Performance Test for
Secondary Aluminum Production MACT

North Melting Furnace

at

Alcoa Extrusions
Plant City, Florida

TRC Project No. 56122 / 115992

Submitted by:

TRC Environmental Corporation
5540 Centerview Drive
Raleigh, NC 27606

TRC

5540 Centerview Drive
Suite 100
Raleigh, NC 27606

919.828.3150 PHONE
919.828.1977 FAX

www.TRCsolutions.com

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Bureau of Air Monitoring
& Mobile Sources

Mr. Russell Wider
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

August 27, 2007

Mr. Doug Neely
US EPA Region IV
61 Forsyth Street
Atlanta, GA 30303

Ms. Diana Lee
Hillsborough County EPC – Air Management Division
3629 Queen Palm Drive
Tampa, FL 33619

Subject: Test Report for Secondary Aluminum Production MACT Compliance Demonstration at Alcoa Extrusions, Plant City, FL
Test Dates: July 10, 11, and 12, 2007

Dear Ms. Lee and Messrs. Wider and Neely:

The Secondary Aluminum Production MACT (40 CFR 63 Subpart RRR) compliance tests at the Alcoa Extrusions facility in Plant City, FL were conducted during July 10 through 12, 2007.

The attached test report documents the test data and test results. The test results are summarized in Table 1-1 of the report. The average Particulate Matter emission rate was 0.374 lb of PM per ton of feed material. This measured PM emission rate is below the Secondary Aluminum MACT PM emission limit of 0.40 lb of PM per ton of feed material. The HCl emissions averaged 0.270 lb of HCl per ton of feed material. This measured HCl emission rate is below the Secondary Aluminum MACT HCl emission limit of 0.40 lb of PM per ton of feed material. The dioxin / furan TEQ emissions rate averaged 0.275 ug of TEQ per Mg of feed material. This measured emission rate is far below the Secondary Aluminum MACT dioxin / furan emission limit of 15.0 ug of PM per Mg of feed material.

If you have questions regarding this test program or the test results, please contact one of the following:

- Jim Serne – TRC Project Director (919) 256-6231
- Mark Young – EHS Manager – Alcoa Custom Extruded Solutions – Tifton, GA (229) 388-6794

Sincerely,
TRC Environmental Corporation

Jim Serne, P.E.
Project Director, Air Measurements

Cc Mark A. Young – Alcoa Tifton, GA

TRC

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SECTION 1.0
INTRODUCTION AND SUMMARY OF RESULTS

1.1 Background Information

On March 23, 2000, the United States Environmental Protection Agency promulgated National Emissions Standards For Hazardous Air Pollutants (NESHAP) for Secondary Aluminum Production under 40 CFR Part 63, Subpart RRR. This rule is typically referred to as the Secondary Aluminum MACT, since it requires "maximum achievable control technology". These regulations establish standards for the emissions of organic hazardous air pollutants (HAPs), inorganic gaseous HAPs (hydrogen chloride) and particulate matter (PM).

In July 2000, Alcoa - North American Extrusions submitted, on behalf of those locations subject to the rule, including Alcoa Extrusions, the *initial notification* to the EPA and state agencies. That notification identified the following regulated sources at the Plant City, Florida facility.

Two (2) 25-ton melters with a combined annual operating capacity of 45,000 tons.

- Each furnace processes clean charge materials; purchased aluminum scrap; internal runaround; and internally generated painted scrap.
- A reactive salt flux (Magnesium Chloride/Potassium Chloride) is added to the furnaces.
- Hydrogen chloride (HCl), particulate matter (PM) and dioxins/furans (D/F) emissions from the melting furnaces are discharged directly through a separate stack on each furnace. Add-on control" devices are not used on these units.
- The furnaces are classified as Group 1.

The Plant City facility is classified as a **major source** in accordance with the definition of "major source" presented in 40 CFR part 63, subpart A. As a major source, Plant City is subject to the following emission limits established at 40 CPR 63.1505:

For Group 1 (melting) Furnaces [63.1505(i)]:

- 0.20 kg of PM per Mg (0.40 lb of PM per ton) of feed/charge
- 15 µg of D/F TEQ per Mg (2.1×10^{-4} gr of D/F TEQ per ton) of feed/charge
- 0.20 kg of HCl per Mg (0.40 lb of HCl per ton) of feed/charge

The MACT rule specifies applicable emissions testing requirements including "initial" performance tests for each affected source and emission unit. The initial performance tests were completed in August 2002. Following the initial performance test, "ongoing" emissions testing must be performed once every five (5) years. The Secondary Aluminum MACT also requires continuous monitoring of control device operating parameters. Plant City does not have control devices on its ingot furnaces but has demonstrated that emission limits are met using good work practices.

1.2 Summary of Results

The MACT performance emissions tests were conducted in July 2007, at the North Furnace to demonstrate compliance with the Secondary Aluminum MACT requirements for Group 1 furnaces. One test run was conducted per day from Tuesday, July 10^{th} through Thursday, July 12^{th}. Each test run spanned an entire melt cycle, which spanned 8 to 9 hours. Table 1-1 provides a summary of the test results as compared to the Group 1 furnace MACT emission limits.

The PM emissions averaged 0.374 lb per ton of feed materials, with a range from 0.288 to 0.494 lb/ton. The average PM emission rate of 0.374 lb per ton of feed materials is lower than the 0.40 lb per ton MACT limit.

The HCl emissions averaged 0.270 lb per ton of feed materials, with a range from 0.260 to 0.288 lb/ton. The average PM emission rate of 0.270 lb per ton of feed materials is lower than the 0.40 lb per ton MACT limit.

The Dioxin/Furan emissions averaged 0.275 μg of D/F TEQ per Mg, with a range from 0.072 to 0.655 μg of D/F TEQ per Mg. The Dioxin/Furan emissions are much lower than the 15.0 μg of D/F TEQ per Mg MACT limit.

These test results and the test data for each of the three test runs are presented and discussed in greater detail in Section 7.

TABLE 1 - 1
SUMMARY OF MACT TEST RESULTS
ALCOA EXTRUSIONS - PLANT CITY, FL
NORTH MELTING FURNACE
Jul-07

	PARTICULATE MATTER TEST RESULTS MACT LIMIT = 0.40 lb / ton of feed			
	TEST RUN # 1	**TEST RUN # 2**	**TEST RUN # 3**	**AVERAGE**
Charge, tons	23.0	21.9	22.4	22.4
Furnace Cycle Time, min	579	552	494	
Production Rate, tons/hr	2.38	2.38	2.72	2.50
PM, lb/hr	0.812	0.687	1.343	0.947
Emission Rate, lb PM / ton	0.341	0.288	0.494	0.374
	HYDROGEN CHLORIDE TEST RESULTS MACT LIMIT = 0.40 lb / ton of feed			
	TEST RUN # 1	**TEST RUN # 2**	**TEST RUN # 3**	**AVERAGE**
HCl, lb/hr	0.626	0.686	0.708	0.673
Emission Rate, lb HCl / ton	0.263	0.288	0.260	0.270
	DIOXINS & FURANS (TEQ) TEST RESULTS MACT LIMIT = 15.0 ug TEQ / Mg of feed			
	TEST RUN # 1	**TEST RUN # 2**	**TEST RUN # 3**	**AVERAGE**
TOTAL TEQ, ug	13.66	1.94	1.46	5.69
Charge, Mg	20.9	19.9	20.3	20.4
Emission Rate, ug TEQ / Mg	0.655	0.098	0.072	0.275

SECTION 2.0
PLANT DESCRIPTION AND OPERATION

The Plant City Operation's ingot plant operates two (2) identical 25-ton melters with a combined annual operating capacity of 45,000 tons. These furnaces process clean charge materials,[1] purchased aluminum scrap and internally generated painted scrap. The molten aluminum is cast into round ingots (logs) of various diameters and lengths. A reactive salt flux is added to the molten aluminum to remove contaminants and inhibit the release of hydrogen gas. Emissions from melting furnaces are discharged directly through a separate stack on each furnace. No add-on control devices are used.

The purchased scrap consists of material from post consumer markets as well as from other extrusion, forging, and fabricating operations. All purchased scrap is inspected to ensure consistency with the Purchased Scrap Specification. The maximum amount of purchased scrap included in a normal charge is 60 percent (28,000 pounds). Commercial metals including chromium and copper are added to produce the desired alloy. Approximately 30 pounds of salt flux is added to each charge. The salt flux currently used contains magnesium chloride (~70 %) and potassium chloride (~30 %). Each furnace processes up to 25 tons per charge (batch). A full charge cycle typically lasts 6-10 hours. The charge cycle could be prolonged if a process upset prohibits the molten metal from being poured into the casting unit.

Molten metal from the melting furnaces is subsequently transferred (tapped) through a trough system to direct chill-type casters. As molten metal exits the trough, it flows into the molds supported by the direct-chill castor. In this process, water is used to cool the molten aluminum into round ingots (logs) of various diameters and lengths. The logs are subsequently used as the feed for the location's extrusion presses.

The melting furnaces are existing units as defined in the rule. The initial compliance date for these units was March 24, 2003.

[1] *Clean charge material* is defined at §63.1503 as furnace charge materials including molten aluminum; T -bar; sow; ingot; billet; pig; alloying elements; uncoated/unpainted thermally dried aluminum chips; aluminum scrap dried at 343°C (650°F) or higher; aluminum scrap delacquered/decoated at 482°C (900°F) or higher; other oil- and lubricant-free unpainted/uncoated gates and risers; oil-and lubricant-free unpainted/ uncoated aluminum scrap, shapes, or products (e.g., pistons) that have not undergone any process (e.g., machining, coating, painting, etc.) that would cause contamination of the aluminum (with oils, lubricants, coatings, or paints); and internal runaround.

SECTION 3.0
TEST PROGRAM SUMMARY

Per §63.1511(e) of the Secondary Aluminum MACT, "repeat" compliance tests are required for major sources every five (5) years following the initial performance test. The initial performance test was completed in August 2002. The tests conducted in July 2007 were done so to satisfy the required 5 year on-going performance test requirement. A summary of the performance tests conducted on the North Furnace, a Group 1 furnace, is presented in Table 3-1. All performance testing was conducted under worst-case operating conditions with respect to those parameters that have an effect on D/F, PM and HCl emissions. Specifically, those parameters include:

- Scrap quality
- Scrap quantity
- Quantity of salt flux used
- Chlorine concentration of the salt flux

TABLE 3-1. SUMMARY OF PERFORMANCE TEST FOR THE NORTH AND SOUTH REMELT FURNACES

Regulated Source(s)	Group 1 (Melting) Furnace(s)
Sampling Location	South Furnace exhaust stack
Number of test runs	3
Length of test run[2]	6 - 10 hours
Parameter(s)	Dioxins and furans (D/F) Particulate Matter (PM)[3] Hydrochloric Acid (HCl)
Sampling & analytical methods	Dioxins and furans - EPA Method 23 Particulate Matter - EPA Methods 1 through 5 Hydrochloric acid - EPA Method 26A[4]

[2] Length of test run is dependent on production output conditions. A full charge was tested.

[3] EPA Method 5 and 26A were combined in a single sample train

[4] Method 26A was used to measure HCl. Only the HCl data are required for SMACT compliance.

In accordance with the Secondary Aluminum MACT, three test runs were performed on one of the furnaces. Since the design, capacity and operation of the two furnaces are identical, only one furnace was tested as allowed in §63.1511(f). Emission results for the furnace tested are representative of the other furnace.

For the performance test, the furnace was emptied to the maximum extent possible. Typically, a molten metal heel of up to 10,000 pounds is maintained in the furnace. Charge material of the composition described in Table 3-2 was then placed into the furnace. The furnace door was then closed and the burners were set on high-fire. After the metal had completely melted, a door was opened and salt flux was introduced to the molten metal bath. Dross was skimmed from the molten metal and alloying agents were then added. The door was then closed and melting was allowed to continue until all the metal had melted and the casting unit was prepared to receive the molten metal.

TABLE 3-2. CHARGE AND FLUX SPECIFICATIONS: NORMAL VS. "WORST-CASE"

Charge Material	Normal Operations (Pounds)	Performance Test Conditions (Pounds)
Prime[5]	15,000 – 20,000	0
RSI[6]	0 - 4,000	0
Internally generated runaround scrap (unpainted)	10,000 - 20,000	0
Alloying materials	100 – 400	0
Purchased Press/Fab Scrap	10,000 to 20,000	27,501 – 29,822
Painted Scrap	0 – 10,000	16,166 – 16,716
Flux Time	30 Minutes	30 Minutes
Reactive Flux – Amlox	(~30 pounds of salt)	30 pounds of Amlox

Emission testing was conducted from the time that the melting furnace doors were first opened to add charge material (beginning of charge) until the transfer of molten metal to the casting unit had been completed. A minimum of six (6) and a maximum of ten (10) hours for each emission

[5] Prime aluminum is typically P1020 purchased aluminum ingot consisting of not less than 99.7% aluminum.
[6] RSI - Recycled Scrap Ingot typically available in 6061 or 6063 alloys.

test run were expected. The actual test run duration ranged from approximately 9 to 10 hours. The production rate was dependent on the downstream operations (preparation of the casting unit and completion of cast). The furnace emissions were sampled from a full furnace cycle. As anticipated, three days were required to complete this performance test with one test run completed on each day.

The sampling and analytical methods listed in Table 3-1 meet the requirements of §63 .1511 (c) of the Secondary Aluminum MACT. The emissions of total particulate matter (PM) and hydrogen chloride (HCl) were determined by a combined EPA Method 5/26A sampling train. The emissions of dioxins/furans were determined by an EPA Method 23 sampling train.

Performance testing on Cast House #2 North Melting Furnace was performed beginning Tuesday, July 10, 2007. TRC setup the test equipment on Monday, July 9th. The test program was concluded on Thursday, July 12, 2007.

SECTION 4.0
SAMPLING LOCATION

Emissions testing was performed at the North Melting Furnace exhaust stack located on the roof of the ingot plant building. The North and South furnaces are physically located in a North to South arrangement in the center of Cast House #2. Each furnace has its own exhaust stack. The exit of this stack is approximately 77 feet above ground surface. The stack extends 16 feet above the roofline. Previously installed sampling ports were used to meet EPA Methods 1 and 2 criteria for obtaining volumetric flow rate data from this stack.

Figure 4-1 provides detailed drawing information on the configuration of the exhaust stack.

The stack has a diameter of approximately 50-inches and the sample ports are located more than 8 diameters after a flow disturbance and more than 2 diameters before the stack exit. Therefore, 12 traverse points were sampled (6 traverse points in each axis of the stack).

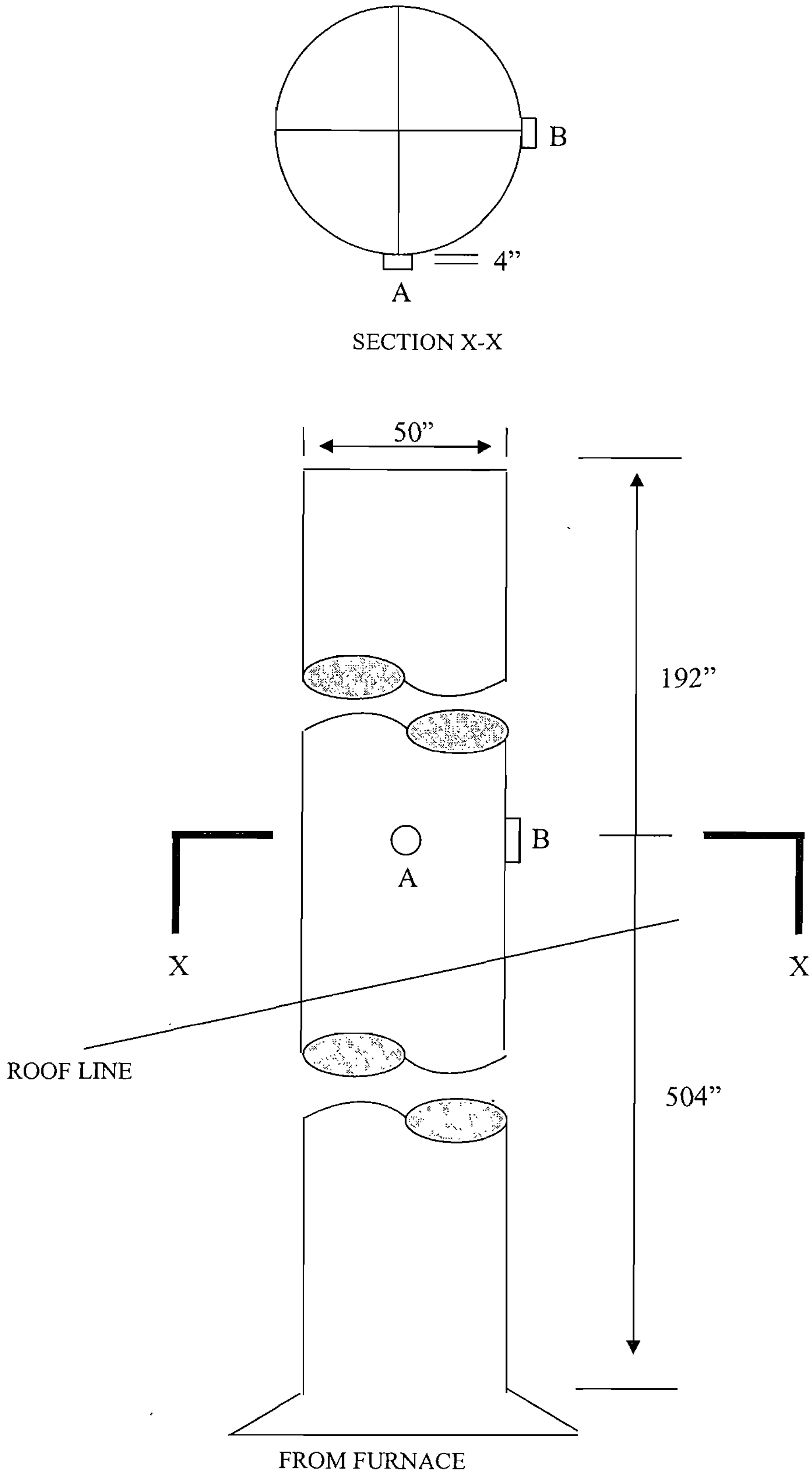


Figure 4-1. Plant City Operation – Drawing North Furnace Stack

SECTION 5.0
SAMPLING/ANALYTICAL PROCEDURES

This section of the test report provides brief descriptions of the sampling and analytical methods that were used to demonstrate compliance with applicable emission limits in the Secondary Aluminum MACT. Complete copies of the reference methods are available in 40 CFR 60 Appendix A or at EPA's TTN website (www.epa.gov/TTN/emc).

EPA Method 5

The sample train used for particulate matter was an EPA Method 5 design. The probe was equipped with type S pitot tubes for measuring gas velocity and a thermocouple sensor for measuring stack gas temperature. The thermocouple sensor was connected to a digital thermocouple indicator, which was used to measure the stack gas temperature at each sample point. A filter assembly containing a quartz filter was enclosed in a temperature-controlled heated sample box. The average box temperature was maintained at 248°F ± 25°F. The nozzle, probe liner, pre-filter connecting glassware, and filter are referred to as the "front-half" of the sample train. Following the filter was a condenser section, which by convention, is referred to as the "backhalf." The back half was maintained at a temperature below 68°F by adding ice to the condenser section during sampling.

The Method 5 sample train was connected to a control box by means of an umbilical cord, which contains a vacuum hose, pitot lines, thermocouple wires, and a 4-wire electrical cord. The control box (meter box) was used to monitor stack conditions and to facilitate isokinetic sampling. The control box consisted of a diaphragm pump used to pull the stack gas through the sample train, fine and coarse metering valves to control the sampling rate, a vacuum gauge to measure the pressure drop, and a calibrated dry gas meter readable to 0.001 cubic feet. At the outlet of the dry gas meter was a calibrated orifice, which was used to isokinetically control the flow of gas through the metering system. The pitot tubes utilized to measure stack gas velocity were connected to the control box via the umbilical cord. The control box contained a manometer, which was used for the velocity measurement and for monitoring orifice pressure.

Stack condition measurements were made prior to collecting a sample, including measurements of velocity and temperature. A sample nozzle was chosen and isokinetic operating parameters were established utilizing a spreadsheet. The sampling nozzle, probe, and pre-filter connecting glassware were cleaned and rinsed prior to use. The sample train was assembled and checked for leaks following the procedures outlined in Method 5. A final check was made of the sample box and probe heat temperatures. Crushed ice was added to the condenser section. The sample nozzle was positioned in the stack at the first sample point. The sample pump was then turned on, and the gas-sampling rate adjusted for isokinetic sampling. Isokinetic sampling proceeded at each of the traverse points. Upon, completion of the test, the sample probe was removed from the stack, and a post-test leak check was performed according to Method 5 procedures. Care was taken to ensure that the nozzle tip did not touch the sampling port.

Following sample collection, the Method 5 sample train was taken to an area free from air disturbances and airborne particulate matter. The filter was transferred to a petri dish labeled with the sample date and the run number. Care was taken to ensure that any loose particulate matter and filter material were quantitatively transferred to the petri dish. In the laboratory, the filter was placed in a constant humidity desiccator containing silica gel for at least 24 hours prior to weighing. Successive weights were obtained until the filter weight had equilibrated. At least 6 hours between each successive weighing was required. The same weighing procedures were followed to obtain the tare weight for the filter. The tare and final weight were made using an electronic balance with a readability of 0.1 milligrams. The filters were weighed to a constant weight of ±0.5 milligrams.

Following each run, the contents of the nozzle, probe liner, and pre-filter connecting glassware were quantitatively transferred to a storage container labeled with sample date and run number. Several rinses of acetone, with simultaneous loosening of particulate matter using a clean nylon brush, were used for the front-half clean up. In the laboratory, the sample acetone rinse was transferred to a tared 150-milliliter beaker. The volume of acetone was recorded, and the beakers were placed in an evaporation chamber at a temperature of approximately 80°F until dry. The beaker was weighed to a constant final weight. Particulate matter is the total of residue captured on the filter and in the front half sampling equipment. The particulate matter recovered from the filter and the probe was analyzed following the procedures in Method 5. The particulate matter gravimetric analysis was performed by Resolution Analytics, Inc.

EPA Method 26A

Gaseous and particulate pollutants were withdrawn isokinetically from the source and collected on a filter and in absorbing solutions. Method 26A requires that the probe and filter box temperature be maintained above 248°F. Therefore, the combined Method 5 / 26A sample train was operated with the probe and filter temperatures above 248°F. The filter collects particulate matter including halide salts. Acidic and alkaline absorbing solutions collect the gaseous hydrogen halides and halogens, respectively. The hydrogen halides are solubilized in the acidic solution and form chloride, bromide, and fluoride ions. The halogens have a very low solubility in the acidic solution and pass through to the alkaline solution where they are hydrolyzed to form a proton, the halide ion, and the hypohalous acid. Sodium thiosulfate was added to the alkaline solution to assure reaction with the hypohalous acid to form a second halide ion such that two halide ions are formed for each molecule of halogen gas. The halide ions in the separate solutions are measured by ion chromatography (IC). The IC analysis of the hydrogen chloride collected in the acidic impingers was performed by Resolution Analytics, Inc.

EPA Method 23

Dioxins and furans were collected with an isokinetic sample train. The Method 23 sample train consists of a heated filter and an XAD-2 resin trap. The stack gas, after passing through the heated filter, is cooled by passing through an ice-water chilled condenser coil where dioxins and furans are adsorbed on the resin trap. There is a potential for cross-contamination from other processes if properly cleaned glassware is not used. The Method 23 glassware was critically cleaned prior to mobilization to the test site. Using a capable laboratory is also critical to ensuring the quality of dioxin and furan emissions data. The Method 23 samples for dioxin and furan analysis were submitted to Analytical Perspectives (Wilmington, NC 910-794-1613). Analysis for only the "2,3,7,8-" chlorinated dioxin and furan congeners (not the "other" dioxins and furans) was performed to meet the Secondary Aluminum MACT data requirements. Calculation of the 2,3,7,8 - TCDD toxic equivalents (TEQ) was made using the 1989 EPA TEQ factors listed in Table 5-1. Non-detectable results for D/F were treated as 0 for the purpose of determining the D/F TEQ. The D/F results, expressed as the Toxic Equivalent Three Run Average (µg D/F TEQ / Mg Aluminum Charged), are reported for comparison to the MACT emission limit.

The Method 5/26A and/or Method 23 stack sampling traverses were designed to ensure at least one complete traverse is completed during the furnace melt cycle. Since a typical furnace cycle takes from 6 to 10 hours, the sampling approach was designed to complete the first traverse in approximately 6 hours. Repeat sampling of additional traverse points was continued until the cycle is over. This approach ensured that a complete traverse was obtained in the event that the cycle is completed early.

TABLE 5-1. EPA 1989 TOXIC EQUIVALENCY FACTORS

Analyte	TEQ Factor
2378 – TCDD	1.0
12378 – PeCDD	0.5
123478 – HxCDD	0.1
123678 – HxCDD	0.1
123789 – HxCDD	0.1
1234678 – HpCDD	0.01
12346789 – OCDD	0.001
2378 – TCDF	0.1
12378 – PeCDF	0.05
23478 – PeCDF	0.5
123478 – HxCDF	0.1
123678 – HxCDF	0.1
234678 – HxCDF	0.1
123789 – HxCDF	0.1
1234678 – HpCDF	0.01
1234789 –HpCDF	0.01
12346789 – OCDF	0.001

SECTION 6.0
QUALITY CONTROL AND QUALITY ASSURANCE

Sampling Activities

Quality control (QC) for sample collection was based on adherence to EPA Reference Method requirements for equipment calibration, sample train leak checks, isokinetic sampling and sample recovery. Acceptance criteria specified for these activities in the applicable test methods were used to access data quality and validate test data. All of the pre- and post-test meter calibrations were within ±5%, all of the sample train leak rates were ≤0.02 cfm, and all of the sampling rates were within 100±10% of isokinetic.

Analysis Activities

Quality control (QC) for sample analysis were based on adherence to sample preparation procedures, as specified in the EPA Reference Methods, proper instrument calibration and analysis of QC samples.

Particulate Matter (Method 5) - The PM analysis involved sample recovery followed by gravimetric analysis. Quality control for this analysis consisted of analytical balance calibrations and QC checks. The analytical balance used to weigh Method 5 samples was calibrated at least annually with standard weights (NIST -traceable). On a daily basis, or just prior to sample weighing, the calibration was checked with a secondary QC weight that had previously been weighed side-by-side with NIST -traceable weights. Measured values for the QC weight must agree within ±0.1 mg of the QC value.

Hydrogen Chloride (Method 26A) - Analysis for hydrogen chloride was performed by ion chromatography (IC). A 5-point calibration (zero plus four upscale points) was performed on the instrument with each batch of HCl samples. Internal quality control consisted of reagent blanks, QC sample analyses and duplicate sample analyses. The analytical QC sample was a sample of known concentration prepared from a stock solution that is independent of the solution used to prepare the calibration standards. The duplicate analysis was performed by taking two sample aliquots from a randomly selected field sample.

***Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans (Method* 23)** -PCDDs and PCDFs were extracted from the sample, separated by high-resolution gas chromatography (HRCG), and measured by high resolution mass spectrometry (HRMS). Calibration of laboratory equipment was consistent with Section 6 of EPA Method 23. Quality control and quality assurance was consistent with Method 23 Sections 7 and 8, respectively.

EPA Audit Samples

The Environmental Protection Commission of Hillsborough County obtained EPA Audit materials from US EPA. While onsite during the test program, TRC was given a Method 26 HCl Audit Sample and a Method 23 Dioxin/Furan Audit Sample.

The original Method 26 Audit Sample provided to TRC onsite was lost by the laboratory, Resolution Analytics. The Hillsborough County EPD and EPA were contacted by the laboratory and a replacement Audit Sample for Method 26A was provided by EPA directly to Resolution Analytics. The replacement Audit Sample was analyzed for chloride content along with the Alcoa field samples.

The following results were reported for the EPA Audit Samples:

Method 26 Audit L 2839	98.1 mg/L of Cl^-
Method 23 -334-01	See attached Dioxin/Furan Reporting Form

USEPA Stationary Compliance Audit Program
Dioxin/Furan Audit Form

Auditor:	
Agency:	
Agency Address:	
Agency Phone #:	
Date Analyzed:	24 Jul 2007
Auditee Company:	Analytical Perspectives (Ph. 910 794-1613)
Auditee Address:	2714 Exchange Drive, Wilmington, NC 28405
Date Audit Sam Rec'd:	16 Jul 2007
Audit Sample #:	M23-3344-01-Audit P8090_5075_005
Confirmation Analysis Used:	Yes ____ No X
Auditee's Name:	Dr. Yves Tondeur
Signature:	Amy J. Boehm

Compound	Auditee Result (ng/sample)	Compound	Auditee Result (ng/sample)
2378-TCDD	0.572	2378-TCDF	0.532
Other TCDD	0.763	Other TCDF	0.563
12378-PeCDD	0.600	12378-PeCDF	0.393
Other PeCDD	0.902	23478-PeCDF	0.390
123478-HxCDD	0.605	Other PeCDF	0.668
123678-HxCDD	0.579	123478-HxCDF	0.505
123789-HxCDD	0.615	123678-HxCDF	0.497
Other HxCDD	0.705	123789-HxCDF	0.845
1234678-HpCDD	0.569	234678-HxCDF	0.474
Other HpCDD	0.320	Other-HxCDF	0.458
OCDD	1.425	1234678-HpCDF	0.569
		1234789-HpCDF	0.294
		Other HpCDF	0.275
		OCDF	1.449

* 1,2,3,7,8,9-HxCDF co-elutes with and is inseparable from the the last eluting HxCDF isomer. The reported value is a combined result of the two isomers.

SECTION 7.0
DISCUSSION OF TEST DATA

Table 7-1 provides the test data and results for the Method 5 / 26A Particulate Matter / Hydrogen Chloride sample train. The Particulate Matter (PM) emissions averaged 0.9473 lb/hr with a range from 0.6868 to 1.3432 lb/hr. The HCl emissions averaged 0.6730 lb/hr with a range from 0.6259 to 0.7075 lb/hr. The three test runs were all conducted very close to the ideal 100 percent isokinetic rate.

Table 7-2 provides the test data and results for the Method 23 Dioxin / Furan sample train. The total TEQ value reported by the laboratory ranged from 53.6 to 480 picograms TEQ in the sample.

Table 1-1 presented previously provides the test results expressed in terms of the amount of feed material charged for comparison to the MACT emission limits.

To calculate the Dioxin / Furan emission rate in the format that the Secondary Aluminum Production MACT emission limit is specified, the total TEQ values found in the Method 23 samples were divided by the sample volume (dscf of sample collected), then multiplied by the volumetric stack gas flow rate (dscfm) and the length of the melt cycle (minutes). After converting from picograms to micrograms, this total TEQ value for the melt cycle (or test run) was divided by the total weight of the feed materials entering the melting furnace, to yield the micrograms of TEQ per Megagram (Mg) of feed material input to the melting furnace.

The appendices include all of the field datasheets, calculation spreadsheets, equipment calibration records, analytical laboratory reports, and the furnace charge weights for each test run.

Table 7-1
PARTICULATE MATTER AND HYDROGEN CHLORIDE
TEST RESULTS
ALCOA EXTRUSIONS
NORTH FURNACE EXHAUST
PLANT CITY, FL

	RUN NUMBER	M5/26A-1	M5/26A-2	M5/26A-3	AVERAGE
	RUN DATE	7/10/2007	7/11/2007	7/12/2007	
	RUN TIME	0758-1737	0715-1627	0725-1539	
	MEASURED DATA				
(Y)	Meter Box Y	0.9978	0.9978	0.9978	
(DeltaH)	Avg Delta H, inches H_2O	1.57	1.61	1.69	
(Pbar)	Barometric Pressure, inches Hg	29.85	29.90	29.90	
(Vm)	Meter Volume, ft³	400.396	385.717	350.674	
(Tm)	Avg Meter Temp, deg F	96	94	92	
(Pg)	Static Pressure, inches H_2O	-0.11	-0.14	-0.11	
(Ts)	Avg Stack Temp, deg F	278	282	274	277.8
(Vlc)	Water Collected, mL	336.4	334.6	296.2	
(%CO_2)	Carbon Dioxide, %	1.0	0.8	0.8	0.9
(%O_2)	Oxygen, %	19.0	19.4	19.6	19.3
(%N_2)	Nitrogen, %	80.0	79.8	79.6	79.8
(Cp)	Pitot Tube Coefficient	0.84	0.84	0.84	
(DeltaP)	Avg Sqrt Delta P, (inches H2O)½	0.4657	0.4722	0.4843	
(Theta)	Sample Time, min	564.8	536.5	478.0	
(Dn)	Nozzle Diameter, inches	0.312	0.312	0.312	
	CALCULATED DATA				
(An)	Nozzle Area, square feet	0.000530929	0.000530929	0.000530929	
(Vmstd)	Standard Meter Volume, ft³	380.057	367.967	335.594	
(Ps)	Stack Pressure, inches Hg	29.84	29.89	29.89	
(%H_2O)	Moisture, %	4.0	4.1	4.0	4.0
(Vwstd)	Standard Water Vapor Volume, ft³	15.861	15.776	13.966	
(Mfd)	Dry Mole Fraction	0.960	0.959	0.960	
(Md)	Molecular Weight-dry, lb/lb-mole	28.92	28.90	28.91	
(Ms)	Molecular Weight-wet, lb/lb-mole	28.48	28.46	28.48	
(Vs)	Velocity, ft/s	31.2	31.7	32.3	31.7
(A)	Stack Area, ft²	13.64	13.64	13.64	
(Qa)	Volumetric flow, acfm	25,488	25,905	26,426	25,940
(Qs)	Volumetric flow, dscfm	17,461	17,658	18,223	17,781
(I)	Isokinetic Rate, %	99.0	99.8	99.0	
	EMISSIONS DATA				
	FILTERABLE PARTICULATE (PM)				
(grams)	Filterable Particulate Catch, g	0.1336	0.1082	0.1870	0.1429
(gr/dscf)	Concen., gr/dscf	0.00542	0.00454	0.00860	0.00619
(gr/acf)	Concen., gr/actual cf	0.00372	0.00309	0.00593	0.00425
(lb/hr)	Emission Rate, lb/hr	0.8119	0.6868	1.3432	0.9473
	HYDROGEN CHLORIDE (HCl)				
(Fwt)	Formula Weight	36.46	36.46	36.46	
(mg)	Catch, milligrams	103.0	108.0	98.5	103.2
(ppm)	Concentration, ppm	6.31	6.84	6.84	6.66
(lb/hr)	Emission Rate, lb/hr	0.6259	0.6855	0.7075	0.6730

TABLE 7-2
DIOXIN/FURAN TEST RESULTS
ALCOA EXTRUSIONS
NORTH FURNACE EXHAUST
PLANT CITY, FL

RUN NUMBER	M23-1	M23-2	M23-3
RUN DATE	7/10/2007	7/11/2007	7/12/2007
RUN TIME	0758-1737	0715-1627	0725-1539
MEASURED DATA			
Sampling duration, min.	551.6	536.4	478.0
Nozzle diameter, in.	0.312	0.312	0.312
Cross sectional nozzle area, sq.ft.	5.31E-04	5.31E-04	5.31E-04
Barometric pressure, in. Hg	29.85	29.90	29.90
Avg. orifice press. diff. Delta H, in H_2O	1.50	1.44	1.33
Avg. dry gas meter temp., F	97.76	96.95	94.62
Avg. abs. dry gas meter temp., R	558	557	555
Volume H_2O imp. (ml)	320.5	301.9	257.3
Std. vol. of H_2O vapor coll., cu.ft.	15.11	14.23	12.13
Dry gas meter calibration factor	0.9961	0.9961	0.9961
Sample vol. at meter cond., dcf	372.819	360.670	304.712
Sample vol. at std. cond., dscf	351.888	341.428	289.593
Percent of isokinetic sampling	94.8	97.7	97.2
GAS STREAM COMPOSITION DATA			
CO_2, % by volume, dry basis	1.0	0.8	0.8
O_2, % by volume, dry basis	19.0	19.4	19.6
CO, % by volume dry basis	0.0	0.0	0.0
N_2, % by volume, dry basis	80.0	79.8	79.6
Molecular wt. of dry gas, lb/lb mole	28.92	28.90	28.91
H_2O vapor in gas stream, prop. by vol.	0.041	0.040	0.040
Mole fraction of dry gas	0.959	0.960	0.960
Molecular wt. of wet gas, lb/lb mole	28.47	28.47	28.47
VELOCITY AND VOLUMETRIC FLOW DATA			
Sq. rt. delta P	0.4623	0.4440	0.4246
Static pressure, in. H_2O	-0.11	-0.13	-0.11
Static pressure, in. Hg	-0.008	-0.010	-0.008
Absolute pressure, in. Hg	29.84	29.89	29.89
Avg. Stack temperature, F	280	272	271
Avg. absolute temperature, R	740	732	731
Pitot tube coefficient	0.84	0.84	0.84
Total number of traverse points	45	44	39
Avg. gas stream velocity, ft./sec.	31.0	29.6	28.3
Stack/duct cross sectional area, sq.ft.	13.64	13.64	13.64
Avg. gas stream volumetric flow, wacf/min.	25,350	24,200	23,110
Avg. gas stream volumetric flow, dscf/min.	17,290	16,730	16,020
TOTAL PCDD & PCDF TEQ			
TEQ, picograms in sample	480	71.7	53.6

TEST PROGRAM PARTICIPANTS

ALCOA	
EHS Manager	Mark A. Young
TRC	
Project Manager & QA	Jim Serne, PE
Field Team Leader & Sample Recovery	Carl Fink, PE
Meter Box Operator	Derek Brewster
Technician	Jay Evans
AGENCY OBSERVER	
Envir Protection Commission of Hillsborough County	Pwu-Sheng Liu, PhD, PE

APPENDIX A

DATA REDUCTION AND FIELD DATASHEETS

Particulate Matter and Hydrogen Chloride
Dioxins and Furans

PLANT CITY, FL
North Melting Furnace

FACILITY NAME
[redacted]A EXTRUSIONS

SAMPLING LOCATION
NORTH FURNACE EXHAUST

CITY AND STATE
PLANT CITY, FL

STACK DIMENSIONS

	Stack ID	Length	Width
** ENTER IN INCHES	50		

RUN SPECIFICS DATA

	Run 1	Run 2	Run 3
TEST DATE	7/10/2007	7/11/2007	7/12/2007
TEST TIMES	0758-1737	0715-1627	0725-1539
TEST DURATION	564.8	536.5	478
TEST RUN ID'S	M5/26A-1	M5/26A-2	M5/26A-3

NOZZLE INSIDE DIAMETER

G-7-31	Run 1	Run 2	Run 3
NOZZLE DIAMETER	0.312	0.312	0.312

DRY GAS METER DATA

	Run 1	Run 2	Run 3
Meterbox #	M13	M13	M13
DGM Gamma (Y)	0.9978	0.9978	0.9978
DGM Delta(H)	1.812	1.812	1.812

VOLUME METERED

Meter Readings	Run 1	Run 2	Run 3
Run Start	163.061	564.248	950.609
Run End	563.457	949.965	1301.283
Leak Check 1 Start	0.000	0.000	0.000
Leak Check 1 End	0.000	0.000	0.000
Leak Check 2 Start	0.000	0.000	0.000
Leak Check 2 End	0.000	0.000	0.000
Volume Metered	400.396	385.717	350.674
		OK	OK

PRESSURE DATA

	Run 1	Run 2	Run 3
Barometric Pressure	29.85	29.90	29.90
Static Pressure	-0.11	-0.14	-0.11

MOLECULAR WEIGHT DATA

	Run 1	Run 2	Run 3
Oxygen	19.00	19.40	19.60
Carbon Dioxide	1.00	0.80	0.80

MOISTURE DATA

	Run 1	Run 2	Run 3
Grams/mls Collected	336.4	334.6	296.2

FILTERABLE PARTICULATE DATA

	Run 1	Run 2	Run 3
Grams Collected	0.1336	0.1082	0.1870

HYDROGEN CHLORIDE LAB DATA

	Run 1	Run 2	Run 3
Milligrams Collected	103.0	108.0	98.5

Data Entry

NUMBER OF TRAVERSE POINTS | 46 | [redacted] | 39 |

Run 1

	Pt ID	Time	delta P		delta H	Ts	Tm
	1	0	0.18	0.424	1.35	222	82
	2	12.5	0.17	0.412	1.92	326	84
	3	25	0.31	0.557	1.89	384	86
	4	37.5	0.20	0.447	1.52	224	88
	5	50	0.20	0.447	1.52	218	90
	6	62.5	0.25	0.500	1.60	348	90
	7	75	0.23	0.480	1.68	241	91
	8	87.5	0.29	0.539	2.29	216	92
	9	100	0.30	0.548	1.88	370	92
	10	112.5	0.28	0.529	1.74	375	92
	11	125	0.19	0.436	1.41	255	93
	12	137.5	0.17	0.412	1.30	235	93
	13	150	0.20	0.447	1.38	293	93
	14	162.5	0.31	0.557	1.89	407	95
	15	175	0.31	0.557	1.89	405	97
	16	187.5	0.35	0.592	2.10	430	98
	17	200	0.31	0.557	1.91	394	98
	18	212.5	0.29	0.539	1.79	407	98
	19	225	0.39	0.624	2.27	441	100
	20	237.5	0.38	0.616	2.21	442	99
	21	250	0.35	0.592	2.10	418	100
	22	262.5	0.35	0.592	2.10	416	100
	23	275	0.26	0.510	1.76	324	100
	24	287.5	0.21	0.458	1.57	258	100
	25	300	0.22	0.469	1.59	277	100
2	26	312.5	0.17	0.412	1.37	213	101
	27	325	0.14	0.374	1.12	186	101
	28	337.5	0.13	0.361	1.09	176	101
	29	350	0.13	0.361	1.09	165	101
	30	362.5	0.11	0.332	0.92	165	101
	31	375	0.12	0.346	1.04	160	101
	32	387.5	0.18	0.424	1.39	218	102
	33	400	0.18	0.424	1.39	228	103
	34	412.5	0.18	0.424	1.39	234	104
	35	425	0.16	0.400	1.24	233	104
	36	437.5	0.16	0.400	1.24	226	100
	37	450	0.18	0.424	1.38	231	97
	38	462.5	0.18	0.424	1.38	227	96
	39	475	0.18	0.424	1.38	223	93
	40	487.5	0.18	0.424	1.37	217	91
	41	500	0.18	0.424	1.37	218	90
	42	512.5	0.19	0.436	1.44	221	90
	43	525	0.2	0.447	1.52	225	92
	44	537.5	0.19	0.436	1.46	224	93
	45	550	0.19	0.436	1.46	225	94
	46	562.5	0.2	0.447	1.48	230	94
	47	575		0.000			
	48	587.5		0.000			
	49	600		0.000			
	50	612.5		0.000			
	51	625		0.000			
	52	637.5		0.000			
	53	650		0.000			
	54	662.5		0.000			
	55	675		0.000			
	56	687.5		0.000			
	57	700		0.000			
	58	712.5		0.000			
3	59	725		0.000			
	60	737.5		0.000			
	61	750		0.000			
	62	762.5		0.000			
	64	775		0.000			
	65	787.5		0.000			
	66	800		0.000			
	67	812.5		0.000			
	69	825		0.000			
	70	837.5		0.000			
	71	850		0.000			
	72	862.5		0.000			
	74	875		0.000			
	75	887.5		0.000			
	76	900		0.000			
	Avg			21.422	1.57	277.6	95.7
	Avg Sqrt			0.4657			

Run 2

	Pt ID	Time	delta P		delta H	Ts	Tm
	1	0	0.33	0.574	1.98	391	78
	2	12.5	0.20	0.447	1.51	232	80
	3	25	0.21	0.458	1.54	239	84
	4	37.5	0.17	0.412	1.34	212	86
	5	50	0.27	0.520	1.70	370	88
	6	62.5	0.20	0.447	1.53	223	89
	7	75	0.23	0.480	1.70	262	90
	8	87.5	0.36	0.600	2.26	382	90
	9	100	0.42	0.648	2.42	453	92
	10	112.5	0.34	0.583	2.08	395	92
	11	125	0.36	0.600	2.20	403	92
	12	137.5	0.38	0.616	2.28	414	93
	13	150	0.31	0.557	1.84	382	90
	14	162.5	0.31	0.557	1.91	391	93
	15	175	0.20	0.447	1.44	274	96
	16	187.5	0.20	0.447	1.49	244	96
	17	200	0.19	0.436	1.42	244	96
	18	212.5	0.20	0.447	1.49	260	96
	19	225	0.26	0.510	1.84	286	85
	20	237.5	0.25	0.500	1.80	278	97
	21	250	0.26	0.510	1.80	292	89
	22	262.5	0.35	0.592	2.10	422	95
	23	275	0.41	0.640	2.32	465	94
	24	287.5	0.43	0.656	2.44	475	94
	25	300	0.24	0.490	1.73	268	94
2	26	312.5	0.19	0.436	1.47	219	94
	27	325	0.16	0.400	1.35	182	97
	28	337.5	0.13	0.361	1.09	175	97
	29	350	0.09	0.300	0.70	234	97
	30	362.5	0.09	0.300	0.70	233	95
	31	375	0.07	0.265	0.56	207	95
	32	387.5	0.16	0.400	1.3	196	96
	33	400	0.14	0.374	1.17	187	97
	34	412.5	0.17	0.412	1.33	220	98
	35	425	0.17	0.412	1.33	230	97
	36	437.5	0.19	0.436	1.48	234	98
	37	450	0.18	0.424	1.36	240	100
	38	462.5	0.18	0.424	1.36	230	101
	39	475	0.18	0.424	1.46	203	101
	40	487.5	0.12	0.346	1.01	180	101
	41	500	0.21	0.458	1.64	235	99
	42	512.5	0.23	0.480	1.73	254	99
	43	525	0.24	0.490	1.81	247	99
	44	537.5	0.21	0.458	1.64	233	99
	45	550		0.000			
	46	562.5		0.000			
	47	575		0.000			
	48	587.5		0.000			
	49	600		0.000			
	50	612.5		0.000			
	51	625		0.000			
	52	637.5		0.000			
	53	650		0.000			
	54	662.5		0.000			
	55	675		0.000			
	56	687.5		0.000			
	57	700		0.000			
	58	712.5		0.000			
3	59	725		0.000			
	60	737.5		0.000			
	61	750		0.000			
	62	762.5		0.000			
	64	775		0.000			
	65	787.5		0.000			
	66	800		0.000			
	67	812.5		0.000			
	69	825		0.000			
	70	837.5		0.000			
	71	850		0.000			
	72	862.5		0.000			
	74	875		0.000			
	75	887.5		0.000			
	76	900		0.000			
				20.776	1.61	281.7	93.8
				0.4722			

[redacted]

Run 3

	Pt ID	Time	delta P		delta H	Ts	Tm
	1	0	0.32	0.566	1.98	367	78
	2	12.5	0.18	0.424	1.41	201	82
	3	25	0.31	0.557	2.06	324	85
	4	37.5	0.29	0.539	2.00	308	88
	5	50	0.26	0.510	1.80	238	89
	6	62.5	0.21	0.458	1.61	238	90
	7	75	0.28	0.529	1.87	317	91
	8	87.5	0.30	0.548	1.89	380	91
	9	100	0.20	0.447	1.53	231	91
	10	112.5	0.26	0.510	1.74	320	92
	11	125	0.29	0.539	1.90	362	93
	12	137.5	0.35	0.592	2.22	368	93
	13	150	0.24	0.490	1.70	277	86
	14	162.5	0.22	0.469	1.57	275	90
	15	175	0.25	0.500	1.79	285	92
	16	187.5	0.33	0.574	1.92	438	94
	17	200	0.37	0.608	2.16	445	94
	18	212.5	0.37	0.608	2.10	470	95
	19	225	0.45	0.671	2.48	506	94
	20	237.5	0.32	0.566	2.23	311	94
	21	250	0.25	0.500	1.80	279	94
	22	262.5	0.29	0.539	2.02	294	94
	23	275	0.23	0.480	1.66	263	94
	24	287.5	0.23	0.480	1.72	254	95
	25	300	0.24	0.490	1.73	270	96
2	26	312.5	0.14	0.374	1.14	205	98
	27	325	0.12	0.346	1.00	175	96
	28	337.5	0.12	0.346	1.01	167	98
	29	350	0.11	0.332	0.93	163	98
	30	362.5	0.14	0.374	1.17	164	97
	31	375	0.21	0.458	1.62	217	97
	32	387.5	0.15	0.387	1.25	170	95
	33	400	0.15	0.387	1.25	165	93
	34	412.5	0.17	0.412	1.42	168	93
	35	425	0.20	0.447	1.55	214	94
	36	437.5	0.21	0.458	1.69	211	95
	37	450	0.21	0.458	1.67	210	90
	38	462.5	0.22	0.469	1.67	219	87
	39	475	0.20	0.447	1.53	220	90
	40	480		0.000			
	41	485		0.000			
	42	490		0.000			
	43	495		0.000			
	44	500		0.000			
	45	505		0.000			
	46	510		0.000			
	47	515		0.000			
	48	520		0.000			
	49	525		0.000			
	50	530		0.000			
	51	535		0.000			
	52	540		0.000			
	53	545		0.000			
	54	550		0.000			
	55	555		0.000			
	56	560		0.000			
	57	565		0.000			
	58	570		0.000			
3	59	575		0.000			
	60	580		0.000			
	61	585		0.000			
	62	590		0.000			
	64	#REF!		0.000			
	65	#REF!		0.000			
	66	#REF!		0.000			
	67	#REF!		0.000			
	69	#REF!		0.000			
	70	#REF!		0.000			
	71	#REF!		0.000			
	72	#REF!		0.000			
	74	#REF!		0.000			
	75	#REF!		0.000			
	76	#REF!		0.000			
				18.890	1.69	274.1	92.2
				0.4843			

CHECK NUMBER OF POINTS

M5&M26A-1&2&3

METHOD 1 WORKSHEET
Summary of Location Setup

	Enter Information Below:
COMPANY NAME:	ALCOA EXTRUSIONS
AREA:	CAST HOUSE
FACILITY LOCATION (City, State)	PLANT CITY, FL
SAMPLING LOCATION:	NORTH FURNACE EXHAUST

Far Wall to Outside of Port	54	Inches
Inside Wall to Outside of Port	4	Inches
DIAMETER OF STACK	50	Inches
DIAMETER OF STACK	4.17	Feet
Nearest Upstream Disturbance	42	Feet
Nearest Dowstream Disturbance	16	Feet
Nearest Upstream Disturbance	10.1	Diameters
Nearest Dowstream Disturbance	3.8	Diameters

USE 12 TRAVERSE POINTS PER PORT

TOTAL TRAVERSE POINTS	12	
TIME PER TRAVERSE POINT	25	minutes
READINGS EVERY	12.5	minutes

Used Trays for Train Support
Use 5 ft Probe, Glass Liner with Glass Nozzle & Graphite / SS Fittings
Work off of scaffolding.
Ports are 4-inch ID with 4-inch long nipples.

METHOD 1 - TRAVERSE POINT LOCATIONS

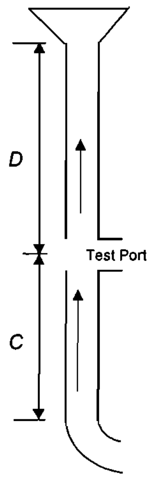
TRC

Plant Name	ALCOA EXTRUSIONS
City/State	PLANT CITY, FL
Test Location	NORTH FURNACE EXHAUST
Personnel / Date	CFF/DMB 07/09/07

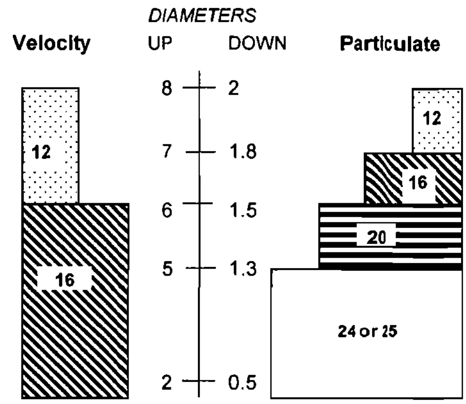
Stack / Ports	Type of Stack:	Circular	X	Rectangle	
Put diagram of test location(s) on back of this sheet	No. of Ports Available	2			
	No. of Ports Used	2			
	Port Inside Diameter, in	3 / 4			

Dimensions		
	Far Wall to Outside of Port, in	54 / 55
	Port Length, in	4 / 5
	Stack Diameter or Depth, in	50
Elevation of Ports (from ground)	Stack Width (if rectangle), in	
	Equivalent Stack Diameter, in	
	Area of Stack, ft^2	13.635

Distance to Flow Disturbances	Distance, ft	Diameters
Upstream (C)	42.0	10.1
Downstream (D)	16.0	3.8



If more than 8 and 2 diameters **and** if duct diameter is less than 24", use 8 or 9 points



DRAW HORIZONTAL LINES THROUGH UPSTREAM AND DOWNSTREAM DIAMETERS AND USE THE HIGHER NUMBER OF POINTS.

Number of Traverse Points			Minimum # Required
Particulate Traverse			12
Velocity Traverse			
# of Ports Used	2	# Points/Port	6
Number of Traverse Points Used			12

Equivalent Diameter (for rectangular ducts):

De = 2 * Depth * Width / (Depth + Width)

De = 2 * (   ) * (   ) / (   ) + (   ) =

Point No.	Fraction of Stack Dia.	Dist. from Inside Wall	Port Length	Dist. From Edge of Port
A-1	0.044	2.2	4	6.2
2	0.146	7.3	4	11.3
3	0.296	14.8	4	18.8
4	0.704	35.2	4	39.2
5	0.854	42.7	4	46.7
6	0.956	47.8	4	51.8
B-1			5	7.2
2			5	12.3
3			5	19.8
4			5	40.2
5			5	47.7
6			5	52.8

LOCATION OF POINTS IN CIRCULAR STACKS OR DUCTS

(Fraction of stack diameter from inside wall to traverse point)

	2	4	6	8	10	12	14	16	18	20
1	.146	.067	.044	.032	.026	.021	.018	.016	.014	.013
2	.854	.250	.146	.105	.082	.067	.057	.049	.044	.039
3		.750	.296	.194	.146	.118	.099	.085	.075	.067
4		.933	.704	.323	.226	.177	.146	.125	.109	.097
5			.854	.677	.342	.250	.201	.169	.146	.129
6			.956	.806	.658	.356	.269	.220	.188	.165
7				.895	.774	.644	.366	.283	.236	.204
8				.968	.854	.750	.634	.375	.296	.250
9					.918	.823	.731	.625	.382	.306
10					.974	.882	.799	.717	.618	.388
11						.933	.854	.780	.704	.612
12						.979	.901	.831	.764	.694
13							.943	.875	.812	.750
14							.982	.915	.854	.796
15								.951	.891	.835
16								.984	.925	.871
17									.956	.903
18									.986	.933
19										.961
20										.987

For 22 or 24 test points, see Method 1 table in CFR

LOCATION OF POINTS IN RECTANGULAR STACKS OR DUCTS

(Fraction of stack diameter from inside wall to traverse point)

	2	3	4	5	6	7	8	9	10	11	12
1	.250	.167	.125	.100	.083	.071	.063	.056	.050	.045	.042
2	.750	.500	.375	.300	.250	.214	.188	.167	.150	.136	.125
3		.833	.625	.500	.417	.357	.313	.278	.250	.227	.208
4			.875	.700	.583	.500	.438	.389	.350	.318	.292
5				.900	.750	.643	.563	.500	.450	.409	.375
6					.917	.786	.688	.611	.550	.500	.458
7						.929	.813	.722	.650	.591	.542
8							.938	.833	.750	.682	.625
9								.944	.850	.773	.708
10									.950	.864	.792
11										.955	.875
12											.958

Note: When using 4 ports in a circular duct, the probe is marked with only the points for the first half of the full diameter traverse.

Checked By: Jim Serne (sign) JIM SERNE (print)

(Project Manager or QA Manger)

RAL-M1.XLS

CYCLONIC FLOW DETERMINATION DATA SHEET
(WITH PRELIMINARY VELOCITY AND MOISTURE)

TRC

Client Name	ALCOA EXTRUSIONS			Velocity Run No.	PRELIM
Plant Name	PLANT CITY			Moisture Run No.	—
City/State	PLANT CITY, FL			Project Number	115992.0000.0000
Test Location	NORTH FURNACE EXHAUST			Test Date	7/9/07
Personnel	DMB/JE			Time: Start 1429	Stop 1437
Pitot I.D	RP-804	Pitot Coeff.	0.84	P barometer, "Hg	29.74
Meter Box ID	NA	Gas Meter Y	NA	P static, " H_2O	-.09
Pressure Gauge ID	NOLL MAG	TC ID	RT-804	Tester Signature	D. B[signature]

Cyclonic Flow / Velocity Traverse

	Point No.	Yaw Angle (deg)	Delta P in. H_2O	Temp Deg. F
1	B-6	0		
2	5	+3		
3	4	0		
4	3	0		
5	2	+3		
6	1	+2		
7	A-6	+2		
8	5	+5		
9	4	+3		
10	3	+3		
11	2	+2		
12	1	+4		
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
Avg		2.3°		

Location is acceptable if avg of ABS(Yaw) ≤ 20°

Preliminary Moisture Sample Data

Test Time	DGM Reading Cubic Feet	Avg DGM Temp (F)	Delta H in. H_2O	Vac. in. Hg	Imp Exit Temp (F)
0/					
5					
10					
15					
20					
25					
30/					
35					
40					
45					
50					
55					
60/					

				Gas Parameters

Moisture Analytical Results

	# 1	# 2	# 3	# 4	Sil Gel
Final Wt. / Vol					
Initial Wt. / Vol					
Moisture Gain					

Balance No. ________ **Total Catch** ______

O_2 / CO_2 Data	Fyrite	Orsat	CEM
O_2 %			
CO_2%			

Leak Check Data: Meter	Pre	Post
in. Hg		
cfm		
Pitot		

Delta P avg is square of the average of the individual square roots

Checked By: [signature] (sign) 07/09/07 ~~(print)~~ date

(Project Manager or QA Manager)

RAL-M2CYC-4.XLS

METHOD 3 - ORSAT ANALYSIS FIELD DATA

TRC

Client Name	ALCOA EXTRUSIONS	Project No.	115992.0000.0000
Plant Name	PLANT CITY	Fuel Type	NA
City / State	PLANT CITY, FL	Orsat ID	#3
Test Location	NORTH FURNACE EXHAUST	Analysis Location	TRC Trailer

Run No. M23-1 Date 07/10/07 Bag ID #1 Operator (signature) Carl Ind

Run Time	Time of Analysis	% CO_2 Reading (A)	% O_2 Reading (B)	% O_2 Value (B-A)	% CO Reading (C)	% CO Value (C-B)	% N_2 Value (100-C)
Start 0758	1740	1.0	20.0	19.0			
Stop 1737	↓	1.0	20.1	19.1			
Leak Chk ✓	1840	1.0	20.0	19.0			
F_o ______	Avg	1.0	Avg	19.0	Avg		

Run No. M23-2 Date 07/11/07 Bag ID #1 Operator (signature) Carl Ind

Run Time	Time of Analysis	% CO_2 Reading (A)	% O_2 Reading (B)	% O_2 Value (B-A)	% CO Reading (C)	% CO Value (C-B)	% N_2 Value (100-C)
Start 0715	1645	0.8	20.3	19.5			
Stop 1627	~~17~~ ↓	0.9	20.3	19.4			
Leak Chk ✓	1735	0.8	20.2	19.4			
F_o ______	Avg	0.8	Avg	19.4	Avg		

Run No. M23-3 Date 07/12/07 Bag ID #1 Operator (signature) Carl Ind

Run Time	Time of Analysis	% CO_2 Reading (A)	% O_2 Reading (B)	% O_2 Value (B-A)	% CO Reading (C)	% CO Value (C-B)	% N_2 Value (100-C)
Start 0725	1600	0.7	20.4	19.7			
Stop 1539	↓	0.9	20.4	19.5			
Leak Chk ✓	1630	0.9	20.4	19.5			
F_o ______	Avg	0.8	Avg	19.6	Avg		

QC Validation

$F_o = (20.9 - \%O2) / \%CO2$

Expected F_o Ranges

Distillate Oil	1.260 - 1.413	Anthracite/Lignite Coal	1.015 - 1.130
Residual Oil	1.210 - 1.370	Bituminous Coal	1.083 - 1.230
Natural Gas	1.600 - 1.836	Municipal Solid Waste	1.043 - 1.177
Wood/Bark	1.000 - 1.130		

Checked By: Jim Serne (sign) Jim Serne (print)
(Project Manager or QA Manager)

METHOD 4 - MOISTURE ANALYSIS DATA SHEET

TRC

Client Name	ALCOA EXTRUSIONS	Project Number	115992.0000.0000
Plant Name	PLANT CITY	Sample Method	M5 & M26A
City / State	PLANT CITY, FL	Recovery Location	TRC Trailer
Test Location	NORTH FURNACE EXHAUST	Analyst Signature	Carl Fink

Run Number	M5/26A-1	M5/26A-2	M5/26A-3	
Test Date	7/10/07	7/11/07	7/12/07	
Recovery Date	7/10/07	7/11/07	7/12/07	
Recovered By	C. FINK	C. FINK	C. FINK	
Impinger 1 - 100 ml H2SO4				
Final Weight, g	954.8	943.7	893.0	
Initial Weight, g	753.0	750.6	730.7	
Net weight, g	201.8	193.1	162.3	
Impinger 2 - 100 ml H2SO4				
Final Weight, g	801.3	799.2	812.1	
Initial Weight, g	745.8	746.0	760.7	
Net weight, g	55.5	53.2	51.4	
Impinger 3 - 100 ml NaOH				
Final Weight, g	763.2	766.0	772.3	
Initial Weight, g	749.5	750.3	759.8	
Net weight, g	13.7	15.7	12.5	
Impinger 4 - Silica Gel				
Final Weight, g	904.5	934.4	917.0	
Initial Weight, g	839.1	861.8	847.0	
Net weight, g	65.4	72.6	70.0	
Impinger 5 -				
Final Weight, g				
Initial Weight, g				
Net weight, g				
Impinger 6 -				
Final Weight, g				
Initial Weight, g				
Net weight, g				
Filter #	RQ-4132	RQ-4349	RQ-4133	
Tare Weight	0.4611 g.	0.3717	0.4884	
Total Catch, g	336.4	334.6	296.2	

Checked By: Jim Serne (sign) JIM SERNE (print)
(Project Manager or QA Manager)

ISOKINETIC FIELD DATA SHEET

METHOD(S) M5/26A

TRC

Client Name	ALCOA EXTRUSIONS	Run Number	M5/26A - 1
Plant Name	PLANT CITY	Job Number	115992.0000.0000
City / State	PLANT CITY, FL	Test Date	7/10/07
Sampling Location	NORTH FURNACE EXHAUST	Start Time	0758
Test Personnel	JE & DB — Operator Signature: [signature]	Stop Time	1737

Filter/XAD	Tare	P barometer (in. Hg)	P static (in H2O)	Meterbox ID / Y (Gamma)	M-13 / Delta H@	Nozzle ID #	Nozzle Diameter	Pitot Tube ID #	Pitot Tube Cp	TC ID #	Probe ID #	Liner Material
RQ-4132	0.4611 g.	29.85	-0.11	0.9978	1.812	6-7-31	0.312	RP7-280	0.84	5C	5C	Glass

Equipment Leak Checks	Sample Train Leak Check	Initial	Final	Interm 1	Interm 2	Interm 3	Interm 4	Fyrites Time	%O2	%CO2	Orsat Check
✓ Pitot, pretest	in Hg	16	11								NA
✓ Pitot, post-test	cfm	0.005	0.001								Bag ID
✓ Positive DGM, pretest	Start Volume										NA
✓ Positive DGM, post-test	Stop Volume										

K Factor Setup Data	K =										
Delta H@	Meter Y	Nozzle Dia.	Avg DeltaP	% H2O	T stack	T meter	Pbar	Pstatic	% O2	%CO2	Cp

Line	Point No.	Time Clock (24-hr)	Time Test (min)	Dry Gas Meter Reading (cu. ft.)	Pitot Reading (in. H2O)	Delta H Actual (in. H2O)	DGM Temp (°F)	Stack Temp (°F)	Probe Temp (°F)	Filter/Box Temp (°F)	Gauge Vacuum (in. Hg)	Imp Exit Temp (°F)	XAD Temp (°F)	____ Temp (°F)
1	A-6	0758	0	163.061	0.18	1.35	82	222	—	265	5	55		
2			12.5	171.080	0.17	1.92	84	326	—	265	5	54		
3	-5		25	179.29	0.31	~~1.3~~ 1.88	86	384	—	262	7	61		
4			37.5	188.36	0.20	1.52	88	224	—	258	6	65		
5	-4		50	197.16	0.20	1.52	90	218	—	259	6	57		
6			62.5	205.91	0.25	1.60	90	348	—	260	6	56		
7	-3		75	214.75	0.23	1.68	91	241	—	265	6	55		
8			87.5	223.65	0.29	2.29	92	216	—	249	8	57		
9	-2		100	234.48	0.30	1.88	92	370	—	265	6	58		
10			112.5	243.85	0.28	1.74	92	375	—	260	6	60		
11	-1		125	253.11	0.19	1.41	93	255	—	262	6	55		
12			137.5	261.81	0.17	1.30	93	~~255~~ 235	—	263	6	55		
13	B-6	1043	150	270.399	0.20	1.38	93	293	—	~~293~~ 264	6	51		
14			162.5	278.73	0.31	1.89	95	407	—	264	8	49		
15	-5		175	288.51	0.31	1.89	97	405	—	266	8	52		
16			187.5	298.39	0.35	2.10	98	430	—	267	8	55		
17	-4		200	308.58	0.31	1.91	98	394	—	263	9	55		
18			212.5	318.67	0.29	1.79	98	407	—	269	8	55		
19	-3		225	328.38	0.39	2.27	100	441	—	262	10	47		
20			237.5	339.07	0.38	2.21	99	442	—	268	10	48		
21	-2		250	349.87	0.35	2.10	100	418	—	268	10	50		
22			262.5	360.42	0.35	2.10	100	416	—	268	10	52		
23	-1		275	370.91	0.26	1.76	100	324	—	267	10	54		
24			287.5	379.89	0.21	1.57	100	259	—	266	9	55		
25	B-1		300	388.43	0.22	1.59	100	277	—	267	10	58		

Run Time	Total Volume	RMS Delta P	Delta H	Tmeter Avg	Tstack Avg

Checked By: [signature] (Project Manager or QA Manager) Date: 07/10/07

RAL-ISO1.xls

ISOKINETIC FIELD DATA SHEET
METHOD(S) 5/26A

TRC

Plant Name	ALCOA EXTRUSIONS	Run Number	M5/26A-1
Sampling Location	NORTH FURNACE EXHAUST	Job Number	115992.0000.0000
Test Personnel	JE+DB	Test Date	7/10/07

Line	Point No.	Time Clock (24-hr)	Time Test (min)	Dry Gas Meter Reading (cu. ft.)	Pitot Reading (in. H2O)	Delta H Actual (in. H2O)	DGM Temp (°F)	Stack Temp (°F)	Probe Temp (°F)	Filter/Box Temp (°F)	Gauge Vacuum (in. Hg)	Imp Exit Temp (°F)	XAD Temp (°F)	____ Temp (°F)
26			312.5	396.84	0.17	1.37	101	213	—	267	10	60		
27	B-2		325	405.23	0.14	1.12	101	186	—	266	8	61		
28			337.5	412.92	0.13	1.09	101	176	—	266	8	64		
29	B-3		350	420.59	0.13	1.09	101	165	—	264	8	51		
30			362.5	428.29	0.11	0.92	101	165	—	264	7	51		
31	B-4		375	435.35	0.12	1.04	101	160	—	264	7	53		
32			387.5	442.67	0.18	~~1.05~~ 1.39	102	218	—	265	7	55		
33	B-5		400	451.34	0.18	1.39	103	228	—	265	9	51		
34			412.5	460.11	0.18	1.39	104	234		266	9	52		
35	B-6		425	468.83	0.16	1.24	104	233	—	264	9	54		
36			437.5	477.27	0.16	1.24	100	226	—	263	9	55		
37			450	485.68	0.18	1.38	97	231	—	260	9	46		
38			462.5	494.06	0.18	1.38	96	227	—	260	9	48		
39			475	502.61	0.18	1.38	93	223	—	260	9	49		
40			487.5	510.83	0.18	1.37	91	217	—	259	9	50		
41			500	519.15	0.18	1.37	90	218	—	256	9	52		
42			512.5	527.57	0.19	1.44	90	221	—	~~[illegible]~~ 263	9	52		
43			525	536.01	0.20	1.52	92	225	—	262	9	56		
44			537.5	544.67	0.19	1.46	93	224	—	263	10	60		
45			550	553.41	0.19	1.46	94	225	—	265	10	65		
46			562.5	562.45	0.20	1.48	94	230		265	10	56		
47		1737	~~[illegible]~~	563.457										
48			564.8											
49														
50														
51														
52														
53														
54														
55														
56														
57														
58														
59														
60														
61														
62														

Run Time	Total Volume	RMS Delta P	Delta H	Tmeter Avg	Tstack Avg
564.8	400.396	.4657	1.57	95.7	277.6

Checked By: [signature] (Project Manager or QA Manager) Date: 07/10/07

RAL-ISO2.xls

ISOKINETIC FIELD DATA SHEET

METHOD(S) 5/26A

TRC

Client Name	ALCOA EXTRUSIONS	Run Number	M5/26A - 2
Plant Name	PLANT CITY	Job Number	115992.0000.0000
City / State	PLANT CITY, FL	Test Date	7/11/07
Sampling Location	NORTH FURNACE EXHAUST	Start Time	0715
Test Personnel	SE+DB Operator Signature	Stop Time	1627

Filter/XAD	Tare	P barometer (in. Hg)	P static (in H2O)	Meterbox ID Y (Gamma)	M-13 Delta H@	Nozzle ID #	Nozzle Diameter	Pitot Tube ID #	Pitot Tube Cp	TC ID #	Probe ID #	Liner Material
RQ-4349	0.3717											
		29.90	-0.14	0.9978	1.812	G-7-31	0.312	RPT-280	0.84	5C	5C	GLASS

Equipment Leak Checks		Initial	Final	Interm 1	Interm 2	Interm 3	Interm 4	Time	Fyrites %O2	Fyrites %CO2	Orsat Check
	Sample Train Leak Check										
✓ Pitot, pretest	in Hg	15	12								NA
✓ Pitot, post-test	cfm	0.005	0.005								Bag ID
✓ Positive DGM, pretest	Start Volume										NA
✓ Positive DGM, post-test	Stop Volume										

K Factor Setup Data	K =										
Delta H@	Meter Y	Nozzle Dia.	Avg DeltaP	% H2O	T stack	T meter	Pbar	Pstatic	% O2	%CO2	Cp

Line	Point No.	Time Clock (24-hr)	Time Test (min)	Dry Gas Meter Reading (cu. ft.)	Pitot Reading (in. H2O)	Delta H Actual (in. H2O)	DGM Temp (°F)	Stack Temp (°F)	Probe Temp (°F)	Filter/Box Temp (°F)	Gauge Vacuum (in. Hg)	Imp Exit Temp (°F)	XAD Temp (°F)	___ Temp (°F)
1	B-6	0715	0	564.248	0.33	1.98	78	391	—	264	4	57		
2			12.5	573.99	0.20	1.51	80	232	—	264	3	47		
3	-5		25	582.67	0.21	1.54	84	239	—	266	3	51		
4			37.5	591.32	0.17	1.34	86	212	—	264	3	52		
5	-4		50	599.68	0.27	1.70	88	370	—	266	3	54		
6			62.5	608.86	0.20	1.53	89	223	—	265	4	55		
7	-3		75	617.77	0.23	1.70	90	262	—	265	4	49		
8			87.5	627.06	0.36	2.26	90	382	—	265	4	47		
9	-2		100	637.72	0.42	2.42	92	453	—	265	6	47		
10			112.5	648.95	0.34	2.08	92	395	—	265	6	47		
11	-1		125	259.49	0.36	2.20	92	403	—	265	5	49		
12			137.5	670.11	0.38	2.28	93	414	—	266	6	50		
13	A-6	0945 1000	150	680.980	0.31	1.84	90	382	—	264	6	60		
14			162.5	690.89	0.31	1.91	93	391	—	267	5	48		
15	-5		175	700.71	0.20	1.44	96	274	—	269	5	51		
16			187.5	709.38	0.20	1.49	96	244	—	266	5	52		
17	-4		200	717.81	0.19	1.42	96	244	—	263	5	49		
18			212.5	726.48	0.20	1.49	96	260	—	263	5	49		
19	-3		225	735.29	0.26	1.84	85	286	—	264	5	48		
20			237.5	744.89	0.25	1.80	97	278	—	263	6	50		
21	-2		250	754.31	0.26	1.80	89	292	—	264	6	49		
22			262.5	763.51	0.35	2.10	95	422	—	264	8	51		
23	-1		275	773.50	0.41	2.32	94	465	—	264	10	52		
24			287.5	784.22	0.43	2.44	94	475	—	265	12	55		
25			300	795.21	0.24	1.73	94	268	—	265	10	57		

Run Time	Total Volume	RMS Delta P	Delta H	Tmeter Avg	Tstack Avg

Checked By: [signature] Date: 07/11/07

(Project Manager or QA Manager)

ISOKINETIC FIELD DATA SHEET
METHOD(S) 5/26A

TRC

Plant Name	ALCOA EXTRUSIONS	Run Number	M5/26A-2
Sampling Location	NORTH FURNACE EXHAUST	Job Number	115992.0000.0000
Test Personnel	JE + DB	Test Date	7/11/07

Line	Point No.	Time Clock (24-hr)	Time Test (min)	Dry Gas Meter Reading (cu. ft.)	Pitot Reading (in. H2O)	Delta H Actual (in. H2O)	DGM Temp (°F)	Stack Temp (°F)	Probe Temp (°F)	Filter/Box Temp (°F)	Gauge Vacuum (in. Hg)	Imp Exit Temp (°F)	XAD Temp (°F)	___ Temp (°F)
26			312.5	804.79	0.19	1.47	94	219	—	265	~~5~~ 9	55		
27			325	813.99	0.16	1.35	97	182	—	262	9	57		
28			337.5	822.87	0.13	1.09	97	175	—	264	6	57		
29			350	830.08	0.09	0.70	97	234	—	262	5	50		
30			362.5	836.18	0.09	0.70	95	233	—	262	5	50		
31			375	842.23	0.07	0.56	95	207	—	263	4	50		
32			387.5	848.32	0.16	1.30	96	196	—	262	~~13~~ 7	40		
33			400	856.82	0.14	1.17	97	187	—	263	7 ~~12~~	43		
34			412.5	864.74	0.17	1.33	98	220	—	264	7	47		
35			425	872.61	0.17	1.33	97	230	—	256	7	49		
36			437.5	881.23	0.19	1.48	98	234	—	261	8	51		
37			450	889.92	0.18	1.36	100	240	—	267	8	54		
38			462.5	898.57	0.18	1.36	101	230	—	264	8	54		
39			475	907.28	0.18	1.46	101	203	—	257	8	56		
40			487.5	915.91	0.12	1.01	101	180	—	253	6	62		
41			500	923.12	0.21	1.64	99	235	—	256	7	53		
42			512.5	~~931.86~~ 932.22	0.23	1.73	99	254	—	259	9.5	50		
43			525	941.46	0.24	1.81	99	247	—	257	10	51		
44		536.5	~~537.5~~	949.965	0.21	1.64	99	233	—	249	10	55		
45			~~550~~											
46	Stop at	1627												
47														
48														
49														
50														
51														
52														
53														
54														
55														
56														
57														
58														
59														
60														
61														
62														

Run Time	Total Volume	RMS Delta P	Delta H	Tmeter Avg	Tstack Avg
536.5	385.717	.4722	1.61	93.8	281.7

Checked By: [signature] (Project Manager or QA Manager) Date: 07/11/07

ISOKINETIC FIELD DATA SHEET

METHOD(S) M5/26A

TRC

Client Name	ALCOA EXTRUSIONS	Run Number	M5/26A - 3
Plant Name	PLANT CITY	Job Number	115992.0000.0000
City / State	PLANT CITY, FL	Test Date	07/12/07
Sampling Location	NORTH FURNACE EXHAUST	Start Time	0725
Test Personnel	JF + DB Operator Signature: [signature]	Stop Time	1539

Filter/XAD	Tare	P barometer (in. Hg)	P static (in H2O)	Meterbox ID M13 Y (Gamma)	Delta H@	Nozzle ID #	Nozzle Diameter	Pitot Tube ID #	Cp	TC ID #	Probe ID #	Liner Material
RQ-4133	0.4984	29.90	-0.11	0.9978	1.812	G-7-31	0.312	RPT-280	0.84	~~RP~~ 5C	5C	Glass

Equipment Leak Checks		Sample Train Leak Check Initial	Final	Interm 1	Interm 2	Interm 3	Interm 4	Fyrites Time	%O2	%CO2	Orsat Check
✓ Pitot, pretest	in Hg	15	16								N/A
✓ Pitot, post-test	cfm	0.007	0.002								Bag ID
✓ Positive DGM, pretest	Start Volume										N/A
✓ Positive DGM, post-test	Stop Volume										

K Factor Setup Data		K =									
Delta H@	Meter Y	Nozzle Dia.	Avg DeltaP	% H2O	T stack	T meter	Pbar	Pstatic	% O2	%CO2	Cp

Line	Point No.	Time Clock (24-hr)	Time Test (min)	Dry Gas Meter Reading (cu. ft.)	Pitot Reading (in. H2O)	Delta H Actual (in. H2O)	DGM Temp (°F)	Stack Temp (°F)	Probe Temp (°F)	Filter/Box Temp (°F)	Gauge Vacuum (in. Hg)	Imp Exit Temp (°F)	XAD Temp (°F)	____ Temp (°F)
1	A-6	0725	0	950.609	0.32	1.98	78	367	—	264	5	59		
2			12.5	960.49	0.18	1.41	82	201	—	265	3	50		
3	-5		25	969.18	0.31	2.06	85	324	—	265	5	55		
4			37.5	979.15	0.29	2.00	88	308	—	264	5	57		
5	-4		50	989.22	0.26	1.80	89	300	—	264	4	48		
6			62.5	998.80	0.21	1.61	90	238	—	262	4	48		
7	-3		75	1008.02	0.28	1.87	91	317	—	265	4	50		
8			87.5	1017.98	0.36	1.89	91	380	—	263	4	50		
9	-2		100	1027.79	0.20	1.53	91	231	—	260	4	50		
10			112.5	1036.77	0.26	1.74	92	320	—	262	4	54		
11	-1		125	1046.14	0.29	1.90	93	362	—	265	5	52		
12			137.5	1056.01	0.35	2.22	93	368	—	263	5	52		
13	B-6	09:55/10:11 JH	150	1066.64	0.24	1.70	86	277	—	264	4	52		
14			162.5	1075.84	0.22	1.57	90	275	—	265	5	46		
15	-5		175	~~1083.99~~ 1084.41 JH	0.25	1.79	92	285	—	265	7	49		
16			187.5	1093.69	0.33	1.92	94	438	—	266	9	50		
17	-4		200	1102.35	0.37	2.16	94	445	—	266	10	45		
18			212.5	1113.21	0.37	2.10	95	470	—	267	12	47		
19	-3		225	1122.56	0.45	2.48	94	506	—	260	12	50		
20			237.5	1131.88	0.32	2.23	94	311	—	258	14	52		
21	-2		250	1141.94	0.25	1.80	94	279	—	262	15	~~49~~ 47 JH		
22			262.5	1151.64	0.29	2.02	94	294	—	251	15	50		
23	-1		275	1161.54	0.23	1.66	94	263	—	249	15	53		
24			287.5	1172.01	0.23	1.72	95	254	—	248	15	54		
25	B-1		300	1180.87	0.24	1.73	96	270	—	265	15	54		

Run Time	Total Volume	RMS Delta P	Delta H	Tmeter Avg	Tstack Avg

Checked By: [signature] (Project Manager or QA Manager) Date: 07/12/07

ISOKINETIC FIELD DATA SHEET

METHOD(S) 5/26A

TRC

Plant Name	ALCOA EXTRUSIONS	Run Number	M5/26A - 3
Sampling Location	NORTH FURNACE EXHAUST	Job Number	115992.0000.0000
Test Personnel	SE + DB	Test Date	07/12/07

Line	Point No.	Time Clock (24-hr)	Time Test (min)	Dry Gas Meter Reading (cu. ft.)	Pitot Reading (in. H2O)	Delta H Actual (in. H2O)	DGM Temp (°F)	Stack Temp (°F)	Probe Temp (°F)	Filter/Box Temp (°F)	Gauge Vacuum (in. Hg)	Imp Exit Temp (°F)	XAD Temp (°F)	___ Temp (°F)
26			312.5	1190.21	0.14	1.14	98	205	—	261	15	51		
27	-2		325	1199.65	0.12	1.00	96	175	—	264	10	58		
28			337.5	120669	0.12	1.01	98	167	—	262	10	59		
29	-3		350	121381	0.11	0.93	98	163	—	259	10	55		
30			362.5	1220.80	0.14	1.17	97	164	—	251	11	57		
31	-4		375	1228.56	0.21	1.62	97	217	—	254	11	58		
32			387.5	1237.68	0.15	1.25	95	170	—	253	12	56		
33	-5		400	1246.00	0.15	1.25	93	165	—	262	12	57		
34			412.5	125429	0.17	1.42	93	168	—	263	12	55		
35	-6		425	1262.71	0.20	1.55	94	214	—	263	12	54		
36			437.5	1271.39	0.21	1.69	95	211	—	253	13	54		
37	B-6		450	1280.72	0.21	1.67	90	210	—	253	13	57		
38			462.5	1289.85	0.22	1.67	87	219	—	261	13	56		
39	-5		475	1299.12	0.20	1.53	90	220	—	261	14	51		
40 (& 478.00)		15:39	~~487.5~~	1301.283										
41	-4		500											
42			512.5											
43	-3		525											
44			537.5											
45	-2		550											
46			562.5											
47	-1		575											
48														
49														
50														
51														
52														
53														
54														
55														
56														
57														
58														
59														
60														
61														
62														

Run Time	Total Volume	RMS Delta P	Delta H	Tmeter Avg	Tstack Avg
478	350.674	.4843	1.69	92.2	274.1

Checked By: ____________ (Project Manager or QA Manager) Date: 07/12/07

RAL-ISO2.xls

[illegible] Entry

FACILITY NAME

ALCOA EXTRUSIONS

SAMPLING LOCATION

NORTH FURNACE EXHAUST

CITY AND STATE

PLANT CITY, FL

STACK DIMENSIONS

	Stack ID	Length	Width
** ENTER IN INCHES	50		
STACK AREA	13.64		

RUN SPECIFICS DATA

	M23-1	M23-2	M23-3
TEST DATE	7/10/2007	7/11/2007	7/12/2007
BOX OPERATOR	D Brewster	D Brewster	D Brewster
TEST TIMES	0758-1737	0715-1627	0725-1539
TEST DURATION	551.6	536.4	478
TEST RUN ID'S	M23-1	M23-2	M23-3

NOZZLE INSIDE DIAMETER

	M23-1	M23-2	M23-3
NOZZLE DIAMETER	0.312	0.312	0.312
PITOT COEFFICIENT	0.84	0.84	0.84

DRY GAS METER DATA

	M23-1	M23-2	M23-3
Meterbox #	M-8	M-8	M-8
DGM Gamma (Y)	0.9961	0.9961	0.9961
DGM Delta(H@)	1.815	1.815	1.815

VOLUME METERED

Meter Readings	M23-1	M23-2	M23-3
Run Start	727.368	101.247	462.309
Run End	1100.187	461.917	767.021
Leak Check 1 Start			
Leak Check 1 End			
Leak Check 2 Start	0.000	0.000	0.000
Leak Check 2 End	0.000	0.000	0.000
Volume Metered	372.819	360.670	304.712

CHECK OK

PRESSURE DATA

	M23-1	M23-2	M23-3
Barometric Pressure	29.85	29.90	29.90
Static Pressure	-0.11	-0.13	-0.11

MOLECULAR WEIGHT DATA

	M23-1	M23-2	M23-3
Carbon Dioxide	1.0	0.8	0.8
Oxygen	19.0	19.4	19.6
Carbon Monoxide	0.00	0.00	0.00

MOISTURE DATA

	M23-1	M23-2	M23-3
Grams/mls Collected	320.5	301.9	257.3

METHOD 23

DIOXINS & FURANS

NUMBER OF TRAVERSE POINTS = 4[illegible] | 44 | 39

M23-1

	Pt ID	Time	Delta P		Delta H	Ts	Tm
1	1	0	0.21	0.458	1.51	244	82
	2	12.5	0.30	0.548	1.84	375	85
2	3	25	0.33	0.574	2.00	402	88
	4	37.5	0.24	0.490	1.76	243	91
3	5	50	0.18	0.424	1.37	220	92
	6	62.5	0.24	0.490	1.66	300	93
4	7	75	0.20	0.447	1.53	232	93
	8	87.5	0.16	0.400	1.27	215	94
5	9	100	0.28	0.529	1.88	328	94
	10	112.5	0.26	0.510	1.82	352	94
6	11	125	0.20	0.447	1.50	233	94
	12	137.5	0.40	0.632	1.12	205	95
1	13	150	0.26	0.510	1.69	364	95
	14	162.5	0.30	0.548	2.09	296	97
2	15	175	0.32	0.566	1.87	436	99
	16	187.5	0.35	0.592	2.1	435	100
3	17	200	0.35	0.592	2.1	451	102
	18	212.5	0.34	0.583	1.99	460	101
4	19	225	0.27	0.520	1.67	409	102
	20	237.5	0.29	0.539	1.79	408	102
5	21	250	0.25	0.500	1.58	385	101
	22	262.5	0.28	0.529	1.78	381	102
6	23	275	0.18	0.424	1.3	285	102
	24	287.5	0.15	0.387	1.12	251	101
6	25	300	0.16	0.400	1.2	242	102
	26	312.5	0.11	0.332	0.89	195	103
5	27	325	0.1	0.316	0.87	166	106
	28	337.5	0.1	0.316	0.88	156	106
4	29	350	0.11	0.332	0.96	154	103
	30	362.5	0.1	0.316	0.87	151	100
3	31	375	0.14	0.374	1.13	198	102
	32	387.5	0.17	0.412	1.28	247	104
2	33	400	0.18	0.424	1.36	252	105
	34	412.5	0.18	0.424	1.36	251	105
1	35	425	0.18	0.424	1.36	240	104
	36	437.5	0.2	0.447	1.5	252	100
	37	450	0.2	0.447	1.5	254	99
	38	462.5	0.2	0.447	1.5	249	97
	39	475	0.2	0.447	1.5	243	94
	40	487.5	0.2	0.447	1.5	242	93
	41	500	0.21	0.458	1.55	239	92
	42	512.5	0.21	0.458	1.55	240	94
	43	525	0.2	0.447	1.5	244	95
	44	537.5	0.2	0.447	1.5	244	97
	45	550	0.2	0.447	1.5	244	99
	46	562.5		0.000			
	47	575		0.000			
	48	587.5		0.000			
	49	600		0.000			
	50	612.5		0.000			
	51	625		0.000			
	52	637.5		0.000			
	53	650		0.000			
	54	662.5		0.000			
	55	675		0.000			
	56	687.5		0.000			
	57	700		0.000			
	58	712.5		0.000			
	59	725		0.000			
	60	737.5		0.000			
	61	750		0.000			
		Average		0.4623	1.502	280.3	97.8

OK

M23-2

Pt ID	Time	Delta P		Delta H	Ts	Tm
1	0.0	0.35	0.592	1.99	449	80
2	12.5	0.21	0.458	1.54	252	83
3	25.0	0.24	0.490	1.66	285	85
4	37.5	0.19	0.436	1.43	235	88
5	50.0	0.27	0.520	1.76	352	90
6	62.5	0.20	0.447	1.54	231	91
7	75.0	0.15	0.387	1.16	222	92
8	87.5	0.25	0.500	1.66	335	93
9	100.0	0.30	0.548	1.85	410	94
10	112.5	0.18	0.424	1.36	250	95
11	125.0	0.24	0.490	1.62	330	95
12	137.5	0.24	0.490	1.62	321	95
13	150.0	0.35	0.592	2.08	428	92
14	162.5	0.34	0.583	1.98	458	95
15	175.0	0.22	0.469	1.54	318	97
16	187.5	0.18	0.424	1.36	253	99
17	200.0	0.20	0.447	1.51	255	99
18	212.5	0.22	0.469	1.6	281	99
19	225.0	0.18	0.424	1.36	244	100
20	237.5	0.18	0.424	1.36	248	100
21	250.0	0.18	0.424	1.36	252	99
22	262.5	0.25	0.500	1.65	352	98
23	275.0	0.28	0.529	1.68	422	96
24	287.5	0.29	0.539	1.8	391	96
25	300.0	0.17	0.412	1.28	235	97
26	312.5	0.13	0.361	1.05	195	97
27	325.0	0.09	0.300	0.78	163	98
28	337.5	0.09	0.300	0.78	161	99
29	350.0	0.15	0.387	1.17	220	98
30	362.5	0.15	0.387	1.17	220	99
31	375.0	0.13	0.361	1.06	194	99
32	387.5	0.15	0.387	1.22	201	99
33	400.0	0.15	0.387	1.22	199	99
34	412.5	0.15	0.387	1.22	230	100
35	425.0	0.15	0.387	1.13	242	101
36	437.5	0.21	0.458	1.58	257	101
37	450.0	0.17	0.412	1.29	249	104
38	462.5	0.19	0.436	1.45	252	105
39	475.0	0.16	0.400	1.31	212	105
40	487.5	0.17	0.412	1.35	187	105
41	500.0	0.2	0.447	1.52	240	103
42	512.5	0.2	0.447	1.52	255	102
43	525.0	0.2	0.447	1.52	259	102
44	537.5	0.17	0.412	1.29	230	102
45	550.0		0.000			
46	562.5		0.000			
47	575.0		0.000			
48	587.5		0.000			
49	600.0		0.000			
50	612.5		0.000			
51	625.0		0.000			
52	637.5		0.000			
53	650.0		0.000			
54	662.5		0.000			
55	675.0		0.000			
56	687.5		0.000			
57	700.0		0.000			
58	712.5		0.000			
59	725.0		0.000			
60	737.5		0.000			
61	750.0		0.000			
	Average		0.4440	1.440	272.2	97.0

OK

M23-3

Pt ID	Time	Delta P		Delta H	Ts	Tm
1	0	0.32	0.566	1.87	420	81
2	12.5	0.19	0.436	1.45	226	84
3	25	0.26	0.510	1.67	345	86
4	37.5	0.28	0.529	1.88	329	88
5	50	0.30	0.548	2.01	325	90
6	62.5	0.21	0.458	1.55	264	91
7	75	0.23	0.480	1.60	295	92
8	87.5	0.27	0.520	1.76	358	93
9	100	0.15	0.387	1.21	209	94
10	112.5	0.20	0.447	1.35	322	94
11	125	0.20	0.447	1.50	262	95
12	137.5	0.25	0.500	1.69	321	95
13	150	0.24	0.490	1.66	299	89
14	162.5	0.21	0.458	1.45	293	91
15	175	0.23	0.480	1.60	302	93
16	187.5	0.33	0.574	1.88	483	96
17	200	0.37	0.608	2.11	480	97
18	212.5	0.34	0.583	1.84	521	97
19	225	0.31	0.557	1.81	460	96
20	237.5	0.21	0.458	1.52	288	96
21	250	0.17	0.412	1.26	262	96
22	262.5	0.18	0.424	1.35	252	96
23	275	0.15	0.387	1.17	232	97
24	287.5	0.15	0.387	1.17	230	97
25	300	0.15	0.387	1.17	229	98
26	312.5	0.1	0.316	0.82	189	100
27	325	0.08	0.283	0.7	166	100
28	337.5	0.08	0.283	0.7	161	100
29	350	0.08	0.283	0.7	165	100
30	362.5	0.08	0.283	0.7	162	100
31	375	0.13	0.361	1.06	206	99
32	387.5	0.1	0.316	0.87	169	99
33	400	0.09	0.300	0.77	162	96
34	412.5	0.1	0.316	0.84	168	96
35	425	0.1	0.316	0.81	199	97
36	437.5	0.13	0.361	1.06	194	98
37	450	0.13	0.361	1.06	185	96
38	462.5	0.15	0.387	1.2	205	93
39	475	0.13	0.361	1.06	215	94
40	487.5		0.000			
41	500		0.000			
42	512.5		0.000			
43	525		0.000			
44	537.5		0.000			
45	550		0.000			
46	562.5		0.000			
47	575		0.000			
48	587.5		0.000			
49	600		0.000			
50	612.5		0.000			
51	625		0.000			
52	637.5		0.000			
53	650		0.000			
54	662.5		0.000			
55	675		0.000			
56	687.5		0.000			
57	700		0.000			
58	712.5		0.000			
59	725		0.000			
60	737.5		0.000			
61	750		0.000			
	Average		0.4246	1.330	270.6	94.6

Check Number of Points !!!

METHOD 4 - MOISTURE ANALYSIS DATA SHEET

TRC

Client Name	ALCOA EXTRUSIONS	Project Number	115992.0000.0000
Plant Name	PLANT CITY	Sample Method	M23
City / State	PLANT CITY, FL	Recovery Location	TRC Trailer
Test Location	SOUTH FURNACE EXHAUST	Analyst Signature	

Run Number	M23-1	M23-2	M23-3	
Test Date	7/10/07	7/11/07	7/12/07	
Recovery Date	7/10/07	7/11/07	7/12/07	
Recovered By	C. FINK	C. FINK	C. FINK	
XAD Trap	P7950-002	P7950-004	P7950- ~~001~~ -003	
Final Weight, g	348.6	267.6	294.3	
Initial Weight, g	330.4	255.9	~~284.6~~ 281.5	
Net weight, g	18.2	11.7	12.8	
Moisture Knockout				
Final Weight, g	716.1	710.0	667.9	
Initial Weight, g	474.6	474.3	474.1	
Net weight, g	241.5	235.7	193.8	
Impinger 1 - DI Water				
Final Weight, g	646.3	634.4	630.6	
Initial Weight, g	644.7	642.0	635.5	
Net weight, g	1.6	-7.6	-4.9	
Impinger 2 DI Water				
Final Weight, g	723.3	731.5	744.5	
Initial Weight, g	732.2	735.4	745.2	
Net weight, g	-8.9	-3.9	-0.7	
Impinger 3 Empty				
Final Weight, g	647.1	651.1	647.6	
Initial Weight, g	643.8	645.1	645.2	
Net weight, g	3.3	6.0	2.4	
Impinger 4 Silica Gel				
Final Weight, g	915.3	921.6	954.8	
Initial Weight, g	850.5	861.6	900.9	
Net weight, g	64.8	60.0	53.9	
Filter ID				BLANK XAD
				P7950-005
Notes:				
Glassware Set				
Total Catch, g	320.5	301.9	257.3	

Checked By: Jim Serne (sign) JIM SERNE (print)

(Project Manager or QA Manager)

ISOKINETIC FIELD DATA SHEET

METHOD(S) M23

TRC

Client Name	ALCOA EXTRUSIONS	Run Number	M23-1
Plant Name	PLANT CITY	Job Number	115992.0000.0000
City / State	PLANT CITY, FL	Test Date	7-10-07
Sampling Location	NORTH FURNACE EXHAUST	Start Time	0758
Test Personnel	DMB / JE Operator Signature DB	Stop Time	1737

Filter/XAD	Tare	P barometer (in. Hg)	P static (in H2O)	Meterbox ID MB Y (Gamma)	Delta H@	Nozzle ID #	Nozzle Diameter	Pitot Tube ID #	Cp	TC ID #	Probe ID #	Liner Material
~~P7950-004~~ CA												
P7950-002		29.85	-.12	.9961	1.815	6-7-10	0.312	RPT-4	0.84	5A	5A	Glass

Equipment Leak Checks		Initial	Final	Interm 1	Interm 2	Interm 3	Interm 4	Fyrites Time	%O2	%CO2	Orsat Check
✓ Pitot, pretest	in Hg	15	11								✓
✓ Pitot, post-test	cfm	0.001	0.001								Bag ID
✓ Positive DGM, pretest	Start Volume										#1
✓ Positive DGM, post-test	Stop Volume										

Sample Train Leak Check

K Factor Setup Data K =

Delta H@	Meter Y	Nozzle Dia.	Avg DeltaP	% H2O	T stack	T meter	Pbar	Pstatic	% O2	%CO2	Cp

Line	Point No.	Clock (24-hr)	Test (min)	Dry Gas Meter Reading (cu. ft.)	Pitot Reading (in. H2O)	Delta H Actual (in. H2O)	DGM Temp (°F)	Stack Temp (°F)	Probe Temp (°F)	Filter/Box Temp (°F)	Gauge Vacuum (in. Hg)	Imp Exit Temp (°F)	XAD Temp (°F)	Temp (°F)
1	B-1	758	0	727.368	0.21	1.51	82	244	N/A	266	5	60	34	N/A
2			12.5	735.66	0.30	1.84	85	375		269	6	50	34	
3	2		25	744.47	0.33	2.00	88	402		263	8	53	35	
4			37.5	754.0	0.24	1.76	91	243		264	7	54	36	
5	3		50	763.17	0.18	1.37	92	220		267	6	47	35	
6			62.5	771.32	0.24	1.66	93	300		265	7	46	35	
7	4		75	780.05	0.20	1.53	93	232		266	7	50	36	
8			87.5	788.65	0.16	1.27	94	215		267	6	53	36	
9	5		100	796.63	0.28	1.88	94	328		266	8	55	37	
10			112.5	805.77	0.26	1.82	94	352		265	8	57	38	
11	B-6		125	815.01	0.20	1.50	94	233		263	7	56	37	
12			137.5	823.65	0.14	1.12	95	205		267	6	56	35	
13	A-1	928 1045	150	830.965	0.26	1.69	95	364		263	8	56	35	
14			162.5	839.73	0.30	2.08	97	296		267	9	50	35	
15	2		175	849.60	0.32	1.87	99	436		266	9	53	36	
16			187.5	859.16	0.35	2.10	100	435		264	9	55	37	
17	3		200	869.12	0.35	2.10	102	451		267	10	57	39	
18			212.5	879.09	0.34	1.99	101	460		268	10	60	40	
19	4		225	888.86	0.27	1.67	102	409		267	9	55	37	
20			237.5	897.91	0.29	1.79	102	408		264	9	57	44	
21	5		250	907.15	0.25	1.58	101	385		265	9	57	34	
22			262.5	916.10	0.28	1.78	102	381		268	9	56	36	
23	6		275	925.33	0.18	1.30	102	285		268	8	58	37	
24			287.5	933.23	0.15	1.12	101	251		268	7	62	38	
25	A-6		300	940.61	0.16	1.70	102	242		267	8	62	40	

Run Time	Total Volume	RMS Delta P	Delta H	Tmeter Avg	Tstack Avg

Checked By: Carl [signature] Date: 07/10/07

(Project Manager or QA Manager)

RAL-ISO1.xls

ISOKINETIC FIELD DATA SHEET
METHOD(S) M23

TRC

Plant Name	ALCOA EXTRUSIONS	Run Number	M23-1
Sampling Location	NORTH FURNACE EXHAUST	Job Number	115992.0000.0000
Test Personnel	DMB / JE	Test Date	7-10-07

Line	Point No.	Time Clock (24-hr)	Time Test (min)	Dry Gas Meter Reading (cu. ft.)	Pitot Reading (in. H2O)	Delta H Actual (in. H2O)	DGM Temp (°F)	Stack Temp (°F)	Probe Temp (°F)	Filter/Box Temp (°F)	Gauge Vacuum (in. Hg)	Imp Exit Temp (°F)	XAD Temp (°F)	Temp (°F)
26			312.5	948.21	0.11	0.89	103	195	N/A	270	7	63	42	N/A
27	A-5		325	954.99	0.10	0.87	106	166		266	7	52	41	
28			337.5	961.84	0.10	0.88	106	156		266	7	52	42	
29	4		350	968.81	0.11	0.96	103	154		261	7	58	42	
30			362.5	976.03	0.10	0.87	100	151		262	7	59	39	
31	3		375	983.21	0.14	1.13	102	198		266	7	59	40	
32			387.5	990.53	0.17	1.28	104	247		266	8	55	36	
33	2		400	998.16	0.18	1.36	105	252		267	8	56	37	
34			412.5	1006.25	0.18	1.36	105	251		267	8	57	37	
35	1		425	1014.36	0.18	1.36	104	240		268	8	63	41	
36			437.5	1022.51	0.20	1.50	100	252		262	9	54	36	
37	1		450	10030.94	0.20	1.50	99	254		260	9	53	37	
38			462.5	1039.26	0.20	1.50	97	249		262	9	53	38	
39			475	1047.64	0.20	1.50	94	243		263	9	54	39	
40	2		487.5	1056.03	0.20	1.50	93	242		269	9	56	41	
41			500	1064.39	0.21	1.55	92	239		263	9	51	36	
42	3		512.5	1073.01	0.21	1.55	94	240		263	9	54	37	
43			525	1081.64	0.20	1.50	95	244		264	9	54	37	
44	4		537.5	1090.35	0.20	1.50	97	244		263	9	56	39	
45			550	1098.72	0.20	1.50	99	244		263	9	57	40	
46		1737	551.6	1100.187										
47														
48														
49														
50														
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59														
60														
61														
62														

Run Time	Total Volume	RMS Delta P	Delta H	Tmeter Avg	Tstack Avg
551.6	372.819	.4623	1.50	97.8	280.3

Checked By: Carl [signature] (Project Manager or QA Manager) Date: 07/10/07

ISOKINETIC FIELD DATA SHEET

METHOD(S) M23

TRC

Client Name	ALCOA EXTRUSIONS	Run Number	M23 - 2
Plant Name	PLANT CITY	Job Number	115992.0000.0000
City / State	PLANT CITY, FL	Test Date	07/11/07
Sampling Location	NORTH FURNACE EXHAUST	Start Time	0715
Test Personnel	DMB/JE Operator Signature [signature]	Stop Time	1627

Filter/XAD	Tare	P barometer (in. Hg)	P static (in H2O)	Meterbox ID M8 Y (Gamma)	Delta H@	Nozzle ID #	Nozzle Diameter	Pitot Tube ID #	Cp	TC ID #	Probe ID #	Liner Material
P7950-004												
		29.90	-.13	.9961	1.815	G-7-10	.312	RPT-4	0.84	5A	5A	GL

Equipment Leak Checks		Sample Train Leak Check Initial	Final	Interm 1	Interm 2	Interm 3	Interm 4	Fyrites Time	%O2	%CO2	Orsat Check
✓ Pitot, pretest	in Hg	15	10								good
✓ Pitot, post-test	cfm	0.005	0.000								Bag ID
✓ Positive DGM, pretest	Start Volume										2
✓ Positive DGM, post-test	Stop Volume										

K Factor Setup Data	K =										
Delta H@	Meter Y	Nozzle Dia.	Avg DeltaP	% H2O	T stack	T meter	Pbar	Pstatic	% O2	%CO2	Cp

Line	Point No.	Time Clock (24-hr)	Time Test (min)	Dry Gas Meter Reading (cu. ft.)	Pitot Reading (in. H2O)	Delta H Actual (in. H2O)	DGM Temp (°F)	Stack Temp (°F)	Probe Temp (°F)	Filter/Box Temp (°F)	Gauge Vacuum (in. Hg)	Imp Exit Temp (°F)	XAD Temp (°F)	___ Temp (°F)
1	A-1	0715	0	101.247	0.35	1.99	80	449	N/A	263	6	63	35	N/A
2			12.5	110.70	0.21	1.54	83	252		262	5	51	35	
3	2		25	119.15	0.24	1.66	85	285		263	6	54	36	
4			37.5	127.93	0.19	1.43	88	235		260	6	55	36	
5	3		50	136.31	0.27	1.76	90	352		261	6	55	38	
6			62.5	145.32	0.20	1.54	91	231		263	6	55	39	
7	4		75	154.11	0.15	1.16	92	222		262	5	54	35	
8			87.5	161.86	0.25	1.66	93	335		264	6	56	36	
9	5		100	170.63	0.30	1.85	94	416		264	7	56	36	
10			112.5	179.99	0.18	1.36	95	256		265	6	58	38	
11	6		125	188.30	0.24	1.62	95	330		264	7	58	38	
12			137.5	197.16	0.24	1.62	95	321		264	7	60	41	
13	B-1	945 1000	150	206.043	0.35	2.08	92	428		261	8	63	36	
14			162.5	215.90	0.34	1.98	95	458		264	8	58	36	
15	2		175	225.79	0.22	1.54	97	318		264	6	59	36	
16			187.5	234.51	0.18	1.36	99	253		265	6	60	36	
17	3		200	242.96	0.20	1.51	99	255		262	6	51	34	
18			212.5	251.53	6.22	1.60	99	281		260	6	50	34	
19	4		225	260.26	0.18	1.36	100	244		264	6	51	34	
20			237.5	268.34	0.18	1.36	100	248		261	6	53	35	
21	5		250	276.46	0.18	1.36	99	252		261	6	54	34	
22			262.5	284.67	0.25	1.65	98	352		265	8	56	35	
23	6		275	293.55	0.28	1.68	96	422		265	8	56	35	
24			287.5	302.45	0.29	1.80	96	391		257	9	57	36	
25	B-6		300	311.82	0.17	1.28	97	235		264	7	58	37	

Run Time	Total Volume	RMS Delta P	Delta H	Tmeter Avg	Tstack Avg

Checked By: [signature] (Project Manager or QA Manager) Date: 07/11/07

ISOKINETIC FIELD DATA SHEET
METHOD(S) M 23

TRC

Plant Name	ALCOA EXTRUSIONS	Run Number	M23-2
Sampling Location	NORTH FURNACE EXHAUST	Job Number	115992.0000.0000
Test Personnel	DMB / JE	Test Date	7-11-07

Line	Point No.	Time Clock (24-hr)	Time Test (min)	Dry Gas Meter Reading (cu. ft.)	Pitot Reading (in. H2O)	Delta H Actual (in. H2O)	DGM Temp (°F)	Stack Temp (°F)	Probe Temp (°F)	Filter/Box Temp (°F)	Gauge Vacuum (in. Hg)	Imp Exit Temp (°F)	XAD Temp (°F)	Temp (°F)
26			312.5	319.91	0.13	1.05	97	195	N/A	264	6	59	38	N/A
27	B-5		325	327.25	.09	0.78	98	163		261	5	62	44	
28			337.5	334.13	.09	0.78	99	161		268	5	63	45	
29	4		350	340.50	0.15	1.17	98	220		261	6	56	35	
30			362.5	348.15	0.15	1.17	99	220		260	7	55	35	
31	3		375	355.84	0.13	1.06	99	194		263	6	56	36	
32			387.5	363.24	0.15	1.22	99	201		260	7	54	34	
33	2		400	371.00	0.15	1.22	99	199		262	7	54	34	
34			412.5	378.81	0.15	1.22	100	230		263	7	55	35	
35	1		425	386.60	0.15	1.13	101	242		262	7	55	36	
36			437.5	394.39	0.21	1.58	101	257		263	9	58	36	
37	1		450	403.23	0.17	1.29	104	249		265	8	55	37	
38			462.5	411.51	0.19	1.45	105	252		267	8	56	37	
39	2		475	420.14	0.16	1.31	105	212		265	8	55	38	
40			487.5	428.47	0.17	1.35	105	187		263	8	55	39	
41	3		500	436.70	0.20	1.52	103	240		260	9	54	37	
42			512.5	445.30	0.20	1.52	102	255		257	9	55	37	
43	4		525	453.98	0.20	1.52	102	259		258	9	55	37	
44		1627	536.4	461.917	0.17	1.29	102	230						
45														
46														
47														
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61														
62														

Run Time	Total Volume	RMS Delta P	Delta H	Tmeter Avg	Tstack Avg
536.4	360.670	.4440	1.44	97.0	272.2

Checked By: [signature] (Project Manager or QA Manager) Date: 07/11/07

ISOKINETIC FIELD DATA SHEET

METHOD(S) M23

TRC

Client Name	ALCOA EXTRUSIONS			Run Number	M23-3
Plant Name	PLANT CITY			Job Number	115992.0000.0000
City / State	PLANT CITY, FL			Test Date	07/12/07
Sampling Location	NORTH FURNACE EXHAUST			Start Time	0725
Test Personnel	DMB / JE	Operator Signature	D.B.	Stop Time	1539

Filter/XAD	Tare	P barometer (in. Hg)	P static (in H2O)	Meterbox ID MB Y (Gamma)	Delta H@	Nozzle ID #	Nozzle Diameter	Pitot Tube ID #	Pitot Tube Cp	TC ID #	Probe ID #	Liner Material
		29.90	-0.11	.9961	1.815	6-7-11	.312	RPT-4	0.84	5A	5A	GL

Equipment Leak Checks	Sample Train Leak Check	Initial	Final	Interm 1	Interm 2	Interm 3	Interm 4	Fyrites Time	%O2	%CO2	Orsat Check
✓ Pitot, pretest	in Hg	15	17								✓
✓ Pitot, post-test	cfm	0.002	0.001								Bag ID
✓ Positive DGM, pretest	Start Volume										1
✓ Positive DGM, post-test	Stop Volume										

K Factor Setup Data		K =									
Delta H@	Meter Y	Nozzle Dia.	Avg DeltaP	% H2O	T stack	T meter	Pbar	Pstatic	% O2	%CO2	Cp

Line	Point No.	Time Clock (24-hr)	Time Test (min)	Dry Gas Meter Reading (cu. ft.)	Pitot Reading (in. H2O)	Delta H Actual (in. H2O)	DGM Temp (°F)	Stack Temp (°F)	Probe Temp (°F)	Filter/Box Temp (°F)	Gauge Vacuum (in. Hg)	Imp Exit Temp (°F)	XAD Temp (°F)	Temp (°F)
1	B-1	725	0	462.309	0.32	1.87	81	420	N/A	263	9	56	35	N/A
2			12.5	471.84	0.19	1.45	84	226		262	7	48	36	
3	2		25	480.10	0.26	1.67	86	345		263	9	50	37	
4			37.5	489.02	0.28	1.88	88	329		264	10	52	38	
5	3		50	498.42	0.30	2.01	90	325		262	10	48	37	
6			62.5	507.98	0.21	1.55	91	264		263	9	50	37	
7	4		75	516.75	0.23	1.60	92	295		263	9	53	38	
8			875	525.50	0.27	1.76	93	358		264	10	57	40	
9	5		100	534.58	0.15	1.21	94	209		263	7	51	34	
10			112.5	542.43	0.20	1.35	94	322		263	8	55	34	
11	6		125	550.50	0.20	1.50	95	262		264	8	54	35	
12			1375	559.07	0.25	1.69	95	321		261	10	55	36	
13	A-1	955/1011	150	568.225	0.24	1.66	89	299		262	9	55	35	
14			1625	577.06	0.21	1.45	91	293		263	9	48	36	
15	2		175	585.30	0.23	1.60	93	302		262	11	49	38	
16			1875	593.89	0.33	1.88	96	483		261	13	54	39	
17	3		200	603.08	0.37	2.11	97	480		263	15	47	35	
18			2125	612.63	0.34	1.84	97	521		264	16	51	35	
19	4		225	621.99	0.31	1.81	96	460		264	16	49	35	
20			2375	631.14	0.21	1.52	96	288		264	15	50	37	
21	5		250	639.63	0.17	1.26	96	262		262	14	48	34	
22			2625	647.52	0.18	1.35	96	252		263	15	57	34	
23	6		275	655.47	0.15	1.17	97	232		260	14	55	35	
24			2875	663.18	0.15	1.17	97	230		261	14	56	34	
25	6		300	670.89	0.15	1.17	98	229		262	14	56	34	

Run Time	Total Volume	RMS Delta P	Delta H	Tmeter Avg	Tstack Avg

Checked By: Carl [signature] Date: 07/12/07

(Project Manager or QA Manager)

RAL-ISO1.xls

ISOKINETIC FIELD DATA SHEET

METHOD(S) M23

TRC

Plant Name	ALCOA EXTRUSIONS	Run Number	M23 - 3
Sampling Location	NORTH FURNACE EXHAUST	Job Number	115992.0000.0000
Test Personnel	DMB / JE	Test Date	07/12/07

Line	Point No.	Time Clock (24-hr)	Time Test (min)	Dry Gas Meter Reading (cu. ft.)	Pitot Reading (in. H2O)	Delta H Actual (in. H2O)	DGM Temp (°F)	Stack Temp (°F)	Probe Temp (°F)	Filter/Box Temp (°F)	Gauge Vacuum (in. Hg)	Imp Exit Temp (°F)	XAD Temp (°F)	___ Temp (°F)
26			312.5	678.61	0.10	0.82	100	189	N/A	263	11	56	34	N/A
27	A-5		325	685.14	0.08	0.70	100	166		262	10	57	34	
28			337.5	691.23	0.08	0.70	100	161		262	10	57	35	
29	4		350	697.33	0.08	0.70	100	165		261	10	55	34	
30			362.5	703.43	0.08	0.70	100	162		262	10	55	34	
31	3		375	709.60	0.13	1.06	99	206		258	12	58	34	
32			387.5	717.00	0.10	0.84	99	169		260	11	57	34	
33	2		400	723.66	0.09	0.77	96	162		262	10	56	35	
34			412.5	730.01	0.10	0.84	96	168		263	11	54	34	
35	1		425	736.57	0.10	0.81	97	199		263	11	53	34	
36			437.5	743.12	0.13	1.06	98	194		263	12	54	35	
37	1		450	750.37	0.13	1.06	96	185		258	12	58	38	
38			462.5	757.63	0.15	1.20	93	205		258	13	61	37	
39	2		475	765.29	0.13	1.06	94	216		265	12	55	34	
40		1539	478	767.021										
41	3													
42														
43	4													
44														
45														
46														
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Run Time	Total Volume	RMS Delta P	Delta H	Tmeter Avg	Tstack Avg
478	304.712	.4246	1.33	94.6	270.6

Checked By: [signature] (Project Manager or QA Manager) Date: 07/12/07

RAL-ISO2.xls

ALCOA EXTRUSIONS
PLANT CITY, FL

NORTH FURNACE EXHAUST

METHOD 23

TEST DATA:

	M23-1	M23-2	M23-3
Run number	M23-1	M23-2	M23-3
Date	7/10/2007	7/11/2007	7/12/2007
Time period	0758-1737	0715-1627	0725-1539
Laboratory	Analytical Perspectives	Analytical Perspectives	Analytical Perspectives

LAB RESULTS:

PCDD/PCDF RESULTS (nanograms, unadjusted)

	M23-1	M23-2	M23-3
2,3,7,8-TCDD	EMPC 0.00733	0.00917	EMPC 0.00363
1,2,3,7,8-PeCDD	EMPC 0.00627	ND 0.00531	0.0097
1,2,3,4,7,8-HxCDD	ND 0.00637	ND 0.00265	EMPC 0.00871
1,2,3,6,7,8-HxCDD	ND 0.00613	ND 0.00264	0.0257
1,2,3,7,8,9-HxCDD	ND 0.00665	ND 0.00288	0.0165
1,2,3,4,6,7,8-HpCDD	0.0320	EMPC 0.0235	0.1080
OCDD	0.0454	EMPC 0.0288	0.1150
Total TCDD	0.128	0.127	0.265
Total PeCDD	0.143	0.128	0.559
Total HxCDD	0.105	0.104	0.619
Total HpCDD	0.0656	0.0249	0.246
2,3,7,8-TCDF	0.490	0.107	0.0297
1,2,3,7,8-PeCDF	0.156	0.0332	0.0169
2,3,4,7,8-PeCDF	0.704	0.0797	0.0446
1,2,3,4,7,8-HxCDF	0.237	0.0269	0.0273
1,2,3,6,7,8-HxCDF	0.103	0.0234	0.0270
2,3,4,6,7,8-HxCDF	0.214	0.0340	0.0455
1,2,3,7,8,9-HxCDF	0.0332	0.0107	0.0172
1,2,3,4,6,7,8-HpCDF	0.139	0.0467	0.0800
1,2,3,4,7,8,9-HpCDF	0.0242	EMPC 0.00956	0.0178
OCDF	0.0443	EMPC 0.0216	0.0674
Total TCDF	3.190	1.310	0.698
Total PeCDF	3.400	0.607	0.438
Total HxCDF	1.460	0.229	0.278
Total HpCDF	0.252	0.0769	0.125
LAB REPORTED TOTAL D/F, (pg)	8,870	2,740	3,520
TEQ (ND = 0; EMPC = EMPC), (pg)	480.0	71.7	53.6

ND - Compound was not detected

TEQ Value in picogram units

EXAMPLE CALCULATIONS

Method 5 / 26A Run # 1

Method 23 Run # 1

M5/26A-1

VOLUME OF DRY GAS SAMPLED AT STANDARD CONDITIONS

$$Vmstd = Y * 17.64 * Vm * \frac{Pbar + (Delta\ H / 13.6)}{(460 + Tm)}$$

$$Vmstd = 0.9978 * 17.64 * 400.396 * \frac{29.85 + (1.56913 / 13.6)}{(460 + 95.6522)} = 380.057 \text{ dscf}$$

VOLUME OF WATER VAPOR AT STANDARD CONDITIONS

$$Vwstd = 0.04715 * Vlc$$

$$Vwstd = 0.04715 * 336.4 = 15.861 \text{ SCF}$$

PERCENT MOISTURE, BY VOLUME, AS MEASURED IN FLUE GAS

$$\% H_2O = \frac{Vwstd}{(Vwstd + Vmstd)} x 100$$

$$\% H_2O = \frac{15.861}{(15.861 + 380.057)} x 100 = 4.0 \%$$

ABSOLUTE FLUE GAS PRESSURE

$$Ps = Pbar + \frac{Pg}{13.6}$$

$$Ps = 29.85 + \frac{-0.11}{13.6} = 29.84 \text{ inches Hg}$$

DRY MOLE FRACTION OF FLUE GAS

$$Mfd = 1 - \frac{\% H_2 0}{100}$$

$$Mfd = 1 - \frac{4.0}{100} = 0.960 \text{ unitless}$$

DRY MOLECULAR WEIGHT OF FLUE GAS

$$Md = (\%CO_2 * \frac{44}{100}) + (\%O_2 * \frac{32}{100}) + (100 - \%CO_2 - \%O_2 * \frac{28}{100})$$

$$Md = \left(1 * \frac{44}{100}\right) + \left(19 * \frac{32}{100}\right) + \left(100 - 1 - 19 * \frac{28}{100}\right) = \mathbf{28.92} \ \textbf{lb/lb-mole}$$

WET MOLECULAR WEIGHT OF FLUE GAS

$$Ms = \left(Md * Mfd\right) + fwtH_2O * \frac{\%H_2O}{100}$$

$$Ms = \left(28.92 * 0.959938\right) + 18 * \frac{4.0}{100} = \mathbf{28.48} \ \textbf{lb/lb-mole}$$

AVERAGE FLUE GAS VELOCITY

$$Vs = 85.49 * Cp * DeltaP * \sqrt{\frac{Ts + 460}{Ps * Ms}}$$

$$Vs = 85.49 * 0.84 * 0.465692 * \sqrt{\frac{277.63 + 460}{29.8 * 28.48}} = \mathbf{31.2} \ \textbf{ft/s}$$

WET VOLUMETRIC FLUE GAS FLOW RATE AT ACTUAL CONDITIONS

$$Qa = 60 * Vs * A$$

$$Qa = 60 * 31.2 * 13.64 = \mathbf{25{,}488} \ \textbf{acfm}$$

DRY VOLUMETRIC FLUE GAS FLOW RATE AT STANDARD CONDITIONS

$$Qs = 60 * Mfd * Vs * A * \frac{528}{460 + Ts} * \frac{Ps}{Pstd}$$

$$Qs = 60 * 0.959938 * 31.2 * 13.64 * \frac{528}{460 + 278} * \frac{29.84}{29.92} = \mathbf{17{,}461} \ \textbf{dscfm}$$

PERCENT ISOKINETIC OF SAMPLING RATE

$$I = \frac{Pstd}{460 + tstd} * \frac{100}{60} * \frac{Ts + 460}{Ps} * \frac{Vmstd}{Vs * Mfd * Theta * An}$$

$$I = \frac{29.92}{460 + 68} * \frac{100}{60} * \frac{278 + 460}{29.84} * \frac{380.057}{31.1538 * 0.960 * 564.8 * 0.000531} = \mathbf{99} \ \%$$

POLLUTANT CONCENTRATION AND EMISSION RATE CALCULATIONS:

PARTICULATE CONCENTRATION, GRAINS PER DSCF

$$gr/dscf = \frac{7{,}000}{453.59} * \frac{grams}{Vmstd}$$

$$gr/dscf = \frac{7{,}000}{453.59} * \frac{0.1336}{380.0568} = \mathbf{0.00542} \ \textbf{gr/dscf}$$

PARTICULATE CONCENTRATION, MILLIGRAMS PER DRY STANDARD CUBIC METER

$$mg/dscm = \frac{grams}{Vmstd} * 1{,}000 * 35.314$$

$$mg/dscm = \frac{0.1336}{380.057} * 1{,}000 * 35.314 = \mathbf{12.4\ mg/dscm}$$

PARTICULATE EMISSION RATE, POUNDS PER HOUR

$$lb/hr = \frac{60}{453.592} * \frac{grams}{Vmstd} * Qs$$

$$lb/hr = \frac{60}{453.59} * \frac{0.1336}{380.0568} * 17{,}461 = \mathbf{0.8119\ lb/hr}$$

HYDROGEN CHLORIDE CONCENTRATION, PARTS PER MILLION

$$ppm = 385.3 * \left(\frac{milligrams}{10^{3}} / (453.592 * Fwt * Vmstd)\right) * 10^{6}$$

$$ppm = 385.3 * \left(\frac{103}{10^{3}} / (453 * 36.46 * 380.06)\right) * 10^{6} = 6.31\ \mathbf{ppm}$$

HYDROGEN CHLORIDE EMISSION RATE, POUNDS PER HOUR

$$lb/hr = 60 * Fwt * ppm * Qs / (385.3 * 10^{6})$$

$$lb/hr = 60 * 36.46 * 6.3091 * 17{,}461 / (385.3 * 10^{6}) = 0.625\ \mathbf{lb/hr}$$

ALCOA EXTRUSIONS
PLANT CITY, FL

SAMPLE CALCULATIONS FOR
METHOD 23

NORTH FURNACE EXHAUST

Test Date: 7/10/2007 Test Number: M23-1

1. Volume of dry gas sampled at standard conditions (68 deg F, 29.92 in. Hg), dscf.

$$Vm(std) = \frac{17.64 \times Y \times Vm \times \left(Pb + \frac{\text{delta H}}{13.6} \right)}{(Tm + 460)}$$

$$Vm(std) = \frac{17.64 \times 0.9961 \times 372.819 \times \left(29.85 + \frac{1.502}{13.6} \right)}{97.8 + 460}$$

$$= 351.888$$

Where:

Vm(std)	=	Volume of gas sample measured by the dry gas meter, corrected to standard conditions, dscf.
Vm	=	Volume of gas sample measured by the dry gas meter at meter conditions, dcf.
Pb	=	Barometric Pressure, in Hg.
delt H	=	Average pressure drop across the orifice meter, in H_20.
Tm	=	Average dry gas meter temperature , deg F.
Y	=	Dry gas meter calibration factor.
17.64	=	Factor that includes ratio of standard temperature (528 deg R) to standard pressure (29.92 in. Hg), deg R/in. Hg.
13.6	=	Specific gravity of mercury.

2. Volume of water vapor in the gas sample corrected to standard conditions, scf.

Vw(std) = 0.04715 x Vwc

Vw(std) = (0.04715 x 320.5)

= 15.11

Where:

Vw(std) = Volume of water vapor in the gas sample corrected to standard conditions, scf.

Vwc = Volume of liquid condensed in impingers, ml.

Wwsg = Weight of water vapor collected in silica gel, g.

0.04707 = Factor which includes the density of water (0.002201 lb/ml), the molecular weight of water (18.0 lb/lb-mole), the ideal gas constant 21.85 (in. Hg) (ft^3)/lb-mole)(deg R); absolute temperature at standard conditions (528 deg R), absolute pressure at standard conditions (29.92 in. Hg), ft^3/ml.

0.04715 = Factor which includes the molecular weight of water (18.0 lb/lb-mole), the ideal gas constant 21.85 (in. Hg) (ft^3)/lb-mole)(deg R); absolute temperature at standard conditions (528 deg R), absolute pressure at standard conditions (29.92 in. Hg), and 453.6 g/lb, ft^3/g.

3. Moisture content

$$Bws = \frac{Vw(std)}{Vw(std) + Vm(std)}$$

$$Bws = \frac{15.11}{15.11 + 351.888}$$

= 0.041

Where:

Bws = Proportion of water vapor, by volume, in the gas stream, dimensionless.

4. Mole fraction of dry gas.

Md = 1 - Bws

Md = 1 - 0.041

= 0.959

Where:

Md = Mole fraction of dry gas, dimensionless.

5. Dry molecular weight of gas stream, lb/lb-mole.

MWd = (0.440 x % CO_2) + (0.320 x % O_2) + (0.280 x (% N_2 + % CO))

MWd = (0.440 x 1.00) + (0.320 x 19.00) + (0.280 x (80.00 + 0.00))

= 28.92

Where:

MWd = Dry molecular weight , lb/lb-mole.

% CO_2 = Percent carbon dioxide by volume, dry basis.

% O_2 = Percent oxygen by volume, dry basis.

% N_2 = Percent nitrogen by volume, dry basis.

% CO = Percent carbon monoxide by volume, dry basis.

0.440 = Molecular weight of carbon dioxide, divided by 100.

0.320 = Molecular weight of oxygen, divided by 100.

0.280 = Molecular weight of nitrogen or carbon monoxide, divided by 100.

6. Actual molecular weight of gas stream (wet basis), lb/lb-mole.

MWs = (MWd x Md) + (18 x (1 - Md))

MWs = (28.92 x 0.959) + (18 (1 - 0.959))

= 28.47

Where:

MWs = Molecular weight of wet gas, lb/lb-mole.

18 = Molecular weight of water, lb/lb-mole.

7. Average velocity of gas stream at actual conditions, ft/sec.

$$Vs = 85.49 \times Cp \times ((\text{delt } p)^{1/2})\text{avg} \times \left(\frac{Ts\ (\text{avg})}{Ps \times MWs}\right)^{1/2}$$

$$Vs = 85.49 \times 0.84 \times 0.46232 \times \left(\frac{740}{29.84 \times 28.47}\right)^{1/2}$$

$$= 30.99$$

Where:

Vs = Average gas stream velocity, ft/sec.

85.49 = Pitot tube constant, ft/sec x $\frac{(\text{lb/lb-mole})(\text{in. Hg})^{1/2}}{(\text{deg R})(\text{in H2O})}$

Cp = Pitot tube coefficient, dimensionless.

Ts = Absolute gas stream temperature, deg R = Ts, deg F + 460.

Ps = Absolute gas stack pressure, in. Hg. = Pb + $\frac{P(\text{static})}{13.6}$

delt p = Velocity head of stack, in. H_2O.

8. Average gas stream volumetric flowrate at actual conditions, wacf/min.

Qs(act) = 60 x Vs x As

Qs(act) = 60 x 30.99 x 13.64

= 25,354

Where:

Qs(act) = Volumetric flowrate of wet stack gas at actual conditions, wacf/min.

As = Cross-sectional area of stack, ft^2.

60 = Conversion, sec/min

9. Average gas stream dry volumetric flowrate at standard conditions, dscf/min.

$$Qs(std) = 17.64 \times Md \times \frac{Ps}{Ts} \times Qs(act)$$

$$Qs(std) = 17.64 \times 0.959 \times \frac{29.84}{740} \times 25350$$

$$= 17{,}294$$

Where:

Qs(std)	=	Volumetric flowrate of dry stack gas at standard conditions, dscf/min.

10. Isokinetic variation calculated from intermediate values, percent.

$$I = \frac{17.327 \times Ts \times Vm(std)}{Vs \times O \times Ps \times Md \times (Dn)^2}$$

$$I = \frac{17.327 \times 740 \times 351.888}{30.99 \times 552 \times 29.84 \times 0.959 \times (0.312)^{\wedge}2} = 94.80$$

Where:

I	=	Percent of isokinetic sampling.
O	=	Total sampling time, minutes.
Dn	=	Diameter of nozzle, inches.
17.327	=	Factor which includes standard temperature (528 deg R), standard pressure (29.92 in. Hg), the formula for calculating area of circle $D^{2/4}$, conversion of square feet to square inches (144), conversion of seconds to minutes (60), and conversion to percent (100), $\frac{(\text{in. Hg})(\text{in}^2)(\text{min})}{(\text{deg R})(\text{ft}^2)(\text{sec})}$

11. Total TEQ Concentration, pg/m^3. (Value reported by laboratory)

480 picograms of TEQ in sample

Note: The value reported is calculated using zero for Non Detects. EMPC (estimated values) are used at the EMPC value.

APPENDIX B-1

LABORATORY REPORTS

Method 5
Method 26A

Analyses Performed by:

Resolution Analytics, Inc.
Sanford, NC

Bruce Nemet - Lab Manager

RESOLUTION ANALYTICS, INC.
Specialists in Air Emission Analysis

ANALYTICAL REPORT

- HCL
  (EPA METHOD 26A)

- FILTERABLE PARTICULATE
  (EPA METHOD 5 (40 CFR. PART 60))

CLIENT: TRC ENVIRONMENTAL, INC.

