Sediment Sampling and Analyses Report

Middle Twin Lake
Brooklyn Center, Minnesota

Prepared for
Joslyn Manufacturing Company

December 2007

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BARR

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Table of Contents

List of Tables

List of Figures

List of Appendices

1.0 Introduction

This report summarizes the results of the analyses of sediment samples collected in September 2007 from Middle Twin Lake by Barr Engineering Co. (Barr) on behalf of the Joslyn Manufacturing Co. (Joslyn). The Joslyn Manufacturing Co. site is a former wood-treating facility located in Brooklyn Center, Minnesota, on the east side of Middle Twin Lake (Figure 1). The sediment sampling and analyses activities were conducted in accordance with the Sediment Sampling and Analysis Plan (SAP) and the Quality Assurance Project Plan (QAPP) which were both approved by the Minnesota Pollution Control Agency (MPCA). Joslyn discussed the sediment study with the MPCA on several occasions, and worked with the MPCA to develop and to agree upon the conceptual design of the study. Correspondence between Barr, Joslyn and the MPCA is presented in Appendix A. Additional background information, discussion of previous Middle Twin Lake investigations, development of the sediment screening value and the rationale and design of this study are all summarized in the SAP (Barr, 2007a).

1.1 Study Objectives and Design

The purpose of the sampling and analyses is to determine the concentration of polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/PCDFs) in sediments at swimming and wading depths in Middle Twin Lake, as directed by the MPCA (MPCA, 2007a). This section briefly summarizes the study design. Section 2 of the SAP describes the study design in further detail.

The study was designed to be implemented in two steps. The first step was to compare PCDD/PCDF concentrations in sediment from two areas in Middle Twin Lake to a risk-based human health sediment screening value (SSV) of 50 ppt Toxicity Equivalency Quotient (TEQ) PCDD/PCDFs developed by the Minnesota Department of Health (MDH, 2006). If the Middle Twin Lake sediment concentrations were below the SSV, the results were to be reported and the investigation would be deemed complete.

The second step of the study would be implemented only if one or more Middle Twin Lake TEQ PCDD/PCDF results were above the SSV. This step involved analyzing sediment samples from several reference lakes in the Minneapolis-St. Paul metropolitan area for PCDD/PCDF and using the results as a background data set for comparison to Middle Twin Lake results. A flow chart illustrating the conceptual design of this study, as presented in the SAP, is shown on Figure 2.

1.2 Report Organization

The following sections of this report describe sample collection and analytical methods (Section 2.0), study results (Section 3.0), quality assurance and quality control results (Section 4.0) and conclusions (Section 5.0). Correspondence regarding the study is presented in Appendix A, reference lake sampling locations are presented Appendix B and laboratory data is in Appendix C.

2.0 Sample Collection and Analysis

2.1 Sample Collection

Sediment samples were collected from Middle Twin Lake and seven reference lakes from September 11th through 14th, 2007. Sample locations from Middle Twin Lake are shown on Figure 3. Sediment sample locations from the seven reference lakes are shown in Appendix B. Near surface (0 to 3 inches) sediment samples were collected from water depths of 1 to 3 feet using a pre-cleaned and decontaminated 2.75-inch diameter polycarbonate tube equipped with a platform stopper and a graduated slicer (Wilner device), as described in the SAP.

Composite samples were created from seven individual aliquots to represent the mean concentrations in each study area (beach and non-beach), as described in the SAP. A description of the individual sediment aliquots that comprised each composite sample is shown on Table 1. Separate containers of the composited sediment samples were shipped to Soil Engineering and Testing (SET) in Bloomington, Minnesota for grain size analysis and to Columbia Analytical Services (CAS) in Kelso, Washington for TOC analysis. Additional sample volume was also shipped to CAS in Houston, Texas for possible PCDD/PCDF analysis.

The MPCA collected a split sample from each of the Middle Twin Lake study areas (beach and non-beach). Barr provided the labor and materials to collect and composite the sediment samples, and split the composite samples for the MPCA. The MPCA arranged for and managed its own analyses, which were conducted by Pace Analytical Services in Minneapolis, Minnesota.

2.2 Laboratory Analysis

The analytical parameters for this study include PCDD/PCDFs, TOC and grain size, as discussed in the SAP. Middle Twin Lake composite sediment samples were analyzed for the seventeen 2,3,7,8-substituted PCDD/PCDFs using EPA method SW846-8290, which uses high resolution gas chromatography and high resolution mass spectrometry (including the required second column confirmation of 2,3,7,8- tetrachlorodibenzo-p-furan). PCDD/PCDF analysis was not performed on reference lake samples based on the results of the PCDD/PCDF analysis of Middle Twin Lake sediment samples, as discussed in Section 3.1. All composite sediment samples were analyzed for TOC (method ASTM D4129-82M) and grain size distribution by sieve (method ASTM D422). The analytical protocols and quality assurance/quality control requirements are specified in the QAPP (Barr, 2007b).

Composite sediment samples collected for PCDD/PCDF analyses were archived at -4°C until analyzed. PCDD/PCDF preparation and extraction were conducted on three separate aliquots of each composite sample and the extracts were then combined for analysis to further increase the likelihood that the analytical result was representative. The laboratory archive/storage, extraction and analytical procedures are described in detail in the QAPP (Barr, 2007b).

2.3 Data Analysis

PCDD/PCDF results were used to calculate a Toxicity Equivalency Quotient (TEQ), which is a method to estimate the risk posed by the PCDD/PCDF mixture as a single compound (i.e., 2,3,7,8-tetrachlorodibenzo-p-dioxin). TEQs were calculated using the World Health Organization's 2005 Toxic Equivalency Factors, consistent with MPCA TEQ guidance. TEQ concentrations were calculated in two ways for each sample, by setting the nondetect results equal to zero and to one-half the detection limit, as described in the SAP (Barr, 2007a). TEQ calculations are described in detail in the Middle Twin Lake Sediment Sampling QAPP (Barr, 2007) and are shown on Tables 2 and 3.

PCDD/PCDF TEQ results in Middle Twin Lake sediment samples were compared to the SSV of 50 ppt TEQ.

3.0 Study Results

This section summarizes the laboratory analytical results. Laboratory analytical data reports are in Appendix C.

3.1 Sediment Characterization Results

Middle Twin Lake and reference lake sediments were characterized by conducting total organic carbon (TOC) and grain size analyses on each composite sample. The sediment characterization analyses were performed in preparation for the potential background comparison of Middle Twin lake PCDD/PCDF concentrations to reference lake PCDD/PCDF concentrations. TOC and grain size results would be compared to the criteria specified in the SAP to select reference lake sediments that are similar to Middle Twin Lake sediments. However, as described in the next section, Middle Twin Lake PCDD/PCDF results were below the SSV and the reference lake comparison was not needed. Therefore, further evaluation of the sediment characterization results was not performed. The TOC and grain size laboratory data reports are in Appendix C.

3.2 PCDD/PCDF Analytical Results

PCDD/PCDF TEQ concentrations from samples collected by Barr in Middle Twin Lake beach (MTL-B) and nonbeach (MTL-NB) areas were well below the SSV of 50 ppt TEQ PCDD/PCDFs. PCDD/PCDF TEQ results for the beach sample (MTL-B) were 0.042 ppt and 6.0 ppt using zero and ½ the detection limit for nondetect results, respectively. PCDD/PCDF TEQ results for the non-beach sample (MTL-NB) were 0.18 ppt and 2.8 ppt using zero and ½ the detection limit for nondetect results, respectively. Barr's sample PCDD/PCDF analytical results and TEQ calculations are summarized in Table 2.

PCDD/PCDF TEQ concentrations from the split samples collected in the Middle Twin Lake beach and non-beach areas and analyzed by the MPCA were also well below the SSV of 50 ppt TEQ. MPCA's Middle Twin Lake beach split sample PCDD/PCDF TEQ results were 0.018 ppt and 1.13 ppt using zero and ½ the detection limit for nondetect results, respectivley. MPCA's non-beach split sample PCDD/PCDF TEQ results were 0.085 ppt and 1.21 ppt using zero and ½ the detection limit for nondetect results, respectively. MPCA's sample PCDD/PCDF analytical results and TEQ calculations are summarized in Table 3.

Because Middle Twin Lake results were below the SSV, the comparison to reference lake sediments was not needed, and reference lake samples were not analyzed for PCDD/PCDFs, in accordance with the MPCA approved sediment study decision tree shown on Figure 2.

4.0 Quality Assurance/Quality Control Results

The laboratory data from Columbia Analytical Services, Inc. (CAS) and Pace Analytical Services, Inc. (Pace) were reviewed in accordance with the U.S. EPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review, Final dated September, 2005 (Guidelines) as specified in the Quality Assurance Project Plan (QAPP, Barr, June 2007b).

The QC assessment of the data collected for the 2007 – Sediment Study – Middle Twin Lake demonstrate compliance with the data quality objectives in the QAPP. The analytical results have been validated and determined useable as qualified in the data summary tables and associated database.

The QC assessment of the field sampling procedures demonstrates compliance with the data quality objectives in the QAPP and the SAP. The field sampling procedures were appropriate. No introduction of contamination or negative effects on sample representativeness were observed.

As set forth in the QAPP, 100% of the analytical data were validated in accordance with the Guidelines. The areas evaluated in the data validation process included holding times, initial and continuing instrument calibrations, resolution and instrument stability, labeled compound recoveries, laboratory control samples, and laboratory method or preparation blank data as well as overall assessment of the data. In addition to the Guidelines, specific SW-846 Method criteria were also considered in the validation process as differences in some of the performance aspects exist between the Guidelines and the non-CLP methods used for the analysis of the samples.

No significant findings or qualifications of the sample concentrations resulted from the data validation effort.

The detailed data validation report for the CAS and Pace analytical data reports is included with the original laboratory reports in Appendix C.

5.0 Conclusions

The sediment study results indicate PCDD/PCDF TEQ concentrations in sediments at swimming and wading depths in both the beach and selected non-beach study areas in Middle Twin Lake are well below the SSV developed by the MDH. The MDH described the intended use of their proposed SSV with the following statement from an October 18, 2006 memorandum to the MPCA:

> " . . contaminant concentrations in sediments at or below the SSVs are considered safe for the general public. Sediment concentrations in excess of the SSV should not be considered unsafe, however, because they were developed using conservative assumptions about exposure and toxicity."
>
> (MDH, 2006).

Therefore, because all PCDD/PCDF TEQ concentrations were well below the SSV, recreational contact with the sediments in Middle Twin Lake is considered safe for the general public and the risk to human health is considered de minimus. The sediment study is complete and no further action or study of Middle Twin Lake is warranted.

References

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Minnesota Department of Health (MDH), 2006. Memorandum to Steve Schoff, MPCA from Jim Kelly, MDH regarding the Revised Sediment Screening Value for Dioxins/Furans for Middle Twin Lake. October 18, 2006.

Minnesota Pollution Control Agency (MPCA), 2007a. Letter to Mr. Carl Grabinski (Joslyn) from Steven Schoff (MPCA) Regarding Sediment Sampling in Middle Twin Lake. May 21, 2007.

MPCA, 2007b. Letter to Mr. Carl Grabinski (Joslyn) from Steven Schoff (MPCA) approving the Sediment Sampling and Analysis Plan and the Quality Assurance Project Plan, both dated July 2007. September 5, 2007.

Tables

Table 1
Middle Twin Lake and Reference Lakes
Sediment Sample Descriptions
Joslyn Manufacturing Company

Sample ID	Water Depth (ft)	Sediment Description	
		Top Layer	Bottom Layer
MTL-B-1	1	Tan vf-fg sand with silt.	Medium tan-brown fg-mg sand with silt.
MTL-B-2	3	3/4" fg-mg sand.	Vf-fg sand with silt.
MTL-B-3	1	4" tan-light gray fg-vfg sand w/ some silt.	Siltier layer.
MTL-B-4	3	1.5" tan fg-mg sand.	Grades gray fg-mg sand to vfg-fg gray sand.
MTL-B-5	1	3/4" tan fg-mg sand.	Grades to med to light gray vfg-fg sand.
MTL-B-6	3	1" tan fg-mg sand.	Medium to dark gray vfg-fg sand with silt.
MTL-B-7	1	1" tan mg-fg sand.	Lt. gray vfg-fg sand with silt.
MTL-NB-1	1	1" tan fg-mg sand.	Gray marl, black organic.
MTL-NB-2	3	Tan fg-mg sand.	Gray marl.
MTL-NB-3	1	Tan-gray mg-fg sand.	Gray mg-fg sand.
MTL-NB-4	3	Tan-light gray fg-vfg sand with silt.	
MTL-NB-5	1	Tan vfg-fg sand. Organic layers visible within (decomposed leaves and vegetation).	Grades to dark gray with more silt.
MTL-NB-6	3	Tan sand.	Light - dark gray silty organic sand.
MTL-NB-7	1	Tan sand.	Light - dark gray silty organic sand.
REF-1-B-1	1	1/2" plant matter.	Black silty organic sand. Minimal silt; dark balck, uniform.
REF-1-B-2	3	2.5" tan fg-cg sand.	Black fg sand, subround.
REF-1-B-3	1	Tan fg-cg sand.	
REF-1-B-4	3	Tan fg-cg sand. Subround.	
REF-1-B-5	1	2" tan fg-cg sand.	Light gray.
REF-1-B-6	3	Thin vegetation layer.	Fg-cg sand, darkens with depth.
REF-1-B-7	1		
REF-1-NB-1	1	Vfg sand. Mostly organic silt, some vegative debris.	
REF-1-NB-2	3	Black organic silt and vfg sand. Few small shells.	
REF-1-NB-3	1	Black organic silt and vfg sand. Few small shells.	
REF-1-NB-4	3	Black organic silty sand with shells.	
REF-1-NB-5	1	Black organic silty sand with shells.	
REF-1-NB-6	3	Black organic silty sand with shells.	
REF-1-NB-7	1	Black organic silty sand with shells.	
REF-2-B-1	1	Tan-light gray sand. ~5-10% gravel.	
REF-2-B-2	3	Tan fg-cg sand with less gravel. (~5%)	
REF-2-B-3	1	Tan fg-cg sand. 5% gravel.	
REF-2-B-4	3	2" tan fg-cg sand.	Tan-gray fg-cg sand.
REF-2-B-5	1	Tan fg-cg sand. 5 % gravel.	
REF-2-B-6	3	Tan fg-cg sand. 5 % gravel.	
REF-2-B-7	1		
REF-2-NB-1	1	2" tan-gray vfg-fg sand with organic silt.	Black, ~ 5% gravel.
REF-2-NB-2	3	Tan to gray vfg-fg sand with organic silt.	Gray throughout.
REF-2-NB-3	1	1.5" tan sand with gravel.	Gray silt/clay.
REF-2-NB-4	3	Tan-gray fg-vfg sand with organic silt.	
REF-2-NB-5	1	2.5" tan-gray fg-cg and with gravel.	Gray clay.
REF-2-NB-6	3	2.5" tan-gray sand and gravel.	Gray clay.
REF-2-NB-7	1	1/4" gray clay on top of 2" tan fg-mg sand.	Gray clay.

Table 1
Middle Twin Lake and Reference Lakes
Sediment Sample Descriptions
Joslyn Manufacturing Company

Sample ID	Water Depth (ft)	Sediment Description	
		Top Layer	Bottom Layer
REF-3-B-1	1	2" tan fg-cg sand.	Medium gray fg sand with gravel.
REF-3-B-2	3	2" tanfg-mg sand.	Gray fg-mg sand.
REF-3-B-3	1	2" tan fg-mg sand with gravel.	Grades to gray fg-mg sand.
REF-3-B-4	3	Tan fg-cg sand with 5% gravel.	
REF-3-B-5	1	Tan fg sand with gravel.	
REF-3-B-6	3	Tan fg-cg sand with gravel.	
REF-3-B-7	1	2" Tan fg-cg sand with gravel.	Gray fg-cg sand transition.
REF-3-NB-1	1	Light-medium gray silty sand.	
REF-3-NB-2	3	Dark gray sandy organic silt.	Gray silty sand.
REF-3-NB-3	1	Medium gray sandy organic silt.	
REF-3-NB-4	3	Medium dark gray sandy organic silt.	
REF-3-NB-5	1	Medium-dark gray sandy organic silt.	
REF-3-NB-6	3	3" Medium gray silty organic sand.	Sand.
REF-3-NB-7	1	Light-medium gray silty sand.	
REF-4-B-1	1	3" tan fg-cg sand w/ 5% gravel.	Grades to gray.
REF-4-B-2	3	2.5" tan fg-cg sand w/ 5% gravel.	Grades to gray.
REF-4-B-3	1	1.5" Tan fg-cg sand with gravel.	Grades to gray with no gravel.
REF-4-B-4	3	1" tan fg-cg sand with 5% gravel.	Grades to gray.
REF-4-B-5	1	Tan fg-cg sand with gravel.	Gray sand.
REF-4-B-6	3	3" tan fg-cg sand w/ gravel.	Gray sand.
REF-4-B-7	1	3" tan fg-cg sand with gravel.	Gray.
REF-4-NB-1	1	Medium gray silty organic sand.	
REF-4-NB-2	3	Light medium gray silty sand.	
REF-4-NB-3	1	2.5" light gray silty organic sand.	Brown w/ silt transitons to tan morl.
REF-4-NB-4	3	2" tan-gray silty sand.	Grades into light gray silt.
REF-4-NB-5	1	1" tan vfg-fg sand.	Medium gray vfg-fg sand.
REF-4-NB-6	3	Algae on top. 1.5" tan sand.	Medium gray silty sand.
REF-4-NB-7	1	1.5" tan-light gray silty sand.	0.5" gray sand on top of gray silt/clay.
REF-5-B-1	1	Tan-gray vfg-mg sand. Little vegetative debris on top.	
REF-5-B-2	3	1" tan-gray fg-cg sand.	2" grades to medium gray fg-cg sand.
REF-5-B-3	1	1/4"-1/2" vegetative debris/matter.	1" tan fg-mg sand. Rest is light-medium gray fg-mg sand.
REF-5-B-4	3	Light-medium gray fg-mg-cg sand.	
REF-5-B-5	1	Medium gray vfg-mg sand. Moslty vfg-fg. <5% gravel.	
REF-5-B-6	3	2" tan vfg-mg sand.	1" medium gray vfg-fg sand.
REF-5-B-7	1	Medium gray vfg-fg sand.	At 1/2", 1/4" thick tan sandy silt layer.
REF-5-NB-1	1	2" medium gray silty organic sand. 5% gravel.	Black granular sand - possibly fill. Angular gravel.
REF-5-NB-2	3	3" medium gray silty sand. Minor gravel.	Shells present at ~ 2".
REF-5-NB-3	1	Gray silty organic sand. Minor gravel.	Shells below 2".
REF-5-NB-4	3	3" gray sandy silt with shells.	Tan silt.
REF-5-NB-5	1	1" black organic matter and silt.	Grades to medium-dark gray sandy silt with shells.
REF-5-NB-6	3	Medium-dark gray sandy silt with shell fragments.	
REF-5-NB-7	1	2.5" light-medium gray silty organic sand.	Medium-dark gray silty organic sand with shells.

Table 1
Middle Twin Lake and Reference Lakes
Sediment Sample Descriptions
Joslyn Manufacturing Company

Sample ID	Water Depth (ft)	Sediment Description	
		Top Layer	Bottom Layer
REF-6-B-1	1	2" fg-cg sand with gravel.	Gray-black vfg-fg sand with some gravel.
REF-6-B-2	3	2" Tan fg-cg sand with gravel.	Gray-black fg-cg sand with some gravel.
REF-6-B-3	1	2" tan fg-cg sand with less gravel.	Gray-black fg-cg sand with some gravel.
REF-6-B-4	3	2" tan fg-cg sand with 10% gravel.	Gray-black sand with 5% gravel.
REF-6-B-5	1	2" tan fg-cg sand with smaller gravel.	Gray-black fg-cg sand.
REF-6-B-6	3	2" Tan fg-cg sand with gravel.	Gray-black fg-cg sand with gravel.
REF-6-B-7	1	2" Tan fg-cg sand with gravel.	Gray-black sand with gravel.
REF-6-NB-1	1	Light-medium gray silty organic sand. Tan top 1/2-3/4". <5% gravel.	
REF-6-NB-2	3	Light -medium gray sandy silt.	
REF-6-NB-3	1	1.5" tan sand fg-cg	Rest medium-dark gray silty organic sand.
REF-6-NB-4	3	Tan-gray fg sandy silt.	Grades to medium gray silty sand, vfg-fg.
REF-6-NB-5	1	Light-medium gray fg-cg san with gravel.	Light-medium gray vfg-mg sandy siilt.
REF-6-NB-6	3	Light-medium gray vfg-mg sandy silt.	
REF-6-NB-7	1	1.5" medium gray sandy silt.	Silty vfg-fg sand.
REF-7-B-1	1	2" golden tan fg-cg sand with gravel.	Fg-cg gray-black sand.
REF-7-B-2	3	2" golden tan fg-cg sand with gravel.	Fg-cg gray-black sand.
REF-7-B-3	1	2" golden tan fg-cg sand with gravel.	Gray-black sand, fg-cg.
REF-7-B-4	3	1.5" golden tan fg-cg sand with gravel.	Gray-black fg-cg sand with gravel.
REF-7-B-5	1	2.5" golden tan fg-cg sand with gravel.	Gray-black fg-cg sand with gravel.
REF-7-B-6	3	Tan/gray fg-cg sand with gravel.	Fades to gray-black fg-cg sand with gravel.
REF-7-B-7	1	1" golden tan-gray fg-cg sand with gravel.	Gray-blacak fg-cg sand with gravel.
REF-7-NB-1	1	1.5" light gray silty sand with gravel, fg-cg.	Grades to fg-mg medium to dark gray silty organic sand.
REF-7-NB-2	3	<1/8" light vegetation. Top 3" light gray fg-cg sand with silt.	
REF-7-NB-3	1	1.5" tan fg-cg sand.	Grades to light ray fg-mg silty organic sand.
REF-7-NB-4	3	2" light gray fg-mg sand with silt.	Black fg-mg sand with silt.
REF-7-NB-5	1	2" tan to light gray fg-cg sand.	Dark silty sand.
REF-7-NB-6	3	2" tan-light gray fg-cg sand.	Grades to medium gray vfg-fg sand.
REF-7-NB-7	1	2" tan-light gray fg-cg sand.	Grades to medium-dark gray vfg-fg silty organic sand.

Legend:
vfg - very-fine grained
fg - fine grained
mg - medium grained
cg - coarse grained

Table 2
Sediment Results - Barr/CAS
Middle Twin Lake Sediment Study
Josyln Manufacturing Company
Brooklyn Center, MN

(concentrations in ng/kg)

Location Date Lab Dup	MPCA Sediment Screening Value U	MTL-B 9/11/2007 CAS	MTL-NB 9/11/2007 CAS
Exceedance Key	**Bold**		
2,3,7,8-TCDD	--	<1.92	<1.04
1,2,3,7,8-Dioxin penta	--	<4.81	<2.60
1,2,3,4,7,8-Dioxin, hexa	--	<4.81	0.0891 j
1,2,3,6,7,8-Dioxin, hexa	--	<4.81	0.304 j
1,2,3,7,8,9-Dioxin, hexa	--	<4.81	0.228 j EMPC
1,2,3,4,6,7,8-Dioxin, hepta	--	2.74 j	7.88
Dioxin octa	--	23.6	62.6
2,3,7,8-TCDF	--	<1.92	<1.04
1,2,3,7,8-Dibenzofuran, penta	--	<4.81	<2.60
2,3,4,7,8-Dibenzofuran, penta	--	<4.81	<2.60
1,2,3,4,7,8-Dibenzofuran, hexa	--	<4.81	<0.151 j
1,2,3,6,7,8-Dibenzofuran, hexa	--	<4.81	0.151 j
1,2,3,7,8,9-Dibenzofuran, hexa	--	<4.81	<2.60
2,3,4,6,7,8-Dibenzofuran, hexa	--	<4.81	<2.60
1,2,3,4,6,7,8-Dibenzofuran, hepta	--	0.793 j	2.36 j
1,2,3,4,7,8,9-Dibenzofuran, hepta	--	<4.81	<0.131 j
Dibenzofuran octa	--	<9.62	6.56
TEQ_{DF} WHO05[1], non-detects at zero	50	0.042	0.18
TEQ_{DF} WHO05[2], non-detects at 1/2	50	6.0	2.8
Dioxin penta, Total	--	<4.81	0.228 j
Dioxin, hexa, Total	--	0.912 j	2.10 j
Dioxin, hepta, Total	--	6.03	15.9
Dioxin tetra, Total	--	<1.92	<1.04
Dibenzofuran penta, Total	--	<4.81	1.57 j
Dibenzofuran, hexa, Total	--	<4.81	3.12
Dibenzofuran, hepta, Total	--	1.71 j	7.48
Dibenzofuran tetra, Total	--	<1.92	<1.04
Carbon, total organic	--	1.4	0.53

Data Qualifiers/Footnotes

-- No criteria/not analyzed.

j Reported value is less than the stated laboratory quantitation limit and is

EMPC Estimated maximum possible concentration.

1,2 Total TEQ_{DF} equivalents calculated using both 0 and 1/2 the detection limit on the non detected compounds.

	Site Conc.	Toxicity Equivalency Factor (WHO05)[q]	TEQ_{DF}
2,3,7,8-TCDD	0.000	1	0.000
1,2,3,7,8-Dioxin penta	0.000	1	0.000
1,2,3,4,7,8-Dioxin, hexa	0.000	0.1	0.000
1,2,3,6,7,8-Dioxin, hexa	0.000	0.1	0.000
1,2,3,7,8,9-Dioxin, hexa	0.000	0.1	0.000
1,2,3,4,6,7,8-Dioxin, hepta	0.000	0.01	0.000
Dioxin octa	0.000	0.0003	0.000
2,3,7,8-TCDF	0.000	0.1	0.000
1,2,3,7,8-Dibenzofuran, penta	0.000	0.03	0.000
2,3,4,7,8-Dibenzofuran, penta	0.000	0.3	0.000
1,2,3,4,7,8-Dibenzofuran, hexa	0.000	0.1	0.000
1,2,3,6,7,8-Dibenzofuran, hexa	0.000	0.1	0.000
2,3,4,6,7,8-Dibenzofuran, hexa	0.000	0.1	0.000
1,2,3,7,8,9-Dibenzofuran, hexa	0.000	0.1	0.000
1,2,3,4,6,7,8-Dibenzofuran, hepta	0.000	0.01	0.000
1,2,3,4,7,8,9-Dibenzofuran, hepta	0.000	0.01	0.000
Dibenzofuran octa	0.000	0.0003	0.000
	Total TEQ_{DF} =		0.000

q Van den Berg, et al., The 2005 World Health Organization Re-evaluation of Human and Mammalian.

Table 3
Sediment Results - MPCA/Pace
Middle Twin Lake Sediment Study
Joslyn Manufacturing Company
Brooklyn Center, MN

(concentrations in ng/kg)

Location Date Lab	MPCA Sediment Screening Value	MTLB-200729487 9/11/2007 PACE	MTLNB-200729488 9/11/2007 PACE
Exceedance Key	**Bold**		
2,3,7,8-TCDD	--	<0.20	<0.20
1,2,3,7,8-Dioxin penta	--	<0.98	<0.99
1,2,3,4,7,8-Dioxin, hexa	--	<0.98	<0.99
1,2,3,6,7,8-Dioxin, hexa	--	<0.98	<0.99
1,2,3,7,8,9-Dioxin, hexa	--	<0.98	<0.99
1,2,3,4,6,7,8-Dioxin, hepta	--	1.5 j	5.7
Dioxin octa	--	9.1 j	44.0
2,3,7,8-TDBF	--	<0.20	<0.20
1,2,3,7,8-Dibenzofuran, penta	--	<0.98	<0.99
2,3,4,7,8-Dibenzofuran, penta	--	<0.98	<0.99
1,2,3,4,7,8-Dibenzofuran, hexa	--	<0.98	<0.99
1,2,3,6,7,8-Dibenzofuran, hexa	--	<0.98	<0.99
1,2,3,7,8,9-Dibenzofuran, hexa	--	<0.98	<0.99
2,3,4,6,7,8-Dibenzofuran, hexa	--	<0.98	<0.99
1,2,3,4,6,7,8-Dibenzofuran, hepta	--	<0.98	1.4 j
1,2,3,4,7,8,9-Dibenzofuran, hepta	--	<0.98	<0.99
Dibenzofuran octa	--	<2.00	3.0 j
TEQ_{DF} WHO05[1], non-detects at zero	50	0.018	0.085
TEQ_{DF} WHO05[2], non-detects at 1/2	50	1.13	1.21
Dioxin penta, Total	--	<0.98	<0.99
Dioxin, hexa, Total	--	<0.98	2.3 j
Dioxin, hepta, Total	--	4.0 j	13.0
Dioxin tetra, Total	--	<0.98	<0.99
Dibenzofuran penta, Total	--	<0.98	<0.99
Dibenzofuran, hexa, Total	--	<0.98	<0.99
Dibenzofuran, hepta, Total	--	<0.98	4.2 j
Dibenzofuran tetra, Total	--	<0.20	<0.20

Data Qualifiers/Footnotes

-- No criteria/not analyzed.

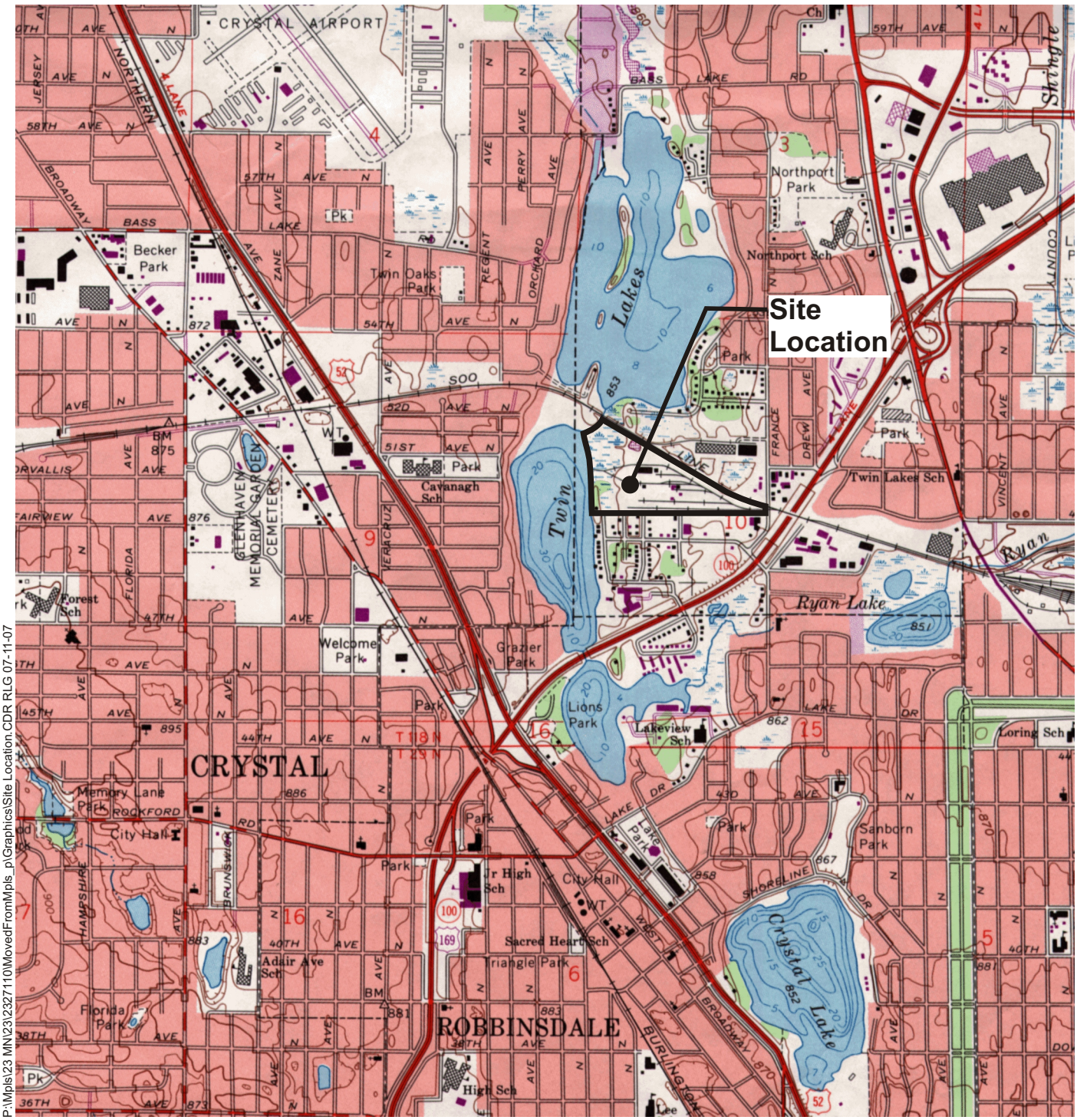
j Reported value is less than the stated laboratory quantitation limit and is

1,2 Total TEQ $_{DF}$ equivalents calculated using both 0 and 1/2 the detection limit on the non detected compounds.

	Site Conc.	Toxicity Equivalency Factor (WHO05)[q]	TEQ $_{DF}$
2,3,7,8-TCDD	0.000	1	0.000
1,2,3,7,8-Dioxin penta	0.000	1	0.000
1,2,3,4,7,8-Dioxin, hexa	0.000	0.1	0.000
1,2,3,6,7,8-Dioxin, hexa	0.000	0.1	0.000
1,2,3,7,8,9-Dioxin, hexa	0.000	0.1	0.000
1,2,3,4,6,7,8-Dioxin, hepta	0.000	0.01	0.000
Dioxin octa	0.000	0.0003	0.000
2,3,7,8-TCDF	0.000	0.1	0.000
1,2,3,7,8-Dibenzofuran, penta	0.000	0.03	0.000
2,3,4,7,8-Dibenzofuran, penta	0.000	0.3	0.000
1,2,3,4,7,8-Dibenzofuran, hexa	0.000	0.1	0.000
1,2,3,6,7,8-Dibenzofuran, hexa	0.000	0.1	0.000
2,3,4,6,7,8-Dibenzofuran, hexa	0.000	0.1	0.000
1,2,3,7,8,9-Dibenzofuran, hexa	0.000	0.1	0.000
1,2,3,4,6,7,8-Dibenzofuran, hepta	0.000	0.01	0.000
1,2,3,4,7,8,9-Dibenzofuran, hepta	0.000	0.01	0.000
Dibenzofuran octa	0.000	0.0003	0.000
	Total TEQ $_{DF}$ =		0.000

q Van den Berg, et al., The 2005 World Health Organization Re-evaluation of Human and Mammalian.

Figures



P:\Mpls\23 MN\23\2327110\MovedFromMpls_p\Graphics\Site Location.CDR RLG 07-11-07

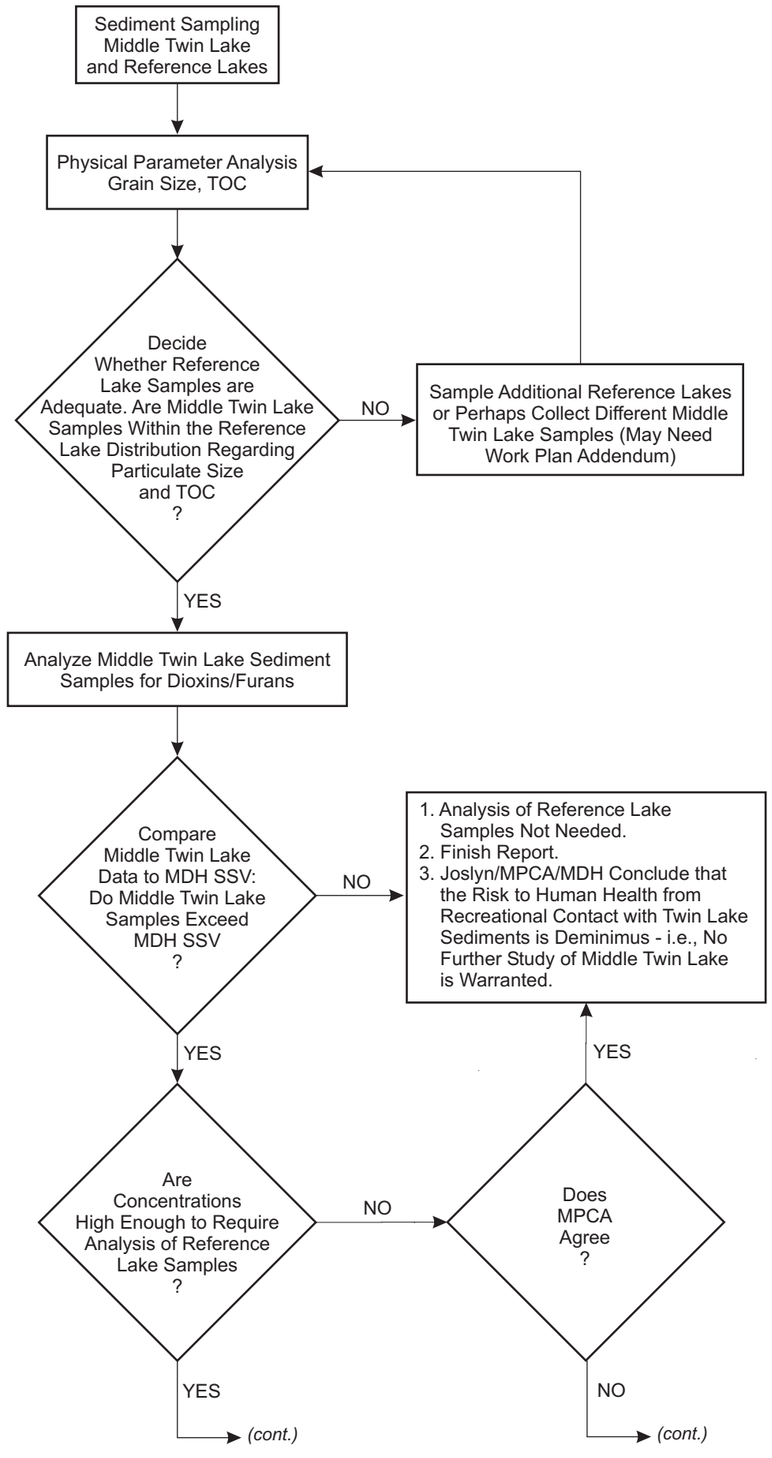
Source: USGS 7.5' Quadrangle, Minneapolis North, MN 1967 Photorevised 1993

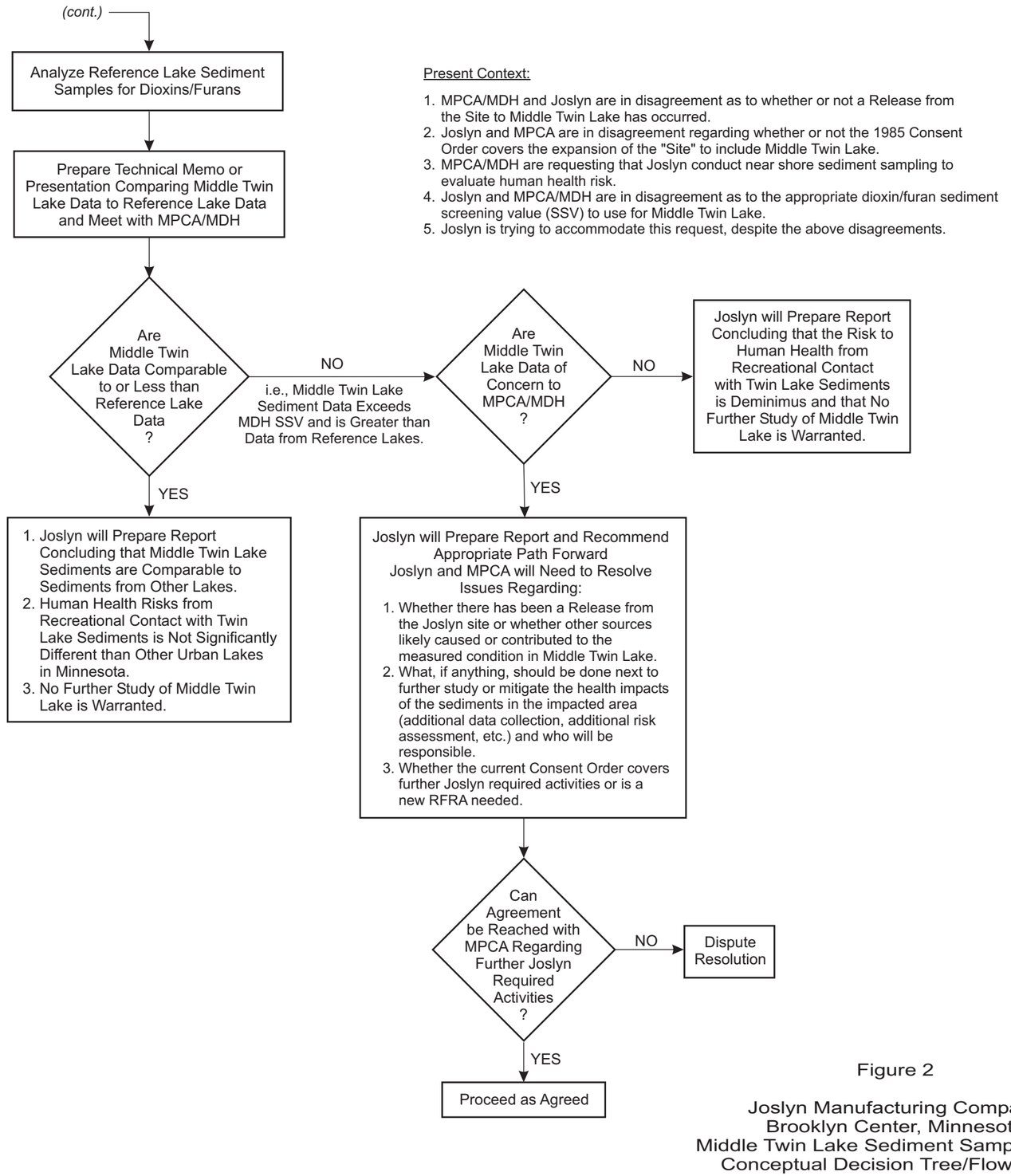
N

0 2000

Scale in Feet

Figure 1
Joslyn Manufacturing Company
Brooklyn Center, Minnesota
Site Location





Present Context:

1. MPCA/MDH and Joslyn are in disagreement as to whether or not a Release from the Site to Middle Twin Lake has occurred.
2. Joslyn and MPCA are in disagreement regarding whether or not the 1985 Consent Order covers the expansion of the "Site" to include Middle Twin Lake.
3. MPCA/MDH are requesting that Joslyn conduct near shore sediment sampling to evaluate human health risk.
4. Joslyn and MPCA/MDH are in disagreement as to the appropriate dioxin/furan sediment screening value (SSV) to use for Middle Twin Lake.
5. Joslyn is trying to accommodate this request, despite the above disagreements.

Figure 2

Joslyn Manufacturing Company
Brooklyn Center, Minnesota
Middle Twin Lake Sediment Sampling Plan
Conceptual Decision Tree/Flow Chart

P:\Mpls\23 MN\27\23271\10\MovedFromMpls_P\GRPAH\CS\M Twin Lake Sampling Paln Decision Tree Revised 07-11-07.CDR RLG

Barr Footer: Date: 11/1/2007 9:25:17 AM File: I:\Projects\23\27\110\GIS\Middle_Twin_Lks_Sediment_Study\Maps\Middle_Twin_Lake_Composite_Sediment_Sampling_Locations.mxd User: mbs2

Legend

- Beach
- Sediment Sampling Location

Feet
0 400 800

Meters
0 100 200 300

Figure 3

MIDDLE TWIN LAKE
Composite Sediment Sample
Collection Locations
Joslyn Manufacturing Company
Brooklyn Center, Minnesota

Appendices

Appendix A

MPCA Correspondence

Minnesota Pollution Control Agency
520 Lafayette Road North | St. Paul, MN 55155-4194 | 651-296-6300 | 800-675-3843 | 651-282-5332 TTY | www.pca.state.mn.us

Post-it® Fax Note 7671	Date 5/21/07	# of pages ▶ 2
To Dale Simensgard	From Scott
Co./Dept. Barr	Co. MPCA
Phone #	Phone #
Fax # 952-832-2601	Fax #

May 21, 2007

Mr. Carl Grabinski
Joslyn Manufacturing Company
9200 West Fullerton Avenue
Franklin Park, IL 60131

RE: Health Consultation Middle Twin Lake Fish Tissue Study, Minnesota Department of Health, June 23, 2006

Dear Mr. Grabinski:

The Minnesota Pollution Control Agency (MPCA) staff has reviewed the Minnesota Department of Health (MDH) document entitled, "Health Consultation Middle Twin Lake Fish Tissue Study" (Study) dated June 23, 2006.

MDH produced the Study at the request of MPCA Superfund Program Staff. The Study reviewed the results of the "Middle Twin Lake Fish Tissue Study Implementation Report" (Report) dated May 2006 and presented conclusions and recommendations regarding public health concerns suggested by the results of that report.

The Study concluded that fish tissue samples collected from Middle Twin Lake show that, of the contaminants of concern at the Joslyn site (Site), only dioxins and furans appear to be present at elevated concentrations in the fish tissue. "Concentrations of dioxins and furans in fish tissue from Middle Twin Lake are between five and forty times the respective concentrations measured in reference lakes selected for the study due to their similarity to Middle Twin Lake." (Study, June 23, 2006, page 15). The Study notes that dioxin and furan concentrations for fish from Middle Twin Lake do not differ significantly from concentrations found by U.S. Environmental Protection Agency in samples for 58 lakes in Minnesota. "MDH considers dioxins and furans in fish in Middle Twin Lake to represent no apparent public health hazard at this time if people follow existing fish consumption advice." (Study, June 23, 2006, page16).

The Study included four recommendations. Two of the recommendations relate to the Joslyn investigation:

- "Representative sediment samples shall be collected from Middle Twin Lake to determine if there is a human health risk from direct exposure to the sediments and to determine if there is as future risk to fish if the sediments are disturbed."

- "The responsible party for the Joslyn Site should continue working toward cleanup of the West Area to prevent future releases of Site related contaminants to Middle Twin Lake."

In consultation with MDH, the MPCA requests Joslyn sample the sediments in Middle Twin Lakes. A minimum of two composites samples shall be collected from the east side of Middle Twin Lake. One set of composite samples should be collected from the public beach area. The other set of composite samples should be collected from the area around the private docks between the Joslyn Site and the public beach.

Collect sediment samples from between 0-3 inches of the lake bottom, at water depths of approximately 1-3 feet. The samples should be analyzed for dioxins and furans. Please develop and submit a work plan to the MPCA within 30 days of receipt of this letter.

Sampling shall be completed within 90 days MPCA approval of Joslyn's work plan. The MPCA requests that Joslyn respond by May 28, 2007, in writing, if it intends to conduct the requested sampling.

Sincerely,

Steven M. Schoff
Project Manager
Superfund Unit 1
Superfund and Emergency Response Section
Remediation Division

SMS:csa

cc: Jim Kelly, MDH
Michael Kanner, Remediation Division, MPCA
Allan Williams, Office of the Attorney General

DANAHER

Joslyn Manufacturing Company
Carl S. Grabinski
Vice President & Corporate Counsel

c/o Videojet Technologies, Inc.
1500 Mittel Boulevard
Wood Dale, IL 60191
Phone: (630) 694-2790 Fax: (630) 694-2788
Email: Carl.Grabinski@Danaher.com

July 12, 2007

Mr. Steven Schoff
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155

Re: Joslyn Manufacturing Company (Joslyn)
Brooklyn Center, MN

Dear Mr. Schoff:

Joslyn has received your letter dated May 21, 2007, regarding sediment sampling in Middle Twin Lake, as recommended by the Minnesota Department of Health in its "Health Consultation—Middle Twin Lake Fish Tissue Study" (June 2006).

The sediment sampling described in your letter is consistent with the conceptual sampling plan discussed at our meeting with Minnesota Pollution Control Agency (MPCA), to collect sediment samples from both Middle Twin Lake and from reference lakes. At our meeting, Joslyn also distributed a "decision tree", that related each element of the conceptual sampling plan to the interpretation of the analytical data generated by the sampling. It is Joslyn's understanding that MPCA agrees that the "decision tree" outlines an appropriate approach to sediment sampling, analysis, and data interpretation. Joslyn further understands from the meeting that MPCA will approve the collection of reference lake sediment samples as well. Subject to these understandings, Joslyn will agree to undertake the sampling described in your May 21 letter, and will soon submit a Work Plan to sample these sediments.

Joslyn takes this opportunity to state that its agreement to undertake this sediment sampling is an accommodation to the MPCA, and an indication of Joslyn's good faith. It does not represent a concession that this sampling is mandated or covered by the 1985 Consent Order. Further, Joslyn's agreement to sample Middle Twin Lake sediments does not represent any position on the issue of whether or not a release of hazardous substances from the former wood treating site into Twin Lake has occurred. Despite the ubiquitous presence of some of the constituents that will be analyzed for (particularly dioxins and furans), the general public may assume that any dioxins and furans present in the sediments should be attributed to the Joslyn site. Joslyn will therefore collect sediment samples from reference lakes, to serve as representative background, so that the Middle Twin Lake sediment sample results can be put into proper context.

Sincerely,

Carl S. Grabinski

Carl S. Grabinski
Corporate Counsel

cc: Dale Finnesgaard, Barr Engineering Co.
Carlos Stern, Stern and Associates
James Payne, Environmental Law Group
James Kelly, Minnesota Department of Health
Michael Kanner, MPCA
Allan Williams, Office of the Attorney General

Minnesota Pollution Control Agency
520 Lafayette Road North | St. Paul, MN 55155-4194 | 651-296-6300 | 800-675-3843 | 651-282-5332 TTY | www.pca.state.mn.us

Post-it® Fax Note 7671	Date 9/7/07	# of pages 4
To Dale W Finnesgaard	From Schoff	
Co./Dept. Barr	Co. MPCA	
Phone #	Phone # 297-1790	
Fax # 952-832-2601	Fax #	

September 5, 2007

Mr. Carl S. Grabinski
Vice President & Corporate Counsel
Joslyn Manufacturing Company
c/o Videojet Technologies, Inc.
1500 Mittel Boulevard
Wood Dale, IL 60191

RE: Sediment Sampling and Analysis Plan, Middle Twin Lake, Brooklyn Center, Minnesota, July 2007 and Quality Assurance Project Plan, Sediment Sampling at Middle Twin Lake, Brooklyn Center, Minnesota, July 2007

Dear Mr. Grabinski:

The Minnesota Pollution Control Agency (MPCA) staff has reviewed the "Sediment Sampling and Analysis Plan" (Plan), Middle Twin Lake, Brooklyn Center, Minnesota, July 2007 and "Quality Assurance Project Plan (QAPP), Sediment Sampling at Middle Twin Lake", Brooklyn Center, Minnesota, July 2007.

The MPCA accepts the Plan with the following modification:

- MPCA will split samples at both locations proposed for Middle Twin Lake.

The MPCA accepts the QAPP with the following comments and modifications in the attached memo from William Scruton, QA Coordinator, MPCA.

If you have any question, please contact me at 651-297-1790

Sincerely,

Steven M. Schoff

Steven M. Schoff, Project Manager
Superfund Unit 1
Superfund and Emergency Response Section
Remediation Division

SMS:csa

Enclosure

cc: Dale Finnesgaard, Barr Engineering
Jim Kelly, Minnesota Department of Health
Allan Williams, Office of the Attorney General
Michael Kanner, Remediation Division, MPCA

SF-00005-05(4/86)

STATE OF MINNESOTA

DEPARTMENT: POLLUTION CONTROL AGENCY

Office Memorandum

DATE: August 17, 2007

TO: Steven Schoff, Project Leader
Remediation Division

FROM: William Scruton, QA Coordinator w/HS
Environmental Analysis & Outcomes Division

PHONE: (651)-296-8445

SUBJECT: Comments for the Sediment Sampling at Middle Twin Lake Quality Assurance Project Plan (July, 2007) [QAPP Prepared by Barr Engineering Company]

The above-referenced Quality Assurance Project Plan (QAPP) was reviewed at the request of Steven Schoff (MPCA). Questions or comments can be directed to me at the above number or by email at Bill.Scruton@pca.state.mn.us.

General Comments

1. None.

Specific Comments

1. **A1 - Title and Approval Sheet**: While it is important that the laboratory project managers be aware of the requirements of the project, the positions are not usually responsible for laboratory operations and may not have the authority to stop operations, make changes to schedules, or require corrective actions be performed. I would recommend changing the Approval Signatures to the appropriate laboratory directors (or operations managers). I would also recommend adding the laboratory QA managers to the signature page

2. **A3 – Distribution List**, page 1 of 3: Barr should consider adding the laboratory directors and laboratory QA Officers to the distribution list.

3. **A3 – Acronym List**, page 2 of 3: CLP should be the Contract Laboratory Program. Barr should correct the acronym list.

4. **A4 – Introduction**, page 1 of 1: The publication date for R-5 is March of 2001. Barr should correct the date. I would also recommend referencing EPA Guidance for Quality Assurance Project Plans, EPA QA/G-5, December 2002.

5. **A5 – Project Organization,** page 1 of 6: At the end of March, 2007, Bill Scruton accepted a permanent QA position with the MPCA. In August, 2007, Luke Charpentier accepted the position of supervisor of the Performance Management and Quality Unit at the MPCA. Bill Scruton will serve as the MPCA's QA Officer for this project. Barr should re-do Figure 1 to reflect these changes and the addition of the laboratory directors and QA Officers. Barr should also identify the person responsible for maintaining and distributing the official approved QAPP.

6. **A5.3 – Columbia Analytical Services, Inc.**, page 4 of 6: CAS is **not** certified by NELAC to perform environmental analyses in the State of Minnesota. CAS **is** certified by the Minnesota Department of Health through the Environmental Laboratory Certification Program to perform environmental analyses. Barr should correct the certification agency.

7. **A5.3.1,** page 4 of 6: Barr should add the project responsibilities for the Columbia Analytical Services, Inc. lab directors. Lynda Huchestein and Jane Freemyer are CAS project managers. Their positions are not responsible for laboratory operations and they may not have the authority to stop operations, make changes to schedules, or require corrective actions be performed.

8. **A5.3.2,** page 4 of 6: Jane Freemyer is identified as one of the CAS QA Officers for the project. She is also identified as a project manager for the project. This may present a conflict of interest. There needs to be a clear separation between the QA Officer duties and the operational duties of a project manager. Barr should ask CAS to consider these assignments and the impact on the project.

9. **A7,** page 1 of 2: The proposed sampling locations in Middle Twin Lake are shown on Figure 2. Figure 3 is a map of reference lakes. Barr should correct the reference.

10. **A7,** page 1 of 2: What is the general schedule for the sample collection, sample analyses, and report writing?

11. **A7.1,** page 1 of 2: Table 2 lists the MRLs for dioxins/furans in units of ng/kg. Will the results be reported on a "dry weight" basis? Barr should clarify.

12. **A8.2,** page 1 of 1: The Houston, Texas laboratory is not listed as a certified laboratory with the Minnesota Department of Health. Since dioxins/furans are available for certification, has the laboratory applied to the MDH program for certification? Appendix F of the Quality Assurance Manual lists the certificates that the lab holds but the analytes are not listed. Barr should supply the laboratory certificates pertinent to the project in an Appendix and reference them in this section.

13. **A9.1.1,** page 1 of 8: In Step 2 of Table 3, Barr states that the PCDD/PCDF concentrations will be compared to the MDH's Sediment Screening Value of 50 ppt TEQ. What is TEC? Is it TCDD Toxic Equivalent Concentration? How is the TEQ calculated? Since dioxins differ in potency, what factors are used to adjust the raw concentration to get the TEQ? Barr should clarify this

14. **A9.2.2.2,** page 6 of 8: In the PCDD/PCDF analysis, are surrogates added to each sample? If they are, Barr should include this information in their discussion.

15. **A9.3.1,** page 8 of 8: Barr defined the frequency for collecting field blanks. However, the QC acceptance criteria are not identified. Barr should provide this information.

16. **A10,** pages 1 and 2 of 2: Barr should include information on how the current copy (and future revisions) of the QAPP will be distributed. Barr should also describe where the project files will be retained, whether the reports are needed in an electronic format or just a hard copy, and what will be the disposition of the records (off-site storage, return to the MPCA, or destruction). Does Barr have a retention schedule for this material?

17. **B2.1,** page 1 of 5: Barr should describe what happens if equipment breaks down (are replacements borrowed, purchased, or extras available in the field?) or if sample containers are broken.

18. **B3.3,** pages 2 and 3 of 3: Barr should describe what happens to any remaining sample aliquots after sample analysis (are the samples returned to the site or will the laboratory dispose of them?).

19. **B5.1,** page 1 of 2: Barr should describe the corrective actions to be taken if problems arise in the field (along with who's responsible for the implementation of the actions).

20. **C1,** page 1 of 2: Barr states that audits of field and laboratory activities include both internal and external components. However, the rest of Section C1 deals with just the laboratory. Barr should also discuss field audits.

21. **C1.1.2,** page 2 of 2: Barr should include a requirement to analyze Proficiency Testing (PT) Samples as part of the external laboratory assessment. The results of the PT samples should be forwarded to the Project Managers.

22. **C2,** page 1 of 3: The first sentence indicates that there are three classes of problems. However, only two are described. Barr should clarify whether there are two or three. Classes of problems.

BARR

Barr Engineering Company
4700 West 77th Street • Minneapolis, MN 55435-4803
Phone: 952-832-2600 • Fax: 952-832-2601 • www.barr.com

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Minneapolis, MN • Hibbing, MN • Duluth, MN • Ann Arbor, MI • Jefferson City, MO

September 10, 2007

Mr. Steven M. Schoff
Project Manager
Superfund Unit 1
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

RE: Sediment Sampling and Analysis Plan and Quality Assurance Project Plan; Middle Twin Lake; Brooklyn Center, Minnesota

Dear Mr. Schoff,

Joslyn has received your letter dated September 5, 2007 which approved and provided comments on the Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP). Barr Engineering Co. (Barr) has prepared this letter on behalf of Joslyn Manufacturing Co. (Joslyn) to respond to MPCA's comments and to submit a revised QAPP for the work.

MPCA's letter specified that MPCA will split both the beach and non-beach samples from Middle Twin Lake for concurrent analysis by Pace Analytical Services (Pace). Joslyn requests that the MPCA require Pace to perform data quality protocols as specified in the recently-approved QAPP. Additionally, Joslyn requests an opportunity to review Pace's Contract Laboratory Program (CLP) data packages generated in association with this project to assure that proper QA/QC procedures have been implemented.

As communicated in an email to you dated September 6, 2007, Barr intends to initiate field sampling activities September 11, 2007, at 9:30 am at the Middle Twin Lake beach area.

The remaining portion of this letter responds to MPCA's QAPP-related comments. A revised QAPP is also enclosed with this letter.

1. **Comment: A1 - Title and Approval Sheet**: *While it is important that the laboratory project managers be aware of the requirements of the project, the positions are not usually responsible for laboratory operations and may not have the authority to stop operations, make changes to schedules, or require corrective actions be performed. I would recommend changing the Approval Signatures to the appropriate laboratory directors (or operations managers). I would also recommend adding the laboratory QA managers to the signature page.*

   Response: The project managers from Columbia Analytical Service (both Houston and Kelso) do have the authority to stop operations, make changes to the schedule, or require

corrective actions be performed relative to this project. Nonetheless, QA officers have been added to signature page.

2. **Comment: A3 – Distribution List**, page 1 of 3: *Barr should consider adding the laboratory directors and laboratory QA Officers to the distribution list.*

Response: The QA officers have been added to the distribution list.

3. **Comment: A3 – Acronym List,** page 2 of 3: *CLP should be the Contract Laboratory Program. Barr should correct the acronym list.*

Response: The requested changes have been made to the acronym list.

4. **Comment: A4 – Introduction,** page 1 of 1: *The publication date for R-5 is March of 2001. Barr should correct the date. I would also recommend referencing EPA Guidance for Quality Assurance Project Plans, EPA QA/G-5, December 2002.*

Response: The requested changes have been made to the publication date and recommended Guidance Document reference has been added to the QAPP.

5. **Comment: A5 – Project Organization,** page 1 of 6: *At the end of March, 2007, Bill Scruton accepted a permanent QA position with the MPCA. In August, 2007, Luke Charpentier accepted the position of supervisor of the Performance Management and Quality Unit at the MPCA. Bill Scruton will serve as the MPCA's QA Officer for this project. Barr should re-do Figure 1 to reflect these changes and the addition of the laboratory directors and QA Officers. Barr should also identify the person responsible for maintaining and distributing the official approved QAPP.*

Response: Figure 1 has been updated to reflect the changes in the organizational structure at the MPCA. Additionally, laboratory project managers and QA officers have been included in the organizational chart. The responsibility for maintenance and distribution of the QAPP has been added to section A.5.2.3.

6. **Comment: A5.3 – Columbia Analytical Services, Inc.**, page 4 of 6: *CAS is **not** certified by NELAC to perform environmental analyses in the State of Minnesota. CAS **is** certified by the Minnesota Department of Health through the Environmental Laboratory Certification Program to perform environmental analyses. Barr should correct the certification agency.*

Response: CAS certifications have been updated to reflect the needs of this project.

7. **Comment: A5.3.1,** page 4 of 6: *Barr should add the project responsibilities for the Columbia Analytical Services, Inc. lab directors. Lynda Huchestein and Jane Freemyer are CAS project managers. Their positions are not responsible for laboratory operations and they may not have the authority to stop operations, make changes to schedules, or require corrective actions be performed.*

Response: Please see response to comment number 1, above.

8. **Comment: A5.3.2,** page 4 of 6: *Jane Freemyer is identified as one of the CAS QA Officers for the project. She is also identified as a project manager for the project. This may present a conflict of interest. There needs to be a clear separation between the QA Officer duties and the operational duties of a project manager. Barr should ask CAS to consider these assignments and the impact on the project.*

Response: Project assignments have been charged at CAS (Houston) to reflect this concern. Darren Biles has been assigned as the project manager and Jane Freemyer will remain the QA officer for this project.

9. **Comment: A7,** page 1 of 2: *The proposed sampling locations in Middle Twin Lake are shown on Figure 2. Figure 3 is a map of reference lakes. Barr should correct the reference.*

Response: The figure reference in this paragraph has been changed.

10. **Comment: A7,** page 1 of 2: *What is the general schedule for the sample collection, sample analyses, and report writing?*

Response: Details regarding the general schedule for sample collection, sample analyses and report writing have been added to A7.

11. **Comment: A7.1,** page 1 of 2: *Table 2 lists the MRLs for dioxins/furans in units of ng/kg. Will the results be reported on a "dry weight" basis? Barr should clarify.*

Response: Table 2 has been updated to reflect that the sediment samples will be reported on a dry-weight basis.

12. **Comment: A8.2,** page 1 of 1: *The Houston, Texas laboratory is not listed as a certified laboratory with the Minnesota Department of Health. Since dioxins/furans are available for certification, has the laboratory applied to the MDH program for certification?*

Appendix F of the Quality Assurance Manual lists the certificates that the lab holds but the analytes are not listed. Barr should supply the laboratory certificates pertinent to the project in an Appendix and reference them in this section.

Response: PCDD/PCDF analyses for soils and solids are not currently a certifiable parameter in the State of Minnesota and therefore the MDH certification requested by the MPCA is not achievable. However, PCDD/PCDF analyses are certifiable for non-potable and drinking water. The MDH certification requirement of PCDD/PCDF in waters is a relatively recent development (June 24, 2007) and the laboratory is currently in the process applying this MN certification. Appendix B of the QAPP now includes the CAS (Houston) certificate and analyte list. Also included in this appendix are copies of CAS's (Kelso) MDH certificate and analyte list.

13. **Comment: A9.1.1,** page 1 of 8: *In Step 2 of Table 3, Barr states that the PCDD/PCDF concentrations will be compared to the MDH's Sediment Screening Value of 50 ppt TEQ. What is TEC? Is it TCDD Toxic Equivalent Concentration? How is the TEQ calculated? Since dioxins differ in potency, what factors are used to adjust the raw concentration to get the TEQ? Barr should clarify this.*

Response: The acronym TEQ has been clarified in the acronym list and on Table 3. 2005 WHO_{DF}TEFs will be used to calculate TEQs per the MDH guidance document, *Methods for Estimating the Carcinogenic Health Risks from Dioxin-Like Compounds* (2006).

14. **Comment: A9.2.2.2,** page 6 of 8: *In the PCDD/PCDF analysis, are surrogates added to each sample? If they are, Barr should include this information in their discussion.*

Response: A discussion of isotopically-labeled standard recoveries has been added to the referenced paragraph.

15. **Comment: A9.3.1,** page 8 of 8: *Barr defined the frequency for collecting field blanks. However, the QC acceptance criteria are not identified. Barr should provide this information.*

Response: QC acceptance criterion for field blanks has been identified in the referenced section.

16. **Comment: A10,** pages 1 and 2 of 2: *Barr should include information on how the current copy (and future revisions) of the QAPP will be distributed. Barr should also describe*

where the project files will be retained, whether the reports are needed in an electronic format or just a hard copy, and what will be the disposition of the records (off-site storage, return to the MPCA, or destruction). Does Barr have a retention schedule for this material?

Response: QAPP distribution and maintenance has been clarified (see response to comment 5). Details regarding the retention of data and project files have been added to the section.

17. **Comment: B2.1,** page 1 of 5: *Barr should describe what happens if equipment breaks down (are replacements borrowed, purchased, or extras available in the field?) or if sample containers are broken.*

Response: Equipment break-down and broken sample container protocols have been included in the referenced section.

18. **Comment: B3.3,** pages 2 and 3 of 3: *Barr should describe what happens to any remaining sample aliquots after sample analysis (are the samples returned to the site or will the laboratory dispose of them?).*

Response: Final disposition of all remaining sample aliquots has been added to the referenced section. It is expected that the laboratory will dispose of all remaining samples.

19. **Comment: B5.1,** page 1 of 2: *Barr should describe the corrective actions to be taken if problems arise in the field (along with who's responsible for the implementation of the actions).*

Response: Barr's field staff is well trained and experienced in sediment investigations. Should any corrective action be required, team members will contact either the project manager or the QA manager (or both) before proceeding with any corrective action. Clarification of these roles has been added to the referenced section.

20. **Comment: C1,** page 1 of 2: *Barr states that audits of field and laboratory activities include both internal and external components. However, the rest of Section C1 deals with just the laboratory. Barr should also discuss field audits.*

Response: The schedule of the field portion of this investigation is expected to take less than two weeks for completion and no field audit is anticipated.

21. **Comment: C1.1.2,** page 2 of 2: *Barr should include a requirement to analyze Proficiency Testing (PT) Samples as part of the external laboratory assessment. The results of the PT samples should be forwarded to the Project Managers.*

Response: CAS, Houston and Kelso, are involved in ongoing proficiency testing (PT) as part of laboratory accreditation. The results of the most recent associated PT evaluations have been added to Appendix B.

22. **Comment: C2,** page 1 of 3: *The first sentence indicates that there are three classes of problems. However, only two are described. Barr should clarify whether there are two or three classes of problems.*

Response: Changes to the paragraph to clarify two classes of problems exist.

Please let me know if you have any questions about our responses to your comments or the QAPP revisions.

Sincerely,

Dale W. Finnesgaard

Dale W. Finnesgaard
Vice President

Encl.

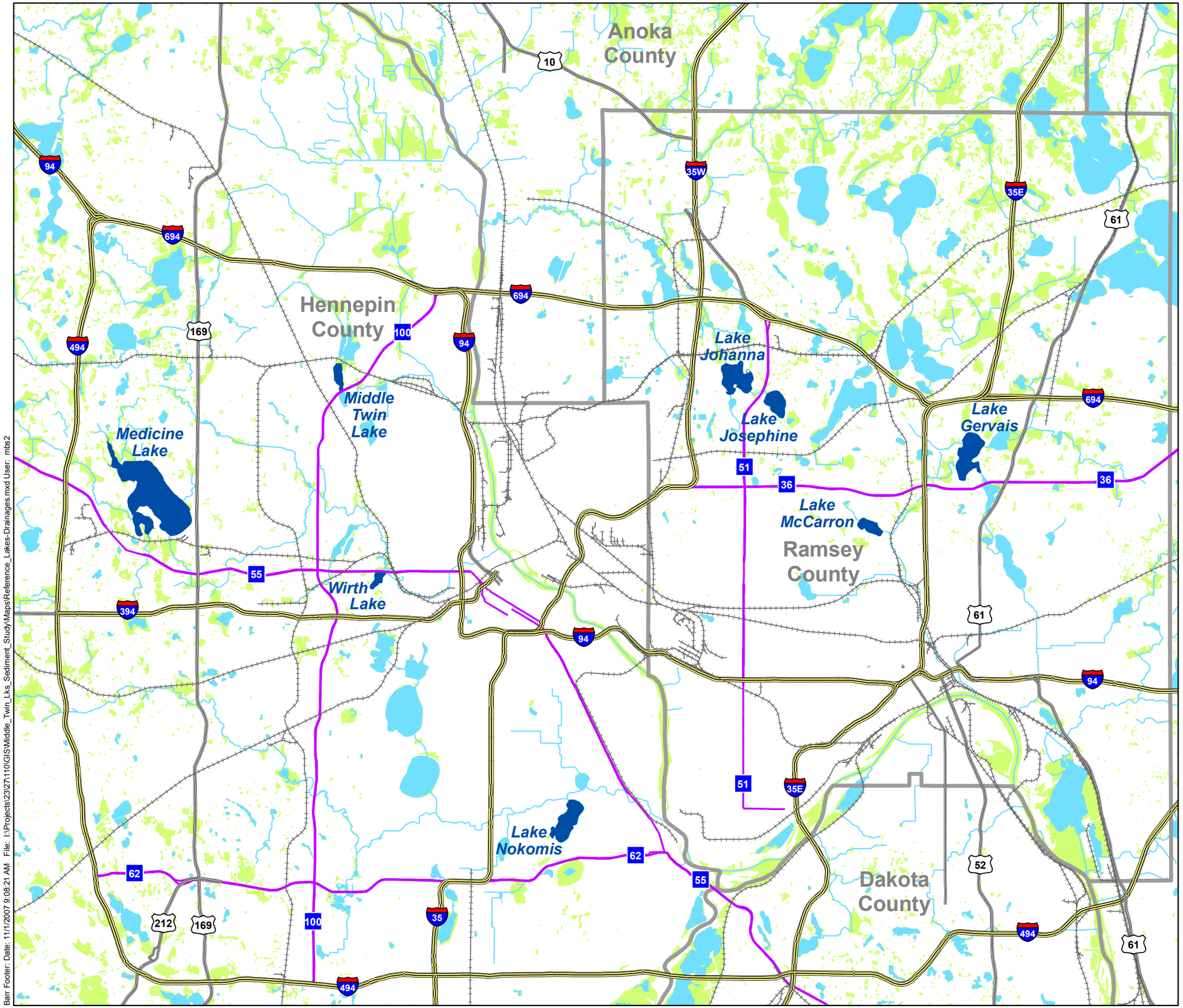
CC: Carl Grabinski (Joslyn)
Carlos Stern (Carlos Stern and Associates)
Jim Payne (Environmental Law Group)
Bill Scruton (MPCA)

Appendix B

Reference Lake Sample Locations

Table B-1
Reference Lake Sample List

Sample Number	Lake	Study Area
REF1-B	Wirth	Beach
REF1-NB		Nonbeach
REF2-B	Johanna	Beach
REF2-NB		Nonbeach
REF3-B	Josephine	Beach
REF3-NB		Nonbeach
REF4-B	Gervais	Beach
REF4-NB		Nonbeach
REF5-B	Medicine	Beach
REF5-NB		Nonbeach
REF6-B	McCarron	Beach
REF6-NB		Nonbeach
REF7-B	Nokomis	Beach
REF7-NB		Nonbeach



Barr Footer: Date: 11/1/2007 9:08:21 AM File: I:\Projects\23\27\110\GIS\Middle_Twin_Lks_Sediment_Study\Maps\Reference_Lakes-Drainages.mxd User: mbs2

Open Water
Wetland (NWI)
Reference Lake
County Boundary
Interstate Hwy
US Hwy
State Highway
Railroad

N

Miles
0 1 2 3 4 5

Kilometers
0 2 4 6 8

Figure B-1

REFERENCE LAKES SELECTED FOR SEDIMENT SAMPLE COLLECTION
Joslyn Manufacturing Company
Brooklyn Center, Minnesota

Barr Footer: Date: 10/31/2007 2:27:41 PM File: I:\Projects\23\27\110\GIS\Middle_Twin_Lks_Sediment_StudyMaps\Wirth_2006.mxd User: mbs2

Legend

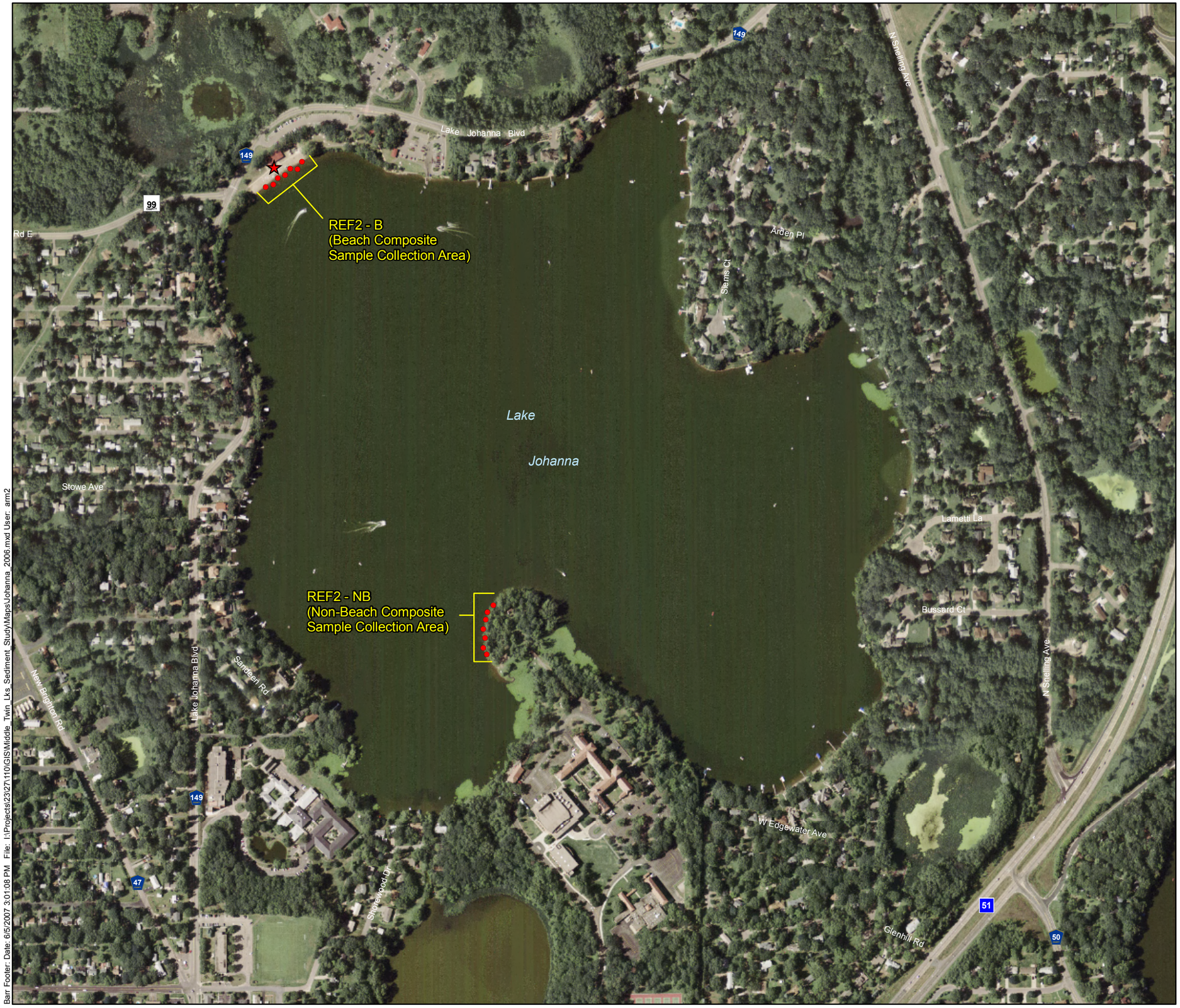
- Beach
- Sediment Sampling Location

Feet
0 300 600

Meters
0 100 200

Figure B-2

WIRTH LAKE
Composite Sediment Sample
Collection Locations
Joslyn Manufacturing Company
Brooklyn Center, Minnesota



Barr Footer: Date: 6/5/2007 3:01:08 PM File: I:\Projects\23\27\110\GIS\Middle_Twin_Lks_Sediment_StudyMaps\Johanna_2006.mxd User: am2

Legend

- Beach
- Sediment Sampling Location

Feet
0 500 1,000

Meters
0 100 200 300

Figure B-3

LAKE JOHANNA
Composite Sediment Sample
Collection Locations
Joslyn Manufacturing Company
Brooklyn Center, Minnesota

Barr Footer: Date: 11/1/2007 8:24:18 AM File: I:\Projects\23\27\110\GIS\Middle_Twin_Lks_Sediment_Study\Maps\Josephine_2006.mxd User: mbs2

Legend

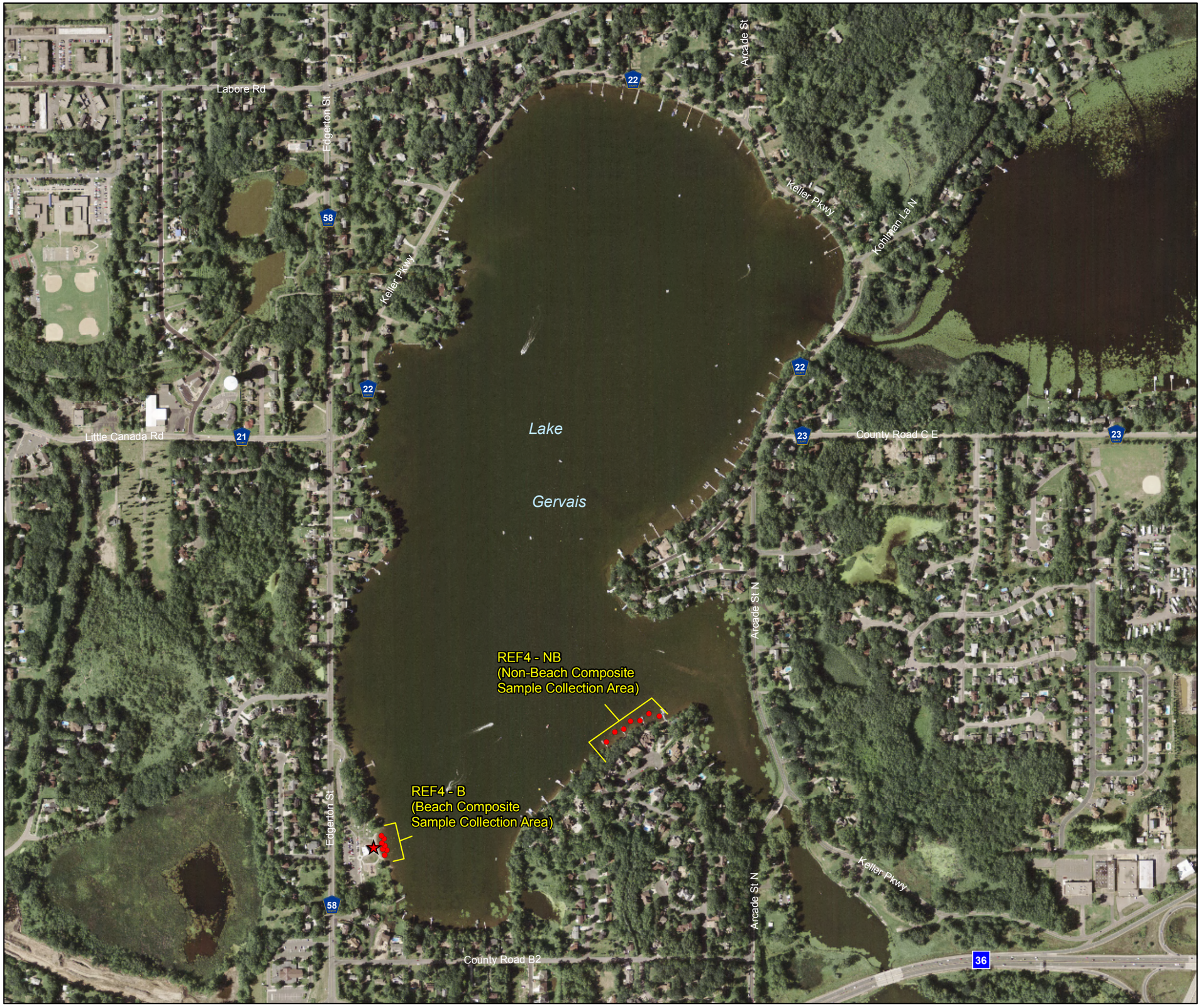
- Beach
- Sediment Sampling Location

Feet
0 400 800

Meters
0 100 200 300

Figure B-4

LAKE JOSEPHINE
Composite Sediment Sample
Collection Locations
Joslyn Manufacturing Company
Brooklyn Center, Minnesota



Barr Footer: Date: 11/1/2007 8:28:52 AM File: I:\Projects\23\27\110\GIS\Middle_Twin_Lks_Sediment_Study\Maps\Gervais_2006.mxd User: mbs2

Legend

- **Beach**
- Sediment Sampling Location

Feet
0 600 1,200

Meters
0 200 400

Figure B-5

LAKE GERVAIS
Composite Sediment Sample
Collection Locations
Joslyn Manufacturing Company
Brooklyn Center, Minnesota

Legend

- Beach
- Sediment Sampling Location

Feet
0 1,000 2,000 3,000

Meters
0 500 1,000

Figure B-6

MEDICINE LAKE
Composite Sediment Sample
Collection Locations
Joslyn Manufacturing Company
Brooklyn Center, Minnesota

Barr Footer: Date: 11/1/2007 8:46:54 AM File: I:\Projects\23\27\110\GIS\Middle_Twin_Lks_Sediment_Study\Maps\McCarron_2006.mxd User: mbs2

Legend

- Beach
- Sediment Sampling Location

Feet
0 400 800

Meters
0 100 200 300

Figure B-7

McCARRON LAKE
Composite Sediment Sample
Collection Locations
Joslyn Manufacturing Company
Brooklyn Center, Minnesota

Barr Footer: Date: 11/1/2007 8:53:31 AM File: I:\Projects\23\27\110\GIS\Middle_Twin_Lks_Sediment_Study\Maps\Nokomis_2006.mxd User: mbs2

Legend

- Beach
- Sediment Sampling Location

Feet
0 600 1,200

Meters
0 200 400

Figure B-8

LAKE NOKOMIS
Composite Sediment Sample
Collection Locations
Joslyn Manufacturing Company
Brooklyn Center, Minnesota

Appendix C

Laboratory Analytical Data and Data Validation Reports

19408 Park Row Suite 320 Houston, TX 77084 (713) 266-1599 (713) 266-0130 fax

November 13, 2007 Service Request No: E0700903

Michael Dupay
Barr Engineering
4700 West 77th Street
Minneapolis, MN 55435

RE: Joslyn - Sediment/23/27-110Y07 720

Dear Michael:

Enclosed are the results of the sample(s) submitted to our laboratory on September 15, 2007. For your reference, these analyses have been assigned our service request number **E0700903**.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. In accordance to the NELAC 2003 Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Please call if you have any questions. My extension is . You may also contact me via email at DBiles@houston.caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Darren Biles
Project Chemist

Page 1 of _____

Columbia Analytical Services INC.

An Employee - Owned Company

Certificate of Analysis

19408 Park Row, Suite 320, Houston, TX 77084
Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

COLUMBIA ANALYTICAL SERVICES, INC

Client:	Barr Engineering	**Service Request No.:**	E0700903
Project:	Joslyn – Sediment/23/27-110Y07 720	**Date Received:**	09/15/07
Sample Matrix:	Solid		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier II. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Seventeen solid samples were received by Columbia Analytical Services on 09/15/07. Two samples were analyzed for dioxins/furans.

The following discrepancies were noted upon initial sample inspection: no custody seals on cooler(s). The exceptions are also noted on the cooler receipt and preservation form included in this data package.

The samples were received at 4°C in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Sample E0700903-012 was re-extracted using a smaller sample size due to low internal standard recovery.

Data Validation Notes and Discussion

B flags – Method Blanks

The Method Blank EQ0700356-01/U212357 contained low levels of 1234678-HpCDD, OCDD, 123478-HxCDF, 1234678-HpCDF, 1234789-HpCDF and OCDF at or below the Method Reporting Limit (MRL).

The Method Blank EQ0700371-01/C15065#1 contained a low level of OCDD above the MRL. CAS/Houston follows the ***EPA National Functional Guidelines for CDDs and CDFs, September 2005,*** which states on page 31, "The concentration of OCDD/OCDF in the method blank must be <3x the CRQL (MRL.) "

The associated compounds in the samples are flagged with 'B' flags.

Y flags – Labeled Standards

Samples that had recoveries of labeled standards outside the acceptance limits are flagged with 'Y' flags on the Form 2s. In all cases, the signal-to-noise ratios are greater than 10:1, making these data acceptable.

Approved by Xiangqi Liang **Date** 11/13/07

Xiangqiu Liang, Laboratory Director

MS/MSD

EQ0700356: Laboratory Control Spike/Laboratory Control Spike Duplicate (LCS/LCSD) samples were analyzed and reported in lieu of an MS/MSD for this extraction batch.

The DLCS/U212362 results for 123789-HxCDD and 123789-HxCDF for batch EQ0700356 were outside the CAS control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. No further corrective action was appropriate.

EQ0700371: Laboratory Control Spike (LCS) sample was analyzed and reported. The batch precision (MS/MSD) measurements were determined on another order in the extraction batch. The MS/MSD results are not included in this report.

The LCS/C15065#12 results for OCDD and 12378-PeCDF for batch EQ0700371 were outside the CAS control criteria. No further corrective action was appropriate.

CAS-Houston follows the LCS acceptance criteria detailed in the EPA SOW DLM02.0, Section 12.2.5.3; which states, "Up to three compounds may fail to meet the recovery limits. However, frequent failures to meet the limits for recovery warrant investigation by the laboratory."

K flags

EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

Detection Limits

Detection limits are calculated for each congener in each sample by measuring the height of the noise level for each quantitation ion for the associated labeled standard. The concentration equivalent to 2.5 times the height of the noise is then calculated using the appropriate response factor and the weight of the sample. The calculated concentration equals the detection limit.

The Form 3 results for each sample have been calculated by CAS/Houston to include:

- WHO-05 TEFs
- Non-detected compounds are not included in the 'Total'

Approved by Xiangqiu Liang **Date** 11/13/07

Xiangqiu Liang, Laboratory Director

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E0700903-001	Ref-4-B	09/12/07	19:00
E0700903-002	Ref-3-NB	09/12/07	15:37
E0700903-003	Ref-5-NB	09/13/07	09:06
E0700903-004	Ref-4-NB	09/12/07	17:40
E0700903-005	Ref-6-NB	09/13/07	14:10
E0700903-006	Ref-5-B	09/13/07	11:47
E0700903-007	Ref-7-B	09/14/07	08:40
E0700903-008	Ref-6-B	09/14/07	10:35
E0700903-009	Ref-3-B	09/12/07	12:52
E0700903-010	Ref-7-NB	09/13/07	16:22
E0700903-011	Dup-1	09/12/07	00:00
E0700903-012	MTL-B	09/11/07	11:02
E0700903-013	MTL-NB	09/11/07	13:31
E0700903-014	Ref-1-B	09/11/07	16:12
E0700903-015	Ref-1-NB	09/11/07	18:15
E0700903-016	Ref-2-NB	09/12/07	10:52
E0700903-017	Ref-2-B	09/12/07	08:55

Data Qualifier Flags

- **B** Used when an associated analyte is found in the method blank, as well as in the sample

- **C** Confirmation of the TCDF compound: When 2378-TCDF is detected on the DB-5 column, confirmation analyses are performed on a second column (DB-225.) The results from both the DB-5 column and the DB-225 column are included in this data package. The results from the DB-225 analyses should be used to evaluate the 2378-TCDF in the samples. The confirmed result should be used in determining the TEQ value for TCDF. The samples requiring confirmation are indicated in the table above.

- **E** Indicates an estimated value – used when the analyte concentration exceeds the upper end of the linear calibration range

- **J** Indicates an estimated value – used when the analyte concentration is below the method reporting limit (MRL) and above the detection limit (DL)

- **K** EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

- **U** Indicates the compound was analyzed and not detected.

- **X** User defined; see case narrative for detailed explanation

- **Y** Samples that had recoveries of labeled standards outside the acceptance limits are flagged with 'Y' flags on the Form 2s. In all cases, the signal-to-noise ratios are greater than 10:1, making these data acceptable.

- * Indicates concentration is reported as 'Not Detected'

- **S** Peak is saturated; data not reportable

- **Q** Lock-mass interference by ether compounds

CAS/HOU - Form Production, Peer Review & Project Review Signatures

SR# Unique ID: E0700903

First Level - Data Processing - to be filled by person generating the forms

Date	10/31/07	Person 1	JB (013) (012)
Date		Person 2	

Second Level - Data Review – to be filled by person doing peer review

Date	10/31/07	Primary Data Reviewer	DB
Date		Secondary Data Reviewer	

Project Level - Review - to be filled by person doing project compliance review

Date	11/13/07	Reviewer	DB

CAS/HOU - Form Production, Peer Review & Project Review Signatures

SR# Unique ID: F0700903-ONE

First Level - Data Processing - to be filled by person generating the forms

Date	11/08/07	Person 1	
Date		Person 2	

Second Level - Data Review – to be filled by person doing peer review

Date	11/08/07	Primary Data Reviewer	QC
Date		Secondary Data Reviewer	

Project Level - Review - to be filled by person doing project compliance review

Date	11/13/07	Reviewer	QB

Columbia Analytical Services INC.

An Employee - Owned Company

Analytical Results

19408 Park Row, Suite 320, Houston, TX 77084
Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

Client:	Barr Engineering	**Service Request:**	E0700903
Project:	Joslyn - Sediment/23/27-110Y07 720	**Date Collected:**	
Sample Matrix:	Sediment	**Date Received:**	
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ0700356-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method:	8290	**Date Analyzed:**	10/30/07 1213
Prep Method:	Method	**Date Extracted:**	10/24/07
Sample Amount:	10.0g	**Instrument Name:**	E-HRMS-02
Percent Solids:		**GC Column:**	DB-5
Data File Name:	U212357	**Blank File Name:**	U212357
ICAL Name:	U40110482901	**Cal Ver. File Name:**	U212356

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.0834	1.00			1
1,2,3,7,8-PeCDD	ND	U	0.0695	2.50			1
1,2,3,4,7,8-HxCDD	ND	U	0.0422	2.50			1
1,2,3,6,7,8-HxCDD	ND	U	0.0379	2.50			1
1,2,3,7,8,9-HxCDD	ND	U	0.0392	2.50			1
1,2,3,4,6,7,8-HpCDD	**0.319**	J	0.0527	2.50	0.95	1.000	1
OCDD	**1.31**	J	0.115	5.00	0.99	1.000	1
2,3,7,8-TCDF	ND	U	0.186	1.00			1
1,2,3,7,8-PeCDF	ND	U	0.0552	2.50			1
2,3,4,7,8-PeCDF	ND	U	0.0516	2.50			1
1,2,3,4,7,8-HxCDF	**0.134**	J	0.0496	2.50	1.42	1.000	1
1,2,3,6,7,8-HxCDF	ND	U	0.0490	2.50			1
1,2,3,7,8,9-HxCDF	ND	U	0.0586	2.50			1
2,3,4,6,7,8-HxCDF	ND	U	0.0523	2.50			1
1,2,3,4,6,7,8-HpCDF	**0.230**	J	0.0804	2.50	0.91	1.000	1
1,2,3,4,7,8,9-HpCDF	**0.128**	J	0.104	2.50	1.09	1.030	1
OCDF	**0.481**	J	0.113	5.00	0.78	1.003	1
Total Tetra-Dioxins	ND	U	0.0834	1.00			1
Total Penta-Dioxins	ND	U	0.0695	2.50			1
Total Hexa-Dioxins	ND	U	0.0379	2.50			1
Total Hepta-Dioxins	**0.653**	J	0.0527	2.50	1.04		1
Total Tetra-Furans	ND	U	0.186	1.00			1
Total Penta-Furans	ND	U	0.0516	2.50			1
Total Hexa-Furans	**0.134**	J	0.0490	2.50	1.42		1
Total Hepta-Furans	**0.357**	J	0.0804	2.50	0.91		1

Comments:

11/12/07 gc

Client: Barr Engineering
Project: Joslyn - Sediment/23/27-110Y07 720
Sample Matrix: Sediment

Service Request: E0700903
Date Collected:
Date Received:

Sample Name: Method Blank
Lab Code: EQ0700356-01

Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 8290
Prep Method: Method
Sample Amount: 10.0g
Percent Solids:
Data File Name: U212357
ICAL Name: U4011048290I

Date Analyzed: 10/30/07 1213
Date Extracted: 10/24/07
Instrument Name: E-HRMS-02
GC Column: DB-5
Blank File Name: U212357
Cal Ver. File Name: U212356

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
C13-2,3,7,8-TCDD	1000	476.859	48		40-135	0.77	1.010
C13-1,2,3,7,8-PeCDD	1000	701.932	70		40-135	1.57	1.211
C13-1,2,3,6,7,8-HxCDD	2500	1810.630	72		40-135	1.27	0.992
C13-1,2,3,4,6,7,8-HpCDD	2500	1525.301	61		40-135	1.06	1.069
C13-OCDD	5000	2006.502	40		40-135	0.90	1.139
C13-2,3,7,8-TCDF	1000	365.398	37	Y	40-135	0.78	0.970
C13-1,2,3,7,8-PeCDF	1000	549.118	55		40-135	1.61	1.164
C13-1,2,3,4,7,8-HxCDF	2500	1481.822	59		40-135	0.52	0.969
C13-1,2,3,4,6,7,8-HpCDF	2500	1407.381	56		40-135	0.45	1.046
CL37-2,3,7,8-TCDD	800	433.109	54		40-135	NA	1.011

Comments:

11/12/07 gc

Client: Barr Engineering
Project: Joslyn - Sediment/23/27-110Y07 720
Sample Matrix: Sediment

Service Request: E0700903
Date Collected:
Date Received:

Sample Name: Method Blank
Lab Code: EQ0700371-01

Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 8290
Prep Method: Method
Sample Amount: 10.0g
Percent Solids:
Data File Name: C15065#1
ICAL Name: C407128290I

Date Analyzed: 11/7/07 1901
Date Extracted: 11/1/07
Instrument Name: E-HRMS-70
GC Column: DB-5
Blank File Name: C15065#1
Cal Ver. File Name: C15063#1

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.140	1.00			1
1,2,3,7,8-PeCDD	ND	U	0.144	2.50			1
1,2,3,4,7,8-HxCDD	ND	U	0.175	2.50			1
1,2,3,6,7,8-HxCDD	ND	U	0.147	2.50			1
1,2,3,7,8,9-HxCDD	ND	U	0.149	2.50			1
1,2,3,4,6,7,8-HpCDD	ND	U	0.269	2.50			1
OCDD	**9.02**		0.428	5.00	0.86	1.000	1
2,3,7,8-TCDF	ND	U	0.134	1.00			1
1,2,3,7,8-PeCDF	ND	U	0.127	2.50			1
2,3,4,7,8-PeCDF	ND	U	0.124	2.50			1
1,2,3,4,7,8-HxCDF	ND	U	0.117	2.50			1
1,2,3,6,7,8-HxCDF	ND	U	0.116	2.50			1
1,2,3,7,8,9-HxCDF	ND	U	0.142	2.50			1
2,3,4,6,7,8-HxCDF	ND	U	0.127	2.50			1
1,2,3,4,6,7,8-HpCDF	ND	U	0.185	2.50			1
1,2,3,4,7,8,9-HpCDF	ND	U	0.251	2.50			1
OCDF	ND	U	0.539	5.00			1
Total Tetra-Dioxins	ND	U	0.140	1.00			1
Total Penta-Dioxins	ND	U	0.144	2.50			1
Total Hexa-Dioxins	ND	U	0.147	2.50			1
Total Hepta-Dioxins	ND	U	0.269	2.50			1
Total Tetra-Furans	ND	U	0.134	1.00			1
Total Penta-Furans	ND	U	0.124	2.50			1
Total Hexa-Furans	ND	U	0.116	2.50			1
Total Hepta-Furans	ND	U	0.185	2.50			1

Comments:

11/12/07 HC

Client: Barr Engineering
Project: Joslyn - Sediment/23/27-110Y07 720
Sample Matrix: Sediment

Service Request: E0700903
Date Collected:
Date Received:

Sample Name: Method Blank
Lab Code: EQ0700371-01

Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 8290
Prep Method: Method
Sample Amount: 10.0g
Percent Solids:
Data File Name: C15065#1
ICAL Name: C407128290I

Date Analyzed: 11/7/07 1901
Date Extracted: 11/1/07
Instrument Name: E-HRMS-70
GC Column: DB-5
Blank File Name: C15065#1
Cal Ver. File Name: C15063#1

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
C13-2,3,7,8-TCDD	1000	689.216	69		40-135	0.78	1.007
C13-1,2,3,7,8-PeCDD	1000	923.865	92		40-135	1.57	1.166
C13-1,2,3,6,7,8-HxCDD	2500	2417.070	97		40-135	1.23	0.992
C13-1,2,3,4,6,7,8-HpCDD	2500	2120.302	85		40-135	1.04	1.078
C13-OCDD	5000	2903.896	58		40-135	0.84	1.172
C13-2,3,7,8-TCDF	1000	646.655	65		40-135	0.78	0.980
C13-1,2,3,7,8-PeCDF	1000	746.290	75		40-135	1.54	1.128
C13-1,2,3,4,7,8-HxCDF	2500	2227.699	89		40-135	0.50	0.971
C13-1,2,3,4,6,7,8-HpCDF	2500	2059.894	82		40-135	0.44	1.051
CL37-2,3,7,8-TCDD	800	655.940	82		40-135	NA	1.007

Comments:

11/12/07 GC

Client:	Barr Engineering Company	**Service Request:**	E0700903
Project:	Joslyn - Sediment/23/27-110Y07 720	**Date Collected:**	09/11/2007
Sample Matrix:	Sediment	**Date Received:**	09/15/2007
Sample Name:	MTL-B	**Units:**	ng/Kg
Lab Code:	E0700903-012	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method:	8290	**Date Analyzed:**	11/7/07 2040
Prep Method:	Method	**Date Extracted:**	11/1/07
Sample Amount:	6.323g	**Instrument Name:**	E-HRMS-70
Percent Solids:	82.2	**GC Column:**	DB-5
Data File Name:	C15065#3	**Blank File Name:**	C15065#1
ICAL Name:	C407128290I	**Cal Ver. File Name:**	C15063#1

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.230	1.92			1
1,2,3,7,8-PeCDD	ND	U	0.217	4.81			1
1,2,3,4,7,8-HxCDD	ND	U	0.242	4.81			1
1,2,3,6,7,8-HxCDD	ND	U	0.204	4.81			1
1,2,3,7,8,9-HxCDD	ND	U	0.206	4.81			1
1,2,3,4,6,7,8-HpCDD	**2.74**	J	0.478	4.81	1.11	1.000	1
OCDD	**23.6**	B	0.499	9.62	0.86	1.000	1
2,3,7,8-TCDF	ND	U	0.233	1.92			1
1,2,3,7,8-PeCDF	ND	U	0.227	4.81			1
2,3,4,7,8-PeCDF	ND	U	0.221	4.81			1
1,2,3,4,7,8-HxCDF	ND	U	0.176	4.81			1
1,2,3,6,7,8-HxCDF	ND	U	0.175	4.81			1
1,2,3,7,8,9-HxCDF	ND	U	0.214	4.81			1
2,3,4,6,7,8-HxCDF	ND	U	0.192	4.81			1
1,2,3,4,6,7,8-HpCDF	**0.793**	J	0.272	4.81	1.00	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	0.370	4.81			1
OCDF	ND	U	0.557	9.62			1
Total Tetra-Dioxins	ND	U	0.230	1.92			1
Total Penta-Dioxins	ND	U	0.217	4.81			1
Total Hexa-Dioxins	**0.912**	J	0.204	4.81	1.27		1
Total Hepta-Dioxins	**6.03**		0.478	4.81	1.08		1
Total Tetra-Furans	ND	U	0.233	1.92			1
Total Penta-Furans	ND	U	0.221	4.81			1
Total Hexa-Furans	ND	U	0.175	4.81			1
Total Hepta-Furans	**1.71**	J	0.272	4.81	1.00		1

Comments:

11/13/07 gc

Client:	Barr Engineering Company	**Service Request:**	E0700903
Project:	Joslyn - Sediment/23/27-110Y07 720	**Date Collected:**	09/11/2007
Sample Matrix:	Sediment	**Date Received:**	09/15/2007
Sample Name:	MTL-B	**Units:**	ng/Kg
Lab Code:	E0700903-012	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method:	8290	**Date Analyzed:**	11/7/07 2040
Prep Method:	Method	**Date Extracted:**	11/1/07
Sample Amount:	6.323g	**Instrument Name:**	E-HRMS-70
Percent Solids:	82.2	**GC Column:**	DB-5
Data File Name:	C15065#3	**Blank File Name:**	C15065#1
ICAL Name:	C407128290I	**Cal Ver. File Name:**	C15063#1

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
C13-2,3,7,8-TCDD	1000	697.902	70		40-135	0.79	1.007
C13-1,2,3,7,8-PeCDD	1000	917.049	92		40-135	1.55	1.167
C13-1,2,3,6,7,8-HxCDD	2500	1992.015	80		40-135	1.23	0.992
C13-1,2,3,4,6,7,8-HpCDD	2500	1873.189	75		40-135	1.03	1.078
C13-OCDD	5000	2892.555	58		40-135	0.86	1.171
C13-2,3,7,8-TCDF	1000	681.984	68		40-135	0.78	0.980
C13-1,2,3,7,8-PeCDF	1000	782.593	78		40-135	1.55	1.128
C13-1,2,3,4,7,8-HxCDF	2500	1823.946	73		40-135	0.49	0.970
C13-1,2,3,4,6,7,8-HpCDF	2500	1675.410	67		40-135	0.44	1.051
CL37-2,3,7,8-TCDD	800	677.110	85		40-135	NA	1.007

Comments:

11/13/07 JC

Client:	Barr Engineering Company	**Service Request:**	E0700903
Project:	Joslyn - Sediment/23/27-110Y07 720	**Date Collected:**	09/11/2007
Sample Matrix:	Sediment	**Date Received:**	09/15/2007
Sample Name:	MTL-B	**Units:**	ng/Kg
Lab Code:	E0700903-012	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analyte Name	Result	DL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.230	1	1	0.115
1,2,3,7,8-PeCDD	ND	0.217	1	1	0.109
1,2,3,4,7,8-HxCDD	ND	0.242	1	0.1	0.0121
1,2,3,6,7,8-HxCDD	ND	0.204	1	0.1	0.0102
1,2,3,7,8,9-HxCDD	ND	0.206	1	0.1	0.0103
1,2,3,4,6,7,8-HpCDD	**2.74**	0.478	1	0.01	0.0274
OCDD	**23.6**	0.499	1	0.0003	0.00708
2,3,7,8-TCDF	ND	0.233	1	0.1	0.0117
1,2,3,7,8-PeCDF	ND	0.227	1	0.03	0.00341
2,3,4,7,8-PeCDF	ND	0.221	1	0.3	0.0332
1,2,3,4,7,8-HxCDF	ND	0.176	1	0.1	0.00880
1,2,3,6,7,8-HxCDF	ND	0.175	1	0.1	0.00875
1,2,3,7,8,9-HxCDF	ND	0.214	1	0.1	0.0107
2,3,4,6,7,8-HxCDF	ND	0.192	1	0.1	0.00960
1,2,3,4,6,7,8-HpCDF	**0.793**	0.272	1	0.01	0.00793
1,2,3,4,7,8,9-HpCDF	ND	0.370	1	0.01	0.00185
OCDF	ND	0.557	1	0.0003	0.0000836
		Total TEQ			0.387

2005 WHO TEFs, ND = 0.5*DL

Comments:

11/13/07 gc

Client:	Barr Engineering Company	**Service Request:**	E0700903
Project:	Joslyn - Sediment/23/27-110Y07 720	**Date Collected:**	09/11/2007
Sample Matrix:	Sediment	**Date Received:**	09/15/2007
Sample Name:	MTL-NB	**Units:**	ng/Kg
Lab Code:	E0700903-013	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method:	8290	**Date Analyzed:**	10/30/07 1348
Prep Method:	Method	**Date Extracted:**	10/24/07
Sample Amount:	12.016g	**Instrument Name:**	E-HRMS-02
Percent Solids:	79.9	**GC Column:**	DB-5
Data File Name:	U212359	**Blank File Name:**	U212357
ICAL Name:	U4011048290I	**Cal Ver. File Name:**	U212356

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.0542	1.04			1
1,2,3,7,8-PeCDD	ND	U	0.0432	2.60			1
1,2,3,4,7,8-HxCDD	**0.0891**	J	0.0284	2.60	1.30	0.998	1
1,2,3,6,7,8-HxCDD	**0.304**	J	0.0256	2.60	1.42	1.000	1
1,2,3,7,8,9-HxCDD	**0.228**	JK	0.0265	2.60	1.02	1.008	1
1,2,3,4,6,7,8-HpCDD	**7.88**	B	0.0237	2.60	1.08	1.000	1
OCDD	**62.6**	B	0.0351	5.21	0.90	1.000	1
2,3,7,8-TCDF	ND	U	0.0854	1.04			1
1,2,3,7,8-PeCDF	ND	U	0.0236	2.60			1
2,3,4,7,8-PeCDF	ND	U	0.0222	2.60			1
1,2,3,4,7,8-HxCDF	**0.151**	JB	0.0321	2.60	1.25	1.000	1
1,2,3,6,7,8-HxCDF	**0.151**	J	0.0317	2.60	1.21	1.004	1
1,2,3,7,8,9-HxCDF	ND	U	0.0378	2.60			1
2,3,4,6,7,8-HxCDF	ND	U	0.0339	2.60			1
1,2,3,4,6,7,8-HpCDF	**2.36**	JB	0.0335	2.60	0.98	1.000	1
1,2,3,4,7,8,9-HpCDF	**0.131**	JB	0.0433	2.60	1.05	1.031	1
OCDF	**6.56**	B	0.0264	5.21	0.86	1.003	1
Total Tetra-Dioxins	ND	U	0.0542	1.04			1
Total Penta-Dioxins	**0.228**	J	0.0432	2.60	1.61		1
Total Hexa-Dioxins	**2.10**	J	0.0256	2.60	1.21		1
Total Hepta-Dioxins	**15.9**		0.0237	2.60	1.06		1
Total Tetra-Furans	ND	U	0.0854	1.04			1
Total Penta-Furans	**1.57**	J	0.0222	2.60	1.54		1
Total Hexa-Furans	**3.12**		0.0317	2.60	1.08		1
Total Hepta-Furans	**7.48**		0.0335	2.60	0.98		1

Comments:

11/12/07 TQC

Client: Barr Engineering Company
Project: Joslyn - Sediment/23/27-110Y07 720
Sample Matrix: Sediment

Service Request: E0700903
Date Collected: 09/11/2007
Date Received: 09/15/2007

Sample Name: MTL-NB
Lab Code: E0700903-013

Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 8290
Prep Method: Method
Sample Amount: 12.016g
Percent Solids: 79.9
Data File Name: U212359
ICAL Name: U4011048290I

Date Analyzed: 10/30/07 1348
Date Extracted: 10/24/07
Instrument Name: E-HRMS-02
GC Column: DB-5
Blank File Name: U212357
Cal Ver. File Name: U212356

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
C13-2,3,7,8-TCDD	1000	575.038	58		40-135	0.80	1.010
C13-1,2,3,7,8-PeCDD	1000	724.944	72		40-135	1.58	1.211
C13-1,2,3,6,7,8-HxCDD	2500	2056.163	82		40-135	1.25	0.992
C13-1,2,3,4,6,7,8-HpCDD	2500	1751.693	70		40-135	1.04	1.069
C13-OCDD	5000	2798.780	56		40-135	0.90	1.139
C13-2,3,7,8-TCDF	1000	452.040	45		40-135	0.79	0.970
C13-1,2,3,7,8-PeCDF	1000	604.941	60		40-135	1.56	1.164
C13-1,2,3,4,7,8-HxCDF	2500	1662.605	67		40-135	0.53	0.969
C13-1,2,3,4,6,7,8-HpCDF	2500	1517.143	61		40-135	0.45	1.046
CL37-2,3,7,8-TCDD	800	528.322	66		40-135	NA	1.011

Comments:

11/12/07 gc

Client:	Barr Engineering Company	**Service Request:**	E0700903
Project:	Joslyn - Sediment/23/27-110Y07 720	**Date Collected:**	09/11/2007
Sample Matrix:	Sediment	**Date Received:**	09/15/2007
Sample Name:	MTL-NB	**Units:**	ng/Kg
Lab Code:	E0700903-013	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analyte Name	Result	DL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.0542	1	1	0.0271
1,2,3,7,8-PeCDD	ND	0.0432	1	1	0.0216
1,2,3,4,7,8-HxCDD	**0.0891**	0.0284	1	0.1	0.00891
1,2,3,6,7,8-HxCDD	**0.304**	0.0256	1	0.1	0.0304
1,2,3,7,8,9-HxCDD	**0.228**	0.0265	1	0.1	0.0228
1,2,3,4,6,7,8-HpCDD	**7.88**	0.0237	1	0.01	0.0788
OCDD	**62.6**	0.0351	1	0.0003	0.0188
2,3,7,8-TCDF	ND	0.0854	1	0.1	0.00427
1,2,3,7,8-PeCDF	ND	0.0236	1	0.03	0.000354
2,3,4,7,8-PeCDF	ND	0.0222	1	0.3	0.00333
1,2,3,4,7,8-HxCDF	**0.151**	0.0321	1	0.1	0.0151
1,2,3,6,7,8-HxCDF	**0.151**	0.0317	1	0.1	0.0151
1,2,3,7,8,9-HxCDF	ND	0.0378	1	0.1	0.00189
2,3,4,6,7,8-HxCDF	ND	0.0339	1	0.1	0.00170
1,2,3,4,6,7,8-HpCDF	**2.36**	0.0335	1	0.01	0.0236
1,2,3,4,7,8,9-HpCDF	**0.131**	0.0433	1	0.01	0.00131
OCDF	**6.56**	0.0264	1	0.0003	0.00197
		Total TEQ			0.277

2005 WHO TEFs, ND = 0.5*DL

Comments:

11/12/07 gc

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Barr Engineering
Project: Joslyn - Sediment/23/27-110Y07 720
Sample Matrix: Sediment

Service Request: E0700903

Sample Name: Lab Control Sample
Lab Code: EQ0700356-02

Units: ng/Kg
Basis: Dry

Analytical Method: 8290
Prep Method: Method

Analyte Name	Lab Control Sample Result	Lab Control Sample Expected	Lab Control Sample % Rec	Duplicate Lab Control Sample Result	Duplicate Lab Control Sample Expected	Duplicate Lab Control Sample % Rec		% Rec Limits	RPD	RPD Limi
2,3,7,8-TCDD	22.3	20.0	112	21.5	20.0	108		70 - 130	4	50
1,2,3,7,8-PeCDD	51.5	50.0	103	50.2	50.0	100		70 - 130	3	50
1,2,3,4,7,8-HxCDD	48.5	50.0	97	48.0	50.0	96		70 - 130	1	50
1,2,3,6,7,8-HxCDD	49.3	50.0	99	45.7	50.0	91		70 - 130	8	50
1,2,3,7,8,9-HxCDD	41.3	50.0	83	34.7	50.0	69	*	70 - 130	17	50
1,2,3,4,6,7,8-HpCDD	55.6	50.0	111	51.9	50.0	104		70 - 130	7	50
OCDD	127	100	127	120	100	120		70 - 130	6	50
2,3,7,8-TCDF	22.5	20.0	113	21.5	20.0	108		70 - 130	5	50
1,2,3,7,8-PeCDF	59.4	50.0	119	58.0	50.0	116		70 - 130	2	50
2,3,4,7,8-PeCDF	56.1	50.0	112	58.6	50.0	117		70 - 130	4	50
1,2,3,4,7,8-HxCDF	49.3	50.0	99	46.7	50.0	93		70 - 130	5	50
1,2,3,6,7,8-HxCDF	45.8	50.0	92	52.1	50.0	104		70 - 130	13	50
1,2,3,7,8,9-HxCDF	37.6	50.0	75	33.7	50.0	67	*	70 - 130	11	50
2,3,4,6,7,8-HxCDF	47.3	50.0	95	41.1	50.0	82		70 - 130	14	50
1,2,3,4,6,7,8-HpCDF	57.7	50.0	115	57.3	50.0	115		70 - 130	1	50
1,2,3,4,7,8,9-HpCDF	50.2	50.0	100	45.1	50.0	90		70 - 130	11	50
OCDF	101	100	101	114	100	114		70 - 130	12	50

Comments:

11/12/07 QC

Client:	Barr Engineering	**Service Request:**	E0700903
Project:	Joslyn - Sediment/23/27-110Y07 720	**Date Collected:**	
Sample Matrix:	Sediment	**Date Received:**	
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ0700356-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method:	8290	**Date Analyzed:**	10/30/07 1524
Prep Method:	Method	**Date Extracted:**	10/24/07
Sample Amount:	10.0g	**Instrument Name:**	E-HRMS-02
Percent Solids:		**GC Column:**	DB-5
Data File Name:	U212361	**Blank File Name:**	U212357
ICAL Name:	U4011048290I	**Cal Ver. File Name:**	U212356

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	**22.3**		0.0449	1.00	0.79	1.001	1
1,2,3,7,8-PeCDD	**51.5**		0.0227	2.50	1.58	1.001	1
1,2,3,4,7,8-HxCDD	**48.5**		0.0491	2.50	1.25	0.998	1
1,2,3,6,7,8-HxCDD	**49.3**		0.0442	2.50	1.25	1.000	1
1,2,3,7,8,9-HxCDD	**41.3**		0.0456	2.50	1.24	1.009	1
1,2,3,4,6,7,8-HpCDD	**55.6**		0.0311	2.50	1.04	1.000	1
OCDD	**127**		0.0933	5.00	0.88	1.000	1
2,3,7,8-TCDF	**22.5**		0.0740	1.00	0.78	1.001	1
1,2,3,7,8-PeCDF	**59.4**		0.0230	2.50	1.58	1.000	1
2,3,4,7,8-PeCDF	**56.1**		0.0215	2.50	1.56	1.027	1
1,2,3,4,7,8-HxCDF	**49.3**		0.0214	2.50	1.26	1.000	1
1,2,3,6,7,8-HxCDF	**45.8**		0.0211	2.50	1.27	1.003	1
1,2,3,7,8,9-HxCDF	**37.6**		0.0253	2.50	1.27	1.038	1
2,3,4,6,7,8-HxCDF	**47.3**		0.0226	2.50	1.26	1.018	1
1,2,3,4,6,7,8-HpCDF	**57.7**		0.0975	2.50	1.04	1.000	1
1,2,3,4,7,8,9-HpCDF	**50.2**		0.126	2.50	0.99	1.031	1
OCDF	**101**		0.0401	5.00	0.91	1.003	1
Total Tetra-Dioxins	**22.3**		0.0449	1.00	0.79		1
Total Penta-Dioxins	**51.6**		0.0227	2.50	1.34		1
Total Hexa-Dioxins	**139**		0.0442	2.50	1.25		1
Total Hepta-Dioxins	**56.1**		0.0311	2.50	1.16		1
Total Tetra-Furans	**24.1**		0.0740	1.00	0.78		1
Total Penta-Furans	**119**		0.0215	2.50	1.41		1
Total Hexa-Furans	**181**		0.0211	2.50	1.17		1
Total Hepta-Furans	**108**		0.0975	2.50	1.04		1

Comments: 11/12/07 gc

Client:	Barr Engineering	**Service Request:**	E0700903
Project:	Joslyn - Sediment/23/27-110Y07 720	**Date Collected:**	
Sample Matrix:	Sediment	**Date Received:**	
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ0700356-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method:	8290	**Date Analyzed:**	10/30/07 1524
Prep Method:	Method	**Date Extracted:**	10/24/07
Sample Amount:	10.0g	**Instrument Name:**	E-HRMS-02
Percent Solids:		**GC Column:**	DB-5
Data File Name:	U212361	**Blank File Name:**	U212357
ICAL Name:	U4011048290I	**Cal Ver. File Name:**	U212356

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
C13-2,3,7,8-TCDD	1000	491.438	49		40-135	0.78	1.010
C13-1,2,3,7,8-PeCDD	1000	659.494	66		40-135	1.58	1.210
C13-1,2,3,6,7,8-HxCDD	2500	2202.320	88		40-135	1.28	0.992
C13-1,2,3,4,6,7,8-HpCDD	2500	1531.129	61		40-135	1.04	1.069
C13-OCDD	5000	2571.136	51		40-135	0.92	1.139
C13-2,3,7,8-TCDF	1000	411.184	41		40-135	0.79	0.971
C13-1,2,3,7,8-PeCDF	1000	543.556	54		40-135	1.59	1.164
C13-1,2,3,4,7,8-HxCDF	2500	1797.589	72		40-135	0.53	0.969
C13-1,2,3,4,6,7,8-HpCDF	2500	1513.320	61		40-135	0.46	1.046
CL37-2,3,7,8-TCDD	800	461.864	58		40-135	NA	1.011

Comments:

11/12/07 gc

Client:	Barr Engineering	**Service Request:**	E0700903
Project:	Joslyn - Sediment/23/27-110Y07 720	**Date Collected:**	
Sample Matrix:	Sediment	**Date Received:**	
Sample Name:	Lab Control Sample Dup	**Units:**	ng/Kg
Lab Code:	EQ0700356-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method:	8290	**Date Analyzed:**	10/30/07 1613
Prep Method:	Method	**Date Extracted:**	10/24/07
Sample Amount:	10.0g	**Instrument Name:**	E-HRMS-02
Percent Solids:		**GC Column:**	DB-5
Data File Name:	U212362	**Blank File Name:**	U212357
ICAL Name:	U4011048290I	**Cal Ver. File Name:**	U212356

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	**21.5**		0.0525	1.00	0.76	1.001	1
1,2,3,7,8-PeCDD	**50.2**		0.0395	2.50	1.57	1.000	1
1,2,3,4,7,8-HxCDD	**48.0**		0.0348	2.50	1.26	0.998	1
1,2,3,6,7,8-HxCDD	**45.7**		0.0313	2.50	1.26	1.000	1
1,2,3,7,8,9-HxCDD	**34.7**		0.0323	2.50	1.25	1.008	1
1,2,3,4,6,7,8-HpCDD	**51.9**		0.0608	2.50	1.07	1.000	1
OCDD	**120**		0.260	5.00	0.89	1.000	1
2,3,7,8-TCDF	**21.5**		0.0829	1.00	0.79	1.001	1
1,2,3,7,8-PeCDF	**58.0**		0.0344	2.50	1.59	1.001	1
2,3,4,7,8-PeCDF	**58.6**		0.0322	2.50	1.56	1.027	1
1,2,3,4,7,8-HxCDF	**46.7**		0.0237	2.50	1.23	1.000	1
1,2,3,6,7,8-HxCDF	**52.1**		0.0234	2.50	1.26	1.004	1
1,2,3,7,8,9-HxCDF	**33.7**		0.0280	2.50	1.25	1.039	1
2,3,4,6,7,8-HxCDF	**41.1**		0.0250	2.50	1.26	1.018	1
1,2,3,4,6,7,8-HpCDF	**57.3**		0.0789	2.50	1.04	1.000	1
1,2,3,4,7,8,9-HpCDF	**45.1**		0.102	2.50	1.06	1.031	1
OCDF	**114**		0.0632	5.00	0.90	1.003	1
Total Tetra-Dioxins	**21.5**		0.0525	1.00	0.76		1
Total Penta-Dioxins	**50.2**		0.0395	2.50	1.40		1
Total Hexa-Dioxins	**129**		0.0313	2.50	1.26		1
Total Hepta-Dioxins	**51.9**		0.0608	2.50	1.07		1
Total Tetra-Furans	**22.8**		0.0829	1.00	0.82		1
Total Penta-Furans	**120**		0.0322	2.50	1.56		1
Total Hexa-Furans	**174**		0.0234	2.50	1.14		1
Total Hepta-Furans	**102**		0.0789	2.50	1.04		1

Comments:

11/12/07 gc

Client:	Barr Engineering	**Service Request:**	E0700903
Project:	Joslyn - Sediment/23/27-110Y07 720	**Date Collected:**	
Sample Matrix:	Sediment	**Date Received:**	
Sample Name:	Lab Control Sample Dup	**Units:**	ng/Kg
Lab Code:	EQ0700356-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method:	8290	**Date Analyzed:**	10/30/07 1613
Prep Method:	Method	**Date Extracted:**	10/24/07
Sample Amount:	10.0g	**Instrument Name:**	E-HRMS-02
Percent Solids:		**GC Column:**	DB-5
Data File Name:	U212362	**Blank File Name:**	U212357
ICAL Name:	U4011048290I	**Cal Ver. File Name:**	U212356

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
C13-2,3,7,8-TCDD	1000	434.542	43		40-135	0.78	1.010
C13-1,2,3,7,8-PeCDD	1000	644.393	64		40-135	1.57	1.211
C13-1,2,3,6,7,8-HxCDD	2500	2109.319	84		40-135	1.26	0.992
C13-1,2,3,4,6,7,8-HpCDD	2500	1407.752	56		40-135	1.05	1.069
C13-OCDD	5000	1804.835	36	Y	40-135	0.92	1.139
C13-2,3,7,8-TCDF	1000	344.861	34	Y	40-135	0.79	0.970
C13-1,2,3,7,8-PeCDF	1000	486.241	49		40-135	1.59	1.164
C13-1,2,3,4,7,8-HxCDF	2500	1711.076	68		40-135	0.53	0.969
C13-1,2,3,4,6,7,8-HpCDF	2500	1341.385	54		40-135	0.46	1.046
CL37-2,3,7,8-TCDD	800	401.442	50		40-135	NA	1.011

Comments: 11/12/07 JC

Client: Barr Engineering
Project: Joslyn - Sediment/23/27-110Y07 720
Sample Matrix: Sediment

Service Request: E0700903

Sample Name: Lab Control Sample
Lab Code: EQ0700371-02

Units: ng/Kg
Basis: Dry

Analytical Method: 8290
Prep Method: Method

Analyte Name	Lab Control Sample Result	Expected	% Rec		% Rec Limits
2,3,7,8-TCDD	22.2	20.0	111		70 - 130
1,2,3,7,8-PeCDD	52.2	50.0	104		70 - 130
1,2,3,4,7,8-HxCDD	55.4	50.0	111		70 - 130
1,2,3,6,7,8-HxCDD	49.5	50.0	99		70 - 130
1,2,3,7,8,9-HxCDD	43.3	50.0	87		70 - 130
1,2,3,4,6,7,8-HpCDD	54.0	50.0	108		70 - 130
OCDD	132	100	132	*	70 - 130
2,3,7,8-TCDF	25.6	20.0	128		70 - 130
1,2,3,7,8-PeCDF	65.7	50.0	131	*	70 - 130
2,3,4,7,8-PeCDF	62.4	50.0	125		70 - 130
1,2,3,4,7,8-HxCDF	48.6	50.0	97		70 - 130
1,2,3,6,7,8-HxCDF	56.1	50.0	112		70 - 130
1,2,3,7,8,9-HxCDF	40.6	50.0	81		70 - 130
2,3,4,6,7,8-HxCDF	50.8	50.0	102		70 - 130
1,2,3,4,6,7,8-HpCDF	59.3	50.0	119		70 - 130
1,2,3,4,7,8,9-HpCDF	53.2	50.0	106		70 - 130
OCDF	114	100	114		70 - 130

Comments:

11/13/07 gc

Client:	Barr Engineering	**Service Request:**	E0700903
Project:	Joslyn - Sediment/23/27-110Y07 720	**Date Collected:**	
Sample Matrix:	Sediment	**Date Received:**	
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ0700371-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method:	8290	**Date Analyzed:**	11/8/07 0404
Prep Method:	Method	**Date Extracted:**	11/1/07
Sample Amount:	10.0g	**Instrument Name:**	E-HRMS-70
Percent Solids:		**GC Column:**	DB-5
Data File Name:	C15065#12	**Blank File Name:**	C15065#1
ICAL Name:	C407128290I	**Cal Ver. File Name:**	C15063#1

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	**22.2**		0.0741	1.00	0.77	1.001	1
1,2,3,7,8-PeCDD	**52.2**		0.0899	2.50	1.62	1.000	1
1,2,3,4,7,8-HxCDD	**55.4**		0.120	2.50	1.26	0.998	1
1,2,3,6,7,8-HxCDD	**49.5**		0.101	2.50	1.24	1.000	1
1,2,3,7,8,9-HxCDD	**43.3**		0.102	2.50	1.25	1.009	1
1,2,3,4,6,7,8-HpCDD	**54.0**		0.178	2.50	1.10	1.000	1
OCDD	**132**		0.255	5.00	0.87	1.001	1
2,3,7,8-TCDF	**25.6**		0.0625	1.00	0.78	1.001	1
1,2,3,7,8-PeCDF	**65.7**		0.0733	2.50	1.58	1.001	1
2,3,4,7,8-PeCDF	**62.4**		0.0714	2.50	1.55	1.024	1
1,2,3,4,7,8-HxCDF	**48.6**		0.0613	2.50	1.26	1.001	1
1,2,3,6,7,8-HxCDF	**56.1**		0.0608	2.50	1.24	1.004	1
1,2,3,7,8,9-HxCDF	**40.6**		0.0743	2.50	1.24	1.039	1
2,3,4,6,7,8-HxCDF	**50.8**		0.0667	2.50	1.25	1.017	1
1,2,3,4,6,7,8-HpCDF	**59.3**		0.142	2.50	1.02	1.000	1
1,2,3,4,7,8,9-HpCDF	**53.2**		0.193	2.50	1.03	1.039	1
OCDF	**114**		0.276	5.00	0.89	1.005	1
Total Tetra-Dioxins	**22.2**		0.0741	0.00	0.77		1
Total Penta-Dioxins	**52.2**		0.0899	0.00	1.62		1
Total Hexa-Dioxins	**148**		0.107	0.00	1.26		1
Total Hepta-Dioxins	**112**		0.0625	0.00	0.98		1
Total Tetra-Furans	**27.6**		0.0625	0.00	0.81		1
Total Penta-Furans	**132**		0.0723	0.00	1.53		1
Total Hexa-Furans	**197**		0.0654	0.00	1.17		1
Total Hepta-Furans							1

Comments: 11/13/07gc

Client: Barr Engineering
Project: Joslyn - Sediment/23/27-110Y07 720
Sample Matrix: Sediment

Service Request: E0700903
Date Collected:
Date Received:

Sample Name: Lab Control Sample
Lab Code: EQ0700371-02

Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 8290
Prep Method: Method
Sample Amount: 10.0g
Percent Solids:
Data File Name: C15065#12
ICAL Name: C407128290I

Date Analyzed: 11/8/07 0404
Date Extracted: 11/1/07
Instrument Name: E-HRMS-70
GC Column: DB-5
Blank File Name: C15065#1
Cal Ver. File Name: C15063#1

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
C13-2,3,7,8-TCDD	1000	625.358	63		40-135	0.78	1.007
C13-1,2,3,7,8-PeCDD	1000	931.071	93		40-135	1.55	1.166
C13-1,2,3,6,7,8-HxCDD	2500	2022.637	81		40-135	1.22	0.992
C13-1,2,3,4,6,7,8-HpCDD	2500	2057.020	82		40-135	1.03	1.078
C13-OCDD	5000	2796.806	56		40-135	0.87	1.171
C13-2,3,7,8-TCDF	1000	640.972	64		40-135	0.77	0.980
C13-1,2,3,7,8-PeCDF	1000	744.112	74		40-135	1.56	1.128
C13-1,2,3,4,7,8-HxCDF	2500	1918.126	77		40-135	0.49	0.970
C13-1,2,3,4,6,7,8-HpCDF	2500	1866.928	75		40-135	0.44	1.051
CL37-2,3,7,8-TCDD	800	587.508	73		40-135	NA	1.007

Comments:

11/13/07 gc

Columbia Analytical Services INC.

An Employee - Owned Company

Chain-of-Custody

19408 Park Row, Suite 320, Houston, TX 77084
Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

Container Supply Number

6633

Chain of Custody

BARR

4700 West 77th Street
Minneapolis, MN 55435-4803
(952) 832-2600

COC 1 of 1

Project Number: 23/27-110.07.720

Project Name: Joslyn - Sediment

No 24315

Project Manager: KAE

Project Contact: MDD

Sampled by: ECL

Laboratory: CAS - Houston

Sample Identification	Collection Date	Collection Time	Matrix: Water	Matrix: Soil	Matrix: Sed	Type: Grab	Type: Comp.	Type: QC	Number of Containers/Preservative — Water: Volatile Organics (Pres.) *1	Semivolatile Organics *2	Dissolved Metals (HNO_3)	Total Metals (HNO_3)	General (Unpreserved) *3	Cyanide (NaOH)	Nutrients (H_2SO_4) *4	Oil and Grease (H_2SO_4)	Sulfide (Zn Acetate)	Methane	Bacteria ($Na_2S_2O_3$)	DRO (HCl)	Soil: VOCs (2-oz tared MeOH) *1	GRO, BTEX (2-oz tared MeOH) *1	DRO (2-oz tared) - 25 grams	Metals (2-oz unpreserved)	SVOCs (2 or 4-oz unpres.) *2	% Moisture (plastic vial, unpres.)	32 oz. Unpreserved	Total No. Of Containers
1. Pup -1	9/12/07	—			X			X																			1	1
2. MTL-B	9/11/07	1102			X		X																				1	1
3. MTL-NB	9/11/07	1331			X		X																				1	1
4. Ref-1-B	9/11/07	1612			X		X																				1	1
5. Ref-1-NB	9/11/07	1815			X		X																				1	1
6. Ref-2-NB	9/12/07	1052			X		X																				1	1
7. Ref-2-B	9/12/07	855			X		X																				1	1
8.																												
9.																												
10.																												
11.																												
12.																												

Remarks:

Please Homogenize Samples Immediately Prior to Analysis. HOLD

HOLD

Dioxin/Furans 8290

Also, These samples will have multiple extractions per container. Contact Lynda H. with Questions.

Page 30 of 1391

Common Parameter/Container - Preservation Key

- *1 - Volatile Organics = BTEX, GRO, TPH, Full List
- *2 - Semivolatile Organics = PAHs, PCP, Dioxins, Full List, Herbicide/Pesticide/PCBs
- *3 - General = pH, Chloride, Flouride, Alkalinity, TSS, TDS, TS, Sulfate
- *4 - Nutrients = COD, TOC, Phenols, Ammonia Nitrogen, TKN

Relinquished By:	On Ice? Y N	Date	Time	Received by:	Date	Time
[signature]	(Y) N	9/14/07	1235	[signature] 4°C	9/15/07	0930
Relinquished By:	On Ice? Y N	Date	Time	Received by:	Date	Time

Samples Shipped VIA: ☐ Air Freight ☐ Federal Express ☐ Sampler ☐ Other

Air Bill Number:

Distribution: White-Original Accompanies Shipment to Lab; Yellow - Field Copy; Pink - Lab Coordinator

H:RLG\STDFORMS\Chain Of Custody Form RLG Rev. 07\01\05

Container Supply Number 6633

Chain of Custody

BARR
4700 West 77th Street
Minneapolis, MN 55435-4803
(952) 832-2600

COC 1 of 1

Project Number: 23/27-110407.720

Project Name: Jaslyn - Sediment

№ 24316

Project Manager: MAE

Project Contact: MPD

Sampled by: ECL

Laboratory: CAS - Houston

Sample Identification	Collection Date	Collection Time	Matrix: Water	Matrix: Soil	Matrix: Sed.	Type: Grab	Type: Comp.	Type: QC	Number of Containers/Preservative — Water: Volatile Organics (Pres.) *1	Semivolatile Organics *2	Dissolved Metals (HNO_3)	Total Metals (HNO_3)	General (Unpreserved) *3	Cyanide (NaOH)	Nutrients (H_2SO_4) *4	Oil and Grease (H_2SO_4)	Sulfide (Zn Acetate)	Methane	Bacteria ($Na_2S_2O_3$)	DRO (HCl)	Soil: VOCs (2-oz tared MeOH) *1	GRO, BTEX (2-oz tared MeOH) *1	DRO (2-oz tared) - 25 grams	Metals (2-oz unpreserved)	SVOCs (2 or 4-oz unpres.) *2	% Moisture (plastic vial, unpres.)	32 oz Unpreserved	Total No. Of Containers
1. Ref-4-B	9/12/07	1900			X		X																				1	1
2. Ref-3-NB	9/12/07	1537			X		X																				1	1
3. Ref-5-NB	9/13/07	906			X		X																				1	1
4. Ref-4-NB	9/12/07	1740			X		X																				1	1
5. Ref-6-NB	9/13/07	1410			X		X																				1	1
6. Ref-5-B	9/13/07	1147			X		X																				1	1
7. Ref-7-B	9/14/07	840			X		X																				1	1
8. Ref-6-B	9/14/07	1035			X		X																				1	1
9. Ref-3-B	9/12/07	1752			X		X																				1	1
10. Ref-7-NB	9/13/07	1622			X		X																				1	1
11.																												
12.																												

Remarks:

HOLD

Dioxin/Furan - 8290

Please Homogenize Samples Immediately Prior to Analysis

Also, These samples will have multiple extractions per container. Contact Lynda H. with Questions.

31

B1 of 391

Common Parameter/Container - Preservation Key

*1 - Volatile Organics = BTEX, GRO, TPH, Full List
*2 - Semivolatile Organics = PAHs, PCP, Dioxins, Full List, Herbicide/Pesticide/PCBs
*3 - General = pH, Chloride, Flouride, Alkalinity, TSS, TDS, TS, Sulfate
*4 - Nutrients = COD, TOC, Phenols, Ammonia Nitrogen, TKN

Relinquished By:	On Ice? Y N	Date	Time	Received by:	Date	Time
[signature]	Y	9/14/07	1235	[signature] 4°C	9/15/07	0930
Relinquished By:	On Ice? Y N	Date	Time	Received by:	Date	Time

Samples Shipped VIA: ☐ Air Freight ☒ Federal Express ☐ Sampler ☐ Other

Air Bill Number:

Distribution: White-Original Accompanies Shipment to Lab; Yellow - Field Copy; Pink - Lab Coordinator

H:\RLG\STDFORMS\Chain Of Custody Form RLG Rev. 07\01105

Columbia Analytical Services Inc.
Cooler Receipt And Preservation Form

Project/Client: Joslyn - Sediment/Barr Engineering Company

Work Order: E0700903

Cooler received on 09/15/2007 and opened on 9/15/07 0930 by Darren

1.	Were custody seals on outside of cooler?		Y	N	9.	Did all bottle labels and tags agree with custody papers?	NA	Y	N
2.	Were seals intact and signature & date correct?	NA	Y	N	10.	Were the correct types of bottles used for the tests indicated?	NA	Y	N
3.	Is the shipper's airbill available and filed?		Y	N	11.	Were all of the preserved bottles received at the lab with the appropriate pH?	NA	Y	N
4.	COC #				12.	Were VOA vials checked for absence of air bubbles, and if present, noted below?	NA	Y	N
5.	Were custody papers properly filled out (ink, signed, etc.)?	NA	Y	N	13.	Did the bottles originate from CAS/E or a branch laboratory?		Y	N
6.	Type of packing material present				14.	Are CWA Microbiology samples received with >½ the 24 hr. hold time remaining from collection?	NA	Y	N
7.	Did all bottles arrive in good condition (unbroken)?	NA	Y	N	15.	Was Cl2/Res negative?	NA	Y	N
8.	Were all bottle labels complete (*i.e.* analysis, preservation, etc.)?	NA	Y	N					

Lab Code **Sample Name**

E0700903-001 Ref-4-B

1L-Glass Jar WM CLEAR (None)

		Expected Conditions			Cooler	Received Conditions Temp	pH	Rec	Seal	
Bottle ID	**Barcode**	**HS**	**pH**	**Temp**	**#**	**deg C**	**Check**	**HS**	**Intact?**	**Corrective Action**
E0700903-001.02		NA		-		4.0		NA		
Test List: 8290	8290									

E0700903-002 Ref-3-NB

1L-Glass Jar WM CLEAR (None)

		Expected Conditions			Cooler	Received Conditions Temp	pH	Rec	Seal	
Bottle ID	**Barcode**	**HS**	**pH**	**Temp**	**#**	**deg C**	**Check**	**HS**	**Intact?**	**Corrective Action**
E0700903-002.02		NA		-		4.0		NA		
Test List: 8290	8290									

E0700903-003 Ref-5-NB

1L-Glass Jar WM CLEAR (None)

		Expected Conditions			Cooler	Received Conditions Temp	pH	Rec	Seal	
Bottle ID	**Barcode**	**HS**	**pH**	**Temp**	**#**	**deg C**	**Check**	**HS**	**Intact?**	**Corrective Action**
E0700903-003.02		NA		-		4.0		NA		
Test List: 8290	8290									

E0700903-004 Ref-4-NB

32

Lab Code	Sample Name
E0700903-004	Ref-4-NB

1L-Glass Jar WM CLEAR (None)

		Expected Conditions			Received Conditions					
Bottle ID	Barcode	HS	pH	Temp	Cooler #	Temp deg C	pH Check	Rec HS	Seal Intact?	Corrective Action
E0700903-004.02		NA		-		4.0		NA		
Test List: 8290	8290									

Lab Code	Sample Name
E0700903-005	Ref-6-NB

1L-Glass Jar WM CLEAR (None)

		Expected Conditions			Received Conditions					
Bottle ID	Barcode	HS	pH	Temp	Cooler #	Temp deg C	pH Check	Rec HS	Seal Intact?	Corrective Action
E0700903-005.02		NA		-		4.0		NA		
Test List: 8290	8290									

Lab Code	Sample Name
E0700903-006	Ref-5-B

1L-Glass Jar WM CLEAR (None)

		Expected Conditions			Received Conditions					
Bottle ID	Barcode	HS	pH	Temp	Cooler #	Temp deg C	pH Check	Rec HS	Seal Intact?	Corrective Action
E0700903-006.02		NA		-		4.0		NA		
Test List: 8290	8290									

Lab Code	Sample Name
E0700903-007	Ref-7-B

1L-Glass Jar WM CLEAR (None)

		Expected Conditions			Received Conditions					
Bottle ID	Barcode	HS	pH	Temp	Cooler #	Temp deg C	pH Check	Rec HS	Seal Intact?	Corrective Action
E0700903-007.02		NA		-		4.0		NA		
Test List: 8290	8290									

Lab Code	Sample Name
E0700903-008	Ref-6-B

1L-Glass Jar WM CLEAR (None)

		Expected Conditions			Received Conditions					
Bottle ID	Barcode	HS	pH	Temp	Cooler #	Temp deg C	pH Check	Rec HS	Seal Intact?	Corrective Action
E0700903-008.02		NA		-		4.0		NA		
Test List: 8290	8290									

Lab Code	Sample Name
E0700903-009	Ref-3-B

1L-Glass Jar WM CLEAR (None)

Bottle ID	Barcode	Expected Conditions HS	Expected Conditions pH	Expected Conditions Temp	Cooler #	Received Conditions Temp deg C	Received Conditions pH Check	Received Conditions Rec HS	Seal Intact?	Corrective Action
E0700903-009.02		NA		-		4.0		NA		

Test List: 8290 8290

Lab Code	Sample Name
E0700903-010	Ref-7-NB

1L-Glass Jar WM CLEAR (None)

Bottle ID	Barcode	Expected Conditions HS	Expected Conditions pH	Expected Conditions Temp	Cooler #	Received Conditions Temp deg C	Received Conditions pH Check	Received Conditions Rec HS	Seal Intact?	Corrective Action
E0700903-010.02		NA		-		4.0		NA		

Test List: 8290 8290

Lab Code	Sample Name
E0700903-011	Dup-1

1L-Glass Jar WM CLEAR (None)

Bottle ID	Barcode	Expected Conditions HS	Expected Conditions pH	Expected Conditions Temp	Cooler #	Received Conditions Temp deg C	Received Conditions pH Check	Received Conditions Rec HS	Seal Intact?	Corrective Action
E0700903-011.02		NA		-		4.0		NA		

Test List: 8290 8290

Lab Code	Sample Name
E0700903-012	MTL-B

1L-Glass Jar WM CLEAR (None)

Bottle ID	Barcode	Expected Conditions HS	Expected Conditions pH	Expected Conditions Temp	Cooler #	Received Conditions Temp deg C	Received Conditions pH Check	Received Conditions Rec HS	Seal Intact?	Corrective Action
E0700903-012.02		NA		-		4.0		NA		

Test List: 8290 8290

Lab Code	Sample Name
E0700903-013	MTL-NB

1L-Glass Jar WM CLEAR (None)

Bottle ID	Barcode	Expected Conditions HS	Expected Conditions pH	Expected Conditions Temp	Cooler #	Received Conditions Temp deg C	Received Conditions pH Check	Received Conditions Rec HS	Seal Intact?	Corrective Action
E0700903-013.02		NA		-		4.0		NA		

Test List: 8290 8290

Columbia Analytical Services Inc.
Cooler Receipt And Preservation Form

Lab Code	Sample Name
E0700903-014	Ref-1-B

1L-Glass Jar WM CLEAR (None)

Bottle ID	Barcode	Expected Conditions HS	pH	Temp	Cooler #	Received Conditions Temp deg C	pH Check	Rec HS	Seal Intact?	Corrective Action
E0700903-014.02		NA		-		4.0		NA		

Test List: 8290 8290

Lab Code	Sample Name
E0700903-015	Ref-1-NB

1L-Glass Jar WM CLEAR (None)

Bottle ID	Barcode	Expected Conditions HS	pH	Temp	Cooler #	Received Conditions Temp deg C	pH Check	Rec HS	Seal Intact?	Corrective Action
E0700903-015.02		NA		-		4.0		NA		

Test List: 8290 8290

Lab Code	Sample Name
E0700903-016	Ref-2-NB

1L-Glass Jar WM CLEAR (None)

Bottle ID	Barcode	Expected Conditions HS	pH	Temp	Cooler #	Received Conditions Temp deg C	pH Check	Rec HS	Seal Intact?	Corrective Action
E0700903-016.02		NA		-		4.0		NA		

Test List: 8290 8290

Lab Code	Sample Name
E0700903-017	Ref-2-B

1L-Glass Jar WM CLEAR (None)

Bottle ID	Barcode	Expected Conditions HS	pH	Temp	Cooler #	Received Conditions Temp deg C	pH Check	Rec HS	Seal Intact?	Corrective Action
E0700903-017.02		NA		-		4.0		NA		

Test List: 8290 8290

Cooler Receipt Comments: Fed Ex Saturday Delivery (2 coolers)
377042601100004472195971208420 13
377042601100004472195971209520 17

All tests have one or more assigned bottles

Service Request Summary

Folder #: **E0700903**
Client Name: Barr Engineering Company
Project Name: Joslyn - Sediment
Project Number: 23/27-110Y07 720

Report To: Michael Dupay
Barr Engineering
4700 West 77th Street
Minneapolis, MN 55435
Phone Number: 952-832-2698
Cell Number:
Fax Number:
E-mail: mdupay@barr.com

Project Chemist: Darren Biles
Originating Lab: HOUSTON
Logged By: NBROWN
Date Received: 09/15/2007
Internal Due Date: 10/30/2007
QAPP: LAB QAP
Qualifier Set: CAS Standard
Formset: CAS Standard
Merged?: N
Report to MDL?: Y
P.O. Number: 23/27-110Y07 720
EDD: Barr Engineering

17 - 1 L-Glass Jar Glass WM CLEAR None

Location: SMO

					SVM	
					PCDD PCDF/ 8290	Total Solids/ 8290
CAS Samp No.	**Client Samp No.**	**Matrix**	**Collected**			
E0700903-001	Ref-4-B	Sediment	9/12/07	1900	IV(H)	IV(H)
E0700903-002	Ref-3-NB	Sediment	9/12/07	1537	IV(H)	IV(H)
E0700903-003	Ref-5-NB	Sediment	9/13/07	0906	IV(H)	IV(H)
E0700903-004	Ref-4-NB	Sediment	9/12/07	1740	IV(H)	IV(H)
E0700903-005	Ref-6-NB	Sediment	9/13/07	1410	IV(H)	IV(H)
E0700903-006	Ref-5-B	Sediment	9/13/07	1147	IV(H)	IV(H)
E0700903-007	Ref-7-B	Sediment	9/14/07	0840	IV(H)	IV(H)
E0700903-008	Ref-6-B	Sediment	9/14/07	1035	IV(H)	IV(H)
E0700903-009	Ref-3-B	Sediment	9/12/07	1252	IV(H)	IV(H)
E0700903-010	Ref-7-NB	Sediment	9/13/07	1622	IV(H)	IV(H)
E0700903-011	Dup-1	Sediment	9/12/07	0000	IV(H)	IV(H)
E0700903-012	MTL-B	Sediment	9/11/07	1102	IV	IV
E0700903-013	MTL-NB	Sediment	9/11/07	1331	IV	IV
E0700903-014	Ref-1-B	Sediment	9/11/07	1612	IV(H)	IV(H)
E0700903-015	Ref-1-NB	Sediment	9/11/07	1815	IV(H)	IV(H)
E0700903-016	Ref-2-NB	Sediment	9/12/07	1052	IV(H)	IV(H)
E0700903-017	Ref-2-B	Sediment	9/12/07	0855	IV(H)	IV(H)

Folder Comments:

Hold - 8290 - please homogenize samples immediately prior to analysis - also,these samples will have multiple extractiions - see Lynda H with questions (notes from coc) 09/17/07jf
Samples 012 and 013 taken off hold 10/16/07 DB
Assemble a CLP report - same as EPA Region IV

Preparation Information Benchsheet

Prep Run#: 56783 **Prep WorkFlow:** OrgExtDioxS(30) **Status:** Prepped
Team: Semivoa GCMS **Prep Method:** Method **Prep Date/Time:** 10/24/2007 04:00 PM

#	Lab Code	Client ID	B#	Method /Test	pH	Matrix	Amt. Ext.	Sample Description
1	EQ0700356-01	MB		8290/PCDD PCDF		Sediment	10.0g	
2	EQ0700356-02	LCS		8290/PCDD PCDF		Sediment	10.0g	
3	EQ0700356-03	DLCS		8290/PCDD PCDF		Sediment	10.0g	
4	E0700903-012	MTL-B	.02	8290/PCDD PCDF		Sediment	12.506g	Wet brown sand
5	E0700903-013	MTL-NB	.02	8290/PCDD PCDF		Sediment	12.016g	Brown mud
6	E0701068-003	F1493-03C	.01	8290/PCDD PCDF		Soil	9.176g	Brown mud
7	E0701068-004	F1493-04C	.01	8290/PCDD PCDF		Soil	8.878g	Brown mud
8	E0701079-001	16-253	.01	8290/PCDD PCDF		Soil	9.611g	Brown soil
9	E0701079-002	16-254	.01	8290/PCDD PCDF		Soil	9.757g	Brown soil
10	E0701079-003	16-255	.01	8290/PCDD PCDF		Soil	10.079g	Brown soil
11	E0701079-004	16-256	.01	8290/PCDD PCDF		Soil	9.513g	Brown soil
12	E0701079-005	16-257	.01	8290/PCDD PCDF		Soil	9.986g	Dark brown soil
13	E0701079-006	16-258	.01	8290/PCDD PCDF		Soil	9.351g	Brown soil
14	K0708933-008	Composite	.01	8290/PCDD PCDF		Paperboard	5.733g	Brown paper shreds
15	K0709434-007	TBH07-Comp	.03	8290/PCDD PCDF		Sediment	9.495g	Dark gray mud
16	K0709434-008	RVV07-Comp	.03	8290/PCDD PCDF		Sediment	10.106g	Dark gray mud

37 of 391

37

Reviewed By: _____ Date: 11/13/07

Chain of Custody

Relinquished By: _____ Date: _____

Received By: _____ Date: _____

Extracts Examined
Yes No

Preparation Information Benchsheet

Prep Run#: 56783 **Prep WorkFlow:** OrgExtDioxS(30) **Status:** Prepped
Team: Semivoa GCMS **Prep Method:** Method **Prep Date/Time:** 10/24/2007 04:00 PM

Spiking Solutions

Name:	8290 Matrix Working Standard	Inventory ID	3052	Logbook Ref:	D9-6-3A	Expires On:	09/30/2017

EQ0700356-02 100.00uL EQ0700356-03 100.00uL

Name:	8290/1613B Cleanup Working Standard	Inventory ID	3156	Logbook Ref:	D9-11-3A/B	Expires On:	10/15/2017

E0700903-012	100.00uL	E0700903-013	100.00uL	E0701068-003	100.00uL	E0701068-004	100.00uL	E0701079-001	100.00uL	E0701079-002	100.00uL
E0701079-003	100.00uL	E0701079-004	100.00uL	E0701079-005	100.00uL	E0701079-006	100.00uL	EQ0700356-01	100.00uL	EQ0700356-02	100.00uL
EQ0700356-03	100.00uL										

Name:	8290 Internal Working Standard	Inventory ID	3163	Logbook Ref:	D9-11-5A	Expires On:	10/22/2017

E0700903-012	100.00uL	E0700903-013	100.00uL	E0701068-003	100.00uL	E0701068-004	100.00uL	E0701079-001	100.00uL	E0701079-002	100.00uL
E0701079-003	100.00uL	E0701079-004	100.00uL	E0701079-005	100.00uL	E0701079-006	100.00uL	EQ0700356-01	100.00uL	EQ0700356-02	100.00uL
EQ0700356-03	100.00uL	K0708933-008	100.00uL	K0709434-007	100.00uL	K0709434-008	100.00uL				

Name:	8290/1613B Cleanup Working Standard	Inventory ID	3169	Logbook Ref:	D9-13-1A/B	Expires On:	10/26/2017

K0708933-008 100.00uL K0709434-007 100.00uL K0709434-008 100.00uL

38 of 391

38

Preparation Materials Recovery Std. D8-33-3A 20uL SM3

Silica Gel Reagent Grade	C2-1-003 (3061)	Carbon, High Purity	C2-1-006 (3058)	Glass Wool	C2-1-004 (3060)
Acetone 99.5% Minimum	C1-124-004 (3063)	Nonane (n-Nonane) 99%	C1-122-004 (3064)	Sodium Sulfate Anhydrous Reage	C1-125-004 (3062)
Dichloromethane (Methylene Chl	C2-3-001 (3054)	Toluene 99.9% Minimum	C2-2-006 (3055)	Ethyl Acetate 99.9% Minimum	C2-1-005 (3059)
Hexane (n-Hexane) 98.5% Minim	C2-2-005 (3056)	Tridecane (n-Tridecane)	C2-3-002 (3065)	Sulfuric Acid Reagent Grade	C2-2-004 (3057)
Extraction Thimbles 43 x123 mm	(1577)	Sand Reagent Grade	C1-99-1 (345)		

Preparation Steps

Step:	Extraction	Step:	Acid Clean	Step:	Silica Gel Clean	Step:	Final Volume
Started:	10/24/07 16:00	Started:	10/26/07 09:00	Started:	10/26/07 15:00	Started:	10/29/07 06:11
Finished:	10/24/07 17:00	Finished:	10/26/07 10:00	Finished:	10/26/07 18:00	Finished:	10/29/07 10:00
By:	ABIDDLE	By:	ABIDDLE	By:	ABIDDLE	By:	ABIDDLE

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

Preparation Information Benchsheet

Prep Run#: 56783
Team: Semivoa GCMS

Prep WorkFlow: OrgExtDioxS(30)
Prep Method: Method

Status: Prepped
Prep Date/Time: 10/24/2007 04:00 PM

Comments: _____

_____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____

Received By: _____ Date: _____

Extracts Examined
Yes No

Preparation Information Benchsheet

Prep Run#: 57739
Team: Semivoa GCMS

Prep WorkFlow: OrgExtDioxS(30)
Prep Method: Method

Status: Prepped
Prep Date/Time: 11/01/2007 04:00 PM

#	Lab Code	Client ID	B#	Method /Test	pH	Matrix	Amt. Ext.	Sample Description
1	EQ0700371-01	MB		8290/PCDD PCDF		Soil	10.0g	
2	EQ0700371-02	LCS		8290/PCDD PCDF		Soil	10.0g	
3	EQ0700371-03	E0701138-009 MS	.01	8290/PCDD PCDF		Soil	10.081g	
4	EQ0700371-04	E0701138-009 DMS	.01	8290/PCDD PCDF		Soil	9.302g	
5	E0700903-012RE	MTL-B	.02	8290/PCDD PCDF		Sediment	6.323g	Wet brown sand
6	E0701079-004RE	16-256	.01	8290/PCDD PCDF		Soil	3.867g	Brown soil
7	E0701110-001RE	MBB 02	.01	8290/PCDD PCDF		Misc. Solid	4.521g	Tan dirt
8	E0701138-001	16-163	.01	8290/PCDD PCDF		Soil	9.659g	Brown soil
9	E0701138-002	16-264	.01	8290/PCDD PCDF		Soil	9.832g	Brown soil
10	E0701138-003	16-265	.01	8290/PCDD PCDF		Soil	9.610g	Brown soil
11	E0701138-004	16-266	.01	8290/PCDD PCDF		Soil	10.729g	Brown soil
12	E0701138-005	16-267	.01	8290/PCDD PCDF		Soil	9.855g	Brown soil
13	E0701138-006	16-268	.01	8290/PCDD PCDF		Soil	9.731g	Brown soil
14	E0701138-007	16-269	.01	8290/PCDD PCDF		Soil	10.194g	Brown soil
15	E0701138-008	16-270	.01	8290/PCDD PCDF		Soil	10.191g	Brown soil
16	E0701138-009	16-271	.01	8290/PCDD PCDF		Soil	10.099g	Brown soil
17	E0701138-010	16-272	.01	8290/PCDD PCDF		Soil	9.868g	Brown soil
18	E0701138-011	16-273	.01	8290/PCDD PCDF		Soil	10.131g	Brown soil
19	E0701141-001	710215	.01	8290/PCDD PCDF		Soil	10.361g	Wet brown soil

40 40 138 1

40

Reviewed By: _____ Date: 11/13/07

Chain of Custody

Relinquished By: _____ Date: _____

Received By: _____ Date: _____

Extracts Examined
Yes No

Preparation Information Benchsheet

Prep Run#: 57739
Team: Semivoa GCMS

Prep WorkFlow: OrgExtDioxS(30)
Prep Method: Method

Status: Prepped
Prep Date/Time: 11/01/2007 04:00 PM

Spiking Solutions

Name:	8290 Matrix Working Standard	Inventory ID	3052	Logbook Ref:	D9-6-3A	Expires On:	09/30/2017

EQ0700371-02	100.00uL	EQ0700371-03	100.00uL	EQ0700371-04	100.00uL

Name:	8290 Internal Working Standard	Inventory ID	3168	Logbook Ref:	D9-12-5A	Expires On:	10/26/2017

E0700903-012	100.00uL	E0701079-004	100.00uL	E0701110-001	100.00uL	E0701138-001	100.00uL	E0701138-002	100.00uL	E0701138-003	100.00uL
E0701138-004	100.00uL	E0701138-005	100.00uL	E0701138-006	100.00uL	E0701138-007	100.00uL	E0701138-008	100.00uL	E0701138-009	100.00uL
E0701138-010	100.00uL	E0701138-011	100.00uL	E0701141-001	100.00uL	EQ0700371-01	100.00uL	EQ0700371-02	100.00uL	EQ0700371-03	100.00uL
EQ0700371-04	100.00uL										

Name:	8290/1613B Cleanup Working Standard	Inventory ID	3175	Logbook Ref:	D9-13-3A/B	Expires On:	10/17/2017

E0700903-012	100.00uL	E0701079-004	100.00uL	E0701110-001	100.00uL	E0701138-001	100.00uL	E0701138-002	100.00uL	E0701138-003	100.00uL
E0701138-004	100.00uL	E0701138-005	100.00uL	E0701138-006	100.00uL	E0701138-007	100.00uL	E0701138-008	100.00uL	E0701138-009	100.00uL
E0701138-010	100.00uL	E0701138-011	100.00uL	E0701141-001	100.00uL	EQ0700371-01	100.00uL	EQ0700371-02	100.00uL	EQ0700371-03	100.00uL
EQ0700371-04	100.00uL										

41 of 91

41

Preparation Materials

Recovery Std. D8-33-31 20mL DB

Silica Gel Reagent Grade	C2-1-003 (3061)	Carbon, High Purity	C2-1-006 (3058)	Glass Wool	C2-1-004 (3060)
Acetone 99.5% Minimum	C1-124-004 (3063)	Nonane (n-Nonane) 99%	C1-122-004 (3064)	Sodium Sulfate Anhydrous Reage	C1-125-004 (3062)
Dichloromethane (Methylene Chl	C2-3-001 (3054)	Toluene 99.9% Minimum	C2-2-006 (3055)	Ethyl Acetate 99.9% Minimum	C2-1-005 (3059)
Hexane (n-Hexane) 98.5% Minim	C2-2-005 (3056)	Tridecane (n-Tridecane)	C2-3-002 (3065)	Sulfuric Acid Reagent Grade	C2-2-004 (3057)
Extraction Thimbles 43 x123 mm	(1577)	Sand Reagent Grade	C1-99-1 (345)		

Preparation Steps

Step:	Extraction	Step:	Acid Clean	Step:	Silica Gel Clean	Step:	Final Volume
Started:	11/1/07 16:00	Started:	11/3/07 08:00	Started:	11/3/07 10:00	Started:	11/7/07 06:00
Finished:	11/1/07 17:00	Finished:	11/3/07 09:00	Finished:	11/3/07 12:33	Finished:	11/7/07 10:00
By:	ABIDDLE	By:	ABIDDLE	By:	ABIDDLE	By:	ABIDDLE

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____

Received By: _____ Date: _____

Extracts Examined
Yes No

Preparation Information Benchsheet

Prep Run#: 57739
Team: Semivoa GCMS

Prep WorkFlow: OrgExtDioxS(30)
Prep Method: Method

Status: Prepped
Prep Date/Time: 11/01/2007 04:00 PM

Comments: _____

_____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____

Received By: _____ Date: _____

Extracts Examined
Yes No

Analytical Results Summary

HOUSTON
Semivoa GCMS
E-HRMS-70
99221

8290 / Total Solids

E0700903-012 / MTL-B / Sediment / NA / Tier IV / MDL=Y Prep 57,429 Spiking Solutions **Rpt. List: 1686** **Spec: 9672 ver. 2**

Target Analytes	*Raw Result*	*Final Result*	*Qualifiers*	*Analysis Date/Time*	*Adj. MRL*	*Adj. MDL*	*TEF*	*Toxic Equivalency*	*Picked?*	*RptList?*
Solids, Total	82.2 Percent	82.2 Percent		10/29/2007 12:00					Y	Y

Analytical Results Summary

HOUSTON
Semivoa GCMS
8290 / Total Solids

E0700903-013 / MTL-NB / Sediment / NA / Tier IV / MDL=Y Prep 57,429 Spiking Solutions **Rpt. List: 1686** **Spec: 9672 ver. 2**

Target Analytes	*Raw Result*	*Final Result*	*Qualifiers*	*Analysis Date/Time*	*Adj. MRL*	*Adj. MDL*	*TEF*	*Toxic Equivalency*	*Picked?*	*RptList?*
Solids, Total	79.9 Percent	79.9 Percent		10/29/2007 12:00					Y	Y

Columbia Analytical Services, Inc.

45

Nonconformity and Corrective Action Report

NONCONFORMITY

PROCEDURE (SOP or METHOD): 8290

EVENT:
- ☐ Missed Holding Time
- ☐ Method Blank Contamination
- ☐ Equipment Failure
- ☐ SOP Deviation
- ☒ QC Failure
- ☐ Login Error
- ☐ Unacceptable PT Sample Result
- ☐ Other (describe):
- ☐ Lab Error (spilled sample, spiking error, etc.)
- ☐ Project Management Error

SAMPLES / PROJECTS / CUSTOMERS / SYSTEMS AFFECTED

E0700903-012

DETAILED DESCRIPTION

Low internal standard recovery

ORIGINATOR: Rolando Diaz DATE: *10/31/07*

CORRECTIVE ACTION AND OUTCOME

Re-establishment of conformity must be demonstrated and documented. Describe the steps that were taken, or are planned to be taken, to correct the particular Nonconformity and prevent its reoccurrence. Include any Project Manager instructions here.

Re-extract ½ half of the original sample size

Is the data to be flagged in the Analytical Report with an appropriate qualifier? ☒ **No** ☐ **Yes**

APPROVAL AND NOTIFICATION

Supervisor Verification and Approval of Corrective Action *EC* Date: *11/13/07*

Comments:

QA PM Verification and Approval of Corrective Action *EC for Jane F.* Date: *11/13/07*

Comments:

Customer Notified by ☐ Telephone ☐ Fax ☐ E-mail ☒ Narrative ☐ Not notified

Project Manager Verification and Approval of Corrective Action *[signature]* Date: *10/31/07*

Comments:

(Attach record or cite reference where record is located.) Project folder archives

Columbia Analytical Services INC.

An Employee - Owned Company

Chromatograms & Selected Ion Monitoring

19408 Park Row, Suite 320, Houston, TX 77084
Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

Run #7 Filename U212357 Samp: 1 Inj: 1 Acquired: 30-OCT-07 12:13:17
Processed: 31-OCT-07 08:38:49 LAB. ID: EQ0700356-01

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	NotFnd	*	*	*	no	no
2	Unk	1,2,3,7,8-PeCDF	NotFnd	*	*	*	no	no
3	Unk	2,3,4,7,8-PeCDF	NotFnd	*	*	*	no	no
4	Unk	1,2,3,4,7,8-HxCDF	36:13	6.339e+01	4.450e+01	1.42	yes	yes
5	Unk	1,2,3,6,7,8-HxCDF	NotFnd	*	*	*	no	yes
6	Unk	2,3,4,6,7,8-HxCDF	NotFnd	*	*	*	no	no
7	Unk	1,2,3,7,8,9-HxCDF	NotFnd	*	*	*	no	no
8	Unk	1,2,3,4,6,7,8-HpCDF	39:05	8.378e+01	9.218e+01	0.91	yes	no
9	Unk	1,2,3,4,7,8,9-HpCDF	40:17	3.936e+01	3.623e+01	1.09	yes	yes
10	Unk	OCDF	42:41	9.050e+01	1.167e+02	0.78	yes	no
11	Unk	2,3,7,8-TCDD	NotFnd	*	*	*	no	no
12	Unk	1,2,3,7,8-PeCDD	NotFnd	*	*	*	no	no
13	Unk	1,2,3,4,7,8-HxCDD	NotFnd	*	*	*	no	no
14	Unk	1,2,3,6,7,8-HxCDD	NotFnd	*	*	*	no	no
15	Unk	1,2,3,7,8,9-HxCDD	NotFnd	*	*	*	no	no
16	Unk	1,2,3,4,6,7,8-HpCDD	39:57	7.307e+01	7.704e+01	0.95	yes	no
17	Unk	OCDD	42:34	2.256e+02	2.268e+02	0.99	yes	no
18	IS	13C-2,3,7,8-TCDF	26:51	1.491e+04	1.921e+04	0.78	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	32:13	3.245e+04	2.013e+04	1.61	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	36:13	5.346e+04	1.024e+05	0.52	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	39:06	3.811e+04	8.439e+04	0.45	yes	no
22	IS	13C-2,3,7,8-TCDD	27:57	1.405e+04	1.819e+04	0.77	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	33:31	2.730e+04	1.734e+04	1.57	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	37:06	7.394e+04	5.829e+04	1.27	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	39:57	5.888e+04	5.576e+04	1.06	yes	no
26	IS	13C-OCDD	42:34	7.367e+04	8.145e+04	0.90	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	27:40	2.803e+04	3.520e+04	0.80	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:23	4.119e+04	3.295e+04	1.25	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	27:59	2.734e+04				
					SUM AREA			
30	Tot	Total Tetra-Furans	NotFnd		*	*	no	
31	Tot	Total Tetra-Dioxins	NotFnd		*	*	no	
32	Tot	Total Penta-Furans	NotFnd		*	*	no	
33	Tot	Total Penta-Dioxins	NotFnd		*	*	no	
34	Tot	Total Hexa-Furans	36:13		1.079e+02	1.42	yes	
35	Tot	Total Hexa-Dioxins	NotFnd		*	*	no	
36	Tot	Total Hepta-Furans	39:05		2.515e+02	0.91	yes	
37	Tot	Total Hepta-Dioxins	39:22		3.069e+02	1.04	yes	

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Columbia Analytical Services,Inc. CLIENT ID.
Signal/Noise Height Ratio Summary METHOD BLANK

Run #7 Filename U212357 Samp: 1 Inj: 1 Acquired: 30-OCT-07 12:13:17

Processed: 31-OCT-07 08:38:49 LAB. ID: EQ0700356-01

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	*	1.30e+03	*	*	1.60e+03	*
2	1,2,3,7,8-PeCDF	*	6.52e+02	*	*	1.33e+03	*
3	2,3,4,7,8-PeCDF	*	6.52e+02	*	*	1.33e+03	*
4	1,2,3,4,7,8-HxCDF	8.76e+03	2.19e+03	4.0e+00	5.40e+03	1.08e+03	5.0e+00
5	1,2,3,6,7,8-HxCDF	*	2.19e+03	*	*	1.08e+03	*
6	2,3,4,6,7,8-HxCDF	*	2.19e+03	*	*	1.08e+03	*
7	1,2,3,7,8,9-HxCDF	*	2.19e+03	*	*	1.08e+03	*
8	1,2,3,4,6,7,8-HpCDF	1.24e+04	2.95e+03	4.2e+00	1.96e+04	2.63e+03	7.4e+00
9	1,2,3,4,7,8,9-HpCDF	9.32e+03	2.95e+03	3.2e+00	7.73e+03	2.63e+03	2.9e+00
10	OCDF	1.74e+04	1.53e+03	1.1e+01	1.85e+04	1.76e+03	1.1e+01
11	2,3,7,8-TCDD	*	8.44e+02	*	*	6.04e+02	*
12	1,2,3,7,8-PeCDD	*	1.28e+03	*	*	8.84e+02	*
13	1,2,3,4,7,8-HxCDD	*	1.31e+03	*	*	7.20e+02	*
14	1,2,3,6,7,8-HxCDD	*	1.31e+03	*	*	7.20e+02	*
15	1,2,3,7,8,9-HxCDD	*	1.31e+03	*	*	7.20e+02	*
16	1,2,3,4,6,7,8-HpCDD	1.80e+04	1.13e+03	1.6e+01	1.61e+04	1.08e+03	1.5e+01
17	OCDD	3.68e+04	1.33e+03	2.8e+01	3.66e+04	1.34e+03	2.7e+01
18	13C-2,3,7,8-TCDF	1.75e+06	3.29e+03	5.3e+02	2.25e+06	1.25e+03	1.8e+03
19	13C-1,2,3,7,8-PeCDF	5.53e+06	8.48e+02	6.5e+03	3.44e+06	8.52e+02	4.0e+03
20	13C-1,2,3,4,7,8-HxCDF	1.09e+07	1.38e+03	7.9e+03	2.09e+07	1.85e+03	1.1e+04
21	13C-1,2,3,4,6,7,8-HpCDF	8.60e+06	2.78e+03	3.1e+03	1.91e+07	4.55e+03	4.2e+03
22	13C-2,3,7,8-TCDD	2.00e+06	2.77e+03	7.2e+02	2.52e+06	1.20e+03	2.1e+03
23	13C-1,2,3,7,8-PeCDD	4.92e+06	6.48e+02	7.6e+03	3.12e+06	7.32e+02	4.3e+03
24	13C-1,2,3,6,7,8-HxCDD	1.55e+07	3.47e+03	4.5e+03	1.22e+07	2.10e+03	5.8e+03
25	13C-1,2,3,4,6,7,8-HpCDD	1.32e+07	1.63e+03	8.1e+03	1.23e+07	1.56e+03	7.9e+03
26	13C-OCDD	1.23e+07	1.84e+03	6.7e+03	1.37e+07	2.22e+03	6.2e+03
27	13C-1,2,3,4-TCDD	3.82e+06	2.77e+03	1.4e+03	4.83e+06	1.20e+03	4.0e+03
28	13C-1,2,3,7,8,9-HxCDD	8.57e+06	3.47e+03	2.5e+03	6.74e+06	2.10e+03	3.2e+03
29	37Cl-2,3,7,8-TCDD	3.68e+06	1.43e+03	2.6e+03			

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Columbia Analytical Services, Inc.
Peak List Summary

CLIENT ID.
METHOD BLANK

Entry: 34 Totals Name: Total Hexa-Furans

Run: 7 File: U212357 Sample:1 Injection:1 Function:3

Acquired: 30-OCT-07 12:13:17 Processed: 31-OCT-07 08:38:49

Mass:373.821 375.818 Response:

#	RT	Resp	Resp Ratio	Meet	Tot Resp	Conc.	Name	Mod?
1	36:13	6.34e+01	4.45e+01 1.42	yes	1.08e+02	0.134	1,2,3,4,7,8-HxCDF	y

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Columbia Analytical Services, Inc.
Peak List Summary

CLIENT ID.
METHOD BLANK

Entry: 36 Totals Name: Total Hepta-Furans

Run: 7 File: U212357 Sample:1 Injection:1 Function:4

Acquired: 30-OCT-07 12:13:17 Processed: 31-OCT-07 08:38:49

#	RT	Resp	Mass:407.782 Resp	Response: Resp Ratio	Meet	Tot Resp	Conc.	Name	Mod?
1	39:05	8.38e+01	409.779 9.22e+01	0.91	yes	1.76e+02	0.230	1,2,3,4,6,7,8-HpCDF	n
2	40:17	3.94e+01	3.62e+01	1.09	yes	7.56e+01	0.128	1,2,3,4,7,8,9-HpCDF	y

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Columbia Analytical Services, Inc.
Peak List Summary

CLIENT ID.
METHOD BLANK

Entry: 37 Totals Name: Total Hepta-Dioxins

Run: 7 File: U212357 Sample:1 Injection:1 Function:4

Acquired: 30-OCT-07 12:13:17 Processed: 31-OCT-07 08:38:49

Mass:423.777	425.774			Response:				
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Conc.	Name	Mod?
1	39:22	8.00e+01	7.68e+01	1.04	yes	1.57e+02	0.334		n
2	39:57	7.31e+01	7.70e+01	0.95	yes	1.50e+02	0.319	1,2,3,4,6,7,8-HpCDD	n

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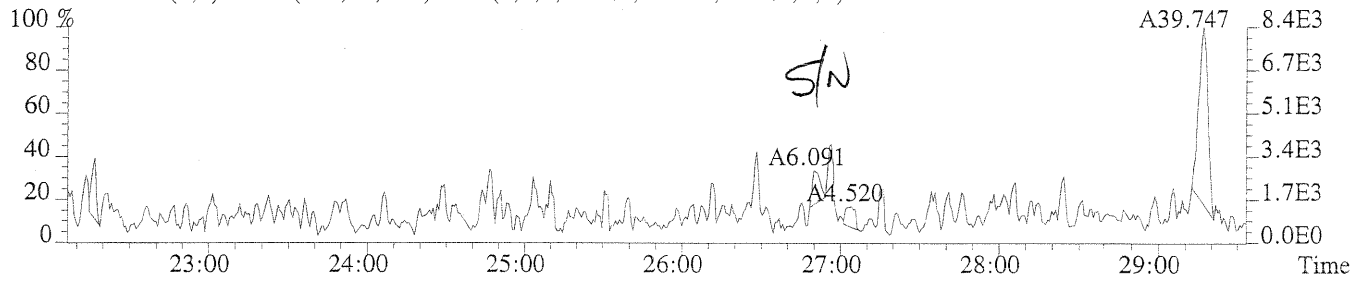
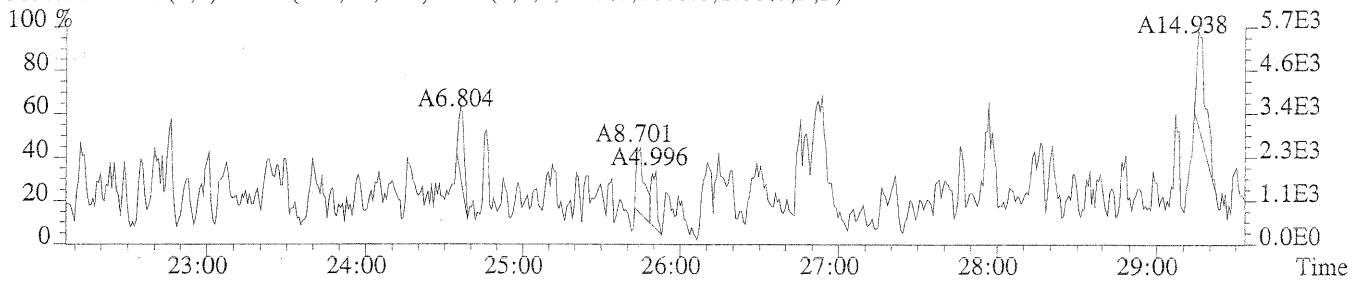
File:U212357 #1-621 Acq:30-OCT-2007 12:13:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:METHOD BLANK Exp:EQ0700356-01MB

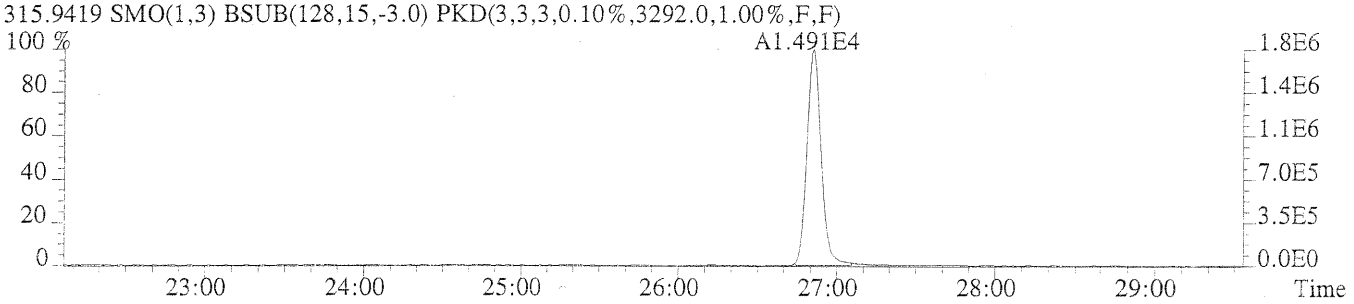
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1296.0,1.00%,F,F)



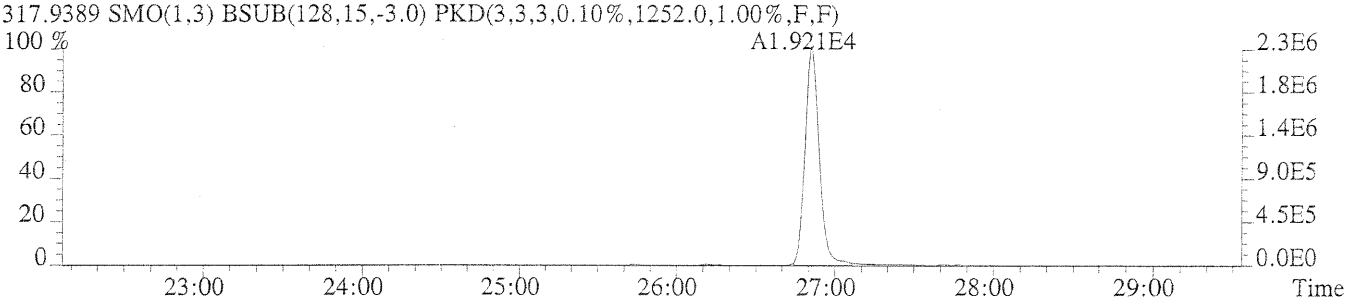
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1600.0,1.00%,F,F)



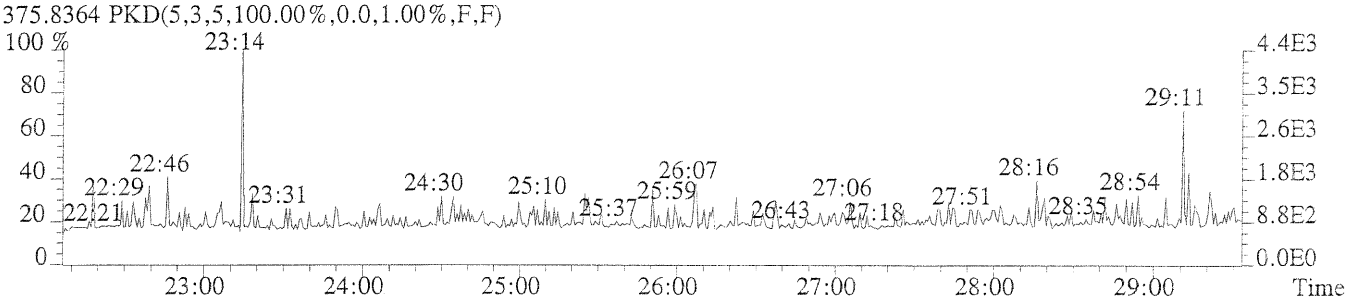
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3292.0,1.00%,F,F)



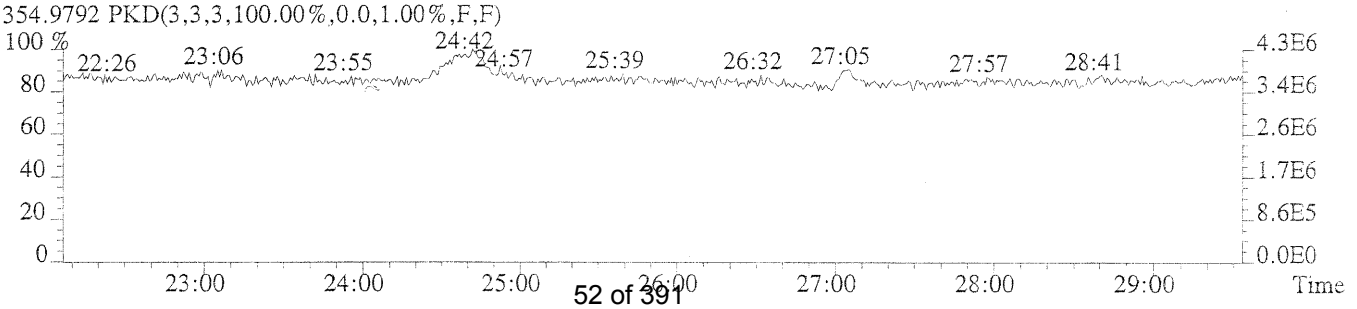
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1252.0,1.00%,F,F)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

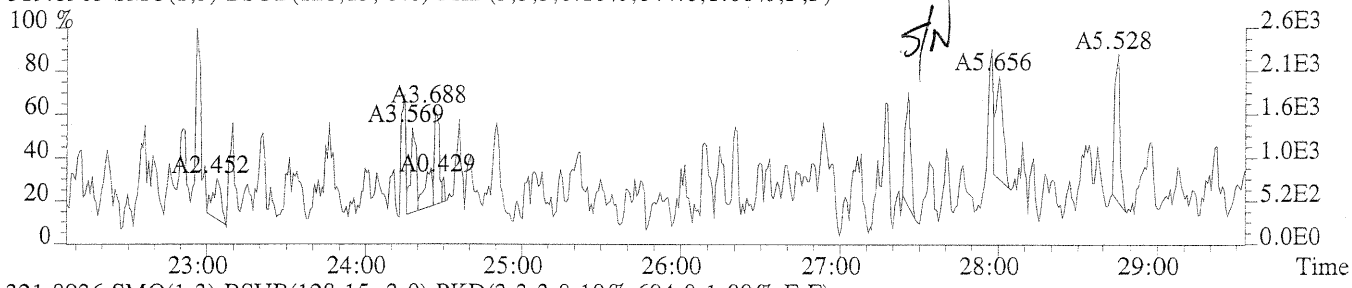


354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

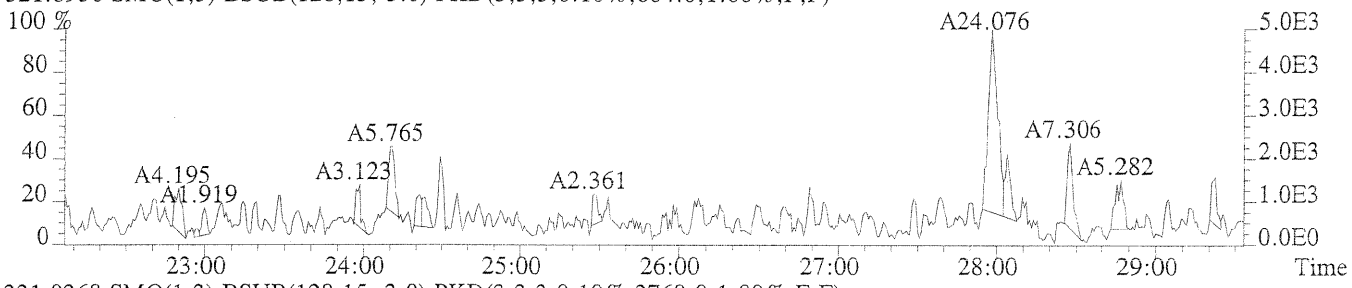


File:U212357 #1-621 Acq:30-OCT-2007 12:13:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:METHOD BLANK Exp:EQ0700356-01MB

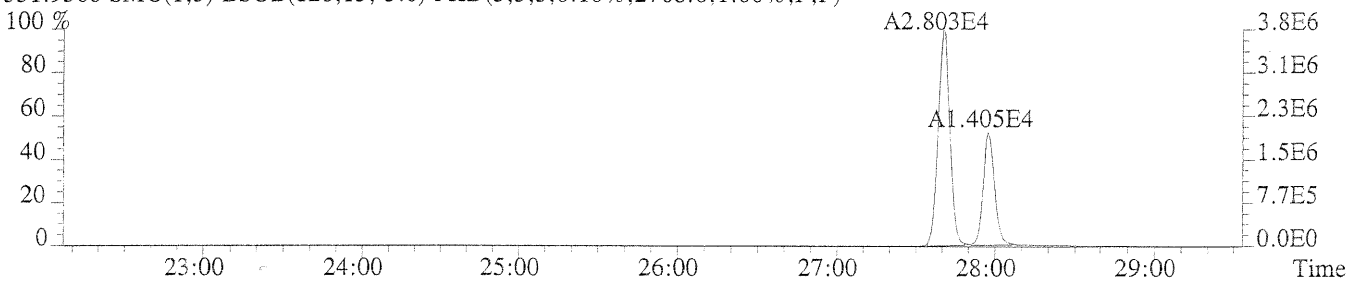
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,844.0,1.00%,F,F)



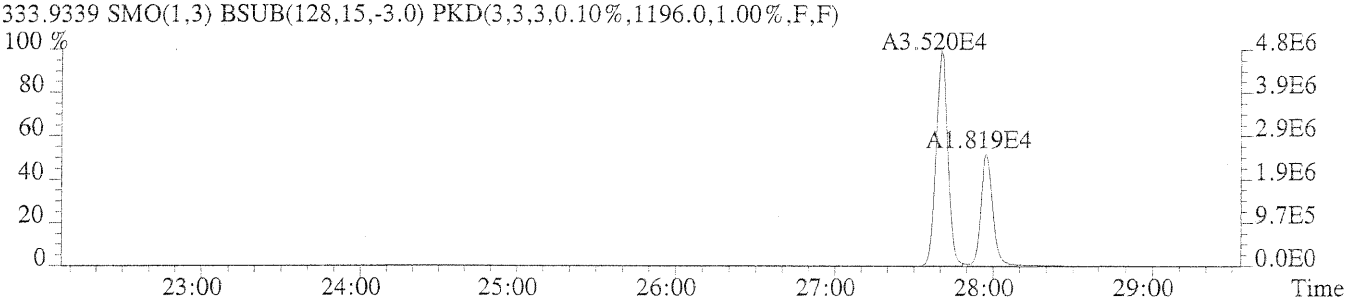
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,604.0,1.00%,F,F)



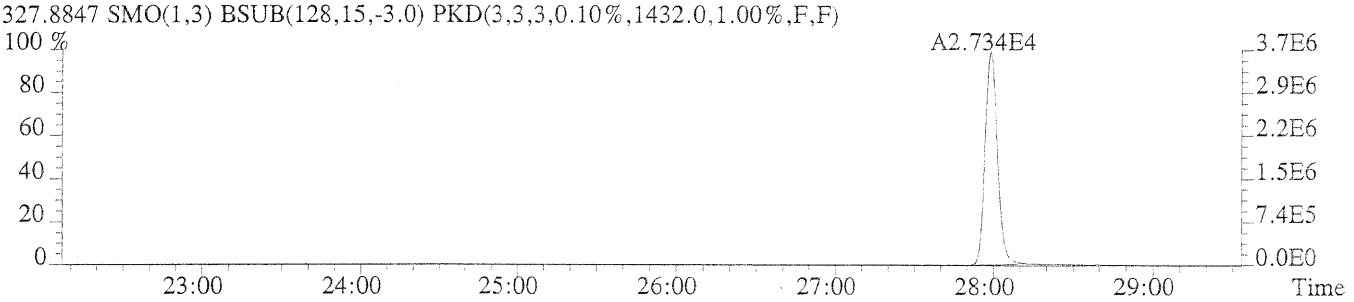
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2768.0,1.00%,F,F)



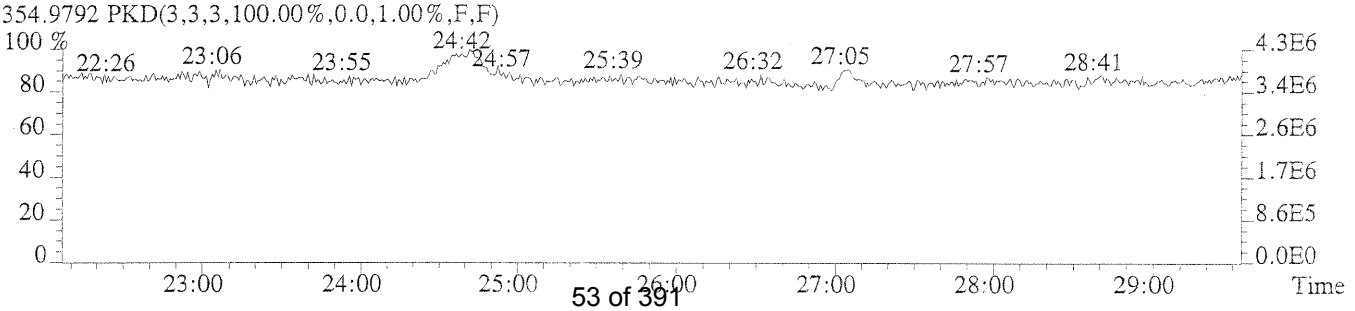
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1196.0,1.00%,F,F)



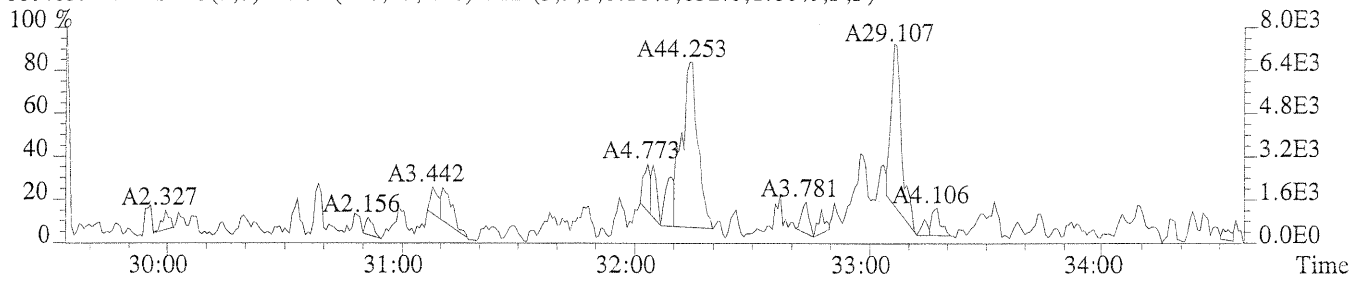
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1432.0,1.00%,F,F)



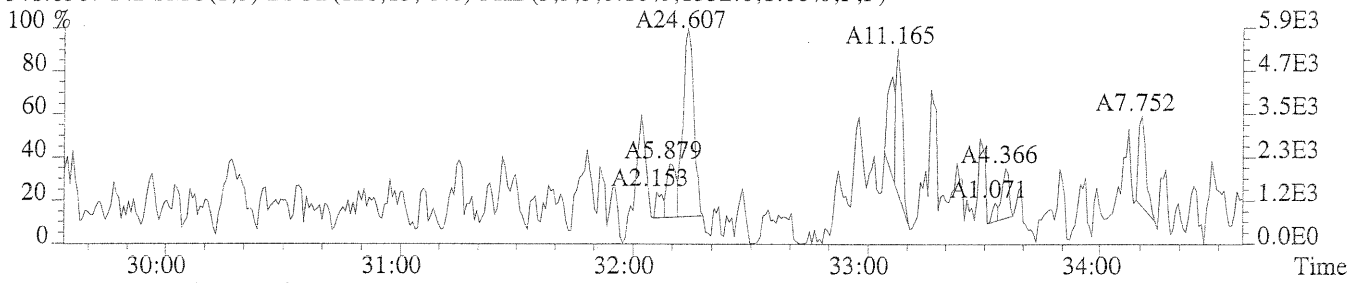
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



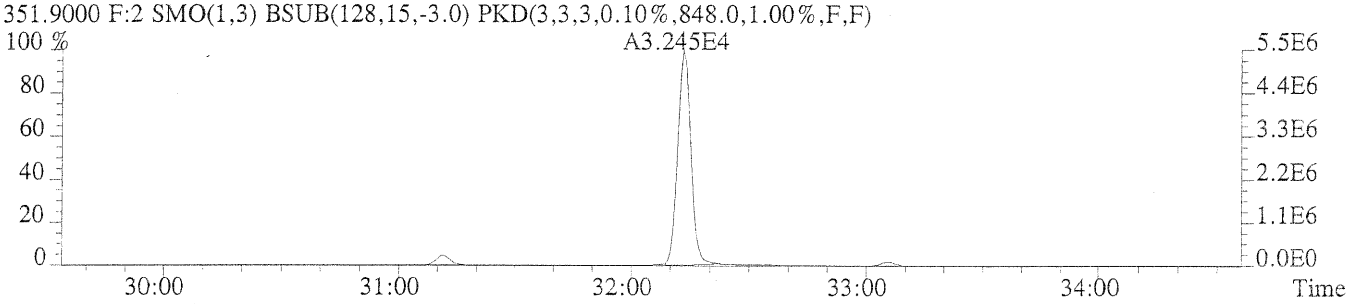
File:U212357 #1-458 Acq:30-OCT-2007 12:13:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:METHOD BLANK Exp:EQ0700356-01MB
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,652.0,1.00%,F,F)



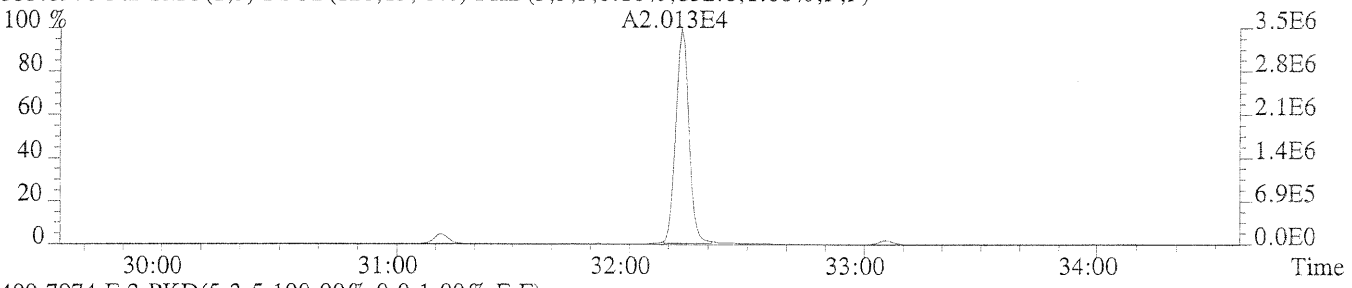
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1332.0,1.00%,F,F)



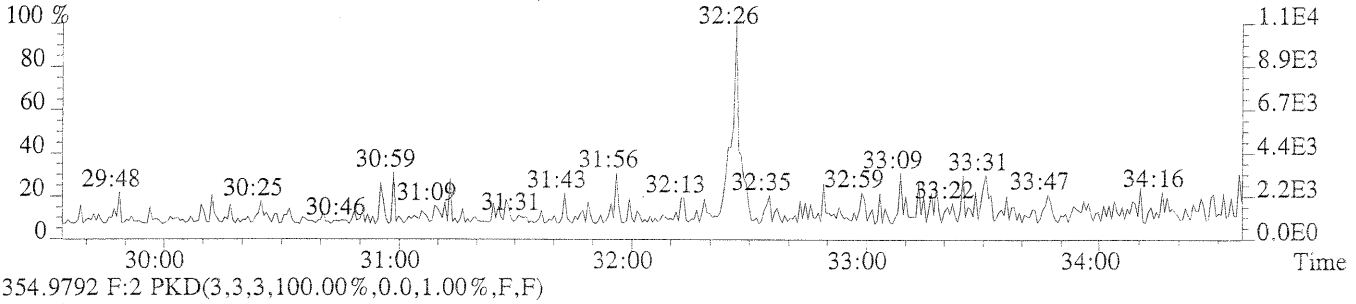
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,848.0,1.00%,F,F)



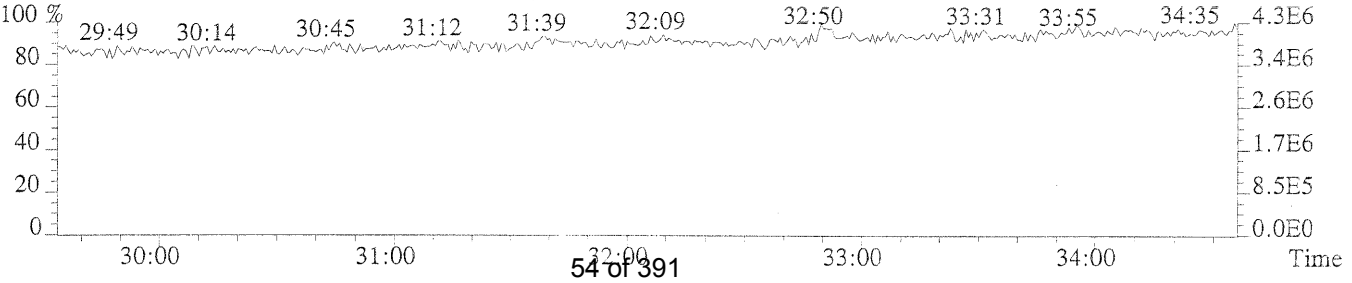
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,852.0,1.00%,F,F)



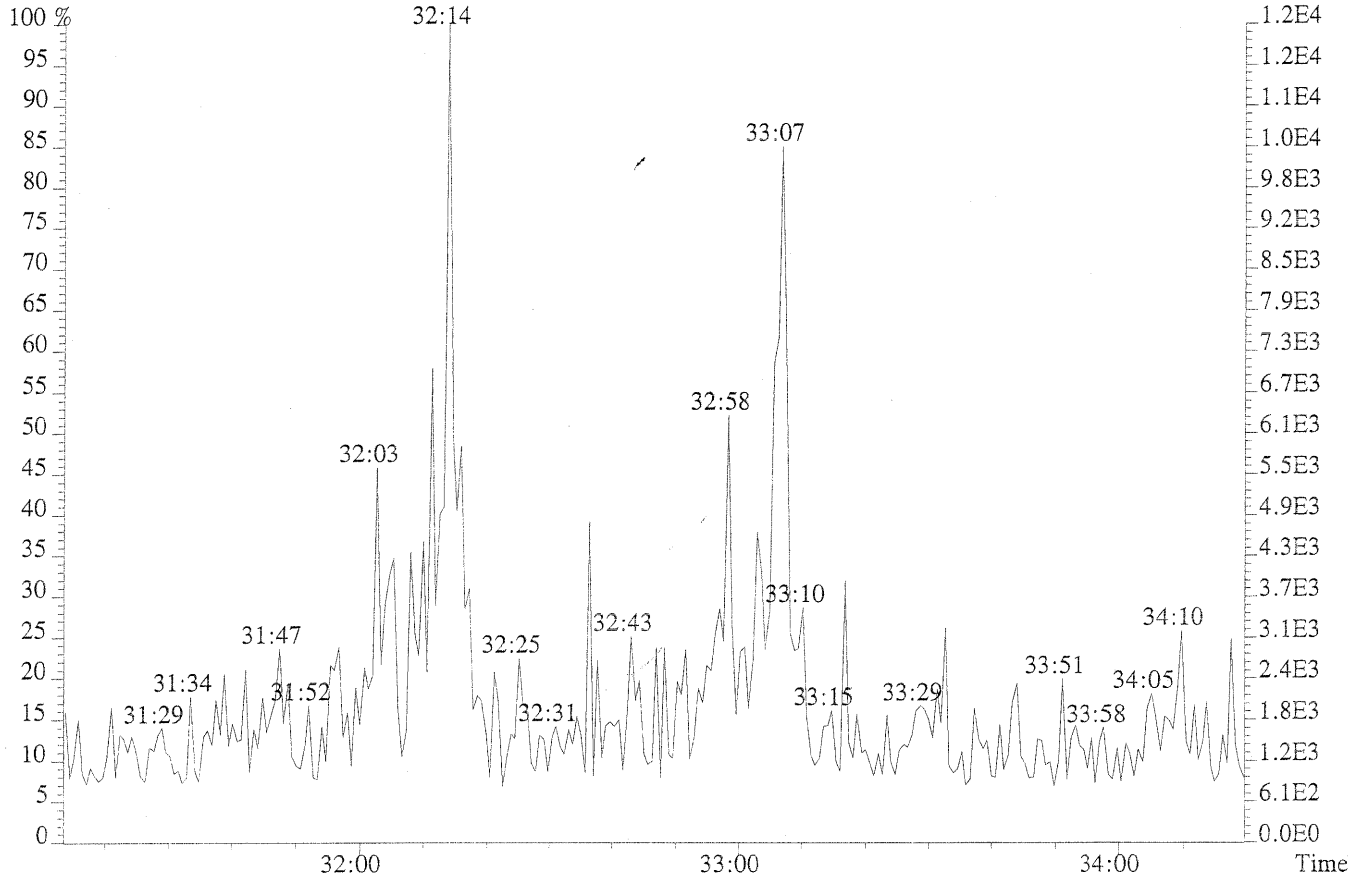
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



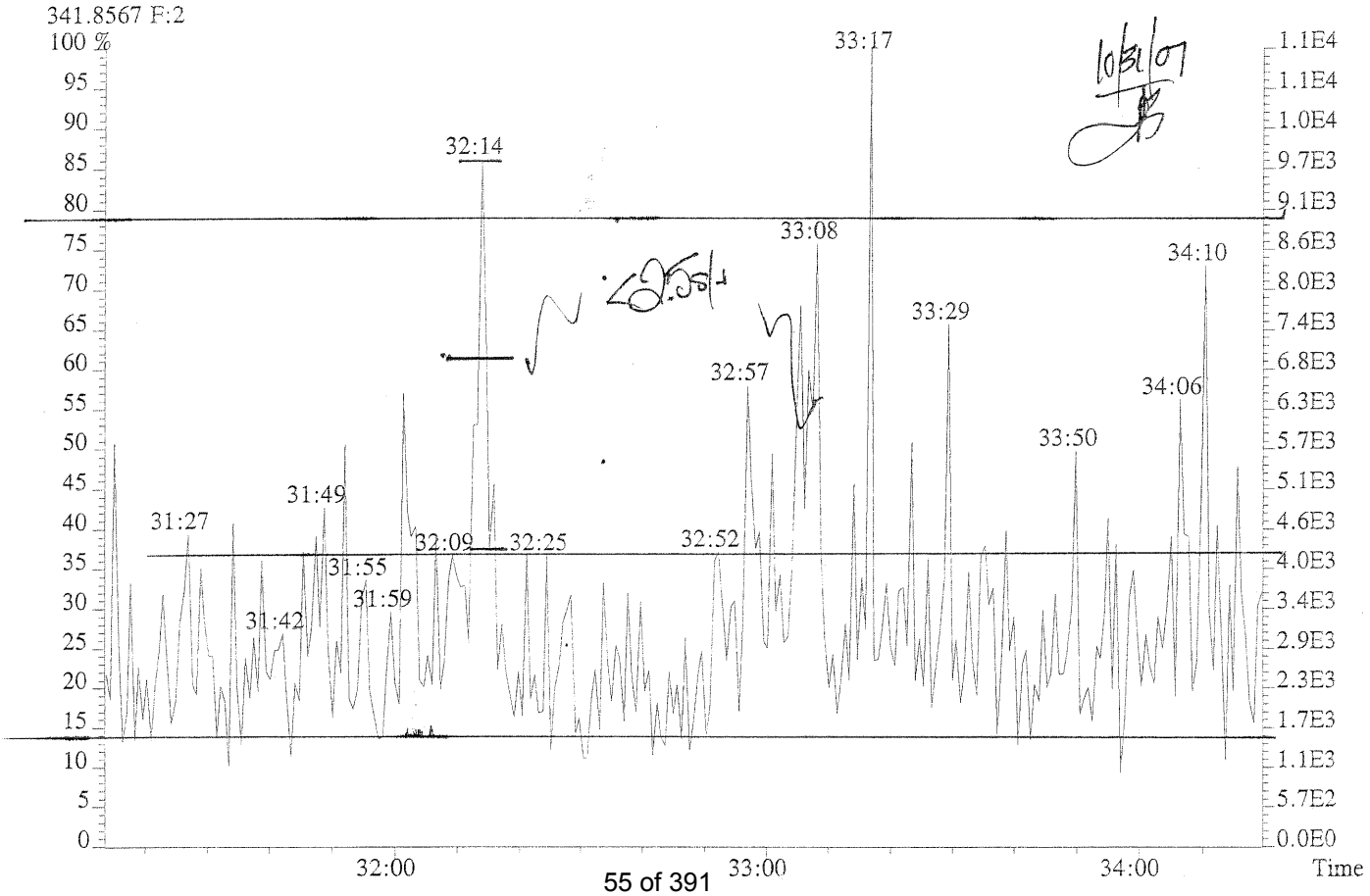
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



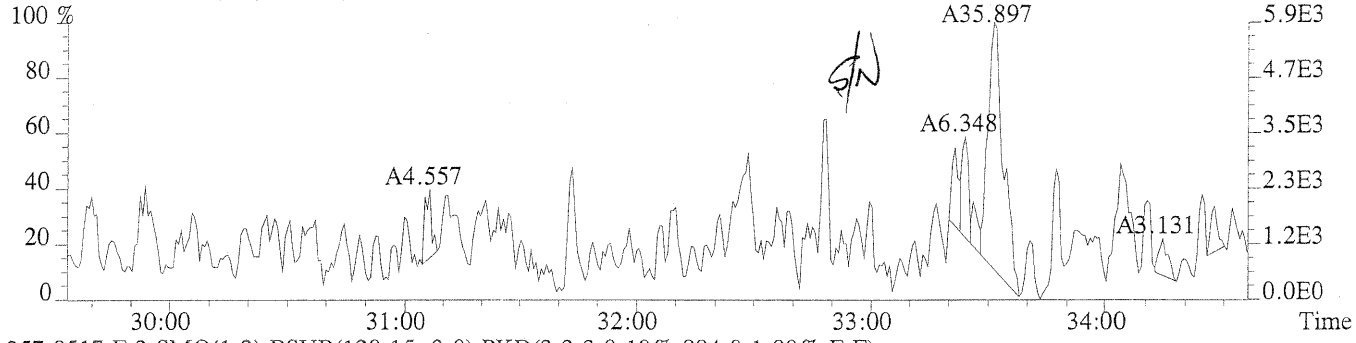
File:U212357 #1-458 Acq:30-OCT-2007 12:13:17 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 File Text:METHOD BLANK Exp:EQ0700356-01MB
339.8597 F:2



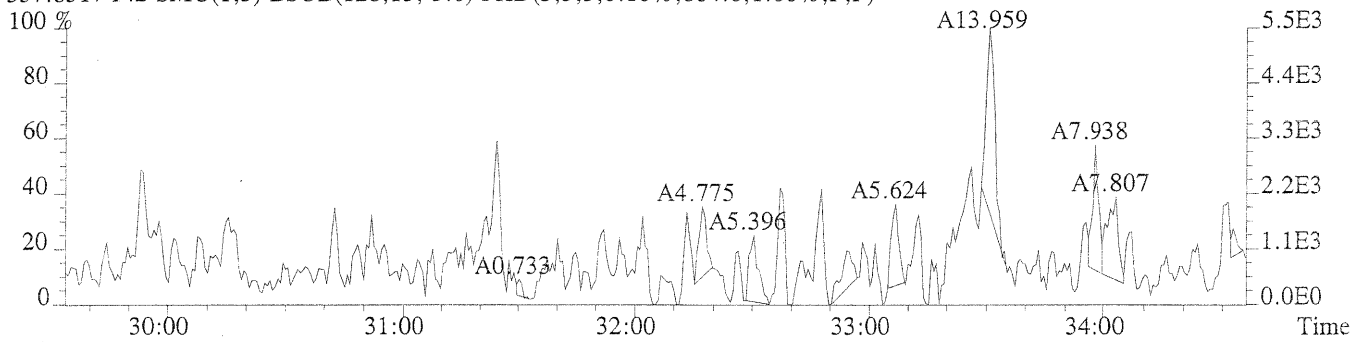
341.8567 F:2



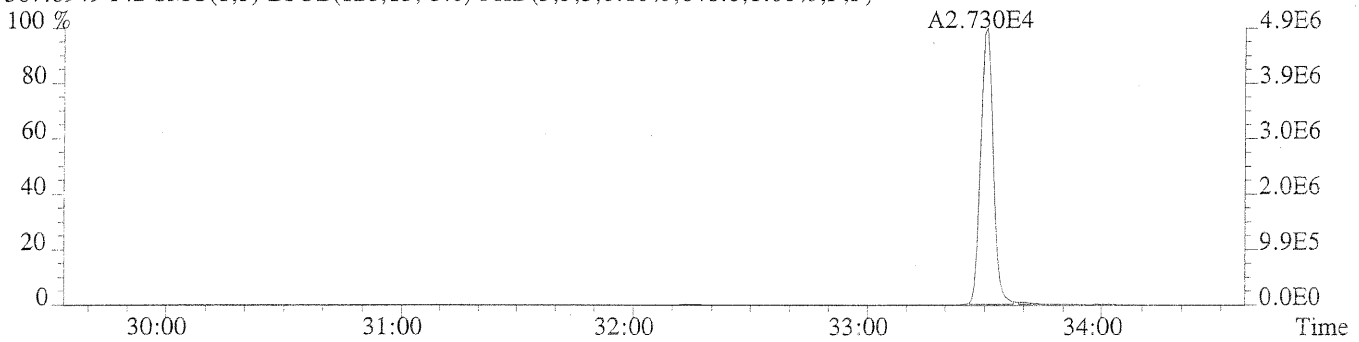
File:U212357 #1-458 Acq:30-OCT-2007 12:13:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:METHOD BLANK Exp:EQ0700356-01MB
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1284.0,1.00%,F,F)



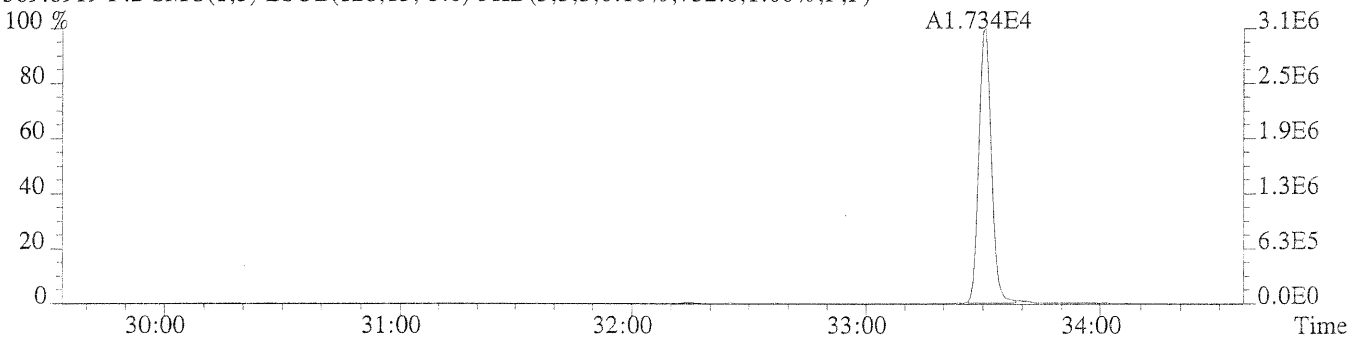
357.8517 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,884.0,1.00%,F,F)



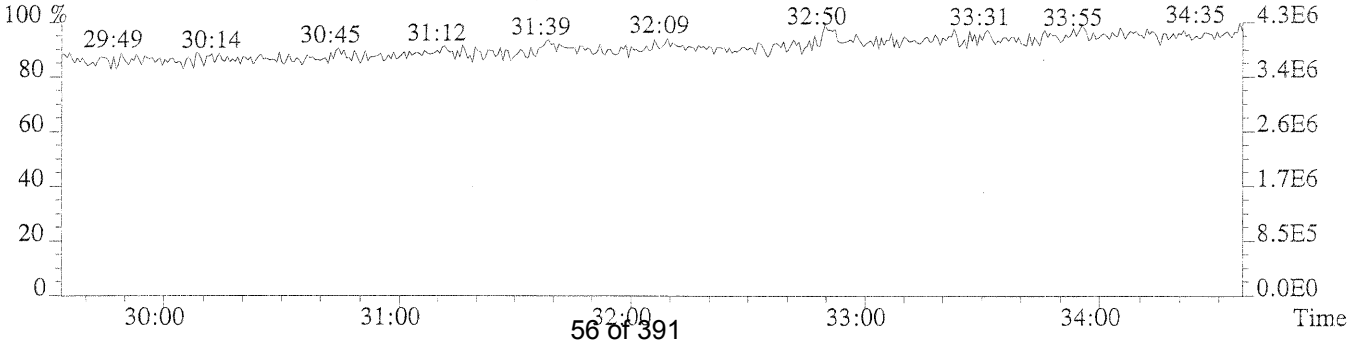
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,648.0,1.00%,F,F)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,732.0,1.00%,F,F)

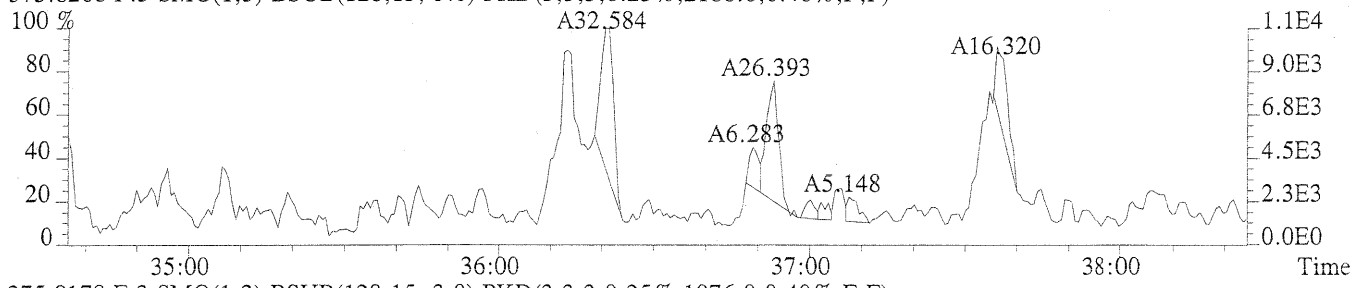


354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

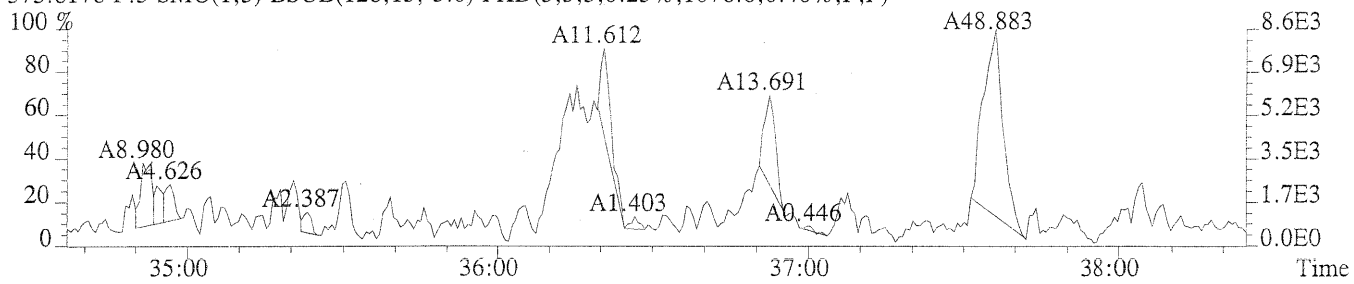


File:U212357 #1-345 Acq:30-OCT-2007 12:13:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:METHOD BLANK Exp:EQ0700356-01MB