RFA#: 56122

2733 Lee Avenue • Sanford, NC 27330 • Phone: 919-774-5557 • Fax: 919-776-6785

REPORT SUMMARY

RFA#: 56122

SAMPLE ID	***Filterable Particulate*** *(EPA Method 5)*	***HCl*** *(EPA Method 26A)*
ACETONE BLANK	0.1 mg (100 ml)	
DI H2O BLANK		< 0.219 mg
0.1 N H2SO4 BLNK		< 0.439 mg
NORTH FURN M5/26A -1	133.6 mg	103 mg
NORTH FURN M5/26A -2	108.2 mg	108 mg
NORTH FURN M5/26A -3	187.0 mg	98.5 mg
EPA AUDIT L-2839		**98.1 mg/L Cl**

ERG

www.erg.com

August 15, 2007

Requestor: Pwu-Sheng Liu
Environmental Protection Commission of Hilsborough County
3629 Queen Palm Drive
Tampa, FL 33619

Dear Pwu-Sheng Liu:

Eastern Research Group (ERG) has been directed by the U.S. EPA to provide you with **one** ampule of the following audit material for a **Method 26A HCl audit; Number M26A-3457-01.** This audit sample is for an upcoming audit at **undisclosed location** and is being sent directly to **Mr. Bruce Nemet of Resolution Analytics, Inc. in Sanford, NC** per your **automated database** request.

Please note: requests for Method 26A are now filled separately from requests for Method 26 and that there are **NEW Instructions associated with these samples,** effective October 2003.

Method 26A

request M26A-3457-01:
- one **Method 26A HCl sample**; Sample No. **L - 2839**

Please note that each sample is individually labeled and shipped with an instruction sheet with the format for reporting the laboratory audit results. All results are to be reported to the internet **automated computerized database.**

You are urged to instruct the laboratory to analyze the audit samples along with the designated field samples. The audit sample should be analyzed as a routine field sample according to the specifications of the Test Method and using the supplied instructions. The audit results are to be reported to you, the requestor, by the analyst, using the Reporting Form, in the units specified in the instructions. You then will use the **automated database** to enter the results into the SSAP database.

We would like to thank you for your participation in the Stationary Source Audit Program. If you have any questions regarding the samples, please contact either Thomas Mckenzie at (919) 468-7920 or myself at (919) 468-7928. My fax number is (919) 468-7803.

Sincerely,

Rick Lafleur
CC: sent with audit sample

Method 26A Audit Material
(Cl- Spiked Aqueous Solution)

REPORTING FORM: To be completed by laboratory

Request Number/Sample Number: M26A-3457-01/L2839 Date Issued: 08/15/07

Auditee:

Company: ______

Address: ______

Attention of: ______ Phone: ______

Requestor:

Agency: Environmental Protection Commission of Hilsborough County

Address: 3629 Queen Palm Drive, Tampa, FL 33619

Attention of: Pwu-Sheng Liu Phone: 813-627-2600 x1279

Project Name: Undisclosed

Audit Results (Results in mg/L)

Analyte	Result
Chloride concentration	98.1

INSTRUCTIONS FOR THE PREPARATION AND ANALYSIS OF METHOD 26A AUDIT SOLUTION

Note: This audit sample corresponds to the Method 26A Container No. 3 aqueous sample referred to as the acid sample or hydrogen halides fraction. There is no filter included with the audit solution, and there is no audit solution for the Container No. 4 alkaline sample or halogens sample fraction.

The ampule you received contains approximately 20 mL of an aqueous mixture of water that is spiked with a low concentration of chloride.

1) Wrap a paper towel around the ampule, and with the ampule in the upright position, break off the top at the pre-scored mark by carefully exerting pressure sideways.

2) Pipette exactly 10 mL of the audit sample from the ampule into a 500 mL volumetric flask. Dilute exactly to the 500 mL mark with DI water and mix well. (This is called the Diluted Sample.)

3) Analyze the Diluted Sample in accordance with the procedures in Section 11.1 of Method 26A. (**Note:** The Diluted Sample may require further dilution with DI water to bring it within the calibration range of the analytical instrument. This decision is left to the analyst.)

4) Calculate the concentration of chloride in the Diluted Sample in mg/L.

5) Record the chloride concentration in the Diluted Sample on the enclosed **Reporting Form** in units of mg/L.

6) Report the Method 26A chloride concentration, in the Diluted Sample on the **Reporting Form**, to the designated agent.

Analytical Narrative

RFA # 56122

Client/Plant Name: TRC Environmental, Inc. **Date Rec'd in lab:** 7/16/07

Analyst: JBN **Date of Analysis:** 08/22/07

Analysis Method: EPA Method 26A **Analyte(s):** HCl

Sample Matrix & Components:

0.1 N H_2SO_4 + DI H_2O rinses

Summary of Sample Prep:

Samples were volumed in the laboratory by JBN prior to analysis by ion chromatography.
See Data Sheets for dilution factors used throughout analysis.

Summary of Instrumentation:

Shimadzu LC-10AD Ion Chromatograph
Hamilton PRP-X100 Column 150x4.1mm 10 µl Inj.
Eluent: 4mM Phthalic Acid Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm Temp: 40°C

Analytical Detection Limit(s): 2.19 ppm HCl

Summary of QA Audit Sample Analysis:

One (1) EPA Compliance Audit sample was analyzed along with the samples as well as daily check standards. (See data sheets for a summary of these results.)

Summary of Sample Spike Analysis:

See Analytical Data Sheets for results of sample spike analyses. (All spike results were within 90-110% recovery limits.)

Miscellaneous Comments Regarding Sample Analysis: (Note unusual catch weights, interferences, odd sample behavior, and steps taken to confirm unusual results. Also note any deviations from standard analytical procedures, together with justification and possible affect on results. Specify samples when applicable.)

None.

Confirmation of Data Review:

To the best of my knowledge this analytical data has been checked thoroughly for completeness and the results presented are accurate, error-free, legible, and have been performed and validated in accordance with the approved method(s).

Lab QA Officer Signature J. Bryh Nast Date 8/22/07

Secondary Review [signature] Date 8/22/07

Hydrogen Chloride (EPA Method 26/26A) Analytical Data Sheet

Client Name:	**TRC Environmental, Inc.**	Job Num.	**56122**
File Pathway:	C:\JOBS\TRC\56122\HCL.WB1	File:	HCL
Analyst:	JBN	Date:	08/22/2007

Chloride Standard Calibration Curve by Linear Regression

Cl Conc. (ppm)	Standard Areas Inj. 1	Standard Areas Inj. 2	Average Area	% Diff.		Calculated Std Conc. (ppm)	% Deviation from Actual
2.00	13477	13120	13299	1.34%		2.13	6.65%
10.0	59889	59809	59849	0.07%		9.83	-1.75%
25.0	151261	152257	151759	0.33%		25.0	0.05%
40.0	241815	243447	242631	0.34%		40.0	0.07%
Standard Curve		Slope:	6052	Y-Int:	391	LoD (ppm):	**2.13**

Field Samples in: 0.1 N H2SO4

SAMPLE ID	Inj. 1 AREA	Inj. 2 AREA	AVERAGE AREA	% DIFF	DILUTION FACTOR	SAMPLE VOLUME (mls)	**HCl Catch (mg)**
DI H2O BLANK	< 13299	< 13299	< 13299	0.00%	1	100	**< 0.219**
0.1 N H2SO4 BLK	< 13299	< 13299	< 13299	0.00%	1	200	**< 0.439**
N FURN M5/26A -1	115001	113667	114334	0.58%	10	530	**103**
N FURN M5/26A -2	117470	118426	117948	0.41%	10	540	**108**
N FURN M5/26A -3	112573	113350	112962	0.34%	10	515	**98.5**

***** AUDIT REPORT *****	294000					
	Inj. 1	Inj. 2	Average Area	% Dev.	Dilution Factor	**Calculated mgs Cl / L**
EPA L-2839	146798	150761	148780	1.33%	4	**98.1**

MATRIX SPIKE

Sample I.D.	Inj. 1	Inj. 2	Average Area	% Dev.	Expected ppm Cl	Calculated ppm Cl	% Recovery
N FURN M5/26A -3	163196	163460	163328	0.08%	15.0	15.3	102.0%
Note:	1	mls of the above sample was spiked with					
	0.6	mls of a	40	ppm chloride standard.			

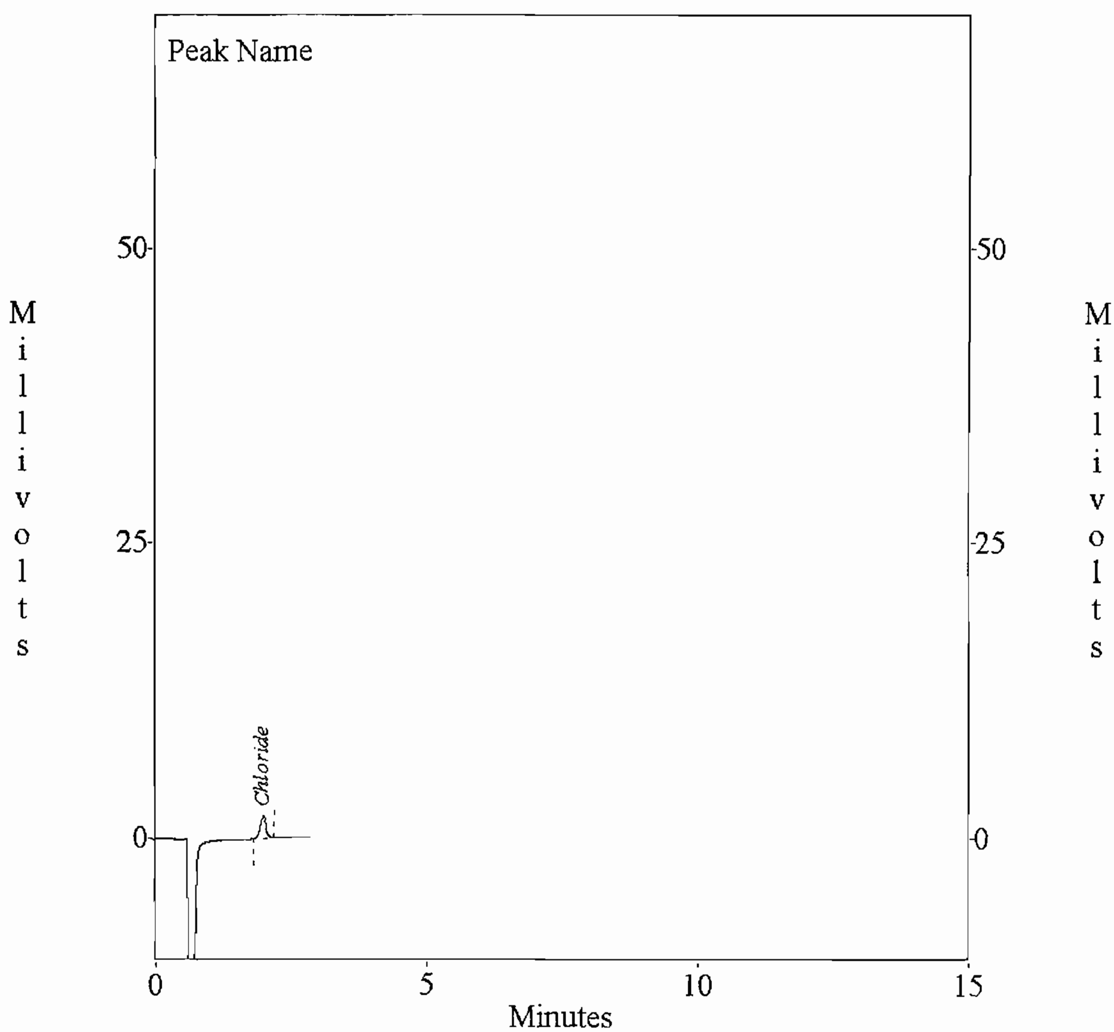
Printing Date 22-Aug-2007 Printing Time 06:31 AM

Instrument: Shimadzu CDD-6A Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6 Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm 10 µl Inj Vol Temp 40 C
File : c:\ezchrom\chrom\56122.001
Method : c:\ezchrom\methods\M26-150.met
Sample ID : 2.0 PPM a
Acquired : Aug 21, 2007 08:10:16

Channel A Results

Peak Name	Ret Time	Area
Chloride	2.00	13477

c:\ezchrom\chrom\56122.001 -- Channel A

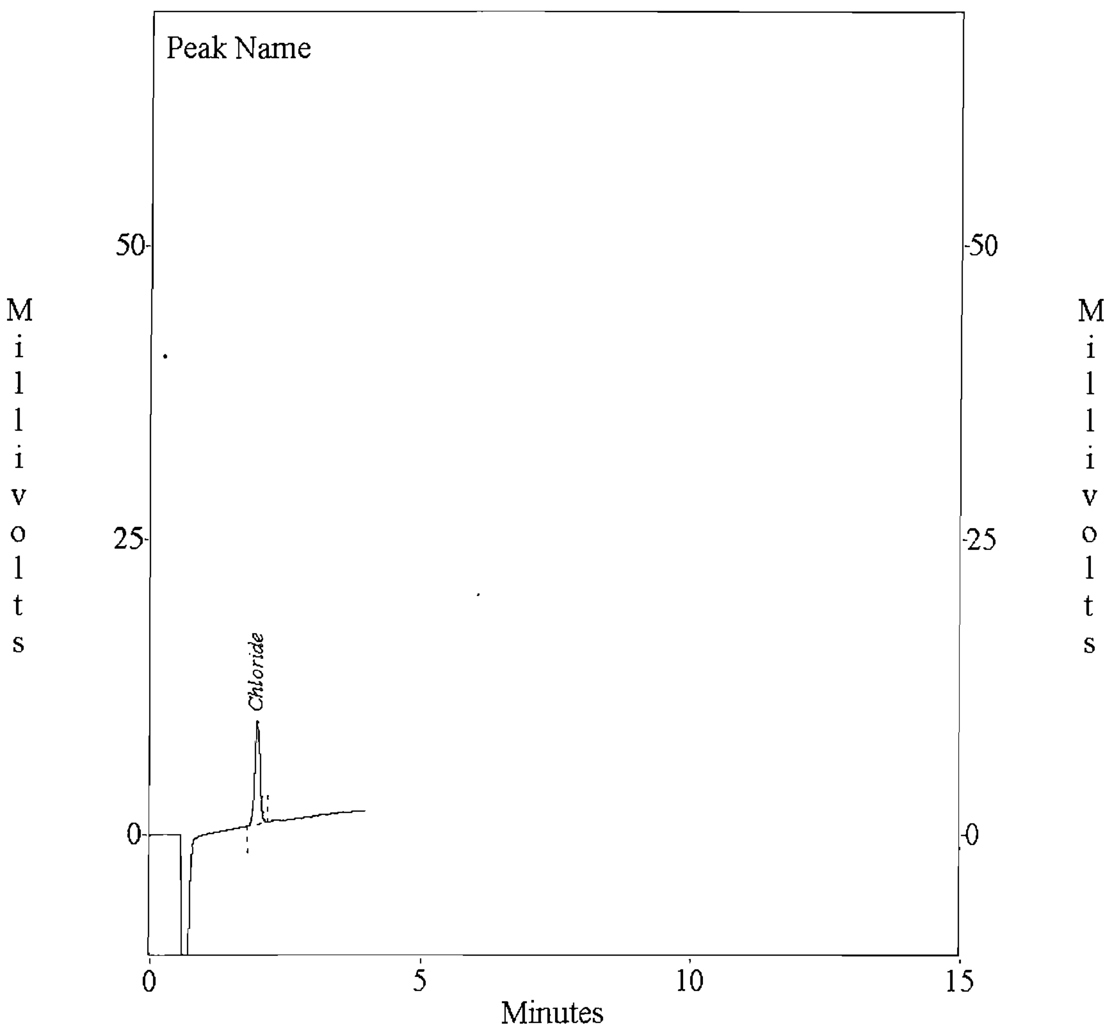


Instrument: Shimadzu CDD-6A Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6 Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm 10 µl Inj Vol Temp 40 C
File : c:\ezchrom\chrom\56122.002
Method : c:\ezchrom\methods\M26-150.met
Sample ID : 10 PPM a
Acquired : Aug 21, 2007 08:14:39

Channel A Results

Peak Name	Ret Time	Area
Chloride	2.00	59889

c:\ezchrom\chrom\56122.002 -- Channel A

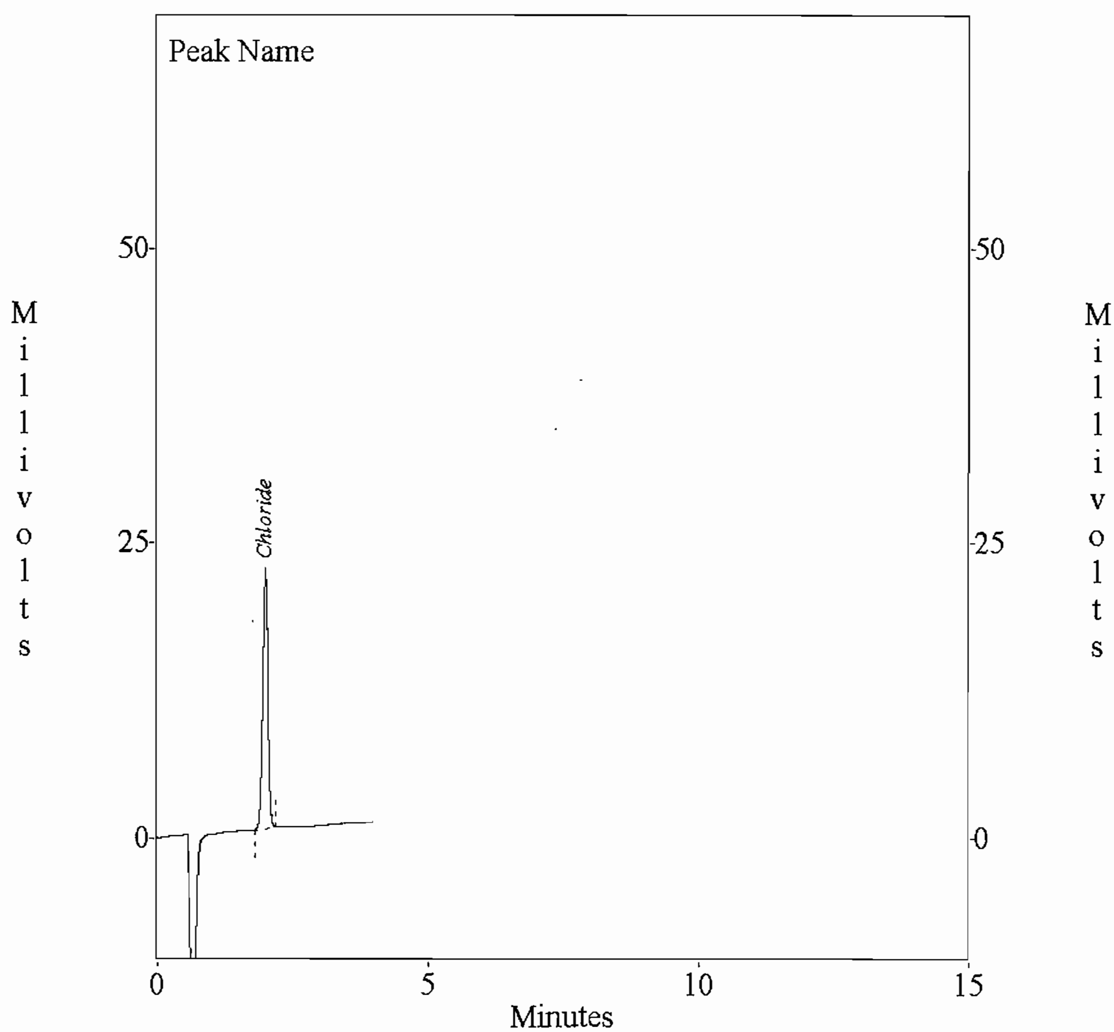


Instrument: Shimadzu CDD-6A Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6 Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm 10 µl Inj Vol Temp 40 C
File : c:\ezchrom\chrom\56122.003
Method : c:\ezchrom\methods\M26-150.met
Sample ID : 25 PPM a
Acquired : Aug 21, 2007 08:19:02

Channel A Results

Peak Name	Ret Time	Area
Chloride	2.01	151261

c:\ezchrom\chrom\56122.003 -- Channel A

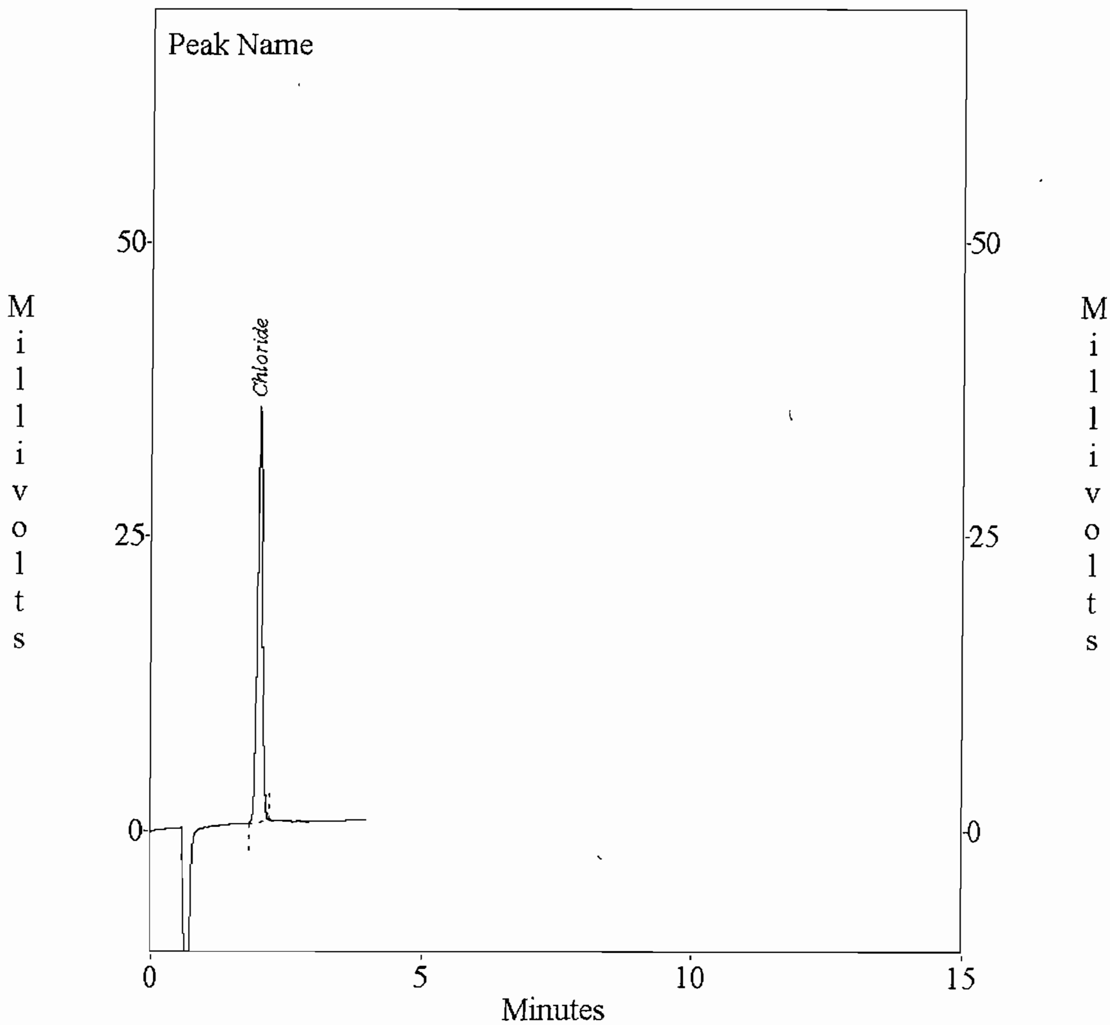


Instrument: Shimadzu CDD-6A Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6 Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm 10 µl Inj Vol Temp 40 C
File : c:\ezchrom\chrom\56122.004
Method : c:\ezchrom\methods\M26-150.met
Sample ID : 40 PPM a
Acquired : Aug 21, 2007 08:23:25

Channel A Results

Peak Name	Ret Time	Area
Chloride	2.02	241815

c:\ezchrom\chrom\56122.004 -- Channel A

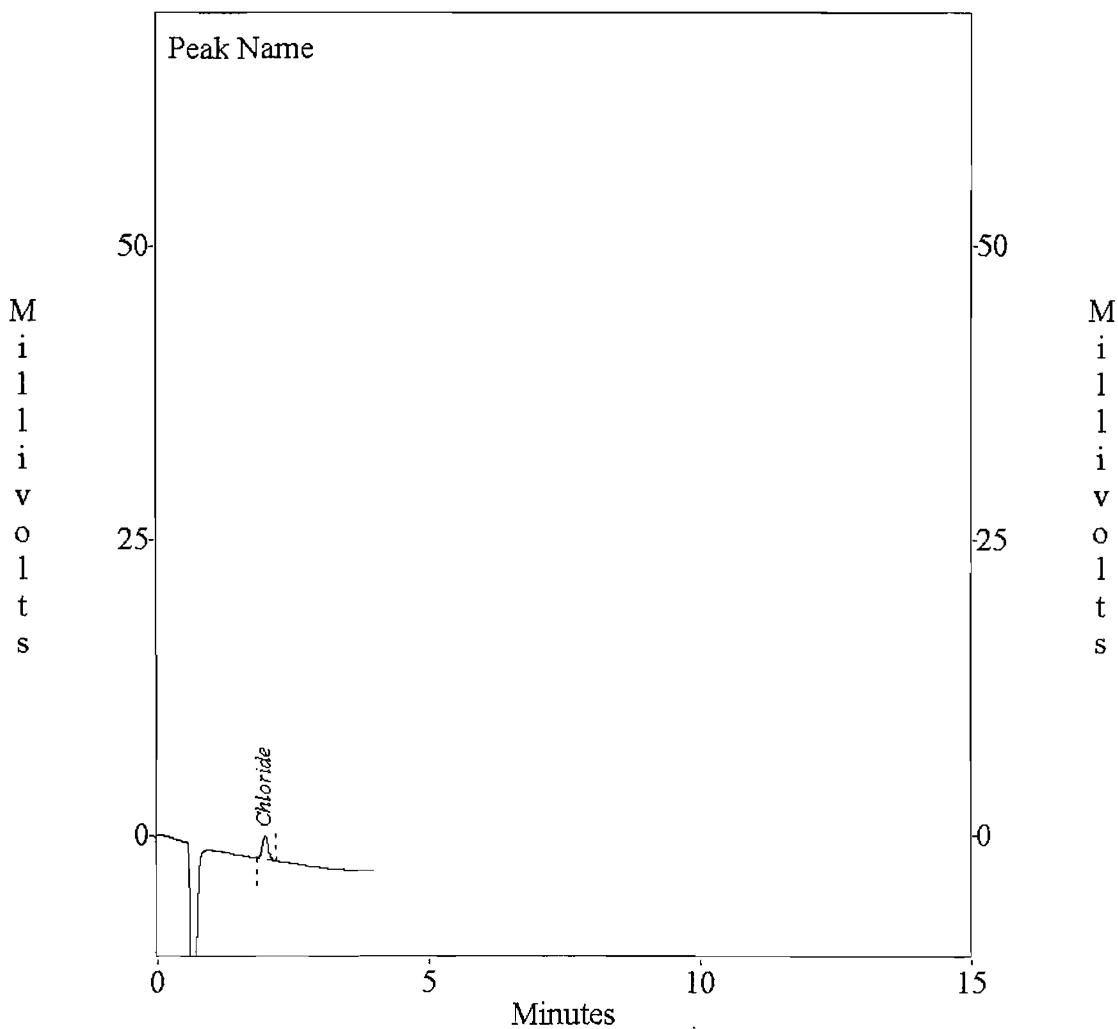


Instrument: Shimadzu CDD-6A   Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6   Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm   10 µl Inj Vol   Temp 40 C
File : c:\ezchrom\chrom\10526.031
Method : c:\ezchrom\methods\M26-150.met
Sample ID : 2.0 PPM b
Acquired : Aug 22, 2007 00:04:26

Channel A Results

Peak Name	Ret Time	Area
Chloride	2.00	13120

c:\ezchrom\chrom\10526.031 -- Channel A



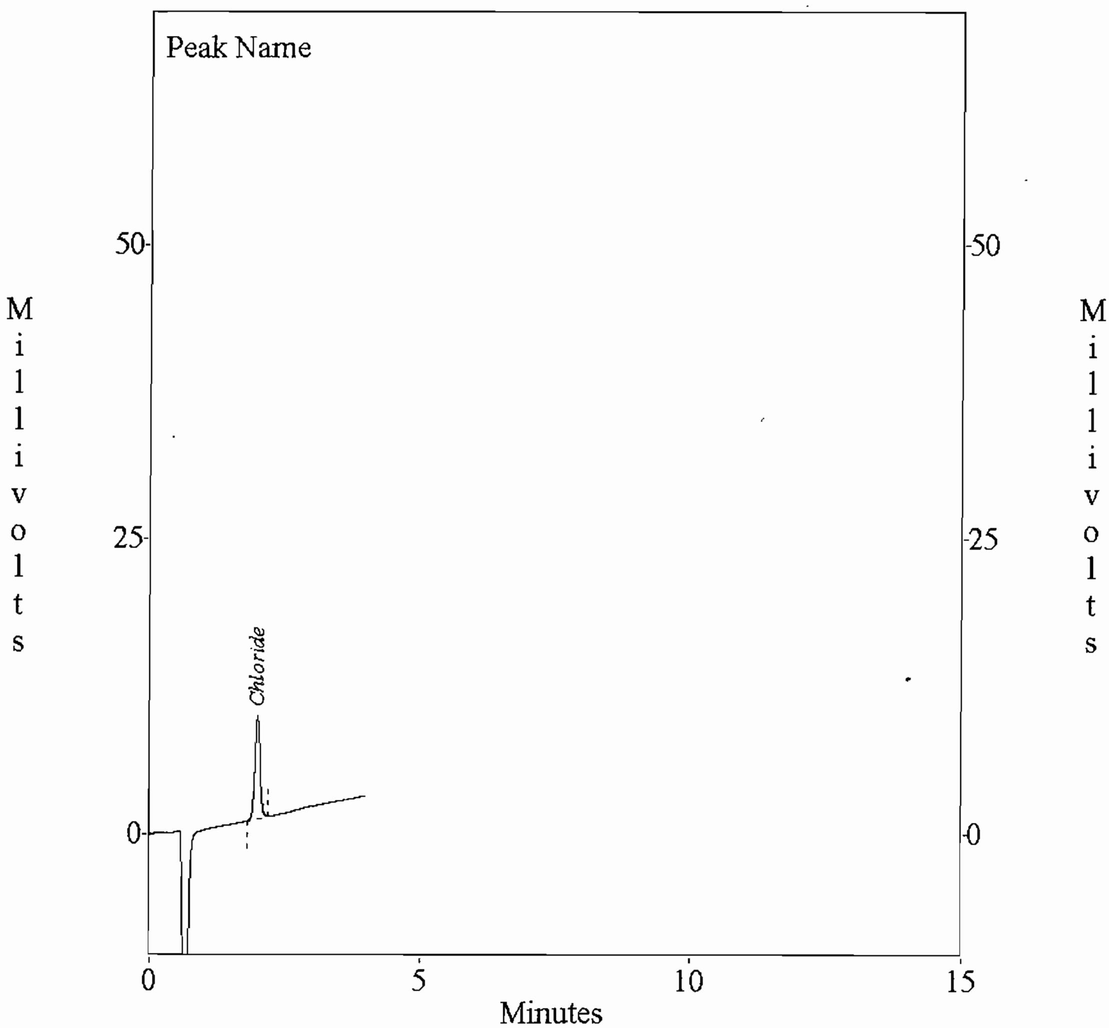
Instrument: Shimadzu CDD-6A   Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6   Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm   10 µl Inj Vol   Temp 40 C

File : c:\ezchrom\chrom\10526.032
Method : c:\ezchrom\methods\M26-150.met
Sample ID : 10 PPM b
Acquired : Aug 22, 2007 00:08:49

Channel A Results

Peak Name	Ret Time	Area
Chloride	2.01	59809

c:\ezchrom\chrom\10526.032 -- Channel A

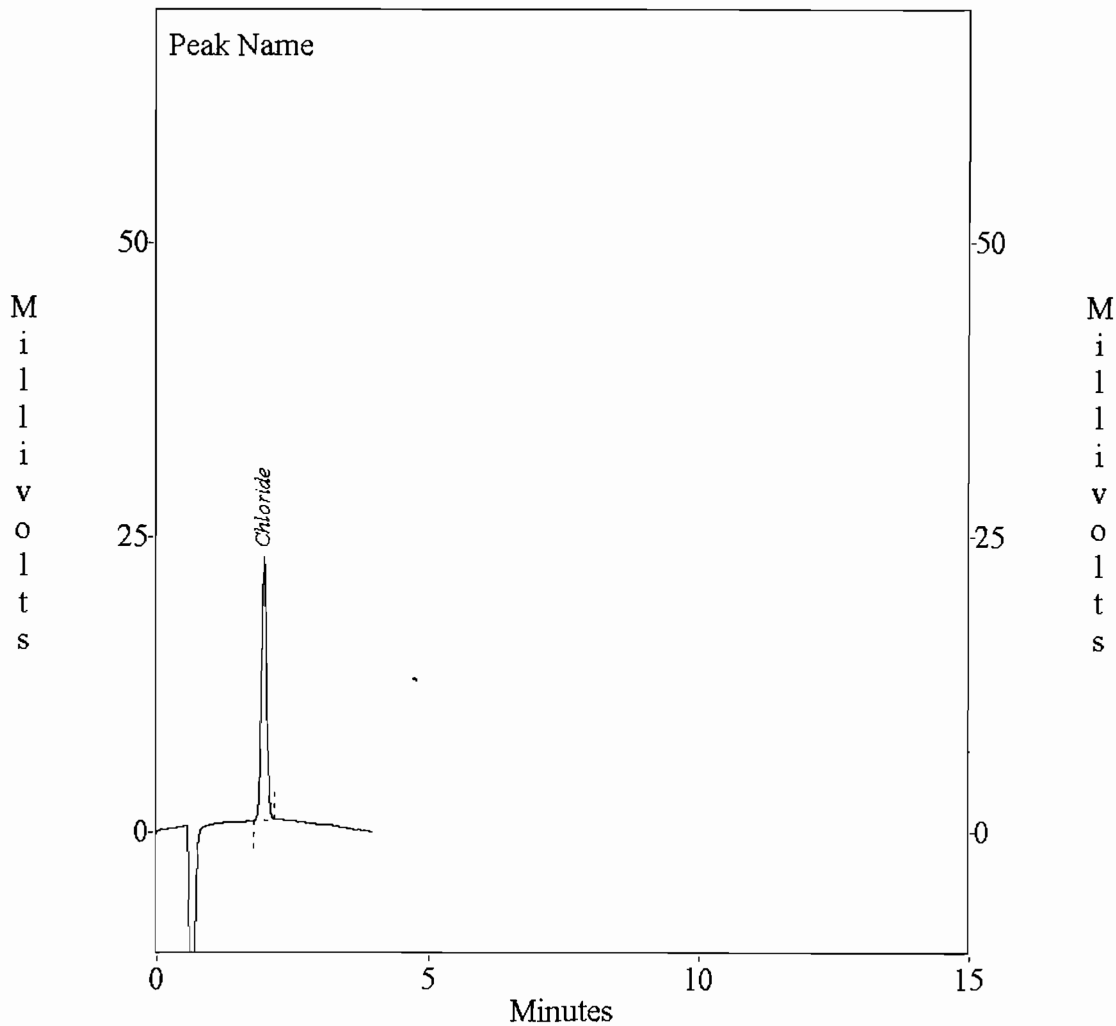


Instrument: Shimadzu CDD-6A   Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6   Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm   10 µl Inj Vol   Temp 40 C
File : c:\ezchrom\chrom\10526.033
Method : c:\ezchrom\methods\M26-150.met
Sample ID : 25 PPM b
Acquired : Aug 22, 2007 00:13:12

Channel A Results

Peak Name	Ret Time	Area
Chloride	2.01	152257

c:\ezchrom\chrom\10526.033 -- Channel A



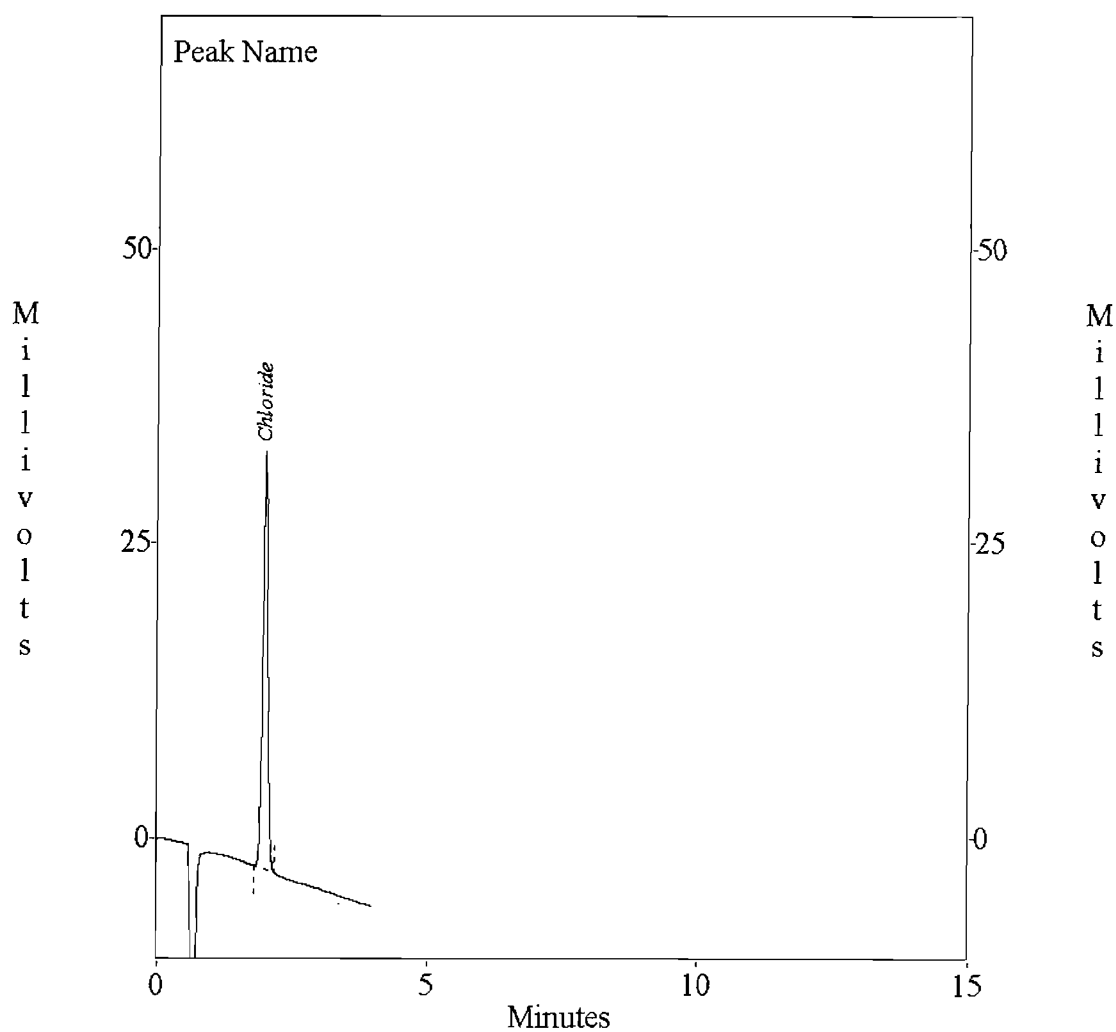
Instrument: Shimadzu CDD-6A Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6 Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm 10 µl Inj Vol Temp 40 C

File : c:\ezchrom\chrom\10526.034
Method : c:\ezchrom\methods\M26-150.met
Sample ID : 40 PPM b
Acquired : Aug 22, 2007 00:17:35

Channel A Results

Peak Name	Ret Time	Area
Chloride	2.02	243447

c:\ezchrom\chrom\10526.034 -- Channel A

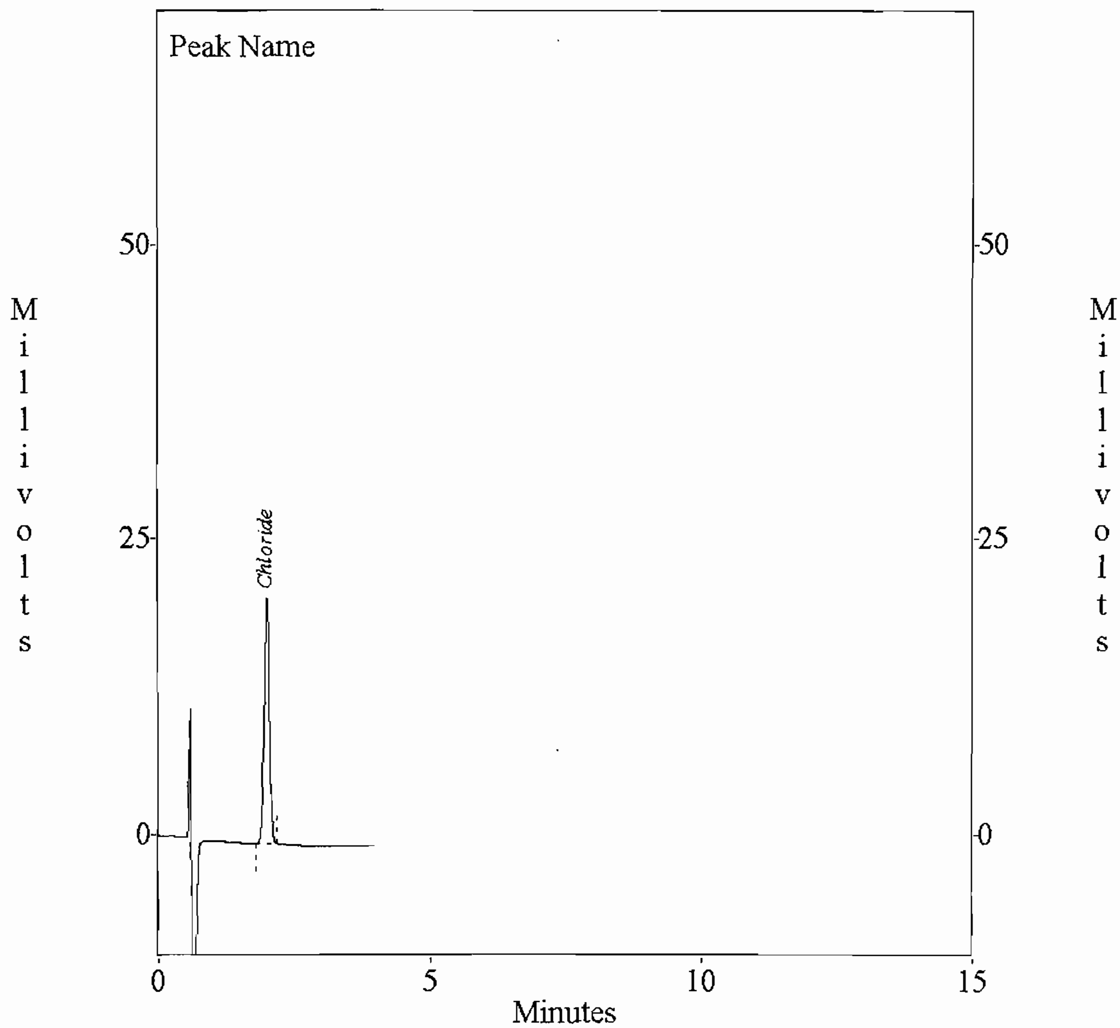


Instrument: Shimadzu CDD-6A Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6 Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm 10 µl Inj Vol Temp 40 C
File : c:\ezchrom\chrom\56122.006
Method : c:\ezchrom\methods\M26-150.met
Sample ID : EPA AUDIT L2839 a
Acquired : Aug 22, 2007 06:08:18

Channel A Results

Peak Name	Ret Time	Area
Chloride	2.02	146798

c:\ezchrom\chrom\56122.006 -- Channel A



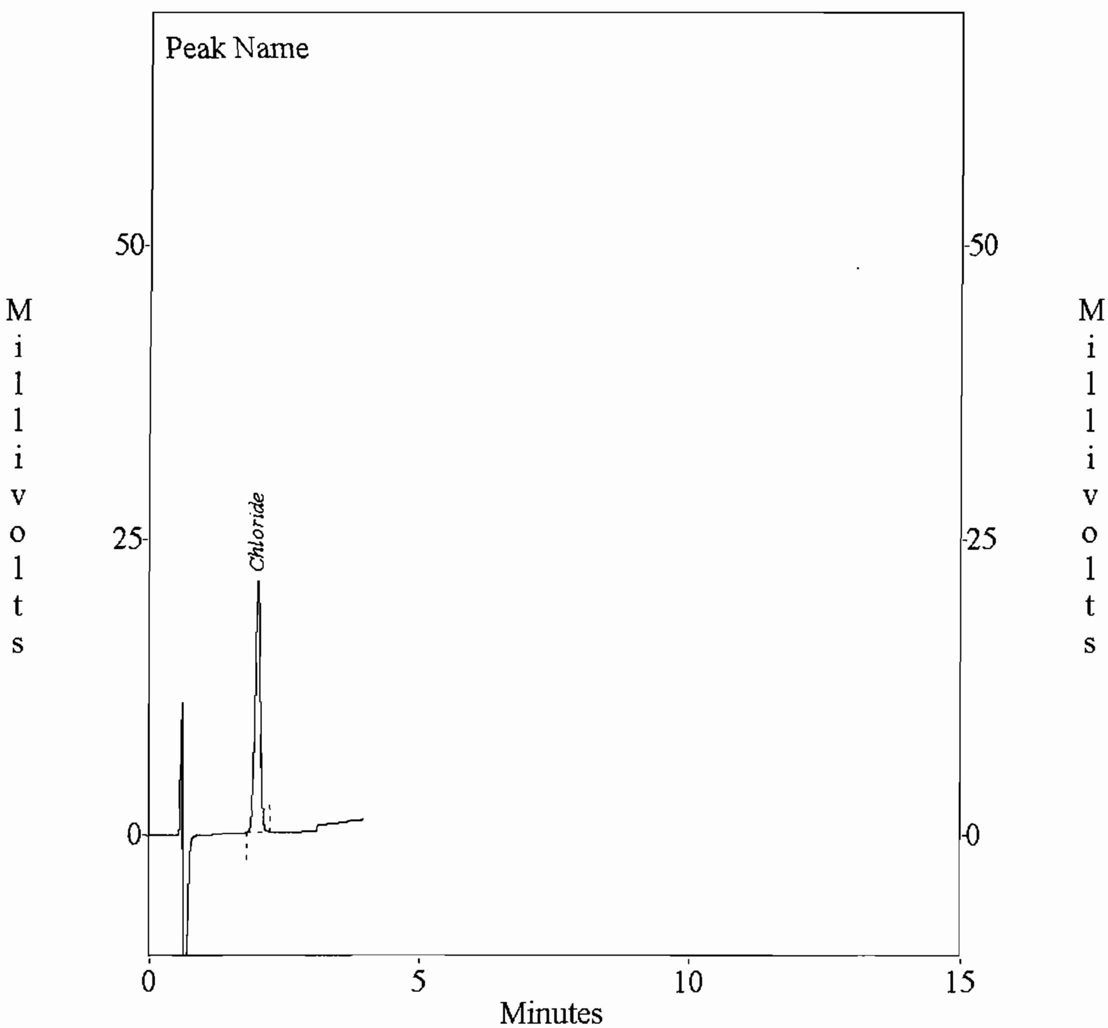
Instrument: Shimadzu CDD-6A   Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6   Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm   10 µl Inj Vol   Temp 40 C

File : c:\ezchrom\chrom\56122.018
Method : c:\ezchrom\methods\M26-150.met
Sample ID : EPA AUDIT L2839 b
Acquired : Aug 22, 2007 06:12:41

Channel A Results

Peak Name	Ret Time	Area
Chloride	2.03	150761

c:\ezchrom\chrom\56122.018 -- Channel A

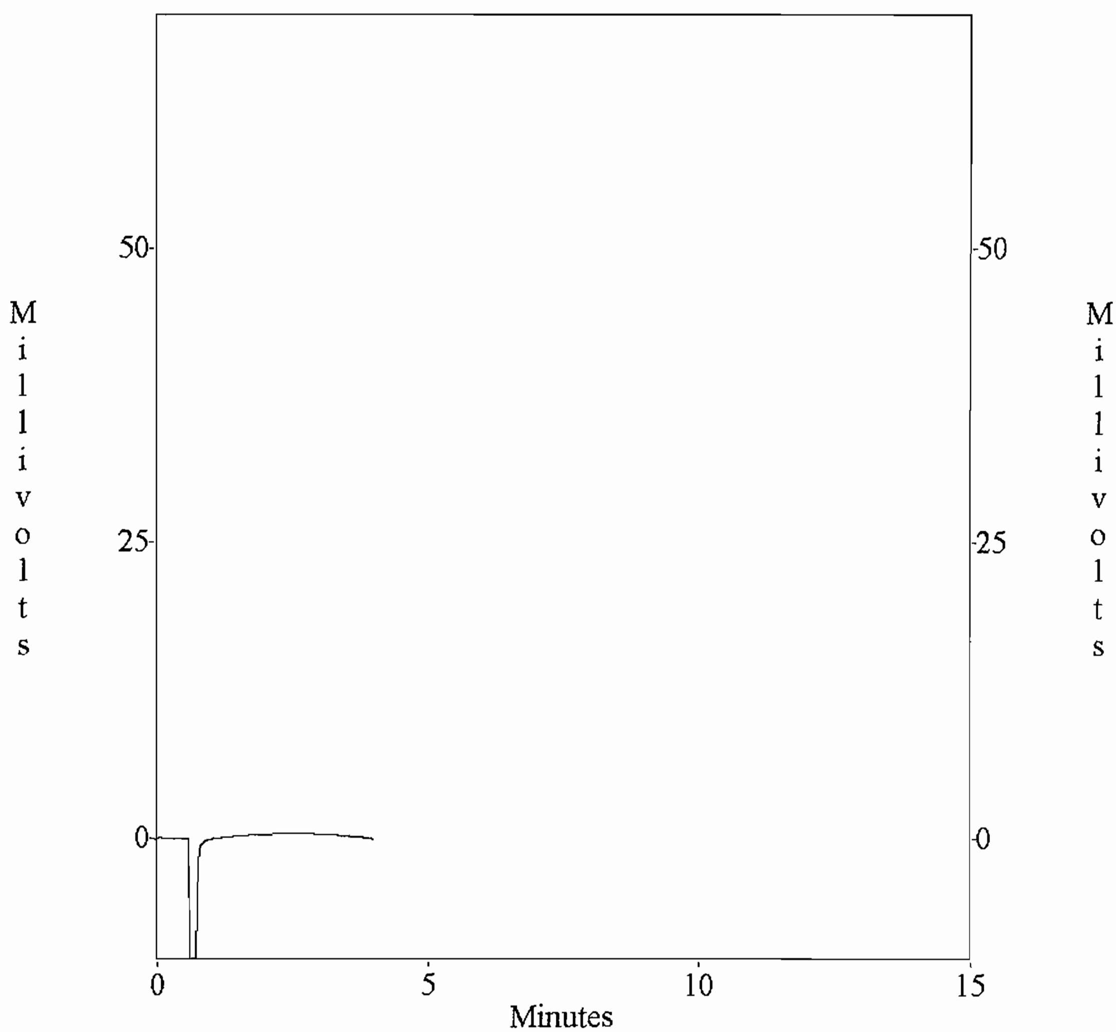


Instrument: Shimadzu CDD-6A Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6 Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm 10 µl Inj Vol Temp 40 C
File : c:\ezchrom\chrom\56122.007
Method : c:\ezchrom\methods\M26-150.met
Sample ID : DI H2O BLK a
Acquired : Aug 21, 2007 08:36:35

Channel A Results

Peak Name	Ret Time	Area

c:\ezchrom\chrom\56122.007 -- Channel A

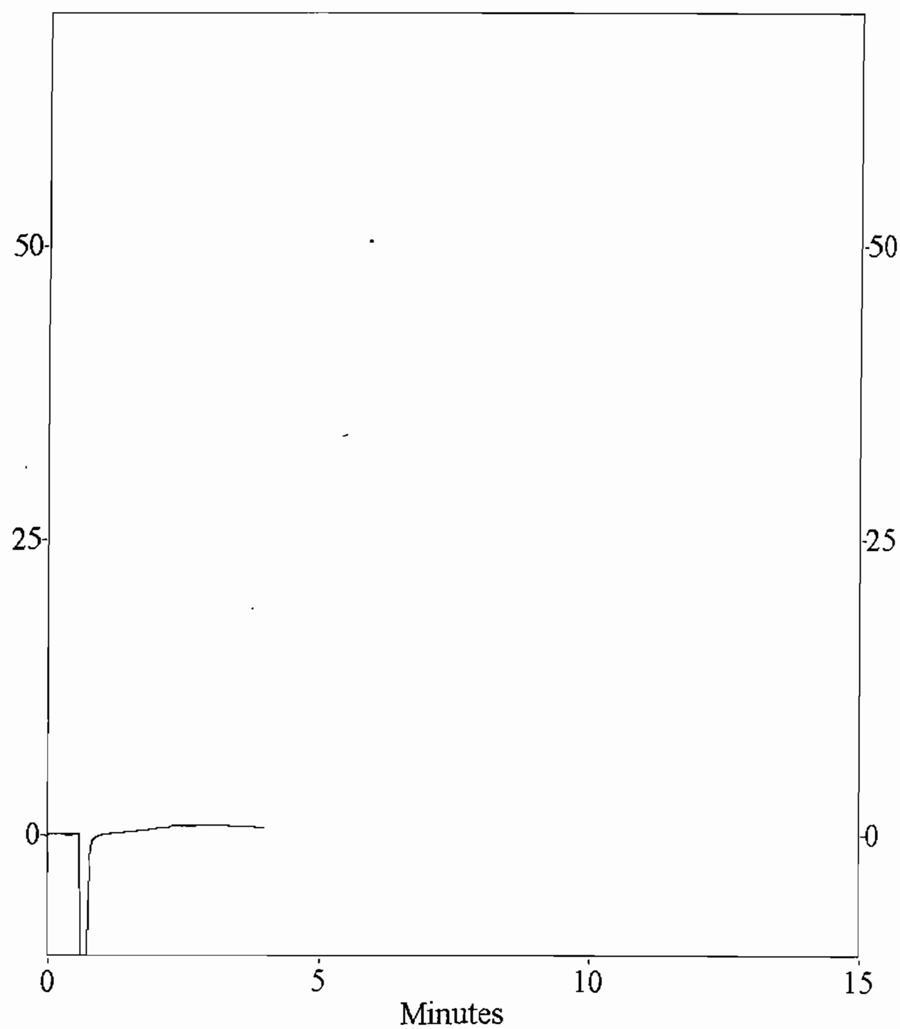


Instrument: Shimadzu CDD-6A Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6 Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm 10 µl Inj Vol Temp 40 C
File : c:\ezchrom\chrom\56122.008
Method : c:\ezchrom\methods\M26-150.met
Sample ID : DI H2O BLK b
Acquired : Aug 21, 2007 08:40:58

Channel A Results

Peak Name	Ret Time	Area

c:\ezchrom\chrom\56122.008 -- Channel A



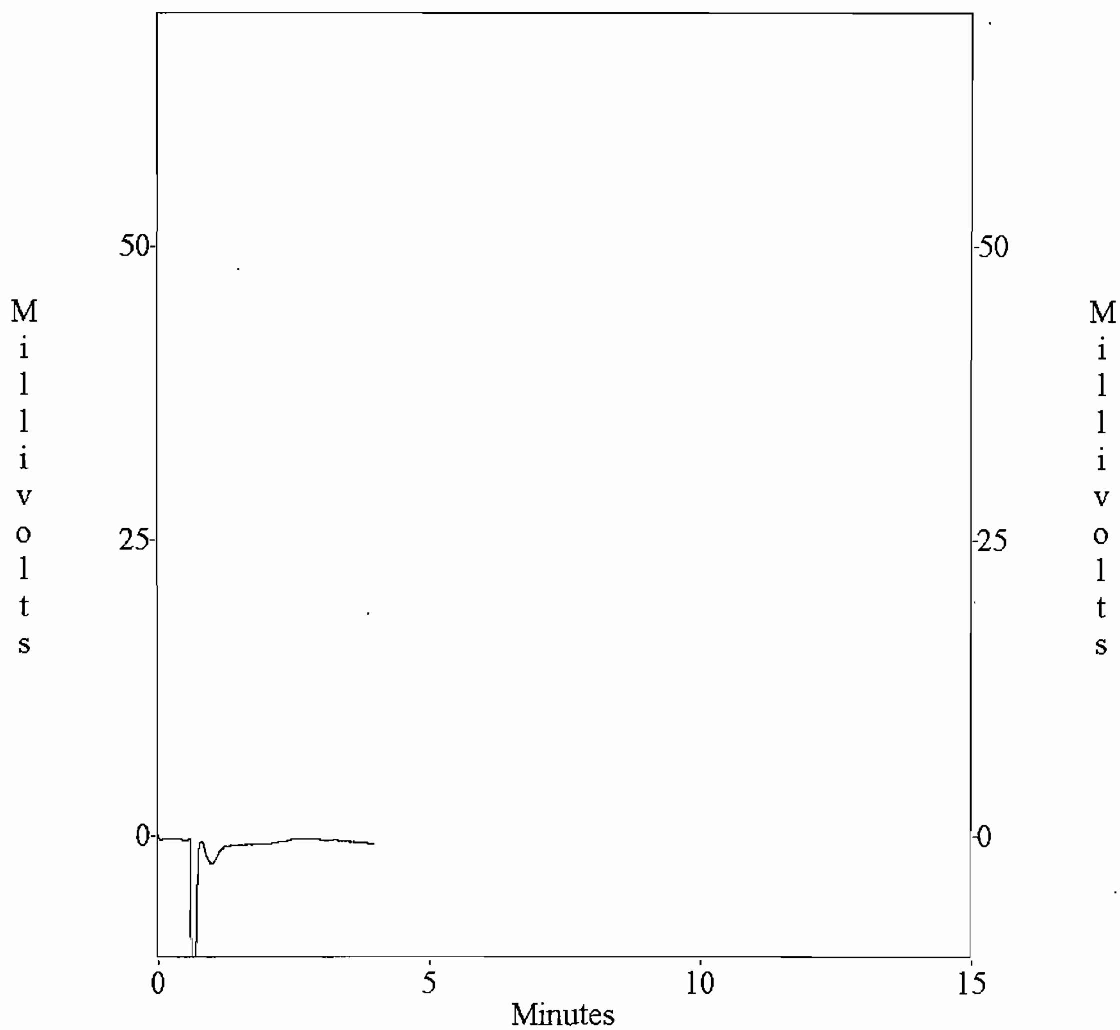
Instrument: Shimadzu CDD-6A Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6 Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm 10 µl Inj Vol Temp 40 C

File : c:\ezchrom\chrom\56122.009
Method : c:\ezchrom\methods\M26-150.met
Sample ID : 0.1 H2SO4 a
Acquired : Aug 21, 2007 08:45:21

Channel A Results

Peak Name	Ret Time	Area

c:\ezchrom\chrom\56122.009 -- Channel A

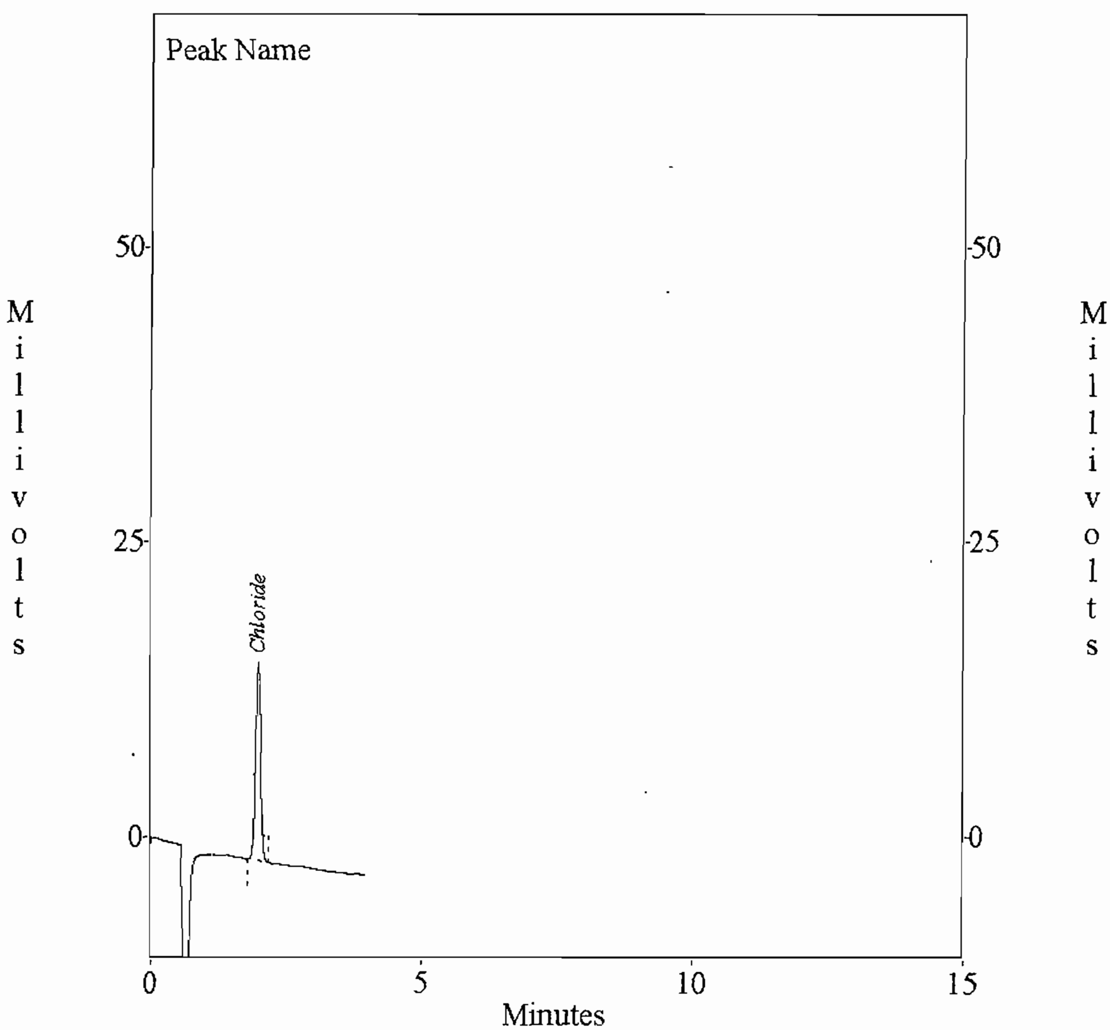


Instrument: Shimadzu CDD-6A Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6 Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm 10 µl Inj Vol Temp 40 C
File : c:\ezchrom\chrom\56122.010
Method : c:\ezchrom\methods\M26-150.met
Sample ID : N FURN M5/26A-1 a
Acquired : Aug 21, 2007 09:17:45

Channel A Results

Peak Name	Ret Time	Area
Chloride	2.01	115001

c:\ezchrom\chrom\56122.010 -- Channel A



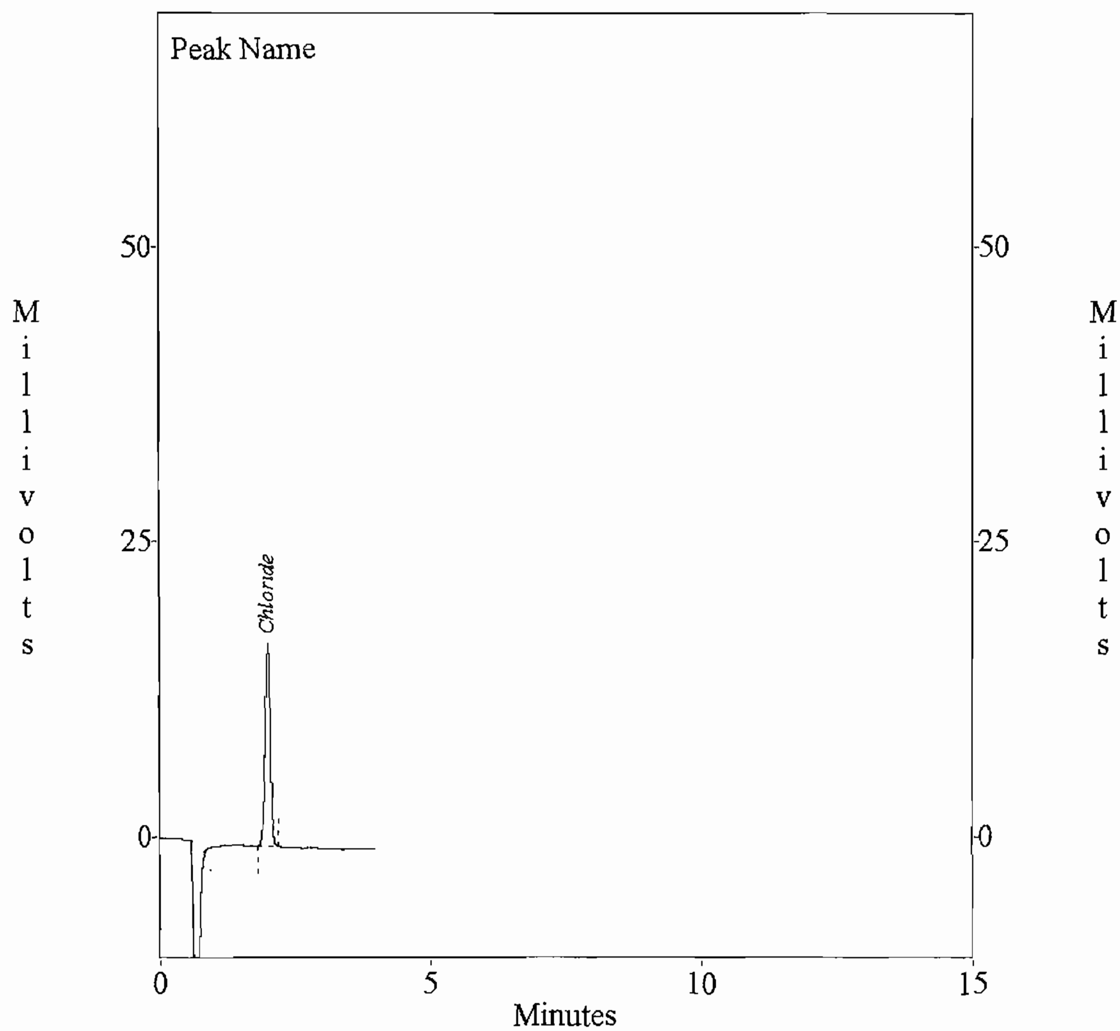
Instrument: Shimadzu CDD-6A Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6 Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm 10 µl Inj Vol Temp 40 C

File : c:\ezchrom\chrom\56122.011
Method : c:\ezchrom\methods\M26-150.met
Sample ID : N FURN M5/26A-2 a
Acquired : Aug 21, 2007 09:22:08

Channel A Results

Peak Name	Ret Time	Area
Chloride	2.01	117470

c:\ezchrom\chrom\56122.011 -- Channel A



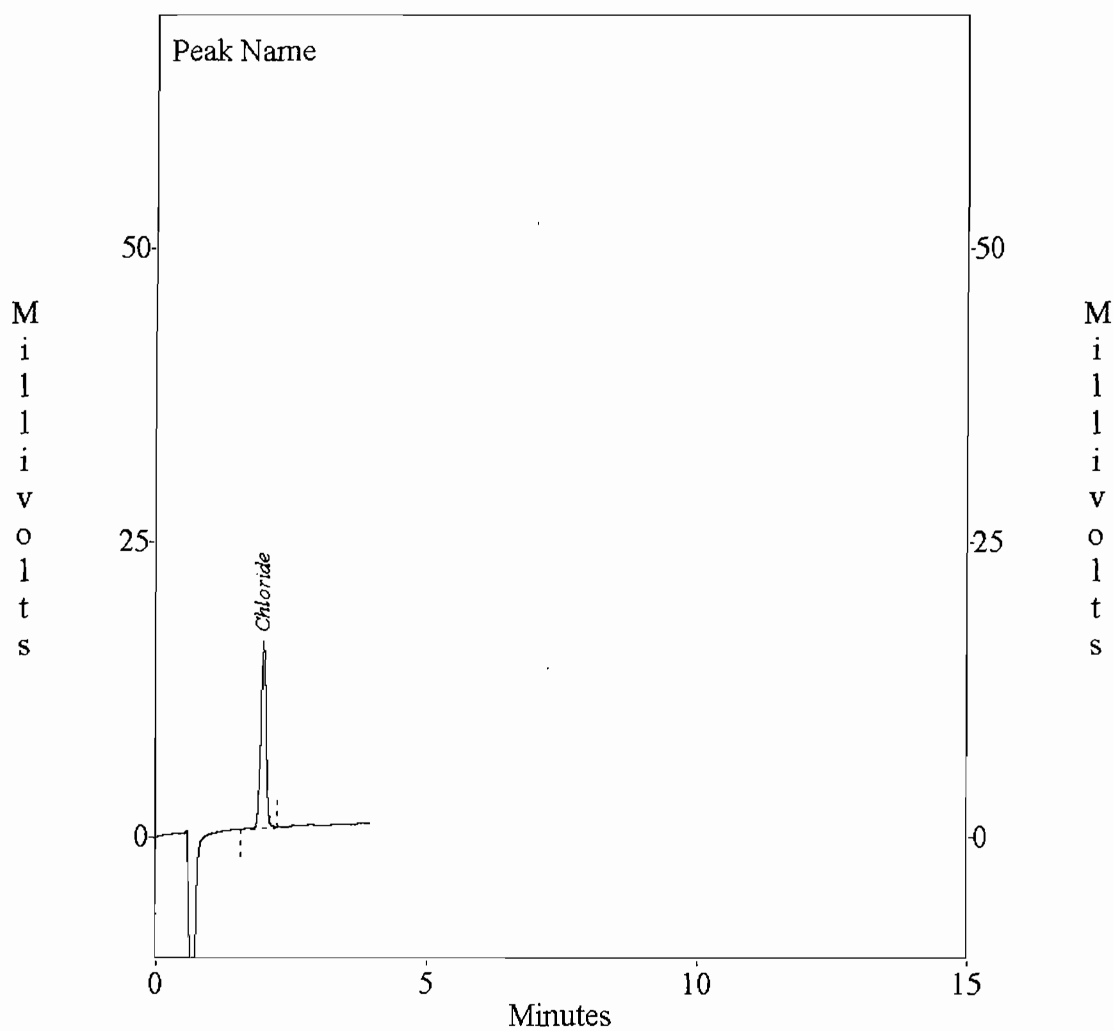
Instrument: Shimadzu CDD-6A Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6 Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm 10 µl Inj Vol Temp 40 C

File : c:\ezchrom\chrom\56122.012
Method : c:\ezchrom\methods\M26-150.met
Sample ID : N FURN M5/26A-3 a
Acquired : Aug 22, 2007 06:17:04

Channel A Results

Peak Name	Ret Time	Area
Chloride	2.01	112573

c:\ezchrom\chrom\56122.012 -- Channel A

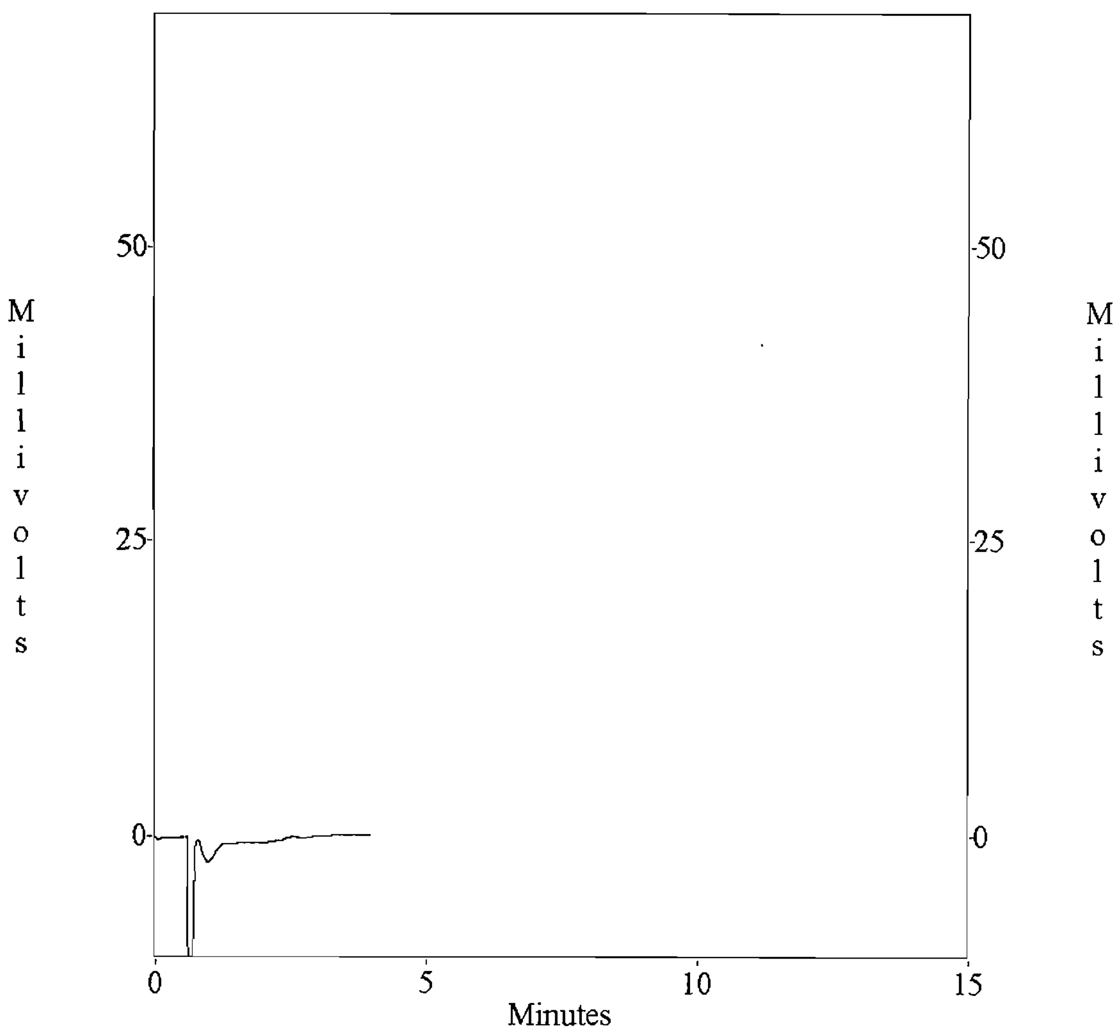


Instrument: Shimadzu CDD-6A Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6 Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm 10 µl Inj Vol Temp 40 C
File : c:\ezchrom\chrom\56122.013
Method : c:\ezchrom\methods\M26-150.met
Sample ID : 0.1 H2SO4 b
Acquired : Aug 21, 2007 10:06:56

Channel A Results

Peak Name	Ret Time	Area

c:\ezchrom\chrom\56122.013 -- Channel A

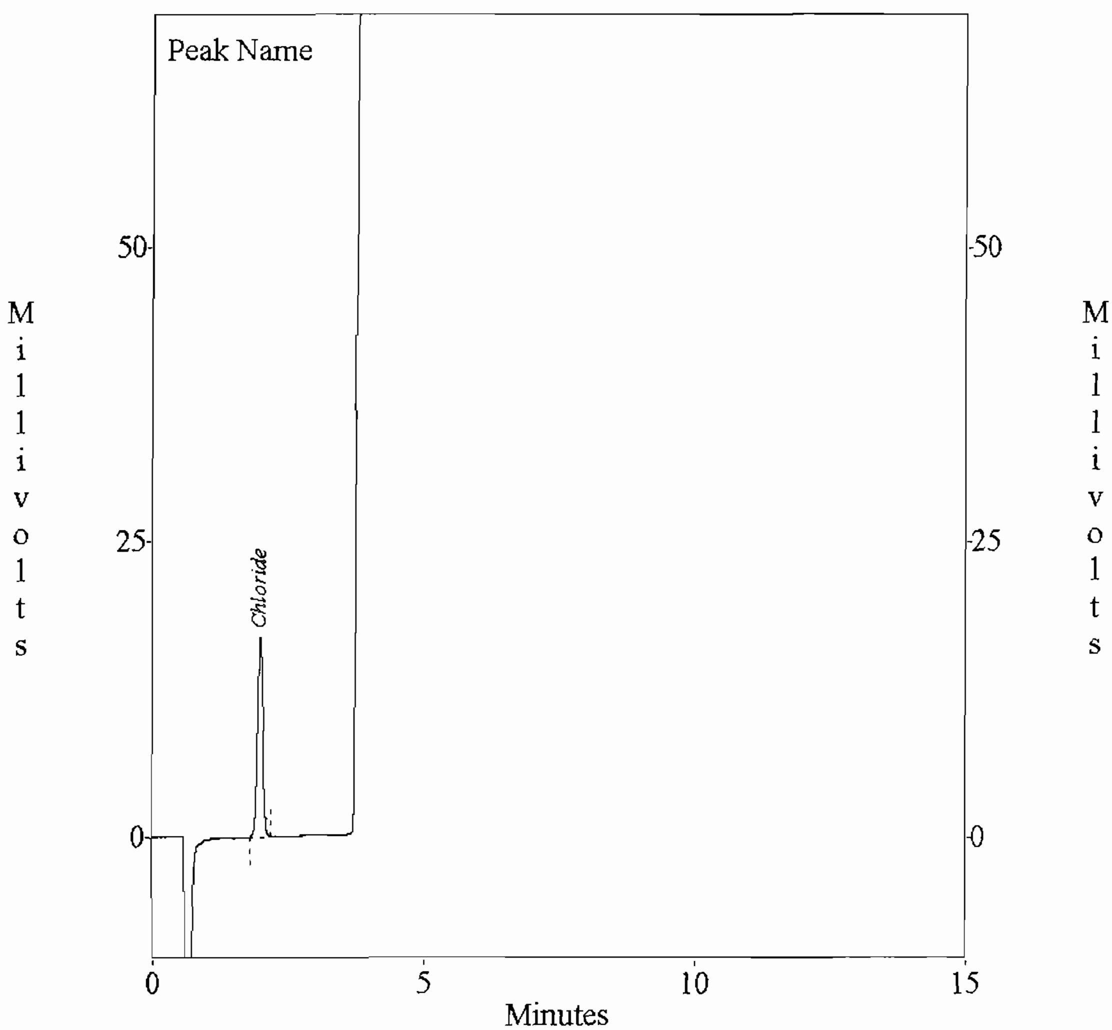


Instrument: Shimadzu CDD-6A Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6 Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm 10 µl Inj Vol Temp 40 C
File : c:\ezchrom\chrom\56122.014
Method : c:\ezchrom\methods\M26-150.met
Sample ID : N FURN M5/26A-1 b
Acquired : Aug 21, 2007 10:11:19

Channel A Results

Peak Name	Ret Time	Area
Chloride	2.00	113667

c:\ezchrom\chrom\56122.014 -- Channel A

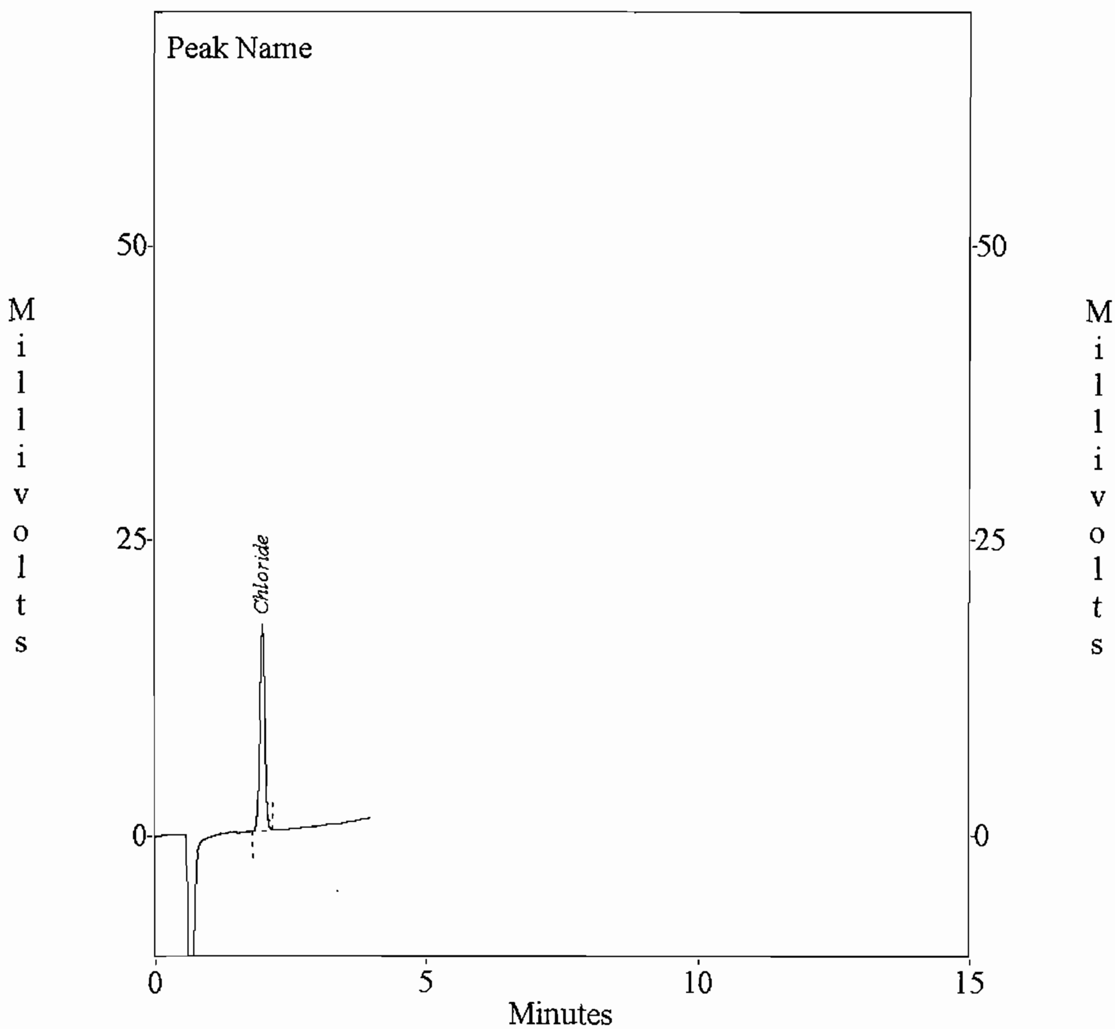


Instrument: Shimadzu CDD-6A Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6 Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm 10 µl Inj Vol Temp 40 C
File : c:\ezchrom\chrom\56122.015
Method : c:\ezchrom\methods\M26-150.met
Sample ID : N FURN M5/26A-2 b
Acquired : Aug 21, 2007 10:23:43

Channel A Results

Peak Name	Ret Time	Area
Chloride	2.01	118426

c:\ezchrom\chrom\56122.015 -- Channel A

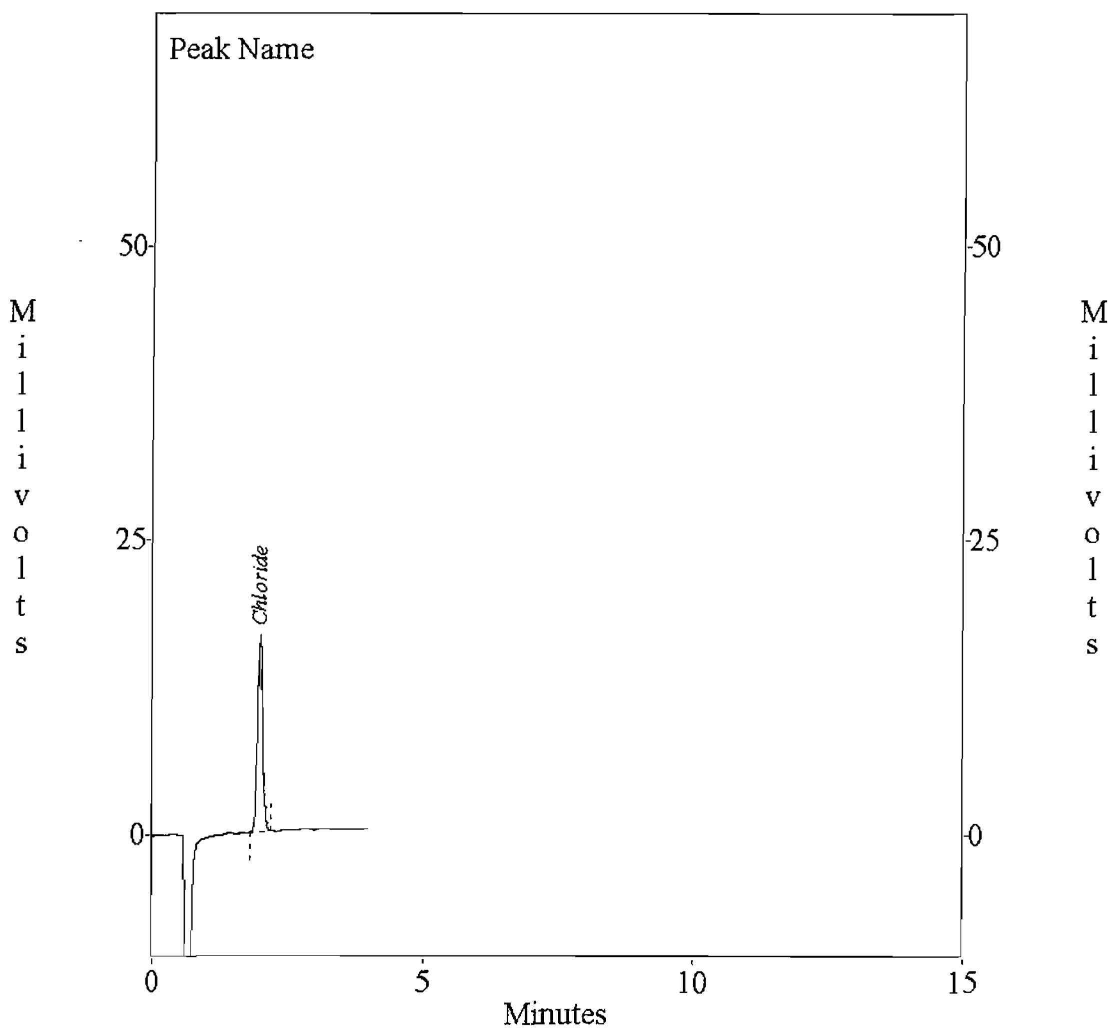


Instrument: Shimadzu CDD-6A Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6 Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm 10 µl Inj Vol Temp 40 C
File : c:\ezchrom\chrom\56122.016
Method : c:\ezchrom\methods\M26-150.met
Sample ID : N FURN M5/26A-3 b
Acquired : Aug 21, 2007 10:56:07

Channel A Results

Peak Name	Ret Time	Area
Chloride	2.01	113350

c:\ezchrom\chrom\56122.016 -- Channel A

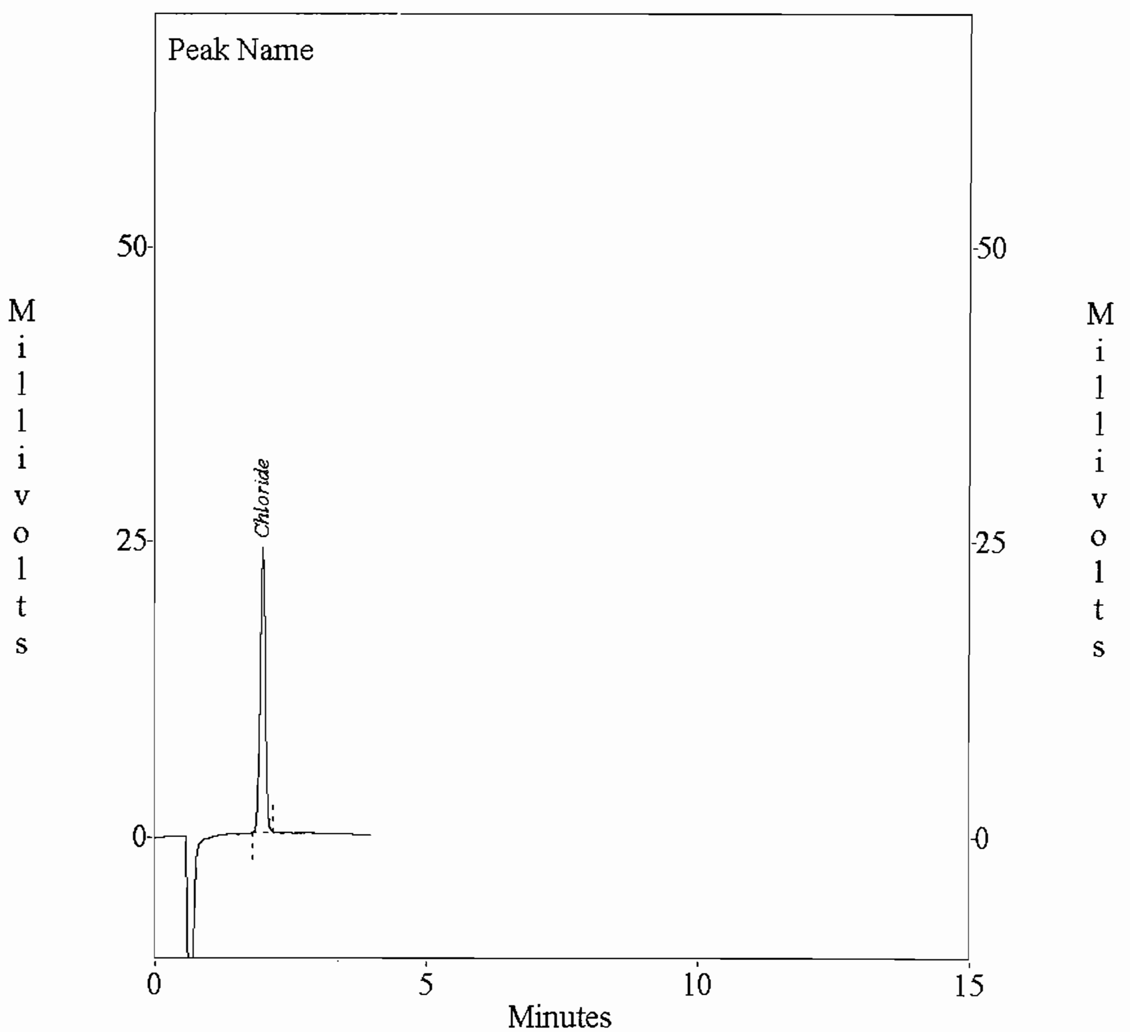


Instrument: Shimadzu CDD-6A Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6 Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm 10 µl Inj Vol Temp 40 C
File : c:\ezchrom\chrom\56122.005
Method : c:\ezchrom\methods\M26-150.met
Sample ID : HCl SPIKE a
Acquired : Aug 21, 2007 11:00:30

Channel A Results

Peak Name	Ret Time	Area
Chloride	2.01	163196

c:\ezchrom\chrom\56122.005 -- Channel A

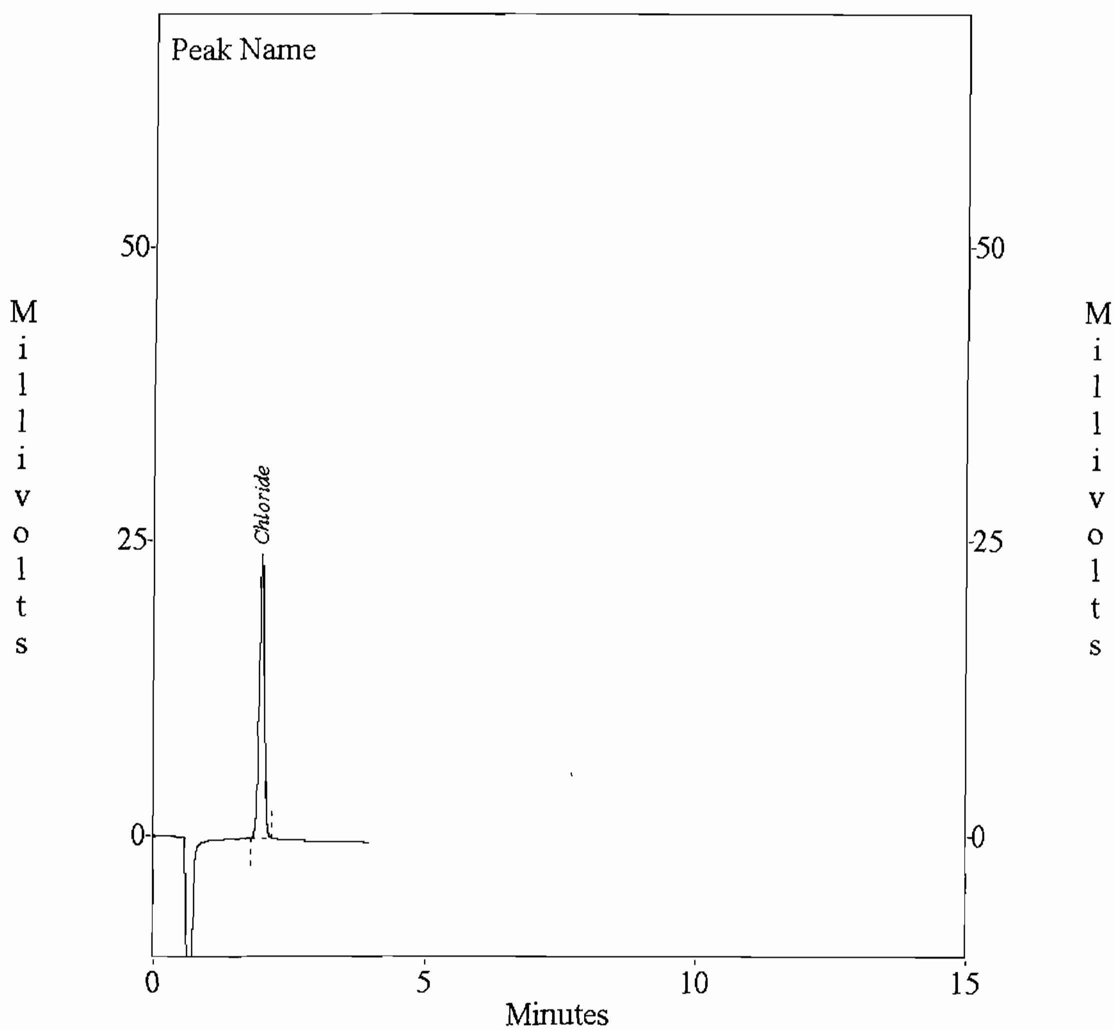


Instrument: Shimadzu CDD-6A Column: Hamilton PRP-X100 150x4.1mm
Eluent: 4mM Phthalic Acid pH 3.6 Flow Rate: 1.75 mls/min
Gain 0.2 µS/cm 10 µl Inj Vol Temp 40 C
File : c:\ezchrom\chrom\56122.017
Method : c:\ezchrom\methods\M26-150.met
Sample ID : HCl SPIKE b
Acquired : Aug 21, 2007 11:12:53

Channel A Results

Peak Name	Ret Time	Area
Chloride	2.01	163460

c:\ezchrom\chrom\56122.017 -- Channel A



APPENDIX B-2

LABORATORY REPORTS

Method 23

Analyses Performed by:

Analytical Perspectives, Inc.
Wilmington, NC

Yves Tondeur, PhD

ANALYTICAL PERSPECTIVES

31 July 2007

Jim Serne
TRC Environmental Corporation
5540 Centerview Drive, Suite 100
Raleigh, NC 27612

Ph.. 919-256-6231
Fax: 919-838-9661 jserne@trcsolutions.com

Subject: Certificate of Results

Dear Jim,

Attached to this narrative are the analytical results you requested on the samples submitted for the determination of polychlorinated dibenzo-*p*-dioxins and dibenzofurans. The insert below summarizes the relevant information pertaining to your project. In particular, the QC annotations bring to your attention specific analytical observations and assessments made during the sample handling and data interpretation phases. A brief description of the report's components is provided on the next page. Results reported relate only to the items tested.

Project Information Summary	When applicable, see QC Annotations for details
Client Project No.	56122
AP Project No.	**P8090**
Analytical Protocol	Method 23
No. Samples Submitted	4 plus 1 M23 audit sample
No. Samples Analyzed	4 (RB archived)
No. Laboratory Method Blanks	1
No. OPRs / Batch CS3	1
No. Outstanding Samples	0
Date Received	16-Jul-2007
Condition Received	good
Temperature upon Receipt (C)	1
Extraction within Holding Time	yes
Analysis within Holding Time	yes
Data meet QA/QC Requirements	yes
Exceptions	none
Analytical Difficulties	none

QC Annotations:

1. The new ratio – [Ra] -- for 2,3,7,8-TCDD following the $^{37}Cl_4$-2,3,7,8-TCDD correction is shown between squared brackets in the DL column.

2. A "J" data qualifier is used for analytes with a concentration below the reporting limit.

Analytical Perspectives remains committed to serving you in the most effective manner. Should you have any questions or need additional information and technical support, please, do not hesitate to contact us. We wanted to thank you for choosing Analytical Perspectives as part of your analytical support team.

Sincerely,

Amy J. Boehm
Project Manager

The electronic version of this report contains 319 pages.
(add one page in count for the NELAC compliance statement) +1

P8090

ANALYTICAL PERSPECTIVES

Part 1 Narrative

17 pages

- ✓Letter
- ✓QC Annotations
- ✓Project Information

ANALYTICAL PERSPECTIVES

Part 2 Path

24 pages

- ✓Overview
- ✓Protocol
- ✓Extraction
- ✓Analysis
- ✓Spike Profile
- ✓SOPs
- ✓QC
- ✓Reporting
- ✓Special Requirements

Extraction Tracking Sheets

Fractionation Tracking Sheets

Injection Tracking Sheets

ANALYTICAL PERSPECTIVES

Part 3 Results

68 pages

- ✓Summary Topsheets
- ✓Raw Data
- ✓SICPs
- ✓Areas
- ✓Retention Times
- ✓S/N
- ✓Ion Abundance Ratios

ANALYTICAL PERSPECTIVES

Part 4 Performance

68 pages

System Checks

- ✓Mass Spectrometry
- ✓Gas Chromatography
- ✓Initial Calibration
- ✓Continuing Calibration
- ✓BCS_3, OPR

Part 4D ICAL

117 pages

Part 4E Audit

18 pages

STATE CERTIFICATION ID #s	
ARIZONA	AZ0696
CALIFORNIA	01166CA
FLORIDA	E87608
LOUISIANA	4024
MICHIGAN	9951
NEW JERSEY	NC005
NEW YORK	11735
NORTH CAROLINA	37783
PENNSYLVANIA	37-1849
SOUTH CAROLINA	99054

Picture File 6 pages

P8090 - TEQ
Project ID: 56122

Sample Summary Part 1 ANALYTICAL PERSPECTIVES **Method 23**

Analyte	0_5075_MB001 pg	North Furnace-Run 1 pg	North Furnace-Run 2 pg	North Furnace-Run 3 pg
2,3,7,8-TCDD	(3.8)	[7.33]	9.17	[3.63]
1,2,3,7,8-PeCDD	(5.95)	[6.27]	(5.31)	9.7
1,2,3,4,7,8-HxCDD	(5.13)	(6.37)	(2.65)	[8.71]
1,2,3,6,7,8-HxCDD	(4.99)	(6.13)	(2.64)	25.7
1,2,3,7,8,9-HxCDD	(5.3)	(6.65)	(2.88)	16.5
1,2,3,4,6,7,8-HpCDD	(10.3)	32	[23.5]	108
OCDD	(10)	45.4	[28.8]	115
2,3,7,8-TCDF	(2.17)	490	107	29.7
1,2,3,7,8-PeCDF	(7.11)	156	33.2	16.9
2,3,4,7,8-PeCDF	(6.72)	704	79.7	44.6
1,2,3,4,7,8-HxCDF	(2.11)	237	26.9	27.3
1,2,3,6,7,8-HxCDF	(1.96)	103	23.4	27
2,3,4,6,7,8-HxCDF	(2.14)	214	34	45.5
1,2,3,7,8,9-HxCDF	(3.02)	33.2	10.7	17.2
1,2,3,4,6,7,8-HpCDF	(3.74)	139	46.7	80
1,2,3,4,7,8,9-HpCDF	(5.33)	24.2	[9.56]	17.8
OCDF	(6.07)	44.3	[21.6]	67.4
ITEF TEQ (ND=0; EMPC=0)	**0**	**470**	**71.3**	**49.1**
ITEF TEQ (ND=0; EMPC=EMPC)	**0**	**480**	**71.7**	**53.6**
ITEF TEQ (ND=DL/2; EMPC=0)	**6.69**	**471**	**73.1**	**49.1**
ITEF TEQ (ND=DL/2; EMPC=EMPC)	**6.69**	**481**	**73.4**	**53.6**
ITEF TEQ (ND=DL; EMPC=EMPC)	**13.4**	**482**	**75.2**	**53.6**
Checkcode	5116	5473	5831	0128

( ) = DL
[ ] = [illegible]C

Reviewer gl
Date 2[illegible]07

P8090 Totals
Project ID: 56122

Sample Summary Part 2	ANALYTICAL PERSPECTIVES			Method 23
Analyte	0_5075_MB001 pg	North Furnace-Run 1 pg	North Furnace-Run 2 pg	North Furnace-Run 3 pg
Totals				
TCDDs	0	128	127	265
PeCDDs	0	143	128	559
HxCDDs	0	105	104	619
HpCDDs	0	65.6	24.9	246
OCDD	0	45.4	0	115
TCDFs	0	3190	1310	698
PeCDFs	0	3400	607	438
HxCDFs	0	1460	229	278
HpCDFs	0	252	76.9	125
OCDF	0	44.3	0	67.4
Total PCDD/Fs (ND=0; EMPC=0)	**0**	**8830**	**2610**	**3410**
Total PCDD/Fs (ND=0; EMPC=EMPC)	**0**	**8870**	**2740**	**3520**
Total PCDD/Fs (2378-X ND=DL; EMPC=EMPC)	**85.8**	**8890**	**2760**	**3520**
Total 2378s (ND=0; EMPC=0)	**0**	**2220**	**371**	**648**
Total 2378s (ND=0.5; EMPC=0)	**42.9**	**2230**	**377**	**648**
Total 2378s (ND=1; EMPC=0)	**85.8**	**2240**	**384**	**648**
Total 2378s (ND=0; EMPC=1)	**0**	**2240**	**454**	**660**
Total 2378s (ND=0.5; EMPC=1)	**42.9**	**2250**	**461**	**660**
Total 2378s (ND=1; EMPC=1)	**85.8**	**2250**	**467**	**660**
Checkcode	5116	5473	5831	0128

Total 2378s = Sum of 17 2378-substituted PCDD/PCDF congeners (SARA 313)

( ) = DL
[ ] = EMPC

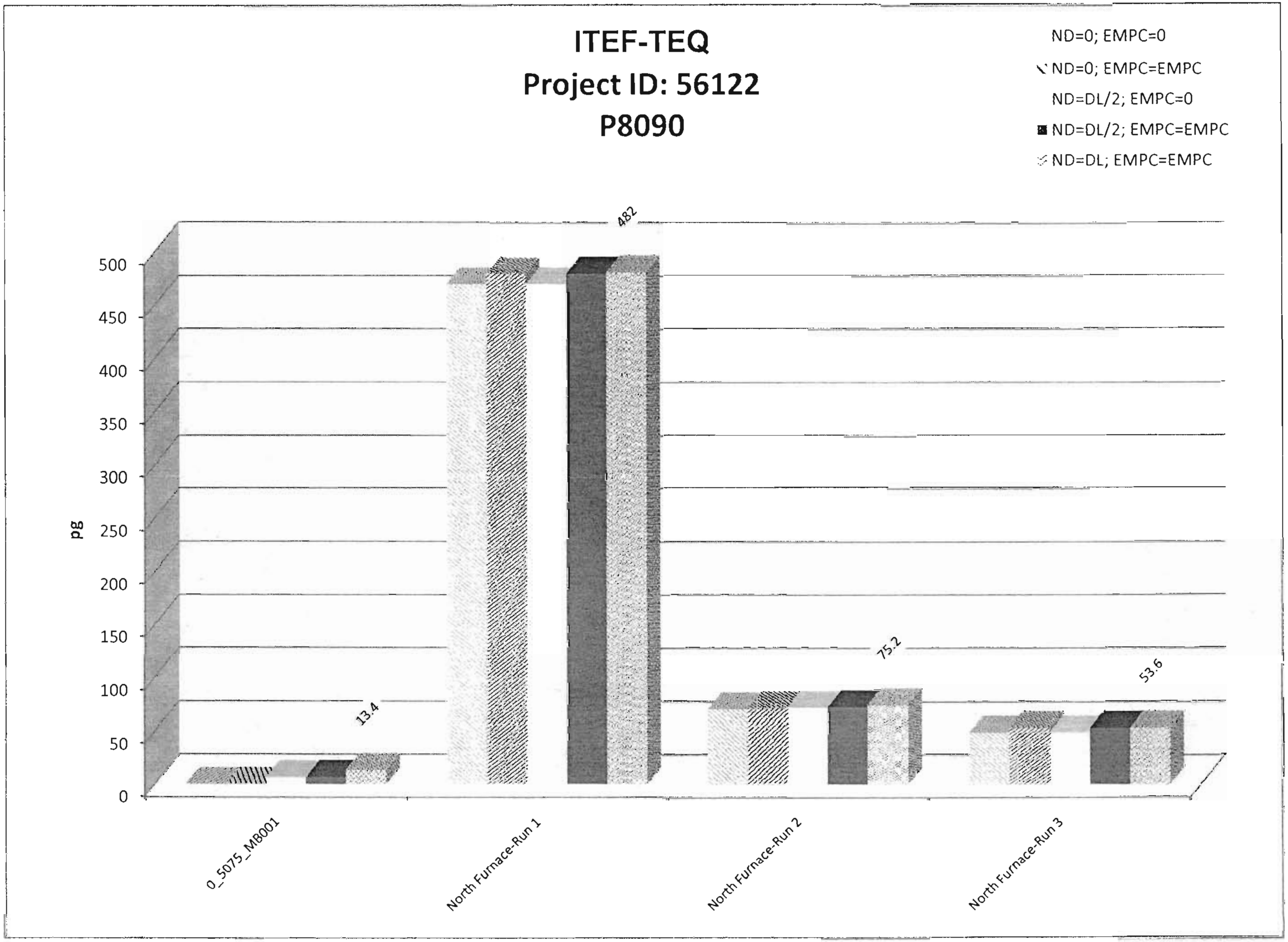
Reviewer ....*ll*....
Date ....*26 Jul 07*....

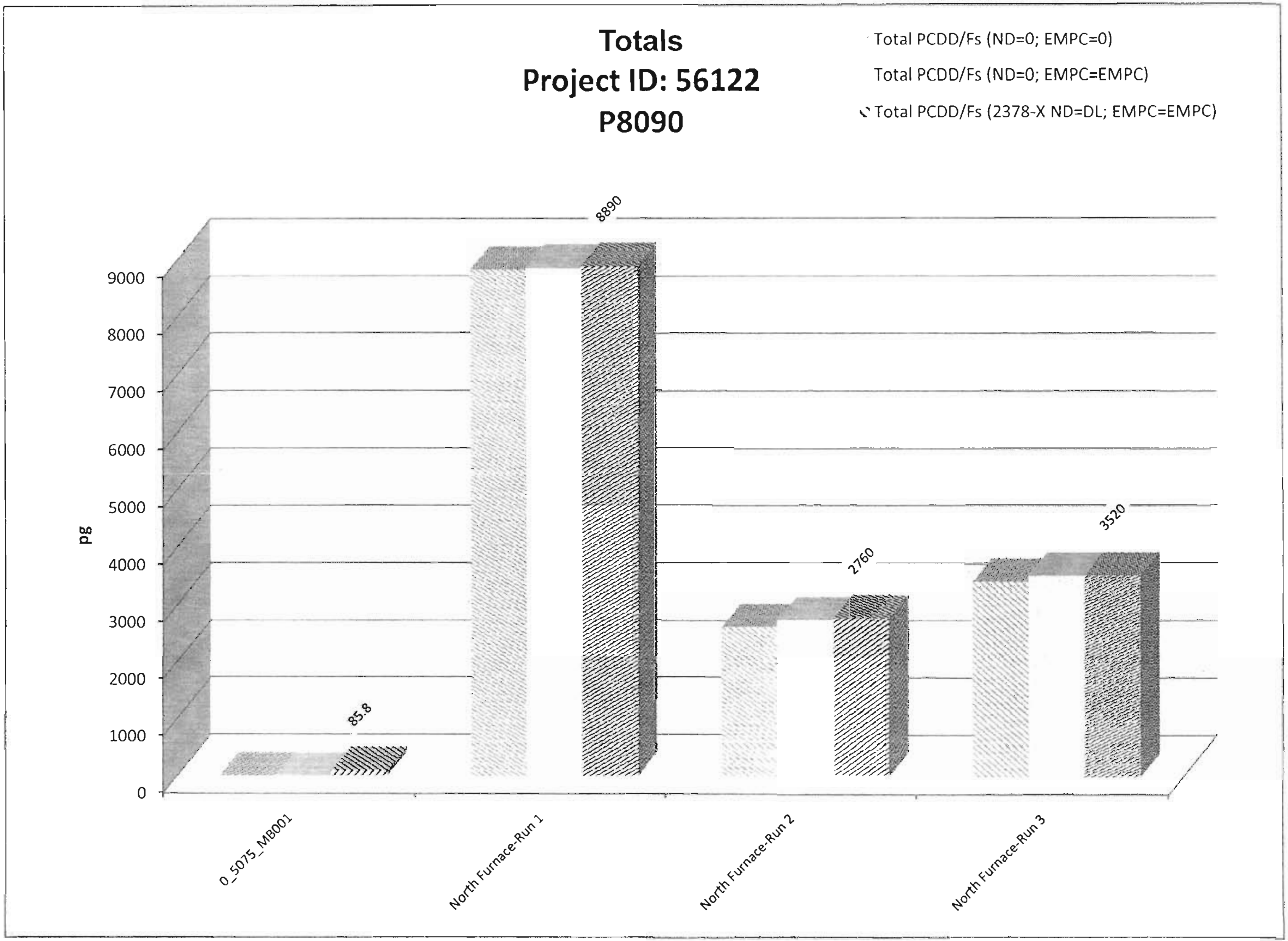
P8090 - Others
Project ID: 56122

Sample Summary Part 3	ANALYTICAL PERSPECTIVES			Method 23
Analyte	0_5075_MB001 pg	North Furnace-Run 1 pg	North Furnace-Run 2 pg	North Furnace-Run 3 pg
Other PCDD/Fs (ND=0, EMPC=0)				
Other TCDD	0	128	118	265
Other PeCDD	0	143	128	549
Other HxCDD	0	105	104	577
Other HpCDD	0	33.6	24.9	138
Other TCDF	0	2700	1210	668
Other PeCDF	0	2540	495	377
Other HxCDF	0	874	134	161
Other HpCDF	0	88.3	30.2	27.5
Other PCDD/Fs (ND=0, EMPC=EMPC)				
Other TCDD	0	151	120	265
Other PeCDD	0	143	128	565
Other HxCDD	0	105	104	577
Other HpCDD	0	33.6	24.9	138
Other TCDF	0	2700	1230	690
Other PeCDF	0	2540	506	384
Other HxCDF	0	874	144	181
Other HpCDF	0	88.3	30.2	56.7
Checkcode	5116	5473	5831	0128

( ) = DL
[ ] = C

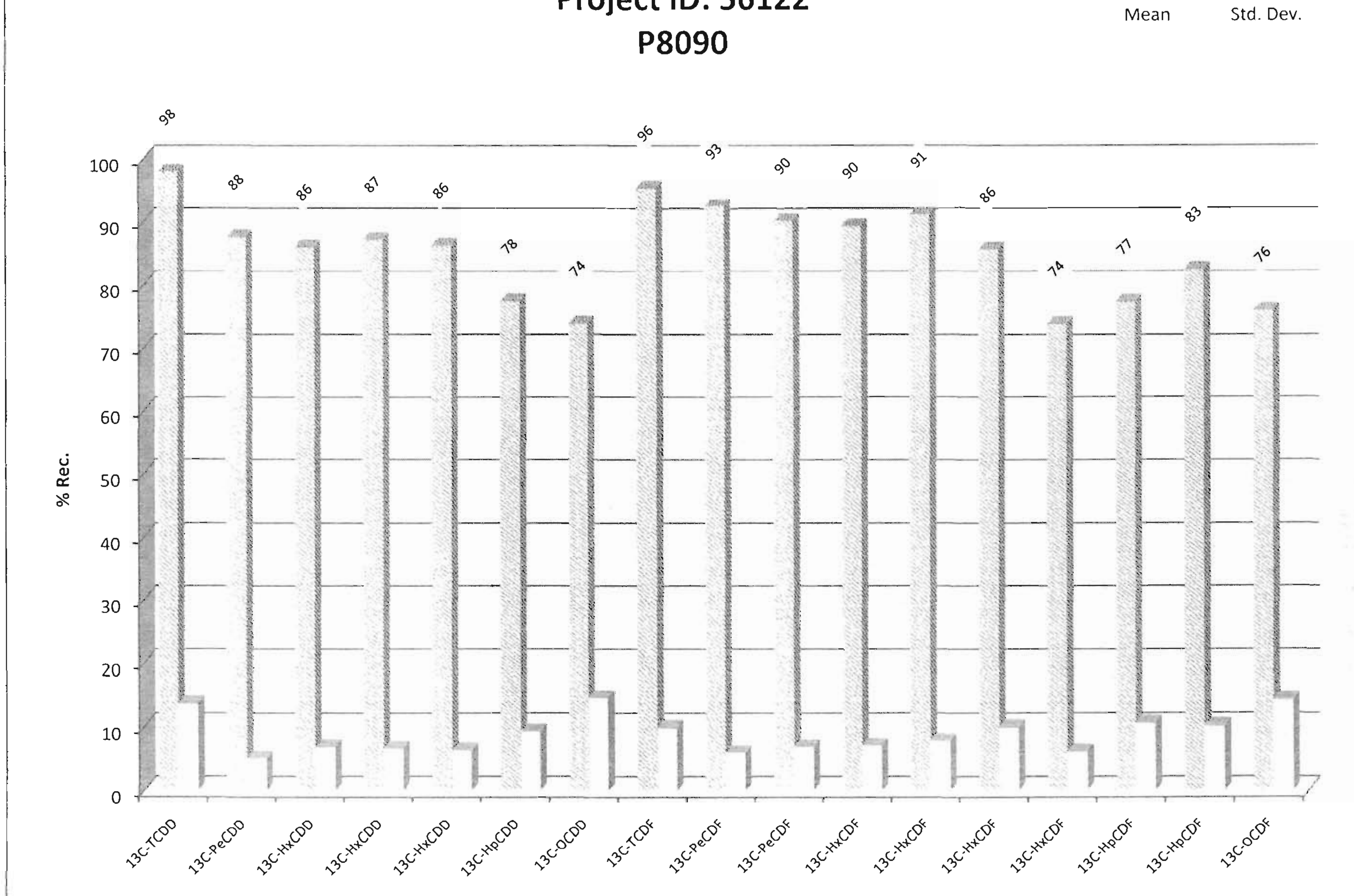
Reviewer ....
Date ....2 07....


ITEF-TEQ
Project ID: 56122
P8090
ND=0; EMPC=0
ND=0; EMPC=EMPC
ND=DL/2; EMPC=0
ND=DL/2; EMPC=EMPC
ND=DL; EMPC=EMPC
pg
500
450
400
350
300
250
200
150
100
50
0
13.4
482
75.2
53.6
0_5075_MB001
North Furnace-Run 1
North Furnace-Run 2
North Furnace-Run 3

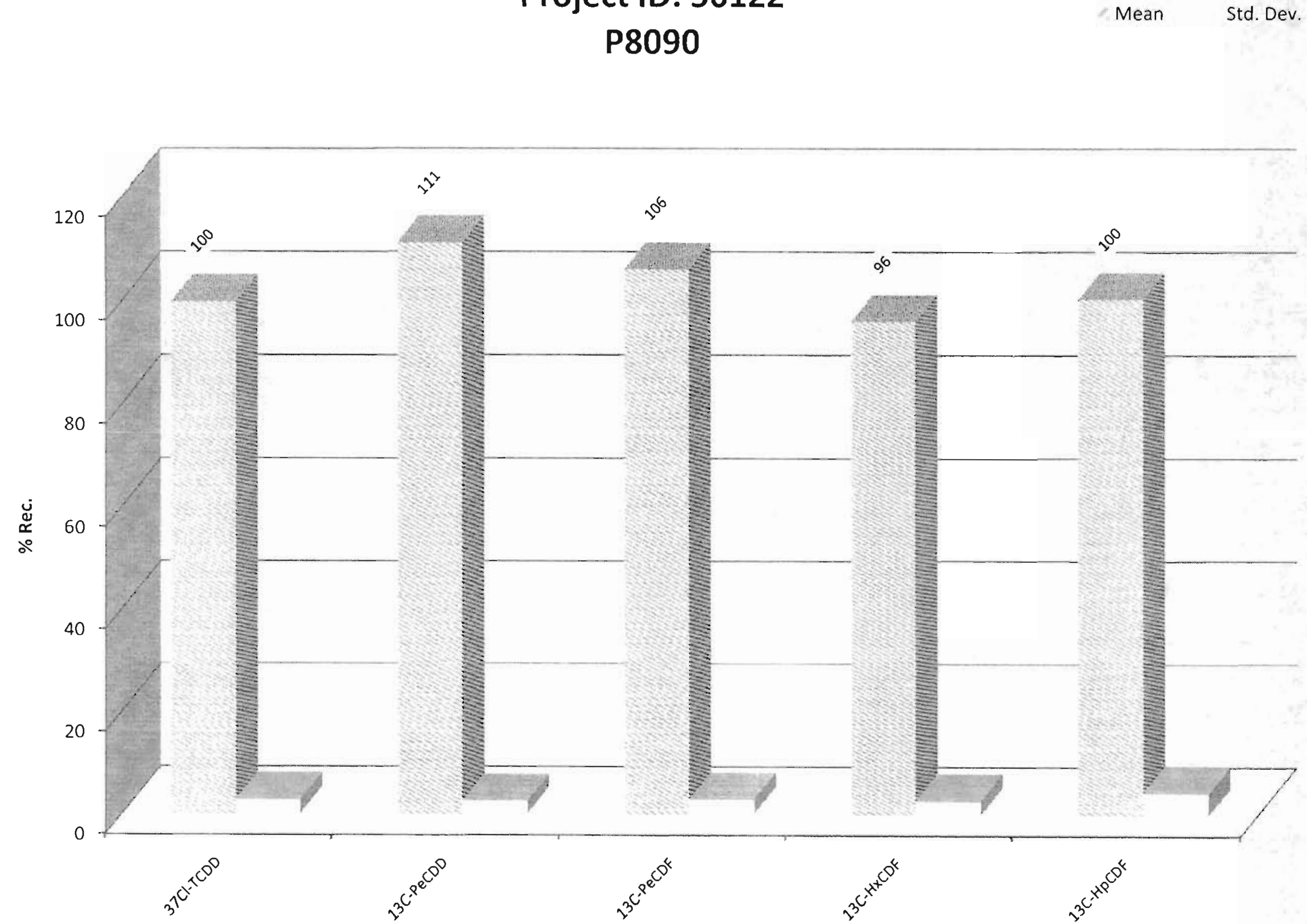


Totals
Project ID: 56122
P8090
Total PCDD/Fs (ND=0; EMPC=0)
Total PCDD/Fs (ND=0; EMPC=EMPC)
Total PCDD/Fs (2378-X ND=DL; EMPC=EMPC)
pg
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
85.8
8890
2760
3520
0_5075_MB001
North Furnace-Run 1
North Furnace-Run 2
North Furnace-Run 3

Mean Recoveries of Extraction Standards (N=4)
Project ID: 56122
P8090



Mean Recoveries of Sampling Standards (N=4)
Project ID: 56122
P8090



Sample ID: 0_5075_MB001 Method 23

Client Data		Sample Data		Laboratory Data			
Name:	TRC Environmental Corporation	Matrix:	Air	Project No.:	P8090	Date Received:	n/a
Project ID:	56122	Weight/Volume:	1	Sample ID:	MB1_5075_DF_SDS	Date Extracted:	19-Jul-07
Date Collected:	n/a			QC Batch No.:	5075	Date Analyzed:	24-Jul-07
		Split:	2	Dilution:	-	Time Analyzed:	18:12:29

Analyte	Conc. (pg)	DL (pg)	EMPC (pg)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	ND	3.8			13C-2,3,7,8-TCDD	78.1	
1,2,3,7,8-PeCDD	ND	5.95			13C-1,2,3,7,8-PeCDD	82	
1,2,3,4,7,8-HxCDD	ND	5.13			13C-1,2,3,4,7,8-HxCDD	84.4	
1,2,3,6,7,8-HxCDD	ND	4.99			13C-1,2,3,6,7,8-HxCDD	86.1	
1,2,3,7,8,9-HxCDD	ND	5.3			13C-1,2,3,7,8,9-HxCDD	86.1	
1,2,3,4,6,7,8-HpCDD	ND	10.3			13C-1,2,3,4,6,7,8-HpCDD	81	
OCDD	ND	10			13C-OCDD	80.6	
2,3,7,8-TCDF	ND	2.17			13C-2,3,7,8-TCDF	81.2	
1,2,3,7,8-PeCDF	ND	7.11			13C-1,2,3,7,8-PeCDF	85.5	
2,3,4,7,8-PeCDF	ND	6.72			13C-2,3,4,7,8-PeCDF	84.8	
1,2,3,4,7,8-HxCDF	ND	2.11			13C-1,2,3,4,7,8-HxCDF	86.7	
1,2,3,6,7,8-HxCDF	ND	1.96			13C-1,2,3,6,7,8-HxCDF	88.5	
2,3,4,6,7,8-HxCDF	ND	2.14			13C-2,3,4,6,7,8-HxCDF	84.6	
1,2,3,7,8,9-HxCDF	ND	3.02			13C-1,2,3,7,8,9-HxCDF	69.4	
1,2,3,4,6,7,8-HpCDF	ND	3.74			13C-1,2,3,4,6,7,8-HpCDF	82.2	
1,2,3,4,7,8,9-HpCDF	ND	5.33			13C-1,2,3,4,7,8,9-HpCDF	82.9	
OCDF	ND	6.07			13C-OCDF	82.5	
Totals						**SS Recoveries**	
TCDDs	ND	3.8			37Cl-2,3,7,8-TCDD	101	
PeCDDs	ND	5.95			13C-1,2,3,4,7-PeCDD	108	
HxCDDs	ND	5.13			13C-1,2,3,4,6-PeCDF	102	
HpCDDs	ND	10.3			13C-1,2,3,4,6,9-HxCDF	98.7	
					13C-1,2,3,4,6,8,9-HpCDF	95.5	
TCDFs	ND	2.17					
PeCDFs	ND	6.91				**AS Recoveries**	
HxCDFs	ND	2.26			13C-1,3,6,8-TCDD	79.3	
HpCDFs	ND	4.45			13C-1,3,6,8-TCDF	76.2	
Total PCDD/Fs	0		0				
ITEF TEQs							
TEQ: ND=0	0		0				
TEQ: ND=DL/2	6.69		6.69				
TEQ: ND=DL	13.4		13.4				

ANALYTICAL PERSPECTIVES
2714 Exchange Drive
Wilmington, NC 28405
USA
Tel: +1 910 794-1613; Toll-Free 866 846-8290
Fax: +1 910 794-3919
info@ultratrace.com
www.ultratrace.com

Checkcode: 5116

AP 2006 Rev. 01

Reviewer ...[signature]...
Date ..26 Jul 07...

Sample ID: North Furnace-Run 1 — Method 23

Client Data		Sample Data		Laboratory Data			
Name:	TRC Environmental Corporation	Matrix:	Air	Project No.:	P8090	Date Received:	16-Jul-07
Project ID:	56122	Weight/Volume:	1	Sample ID:	P8090_5075_001	Date Extracted:	19-Jul-07
Date Collected:	10-Jul-07			QC Batch No.:	5075	Date Analyzed:	24-Jul-07
		Split:	2	Dilution:	-	Time Analyzed:	19:02:18

Analyte	Conc. (pg)	DL (pg)	EMPC (pg)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	EMPC	[Ra=0.936]	7.33	J	13C-2,3,7,8-TCDD	100	
1,2,3,7,8-PeCDD	EMPC		6.27	J	13C-1,2,3,7,8-PeCDD	93.3	
1,2,3,4,7,8-HxCDD	ND	6.37			13C-1,2,3,4,7,8-HxCDD	94.6	
1,2,3,6,7,8-HxCDD	ND	6.13			13C-1,2,3,6,7,8-HxCDD	96.5	
1,2,3,7,8,9-HxCDD	ND	6.65			13C-1,2,3,7,8,9-HxCDD	94.5	
1,2,3,4,6,7,8-HpCDD	32			J	13C-1,2,3,4,6,7,8-HpCDD	87.9	
OCDD	45.4			J	13C-OCDD	90.4	
2,3,7,8-TCDF	490				13C-2,3,7,8-TCDF	104	
1,2,3,7,8-PeCDF	156				13C-1,2,3,7,8-PeCDF	100	
2,3,4,7,8-PeCDF	704				13C-2,3,4,7,8-PeCDF	99.5	
1,2,3,4,7,8-HxCDF	237				13C-1,2,3,4,7,8-HxCDF	99.3	
1,2,3,6,7,8-HxCDF	103				13C-1,2,3,6,7,8-HxCDF	102	
2,3,4,6,7,8-HxCDF	214				13C-2,3,4,6,7,8-HxCDF	99.5	
1,2,3,7,8,9-HxCDF	33.2			J	13C-1,2,3,7,8,9-HxCDF	79.4	
1,2,3,4,6,7,8-HpCDF	139				13C-1,2,3,4,6,7,8-HpCDF	89.2	
1,2,3,4,7,8,9-HpCDF	24.2			J	13C-1,2,3,4,7,8,9-HpCDF	96.2	
OCDF	44.3			J	13C-OCDF	92.3	
Totals						**SS Recoveries**	
TCDDs	128		158		37Cl-2,3,7,8-TCDD	98.2	
PeCDDs	143		150		13C-1,2,3,4,7-PeCDD	114	
HxCDDs	105				13C-1,2,3,4,6-PeCDF	106	
HpCDDs	65.6				13C-1,2,3,4,6,9-HxCDF	97.6	
					13C-1,2,3,4,6,8,9-HpCDF	99.2	
TCDFs	3,190						
PeCDFs	3,400		3,400			**AS Recoveries**	
HxCDFs	1,460				13C-1,3,6,8-TCDD	102	
HpCDFs	252				13C-1,3,6,8-TCDF	102	
Total PCDD/Fs	**8,830**		**8,870**				
ITEF TEQs							
TEQ: ND=0	470		480				
TEQ: ND=DL/2	471		481				
TEQ: ND=DL	472		482				

ANALYTICAL PERSPECTIVES
2714 Exchange Drive
Wilmington, NC 28405
USA
Tel: +1 910 794-1613; Toll-Free 866 846-8290
Fax: +1 910 794-3919
info@ultratrace.com
www.ultratrace.com

Checkcode: 5473

AP 2006 Rev. G

Reviewer ....

Date ..2 07.....