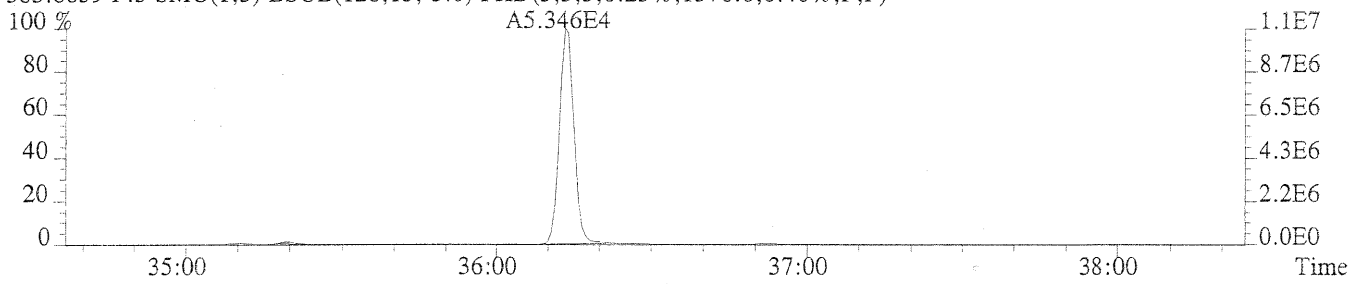
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2188.0,0.40%,F,F)



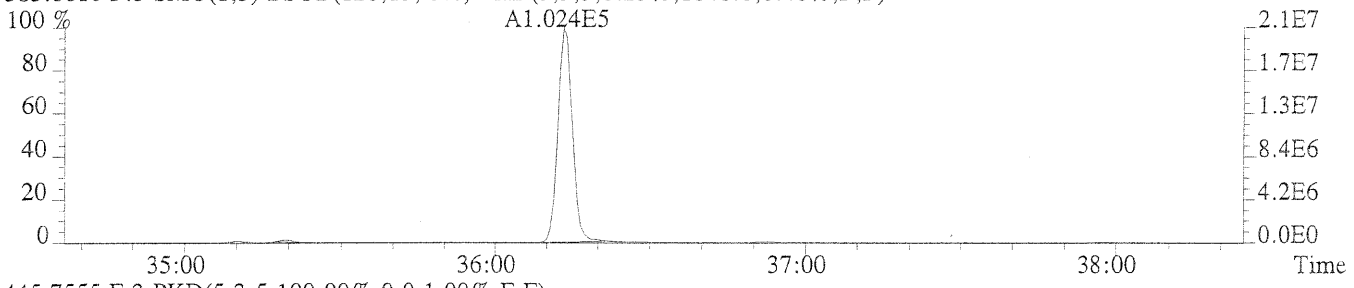
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1076.0,0.40%,F,F)



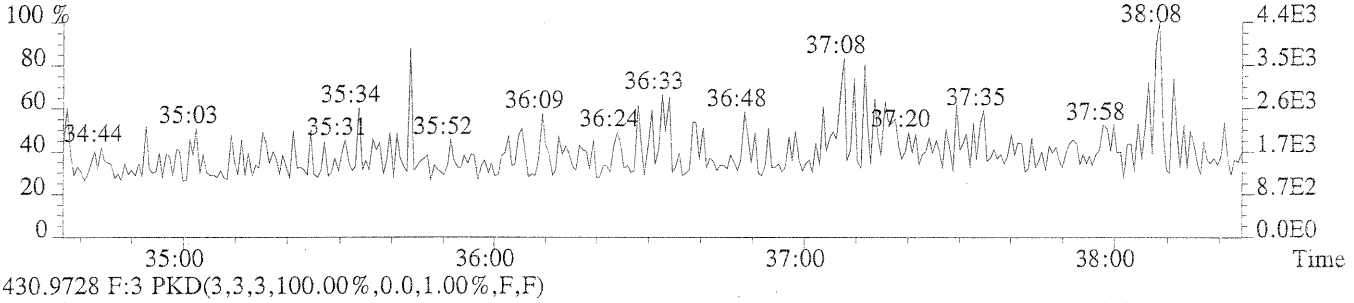
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1376.0,0.40%,F,F)



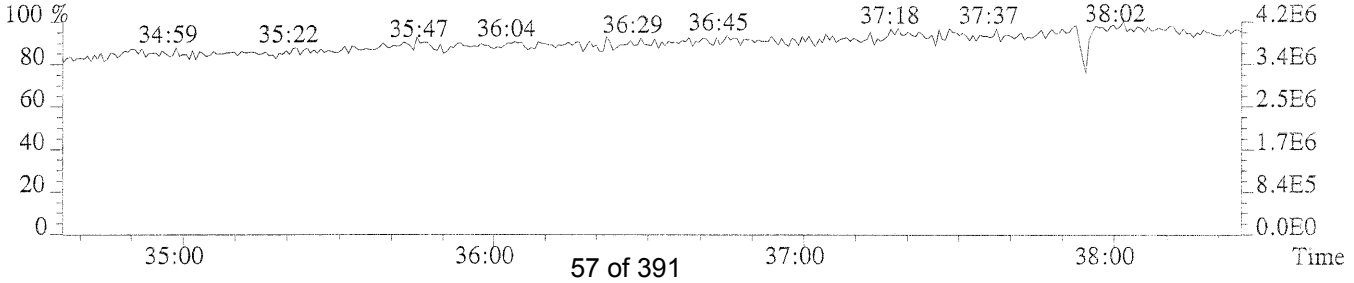
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1848.0,0.40%,F,F)



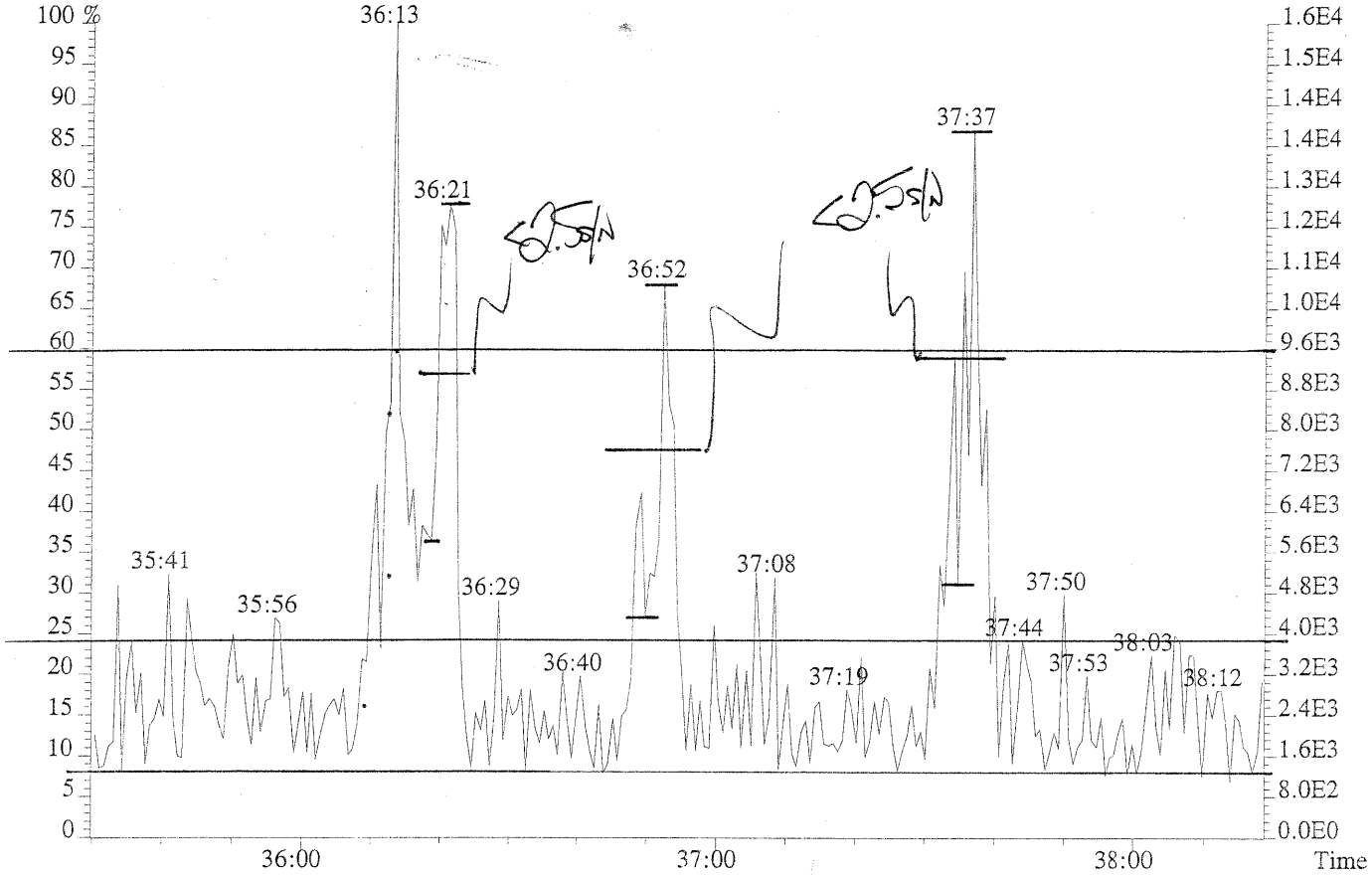
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



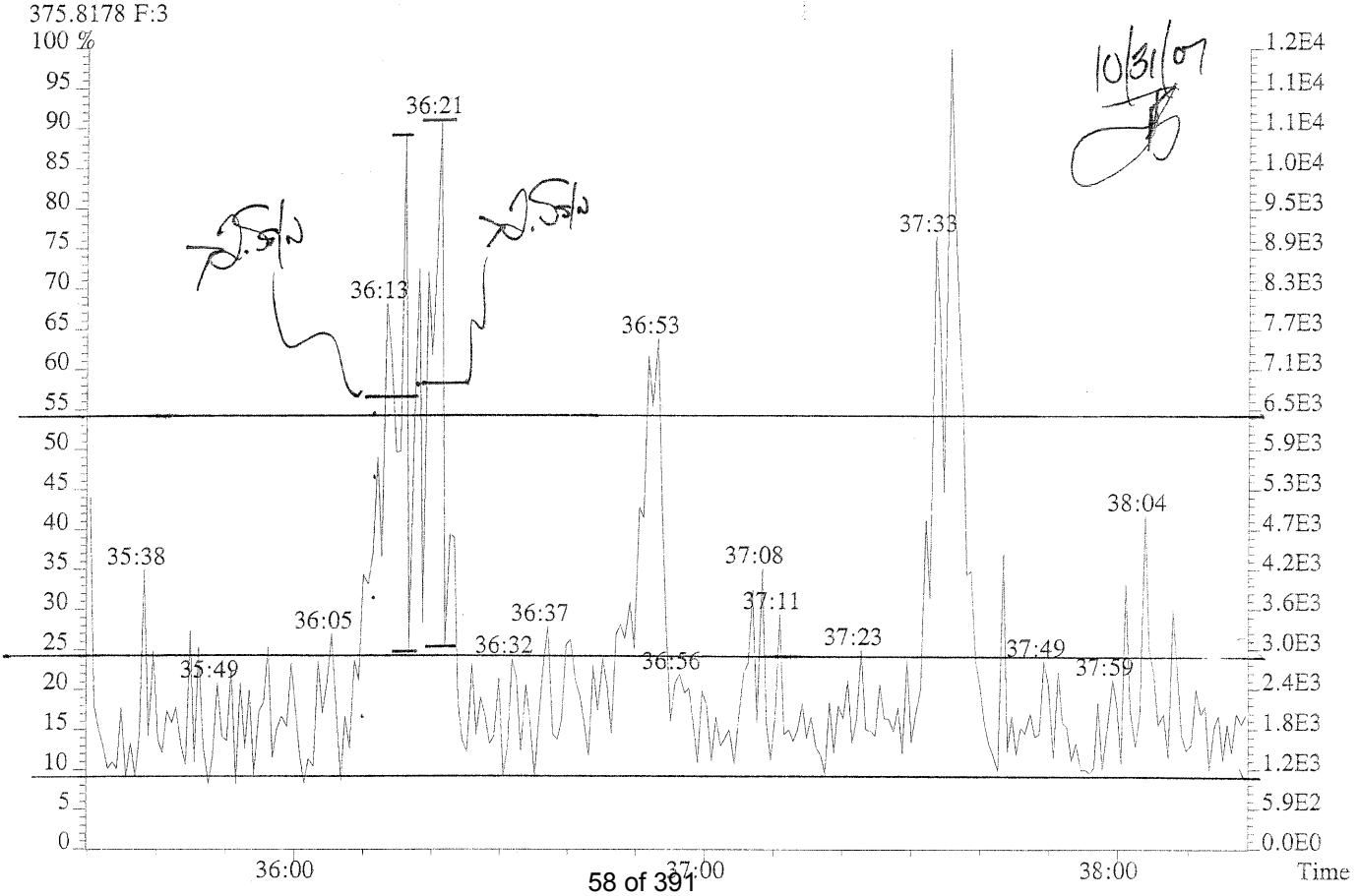
430.9728 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



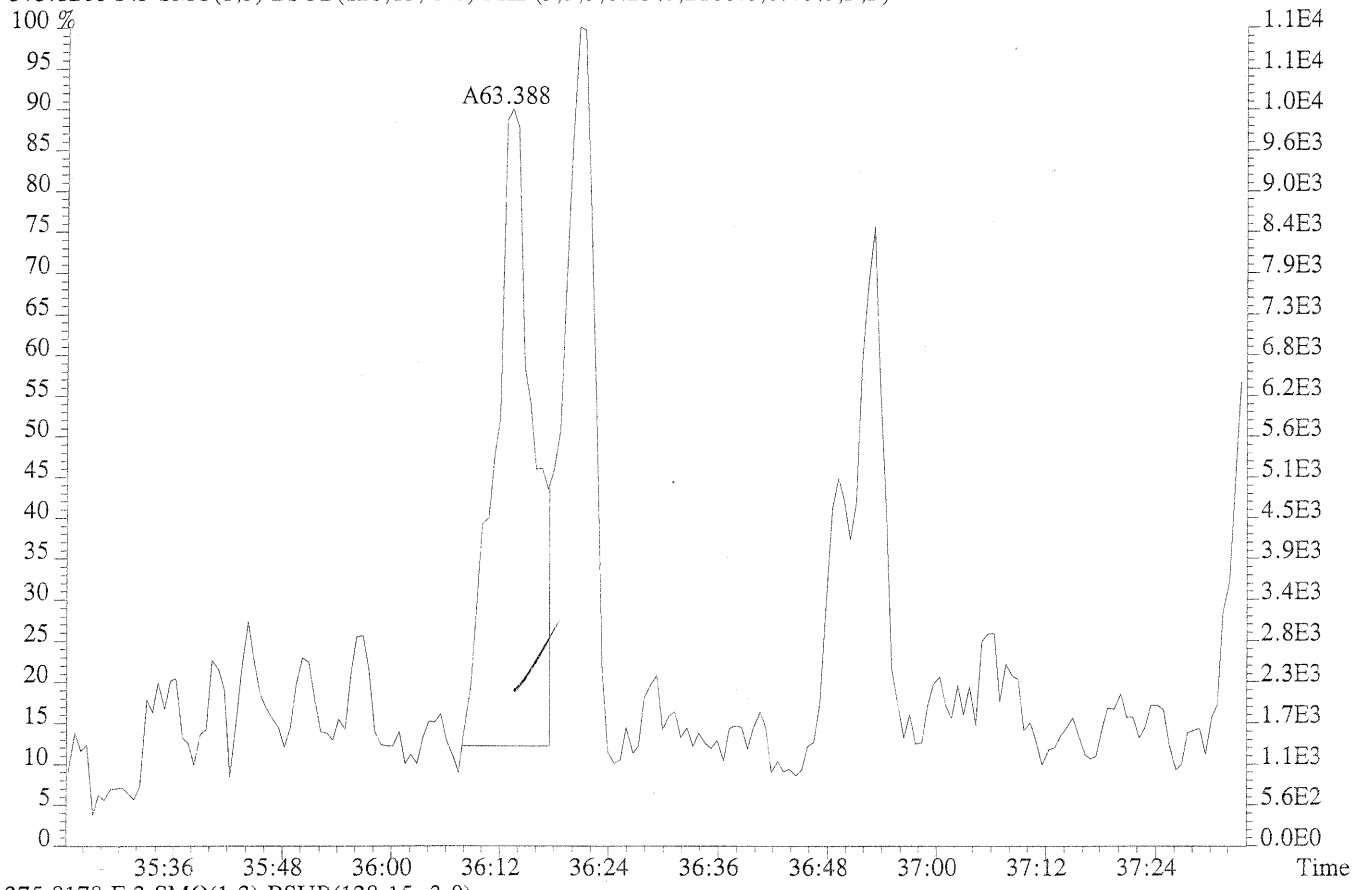
File:U212357 #1-345 Acq:30-OCT-2007 12:13:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:METHOD BLANK Exp:EQ0700356-01MB
373.8208 F:3



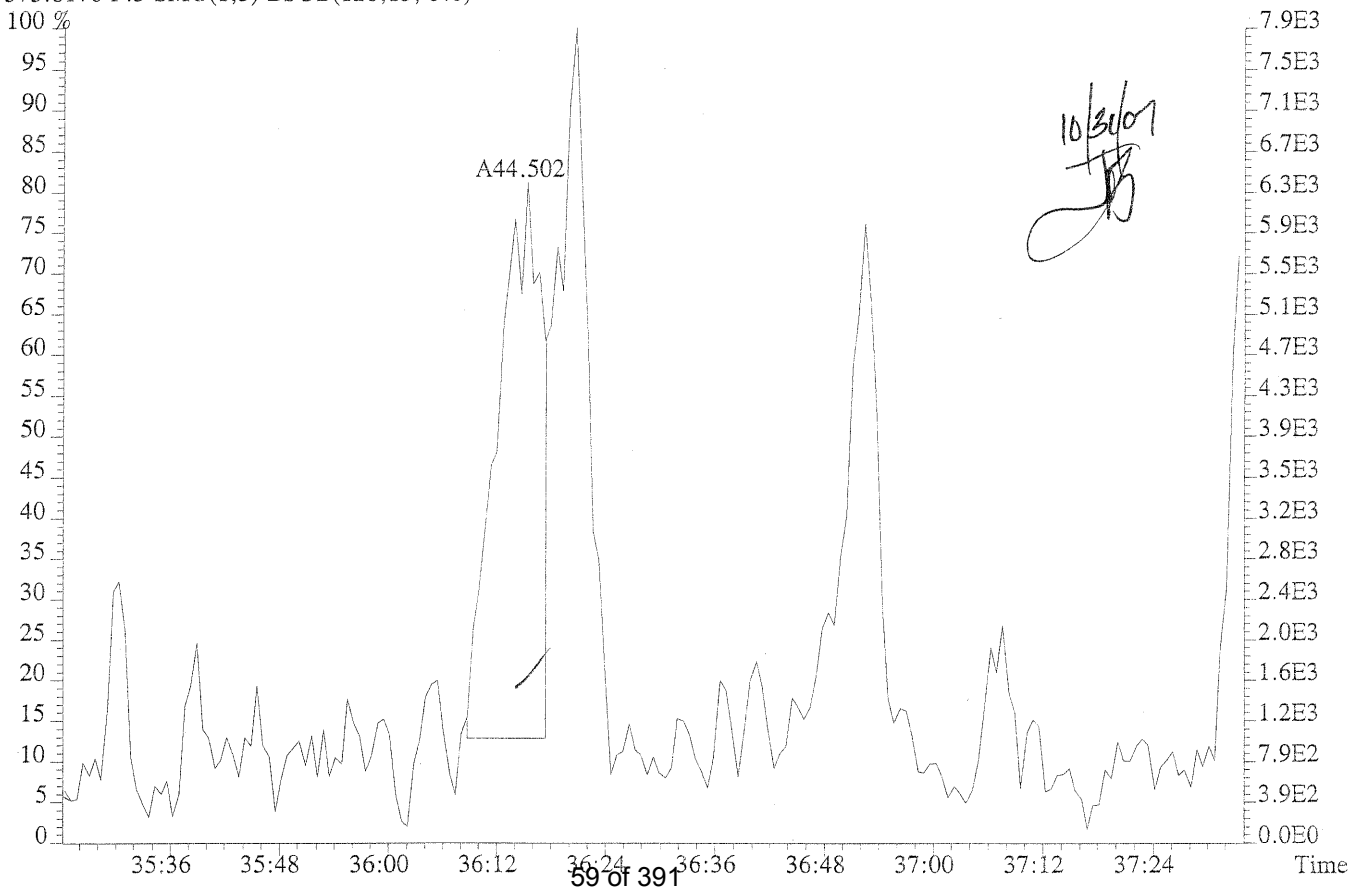
375.8178 F:3



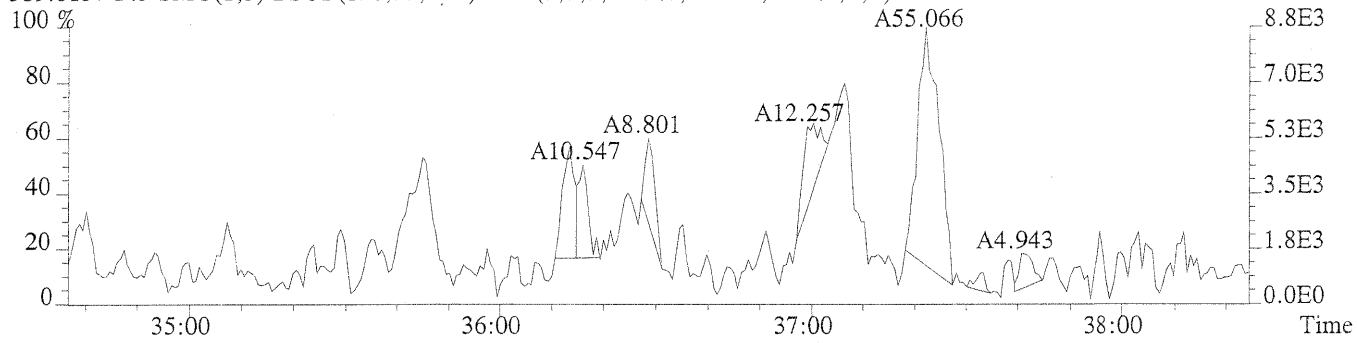
File:U212357 #1-345 Acq:30-OCT-2007 12:13:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:METHOD BLANK Exp:EQ0700356-01MB
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2188.0,0.40%,F,F)



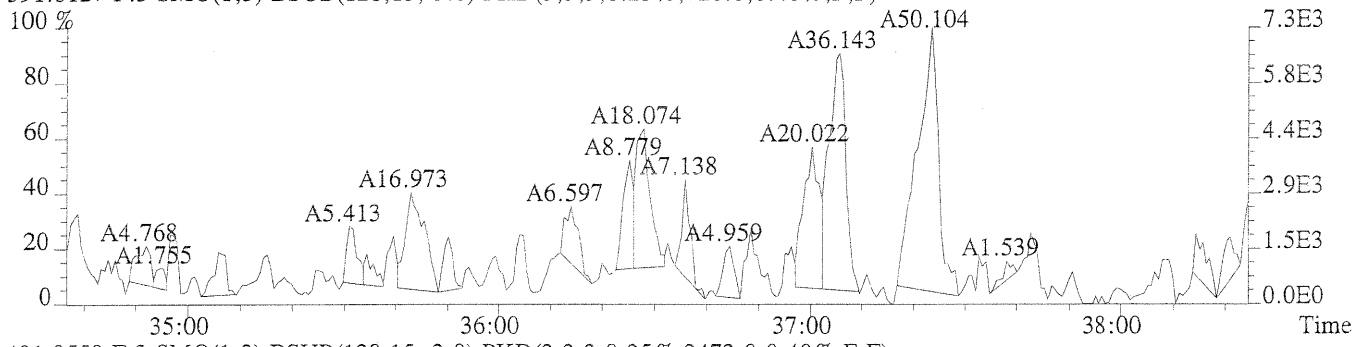
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0)



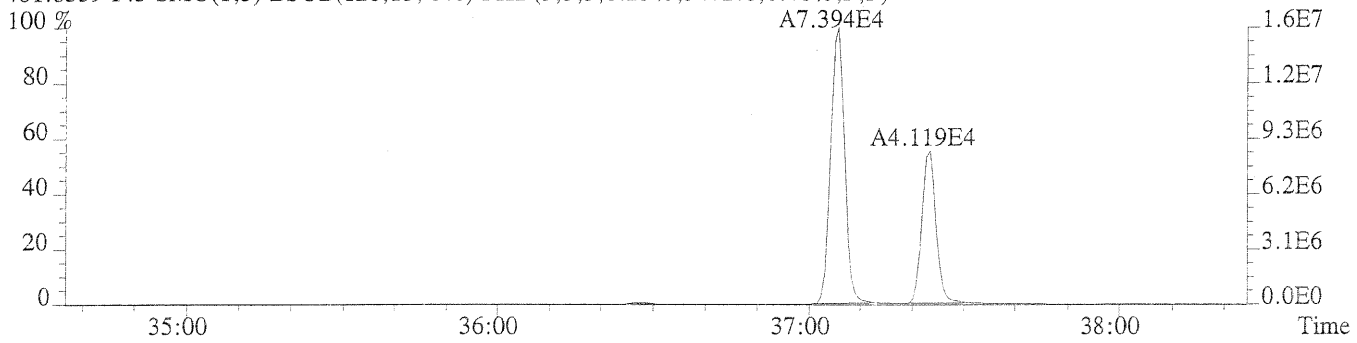
File:U212357 #1-345 Acq:30-OCT-2007 12:13:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:METHOD BLANK Exp:EQ0700356-01MB
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1308.0,0.40%,F,F)



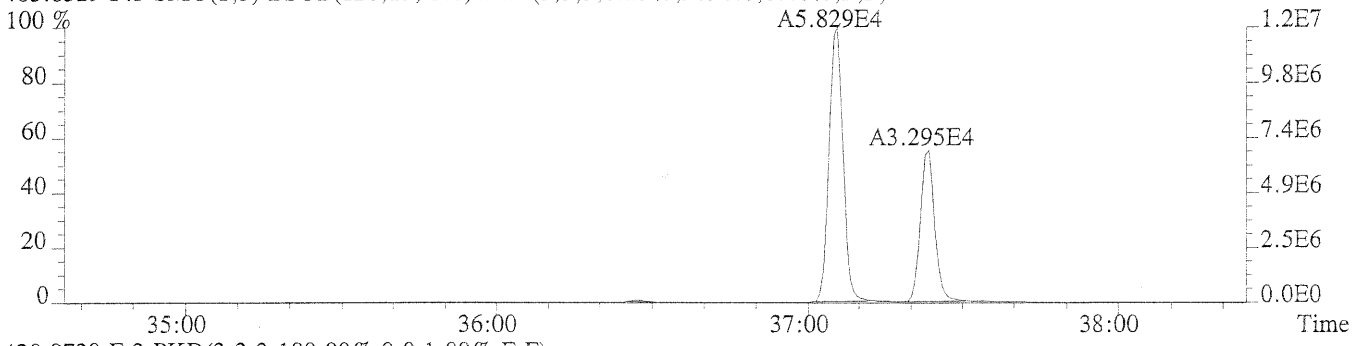
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,720.0,0.40%,F,F)



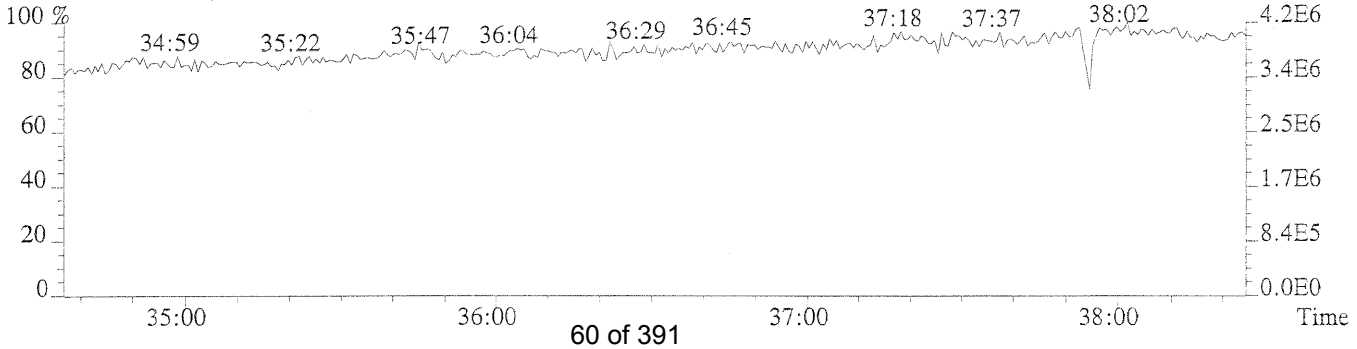
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3472.0,0.40%,F,F)



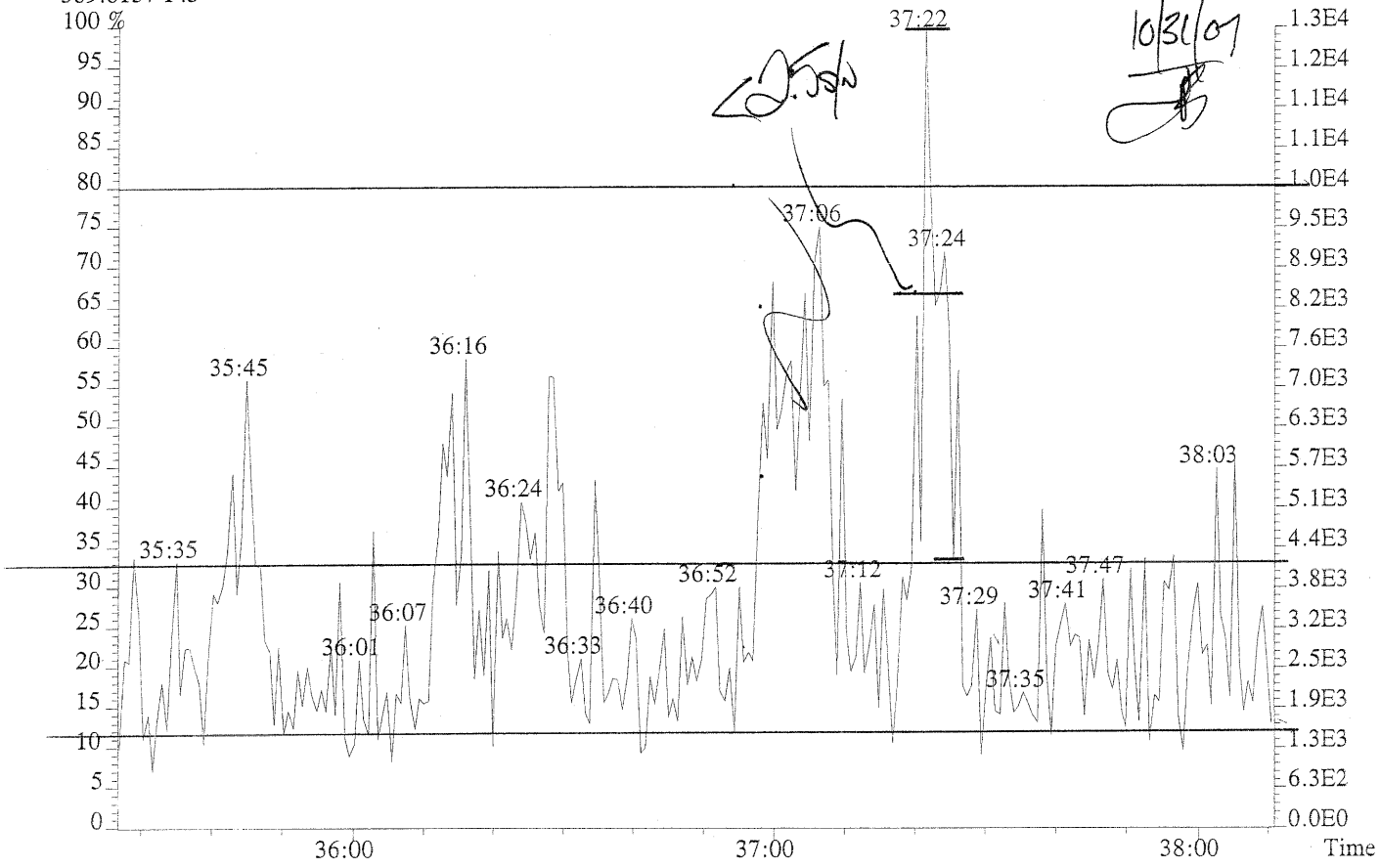
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2096.0,0.40%,F,F)



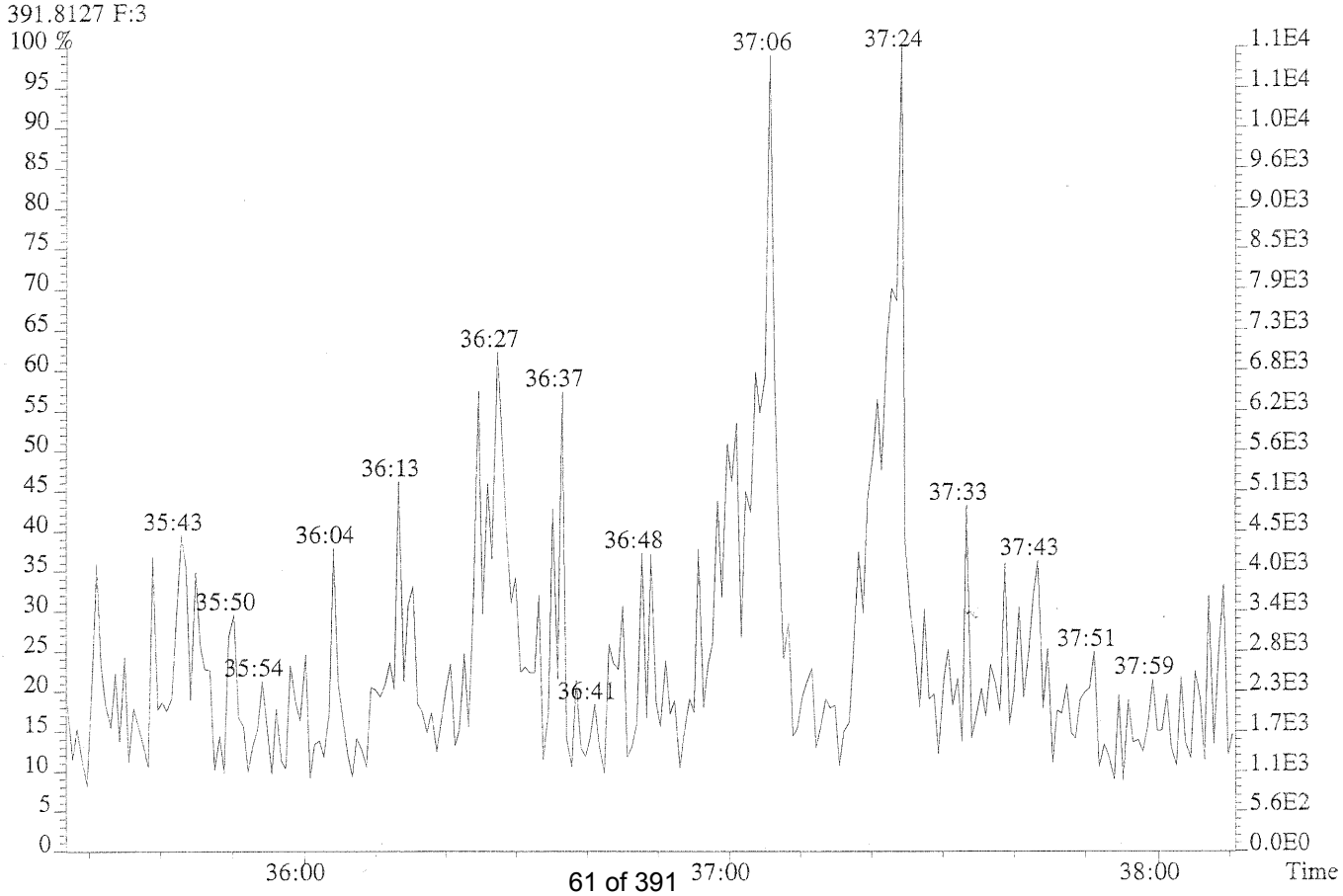
430.9728 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



File:U212357 #1-345 Acq:30-OCT-2007 12:13:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:METHOD BLANK Exp:EQ0700356-01MB
389.8157 F:3

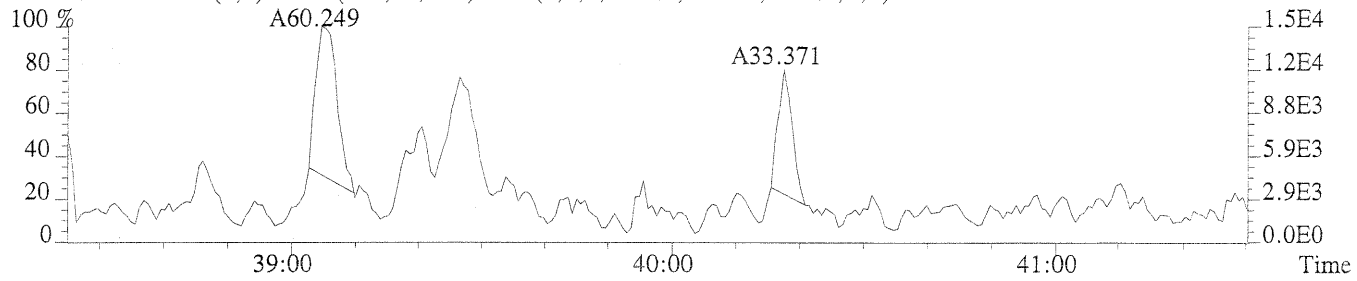


391.8127 F:3

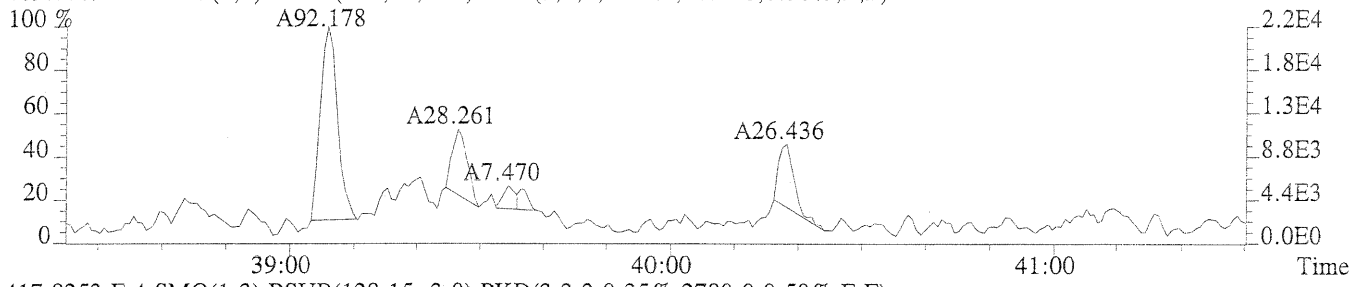


File:U212357 #1-281 Acq:30-OCT-2007 12:13:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:METHOD BLANK Exp:EQ0700356-01MB

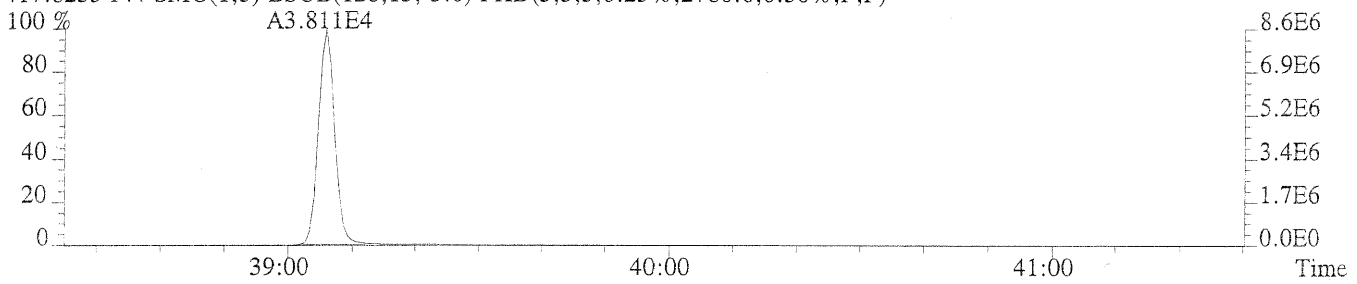
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2952.0,0.50%,F,F)



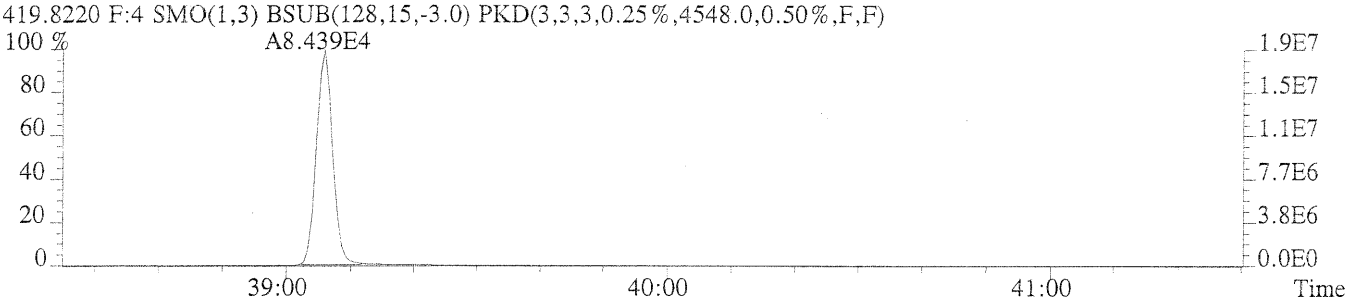
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2632.0,0.50%,F,F)



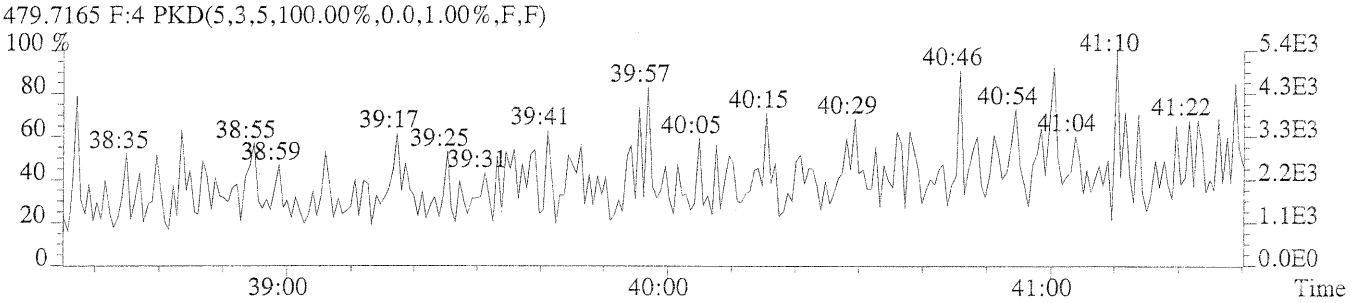
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2780.0,0.50%,F,F)



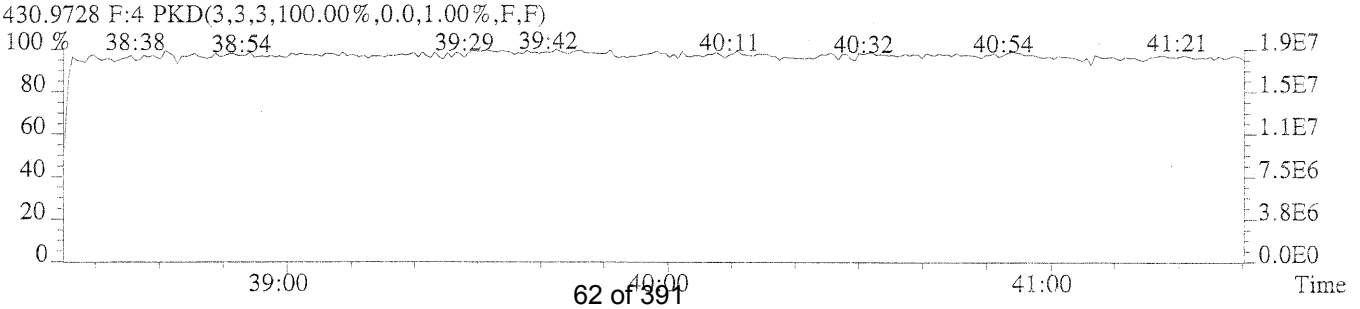
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4548.0,0.50%,F,F)



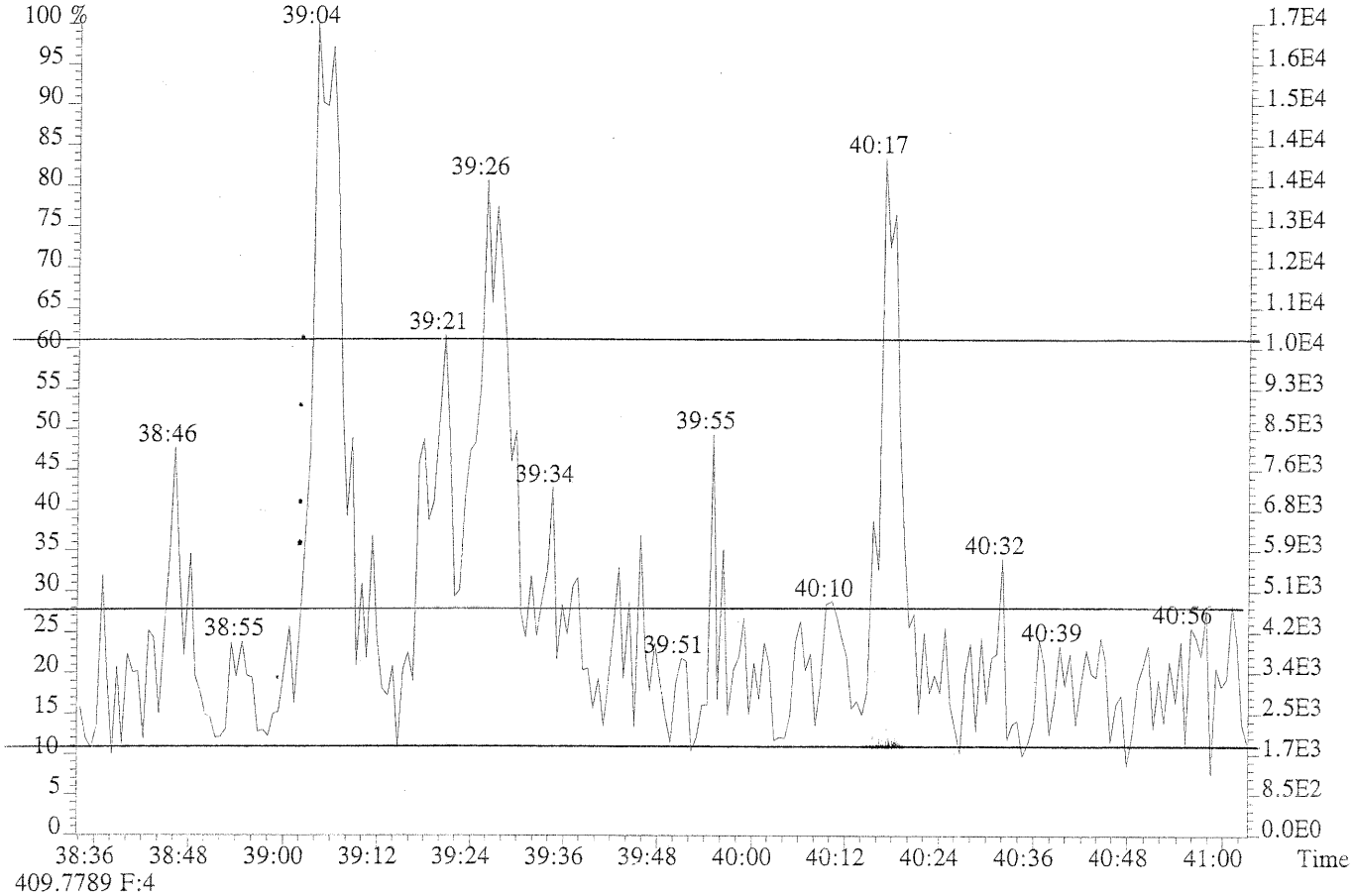
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



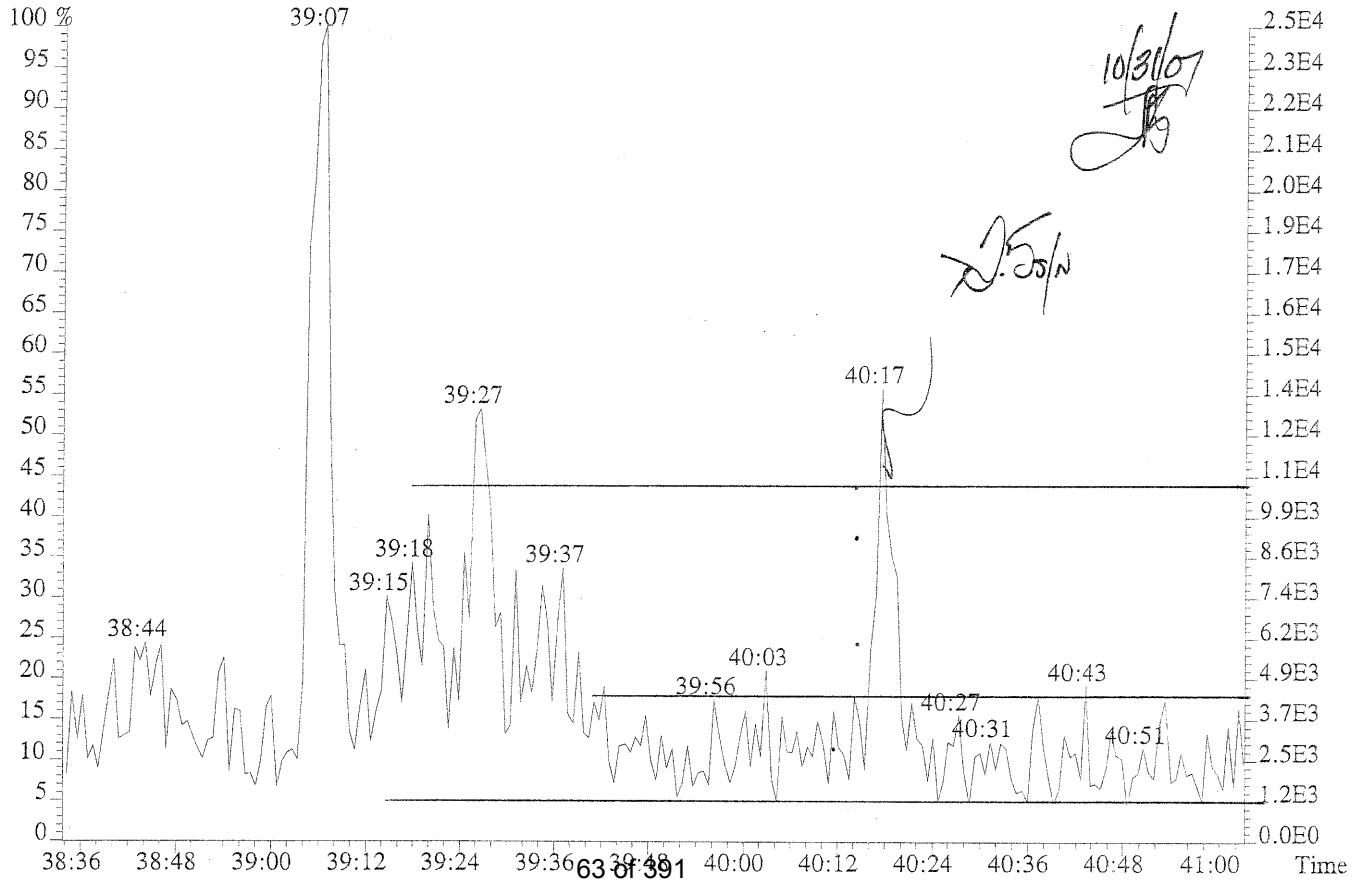
430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



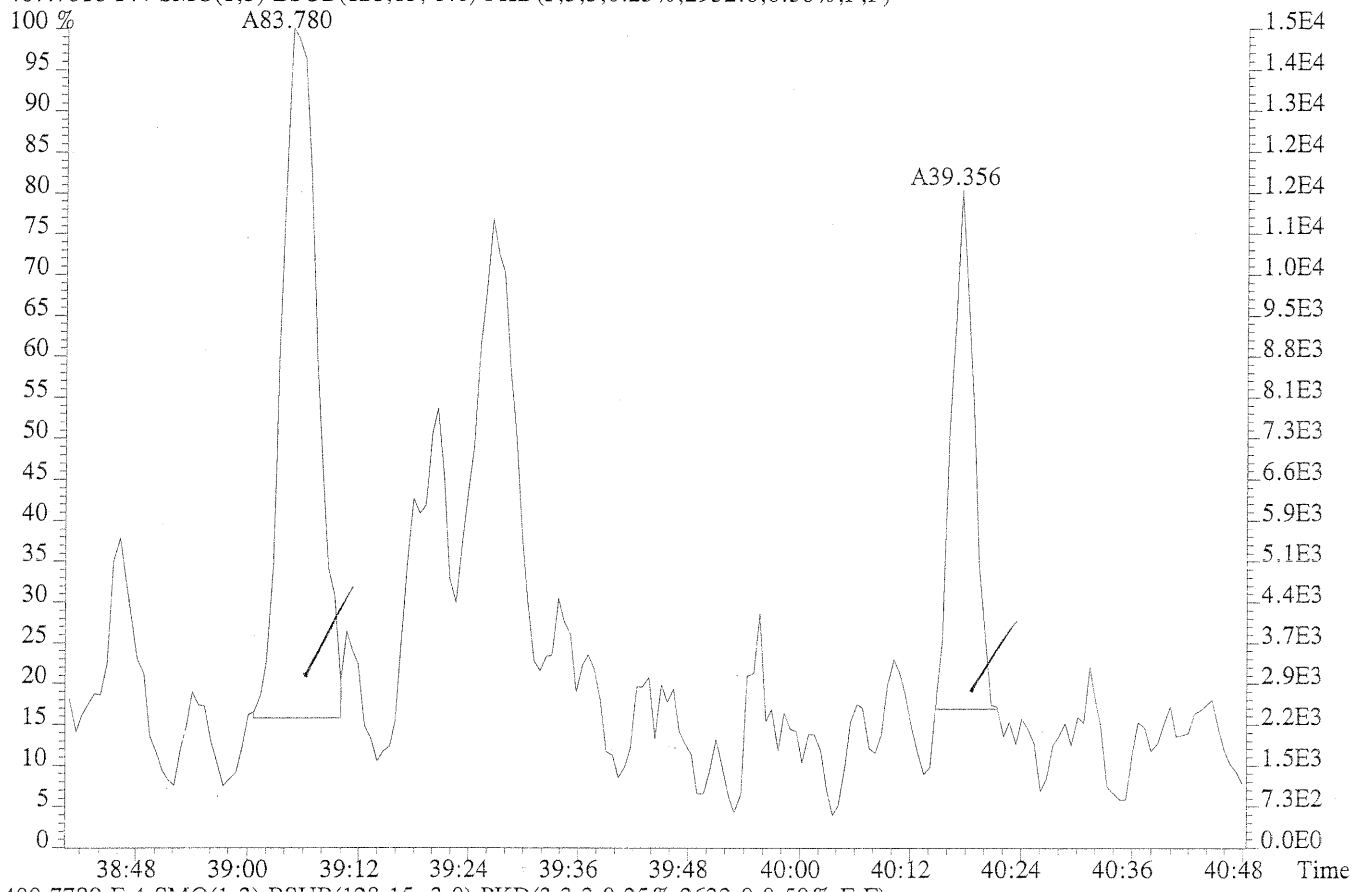
File:U212357 #1-281 Acq:30-OCT-2007 12:13:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:METHOD BLANK Exp:EQ0700356-01MB
407.7818 F:4



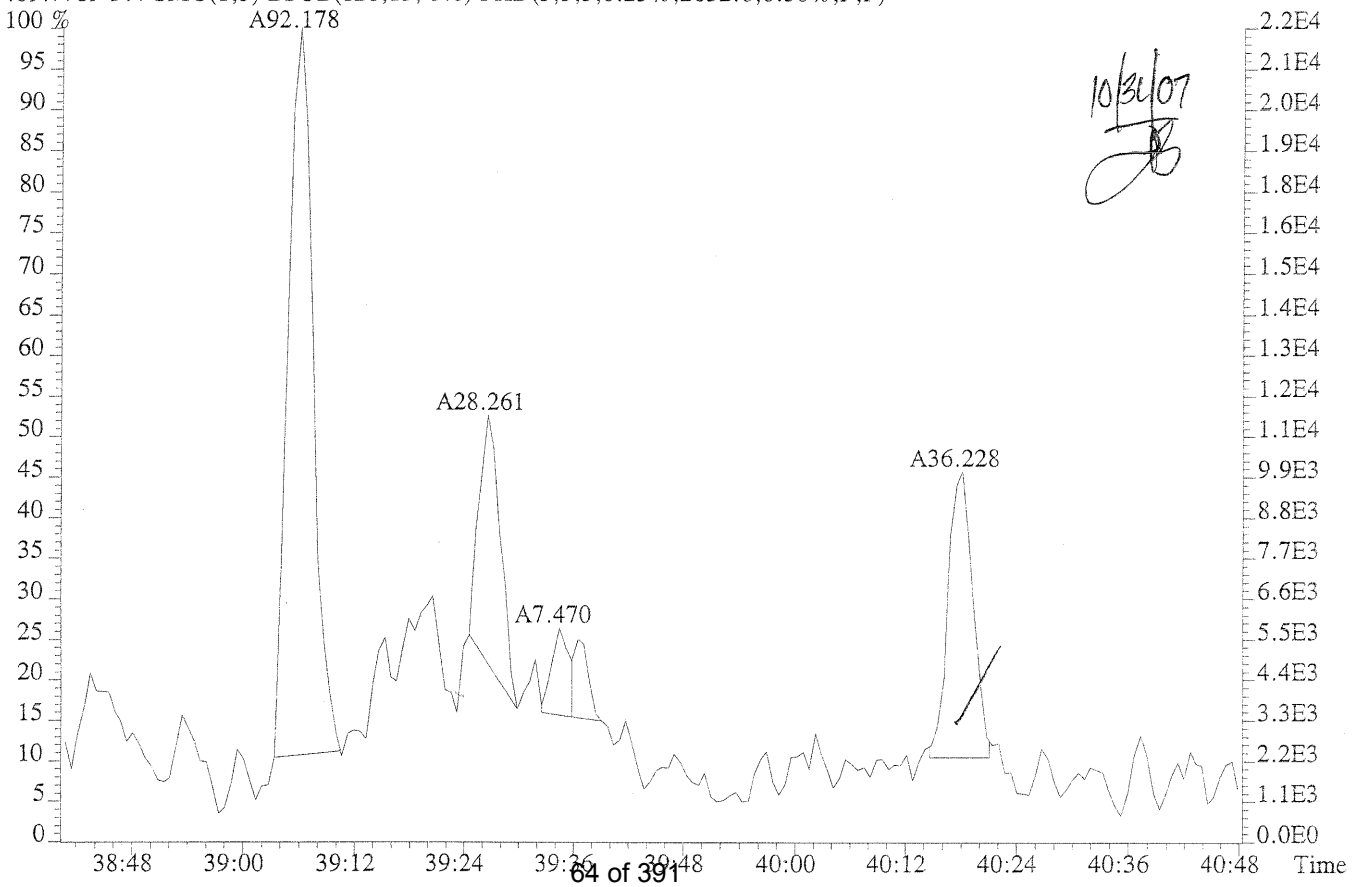
409.7789 F:4



File:U212357 #1-281 Acq:30-OCT-2007 12:13:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:METHOD BLANK Exp:EQ0700356-01MB
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2952.0,0.50%,F,F)

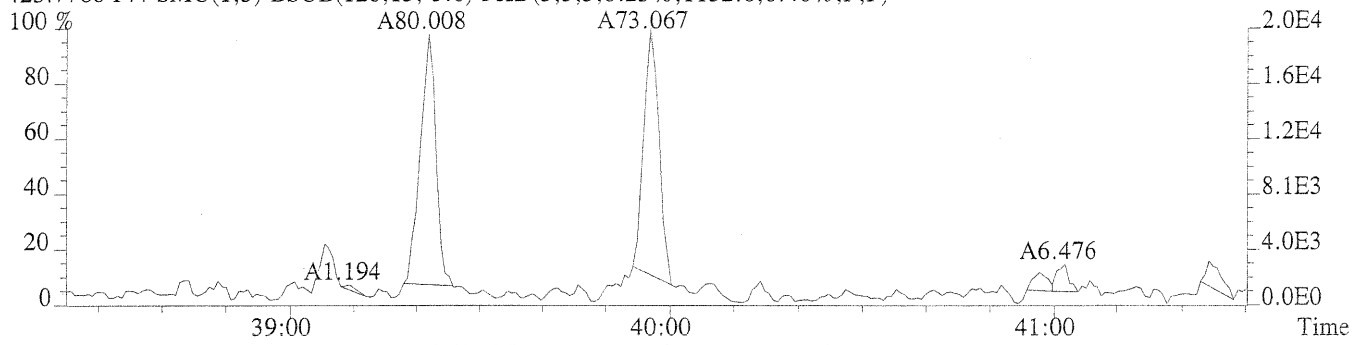


409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2632.0,0.50%,F,F)

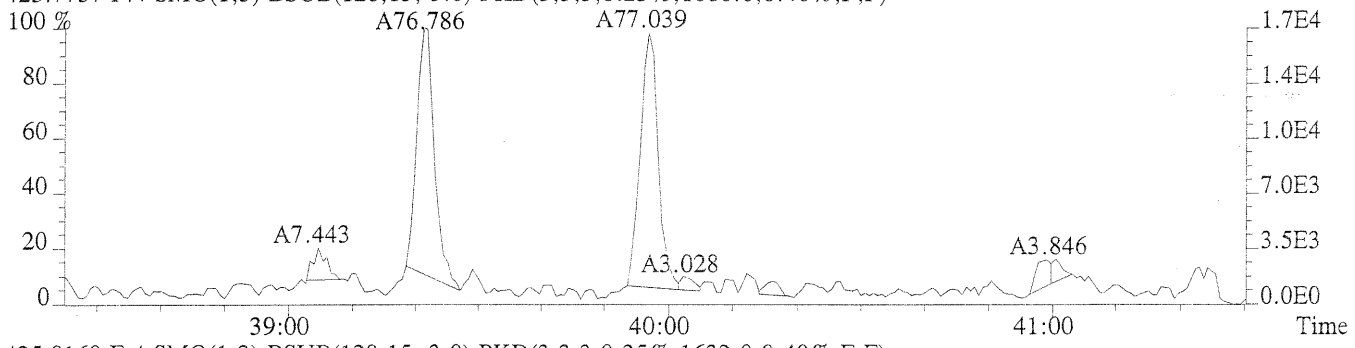


10/31/07

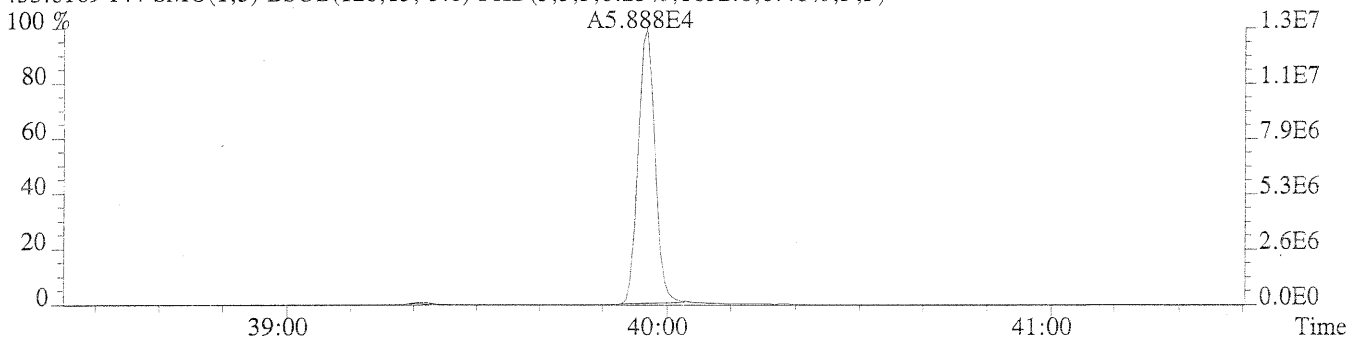
File:U212357 #1-281 Acq:30-OCT-2007 12:13:17 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 File Text:METHOD BLANK Exp:EQ0700356-01MB
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1132.0,0.40%,F,F)



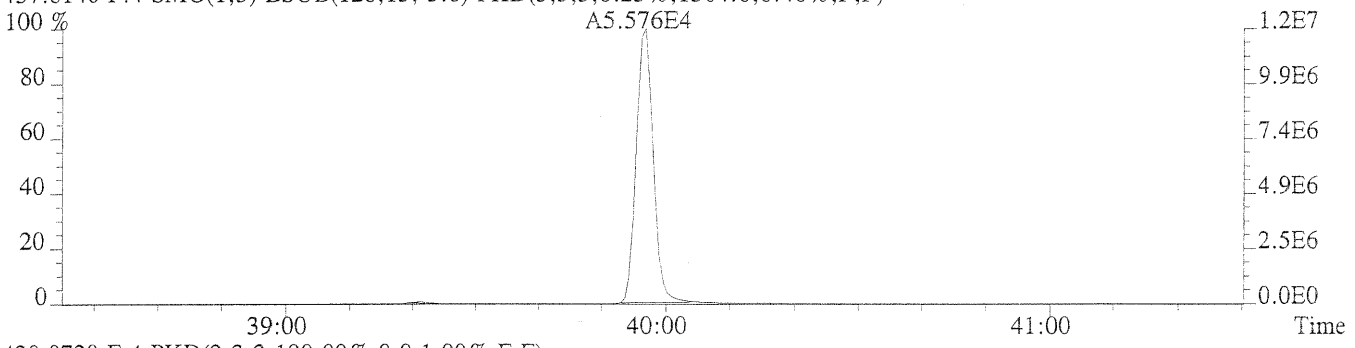
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1080.0,0.40%,F,F)



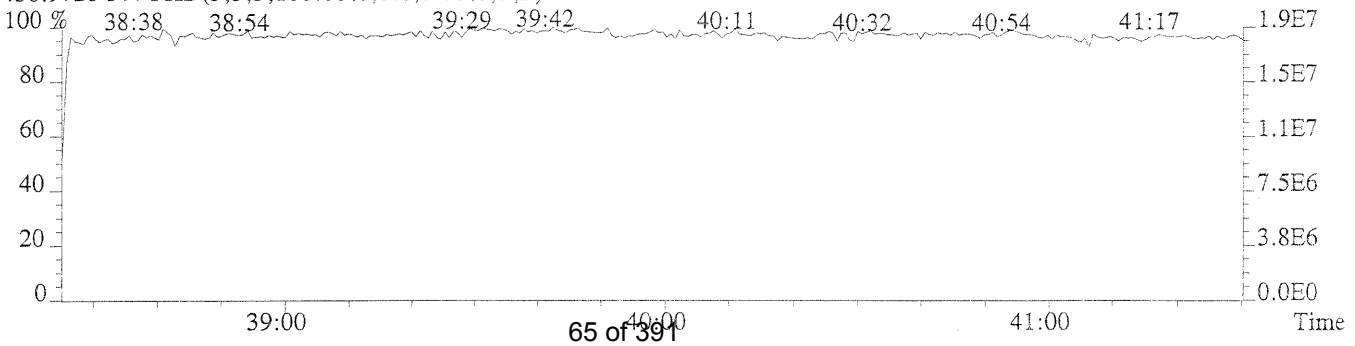
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1632.0,0.40%,F,F)



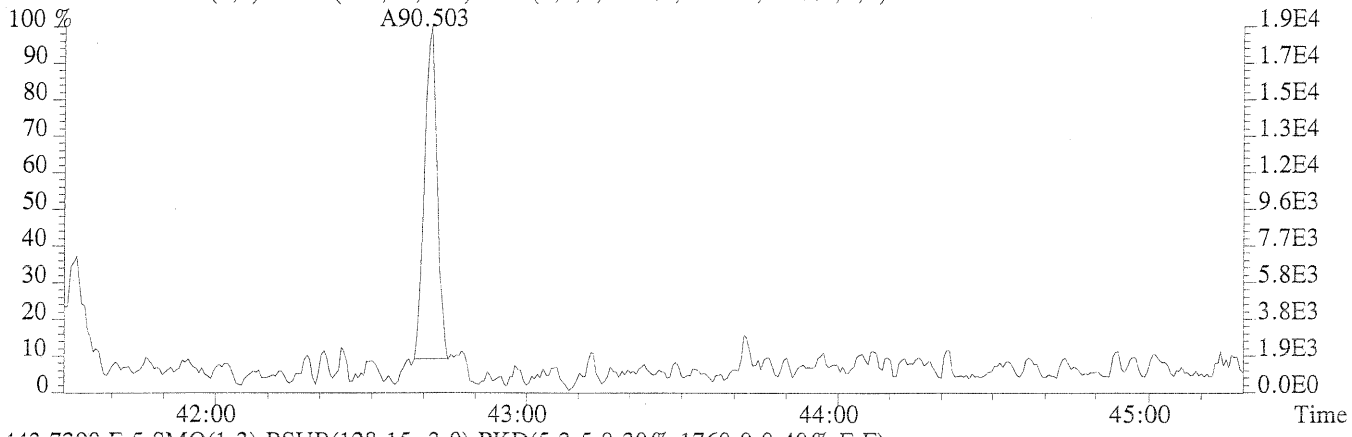
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1564.0,0.40%,F,F)



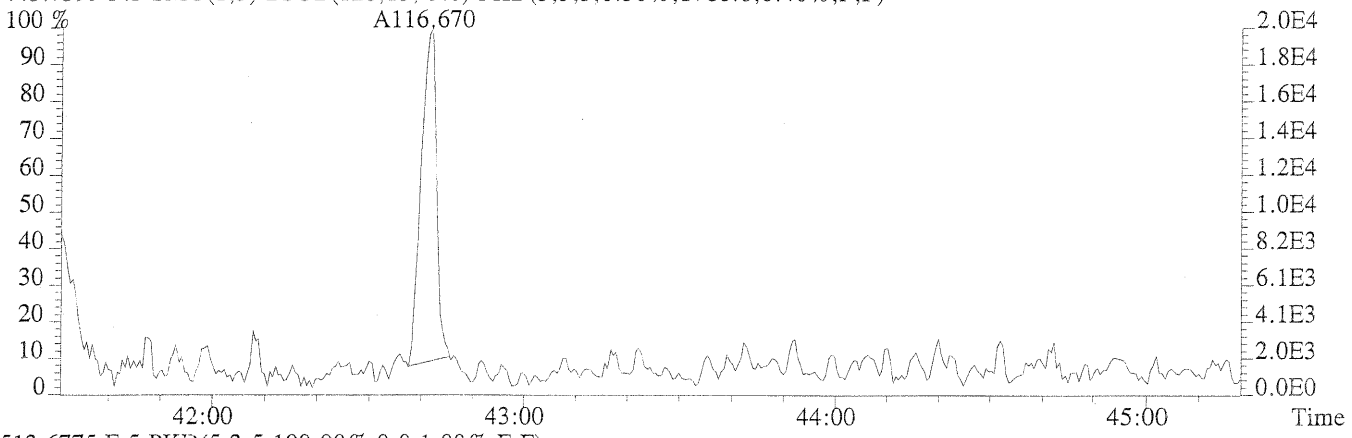
430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



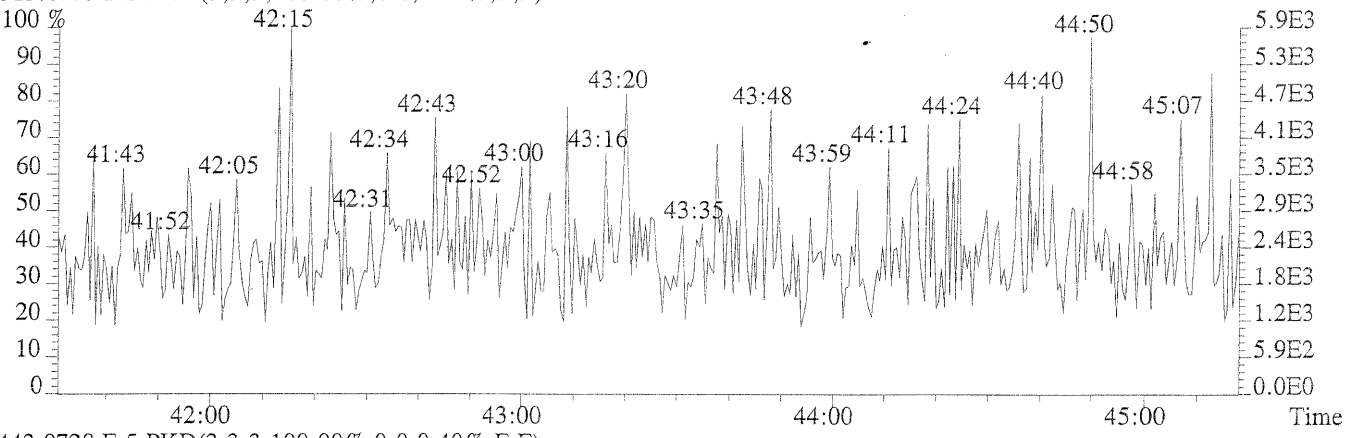
File:U212357 #1-419 Acq:30-OCT-2007 12:13:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:METHOD BLANK Exp:EQ0700356-01MB
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1532.0,0.40%,F,F)



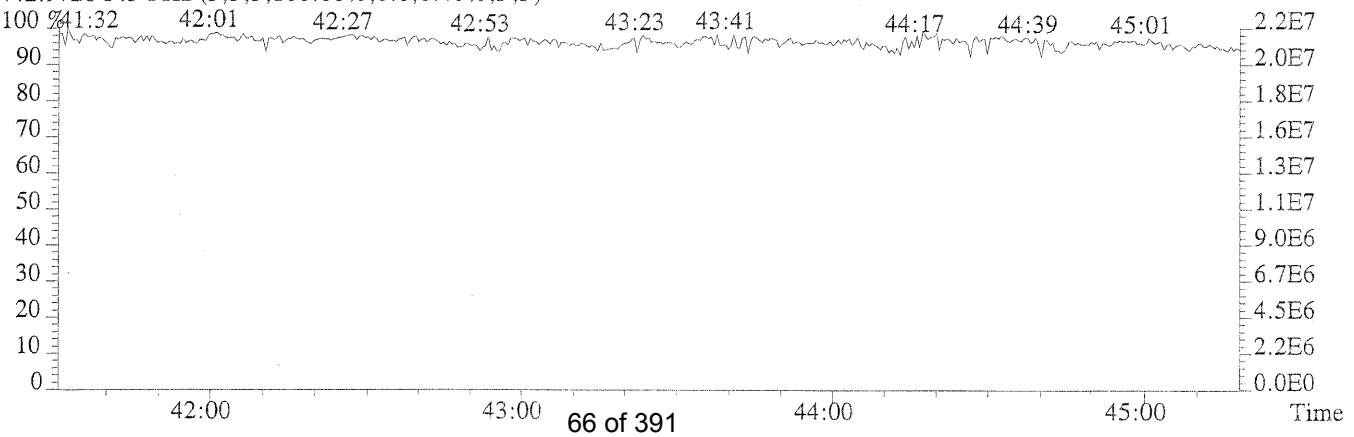
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1760.0,0.40%,F,F)



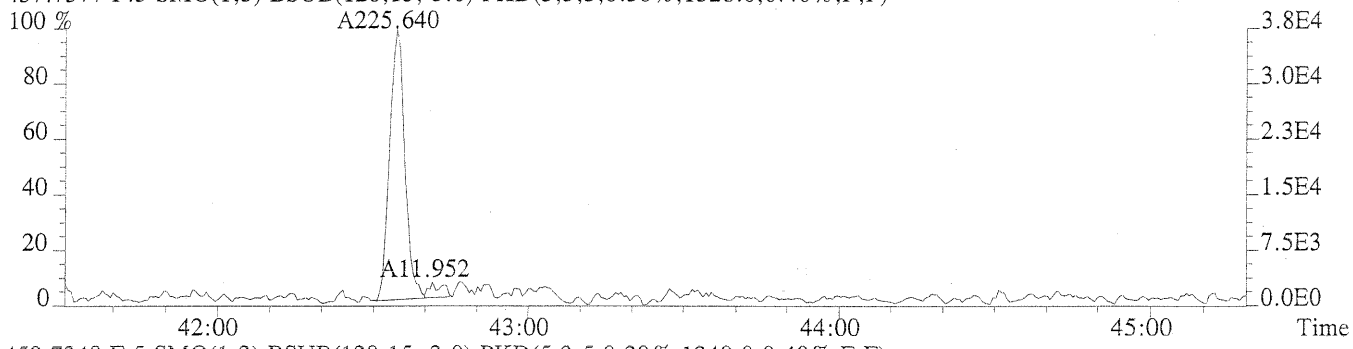
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



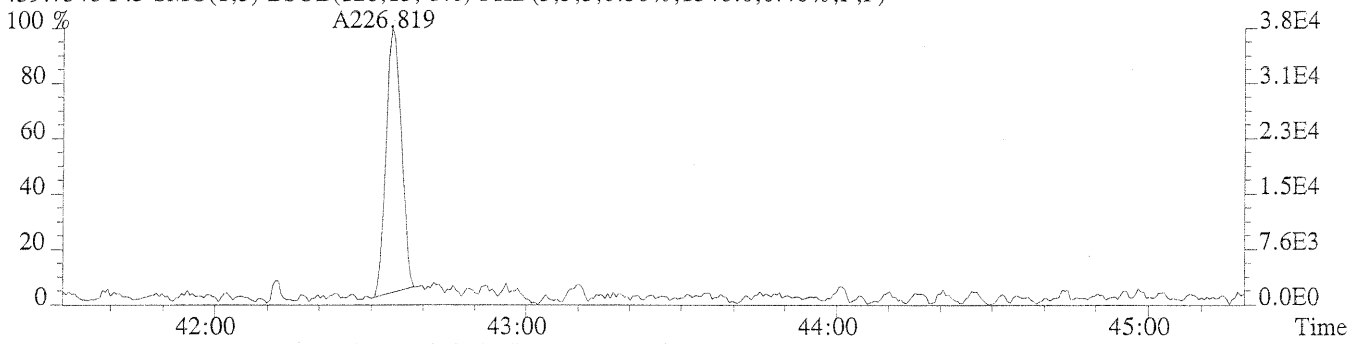
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



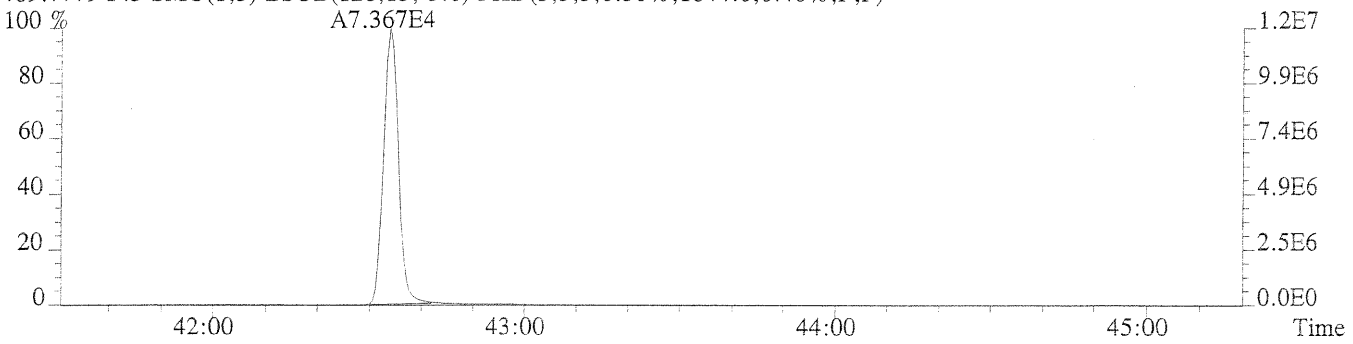
File:U212357 #1-419 Acq:30-OCT-2007 12:13:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:METHOD BLANK Exp:EQ0700356-01MB
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1328.0,0.40%,F,F)



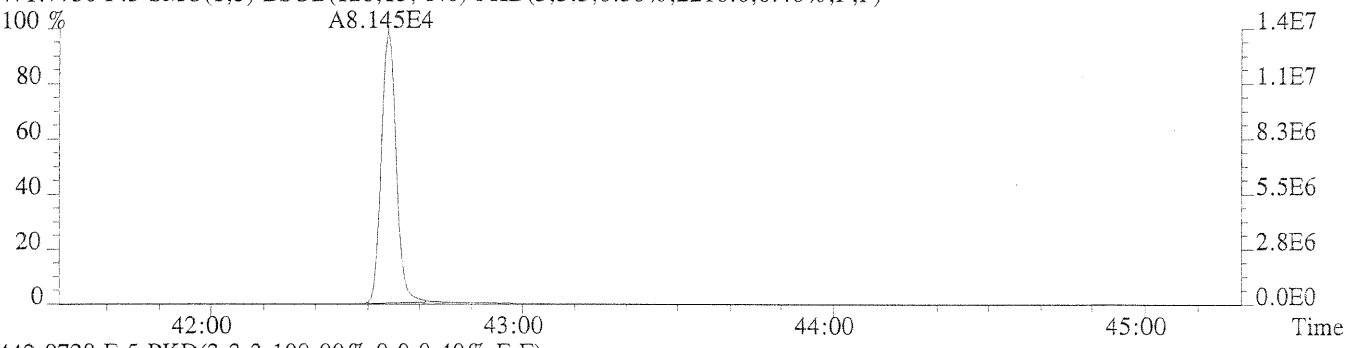
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1340.0,0.40%,F,F)



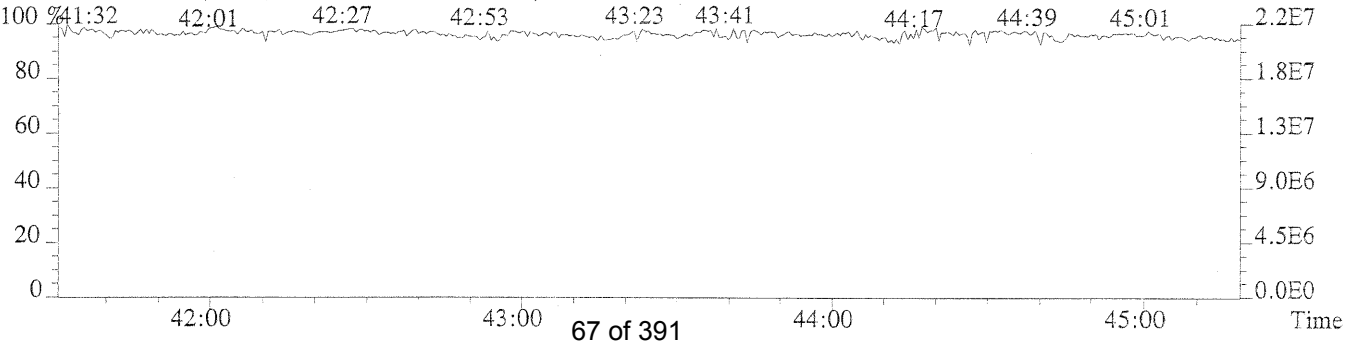
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1844.0,0.40%,F,F)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3.5,0.30%,2216.0,0.40%,F,F)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



Columbia Analytical Services, Inc.
Sample Response Summary

CLIENT ID.
METHOD BLANK

Run #7 Filename C15065 Samp: 1 Inj: 1 Acquired: 7-NOV-07 19:01:34
Processed: 8-NOV-07 11:11:40 LAB. ID: EQ0700371-001

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	NotFnd	*	*	*	no	no
2	Unk	1,2,3,7,8-PeCDF	NotFnd	*	*	*	no	no
3	Unk	2,3,4,7,8-PeCDF	NotFnd	*	*	*	no	no
4	Unk	1,2,3,4,7,8-HxCDF	NotFnd	*	*	*	no	no
5	Unk	1,2,3,6,7,8-HxCDF	NotFnd	*	*	*	no	no
6	Unk	2,3,4,6,7,8-HxCDF	NotFnd	*	*	*	no	no
7	Unk	1,2,3,7,8,9-HxCDF	NotFnd	*	*	*	no	no
8	Unk	1,2,3,4,6,7,8-HpCDF	NotFnd	*	*	*	no	no
9	Unk	1,2,3,4,7,8,9-HpCDF	NotFnd	*	*	*	no	no
10	Unk	OCDF	NotFnd	*	*	*	no	no
11	Unk	2,3,7,8-TCDD	NotFnd	*	*	*	no	no
12	Unk	1,2,3,7,8-PeCDD	NotFnd	*	*	*	no	no
13	Unk	1,2,3,4,7,8-HxCDD	NotFnd	*	*	*	no	no
14	Unk	1,2,3,6,7,8-HxCDD	NotFnd	*	*	*	no	no
15	Unk	1,2,3,7,8,9-HxCDD	NotFnd	*	*	*	no	no
16	Unk	1,2,3,4,6,7,8-HpCDD	NotFnd	*	*	*	no	no
17	Unk	OCDD	44:23	6.539e+05	7.595e+05	0.86	yes	no
18	IS	13C-2,3,7,8-TCDF	28:42	2.339e+07	3.012e+07	0.78	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	33:03	2.982e+07	1.935e+07	1.54	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	36:45	3.780e+07	7.600e+07	0.50	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	39:47	2.405e+07	5.465e+07	0.44	yes	no
22	IS	13C-2,3,7,8-TCDD	29:30	1.820e+07	2.346e+07	0.78	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	34:10	2.391e+07	1.525e+07	1.57	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	37:33	5.089e+07	4.130e+07	1.23	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	40:49	3.458e+07	3.317e+07	1.04	yes	no
26	IS	13C-OCDD	44:22	3.446e+07	4.093e+07	0.84	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	29:18	2.513e+07	3.179e+07	0.79	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:52	2.202e+07	1.789e+07	1.23	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	29:31	3.660e+07				
					SUM AREA			
30	Tot	Total Tetra-Furans	NotFnd		*	*	no	
31	Tot	Total Tetra-Dioxins	NotFnd		*	*	no	
32	Tot	Total Penta-Furans	NotFnd		*	*	no	
33	Tot	Total Penta-Dioxins	NotFnd		*	*	no	
34	Tot	Total Hexa-Furans	NotFnd		*	*	no	
35	Tot	Total Hexa-Dioxins	NotFnd		*	*	no	
36	Tot	Total Hepta-Furans	NotFnd		*	*	no	
37	Tot	Total Hepta-Dioxins	NotFnd		*	*	no	

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Columbia Analytical Services,Inc. CLIENT ID.
Signal/Noise Height Ratio Summary METHOD BLANK

Run #7 Filename C15065 Samp: 1 Inj: 1 Acquired: 7-NOV-07 19:01:34

Processed: 8-NOV-07 11:11:40 LAB. ID: EQ0700371-001

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	*	2.21e+03	*	*	3.60e+03	*
2	1,2,3,7,8-PeCDF	*	2.31e+03	*	*	3.55e+03	*
3	2,3,4,7,8-PeCDF	*	2.31e+03	*	*	3.55e+03	*
4	1,2,3,4,7,8-HxCDF	*	3.29e+03	*	*	3.57e+03	*
5	1,2,3,6,7,8-HxCDF	*	3.29e+03	*	*	3.57e+03	*
6	2,3,4,6,7,8-HxCDF	*	3.29e+03	*	*	3.57e+03	*
7	1,2,3,7,8,9-HxCDF	*	3.29e+03	*	*	3.57e+03	*
8	1,2,3,4,6,7,8-HpCDF	*	5.20e+03	*	*	2.30e+03	*
9	1,2,3,4,7,8,9-HpCDF	*	5.20e+03	*	*	2.30e+03	*
10	OCDF	*	3.04e+03	*	*	3.86e+03	*
11	2,3,7,8-TCDD	*	3.17e+03	*	*	2.21e+03	*
12	1,2,3,7,8-PeCDD	*	3.32e+03	*	*	2.31e+03	*
13	1,2,3,4,7,8-HxCDD	*	2.62e+03	*	*	3.76e+03	*
14	1,2,3,6,7,8-HxCDD	*	2.62e+03	*	*	3.76e+03	*
15	1,2,3,7,8,9-HxCDD	*	2.62e+03	*	*	3.76e+03	*
16	1,2,3,4,6,7,8-HpCDD	*	2.48e+03	*	*	3.22e+03	*
17	OCDD	1.01e+05	2.67e+03	3.8e+01	1.27e+05	1.69e+03	7.5e+01
18	13C-2,3,7,8-TCDF	5.26e+06	6.54e+03	8.0e+02	6.67e+06	5.09e+03	1.3e+03
19	13C-1,2,3,7,8-PeCDF	7.80e+06	2.16e+03	3.6e+03	5.09e+06	2.16e+03	2.4e+03
20	13C-1,2,3,4,7,8-HxCDF	9.77e+06	4.52e+03	2.2e+03	2.00e+07	3.25e+03	6.2e+03
21	13C-1,2,3,4,6,7,8-HpCDF	5.45e+06	4.66e+03	1.2e+03	1.25e+07	1.05e+04	1.2e+03
22	13C-2,3,7,8-TCDD	4.45e+06	6.06e+03	7.3e+02	5.63e+06	3.76e+03	1.5e+03
23	13C-1,2,3,7,8-PeCDD	6.08e+06	2.81e+03	2.2e+03	3.95e+06	2.98e+03	1.3e+03
24	13C-1,2,3,6,7,8-HxCDD	1.31e+07	3.23e+03	4.0e+03	1.07e+07	3.57e+03	3.0e+03
25	13C-1,2,3,4,6,7,8-HpCDD	6.90e+06	3.05e+03	2.3e+03	6.66e+06	2.52e+03	2.6e+03
26	13C-OCDD	5.64e+06	3.29e+03	1.7e+03	6.57e+06	2.52e+03	2.6e+03
27	13C-1,2,3,4-TCDD	6.09e+06	6.06e+03	1.0e+03	7.71e+06	3.76e+03	2.1e+03
28	13C-1,2,3,7,8,9-HxCDD	5.15e+06	3.23e+03	1.6e+03	4.11e+06	3.57e+03	1.2e+03
29	37Cl-2,3,7,8-TCDD	8.65e+06	3.35e+03	2.6e+03			

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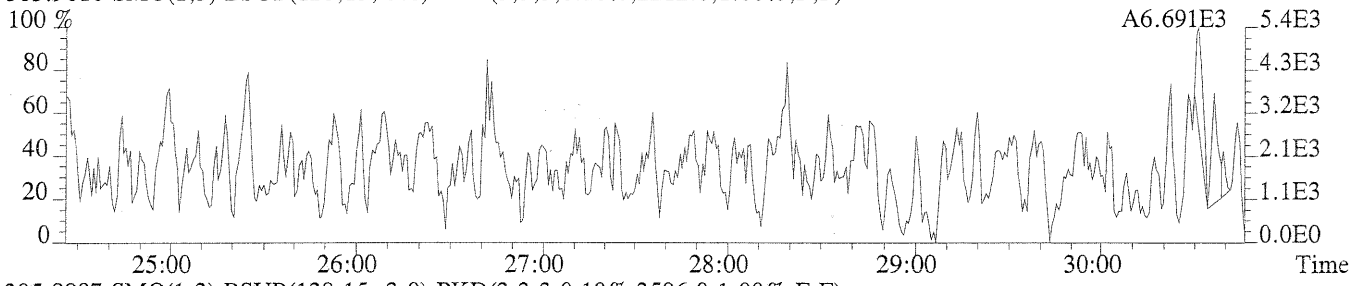
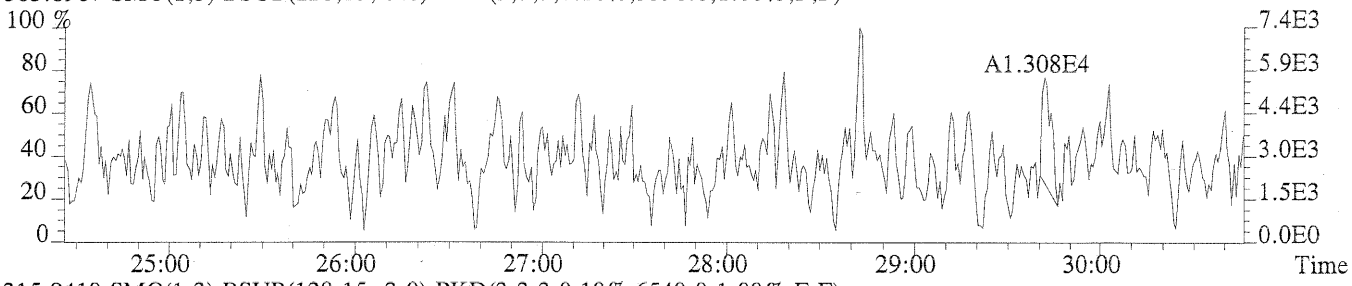
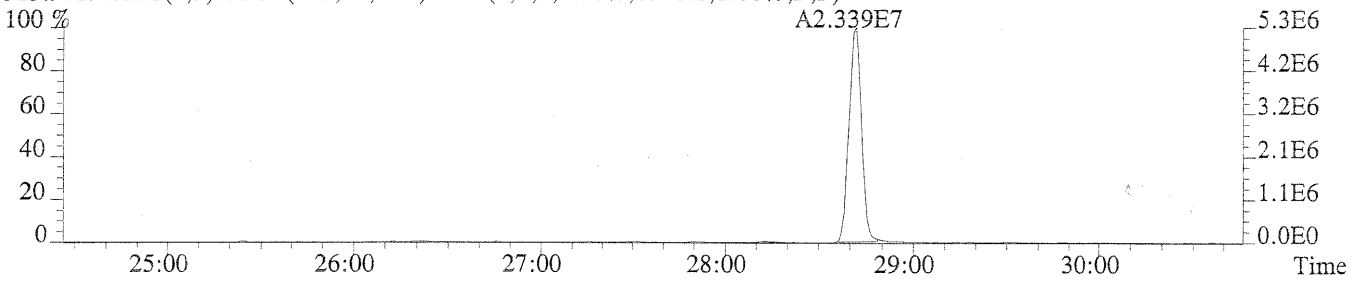
File:C15065 #1-520 Acq: 7-NOV-2007 19:01:34 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:EQ0700371-01MB METHOD BLA Exp:8290CA
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2212.0,1.00%,F,F)



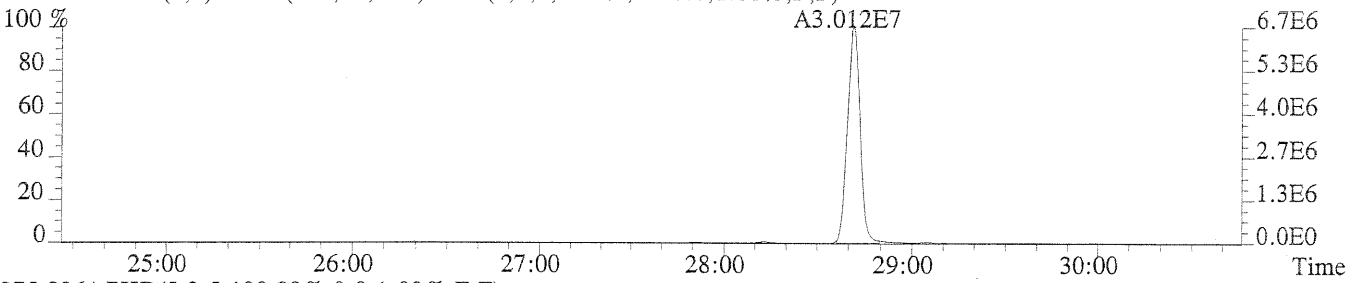
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3596.0,1.00%,F,F)



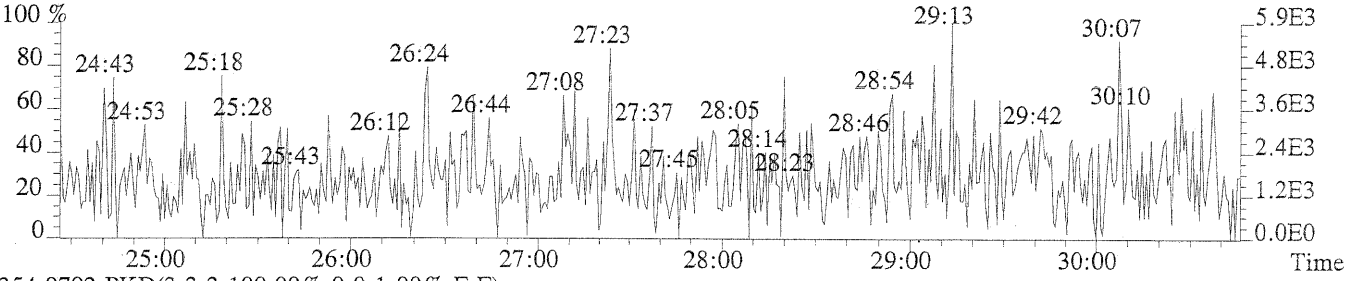
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6540.0,1.00%,F,F)



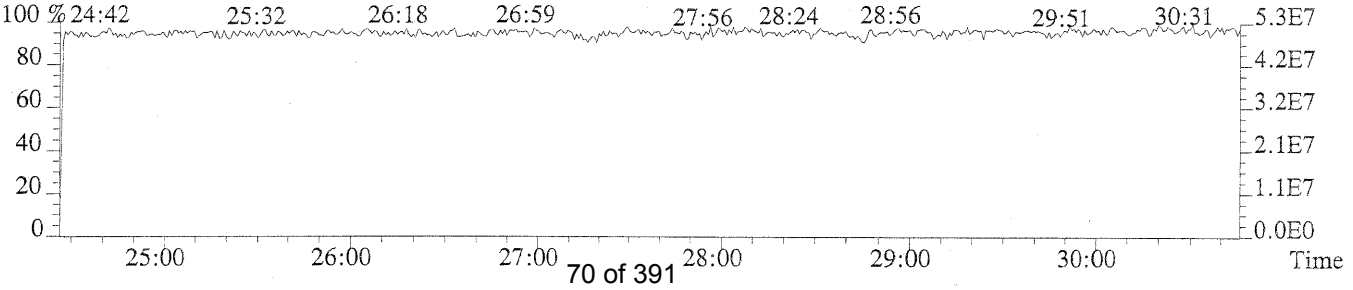
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5088.0,1.00%,F,F)



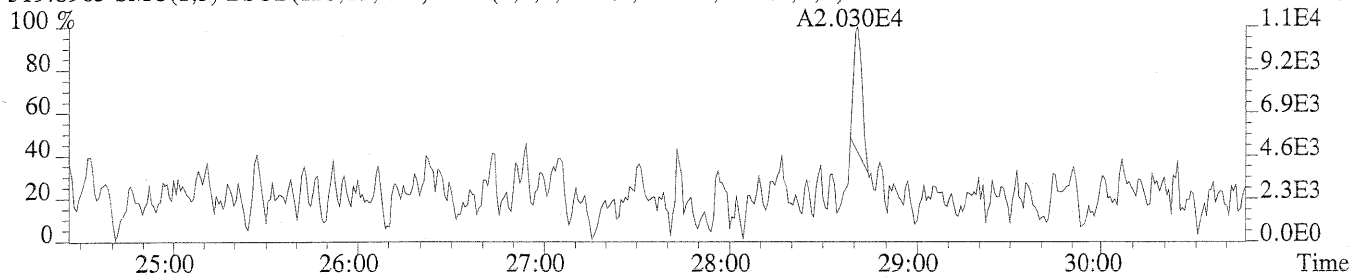
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



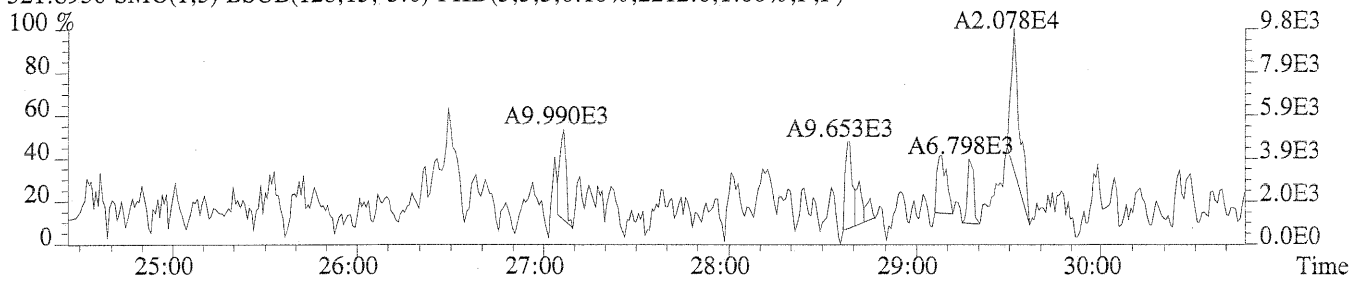
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



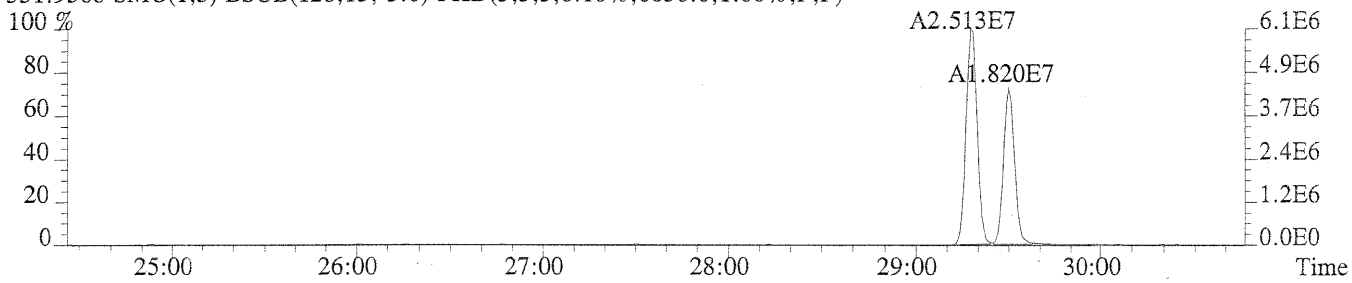
File:C15065 #1-520 Acq: 7-NOV-2007 19:01:34 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:EQ0700371-01MB METHOD BLA Exp:8290CA
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3168.0,1.00%,F,F)



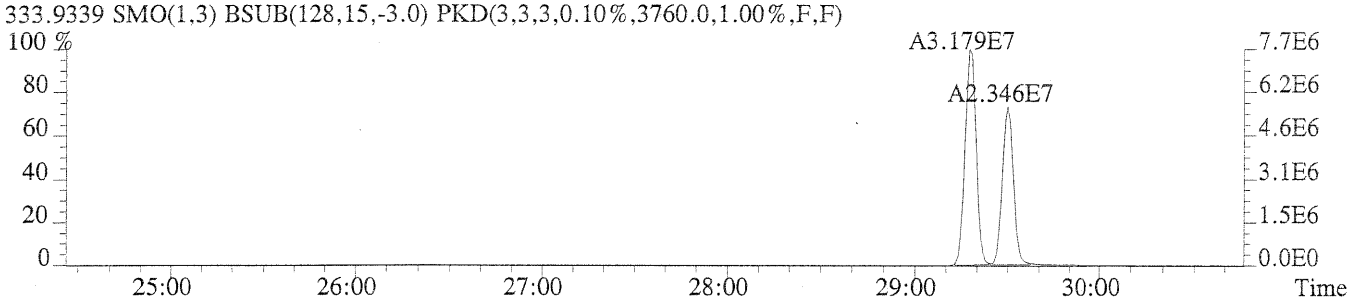
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2212.0,1.00%,F,F)



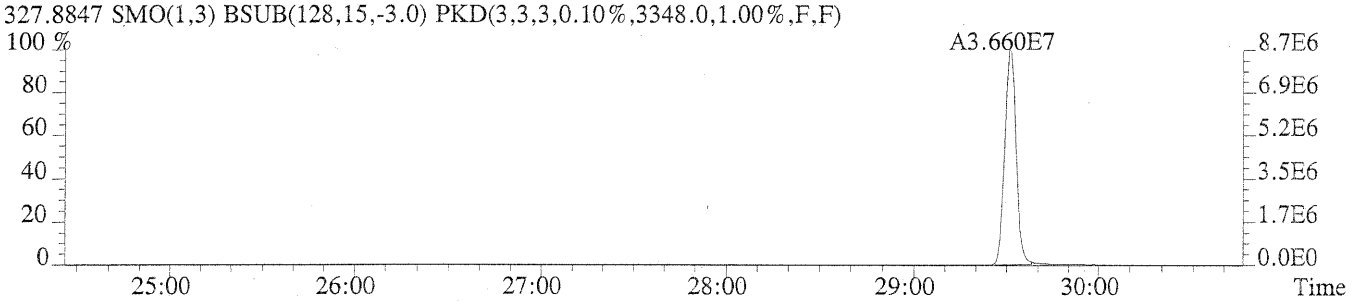
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6056.0,1.00%,F,F)



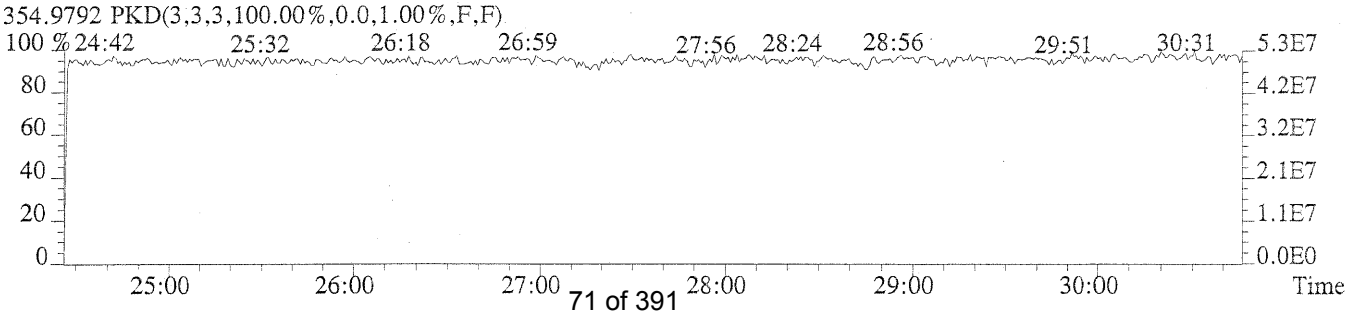
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3760.0,1.00%,F,F)



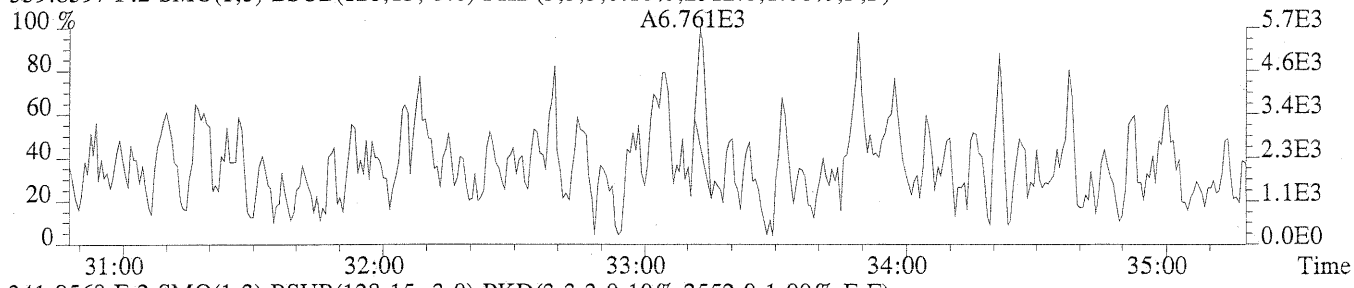
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3348.0,1.00%,F,F)



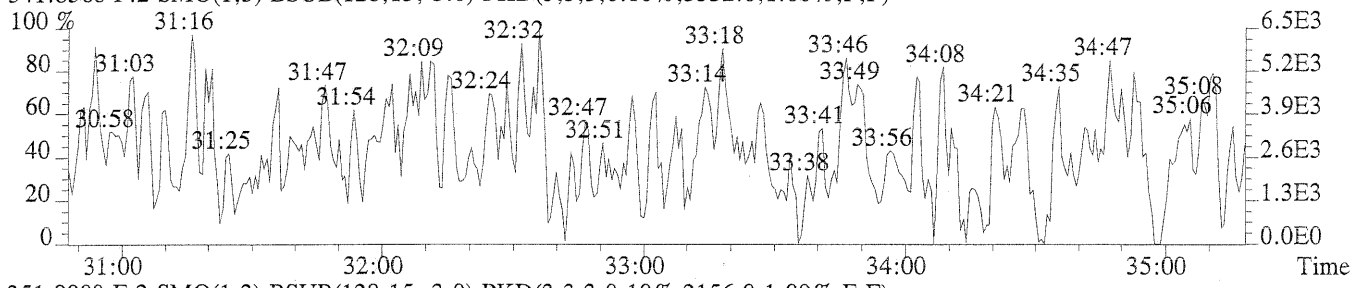
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



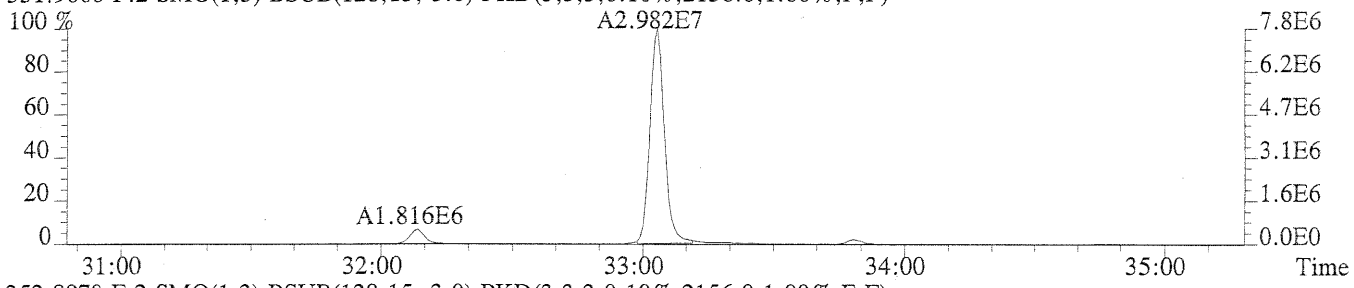
File:C15065 #1-404 Acq: 7-NOV-2007 19:01:34 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:EQ0700371-01MB METHOD BLA Exp:8290CA
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2312.0,1.00%,F,F)



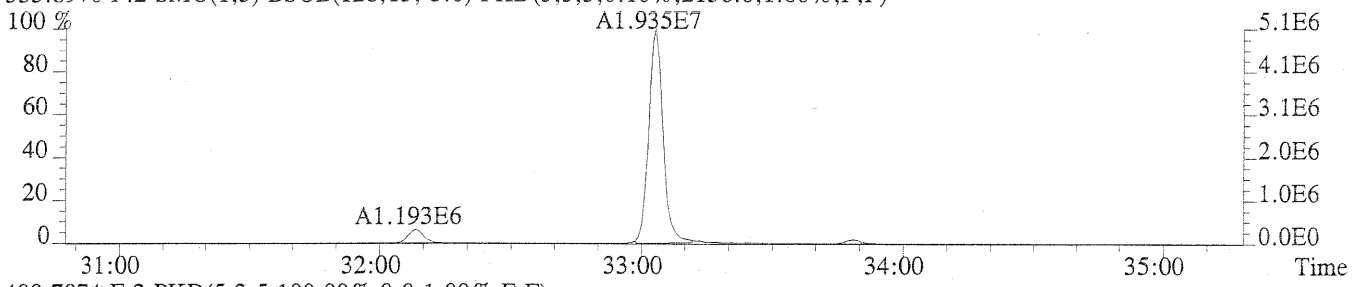
341.8568 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3552.0,1.00%,F,F)



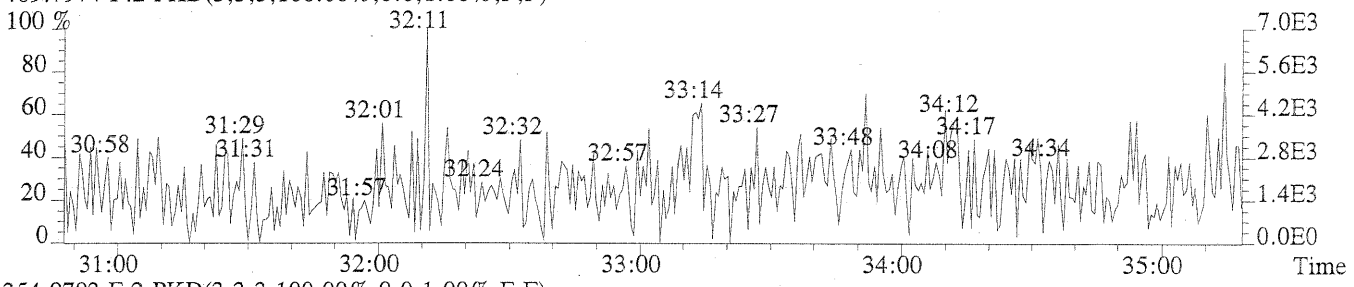
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2156.0,1.00%,F,F)



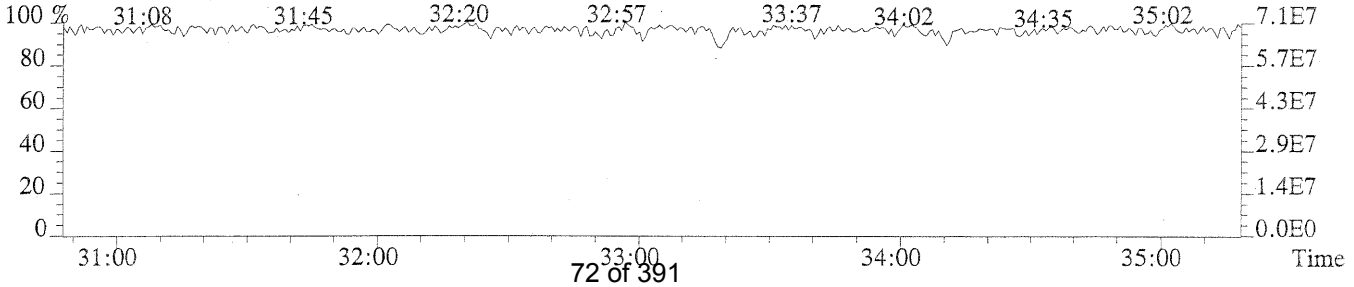
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2156.0,1.00%,F,F)



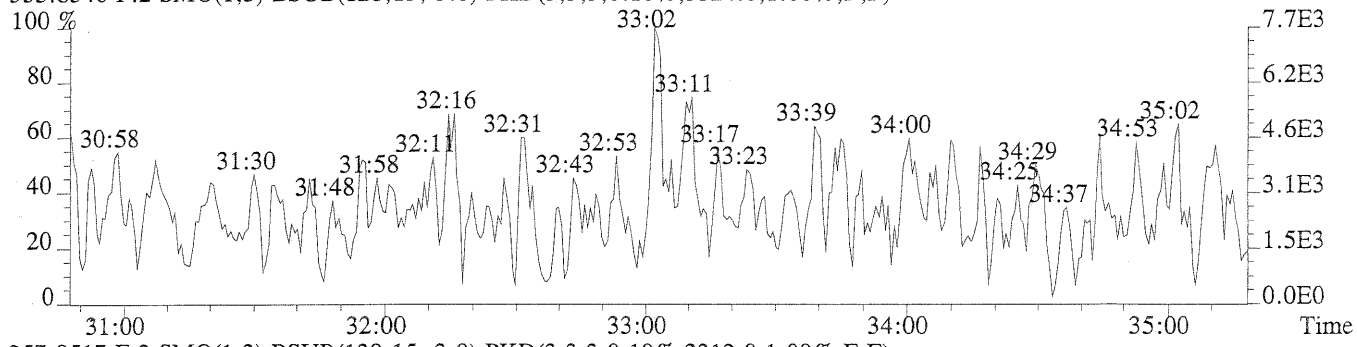
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



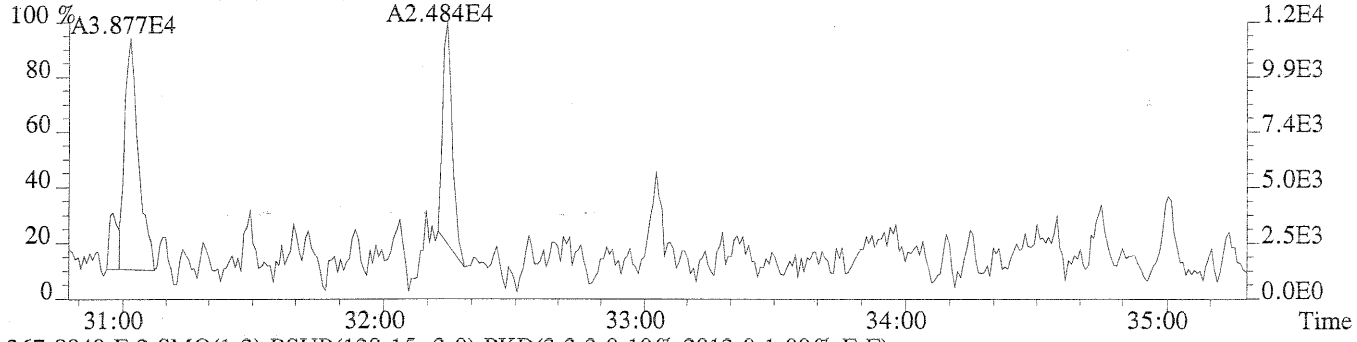
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



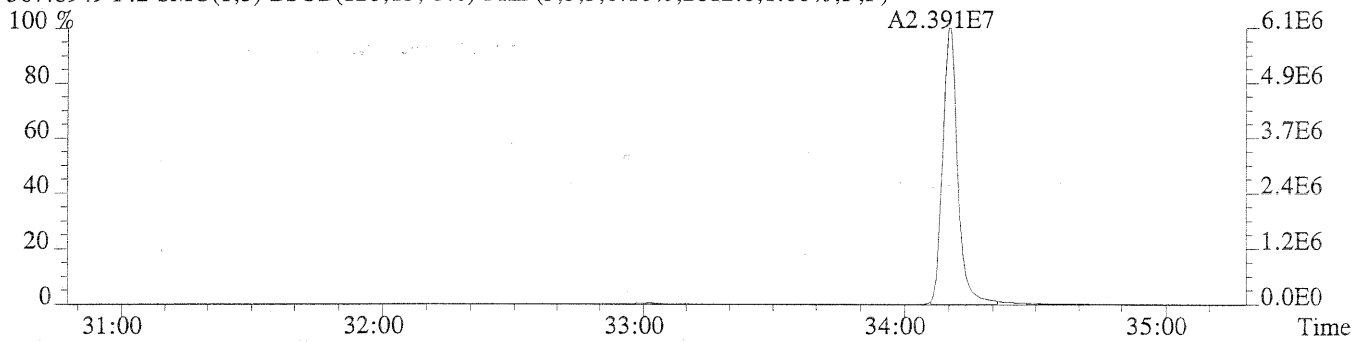
File:C15065 #1-404 Acq: 7-NOV-2007 19:01:34 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:EQ0700371-01MB METHOD BLA Exp:8290CA
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3324.0,1.00%,F,F)



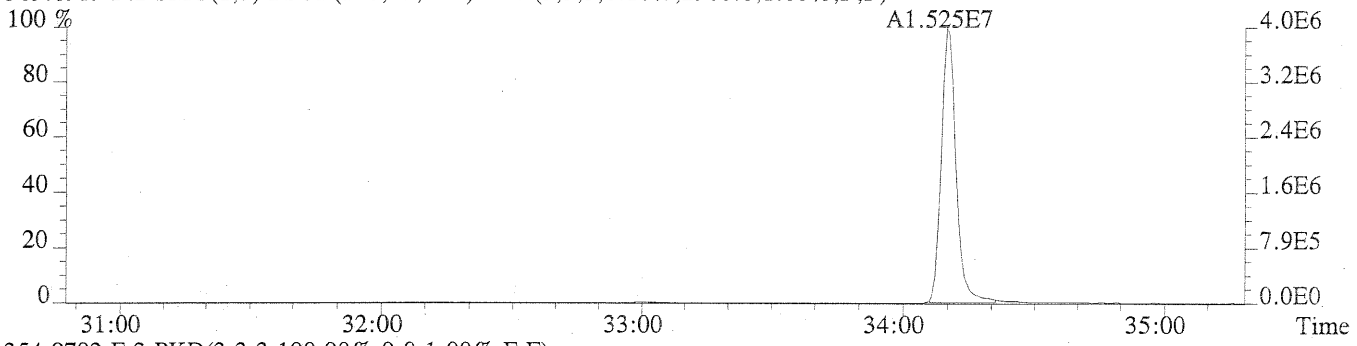
357.8517 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2312.0,1.00%,F,F)



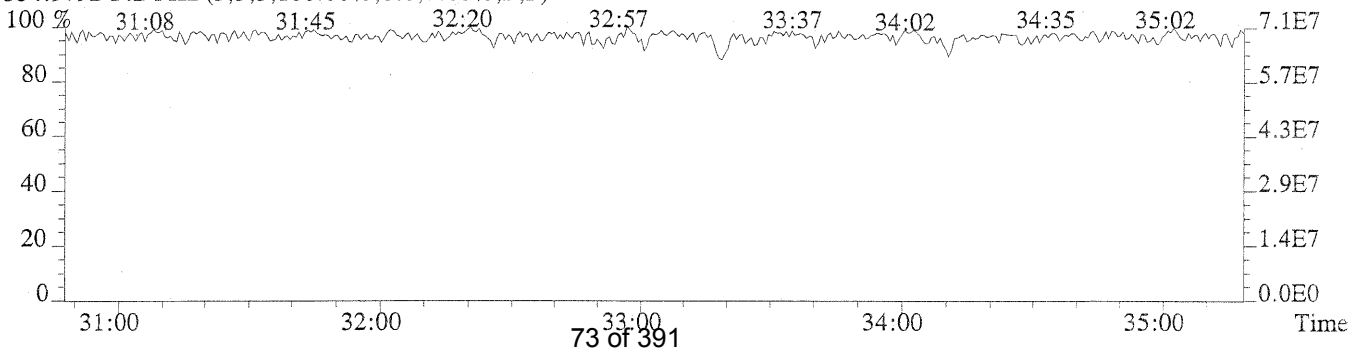
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2812.0,1.00%,F,F)



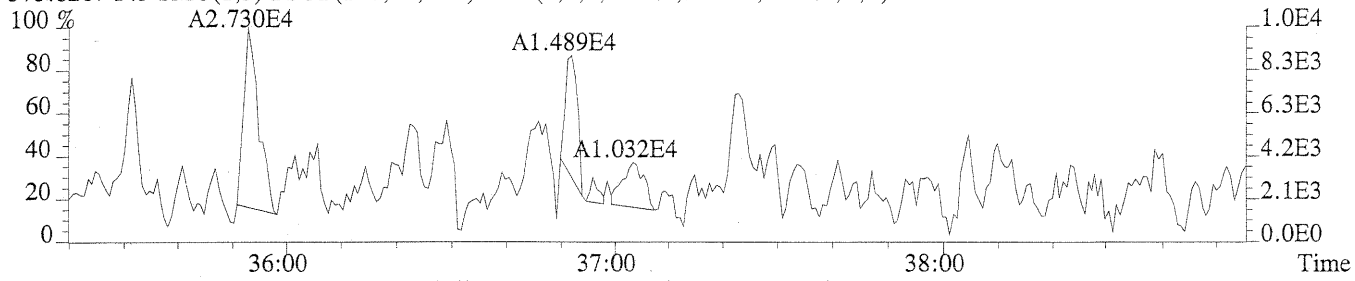
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2980.0,1.00%,F,F)



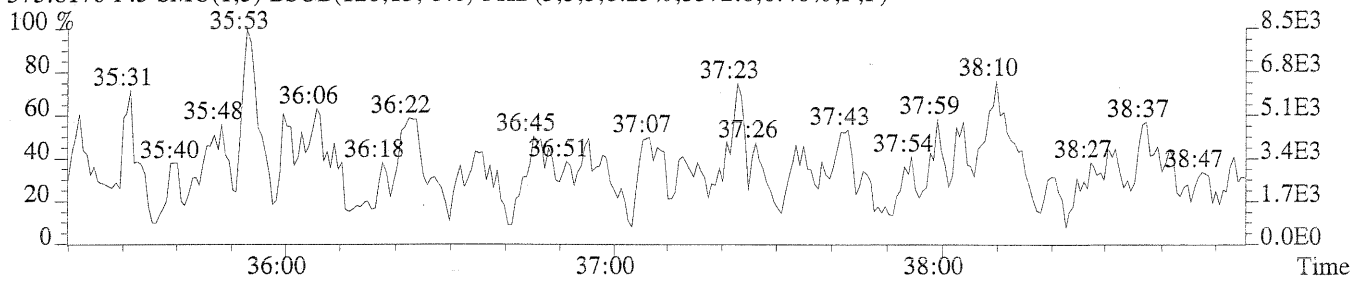
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



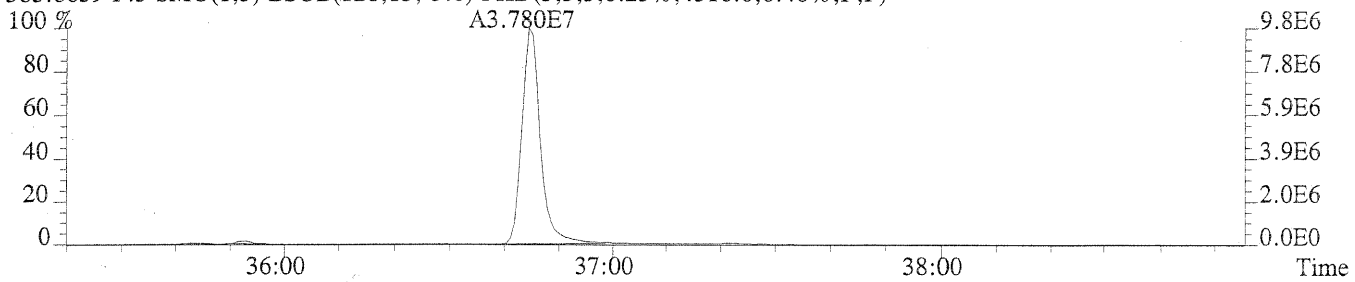
File:C15065 #1-322 Acq: 7-NOV-2007 19:01:34 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:EQ0700371-01MB METHOD BLA Exp:8290CA
373.8207 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3288.0,0.40%,F,F)



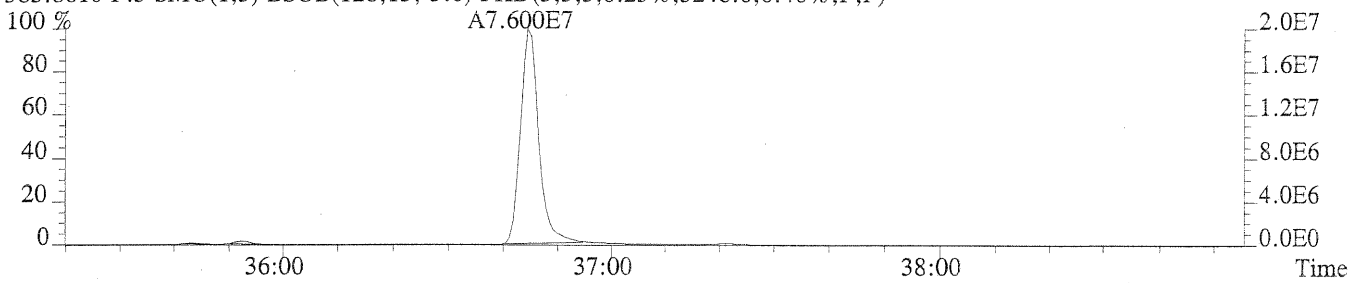
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3572.0,0.40%,F,F)



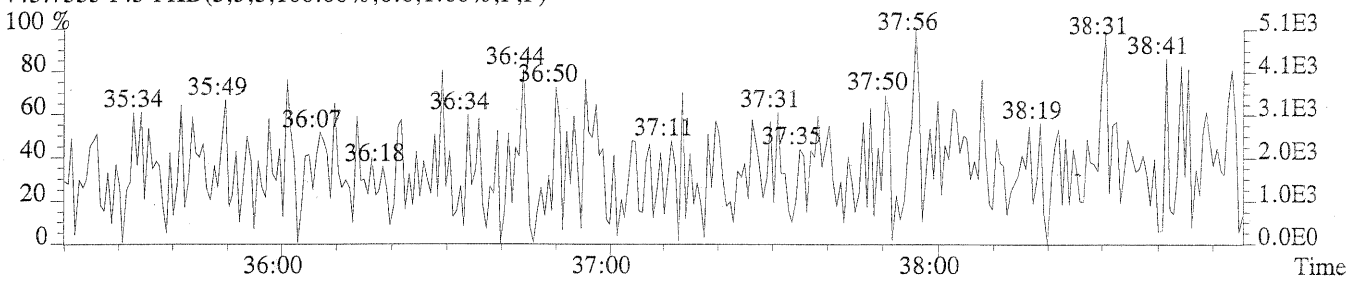
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4516.0,0.40%,F,F)



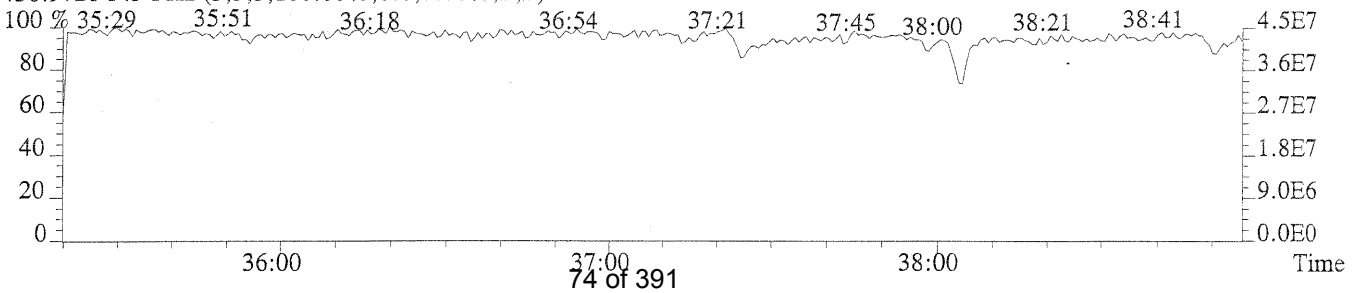
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3248.0,0.40%,F,F)



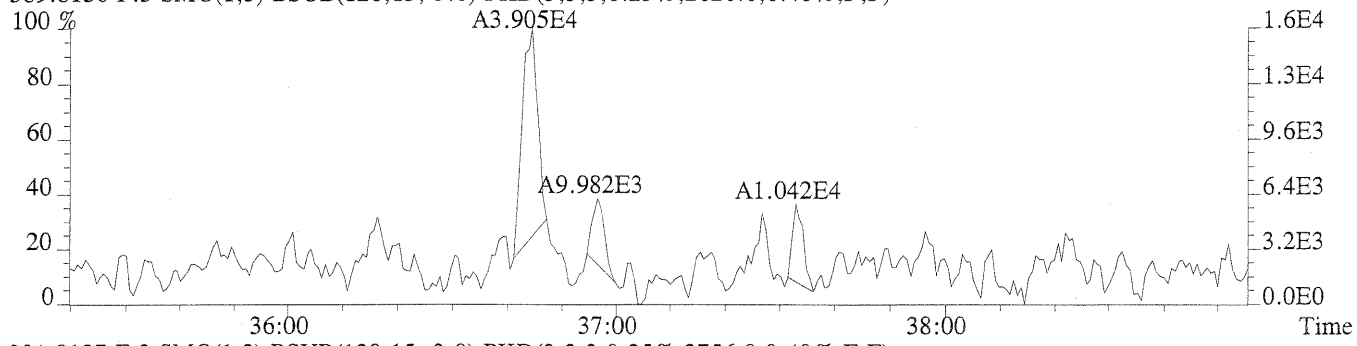
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



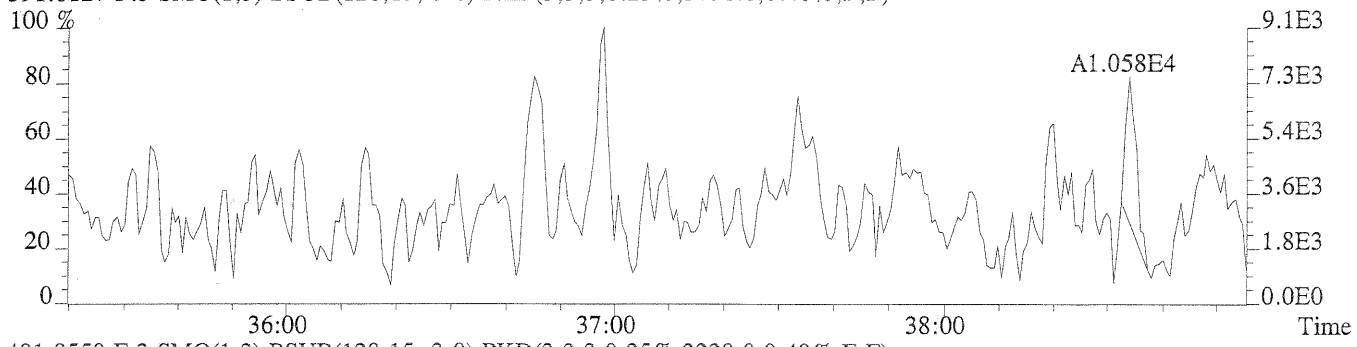
430.9728 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



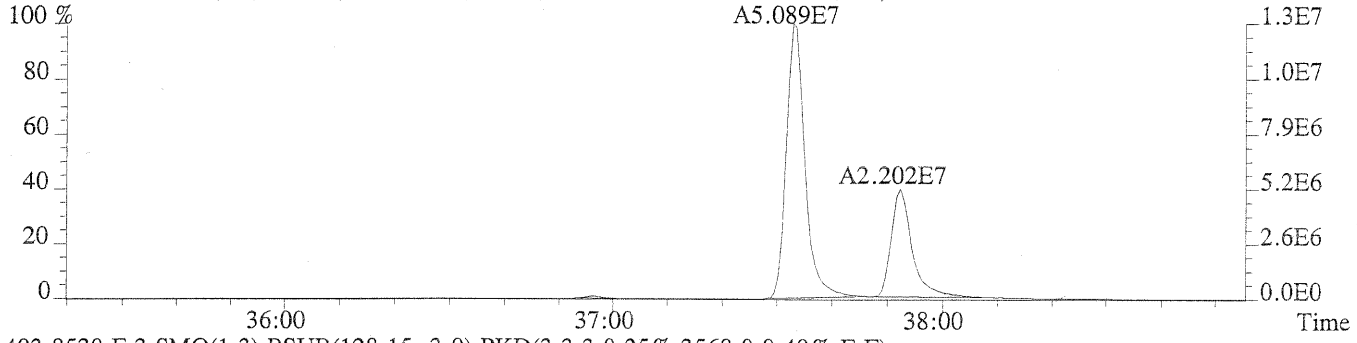
File:C15065 #1-322 Acq: 7-NOV-2007 19:01:34 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:EQ0700371-01MB METHOD BLA Exp:8290CA
389.8156 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2620.0,0.40%,F,F)



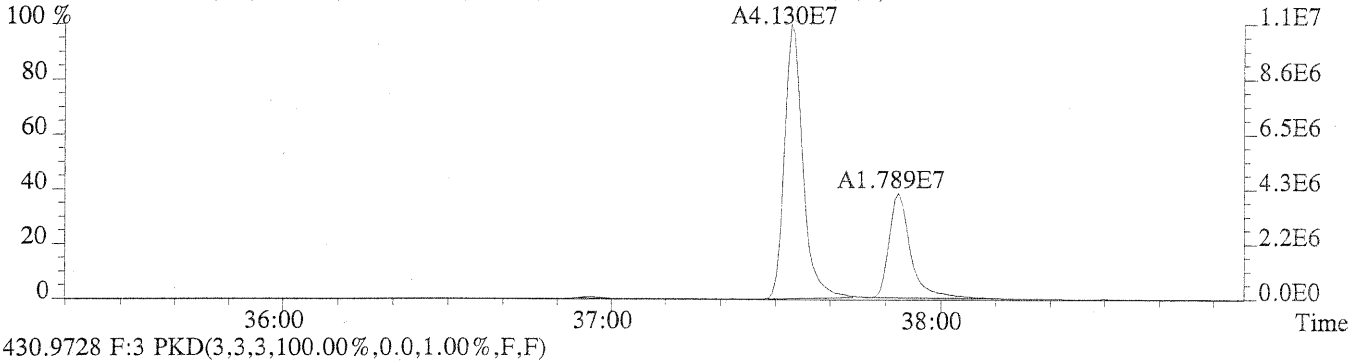
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3756.0,0.40%,F,F)



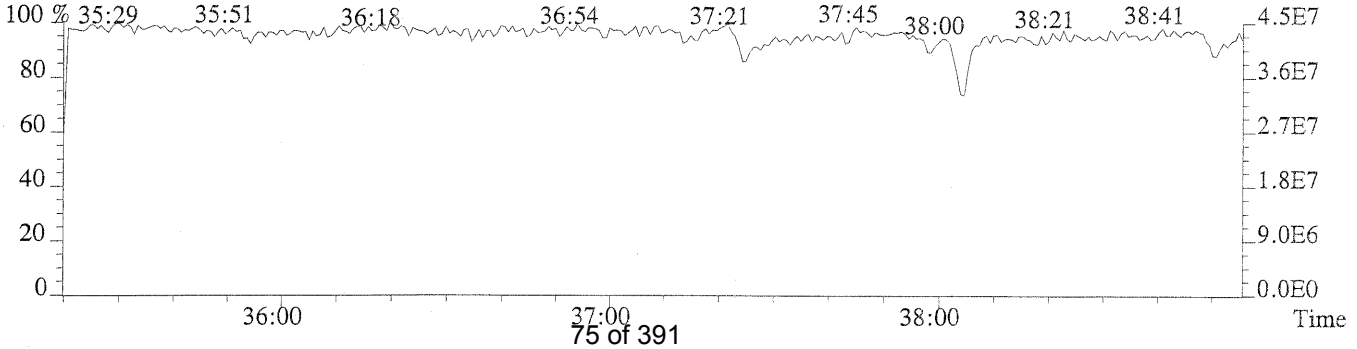
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3228.0,0.40%,F,F)



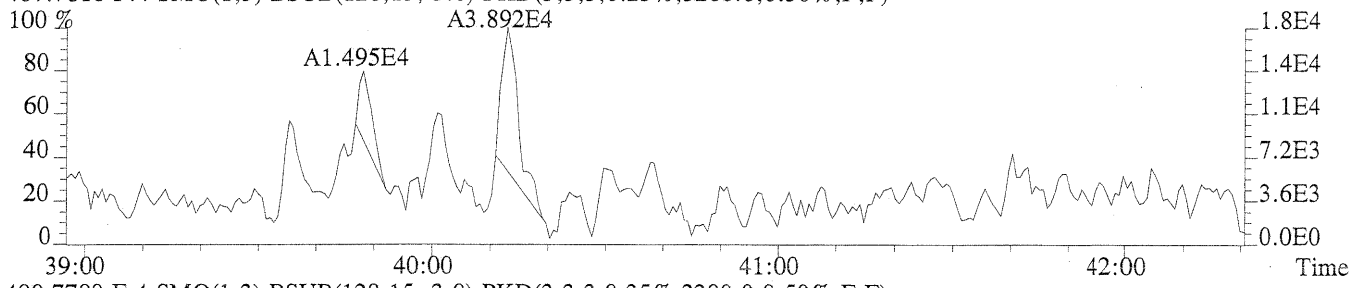
403.8530 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3568.0,0.40%,F,F)



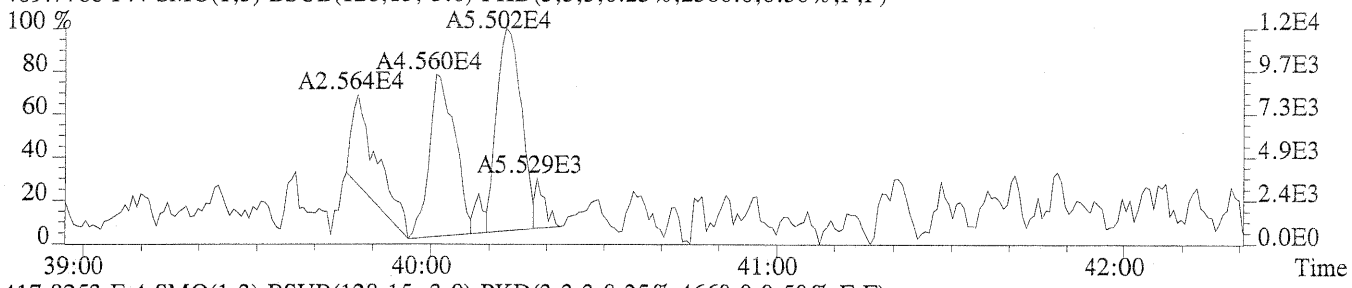
430.9728 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



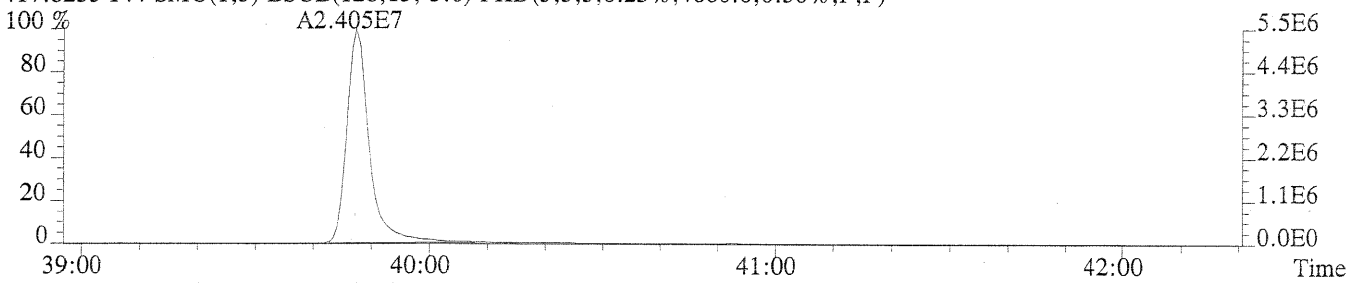
File:C15065 #1-304 Acq: 7-NOV-2007 19:01:34 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:EQ0700371-01MB METHOD BLA Exp:8290CA
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5200.0,0.50%,F,F)



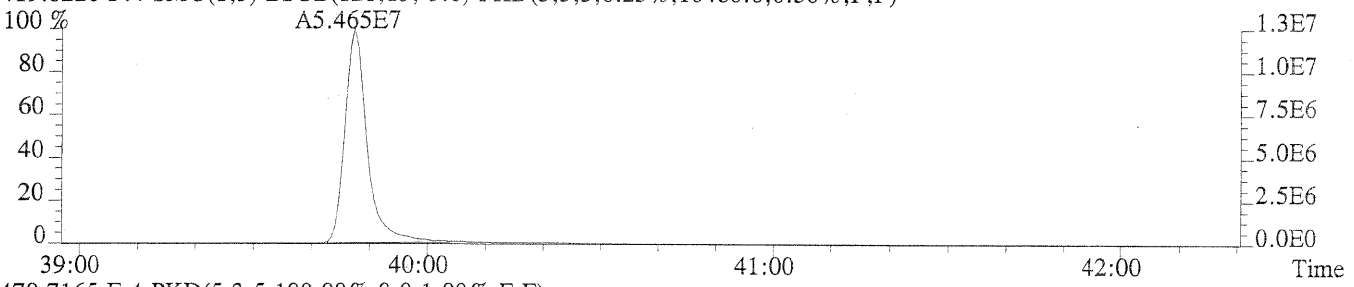
409.7788 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2300.0,0.50%,F,F)



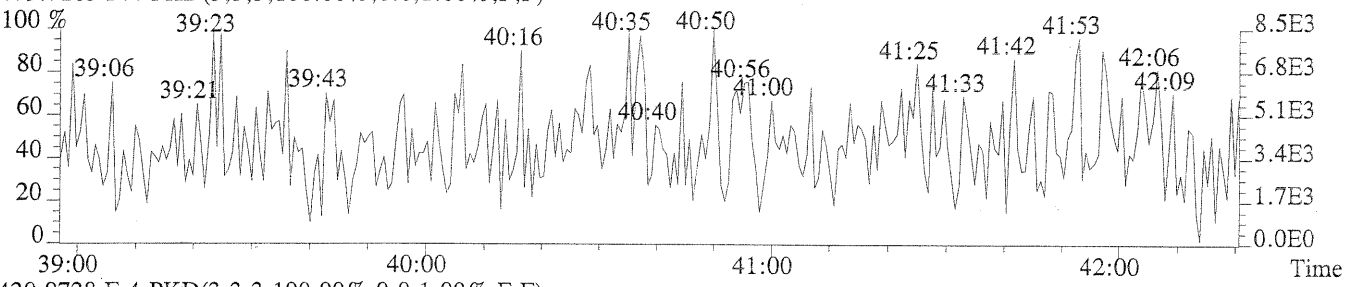
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4660.0,0.50%,F,F)



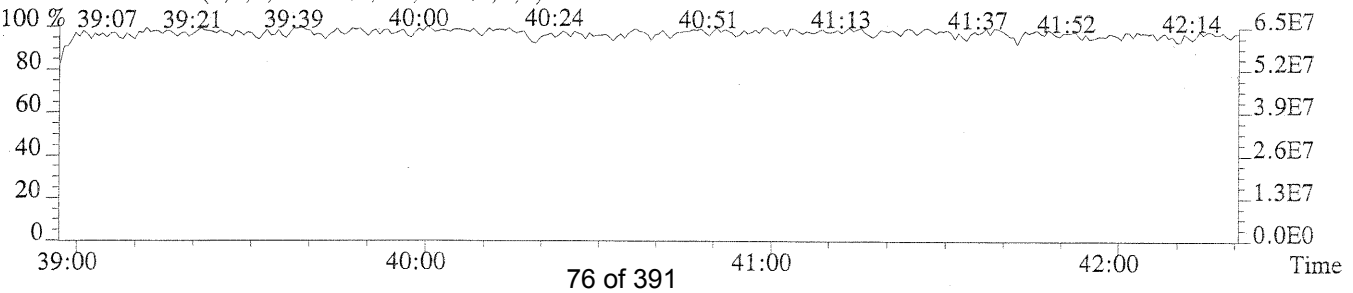
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,10480.0,0.50%,F,F)



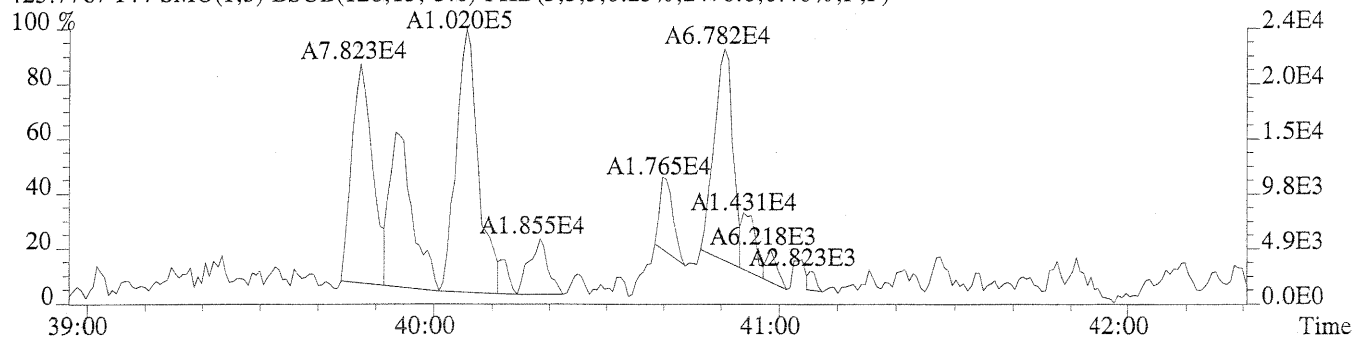
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



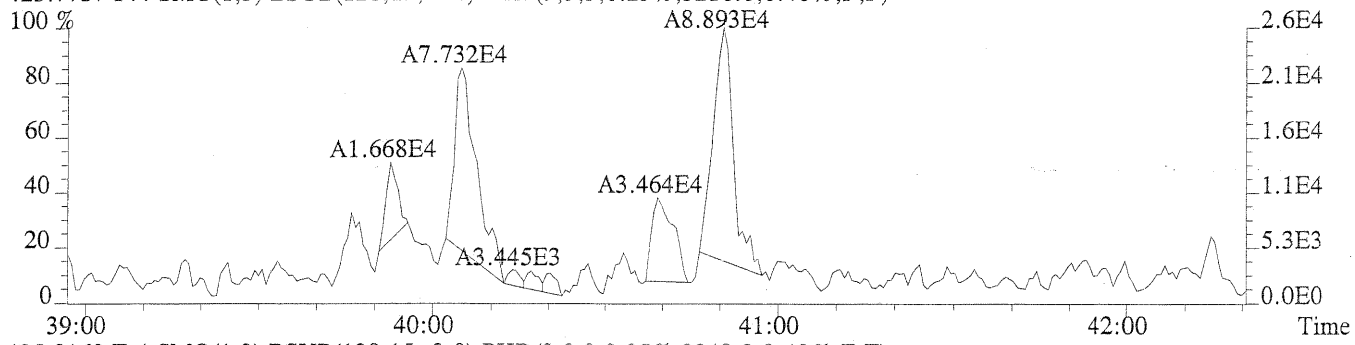
430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



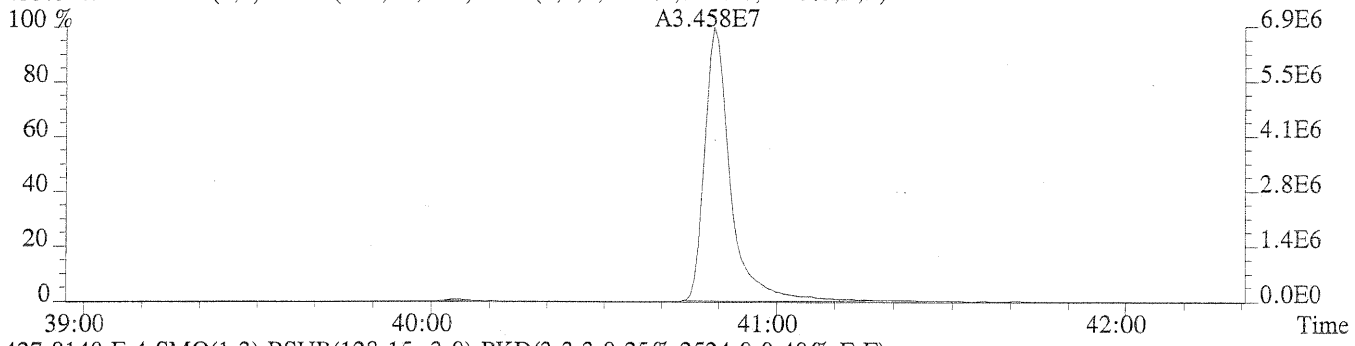
File:C15065 #1-304 Acq: 7-NOV-2007 19:01:34 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:EQ0700371-01MB METHOD BLA Exp:8290CA
423.7767 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2476.0,0.40%,F,F)



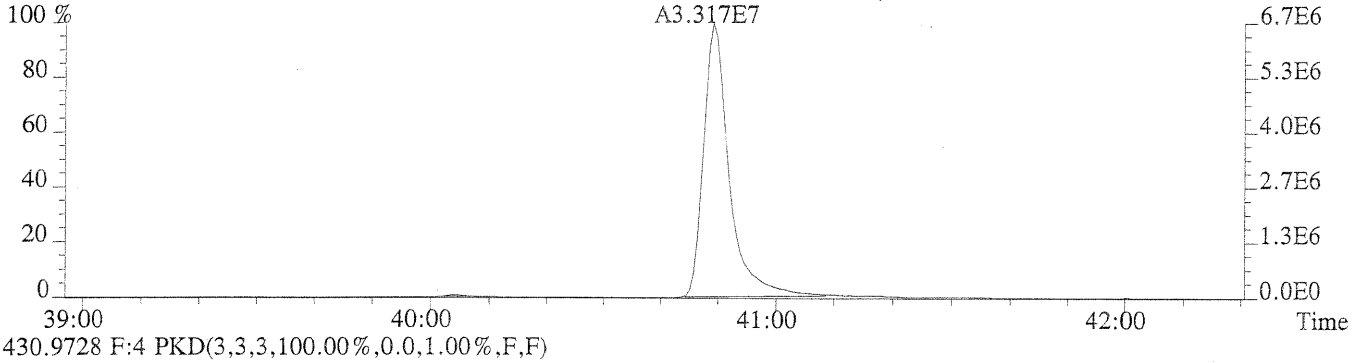
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3216.0,0.40%,F,F)



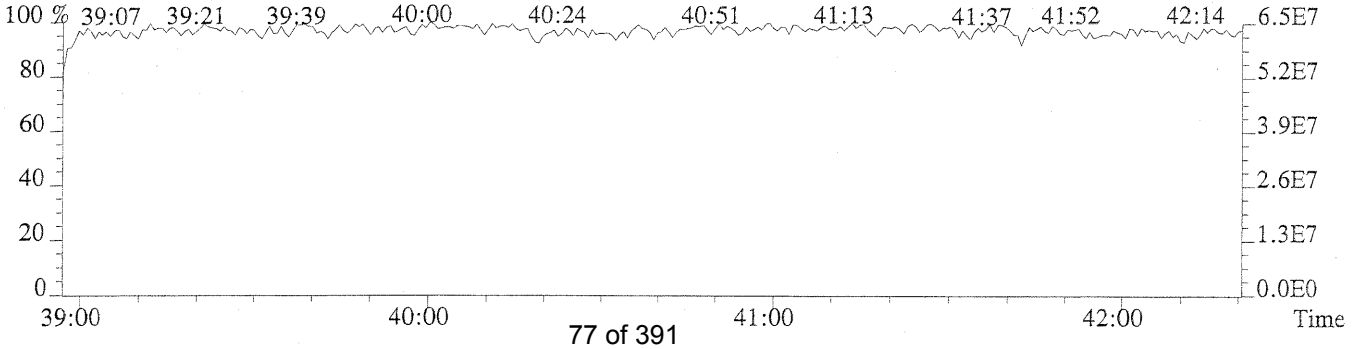
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3048.0,0.40%,F,F)



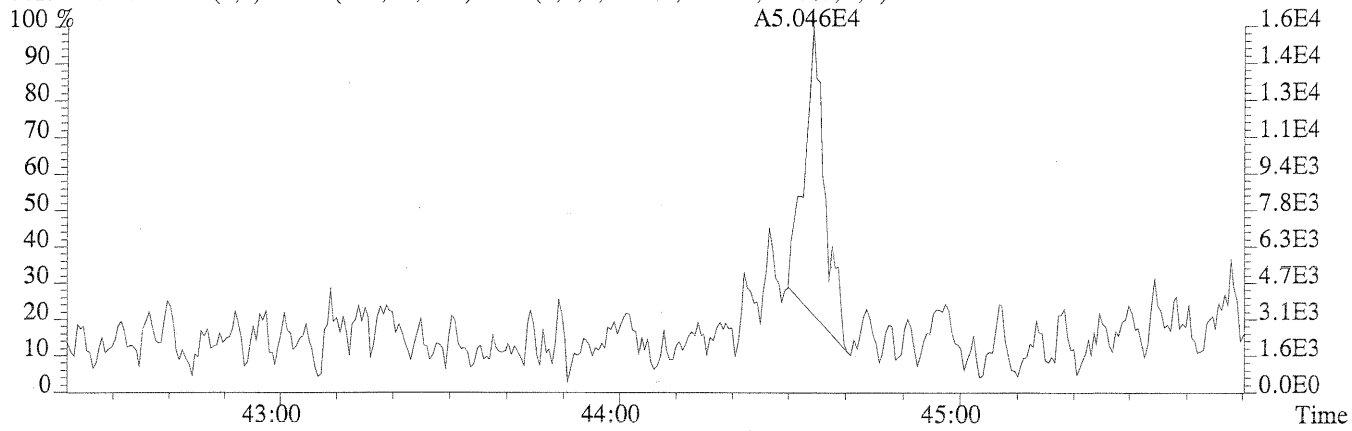
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2524.0,0.40%,F,F)



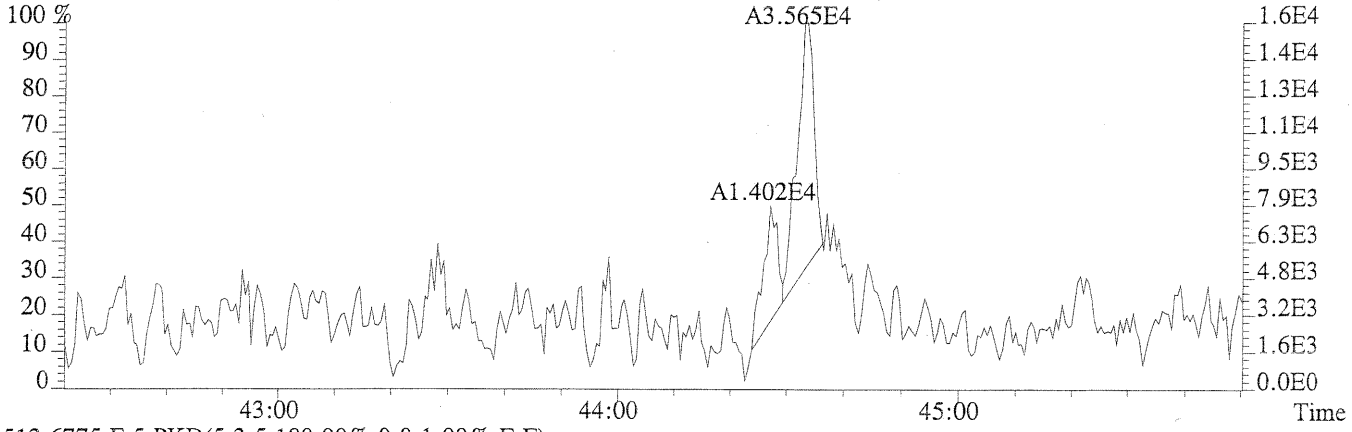
430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



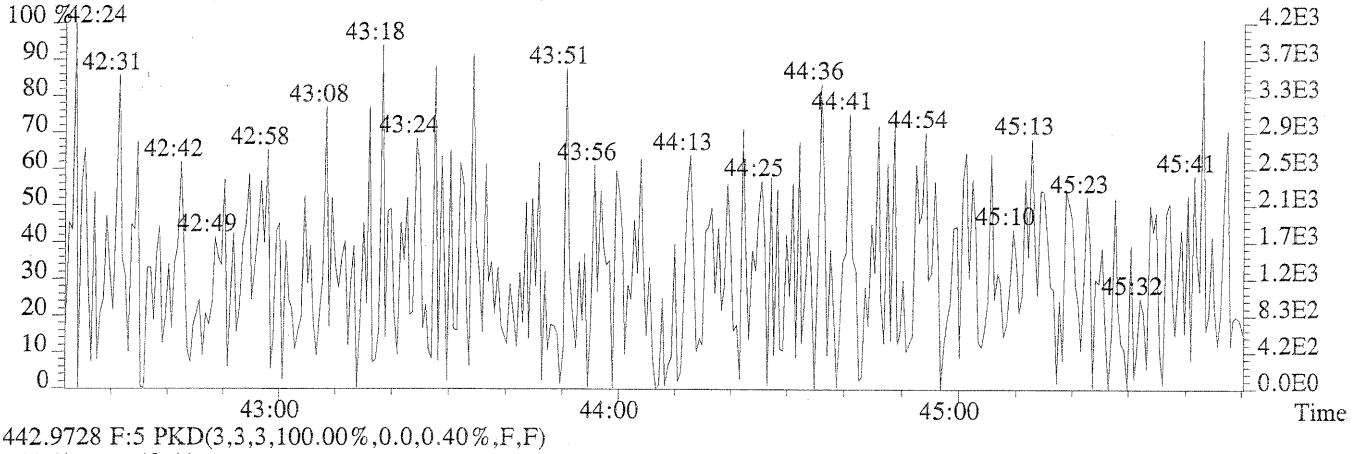
File:C15065 #1-379 Acq: 7-NOV-2007 19:01:34 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:EQ0700371-01MB METHOD BLA Exp:8290CA
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3036.0,0.40%,F,F)



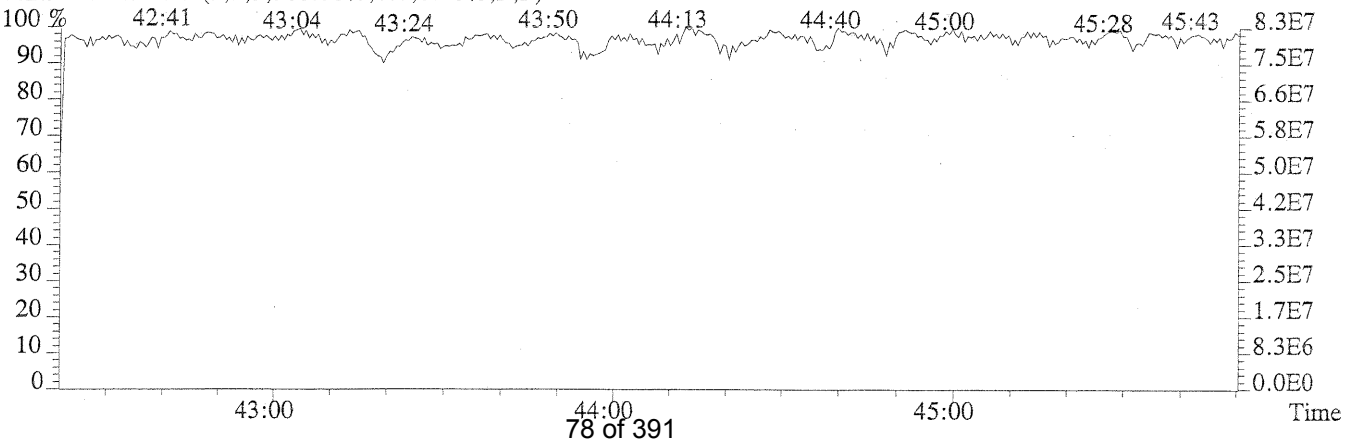
443.7398 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3856.0,0.40%,F,F)



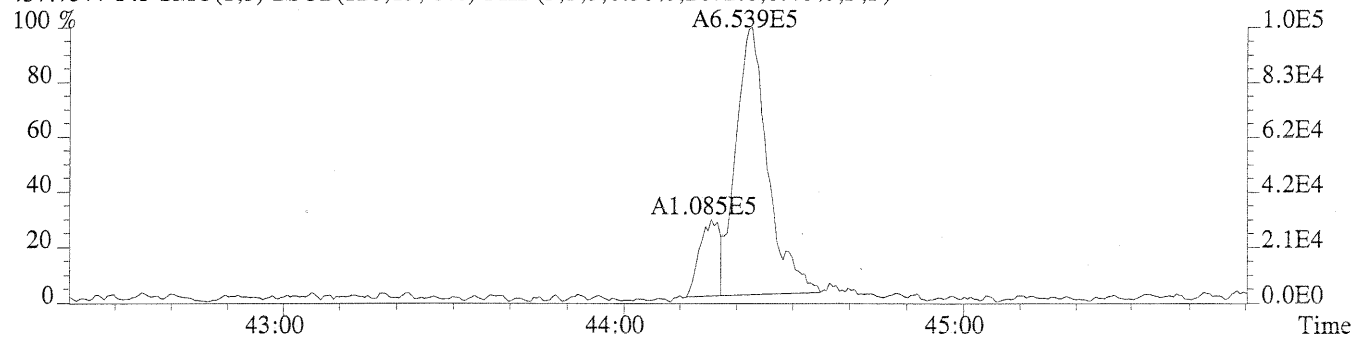
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



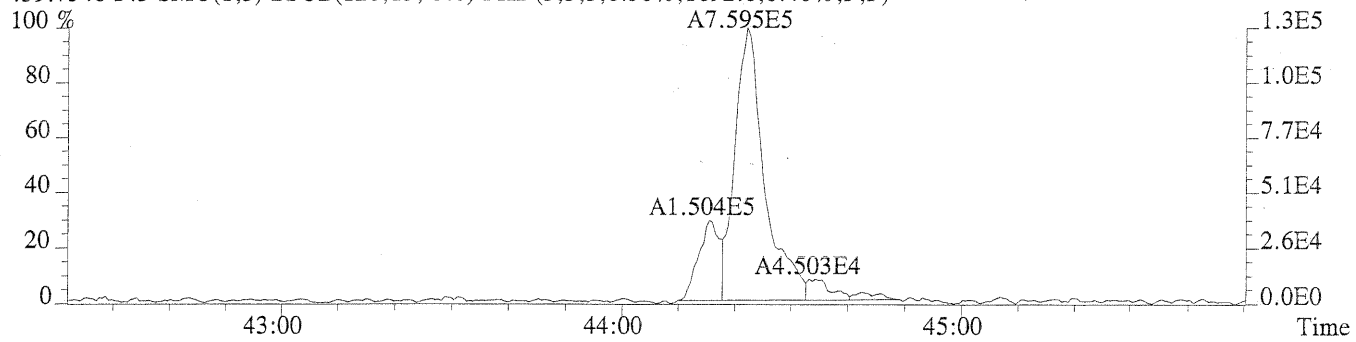
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



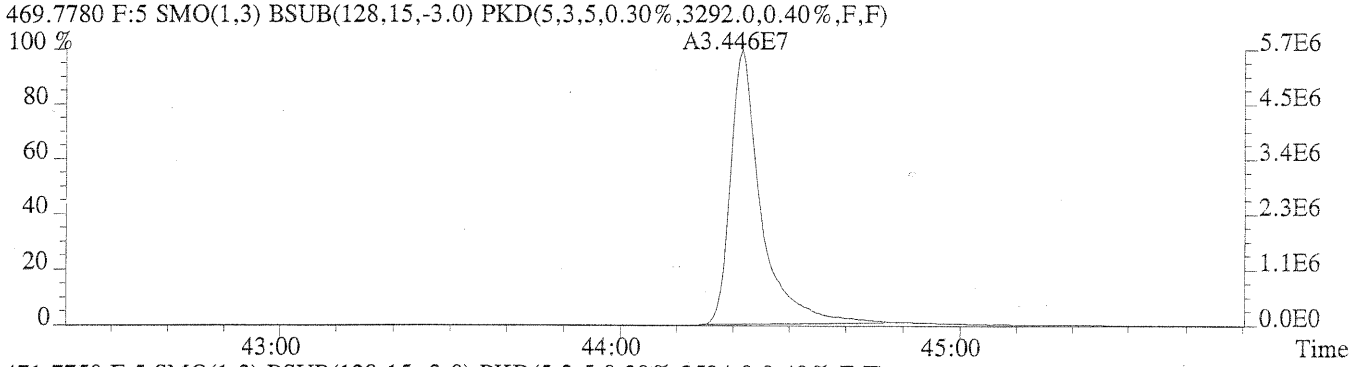
File:C15065 #1-379 Acq: 7-NOV-2007 19:01:34 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:EQ0700371-01MB METHOD BLA Exp:8290CA
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2672.0,0.40%,F,F)



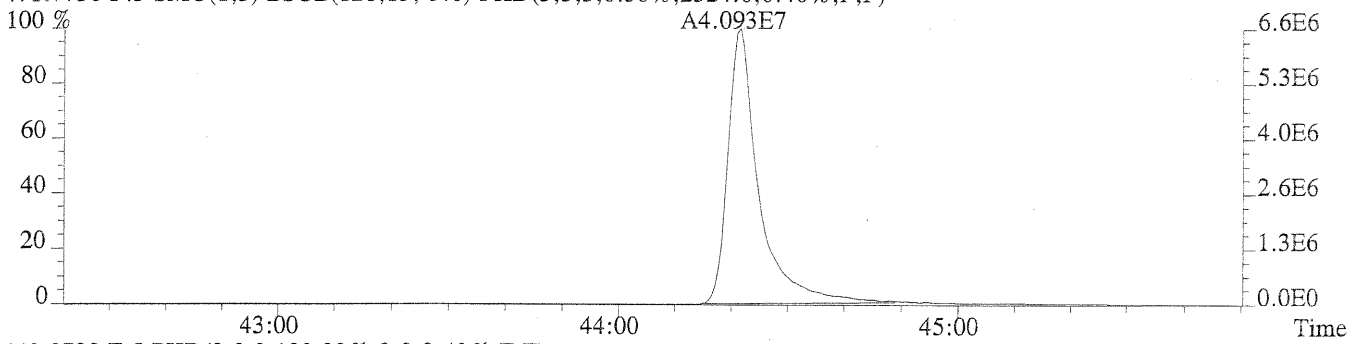
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1692.0,0.40%,F,F)



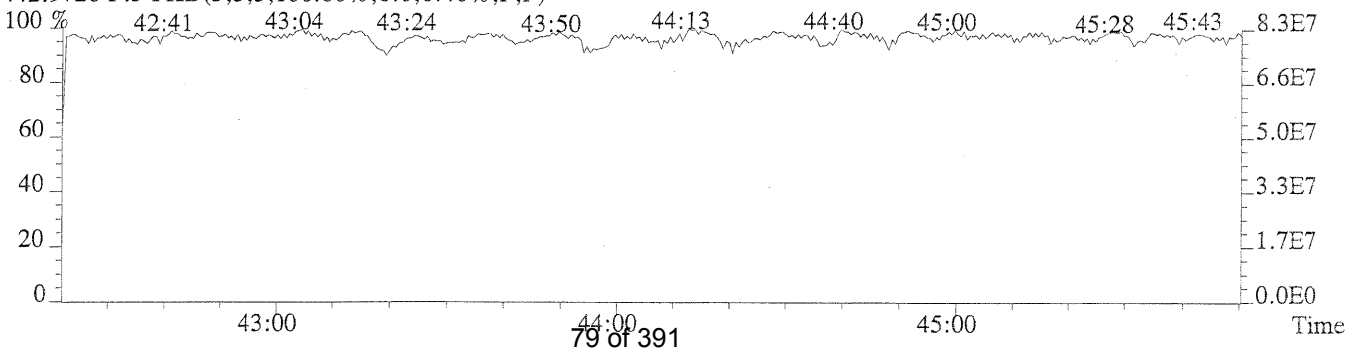
469.7780 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3292.0,0.40%,F,F)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2524.0,0.40%,F,F)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



Columbia Analytical Services, Inc.
Sample Response Summary

CLIENT ID.
MLT-B

Run #9 Filename C15065 Samp: 3 Inj: 1 Acquired: 7-NOV-07 20:40:14
Processed: 8-NOV-07 11:11:43 LAB. ID: E0700903-012RE

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	NotFnd	*	*	*	no	no
2	Unk	1,2,3,7,8-PeCDF	NotFnd	*	*	*	no	no
3	Unk	2,3,4,7,8-PeCDF	NotFnd	*	*	*	no	no
4	Unk	1,2,3,4,7,8-HxCDF	NotFnd	*	*	*	no	no
5	Unk	1,2,3,6,7,8-HxCDF	NotFnd	*	*	*	no	no
6	Unk	2,3,4,6,7,8-HxCDF	NotFnd	*	*	*	no	no
7	Unk	1,2,3,7,8,9-HxCDF	NotFnd	*	*	*	no	no
8	Unk	1,2,3,4,6,7,8-HpCDF	39:47	9.988e+04	9.952e+04	1.00	yes	no
9	Unk	1,2,3,4,7,8,9-HpCDF	NotFnd	*	*	*	no	no
10	Unk	OCDF	NotFnd	*	*	*	no	no
11	Unk	2,3,7,8-TCDD	NotFnd	*	*	*	no	no
12	Unk	1,2,3,7,8-PeCDD	NotFnd	*	*	*	no	no
13	Unk	1,2,3,4,7,8-HxCDD	NotFnd	*	*	*	no	no
14	Unk	1,2,3,6,7,8-HxCDD	NotFnd	*	*	*	no	no
15	Unk	1,2,3,7,8,9-HxCDD	NotFnd	*	*	*	no	no
16	Unk	1,2,3,4,6,7,8-HpCDD	40:50	2.341e+05	2.106e+05	1.11	yes	no
17	Unk	OCDD	44:22	1.191e+06	1.381e+06	0.86	yes	no
18	IS	13C-2,3,7,8-TCDF	28:41	2.697e+07	3.464e+07	0.78	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	33:02	3.426e+07	2.204e+07	1.55	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	36:44	4.120e+07	8.372e+07	0.49	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	39:47	2.631e+07	5.952e+07	0.44	yes	no
22	IS	13C-2,3,7,8-TCDD	29:30	2.034e+07	2.572e+07	0.79	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	34:10	2.580e+07	1.664e+07	1.55	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	37:33	5.625e+07	4.562e+07	1.23	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	40:49	4.067e+07	3.958e+07	1.03	yes	no
26	IS	13C-OCDD	44:21	4.654e+07	5.414e+07	0.86	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	29:17	2.748e+07	3.466e+07	0.79	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:52	2.952e+07	2.398e+07	1.23	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	29:30	4.125e+07				
					SUM AREA			
30	Tot	Total Tetra-Furans	NotFnd		*	*	no	
31	Tot	Total Tetra-Dioxins	NotFnd		*	*	no	
32	Tot	Total Penta-Furans	NotFnd		*	*	no	
33	Tot	Total Penta-Dioxins	NotFnd		*	*	no	
34	Tot	Total Hexa-Furans	NotFnd		*	*	no	
35	Tot	Total Hexa-Dioxins	36:15		2.064e+05	1.27	yes	
36	Tot	Total Hepta-Furans	39:47		3.937e+05	1.00	yes	
37	Tot	Total Hepta-Dioxins	40:05		9.787e+05	1.08	yes	

---Sample Calculation---

$$OCDD = \frac{(1.191e+06 + 1.381e+06\ ) \times 5000\ pg}{(4.654e+07 + 5.414e+07\ ) \times (\ 6.323\ g\ ) \times (100 - 17.79\ )/100 \times 1.04} = 23.63$$

ng/kg

11/08/07

Columbia Analytical Services, Inc.
10655 Richmond Ave., Suite 130A
Houston, TX 77042
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Columbia Analytical Services,Inc. CLIENT ID.
Signal/Noise Height Ratio Summary MLT-B

Run #9 Filename C15065 Samp: 3 Inj: 1 Acquired: 7-NOV-07 20:40:14

Processed: 8-NOV-07 11:11:43 LAB. ID: E0700903-012RE

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	*	2.67e+03	*	*	3.62e+03	*
2	1,2,3,7,8-PeCDF	*	2.71e+03	*	*	3.50e+03	*
3	2,3,4,7,8-PeCDF	*	2.71e+03	*	*	3.50e+03	*
4	1,2,3,4,7,8-HxCDF	*	3.26e+03	*	*	3.05e+03	*
5	1,2,3,6,7,8-HxCDF	*	3.26e+03	*	*	3.05e+03	*
6	2,3,4,6,7,8-HxCDF	*	3.26e+03	*	*	3.05e+03	*
7	1,2,3,7,8,9-HxCDF	*	3.26e+03	*	*	3.05e+03	*
8	1,2,3,4,6,7,8-HpCDF	2.55e+04	3.34e+03	7.6e+00	2.50e+04	3.31e+03	7.6e+00
9	1,2,3,4,7,8,9-HpCDF	*	3.34e+03	*	*	3.31e+03	*
10	OCDF	*	2.70e+03	*	*	2.53e+03	*
11	2,3,7,8-TCDD	*	2.71e+03	*	*	2.56e+03	*
12	1,2,3,7,8-PeCDD	*	2.96e+03	*	*	2.22e+03	*
13	1,2,3,4,7,8-HxCDD	*	2.35e+03	*	*	3.09e+03	*
14	1,2,3,6,7,8-HxCDD	*	2.35e+03	*	*	3.09e+03	*
15	1,2,3,7,8,9-HxCDD	*	2.35e+03	*	*	3.09e+03	*
16	1,2,3,4,6,7,8-HpCDD	4.97e+04	3.46e+03	1.4e+01	4.53e+04	3.18e+03	1.4e+01
17	OCDD	2.08e+05	1.76e+03	1.2e+02	2.47e+05	1.99e+03	1.2e+02
18	13C-2,3,7,8-TCDF	6.27e+06	4.11e+03	1.5e+03	8.03e+06	5.99e+03	1.3e+03
19	13C-1,2,3,7,8-PeCDF	8.97e+06	1.78e+03	5.0e+03	5.78e+06	2.84e+03	2.0e+03
20	13C-1,2,3,4,7,8-HxCDF	1.15e+07	4.44e+03	2.6e+03	2.33e+07	2.84e+03	8.2e+03
21	13C-1,2,3,4,6,7,8-HpCDF	6.40e+06	7.50e+03	8.5e+02	1.43e+07	6.52e+03	2.2e+03
22	13C-2,3,7,8-TCDD	5.14e+06	6.49e+03	7.9e+02	6.46e+06	3.52e+03	1.8e+03
23	13C-1,2,3,7,8-PeCDD	7.12e+06	2.10e+03	3.4e+03	4.63e+06	2.06e+03	2.2e+03
24	13C-1,2,3,6,7,8-HxCDD	1.55e+07	2.84e+03	5.5e+03	1.27e+07	4.38e+03	2.9e+03
25	13C-1,2,3,4,6,7,8-HpCDD	8.74e+06	2.64e+03	3.3e+03	8.35e+06	2.72e+03	3.1e+03
26	13C-OCDD	8.03e+06	2.16e+03	3.7e+03	9.25e+06	2.27e+03	4.1e+03
27	13C-1,2,3,4-TCDD	6.66e+06	6.49e+03	1.0e+03	8.50e+06	3.52e+03	2.4e+03
28	13C-1,2,3,7,8,9-HxCDD	7.59e+06	2.84e+03	2.7e+03	6.17e+06	4.38e+03	1.4e+03
29	37Cl-2,3,7,8-TCDD	1.01e+07	2.71e+03	3.7e+03			

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Columbia Analytical Services, Inc.
Peak List Summary

CLIENT ID.

MLT-B

Entry: 35 Totals Name: Total Hexa-Dioxins

Run: 9 File: C15065 Sample:3 Injection:1 Function:3

Acquired: 7-NOV-07 20:40:14 Processed: 8-NOV-07 11:11:43

Mass:389.816 391.813 Response:

#	RT	Resp	Resp Ratio	Meet	Tot Resp	Conc.	Name	Mod?
1	36:15	1.16e+05	9.08e+04 1.27	yes	2.06e+05	0.912		y

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Columbia Analytical Services, Inc.
Peak List Summary

CLIENT ID.

MLT-B

Entry: 36 Totals Name: Total Hepta-Furans

Run: 9 File: C15065 Sample:3 Injection:1 Function:4

Acquired: 7-NOV-07 20:40:14 Processed: 8-NOV-07 11:11:43

#	RT	Resp	Mass:407.782 Resp	Resp Ratio	Response: Meet	Tot Resp	Conc.	Name	Mod?
			409.779						
1	39:47	9.99e+04	9.95e+04	1.00	yes	1.99e+05	0.793	1,2,3,4,6,7,8-HpCDF	n
2	40:13	9.18e+04	1.02e+05	0.90	yes	1.94e+05	0.917		n

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Columbia Analytical Services, Inc.
Peak List Summary

CLIENT ID.