Sample ID: North Furnace-Run 2 — Method 23

Client Data		Sample Data		Laboratory Data			
Name:	TRC Environmental Corporation	Matrix:	Air	Project No.:	P8090	Date Received:	16-Jul-07
Project ID:	56122	Weight/Volume:	1	Sample ID:	P8090_5075_002	Date Extracted:	19-Jul-07
Date Collected:	11-Jul-07			QC Batch No.:	5075	Date Analyzed:	24-Jul-07
		Split:	2	Dilution:	-	Time Analyzed:	19:52:12

Analyte	Conc. (pg)	DL (pg)	EMPC (pg)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	9.17	[Ra=0.754]		J	13C-2,3,7,8-TCDD	107	
1,2,3,7,8-PeCDD	ND	5.31			13C-1,2,3,7,8-PeCDD	84.8	
1,2,3,4,7,8-HxCDD	ND	2.65			13C-1,2,3,4,7,8-HxCDD	78	
1,2,3,6,7,8-HxCDD	ND	2.64			13C-1,2,3,6,7,8-HxCDD	80.5	
1,2,3,7,8,9-HxCDD	ND	2.88			13C-1,2,3,7,8,9-HxCDD	78.8	
1,2,3,4,6,7,8-HpCDD	EMPC		23.5	J	13C-1,2,3,4,6,7,8-HpCDD	65.7	
OCDD	EMPC		28.8	J	13C-OCDD	57	
2,3,7,8-TCDF	107				13C-2,3,7,8-TCDF	97.3	
1,2,3,7,8-PeCDF	33.2			J	13C-1,2,3,7,8-PeCDF	91	
2,3,4,7,8-PeCDF	79.7				13C-2,3,4,7,8-PeCDF	85.2	
1,2,3,4,7,8-HxCDF	26.9			J	13C-1,2,3,4,7,8-HxCDF	82.5	
1,2,3,6,7,8-HxCDF	23.4			J	13C-1,2,3,6,7,8-HxCDF	83.3	
2,3,4,6,7,8-HxCDF	34			J	13C-2,3,4,6,7,8-HxCDF	75.6	
1,2,3,7,8,9-HxCDF	10.7			J	13C-1,2,3,7,8,9-HxCDF	67.7	
1,2,3,4,6,7,8-HpCDF	46.7			J	13C-1,2,3,4,6,7,8-HpCDF	64.3	
1,2,3,4,7,8,9-HpCDF	EMPC		9.56	J	13C-1,2,3,4,7,8,9-HpCDF	71.7	
OCDF	EMPC		21.6	J	13C-OCDF	59.6	
Totals						**SS Recoveries**	
TCDDs	127		129		37Cl-2,3,7,8-TCDD	103	
PeCDDs	128				13C-1,2,3,4,7-PeCDD	112	
HxCDDs	104				13C-1,2,3,4,6-PeCDF	109	
HpCDDs	24.9		48.3		13C-1,2,3,4,6,9-HxCDF	94.4	
					13C-1,2,3,4,6,8,9-HpCDF	106	
TCDFs	1,310		1,340				
PeCDFs	607		619			**AS Recoveries**	
HxCDFs	229		239		13C-1,3,6,8-TCDD	98.4	
HpCDFs	76.9		86.5		13C-1,3,6,8-TCDF	101	
Total PCDD/Fs	**2,610**		**2,740**				
ITEF TEQs							
TEQ: ND=0	71.3		71.7				
TEQ: ND=DL/2	73.1		73.4				
TEQ: ND=DL	74.8		75.2				

ANALYTICAL PERSPECTIVES
2714 Exchange Drive
Wilmington, NC 28405
USA
Tel: +1 910 794-1613; Toll-Free 866 846-8290
Fax: +1 910 794-3919
info@ultratrace.com
www.ultratrace.com

Checkcode: 5831

AP 2006 Rev. G

Reviewer ....[signature]........
Date ....26 Jul 07....

Sample ID: North Furnace-Run 3 — Method 23

Client Data		Sample Data		Laboratory Data			
Name:	TRC Environmental Corporation	Matrix:	Air	Project No.:	P8090	Date Received:	16-Jul-07
Project ID:	56122	Weight/Volume:	1	Sample ID:	P8090_5075_003	Date Extracted:	19-Jul-07
Date Collected:	12-Jul-07			QC Batch No.:	5075	Date Analyzed:	24-Jul-07
		Split:	2	Dilution:	-	Time Analyzed:	20:42:05

Analyte	Conc. (pg)	DL (pg)	EMPC (pg)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	EMPC	[Ra=0.973]	3.63	J	13C-2,3,7,8-TCDD	107	
1,2,3,7,8-PeCDD	9.7			J	13C-1,2,3,7,8-PeCDD	90.4	
1,2,3,4,7,8-HxCDD	EMPC		8.71	J	13C-1,2,3,4,7,8-HxCDD	87.4	
1,2,3,6,7,8-HxCDD	25.7			J	13C-1,2,3,6,7,8-HxCDD	86	
1,2,3,7,8,9-HxCDD	16.5			J	13C-1,2,3,7,8,9-HxCDD	86.1	
1,2,3,4,6,7,8-HpCDD	108				13C-1,2,3,4,6,7,8-HpCDD	75.4	
OCDD	115				13C-OCDD	67.8	
2,3,7,8-TCDF	29.7				13C-2,3,7,8-TCDF	99.5	
1,2,3,7,8-PeCDF	16.9			J	13C-1,2,3,7,8-PeCDF	94.1	
2,3,4,7,8-PeCDF	44.6			J	13C-2,3,4,7,8-PeCDF	91.7	
1,2,3,4,7,8-HxCDF	27.3			J	13C-1,2,3,4,7,8-HxCDF	89.7	
1,2,3,6,7,8-HxCDF	27			J	13C-1,2,3,6,7,8-HxCDF	91.4	
2,3,4,6,7,8-HxCDF	45.5			J	13C-2,3,4,6,7,8-HxCDF	83	
1,2,3,7,8,9-HxCDF	17.2			J	13C-1,2,3,7,8,9-HxCDF	79.1	
1,2,3,4,6,7,8-HpCDF	80				13C-1,2,3,4,6,7,8-HpCDF	73.9	
1,2,3,4,7,8,9-HpCDF	17.8			J	13C-1,2,3,4,7,8,9-HpCDF	79.3	
OCDF	67.4			J	13C-OCDF	69.8	
Totals						**SS Recoveries**	
TCDDs	265		269		37Cl-2,3,7,8-TCDD	96.6	
PeCDDs	559		574		13C-1,2,3,4,7-PeCDD	110	
HxCDDs	619		628		13C-1,2,3,4,6-PeCDF	107	
HpCDDs	246				13C-1,2,3,4,6,9-HxCDF	92.8	
					13C-1,2,3,4,6,8,9-HpCDF	100	
TCDFs	698		720				
PeCDFs	438		445			**AS Recoveries**	
HxCDFs	278		298		13C-1,3,6,8-TCDD	101	
HpCDFs	125		155		13C-1,3,6,8-TCDF	98.2	
Total PCDD/Fs	**3,410**		**3,520**				
ITEF TEQs							
TEQ: ND=0	49.1		53.6				
TEQ: ND=DL/2	49.1		53.6				
TEQ: ND=DL	49.1		53.6				

ANALYTICAL PERSPECTIVES
2714 Exchange Drive
Wilmington, NC 28405
USA
Tel: +1 910 794-1613; Toll-Free 866 846-8290
Fax: +1 910 794-3919
info@ultratrace.com
www.ultratrace.com

Checkcode: 0128

AP 2006 Rev. G

Reviewer ....

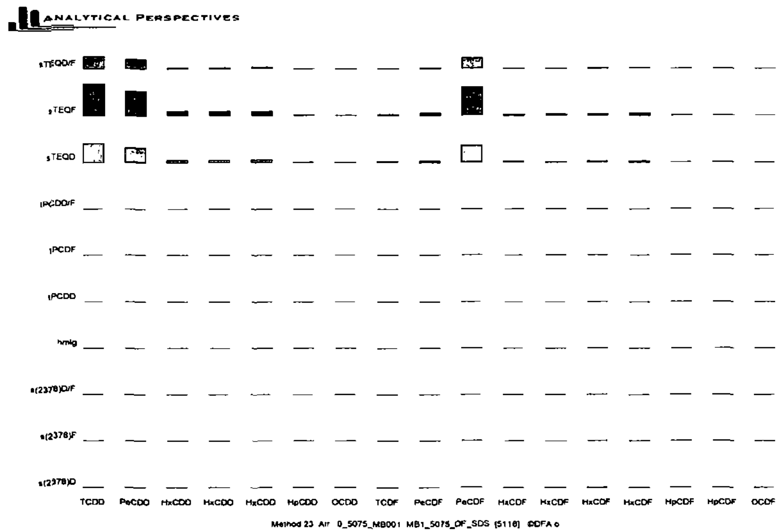
Date 2[illegible]07

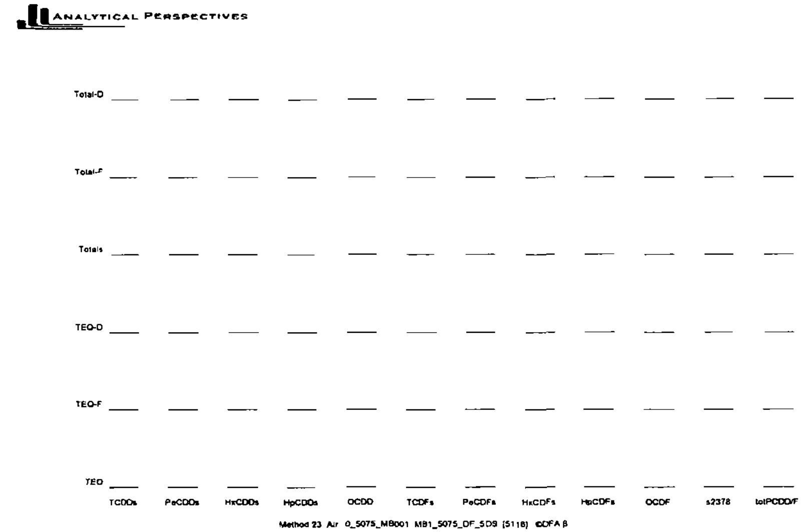
USEPA Stationary Compliance Audit Program
Dioxin/Furan Audit Form

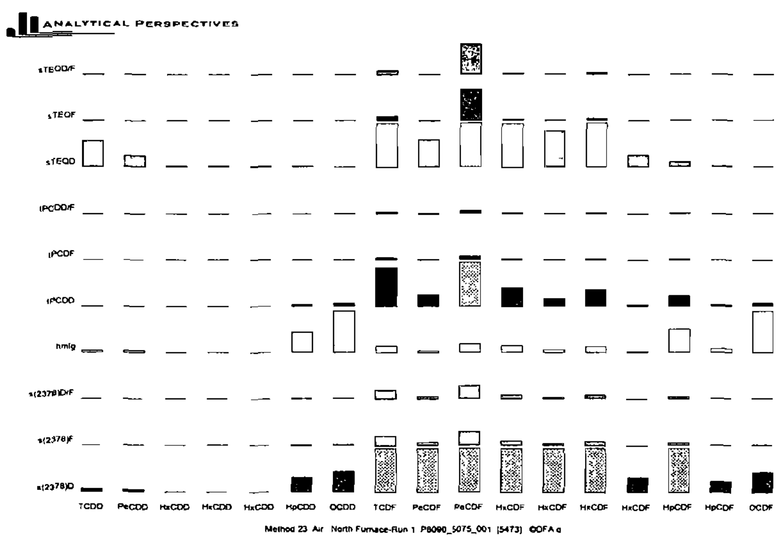
Auditor:	
Agency:	
Agency Address:	
Agency Phone #:	
Date Analyzed:	24 Jul 2007
Auditee Company:	Analytical Perspectives (Ph. 910 794-1613)
Auditee Address:	2714 Exchange Drive, Wilmington, NC 28405
Date Audit Sam Rec'd:	16 Jul 2007
Audit Sample #:	M23-3344-01-Audit P8090_5075_005
Confirmation Analysis Used:	Yes ___ No X
Auditee's Name:	Dr. Yves Tondeur
Signature:	Amy J. Boehm

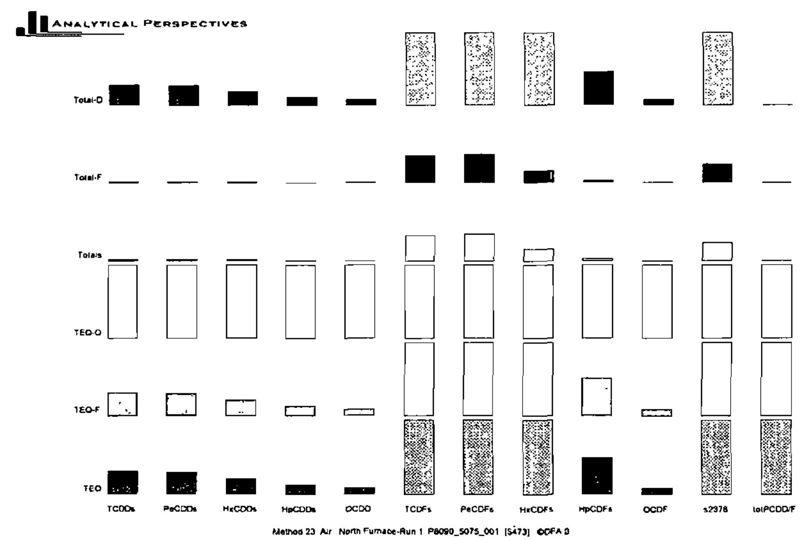
Compound	Auditee Result (ng/sample)	Compound	Auditee Result (ng/sample)
2378-TCDD	0.572	2378-TCDF	0.532
Other TCDD	0.763	Other TCDF	0.563
12378-PeCDD	0.600	12378-PeCDF	0.393
Other PeCDD	0.902	23478-PeCDF	0.390
123478-HxCDD	0.605	Other PeCDF	0.668
123678-HxCDD	0.579	123478-HxCDF	0.505
123789-HxCDD	0.615	123678-HxCDF	0.497
Other HxCDD	0.705	123789-HxCDF	0.845
1234678-HpCDD	0.569	234678-HxCDF	0.474
Other HpCDD	0.320	Other-HxCDF	0.458
OCDD	1.425	1234678-HpCDF	0.569
		1234789-HpCDF	0.294
		Other HpCDF	0.275
		OCDF	1.449

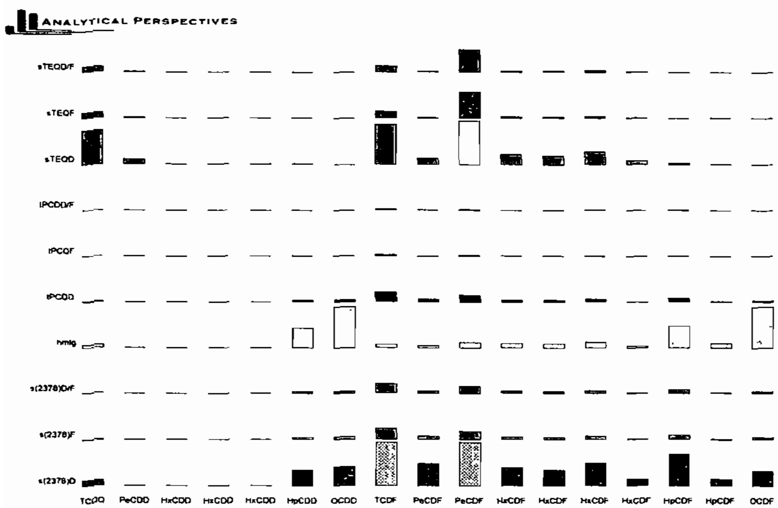
* 1,2,3,7,8,9-HxCDF co-elutes with and is inseparable from the the last eluting HxCDF isomer. The reported value is a combined result of the two isomers.


ANALYTICAL PERSPECTIVES
sTEQD/F
sTEQF
sTEQD
tPCDD/F
tPCDF
tPCDD
hmlg
s(2378)D/F
s(2378)F
s(2378)D
TCDD PeCDD HxCDD HxCDD HxCDD HpCDD OCDD TCDF PeCDF PeCDF HxCDF HxCDF HxCDF HxCDF HpCDF HpCDF OCDF
Method 23 Air 0_5075_MB001 MB1_5075_DF_SDS [5116] ©DFA α

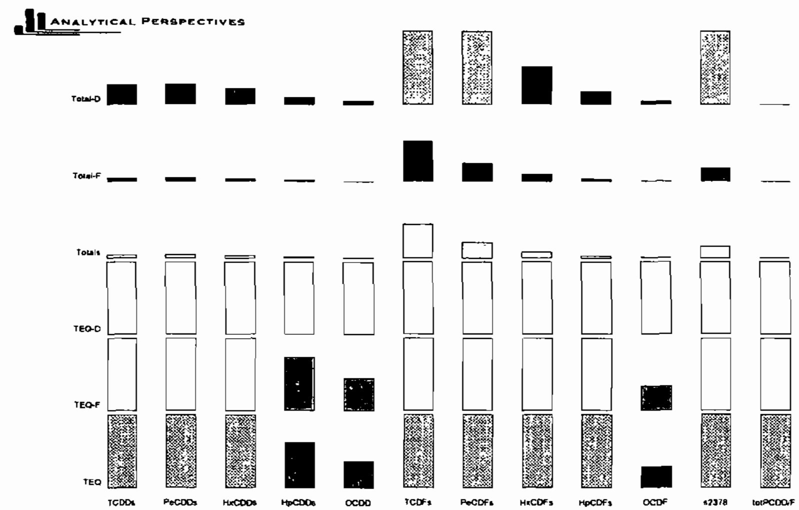

ANALYTICAL PERSPECTIVES
Total-D
Total-F
Totals
TEQ-D
TEQ-F
TEQ
TCDDs PeCDDs HxCDDs HpCDDs OCDD TCDFs PeCDFs HxCDFs HpCDFs OCDF s2378 totPCDD/F
Method 23 Air 0_5075_MB001 MB1_5075_DF_SDS [5116] ©DFA β


ANALYTICAL PERSPECTIVES
sTEQD/F
sTEQF
sTEQD
tPCDD/F
tPCDF
tPCDD
hmlg
s(2378)D/F
s(2378)F
s(2378)D
TCDD PeCDD HxCDD HxCDD HxCDD HpCDD OCDD TCDF PeCDF PeCDF HxCDF HxCDF HxCDF HxCDF HpCDF HpCDF OCDF
Method 23 Air North Furnace-Run 1 P8090_5075_001 [5473] ©DFA α

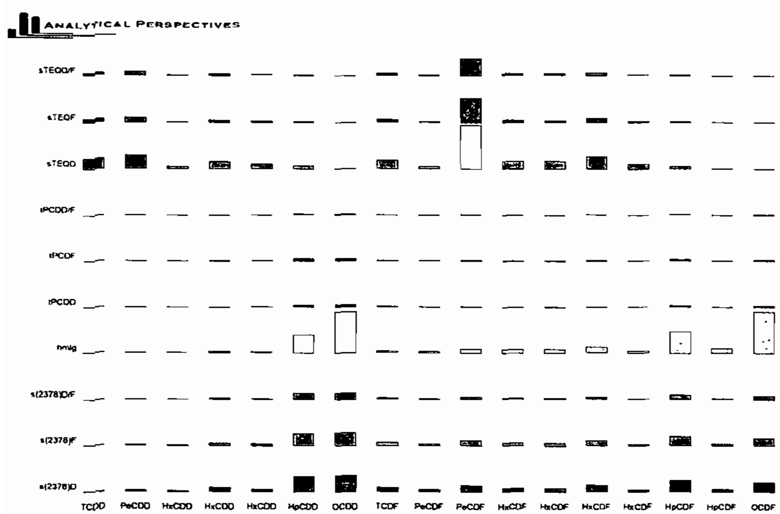

ANALYTICAL PERSPECTIVES
Total-D
Total-F
Totals
TEQ-D
TEQ-F
TEQ
TCDDs PeCDDs HxCDDs HpCDDs OCDD TCDFs PeCDFs HxCDFs HpCDFs OCDF s2378 totPCDD/F
Method 23 Air North Furnace-Run 1 P8090_5075_001 [5473] ©DFA β



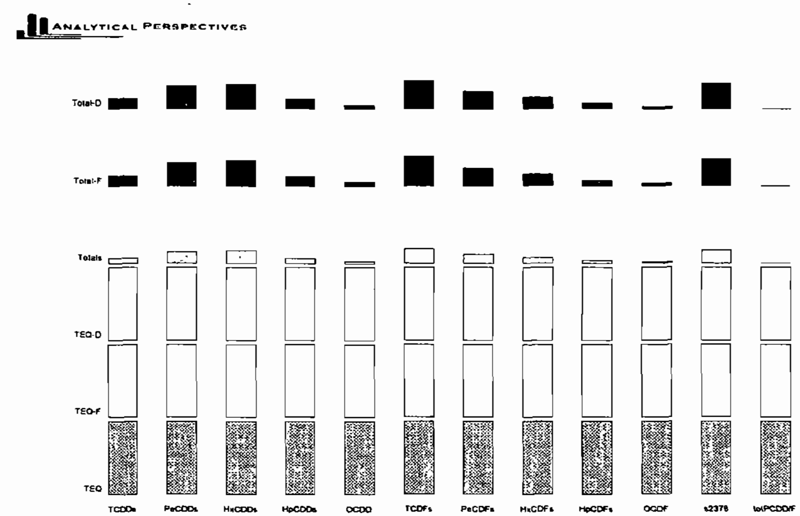
Method 23 Air North Furnace-Run 2 P8090_5075_002 [5831] ODFA α



Method 23 Air North Furnace-Run 2 P8090_5075_002 [5831] ODFA β



Method 23 Air North Furnace-Run 3 P8090_5075_003 [0128] ODFA α



Method 23 Air North Furnace-Run 3 P8090_5075_003 [0128] ODFA β

P8090

ANALYTICAL PERSPECTIVES

PART 2

SAMPLE PATH

DOCUMENTATION FOR THE ANALYSIS
OF
POLYCHLORINATED DIBENZO-*P*-DIOXINS & DIBENZOFURANS

Version B

ANALYTICAL PERSPECTIVES

SAMPLE PATH

AP PROJECT NO.: P8090
PROTOCOL: 23

SAMPLE PROCESSING

Extraction
- ☑ SDS
- ☑ Extraction Standards ($^{13}C_{12}$ - PCDD / F) "ES"

Fractionation Split 1:1
- ☑ Alternate Standard ($^{13}C_{12}$-TCDD/F "AS")
- ☑ Multi-Column Cleanup (ASECS)
- ☑ Final Extract

Analysis
- ☑ Injection Standards "JS"
- ☑ HRGC / HRMS
- ☑ 12-H Performance Checks

Interpretation
- ☑ ID Criteria
- ☑ Detection Limits
- ☑ Recoveries

SPIKE PROFILE

A_x: ~~A + B~~	400 PG (40 µL; 0.01 NG/ µL) FOR BCS_3 ONLY (PREPARED WITH TRAPS)
ES:	4 NG (40 µL; 0.1 NG/ µL)
SS:	4 NG (40 µL; 0.1 NG/ µL; 0.04 NG/ µL OR 1.6 NG FOR TCDD)
AS:	4 NG (40 µL; 0.1 NG/ µL)
JS:	2 NG (20 µL; 0.1 NG/ µL)

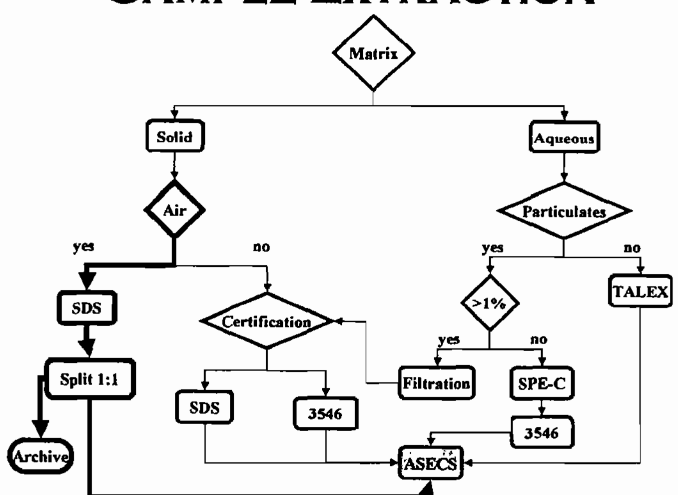
SOPs

EXTRACTION:	AP-SP-E
FRACTIONATION:	AP-SP-CU
ANALYSIS:	AP-SP-A
CONCENTRATION:	AP-SP-N
FORTIFICATION:	AP-SP-F
DATA VALIDATION:	AP-SP-R

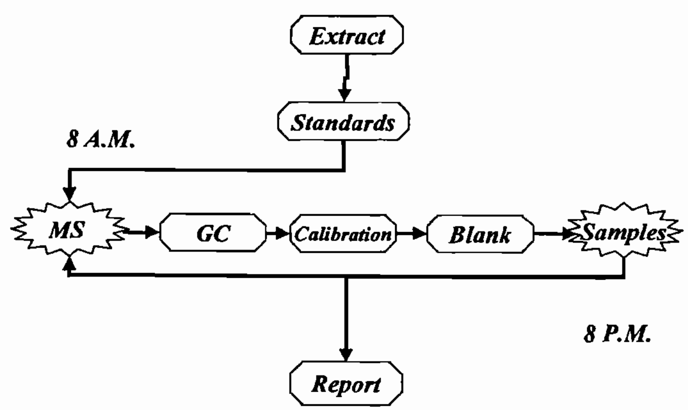
QC PROFILE

LMB:	ALWAYS REQUIRED
BCS_3:	ALWAYS REQUIRED

SAMPLE EXTRACTION



SAMPLE ANALYSIS



SPECIAL REQUIREMENTS

TRI-OCTA: YES NO

SUPPLIES IDs

SAND	—
TOLUENE	076027
ACID SILICA	07172007
BASE SILICA	07102007
SILICA	07072007
FLORISIL	07132007
HEXANE	CT 682
CH_2CL_2	CT 204
TETRADECANE	D2831AE

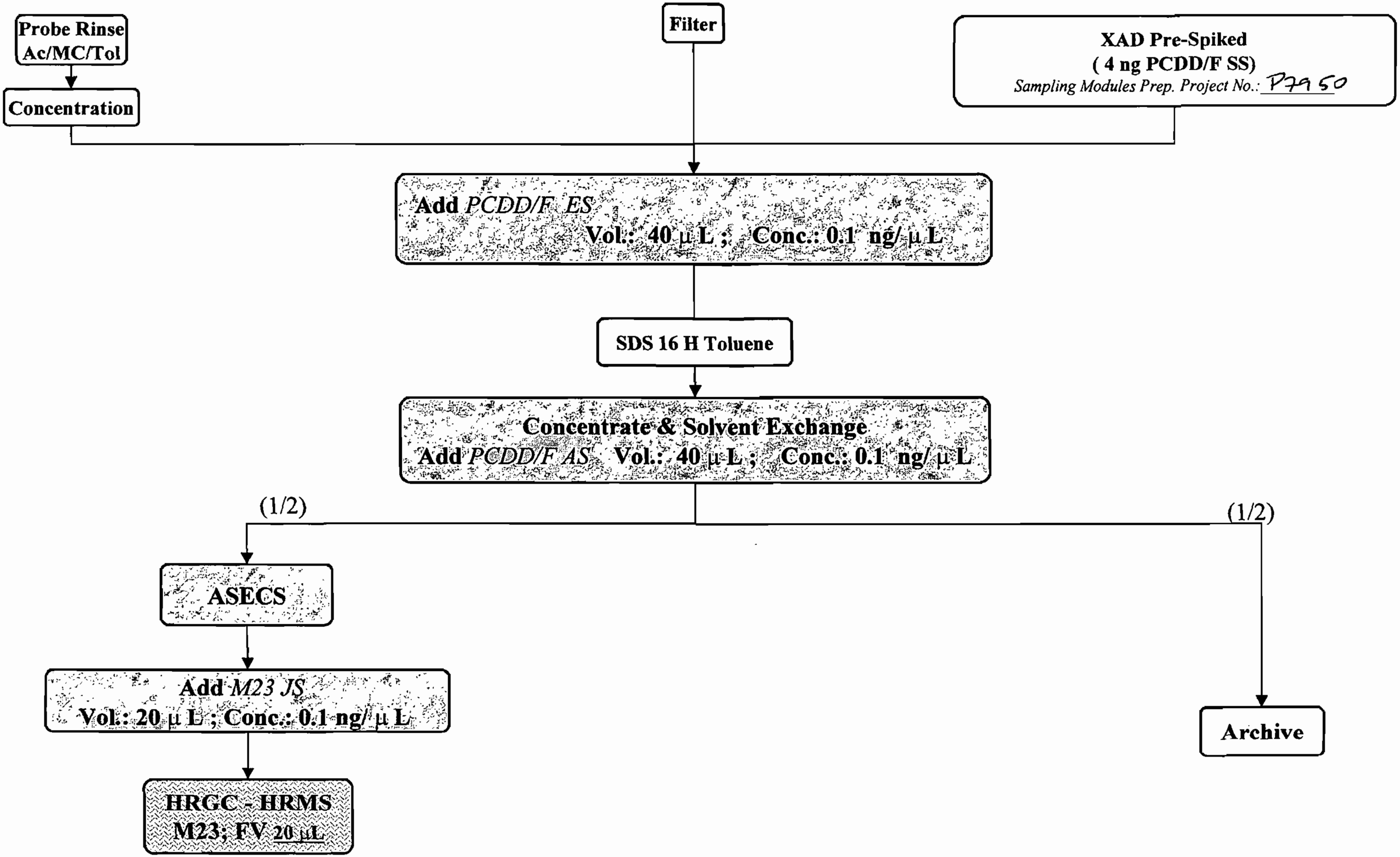
Version B

Analytical Perspectives

Sample Path

AP Project No: P8090

Protocol: 23 PCDD/F



ANALYTICAL PERSPECTIVES

PCDD/PCDFs

Air

Project: P8090

Extraction Group: EPA Method 23

Extraction Batch: 5075

SDS Number	AP Sample ID	Client Sample ID	Observations	ES 40µl (CB 7/19/07)	Ax A 40µl / B 40µl (CB 7/19/07 CB)	SDS TO1	AS 40µl (cw 7-20-07)	SPLIT (1/2) 1/4	ASECS (Td) 40µl	JS 20µl (7/23/07 TM)
—	0_5075_BCS3	—	Std's	JK 7/19/07	JK 7/19/07 / JK 7/19/07	—	DRM	—	CB 7/19/07 20µl	DRM
8	0_5075_MB001	—	prespiked XAD	JK	— —		DRM		DRM 13	DRM
9	P8090_5075_001	North Furnace-Run 1	see sample path + observations sheet	JK	— —		DRM		DRM 12	DRM
10	P8090_5075_002	North Furnace-Run 2		JK	— —		DRM		DRM 11	DRM
11	P8090_5075_003	North Furnace-Run 3		JK	— —		DRM		DRM 10	DRM
12	P8090_5075_005	M23-3344-01-Audit		JK	— —	CB 7/19/07	DRM 7/20/07	cw 72007	DRM 9 DRM 7/23/07	DRM 7/23/07

M23-3344-01
May 07

CB
7/19/07

P7950-000
TRC-Raleigh
Prep.: 05 JULY 2007
Advisory Exp. 19 JULY 2007
4 ng Sampling Standards PCDD/F
Initials:MK, CDB,JK

ANALYTICAL PERSPECTIVES

CB
7/19/07

AxB
01012007
10pg/µl
1/13/08
SIL7-9-1

ES	Ax	AS	JS	Cycle Time	Check
ES ID: 09182006B-ES	Ax ID: A AAP 13B	AS ID: 09182006A-AS	JS ID: 09182006A-JS	Cycle Time: 7/19/07	Check Out: Chemist: CB 7/19/07
ES(conc.): 100pg/µl	Ax (conc.): 10pg/µl	AS(conc.): 100pg/µL	JS (conc.): 100 pg/µL	Start: 3:20 pm	Check-In: Chemist: — / /
ES (exp.): 9/18/08	~~Ax (exp.):~~ Vial SIL-21-32-6A	AS (exp.): 091808	JS (exp.): 09/18/08	Stop: 7/20/07 8:45am	1/2 TO1 Arc.
Vial #: SIL6-66-1C	~~Vial #:~~ EXP 12/12/09	Vial #: SIL6-53-3C	Vial #: SIL6-53-4		
ES: 23 ~~20~~ 40 µl @ ~~0.2~~ 0.1 ng/µl	Ax: 23 ~~20~~ 40 µl @ 0.01ng/µl	AS: 23 ~~20~~ 40 µl @ ~~0.2~~ 0.1 ng/µl	JS: 23 ~~10~~ 20 µl @ ~~0.2~~ 0.1 ng/µl		

prepair.rpt

SAMPLE PATH

ANALYTICAL PERSPECTIVES

AP PROJECT NO.: P8090

VERSION B

SPIKE PROFILE & OBSERVATIONS

SPIKE PROFILE PCDD/F ONLY SAMPLING TRAIN OR PUF

Analyte	Spiked Compounds	Spiked Amount	Spiked Volume	Spiking Solution Conc.	Split Factor Factor	Final Volume	Final Solvent
PCDD/F	SS / AS	4 ng	40 µL	0.1 ng/µL	2	20 µL	Td
	ES	4 ng	40 µL	0.1 ng/µL			
	JS	2 ng	20 µL	0.1 ng/µL			
	Ax Batch CS3 ~~A~~ ~~B~~	0.4 ng	40 µL	0.01 ng/µL	2	40 µL	Td
	Td Batch CS3	-	40 µL	-		40 µL	

Sample ID	Rinses	Filter ASH	XAD Resin	glasswool Others
001	BE + Black PM	solid, flakes GY, BK PM	moist, clean	moist, clean
002	see 001	see 001	Top yellow - white bottom	yellow, moist
003	see 001	see 001	see 002	see 002
004				
005				
006				
007				
008				
009				
010				
011				
012				
013				
014				

W = wet; S = sticky; C = clean; D = dry; F = free-flowing; WH = white; M = moist; B = bullseye; BE = beige; BK = black; YW = yellow; GY = grey; PM = particulates

Analytical Perspectives

Sample Path

AP Project No.: P8090

Communications

31 Jul 07

M23 / M0023A PCDD/F Spike Profile

Analyte	Sampling Standards Amount Spiked (ng)
$^{37}Cl_4$-2,3,7,8-TCDD	1.6
$^{13}C_{12}$-1,2,3,4,7-PeCDD	4
$^{13}C_{12}$-1,2,3,4,6-PeCDF	4
$^{13}C_{12}$-1,2,3,4,6,9-HxCDF	4
$^{13}C_{12}$-1,2,3,4,6,8,9-HpCDF	4

Compound	Injection Standards Amount Spiked ng
$^{13}C_{12}$–1,2,3,4-TCDD	2
$^{13}C_{12}$-1,2,3,4-TCDF	2
$^{13}C_{12}$-1,2,3,4,6,7-HxCDD	2

Compound	Alternate Standard Amount Spiked ng
$^{13}C_{12}$–1,3,6,8-TCDD	4
$^{13}C_{12}$-1,3,6,8-TCDF	4

Compound	Extraction Standards Amount Spiked ng
$^{13}C_{12}$-2,3,7,8-TCDD	4
$^{13}C_{12}$-1,2,3,7,8-PeCDD	4
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	4
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	4
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	4
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	4
$^{13}C_{12}$-OCDD	8
$^{13}C_{12}$-2,3,7,8-TCDF	4
$^{13}C_{12}$-1,2,3,7,8-PeCDF	4
$^{13}C_{12}$-2,3,4,7,8-PeCDF	4
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	4
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	4
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	4
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	4
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	4
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	4
$^{13}C_{12}$-OCDF	8

8290B/23 ICAL (pg/µL)

Analytical Perspectives	CS0	CS1	CS2	CS3	CS4	CS5	CS6
Unlabeled Analytes							
2,3,7,8-TCDD	0.25	0.5	2	10	40	200	500
2,3,7,8-TCDF	0.25	0.5	2	10	40	200	500
1,2,3,7,8-PeCDD	1.25	2.5	10	50	200	1000	2500
1,2,3,7,8-PeCDF	1.25	2.5	10	50	200	1000	2500
2,3,4,7,8-PeCDF	1.25	2.5	10	50	200	1000	2500
1,2,3,4,7,8-HxCDD	1.25	2.5	10	50	200	1000	2500
1,2,3,6,7,8-HxCDD	1.25	2.5	10	50	200	1000	2500
1,2,3,7,8,9-HxCDD	1.25	2.5	10	50	200	1000	2500
1,2,3,4,7,8-HxCDF	1.25	2.5	10	50	200	1000	2500
1,2,3,6,7,8-HxCDF	1.25	2.5	10	50	200	1000	2500
1,2,3,7,8,9-HxCDF	1.25	2.5	10	50	200	1000	2500
2,3,4,6,7,8-HxCDF	1.25	2.5	10	50	200	1000	2500
1,2,3,4,6,7,8-HpCDD	1.25	2.5	10	50	200	1000	2500
1,2,3,4,6,7,8-HpCDF	1.25	2.5	10	50	200	1000	2500
1,2,3,4,7,8,9-HpCDF	1.25	2.5	10	50	200	1000	2500
OCDD	2.5	5	20	100	400	2000	5000
OCDF	2.5	5	20	100	400	2000	5000
Extraction Standards							
$^{13}C_{12}$-2,3,7,8-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,7,8-TCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-OCDD	200	200	200	200	200	200	200
$^{13}C_{12}$-OCDF	200	200	200	200	200	200	200
Cleanup Standards							
$^{37}Cl_4$-2,3,7,8-TCDD	-	0.5	2	10	40	200	-
$^{13}C_{12}$-1,2,3,4,7-PeCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,9-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,8,9-HpCDF	100	100	100	100	100	100	100
Alternate Standards							
$^{13}C_{12}$-1,3,6,8-TCDD				100			
$^{13}C_{12}$-1,3,6,8-TCDF				100			
Injection Standards							
$^{13}C_{12}$-1,2,3,4-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4-TCDF	100	[illegible]	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7-HxCDD	50	[illegible]	50	50	50	50	50

ANALYTICAL PERSPECTIVES *Sample Inventory Report: MM5 Sampling Train*

Project No.: P8090 **Date Rec.:** 16-Jul-07 **Project Name:** 56122

Lab. Sample ID	Collection Date	Client Sample ID	Component ID
001	10-Jul-07	North Furnace-Run 1	Ace/Me
	10-Jul-07		Filter
	10-Jul-07		P7950-002
	10-Jul-07		Toluene
	10-Jul-07		XAD
002	11-Jul-07	North Furnace-Run 2	Ace/Me
	11-Jul-07		Filter
	11-Jul-07		P7950-004
	11-Jul-07		Toluene
	11-Jul-07		XAD
003	12-Jul-07	North Furnace-Run 3	Ace/Me
	12-Jul-07		Filter
	12-Jul-07		P7950-003
	12-Jul-07		Toluene
	12-Jul-07		XAD
004	10-Jul-07	Reagent Blank-Archive	Ace/Me
	10-Jul-07		Filter
	10-Jul-07		P7950-005
	10-Jul-07		Toluene
	10-Jul-07		XAD
005	10-Jul-07	M23-3344-01-Audit	
	10-Jul-07		XAD

ok
16JUL07

Smpinvmgnmm5.rpt

P8090 1/1

SAMPLE LOG and CHAIN OF CUSTODY RECORD

Page 1

Client:	TRC Environmental Corporation	TRC Project Manager :	Jim Serne	Analytical Perspectives
Location:	5540 Centerview Drive	Telephone No.	(919) 256-6231	(910) 794-1613
	Raleigh, NC 27606			
Project Name :	Alcoa Extrusions	TRC Project No.	56122	
	Plant City, FL			
		Carrier or Delivery:	Picked up by Analytical Perspectives	
Sample I.D. No. and Description		Date Delivered to Lab:	16-Jul-07	

Source:	Location :	Train #	Run #	Fraction :	Sample Date :	Sample Type :	Type of Container :	Analysis Requested
North Furnace	Stack	M23	1	FILTER	10-Jul	Filter	Petri	Dioxins and Furans
North Furnace	Stack	M23	1	FH Rinses (Acetone & MeCl)	10-Jul	Liquid	250 ml Amber	Dioxins and Furans
North Furnace	Stack	M23	1	XAD-2 Trap	10-Jul	XAD Resin	Trap	Dioxins and Furans
North Furnace	Stack	M23	1	FH Rinses (Toluene)	10-Jul	Liquid	250 ml Amber	Dioxins and Furans
North Furnace	Stack	M23	2	FILTER	11-Jul	Two Filters	Petri	Dioxins and Furans
North Furnace	Stack	M23	2	FH Rinses (Acetone & MeCl)	11-Jul	Liquid	250 ml Amber	Dioxins and Furans
North Furnace	Stack	M23	2	XAD-2 Trap	11-Jul	XAD Resin	Trap	Dioxins and Furans
North Furnace	Stack	M23	2	FH Rinses (Toluene)	11-Jul	Liquid	250 ml Amber	Dioxins and Furans
North Furnace	Stack	M23	3	FILTER	12-Jul	Filter	Petri	Dioxins and Furans
North Furnace	Stack	M23	3	FH Rinses (Acetone & MeCl)	12-Jul	Liquid	250 ml Amber	Dioxins and Furans
North Furnace	Stack	M23	3	XAD-2 Trap	12-Jul	XAD Resin	Trap	Dioxins and Furans
North Furnace	Stack	M23	3	FH Rinses (Toluene)	12-Jul	Liquid	250 ml Amber	Dioxins and Furans
ARCHIVE	BLANK	M23	Blank	Filter	10-Jul	Filter	Petri	Dioxins and Furans
ARCHIVE	BLANK	M23	Blank	XAD-2 Trap	10-Jul	XAD Resin	Trap	Dioxins and Furans
ARCHIVE	BLANK	M23	Blank	Acetone & MeCl	10-Jul	Liquid	250 ml Glass	Dioxins and Furans
ARCHIVE	BLANK	M23	Blank	Toluene	10-Jul	Liquid	250 ml Glass	Dioxins and Furans
EPA Audit Sample	M23-3344-01			Vial	10-Jul	Liquid	Glass Jar	Dioxins and Furans

Released by TRC	Jim Serne	7-16-07	Accepted by Laboratory	T Musselwhite 16 July 07 1:00 pm
	Signature	Date		Signature and Date

1/1

CLIENT SAMPLE ID	North Furnace-Run 1	North Furnace-Run 2	North Furnace-Run 3	Reagent Blank-Archi
LAB SAMPLE #	P8090-001	-002	-003	-004
DATE SAMPLED	7/10/07	7/11/07	7/12/07	7/10/07
OBSERVATIONS				
COMPONENTS	**QUANTITY**	**QUANTITY**	**QUANTITY**	**QUANTITY**
FILTER	1	1	1	1
XAD	1	1	1	1
TRAP PREP#	P7950-002	P7950-004	P7950-003	P7950-005
ACETONE / CH_2Cl_2 FH/BH RINSE	1	1	1	1
TOLUENE FH/BH RINSE	1	1	1	1
OTHER (IMPING ERS, ETC…)				
TRAP SOURCE	☐ AP ☑ CLIENT	☐ AP ☑ CLIENT	☐ AP ☑ CLIENT	☐ AP ☑ CLIENT

CLIENT SAMPLE ID	M23-3344-01-Audit			
LAB SAMPLE #	P8090-005			
DATE SAMPLED	7/10/07			
OBSERVATIONS				
COMPONENTS	**QUANTITY**	**QUANTITY**	**QUANTITY**	**QUANTITY**
FILTER				
XAD	1			
TRAP PREP#	N/A			
ACETONE / CH_2Cl_2 FH/BH RINSE				
TOLUENE FH/BH RINSE				
OTHER (IMPINGERS, ETC…)				
TRAP SOURCE	☐ AP ☐ CLIENT	☐ AP ☐ CLIENT	☐ AP ☐ CLIENT	☐ AP ☐ CLIENT

UNUSED TRAPS: P7950-001

METHOD 23
PCDD/PCDFs

Sampling Module Request Form

AP Project #: P7950

Type & Quantity of Sampling Modules

Qty. XAD: 5
Resin Batch No.: S1084

Qty. PUF: 0
PUF Batch No.: —

Filter Size: 82.6 mm
Qty Filters: 7
Filter Batch#: 06052007

Qty. Petri Dishes: 7

Jars and/or Bottles: N/A

Client Specific Instructions

CLIENT INFORMATION

Company/Org.: TRC-Raleigh
Contact: Jim Serne
Client Project ID: Alcoa-Plant City, FL
Client PO #: P8090 1/2

Date of Request: 24 Apr 2007

Arrival Date: 06 July 2007

Ship To:
TRC Environmental
Attn. Jim Serne
5540 Centerview Drive, Suite 100
Raleigh, NC 27606

Ph.: (919) 256-6231
Fax:(919) 838-9661

ALL PROJECTS ARE SHIPPED PRIORITY OVERNIGHT VIA FEDEX

FILE

Following sample recovery, please return this form with the field samples to:

2714 Exchange Drive
Wilmington, NC 28405
Ph.: 910-794-1613
Fax: 910-794-3919

Please be aware of your trap batch #
QC begins when we prep your traps.
The Method Blank and a BCS_3 are prepared simultaneously with the trap and are properly stored until the trap batch returns for analysis.

We recommend keeping trap batches together and if a set of traps is to be split into multiple project, please let us know so we can prepare extra Method Blanks/BCS_3

Thank you.

Spike Profile

* # 0F MB / BCS_3 NEEDED: 1 OF EACH*

Vol. PCDD/F: 40 µL

Solution ID: 09182006A-CS/SS ; 1.6-4 ng
Vial ID: SE66-53-2C Expiration: 09/18/08

Vol. HR_PAH: 80 µL (40 ng)

Solution ID: N/A ; 0.5 ng/ µL
Vial ID: Expiration:

Vol. HR_PCB: 40 µL (4 ng)

Solution ID: N/A ; 0.1 ng/ µL
Vial ID: Expiration:

Initial Below

Prep By: MK
Spike By: JL
Witness: CDB Date: 07/05/07

ADDITIONAL NOTES

OK to use rental traps if needed.

Airway Bill #: 7913 3676 0247

Date Shipped: 05 JULY 2007

AP Invoice # 8277

AP Rental Traps: Y / N Qty: 0

P8090 2/2

TRAP BATCH

P7950

INITIAL & DATE BELOW FOR EACH TRAP

SPIKING TRAPS

ONLY FILL OUT APPLICABLE TABLE

SOLUTION ID: 09182006A-25/SS SEL 6-53-26	
SPIKE VOLUME : 40 ul	
TRAP ID	PCDD/Fs
MB-000	CDB
BCS3	CDB
001	CDB
002	CDB
003	CDB
004	CDB
005	CDB
006	—
007	—

SOLUTION ID:	
SPIKE VOLUME :	
TRAP ID	HRPCBs
MB-000	
BCS3	
001	
002	
003	
004	
005	
006	
007	

SOLUTION ID:	
SPIKE VOLUME :	
TRAP ID	HRPAHs
MB-000	
BCS3	
001	
002	
003	
004	
005	
006	
007	

SOLUTION ID:	
SPIKE VOLUME :	
TRAP ID	OTHER
MB-000	
BCS3	
001	
002	
003	
004	
005	
006	
007	

ANALYTICAL PERSPECTIVES

P8090.

INSTRUCTIONS FOR CONDUCTING A METHOD 23 DIOXIN/FURAN PERFORMANCE AUDIT

Auditor/Requestor Information

A dioxin/furan performance audit sample is provided for Method 23 analysis by the selected laboratory. Upon receipt of the audit material and forms, the auditor/requestor (or auditor/requestor's representative) should verify that the proper audit material(s), instructions, and data form(s) have been received and that the shipping material package has not been opened or has not been damaged. The auditor/requestor should not open the inner protective covering of the audit materials or alter the numbers on the audit materials. The auditor/requestor is responsible for forwarding the audit material with accompanying instructions and forms to the auditee (or auditee representative). The intent of the performance audit material is to provide quality assurance for the relative accuracy of the dioxin and furan analysis. The audit sample should be processed and analyzed in the same manner as the field samples. Upon completion of the performance audit analysis, the audit results shall be reported on the attached **Dioxin/Furan Audit Reporting Form** by the audited laboratory and then forwarded to the auditor/requestor. The auditor/requestor is to enter the audit results into the Stationary Source Audit Program (SSAP) electronic database. A dioxin/furan audit report will be developed and forwarded to the auditor within 10 work days after receipt of the report in the database. The auditor/requestor will not be informed as to which specific isomer data failed, or were acceptable, only that the results met either a 90% confidence limit or a 50% confidence limit. The auditor/requestor is responsible for providing a copy of the audit report to the tester as well as the laboratory. If, necessary, the auditor/requestor can obtain additional data quality information by contacting the SSAP staff.

Auditee Information

The auditee laboratory shall analyze the performance audit sample at the same time and in the same manner as the dioxin/furan field samples. If confirmation analysis (2,3,7,8-TCDF) is conducted and results reported for the field samples, the identical analytical procedures must be performed and results reported for the audit sample. If an isomer is not detected, the auditee should enter "0" in the appropriate space. The auditee is responsible for preparing the **Dioxin/Furan Audit Reporting Form** and forwarding the **Reporting Form** to the auditor/requestor. The auditee should carefully follow the enclosed reporting instructions listed on the attached page 3 of 4. The dioxin/furan data must be entered in the format as instructed. The **Dioxin/Furan Audit Reporting Form** has been designed to allow calculation of toxic equivalencies. The auditee may provide as many significant figures as desired. However, the database input is two significant figures. The auditee should retain a copy of the results to ensure that the audit values have been reported correctly. The auditee will not be informed as to which specific isomers are outside the confidence limits.

INSTRUCTIONS (Continued)

The dioxin/furan audit material you have received contains 17 low level dioxin/furan congeners spiked onto 20 grams of XAD-2® adsorbent. To extract and process the dioxin/furan audit sample, follow the steps below.

1) Remove the XAD-2® adsorbent from the container, and place in a Soxhlet apparatus extraction thimble. Throughly rinse the container with toluene, and place the rinses into the extraction thimble. (**Note:** There are no Container No. 1 filter or Container No. 2 acetone and methylene chloride rinse fractions to be incorporated.)

2) Place the extraction thimble into the extractor. Extract the contents of the extraction thimble for ~16 hours using the directions in Section 5.1.5 of Method 23.

3) Following extraction, transfer the toluene extract to a rotary evaporator and concentrate the sample to approximately 10 mL.

4) Split the concentrate sample: If the field sample concentrates are split, an identical audit concentrate split shall be performed in the same manner as the field samples. To separate the sample, split and store one/half of the fraction , and analyze the remaining fraction according to procedures in Sections 5.2 and 5.3 of Method 23.

5) Record the results on the **Dioxin/Furan Audit Reporting Form** in units of ng/sample per the instructions listed on page 3 of 4.

6) Submit the dioxin/furan audit results recorded on the **Reporting Form** to the designated agent.

P8690

INSTRUCTIONS FOR REPORTING METHOD 23 DIOXIN/FURAN PERFORMANCE AUDIT RESULTS

Note: **Method 23 Dioxin/Furan Audit Samples are currently ordered using the Stationary Source Audit Program (SSAP) automated electronic database. Requestors use the *SSAP Automated Sample Request and Information System* to request audit samples and to enter the audit sample data results (answers) into the database for evaluation.**

1) Please use the **enclosed Dioxin/Furan Audit Reporting Form** (page 4 of 4) as a template for reporting the dioxin/furan audit data results. The format of the form duplicates the electronic database entry table for dioxin/furan audit data results.

2) Two important components of the template are:

- Results for congeners are reported in units of **nanograms/sample**. The database will not convert other units into nanograms.
- Please note that **"Other"** is shown at the end of each congener class. Results must be reported as **other**, **and not as total**, congeners. For example, 1,2,3,7,8 -pentachlorodibenzofuran (PCDF) and 2,3,4,7,8 - PCDF are followed on the form by **Other PCDF.** "Other" DOES NOT include the individual compound values listed in 1,2,3,7,8 - and 2,3,4,7,8 - PCDF.

[Total PCDF] minus [1,2,3,7,8-PCDF] minus [2,3,4,7,8-PCDF] = **Other PCDF**

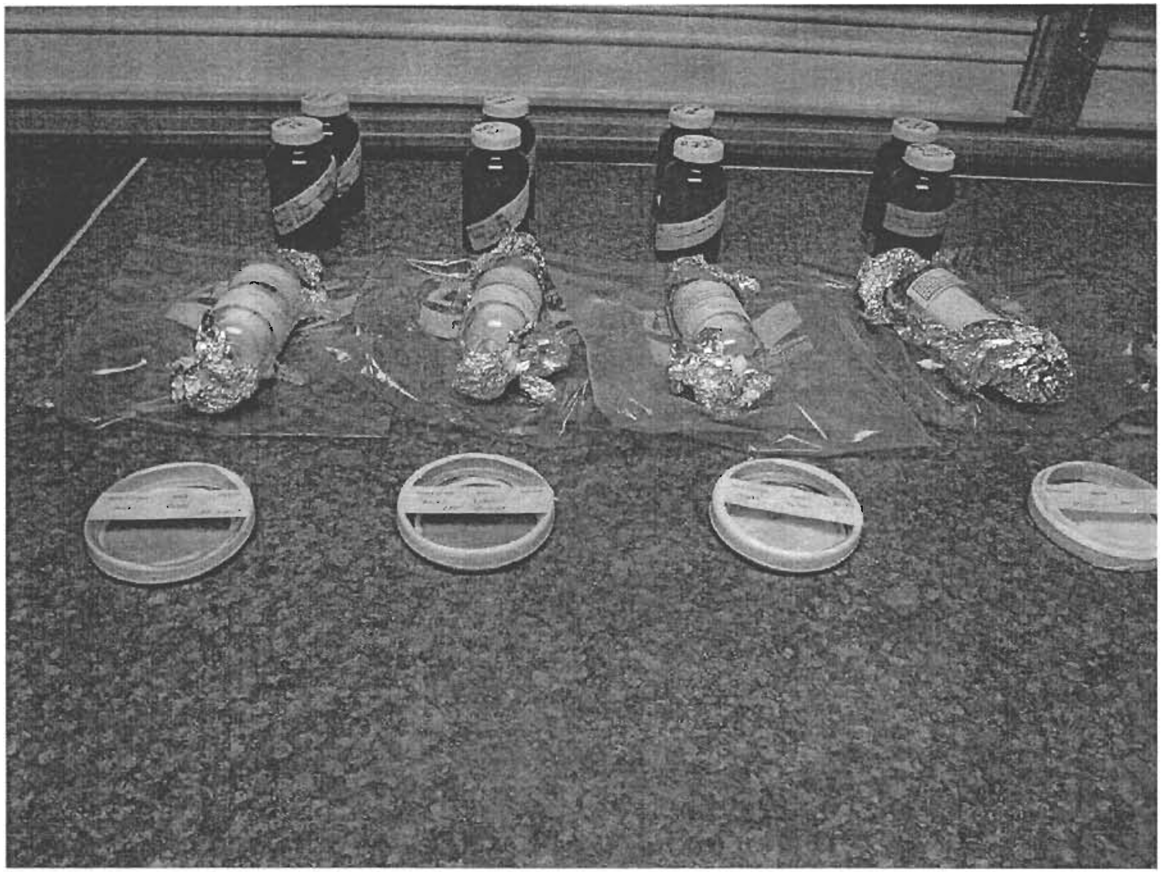
3) Please contact Thomas Mckenzie at Eastern Research Group, telephone (919) 468-7920, or Rick Lafleur (919) 468-7928 with questions you may have. Their fax number is (919) 468-7803.

Dioxin/Furan Audit Reporting Form

Auditor:	
Agency:	
Agency Address:	
Agency Phone #:	
Date Analyzed:	
Auditee Company:	
Auditee Address:	
Date Audit Sam Rec'd:	
Audit Sample #:	M23-3344-01
Confirmation Analysis Used:	Yes ____ No ____
Auditee's Name:	
Signature:	

Compound	**Auditee Result (ng/sample)**	**Compound**	**Auditee Result (ng/sample)**
2378-TCDD		2378-TCDF	
Other TCDD		Other TCDF	
12378-PeCDD		12378-PCDF	
Other PeCDD		23478-PCDF	
123478-HxCDD		Other PCDF	
123678-HxCDD		123478-HxCDF	
123789-HxCDD		123678-HxCDF	
Other HxCDD		123789-HxCDF	
1234678-HpCDD		234678-HxCDF	
Other HpCDD		Other HxCDF	
OCDD		1234678-HpCDF	
		1234789-HpCDF	
		Other HpCDF	
		OCDF	

Analytical Perspectives - Sample Receiving Picture



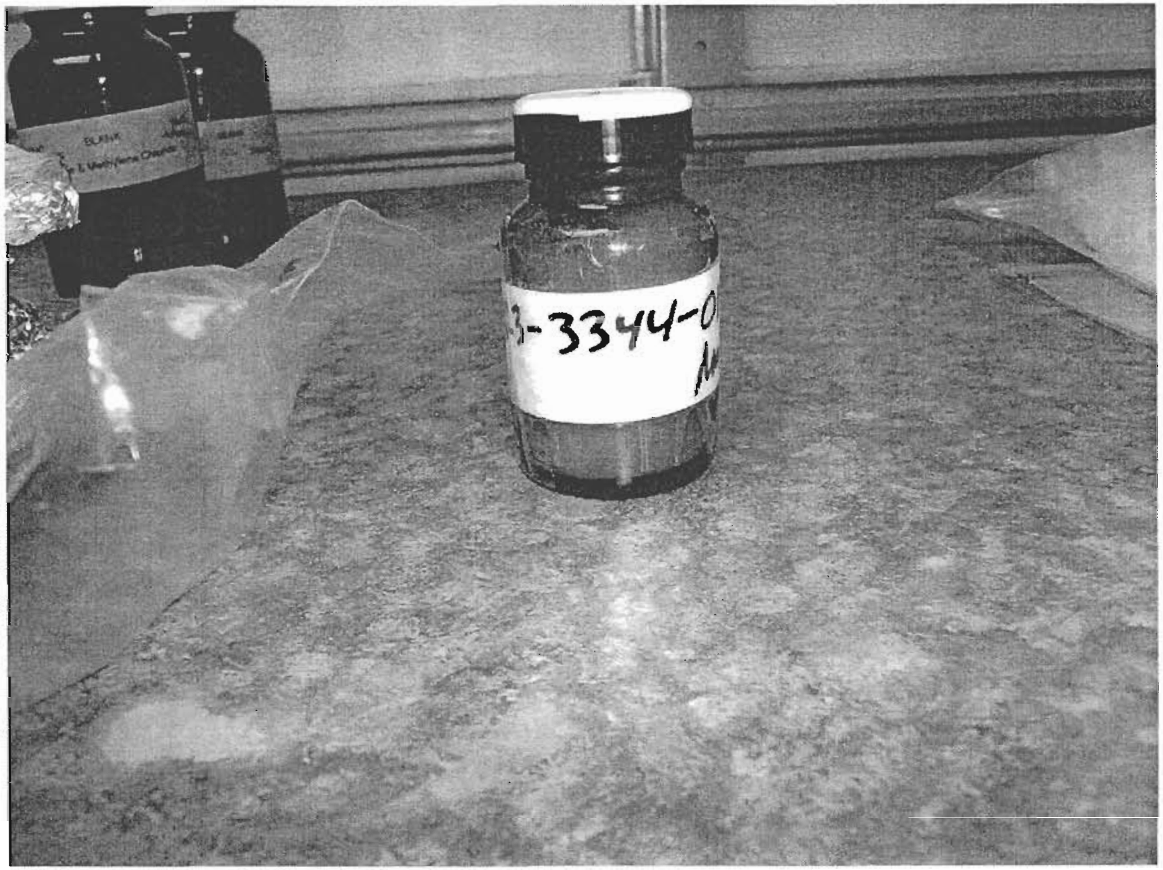
AP Project ID: P8090

Picture taken: Monday, 16 July 2007 1:48 PM

Picture filename: V:\Reports 2007\TRC\P8090\P8090-01.jpg

File created: Monday, 16 Jul 2007 1:48 PM

Analytical Perspectives - Sample Receiving Picture



AP Project ID: P8090

Picture taken: Monday, 16 July 2007 1:49 PM

Picture filename: V:\Reports 2007\TRC\P8090\P8090-02.jpg

File created: Monday, 16 Jul 2007 1:48 PM

Analytical Perspectives - Sample Receiving Picture

AP Project ID: P8090

Picture taken: Monday, 16 July 2007 1:49 PM

Picture filename: V:\Reports 2007\TRC\P8090\P8090-03.jpg

File created: Monday, 16 Jul 2007 1:48 PM

Analytical Perspectives - Sample Receiving Picture

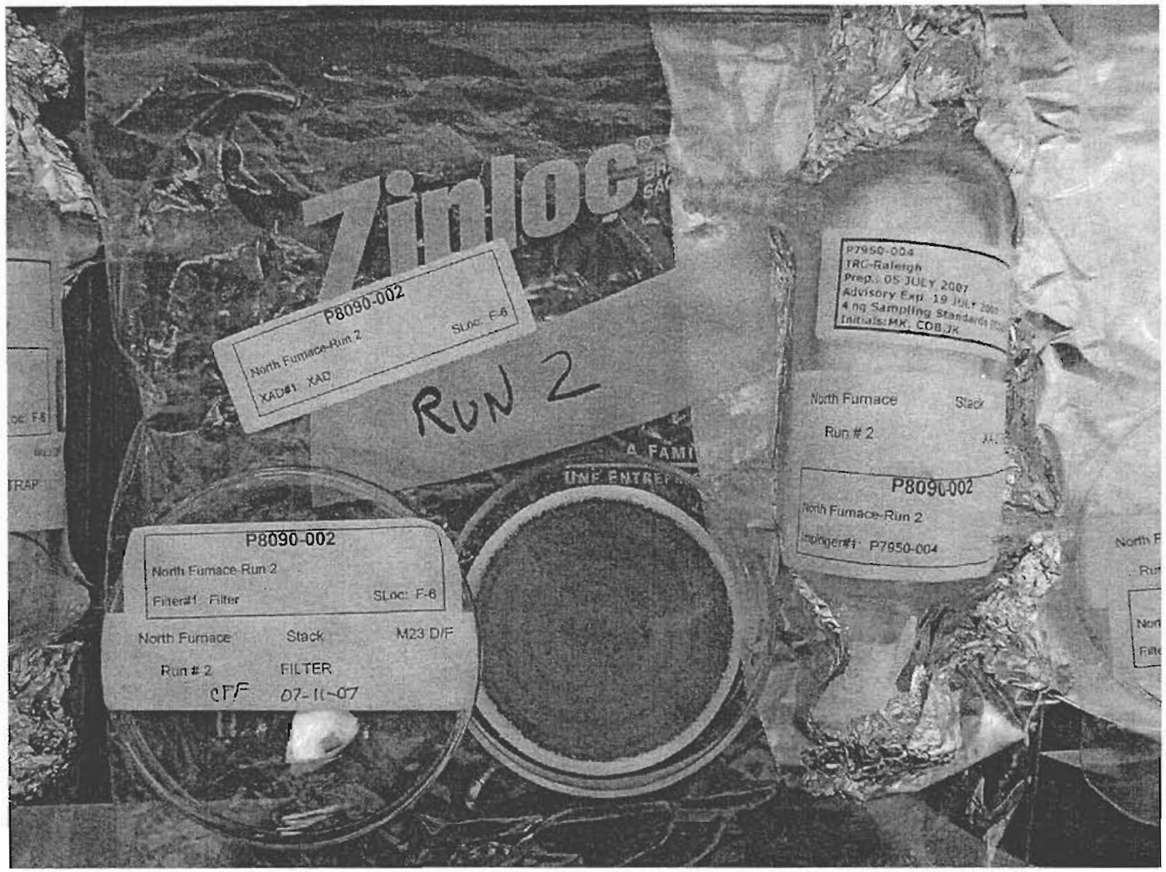
AP Project ID: P8090

Picture taken: Thursday, 19 July 2007 9:30 AM

Picture filename: V:\Reports 2007\TRC\P8090\P8090-04.jpg

File created: Thursday, 19 Jul 2007 9:34 AM

Analytical Perspectives - Sample Receiving Picture



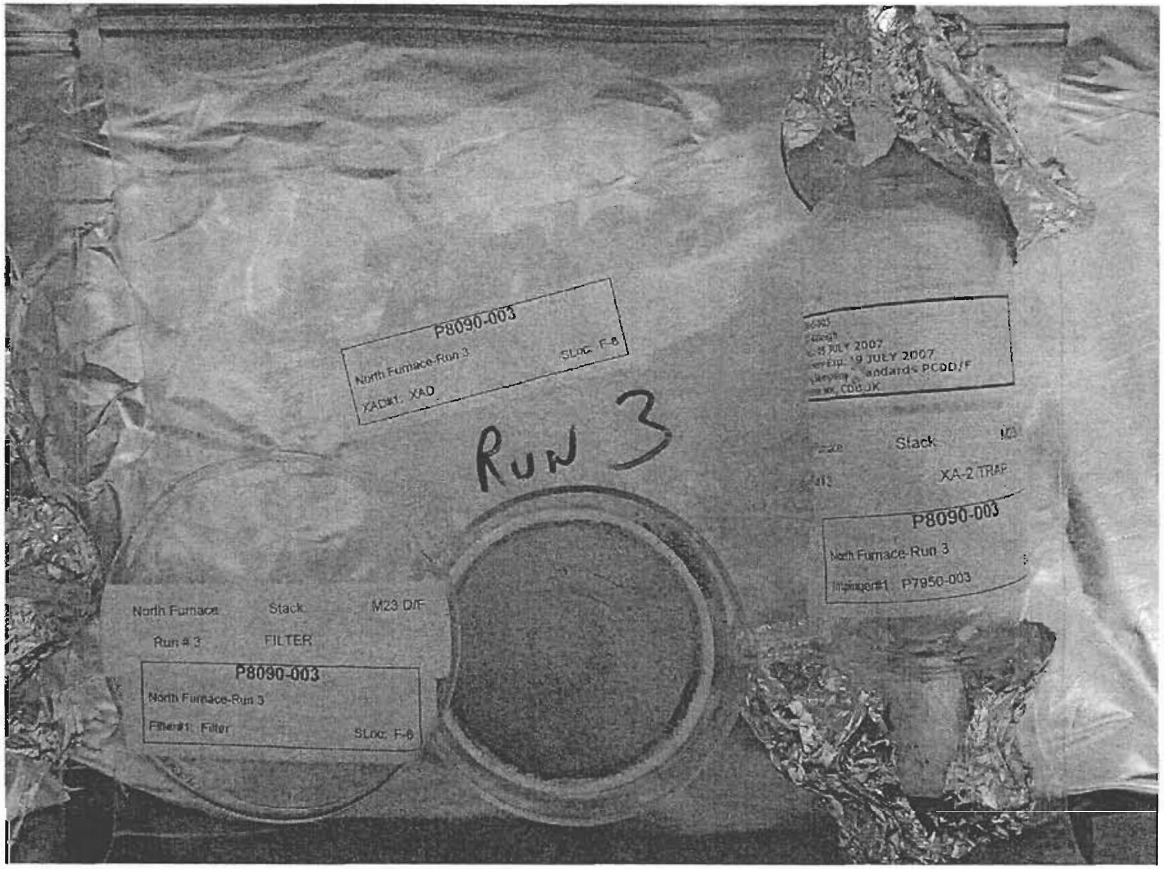
AP Project ID: P8090

Picture taken: Thursday, 19 July 2007 9:30 AM

Picture filename: V:\Reports 2007\TRC\P8090\P8090-05.jpg

File created: Thursday, 19 Jul 2007 9:34 AM

Analytical Perspectives - Sample Receiving Picture



AP Project ID: P8090

Picture taken: Thursday, 19 July 2007 9:30 AM

Picture filename: V:\Reports 2007\TRC\P8090\P8090-06.jpg

File created: Thursday, 19 Jul 2007 9:34 AM

ANALYTICAL PERSPECTIVES

SAMPLE LOG-IN FORM

Date Samples Arrived: 16 July 07 Initials: NM

Time / Date logged in: 1:00 PM 16 July 07 Refrigerator: F6 Initials: NM

Samples Arrived By: (circle one) FedEx UPS Airborne Express DHL Emery Freezer Truck Company Courier Other________

Shipping Preservation: Traps & Filters: Ice / Blue Ice / Dry Ice / None Temp °C 1° (24° unused traps 40 shipping insulators)

Solvents: Ice / Blue Ice / Dry Ice / None Temp °C 1°

Shipping Documentation Present? (circle one) Shipping Label or Airbill

# of boxes: Ø # of coolers: 2 Tracking #s: ——

Shipping Container(s) intact? yes If no, describe condition:

Container Custody Seals Present & Intact? NA If not intact, describe condition:

Sample Cutody Seals Present & Intact? NA If not intact, describe condition:

# of Seals: Ø or Seal #: Ø

Sample Container Intact? yes If no, indicate sample condition:

Chain of Custody (COC) / Sample Documentation Present? yes Exceptions? NO

If not, complete COC Anomaly Form

Shipping Containers: Coolers: Client or AP .... Return Retain Dispose

Boxes: Client or AP .... Return Retain Dispose

Sample Control Log In/Out Completed? yes

FILL BELOW IF APPLICABLE

Have all the samples arrived? yes If no, complete the following.

Shipment #:_______ Date of Arrival:___________ Condition:___________ Temp°C____________

Delivered by:___________ Tracking #s_______________________

COC Present?_____ Acceptable?_____ If no, document on COC Anomaly Form additional shipment comments.

Container Intact?__________ Samples Intact?___________ If no, describe:

Do we expect another shipment?__________ If yes, start a new log-in sheet.

Client Project / Job ID: 56122

PO #: See CT for PO#

AP Project ID: P8090

CHAIN OF CUSTODY ANOMALY FORM

The following items were omited from the COC

Project ID and/or PO#:

Sampler:

Relinquished By:

Date:

Time:

Sample ID:

Sample Date: missing on samples 3 & 4 & audit

Sample Description:

Analysis Requested:

Turn-Around Time:

Container Qty.:

Container Type:

Other:

COMMENTS

Analytical Perspectives - Injection Log

Analyst: MC
MS Method: DF_CL4-8

GC Column: db-5
GC Method: DB5MS_60M

Data file	S#	Vial#	Lab ID	Sample ID (Chrom. Text)	Wt/Vol	ES	Check	Acq date	Acq time
070724P2	1	16	BCS3_5075_DF_PA	BCS3_5075_DF_PA	1.0000	100		24-JUL-07	16:32:51
070724P2	2	15	SBS	SBS SOLVENT BLANK	1.0000	4000		24-JUL-07	17:22:38
070724P2	3	17	MB1_5075_DF_SDS	MB1_5075_DF_SDS 0_5075_MB001	1.0000	4000	5116	24-JUL-07	18:12:29
070724P2	4	18	P8090_5075_001	P8090_5075_001 North Furnace-Run 1 Air Train	1.0000	4000	5473	24-JUL-07	19:02:18
070724P2	5	19	P8090_5075_002	P8090_5075_002 North Furnace-Run 2 Air Train	1.0000	4000	5831	24-JUL-07	19:52:12
070724P2	6	20	P8090_5075_003	P8090_5075_003 North Furnace-Run 3 Air Train	1.0000	4000	0128	24-JUL-07	20:42:05
070724P2	7	21	P8090_5075_005	P8090_5075_005 M23-3344-01-Audit Air Train	1.0000	4000	0422	24-JUL-07	21:31:56
070724P2	8	16	BCS3_5075_DF_PB	BCS3_5075_DF_PB	1.0000	100		24-JUL-07	22:21:45

P8090

ANALYTICAL PERSPECTIVES

PART 3

ANALYTICAL RESULTS

DOCUMENTATION FOR THE ANALYSIS
OF
POLYCHLORINATED DIBENZO-*P*-DIOXINS & DIBENZOFURANS

OPUSquan on MM1 25-JUL-2007 15:41 checkcode: 5116 31 Jul 07

1613/8290 Sample Summary Analytical Perspectives [Form: DF]

Client ID: 0_5075_MB001 Filename: 070724P2 S: 3 Vial: 17 Acq: 24-JUL-07 18:12:29
Lab ID: MB1_5075_DF_SDS GC column ID: db-5 Cal: Wt/Vol: 1.000
Sample text: MB1_5075_DF_SDS 0_5075_MB001 Stds: JS (split adj.): 4000 CS/SS: 1600 ES: 4000

BCS3

Typ	Name	Resp	RA		RT	RRF	Conc.	Noise	Fac	DL	Rec
Ax	2,3,7,8-TCDD	*	*	n	NotF»	0.97	*	2051	2.5	3.80	-
Ax	1,2,3,7,8-PeCDD	*	*	n	NotF»	0.88	*	2350	2.5	5.95	-
Ax	1,2,3,4,7,8-HxCDD	*	*	n	NotF»	1.07	*	2257	2.5	5.13	-
Ax	1,2,3,6,7,8-HxCDD	*	*	n	NotF»	1.00	*	2257	2.5	4.99	-
Ax	1,2,3,7,8,9-HxCDD	*	*	n	NotF»	0.94	*	2257	2.5	5.30	-
Ax	1,2,3,4,6,7,8-HpCDD	*	*	n	NotF»	0.88	*	4441	2.5	10.3	-
Ax	OCDD	*	*	n	NotF»	0.96	*	2708	2.5	10.0	-
Ax2	OCDD-a	*	*	n	NotF»	0.06	*	10210	2.5	603	-
Ax	2,3,7,8-TCDF	*	*	n	NotF»	1.06	*	1689	2.5	2.17	-
Ax	1,2,3,7,8-PeCDF	*	*	n	NotF»	0.96	*	4360	2.5	7.11	-
Ax	2,3,4,7,8-PeCDF	*	*	n	NotF»	0.96	*	4360	2.5	6.72	-
Ax	1,2,3,4,7,8-HxCDF	*	*	n	NotF»	1.04	*	2201	2.5	2.11	-
Ax	1,2,3,6,7,8-HxCDF	*	*	n	NotF»	1.06	*	2201	2.5	1.96	-
Ax	2,3,4,6,7,8-HxCDF	*	*	n	NotF»	1.01	*	2201	2.5	2.14	-
Ax	1,2,3,7,8,9-HxCDF	*	*	n	NotF»	1.05	*	2201	2.5	3.02	-
Ax	1,2,3,4,6,7,8-HpCDF	*	*	n	NotF»	1.22	*	3677	2.5	3.74	-
Ax	1,2,3,4,7,8,9-HpCDF	*	*	n	NotF»	1.13	*	3677	2.5	5.33	-
Ax	OCDF	*	*	n	NotF»	0.79	*	2015	2.5	6.07	-
Ax2	OCDF-a	*	*	n	NotF»	0.05	*	3551	2.5	173	-
ES	13C-2,3,7,8-TCDD	4.23e+07	0.79	y	26:51	1.11	3120	2945	2.5	4.23	78.1
ES	13C-1,2,3,7,8-PeCDD	4.06e+07	1.60	y	32:29	1.01	3280	2533	2.5	3.98	82.0
ES	13C-1,2,3,4,7,8-HxCDD	3.12e+07	1.28	y	36:27	1.04	3370	4064	2.5	7.95	84.4
ES	13C-1,2,3,6,7,8-HxCDD	3.45e+07	1.25	y	36:34	1.13	3450	4064	2.5	7.34	86.1
ES	13C-1,2,3,7,8,9-HxCDD	3.65e+07	1.25	y	36:52	1.19	3440	4064	2.5	6.94	86.1
ES	13C-1,2,3,4,6,7,8-HpCDD	3.60e+07	1.04	y	40:04	1.25	3240	10384	2.5	16.9	81.0
ES	13C-OCDD	5.02e+07	0.89	y	43:36	0.88	6450	3935615	2.5	9150	80.6
ES	13C-2,3,7,8-TCDF	5.96e+07	0.79	y	25:56	0.93	3250	3270	2.5	3.90	81.2
ES	13C-1,2,3,7,8-PeCDF	6.30e+07	1.55	y	30:58	0.94	3420	2896	2.5	3.44	85.5
ES	13C-2,3,4,7,8-PeCDF	6.39e+07	1.54	y	32:08	0.96	3390	2896	2.5	3.37	84.8
ES	13C-1,2,3,4,7,8-HxCDF	4.80e+07	0.53	y	35:28	1.56	3470	106610	2.5	139	86.7
ES	13C-1,2,3,6,7,8-HxCDF	5.54e+07	0.53	y	35:37	1.76	3540	106610	2.5	123	88.5
ES	13C-2,3,4,6,7,8-HxCDF	5.37e+07	0.53	y	36:17	1.79	3380	106610	2.5	121	84.6
ES	13C-1,2,3,7,8,9-HxCDF	4.06e+07	0.53	y	37:15	1.65	2780	106610	2.5	132	69.4
ES	13C-1,2,3,4,6,7,8-HpCDF	3.94e+07	0.44	y	38:55	1.35	3290	4294	2.5	6.48	82.2
ES	13C-1,2,3,4,7,8,9-HpCDF	3.47e+07	0.43	y	40:39	1.18	3320	4294	2.5	7.42	82.9
ES	13C-OCDF	7.58e+07	0.90	y	43:51	1.29	6600	4797	2.5	7.56	82.5
CS	37Cl-2,3,7,8-TCDD	1.77e+07			26:53	1.15	1260			5.80	78.7
CS	13C-1,2,3,4,7-PeCDD	4.39e+07	1.62	y	31:58	1.01	3550	2533	2.5	3.99	88.8
CS	13C-1,2,3,4,6-PeCDF	5.73e+07	1.52	y	30:25	0.83	3510	2896	2.5	3.88	87.6
CS	13C-1,2,3,4,6,9-HxCDF	4.11e+07	0.53	y	35:55	1.32	3500	106610	2.5	164	87.4
CS	13C-1,2,3,4,6,8,9-HpCDF	2.94e+07	0.45	y	39:24	1.05	3140	4294	2.5	8.32	78.5
NA	n/a	*	*	n	NotF»	Div0	*	106610	2.5	*	*
JS/RT	13C-1,2,3,4-TCDD	4.90e+07	0.80	y	26:09	-	126	2945	2.5	-	-
JS	13C-1,2,3,4-TCDF	7.86e+07	0.77	y	24:26	-	124	3270	2.5	-	-
JS/RT	13C-1,2,3,4,6,7-HxCDD	1.78e+07	1.25	y	36:45	-	60.6	4064	2.5	-	-

Analyst:

Date: 25Jul07

SS	37Cl-2,3,7,8-TCDD	1.77e+07			26:53	1.03	1610			7.27	101
SS	13C-1,2,3,4,7-PeCDD	4.39e+07	1.62	y	31:58	1.00	4330	2533	2.5	5.66	108
SS	13C-1,2,3,4,6-PeCDF	5.73e+07	1.52	y	30:25	0.89	4100	2896	2.5	5.09	102
SS	13C-1,2,3,4,6,9-HxCDF	4.11e+07	0.53	y	35:55	0.75	3950	106610	2.5	134	98.7
SS	13C-1,2,3,4,6,8,9-HpCDF	2.94e+07	0.45	y	39:24	0.78	3820	4294	2.5	6.83	95.5
SBS	2,4,6,8-TCDF	*	*	n	NotF»	1.06	*	1689	2.5	2.17	-
Ay	1,3,6,8-TCDD	*	*	n	NotF»	0.97	*	2051	2.5	3.80	-
Ay	1,2,3,9-TCDD	*	*	n	NotF»	0.97	*	2051	2.5	3.80	-
Ay	1,2,8,9-TCDD	*	*	n	NotF»	0.97	*	2051	2.5	3.80	-
Ay	1,2,4,7,9-PeCDD	*	*	n	NotF»	0.88	*	2350	2.5	5.95	-
Ay	1,2,3,8,9-PeCDD	*	*	n	NotF»	0.88	*	2350	2.5	5.95	-
Ay	1,2,4,6,7,9-HxCDD	*	*	n	NotF»	1.00	*	2257	2.5	5.13	-
Ay	1,2,3,4,6,7,9-HpCDD	*	*	n	NotF»	0.88	*	4441	2.5	10.3	-
Ay	1,3,6,8-TCDF	*	*	n	NotF»	1.06	*	1689	2.5	2.17	-
Ay	2,3,4,8-TCDF	*	*	n	NotF»	1.06	*	1689	2.5	2.17	-
Ay	1,2,8,9-TCDF	*	*	n	NotF»	1.06	*	1689	2.5	2.17	-
Ay	1,3,4,6,8-PeCDF	*	*	n	NotF»	1.06	*	5472	2.5	7.04	-
Ay	1,2,3,8,9-PeCDF	*	*	n	NotF»	0.96	*	4360	2.5	6.91	-
Ay	1,2,3,4,6,8-HxCDF	*	*	n	NotF»	1.04	*	2201	2.5	2.26	-
Tot	Total Tetra-Dioxins	*	*	n	NotF»	0.97	*	2051	2.5	3.80	-
Tot	Total Penta-Dioxins	*	*	n	NotF»	0.88	*	2350	2.5	5.95	-
Tot	Total Hexa-Dioxins	*	*	n	NotF»	1.00	*	2257	2.5	5.13	-
Tot	Total Hepta-Dioxins	*	*	n	NotF»	0.88	*	4441	2.5	10.3	-
Tot	Total Tetra-Furans	*	*	n	NotF»	1.06	*	1689	2.5	2.17	-
Tot	Total Penta-Furans	*	*	n	NotF»	0.96	*	4360	2.5	6.91	-
Tot	Total Hexa-Furans	*	*	n	NotF»	1.04	*	2201	2.5	2.26	-
Tot	Total Hepta-Furans	*	*	n	NotF»	1.18	*	3677	2.5	4.45	-
Tot	TCDD EMPC	*	*	n	NotF»	0.97	*	2051	2.5	3.80	-
Tot	PeCDD EMPC	*	*	n	NotF»	0.88	*	2350	2.5	5.95	-
Tot	HxCDD EMPC	*	*	n	NotF»	1.00	*	2257	2.5	5.13	-
Tot	HpCDD EMPC	*	*	n	NotF»	0.88	*	4441	2.5	10.3	-
Tot	TCDF EMPC	*	*	n	NotF»	1.06	*	1689	2.5	2.17	-
Tot	PeCDF EMPC	*	*	n	NotF»	0.96	*	4360	2.5	6.91	-
Tot	HxCDF EMPC	*	*	n	NotF»	1.04	*	2201	2.5	2.26	-
Tot	HpCDF EMPC	*	*	n	NotF»	1.18	*	3677	2.5	4.45	-
AS	13C-1,3,6,8-TCDD	4.27e+07	0.79	y	22:51	1.10	3170	2945	2.5	4.26	79.3
AS	13C-1,3,6,8-TCDF	6.43e+07	0.77	y	20:40	1.07	3050	3270	2.5	3.40	76.2
DPE	HxCDPE	*			NotF»	-	*			-	-
DPE	HpCDPE	*			NotF»	-	*			-	-
DPE	OCDPE	*			NotF»	-	*			-	-
DPE	NCDPE	*			NotF»	-	*			-	-
DPE	DCDPE	*			NotF»	-	*			-	-
LMC	Fn1 check mass	*			NotF»	-	*			-	-
LMC	Fn2 check mass	*			NotF»	-	*			-	-
LMC	Fn3 check mass	*			NotF»	-	*			-	-
LMC	Fn4 check mass	*			NotF»	-	*			-	-
LMC	Fn5 check mass	*			NotF»	-	*			-	-

Totals Results Analytical Perspectives [Form: TOT]

Totals class: TCDD EMPC Function: 1 Run #: 3 Checkcode: 5116
File Name: 070724P2 Sample #: 3 Sample text: MB1_5075_DF_SDS 0_5075_MB001

Acquired: 24-JUL-07 18:12:29 Processed: 25-JUL-07 08:37:26

Total Conc.: * Unnamed Conc.: * Homolog count: 0

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
NotF»	*	n	*	n	*	n	*	*	*	n	*	

Totals Results Analytical Perspectives [Form: TOT]

Totals class: PeCDD EMPC Function: 2 Run #: 3 Checkcode: 5116
File Name: 070724P2 Sample #: 3 Sample text: MB1_5075_DF_SDS 0_5075_MB001

Acquired: 24-JUL-07 18:12:29 Processed: 25-JUL-07 08:37:26

Total Conc.: * Unnamed Conc.: * Homolog count: 0

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
NotF»	*	n	*	n	*	n	*	*	*	n	*	

Totals Results Analytical Perspectives [Form: TOT]

Totals class: HxCDD EMPC Function: 3 Run #: 3 Checkcode: 5116
File Name: 070724P2 Sample #: 3 Sample text: MB1_5075_DF_SDS 0_5075_MB001

Acquired: 24-JUL-07 18:12:29 Processed: 25-JUL-07 08:37:26

Total Conc.: * Unnamed Conc.: * Homolog count: 0

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
NotF»	*	n	*	n	*	n	*	*	*	n	*	

Totals Results Analytical Perspectives [Form: TOT]

Totals class: HpCDD EMPC Function: 4 Run #: 3 Checkcode: 5116
File Name: 070724P2 Sample #: 3 Sample text: MB1_5075_DF_SDS 0_5075_MB001

Acquired: 24-JUL-07 18:12:29 Processed: 25-JUL-07 08:37:26

Total Conc.: * Unnamed Conc.: * Homolog count: 0

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
NotF»	*	n	*	n	*	n	*	*	*	n	*	

Totals Results Analytical Perspectives [Form: TOT]

Totals class: TCDF EMPC Function: 1 Run #: 3 Checkcode: 5116
File Name: 070724P2 Sample #: 3 Sample text: MB1_5075_DF_SDS 0_5075_MB001

Acquired: 24-JUL-07 18:12:29 Processed: 25-JUL-07 08:37:26

Total Conc.: * Unnamed Conc.: * Homolog count: 0

RT m1 Resp mod. m2 Resp mod. RA Resp Adj_Resp S/N Conc. Name

NotF» * n * n * n * * * n *
Totals Results Analytical Perspectives [Form: TOT]

Totals class: PeCDF EMPC Function: 2 Run #: 3 Checkcode: 5116
File Name: 070724P2 Sample #: 3 Sample text: MB1_5075_DF_SDS 0_5075_MB001

Acquired: 24-JUL-07 18:12:29 Processed: 25-JUL-07 08:37:26

Total Conc.: * Unnamed Conc.: * Homolog count: 0

RT m1 Resp mod. m2 Resp mod. RA Resp Adj_Resp S/N Conc. Name

NotF» * n * n * n * * * n *
Totals Results Analytical Perspectives [Form: TOT]

Totals class: HxCDF EMPC Function: 3 Run #: 3 Checkcode: 5116
File Name: 070724P2 Sample #: 3 Sample text: MB1_5075_DF_SDS 0_5075_MB001

Acquired: 24-JUL-07 18:12:29 Processed: 25-JUL-07 08:37:26

Total Conc.: * Unnamed Conc.: * Homolog count: 0

RT m1 Resp mod. m2 Resp mod. RA Resp Adj_Resp S/N Conc. Name

NotF» * n * n * n * * * n *
Totals Results Analytical Perspectives [Form: TOT]

Totals class: HpCDF EMPC Function: 4 Run #: 3 Checkcode: 5116
File Name: 070724P2 Sample #: 3 Sample text: MB1_5075_DF_SDS 0_5075_MB001

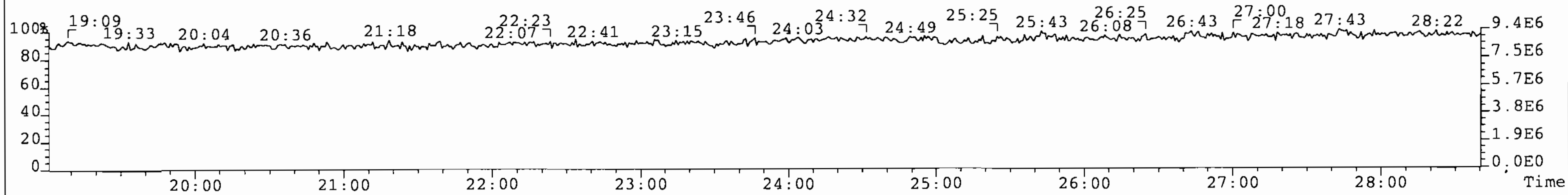
Acquired: 24-JUL-07 18:12:29 Processed: 25-JUL-07 08:37:26

Total Conc.: * Unnamed Conc.: * Homolog count: 0

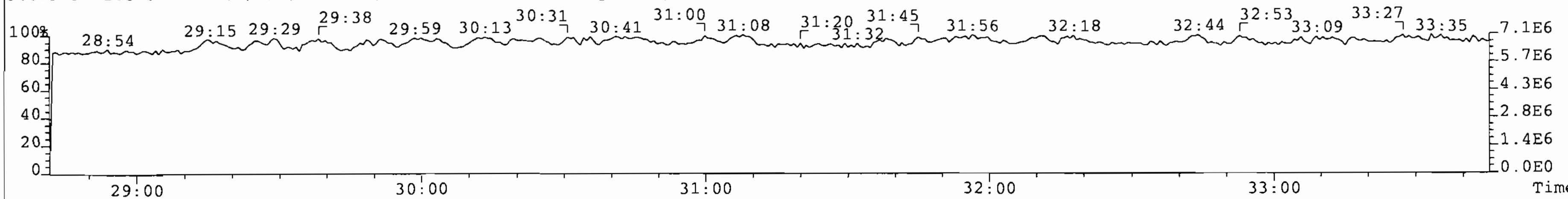
RT m1 Resp mod. m2 Resp mod. RA Resp Adj_Resp S/N Conc. Name

NotF» * n * n * n * * * n *

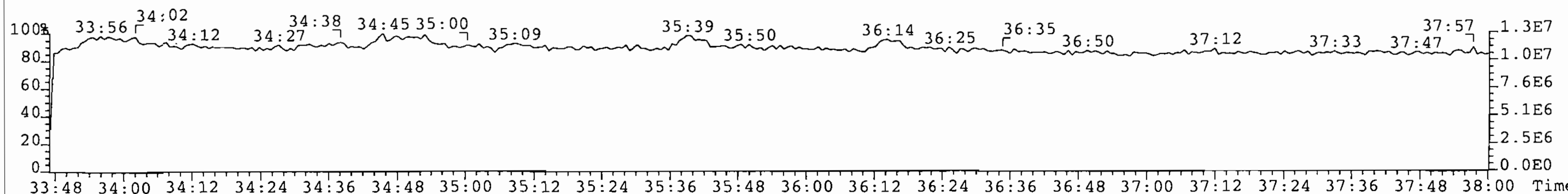
File: 070724P2 Acq: 24-JUL-2007 18:12:29 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 3 Text: MB1_5075_DF_SDS 0_5075_MB001 Vial# 17 File Text: AP DB5
316.9824 S:3 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



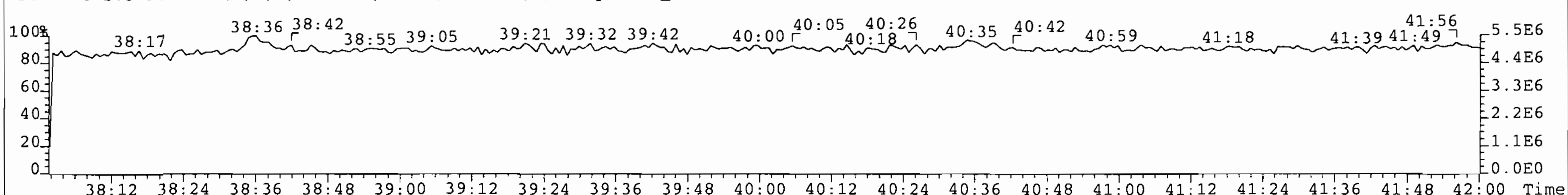
366.9792 S:3 F:2 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



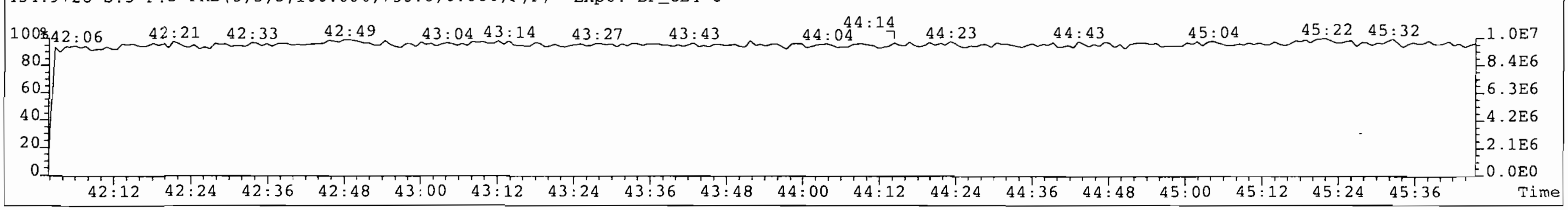
380.9760 S:3 F:3 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



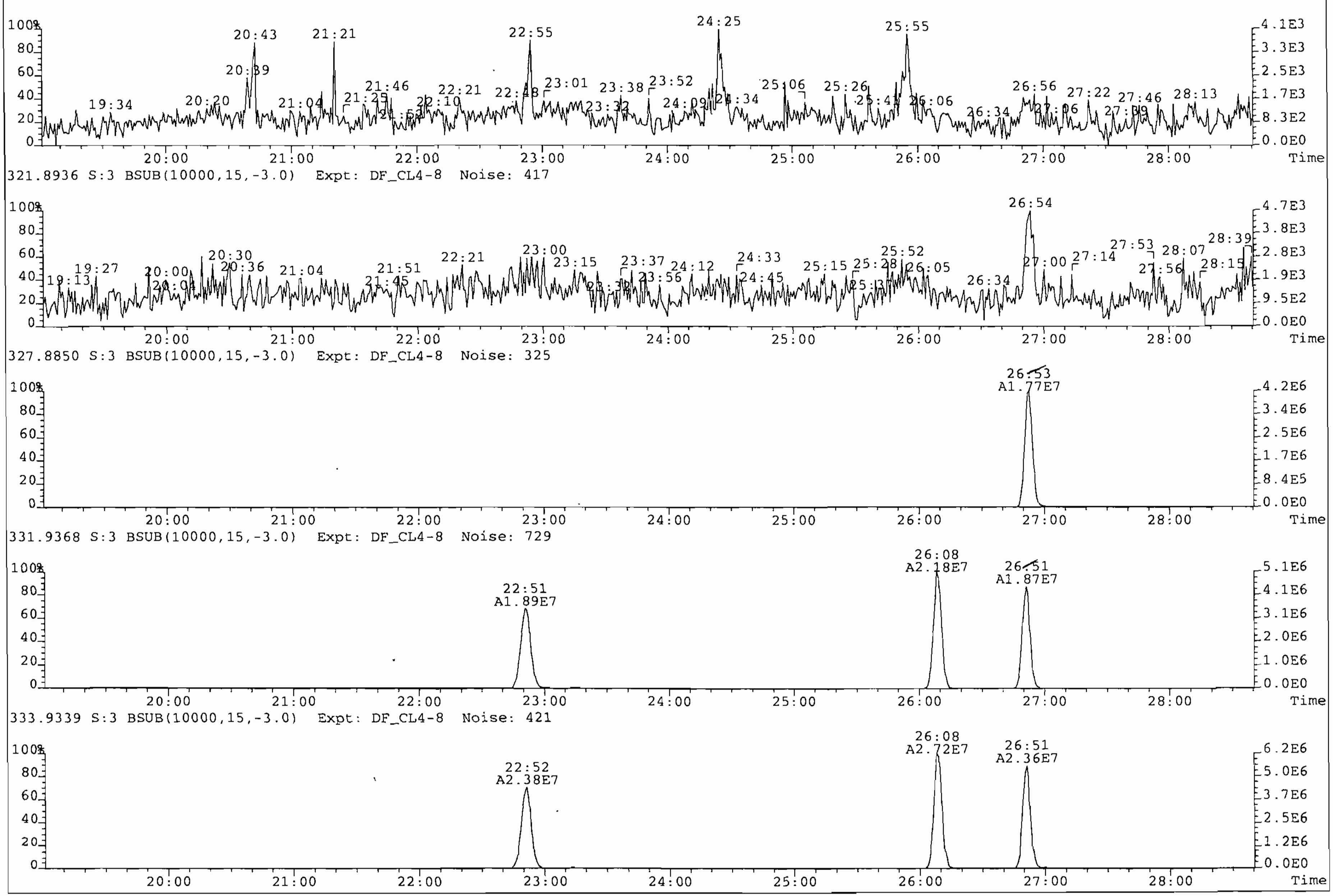
430.9728 S:3 F:4 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8

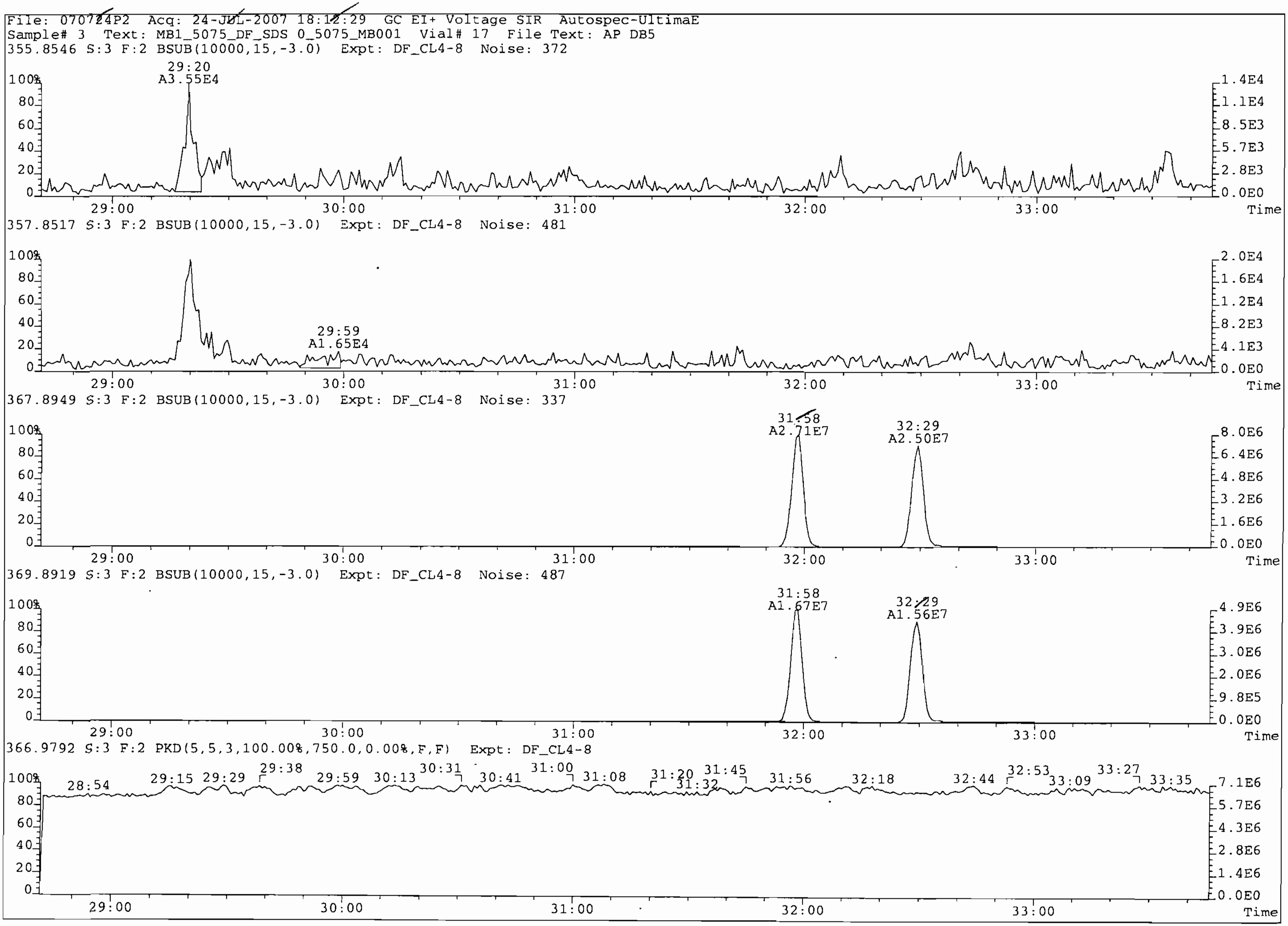


454.9728 S:3 F:5 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8

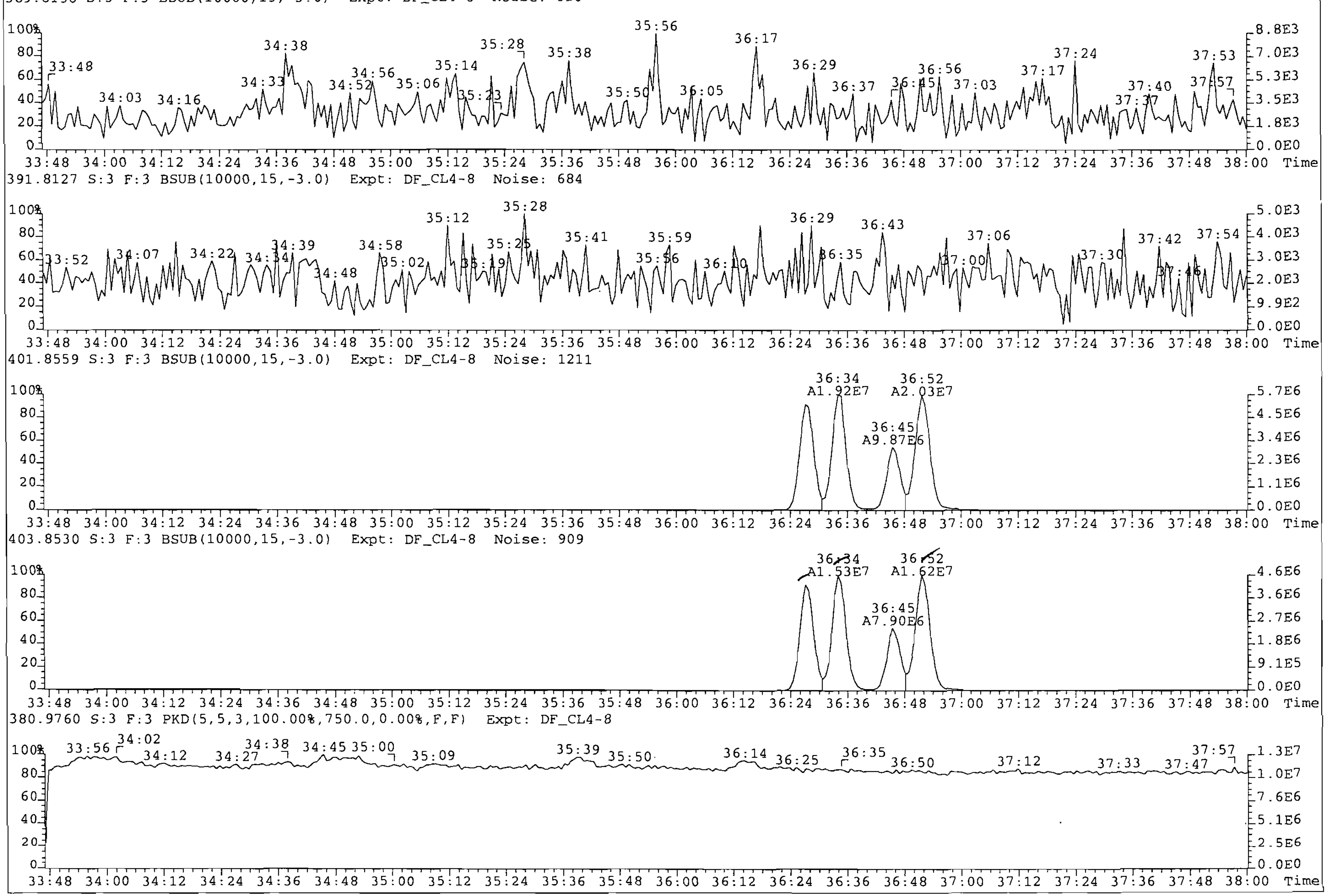


File: 070724P2 Acq: 24-JUL-2007 18:12:29 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 3 Text: MB1_5075_DF_SDS 0_5075_MB001 Vial# 17 File Text: AP DB5
319.8965 S:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 297

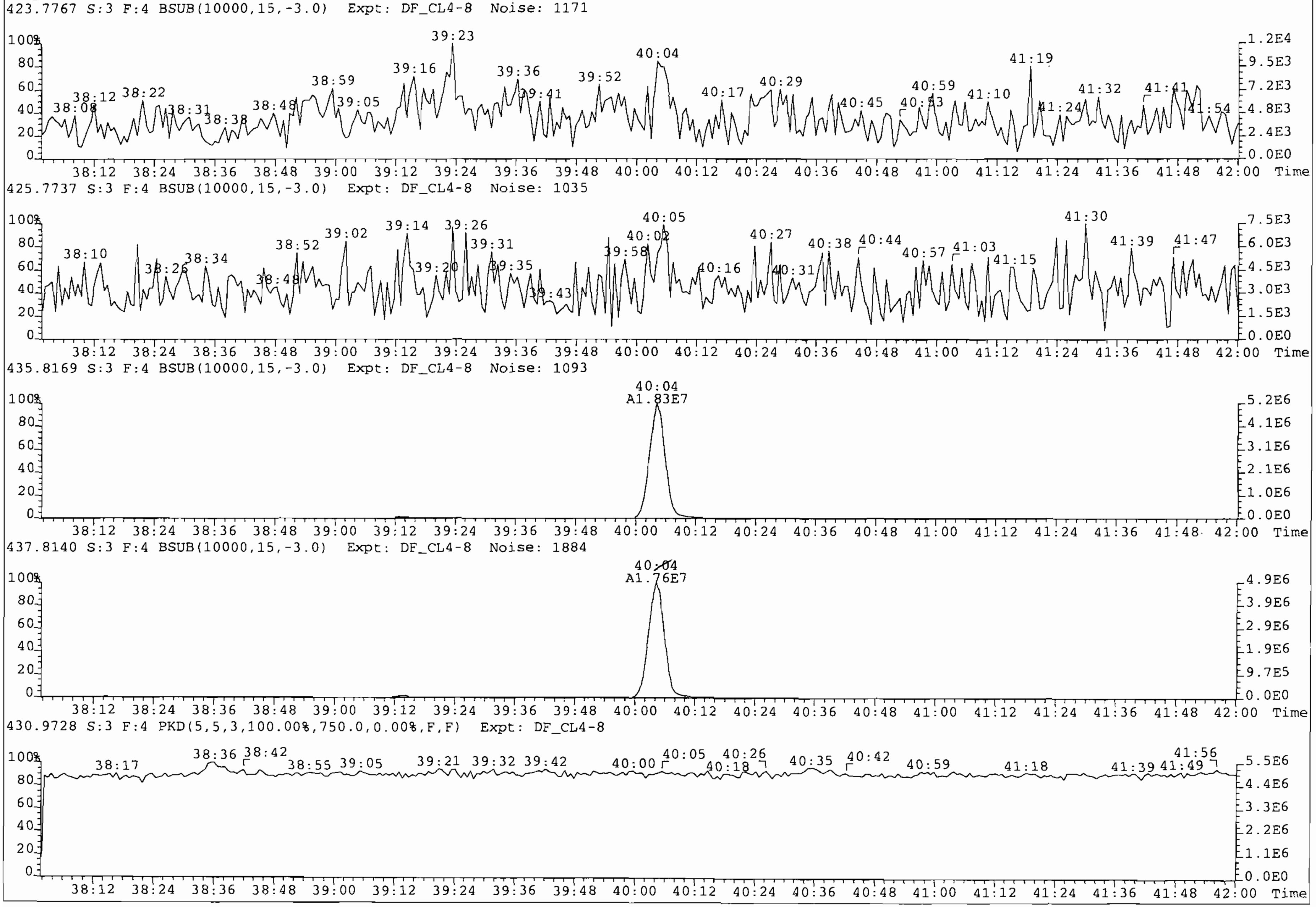



File: 070724P2 Acq: 24-JUL-2007 18:12:29 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 3 Text: MB1_5075_DF_SDS 0_5075_MB001 Vial# 17 File Text: AP DB5
355.8546 S:3 F:2 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 372
29:20
A3.55E4
357.8517 S:3 F:2 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 481
29:59
A1.65E4
367.8949 S:3 F:2 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 337
31:58
A2.71E7
32:29
A2.50E7
369.8919 S:3 F:2 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 487
31:58
A1.67E7
32:29
A1.56E7
366.9792 S:3 F:2 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8
28:54
29:15
29:29
29:38
29:59
30:13
30:31
30:41
31:00
31:08
31:20
31:32
31:45
31:56
32:18
32:44
32:53
33:09
33:27
33:35
Time

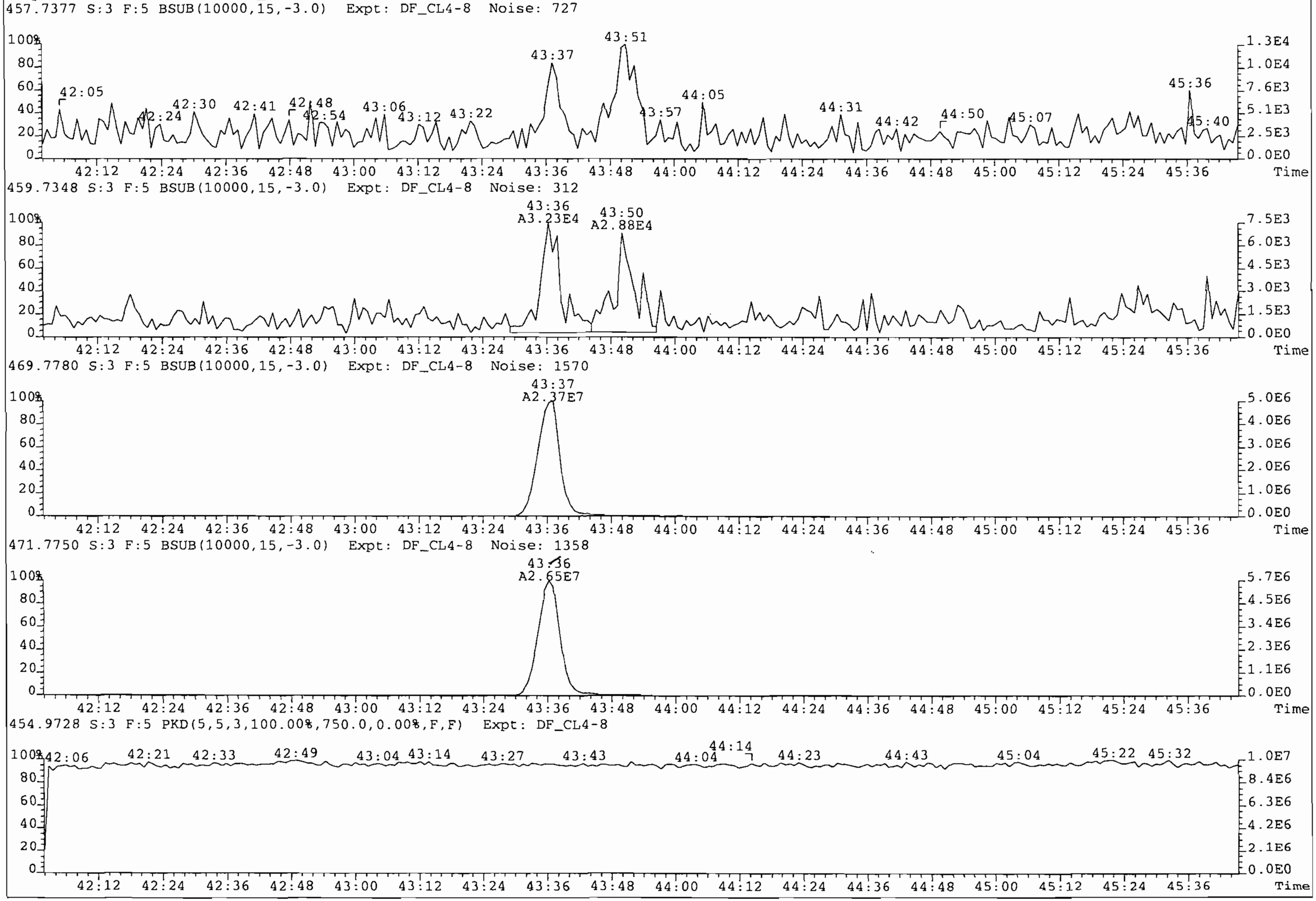
File: 070724P2 Acq: 24-JUL-2007 18:12:29 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 3 Text: MB1_5075_DF_SDS 0_5075_MB001 Vial# 17 File Text: AP DB5



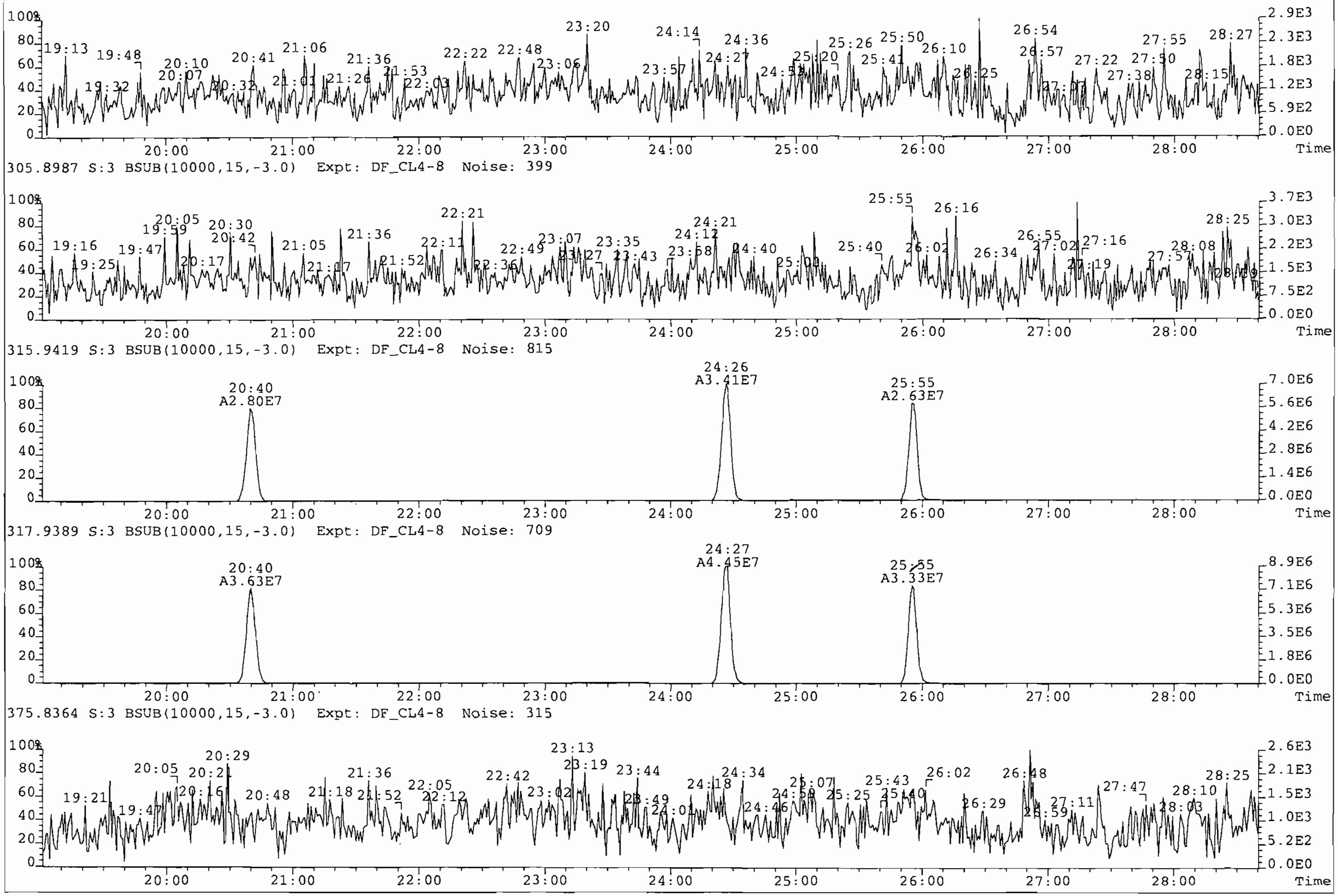
File: 070724P2 Acq: 24-JUL-2007 18:12:29 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 3 Text: MB1_5075_DF_SDS 0_5075_MB001 Vial# 17 File Text: AP DB5



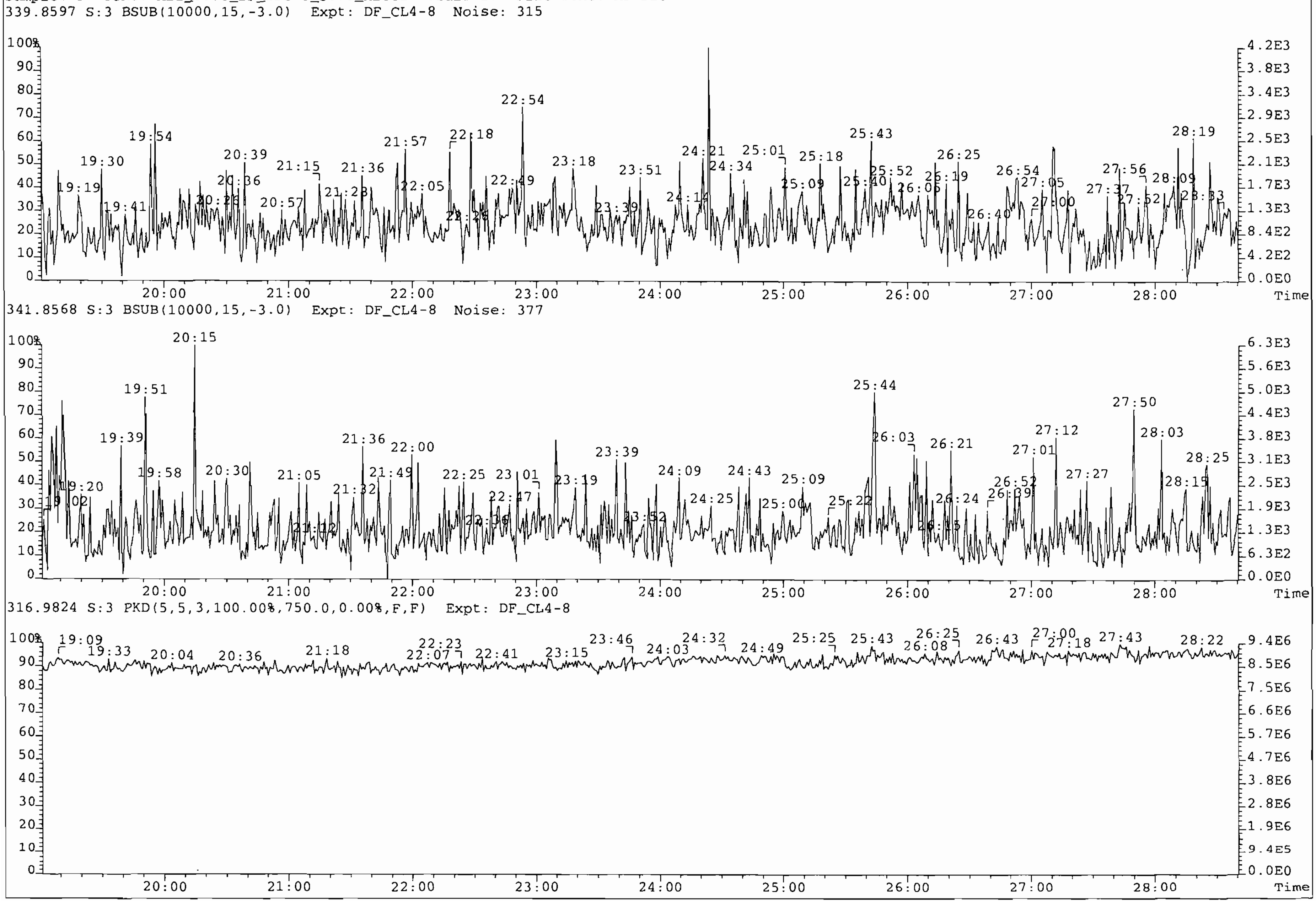
File: 070724P2 Acq: 24-JUL-2007 18:12:29 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 3 Text: MB1_5075_DF_SDS 0_5075_MB001 Vial# 17 File Text: AP DB5



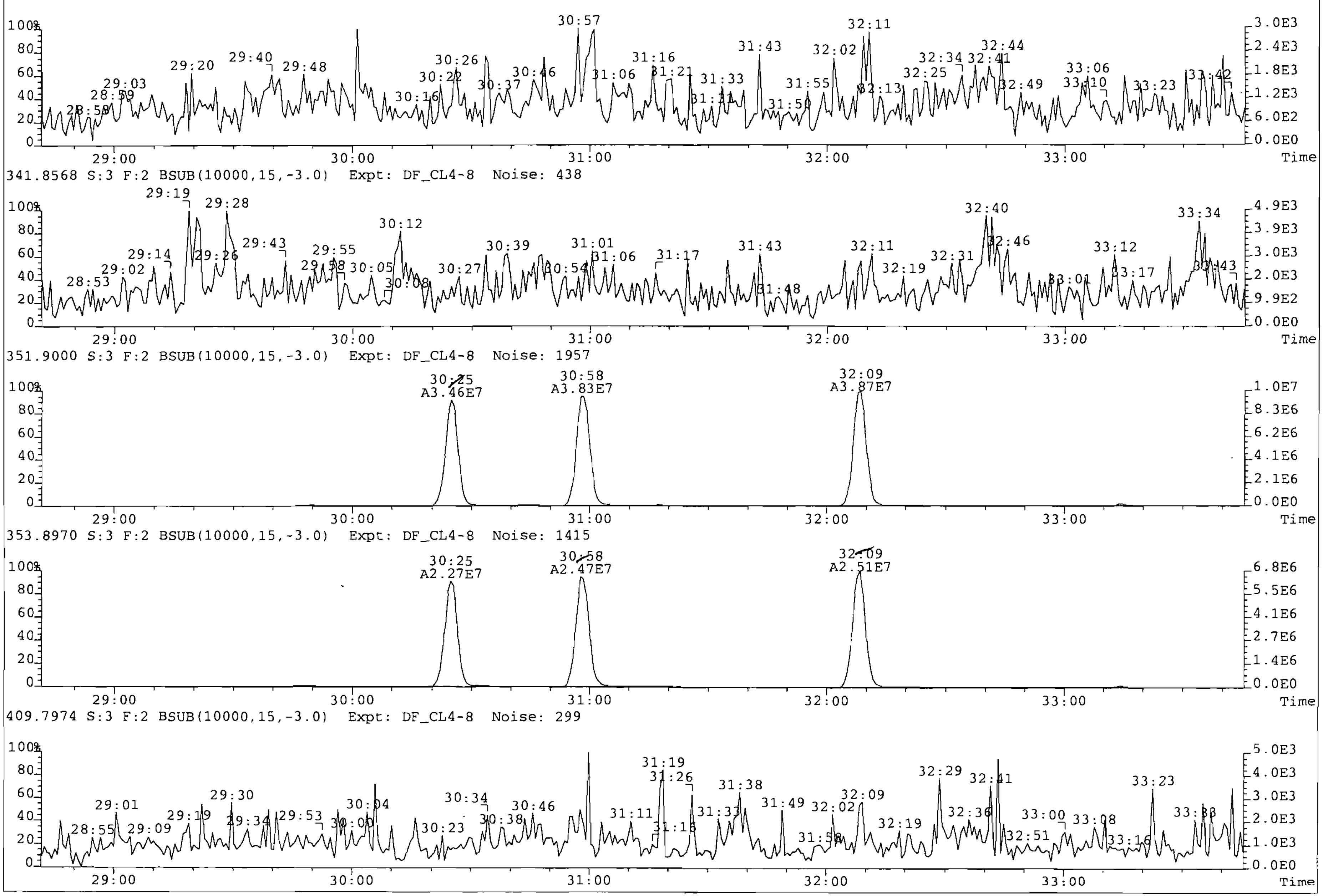
File: 070724P2 Acq: 24-JUL-2007 18:12:29 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 3 Text: MB1_5075_DF_SDS 0_5075_MB001 Vial# 17 File Text: AP DB5
303.9016 S:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 318



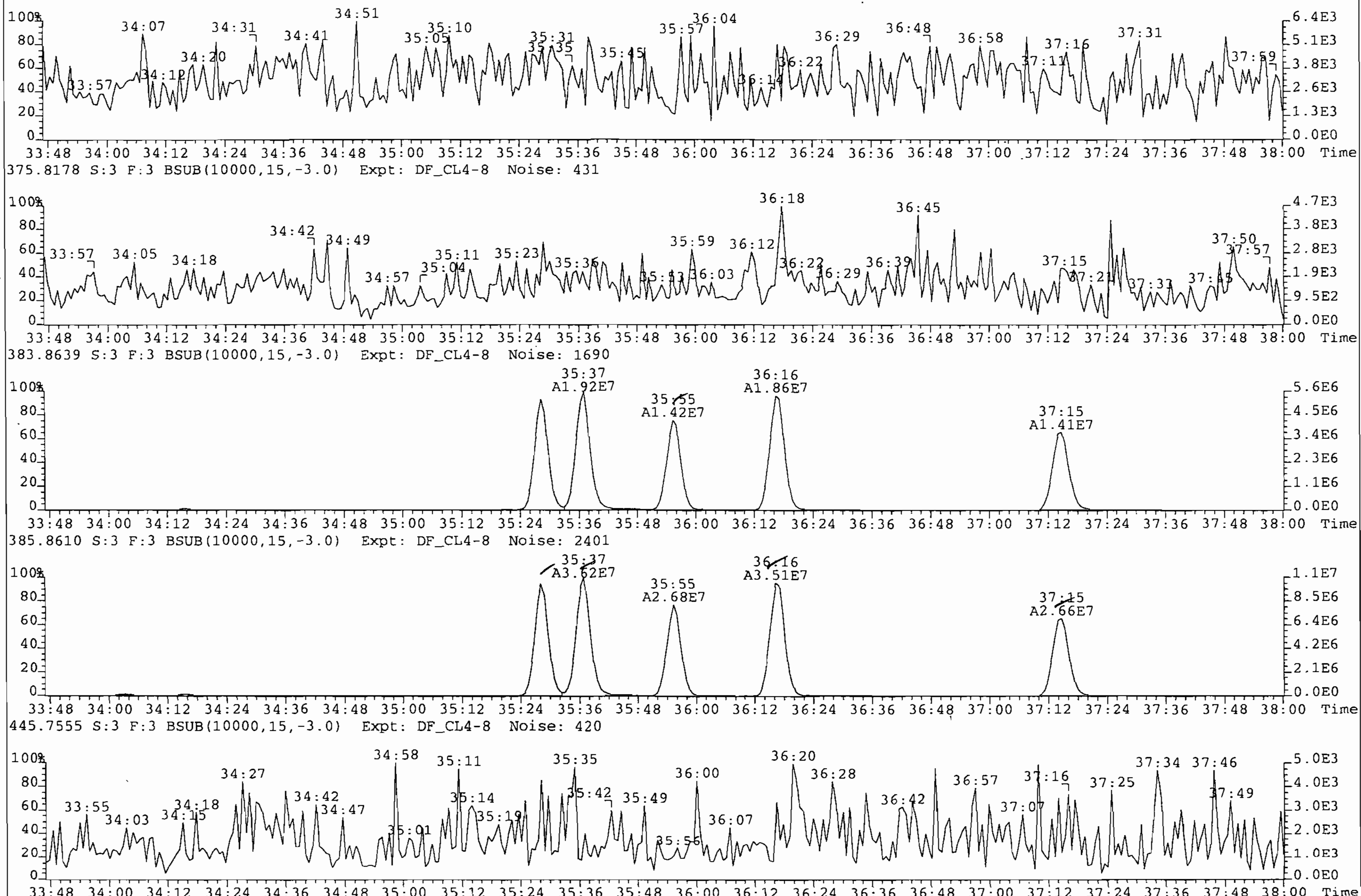
File: 070724P2 Acq: 24-JUL-2007 18:12:29 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 3 Text: MB1_5075_DF_SDS 0_5075_MB001 Vial# 17 File Text: AP DB5



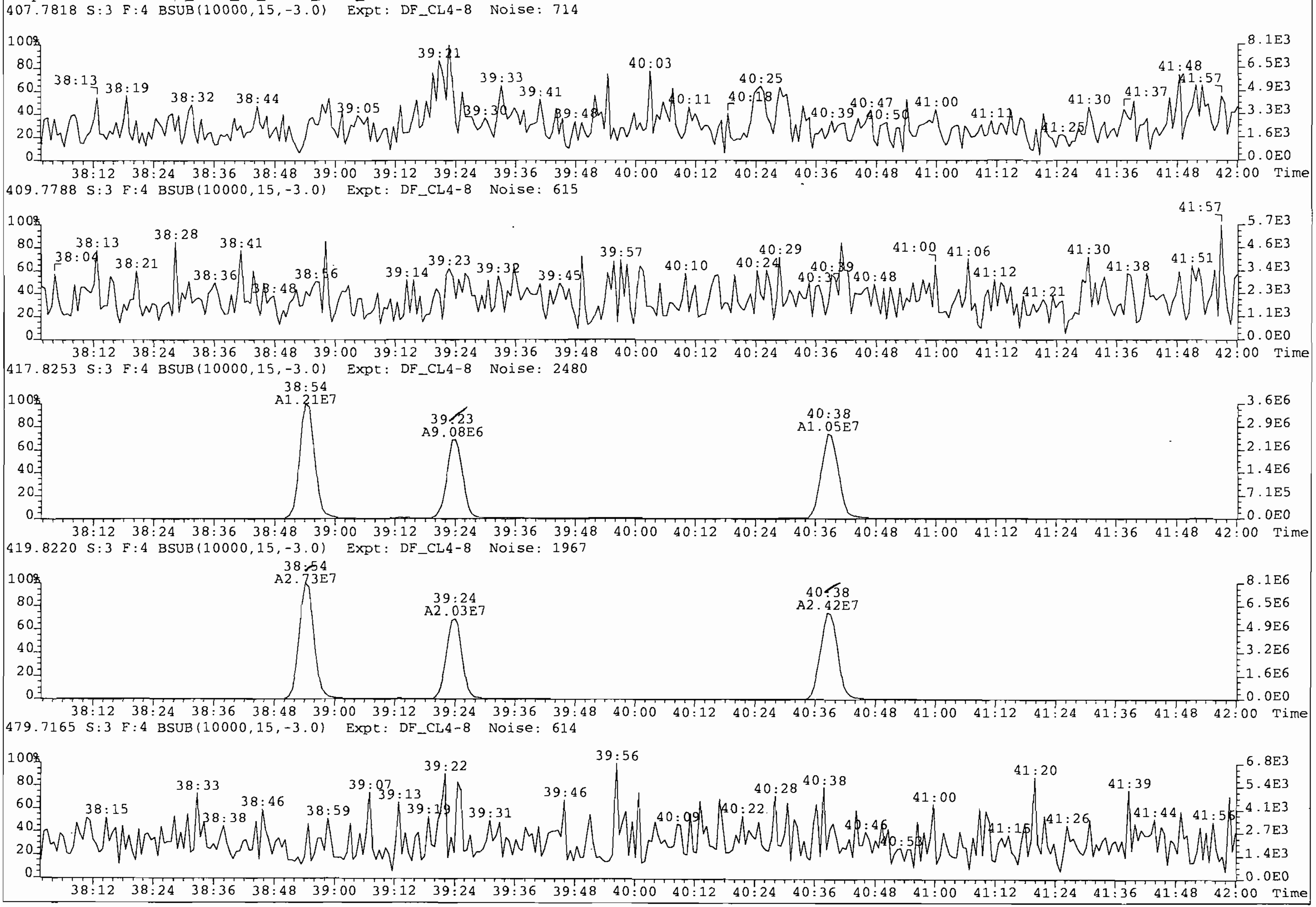
File: 070724P2 Acq: 24-JUL-2007 18:12:29 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 3 Text: MB1_5075_DF_SDS 0_5075_MB001 Vial# 17 File Text: AP DB5
339.8597 S:3 F:2 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 295