MLT-B

Entry: 37 Totals Name: Total Hepta-Dioxins

Run: 9 File: C15065 Sample:3 Injection:1 Function:4

Acquired: 7-NOV-07 20:40:14 Processed: 8-NOV-07 11:11:43

Mass:423.777		425.774		Response:				
#	RT	Resp	Resp Ratio	Meet	Tot Resp	Conc.	Name	Mod?
1	40:05	2.78e+05	2.56e+05 1.08	yes	5.34e+05	3.289		n
2	40:50	2.34e+05	2.11e+05 1.11	yes	4.45e+05	2.739	1,2,3,4,6,7,8-HpCDD	n

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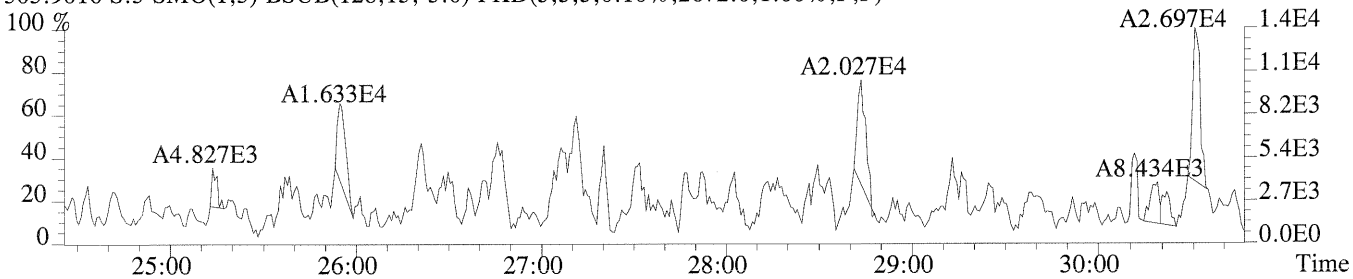
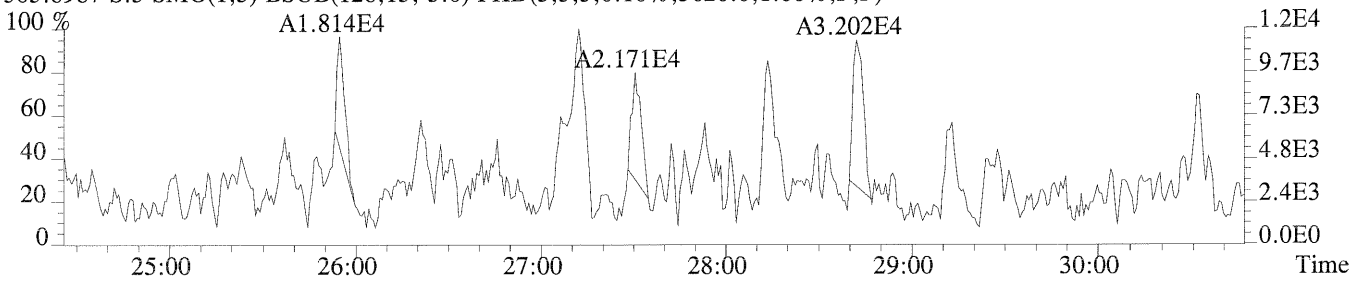
File:C15065 #1-521 Acq: 7-NOV-2007 20:40:14 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS,HOUSTON Text:E0700903-012RE MLT-B Exp:8290CA

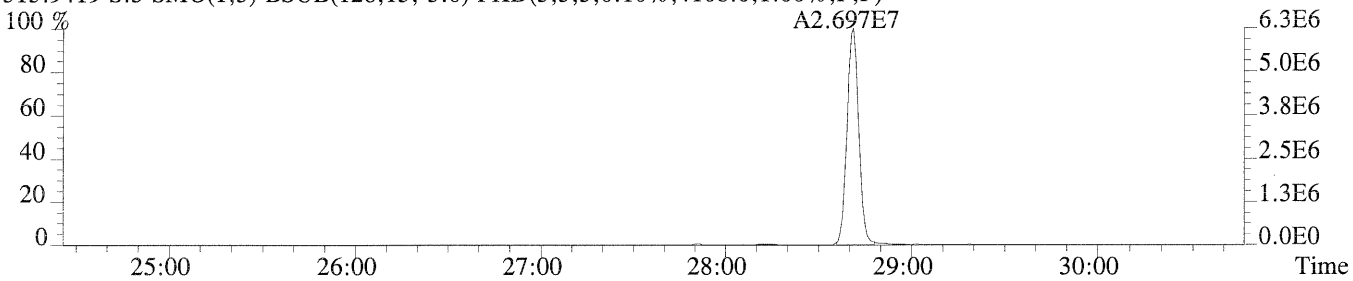
303.9016 S:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2672.0,1.00%,F,F)



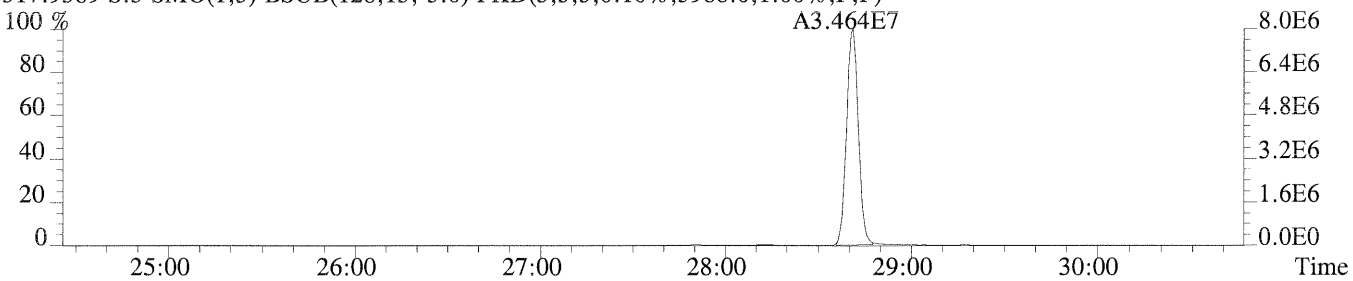
305.8987 S:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3620.0,1.00%,F,F)



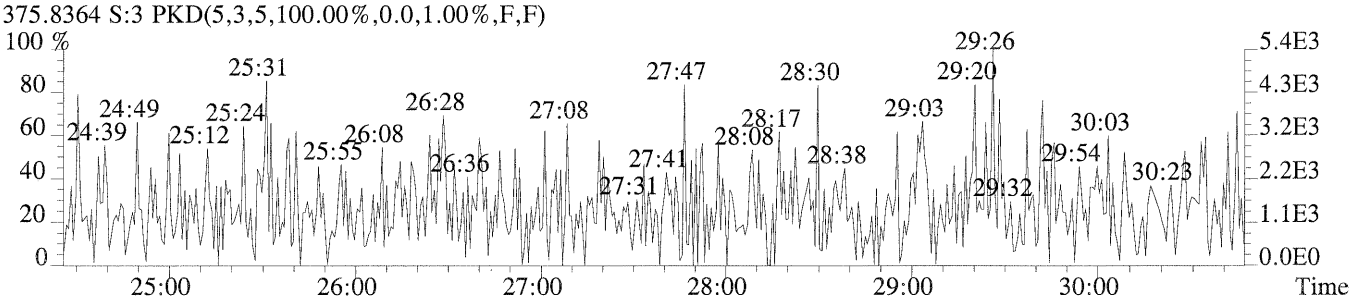
315.9419 S:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4108.0,1.00%,F,F)



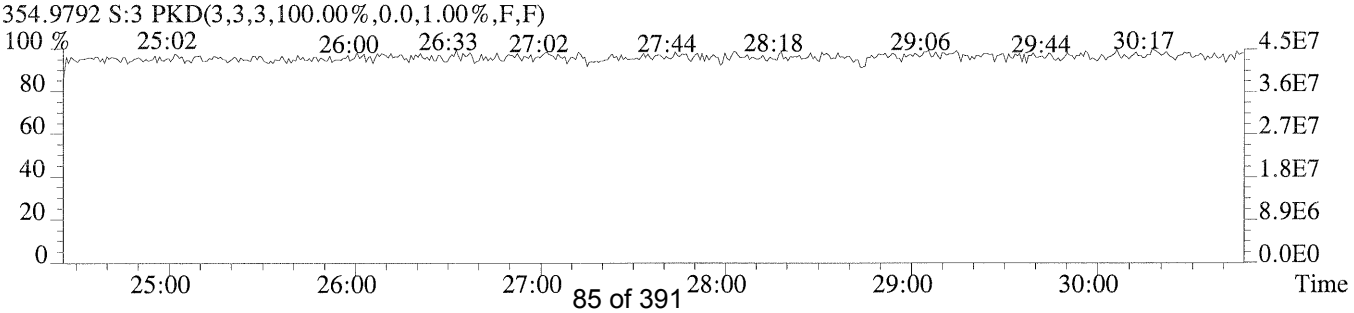
317.9389 S:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5988.0,1.00%,F,F)



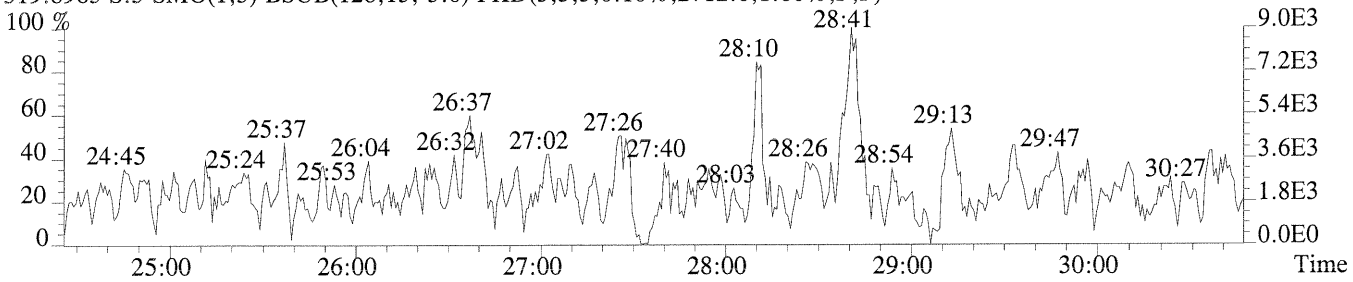
375.8364 S:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



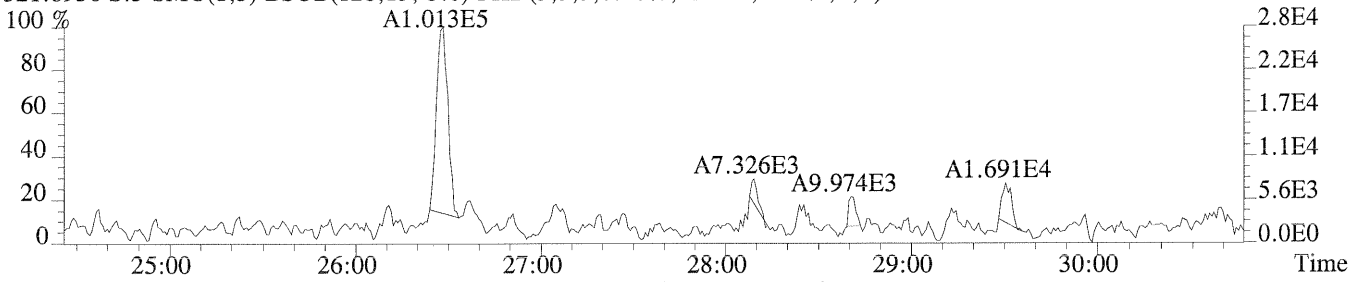
354.9792 S:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



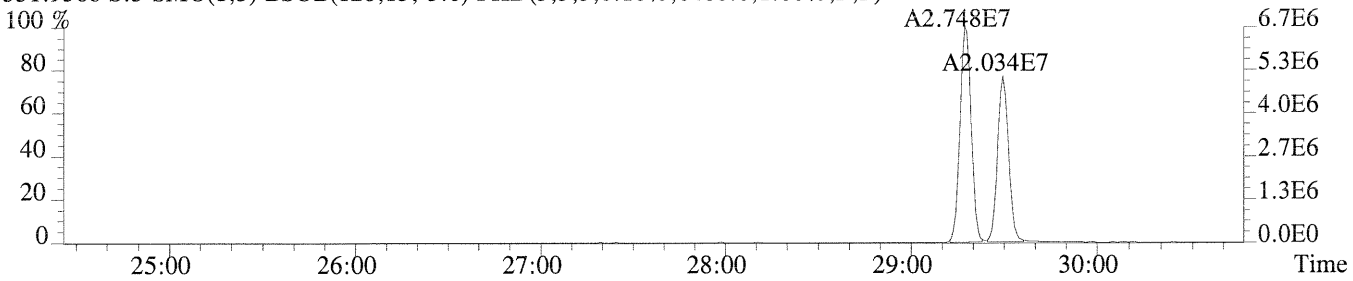
File:C15065 #1-521 Acq: 7-NOV-2007 20:40:14 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS,HOUSTON Text:E0700903-012RE MLT-B Exp:8290CA
319.8965 S:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2712.0,1.00%,F,F)



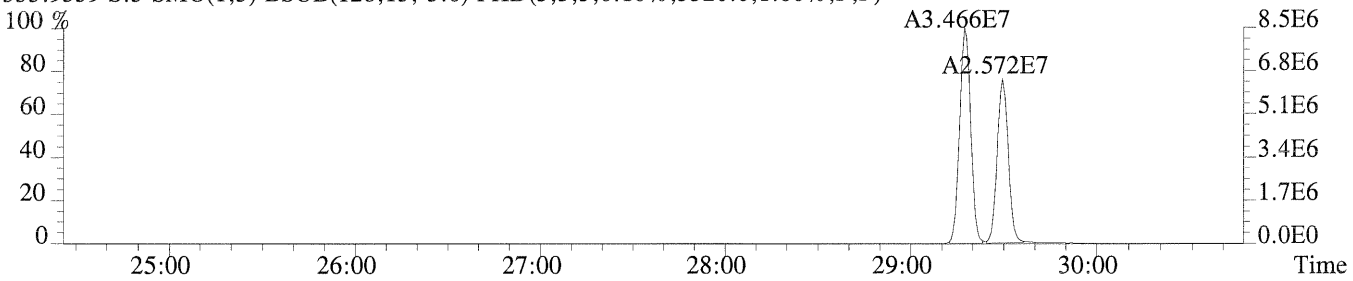
321.8936 S:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2556.0,1.00%,F,F)



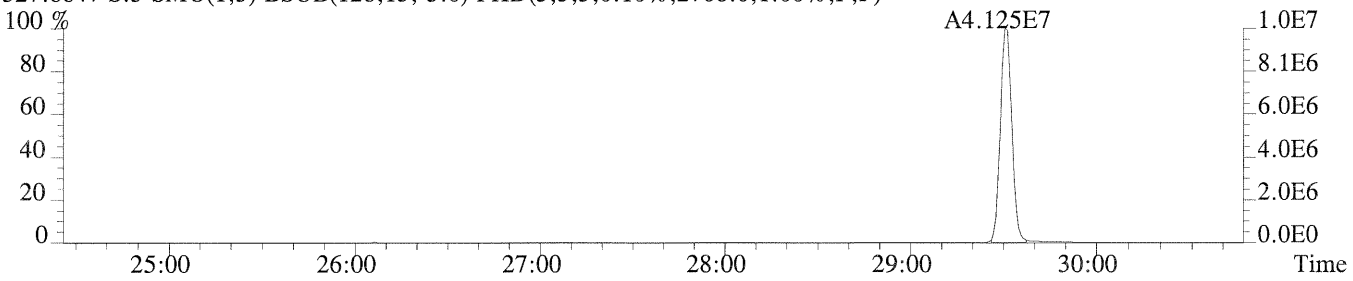
331.9368 S:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6488.0,1.00%,F,F)



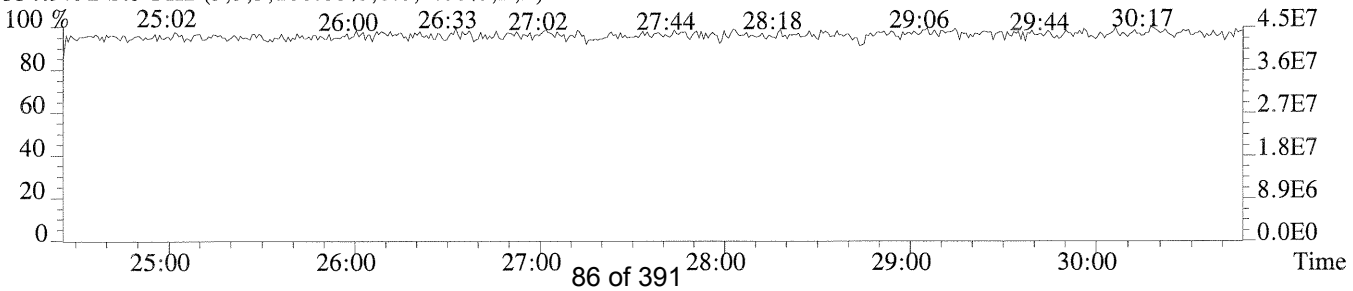
333.9339 S:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3520.0,1.00%,F,F)



327.8847 S:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2708.0,1.00%,F,F)

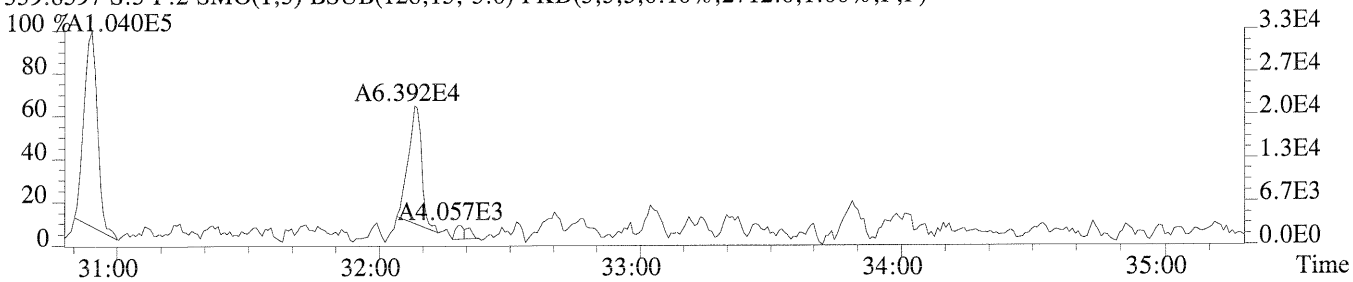


354.9792 S:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

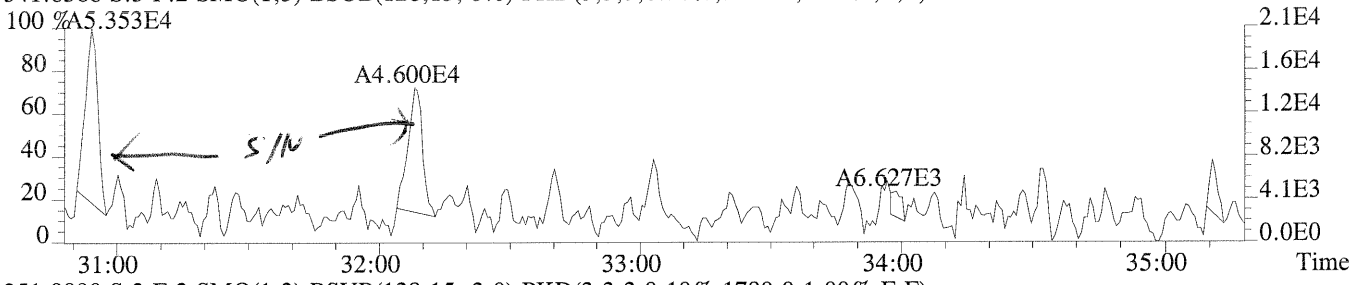


File:C15065 #1-403 Acq: 7-NOV-2007 20:40:14 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS,HOUSTON Text:E0700903-012RE MLT-B Exp:8290CA

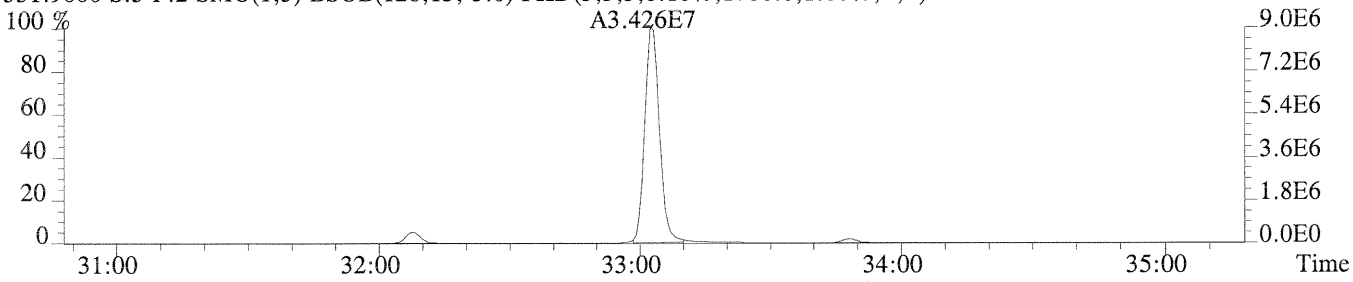
339.8597 S:3 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2712.0,1.00%,F,F)



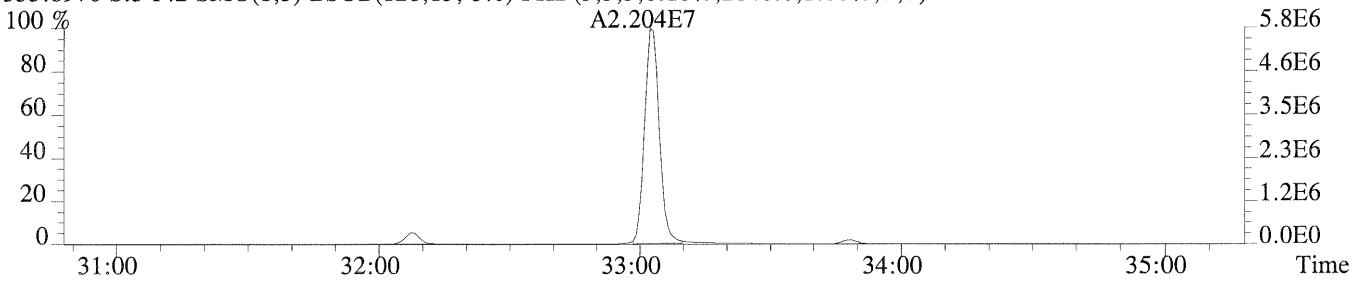
341.8568 S:3 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3504.0,1.00%,F,F)



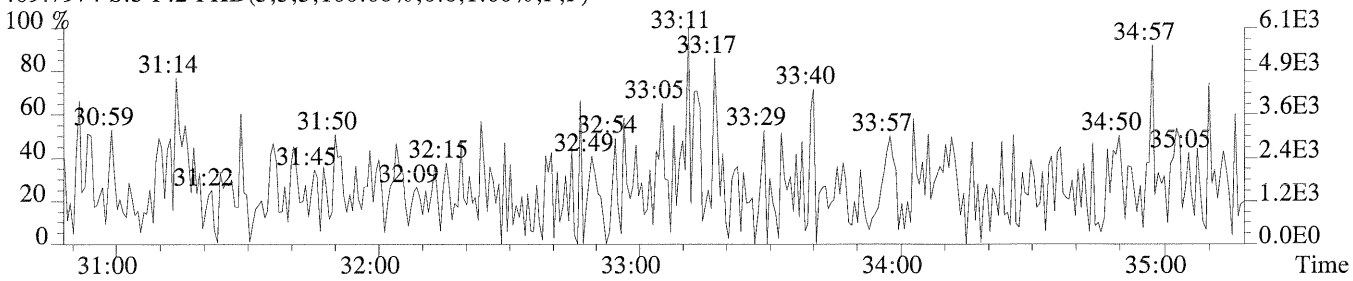
351.9000 S:3 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1780.0,1.00%,F,F)



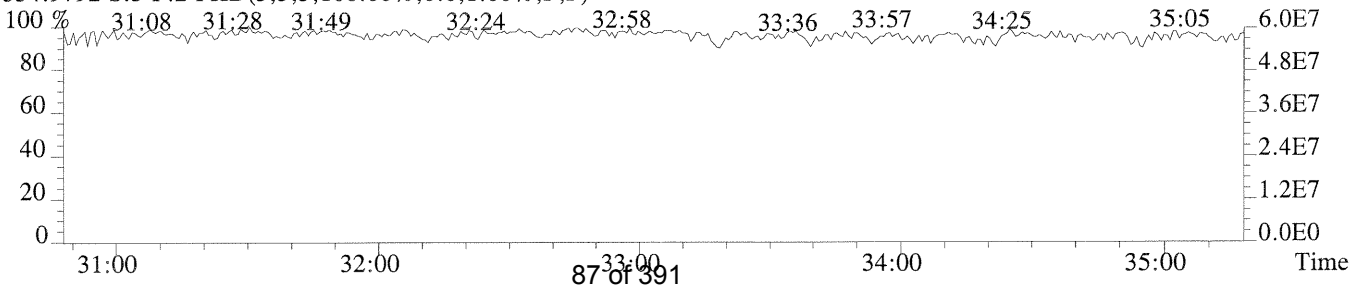
353.8970 S:3 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2840.0,1.00%,F,F)



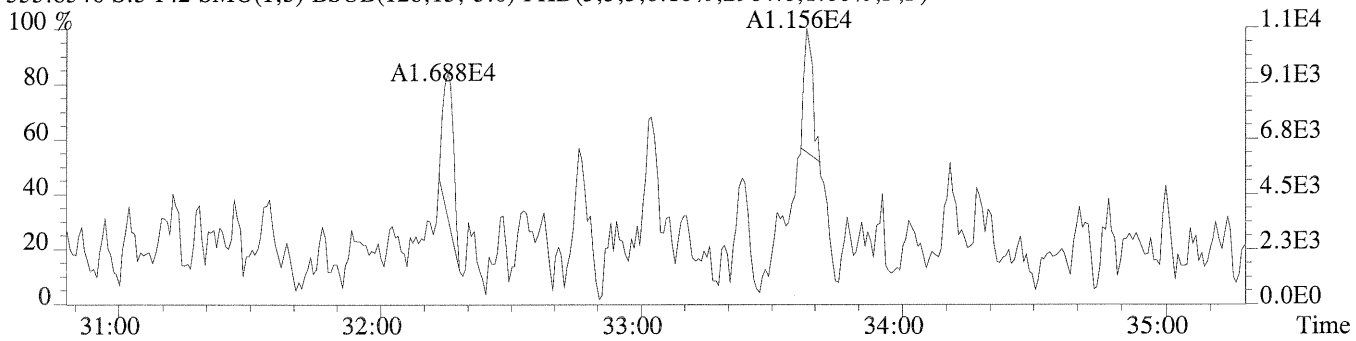
409.7974 S:3 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



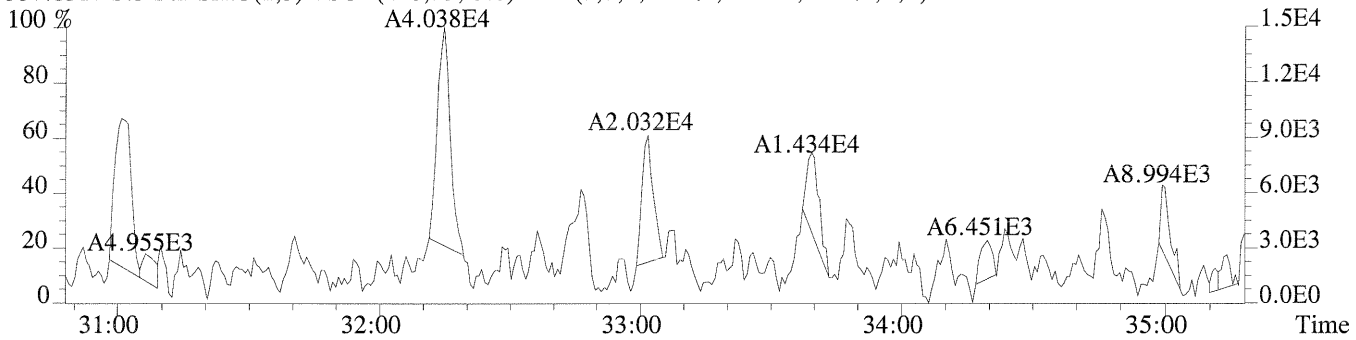
354.9792 S:3 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



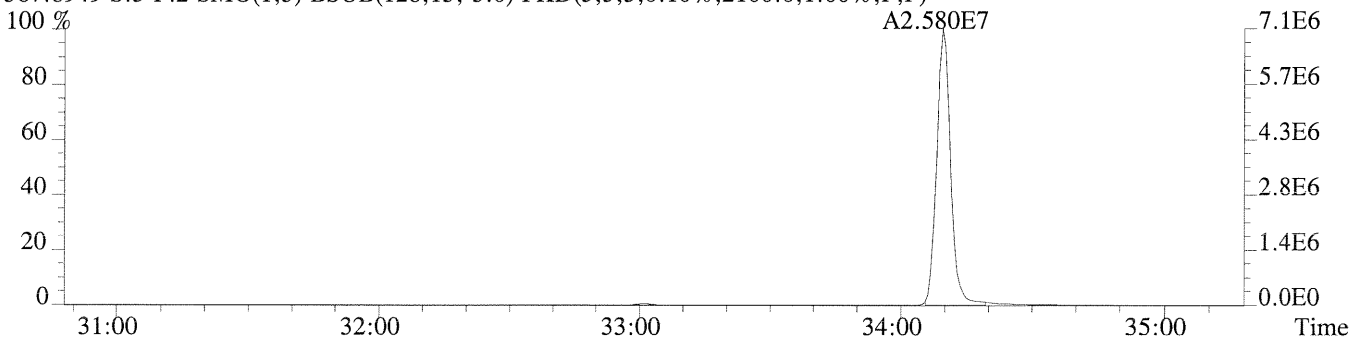
File:C15065 #1-403 Acq: 7-NOV-2007 20:40:14 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS,HOUSTON Text:E0700903-012RE MLT-B Exp:8290CA
355.8546 S:3 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2964.0,1.00%,F,F)



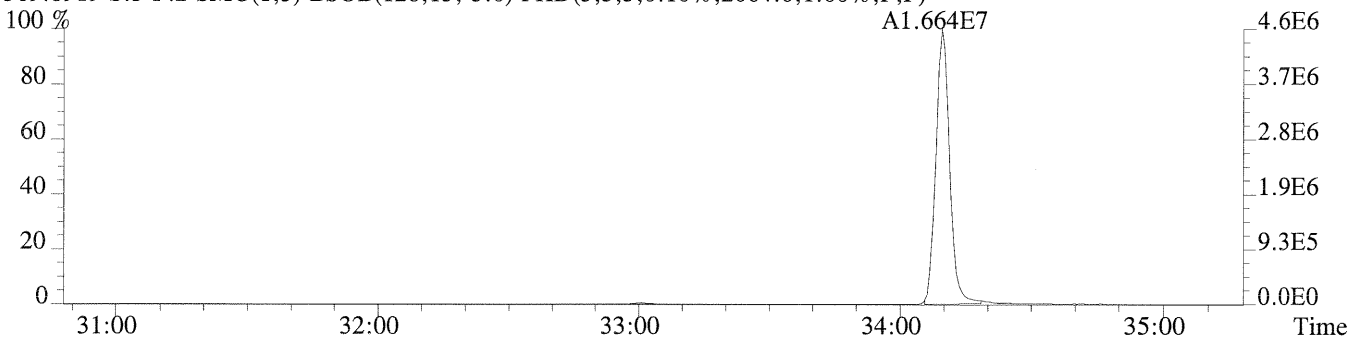
357.8517 S:3 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2220.0,1.00%,F,F)



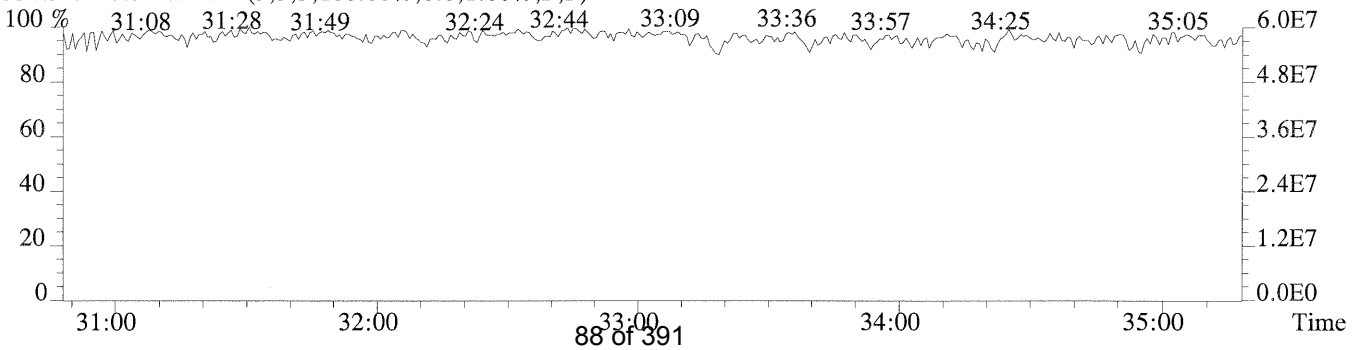
367.8949 S:3 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2100.0,1.00%,F,F)



369.8919 S:3 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2064.0,1.00%,F,F)

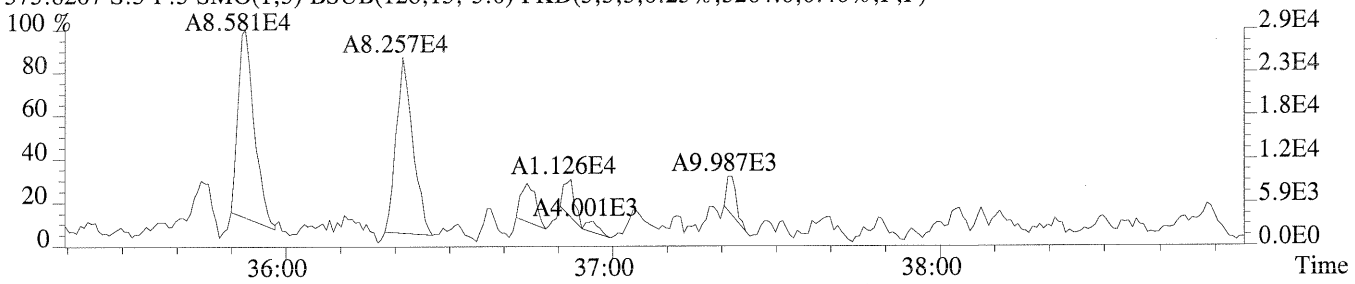


354.9792 S:3 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

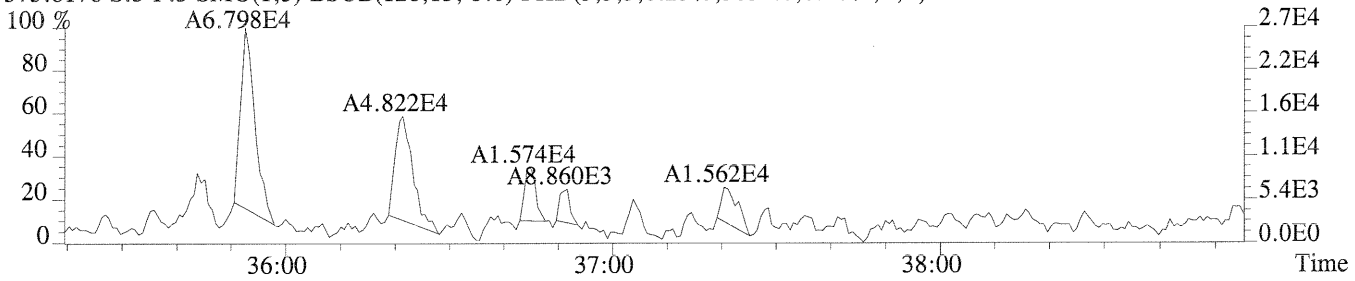


File:C15065 #1-322 Acq: 7-NOV-2007 20:40:14 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS,HOUSTON Text:E0700903-012RE MLT-B Exp:8290CA

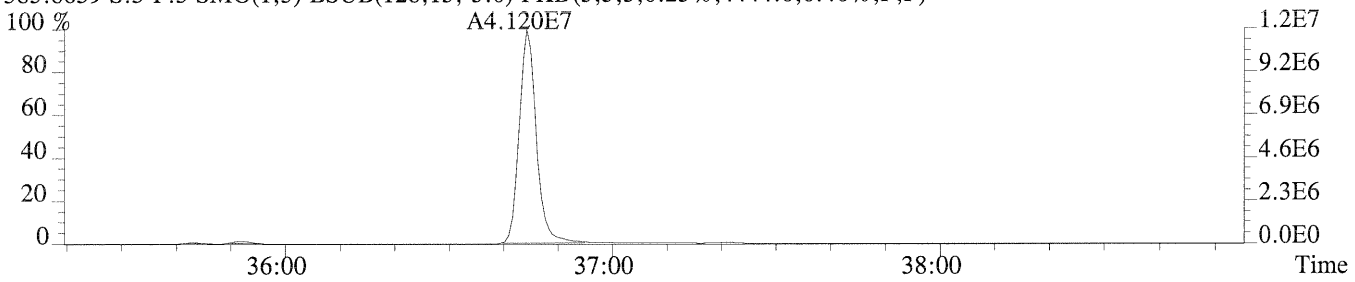
373.8207 S:3 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3264.0,0.40%,F,F)



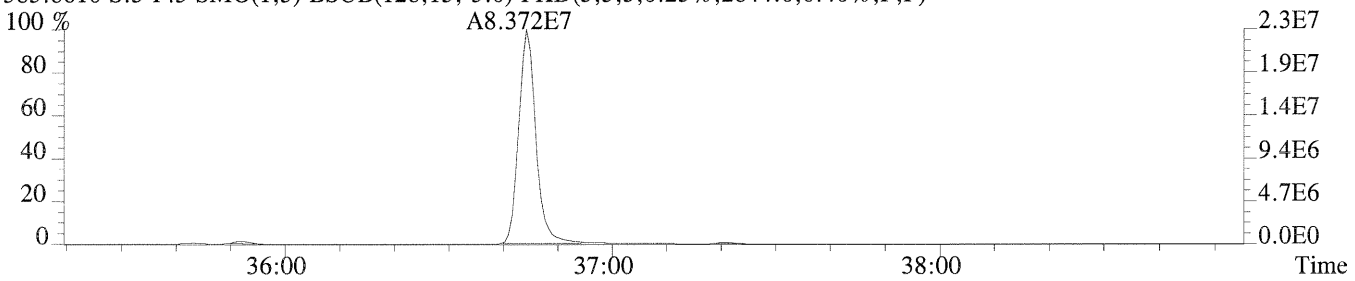
375.8178 S:3 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3052.0,0.40%,F,F)



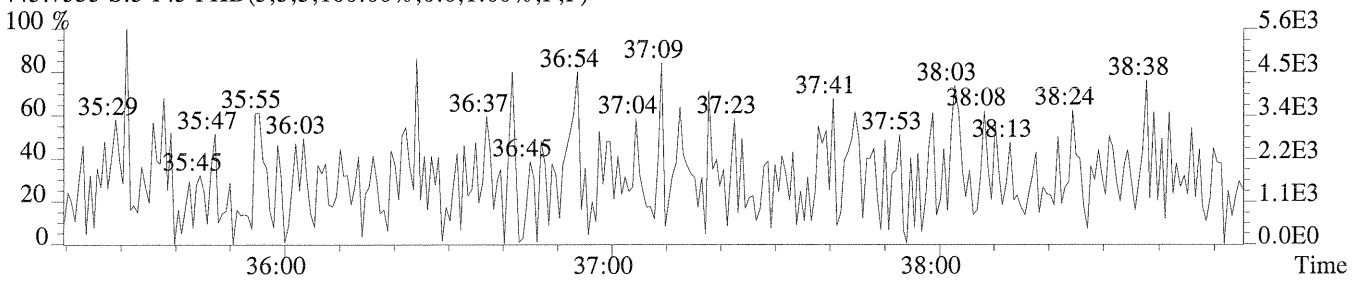
383.8639 S:3 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4444.0,0.40%,F,F)



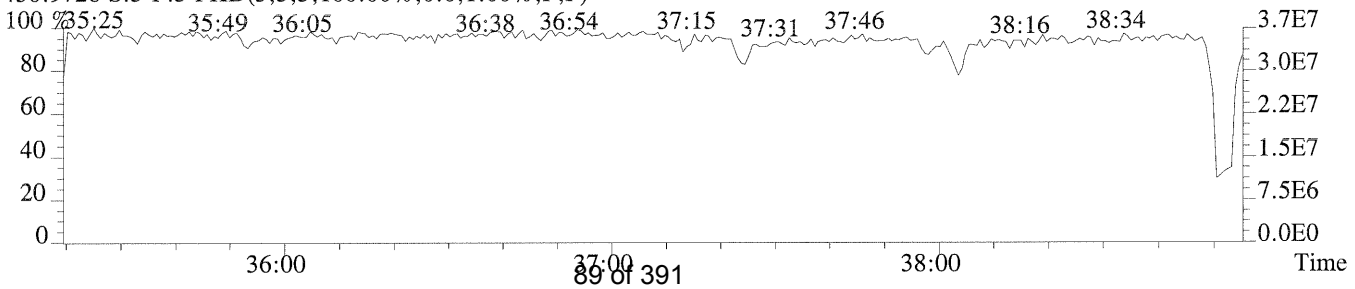
385.8610 S:3 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2844.0,0.40%,F,F)



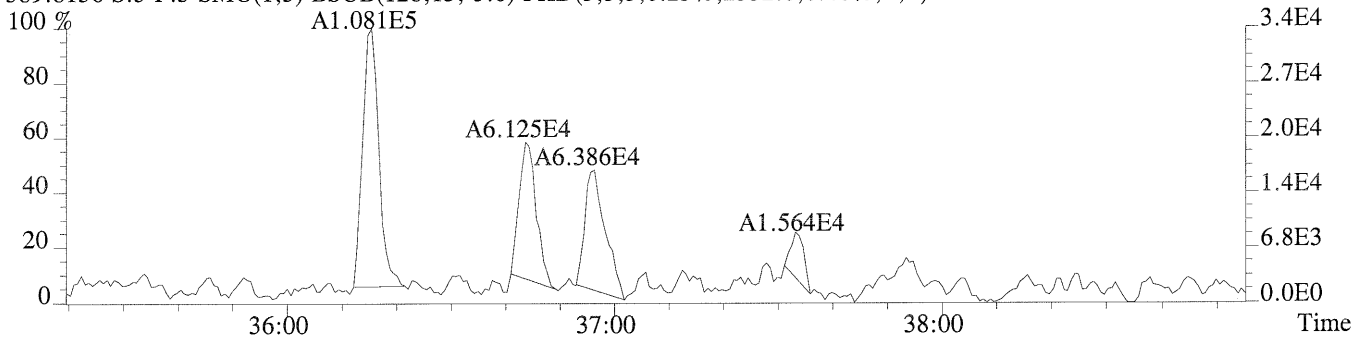
445.7555 S:3 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



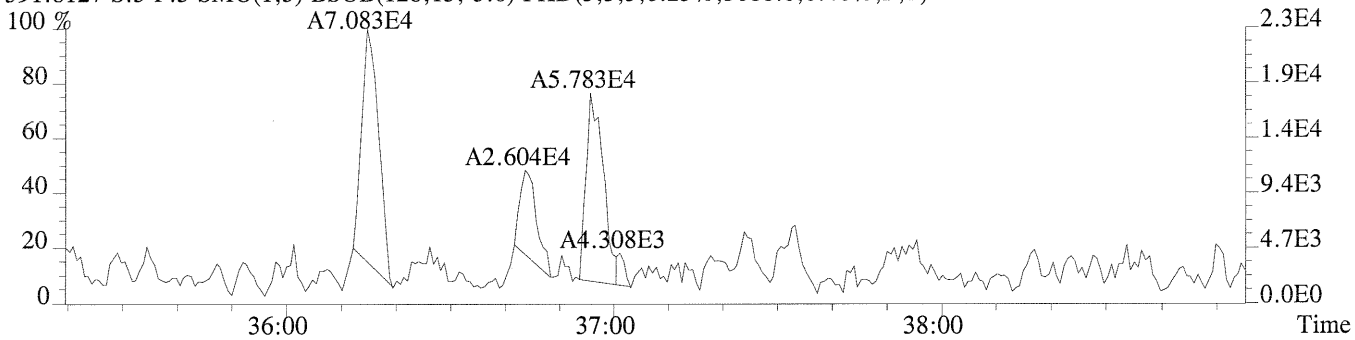
430.9728 S:3 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



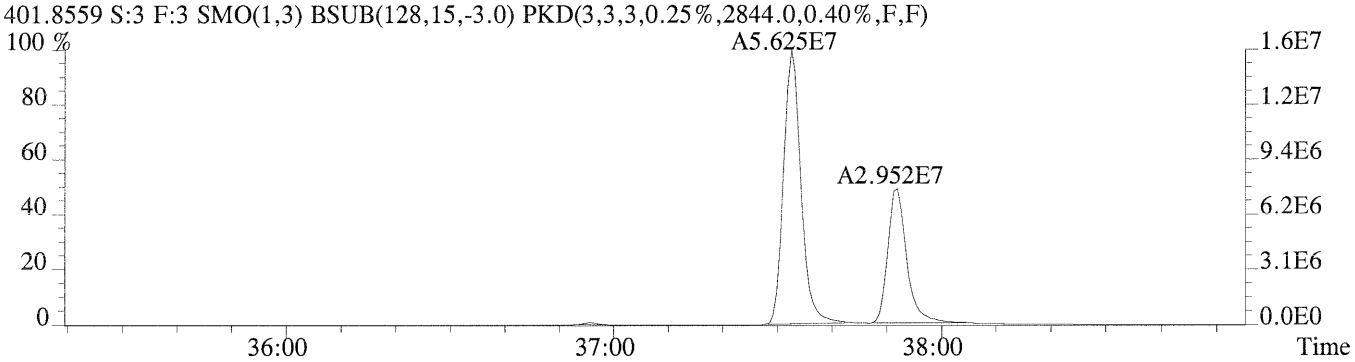
File:C15065 #1-322 Acq: 7-NOV-2007 20:40:14 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS,HOUSTON Text:E0700903-012RE MLT-B Exp:8290CA
389.8156 S:3 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2352.0,0.40%,F,F)



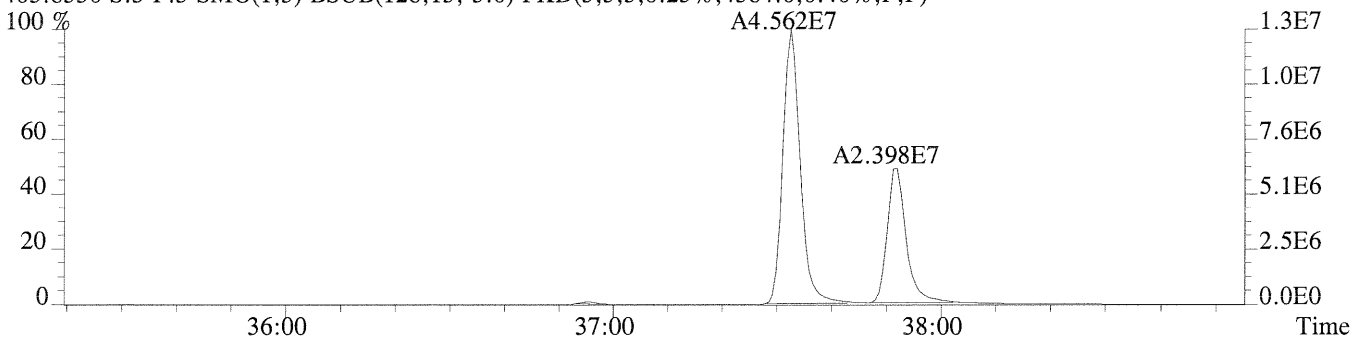
391.8127 S:3 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3088.0,0.40%,F,F)



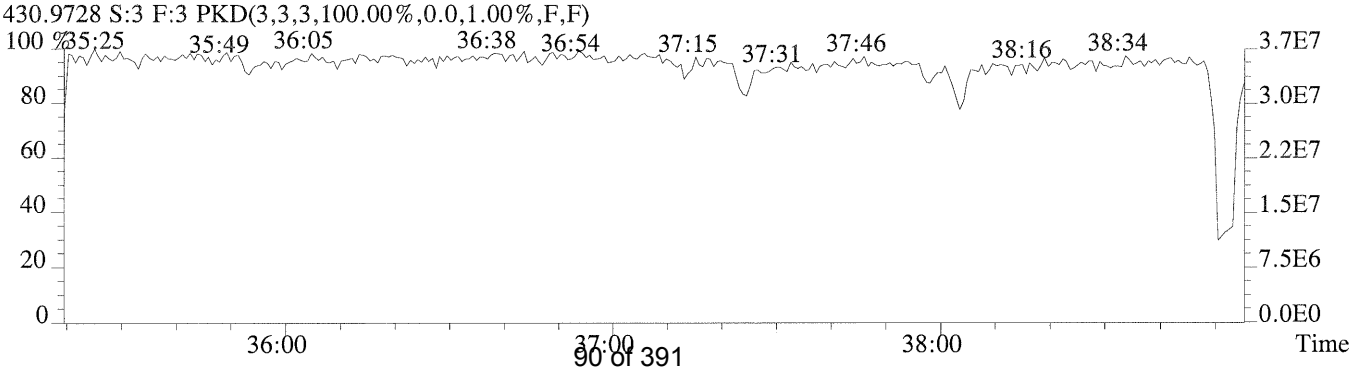
401.8559 S:3 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2844.0,0.40%,F,F)



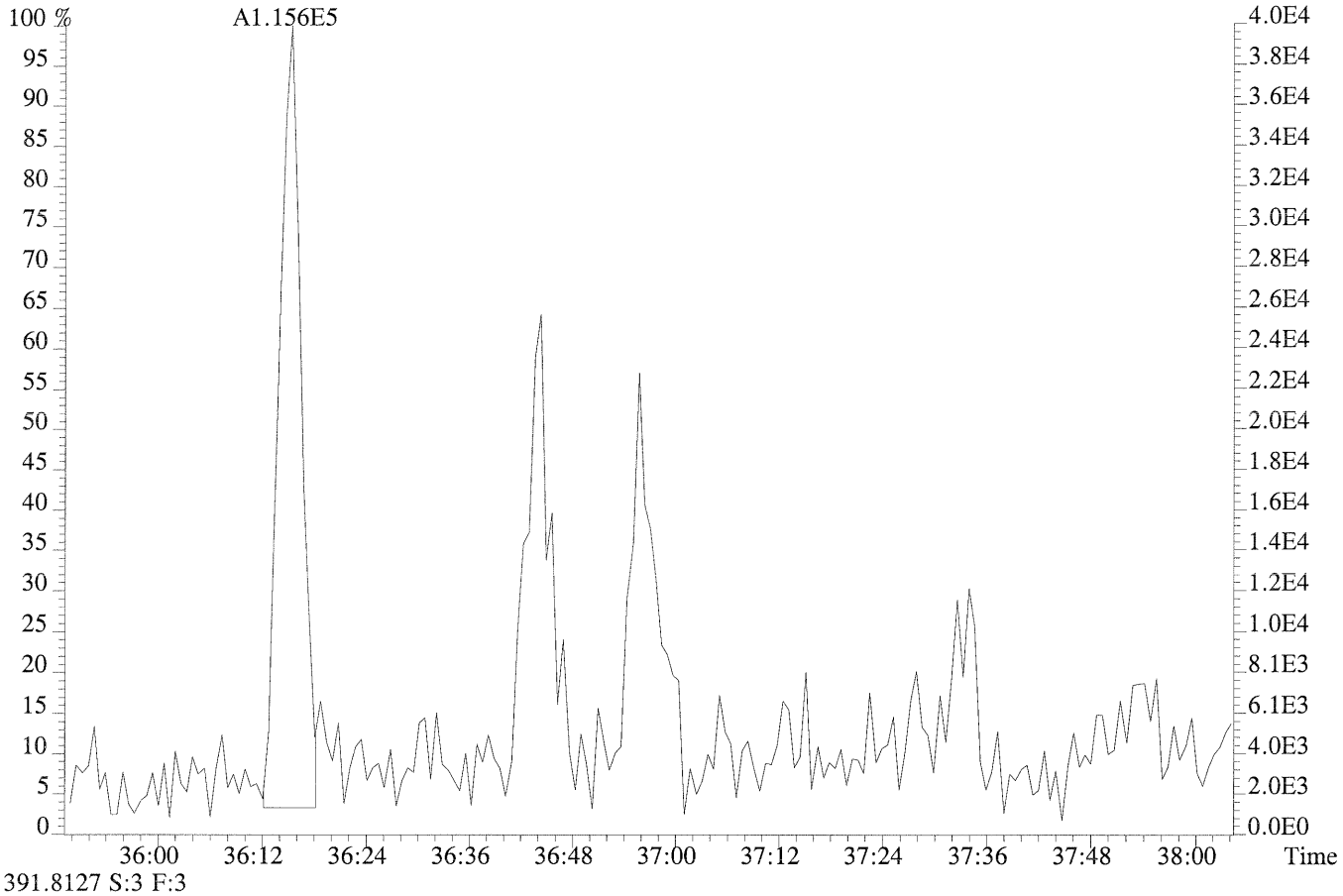
403.8530 S:3 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4384.0,0.40%,F,F)



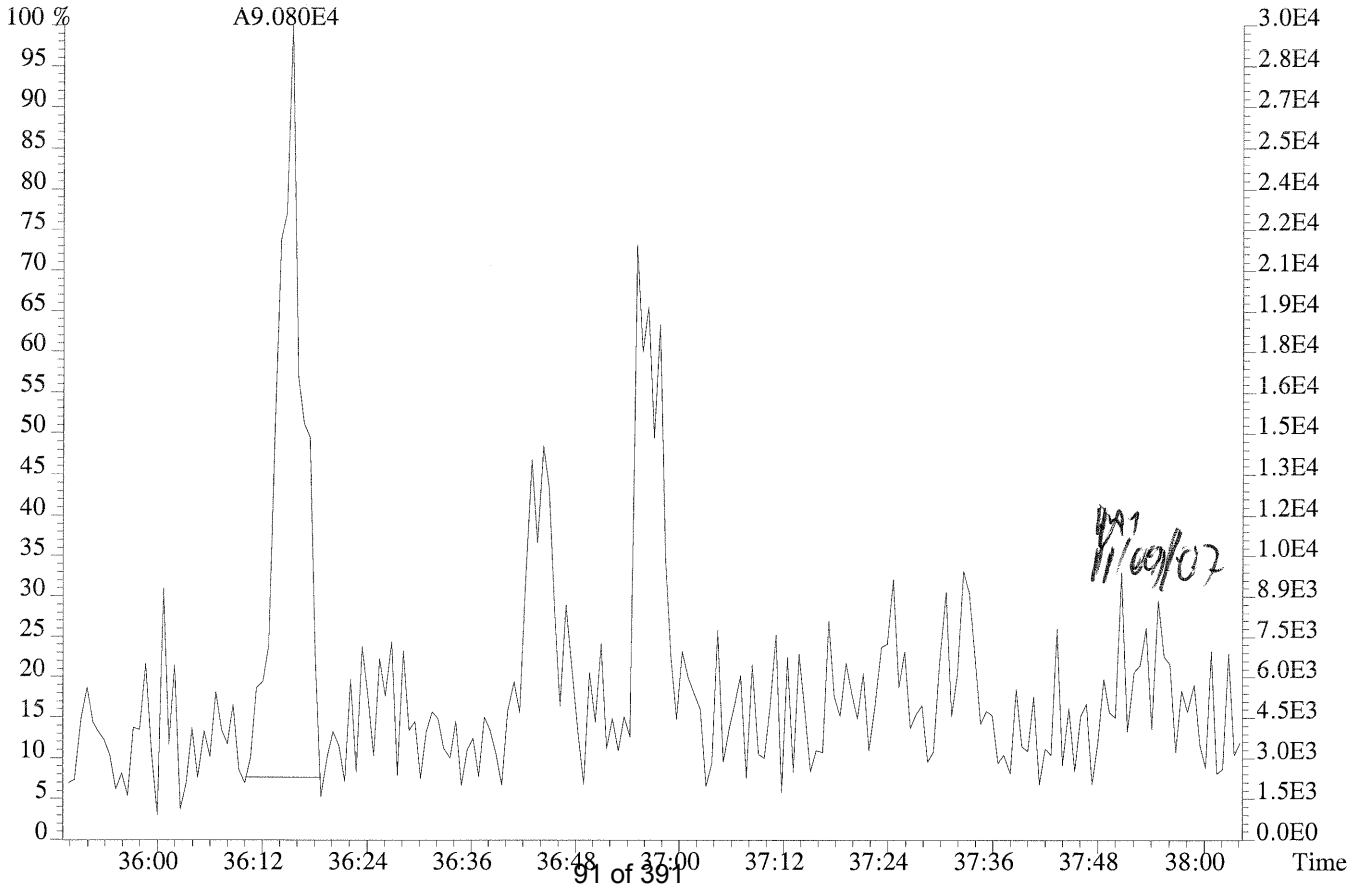
430.9728 S:3 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



File:C15065 #1-322 Acq: 7-NOV-2007 20:40:14 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS,HOUSTON Text:E0700903-012RE MLT-B Exp:8290CA
389.8156 S:3 F:3



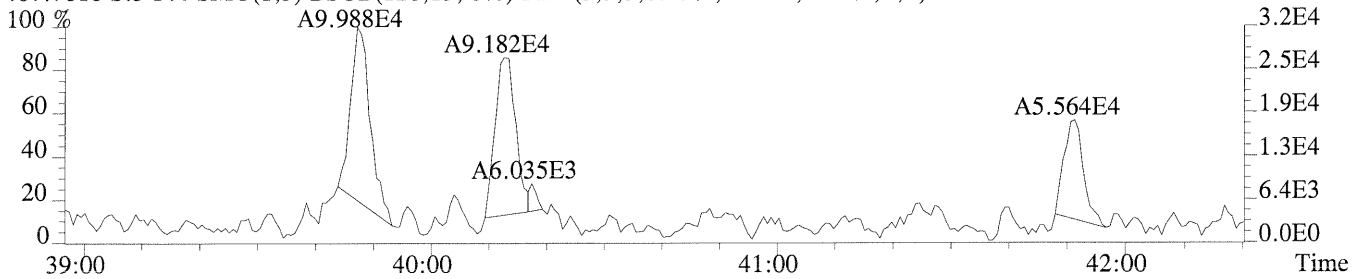
391.8127 S:3 F:3



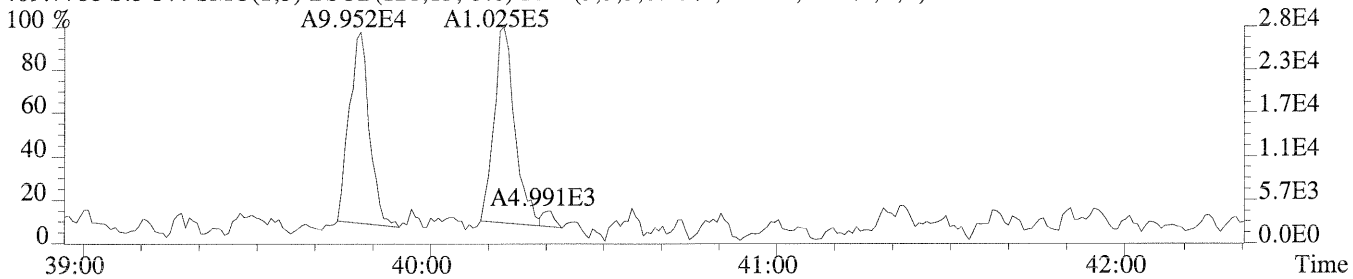
11/09/07

File:C15065 #1-304 Acq: 7-NOV-2007 20:40:14 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS,HOUSTON Text:E0700903-012RE MLT-B Exp:8290CA

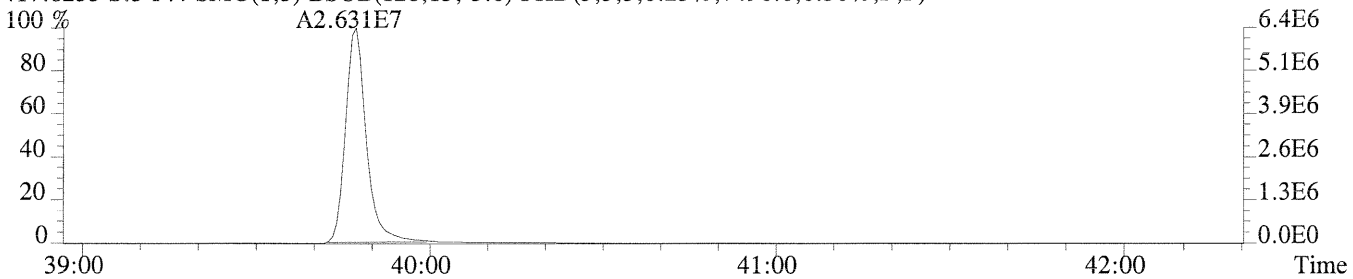
407.7818 S:3 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3344.0,0.50%,F,F)



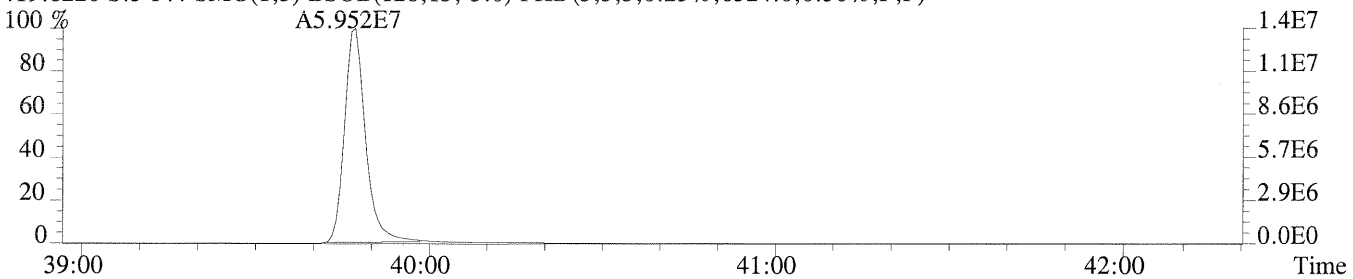
409.7788 S:3 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3308.0,0.50%,F,F)



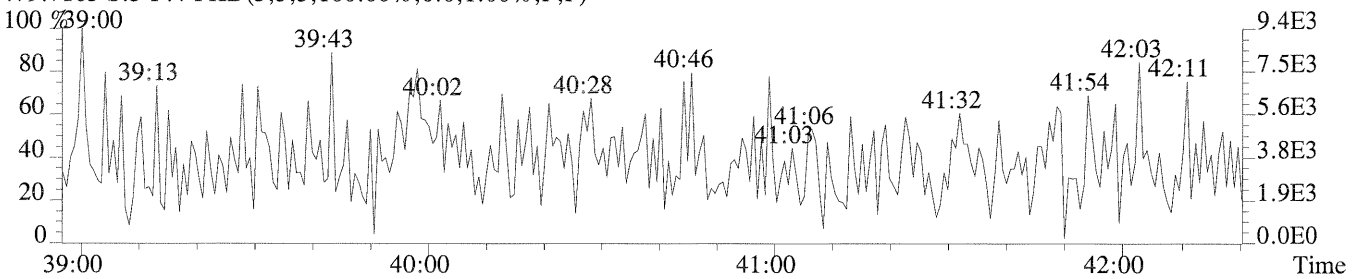
417.8253 S:3 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,7496.0,0.50%,F,F)



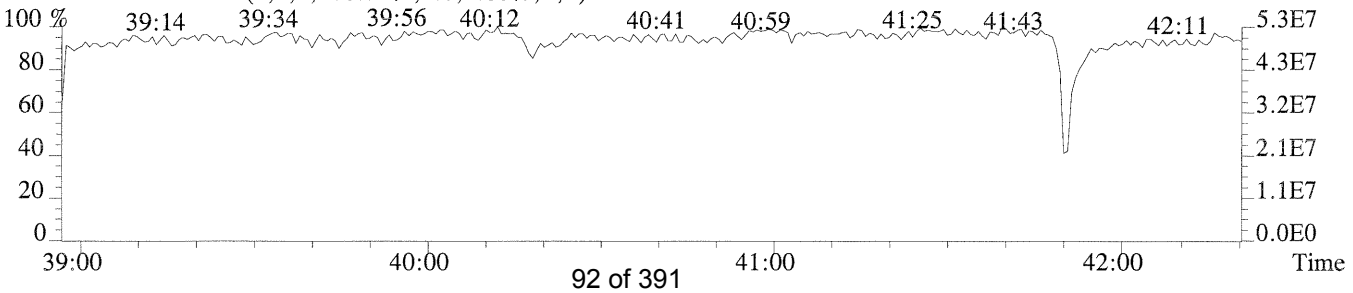
419.8220 S:3 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,6524.0,0.50%,F,F)



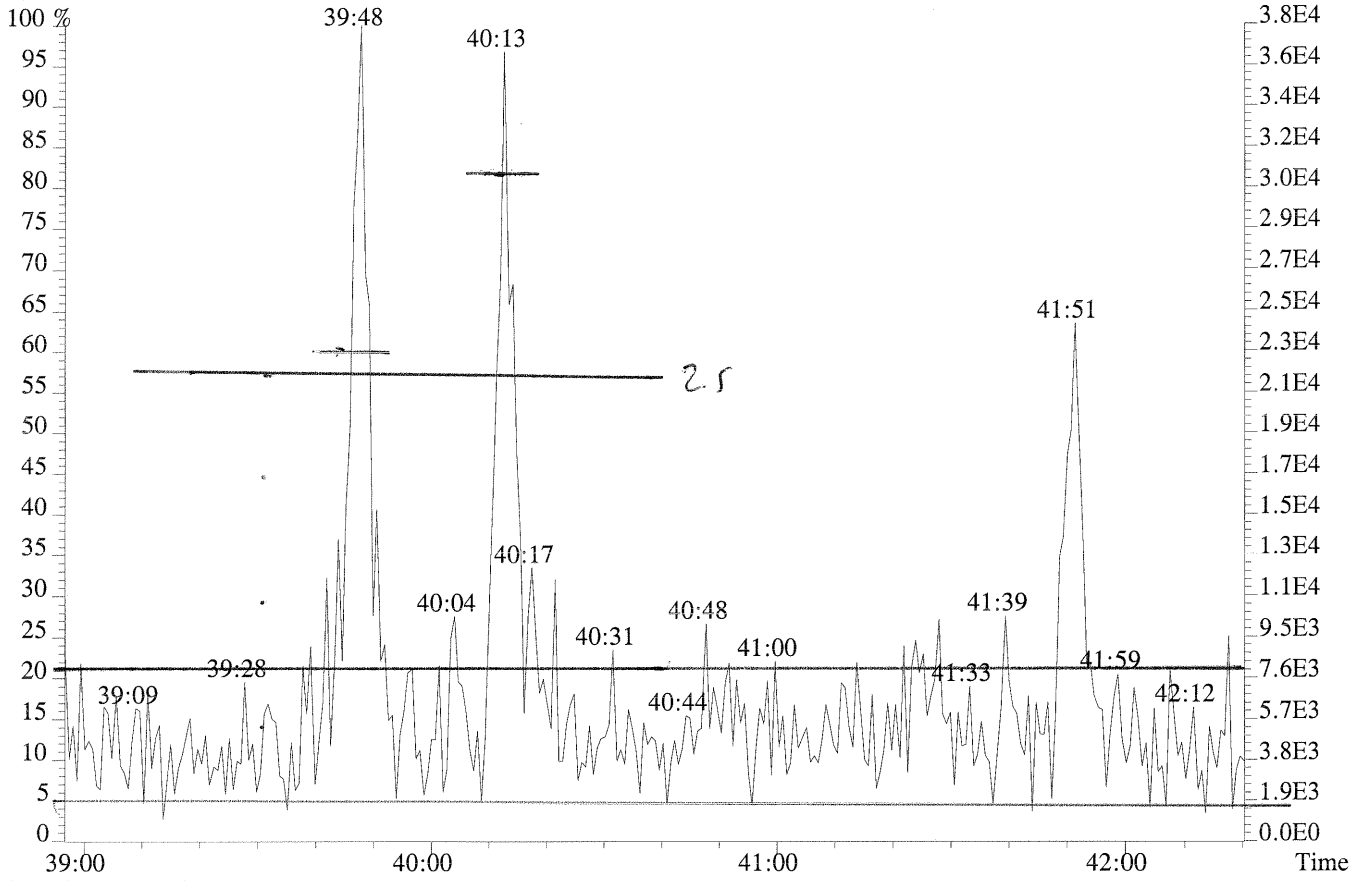
479.7165 S:3 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



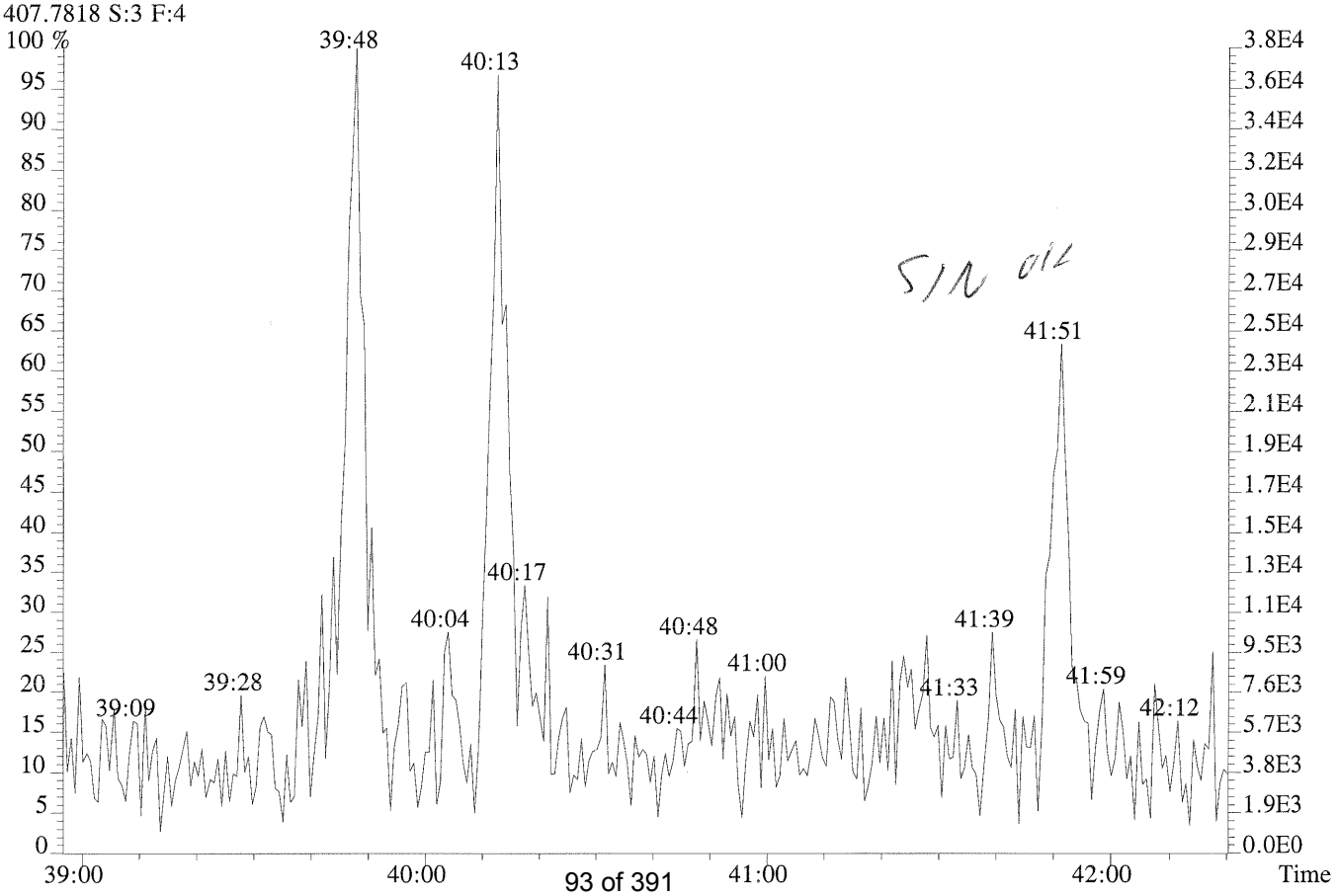
430.9728 S:3 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



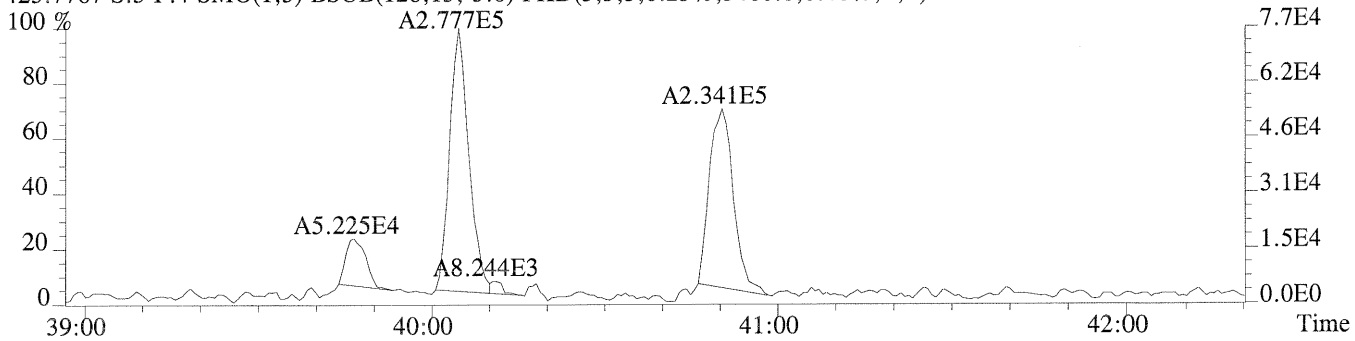
File:C15065 #1-304 Acq: 7-NOV-2007 20:40:14 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS,HOUSTON Text:E0700903-012RE MLT-B Exp:8290CA
407.7818 S:3 F:4



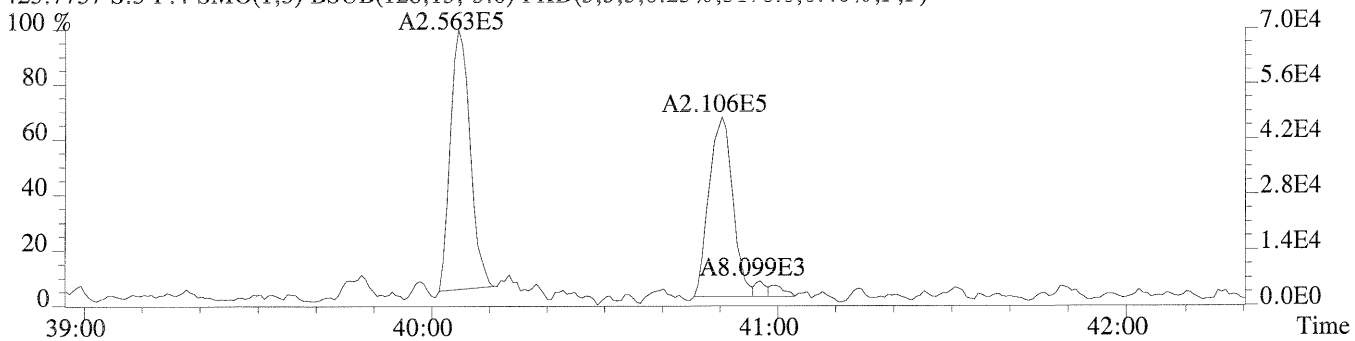
407.7818 S:3 F:4



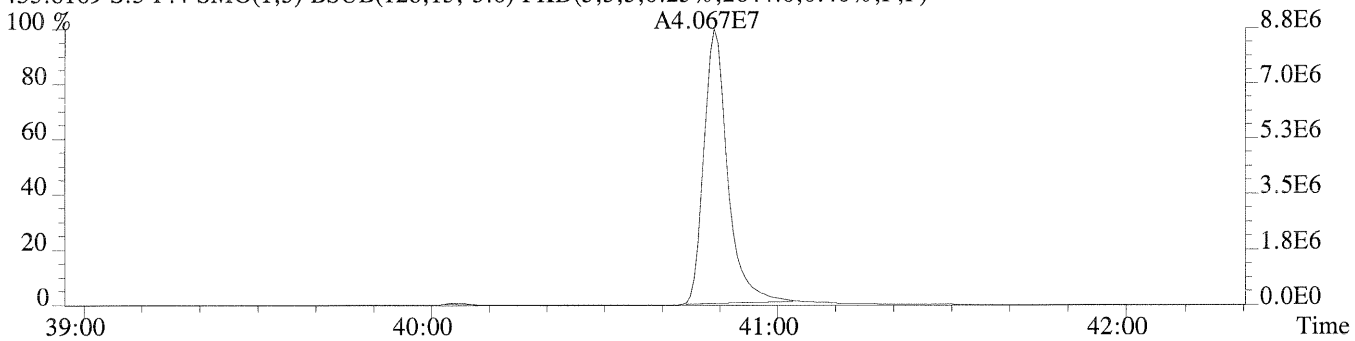
File:C15065 #1-304 Acq: 7-NOV-2007 20:40:14 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS,HOUSTON Text:E0700903-012RE MLT-B Exp:8290CA
423.7767 S:3 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3460.0,0.40%,F,F)



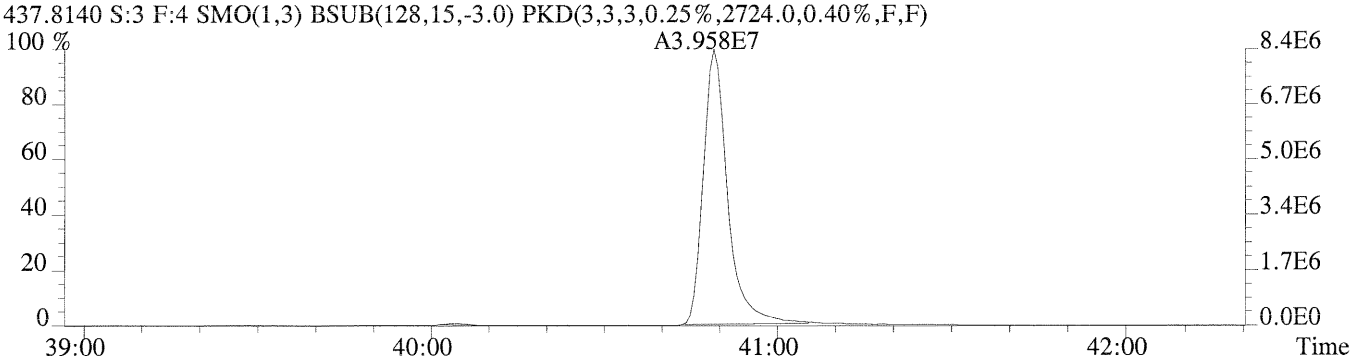
425.7737 S:3 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3176.0,0.40%,F,F)



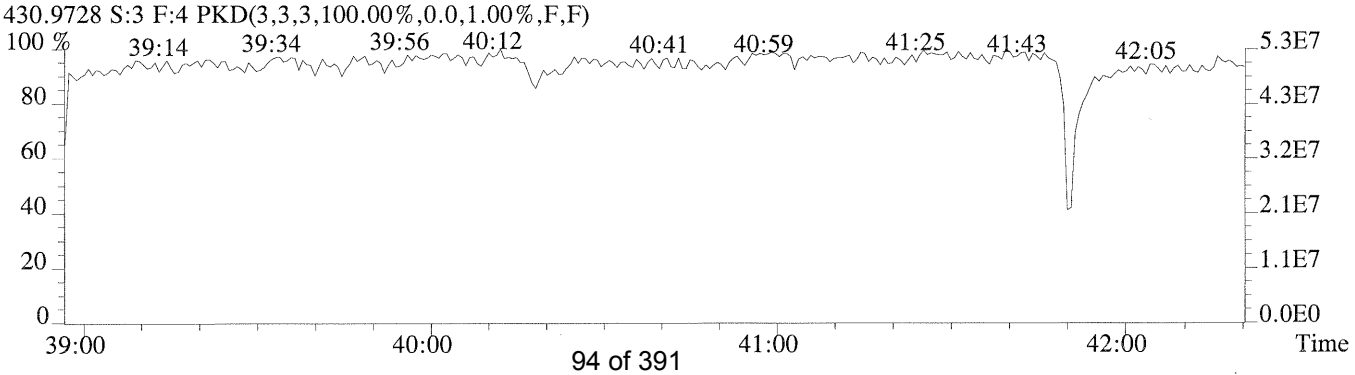
435.8169 S:3 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2644.0,0.40%,F,F)



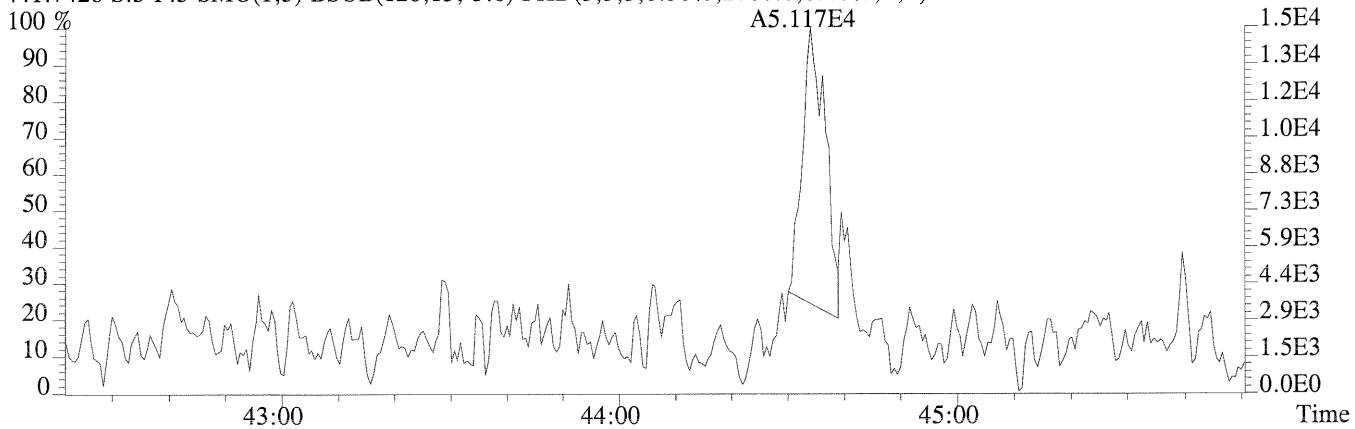
437.8140 S:3 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2724.0,0.40%,F,F)



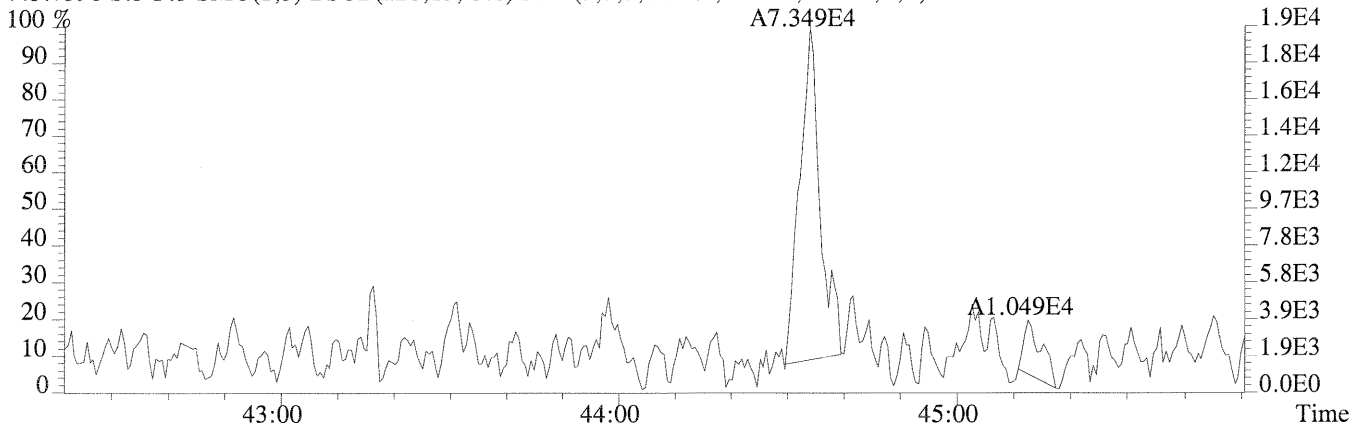
430.9728 S:3 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



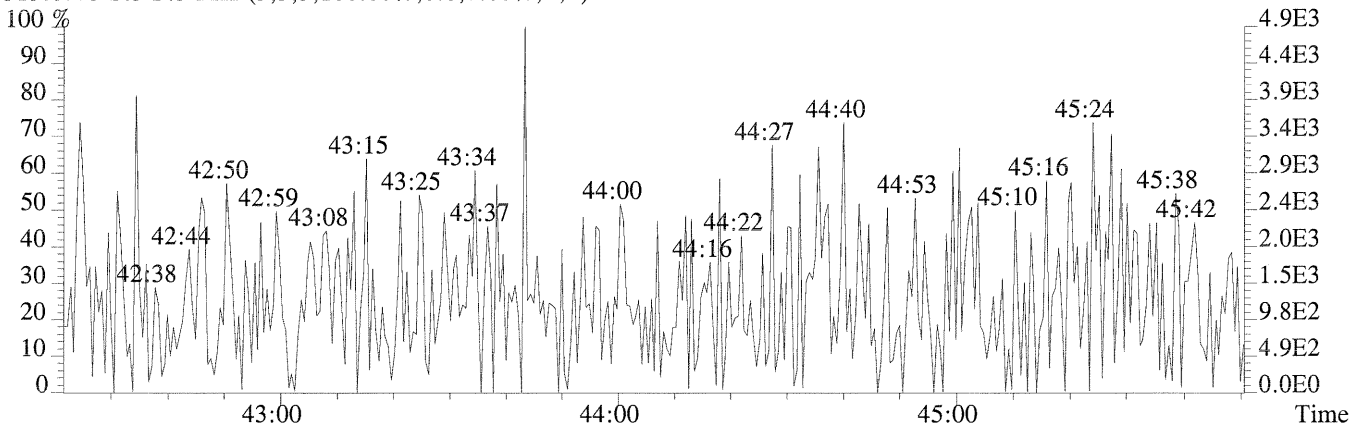
File:C15065 #1-380 Acq: 7-NOV-2007 20:40:14 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS,HOUSTON Text:E0700903-012RE MLT-B Exp:8290CA
441.7428 S:3 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2700.0,0.40%,F,F)



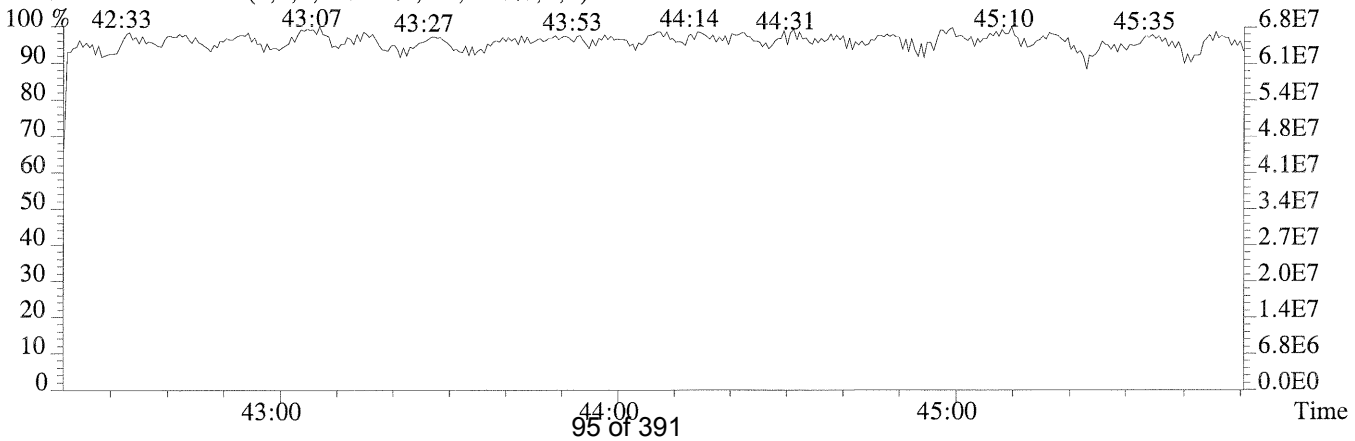
443.7398 S:3 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2532.0,0.40%,F,F)



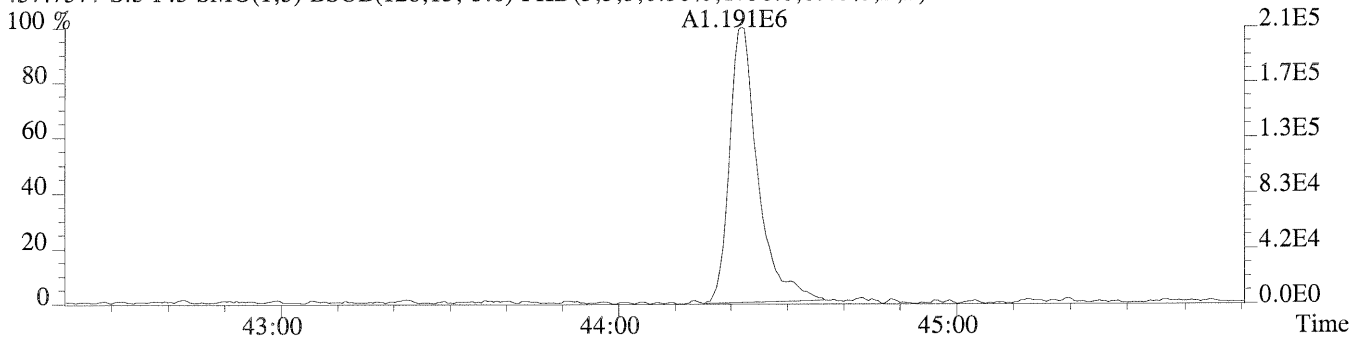
513.6775 S:3 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



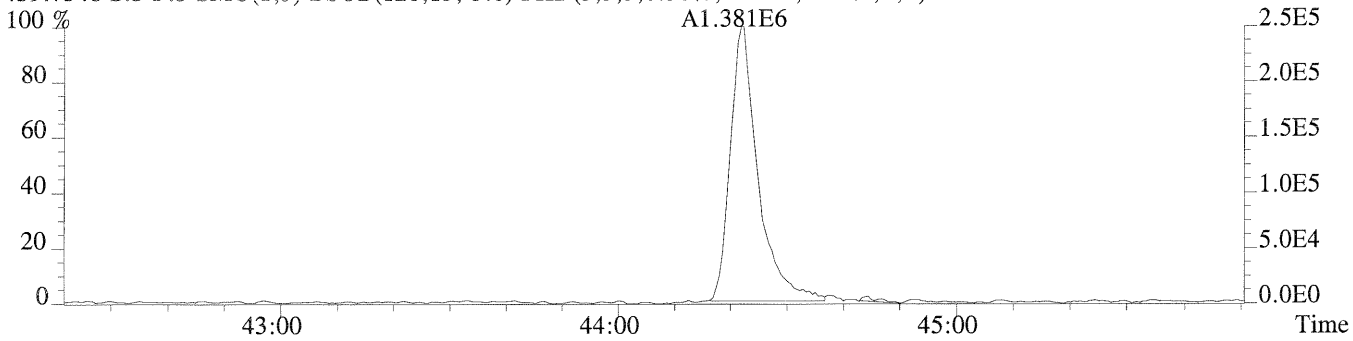
442.9728 S:3 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



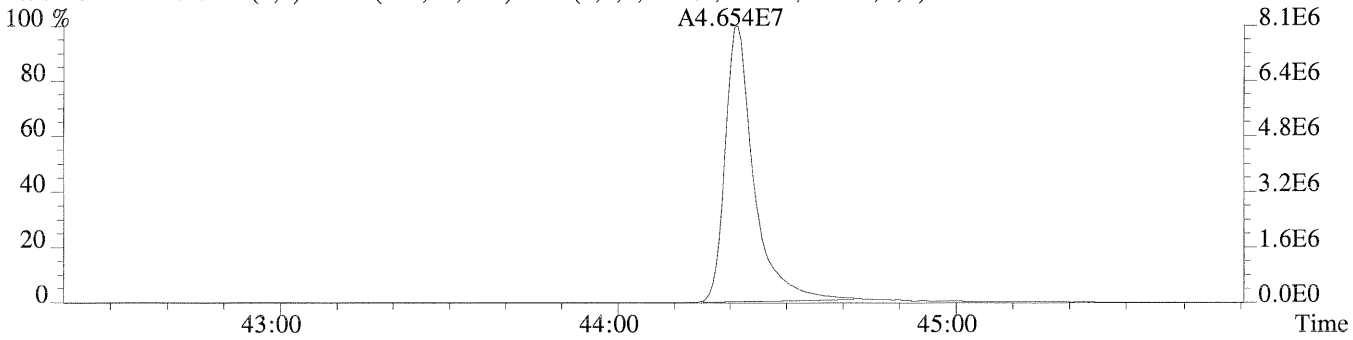
File:C15065 #1-380 Acq: 7-NOV-2007 20:40:14 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS,HOUSTON Text:E0700903-012RE MLT-B Exp:8290CA
457.7377 S:3 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1756.0,0.40%,F,F)



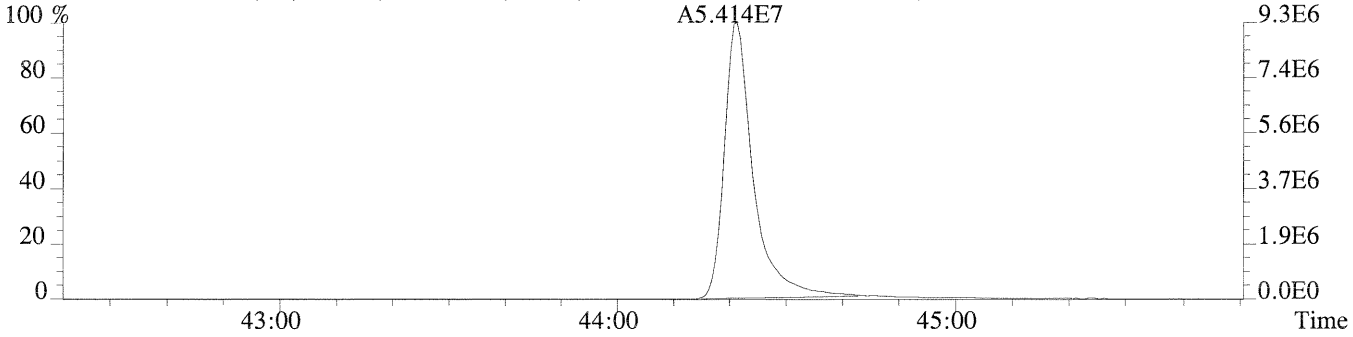
459.7348 S:3 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1988.0,0.40%,F,F)



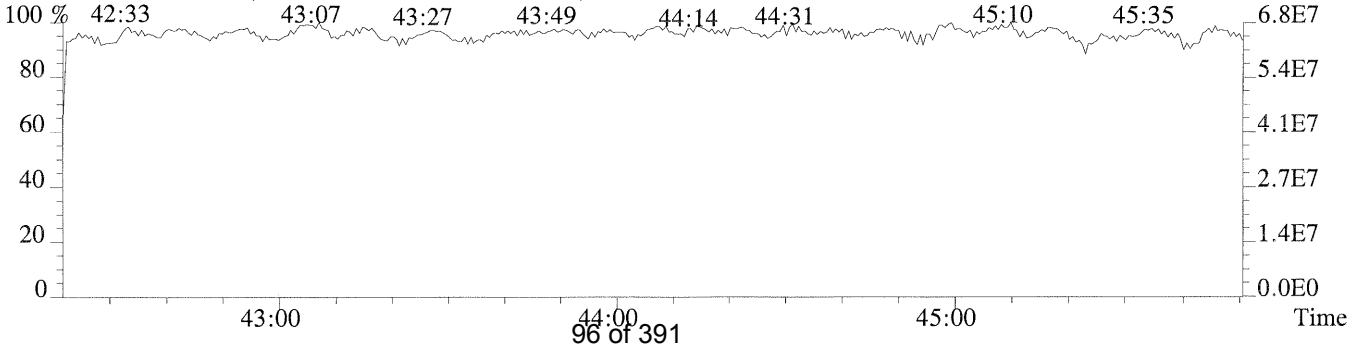
469.7780 S:3 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2156.0,0.40%,F,F)



471.7750 S:3 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2272.0,0.40%,F,F)



442.9728 S:3 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



Columbia Analytical Services, Inc.
Sample Response Summary

CLIENT ID.
MTL-NB

Filename U212359 Samp: 1 Inj: 1 Acquired: 30-OCT-07 13:48:00
Processed: 31-OCT-07 08:38:52 LAB. ID: E0700903-013

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	NotFnd	*	*	*	no	no
2	Unk	1,2,3,7,8-PeCDF	NotFnd	*	*	*	no	no
3	Unk	2,3,4,7,8-PeCDF	NotFnd	*	*	*	no	no
4	Unk	1,2,3,4,7,8-HxCDF	36:14	8.939e+01	7.136e+01	1.25	yes	no
5	Unk	1,2,3,6,7,8-HxCDF	36:21	8.945e+01	7.362e+01	1.21	yes	no
6	Unk	2,3,4,6,7,8-HxCDF	NotFnd	*	*	*	no	yes
7	Unk	1,2,3,7,8,9-HxCDF	NotFnd	*	*	*	no	no
8	Unk	1,2,3,4,6,7,8-HpCDF	39:07	1.136e+03	1.160e+03	0.98	yes	no
9	Unk	1,2,3,4,7,8,9-HpCDF	40:19	5.078e+01	4.826e+01	1.05	yes	no
10	Unk	OCDF	42:42	2.149e+03	2.500e+03	0.86	yes	no
11	Unk	2,3,7,8-TCDD	NotFnd	*	*	*	no	no
12	Unk	1,2,3,7,8-PeCDD	NotFnd	*	*	*	no	no
13	Unk	1,2,3,4,7,8-HxCDD	37:01	3.846e+01	2.955e+01	1.30	yes	no
14	Unk	1,2,3,6,7,8-HxCDD	37:06	1.512e+02	1.067e+02	1.42	yes	no
15	Unk	1,2,3,7,8,9-HxCDD	37:24	1.036e+02	1.018e+02	1.02	no	yes
16	Unk	1,2,3,4,6,7,8-HpCDD	39:58	2.599e+03	2.414e+03	1.08	yes	no
17	Unk	OCDD	42:35	1.678e+04	1.873e+04	0.90	yes	no
18	IS	13C-2,3,7,8-TCDF	26:50	2.430e+04	3.079e+04	0.79	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	32:13	4.602e+04	2.957e+04	1.56	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	36:13	7.460e+04	1.402e+05	0.53	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	39:06	5.013e+04	1.120e+05	0.45	yes	no
22	IS	13C-2,3,7,8-TCDD	27:57	2.255e+04	2.819e+04	0.80	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	33:30	3.686e+04	2.330e+04	1.58	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	37:06	1.023e+05	8.211e+04	1.25	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	39:57	8.250e+04	7.918e+04	1.04	yes	no
26	IS	13C-OCDD	42:34	1.261e+05	1.396e+05	0.90	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	27:40	3.663e+04	4.588e+04	0.80	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:23	5.037e+04	4.067e+04	1.24	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	27:59	4.352e+04				
				SUM AREA				
30	Tot	Total Tetra-Furans	NotFnd		*	*	no	
31	Tot	Total Tetra-Dioxins	NotFnd		*	*	no	
32	Tot	Total Penta-Furans	29:44		1.174e+03	1.54	yes	
33	Tot	Total Penta-Dioxins	31:22		1.275e+02	1.61	yes	
34	Tot	Total Hexa-Furans	35:11		3.180e+03	1.08	yes	
35	Tot	Total Hexa-Dioxins	35:46		1.708e+03	1.21	yes	
36	Tot	Total Hepta-Furans	39:07		6.704e+03	0.98	yes	
37	Tot	Total Hepta-Dioxins	39:22		1.014e+04	1.06	yes	

---Sample Calculation---

$$\text{OCDD} = \frac{(1.678e+04 + 1.873e+04) \times 5000 \text{ pg}}{(1.261e+05 + 1.396e+05) \times (12.016 \text{ g}) \times (100 - 20.13)/100 \times 1.11} = 62.73 \text{ pg}$$

Columbia Analytical Services, Inc.
10655 Richmond Ave., Suite 130A
Houston, TX 77042
Office(713)266-1599. Fax(713)266-0130

10/31/07
QB 10/31/07

Columbia Analytical Services,Inc. CLIENT ID.
Signal/Noise Height Ratio Summary MTL-NB

Run #8 Filename U212359 Samp: 1 Inj: 1 Acquired: 30-OCT-07 13:48:00

Processed: 31-OCT-07 08:38:52 LAB. ID: E0700903-013

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	*	7.48e+02	*	*	1.33e+03	*
2	1,2,3,7,8-PeCDF	*	4.96e+02	*	*	6.88e+02	*
3	2,3,4,7,8-PeCDF	*	4.96e+02	*	*	6.88e+02	*
4	1,2,3,4,7,8-HxCDF	1.84e+04	1.62e+03	1.1e+01	1.51e+04	1.17e+03	1.3e+01
5	1,2,3,6,7,8-HxCDF	1.49e+04	1.62e+03	9.2e+00	1.54e+04	1.17e+03	1.3e+01
6	2,3,4,6,7,8-HxCDF	*	1.62e+03	*	*	1.17e+03	*
7	1,2,3,7,8,9-HxCDF	*	1.62e+03	*	*	1.17e+03	*
8	1,2,3,4,6,7,8-HpCDF	2.55e+05	2.35e+03	1.1e+02	2.50e+05	4.96e+02	5.0e+02
9	1,2,3,4,7,8,9-HpCDF	1.07e+04	2.35e+03	4.6e+00	9.74e+03	4.96e+02	2.0e+01
10	OCDF	3.42e+05	3.40e+02	1.0e+03	3.91e+05	8.56e+02	4.6e+02
11	2,3,7,8-TCDD	*	8.48e+02	*	*	5.88e+02	*
12	1,2,3,7,8-PeCDD	*	8.16e+02	*	*	9.12e+02	*
13	1,2,3,4,7,8-HxCDD	8.83e+03	9.00e+02	9.8e+00	6.96e+03	9.24e+02	7.5e+00
14	1,2,3,6,7,8-HxCDD	2.94e+04	9.00e+02	3.3e+01	1.91e+04	9.24e+02	2.1e+01
15	1,2,3,7,8,9-HxCDD	1.96e+04	9.00e+02	2.2e+01	1.73e+04	9.24e+02	1.9e+01
16	1,2,3,4,6,7,8-HpCDD	5.44e+05	4.92e+02	1.1e+03	5.10e+05	8.08e+02	6.3e+02
17	OCDD	2.65e+06	7.80e+02	3.4e+03	2.98e+06	4.96e+02	6.0e+03
18	13C-2,3,7,8-TCDF	2.88e+06	3.39e+03	8.5e+02	3.61e+06	1.09e+03	3.3e+03
19	13C-1,2,3,7,8-PeCDF	7.92e+06	3.40e+02	2.3e+04	5.08e+06	6.08e+02	8.4e+03
20	13C-1,2,3,4,7,8-HxCDF	1.51e+07	5.12e+02	3.0e+04	2.86e+07	1.20e+03	2.4e+04
21	13C-1,2,3,4,6,7,8-HpCDF	1.09e+07	3.35e+03	3.2e+03	2.43e+07	4.35e+03	5.6e+03
22	13C-2,3,7,8-TCDD	3.18e+06	3.86e+03	8.2e+02	4.01e+06	1.72e+03	2.3e+03
23	13C-1,2,3,7,8-PeCDD	6.58e+06	5.56e+02	1.2e+04	4.14e+06	6.60e+02	6.3e+03
24	13C-1,2,3,6,7,8-HxCDD	2.15e+07	3.31e+03	6.5e+03	1.71e+07	1.90e+03	9.0e+03
25	13C-1,2,3,4,6,7,8-HpCDD	1.77e+07	9.36e+02	1.9e+04	1.69e+07	8.04e+02	2.1e+04
26	13C-OCDD	2.01e+07	6.40e+02	3.1e+04	2.23e+07	6.96e+02	3.2e+04
27	13C-1,2,3,4-TCDD	5.01e+06	3.86e+03	1.3e+03	6.30e+06	1.72e+03	3.7e+03
28	13C-1,2,3,7,8,9-HxCDD	1.04e+07	3.31e+03	3.1e+03	8.35e+06	1.90e+03	4.4e+03
29	37Cl-2,3,7,8-TCDD	5.80e+06	1.32e+03	4.4e+03			

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Columbia Analytical Services, Inc.
Peak List Summary

CLIENT ID.

MTL-NB

Entry: 32 Totals Name: Total Penta-Furans

Run: 8 File: U212359 Sample:1 Injection:1 Function:2

Acquired: 30-OCT-07 13:48:00 Processed: 31-OCT-07 08:38:52

Mass:339.860 341.857 Response:

#	RT	Resp	Resp Ratio	Meet	Tot Resp	Conc.	Name	Mod?
1	29:44	4.61e+02	2.99e+02 1.54	yes	7.60e+02	1.015		n
2	31:11	2.54e+02	1.59e+02 1.60	yes	4.13e+02	0.552		n

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Peak List Summary

CLIENT ID.

MTL-NB

Entry: 33 Totals Name: Total Penta-Dioxins

Run: 8 File: U212359 Sample:1 Injection:1 Function:2

Acquired: 30-OCT-07 13:48:00 Processed: 31-OCT-07 08:38:52

Mass:355.855 357.852 Response:

#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Conc.	Name	Mod?
1	31:22	7.87e+01	4.89e+01	1.61	yes	1.28e+02	0.228		n

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Peak List Summary

CLIENT ID.

MTL-NB

Entry: 34 Totals Name: Total Hexa-Furans

Run: 8 File: U212359 Sample:1 Injection:1 Function:3

Acquired: 30-OCT-07 13:48:00 Processed: 31-OCT-07 08:38:52

#	RT	Resp	Mass:373.821 / 375.818 Resp Ratio	Response: Meet	Tot Resp	Conc.	Name	Mod?
1	35:11	1.78e+02	1.65e+02 1.08	yes	3.43e+02	0.338		n
2	35:20	6.48e+02	5.26e+02 1.23	yes	1.17e+03	1.159		n
3	35:50	7.22e+02	6.17e+02 1.17	yes	1.34e+03	1.322		n
4	36:14	8.94e+01	7.14e+01 1.25	yes	1.61e+02	0.151	1,2,3,4,7,8-HxCDF	n
5	36:21	8.94e+01	7.36e+01 1.21	yes	1.63e+02	0.151	1,2,3,6,7,8-HxCDF	n

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Columbia Analytical Services, Inc.
Peak List Summary

CLIENT ID.

MTL-NB

Entry: 35 Totals Name: Total Hexa-Dioxins

Run: 8 File: U212359 Sample:1 Injection:1 Function:3

Acquired: 30-OCT-07 13:48:00 Processed: 31-OCT-07 08:38:52

Mass:389.816 391.813 Response:

#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Conc.	Name	Mod?
1	35:46	3.82e+02	3.16e+02	1.21	yes	6.98e+02	0.861		n
2	36:28	3.87e+02	2.97e+02	1.30	yes	6.84e+02	0.844		n
3	37:01	3.85e+01	2.96e+01	1.30	yes	6.80e+01	0.089	1,2,3,4,7,8-HxCDD	n
4	37:06	1.51e+02	1.07e+02	1.42	yes	2.58e+02	0.304	1,2,3,6,7,8-HxCDD	n

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Columbia Analytical Services, Inc.
Peak List Summary

CLIENT ID.

MTL-NB

Entry: 36 Totals Name: Total Hepta-Furans

Run: 8 File: U212359 Sample:1 Injection:1 Function:4

Acquired: 30-OCT-07 13:48:00 Processed: 31-OCT-07 08:38:52

Mass:407.782	409.779		Response:					
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Conc.	Name	Mod?
1	39:07	1.14e+03	1.16e+03	0.98	yes	2.30e+03	2.360	1,2,3,4,6,7,8-HpCDF	n
2	39:27	2.21e+03	2.10e+03	1.05	yes	4.31e+03	4.994		n
3	40:19	5.08e+01	4.83e+01	1.05	yes	9.90e+01	0.132	1,2,3,4,7,8,9-HpCDF	n

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Columbia Analytical Services, Inc.
Peak List Summary

CLIENT ID.

MTL-NB

Entry: 37 Totals Name: Total Hepta-Dioxins

Run: 8 File: U212359 Sample:1 Injection:1 Function:4

Acquired: 30-OCT-07 13:48:00 Processed: 31-OCT-07 08:38:52

Mass:423.777 425.774 Response:

#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Conc.	Name	Mod?
1	39:22	2.64e+03	2.49e+03	1.06	yes	5.12e+03	8.053		n
2	39:58	2.60e+03	2.41e+03	1.08	yes	5.01e+03	7.878	1,2,3,4,6,7,8-HpCDD	n

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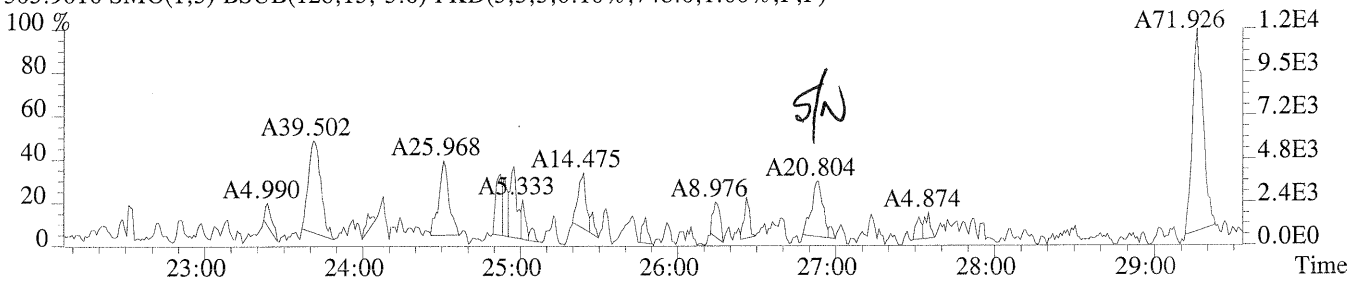
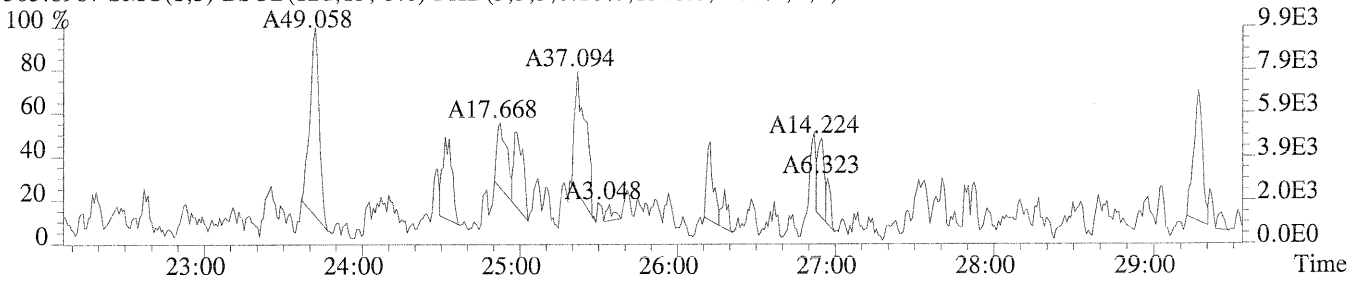
File:U212359 #1-621 Acq:30-OCT-2007 13:48:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:MTL-NB Exp:E0700903-013

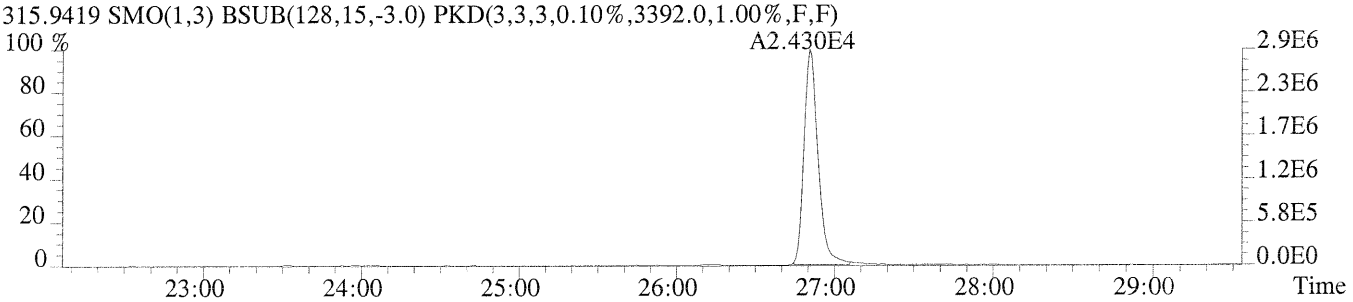
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,748.0,1.00%,F,F)



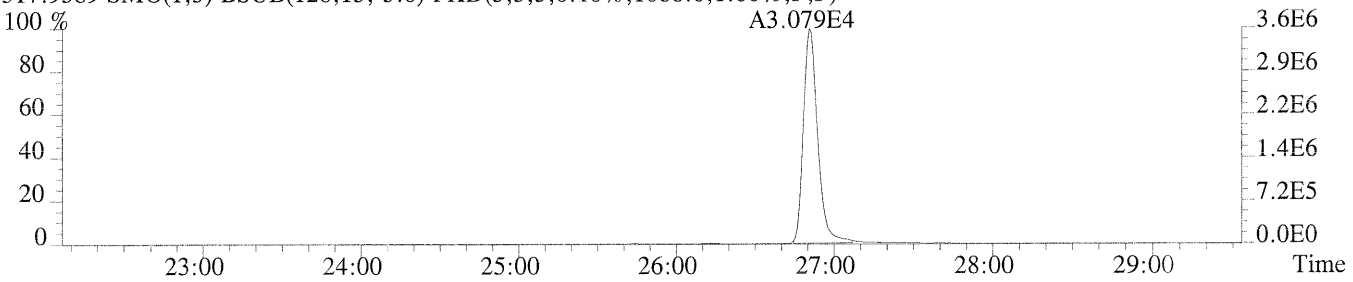
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1328.0,1.00%,F,F)



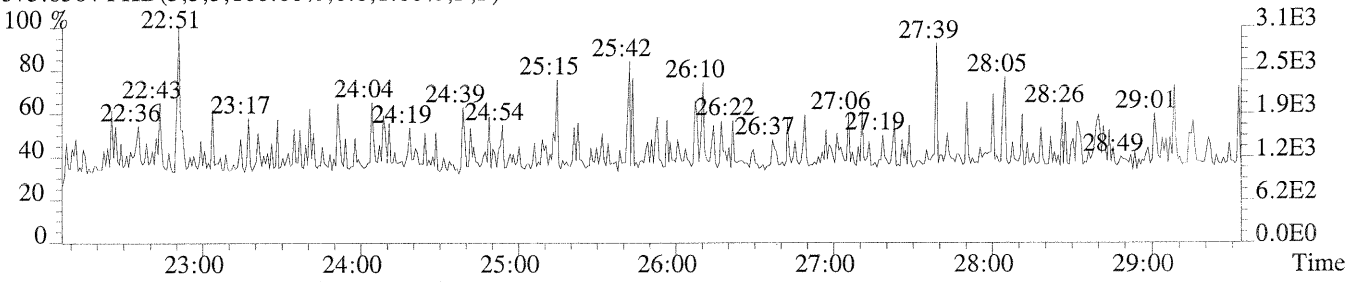
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3392.0,1.00%,F,F)



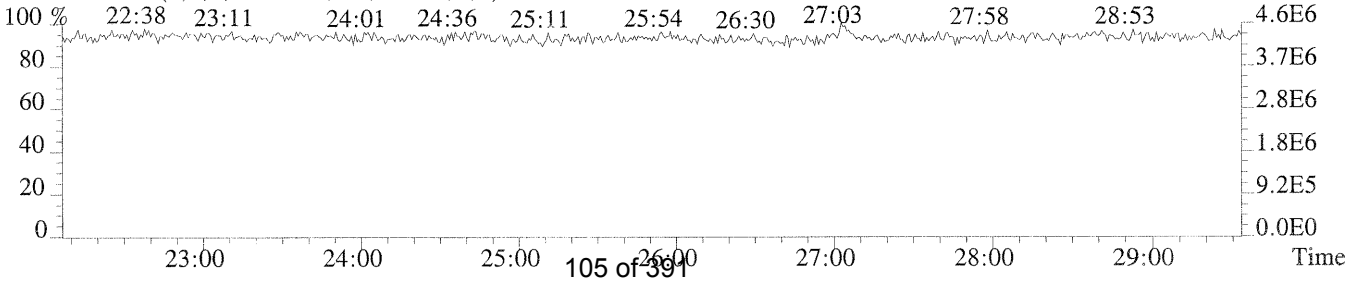
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1088.0,1.00%,F,F)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

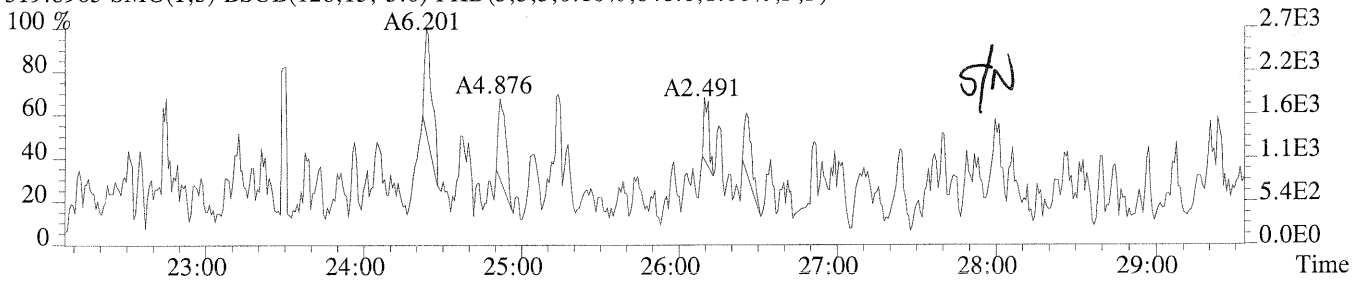


354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

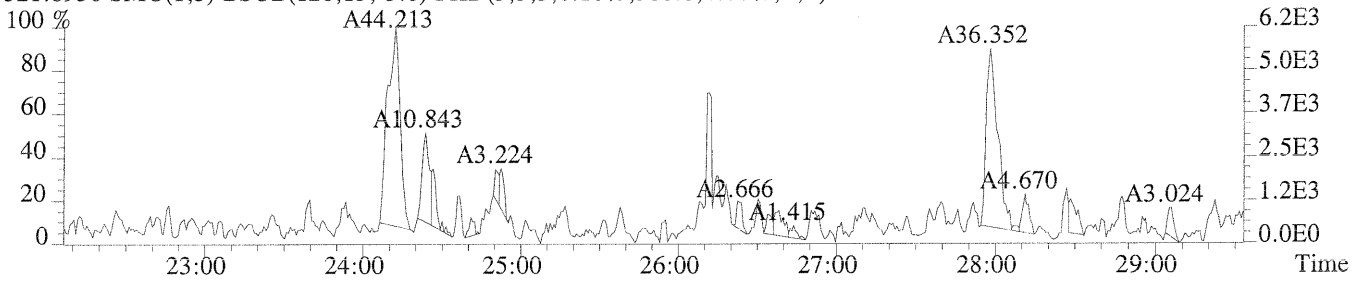


File:U212359 #1-621 Acq:30-OCT-2007 13:48:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:MTL-NB Exp:E0700903-013

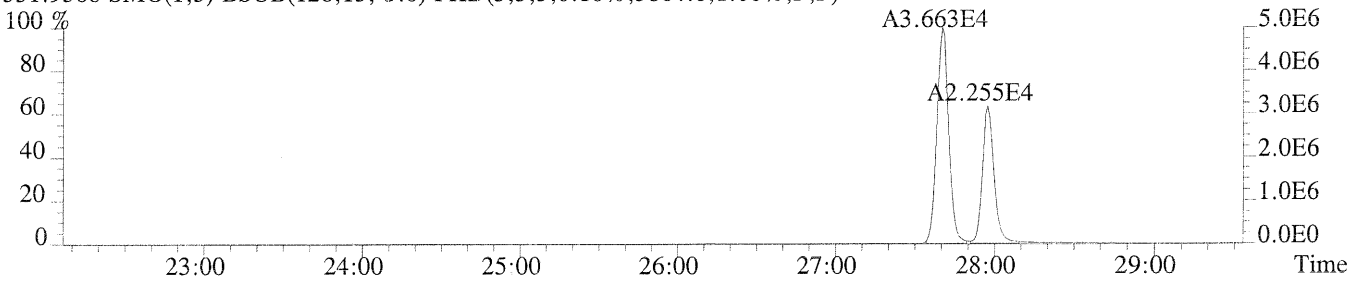
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,848.0,1.00%,F,F)



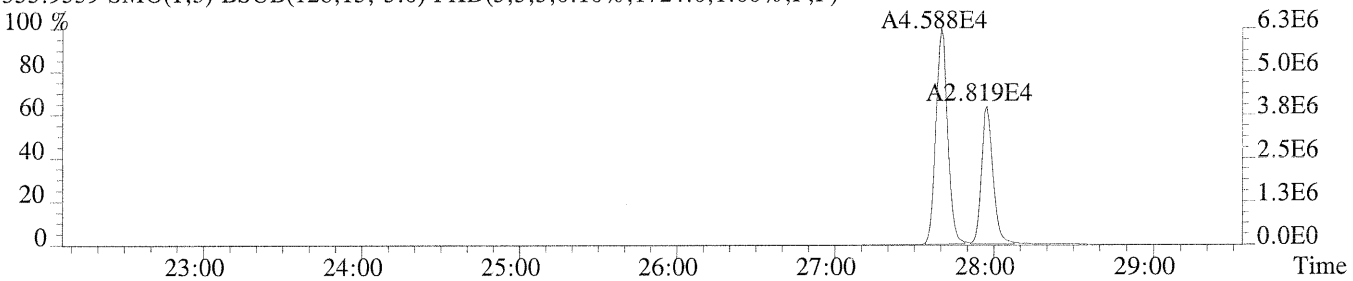
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,588.0,1.00%,F,F)



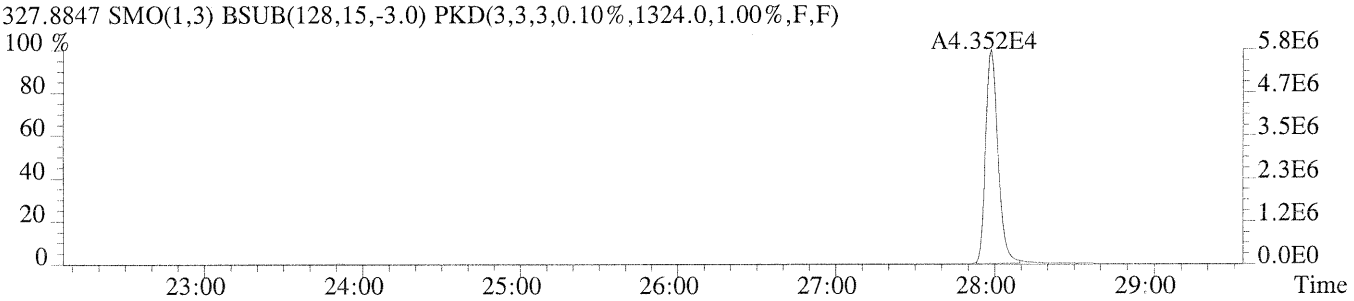
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3864.0,1.00%,F,F)



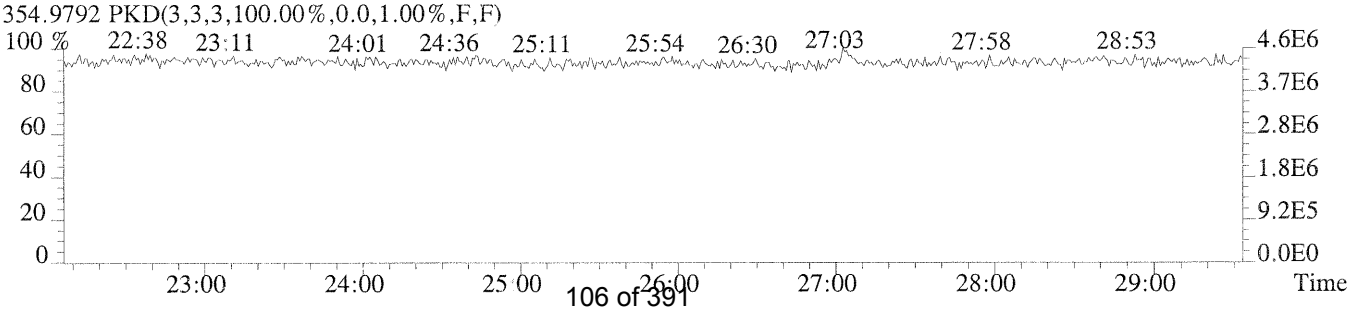
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1724.0,1.00%,F,F)



327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1324.0,1.00%,F,F)

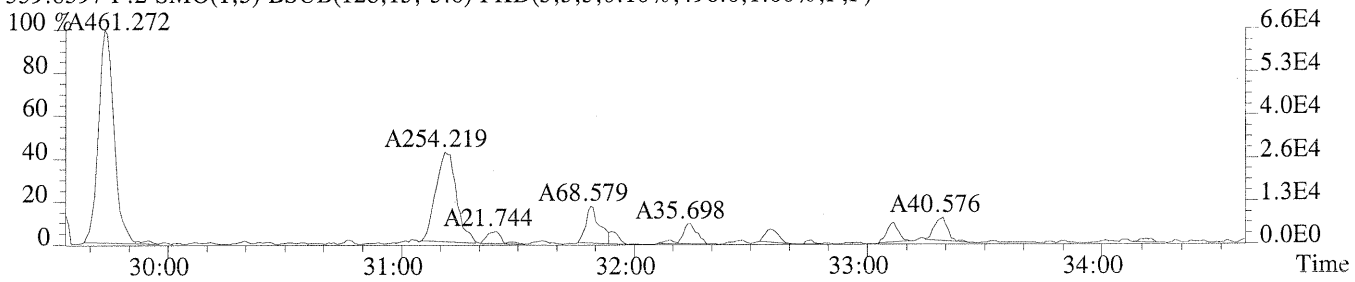


354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

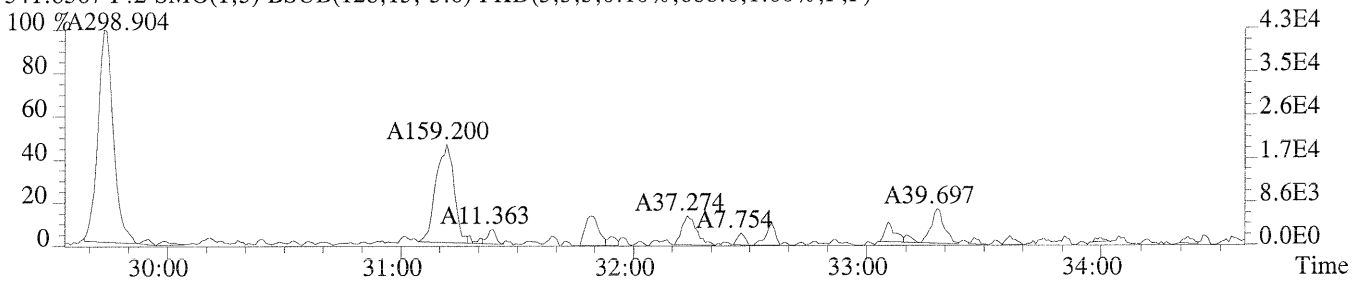


File:U212359 #1-458 Acq:30-OCT-2007 13:48:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:MTL-NB Exp:E0700903-013

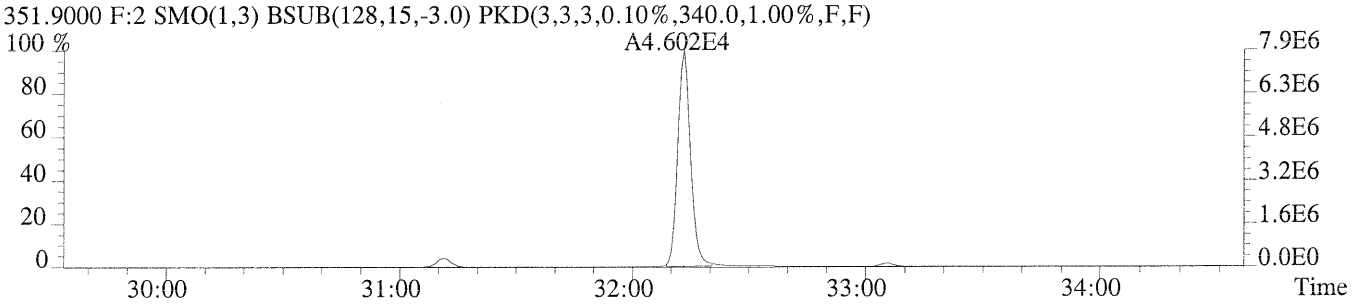
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,496.0,1.00%,F,F)



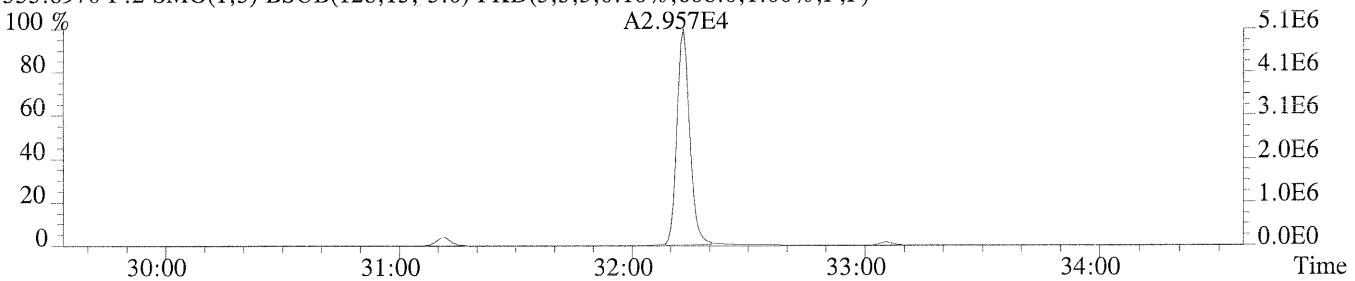
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,688.0,1.00%,F,F)



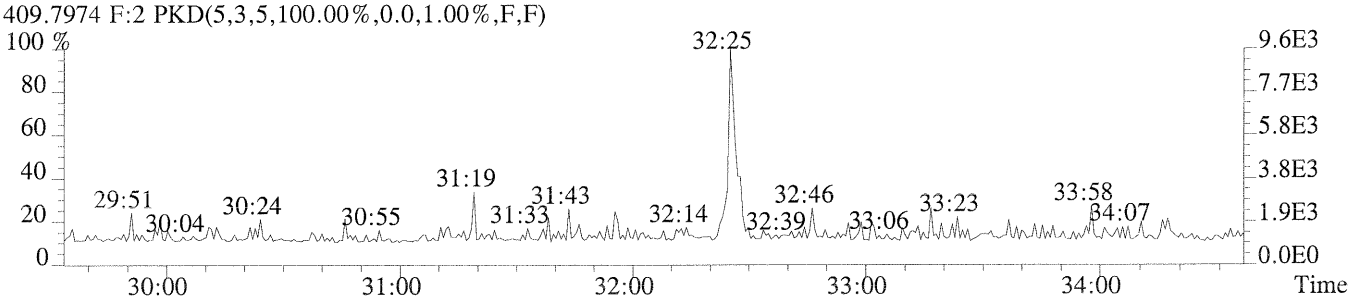
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,340.0,1.00%,F,F)



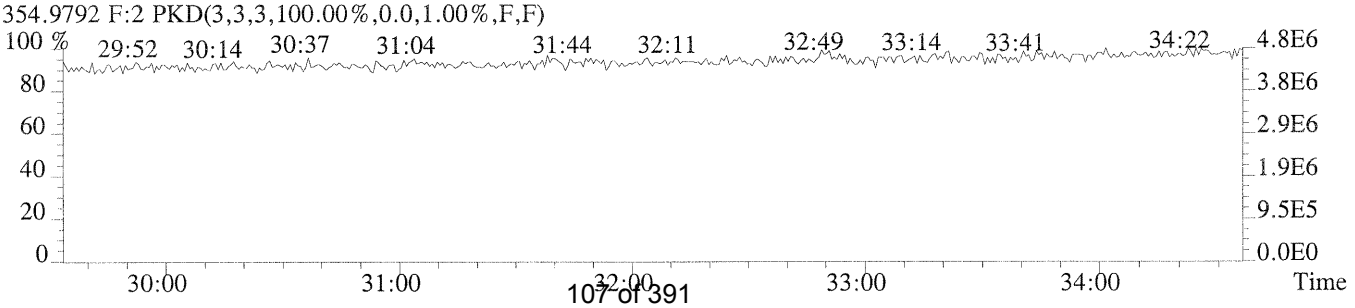
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,608.0,1.00%,F,F)



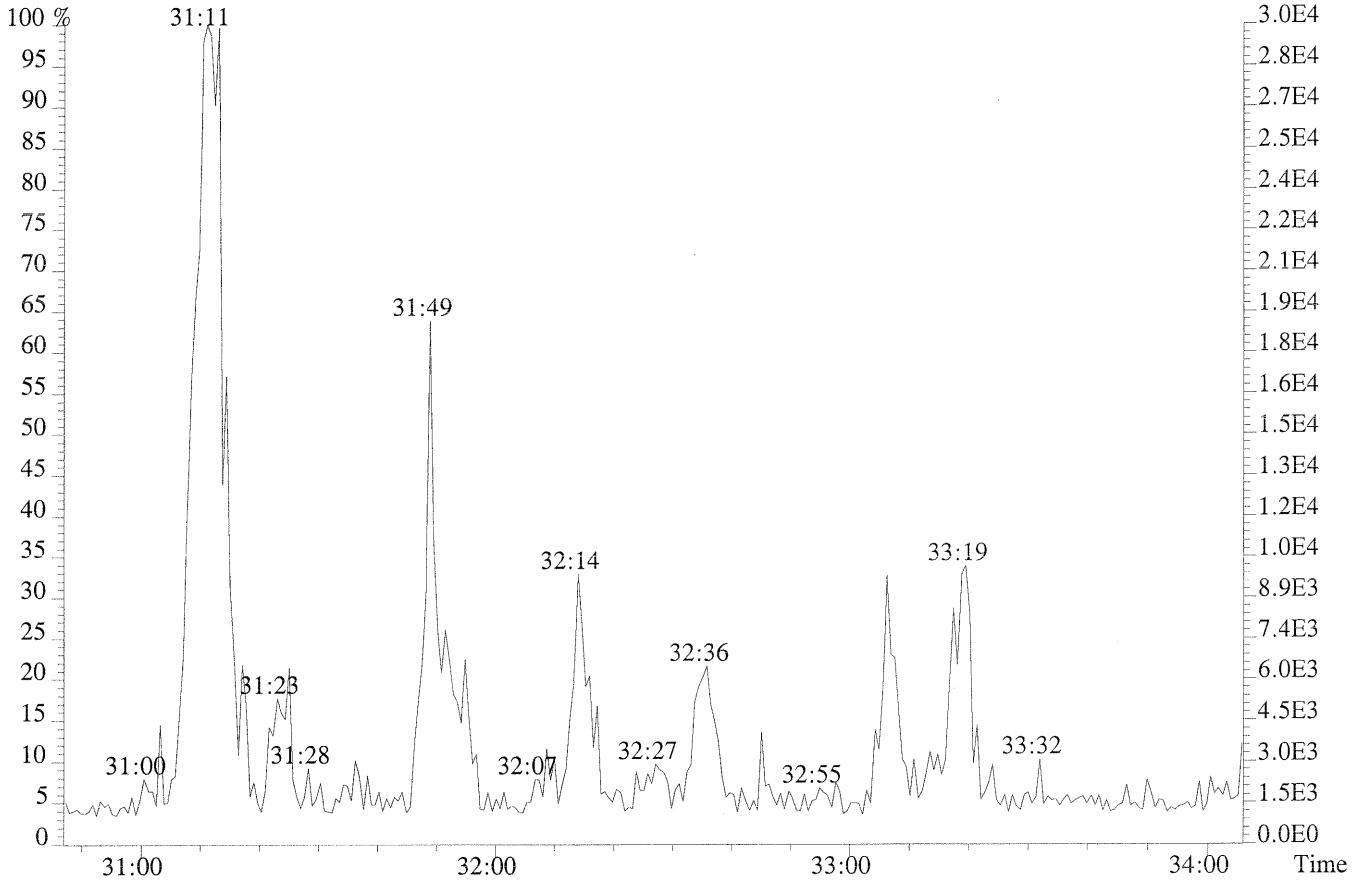
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



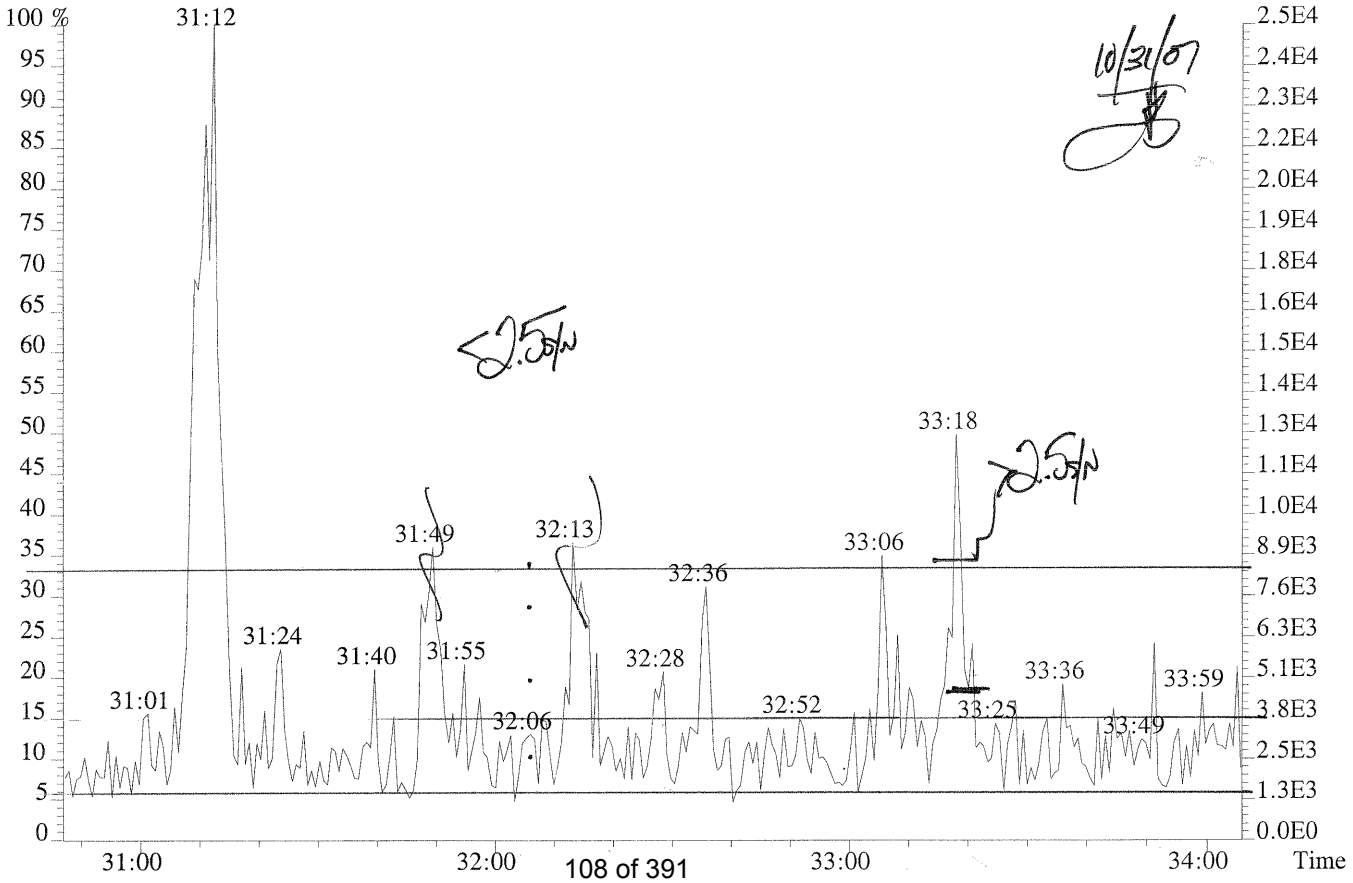
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



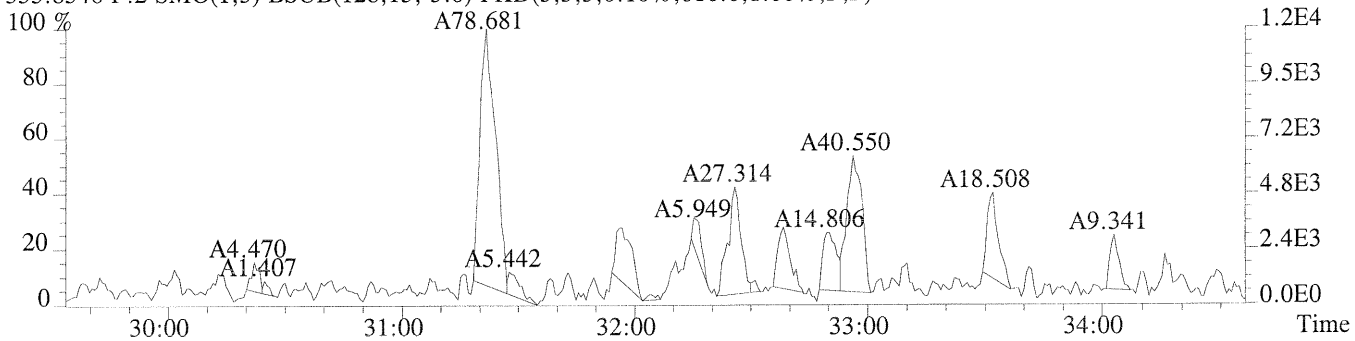
File:U212359 #1-458 Acq:30-OCT-2007 13:48:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:MTL-NB Exp:E0700903-013
339.8597 F:2



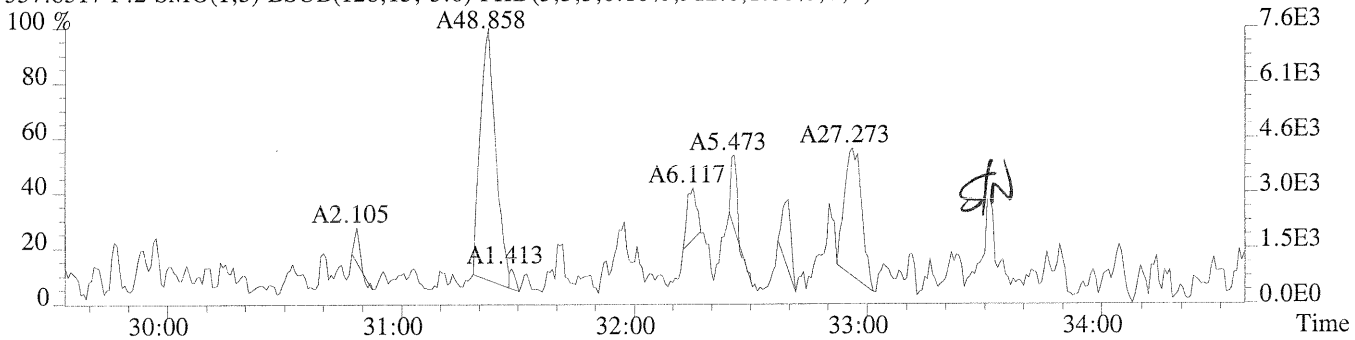
341.8567 F:2



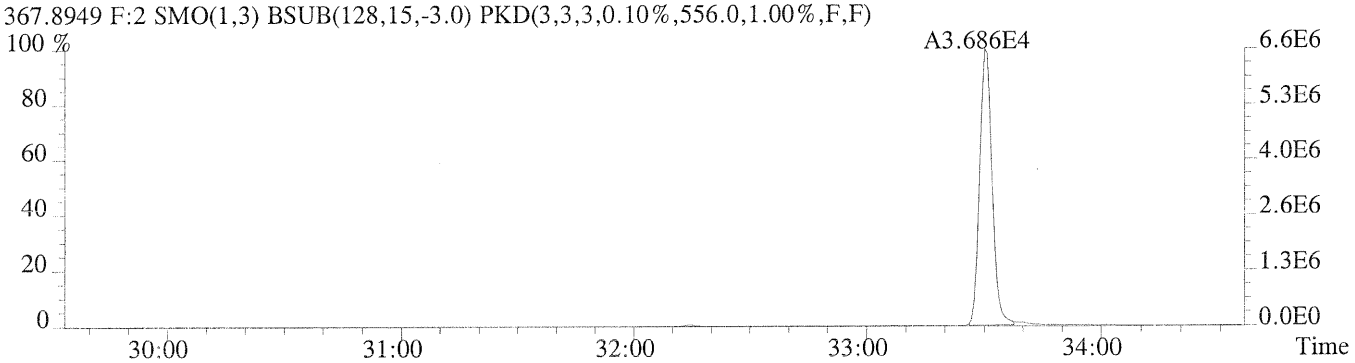
File:U212359 #1-458 Acq:30-OCT-2007 13:48:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:MTL-NB Exp:E0700903-013
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,816.0,1.00%,F,F)



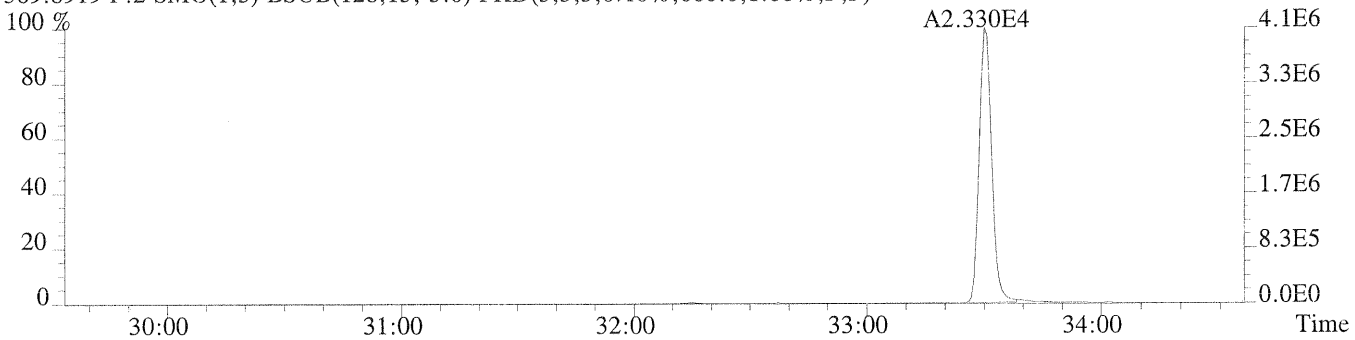
357.8517 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,912.0,1.00%,F,F)



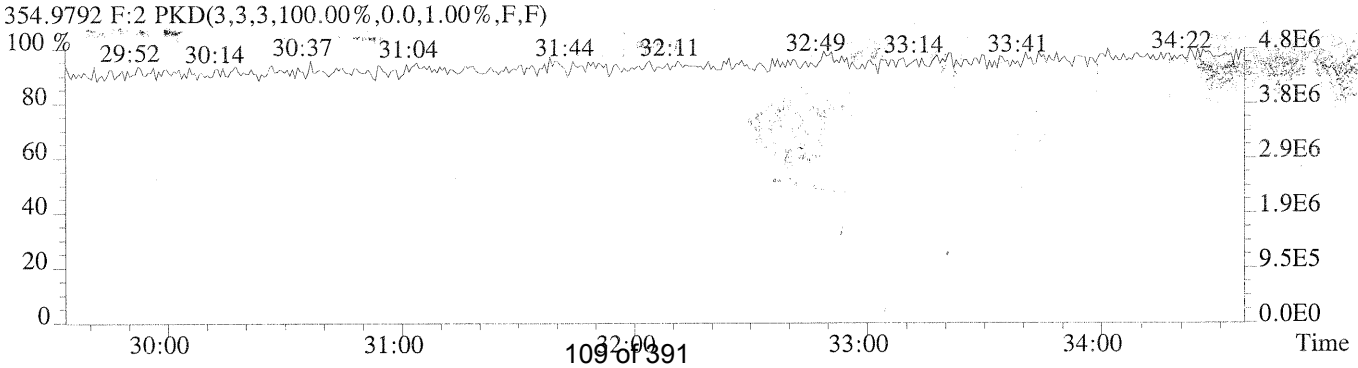
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,556.0,1.00%,F,F)



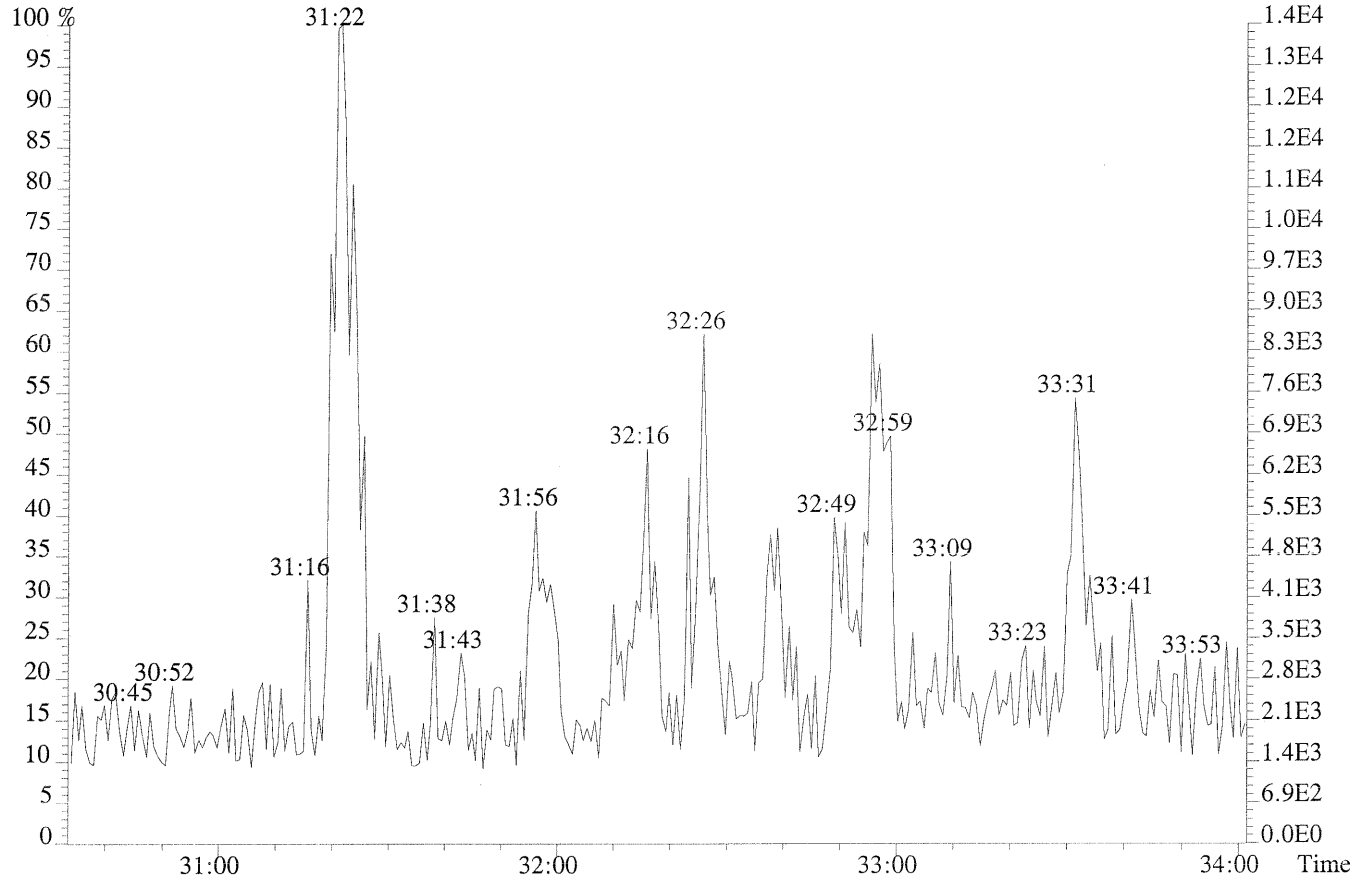
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,660.0,1.00%,F,F)



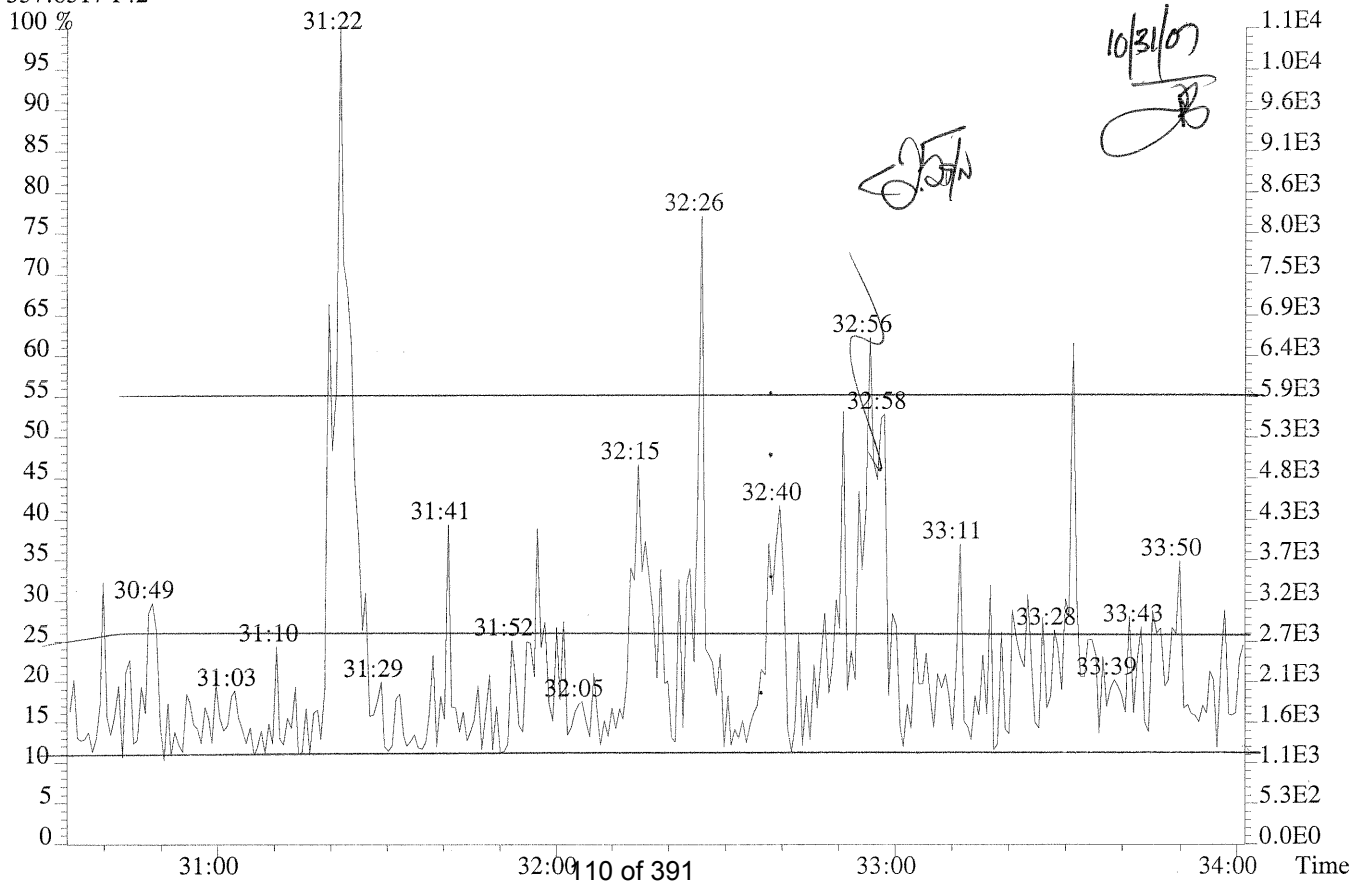
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



File:U212359 #1-458 Acq:30-OCT-2007 13:48:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:MTL-NB Exp:E0700903-013
355.8546 F:2



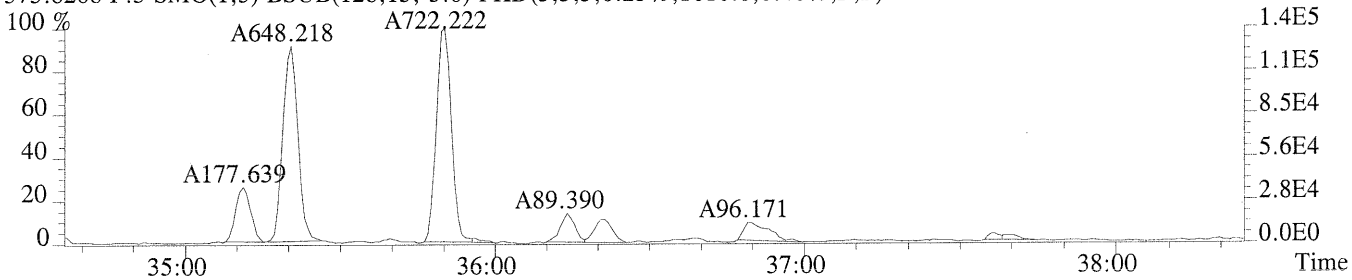
357.8517 F:2



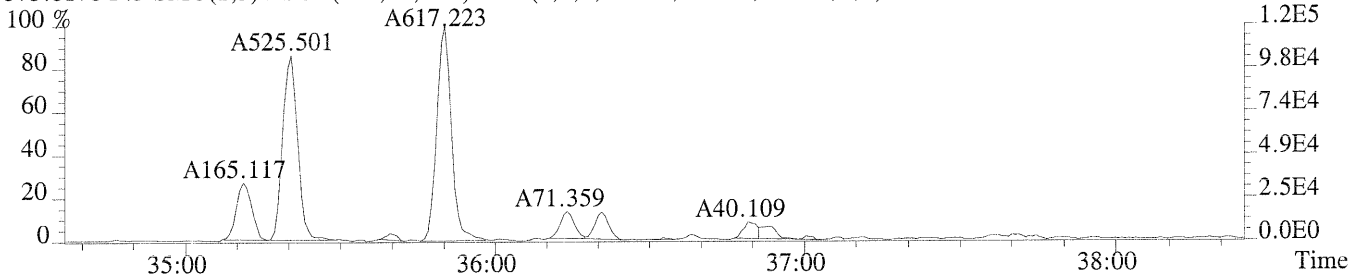
10/31/07

File:U212359 #1-345 Acq:30-OCT-2007 13:48:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:MTL-NB Exp:E0700903-013

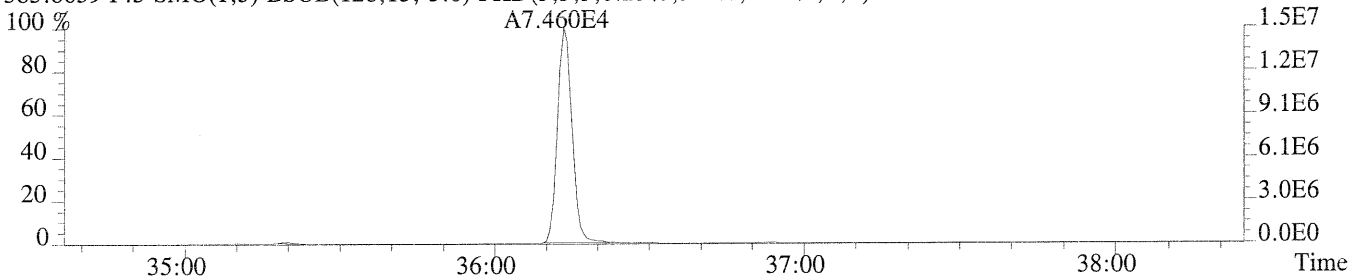
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1616.0,0.40%,F,F)



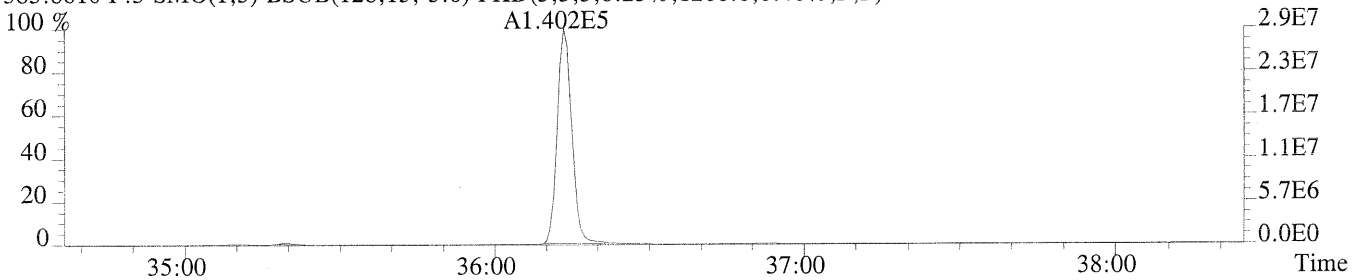
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1172.0,0.40%,F,F)



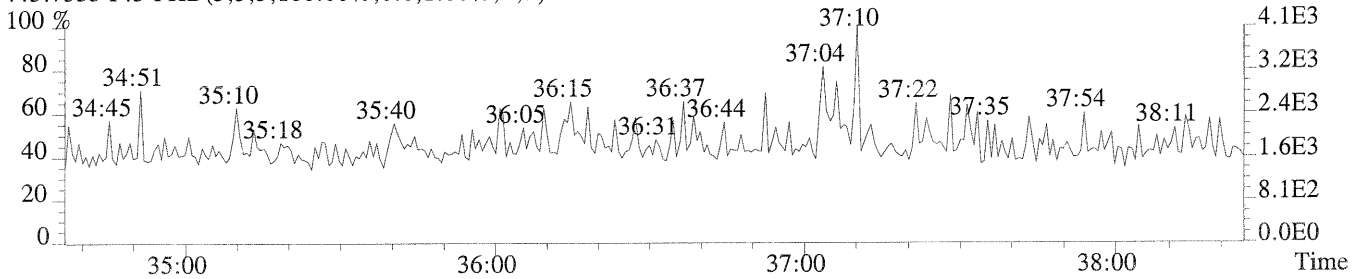
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,512.0,0.40%,F,F)



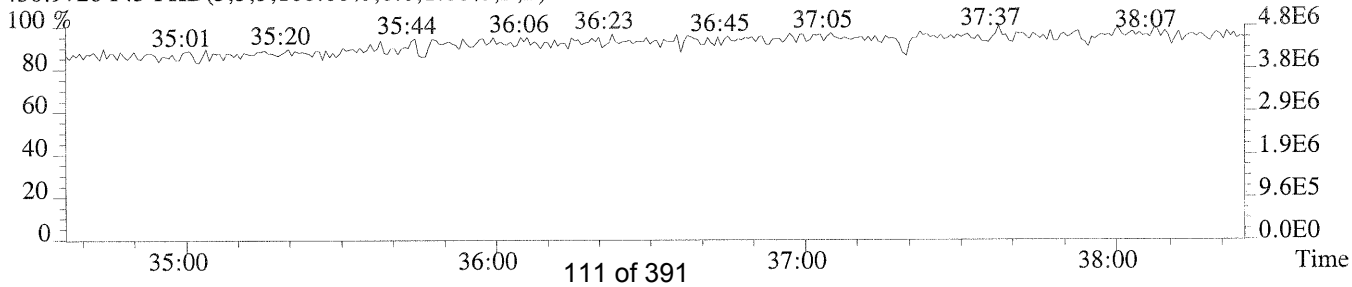
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1200.0,0.40%,F,F)



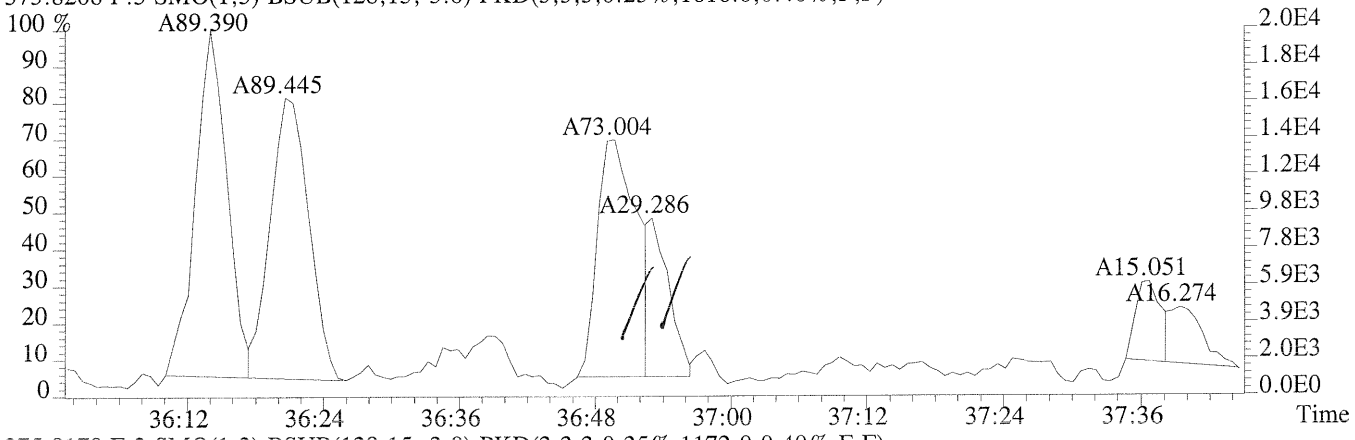
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



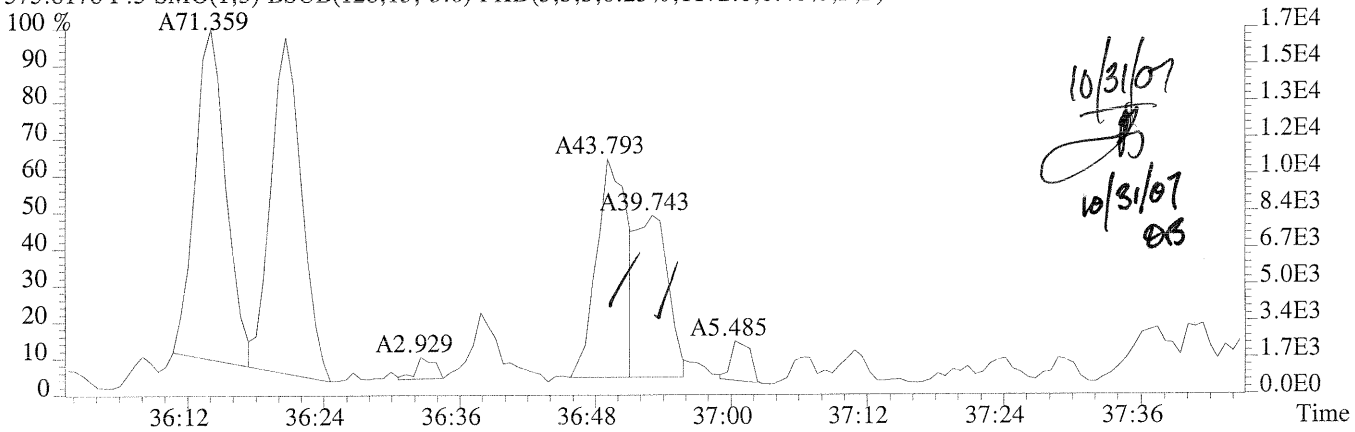
430.9728 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



File:U212359 #1-345 Acq:30-OCT-2007 13:48:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:MTL-NB Exp:E0700903-013
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1616.0,0.40%,F,F)



375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1172.0,0.40%,F,F)



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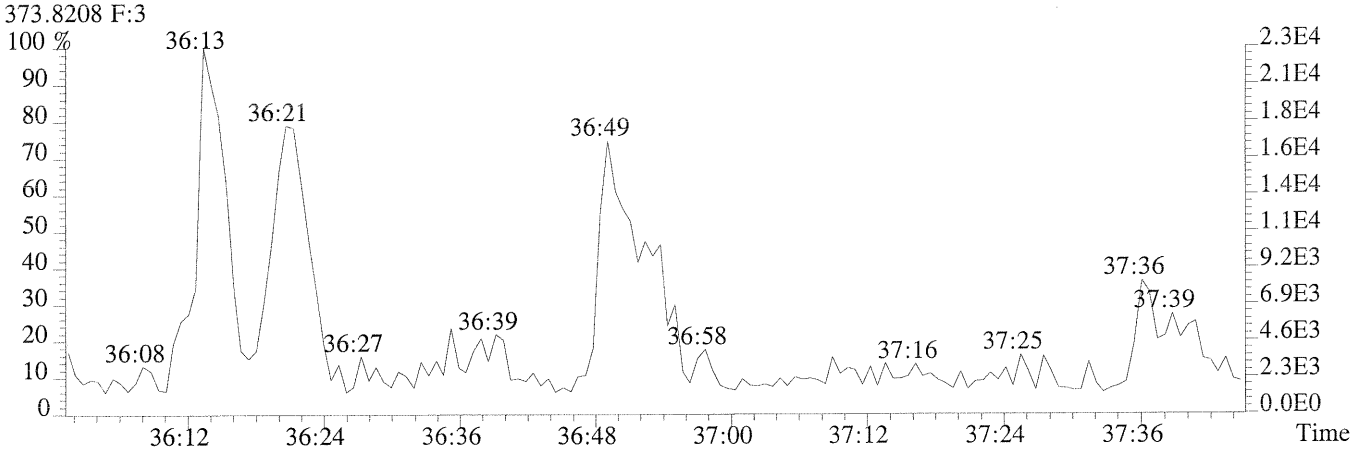
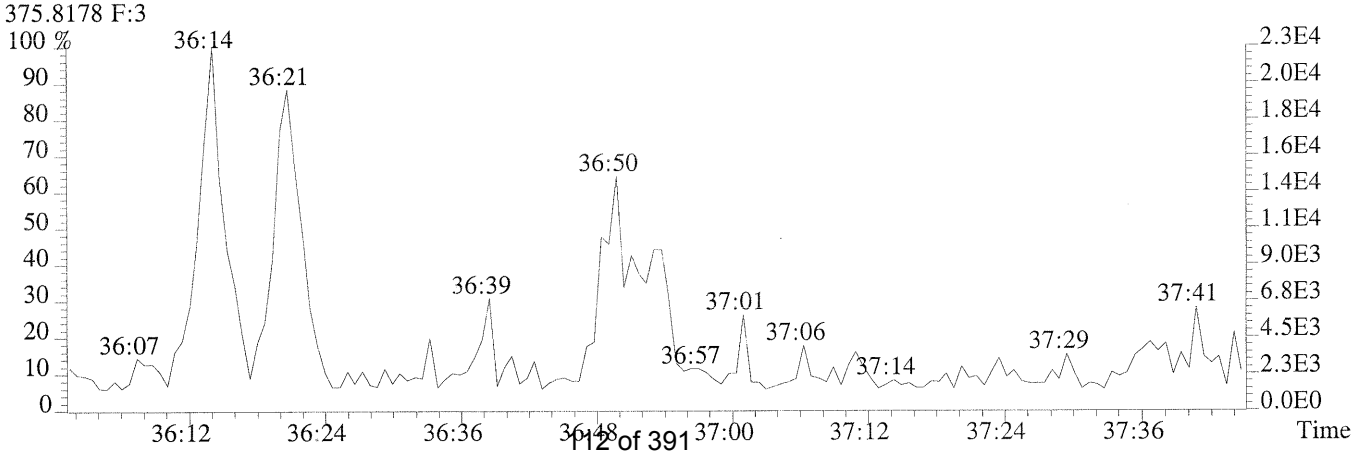
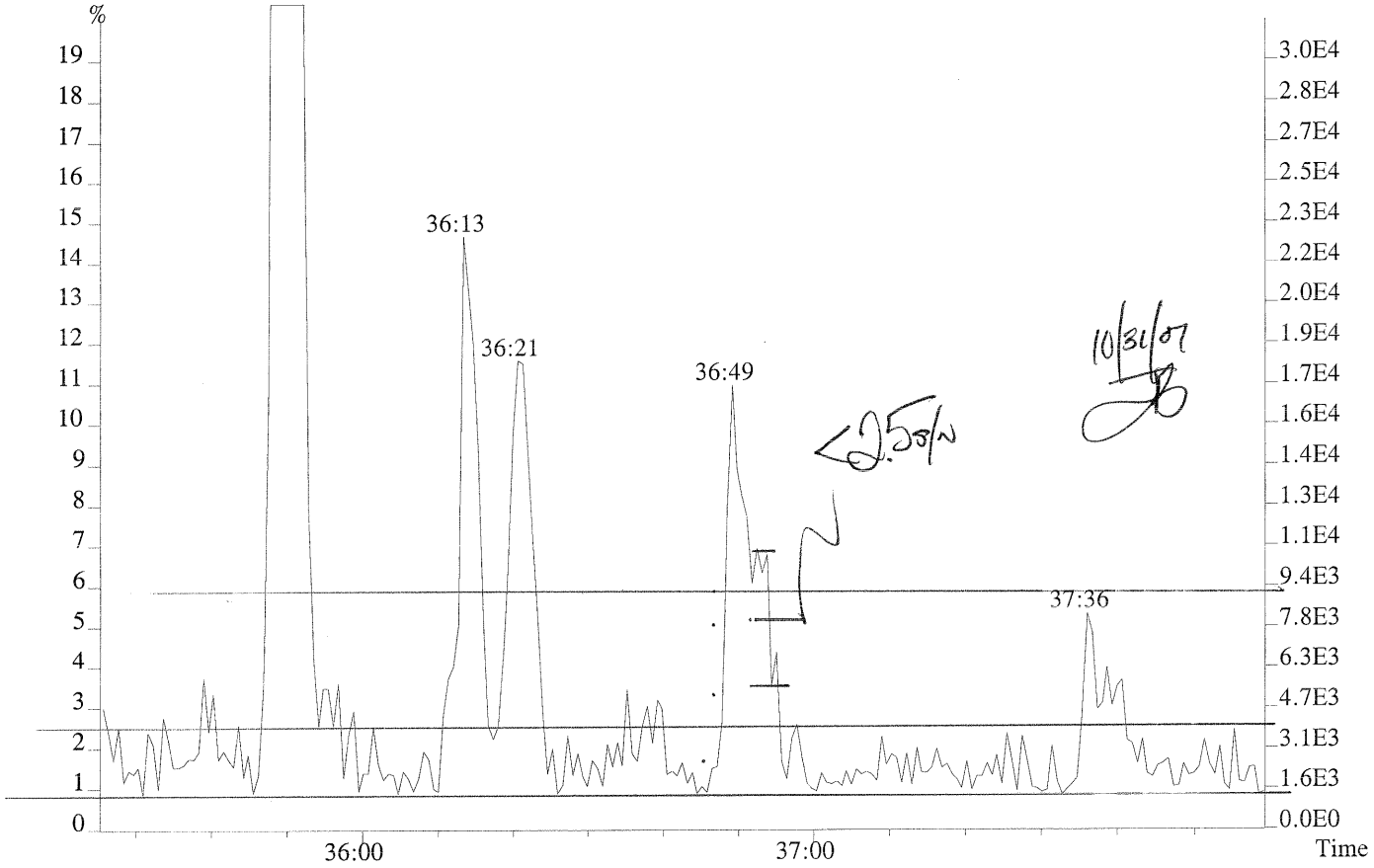
373.8208 F:3



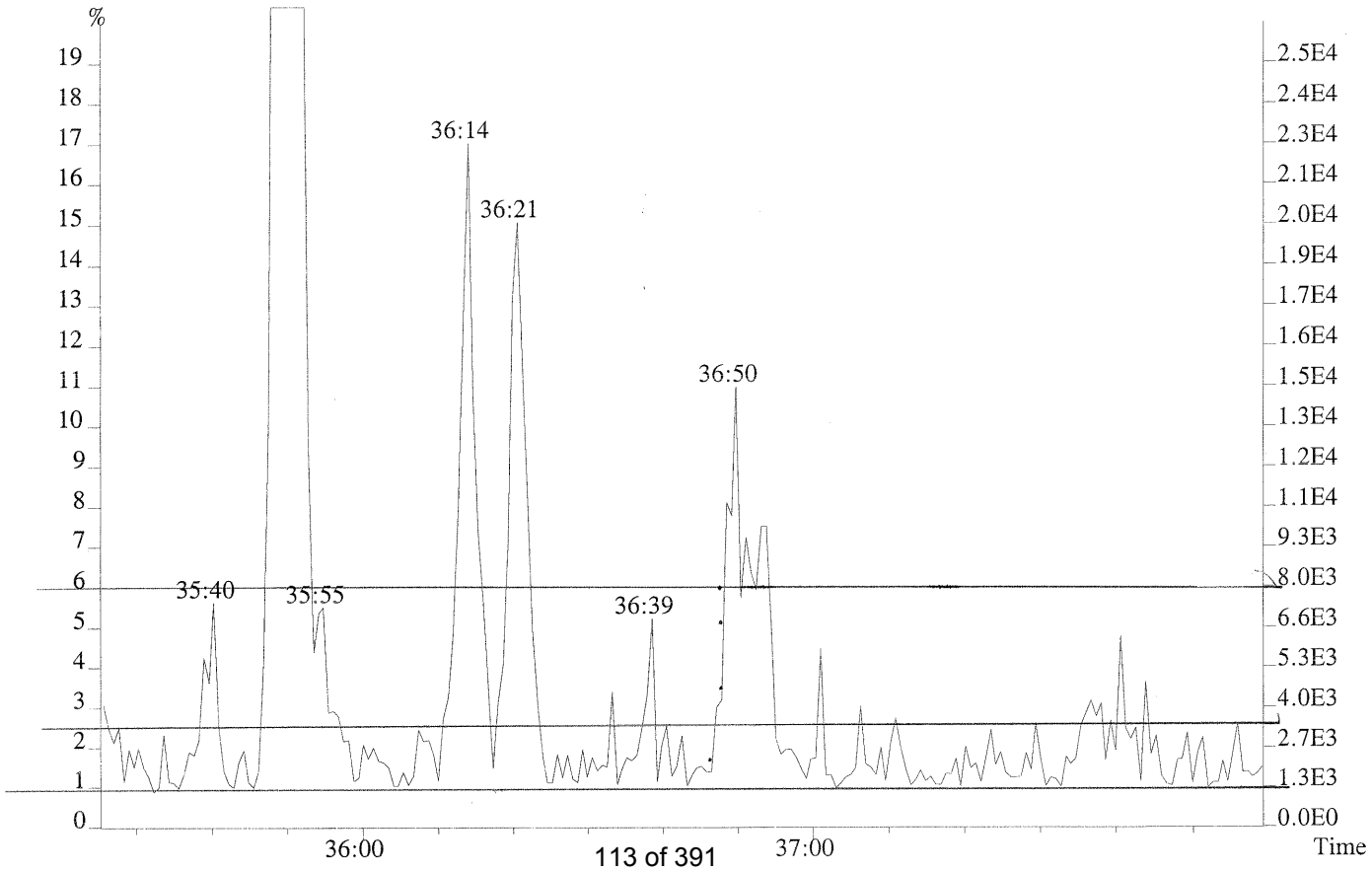
375.8178 F:3



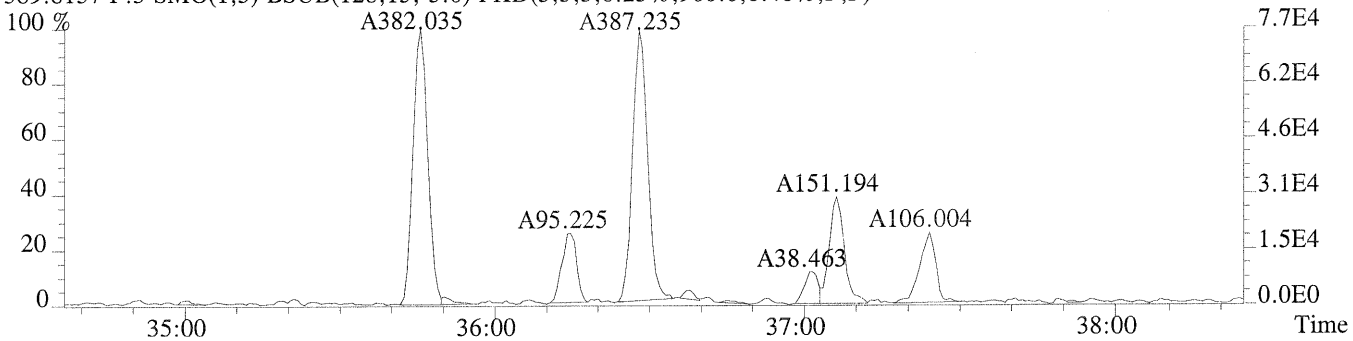
File:U212359 #1-345 Acq:30-OCT-2007 13:48:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:MTL-NB Exp:E0700903-013
373.8208 F:3



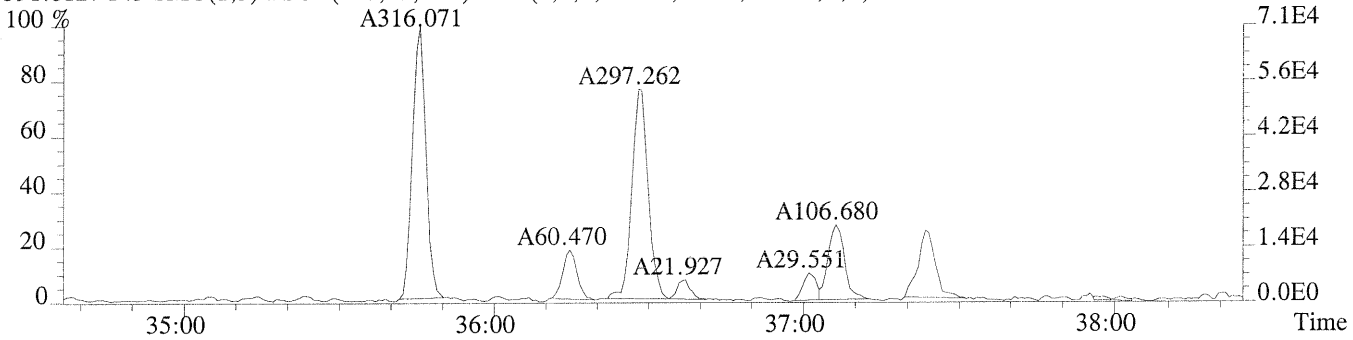
375.8178 F:3



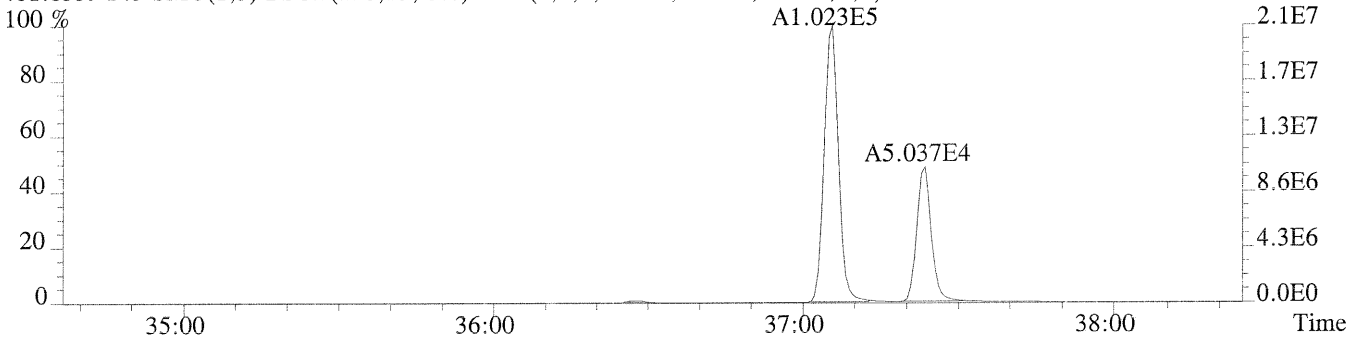
File:U212359 #1-345 Acq:30-OCT-2007 13:48:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:MTL-NB Exp:E0700903-013
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,900.0,0.40%,F,F)



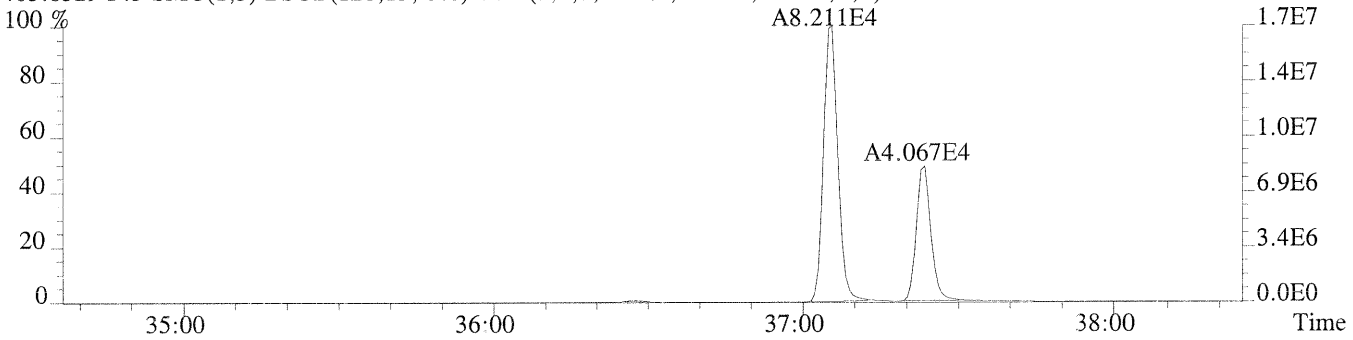
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,924.0,0.40%,F,F)



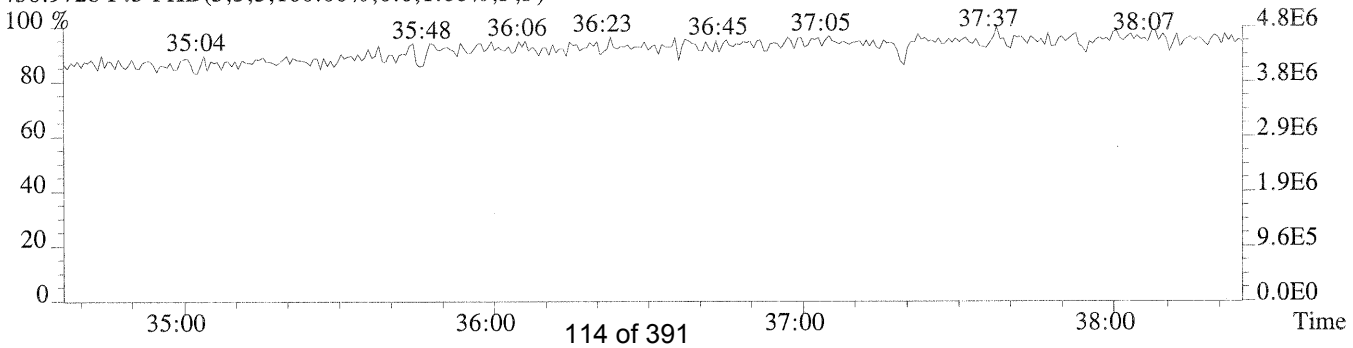
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3308.0,0.40%,F,F)



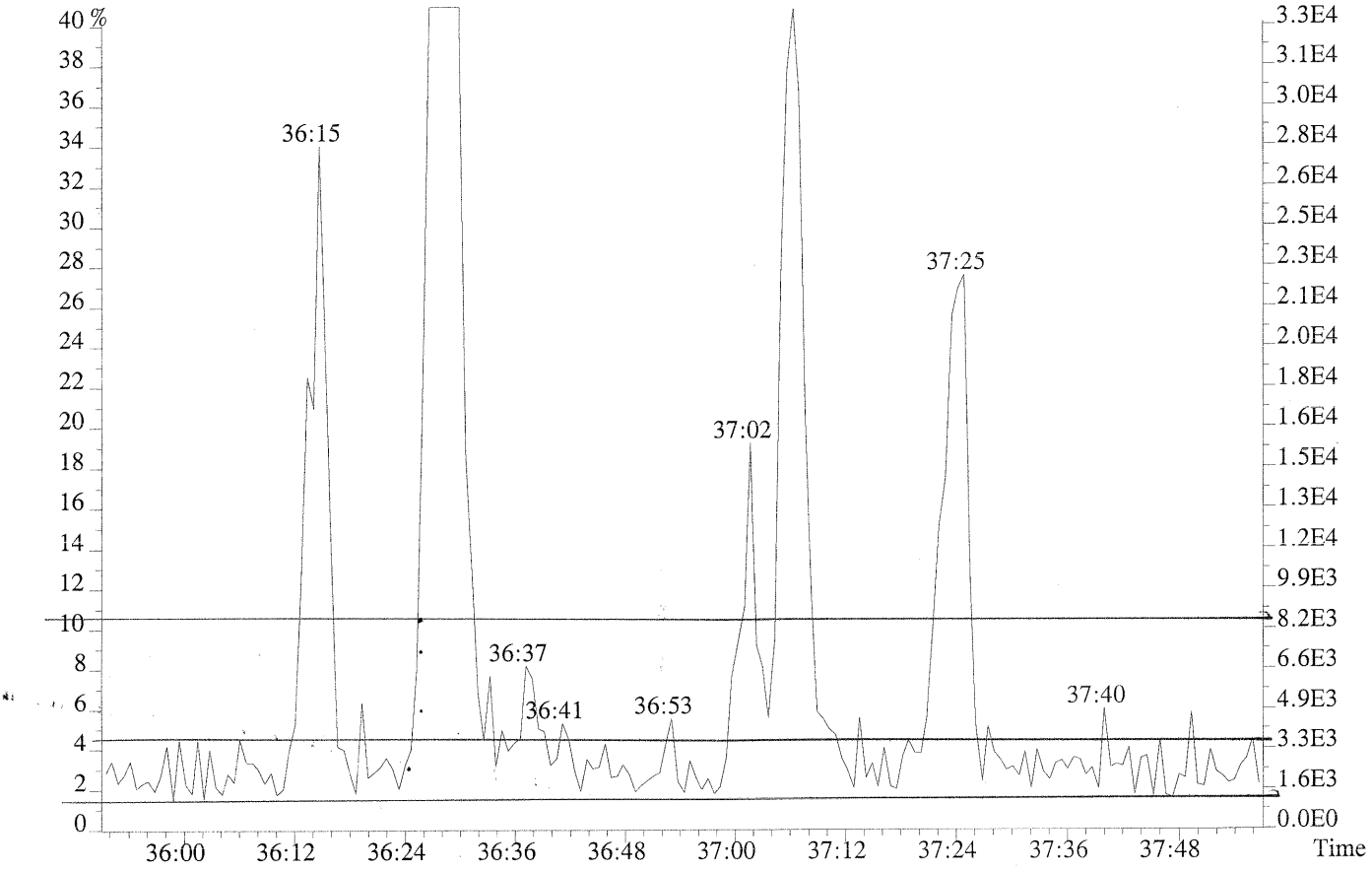
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1896.0,0.40%,F,F)



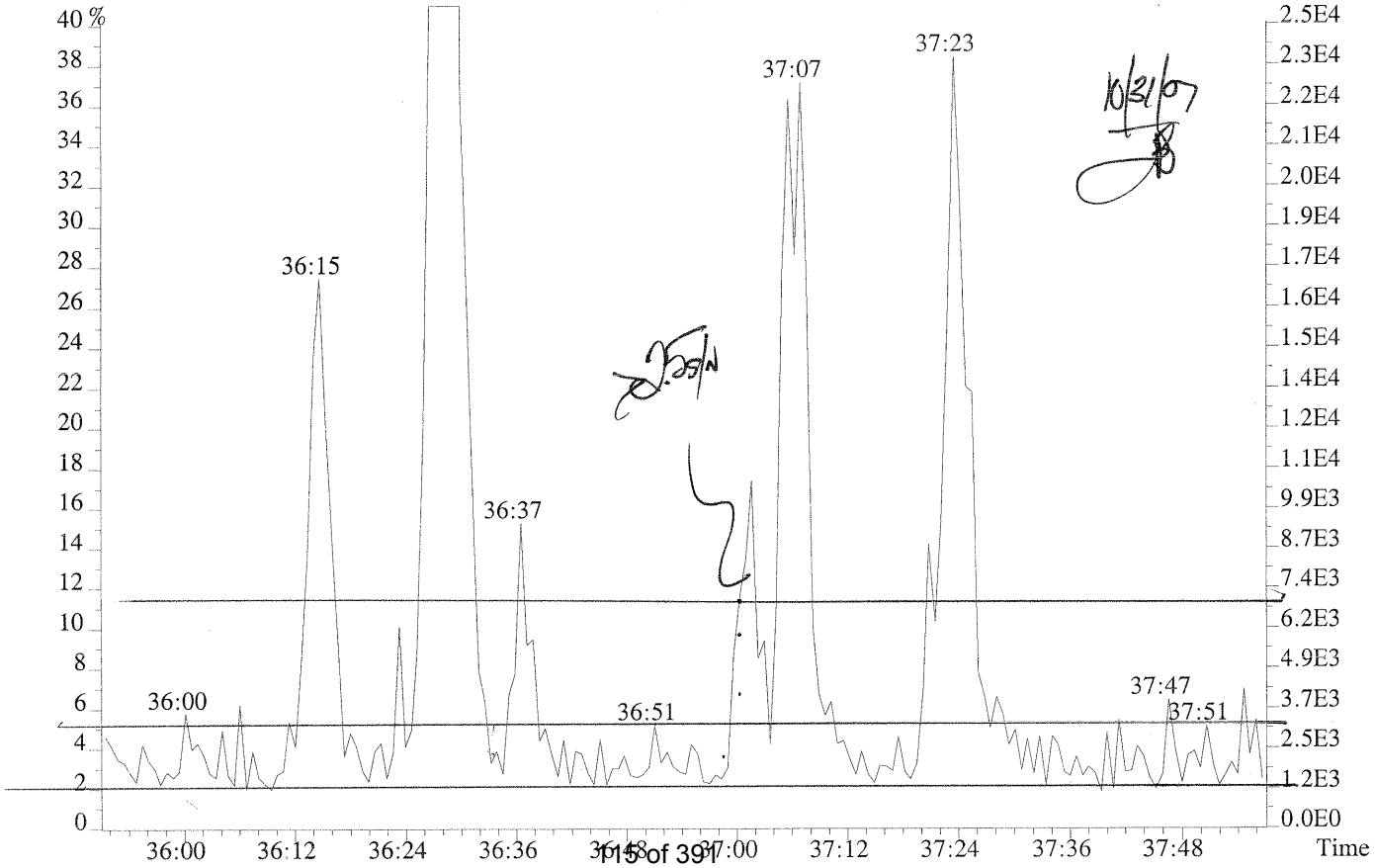
430.9728 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



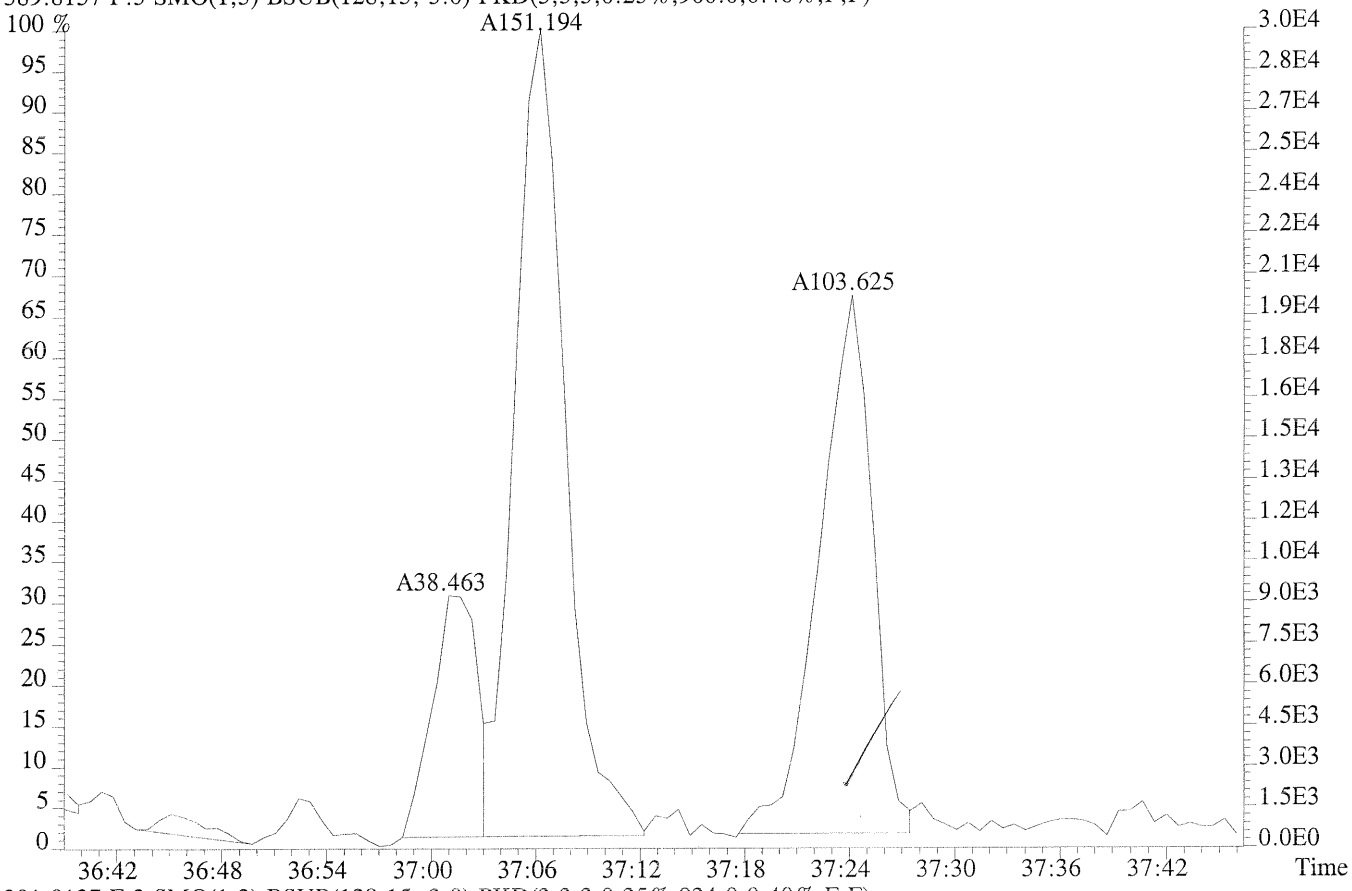
File:U212359 #1-345 Acq:30-OCT-2007 13:48:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:MTL-NB Exp:E0700903-013
389.8157 F:3



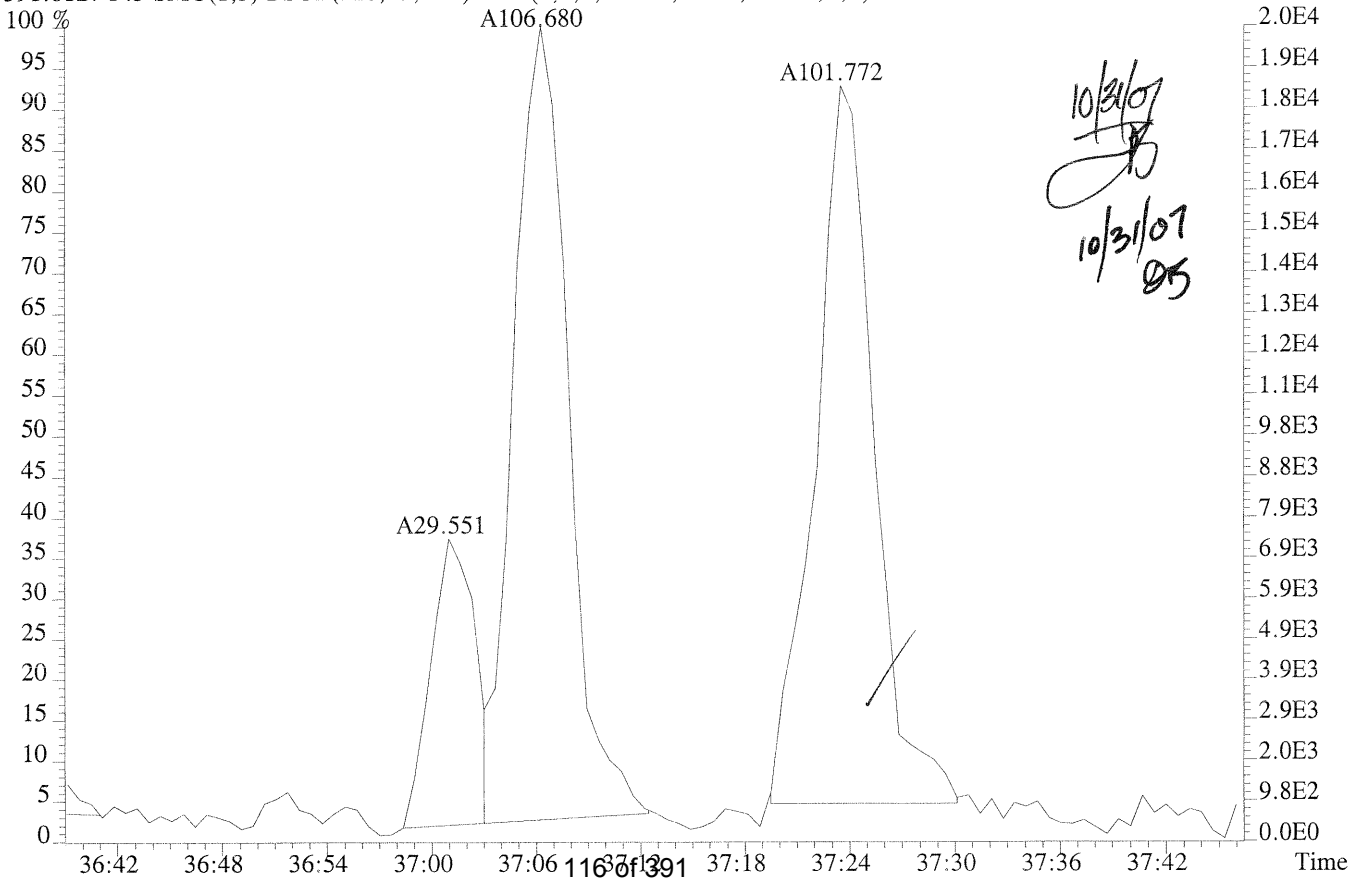
391.8127 F:3



File:U212359 #1-345 Acq:30-OCT-2007 13:48:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:MTL-NB Exp:E0700903-013
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,900.0,0.40%,F,F)



391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,924.0,0.40%,F,F)



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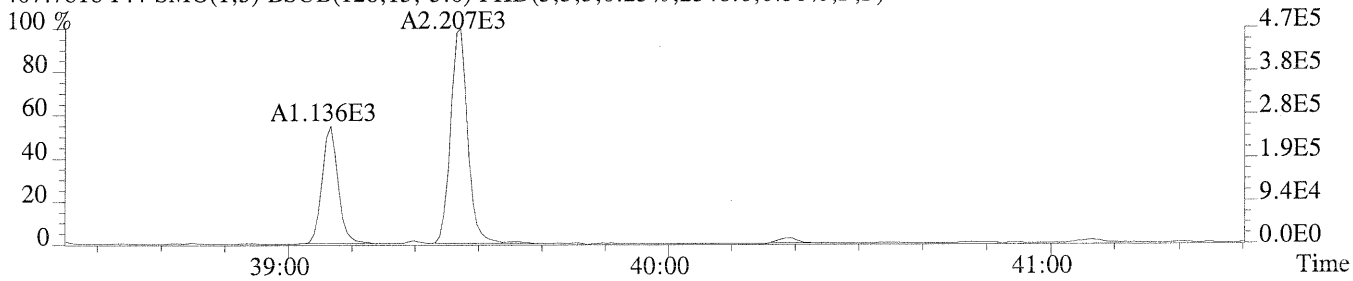
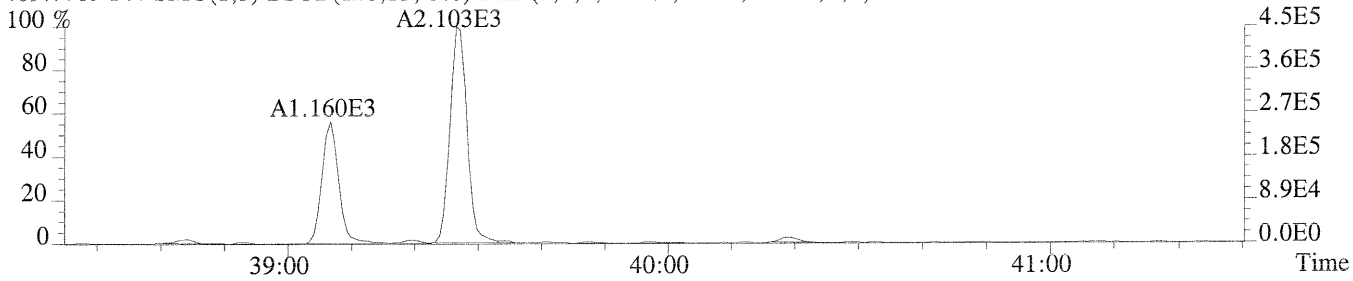
File:U212359 #1-281 Acq:30-OCT-2007 13:48:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:MTL-NB Exp:E0700903-013

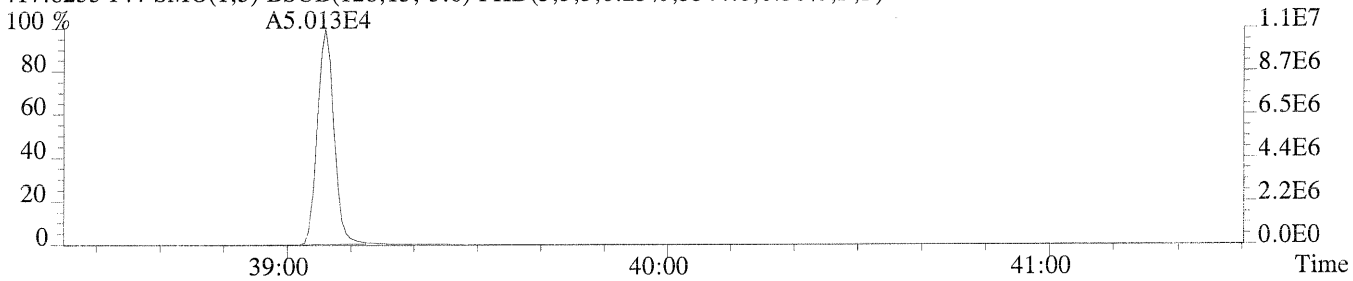
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2348.0,0.50%,F,F)



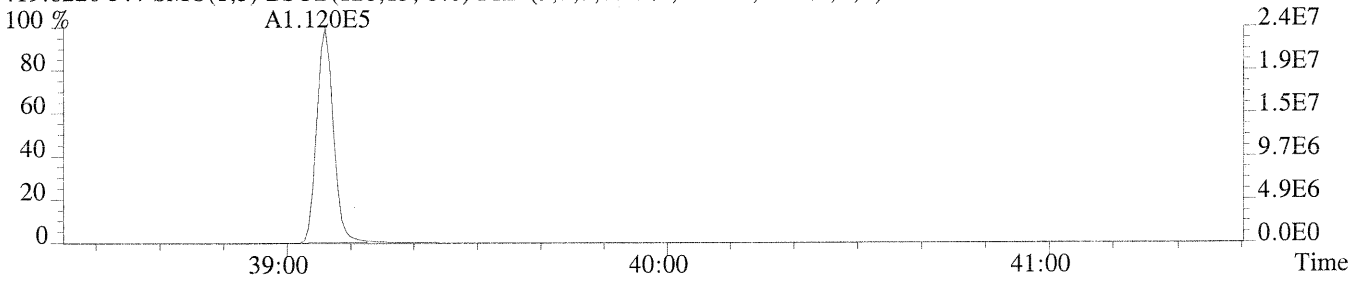
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,496.0,0.50%,F,F)



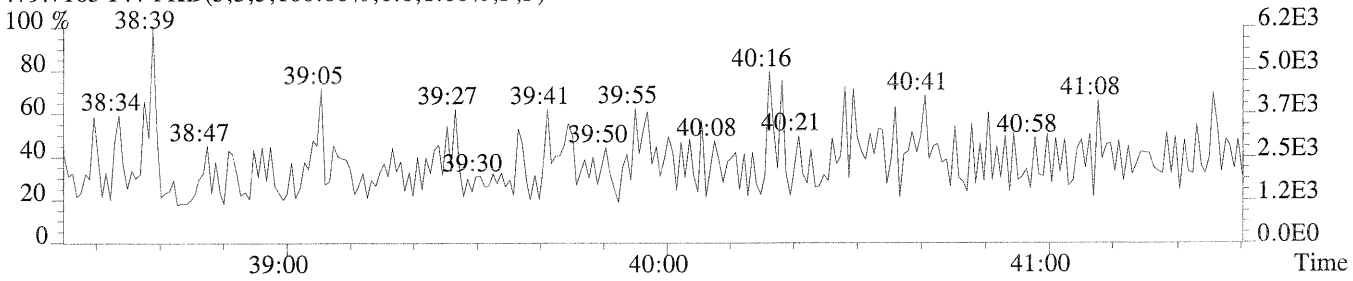
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3344.0,0.50%,F,F)



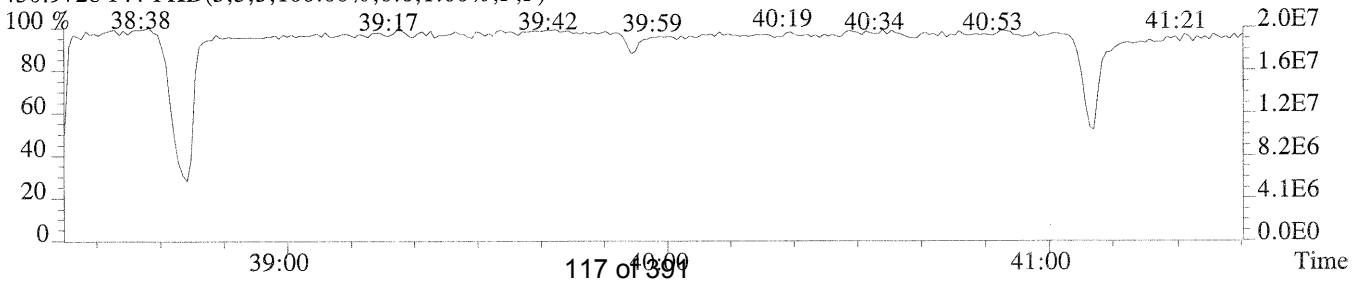
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4348.0,0.50%,F,F)



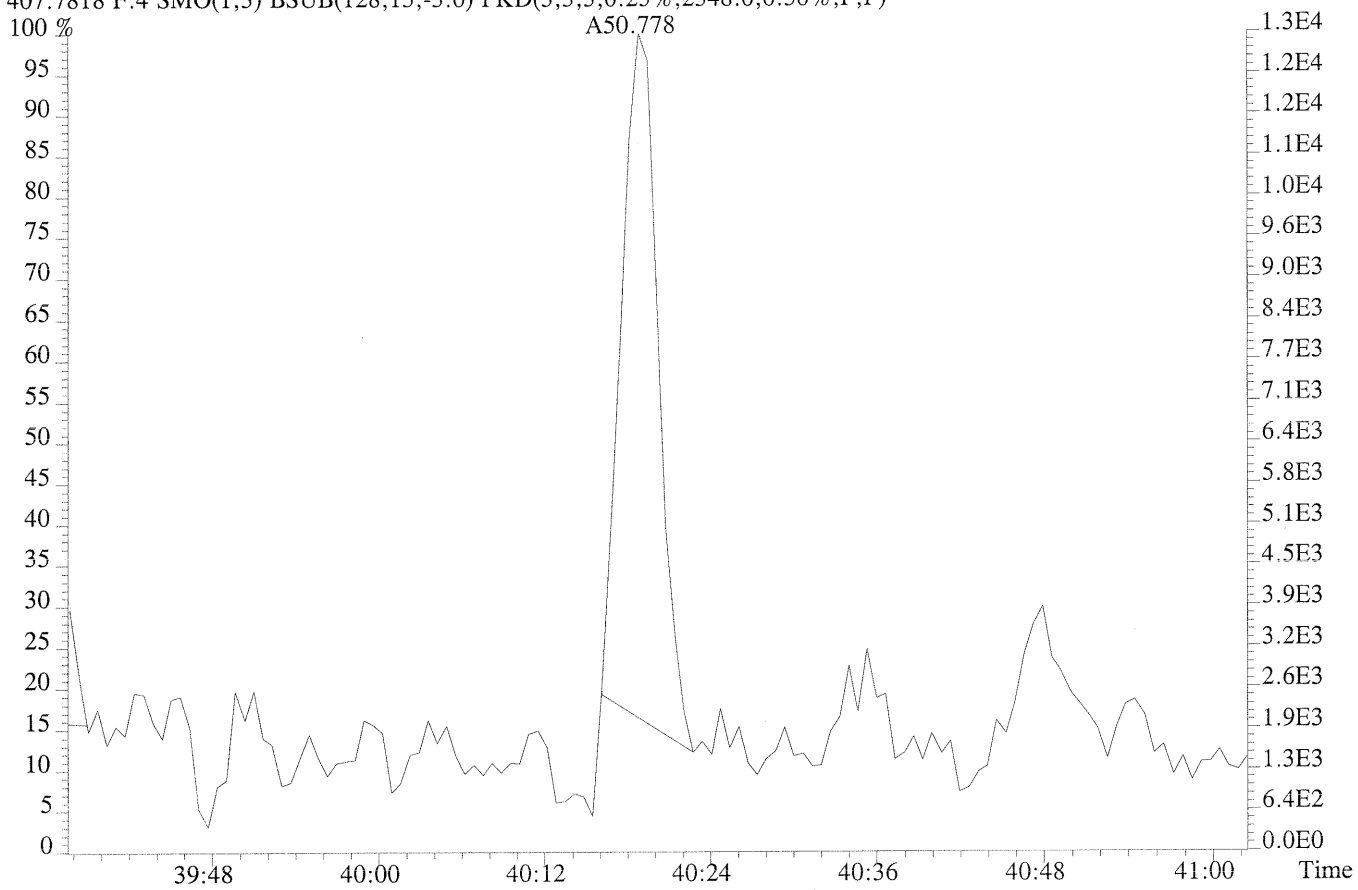
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



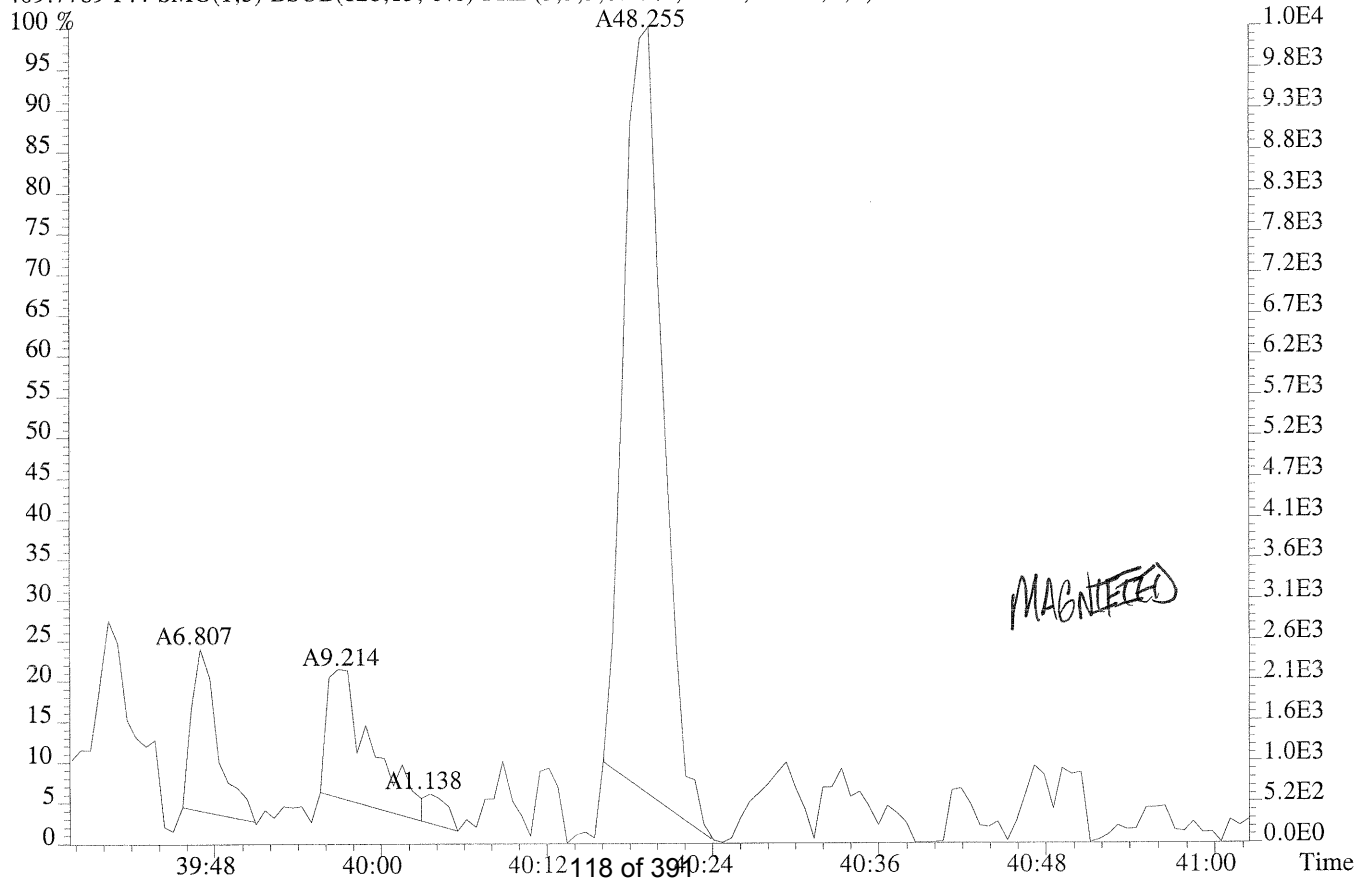
430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



File:U212359 #1-281 Acq:30-OCT-2007 13:48:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:MTL-NB Exp:E0700903-013
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2348.0,0.50%,F,F)

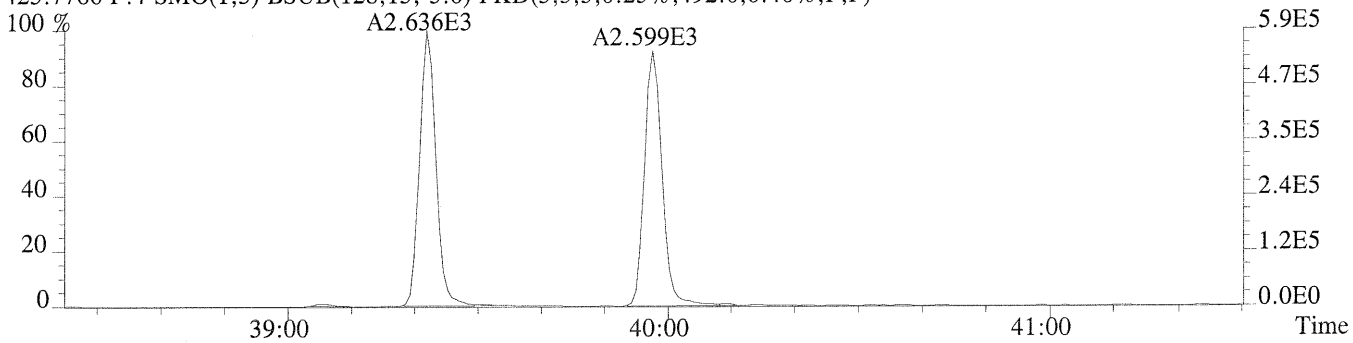


409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,496.0,0.50%,F,F)

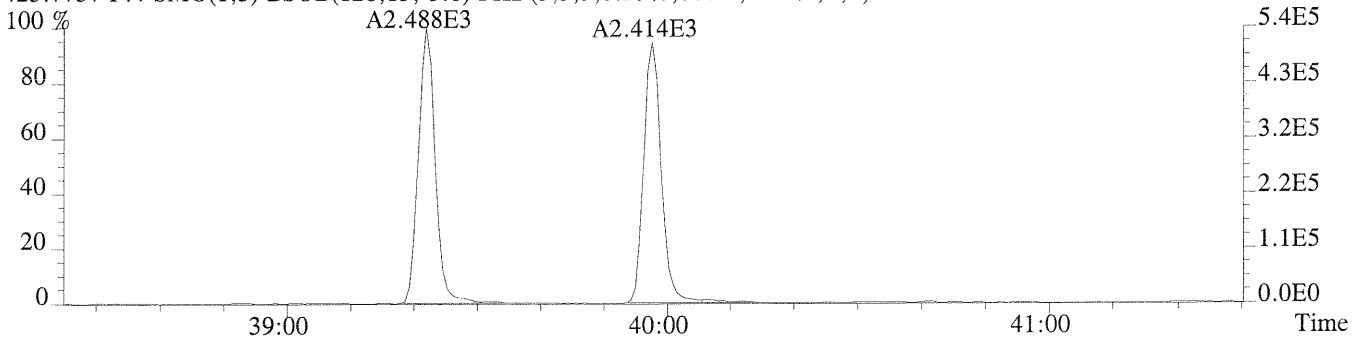


File:U212359 #1-281 Acq:30-OCT-2007 13:48:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:MTL-NB Exp:E0700903-013

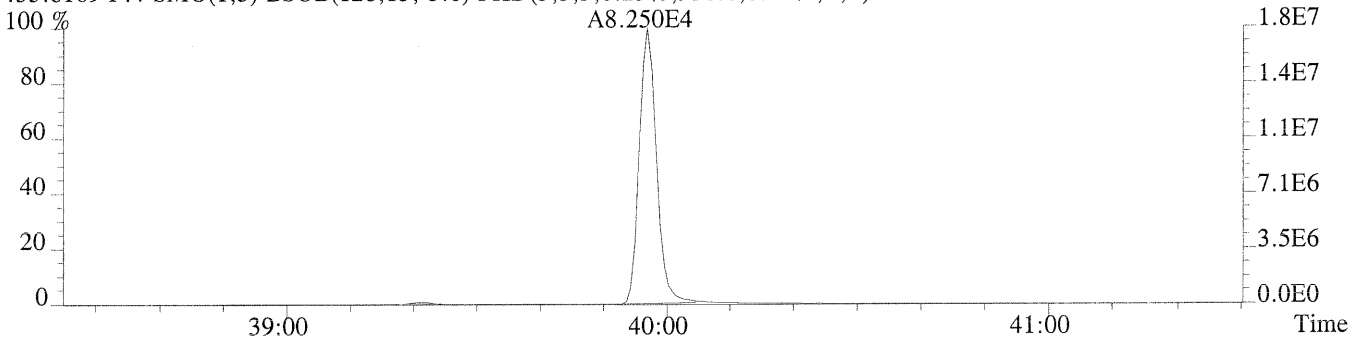
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,492.0,0.40%,F,F)



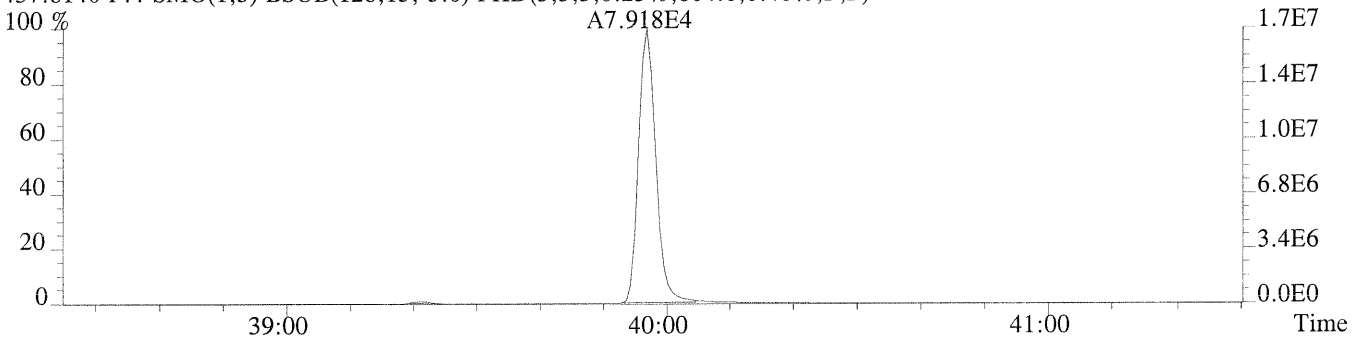
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,808.0,0.40%,F,F)



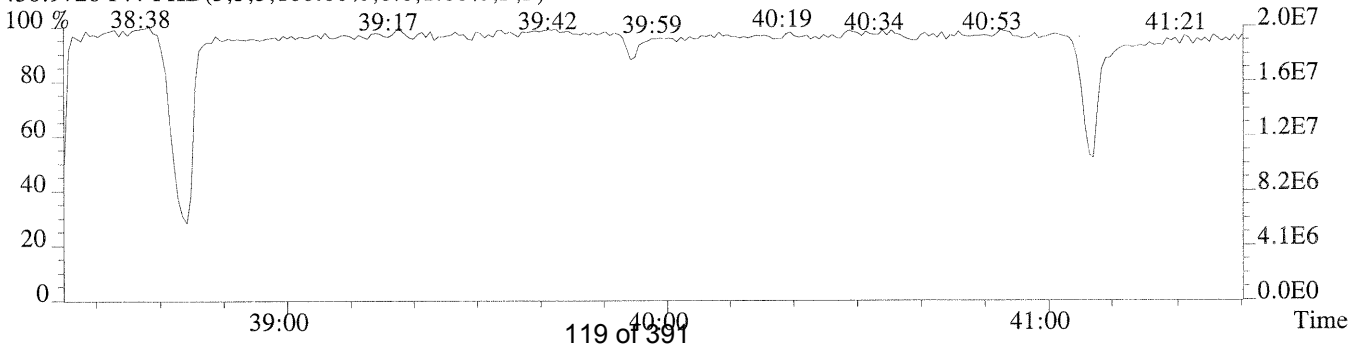
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,936.0,0.40%,F,F)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,804.0,0.40%,F,F)

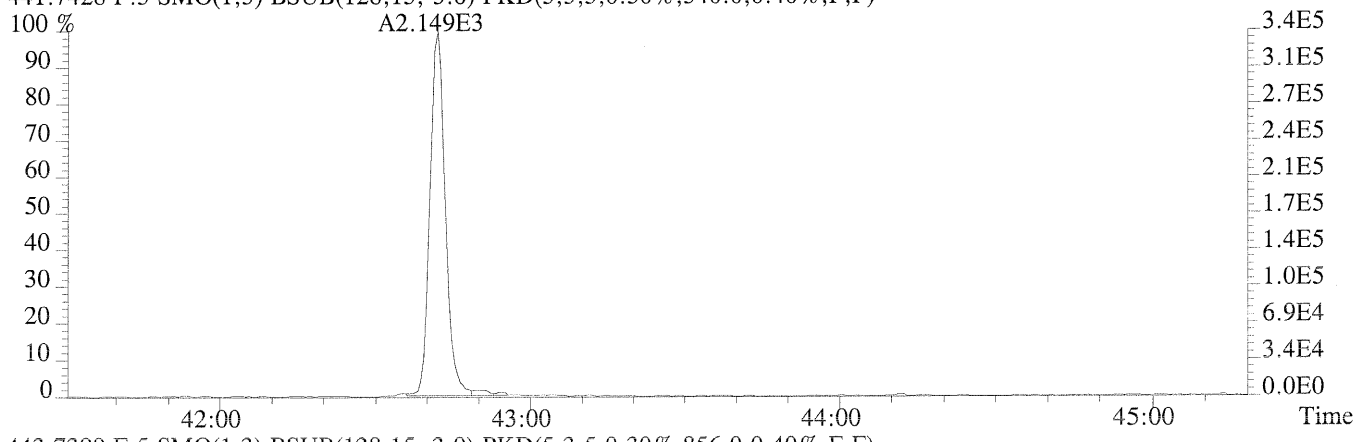


430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

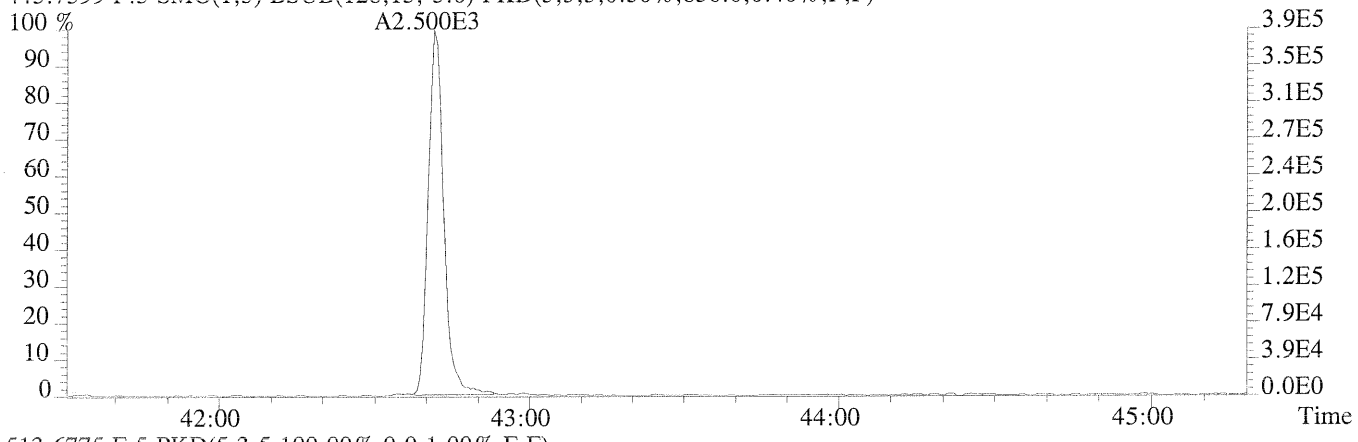


File:U212359 #1-419 Acq:30-OCT-2007 13:48:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:MTL-NB Exp:E0700903-013

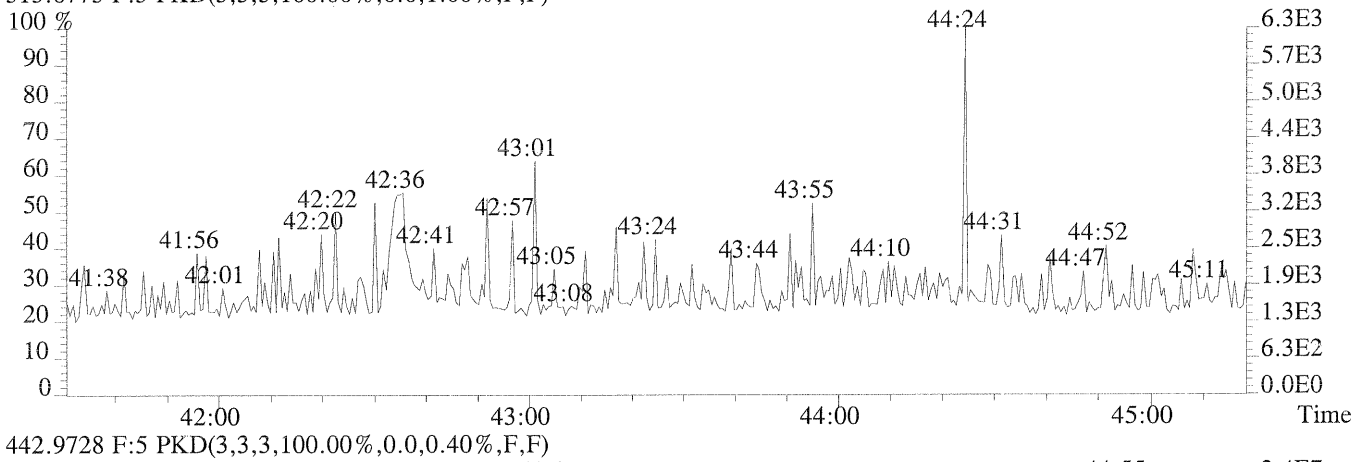
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,340.0,0.40%,F,F)



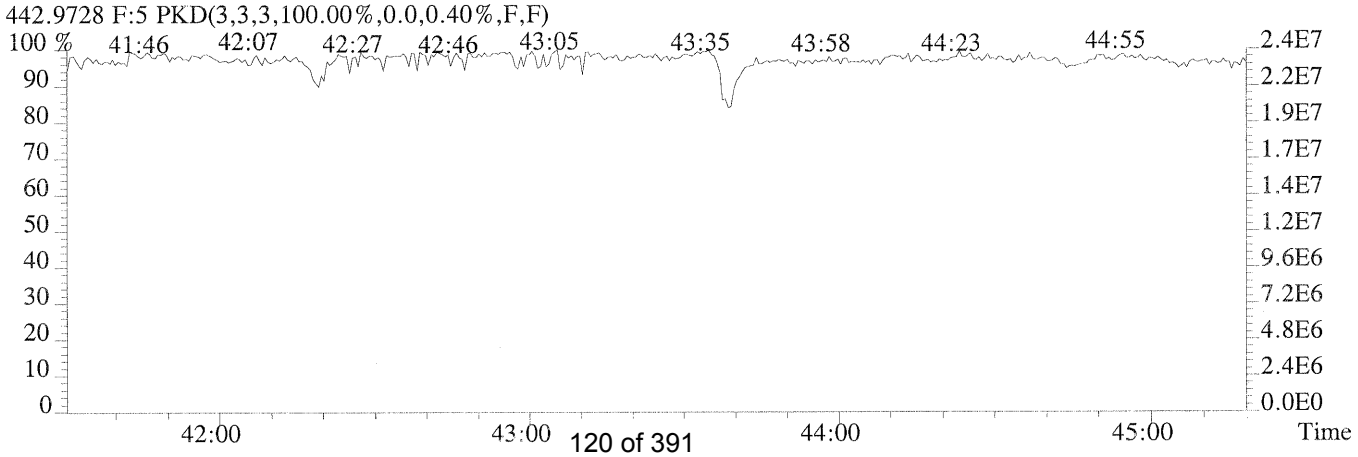
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,856.0,0.40%,F,F)



513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

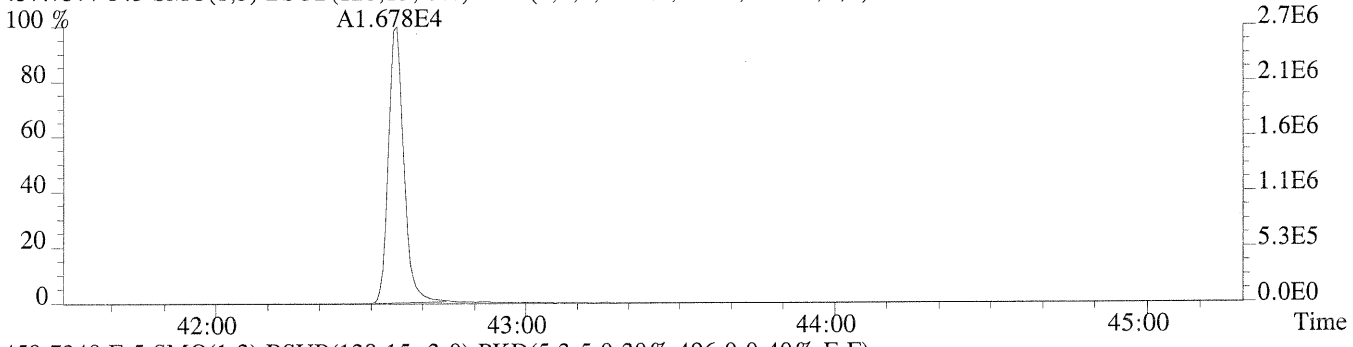


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

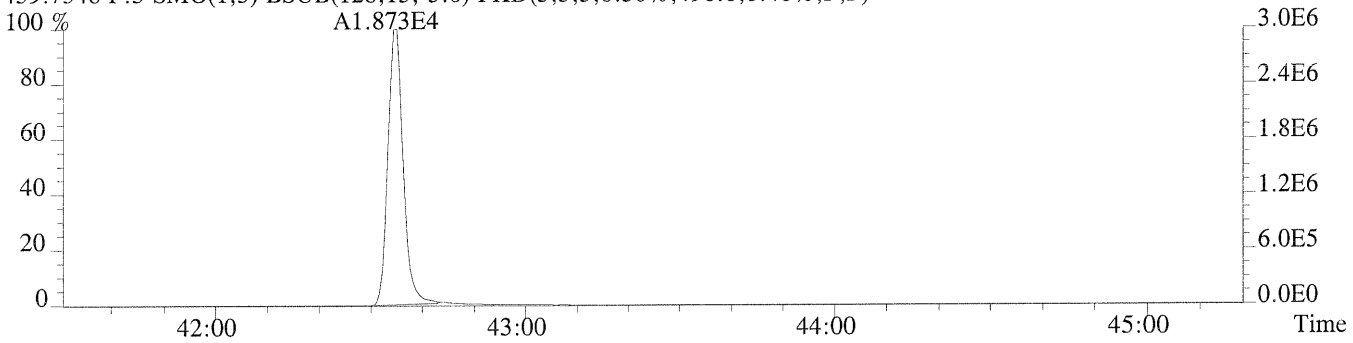


File:U212359 #1-419 Acq:30-OCT-2007 13:48:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:MTL-NB Exp:E0700903-013

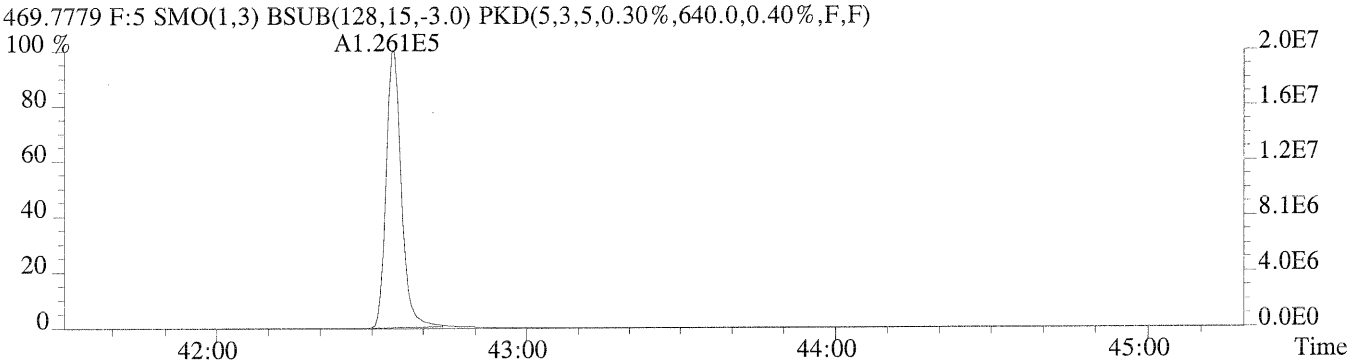
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,780.0,0.40%,F,F)



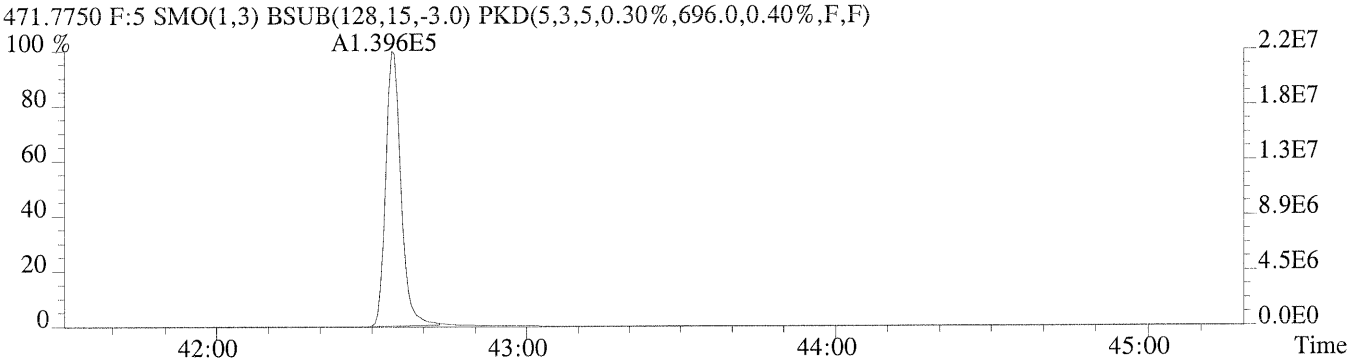
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,496.0,0.40%,F,F)



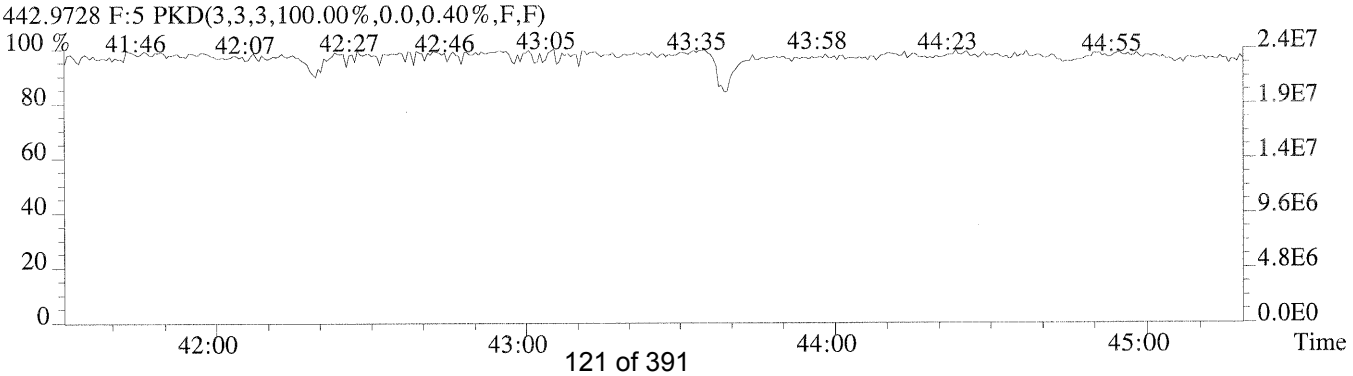
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,640.0,0.40%,F,F)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,696.0,0.40%,F,F)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



Columbia Analytical Services, Inc.
Sample Response Summary
CLIENT ID.
LCS

Run #10 Filename U212361 Samp: 1 Inj: 1 Acquired: 30-OCT-07 15:24:45
Processed: 31-OCT-07 08:38:59 LAB. ID: EQ0700356-02

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	26:54	7.392e+03	9.462e+03	0.78	yes	no
2	Unk	1,2,3,7,8-PeCDF	32:15	3.792e+04	2.396e+04	1.58	yes	no
3	Unk	2,3,4,7,8-PeCDF	33:07	3.810e+04	2.438e+04	1.56	yes	no
4	Unk	1,2,3,4,7,8-HxCDF	36:15	3.531e+04	2.800e+04	1.26	yes	no
5	Unk	1,2,3,6,7,8-HxCDF	36:22	3.326e+04	2.621e+04	1.27	yes	no
6	Unk	2,3,4,6,7,8-HxCDF	36:54	3.206e+04	2.547e+04	1.26	yes	no
7	Unk	1,2,3,7,8,9-HxCDF	37:37	2.286e+04	1.804e+04	1.27	yes	no
8	Unk	1,2,3,4,6,7,8-HpCDF	39:07	3.194e+04	3.061e+04	1.04	yes	no
9	Unk	1,2,3,4,7,8,9-HpCDF	40:19	2.092e+04	2.117e+04	0.99	yes	no
10	Unk	OCDF	42:43	3.525e+04	3.854e+04	0.91	yes	no
11	Unk	2,3,7,8-TCDD	28:00	6.260e+03	7.966e+03	0.79	yes	no
12	Unk	1,2,3,7,8-PeCDD	33:33	2.567e+04	1.626e+04	1.58	yes	no
13	Unk	1,2,3,4,7,8-HxCDD	37:02	2.456e+04	1.968e+04	1.25	yes	no
14	Unk	1,2,3,6,7,8-HxCDD	37:07	2.775e+04	2.225e+04	1.25	yes	no
15	Unk	1,2,3,7,8,9-HxCDD	37:25	2.244e+04	1.812e+04	1.24	yes	no
16	Unk	1,2,3,4,6,7,8-HpCDD	39:58	1.758e+04	1.693e+04	1.04	yes	no
17	Unk	OCDD	42:36	3.466e+04	3.917e+04	0.88	yes	no
18	IS	13C-2,3,7,8-TCDF	26:53	3.409e+04	4.298e+04	0.79	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	32:15	6.412e+04	4.033e+04	1.59	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	36:15	8.596e+04	1.630e+05	0.53	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	39:07	5.438e+04	1.190e+05	0.46	yes	no
22	IS	13C-2,3,7,8-TCDD	27:59	2.924e+04	3.744e+04	0.78	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	33:31	5.150e+04	3.266e+04	1.58	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	37:06	1.187e+05	9.294e+04	1.28	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	39:58	7.732e+04	7.413e+04	1.04	yes	no
26	IS	13C-OCDD	42:35	1.254e+05	1.362e+05	0.92	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	27:42	5.610e+04	7.079e+04	0.79	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:24	5.458e+04	4.299e+04	1.27	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	28:00	5.850e+04				
					SUM AREA			
30	Tot	Total Tetra-Furans	25:25		1.807e+04	0.78	yes	
31	Tot	Total Tetra-Dioxins	28:00		1.423e+04	0.79	yes	
32	Tot	Total Penta-Furans	31:14		1.280e+05	1.41	yes	
33	Tot	Total Penta-Dioxins	32:40		4.198e+04	1.34	yes	
34	Tot	Total Hexa-Furans	35:13		2.224e+05	1.17	yes	
35	Tot	Total Hexa-Dioxins	37:02		1.348e+05	1.25	yes	
36	Tot	Total Hepta-Furans	39:07		1.046e+05	1.04	yes	
37	Tot	Total Hepta-Dioxins	39:23		3.486e+04	1.16	yes	

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Columbia Analytical Services,Inc.
Signal/Noise Height Ratio Summary

CLIENT ID.
LCS

Run #10 Filename U212361 Samp: 1 Inj: 1 Acquired: 30-OCT-07 15:24:45

Processed: 31-OCT-07 08:38:59 LAB. ID: EQ0700356-02

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	8.12e+05	1.38e+03	5.9e+02	1.06e+06	1.20e+03	8.9e+02
2	1,2,3,7,8-PeCDF	6.21e+06	5.24e+02	1.2e+04	3.92e+06	1.11e+03	3.5e+03
3	2,3,4,7,8-PeCDF	6.60e+06	5.24e+02	1.3e+04	4.22e+06	1.11e+03	3.8e+03
4	1,2,3,4,7,8-HxCDF	7.22e+06	1.02e+03	7.1e+03	5.73e+06	1.22e+03	4.7e+03
5	1,2,3,6,7,8-HxCDF	6.56e+06	1.02e+03	6.4e+03	5.15e+06	1.22e+03	4.2e+03
6	2,3,4,6,7,8-HxCDF	6.73e+06	1.02e+03	6.6e+03	5.32e+06	1.22e+03	4.3e+03
7	1,2,3,7,8,9-HxCDF	4.65e+06	1.02e+03	4.5e+03	3.59e+06	1.22e+03	2.9e+03
8	1,2,3,4,6,7,8-HpCDF	7.16e+06	6.09e+03	1.2e+03	6.84e+06	3.40e+03	2.0e+03
9	1,2,3,4,7,8,9-HpCDF	4.28e+06	6.09e+03	7.0e+02	4.44e+06	3.40e+03	1.3e+03
10	OCDF	5.81e+06	5.68e+02	1.0e+04	6.23e+06	1.38e+03	4.5e+03
11	2,3,7,8-TCDD	8.18e+05	8.40e+02	9.7e+02	1.04e+06	7.28e+02	1.4e+03
12	1,2,3,7,8-PeCDD	4.50e+06	7.52e+02	6.0e+03	2.83e+06	6.00e+02	4.7e+03
13	1,2,3,4,7,8-HxCDD	5.49e+06	1.15e+03	4.8e+03	4.38e+06	2.72e+03	1.6e+03
14	1,2,3,6,7,8-HxCDD	5.67e+06	1.15e+03	4.9e+03	4.54e+06	2.72e+03	1.7e+03
15	1,2,3,7,8,9-HxCDD	4.79e+06	1.15e+03	4.2e+03	3.84e+06	2.72e+03	1.4e+03
16	1,2,3,4,6,7,8-HpCDD	3.88e+06	9.04e+02	4.3e+03	3.73e+06	8.04e+02	4.6e+03
17	OCDD	5.77e+06	9.84e+02	5.9e+03	6.46e+06	2.65e+03	2.4e+03
18	13C-2,3,7,8-TCDF	3.97e+06	3.14e+03	1.3e+03	4.97e+06	1.38e+03	3.6e+03
19	13C-1,2,3,7,8-PeCDF	1.09e+07	1.23e+03	8.8e+03	6.86e+06	7.92e+02	8.7e+03
20	13C-1,2,3,4,7,8-HxCDF	1.75e+07	1.13e+03	1.5e+04	3.33e+07	1.00e+03	3.3e+04
21	13C-1,2,3,4,6,7,8-HpCDF	1.21e+07	4.16e+03	2.9e+03	2.67e+07	3.69e+03	7.2e+03
22	13C-2,3,7,8-TCDD	4.01e+06	4.64e+03	8.6e+02	5.07e+06	2.11e+03	2.4e+03
23	13C-1,2,3,7,8-PeCDD	9.42e+06	5.40e+02	1.7e+04	5.93e+06	6.24e+02	9.5e+03
24	13C-1,2,3,6,7,8-HxCDD	2.56e+07	2.04e+03	1.3e+04	1.99e+07	1.48e+03	1.3e+04
25	13C-1,2,3,4,6,7,8-HpCDD	1.71e+07	4.79e+03	3.6e+03	1.63e+07	1.59e+03	1.0e+04
26	13C-OCDD	2.09e+07	1.28e+03	1.6e+04	2.27e+07	8.88e+02	2.6e+04
27	13C-1,2,3,4-TCDD	7.41e+06	4.64e+03	1.6e+03	9.29e+06	2.11e+03	4.4e+03
28	13C-1,2,3,7,8,9-HxCDD	1.17e+07	2.04e+03	5.8e+03	9.26e+06	1.48e+03	6.3e+03
29	37Cl-2,3,7,8-TCDD	7.56e+06	1.19e+03	6.3e+03			

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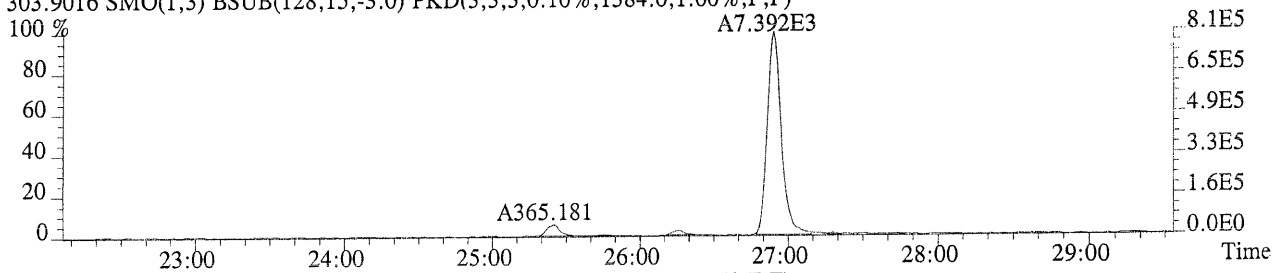
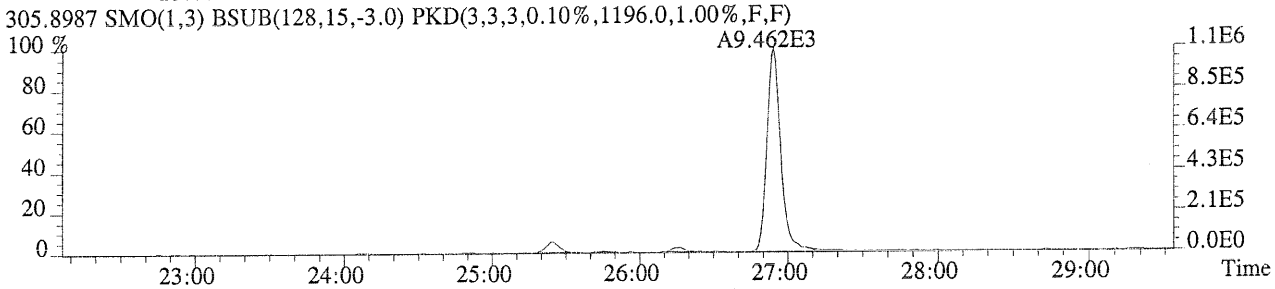
File:U212361 #1-621 Acq:30-OCT-2007 15:24:45 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:LCS Exp:EQ0700356-02LCS

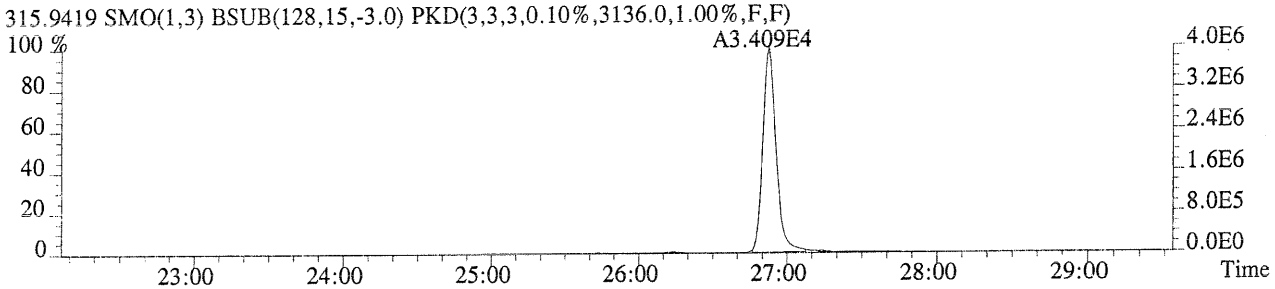
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1384.0,1.00%,F,F)



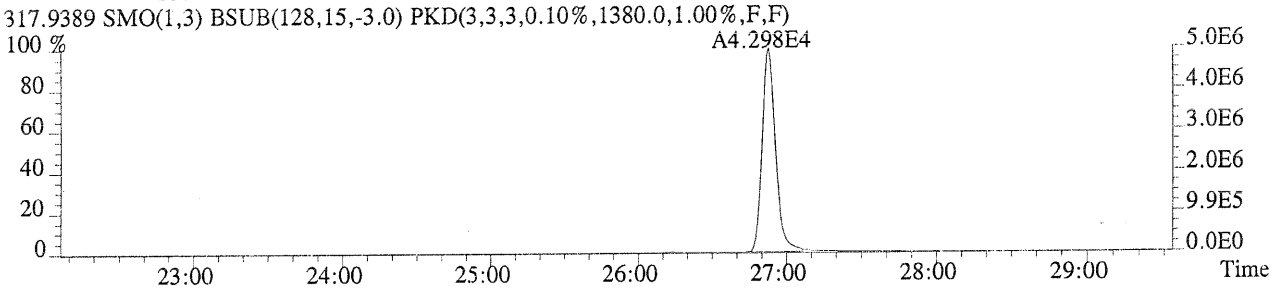
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1196.0,1.00%,F,F)



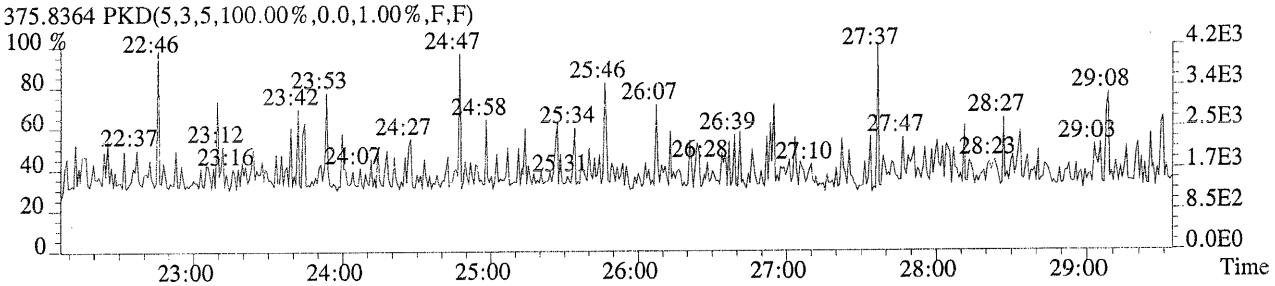
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3136.0,1.00%,F,F)



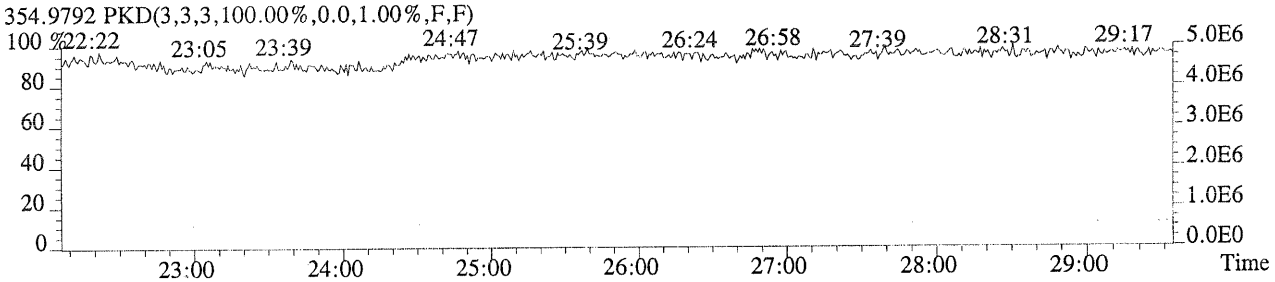
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1380.0,1.00%,F,F)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

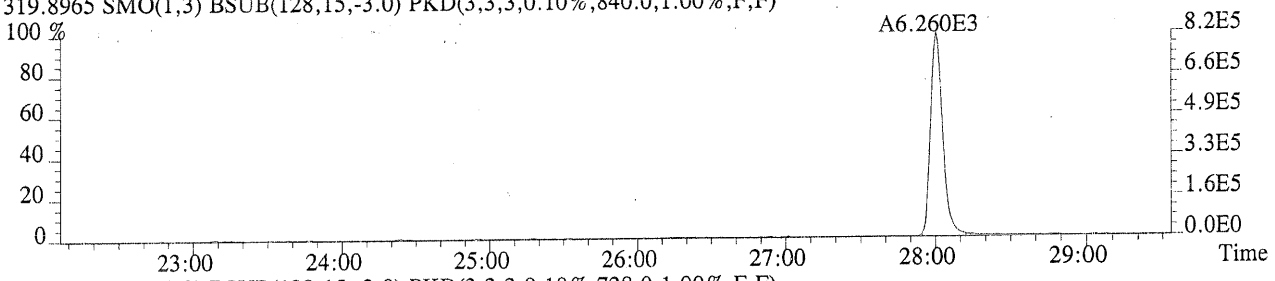


354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

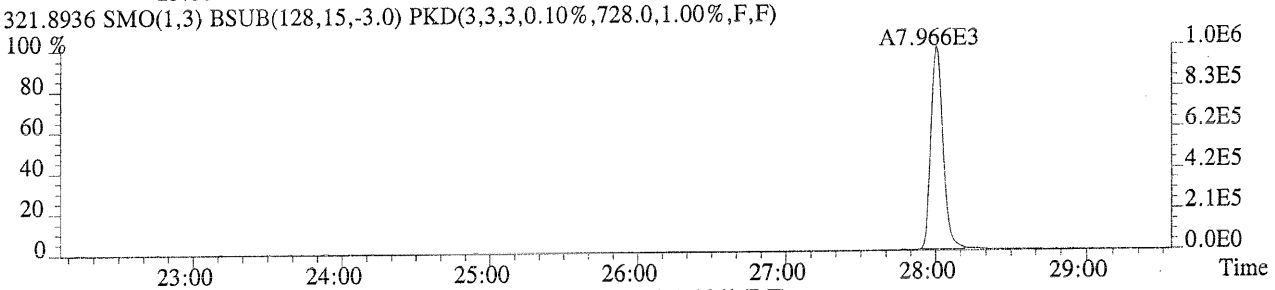


File:U212361 #1-621 Acq:30-OCT-2007 15:24:45 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 File Text:LCS Exp:EQ0700356-02LCS

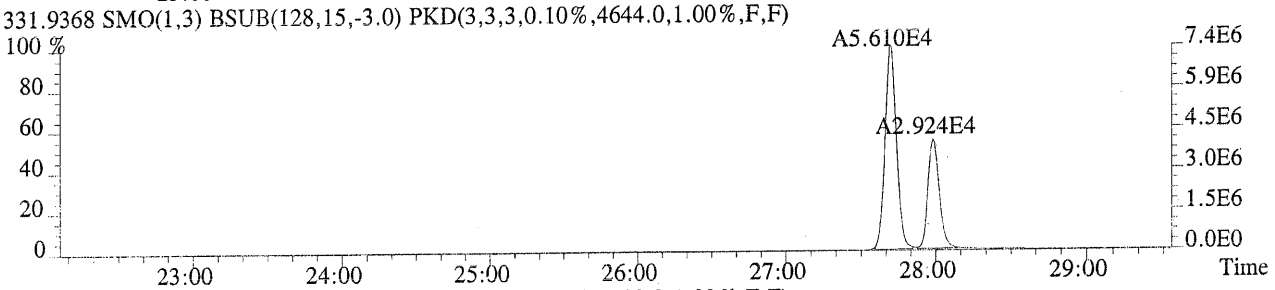
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,840.0,1.00%,F,F)



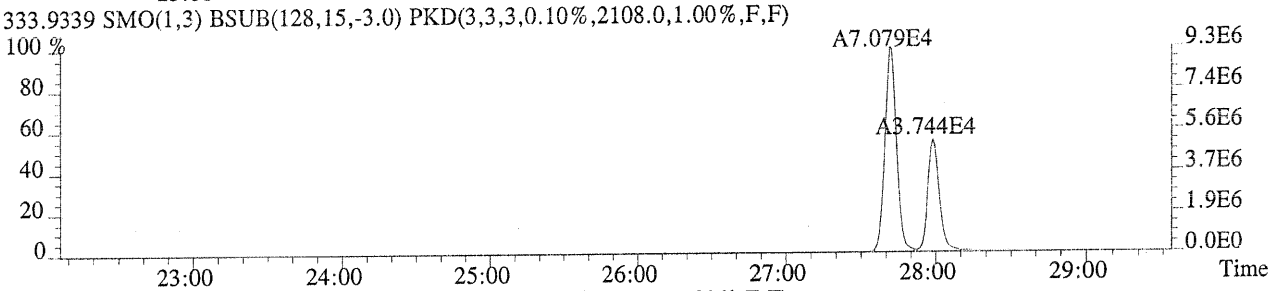
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,728.0,1.00%,F,F)



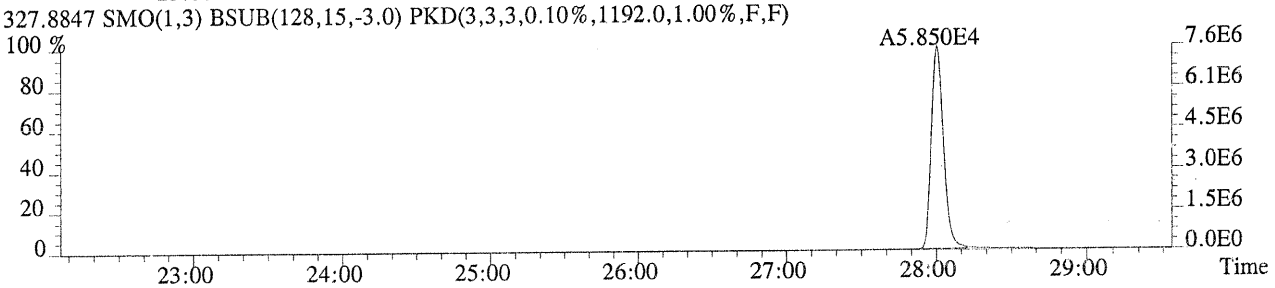
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4644.0,1.00%,F,F)



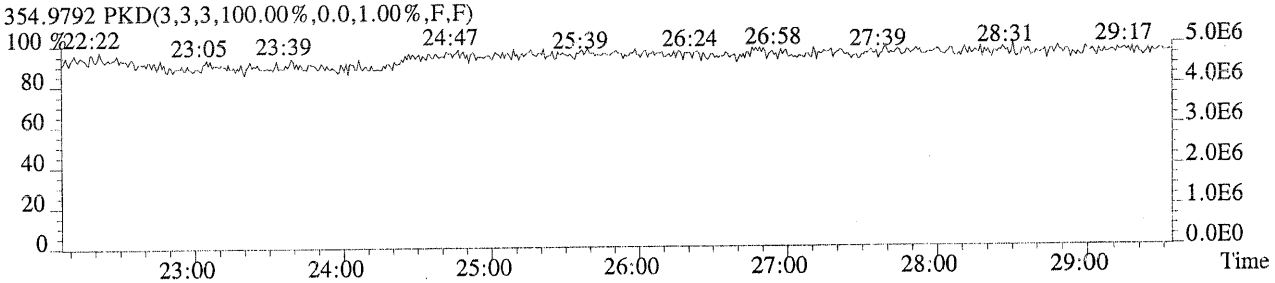
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2108.0,1.00%,F,F)



327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1192.0,1.00%,F,F)

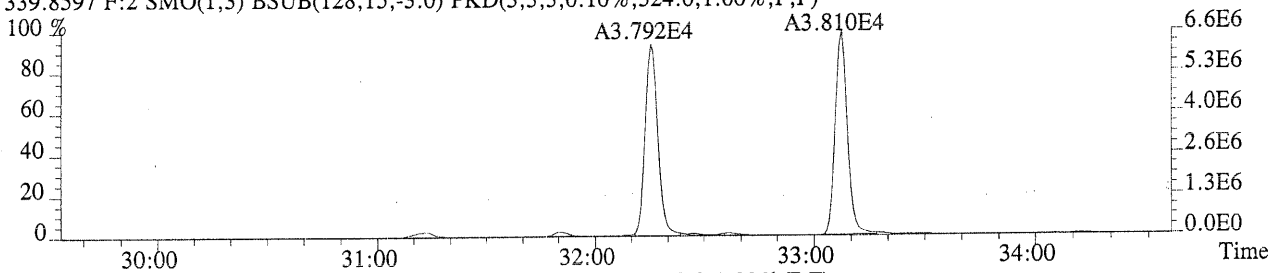


354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

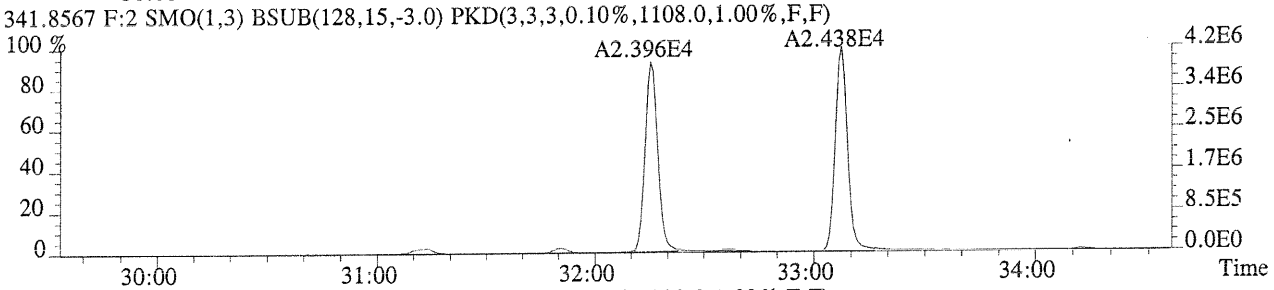


File:U212361 #1-458 Acq:30-OCT-2007 15:24:45 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:LCS Exp:EQ0700356-02LCS

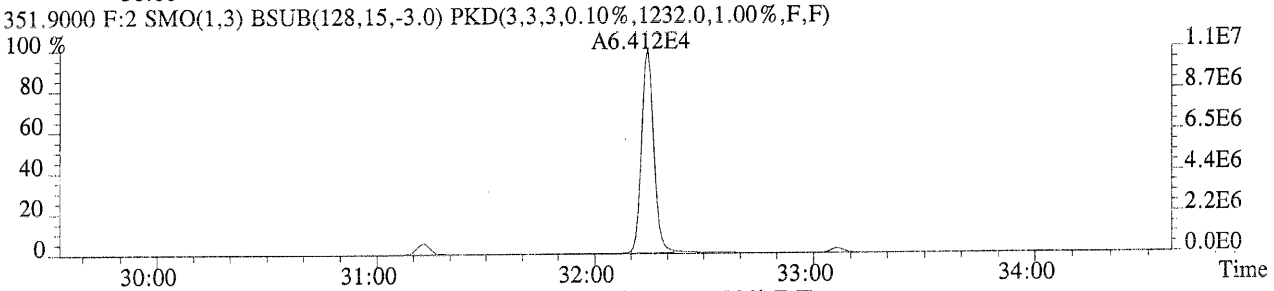
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,524.0,1.00%,F,F)



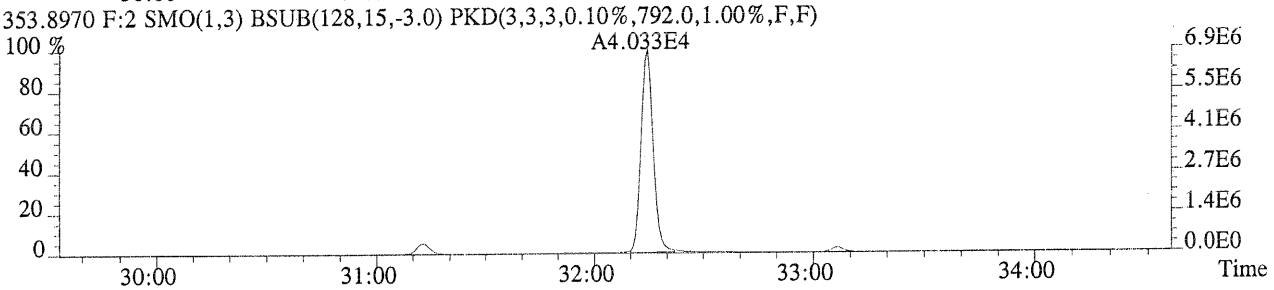
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1108.0,1.00%,F,F)



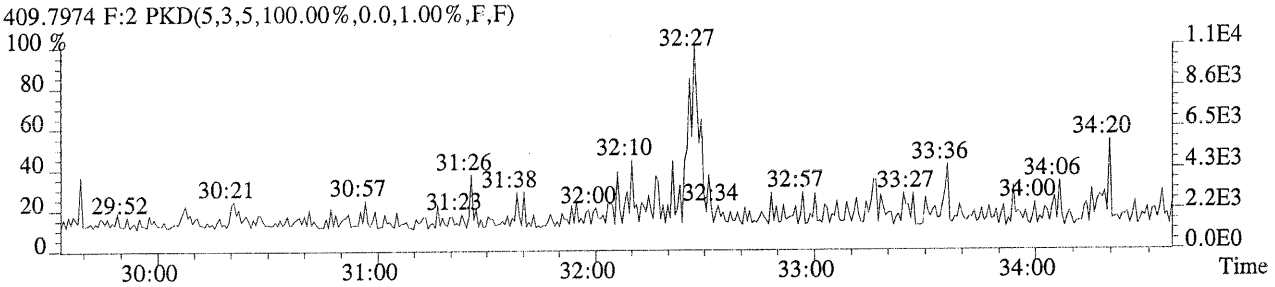
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1232.0,1.00%,F,F)



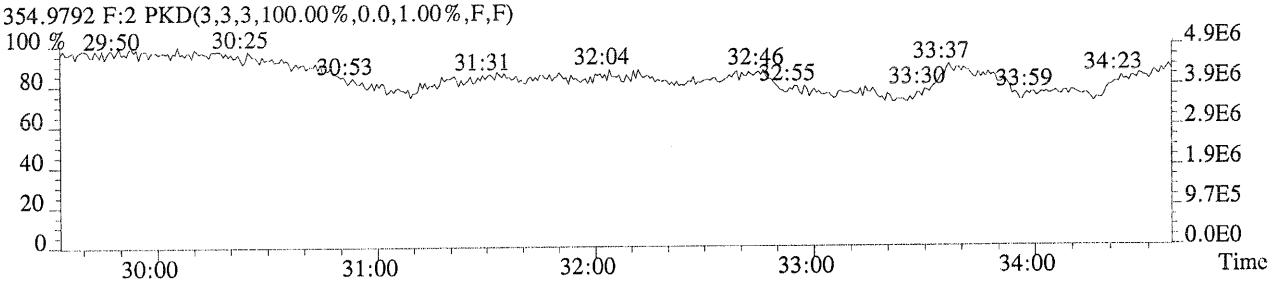
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,792.0,1.00%,F,F)



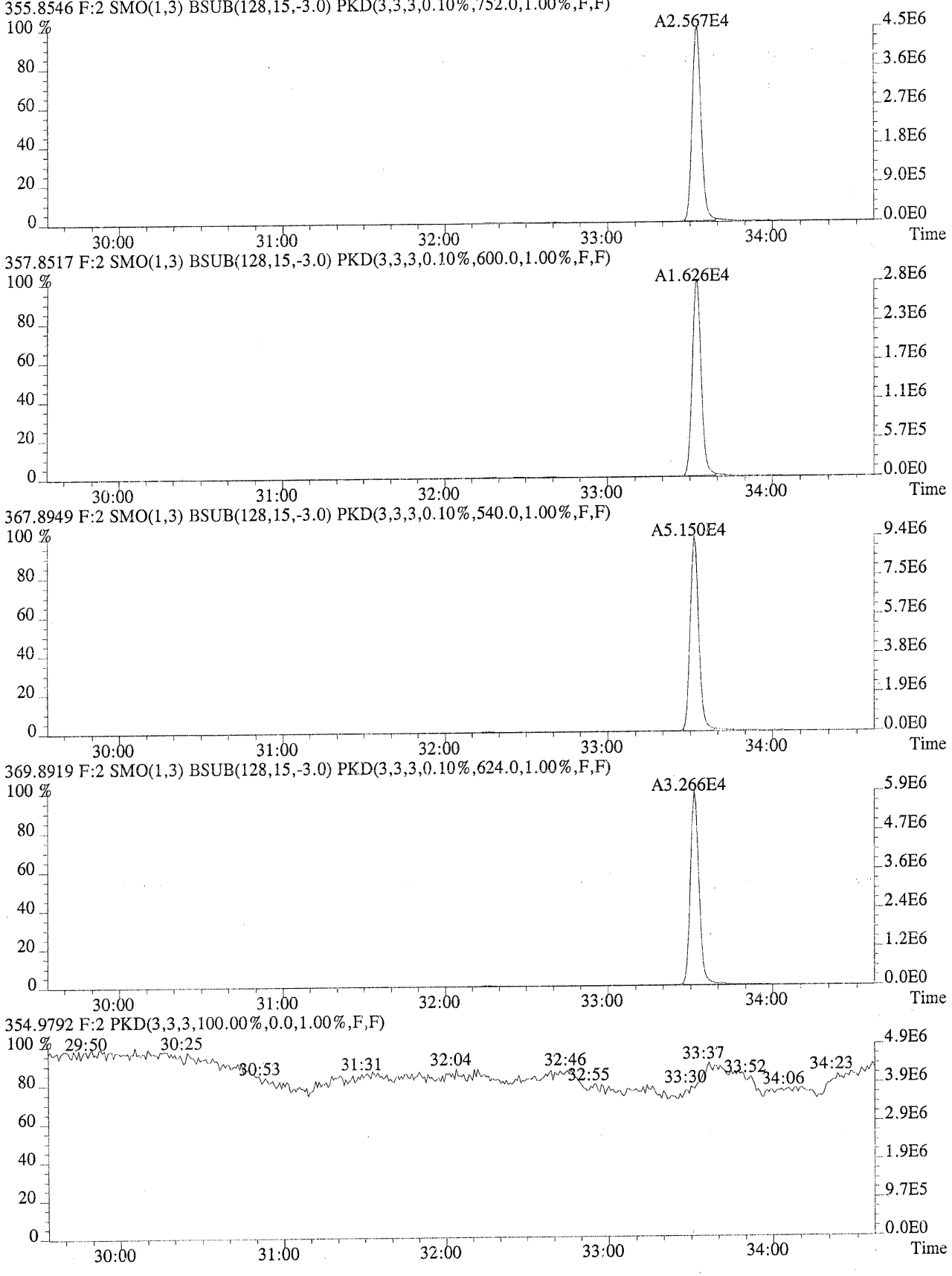
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

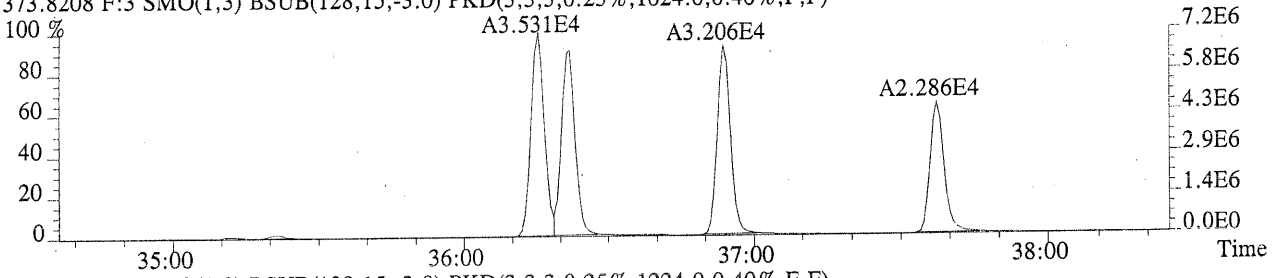


File:U212361 #1-458 Acq:30-OCT-2007 15:24:45 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 File Text:LCS Exp:EQ0700356-02LCS

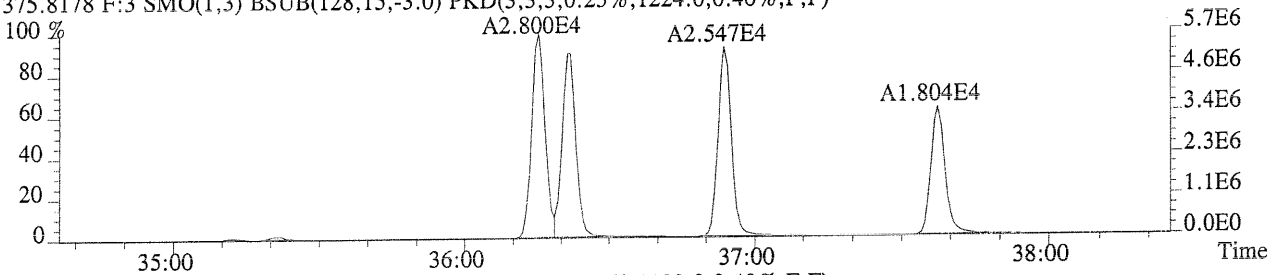


File:U212361 #1-345 Acq:30-OCT-2007 15:24:45 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:LCS Exp:EQ0700356-02LCS

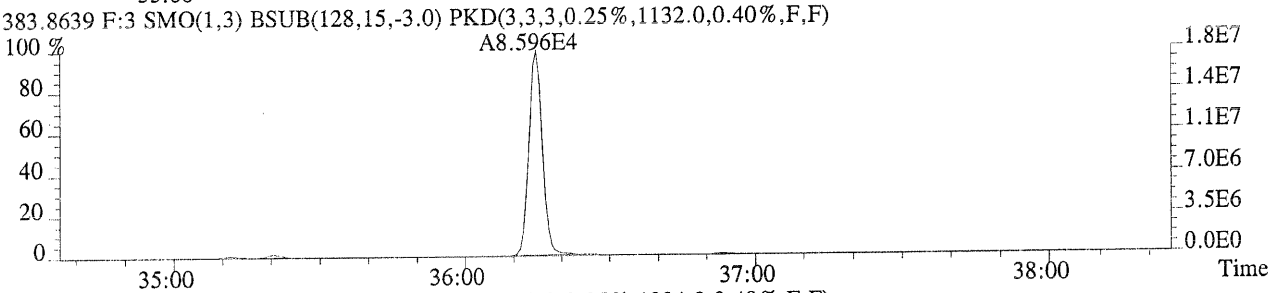
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1024.0,0.40%,F,F)



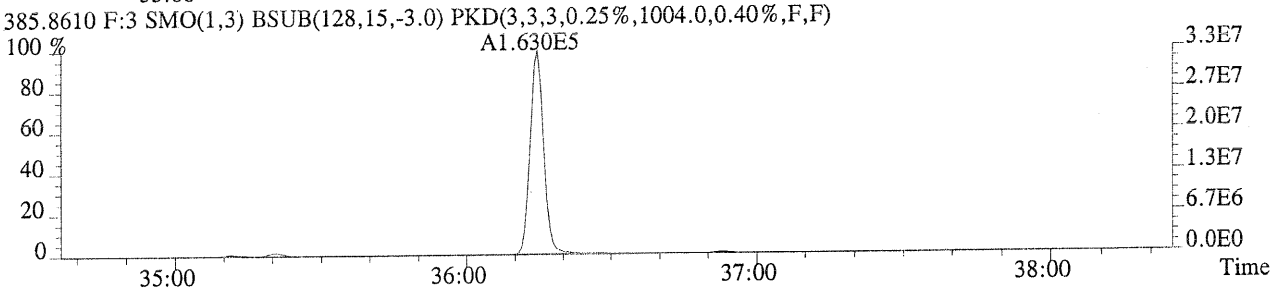
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1224.0,0.40%,F,F)



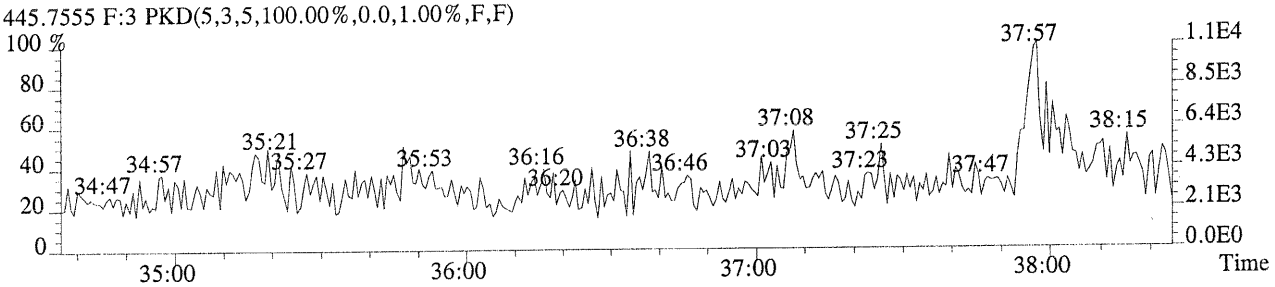
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1132.0,0.40%,F,F)



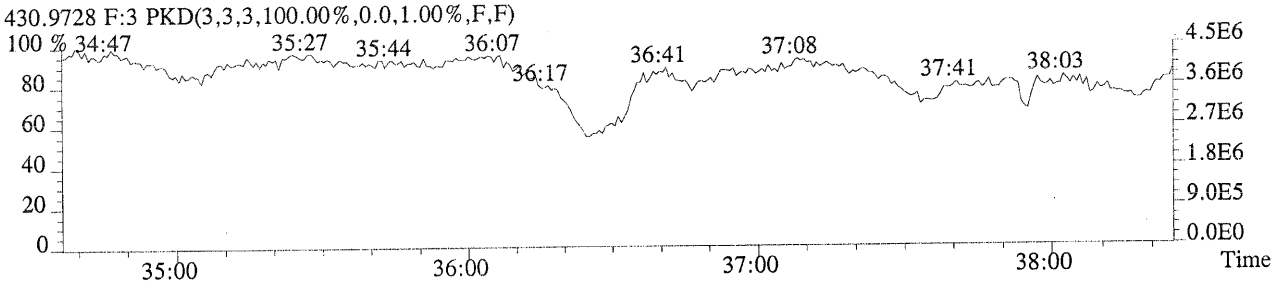
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1004.0,0.40%,F,F)



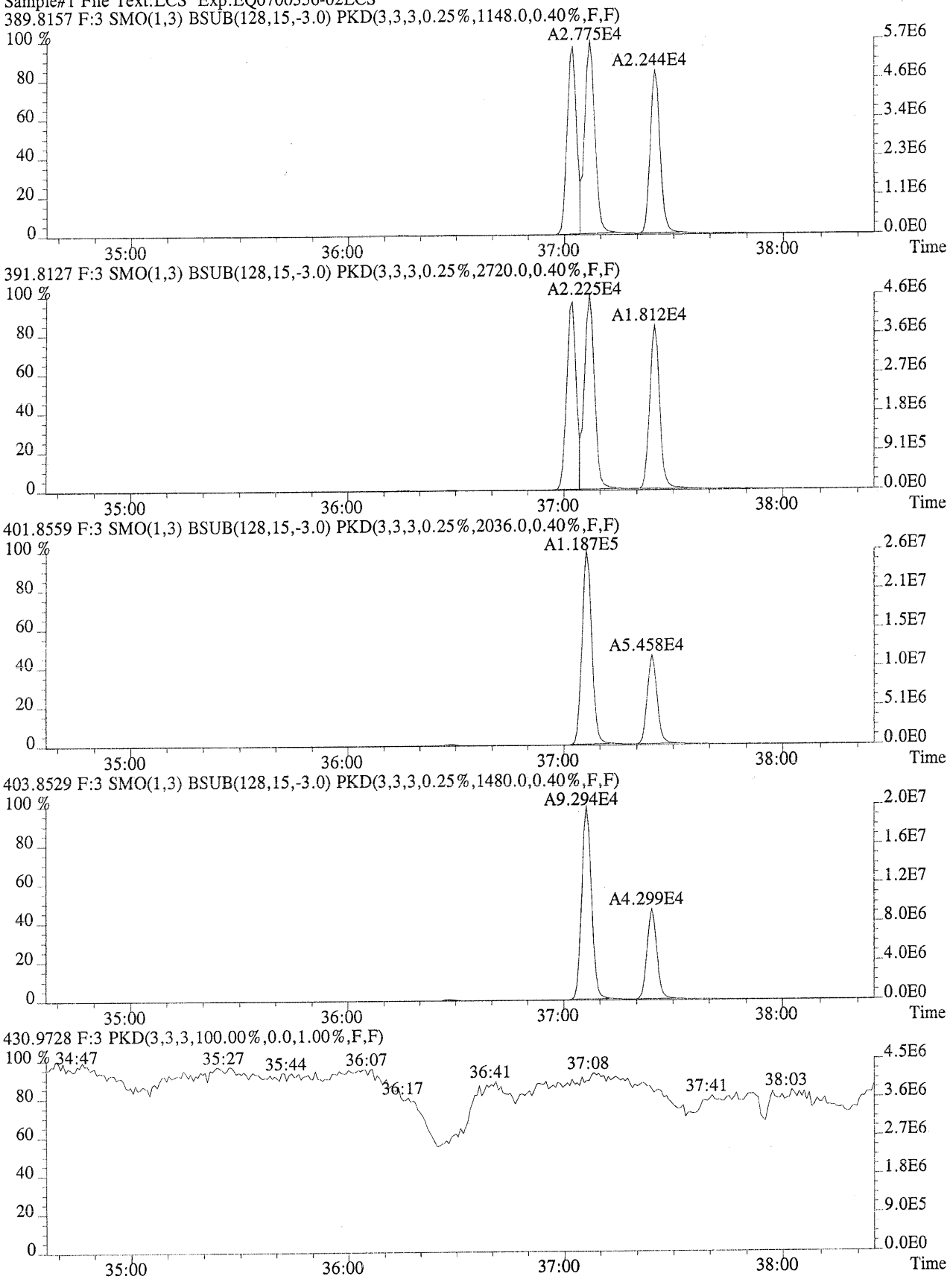
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



430.9728 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

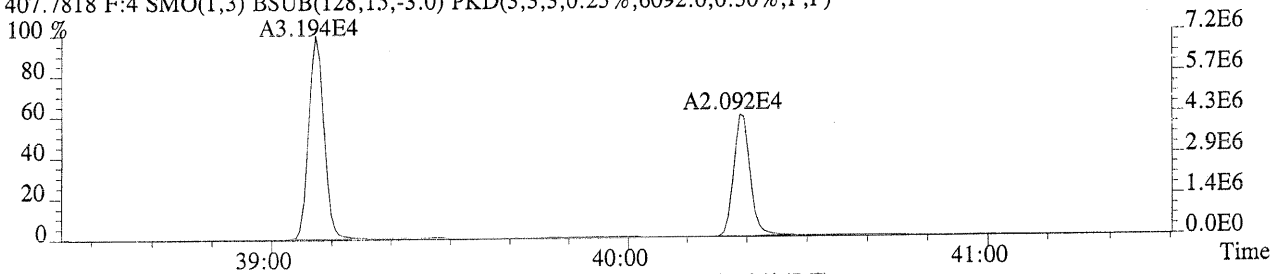


File:U212361 #1-345 Acq:30-OCT-2007 15:24:45 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:LCS Exp:EQ0700356-02LCS

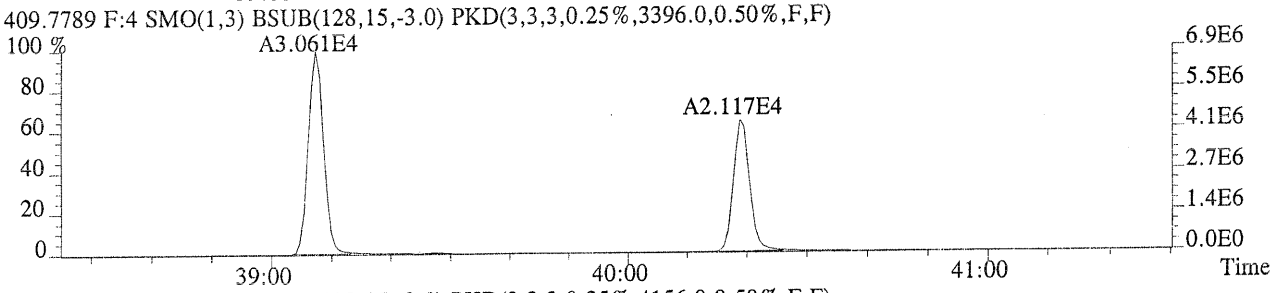


File:U212361 #1-281 Acq:30-OCT-2007 15:24:45 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 File Text:LCS Exp:EQ0700356-02LCS

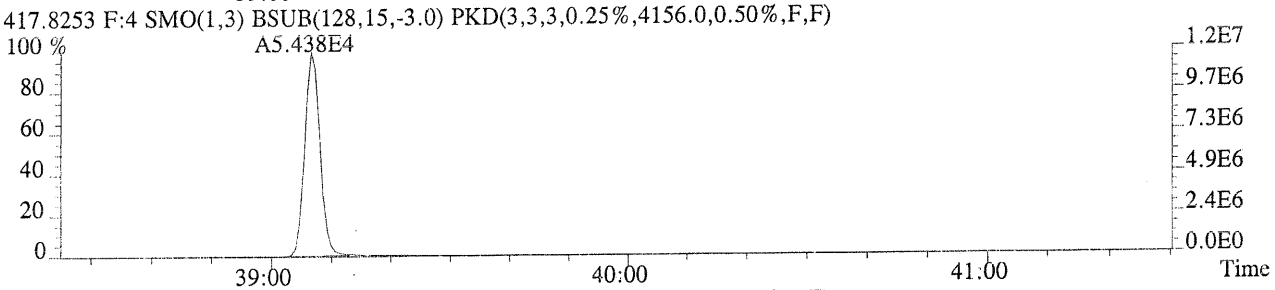
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,6092.0,0.50%,F,F)



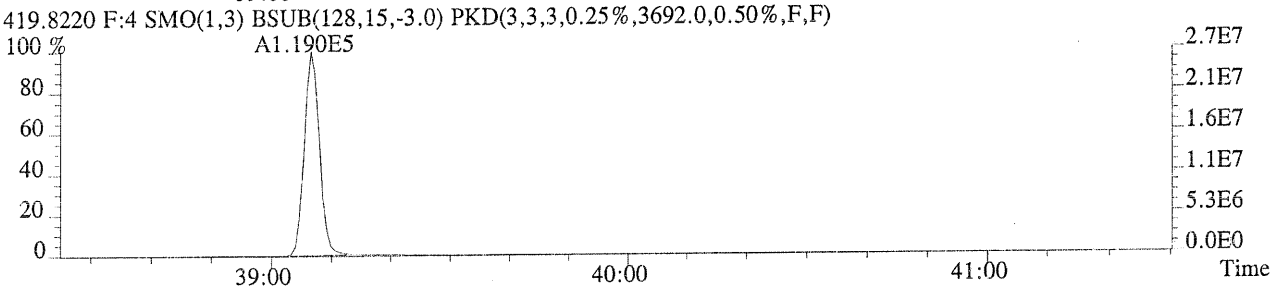
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3396.0,0.50%,F,F)



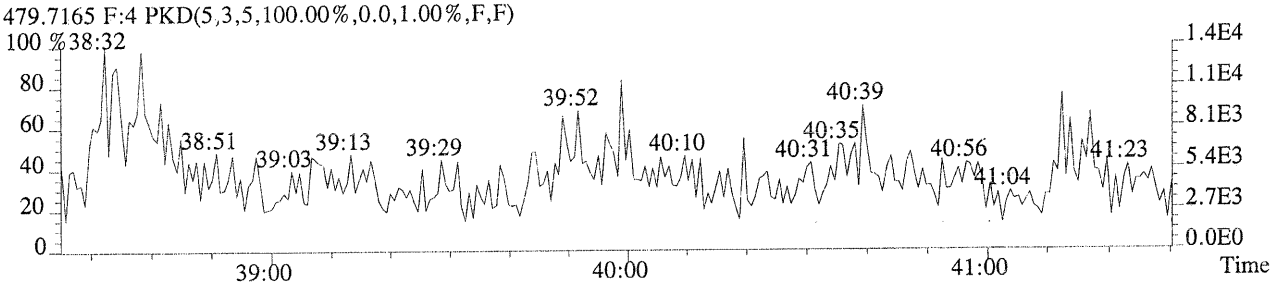
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4156.0,0.50%,F,F)



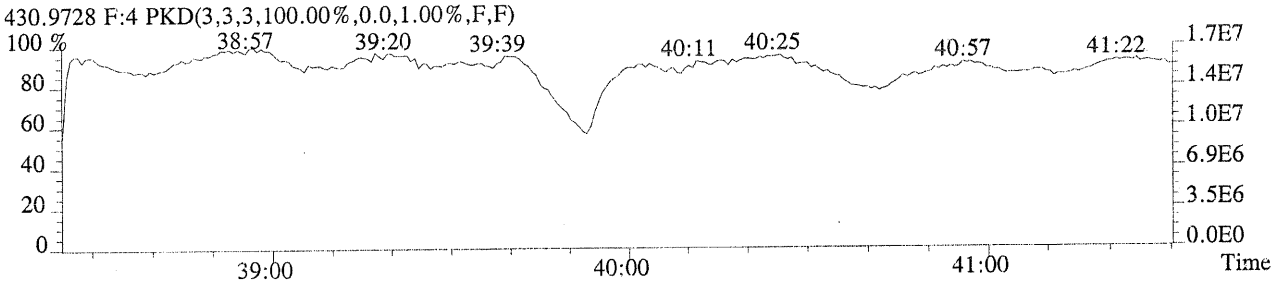
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3692.0,0.50%,F,F)



479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

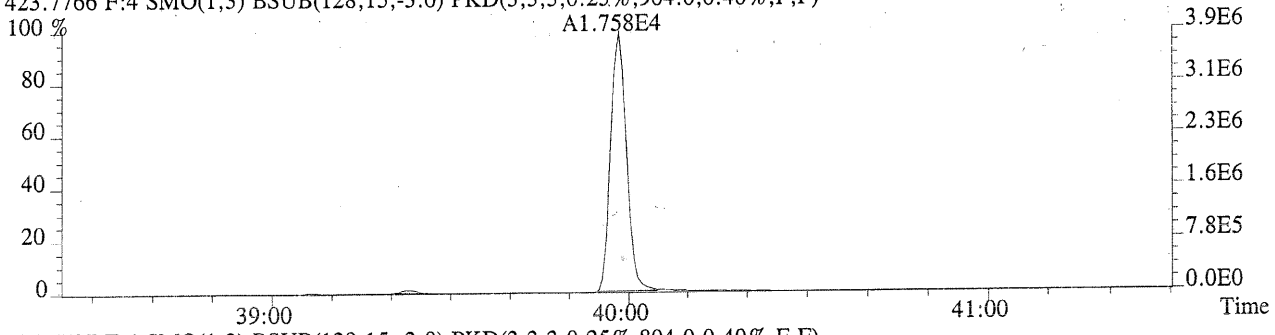


430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

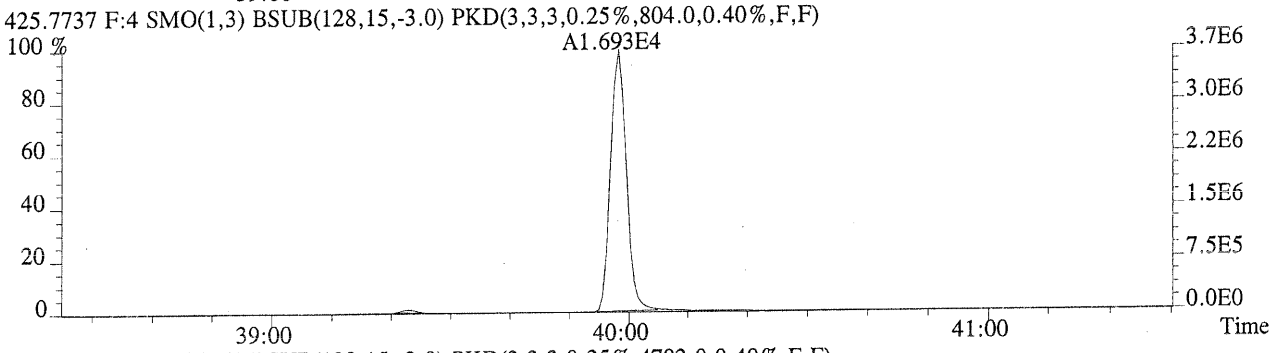


File:U212361 #1-281 Acq:30-OCT-2007 15:24:45 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 File Text:LCS Exp:EQ0700356-02LCS

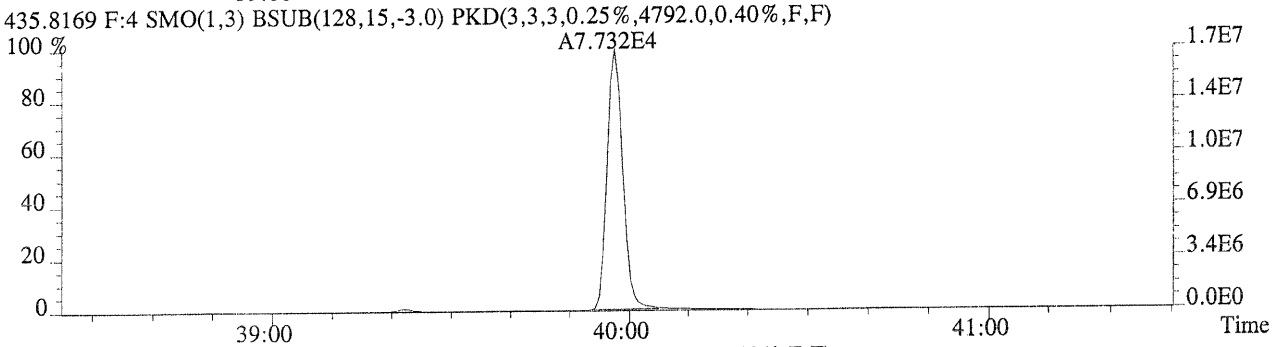
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,904.0,0.40%,F,F)



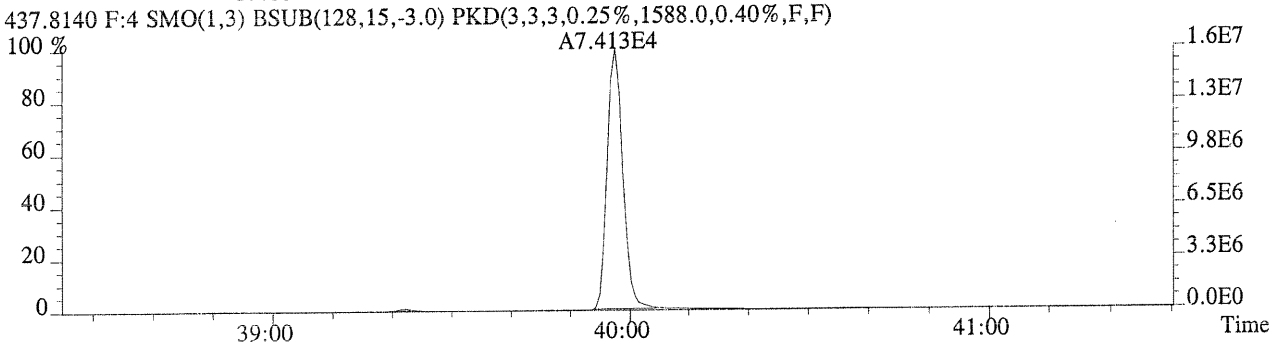
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,804.0,0.40%,F,F)



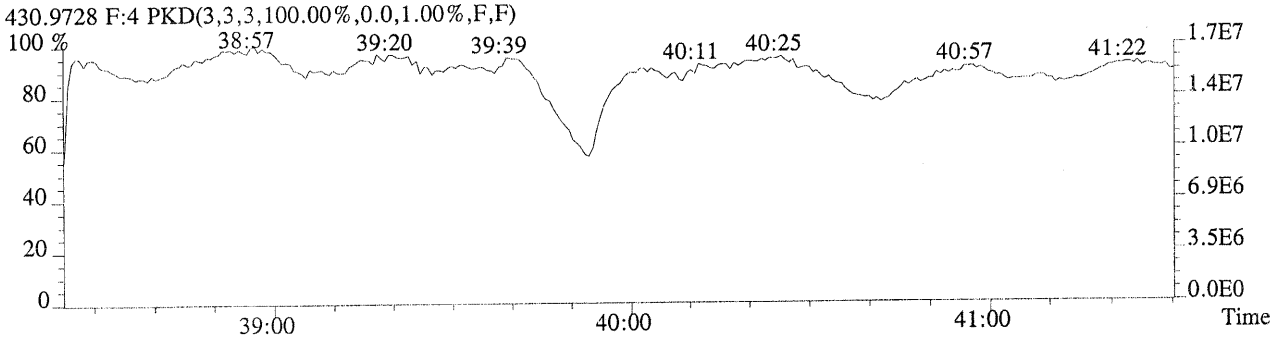
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4792.0,0.40%,F,F)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1588.0,0.40%,F,F)

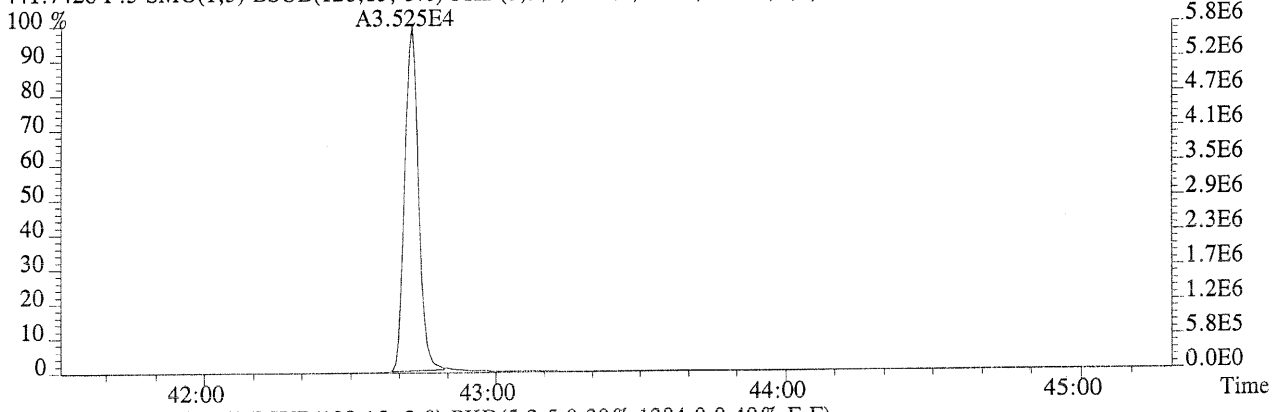


430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

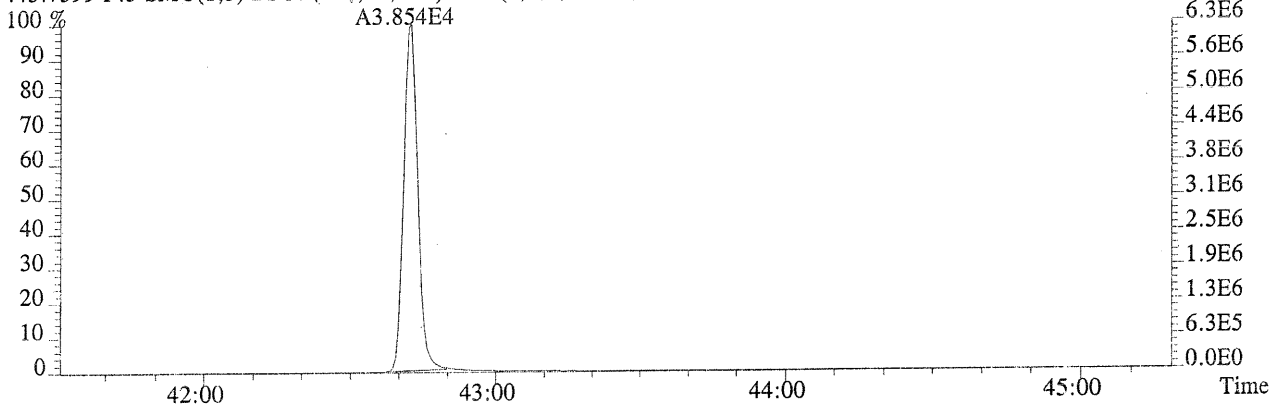


File:U212361 #1-419 Acq:30-OCT-2007 15:24:45 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:LCS Exp:EQ0700356-02LCS

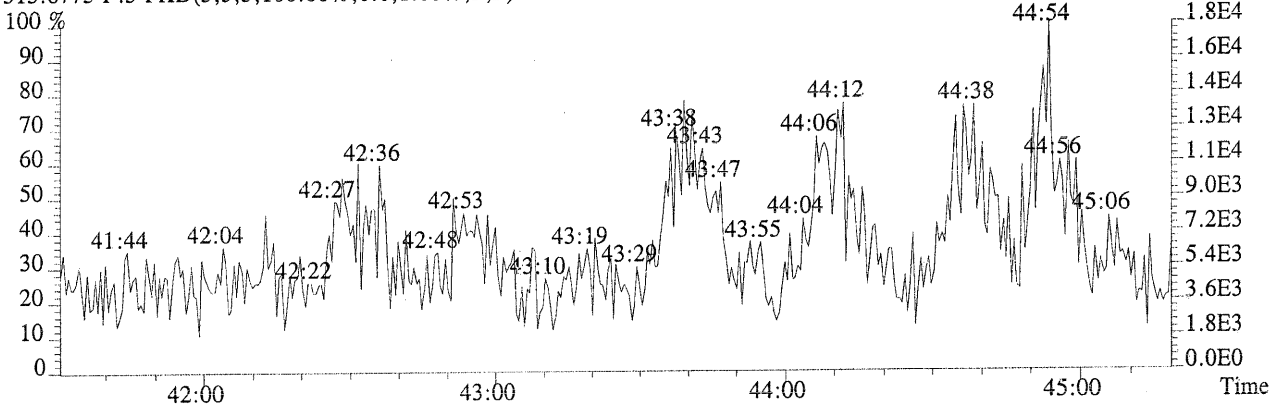
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,568.0,0.40%,F,F)



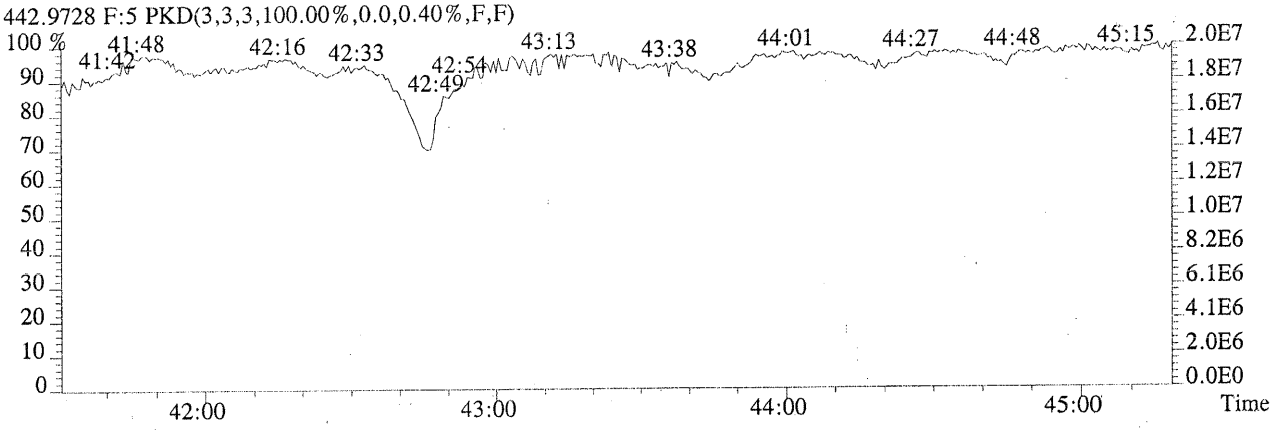
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3.5,0.30%,1384.0,0.40%,F,F)



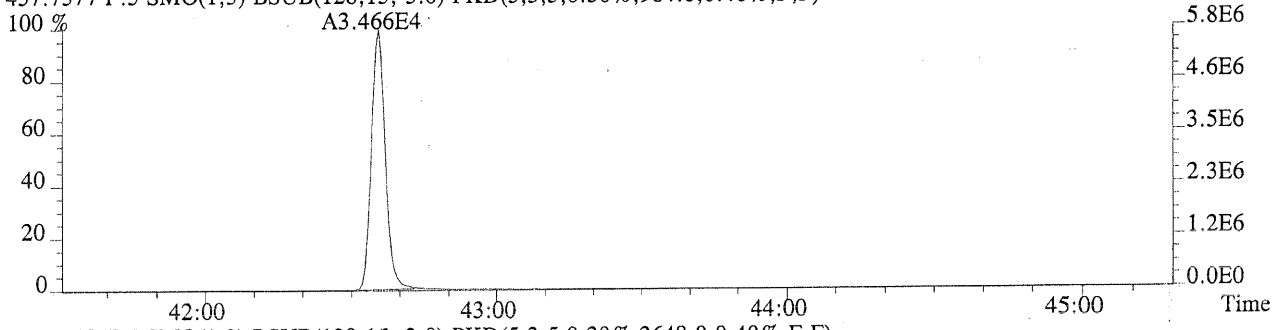
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



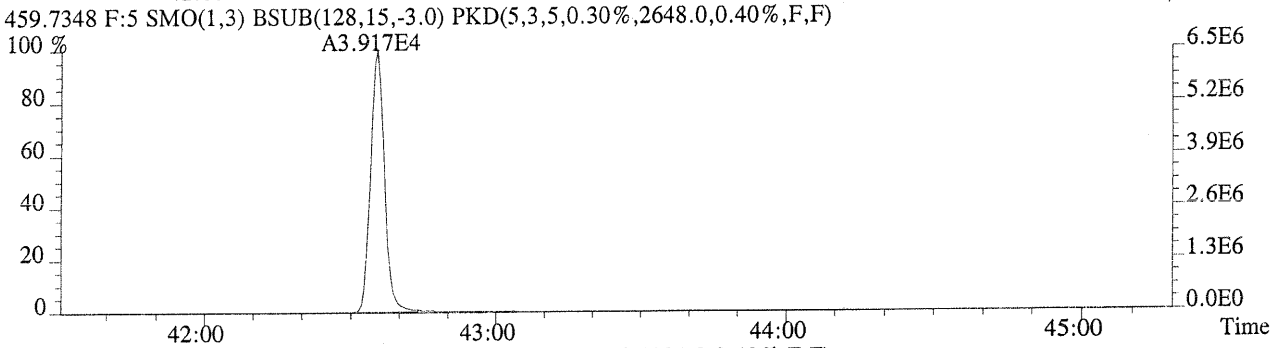
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



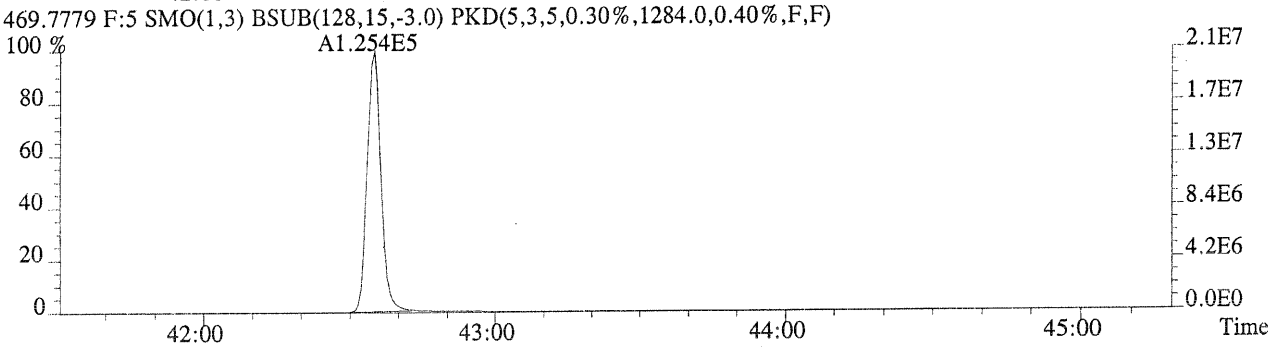
File:U212361 #1-419 Acq:30-OCT-2007 15:24:45 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:LCS Exp:EQ0700356-02LCS
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,984.0,0.40%,F,F)



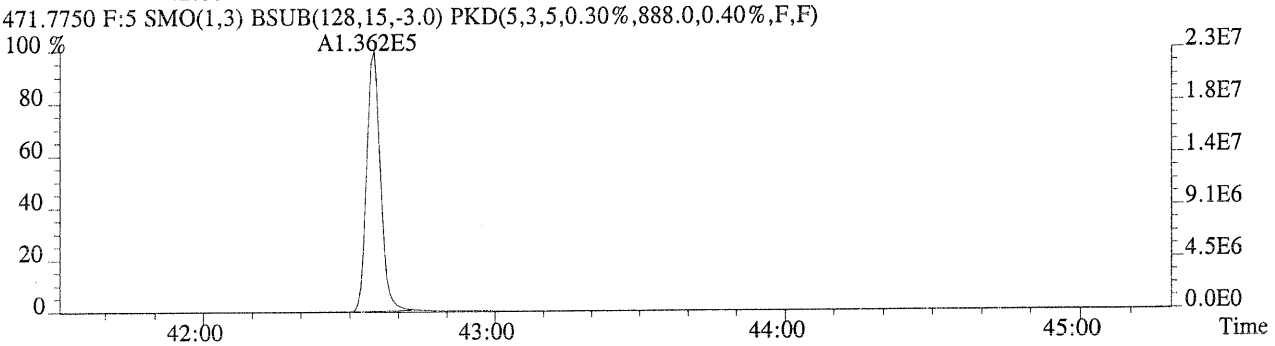
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2648.0,0.40%,F,F)



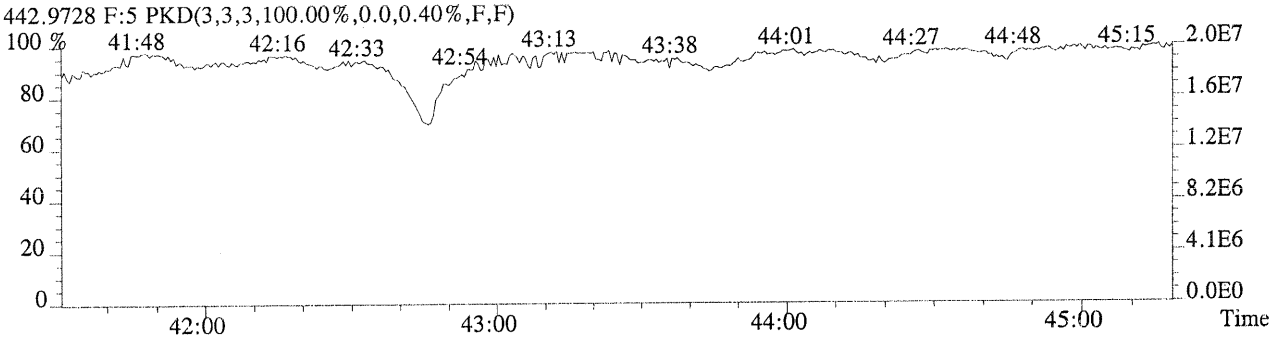
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1284.0,0.40%,F,F)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,888.0,0.40%,F,F)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



Columbia Analytical Services, Inc.
Sample Response Summary

CLIENT ID.
DLCS

Run #11 Filename U212362 Samp: 1 Inj: 1 Acquired: 30-OCT-07 16:13:08
Processed: 31-OCT-07 08:39:02 LAB. ID: EQ0700356-03

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	26:53	5.210e+03	6.623e+03	0.79	yes	no
2	Unk	1,2,3,7,8-PeCDF	32:15	2.908e+04	1.828e+04	1.59	yes	no
3	Unk	2,3,4,7,8-PeCDF	33:06	3.120e+04	2.003e+04	1.56	yes	no
4	Unk	1,2,3,4,7,8-HxCDF	36:14	3.133e+04	2.551e+04	1.23	yes	no
5	Unk	1,2,3,6,7,8-HxCDF	36:21	3.578e+04	2.836e+04	1.26	yes	no
6	Unk	2,3,4,6,7,8-HxCDF	36:53	2.646e+04	2.096e+04	1.26	yes	no
7	Unk	1,2,3,7,8,9-HxCDF	37:37	1.933e+04	1.545e+04	1.25	yes	no
8	Unk	1,2,3,4,6,7,8-HpCDF	39:07	2.794e+04	2.682e+04	1.04	yes	no
9	Unk	1,2,3,4,7,8,9-HpCDF	40:18	1.713e+04	1.621e+04	1.06	yes	no
10	Unk	OCDF	42:42	2.737e+04	3.041e+04	0.90	yes	no
11	Unk	2,3,7,8-TCDD	27:59	4.570e+03	6.039e+03	0.76	yes	no
12	Unk	1,2,3,7,8-PeCDD	33:31	2.134e+04	1.361e+04	1.57	yes	no
13	Unk	1,2,3,4,7,8-HxCDD	37:01	2.328e+04	1.851e+04	1.26	yes	no
14	Unk	1,2,3,6,7,8-HxCDD	37:06	2.468e+04	1.953e+04	1.26	yes	no
15	Unk	1,2,3,7,8,9-HxCDD	37:24	1.805e+04	1.448e+04	1.25	yes	no
16	Unk	1,2,3,4,6,7,8-HpCDD	39:58	1.522e+04	1.428e+04	1.07	yes	no
17	Unk	OCDD	42:35	2.287e+04	2.576e+04	0.89	yes	no
18	IS	13C-2,3,7,8-TCDF	26:51	2.492e+04	3.173e+04	0.79	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	32:13	5.028e+04	3.161e+04	1.59	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	36:13	8.189e+04	1.539e+05	0.53	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	39:06	4.788e+04	1.050e+05	0.46	yes	no
22	IS	13C-2,3,7,8-TCDD	27:57	2.270e+04	2.898e+04	0.78	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	33:31	4.408e+04	2.800e+04	1.57	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	37:06	1.126e+05	8.907e+04	1.26	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	39:57	7.109e+04	6.747e+04	1.05	yes	no
26	IS	13C-OCDD	42:34	8.754e+04	9.517e+04	0.92	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	27:40	4.934e+04	6.187e+04	0.80	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:23	5.463e+04	4.246e+04	1.29	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	27:59	4.457e+04				
					SUM AREA			
30	Tot	Total Tetra-Furans	25:23		1.254e+04	0.82	yes	
31	Tot	Total Tetra-Dioxins	27:59		1.063e+04	0.76	yes	
32	Tot	Total Penta-Furans	31:12		1.018e+05	1.56	yes	
33	Tot	Total Penta-Dioxins	32:38		3.501e+04	1.40	yes	
34	Tot	Total Hexa-Furans	35:20		2.039e+05	1.14	yes	
35	Tot	Total Hexa-Dioxins	37:01		1.185e+05	1.26	yes	
36	Tot	Total Hepta-Furans	39:07		8.809e+04	1.04	yes	
37	Tot	Total Hepta-Dioxins	39:58		2.951e+04	1.07	yes	

Columbia Analytical Services, Inc.
10655 Richmond Ave., Suite 130A
Houston, TX 77042
Office(713)266-1599. Fax(713)266-0130

Columbia Analytical Services,Inc. CLIENT ID.
Signal/Noise Height Ratio Summary DLCS

Run #11 Filename U212362 Samp: 1 Inj: 1 Acquired: 30-OCT-07 16:13:08

Processed: 31-OCT-07 08:39:02 LAB. ID: EQ0700356-03

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	5.45e+05	9.72e+02	5.6e+02	6.77e+05	9.96e+02	6.8e+02
2	1,2,3,7,8-PeCDF	4.52e+06	7.44e+02	6.1e+03	2.87e+06	1.04e+03	2.8e+03
3	2,3,4,7,8-PeCDF	5.32e+06	7.44e+02	7.2e+03	3.36e+06	1.04e+03	3.2e+03
4	1,2,3,4,7,8-HxCDF	6.18e+06	1.24e+03	5.0e+03	5.03e+06	1.01e+03	5.0e+03
5	1,2,3,6,7,8-HxCDF	6.79e+06	1.24e+03	5.5e+03	5.50e+06	1.01e+03	5.4e+03
6	2,3,4,6,7,8-HxCDF	5.21e+06	1.24e+03	4.2e+03	4.14e+06	1.01e+03	4.1e+03
7	1,2,3,7,8,9-HxCDF	3.70e+06	1.24e+03	3.0e+03	2.96e+06	1.01e+03	2.9e+03
8	1,2,3,4,6,7,8-HpCDF	6.03e+06	3.10e+03	1.9e+03	5.75e+06	3.48e+03	1.7e+03
9	1,2,3,4,7,8,9-HpCDF	3.44e+06	3.10e+03	1.1e+03	3.31e+06	3.48e+03	9.5e+02
10	OCDF	4.38e+06	7.88e+02	5.6e+03	4.73e+06	1.26e+03	3.7e+03
11	2,3,7,8-TCDD	5.67e+05	6.88e+02	8.2e+02	7.61e+05	6.56e+02	1.2e+03
12	1,2,3,7,8-PeCDD	3.69e+06	9.28e+02	4.0e+03	2.33e+06	9.60e+02	2.4e+03
13	1,2,3,4,7,8-HxCDD	4.90e+06	1.26e+03	3.9e+03	3.88e+06	1.22e+03	3.2e+03
14	1,2,3,6,7,8-HxCDD	4.86e+06	1.26e+03	3.9e+03	3.90e+06	1.22e+03	3.2e+03
15	1,2,3,7,8,9-HxCDD	3.67e+06	1.26e+03	2.9e+03	2.95e+06	1.22e+03	2.4e+03
16	1,2,3,4,6,7,8-HpCDD	3.28e+06	2.02e+03	1.6e+03	3.07e+06	9.64e+02	3.2e+03
17	OCDD	3.68e+06	9.12e+02	4.0e+03	4.13e+06	5.84e+03	7.1e+02
18	13C-2,3,7,8-TCDF	2.66e+06	2.43e+03	1.1e+03	3.43e+06	1.54e+03	2.2e+03
19	13C-1,2,3,7,8-PeCDF	7.88e+06	4.48e+02	1.8e+04	5.03e+06	7.96e+02	6.3e+03
20	13C-1,2,3,4,7,8-HxCDF	1.59e+07	1.09e+03	1.5e+04	3.00e+07	2.10e+03	1.4e+04
21	13C-1,2,3,4,6,7,8-HpCDF	1.04e+07	3.65e+03	2.8e+03	2.28e+07	1.91e+03	1.2e+04
22	13C-2,3,7,8-TCDD	2.94e+06	3.25e+03	9.0e+02	3.72e+06	1.94e+03	1.9e+03
23	13C-1,2,3,7,8-PeCDD	7.54e+06	6.80e+02	1.1e+04	4.77e+06	6.76e+02	7.1e+03
24	13C-1,2,3,6,7,8-HxCDD	2.31e+07	2.66e+03	8.7e+03	1.81e+07	1.54e+03	1.2e+04
25	13C-1,2,3,4,6,7,8-HpCDD	1.53e+07	3.51e+03	4.4e+03	1.45e+07	7.84e+02	1.8e+04
26	13C-OCDD	1.40e+07	2.68e+04	5.2e+02	1.51e+07	2.41e+04	6.3e+02
27	13C-1,2,3,4-TCDD	6.23e+06	3.25e+03	1.9e+03	7.83e+06	1.94e+03	4.0e+03
28	13C-1,2,3,7,8,9-HxCDD	1.12e+07	2.66e+03	4.2e+03	8.63e+06	1.54e+03	5.6e+03
29	37Cl-2,3,7,8-TCDD	5.55e+06	1.00e+03	5.5e+03			

Columbia Analytical Services, Inc.
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Houston, TX 77042
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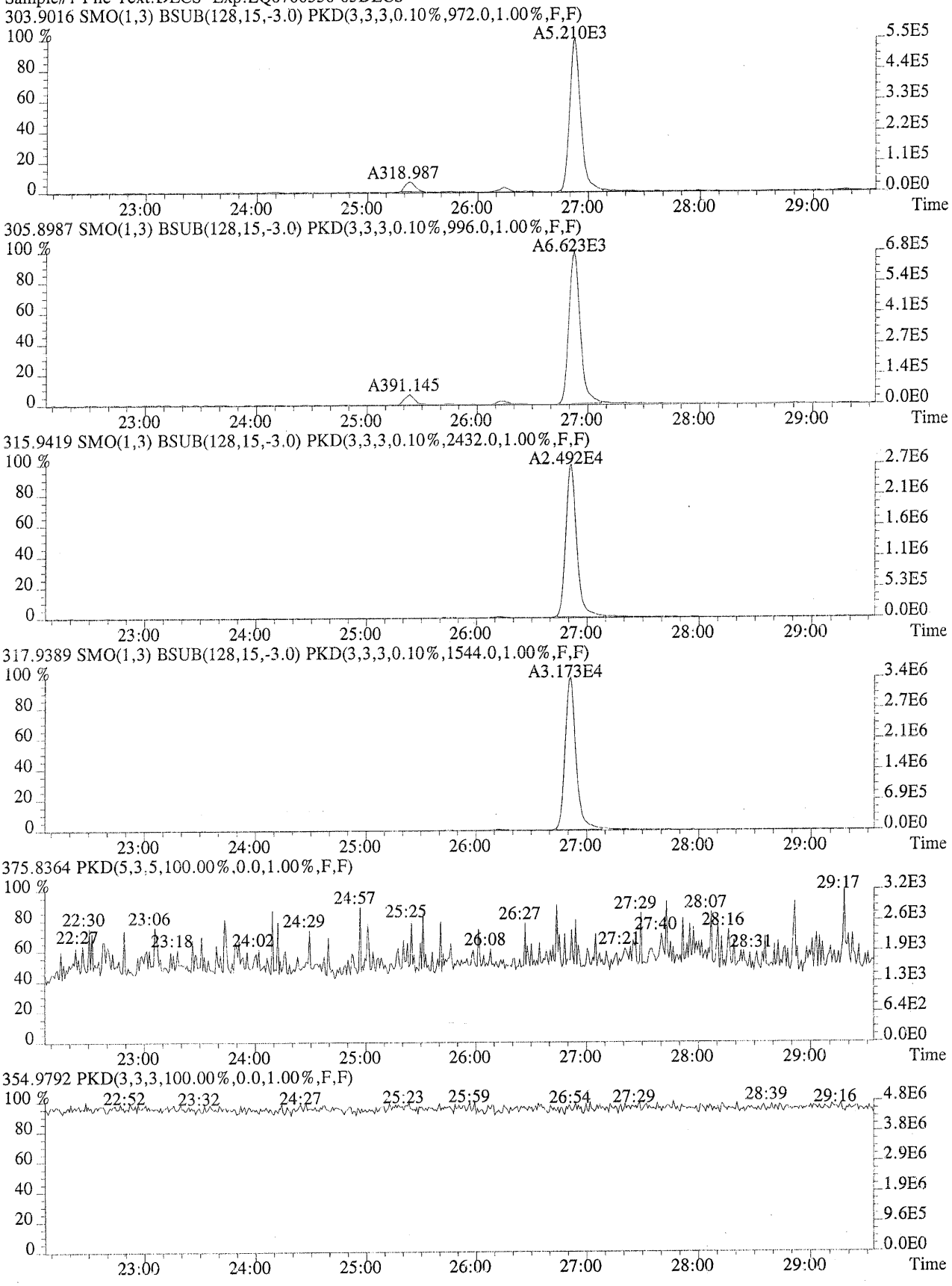
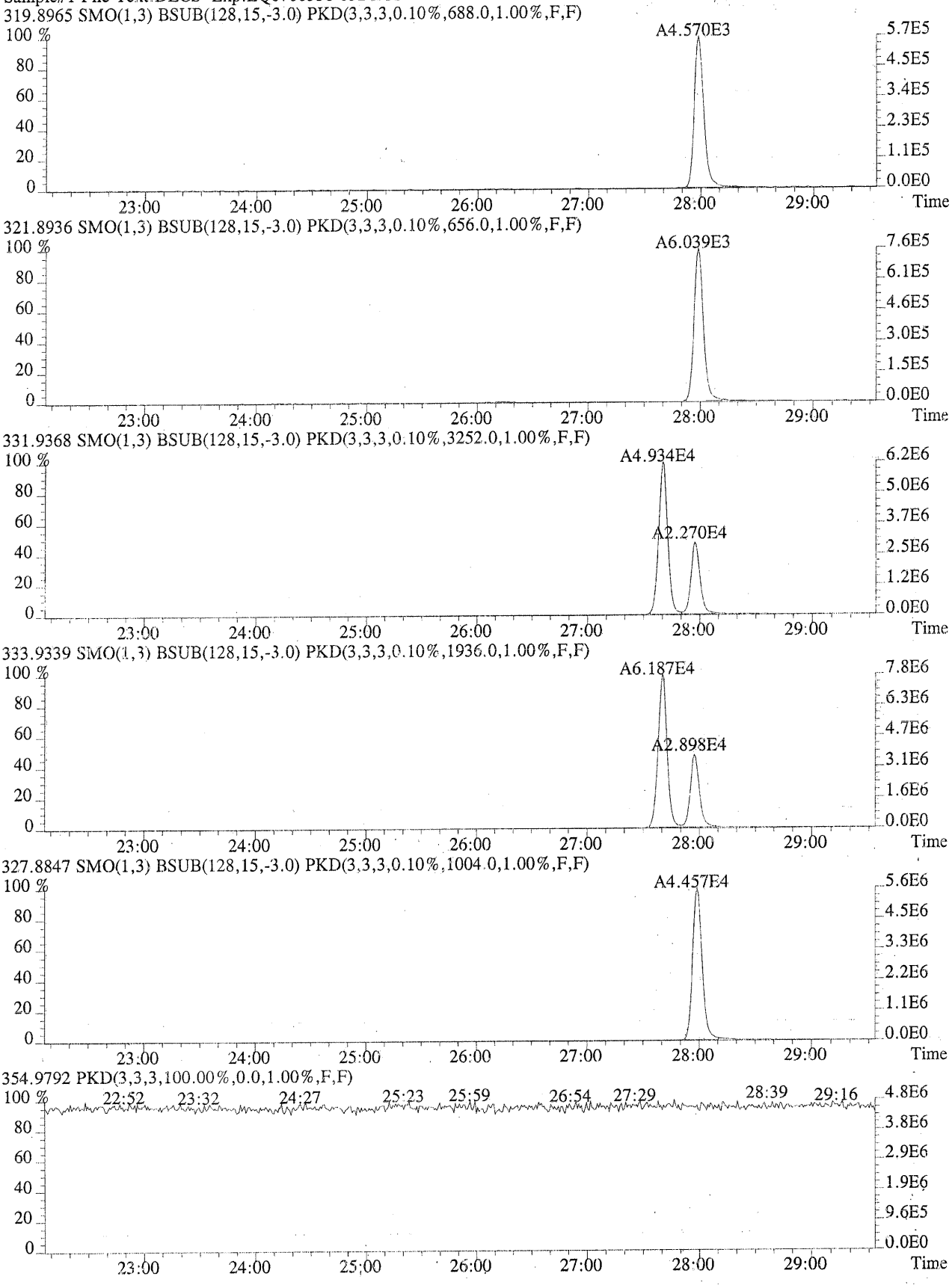
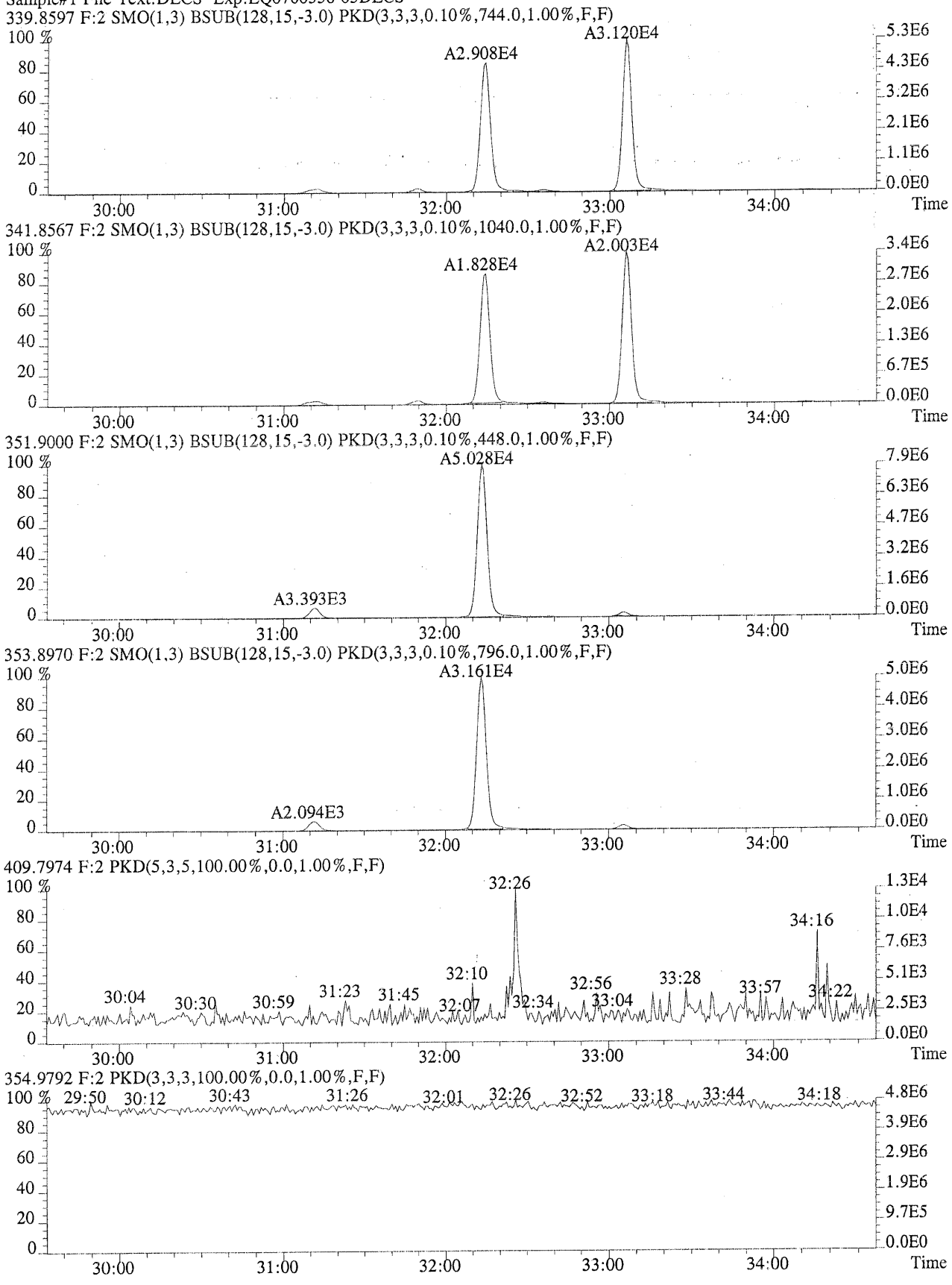
File:U212362 #1-621 Acq:30-OCT-2007 16:13:08 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 File Text:DLCS Exp:EQ0700356-03DLCS



File:U212362 #1-621 Acq:30-OCT-2007 16:13:08 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 File Text:DLCS Exp:EQ0700356-03DLCS

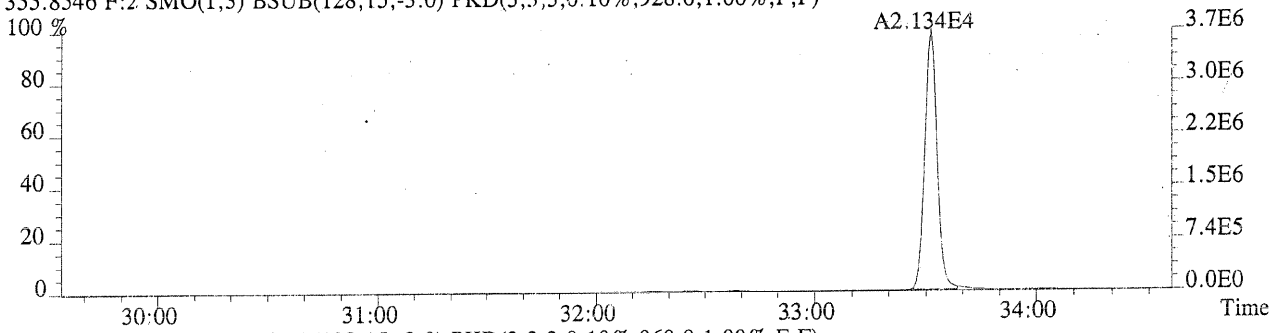


File:U212362 #1-458 Acq:30-OCT-2007 16:13:08 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 File Text:DLCS Exp:EQ0700356-03DLCS

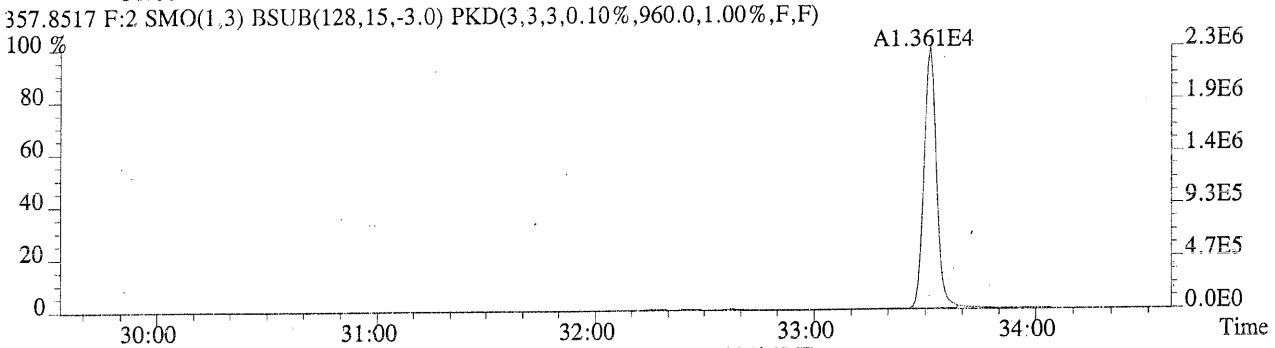


File:U212362 #1-458 Acq:30-OCT-2007 16:13:08 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 File Text:DLCS Exp:EQ0700356-03DLCS

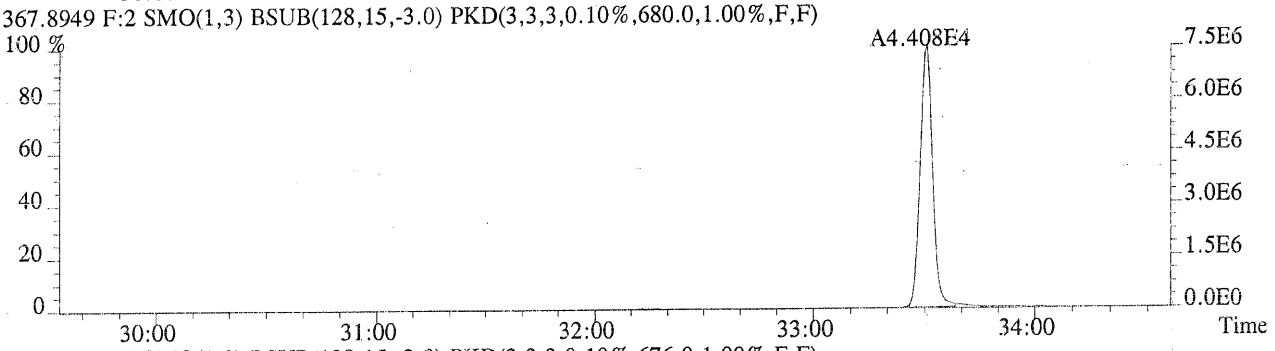
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,928.0,1.00%,F,F)



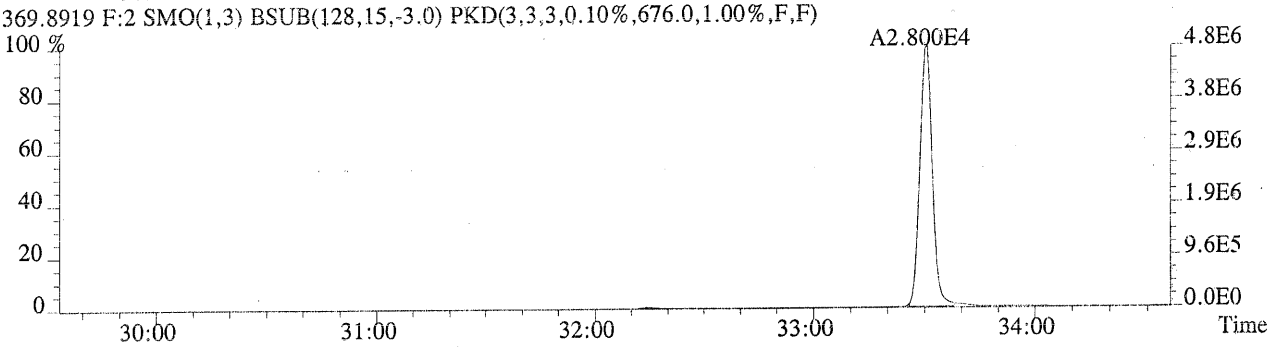
357.8517 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,960.0,1.00%,F,F)



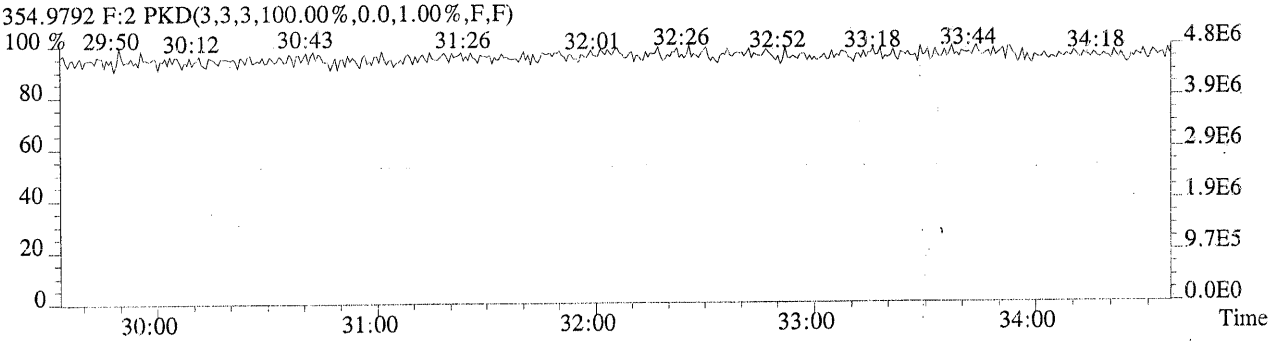
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,680.0,1.00%,F,F)



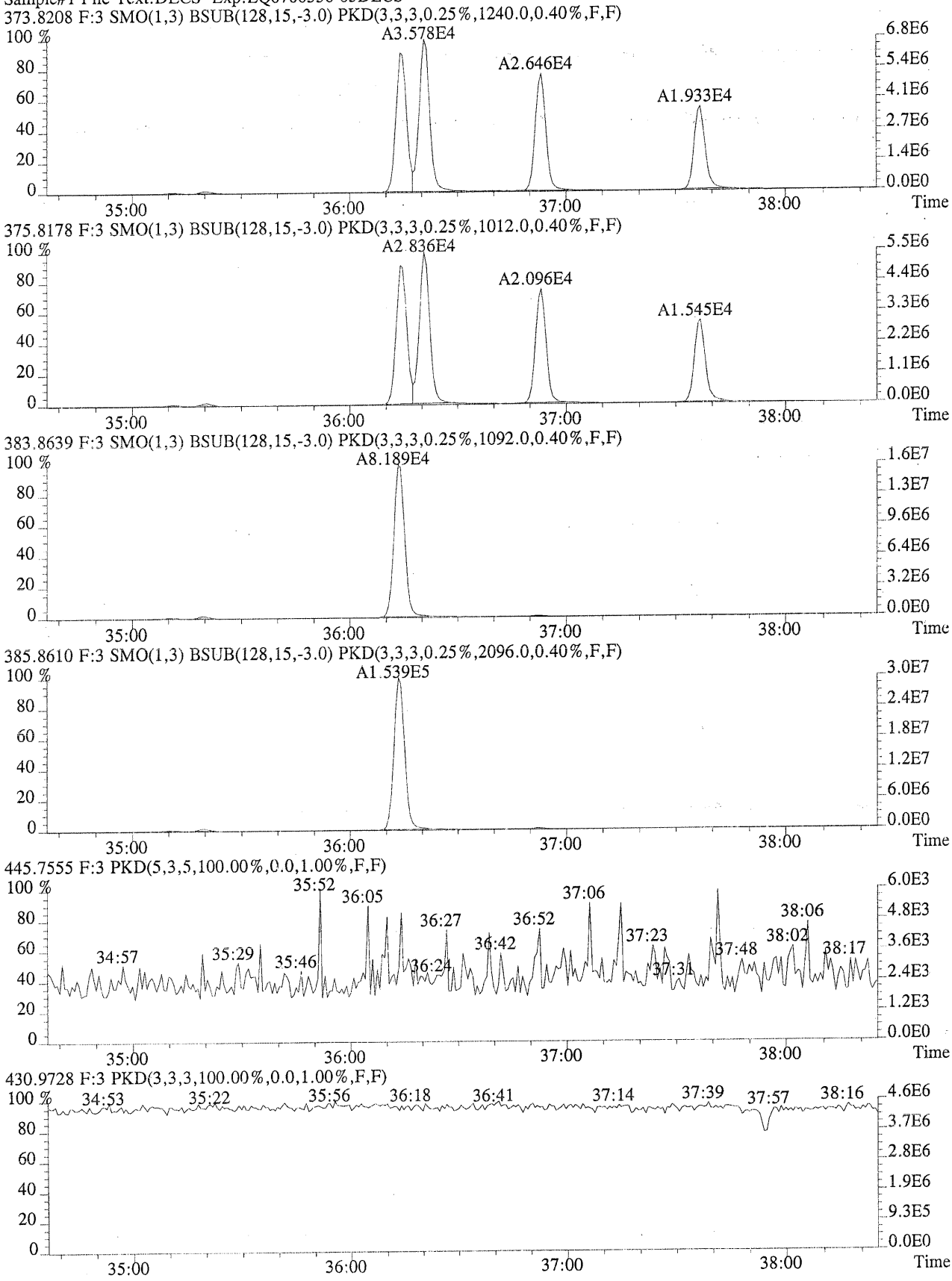
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,676.0,1.00%,F,F)



354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

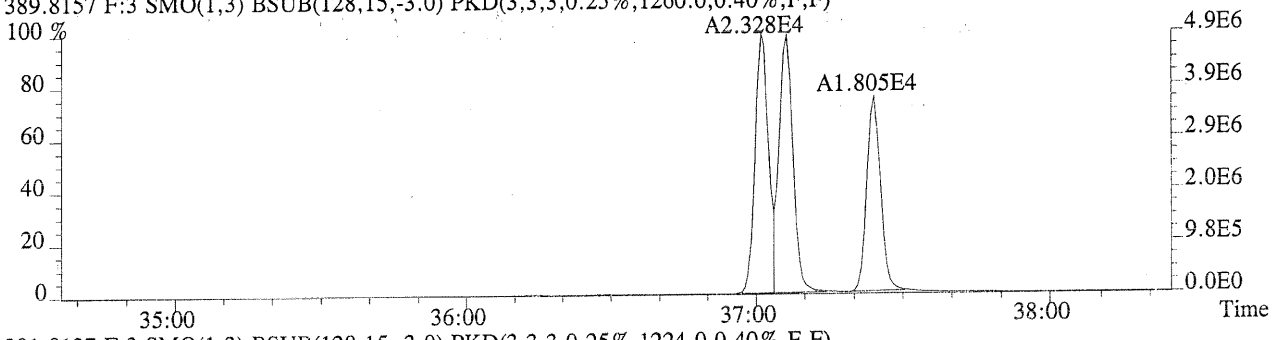


File:U212362 #1-345 Acq:30-OCT-2007 16:13:08 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 File Text:DLCS Exp:EQ0700356-03DLCS

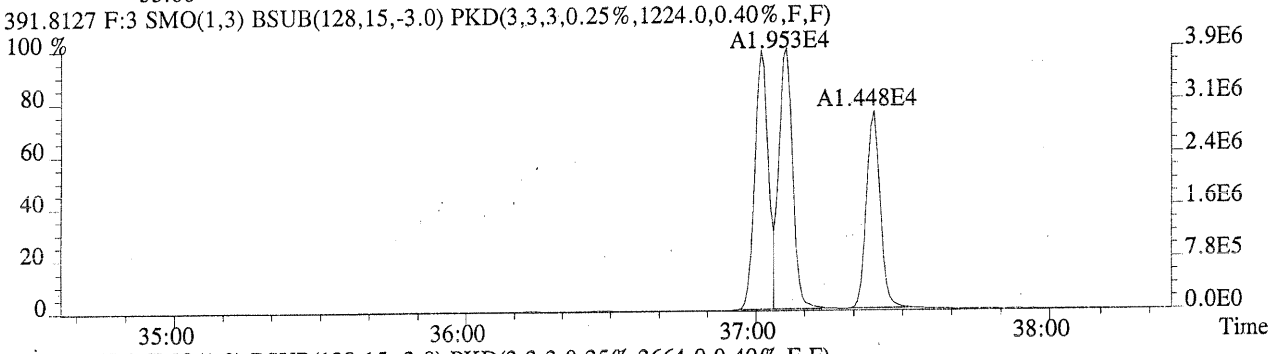


File:U212362 #1-345 Acq:30-OCT-2007 16:13:08 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 File Text:DLCS Exp:EQ0700356-03DLCS

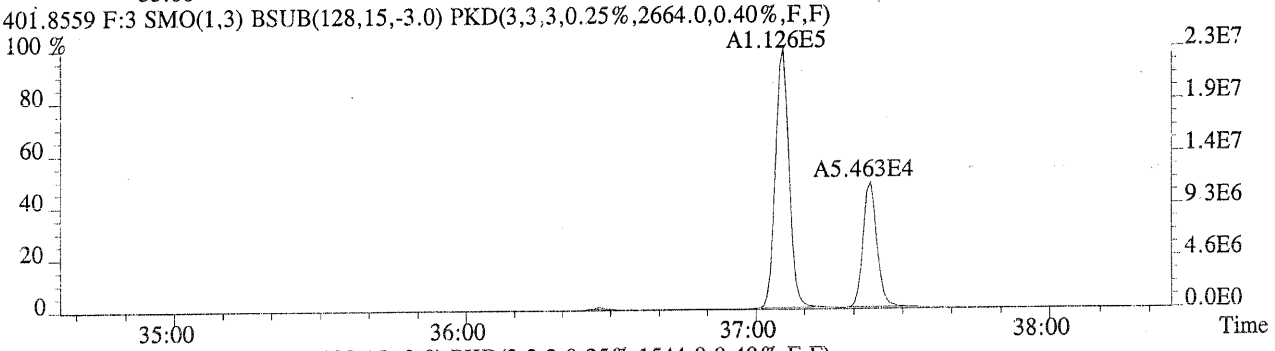
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1260.0,0.40%,F,F)



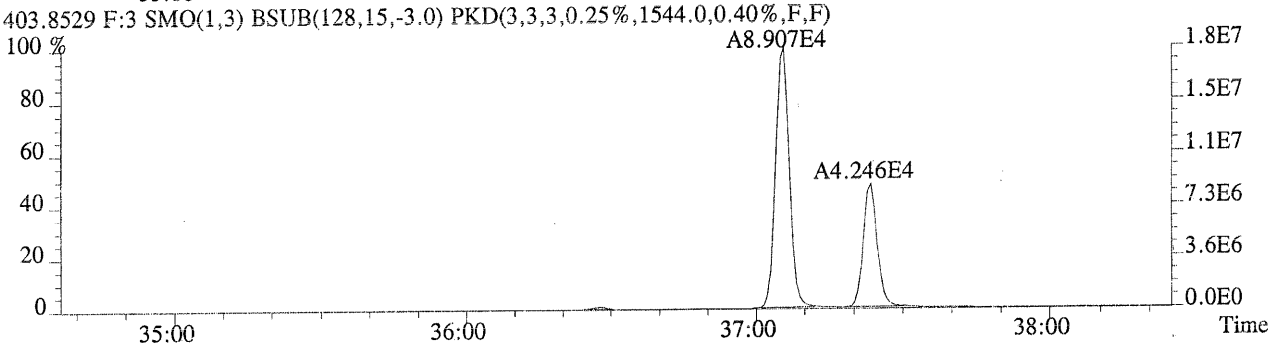
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1224.0,0.40%,F,F)



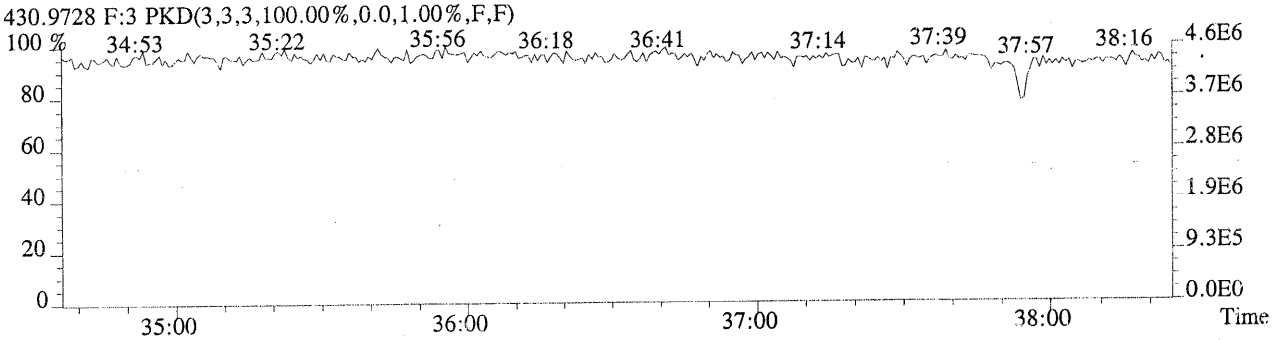
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2664.0,0.40%,F,F)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1544.0,0.40%,F,F)

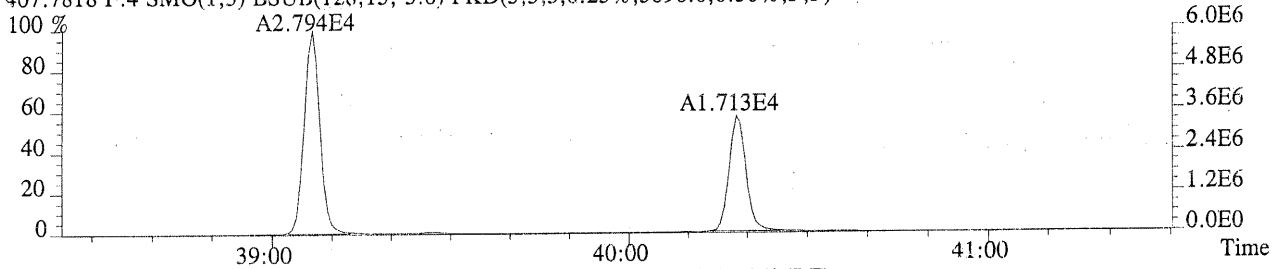


430.9728 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

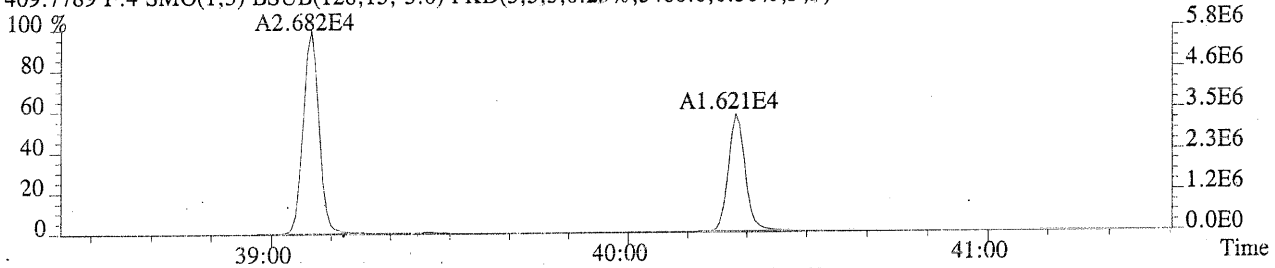


File:U212362 #1-281 Acq:30-OCT-2007 16:13:08 Probe El+ Magnet SIR VG BioTech Mass spectr
Sample#1 File Text:DLCS Exp:FQ0700356-03DLCS

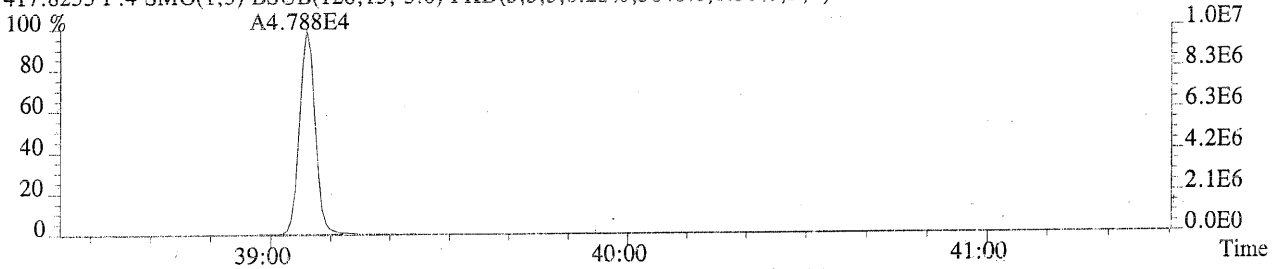
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3096.0,0.50%,F,F)



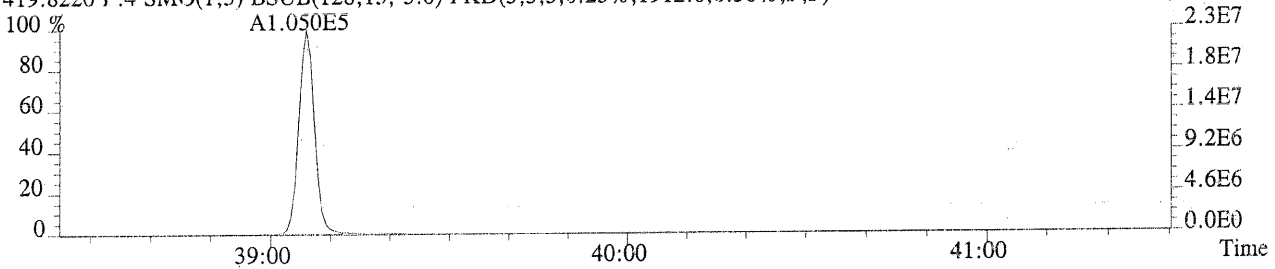
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3480.0,0.50%,F,F)



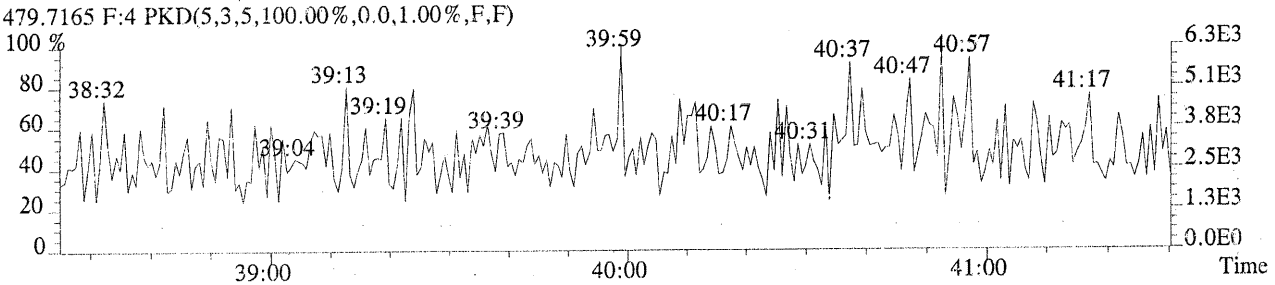
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3648.0,0.50%,F,F)



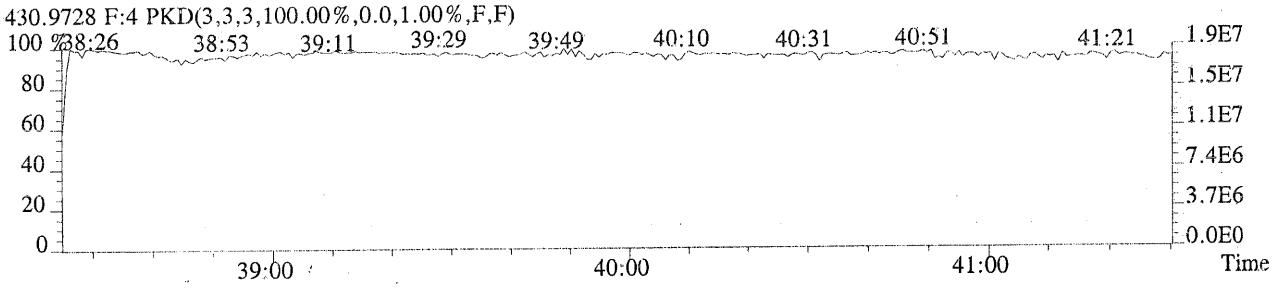
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1912.0,0.50%,F,F)



479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

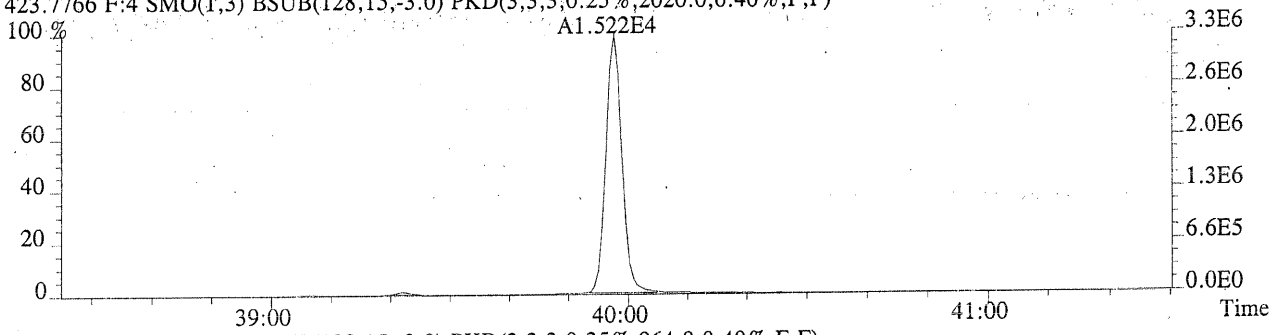


430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

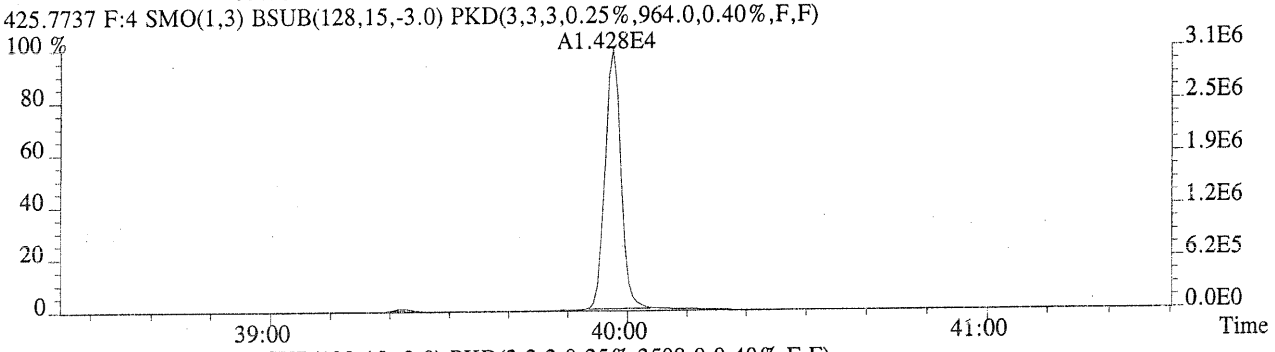


File:U212362 #1-281 Acq:30-OCT-2007 16:13:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:DLCS Exp:EQ0700356-03DLCS

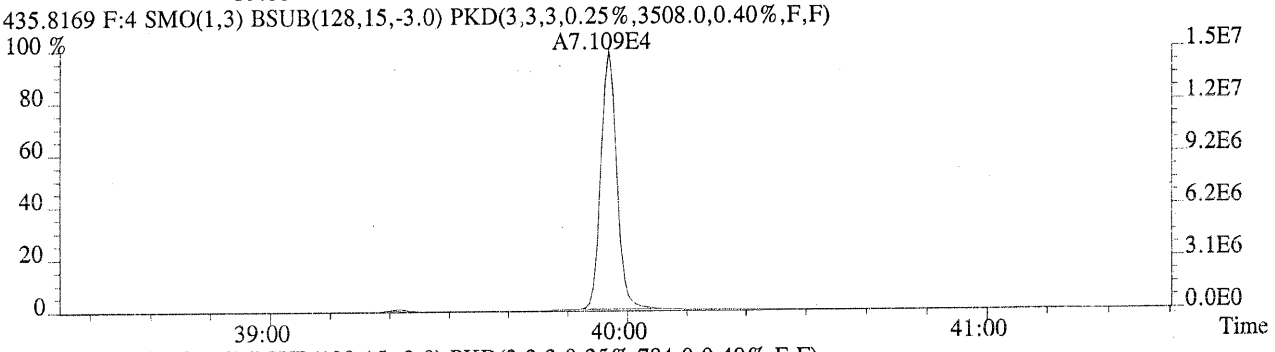
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2020.0,0.40%,F,F)



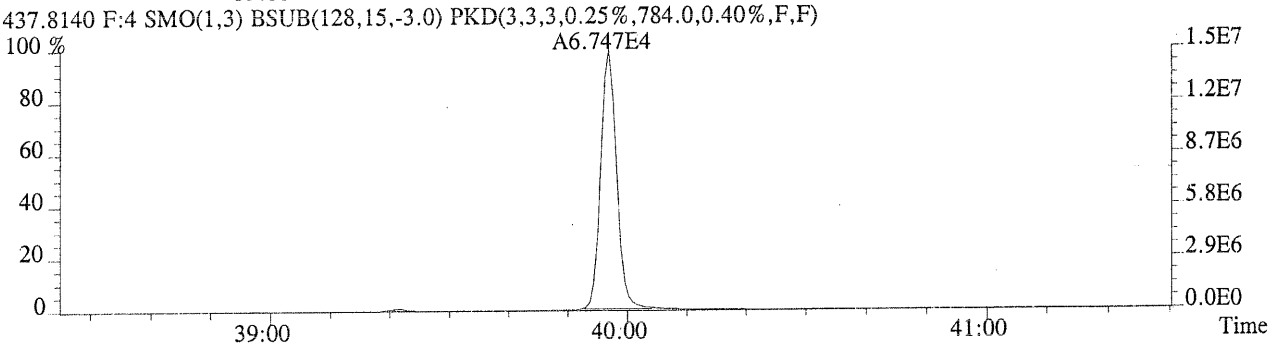
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,964.0,0.40%,F,F)



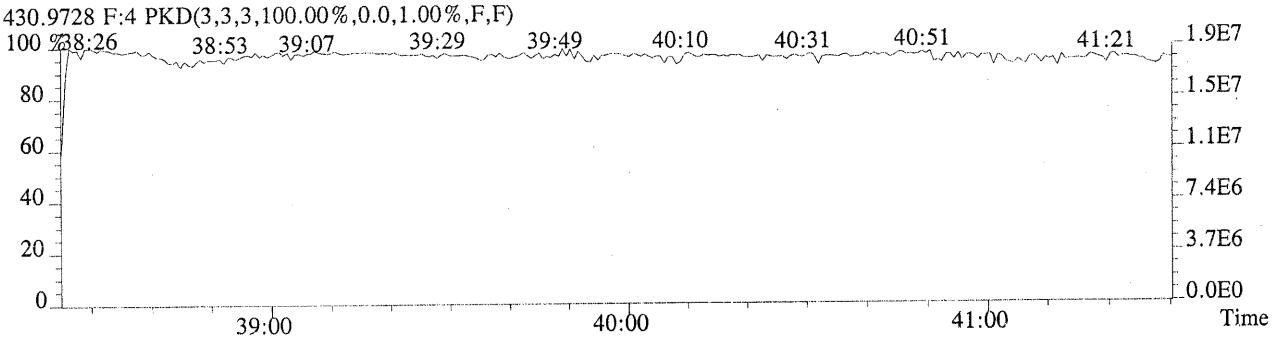
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3508.0,0.40%,F,F)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,784.0,0.40%,F,F)

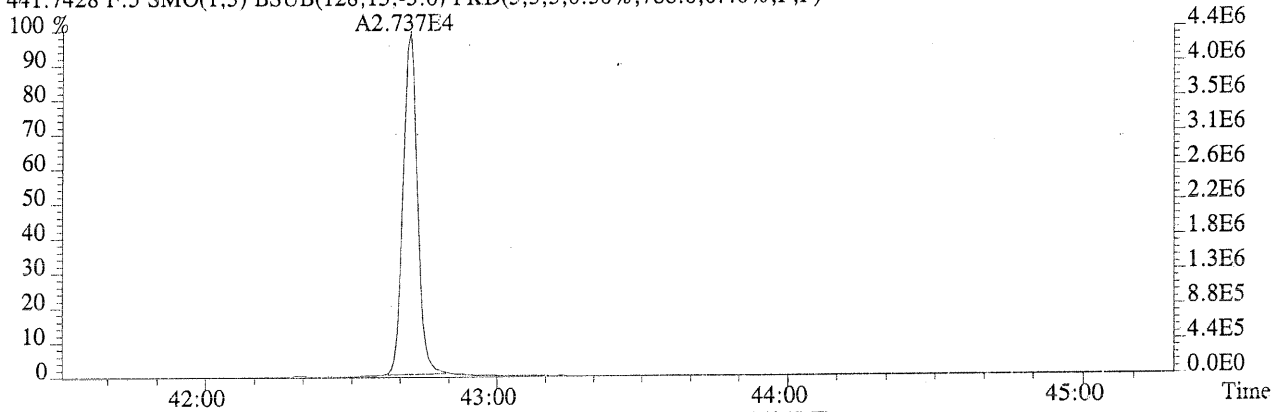


430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

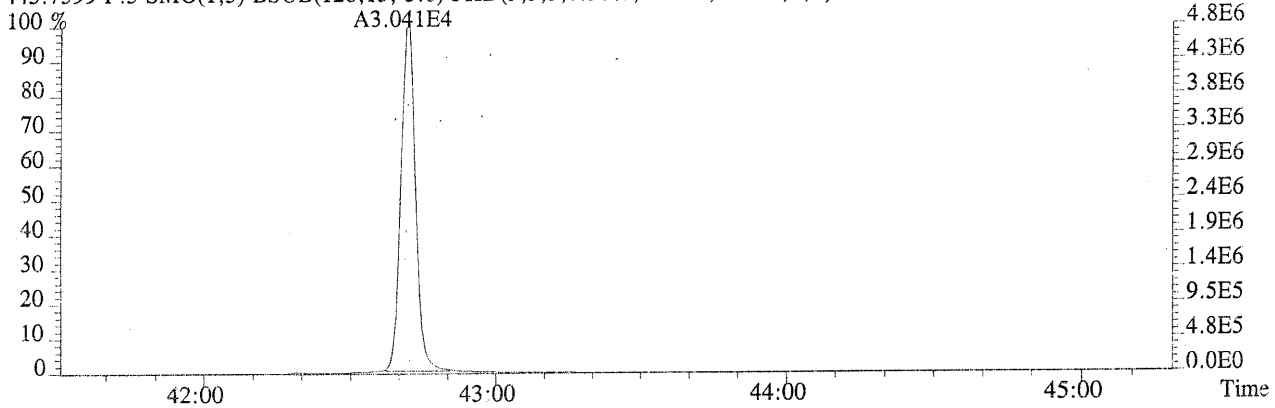


File:U212362 #1-419 Acq:30-OCT-2007 16:13:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:DLCS Exp:EQ0700356-03DLCS

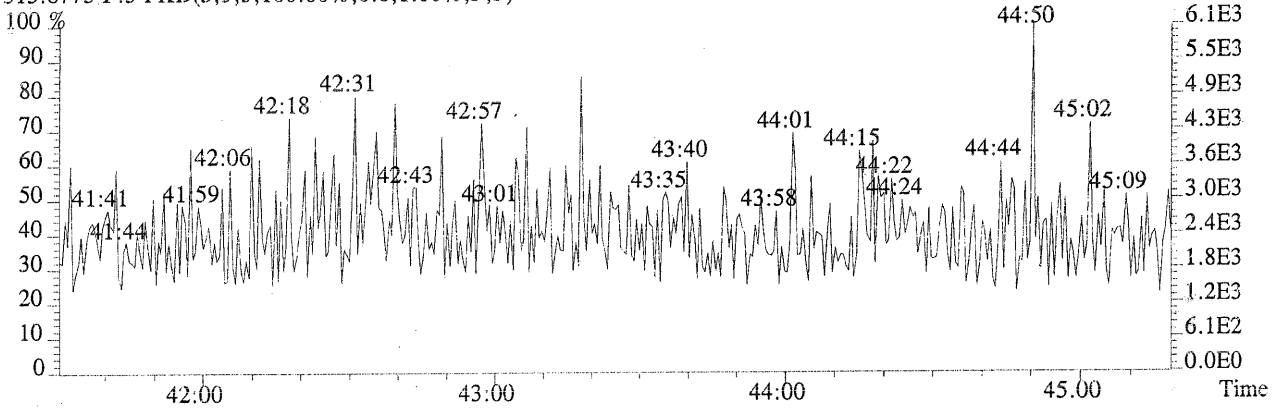
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,788.0,0.40%,F,F)



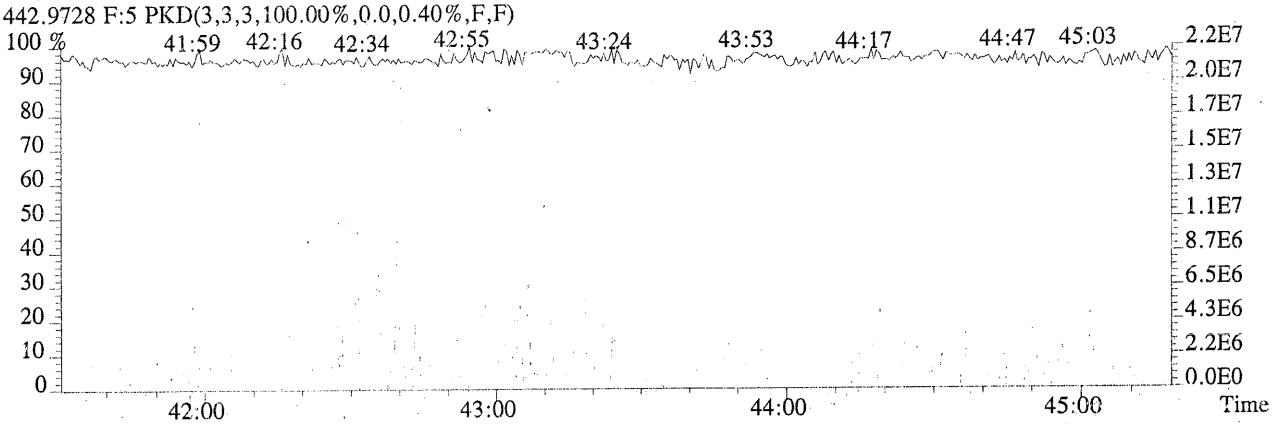
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1264.0,0.40%,F,F)



513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

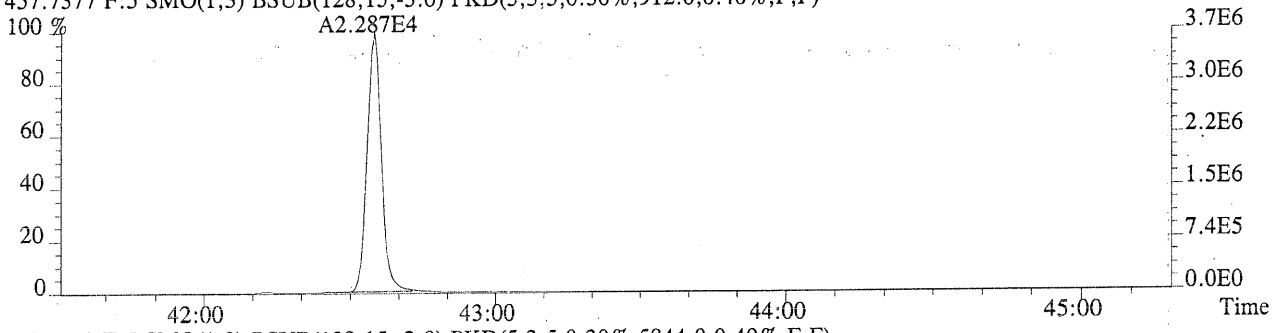


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

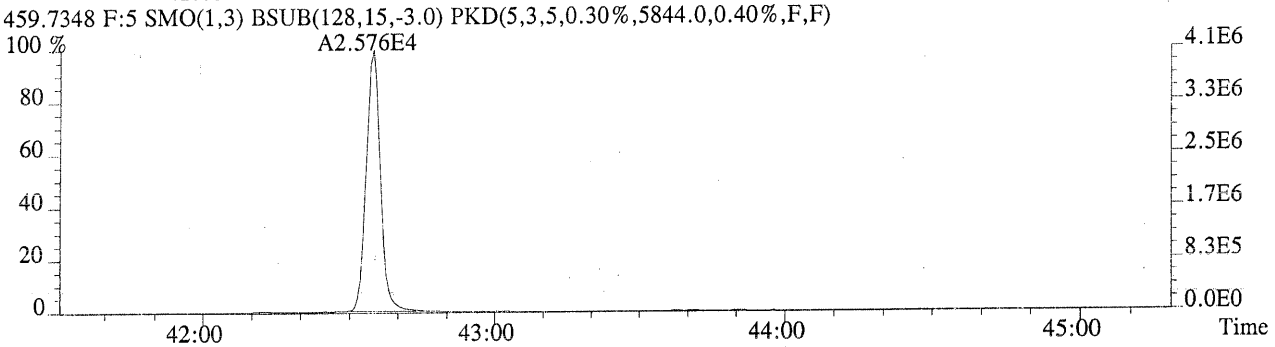


File:U212362 #1-419 Acq:30-OCT-2007 16:13:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:DLCS Exp:EQ0700356-03DLCS

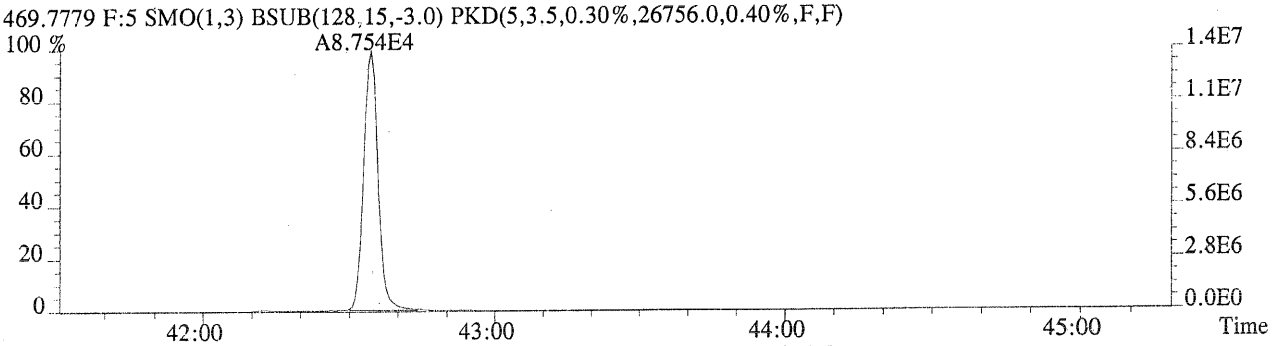
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,912.0,0.40%,F,F)



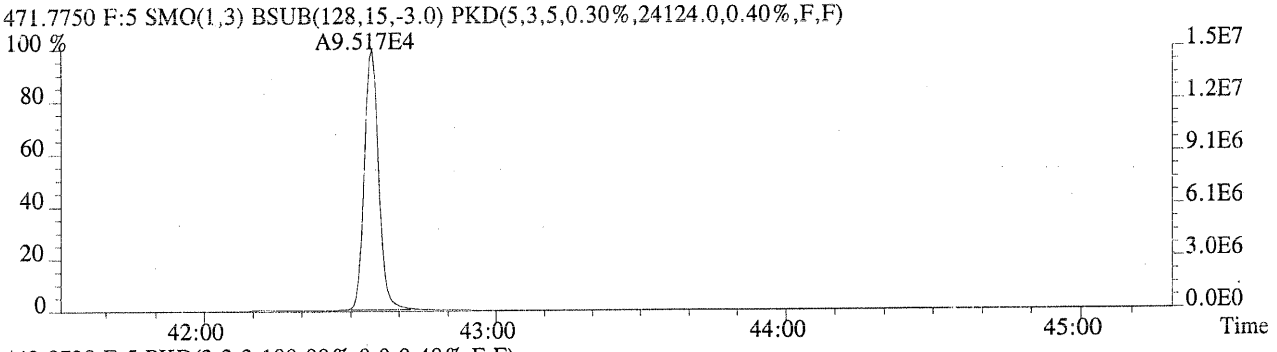
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,5844.0,0.40%,F,F)



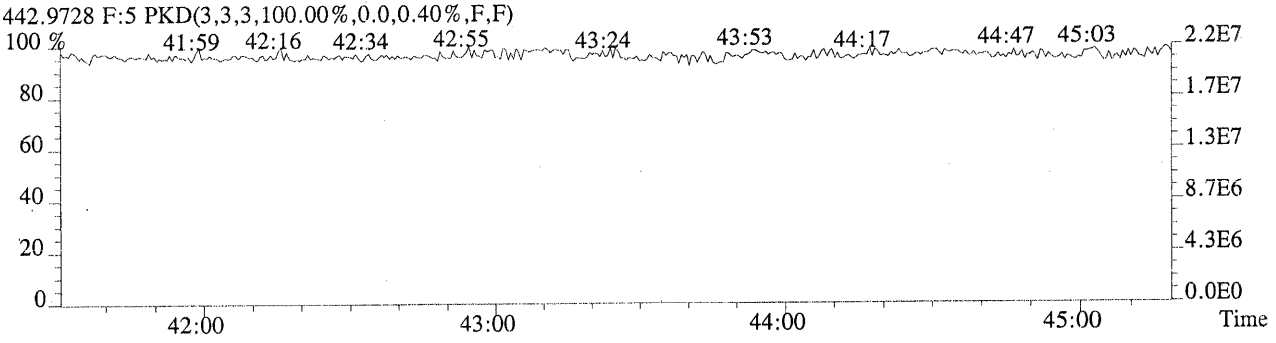
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3.5,0.30%,26756.0,0.40%,F,F)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,24124.0,0.40%,F,F)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



Columbia Analytical Services, Inc.

Sample Response Summary CLIENT ID.
LCS

Run #13 Filename C15065 Samp: 12 Inj: 1 Acquired: 8-NOV-07 04:04:06
Processed: 13-NOV-07 11:33:22 LAB. ID: EQ0700371-02

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	28:43	6.504e+06	8.380e+06	0.78	yes	no
2	Unk	1,2,3,7,8-PeCDF	33:04	2.117e+07	1.344e+07	1.58	yes	no
3	Unk	2,3,4,7,8-PeCDF	33:50	2.054e+07	1.323e+07	1.55	yes	no
4	Unk	1,2,3,4,7,8-HxCDF	36:46	1.882e+07	1.500e+07	1.26	yes	no
5	Unk	1,2,3,6,7,8-HxCDF	36:52	2.177e+07	1.759e+07	1.24	yes	no
6	Unk	2,3,4,6,7,8-HxCDF	37:22	1.809e+07	1.447e+07	1.25	yes	no
7	Unk	1,2,3,7,8,9-HxCDF	38:09	1.291e+07	1.042e+07	1.24	yes	no
8	Unk	1,2,3,4,6,7,8-HpCDF	39:48	1.737e+07	1.702e+07	1.02	yes	no
9	Unk	1,2,3,4,7,8,9-HpCDF	41:20	1.150e+07	1.117e+07	1.03	yes	no
10	Unk	OCDF	44:34	1.467e+07	1.652e+07	0.89	yes	no
11	Unk	2,3,7,8-TCDD	29:31	4.158e+06	5.415e+06	0.77	yes	no
12	Unk	1,2,3,7,8-PeCDD	34:11	1.497e+07	9.231e+06	1.62	yes	no
13	Unk	1,2,3,4,7,8-HxCDD	37:29	1.309e+07	1.041e+07	1.26	yes	no
14	Unk	1,2,3,6,7,8-HxCDD	37:33	1.379e+07	1.116e+07	1.24	yes	no
15	Unk	1,2,3,7,8,9-HxCDD	37:53	1.201e+07	9.633e+06	1.25	yes	no
16	Unk	1,2,3,4,6,7,8-HpCDD	40:50	1.042e+07	9.510e+06	1.10	yes	no
17	Unk	OCDD	44:23	1.337e+07	1.543e+07	0.87	yes	no
18	IS	13C-2,3,7,8-TCDF	28:42	2.796e+07	3.613e+07	0.77	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	33:03	3.606e+07	2.318e+07	1.56	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	36:44	4.620e+07	9.519e+07	0.49	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	39:47	3.148e+07	7.145e+07	0.44	yes	no
22	IS	13C-2,3,7,8-TCDD	29:30	1.998e+07	2.570e+07	0.78	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	34:10	2.896e+07	1.874e+07	1.55	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	37:33	6.111e+07	5.022e+07	1.22	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	40:50	4.817e+07	4.667e+07	1.03	yes	no
26	IS	13C-OCDD	44:21	4.885e+07	5.593e+07	0.87	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	29:18	3.034e+07	3.844e+07	0.79	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:52	3.195e+07	2.563e+07	1.25	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	29:31	3.961e+07				
				SUM AREA				
30	Tot	Total Tetra-Furans	27:33		1.603e+07	0.75	yes	
31	Tot	Total Tetra-Dioxins	29:31		9.573e+06	0.77	yes	
32	Tot	Total Penta-Furans	32:08		7.021e+07	1.53	yes	
33	Tot	Total Penta-Dioxins	34:11		2.420e+07	1.62	yes	
34	Tot	Total Hexa-Furans	35:45		1.296e+08	1.17	yes	
35	Tot	Total Hexa-Dioxins	37:29		7.010e+07	1.26	yes	
36	Tot	Total Hepta-Furans	39:48		5.707e+07	1.02	yes	
37	Tot	Total Hepta-Dioxins	40:05		2.044e+07	0.98	yes	

Columbia Analytical Services, Inc.
10655 Richmond Ave., Suite 130A
Houston, TX 77042
Office(713)266-1599. Fax(713)266-0130

Columbia Analytical Services,Inc. CLIENT ID.
Signal/Noise Height Ratio Summary LCS

Run #13 Filename C15065 Samp: 12 Inj: 1 Acquired: 8-NOV-07 04:04:06

Processed: 13-NOV-07 11:33:22 LAB. ID: EQ0700371-02

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	1.49e+06	1.65e+03	9.0e+02	1.97e+06	1.89e+03	1.0e+03
2	1,2,3,7,8-PeCDF	5.81e+06	9.24e+02	6.3e+03	3.73e+06	3.37e+03	1.1e+03
3	2,3,4,7,8-PeCDF	5.66e+06	9.24e+02	6.1e+03	3.62e+06	3.37e+03	1.1e+03
4	1,2,3,4,7,8-HxCDF	5.68e+06	2.91e+03	2.0e+03	4.50e+06	1.89e+03	2.4e+03
5	1,2,3,6,7,8-HxCDF	5.91e+06	2.91e+03	2.0e+03	4.81e+06	1.89e+03	2.5e+03
6	2,3,4,6,7,8-HxCDF	5.09e+06	2.91e+03	1.7e+03	4.06e+06	1.89e+03	2.2e+03
7	1,2,3,7,8,9-HxCDF	3.15e+06	2.91e+03	1.1e+03	2.46e+06	1.89e+03	1.3e+03
8	1,2,3,4,6,7,8-HpCDF	4.36e+06	4.10e+03	1.1e+03	4.25e+06	4.04e+03	1.1e+03
9	1,2,3,4,7,8,9-HpCDF	2.42e+06	4.10e+03	5.9e+02	2.36e+06	4.04e+03	5.8e+02
10	OCDF	2.62e+06	2.40e+03	1.1e+03	2.95e+06	2.94e+03	1.0e+03
11	2,3,7,8-TCDD	1.03e+06	1.70e+03	6.0e+02	1.35e+06	1.43e+03	9.5e+02
12	1,2,3,7,8-PeCDD	4.21e+06	2.86e+03	1.5e+03	2.58e+06	1.72e+03	1.5e+03
13	1,2,3,4,7,8-HxCDD	3.94e+06	2.79e+03	1.4e+03	3.07e+06	2.92e+03	1.1e+03
14	1,2,3,6,7,8-HxCDD	3.75e+06	2.79e+03	1.3e+03	3.05e+06	2.92e+03	1.0e+03
15	1,2,3,7,8,9-HxCDD	3.16e+06	2.79e+03	1.1e+03	2.52e+06	2.92e+03	8.7e+02
16	1,2,3,4,6,7,8-HpCDD	2.33e+06	3.04e+03	7.7e+02	2.18e+06	2.78e+03	7.8e+02
17	OCDD	2.34e+06	2.34e+03	1.0e+03	2.68e+06	1.60e+03	1.7e+03
18	13C-2,3,7,8-TCDF	6.79e+06	4.13e+03	1.6e+03	8.76e+06	4.22e+03	2.1e+03
19	13C-1,2,3,7,8-PeCDF	1.00e+07	1.36e+03	7.4e+03	6.42e+06	1.40e+03	4.6e+03
20	13C-1,2,3,4,7,8-HxCDF	1.30e+07	3.74e+03	3.5e+03	2.65e+07	3.07e+03	8.6e+03
21	13C-1,2,3,4,6,7,8-HpCDF	7.73e+06	1.30e+04	6.0e+02	1.76e+07	7.32e+03	2.4e+03
22	13C-2,3,7,8-TCDD	4.85e+06	4.83e+03	1.0e+03	6.28e+06	2.79e+03	2.3e+03
23	13C-1,2,3,7,8-PeCDD	7.94e+06	1.91e+03	4.2e+03	5.13e+06	1.20e+03	4.3e+03
24	13C-1,2,3,6,7,8-HxCDD	1.71e+07	2.24e+03	7.6e+03	1.39e+07	3.40e+03	4.1e+03
25	13C-1,2,3,4,6,7,8-HpCDD	1.07e+07	2.26e+03	4.7e+03	1.02e+07	2.48e+03	4.1e+03
26	13C-OCDD	8.56e+06	3.31e+03	2.6e+03	9.94e+06	2.10e+03	4.7e+03
27	13C-1,2,3,4-TCDD	7.62e+06	4.83e+03	1.6e+03	9.63e+06	2.79e+03	3.4e+03
28	13C-1,2,3,7,8,9-HxCDD	8.54e+06	2.24e+03	3.8e+03	6.83e+06	3.40e+03	2.0e+03
29	37Cl-2,3,7,8-TCDD	9.94e+06	1.92e+03	5.2e+03			

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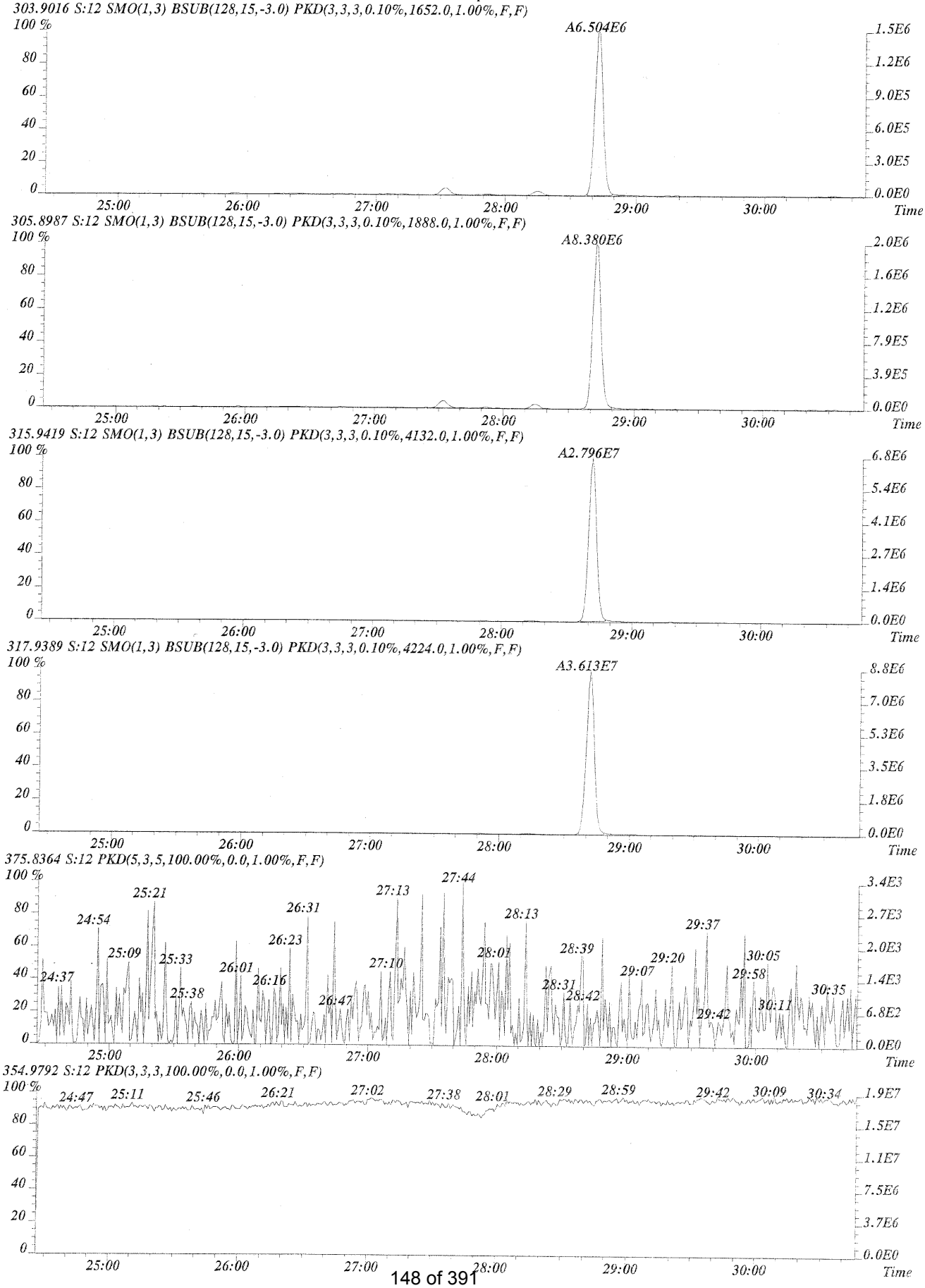
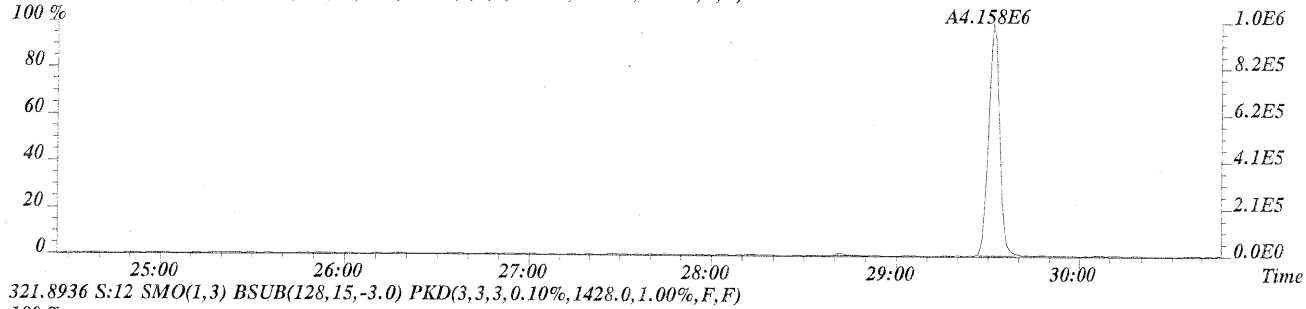
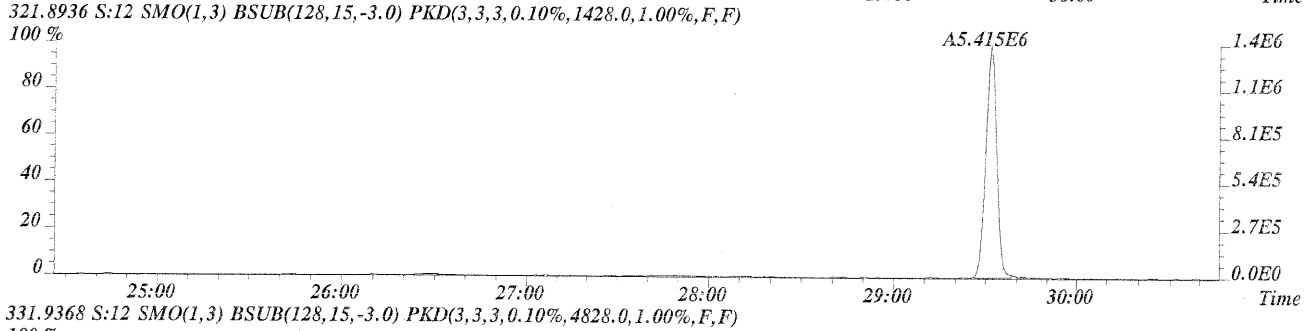
File:C15065 #1-520 Acq: 8-NOV-2007 04:04:06 GC EI+ Voltage SIR 70S
Sample#12 File Text:CAS,HOUSTON Text:EQ0700371-02LCS LCS Exp:8290CA



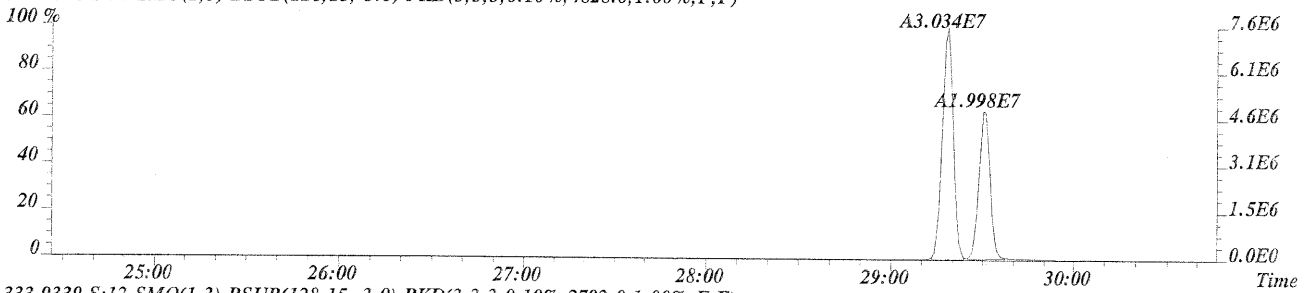
File:C15065 #1-520 Acq: 8-NOV-2007 04:04:06 GC EI+ Voltage SIR 70S
Sample#12 File Text:CAS,HOUSTON Text:EQ0700371-02LCS LCS Exp:8290CA
319.8965 S:12 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1704.0,1.00%,F,F)



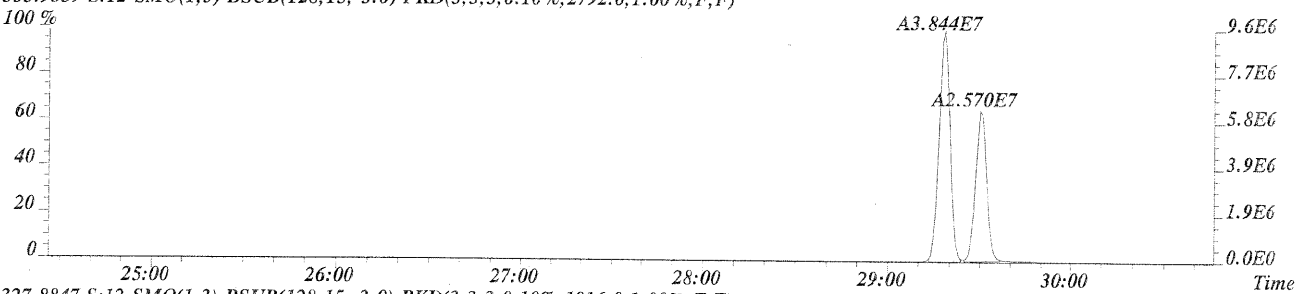
321.8936 S:12 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1428.0,1.00%,F,F)



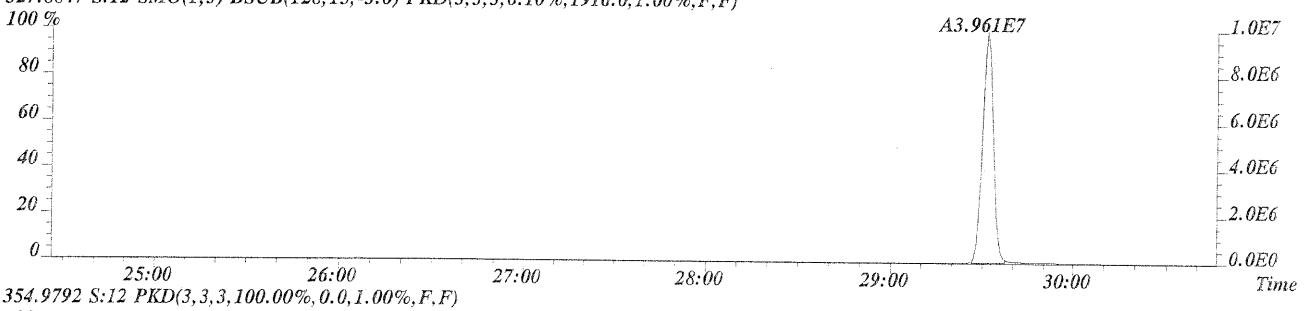
331.9368 S:12 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4828.0,1.00%,F,F)



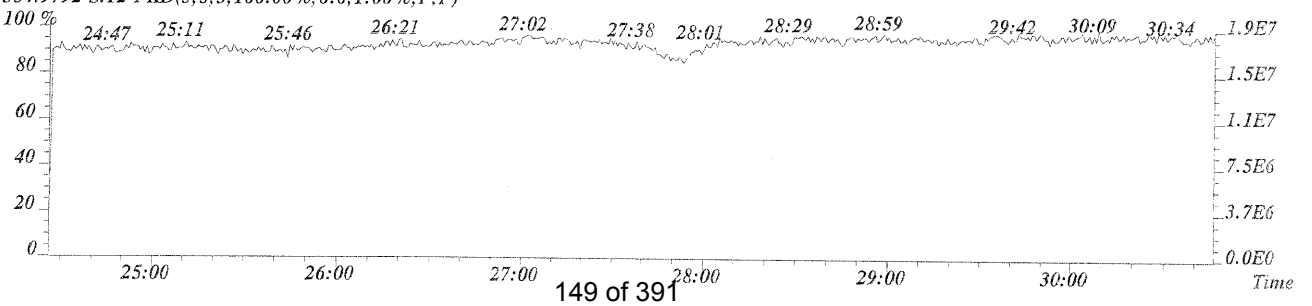
333.9339 S:12 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2792.0,1.00%,F,F)



327.8847 S:12 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1916.0,1.00%,F,F)

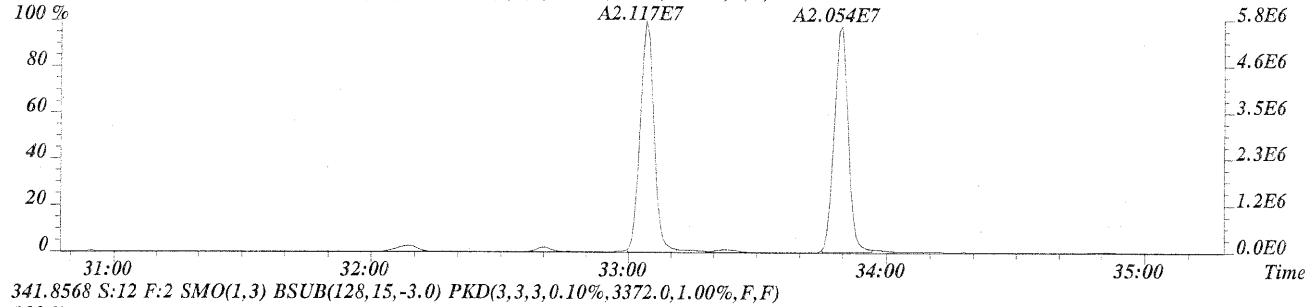


354.9792 S:12 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

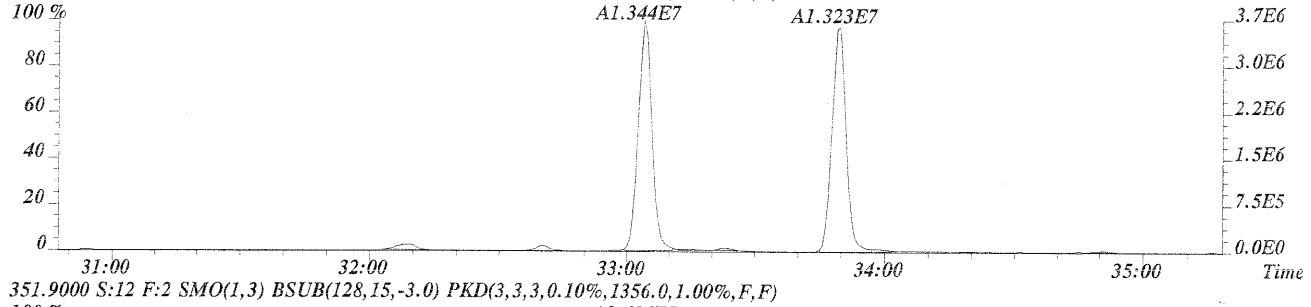


File:C15065 #1-404 Acq: 8-NOV-2007 04:04:06 GC EI+ Voltage SIR 70S
Sample#12 File Text:CAS,HOUSTON Text:EQ0700371-02LCS LCS Exp:8290CA

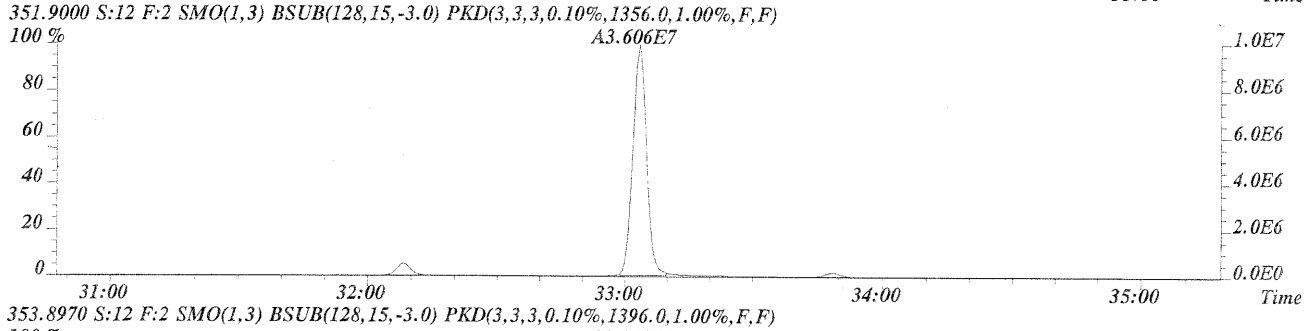
339.8597 S:12 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,924.0,1.00%,F,F)



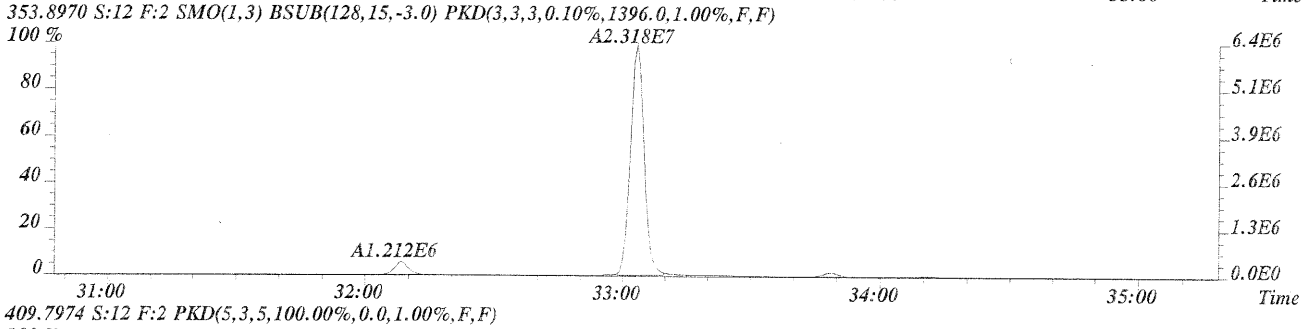
341.8568 S:12 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3372.0,1.00%,F,F)



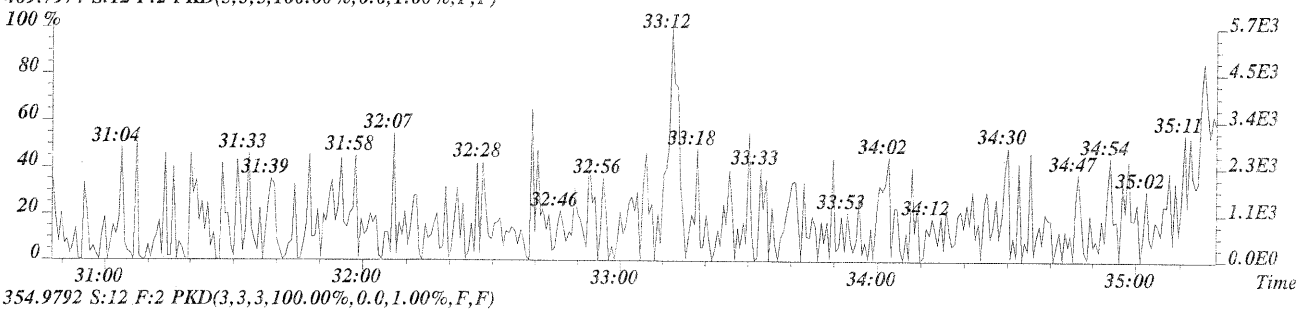
351.9000 S:12 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1356.0,1.00%,F,F)



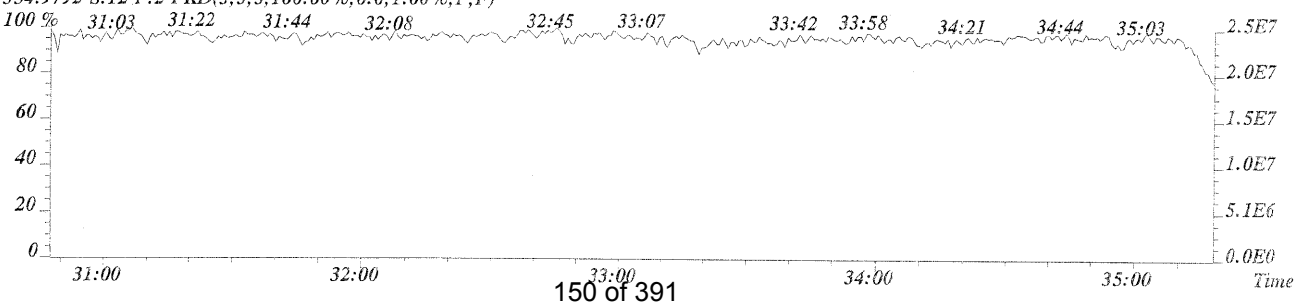
353.8970 S:12 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1396.0,1.00%,F,F)



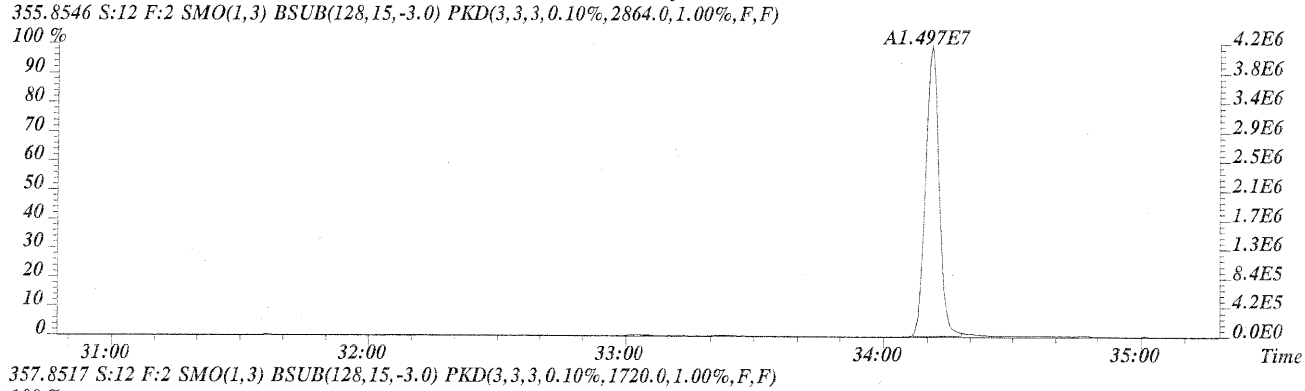
409.7974 S:12 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



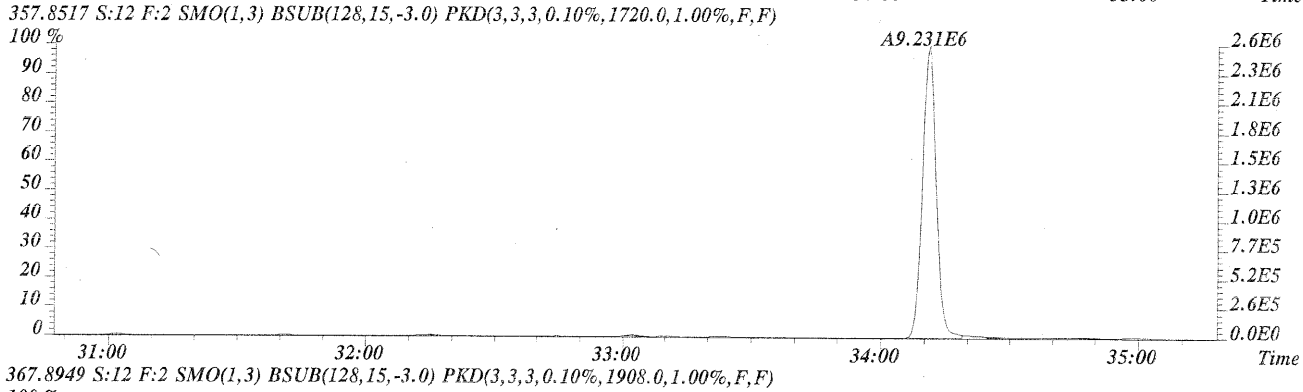
354.9792 S:12 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



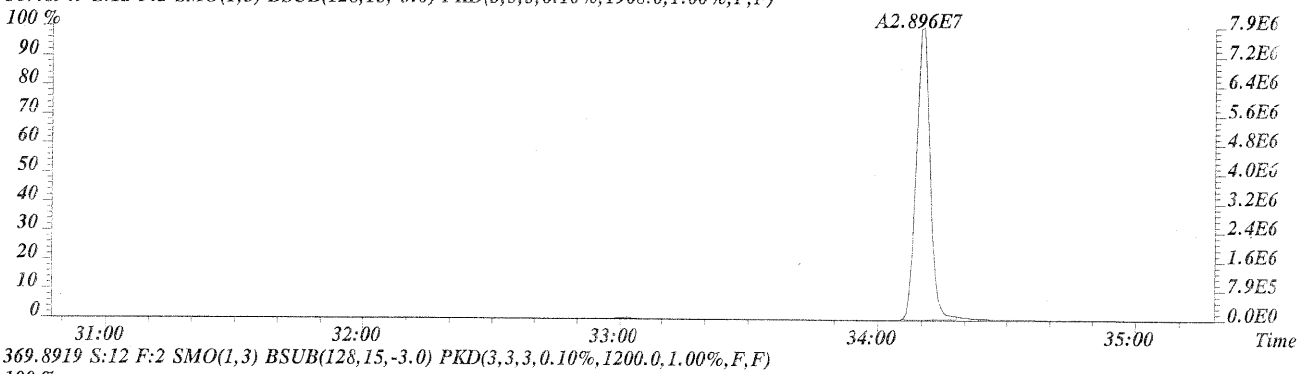
File:C15065 #1-404 Acq: 8-NOV-2007 04:04:06 GC EI+ Voltage SIR 70S
Sample#12 File Text:CAS,HOUSTON Text:EQ0700371-02LCS LCS Exp:8290CA
355.8546 S:12 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2864.0,1.00%,F,F)



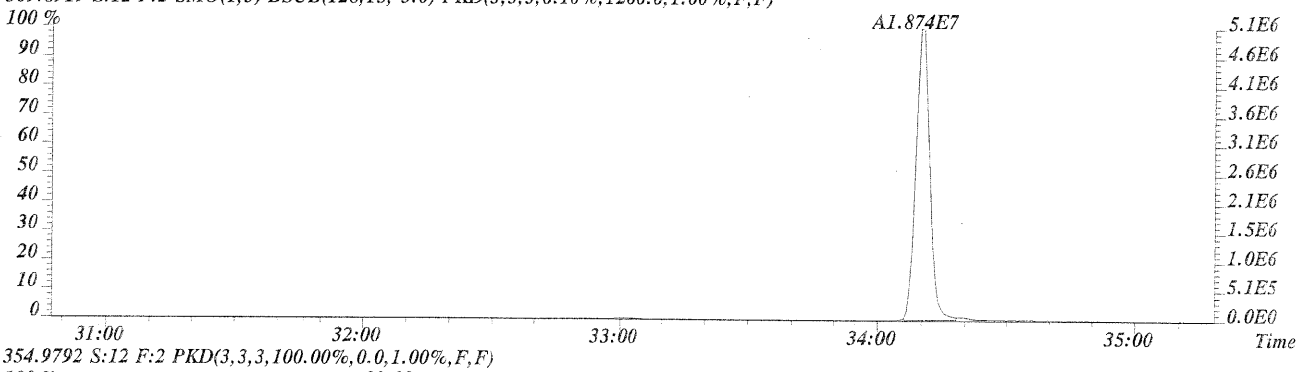
357.8517 S:12 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1720.0,1.00%,F,F)



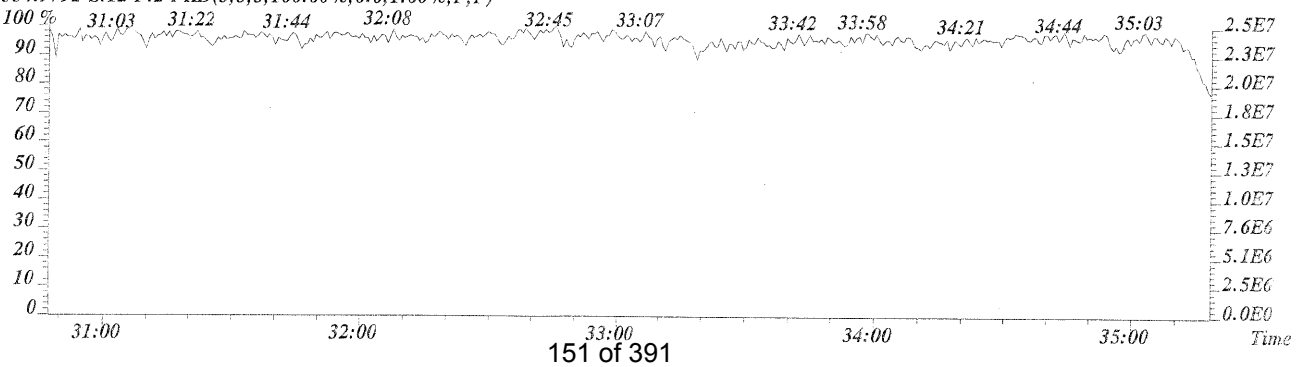
367.8949 S:12 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1908.0,1.00%,F,F)



369.8919 S:12 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1200.0,1.00%,F,F)

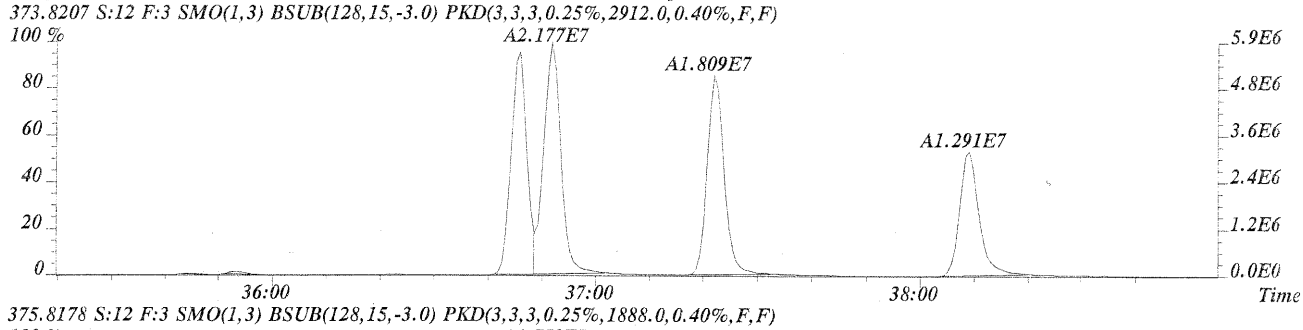


354.9792 S:12 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

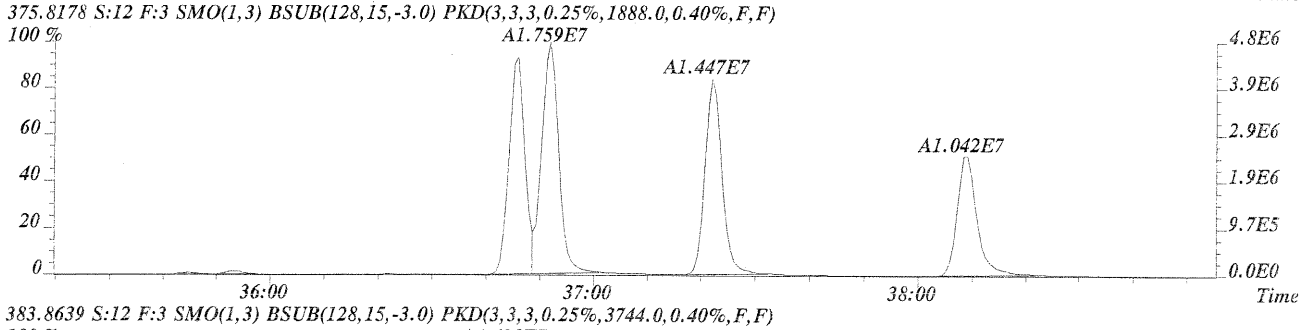


File:C15065 #1-322 Acq: 8-NOV-2007 04:04:06 GC EI+ Voltage SIR 70S
Sample#12 File Text:CAS,HOUSTON Text:EQ0700371-02LCS LCS Exp:8290CA

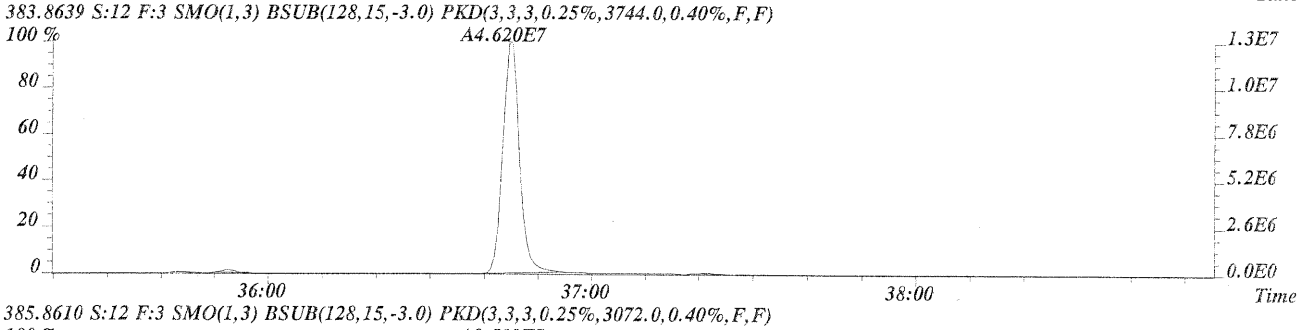
373.8207 S:12 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2912.0,0.40%,F,F)



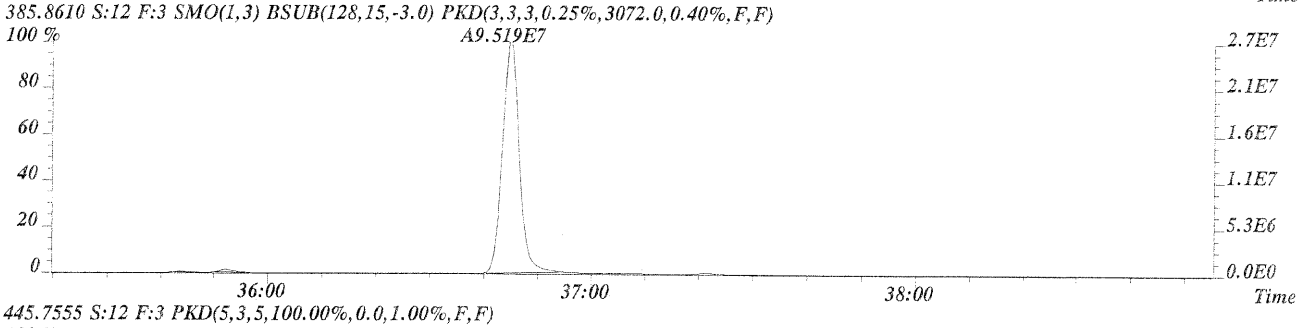
375.8178 S:12 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1888.0,0.40%,F,F)



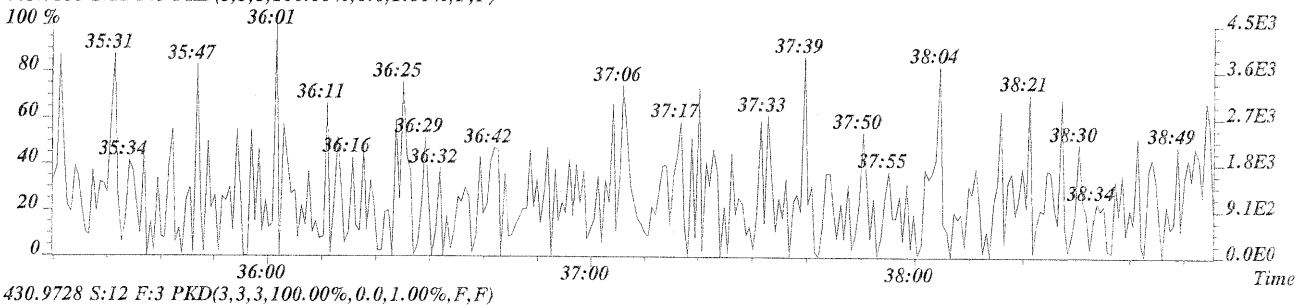
383.8639 S:12 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3744.0,0.40%,F,F)



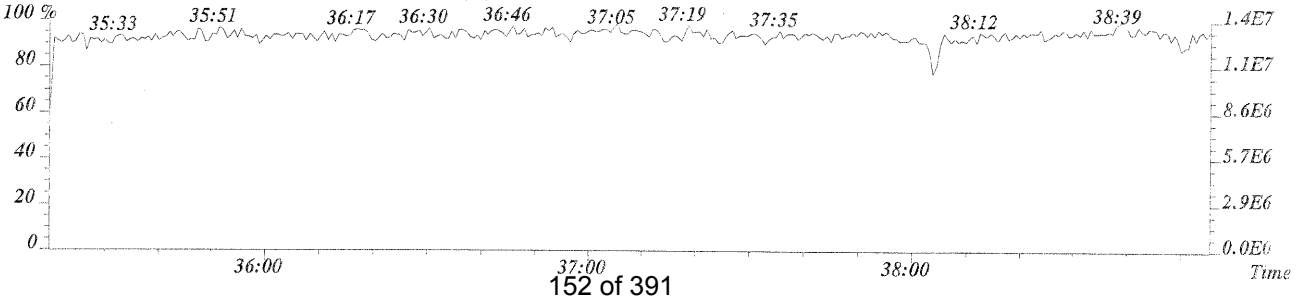
385.8610 S:12 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3072.0,0.40%,F,F)



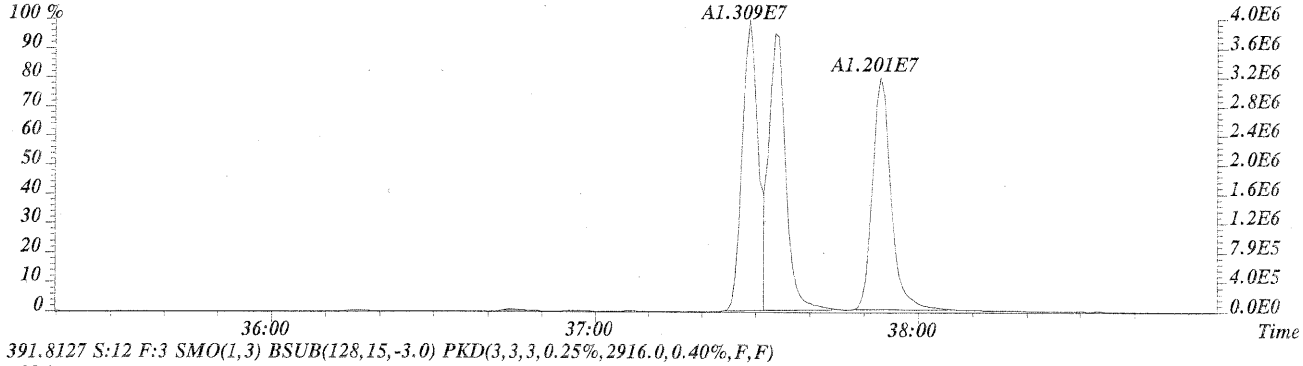
445.7555 S:12 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



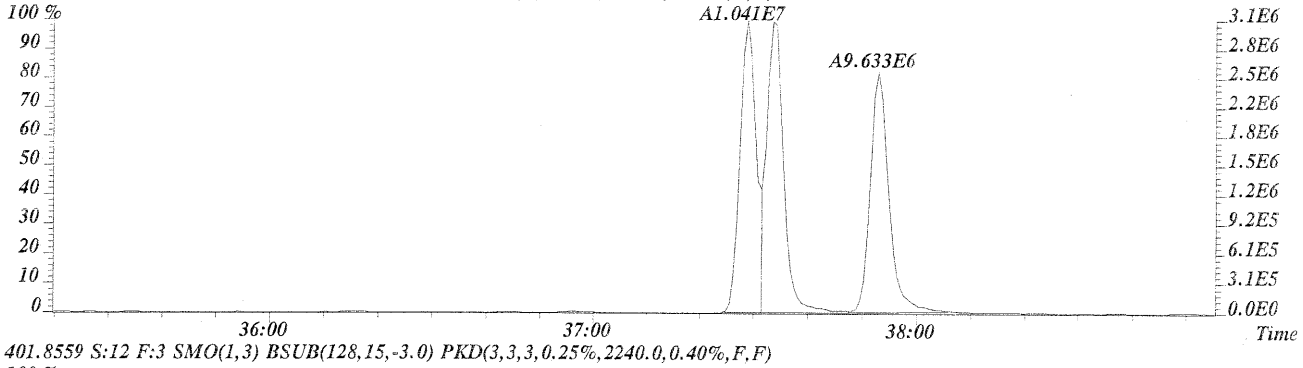
430.9728 S:12 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



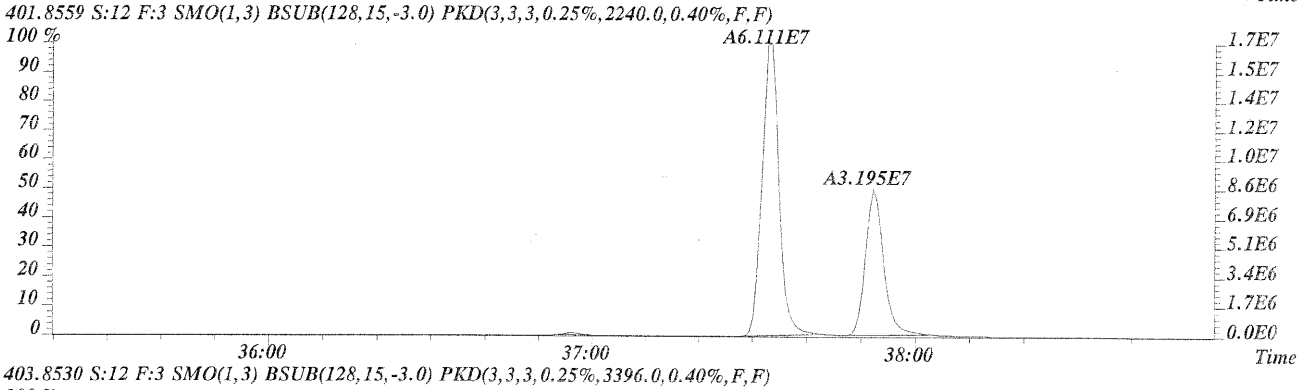
File:C15065 #1-322 Acq: 8-NOV-2007 04:04:06 GC EI+ Voltage SIR 70S
Sample#12 File Text:CAS,HOUSTON Text:EQ0700371-02LCS LCS Exp:8290CA
389.8156 S:12 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2792.0,0.40%,F,F)



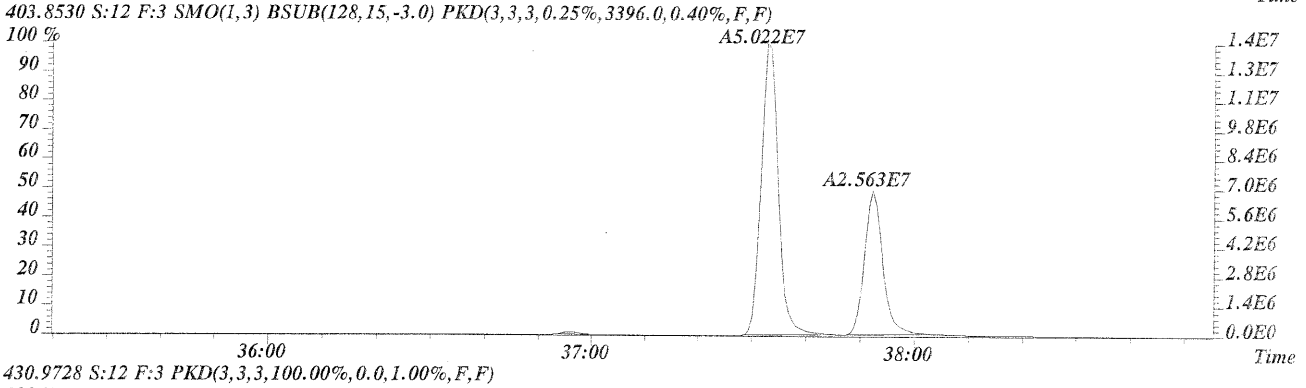
391.8127 S:12 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2916.0,0.40%,F,F)



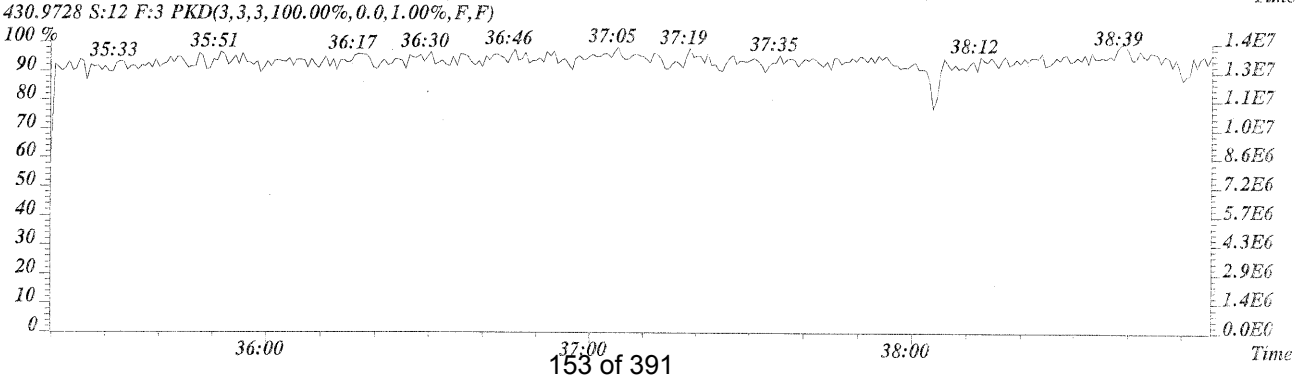
401.8559 S:12 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2240.0,0.40%,F,F)



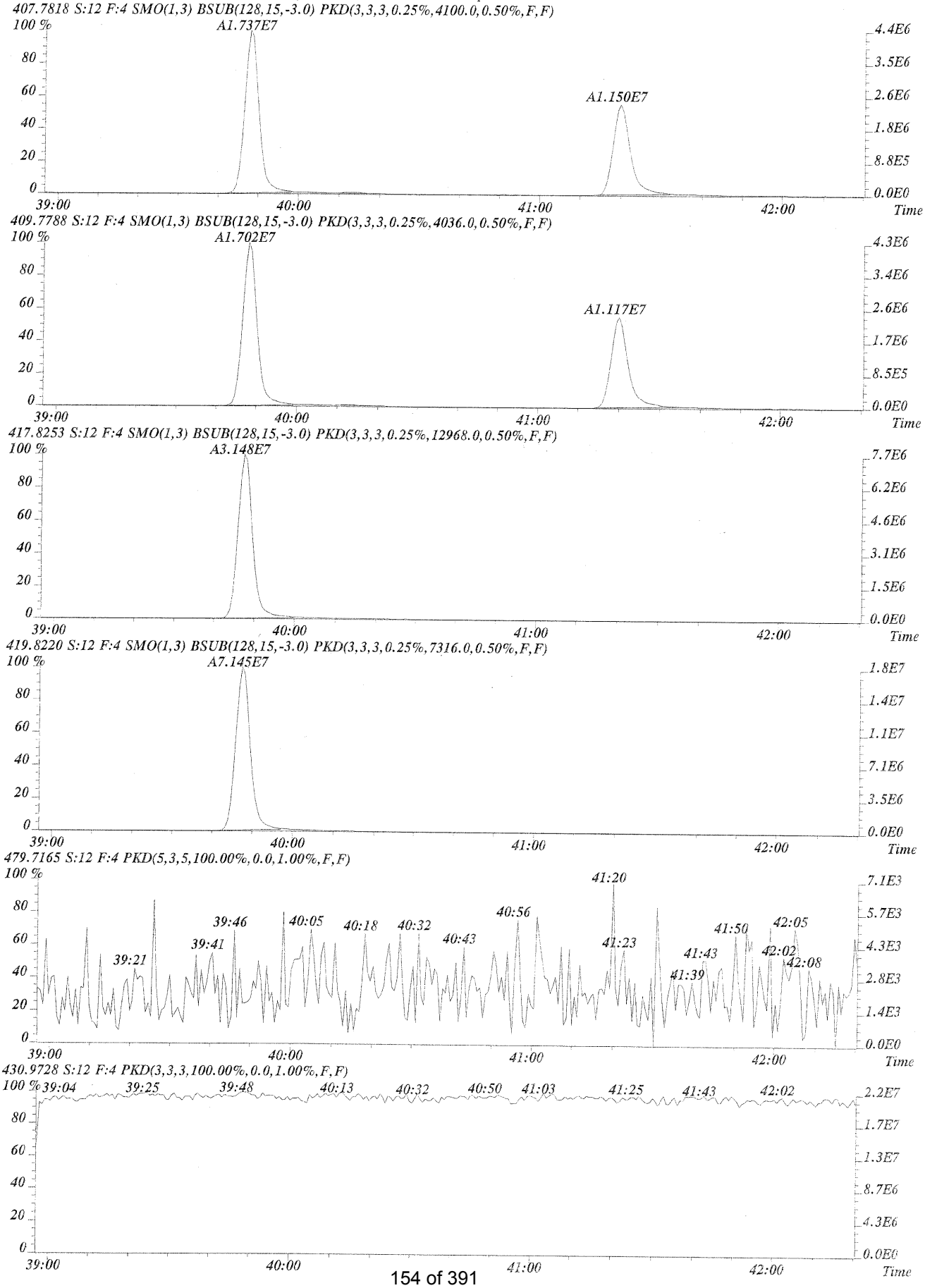
403.8530 S:12 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3396.0,0.40%,F,F)



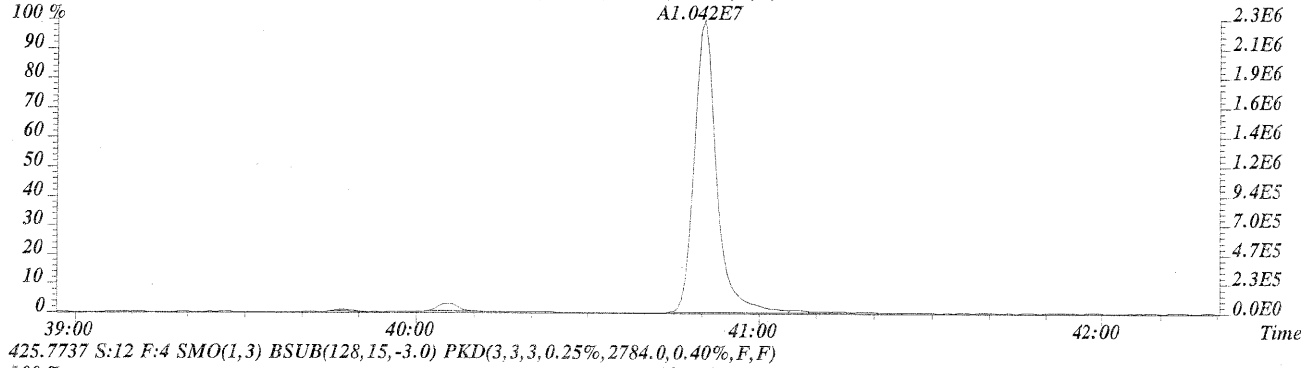
430.9728 S:12 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



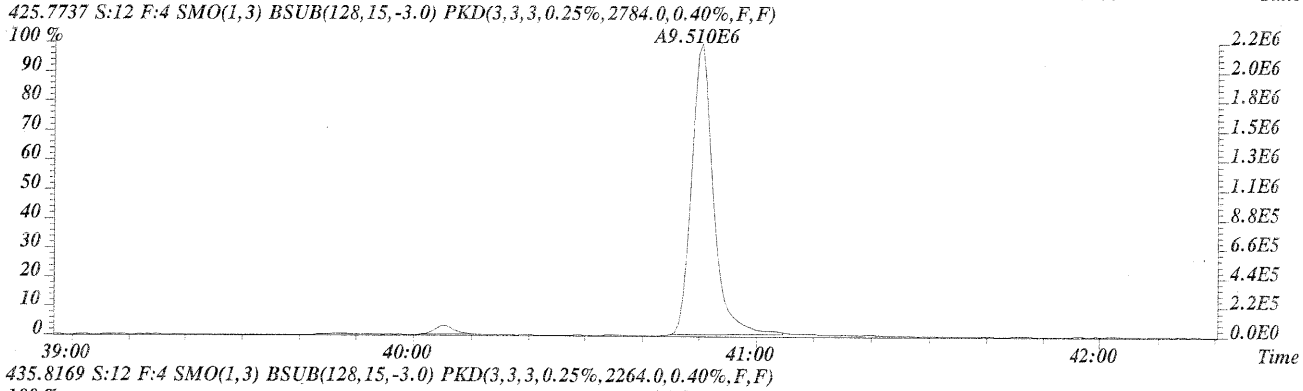
File:C15065 #1-304 Acq: 8-NOV-2007 04:04:06 GC EI+ Voltage SIR 70S
Sample#12 File Text:CAS,HOUSTON Text:EQ0700371-02LCS LCS Exp:8290CA



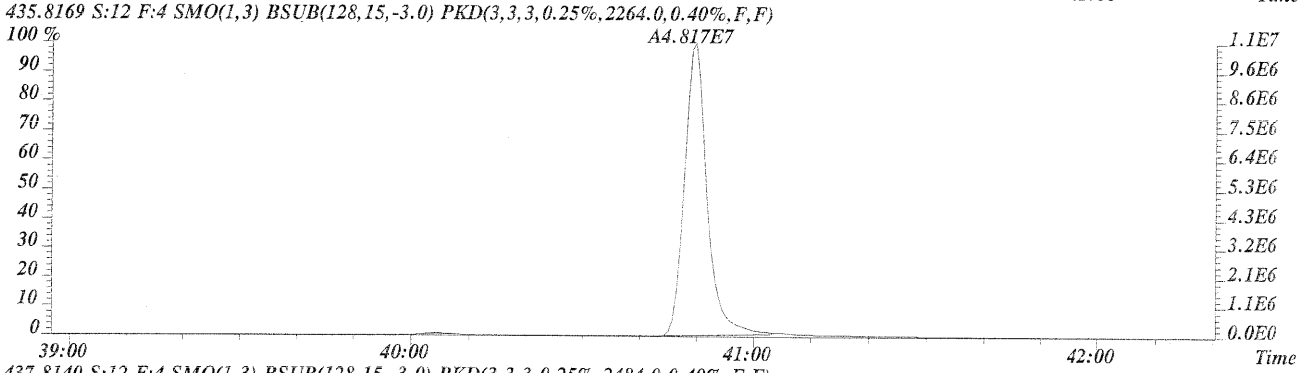
File:C15065 #1-304 Acq: 8-NOV-2007 04:04:06 GC EI+ Voltage SIR 70S
Sample#12 File Text:CAS,HOUSTON Text:EQ0700371-02LCS LCS Exp:8290CA
423.7767 S:12 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3036.0,0.40%,F,F)



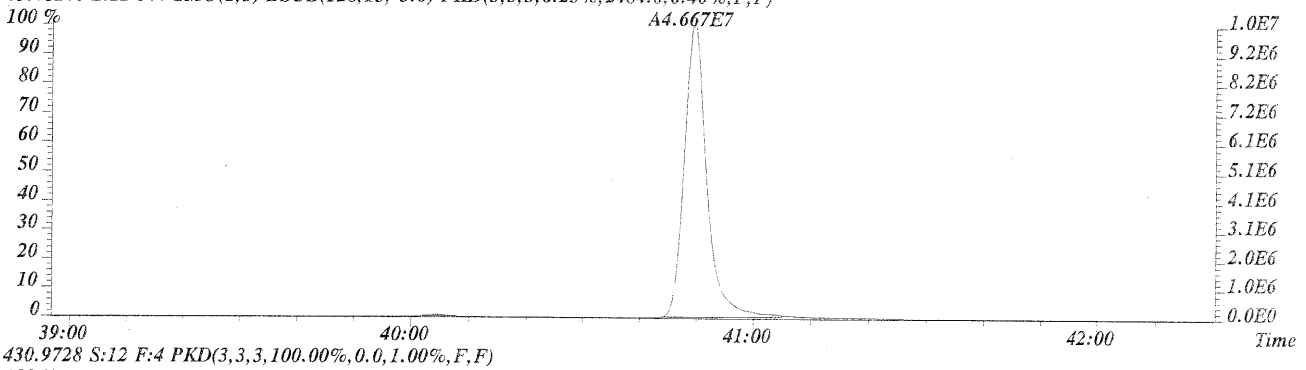
425.7737 S:12 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2784.0,0.40%,F,F)



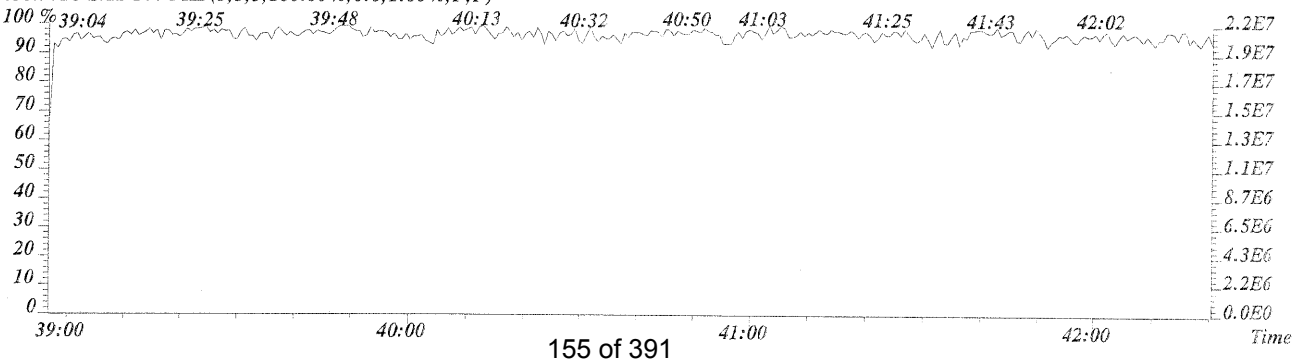
435.8169 S:12 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2264.0,0.40%,F,F)



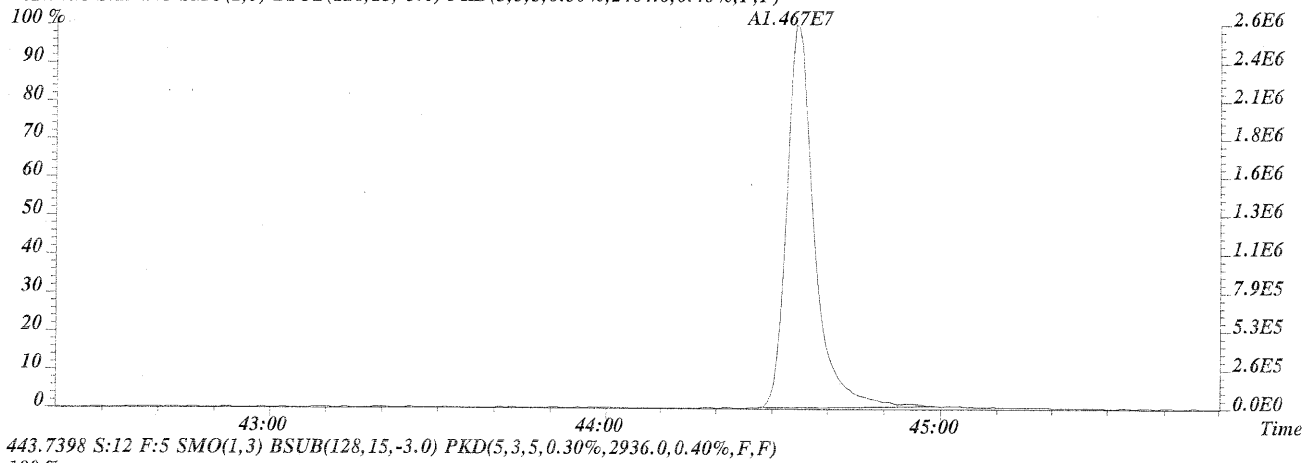
437.8140 S:12 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2484.0,0.40%,F,F)



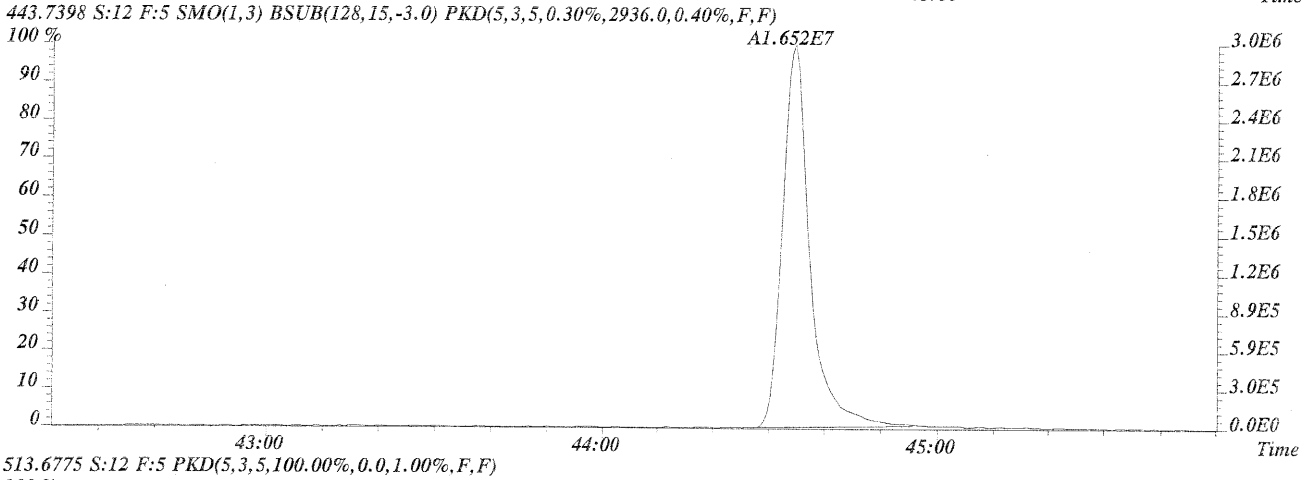
430.9728 S:12 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



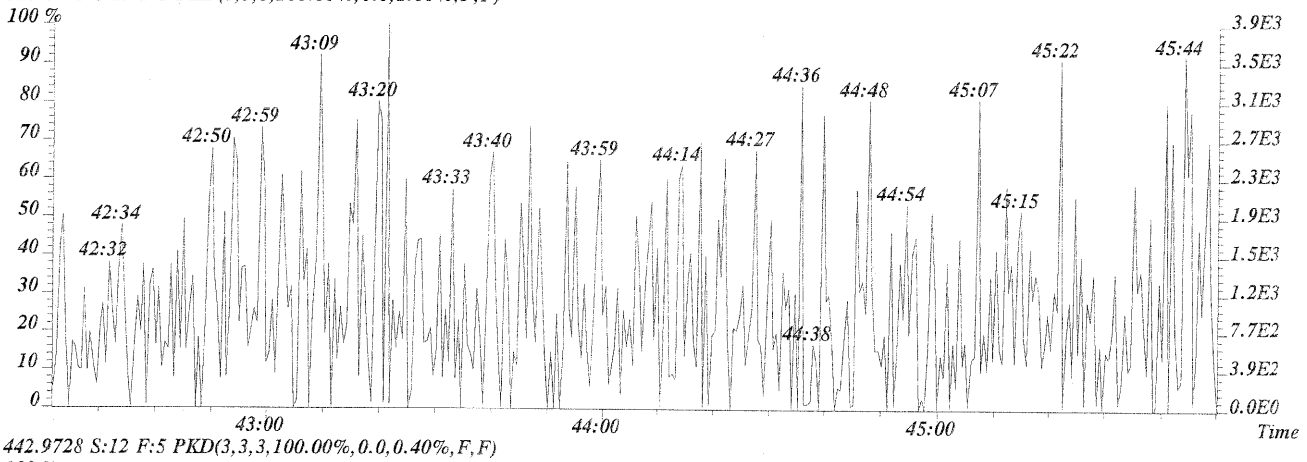
File:C15065 #1-379 Acq: 8-NOV-2007 04:04:06 GC EI+ Voltage SIR 70S
Sample#12 File Text:CAS,HOUSTON Text:EQ0700371-02LCS LCS Exp:8290CA
441.7428 S:12 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2404.0,0.40%,F,F)



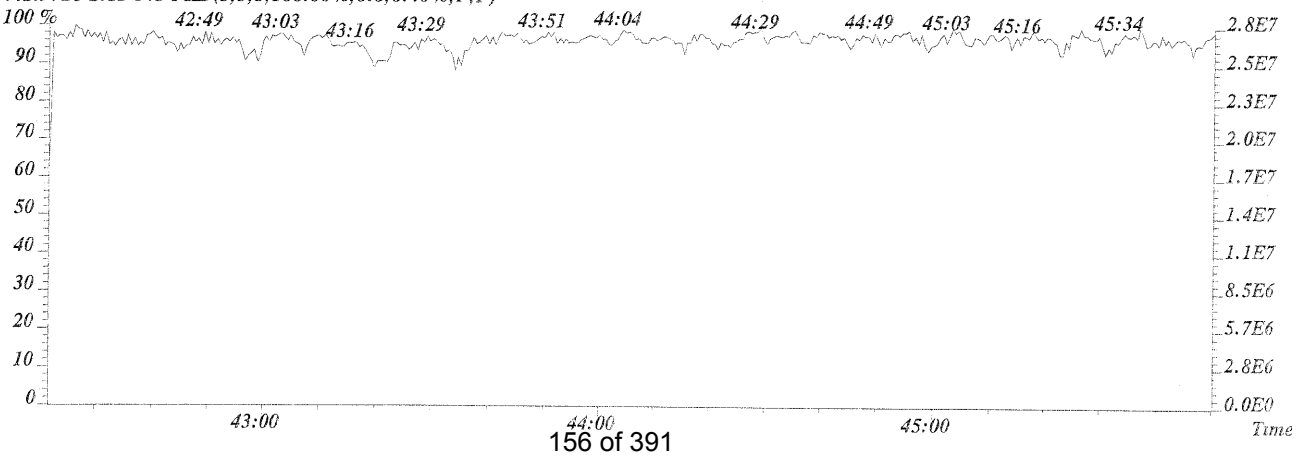
443.7398 S:12 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2936.0,0.40%,F,F)



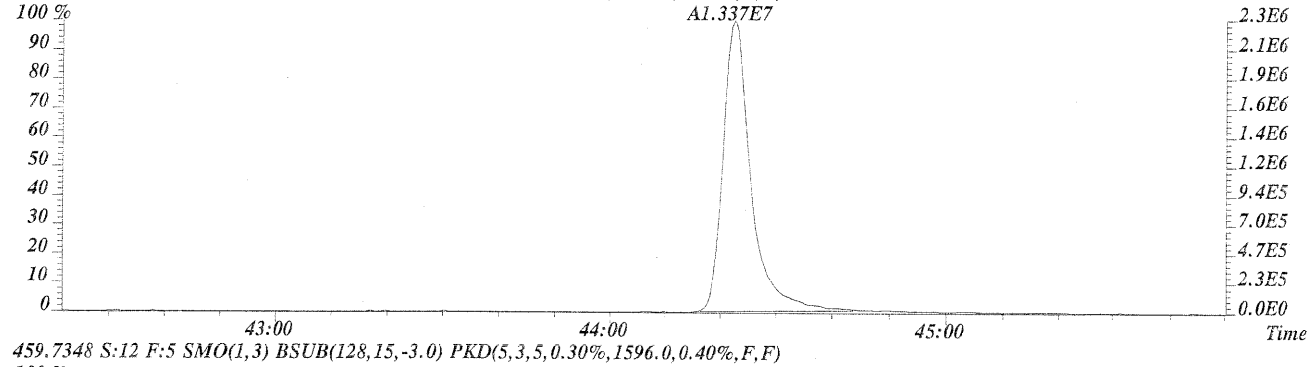
513.6775 S:12 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



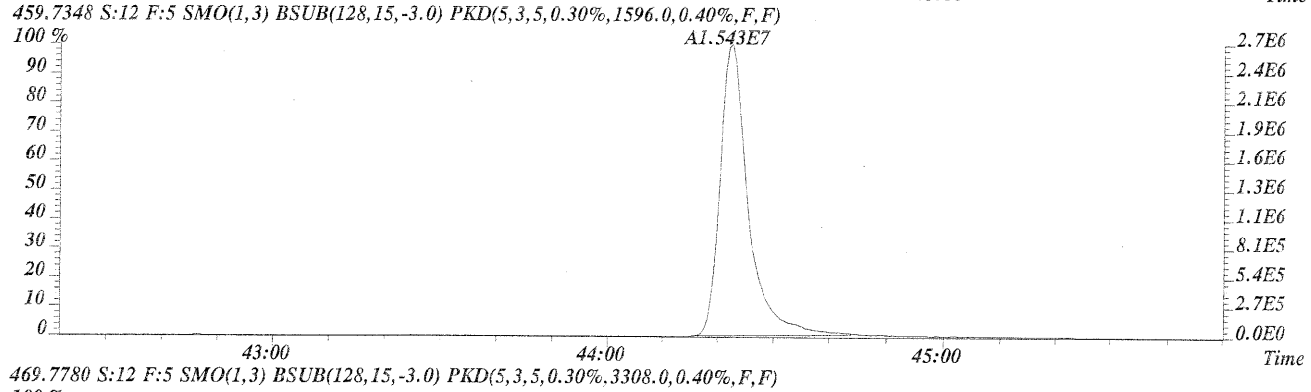
442.9728 S:12 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



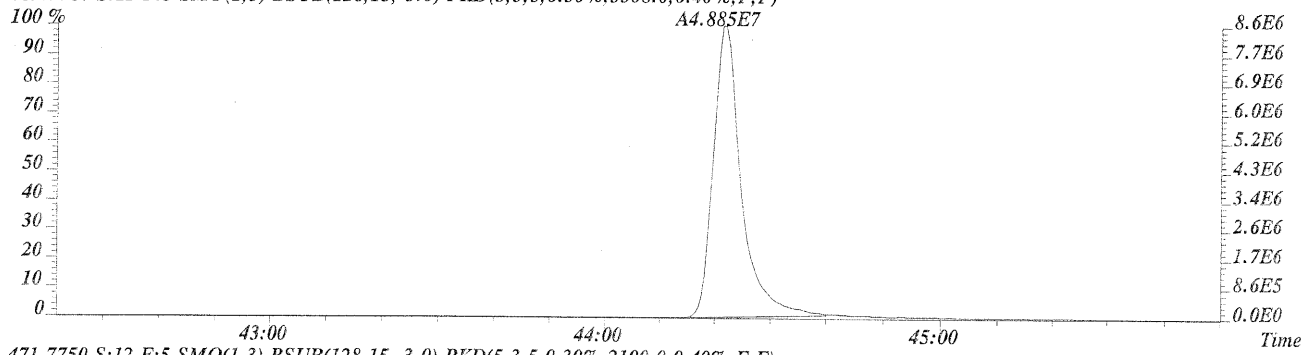
File:C15065 #1-379 Acq: 8-NOV-2007 04:04:06 GC EI+ Voltage SIR 70S
Sample#12 File Text:CAS,HOUSTON Text:EQ0700371-02LCS LCS Exp:8290CA
457.7377 S:12 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2336.0,0.40%,F,F)



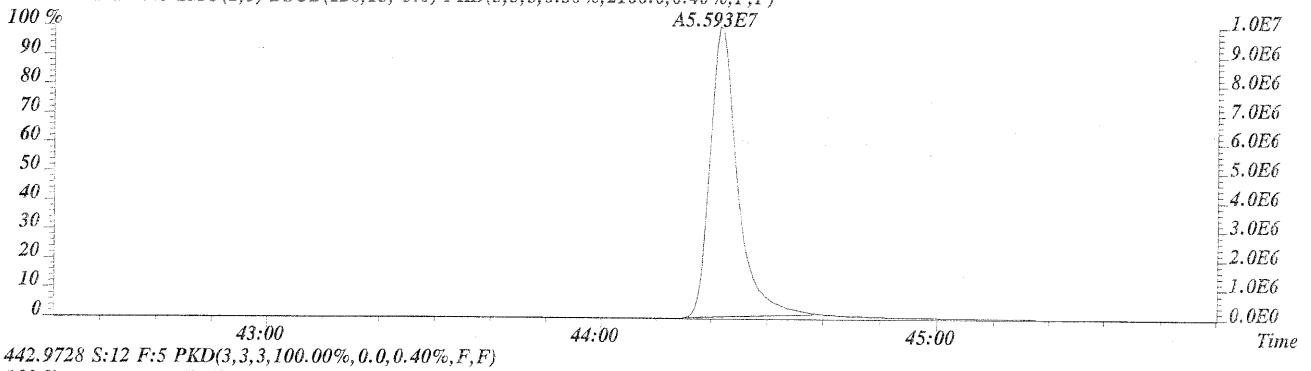
459.7348 S:12 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1596.0,0.40%,F,F)



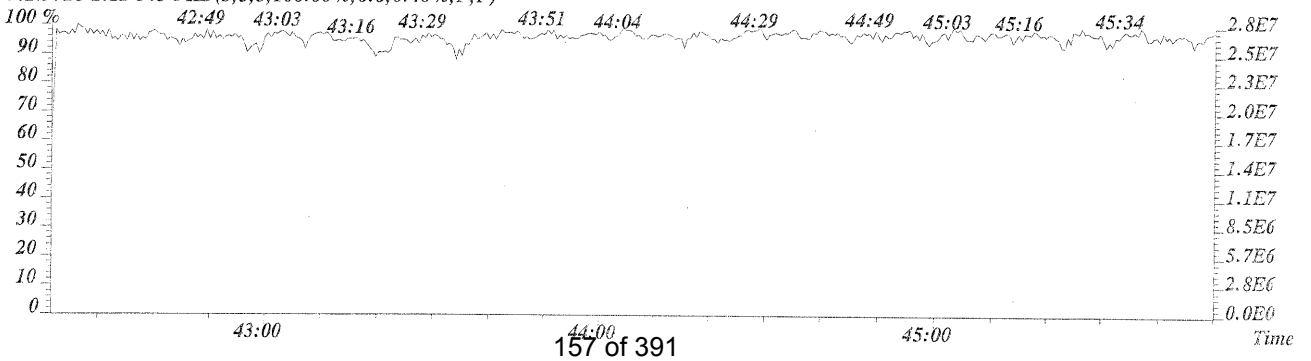
469.7780 S:12 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3308.0,0.40%,F,F)



471.7750 S:12 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2100.0,0.40%,F,F)



442.9728 S:12 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



Columbia Analytical Services INC.