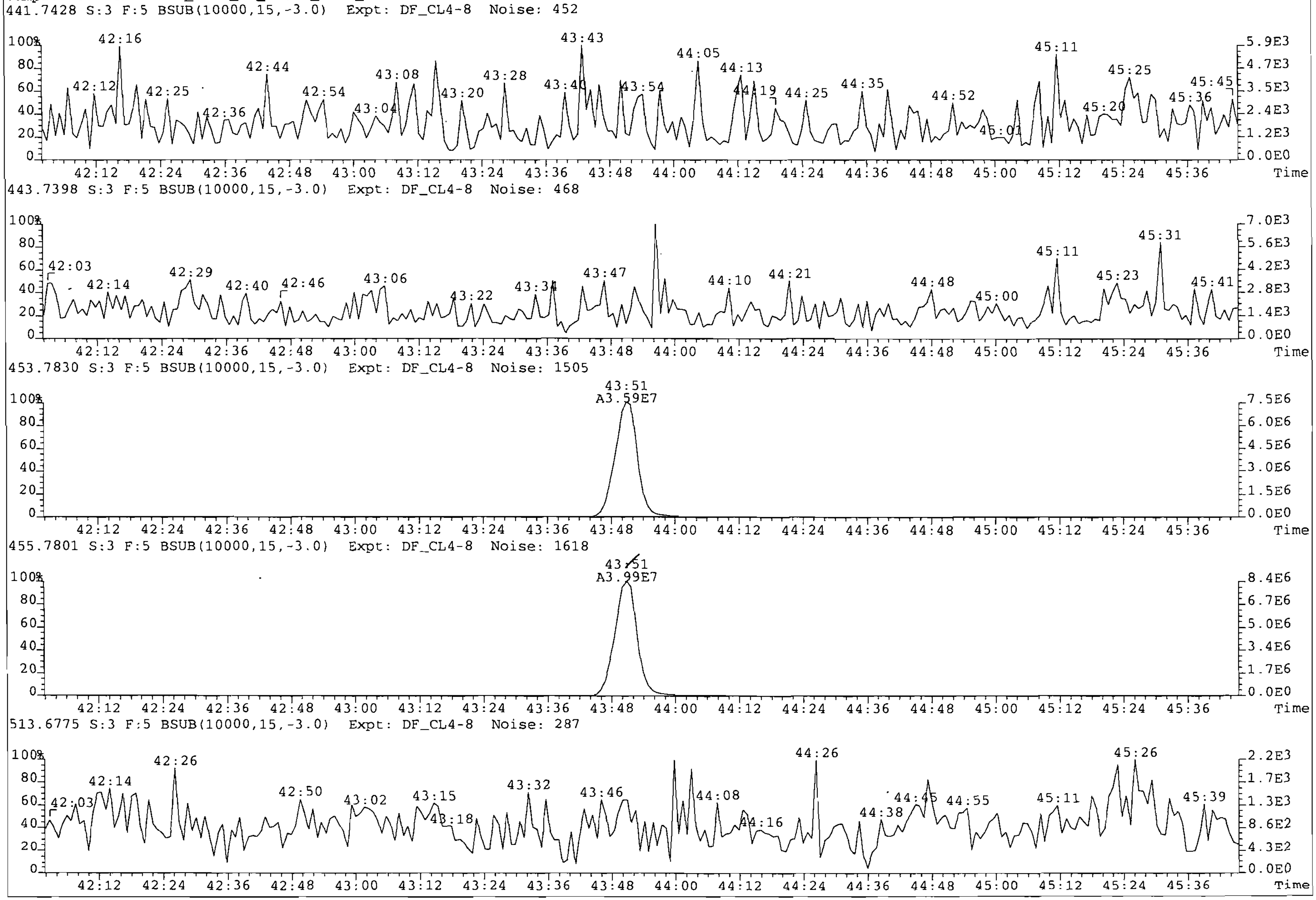
File: 070724P2 Acq: 24-JUL-2007 18:12:29 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 3 Text: MB1_5075_DF_SDS 0_5075_MB001 Vial# 17 File Text: AP DB5
373.8207 S:3 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 1047



File: 070724P2 Acq: 24-JUL-2007 18:12:29 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 3 Text: MB1_5075_DF_SDS 0_5075_MB001 Vial# 17 File Text: AP DB5



File: 070724P2 Acq: 24-JUL-2007 18:12:29 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 3 Text: MB1_5075_DF_SDS 0_5075_MB001 Vial# 17 File Text: AP DB5



OPUSquan on MM1 25-JUL-2007 15:41 checkcode: 5473 JB 31 Jul 07

1613/8290 Sample Summary Analytical Perspectives [Form: DF]

Client ID: North Furnace-Run 1 Filename: 070724P2 S: 4 Vial: 18 Acq: 24-JUL-07 19:02:18
Lab ID: P8090_5075_001 GC column ID: db-5 Cal: Wt/Vol: 1.000
Sample text: P8090_5075_001 North Furnace-Run 1 Air Train Stds: JS (split adj.): 4000 CS/SS: 1600 ES: 4000

Typ	Name	Resp	RA		RT	RRF	Conc.	Noise	Fac	DL	Rec
Ax	2,3,7,8-TCDD	9.52e+04	0.74	y	26:53	0.97	8.34	1724	2.5	2.90	-
Ax	1,2,3,7,8-PeCDD	5.53e+04	1.27	n	32:31	0.88	6.27	20492	2.5	52.7	-
Ax	1,2,3,4,7,8-HxCDD	*	*	n	NotF»	1.07	*	2623	2.5	6.37	-
Ax	1,2,3,6,7,8-HxCDD	*	*	n	NotF»	1.00	*	2623	2.5	6.13	-
Ax	1,2,3,7,8,9-HxCDD	*	*	n	NotF»	0.94	*	2623	2.5	6.65	-
Ax	1,2,3,4,6,7,8-HpCDD	2.31e+05	1.12	y	40:06	0.88	32.0	3869	2.5	10.4	-
Ax	OCDD	2.58e+05	0.80	y	43:38	0.96	45.4	5110	2.5	18.9	-
Ax2	OCDD-a	*	*	n	NotF»	0.06	*	8604	2.5	509	-
Ax	2,3,7,8-TCDF	8.58e+06	0.77	y	25:57	1.06	490	1279	2.5	1.47	-
Ax	1,2,3,7,8-PeCDF	2.41e+06	1.48	y	31:00	0.96	156	3974	2.5	6.26	-
Ax	2,3,4,7,8-PeCDF	1.10e+07	1.58	y	32:10	0.96	704	3974	2.5	5.76	-
Ax	1,2,3,4,7,8-HxCDF	2.86e+06	1.26	y	35:30	1.04	237	54307	2.5	56.9	-
Ax	1,2,3,6,7,8-HxCDF	1.47e+06	1.24	y	35:39	1.06	103	54307	2.5	53.0	-
Ax	2,3,4,6,7,8-HxCDF	2.88e+06	1.29	y	36:18	1.01	214	54307	2.5	48.3	-
Ax	1,2,3,7,8,9-HxCDF	3.43e+05	1.23	y	37:19	1.05	33.2	54307	2.5	73.3	-
Ax	1,2,3,4,6,7,8-HpCDF	1.53e+06	1.02	y	38:56	1.22	139	4443	2.5	4.72	-
Ax	1,2,3,4,7,8,9-HpCDF	2.33e+05	1.06	y	40:41	1.13	24.2	4443	2.5	6.21	-
Ax	OCDF	3.15e+05	0.83	y	43:52	0.79	44.3	2678	2.5	8.08	-
Ax2	OCDF-a	*	*	n	NotF»	0.05	*	4248	2.5	207	-
ES	13C-2,3,7,8-TCDD	4.69e+07	0.81	y	26:52	1.11	4000	2138	2.5	3.57	100
ES	13C-1,2,3,7,8-PeCDD	4.01e+07	1.62	y	32:30	1.01	3730	1712	2.5	3.13	93.3
ES	13C-1,2,3,4,7,8-HxCDD	2.96e+07	1.26	y	36:28	1.04	3780	4935	2.5	11.3	94.6
ES	13C-1,2,3,6,7,8-HxCDD	3.27e+07	1.26	y	36:35	1.13	3860	4935	2.5	10.5	96.5
ES	13C-1,2,3,7,8,9-HxCDD	3.39e+07	1.22	y	36:53	1.19	3780	4935	2.5	9.91	94.5
ES	13C-1,2,3,4,6,7,8-HpCDD	3.30e+07	1.05	y	40:06	1.25	3520	6336	2.5	12.1	87.9
ES	13C-OCDD	4.76e+07	0.91	y	43:37	0.88	7230	1576246	2.5	4310	90.4
ES	13C-2,3,7,8-TCDF	6.64e+07	0.79	y	25:56	0.93	4160	3203	2.5	4.39	104
ES	13C-1,2,3,7,8-PeCDF	6.43e+07	1.57	y	30:59	0.94	4020	2221	2.5	3.04	100
ES	13C-2,3,4,7,8-PeCDF	6.52e+07	1.54	y	32:09	0.96	3980	2221	2.5	2.97	99.5
ES	13C-1,2,3,4,7,8-HxCDF	4.64e+07	0.52	y	35:29	1.56	3970	83660	2.5	129	99.3
ES	13C-1,2,3,6,7,8-HxCDF	5.39e+07	0.52	y	35:38	1.76	4080	83660	2.5	114	102
ES	13C-2,3,4,6,7,8-HxCDF	5.34e+07	0.53	y	36:18	1.79	3980	83660	2.5	112	99.5
ES	13C-1,2,3,7,8,9-HxCDF	3.93e+07	0.53	y	37:16	1.65	3170	83660	2.5	122	79.4
ES	13C-1,2,3,4,6,7,8-HpCDF	3.62e+07	0.46	y	38:56	1.35	3570	6428	2.5	11.4	89.2
ES	13C-1,2,3,4,7,8,9-HpCDF	3.40e+07	0.44	y	40:40	1.18	3850	6428	2.5	13.1	96.2
ES	13C-OCDF	7.17e+07	0.90	y	43:52	1.29	7390	5521	2.5	10.2	92.3
CS	37Cl-2,3,7,8-TCDD	1.91e+07			26:53	1.15	1570			2.45	98.3
CS	13C-1,2,3,4,7-PeCDD	4.54e+07	1.63	y	31:59	1.01	4240	1712	2.5	3.14	106
CS	13C-1,2,3,4,6-PeCDF	6.05e+07	1.53	y	30:26	0.83	4260	2221	2.5	3.42	106
CS	13C-1,2,3,4,6,9-HxCDF	3.95e+07	0.52	y	35:57	1.32	3980	83660	2.5	152	99.4
CS	13C-1,2,3,4,6,8,9-HpCDF	2.80e+07	0.45	y	39:25	1.05	3540	6428	2.5	14.6	88.5
NA	n/a	*	*	n	NotF»	Div0	*	83660	2.5	*	*
JS/RT	13C-1,2,3,4-TCDD	4.24e+07	0.81	y	26:10	-	109	2138	2.5	-	-
JS	13C-1,2,3,4-TCDF	6.84e+07	0.77	y	24:27	-	108	3203	2.5	-	-
JS/RT	13C-1,2,3,4,6,7-HxCDD	1.50e+07	1.27	y	36:47	-	51.2	4935	2.5	-	-

Analyst: EL

Date: 25 Jul 07

SS	37Cl-2,3,7,8-TCDD	1.91e+07			26:53	1.03	1570			2.40	98.2
SS	13C-1,2,3,4,7-PeCDD	4.54e+07	1.63	y	31:59	1.00	4540	1712	2.5	3.89	114
SS	13C-1,2,3,4,6-PeCDF	6.05e+07	1.53	y	30:26	0.89	4240	2221	2.5	3.77	106
SS	13C-1,2,3,4,6,9-HxCDF	3.95e+07	0.52	y	35:57	0.75	3900	83660	2.5	115	97.6
SS	13C-1,2,3,4,6,8,9-HpCDF	2.80e+07	0.45	y	39:25	0.78	3970	6428	2.5	10.7	99.2
SBS	2,4,6,8-TCDF	1.85e+06	0.76	y	21:54	1.06	105	1279	2.5	1.47	-
Ay	1,3,6,8-TCDD	6.47e+05	0.83	y	22:54	0.97	56.6	1724	2.5	2.90	-
Ay	1,2,3,9-TCDD	*	*	n	NotF»	0.97	*	1724	2.5	2.90	-
Ay	1,2,8,9-TCDD	*	*	n	NotF»	0.97	*	1724	2.5	2.90	-
Ay	1,2,4,7,9-PeCDD	4.16e+05	1.43	y	29:54	0.88	47.2	20492	2.5	52.7	-
Ay	1,2,3,8,9-PeCDD	*	*	n	NotF»	0.88	*	20492	2.5	52.7	-
Ay	1,2,4,6,7,9-HxCDD	1.21e+05	1.37	y	34:45	1.00	15.1	2623	2.5	6.38	-
Ay	1,2,3,4,6,7,9-HpCDD	2.43e+05	1.11	y	39:15	0.88	33.6	3869	2.5	10.4	-
Ay	1,3,6,8-TCDF	8.41e+05	0.79	y	20:43	1.06	48.0	1279	2.5	1.47	-
Ay	2,3,4,8-TCDF	2.34e+06	0.76	y	25:50	1.06	133	1279	2.5	1.47	-
Ay	1,2,8,9-TCDF	3.20e+05	0.80	y	28:06	1.06	18.3	1279	2.5	1.47	-
Ay	1,3,4,6,8-PeCDF	2.57e+06	1.60	y	28:03	1.06	147	3107	2.5	3.57	-
Ay	1,2,3,8,9-PeCDF	2.65e+05	1.53	y	33:16	0.96	17.1	3974	2.5	6.01	-
Ay	1,2,3,4,6,8-HxCDF	6.77e+05	1.30	y	34:05	1.04	54.0	54307	2.5	56.8	-
Tot	Total Tetra-Dioxins	1.55e+06	0.83	y	22:54	0.97	136	1724	2.5	2.90	-
Tot	Total Penta-Dioxins	1.26e+06	1.43	y	29:54	0.88	143	20492	2.5	52.7	-
Tot	Total Hexa-Dioxins	8.39e+05	1.37	y	34:45	1.00	105	2623	2.5	6.38	-
Tot	Total Hepta-Dioxins	4.74e+05	1.11	y	39:15	0.88	65.6	3869	2.5	10.4	-
Tot	Total Tetra-Furans	5.58e+07	0.79	y	20:43	1.06	3190	1279	2.5	1.47	-
Tot	Total Penta-Furans	5.04e+07	1.55	y	29:42	0.96	3250	3974	2.5	6.01	-
Tot	Total Hexa-Furans	1.85e+07	1.30	y	34:05	1.04	1460	54307	2.5	56.8	-
Tot	Total Hepta-Furans	2.68e+06	1.02	y	38:56	1.18	252	4443	2.5	5.41	-
Tot	TCDD EMPC	1.82e+06	0.83	y	22:54	0.97	159	1724	2.5	2.90	-
Tot	PeCDD EMPC	1.32e+06	1.43	y	29:54	0.88	150	20492	2.5	52.7	-
Tot	HxCDD EMPC	8.39e+05	1.37	y	34:45	1.00	105	2623	2.5	6.38	-
Tot	HpCDD EMPC	4.74e+05	1.11	y	39:15	0.88	65.6	3869	2.5	10.4	-
Tot	TCDF EMPC	5.58e+07	0.79	y	20:43	1.06	3190	1279	2.5	1.47	-
Tot	PeCDF EMPC	5.06e+07	1.55	y	29:42	0.96	3260	3974	2.5	6.01	-
Tot	HxCDF EMPC	1.85e+07	1.30	y	34:05	1.04	1460	54307	2.5	56.8	-
Tot	HpCDF EMPC	2.68e+06	1.02	y	38:56	1.18	252	4443	2.5	5.41	-
AS	13C-1,3,6,8-TCDD	4.74e+07	0.80	y	22:52	1.10	4070	2138	2.5	3.60	102
AS	13C-1,3,6,8-TCDF	7.46e+07	0.77	y	20:41	1.07	4070	3203	2.5	3.82	102
DPE	HxCDPE	*			NotF»	-	*			-	-
DPE	HpCDPE	*			NotF»	-	*			-	-
DPE	OCDPE	*			NotF»	-	*			-	-
DPE	NCDPE	*			NotF»	-	*			-	-
DPE	DCDPE	*			NotF»	-	*			-	-
LMC	Fn1 check mass	*			NotF»	-	*			-	-
LMC	Fn2 check mass	*			NotF»	-	*			-	-
LMC	Fn3 check mass	*			NotF»	-	*			-	-
LMC	Fn4 check mass	*			NotF»	-	*			-	-
LMC	Fn5 check mass	*			NotF»	-	*			-	-

Totals Results Analytical Perspectives [Form: TOT]

Totals class: TCDD EMPC Function: 1 Run #: 4 Checkcode: 5473
File Name: 070724P2 Sample #: 4 Sample text: P8090_5075_001 North Furnace-Run 1 Air »

Acquired: 24-JUL-07 19:02:18 Processed: 25-JUL-07 08:37:28

Total Conc.: 159.39 Unnamed Conc.: 94.429 Homolog count: 11

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
22:54	2.938e+05	n	3.527e+05	y	0.83	y	6.465e+05	6.465e+05	3.73e+01	y	56.6	1,3,6,8-TCDD
23:18	1.140e+05	y	1.453e+05	y	0.78	y	2.592e+05	2.592e+05	1.67e+01	y	22.7	
23:46	3.961e+04	y	4.440e+04	y	0.89	n	8.400e+04	7.858e+04	4.89e+00	y	6.88	
24:54	7.308e+04	y	9.888e+04	y	0.74	y	1.720e+05	1.720e+05	1.00e+01	y	15.1	
25:06	6.364e+04	y	8.544e+04	y	0.74	y	1.491e+05	1.491e+05	1.05e+01	y	13.1	
25:20	3.109e+04	y	4.525e+04	y	0.69	y	7.634e+04	7.634e+04	4.51e+00	y	6.69	
25:46	3.656e+04	y	5.091e+04	y	0.72	y	8.747e+04	8.747e+04	6.75e+00	y	7.66	
26:10	2.774e+04	y	4.713e+04	y	0.59	n	7.487e+04	6.377e+04	5.77e+00	y	5.58	
26:35	6.544e+04	y	6.948e+04	y	0.94	n	1.349e+05	1.230e+05	6.97e+00	y	10.8	
26:53	4.048e+04	y	5.470e+04	y	0.74	y	9.517e+04	9.517e+04	8.42e+00	y	8.34	2,3,7,8-TCDD
27:14	2.947e+04	y	3.933e+04	y	0.75	y	6.879e+04	6.879e+04	5.87e+00	y	6.03	

Totals Results Analytical Perspectives [Form: TOT]

Totals class: PeCDD EMPC Function: 2 Run #: 4 Checkcode: 5473
File Name: 070724P2 Sample #: 4 Sample text: P8090_5075_001 North Furnace-Run 1 Air »

Acquired: 24-JUL-07 19:02:18 Processed: 25-JUL-07 08:37:28

Total Conc.: 149.63 Unnamed Conc.: 96.168 Homolog count: 8

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
29:54	2.447e+05	y	1.712e+05	y	1.43	y	4.160e+05	4.160e+05	1.67e+00	n	47.2	1,2,4,7,9-PeCDD
30:28	3.572e+04	n	2.236e+04	y	1.60	y	5.808e+04	5.808e+04	3.46e-01	n	6.59	
31:03	1.874e+05	y	1.237e+05	y	1.52	y	3.111e+05	3.111e+05	1.64e+00	n	35.3	
31:15	3.930e+04	y	2.906e+04	y	1.35	y	6.836e+04	6.836e+04	3.09e-01	n	7.76	
31:21	9.726e+04	y	7.004e+04	y	1.39	y	1.673e+05	1.673e+05	9.75e-01	n	19.0	
31:38	6.533e+04	y	4.268e+04	y	1.53	y	1.080e+05	1.080e+05	4.25e-01	n	12.3	
32:00	8.454e+04	y	5.015e+04	y	1.69	y	1.347e+05	1.347e+05	6.30e-01	n	15.3	
32:31	3.360e+04	y	2.641e+04	y	1.27	n	6.001e+04	5.527e+04	3.58e-01	n	6.27	1,2,3,7,8-PeCDD

Totals Results Analytical Perspectives [Form: TOT]

Totals class: HxCDD EMPC Function: 3 Run #: 4 Checkcode: 5473
File Name: 070724P2 Sample #: 4 Sample text: P8090_5075_001 North Furnace-Run 1 Air »

Acquired: 24-JUL-07 19:02:18 Processed: 25-JUL-07 08:37:28

Total Conc.: 104.89 Unnamed Conc.: 89.773 Homolog count: 3

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
34:45	6.994e+04	y	5.107e+04	y	1.37	y	1.210e+05	1.210e+05	6.99e+00	y	15.1	1,2,4,6,7,9-HxCDD
35:25	2.545e+05	y	2.216e+05	y	1.15	y	4.761e+05	4.761e+05	2.59e+01	y	59.5	
35:43	1.372e+05	y	1.052e+05	y	1.30	y	2.423e+05	2.423e+05	9.14e+00	y	30.3	

Totals Results Analytical Perspectives [Form: TOT]

Totals class: HpCDD EMPC Function: 4 Run #: 4 Checkcode: 5473
File Name: 070724P2 Sample #: 4 Sample text: P8090_5075_001 North Furnace-Run 1 Air »

Acquired: 24-JUL-07 19:02:18 Processed: 25-JUL-07 08:37:28

Total Conc.: 65.573 Unnamed Conc.: * Homolog count: 2

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
39:15	1.281e+05	y	1.151e+05	y	1.11	y	2.433e+05	2.433e+05	9.46e+00	y	33.6	1,2,3,4,6,7,9-HpCDD
40:06	1.222e+05	y	1.089e+05	y	1.12	y	2.312e+05	2.312e+05	8.18e+00	y	32.0	1,2,3,4,6,7,8-HpCDD

Totals Results Analytical Perspectives [Form: TOT]

Totals class: TCDF EMPC Function: 1 Run #: 4 Checkcode: 5473
File Name: 070724P2 Sample #: 4 Sample text: P8090_5075_001 North Furnace-Run 1 Air »

Acquired: 24-JUL-07 19:02:18 Processed: 25-JUL-07 08:37:28

Total Conc.: 3188.5 Unnamed Conc.: 2393.572 Homolog count: 22

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
20:43	3.703e+05	y	4.707e+05	y	0.79	y	8.410e+05	8.410e+05	7.06e+01	y	48.0	1,3,6,8-TCDF
21:15	4.683e+05	y	5.845e+05	y	0.80	y	1.053e+06	1.053e+06	9.09e+01	y	60.1	
21:54	7.991e+05	y	1.047e+06	y	0.76	y	1.846e+06	1.846e+06	1.50e+02	y	105	2,4,6,8-TCDF
22:25	1.357e+06	y	1.734e+06	y	0.78	y	3.092e+06	3.092e+06	1.27e+02	y	177	
22:51	2.213e+06	y	2.779e+06	y	0.80	y	4.992e+06	4.992e+06	3.11e+02	y	285	
23:20	4.896e+05	y	6.604e+05	y	0.74	y	1.150e+06	1.150e+06	1.03e+02	y	65.7	
23:28	9.197e+05	y	1.216e+06	y	0.76	y	2.136e+06	2.136e+06	1.76e+02	y	122	
23:40	2.105e+06	y	2.655e+06	y	0.79	y	4.760e+06	4.760e+06	4.08e+02	y	272	
24:05	2.685e+05	y	3.160e+05	y	0.85	y	5.845e+05	5.845e+05	4.48e+01	y	33.4	
24:14	6.121e+05	y	7.607e+05	y	0.80	y	1.373e+06	1.373e+06	1.20e+02	y	78.4	
24:24	1.109e+06	y	1.484e+06	y	0.75	y	2.593e+06	2.593e+06	2.34e+02	y	148	
24:30	1.040e+06	y	1.295e+06	y	0.80	y	2.335e+06	2.335e+06	1.93e+02	y	133	
24:59	2.314e+06	y	2.957e+06	y	0.78	y	5.271e+06	5.271e+06	4.62e+02	y	301	
25:17	1.011e+06	y	1.349e+06	y	0.75	y	2.360e+06	2.360e+06	2.37e+02	y	135	
25:29	4.801e+05	y	6.079e+05	y	0.79	y	1.088e+06	1.088e+06	8.95e+01	y	62.1	
25:43	4.855e+05	y	6.465e+05	y	0.75	y	1.132e+06	1.132e+06	1.11e+02	y	64.6	
25:50	1.007e+06	y	1.330e+06	y	0.76	y	2.337e+06	2.337e+06	2.45e+02	y	133	2,3,4,8-TCDF
25:57	3.741e+06	y	4.838e+06	y	0.77	y	8.578e+06	8.578e+06	8.43e+02	y	490	2,3,7,8-TCDF
26:21	3.284e+06	y	4.199e+06	y	0.78	y	7.483e+06	7.483e+06	7.12e+02	y	427	
26:36	1.583e+05	y	2.351e+05	y	0.67	y	3.934e+05	3.934e+05	4.18e+01	y	22.5	
26:53	5.413e+04	y	7.125e+04	y	0.76	y	1.254e+05	1.254e+05	1.40e+01	y	7.16	
28:06	1.417e+05	y	1.781e+05	y	0.80	y	3.198e+05	3.198e+05	3.05e+01	y	18.3	1,2,8,9-TCDF

Totals Results Analytical Perspectives [Form: TOT]

Totals class: PeCDF EMPC Function: 2 Run #: 4 Checkcode: 5473
File Name: 070724P2 Sample #: 4 Sample text: P8090_5075_001 North Furnace-Run 1 Air »

Acquired: 24-JUL-07 19:02:18 Processed: 25-JUL-07 08:37:28

Total Conc.: 3258.1 Unnamed Conc.: 2380.430 Homolog count: 14

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
29:42	3.484e+06	y	2.242e+06	y	1.55	y	5.726e+06	5.726e+06	1.42e+02	y	369	
29:51	9.213e+06	y	6.062e+06	y	1.52	y	1.527e+07	1.527e+07	3.72e+02	y	986	

29:57	1.836e+06	y	1.124e+06	y	1.63	y	2.960e+06	2.960e+06	9.13e+01	y	191	
30:17	3.601e+05	y	2.400e+05	y	1.50	y	6.002e+05	6.002e+05	1.36e+01	y	38.7	
30:27	2.071e+05	y	1.385e+05	y	1.50	y	3.455e+05	3.455e+05	9.28e+00	y	22.3	
30:33	1.792e+06	y	1.139e+06	y	1.57	y	2.932e+06	2.932e+06	6.84e+01	y	189	
30:47	7.040e+05	y	4.646e+05	y	1.52	y	1.169e+06	1.169e+06	3.13e+01	y	75.4	
31:00	1.434e+06	y	9.713e+05	y	1.48	y	2.405e+06	2.405e+06	6.80e+01	y	156	1,2,3,7,8-PeCDF
31:18	2.348e+06	y	1.524e+06	y	1.54	y	3.872e+06	3.872e+06	8.36e+01	y	250	
31:54	2.159e+05	y	1.340e+05	y	1.61	y	3.499e+05	3.499e+05	1.01e+01	y	22.6	
32:02	2.125e+06	y	1.418e+06	y	1.50	y	3.543e+06	3.543e+06	1.03e+02	y	229	
32:10	6.733e+06	y	4.259e+06	y	1.58	y	1.099e+07	1.099e+07	2.88e+02	y	704	2,3,4,7,8-PeCDF
32:29	7.586e+04	y	6.076e+04	y	1.25	n	1.366e+05	1.248e+05	4.58e+00	y	8.05	
33:16	1.602e+05	y	1.044e+05	y	1.53	y	2.645e+05	2.645e+05	7.80e+00	y	17.1	1,2,3,8,9-PeCDF

Totals Results Analytical Perspectives [Form: TOT]

Totals class: HxCDF EMPC Function: 3 Run #: 4 Checkcode: 5473
File Name: 070724P2 Sample #: 4 Sample text: P8090_5075_001 North Furnace-Run 1 Air »

Acquired: 24-JUL-07 19:02:18 Processed: 25-JUL-07 08:37:28

Total Conc.: 1460.8 Unnamed Conc.: 820.116 Homolog count: 13

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
34:05	3.835e+05	y	2.939e+05	y	1.30	y	6.774e+05	6.774e+05	1.42e+00	n	54.0	1,2,3,4,6,8-HxCDF
34:18	3.644e+06	y	2.897e+06	y	1.26	y	6.541e+06	6.541e+06	1.61e+01	y	522	
34:32	1.291e+05	y	1.031e+05	y	1.25	y	2.322e+05	2.322e+05	5.22e-01	n	18.5	
34:43	3.905e+05	y	3.051e+05	y	1.28	y	6.956e+05	6.956e+05	1.75e+00	n	55.5	
34:57	3.047e+05	y	2.339e+05	y	1.30	y	5.387e+05	5.387e+05	1.29e+00	n	43.0	
35:23	8.251e+05	y	6.813e+05	y	1.21	y	1.506e+06	1.506e+06	3.77e+00	y	120	
35:30	1.594e+06	y	1.266e+06	n	1.26	y	2.860e+06	2.860e+06	6.65e+00	y	237	1,2,3,4,7,8-HxCDF
35:39	8.122e+05	y	6.562e+05	y	1.24	y	1.468e+06	1.468e+06	3.52e+00	y	103	1,2,3,6,7,8-HxCDF
35:48	7.388e+04	y	5.534e+04	y	1.33	y	1.292e+05	1.292e+05	2.63e-01	n	10.3	
35:57	2.367e+05	y	1.704e+05	y	1.39	y	4.071e+05	4.071e+05	9.66e-01	n	32.5	
36:05	1.299e+05	y	1.025e+05	y	1.27	y	2.324e+05	2.324e+05	5.15e-01	n	18.5	
36:18	1.621e+06	y	1.257e+06	y	1.29	y	2.878e+06	2.878e+06	6.90e+00	y	214	2,3,4,6,7,8-HxCDF
37:19	1.896e+05	y	1.537e+05	y	1.23	y	3.433e+05	3.433e+05	7.04e-01	n	33.2	1,2,3,7,8,9-HxCDF

Totals Results Analytical Perspectives [Form: TOT]

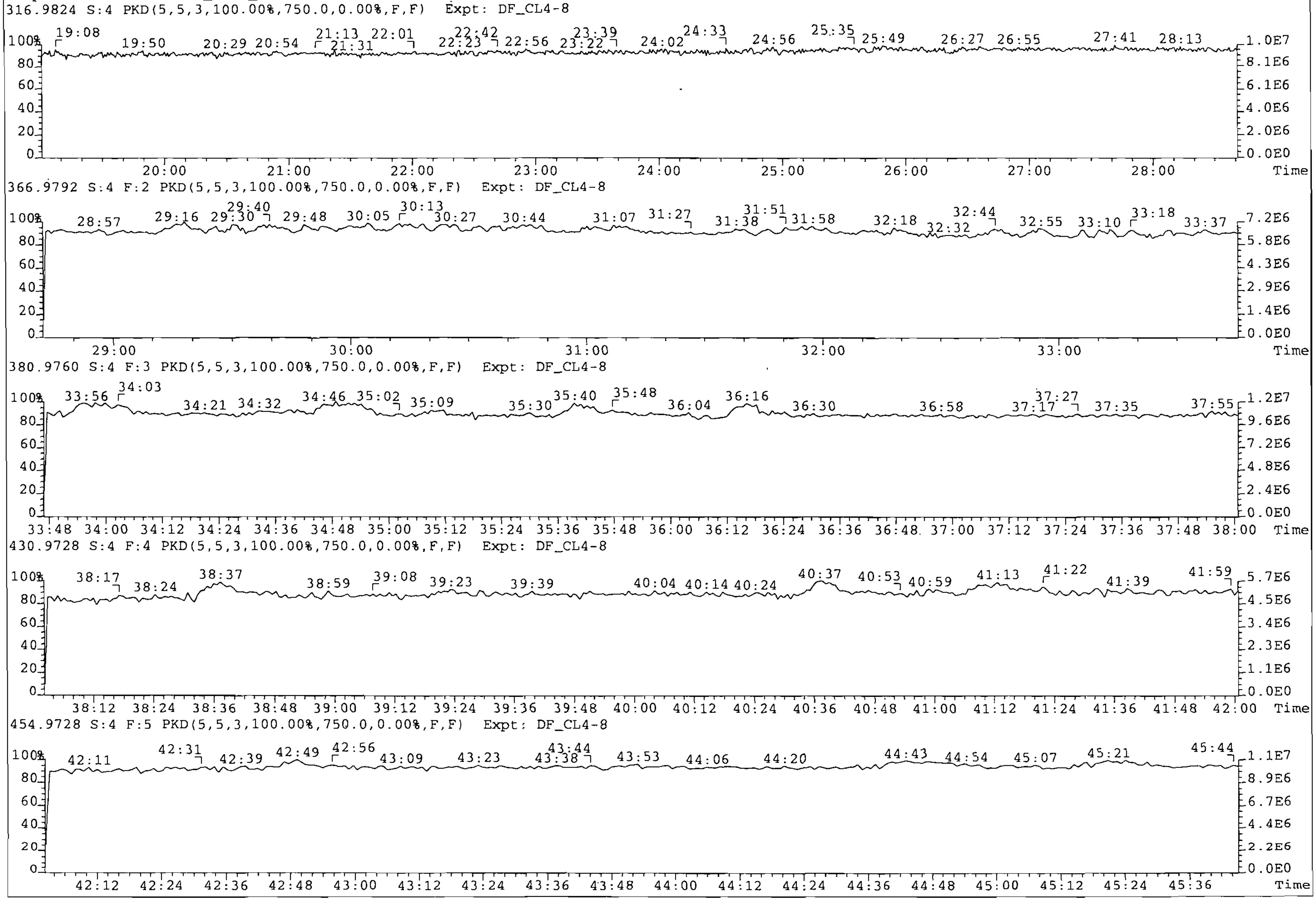
Totals class: HpCDF EMPC Function: 4 Run #: 4 Checkcode: 5473
File Name: 070724P2 Sample #: 4 Sample text: P8090_5075_001 North Furnace-Run 1 Air »

Acquired: 24-JUL-07 19:02:18 Processed: 25-JUL-07 08:37:28

Total Conc.: 251.67 Unnamed Conc.: 88.324 Homolog count: 4

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
38:56	7.737e+05	y	7.594e+05	y	1.02	y	1.533e+06	1.533e+06	5.15e+01	y	139	1,2,3,4,6,7,8-HpCDF
39:15	2.097e+05	y	2.066e+05	y	1.02	y	4.163e+05	4.163e+05	1.54e+01	y	40.3	
39:25	2.639e+05	y	2.326e+05	y	1.13	y	4.964e+05	4.964e+05	1.48e+01	y	48.0	
40:41	1.202e+05	y	1.128e+05	y	1.06	y	2.330e+05	2.330e+05	7.36e+00	y	24.2	1,2,3,4,7,8,9-HpCDF

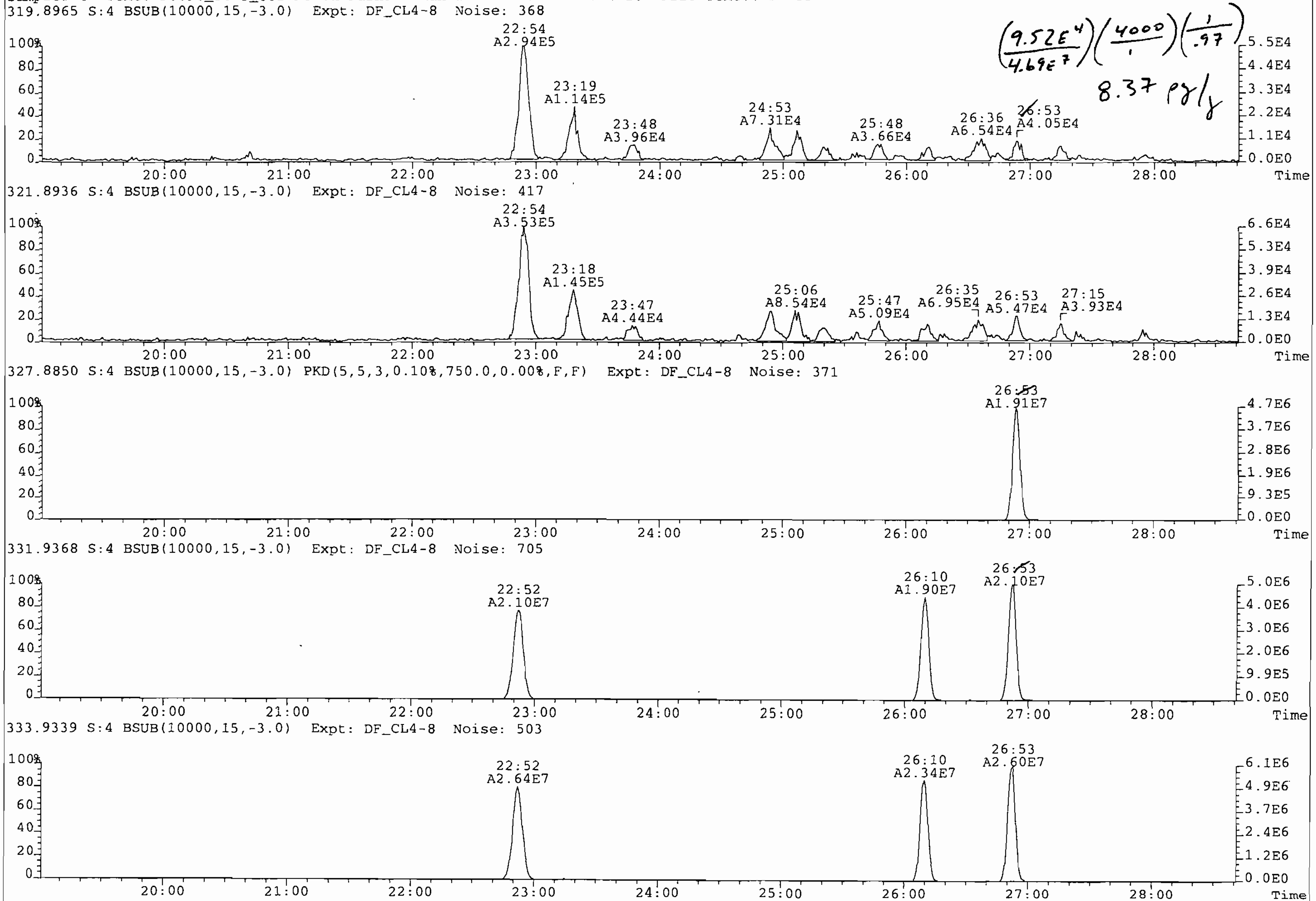
File: 070724P2 Acq: 24-JUL-2007 19:02:18 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 4 Text: P8090_5075_001 North Furnace-Run 1 Air Train Vial# 18 File Text: AP DB5



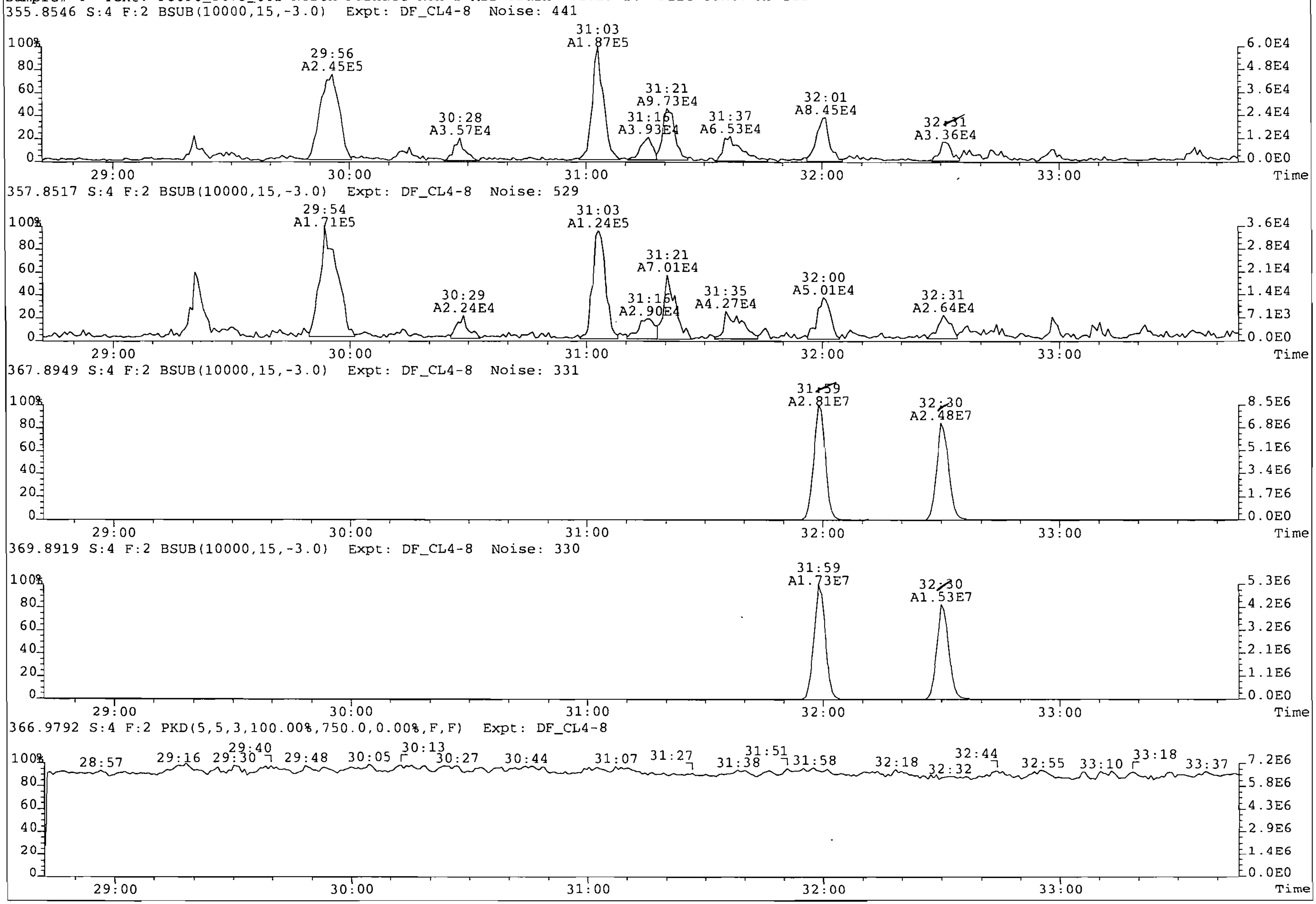
File: 070724P2 Acq: 24-JUL-2007 19:02:18 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 4 Text: P8090_5075_001 North Furnace-Run 1 Air Train Vial# 18 File Text: AP DB5

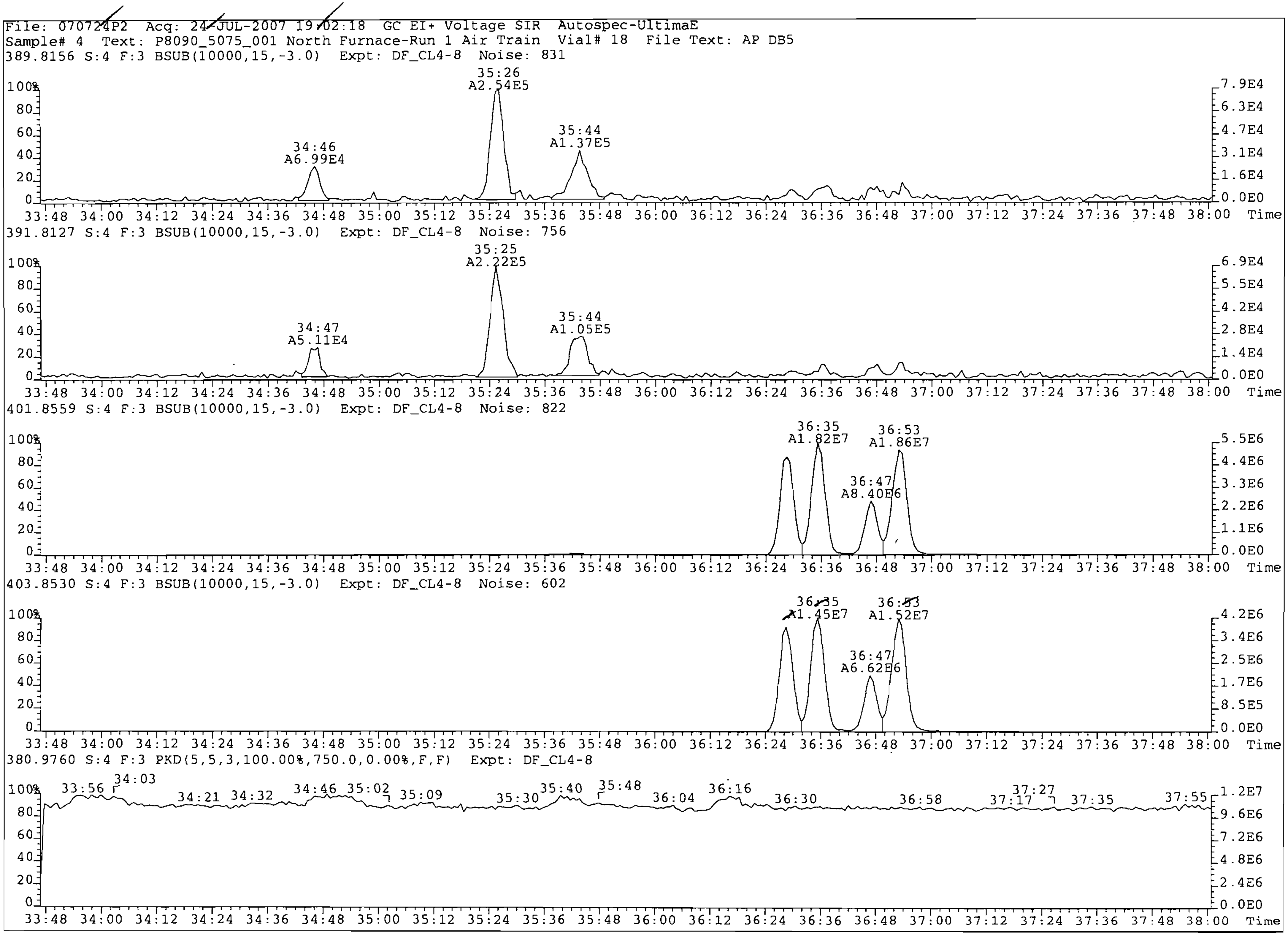
$$\left(\frac{9.52E^4}{4.69E^7}\right)\left(\frac{4000}{1}\right)\left(\frac{1}{.97}\right)$$

8.37 pg/g

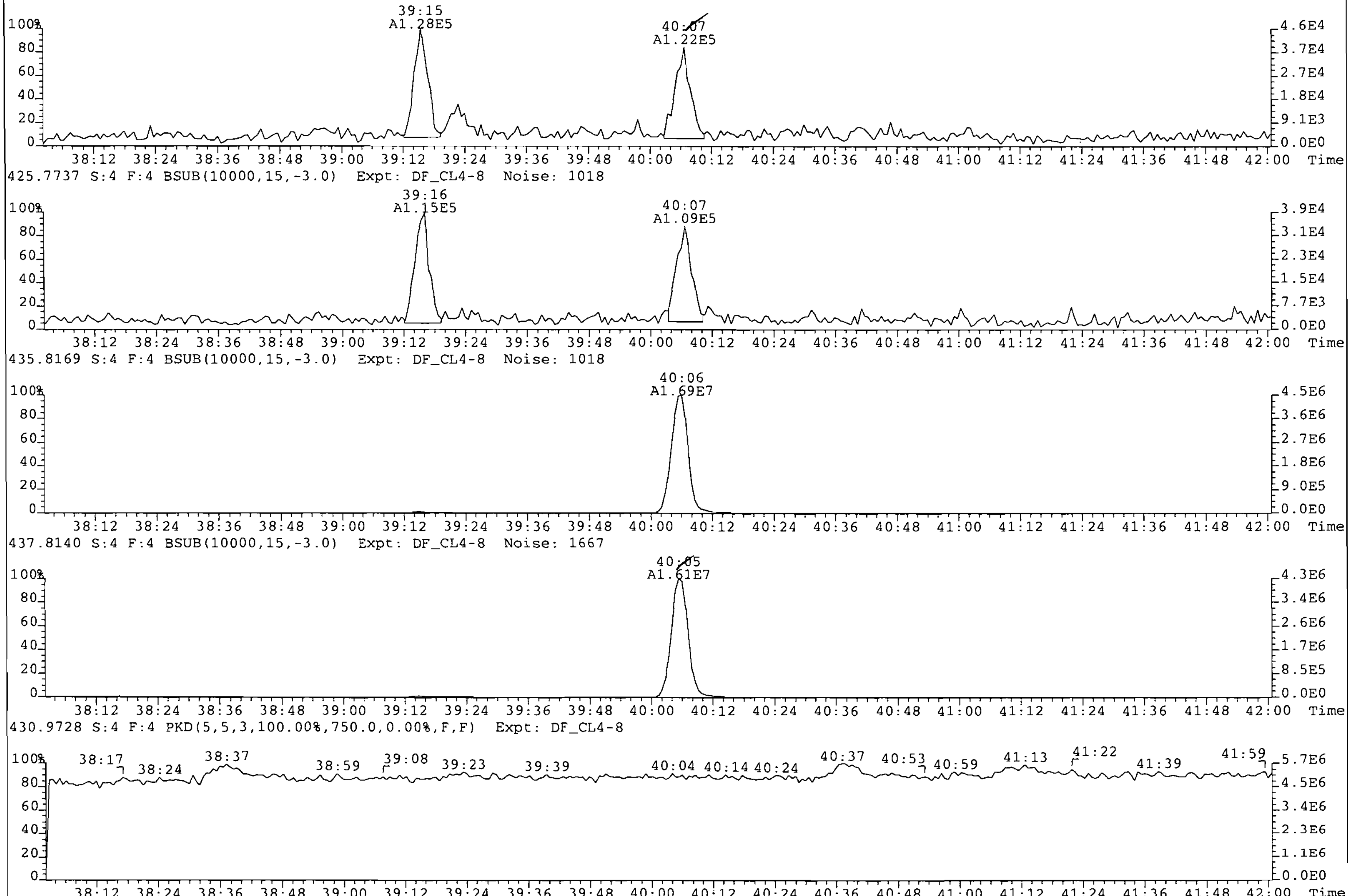


File: 070724P2 Acq: 24-JUL-2007 19:02:18 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 4 Text: P8090_5075_001 North Furnace-Run 1 Air Train Vial# 18 File Text: AP DB5

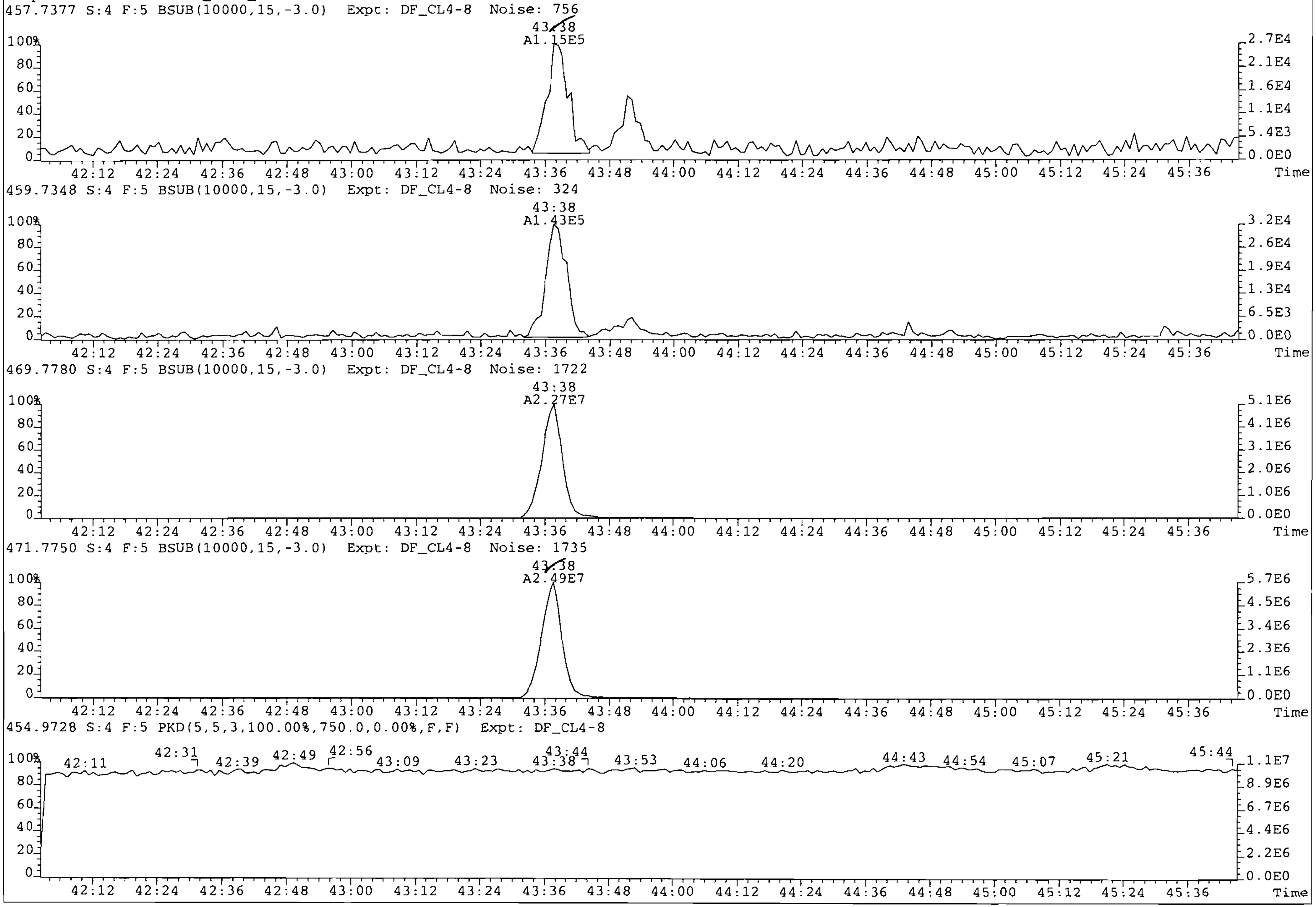



File: 070724P2 Acq: 24-JUL-2007 19:02:18 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 4 Text: P8090_5075_001 North Furnace-Run 1 Air Train Vial# 18 File Text: AP DB5
389.8156 S:4 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 831
35:26 A2.54E5
35:44 A1.37E5
34:46 A6.99E4
391.8127 S:4 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 756
35:25 A2.22E5
35:44 A1.05E5
34:47 A5.11E4
401.8559 S:4 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 822
36:35 A1.82E7
36:53 A1.86E7
36:47 A8.40E6
403.8530 S:4 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 602
36:35 A1.45E7
36:53 A1.52E7
36:47 A6.62E6
380.9760 S:4 F:3 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8
33:56 34:03 34:21 34:32 34:46 35:02 35:09 35:30 35:40 35:48 36:04 36:16 36:30 36:58 37:17 37:27 37:35 37:55
Time

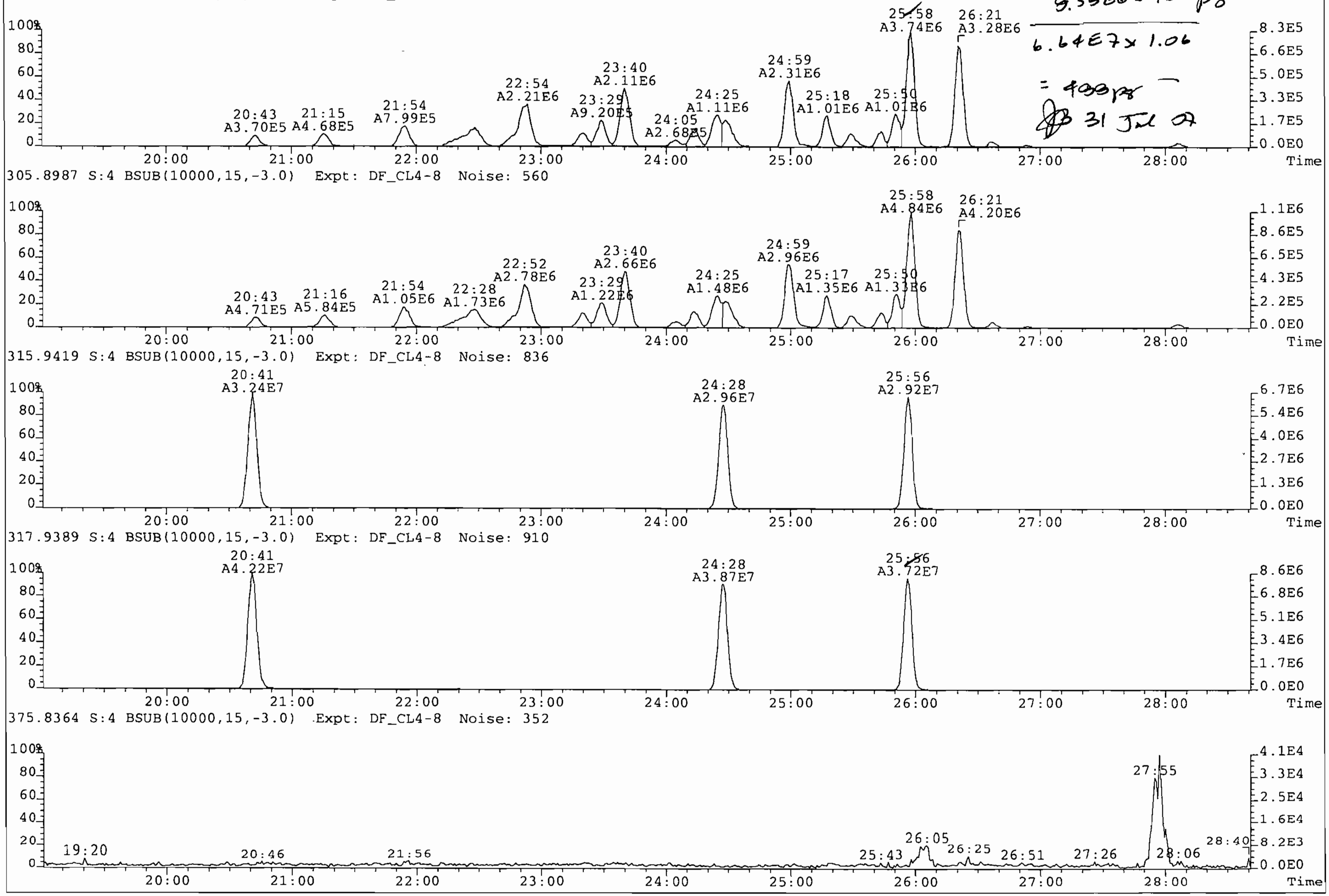
File: 070724P2 Acq: 24-JUL-2007 19:02:18 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 4 Text: P8090_5075_001 North Furnace-Run 1 Air Train Vial# 18 File Text: AP DB5
423.7767 S:4 F:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 1313



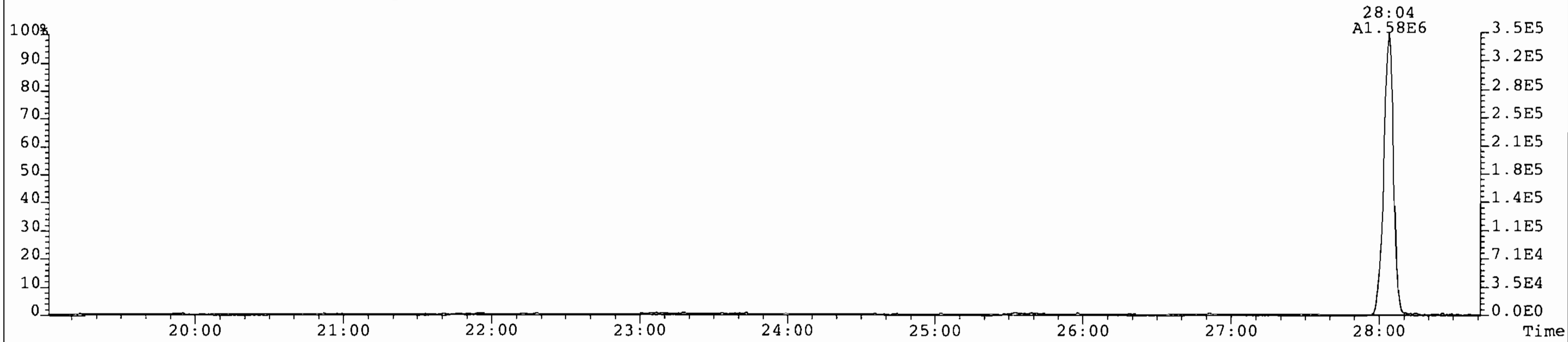
File: 070724P2 Acq: 24-JUL-2007 19:02:18 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 4 Text: P8090_5075_001 North Furnace-Run 1 Air Train Vial# 18 File Text: AP DB5



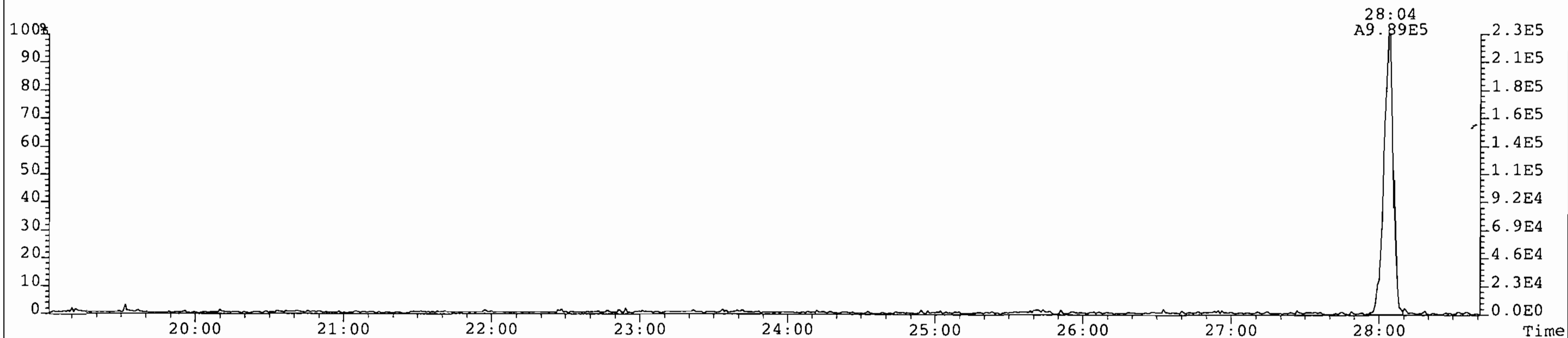
File: 070724P2 Acq: 24-JUL-2007 19:02:18 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 4 Text: P8090_5075_001 North Furnace-Run 1 Air Train Vial# 18 File Text: AP DB5
303.9016 S:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 501



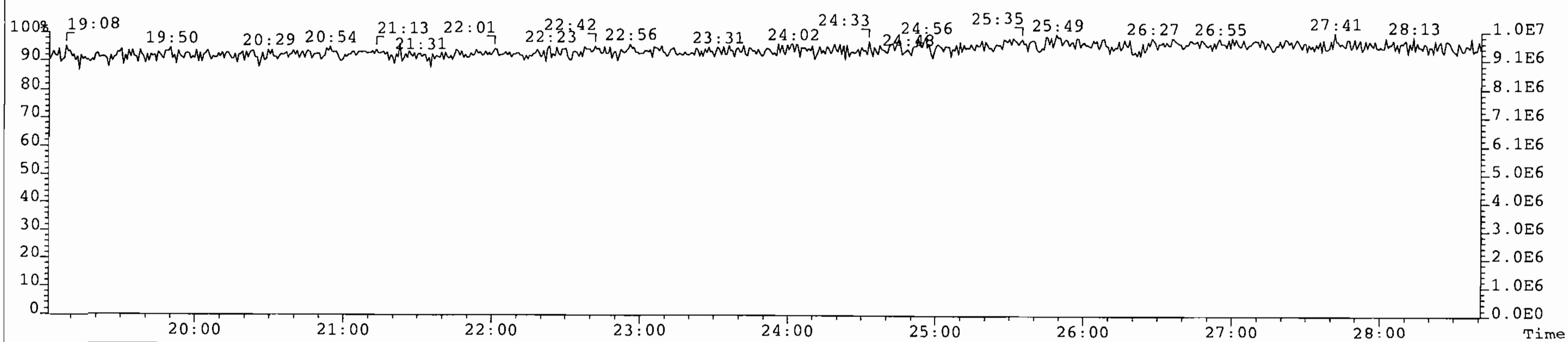
File: 070724P2 Acq: 24-JUL-2007 19:02:18 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 4 Text: P8090_5075_001 North Furnace-Run 1 Air Train Vial# 18 File Text: AP DB5
339.8597 S:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 347



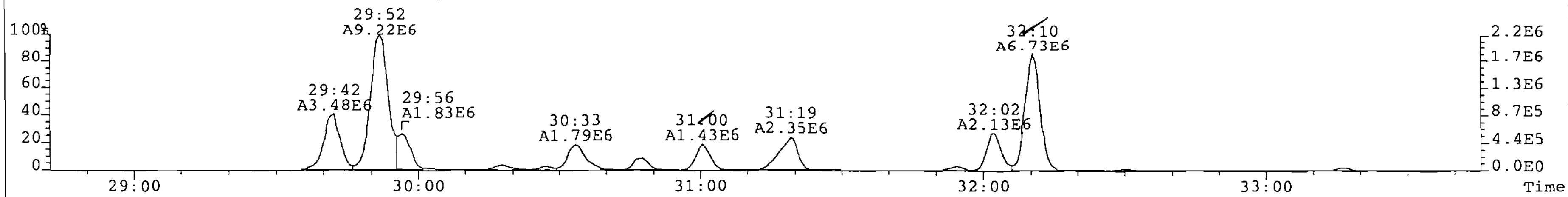
341.8568 S:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 404



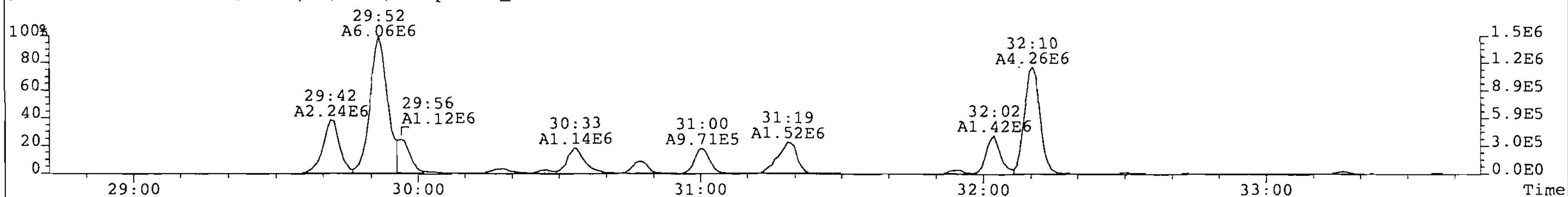
316.9824 S:4 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



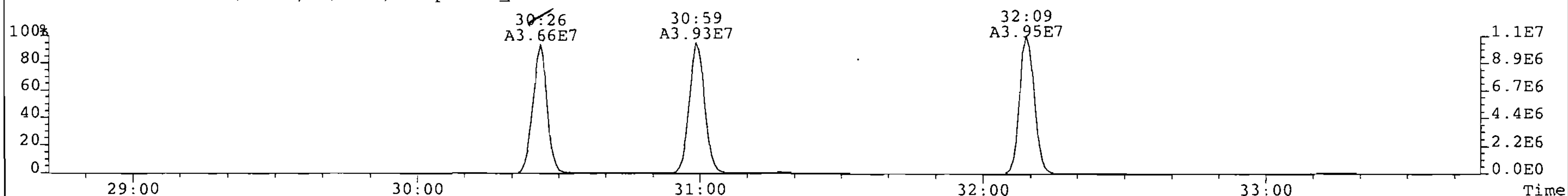
File: 070724P2 Acq: 24-JUL-2007 19:02:18 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 4 Text: P8090_5075_001 North Furnace-Run 1 Air Train Vial# 18 File Text: AP DB5
339.8597 S:4 F:2 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 402



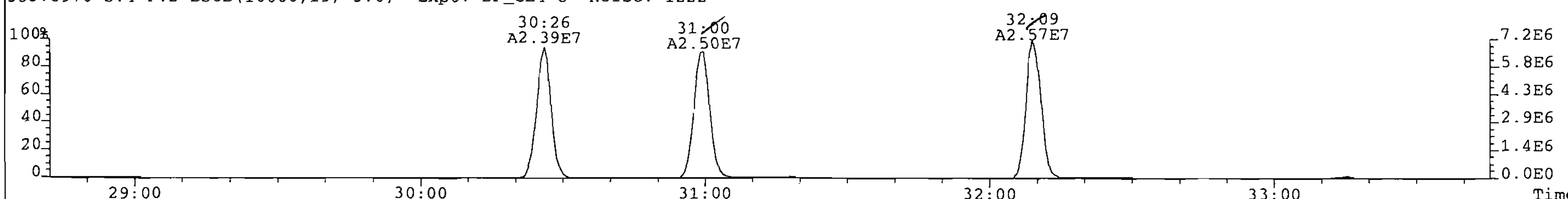
341.8568 S:4 F:2 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 627



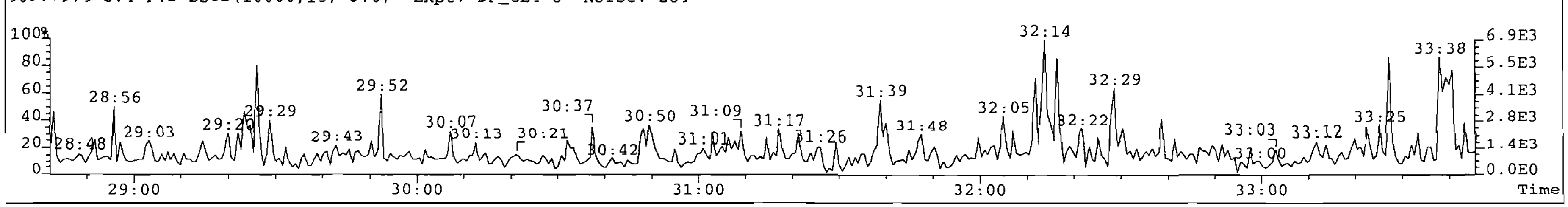
351.9000 S:4 F:2 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 1335



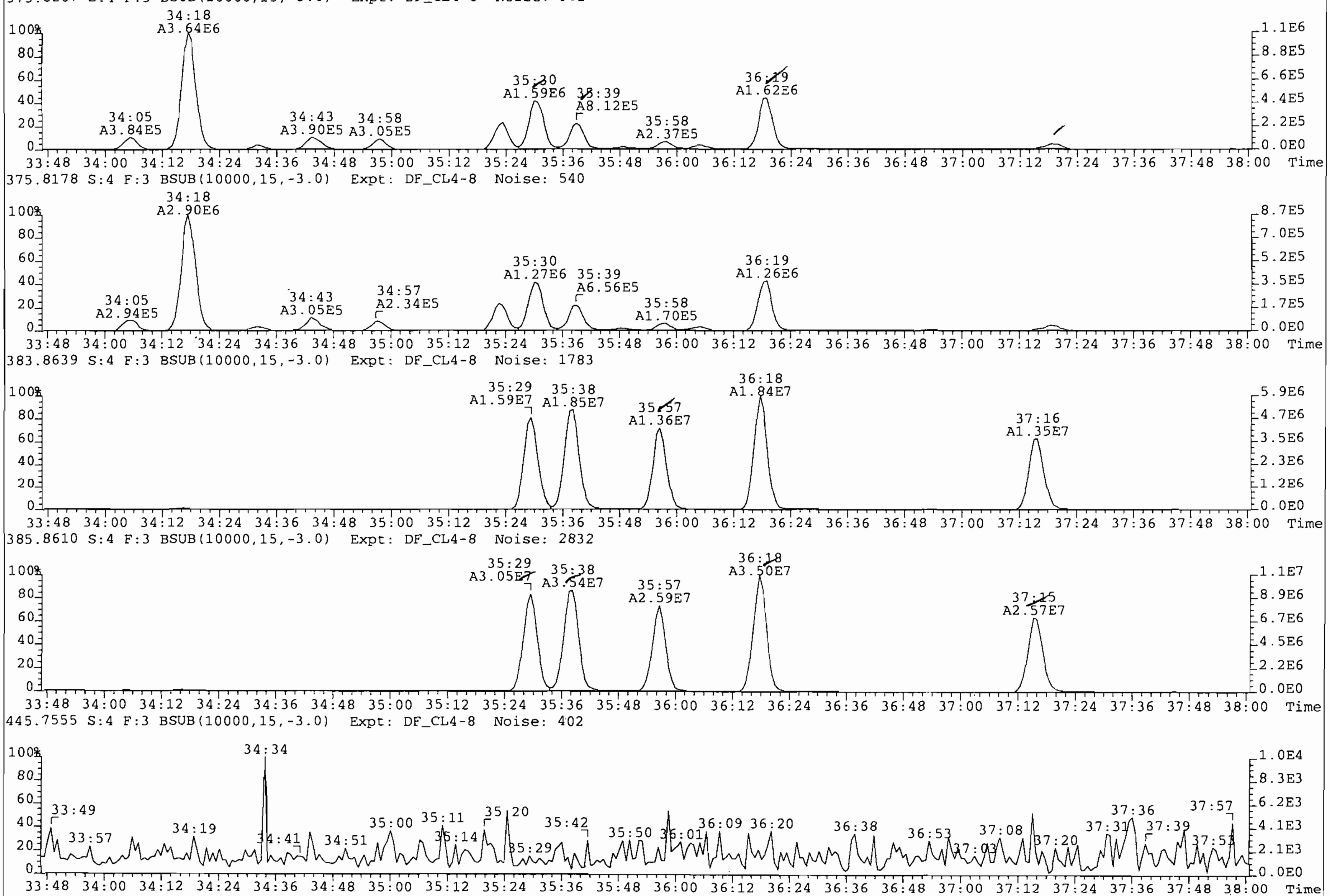
353.8970 S:4 F:2 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 1222



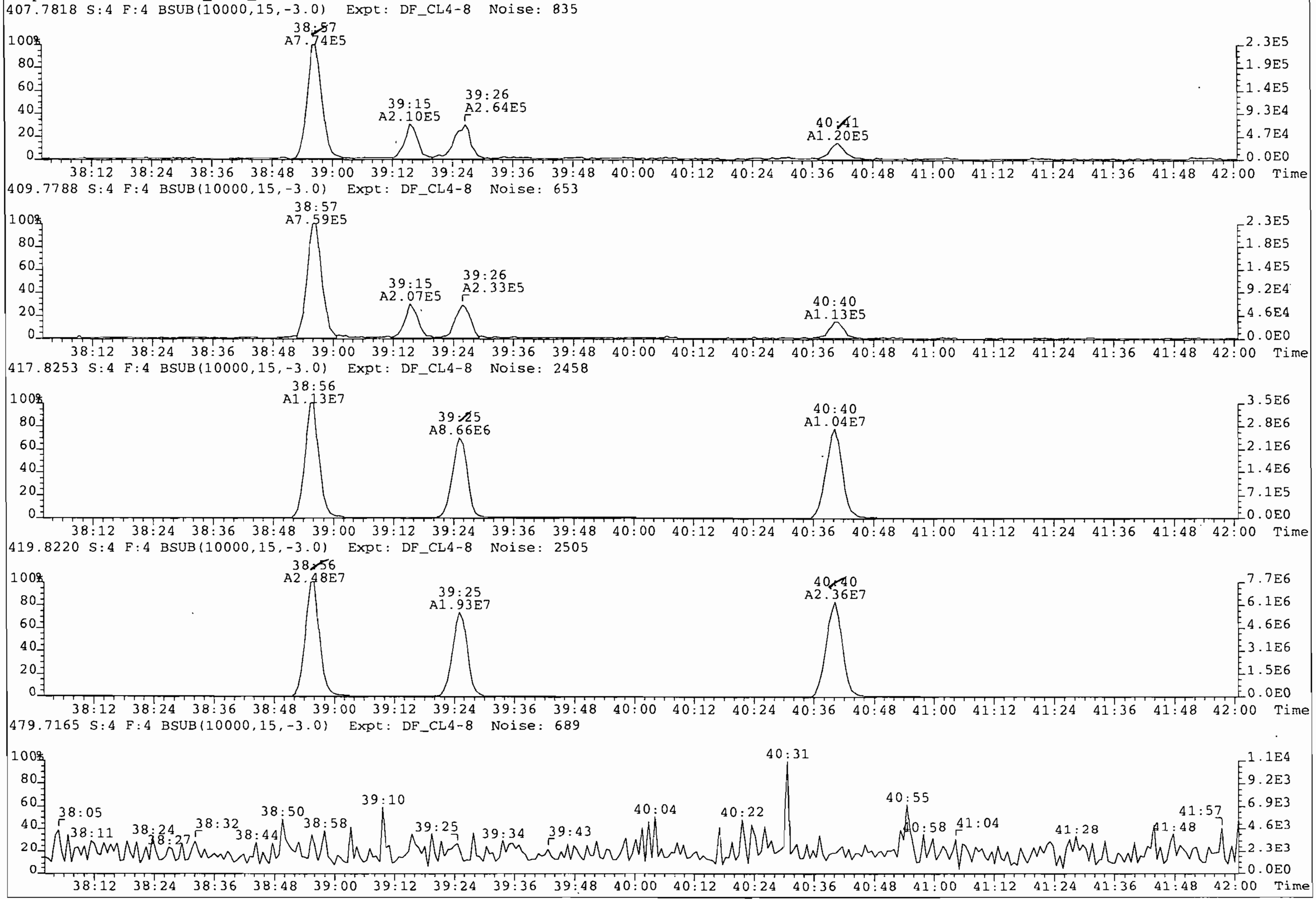
409.7974 S:4 F:2 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 284



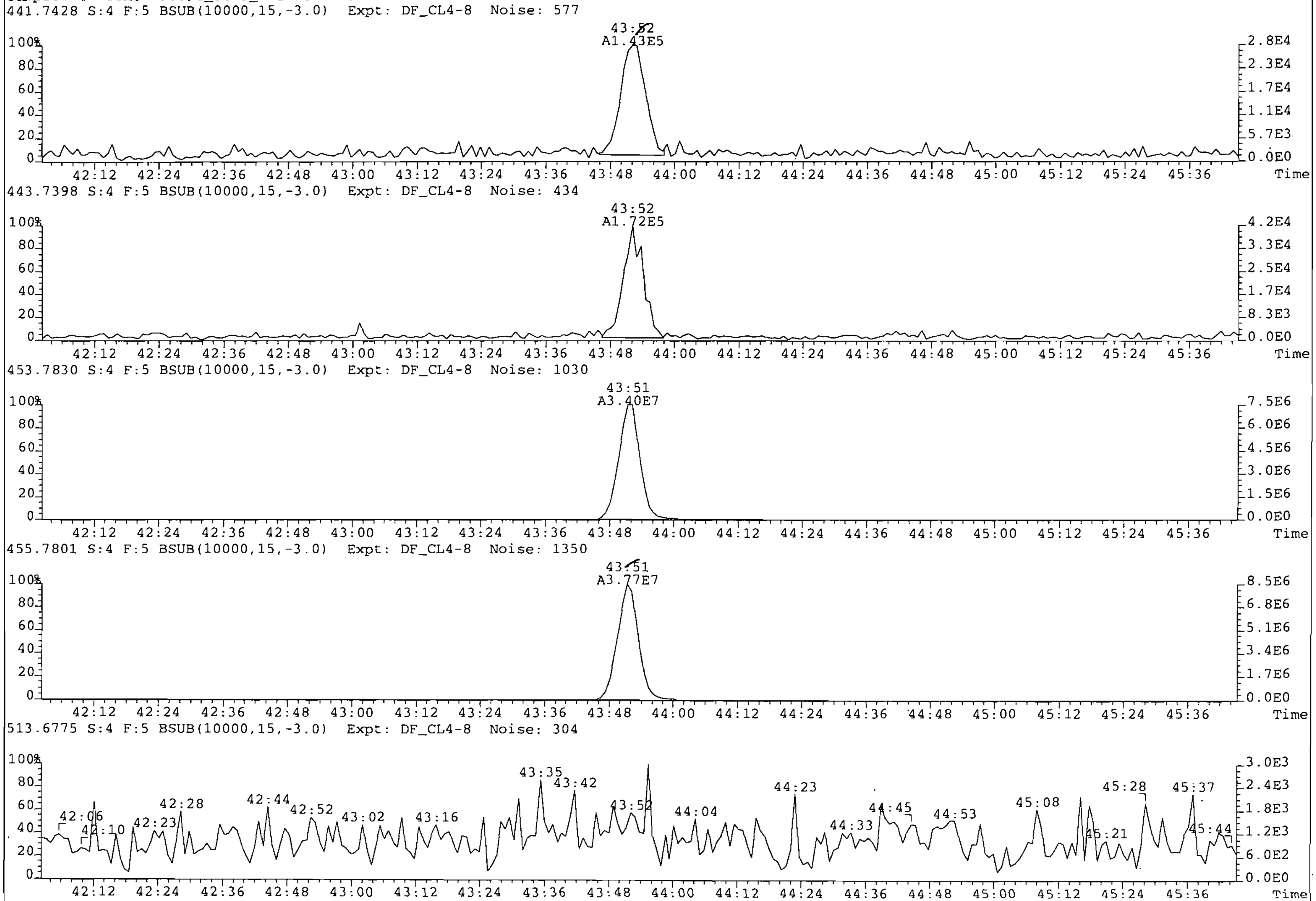
File: 070724P2 Acq: 24-JUL-2007 19:02:18 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 4 Text: P8090_5075_001 North Furnace-Run 1 Air Train Vial# 18 File Text: AP DB5
373.8207 S:4 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 901



File: 070724P2 Acq: 24-JUL-2007 19:02:18 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 4 Text: P8090_5075_001 North Furnace-Run 1 Air Train Vial# 18 File Text: AP DB5



File: 070724P2 Acq: 24-JUL-2007 19:02:18 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 4 Text: P8090_5075_001 North Furnace-Run 1 Air Train Vial# 18 File Text: AP DB5



O[illegible]an on MM1 25-JUL-2007 15:41 checkcode: 5[illegible] JO 31 Jul 07

1[illegible]/8290 Sample Summary Analytical Perspectives [Form: DF]

Client ID: North Furnace-Run 2 Filename: 070724P2 S: 5 Vial: 19 Acq: 24-JUL-07 19:52:12
Lab ID: P8090_5075_002 GC column ID: db-5 Cal: Wt/Vol: 1.000
Sample text: P8090_5075_002 North Furnace-Run 2 Air Train Stds: JS (split adj.): 4000 CS/SS: 1600 ES: 4000

Typ.	Name	Resp	RA		RT	RRF	Conc.	Noise	Fac	DL	Rec.
Ax	2,3,7,8-TCDD	1.65e+05	0.63	n	26:54	0.97	9.17	1890	2.5	1.97	-
Ax	1,2,3,7,8-PeCDD	*	*	n	NotF»	0.88	*	2841	2.5	5.31	-
Ax	1,2,3,4,7,8-HxCDD	*	*	n	NotF»	1.07	*	1415	2.5	2.65	-
Ax	1,2,3,6,7,8-HxCDD	*	*	n	NotF»	1.00	*	1415	2.5	2.64	-
Ax	1,2,3,7,8,9-HxCDD	*	*	n	NotF»	0.94	*	1415	2.5	2.88	-
Ax	1,2,3,4,6,7,8-HpCDD	1.86e+05	1.37	n	40:06	0.88	23.5	2716	2.5	6.32	-
Ax	OCDD	1.51e+05	1.09	n	43:37	0.96	28.8	4356	2.5	19.2	-
Ax2	OCDD-a	*	*	n	NotF»	0.06	*	4781	2.5	337	-
Ax	2,3,7,8-TCDF	2.56e+06	0.84	y	25:57	1.06	107	1516	2.5	1.19	-
Ax	1,2,3,7,8-PeCDF	6.77e+05	1.46	y	31:00	0.96	33.2	5051	2.5	5.98	-
Ax	2,3,4,7,8-PeCDF	1.56e+06	1.61	y	32:10	0.96	79.7	5051	2.5	5.80	-
Ax	1,2,3,4,7,8-HxCDF	3.95e+05	1.09	y	35:30	1.04	26.9	15870	2.5	13.3	-
Ax	1,2,3,6,7,8-HxCDF	3.98e+05	1.21	y	35:38	1.06	23.4	15870	2.5	12.5	-
Ax	2,3,4,6,7,8-HxCDF	5.10e+05	1.23	y	36:18	1.01	34.0	15870	2.5	12.7	-
Ax	1,2,3,7,8,9-HxCDF	1.39e+05	1.16	y	37:18	1.05	10.7	15870	2.5	17.8	-
Ax	1,2,3,4,6,7,8-HpCDF	5.43e+05	0.99	y	38:56	1.22	46.7	3618	2.5	3.91	-
Ax	1,2,3,4,7,8,9-HpCDF	1.00e+05	1.20	n	40:40	1.13	9.56	3618	2.5	4.72	-
Ax	OCDF	1.45e+05	1.04	n	43:52	0.79	21.6	3541	2.5	12.1	-
Ax2	OCDF-a	*	*	n	NotF»	0.05	*	4236	2.5	234	-
ES	13C-2,3,7,8-TCDD	7.41e+07	0.79	y	26:52	1.11	4290	1654	2.5	1.99	107 calc
ES	13C-1,2,3,7,8-PeCDD	5.35e+07	1.59	y	32:30	1.01	3390	3483	2.5	4.58	84.8
ES	13C-1,2,3,4,7,8-HxCDD	3.57e+07	1.27	y	36:28	1.04	3120	6626	2.5	10.7	78.0
ES	13C-1,2,3,6,7,8-HxCDD	3.99e+07	1.27	y	36:35	1.13	3220	6626	2.5	9.89	80.5
ES	13C-1,2,3,7,8,9-HxCDD	4.13e+07	1.28	y	36:53	1.19	3150	6626	2.5	9.35	78.8
ES	13C-1,2,3,4,6,7,8-HpCDD	3.61e+07	1.05	y	40:05	1.25	2630	4869	2.5	6.56	65.7
ES	13C-OCDD	4.39e+07	0.90	y	43:37	0.88	4560	2271826	2.5	4370	57.0
ES	13C-2,3,7,8-TCDF	9.08e+07	0.77	y	25:56	0.93	3890	4810	2.5	4.39	97.3
ES	13C-1,2,3,7,8-PeCDF	8.52e+07	1.56	y	30:59	0.94	3640	2799	2.5	2.55	91.0
ES	13C-2,3,4,7,8-PeCDF	8.16e+07	1.54	y	32:09	0.96	3410	2799	2.5	2.49	85.2
ES	13C-1,2,3,4,7,8-HxCDF	5.65e+07	0.52	y	35:29	1.56	3300	68940	2.5	74.5	82.5
ES	13C-1,2,3,6,7,8-HxCDF	6.45e+07	0.53	y	35:38	1.76	3330	68940	2.5	65.9	83.3
ES	13C-2,3,4,6,7,8-HxCDF	5.95e+07	0.53	y	36:18	1.79	3030	68940	2.5	64.9	75.6
ES	13C-1,2,3,7,8,9-HxCDF	4.90e+07	0.53	y	37:16	1.65	2710	68940	2.5	70.5	67.7
ES	13C-1,2,3,4,6,7,8-HpCDF	3.82e+07	0.43	y	38:55	1.35	2570	7004	2.5	8.74	64.3
ES	13C-1,2,3,4,7,8,9-HpCDF	3.71e+07	0.44	y	40:40	1.18	2870	7004	2.5	10.0	71.7
ES	13C-OCDF	6.77e+07	0.91	y	43:52	1.29	4770	8294	2.5	10.8	59.6
CS	37Cl-2,3,7,8-TCDD	3.16e+07			26:54	1.15	1770			1.28	111
CS	13C-1,2,3,4,7-PeCDD	6.01e+07	1.59	y	31:59	1.01	3820	3483	2.5	4.60	95.5
CS	13C-1,2,3,4,6-PeCDF	8.21e+07	1.54	y	30:27	0.83	3950	2799	2.5	2.87	98.8
CS	13C-1,2,3,4,6,9-HxCDF	4.57e+07	0.53	y	35:57	1.32	3140	68940	2.5	87.8	78.6
CS	13C-1,2,3,4,6,8,9-HpCDF	3.16e+07	0.45	y	39:25	1.05	2730	7004	2.5	11.2	68.3
NA	n/a	*	*	n	NotF»	Div0	*	68940	2.5	*	*
JS/RT	13C-1,2,3,4-TCDD	6.24e+07	0.80	y	26:10	-	161	1654	2.5	-	-
JS	13C-1,2,3,4-TCDF	9.99e+07	0.78	y	24:27	-	158	4810	2.5	-	-
JS/RT	13C-1,2,3,4,6,7-HxCDD	2.20e+07	1.28	y	36:47	-	75.0	6626	2.5	-	-

Analyst: EC

Date: 25 Jul 07

SS	37Cl-2,3,7,8-TCDD	3.16e+07			26:54	1.03	1650			1.08	103
SS	13C-1,2,3,4,7-PeCDD	6.01e+07	1.59	y	31:59	1.00	4500	3483	2.5	5.75	112
SS	13C-1,2,3,4,6-PeCDF	8.21e+07	1.54	y	30:27	0.89	4340	2799	2.5	3.57	109
SS	13C-1,2,3,4,6,9-HxCDF	4.57e+07	0.53	y	35:57	0.75	3770	68940	2.5	76.4	94.4
SS	13C-1,2,3,4,6,8,9-HpCDF	3.16e+07	0.45	y	39:25	0.78	4240	7004	2.5	11.8	106
SBS	2,4,6,8-TCDF	2.84e+06	0.76	y	21:54	1.06	118	1516	2.5	1.19	-
Ay	1,3,6,8-TCDD	7.33e+05	0.79	y	22:54	0.97	40.7	1890	2.5	1.97	-
Ay	1,2,3,9-TCDD	*	*	n	NotF»	0.97	*	1890	2.5	1.97	-
Ay	1,2,8,9-TCDD	3.92e+04	0.96	n	27:55	0.97	2.18	1890	2.5	1.97	-
Ay	1,2,4,7,9-PeCDD	3.63e+05	1.47	y	29:58	0.88	30.8	2841	2.5	5.31	-
Ay	1,2,3,8,9-PeCDD	*	*	n	NotF»	0.88	*	2841	2.5	5.31	-
Ay	1,2,4,6,7,9-HxCDD	1.00e+05	1.07	y	34:45	1.00	10.3	1415	2.5	2.72	-
Ay	1,2,3,4,6,7,9-HpCDD	1.97e+05	1.01	y	39:15	0.88	24.9	2716	2.5	6.32	-
Ay	1,3,6,8-TCDF	1.45e+06	0.81	y	20:43	1.06	60.7	1516	2.5	1.19	-
Ay	2,3,4,8-TCDF	9.43e+05	0.72	y	25:51	1.06	39.3	1516	2.5	1.19	-
Ay	1,2,8,9-TCDF	1.72e+05	0.75	y	28:05	1.06	7.18	1516	2.5	1.19	-
Ay	1,3,4,6,8-PeCDF	1.50e+06	1.57	y	28:04	1.06	62.8	2443	2.5	1.92	-
Ay	1,2,3,8,9-PeCDF	9.91e+04	1.85	n	33:16	0.96	4.96	5051	2.5	5.89	-
Ay	1,2,3,4,6,8-HxCDF	3.18e+05	1.30	y	34:05	1.04	21.4	15870	2.5	13.9	-
Tot	Total Tetra-Dioxins	2.12e+06	0.79	y	22:54	0.97	118	1890	2.5	1.97	-
Tot	Total Penta-Dioxins	1.51e+06	1.47	y	29:58	0.88	128	2841	2.5	5.31	-
Tot	Total Hexa-Dioxins	1.01e+06	1.07	y	34:45	1.00	104	1415	2.5	2.72	-
Tot	Total Hepta-Dioxins	1.97e+05	1.01	y	39:15	0.88	24.9	2716	2.5	6.32	-
Tot	Total Tetra-Furans	3.15e+07	0.81	y	20:43	1.06	1310	1516	2.5	1.19	-
Tot	Total Penta-Furans	1.09e+07	1.57	y	29:42	0.96	545	5051	2.5	5.89	-
Tot	Total Hexa-Furans	3.44e+06	1.30	y	34:05	1.04	229	15870	2.5	13.9	-
Tot	Total Hepta-Furans	8.78e+05	0.99	y	38:56	1.18	76.9	3618	2.5	4.28	-
Tot	TCDD EMPC	2.32e+06	0.79	y	22:54	0.97	129	1890	2.5	1.97	-
Tot	PeCDD EMPC	1.51e+06	1.47	y	29:58	0.88	128	2841	2.5	5.31	-
Tot	HxCDD EMPC	1.01e+06	1.07	y	34:45	1.00	104	1415	2.5	2.72	-
Tot	HpCDD EMPC	3.83e+05	1.01	y	39:15	0.88	48.3	2716	2.5	6.32	-
Tot	TCDF EMPC	3.20e+07	0.81	y	20:43	1.06	1340	1516	2.5	1.19	-
Tot	PeCDF EMPC	1.11e+07	1.57	y	29:42	0.96	557	5051	2.5	5.89	-
Tot	HxCDF EMPC	3.59e+06	1.30	y	34:05	1.04	239	15870	2.5	13.9	-
Tot	HpCDF EMPC	9.78e+05	0.99	y	38:56	1.18	86.5	3618	2.5	4.28	-
AS	13C-1,3,6,8-TCDD	6.74e+07	0.81	y	22:52	1.10	3940	1654	2.5	2.00	98.4
AS	13C-1,3,6,8-TCDF	1.08e+08	0.78	y	20:41	1.07	4030	4810	2.5	3.83	101
DPE	HxCDPE	*			NotF»	-	*			-	-
DPE	HpCDPE	*			NotF»	-	*			-	-
DPE	OCDPE	*			NotF»	-	*			-	-
DPE	NCDPE	*			NotF»	-	*			-	-
DPE	DCDPE	*			NotF»	-	*			-	-
LMC	Fn1 check mass	*			NotF»	-	*			-	-
LMC	Fn2 check mass	*			NotF»	-	*			-	-
LMC	Fn3 check mass	*			NotF»	-	*			-	-
LMC	Fn4 check mass	*			NotF»	-	*			-	-
LMC	Fn5 check mass	*			NotF»	-	*			-	-

Totals Results Analytical Perspectives [Form: TOT]

Totals class: TCDD EMPC Function: 1 Run #: 5 Checkcode: 5831
File Name: 070724P2 Sample #: 5 Sample text: P8090_5075_002 North Furnace-Run 2 Air »

Acquired: 24-JUL-07 19:52:12 Processed: 25-JUL-07 08:37:29

Total Conc.: 128.95 Unnamed Conc.: 76.940 Homolog count: 12

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
22:54	3.229e+05	y	4.097e+05	y	0.79	y	7.327e+05	7.327e+05	3.89e+01	y	40.7	1,3,6,8-TCDD
23:18	1.723e+05	y	2.113e+05	y	0.82	y	3.836e+05	3.836e+05	1.99e+01	y	21.3	
23:46	3.793e+04	y	5.783e+04	y	0.66	y	9.576e+04	9.576e+04	7.48e+00	y	5.32	
24:54	9.155e+04	y	1.222e+05	y	0.75	y	2.137e+05	2.137e+05	1.06e+01	y	11.9	
25:07	9.714e+04	y	1.238e+05	y	0.78	y	2.209e+05	2.209e+05	1.26e+01	y	12.3	
25:20	3.177e+04	y	4.540e+04	y	0.70	y	7.717e+04	7.717e+04	4.53e+00	y	4.28	
25:46	4.679e+04	y	6.655e+04	y	0.70	y	1.133e+05	1.133e+05	7.40e+00	y	6.29	
26:09	3.948e+04	y	4.962e+04	y	0.80	y	8.909e+04	8.909e+04	5.52e+00	y	4.95	
26:34	5.636e+04	y	6.949e+04	y	0.81	y	1.258e+05	1.258e+05	6.52e+00	y	6.99	
26:54	7.184e+04	y	1.143e+05	y	0.63	n	1.861e+05	1.651e+05	1.66e+01	y	9.17	2,3,7,8-TCDD
27:14	2.797e+04	y	3.870e+04	y	0.72	y	6.666e+04	6.666e+04	5.10e+00	y	3.70	
27:55	2.124e+04	y	2.215e+04	y	0.96	n	4.339e+04	3.921e+04	2.75e+00	y	2.18	1,2,8,9-TCDD

Totals Results Analytical Perspectives [Form: TOT]

Totals class: PeCDD EMPC Function: 2 Run #: 5 Checkcode: 5831
File Name: 070724P2 Sample #: 5 Sample text: P8090_5075_002 North Furnace-Run 2 Air »

Acquired: 24-JUL-07 19:52:12 Processed: 25-JUL-07 08:37:29

Total Conc.: 128.18 Unnamed Conc.: 97.401 Homolog count: 6

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
29:58	2.160e+05	y	1.466e+05	y	1.47	y	3.626e+05	3.626e+05	9.90e+00	y	30.8	1,2,4,7,9-PeCDD
30:28	3.977e+04	y	2.644e+04	y	1.50	y	6.621e+04	6.621e+04	3.90e+00	y	5.62	
31:03	2.671e+05	y	1.816e+05	y	1.47	y	4.487e+05	4.487e+05	1.85e+01	y	38.1	
31:21	1.851e+05	y	1.131e+05	n	1.64	y	2.982e+05	2.982e+05	1.09e+01	y	25.3	
31:37	6.554e+04	y	4.336e+04	y	1.51	y	1.089e+05	1.089e+05	3.19e+00	y	9.25	
32:00	1.368e+05	y	8.846e+04	y	1.55	y	2.253e+05	2.253e+05	9.76e+00	y	19.1	

Totals Results Analytical Perspectives [Form: TOT]

Totals class: HxCDD EMPC Function: 3 Run #: 5 Checkcode: 5831
File Name: 070724P2 Sample #: 5 Sample text: P8090_5075_002 North Furnace-Run 2 Air »

Acquired: 24-JUL-07 19:52:12 Processed: 25-JUL-07 08:37:29

Total Conc.: 103.69 Unnamed Conc.: 93.412 Homolog count: 3

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
34:45	5.165e+04	y	4.835e+04	y	1.07	y	1.000e+05	1.000e+05	9.47e+00	y	10.3	1,2,4,6,7,9-HxCDD
35:25	4.176e+05	y	3.212e+05	y	1.30	y	7.388e+05	7.388e+05	6.62e+01	y	75.9	
35:43	9.182e+04	y	7.864e+04	y	1.17	y	1.705e+05	1.705e+05	1.36e+01	y	17.5	

Totals Results Analytical Perspectives [Form: TOT]

Totals class: HpCDD EMPC Function: 4 Run #: 5 Checkcode: 5831

File Name: 070724P2 Sample #: 5 Sample text: P8090_5075_002 North Furnace-Run 2 Air »

Acquired: 24-JUL-07 19:52:12 Processed: 25-JUL-07 08:37:29

Total Conc.: 48.348 Unnamed Conc.: * Homolog count: 2

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
39:15	9.905e+04	y	9.794e+04	y	1.01	y	1.970e+05	1.970e+05	1.02e+01	y	24.9	1,2,3,4,6,7,9-HpCDD
40:06	1.245e+05	y	9.105e+04	y	1.37	n	2.156e+05	1.857e+05	8.66e+00	y	23.5	1,2,3,4,6,7,8-HpCDD

Totals Results Analytical Perspectives [Form: TOT]

Totals class: TCDF EMPC Function: 1 Run #: 5 Checkcode: 5831
File Name: 070724P2 Sample #: 5 Sample text: P8090_5075_002 North Furnace-Run 2 Air »

Acquired: 24-JUL-07 19:52:12 Processed: 25-JUL-07 08:37:29

Total Conc.: 1337.2 Unnamed Conc.: 1004.642 Homolog count: 22

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
20:43	6.517e+05	y	8.018e+05	y	0.81	y	1.454e+06	1.454e+06	1.03e+02	y	60.7	1,3,6,8-TCDF
21:15	3.133e+05	y	3.891e+05	y	0.81	y	7.025e+05	7.025e+05	5.06e+01	y	29.3	
21:54	1.227e+06	y	1.612e+06	n	0.76	y	2.839e+06	2.839e+06	1.95e+02	y	118	2,4,6,8-TCDF
22:25	1.084e+06	y	1.372e+06	y	0.79	y	2.455e+06	2.455e+06	8.09e+01	y	102	
22:52	1.060e+06	y	1.340e+06	y	0.79	y	2.399e+06	2.399e+06	1.14e+02	y	100	
23:20	4.272e+05	y	5.218e+05	y	0.82	y	9.490e+05	9.490e+05	6.34e+01	y	39.6	
23:29	4.743e+05	n	5.756e+05	n	0.82	y	1.050e+06	1.050e+06	7.72e+01	y	43.8	
23:40	6.544e+05	y	8.120e+05	n	0.81	y	1.466e+06	1.466e+06	1.04e+02	y	61.2	
24:04	2.022e+05	y	2.281e+05	y	0.89	n	4.303e+05	4.037e+05	3.02e+01	y	16.9	
24:14	5.274e+05	y	6.507e+05	y	0.81	y	1.178e+06	1.178e+06	8.96e+01	y	49.2	
24:23	9.257e+05	y	1.354e+06	y	0.68	y	2.279e+06	2.279e+06	1.57e+02	y	95.1	
24:30	8.482e+05	y	9.731e+05	y	0.87	y	1.821e+06	1.821e+06	1.37e+02	y	76.0	
25:00	8.564e+05	y	1.047e+06	y	0.82	y	1.904e+06	1.904e+06	1.57e+02	y	79.5	
25:17	5.270e+05	y	6.515e+05	y	0.81	y	1.178e+06	1.178e+06	8.92e+01	y	49.2	
25:29	4.070e+05	y	5.362e+05	y	0.76	y	9.432e+05	9.432e+05	6.26e+01	y	39.4	
25:43	3.936e+05	y	4.870e+05	y	0.81	y	8.806e+05	8.806e+05	7.71e+01	y	36.8	
25:51	3.952e+05	y	5.473e+05	y	0.72	y	9.425e+05	9.425e+05	8.18e+01	y	39.3	2,3,4,8-TCDF
25:57	1.166e+06	y	1.395e+06	y	0.84	y	2.561e+06	2.561e+06	2.22e+02	y	107	2,3,7,8-TCDF
26:21	1.818e+06	y	2.364e+06	y	0.77	y	4.182e+06	4.182e+06	3.45e+02	y	175	
26:37	8.466e+04	y	8.441e+04	y	1.00	n	1.691e+05	1.494e+05	1.20e+01	y	6.24	
26:53	5.757e+04	y	7.115e+04	y	0.81	y	1.287e+05	1.287e+05	1.08e+01	y	5.37	
28:05	7.378e+04	y	9.825e+04	y	0.75	y	1.720e+05	1.720e+05	1.48e+01	y	7.18	1,2,8,9-TCDF

Totals Results Analytical Perspectives [Form: TOT]

Totals class: PeCDF EMPC Function: 2 Run #: 5 Checkcode: 5831
File Name: 070724P2 Sample #: 5 Sample text: P8090_5075_002 North Furnace-Run 2 Air »

Acquired: 24-JUL-07 19:52:12 Processed: 25-JUL-07 08:37:29

Total Conc.: 556.54 Unnamed Conc.: 438.712 Homolog count: 15

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
29:42	9.533e+05	y	6.059e+05	y	1.57	y	1.559e+06	1.559e+06	2.45e+01	y	78.1	
29:53	1.393e+06	y	9.271e+05	y	1.50	y	2.320e+06	2.320e+06	3.47e+01	y	116	
30:00	2.772e+05	y	1.692e+05	y	1.64	y	4.464e+05	4.464e+05	1.04e+01	y	22.4	

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
[illegible]:05	6.231e+04	y	4.595e+04	y	1.36	y	1.083e+05	1.083e+05	2.4[illegible]00	n	5.42	
30:22	1.342e+05	y	9.737e+04	y	1.38	y	2.316e+05	2.316e+05	7.50e+00	y	11.6	
30:27	1.964e+05	y	1.126e+05	y	1.74	y	3.091e+05	3.091e+05	7.85e+00	y	15.5	
30:34	6.643e+05	y	4.591e+05	y	1.45	y	1.123e+06	1.123e+06	1.84e+01	y	56.3	
30:47	1.570e+05	y	1.112e+05	y	1.41	y	2.681e+05	2.681e+05	6.95e+00	y	13.4	
31:00	4.013e+05	y	2.755e+05	y	1.46	y	6.768e+05	6.768e+05	1.66e+01	y	33.2	1,2,3,7,8-PeCDF
31:17	5.802e+05	y	3.804e+05	n	1.53	y	9.606e+05	9.606e+05	1.33e+01	y	48.1	
31:54	8.504e+04	y	6.544e+04	y	1.30	n	1.505e+05	1.399e+05	4.34e+00	y	7.01	
32:02	7.049e+05	y	4.711e+05	y	1.50	y	1.176e+06	1.176e+06	2.45e+01	y	58.9	
32:10	9.597e+05	y	5.971e+05	y	1.61	y	1.557e+06	1.557e+06	3.01e+01	y	79.7	2,3,4,7,8-PeCDF
32:29	6.865e+04	y	4.778e+04	y	1.44	y	1.164e+05	1.164e+05	3.02e+00	y	5.83	
33:16	7.186e+04	y	3.887e+04	y	1.85	n	1.107e+05	9.912e+04	3.05e+00	y	4.96	1,2,3,8,9-PeCDF

Totals Results   Analytical Perspectives   [Form: TOT]

Totals class: HxCDF EMPC   Function: 3 Run #: 5   Checkcode: 5831
File Name: 070724P2   Sample #: 5   Sample text: P8090_5075_002 North Furnace-Run 2 Air »

Acquired: 24-JUL-07 19:52:12   Processed: 25-JUL-07 08:37:29

Total Conc.: 239.12   Unnamed Conc.: 122.737   Homolog count: 13

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
34:05	1.800e+05	y	1.382e+05	y	1.30	y	3.182e+05	3.182e+05	2.82e+00	y	21.4	1,2,3,4,6,8-HxCDF
34:18	4.868e+05	y	4.004e+05	y	1.22	y	8.872e+05	8.872e+05	7.83e+00	y	59.5	
34:32	4.746e+04	y	2.943e+04	y	1.61	n	7.689e+04	6.592e+04	6.10e-01	n	4.42	
34:43	7.653e+04	y	6.355e+04	y	1.20	y	1.401e+05	1.401e+05	1.14e+00	n	9.40	
34:58	5.531e+04	y	3.742e+04	y	1.48	n	9.273e+04	8.382e+04	6.79e-01	n	5.62	
35:23	2.209e+05	y	1.725e+05	y	1.28	y	3.934e+05	3.934e+05	3.22e+00	y	26.4	
35:30	2.062e+05	y	1.892e+05	y	1.09	y	3.953e+05	3.953e+05	3.68e+00	y	26.9	1,2,3,4,7,8-HxCDF
35:38	2.179e+05	y	1.801e+05	y	1.21	y	3.980e+05	3.980e+05	3.22e+00	y	23.4	1,2,3,6,7,8-HxCDF
35:48	3.793e+04	y	3.431e+04	y	1.11	y	7.224e+04	7.224e+04	6.87e-01	n	4.85	
35:57	4.978e+04	y	4.466e+04	y	1.11	y	9.444e+04	9.444e+04	7.16e-01	n	6.34	
36:05	4.871e+04	y	4.337e+04	y	1.12	y	9.208e+04	9.208e+04	8.40e-01	n	6.18	
36:18	2.815e+05	y	2.286e+05	y	1.23	y	5.101e+05	5.101e+05	4.79e+00	y	34.0	2,3,4,6,7,8-HxCDF
37:18	7.454e+04	y	6.406e+04	y	1.16	y	1.386e+05	1.386e+05	1.19e+00	n	10.7	1,2,3,7,8,9-HxCDF

Totals Results   Analytical Perspectives   [Form: TOT]

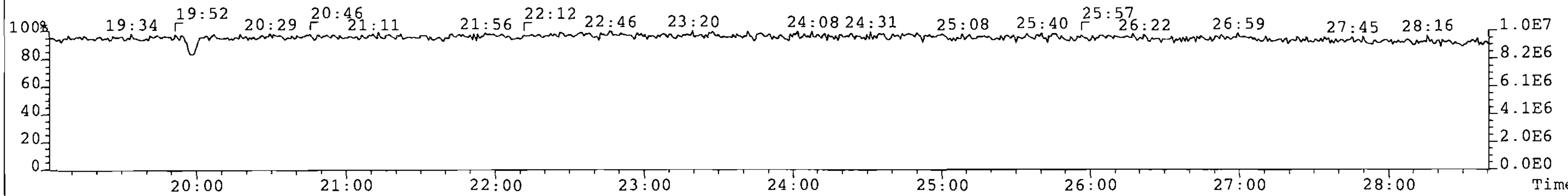
Totals class: HpCDF EMPC   Function: 4 Run #: 5   Checkcode: 5831
File Name: 070724P2   Sample #: 5   Sample text: P8090_5075_002 North Furnace-Run 2 Air »

Acquired: 24-JUL-07 19:52:12   Processed: 25-JUL-07 08:37:29

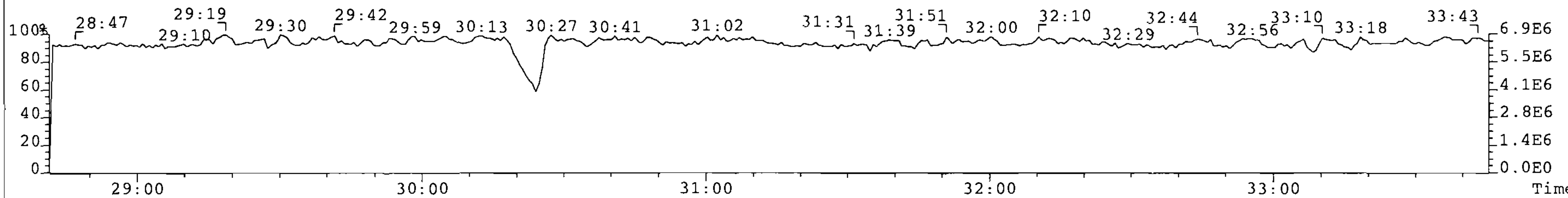
Total Conc.: 86.467   Unnamed Conc.: 30.244   Homolog count: 4

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
38:56	2.698e+05	y	2.728e+05	y	0.99	y	5.426e+05	5.426e+05	1.99e+01	y	46.7	1,2,3,4,6,7,8-HpCDF
39:16	9.036e+04	y	7.582e+04	y	1.19	y	1.662e+05	1.662e+05	6.36e+00	y	15.0	
39:25	9.181e+04	y	7.718e+04	y	1.19	y	1.690e+05	1.690e+05	6.89e+00	y	15.2	
40:40	5.879e+04	y	4.915e+04	y	1.20	n	1.079e+05	1.003e+05	3.87e+00	y	9.56	1,2,3,4,7,8,9-HpCDF

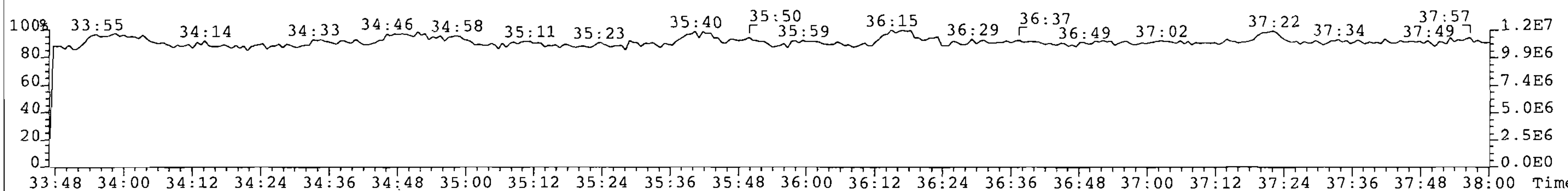
File: 070724P2 Acq: 24-JUL-2007 19:52:12 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 5 Text: P8090_5075_002 North Furnace-Run 2 Air Train Vial# 19 File Text: AP DB5
316.9824 S:5 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



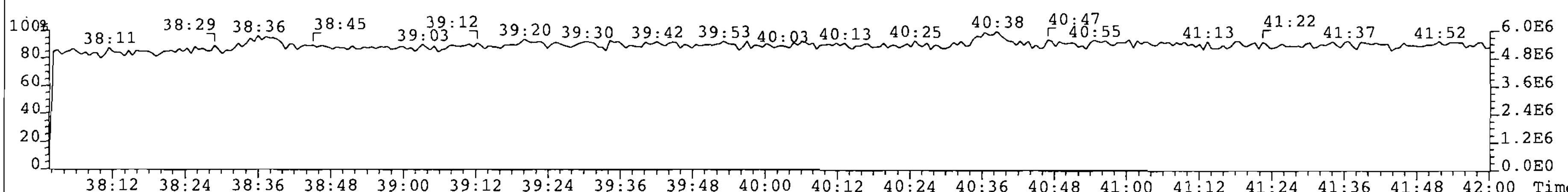
366.9792 S:5 F:2 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



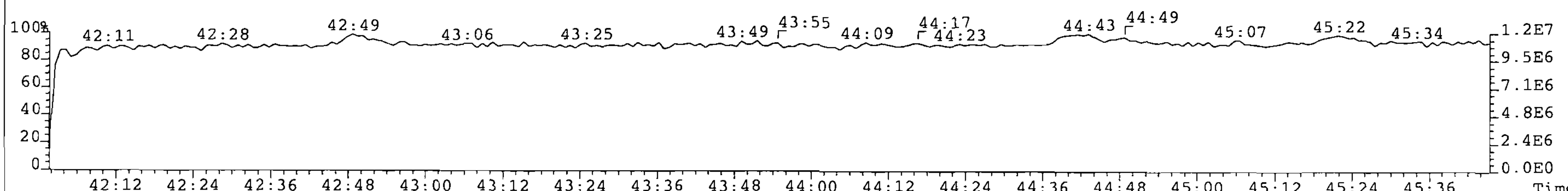
380.9760 S:5 F:3 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



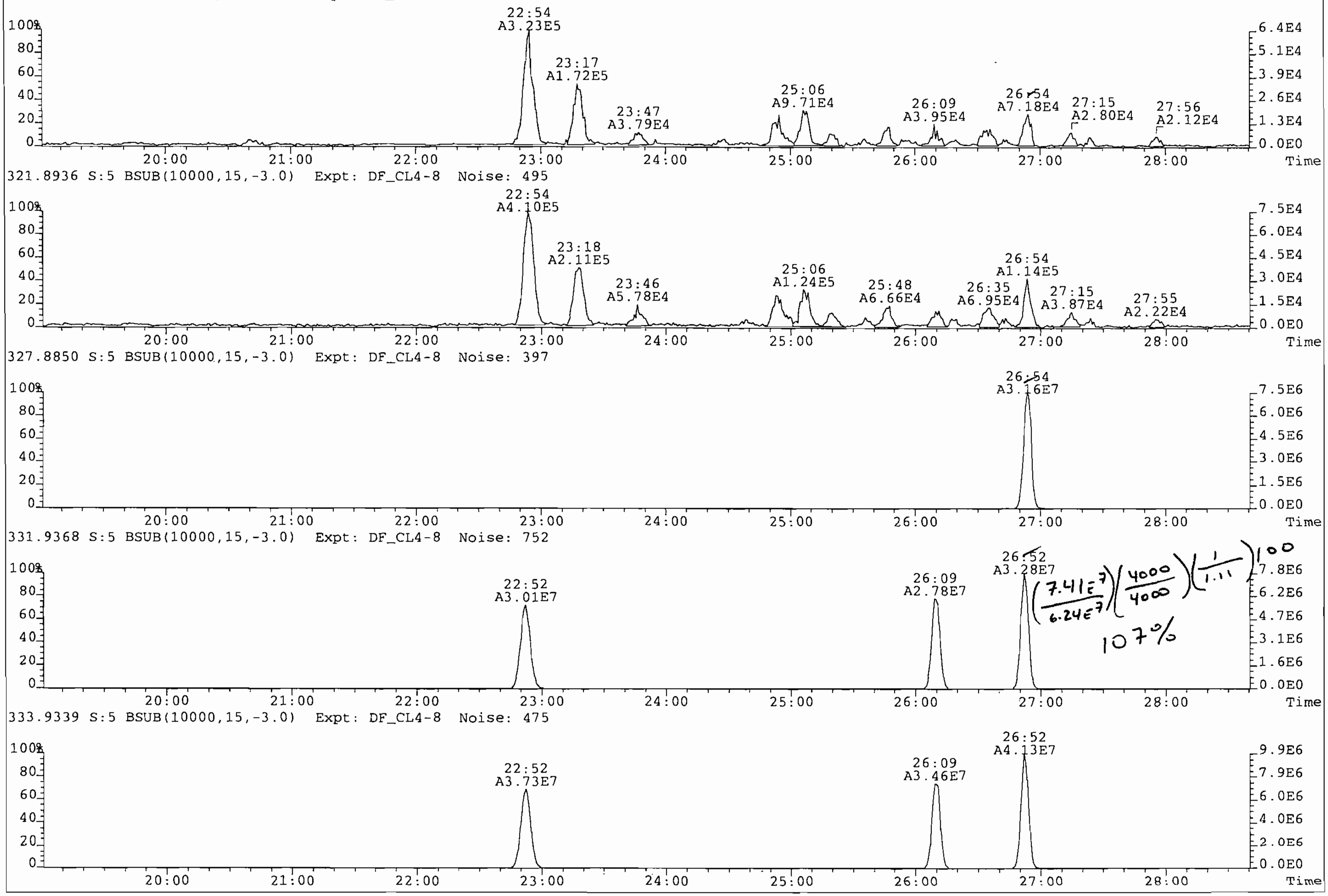
430.9728 S:5 F:4 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



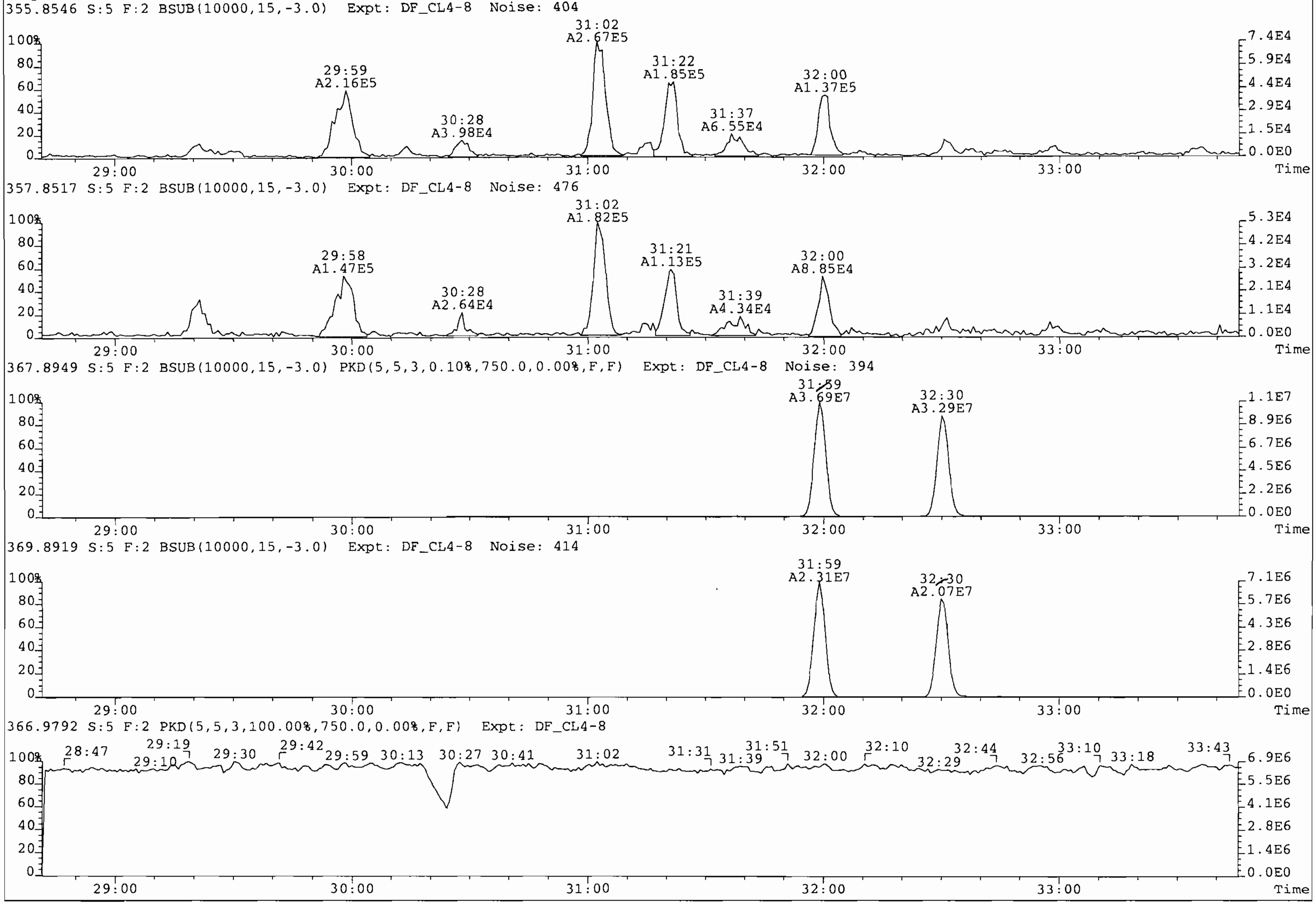
454.9728 S:5 F:5 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



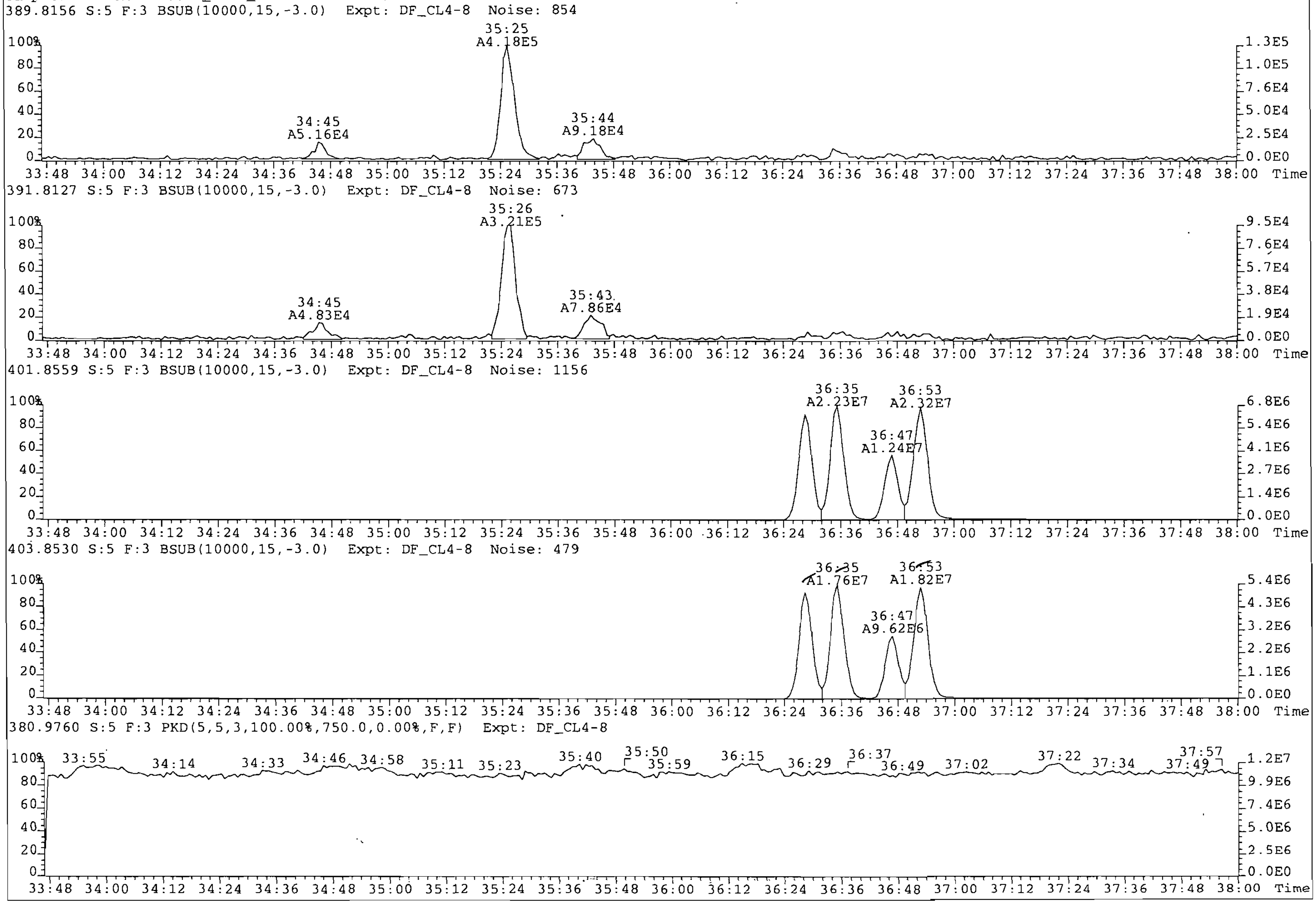
File: 070724P2 Acq: 24-JUL-2007 19:52:12 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 5 Text: P8090_5075_002 North Furnace-Run 2 Air Train Vial# 19 File Text: AP DB5
319.8965 S:5 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 386

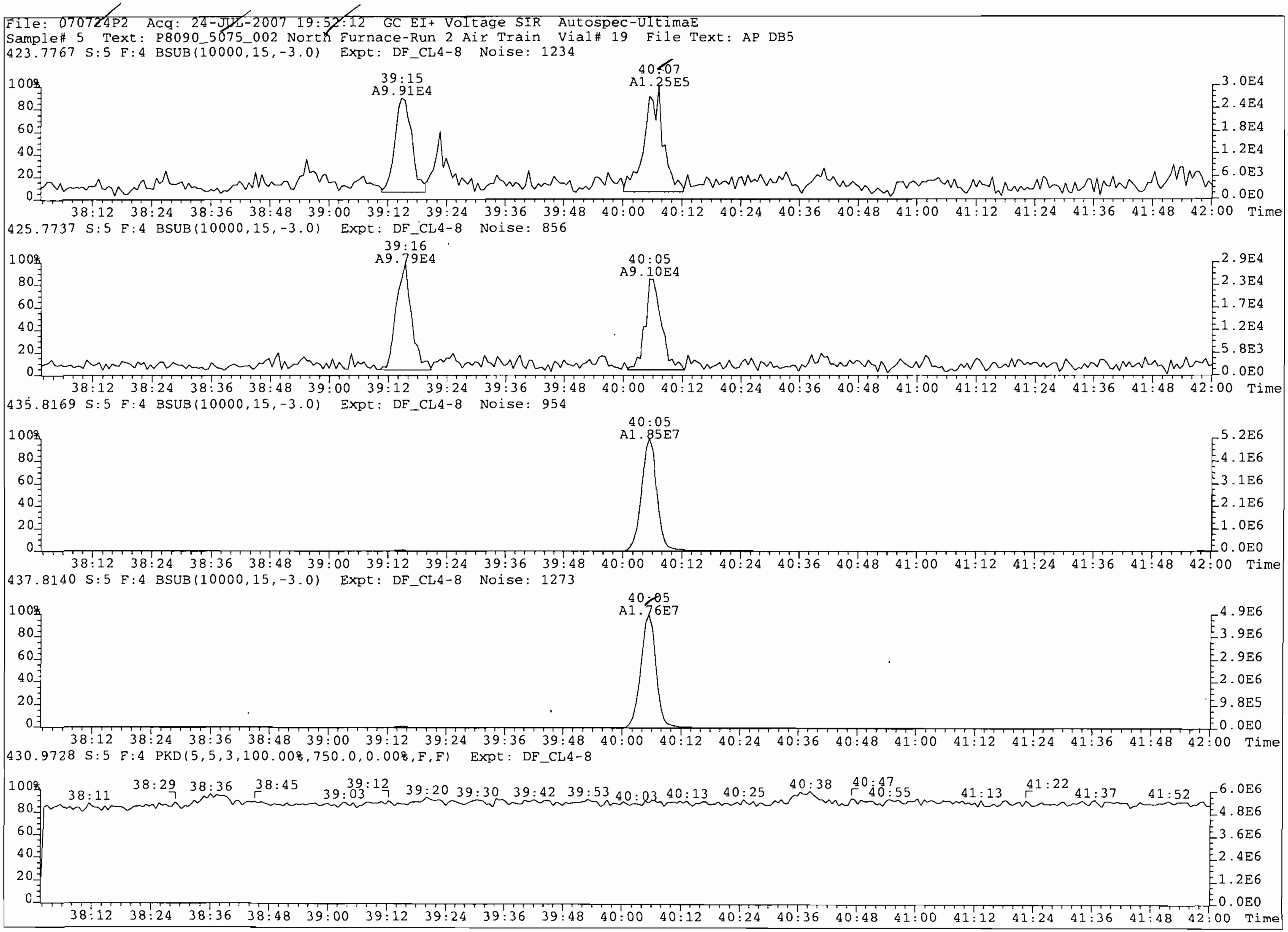


File: 070724P2 Acq: 24-JUL-2007 19:52:12 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 5 Text: P8090_5075_002 North Furnace-Run 2 Air Train Vial# 19 File Text: AP DB5