An Employee - Owned Company

Continuing Calibration

19408 Park Row, Suite 320, Houston, TX 77084
Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

RW/ HRCC3 Daily Calibration QC Checklist

Calibration File Name: C15063 #1/C15065 #1 Circle one: Beginning / Ending

Date: 11/07/07

Method: 8290 / Tetra / TCDD Only / TCDF Conf

Retention Window/Column Performance Check:	**Analyst**	**Second Check**
Windows labeled for first and last eluting compounds	✓	✓
Column performance shows less than or equal to 25% valley between column specific 2378 isomer and the closest eluters	✓	✓
No QC ion deflections affect column specific 2378 isomer or the closest eluters	✓	✓

HRCC3 Continuing Calibration	Analyst	Second Check
Percent RSD within method criteria	✓	✓
All relative abundance ratios meet method criteria	✓	✓
No QC ion deflections greater than 20%	✓	✓
Mass spectrometer resolution greater than or equal to 10,000 and documented	✓	✓
Signal-to-noise of all target analytes and associated labeled standards at least 2.5:1	✓	✓
Ending Calibration injected prior to end of 12 hour clock	✓	✓

Analyst: _____ Second QC: _____

5DFC
PCDD/PCDF ANALYTICAL SEQUENCE SUMMARY

Lab Name: Columbia Analytical Services Contract:

Lab Code: TX01411 Case No.: Client No.: SDG No.:

GC Column: DB-5 ID: 0.25 (mm) Instrument ID: 70S

Init. Calib. Date: 07/12/04

Init. Calib.Times: 11:08

THE ANALYTICAL SEQUENCE OF STANDARDS, SAMPLES, BLANKS, AND LABORATORY CONTROL SAMPLES (LCSs) IS AS FOLLOWS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
WINDOW DEFINE		C15062 #1	7-NOV-07	16:02:46
CCAL HRCC3		C15063 #1	7-NOV-07	17:46:12
METHOD BLANK	EQ0700371-01	C15065 #1	7-NOV-07	19:01:34
710215	E0701141-001	C15065 #2	7-NOV-07	19:50:53
MLT-B	E0700903-012RE	C15065 #3	7-NOV-07	20:40:14
MBB 02	E0701110-001RE	C15065 #4	7-NOV-07	21:29:32
16-256	E0701079-004RE	C15065 #5	7-NOV-07	22:18:53
CCAL HRCC3	CCAL HRCC3	C15065 #14	8-NOV-07	05:42:46
LCS	EQ0700371-02	C15065 #12	8-NOV-07	04:04:06

HRGC/HRMS RUN LOG

CAS HOUSTON 10655 Richmond Avenue, Suite 130-A Houston, TX 77042

Columbia Analytical Services inc.
An Employee Owned Company

Acq Method: 8290CA/1613 Result File: Archive Tape:
GC Method: 8290CA/1613 EDD File: Instrument ID: VG 70C

Date	Time	File	CAS ID	Client ID	Batch #	Analyst	Comments	RE
11/07/07	02:16	C15054 #8	EQ701128-001	710043 (7100 KMS)				✓
	08:05	#9	KQ709578-001	K-3 321 Blk 07/Sep.25-006, 2007				✓
	08:56	#10	EQ701128-002	710042 (710044 MSD)				✓
	04:44	#11	EQ700368-02LCS	LCS				
	05:33	#12	EQ700889-03DLCS	DLCS				
	0 —	#13	TEST	—				
	07:12	#14	CCAL HRCC3	D8-2-2A				
	—	C15055	No File.	FC 11/7/07				
	09:08	C15056	HRMS CHECK					
11/07/07	12:12	C15057	HRMS CHECK					
		C15058 #1	WINDOW DEFINE	D4-90-2			Transfered 11/07/07. NEEDS REINJECTED	
		C15059 #1	CCAL HRCC3	D8-2-2A			" "	
		C15060 #1	CCAL HRCC3	D8-2-2A				
	16:01	C15061	HRMS Check					
	16:02	C15062	Window Define	D4-90-2				
	17:46	C15063	CCAL HRCC3	D8-2-2A				

Reviewed by:

HRGC/HRMS RUN LOG

CAS HOUSTON 10655 Richmond Avenue, Suite 130-A Houston, TX 77042

Columbia Analytical Services inc.
An Employee Owned Company

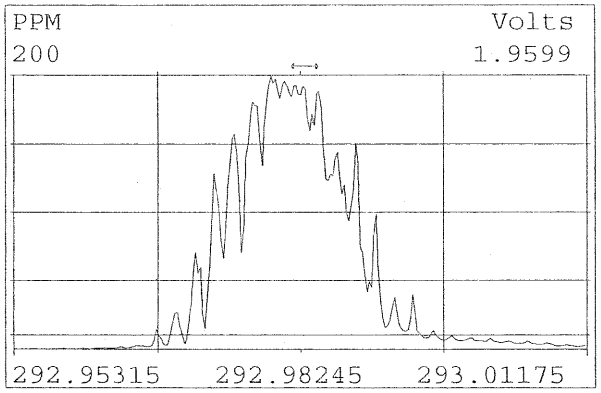
Acq Method: 8290CA/1613
GC Method: 8290CA/1613
Result File: E C15063RE1
EDD File:
Archive Tape:
Instrument ID: VG 70C

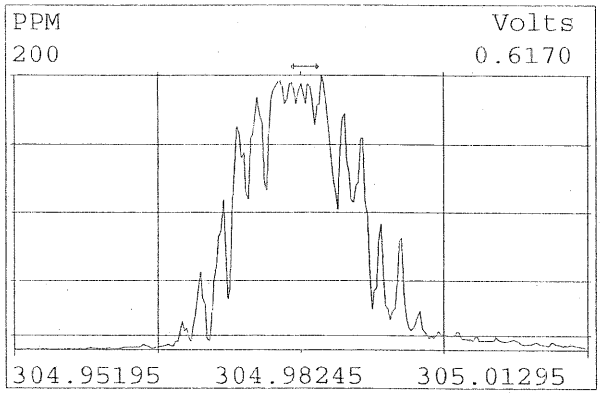
Date	Time	File	CAS ID	Client ID	Batch #	Analyst	Comments	~~RE~~ TO CONFIRM
11/7/07	19:00	C15064	HRMS check			jc		
↓	19:01	C15065 #1	EQ0700371-01MB					
	19:50	#2	E0701141-001	710215				
	20:40	#3	E0700903-012RE	MTL-B				
	21:29	#4	E0701110-001RE	MBB-02				
↓	22:14	#5	E0701079-004RE	16-256				
		#6	E0701138-001	16-263				
		#7	-002	16-264				
		#8	-003	16-265				✓
		#9	-004	16-266				✓
		#10	-005	16-267				✓
		#11	-006	16-268				✓
		#12	EQ0700371-02LCS	LCS				
11/8/07	04:53	#13	TEST					
	05:42	#14	CCAL HRCC3	D8-2-2A				
↓	06:36	C15066	HRMS CHECK					

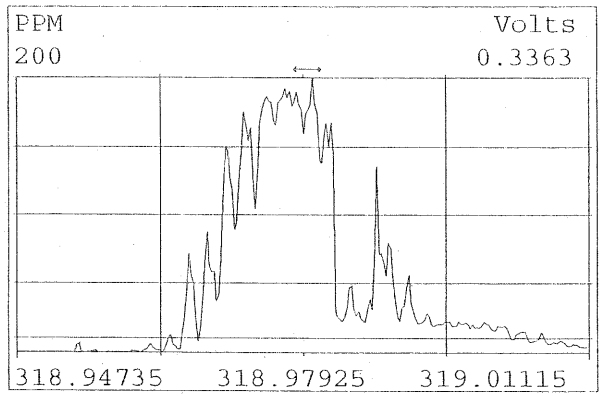
Reviewed by: [signature]

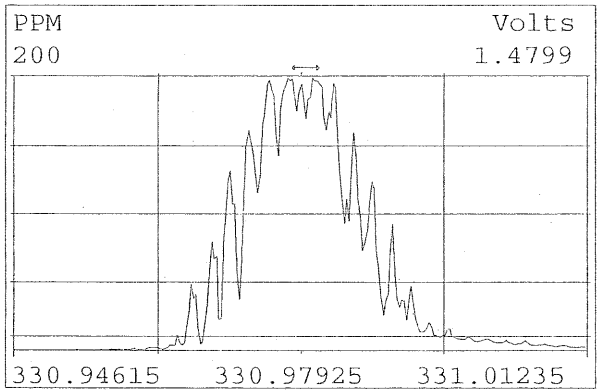
097

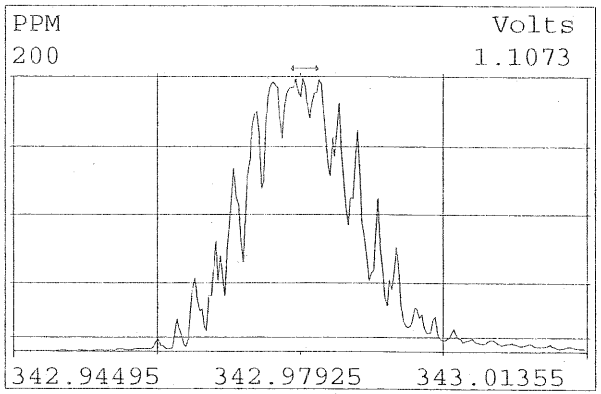
Peak Locate Examination: 7-NOV-2007:16:01 File:C15061
Experiment:8290CA Function:1 Reference:PFK

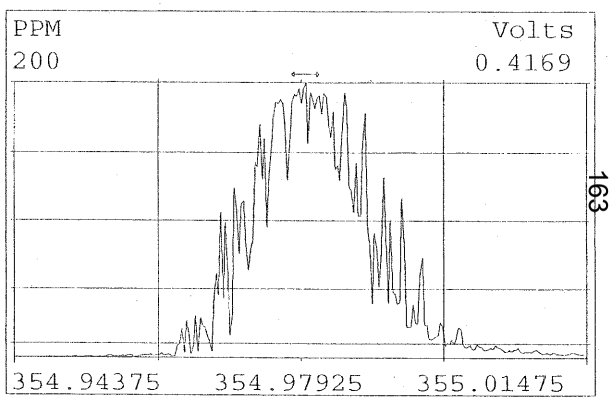


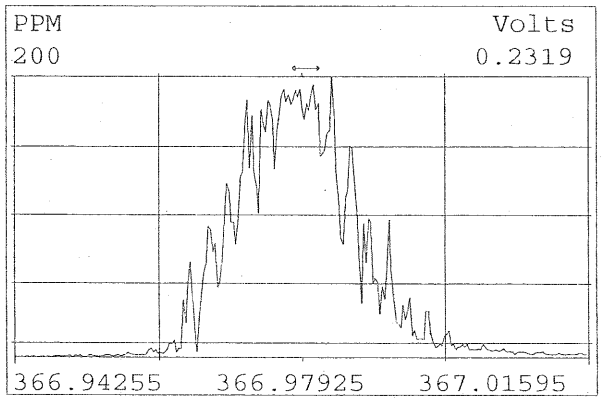


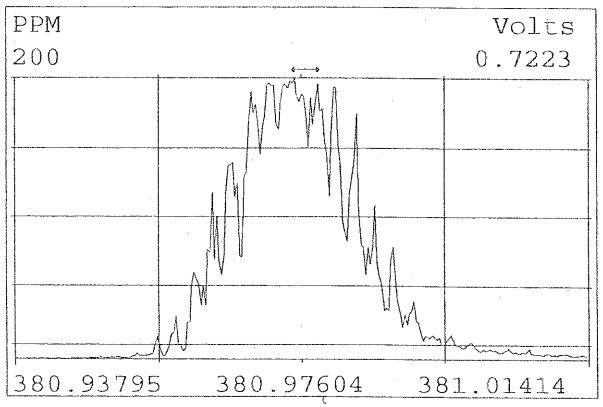




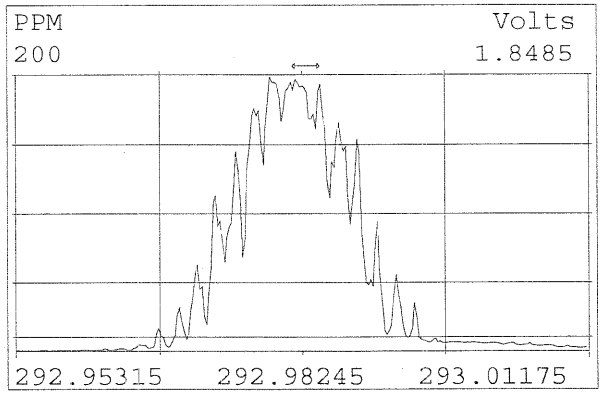


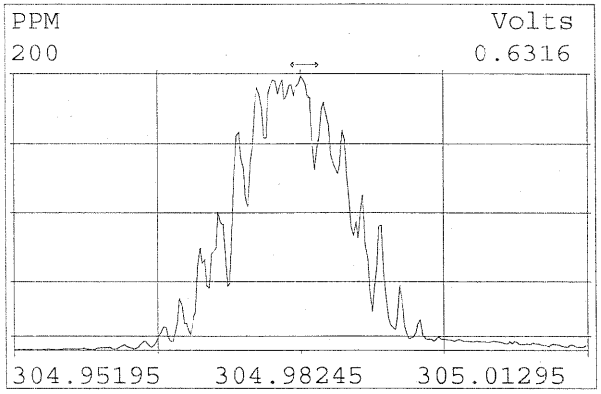


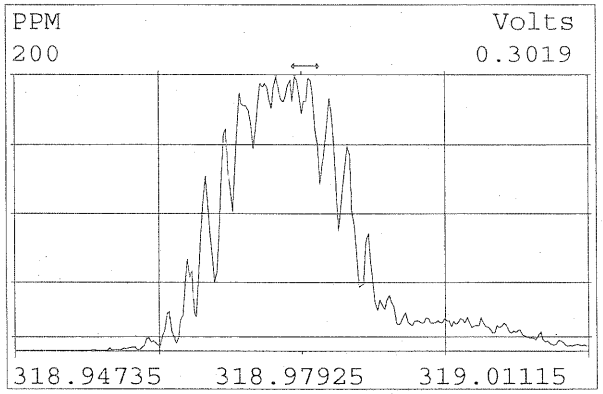


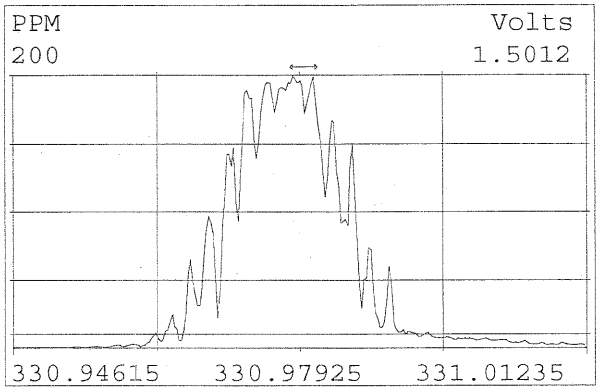


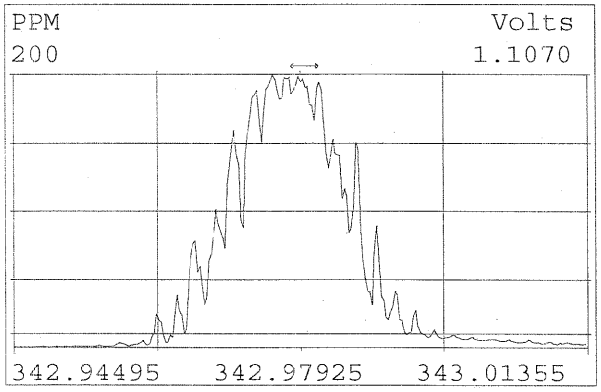
Peak Locate Examination: 7-NOV-2007:19:00 File:C15064
Experiment:8290CA Function:1 Reference:PFK

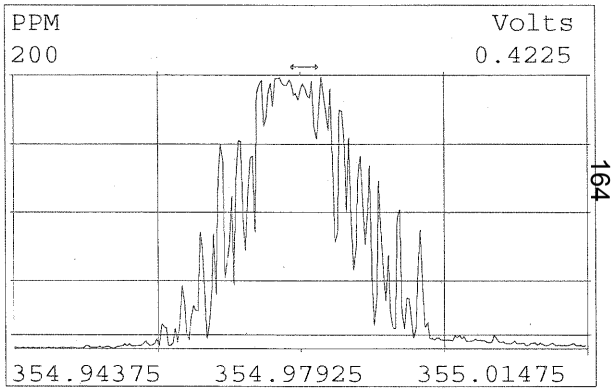


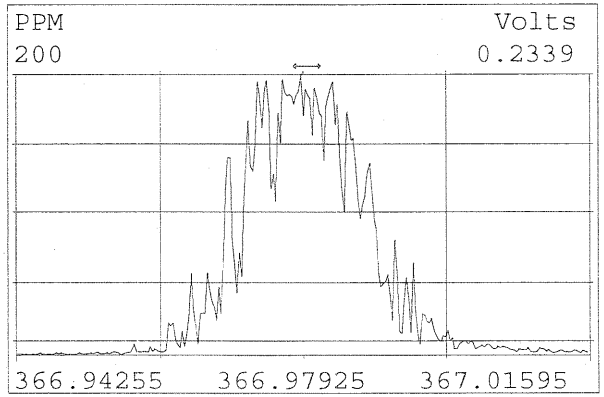


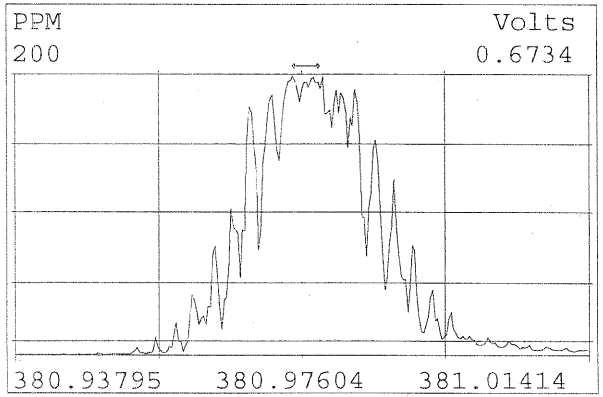




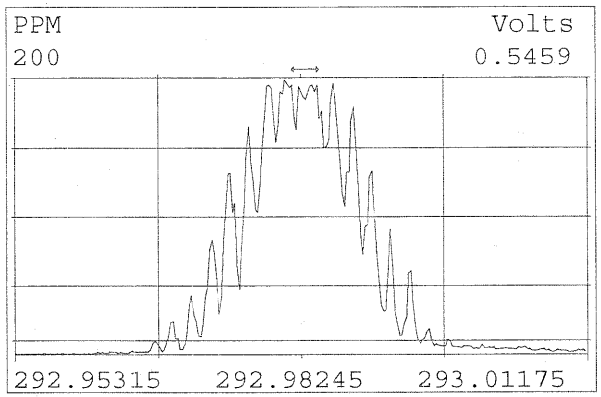


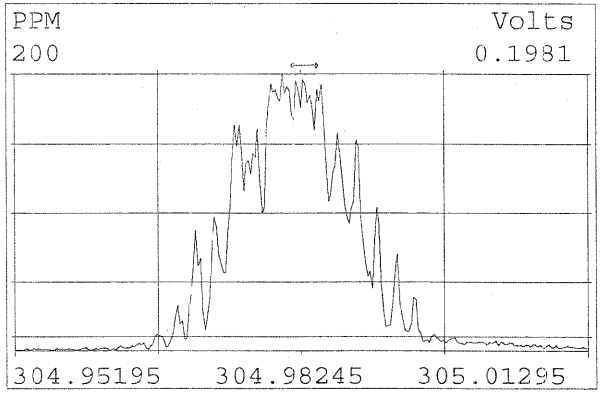


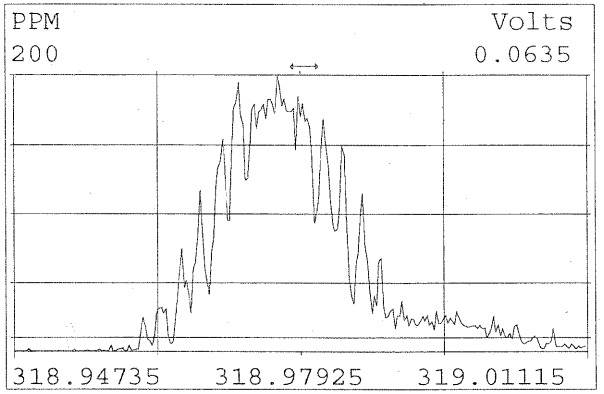


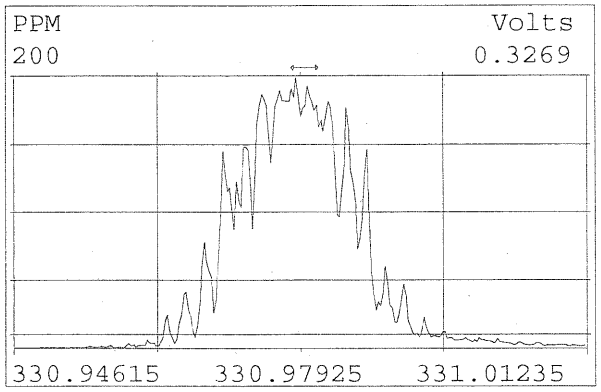


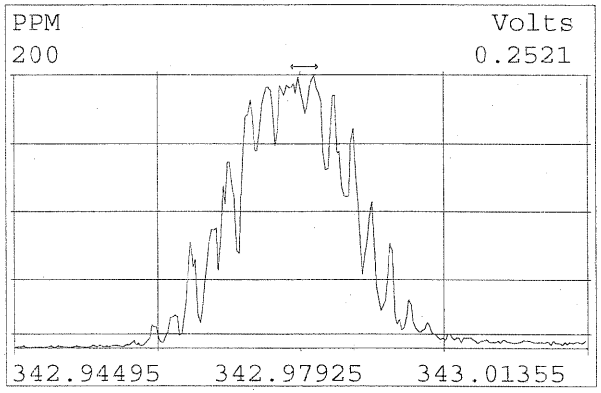
Peak Locate Examination: 8-NOV-2007:06:36 File:C15066
Experiment:8290CA Function:1 Reference:PFK

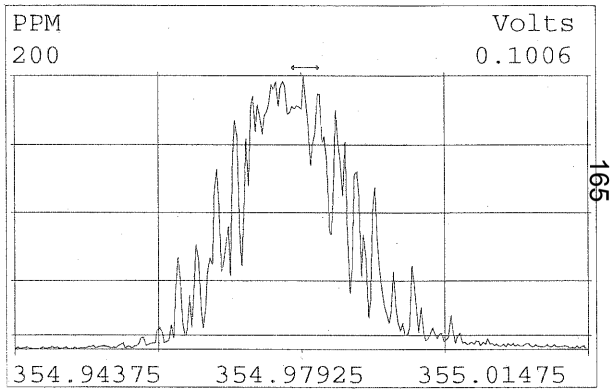


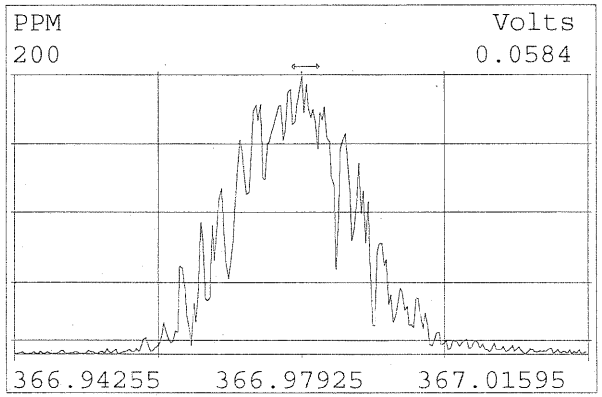


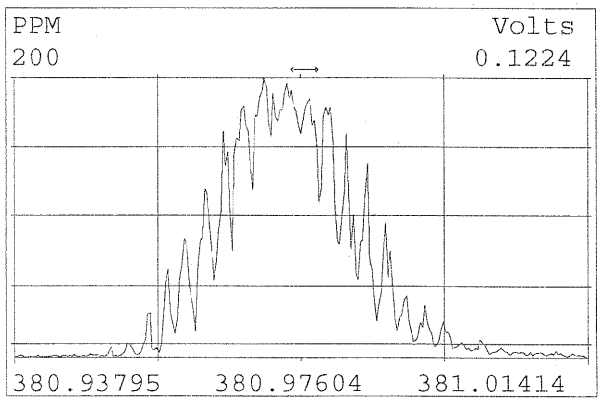












5DFA

WINDOW DEFINING MIX SUMMARY

CLIENT ID

WDM

Lab Name: COLUMBIA ANALYTICAL SERVICES

Lab Code: CAS Case No.: _____ SDG No.: _____

GC Column: DB-5 ID: 0.25 (mm) Lab File ID: C15062#1

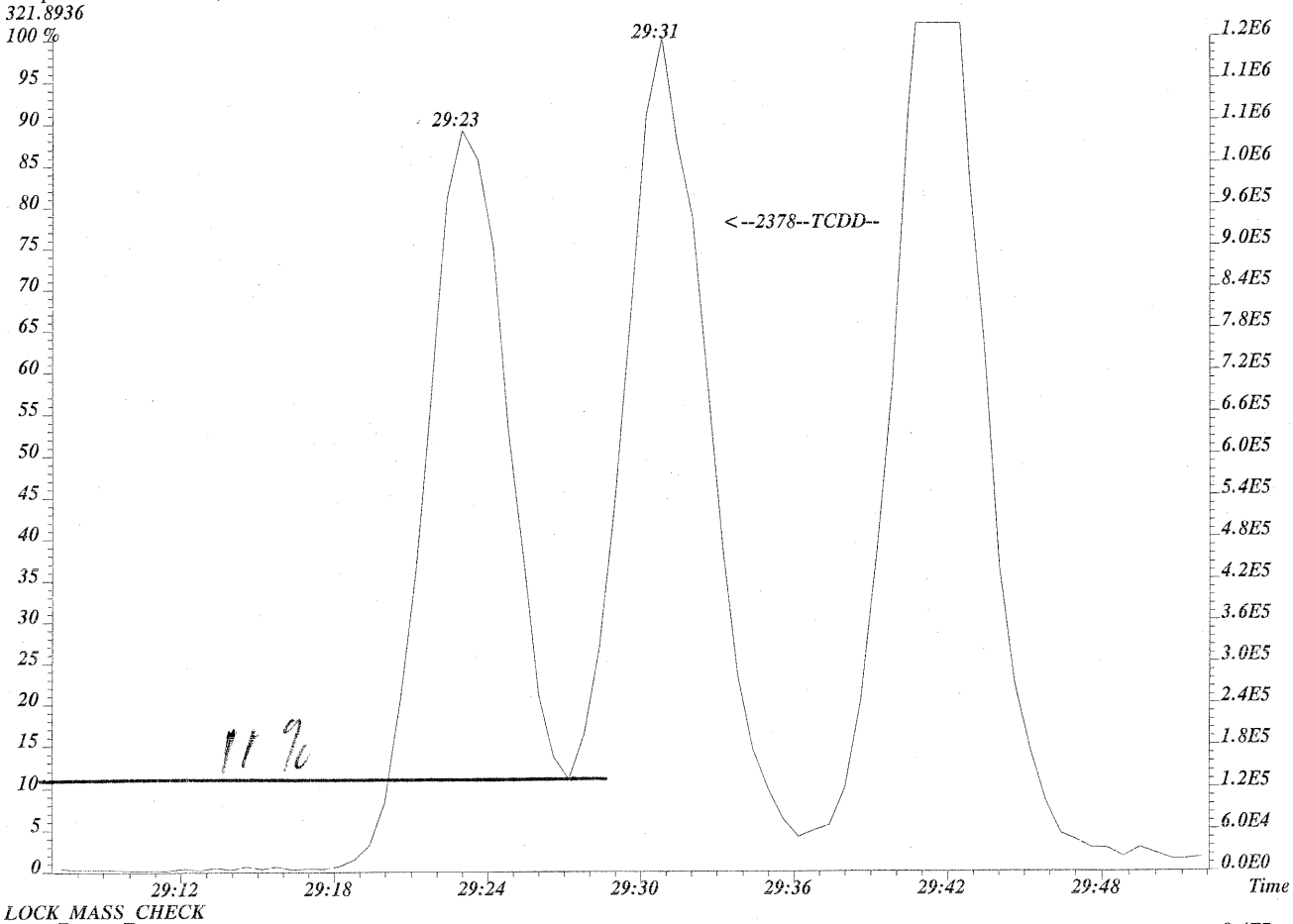
Date Analyzed: 11/07/07

Time Analyzed: 16:02:46

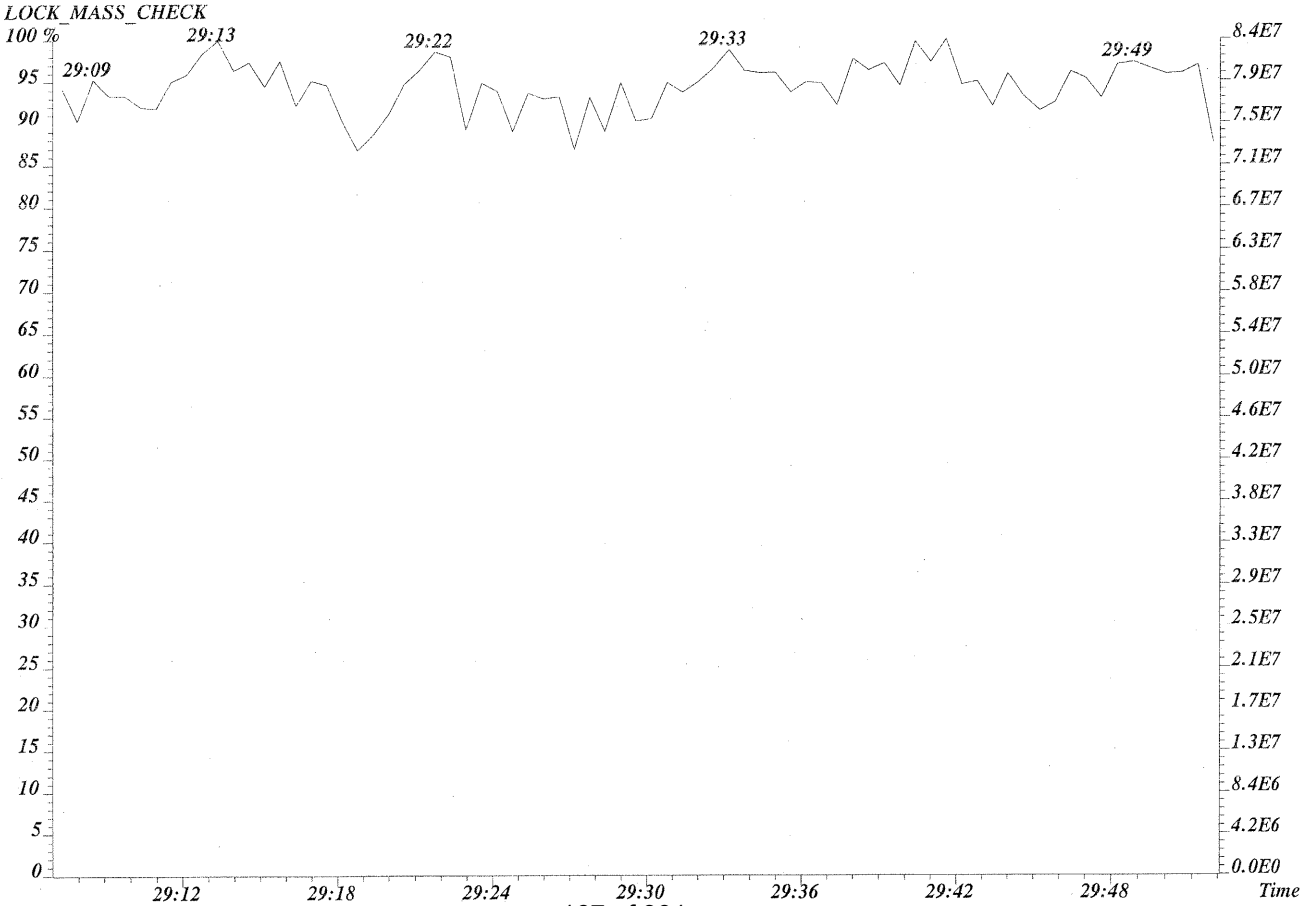
CONGENER	RT FIRST ELUTING	RT LAST ELUTING
TCDF	25:00	30:38
TCDD	26:37	30:37
PeCDF	30:53	34:50
PeCDD	32:15	34:40
HxCDF	35:43	38:12
HxCDD	36:15	37:50
HpCDF	39:47	41:19
HpCDD	40:04	40:49

% Valley 2378-TCDD 11%

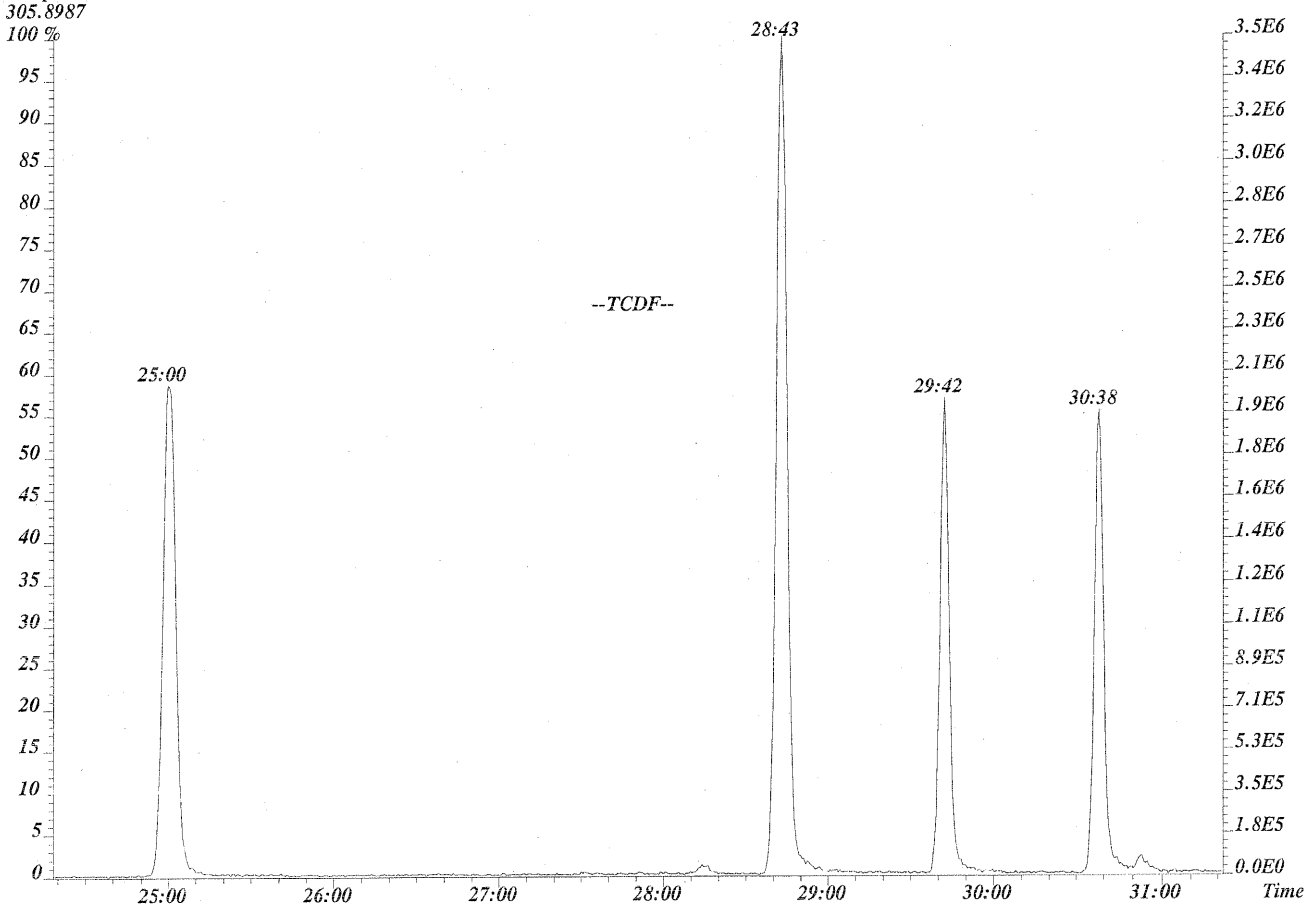
File:C15062 #1-2546 Acq: 7-NOV-2007 16:02:46 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:window define Exp:WDM
321.8936

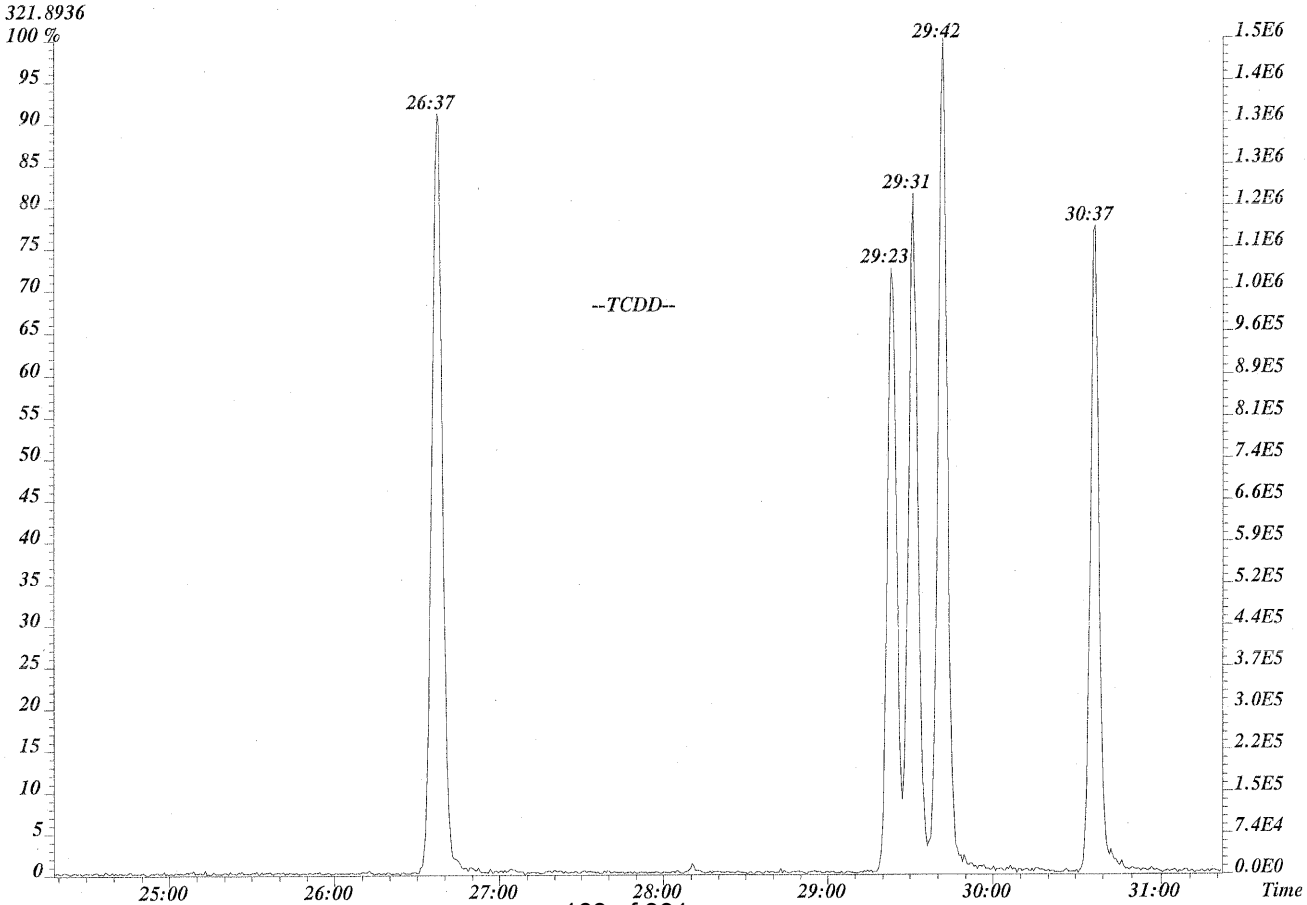


LOCK_MASS_CHECK

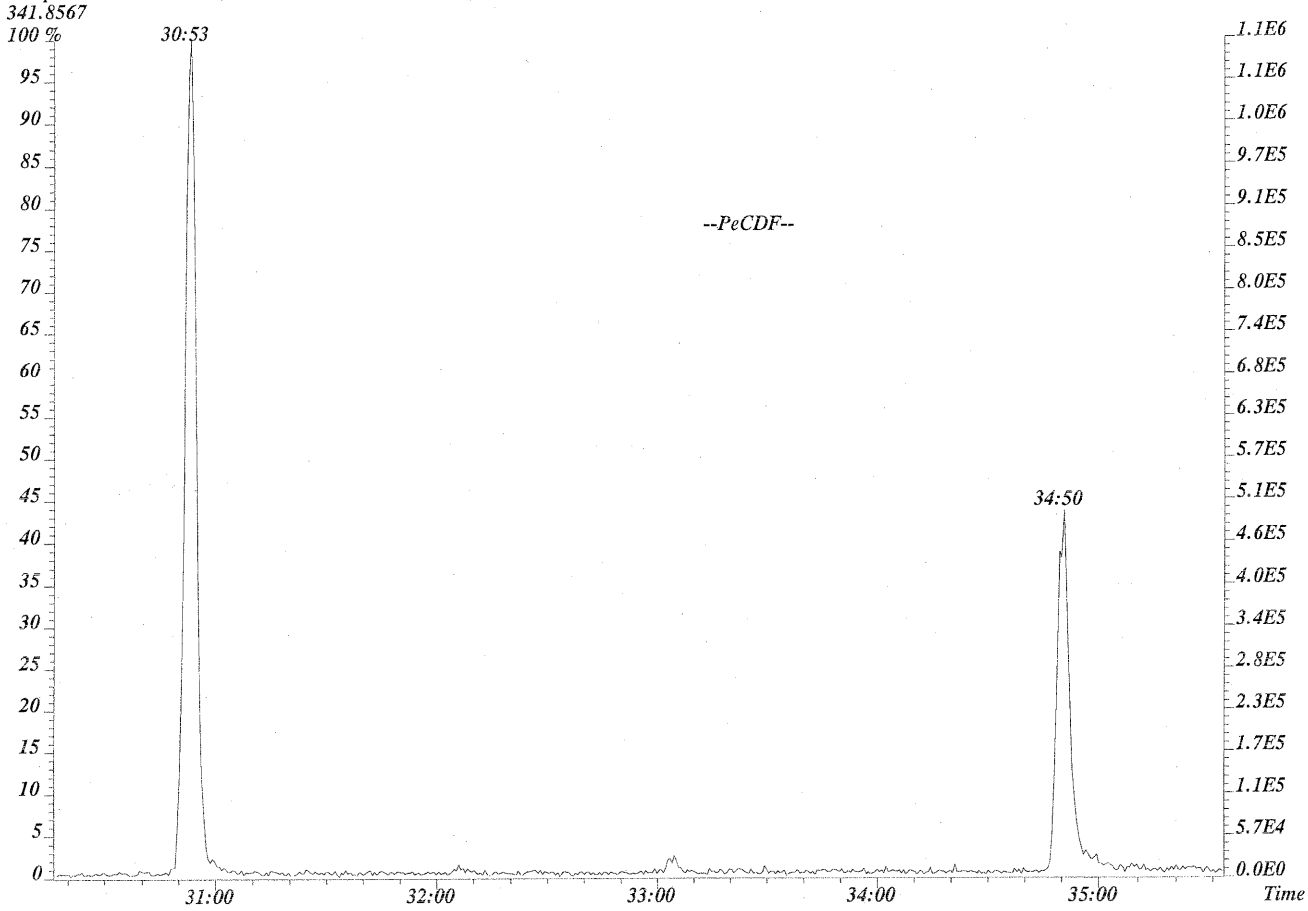


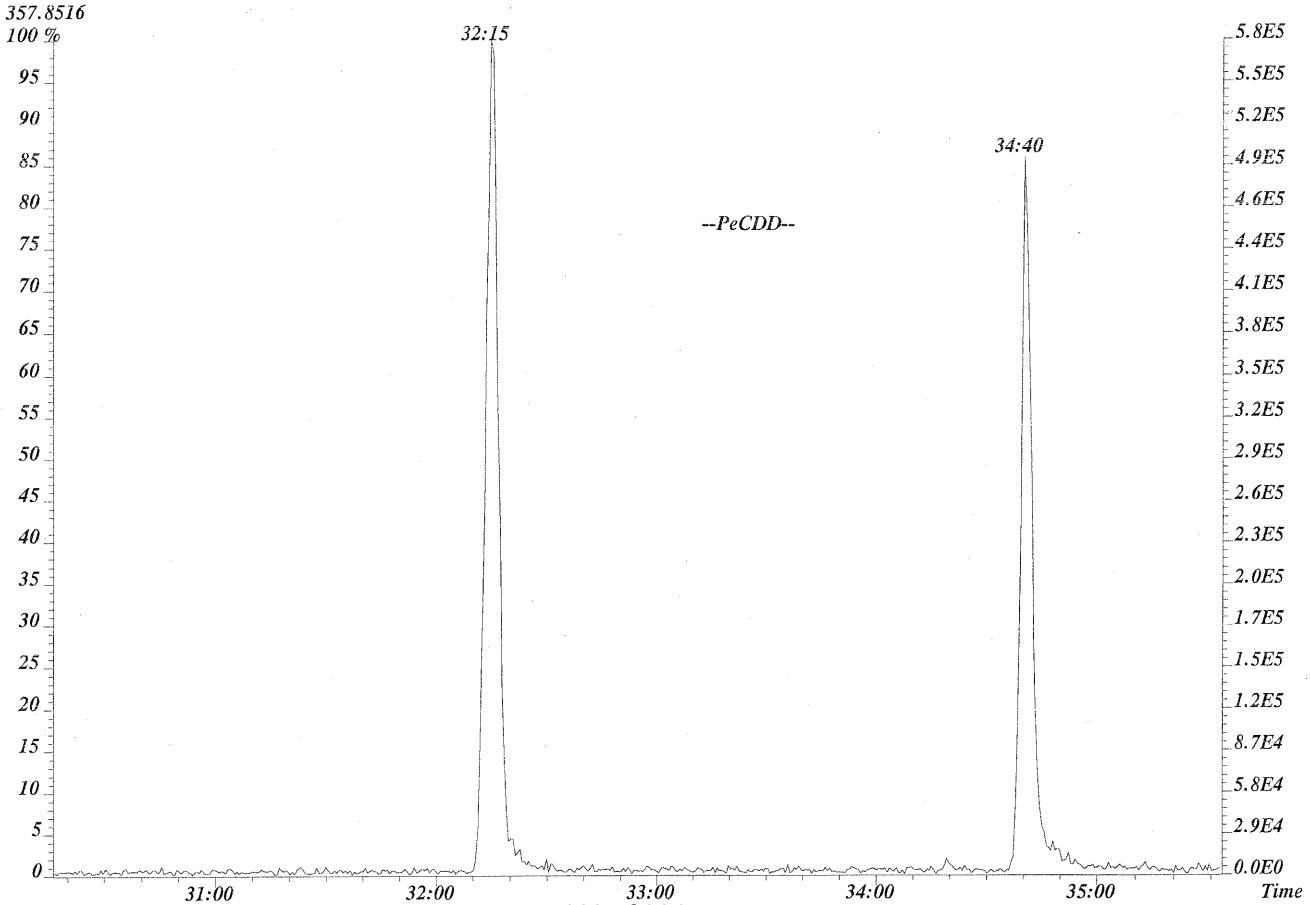
File:C15062 #1-2546 Acq: 7-NOV-2007 16:02:46 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:window define Exp:WDM



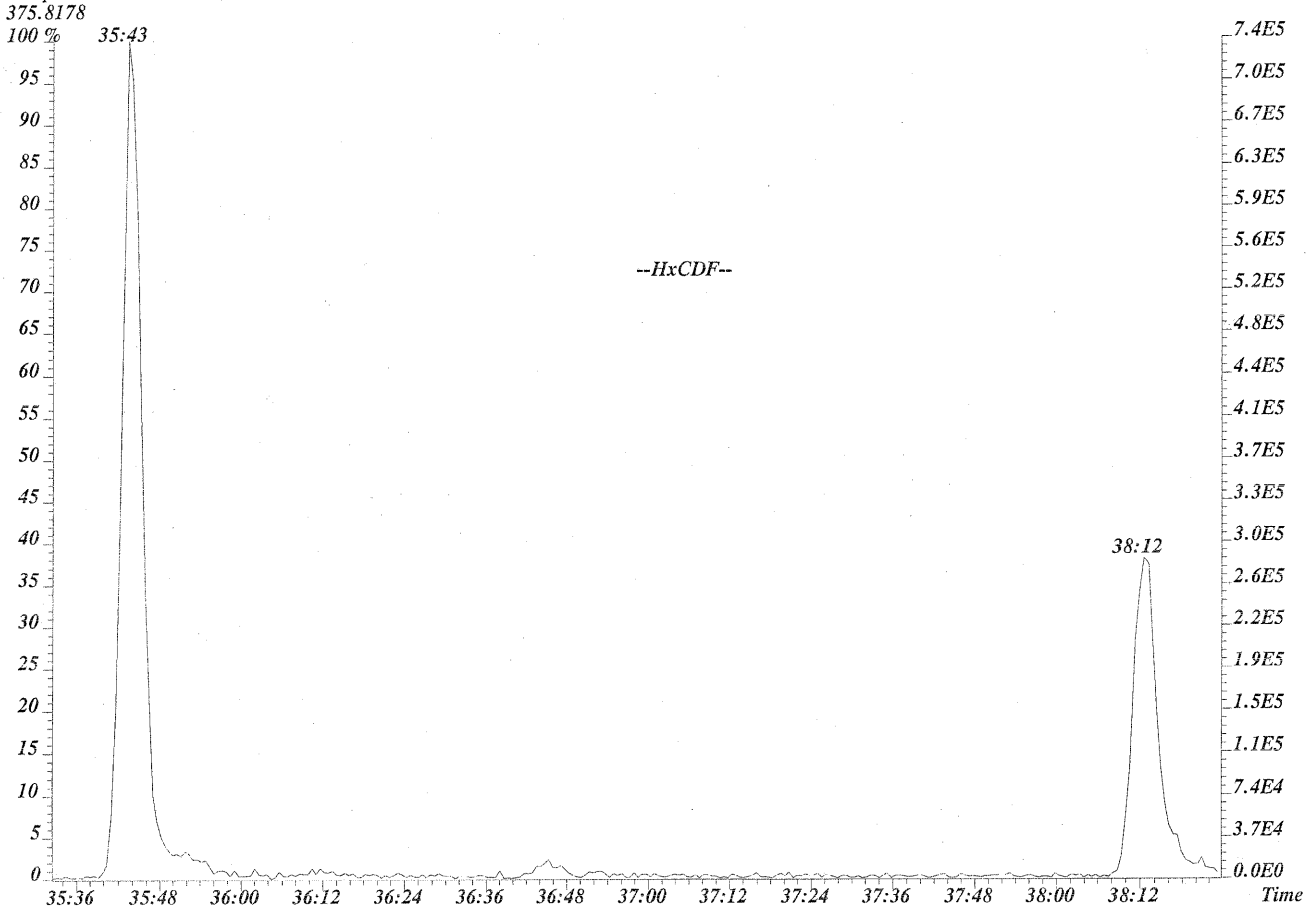


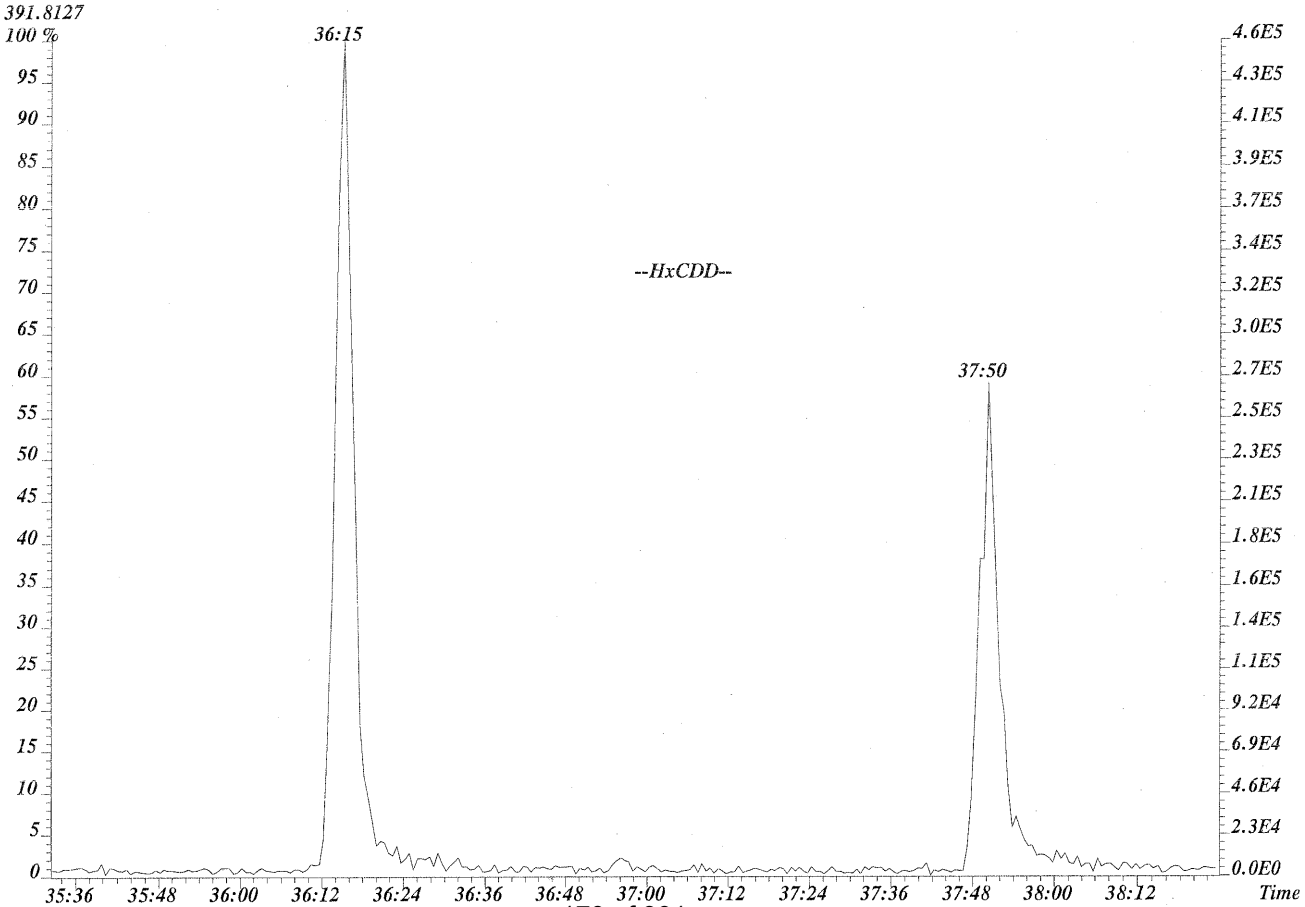
File:C15062 #1-2546 Acq: 7-NOV-2007 16:02:46 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:window define Exp:WDM



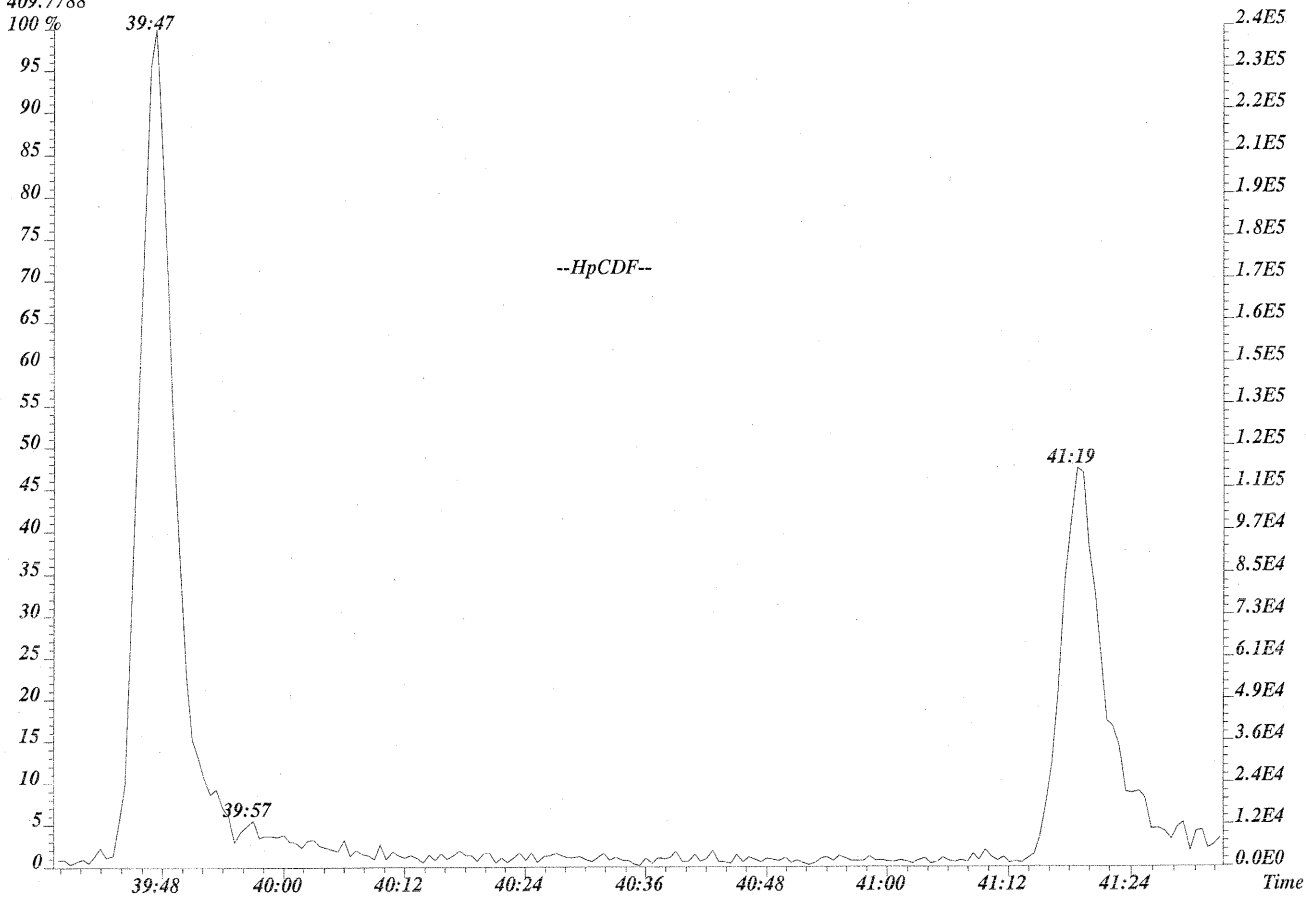


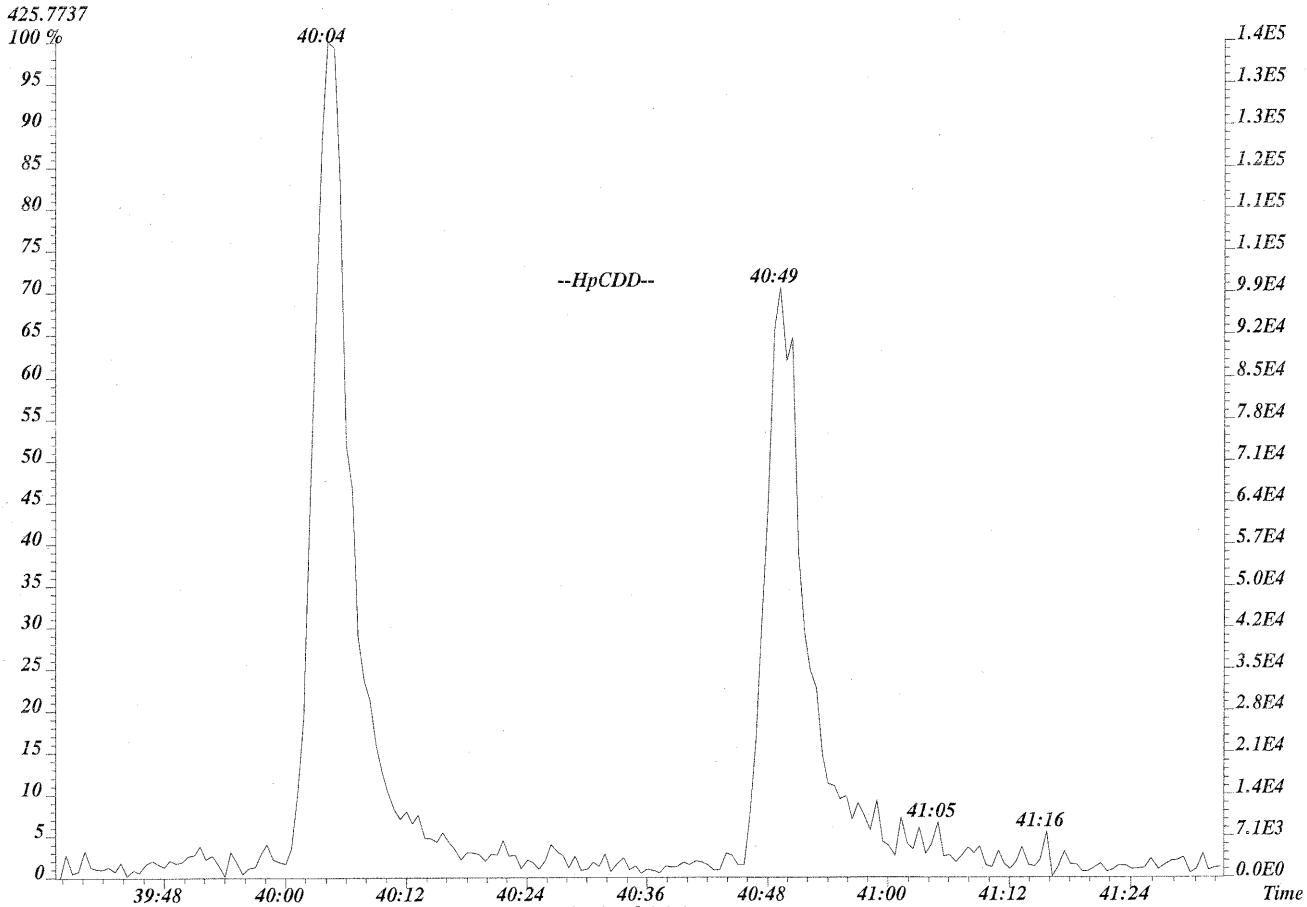
File:C15062 #1-2546 Acq: 7-NOV-2007 16:02:46 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:window define Exp:WDM





File:C15062 #1-2546 Acq: 7-NOV-2007 16:02:46 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:window define Exp:WDM





FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Columbia Analytical Services Episode No.:

Contract No.: SDG No.:

Initial Calibration Date: 07/12/04

Instrument ID: 70S GC Column ID: DB-5

VER Data Filename: C15063#1 Analysis Date: 7-NOV-07 Time: 17:46:12

	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CCAL. RRF	MEAN RRF	%D (3)
NATIVE ANALYTES						
2,3,7,8-TCDD	M/M+2	0.75	0.65-0.89	0.95	0.95	0.75
1,2,3,7,8-PeCDD	M+2/M+4	1.62	1.32-1.78	1.01	0.97	4.14
1,2,3,4,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	0.82	0.95	-14.20
1,2,3,6,7,8-HxCDD	M+2/M+4	1.31	1.05-1.43	1.11	1.13	-1.81
1,2,3,7,8,9-HxCDD	M+2/M+4	1.28	1.05-1.43	0.91	1.12	-19.28
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.04	0.88-1.20	0.96	0.97	-1.34
OCDD	M+2/M+4	0.88	0.76-1.02	1.03	1.04	-1.12
2,3,7,8-TCDF	M/M+2	0.79	0.65-0.89	1.09	0.91	19.82
1,2,3,7,8-PeCDF	M+2/M+4	1.62	1.32-1.78	1.02	0.89	14.16
2,3,4,7,8-PeCDF	M+2/M+4	1.63	1.32-1.78	1.01	0.91	10.72
1,2,3,4,7,8-HxCDF	M+2/M+4	1.29	1.05-1.43	1.24	1.23	0.60
1,2,3,6,7,8-HxCDF	M+2/M+4	1.25	1.05-1.43	1.43	1.24	15.22
1,2,3,7,8,9-HxCDF	M+2/M+4	1.32	1.05-1.43	0.85	1.02	-16.09
2,3,4,6,7,8-HxCDF	M+2/M+4	1.23	1.05-1.43	1.19	1.13	4.61
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.01	0.88-1.20	1.47	1.41	4.45
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.01	0.88-1.20	0.92	1.04	-11.50
OCDF	M+2/M+4	0.91	0.76-1.02	1.29	1.30	-1.13

(1) See Table 6, Method 8290, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 8, Method 8290.

(3) The beginning CCAL %RSD for the 17 unlabeled standard must not exceed +/- 20%, Section 7.7.4.1. The ending CCAL must not exceed +/-25%. Section 8.3.2.4.

8290F4A

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Columbia Analytical Services Episode No.:

Contract No.: SDG No.:

Initial Calibration Date: 07/12/04

Instrument ID: 70S GC Column ID: DB-5

VER Data Filename: C15063#1 Analysis Date: 7-NOV-07 Time: 17:46:12

	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CCAL. RRF	MEAN RRF	%D (3)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	M/M+2	0.82	0.65-0.89	0.92	1.06	-13.02
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.58	1.32-1.78	0.83	0.74	12.01
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.22	1.05-1.43	1.06	0.96	10.98
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.06	0.88-1.20	0.86	0.80	7.20
13C-OCDD	M+2/M+4	0.82	0.76-1.02	0.61	0.65	-6.14
13C-2,3,7,8-TCDF	M/M+2	0.78	0.65-0.89	1.28	1.45	-11.75
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.53	1.32-1.78	1.26	1.16	9.16
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.51	0.43-0.59	1.37	1.28	6.99
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.44	0.37-0.51	1.08	0.96	12.38
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD				0.91	0.98	-7.43

(1) See Table 6, Method 8290, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 8, Method 8290.

(3) The beginning CCAL %RSD for the labeled standard must not exceed +/- 30%, Section 7.7.4.2. The ending CCAL must not exceed +/- 35%, Section 8.3.2.4.

8290F4B

Columbia Analytical Services, Inc.
Sample Response Summary

CLIENT ID.
CCAL HRCC3

Run #6 Filename C15063 Samp: 1 Inj: 1 Acquired: 7-NOV-07 17:46:12
Processed: 8-NOV-07 10:55:42 LAB. ID:

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	28:42	5.711e+06	7.266e+06	0.79	yes	yes
2	Unk	1,2,3,7,8-PeCDF	33:04	1.849e+07	1.138e+07	1.62	yes	no
3	Unk	2,3,4,7,8-PeCDF	33:49	1.842e+07	1.132e+07	1.63	yes	no
4	Unk	1,2,3,4,7,8-HxCDF	36:45	1.631e+07	1.269e+07	1.29	yes	no
5	Unk	1,2,3,6,7,8-HxCDF	36:51	1.860e+07	1.490e+07	1.25	yes	no
6	Unk	2,3,4,6,7,8-HxCDF	37:22	1.531e+07	1.244e+07	1.23	yes	no
7	Unk	1,2,3,7,8,9-HxCDF	38:08	1.107e+07	8.915e+06	1.24	yes	yes
8	Unk	1,2,3,4,6,7,8-HpCDF	39:48	1.361e+07	1.346e+07	1.01	yes	no
9	Unk	1,2,3,4,7,8,9-HpCDF	41:19	8.455e+06	8.406e+06	1.01	yes	no
10	Unk	OCDF	44:34	1.284e+07	1.404e+07	0.91	yes	no
11	Unk	2,3,7,8-TCDD	29:31	3.517e+06	4.676e+06	0.75	yes	no
12	Unk	1,2,3,7,8-PeCDD	34:10	1.215e+07	7.497e+06	1.62	yes	no
13	Unk	1,2,3,4,7,8-HxCDD	37:29	8.253e+06	6.570e+06	1.26	yes	no
14	Unk	1,2,3,6,7,8-HxCDD	37:33	1.142e+07	8.730e+06	1.31	yes	no
15	Unk	1,2,3,7,8,9-HxCDD	37:53	9.206e+06	7.214e+06	1.28	yes	yes
16	Unk	1,2,3,4,6,7,8-HpCDD	40:50	7.173e+06	6.910e+06	1.04	yes	no
17	Unk	OCDD	44:21	1.004e+07	1.141e+07	0.88	yes	no
18	IS	13C-2,3,7,8-TCDF	28:41	2.615e+07	3.358e+07	0.78	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	33:03	3.561e+07	2.322e+07	1.53	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	36:44	3.933e+07	7.774e+07	0.51	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	39:47	2.790e+07	6.407e+07	0.44	yes	no
22	IS	13C-2,3,7,8-TCDD	29:30	1.933e+07	2.368e+07	0.82	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	34:09	2.380e+07	1.504e+07	1.58	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	37:33	4.989e+07	4.078e+07	1.22	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	40:49	3.767e+07	3.570e+07	1.06	yes	no
26	IS	13C-OCDD	44:21	4.712e+07	5.727e+07	0.82	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	29:17	2.064e+07	2.592e+07	0.80	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:52	4.768e+07	3.779e+07	1.26	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	29:31	8.449e+06				
					SUM AREA			
30	Tot	Total Tetra-Furans	28:42		1.298e+07	0.79	yes	
31	Tot	Total Tetra-Dioxins	29:31		8.193e+06	0.75	yes	
32	Tot	Total Penta-Furans	33:04		5.960e+07	1.62	yes	
33	Tot	Total Penta-Dioxins	34:10		1.968e+07	1.62	yes	
34	Tot	Total Hexa-Furans	36:45		1.102e+08	1.29	yes	
35	Tot	Total Hexa-Dioxins	37:29		5.140e+07	1.26	yes	
36	Tot	Total Hepta-Furans	39:48		4.393e+07	1.01	yes	
37	Tot	Total Hepta-Dioxins	40:50		1.408e+07	1.04	yes	

Columbia Analytical Services, Inc.
10655 Richmond Ave., Suite 130A
Houston, TX 77042
Office(713)266-1599. Fax(713)266-0130

Columbia Analytical Services,Inc. CLIENT ID.
Signal/Noise Height Ratio Summary CCAL HRCC3

Run #6 Filename C15063 Samp: 1 Inj: 1 Acquired: 7-NOV-07 17:46:12

Processed: 8-NOV-07 10:55:42 LAB. ID:

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	1.31e+06	3.14e+03	4.2e+02	1.65e+06	3.88e+03	4.2e+02
2	1,2,3,7,8-PeCDF	4.51e+06	2.46e+03	1.8e+03	2.84e+06	4.80e+03	5.9e+02
3	2,3,4,7,8-PeCDF	4.80e+06	2.46e+03	2.0e+03	3.00e+06	4.80e+03	6.2e+02
4	1,2,3,4,7,8-HxCDF	4.66e+06	2.67e+03	1.7e+03	3.61e+06	3.16e+03	1.1e+03
5	1,2,3,6,7,8-HxCDF	4.32e+06	2.67e+03	1.6e+03	3.45e+06	3.16e+03	1.1e+03
6	2,3,4,6,7,8-HxCDF	3.73e+06	2.67e+03	1.4e+03	3.06e+06	3.16e+03	9.7e+02
7	1,2,3,7,8,9-HxCDF	2.37e+06	2.67e+03	8.9e+02	1.91e+06	3.16e+03	6.1e+02
8	1,2,3,4,6,7,8-HpCDF	3.02e+06	6.20e+03	4.9e+02	2.98e+06	4.35e+03	6.9e+02
9	1,2,3,4,7,8,9-HpCDF	1.59e+06	6.20e+03	2.6e+02	1.57e+06	4.35e+03	3.6e+02
10	OCDF	2.03e+06	3.01e+03	6.8e+02	2.32e+06	3.64e+03	6.4e+02
11	2,3,7,8-TCDD	8.01e+05	3.20e+03	2.5e+02	1.02e+06	2.78e+03	3.7e+02
12	1,2,3,7,8-PeCDD	3.05e+06	2.82e+03	1.1e+03	1.90e+06	2.14e+03	8.9e+02
13	1,2,3,4,7,8-HxCDD	2.44e+06	3.06e+03	8.0e+02	1.91e+06	3.32e+03	5.7e+02
14	1,2,3,6,7,8-HxCDD	2.69e+06	3.06e+03	8.8e+02	2.05e+06	3.32e+03	6.2e+02
15	1,2,3,7,8,9-HxCDD	2.04e+06	3.06e+03	6.7e+02	1.60e+06	3.32e+03	4.8e+02
16	1,2,3,4,6,7,8-HpCDD	1.44e+06	2.55e+03	5.6e+02	1.33e+06	2.35e+03	5.7e+02
17	OCDD	1.62e+06	2.23e+03	7.2e+02	1.84e+06	2.34e+03	7.9e+02
18	13C-2,3,7,8-TCDF	5.98e+06	4.68e+03	1.3e+03	7.72e+06	4.91e+03	1.6e+03
19	13C-1,2,3,7,8-PeCDF	8.60e+06	2.35e+03	3.7e+03	5.57e+06	3.05e+03	1.8e+03
20	13C-1,2,3,4,7,8-HxCDF	1.03e+07	4.49e+03	2.3e+03	2.05e+07	2.93e+03	7.0e+03
21	13C-1,2,3,4,6,7,8-HpCDF	6.14e+06	6.60e+03	9.3e+02	1.41e+07	1.79e+04	7.9e+02
22	13C-2,3,7,8-TCDD	4.40e+06	7.30e+03	6.0e+02	5.38e+06	3.92e+03	1.4e+03
23	13C-1,2,3,7,8-PeCDD	5.99e+06	3.24e+03	1.8e+03	3.83e+06	2.35e+03	1.6e+03
24	13C-1,2,3,6,7,8-HxCDD	1.28e+07	3.18e+03	4.0e+03	1.05e+07	3.63e+03	2.9e+03
25	13C-1,2,3,4,6,7,8-HpCDD	7.40e+06	2.41e+03	3.1e+03	6.99e+06	1.65e+03	4.2e+03
26	13C-OCDD	7.56e+06	2.50e+03	3.0e+03	9.00e+06	2.64e+03	3.4e+03
27	13C-1,2,3,4-TCDD	4.97e+06	7.30e+03	6.8e+02	6.13e+06	3.92e+03	1.6e+03
28	13C-1,2,3,7,8,9-HxCDD	1.08e+07	3.18e+03	3.4e+03	8.60e+06	3.63e+03	2.4e+03
29	37Cl-2,3,7,8-TCDD	1.92e+06	4.09e+03	4.7e+02			

Columbia Analytical Services, Inc.
10655 Richmond Ave., Suite 130A
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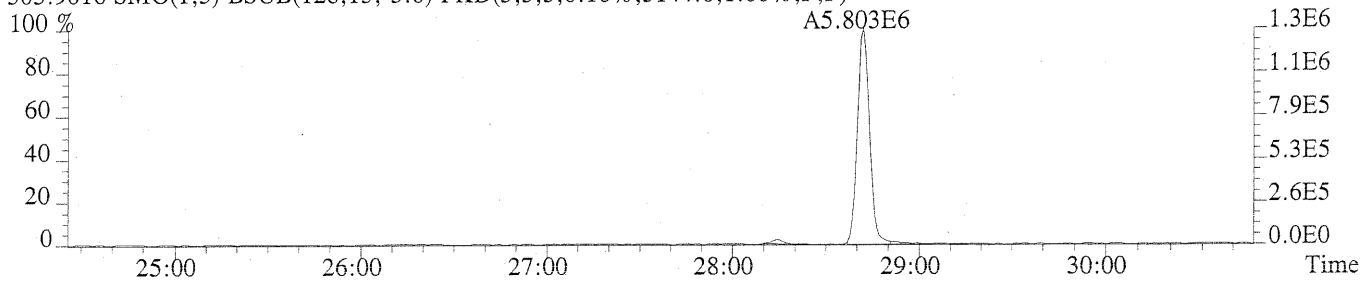
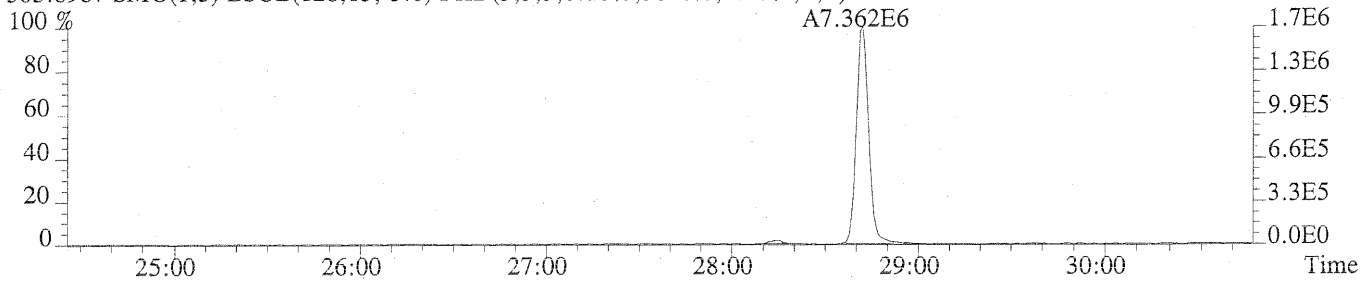
File:C15063 #1-521 Acq: 7-NOV-2007 17:46:12 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA

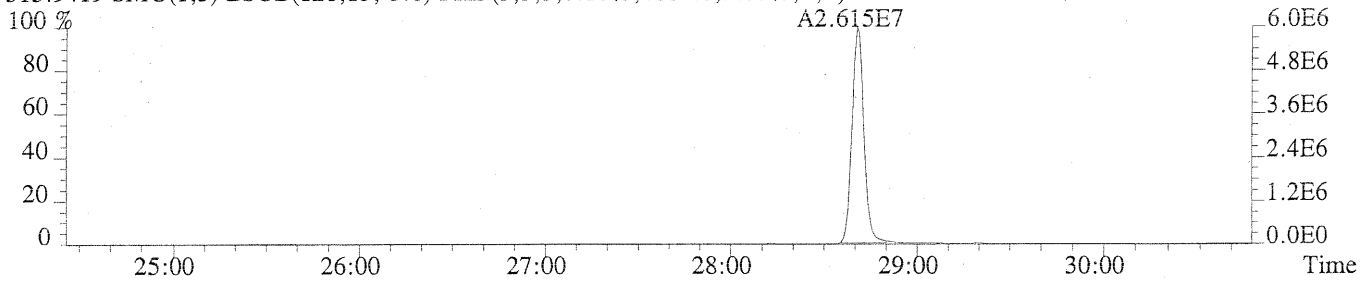
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3144.0,1.00%,F,F)



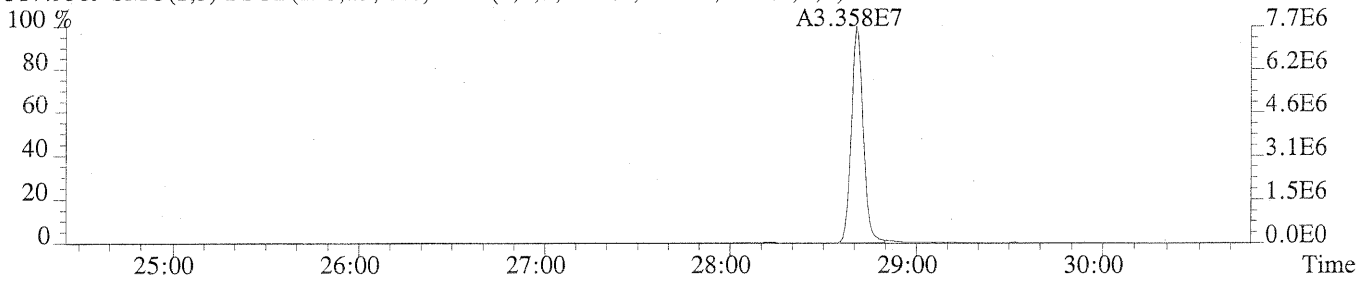
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3876.0,1.00%,F,F)



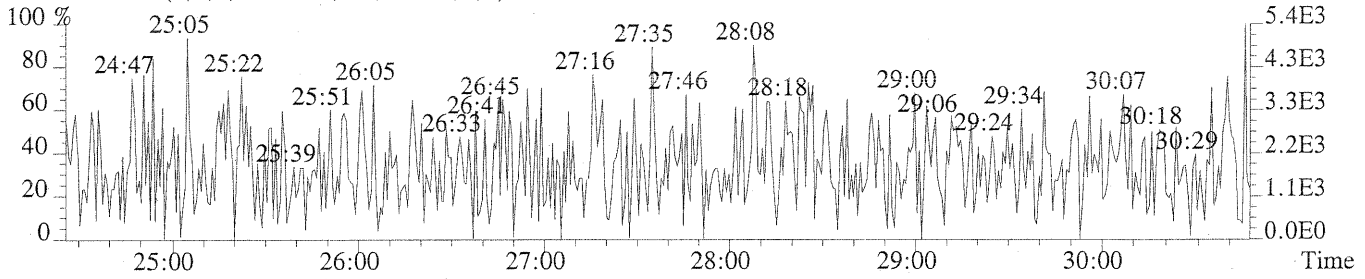
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4684.0,1.00%,F,F)



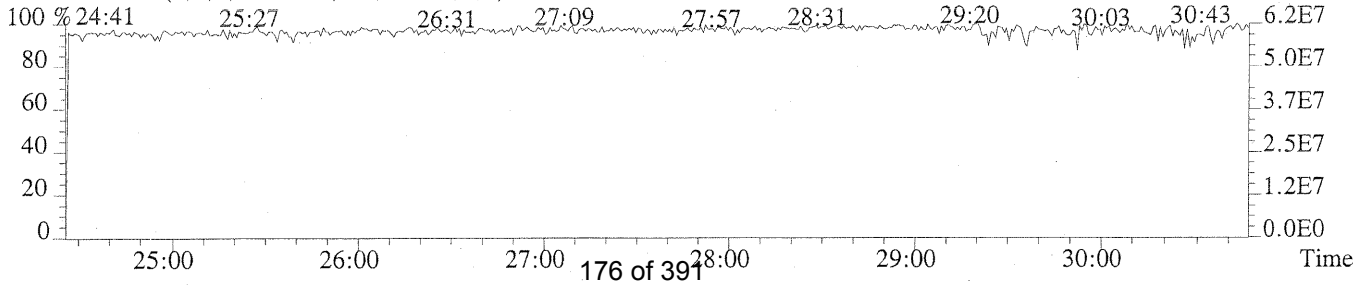
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4912.0,1.00%,F,F)



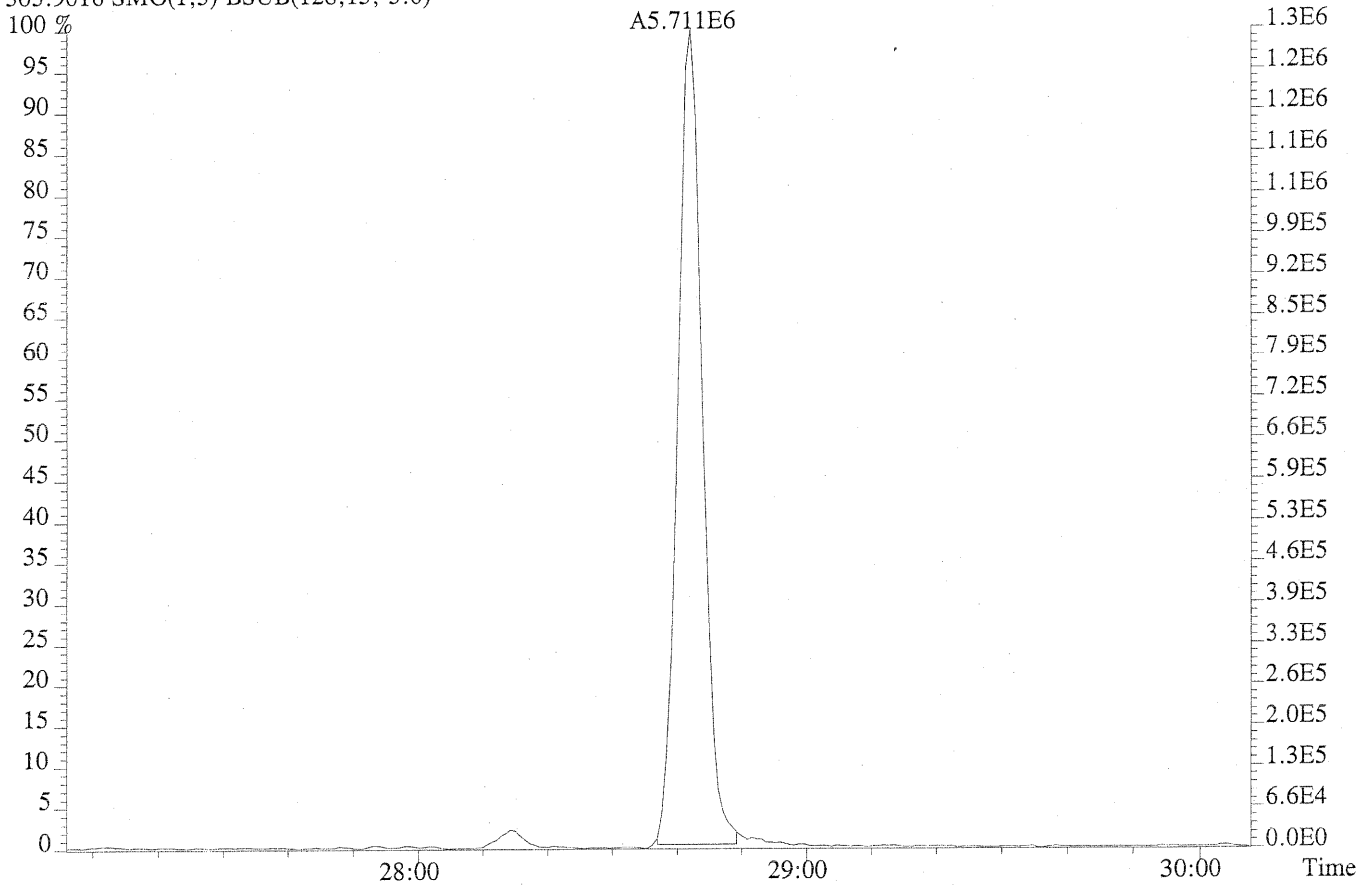
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



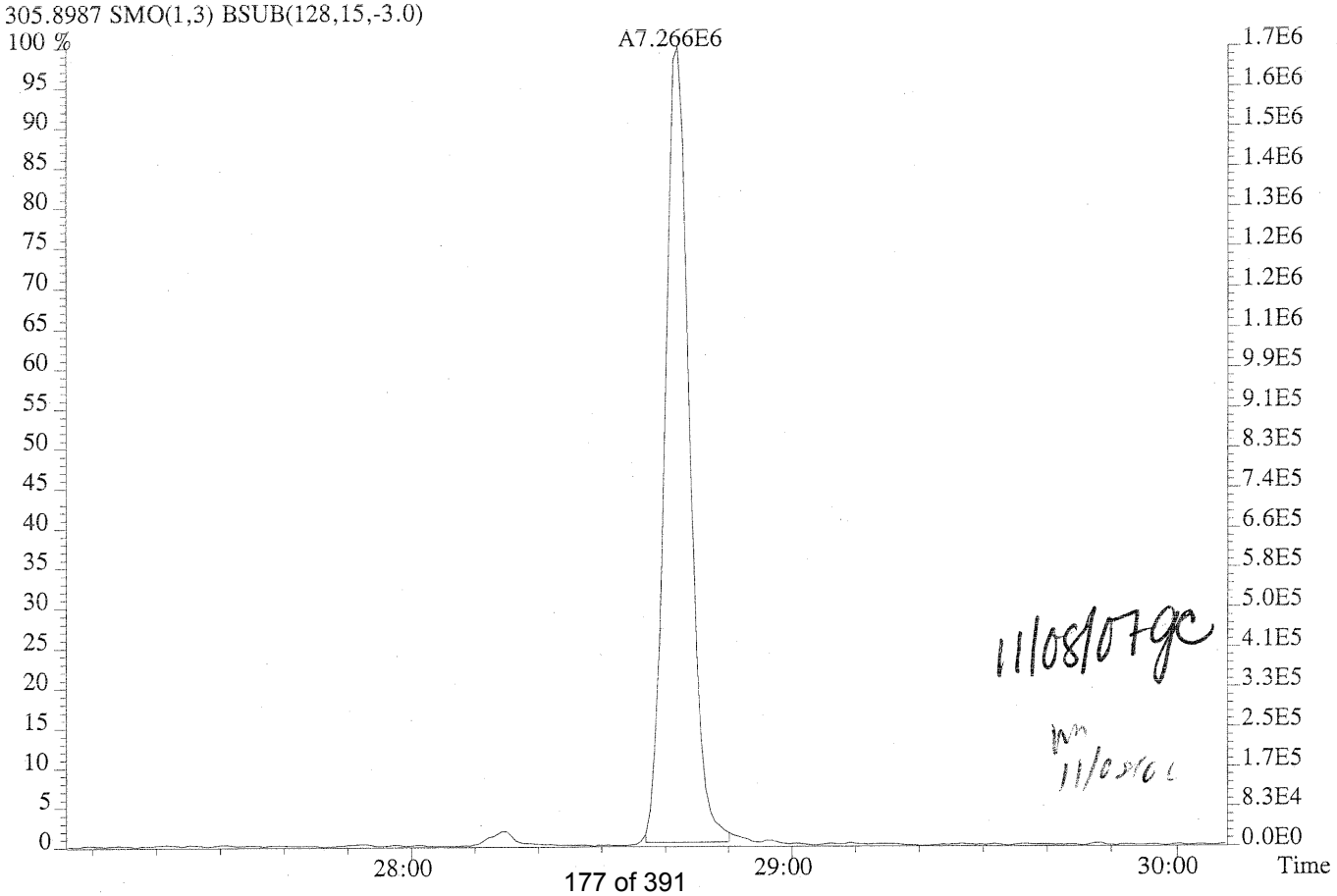
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



File:C15063 #1-521 Acq: 7-NOV-2007 17:46:12 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA
303.9016 SMO(1,3) BSUB(128,15,-3.0)



305.8987 SMO(1,3) BSUB(128,15,-3.0)



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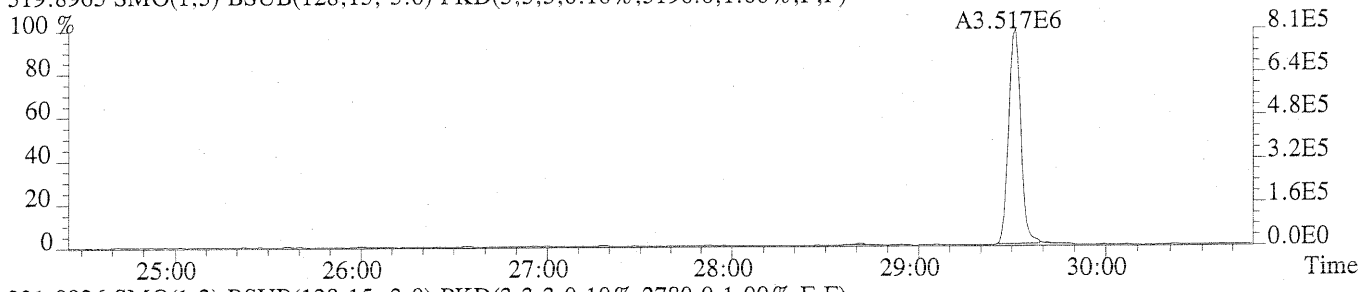
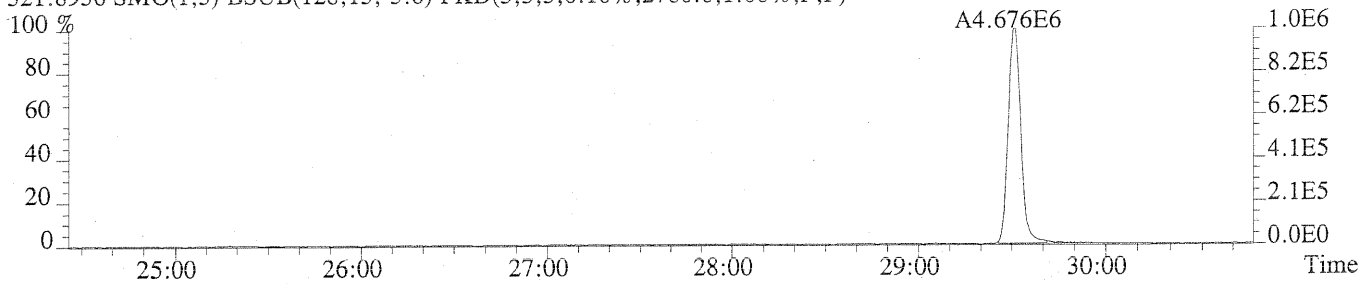
File:C15063 #1-521 Acq: 7-NOV-2007 17:46:12 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA

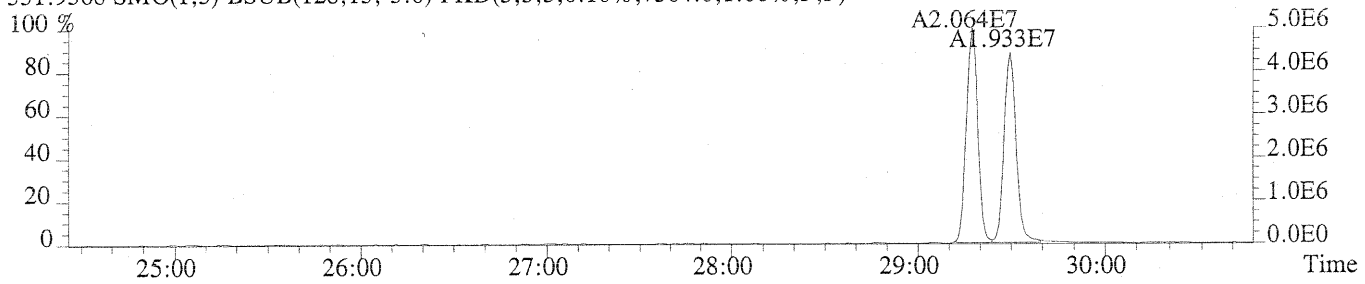
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3196.0,1.00%,F,F)



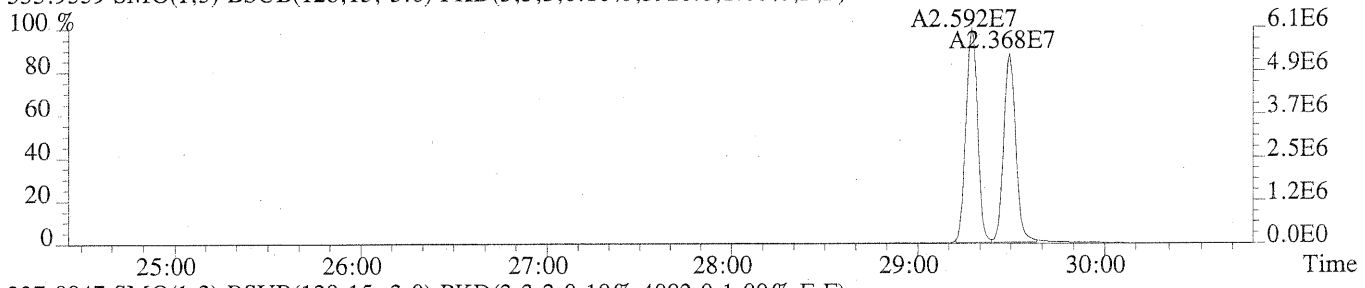
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2780.0,1.00%,F,F)



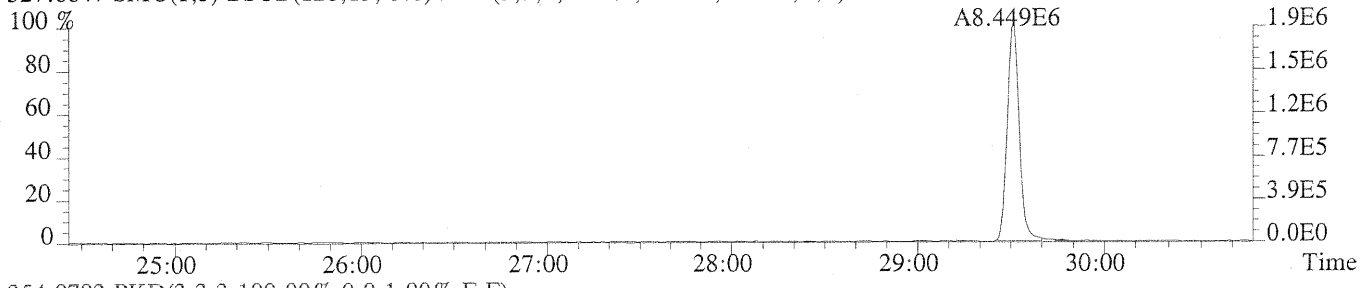
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,7304.0,1.00%,F,F)



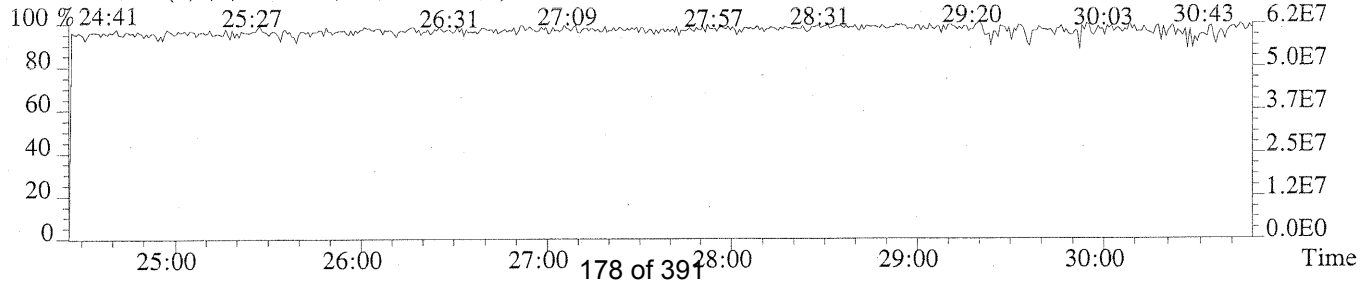
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3920.0,1.00%,F,F)



327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4092.0,1.00%,F,F)

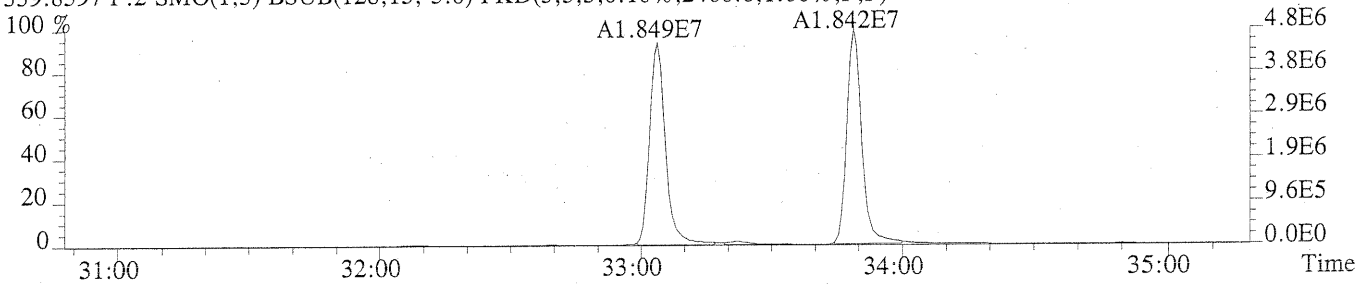


354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

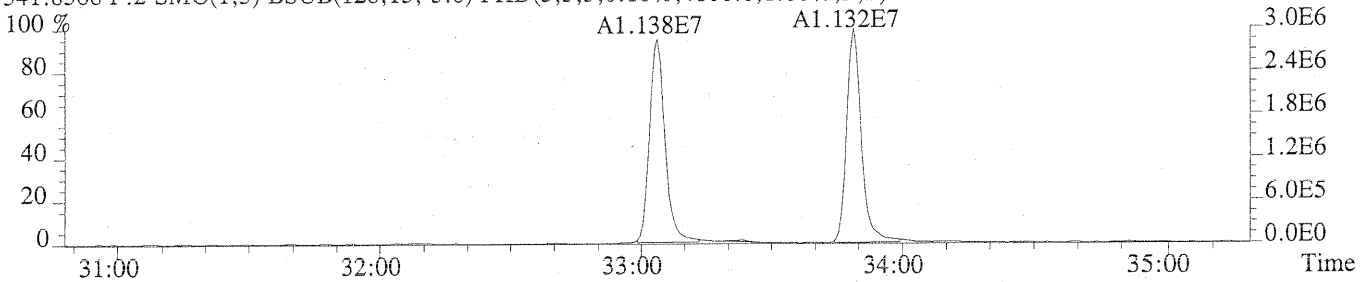


File:C15063 #1-404 Acq: 7-NOV-2007 17:46:12 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA

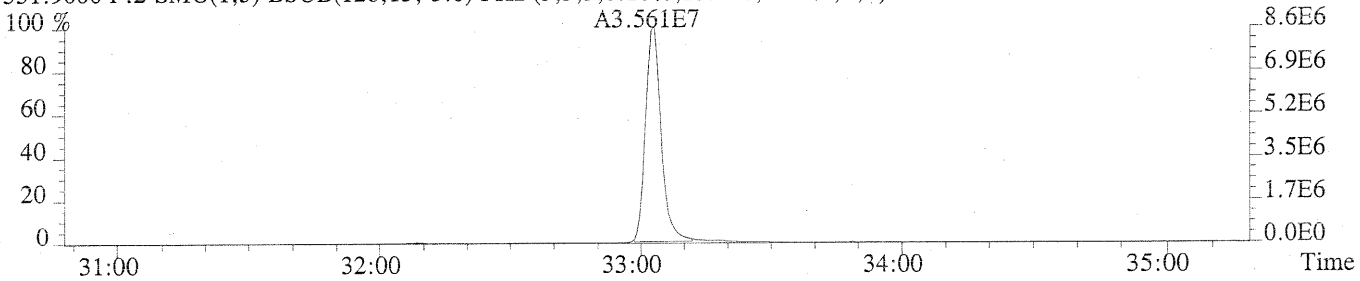
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2460.0,1.00%,F,F)



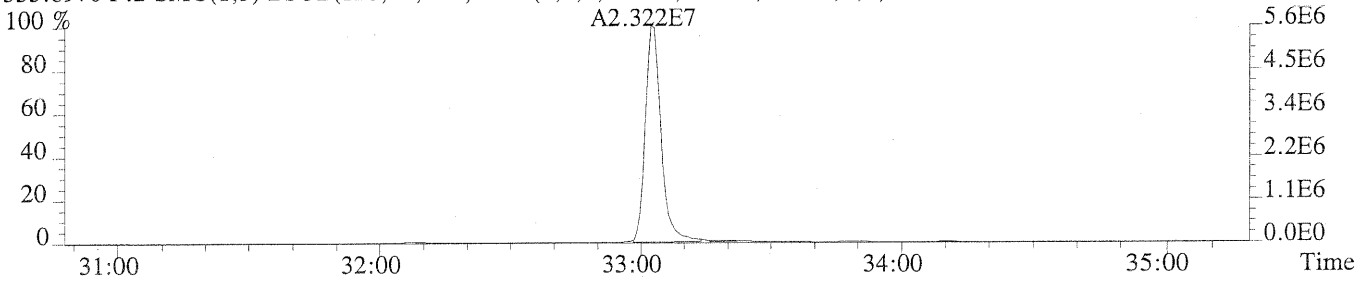
341.8568 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4800.0,1.00%,F,F)



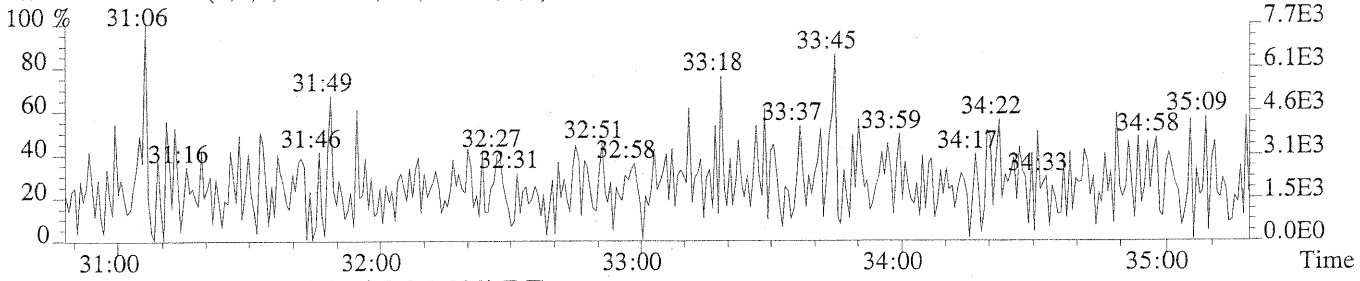
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2352.0,1.00%,F,F)



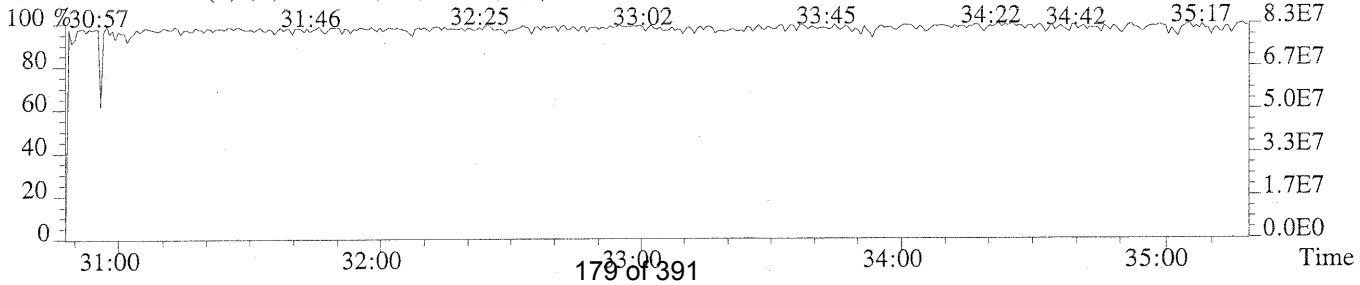
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3052.0,1.00%,F,F)



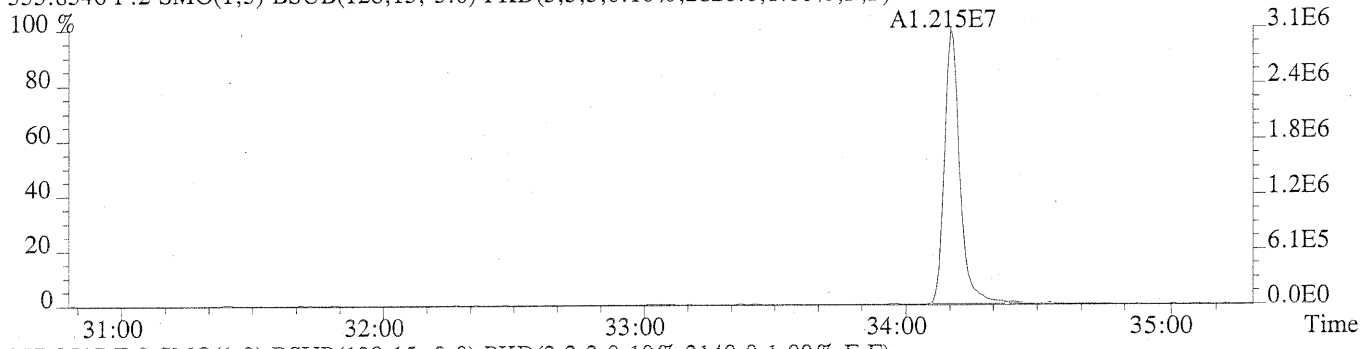
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



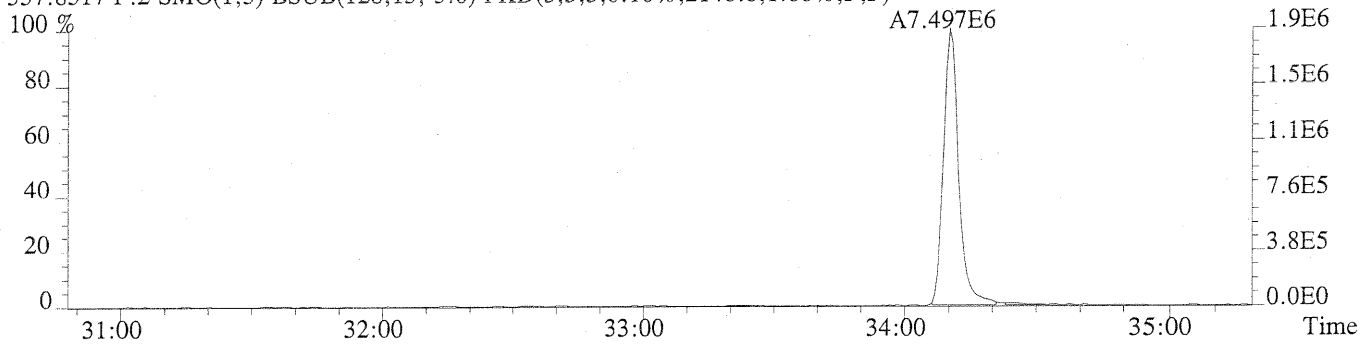
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



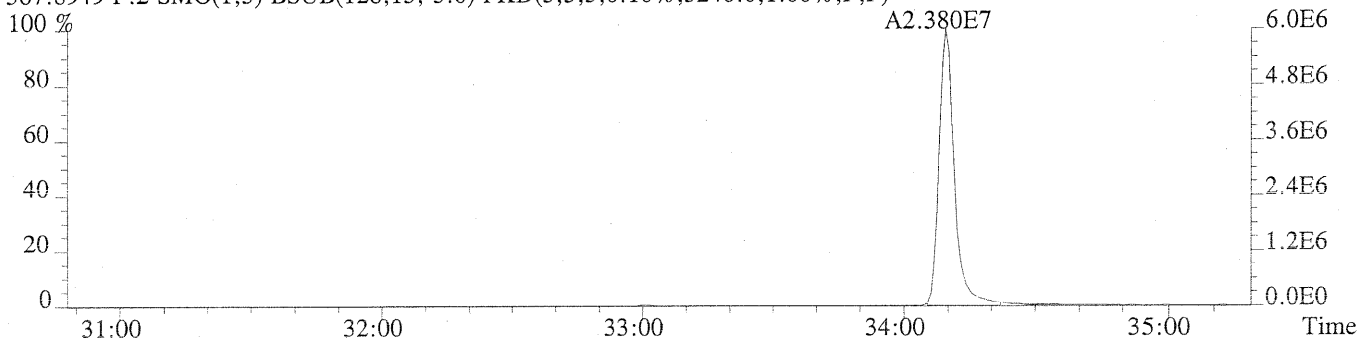
File:C15063 #1-404 Acq: 7-NOV-2007 17:46:12 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2820.0,1.00%,F,F)



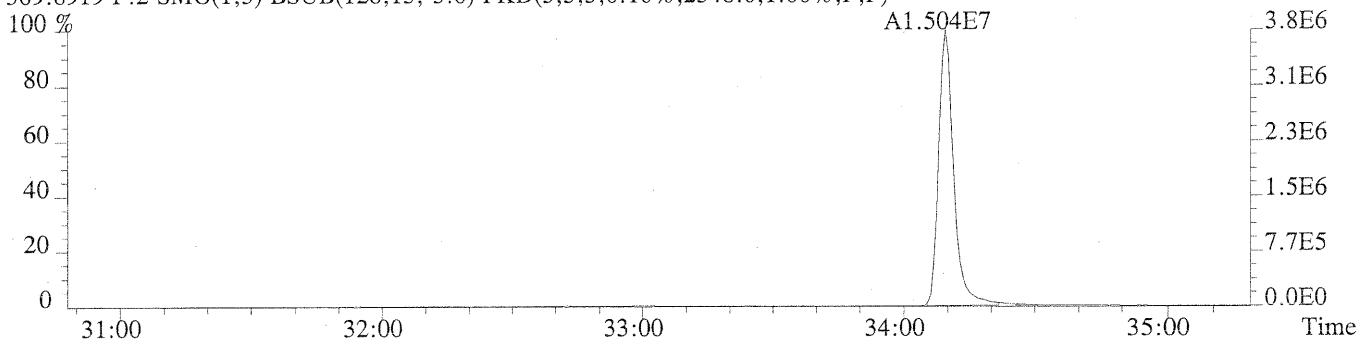
357.8517 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2140.0,1.00%,F,F)



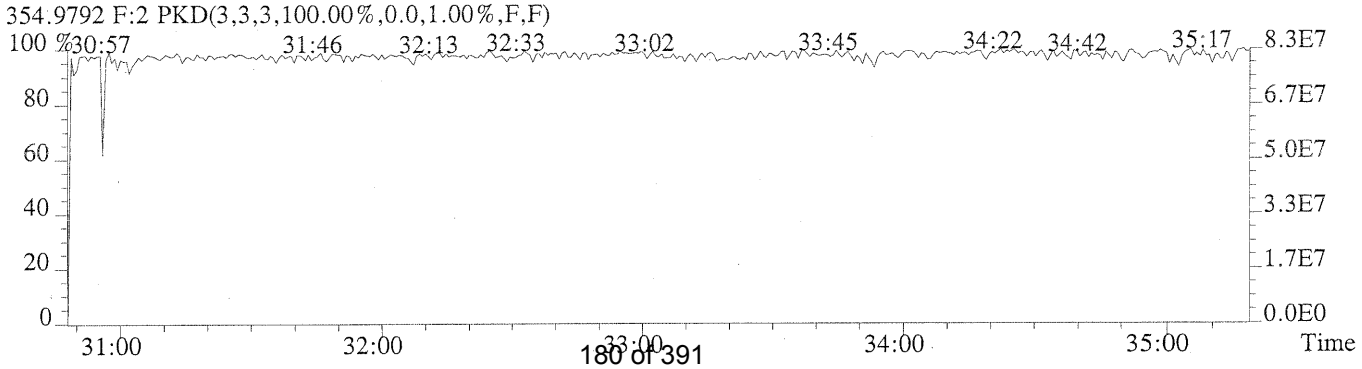
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3240.0,1.00%,F,F)



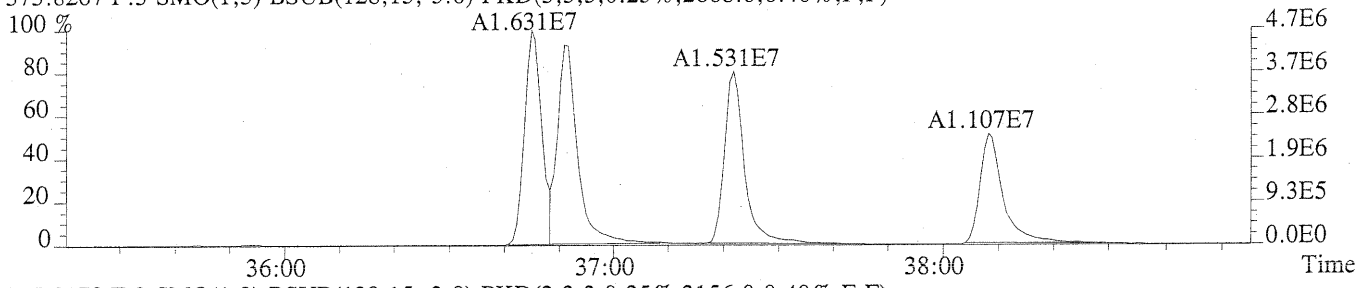
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2348.0,1.00%,F,F)



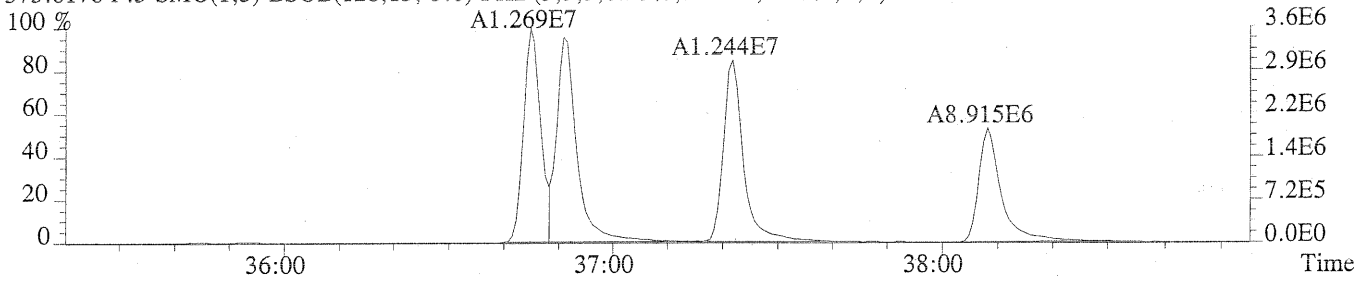
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



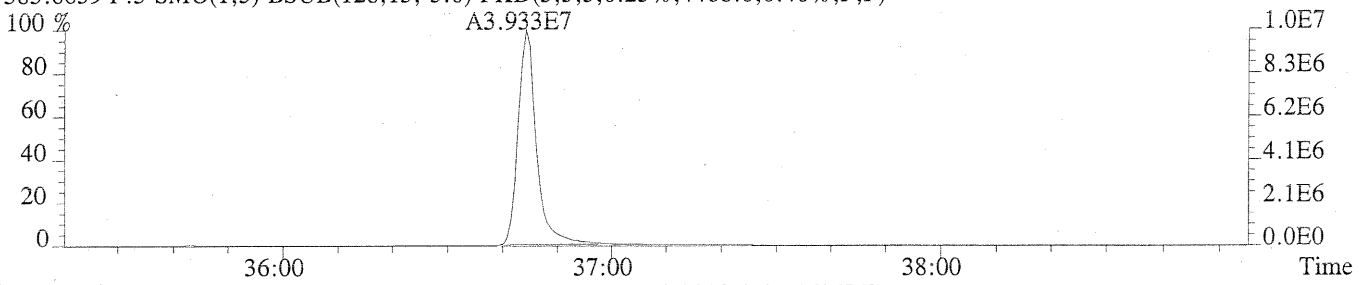
File:C15063 #1-321 Acq: 7-NOV-2007 17:46:12 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA
373.8207 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2668.0,0.40%,F,F)



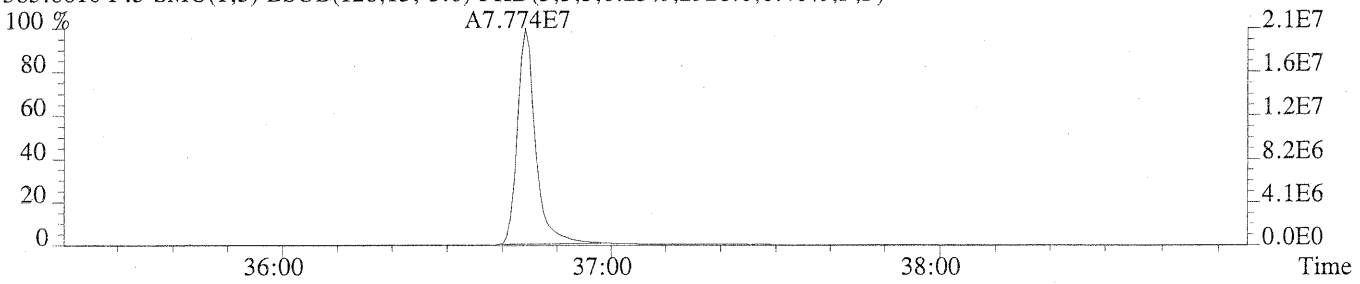
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3156.0,0.40%,F,F)



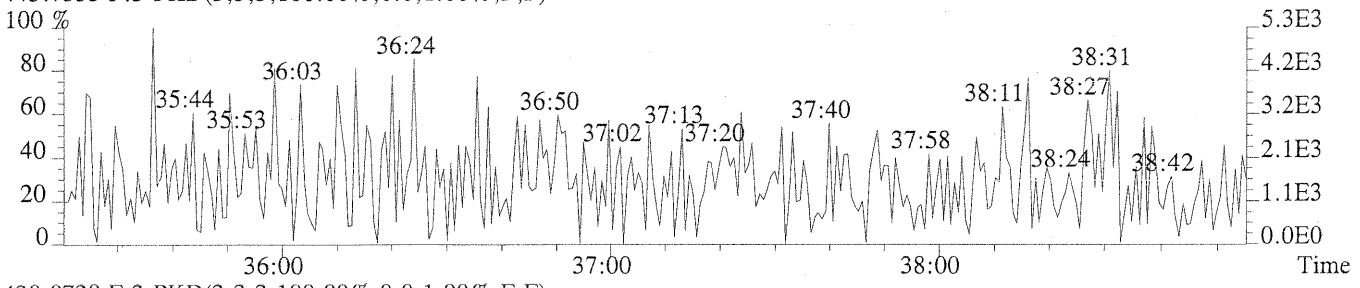
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4488.0,0.40%,F,F)



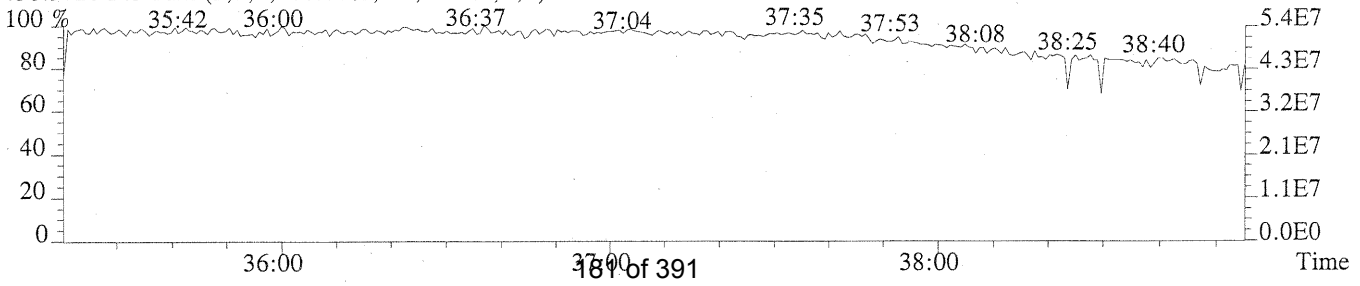
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2928.0,0.40%,F,F)



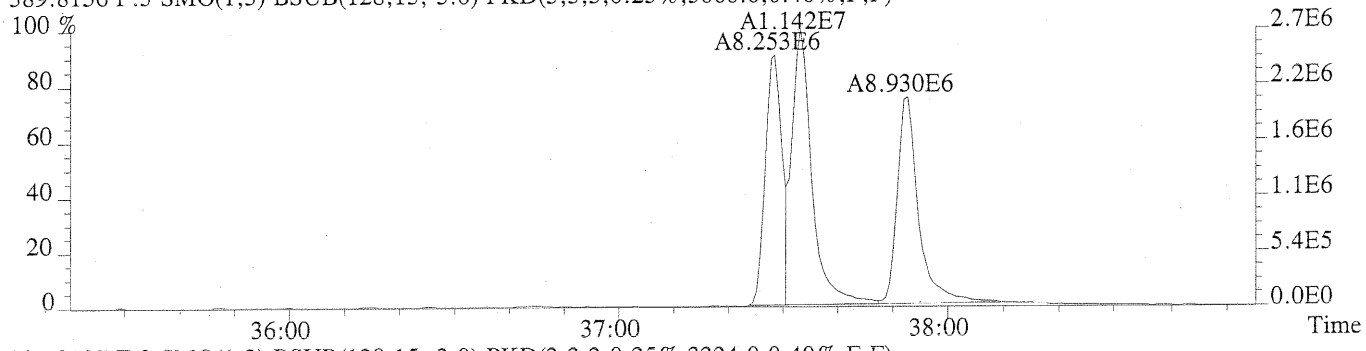
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



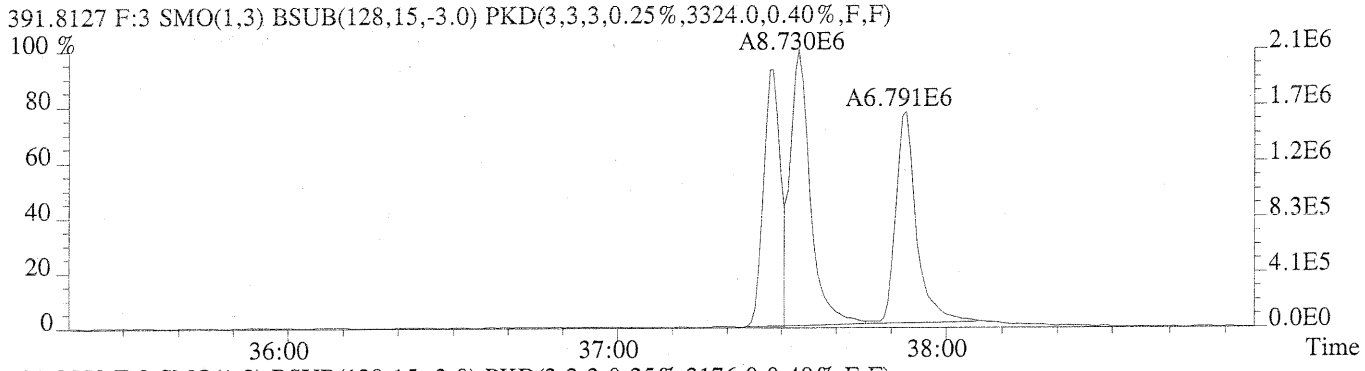
430.9728 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



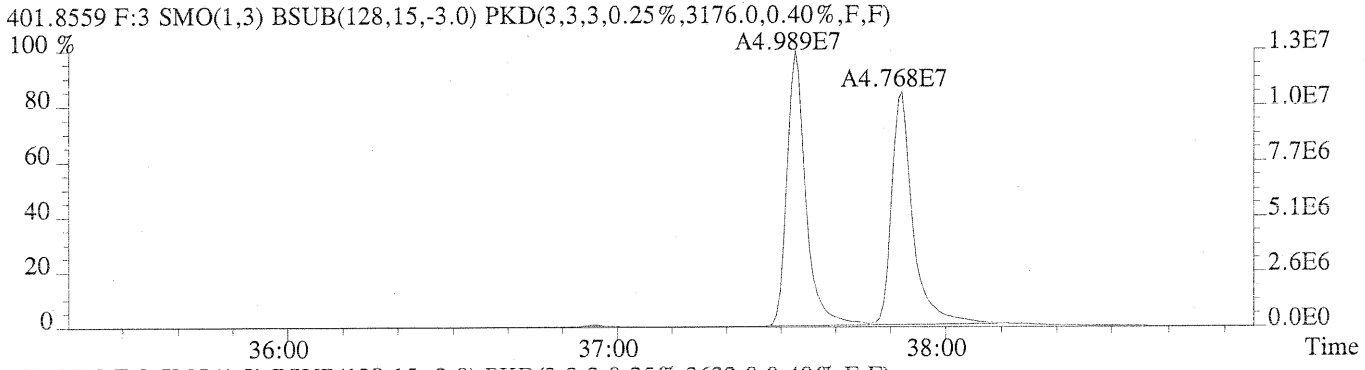
File:C15063 #1-321 Acq: 7-NOV-2007 17:46:12 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA
389.8156 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3060.0,0.40%,F,F)



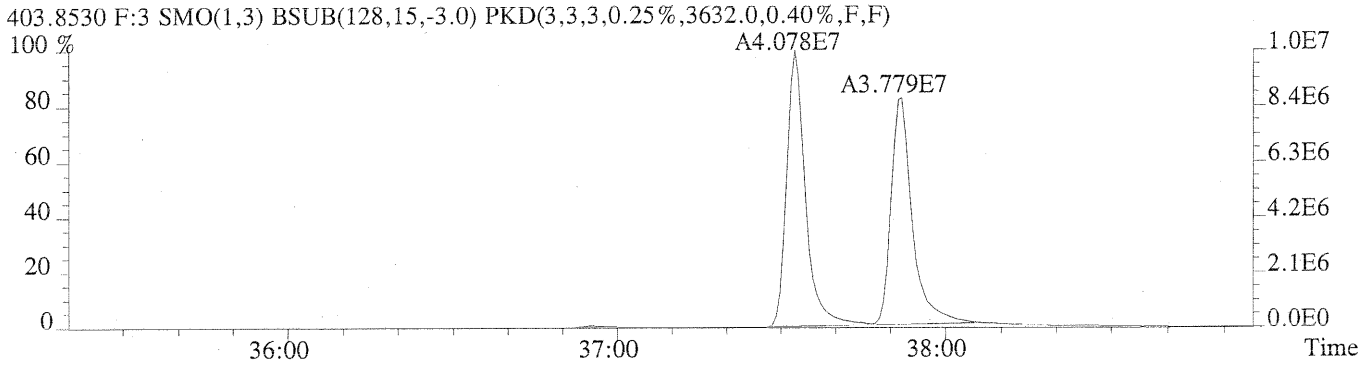
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3324.0,0.40%,F,F)



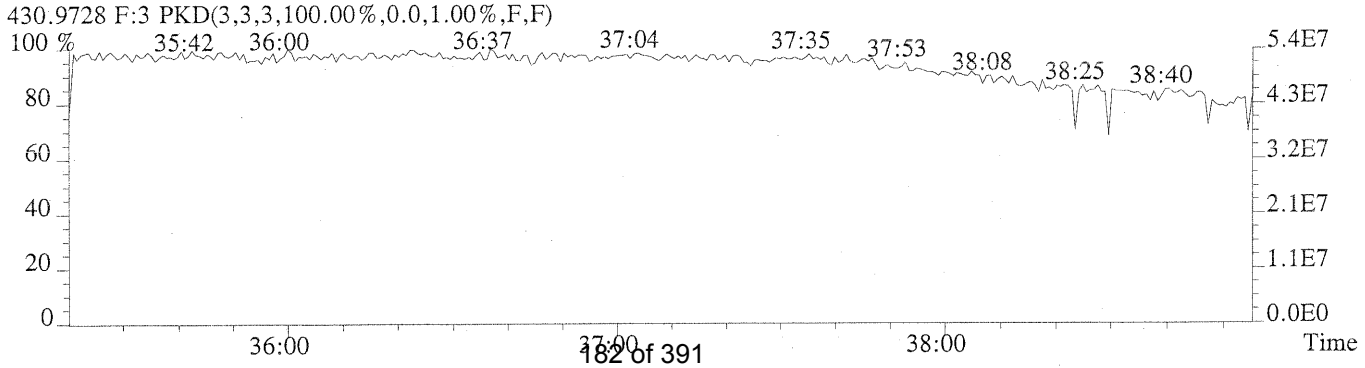
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3176.0,0.40%,F,F)



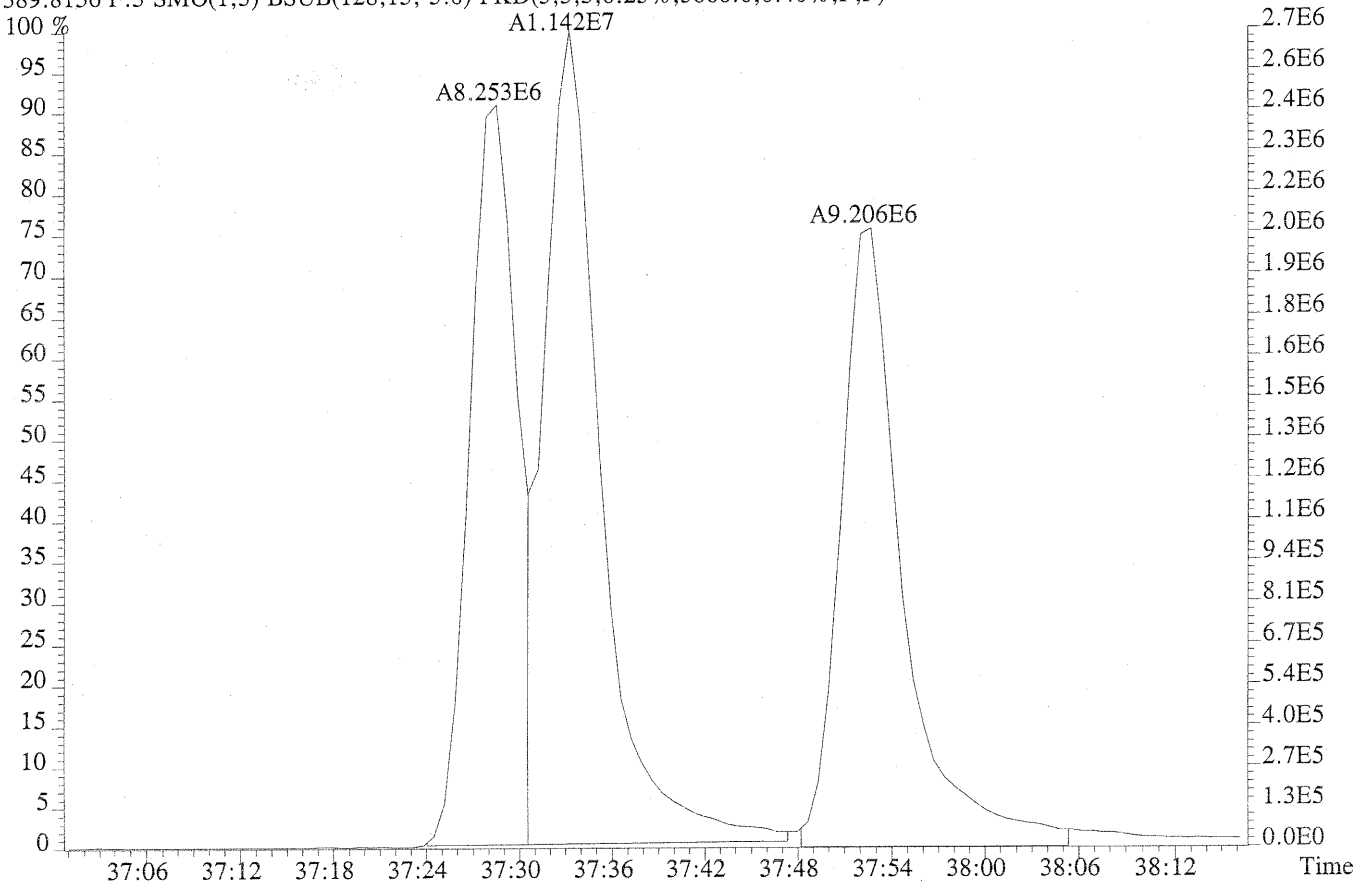
403.8530 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3632.0,0.40%,F,F)



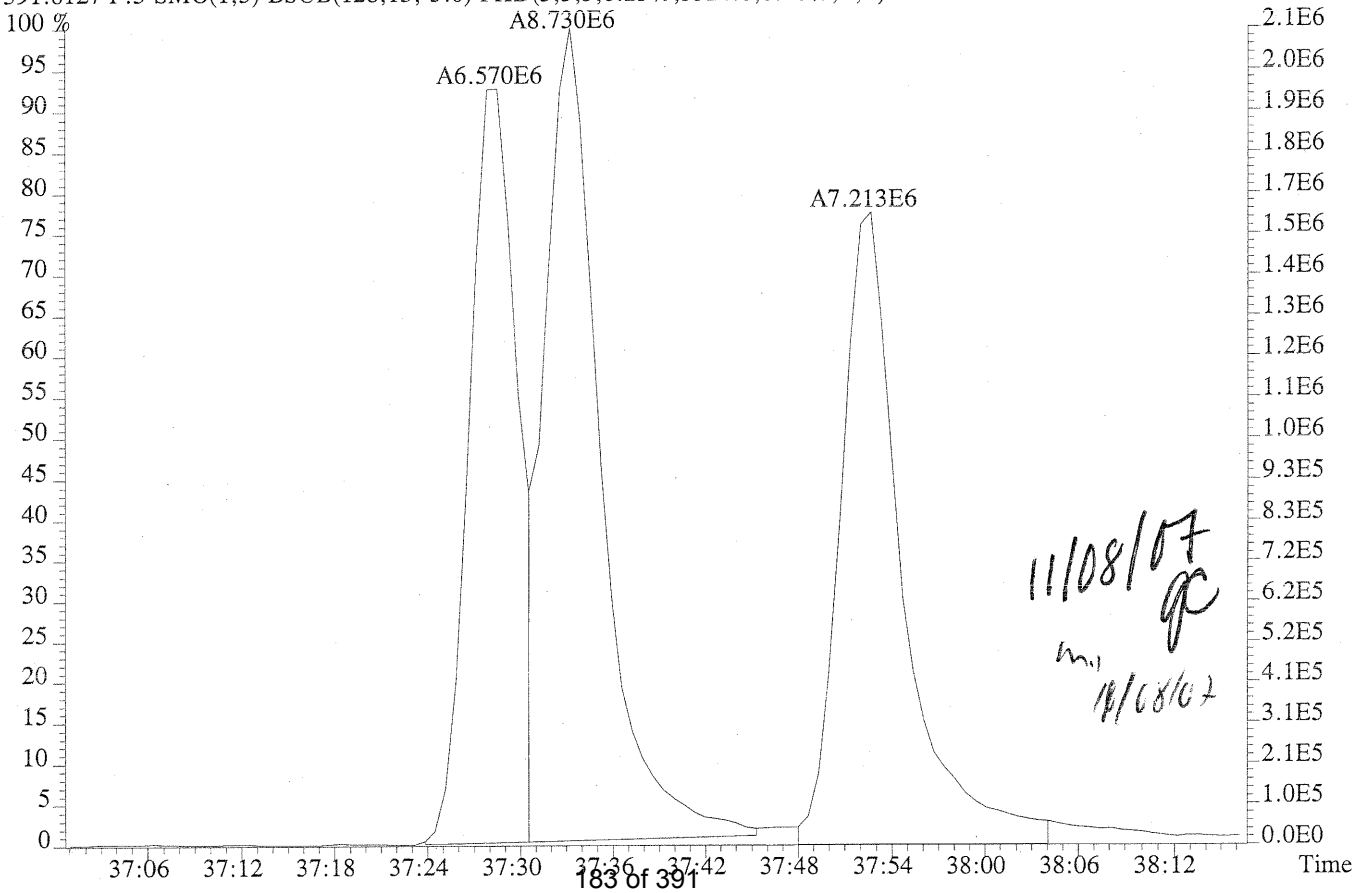
430.9728 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



File:C15063 #1-321 Acq: 7-NOV-2007 17:46:12 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA
389.8156 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3060.0,0.40%,F,F)



391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3324.0,0.40%,F,F)



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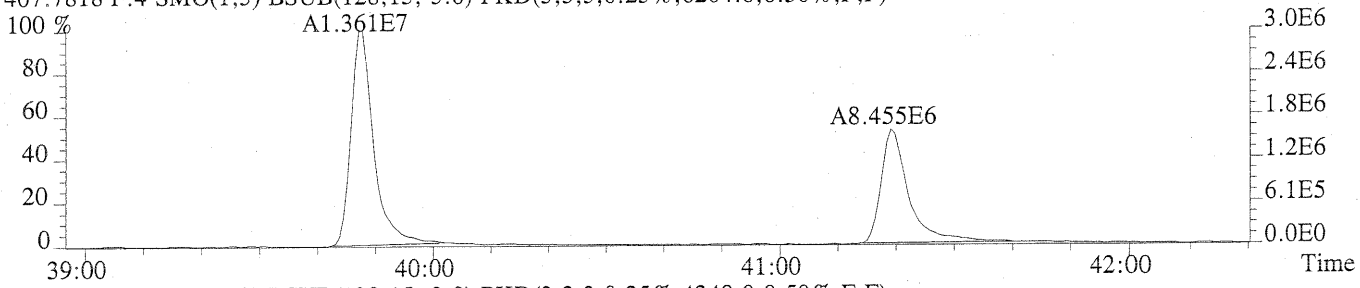
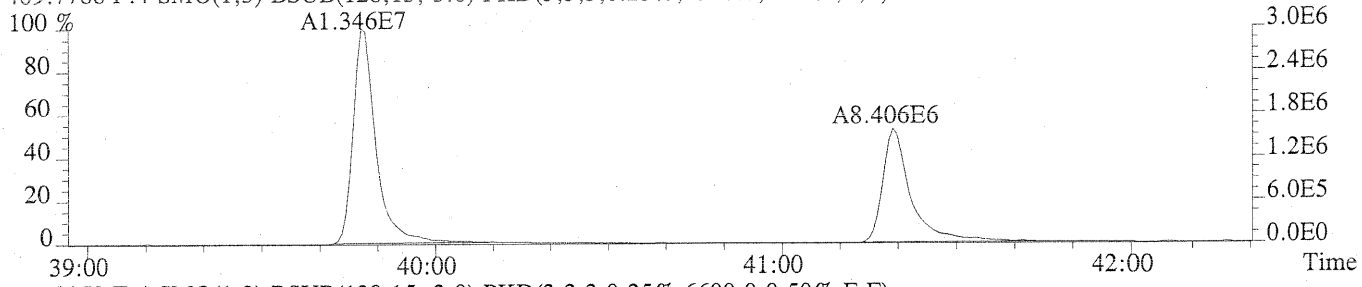
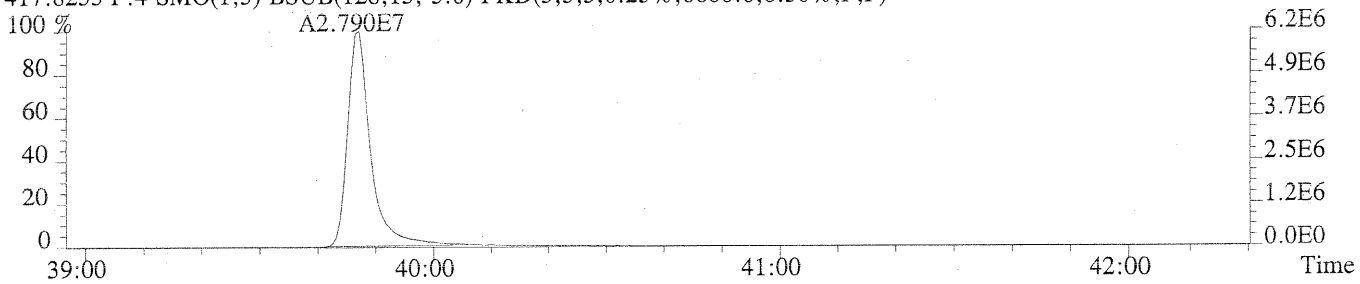
File:C15063 #1-304 Acq: 7-NOV-2007 17:46:12 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,6204.0,0.50%,F,F)



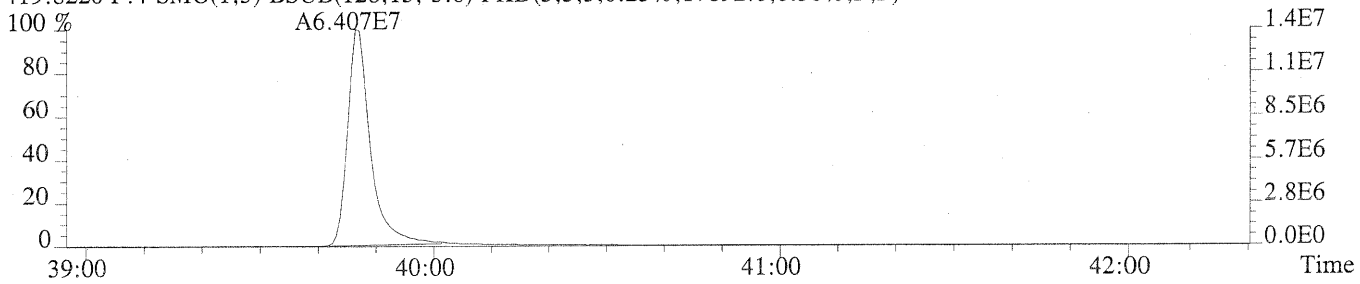
409.7788 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4348.0,0.50%,F,F)



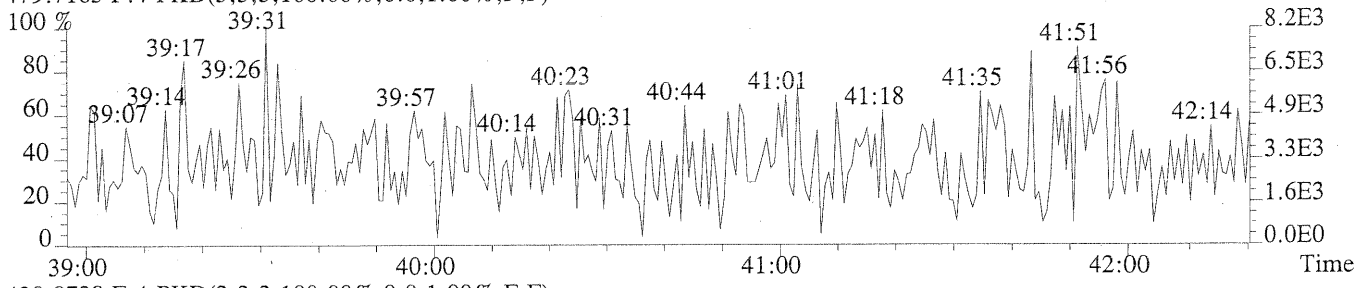
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,6600.0,0.50%,F,F)



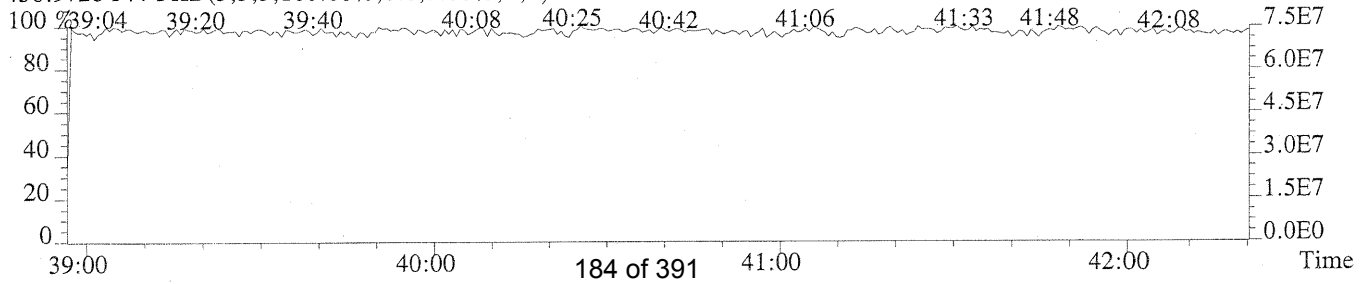
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,17892.0,0.50%,F,F)



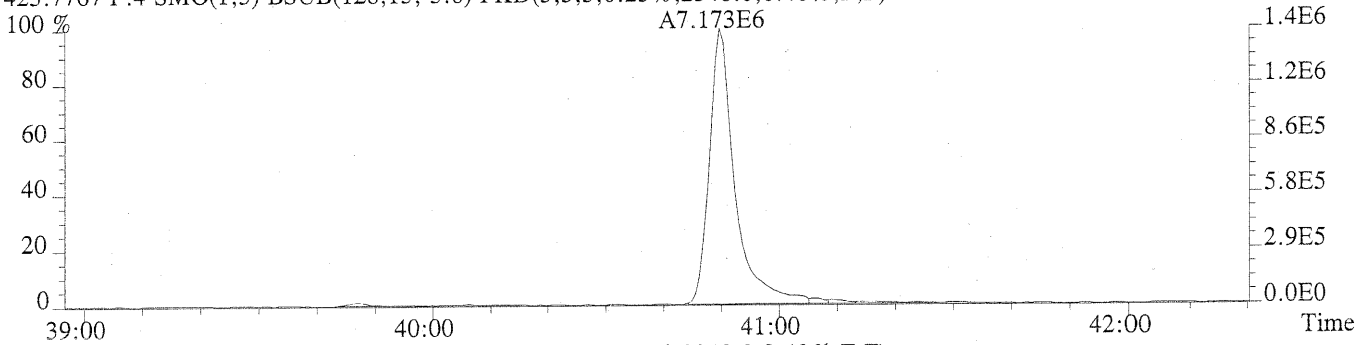
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



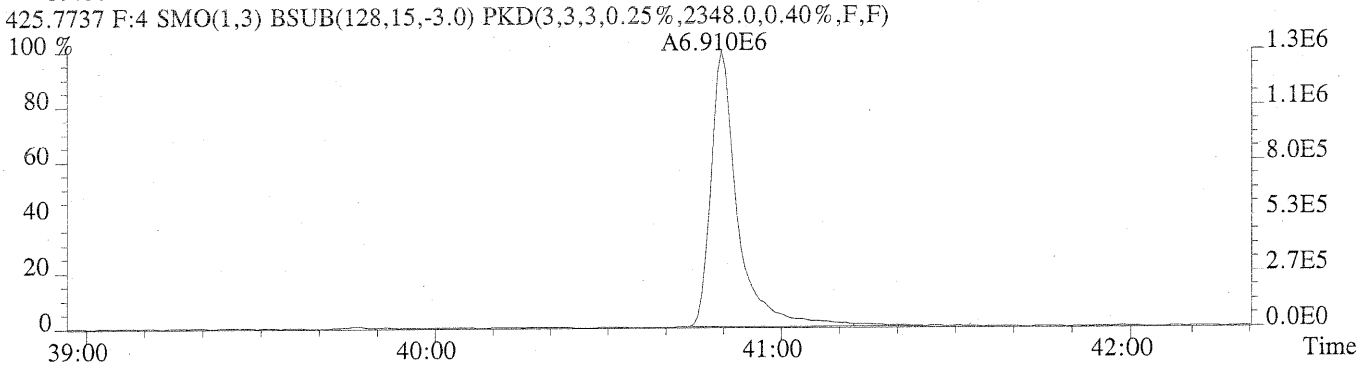
430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



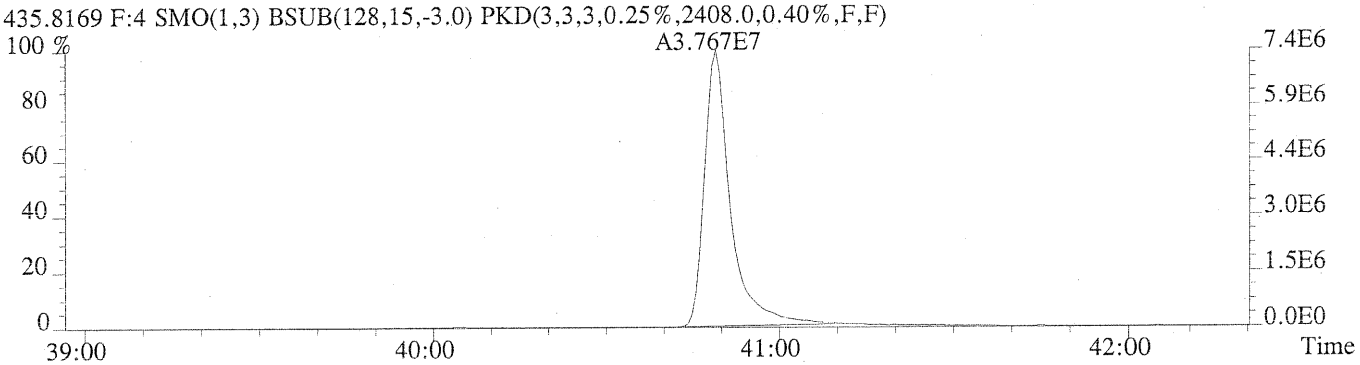
File:C15063 #1-304 Acq: 7-NOV-2007 17:46:12 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA
423.7767 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2548.0,0.40%,F,F)



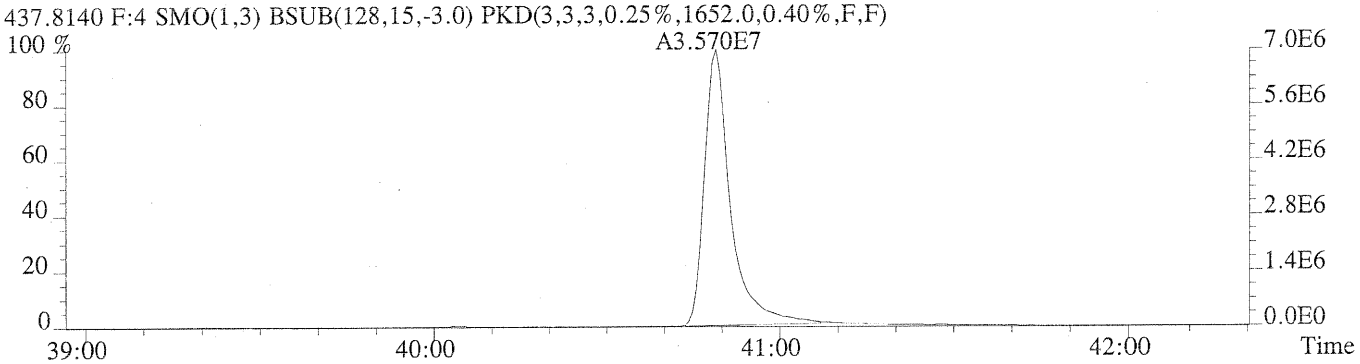
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2348.0,0.40%,F,F)



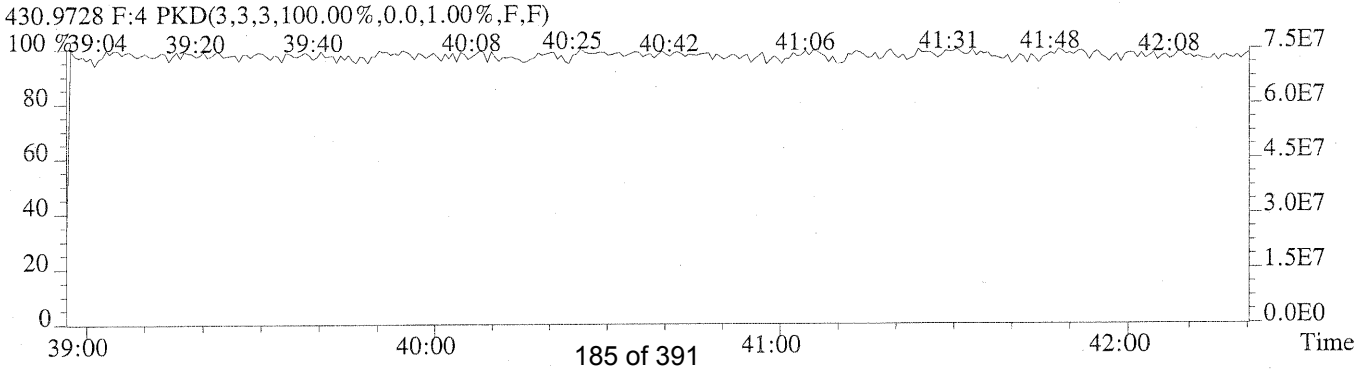
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2408.0,0.40%,F,F)



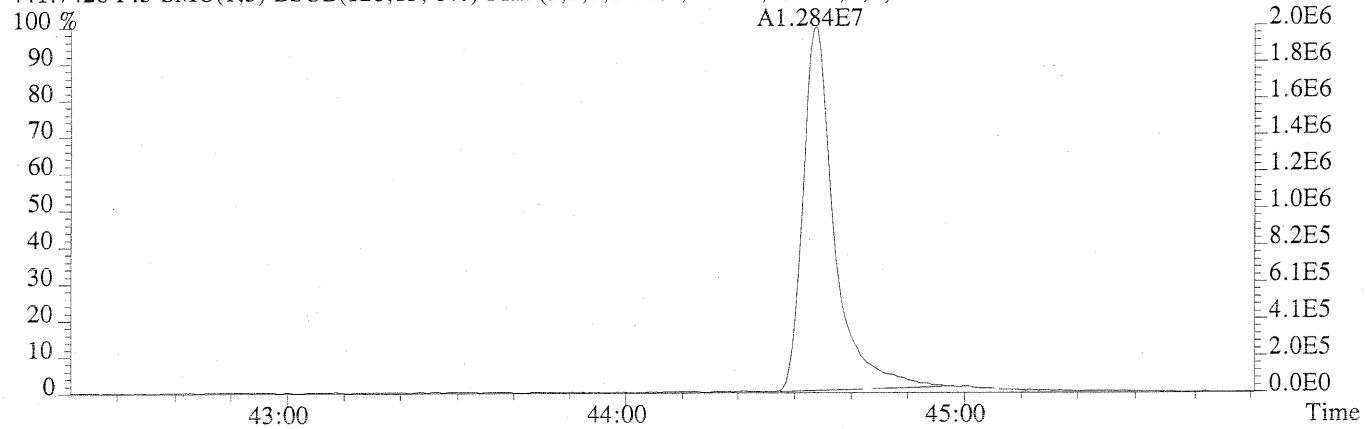
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1652.0,0.40%,F,F)



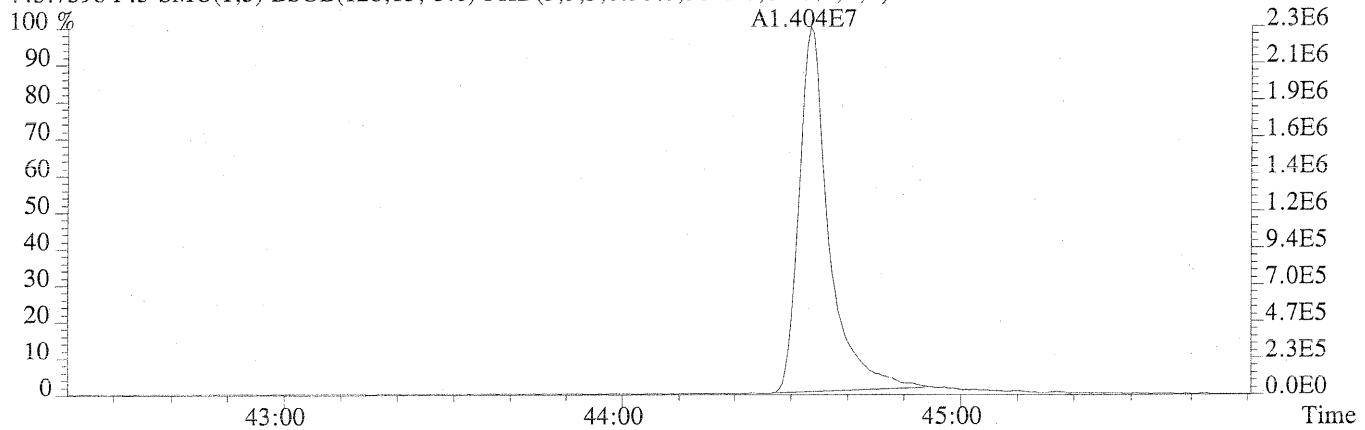
430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



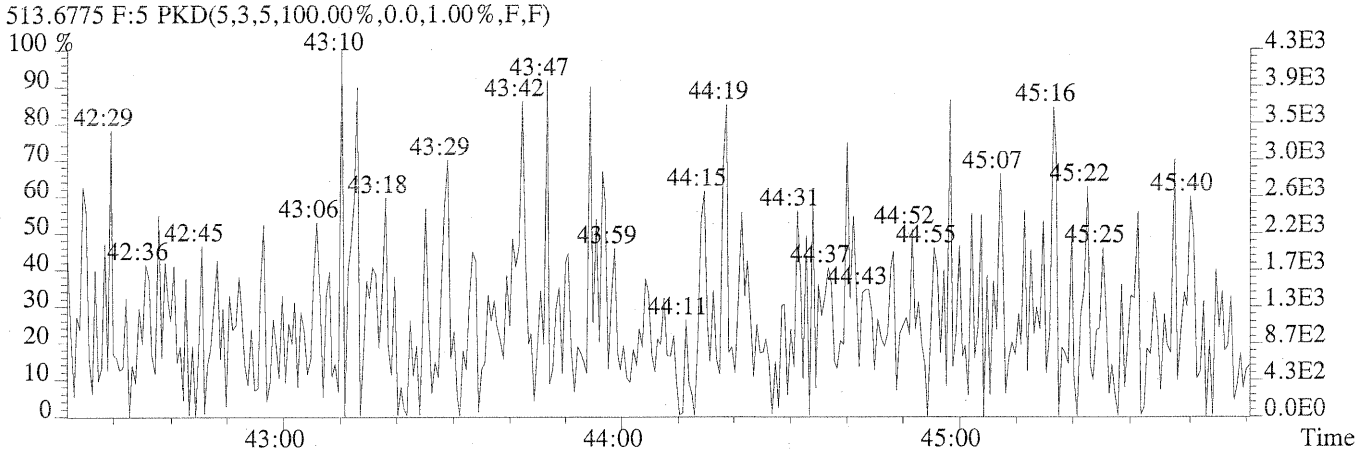
File:C15063 #1-380 Acq: 7-NOV-2007 17:46:12 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3008.0,0.40%,F,F)



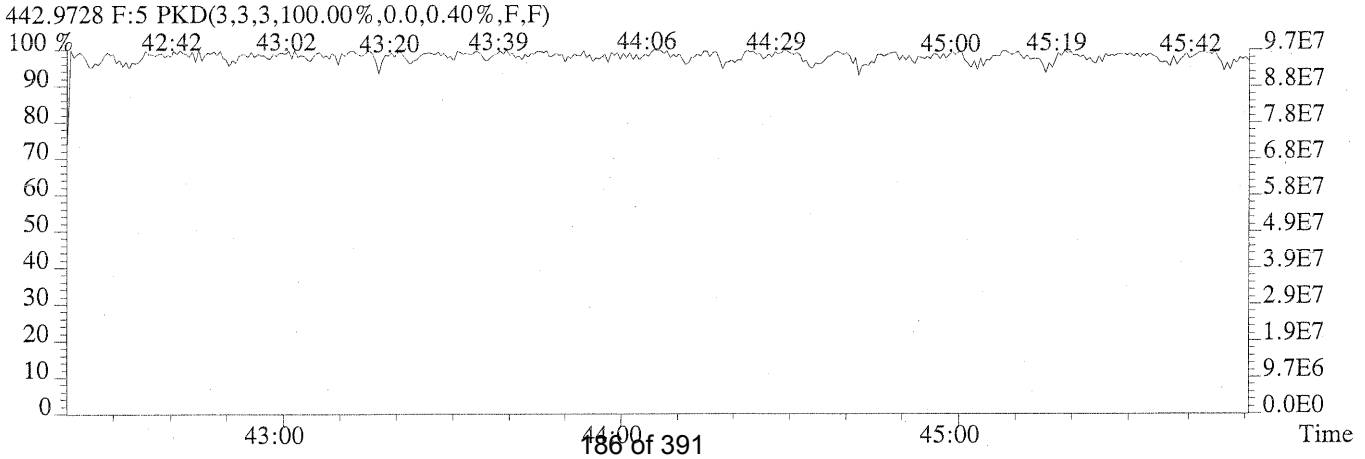
443.7398 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3640.0,0.40%,F,F)



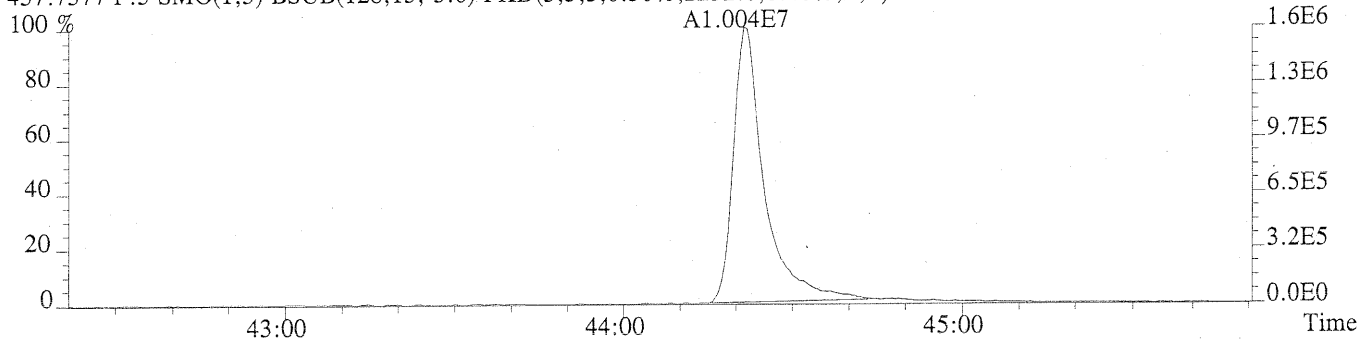
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



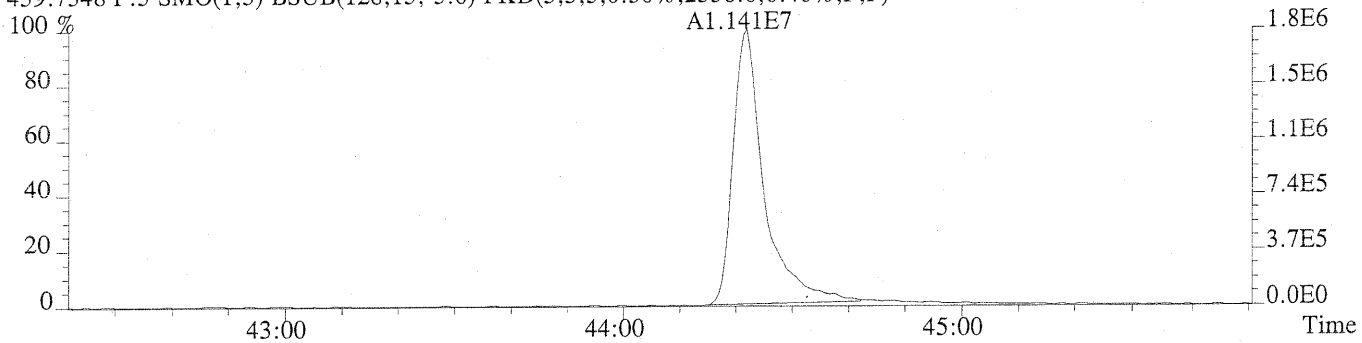
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



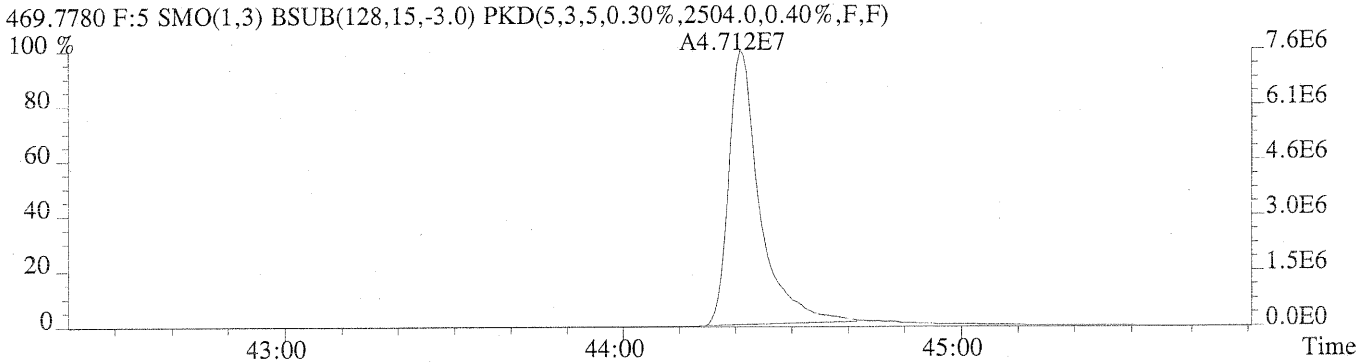
File:C15063 #1-380 Acq: 7-NOV-2007 17:46:12 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2232.0,0.40%,F,F)



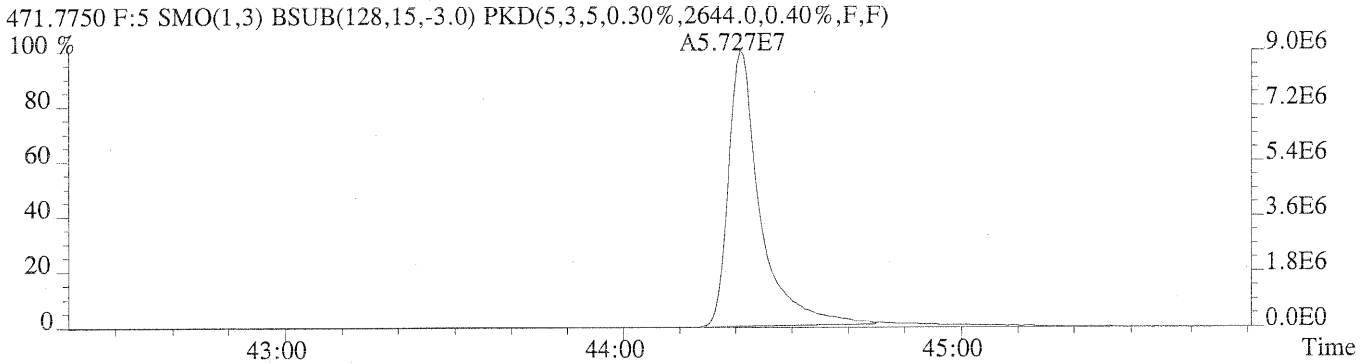
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2336.0,0.40%,F,F)



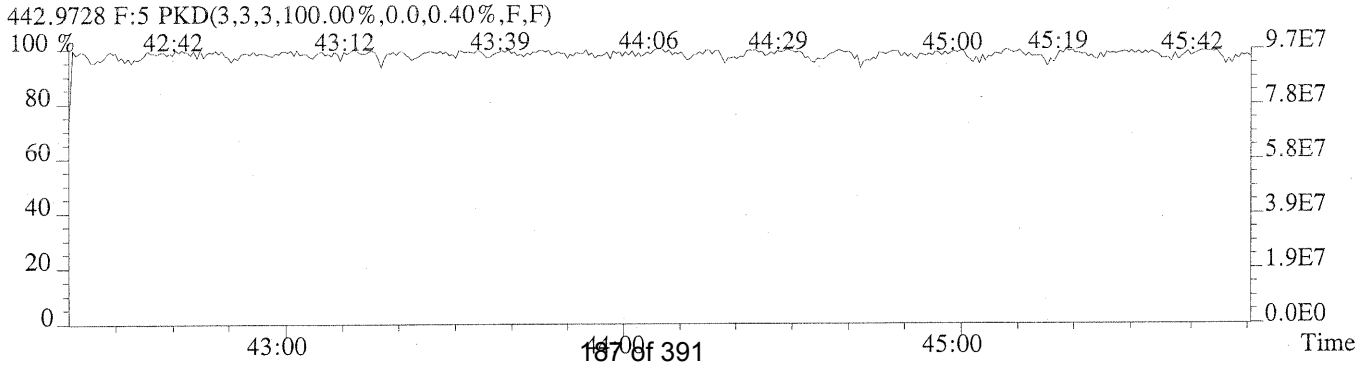
469.7780 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2504.0,0.40%,F,F)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2644.0,0.40%,F,F)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Columbia Analytical Services Episode No.:

Contract No.: SDG No.:

Initial Calibration Date: 07/12/04

Instrument ID: 70S GC Column ID: DB-5

VER Data Filename: C15065#14 Analysis Date: 8-NOV-07 Time: 05:42:46

	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CCAL. RRF	MEAN RRF	%D (3)
NATIVE ANALYTES						
2,3,7,8-TCDD	M/M+2	0.79	0.65-0.89	1.00	0.95	5.51
1,2,3,7,8-PeCDD	M+2/M+4	1.59	1.32-1.78	0.96	0.97	-1.53
1,2,3,4,7,8-HxCDD	M+2/M+4	1.23	1.05-1.43	0.88	0.95	-7.73
1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	1.13	1.13	0.12
1,2,3,7,8,9-HxCDD	M+2/M+4	1.28	1.05-1.43	0.99	1.12	-11.70
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.03	0.88-1.20	0.94	0.97	-3.13
OCDD	M+2/M+4	0.86	0.76-1.02	1.00	1.04	-3.36
2,3,7,8-TCDF	M/M+2	0.78	0.65-0.89	1.04	0.91	15.19
1,2,3,7,8-PeCDF	M+2/M+4	1.59	1.32-1.78	1.01	0.89	13.28
2,3,4,7,8-PeCDF	M+2/M+4	1.58	1.32-1.78	1.04	0.91	13.49
1,2,3,4,7,8-HxCDF	M+2/M+4	1.23	1.05-1.43	1.27	1.23	3.11
1,2,3,6,7,8-HxCDF	M+2/M+4	1.26	1.05-1.43	1.32	1.24	6.55
1,2,3,7,8,9-HxCDF	M+2/M+4	1.27	1.05-1.43	1.03	1.02	1.13
2,3,4,6,7,8-HxCDF	M+2/M+4	1.26	1.05-1.43	1.20	1.13	6.13
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.04	0.88-1.20	1.43	1.41	1.49
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.03	0.88-1.20	1.04	1.04	0.18
OCDF	M+2/M+4	0.89	0.76-1.02	1.23	1.30	-5.57

(1) See Table 6, Method 8290, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 8, Method 8290.

(3) The beginning CCAL %RSD for the 17 unlabeled standard must not exceed +/- 20%, Section 7.7.4.1. The ending CCAL must not exceed +/-25%. Section 8.3.2.4.

8290F4A

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Columbia Analytical Services Episode No.:

Contract No.: SDG No.:

Initial Calibration Date: 07/12/04

Instrument ID: 70S GC Column ID: DB-5

VER Data Filename: C15065#14 Analysis Date: 8-NOV-07 Time: 05:42:46

	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CCAL. RRF	MEAN RRF	%D (3)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	M/M+2	0.78	0.65-0.89	0.98	1.06	-7.52
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.53	1.32-1.78	0.95	0.74	27.69
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.23	1.05-1.43	1.00	0.96	4.39
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.05	0.88-1.20	0.92	0.80	15.12
13C-OCDD	M+2/M+4	0.86	0.76-1.02	0.70	0.65	7.47
13C-2,3,7,8-TCDF	M/M+2	0.77	0.65-0.89	1.39	1.45	-4.71
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.55	1.32-1.78	1.34	1.16	15.59
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.49	0.43-0.59	1.20	1.28	-6.25
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.44	0.37-0.51	1.05	0.96	10.11
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD				0.96	0.98	-1.57

(1) See Table 6, Method 8290, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 8, Method 8290.

(3) The beginning CCAL %RSD for the labeled standard must not exceed +/- 30%, Section 7.7.4.2. The ending CCAL must not exceed +/- 35%, Section 8.3.2.4.

8290F4B

Columbia Analytical Services, Inc.
Sample Response Summary

CLIENT ID.
CCAL HRCC3 .

Run #12 Filename C15065 Samp: 14 Inj: 1 Acquired: 8-NOV-07 05:42:46
Processed: 8-NOV-07 11:11:47 LAB. ID: CCAL HRCC3

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	28:42	6.312e+06	8.132e+06	0.78	yes	no
2	Unk	1,2,3,7,8-PeCDF	33:04	2.067e+07	1.298e+07	1.59	yes	no
3	Unk	2,3,4,7,8-PeCDF	33:49	2.121e+07	1.339e+07	1.58	yes	no
4	Unk	1,2,3,4,7,8-HxCDF	36:45	1.905e+07	1.550e+07	1.23	yes	no
5	Unk	1,2,3,6,7,8-HxCDF	36:52	2.008e+07	1.592e+07	1.26	yes	no
6	Unk	2,3,4,6,7,8-HxCDF	37:22	1.825e+07	1.446e+07	1.26	yes	no
7	Unk	1,2,3,7,8,9-HxCDF	38:08	1.564e+07	1.234e+07	1.27	yes	no
8	Unk	1,2,3,4,6,7,8-HpCDF	39:48	1.742e+07	1.676e+07	1.04	yes	no
9	Unk	1,2,3,4,7,8,9-HpCDF	41:20	1.257e+07	1.223e+07	1.03	yes	no
10	Unk	OCDF	44:34	1.836e+07	2.062e+07	0.89	yes	no
11	Unk	2,3,7,8-TCDD	29:31	4.305e+06	5.478e+06	0.79	yes	no
12	Unk	1,2,3,7,8-PeCDD	34:10	1.394e+07	8.762e+06	1.59	yes	no
13	Unk	1,2,3,4,7,8-HxCDD	37:29	1.096e+07	8.926e+06	1.23	yes	no
14	Unk	1,2,3,6,7,8-HxCDD	37:33	1.429e+07	1.135e+07	1.26	yes	no
15	Unk	1,2,3,7,8,9-HxCDD	37:53	1.260e+07	9.810e+06	1.28	yes	no
16	Unk	1,2,3,4,6,7,8-HpCDD	40:50	9.979e+06	9.717e+06	1.03	yes	no
17	Unk	OCDD	44:22	1.472e+07	1.712e+07	0.86	yes	no
18	IS	13C-2,3,7,8-TCDF	28:42	3.009e+07	3.906e+07	0.77	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	33:03	4.059e+07	2.620e+07	1.55	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	36:44	4.483e+07	9.123e+07	0.49	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	39:47	3.653e+07	8.298e+07	0.44	yes	no
22	IS	13C-2,3,7,8-TCDD	29:30	2.144e+07	2.759e+07	0.78	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	34:10	2.871e+07	1.876e+07	1.53	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	37:33	6.240e+07	5.072e+07	1.23	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	40:49	5.359e+07	5.091e+07	1.05	yes	no
26	IS	13C-OCDD	44:21	7.344e+07	8.508e+07	0.86	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	29:18	2.201e+07	2.791e+07	0.79	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:52	6.236e+07	5.100e+07	1.22	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	29:31	9.634e+06				
					SUM AREA			
30	Tot	Total Tetra-Furans	28:42		1.444e+07	0.78	yes	
31	Tot	Total Tetra-Dioxins	29:31		9.783e+06	0.79	yes	
32	Tot	Total Penta-Furans	33:04		6.842e+07	1.59	yes	
33	Tot	Total Penta-Dioxins	34:10		2.270e+07	1.59	yes	
34	Tot	Total Hexa-Furans	36:45		1.313e+08	1.23	yes	
35	Tot	Total Hexa-Dioxins	37:29		6.793e+07	1.23	yes	
36	Tot	Total Hepta-Furans	39:48		5.898e+07	1.04	yes	
37	Tot	Total Hepta-Dioxins	40:50		1.970e+07	1.03	yes	

Columbia Analytical Services, Inc.
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Houston, TX 77042
Office(713)266-1599. Fax(713)266-0130

Columbia Analytical Services,Inc. CLIENT ID.
Signal/Noise Height Ratio Summary CCAL HRCC3 .