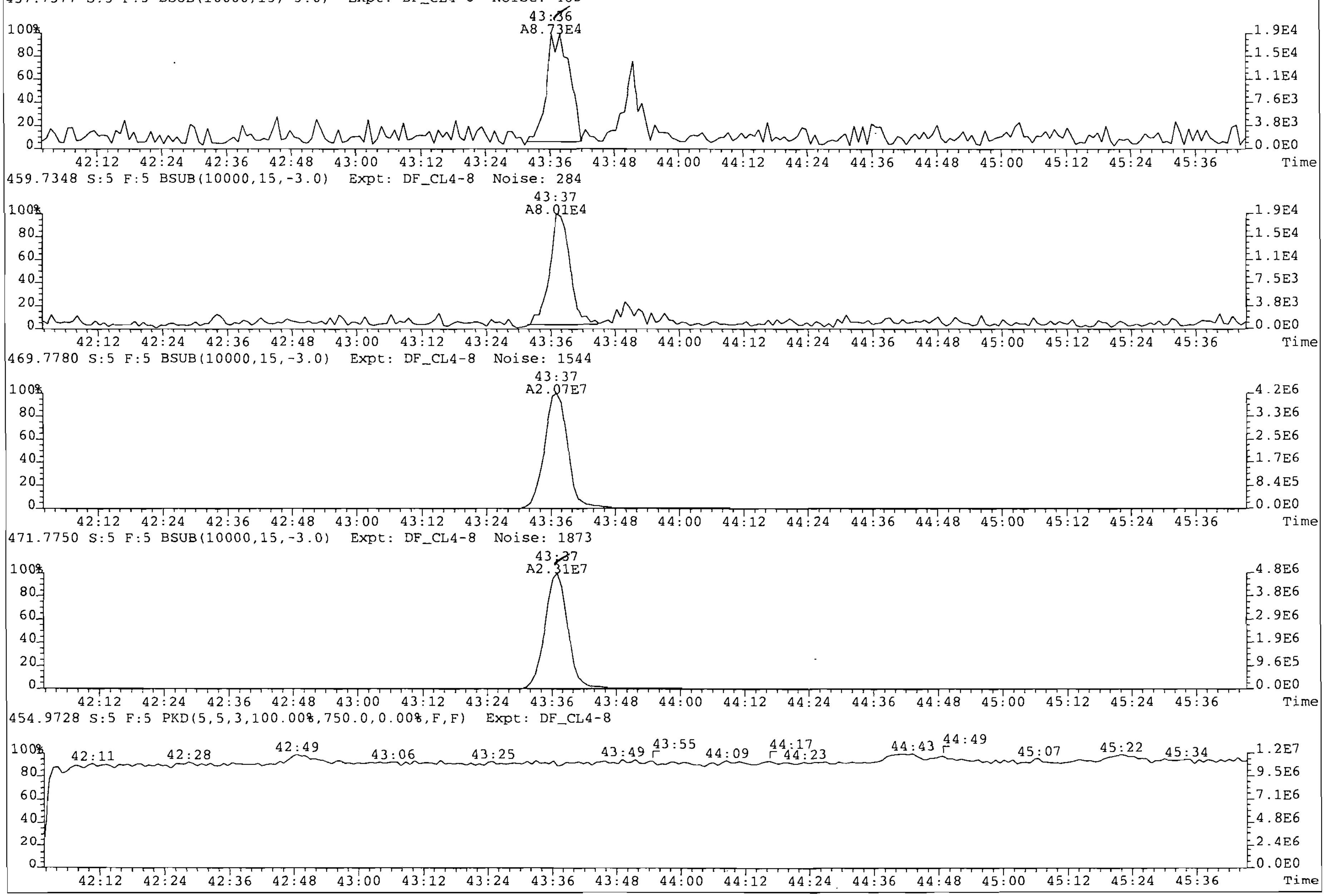


File: 070724P2 Acq: 24-JUL-2007 19:52:12 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 5 Text: P8090_5075_002 North Furnace-Run 2 Air Train Vial# 19 File Text: AP DB5

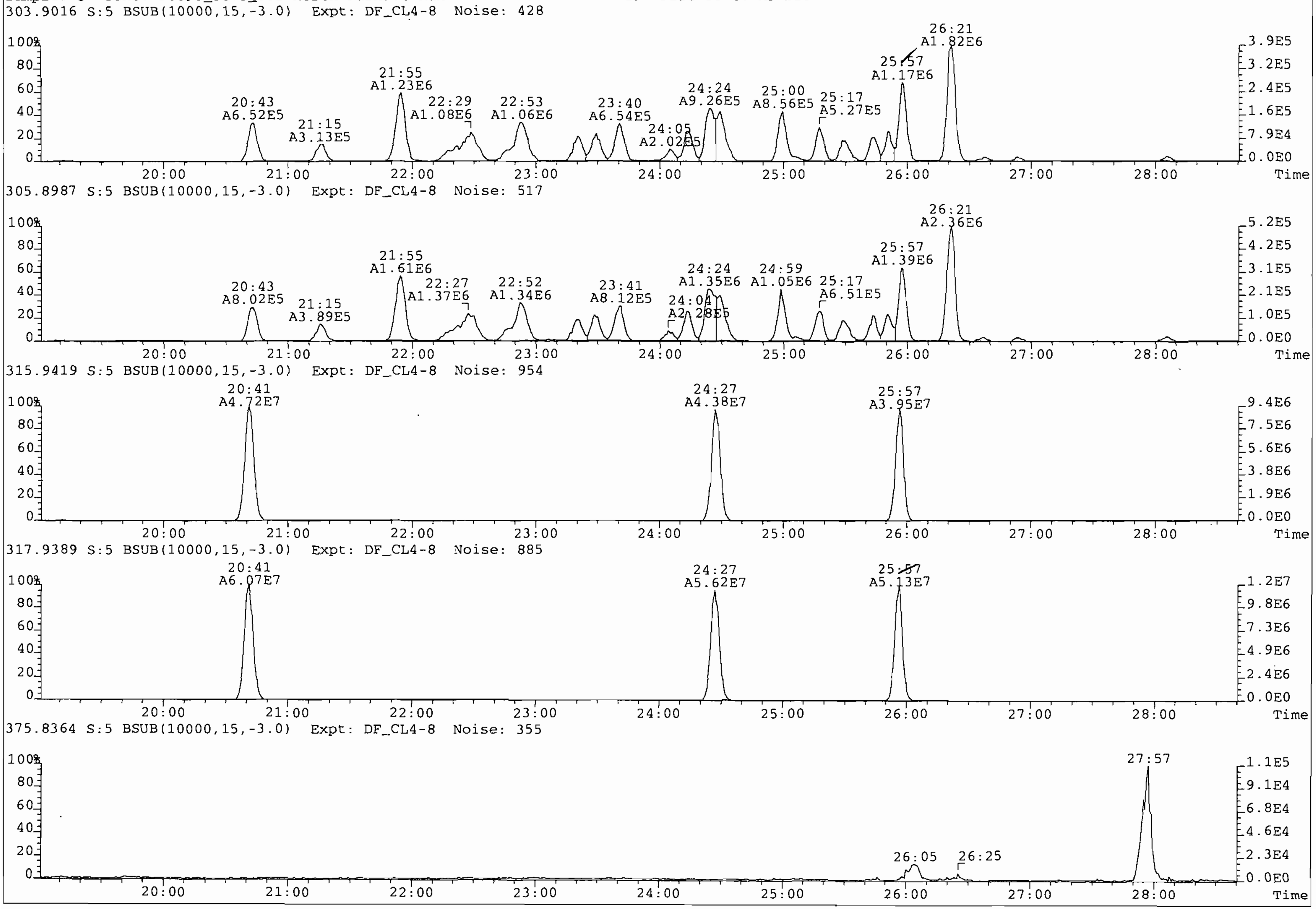



File: 070724P2 Acq: 24-JUL-2007 19:52:12 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 5 Text: P8090_5075_002 North Furnace-Run 2 Air Train Vial# 19 File Text: AP DB5
423.7767 S:5 F:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 1234
39:15
A9.91E4
40:07
A1.25E5
425.7737 S:5 F:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 856
39:16
A9.79E4
40:05
A9.10E4
435.8169 S:5 F:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 954
40:05
A1.85E7
437.8140 S:5 F:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 1273
40:05
A1.76E7
430.9728 S:5 F:4 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8
Time

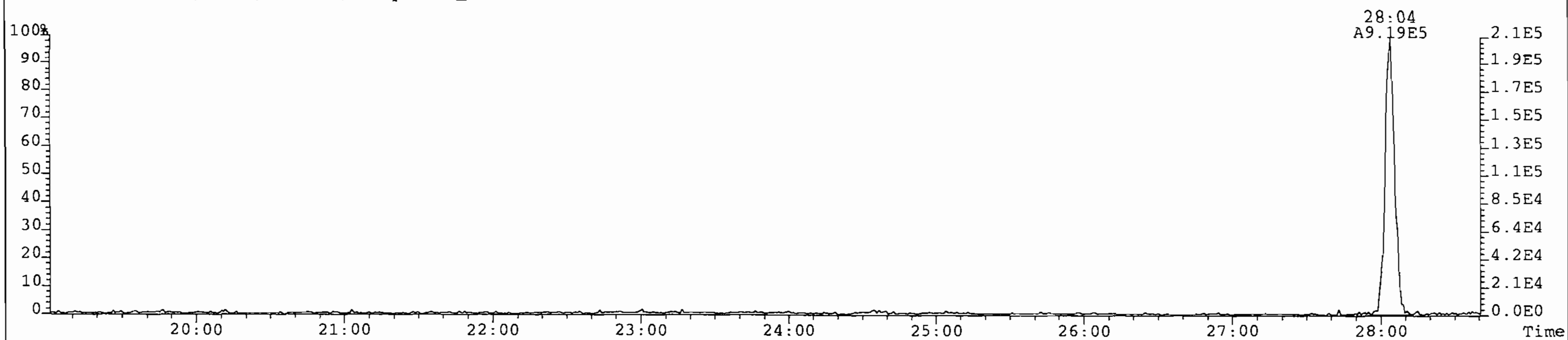
File: 070724P2 Acq: 24-JUL-2007 19:52:12 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 5 Text: P8090_5075_002 North Furnace-Run 2 Air Train Vial# 19 File Text: AP DB5
457.7377 S:5 F:5 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 468



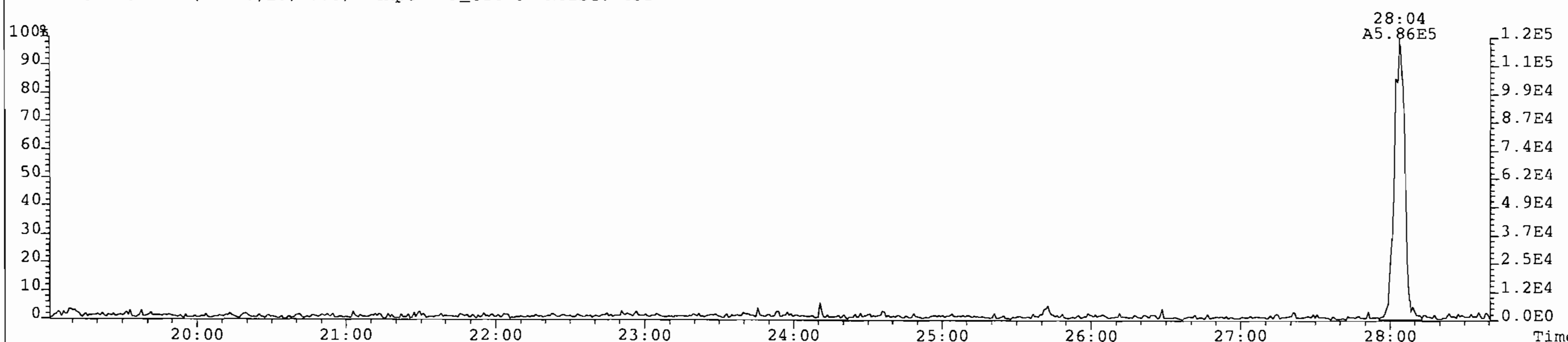
File: 070724P2 Acq: 24-JUL-2007 19:52:12 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 5 Text: P8090_5075_002 North Furnace-Run 2 Air Train Vial# 19 File Text: AP DB5



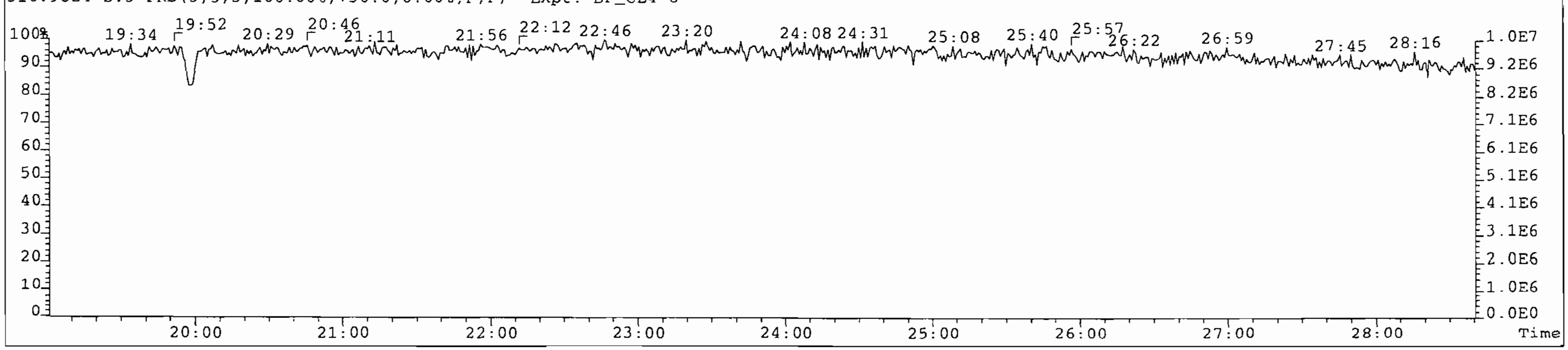
File: 070724P2 Acq: 24-JUL-2007 19:52:12 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 5 Text: P8090_5075_002 North Furnace-Run 2 Air Train Vial# 19 File Text: AP DB5
339.8597 S:5 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 364



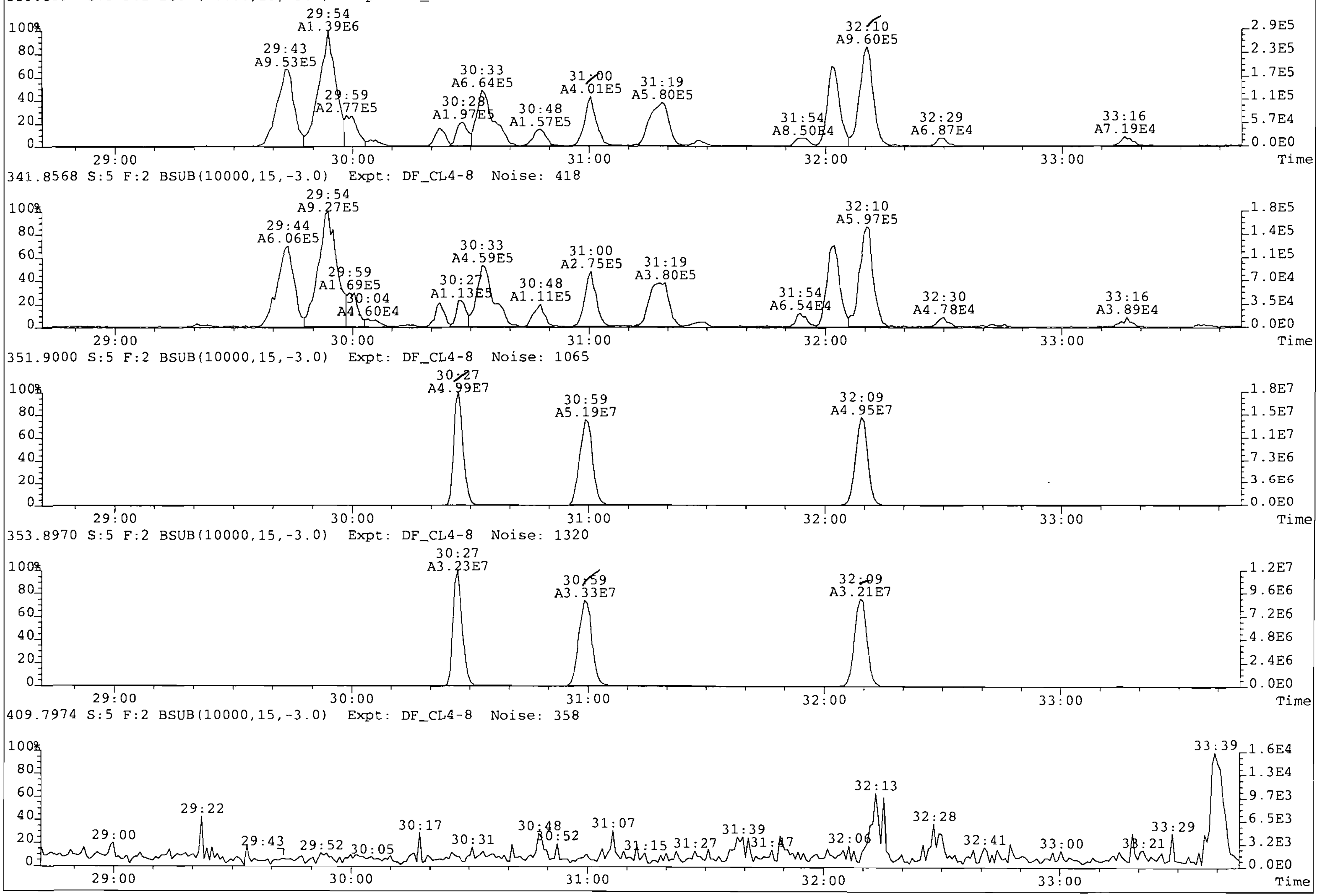
341.8568 S:5 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 452



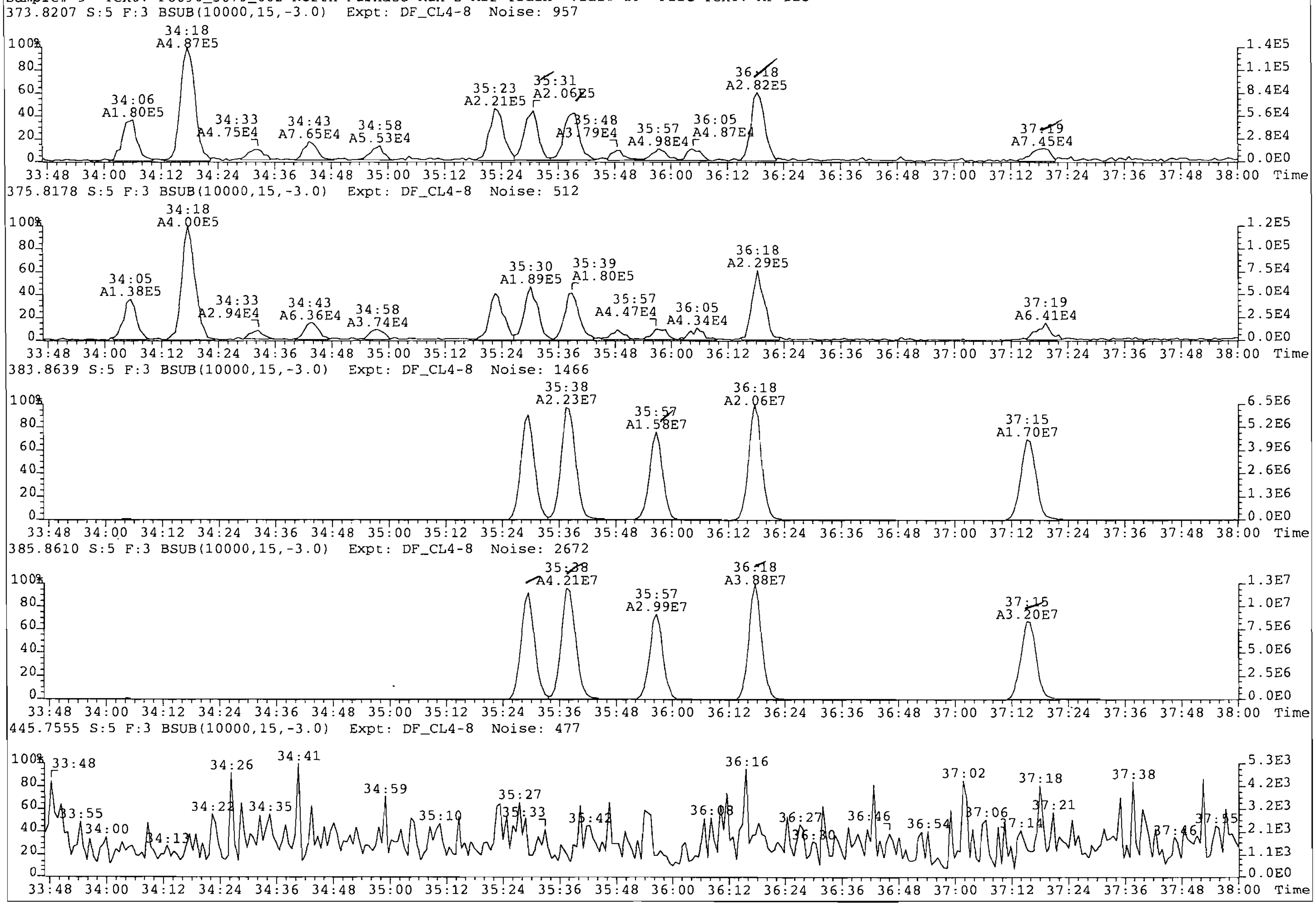
316.9824 S:5 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



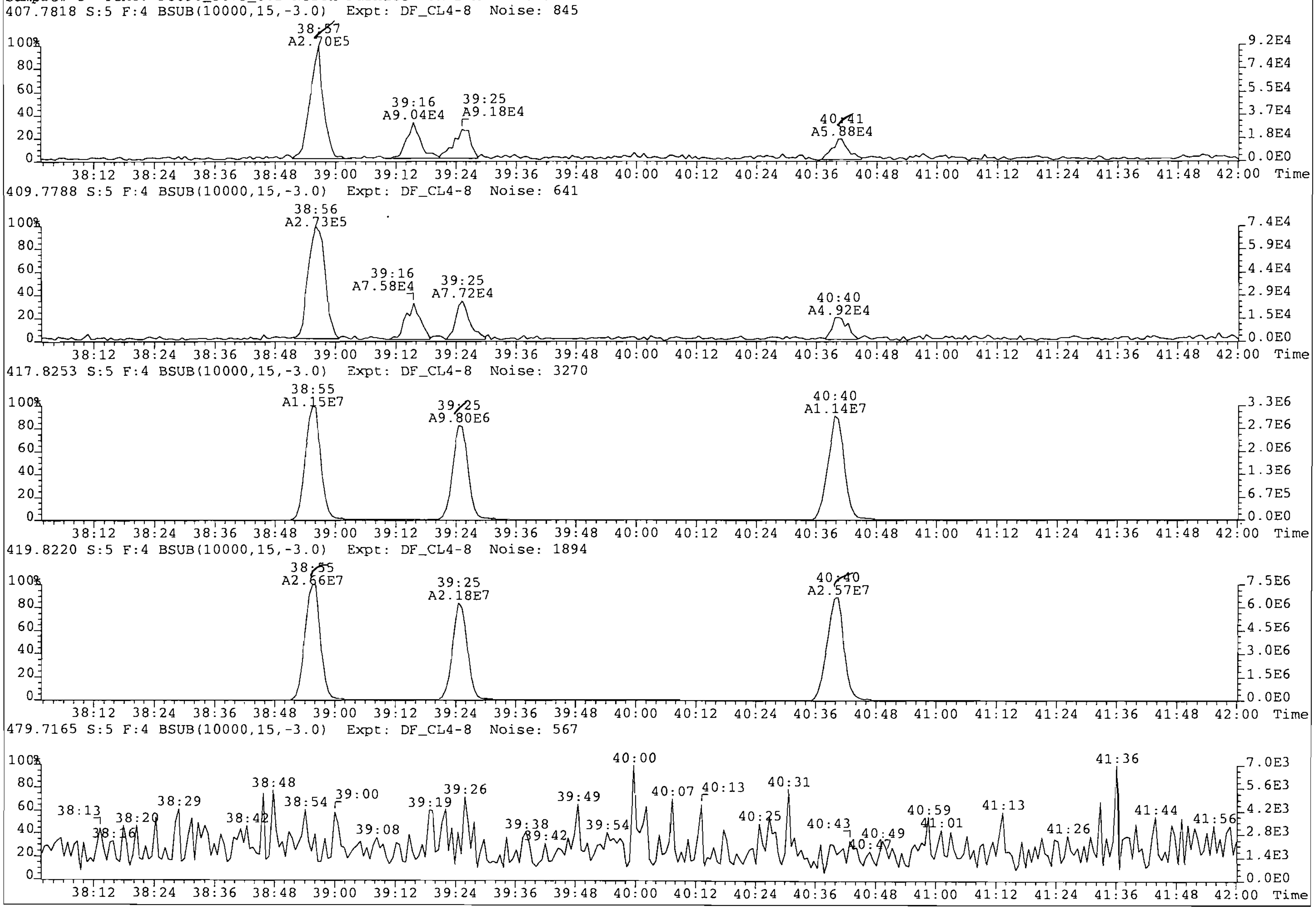
File: 070724P2 Acq: 24-JUL-2007 19:52:12 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 5 Text: P8090_5075_002 North Furnace-Run 2 Air Train Vial# 19 File Text: AP DB5
339.8597 S:5 F:2 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 497



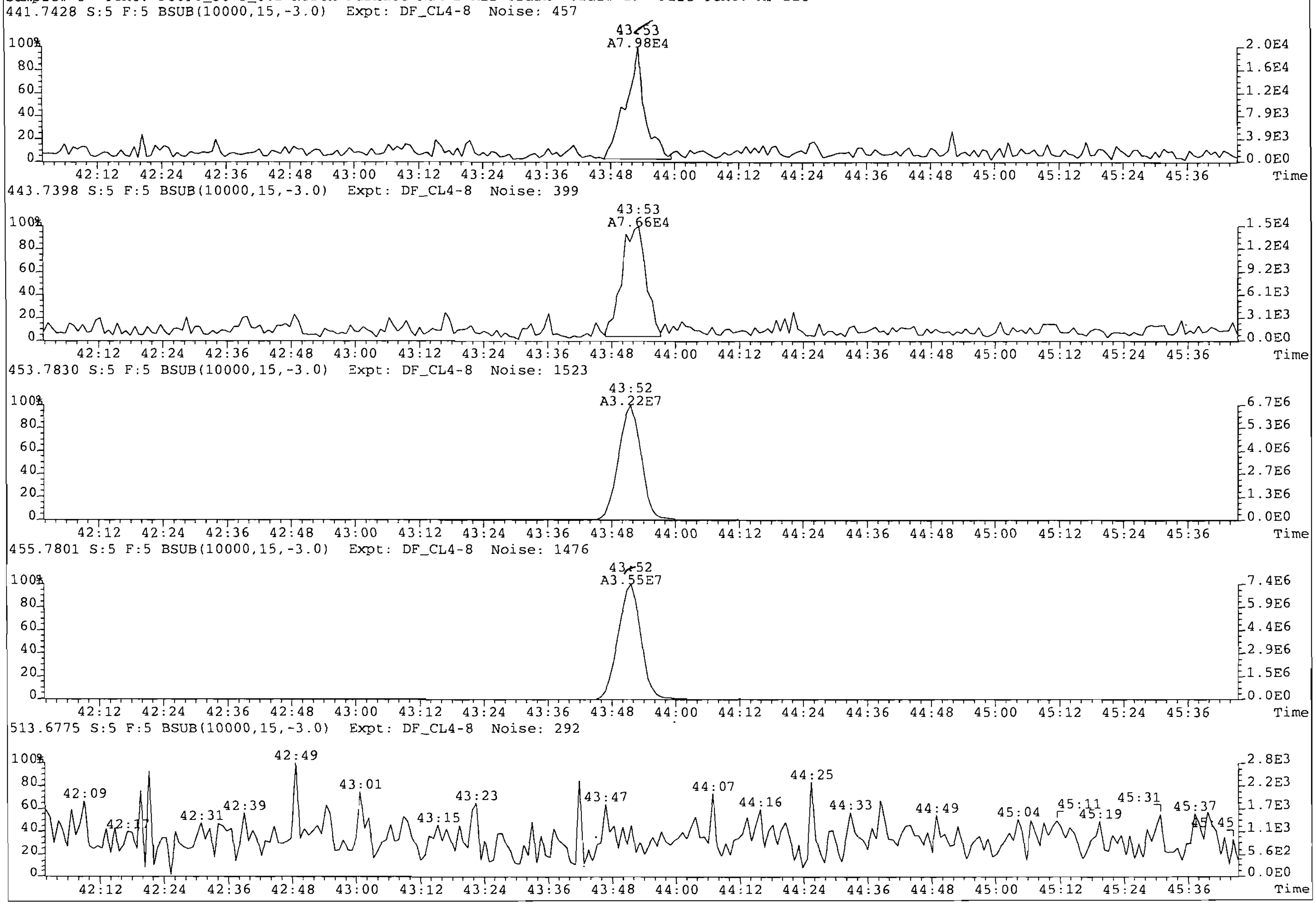
File: 070724P2 Acq: 24-JUL-2007 19:52:12 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 5 Text: P8090_5075_002 North Furnace-Run 2 Air Train Vial# 19 File Text: AP DB5



File: 070724P2 Acq: 24-JUL-2007 19:52:12 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 5 Text: P8090_5075_002 North Furnace-Run 2 Air Train Vial# 19 File Text: AP DB5



File: 070724P2 Acq: 24-JUL-2007 19:52:12 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 5 Text: P8090_5075_002 North Furnace-Run 2 Air Train Vial# 19 File Text: AP DB5



31-Jul 07

1613/8290 Sample Summary Analytical Perspectives [Form: DF]

Client ID: North Furnace-Run 3 Filename: 070724P2 S: 6 Vial: 20 Acq: 24-JUL-07 20:42:05
Lab ID: P8090_5075_003 GC column ID: db-5 Cal: Wt/Vol: 1.000
Sample text: P8090_5075_003 North Furnace-Run 3 Air Train Stds: JS (split adj.): 4000 CS/SS: 1600 ES: 4000

Typ	Name	Resp	RA		RT	RRF	Conc.	Noise	Fac	DL	Rec
Ax	2,3,7,8-TCDD	7.28e+04	0.63	n	26:54	0.97	4.12	1848	2.5	1.99	-
Ax	1,2,3,7,8-PeCDD	1.20e+05	1.52	y	32:31	0.88	9.70	18063	2.5	32.5	-
Ax	1,2,3,4,7,8-HxCDD	9.46e+04	1.47	n	36:29	1.07	8.71	2260	2.5	4.06	-
Ax	1,2,3,6,7,8-HxCDD	2.78e+05	1.30	y	36:36	1.00	25.7	2260	2.5	4.09	-
Ax	1,2,3,7,8,9-HxCDD	1.77e+05	1.26	y	36:53	0.94	16.5	2260	2.5	4.25	-
Ax	1,2,3,4,6,7,8-HpCDD	9.96e+05	1.05	y	40:06	0.88	108	2462	2.5	5.11	-
Ax	OCDD	7.28e+05	0.83	y	43:37	0.96	115	24461	2.5	80.6	-
Ax2	OCDD-a	*	*	n	NotF»	0.06	*	8316	2.5	438	-
Ax	2,3,7,8-TCDF	7.31e+05	0.75	y	25:57	1.06	29.7	2016	2.5	1.65	-
Ax	1,2,3,7,8-PeCDF	3.58e+05	1.54	y	31:00	0.96	16.9	3488	2.5	3.82	-
Ax	2,3,4,7,8-PeCDF	9.42e+05	1.54	y	32:10	0.96	44.6	3488	2.5	3.62	-
Ax	1,2,3,4,7,8-HxCDF	4.42e+05	1.36	y	35:30	1.04	27.3	37012	2.5	28.6	-
Ax	1,2,3,6,7,8-HxCDF	5.11e+05	1.35	y	35:38	1.06	27.0	37012	2.5	25.7	-
Ax	2,3,4,6,7,8-HxCDF	7.60e+05	1.22	y	36:18	1.01	45.5	37012	2.5	27.0	-
Ax	1,2,3,7,8,9-HxCDF	2.62e+05	1.13	y	37:18	1.05	17.2	37012	2.5	34.0	-
Ax	1,2,3,4,6,7,8-HpCDF	1.08e+06	1.07	y	38:56	1.22	80.0	2094	2.5	1.86	-
Ax	1,2,3,4,7,8,9-HpCDF	2.10e+05	1.07	y	40:40	1.13	17.8	2094	2.5	2.54	-
Ax	OCDF	5.38e+05	0.91	y	43:52	0.79	67.4	1889	2.5	5.19	-
Ax2	OCDF-a	3.59e+04	1.00	n	43:51	0.05	72.6	3910	2.5	173	-
ES	13C-2,3,7,8-TCDD	7.26e+07	0.80	y	26:52	1.11	4290	2277	2.5	2.65	107
ES	13C-1,2,3,7,8-PeCDD	5.60e+07	1.59	y	32:30	1.01	3620	4333	2.5	5.50	90.4
ES	13C-1,2,3,4,7,8-HxCDD	4.06e+07	1.25	y	36:28	1.04	3500	3948	2.5	6.81	87.4
ES	13C-1,2,3,6,7,8-HxCDD	4.33e+07	1.26	y	36:35	1.13	3440	3948	2.5	6.29	86.0
ES	13C-1,2,3,7,8,9-HxCDD	4.58e+07	1.26	y	36:53	1.19	3440	3948	2.5	5.95	86.1
ES	13C-1,2,3,4,6,7,8-HpCDD	4.20e+07	1.04	y	40:05	1.25	3020	3970	2.5	5.71	75.4
ES	13C-OCDD	5.29e+07	0.89	y	43:37	0.88	5420	2765040	2.5	5670	67.8
ES	13C-2,3,7,8-TCDF	9.33e+07	0.78	y	25:56	0.93	3980	2188	2.5	2.01	99.5
ES	13C-1,2,3,7,8-PeCDF	8.85e+07	1.54	y	30:59	0.94	3760	3391	2.5	3.11	94.1
ES	13C-2,3,4,7,8-PeCDF	8.83e+07	1.54	y	32:09	0.96	3670	3391	2.5	3.04	91.7
ES	13C-1,2,3,4,7,8-HxCDF	6.23e+07	0.53	y	35:29	1.56	3590	87449	2.5	101	89.7
ES	13C-1,2,3,6,7,8-HxCDF	7.17e+07	0.52	y	35:38	1.76	3660	87449	2.5	89.3	91.4
ES	13C-2,3,4,6,7,8-HxCDF	6.62e+07	0.53	y	36:18	1.79	3320	87449	2.5	87.9	83.0
ES	13C-1,2,3,7,8,9-HxCDF	5.81e+07	0.53	y	37:16	1.65	3160	87449	2.5	95.5	79.1
ES	13C-1,2,3,4,6,7,8-HpCDF	4.45e+07	0.45	y	38:55	1.35	2960	4353	2.5	5.80	73.9
ES	13C-1,2,3,4,7,8,9-HpCDF	4.17e+07	0.44	y	40:40	1.18	3170	4353	2.5	6.64	79.3
ES	13C-OCDF	8.05e+07	0.89	y	43:51	1.29	5590	5562	2.5	7.73	69.8
CS	37Cl-2,3,7,8-TCDD	2.91e+07			26:53	1.15	1660			1.55	104
CS	13C-1,2,3,4,7-PeCDD	6.13e+07	1.62	y	31:59	1.01	3970	4333	2.5	5.52	99.2
CS	13C-1,2,3,4,6-PeCDF	8.39e+07	1.54	y	30:27	0.83	4020	3391	2.5	3.50	100
CS	13C-1,2,3,4,6,9-HxCDF	5.00e+07	0.53	y	35:56	1.32	3390	87449	2.5	119	84.8
CS	13C-1,2,3,4,6,8,9-HpCDF	3.47e+07	0.45	y	39:25	1.05	2960	4353	2.5	7.44	74.0
NA	n/a	*	*	n	NotF»	Div0	*	87449	2.5	*	*
JS/RT	13C-1,2,3,4-TCDD	6.12e+07	0.80	y	26:10	-	158	2277	2.5	-	-
JS	13C-1,2,3,4-TCDF	1.00e+08	0.77	y	24:27	-	159	2188	2.5	-	-
JS/RT	13C-1,2,3,4,6,7-HxCDD	2.23e+07	1.27	y	36:47	-	76.0	3948	2.5	-	-

Analyst: El

Date: 25 Jul 07

SS	37Cl-2,3,7,8-TCDD	2.91e+07			26:53	1.03	1550			1.40	96.6
SS	13C-1,2,3,4,7-PeCDD	6.13e+07	1.62	y	31:59	1.00	4390	4333	2.5	6.89	110
SS	13C-1,2,3,4,6-PeCDF	8.39e+07	1.54	y	30:27	0.89	4270	3391	2.5	4.00	107
SS	13C-1,2,3,4,6,9-HxCDF	5.00e+07	0.53	y	35:56	0.75	3710	87449	2.5	85.5	92.8
SS	13C-1,2,3,4,6,8,9-HpCDF	3.47e+07	0.45	y	39:25	0.78	4010	4353	2.5	6.04	100
SBS	2,4,6,8-TCDF	8.23e+05	0.76	y	21:54	1.06	33.4	2016	2.5	1.65	-
Ay	1,3,6,8-TCDD	2.33e+06	0.76	y	22:54	0.97	132	1848	2.5	1.99	-
Ay	1,2,3,9-TCDD	*	*	n	NotF»	0.97	*	1848	2.5	1.99	-
Ay	1,2,8,9-TCDD	5.75e+04	0.72	y	27:56	0.97	3.25	1848	2.5	1.99	-
Ay	1,2,4,7,9-PeCDD	2.65e+06	1.54	y	29:57	0.88	215	18063	2.5	32.5	-
Ay	1,2,3,8,9-PeCDD	9.24e+04	1.79	n	32:58	0.88	7.50	18063	2.5	32.5	-
Ay	1,2,4,6,7,9-HxCDD	6.35e+05	1.29	y	34:45	1.00	58.8	2260	2.5	4.13	-
Ay	1,2,3,4,6,7,9-HpCDD	1.27e+06	1.06	y	39:15	0.88	138	2462	2.5	5.11	-
Ay	1,3,6,8-TCDF	5.30e+05	0.74	y	20:43	1.06	21.5	2016	2.5	1.65	-
Ay	2,3,4,8-TCDF	5.32e+05	0.91	n	25:51	1.06	21.6	2016	2.5	1.65	-
Ay	1,2,8,9-TCDF	1.29e+05	0.74	y	28:05	1.06	5.25	2016	2.5	1.65	-
Ay	1,3,4,6,8-PeCDF	8.11e+05	1.47	y	28:03	1.06	32.9	2076	2.5	1.70	-
Ay	1,2,3,8,9-PeCDF	1.26e+05	1.44	y	33:16	0.96	5.94	3488	2.5	3.72	-
Ay	1,2,3,4,6,8-HxCDF	5.77e+05	1.20	y	34:05	1.04	34.4	37012	2.5	28.6	-
Tot	Total Tetra-Dioxins	4.68e+06	0.76	y	22:54	0.97	265	1848	2.5	1.99	-
Tot	Total Penta-Dioxins	6.89e+06	1.54	y	29:57	0.88	559	18063	2.5	32.5	-
Tot	Total Hexa-Dioxins	6.69e+06	1.29	y	34:45	1.00	619	2260	2.5	4.13	-
Tot	Total Hepta-Dioxins	2.27e+06	1.06	y	39:15	0.88	246	2462	2.5	5.11	-
Tot	Total Tetra-Furans	1.72e+07	0.74	y	20:43	1.06	698	2016	2.5	1.65	-
Tot	Total Penta-Furans	8.57e+06	1.49	y	29:42	0.96	405	3488	2.5	3.72	-
Tot	Total Hexa-Furans	4.68e+06	1.20	y	34:05	1.04	278	37012	2.5	28.6	-
Tot	Total Hepta-Furans	1.64e+06	1.07	y	38:56	1.18	125	2094	2.5	2.17	-
Tot	TCDD EMPC	4.75e+06	0.76	y	22:54	0.97	269	1848	2.5	1.99	-
Tot	PeCDD EMPC	7.08e+06	1.54	y	29:57	0.88	574	18063	2.5	32.5	-
Tot	HxCDD EMPC	6.78e+06	1.29	y	34:45	1.00	628	2260	2.5	4.13	-
Tot	HpCDD EMPC	2.27e+06	1.06	y	39:15	0.88	246	2462	2.5	5.11	-
Tot	TCDF EMPC	1.77e+07	0.74	y	20:43	1.06	720	2016	2.5	1.65	-
Tot	PeCDF EMPC	8.72e+06	1.49	y	29:42	0.96	412	3488	2.5	3.72	-
Tot	HxCDF EMPC	5.01e+06	1.20	y	34:05	1.04	298	37012	2.5	28.6	-
Tot	HpCDF EMPC	2.01e+06	1.07	y	38:56	1.18	155	2094	2.5	2.17	-
AS	13C-1,3,6,8-TCDD	6.79e+07	0.79	y	22:52	1.10	4040	2277	2.5	2.67	101
AS	13C-1,3,6,8-TCDF	1.06e+08	0.78	y	20:41	1.07	3930	2188	2.5	1.75	98.2
DPE	HxCDPE	*			NotF»	-	*			-	-
DPE	HpCDPE	*			NotF»	-	*			-	-
DPE	OCDPE	*			NotF»	-	*			-	-
DPE	NCDPE	*			NotF»	-	*			-	-
DPE	DCDPE	*			NotF»	-	*			-	-
LMC	Fn1 check mass	*			NotF»	-	*			-	-
LMC	Fn2 check mass	*			NotF»	-	*			-	-
LMC	Fn3 check mass	*			NotF»	-	*			-	-
LMC	Fn4 check mass	*			NotF»	-	*			-	-
LMC	Fn5 check mass	*			NotF»	-	*			-	-

Totals Results Analytical Perspectives [Form: TOT]

Totals class: TCDD EMPC Function: 1 Run #: 6 Checkcode: 0128
File Name: 070724P2 Sample #: 6 Sample text: P8090_5075_003 North Furnace-Run 3 Air »

Acquired: 24-JUL-07 20:42:05 Processed: 25-JUL-07 08:37:30

Total Conc.: 269.06 Unnamed Conc.: 129.804 Homolog count: 12

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
22:54	1.009e+06	y	1.320e+06	y	0.76	y	2.330e+06	2.330e+06	1.26e+02	y	132	1,3,6,8-TCDD
23:17	2.890e+05	y	3.577e+05	y	0.81	y	6.467e+05	6.467e+05	3.92e+01	y	36.6	
23:46	7.249e+04	y	8.902e+04	n	0.81	y	1.615e+05	1.615e+05	9.84e+00	y	9.14	
24:54	1.406e+05	y	1.766e+05	y	0.80	y	3.172e+05	3.172e+05	1.62e+01	y	18.0	
25:06	1.405e+05	y	2.064e+05	y	0.68	y	3.469e+05	3.469e+05	2.39e+01	y	19.6	
25:20	4.957e+04	y	7.391e+04	y	0.67	y	1.235e+05	1.235e+05	9.56e+00	y	6.99	
25:45	9.842e+04	y	1.208e+05	y	0.81	y	2.192e+05	2.192e+05	1.42e+01	y	12.4	
26:09	4.876e+04	y	7.037e+04	y	0.69	y	1.191e+05	1.191e+05	8.45e+00	y	6.74	
26:35	1.087e+05	y	1.437e+05	y	0.76	y	2.524e+05	2.524e+05	1.31e+01	y	14.3	
26:54	3.166e+04	y	4.999e+04	y	0.63	n	8.165e+04	7.278e+04	7.58e+00	y	4.12	2,3,7,8-TCDD
27:14	4.757e+04	y	5.900e+04	y	0.81	y	1.066e+05	1.066e+05	7.21e+00	y	6.03	
27:56	2.408e+04	y	3.338e+04	y	0.72	y	5.746e+04	5.746e+04	5.03e+00	y	3.25	1,2,8,9-TCDD

Totals Results Analytical Perspectives [Form: TOT]

Totals class: PeCDD EMPC Function: 2 Run #: 6 Checkcode: 0128
File Name: 070724P2 Sample #: 6 Sample text: P8090_5075_003 North Furnace-Run 3 Air »

Acquired: 24-JUL-07 20:42:05 Processed: 25-JUL-07 08:37:30

Total Conc.: 574.26 Unnamed Conc.: 341.819 Homolog count: 9

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
29:57	1.608e+06	y	1.045e+06	y	1.54	y	2.653e+06	2.653e+06	1.09e+01	y	215	1,2,4,7,9-PeCDD
30:27	6.891e+04	y	3.667e+04	y	1.88	n	1.056e+05	9.351e+04	6.02e-01	n	7.59	
31:02	1.467e+06	y	9.374e+05	y	1.57	y	2.405e+06	2.405e+06	1.50e+01	y	195	
31:15	1.245e+05	y	8.459e+04	y	1.47	y	2.091e+05	2.091e+05	1.40e+00	n	17.0	
31:21	5.041e+05	y	3.204e+05	y	1.57	y	8.245e+05	8.245e+05	5.14e+00	y	66.9	
31:37	1.276e+05	y	9.353e+04	y	1.36	y	2.212e+05	2.212e+05	1.11e+00	n	17.9	
32:00	2.832e+05	y	1.766e+05	y	1.60	y	4.598e+05	4.598e+05	2.90e+00	y	37.3	
32:31	7.211e+04	y	4.749e+04	y	1.52	y	1.196e+05	1.196e+05	8.75e-01	n	9.70	1,2,3,7,8-PeCDD
32:58	6.492e+04	y	3.623e+04	y	1.79	n	1.011e+05	9.239e+04	6.35e-01	n	7.50	1,2,3,8,9-PeCDD

Totals Results Analytical Perspectives [Form: TOT]

Totals class: HxCDD EMPC Function: 3 Run #: 6 Checkcode: 0128
File Name: 070724P2 Sample #: 6 Sample text: P8090_5075_003 North Furnace-Run 3 Air »

Acquired: 24-JUL-07 20:42:05 Processed: 25-JUL-07 08:37:30

Total Conc.: 628.04 Unnamed Conc.: 518.348 Homolog count: 7

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
34:45	3.583e+05	y	2.768e+05	y	1.29	y	6.351e+05	6.351e+05	3.67e+01	y	58.8	1,2,4,6,7,9-HxCDD
35:25	2.253e+06	y	1.786e+06	y	1.26	y	4.039e+06	4.039e+06	2.42e+02	y	374	
35:43	7.839e+05	y	6.295e+05	y	1.25	y	1.413e+06	1.413e+06	6.29e+01	y	131	

[illegible]:29	6.216e+04	y	4.221e+04	y	1.47	n	1.044e+05	9.455e+04	5.5[illegible]e+00	y	8.71	1,2,3,4,7,8-HxCDD
36:36	1.570e+05	y	1.205e+05	y	1.30	y	2.775e+05	2.775e+05	1.49e+01	y	25.7	1,2,3,6,7,8-HxCDD
36:47	8.281e+04	y	6.015e+04	y	1.38	y	1.430e+05	1.430e+05	8.06e+00	y	13.2	
36:53	9.836e+04	y	7.833e+04	y	1.26	y	1.767e+05	1.767e+05	9.57e+00	y	16.5	1,2,3,7,8,9-HxCDD

Totals Results Analytical Perspectives [Form: TOT]

Totals class: HpCDD EMPC Function: 4 Run #: 6 Checkcode: 0128
File Name: 070724P2 Sample #: 6 Sample text: P8090_5075_003 North Furnace-Run 3 Air »

Acquired: 24-JUL-07 20:42:05 Processed: 25-JUL-07 08:37:30

Total Conc.: 246.44 Unnamed Conc.: * Homolog count: 2

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
39:15	6.557e+05	y	6.192e+05	y	1.06	y	1.275e+06	1.275e+06	8.05e+01	y	138	1,2,3,4,6,7,9-HpCDD
40:06	5.106e+05	y	4.854e+05	y	1.05	y	9.960e+05	9.960e+05	5.42e+01	y	108	1,2,3,4,6,7,8-HpCDD

Totals Results Analytical Perspectives [Form: TOT]

Totals class: TCDF EMPC Function: 1 Run #: 6 Checkcode: 0128
File Name: 070724P2 Sample #: 6 Sample text: P8090_5075_003 North Furnace-Run 3 Air »

Acquired: 24-JUL-07 20:42:05 Processed: 25-JUL-07 08:37:30

Total Conc.: 719.73 Unnamed Conc.: 608.220 Homolog count: 22

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
20:43	2.257e+05	y	3.047e+05	y	0.74	y	5.304e+05	5.304e+05	2.88e+01	y	21.5	1,3,6,8-TCDF
21:15	1.549e+05	y	2.032e+05	y	0.76	y	3.581e+05	3.581e+05	1.72e+01	y	14.5	
21:54	3.544e+05	y	4.686e+05	n	0.76	y	8.230e+05	8.230e+05	4.33e+01	y	33.4	2,4,6,8-TCDF
22:25	7.322e+05	y	9.360e+05	y	0.78	y	1.668e+06	1.668e+06	3.54e+01	y	67.7	
22:51	4.625e+05	y	5.809e+05	y	0.80	y	1.043e+06	1.043e+06	3.10e+01	y	42.4	
23:20	2.653e+05	y	3.021e+05	y	0.88	y	5.674e+05	5.674e+05	3.09e+01	y	23.0	
23:28	1.606e+05	y	1.918e+05	y	0.84	y	3.525e+05	3.525e+05	2.07e+01	y	14.3	
23:40	1.930e+05	y	2.475e+05	y	0.78	y	4.405e+05	4.405e+05	2.57e+01	y	17.9	
24:04	1.526e+05	y	2.054e+05	y	0.74	y	3.579e+05	3.579e+05	1.73e+01	y	14.5	
24:13	7.017e+05	y	9.445e+05	n	0.74	y	1.646e+06	1.646e+06	9.34e+01	y	66.9	
24:28	1.447e+06	y	1.909e+06	y	0.76	y	3.356e+06	3.356e+06	1.26e+02	y	136	
24:59	3.799e+05	n	4.633e+05	n	0.82	y	8.432e+05	8.432e+05	4.48e+01	y	34.2	
25:07	6.731e+04	n	9.782e+04	n	0.69	y	1.651e+05	1.651e+05	1.11e+01	y	6.71	
25:17	2.208e+05	n	2.627e+05	n	0.84	y	4.835e+05	4.835e+05	2.71e+01	y	19.6	
25:29	4.616e+05	n	5.877e+05	n	0.79	y	1.049e+06	1.049e+06	5.56e+01	y	42.6	
25:42	3.802e+05	y	4.742e+05	y	0.80	y	8.544e+05	8.544e+05	5.18e+01	y	34.7	
25:51	2.733e+05	y	3.005e+05	y	0.91	n	5.738e+05	5.319e+05	3.29e+01	y	21.6	2,3,4,8-TCDF
25:57	3.131e+05	y	4.183e+05	y	0.75	y	7.313e+05	7.313e+05	4.53e+01	y	29.7	2,3,7,8-TCDF
26:21	6.663e+05	y	8.482e+05	y	0.79	y	1.514e+06	1.514e+06	8.69e+01	y	61.5	
26:36	4.739e+04	y	6.847e+04	y	0.69	y	1.159e+05	1.159e+05	6.98e+00	y	4.71	
26:54	6.908e+04	y	9.155e+04	y	0.75	y	1.606e+05	1.606e+05	1.21e+01	y	6.52	
28:05	5.506e+04	y	7.422e+04	y	0.74	y	1.293e+05	1.293e+05	7.23e+00	y	5.25	1,2,8,9-TCDF

Totals Results Analytical Perspectives [Form: TOT]

Totals class: PeCDF EMPC Function: 2 Run #: 6 Checkcode: 0128
File Name: 070724P2 Sample #: 6 Sample text: P8090_5075_003 North Furnace-Run 3 Air »

Acquired: 24-JUL-07 20:42:05 Processed: 25-JUL-07 08:37:30

Total Conc.: 412.31 Unnamed Conc.: 344.899 Homolog count: 16

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
29:42	6.647e+05	y	4.448e+05	y	1.49	y	1.109e+06	1.109e+06	2.44e+01	y	52.4	
29:52	8.629e+05	y	5.281e+05	y	1.63	y	1.391e+06	1.391e+06	2.74e+01	y	65.7	
30:00	1.438e+05	y	1.001e+05	y	1.44	y	2.439e+05	2.439e+05	8.40e+00	y	11.5	
30:05	5.193e+04	y	4.247e+04	y	1.22	n	9.439e+04	8.543e+04	3.16e+00	y	4.04	
30:21	1.261e+05	y	9.359e+04	y	1.35	y	2.197e+05	2.197e+05	9.51e+00	y	10.4	
30:27	2.199e+05	y	1.483e+05	y	1.48	y	3.683e+05	3.683e+05	1.35e+01	y	17.4	
30:34	8.558e+05	y	5.590e+05	y	1.53	y	1.415e+06	1.415e+06	3.56e+01	y	66.9	
30:46	1.607e+05	y	1.037e+05	y	1.55	y	2.644e+05	2.644e+05	1.02e+01	y	12.5	
31:00	2.167e+05	y	1.412e+05	y	1.54	y	3.579e+05	3.579e+05	1.14e+01	y	16.9	1,2,3,7,8-PeCDF
31:17	4.110e+05	y	2.689e+05	y	1.53	y	6.799e+05	6.799e+05	1.51e+01	y	32.1	
31:27	4.010e+04	y	3.150e+04	y	1.27	n	7.161e+04	6.598e+04	2.24e+00	n	3.12	
31:54	8.255e+04	y	5.409e+04	y	1.53	y	1.366e+05	1.366e+05	4.87e+00	y	6.46	
32:02	6.760e+05	y	4.513e+05	y	1.50	y	1.127e+06	1.127e+06	3.72e+01	y	53.3	
32:10	5.711e+05	y	3.709e+05	y	1.54	y	9.420e+05	9.420e+05	2.65e+01	y	44.6	2,3,4,7,8-PeCDF
32:29	1.186e+05	y	7.263e+04	y	1.63	y	1.912e+05	1.912e+05	8.20e+00	y	9.04	
33:16	7.420e+04	y	5.158e+04	y	1.44	y	1.258e+05	1.258e+05	4.20e+00	y	5.94	1,2,3,8,9-PeCDF

Totals Results Analytical Perspectives [Form: TOT]

Totals class: HxCDF EMPC Function: 3 Run #: 6 Checkcode: 0128
File Name: 070724P2 Sample #: 6 Sample text: P8090_5075_003 North Furnace-Run 3 Air »

Acquired: 24-JUL-07 20:42:05 Processed: 25-JUL-07 08:37:30

Total Conc.: 297.96 Unnamed Conc.: 146.662 Homolog count: 13

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
34:05	3.149e+05	y	2.617e+05	y	1.20	y	5.766e+05	5.766e+05	1.99e+00	n	34.4	1,2,3,4,6,8-HxCDF
34:17	6.301e+05	y	5.059e+05	y	1.25	y	1.136e+06	1.136e+06	4.32e+00	y	67.7	
34:31	6.754e+04	y	5.783e+04	y	1.17	y	1.254e+05	1.254e+05	4.95e-01	n	7.47	
34:43	1.206e+05	y	1.054e+05	y	1.14	y	2.259e+05	2.259e+05	9.63e-01	n	13.5	
34:57	8.919e+04	y	5.695e+04	y	1.57	n	1.461e+05	1.276e+05	4.92e-01	n	7.60	
35:23	2.801e+05	y	2.198e+05	y	1.27	y	4.999e+05	4.999e+05	1.83e+00	n	29.8	
35:30	2.545e+05	y	1.878e+05	y	1.36	y	4.423e+05	4.423e+05	1.40e+00	n	27.3	1,2,3,4,7,8-HxCDF
35:38	2.935e+05	y	2.172e+05	y	1.35	y	5.107e+05	5.107e+05	1.94e+00	n	27.0	1,2,3,6,7,8-HxCDF
35:48	7.472e+04	y	4.765e+04	y	1.57	n	1.224e+05	1.067e+05	4.51e-01	n	6.36	
35:57	7.782e+04	y	5.912e+04	y	1.32	y	1.369e+05	1.369e+05	5.13e-01	n	8.16	
36:05	7.909e+04	y	4.557e+04	y	1.74	n	1.247e+05	1.021e+05	4.87e-01	n	6.08	
36:18	4.170e+05	y	3.430e+05	y	1.22	y	7.600e+05	7.600e+05	2.79e+00	y	45.5	2,3,4,6,7,8-HxCDF
37:18	1.392e+05	y	1.231e+05	y	1.13	y	2.623e+05	2.623e+05	7.42e-01	n	17.2	1,2,3,7,8,9-HxCDF

Totals Results Analytical Perspectives [Form: TOT]

Totals class: HpCDF EMPC Function: 4 Run #: 6 Checkcode: 0128
File Name: 070724P2 Sample #: 6 Sample text: P8090_5075_003 North Furnace-Run 3 Air »

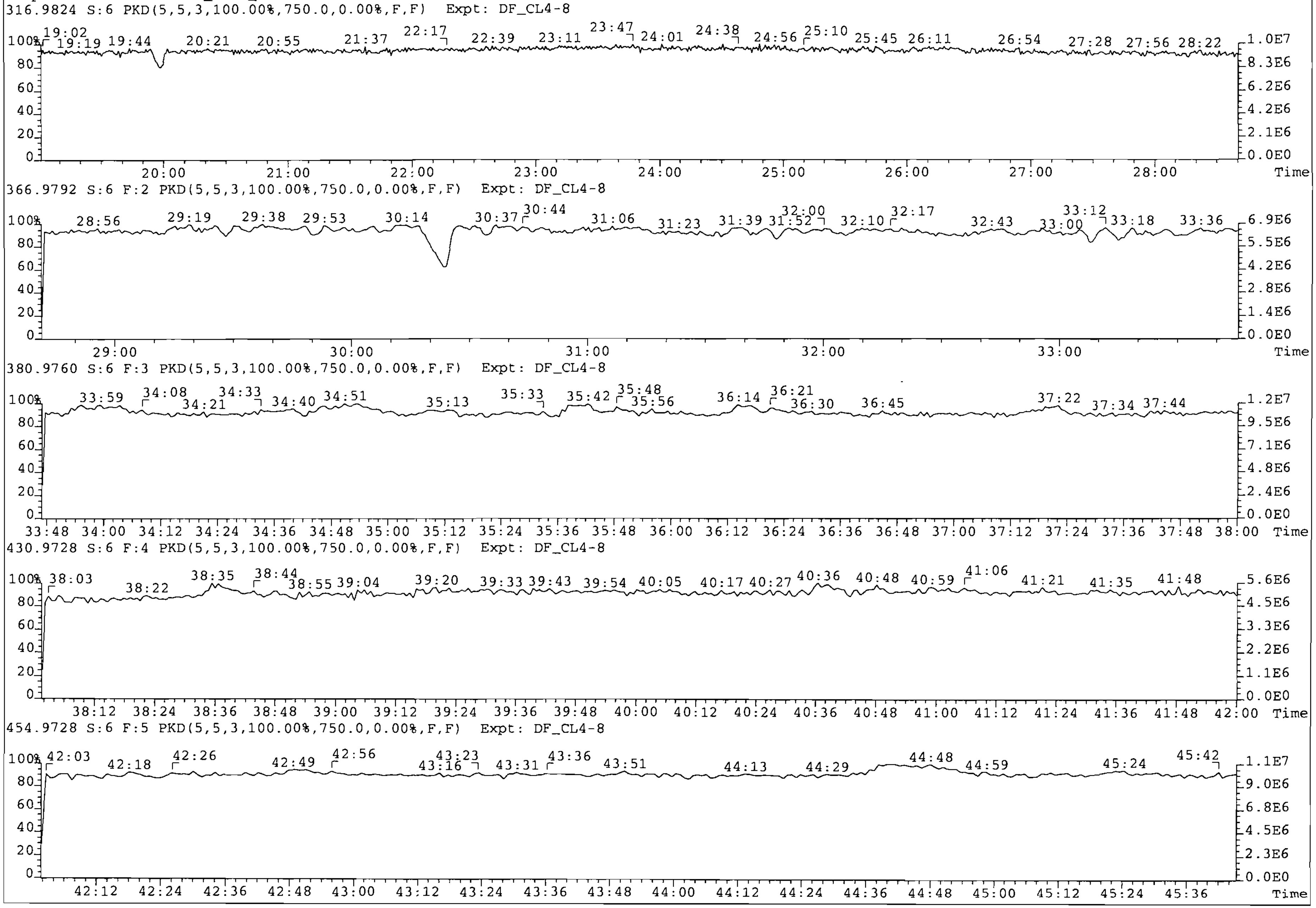
Acquired: 24-JUL-07 20:42:05 Processed: 25-JUL-07 08:37:30

Total Conc.: 154.52 Unnamed Conc.: 56.721 Homolog count: 4

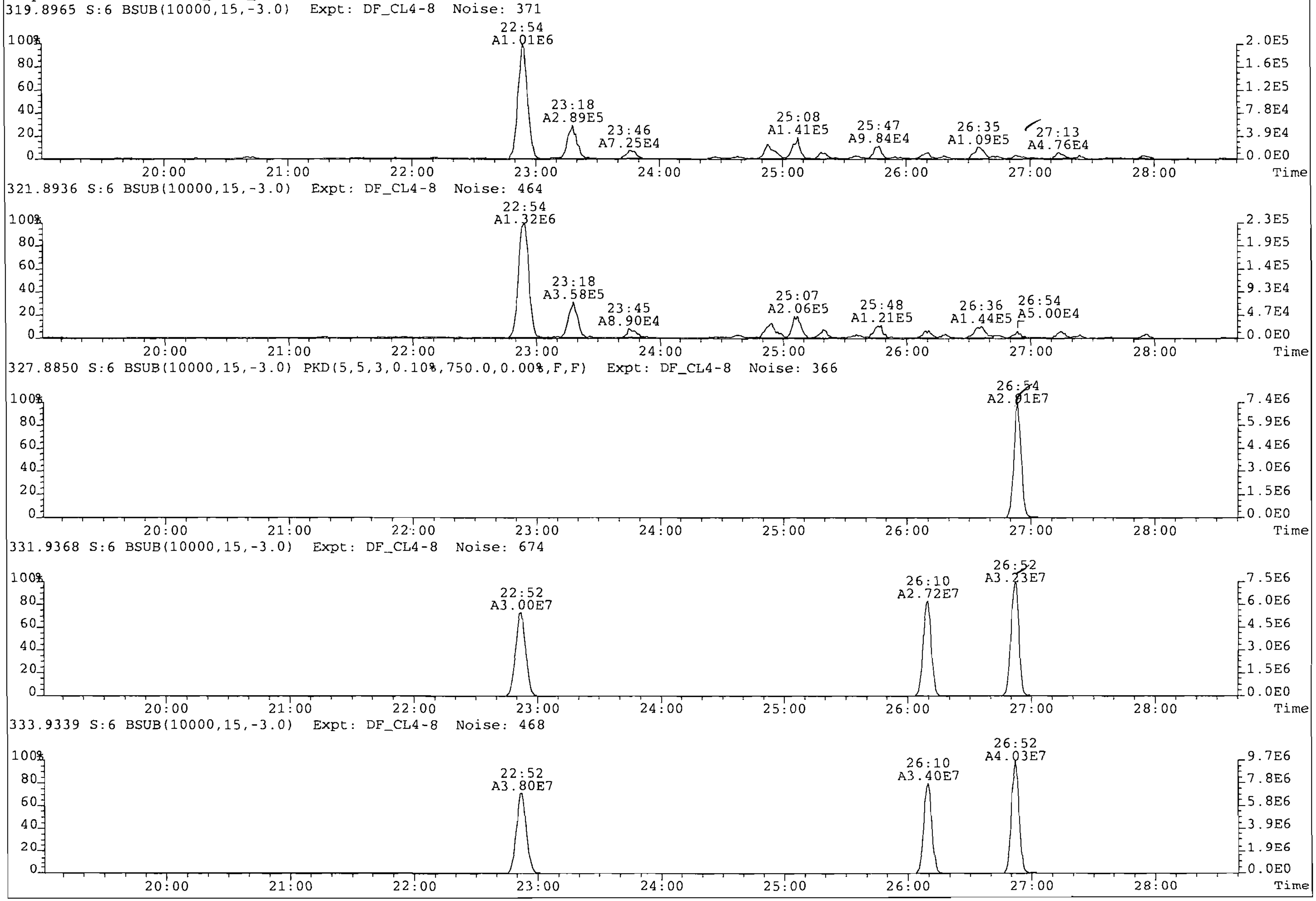
RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
38:56	5.598e+05	y	5.239e+05	y	1.07	y	1.084e+06	1.084e+06	8.25e+01	y	80.0	1,2,3,4,6,7,8-HpCDF
39:15	1.775e+05	y	1.711e+05	y	1.04	y	3.486e+05	3.486e+05	2.77e+01	y	27.5	
39:25	2.190e+05	y	1.817e+05	y	1.21	n	4.007e+05	3.707e+05	2.75e+01	y	29.2	

[illegible].40 1.084e+05 y 1.016e+05 y 1.07 y 2.100e+05 2.100e+05 1.[illegible]e+01 y 17.8 1,2,3,4,7,8,9-HpCDF

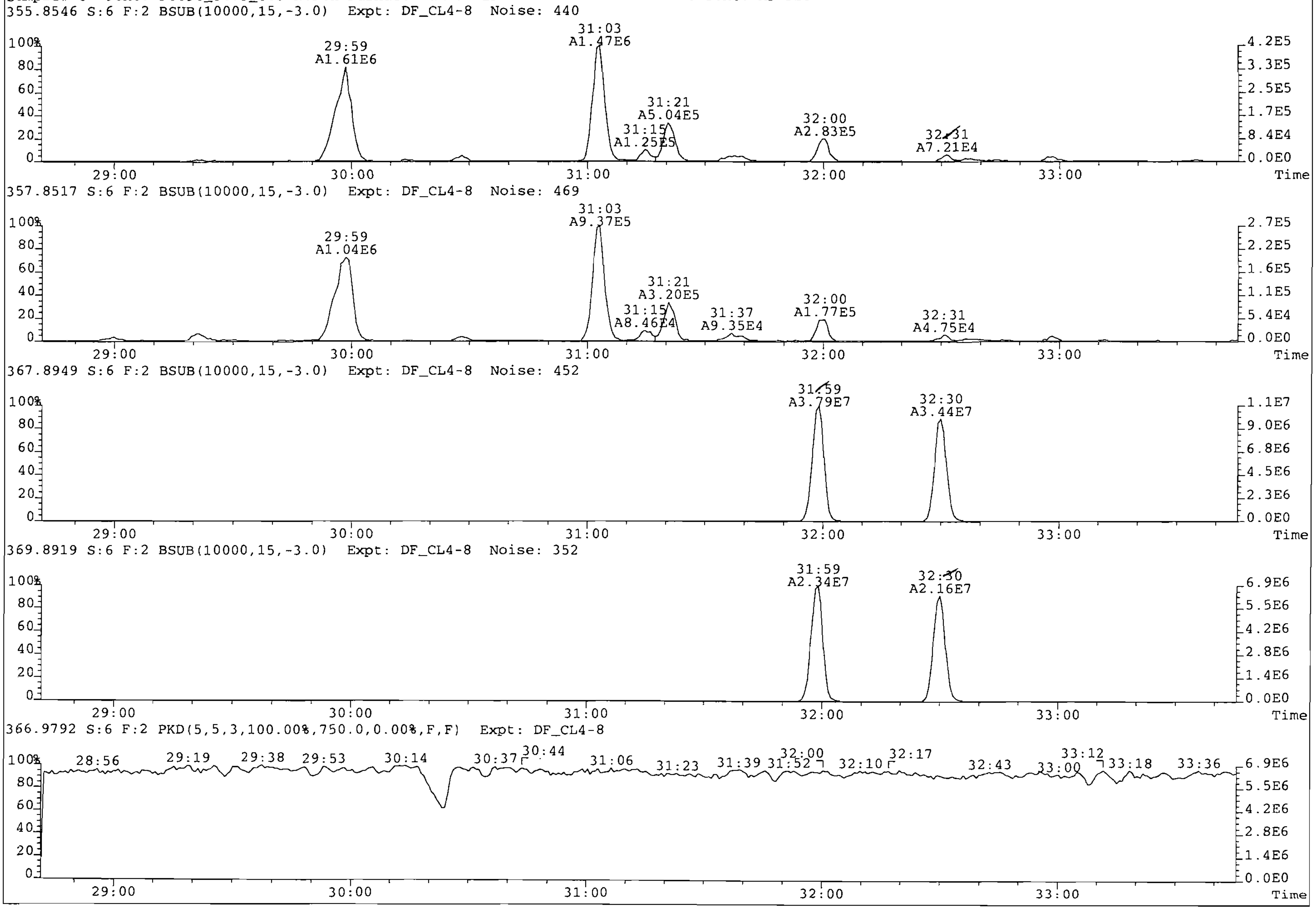
File: 070724P2 Acq: 24-JUL-2007 20:42:05 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 6 Text: P8090_5075_003 North Furnace-Run 3 Air Train Vial# 20 File Text: AP DB5



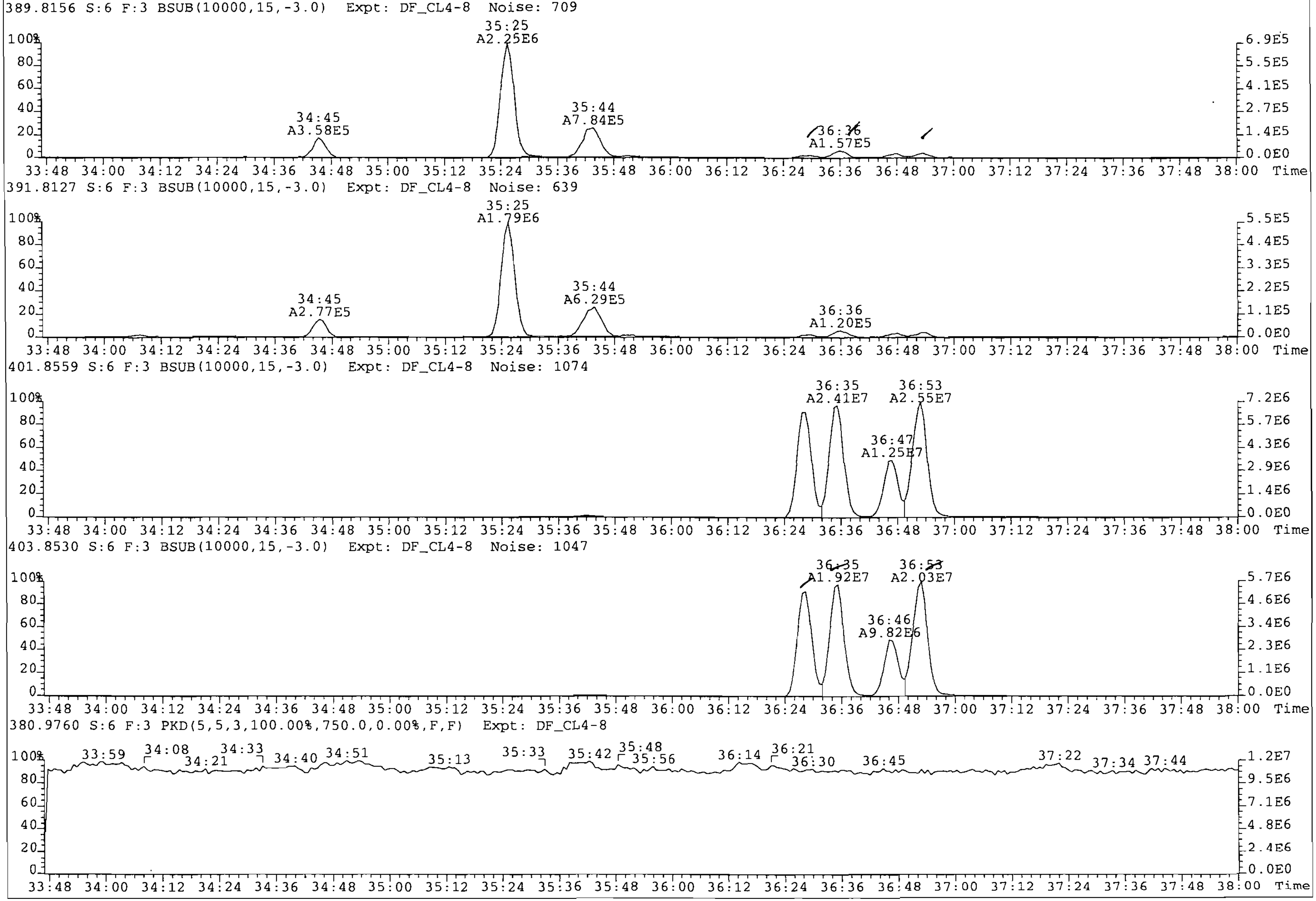
File: 070724P2 Acq: 24-JUL-2007 20:42:05 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 6 Text: P8090_5075_003 North Furnace-Run 3 Air Train Vial# 20 File Text: AP DB5



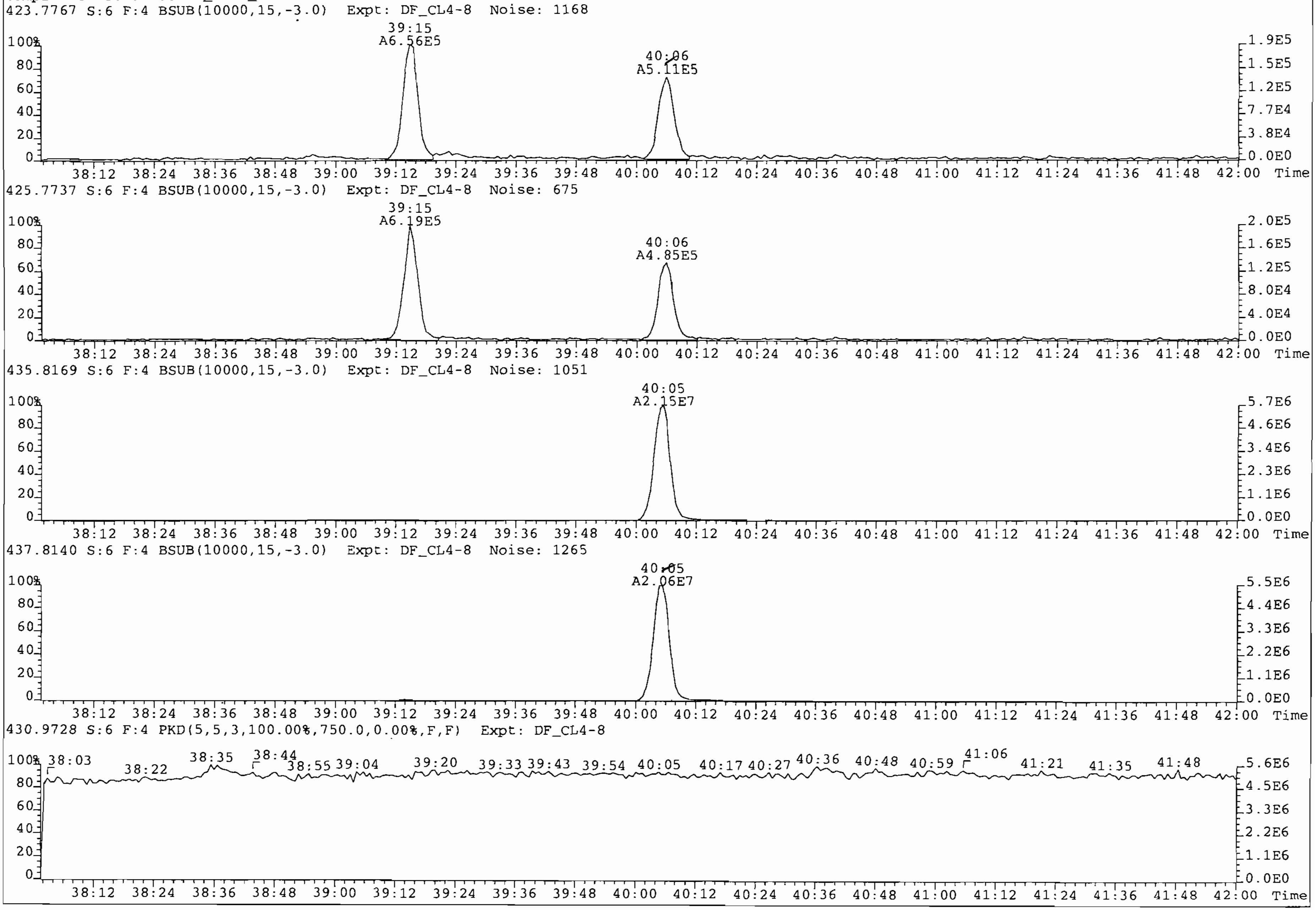
File: 070724P2 Acq: 24-JUL-2007 20:42:05 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 6 Text: P8090_5075_003 North Furnace-Run 3 Air Train Vial# 20 File Text: AP DB5



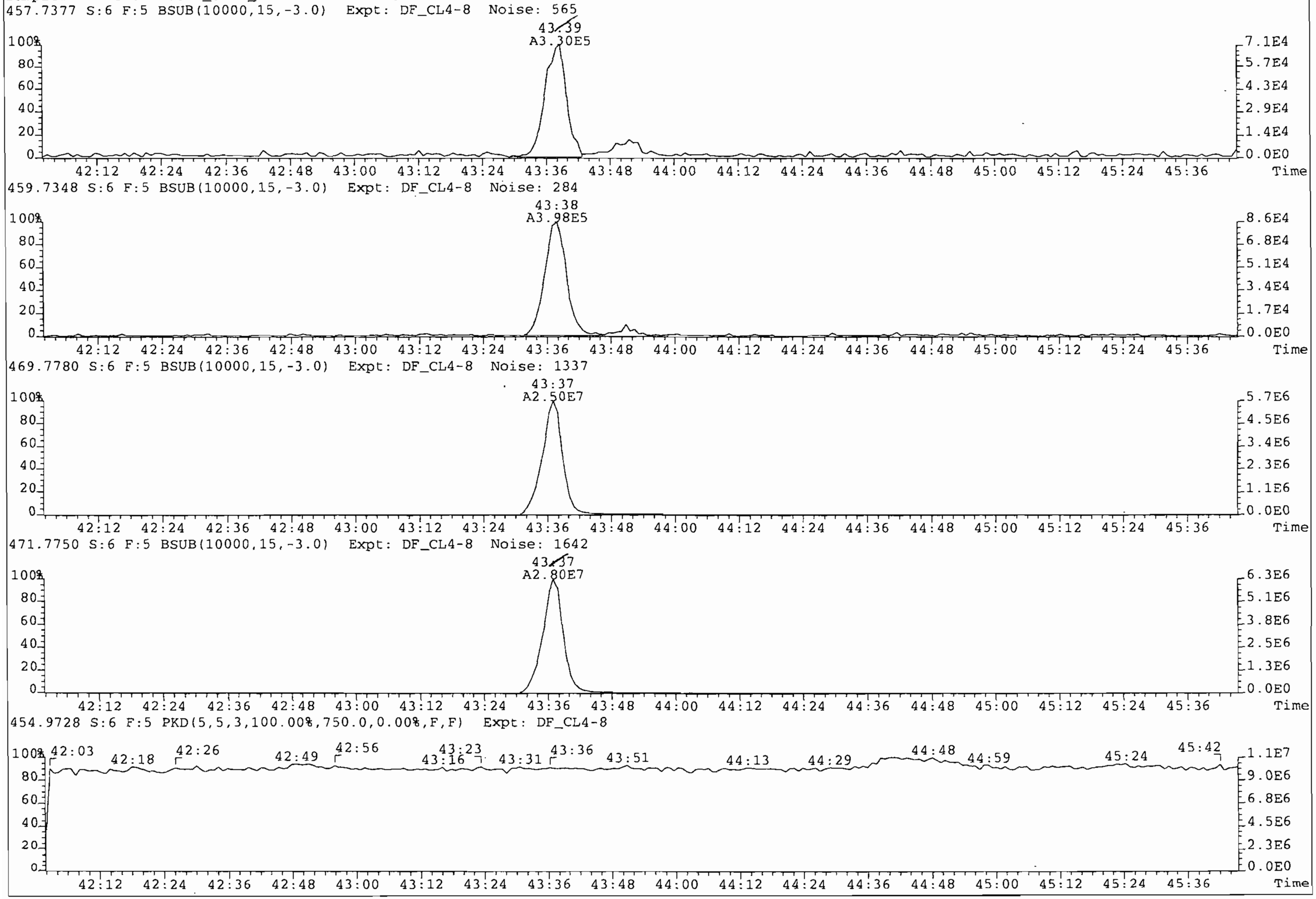
File: 070724P2 Acq: 24-JUL-2007 20:42:05 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 6 Text: P8090_5075_003 North Furnace-Run 3 Air Train Vial# 20 File Text: AP DB5



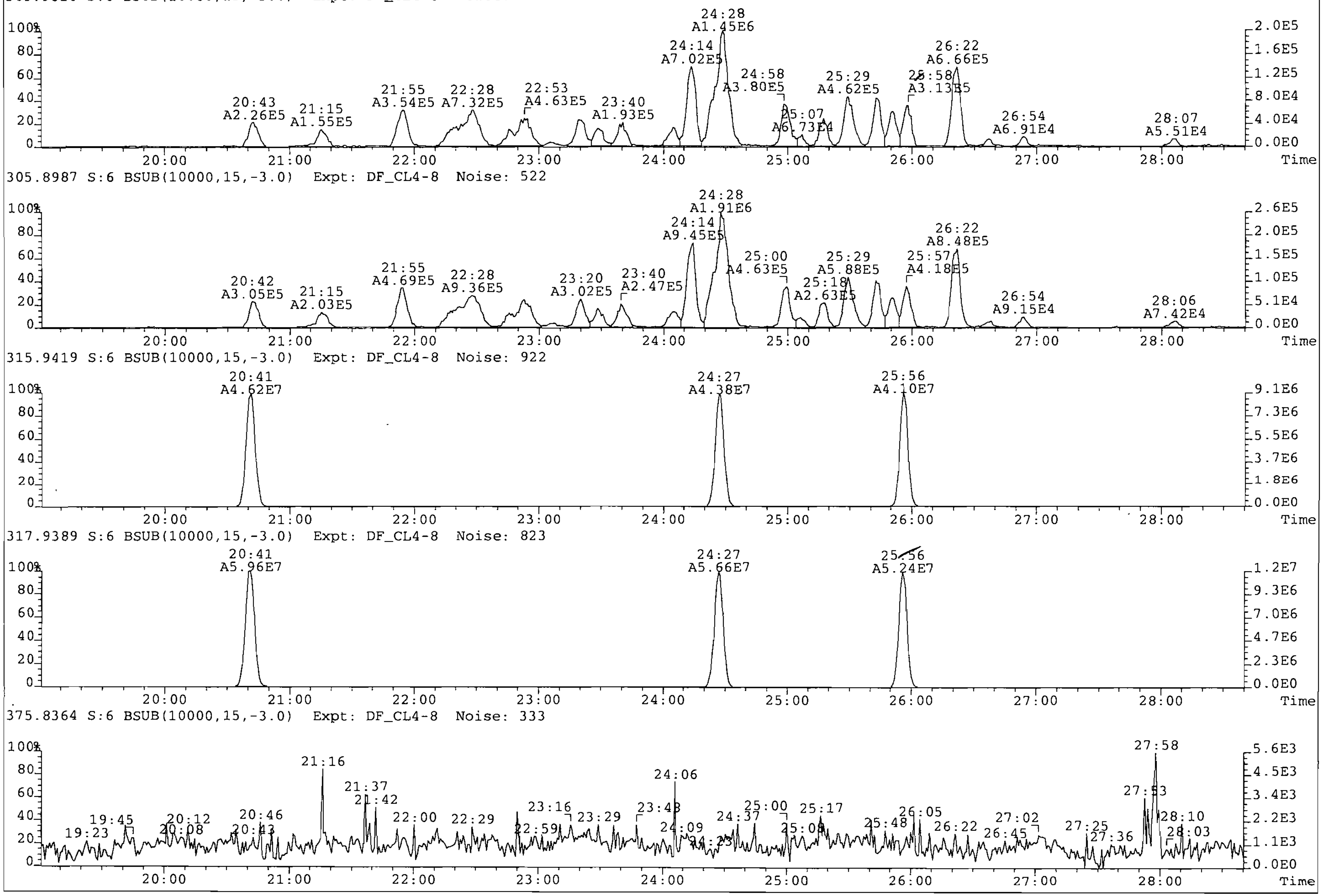
File: 070724P2 Acq: 24-JUL-2007 20:42:05 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 6 Text: P8090_5075_003 North Furnace-Run 3 Air Train Vial# 20 File Text: AP DB5



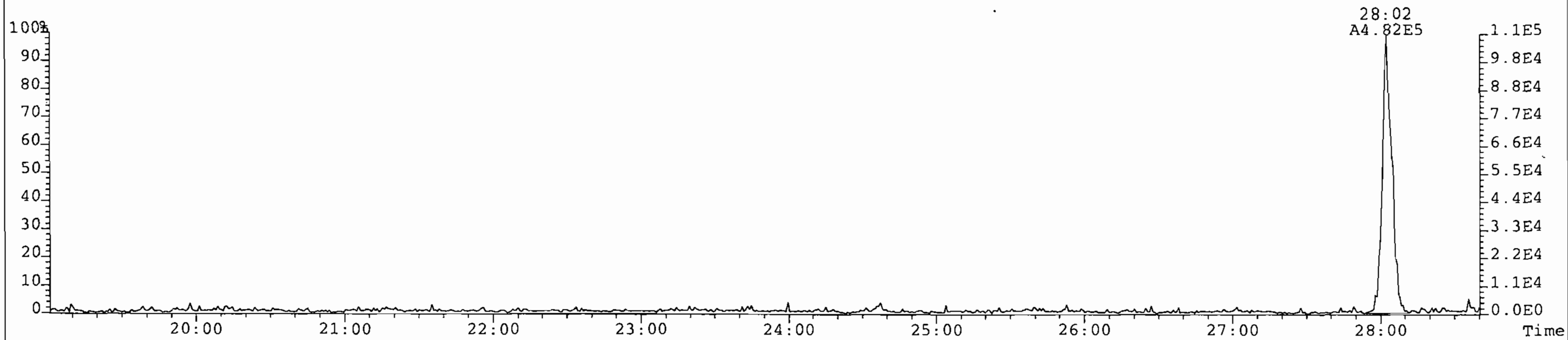
File: 070724P2 Acq: 24-JUL-2007 20:42:05 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 6 Text: P8090_5075_003 North Furnace-Run 3 Air Train Vial# 20 File Text: AP DB5



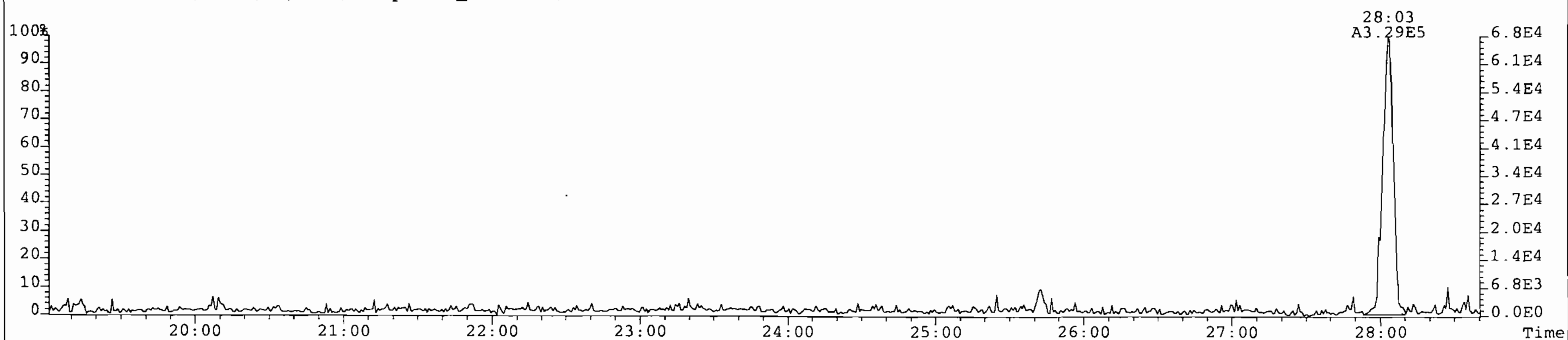
File: 070724P2 Acq: 24-JUL-2007 20:42:05 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 6 Text: P8090_5075_003 North Furnace-Run 3 Air Train Vial# 20 File Text: AP DB5
303.9016 S:6 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 456



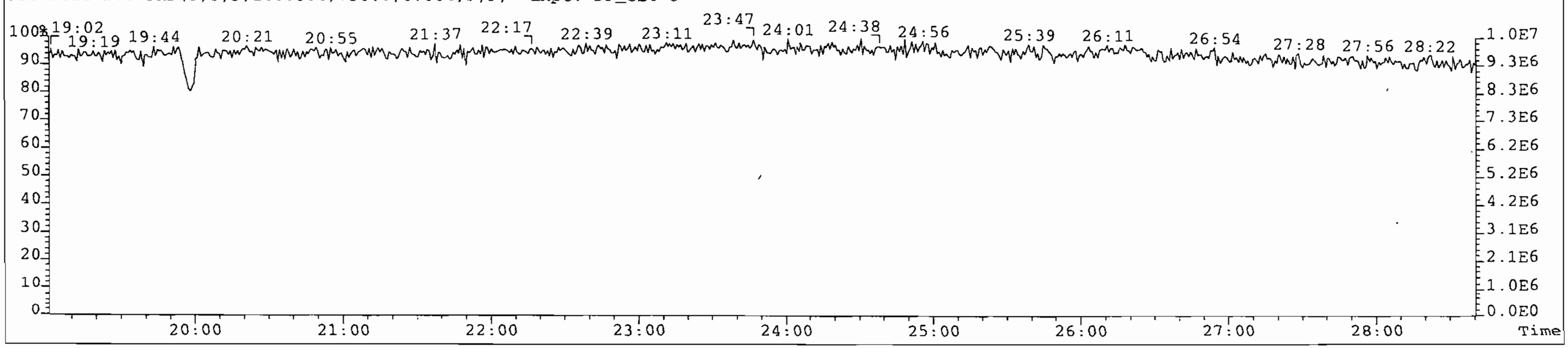
File: 070724P2 Acq: 24-JUL-2007 20:42:05 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 6 Text: P8090_5075_003 North Furnace-Run 3 Air Train Vial# 20 File Text: AP DB5
339.8597 S:6 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 362



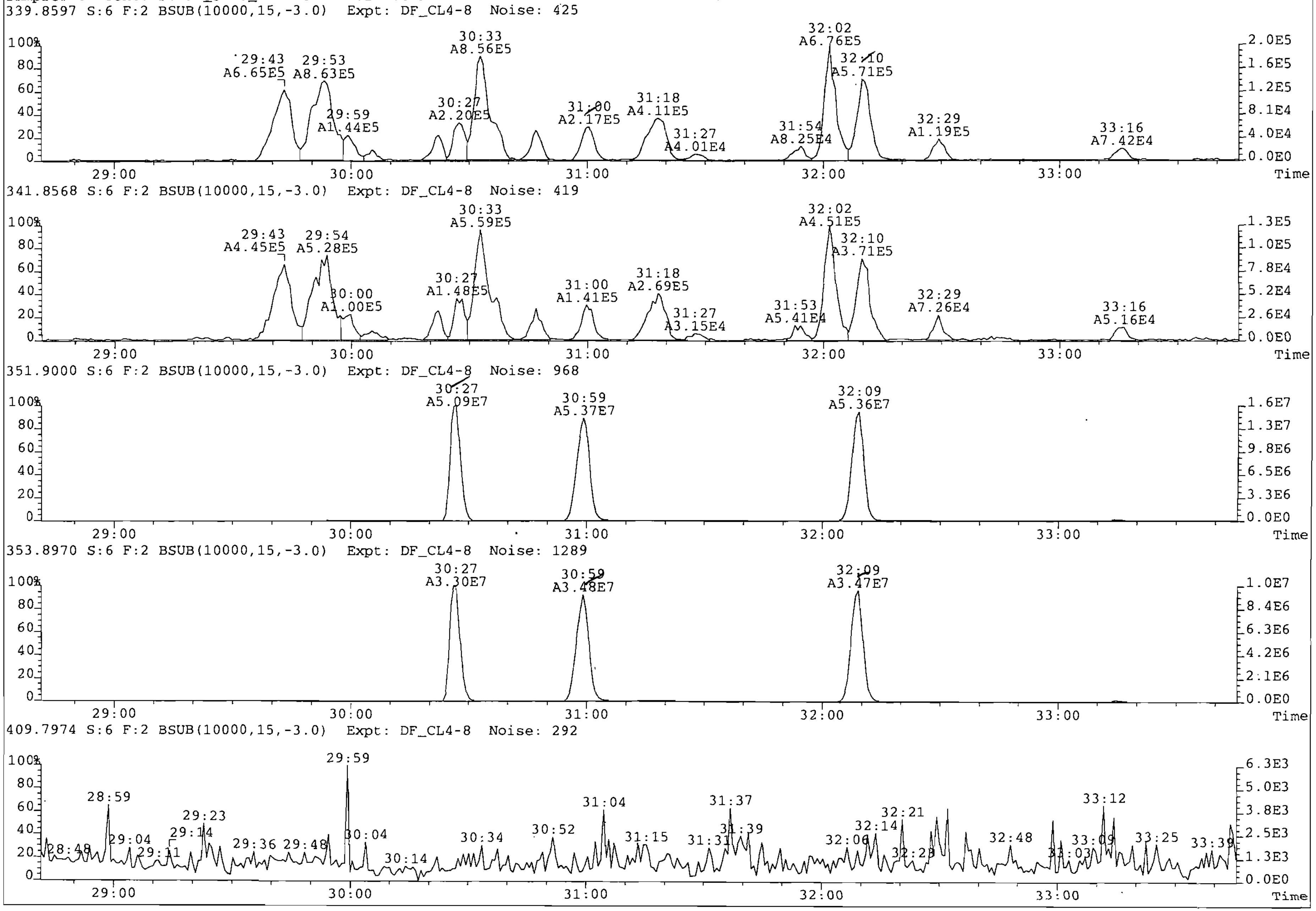
341.8568 S:6 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 392



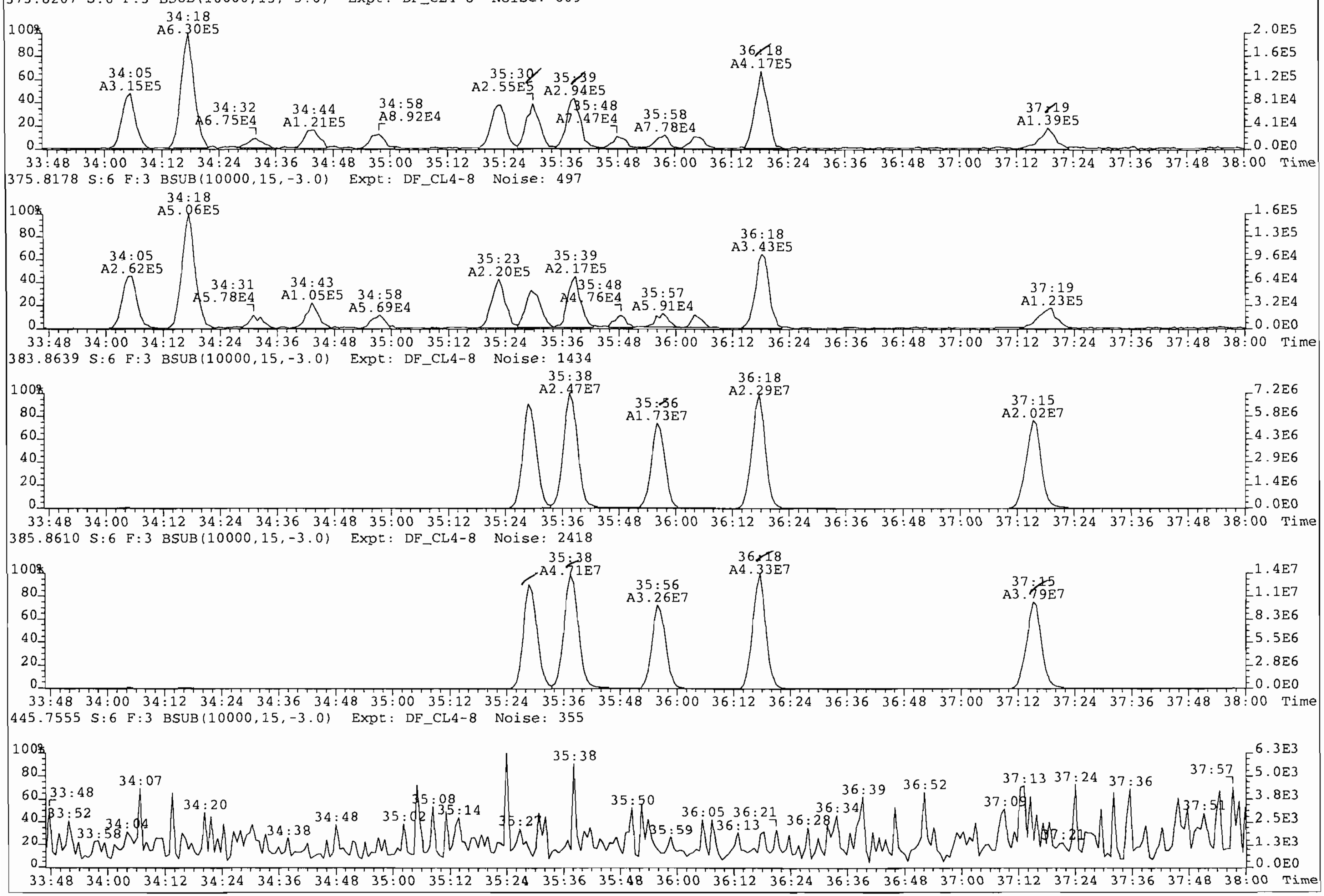
316.9824 S:6 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



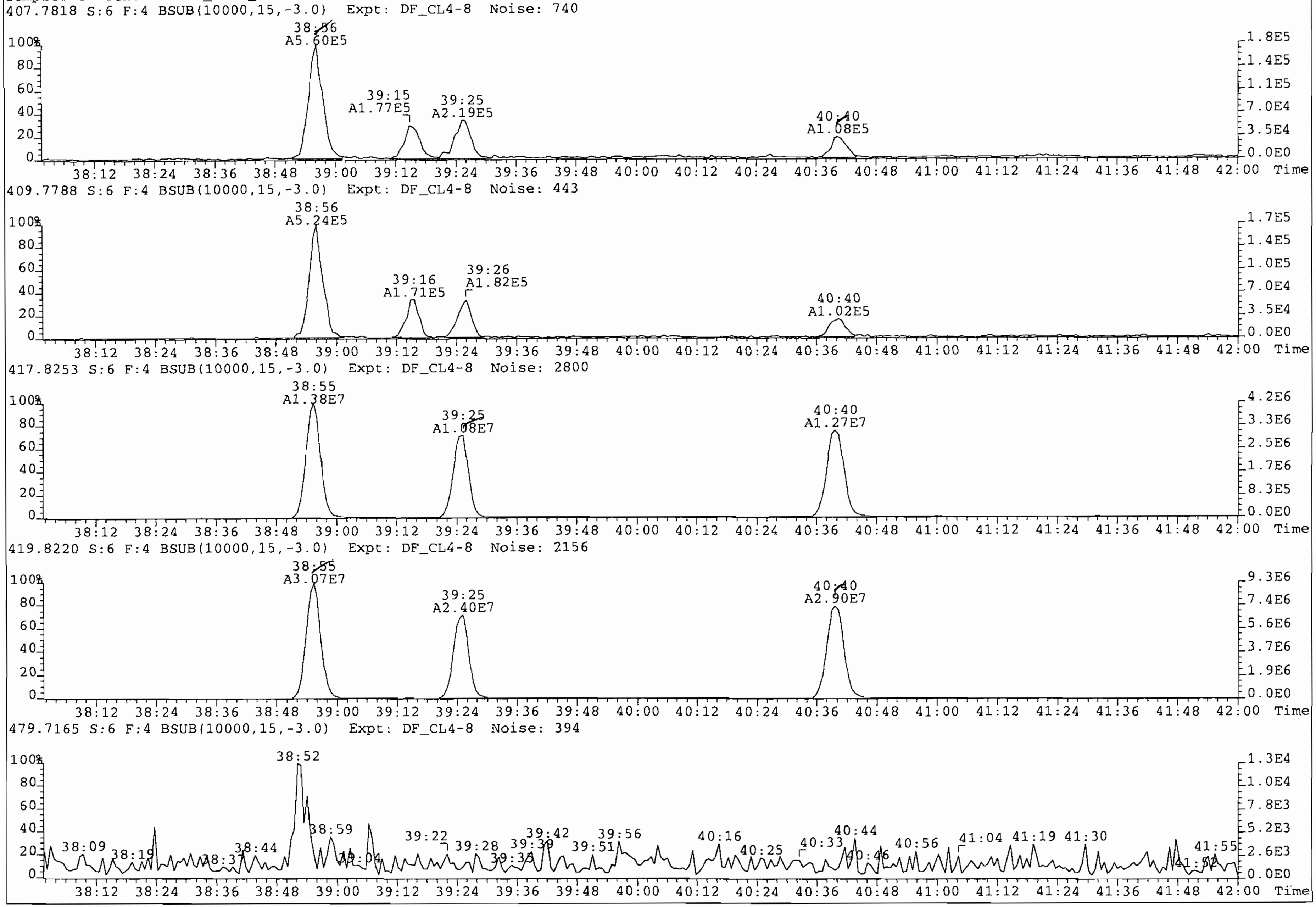
File: 070724P2 Acq: 24-JUL-2007 20:42:05 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 6 Text: P8090_5075_003 North Furnace-Run 3 Air Train Vial# 20 File Text: AP DB5



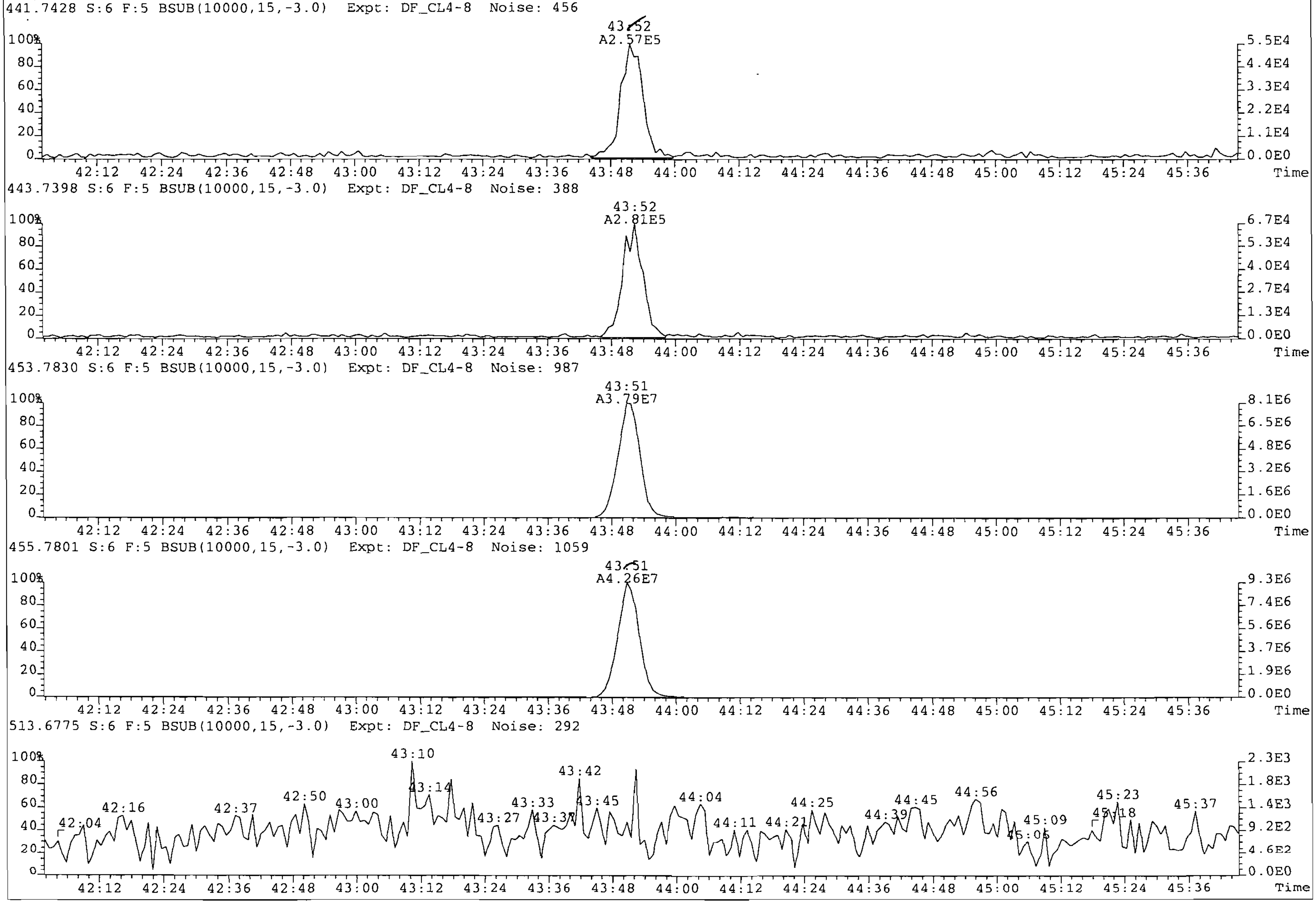
File: 070724P2 Acq: 24-JUL-2007 20:42:05 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 6 Text: P8090_5075_003 North Furnace-Run 3 Air Train Vial# 20 File Text: AP DB5
373.8207 S:6 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 809



File: 070724P2 Acq: 24-JUL-2007 20:42:05 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 6 Text: P8090_5075_003 North Furnace-Run 3 Air Train Vial# 20 File Text: AP DB5



File: 070724P2 Acq: 24-JUL-2007 20:42:05 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 6 Text: P8090_5075_003 North Furnace-Run 3 Air Train Vial# 20 File Text: AP DB5



P8090

ANALYTICAL PERSPECTIVES

PART 4

SYSTEM PERFORMANCE

MS & GC

BCS_3 - CONCAL

DOCUMENTATION FOR THE ANALYSIS
OF
POLYCHLORINATED DIBENZO-*P*-DIOXINS & DIBENZOFURANS

P3010

31 Jul 07

BCS3 QC Sheet 1/2

BCS3_5075_M23_24JUL07AB

ANALYTICAL PERSPECTIVES

BCS3 Report Created: 25 Jul 2007 9:24

ICAL	MM1_DF_091806B_16APR07	
BCS3_5075_DF_PA	070724P2S1	24/Jul/07/16:32:51
BCS3_5075_DF_PB	070724P2S8	24/Jul/07/22:21:45

Avg (Ax) RPD	1%
Max (Ax) RPD	4%

Name	ICAL (Ax)	A	B	A-I	B-I	AB Avg	AB RPD
2,3,7,8-TCDD	1.10	0.97	0.97	-11.8%	-11.6%	0.97	0%
1,2,3,7,8-PeCDD	0.97	0.87	0.89	-10.0%	-8.0%	0.88	2%
1,2,3,4,7,8-HxCDD	1.13	1.05	1.09	-7.1%	-3.7%	1.07	4%
1,2,3,6,7,8-HxCDD	1.04	0.99	1.01	-5.2%	-2.9%	1.00	2%
1,2,3,7,8,9-HxCDD	1.00	0.94	0.93	-6.1%	-7.2%	0.94	1%
1,2,3,4,6,7,8-HpCDD	0.91	0.86	0.89	-5.6%	-2.0%	0.88	4%
OCDD	0.94	0.94	0.97	0.7%	3.7%	0.96	3%
2,3,7,8-TCDF	1.03	1.04	1.07	0.5%	3.5%	1.06	3%
1,2,3,7,8-PeCDF	0.96	0.97	0.95	0.5%	-1.1%	0.96	2%
2,3,4,7,8-PeCDF	0.99	0.96	0.96	-3.4%	-3.7%	0.96	0%
1,2,3,4,7,8-HxCDF	1.13	1.04	1.04	-7.4%	-7.6%	1.04	0%
1,2,3,6,7,8-HxCDF	1.12	1.05	1.06	-6.7%	-5.3%	1.06	1%
2,3,4,6,7,8-HxCDF	1.06	1.01	1.01	-4.6%	-5.0%	1.01	0%
1,2,3,7,8,9-HxCDF	1.12	1.04	1.06	-6.7%	-4.6%	1.05	2%
1,2,3,4,6,7,8-HpCDF	1.20	1.21	1.23	1.1%	2.4%	1.22	1%
1,2,3,4,7,8,9-HpCDF	1.20	1.13	1.13	-5.9%	-5.9%	1.13	0%
OCDF	0.83	0.80	0.79	-4.1%	-4.7%	0.79	1%
Total Tetra-Dioxins	1.10	0.97	0.97	-11.8%	-11.6%	0.97	0%
Total Penta-Dioxins	0.97	0.87	0.89	-10.0%	-8.0%	0.88	2%
Total Hexa-Dioxins	1.05	0.99	1.01	-6.1%	-4.5%	1.00	2%
Total Hepta-Dioxins	0.91	0.86	0.89	-5.6%	-2.0%	0.88	4%
Total Tetra-Furans	1.03	1.04	1.07	0.5%	3.5%	1.06	3%
Total Penta-Furans	0.98	0.96	0.95	-1.5%	-2.4%	0.96	1%
Total Hexa-Furans	1.11	1.04	1.04	-6.4%	-5.6%	1.04	1%
Total Hepta-Furans	1.20	1.17	1.18	-2%	-1%	1.18	1%

Reviewer ....

Date ....2[illegible]07....

BCS3 QC Sheet 2/2

BCS3_5075_M23_24JUL07AB

ANALYTICAL PERSPECTIVES

BCS3 Report Created: 25 Jul 2007 9:24

ICAL	MM1_DF_091806B_16APR07	
BCS3_5075_DF_PA	070724P2S1	24/Jul/07/16:32:51
BCS3_5075_DF_PB	070724P2S8	24/Jul/07/22:21:45

Avg (ES) RPD	5%
Max (ES) RPD	14%

Name	ICAL (Stds.)	A	B	A-I	B-I	AB Avg	AB RPD
13C-2,3,7,8-TCDD	1.09	1.11	1.11	1%	1%	1.11	0%
13C-1,2,3,7,8-PeCDD	1.02	1.07	0.96	5%	-6%	1.01	10%
13C-1,2,3,4,7,8-HxCDD	1.06	1.05	1.03	-1%	-3%	1.04	1%
13C-1,2,3,6,7,8-HxCDD	1.20	1.14	1.12	-5%	-7%	1.13	1%
13C-1,2,3,7,8,9-HxCDD	1.25	1.21	1.17	-3%	-6%	1.19	3%
13C-1,2,3,4,6,7,8-HpCDD	1.09	1.30	1.20	19%	10%	1.25	8%
13C-OCDD	0.84	0.94	0.81	12%	-3%	0.88	14%
13C-2,3,7,8-TCDF	1.00	0.93	0.94	-8%	-7%	0.93	1%
13C-1,2,3,7,8-PeCDF	0.96	0.97	0.90	1%	-6%	0.94	8%
13C-2,3,4,7,8-PeCDF	1.00	1.00	0.91	1%	-8%	0.96	10%
13C-1,2,3,4,7,8-HxCDF	1.64	1.52	1.60	-8%	-3%	1.56	5%
13C-1,2,3,6,7,8-HxCDF	1.88	1.73	1.79	-8%	-4%	1.76	4%
13C-2,3,4,6,7,8-HxCDF	1.74	1.76	1.82	1%	4%	1.79	3%
13C-1,2,3,7,8,9-HxCDF	1.53	1.63	1.66	6%	9%	1.65	2%
13C-1,2,3,4,6,7,8-HpCDF	1.32	1.38	1.32	4%	0%	1.35	5%
13C-1,2,3,4,7,8,9-HpCDF	1.11	1.20	1.16	8%	5%	1.18	3%
13C-OCDF	1.26	1.36	1.23	7%	-3%	1.29	10%
37Cl-2,3,7,8-TCDD	1.00	1.02	1.05	2%	4%	1.04	2%
13C-1,2,3,4,7-PeCDD	0.91	0.98	1.02	7%	11%	1.00	4%
13C-1,2,3,4,6-PeCDF	0.91	0.88	0.90	-4%	-1%	0.89	3%
13C-1,2,3,4,6,9-HxCDF	0.76	0.75	0.75	-1%	-1%	0.75	0%
13C-1,2,3,4,6,8,9-HpCDF	0.74	0.77	0.79	5%	7%	0.78	2%

Reviewer ....RL..........
Date ....25 Jul 07..........