Run #12 Filename C15065 Samp: 14 Inj: 1 Acquired: 8-NOV-07 05:42:46

Processed: 8-NOV-07 11:11:47 LAB. ID: CCAL HRCC3

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	1.50e+06	1.03e+03	1.5e+03	1.92e+06	1.92e+03	1.0e+03
2	1,2,3,7,8-PeCDF	5.57e+06	1.46e+03	3.8e+03	3.50e+06	2.62e+03	1.3e+03
3	2,3,4,7,8-PeCDF	5.82e+06	1.46e+03	4.0e+03	3.71e+06	2.62e+03	1.4e+03
4	1,2,3,4,7,8-HxCDF	5.52e+06	1.95e+03	2.8e+03	4.47e+06	1.15e+03	3.9e+03
5	1,2,3,6,7,8-HxCDF	5.32e+06	1.95e+03	2.7e+03	4.18e+06	1.15e+03	3.6e+03
6	2,3,4,6,7,8-HxCDF	5.06e+06	1.95e+03	2.6e+03	4.02e+06	1.15e+03	3.5e+03
7	1,2,3,7,8,9-HxCDF	3.78e+06	1.95e+03	1.9e+03	3.00e+06	1.15e+03	2.6e+03
8	1,2,3,4,6,7,8-HpCDF	4.32e+06	2.97e+03	1.5e+03	4.06e+06	2.41e+03	1.7e+03
9	1,2,3,4,7,8,9-HpCDF	2.63e+06	2.97e+03	8.9e+02	2.55e+06	2.41e+03	1.1e+03
10	OCDF	3.37e+06	1.66e+03	2.0e+03	3.73e+06	1.75e+03	2.1e+03
11	2,3,7,8-TCDD	1.06e+06	1.13e+03	9.4e+02	1.35e+06	1.10e+03	1.2e+03
12	1,2,3,7,8-PeCDD	3.73e+06	1.47e+03	2.5e+03	2.37e+06	1.13e+03	2.1e+03
13	1,2,3,4,7,8-HxCDD	3.40e+06	1.76e+03	1.9e+03	2.73e+06	1.69e+03	1.6e+03
14	1,2,3,6,7,8-HxCDD	3.78e+06	1.76e+03	2.1e+03	3.02e+06	1.69e+03	1.8e+03
15	1,2,3,7,8,9-HxCDD	3.15e+06	1.76e+03	1.8e+03	2.46e+06	1.69e+03	1.5e+03
16	1,2,3,4,6,7,8-HpCDD	2.21e+06	2.06e+03	1.1e+03	2.18e+06	1.73e+03	1.3e+03
17	OCDD	2.71e+06	1.09e+03	2.5e+03	3.14e+06	1.31e+03	2.4e+03
18	13C-2,3,7,8-TCDF	6.93e+06	3.18e+03	2.2e+03	9.06e+06	2.60e+03	3.5e+03
19	13C-1,2,3,7,8-PeCDF	1.08e+07	8.80e+02	1.2e+04	6.97e+06	1.65e+03	4.2e+03
20	13C-1,2,3,4,7,8-HxCDF	1.25e+07	2.89e+03	4.3e+03	2.52e+07	1.42e+03	1.8e+04
21	13C-1,2,3,4,6,7,8-HpCDF	9.12e+06	5.39e+03	1.7e+03	2.02e+07	9.30e+03	2.2e+03
22	13C-2,3,7,8-TCDD	5.33e+06	3.52e+03	1.5e+03	6.75e+06	1.96e+03	3.4e+03
23	13C-1,2,3,7,8-PeCDD	7.84e+06	1.32e+03	5.9e+03	5.15e+06	1.17e+03	4.4e+03
24	13C-1,2,3,6,7,8-HxCDD	1.78e+07	2.26e+03	7.9e+03	1.45e+07	2.45e+03	5.9e+03
25	13C-1,2,3,4,6,7,8-HpCDD	1.20e+07	1.56e+03	7.7e+03	1.16e+07	1.15e+03	1.0e+04
26	13C-OCDD	1.31e+07	1.72e+03	7.6e+03	1.52e+07	1.29e+03	1.2e+04
27	13C-1,2,3,4-TCDD	5.44e+06	3.52e+03	1.5e+03	6.92e+06	1.96e+03	3.5e+03
28	13C-1,2,3,7,8,9-HxCDD	1.58e+07	2.26e+03	7.0e+03	1.29e+07	2.45e+03	5.3e+03
29	37Cl-2,3,7,8-TCDD	2.37e+06	1.73e+03	1.4e+03			

Columbia Analytical Services, Inc.
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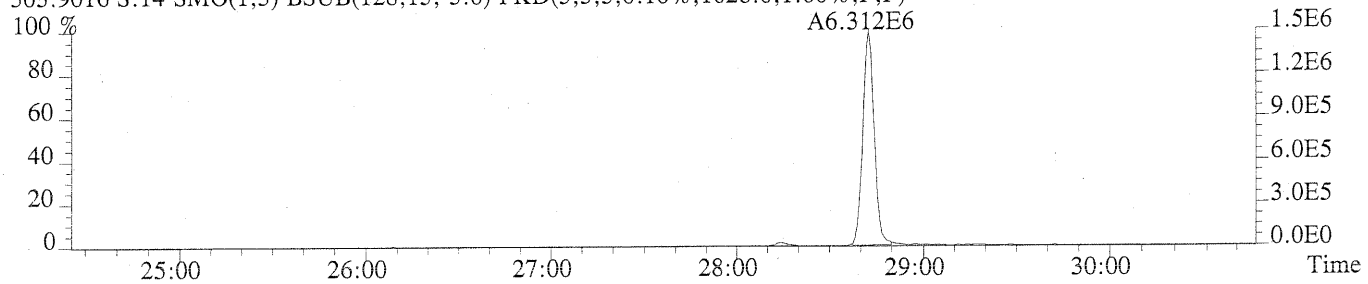
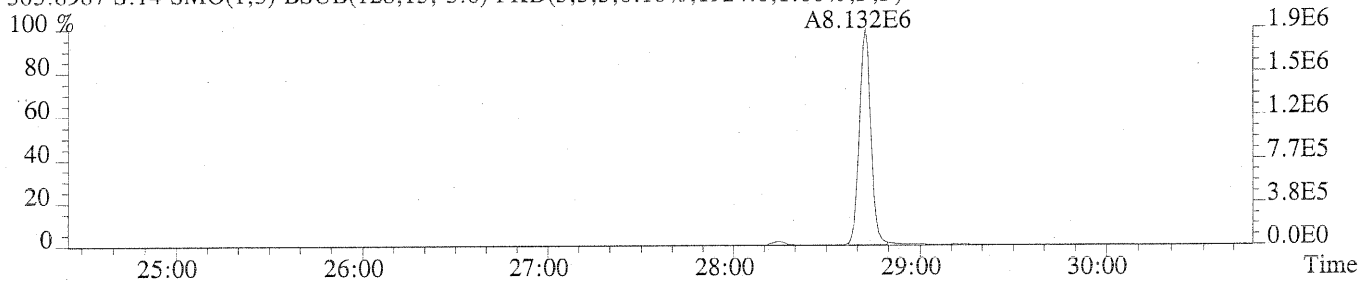
Office:(713)266-1599. Fax:(713)266-0130

File:C15065 #1-521 Acq: 8-NOV-2007 05:42:46 GC EI+ Voltage SIR 70S
Sample#14 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA

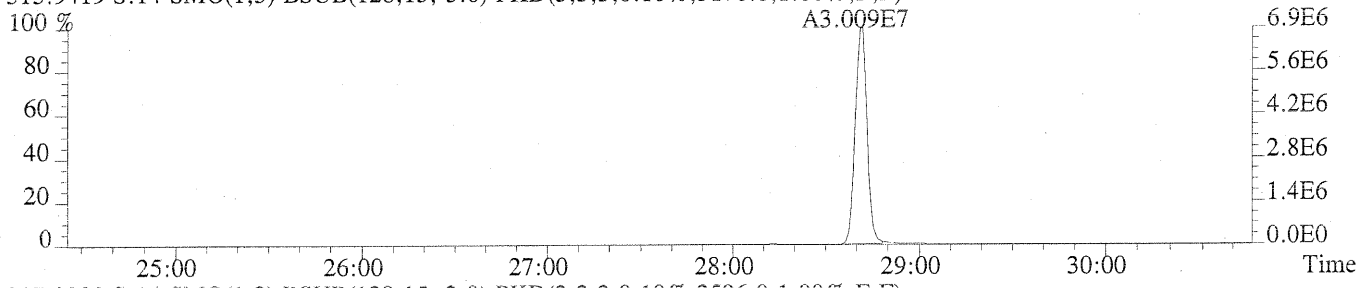
303.9016 S:14 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1028.0,1.00%,F,F)



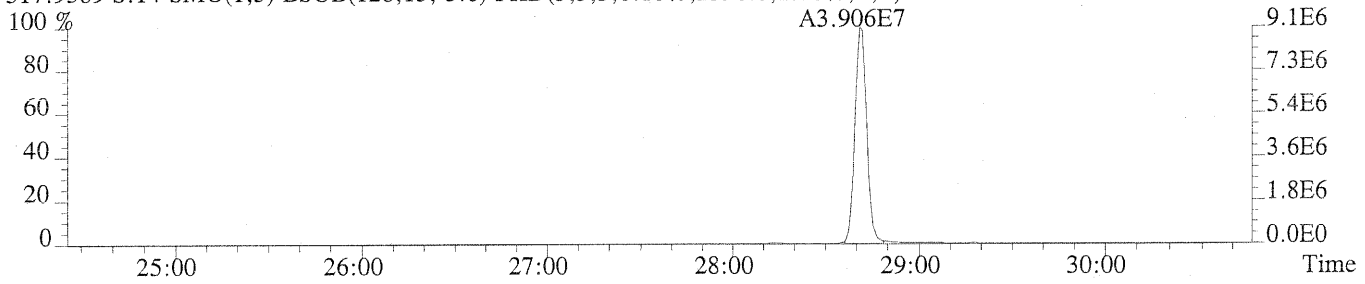
305.8987 S:14 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1924.0,1.00%,F,F)



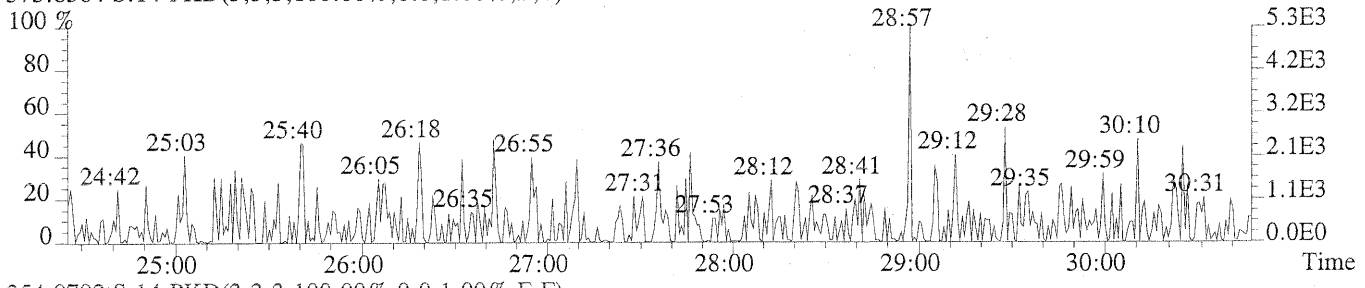
315.9419 S:14 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3176.0,1.00%,F,F)



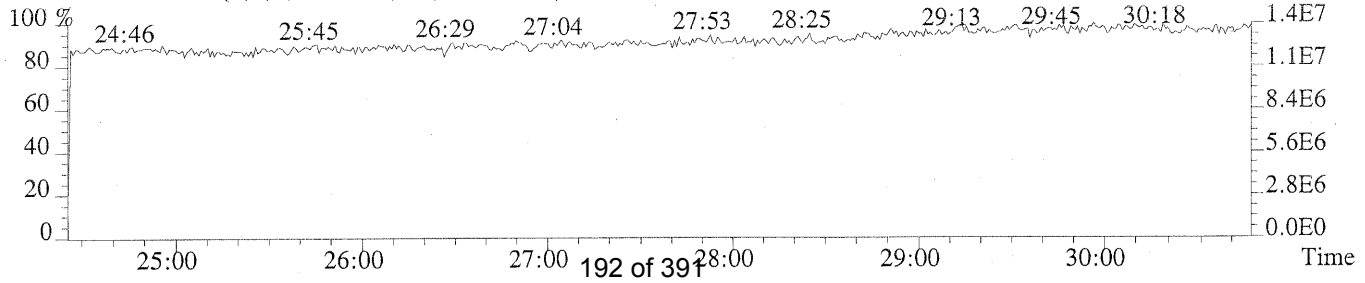
317.9389 S:14 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2596.0,1.00%,F,F)



375.8364 S:14 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

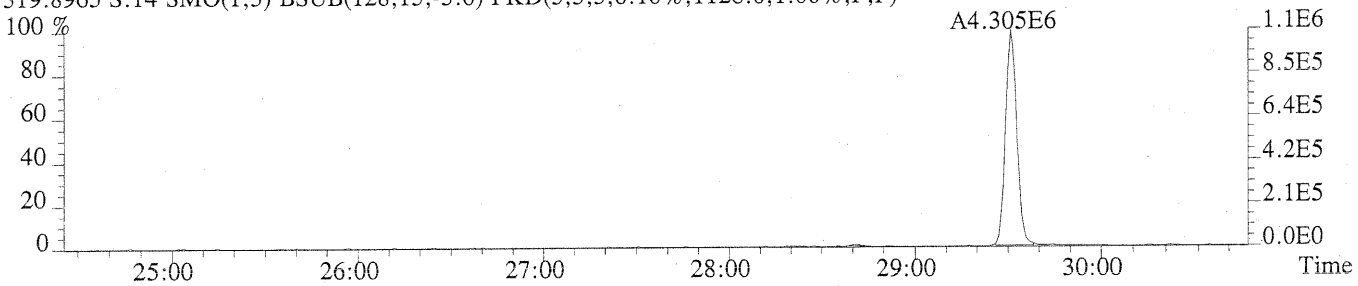


354.9792 S:14 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

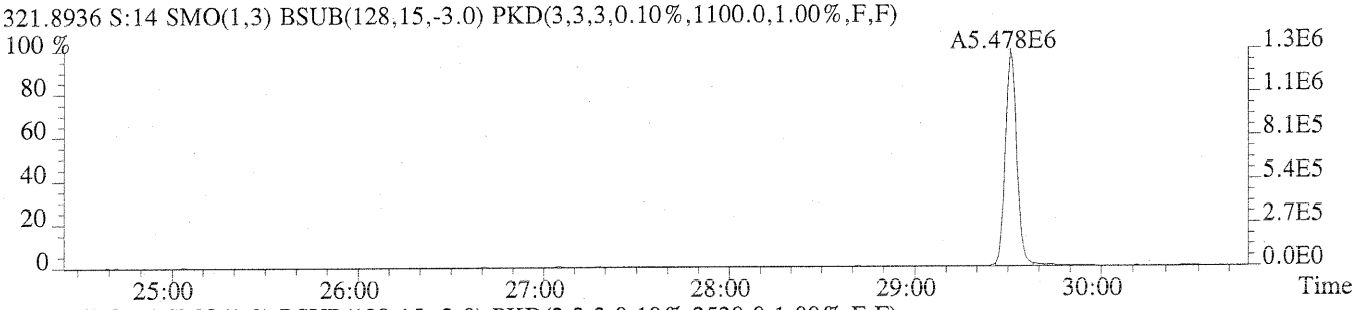


File:C15065 #1-521 Acq: 8-NOV-2007 05:42:46 GC EI+ Voltage SIR 70S
Sample#14 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA

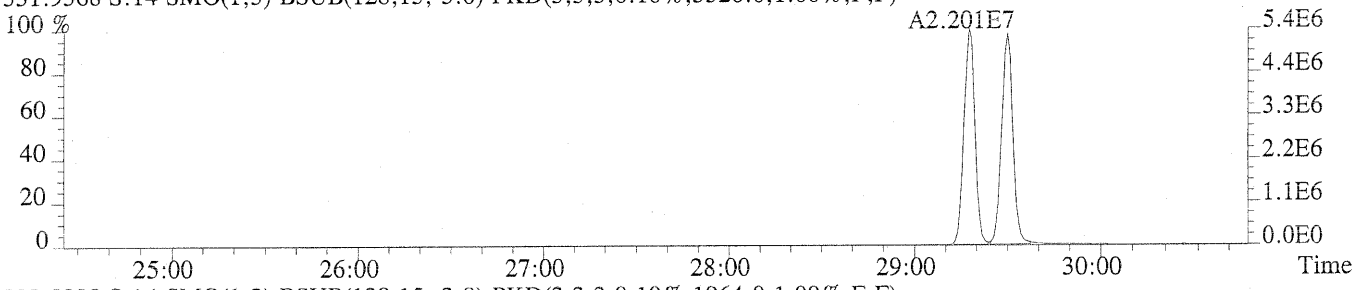
319.8965 S:14 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1128.0,1.00%,F,F)



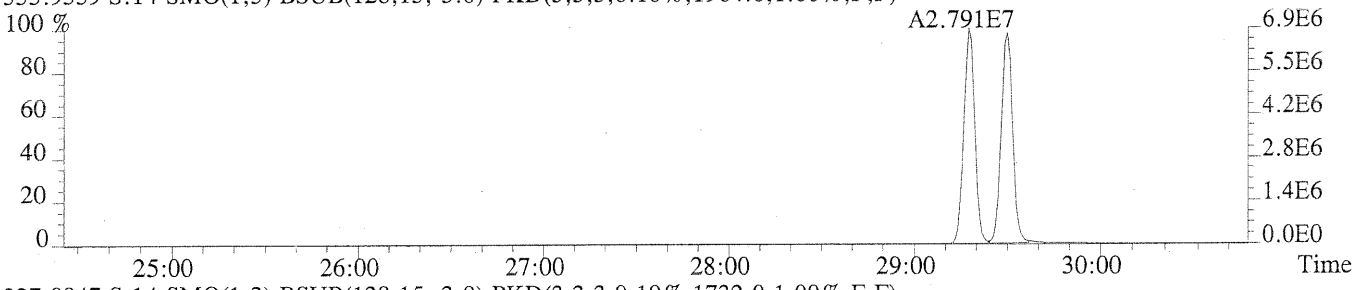
321.8936 S:14 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1100.0,1.00%,F,F)



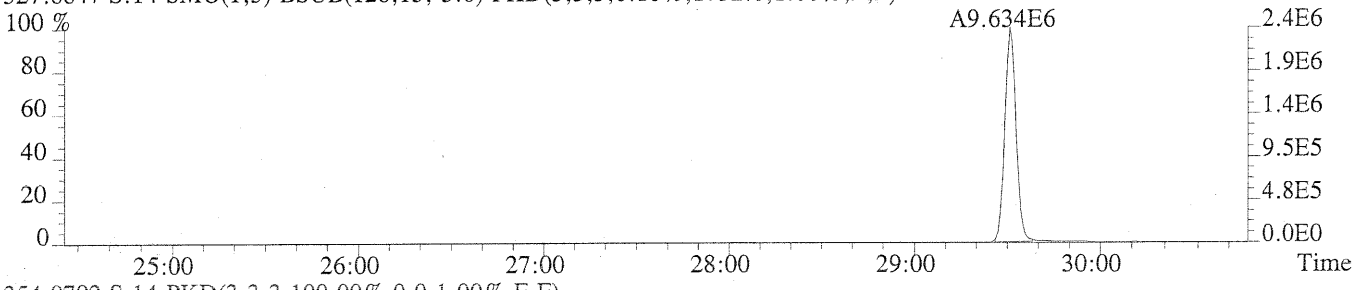
331.9368 S:14 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3520.0,1.00%,F,F)



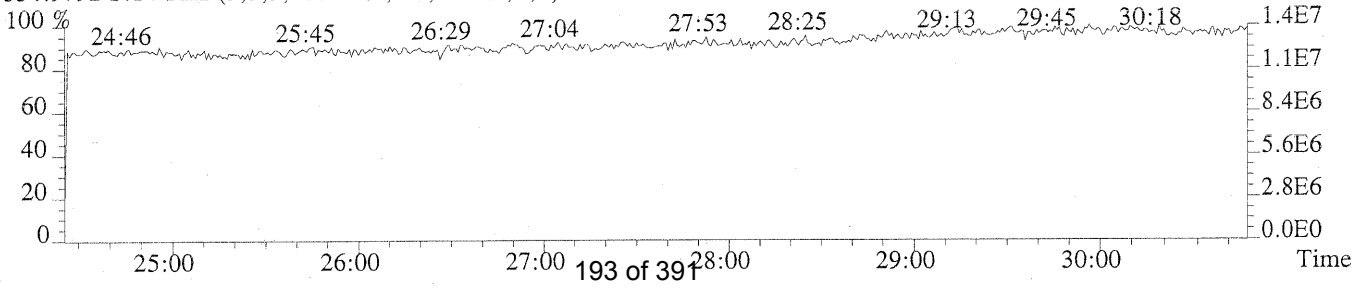
333.9339 S:14 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1964.0,1.00%,F,F)



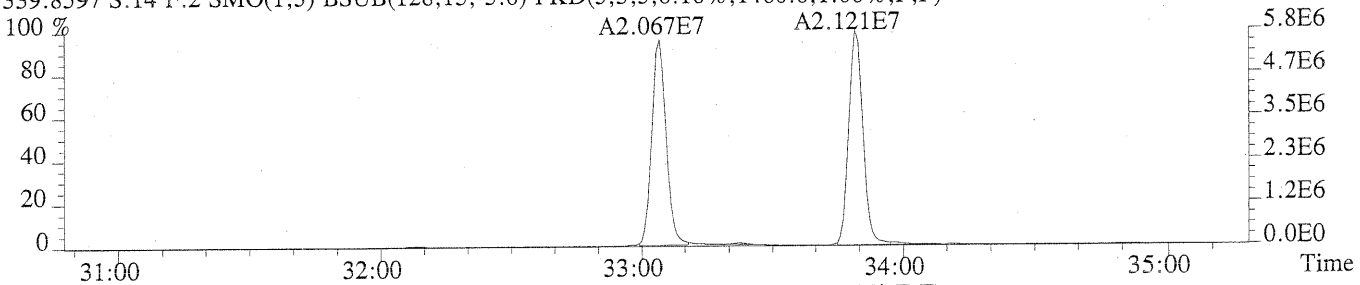
327.8847 S:14 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1732.0,1.00%,F,F)



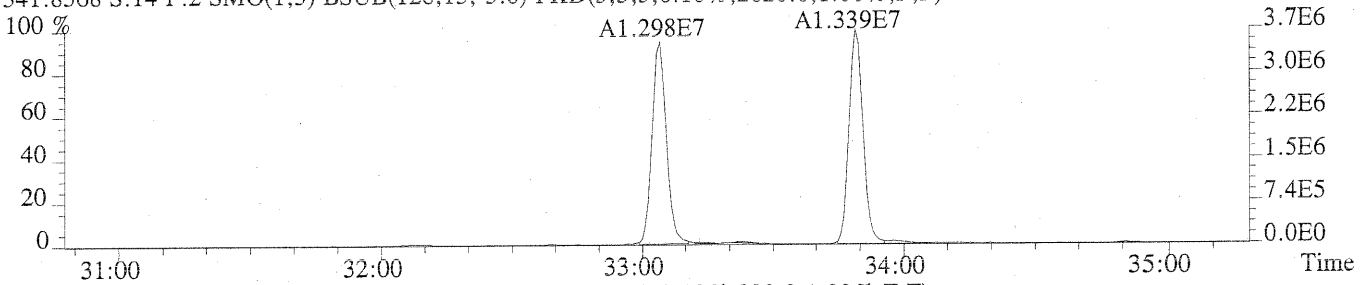
354.9792 S:14 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



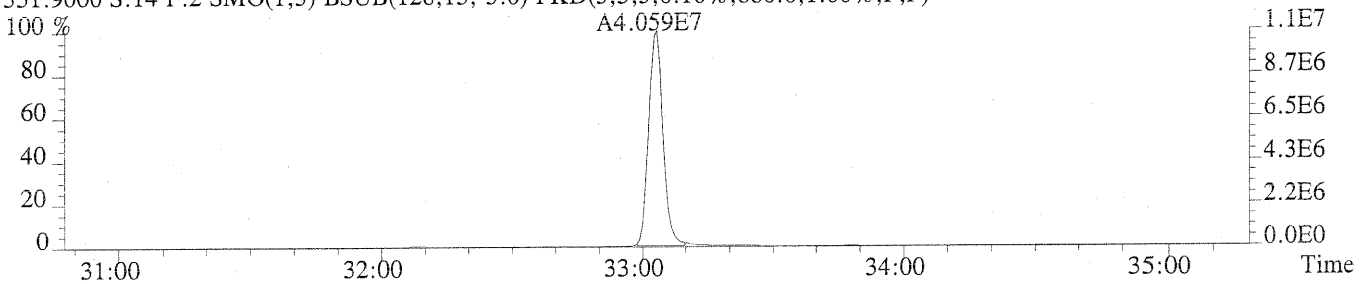
File:C15065 #1-404 Acq: 8-NOV-2007 05:42:46 GC EI+ Voltage SIR 70S
Sample#14 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA
339.8597 S:14 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1460.0,1.00%,F,F)



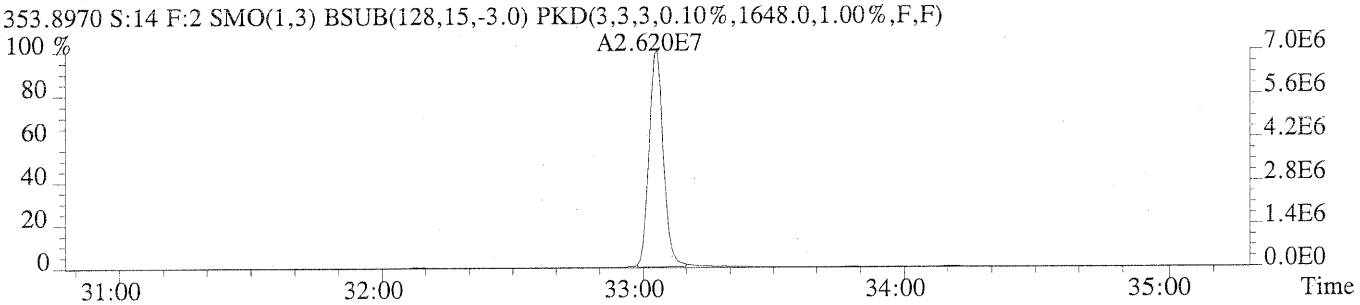
341.8568 S:14 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2620.0,1.00%,F,F)



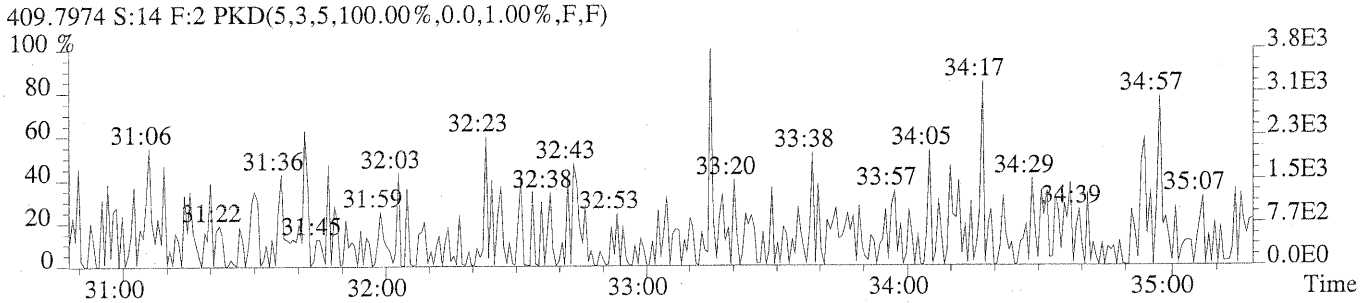
351.9000 S:14 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,880.0,1.00%,F,F)



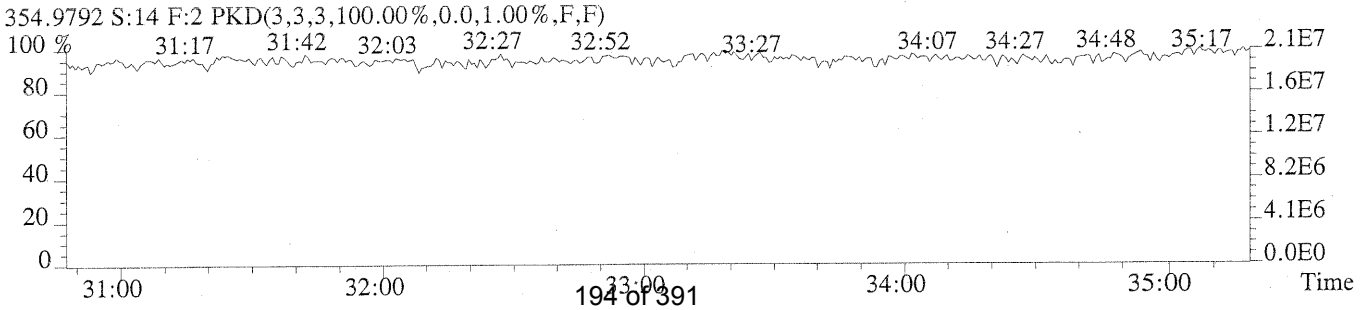
353.8970 S:14 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1648.0,1.00%,F,F)



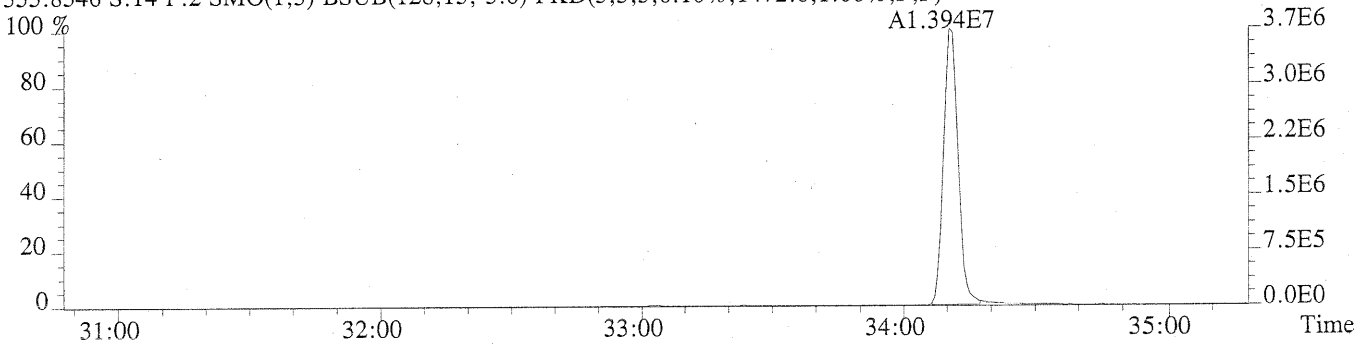
409.7974 S:14 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



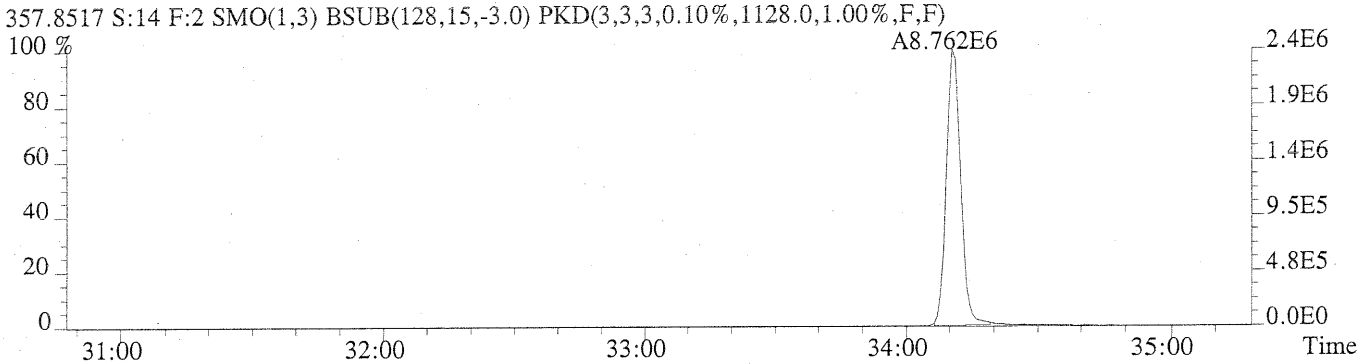
354.9792 S:14 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



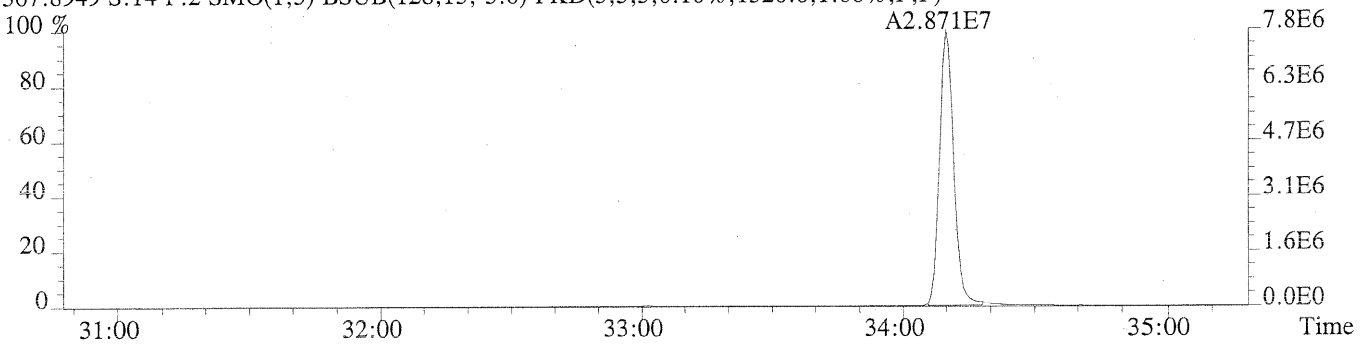
File:C15065 #1-404 Acq: 8-NOV-2007 05:42:46 GC EI+ Voltage SIR 70S
Sample#14 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA
355.8546 S:14 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1472.0,1.00%,F,F)



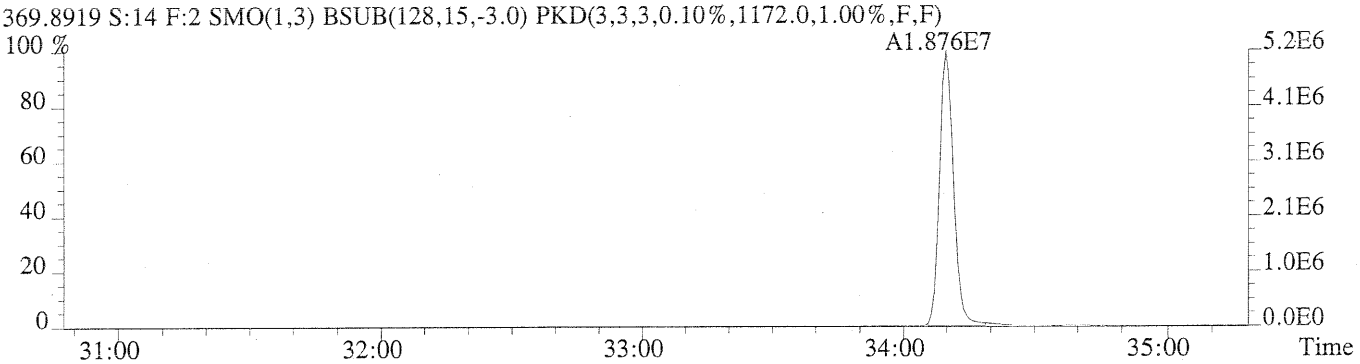
357.8517 S:14 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1128.0,1.00%,F,F)



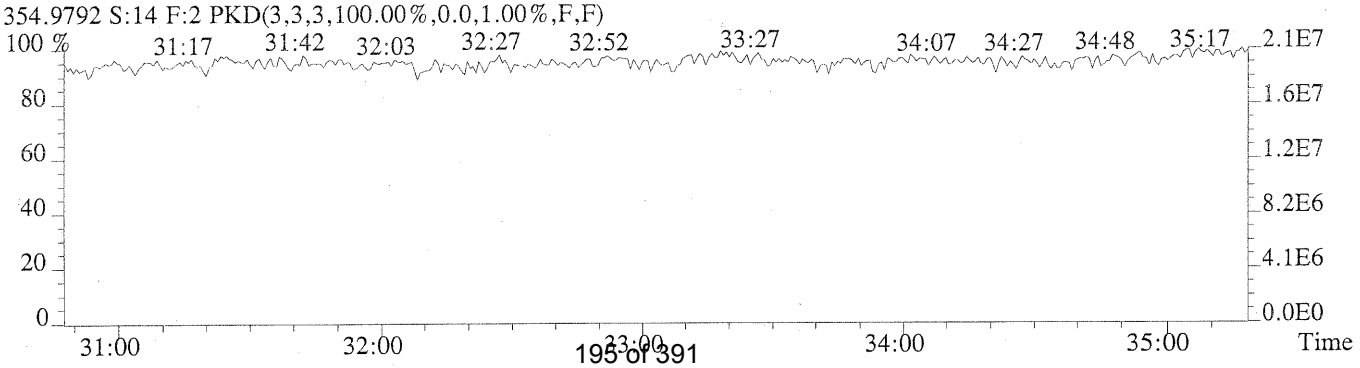
367.8949 S:14 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1320.0,1.00%,F,F)



369.8919 S:14 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1172.0,1.00%,F,F)

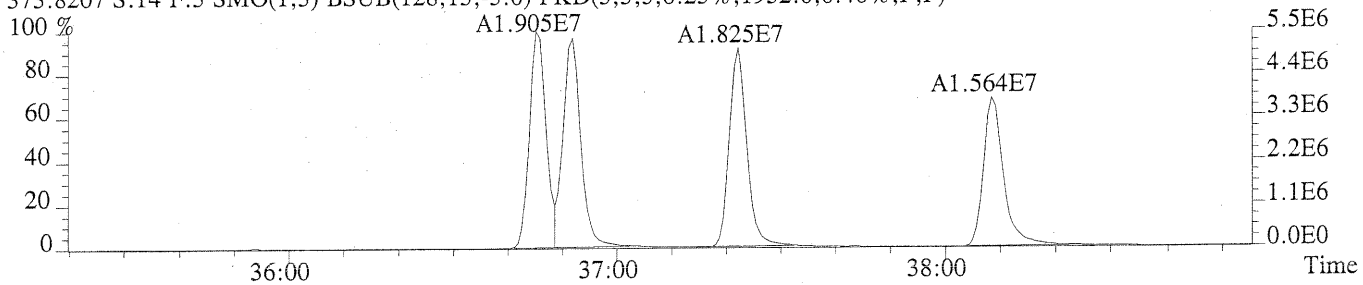


354.9792 S:14 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

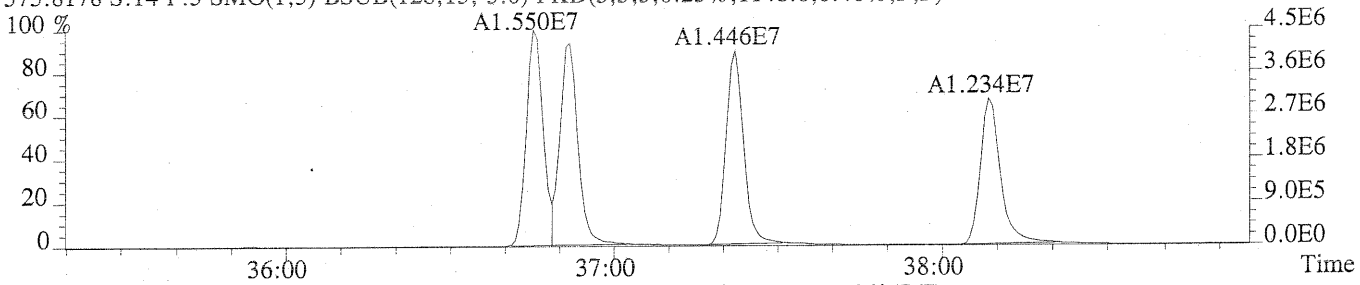


File:C15065 #1-322 Acq: 8-NOV-2007 05:42:46 GC EI+ Voltage SIR 70S
Sample#14 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA

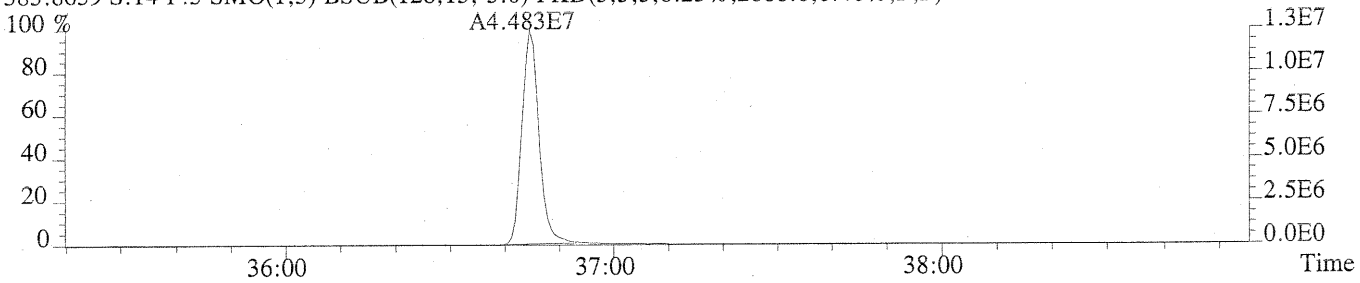
373.8207 S:14 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1952.0,0.40%,F,F)



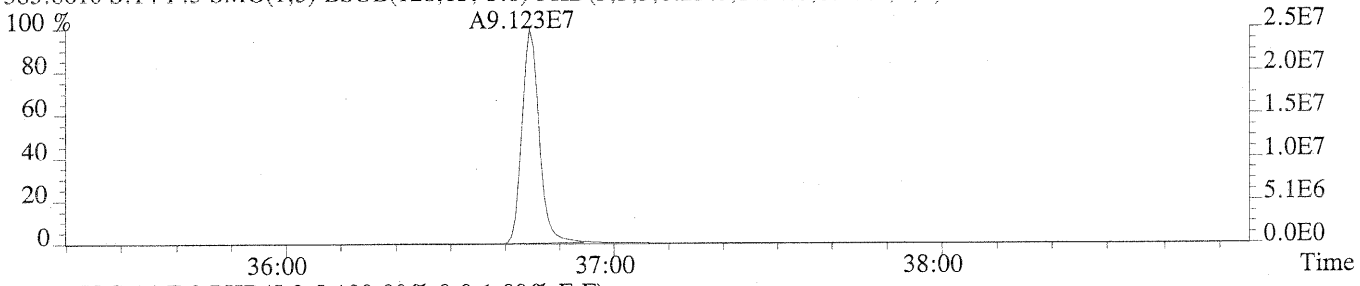
375.8178 S:14 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1148.0,0.40%,F,F)



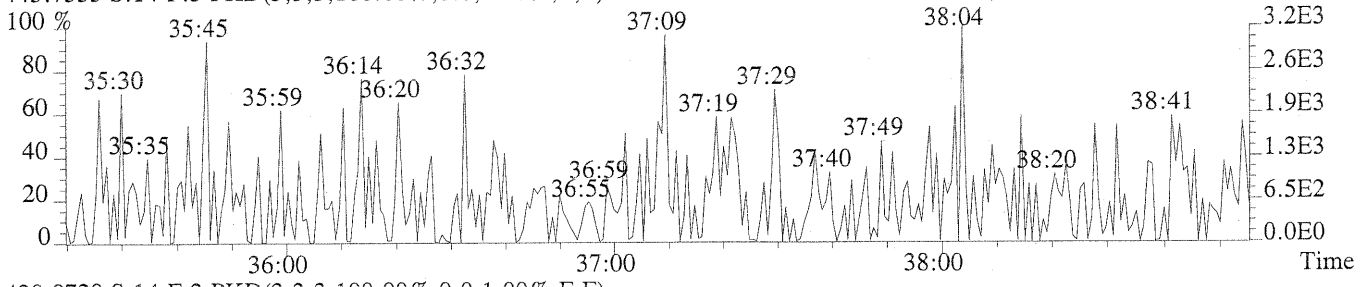
383.8639 S:14 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2888.0,0.40%,F,F)



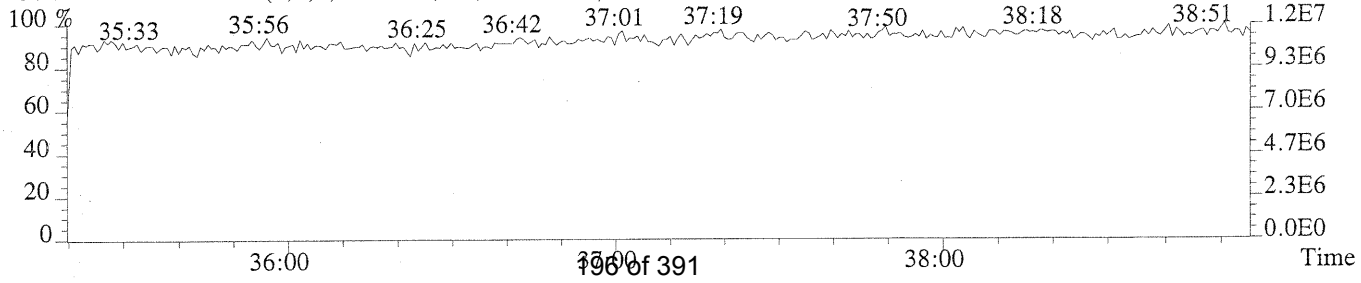
385.8610 S:14 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1424.0,0.40%,F,F)



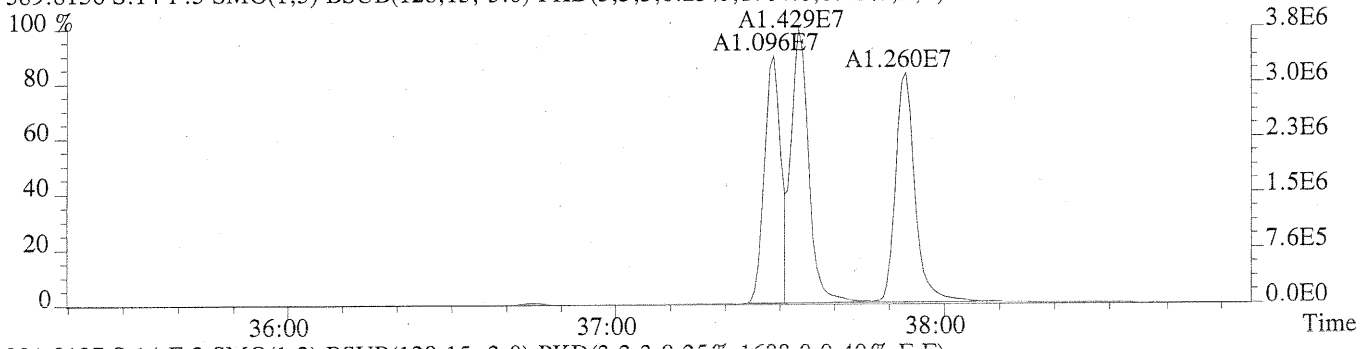
445.7555 S:14 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



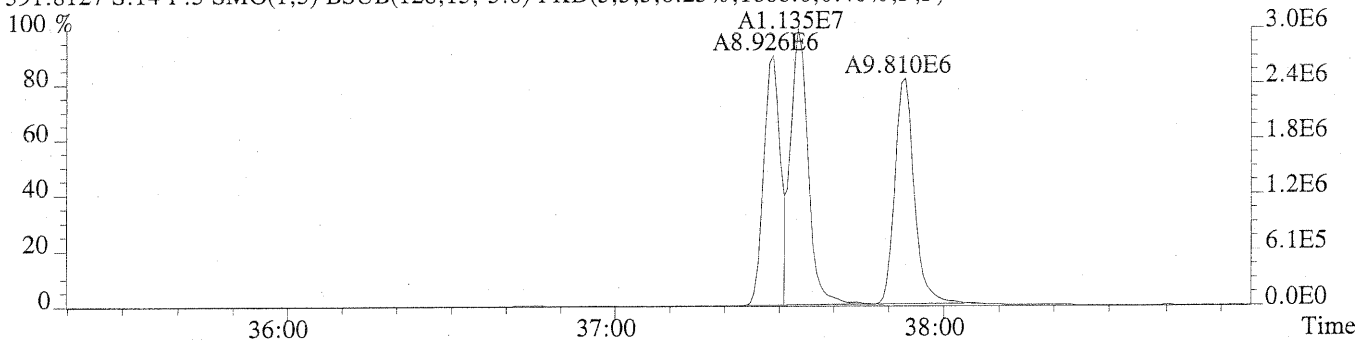
430.9728 S:14 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



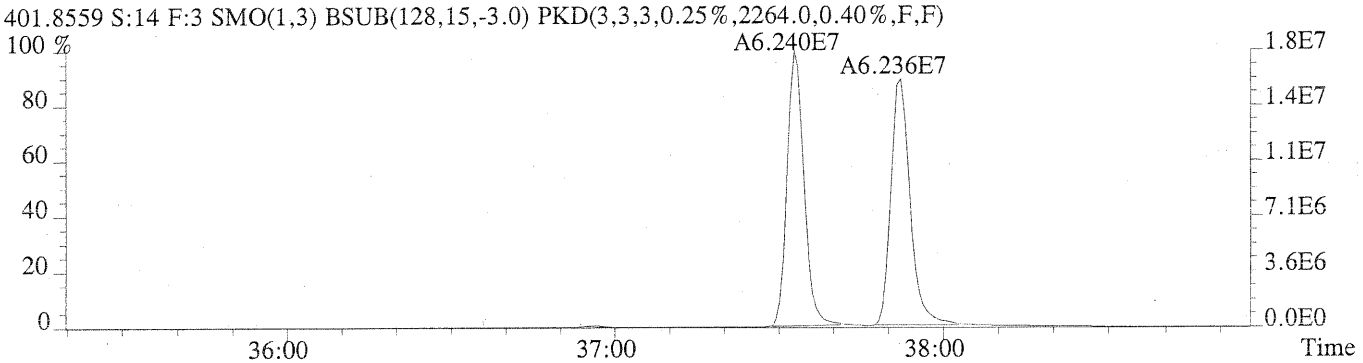
File:C15065 #1-322 Acq: 8-NOV-2007 05:42:46 GC EI+ Voltage SIR 70S
Sample#14 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA
389.8156 S:14 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1764.0,0.40%,F,F)



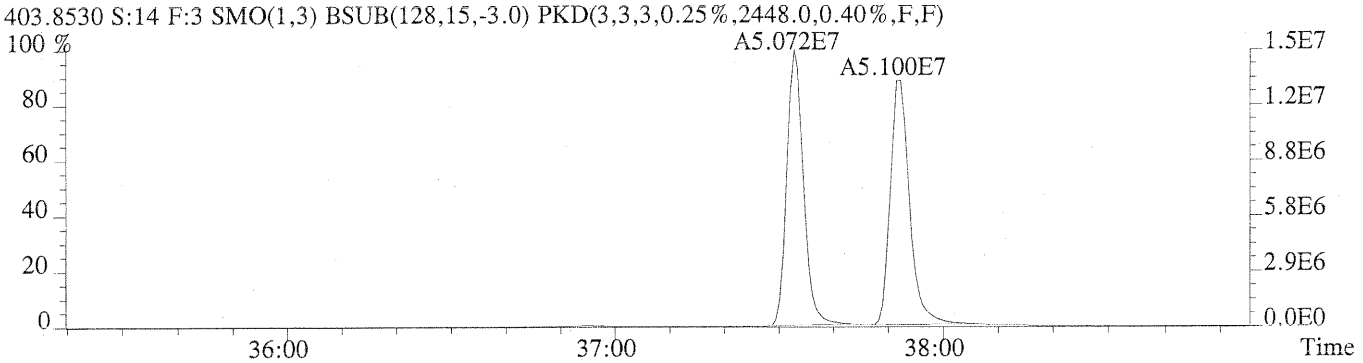
391.8127 S:14 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1688.0,0.40%,F,F)



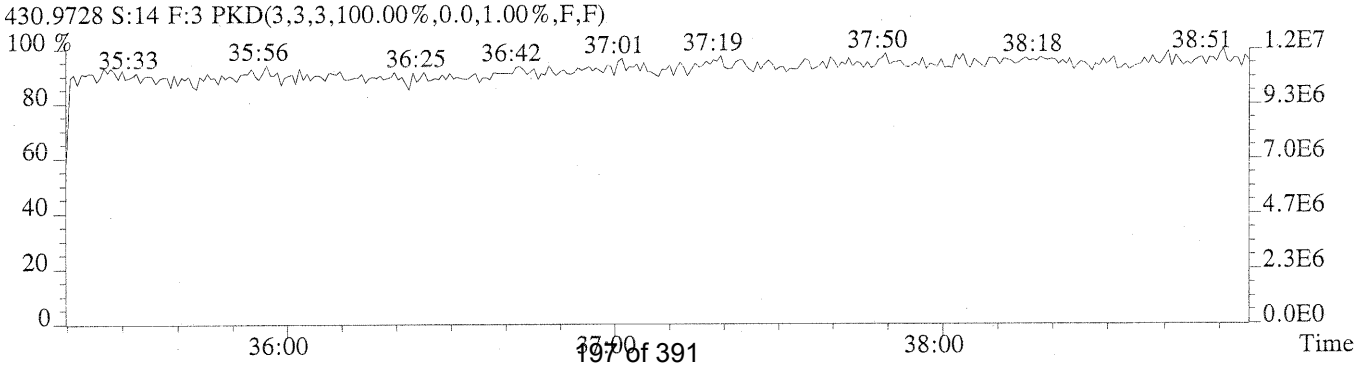
401.8559 S:14 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2264.0,0.40%,F,F)



403.8530 S:14 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2448.0,0.40%,F,F)

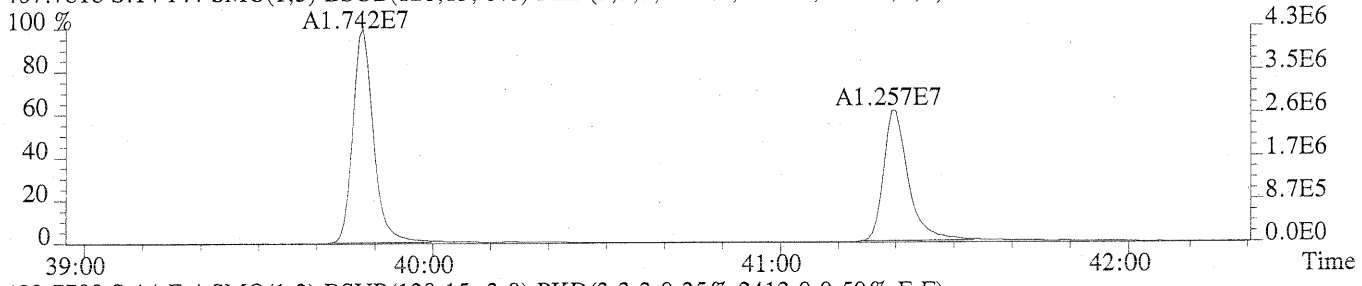


430.9728 S:14 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

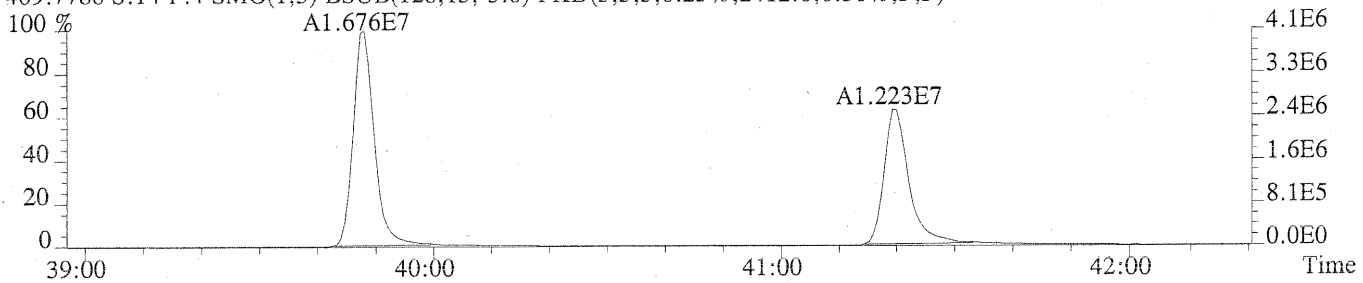


File:C15065 #1-304 Acq: 8-NOV-2007 05:42:46 GC EI+ Voltage SIR 70S
Sample#14 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA

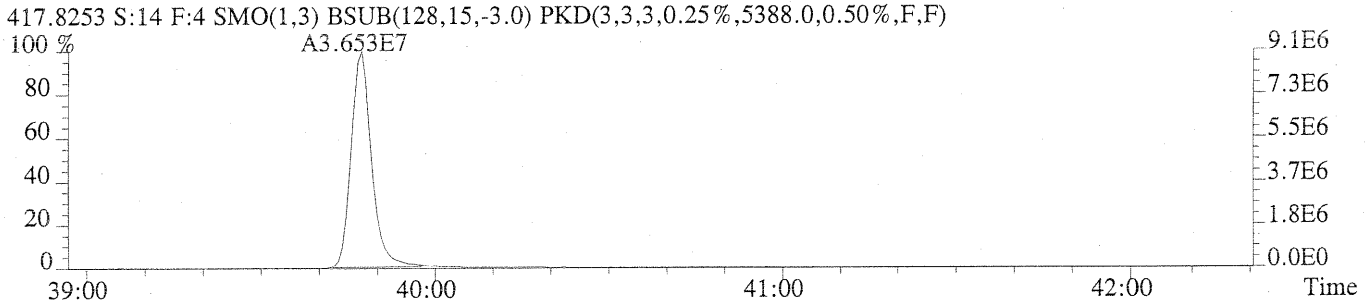
407.7818 S:14 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2968.0,0.50%,F,F)



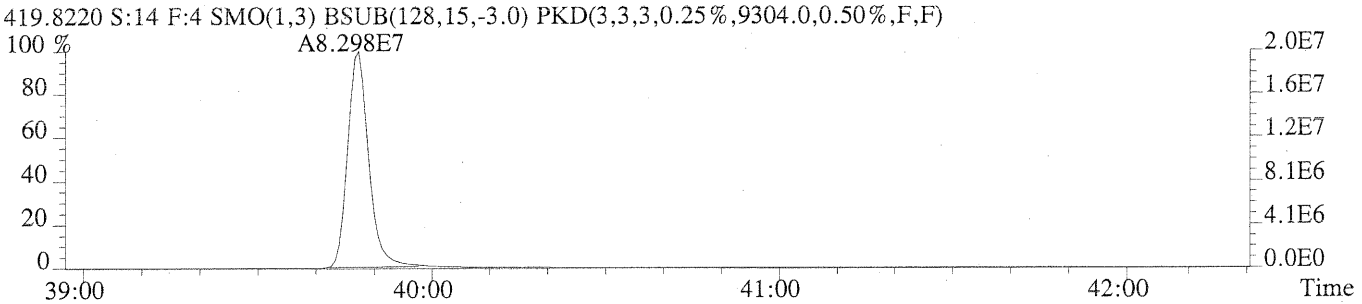
409.7788 S:14 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2412.0,0.50%,F,F)



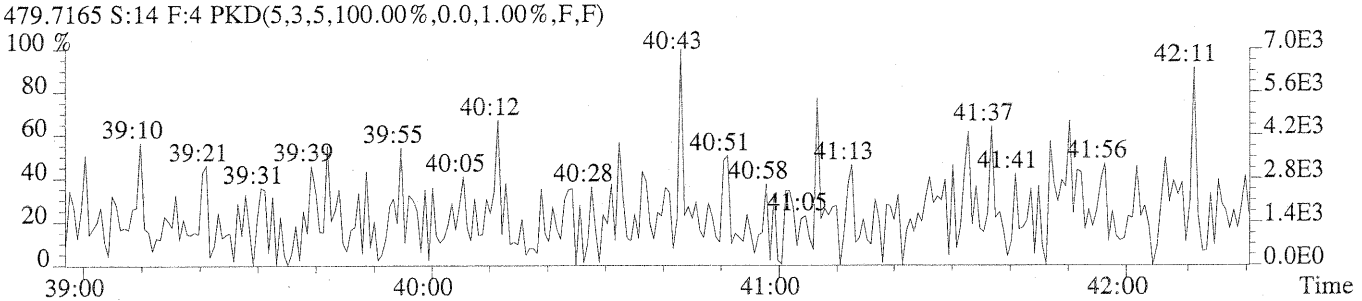
417.8253 S:14 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5388.0,0.50%,F,F)



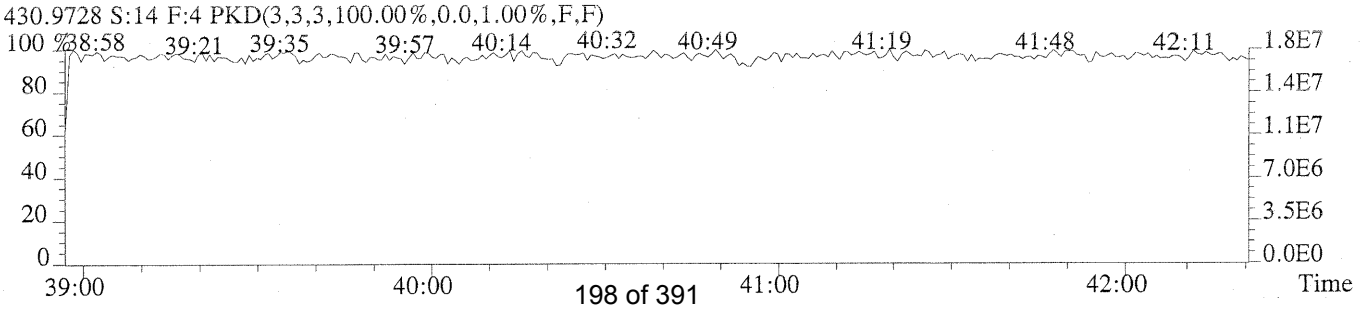
419.8220 S:14 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,9304.0,0.50%,F,F)



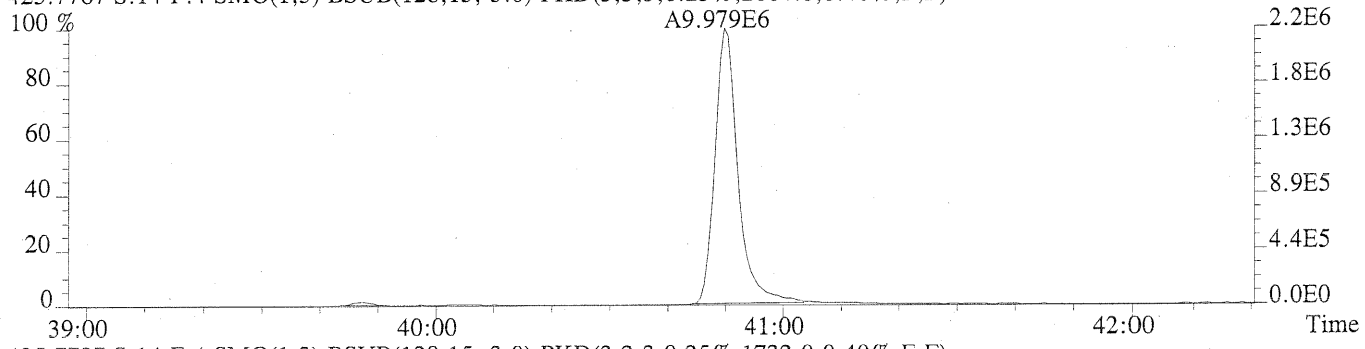
479.7165 S:14 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



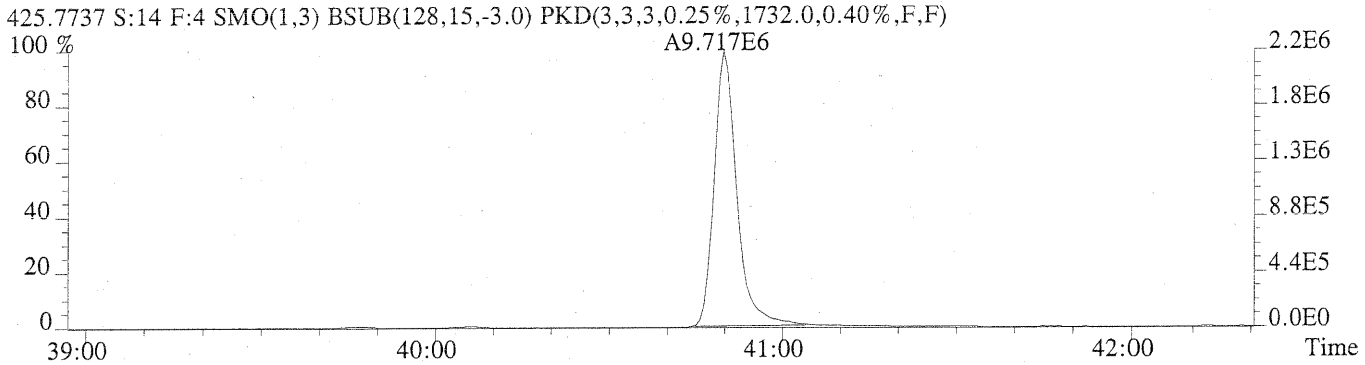
430.9728 S:14 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



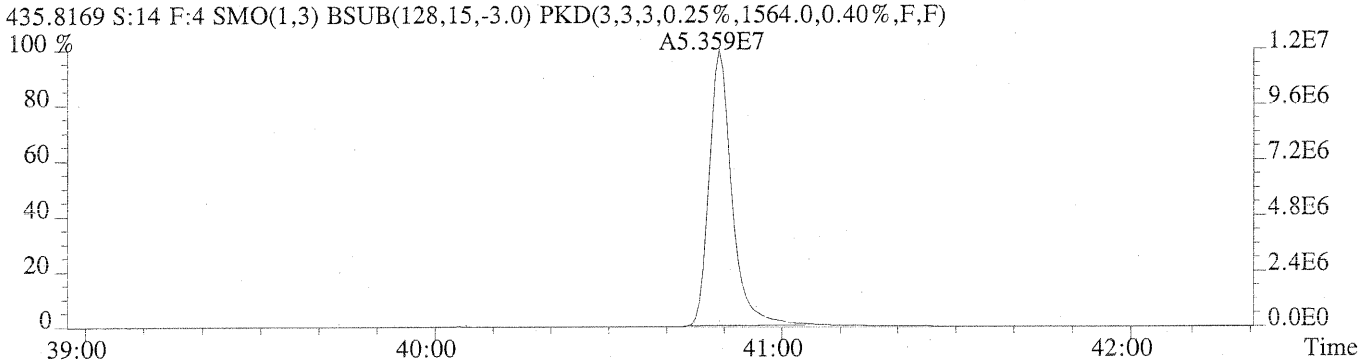
File:C15065 #1-304 Acq: 8-NOV-2007 05:42:46 GC EI+ Voltage SIR 70S
Sample#14 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA
423.7767 S:14 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2064.0,0.40%,F,F)



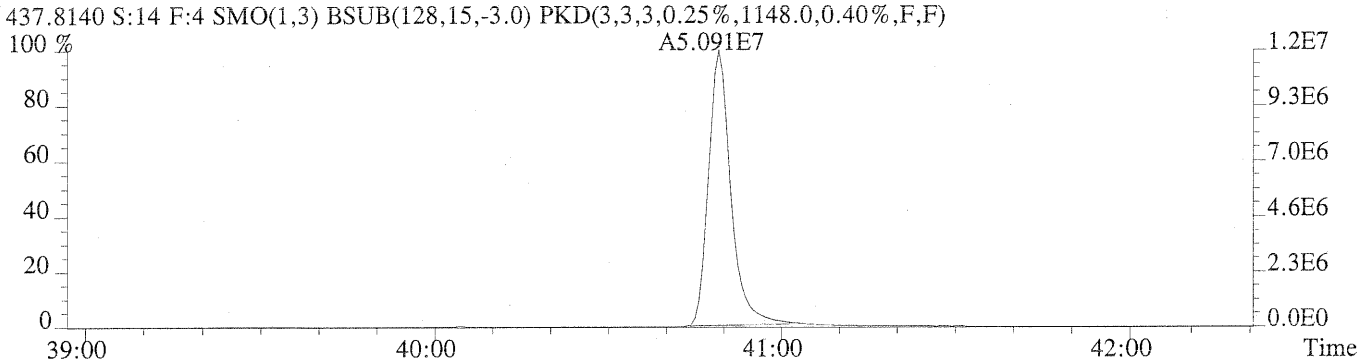
425.7737 S:14 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1732.0,0.40%,F,F)



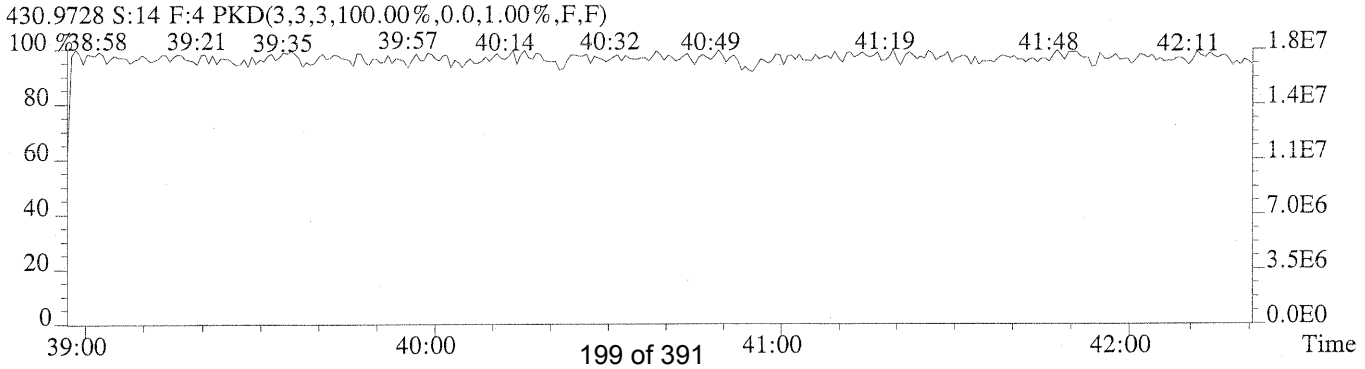
435.8169 S:14 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1564.0,0.40%,F,F)



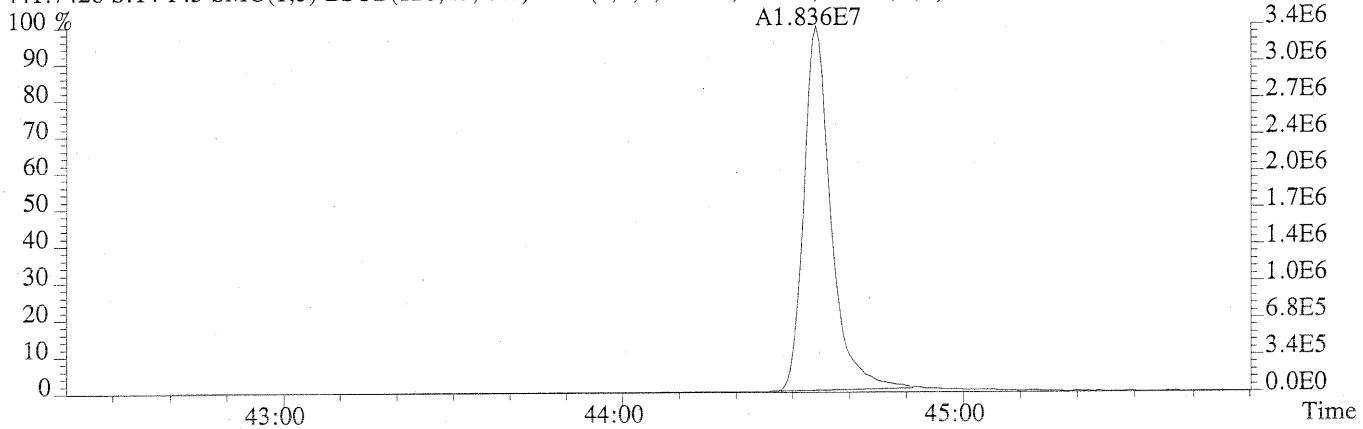
437.8140 S:14 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1148.0,0.40%,F,F)



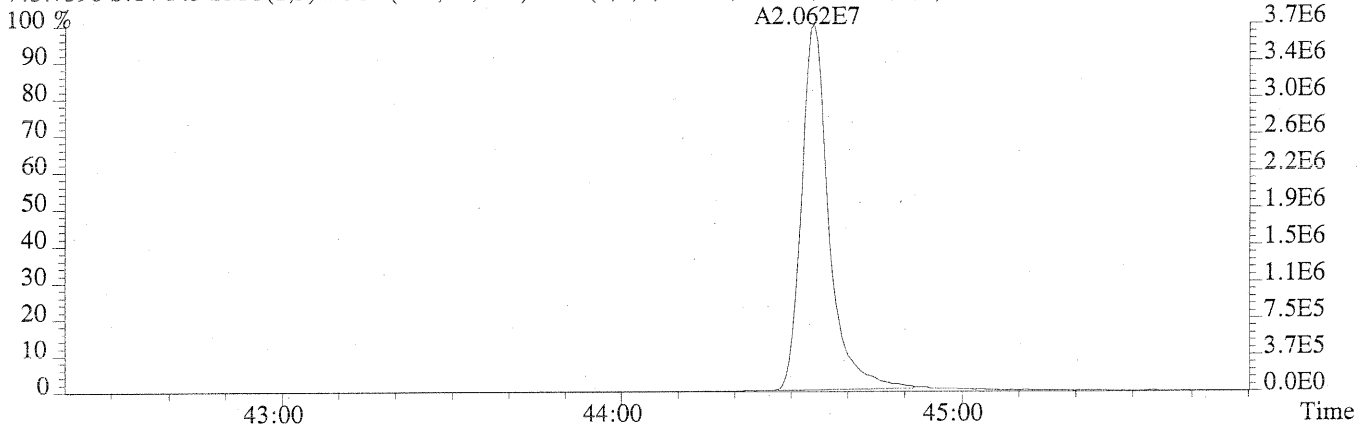
430.9728 S:14 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



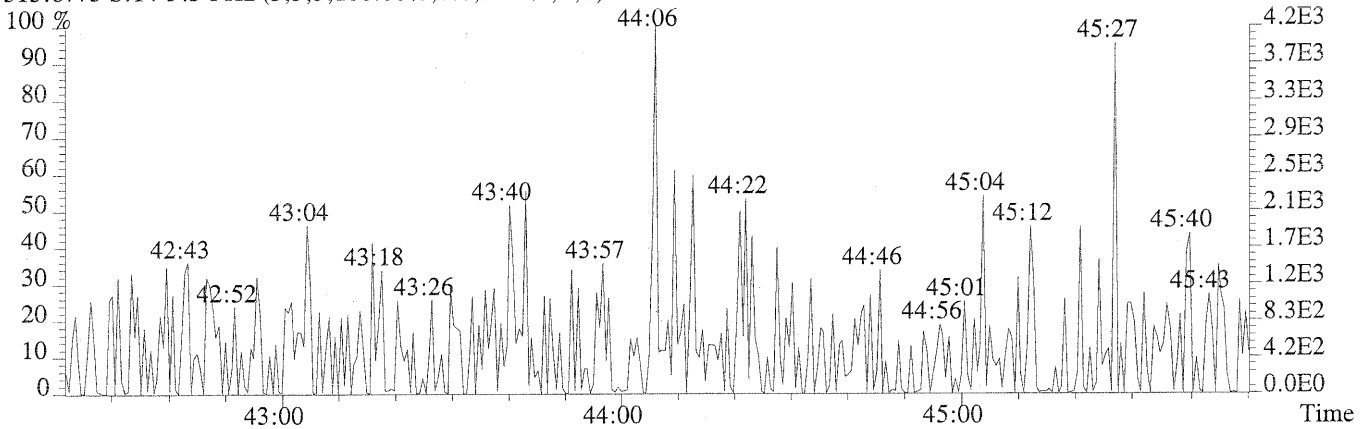
File:C15065 #1-379 Acq: 8-NOV-2007 05:42:46 GC EI+ Voltage SIR 70S
Sample#14 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA
441.7428 S:14 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1660.0,0.40%,F,F)



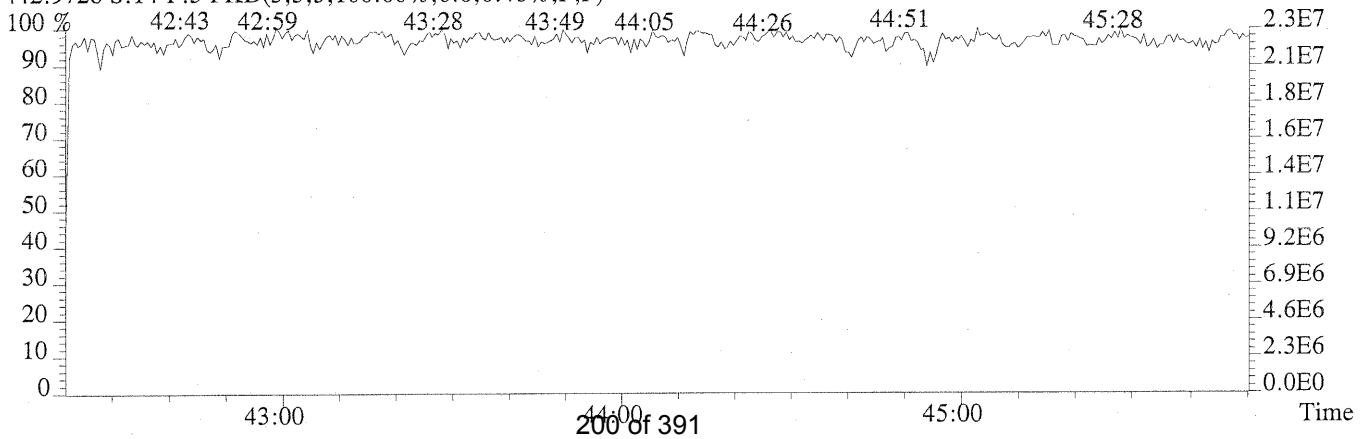
443.7398 S:14 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1752.0,0.40%,F,F)



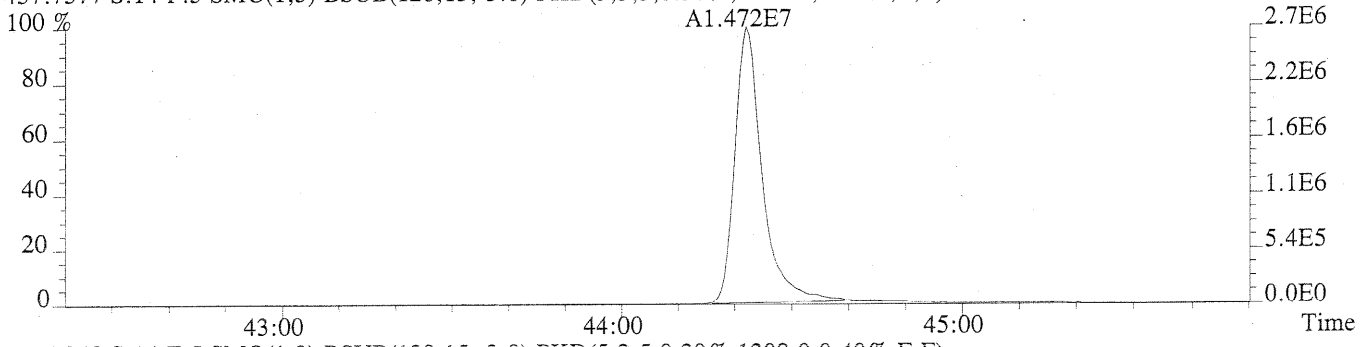
513.6775 S:14 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



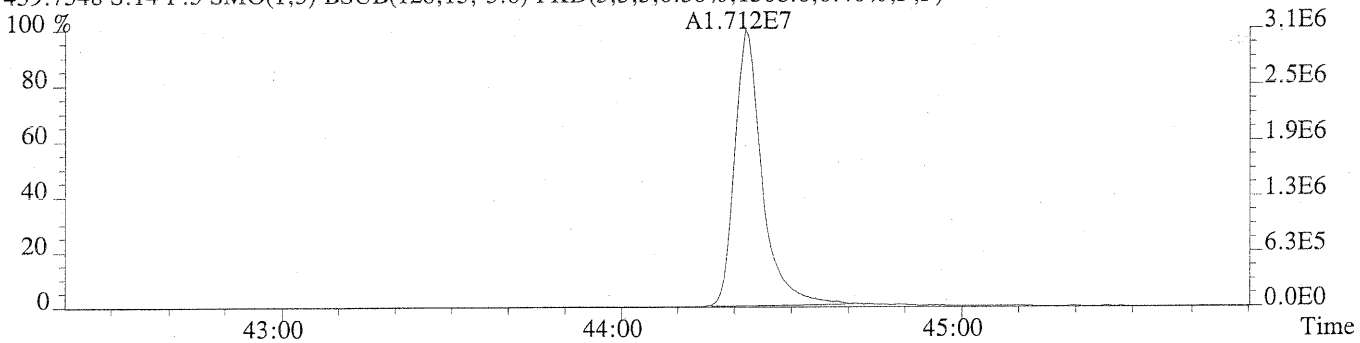
442.9728 S:14 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



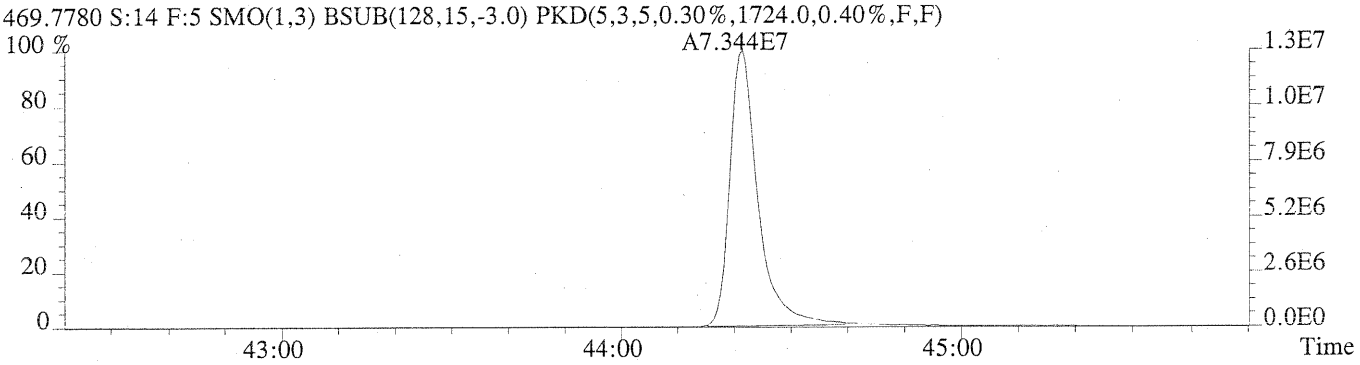
File:C15065 #1-379 Acq: 8-NOV-2007 05:42:46 GC EI+ Voltage SIR 70S
Sample#14 File Text:CAS,HOUSTON Text:CCAL HRCC3 Exp:8290CA
457.7377 S:14 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1088.0,0.40%,F,F)



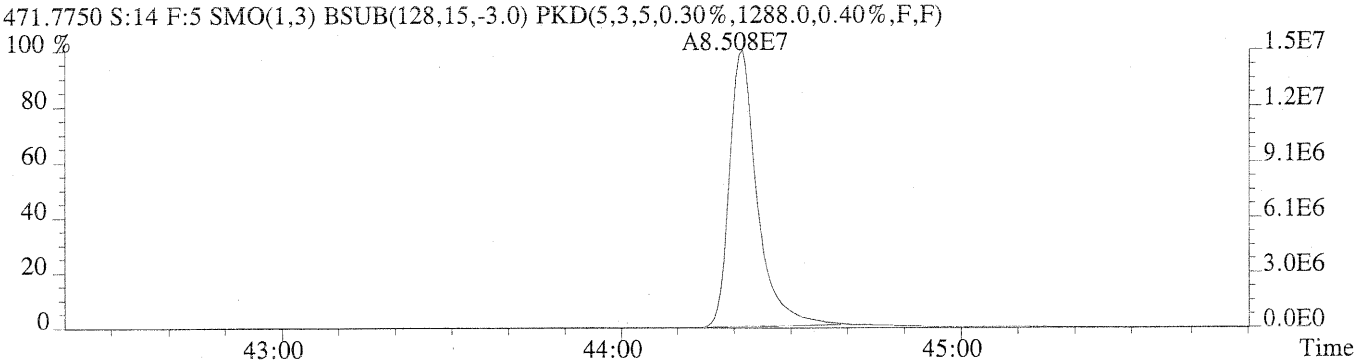
459.7348 S:14 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1308.0,0.40%,F,F)



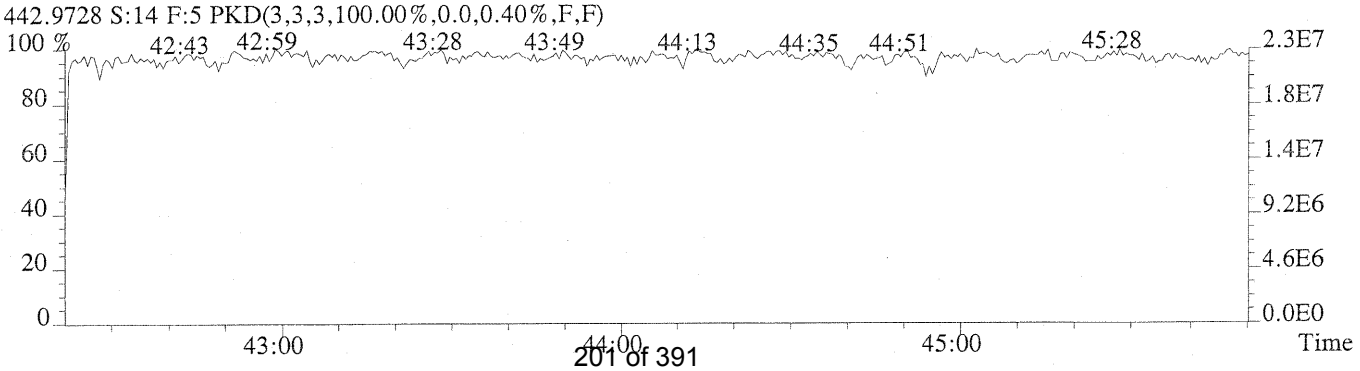
469.7780 S:14 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1724.0,0.40%,F,F)



471.7750 S:14 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1288.0,0.40%,F,F)



442.9728 S:14 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



RW/ HRCC3 Daily Calibration QC Checklist

Calibration File Name: U212356~U212363

Circle one: Beginning / Ending

Date: 30 OCT. '07

Method: 8290 / Tetra / TCDD Only / TCDF Conf

Retention Window/Column Performance Check:	**Analyst**	**Second Check**
Windows labeled for first and last eluting compounds	✓	✓
Column performance shows less than or equal to 25% valley between column specific 2378 isomer and the closest eluters	✓	✓
No QC ion deflections affect column specific 2378 isomer or the closest eluters	✓	✓

HRCC3 Continuing Calibration	Analyst	Second Check
Percent RSD within method criteria	✓	✓
All relative abundance ratios meet method criteria	✓	✓
No QC ion deflections greater than 20%	✓	✓
Mass spectrometer resolution greater than or equal to 10,000 and documented	✓	✓
Signal-to-noise of all target analytes and associated labeled standards at least 2.5:1	✓	✓
Ending Calibration injected prior to end of 12 hour clock	✓	✓

Analyst: _____ Second QC: _____

8290 CCALQC 03/23/04

USEPA - CLP

5DFC
PCDD/PCDF ANALYTICAL SEQUENCE SUMMARY

Lab Name: Columbia Analytical Services Contract:

Lab Code: TX01411 Case No.: Client No.: SDG No.:

GC Column: DB-5 ID: 0.25 (mm) Instrument ID: AutoSpec-Ultima

Init. Calib. Date: 11/04/04

Init. Calib.Times: 10:34

THE ANALYTICAL SEQUENCE OF STANDARDS, SAMPLES, BLANKS, AND LABORATORY CONTROL SAMPLES (LCSs) IS AS FOLLOWS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
WINDOW DEFINE		U212355	30-OCT-07	09:14:31
CCAL HRCC3		U212356	30-OCT-07	10:58:38
METHOD BLANK	EQ0700356-01	U212357	30-OCT-07	12:13:17
MTL-NB	E0700903-013	U212359	30-OCT-07	13:48:00
DO NOT USE	K0708933-008	U212360	30-OCT-07	14:36:22
LCS	EQ0700356-02	U212361	30-OCT-07	15:24:45
DLCS	EQ0700356-03	U212362	30-OCT-07	16:13:08
CCAL HRCC3		U212363	30-OCT-07	17:14:11
DO NOT USE	K0708933-008	U212360	30-OCT-07	14:36:22
MTL-B	E0700903-012	U212358	30-OCT-07	12:59:38

HRGC/HRMS RUN LOG

CAS HOUSTON 10655 Richmond Avenue, Suite 130-A Houston, TX 77042

Columbia Analytical Services inc.
An Employee Owned Company

Acq Method: 1668 EPA/8290 CAS
GC Method: 1668 EPA/8290 CAS

Result File: D:\U212356.RES
EDD File: _____

Archive Tape: _____
Instrument ID: AutoSpec 2

Date	Time	File	CAS ID	Client ID	Batch #	Analyst	Comments	RE
		U212349	EQ-00927-002	072607-43	EQ 301	[illegible]		
		U212350	931-004	090507-65	↓			
		U212351	931-005	090507-66	↓			
		U212352	885-001DL	SM-01 DL	EQ 293		1:1000	
		U212353	885-002DL	SM-02 DL	↓		1:1000	
		U212354	cal CS3	B1-66-1				
10/30/07	09:14	U212355	Window Define	DH-90-2				
	10:58	U212356	cal HRCC3	DB-2-2A				
	12:13	U212357	EQ-00356-01MB	METHOD BLANK	EQ356			
	12:59	U212358	EQ-00903-012	MTL-B			Needs re-extraction; %R too low.	
	13:48	U212359	903-013	MTL-NB				
	14:36	U212360	EQ-08933-008	COMPOSITE			NEEDS REINJECTED	
	15:24	U212361	EQ-00356-02LCS	LAB SPIKE				
	16:13	U212362	EQ-00356-03DLCS	DUP LAB SPIKE	↓			
	17:14	U212363	cal HRCC3	DB-2-2A				
		U212364	WINDOW DEFINE	DH-90-2		↓		

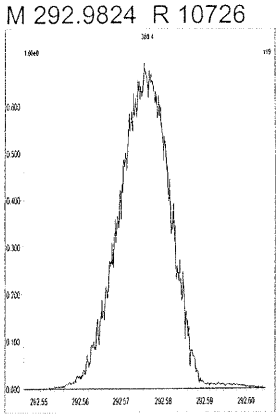
Reviewed by: _____

Experiment Calibration Report MassLynx 4.1

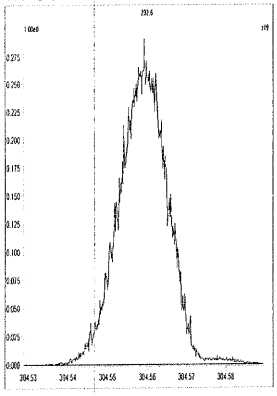
File: Experiment: 8290CAS.exp Reference: Pfk.ref Function: 1 @ 200 (ppm)

Printed: Tuesday, October 30, 2007 09:13:25 Central Standard Time

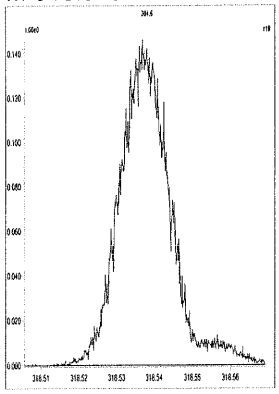
M 292.9824 R 10726



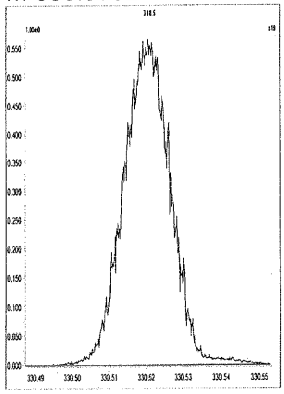
M 304.9824 R 11467



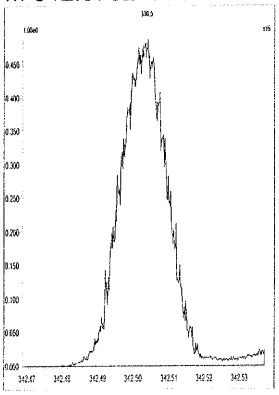
M 318.9792 R 10636



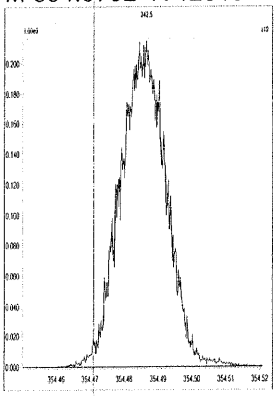
M 330.9792 R 12019



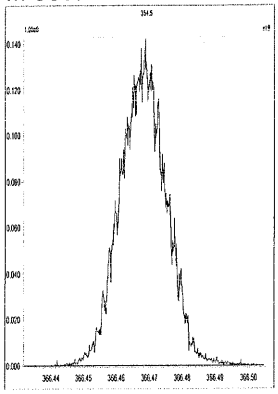
M 342.9792 R 12193



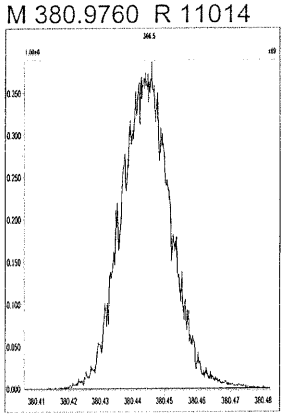
M 354.9792 R 12316



M 366.9792 R 12075



M 380.9760 R 11014

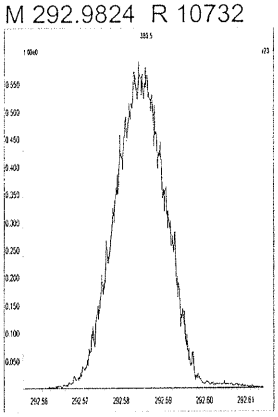


Experiment Calibration Report MassLynx 4.1

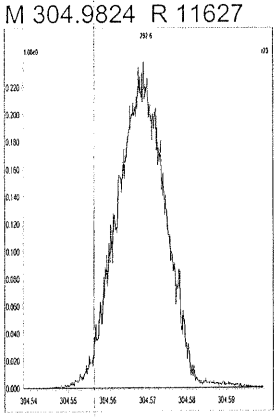
File: Experiment: 8290CAS.exp Reference: Pfk.ref Function: 1 @ 200 (ppm)

Printed: Tuesday, October 30, 2007 18:18:44 Central Standard Time

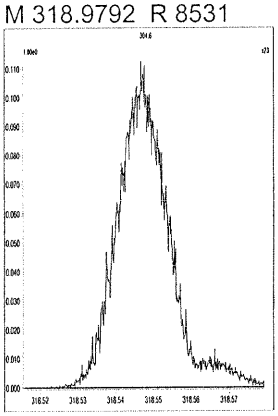
M 292.9824 R 10732



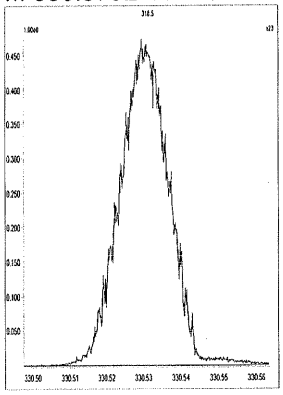
M 304.9824 R 11627



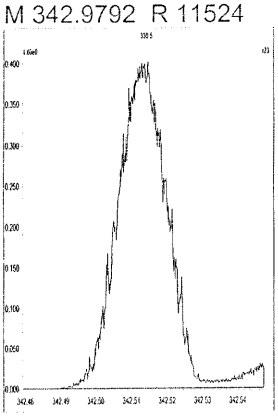
M 318.9792 R 8531



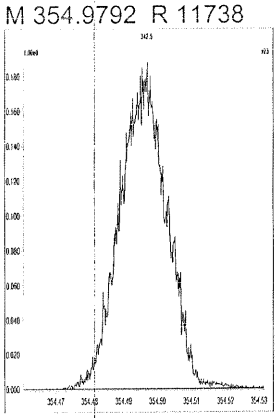
M 330.9792 R 11905



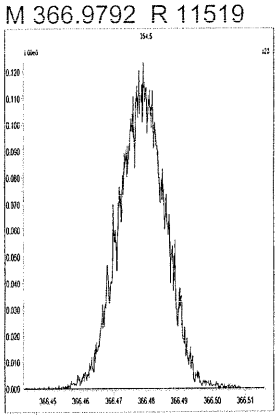
M 342.9792 R 11524



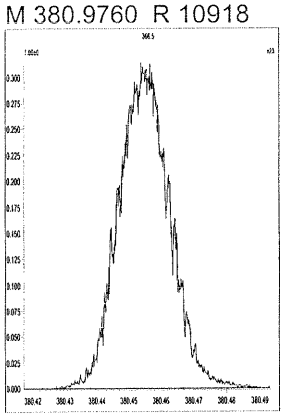
M 354.9792 R 11738



M 366.9792 R 11519



M 380.9760 R 10918



5DFA

WINDOW DEFINING MIX SUMMARY

CLIENT ID

WDM

Lab Name: COLUMBIA ANALYTICAL SERVICES

Lab Code: CAS Case No.: _____ SDG No.: _____

GC Column: DB-5 ID: 0.25 (mm) Lab File ID: U212355

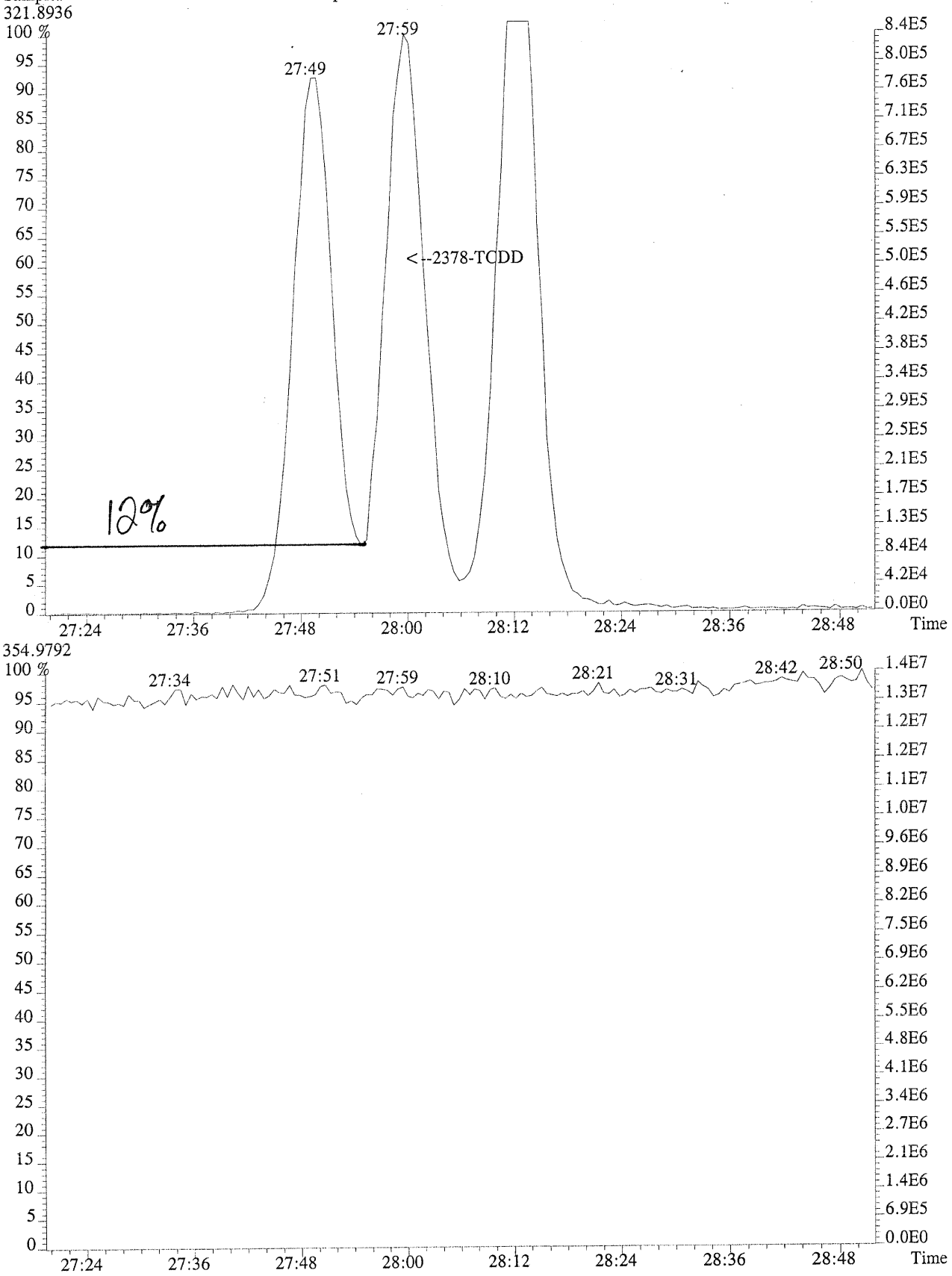
Date Analyzed: 10/30/07

Time Analyzed: 09:14:31

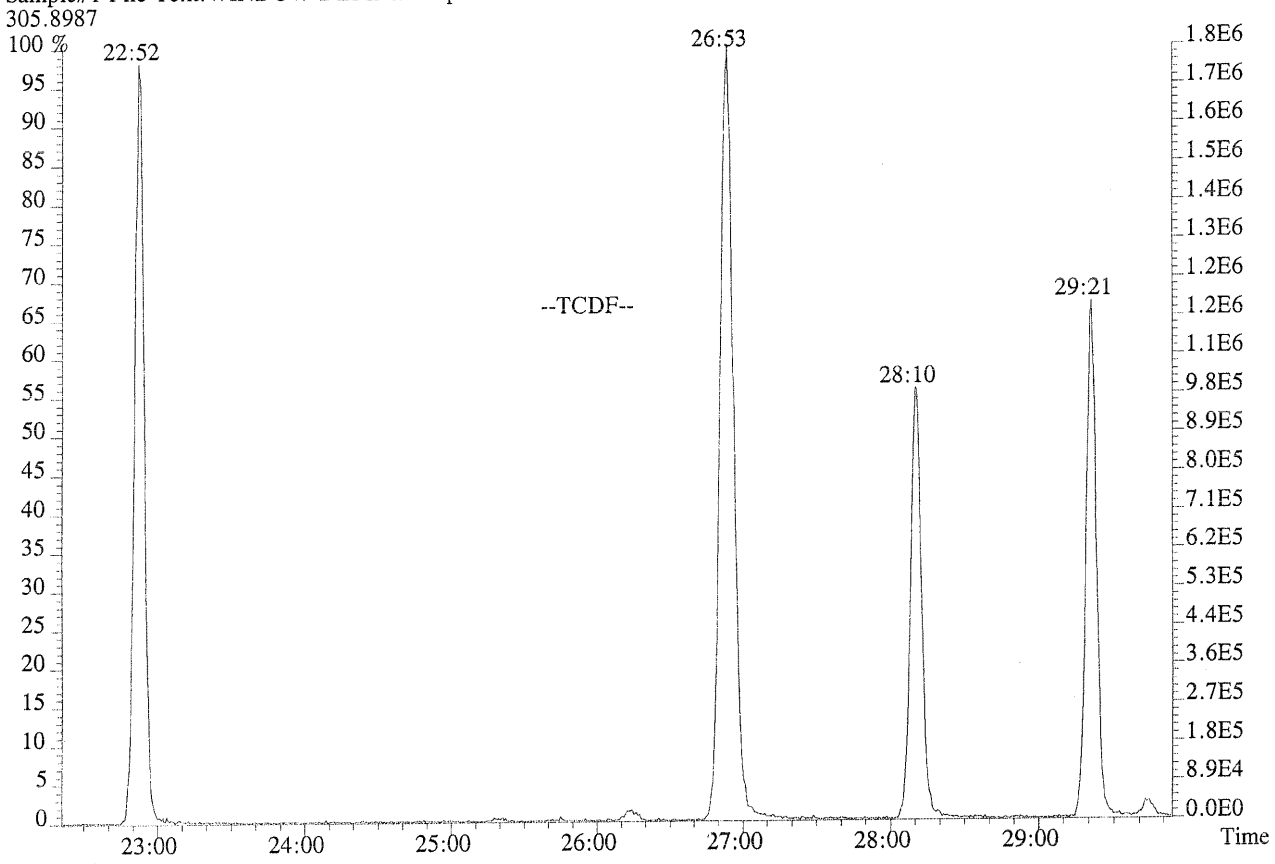
CONGENER	RT FIRST ELUTING	RT LAST ELUTING
TCDF	22:52	29:21
TCDD	24:23	29:22
PeCDF	29:43	34:11
PeCDD	31:22	34:03
HxCDF	35:11	37:41
HxCDD	35:46	37:22
HpCDF	39:06	40:18
HpCDD	39:22	39:58

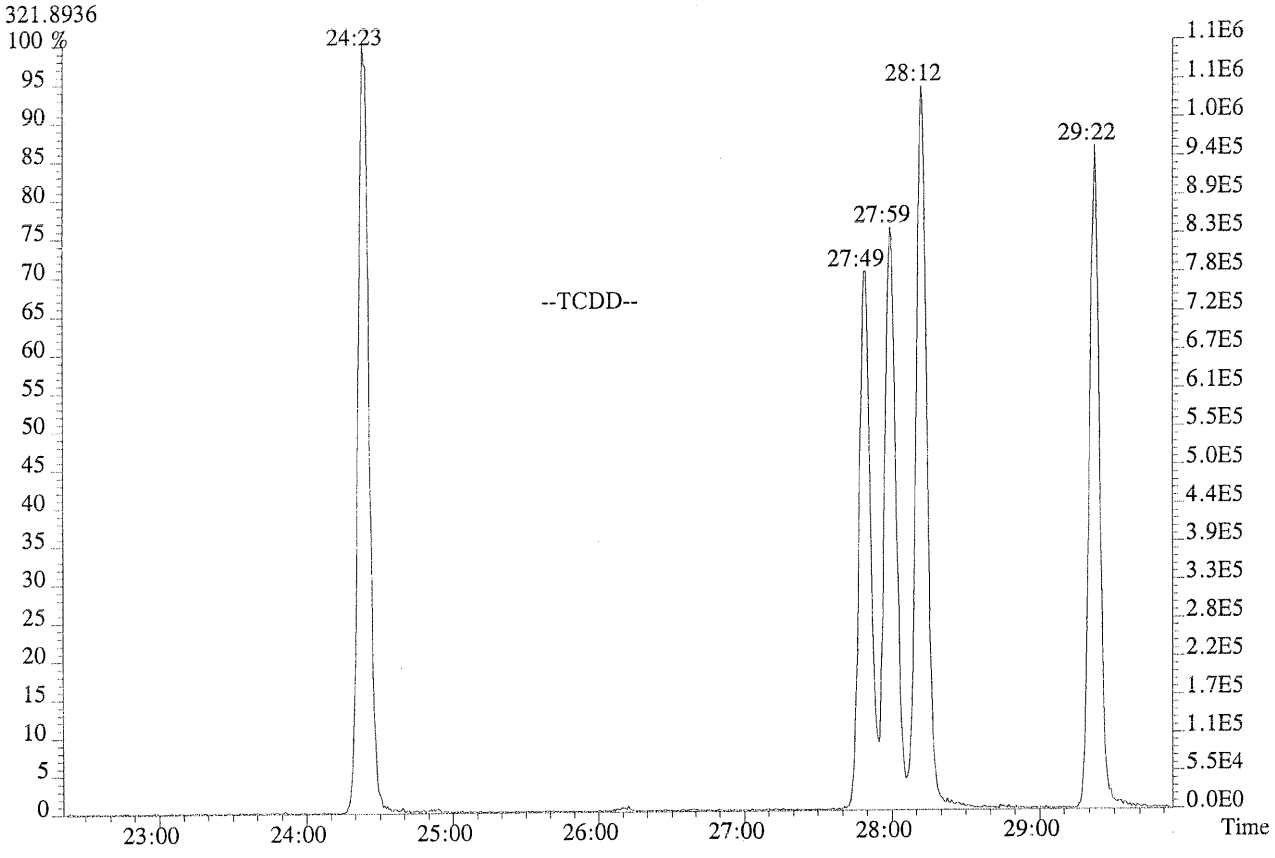
% Valley 2378-TCDD 12%

File:U212355 #1-2433 Acq:30-OCT-2007 09:14:31 Probe EI+ Magnet SIR VG BioTech Mass spec£
Sample#1 File Text:WINDOW DEFINE Exp:WINDOW DEFINE

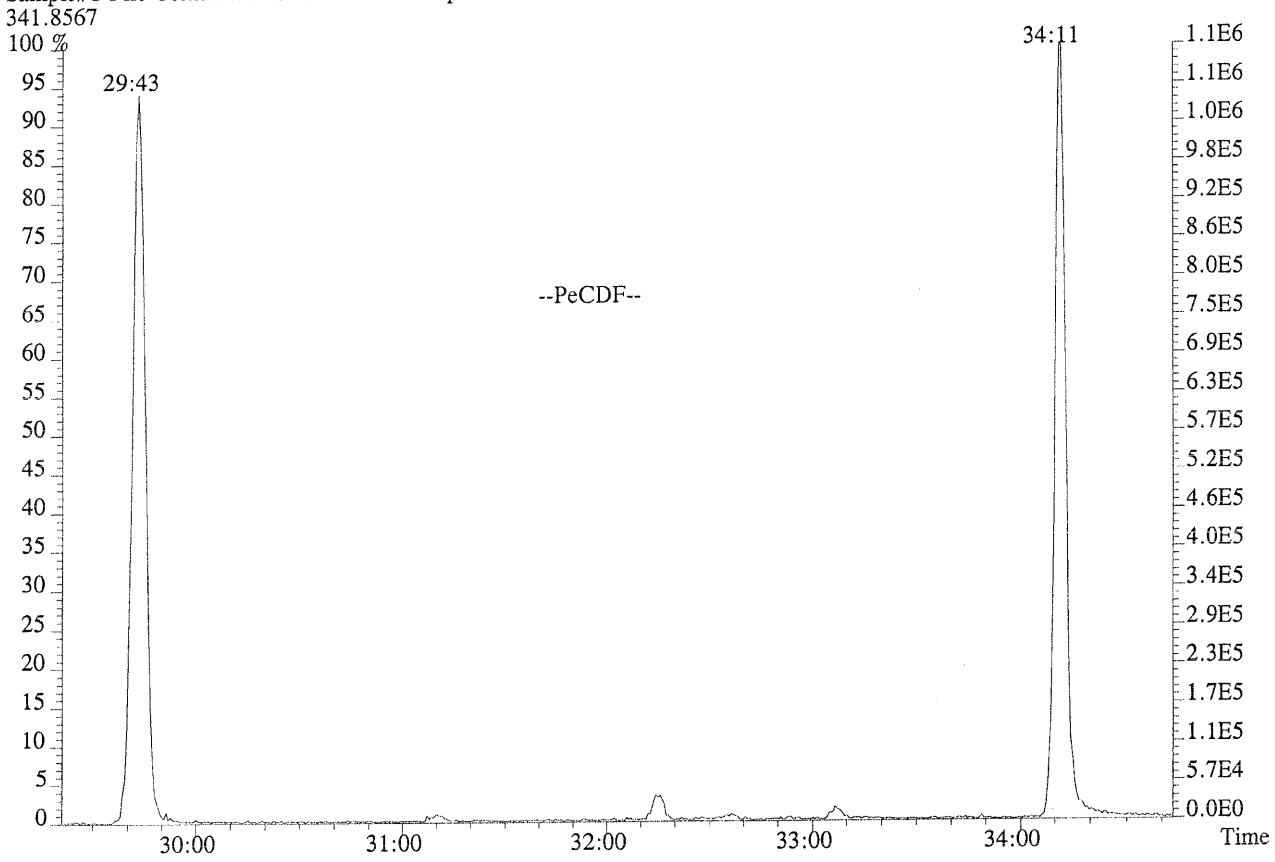


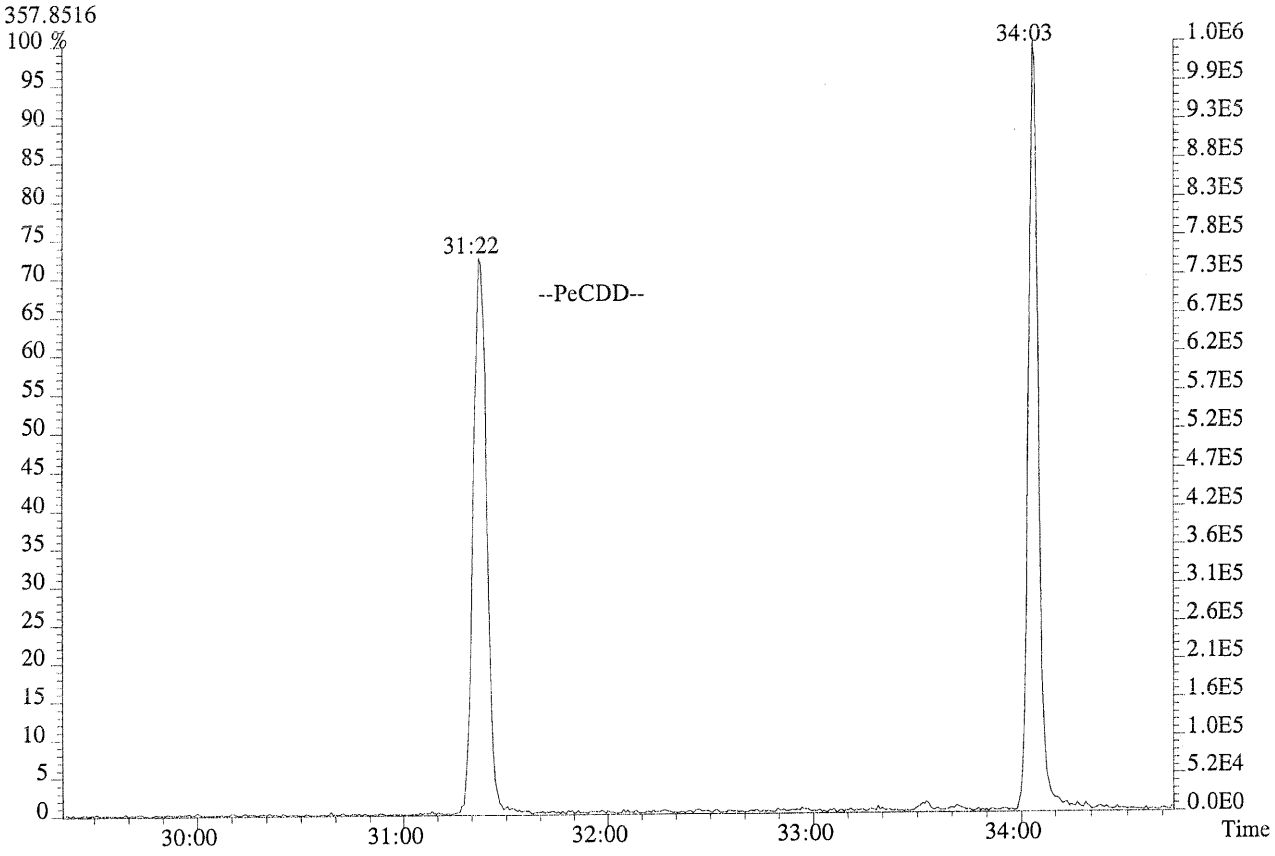
File:U212355 #1-2433 Acq:30-OCT-2007 09:14:31 Probe EI+ Magnet SIR VG BioTech Mass spec£
Sample#1 File Text:WINDOW DEFINE Exp:WINDOW DEFINE



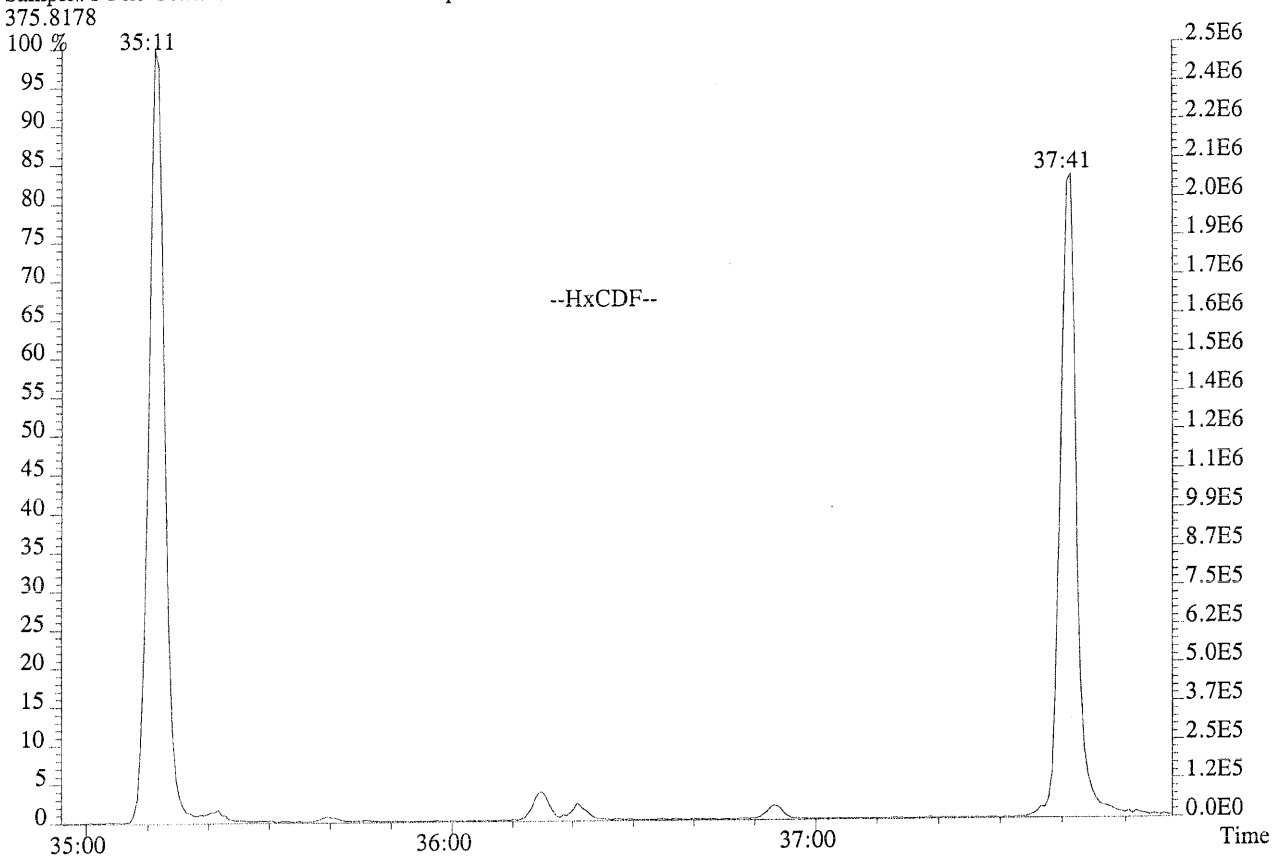


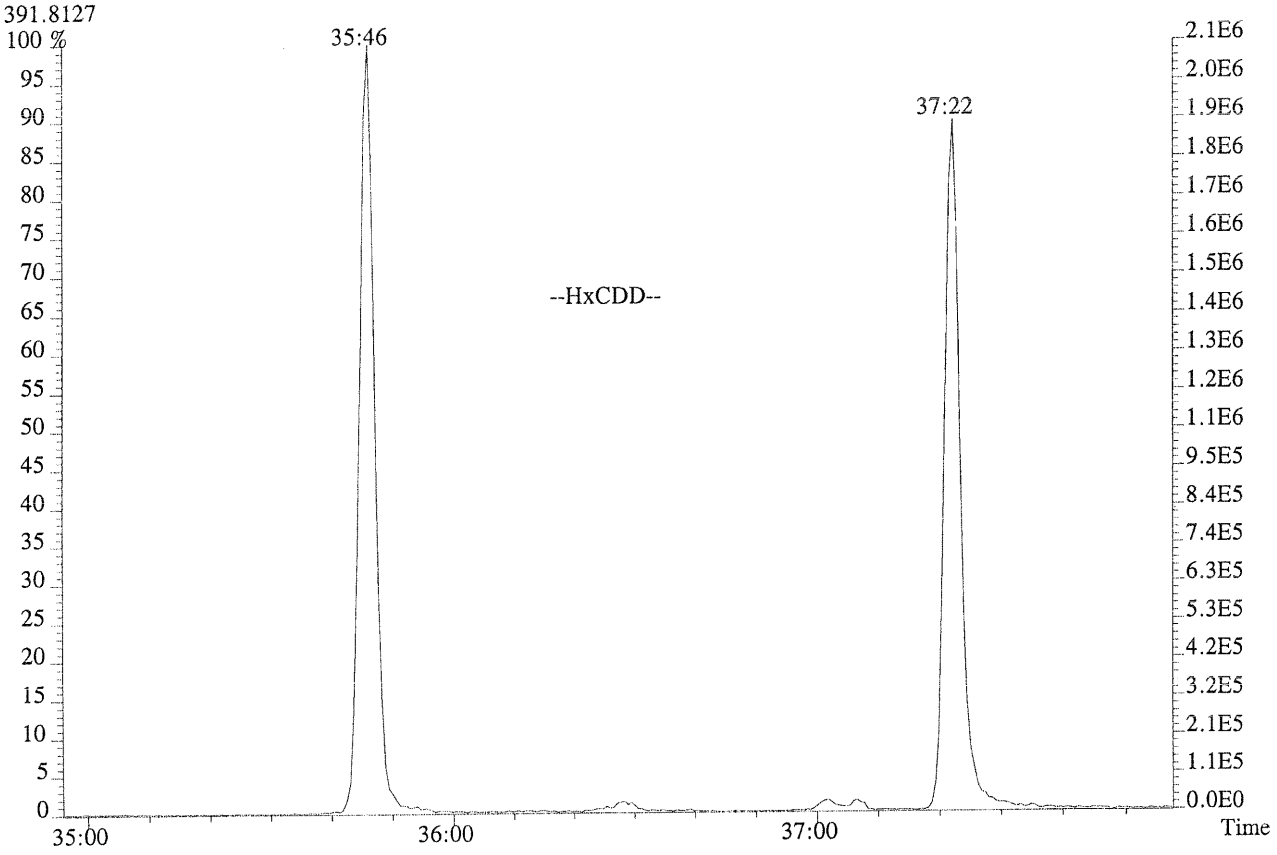
File:U212355 #1-2433 Acq:30-OCT-2007 09:14:31 Probe EI+ Magnet SIR VG BioTech Mass spec£
Sample#1 File Text:WINDOW DEFINE Exp:WINDOW DEFINE



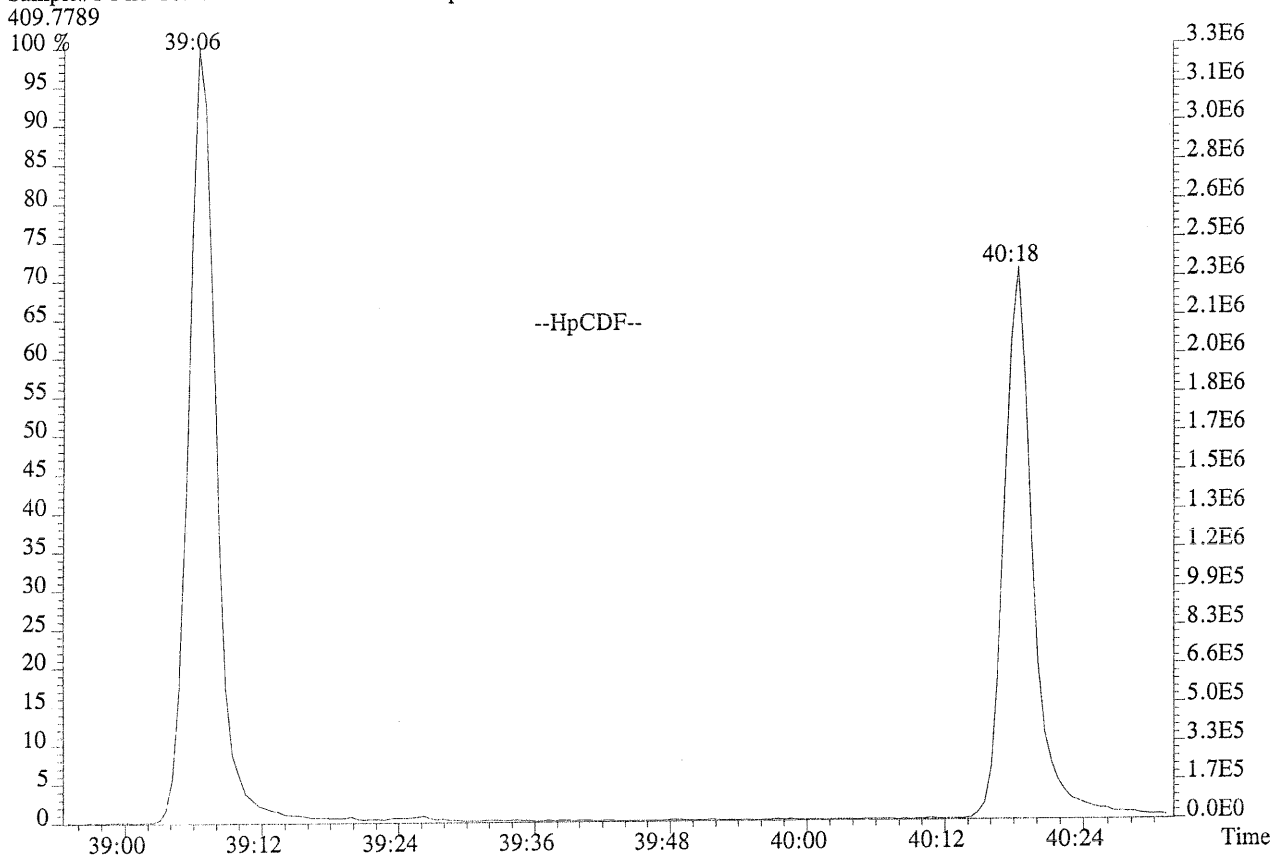


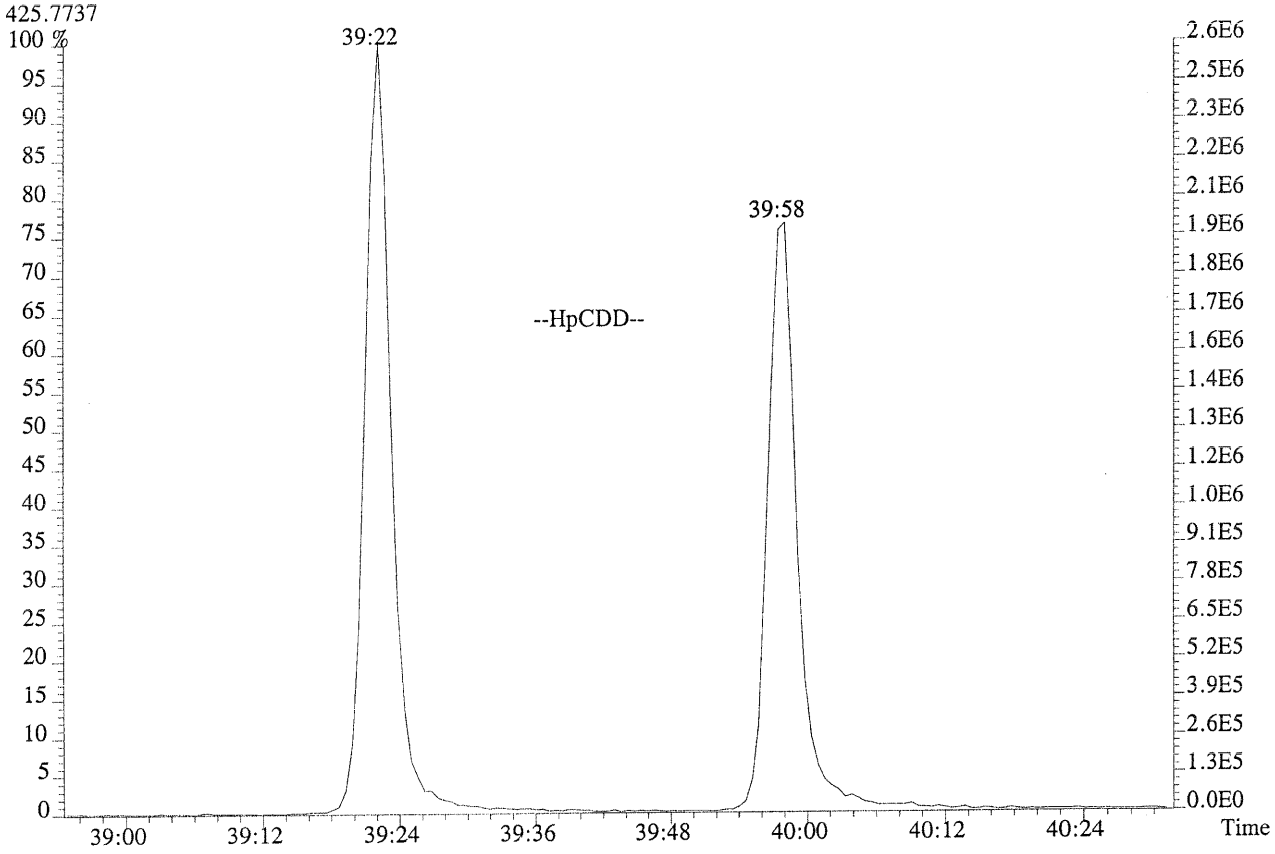
File:U212355 #1-2433 Acq:30-OCT-2007 09:14:31 Probe EI+ Magnet SIR VG BioTech Mass spec£
Sample#1 File Text:WINDOW DEFINE Exp:WINDOW DEFINE





File:U212355 #1-2433 Acq:30-OCT-2007 09:14:31 Probe EI+ Magnet SIR VG BioTech Mass spec£
Sample#1 File Text:WINDOW DEFINE Exp:WINDOW DEFINE





FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Columbia Analytical Services Episode No.:

Contract No.: SDG No.:

Initial Calibration Date: 11/04/04

Instrument ID: AutoSpec-Ultima GC Column ID: DB-5

VER Data Filename: U212356 Analysis Date: 30-OCT-07 Time: 10:58:38

	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CCAL. RRF	MEAN RRF	%D (3)
NATIVE ANALYTES						
2,3,7,8-TCDD	M/M+2	0.77	0.65-0.89	0.99	0.96	3.47
1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.32-1.78	0.91	0.97	-6.12
1,2,3,4,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	0.91	1.08	-15.96
1,2,3,6,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	1.12	1.20	-6.42
1,2,3,7,8,9-HxCDD	M+2/M+4	1.27	1.05-1.43	0.99	1.16	-14.34
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.08	0.88-1.20	0.96	1.03	-6.03
OCDD	M+2/M+4	0.88	0.76-1.02	1.10	1.11	-0.82
2,3,7,8-TCDF	M/M+2	0.78	0.65-0.89	0.94	0.97	-3.29
1,2,3,7,8-PeCDF	M+2/M+4	1.53	1.32-1.78	0.96	1.00	-4.20
2,3,4,7,8-PeCDF	M+2/M+4	1.59	1.32-1.78	1.04	1.07	-2.95
1,2,3,4,7,8-HxCDF	M+2/M+4	1.27	1.05-1.43	1.24	1.29	-3.75
1,2,3,6,7,8-HxCDF	M+2/M+4	1.26	1.05-1.43	1.23	1.31	-5.48
1,2,3,7,8,9-HxCDF	M+2/M+4	1.27	1.05-1.43	0.90	1.09	-17.35
2,3,4,6,7,8-HxCDF	M+2/M+4	1.25	1.05-1.43	1.15	1.22	-6.34
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.02	0.88-1.20	1.50	1.56	-4.18
1,2,3,4,7,8,9-HpCDF	M+2/M+4	0.99	0.88-1.20	1.01	1.21	-16.70
OCDF	M+2/M+4	0.91	0.76-1.02	1.33	1.39	-4.31

(1) See Table 6, Method 8290, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 8, Method 8290.

(3) The beginning CCAL %RSD for the 17 unlabeled standard must not exceed +/- 20%, Section 7.7.4.1. The ending CCAL must not exceed +/-25%. Section 8.3.2.4.

8290F4A

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Columbia Analytical Services Episode No.:

Contract No.: SDG No.:

Initial Calibration Date: 11/04/04

Instrument ID: AutoSpec-Ultima GC Column ID: DB-5

VER Data Filename: U212356 Analysis Date: 30-OCT-07 Time: 10:58:38

	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CCAL. RRF	MEAN RRF	%D (3)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	M/M+2	0.78	0.65-0.89	0.87	1.07	-18.99
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.32-1.78	0.91	1.01	-9.61
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.29	1.05-1.43	0.99	0.98	1.00
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.05	0.88-1.20	1.06	1.01	4.97
13C-OCDD	M+2/M+4	0.91	0.76-1.02	1.10	1.04	5.72
13C-2,3,7,8-TCDF	M/M+2	0.78	0.65-0.89	1.19	1.48	-19.60
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.57	1.32-1.78	1.26	1.51	-17.10
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.54	0.43-0.59	1.19	1.42	-16.49
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.46	0.37-0.51	1.19	1.17	1.54
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD				0.85	1.00	-14.42

(1) See Table 6, Method 8290, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 8, Method 8290.

(3) The beginning CCAL %RSD for the labeled standard must not exceed +/- 30%, Section 7.7.4.2. The ending CCAL must not exceed +/- 35%, Section 8.3.2.4.

8290F4B

Columbia Analytical Services, Inc.
Sample Response Summary
CLIENT ID.
CCAL HRCC3

Run #6 Filename U212356 Samp: 1 Inj: 1 Acquired: 30-OCT-07 10:58:38
Processed: 31-OCT-07 08:38:46 LAB. ID: CCAL HRCC3

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	26:53	7.123e+03	9.121e+03	0.78	yes	no
2	Unk	1,2,3,7,8-PeCDF	32:15	2.644e+04	1.723e+04	1.53	yes	no
3	Unk	2,3,4,7,8-PeCDF	33:07	2.905e+04	1.831e+04	1.59	yes	no
4	Unk	1,2,3,4,7,8-HxCDF	36:15	3.201e+04	2.529e+04	1.27	yes	no
5	Unk	1,2,3,6,7,8-HxCDF	36:21	3.179e+04	2.513e+04	1.26	yes	no
6	Unk	2,3,4,6,7,8-HxCDF	36:53	2.938e+04	2.346e+04	1.25	yes	no
7	Unk	1,2,3,7,8,9-HxCDF	37:37	2.330e+04	1.836e+04	1.27	yes	no
8	Unk	1,2,3,4,6,7,8-HpCDF	39:07	3.510e+04	3.435e+04	1.02	yes	no
9	Unk	1,2,3,4,7,8,9-HpCDF	40:19	2.328e+04	2.345e+04	0.99	yes	no
10	Unk	OCDF	42:42	5.446e+04	5.967e+04	0.91	yes	no
11	Unk	2,3,7,8-TCDD	27:59	5.416e+03	7.075e+03	0.77	yes	no
12	Unk	1,2,3,7,8-PeCDD	33:31	1.836e+04	1.169e+04	1.57	yes	no
13	Unk	1,2,3,4,7,8-HxCDD	37:02	1.953e+04	1.556e+04	1.26	yes	no
14	Unk	1,2,3,6,7,8-HxCDD	37:06	2.428e+04	1.914e+04	1.27	yes	no
15	Unk	1,2,3,7,8,9-HxCDD	37:24	2.157e+04	1.693e+04	1.27	yes	no
16	Unk	1,2,3,4,6,7,8-HpCDD	39:58	2.072e+04	1.918e+04	1.08	yes	no
17	Unk	OCDD	42:35	4.428e+04	5.032e+04	0.88	yes	no
18	IS	13C-2,3,7,8-TCDF	26:50	3.793e+04	4.857e+04	0.78	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	32:13	5.590e+04	3.555e+04	1.57	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	36:14	8.093e+04	1.497e+05	0.54	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	39:06	7.302e+04	1.590e+05	0.46	yes	no
22	IS	13C-2,3,7,8-TCDD	27:57	2.757e+04	3.553e+04	0.78	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	33:31	4.047e+04	2.575e+04	1.57	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	37:06	1.091e+05	8.451e+04	1.29	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	39:57	1.059e+05	1.012e+05	1.05	yes	no
26	IS	13C-OCDD	42:34	2.049e+05	2.241e+05	0.91	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	27:41	3.205e+04	4.079e+04	0.79	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:23	1.074e+05	8.722e+04	1.23	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	27:59	1.244e+04				
					SUM AREA			
30	Tot	Total Tetra-Furans	26:14		1.660e+04	0.69	yes	
31	Tot	Total Tetra-Dioxins	27:48		1.255e+04	0.77	yes	
32	Tot	Total Penta-Furans	32:15		9.133e+04	1.53	yes	
33	Tot	Total Penta-Dioxins	33:31		3.005e+04	1.57	yes	
34	Tot	Total Hexa-Furans	36:15		2.087e+05	1.27	yes	
35	Tot	Total Hexa-Dioxins	37:02		1.170e+05	1.26	yes	
36	Tot	Total Hepta-Furans	39:07		1.162e+05	1.02	yes	
37	Tot	Total Hepta-Dioxins	39:23		4.021e+04	1.00	yes	

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Columbia Analytical Services,Inc. CLIENT ID.
Signal/Noise Height Ratio Summary CCAL HRCC3

Run #6 Filename U212356 Samp: 1 Inj: 1 Acquired: 30-OCT-07 10:58:38

Processed: 31-OCT-07 08:38:46 LAB. ID: CCAL HRCC3

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	7.67e+05	1.22e+03	6.3e+02	1.00e+06	1.94e+03	5.1e+02
2	1,2,3,7,8-PeCDF	4.22e+06	5.84e+02	7.2e+03	2.77e+06	1.07e+03	2.6e+03
3	2,3,4,7,8-PeCDF	4.86e+06	5.84e+02	8.3e+03	3.04e+06	1.07e+03	2.8e+03
4	1,2,3,4,7,8-HxCDF	6.37e+06	1.59e+03	4.0e+03	5.12e+06	1.29e+03	4.0e+03
5	1,2,3,6,7,8-HxCDF	5.97e+06	1.59e+03	3.8e+03	4.74e+06	1.29e+03	3.7e+03
6	2,3,4,6,7,8-HxCDF	5.71e+06	1.59e+03	3.6e+03	4.55e+06	1.29e+03	3.5e+03
7	1,2,3,7,8,9-HxCDF	4.39e+06	1.59e+03	2.8e+03	3.44e+06	1.29e+03	2.7e+03
8	1,2,3,4,6,7,8-HpCDF	7.36e+06	2.31e+03	3.2e+03	7.29e+06	4.80e+03	1.5e+03
9	1,2,3,4,7,8,9-HpCDF	4.63e+06	2.31e+03	2.0e+03	4.58e+06	4.80e+03	9.6e+02
10	OCDF	8.82e+06	5.16e+02	1.7e+04	9.49e+06	7.04e+02	1.3e+04
11	2,3,7,8-TCDD	6.92e+05	6.48e+02	1.1e+03	8.71e+05	5.44e+02	1.6e+03
12	1,2,3,7,8-PeCDD	3.11e+06	1.42e+03	2.2e+03	2.01e+06	1.25e+03	1.6e+03
13	1,2,3,4,7,8-HxCDD	4.26e+06	1.95e+03	2.2e+03	3.39e+06	2.30e+03	1.5e+03
14	1,2,3,6,7,8-HxCDD	4.57e+06	1.95e+03	2.3e+03	3.62e+06	2.30e+03	1.6e+03
15	1,2,3,7,8,9-HxCDD	4.13e+06	1.95e+03	2.1e+03	3.28e+06	2.30e+03	1.4e+03
16	1,2,3,4,6,7,8-HpCDD	4.25e+06	9.88e+02	4.3e+03	4.05e+06	6.60e+02	6.1e+03
17	OCDD	7.13e+06	7.80e+02	9.1e+03	8.11e+06	5.64e+02	1.4e+04
18	13C-2,3,7,8-TCDF	4.36e+06	2.14e+03	2.0e+03	5.54e+06	1.04e+03	5.3e+03
19	13C-1,2,3,7,8-PeCDF	8.99e+06	8.04e+02	1.1e+04	5.71e+06	5.32e+02	1.1e+04
20	13C-1,2,3,4,7,8-HxCDF	1.58e+07	9.52e+02	1.7e+04	2.92e+07	1.76e+03	1.7e+04
21	13C-1,2,3,4,6,7,8-HpCDF	1.53e+07	4.40e+03	3.5e+03	3.34e+07	8.76e+03	3.8e+03
22	13C-2,3,7,8-TCDD	3.55e+06	1.57e+03	2.3e+03	4.54e+06	6.80e+02	6.7e+03
23	13C-1,2,3,7,8-PeCDD	7.09e+06	5.36e+02	1.3e+04	4.55e+06	3.76e+02	1.2e+04
24	13C-1,2,3,6,7,8-HxCDD	2.19e+07	2.40e+03	9.2e+03	1.70e+07	1.86e+03	9.1e+03
25	13C-1,2,3,4,6,7,8-HpCDD	2.20e+07	9.96e+02	2.2e+04	2.11e+07	9.16e+02	2.3e+04
26	13C-OCDD	3.29e+07	5.72e+02	5.8e+04	3.58e+07	9.48e+02	3.8e+04
27	13C-1,2,3,4-TCDD	4.20e+06	1.57e+03	2.7e+03	5.29e+06	6.80e+02	7.8e+03
28	13C-1,2,3,7,8,9-HxCDD	2.09e+07	2.40e+03	8.7e+03	1.70e+07	1.86e+03	9.1e+03
29	37Cl-2,3,7,8-TCDD	1.56e+06	1.24e+03	1.3e+03			

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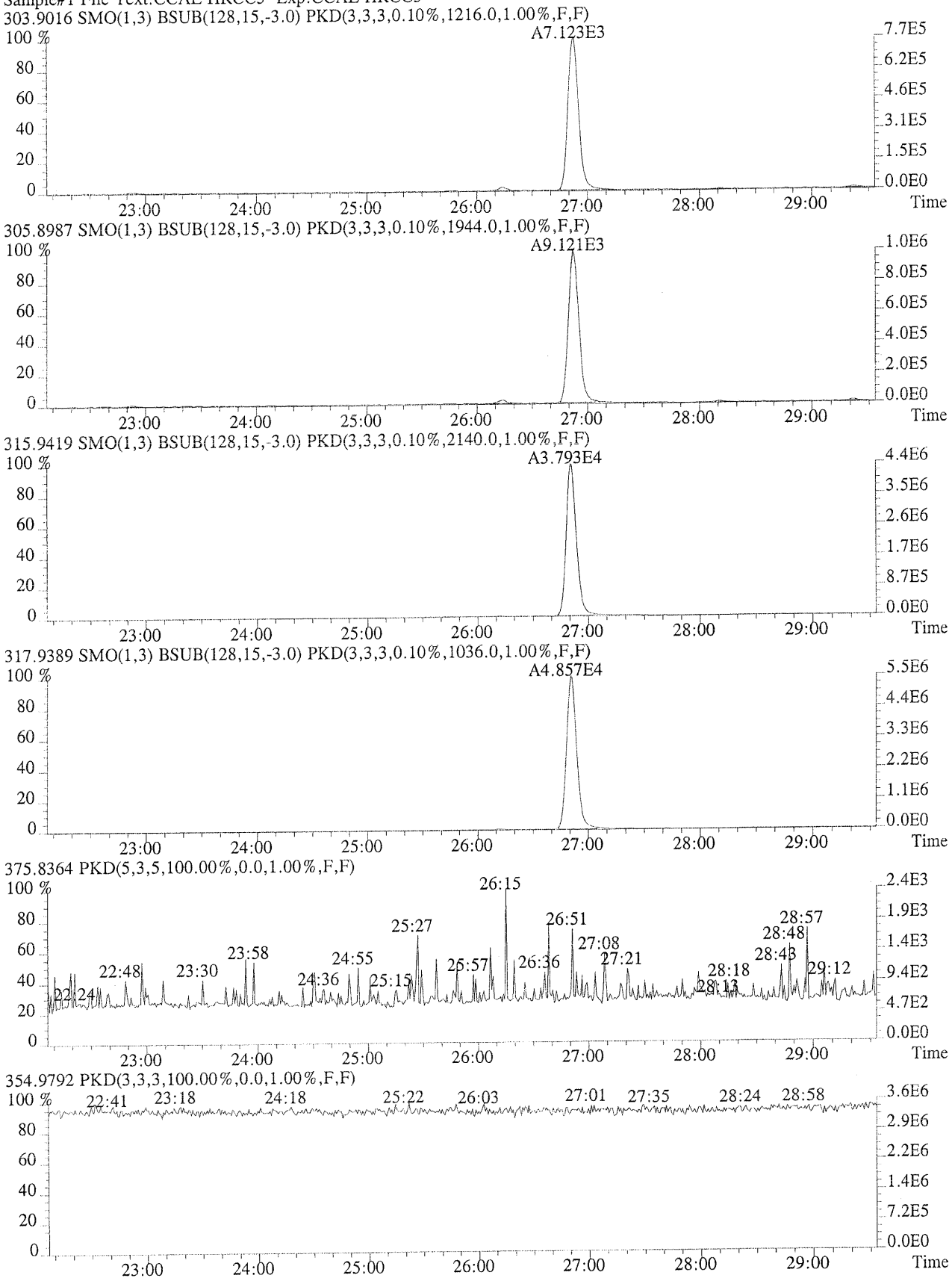
File:U212356 #1-621 Acq:30-OCT-2007 10:58:38 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:CCAL HRCC3 Exp:CCAL HRCC3



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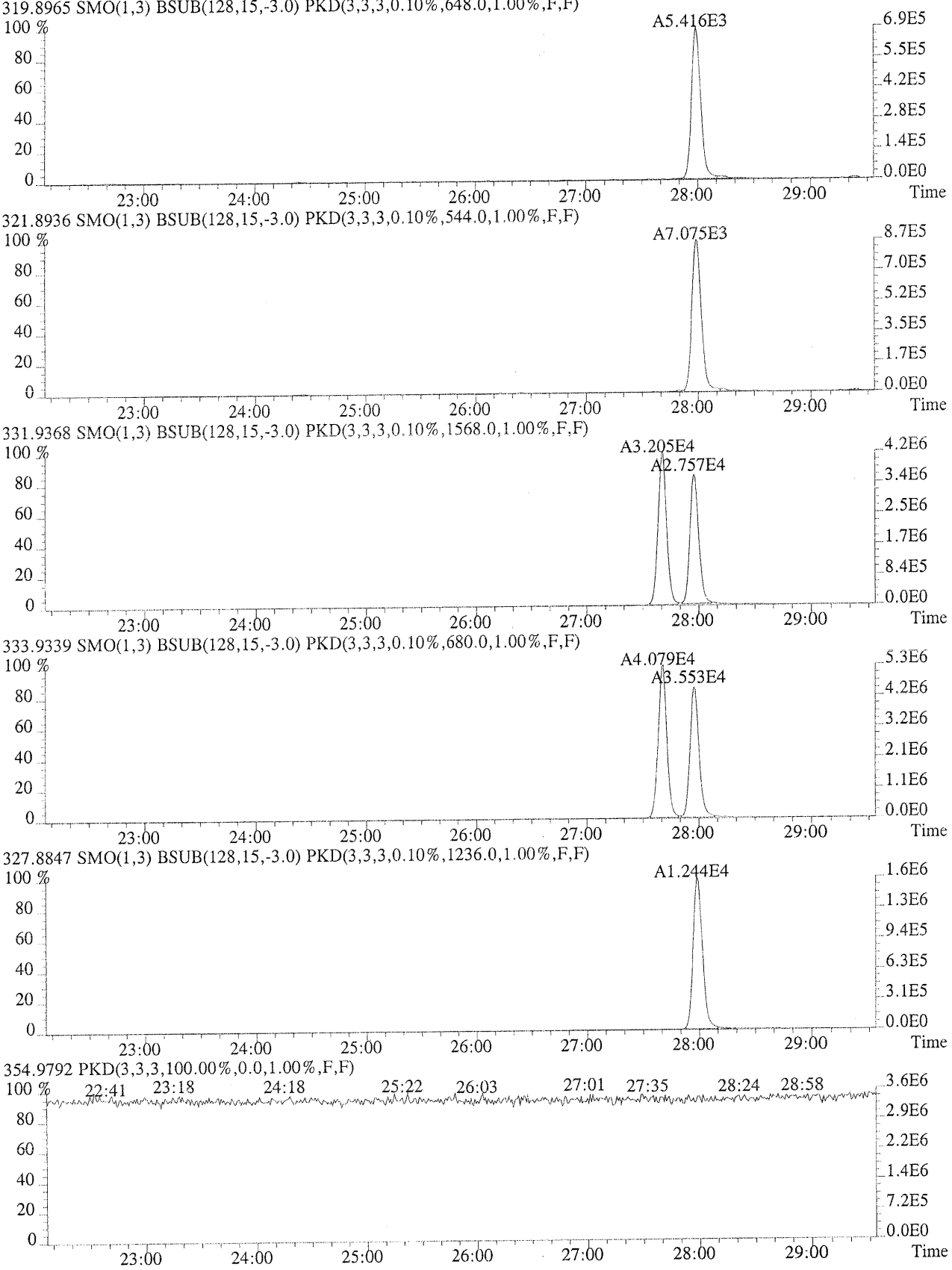

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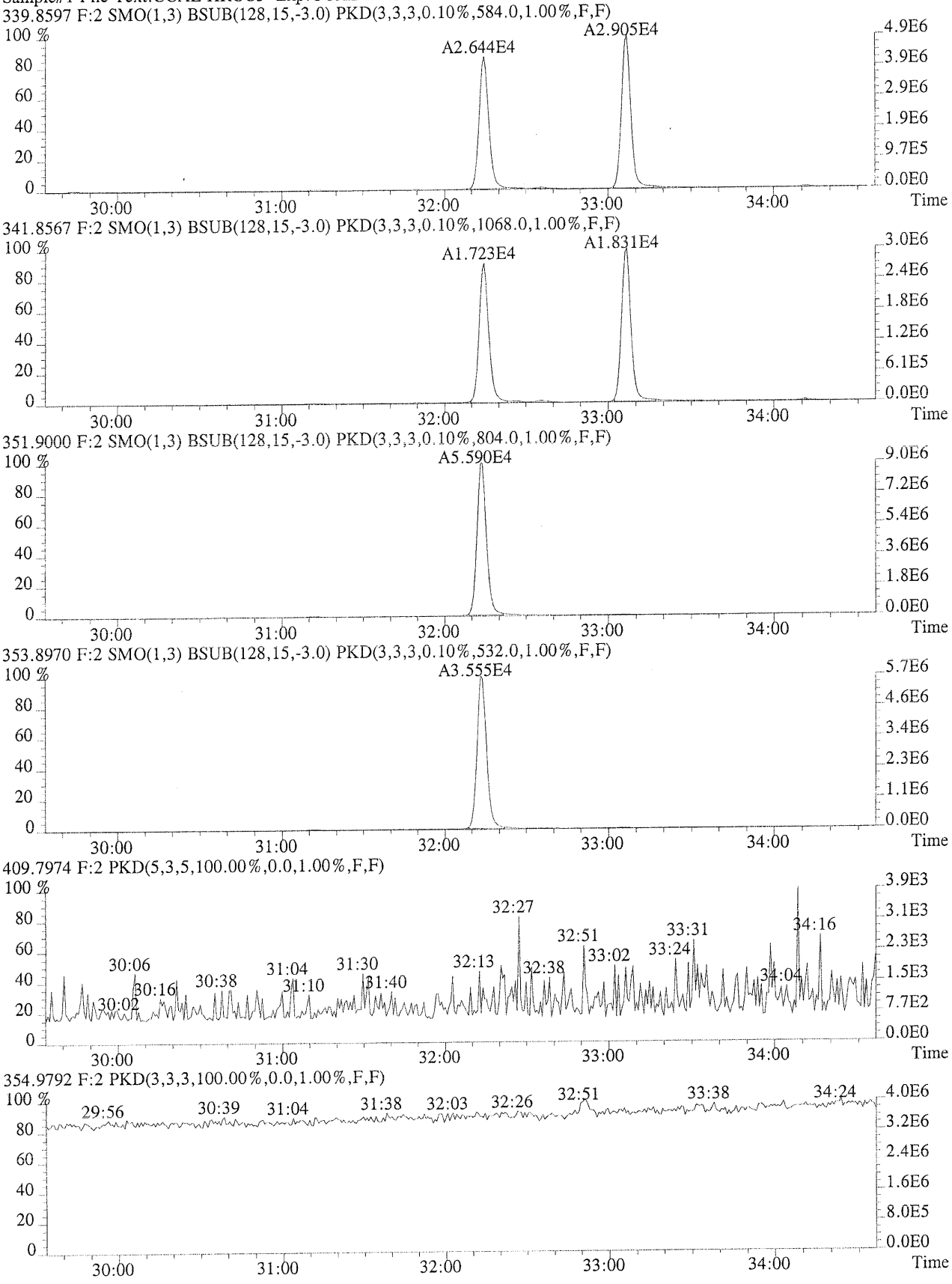

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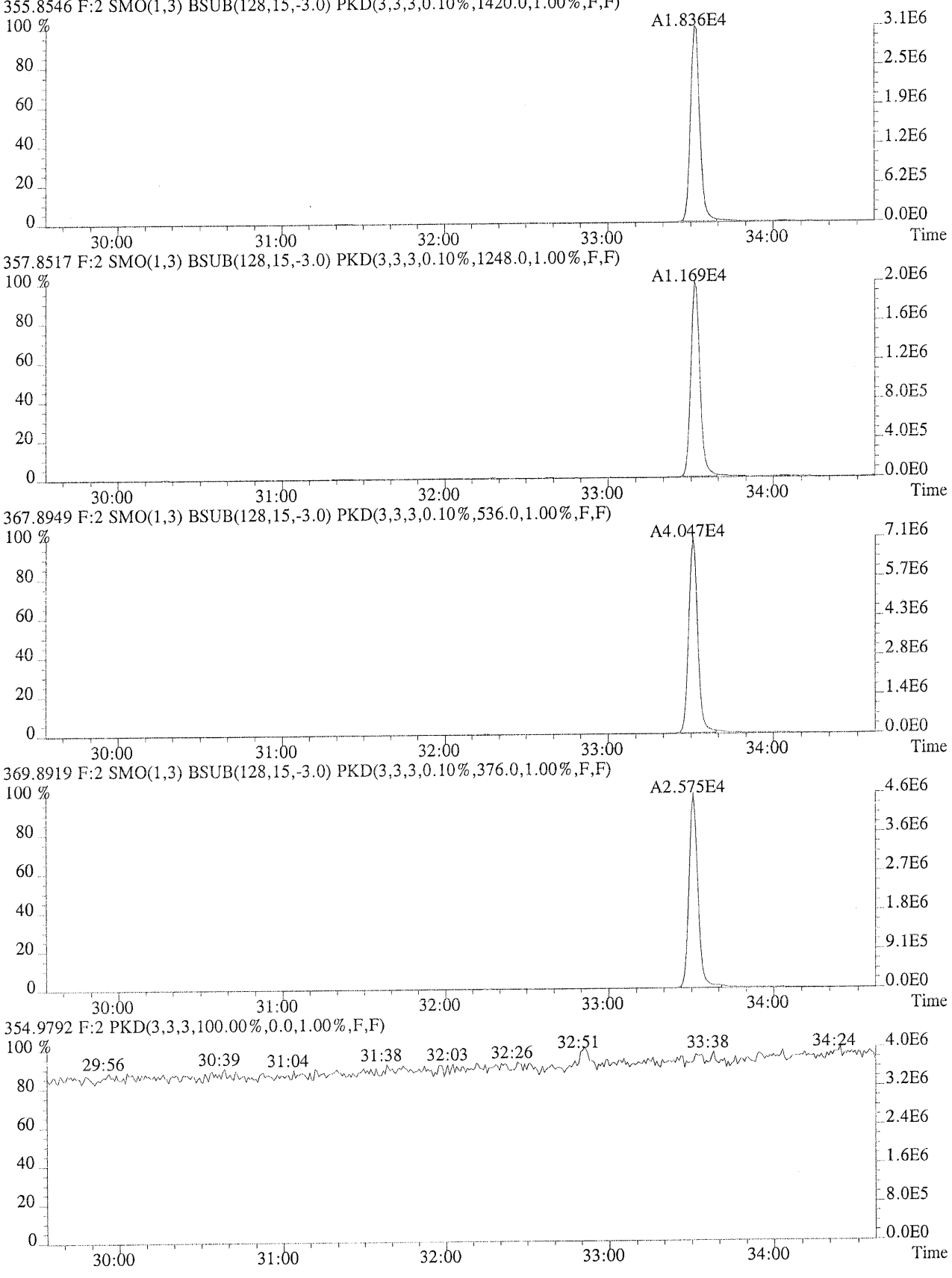

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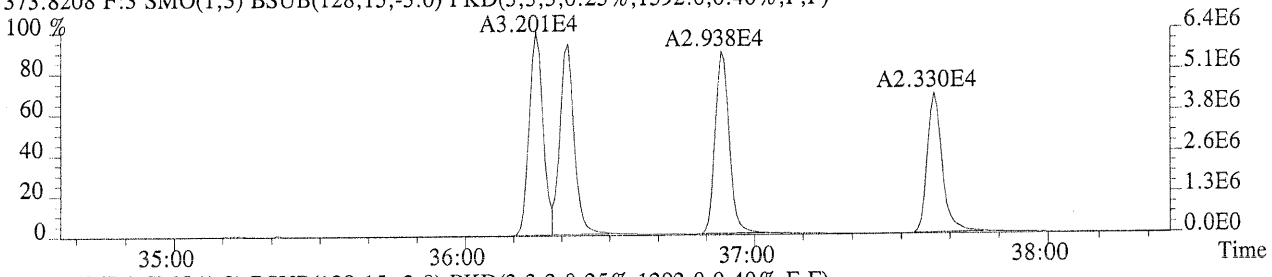
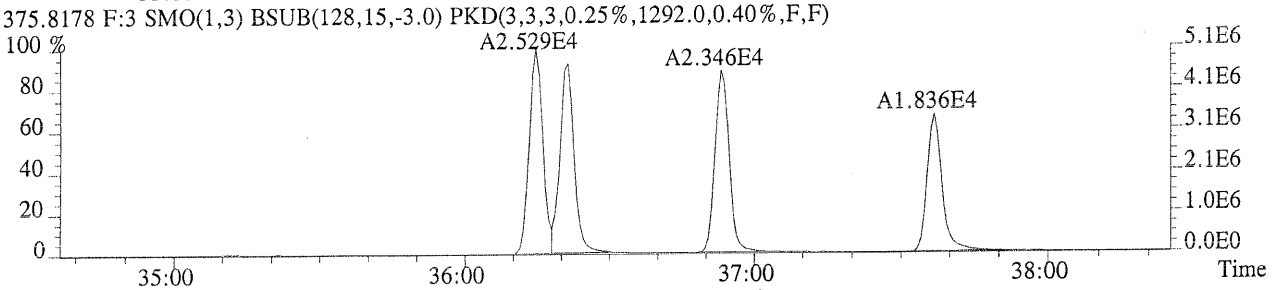
Sample#1 File Text:CCAL HRCC3 Exp:CCAL HRCC3

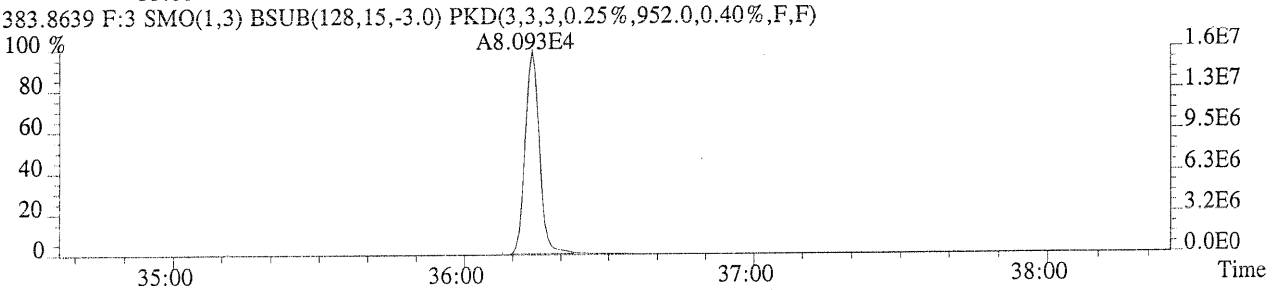
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1592.0,0.40%,F,F)



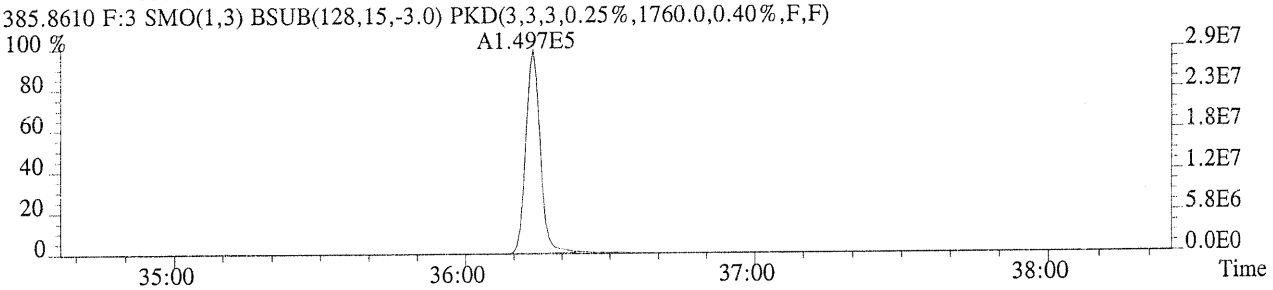
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1292.0,0.40%,F,F)



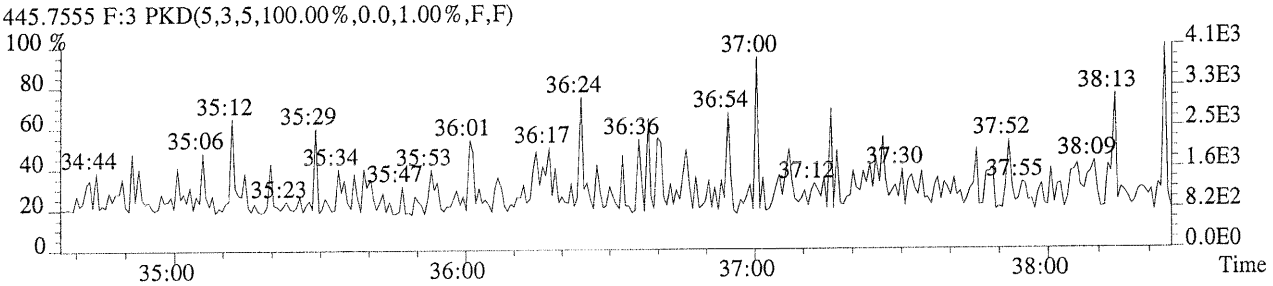
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,952.0,0.40%,F,F)



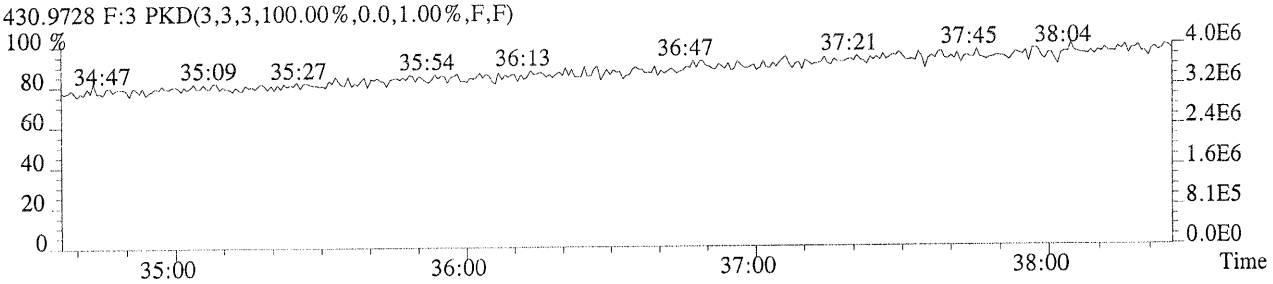
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1760.0,0.40%,F,F)



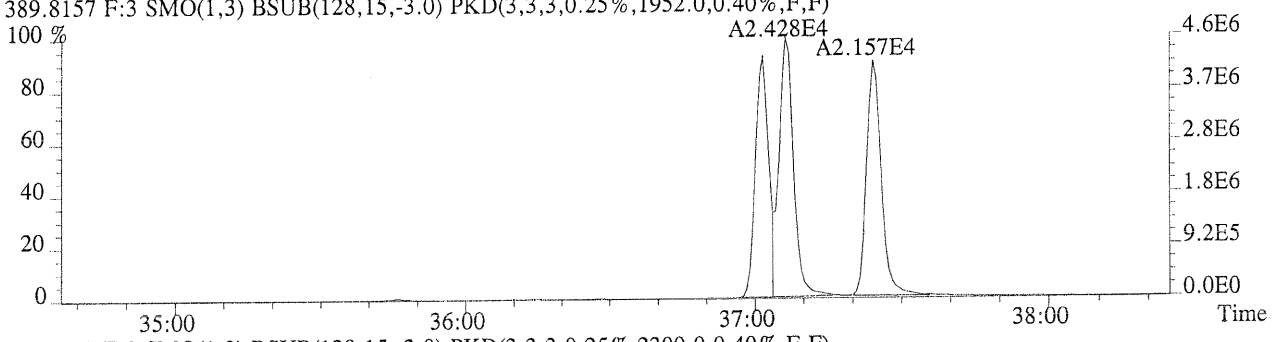
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

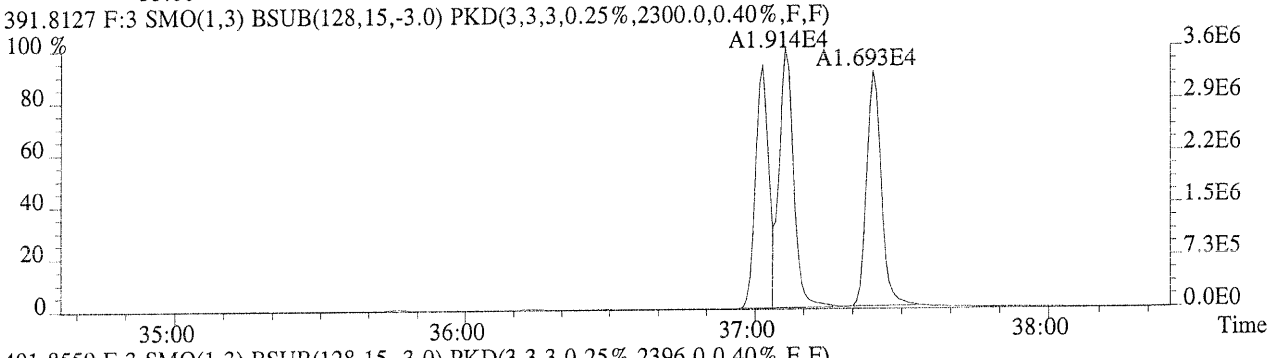


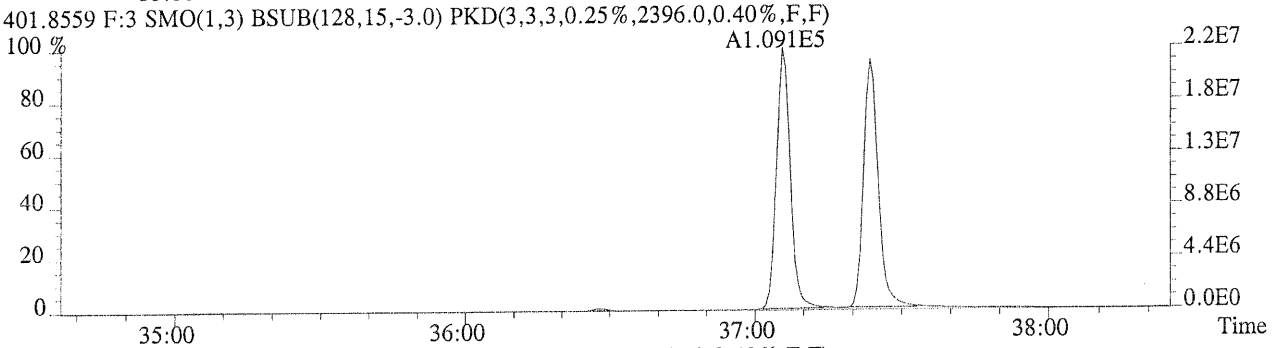
430.9728 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

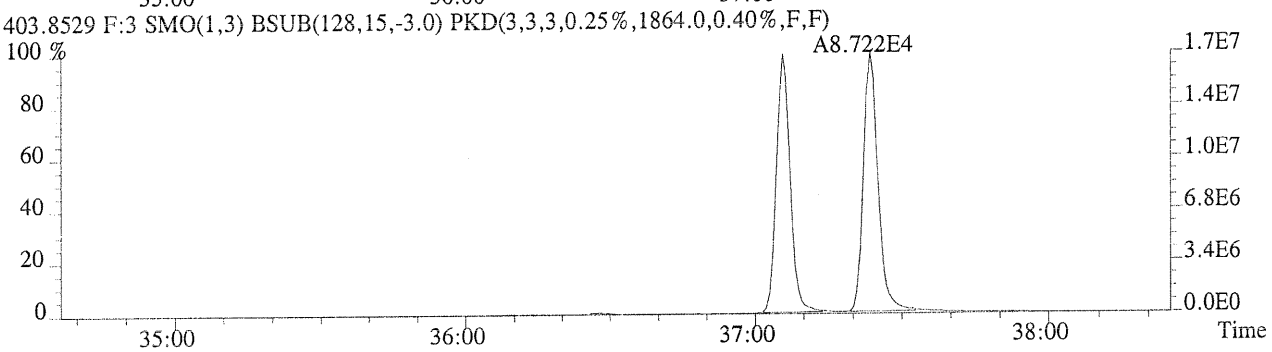


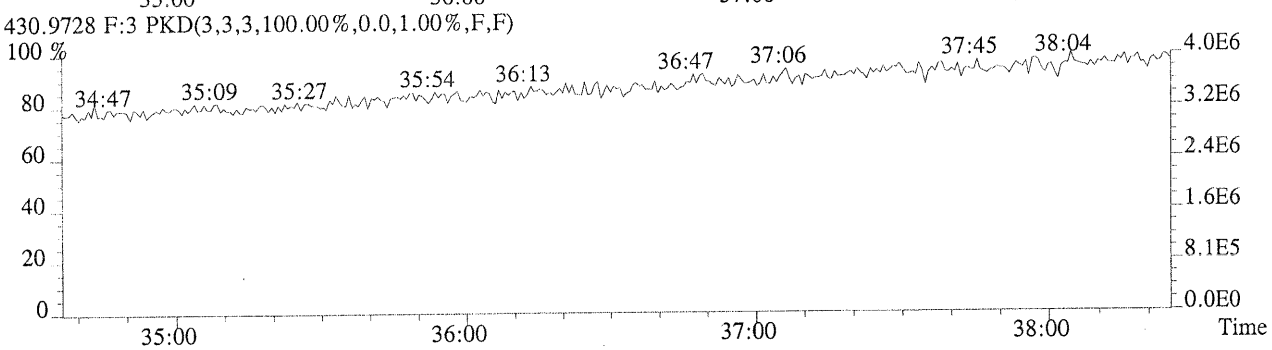
File:U212356 #1-345 Acq:30-OCT-2007 10:58:38 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:CCAL HRCC3 Exp:CCAL HRCC3





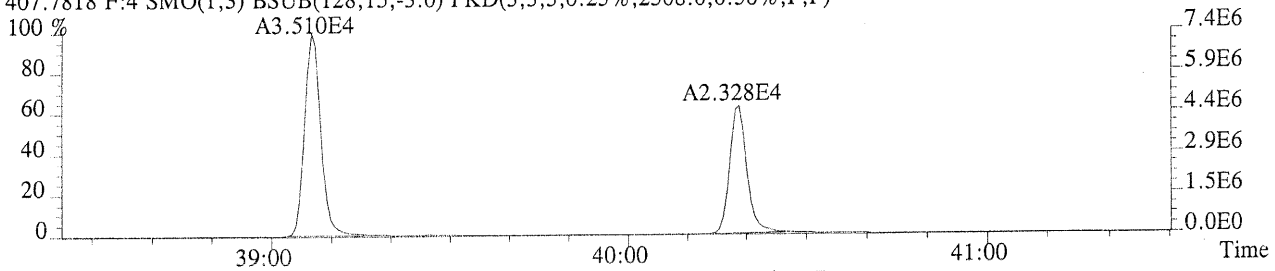




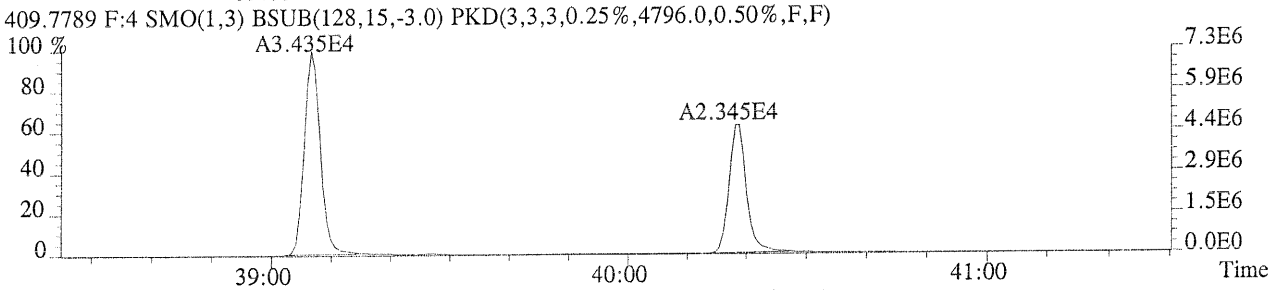


File:U212356 #1-281 Acq:30-OCT-2007 10:58:38 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 File Text:CCAL HRCC3 Exp:CCAL HRCC3

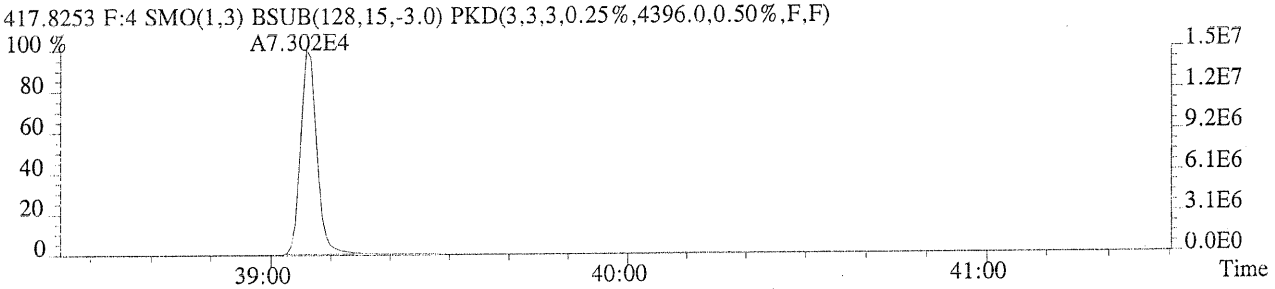
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2308.0,0.50%,F,F)



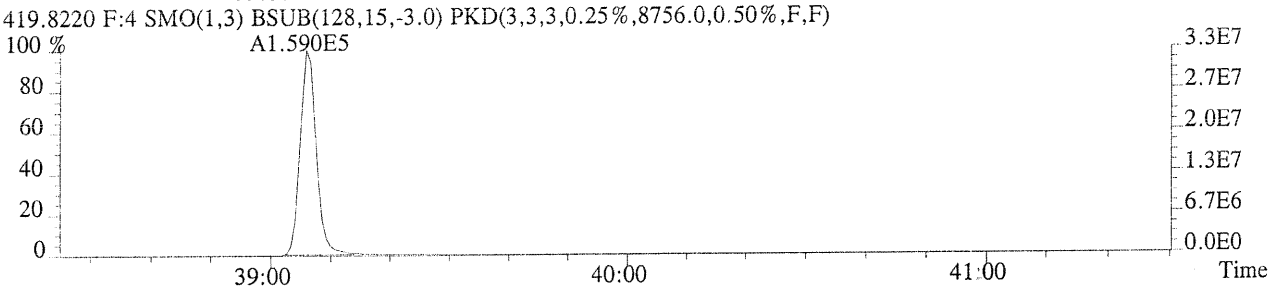
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4796.0,0.50%,F,F)



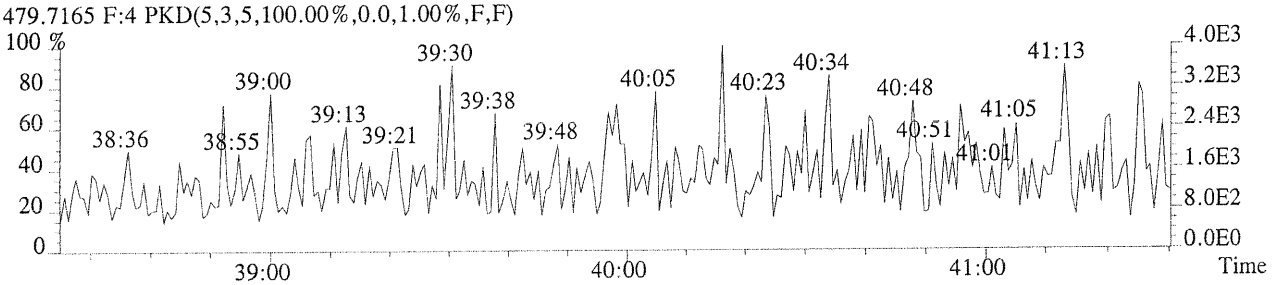
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4396.0,0.50%,F,F)



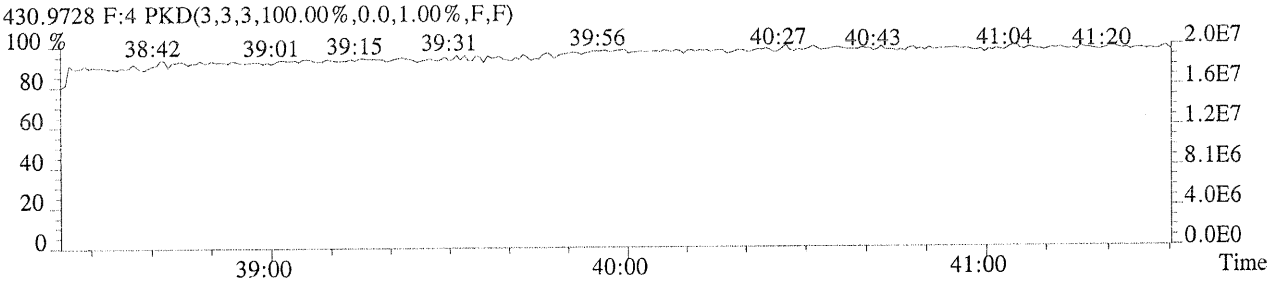
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,8756.0,0.50%,F,F)



479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

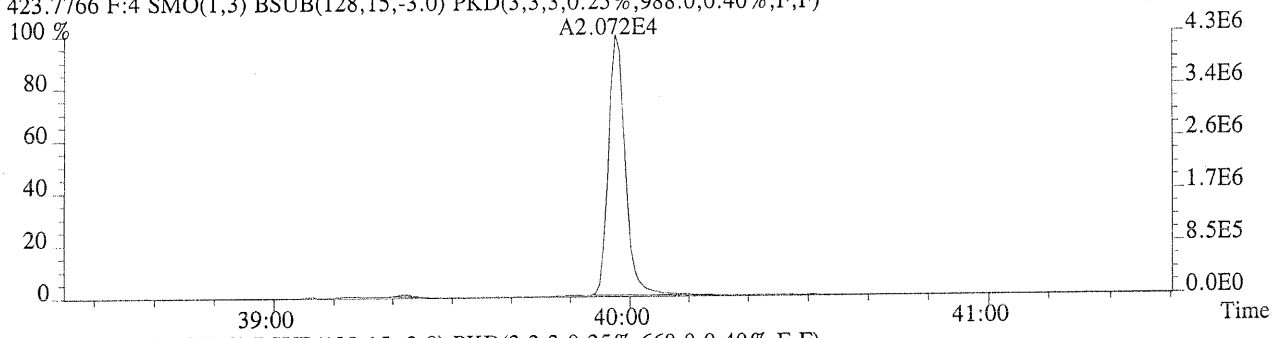


430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

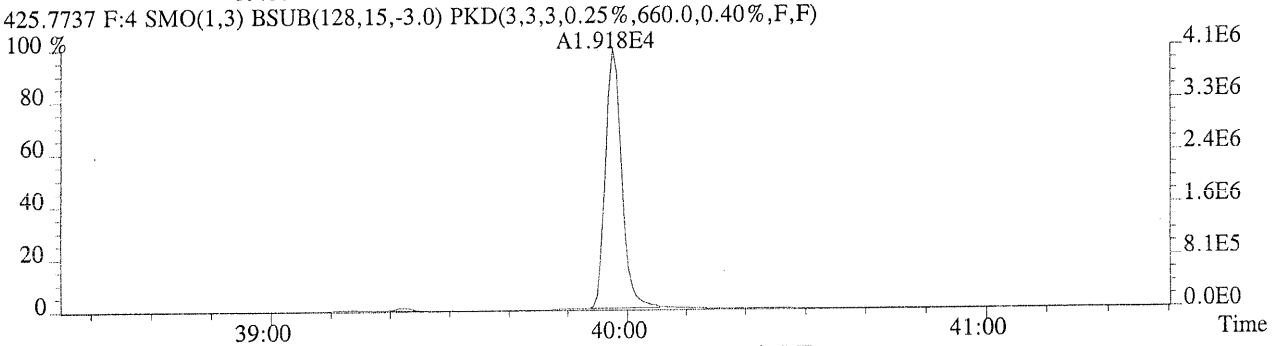


File:U212356 #1-281 Acq:30-OCT-2007 10:58:38 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:CCAL HRCC3 Exp:CCAL HRCC3

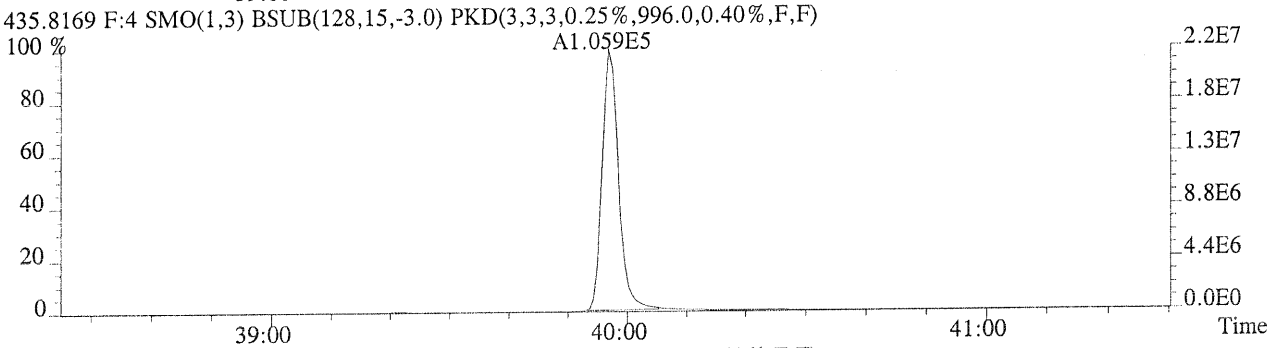
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,988.0,0.40%,F,F)



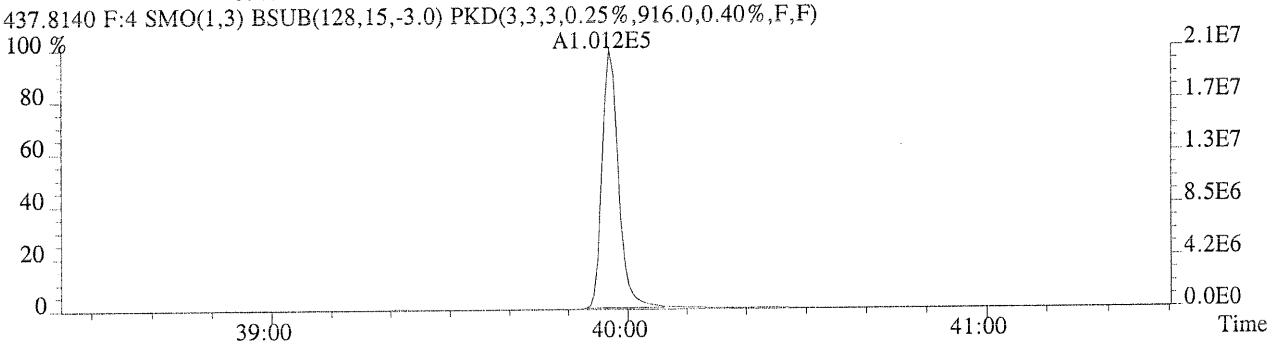
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,660.0,0.40%,F,F)



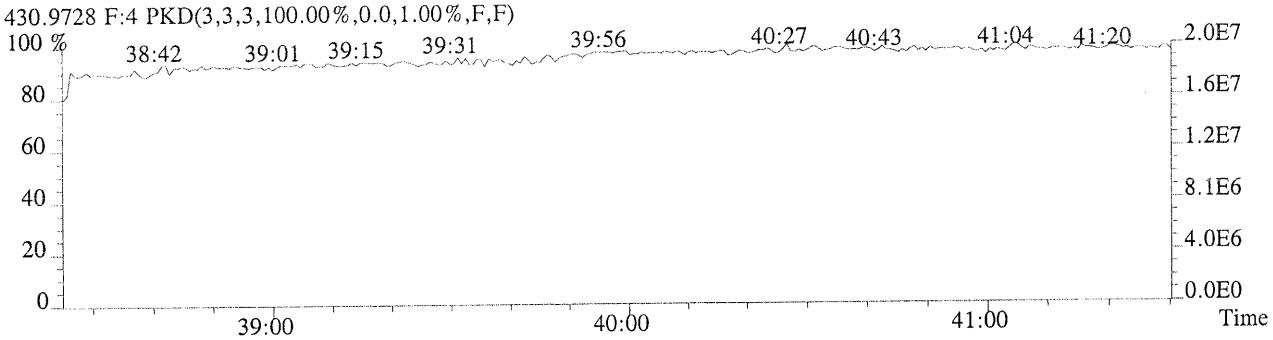
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,996.0,0.40%,F,F)



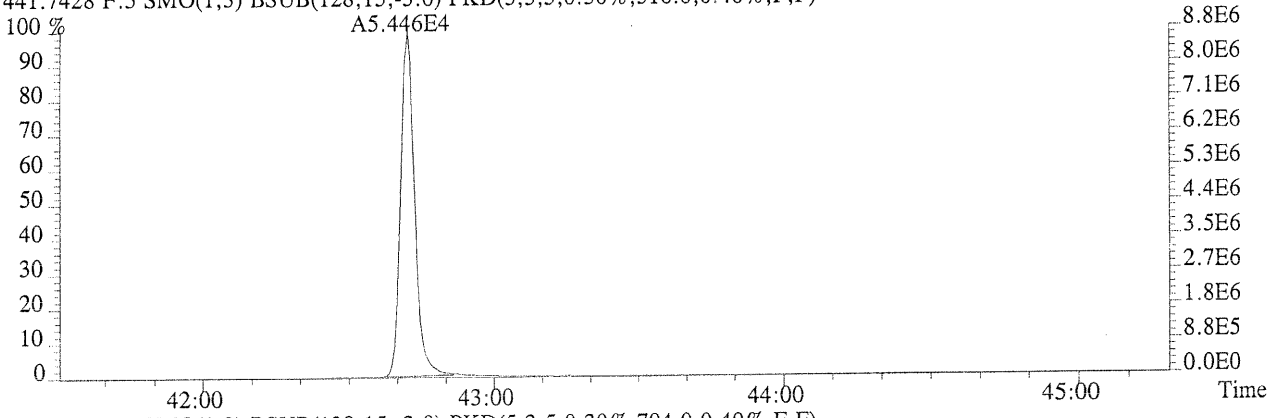
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,916.0,0.40%,F,F)



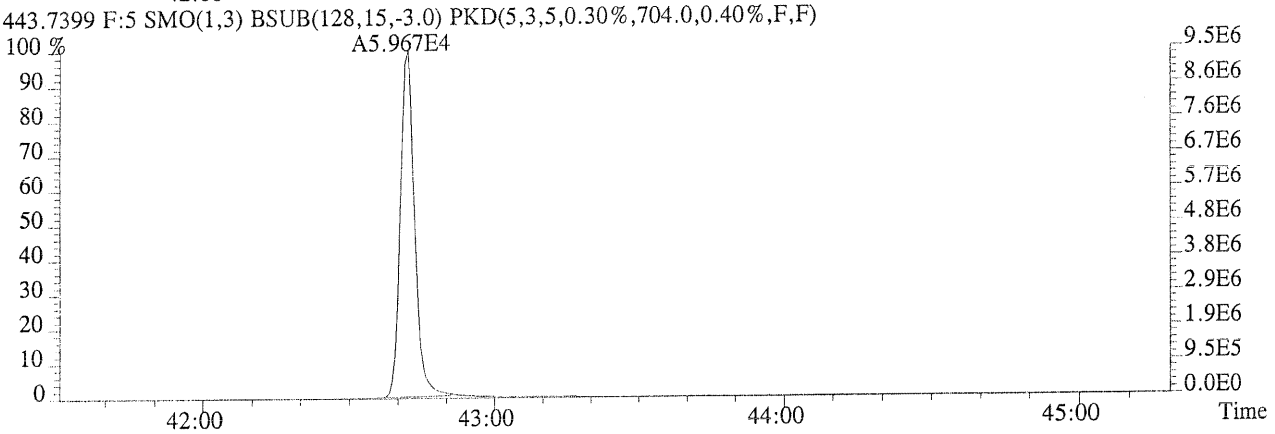
430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



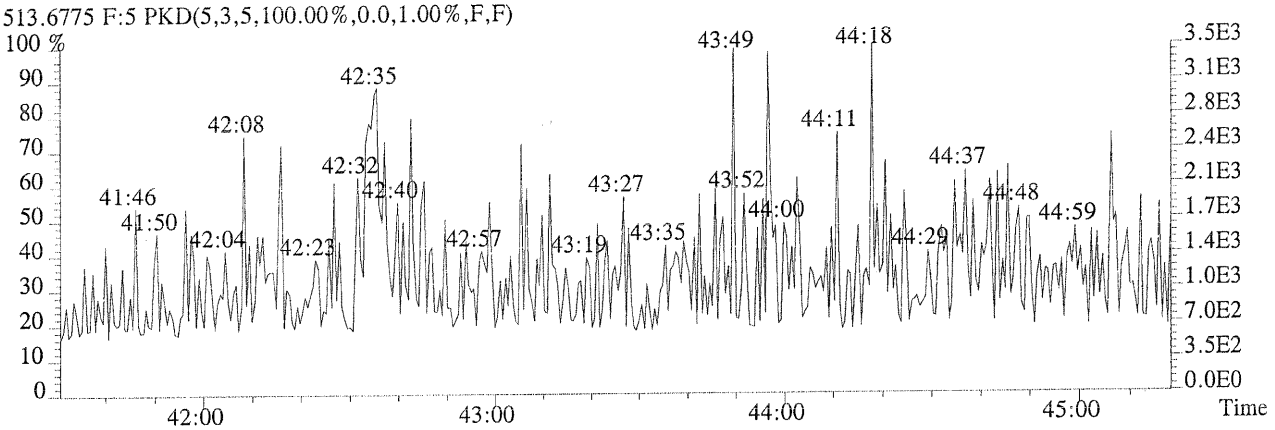
File:U212356 #1-419 Acq:30-OCT-2007 10:58:38 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:CCAL HRCC3 Exp:CCAL HRCC3
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,516.0,0.40%,F,F)



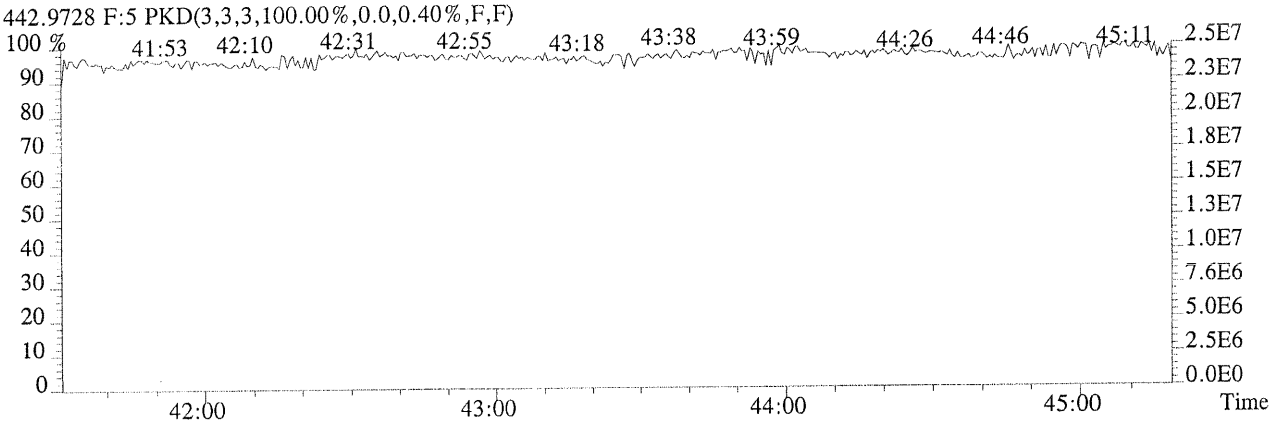
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,704.0,0.40%,F,F)



513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

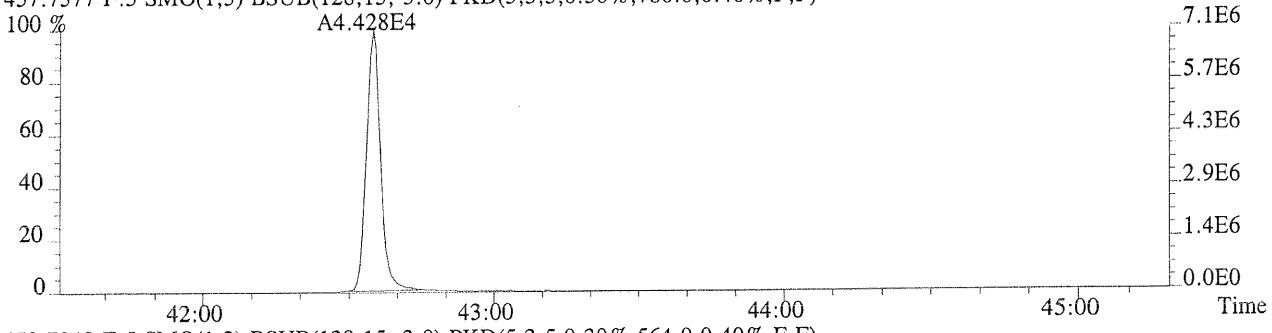


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

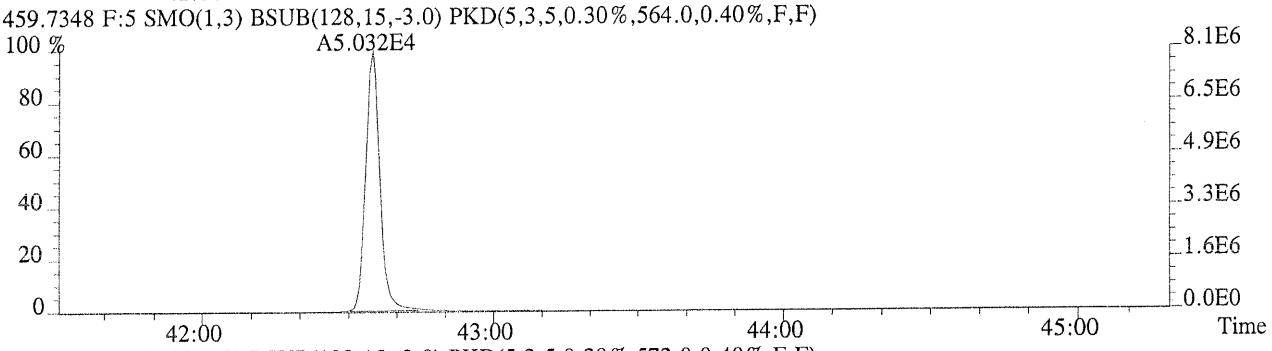


File:U212356 #1-419 Acq:30-OCT-2007 10:58:38 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 File Text:CCAL HRCC3 Exp:CCAL HRCC3

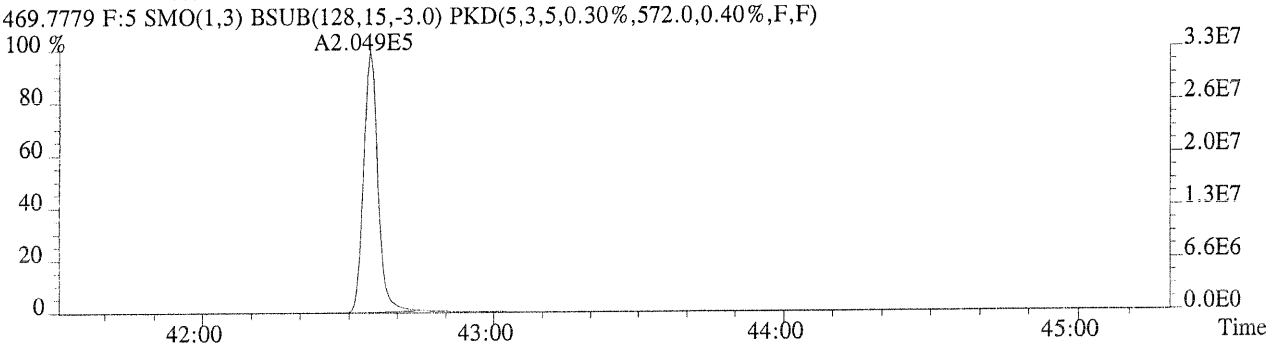
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,780.0,0.40%,F,F)



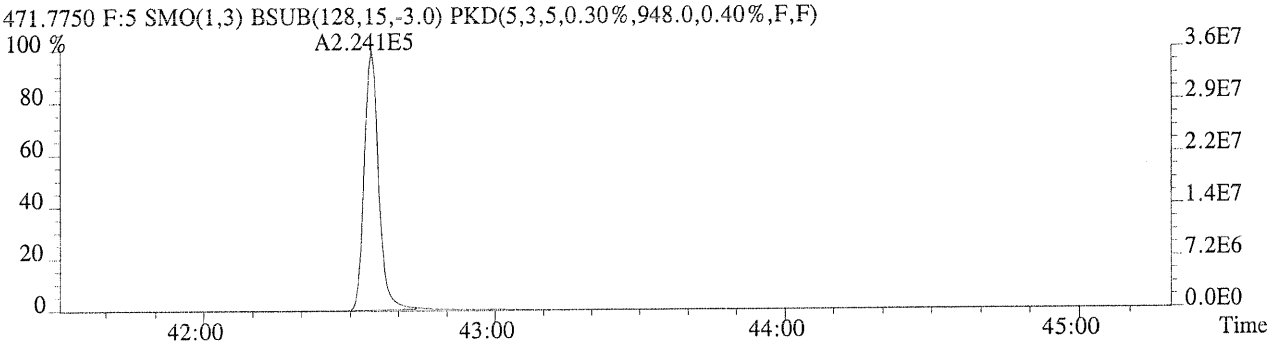
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,564.0,0.40%,F,F)



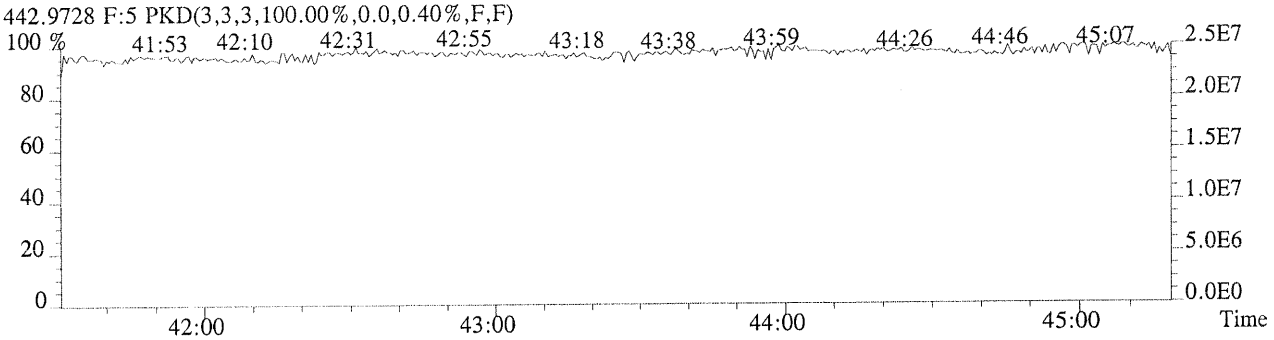
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,572.0,0.40%,F,F)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,948.0,0.40%,F,F)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Columbia Analytical Services Episode No.:

Contract No.: SDG No.:

Initial Calibration Date: 11/04/04

Instrument ID: AutoSpec-Ultima GC Column ID: DB-5

VER Data Filename: U212363 Analysis Date: 30-OCT-07 Time: 17:14:11

	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CCAL. RRF	MEAN RRF	%D (3)
NATIVE ANALYTES						
2,3,7,8-TCDD	M/M+2	0.78	0.65-0.89	0.97	0.96	0.97
1,2,3,7,8-PeCDD	M+2/M+4	1.56	1.32-1.78	0.92	0.97	-4.67
1,2,3,4,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	0.98	1.08	-8.70
1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	1.07	1.20	-10.72
1,2,3,7,8,9-HxCDD	M+2/M+4	1.27	1.05-1.43	1.01	1.16	-12.58
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.05	0.88-1.20	0.98	1.03	-4.17
OCDD	M+2/M+4	0.90	0.76-1.02	1.08	1.11	-2.87
2,3,7,8-TCDF	M/M+2	0.76	0.65-0.89	0.95	0.97	-2.48
1,2,3,7,8-PeCDF	M+2/M+4	1.57	1.32-1.78	0.97	1.00	-2.91
2,3,4,7,8-PeCDF	M+2/M+4	1.53	1.32-1.78	1.02	1.07	-4.64
1,2,3,4,7,8-HxCDF	M+2/M+4	1.26	1.05-1.43	1.25	1.29	-2.83
1,2,3,6,7,8-HxCDF	M+2/M+4	1.28	1.05-1.43	1.18	1.31	-9.74
1,2,3,7,8,9-HxCDF	M+2/M+4	1.19	1.05-1.43	0.93	1.09	-14.75
2,3,4,6,7,8-HxCDF	M+2/M+4	1.20	1.05-1.43	1.12	1.22	-8.45
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.04	0.88-1.20	1.51	1.56	-3.58
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.04	0.88-1.20	1.06	1.21	-12.66
OCDF	M+2/M+4	0.89	0.76-1.02	1.28	1.39	-7.69

(1) See Table 6, Method 8290, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 8, Method 8290.

(3) The beginning CCAL %RSD for the 17 unlabeled standard must not exceed +/- 20%, Section 7.7.4.1. The ending CCAL must not exceed +/-25%. Section 8.3.2.4.

8290F4A

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: Columbia Analytical Services Episode No.:

Contract No.: SDG No.:

Initial Calibration Date: 11/04/04

Instrument ID: AutoSpec-Ultima GC Column ID: DB-5

VER Data Filename: U212363 Analysis Date: 30-OCT-07 Time: 17:14:11

	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CCAL. RRF	MEAN RRF	%D (3)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	M/M+2	0.80	0.65-0.89	0.95	1.07	-11.19
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.32-1.78	0.95	1.01	-5.73
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.23	1.05-1.43	0.98	0.98	-0.42
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.05	0.88-1.20	0.93	1.01	-8.11
13C-OCDD	M+2/M+4	0.92	0.76-1.02	0.91	1.04	-12.90
13C-2,3,7,8-TCDF	M/M+2	0.79	0.65-0.89	1.26	1.48	-14.80
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.60	1.32-1.78	1.31	1.51	-13.19
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.51	0.43-0.59	1.22	1.42	-14.10
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.46	0.37-0.51	1.02	1.17	-12.69
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD				0.95	1.00	-4.85

(1) See Table 6, Method 8290, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 8, Method 8290.

(3) The beginning CCAL %RSD for the labeled standard must not exceed +/- 30%, Section 7.7.4.2. The ending CCAL must not exceed +/- 35%, Section 8.3.2.4.