OPUSquan on MM1 25-JUL-2007 09:09

Calibration Summary Analytical Perspectives [Form: CAL]

Client ID: BCS3_5075_DF_PA Filename: 070724P2 S: 1 Acq: 24-JUL-07 16:32:51
Lab ID: BCS3_5075_DF_PA GC Column ID: db-5 ICal: Wt/Vol: 1.000
Sample text: BCS3_5075_DF_PA Vial: 16

	Typ	Name	Amount	Resp	RA		RT	RF	RRF
1	Ax	2,3,7,8-TCDD	10.00	3.87e+06	0.78	y	26:55	-	0.97
2	Ax	1,2,3,7,8-PeCDD	50.00	1.67e+07	1.58	y	32:32	-	0.87
3	Ax	1,2,3,4,7,8-HxCDD	50.00	1.65e+07	1.27	y	36:30	-	1.05
4	Ax	1,2,3,6,7,8-HxCDD	50.00	1.68e+07	1.23	y	36:36	-	0.99
5	Ax	1,2,3,7,8,9-HxCDD	50.00	1.72e+07	1.25	y	36:54	-	0.94
6	Ax	1,2,3,4,6,7,8-HpCDD	50.00	1.68e+07	1.08	y	40:07	-	0.86
7	Ax	OCDD	100.00	2.66e+07	0.89	y	43:39	-	0.94
8	Ax2	OCDD-a	100.00	1.66e+06	2.36	y	43:38	-	0.06
9	Ax	2,3,7,8-TCDF	10.00	5.61e+06	0.79	y	25:59	-	1.04
10	Ax	1,2,3,7,8-PeCDF	50.00	2.73e+07	1.54	y	31:01	-	0.97
11	Ax	2,3,4,7,8-PeCDF	50.00	2.80e+07	1.56	y	32:11	-	0.96
12	Ax	1,2,3,4,7,8-HxCDF	50.00	2.38e+07	1.26	y	35:31	-	1.04
13	Ax	1,2,3,6,7,8-HxCDF	50.00	2.72e+07	1.26	y	35:39	-	1.05
14	Ax	2,3,4,6,7,8-HxCDF	50.00	2.67e+07	1.26	y	36:19	-	1.01
15	Ax	1,2,3,7,8,9-HxCDF	50.00	2.55e+07	1.25	y	37:17	-	1.04
16	Ax	1,2,3,4,6,7,8-HpCDF	50.00	2.51e+07	1.05	y	38:57	-	1.21
17	Ax	1,2,3,4,7,8,9-HpCDF	50.00	2.03e+07	1.05	y	40:41	-	1.13
18	Ax	OCDF	100.00	3.25e+07	0.90	y	43:53	-	0.80
19	Ax2	OCDF-a	100.00	2.06e+06	2.50	y	43:53	-	0.05
20	ES	13C-2,3,7,8-TCDD	100.00	3.98e+07	0.80	y	26:53	-	1.11
21	ES	13C-1,2,3,7,8-PeCDD	100.00	3.83e+07	1.62	y	32:31	-	1.07
22	ES	13C-1,2,3,4,7,8-HxCDD	100.00	3.15e+07	1.27	y	36:29	-	1.05
23	ES	13C-1,2,3,6,7,8-HxCDD	100.00	3.41e+07	1.27	y	36:36	-	1.14
24	ES	13C-1,2,3,7,8,9-HxCDD	100.00	3.64e+07	1.23	y	36:53	-	1.21
25	ES	13C-1,2,3,4,6,7,8-HpCDD	100.00	3.90e+07	1.02	y	40:06	-	1.30
26	ES	13C-OCDD	200.00	5.64e+07	0.91	y	43:38	-	0.94
27	ES	13C-2,3,7,8-TCDF	100.00	5.40e+07	0.79	y	25:57	-	0.93
28	ES	13C-1,2,3,7,8-PeCDF	100.00	5.65e+07	1.54	y	31:00	-	0.97
29	ES	13C-2,3,4,7,8-PeCDF	100.00	5.84e+07	1.55	y	32:10	-	1.00
30	ES	13C-1,2,3,4,7,8-HxCDF	100.00	4.56e+07	0.52	y	35:30	-	1.52
31	ES	13C-1,2,3,6,7,8-HxCDF	100.00	5.20e+07	0.53	y	35:38	-	1.73
32	ES	13C-2,3,4,6,7,8-HxCDF	100.00	5.29e+07	0.52	y	36:18	-	1.76
33	ES	13C-1,2,3,7,8,9-HxCDF	100.00	4.90e+07	0.53	y	37:16	-	1.63
34	ES	13C-1,2,3,4,6,7,8-HpCDF	100.00	4.15e+07	0.45	y	38:56	-	1.38
35	ES	13C-1,2,3,4,7,8,9-HpCDF	100.00	3.59e+07	0.46	y	40:40	-	1.20
36	ES	13C-OCDF	200.00	8.16e+07	0.91	y	43:52	-	1.36
37	CS	37Cl-2,3,7,8-TCDD	40.00	1.63e+07			26:54	-	1.13
38	CS	13C-1,2,3,4,7-PeCDD	100.00	3.75e+07	1.65	y	31:59	-	1.04
39	CS	13C-1,2,3,4,6-PeCDF	100.00	4.95e+07	1.53	y	30:27	-	0.85
40	CS	13C-1,2,3,4,6,9-HxCDF	100.00	3.91e+07	0.53	y	35:57	-	1.30
41	CS	13C-1,2,3,4,6,8,9-HpCDF	100.00	3.20e+07	0.47	y	39:25	-	1.06
42	NA	n/a	100.00	1.40e+05	0.52	y	36:36	-	0.00
43	JS/RT	13C-1,2,3,4-TCDD	50.00	1.80e+07	0.81	y	26:10	3.60e+05	-
44	JS	13C-1,2,3,4-TCDF	50.00	2.91e+07	0.77	y	24:28	5.81e+05	-
45	JS/RT	13C-1,2,3,4,6,7-HxCDD	25.00	7.52e+06	1.27	y	36:47	3.01e+05	-

Analyst: El

Date: 25Jul07

46	SS	37Cl-2,3,7,8-TCDD	40.00	1.63e+07			26:54	-	1.02
47	SS	13C-1,2,3,4,7-PeCDD	100.00	3.75e+07	1.65	y	31:59	-	0.98
48	SS	13C-1,2,3,4,6-PeCDF	100.00	4.95e+07	1.53	y	30:27	-	0.88
49	SS	13C-1,2,3,4,6,9-HxCDF	100.00	3.91e+07	0.53	y	35:57	-	0.75
50	SS	13C-1,2,3,4,6,8,9-HpCDF	100.00	3.20e+07	0.47	y	39:25	-	0.77
51	SBS	2,4,6,8-TCDF	-	-	-	n	-	-	1.04
52	Ay	1,3,6,8-TCDD	-	-	-	n	-	-	0.97
53	Ay	1,2,3,9-TCDD	-	-	-	n	-	-	0.97
54	Ay	1,2,8,9-TCDD	-	-	-	n	-	-	0.97
55	Ay	1,2,4,7,9-PeCDD	-	-	-	n	-	-	0.87
56	Ay	1,2,3,8,9-PeCDD	-	-	-	n	-	-	0.87
57	Ay	1,2,4,6,7,9-HxCDD	-	-	-	n	-	-	0.99
58	Ay	1,2,3,4,6,7,9-HpCDD	-	-	-	n	-	-	0.86
59	Ay	1,3,6,8-TCDF	-	-	-	n	-	-	1.04
60	Ay	2,3,4,8-TCDF	-	-	-	n	-	-	1.04
61	Ay	1,2,8,9-TCDF	-	-	-	n	-	-	1.04
62	Ay	1,3,4,6,8-PeCDF	-	-	-	n	-	-	1.04
63	Ay	1,2,3,8,9-PeCDF	-	-	-	n	-	-	0.96
64	Ay	1,2,3,4,6,8-HxCDF	-	-	-	n	-	-	1.04
65	Tot	Total Tetra-Dioxins	-	-	-	n	-	-	0.97
66	Tot	Total Penta-Dioxins	-	-	-	n	-	-	0.87
67	Tot	Total Hexa-Dioxins	-	-	-	n	-	-	0.99
68	Tot	Total Hepta-Dioxins	-	-	-	n	-	-	0.86
69	Tot	Total Tetra-Furans	-	-	-	n	-	-	1.04
70	Tot	Total Penta-Furans	-	-	-	n	-	-	0.96
71	Tot	Total Hexa-Furans	-	-	-	n	-	-	1.04
72	Tot	Total Hepta-Furans	-	-	-	n	-	-	1.17
73	Tot	TCDD EMPC	-	-	-	n	-	-	0.97
74	Tot	PeCDD EMPC	-	-	-	n	-	-	0.87
75	Tot	HxCDD EMPC	-	-	-	n	-	-	0.99
76	Tot	HpCDD EMPC	-	-	-	n	-	-	0.86
77	Tot	TCDF EMPC	-	-	-	n	-	-	1.04
78	Tot	PeCDF EMPC	-	-	-	n	-	-	0.96
79	Tot	HxCDF EMPC	-	-	-	n	-	-	1.04
80	Tot	HpCDF EMPC	-	-	-	n	-	-	1.17
81	AS	13C-1,3,6,8-TCDD	100.00	3.94e+07	0.79	y	22:53	-	1.09
82	AS	13C-1,3,6,8-TCDF	100.00	6.22e+07	0.77	y	20:42	-	1.07
83	DPE	HxCDPE	-	1.80e+05			19:43	-	-
84	DPE	HpCDPE	-	2.21e+05			29:05	-	-
85	DPE	OCDPE	-	3.55e+05			34:00	-	-
86	DPE	NCDPE	-	4.02e+05			38:16	-	-
87	DPE	DCDPE	-	7.38e+04			42:18	-	-
88	LMC	Fn1 check mass	-	*			NotF»	-	-
89	LMC	Fn2 check mass	-	*			NotF»	-	-
90	LMC	Fn3 check mass	-	*			NotF»	-	-
91	LMC	Fn4 check mass	-	*			NotF»	-	-
92	LMC	Fn5 check mass	-	*			NotF»	-	-

METHOD M23B
PCDD/F CALIBRATION VERIFICATION

Lab Name: Analytical Perspectives

Initial Calibration: MM1_DF_091806B_16APR07

GC Column ID: DB-5

VER Data Filename: 070724P2 S#1 Analysis Date: 24-JUL-07 Time: 16:32:51

NATIVE ANALYTES	M/Z'S FORMING RATIO	ION ABUND. RATIO	QC LIMITS	CONC. FOUND	CONC. RANGE (ng/mL)
2,3,7,8-TCDD	M/M+2	0.78	0.65-0.89	8.8	8.0 - 12.0
1,2,3,7,8-PeCDD	M+2/M+4	1.58	1.32-1.78	45.0	40.0 - 60.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	46.4	40.0 - 60.0
1,2,3,6,7,8-HxCDD	M+2/M+4	1.23	1.05-1.43	47.4	40.0 - 60.0
1,2,3,7,8,9-HxCDD	M+2/M+4	1.25	1.05-1.43	46.9	40.0 - 60.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.08	0.88-1.20	47.2	40.0 - 60.0
OCDD	M+2/M+4	0.89	0.76-1.02	100.7	80.0 - 120.0
2,3,7,8-TCDF	M/M+2	0.79	0.65-0.89	10.0	8.0 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.54	1.32-1.78	50.2	40.0 - 60.0
2,3,4,7,8-PeCDF	M+2/M+4	1.56	1.32-1.78	48.3	40.0 - 60.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.26	1.05-1.43	46.3	40.0 - 60.0
1,2,3,6,7,8-HxCDF	M+2/M+4	1.26	1.05-1.43	46.7	40.0 - 60.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.26	1.05-1.43	47.7	40.0 - 60.0
1,2,3,7,8,9-HxCDF	M+2/M+4	1.25	1.05-1.43	46.6	40.0 - 60.0
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.05	0.88-1.20	50.6	40.0 - 60.0
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.05	0.88-1.20	47.1	40.0 - 60.0
OCDF	M+2/M+4	0.90	0.76-1.02	95.9	80.0 - 120.0

Analyst: gl

Date: 25 Jul 07

METHOD M23B
CONTINUING CALIBRATION VERIFICATION

Lab Name: Analytical Perspectives

Initial Calibration: MM1_DF_091806B_16APR07

GC Column ID: DB-5

VER Data Filename: 070724P2 S#1 Analysis Date: 24-JUL-07 Time: 16:32:51

LABELED COMPOUNDS		ION ABUND. RATIO	QC LIMITS	CONC. FOUND	CONC. RANGE (ng/mL)
13C-2,3,7,8-TCDD	M/M+2	0.80	0.65-0.89	101	70 - 130
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.62	1.32-1.78	105	70 - 130
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	98.7	70 - 130
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	94.6	70 - 130
13C-1,2,3,7,8,9-HxCDD	M+2/M+4	1.23	1.05-1.43	96.7	70 - 130
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.02	0.88-1.20	119	70 - 130
13C-OCDD	M+2/M+4	0.91	0.76-1.02	225	140 - 260
13C-2,3,7,8-TCDF	M/M+2	0.79	0.65-0.89	92.5	70 - 130
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.54	1.32-1.78	101	70 - 130
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.55	1.32-1.78	101	70 - 130
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.52	0.43-0.59	92.2	70 - 130
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.53	0.43-0.59	92.1	70 - 130
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.52	0.43-0.59	101	70 - 130
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.53	0.43-0.59	106	70 - 130
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.45	0.37-0.51	104	70 - 130
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.46	0.37-0.51	108	70 - 130
13C-OCDF	M+2/M+4	0.91	0.76-1.02	215	140 - 260
SURROGATE STANDARDS					
37Cl-2,3,7,8-TCDD		1.65		40.8	28 - 52
13C-1,2,3,4,7-PeCDD	M+2/M+4	1.65	1.32-1.78	107	70 - 130
13C-1,2,3,4,6-PeCDF	M+2/M+4	1.53	1.32-1.78	96.5	70 - 130
13C-1,2,3,4,6,9-HxCDF	M/M+2	0.53	0.43-0.59	99.3	70 - 130
13C-1,2,3,4,6,8,9-HpCDF	M/M+2	0.47	0.37-0.51	105	70 - 130

Analyst: [illegible]

Date: 25 Jul 07

OPUSquan on MM1   25-JUL-2007 09:01   checkcode: 5205

1613/8290 Sample Summary   Analytical Perspectives   [Form: DF]

Client ID: BCS3_5075_DF_PA   Filename: 070724P2   S: 1   Vial: 16   Acq: 24-JUL-07 16:32:51
Lab ID: BCS3_5075_DF_PA   GC column ID: db-5   Cal: MM1_DF_091806B_16APR07   Wt/Vol: 1.000
Sample text: BCS3_5075_DF_PA   Stds: JS (split adj.): 50.0   CS/SS: 40.0   ES: 100

Typ	Name	Resp	RA		RT	RRF	Conc.	Noise	Fac	DL	Rec
Ax	2,3,7,8-TCDD	3.87e+06	0.78	y	26:55	1.10	8.82	2430	2.5	0.108	-
Ax	1,2,3,7,8-PeCDD	1.67e+07	1.58	y	32:32	0.97	45.0	184199	2.5	11.9	-
Ax	1,2,3,4,7,8-HxCDD	1.65e+07	1.27	y	36:30	1.13	46.4	4728	2.5	0.249	-
Ax	1,2,3,6,7,8-HxCDD	1.68e+07	1.23	y	36:36	1.04	47.4	4728	2.5	0.261	-
Ax	1,2,3,7,8,9-HxCDD	1.72e+07	1.25	y	36:54	1.00	46.9	4728	2.5	0.262	-
Ax	1,2,3,4,6,7,8-HpCDD	1.68e+07	1.08	y	40:07	0.91	47.2	5088	2.5	0.262	-
Ax	OCDD	2.66e+07	0.89	y	43:39	0.94	101	145387	2.5	11.6	-
Ax2	OCDD-a	1.66e+06	2.36	y	43:38	0.05	108	11052	2.5	15.1	-
Ax	2,3,7,8-TCDF	5.61e+06	0.79	y	25:59	1.03	10.0	1694	2.5	0.0631	-
Ax	1,2,3,7,8-PeCDF	2.73e+07	1.54	y	31:01	0.96	50.2	26557	2.5	1.17	-
Ax	2,3,4,7,8-PeCDF	2.80e+07	1.56	y	32:11	0.99	48.3	26557	2.5	1.04	-
Ax	1,2,3,4,7,8-HxCDF	2.38e+07	1.26	y	35:31	1.13	46.3	266868	2.5	6.76	-
Ax	1,2,3,6,7,8-HxCDF	2.72e+07	1.26	y	35:39	1.12	46.7	266868	2.5	6.10	-
Ax	2,3,4,6,7,8-HxCDF	2.67e+07	1.26	y	36:19	1.06	47.7	266868	2.5	6.22	-
Ax	1,2,3,7,8,9-HxCDF	2.55e+07	1.25	y	37:17	1.12	46.6	266868	2.5	6.97	-
Ax	1,2,3,4,6,7,8-HpCDF	2.51e+07	1.05	y	38:57	1.20	50.6	2868	2.5	0.0656	-
Ax	1,2,3,4,7,8,9-HpCDF	2.03e+07	1.05	y	40:41	1.20	47.1	2868	2.5	0.0924	-
Ax	OCDF	3.25e+07	0.90	y	43:53	0.83	95.9	3365	2.5	0.211	-
Ax2	OCDF-a	2.06e+06	2.50	y	43:53	0.05	104	9551	2.5	10.3	-
ES	13C-2,3,7,8-TCDD	3.98e+07	0.80	y	26:53	1.09	101	1225	2.5	0.0631	101
ES	13C-1,2,3,7,8-PeCDD	3.83e+07	1.62	y	32:31	1.02	105	14097	2.5	0.781	105
ES	13C-1,2,3,4,7,8-HxCDD	3.15e+07	1.27	y	36:29	1.06	98.7	11405	2.5	0.660	98.7
ES	13C-1,2,3,6,7,8-HxCDD	3.41e+07	1.27	y	36:36	1.20	94.6	11405	2.5	0.584	94.6
ES	13C-1,2,3,7,8,9-HxCDD	3.64e+07	1.23	y	36:53	1.25	96.7	11405	2.5	0.559	96.7
ES	13C-1,2,3,4,6,7,8-HpCDD	3.90e+07	1.02	y	40:06	1.09	119	17813	2.5	1.00	119
ES	13C-OCDD	5.64e+07	0.91	y	43:38	0.83	225	878427	2.5	64.7	112
ES	13C-2,3,7,8-TCDF	5.40e+07	0.79	y	25:57	1.00	92.5	2024	2.5	0.0770	92.5
ES	13C-1,2,3,7,8-PeCDF	5.65e+07	1.54	y	31:00	0.96	101	5645	2.5	0.225	101
ES	13C-2,3,4,7,8-PeCDF	5.84e+07	1.55	y	32:10	1.00	101	5645	2.5	0.217	101
ES	13C-1,2,3,4,7,8-HxCDF	4.56e+07	0.52	y	35:30	1.64	92.2	73764	2.5	2.76	92.2
ES	13C-1,2,3,6,7,8-HxCDF	5.20e+07	0.53	y	35:38	1.88	92.1	73764	2.5	2.42	92.1
ES	13C-2,3,4,6,7,8-HxCDF	5.29e+07	0.52	y	36:18	1.74	101	73764	2.5	2.60	101
ES	13C-1,2,3,7,8,9-HxCDF	4.90e+07	0.53	y	37:16	1.53	106	73764	2.5	2.96	106
ES	13C-1,2,3,4,6,7,8-HpCDF	4.15e+07	0.45	y	38:56	1.32	104	13332	2.5	0.620	104
ES	13C-1,2,3,4,7,8,9-HpCDF	3.59e+07	0.46	y	40:40	1.11	108	13332	2.5	0.738	108
ES	13C-OCDF	8.16e+07	0.91	y	43:52	1.26	215	6308	2.5	0.307	107
CS	37Cl-2,3,7,8-TCDD	1.63e+07			26:54	1.09	41.6			0.113	104
CS	13C-1,2,3,4,7-PeCDD	3.75e+07	1.65	y	31:59	0.92	113	14097	2.5	0.859	113
CS	13C-1,2,3,4,6-PeCDF	4.95e+07	1.53	y	30:27	0.87	97.9	5645	2.5	0.248	97.9
CS	13C-1,2,3,4,6,9-HxCDF	3.91e+07	0.53	y	35:57	1.42	91.7	73764	2.5	3.20	91.7
CS	13C-1,2,3,4,6,8,9-HpCDF	3.20e+07	0.47	y	39:25	0.97	110	13332	2.5	0.845	110
NA	n/a	1.40e+05	0.52	y	36:36	Div0	*	73764	2.5	*	*
JS/RT	13C-1,2,3,4-TCDD	1.80e+07	0.81	y	26:10	-	80.3	1225	2.5	-	-
JS	13C-1,2,3,4-TCDF	2.91e+07	0.77	y	24:28	-	81.0	2024	2.5	-	-
JS/RT	13C-1,2,3,4,6,7-HxCDD	7.52e+06	1.27	y	36:47	-	46.6	11405	2.5	-	-

Analyst: EL

Date: 25 Jul 07

SS	37Cl-2,3,7,8-TCDD	1.63e+07			26:54	1.00	40.8			0.107	102
SS	13C-1,2,3,4,7-PeCDD	3.75e+07	1.65	y	31:59	0.91	107	14097	2.5	0.965	107
SS	13C-1,2,3,4,6-PeCDF	4.95e+07	1.53	y	30:27	0.91	96.5	5645	2.5	0.263	96.5
SS	13C-1,2,3,4,6,9-HxCDF	3.91e+07	0.53	y	35:57	0.76	99.3	73764	2.5	2.50	99.3
SS	13C-1,2,3,4,6,8,9-HpCDF	3.20e+07	0.47	y	39:25	0.74	105	13332	2.5	0.497	105
SBS	2,4,6,8-TCDF	3.65e+06	0.77	y	21:55	1.03	6.54	1694	2.5	0.0631	-
Ay	1,3,6,8-TCDD	4.82e+06	0.76	y	22:55	1.10	11.0	2430	2.5	0.108	-
Ay	1,2,3,9-TCDD	4.80e+06	0.83	y	26:44	1.10	10.9	2430	2.5	0.108	-
Ay	1,2,8,9-TCDD	4.35e+06	0.78	y	27:57	1.10	9.93	2430	2.5	0.108	-
Ay	1,2,4,7,9-PeCDD	4.53e+06	1.52	y	29:56	0.97	12.2	184199	2.5	11.9	-
Ay	1,2,3,8,9-PeCDD	4.07e+06	1.56	y	32:59	0.97	11.0	184199	2.5	11.9	-
Ay	1,2,4,6,7,9-HxCDD	4.48e+06	1.24	y	34:46	1.05	12.5	4728	2.5	0.257	-
Ay	1,2,3,4,6,7,9-HpCDD	5.78e+06	1.07	y	39:15	0.91	16.3	5088	2.5	0.262	-
Ay	1,3,6,8-TCDF	8.47e+06	0.79	y	20:43	1.03	15.2	1694	2.5	0.0631	-
Ay	2,3,4,8-TCDF	6.67e+06	0.77	y	25:52	1.03	11.9	1694	2.5	0.0631	-
Ay	1,2,8,9-TCDF	6.91e+06	0.78	y	28:07	1.03	12.4	1694	2.5	0.0631	-
Ay	1,3,4,6,8-PeCDF	5.29e+06	1.58	y	28:03	1.03	9.47	1677	2.5	0.0624	-
Ay	1,2,3,8,9-PeCDF	7.28e+06	1.60	y	33:17	0.98	13.0	26557	2.5	1.11	-
Ay	1,2,3,4,6,8-HxCDF	6.12e+06	1.25	y	34:06	1.11	11.1	266868	2.5	6.50	-
Tot	Total Tetra-Dioxins	1.79e+07	0.76	y	22:55	1.10	40.8	2430	2.5	0.108	-
Tot	Total Penta-Dioxins	2.63e+07	1.60	y	29:30	0.97	71.0	184199	2.5	11.9	-
Tot	Total Hexa-Dioxins	5.52e+07	1.24	y	34:46	1.05	154	4728	2.5	0.257	-
Tot	Total Hepta-Dioxins	2.26e+07	1.07	y	39:15	0.91	63.6	5088	2.5	0.262	-
Tot	Total Tetra-Furans	3.16e+07	0.79	y	20:43	1.03	56.5	1694	2.5	0.0631	-
Tot	Total Penta-Furans	6.35e+07	1.49	y	30:34	0.98	113	26557	2.5	1.11	-
Tot	Total Hexa-Furans	1.10e+08	1.25	y	34:06	1.11	199	266868	2.5	6.50	-
Tot	Total Hepta-Furans	4.55e+07	1.05	y	38:57	1.20	97.6	2868	2.5	0.0780	-
Tot	TCDD EMPC	1.82e+07	1.25	n	20:41	1.10	41.5	2430	2.5	0.108	-
Tot	PeCDD EMPC	2.74e+07	0.92	n	29:10	0.97	73.9	184199	2.5	11.9	-
Tot	HxCDD EMPC	5.58e+07	1.02	n	34:19	1.05	155	4728	2.5	0.257	-
Tot	HpCDD EMPC	2.35e+07	2.03	n	38:22	0.91	66.1	5088	2.5	0.262	-
Tot	TCDF EMPC	3.20e+07	0.89	n	19:25	1.03	57.3	1694	2.5	0.0631	-
Tot	PeCDF EMPC	6.40e+07	0.70	n	29:41	0.98	114	26557	2.5	1.11	-
Tot	HxCDF EMPC	1.10e+08	1.25	y	34:06	1.11	200	266868	2.5	6.50	-
Tot	HpCDF EMPC	4.60e+07	1.05	y	38:57	1.20	98.8	2868	2.5	0.0780	-
AS	13C-1,3,6,8-TCDD	3.94e+07	0.79	y	22:53	Div0	*	1225	2.5	*	*
AS	13C-1,3,6,8-TCDF	6.22e+07	0.77	y	20:42	Div0	*	2024	2.5	*	*
DPE	HxCDPE	1.80e+05			19:43	-	*			-	-
DPE	HpCDPE	2.21e+05			29:05	-	*			-	-
DPE	OCDPE	3.55e+05			34:00	-	*			-	-
DPE	NCDPE	4.02e+05			38:16	-	*			-	-
DPE	DCDPE	7.38e+04			42:18	-	*			-	-
LMC	Fn1 check mass	*			NotF»	-	*			-	-
LMC	Fn2 check mass	*			NotF»	-	*			-	-
LMC	Fn3 check mass	*			NotF»	-	*			-	-
LMC	Fn4 check mass	*			NotF»	-	*			-	-
LMC	Fn5 check mass	*			NotF»	-	*			-	-

PCDD/PCDF RT Window & Isomer Specificity Standards   Analytical Perspectives   [Form: CPSM]

Client ID: BCS3_5075_DF_PA   Filename: 070724P2 S: 1 Vial: 16   Acq: 24-JUL-07 16:32:51
Lab ID: BCS3_5075_DF_PA   GC Column ID: db-5 ICal: MM1_DF_091806B_16AP» Wt/Vol: 1.000
Sample text: BCS3_5075_DF_PA

Window Defining Standards Results

First Eluting Isomer	RT	Last Eluting Isomer	RT
1,3,6,8-TCDD	22:55	1,2,8,9-TCDD	27:57
1,2,4,7,9-PeCDD	29:56	1,2,3,8,9-PeCDD	32:59
1,2,4,6,7,9-HxCDD	34:46	1,2,3,7,8,9-HxCDD	36:54
1,2,3,4,6,7,9-HpCDD	39:15	1,2,3,4,6,7,8-HpCDD	40:07
1,3,6,8-TCDF	20:43	1,2,8,9-TCDF	28:07
1,3,4,6,8-PeCDF	28:03	1,2,3,8,9-PeCDF	33:17
1,2,3,4,6,8-HxCDF	34:06	1,2,3,7,8,9-HxCDF	37:17
1,2,3,4,6,7,8-HpCDF	38:57	1,2,3,4,7,8,9-HpCDF	40:41

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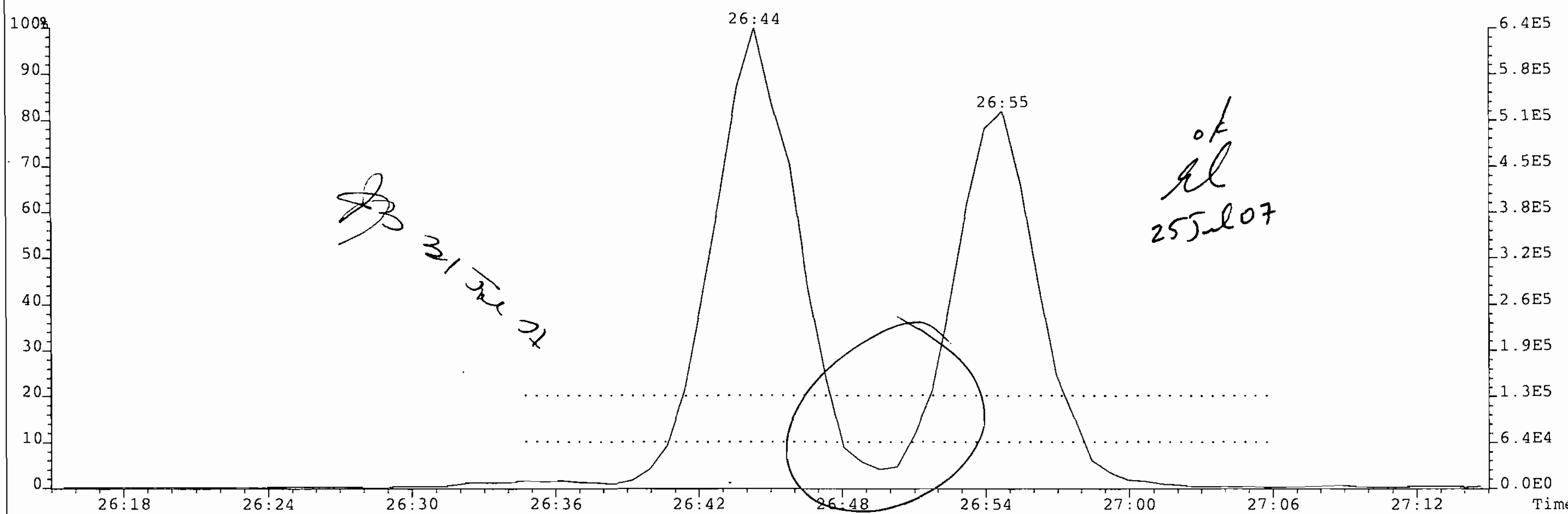
Isomer Specificity Test Standard Results

2,3,7,8 Isomer	RT	Closest Isomer	RT	
2,3,7,8-TCDD	26:55	1,2,3,9-TCDD	26:44	% Valley <= 10%
2,3,7,8-TCDF	25:59	2,3,4,8-TCDF	25:52	% Valley <= 40%

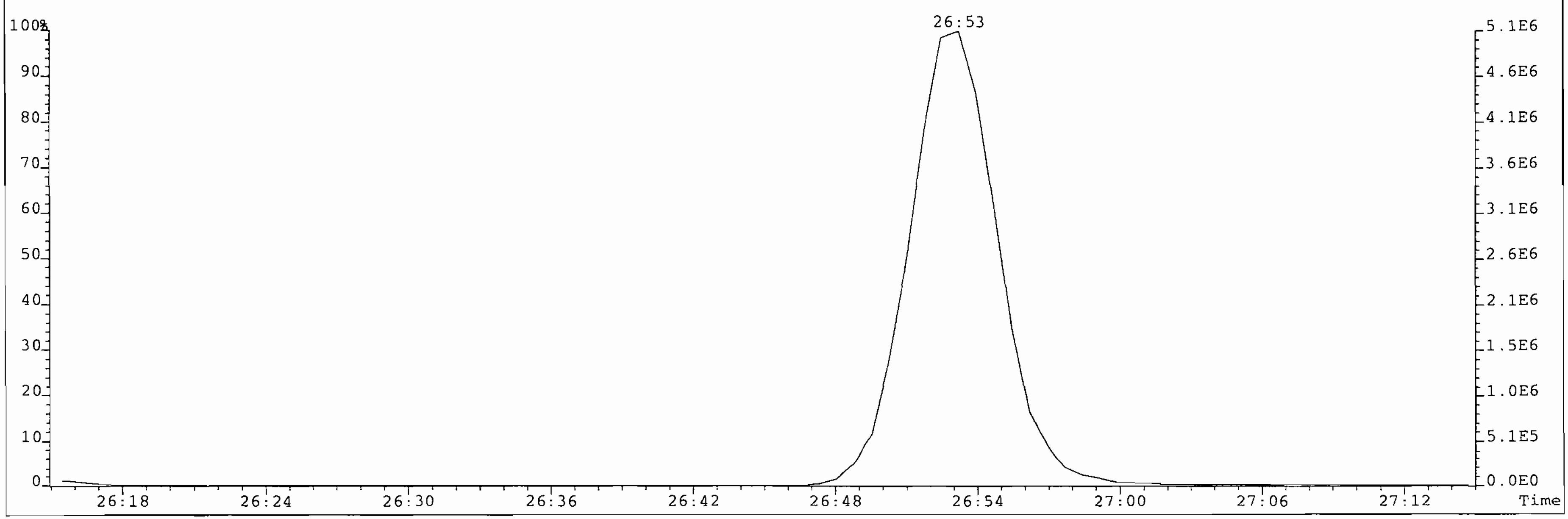
Analyst: El

Date: 25 Jul 07

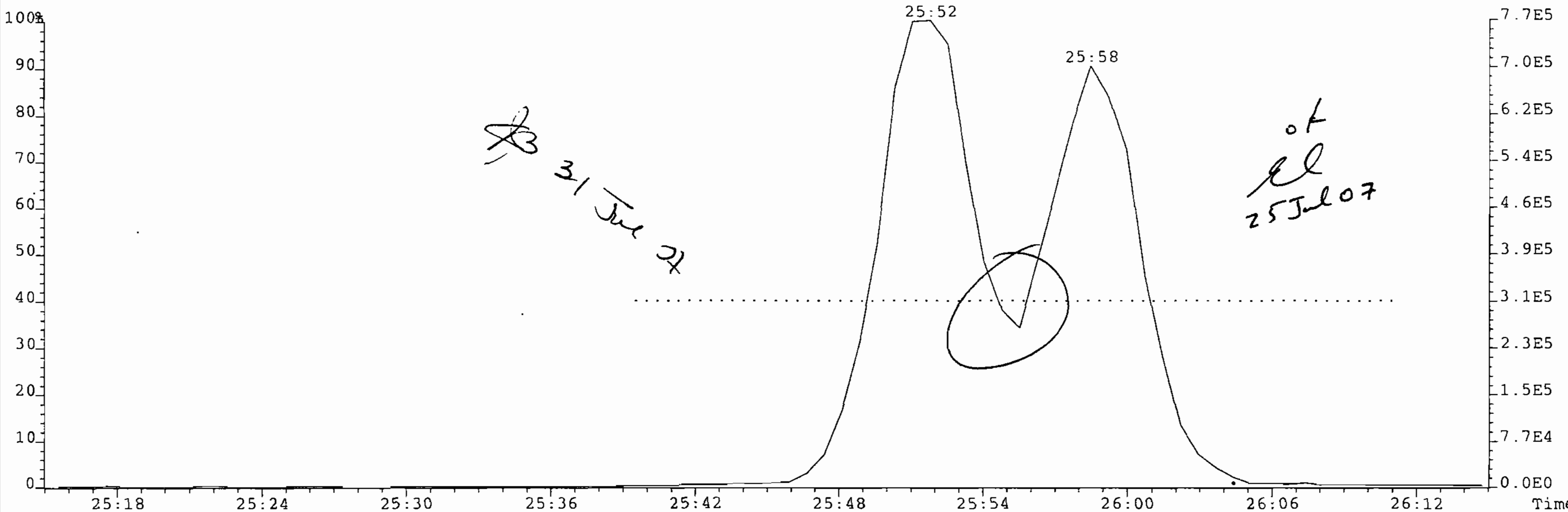
File: 070724P2 Acq: 24-JUL-2007 16:32:51 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 1 Text: BCS3_5075_DF_PA Vial# 16 File Text: AP DB5
321.8936 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 454



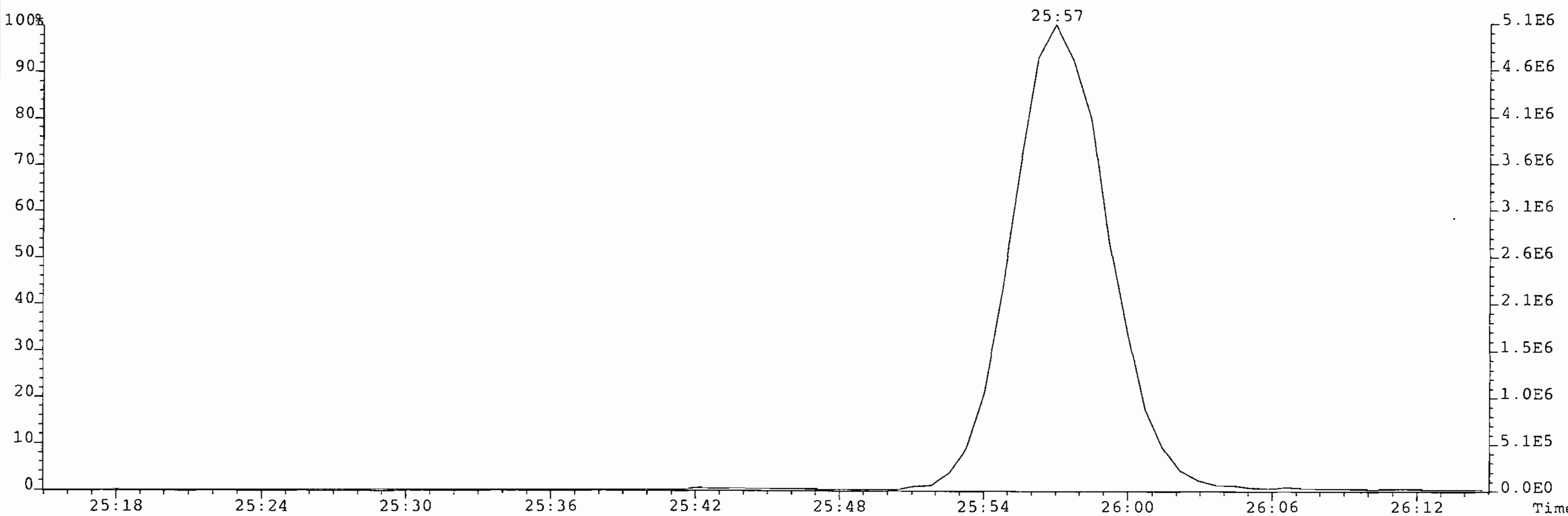
333.9339 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 412



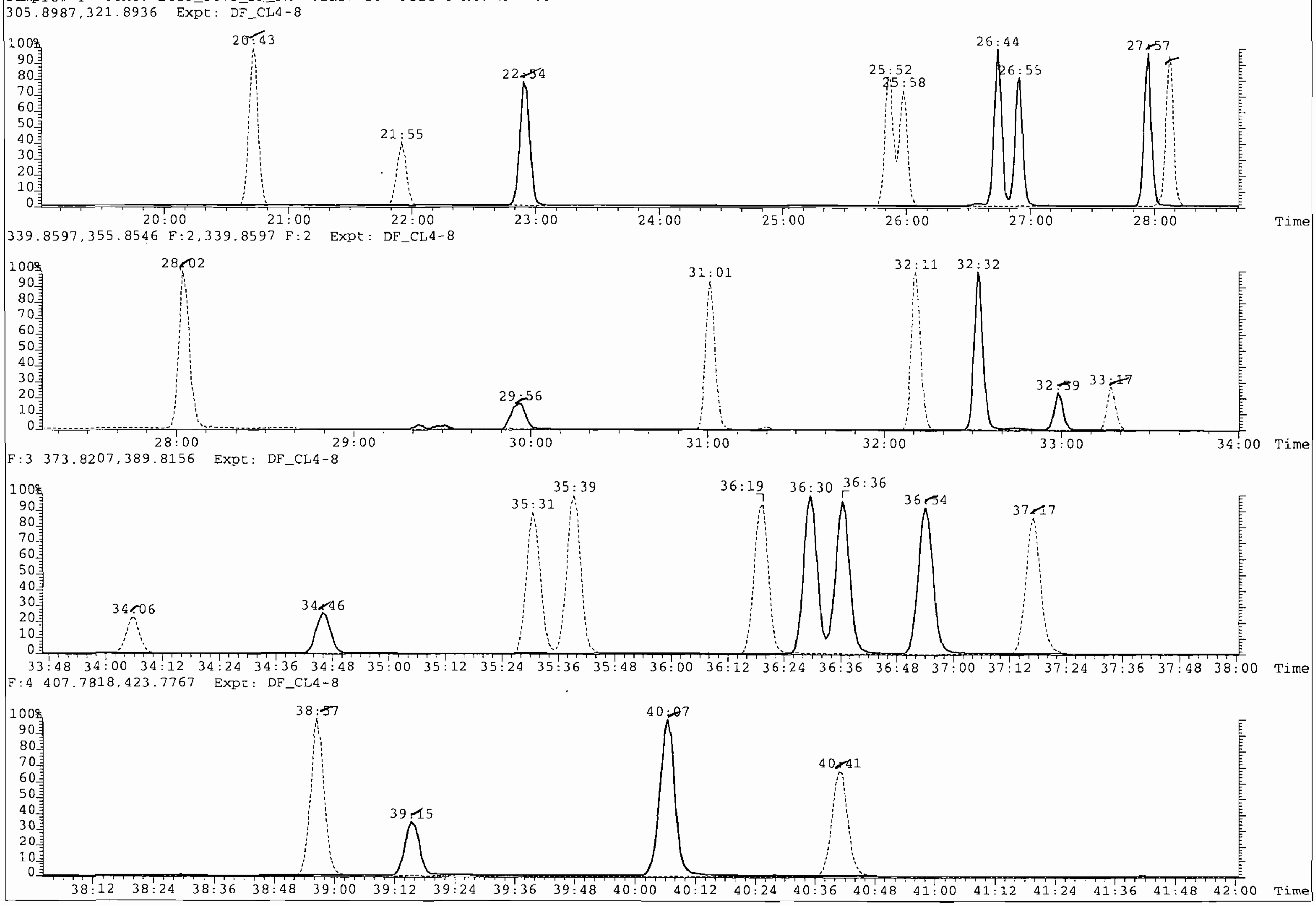
File: 070724P2 Acq: 24-JUL-2007 16:32:51 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 1 Text: BCS3_5075_DF_PA Vial# 16 File Text: AP DB5
305.8987 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 562



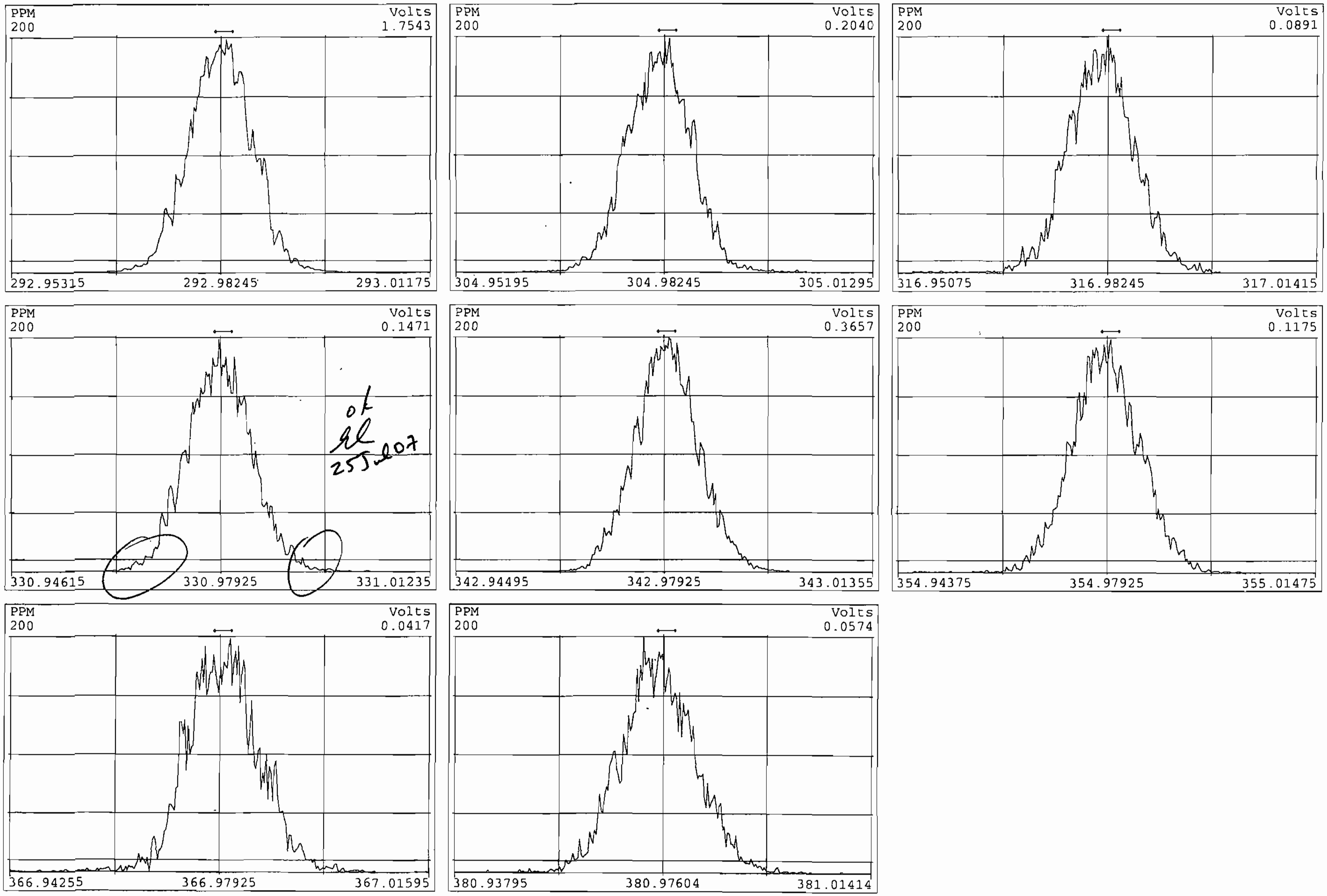
315.9419 Expt: DF_CL4-8



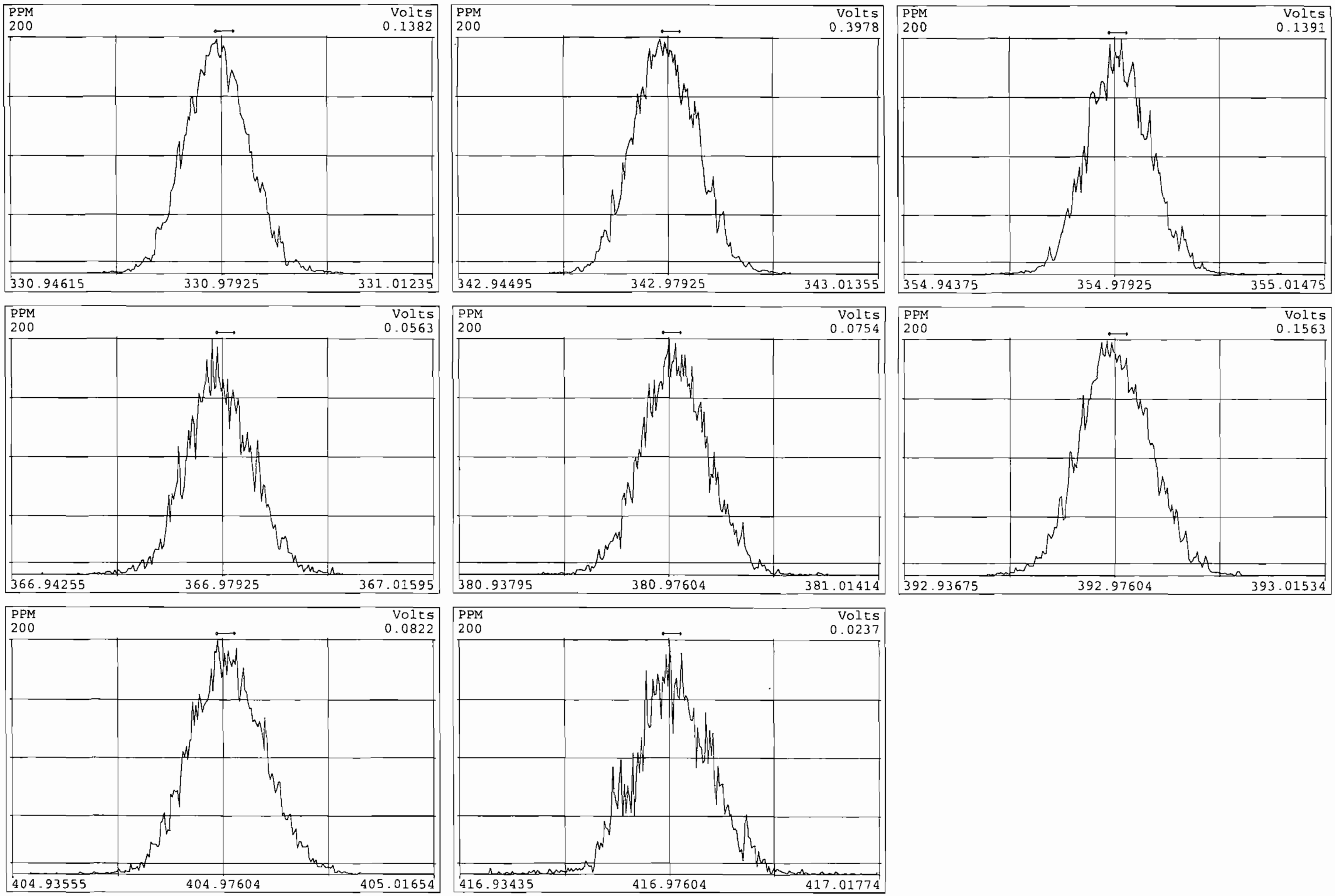
File: 070724P2 Acq: 24-JUL-2007 16:32:51 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 1 Text: BCS3_5075_DF_PA Vial# 16 File Text: AP DB5



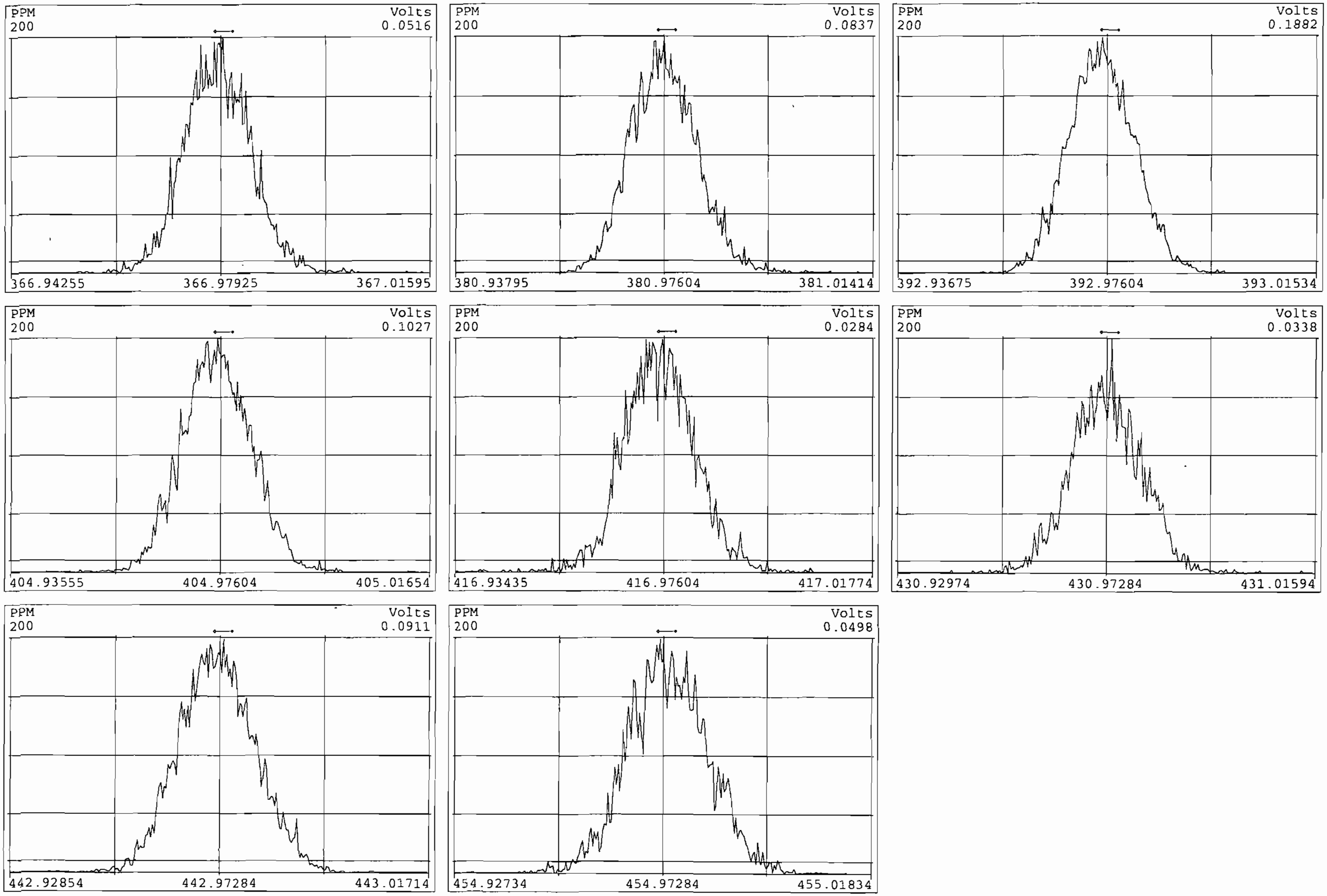
Peak Locate Examination:24-JUL-2007:16:30 File:070724P2
Experiment:DF_CL4-8 Function:1 Reference:PFK2



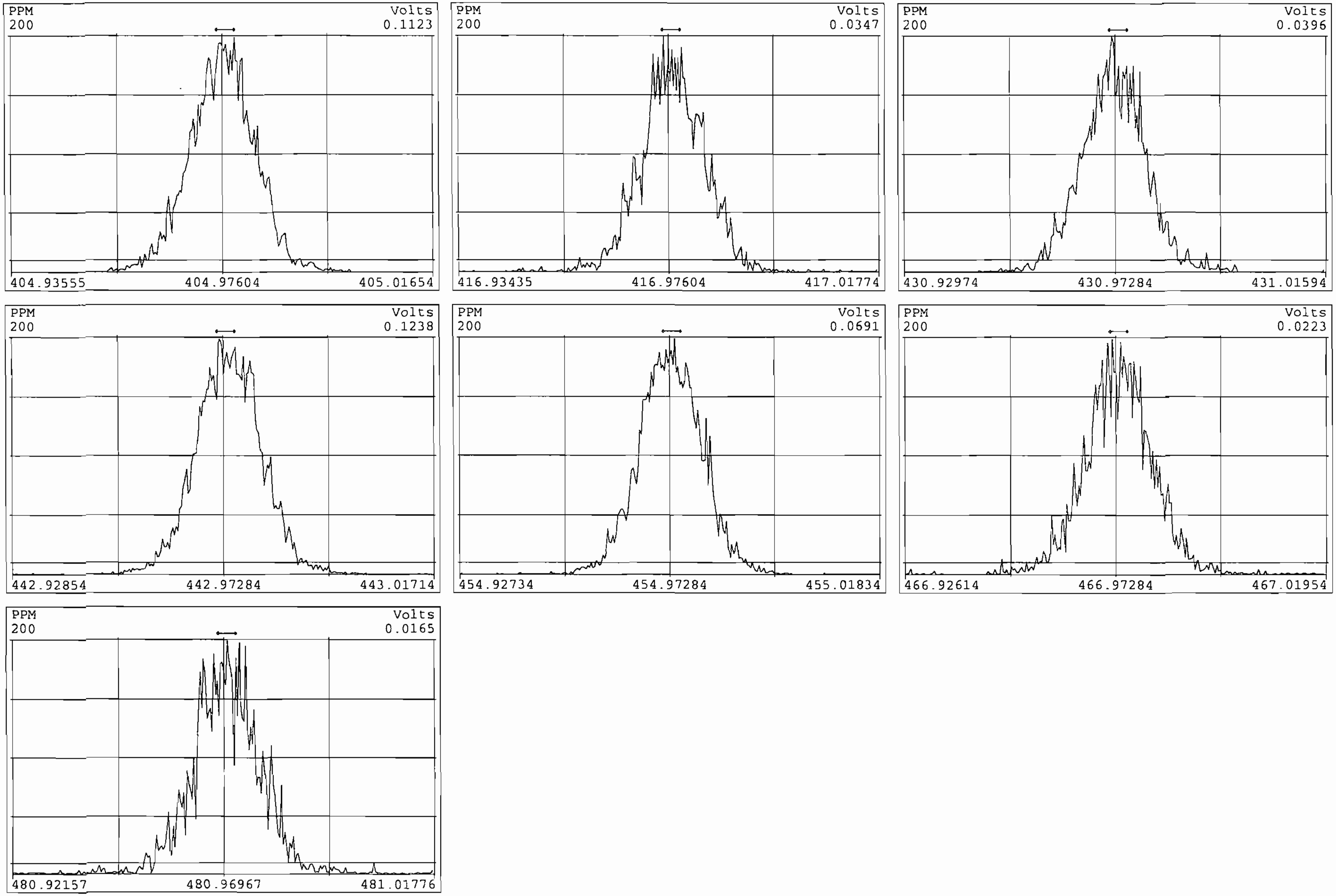
Peak Locate Examination:24-JUL-2007:16:31 File:070724P2
Experiment:DF_CL4-8 Function:2 Reference:PFK2



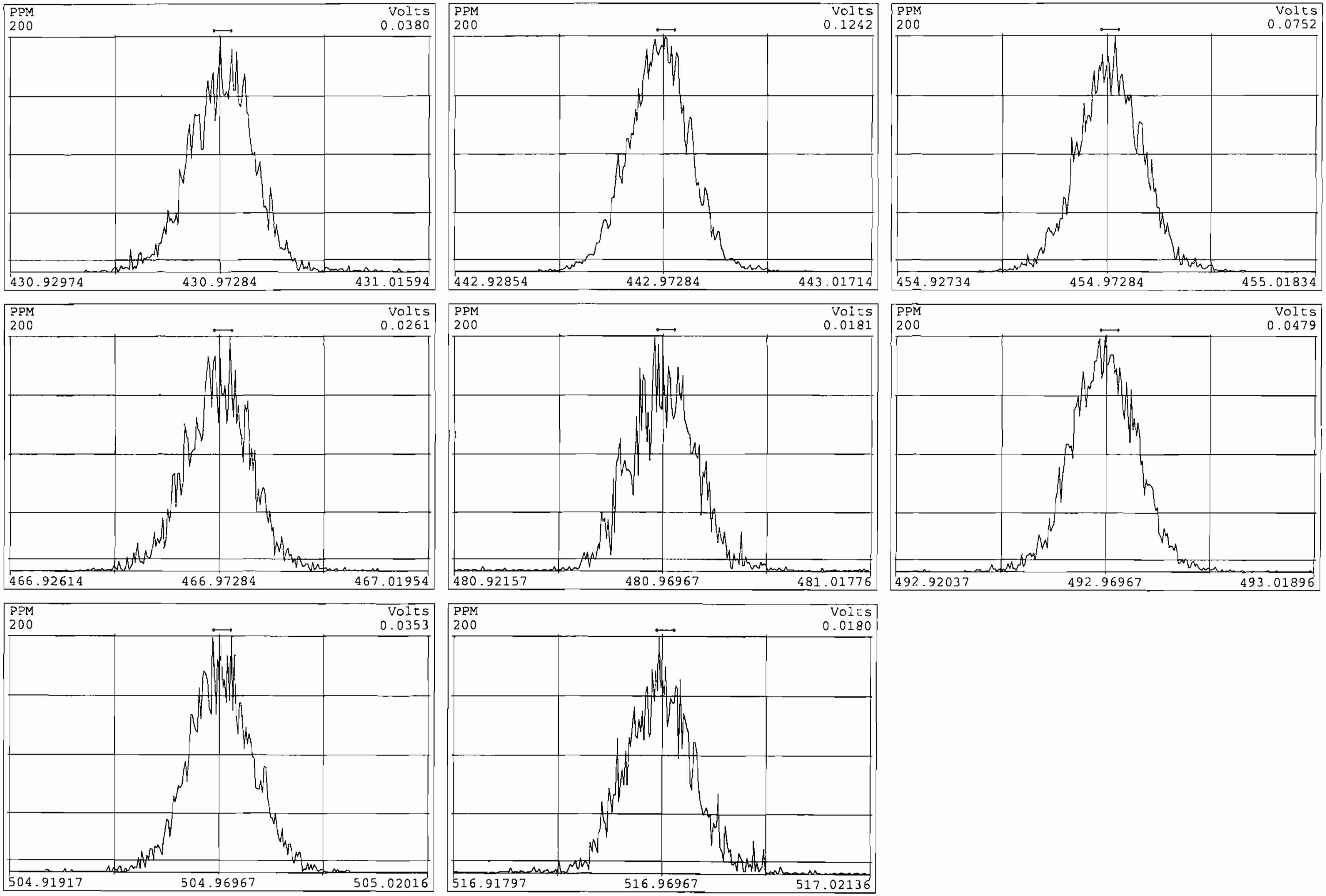
Peak Locate Examination:24-JUL-2007:16:31 File:070724P2
Experiment:DF_CL4-8 Function:3 Reference:PFK2



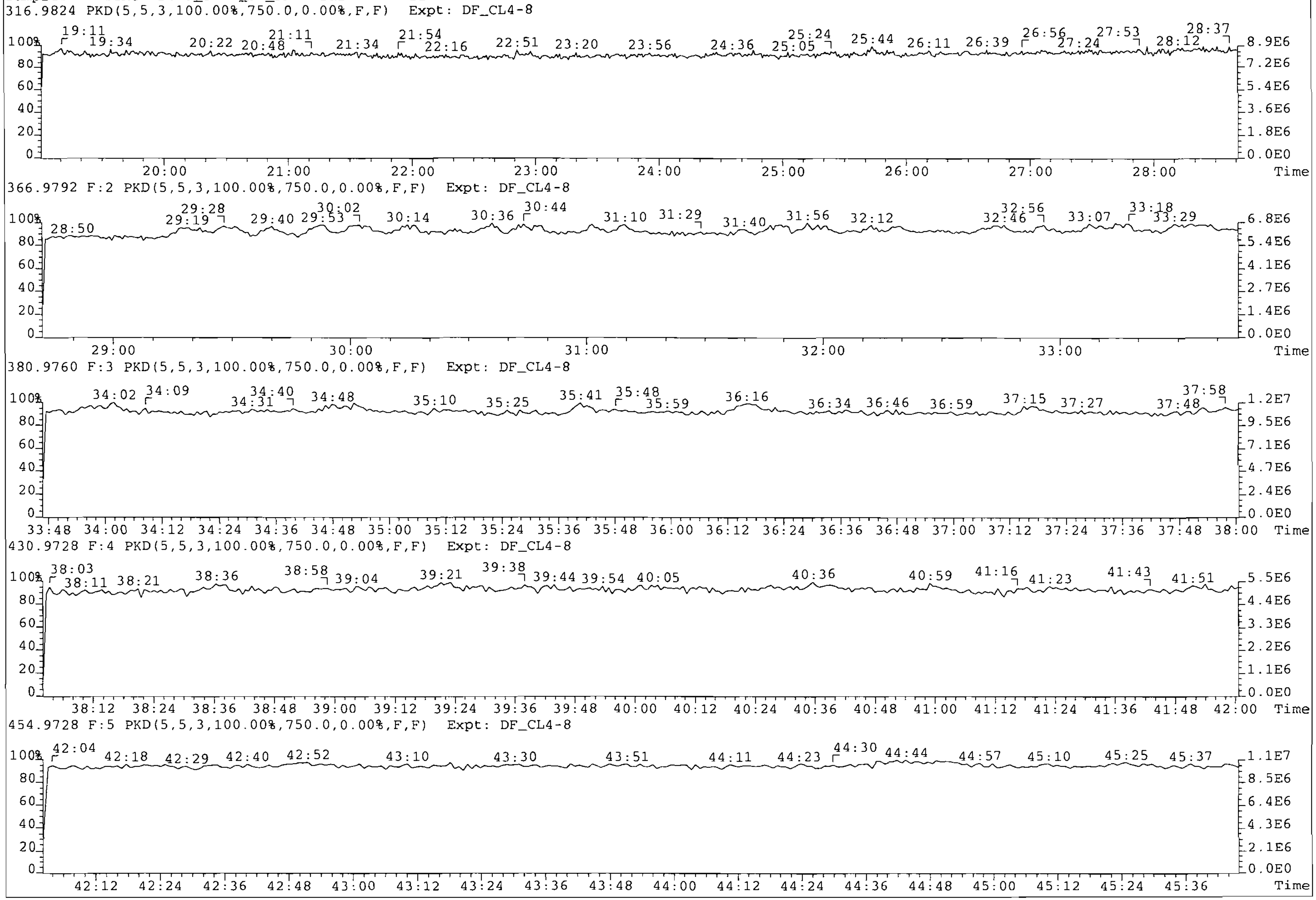
Peak Locate Examination:24-JUL-2007:16:32 File:070724P2
Experiment:DF_CL4-8 Function:4 Reference:PFK2



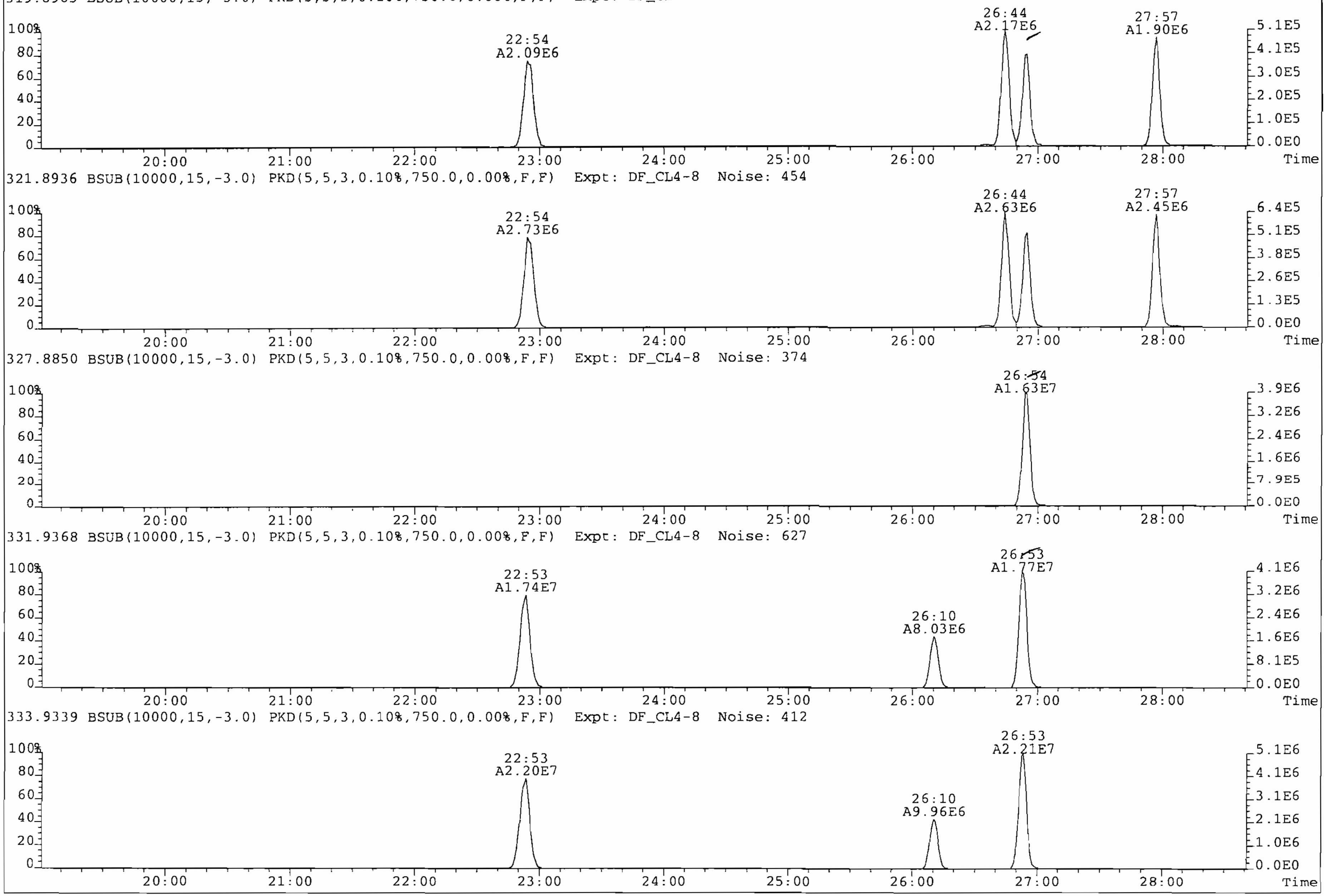
Peak Locate Examination:24-JUL-2007:16:32 File:070724P2
Experiment:DF_CL4-8 Function:5 Reference:PFK2



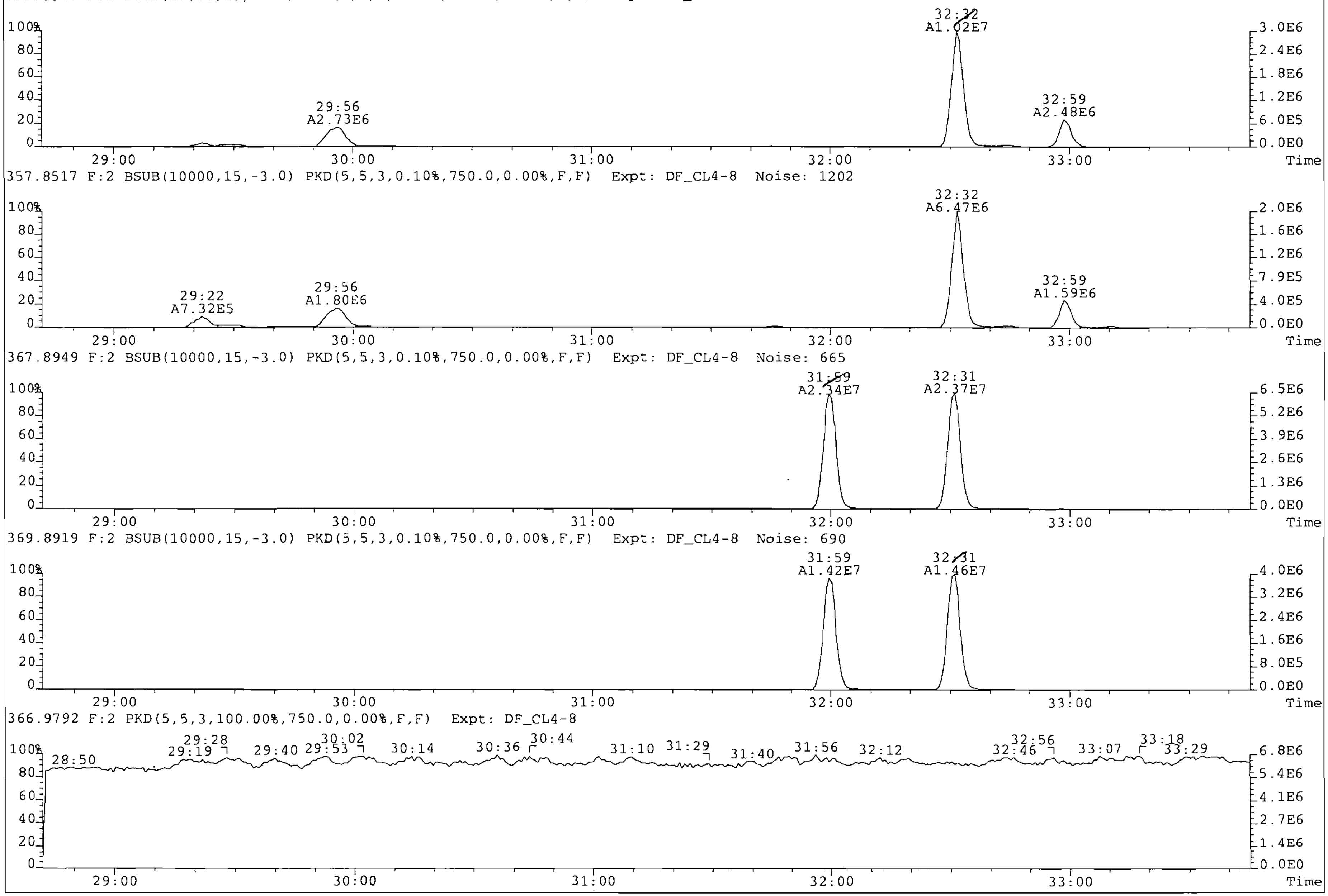
File: 070724P2 Acq: 24-JUL-2007 10:32:51 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 1 Text: BCS3_5075_DF_PA Vial# 16 File Text: AP DB5

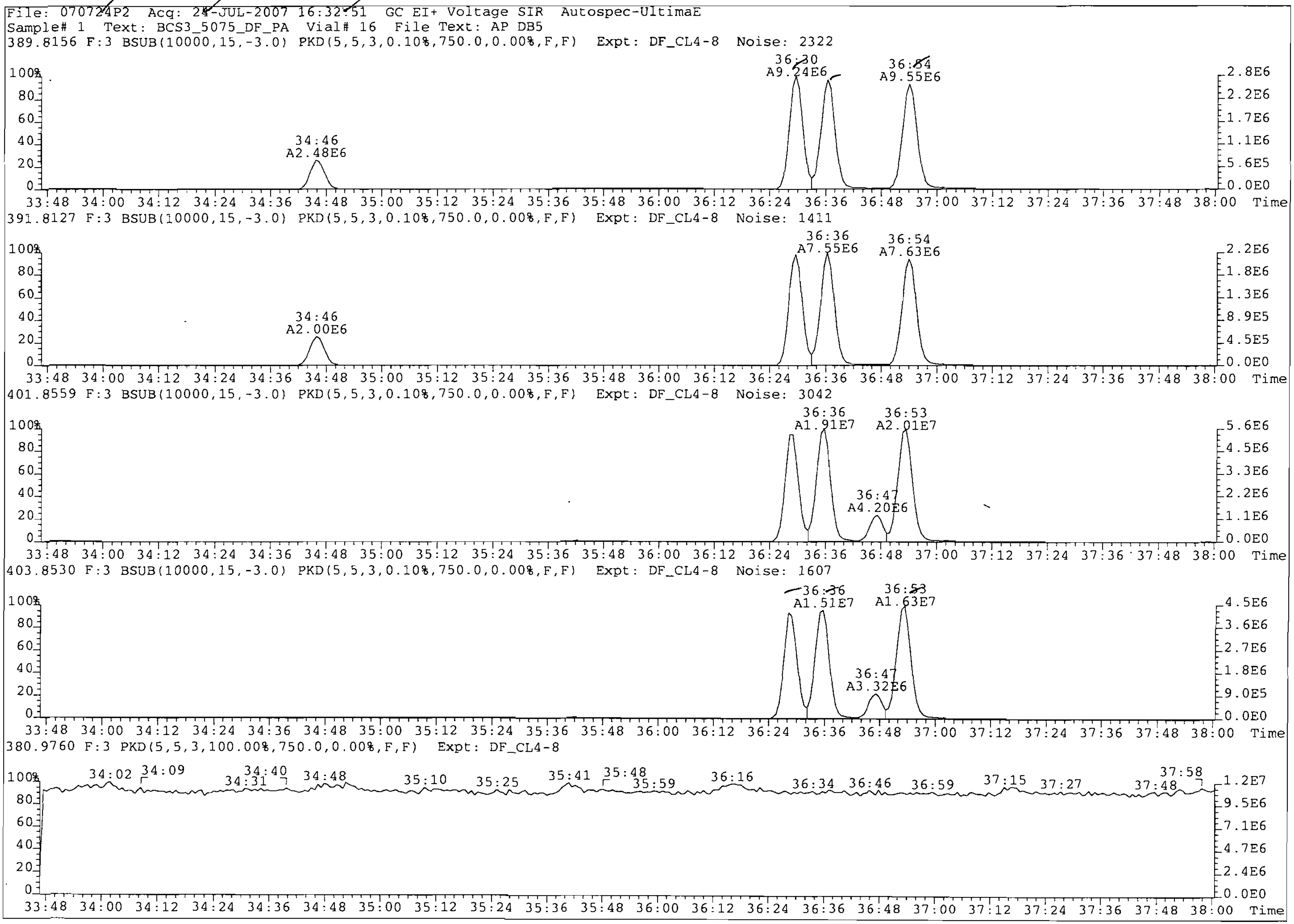


File: 070724P2 Acq: 24-JUL-2007 16:32:51 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 1 Text: BCS3_5075_DF_PA Vial# 16 File Text: AP DB5
319.8965 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 332

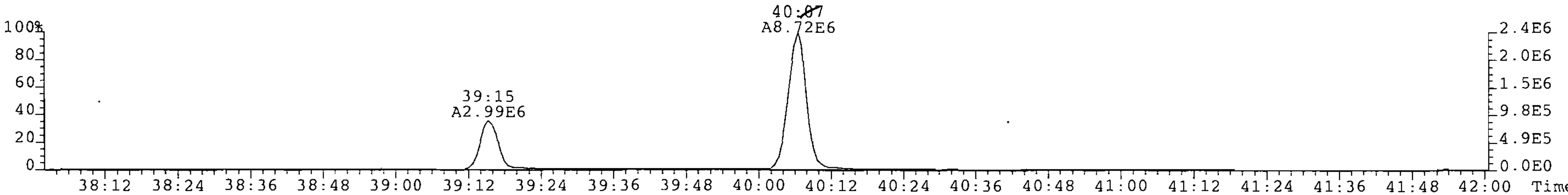


File: 070724P2 Acq: 24-JUL-2007 16:32:51 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 1 Text: BCS3_5075_DF_PA Vial# 16 File Text: AP DB5
355.8546 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 937

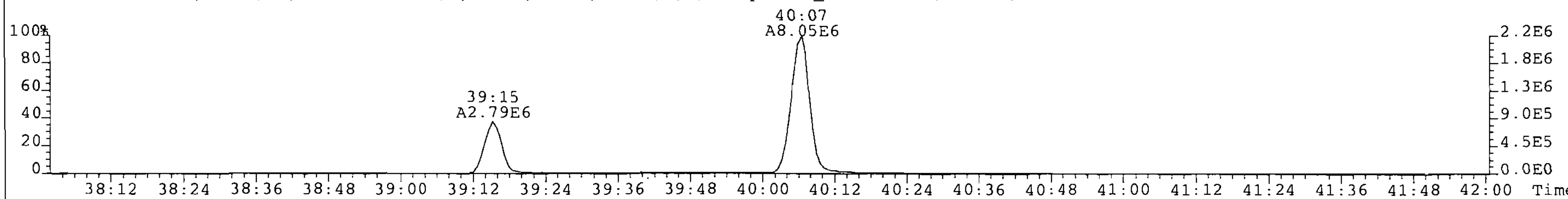



File: 070724P2 Acq: 24-JUL-2007 16:32:51 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 1 Text: BCS3_5075_DF_PA Vial# 16 File Text: AP DB5
389.8156 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 2322
34:46 A2.48E6
36:30 A9.24E6
36:54 A9.55E6
391.8127 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 1411
34:46 A2.00E6
36:36 A7.55E6
36:54 A7.63E6
401.8559 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 3042
36:36 A1.91E7
36:47 A4.20E6
36:53 A2.01E7
403.8530 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 1607
36:36 A1.51E7
36:47 A3.32E6
36:53 A1.63E7
380.9760 F:3 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8
34:02 34:09 34:31 34:40 34:48 35:10 35:25 35:41 35:48 35:59 36:16 36:34 36:46 36:59 37:15 37:27 37:48 37:58
33:48 34:00 34:12 34:24 34:36 34:48 35:00 35:12 35:24 35:36 35:48 36:00 36:12 36:24 36:36 36:48 37:00 37:12 37:24 37:36 37:48 38:00 Time

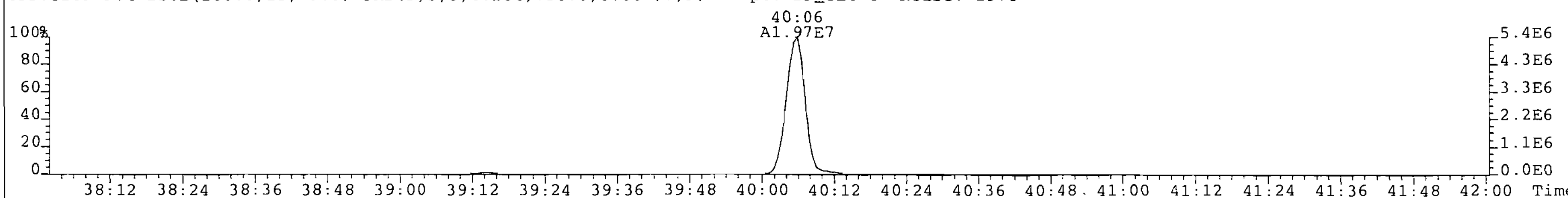
File: 070724P2 Acq: 24-JUL-2007 16:32:51 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 1 Text: BCS3_5075_DF_PA Vial# 16 File Text: AP DB5
423.7767 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 3530



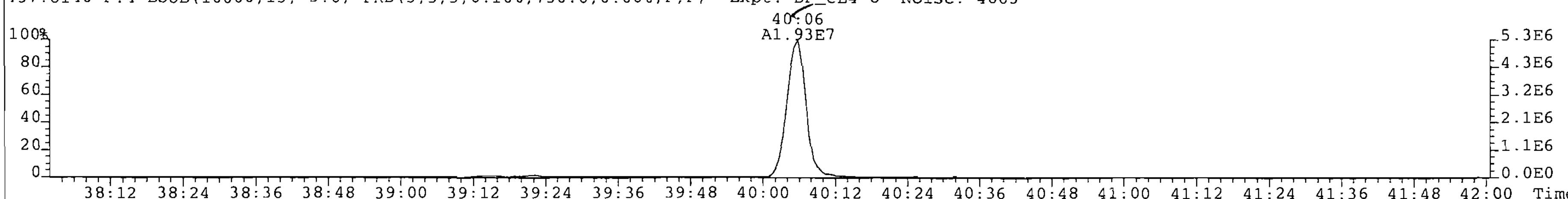
425.7737 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 1480



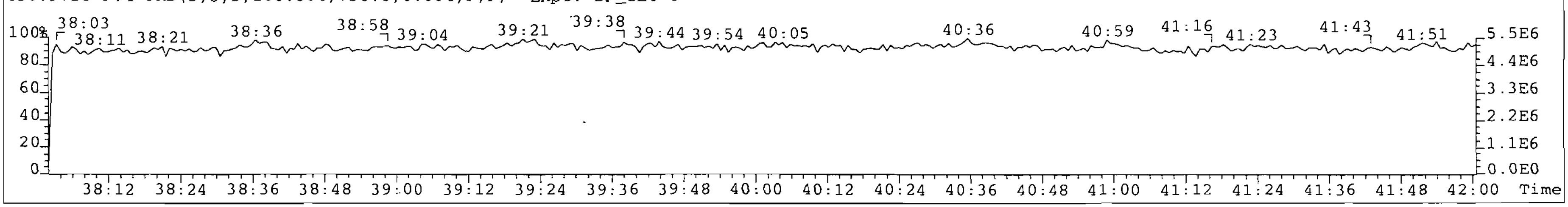
435.8169 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 1978



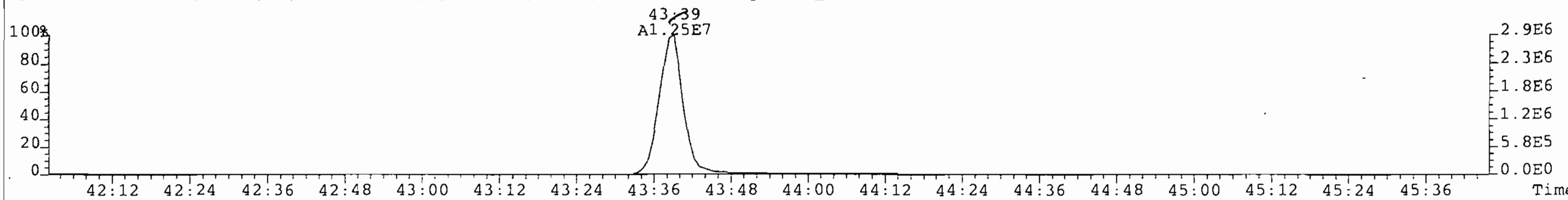
437.8140 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 4663



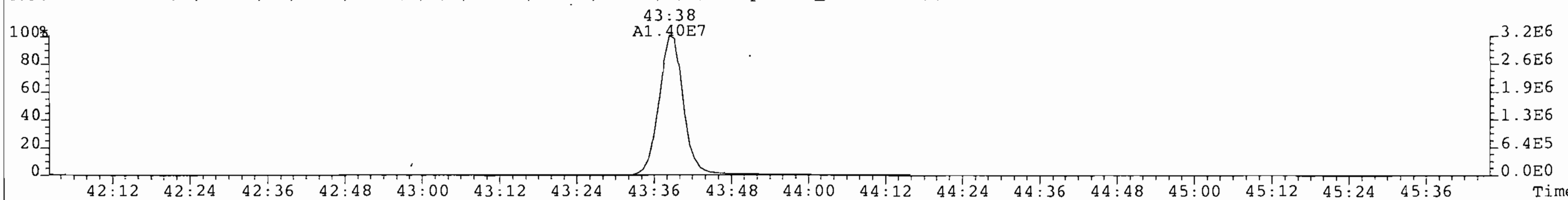
430.9728 F:4 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



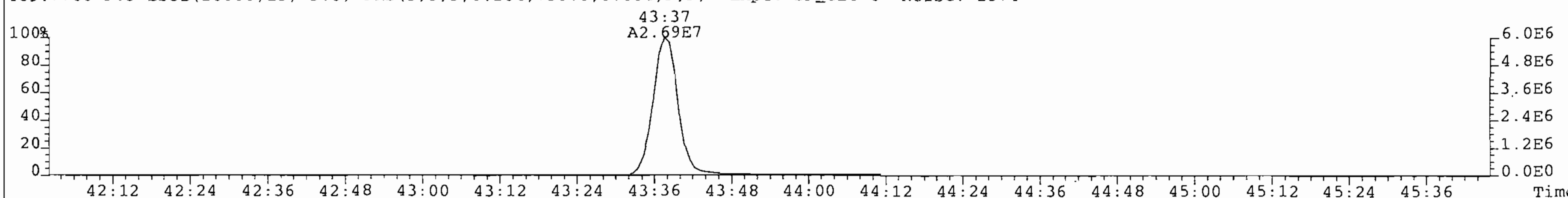
File: 070724P2 Acq: 24-JUL-2007 16:32:51 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 1 Text: BCS3_5075_DF_PA Vial# 16 File Text: AP DB5
457.7377 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 632



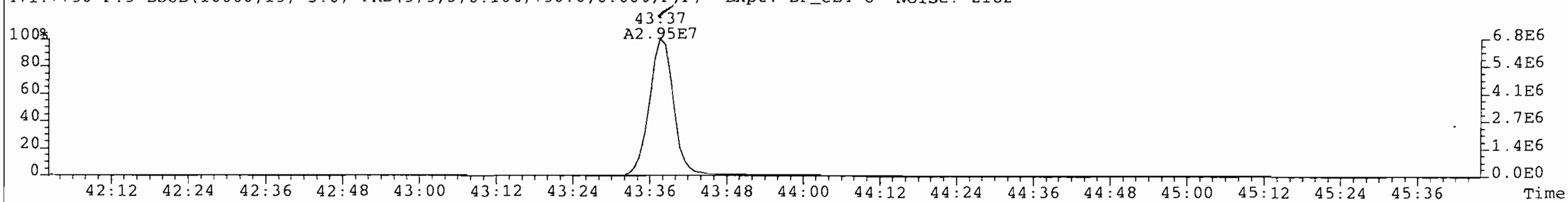
459.7348 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 495



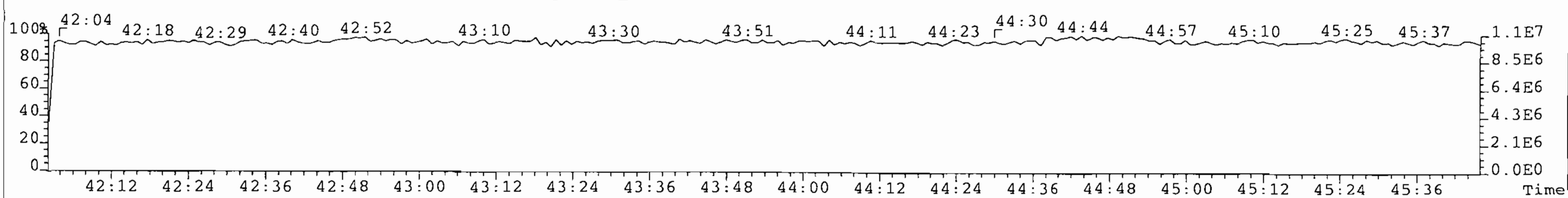
469.7780 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 2574

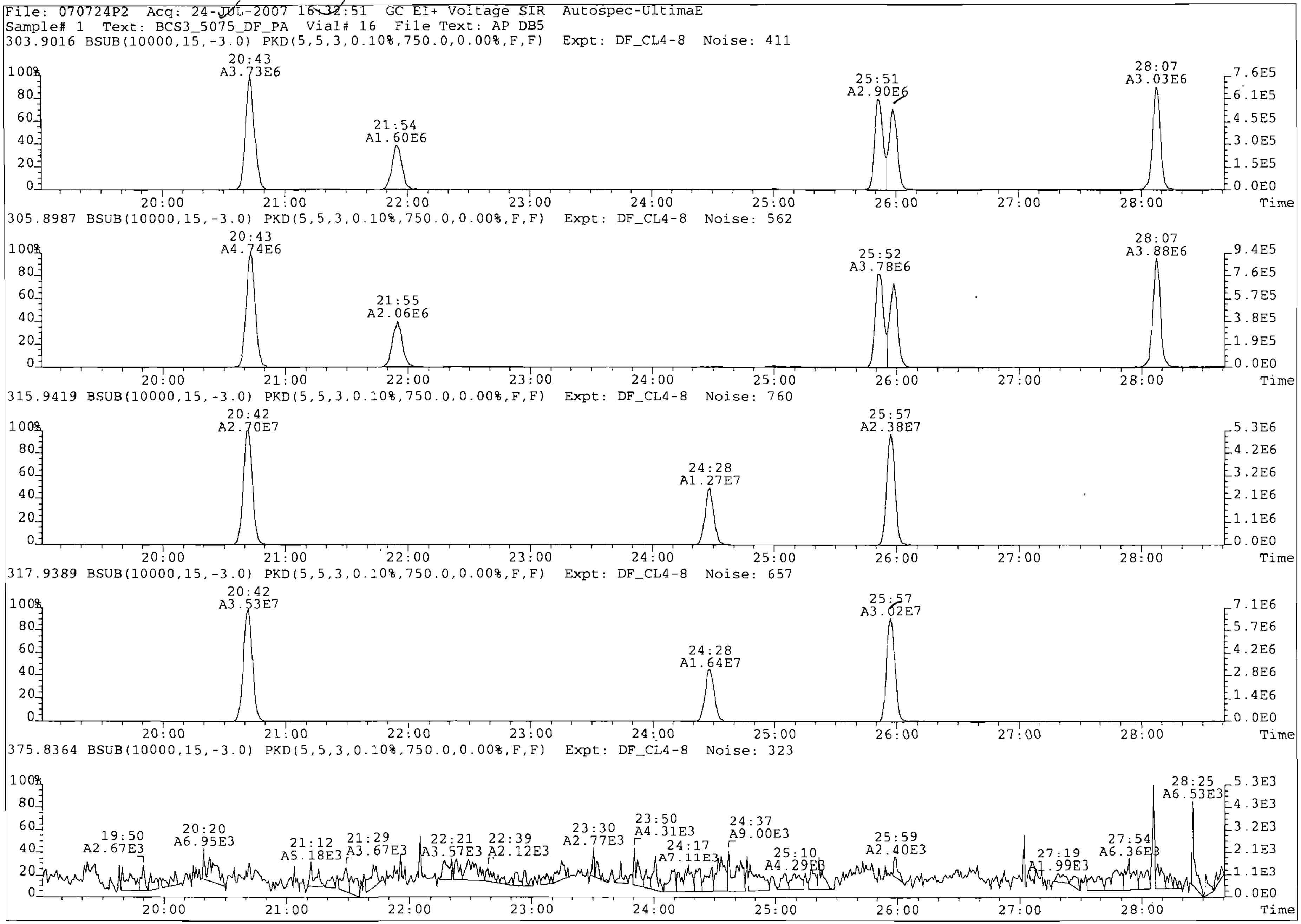


471.7750 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 2182

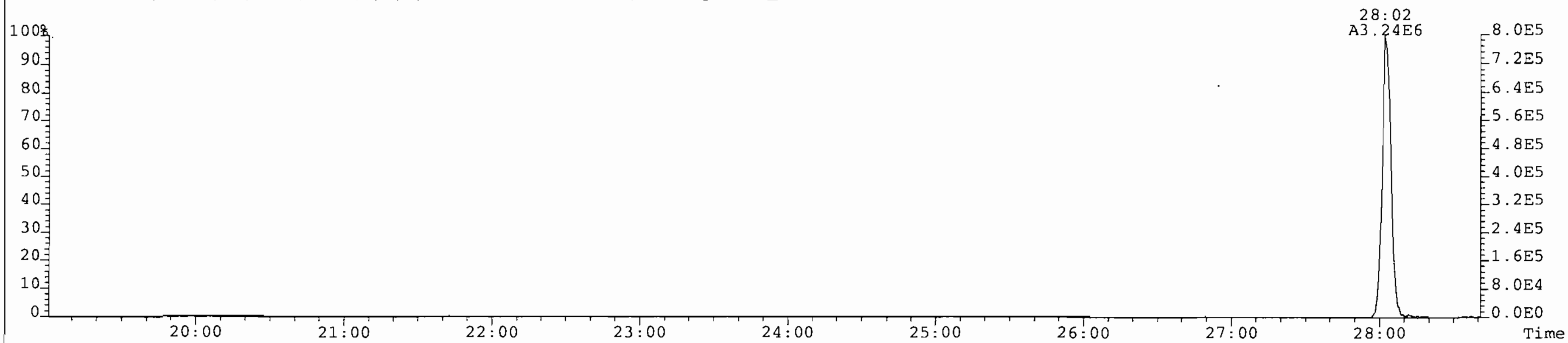


454.9728 F:5 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8

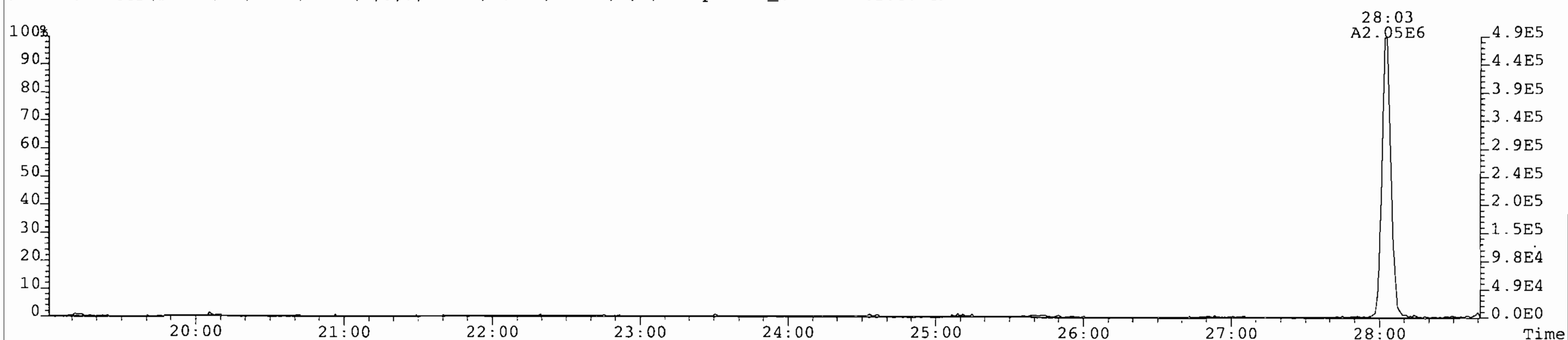



File: 070724P2 Acq: 24-JUL-2007 16:32:51 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 1 Text: BCS3_5075_DF_PA Vial# 16 File Text: AP DB5
303.9016 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 411
20:43 A3.73E6
21:54 A1.60E6
25:51 A2.90E6
28:07 A3.03E6
305.8987 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 562
20:43 A4.74E6
21:55 A2.06E6
25:52 A3.78E6
28:07 A3.88E6
315.9419 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 760
20:42 A2.70E7
24:28 A1.27E7
25:57 A2.38E7
317.9389 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 657
20:42 A3.53E7
24:28 A1.64E7
25:57 A3.02E7
375.8364 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 323
19:50 A2.67E3
20:20 A6.95E3
21:12 A5.18E3
21:29 A3.67E3
22:21 A3.57E3
22:39 A2.12E3
23:30 A2.77E3
23:50 A4.31E3
24:17 A7.11E3
24:37 A9.00E3
25:10 A4.29E3
25:59 A2.40E3
27:19 A1.99E3
27:54 A6.36E3
28:25 A6.53E3
Time

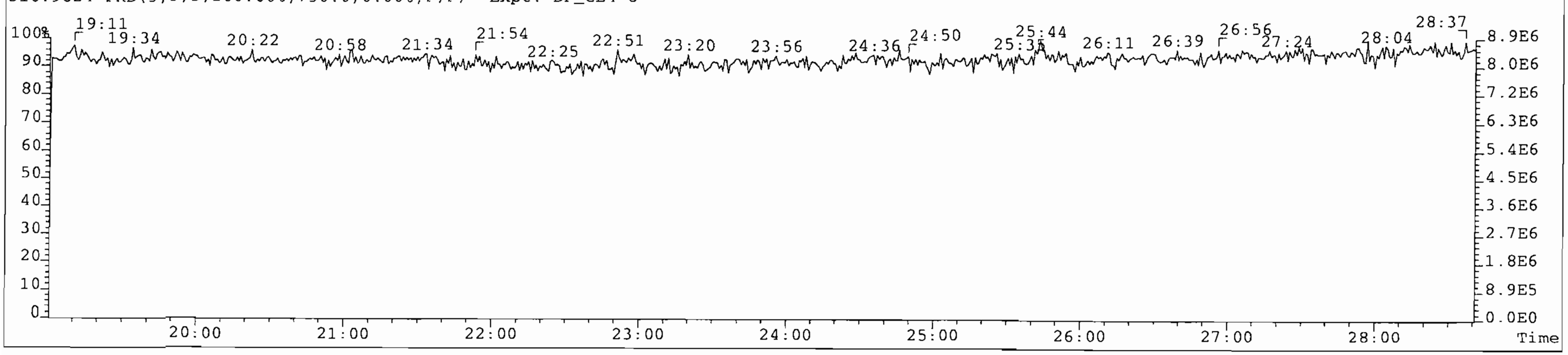
File: 070724P2 Acq: 24-JUL-2007 16:32:51 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 1 Text: BCS3_5075_DF_PA Vial# 16 File Text: AP DB5
339.8597 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 300



341.8568 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 416

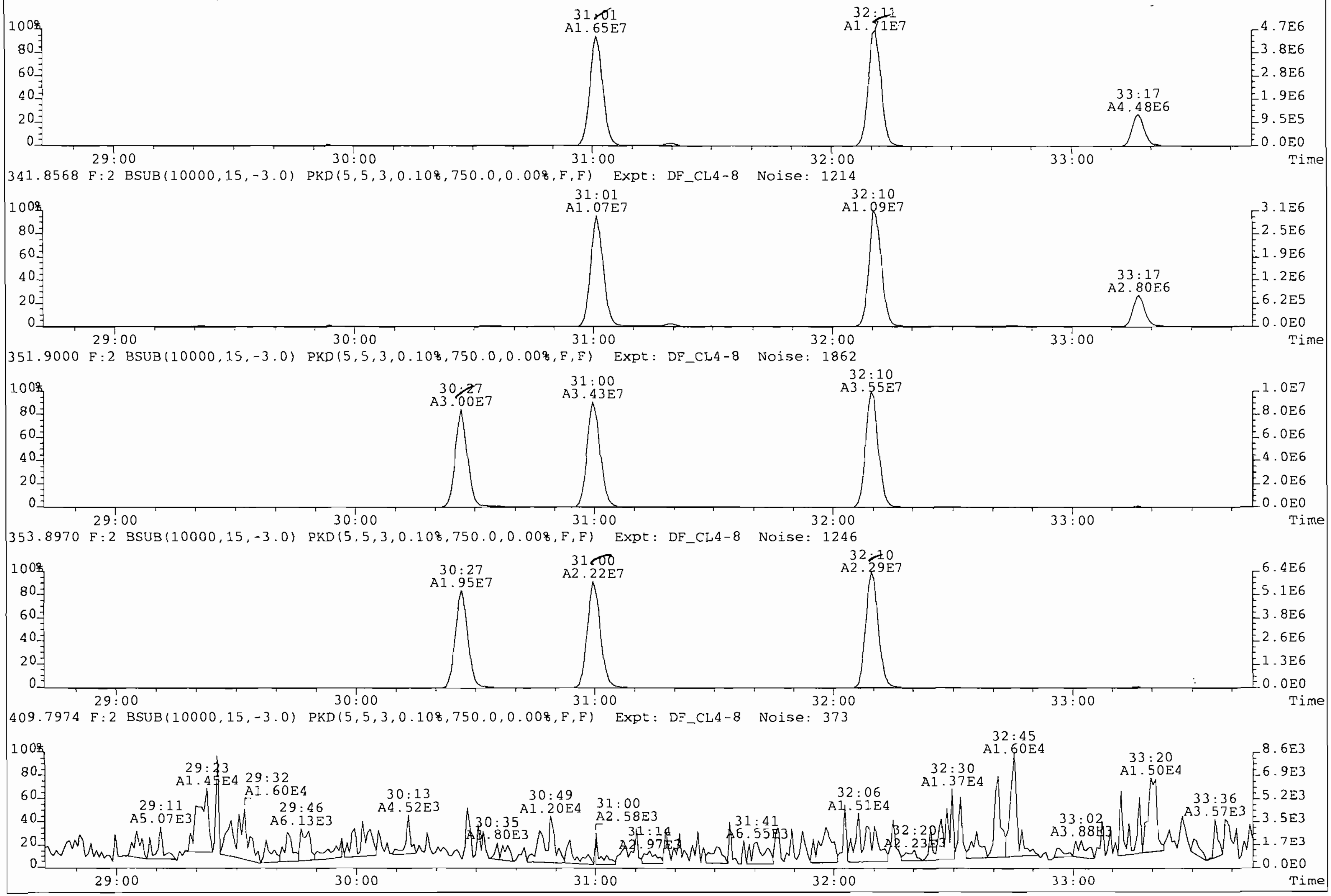


316.9824 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



File: 070724P2 Acq: 24-JUL-2007 16:32:51 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 1 Text: BCS3_5075_DF_PA Vial# 16 File Text: AP DB5

339.8597 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 794



341.8568 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 1214

31:01 A1.07E7
32:10 A1.09E7
33:17 A2.80E6

351.9000 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 1862

30:27 A3.00E7
31:00 A3.43E7
32:10 A3.55E7

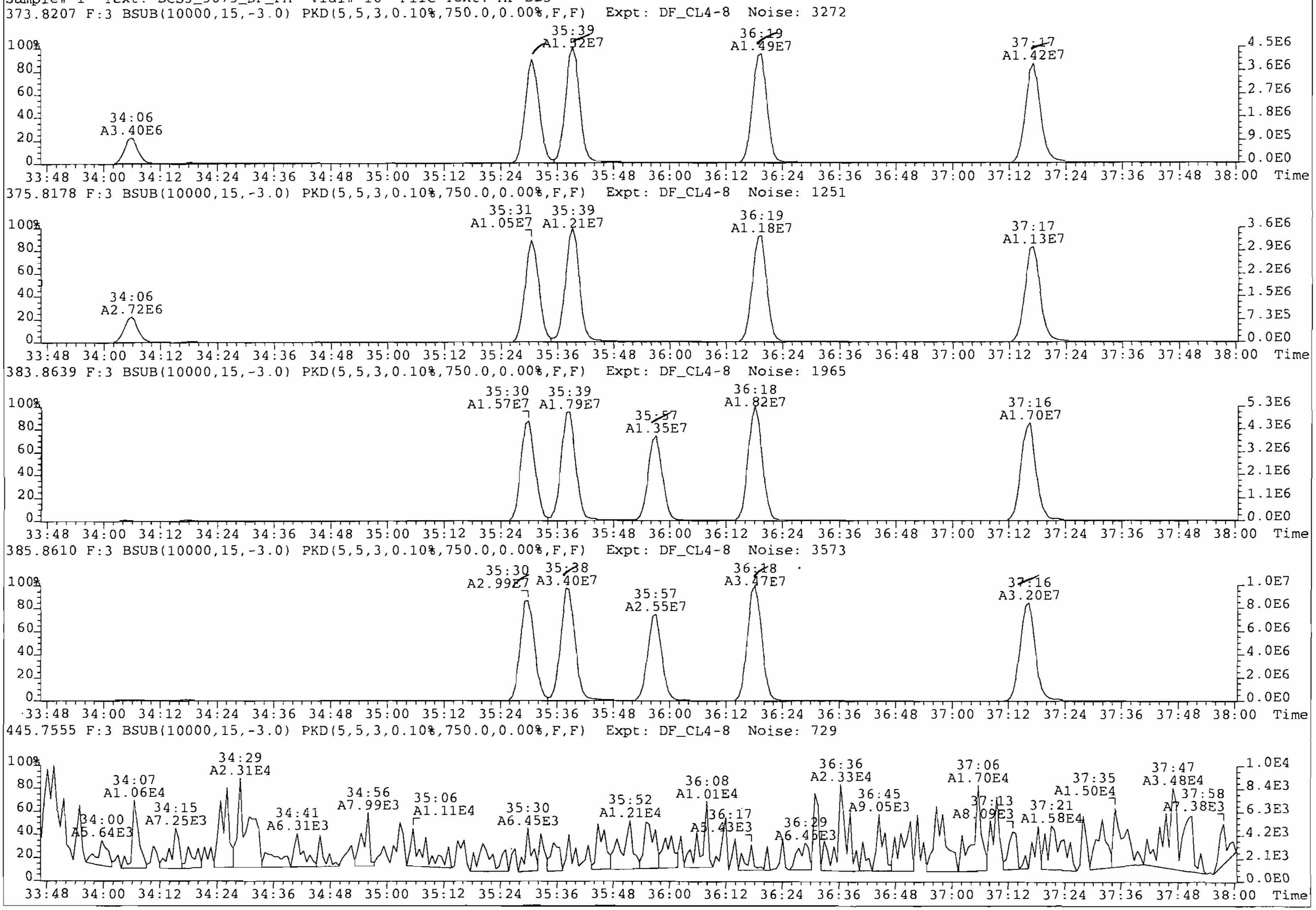
353.8970 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 1246

30:27 A1.95E7
31:00 A2.22E7
32:10 A2.29E7

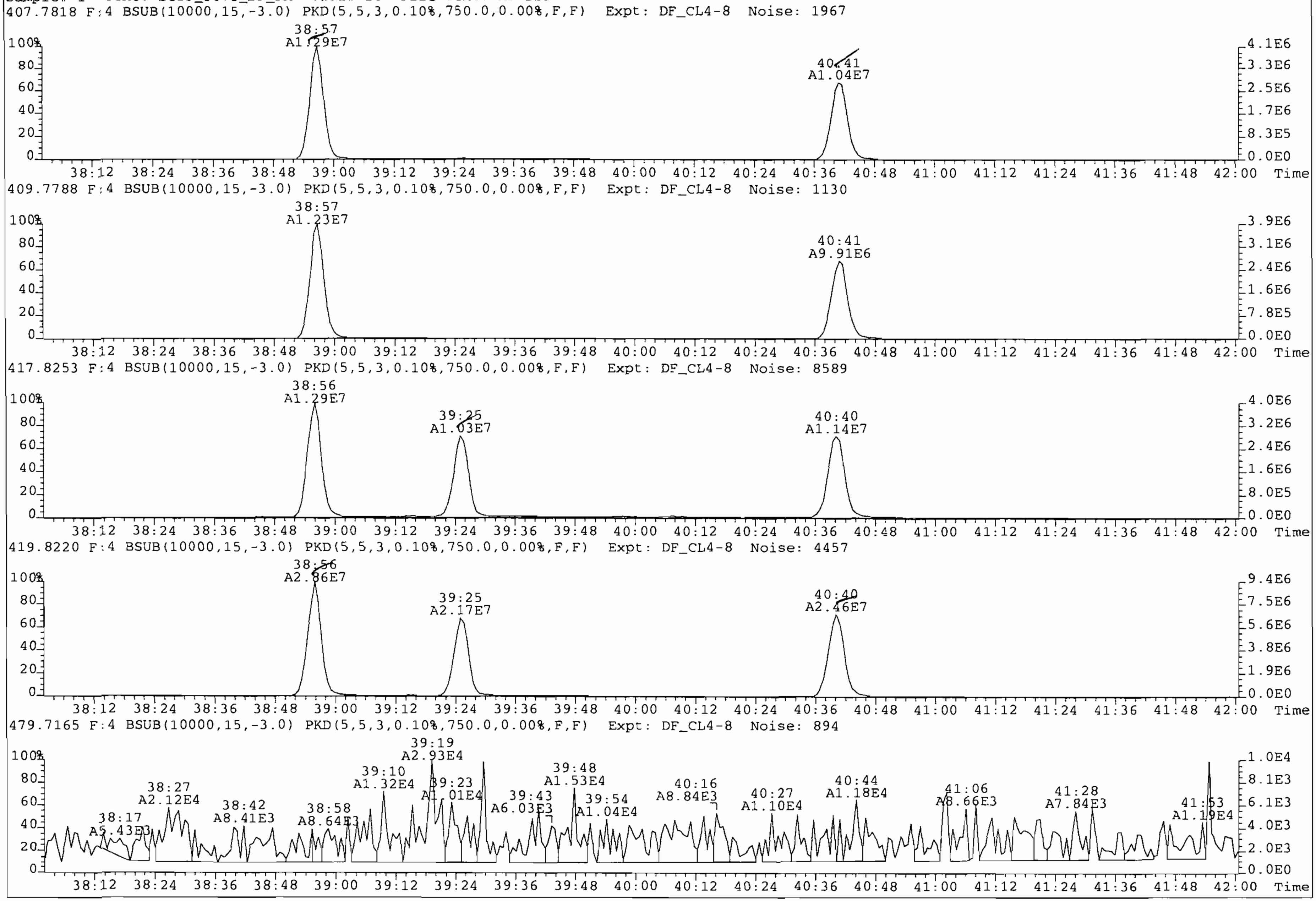
409.7974 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 373

29:11 A5.07E3
29:23 A1.45E4
29:32 A1.60E4
29:46 A6.13E3
30:13 A4.52E3
30:35 A3.80E3
30:49 A1.20E4
31:00 A2.58E3
31:14 A2.97E3
31:41 A6.55E3
32:06 A1.51E4
32:20 A2.23E3
32:30 A1.37E4
32:45 A1.60E4
33:02 A3.88E3
33:20 A1.50E4
33:36 A3.57E3

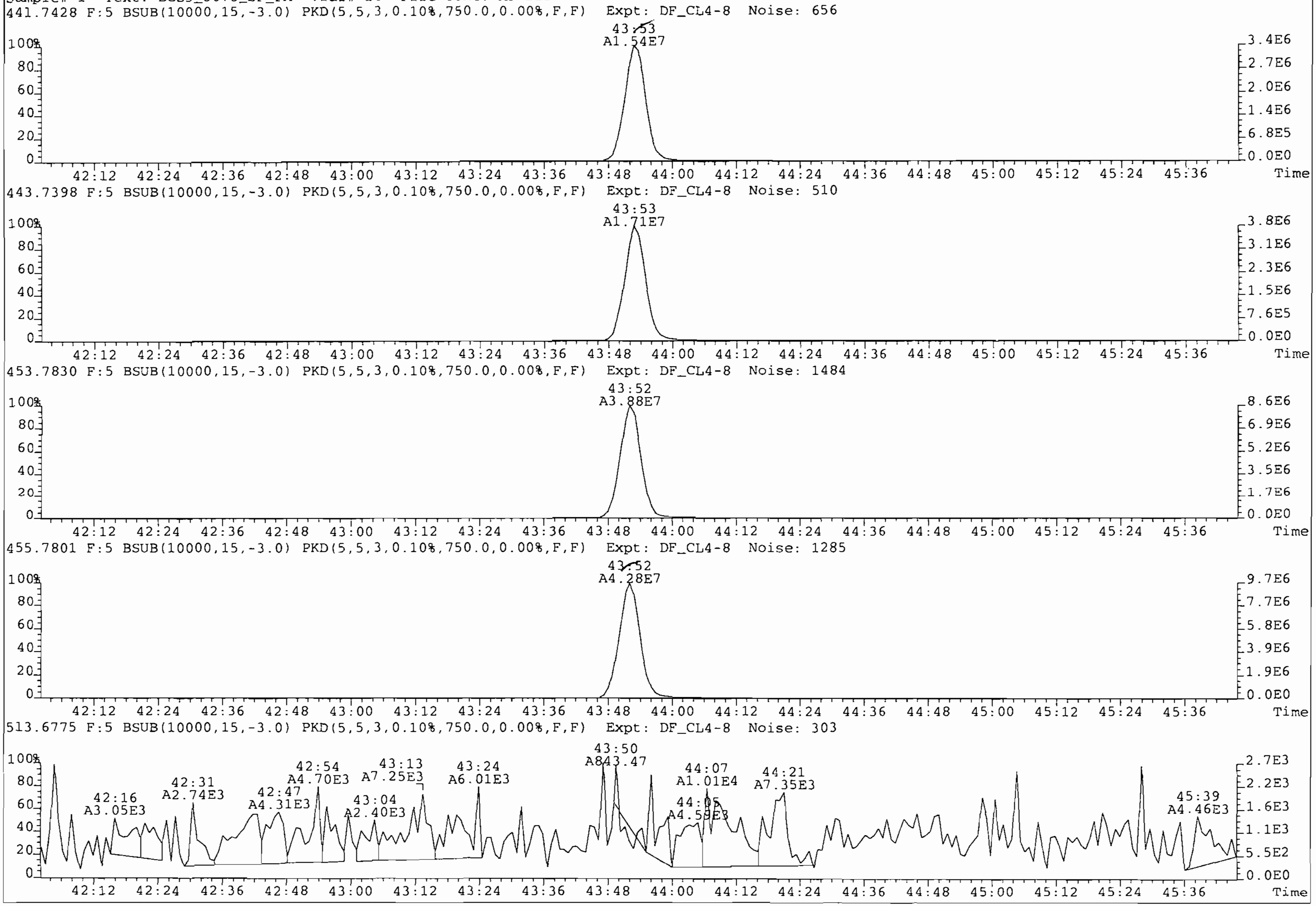
File: 070724P2 Acq: 24-JUL-2007 16:32:51 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 1 Text: BCS3_5075_DF_PA Vial# 16 File Text: AP DB5



File: 070724P2 Acq: 24-JUL-2007 16:32:51 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 1 Text: BCS3_5075_DF_PA Vial# 16 File Text: AP DB5

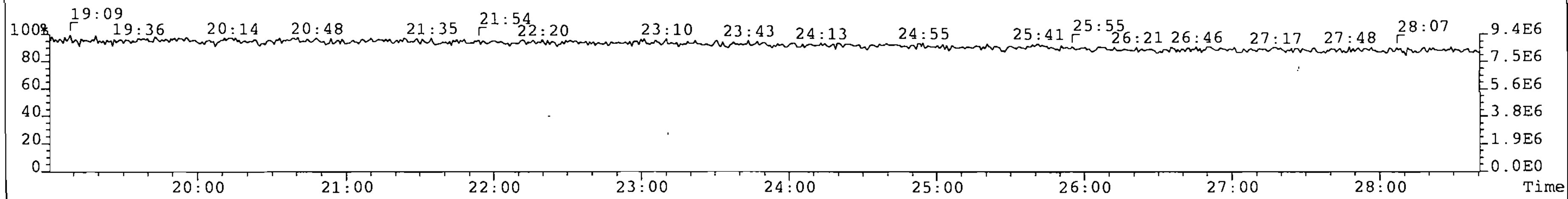


File: 070724P2 Acq: 24-JUL-2007 16:32:51 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 1 Text: BCS3_5075_DF_PA Vial# 16 File Text: AP DB5

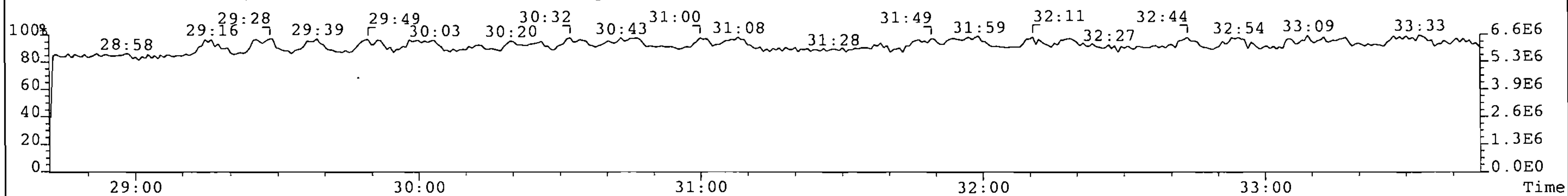


File: 070724P2 Acq: 24-JUL-2007 17:22:38 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 2 Text: SBS SOLVENT BLANK Vial# 15 File Text: AP DB5

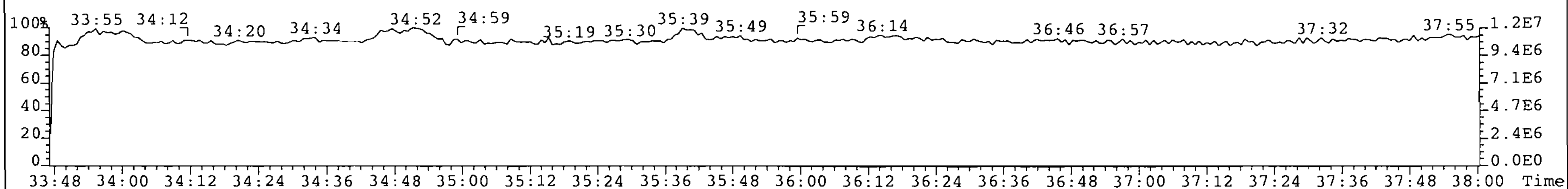
316.9824 S:2 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



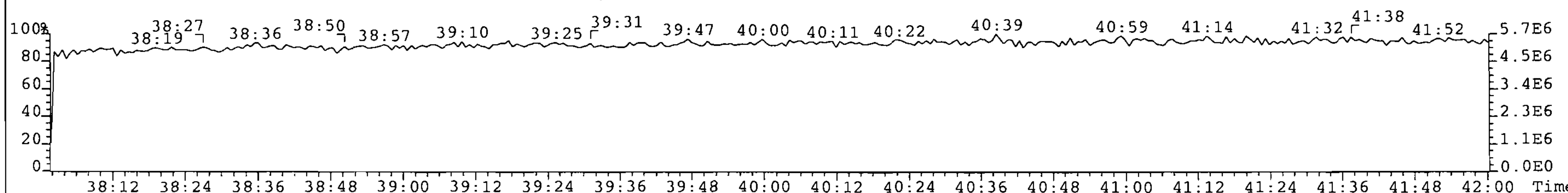
366.9792 S:2 F:2 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



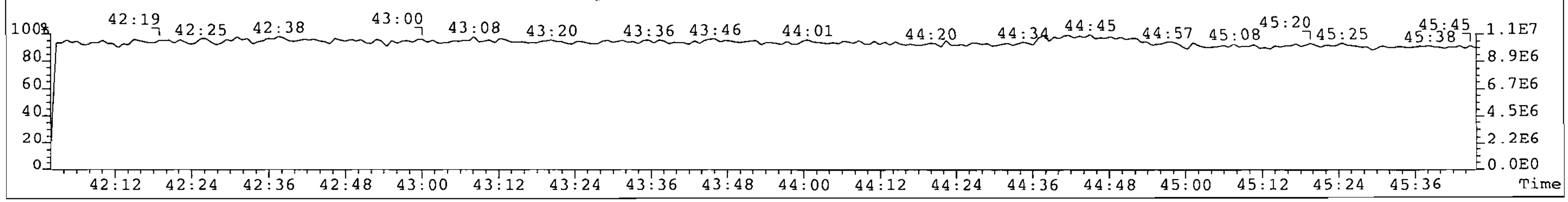
380.9760 S:2 F:3 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



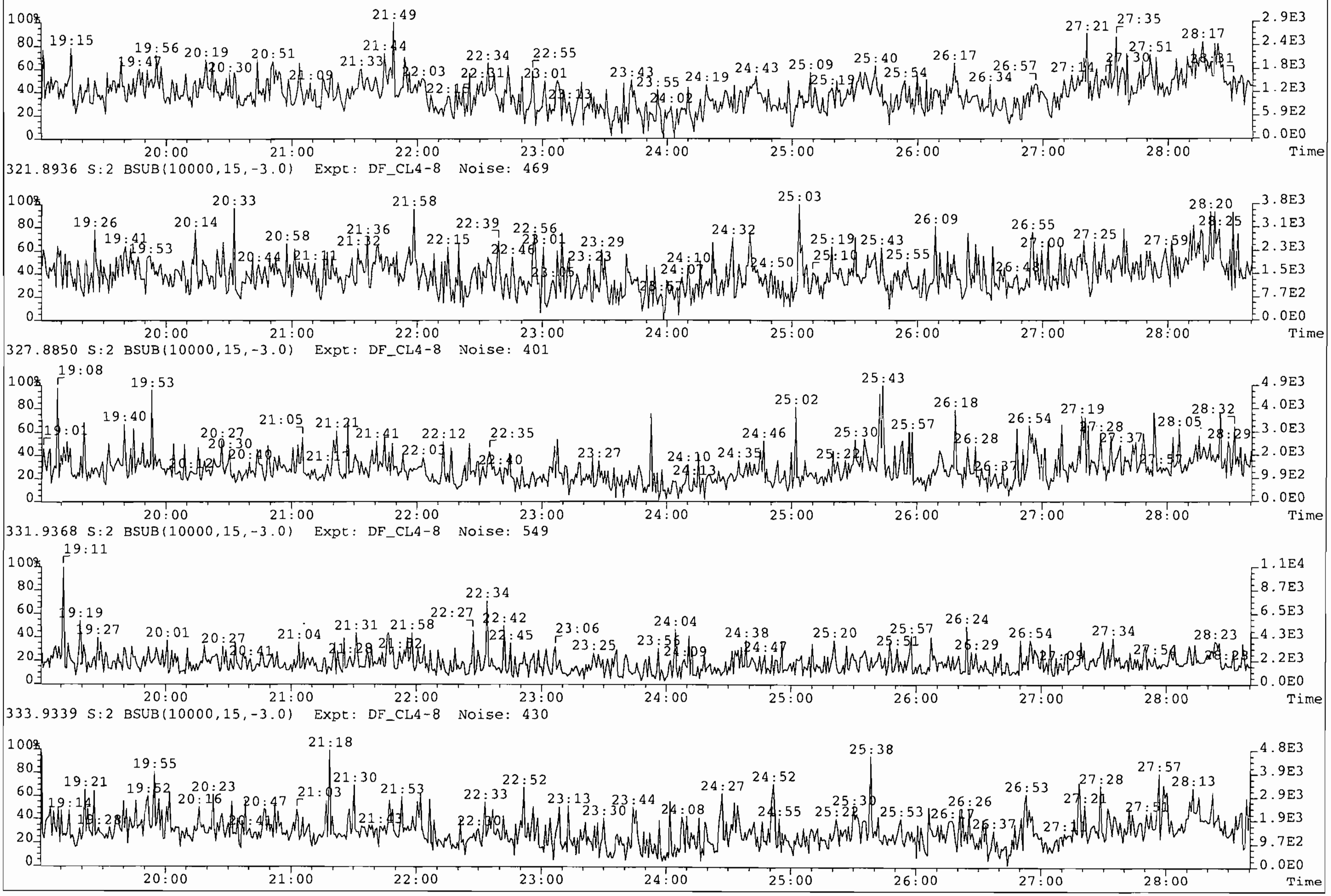
430.9728 S:2 F:4 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



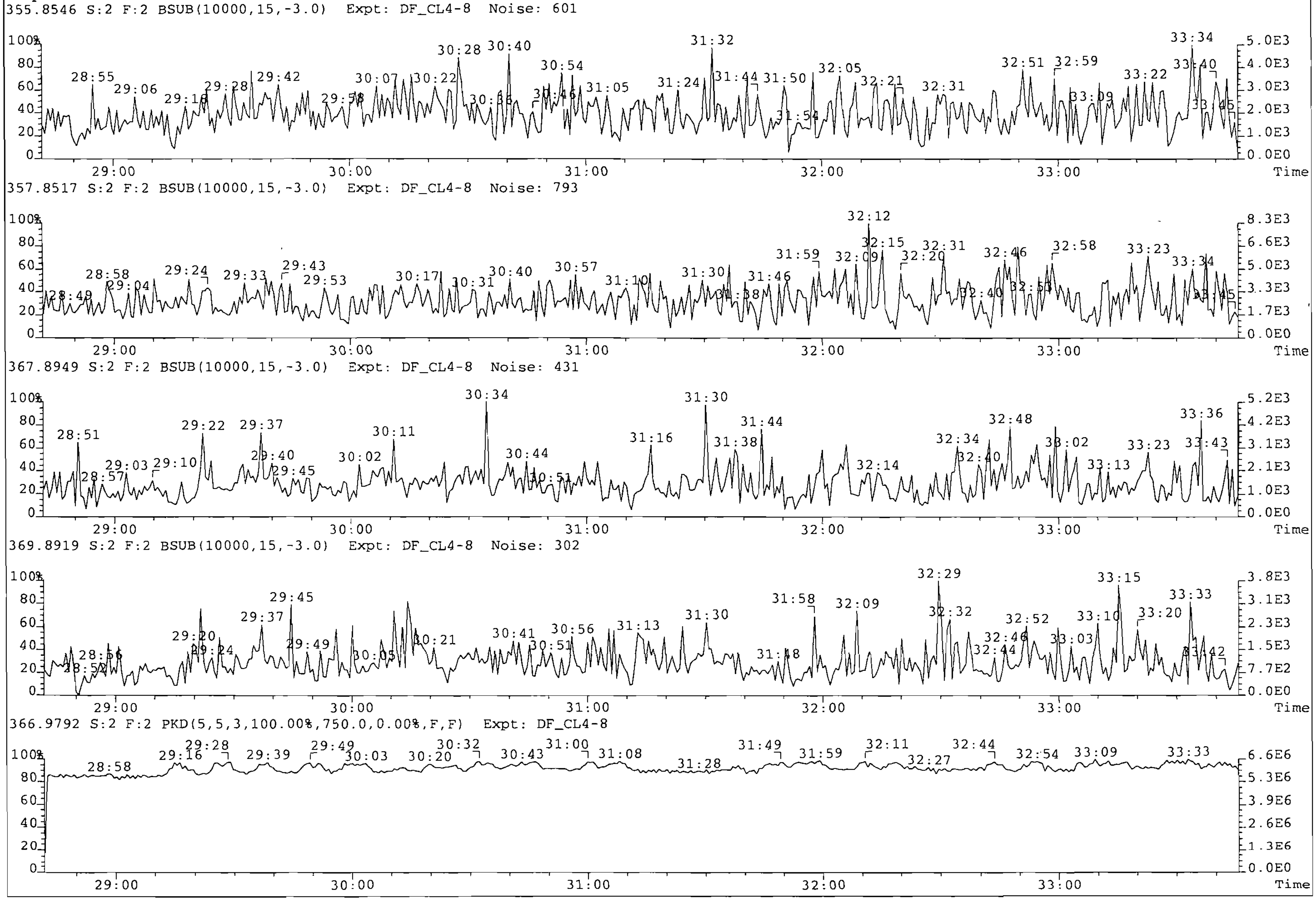
454.9728 S:2 F:5 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



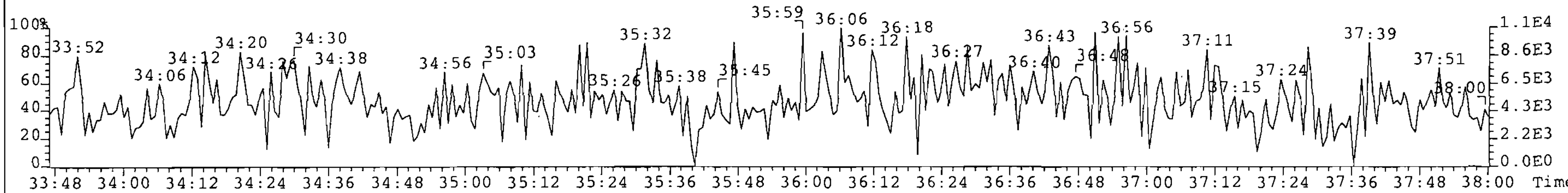
File: 070724P2 Acq: 24-JUL-2007 17:22:38 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 2 Text: SBS SOLVENT BLANK Vial# 15 File Text: AP DB5
319.8965 S:2 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 362



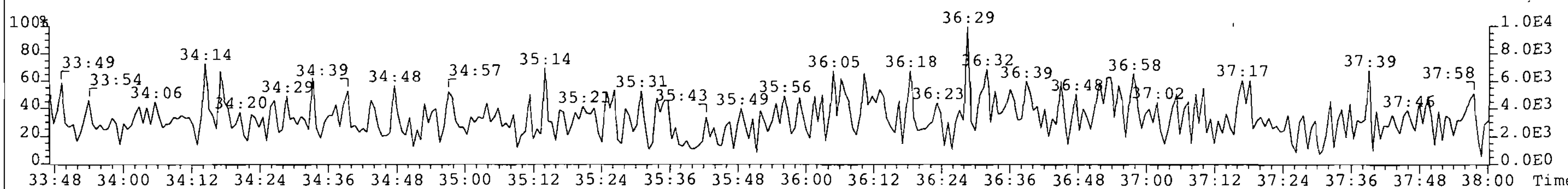
File: 070724P2 Acq: 24-JUL-2007 17:22:38 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 2 Text: SBS SOLVENT BLANK Vial# 15 File Text: AP DB5



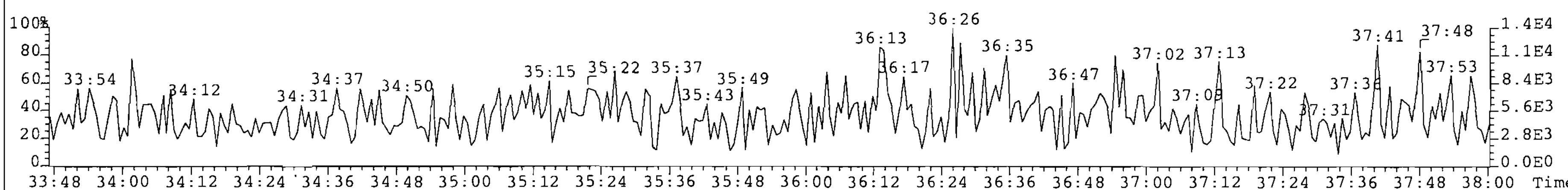
File: 070724P2 Acq: 24-JUL-2007 17:22:38 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 2 Text: SBS SOLVENT BLANK Vial# 15 File Text: AP DB5
389.8156 S:2 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 1601



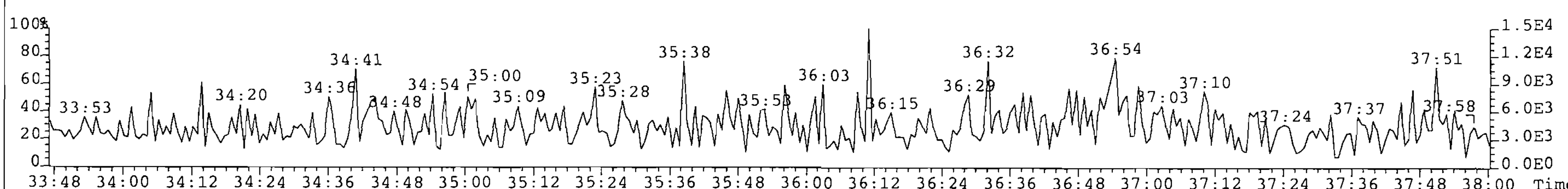
391.8127 S:2 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 1009



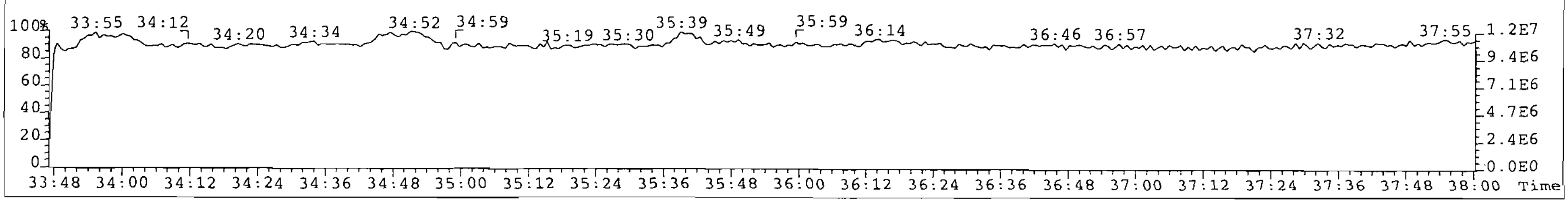
401.8559 S:2 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 1497



403.8530 S:2 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 1294



380.9760 S:2 F:3 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



File: 070724P2 Acq: 24-JUL-2007 17:22:38 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 2 Text: SBS SOLVENT BLANK Vial# 15 File Text: AP DB5

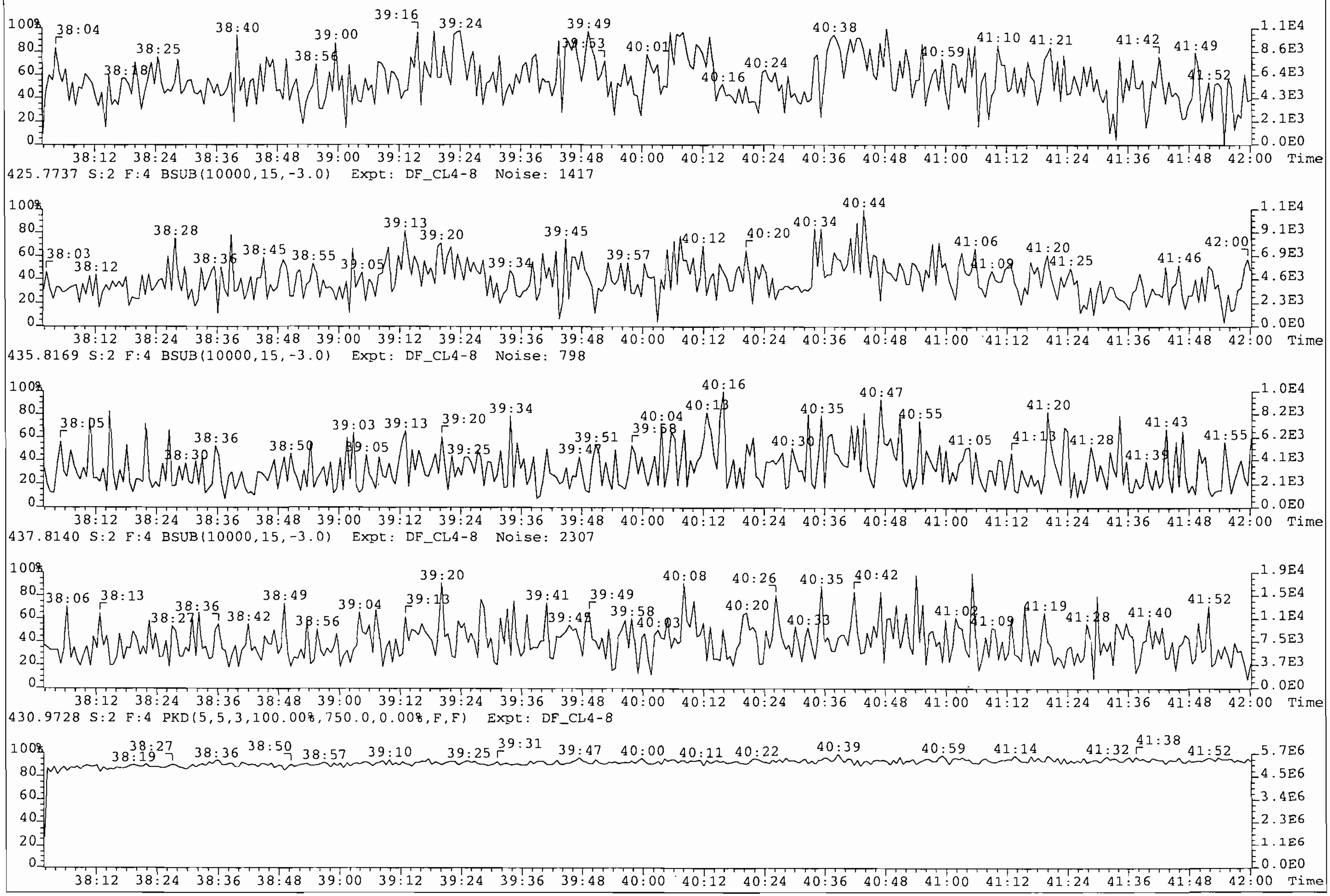
423.7767 S:2 F:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 1921

425.7737 S:2 F:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 1417

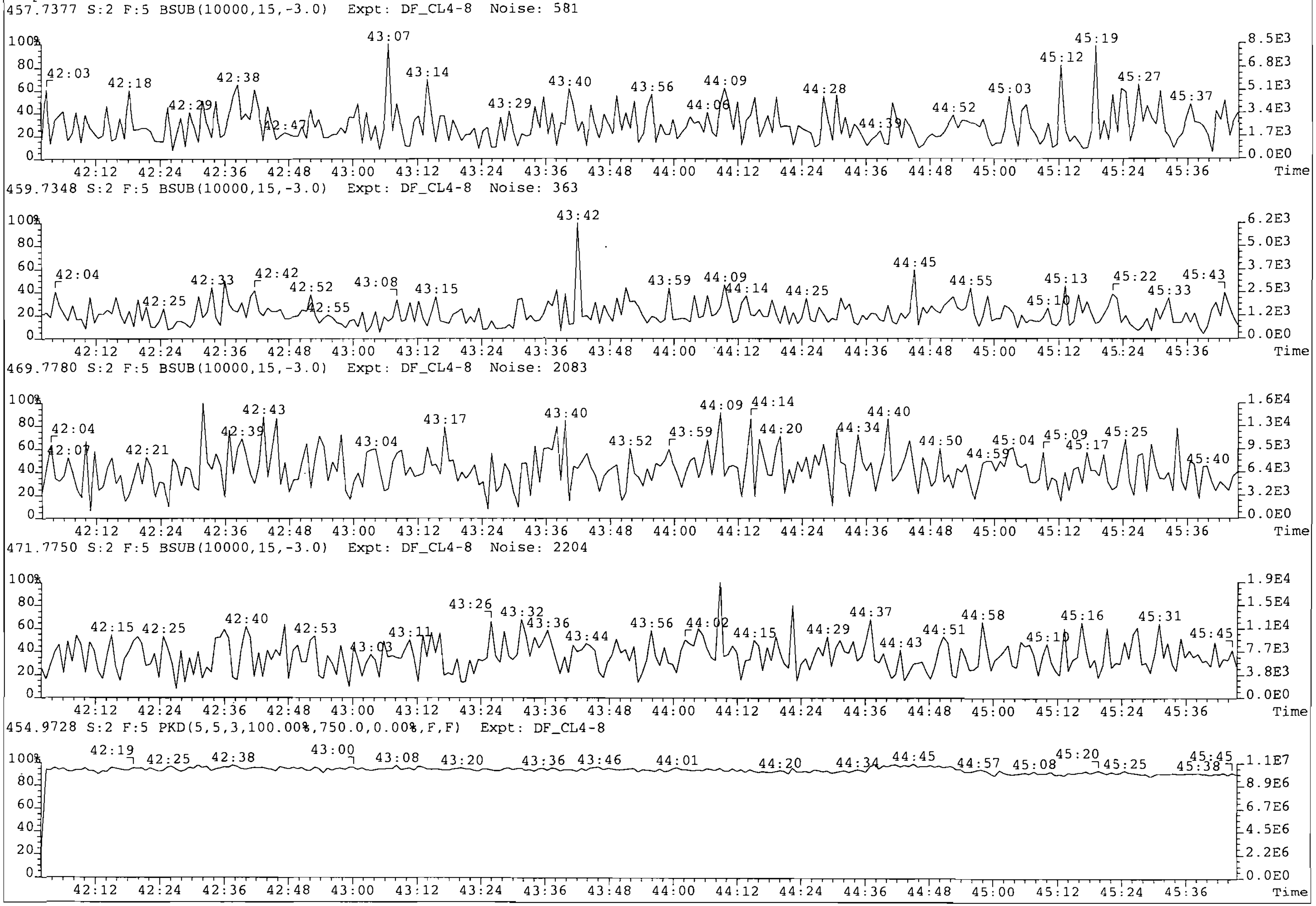
435.8169 S:2 F:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 798

437.8140 S:2 F:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 2307

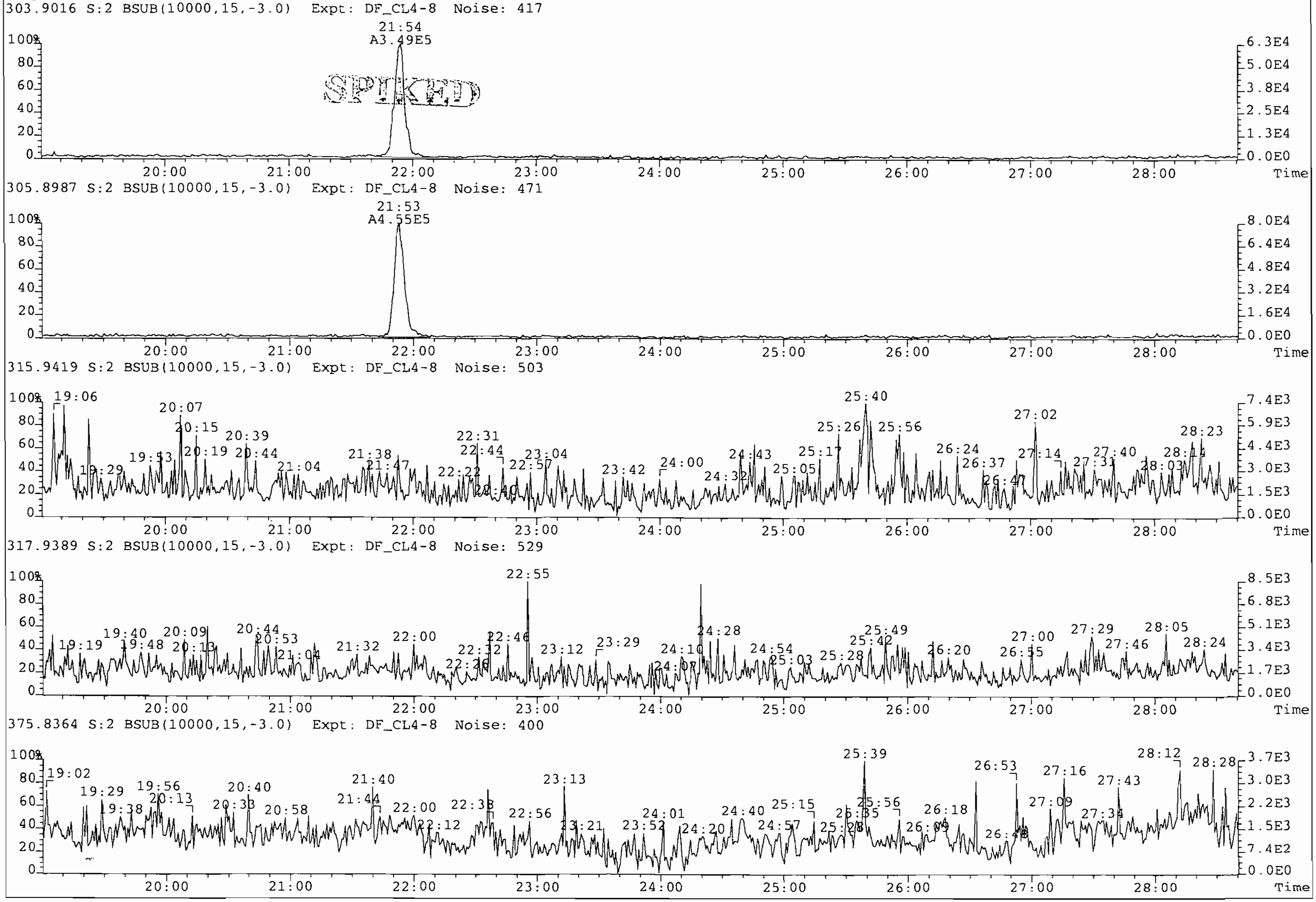
430.9728 S:2 F:4 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



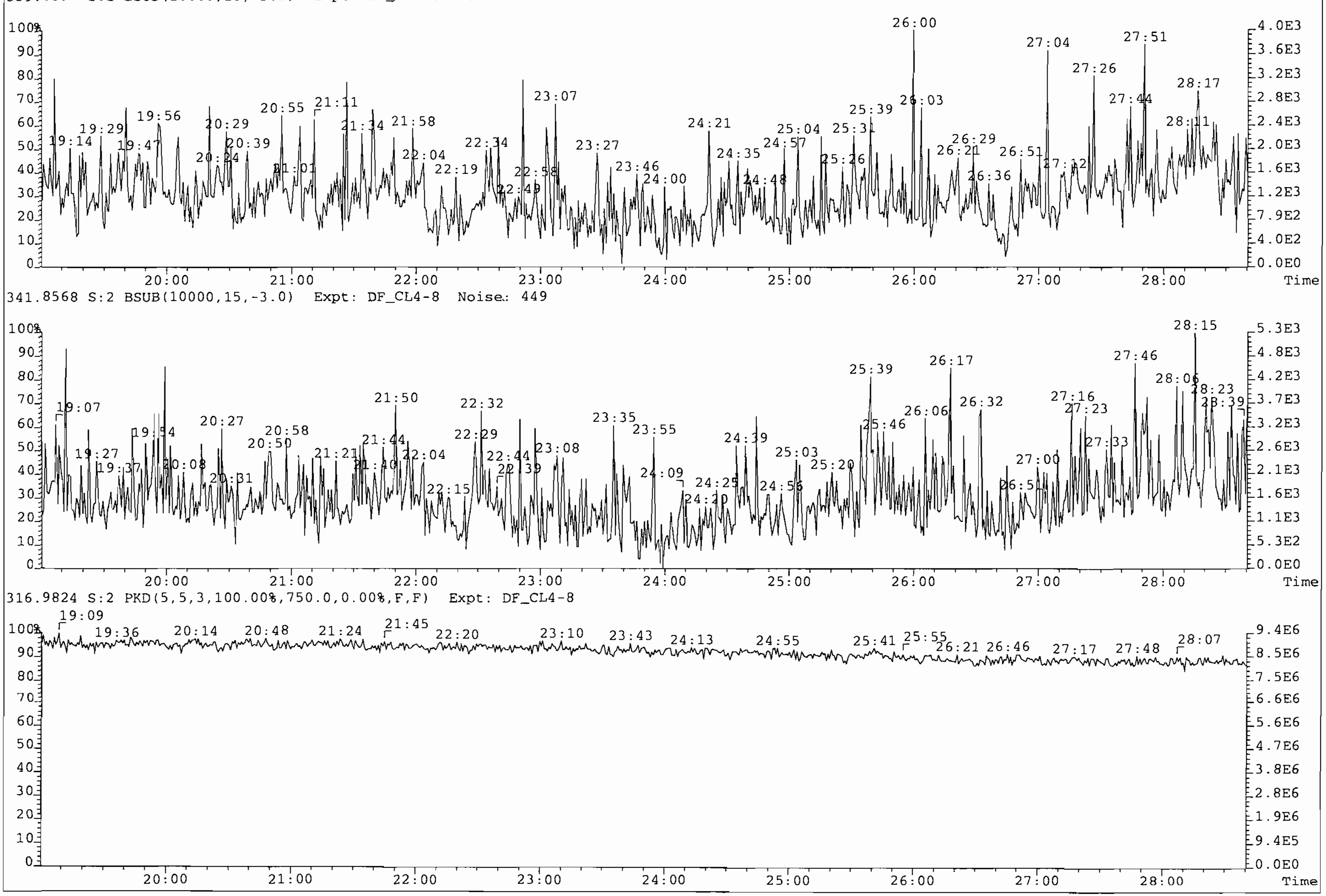
File: 070724P2 Acq: 24-JUL-2007 17:22:38 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 2 Text: SBS SOLVENT BLANK Vial# 15 File Text: AP DB5



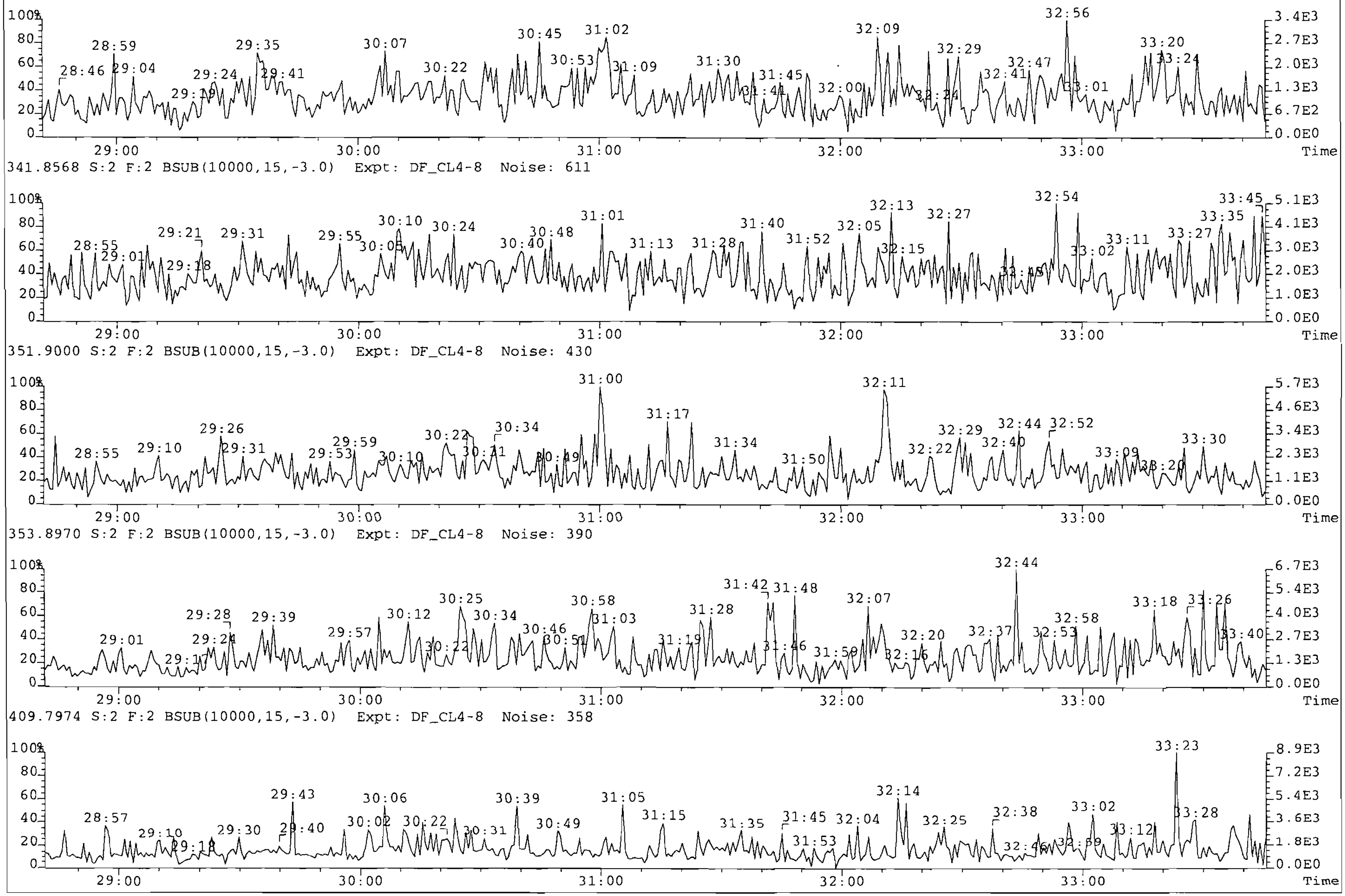
File: 070724P2 Acq: 24-JUL-2007 17:22:38 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 2 Text: SBS SOLVENT BLANK Vial# 15 File Text: AP DB5

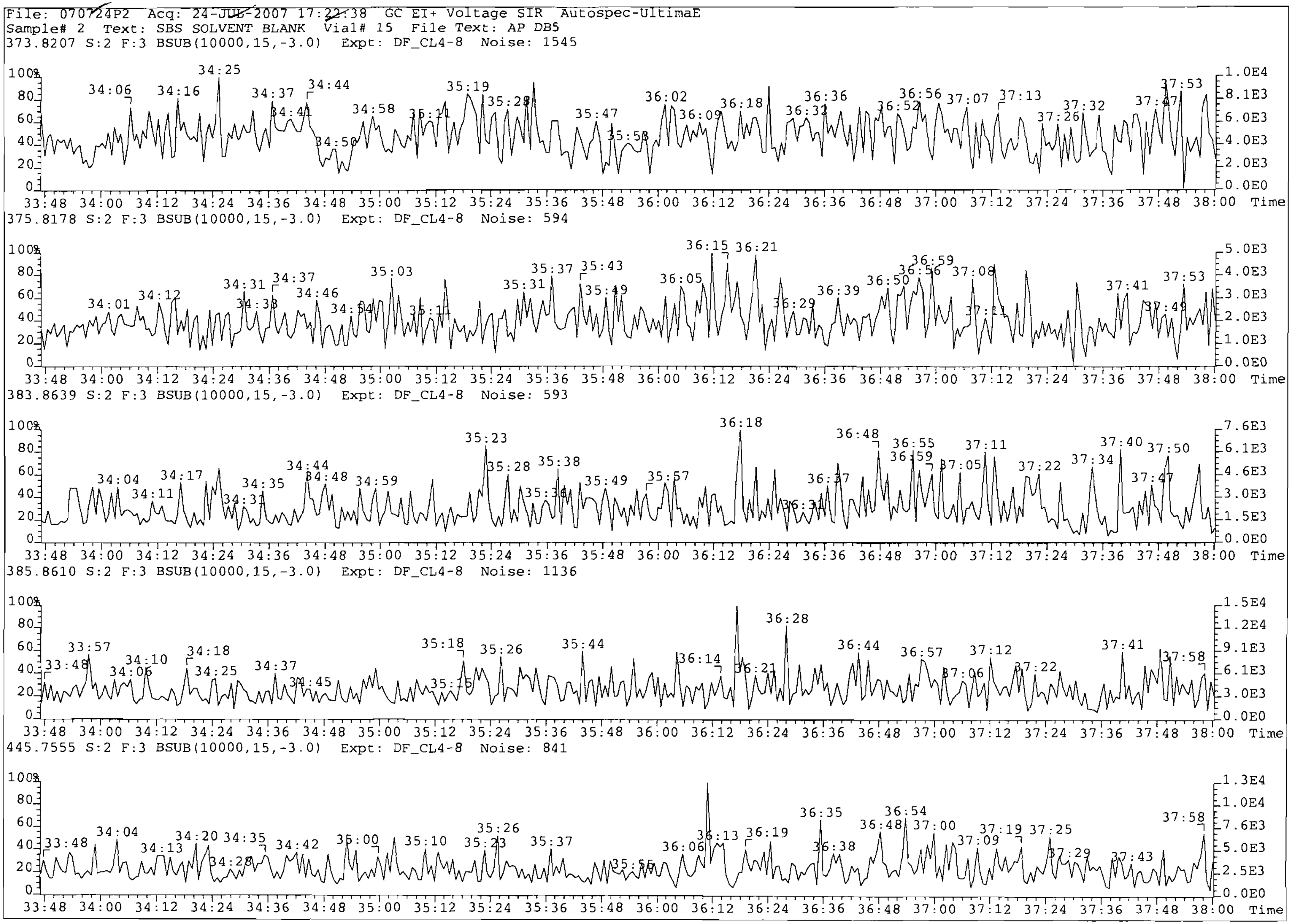


File: 070724P2 Acq: 24-JUL-2007 17:22:38 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 2 Text: SBS SOLVENT BLANK Vial# 15 File Text: AP DB5
339.8597 S:2 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 361



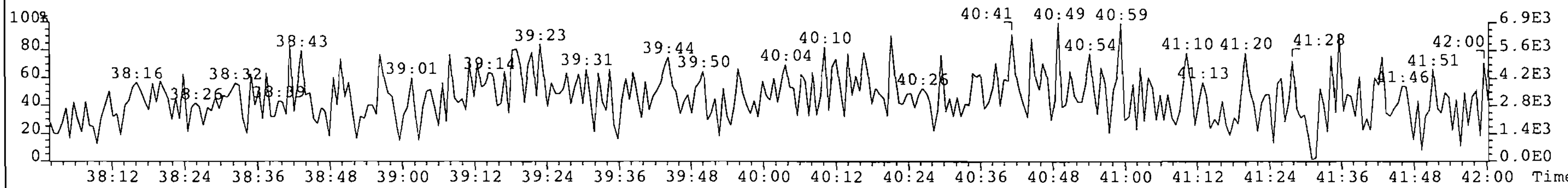
File: 070724P2 Acq: 24-JUL-2007 17:22:38 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 2 Text: SBS SOLVENT BLANK Vial# 15 File Text: AP DB5
339.8597 S:2 F:2 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 331



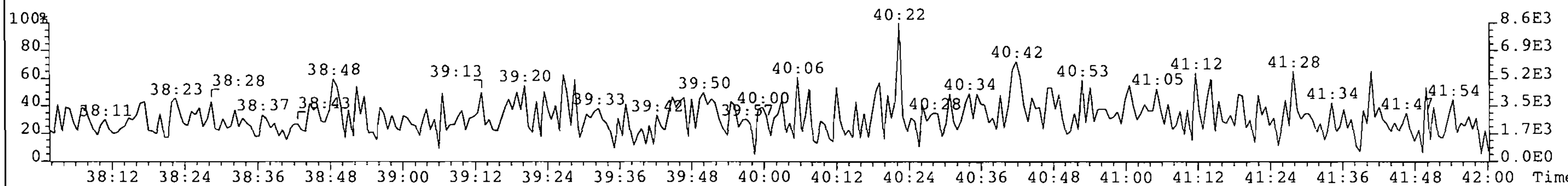

File: 070724P2 Acq: 24-JUL-2007 17:22:38 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 2 Text: SBS SOLVENT BLANK Vial# 15 File Text: AP DB5
373.8207 S:2 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 1545
375.8178 S:2 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 594
383.8639 S:2 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 593
385.8610 S:2 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 1136
445.7555 S:2 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 841
Time

File: 070724P2 Acq: 24-JUL-2007 17:22:38 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 2 Text: SBS SOLVENT BLANK Vial# 15 File Text: AP DB5

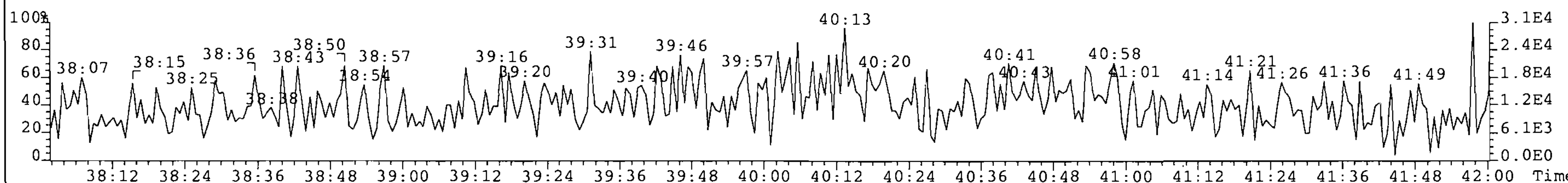
407.7818 S:2 F:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 1002



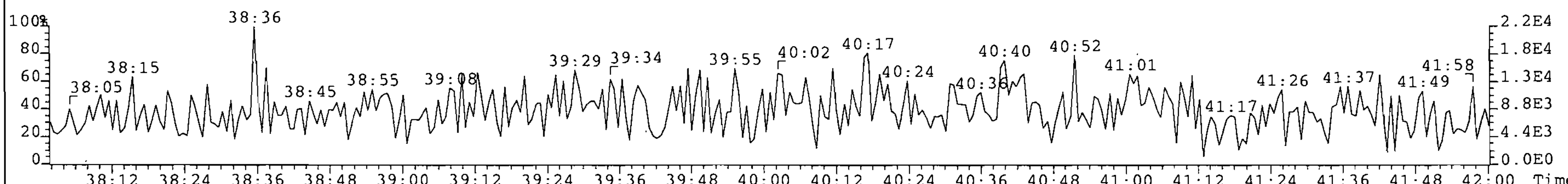
409.7788 S:2 F:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 855



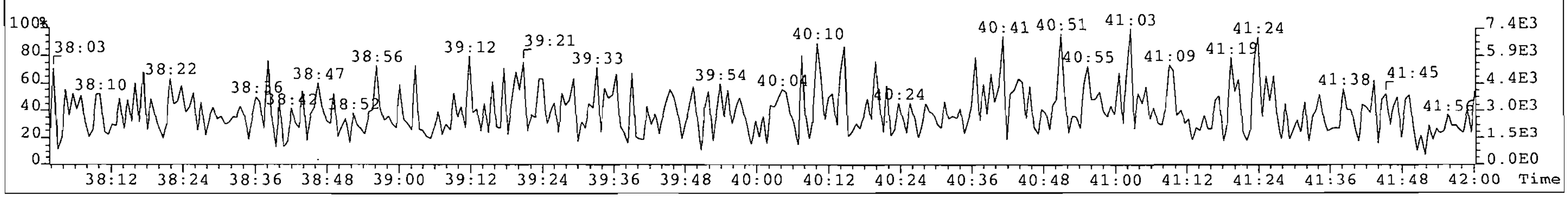
417.8253 S:2 F:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 3746



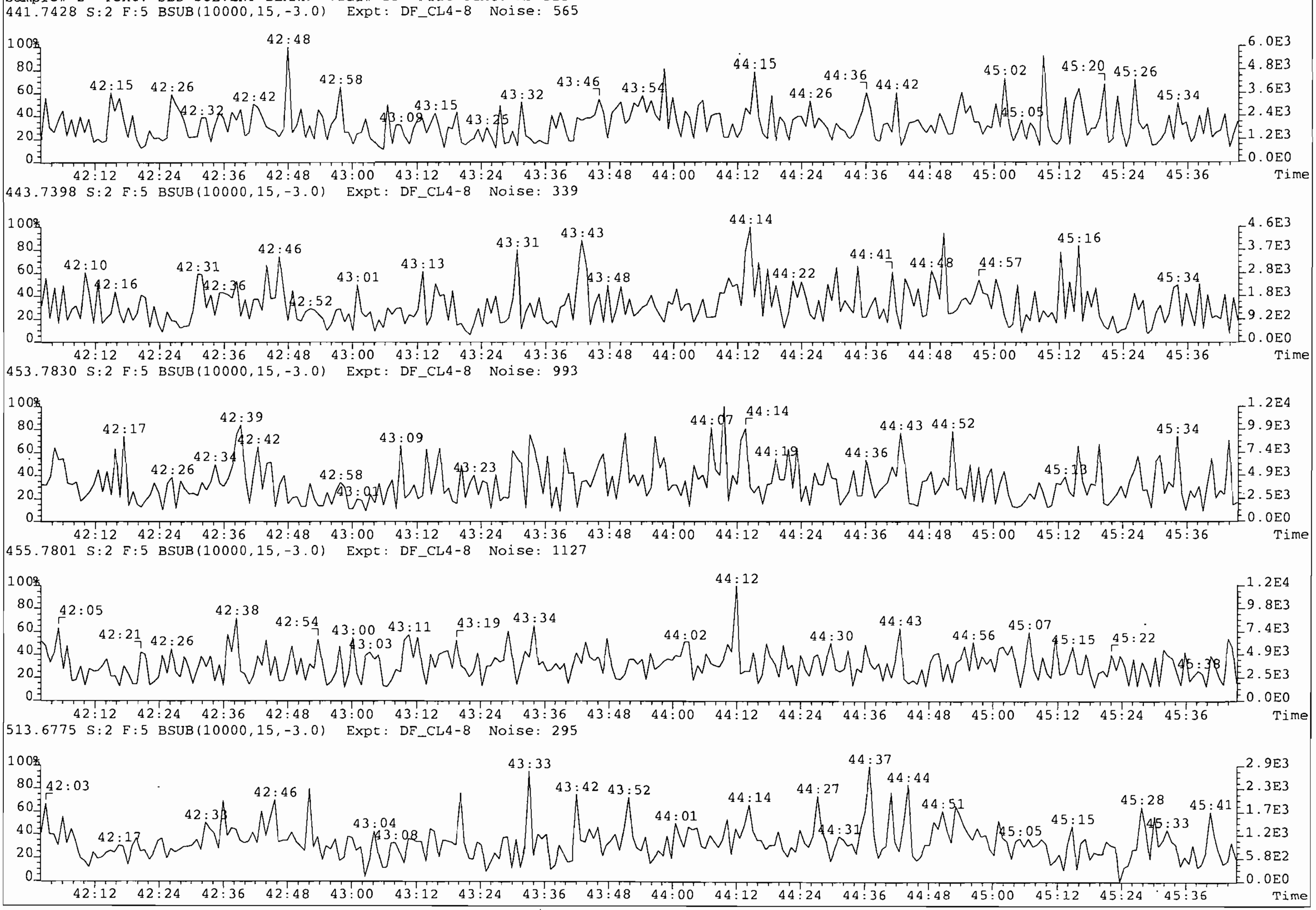
419.8220 S:2 F:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 2684



479.7165 S:2 F:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 867



File: 070724P2 Acq: 24-JUL-2007 17:22:38 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 2 Text: SBS SOLVENT BLANK Vial# 15 File Text: AP DB5



OF[illegible]an on MM1   25-JUL-2007 09:09   JB 31 Jul 07

Calibration Summary   Analytical Perspectives   [Form: CAL]

Client ID: BCS3_5075_DF_PB   Filename: 070724P2   S: 8   Acq: 24-JUL-07 22:21:45
Lab ID: BCS3_5075_DF_PB   GC Column ID: db-5   ICal: Wt/Vol: 1.000
Sample text: BCS3_5075_DF_PB   Vial: 16

	Typ	Name	Amount	Resp	RA		RT	RF	RRF
1	Ax	2,3,7,8-TCDD	10.00	4.47e+06	0.78	y	26:52	-	0.97
2	Ax	1,2,3,7,8-PeCDD	50.00	1.77e+07	1.58	y	32:31	-	0.89
3	Ax	1,2,3,4,7,8-HxCDD	50.00	1.61e+07	1.25	y	36:29	-	1.09
4	Ax	1,2,3,6,7,8-HxCDD	50.00	1.62e+07	1.22	y	36:35	-	1.01
5	Ax	1,2,3,7,8,9-HxCDD	50.00	1.56e+07	1.23	y	36:53	-	0.93
6	Ax	1,2,3,4,6,7,8-HpCDD	50.00	1.54e+07	1.07	y	40:06	-	0.89
7	Ax	OCDD	100.00	2.26e+07	0.89	y	43:37	-	0.97
8	Ax2	OCDD-a	100.00	1.42e+06	2.38	y	43:37	-	0.06
9	Ax	2,3,7,8-TCDF	10.00	6.90e+06	0.78	y	25:57	-	1.07
10	Ax	1,2,3,7,8-PeCDF	50.00	2.94e+07	1.55	y	30:59	-	0.95
11	Ax	2,3,4,7,8-PeCDF	50.00	2.99e+07	1.54	y	32:09	-	0.96
12	Ax	1,2,3,4,7,8-HxCDF	50.00	2.38e+07	1.24	y	35:29	-	1.04
13	Ax	1,2,3,6,7,8-HxCDF	50.00	2.73e+07	1.26	y	35:38	-	1.06
14	Ax	2,3,4,6,7,8-HxCDF	50.00	2.61e+07	1.25	y	36:18	-	1.01
15	Ax	1,2,3,7,8,9-HxCDF	50.00	2.53e+07	1.27	y	37:16	-	1.06
16	Ax	1,2,3,4,6,7,8-HpCDF	50.00	2.31e+07	1.04	y	38:56	-	1.23
17	Ax	1,2,3,4,7,8,9-HpCDF	50.00	1.88e+07	1.05	y	40:40	-	1.13
18	Ax	OCDF	100.00	2.78e+07	0.91	y	43:52	-	0.79
19	Ax2	OCDF-a	100.00	1.68e+06	2.50	y	43:52	-	0.05
20	ES	13C-2,3,7,8-TCDD	100.00	4.59e+07	0.78	y	26:51	-	1.11
21	ES	13C-1,2,3,7,8-PeCDD	100.00	3.98e+07	1.57	y	32:30	-	0.96
22	ES	13C-1,2,3,4,7,8-HxCDD	100.00	2.96e+07	1.26	y	36:28	-	1.03
23	ES	13C-1,2,3,6,7,8-HxCDD	100.00	3.20e+07	1.23	y	36:35	-	1.12
24	ES	13C-1,2,3,7,8,9-HxCDD	100.00	3.35e+07	1.25	y	36:52	-	1.17
25	ES	13C-1,2,3,4,6,7,8-HpCDD	100.00	3.44e+07	1.07	y	40:05	-	1.20
26	ES	13C-OCDD	200.00	4.65e+07	0.89	y	43:36	-	0.81
27	ES	13C-2,3,7,8-TCDF	100.00	6.44e+07	0.78	y	25:55	-	0.94
28	ES	13C-1,2,3,7,8-PeCDF	100.00	6.18e+07	1.55	y	30:59	-	0.90
29	ES	13C-2,3,4,7,8-PeCDF	100.00	6.25e+07	1.54	y	32:08	-	0.91
30	ES	13C-1,2,3,4,7,8-HxCDF	100.00	4.57e+07	0.53	y	35:28	-	1.60
31	ES	13C-1,2,3,6,7,8-HxCDF	100.00	5.13e+07	0.53	y	35:37	-	1.79
32	ES	13C-2,3,4,6,7,8-HxCDF	100.00	5.19e+07	0.52	y	36:17	-	1.82
33	ES	13C-1,2,3,7,8,9-HxCDF	100.00	4.76e+07	0.53	y	37:15	-	1.66
34	ES	13C-1,2,3,4,6,7,8-HpCDF	100.00	3.77e+07	0.46	y	38:55	-	1.32
35	ES	13C-1,2,3,4,7,8,9-HpCDF	100.00	3.32e+07	0.44	y	40:39	-	1.16
36	ES	13C-OCDF	200.00	7.02e+07	0.90	y	43:51	-	1.23
37	CS	37Cl-2,3,7,8-TCDD	40.00	1.92e+07			26:52	-	1.16
38	CS	13C-1,2,3,4,7-PeCDD	100.00	4.04e+07	1.64	y	31:58	-	0.97
39	CS	13C-1,2,3,4,6-PeCDF	100.00	5.57e+07	1.54	y	30:25	-	0.81
40	CS	13C-1,2,3,4,6,9-HxCDF	100.00	3.84e+07	0.53	y	35:55	-	1.34
41	CS	13C-1,2,3,4,6,8,9-HpCDF	100.00	2.97e+07	0.47	y	39:24	-	1.04
42	NA	n/a	100.00	7.94e+04	0.26	n	36:36	-	0.00
43	JS/RT	13C-1,2,3,4-TCDD	50.00	2.07e+07	0.81	y	26:09	4.15e+05	-
44	JS	13C-1,2,3,4-TCDF	50.00	3.43e+07	0.77	y	24:26	6.86e+05	-
45	JS/RT	13C-1,2,3,4,6,7-HxCDD	25.00	7.15e+06	1.24	y	36:46	2.86e+05	-

Analyst: AL

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46	SS	37Cl-2,3,7,8-TCDD	40.00	1.92e+07			26:52		-	1.05
47	SS	13C-1,2,3,4,7-PeCDD	100.00	4.04e+07	1.64	y	31:58		-	1.02
48	SS	13C-1,2,3,4,6-PeCDF	100.00	5.57e+07	1.54	y	30:25		-	0.90
49	SS	13C-1,2,3,4,6,9-HxCDF	100.00	3.84e+07	0.53	y	35:55		-	0.75
50	SS	13C-1,2,3,4,6,8,9-HpCDF	100.00	2.97e+07	0.47	y	39:24		-	0.79
51	SBS	2,4,6,8-TCDF	-	-	-	n	-		-	1.07
52	Ay	1,3,6,8-TCDD	-	-	-	n	-		-	0.97
53	Ay	1,2,3,9-TCDD	-	-	-	n	-		-	0.97
54	Ay	1,2,8,9-TCDD	-	-	-	n	-		-	0.97
55	Ay	1,2,4,7,9-PeCDD	-	-	-	n	-		-	0.89
56	Ay	1,2,3,8,9-PeCDD	-	-	-	n	-		-	0.89
57	Ay	1,2,4,6,7,9-HxCDD	-	-	-	n	-		-	1.01
58	Ay	1,2,3,4,6,7,9-HpCDD	-	-	-	n	-		-	0.89
59	Ay	1,3,6,8-TCDF	-	-	-	n	-		-	1.07
60	Ay	2,3,4,8-TCDF	-	-	-	n	-		-	1.07
61	Ay	1,2,8,9-TCDF	-	-	-	n	-		-	1.07
62	Ay	1,3,4,6,8-PeCDF	-	-	-	n	-		-	1.07
63	Ay	1,2,3,8,9-PeCDF	-	-	-	n	-		-	0.95
64	Ay	1,2,3,4,6,8-HxCDF	-	-	-	n	-		-	1.04
65	Tot	Total Tetra-Dioxins	-	-	-	n	-		-	0.97
66	Tot	Total Penta-Dioxins	-	-	-	n	-		-	0.89
67	Tot	Total Hexa-Dioxins	-	-	-	n	-		-	1.01
68	Tot	Total Hepta-Dioxins	-	-	-	n	-		-	0.89
69	Tot	Total Tetra-Furans	-	-	-	n	-		-	1.07
70	Tot	Total Penta-Furans	-	-	-	n	-		-	0.95
71	Tot	Total Hexa-Furans	-	-	-	n	-		-	1.04
72	Tot	Total Hepta-Furans	-	-	-	n	-		-	1.18
73	Tot	TCDD EMPC	-	-	-	n	-		-	0.97
74	Tot	PeCDD EMPC	-	-	-	n	-		-	0.89
75	Tot	HxCDD EMPC	-	-	-	n	-		-	1.01
76	Tot	HpCDD EMPC	-	-	-	n	-		-	0.89
77	Tot	TCDF EMPC	-	-	-	n	-		-	1.07
78	Tot	PeCDF EMPC	-	-	-	n	-		-	0.95
79	Tot	HxCDF EMPC	-	-	-	n	-		-	1.04
80	Tot	HpCDF EMPC	-	-	-	n	-		-	1.18
81	AS	13C-1,3,6,8-TCDD	100.00	4.57e+07	0.79	y	22:50		-	1.10
82	AS	13C-1,3,6,8-TCDF	100.00	7.37e+07	0.78	y	20:39		-	1.07
83	DPE	HxCDPE	-	1.32e+05			19:33		-	-
84	DPE	HpCDPE	-	2.59e+05			29:04		-	-
85	DPE	OCDPE	-	3.11e+05			33:59		-	-
86	DPE	NCDPE	-	4.36e+05			38:15		-	-
87	DPE	DCDPE	-	7.50e+04			43:01		-	-
88	LMC	Fn1 check mass	-	*			NotF»		-	-
89	LMC	Fn2 check mass	-	*			NotF»		-	-
90	LMC	Fn3 check mass	-	*			NotF»		-	-
91	LMC	Fn4 check mass	-	*			NotF»		-	-
92	LMC	Fn5 check mass	-	*			NotF»		-	-

METHOD M23B
PCDD/F CALIBRATION VERIFICATION

Lab Name: Analytical Perspectives

Initial Calibration: MM1_DF_091806B_16APR07

GC Column ID: DB-5

VER Data Filename: 070724P2 S#8 Analysis Date: 24-JUL-07 Time: 22:21:45

NATIVE ANALYTES	M/Z'S FORMING RATIO	ION ABUND. RATIO	QC LIMITS	CONC. FOUND	CONC. RANGE (ng/mL)
2,3,7,8-TCDD	M/M+2	0.78	0.65-0.89	8.8	8.0 - 12.0
1,2,3,7,8-PeCDD	M+2/M+4	1.58	1.32-1.78	46.0	40.0 - 60.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	48.1	40.0 - 60.0
1,2,3,6,7,8-HxCDD	M+2/M+4	1.22	1.05-1.43	48.6	40.0 - 60.0
1,2,3,7,8,9-HxCDD	M+2/M+4	1.23	1.05-1.43	46.4	40.0 - 60.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.07	0.88-1.20	49.0	40.0 - 60.0
OCDD	M+2/M+4	0.89	0.76-1.02	103.7	80.0 - 120.0
2,3,7,8-TCDF	M/M+2	0.78	0.65-0.89	10.4	8.0 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.55	1.32-1.78	49.5	40.0 - 60.0
2,3,4,7,8-PeCDF	M+2/M+4	1.54	1.32-1.78	48.2	40.0 - 60.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.24	1.05-1.43	46.2	40.0 - 60.0
1,2,3,6,7,8-HxCDF	M+2/M+4	1.26	1.05-1.43	47.3	40.0 - 60.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.25	1.05-1.43	47.5	40.0 - 60.0
1,2,3,7,8,9-HxCDF	M+2/M+4	1.27	1.05-1.43	47.7	40.0 - 60.0
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.04	0.88-1.20	51.2	40.0 - 60.0
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.05	0.88-1.20	47.1	40.0 - 60.0
OCDF	M+2/M+4	0.91	0.76-1.02	95.3	80.0 - 120.0

Analyst: ge

Date: 25 Jul 07

METHOD M23B
CONTINUING CALIBRATION VERIFICATION

Lab Name: Analytical Perspectives

Initial Calibration: MM1_DF_091806B_16APR07

GC Column ID: DB-5

VER Data Filename: 070724P2 S#8 Analysis Date: 24-JUL-07 Time: 22:21:45

		ION ABUND. RATIO	QC LIMITS	CONC. FOUND	CONC. RANGE (ng/mL)
LABELED COMPOUNDS					
13C-2,3,7,8-TCDD	M/M+2	0.78	0.65-0.89	101	70 - 130
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.32-1.78	94.5	70 - 130
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	97.4	70 - 130
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.23	1.05-1.43	93.3	70 - 130
13C-1,2,3,7,8,9-HxCDD	M+2/M+4	1.25	1.05-1.43	93.6	70 - 130
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.07	0.88-1.20	110	70 - 130
13C-OCDD	M+2/M+4	0.89	0.76-1.02	195	140 - 260
13C-2,3,7,8-TCDF	M/M+2	0.78	0.65-0.89	93.4	70 - 130
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.55	1.32-1.78	93.8	70 - 130
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.54	1.32-1.78	91.6	70 - 130
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.53	0.43-0.59	97.2	70 - 130
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.53	0.43-0.59	95.6	70 - 130
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.52	0.43-0.59	104	70 - 130
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.53	0.43-0.59	109	70 - 130
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.46	0.37-0.51	99.7	70 - 130
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.44	0.37-0.51	105	70 - 130
13C-OCDF	M+2/M+4	0.90	0.76-1.02	194	140 - 260
SURROGATE STANDARDS					
37Cl-2,3,7,8-TCDD		1.64		41.6	28 - 52
13C-1,2,3,4,7-PeCDD	M+2/M+4	1.64	1.32-1.78	111	70 - 130
13C-1,2,3,4,6-PeCDF	M+2/M+4	1.54	1.32-1.78	99.2	70 - 130
13C-1,2,3,4,6,9-HxCDF	M/M+2	0.53	0.43-0.59	99.1	70 - 130
13C-1,2,3,4,6,8,9-HpCDF	M/M+2	0.47	0.37-0.51	107	70 - 130

Analyst: EL

Date: 25 Jul 07

O[illegible]an on MM1   25-JUL-2007 09:01   checkcode: 5[illegible]

1[illegible]3/8290 Sample Summary   Analytical Perspectives   [Form: DF]

Client ID: BCS3_5075_DF_PB   Filename: 070724P2   S: 8   Vial: 16   Acq: 24-JUL-07 22:21:45
Lab ID: BCS3_5075_DF_PB   GC column ID: db-5   Cal: MM1_DF_091806B_16APR07   Wt/Vol: 1.000
Sample text: BCS3_5075_DF_PB   Stds: JS (split adj.): 50.0   CS/SS: 40.0   ES: 100

Typ	Name	Resp	RA		RT	RRF	Conc.	Noise	Fac	DL	Rec
Ax	2,3,7,8-TCDD	4.47e+06	0.78	y	26:52	1.10	8.84	1734	2.5	0.0658	-
Ax	1,2,3,7,8-PeCDD	1.77e+07	1.58	y	32:31	0.97	46.0	162713	2.5	9.83	-
Ax	1,2,3,4,7,8-HxCDD	1.61e+07	1.25	y	36:29	1.13	48.1	3467	2.5	0.188	-
Ax	1,2,3,6,7,8-HxCDD	1.62e+07	1.22	y	36:35	1.04	48.6	3467	2.5	0.194	-
Ax	1,2,3,7,8,9-HxCDD	1.56e+07	1.23	y	36:53	1.00	46.4	3467	2.5	0.201	-
Ax	1,2,3,4,6,7,8-HpCDD	1.54e+07	1.07	y	40:06	0.91	49.0	3966	2.5	0.227	-
Ax	OCDD	2.26e+07	0.89	y	43:37	0.94	104	1161000	2.5	108	-
Ax2	OCDD-a	1.42e+06	2.38	y	43:37	0.05	111	41900	2.5	66.7	-
Ax	2,3,7,8-TCDF	6.90e+06	0.78	y	25:57	1.03	10.4	2250	2.5	0.0695	-
Ax	1,2,3,7,8-PeCDF	2.94e+07	1.55	y	30:59	0.96	49.5	26113	2.5	1.10	-
Ax	2,3,4,7,8-PeCDF	2.99e+07	1.54	y	32:09	0.99	48.2	26113	2.5	0.957	-
Ax	1,2,3,4,7,8-HxCDF	2.38e+07	1.24	y	35:29	1.13	46.2	641413	2.5	15.7	-
Ax	1,2,3,6,7,8-HxCDF	2.73e+07	1.26	y	35:38	1.12	47.3	641413	2.5	14.6	-
Ax	2,3,4,6,7,8-HxCDF	2.61e+07	1.25	y	36:18	1.06	47.5	641413	2.5	14.5	-
Ax	1,2,3,7,8,9-HxCDF	2.53e+07	1.27	y	37:16	1.12	47.7	641413	2.5	15.9	-
Ax	1,2,3,4,6,7,8-HpCDF	2.31e+07	1.04	y	38:56	1.20	51.2	3244	2.5	0.0883	-
Ax	1,2,3,4,7,8,9-HpCDF	1.88e+07	1.05	y	40:40	1.20	47.1	3244	2.5	0.111	-
Ax	OCDF	2.78e+07	0.91	y	43:52	0.83	95.3	2020	2.5	0.149	-
Ax2	OCDF-a	1.68e+06	2.50	y	43:52	0.05	98.4	6559	2.5	8.28	-
ES	13C-2,3,7,8-TCDD	4.59e+07	0.78	y	26:51	1.09	101	1475	2.5	0.0643	101
ES	13C-1,2,3,7,8-PeCDD	3.98e+07	1.57	y	32:30	1.02	94.5	9707	2.5	0.455	94.5
ES	13C-1,2,3,4,7,8-HxCDD	2.96e+07	1.26	y	36:28	1.06	97.4	19469	2.5	1.20	97.4
ES	13C-1,2,3,6,7,8-HxCDD	3.20e+07	1.23	y	36:35	1.20	93.3	19469	2.5	1.06	93.3
ES	13C-1,2,3,7,8,9-HxCDD	3.35e+07	1.25	y	36:52	1.25	93.6	19469	2.5	1.02	93.6
ES	13C-1,2,3,4,6,7,8-HpCDD	3.44e+07	1.07	y	40:05	1.09	110	15103	2.5	0.909	110
ES	13C-OCDD	4.65e+07	0.89	y	43:36	0.83	195	4128590	2.5	325	97.5
ES	13C-2,3,7,8-TCDF	6.44e+07	0.78	y	25:55	1.00	93.4	2641	2.5	0.0864	93.4
ES	13C-1,2,3,7,8-PeCDF	6.18e+07	1.55	y	30:59	0.96	93.8	5188	2.5	0.177	93.8
ES	13C-2,3,4,7,8-PeCDF	6.25e+07	1.54	y	32:08	1.00	91.6	5188	2.5	0.171	91.6
ES	13C-1,2,3,4,7,8-HxCDF	4.57e+07	0.53	y	35:28	1.64	97.2	99436	2.5	3.97	97.2
ES	13C-1,2,3,6,7,8-HxCDF	5.13e+07	0.53	y	35:37	1.88	95.6	99436	2.5	3.48	95.6
ES	13C-2,3,4,6,7,8-HxCDF	5.19e+07	0.52	y	36:17	1.74	104	99436	2.5	3.74	104
ES	13C-1,2,3,7,8,9-HxCDF	4.76e+07	0.53	y	37:15	1.53	109	99436	2.5	4.26	109
ES	13C-1,2,3,4,6,7,8-HpCDF	3.77e+07	0.46	y	38:55	1.32	99.7	10765	2.5	0.534	99.7
ES	13C-1,2,3,4,7,8,9-HpCDF	3.32e+07	0.44	y	40:39	1.11	105	10765	2.5	0.636	105
ES	13C-OCDF	7.02e+07	0.90	y	43:51	1.26	194	4255	2.5	0.221	97.2
CS	37Cl-2,3,7,8-TCDD	1.92e+07			26:52	1.09	42.5			0.0825	106
CS	13C-1,2,3,4,7-PeCDD	4.04e+07	1.64	y	31:58	0.92	105	9707	2.5	0.500	105
CS	13C-1,2,3,4,6-PeCDF	5.57e+07	1.54	y	30:25	0.87	93.3	5188	2.5	0.196	93.3
CS	13C-1,2,3,4,6,9-HxCDF	3.84e+07	0.53	y	35:55	1.42	94.9	99436	2.5	4.61	94.9
CS	13C-1,2,3,4,6,8,9-HpCDF	2.97e+07	0.47	y	39:24	0.97	107	10765	2.5	0.729	107
NA	n/a	7.94e+04	0.26	n	36:36	Div0	*	99436	2.5	*	*
JS/RT	13C-1,2,3,4-TCDD	2.07e+07	0.81	y	26:09	-	92.6	1475	2.5	-	-
JS	13C-1,2,3,4-TCDF	3.43e+07	0.77	y	24:26	-	95.7	2641	2.5	-	-
JS/RT	13C-1,2,3,4,6,7-HxCDD	7.15e+06	1.24	y	36:46	-	44.3	19469	2.5	-	-

Analyst: El

Date: 25 Jul 07

SS	37Cl-2,3,7,8-TCDD	1.92e+07			26:52	1.00	41.6			0.0787	104
SS	13C-1,2,3,4,7-PeCDD	4.04e+07	1.64	y	31:58	0.91	111	9707	2.5	0.622	111
SS	13C-1,2,3,4,6-PeCDF	5.57e+07	1.54	y	30:25	0.91	99.2	5188	2.5	0.231	99.2
SS	13C-1,2,3,4,6,9-HxCDF	3.84e+07	0.53	y	35:55	0.76	99.1	99436	2.5	3.35	99.1
SS	13C-1,2,3,4,6,8,9-HpCDF	2.97e+07	0.47	y	39:24	0.74	107	10765	2.5	0.477	107
SBS	2,4,6,8-TCDF	4.39e+06	0.77	y	21:53	1.03	6.59	2250	2.5	0.0695	-
Ay	1,3,6,8-TCDD	5.85e+06	0.78	y	22:52	1.10	11.5	1734	2.5	0.0658	-
Ay	1,2,3,9-TCDD	5.63e+06	0.78	y	26:43	1.10	11.1	1734	2.5	0.0658	-
Ay	1,2,8,9-TCDD	4.92e+06	0.79	y	27:55	1.10	9.73	1734	2.5	0.0658	-
Ay	1,2,4,7,9-PeCDD	5.00e+06	1.56	y	29:54	0.97	13.0	162713	2.5	9.83	-
Ay	1,2,3,8,9-PeCDD	4.29e+06	1.55	y	32:58	0.97	11.1	162713	2.5	9.83	-
Ay	1,2,4,6,7,9-HxCDD	4.59e+06	1.28	y	34:45	1.05	13.7	3467	2.5	0.195	-
Ay	1,2,3,4,6,7,9-HpCDD	5.14e+06	1.10	y	39:14	0.91	16.4	3966	2.5	0.227	-
Ay	1,3,6,8-TCDF	1.00e+07	0.78	y	20:41	1.03	15.0	2250	2.5	0.0695	-
Ay	2,3,4,8-TCDF	7.54e+06	0.77	y	25:49	1.03	11.3	2250	2.5	0.0695	-
Ay	1,2,8,9-TCDF	7.60e+06	0.78	y	28:06	1.03	11.4	2250	2.5	0.0695	-
Ay	1,3,4,6,8-PeCDF	6.08e+06	1.64	y	28:01	1.03	9.13	1846	2.5	0.0570	-
Ay	1,2,3,8,9-PeCDF	7.56e+06	1.56	y	33:16	0.98	12.4	26113	2.5	1.03	-
Ay	1,2,3,4,6,8-HxCDF	6.34e+06	1.24	y	34:05	1.11	11.7	641413	2.5	15.1	-
Tot	Total Tetra-Dioxins	2.11e+07	0.66	y	21:04	1.10	41.7	1734	2.5	0.0658	-
Tot	Total Penta-Dioxins	2.80e+07	1.76	y	29:28	0.97	72.7	162713	2.5	9.83	-
Tot	Total Hexa-Dioxins	5.26e+07	1.28	y	34:45	1.05	157	3467	2.5	0.195	-
Tot	Total Hepta-Dioxins	2.05e+07	1.10	y	39:14	0.91	65.6	3966	2.5	0.227	-
Tot	Total Tetra-Furans	3.67e+07	0.78	y	20:41	1.03	55.2	2250	2.5	0.0695	-
Tot	Total Penta-Furans	6.74e+07	1.40	y	29:50	0.98	111	26113	2.5	1.03	-
Tot	Total Hexa-Furans	1.09e+08	1.24	y	34:05	1.11	201	641413	2.5	15.1	-
Tot	Total Hepta-Furans	4.21e+07	1.04	y	38:56	1.20	98.7	3244	2.5	0.0989	-
Tot	TCDD EMPC	2.13e+07	1.44	n	20:16	1.10	42.2	1734	2.5	0.0658	-
Tot	PeCDD EMPC	2.90e+07	0.49	n	29:20	0.97	75.4	162713	2.5	9.83	-
Tot	HxCDD EMPC	5.27e+07	1.28	y	34:45	1.05	157	3467	2.5	0.195	-
Tot	HpCDD EMPC	2.12e+07	2.38	n	38:51	0.91	67.8	3966	2.5	0.227	-
Tot	TCDF EMPC	3.72e+07	1.38	n	19:16	1.03	55.8	2250	2.5	0.0695	-
Tot	PeCDF EMPC	6.82e+07	1.40	y	29:50	0.98	112	26113	2.5	1.03	-
Tot	HxCDF EMPC	1.09e+08	1.24	y	34:05	1.11	201	641413	2.5	15.1	-
Tot	HpCDF EMPC	4.24e+07	1.04	y	38:56	1.20	99.6	3244	2.5	0.0989	-
AS	13C-1,3,6,8-TCDD	4.57e+07	0.79	y	22:50	Div0	*	1475	2.5	*	*
AS	13C-1,3,6,8-TCDF	7.37e+07	0.78	y	20:39	Div0	*	2641	2.5	*	*
DPE	HxCDPE	1.32e+05			19:33	-	*			-	-
DPE	HpCDPE	2.59e+05			29:04	-	*			-	-
DPE	OCDPE	3.11e+05			33:59	-	*			-	-
DPE	NCDPE	4.36e+05			38:15	-	*			-	-
DPE	DCDPE	7.50e+04			43:01	-	*			-	-
LMC	Fn1 check mass	*			NotF»	-	*			-	-
LMC	Fn2 check mass	*			NotF»	-	*			-	-
LMC	Fn3 check mass	*			NotF»	-	*			-	-
LMC	Fn4 check mass	*			NotF»	-	*			-	-
LMC	Fn5 check mass	*			NotF»	-	*			-	-

O[illegible]an on MM1 25-JUL-2007 09:02

PCDD/PCDF RT Window & Isomer Specificity Standards   Analytical Perspectives   [Form: CPSM]

Client ID: BCS3_5075_DF_PB   Filename: 070724P2 S: 8 Vial: 16   Acq: 24-JUL-07 22:21:45
Lab ID: BCS3_5075_DF_PB   GC Column ID: db-5 ICal: MM1_DF_091806B_16AP» Wt/Vol: 1.000
Sample text: BCS3_5075_DF_PB

Window Defining Standards Results

First Eluting Isomer	RT	Last Eluting Isomer	RT
1,3,6,8-TCDD	22:52	1,2,8,9-TCDD	27:55
1,2,4,7,9-PeCDD	29:54	1,2,3,8,9-PeCDD	32:58
1,2,4,6,7,9-HxCDD	34:45	1,2,3,7,8,9-HxCDD	36:53
1,2,3,4,6,7,9-HpCDD	39:14	1,2,3,4,6,7,8-HpCDD	40:06
1,3,6,8-TCDF	20:41	1,2,8,9-TCDF	28:06
1,3,4,6,8-PeCDF	28:01	1,2,3,8,9-PeCDF	33:16
1,2,3,4,6,8-HxCDF	34:05	1,2,3,7,8,9-HxCDF	37:16
1,2,3,4,6,7,8-HpCDF	38:56	1,2,3,4,7,8,9-HpCDF	40:40

==

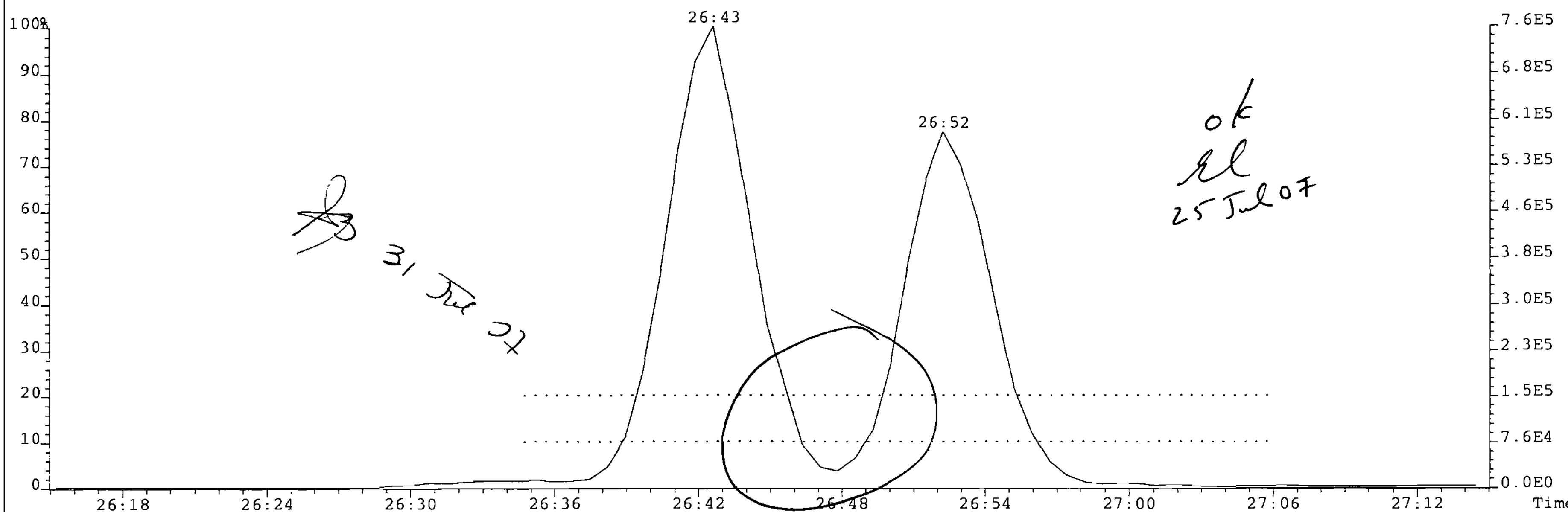
Isomer Specificity Test Standard Results

2,3,7,8 Isomer	RT	Closest Isomer	RT	
2,3,7,8-TCDD	26:52	1,2,3,9-TCDD	26:43	% Valley <= 10%
2,3,7,8-TCDF	25:57	2,3,4,8-TCDF	25:49	% Valley <= 40%

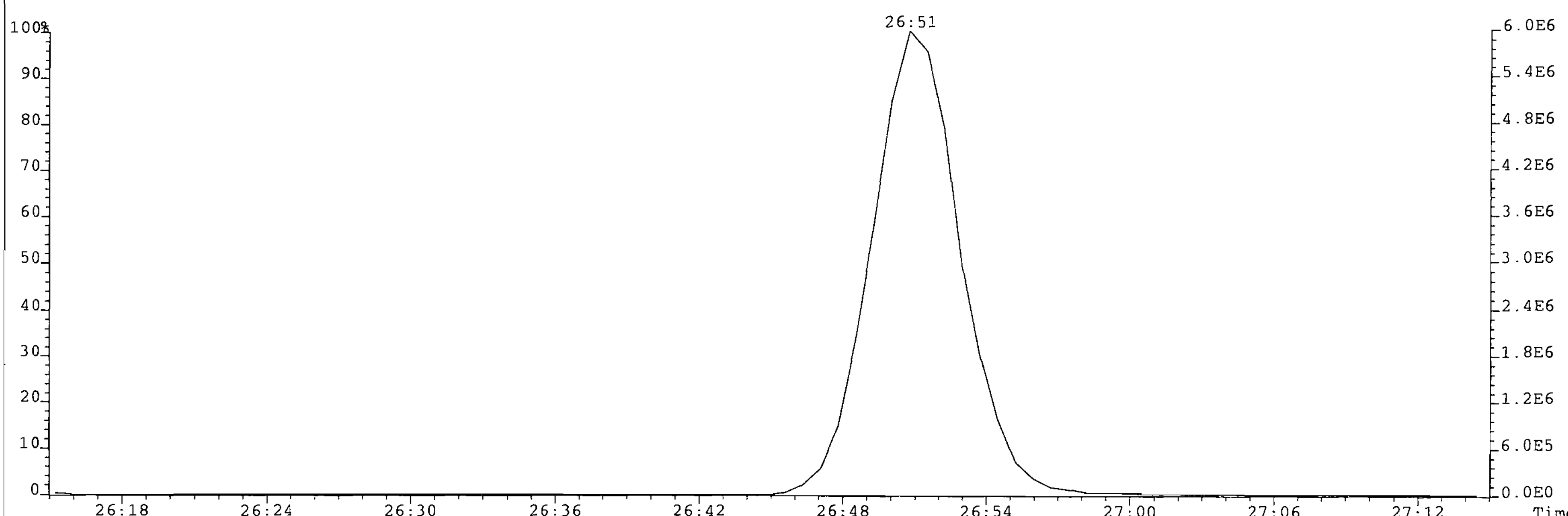
Analyst: EL

Date: 25 Jul 07

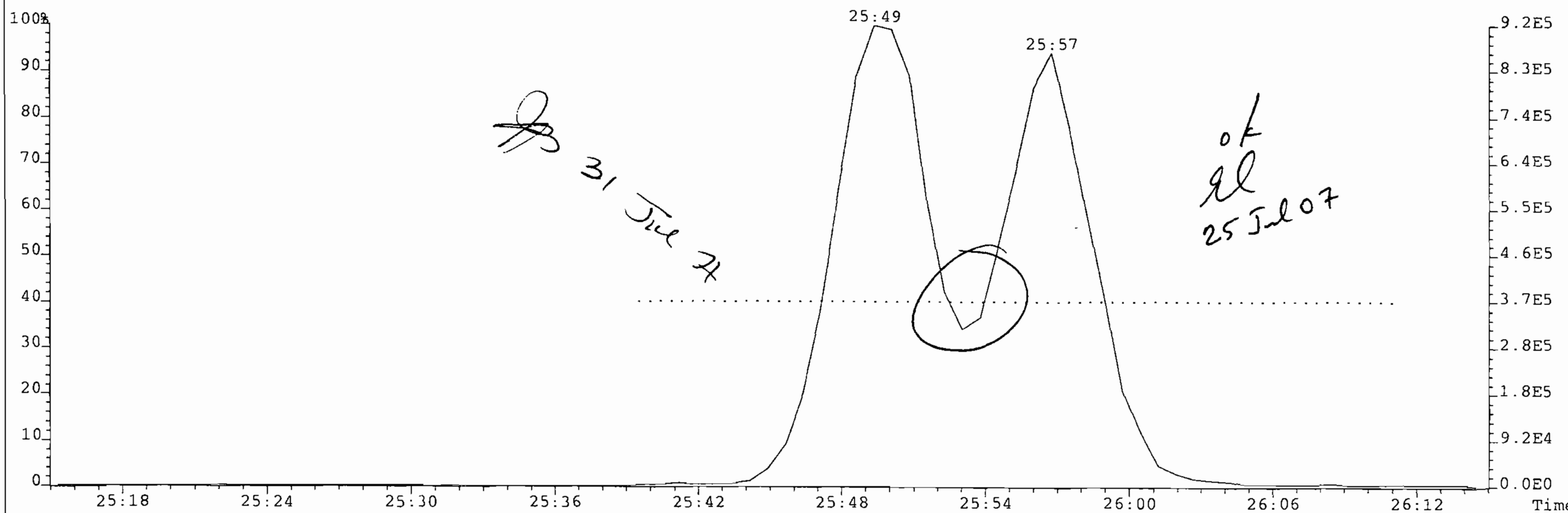
File: 070724P2 Acq: 24-JUL-2007 22:21:45 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 8 Text: BCS3_5075_DF_PB Vial# 16 File Text: AP DB5
321.8936 S:8 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 434



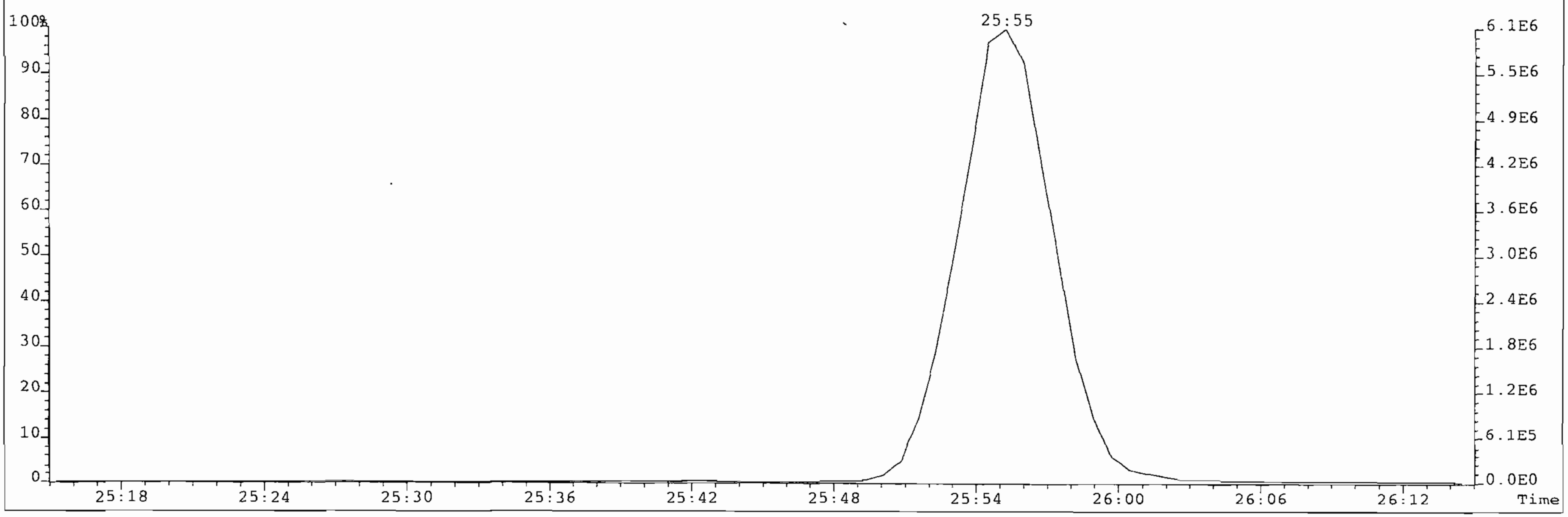
333.9339 S:8 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 506



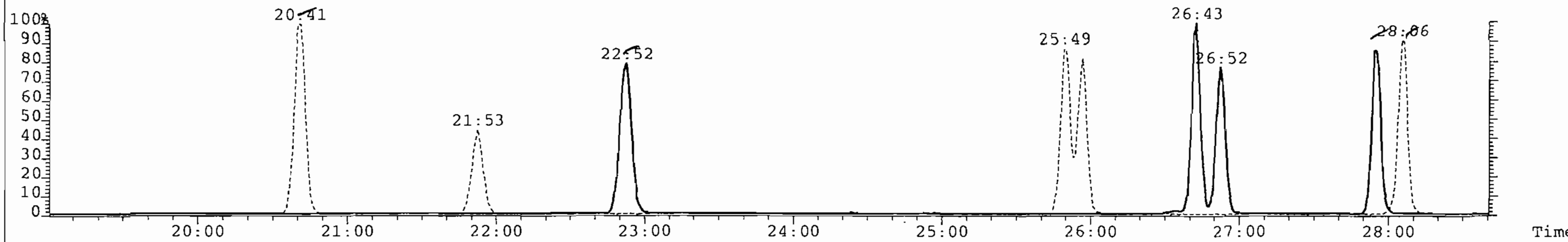
File: 07072422 Acq: 24-JUL-2007 22:21:45 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 8 Text: BCS3_5075_DF_PB Vial# 16 File Text: AP DB5
305.8987 S:8 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 538



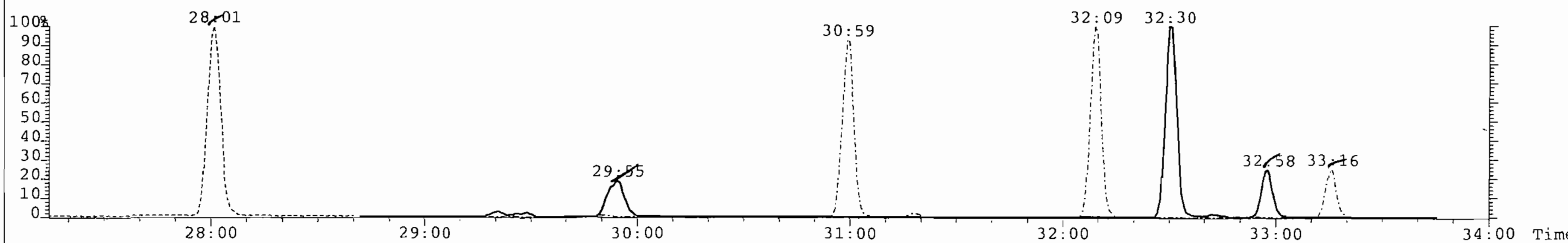
315.9419 S:8 Expt: DF_CL4-8



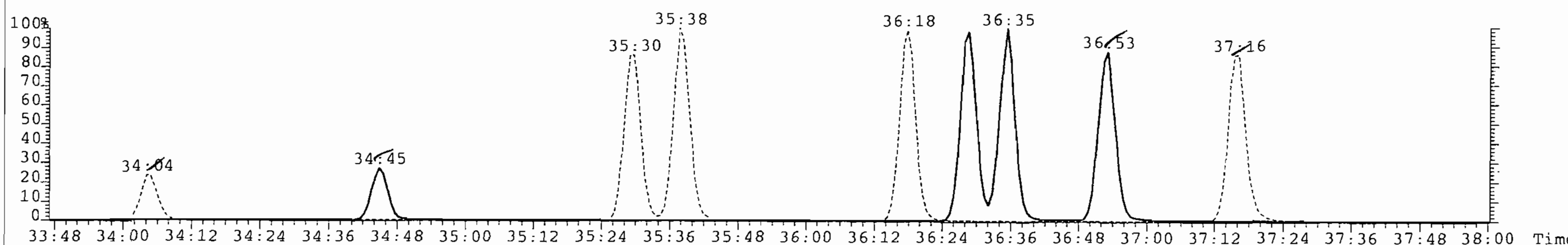
File: 070724P2 Acq: 24-JUL-2007 22:21:45 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 8 Text: BCS3_5075_DF_PB Vial# 16 File Text: AP DB5
S:8 305.8987,321.8936 Expt: DF_CL4-8



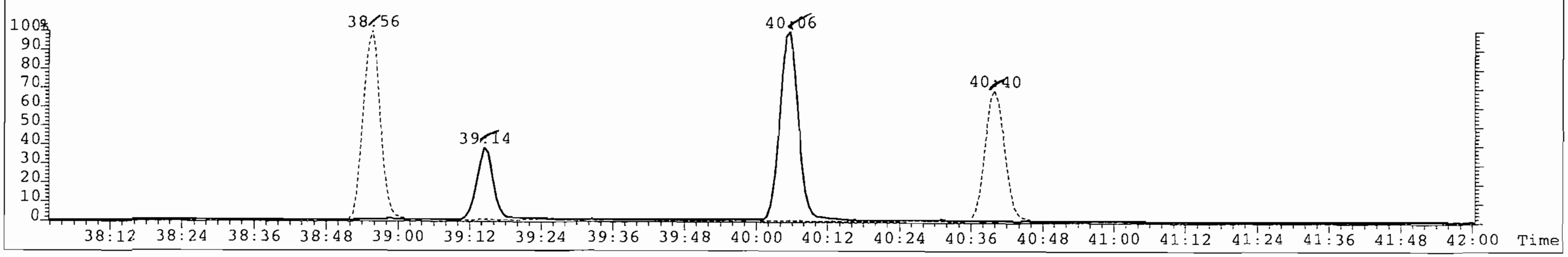
S:8 339.8597,355.8546 F:2,339.8597 F:2 Expt: DF_CL4-8



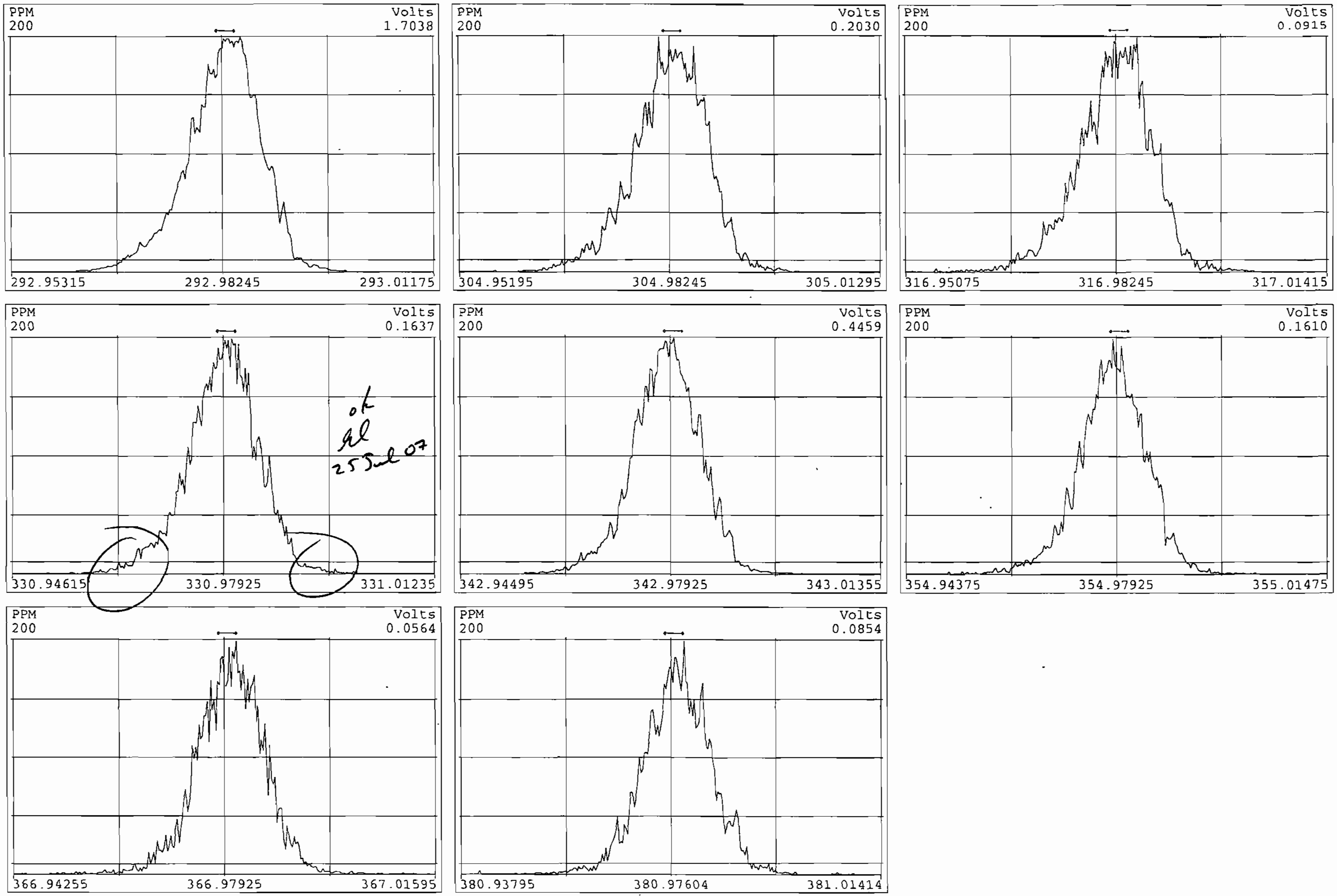
S:8 F:3 373.8207,389.8156 Expt: DF_CL4-8



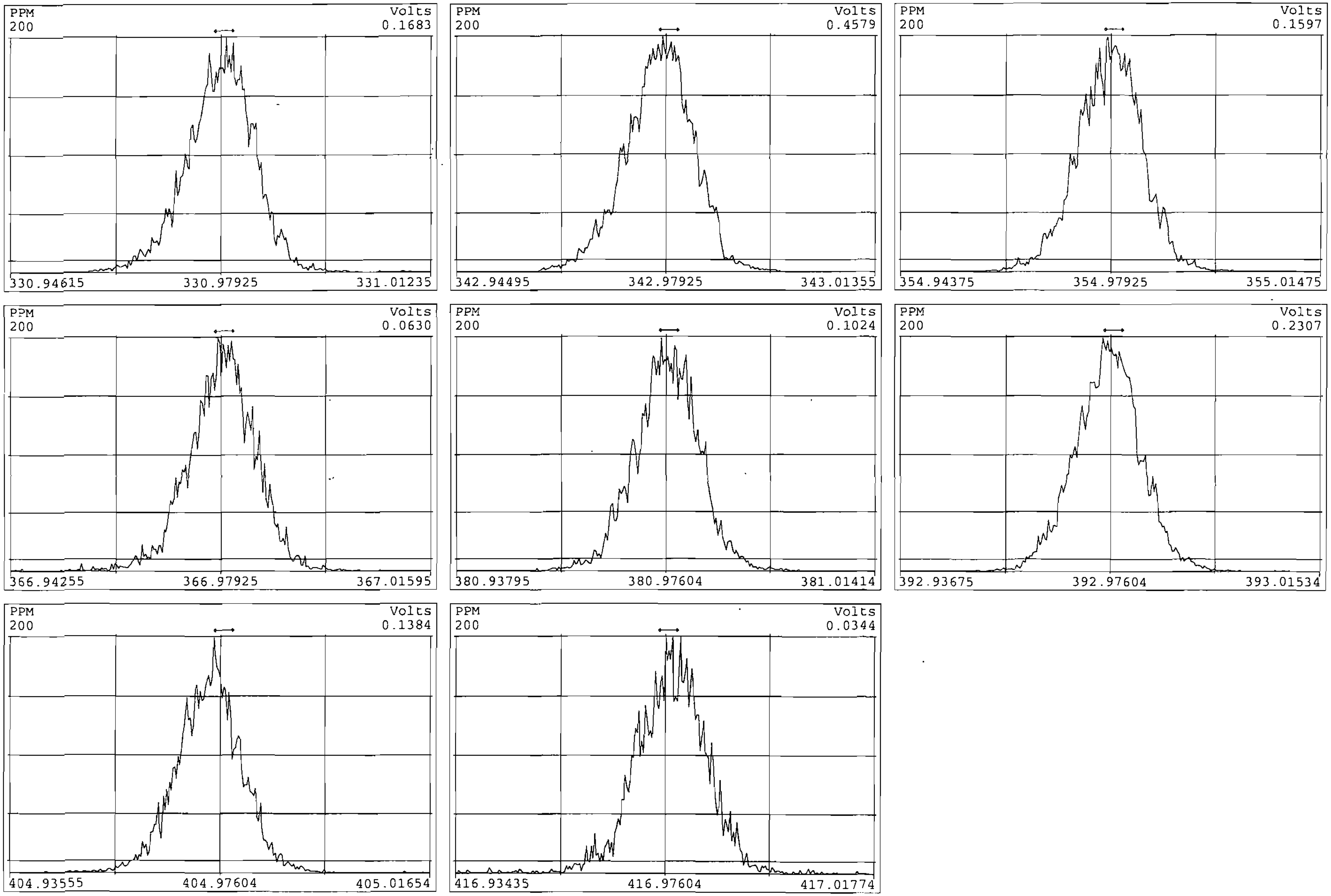
S:8 F:4 407.7818,423.7767 Expt: DF_CL4-8



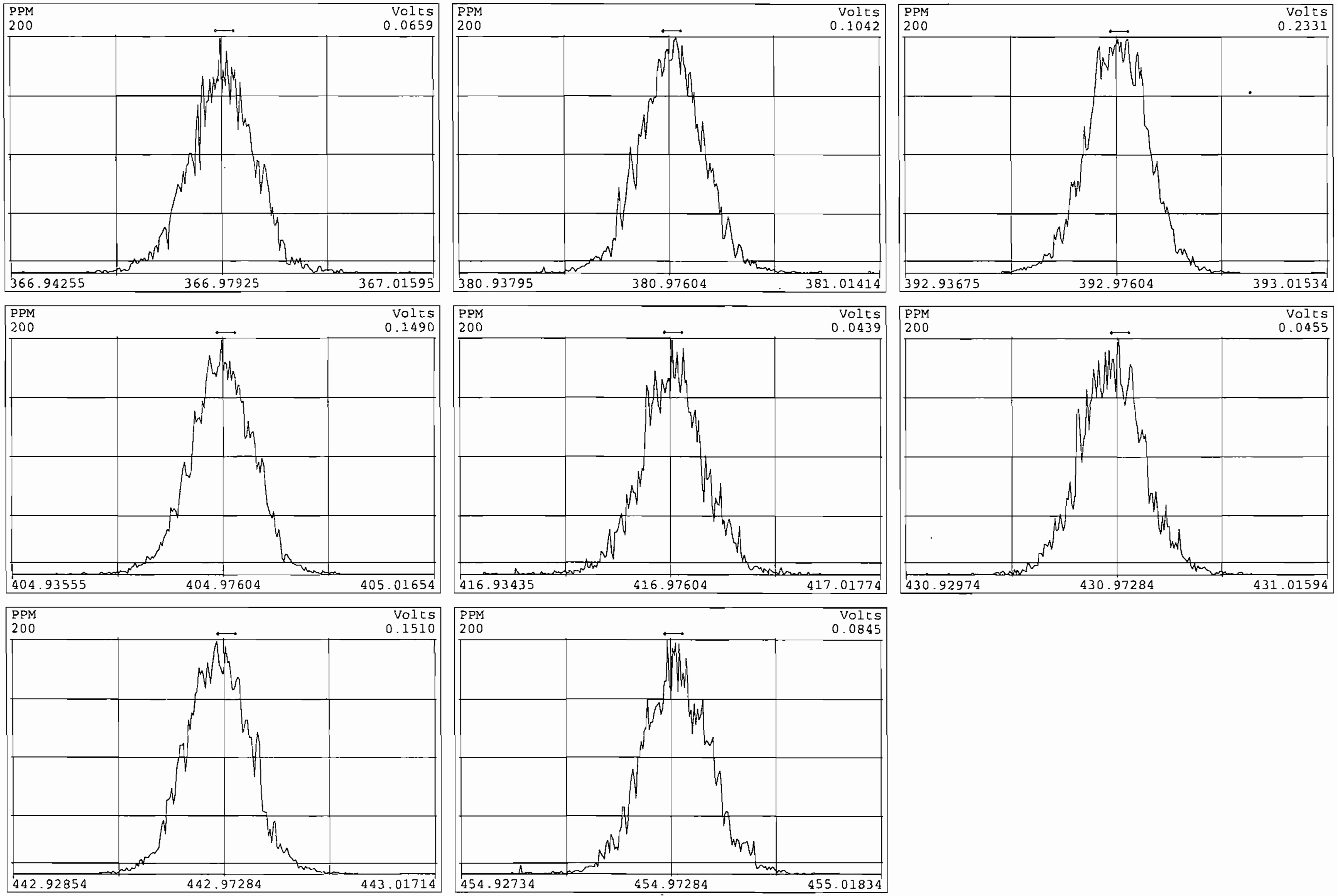
Peak Locate Examination:24-JUL-2007:23:18 File:MM1_RES_CHECK
Experiment:DF_CL4-8 Function:1 Reference:PFK2



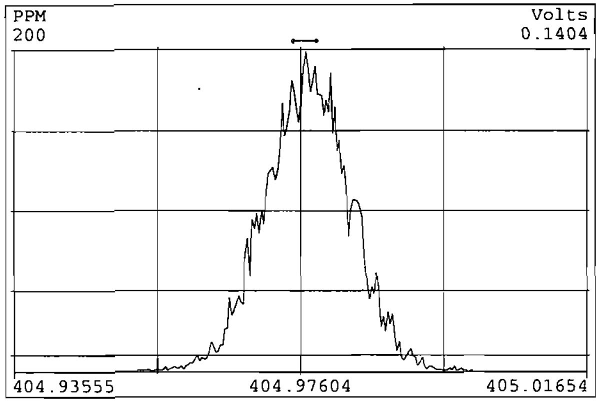
Peak Locate Examination:24-JUL-2007:23:19 File:MM1_RES_CHECK
Experiment:DF_CL4-8 Function:2 Reference:PFK2

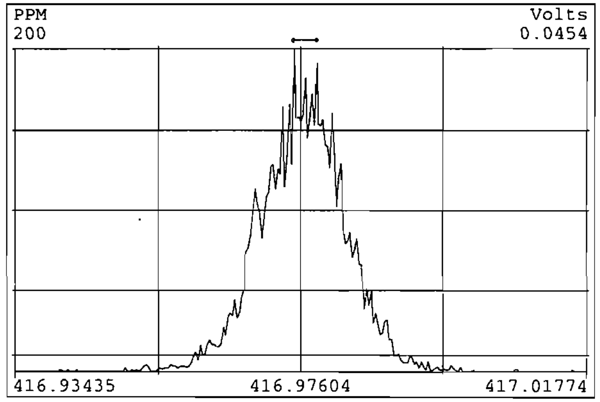


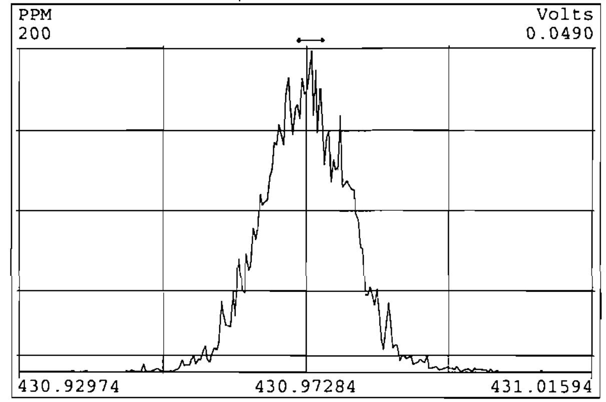
Peak Locate Examination:24-JUL-2007 23:20 File:MM1_RES_CHECK
Experiment:DF_CL4-8 Function:3 Reference:PFK2

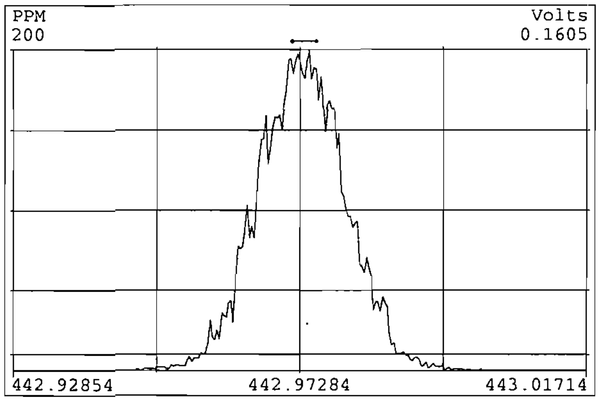


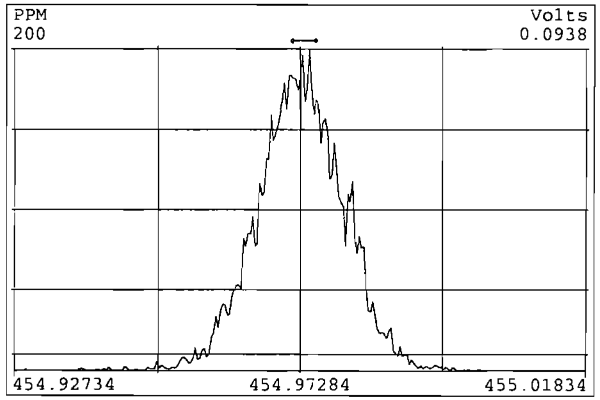
Peak Locate Examination:24-JUL-2007:23:21 File:MM1_RES_CHECK
Experiment:DF_CL4-8 Function:4 Reference:PFK2

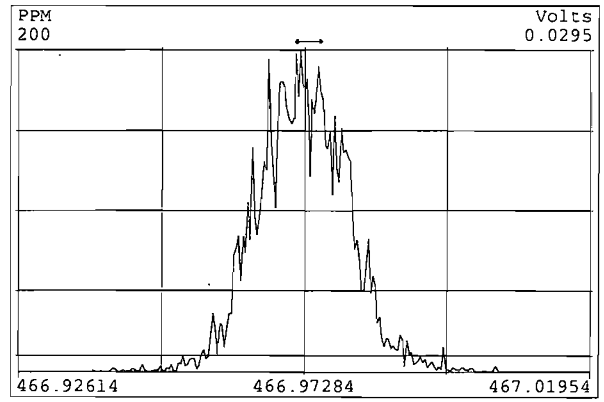


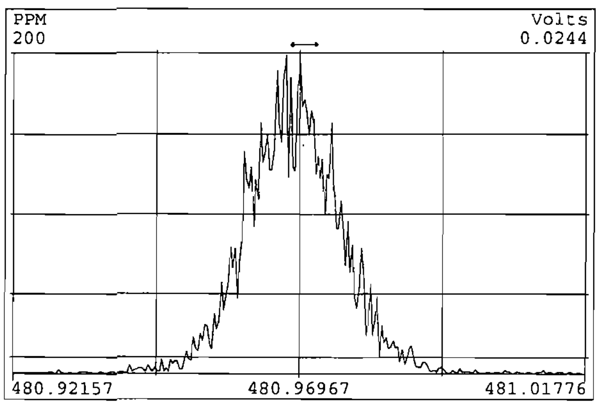


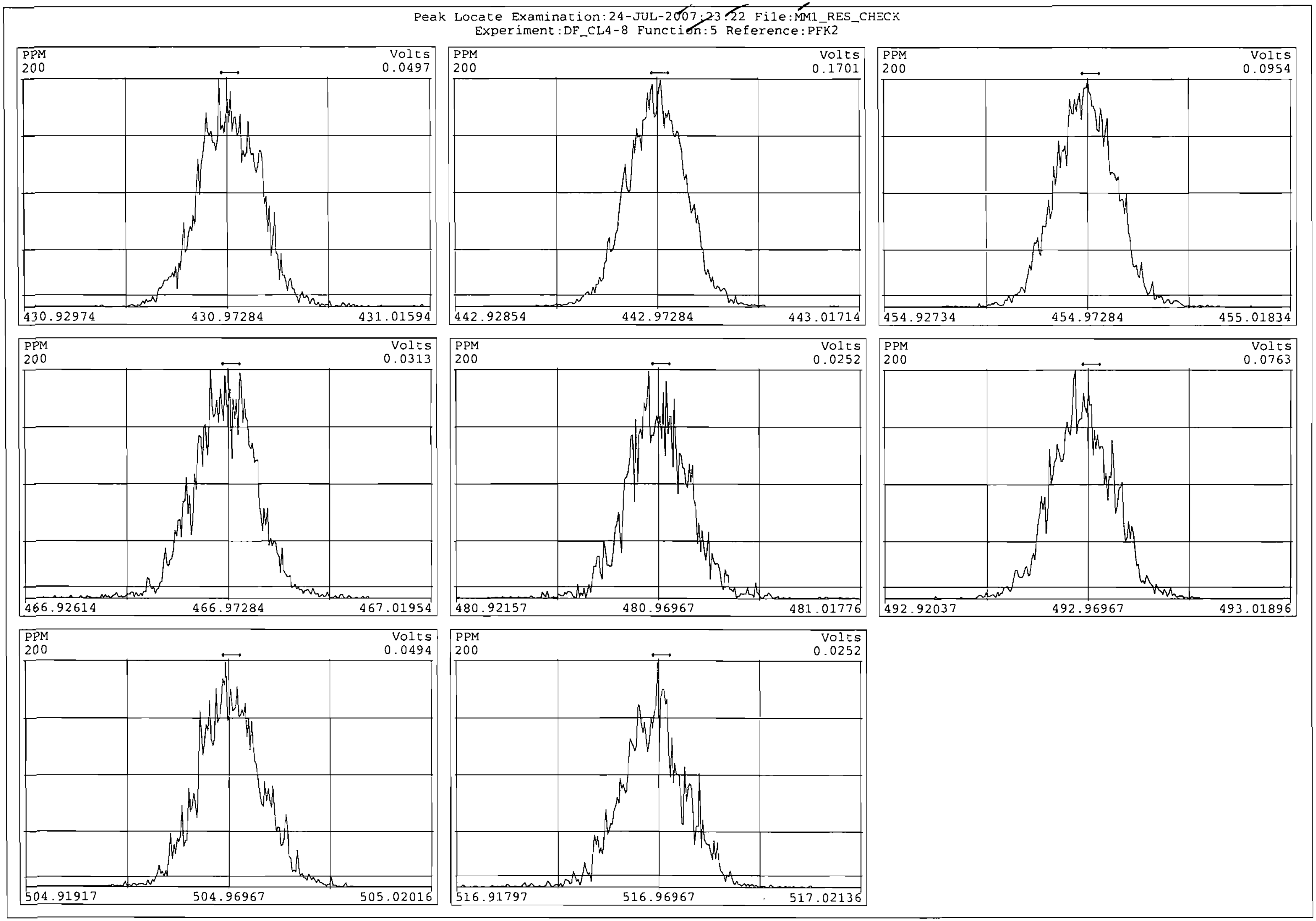




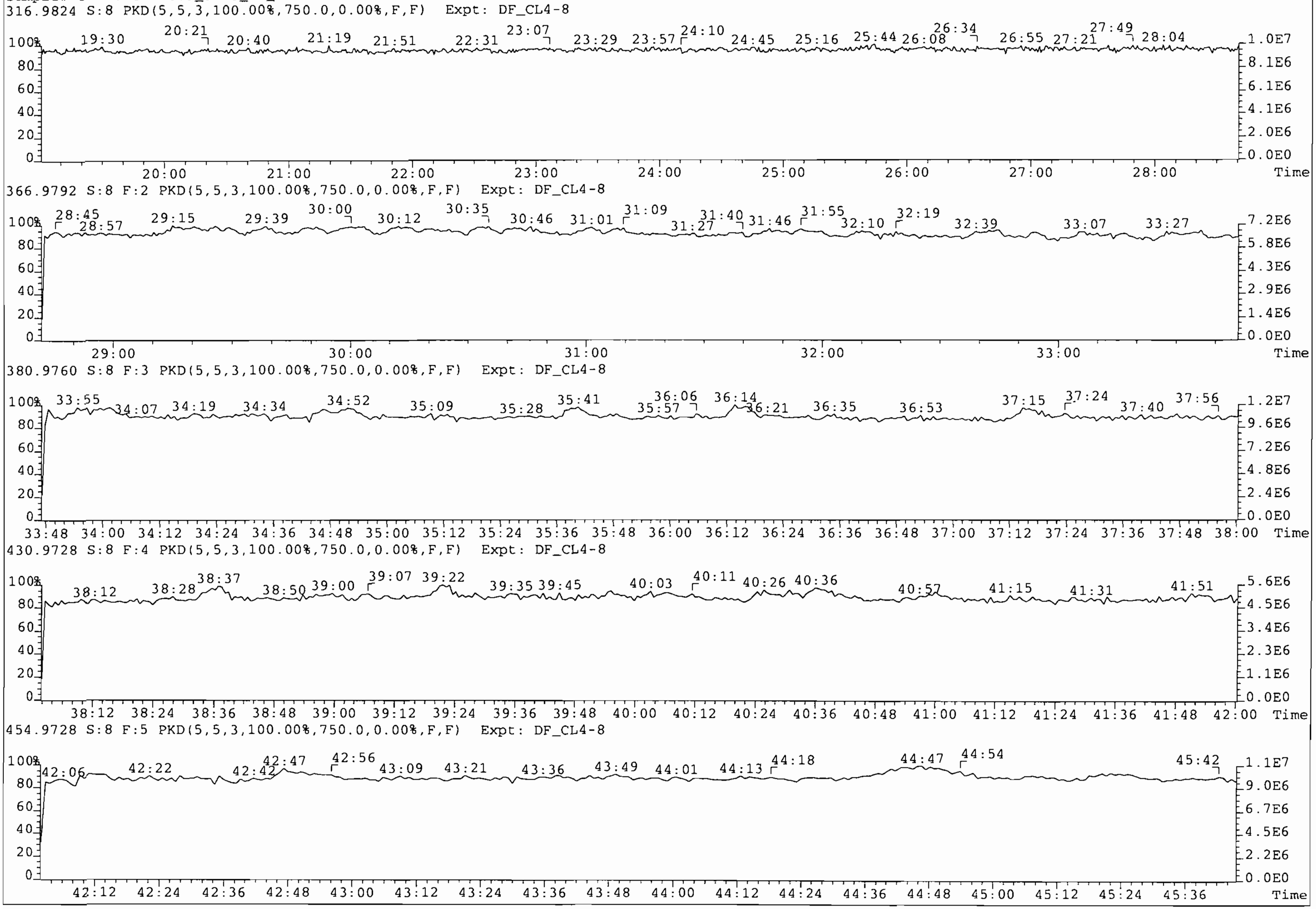




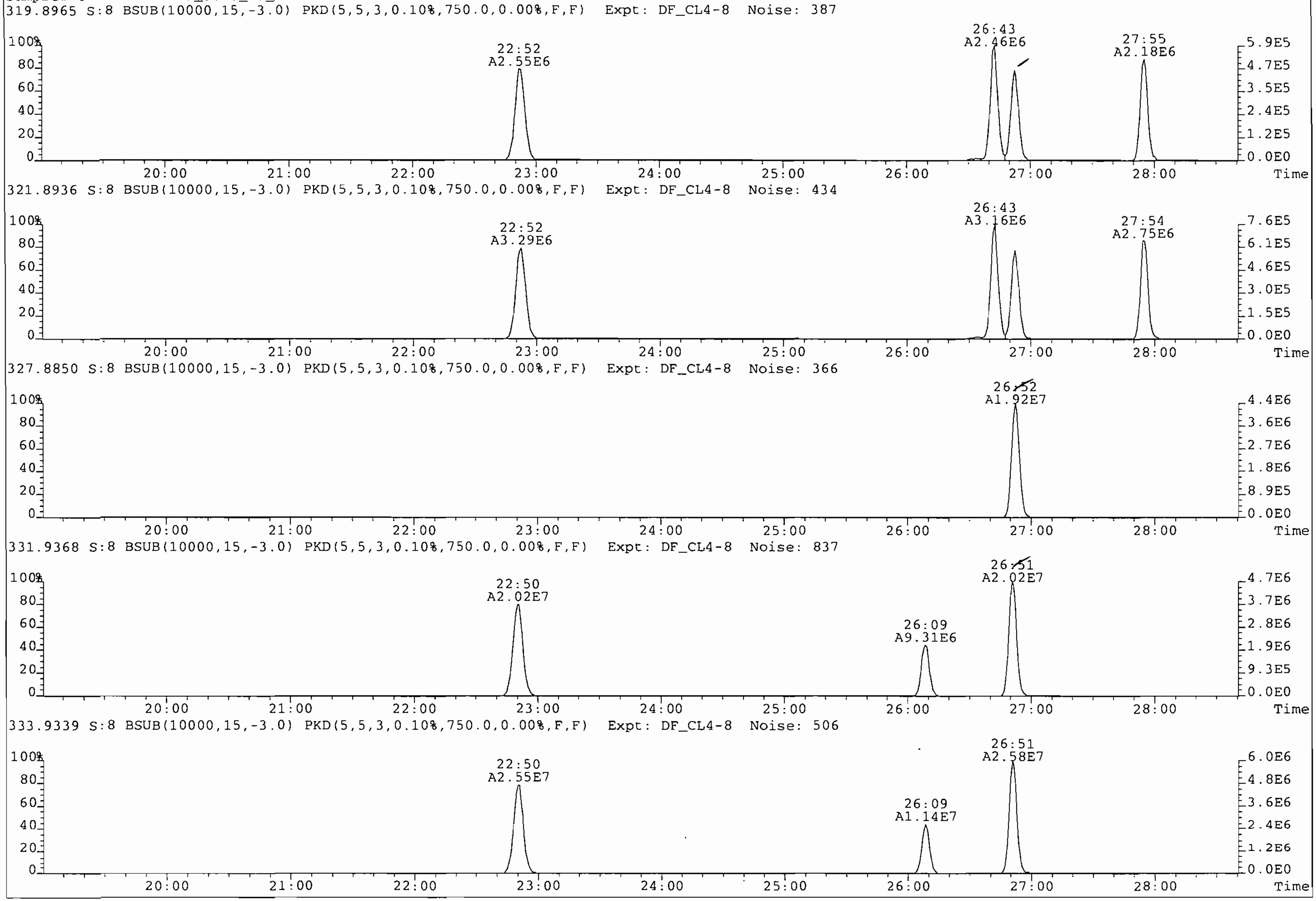



Peak Locate Examination:24-JUL-2007 23:22 File:MM1_RES_CHECK
Experiment:DF_CL4-8 Function:5 Reference:PFK2
PPM 200 Volts 0.0497
430.92974 430.97284 431.01594
PPM 200 Volts 0.1701
442.92854 442.97284 443.01714
PPM 200 Volts 0.0954
454.92734 454.97284 455.01834
PPM 200 Volts 0.0313
466.92614 466.97284 467.01954
PPM 200 Volts 0.0252
480.92157 480.96967 481.01776
PPM 200 Volts 0.0763
492.92037 492.96967 493.01896
PPM 200 Volts 0.0494
504.91917 504.96967 505.02016
PPM 200 Volts 0.0252
516.91797 516.96967 517.02136

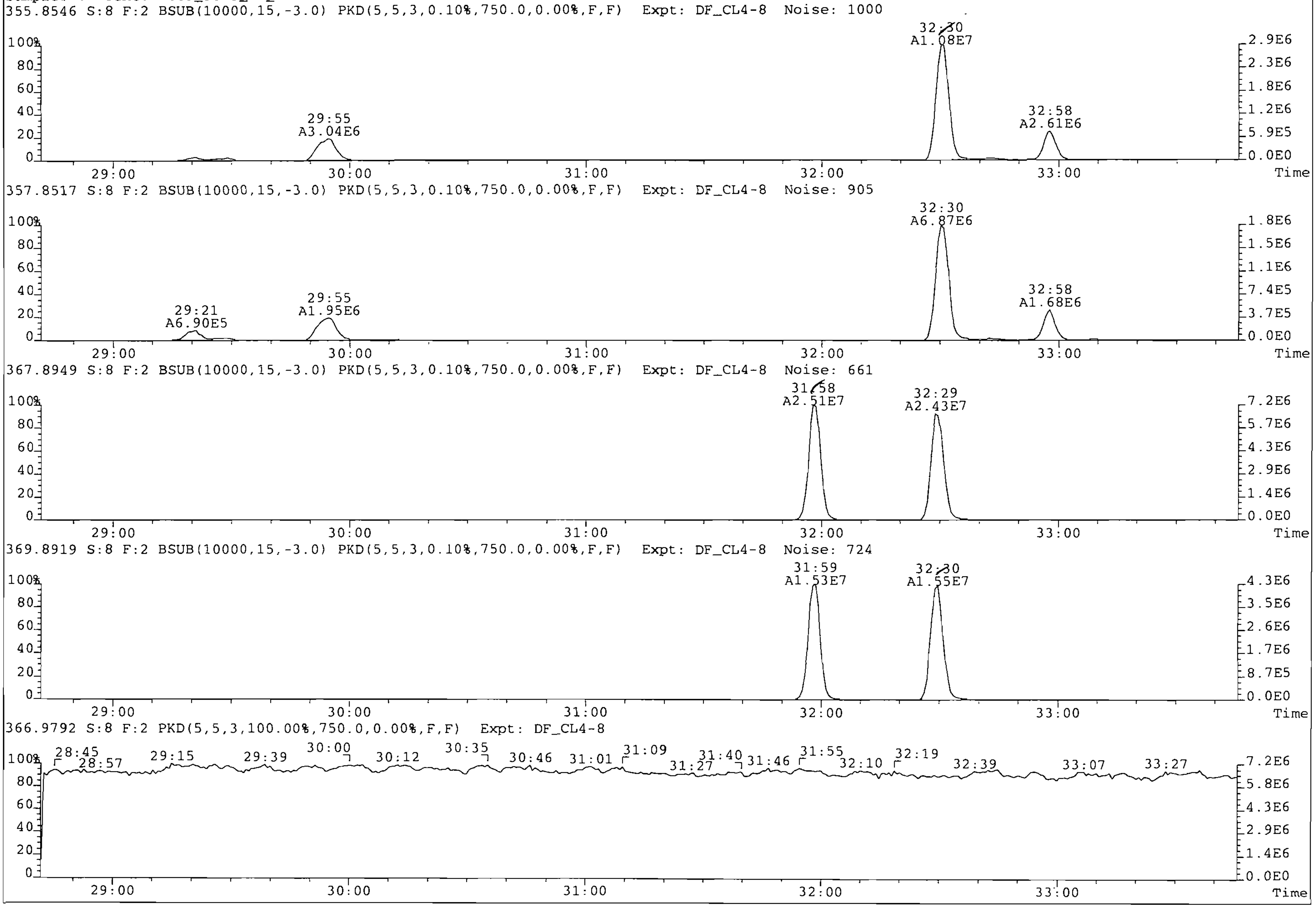
File: 070724P2 Acq: 24-JUL-2007 22:21:45 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 8 Text: BCS3_5075_DF_PB Vial# 16 File Text: AP DB5



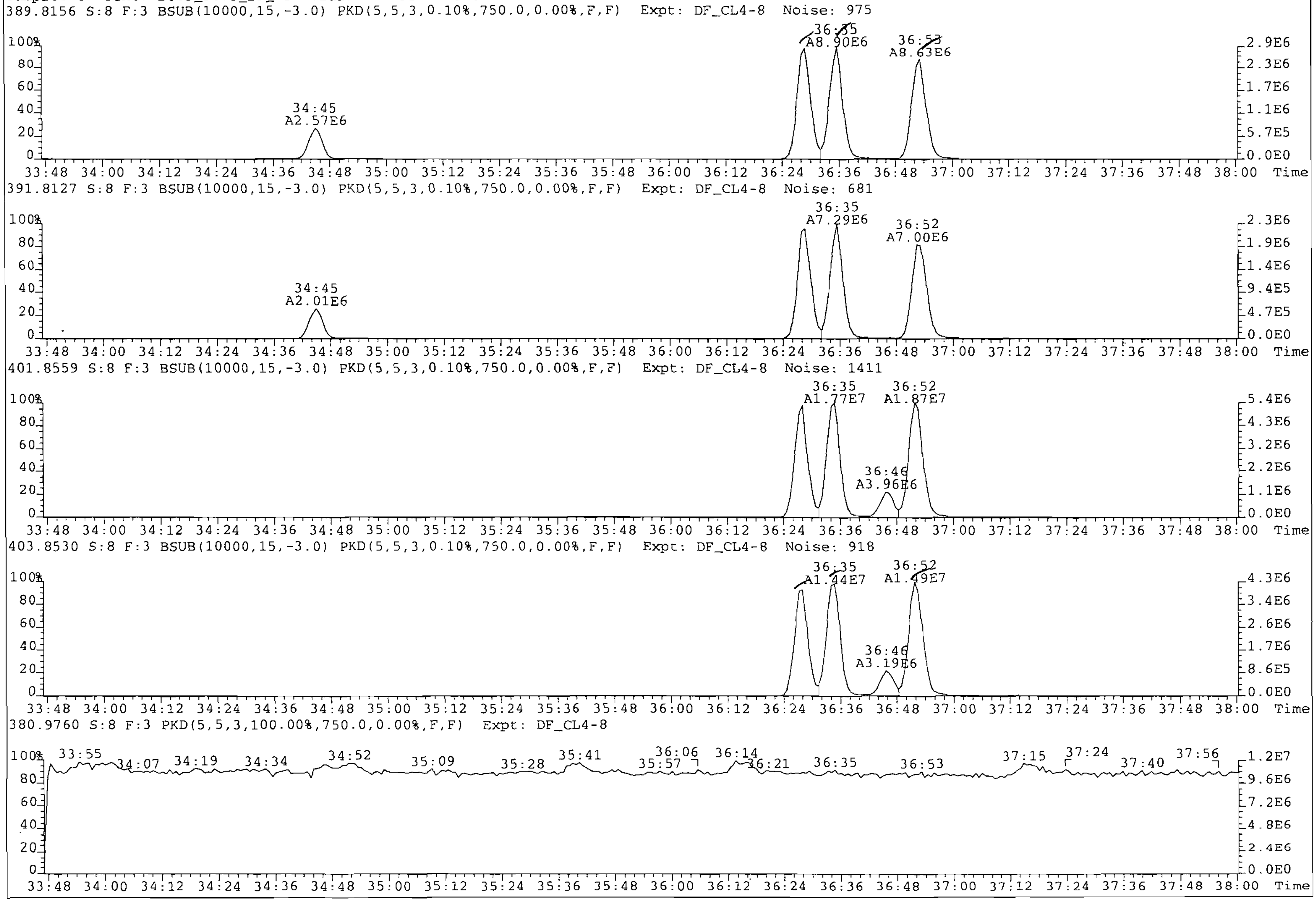
File: 070724P2 Acq: 24-JUL-2007 22:21:45 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 8 Text: BCS3_5075_DF_PB Vial# 16 File Text: AP DB5



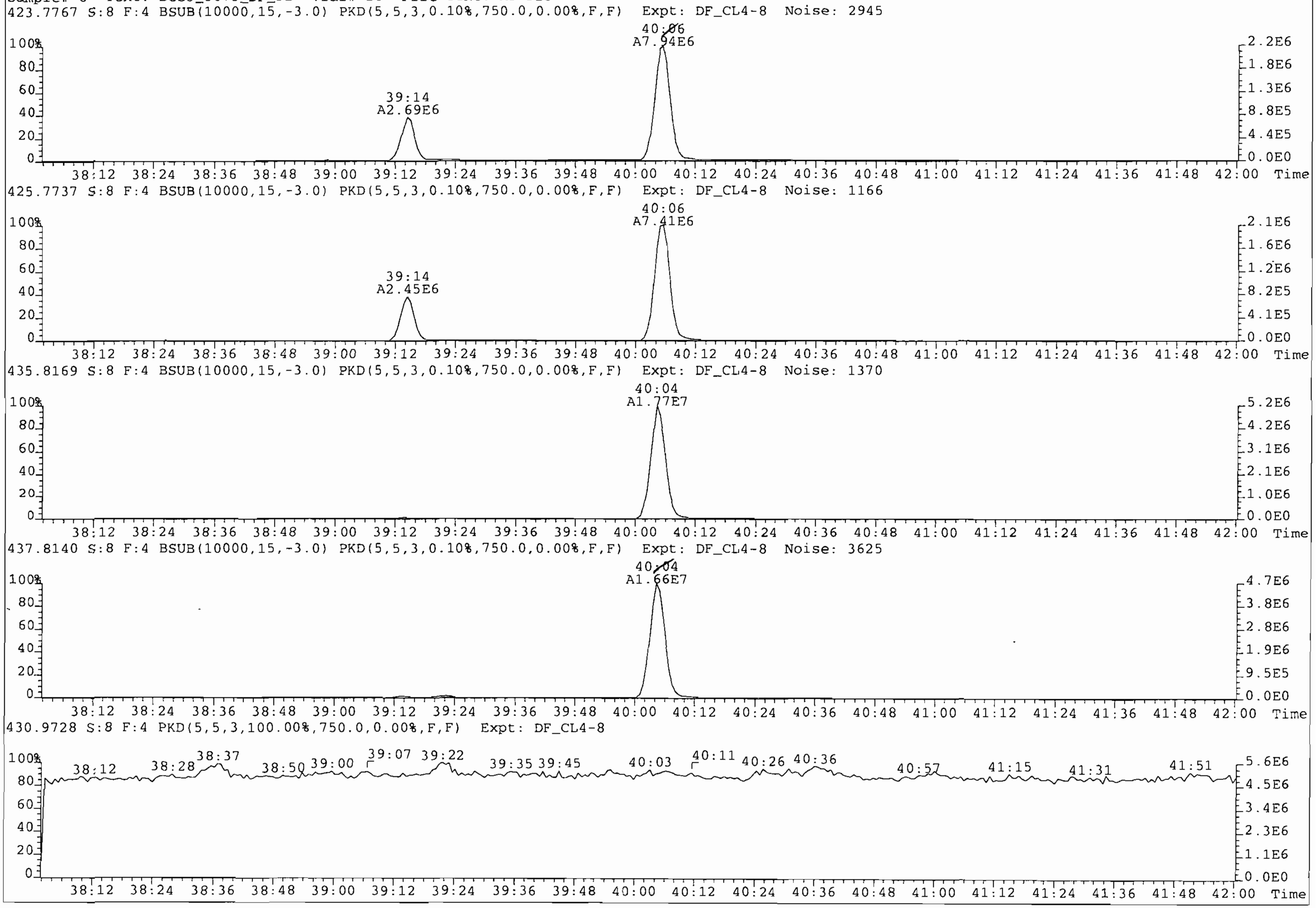
File: 070724P2 Acq: 24-JUL-2007 22:21:45 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 8 Text: BCS3_5075_DF_PB Vial# 16 File Text: AP DB5



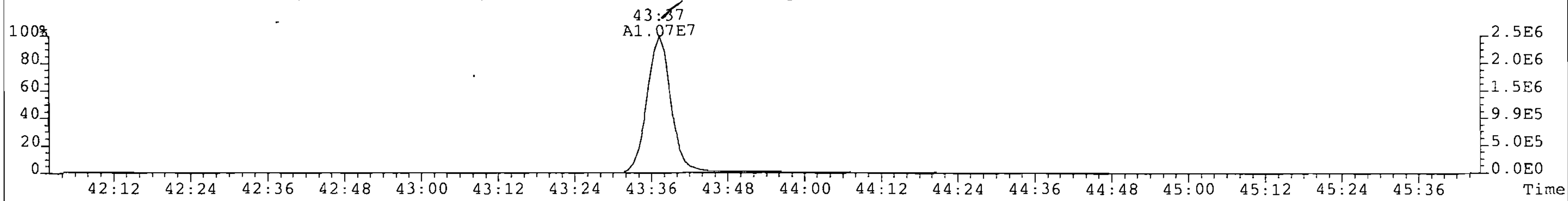
File: 070724P2 Acq: 24-JUL-2007 22:21:45 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 8 Text: BCS3_5075_DF_PB Vial# 16 File Text: AP DB5



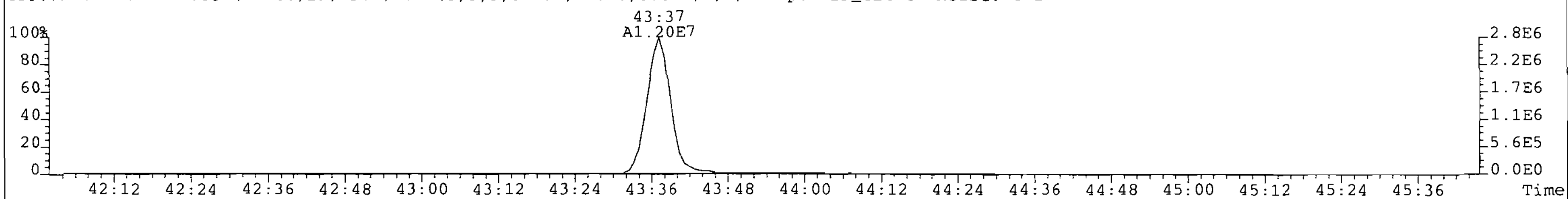
File: 070724P2 Acq: 24-JUL-2007 22:21:45 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 8 Text: BCS3_5075_DF_PB Vial# 16 File Text: AP DB5



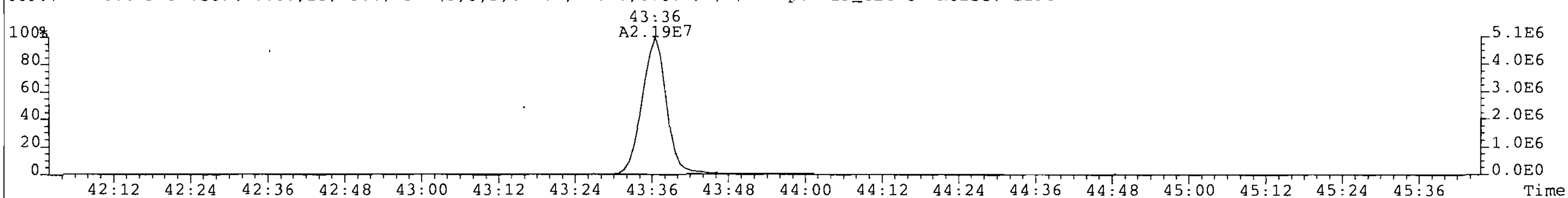
File: 070724P2 Acq: 24-JUL-2007 22:21:45 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 8 Text: BCS3_5075_DF_PB Vial# 16 File Text: AP DB5
457.7377 S:8 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 799



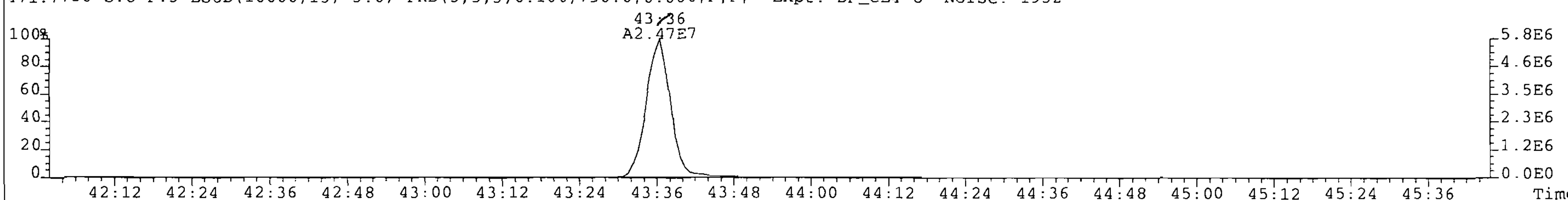
459.7348 S:8 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 472



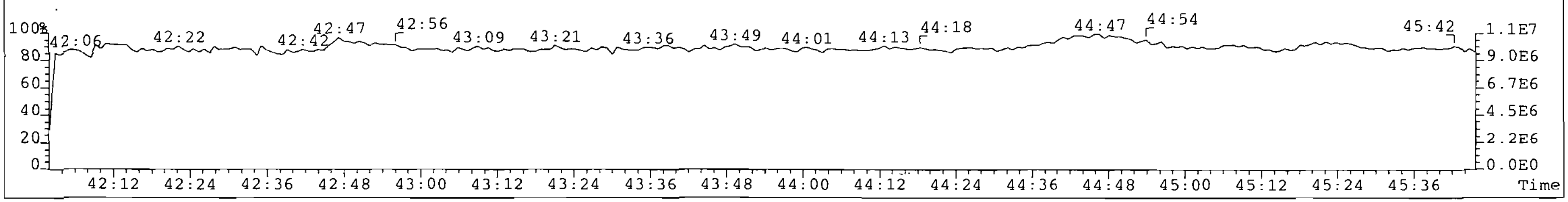
469.7780 S:8 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 2196



471.7750 S:8 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 1932

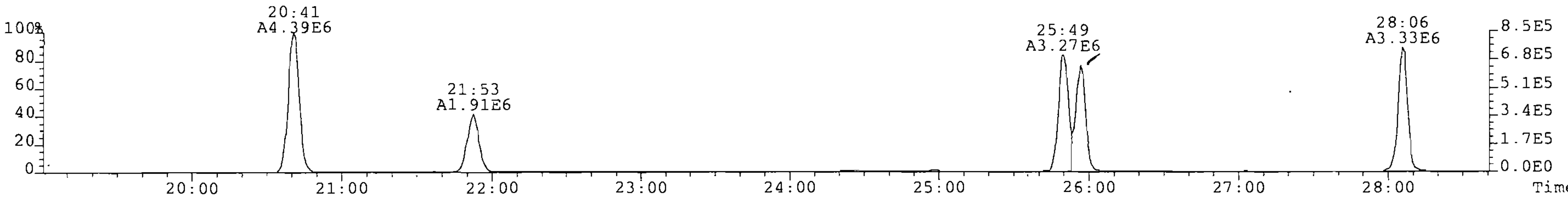


454.9728 S:8 F:5 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8

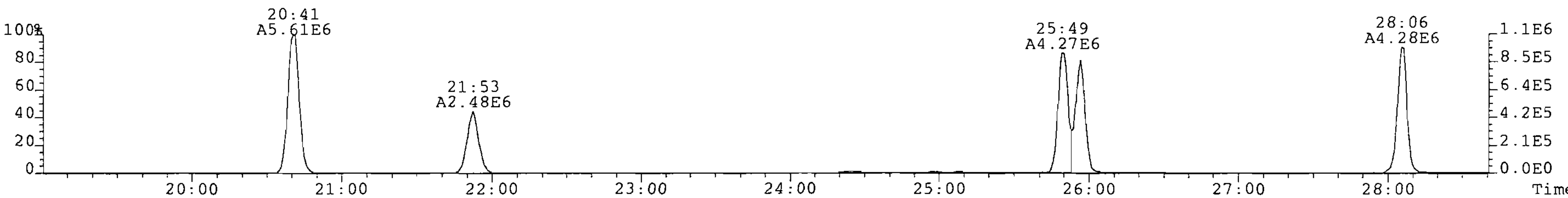


File: 070724P2 Acq: 24-JUL-2007 22:21:45 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 8 Text: BCS3_5075_DF_PB Vial# 16 File Text: AP DB5

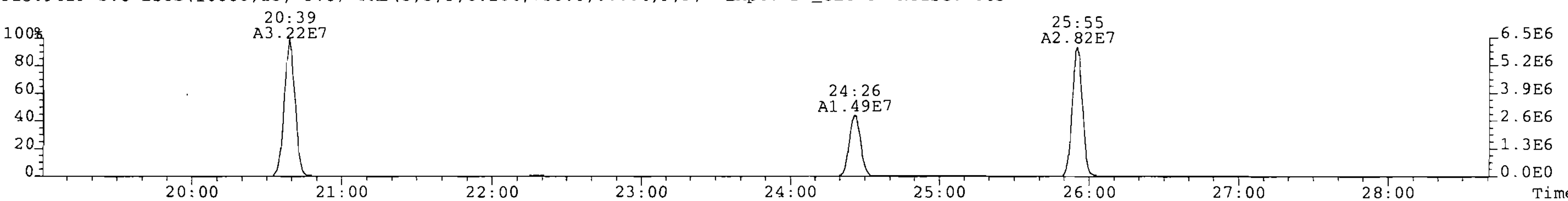
303.9016 S:8 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 476



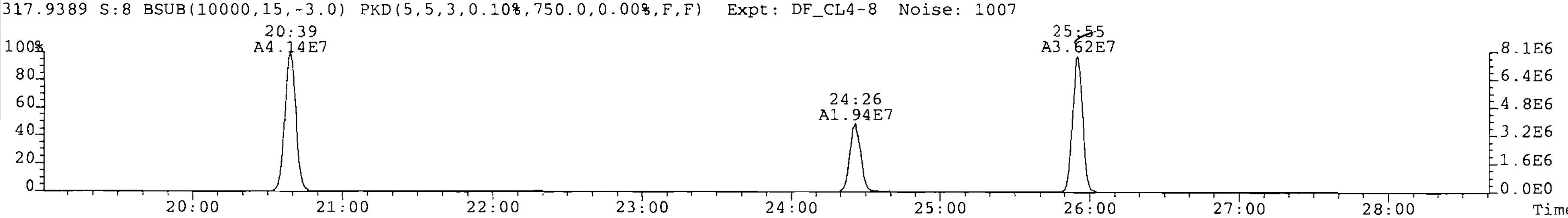
305.8987 S:8 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 538



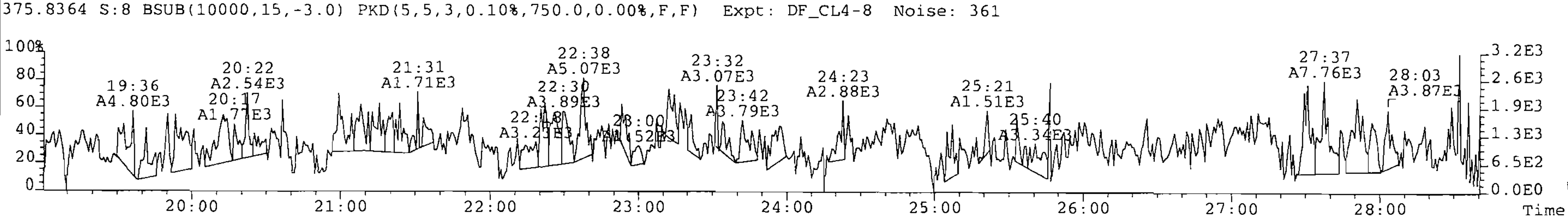
315.9419 S:8 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 845



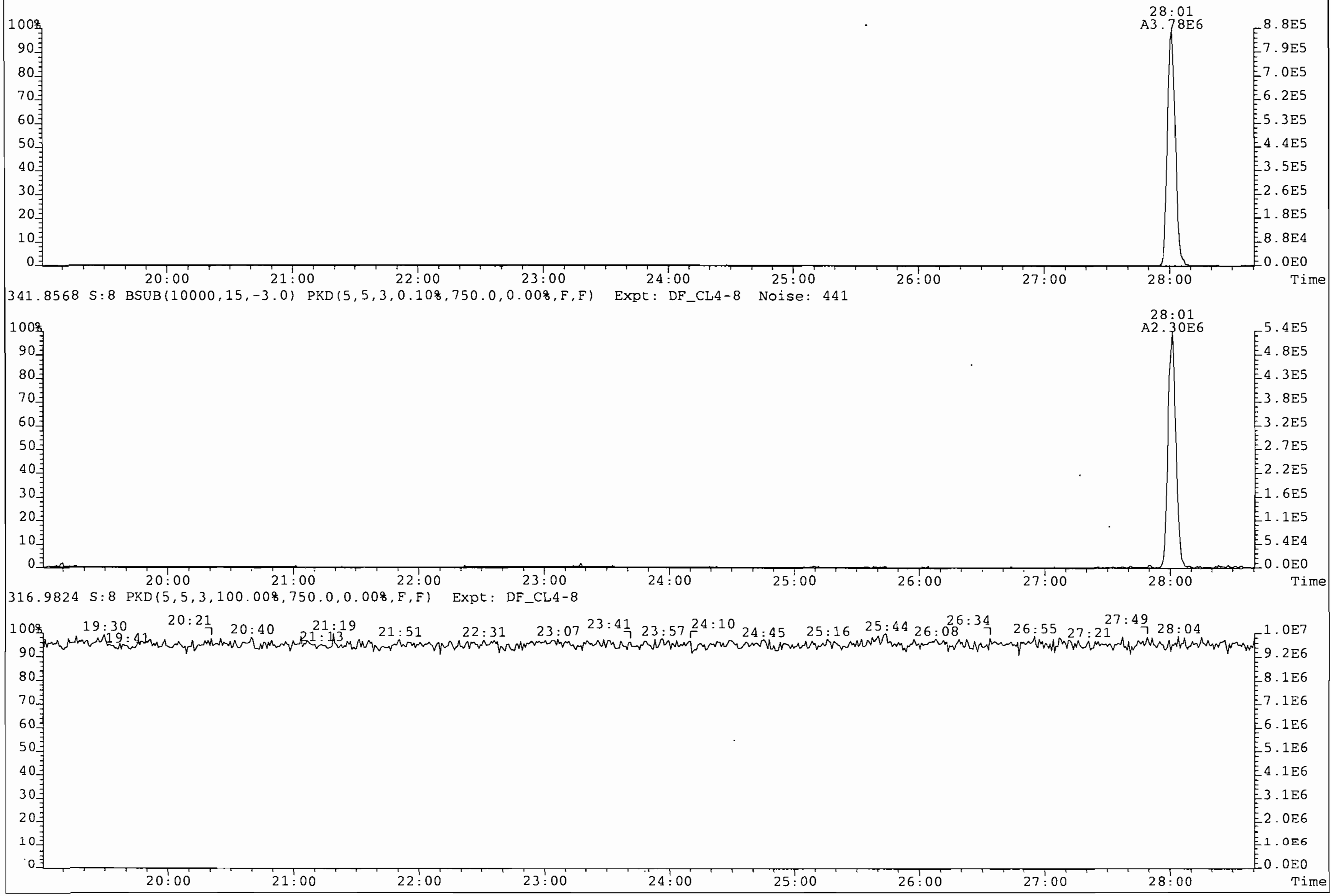
317.9389 S:8 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 1007



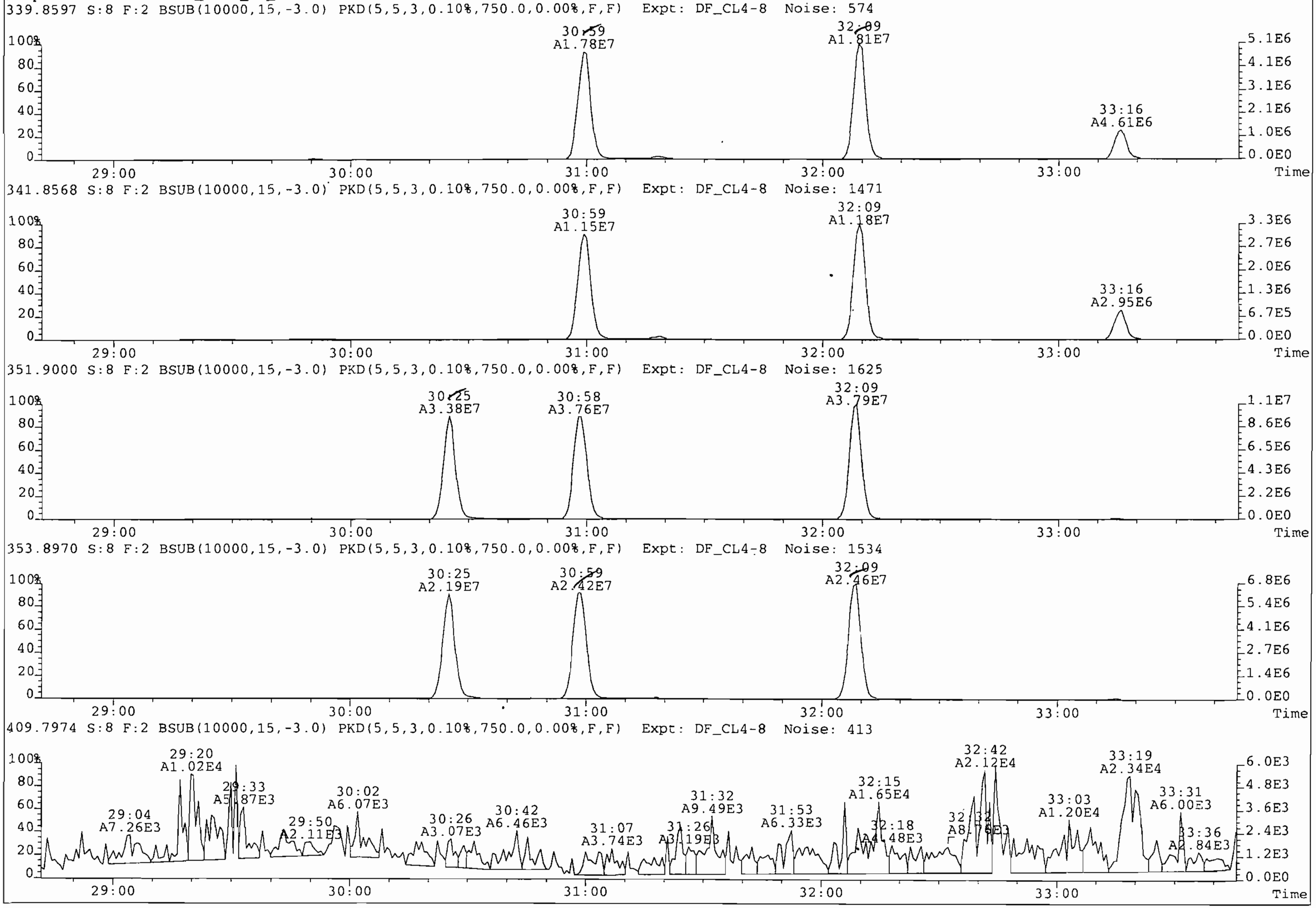
375.8364 S:8 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 361