8290F4B

Columbia Analytical Services, Inc.
Sample Response Summary

CLIENT ID.
CCAL HRCC3

Run #12 Filename U212363 Samp: 1 Inj: 1 Acquired: 30-OCT-07 17:14:11
Processed: 31-OCT-07 08:39:06 LAB. ID: CCAL HRCC3

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	26:52	1.568e+04	2.052e+04	0.76	yes	no
2	Unk	1,2,3,7,8-PeCDF	32:14	5.907e+04	3.758e+04	1.57	yes	no
3	Unk	2,3,4,7,8-PeCDF	33:06	6.150e+04	4.012e+04	1.53	yes	no
4	Unk	1,2,3,4,7,8-HxCDF	36:15	6.294e+04	4.984e+04	1.26	yes	no
5	Unk	1,2,3,6,7,8-HxCDF	36:21	5.944e+04	4.653e+04	1.28	yes	no
6	Unk	2,3,4,6,7,8-HxCDF	36:53	5.494e+04	4.576e+04	1.20	yes	no
7	Unk	1,2,3,7,8,9-HxCDF	37:37	4.546e+04	3.832e+04	1.19	yes	no
8	Unk	1,2,3,4,6,7,8-HpCDF	39:07	5.817e+04	5.573e+04	1.04	yes	no
9	Unk	1,2,3,4,7,8,9-HpCDF	40:18	4.065e+04	3.922e+04	1.04	yes	no
10	Unk	OCDF	42:42	8.084e+04	9.107e+04	0.89	yes	no
11	Unk	2,3,7,8-TCDD	27:59	1.220e+04	1.566e+04	0.78	yes	no
12	Unk	1,2,3,7,8-PeCDD	33:31	4.043e+04	2.593e+04	1.56	yes	no
13	Unk	1,2,3,4,7,8-HxCDD	37:02	3.992e+04	3.133e+04	1.27	yes	no
14	Unk	1,2,3,6,7,8-HxCDD	37:06	4.316e+04	3.425e+04	1.26	yes	no
15	Unk	1,2,3,7,8,9-HxCDD	37:24	4.103e+04	3.239e+04	1.27	yes	no
16	Unk	1,2,3,4,6,7,8-HpCDD	39:58	3.453e+04	3.297e+04	1.05	yes	no
17	Unk	OCDD	42:35	6.838e+04	7.628e+04	0.90	yes	no
18	IS	13C-2,3,7,8-TCDF	26:50	8.419e+04	1.070e+05	0.79	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	32:13	1.229e+05	7.677e+04	1.60	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	36:14	1.519e+05	2.978e+05	0.51	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	39:06	1.188e+05	2.593e+05	0.46	yes	no
22	IS	13C-2,3,7,8-TCDD	27:57	6.412e+04	8.012e+04	0.80	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	33:30	8.807e+04	5.596e+04	1.57	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	37:06	1.997e+05	1.621e+05	1.23	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	39:57	1.762e+05	1.674e+05	1.05	yes	no
26	IS	13C-OCDD	42:34	3.203e+05	3.497e+05	0.92	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	27:40	6.728e+04	8.463e+04	0.80	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:23	2.046e+05	1.642e+05	1.25	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	27:58	2.886e+04				
					SUM AREA			
30	Tot	Total Tetra-Furans	26:13		3.682e+04	0.82	yes	
31	Tot	Total Tetra-Dioxins	27:59		2.787e+04	0.78	yes	
32	Tot	Total Penta-Furans	32:14		2.001e+05	1.57	yes	
33	Tot	Total Penta-Dioxins	33:31		6.637e+04	1.56	yes	
34	Tot	Total Hexa-Furans	36:15		4.032e+05	1.26	yes	
35	Tot	Total Hexa-Dioxins	37:02		2.221e+05	1.27	yes	
36	Tot	Total Hepta-Furans	39:07		1.938e+05	1.04	yes	
37	Tot	Total Hepta-Dioxins	39:22		6.786e+04	0.97	yes	

Columbia Analytical Services, Inc.
10655 Richmond Ave., Suite 130A
Houston, TX 77042
Office(713)266-1599. Fax(713)266-0130

Columbia Analytical Services,Inc. CLIENT ID.
Signal/Noise Height Ratio Summary CCAL HRCC3

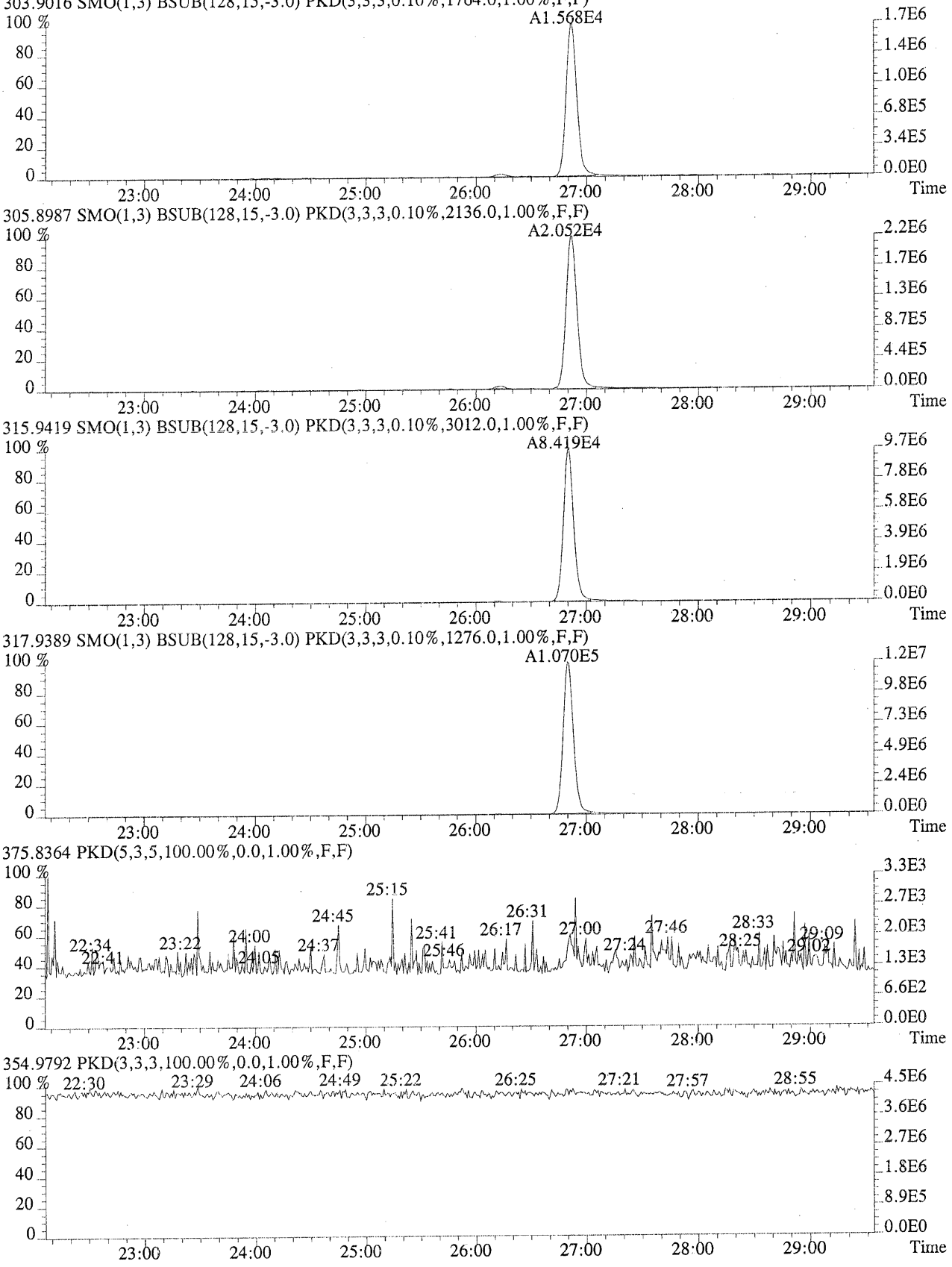
Run #12 Filename U212363 Samp: 1 Inj: 1 Acquired: 30-OCT-07 17:14:11

Processed: 31-OCT-07 08:39:06 LAB. ID: CCAL HRCC3

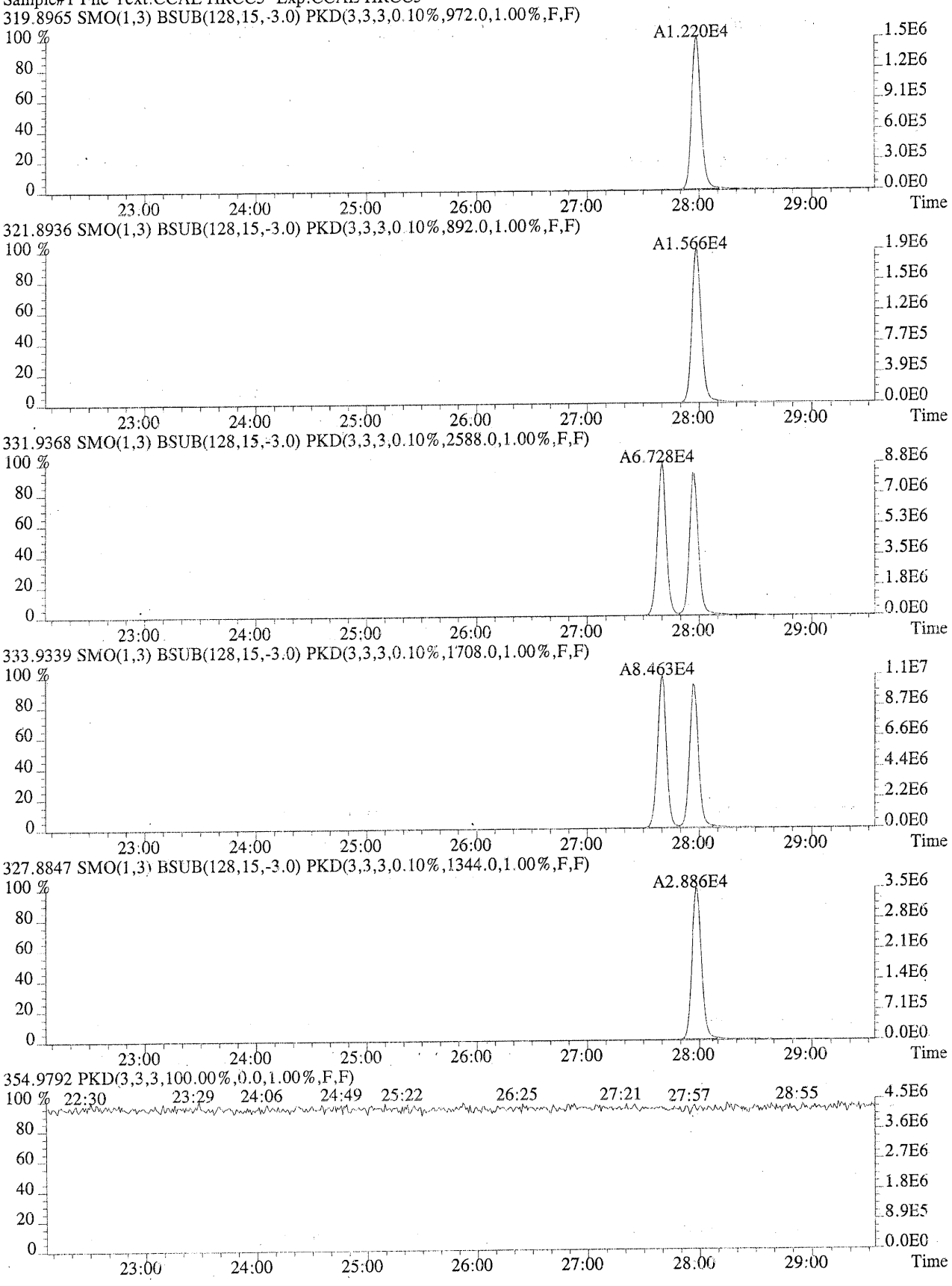
	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	1.70e+06	1.76e+03	9.6e+02	2.18e+06	2.14e+03	1.0e+03
2	1,2,3,7,8-PeCDF	9.36e+06	8.64e+02	1.1e+04	6.08e+06	1.92e+03	3.2e+03
3	2,3,4,7,8-PeCDF	1.05e+07	8.64e+02	1.2e+04	6.87e+06	1.92e+03	3.6e+03
4	1,2,3,4,7,8-HxCDF	1.23e+07	3.08e+03	4.0e+03	9.62e+06	8.48e+02	1.1e+04
5	1,2,3,6,7,8-HxCDF	1.16e+07	3.08e+03	3.8e+03	9.20e+06	8.48e+02	1.1e+04
6	2,3,4,6,7,8-HxCDF	1.14e+07	3.08e+03	3.7e+03	9.47e+06	8.48e+02	1.1e+04
7	1,2,3,7,8,9-HxCDF	8.97e+06	3.08e+03	2.9e+03	7.53e+06	8.48e+02	8.9e+03
8	1,2,3,4,6,7,8-HpCDF	1.28e+07	2.44e+03	5.2e+03	1.22e+07	1.69e+03	7.2e+03
9	1,2,3,4,7,8,9-HpCDF	8.32e+06	2.44e+03	3.4e+03	8.15e+06	1.69e+03	4.8e+03
10	OCDF	1.28e+07	9.16e+02	1.4e+04	1.44e+07	1.42e+03	1.0e+04
11	2,3,7,8-TCDD	1.51e+06	9.72e+02	1.6e+03	1.93e+06	8.92e+02	2.2e+03
12	1,2,3,7,8-PeCDD	7.10e+06	1.30e+03	5.4e+03	4.54e+06	1.24e+03	3.7e+03
13	1,2,3,4,7,8-HxCDD	8.28e+06	1.69e+03	4.9e+03	6.51e+06	1.46e+03	4.4e+03
14	1,2,3,6,7,8-HxCDD	8.89e+06	1.69e+03	5.3e+03	6.99e+06	1.46e+03	4.8e+03
15	1,2,3,7,8,9-HxCDD	8.46e+06	1.69e+03	5.0e+03	6.68e+06	1.46e+03	4.6e+03
16	1,2,3,4,6,7,8-HpCDD	7.49e+06	1.58e+03	4.7e+03	7.13e+06	1.47e+03	4.9e+03
17	OCDD	1.13e+07	1.73e+03	6.5e+03	1.26e+07	1.76e+03	7.2e+03
18	13C-2,3,7,8-TCDF	9.73e+06	3.01e+03	3.2e+03	1.22e+07	1.28e+03	9.6e+03
19	13C-1,2,3,7,8-PeCDF	2.05e+07	8.08e+02	2.5e+04	1.28e+07	6.76e+02	1.9e+04
20	13C-1,2,3,4,7,8-HxCDF	2.94e+07	1.70e+03	1.7e+04	5.81e+07	1.44e+03	4.0e+04
21	13C-1,2,3,4,6,7,8-HpCDF	2.65e+07	9.10e+03	2.9e+03	5.78e+07	8.77e+03	6.6e+03
22	13C-2,3,7,8-TCDD	8.14e+06	2.59e+03	3.1e+03	1.03e+07	1.71e+03	6.0e+03
23	13C-1,2,3,7,8-PeCDD	1.54e+07	8.92e+02	1.7e+04	9.78e+06	6.08e+02	1.6e+04
24	13C-1,2,3,6,7,8-HxCDD	4.22e+07	3.52e+03	1.2e+04	3.43e+07	2.84e+03	1.2e+04
25	13C-1,2,3,4,6,7,8-HpCDD	3.84e+07	1.92e+03	2.0e+04	3.66e+07	1.62e+03	2.3e+04
26	13C-OCDD	5.27e+07	1.56e+03	3.4e+04	5.76e+07	9.72e+02	5.9e+04
27	13C-1,2,3,4-TCDD	8.75e+06	2.59e+03	3.4e+03	1.09e+07	1.71e+03	6.4e+03
28	13C-1,2,3,7,8,9-HxCDD	4.25e+07	3.52e+03	1.2e+04	3.40e+07	2.84e+03	1.2e+04
29	37Cl-2,3,7,8-TCDD	3.52e+06	1.34e+03	2.6e+03			

Columbia Analytical Services, Inc.
10655 Richmond Ave., Suite 130A
Houston, TX 77042
Office:(713)266-1599. Fax:(713)266-0130

File:U212363 #1-621 Acq:30-OCT-2007 17:14:11 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:CCAL HRCC3 Exp:CCAL HRCC3

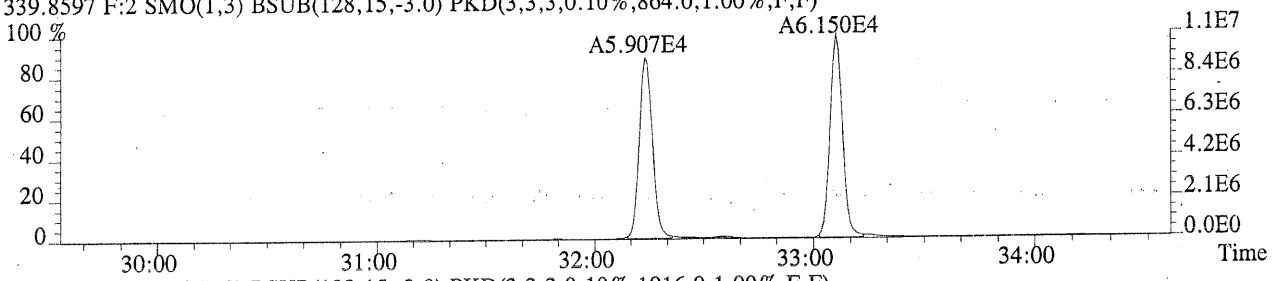


File:U212363 #1-621 Acq:30-OCT-2007 17:14:11 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 File Text:CCAL HRCC3 Exp:CCAL HRCC3

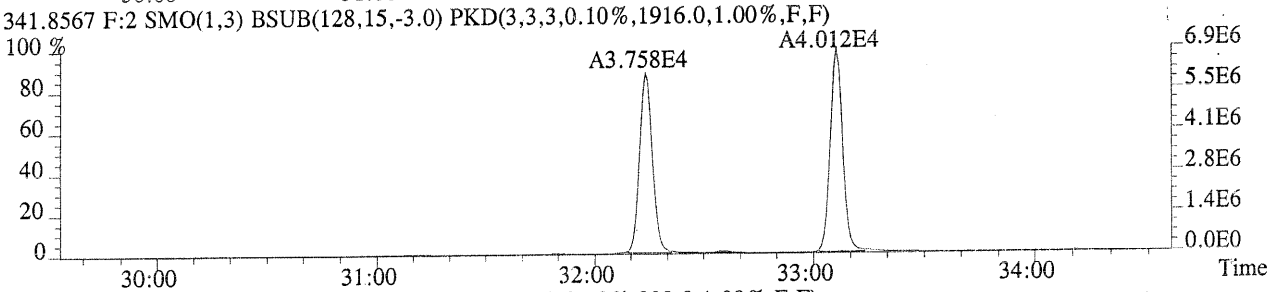


File:U212363 #1-458 Acq:30-OCT-2007 17:14:11 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 File Text:CCAL HRCC3 Exp:CCAL HRCC3

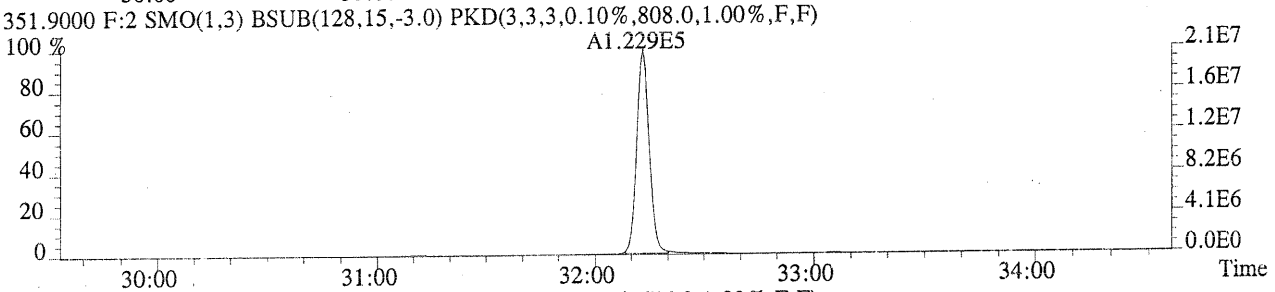
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,864.0,1.00%,F,F)



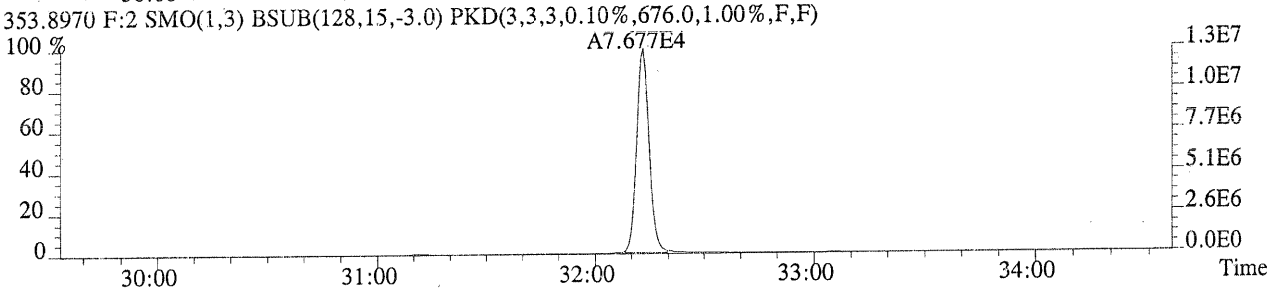
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1916.0,1.00%,F,F)



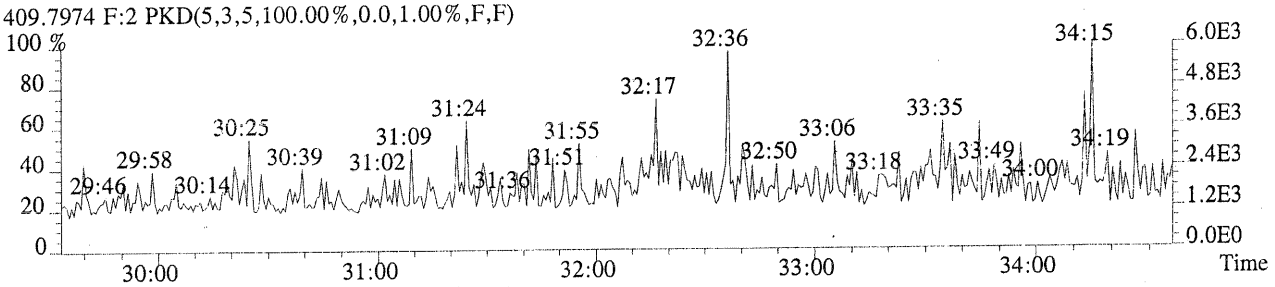
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,808.0,1.00%,F,F)



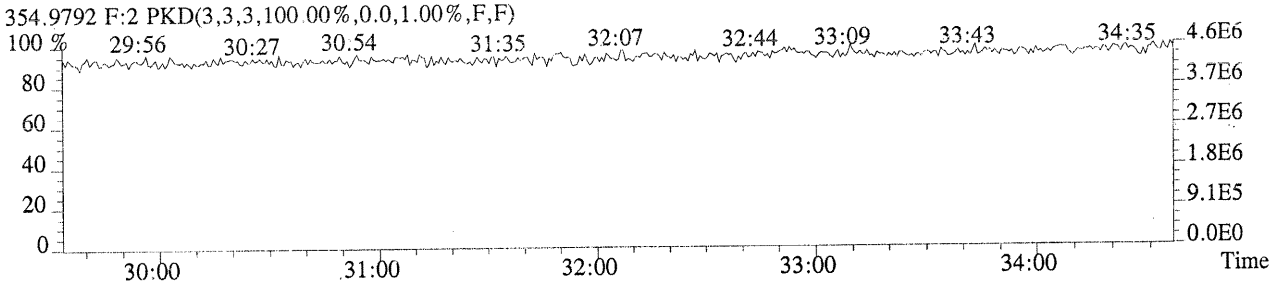
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,676.0,1.00%,F,F)



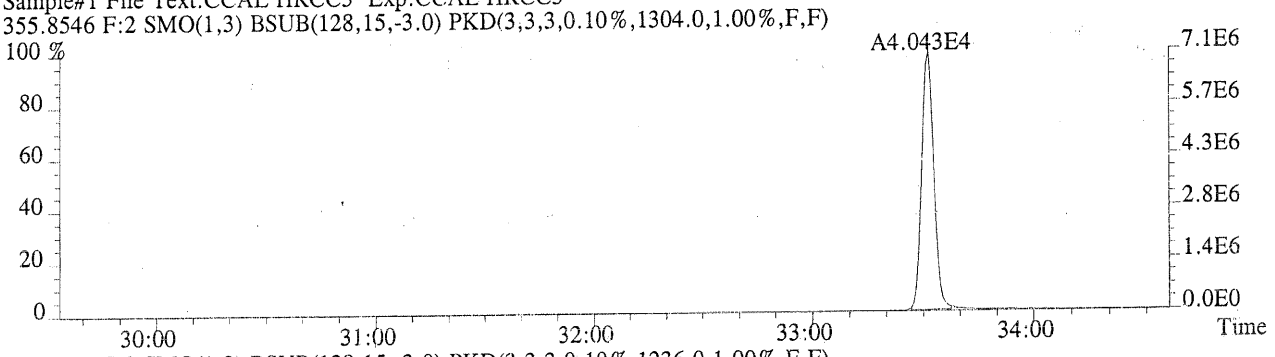
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

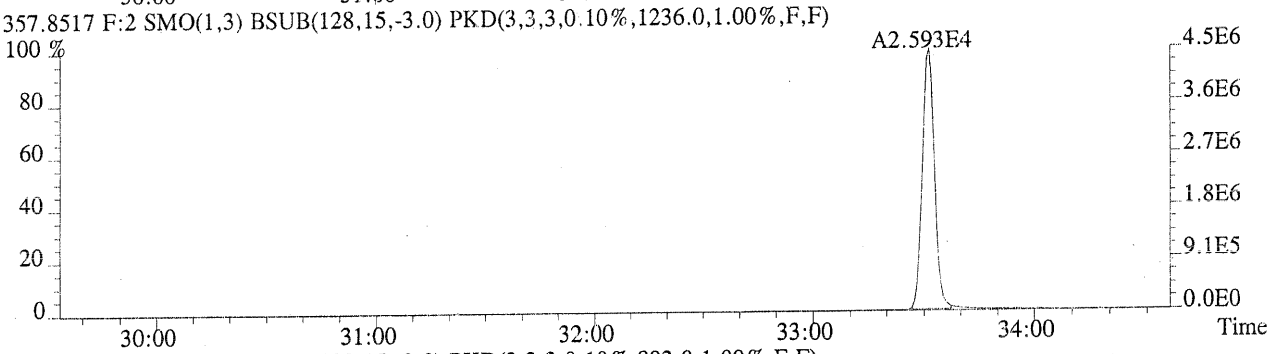


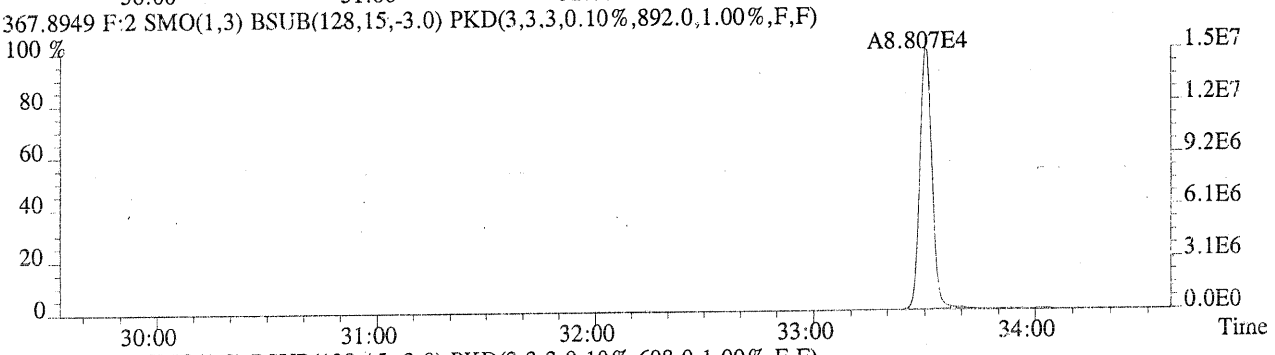
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

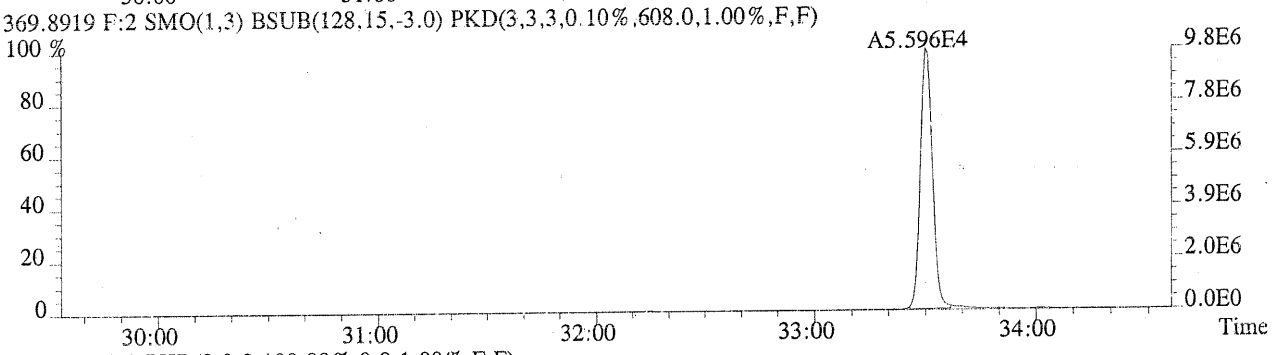


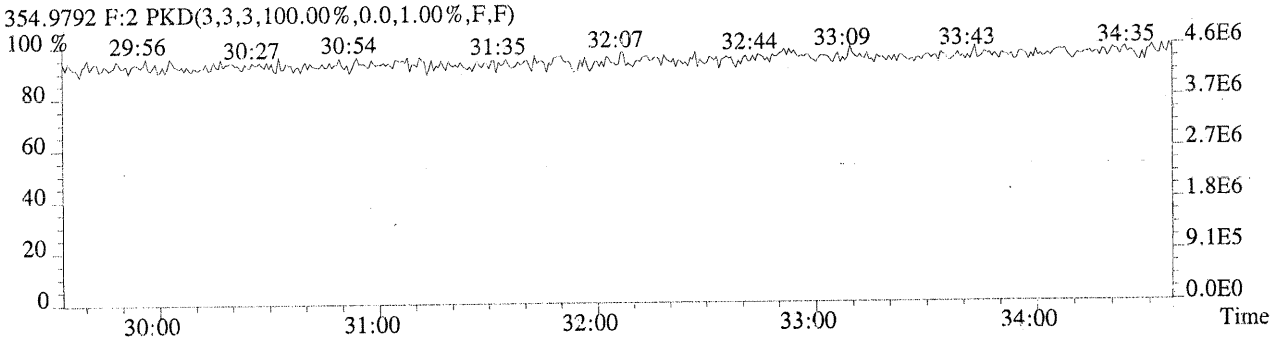
File:U212363 #1-458 Acq:30-OCT-2007 17:14:11 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:CCAL HRCC3 Exp:CCAL HRCC3





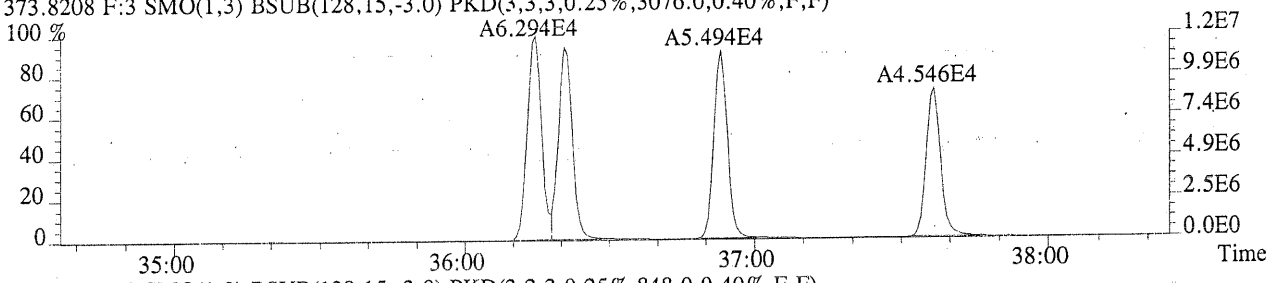




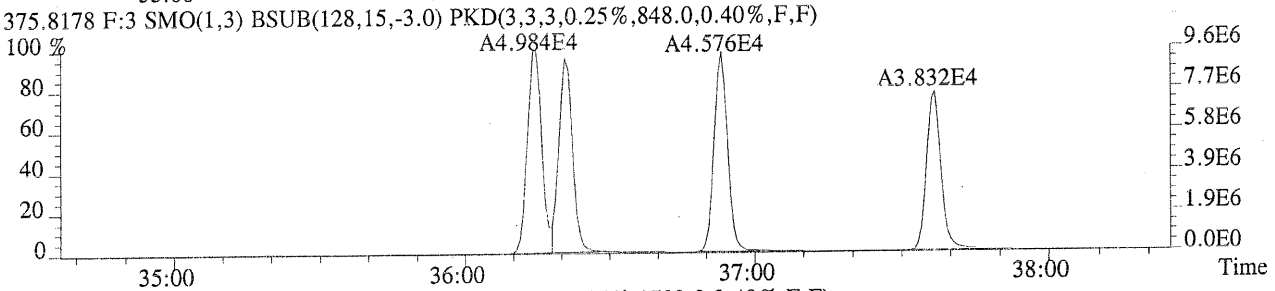


File:U212363 #1-345 Acq:30-OCT-2007 17:14:11 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 File Text:CCAL HRCC3 Exp:CCAL HRCC3

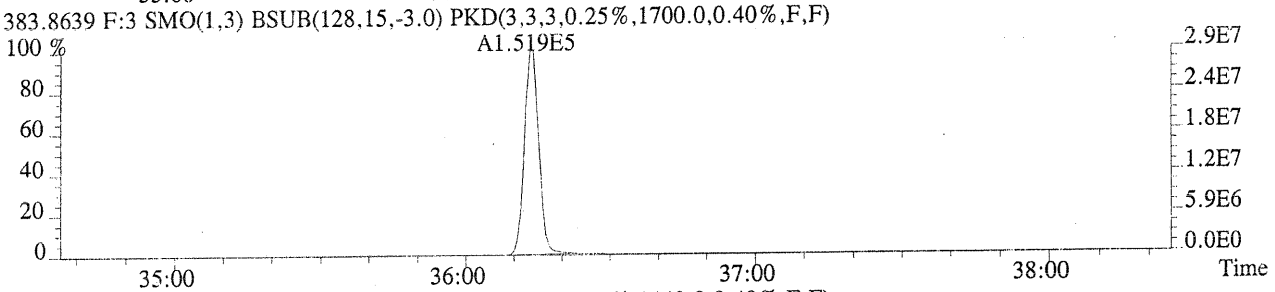
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3076.0,0.40%,F,F)



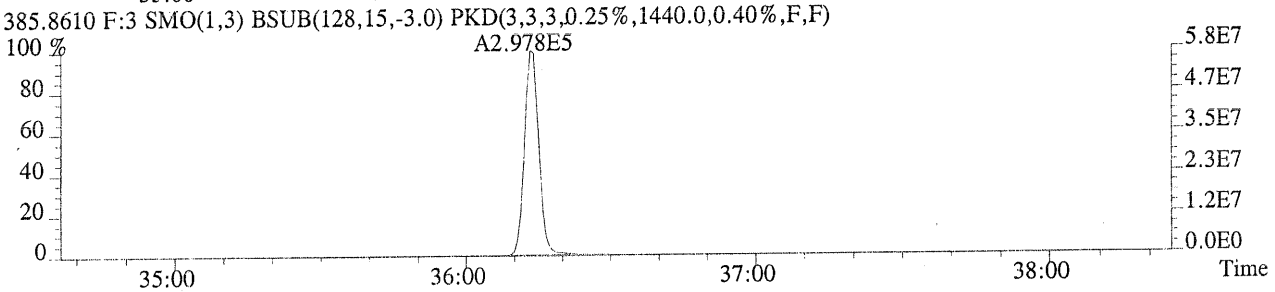
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,848.0,0.40%,F,F)



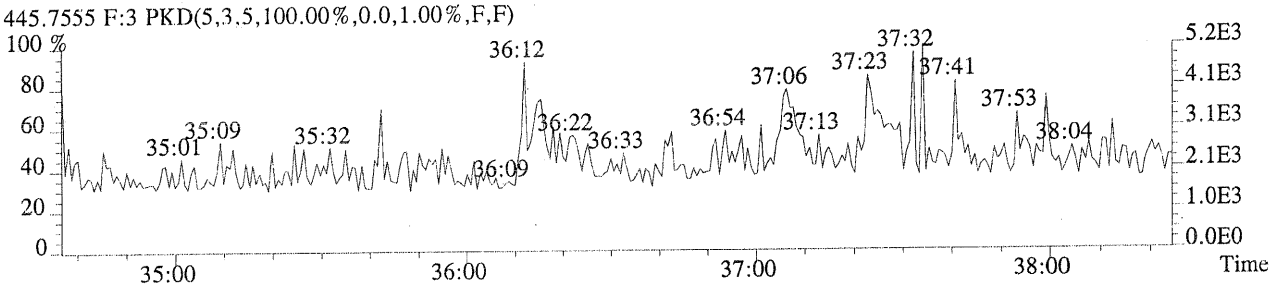
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1700.0,0.40%,F,F)



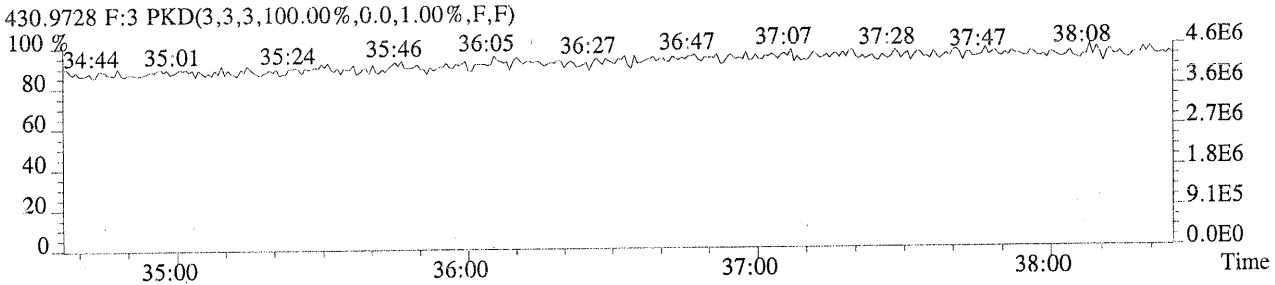
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1440.0,0.40%,F,F)



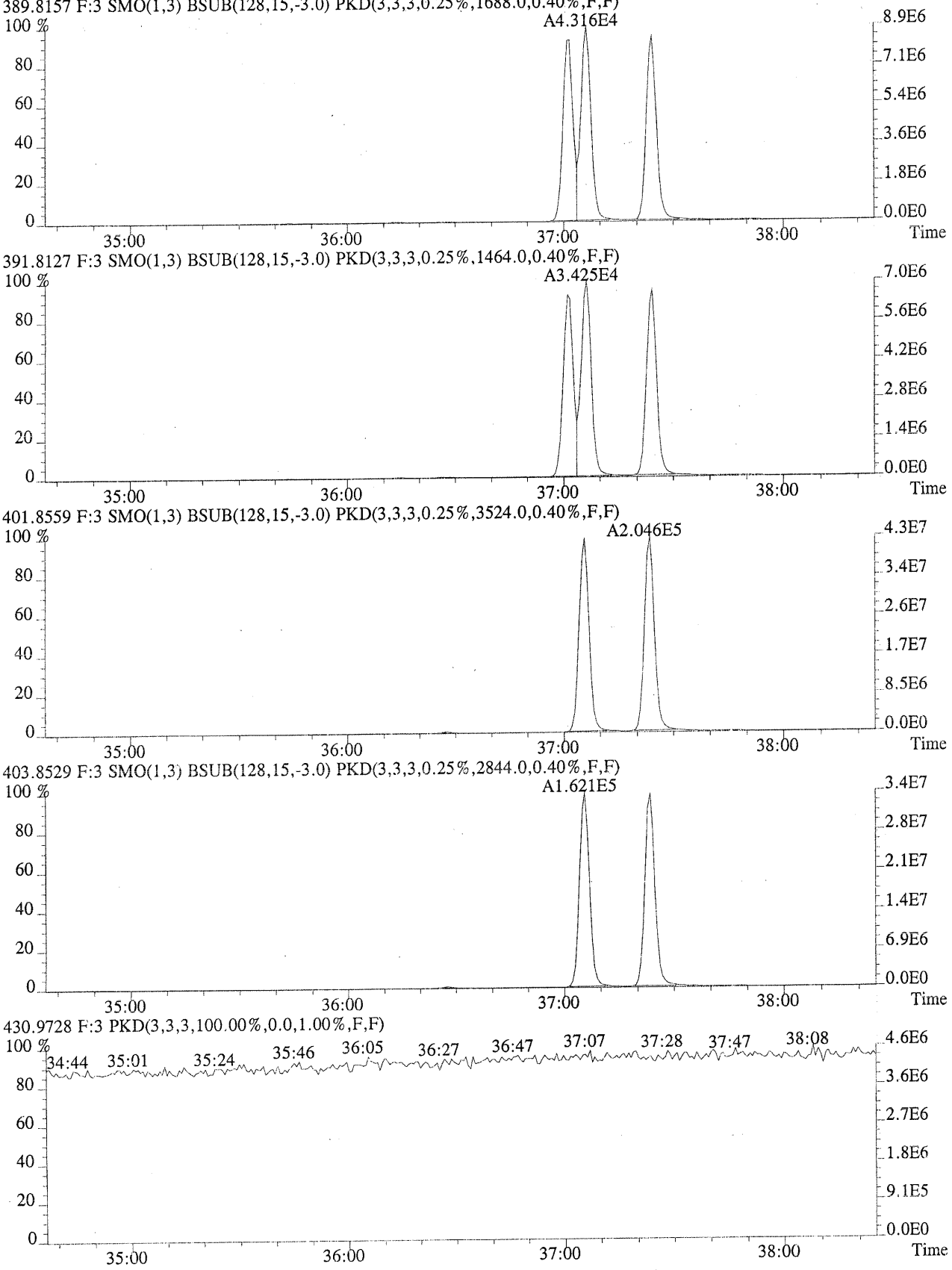
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



430.9728 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

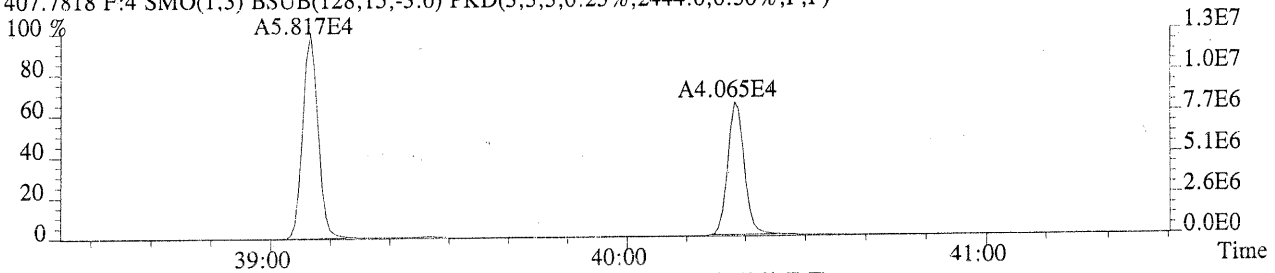


File:U212363 #1-345 Acq:30-OCT-2007 17:14:11 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 File Text:CCAL HRCC3 Exp:CCAL HRCC3

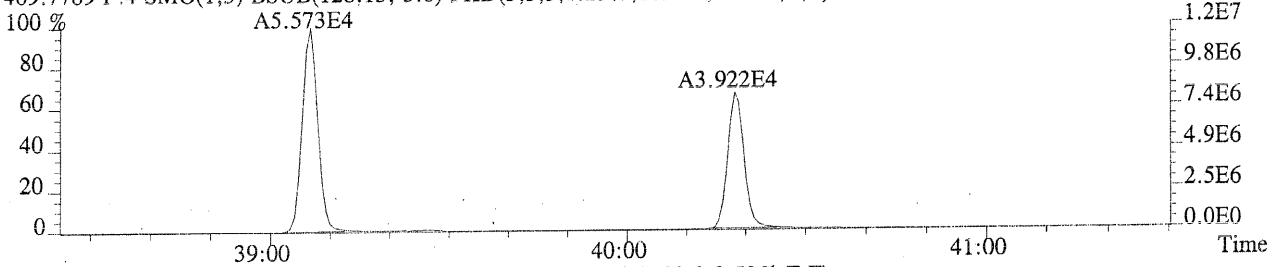


File:U212363 #1-281 Acq:30-OCT-2007 17:14:11 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 File Text:CCAL HRCC3 Exp:CCAL HRCC3

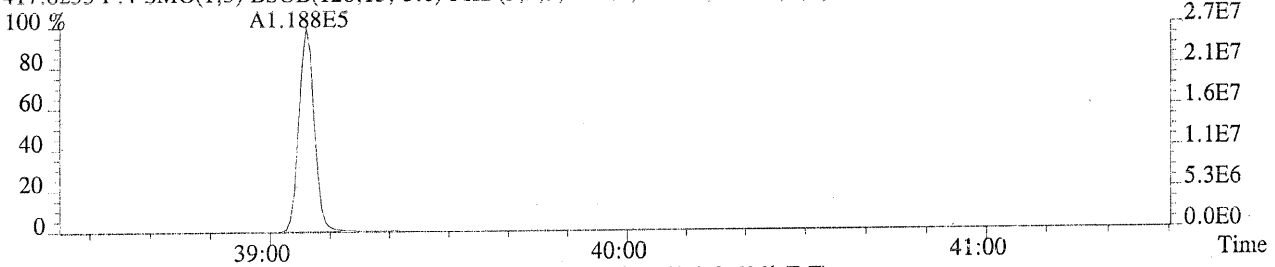
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2444.0,0.50%,F,F)



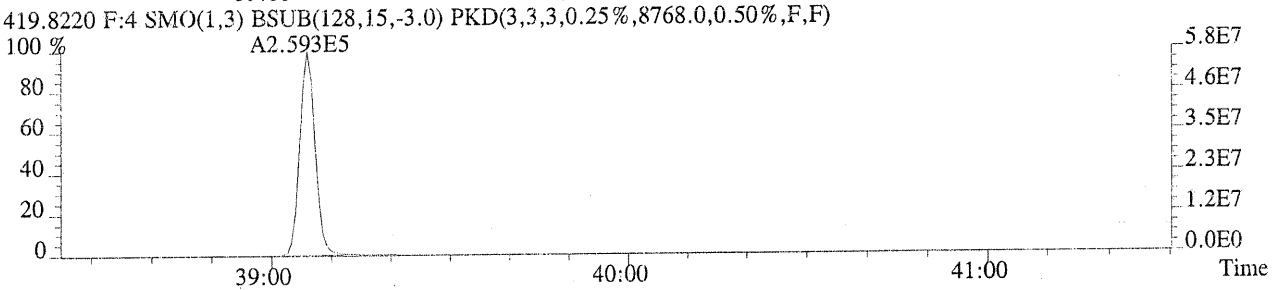
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1692.0,0.50%,F,F)



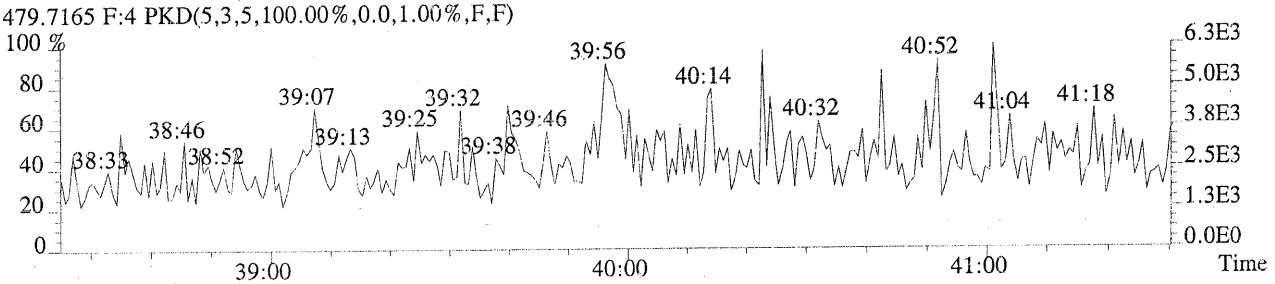
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,9100.0,0.50%,F,F)



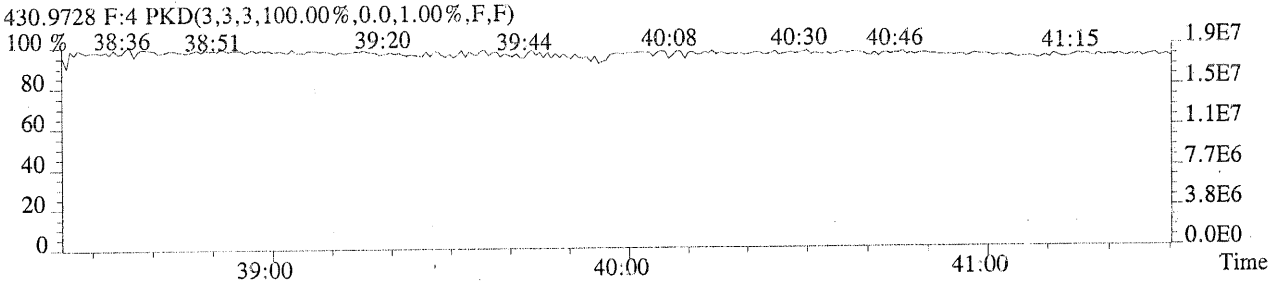
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,8768.0,0.50%,F,F)



479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

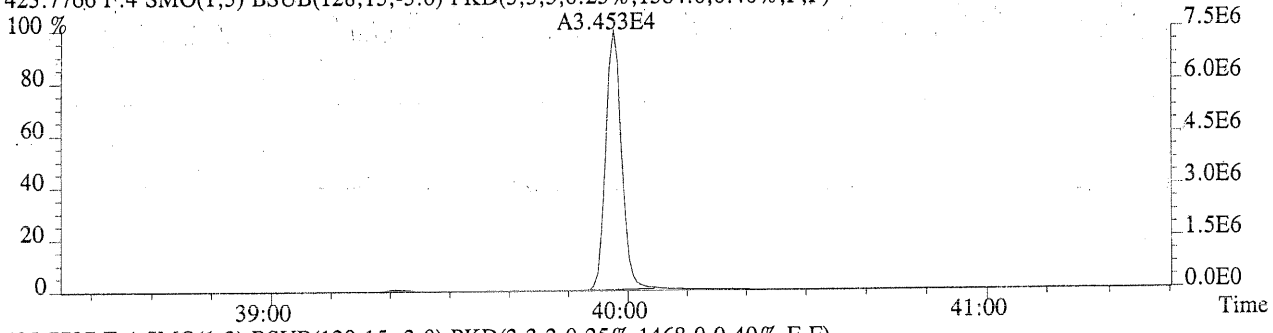


430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

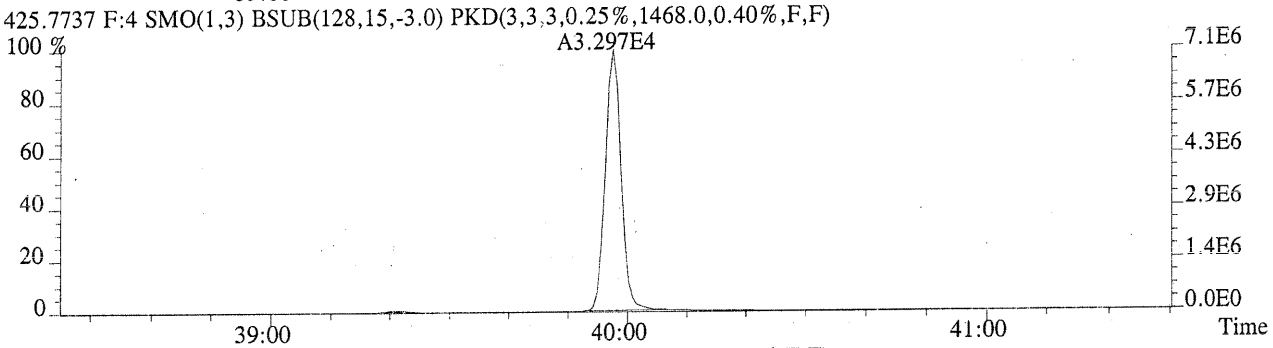


File:U212363 #1-281 Acq:30-OCT-2007 17:14:11 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 File Text:CCAL HRCC3 Exp:CCAL HRCC3

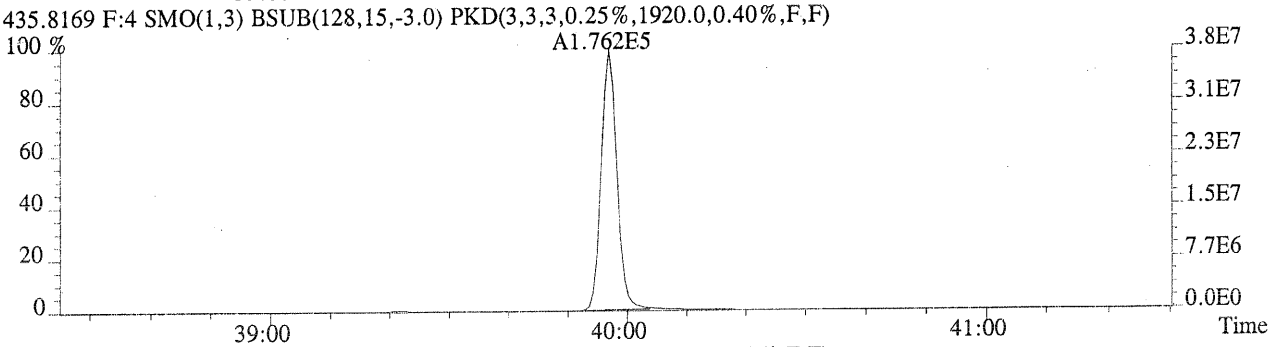
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1584.0,0.40%,F,F)



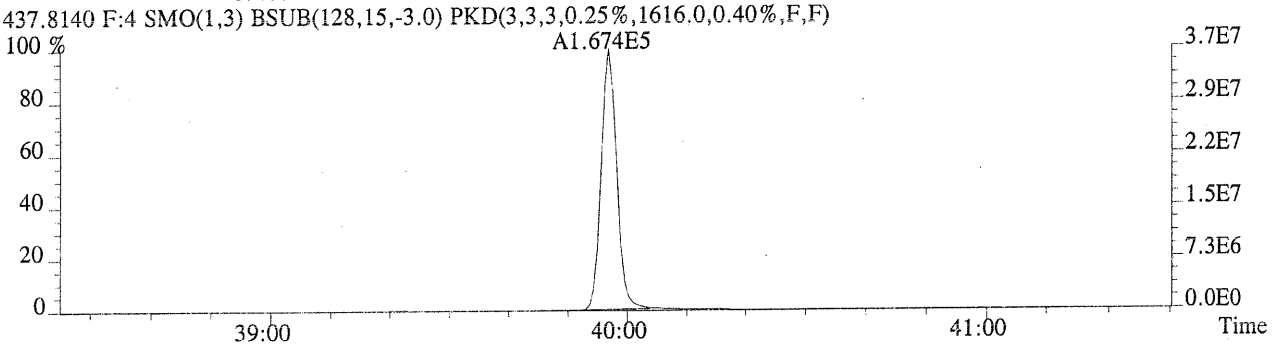
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1468.0,0.40%,F,F)



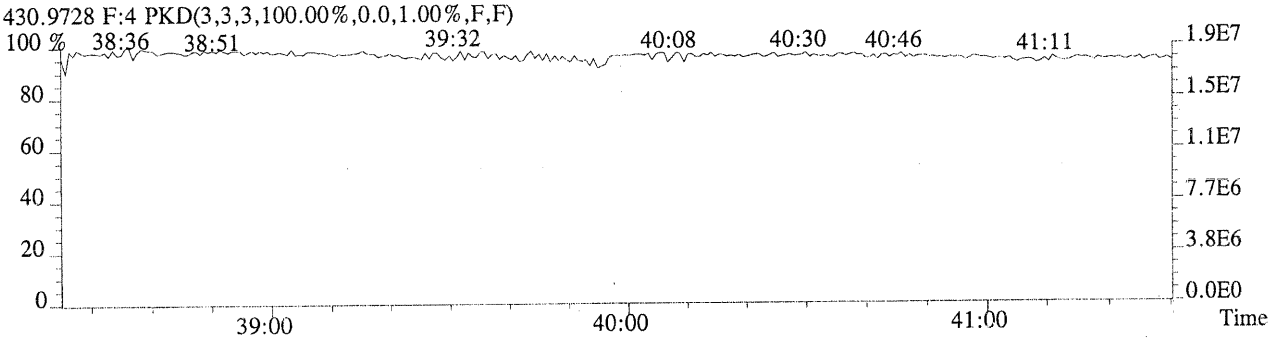
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1920.0,0.40%,F,F)



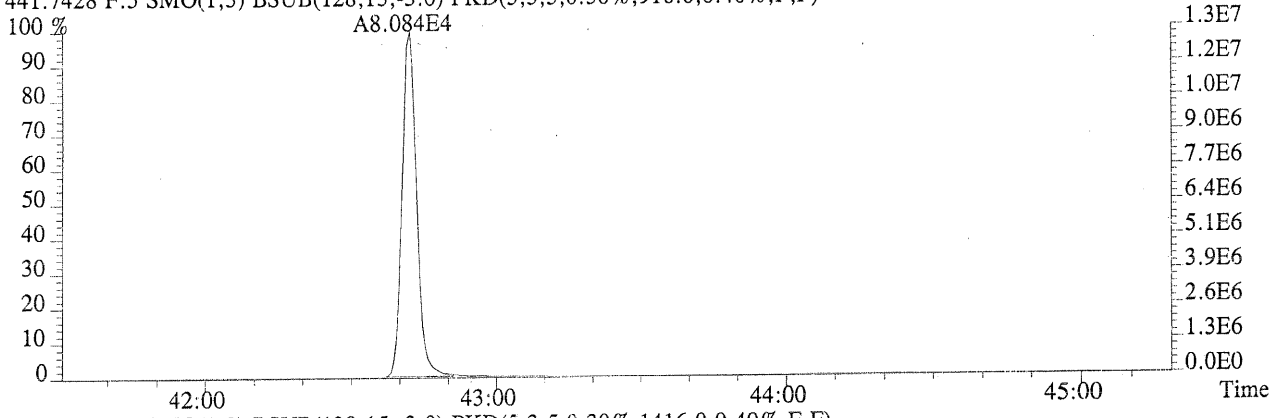
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1616.0,0.40%,F,F)



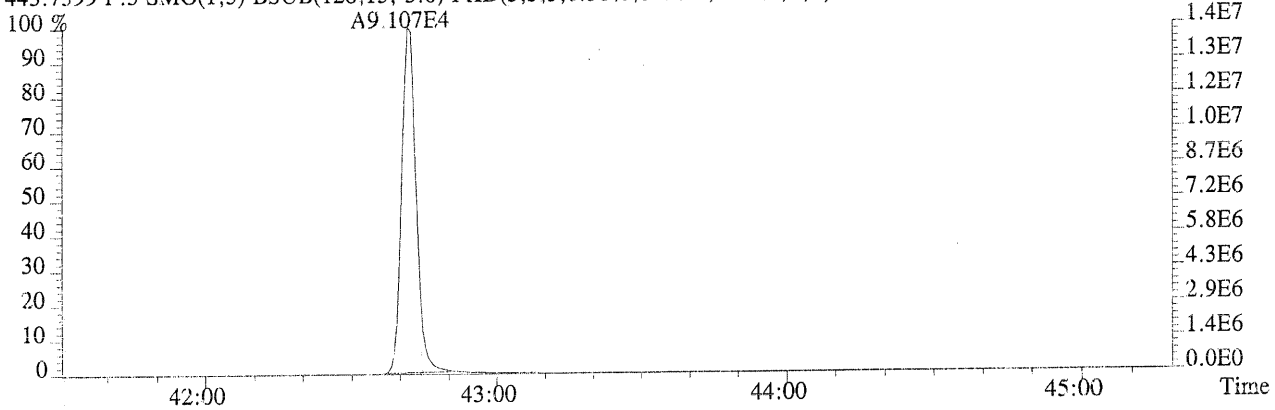
430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



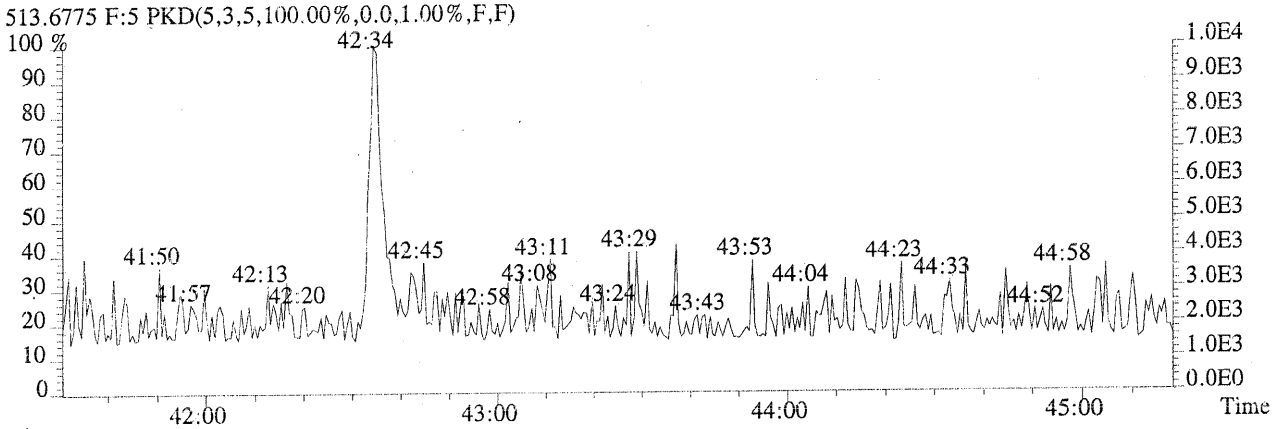
File:U212363 #1-419 Acq:30-OCT-2007 17:14:11 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 File Text:CCAL HRCC3 Exp:CCAL HRCC3
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,916.0,0.40%,F,F)



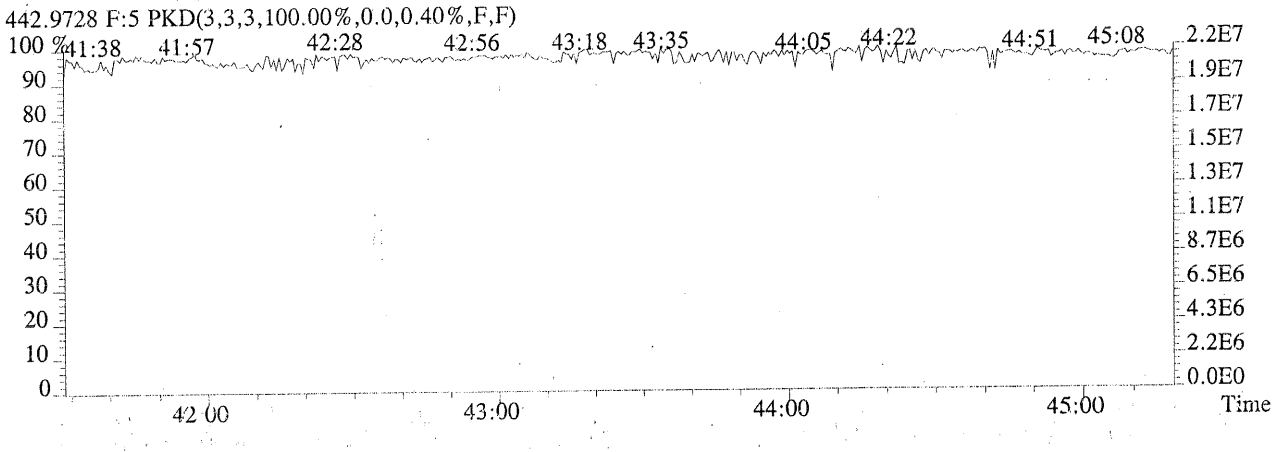
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1416.0,0.40%,F,F)



513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

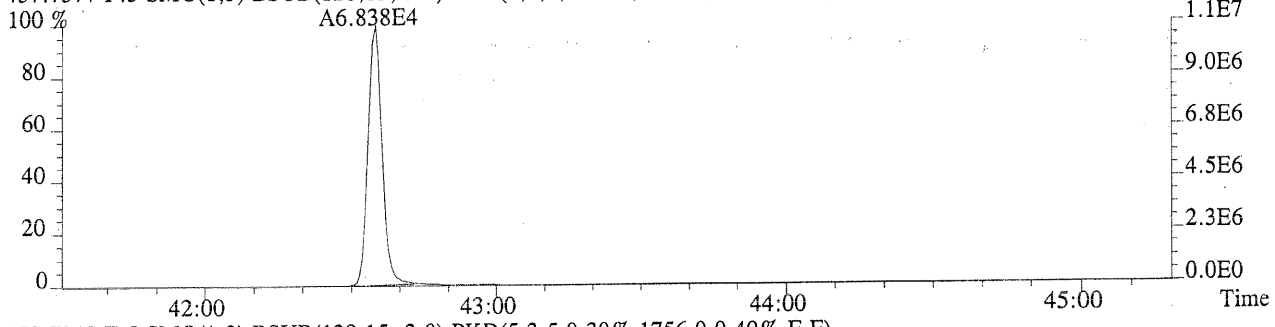


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

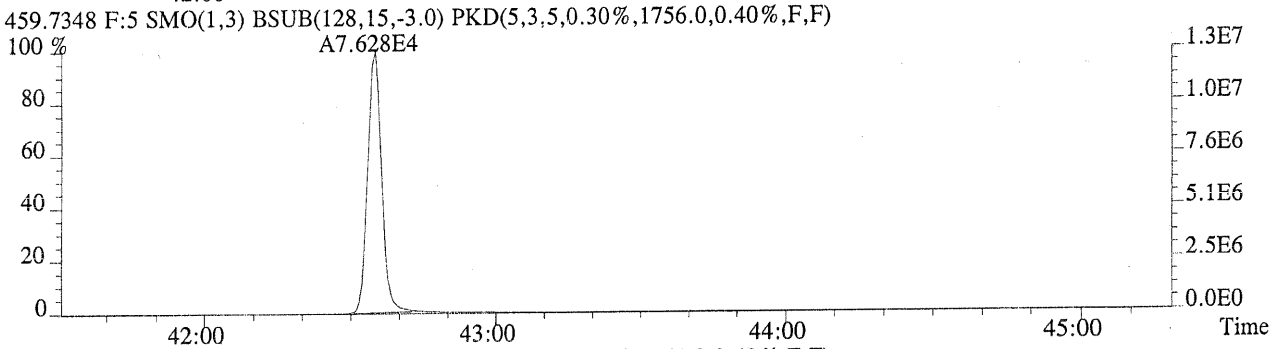


File:U212363 #1-419 Acq:30-OCT-2007 17:14:11 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 File Text:CCAL HRCC3 Exp:CCAL HRCC3

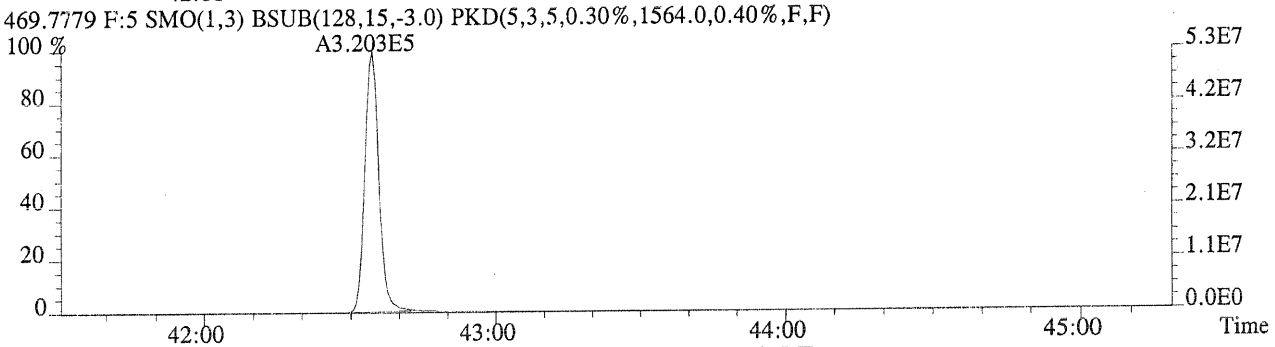
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1732.0,0.40%,F,F)



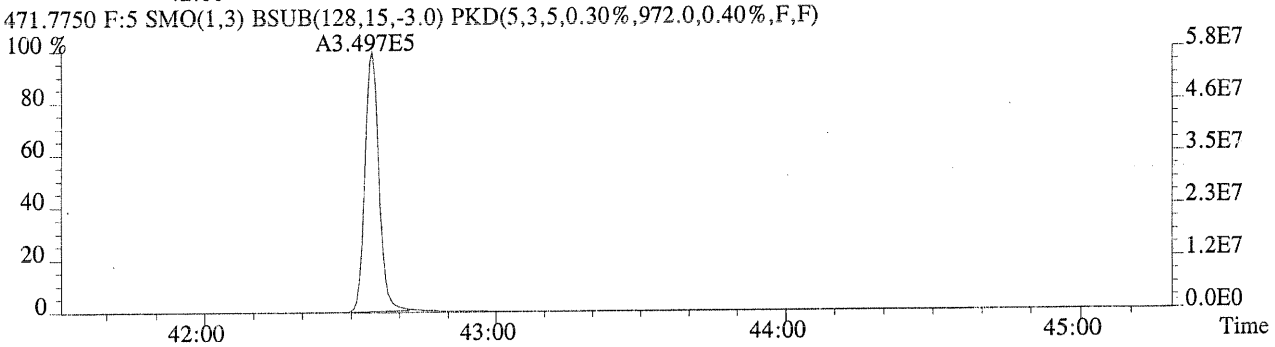
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1756.0,0.40%,F,F)



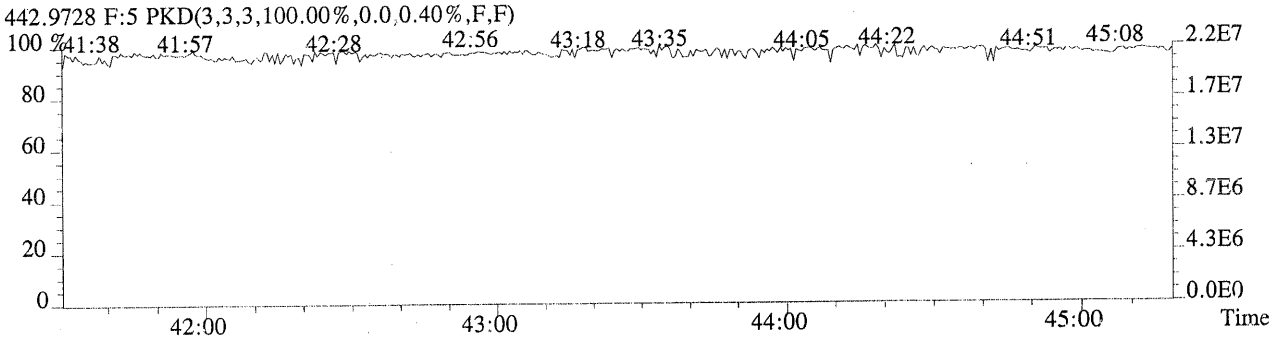
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1564.0,0.40%,F,F)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,972.0,0.40%,F,F)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



Columbia Analytical Services INC.

An Employee - Owned Company

Initial Calibration

19408 Park Row, Suite 320, Houston, TX 77084
Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

Initial Calibration QC Checklist

ICAL Name: C 071204 8290 I

Date: 04/12/04

Method: 1613 / (8290) / Tetra / TCDD Only / TCDF Conf / 8280 / 613 / M23

Retention Window/Column Performance Check	Analyst	Second Check
Windows in and first and last eluters labeled	✓	✓
Column Performance shows less than or equal to 25% valley between column specific 2378 isomer and it's closest eluters	✓	✓
No QC ion deflections affect column specific 2378 isomer or it's closest eluters	✓	✓

Initial Calibration	Analyst	Second Check
Percent RSD within method criteria	✓	✓
All relative abundance ratios meet method criteria	✓	✓
No QC ion deflections of greater than 20%	✓	✓
Mass spectrometer resolution greater than or equal to 10,000 and documented	✓	✓
2378-TCDD elutes at 25 minutes or later on the DB-5 column	NA	✓
Signal-to-noise of all target analytes and their labeled standards at least 10:1	✓	✓
Valley between labeled 123478 and 123678 HxCDD peaks less than or equal to 50%	NA	✓
All Manual Intergrations signed and dated and first and final copies of Ical summary included	✓	✓

Analyst: CCR Second QC: [illegible]

5DFC
PCDD/PCDF ANALYTICAL SEQUENCE SUMMARY

Name: Columbia Analytical Services, Houston Contract

Lab Code: TX01411 CASE No.: Client No: SDG No.:

GC Column: DB-5 ID: 0.25 (mm) Instrument ID: 70S

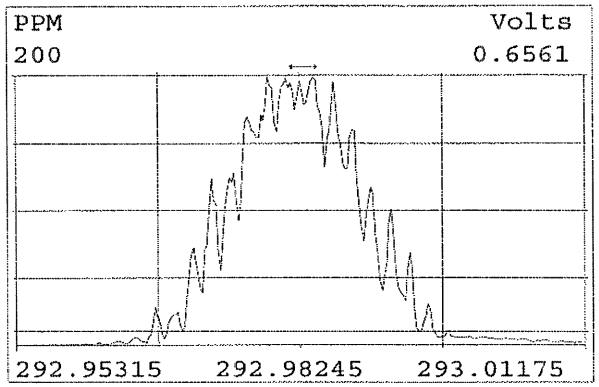
Init. Calib. Date: 07/12/04

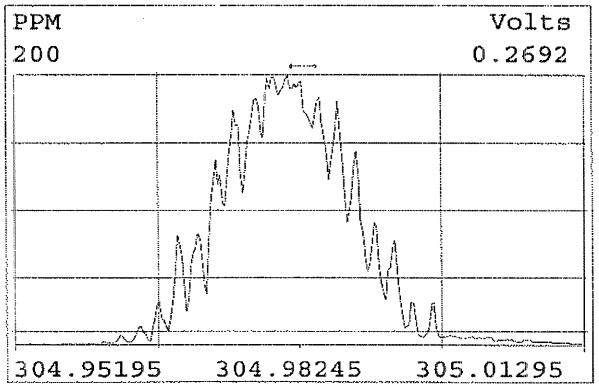
Init. Calib.Times: 11:08

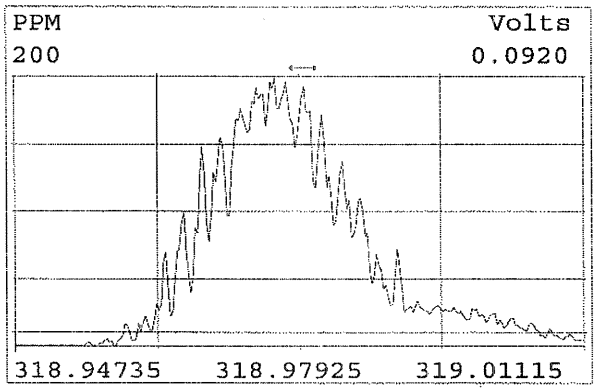
THE ANALYTICAL SEQUENCE OF STANDARDS, SAMPLES, BLANKS, SPIKES AND DUPLICATES IS AS FOLLOWS:

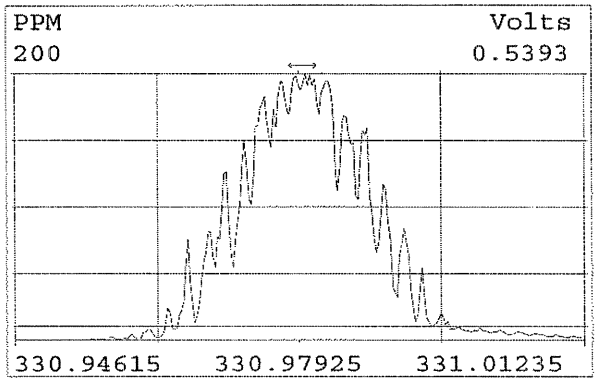
EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
WINDOW DEFINE		C12900#1	12-JUL-04	11:08:57
ICAL HRCC1		C12900#4	12-JUL-04	13:42:42
ICAL HRCC2		C12900#3	12-JUL-04	12:51:27
ICAL HRCC3		C12900#2	12-JUL-04	12:00:10
ICAL HRCC4		C12900#5	12-JUL-04	14:33:58
ICAL HRCC5		C12900#6	12-JUL-04	15:25:14

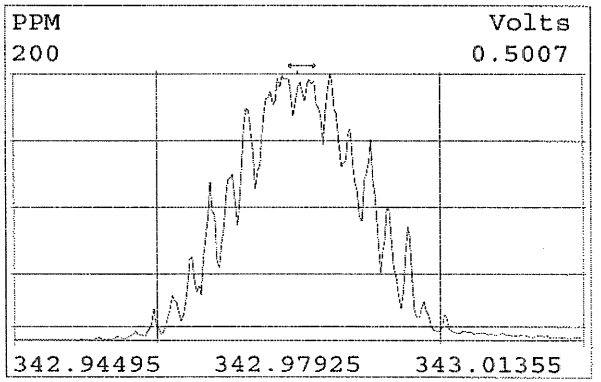
Peak Locate Examination:12-JUL-2004:11:07 File:C12899
Experiment:8290CA Function:1 Reference:PFK

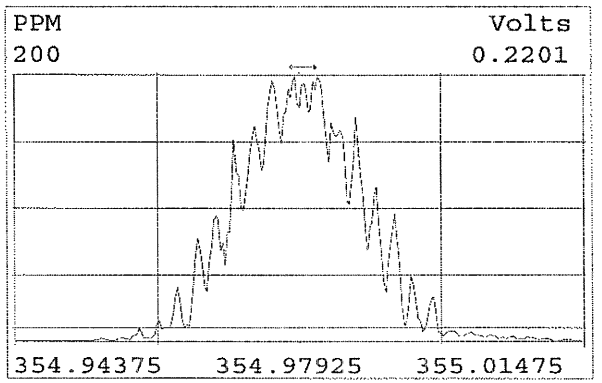


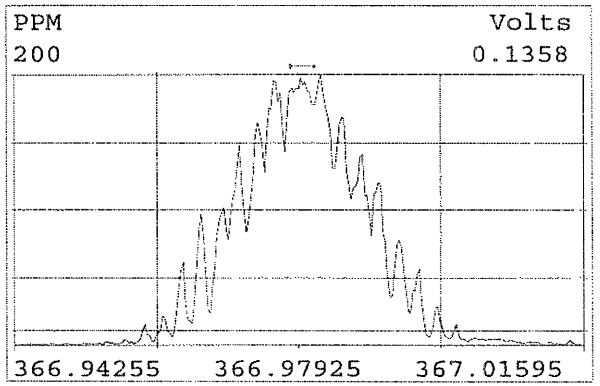


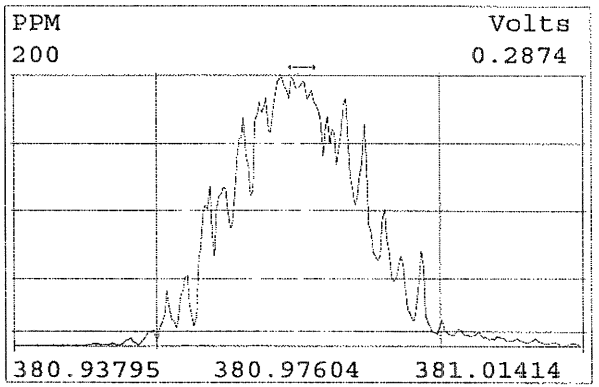




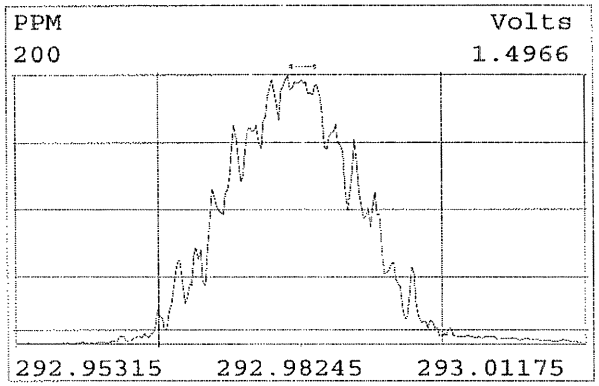


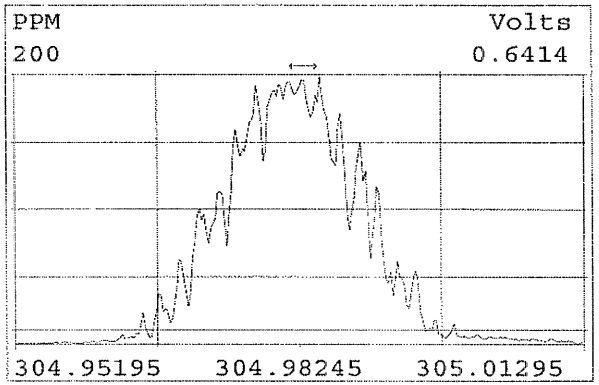


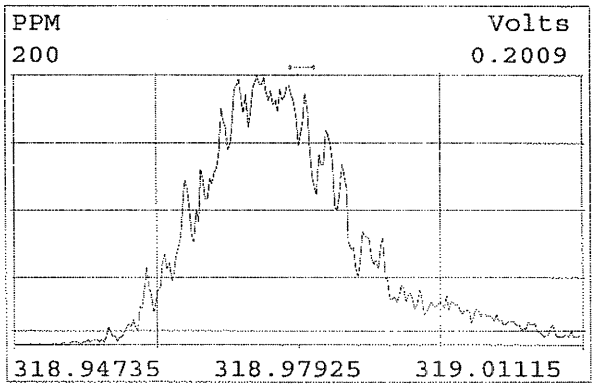


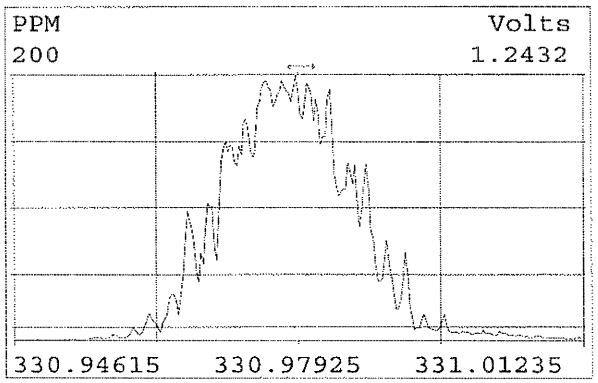


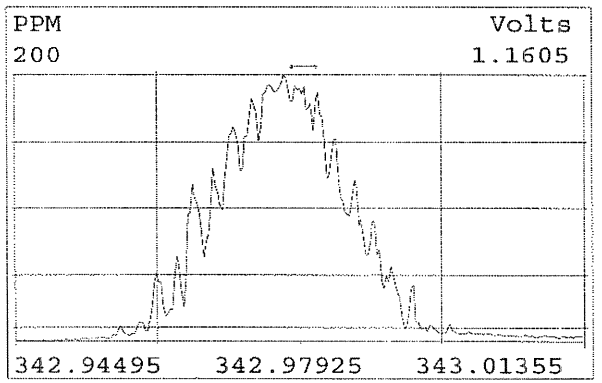
Peak Locate Examination:12-JUL-2004:17:17 File:C12901
Experiment:8290CA Function:1 Reference:PFK

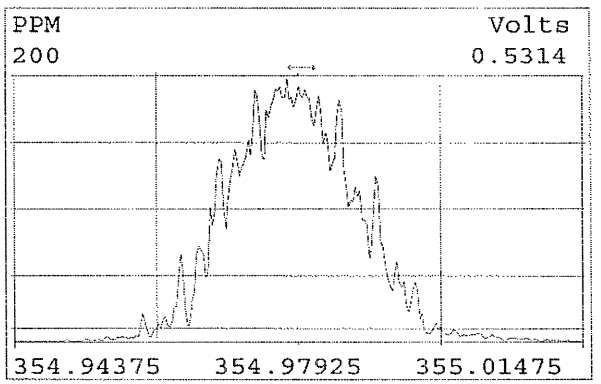


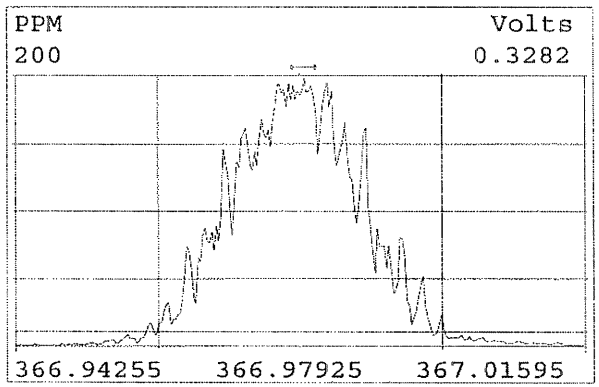


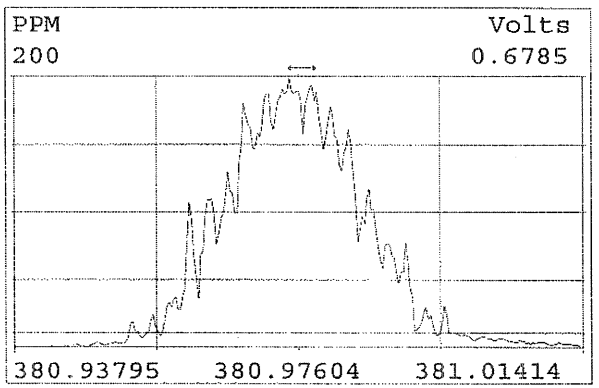












C12900RES

~~C10209~~ C12902CAL/C12904RES

DIOXIN GC/MS RUN LOG

CAS HOUSTON 10655 Richmond Avenue, Suite 130-A Houston, TX 77042

Columbia Analytical Services inc.
An Employee Owned Company

Acq Method: ~~8290~~ 8290CA/1613 Result File: C40712S290I Archive Tape: 07/14/04

GC Method: 8290CA/1613 EDD File: _____ Instrument ID: VG70C

Date	Time	File	CAS ID	Client ID	Batch #	Analyst	Comments	RE
7/12/04	11:07	C12899	HRMS check			kc		
	11:08	C12900#1	Window Define	DF-90-2				
	12:00	C12900#2	Ical HRCC3	DC-49-3				
	12:51	C12900#3	Ical HRCC2	DS-49-4				
	13:42	C12900#4	Ical HRCC1	DS-49-5				
	14:33	C12900#5	Ical HRCC4	DS-49-2				
	15:25	C12900#6	Ical HRCC5	DS-49-1				
	16:23	C12900#7	EB18042-LCS	lab spk				
	17:17	C12901	HRMS check					
	17:19	C12902#1	Window Define	DF-90-2				
	18:10	C12902#2	Ical HRCC3	DS-49-3				
	19:05	C12903	HRMS check					
	19:07	C12904#1	EB18042-MB	Method Blank	EB18042			
	19:58	#2	E2400595-001	41551-01				
	20:49	#3	E2400595-002	41551-02				
	21:41	C12904 #4	E2400595-004	41551-04				

Reviewed by: cel

5DFA

WINDOW DEFINING MIX SUMMARY

CLIENT ID

WDM

Lab Name: COLUMBIA ANALYTICAL SERVICES

Lab Code: CAS Case No.: _____ SDG No.: _____

GC Column: DB-5 ID: 0.25 (mm) Lab File ID: C12900#1

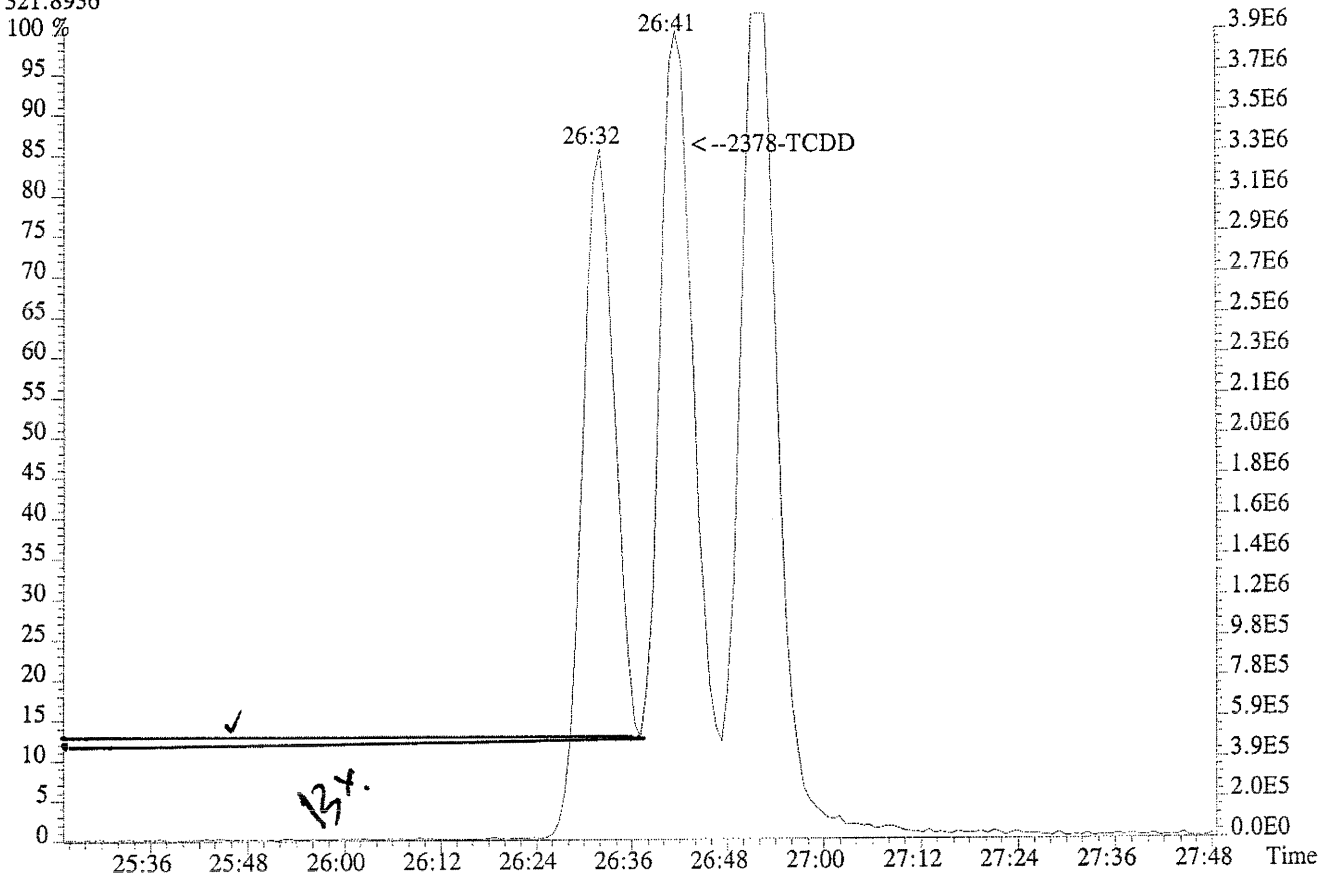
Date Analyzed: 12 Jul 04

Time Analyzed: 11:08:57

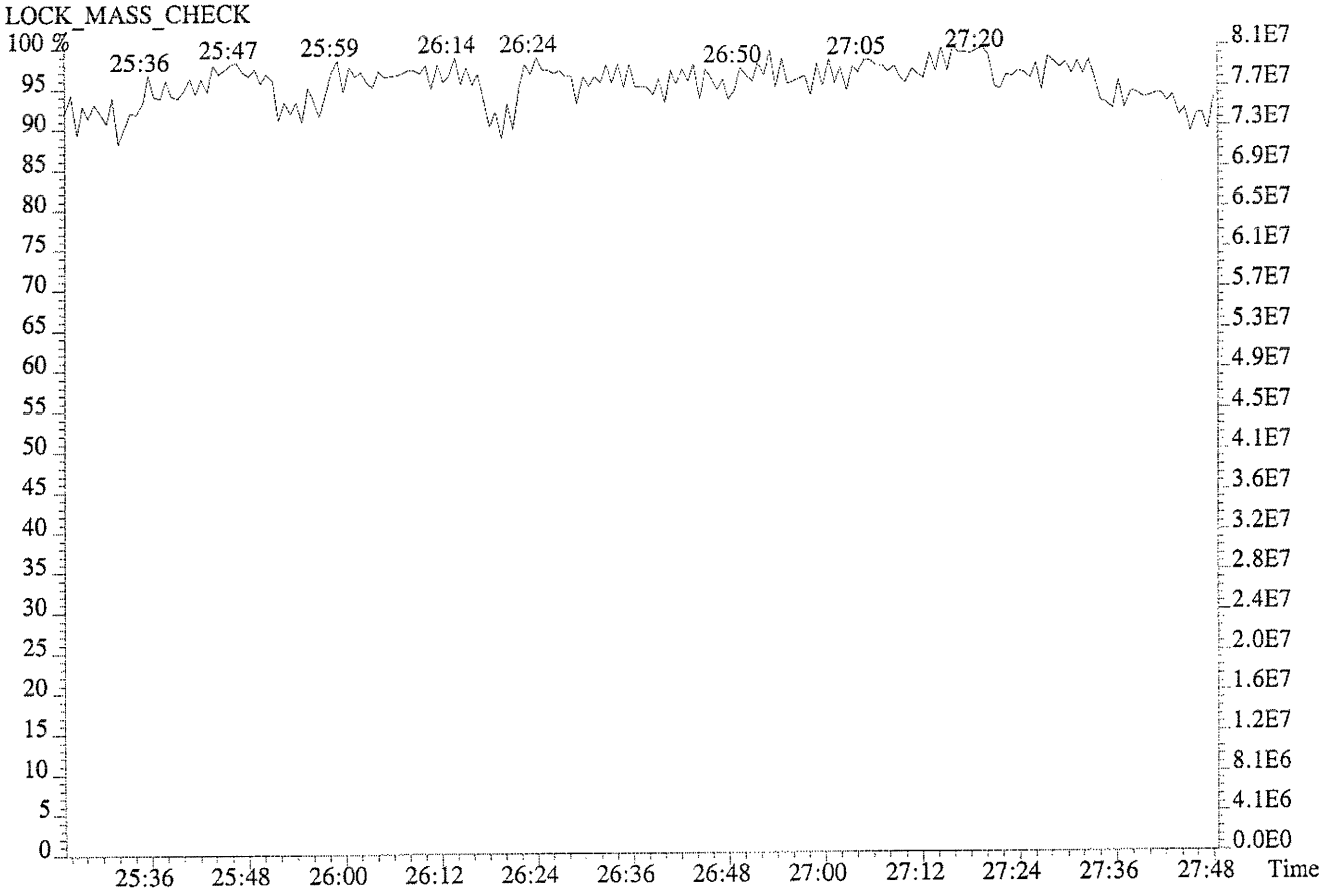
CONGENER	RT FIRST ELUTING	RT LAST ELUTING
TCDF	21:33	27:55
TCDD	23:13	27:55
PeCDF	28:15	32:33
PeCDD	29:47	32:24
HxCDF	33:32	36:05
HxCDD	34:05	35:44
HpCDF	37:36	38:58
HpCDD	37:52	38:33

% Valley 2378-TCDD: 13%

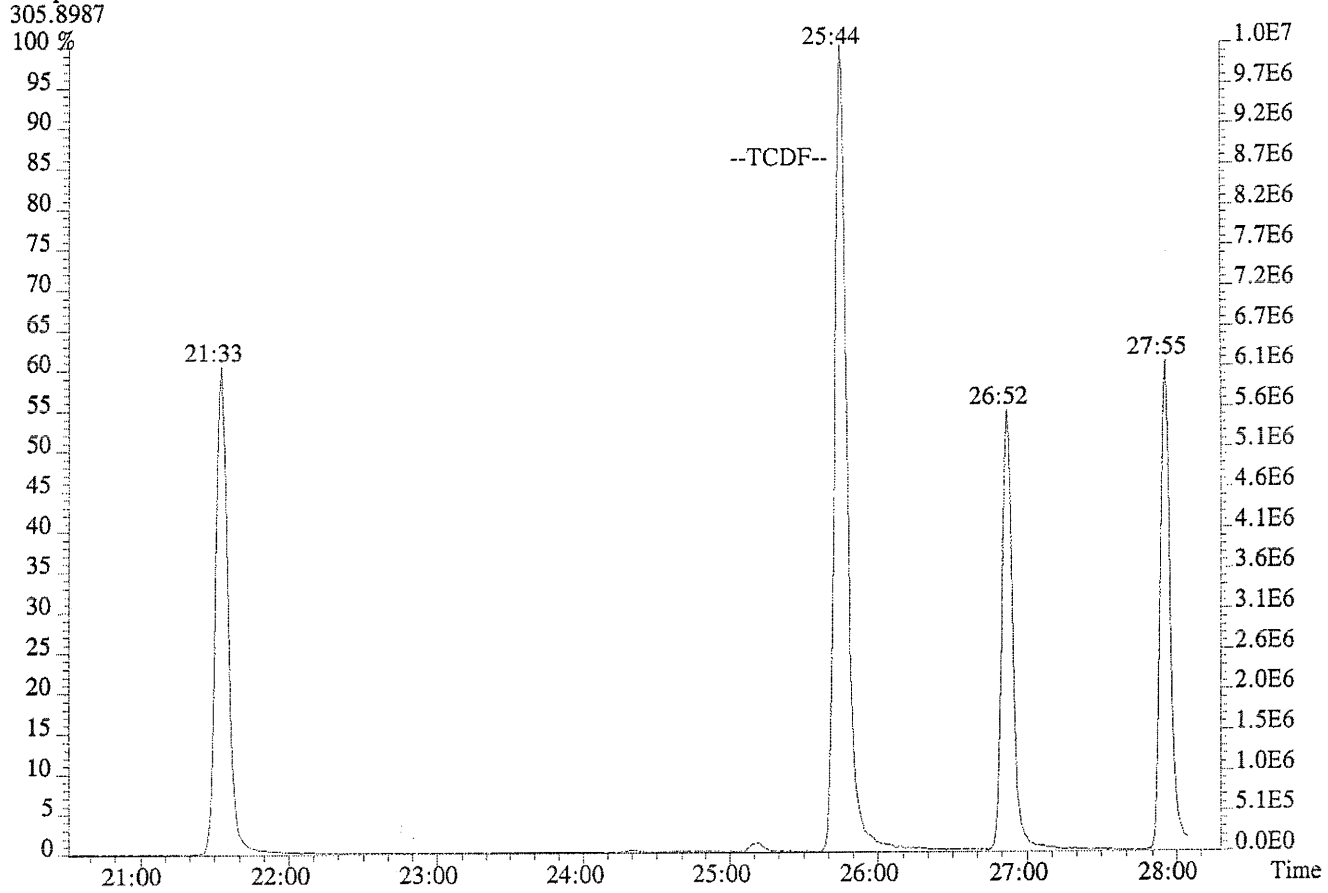
File:C12900 #1-620 Acq:12-JUL-2004 11:08:57 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS HOUSTN Text:WINDOW DEFINE Exp:8290CA
321.8936

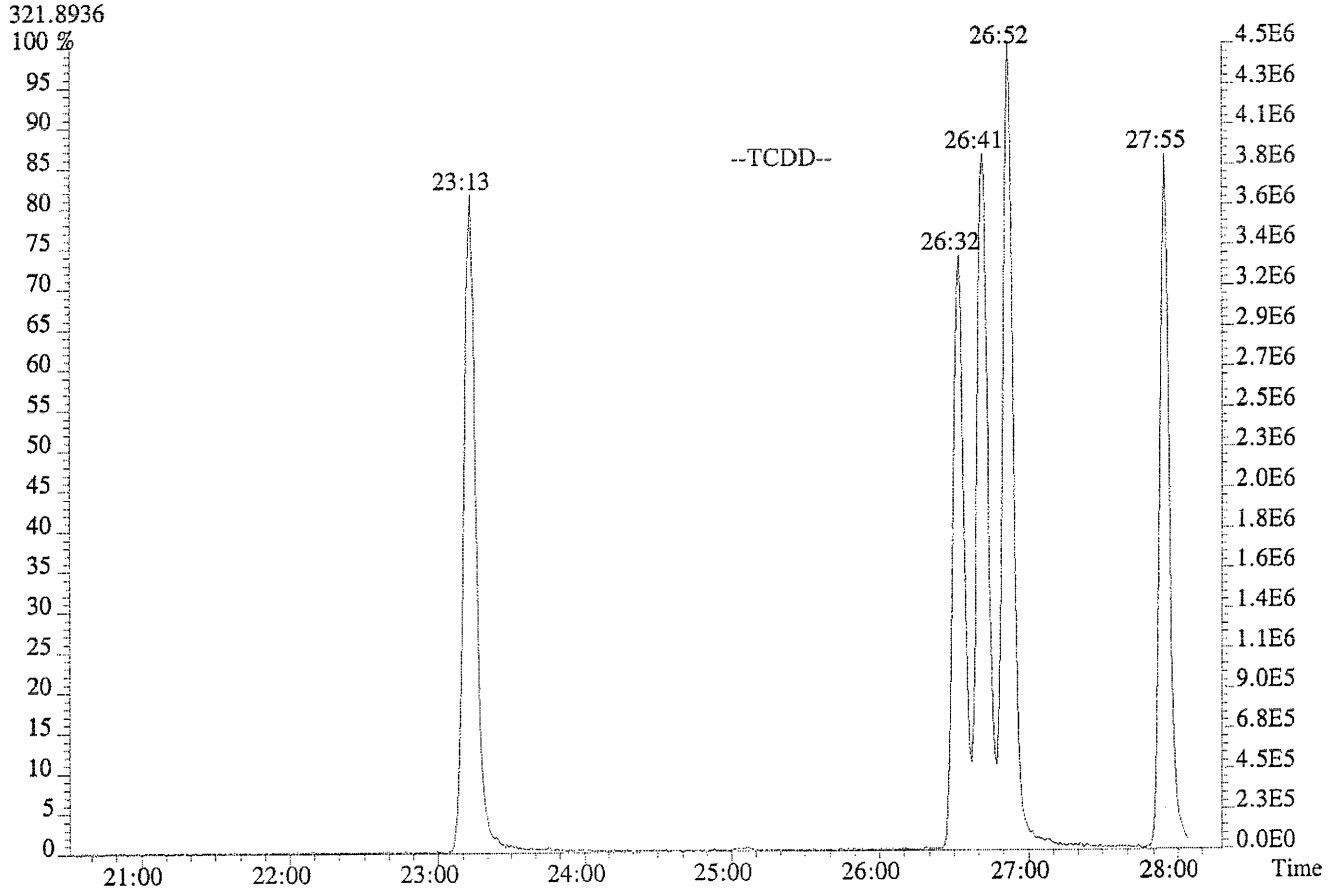


LOCK_MASS_CHECK



File:C12900 #1-620 Acq:12-JUL-2004 11:08:57 GC EI+ Voltage SIR 70S
Sample#1 File Text:CAS HOUSTN Text:WINDOW DEFINE Exp:8290CA





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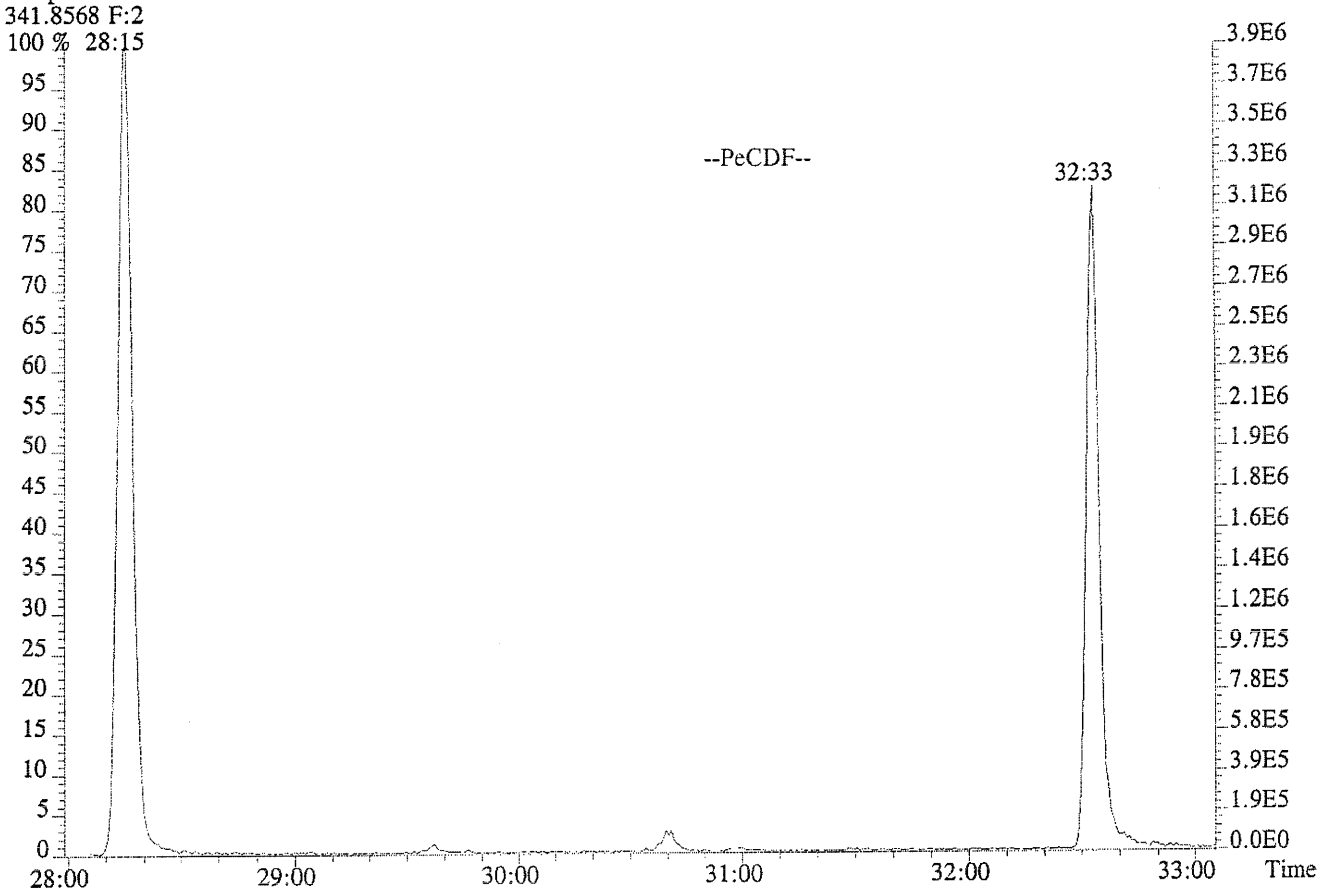

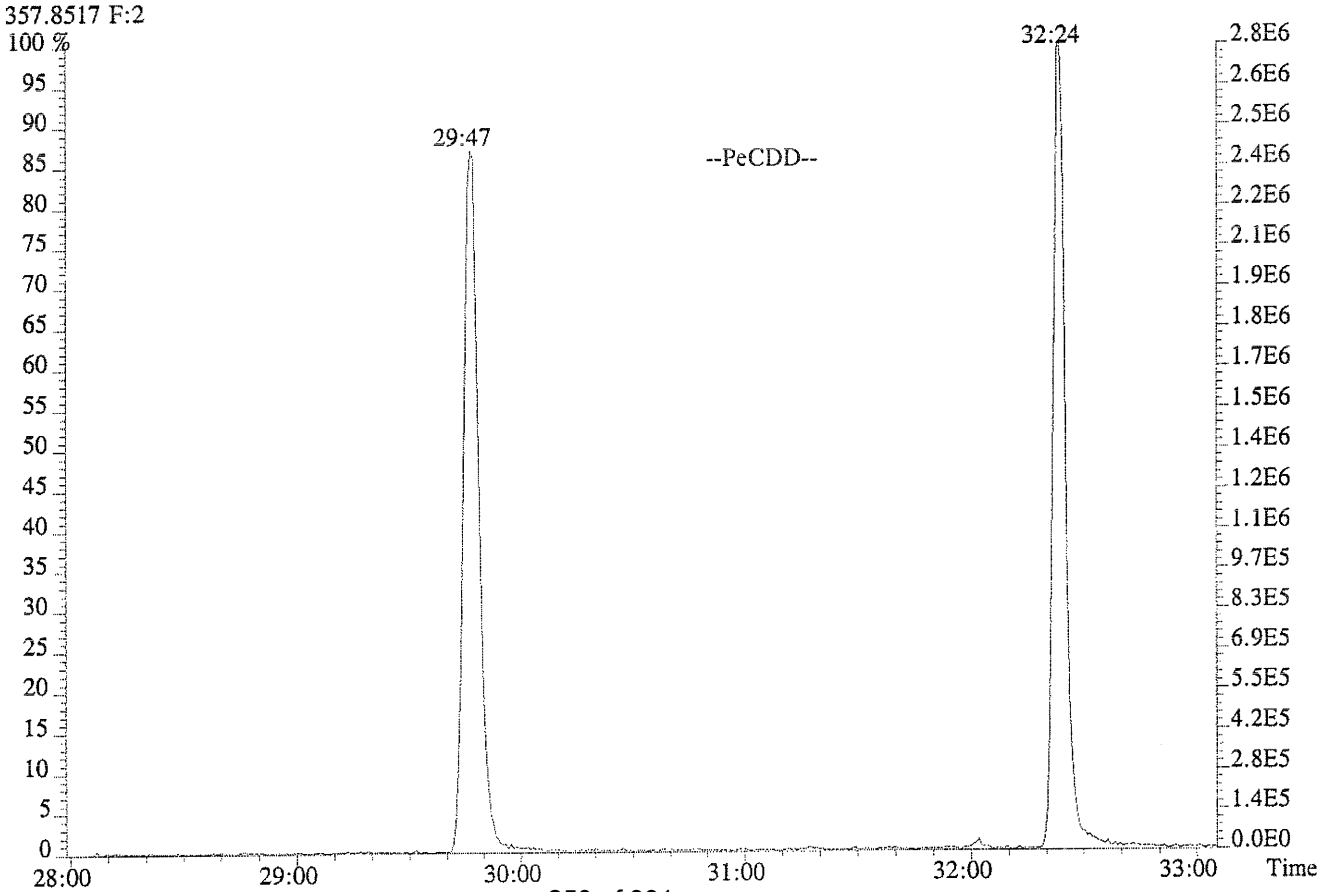

File:C12900 #1-364 Acq:12-JUL-2004 11:08:57 GC EI+ Voltage SIR 70S
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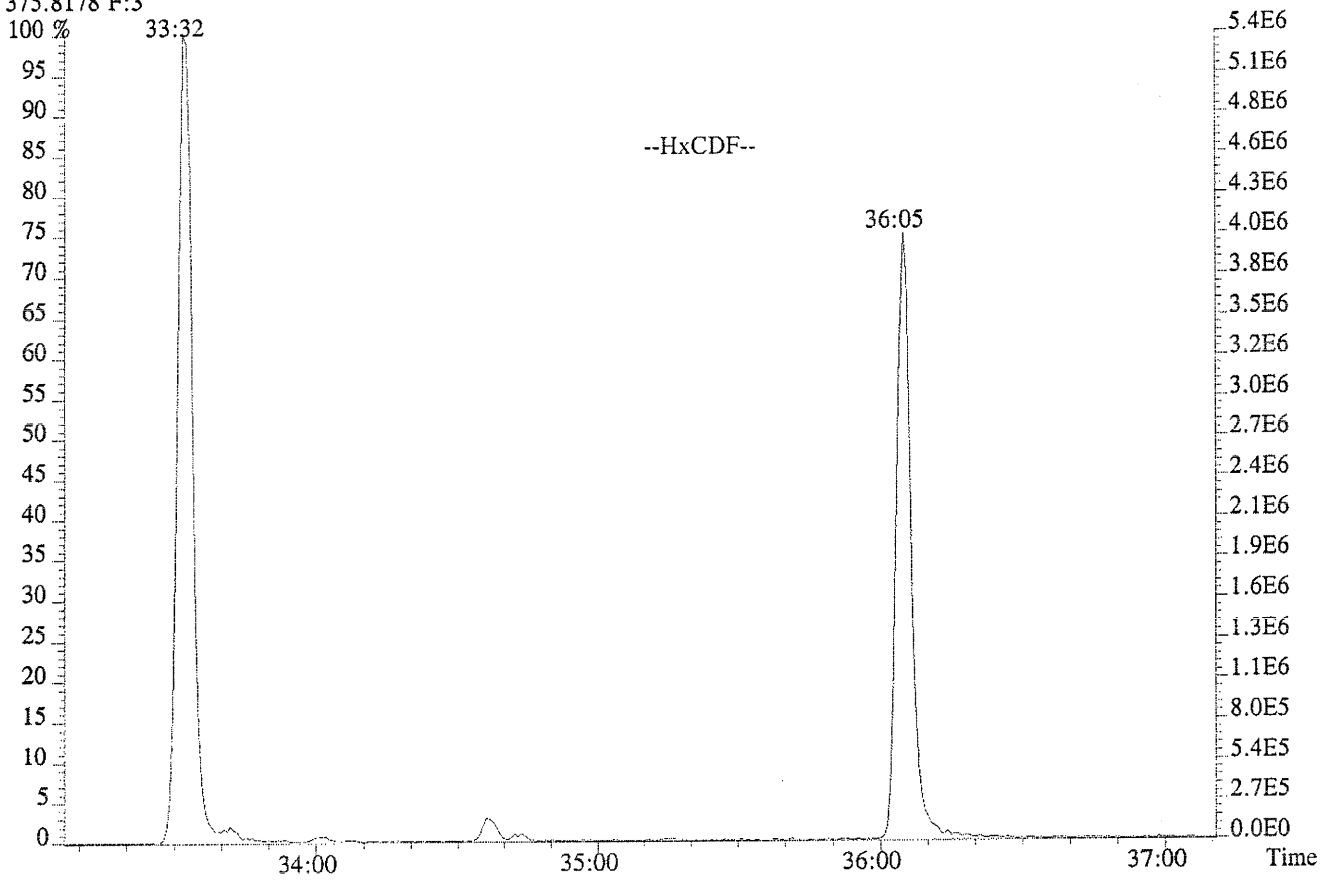
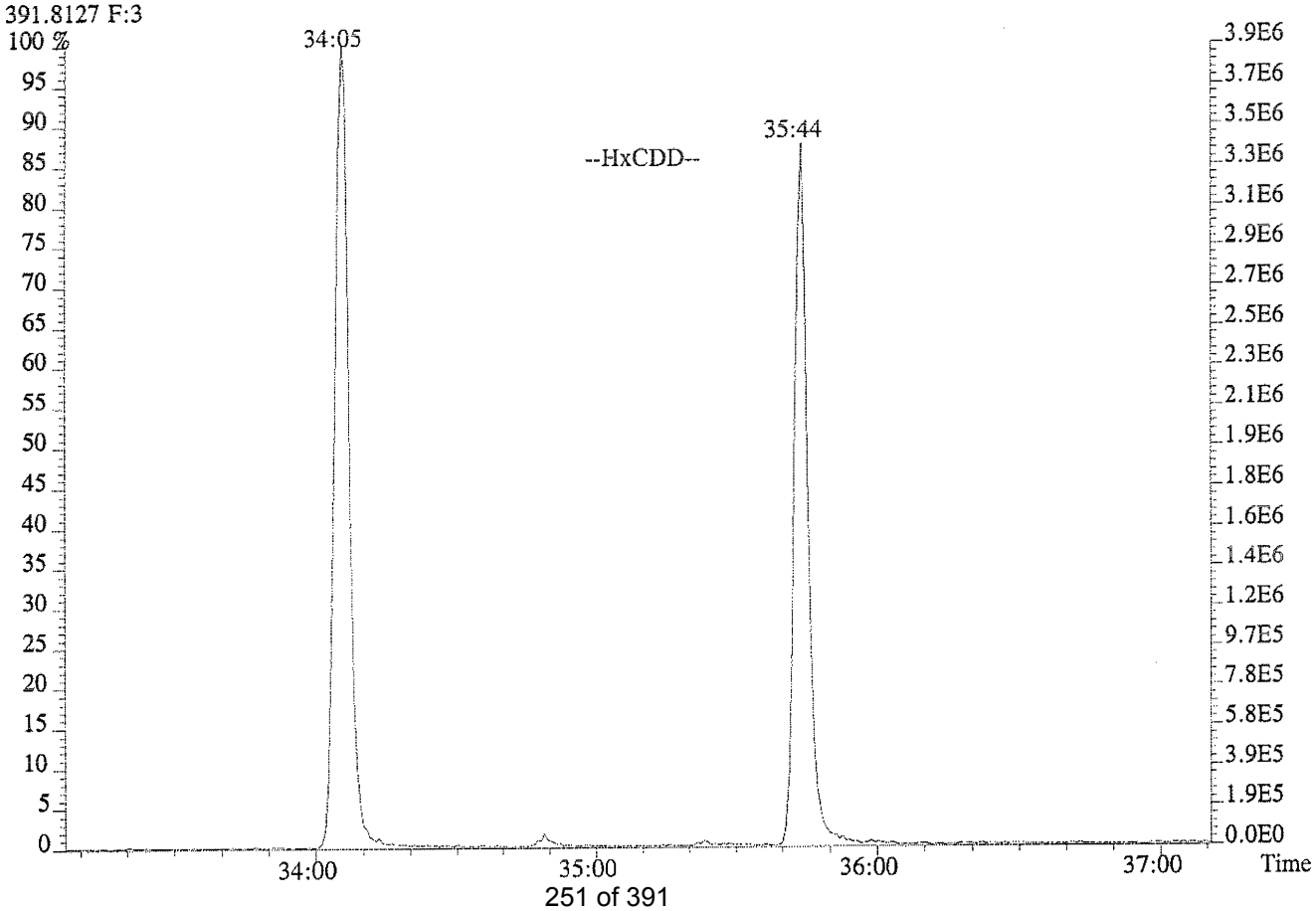
375.8178 F:3



391.8127 F:3



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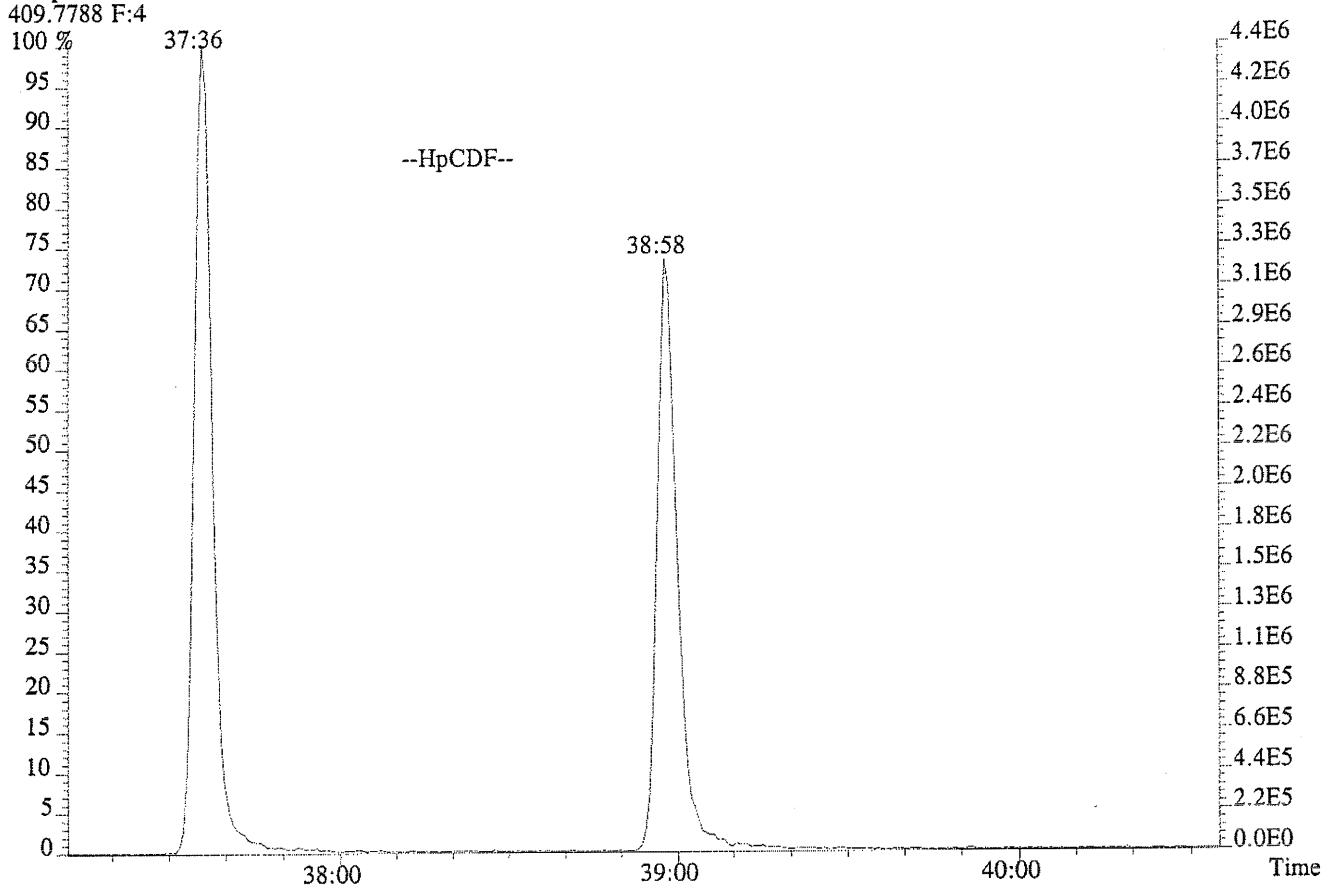
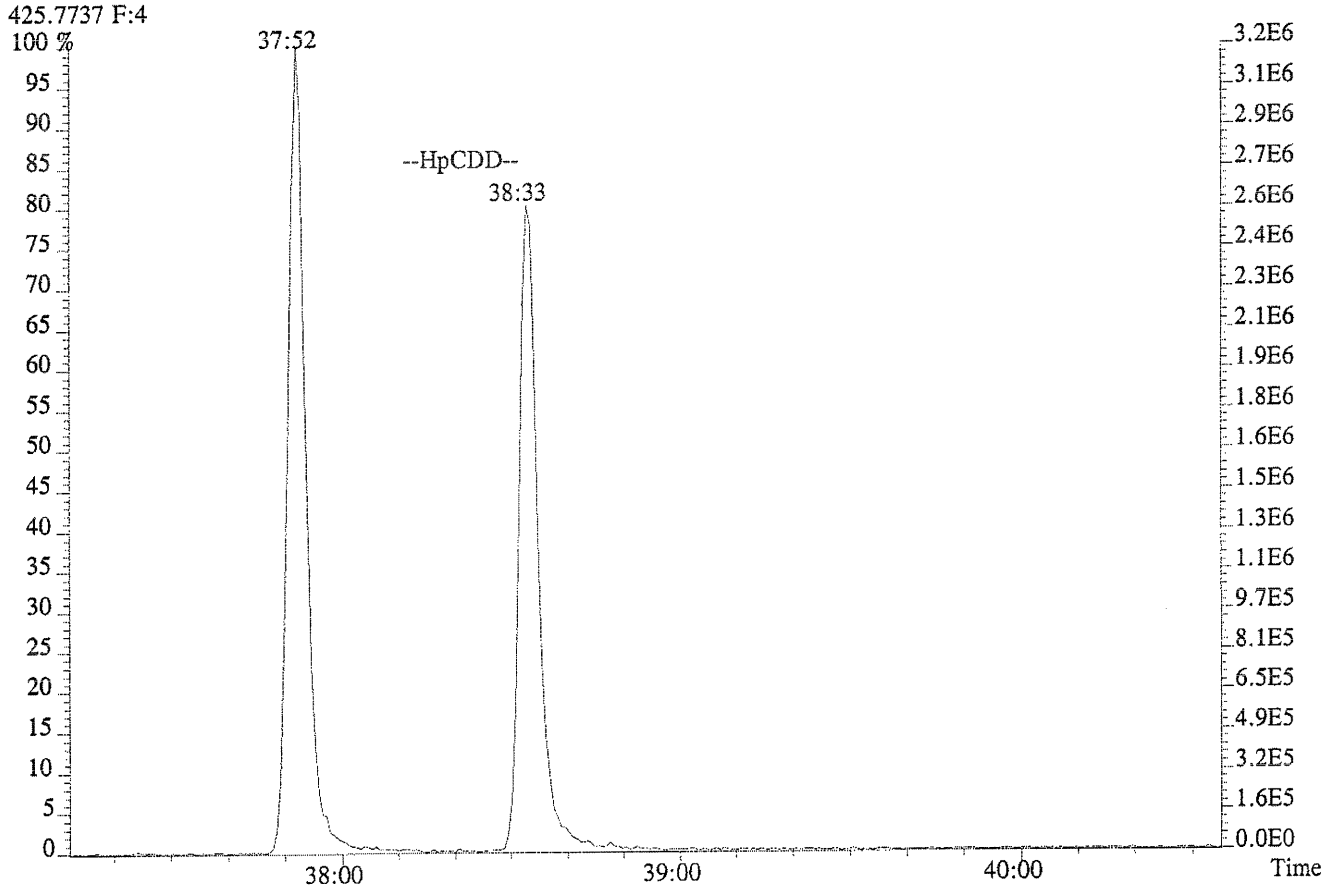
Sample#1 File Text:CAS HOUSTN Text:WINDOW DEFINE Exp:8290CA
409.7788 F:4



425.7737 F:4



FORM 3A
PCDD/PCDF INITIAL CALIBRATION RELATIVE RESPONSES

Lab Name: Columbia Analytical Services Episode No.:

Contract No.: SDG No.:

Initial Calibration Date: 07/12/04

Instrument ID: 70S GC Column ID: DB-5

HRCC1 Data Filename: C12900#4 HRCC4 Data Filename: C12900#5

HRCC2 Data Filename: C12900#3 HRCC5 Data Filename: C12900#6

HRCC3 Data Filename: C12900#2

	RELATIVE RESPONSE (RR)					MEAN RR	Cv (RSD) (1)
	HRCC1	HRCC2	HRCC3	HRCC4	HRCC5		
NATIVE ANALYTES							
2,3,7,8-TCDD	0.92	0.90	0.95	0.97	0.97	0.95	3.34
1,2,3,7,8-PeCDD	0.93	0.97	0.98	0.98	1.00	0.97	2.77
1,2,3,4,7,8-HxCDD	0.89	0.96	0.93	0.97	1.01	0.95	4.75
1,2,3,6,7,8-HxCDD	1.06	1.18	1.15	1.15	1.12	1.13	3.90
1,2,3,7,8,9-HxCDD	1.03	1.30	1.18	1.05	1.05	1.12	10.33
1,2,3,4,6,7,8-HpCDD	0.90	1.05	0.99	0.94	0.99	0.97	5.84
OCDD	1.00	1.17	1.00	1.00	1.02	1.04	7.25
2,3,7,8-TCDF	0.89	0.90	0.87	0.93	0.94	0.91	3.37
1,2,3,7,8-PeCDF	0.85	0.89	0.88	0.91	0.91	0.89	2.92
2,3,4,7,8-PeCDF	0.84	0.90	0.89	0.94	0.99	0.91	5.99
1,2,3,4,7,8-HxCDF	1.20	1.23	1.30	1.20	1.23	1.23	3.22
1,2,3,6,7,8-HxCDF	1.18	1.25	1.28	1.25	1.24	1.24	3.01
1,2,3,7,8,9-HxCDF	0.91	1.07	1.13	0.94	1.03	1.02	9.30
2,3,4,6,7,8-HxCDF	1.05	1.13	1.24	1.09	1.15	1.13	6.20
1,2,3,4,6,7,8-HpCDF	1.30	1.52	1.42	1.39	1.42	1.41	5.68
1,2,3,4,7,8,9-HpCDF	0.95	1.06	1.07	1.00	1.11	1.04	6.26
OCDF	1.24	1.37	1.25	1.29	1.36	1.30	4.79

(1) The %RSD for the 17 unlabeled standard must not exceed +/- 20%, see Section 7.7.2.1, Method 8290.

8290F3A

FORM 3B
PCDD/PCDF INITIAL CALIBRATION RELATIVE RESPONSES

Lab Name: Columbia Analytical Services Episode No.:

Contract No.: SDG No.:

Initial Calibration Date: 07/12/04

Instrument ID: 70S GC Column ID: DB-5

HCC1 Data Filename: C12900#4 HCC4 Data Filename: C12900#5

HCC2 Data Filename: C12900#3 HCC5 Data Filename: C12900#6

HCC3 Data Filename: C12900#2

	RELATIVE RESPONSE (RR)					MEAN RR	Cv (RSD) (1)
	HRCC1	HRCC2	HRCC3	HRCC4	HRCC5		
LABELED COMPOUNDS							
13C-2,3,7,8-TCDD	1.00	1.06	1.08	1.05	1.12	1.06	3.93
13C-1,2,3,7,8-PeCDD	0.68	0.72	0.79	0.72	0.81	0.74	7.25
13C-1,2,3,6,7,8-HxCDD	0.98	0.82	0.95	1.02	1.01	0.96	8.32
13C-1,2,3,4,6,7,8-HpCDD	0.81	0.71	0.83	0.80	0.85	0.80	6.64
13C-OCDD	0.62	0.56	0.72	0.61	0.74	0.65	11.70
13C-2,3,7,8-TCDF	1.36	1.39	1.58	1.43	1.52	1.45	6.29
13C-1,2,3,7,8-PeCDF	1.05	1.13	1.23	1.13	1.25	1.16	6.96
13C-1,2,3,4,7,8-HxCDF	1.37	1.14	1.16	1.41	1.32	1.28	9.65
13C-1,2,3,4,6,7,8-HpCDF	0.97	0.85	0.98	0.99	1.00	0.96	6.62
CLEANUP STANDARD							
37Cl-2,3,7,8-TCDD	0.88	0.97	1.01	0.99	1.06	0.98	6.89

(1) The %RSD for the nine labeled reference compounds must not exceed +/- 30%, see Section 7.7.2.1, Method 8290.

8290F3B

FORM 3C
PCDD/PCDF INITIAL CALIBRATION ION ABUNDANCE RATIOS

Lab Name: Columbia Analytical Services Episode No.:

Contract No.: SDG No.:

Initial Calibration Date: 07/12/04

Instrument ID: 70S GC Column ID: DB-5

HCC1 Data Filename: C12900#4 HCC4 Data Filename: C12900#5

HCC2 Data Filename: C12900#3 HCC5 Data Filename: C12900#6

HCC3 Data Filename: C12900#2

	M/Z'S FORMING RATIO	ION ABUNDANCE RATIO					QC LIMITS (2)
		HRCC1	HRCC2	HRCC3	HRCC4	HRCC5	
NATIVE ANALYTES							
2,3,7,8-TCDD	M/M+2	0.81	0.80	0.76	0.77	0.78	0.65-0.89
1,2,3,7,8-PeCDD	M+2/M+4	1.61	1.60	1.61	1.58	1.58	1.32-1.78
1,2,3,4,7,8-HxCDD	M+2/M+4	1.24	1.26	1.23	1.23	1.23	1.05-1.43
1,2,3,6,7,8-HxCDD	M+2/M+4	1.25	1.23	1.23	1.23	1.25	1.05-1.43
1,2,3,7,8,9-HxCDD	M+2/M+4	1.15	1.28	1.21	1.21	1.24	1.05-1.43
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.02	1.06	1.04	1.02	1.03	0.88-1.20
OCDD	M+2/M+4	0.85	0.85	0.86	0.85	0.86	0.76-1.02
2,3,7,8-TCDF	M/M+2	0.79	0.77	0.78	0.77	0.78	0.65-0.89
1,2,3,7,8-PeCDF	M+2/M+4	1.64	1.66	1.55	1.57	1.58	1.32-1.78
2,3,4,7,8-PeCDF	M+2/M+4	1.67	1.65	1.56	1.57	1.56	1.32-1.78
1,2,3,4,7,8-HxCDF	M+2/M+4	1.27	1.33	1.25	1.24	1.24	1.05-1.43
1,2,3,6,7,8-HxCDF	M+2/M+4	1.25	1.21	1.25	1.25	1.25	1.05-1.43
1,2,3,7,8,9-HxCDF	M+2/M+4	1.20	1.22	1.26	1.26	1.24	1.05-1.43
2,3,4,6,7,8-HxCDF	M+2/M+4	1.20	1.24	1.25	1.25	1.24	1.05-1.43
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.04	1.05	1.03	1.03	1.03	0.88-1.20
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.02	1.00	1.04	1.03	1.05	0.88-1.20
OCDF	M+2/M+4	0.90	0.89	0.90	0.90	0.90	0.76-1.02

(1) See Table 6, Method 8290, for m/z specifications.

(2) Ion Abundance Ratio Control Limits from Table 8, Method 8290.

8290F3C

FORM 3D
PCDD/PCDF INITIAL CALIBRATION ION ABUNDANCE RATIOS

Lab Name: Columbia Analytical Services Episode No.:

Contract No.: SDG No.:

Initial Calibration Date: 07/12/04

Instrument ID: 70S GC Column ID: DB-5

HRCC1 Data Filename: C12900#4 HRCC4 Data Filename: C12900#5

HRCC2 Data Filename: C12900#3 HRCC5 Data Filename: C12900#6

HRCC3 Data Filename: C12900#2

LABELED COMPOUNDS	M/Z'S FORMING RATIO	ION ABUNDANCE RATIO HRCC1	HRCC2	HRCC3	HRCC4	HRCC5	QC LIMITS (2)
13C-2,3,7,8-TCDD	M/M+2	0.78	0.79	0.79	0.78	0.79	0.65-0.89
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.60	1.58	1.57	1.61	1.57	1.32-1.78
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.23	1.24	1.23	1.20	1.24	1.05-1.43
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.04	1.01	1.03	1.04	1.02	0.88-1.20
13C-OCDD	M+2/M+4	0.86	0.88	0.89	0.87	0.88	0.76-1.02
13C-2,3,7,8-TCDF	M/M+2	0.77	0.75	0.78	0.78	0.79	0.65-0.89
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.52	1.50	1.50	1.53	1.53	1.32-1.78
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.51	0.50	0.52	0.50	0.50	0.43-0.59
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.44	0.44	0.44	0.43	0.44	0.37-0.51

(1) See Table 6, Method 8290, for m/z specifications.Method 8290.

(2) Ion Abundance Ratio Control Limits from Table 8,

8290F3D

Columbia Analytical Services, Inc.
Sample Response Summary

CLIENT ID.
ICAL HRCC1

Run #1 Filename C12900#4 Samp: 4 Inj: 1 Acquired: 12-JUL-04 13:42:42
Processed: 12-JUL-04 16:16:22 Sample ID: ICAL HRCC1

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	25:16	9.456e+05	1.191e+06	0.79	yes	no
2	Unk	1,2,3,7,8-PeCDF	30:21	2.465e+06	1.502e+06	1.64	yes	no
3	Unk	2,3,4,7,8-PeCDF	31:12	2.453e+06	1.471e+06	1.67	yes	no
4	Unk	1,2,3,4,7,8-HxCDF	34:23	2.239e+06	1.761e+06	1.27	yes	no
5	Unk	1,2,3,6,7,8-HxCDF	34:29	2.191e+06	1.751e+06	1.25	yes	no
6	Unk	2,3,4,6,7,8-HxCDF	35:02	1.923e+06	1.596e+06	1.20	yes	no
7	Unk	1,2,3,7,8,9-HxCDF	35:49	1.651e+06	1.376e+06	1.20	yes	no
8	Unk	1,2,3,4,6,7,8-HpCDF	37:24	1.568e+06	1.501e+06	1.04	yes	no
9	Unk	1,2,3,4,7,8,9-HpCDF	38:47	1.129e+06	1.112e+06	1.02	yes	no
10	Unk	OCDF	41:39	1.777e+06	1.973e+06	0.90	yes	no
11	Unk	2,3,7,8-TCDD	26:16	7.365e+05	9.039e+05	0.81	yes	no
12	Unk	1,2,3,7,8-PeCDD	31:36	1.724e+06	1.072e+06	1.61	yes	no
13	Unk	1,2,3,4,7,8-HxCDD	35:10	1.189e+06	9.548e+05	1.24	yes	no
14	Unk	1,2,3,6,7,8-HxCDD	35:15	1.419e+06	1.138e+06	1.25	yes	no
15	Unk	1,2,3,7,8,9-HxCDD	35:34	1.317e+06	1.148e+06	1.15	yes	no
16	Unk	1,2,3,4,6,7,8-HpCDD	38:21	8.918e+05	8.777e+05	1.02	yes	no
17	Unk	OCDD	41:29	1.402e+06	1.645e+06	0.85	yes	no
18	IS	13C-2,3,7,8-TCDF	25:15	5.208e+07	6.797e+07	0.77	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	30:19	5.613e+07	3.699e+07	1.52	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	34:22	5.604e+07	1.109e+08	0.51	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	37:23	3.619e+07	8.222e+07	0.44	yes	no
22	IS	13C-2,3,7,8-TCDD	26:15	3.899e+07	4.978e+07	0.78	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	31:34	3.709e+07	2.317e+07	1.60	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	35:14	6.629e+07	5.384e+07	1.23	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	38:21	5.024e+07	4.826e+07	1.04	yes	no
26	IS	13C-OCDD	41:29	7.010e+07	8.167e+07	0.86	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	25:58	3.921e+07	4.927e+07	0.80	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	35:34	6.742e+07	5.464e+07	1.23	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	26:16	1.550e+06				

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Columbia Analytical Services,Inc. CLIENT ID.
Signal/Noise Height Ratio Summary ICAL HRCC1

Run #1 Filename C12900 #4 Samp: 4 Inj: 1 Acquired: 12-JUL-04 13:42:42

Processed: 12-JUL-04 16:16:22 LAB. ID: ICAL HRCC1

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	1.45e+05	2.40e+03	6.0e+01	1.81e+05	3.51e+03	5.2e+01
2	1,2,3,7,8-PeCDF	5.45e+05	1.95e+03	2.8e+02	3.53e+05	4.74e+03	7.5e+01
3	2,3,4,7,8-PeCDF	5.53e+05	1.95e+03	2.8e+02	3.37e+05	4.74e+03	7.1e+01
4	1,2,3,4,7,8-HxCDF	6.14e+05	3.17e+03	1.9e+02	4.89e+05	2.17e+03	2.3e+02
5	1,2,3,6,7,8-HxCDF	5.26e+05	3.17e+03	1.7e+02	4.17e+05	2.17e+03	1.9e+02
6	2,3,4,6,7,8-HxCDF	5.16e+05	3.17e+03	1.6e+02	4.19e+05	2.17e+03	1.9e+02
7	1,2,3,7,8,9-HxCDF	4.17e+05	3.17e+03	1.3e+02	3.15e+05	2.17e+03	1.5e+02
8	1,2,3,4,6,7,8-HpCDF	4.36e+05	3.97e+03	1.1e+02	4.08e+05	3.10e+03	1.3e+02
9	1,2,3,4,7,8,9-HpCDF	2.30e+05	3.97e+03	5.8e+01	2.69e+05	3.10e+03	8.7e+01
10	OCDF	3.63e+05	2.15e+03	1.7e+02	3.94e+05	3.92e+03	1.0e+02
11	2,3,7,8-TCDD	1.29e+05	3.68e+03	3.5e+01	1.65e+05	2.62e+03	6.3e+01
12	1,2,3,7,8-PeCDD	4.13e+05	3.89e+03	1.1e+02	2.58e+05	2.06e+03	1.3e+02
13	1,2,3,4,7,8-HxCDD	3.57e+05	2.61e+03	1.4e+02	2.78e+05	2.66e+03	1.0e+02
14	1,2,3,6,7,8-HxCDD	3.70e+05	2.61e+03	1.4e+02	2.93e+05	2.66e+03	1.1e+02
15	1,2,3,7,8,9-HxCDD	3.54e+05	2.61e+03	1.4e+02	3.02e+05	2.66e+03	1.1e+02
16	1,2,3,4,6,7,8-HpCDD	2.13e+05	2.66e+03	8.0e+01	2.18e+05	3.71e+03	5.9e+01
17	OCDD	2.85e+05	2.09e+03	1.4e+02	3.30e+05	2.12e+03	1.6e+02
18	13C-2,3,7,8-TCDF	8.71e+06	6.45e+03	1.4e+03	1.11e+07	6.51e+03	1.7e+03
19	13C-1,2,3,7,8-PeCDF	1.30e+07	2.06e+03	6.3e+03	8.66e+06	3.23e+03	2.7e+03
20	13C-1,2,3,4,7,8-HxCDF	1.50e+07	4.32e+03	3.5e+03	2.96e+07	3.92e+03	7.6e+03
21	13C-1,2,3,4,6,7,8-HpCDF	9.85e+06	2.92e+04	3.4e+02	2.22e+07	5.44e+04	4.1e+02
22	13C-2,3,7,8-TCDD	6.95e+06	8.52e+03	8.2e+02	8.90e+06	4.40e+03	2.0e+03
23	13C-1,2,3,7,8-PeCDD	9.12e+06	3.47e+03	2.6e+03	5.80e+06	2.49e+03	2.3e+03
24	13C-1,2,3,6,7,8-HxCDD	1.85e+07	3.06e+03	6.0e+03	1.51e+07	3.91e+03	3.9e+03
25	13C-1,2,3,4,6,7,8-HpCDD	1.24e+07	1.96e+03	6.3e+03	1.18e+07	2.37e+03	5.0e+03
26	13C-OCDD	1.46e+07	3.34e+03	4.4e+03	1.69e+07	1.48e+03	1.1e+04
27	13C-1,2,3,4-TCDD	7.34e+06	8.52e+03	8.6e+02	9.38e+06	4.40e+03	2.1e+03
28	13C-1,2,3,7,8,9-HxCDD	1.80e+07	3.06e+03	5.9e+03	1.45e+07	3.91e+03	3.7e+03
29	37Cl-2,3,7,8-TCDD	2.80e+05	4.05e+03	6.9e+01			

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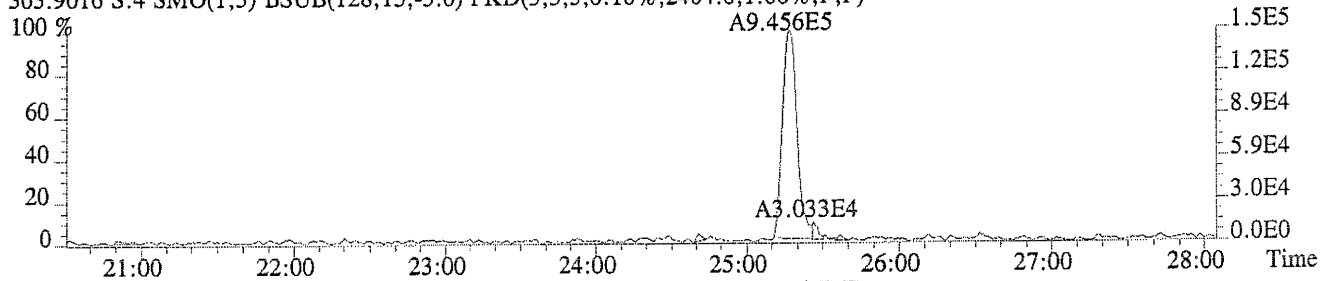
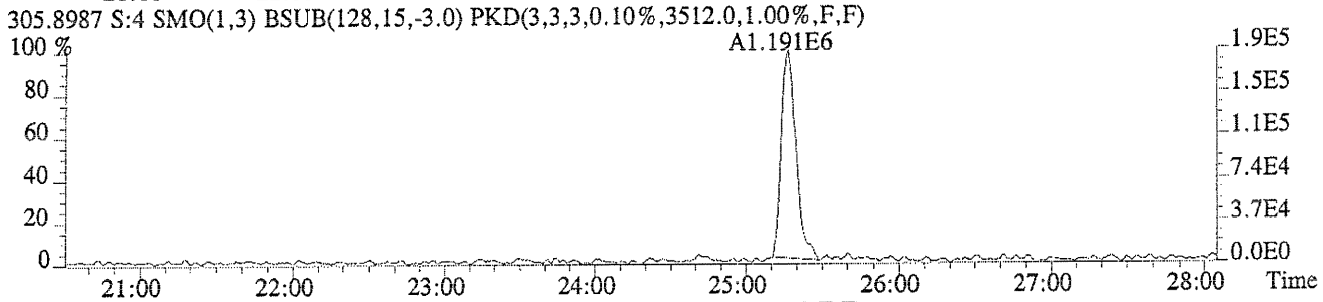
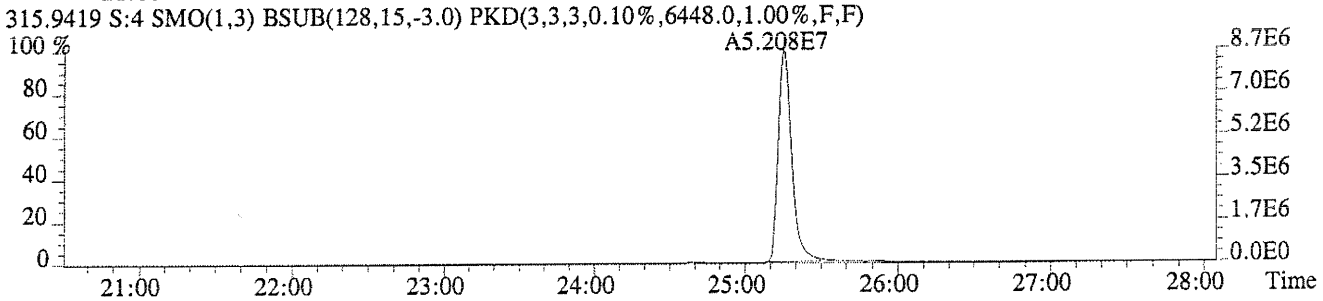
File:C12900 #1-621 Acq:12-JUL-2004 13:42:42 GC EI+ Voltage SIR 70S
Sample#4 File Text:CAS HOUSTN Text:ICAL HRCC1 Exp:8290CA
303.9016 S:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2404.0,1.00%,F,F)



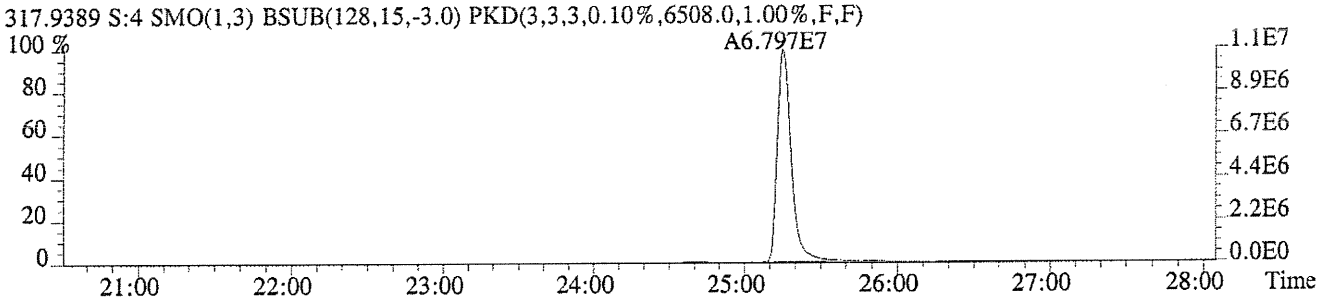
305.8987 S:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3512.0,1.00%,F,F)



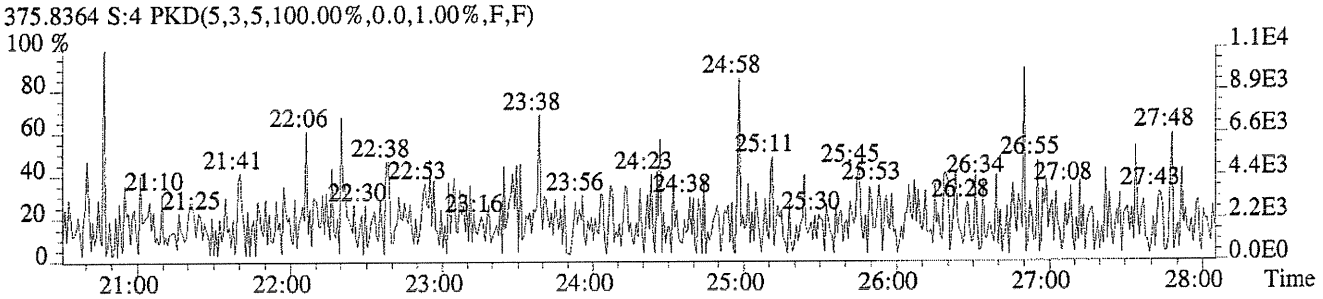
315.9419 S:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6448.0,1.00%,F,F)



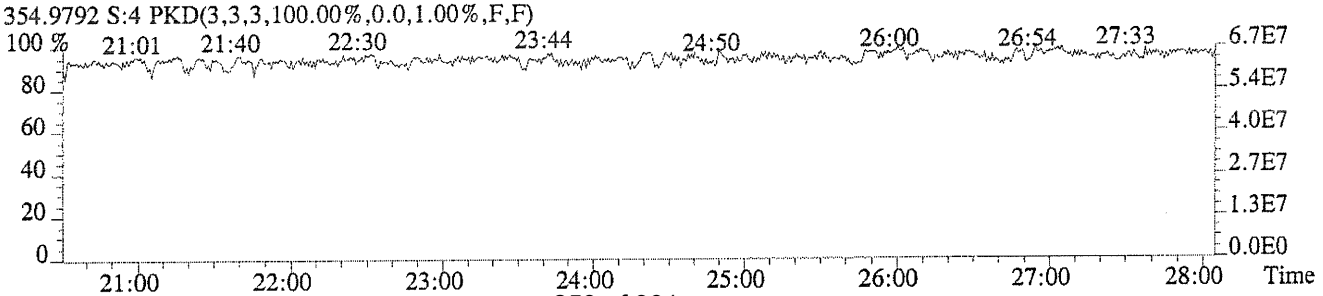
317.9389 S:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6508.0,1.00%,F,F)



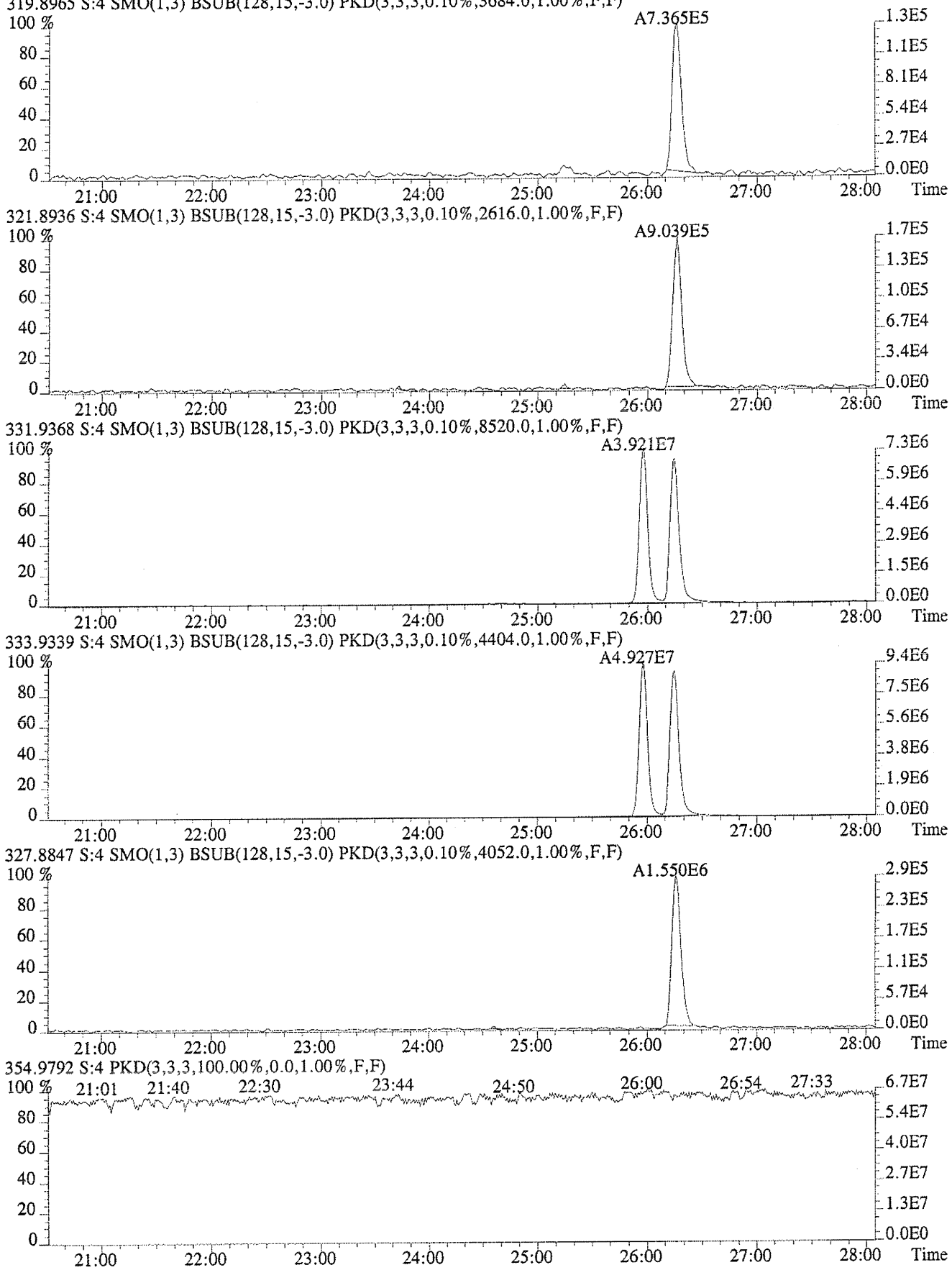
375.8364 S:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

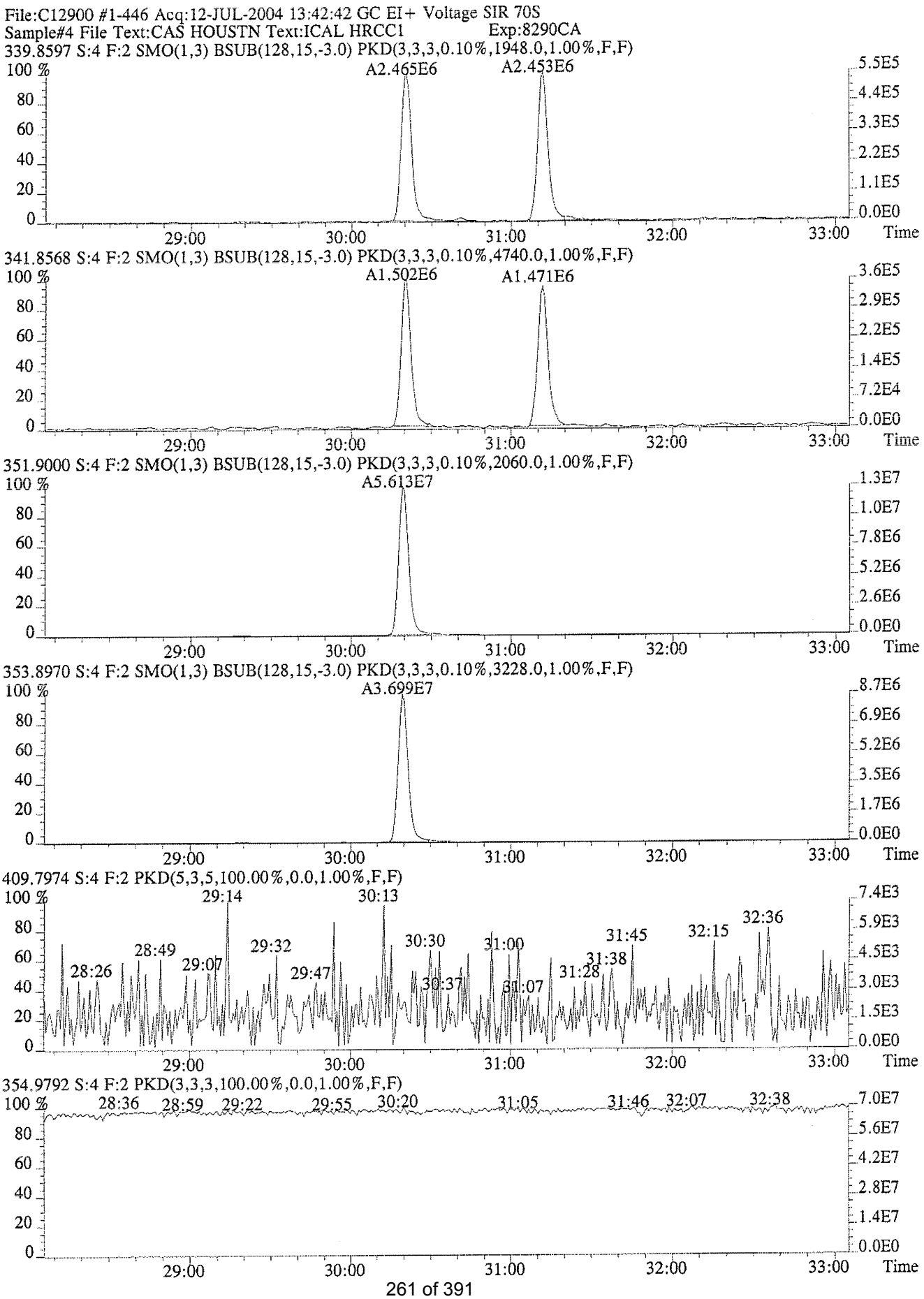


354.9792 S:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

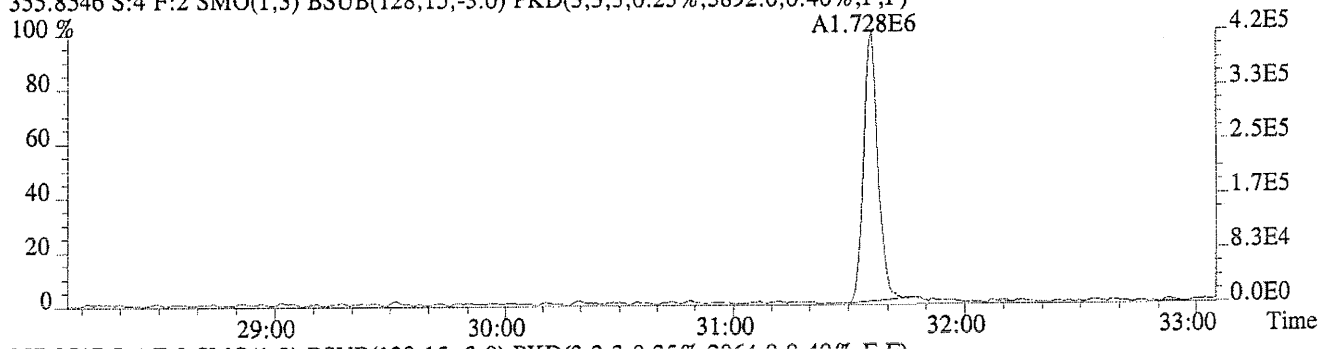


File:C12900 #1-621 Acq:12-JUL-2004 13:42:42 GC EI+ Voltage SIR 70S
Sample#4 File Text:CAS HOUSTN Text:ICAL HRCC1 Exp:8290CA

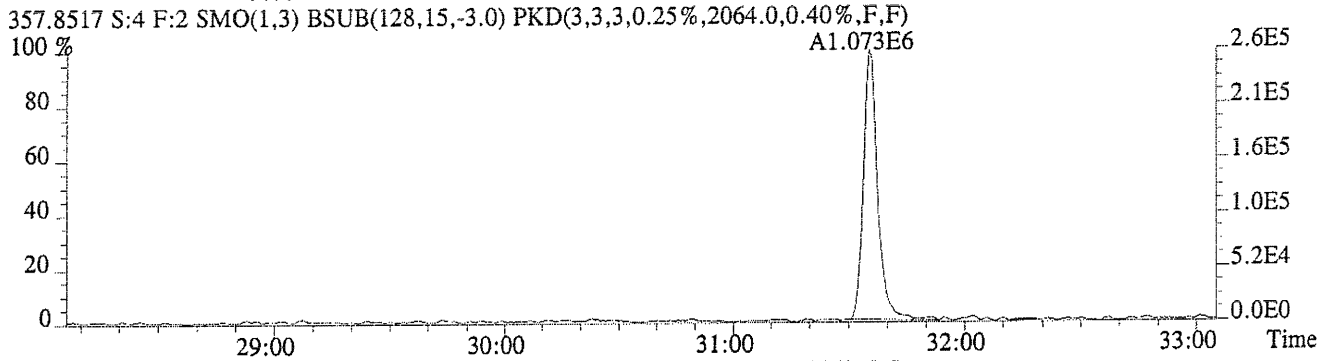



File:C12900 #1-446 Acq:12-JUL-2004 13:42:42 GC EI+ Voltage SIR 70S
Sample#4 File Text:CAS HOUSTN Text:ICAL HRCC1 Exp:8290CA
339.8597 S:4 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1948.0,1.00%,F,F)
A2.465E6
A2.453E6
341.8568 S:4 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4740.0,1.00%,F,F)
A1.502E6
A1.471E6
351.9000 S:4 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2060.0,1.00%,F,F)
A5.613E7
353.8970 S:4 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3228.0,1.00%,F,F)
A3.699E7
409.7974 S:4 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)
354.9792 S:4 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)
Time

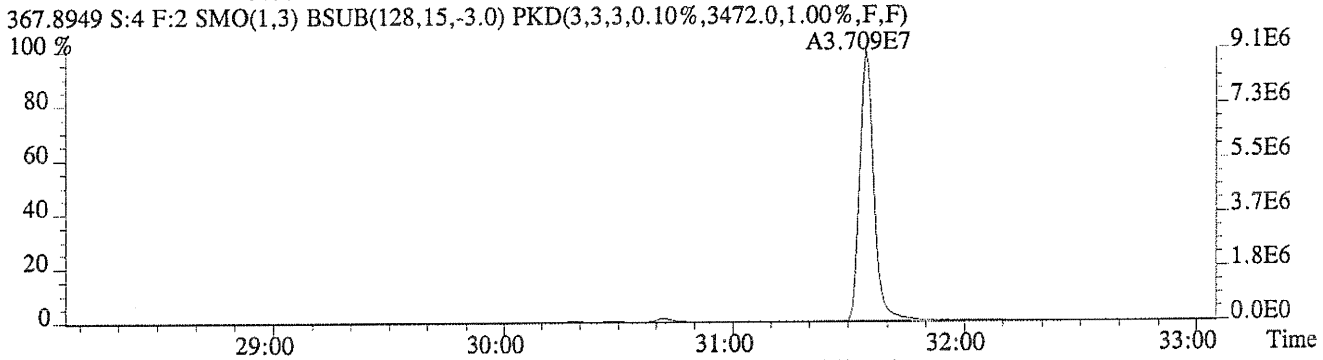
File:C12900 #1-446 Acq:12-JUL-2004 13:42:42 GC EI+ Voltage SIR 70S
Sample#4 File Text:CAS HOUSTN Text:ICAL HRCC1 Exp:8290CA
355.8546 S:4 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3892.0,0.40%,F,F)



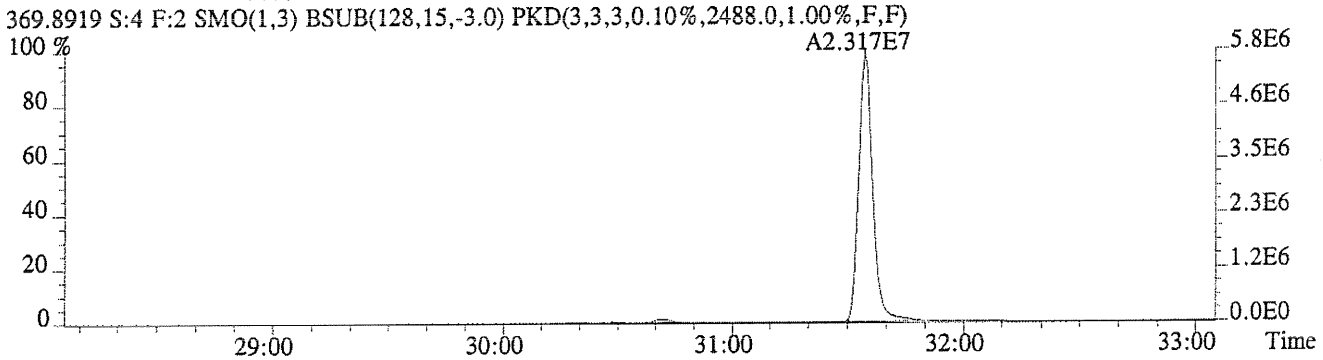
357.8517 S:4 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2064.0,0.40%,F,F)



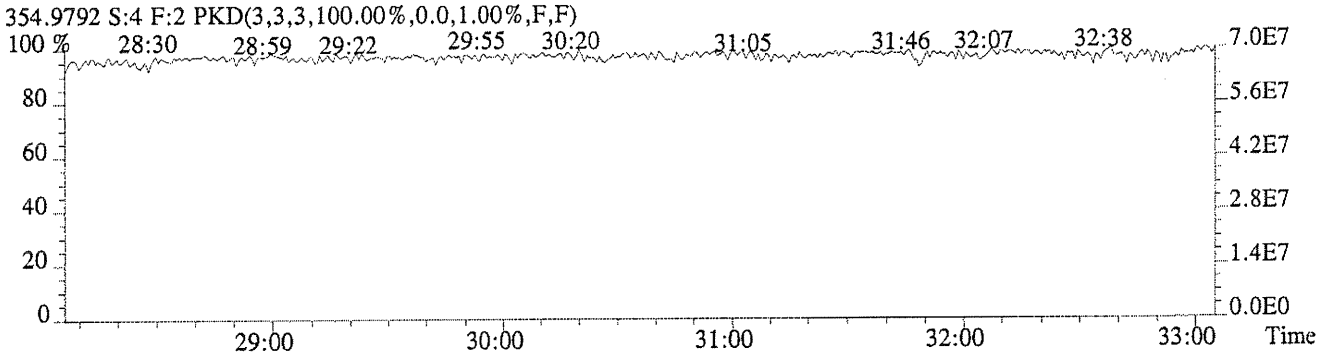
367.8949 S:4 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3472.0,1.00%,F,F)



369.8919 S:4 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2488.0,1.00%,F,F)

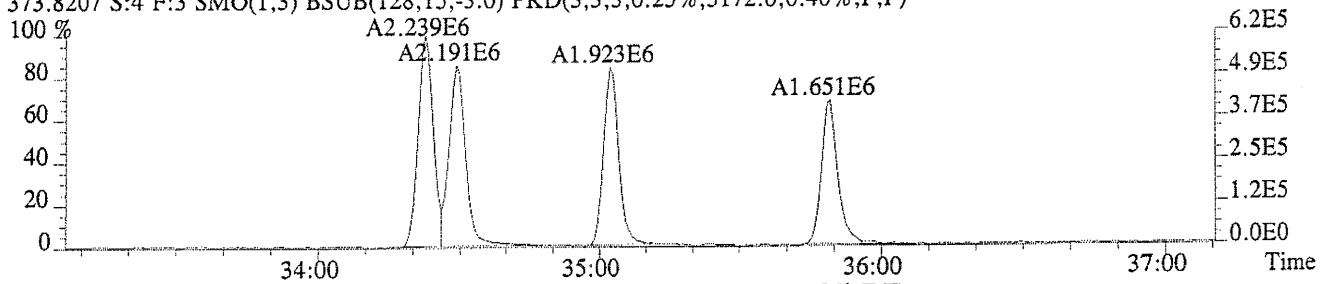


354.9792 S:4 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

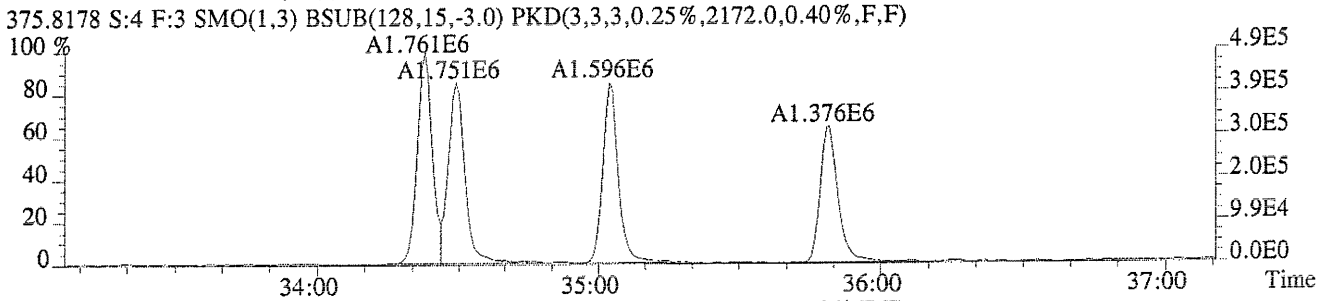


File:C12900 #1-364 Acq:12-JUL-2004 13:42:42 GC EI+ Voltage SIR 70S
Sample#4 File Text:CAS HOUSTN Text:ICAL HRCC1 Exp:8290CA

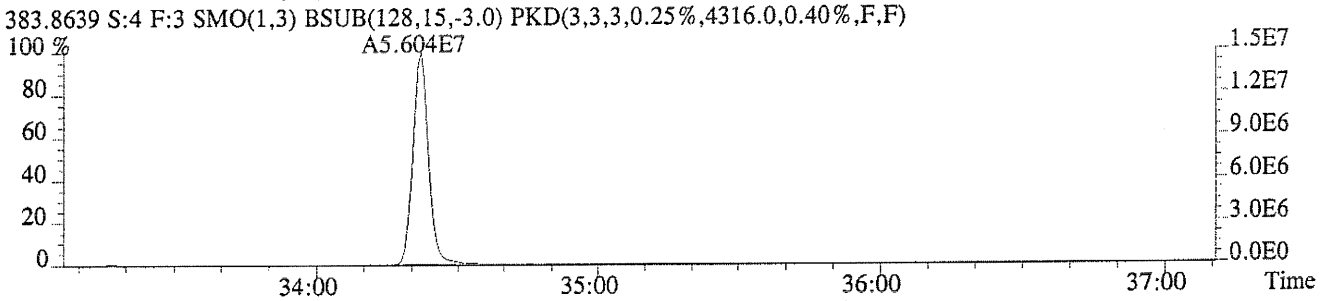
373.8207 S:4 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3172.0,0.40%,F,F)



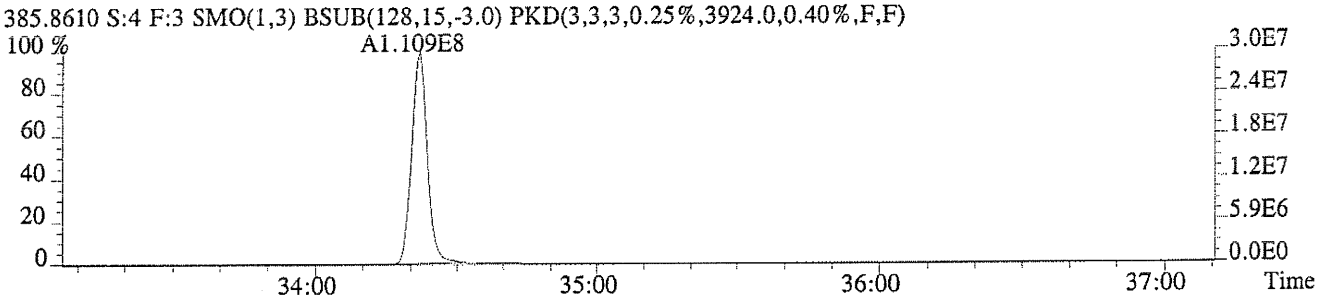
375.8178 S:4 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2172.0,0.40%,F,F)



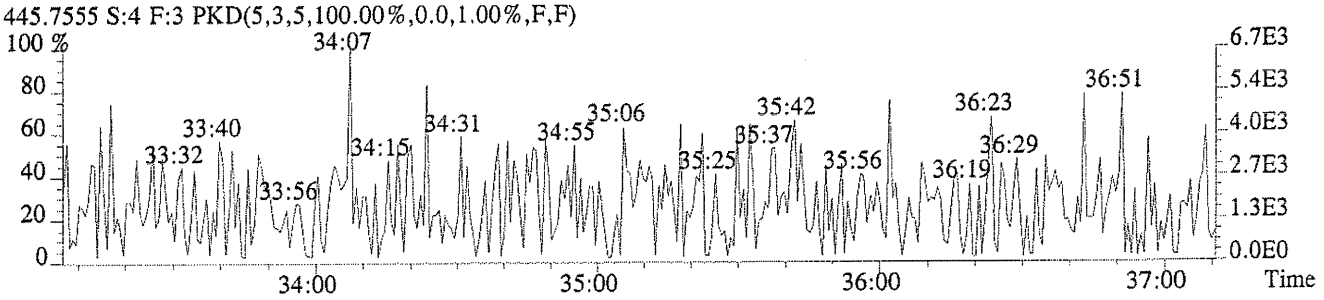
383.8639 S:4 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4316.0,0.40%,F,F)



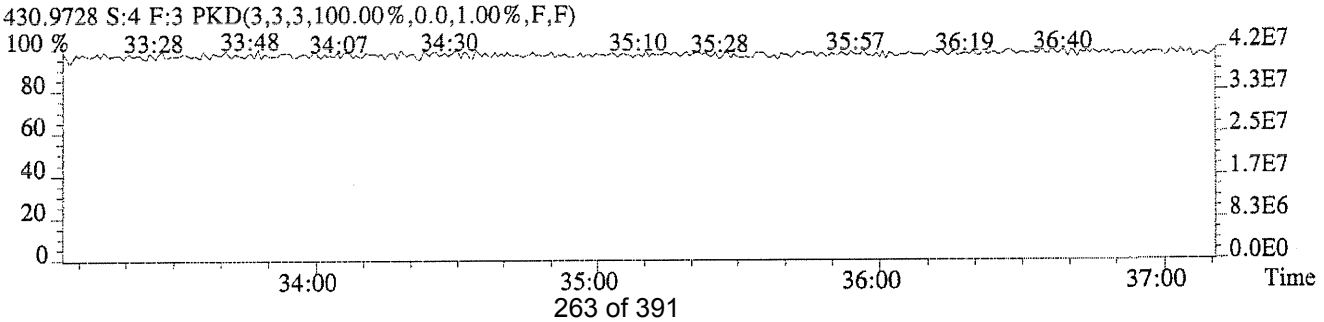
385.8610 S:4 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3924.0,0.40%,F,F)



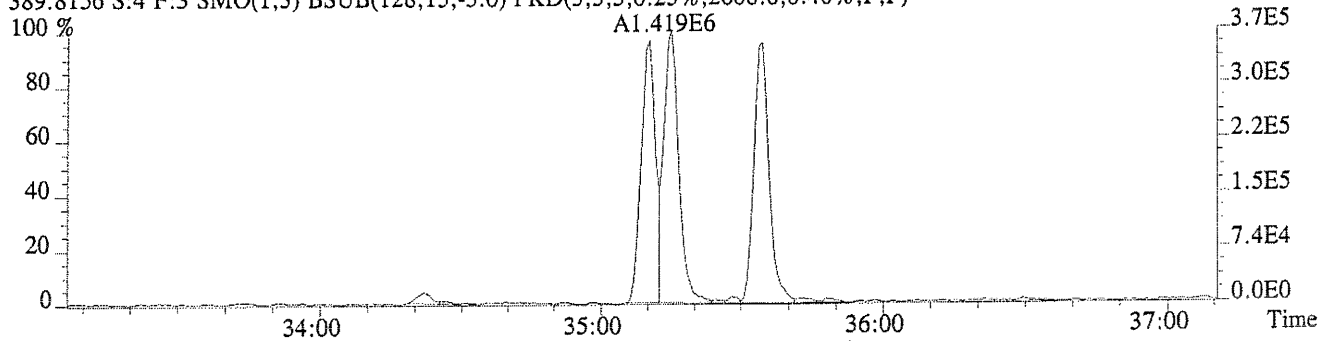
445.7555 S:4 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



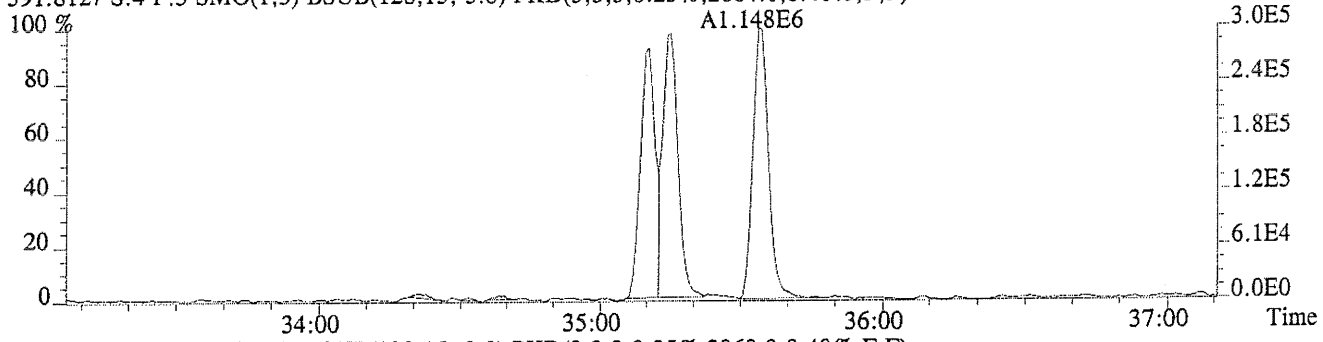
430.9728 S:4 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



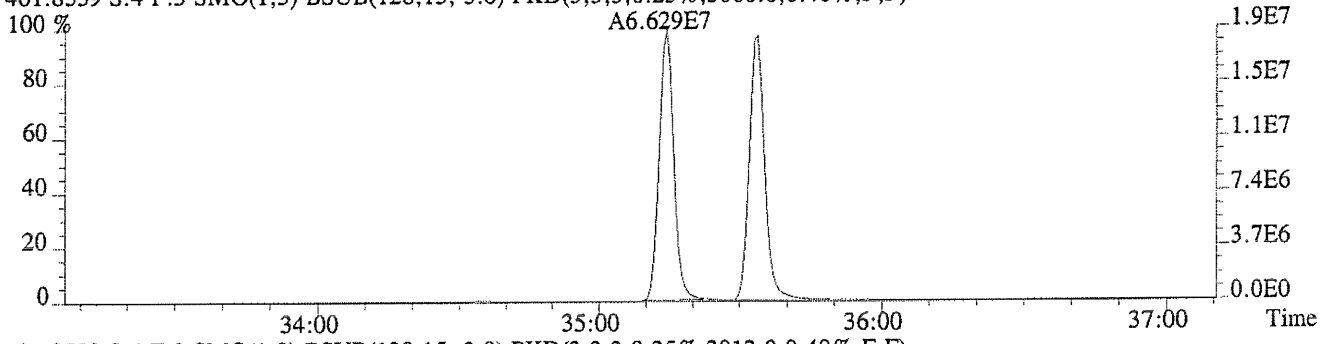
File:C12900 #1-364 Acq:12-JUL-2004 13:42:42 GC EI+ Voltage SIR 70S
Sample#4 File Text:CAS HOUSTN Text:ICAL HRCC1 Exp:8290CA
389.8156 S:4 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2608.0,0.40%,F,F)



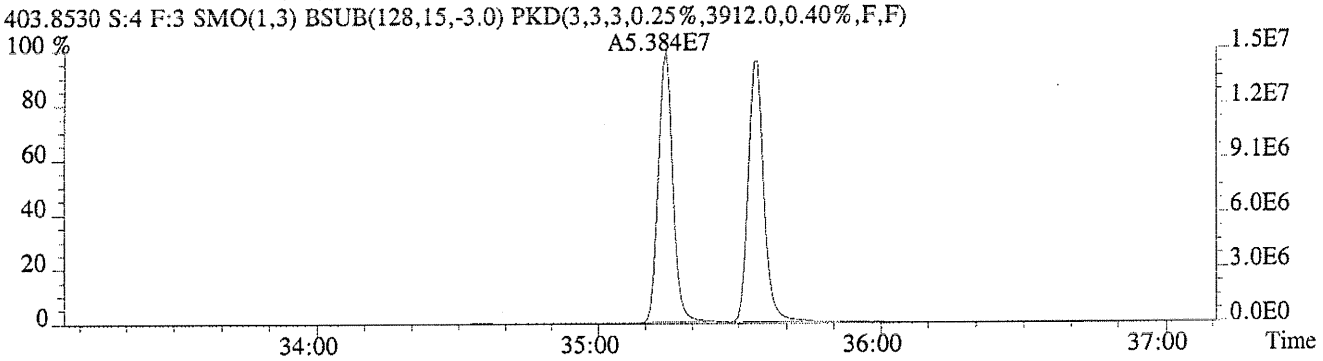
391.8127 S:4 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2664.0,0.40%,F,F)



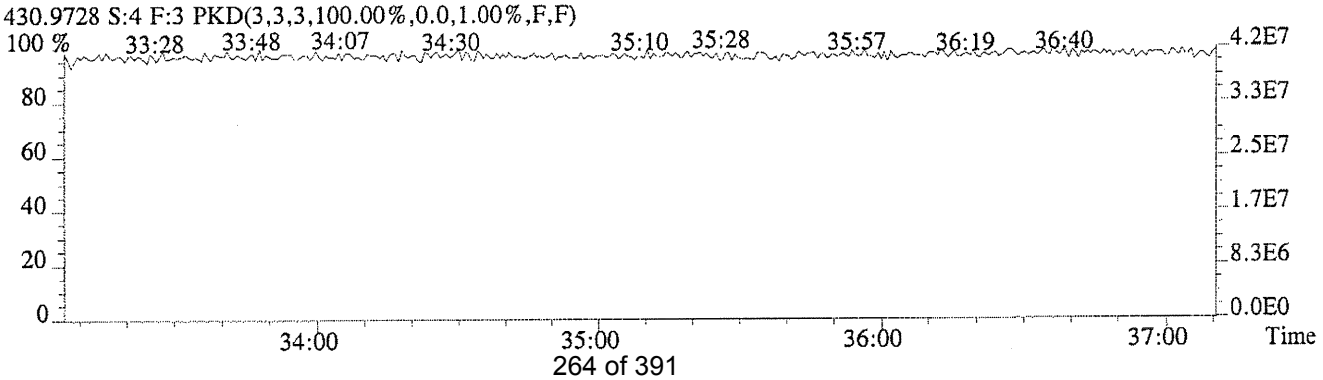
401.8559 S:4 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3060.0,0.40%,F,F)



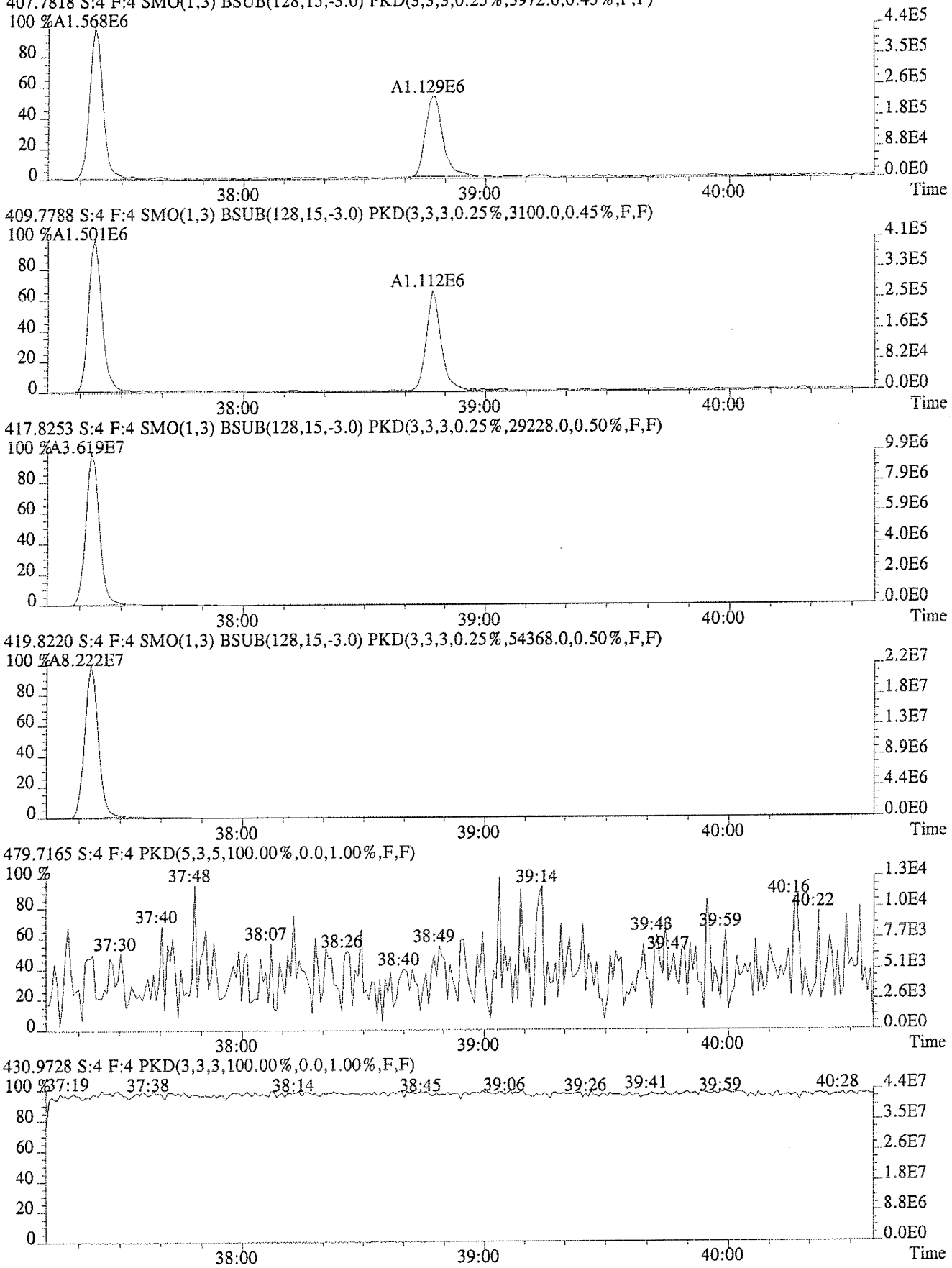
403.8530 S:4 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3912.0,0.40%,F,F)



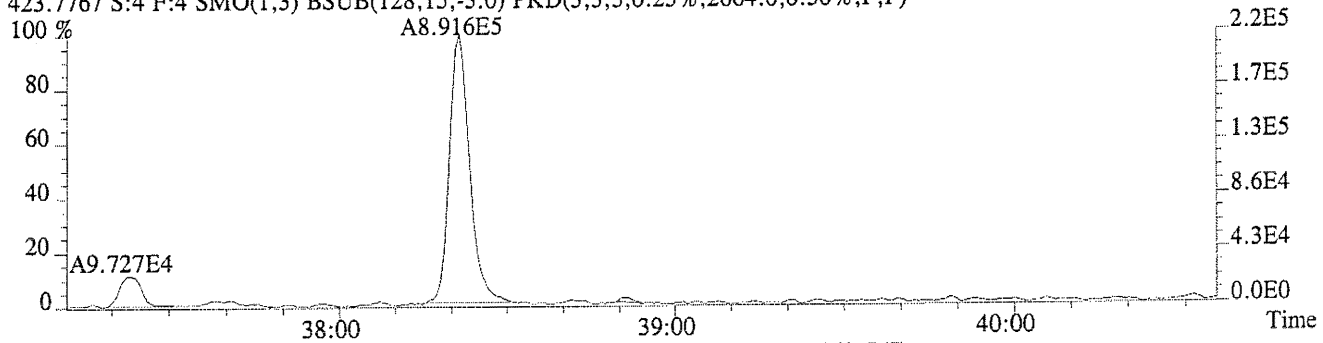
430.9728 S:4 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



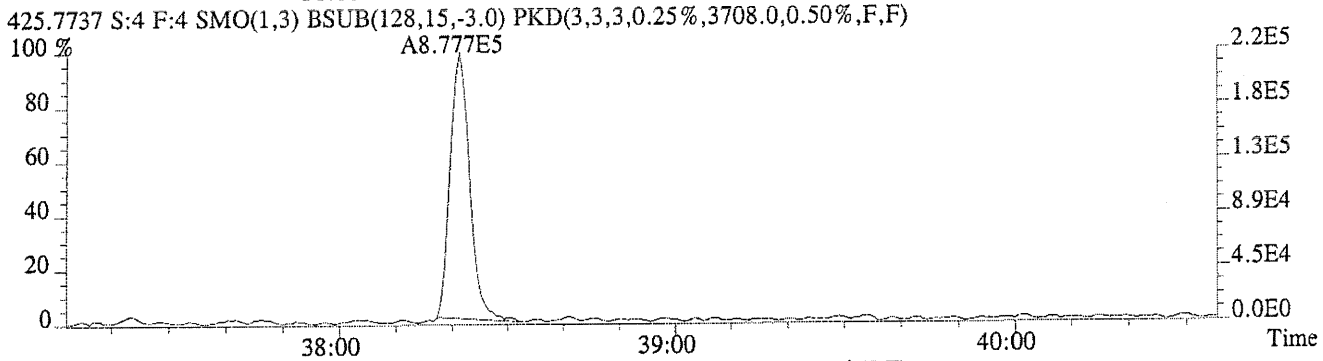
File:C12900 #1-304 Acq:12-JUL-2004 13:42:42 GC EI+ Voltage SIR 70S
Sample#4 File Text:CAS HOUSTN Text:ICAL HRCC1 Exp:8290CA



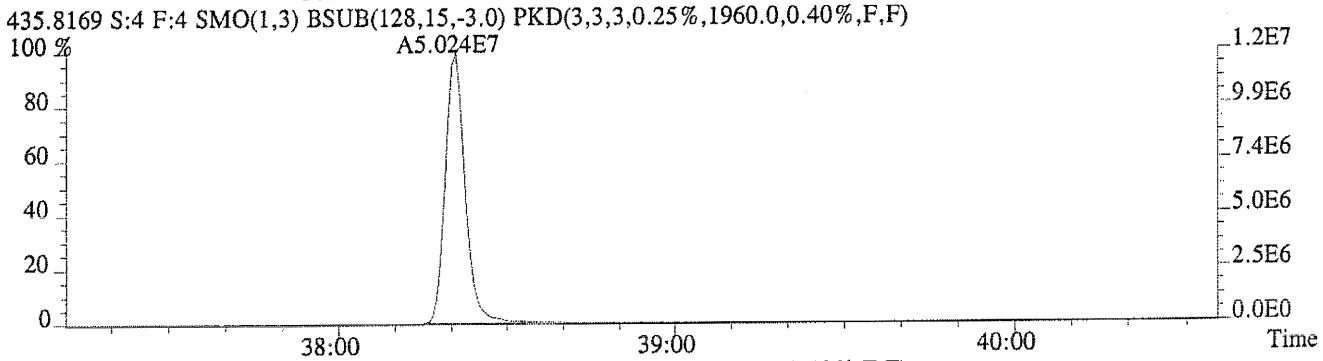
File:C12900 #1-304 Acq:12-JUL-2004 13:42:42 GC EI+ Voltage SIR 70S
Sample#4 File Text:CAS HOUSTN Text:ICAL HRCC1 Exp:8290CA
423.7767 S:4 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2664.0,0.50%,F,F)



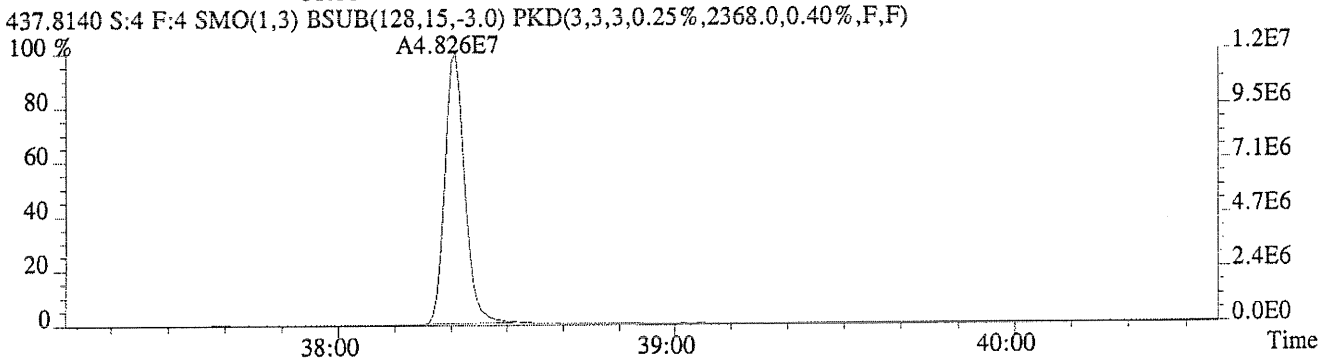
425.7737 S:4 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3708.0,0.50%,F,F)



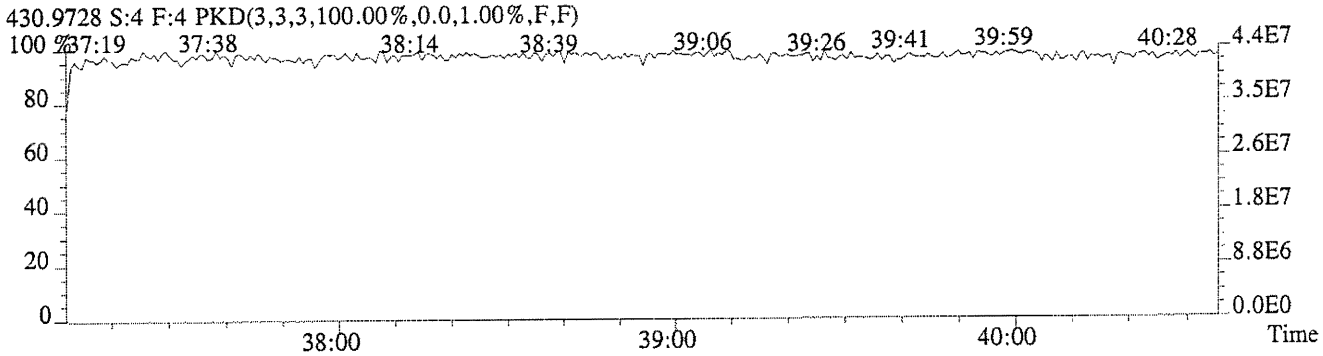
435.8169 S:4 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1960.0,0.40%,F,F)



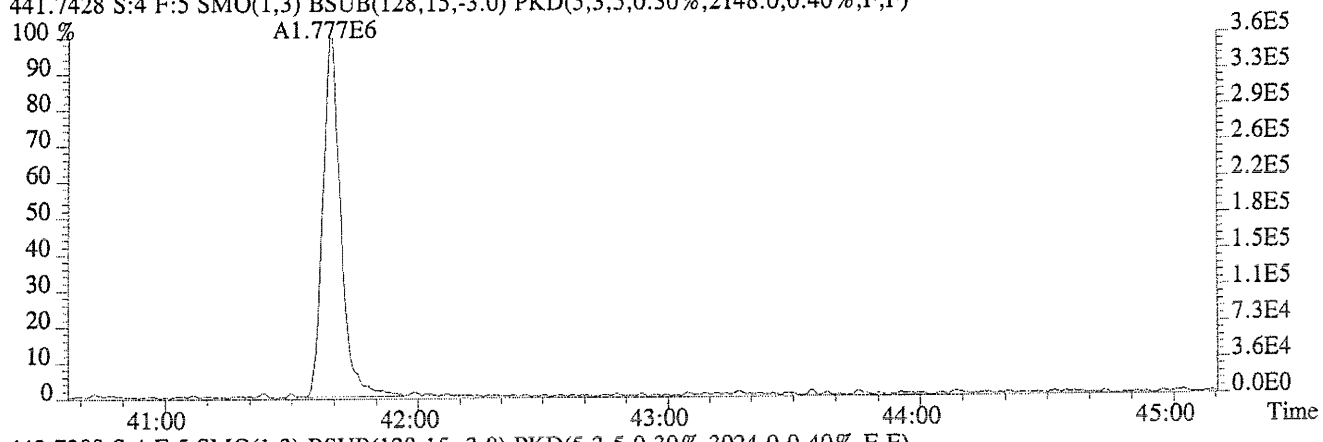
437.8140 S:4 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2368.0,0.40%,F,F)



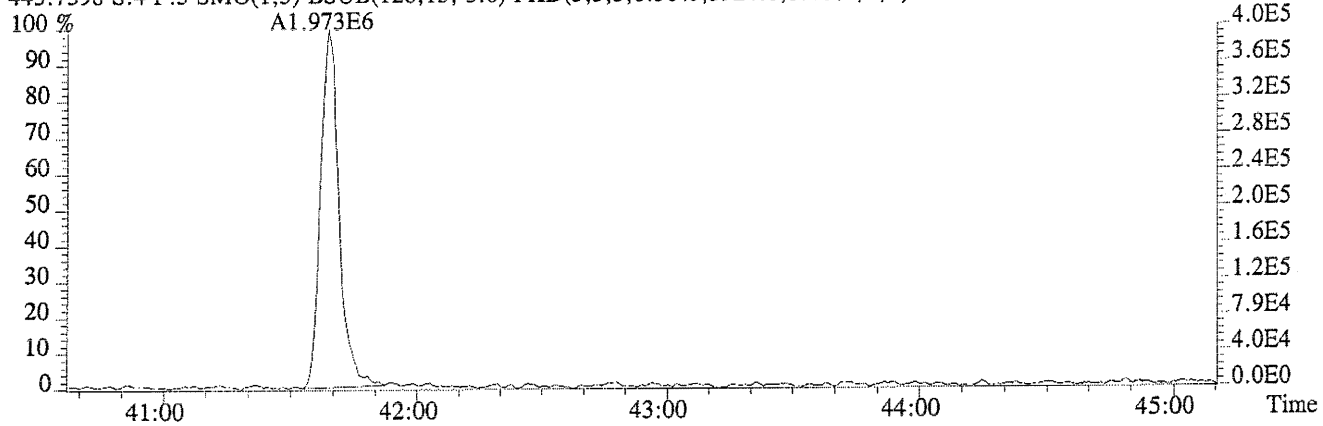
430.9728 S:4 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



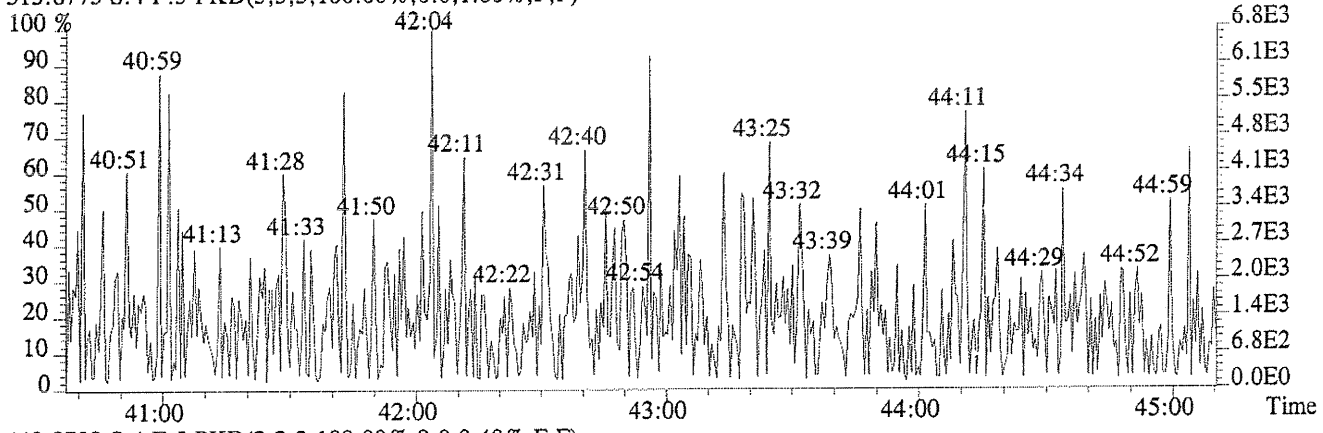
File:C12900 #1-497 Acq:12-JUL-2004 13:42:42 GC EI+ Voltage SIR 70S
Sample#4 File Text:CAS HOUSTN Text:ICAL HRCC1 Exp:8290CA
441.7428 S:4 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2148.0,0.40%,F,F)



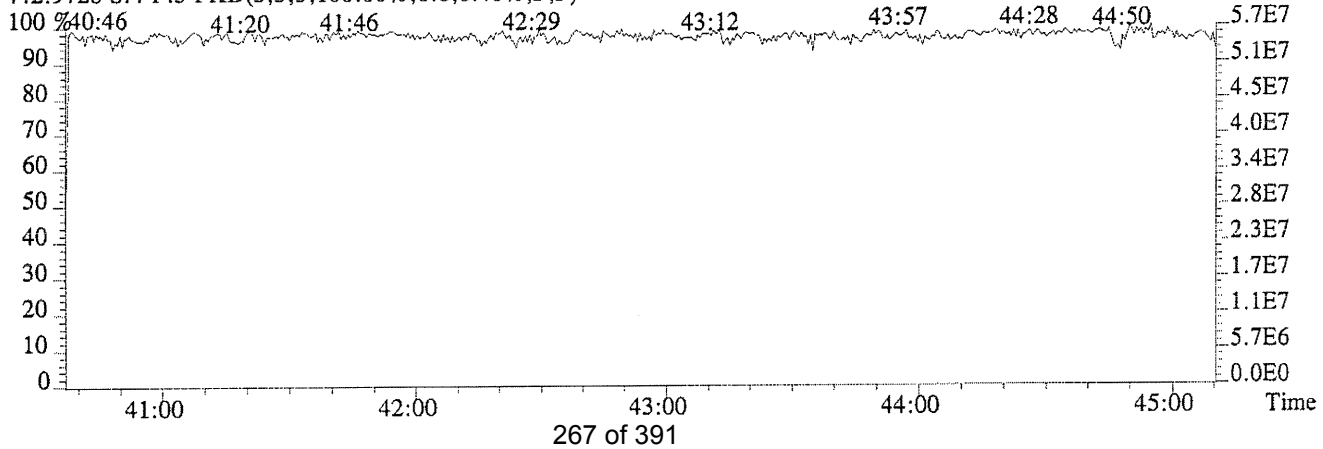
443.7398 S:4 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3924.0,0.40%,F,F)



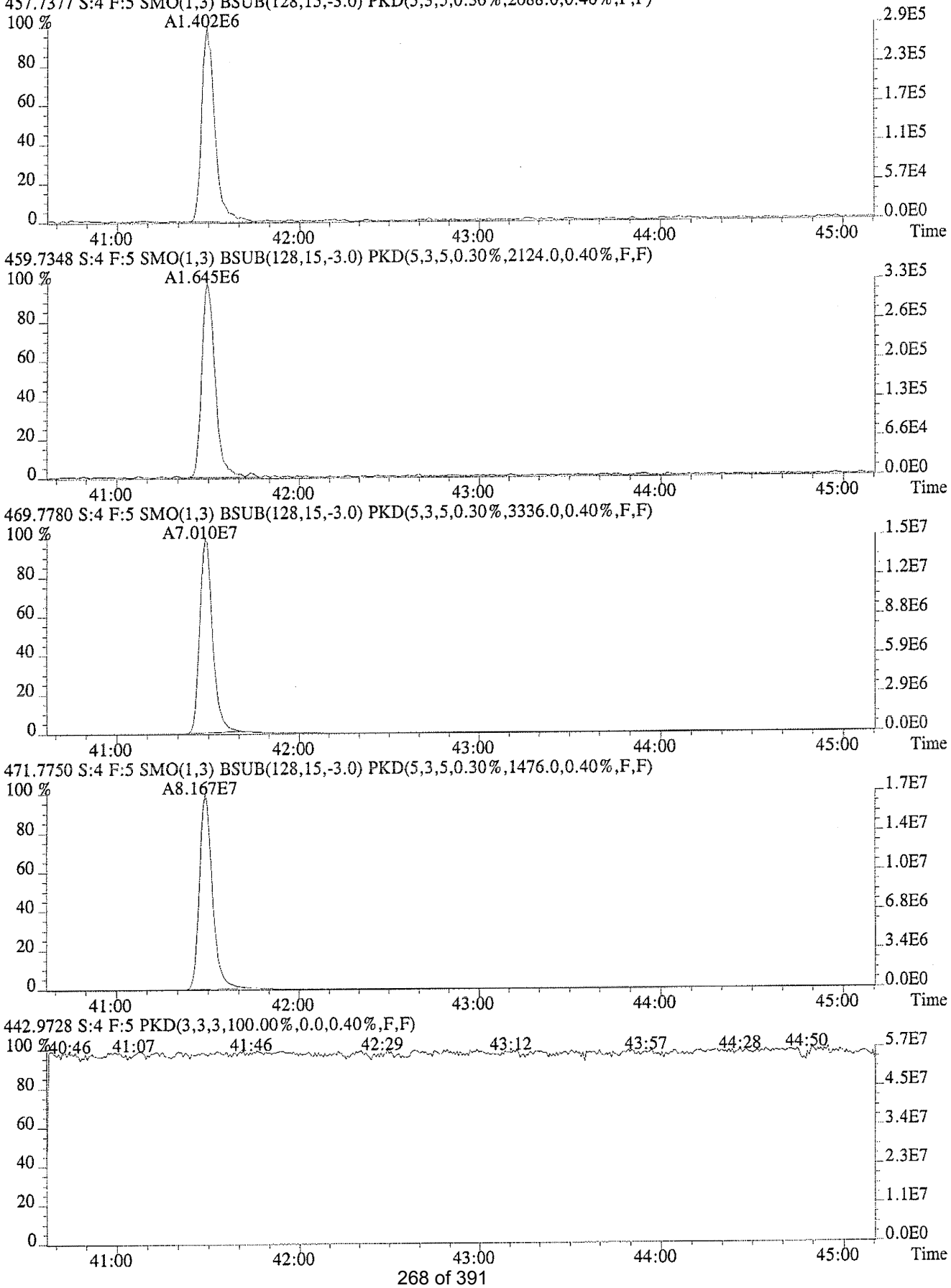
513.6775 S:4 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



442.9728 S:4 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



File:C12900 #1-497 Acq:12-JUL-2004 13:42:42 GC EI+ Voltage SIR 70S
Sample#4 File Text:CAS HOUSTN Text:ICAL HRCC1 Exp:8290CA



Columbia Analytical Services, Inc.
Sample Response Summary

CLIENT ID.
ICAL HRCC2

Run #2 Filename C12900#3 Samp: 3 Inj: 1 Acquired: 12-JUL-04 12:51:27
Processed: 12-JUL-04 16:16:53 Sample ID: ICAL HRCC2

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	25:45	1.403e+06	1.818e+06	0.77	yes	no
2	Unk	1,2,3,7,8-PeCDF	30:41	4.036e+06	2.434e+06	1.66	yes	no
3	Unk	2,3,4,7,8-PeCDF	31:30	4.066e+06	2.467e+06	1.65	yes	no
4	Unk	1,2,3,4,7,8-HxCDF	34:39	3.749e+06	2.821e+06	1.33	yes	no
5	Unk	1,2,3,6,7,8-HxCDF	34:45	3.670e+06	3.036e+06	1.21	yes	no
6	Unk	2,3,4,6,7,8-HxCDF	35:18	3.356e+06	2.699e+06	1.24	yes	no
7	Unk	1,2,3,7,8,9-HxCDF	36:05	3.171e+06	2.590e+06	1.22	yes	no
8	Unk	1,2,3,4,6,7,8-HpCDF	37:39	3.104e+06	2.954e+06	1.05	yes	no
9	Unk	1,2,3,4,7,8,9-HpCDF	39:03	2.110e+06	2.108e+06	1.00	yes	no
10	Unk	OCDF	41:57	3.436e+06	3.858e+06	0.89	yes	no
11	Unk	2,3,7,8-TCDD	26:42	1.095e+06	1.376e+06	0.80	yes	no
12	Unk	1,2,3,7,8-PeCDD	31:54	2.790e+06	1.748e+06	1.60	yes	no
13	Unk	1,2,3,4,7,8-HxCDD	35:26	2.081e+06	1.645e+06	1.26	yes	no
14	Unk	1,2,3,6,7,8-HxCDD	35:30	2.521e+06	2.057e+06	1.23	yes	no
15	Unk	1,2,3,7,8,9-HxCDD	35:50	2.826e+06	2.201e+06	1.28	yes	no
16	Unk	1,2,3,4,6,7,8-HpCDD	38:37	1.813e+06	1.712e+06	1.06	yes	no
17	Unk	OCDD	41:48	2.869e+06	3.377e+06	0.85	yes	no
18	IS	13C-2,3,7,8-TCDF	25:43	3.059e+07	4.080e+07	0.75	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	30:39	3.493e+07	2.330e+07	1.50	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	34:38	3.590e+07	7.134e+07	0.50	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	37:38	2.430e+07	5.547e+07	0.44	yes	no
22	IS	13C-2,3,7,8-TCDD	26:41	2.417e+07	3.060e+07	0.79	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	31:53	2.285e+07	1.442e+07	1.58	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	35:30	4.289e+07	3.467e+07	1.24	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	38:36	3.379e+07	3.331e+07	1.01	yes	no
26	IS	13C-OCDD	41:47	4.973e+07	5.677e+07	0.88	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	26:24	2.266e+07	2.879e+07	0.79	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	35:49	5.184e+07	4.247e+07	1.22	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	26:42	2.486e+06				

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Columbia Analytical Services,Inc. CLIENT ID.
Signal/Noise Height Ratio Summary ICAL HRCC2

Run #2 Filename C12900 #3 Samp: 3 Inj: 1 Acquired: 12-JUL-04 12:51:27

Processed: 12-JUL-04 16:16:53 LAB. ID: ICAL HRCC2

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	2.33e+05	3.73e+03	6.2e+01	2.99e+05	3.84e+03	7.8e+01
2	1,2,3,7,8-PeCDF	9.12e+05	2.66e+03	3.4e+02	5.73e+05	3.50e+03	1.6e+02
3	2,3,4,7,8-PeCDF	9.13e+05	2.66e+03	3.4e+02	5.89e+05	3.50e+03	1.7e+02
4	1,2,3,4,7,8-HxCDF	9.74e+05	2.98e+03	3.3e+02	7.67e+05	2.10e+03	3.7e+02
5	1,2,3,6,7,8-HxCDF	9.50e+05	2.98e+03	3.2e+02	7.32e+05	2.10e+03	3.5e+02
6	2,3,4,6,7,8-HxCDF	8.68e+05	2.98e+03	2.9e+02	7.03e+05	2.10e+03	3.3e+02
7	1,2,3,7,8,9-HxCDF	7.22e+05	2.98e+03	2.4e+02	5.96e+05	2.10e+03	2.8e+02
8	1,2,3,4,6,7,8-HpCDF	7.91e+05	4.10e+03	1.9e+02	7.74e+05	2.71e+03	2.9e+02
9	1,2,3,4,7,8,9-HpCDF	4.60e+05	4.10e+03	1.1e+02	4.61e+05	2.71e+03	1.7e+02
10	OCDF	6.64e+05	3.55e+03	1.9e+02	7.47e+05	3.48e+03	2.1e+02
11	2,3,7,8-TCDD	2.05e+05	4.14e+03	4.9e+01	2.60e+05	3.37e+03	7.7e+01
12	1,2,3,7,8-PeCDD	6.89e+05	3.90e+03	1.8e+02	4.29e+05	2.18e+03	2.0e+02
13	1,2,3,4,7,8-HxCDD	6.20e+05	2.32e+03	2.7e+02	4.92e+05	3.71e+03	1.3e+02
14	1,2,3,6,7,8-HxCDD	6.62e+05	2.32e+03	2.9e+02	5.40e+05	3.71e+03	1.5e+02
15	1,2,3,7,8,9-HxCDD	7.33e+05	2.32e+03	3.2e+02	5.58e+05	3.71e+03	1.5e+02
16	1,2,3,4,6,7,8-HpCDD	4.28e+05	2.23e+03	1.9e+02	4.03e+05	2.56e+03	1.6e+02
17	OCDD	5.92e+05	2.61e+03	2.3e+02	6.45e+05	2.45e+03	2.6e+02
18	13C-2,3,7,8-TCDF	5.20e+06	7.96e+03	6.5e+02	6.83e+06	5.60e+03	1.2e+03
19	13C-1,2,3,7,8-PeCDF	7.99e+06	2.23e+03	3.6e+03	5.38e+06	2.52e+03	2.1e+03
20	13C-1,2,3,4,7,8-HxCDF	9.56e+06	5.71e+03	1.7e+03	1.89e+07	3.47e+03	5.4e+03
21	13C-1,2,3,4,6,7,8-HpCDF	6.42e+06	4.34e+03	1.5e+03	1.47e+07	7.19e+03	2.0e+03
22	13C-2,3,7,8-TCDD	4.47e+06	8.21e+03	5.4e+02	5.71e+06	3.80e+03	1.5e+03
23	13C-1,2,3,7,8-PeCDD	5.66e+06	3.54e+03	1.6e+03	3.54e+06	3.06e+03	1.2e+03
24	13C-1,2,3,6,7,8-HxCDD	1.19e+07	3.97e+03	3.0e+03	9.76e+06	4.02e+03	2.4e+03
25	13C-1,2,3,4,6,7,8-HpCDD	8.32e+06	2.77e+03	3.0e+03	8.13e+06	1.98e+03	4.1e+03
26	13C-OCDD	1.01e+07	2.24e+03	4.5e+03	1.15e+07	3.36e+03	3.4e+03
27	13C-1,2,3,4-TCDD	4.35e+06	8.21e+03	5.3e+02	5.55e+06	3.80e+03	1.5e+03
28	13C-1,2,3,7,8,9-HxCDD	1.35e+07	3.97e+03	3.4e+03	1.09e+07	4.02e+03	2.7e+03
29	37Cl-2,3,7,8-TCDD	4.47e+05	3.76e+03	1.2e+02			

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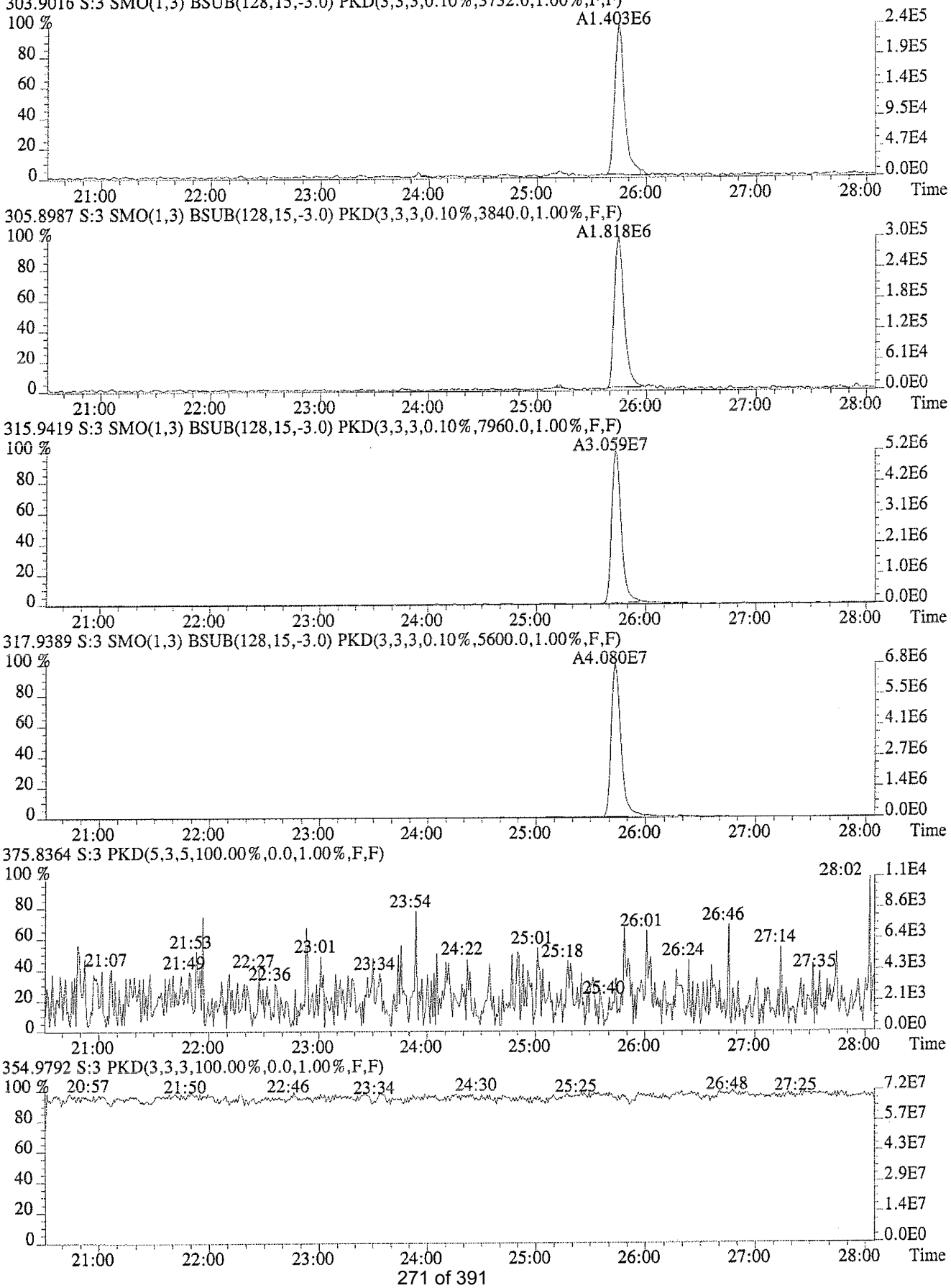
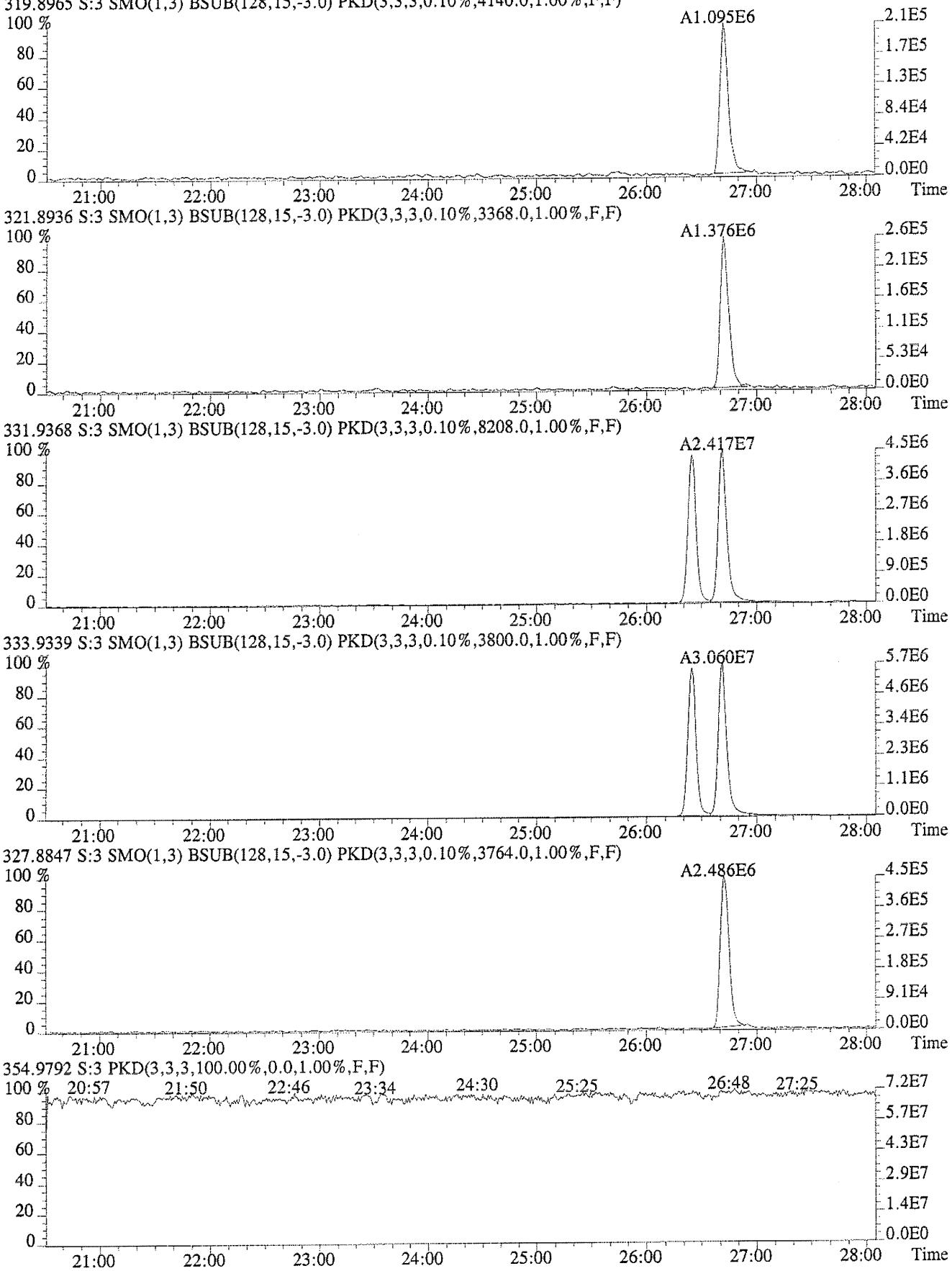
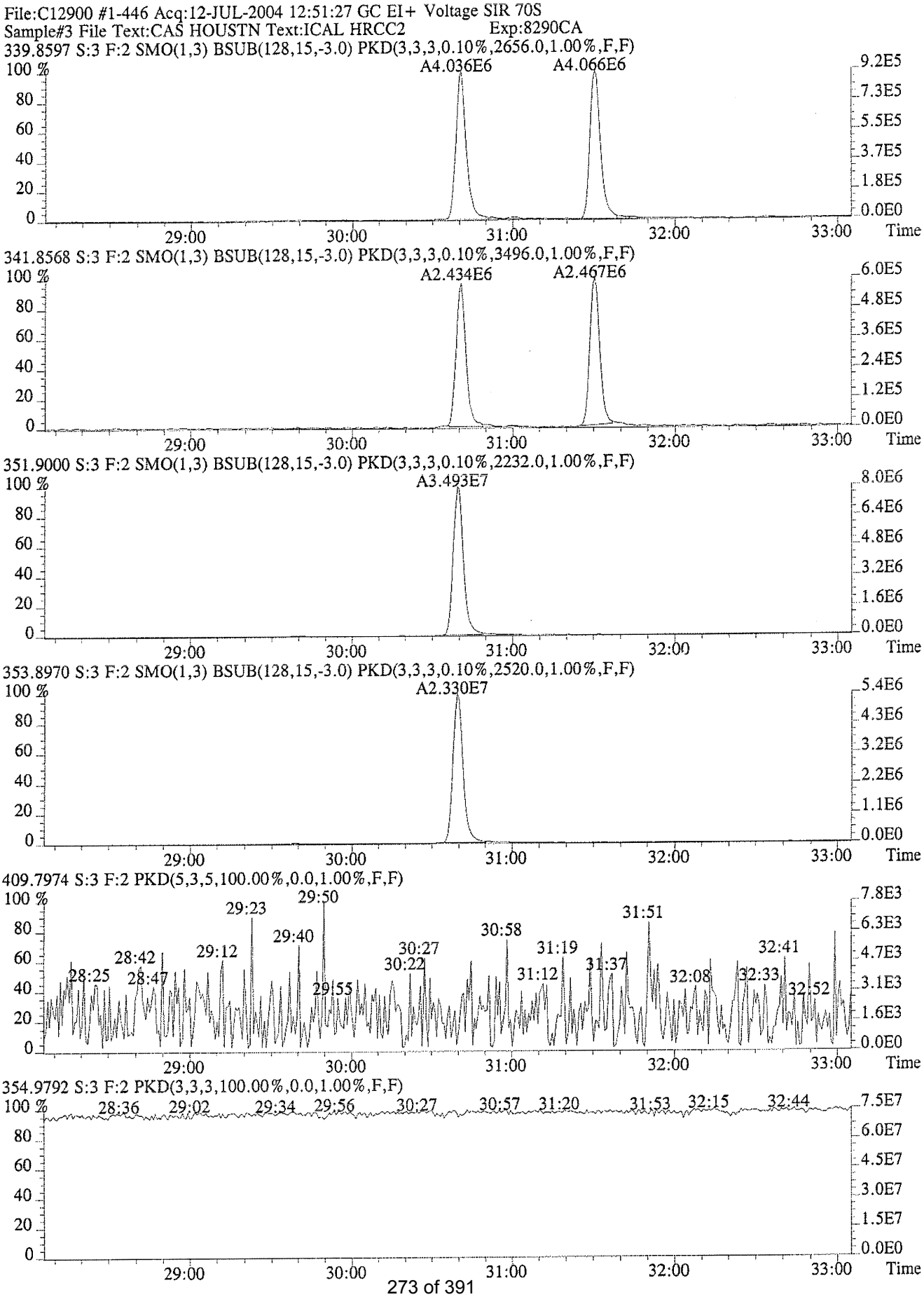
File:C12900 #1-621 Acq:12-JUL-2004 12:51:27 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS HOUSTN Text:ICAL HRCC2 Exp:8290CA

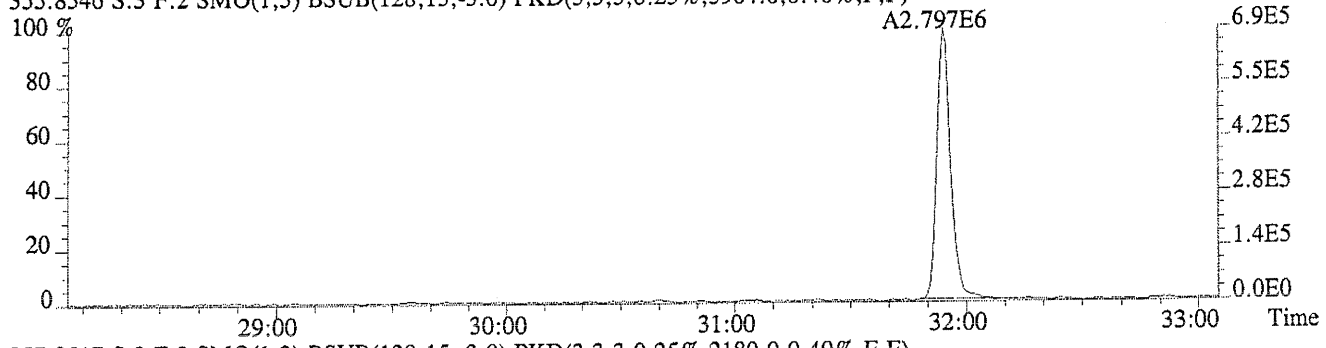


File:C12900 #1-621 Acq:12-JUL-2004 12:51:27 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS HOUSTN Text:ICAL HRCC2 Exp:8290CA

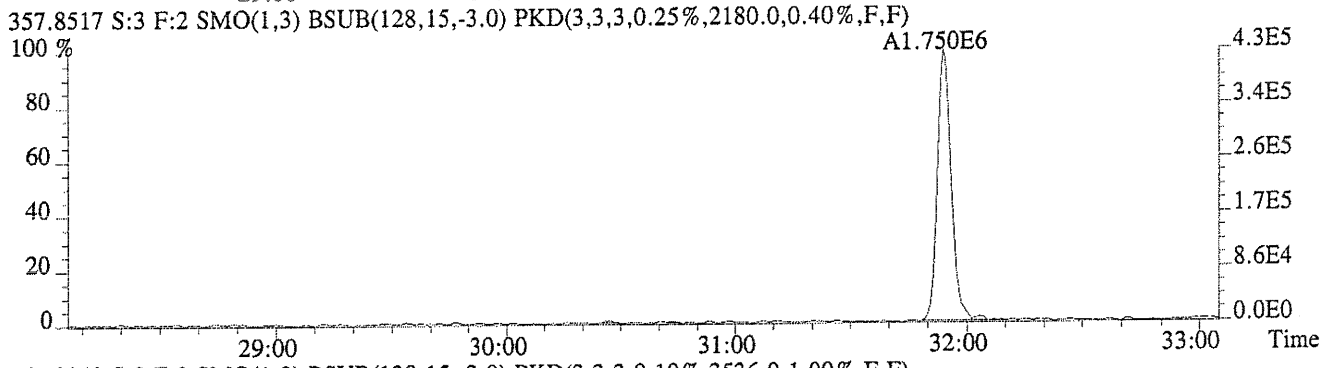



File:C12900 #1-446 Acq:12-JUL-2004 12:51:27 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS HOUSTN Text:ICAL HRCC2 Exp:8290CA
339.8597 S:3 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2656.0,1.00%,F,F)
A4.036E6
A4.066E6
341.8568 S:3 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3496.0,1.00%,F,F)
A2.434E6
A2.467E6
351.9000 S:3 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2232.0,1.00%,F,F)
A3.493E7
353.8970 S:3 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2520.0,1.00%,F,F)
A2.330E7
409.7974 S:3 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)
28:25
28:42
28:47
29:12
29:23
29:40
29:50
29:55
30:22
30:27
30:58
31:12
31:19
31:37
31:51
32:08
32:33
32:41
32:52
354.9792 S:3 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)
28:36
29:02
29:34
29:56
30:27
30:57
31:20
31:53
32:15
32:44
100 %
80
60
40
20
0
29:00
30:00
31:00
32:00
33:00
Time
9.2E5
7.3E5
5.5E5
3.7E5
1.8E5
0.0E0
6.0E5
4.8E5
3.6E5
2.4E5
1.2E5
8.0E6
6.4E6
4.8E6
3.2E6
1.6E6
5.4E6
4.3E6
3.2E6
2.2E6
1.1E6
7.8E3
6.3E3
4.7E3
3.1E3
1.6E3
7.5E7
6.0E7
4.5E7
3.0E7
1.5E7

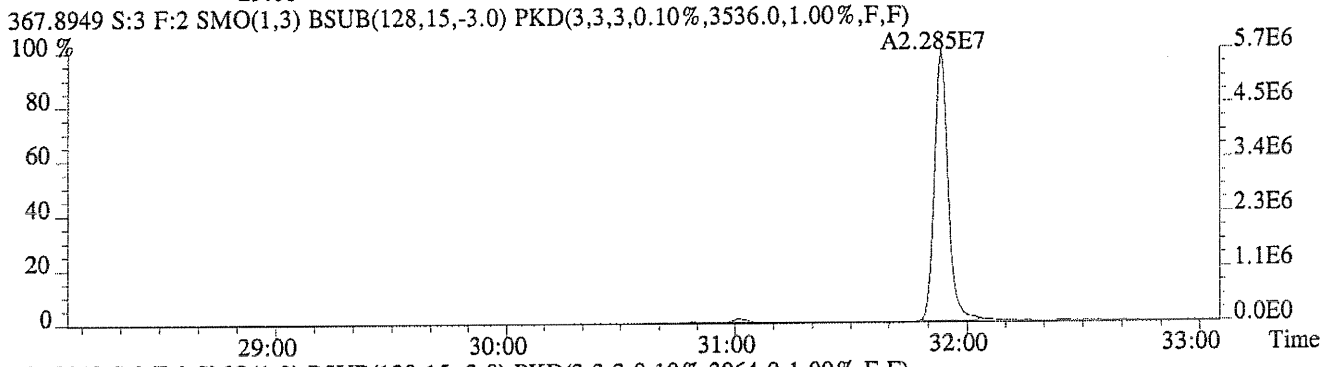
File:C12900 #1-446 Acq:12-JUL-2004 12:51:27 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS HOUSTN Text:ICAL HRCC2 Exp:8290CA
355.8546 S:3 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3904.0,0.40%,F,F)



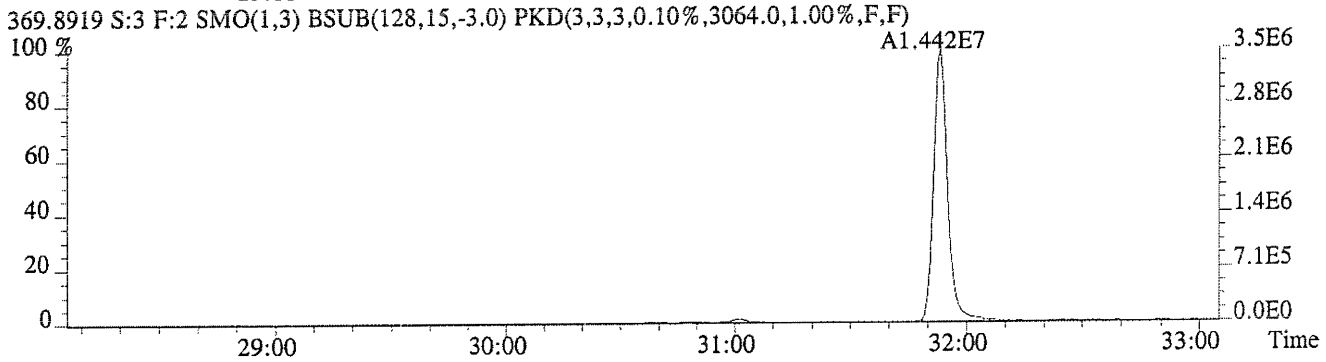
357.8517 S:3 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2180.0,0.40%,F,F)



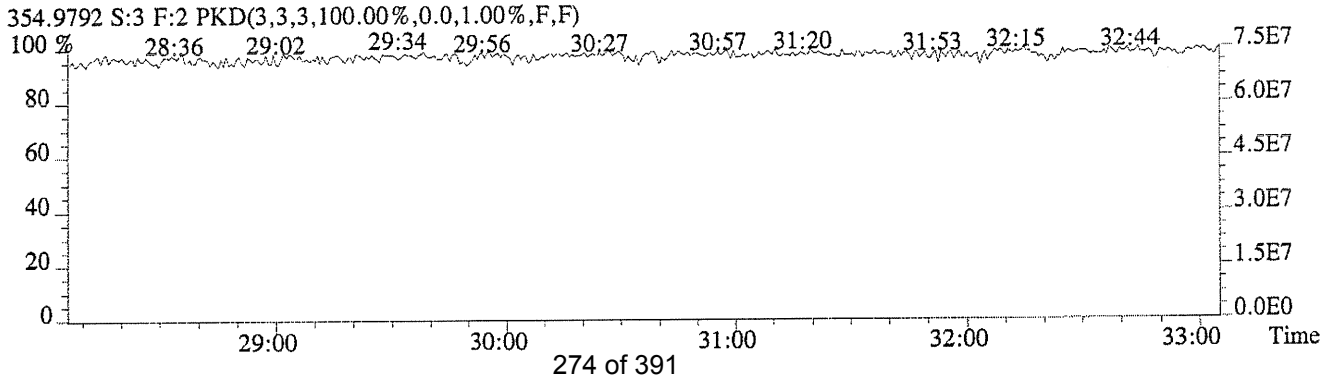
367.8949 S:3 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3536.0,1.00%,F,F)



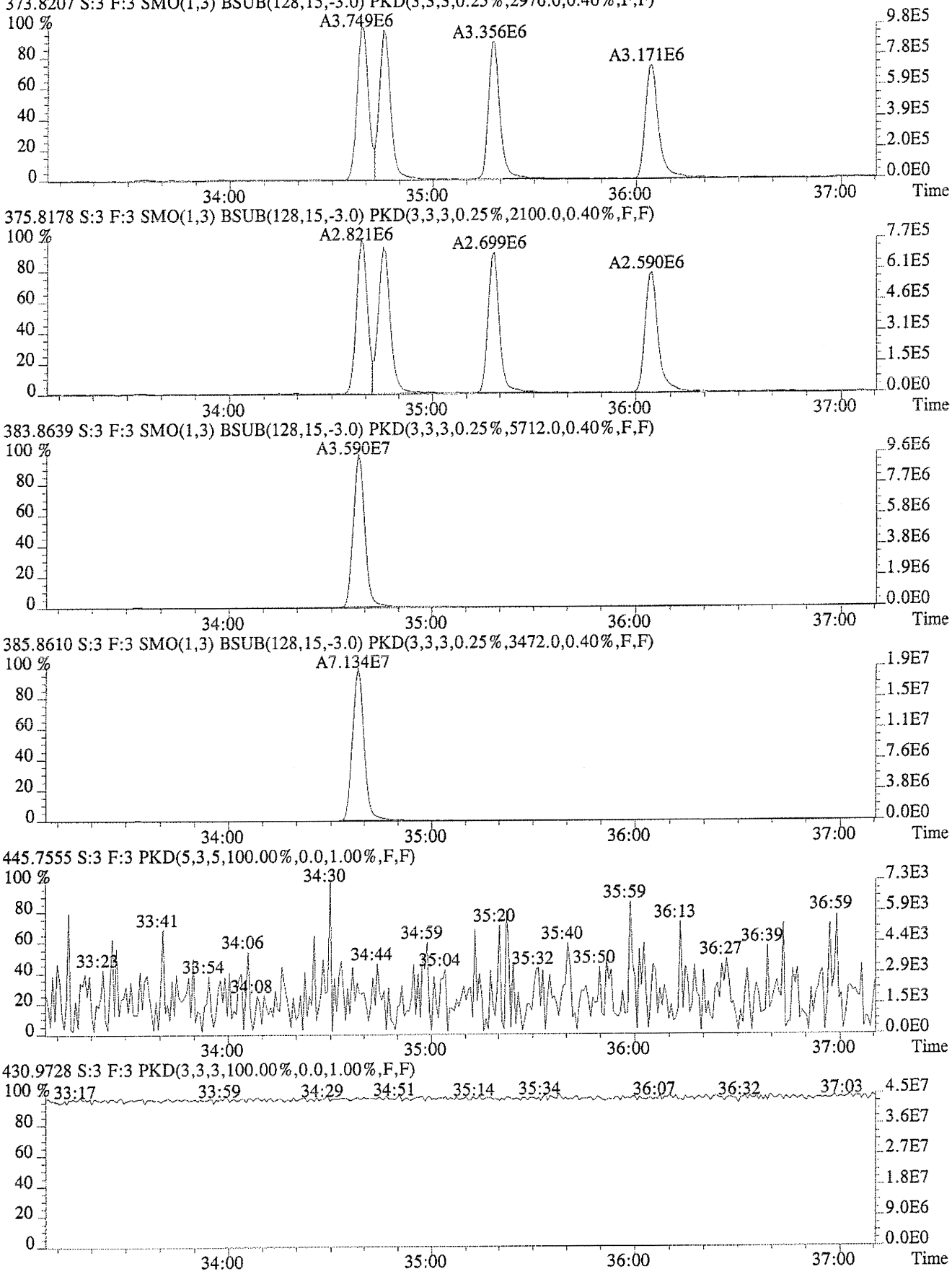
369.8919 S:3 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3064.0,1.00%,F,F)



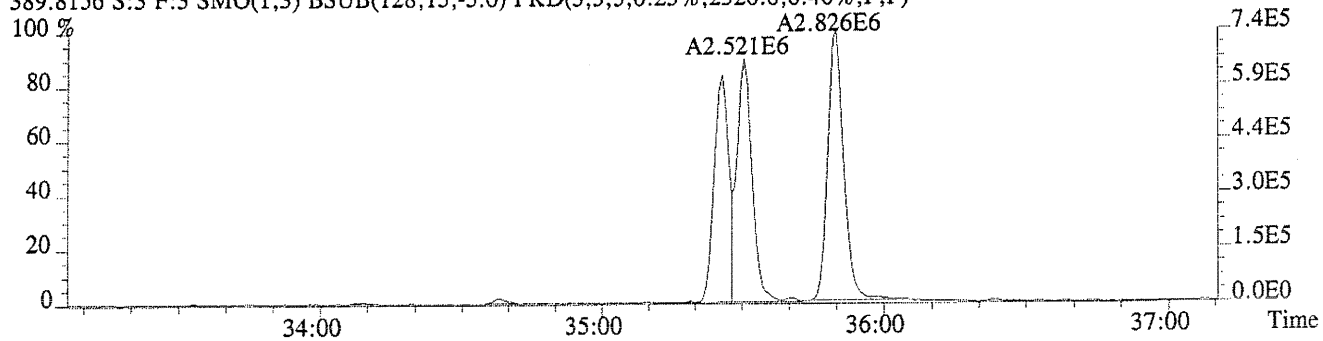
354.9792 S:3 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