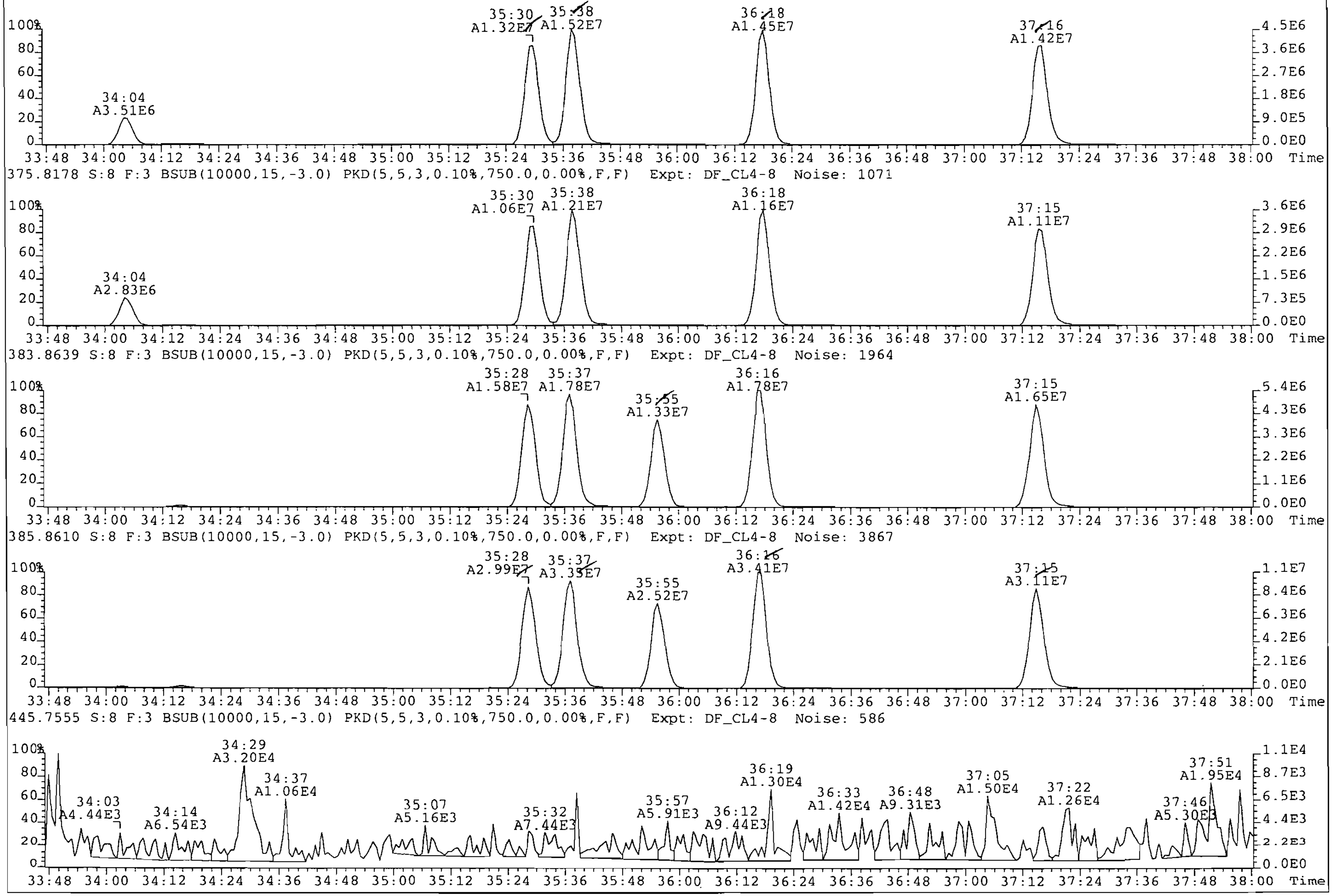
File: 070724P2 Acq: 24-JUL-2007 22:21:45 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 8 Text: BCS3_5075_DF_PB Vial# 16 File Text: AP DB5
339.8597 S:8 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 372

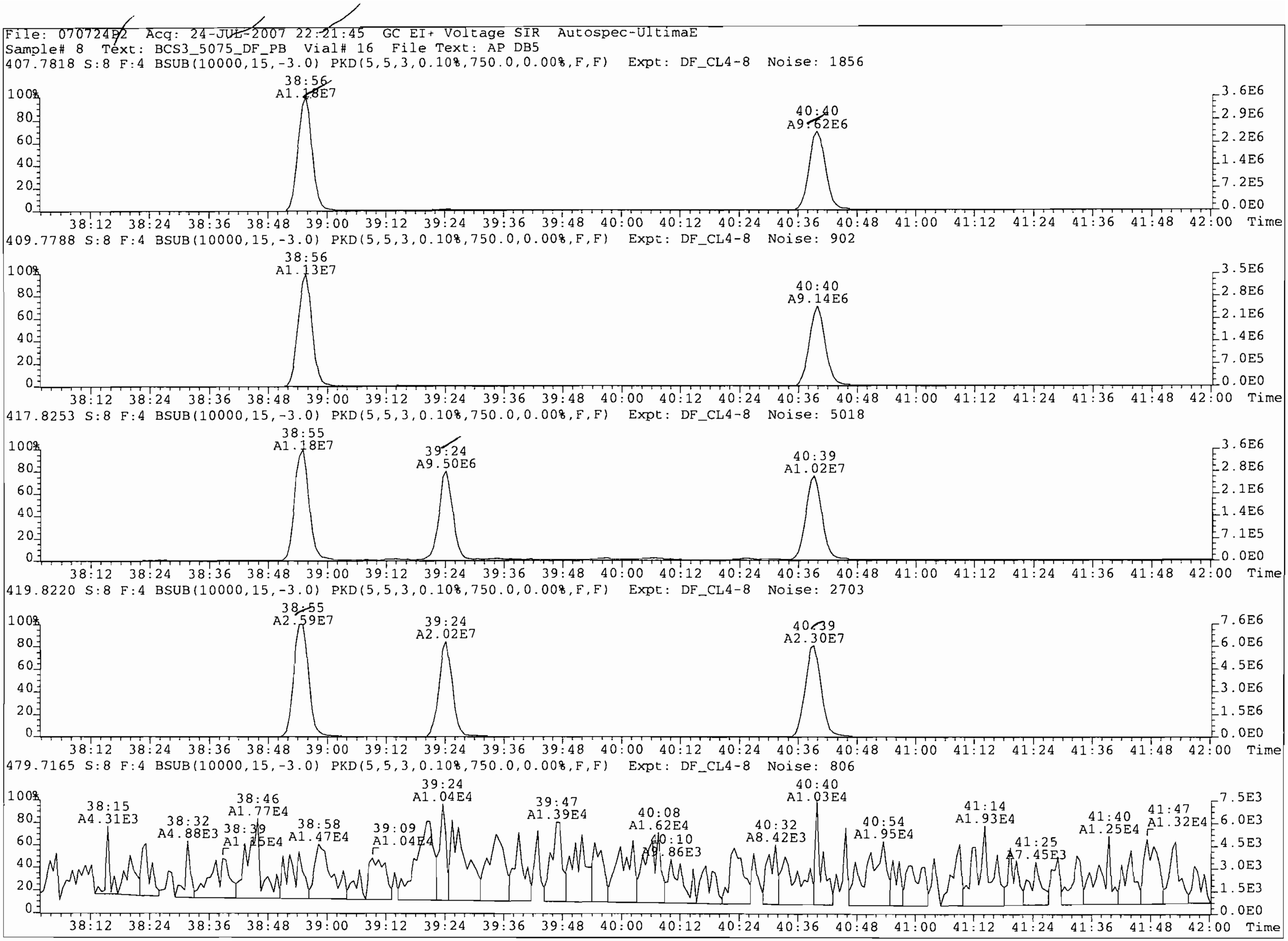


File: 070724P2 Acq: 24-JUL-2007 22:21:45 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 8 Text: BCS3_5075_DF_PB Vial# 16 File Text: AP DB5



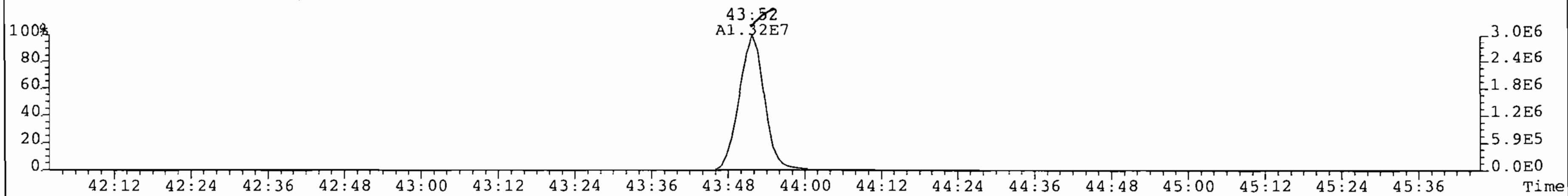
File: 070724P2 Acq: 24-JUL-2007 22:21:45 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 8 Text: BCS3_5075_DF_PB Vial# 16 File Text: AP DB5
373.8207 S:8 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 1808



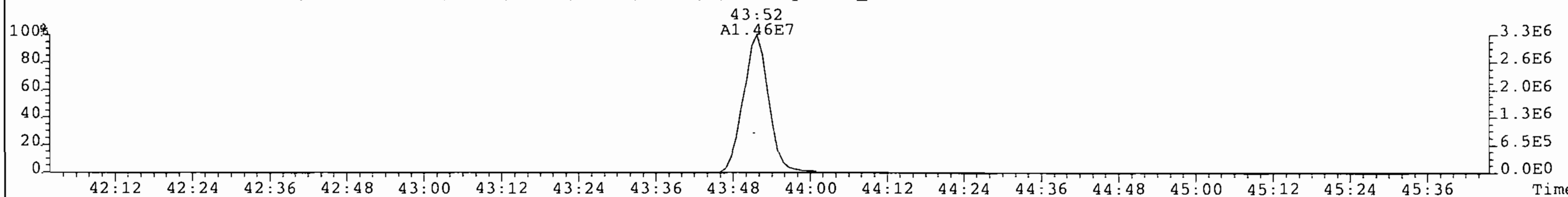

File: 070724B2 Acq: 24-JUL-2007 22:21:45 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 8 Text: BCS3_5075_DF_PB Vial# 16 File Text: AP DB5
407.7818 S:8 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 1856
38:56
A1.18E7
40:40
A9.62E6
409.7788 S:8 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 902
38:56
A1.13E7
40:40
A9.14E6
417.8253 S:8 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 5018
38:55
A1.18E7
39:24
A9.50E6
40:39
A1.02E7
419.8220 S:8 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 2703
38:55
A2.59E7
39:24
A2.02E7
40:39
A2.30E7
479.7165 S:8 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 806
38:15
A4.31E3
38:32
A4.88E3
38:39
A1.15E4
38:46
A1.77E4
38:58
A1.47E4
39:09
A1.04E4
39:24
A1.04E4
39:47
A1.39E4
40:08
A1.62E4
40:10
A9.86E3
40:32
A8.42E3
40:40
A1.03E4
40:54
A1.95E4
41:14
A1.93E4
41:25
A7.45E3
41:40
A1.25E4
41:47
A1.32E4
38:12 38:24 38:36 38:48 39:00 39:12 39:24 39:36 39:48 40:00 40:12 40:24 40:36 40:48 41:00 41:12 41:24 41:36 41:48 42:00 Time

File: 070724P2 Acq: 24-JUL-2007 22:21:45 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 8 Text: BCS3_5075_DF_PB Vial# 16 File Text: AP DB5

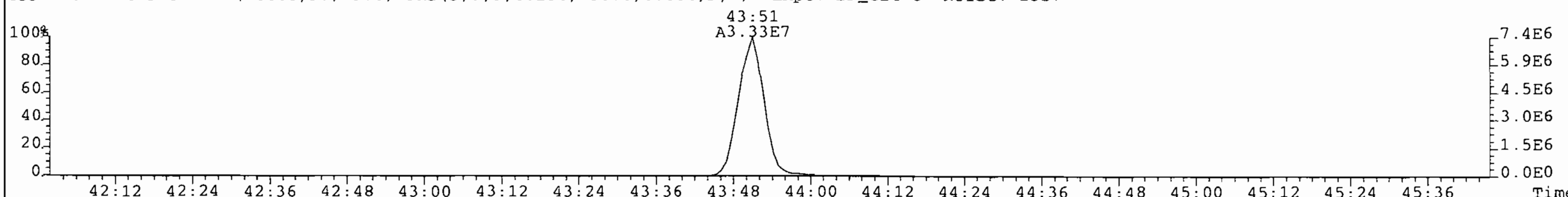
441.7428 S:8 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 697



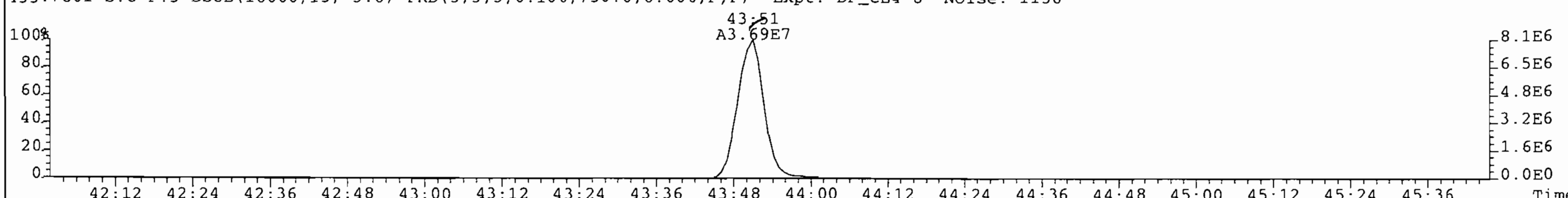
443.7398 S:8 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 494



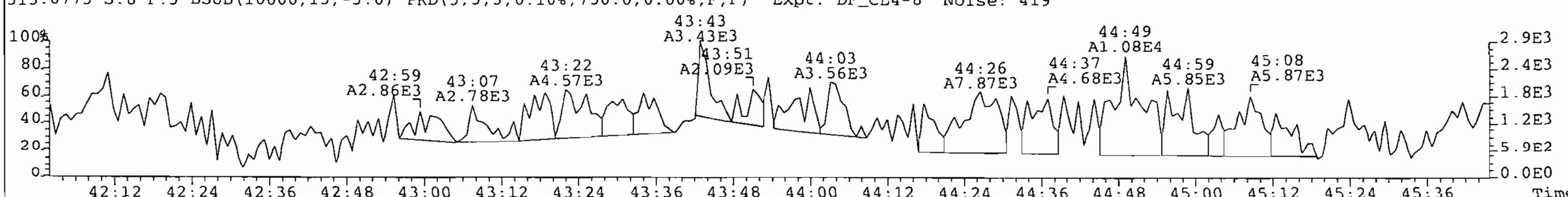
453.7830 S:8 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 1527



455.7801 S:8 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 1156



513.6775 S:8 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,750.0,0.00%,F,F) Expt: DF_CL4-8 Noise: 419



P8090

ANALYTICAL PERSPECTIVES

PART 4D

SYSTEM PERFORMANCE

"INITIAL CALIBRATION"

DOCUMENTATION FOR THE ANALYSIS
OF
POLYCHLORINATED DIBENZO-*P*-DIOXINS & DIBENZOFURANS

OPUSquan on MM1 16-APR-2007 21:36 JB 17 Apr 07

Initial Calibration RRF Summary (ICAL) Analytical Perspectives [Form: RRF7]

Cal filename: MM1_DF_091806B_16APR07 Cal date: 16-APR-07

Data filename: 070416P3

Type	Name	Mean	%RSD	Samp# 2 0.25	Samp# 3 0.50	Samp# 4 2.0	Samp# 5 10	Samp# 6 40	Samp# 7 200	Samp# 8 500 pg/uL
				RRF#1	RRF#2	RRF#3	RRF#4	RRF#5	RRF#6	RRF#7
Ax	2,3,7,8-TCDD	1.10	4.60 %	1.18	1.03	1.05	1.07	1.12	1.12	1.13
Ax	1,2,3,7,8-PeCDD	0.97	3.59 %	1.03	0.96	0.91	0.95	0.97	0.99	0.96
Ax	1,2,3,4,7,8-HxCDD	1.13	4.93 %	1.24	1.09	1.07	1.14	1.15	1.12	1.10
Ax	1,2,3,6,7,8-HxCDD	1.04	3.37 %	1.11	1.02	1.01	1.02	1.03	1.05	1.05
Ax	1,2,3,7,8,9-HxCDD	1.00	5.22 %	1.11	0.96	0.95	0.99	1.01	1.00	1.02
Ax	1,2,3,4,6,7,8-HpCDD	0.91	3.97 %	0.97	0.89	0.85	0.91	0.92	0.92	0.92
Ax	OCDD	0.94	5.87 %	1.05	0.93	0.87	0.91	0.95	0.93	0.93
Ax2	OCDD-a	0.05	3.70 %	*	*	0.05	0.05	0.06	0.06	0.06
Ax	2,3,7,8-TCDF	1.03	3.66 %	1.10	0.99	1.00	1.01	1.04	1.05	1.05
Ax	1,2,3,7,8-PeCDF	0.96	3.33 %	1.02	0.96	0.92	0.94	0.97	0.95	0.95
Ax	2,3,4,7,8-PeCDF	0.99	4.89 %	1.09	0.94	0.97	0.98	0.99	0.99	0.98
Ax	1,2,3,4,7,8-HxCDF	1.13	5.43 %	1.25	1.07	1.07	1.10	1.13	1.13	1.12
Ax	1,2,3,6,7,8-HxCDF	1.12	4.16 %	1.22	1.11	1.07	1.12	1.10	1.13	1.11
Ax	2,3,4,6,7,8-HxCDF	1.06	4.25 %	1.15	1.02	1.02	1.04	1.06	1.06	1.06
Ax	1,2,3,7,8,9-HxCDF	1.12	4.85 %	1.22	1.06	1.07	1.10	1.13	1.12	1.11
Ax	1,2,3,4,6,7,8-HpCDF	1.20	4.52 %	1.31	1.16	1.13	1.19	1.20	1.20	1.19
Ax	1,2,3,4,7,8,9-HpCDF	1.20	5.72 %	1.33	1.13	1.13	1.20	1.21	1.21	1.20
Ax	OCDF	0.83	3.91 %	0.88	0.79	0.79	0.82	0.85	0.84	0.84
Ax2	OCDF-a	0.05	2.47 %	*	*	0.05	0.05	0.05	0.05	0.05
ES	13C-2,3,7,8-TCDD	1.09	2.52 %	1.08	1.08	1.07	1.06	1.09	1.11	1.15
ES	13C-1,2,3,7,8-PeCDD	1.02	7.28 %	0.97	0.98	0.98	0.96	1.01	1.04	1.17
ES	13C-1,2,3,4,7,8-HxCDD	1.06	6.17 %	1.02	0.99	1.01	1.04	1.07	1.14	1.16
ES	13C-1,2,3,6,7,8-HxCDD	1.20	4.55 %	1.17	1.13	1.15	1.21	1.22	1.28	1.26
ES	13C-1,2,3,7,8,9-HxCDD	1.25	5.04 %	1.23	1.17	1.21	1.26	1.25	1.35	1.32
ES	13C-1,2,3,4,6,7,8-HpCDD	1.09	6.12 %	1.06	1.03	1.03	1.07	1.08	1.18	1.18
ES	13C-OCDD	0.83	11.97 %	0.77	0.75	0.76	0.80	0.80	0.96	0.99
ES	13C-2,3,7,8-TCDF	1.00	2.31 %	1.00	0.99	0.98	0.99	1.01	1.02	1.05
ES	13C-1,2,3,7,8-PeCDF	0.96	6.19 %	0.91	0.94	0.92	0.92	0.94	1.01	1.07
ES	13C-2,3,4,7,8-PeCDF	1.00	5.05 %	0.95	0.98	0.96	0.96	0.99	1.03	1.09
ES	13C-1,2,3,4,7,8-HxCDF	1.64	3.46 %	1.62	1.59	1.58	1.65	1.65	1.71	1.72
ES	13C-1,2,3,6,7,8-HxCDF	1.88	4.09 %	1.83	1.81	1.80	1.86	2.02	1.90	1.91
ES	13C-2,3,4,6,7,8-HxCDF	1.74	3.16 %	1.72	1.68	1.67	1.76	1.78	1.81	1.79
ES	13C-1,2,3,7,8,9-HxCDF	1.53	2.80 %	1.50	1.50	1.49	1.51	1.55	1.59	1.59
ES	13C-1,2,3,4,6,7,8-HpCDF	1.32	4.59 %	1.30	1.27	1.26	1.30	1.32	1.40	1.42
ES	13C-1,2,3,4,7,8,9-HpCDF	1.11	6.67 %	1.07	1.06	1.05	1.06	1.11	1.21	1.22
ES	13C-OCDF	1.26	12.25 %	1.16	1.13	1.15	1.20	1.23	1.44	1.52
CS	37Cl-2,3,7,8-TCDD	1.09	4.81 %	*	1.10	1.03	1.05	1.12	1.16	*
CS	13C-1,2,3,4,7-PeCDD	0.92	4.65 %	0.96	0.97	0.90	0.86	0.92	0.89	0.97
CS	13C-1,2,3,4,6-PeCDF	0.87	3.14 %	0.88	0.91	0.86	0.83	0.87	0.85	0.89
CS	13C-1,2,3,4,6,9-HxCDF	1.42	3.53 %	1.47	1.47	1.41	1.43	1.45	1.37	1.33
CS	13C-1,2,3,4,6,8,9-HpCDF	0.97	3.23 %	1.01	0.99	0.96	0.98	0.99	0.94	0.92
NA	n/a	Div0	* %	*	*	*	*	*	*	*
JS/RT	13C-1,2,3,4-TCDD	-	- %	-	-	-	-	-	-	-
JS	13C-1,2,3,4-TCDF	-	- %	-	-	-	-	-	-	-
JS/RT	13C-1,2,3,4,6,7-HxCDD	-	- %	-	-	-	-	-	-	-

Analyst: MI

Date: 4/17/07

SS	37Cl-2,3,7,8-TCDD	1.00	3.40 %	*	1.01	0.95	0.99	1.02	1.04	*
SS	13C-1,2,3,4,7-PeCDD	0.91	6.56 %	0.99	0.99	0.92	0.90	0.91	0.86	0.83
SS	13C-1,2,3,4,6-PeCDF	0.91	5.89 %	0.97	0.96	0.93	0.90	0.92	0.85	0.83
SS	13C-1,2,3,4,6,9-HxCDF	0.76	5.93 %	0.80	0.81	0.78	0.77	0.72	0.72	0.70
SS	13C-1,2,3,4,6,8,9-HpCDF	0.74	7.10 %	0.78	0.78	0.76	0.76	0.75	0.68	0.65
SBS	2,4,6,8-TCDF	1.03	3.66 %	1.10	0.99	1.00	1.01	1.04	1.05	1.05
Ay	1,3,6,8-TCDD	1.10	4.60 %	1.18	1.03	1.05	1.07	1.12	1.12	1.13
Ay	1,2,3,9-TCDD	1.10	4.60 %	1.18	1.03	1.05	1.07	1.12	1.12	1.13
Ay	1,2,8,9-TCDD	1.10	4.60 %	1.18	1.03	1.05	1.07	1.12	1.12	1.13
Ay	1,2,4,7,9-PeCDD	0.97	3.59 %	1.03	0.96	0.91	0.95	0.97	0.99	0.96
Ay	1,2,3,8,9-PeCDD	0.97	3.59 %	1.03	0.96	0.91	0.95	0.97	0.99	0.96
Ay	1,2,4,6,7,9-HxCDD	1.05	4.36 %	1.15	1.02	1.01	1.04	1.06	1.05	1.06
Ay	1,2,3,4,6,7,9-HpCDD	0.91	3.97 %	0.97	0.89	0.85	0.91	0.92	0.92	0.92
Ay	1,3,6,8-TCDF	1.03	3.66 %	1.10	0.99	1.00	1.01	1.04	1.05	1.05
Ay	2,3,4,8-TCDF	1.03	3.66 %	1.10	0.99	1.00	1.01	1.04	1.05	1.05
Ay	1,2,8,9-TCDF	1.03	3.66 %	1.10	0.99	1.00	1.01	1.04	1.05	1.05
Ay	1,3,4,6,8-PeCDF	1.03	3.66 %	1.10	0.99	1.00	1.01	1.04	1.05	1.05
Ay	1,2,3,8,9-PeCDF	0.98	3.98 %	1.06	0.95	0.94	0.96	0.98	0.97	0.97
Ay	1,2,3,4,6,8-HxCDF	1.11	4.57 %	1.21	1.07	1.06	1.09	1.10	1.11	1.10
AS	13C-1,3,6,8-TCDD	Div0	* %	*	*	*	*	*	*	*
AS	13C-1,3,6,8-TCDF	Div0	* %	*	*	*	*	*	*	*

P8090

ANALYTICAL PERSPECTIVES

PART 4E

SYSTEM PERFORMANCE

"AUDIT SAMPLE"

DOCUMENTATION FOR THE ANALYSIS
OF
POLYCHLORINATED DIBENZO-*P*-DIOXINS & DIBENZOFURANS

Sample ID: M23-3344-01-Audit — Method 23

Client Data		Sample Data		Laboratory Data			
Name:	TRC Environmental Corporation	Matrix:	Air	Project No.:	P8090	Date Received:	16-Jul-07
Project ID:	56122	Weight/Volume:	1	Sample ID:	P8090_5075_005	Date Extracted:	19-Jul-07
Date Collected:	-			QC Batch No.:	5075	Date Analyzed:	24-Jul-07
		Split:	2	Dilution:	-	Time Analyzed:	21:31:56

Analyte	Conc. (pg)	DL (pg)	EMPC (pg)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	572	[Ra=0.779]			13C-2,3,7,8-TCDD	84.3	
1,2,3,7,8-PeCDD	600				13C-1,2,3,7,8-PeCDD	92.2	
1,2,3,4,7,8-HxCDD	605				13C-1,2,3,4,7,8-HxCDD	90.4	
1,2,3,6,7,8-HxCDD	579				13C-1,2,3,6,7,8-HxCDD	90.5	
1,2,3,7,8,9-HxCDD	615				13C-1,2,3,7,8,9-HxCDD	89.6	
1,2,3,4,6,7,8-HpCDD	569				13C-1,2,3,4,6,7,8-HpCDD	82.3	
OCDD	1,430				13C-OCDD	79.2	
2,3,7,8-TCDF	532				13C-2,3,7,8-TCDF	90.4	
1,2,3,7,8-PeCDF	393				13C-1,2,3,7,8-PeCDF	93.8	
2,3,4,7,8-PeCDF	390				13C-2,3,4,7,8-PeCDF	94.5	
1,2,3,4,7,8-HxCDF	505				13C-1,2,3,4,7,8-HxCDF	92.1	
1,2,3,6,7,8-HxCDF	497				13C-1,2,3,6,7,8-HxCDF	93.5	
2,3,4,6,7,8-HxCDF	474				13C-2,3,4,6,7,8-HxCDF	90	
1,2,3,7,8,9-HxCDF	845				13C-1,2,3,7,8,9-HxCDF	74.7	
1,2,3,4,6,7,8-HpCDF	569				13C-1,2,3,4,6,7,8-HpCDF	84.3	
1,2,3,4,7,8,9-HpCDF	294				13C-1,2,3,4,7,8,9-HpCDF	85.7	
OCDF	1,450				13C-OCDF	79.2	
Totals						**SS Recoveries**	
TCDDs	1,340				37Cl-2,3,7,8-TCDD	-	
PeCDDs	1,500				13C-1,2,3,4,7-PeCDD	-	
HxCDDs	2,500				13C-1,2,3,4,6-PeCDF	-	
HpCDDs	889				13C-1,2,3,4,6,9-HxCDF	-	
					13C-1,2,3,4,6,8,9-HpCDF	-	
TCDFs	1,090						
PeCDFs	1,450					**AS Recoveries**	
HxCDFs	2,780				13C-1,3,6,8-TCDD	84.3	
HpCDFs	1,140				13C-1,3,6,8-TCDF	78.6	
Total PCDD/Fs	**15,600**		**15,600**				
ITEF TEQs							
TEQ: ND=0	1,570		1,570				
TEQ: ND=DL/2	1,570		1,570				
TEQ: ND=DL	1,570		1,570				

ANALYTICAL PERSPECTIVES
2714 Exchange Drive
Wilmington, NC 28405
USA
Tel: +1 910 794-1613; Toll-Free 866 846-8290
Fax: +1 910 794-3919
info@ultratrace.com
www.ultratrace.com

Checkcode: 0422

AP 2006 Rev. G

Reviewer ....
Date 3 07

O an on MM1 25-JUL-2007 15:42 checkcode: 0 JB 31 Jul 07

/8290 Sample Summary Analytical Perspectives [Form: DF]

Client ID: M23-3344-01-Audit Filename: 070724P2 S: 7 Vial: 21 Acq: 24-JUL-07 21:31:56
Lab ID: P8090_5075_005 GC column ID: db-5 Cal: Wt/Vol: 1.000
Sample text: P8090_5075_005 M23-3344-01-Audit Air Train Stds: JS (split adj.): 4000 CS/SS: 1600 ES: 4000

Typ	Name	Resp	RA		RT	RRF	Conc.	Noise	Fac	DL	Rec
Ax	2,3,7,8-TCDD	5.61e+06	0.78	y	26:53	0.97	572	1678	2.5	3.19	-
Ax	1,2,3,7,8-PeCDD	5.33e+06	1.56	y	32:31	0.88	600	25922	2.5	68.4	-
Ax	1,2,3,4,7,8-HxCDD	4.96e+06	1.27	y	36:28	1.07	605	2288	2.5	5.44	-
Ax	1,2,3,6,7,8-HxCDD	4.81e+06	1.26	y	36:35	1.00	579	2288	2.5	5.45	-
Ax	1,2,3,7,8,9-HxCDD	5.01e+06	1.26	y	36:53	0.94	615	2288	2.5	5.88	-
Ax	1,2,3,4,6,7,8-HpCDD	4.17e+06	1.06	y	40:05	0.88	569	2418	2.5	6.12	-
Ax	OCDD	7.70e+06	0.89	y	43:37	0.96	1430	320557	2.5	1340	-
Ax2	OCDD-a	4.69e+05	1.97	n	43:37	0.06	1390	23201	2.5	1550	-
Ax	2,3,7,8-TCDF	8.35e+06	0.79	y	25:57	1.06	532	2061	2.5	2.56	-
Ax	1,2,3,7,8-PeCDF	5.82e+06	1.53	y	31:00	0.96	393	4041	2.5	6.72	-
Ax	2,3,4,7,8-PeCDF	5.96e+06	1.55	y	32:10	0.96	390	4041	2.5	6.13	-
Ax	1,2,3,4,7,8-HxCDF	6.14e+06	1.27	y	35:29	1.04	505	569981	2.5	602	-
Ax	1,2,3,6,7,8-HxCDF	7.04e+06	1.28	y	35:38	1.06	497	569981	2.5	523	-
Ax	2,3,4,6,7,8-HxCDF	6.27e+06	1.23	y	36:18	1.01	474	569981	2.5	549	-
Ax	1,2,3,7,8,9-HxCDF	8.90e+06	1.25	y	37:17	1.05	845	569981	2.5	766	-
Ax	1,2,3,4,6,7,8-HpCDF	6.42e+06	1.04	y	38:55	1.22	569	2042	2.5	2.10	-
Ax	1,2,3,4,7,8,9-HpCDF	2.73e+06	1.03	y	40:40	1.13	294 — cc	2042	2.5	3.18	-
Ax	OCDF	9.59e+06	0.94	y	43:51	0.79	1450	1765	2.5	6.19	-
Ax2	OCDF-a	6.17e+05	2.29	y	43:51	0.05	1510	3797	2.5	215	-
ES	13C-2,3,7,8-TCDD	4.03e+07	0.78	y	26:52	1.11	3370	2855	2.5	4.77	84.3
ES	13C-1,2,3,7,8-PeCDD	4.03e+07	1.62	y	32:30	1.01	3690	3195	2.5	5.84	92.2
ES	13C-1,2,3,4,7,8-HxCDD	3.07e+07	1.26	y	36:28	1.04	3620	5766	2.5	13.6	90.4
ES	13C-1,2,3,6,7,8-HxCDD	3.33e+07	1.27	y	36:35	1.13	3620	5766	2.5	12.6	90.5
ES	13C-1,2,3,7,8,9-HxCDD	3.48e+07	1.26	y	36:53	1.19	3580	5766	2.5	11.9	89.6
ES	13C-1,2,3,4,6,7,8-HpCDD	3.35e+07	1.03	y	40:05	1.25	3290	5385	2.5	10.6	82.3
ES	13C-OCDD	4.52e+07	0.91	y	43:37	0.88	6330	3050833	2.5	8560	79.2
ES	13C-2,3,7,8-TCDF	5.95e+07	0.78	y	25:56	0.93	3620	3597	2.5	4.66	90.4
ES	13C-1,2,3,7,8-PeCDF	6.19e+07	1.57	y	30:59	0.94	3750	2444	2.5	3.16	93.8
ES	13C-2,3,4,7,8-PeCDF	6.38e+07	1.54	y	32:09	0.96	3780	2444	2.5	3.09	94.5
ES	13C-1,2,3,4,7,8-HxCDF	4.67e+07	0.54	y	35:29	1.56	3680	30948	2.5	48.8	92.1
ES	13C-1,2,3,6,7,8-HxCDF	5.36e+07	0.52	y	35:38	1.76	3740	30948	2.5	43.2	93.5
ES	13C-2,3,4,6,7,8-HxCDF	5.24e+07	0.52	y	36:17	1.79	3600	30948	2.5	42.5	90.0
ES	13C-1,2,3,7,8,9-HxCDF	4.00e+07	0.53	y	37:16	1.65	2990	30948	2.5	46.2	74.7
ES	13C-1,2,3,4,6,7,8-HpCDF	3.70e+07	0.44	y	38:55	1.35	3370	8194	2.5	14.9	84.3
ES	13C-1,2,3,4,7,8,9-HpCDF	3.29e+07	0.45	y	40:40	1.18	3430	8194	2.5	17.1	85.7
ES	13C-OCDF	6.67e+07	0.90	y	43:51	1.29	6340	4349	2.5	8.26	79.2
CS	37Cl-2,3,7,8-TCDD	2.54e+04			26:53	1.15	2.06			1.92	0.129
CS	13C-1,2,3,4,7-PeCDD	*	*	n	NotF»	1.01	*	3195	2.5	5.86	*
CS	13C-1,2,3,4,6-PeCDF	2.53e+05	1.73	y	30:26	0.83	17.3	2444	2.5	3.55	0.432
CS	13C-1,2,3,4,6,9-HxCDF	*	*	n	NotF»	1.32	*	30948	2.5	57.5	*
CS	13C-1,2,3,4,6,8,9-HpCDF	4.22e+05	0.85	n	39:24	1.05	49.3	8194	2.5	19.1	1.23
NA	n/a	*	*	n	NotF»	Div0	*	30948	2.5	*	*
JS/RT	13C-1,2,3,4-TCDD	4.32e+07	0.81	y	26:09	-	112	2855	2.5	-	-
JS	13C-1,2,3,4-TCDF	7.05e+07	0.77	y	24:27	-	111	3597	2.5	-	-
JS/RT	13C-1,2,3,4,6,7-HxCDD	1.63e+07	1.28	y	36:46	-	55.5	5766	2.5	-	-

Pg

↳ ci 'ns' on final report.

* 1,2,3,7,8,9-HxCDF co-elutes with and is inseparable from the the last eluting HxCDF isomer. The reported value is a combined result of the two isomers.

Analyst: RL

Date: 25 Jul 07

SS	37Cl-2,3,7,8-TCDD	2.54e+04			26:53	1.03	2.44			2.13	0.153
SS	13C-1,2,3,4,7-PeCDD	*	*	n	NotF»	1.00	*	3195	2.5	7.44	*
SS	13C-1,2,3,4,6-PeCDF	2.53e+05	1.73	y	30:26	0.89	18.4	2444	2.5	4.38	0.460
SS	13C-1,2,3,4,6,9-HxCDF	*	*	n	NotF»	0.75	*	30948	2.5	40.0	*
SS	13C-1,2,3,4,6,8,9-HpCDF	4.22e+05	0.85	n	39:24	0.78	58.5	8194	2.5	13.2	1.46
SBS	2,4,6,8-TCDF	*	*	n	NotF»	1.06	*	2061	2.5	2.56	-
Ay	1,3,6,8-TCDD	3.76e+06	0.77	y	22:54	0.97	384	1678	2.5	3.19	-
Ay	1,2,3,9-TCDD	*	*	n	NotF»	0.97	*	1678	2.5	3.19	-
Ay	1,2,8,9-TCDD	3.71e+06	0.76	y	27:56	0.97	379	1678	2.5	3.19	-
Ay	1,2,4,7,9-PeCDD	4.10e+06	1.57	y	29:54	0.88	462	25922	2.5	68.4	-
Ay	1,2,3,8,9-PeCDD	3.90e+06	1.56	y	32:58	0.88	440	25922	2.5	68.4	-
Ay	1,2,4,6,7,9-HxCDD	3.35e+06	1.24	y	34:45	1.00	407	2288	2.5	5.59	-
Ay	1,2,3,4,6,7,9-HpCDD	2.35e+06	1.07	y	39:15	0.88	320	2418	2.5	6.12	-
Ay	1,3,6,8-TCDF	4.45e+06	0.77	y	20:42	1.06	283	2061	2.5	2.56	-
Ay	2,3,4,8-TCDF	*	*	n	NotF»	1.06	*	2061	2.5	2.56	-
Ay	1,2,8,9-TCDF	4.22e+06	0.80	y	28:06	1.06	269	2061	2.5	2.56	-
Ay	1,3,4,6,8-PeCDF	4.80e+06	1.65	y	28:01	1.06	306	1872	2.5	2.33	-
Ay	1,2,3,8,9-PeCDF	5.45e+06	1.56	y	33:16	0.96	362	4041	2.5	6.42	-
Ay	1,2,3,4,6,8-HxCDF	5.74e+06	1.26	y	34:05	1.04	458	569981	2.5	600	-
Tot	Total Tetra-Dioxins	1.31e+07	0.77	y	22:54	0.97	1340	1678	2.5	3.19	-
Tot	Total Penta-Dioxins	1.33e+07	1.57	y	29:54	0.88	1500	25922	2.5	68.4	-
Tot	Total Hexa-Dioxins	2.06e+07	1.24	y	34:45	1.00	2500	2288	2.5	5.59	-
Tot	Total Hepta-Dioxins	6.52e+06	1.07	y	39:15	0.88	889	2418	2.5	6.12	-
Tot	Total Tetra-Furans	1.72e+07	0.77	y	20:42	1.06	1090	2061	2.5	2.56	-
Tot	Total Penta-Furans	1.72e+07	1.53	y	31:00	0.96	1140	4041	2.5	6.42	-
Tot	Total Hexa-Furans	3.41e+07	1.26	y	34:05	1.04	2780	569981	2.5	600	-
Tot	Total Hepta-Furans	1.20e+07	1.04	y	38:55	1.18	1140	2042	2.5	2.58	-
Tot	TCDD EMPC	1.31e+07	0.77	y	22:54	0.97	1340	1678	2.5	3.19	-
Tot	PeCDD EMPC	1.33e+07	1.57	y	29:54	0.88	1500	25922	2.5	68.4	-
Tot	HxCDD EMPC	2.06e+07	1.24	y	34:45	1.00	2500	2288	2.5	5.59	-
Tot	HpCDD EMPC	6.52e+06	1.07	y	39:15	0.88	889	2418	2.5	6.12	-
Tot	TCDF EMPC	1.72e+07	0.77	y	20:42	1.06	1090	2061	2.5	2.56	-
Tot	PeCDF EMPC	1.72e+07	1.53	y	31:00	0.96	1140	4041	2.5	6.42	-
Tot	HxCDF EMPC	3.41e+07	1.26	y	34:05	1.04	2780	569981	2.5	600	-
Tot	HpCDF EMPC	1.20e+07	1.04	y	38:55	1.18	1140	2042	2.5	2.58	-
AS	13C-1,3,6,8-TCDD	4.00e+07	0.79	y	22:52	1.10	3370	2855	2.5	4.81	84.3
AS	13C-1,3,6,8-TCDF	5.95e+07	0.77	y	20:41	1.07	3150	3597	2.5	4.06	78.6
DPE	HxCDPE	*			NotF»	-	*			-	-
DPE	HpCDPE	*			NotF»	-	*			-	-
DPE	OCDPE	*			NotF»	-	*			-	-
DPE	NCDPE	*			NotF»	-	*			-	-
DPE	DCDPE	*			NotF»	-	*			-	-
LMC	Fn1 check mass	*			NotF»	-	*			-	-
LMC	Fn2 check mass	*			NotF»	-	*			-	-
LMC	Fn3 check mass	*			NotF»	-	*			-	-
LMC	Fn4 check mass	*			NotF»	-	*			-	-
LMC	Fn5 check mass	*			NotF»	-	*			-	-

O[illegible]uan on MM1 25-JUL-2007 15:44

Totals Results Analytical Perspectives [Form: TOT]

Totals class: TCDD EMPC Function: 1 Run #: 7 Checkcode: 0422
File Name: 070724P2 Sample #: 7 Sample text: P8090_5075_005 M23-3344-01-Audit Air Tr»

Acquired: 24-JUL-07 21:31:56 Processed: 25-JUL-07 08:37:31

Total Conc.: 1335.0 Unnamed Conc.: * Homolog count: 3

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
22:54	1.634e+06	y	2.126e+06	y	0.77	y	3.760e+06	3.760e+06	2.44e+02	y	384	1,3,6,8-TCDD
26:53	2.456e+06	y	3.153e+06	y	0.78	y	5.609e+06	5.609e+06	4.28e+02	y	572	2,3,7,8-TCDD
27:56	1.607e+06	y	2.106e+06	y	0.76	y	3.713e+06	3.713e+06	3.11e+02	y	379	1,2,8,9-TCDD

Totals Results Analytical Perspectives [Form: TOT]

Totals class: PeCDD EMPC Function: 2 Run #: 7 Checkcode: 0422
File Name: 070724P2 Sample #: 7 Sample text: P8090_5075_005 M23-3344-01-Audit Air Tr»

Acquired: 24-JUL-07 21:31:56 Processed: 25-JUL-07 08:37:31

Total Conc.: 1502.1 Unnamed Conc.: * Homolog count: 3

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
29:54	2.502e+06	y	1.594e+06	y	1.57	y	4.096e+06	4.096e+06	1.13e+01	y	462	1,2,4,7,9-PeCDD
32:31	3.243e+06	y	2.082e+06	y	1.56	y	5.325e+06	5.325e+06	2.23e+01	y	600	1,2,3,7,8-PeCDD
32:58	2.377e+06	y	1.523e+06	y	1.56	y	3.900e+06	3.900e+06	1.58e+01	y	440	1,2,3,8,9-PeCDD

Totals Results Analytical Perspectives [Form: TOT]

Totals class: HxCDD EMPC Function: 3 Run #: 7 Checkcode: 0422
File Name: 070724P2 Sample #: 7 Sample text: P8090_5075_005 M23-3344-01-Audit Air Tr»

Acquired: 24-JUL-07 21:31:56 Processed: 25-JUL-07 08:37:31

Total Conc.: 2504.1 Unnamed Conc.: 298.212 Homolog count: 5

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
34:45	1.854e+06	y	1.492e+06	y	1.24	y	3.346e+06	3.346e+06	1.94e+02	y	407	1,2,4,6,7,9-HxCDD
36:28	2.777e+06	y	2.184e+06	y	1.27	y	4.960e+06	4.960e+06	2.83e+02	y	605	1,2,3,4,7,8-HxCDD
36:35	2.682e+06	y	2.129e+06	y	1.26	y	4.810e+06	4.810e+06	2.84e+02	y	579	1,2,3,6,7,8-HxCDD
36:47	1.353e+06	y	1.098e+06	y	1.23	y	2.451e+06	2.451e+06	1.36e+02	y	298	
36:53	2.797e+06	y	2.214e+06	y	1.26	y	5.012e+06	5.012e+06	2.84e+02	y	615	1,2,3,7,8,9-HxCDD

Totals Results Analytical Perspectives [Form: TOT]

Totals class: HpCDD EMPC Function: 4 Run #: 7 Checkcode: 0422
File Name: 070724P2 Sample #: 7 Sample text: P8090_5075_005 M23-3344-01-Audit Air Tr»

Acquired: 24-JUL-07 21:31:56 Processed: 25-JUL-07 08:37:31

Total Conc.: 888.84 Unnamed Conc.: * Homolog count: 2

RT	m1 Resp	mod.	m2 Resp	mod.	RA		Resp	Adj_Resp	S/N		Conc.	Name
39:15	1.211e+06	y	1.136e+06	y	1.07	y	2.348e+06	2.348e+06	1.41e+02	y	320	1,2,3,4,6,7,9-HpCDD

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 40:05  2.145e+06 y  2.030e+06 y  1.06 y 4.174e+06 4.174e+06  2.29e+02  y        569 1,2,3,4,6,7,8-HpCDD
Totals Results              Analytical Perspectives            [Form: TOT]

  Totals class: TCDF EMPC                     Function: 1  Run #: 7                 Checkcode: 0422
  File Name: 070724P2   Sample #: 7      Sample text: P8090_5075_005 M23-3344-01-Audit Air Tr»

      Acquired: 24-JUL-07 21:31:56    Processed: 25-JUL-07 08:37:31

   Total Conc.: 1094.5               Unnamed Conc.: 10.626        Homolog count: 4


    RT    m1 Resp mod. m2 Resp mod. RA        Resp  Adj_Resp  S/N              Conc. Name

 20:42  1.934e+06 y  2.512e+06 y  0.77 y 4.446e+06 4.446e+06  2.39e+02  y        283 1,3,6,8-TCDF
 24:59  7.486e+04 y  9.198e+04 y  0.81 y 1.668e+05 1.668e+05  1.00e+01  y       10.6
 25:57  3.684e+06 y  4.669e+06 y  0.79 y 8.353e+06 8.353e+06  5.05e+02  y        532 2,3,7,8-TCDF
 28:06  1.879e+06 y  2.340e+06 y  0.80 y 4.220e+06 4.220e+06  2.61e+02  y        269 1,2,8,9-TCDF
Totals Results              Analytical Perspectives            [Form: TOT]

  Totals class: PeCDF EMPC                    Function: 2  Run #: 7                 Checkcode: 0422
  File Name: 070724P2   Sample #: 7      Sample text: P8090_5075_005 M23-3344-01-Audit Air Tr»

      Acquired: 24-JUL-07 21:31:56    Processed: 25-JUL-07 08:37:31

   Total Conc.: 1144.4               Unnamed Conc.: *             Homolog count: 3


    RT    m1 Resp mod. m2 Resp mod. RA        Resp  Adj_Resp  S/N              Conc. Name

 31:00  3.524e+06 y  2.300e+06 y  1.53 y 5.824e+06 5.824e+06  1.58e+02  y        393 1,2,3,7,8-PeCDF
 32:10  3.619e+06 y  2.338e+06 y  1.55 y 5.956e+06 5.956e+06  1.55e+02  y        390 2,3,4,7,8-PeCDF
 33:16  3.322e+06 y  2.129e+06 y  1.56 y 5.451e+06 5.451e+06  1.54e+02  y        362 1,2,3,8,9-PeCDF
Totals Results              Analytical Perspectives            [Form: TOT]

  Totals class: HxCDF EMPC                    Function: 3  Run #: 7                 Checkcode: 0422
  File Name: 070724P2   Sample #: 7      Sample text: P8090_5075_005 M23-3344-01-Audit Air Tr»

      Acquired: 24-JUL-07 21:31:56    Processed: 25-JUL-07 08:37:31

   Total Conc.: 2779.2               Unnamed Conc.: *             Homolog count: 5


    RT    m1 Resp mod. m2 Resp mod. RA        Resp  Adj_Resp  S/N              Conc. Name

 34:05  3.204e+06 y  2.535e+06 y  1.26 y 5.740e+06 5.740e+06  1.28e+00  n        458 1,2,3,4,6,8-HxCDF
 35:29  3.440e+06 y  2.703e+06 y  1.27 y 6.143e+06 6.143e+06  1.44e+00  n        505 1,2,3,4,7,8-HxCDF
 35:38  3.947e+06 y  3.094e+06 y  1.28 y 7.042e+06 7.042e+06  1.64e+00  n        497 1,2,3,6,7,8-HxCDF
 36:18  3.461e+06 y  2.805e+06 y  1.23 y 6.267e+06 6.267e+06  1.52e+00  n        474 2,3,4,6,7,8-HxCDF
 37:17  4.946e+06 y  3.951e+06 y  1.25 y 8.898e+06 8.898e+06  1.29e+00  n        845 1,2,3,7,8,9-HxCDF
Totals Results              Analytical Perspectives            [Form: TOT]

  Totals class: HpCDF EMPC                    Function: 4  Run #: 7                 Checkcode: 0422
  File Name: 070724P2   Sample #: 7      Sample text: P8090_5075_005 M23-3344-01-Audit Air Tr»

      Acquired: 24-JUL-07 21:31:56    Processed: 25-JUL-07 08:37:31

   Total Conc.: 1137.2               Unnamed Conc.: 274.828       Homolog count: 3


    RT    m1 Resp mod. m2 Resp mod. RA        Resp  Adj_Resp  S/N              Conc. Name
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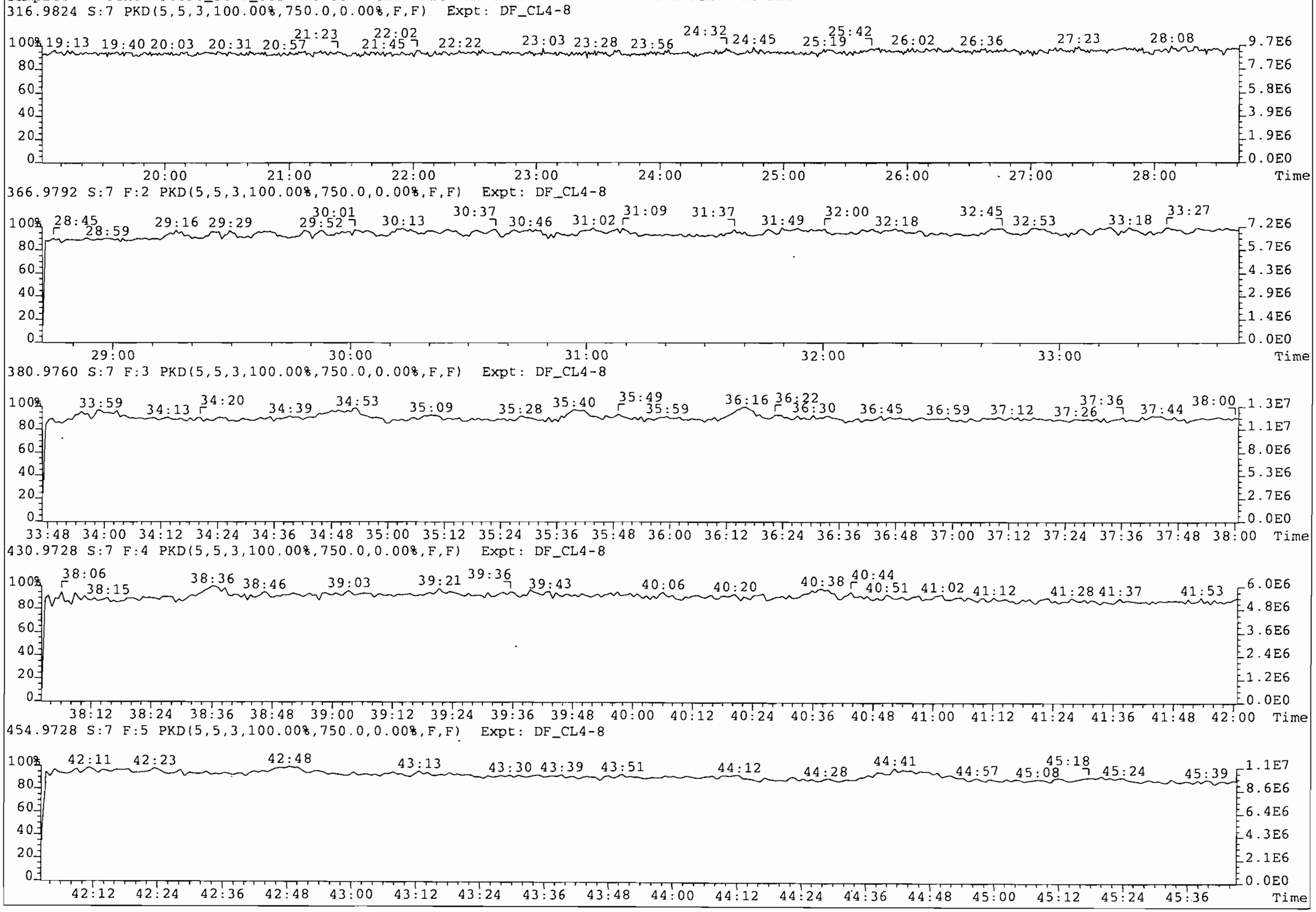
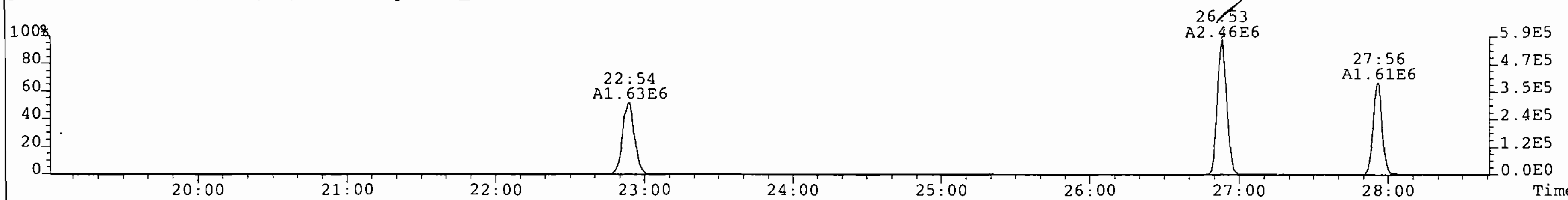
38:55	3.278e+06	y	3.141e+06	y	1.04	y	6.419e+06	6.419e+06	4.68e+02	y	569	1,2,3,4,6,7,8-HpCDF
39:25	1.456e+06	y	1.374e+06	y	1.06	y	2.830e+06	2.830e+06	2.03e+02	y	275	
40:40	1.388e+06	y	1.344e+06	y	1.03	y	2.732e+06	2.732e+06	1.62e+02	y	294	1,2,3,4,7,8,9-HpCDF

File: 070724P2 Acq: 24-JUL-2007 21:31:56 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 7 Text: P8090_5075_005 M23-3344-01-Audit Air Train Vial# 21 File Text: AP DB5

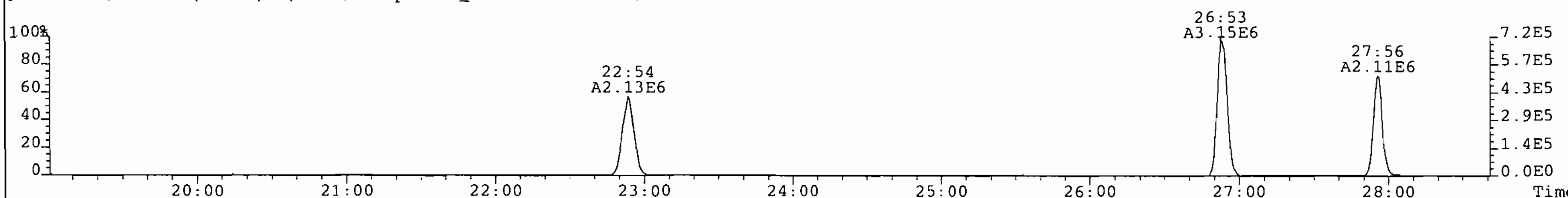


File: 070724P2 Acq: 24-JUL-2007 21:31:56 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 7 Text: P8090_5075_005 M23-3344-01-Audit Air Train Vial# 21 File Text: AP DB5

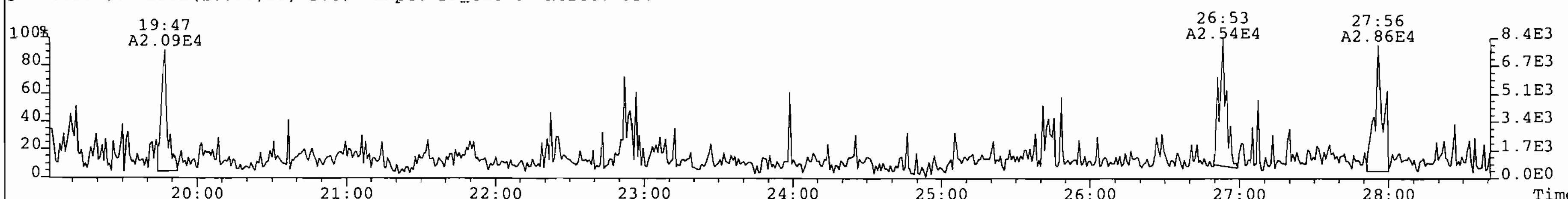
319.8965 S:7 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 330



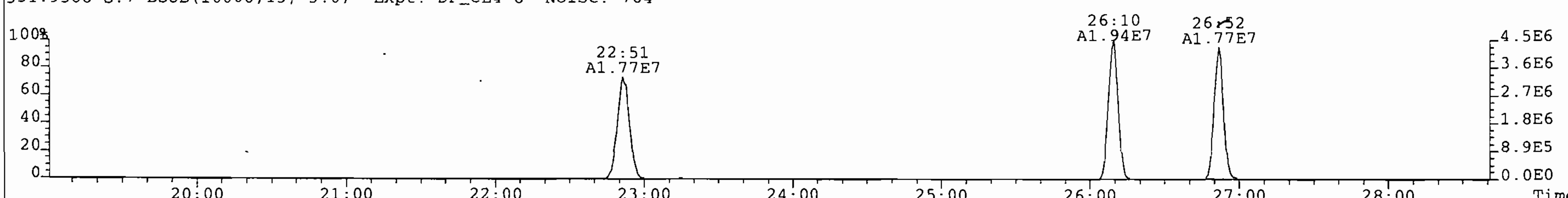
321.8936 S:7 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 469



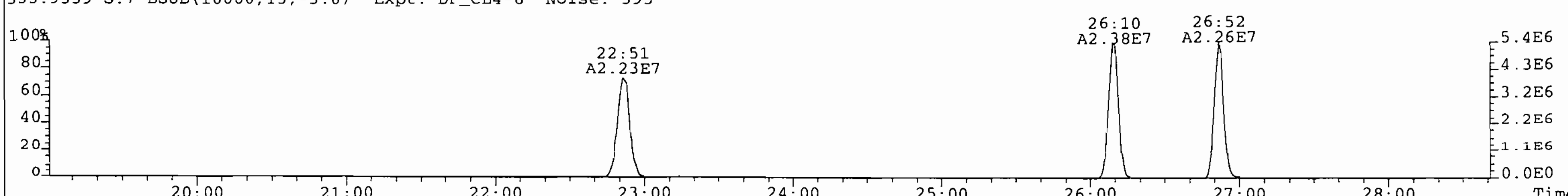
327.8850 S:7 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 330



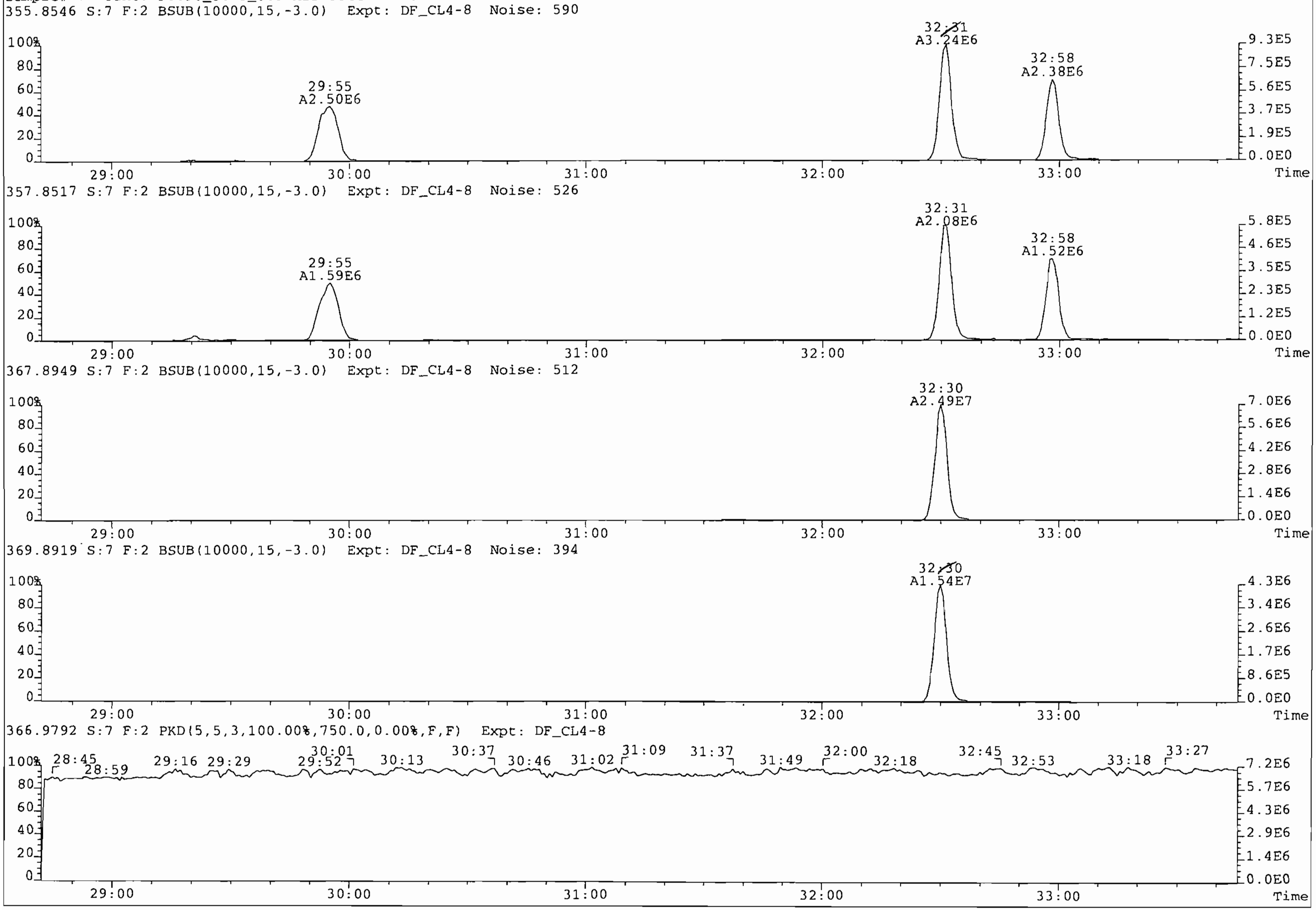
331.9368 S:7 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 764



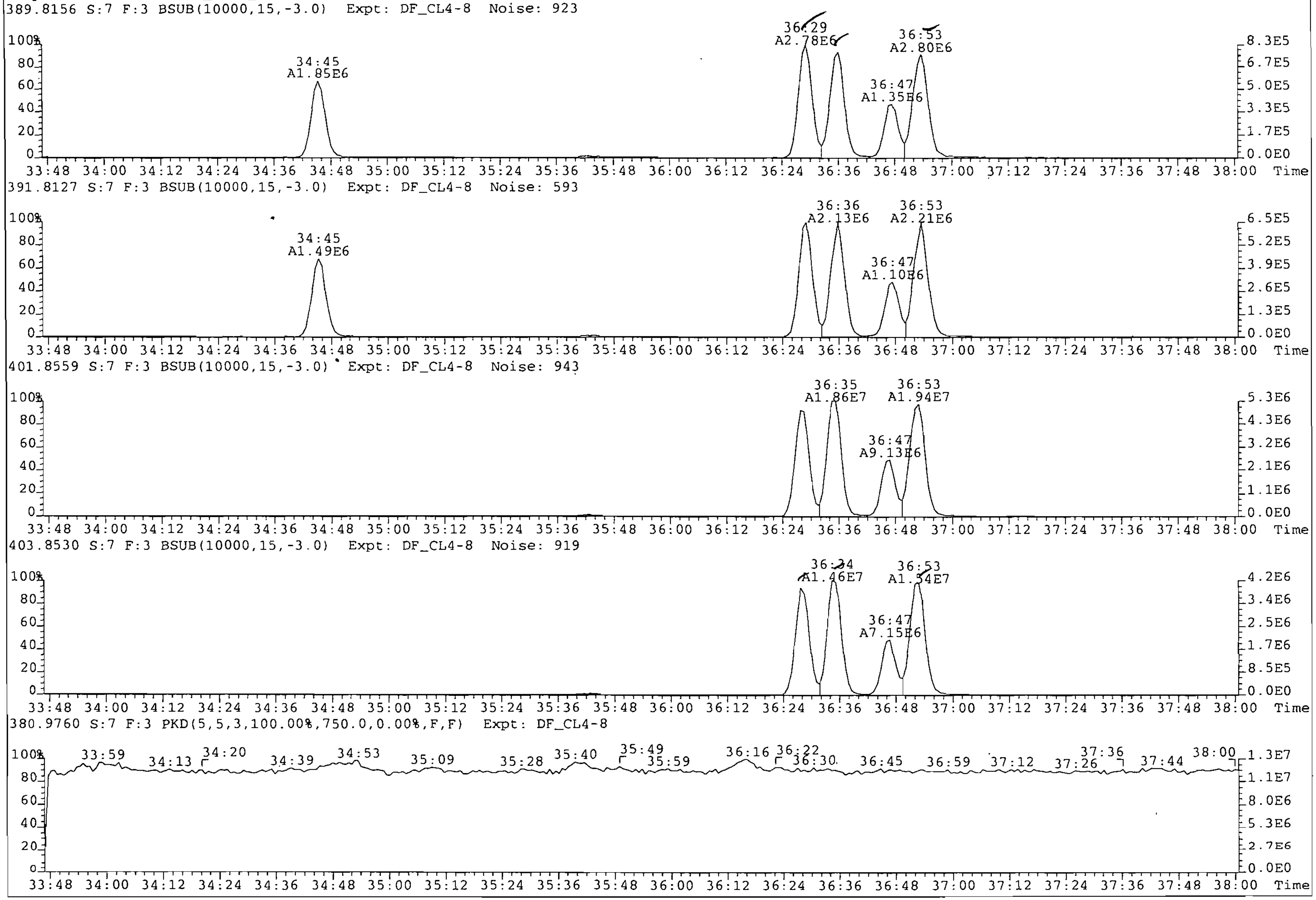
333.9339 S:7 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 395



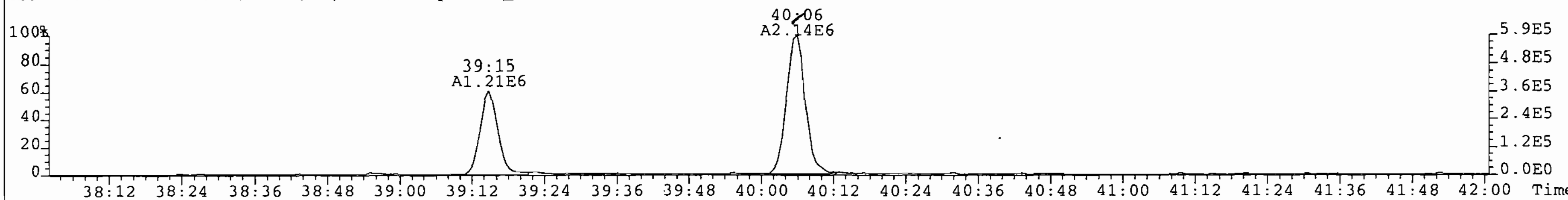
File: 070724P2 Acq: 24-JUL-2007 21:31:56 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 7 Text: P8090_5075_005 M23-3344-01-Audit Air Train Vial# 21 File Text: AP DB5



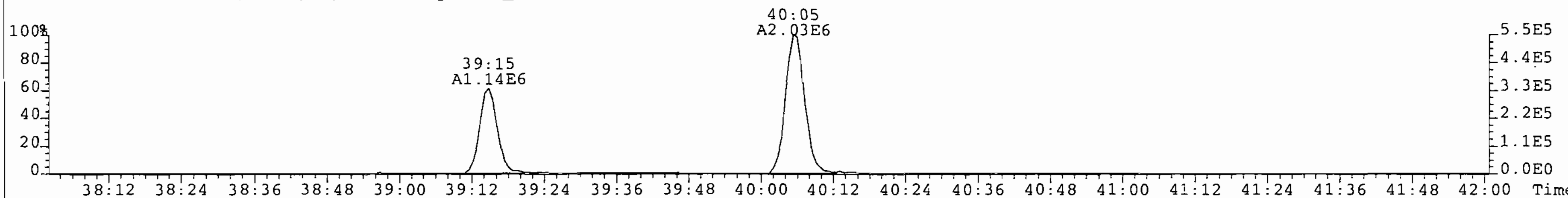
File: 070724P2 Acq: 24-JUL-2007 21:31:56 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 7 Text: P8090_5075_005 M23-3344-01-Audit Air Train Vial# 21 File Text: AP DB5



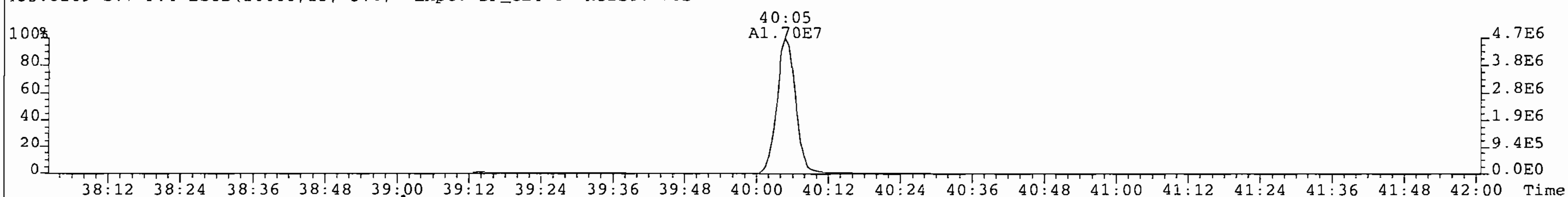
File: 070724P2 Acq: 24-JUL-2007 21:31:56 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 7 Text: P8090_5075_005 M23-3344-01-Audit Air Train Vial# 21 File Text: AP DB5
423.7767 S:7 F:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 1249



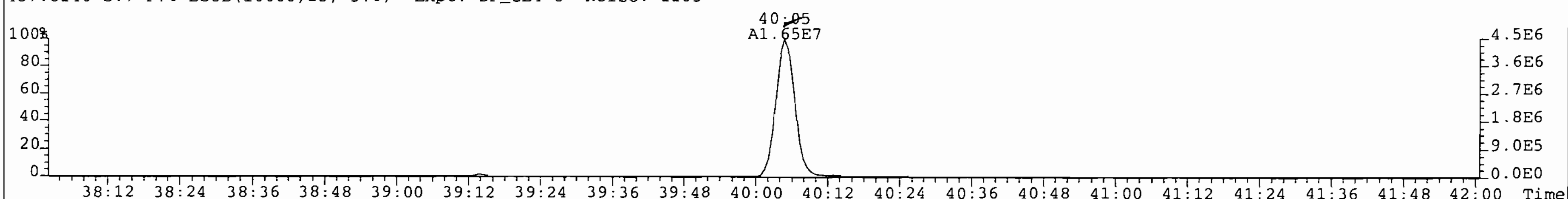
425.7737 S:7 F:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 817



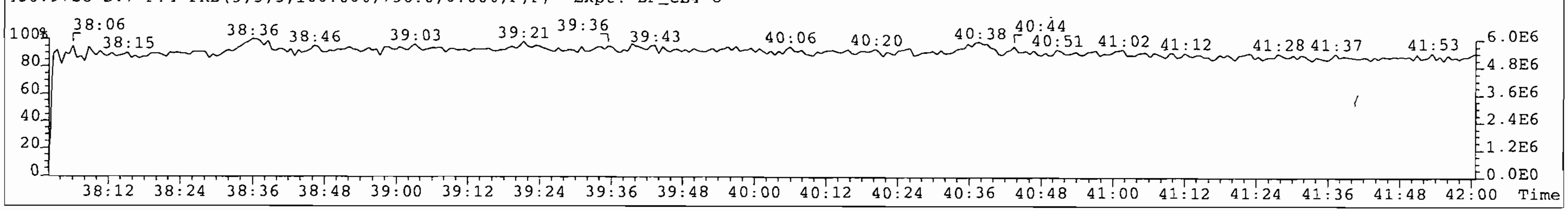
435.8169 S:7 F:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 702



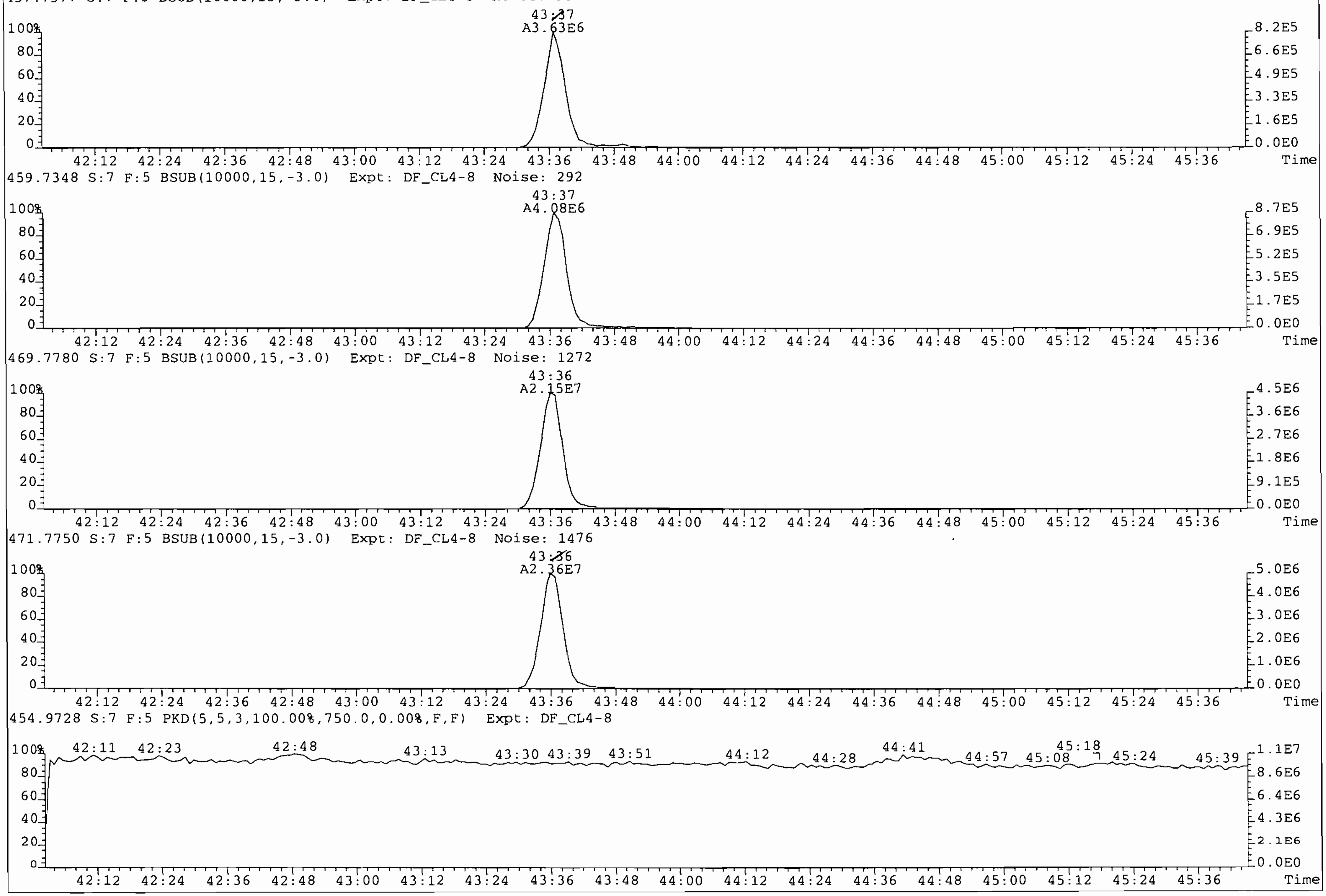
437.8140 S:7 F:4 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 1103



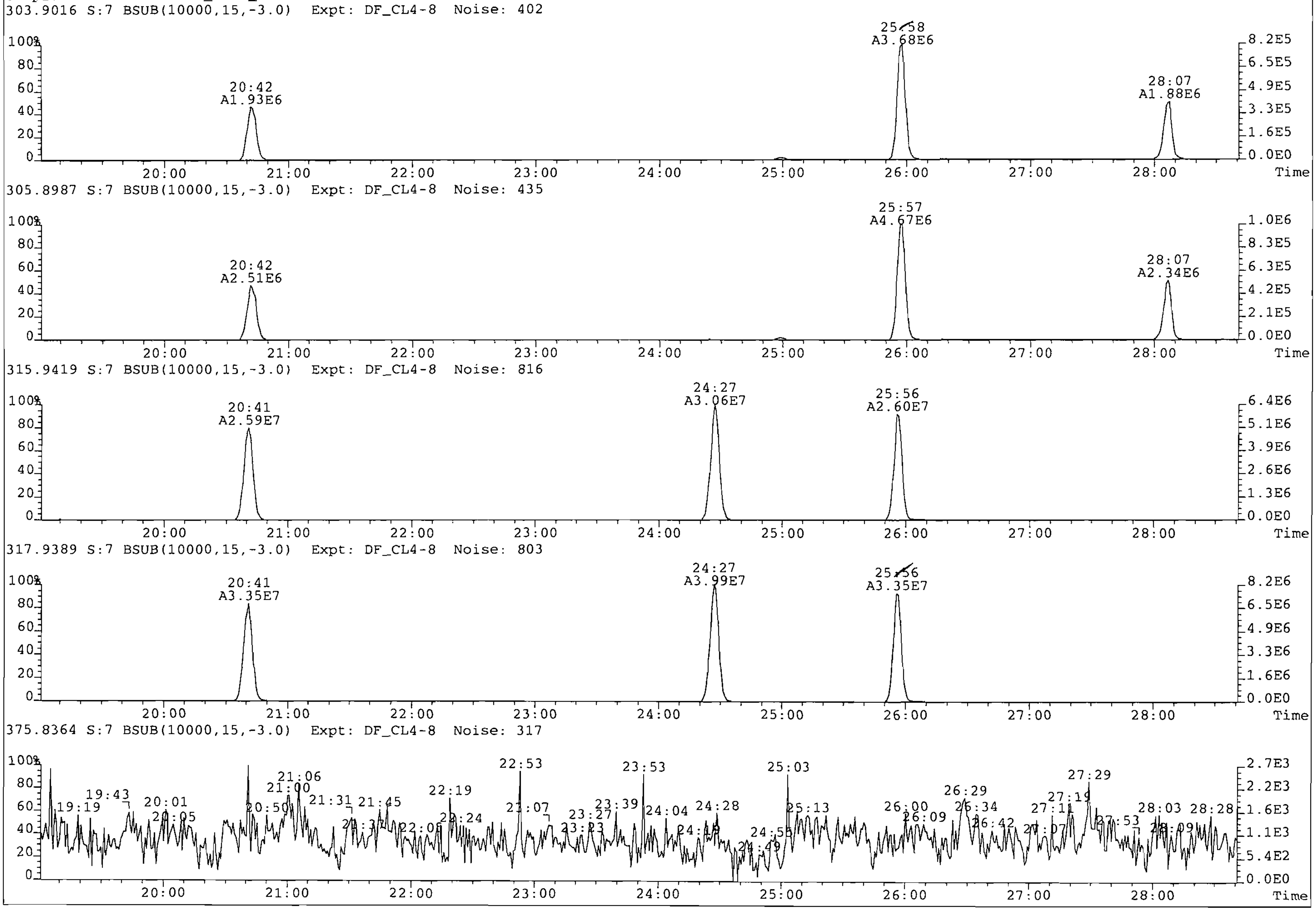
430.9728 S:7 F:4 PKD(5,5,3,100.00%,750.0,0.00%,F,F) Expt: DF_CL4-8



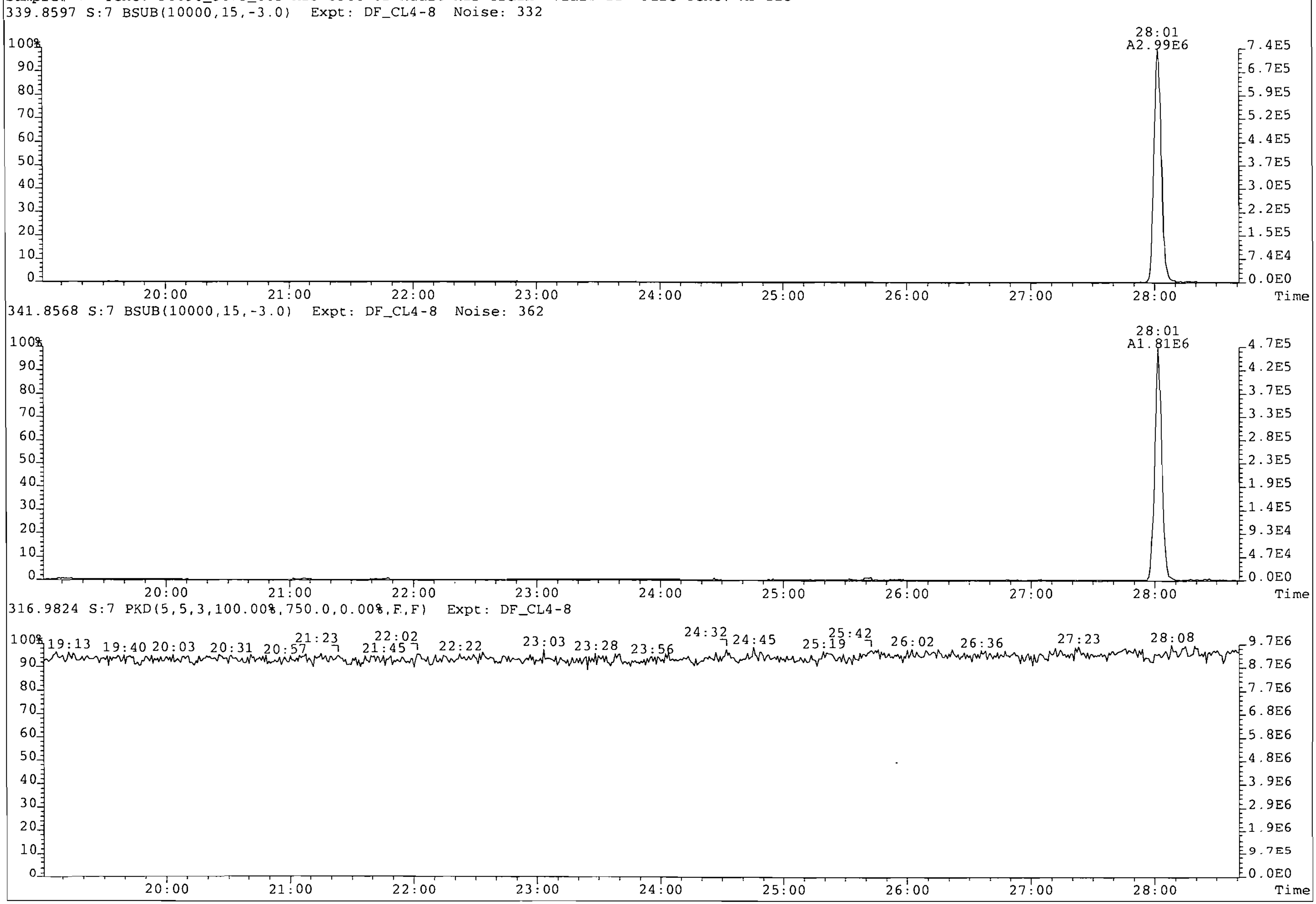
File: 070724P2 Acq: 24-JUL-2007 21:21:56 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 7 Text: P8090_5075_005 M23-3344-01-Audit Air Train Vial# 21 File Text: AP DB5
457.7377 S:7 F:5 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 584



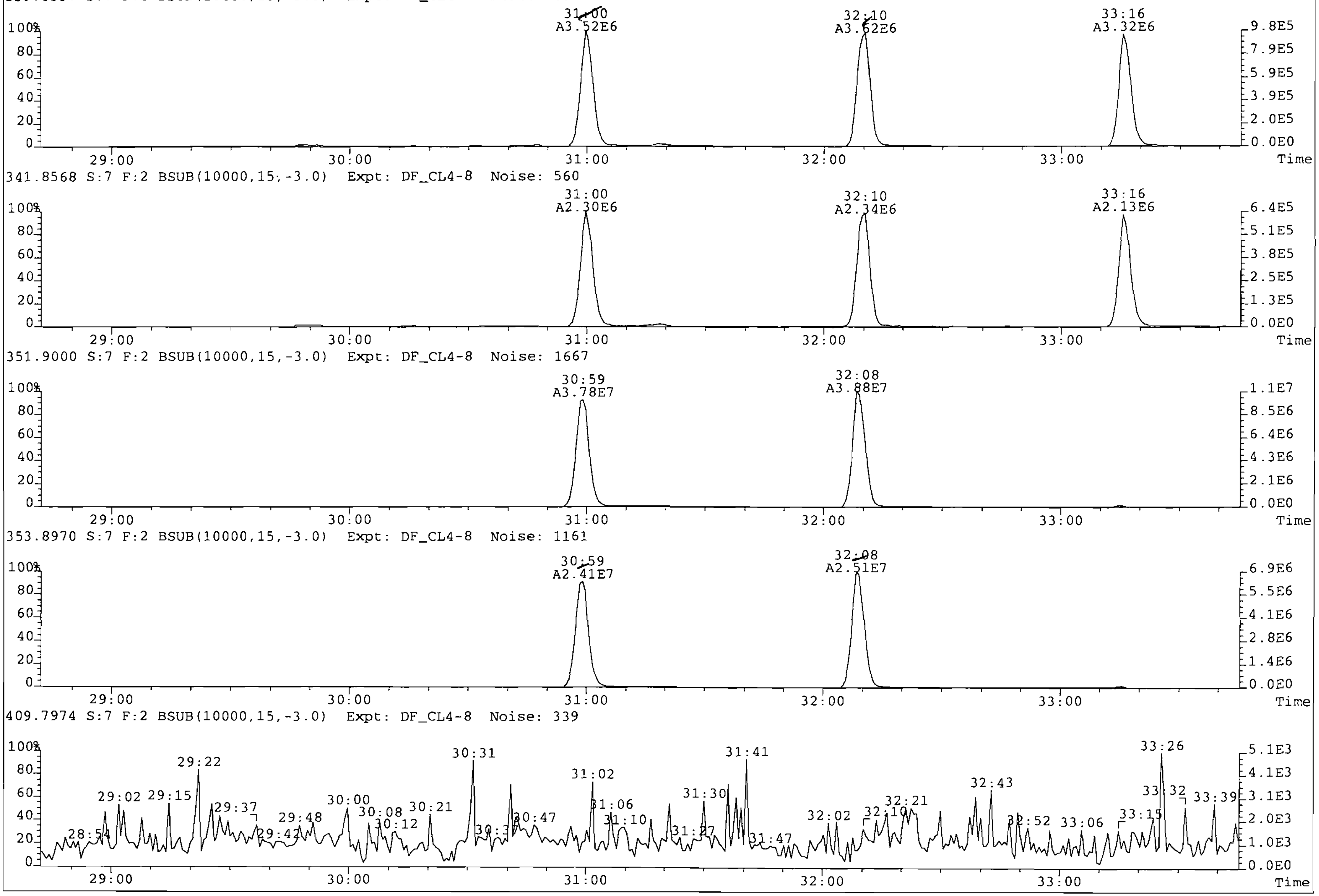
File: 070724P2 Acq: 24-JUL-2007 21:31:56 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 7 Text: P8090_5075_005 M23-3344-01-Audit Air Train Vial# 21 File Text: AP DB5



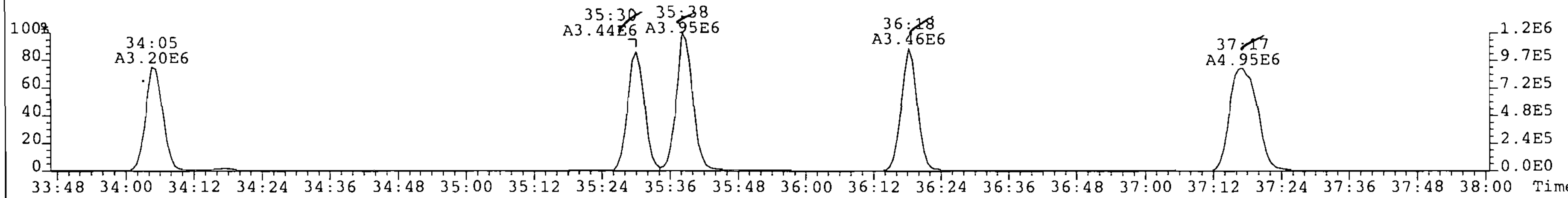
File: 070724P2 Acq: 24-JUL-2007 21:31:56 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 7 Text: P8090_5075_005 M23-3344-01-Audit Air Train Vial# 21 File Text: AP DB5



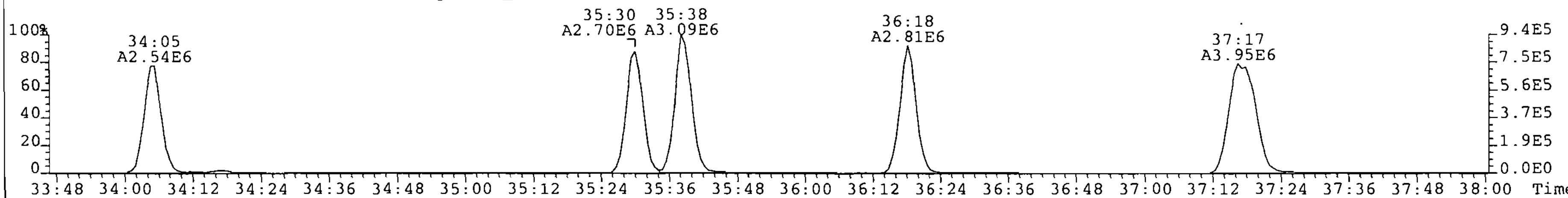
File: 070724P2 Acq: 24-JUL-2007 21:31:56 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 7 Text: P8090_5075_005 M23-3344-01-Audit Air Train Vial# 21 File Text: AP DB5
339.8597 S:7 F:2 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 638



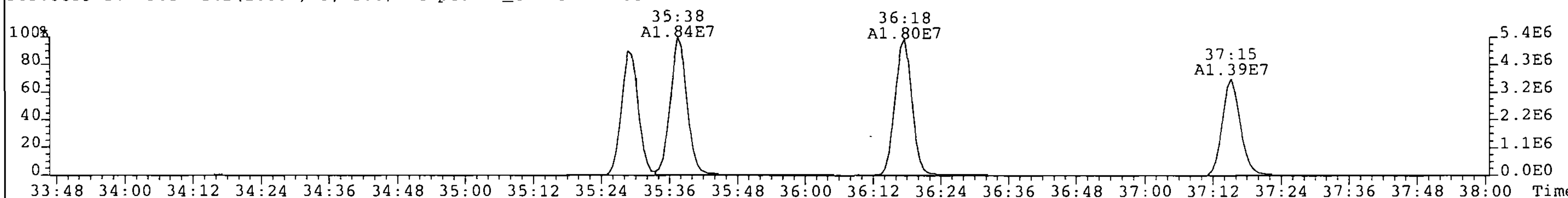
File: 070724P2 Acq: 24-JUL-2007 21:31:56 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 7 Text: P8090_5075_005 M23-3344-01-Audit Air Train Vial# 21 File Text: AP DB5
373.8207 S:7 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 850



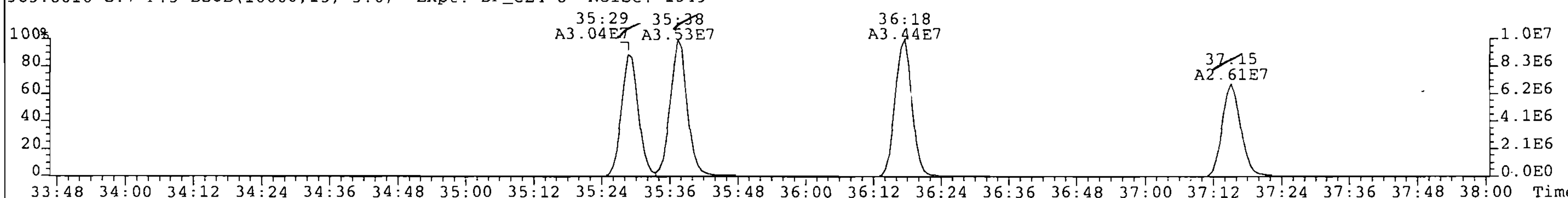
375.8178 S:7 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 419



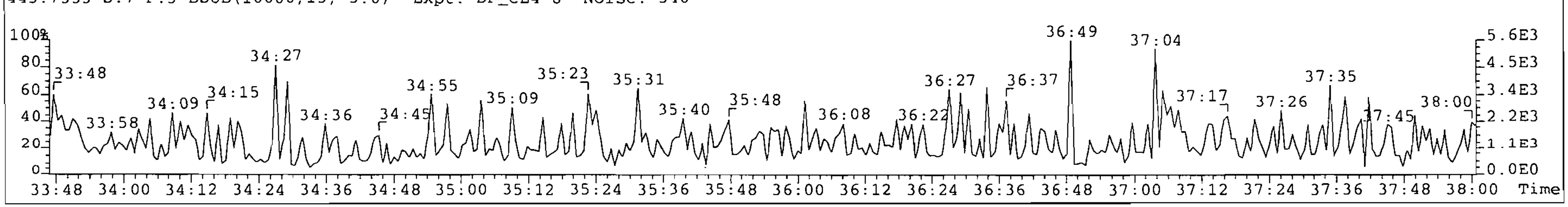
383.8639 S:7 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 1244



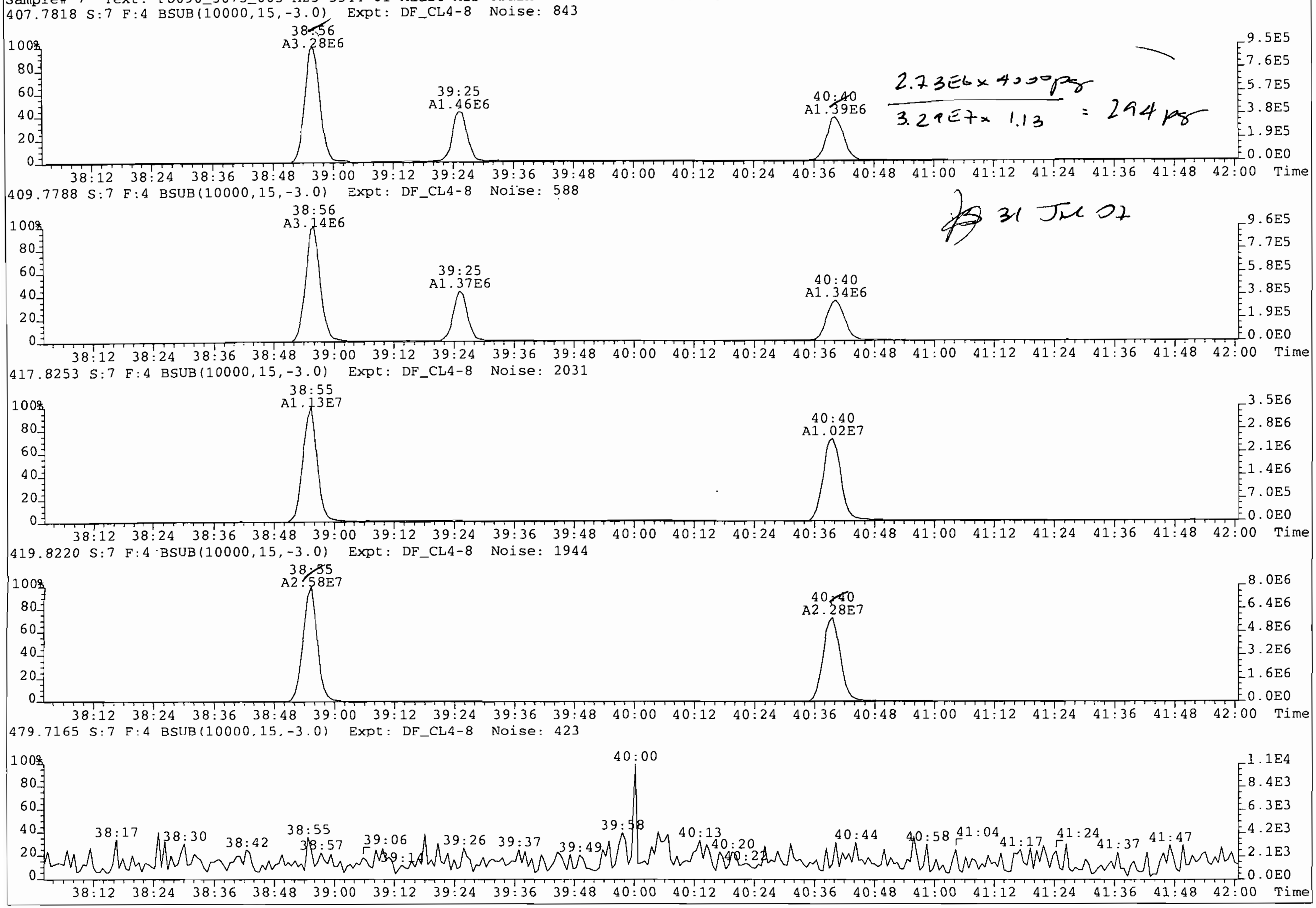
385.8610 S:7 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 1549



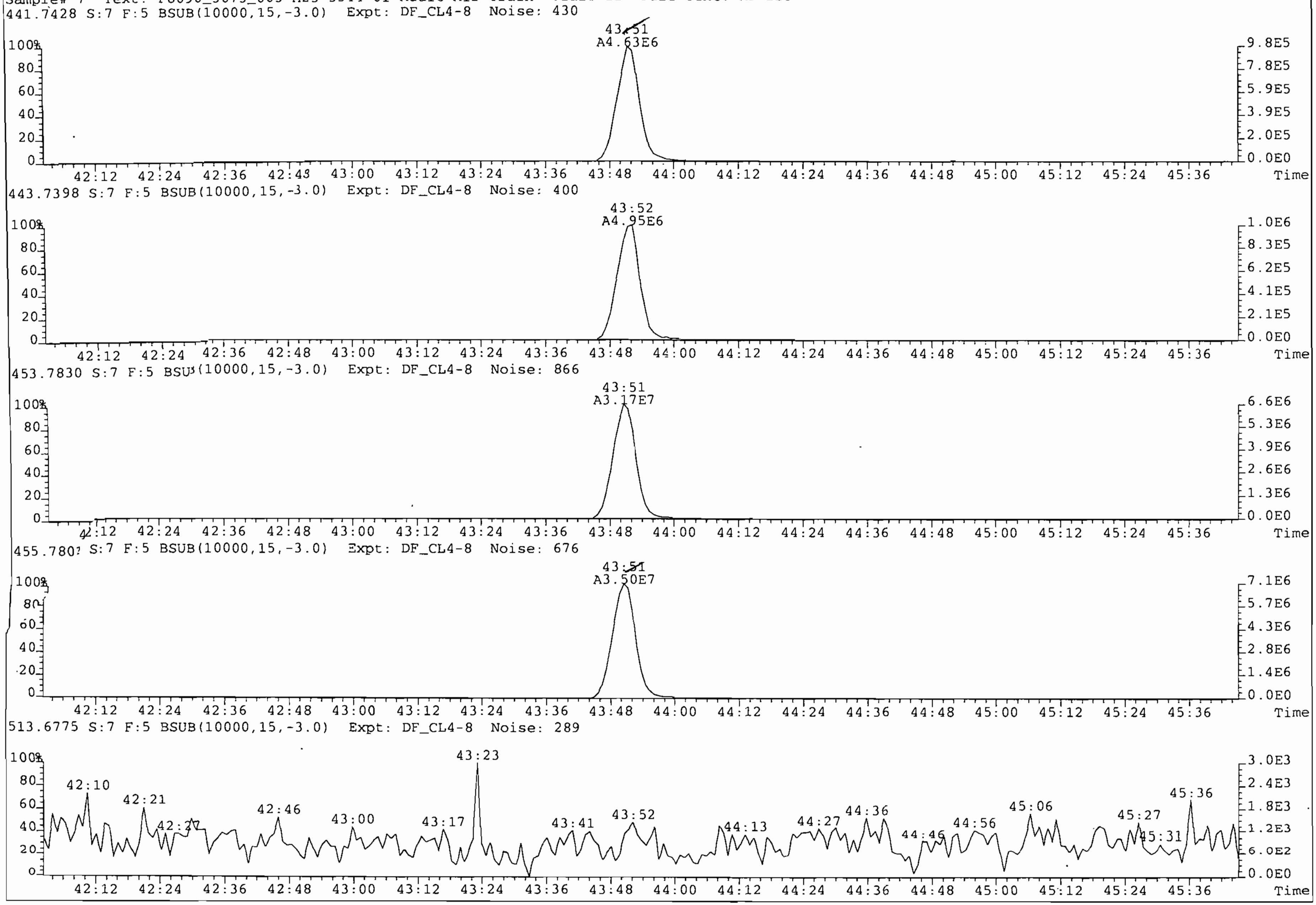
445.7555 S:7 F:3 BSUB(10000,15,-3.0) Expt: DF_CL4-8 Noise: 340



File: 070724P2 Acq: 24-JUL-2007 21:31:56 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 7 Text: P8090_5075_005 M23-3344-01-Audit Air Train Vial# 21 File Text: AP DB5



File: 070724P2 Acq: 24-JUL-2007 21:31:56 GC EI+ Voltage SIR Autospec-UltimaE
Sample# 7 Text: P8090_5075_005 M23-3344-01-Audit Air Train Vial# 21 File Text: AP DB5



APPENDIX C

EQUIPMENT CALIBRATION RECORDS
for
Meter Boxes and Pitot / Thermocouples
and
Nozzles

SUMMARY OF EQUIPMENT

TRAIN	METER BOX	PROBE / PITOT	THERMOCOUPLE	LINER	NOZZLE	NOZZLES
M5 / 26A	M-13	RPT-280 / 5C	RT-5C	Glass	G-7-31	0.312
M23	M-8	RPT-4 / 5A	RT-5A	Glass	G-7-10	0.312

METERBOX CALIBRATION

Meter Box Post Test Calibration Check

ALCOA EXTRUSIONS
PLANT CITY, FL
NORTH FURNACE EXHAUST

Meter Box #: M13

Calibrated by:	Jason Pennington	Delta H @	1.812
5-Pt Cal Date:	3/22/2007	Gamma, initial	0.9978

Calculate Yqa for each test run using the following equation:

$$Y_{qa} = \frac{\theta}{V_m}\sqrt{\frac{0.0319\,T_m}{\Delta H@(P_b + \Delta\frac{H_{avg}}{13.6})}\frac{29}{M_d}}\,(\sqrt{\Delta H})_{avg}$$

where:

Yqa	dry gas meter calibration check value, dimensionless.
q	total run time, min.
Vm	total sample volume measured by dry gas meter, dcf.
Tm	absolute average dry gas meter temp., °R.
Pb	barometric pressure, in. Hg.
0.0319	= (29.92/528)(0.75)2 (in. Hg/°/R) cfm2.
DHavg	average orifice meter differential, in. H20.
DH@	orifice meter calibration coefficient, in. H2O.
Md	dry molecular weight of stack gas, lb/lb-mole.
29	dry molecular weight of air, lb/lb-mole.
13.6	specific gravity of mercury.

After each test run series, do the following:

Average the three or more Yqa's obtained from the test run series and compare this average with the dry gas meter calibration factor, Y. The average Yqa must be within 5 percent of Y.

If the average Yqa does not meet the +5 percent criterion, recalibrate the meter over the full range of orifice settings, as detailed in Section 5.3.1 of Method 5. Then follow the procedure in Section 5.3.3 of Method 5.

	Test 1	Test 2	Test 3
time	564.8	536.5	478
Vm - total	400.396	385.717	350.674
Tm avg	95.7	93.8	92.2
Tm -R	556	554	552
Barometric	29.85	29.90	29.90
DH_{avg}	1.569	1.606	1.687
DH@	1.8120	1.8120	1.8120
Md stack gas	28.92	28.90	28.91
Md Air	29.00	29.00	29.00
Meter Box Gamma	0.9978	0.9978	0.9978
QA Gamma	1.0050	0.9957	1.0028
Difference: within 5%?	0.7%	0.2%	0.5%

AVERAGE DIFFERENCE	0.5%

Dry Gas Meter 5-Point Full Test

Meter Box ID	M13	**Calibration Date**	3/22/2007
Gas Meter Number	9433	**Barometric Pressure**	29.85
Calibrated By	J.Pennington	**Orifice Set Calibration Date**	2/21/2007

	Run #1	Run #2	Run #1	Run #2	Run #1	Run #2	Run #1	Run #2	Run #1	Run #2
Orifice ID	MS-40		BU-48		BU-55		BU-63		BU-73	
Orifice Coefficient K'	0.2391		0.3437		0.4564		0.5908		0.8130	
Ambient Temperature	73	73	72	72	72	72	72	72	71	71
Meter Readings										
Vacuum (≥14.0" Hg)	23	23	22	22	21	21	19.5	19.5	17	17
Delta H	0.29	0.29	0.62	0.62	1.20	1.20	1.90	1.90	3.70	3.70
Initial Volume Ft^3	613.900	619.650	601.300	607.500	585.520	593.150	571.100	578.300	557.200	564.200
Final Volume Ft^3	619.500	626.300	607.300	613.500	592.850	600.000	577.900	584.900	563.200	570.500
Total (≥5 Ft^3)	5.6	6.65	6	6	7.33	6.85	6.8	6.6	6	6.3
Initial DGM Temperature °F	75	75	74	75	74	74	72	73	71	72
Final DGM Temperature °F	75	75	75	75	74	74	73	74	72	72
Average Temperature °F	75.0	75.0	74.5	75.0	74.0	74.0	72.5	73.5	71.5	72.0
Time Minutes	17	21	13	13	12	11	8	8	5	5
Time Seconds	47.93	12.28	15.90	15.53	14.84	25.28	50.62	33.34	40.35	56.85
Delta H@	1.683	1.683	1.742	1.741	1.920	1.920	1.825	1.822	1.894	1.892
Gamma (Y)	0.9976	1.0009	0.9967	0.9972	0.9979	0.9958	1.0009	0.9995	0.9959	0.9954
Average Gamma (Y)	**Pass**	**0.9992**	**Pass**	**0.9969**	**Pass**	**0.9969**	**Pass**	**1.0002**	**Pass**	**0.9957**
Delta H@ tolerance	**Pass**		**Pass**		**Pass**		**Pass**		**Pass**	

Gamma (Y)	**0.9978**
Delta H@	**1.812**

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QA / QC Check: Sign and Date 04-11-07

Dry Gas Meter Temperature Display Calibration

Meter Box ID	M13	**Reference Calibrator**	Omega-CL23A
Date	3/22/2007	**Serial Number**	T-235647
Calibrated By	J.Pennington	**Reference Calibration Date**	7/31/2006

Input Temperature		**Temperature Reading from Individual Thermocouple Input**[1]									
		Channel Number									
Deg. F	**Deg. R**	**1**	**% Diff**	**2**	**% Diff**	**3**	**% Diff**	**4**	**% Diff**	**5**	**% Diff**
0	460	1	**-0.2%**	1	**-0.2%**	1	**-0.2%**	0	**0.0%**	1	**-0.2%**
50	510	49	**0.2%**	49	**0.2%**	49	**0.2%**	48	**0.4%**	49	**0.2%**
100	560	99	**0.2%**	99	**0.2%**	99	**0.2%**	98	**0.4%**	98	**0.4%**
500	960	499	**0.1%**	499	**0.1%**	498	**0.2%**	497	**0.3%**	498	**0.2%**
900	1360	902	**-0.1%**	902	**-0.1%**	901	**-0.1%**	900	**0.0%**	901	**-0.1%**
1900	2360	1901	**0.0%**	1901	**0.0%**	1900	**0.0%**	1900	**0.0%**	1899	**0.0%**
		Pass	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**

[1] - Channel temperatures must agree with +/- 5 °F or 3 °C

[2] - Acceptable temperature difference is less than 1.5 %

Dry Gas Meter Thermocouple Calibration[3]

Readout Display Temperature oF	Reference Thermometer °F	Percent Difference
74	75	**-0.2%**

[3] - Dry gas meter thermicouple is compared to an ASTM type mercury in glass reference thermometer

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Customer-Focused Solutions

QA / QC Check: Sign and Date [signature] 04-11-07

Alternative Method 5 Post-Test Calibration
EPA Approved Alternative Method (ALT-009)
ALCOA EXTRUSIONS
PLANT CITY, FL
NORTH FURNACE EXHAUST

Meter Box #: M-8

Calibrated by:	Jason Pennington	Delta H @	1.815
5-Pt Cal Date:	4/3/2007	Gamma, initial	0.9961

1) Does the Meter Box pass the leak check procedure defined in 5.6 of Method 5? X Yes ___ No

2) Calculate Yqa for each test run using the following equation:

$$Y_{qa} = \frac{\theta}{V_m} \sqrt{\frac{0.0319\, T_m}{\Delta H_@ (P_b + \Delta \frac{H_{avg}}{13.6})} \frac{29}{M_d}} \; (\sqrt{\Delta H})_{avg}$$

where:

Yqa	dry gas meter calibration check value, dimensionless.
q	total run time, min.
Vm	total sample volume measured by dry gas meter, dcf.
Tm	absolute average dry gas meter temp., °R.
Pb	barometric pressure, in. Hg.
0.0319	= (29.92/528)(0.75)2 (in. Hg/°/R) cfm2.
DHavg	average orifice meter differential, in. H20.
DH@	orifice meter calibration coefficient, in. H2O.
Md	dry molecular weight of stack gas, lb/lb-mole.
29	dry molecular weight of air, lb/lb-mole.
13.6	specific gravity of mercury.

After each test run series, do the following:

Average the three or more Yqa's obtained from the test run series and compare this average with the dry gas meter calibration factor, Y. The average Yqa must be within 5 percent of Y.

If the average Yqa does not meet the +5 percent criterion, recalibrate the meter over the full range of orifice settings, as detailed in Section 5.3.1 of Method 5. Then follow the procedure in Section 5.3.3 of Method 5.

	Test 1	Test 2	Test 3	Average
time	551.6	536.4	478	
Vm - total	372.819	360.670	304.712	
Tm avg	97.8	97.0	94.6	
Tm -R	558	557	555	
Barometric	29.85	29.90	29.90	
DH_{avg}	1.502	1.440	1.330	
DH@	1.8150	1.8150	1.8150	
Md stack gas	28.47	28.47	28.47	
Md Air	29.00	29.00	29.00	
Meter Box Gamma	0.9961	0.9961	0.9961	
QA Gamma	1.0397	1.0233	1.0271	
Difference:	4.4%	2.7%	3.1%	3.4%
within 5%?				PASS

Dry Gas Meter 5-Point Full Test

Meter Box ID	**M8**	**Calibration Date**	**4/3/2007**
Gas Meter Number	**6835273**	**Barometric Pressure**	**29.68**
Calibrated By	**J.Pennington**	**Orifice Set Calibration Date**	**2/21/2007**

	Run #1	**Run #2**	**Run #1**	**Run #2**	**Run #1**	**Run #2**	**Run #1**	**Run #2**	**Run #1**	**Run #2**
Orifice ID	**MS-40**		**BU-48**		**BU-55**		**BU-63**		**BU-73**	
Orifice Coefficient K'	**0.2391**		**0.3437**		**0.4564**		**0.5908**		**0.8130**	
Ambient Temperature	71	72	71	71	70	71	71	71	71	70
	Meter Readings									
Vacuum ($\geq$14.0" Hg)	24	24	22	22	20.5	20.5	19.5	19.5	17	17
Delta H	0.30	0.30	0.65	0.65	1.00	1.00	2.00	2.00	3.90	3.90
Initial Volume Ft^3	944.600	966.000	923.300	929.200	909.000	916.800	874.400	880.100	894.200	900.500
Final Volume Ft^3	949.700	971.400	928.900	936.300	916.400	922.800	879.500	886.300	900.200	906.500
Total ($\geq$5 Ft^3)	5.1	5.4	5.6	7.1	7.4	6	5.1	6.2	6	6
Initial DGM Temperature ^oF	76	76	76	76	77	77	75	75	75	77
Final DGM Temperature ^oF	76	77	76	76	77	76	75	76	77	77
Average Temperature ^oF	76.0	76.5	76.0	76.0	77.0	76.5	75.0	75.5	76.0	77.0
Time Minutes	16	17	12	15	12	9	6	7	5	5
Time Seconds	8.53	5.78	16.94	34.78	16.47	56.22	32.69	59.00	38.10	37.93
Delta H@	1.741	1.743	1.829	1.829	1.593	1.597	1.921	1.919	1.993	1.985
Gamma (Y)	0.9972	0.9974	0.9924	0.9929	0.9986	0.9952	0.9930	0.9972	0.9972	0.9995
Average Gamma (Y)	**Pass**	**0.9973**	**Pass**	**0.9926**	**Pass**	**0.9969**	**Pass**	**0.9951**	**Pass**	**0.9983**
Delta H@ tolerance	**Pass**		**Pass**		**Fail**		**Pass**		**Pass**	

Gamma (Y)	**0.9961**
Delta H@	**1.815**

TRC

QA / QC Check: Sign and Date Carl F. Thurf 04-06-07

Dry Gas Meter Temperature Display Calibration

Meter Box ID	**M8**	**Reference Calibrator**	**Omega-CL23A**
Date	**4/3/2007**	**Serial Number**	**T-235647**
Calibrated By	**J.Pennington**	**Reference Calibration Date**	**7/31/2006**

Input Temperature		**Temperature Reading from Individual Thermocouple Input[1]**									
		Channel Number									
Deg. F	**Deg. R**	**1**	**% Diff**	**2**	**% Diff**	**3**	**% Diff**	**4**	**% Diff**	**5**	**% Diff**
0	460	0.7	**-0.2%**	0.2	**0.0%**	-0.3	**0.1%**	-0.1	**0.0%**	-0.2	**0.0%**
50	510	50.2	**0.0%**	49.9	**0.0%**	50.4	**-0.1%**	50.3	**-0.1%**	49.8	**0.0%**
100	560	100.1	**0.0%**	100.1	**0.0%**	100.1	**0.0%**	100.2	**0.0%**	100.4	**-0.1%**
500	960	500	**0.0%**	500.4	**0.0%**	499.9	**0.0%**	499.9	**0.0%**	500.1	**0.0%**
900	1360	900	**0.0%**	900.4	**0.0%**	900.3	**0.0%**	900.3	**0.0%**	900.4	**0.0%**
1900	2360	1900	**0.0%**	1900	**0.0%**	1900	**0.0%**	1900	**0.0%**	1900	**0.0%**
		Pass	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**

[1] - Channel temperatures must agree with +/- 5 °F or 3 °C

[2] - Acceptable temperature difference is less than 1.5 %

Dry Gas Meter Thermocouple Calibration[3]

Readout Display Temperature oF	Reference Thermometer °F	Percent Difference
71	70	**0.2%**

[3] - Dry gas meter thermicouple is compared to an ASTM type mercury in glass reference thermometer

TRC

QA / QC Check: Sign and Date [signature] 04-06-07

Pitot Tube Inspection Sheet

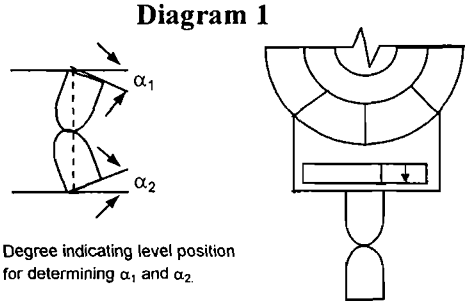
TRC
Custom-Focused Solutions

Pitot Number:	RPT-280	Calibrated By:	J.R. Lowe
Inspection Date:	05/03/2005	Reviewed By:	C. Fink

Pitot Type: Detachable Tip [X] Fixed [ ] PM10 [ ]

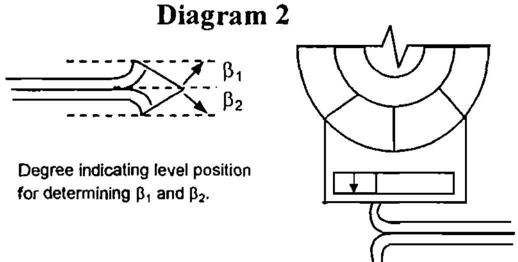
Wind Tunnel Calibration? No [X] Yes [ ] → Coefficient: A side [ ] B side [ ]

Diagram 1



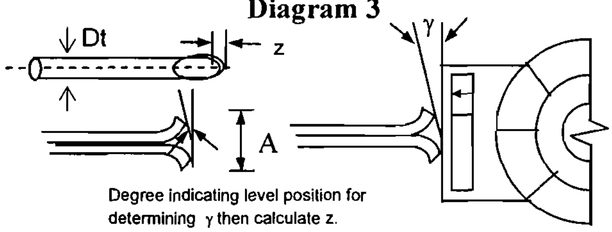
Degree indicating level position for determining α_1 and α_2.

Diagram 2

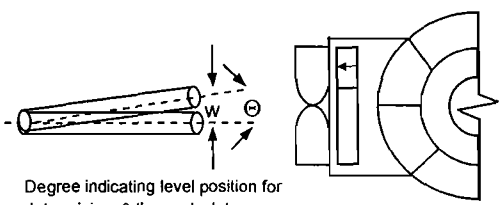


Degree indicating level position for determining β_1 and β_2.

Diagram 3



Degree indicating level position for determining γ then calculate z.



Degree indicating level position for determining θ then calculate w.

Level?	YES
Obstructions?	NO
Damaged?	NO
Diagram 1	
$-10^\circ < \alpha_1 < +10^\circ =$	2
$-10^\circ < \alpha_2 < +10^\circ =$	1
Diagram 2	
$-5^\circ < \beta_1 < +5^\circ =$	1
$-5^\circ < \beta_2 < +5^\circ =$	1
Diagram 3	
$\gamma =$	0
$\Theta =$	0
$A =$	0.950
$P_a = P_b = A/2 =$	0.475
$0.188" \leq D_t \leq 0.375" =$	0.374
$1.05\ D_t < A/2 < 1.5\ D_t =$	YES
$z = A \tan \gamma < 0.125" =$	0.0000
$w = A \tan \Theta < 0.03125" =$	0.0000
w and z meet specs?	YES

Comments: Installed on Probe RP-2C

The pitot tube/probe meets or exceeds all specifications criteria and/or applicable design features and is hereby assigned a pitot tube coefficient factor of 0.84, unless a specific wind tunnel calibration coefficient has been determined.

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40 CFR 60, Appendix A, Method 2. Verify the minimum 3/4 inch separation between the pitot tube and the nozzle and minimum 2 inch setback of the thermocouple (or 3/4" separation) in the assembled probe.

Pitot Tube Inspection Sheet

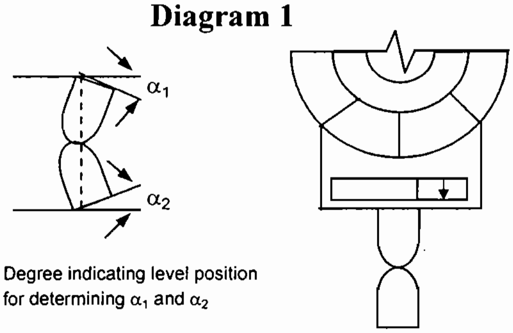
TRC
Custom-Focused Solutions

Pitot Number:	RPT-4	Calibrated By:	C. Alfano
Inspection Date:	01/04/2007	Reviewed By:	**C. Fink**

Pitot Type: Detachable Tip [X] Fixed [ ] PM10 [ ]

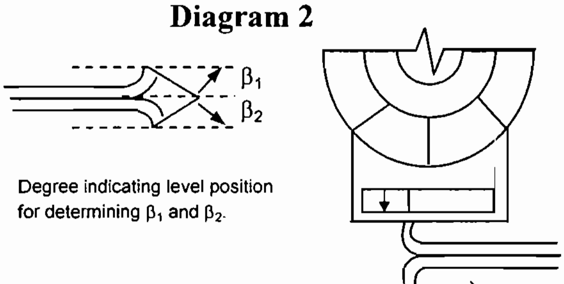
Wind Tunnel Calibration? No [X] Yes [ ] → Coefficient: A side [ ] B side [ ]

Diagram 1



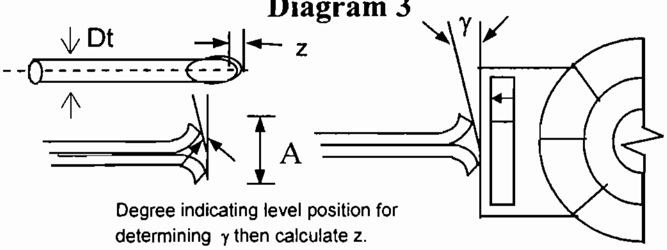
Degree indicating level position for determining α_1 and α_2

Diagram 2

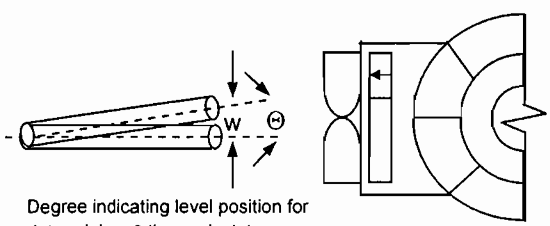


Degree indicating level position for determining β_1 and β_2.

Diagram 3



Degree indicating level position for determining γ then calculate z.



Degree indicating level position for determining θ then calculate w.

Level?	YES
Obstructions?	NO
Damaged?	NO
Diagram 1	
$-10^\circ < \alpha_1 < +10^\circ =$	0
$-10^\circ < \alpha_2 < +10^\circ =$	-1
Diagram 2	
$-5^\circ < \beta_1 < +5^\circ =$	0
$-5^\circ < \beta_2 < +5^\circ =$	0
Diagram 3	
$\gamma =$	1
$\Theta =$	1
A =	0.923
$P_a = P_b = A/2 =$	0.462
$0.188" \leq D_t \leq 0.375" =$	0.374
$1.05\ D_t < A/2 < 1.5\ D_t =$	YES
$z = A \tan \gamma < 0.125" =$	0.0161
$w = A \tan \Theta < 0.03125" =$	0.0161
w and z meet specs?	YES

Comments: Installed on Probe RP-5A

The pitot tube/probe meets or exceeds all specifications criteria and/or applicable design features and is hereby assigned a pitot tube coefficient factor of 0.84, unless a specific wind tunnel calibration coefficient has been determined.

40 CFR 60, Appendix A, Method 2. Verify the minimum 3/4 inch separation between the pitot tube and the nozzle and minimum 2 inch setback of the thermocouple (or 3/4" separation) in the assembled probe.

THERMOCOUPLE CALIBRATION DATA FORM

TRC
TRC Environmental Corp

THERMOCOUPLE ID: RT-5C **PITOT or PROBE ID:** RP-5C

3-POINT CALIBRATION							
Date	*Calibrated By*	*Source (specify)*	*Reference Temp, °F*	*Thermocouple Temp, °F*	*Percent Error (1)*	*Mantle Heat -250 F*	*Reviewed By*
01/09/06	W. Brummer	Ambient Air	74.0	73.2	-0.15	NA	C. Fink
		Ice Bath	34.0	33.6	-0.08		
		Boiling Water	212.0	211.0	-0.15		

EPA APPROVED ALTERNATIVE METHOD (Alt - 011) SINGLE POINT CALIBRATION							
Date	*Calibrated By*	*Reference Temp, °F (2)*	*Thermocouple Temp, °F*	*Difference (3) (within ± 2° F)*	*Continuity Check (4)*	*Pass / Fail*	*Reviewed By*
07/27/06	D. Brewster	74	74	0.0	Good	Pass	C. Fink
07/16/07	D. Brewster	70	71	1.0	Good	Pass	C. Fink

1) % error = $\frac{(\text{Thermocouple Temperature} + 460) - (\text{Reference Temperature} + 460) \times 100,}{\text{Reference Temperature} + 460}$ should be < 1.5%

2) Reference Thermometer is mercury-in-glass and ASTM certified, unless otherwise noted.

3) After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature. The temperatures of the thermocouple and reference thermometers shall agree within + 2°F

4) The continuity check involves subjecting the tip of the thermocouple to a change in temperature to check for crimps, loose connections, or reversed connections. Thermocouples with crimps and loose connections will not immediately respond to temperature changes, and those with reversed connections will show a temperature change in the opposite direction.

THERMOCOUPLE CALIBRATION DATA FORM

TRC
TRC Environmental Corp

THERMOCOUPLE ID: RT-5A **PITOT or PROBE ID:** RP-5A

3-POINT CALIBRATION							
Date	Calibrated By	Source (specify)	Reference Temp, °F	Thermocouple Temp, °F	Percent Error (1)	Mantle Heat -250 F	Reviewed By
05/28/03	J. Winslow	Ambient Air	73.6	73.6	0.00	NA	C. Fink
		Ice Bath	32.8	33.0	0.04		
		Boiling Water	212.0	209.0	-0.45		

EPA APPROVED ALTERNATIVE METHOD (Alt - 011) SINGLE POINT CALIBRATION							
Date	Calibrated By	Reference Temp, °F (2)	Thermocouple Temp, °F	Difference (3) (within ± 2°F)	Continuity Check (4)	Pass / Fail	Reviewed By
06/04/03	D. Brewster	76	76	0.0	Good	Pass	C. Fink
12/04/03	J. Lowe	72	72	0.0	Good	Pass	C. Fink
01/13/05	J. Lowe	73	72	-1.0	Good	Pass	C. Fink
12/05/05	J. Lowe	73	73	0.0	Good	Pass	C. Fink
01/09/06	J. Lowe	73	73	0.0	Good	Pass	C. Fink
12/29/06	J. Kunstling	70	69	-1.0	Good	Pass	C. Fink
07/16/07	D. Brewster	70	70	0.0	Good	Pass	C. Fink

1) % error = $\frac{\text{(Thermocouple Temperature + 460) - (Reference Temperature + 460) x 100,}}{\text{Reference Temperature + 460}}$ should be < 1.5%

2) Reference Thermometer is mercury-in-glass and ASTM certified, unless otherwise noted.

3) After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature. The temperatures of the thermocouple and reference thermometers shall agree within + 2°F

4) The continuity check involves subjecting the tip of the thermocouple to a change in temperature to check for crimps, loose connections, or reversed connections. Thermocouples with crimps and loose connections will not immediately respond to temperature changes, and those with reversed connections will show a temperature change in the opposite direction.

TRC Raleigh, NC
Glass Nozzle Master List
1/19/2007

Size Designation	Nominal Diameter (Decimal In.)	Nominal Diameter (Fraction In.)	Nozzle Identification Number	Date Calibrated	Calibrated By	D1,inches	D2,inches	D3,inches	D, inches	Nozzle Diameter (average)
7	0.313	5/16	G-7-1	11/8/2003	CB	0.310	0.310	0.310	0.000	0.310
7	0.313	5/16	G-7-4	11/8/2003	CB	0.308	0.309	0.307	0.002	0.308
7	0.313	5/16	G-7-5	11/8/2003	CB	0.300	0.300	0.301	0.001	0.300
7	0.313	5/16	G-7-6	11/8/2003	CB	0.310	0.310	0.310	0.000	0.310
7	0.313	5/16	G-7-7	11/8/2003	CB	0.308	0.307	0.309	0.002	0.308
7	0.313	5/16	G-7-8	11/8/2003	CB	0.309	0.309	0.310	0.001	0.309
7	0.313	5/16	G-7-9	11/8/2003	CB	0.308	0.308	0.308	0.000	0.308
7	0.313	5/16	G-7-10	1/4/2004	MGW	0.312	0.312	0.311	0.001	0.312
7	0.313	5/16	G-7-11	1/4/2004	MGW	0.312	0.312	0.312	0.000	0.312
7	0.313	5/16	G-7-13	8/8/2006	JRL	0.312	0.312	0.312	0.000	0.312
7	0.313	5/16	G-7-14	1/4/2004	MGW	0.311	0.313	0.314	0.003	0.313
7	0.313	5/16	G-7-15	1/4/2004	MGW	0.311	0.310	0.311	0.001	0.311
7	0.313	5/16	G-7-17	8/8/2006	JRL	0.309	0.310	0.310	0.001	0.310
7	0.313	5/16	G-7-18	1/4/2004	MGW	0.312	0.314	0.312	0.002	0.313
7	0.313	5/16	G-7-20	6/2/2004	CB	0.307	0.308	0.308	0.001	0.308
7	0.313	5/16	G-7-21	11/10/2004	MGW	0.310	0.311	0.310	0.001	0.310
7	0.313	5/16	G-7-22	11/10/2004	MGW	0.313	0.315	0.313	0.002	0.314
7	0.313	5/16	G-7-23	10/26/2005	JRL	0.311	0.312	0.312	0.001	0.312
7	0.313	5/16	G-7-24	10/26/2005	JRL	0.308	0.307	0.307	0.001	0.307
7	0.313	5/16	G-7-25	10/26/2005	JRL	0.310	0.310	0.311	0.001	0.310
7	0.313	5/16	G-7-26	10/27/2005	JRL	0.310	0.312	0.311	0.002	0.311
7	0.313	5/16	G-7-27	1/25/2006	MGW	0.309	0.309	0.309	0.000	0.309
7	0.313	5/16	G-7-28	1/25/2006	MGW	0.314	0.313	0.314	0.001	0.314
7	0.313	5/16	G-7-29	1/25/2006	MGW	0.311	0.311	0.310	0.001	0.311
7	0.313	5/16	G-7-30	8/8/2006	JRL	0.311	0.311	0.311	0.000	0.311
7	0.313	5/16	G-7-31	8/8/2006	JRL	0.312	0.312	..311	0.000	0.312
7	0.313	5/16	G-B7	1/6/2003	MGW	0.294	0.295	0.297	0.003	0.295

APPENDIX D

ALCOA OPERATING RECORDS
for
Each Test Run

APPENDIX D

SMACT TEST DATA
Alcoa Extrusions, Inc. – Plant City, FL
North Melting Furnace
July 2007

Charge Material	Test Run #1 (lbs)	Test Run #2 (lbs)	Test Run #3 (lbs)	Average (lbs)
Purchased Scrap	29,822	27,501	28,071	28,465
Painted Scrap	16,166	16,354	16,716	16,412
Total	**45,988**	**43,855**	**44,787**	**44,877**