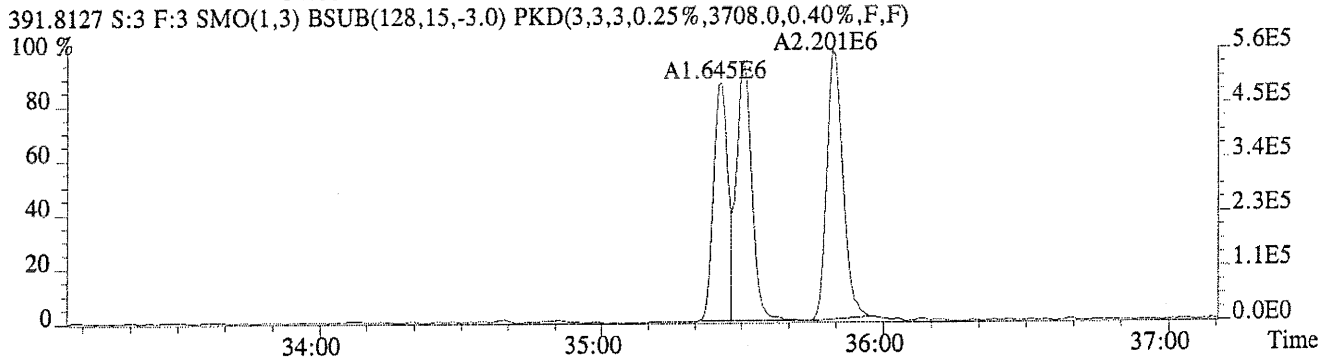
File:C12900 #1-364 Acq:12-JUL-2004 12:51:27 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS HOUSTN Text:ICAL HRCC2 Exp:8290CA



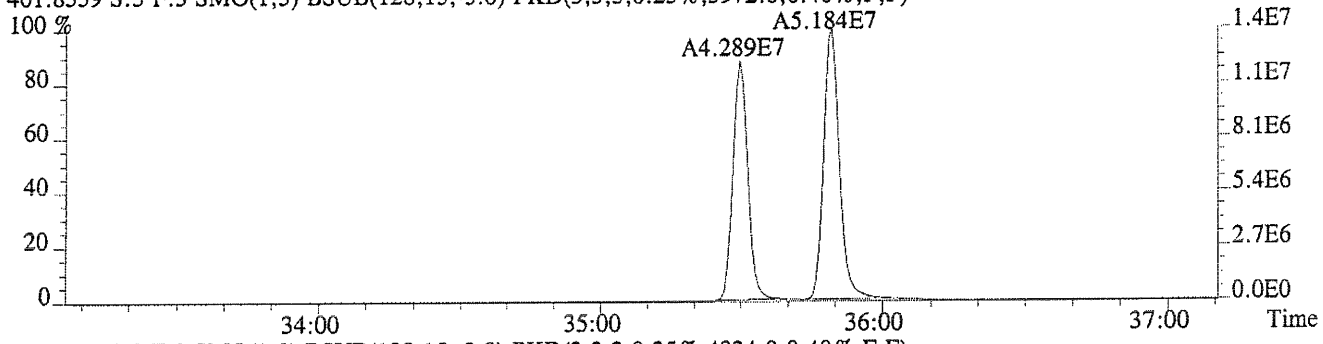
File:C12900 #1-364 Acq:12-JUL-2004 12:51:27 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS HOUSTN Text:ICAL HRCC2 Exp:8290CA
389.8156 S:3 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2320.0,0.40%,F,F)



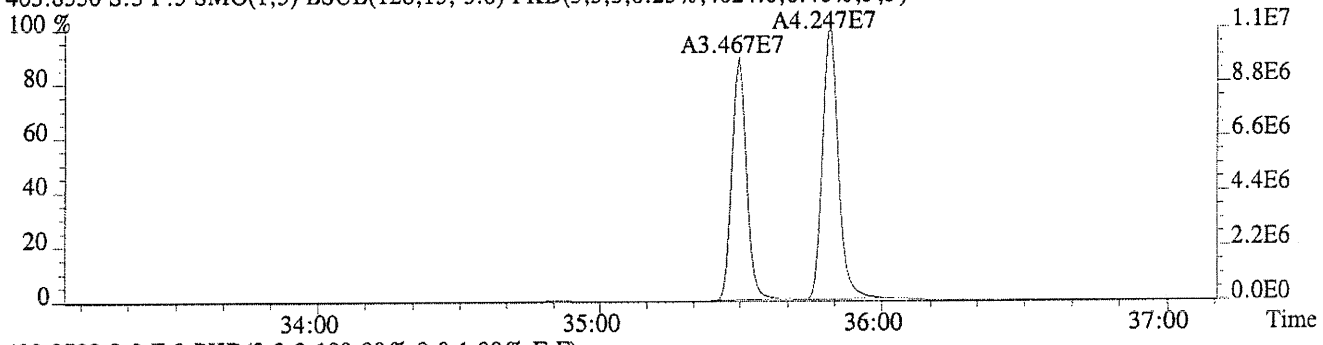
391.8127 S:3 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3708.0,0.40%,F,F)



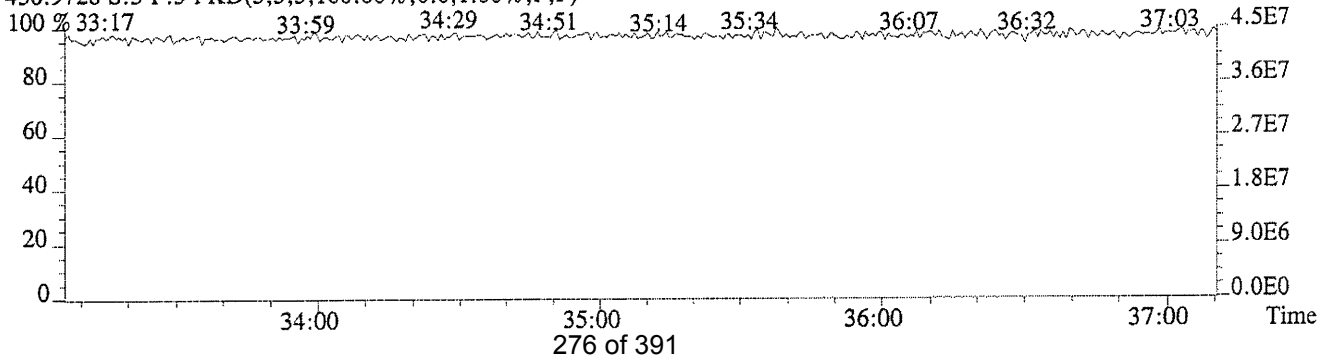
401.8559 S:3 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3972.0,0.40%,F,F)



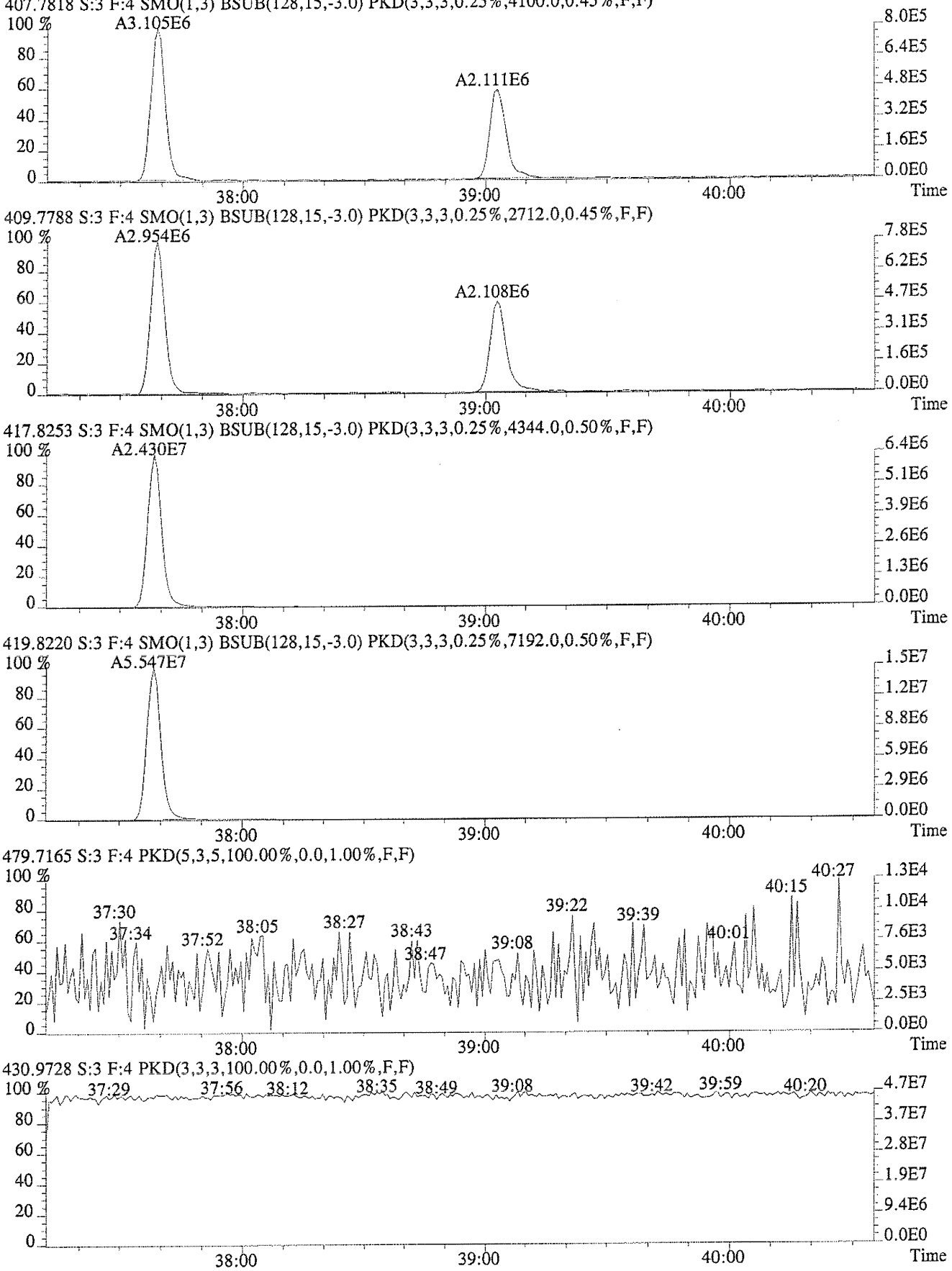
403.8530 S:3 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4024.0,0.40%,F,F)



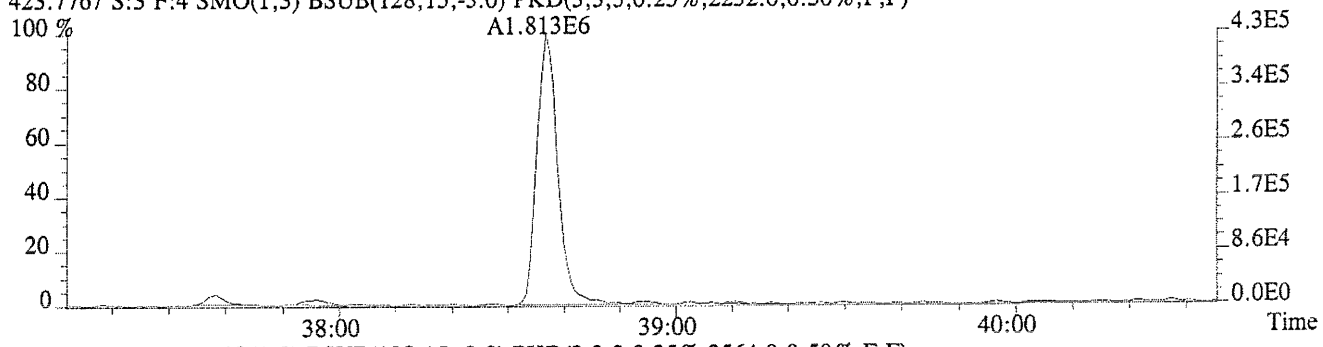
430.9728 S:3 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



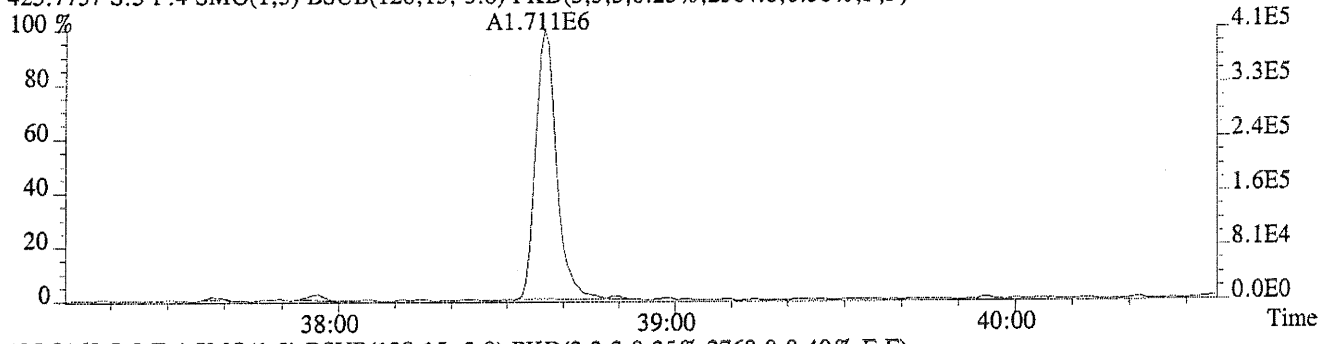
File:C12900 #1-304 Acq:12-JUL-2004 12:51:27 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS HOUSTN Text:ICAL HRCC2 Exp:8290CA



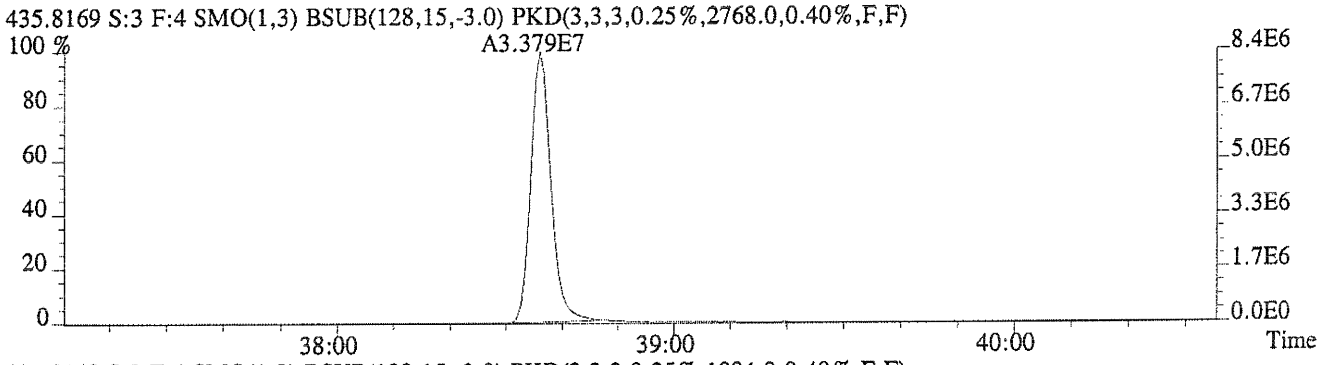
File:C12900 #1-304 Acq:12-JUL-2004 12:51:27 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS HOUSTN Text:ICAL HRCC2 Exp:8290CA
423.7767 S:3 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2232.0,0.50%,F,F)



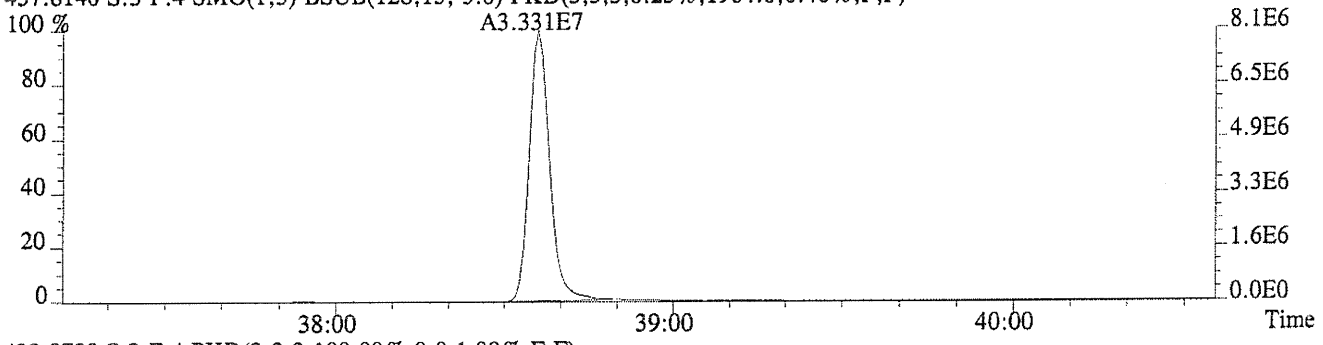
425.7737 S:3 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2564.0,0.50%,F,F)



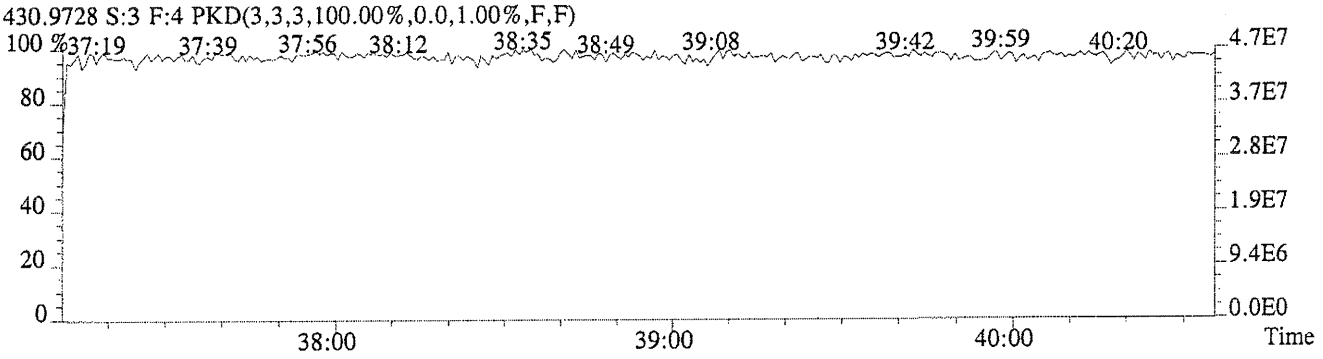
435.8169 S:3 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2768.0,0.40%,F,F)



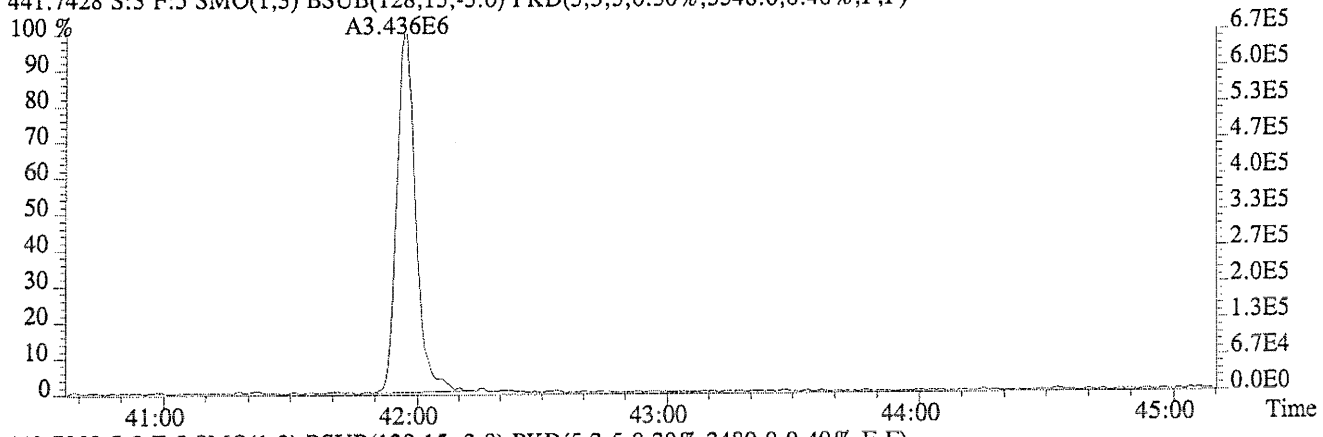
437.8140 S:3 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1984.0,0.40%,F,F)



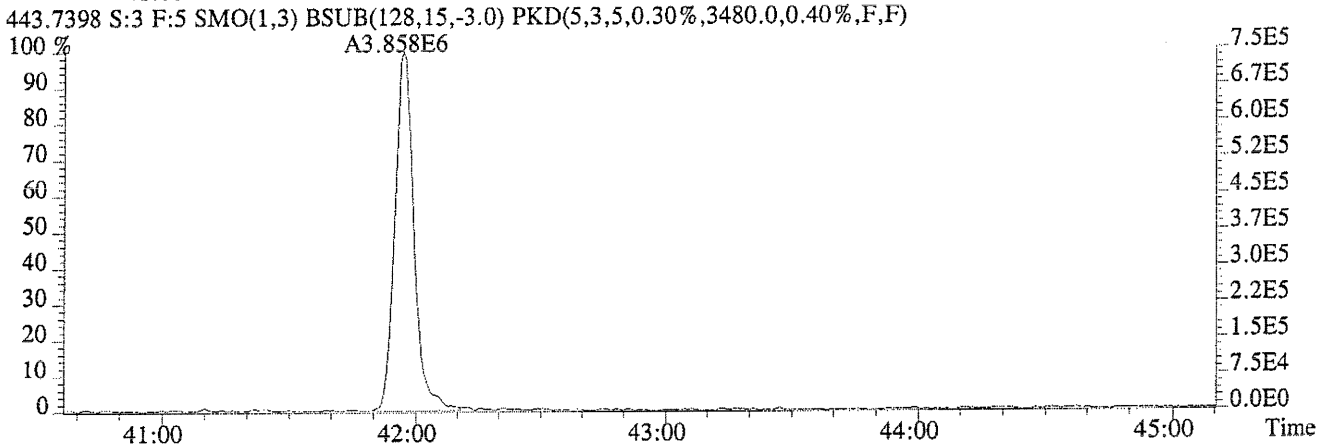
430.9728 S:3 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



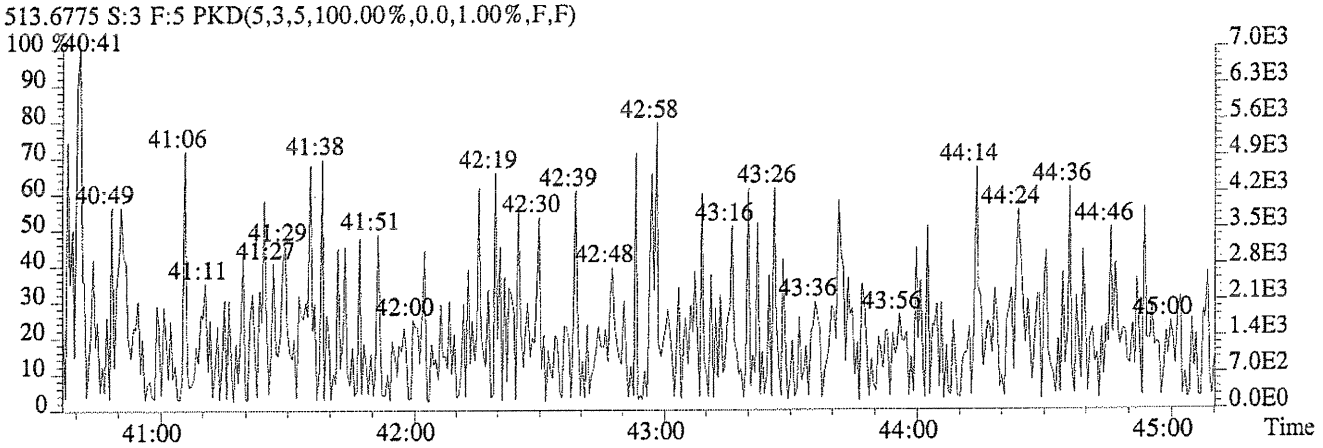
File:C12900 #1-497 Acq:12-JUL-2004 12:51:27 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS HOUSTN Text:ICAL HRCC2 Exp:8290CA
441.7428 S:3 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3548.0,0.40%,F,F)



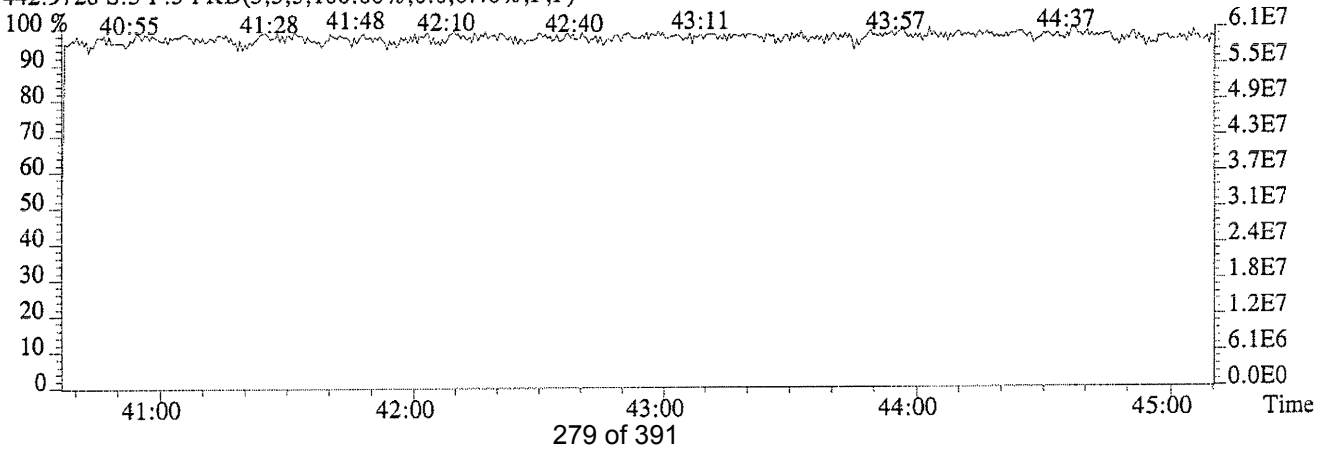
443.7398 S:3 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3480.0,0.40%,F,F)



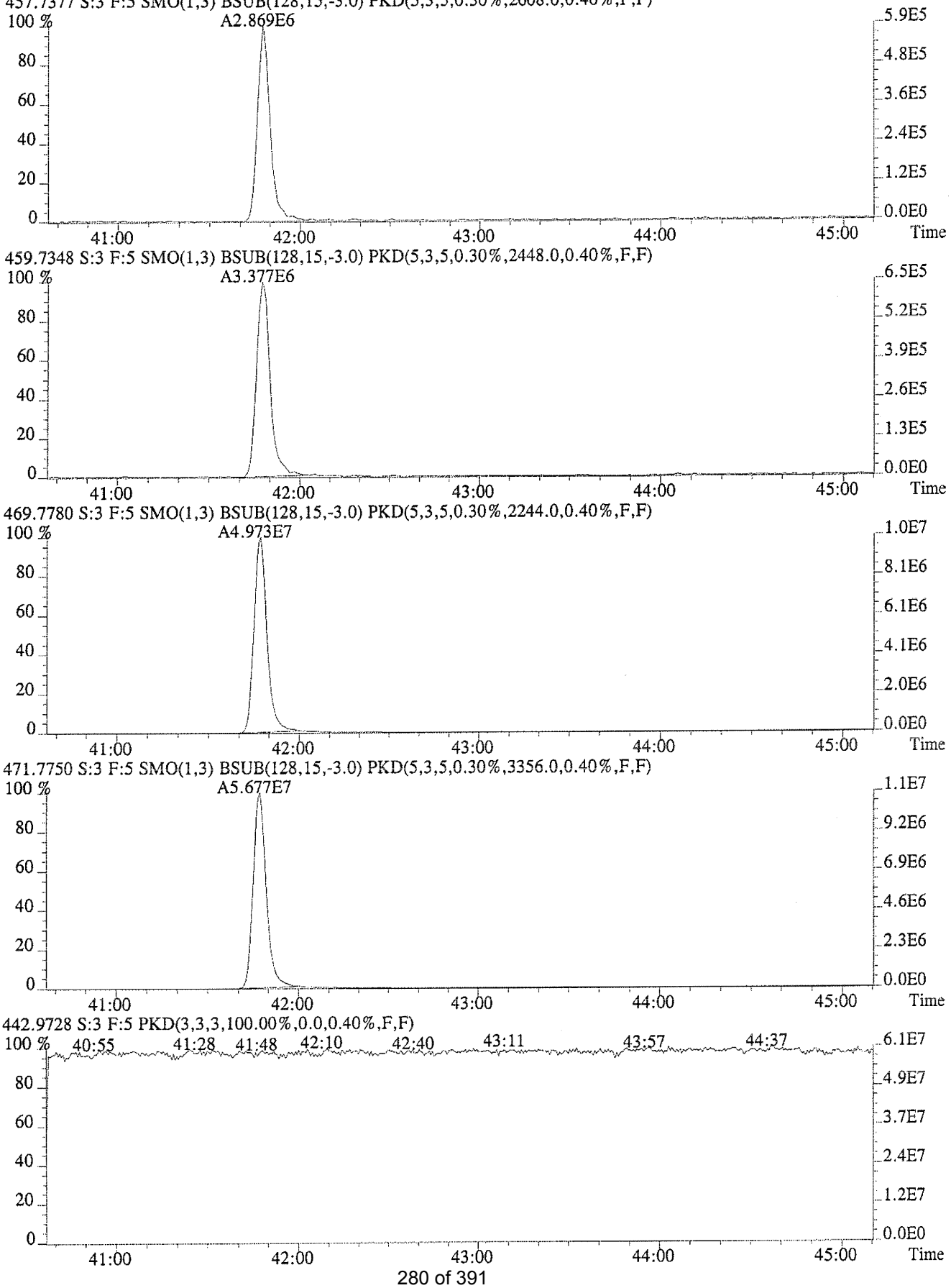
513.6775 S:3 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



442.9728 S:3 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



File:C12900 #1-497 Acq:12-JUL-2004 12:51:27 GC EI+ Voltage SIR 70S
Sample#3 File Text:CAS HOUSTN Text:ICAL HRCC2 Exp:8290CA



Columbia Analytical Services, Inc.
Sample Response Summary

CLIENT ID.
ICAL HRCC3

Run #3 Filename C12900#2 Samp: 2 Inj: 1 Acquired: 12-JUL-04 12:00:10
Processed: 12-JUL-04 16:16:56 Sample ID: ICAL HRCC3

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	25:45	1.768e+07	2.279e+07	0.78	yes	no
2	Unk	1,2,3,7,8-PeCDF	30:40	4.858e+07	3.131e+07	1.55	yes	no
3	Unk	2,3,4,7,8-PeCDF	31:30	4.951e+07	3.168e+07	1.56	yes	no
4	Unk	1,2,3,4,7,8-HxCDF	34:39	4.599e+07	3.678e+07	1.25	yes	no
5	Unk	1,2,3,6,7,8-HxCDF	34:45	4.547e+07	3.637e+07	1.25	yes	no
6	Unk	2,3,4,6,7,8-HxCDF	35:17	4.402e+07	3.518e+07	1.25	yes	no
7	Unk	1,2,3,7,8,9-HxCDF	36:03	4.044e+07	3.198e+07	1.26	yes	no
8	Unk	1,2,3,4,6,7,8-HpCDF	37:38	3.869e+07	3.744e+07	1.03	yes	no
9	Unk	1,2,3,4,7,8,9-HpCDF	39:02	2.923e+07	2.804e+07	1.04	yes	no
10	Unk	OCDF	41:56	4.661e+07	5.151e+07	0.90	yes	no
11	Unk	2,3,7,8-TCDD	26:42	1.316e+07	1.733e+07	0.76	yes	no
12	Unk	1,2,3,7,8-PeCDD	31:54	3.512e+07	2.181e+07	1.61	yes	no
13	Unk	1,2,3,4,7,8-HxCDD	35:25	2.663e+07	2.158e+07	1.23	yes	no
14	Unk	1,2,3,6,7,8-HxCDD	35:30	3.288e+07	2.664e+07	1.23	yes	no
15	Unk	1,2,3,7,8,9-HxCDD	35:49	3.375e+07	2.778e+07	1.21	yes	no
16	Unk	1,2,3,4,6,7,8-HpCDD	38:36	2.298e+07	2.214e+07	1.04	yes	no
17	Unk	OCDD	41:46	3.633e+07	4.237e+07	0.86	yes	no
18	IS	13C-2,3,7,8-TCDF	25:43	1.020e+08	1.315e+08	0.78	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	30:39	1.089e+08	7.284e+07	1.50	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	34:37	1.087e+08	2.105e+08	0.52	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	37:38	8.177e+07	1.870e+08	0.44	yes	no
22	IS	13C-2,3,7,8-TCDD	26:40	7.026e+07	8.948e+07	0.79	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	31:53	7.138e+07	4.538e+07	1.57	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	35:29	1.435e+08	1.162e+08	1.23	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	38:35	1.161e+08	1.127e+08	1.03	yes	no
26	IS	13C-OCDD	41:46	1.844e+08	2.079e+08	0.89	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	26:25	6.586e+07	8.232e+07	0.80	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	35:48	1.509e+08	1.233e+08	1.22	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	26:42	3.004e+07				

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Houston, TX 77042
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Columbia Analytical Services,Inc. CLIENT ID.
Signal/Noise Height Ratio Summary ICAL HRCC3

Run #3 Filename C12900 #2 Samp: 2 Inj: 1 Acquired: 12-JUL-04 12:00:10

Processed: 12-JUL-04 16:16:56 LAB. ID: ICAL HRCC3

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	3.03e+06	3.61e+03	8.4e+02	3.91e+06	4.34e+03	9.0e+02
2	1,2,3,7,8-PeCDF	1.15e+07	3.22e+03	3.6e+03	7.29e+06	3.93e+03	1.9e+03
3	2,3,4,7,8-PeCDF	1.21e+07	3.22e+03	3.8e+03	7.78e+06	3.93e+03	2.0e+03
4	1,2,3,4,7,8-HxCDF	1.26e+07	3.46e+03	3.6e+03	9.92e+06	2.91e+03	3.4e+03
5	1,2,3,6,7,8-HxCDF	1.18e+07	3.46e+03	3.4e+03	9.40e+06	2.91e+03	3.2e+03
6	2,3,4,6,7,8-HxCDF	1.18e+07	3.46e+03	3.4e+03	9.51e+06	2.91e+03	3.3e+03
7	1,2,3,7,8,9-HxCDF	1.02e+07	3.46e+03	2.9e+03	8.00e+06	2.91e+03	2.7e+03
8	1,2,3,4,6,7,8-HpCDF	1.01e+07	9.64e+03	1.1e+03	9.81e+06	7.72e+03	1.3e+03
9	1,2,3,4,7,8,9-HpCDF	6.67e+06	9.64e+03	6.9e+02	6.34e+06	7.72e+03	8.2e+02
10	OCDF	9.36e+06	2.81e+03	3.3e+03	1.03e+07	4.88e+03	2.1e+03
11	2,3,7,8-TCDD	2.51e+06	3.43e+03	7.3e+02	3.30e+06	3.46e+03	9.5e+02
12	1,2,3,7,8-PeCDD	8.64e+06	3.94e+03	2.2e+03	5.45e+06	2.34e+03	2.3e+03
13	1,2,3,4,7,8-HxCDD	8.07e+06	3.22e+03	2.5e+03	6.53e+06	3.28e+03	2.0e+03
14	1,2,3,6,7,8-HxCDD	8.55e+06	3.22e+03	2.7e+03	7.02e+06	3.28e+03	2.1e+03
15	1,2,3,7,8,9-HxCDD	8.71e+06	3.22e+03	2.7e+03	7.18e+06	3.28e+03	2.2e+03
16	1,2,3,4,6,7,8-HpCDD	5.71e+06	2.62e+03	2.2e+03	5.51e+06	3.16e+03	1.7e+03
17	OCDD	7.40e+06	2.48e+03	3.0e+03	8.59e+06	2.43e+03	3.5e+03
18	13C-2,3,7,8-TCDF	1.86e+07	5.90e+03	3.2e+03	2.36e+07	5.44e+03	4.3e+03
19	13C-1,2,3,7,8-PeCDF	2.66e+07	2.88e+03	9.2e+03	1.76e+07	3.44e+03	5.1e+03
20	13C-1,2,3,4,7,8-HxCDF	2.93e+07	6.04e+03	4.8e+03	5.72e+07	3.04e+03	1.9e+04
21	13C-1,2,3,4,6,7,8-HpCDF	2.16e+07	1.34e+04	1.6e+03	4.92e+07	1.88e+04	2.6e+03
22	13C-2,3,7,8-TCDD	1.39e+07	1.10e+04	1.3e+03	1.77e+07	4.31e+03	4.1e+03
23	13C-1,2,3,7,8-PeCDD	1.81e+07	3.82e+03	4.8e+03	1.17e+07	3.02e+03	3.9e+03
24	13C-1,2,3,6,7,8-HxCDD	4.04e+07	5.44e+03	7.4e+03	3.29e+07	3.52e+03	9.3e+03
25	13C-1,2,3,4,6,7,8-HpCDD	2.88e+07	3.18e+03	9.1e+03	2.78e+07	3.28e+03	8.5e+03
26	13C-OCDD	3.76e+07	2.50e+03	1.5e+04	4.25e+07	2.98e+03	1.4e+04
27	13C-1,2,3,4-TCDD	1.29e+07	1.10e+04	1.2e+03	1.61e+07	4.31e+03	3.7e+03
28	13C-1,2,3,7,8,9-HxCDD	3.96e+07	5.44e+03	7.3e+03	3.23e+07	3.52e+03	9.2e+03
29	37Cl-2,3,7,8-TCDD	5.69e+06	4.36e+03	1.3e+03			

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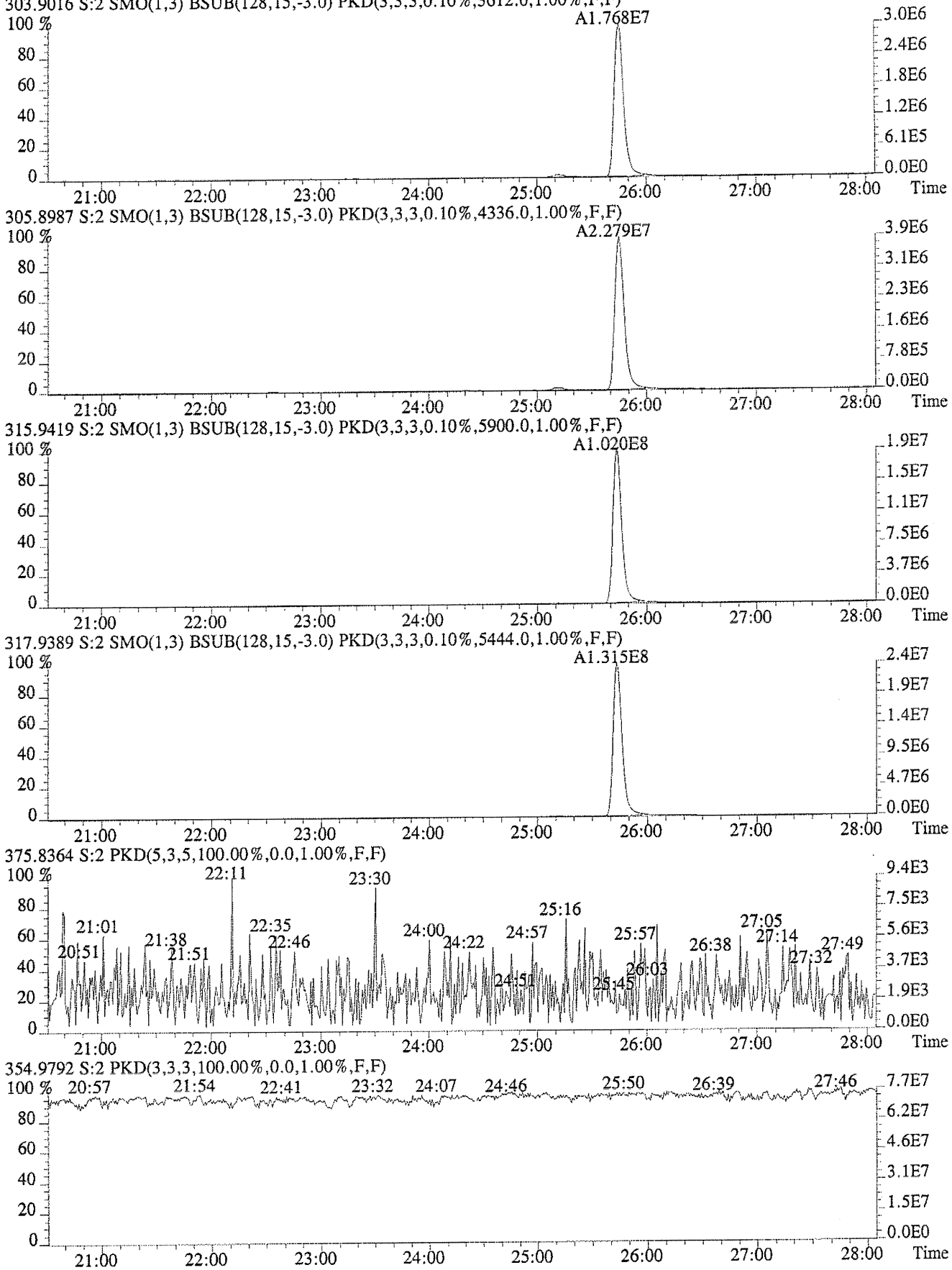
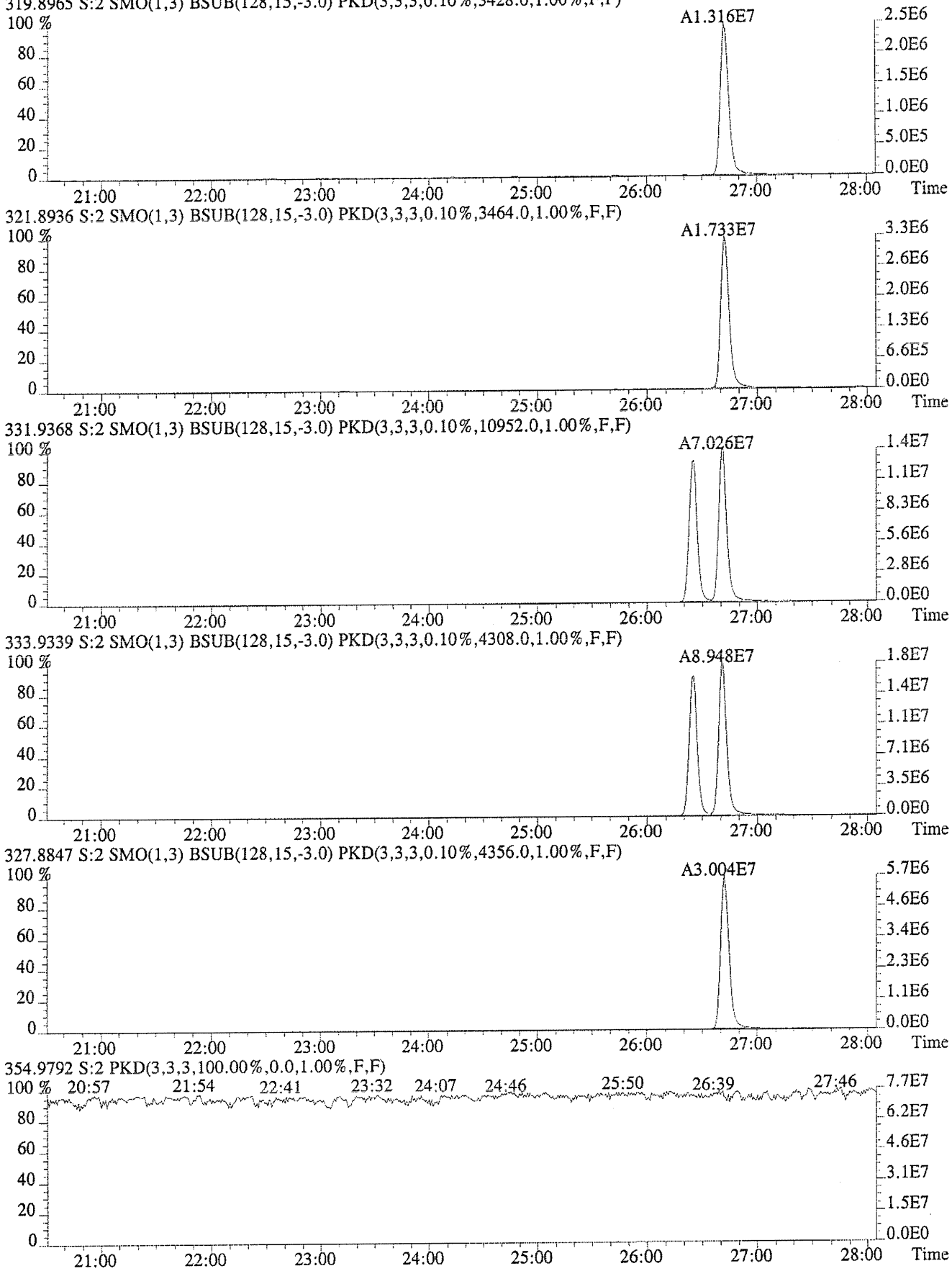
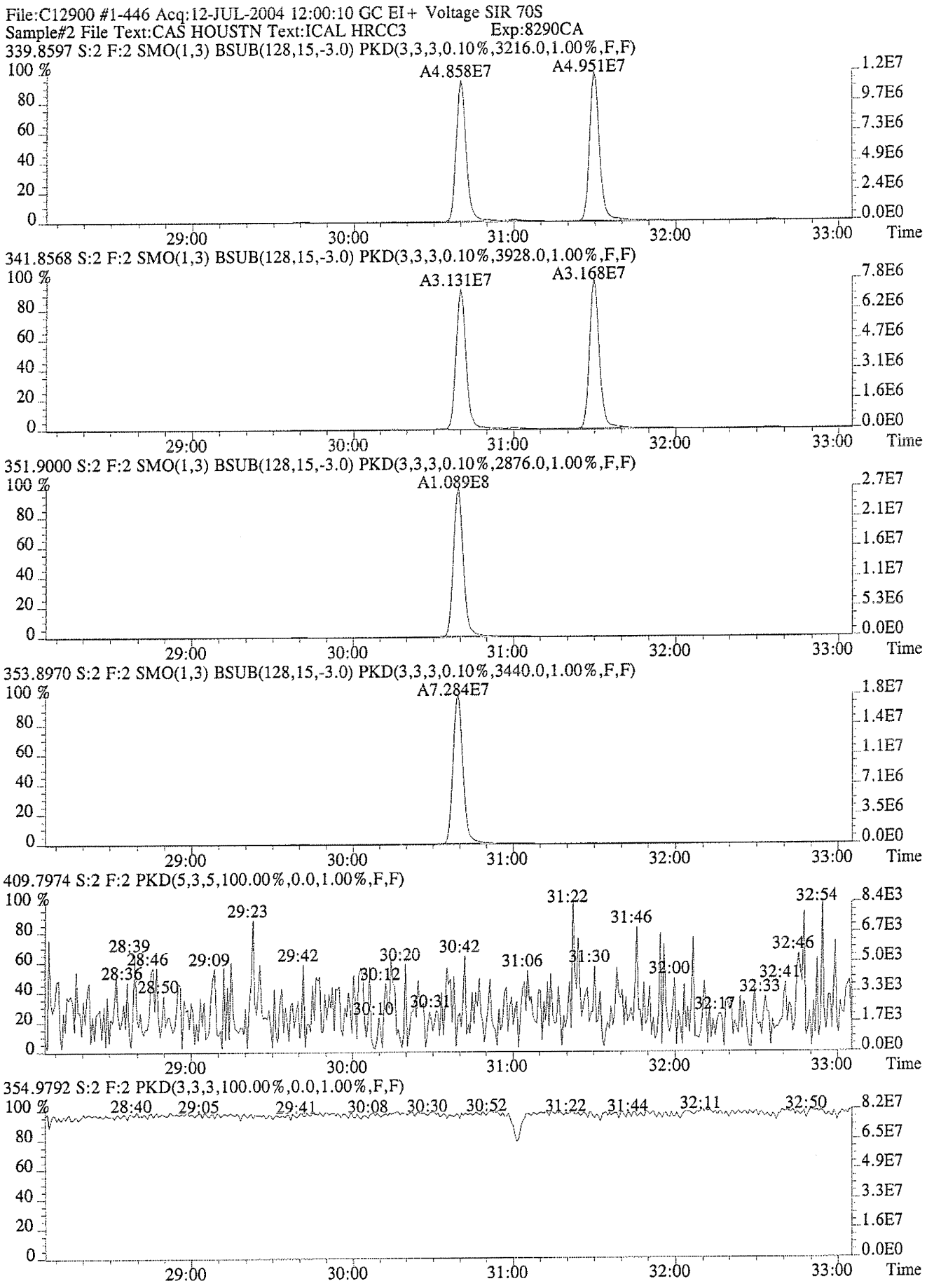
File:C12900 #1-621 Acq:12-JUL-2004 12:00:10 GC EI+ Voltage SIR 70S
Sample#2 File Text:CAS HOUSTN Text:ICAL HRCC3 Exp:8290CA

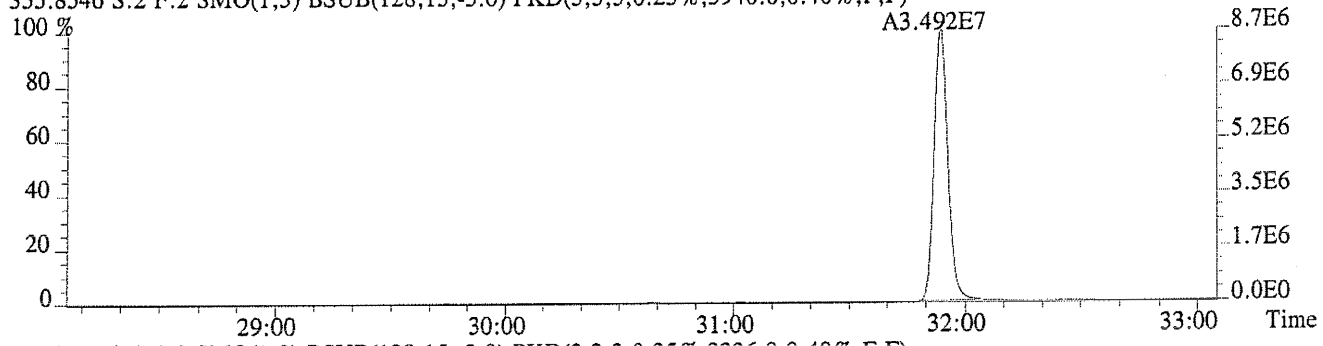


File:C12900 #1-621 Acq:12-JUL-2004 12:00:10 GC EI+ Voltage SIR 70S
Sample#2 File Text:CAS HOUSTN Text:ICAL HRCC3 Exp:8290CA

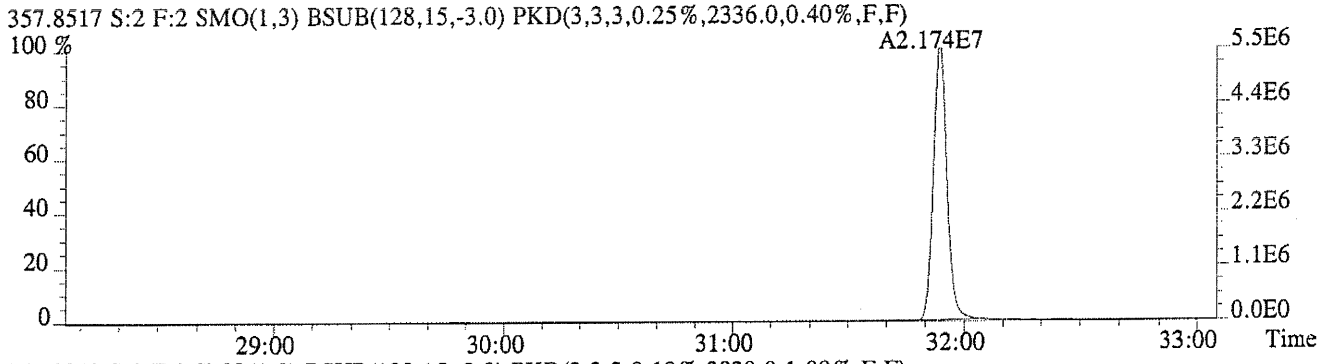



File:C12900 #1-446 Acq:12-JUL-2004 12:00:10 GC EI+ Voltage SIR 70S
Sample#2 File Text:CAS HOUSTN Text:ICAL HRCC3 Exp:8290CA
339.8597 S:2 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3216.0,1.00%,F,F)
A4.858E7
A4.951E7
341.8568 S:2 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3928.0,1.00%,F,F)
A3.131E7
A3.168E7
351.9000 S:2 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2876.0,1.00%,F,F)
A1.089E8
353.8970 S:2 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3440.0,1.00%,F,F)
A7.284E7
409.7974 S:2 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)
354.9792 S:2 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)
100 %
Time
29:00
30:00
31:00
32:00
33:00

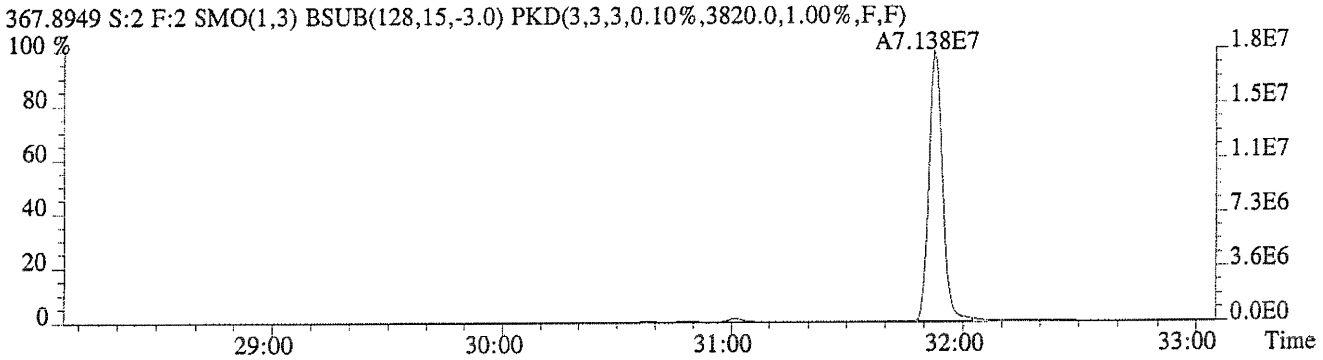
File:C12900 #1-446 Acq:12-JUL-2004 12:00:10 GC EI+ Voltage SIR 70S
Sample#2 File Text:CAS HOUSTN Text:ICAL HRCC3 Exp:8290CA
355.8546 S:2 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3940.0,0.40%,F,F)



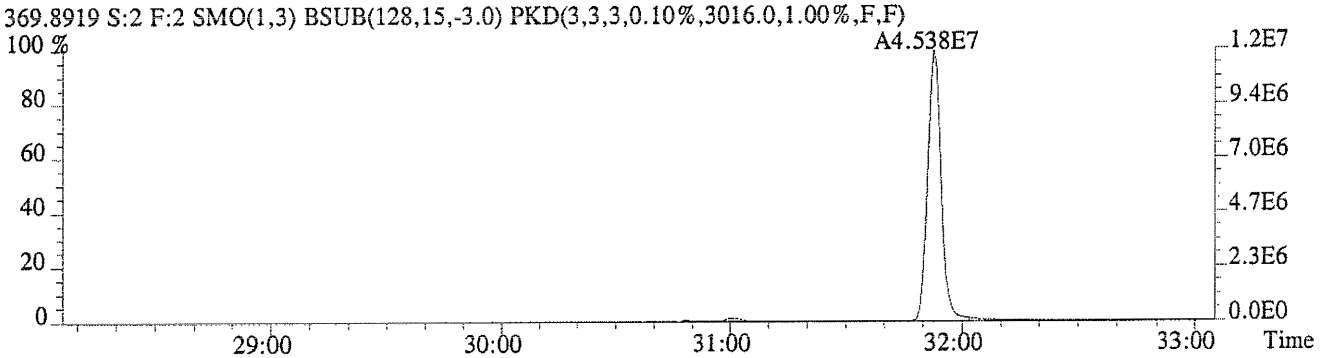
357.8517 S:2 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2336.0,0.40%,F,F)



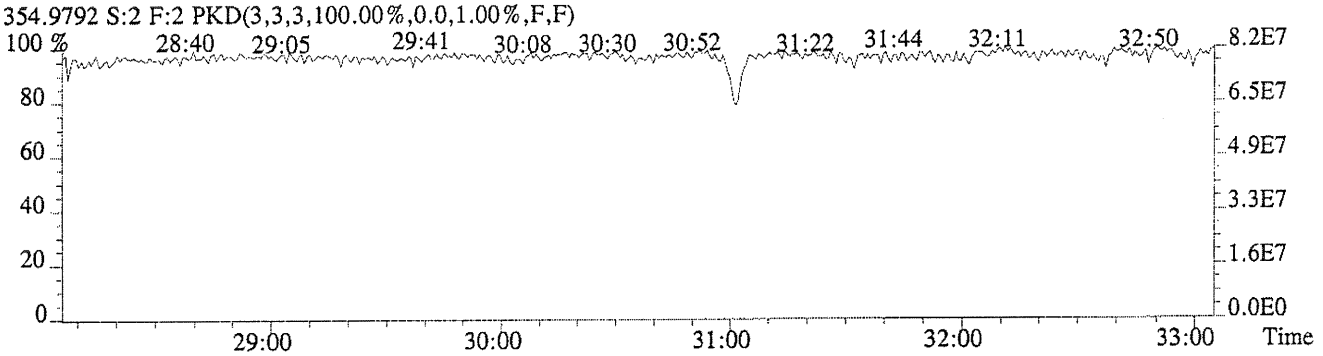
367.8949 S:2 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3820.0,1.00%,F,F)



369.8919 S:2 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3016.0,1.00%,F,F)

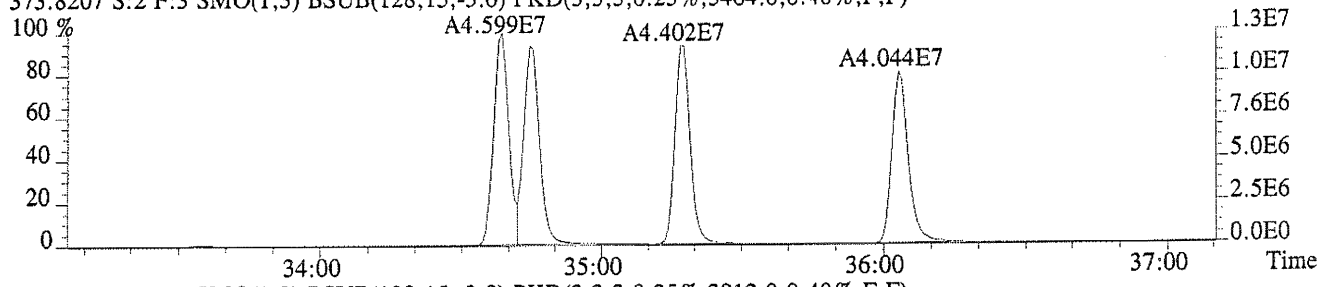


354.9792 S:2 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

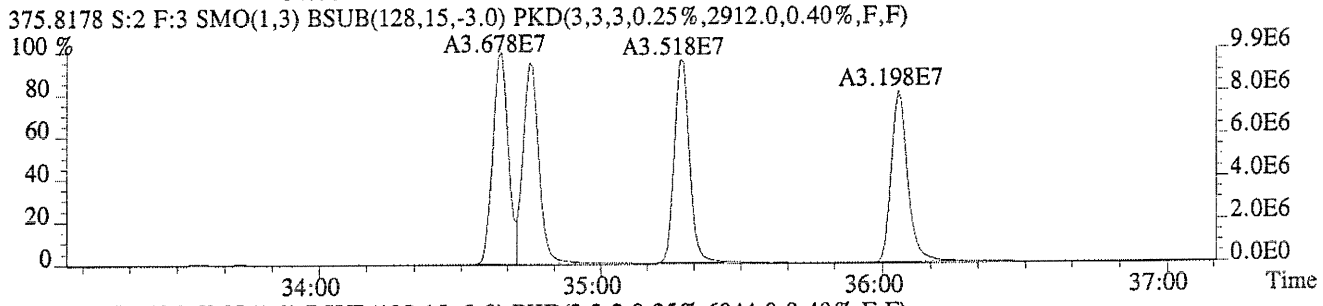


File:C12900 #1-364 Acq:12-JUL-2004 12:00:10 GC EI+ Voltage SIR 70S
Sample#2 File Text:CAS HOUSTN Text:ICAL HRCC3 Exp:8290CA

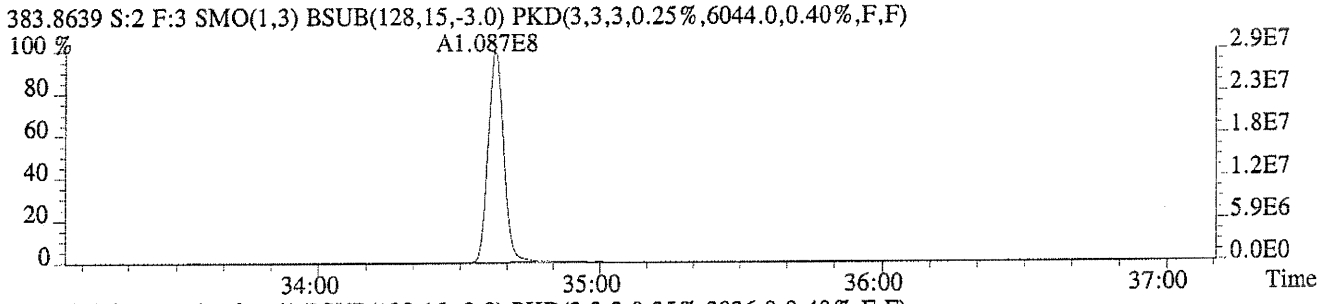
373.8207 S:2 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3464.0,0.40%,F,F)



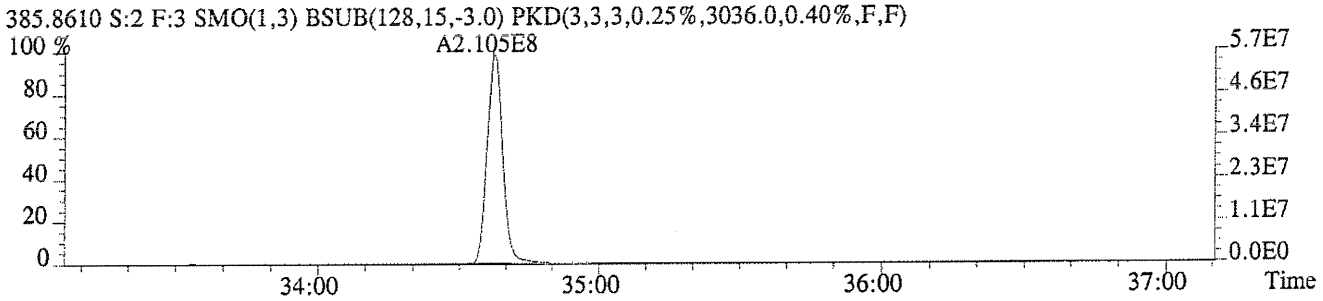
375.8178 S:2 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2912.0,0.40%,F,F)



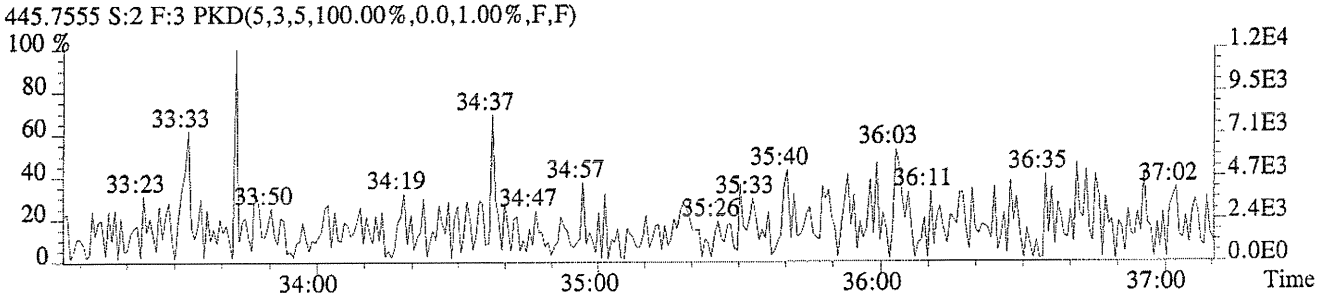
383.8639 S:2 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,6044.0,0.40%,F,F)



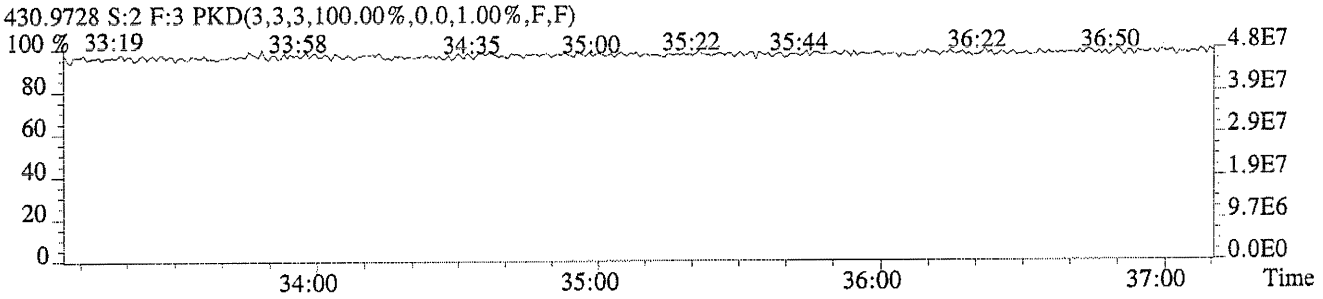
385.8610 S:2 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3036.0,0.40%,F,F)



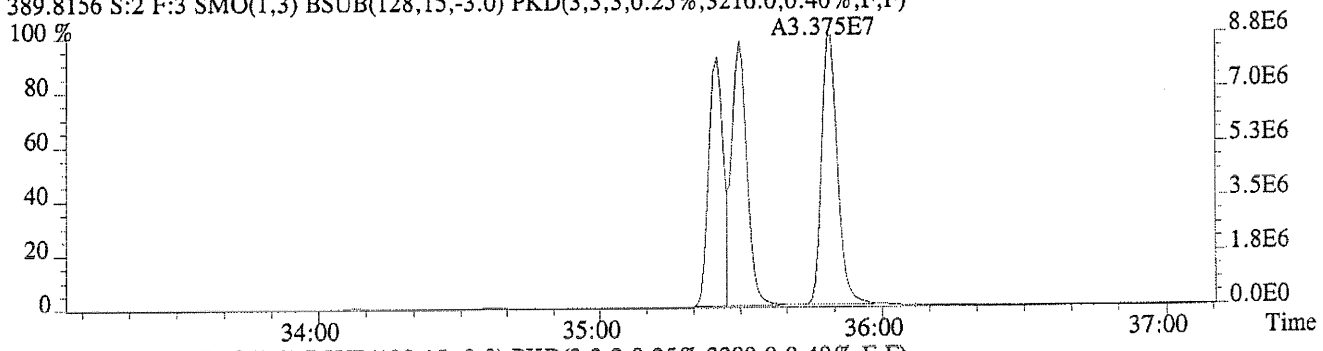
445.7555 S:2 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



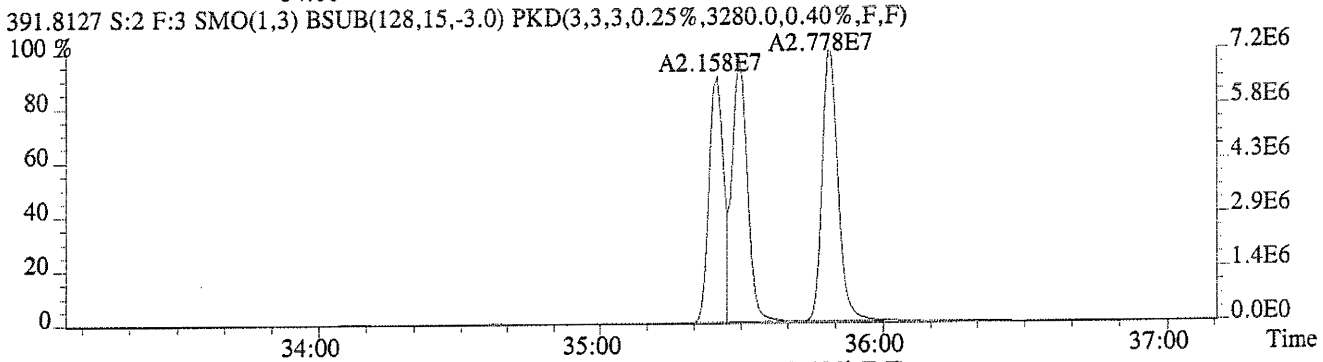
430.9728 S:2 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



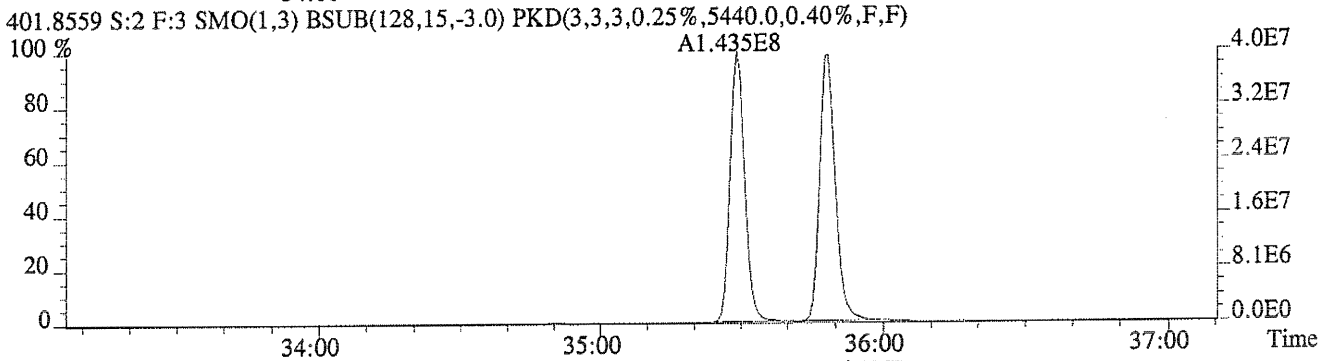
File:C12900 #1-364 Acq:12-JUL-2004 12:00:10 GC EI+ Voltage SIR 70S
Sample#2 File Text:CAS HOUSTN Text:ICAL HRCC3 Exp:8290CA
389.8156 S:2 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3216.0,0.40%,F,F)



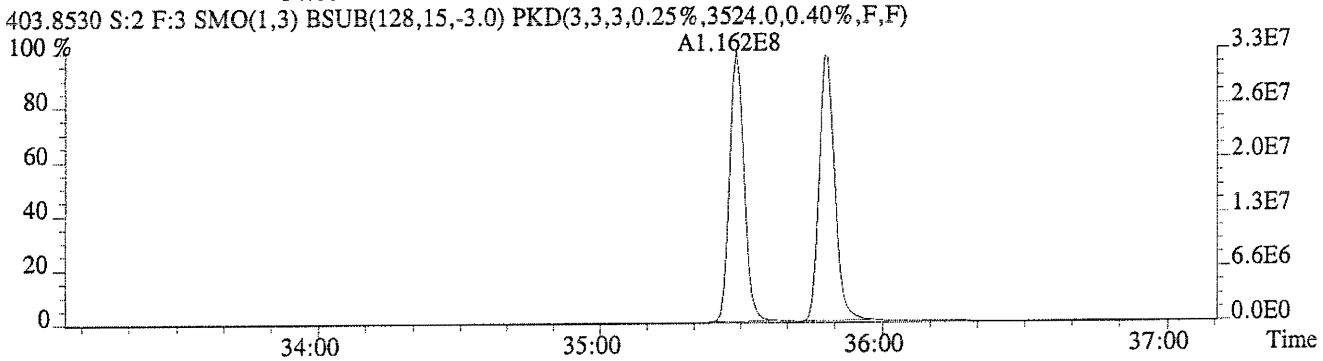
391.8127 S:2 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3280.0,0.40%,F,F)



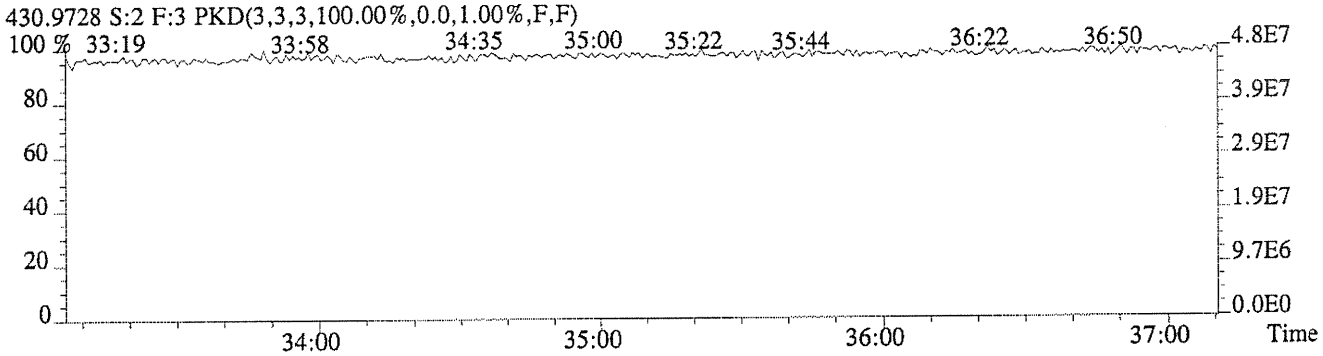
401.8559 S:2 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5440.0,0.40%,F,F)



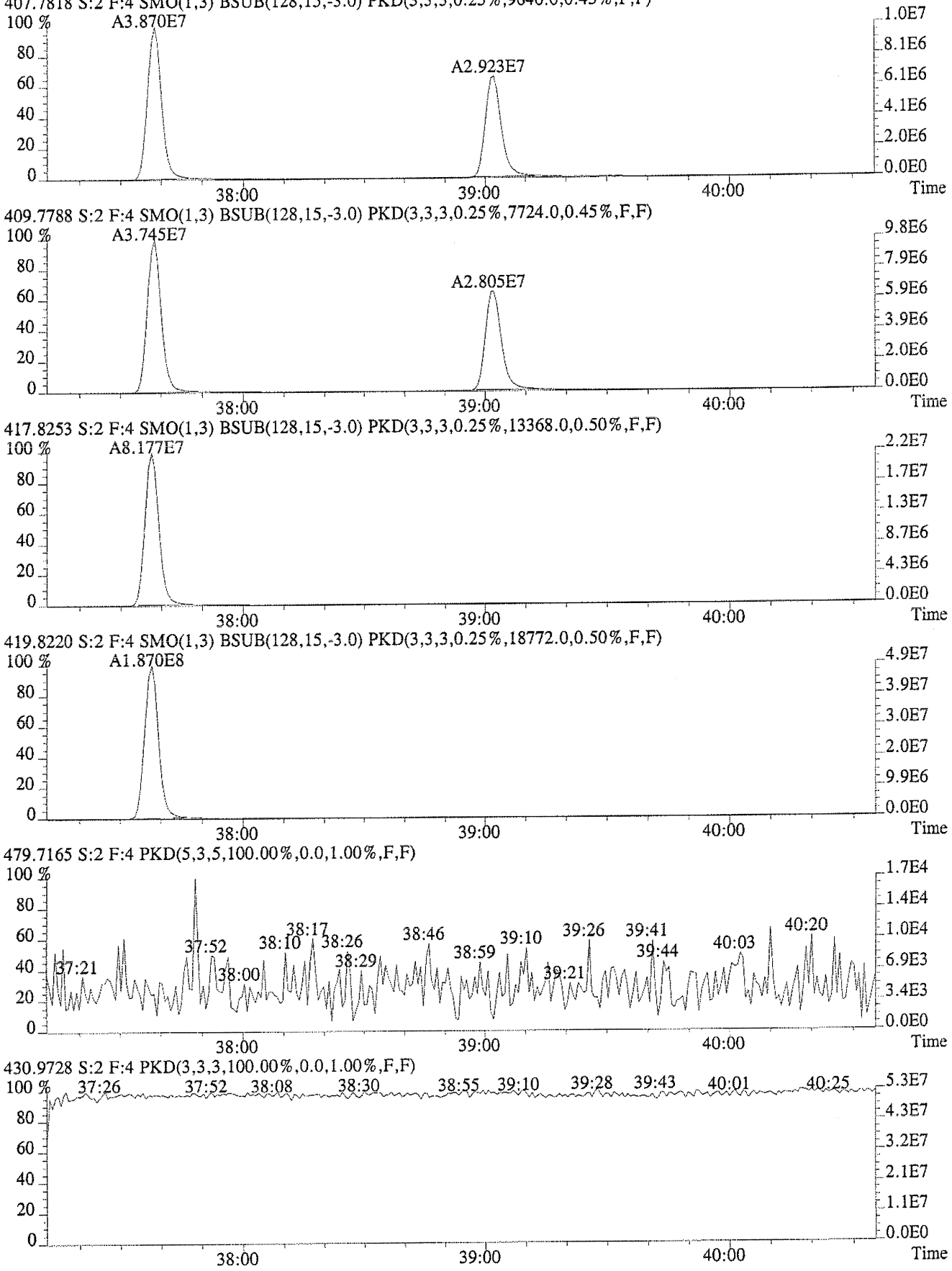
403.8530 S:2 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3524.0,0.40%,F,F)



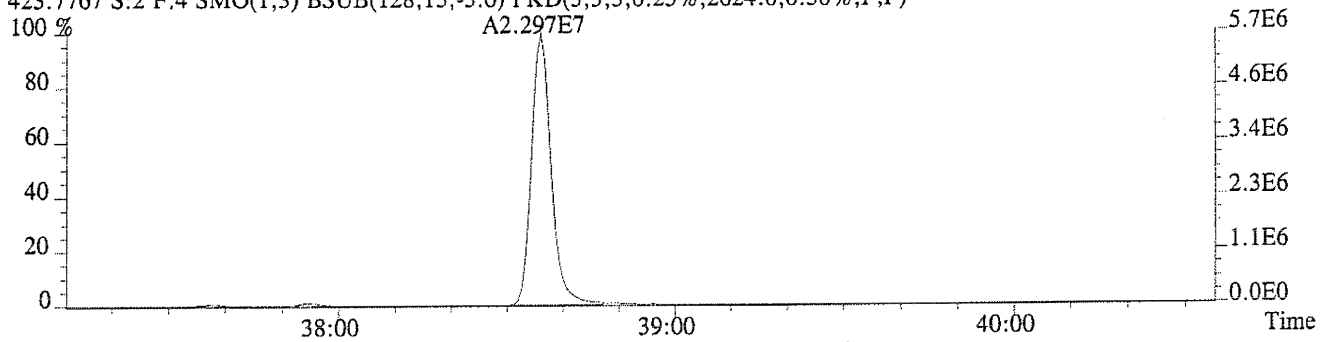
430.9728 S:2 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



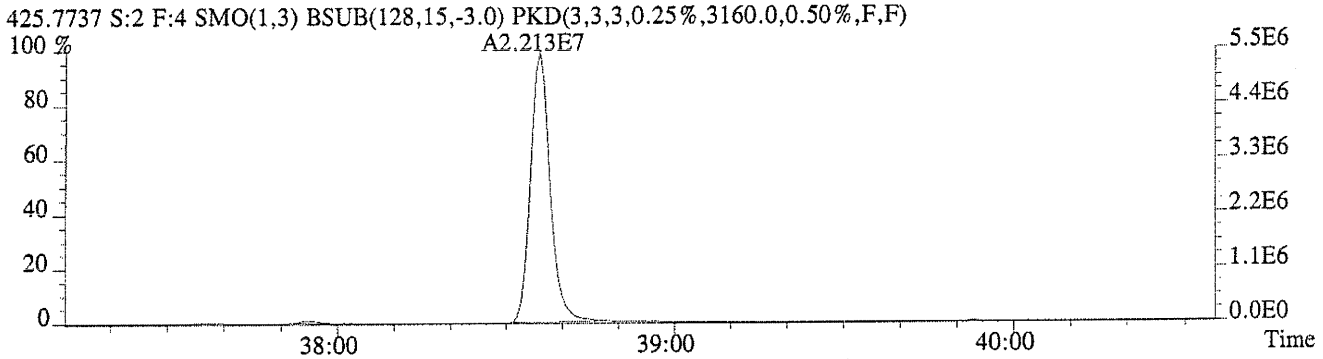
File:C12900 #1-304 Acq:12-JUL-2004 12:00:10 GC EI+ Voltage SIR 70S
Sample#2 File Text:CAS HOUSTN Text:ICAL HRCC3 Exp:8290CA



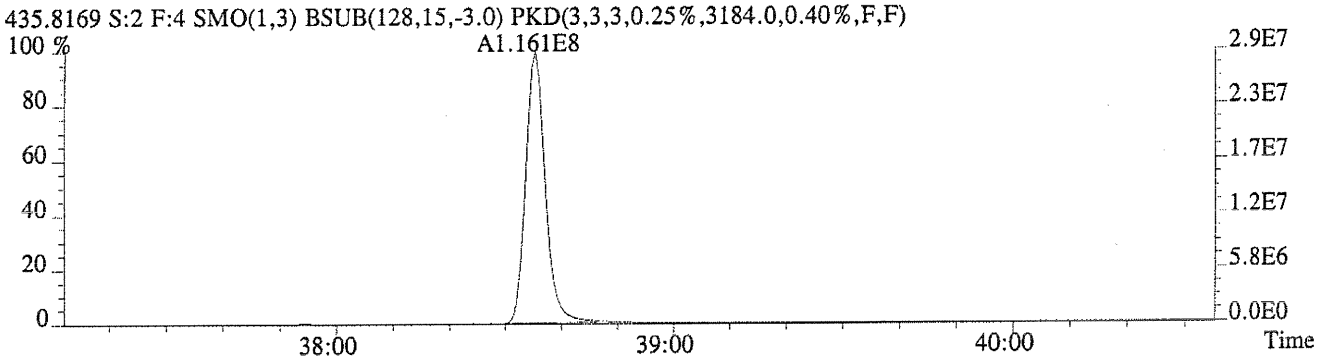
File:C12900 #1-304 Acq:12-JUL-2004 12:00:10 GC EI+ Voltage SIR 70S
Sample#2 File Text:CAS HOUSTN Text:ICAL HRCC3 Exp:8290CA
423.7767 S:2 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2624.0,0.50%,F,F)



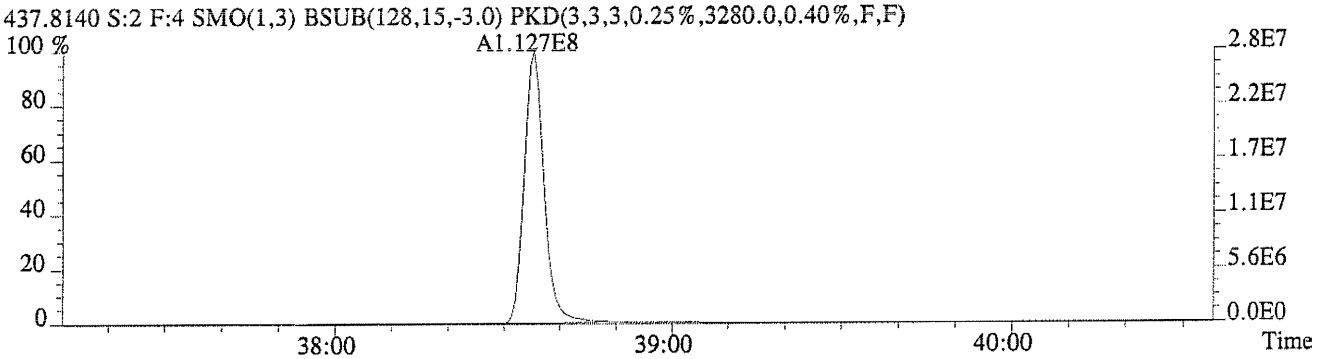
425.7737 S:2 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3160.0,0.50%,F,F)



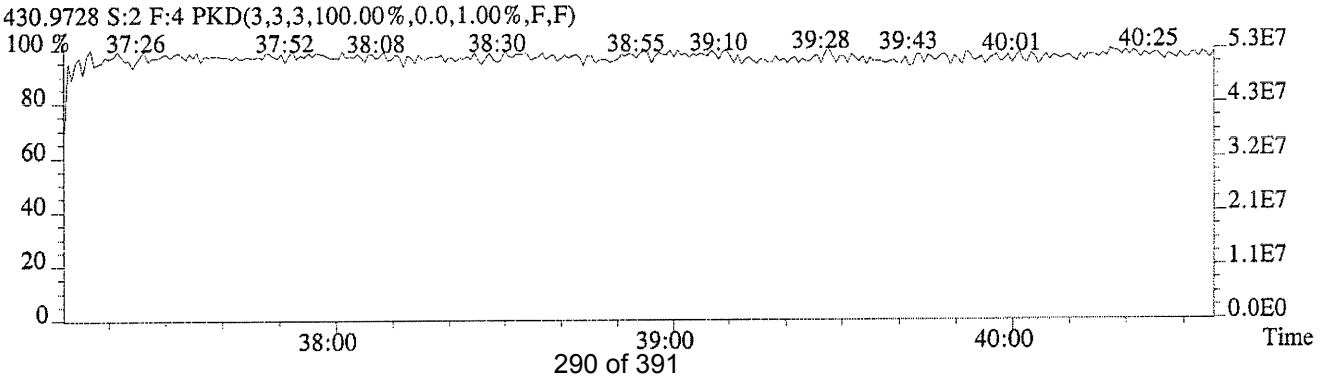
435.8169 S:2 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3184.0,0.40%,F,F)



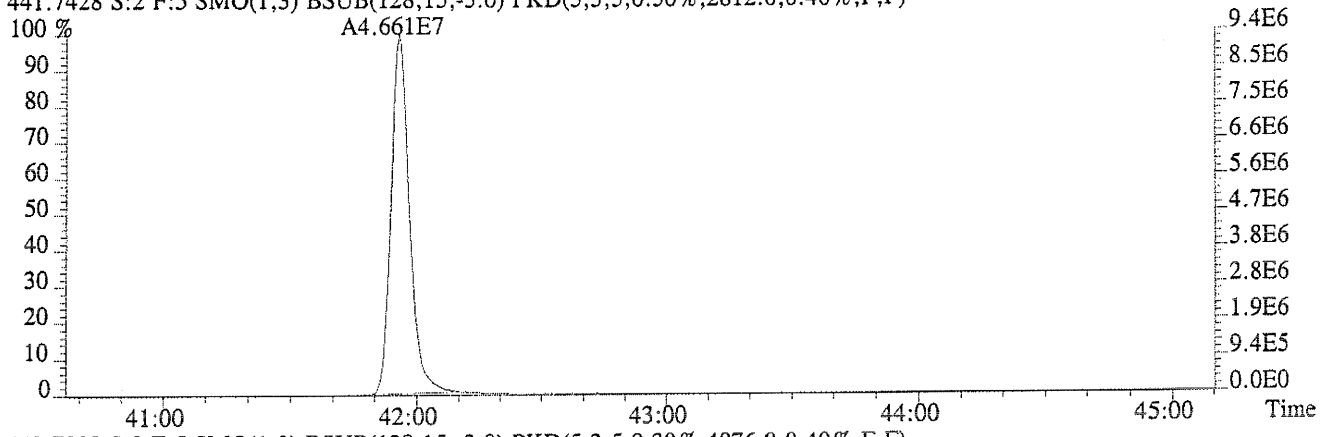
437.8140 S:2 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3280.0,0.40%,F,F)



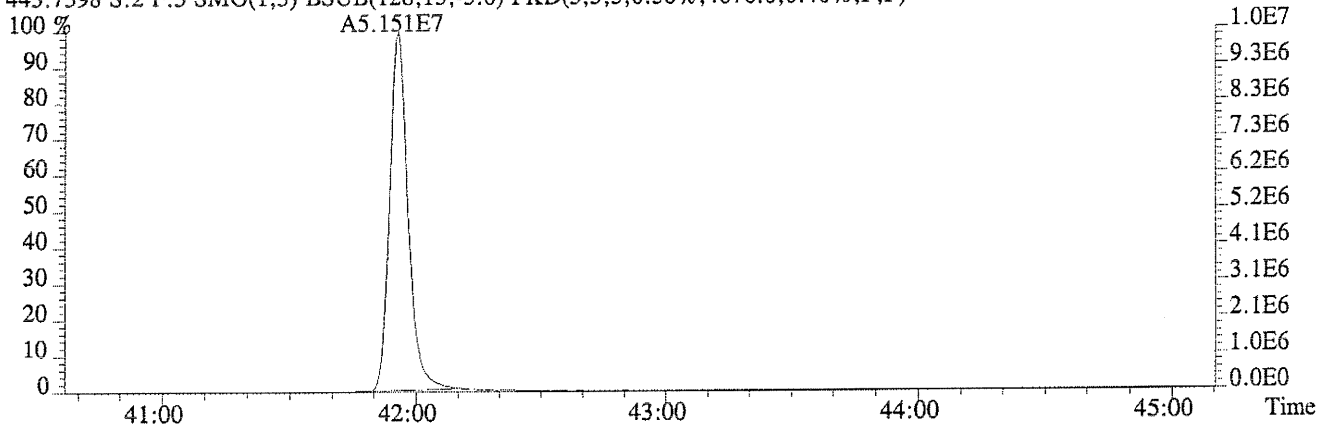
430.9728 S:2 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



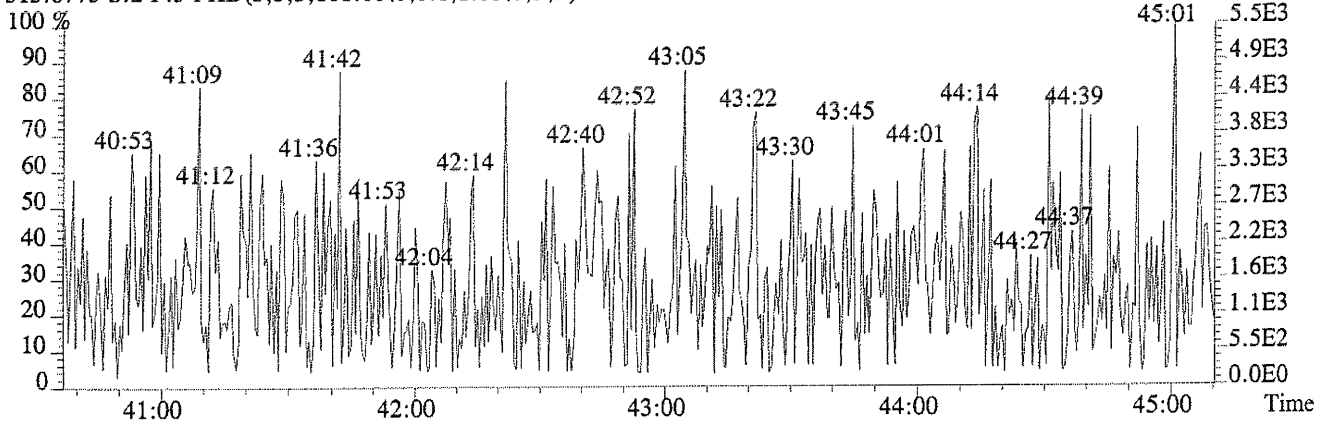
File:C12900 #1-497 Acq:12-JUL-2004 12:00:10 GC EI+ Voltage SIR 70S
Sample#2 File Text:CAS HOUSTN Text:ICAL HRCC3 Exp:8290CA
441.7428 S:2 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2812.0,0.40%,F,F)



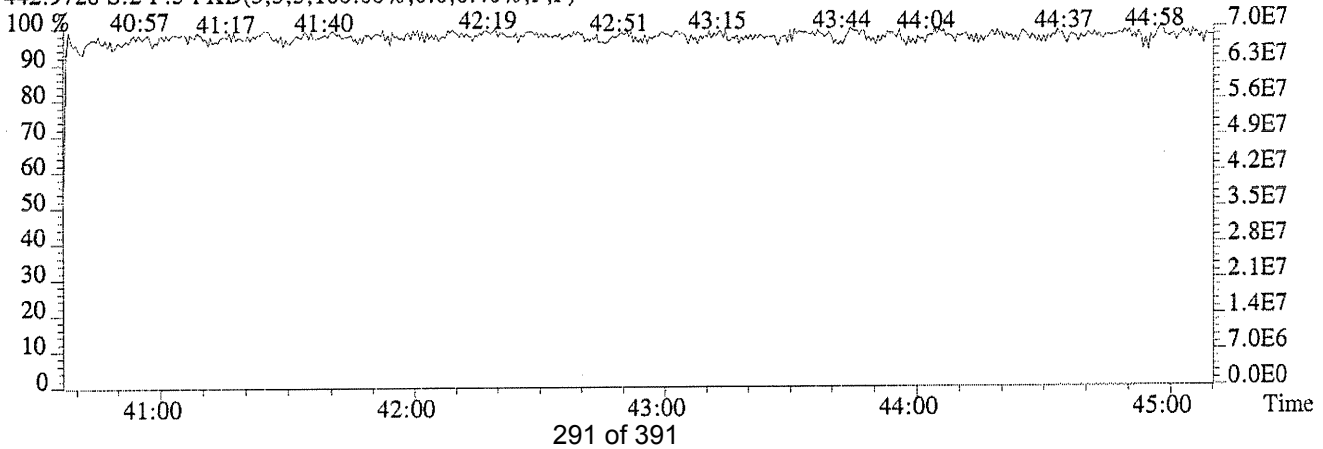
443.7398 S:2 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4876.0,0.40%,F,F)



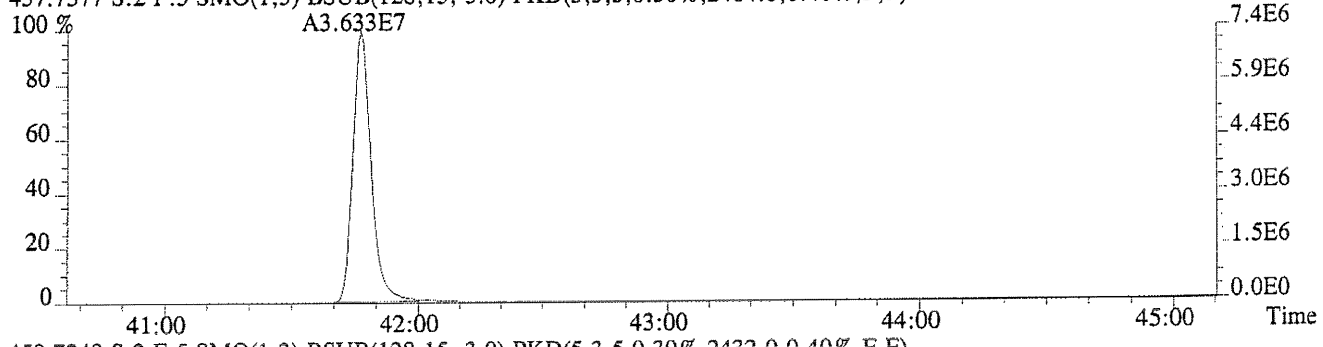
513.6775 S:2 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



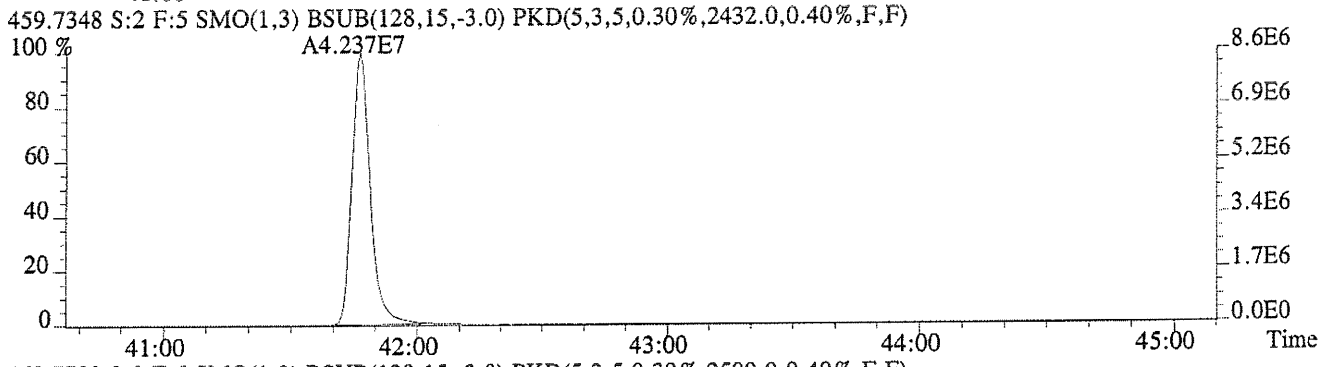
442.9728 S:2 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



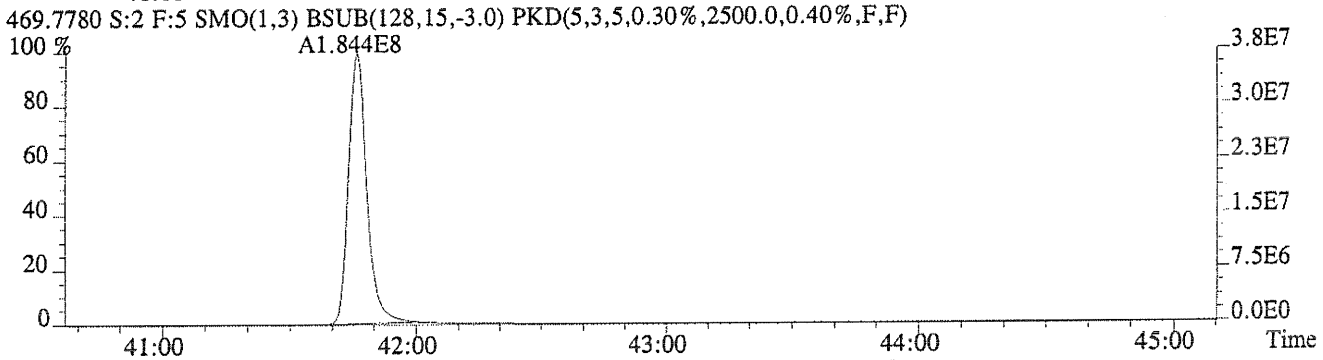
File:C12900 #1-497 Acq:12-JUL-2004 12:00:10 GC EI+ Voltage SIR 70S
Sample#2 File Text:CAS HOUSTN Text:ICAL HRCC3 Exp:8290CA
457.7377 S:2 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2484.0,0.40%,F,F)



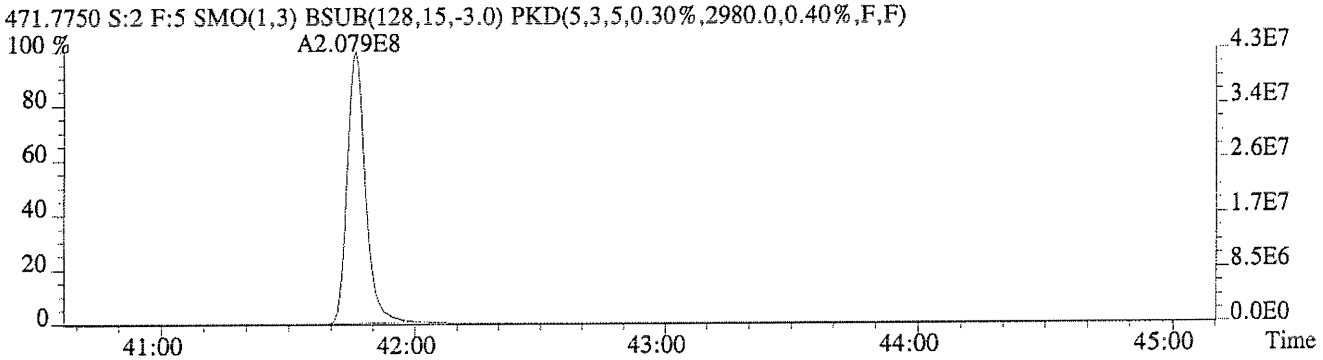
459.7348 S:2 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2432.0,0.40%,F,F)



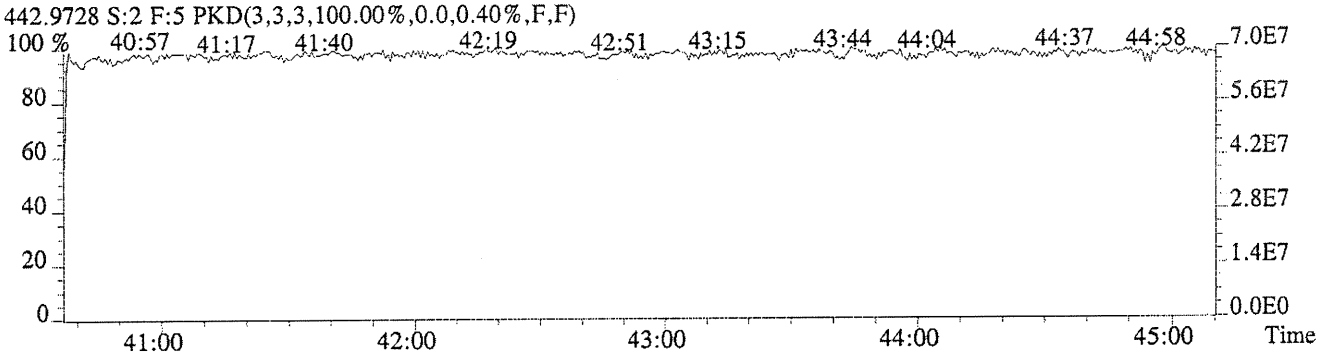
469.7780 S:2 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2500.0,0.40%,F,F)



471.7750 S:2 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2980.0,0.40%,F,F)



442.9728 S:2 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



Columbia Analytical Services, Inc.
Sample Response Summary CLIENT ID.
ICAL HRCC4

Run #4 Filename C12900#5 Samp: 5 Inj: 1 Acquired: 12-JUL-04 14:33:58
Processed: 12-JUL-04 16:22:02 Sample ID: ICAL HRCC4

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	25:33	3.371e+07	4.353e+07	0.77	yes	no
2	Unk	1,2,3,7,8-PeCDF	30:32	9.115e+07	5.799e+07	1.57	yes	no
3	Unk	2,3,4,7,8-PeCDF	31:21	9.419e+07	6.007e+07	1.57	yes	no
4	Unk	1,2,3,4,7,8-HxCDF	34:32	7.909e+07	6.356e+07	1.24	yes	no
5	Unk	1,2,3,6,7,8-HxCDF	34:38	8.245e+07	6.599e+07	1.25	yes	no
6	Unk	2,3,4,6,7,8-HxCDF	35:11	7.190e+07	5.766e+07	1.25	yes	no
7	Unk	1,2,3,7,8,9-HxCDF	35:57	6.212e+07	4.913e+07	1.26	yes	no
8	Unk	1,2,3,4,6,7,8-HpCDF	37:32	5.868e+07	5.689e+07	1.03	yes	no
9	Unk	1,2,3,4,7,8,9-HpCDF	38:55	4.214e+07	4.089e+07	1.03	yes	no
10	Unk	OCDF	41:48	6.228e+07	6.912e+07	0.90	yes	no
11	Unk	2,3,7,8-TCDD	26:31	2.569e+07	3.331e+07	0.77	yes	no
12	Unk	1,2,3,7,8-PeCDD	31:46	6.214e+07	3.942e+07	1.58	yes	no
13	Unk	1,2,3,4,7,8-HxCDD	35:19	4.586e+07	3.717e+07	1.23	yes	no
14	Unk	1,2,3,6,7,8-HxCDD	35:23	5.440e+07	4.418e+07	1.23	yes	no
15	Unk	1,2,3,7,8,9-HxCDD	35:43	4.928e+07	4.061e+07	1.21	yes	no
16	Unk	1,2,3,4,6,7,8-HpCDD	38:30	3.206e+07	3.150e+07	1.02	yes	no
17	Unk	OCDD	41:39	4.665e+07	5.482e+07	0.85	yes	no
18	IS	13C-2,3,7,8-TCDF	25:31	3.626e+07	4.662e+07	0.78	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	30:31	3.946e+07	2.585e+07	1.53	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	34:31	3.944e+07	7.916e+07	0.50	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	37:31	2.519e+07	5.804e+07	0.43	yes	no
22	IS	13C-2,3,7,8-TCDD	26:29	2.664e+07	3.403e+07	0.78	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	31:45	2.563e+07	1.594e+07	1.61	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	35:23	4.675e+07	3.881e+07	1.20	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	38:29	3.446e+07	3.298e+07	1.04	yes	no
26	IS	13C-OCDD	41:39	4.749e+07	5.434e+07	0.87	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	26:13	2.578e+07	3.216e+07	0.80	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	35:42	4.586e+07	3.804e+07	1.21	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	26:31	5.728e+07				

Columbia Analytical Services, Inc.
10655 Richmond Ave., Suite 130A
Houston, TX 77042
Office(713)266-1599. Fax(713)266-0130

Columbia Analytical Services, Inc.
Signal/Noise Height Ratio Summary

CLIENT ID.
ICAL HRCC4

Run #4 Filename C12900 #5 Samp: 5 Inj: 1 Acquired: 12-JUL-04 14:33:58

Processed: 12-JUL-04 16:22:02 LAB. ID: ICAL HRCC4

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	5.67e+06	2.61e+03	2.2e+03	7.21e+06	3.89e+03	1.9e+03
2	1,2,3,7,8-PeCDF	2.14e+07	1.90e+03	1.1e+04	1.38e+07	3.89e+03	3.6e+03
3	2,3,4,7,8-PeCDF	2.30e+07	1.90e+03	1.2e+04	1.47e+07	3.89e+03	3.8e+03
4	1,2,3,4,7,8-HxCDF	2.24e+07	3.77e+03	5.9e+03	1.80e+07	2.07e+03	8.7e+03
5	1,2,3,6,7,8-HxCDF	2.18e+07	3.77e+03	5.8e+03	1.74e+07	2.07e+03	8.4e+03
6	2,3,4,6,7,8-HxCDF	2.01e+07	3.77e+03	5.3e+03	1.60e+07	2.07e+03	7.7e+03
7	1,2,3,7,8,9-HxCDF	1.58e+07	3.77e+03	4.2e+03	1.26e+07	2.07e+03	6.1e+03
8	1,2,3,4,6,7,8-HpCDF	1.58e+07	9.25e+03	1.7e+03	1.53e+07	8.43e+03	1.8e+03
9	1,2,3,4,7,8,9-HpCDF	9.89e+06	9.25e+03	1.1e+03	9.54e+06	8.43e+03	1.1e+03
10	OCDF	1.28e+07	1.61e+03	7.9e+03	1.41e+07	3.66e+03	3.9e+03
11	2,3,7,8-TCDD	4.83e+06	2.97e+03	1.6e+03	6.19e+06	2.27e+03	2.7e+03
12	1,2,3,7,8-PeCDD	1.55e+07	3.48e+03	4.5e+03	9.95e+06	2.22e+03	4.5e+03
13	1,2,3,4,7,8-HxCDD	1.39e+07	2.94e+03	4.7e+03	1.11e+07	3.50e+03	3.2e+03
14	1,2,3,6,7,8-HxCDD	1.41e+07	2.94e+03	4.8e+03	1.15e+07	3.50e+03	3.3e+03
15	1,2,3,7,8,9-HxCDD	1.33e+07	2.94e+03	4.5e+03	1.07e+07	3.50e+03	3.1e+03
16	1,2,3,4,6,7,8-HpCDD	8.16e+06	3.85e+03	2.1e+03	8.02e+06	2.36e+03	3.4e+03
17	OCDD	9.81e+06	2.03e+03	4.8e+03	1.14e+07	1.80e+03	6.3e+03
18	13C-2,3,7,8-TCDF	6.52e+06	4.88e+03	1.3e+03	8.34e+06	5.53e+03	1.5e+03
19	13C-1,2,3,7,8-PeCDF	9.56e+06	2.61e+03	3.7e+03	6.20e+06	3.05e+03	2.0e+03
20	13C-1,2,3,4,7,8-HxCDF	1.09e+07	5.45e+03	2.0e+03	2.20e+07	3.76e+03	5.9e+03
21	13C-1,2,3,4,6,7,8-HpCDF	6.81e+06	3.07e+03	2.2e+03	1.57e+07	8.99e+03	1.7e+03
22	13C-2,3,7,8-TCDD	5.27e+06	9.26e+03	5.7e+02	6.76e+06	3.90e+03	1.7e+03
23	13C-1,2,3,7,8-PeCDD	6.67e+06	3.83e+03	1.7e+03	4.15e+06	2.48e+03	1.7e+03
24	13C-1,2,3,6,7,8-HxCDD	1.30e+07	3.22e+03	4.0e+03	1.08e+07	3.87e+03	2.8e+03
25	13C-1,2,3,4,6,7,8-HpCDD	8.87e+06	3.04e+03	2.9e+03	8.38e+06	2.20e+03	3.8e+03
26	13C-OCDD	9.97e+06	2.42e+03	4.1e+03	1.13e+07	2.38e+03	4.8e+03
27	13C-1,2,3,4-TCDD	5.09e+06	9.26e+03	5.5e+02	6.35e+06	3.90e+03	1.6e+03
28	13C-1,2,3,7,8,9-HxCDD	1.26e+07	3.22e+03	3.9e+03	1.03e+07	3.87e+03	2.7e+03
29	37Cl-2,3,7,8-TCDD	1.09e+07	3.58e+03	3.0e+03			

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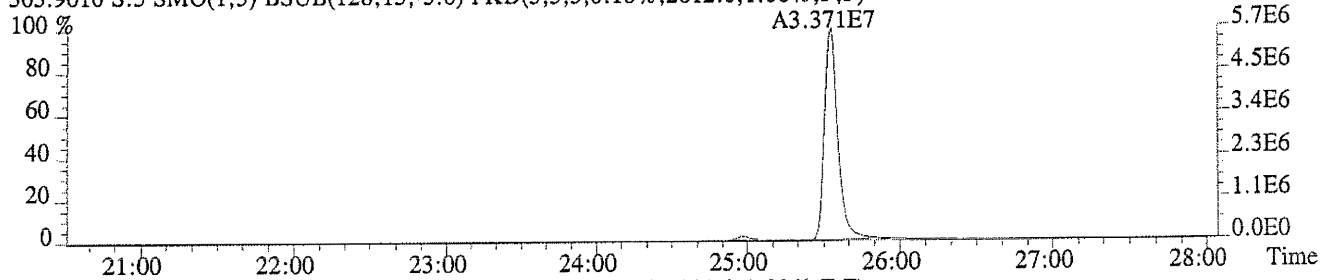
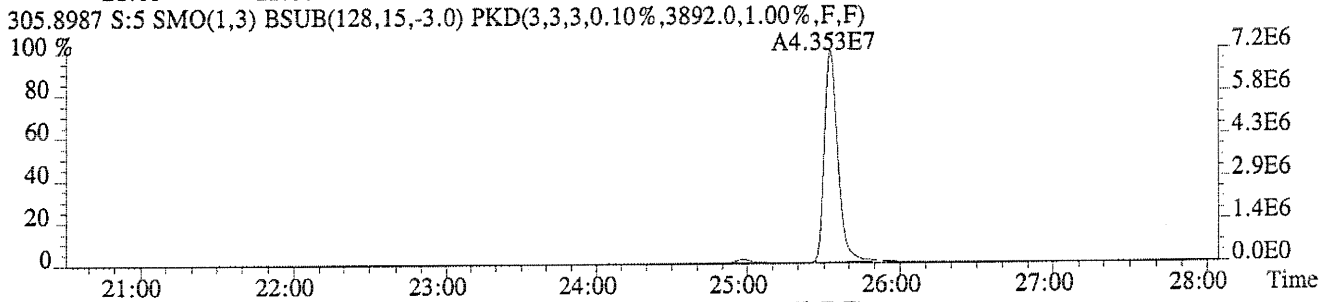
File:C12900 #1-620 Acq:12-JUL-2004 14:33:58 GC EI+ Voltage SIR 70S
Sample#5 File Text:CAS HOUSTN Text:ICAL HRCC4 Exp:8290CA

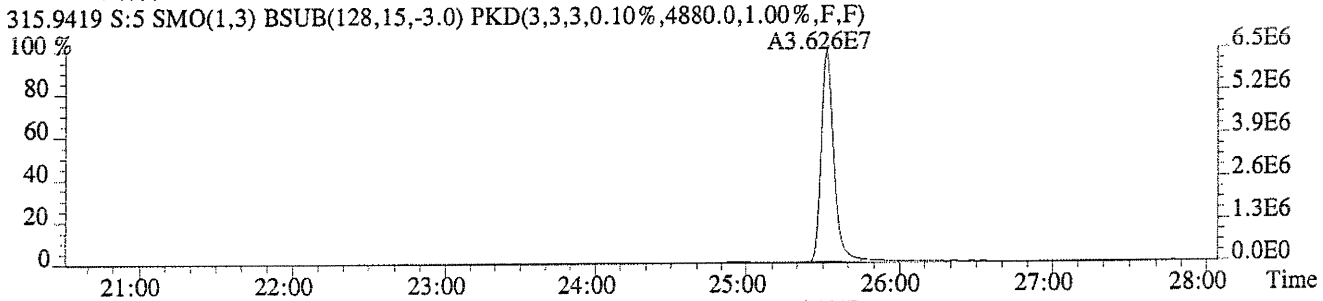
303.9016 S:5 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2612.0,1.00%,F,F)



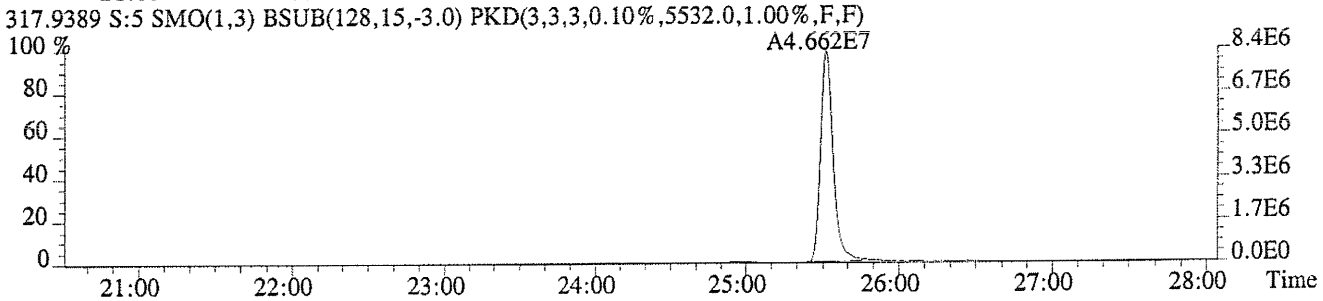
305.8987 S:5 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3892.0,1.00%,F,F)



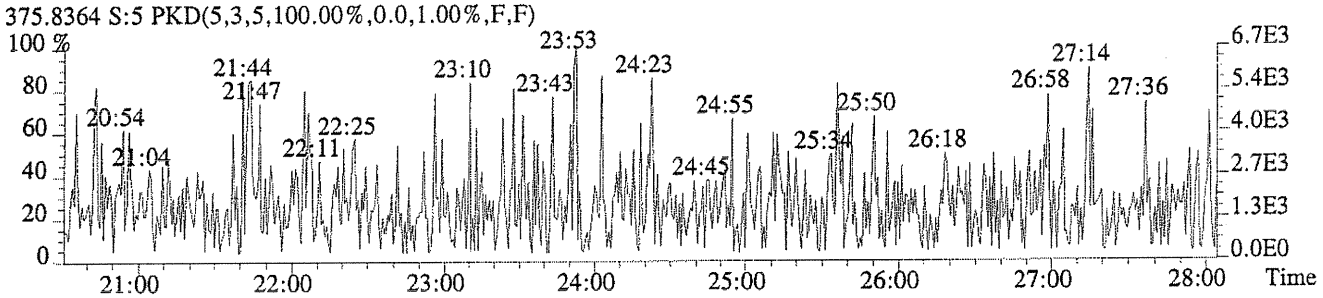
315.9419 S:5 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4880.0,1.00%,F,F)



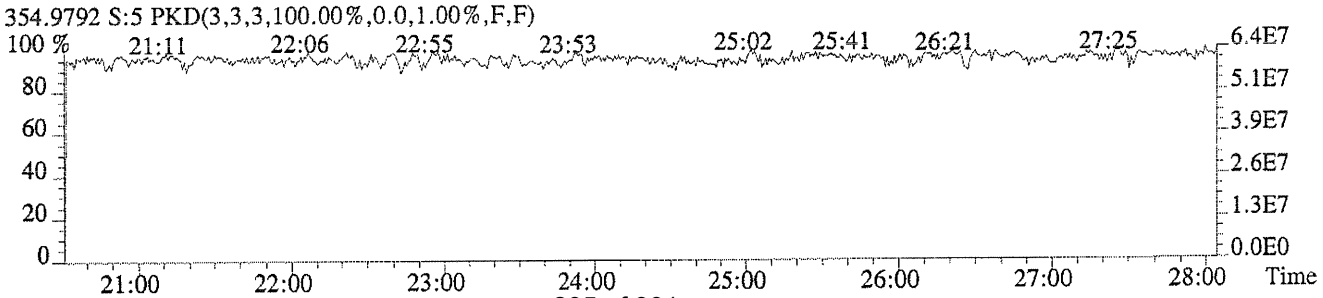
317.9389 S:5 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5532.0,1.00%,F,F)



375.8364 S:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

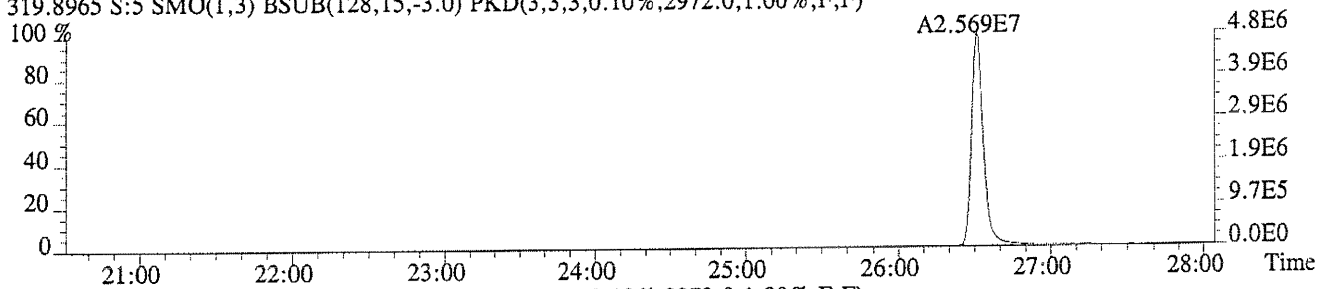


354.9792 S:5 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

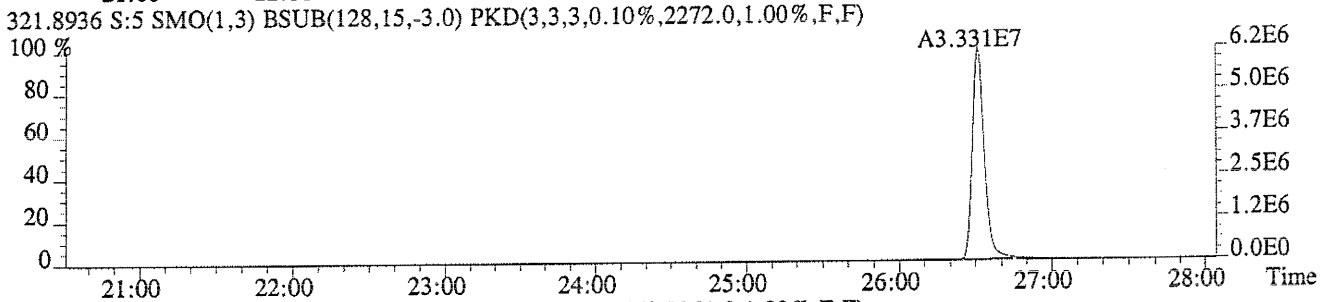


File:C12900 #1-620 Acq:12-JUL-2004 14:33:58 GC EI+ Voltage SIR 70S
Sample#5 File Text:CAS HOUSTN Text:ICAL HRCC4 Exp:8290CA

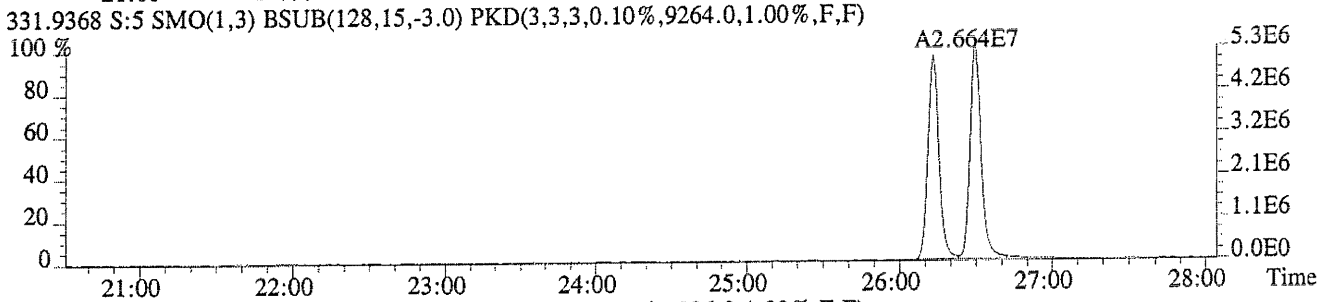
319.8965 S:5 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2972.0,1.00%,F,F)



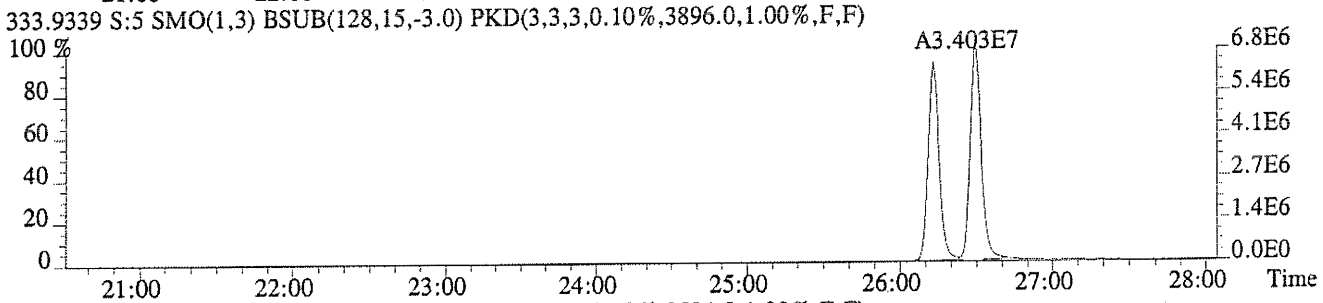
321.8936 S:5 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2272.0,1.00%,F,F)



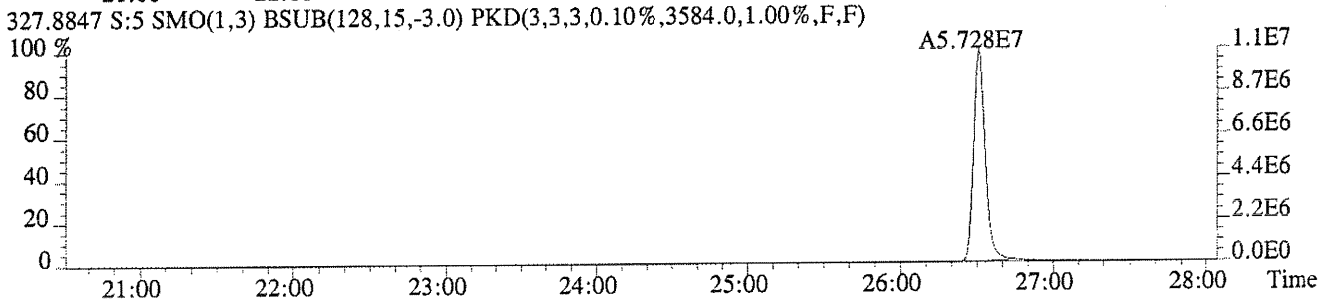
331.9368 S:5 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,9264.0,1.00%,F,F)



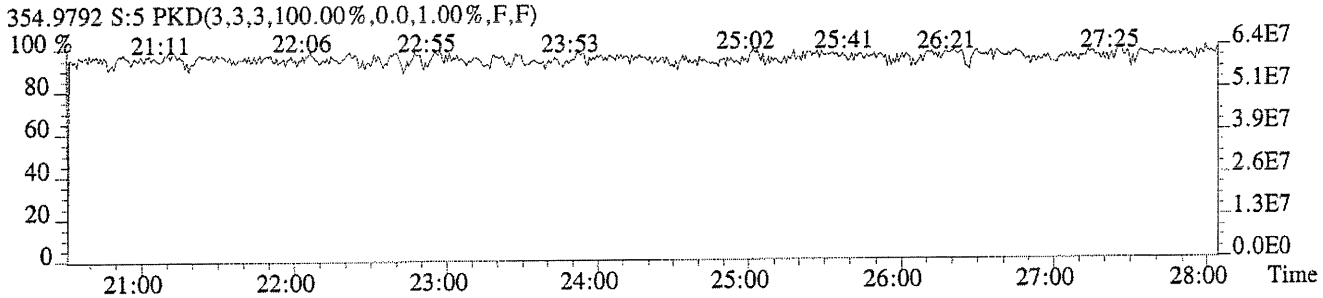
333.9339 S:5 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3896.0,1.00%,F,F)

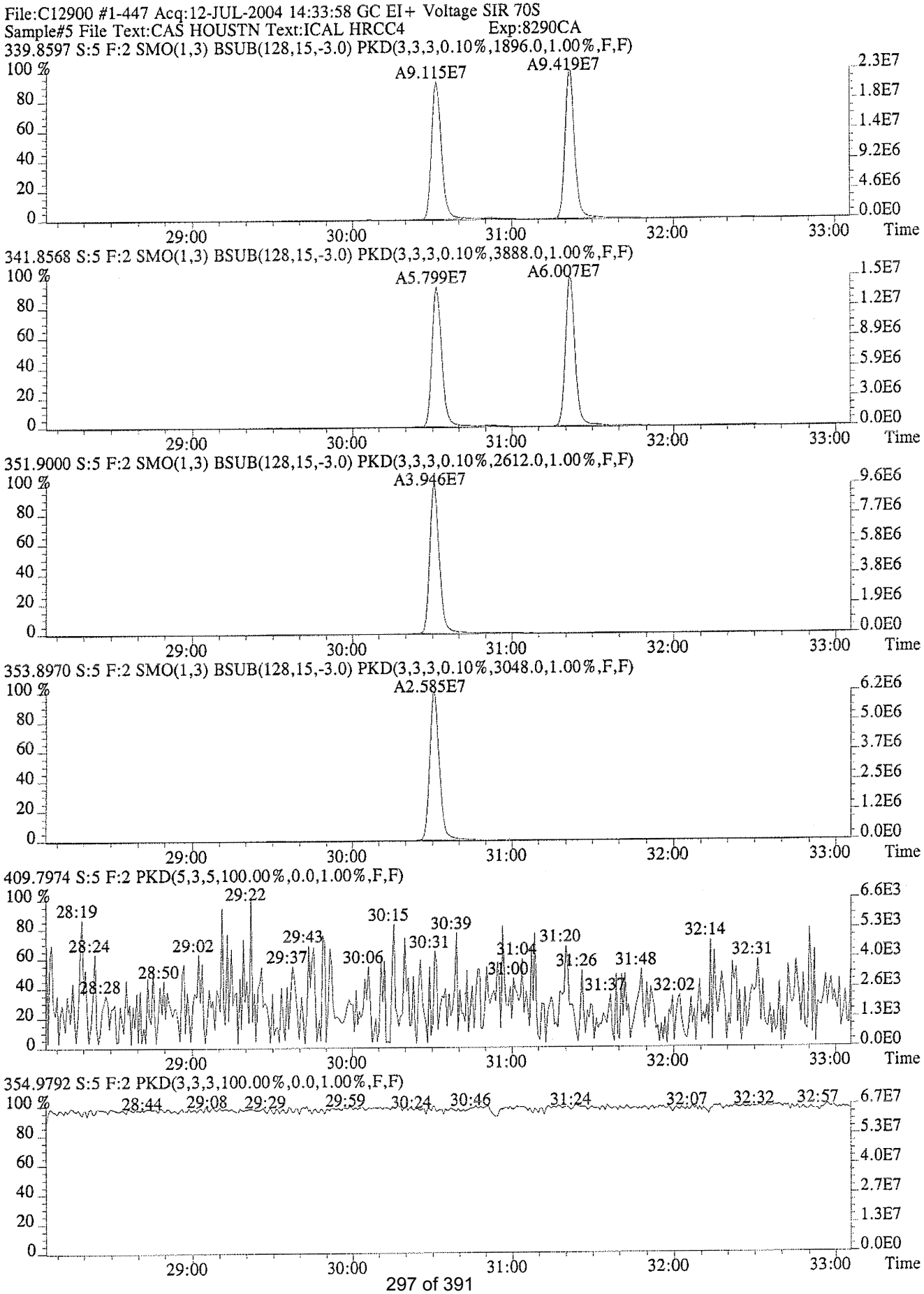


327.8847 S:5 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3584.0,1.00%,F,F)

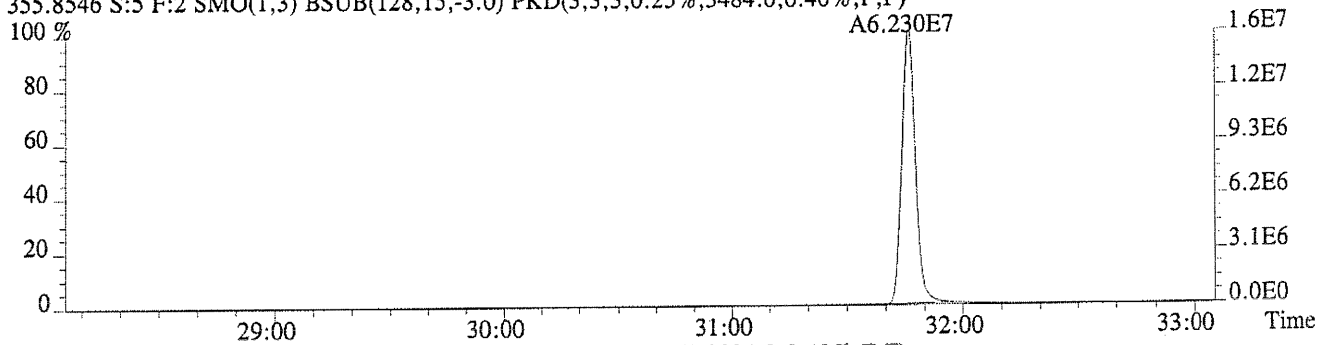


354.9792 S:5 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

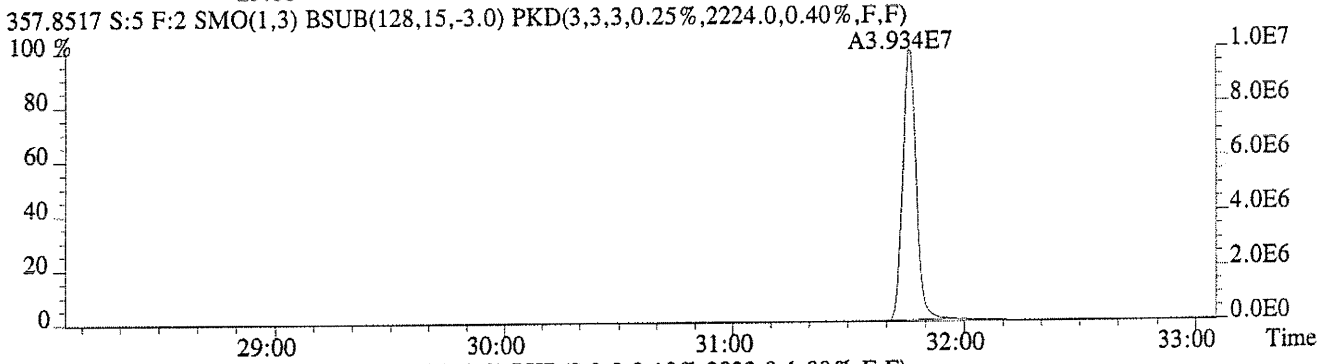



File:C12900 #1-447 Acq:12-JUL-2004 14:33:58 GC EI+ Voltage SIR 70S
Sample#5 File Text:CAS HOUSTN Text:ICAL HRCC4 Exp:8290CA
339.8597 S:5 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1896.0,1.00%,F,F)
A9.115E7
A9.419E7
341.8568 S:5 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3888.0,1.00%,F,F)
A5.799E7
A6.007E7
351.9000 S:5 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2612.0,1.00%,F,F)
A3.946E7
353.8970 S:5 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3048.0,1.00%,F,F)
A2.585E7
409.7974 S:5 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)
354.9792 S:5 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)
Time

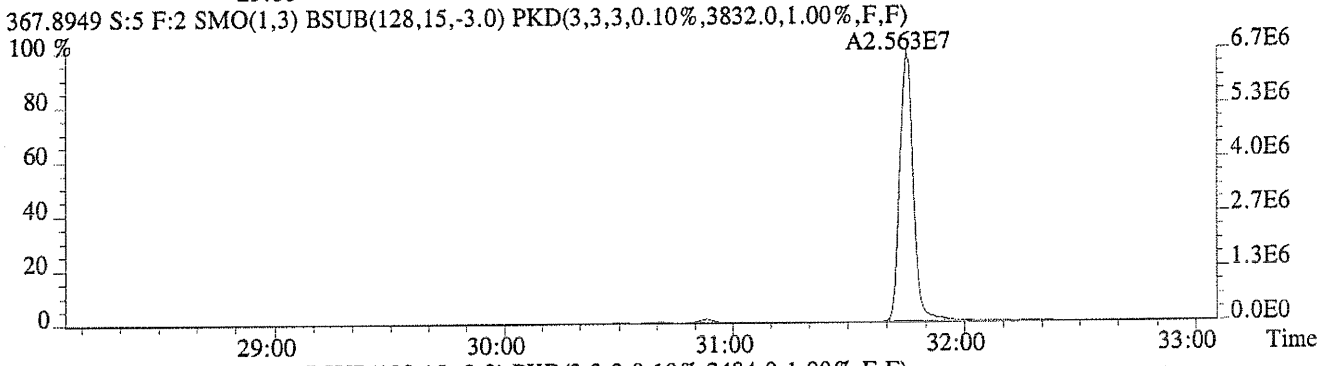
File:C12900 #1-447 Acq:12-JUL-2004 14:33:58 GC EI+ Voltage SIR 70S
Sample#5 File Text:CAS HOUSTN Text:ICAL HRCC4 Exp:8290CA
355.8546 S:5 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3484.0,0.40%,F,F)



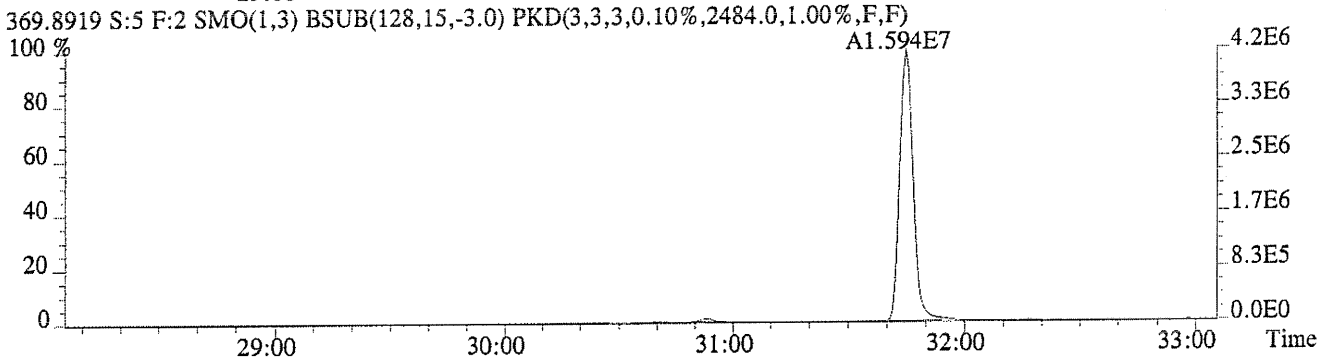
357.8517 S:5 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2224.0,0.40%,F,F)



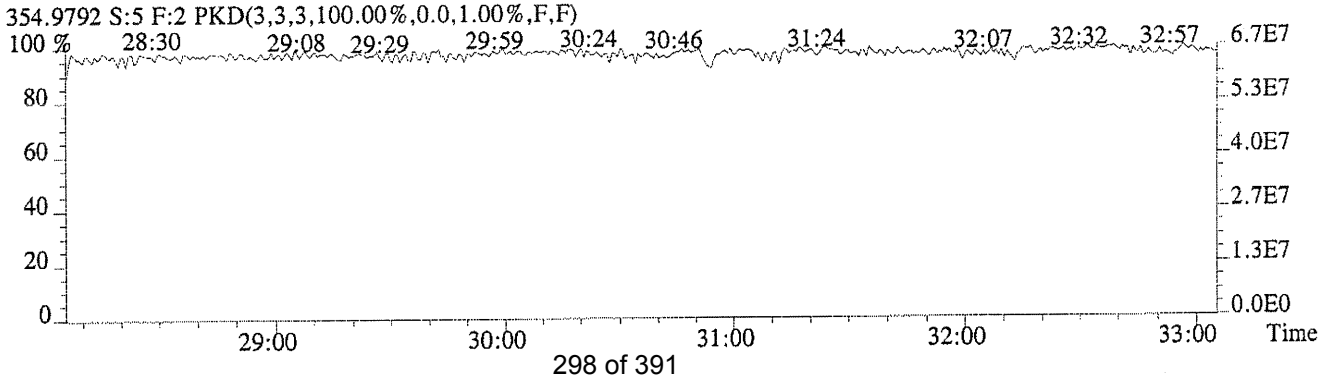
367.8949 S:5 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3832.0,1.00%,F,F)



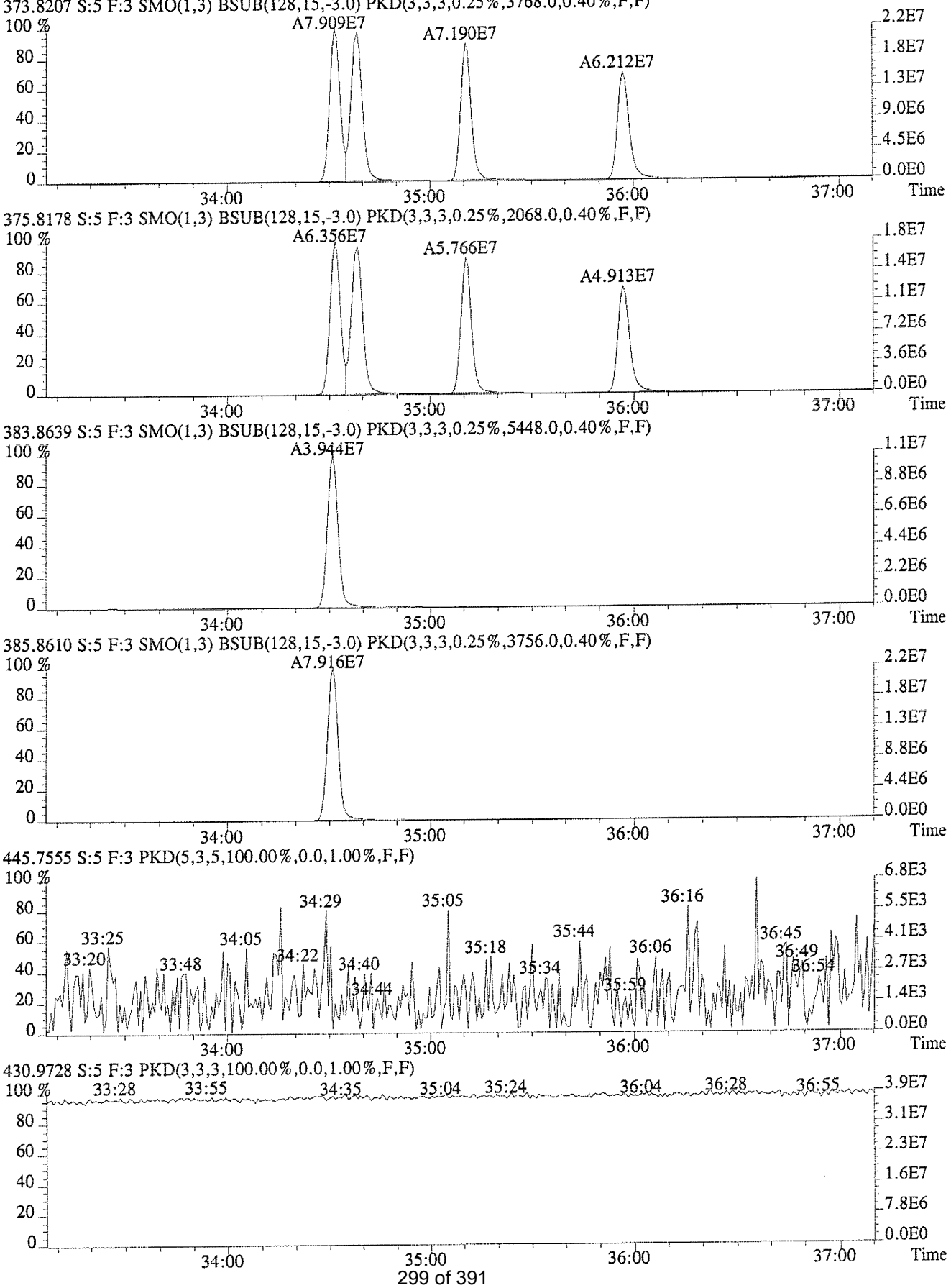
369.8919 S:5 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2484.0,1.00%,F,F)



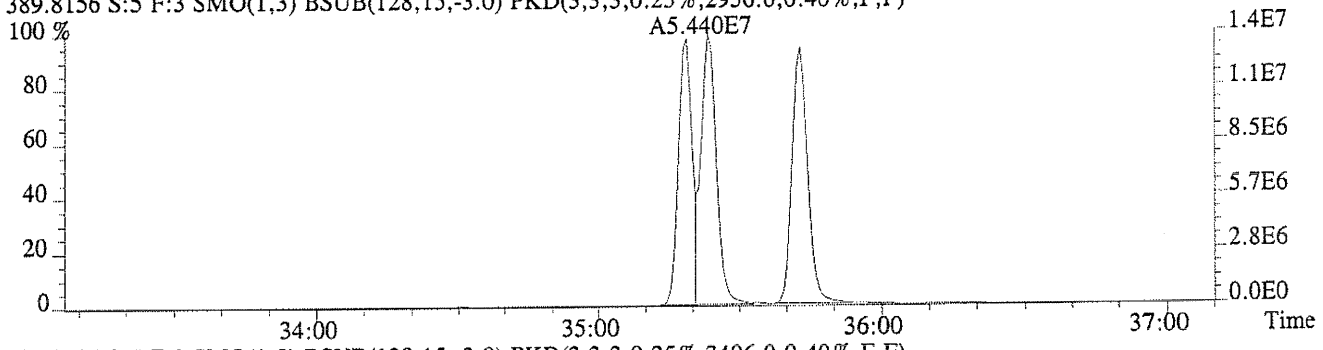
354.9792 S:5 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



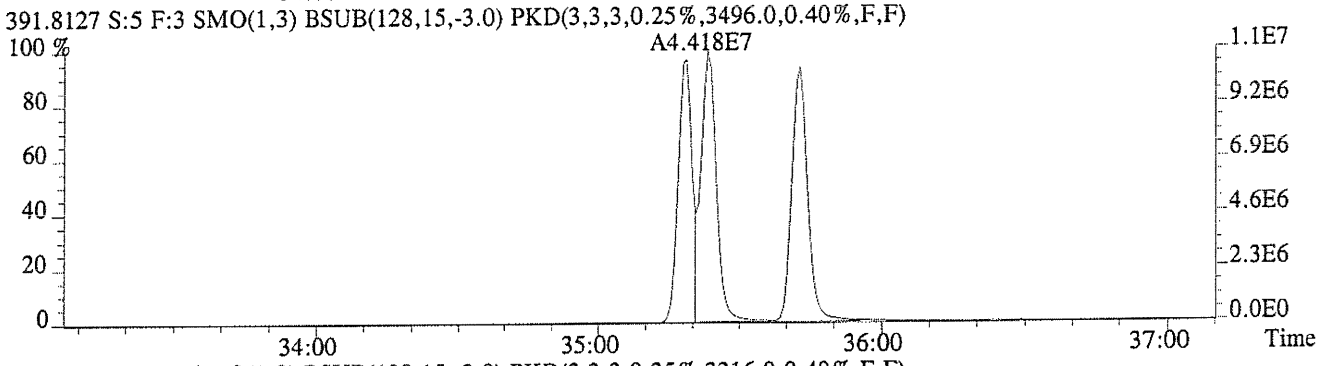
File:C12900 #1-363 Acq:12-JUL-2004 14:33:58 GC EI+ Voltage SIR 70S
Sample#5 File Text:CAS HOUSTN Text:ICAL HRCC4 Exp:8290CA



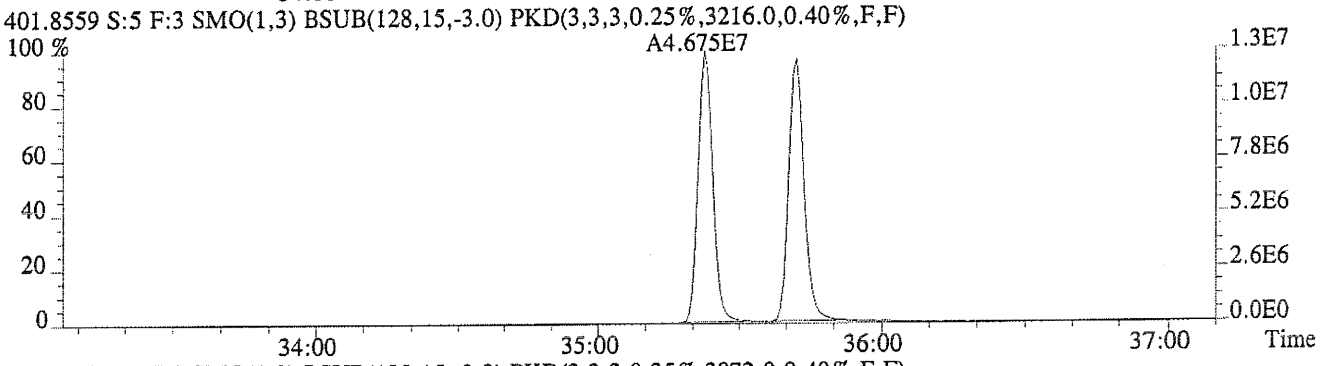
File:C12900 #1-363 Acq:12-JUL-2004 14:33:58 GC EI+ Voltage SIR 70S
Sample#5 File Text:CAS HOUSTN Text:ICAL HRCC4 Exp:8290CA
389.8156 S:5 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2936.0,0.40%,F,F)



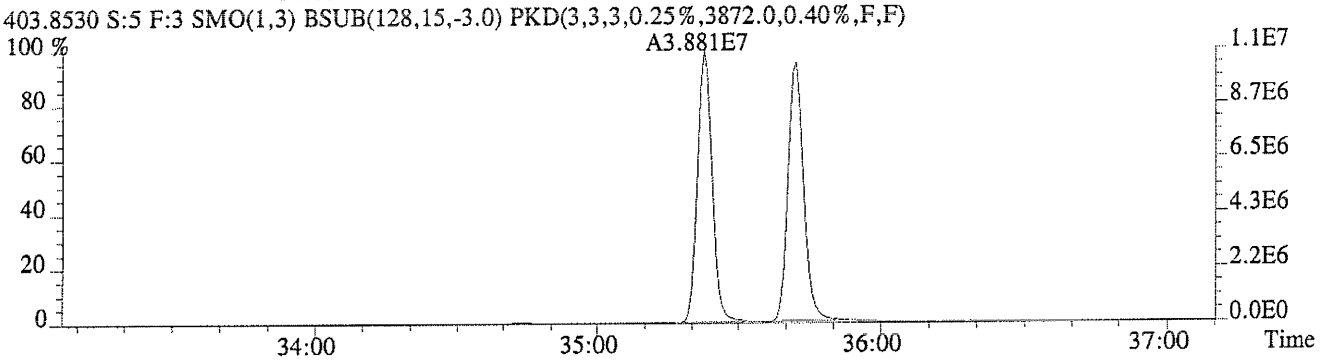
391.8127 S:5 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3496.0,0.40%,F,F)



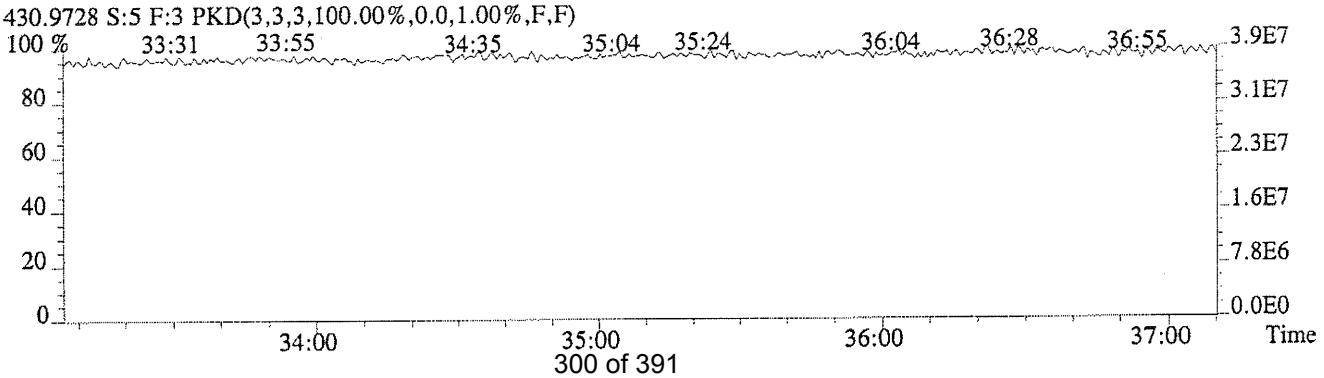
401.8559 S:5 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3216.0,0.40%,F,F)



403.8530 S:5 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3872.0,0.40%,F,F)

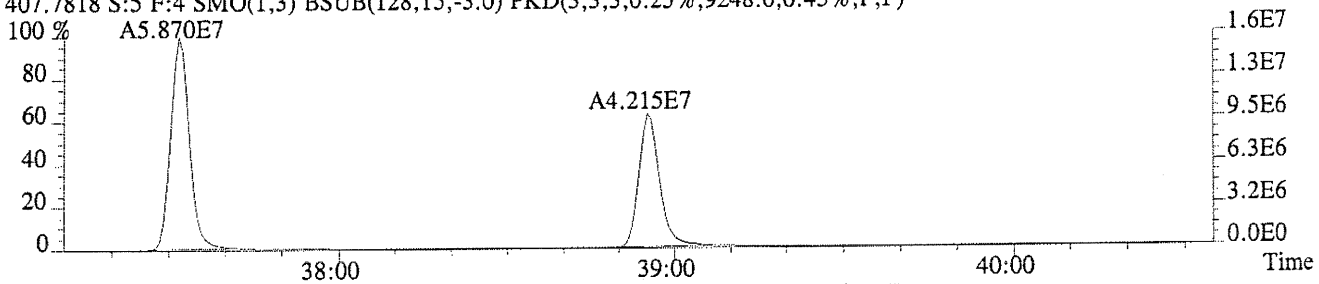


430.9728 S:5 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

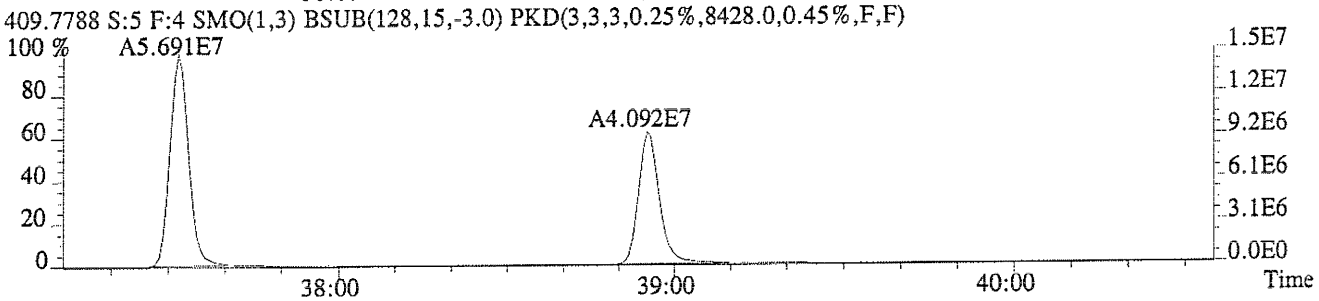


File:C12900 #1-304 Acq:12-JUL-2004 14:33:58 GC EI+ Voltage SIR 70S
Sample#5 File Text:CAS HOUSTN Text:ICAL HRCC4 Exp:8290CA

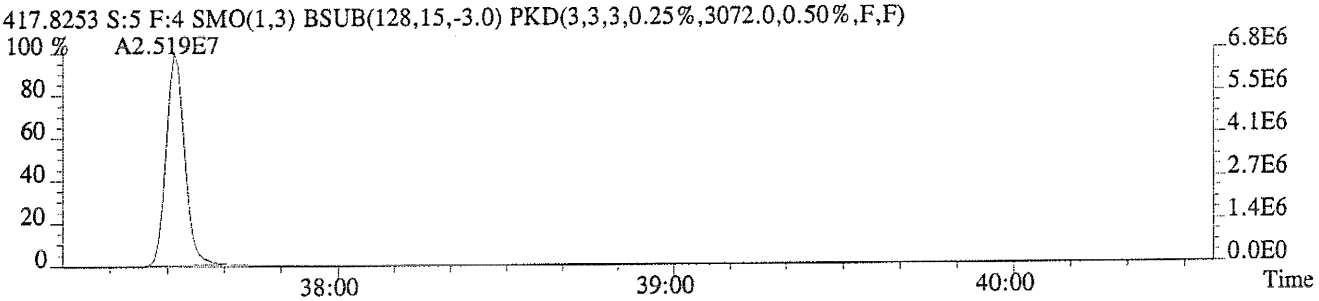
407.7818 S:5 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,9248.0,0.45%,F,F)



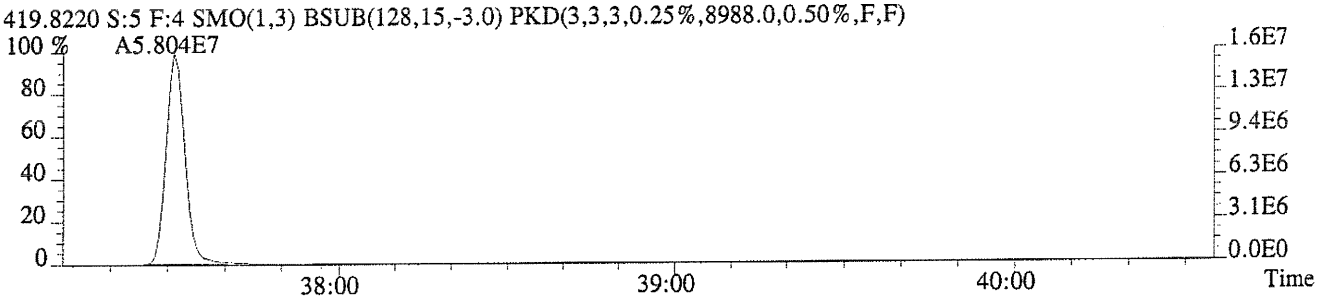
409.7788 S:5 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,8428.0,0.45%,F,F)



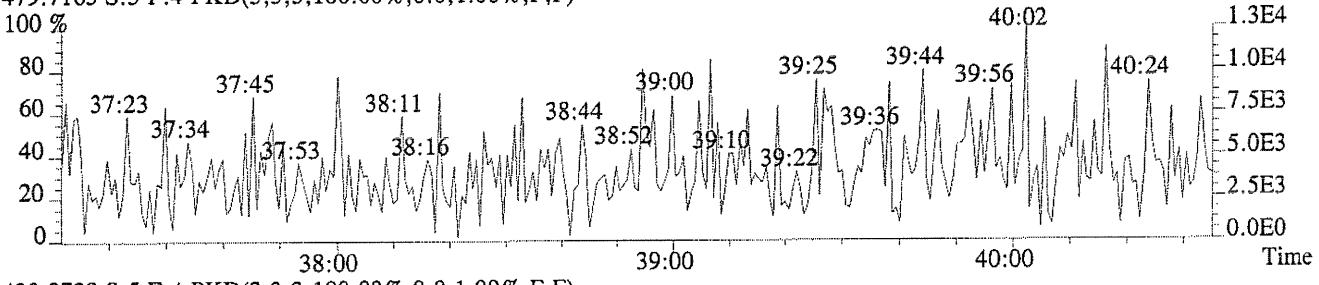
417.8253 S:5 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3072.0,0.50%,F,F)



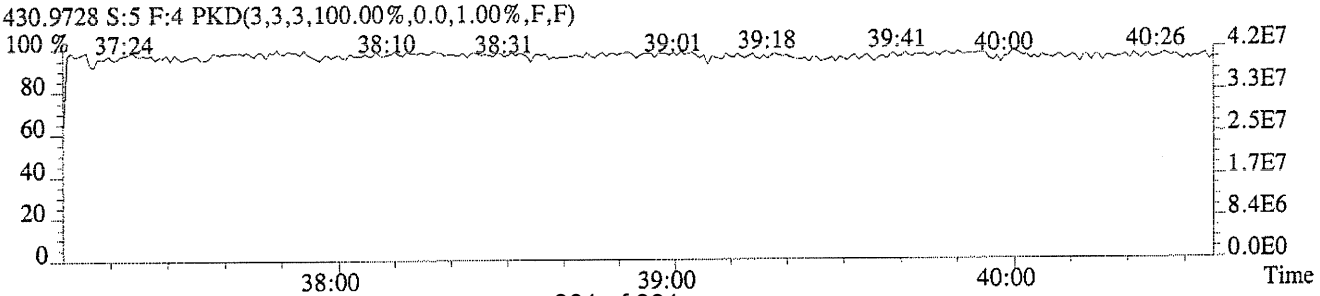
419.8220 S:5 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,8988.0,0.50%,F,F)



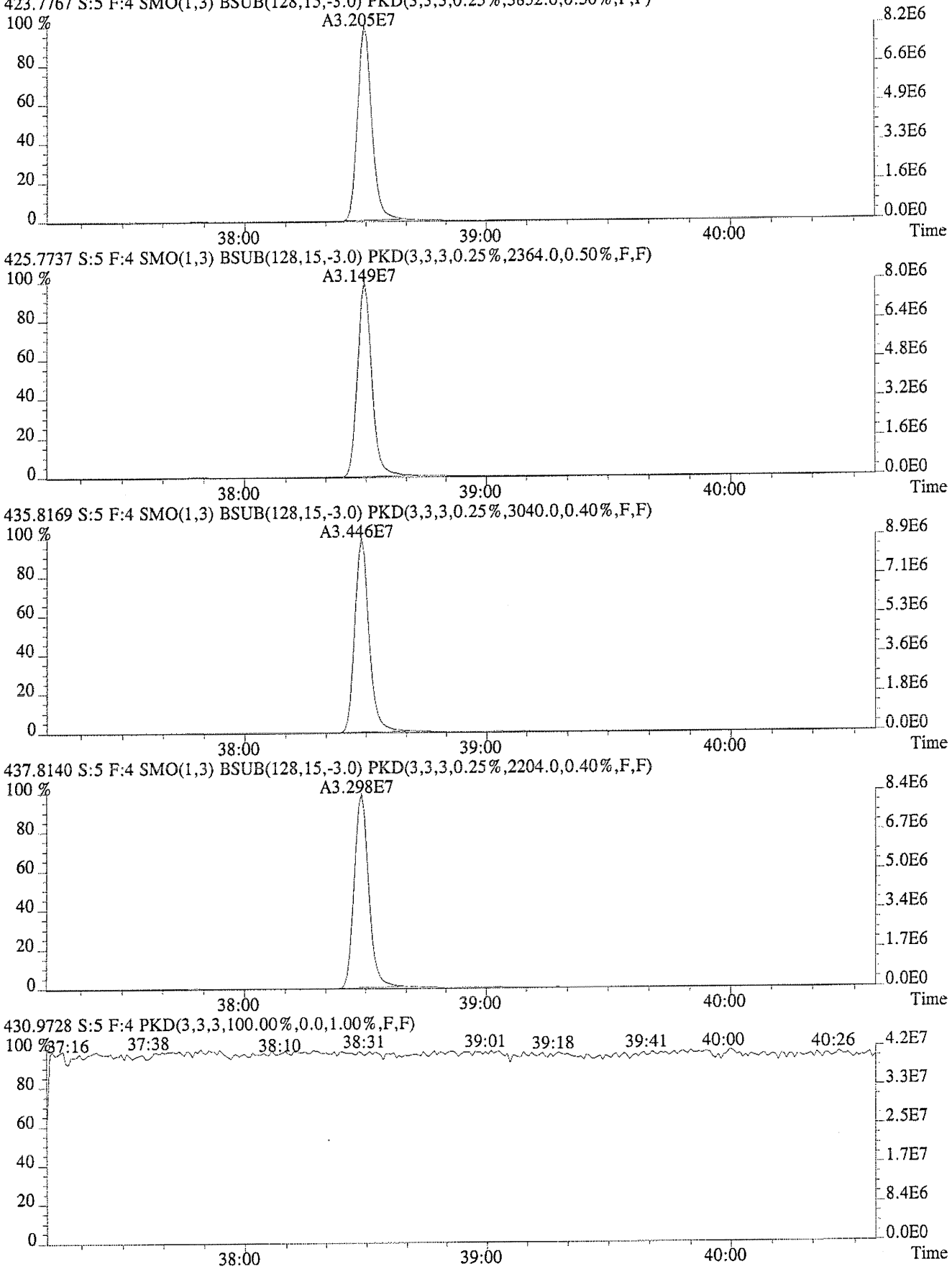
479.7165 S:5 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



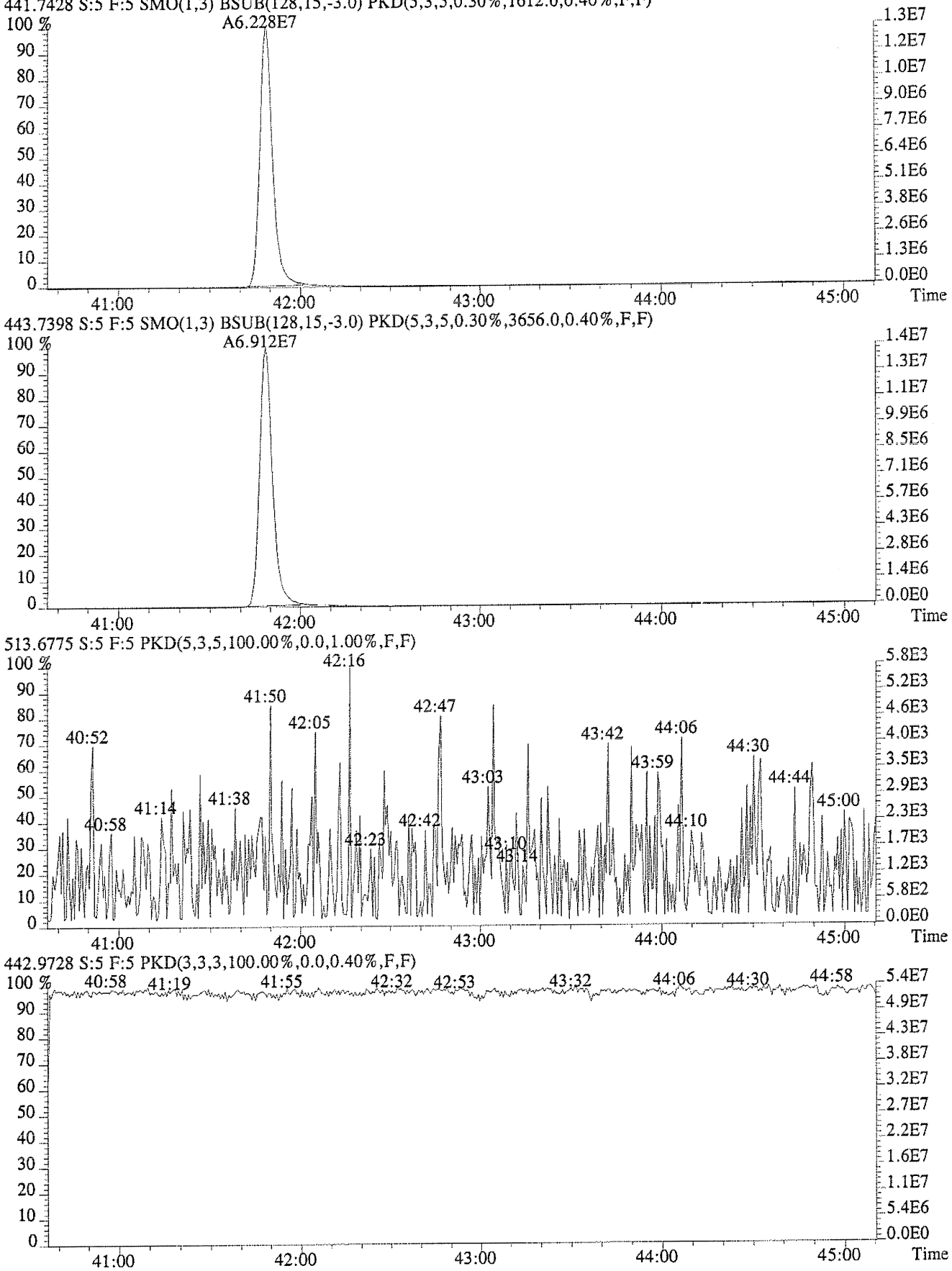
430.9728 S:5 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



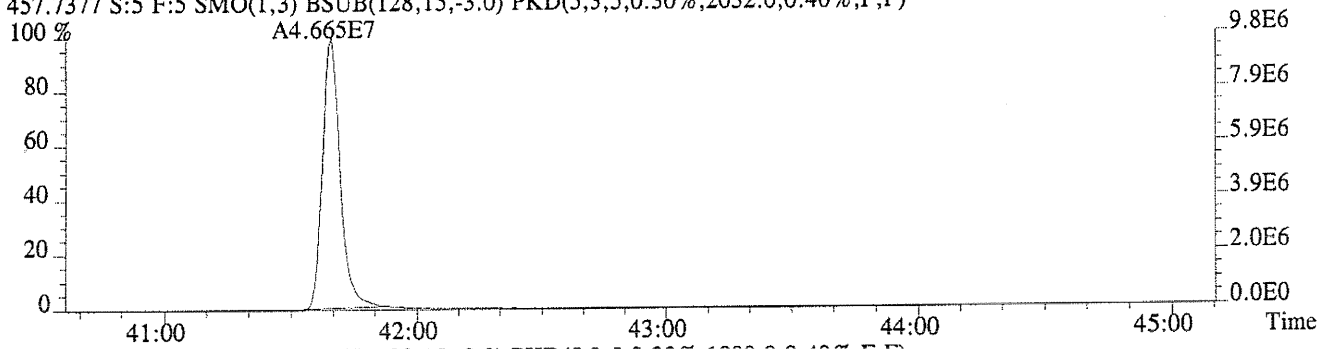
File:C12900 #1-304 Acq:12-JUL-2004 14:33:58 GC EI+ Voltage SIR 70S
Sample#5 File Text:CAS HOUSTN Text:ICAL HRCC4 Exp:8290CA



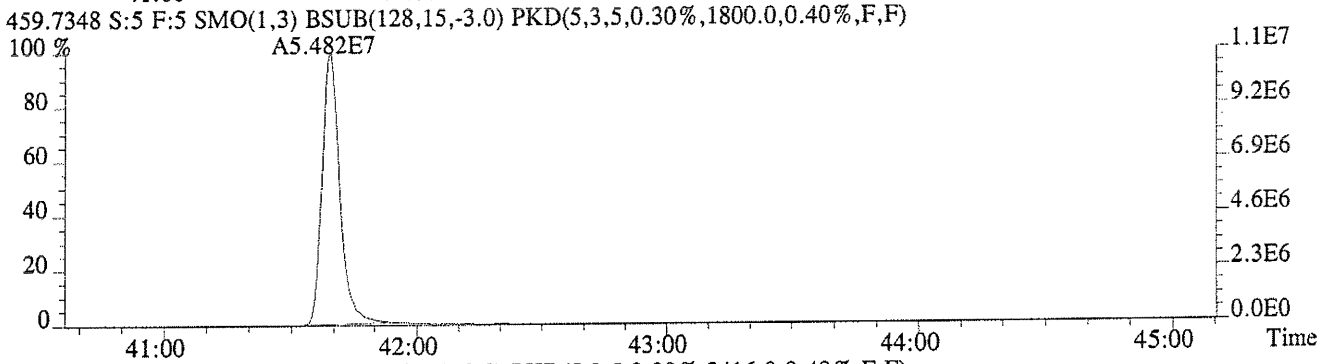
File:C12900 #1-498 Acq:12-JUL-2004 14:33:58 GC EI+ Voltage SIR 70S
Sample#5 File Text:CAS HOUSTN Text:ICAL HRCC4 Exp:8290CA



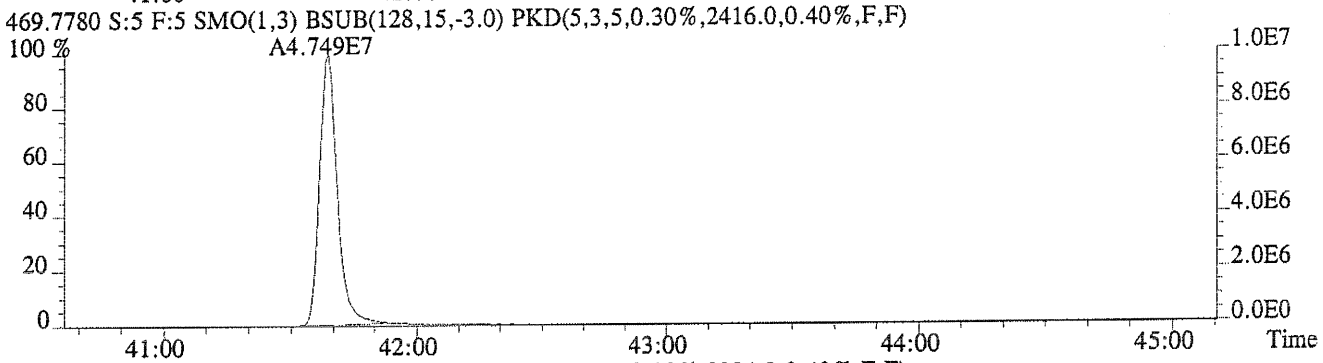
File:C12900 #1-498 Acq:12-JUL-2004 14:33:58 GC EI+ Voltage SIR 70S
Sample#5 File Text:CAS HOUSTN Text:ICAL HRCC4 Exp:8290CA
457.7377 S:5 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2032.0,0.40%,F,F)



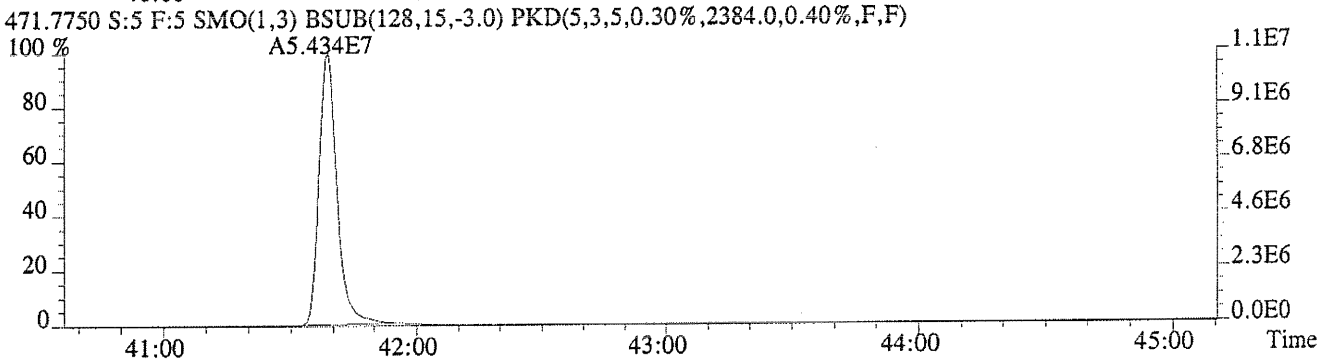
459.7348 S:5 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1800.0,0.40%,F,F)



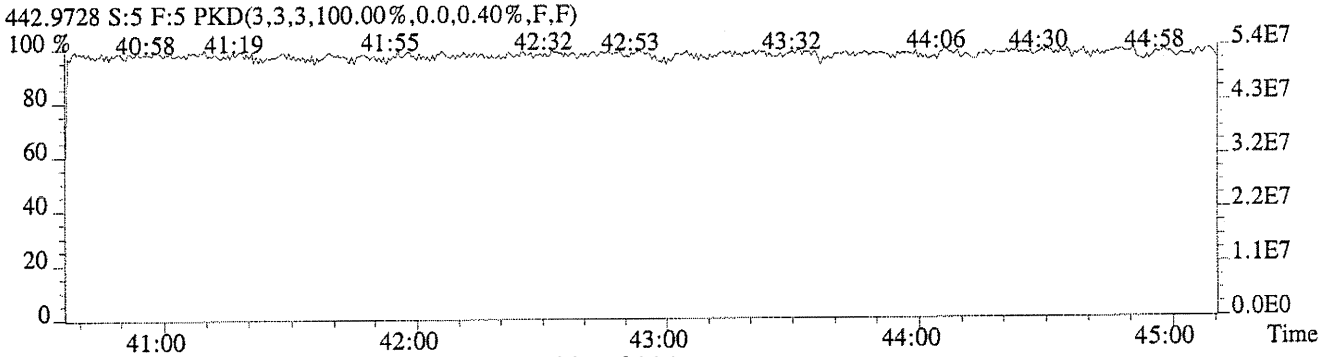
469.7780 S:5 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2416.0,0.40%,F,F)



471.7750 S:5 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2384.0,0.40%,F,F)



442.9728 S:5 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



Columbia Analytical Services, Inc.
Sample Response Summary

CLIENT ID.
ICAL HRCC5

Run #5 Filename C12900#6 Samp: 6 Inj: 1 Acquired: 12-JUL-04 15:25:14
Processed: 12-JUL-04 16:22:05 Sample ID: ICAL HRCC5

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	25:32	1.585e+08	2.033e+08	0.78	yes	no
2	Unk	1,2,3,7,8-PeCDF	30:31	4.421e+08	2.805e+08	1.58	yes	no
3	Unk	2,3,4,7,8-PeCDF	31:22	4.751e+08	3.047e+08	1.56	yes	no
4	Unk	1,2,3,4,7,8-HxCDF	34:32	4.187e+08	3.367e+08	1.24	yes	no
5	Unk	1,2,3,6,7,8-HxCDF	34:38	4.234e+08	3.381e+08	1.25	yes	no
6	Unk	2,3,4,6,7,8-HxCDF	35:11	3.895e+08	3.134e+08	1.24	yes	no
7	Unk	1,2,3,7,8,9-HxCDF	35:57	3.500e+08	2.814e+08	1.24	yes	no
8	Unk	1,2,3,4,6,7,8-HpCDF	37:32	3.347e+08	3.264e+08	1.03	yes	no
9	Unk	1,2,3,4,7,8,9-HpCDF	38:55	2.645e+08	2.519e+08	1.05	yes	no
10	Unk	OCDF	41:49	4.477e+08	4.952e+08	0.90	yes	no
11	Unk	2,3,7,8-TCDD	26:31	1.204e+08	1.550e+08	0.78	yes	no
12	Unk	1,2,3,7,8-PeCDD	31:46	3.152e+08	2.000e+08	1.58	yes	no
13	Unk	1,2,3,4,7,8-HxCDD	35:18	2.611e+08	2.118e+08	1.23	yes	no
14	Unk	1,2,3,6,7,8-HxCDD	35:24	2.893e+08	2.320e+08	1.25	yes	no
15	Unk	1,2,3,7,8,9-HxCDD	35:42	2.715e+08	2.192e+08	1.24	yes	no
16	Unk	1,2,3,4,6,7,8-HpCDD	38:30	1.971e+08	1.910e+08	1.03	yes	no
17	Unk	OCDD	41:40	3.259e+08	3.787e+08	0.86	yes	no
18	IS	13C-2,3,7,8-TCDF	25:31	4.247e+07	5.359e+07	0.79	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	30:31	4.776e+07	3.130e+07	1.53	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	34:31	5.075e+07	1.023e+08	0.50	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	37:31	3.539e+07	8.061e+07	0.44	yes	no
22	IS	13C-2,3,7,8-TCDD	26:29	3.127e+07	3.939e+07	0.79	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	31:45	3.143e+07	1.996e+07	1.57	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	35:23	6.460e+07	5.221e+07	1.24	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	38:29	4.963e+07	4.872e+07	1.02	yes	no
26	IS	13C-OCDD	41:39	8.081e+07	9.207e+07	0.88	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	26:13	2.800e+07	3.524e+07	0.79	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	35:42	6.380e+07	5.227e+07	1.22	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	26:31	2.675e+08				

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Columbia Analytical Services,Inc. CLIENT ID.
Signal/Noise Height Ratio Summary ICAL HRCC5

Run #5 Filename C12900 #6 Samp: 6 Inj: 1 Acquired: 12-JUL-04 15:25:14

Processed: 12-JUL-04 16:22:05 LAB. ID: ICAL HRCC5

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	2.85e+07	2.24e+03	1.3e+04	3.63e+07	4.16e+03	8.7e+03
2	1,2,3,7,8-PeCDF	1.08e+08	1.90e+03	5.7e+04	6.80e+07	4.12e+03	1.7e+04
3	2,3,4,7,8-PeCDF	1.23e+08	1.90e+03	6.5e+04	7.83e+07	4.12e+03	1.9e+04
4	1,2,3,4,7,8-HxCDF	1.19e+08	5.12e+03	2.3e+04	9.44e+07	3.19e+03	3.0e+04
5	1,2,3,6,7,8-HxCDF	1.16e+08	5.12e+03	2.3e+04	9.32e+07	3.19e+03	2.9e+04
6	2,3,4,6,7,8-HxCDF	1.11e+08	5.12e+03	2.2e+04	8.89e+07	3.19e+03	2.8e+04
7	1,2,3,7,8,9-HxCDF	9.15e+07	5.12e+03	1.8e+04	7.28e+07	3.19e+03	2.3e+04
8	1,2,3,4,6,7,8-HpCDF	9.16e+07	3.06e+04	3.0e+03	8.86e+07	5.31e+03	1.7e+04
9	1,2,3,4,7,8,9-HpCDF	6.37e+07	3.06e+04	2.1e+03	6.10e+07	5.31e+03	1.1e+04
10	OCDF	9.40e+07	2.38e+03	3.9e+04	1.05e+08	4.14e+03	2.5e+04
11	2,3,7,8-TCDD	2.40e+07	2.98e+03	8.0e+03	3.07e+07	2.74e+03	1.1e+04
12	1,2,3,7,8-PeCDD	8.41e+07	3.24e+03	2.6e+04	5.34e+07	2.20e+03	2.4e+04
13	1,2,3,4,7,8-HxCDD	7.77e+07	3.55e+03	2.2e+04	6.31e+07	3.39e+03	1.9e+04
14	1,2,3,6,7,8-HxCDD	8.01e+07	3.55e+03	2.3e+04	6.42e+07	3.39e+03	1.9e+04
15	1,2,3,7,8,9-HxCDD	7.47e+07	3.55e+03	2.1e+04	6.06e+07	3.39e+03	1.8e+04
16	1,2,3,4,6,7,8-HpCDD	5.06e+07	3.45e+03	1.5e+04	4.85e+07	3.44e+03	1.4e+04
17	OCDD	6.87e+07	2.72e+03	2.5e+04	7.96e+07	2.26e+03	3.5e+04
18	13C-2,3,7,8-TCDF	8.07e+06	5.94e+03	1.4e+03	1.02e+07	4.38e+03	2.3e+03
19	13C-1,2,3,7,8-PeCDF	1.21e+07	1.77e+03	6.8e+03	8.00e+06	2.59e+03	3.1e+03
20	13C-1,2,3,4,7,8-HxCDF	1.40e+07	3.42e+03	4.1e+03	2.83e+07	2.91e+03	9.7e+03
21	13C-1,2,3,4,6,7,8-HpCDF	9.78e+06	7.28e+03	1.3e+03	2.19e+07	1.17e+04	1.9e+03
22	13C-2,3,7,8-TCDD	6.56e+06	8.53e+03	7.7e+02	8.20e+06	4.92e+03	1.7e+03
23	13C-1,2,3,7,8-PeCDD	8.43e+06	3.06e+03	2.8e+03	5.28e+06	2.32e+03	2.3e+03
24	13C-1,2,3,6,7,8-HxCDD	1.86e+07	3.69e+03	5.0e+03	1.51e+07	4.18e+03	3.6e+03
25	13C-1,2,3,4,6,7,8-HpCDD	1.28e+07	3.94e+03	3.3e+03	1.23e+07	1.61e+03	7.6e+03
26	13C-OCDD	1.71e+07	2.41e+03	7.1e+03	1.93e+07	2.16e+03	8.9e+03
27	13C-1,2,3,4-TCDD	5.38e+06	8.53e+03	6.3e+02	6.87e+06	4.92e+03	1.4e+03
28	13C-1,2,3,7,8,9-HxCDD	1.75e+07	3.69e+03	4.7e+03	1.45e+07	4.18e+03	3.5e+03
29	37Cl-2,3,7,8-TCDD	5.33e+07	3.46e+03	1.5e+04			

Columbia Analytical Services, Inc.
10655 Richmond Ave., Suite 130A
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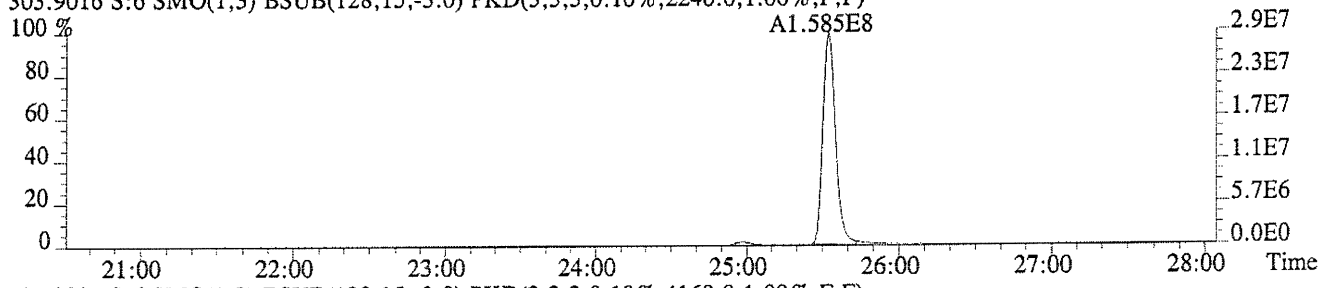
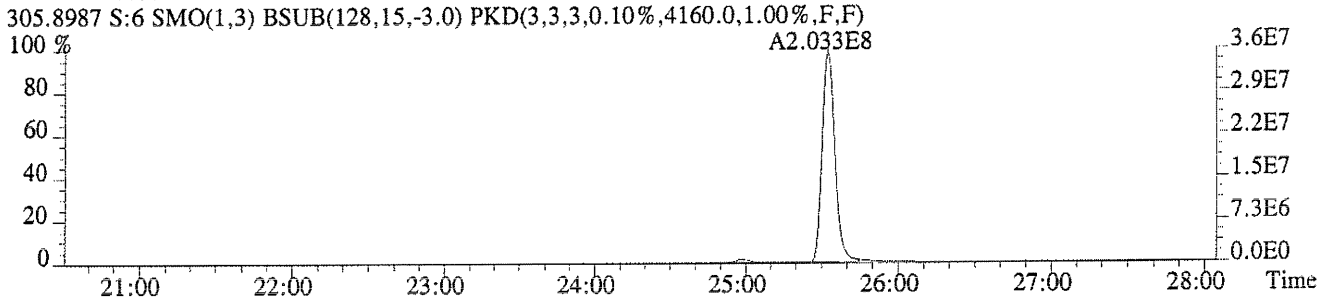
Office:(713)266-1599. Fax:(713)266-0130

File:C12900 #1-621 Acq:12-JUL-2004 15:25:14 GC EI+ Voltage SIR 70S
Sample#6 File Text:CAS HOUSTN Text:ICAL HRCC5 Exp:8290CA

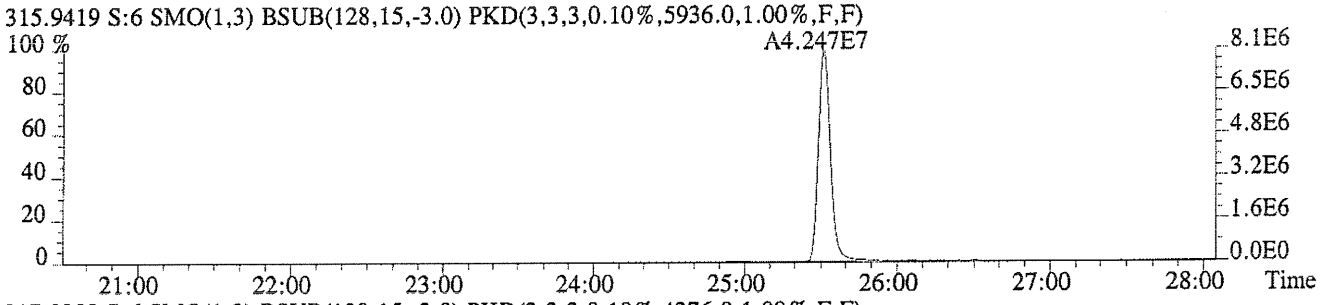
303.9016 S:6 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2240.0,1.00%,F,F)



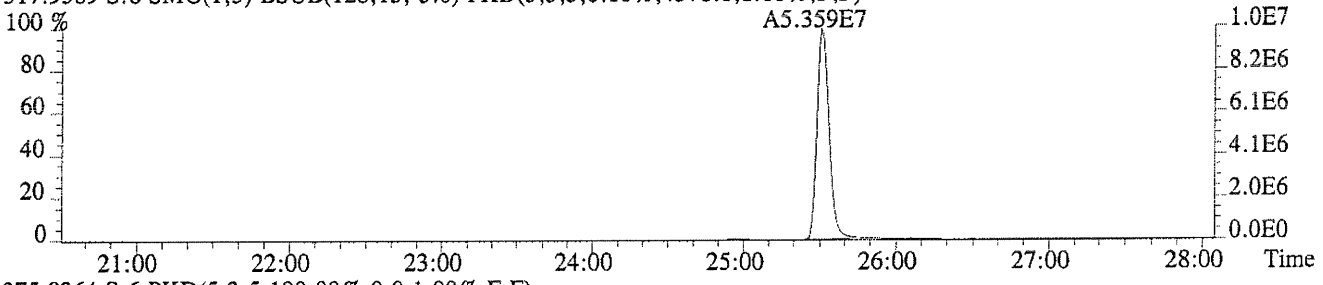
305.8987 S:6 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4160.0,1.00%,F,F)



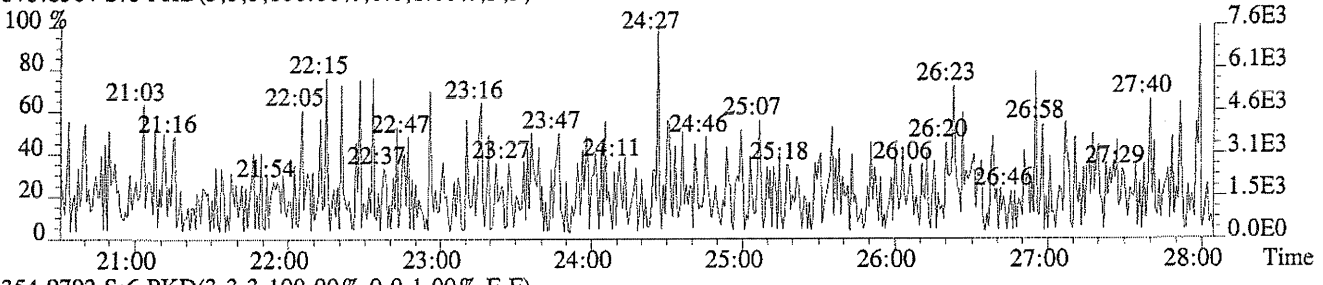
315.9419 S:6 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5936.0,1.00%,F,F)



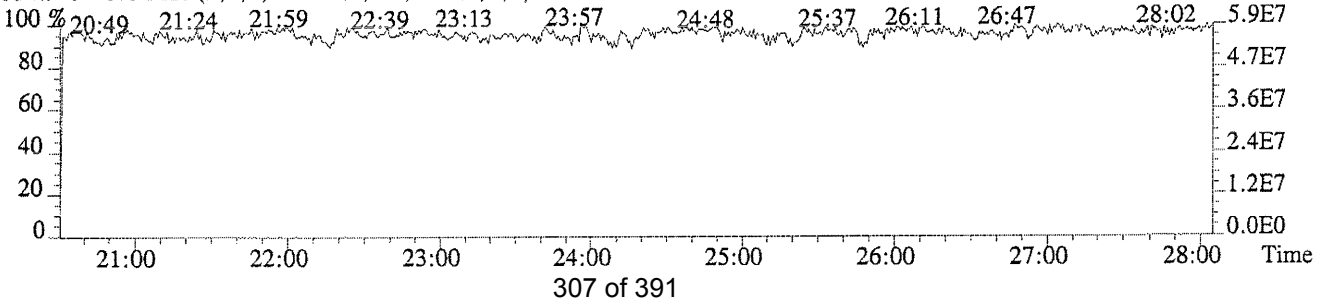
317.9389 S:6 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4376.0,1.00%,F,F)



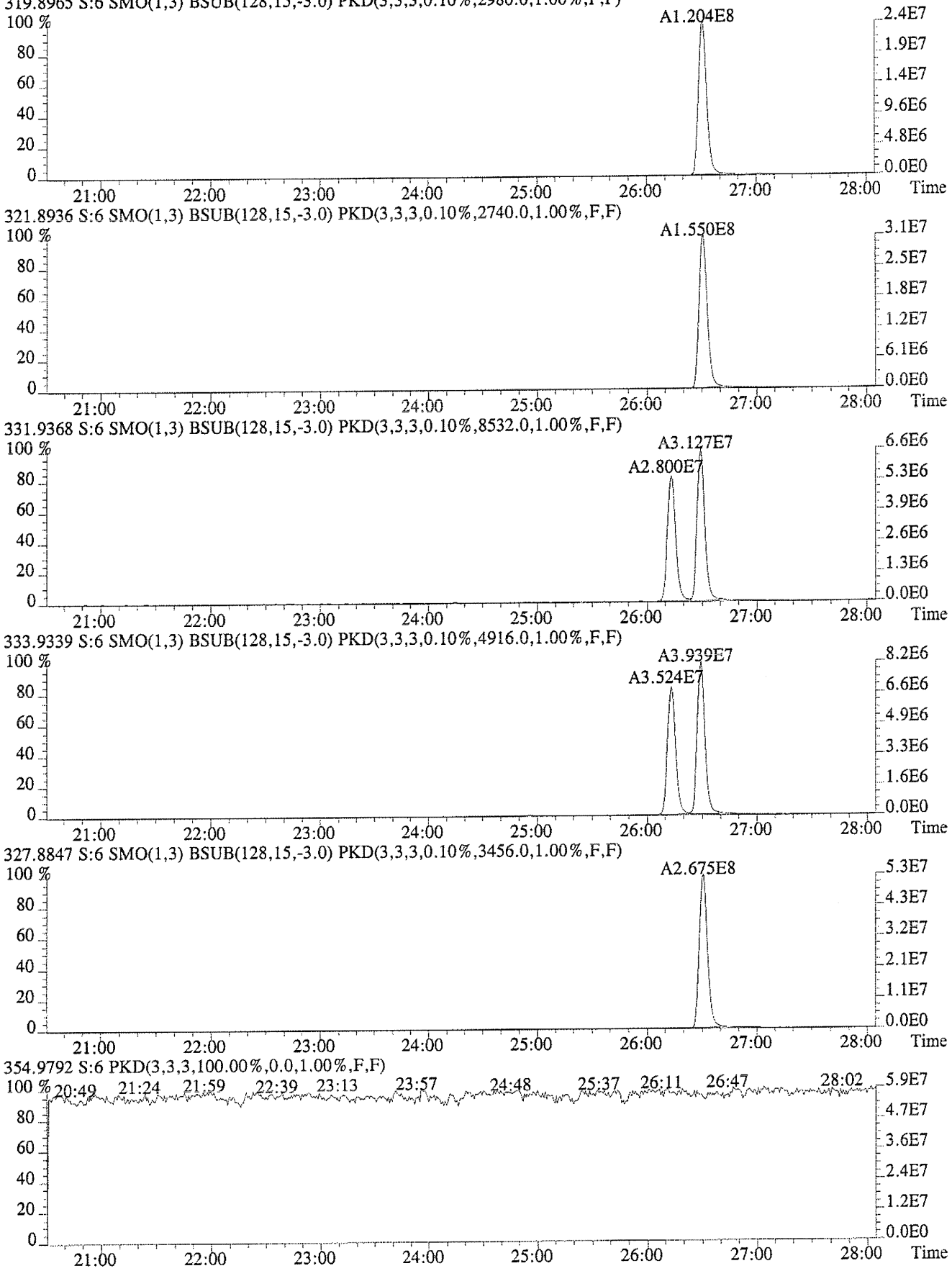
375.8364 S:6 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



354.9792 S:6 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

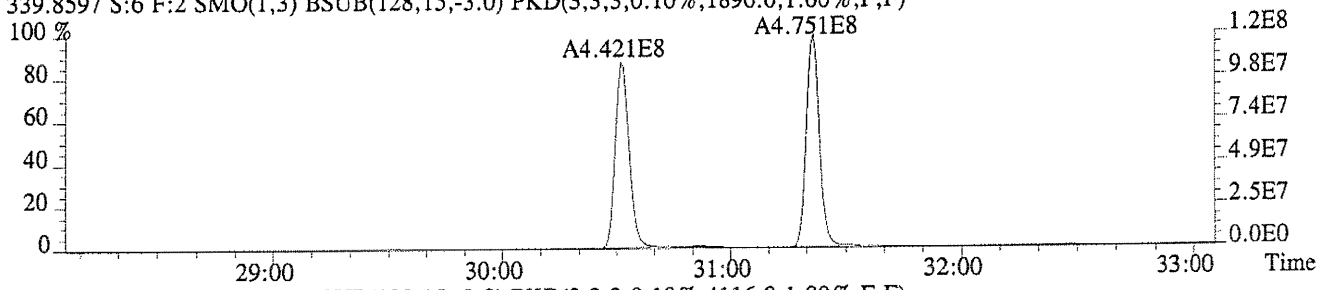


File:C12900 #1-621 Acq:12-JUL-2004 15:25:14 GC EI+ Voltage SIR 70S
Sample#6 File Text:CAS HOUSTN Text:ICAL HRCC5 Exp:8290CA

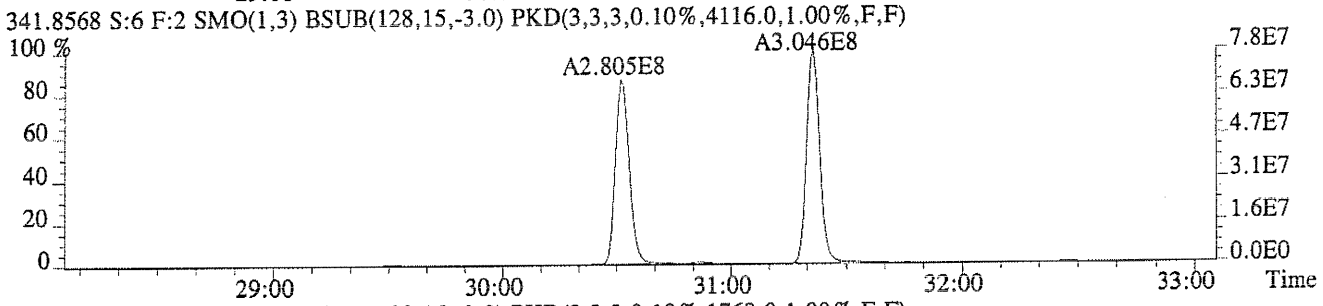


File:C12900 #1-447 Acq:12-JUL-2004 15:25:14 GC EI+ Voltage SIR 70S
Sample#6 File Text:CAS HOUSTN Text:ICAL HRCC5 Exp:8290CA

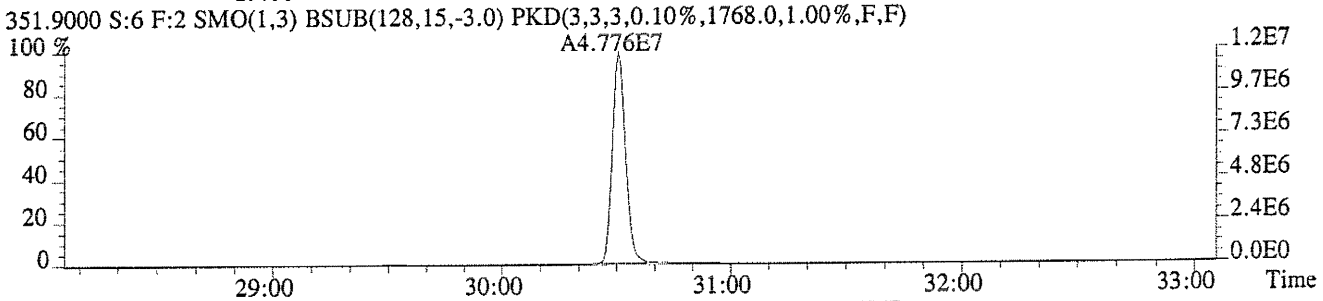
339.8597 S:6 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1896.0,1.00%,F,F)



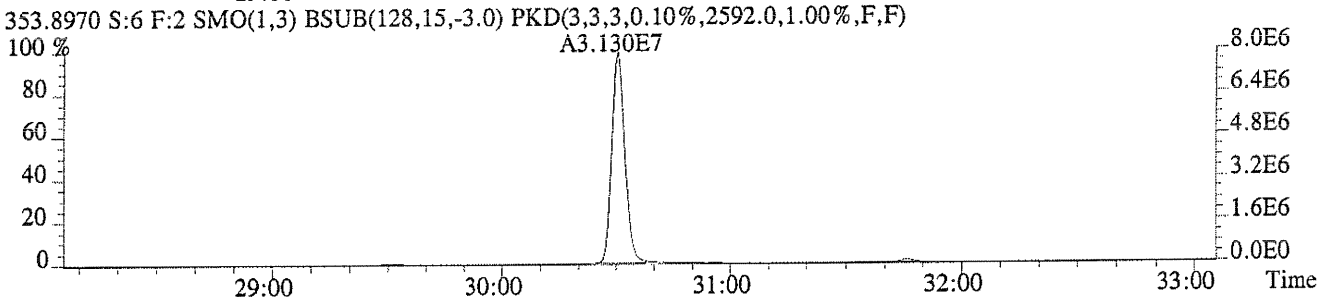
341.8568 S:6 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4116.0,1.00%,F,F)



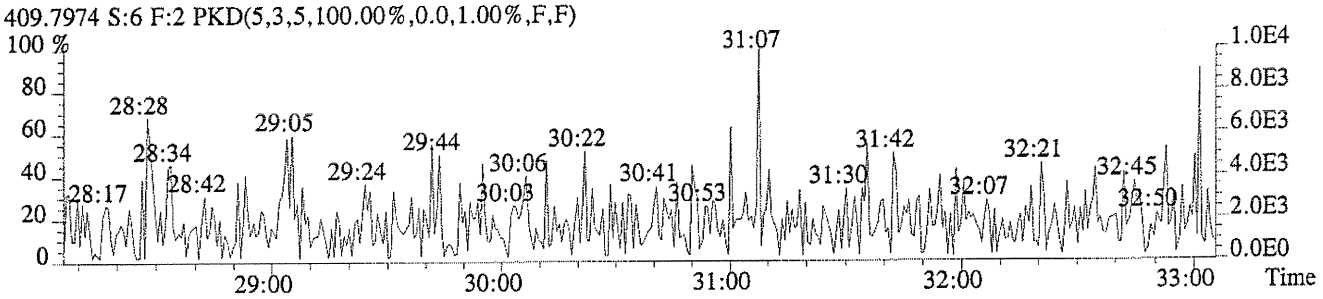
351.9000 S:6 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1768.0,1.00%,F,F)



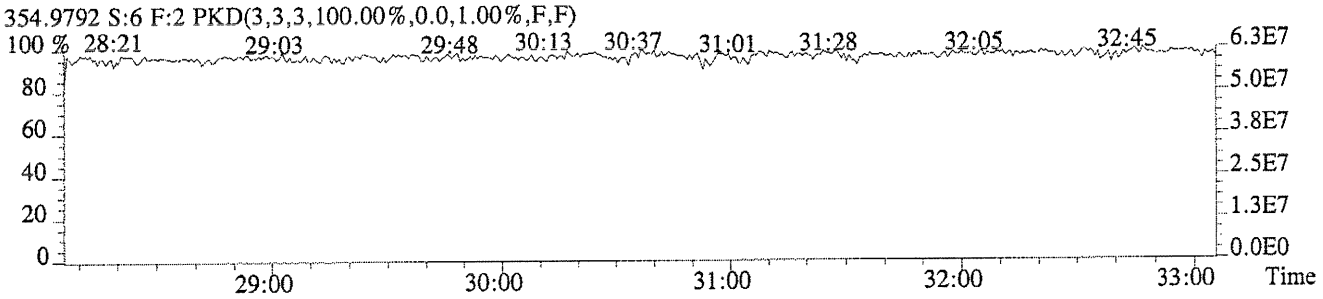
353.8970 S:6 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2592.0,1.00%,F,F)



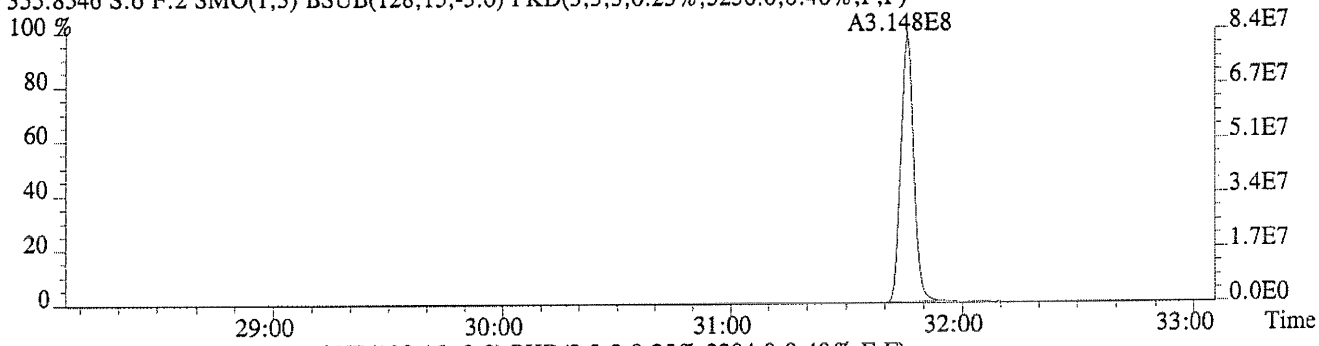
409.7974 S:6 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



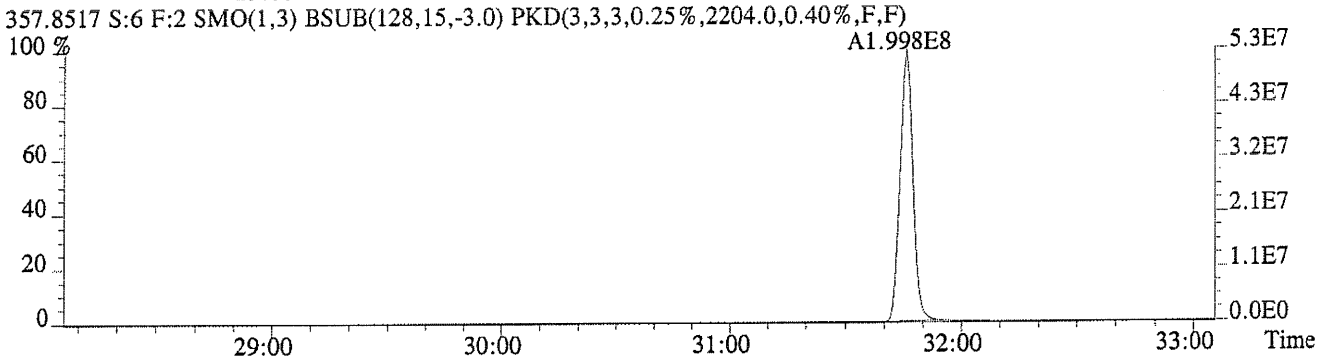
354.9792 S:6 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



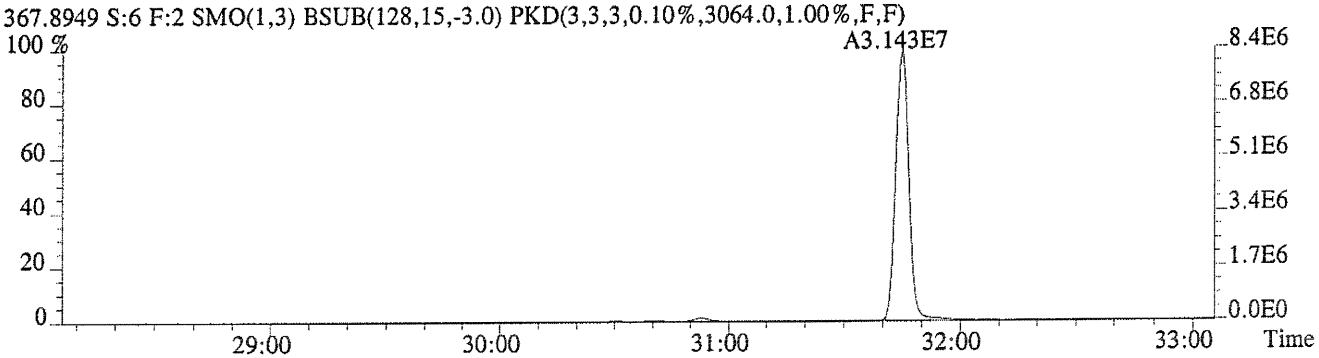
File:C12900 #1-447 Acq:12-JUL-2004 15:25:14 GC EI+ Voltage SIR 70S
Sample#6 File Text:CAS HOUSTN Text:ICAL HRCC5 Exp:8290CA
355.8546 S:6 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3236.0,0.40%,F,F)



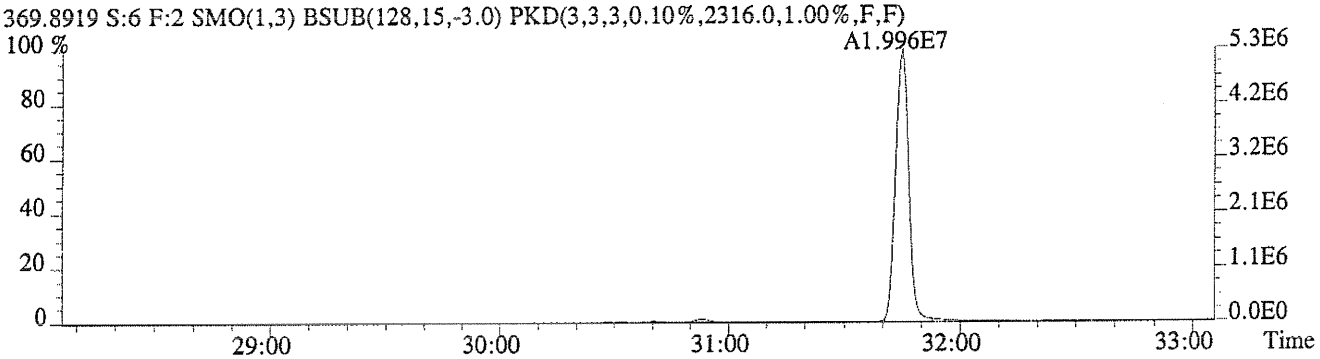
357.8517 S:6 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2204.0,0.40%,F,F)



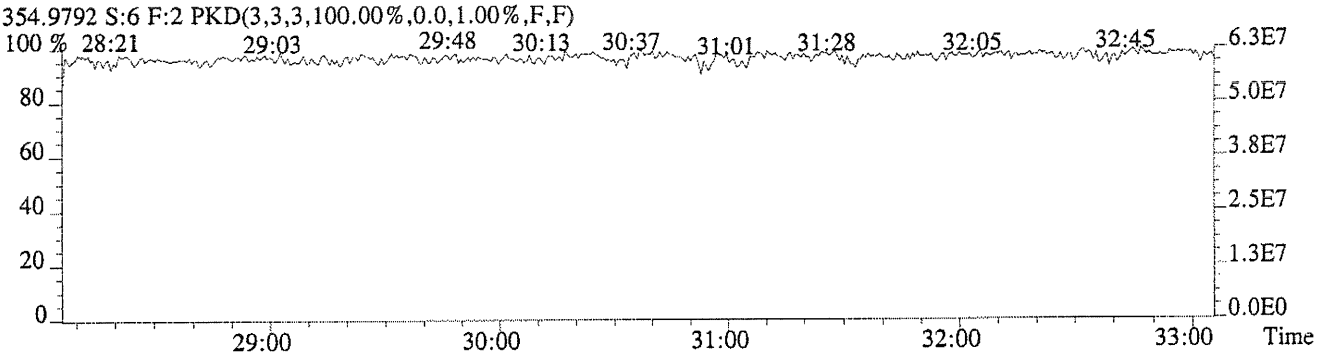
367.8949 S:6 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3064.0,1.00%,F,F)



369.8919 S:6 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2316.0,1.00%,F,F)

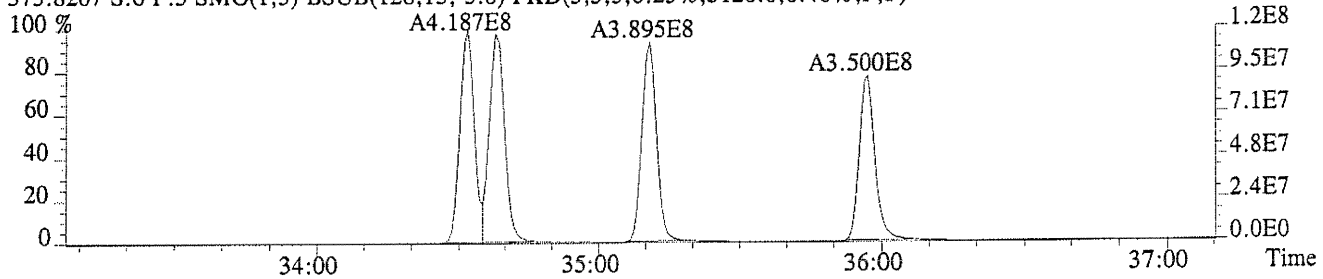


354.9792 S:6 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

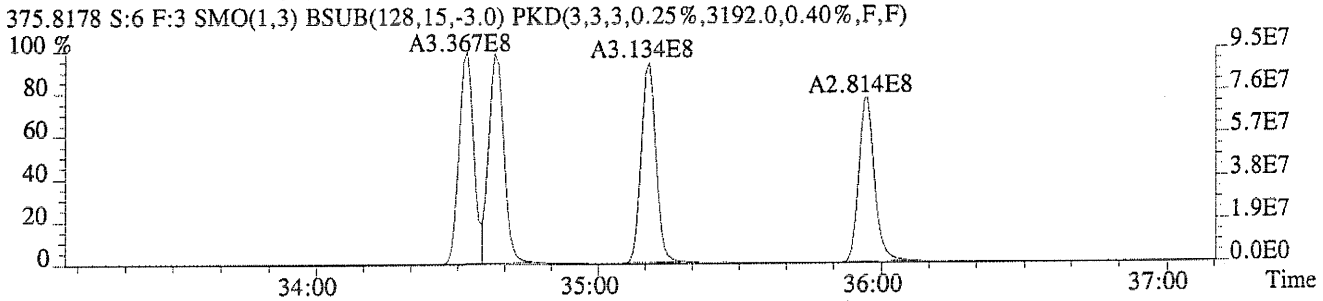


File:C12900 #1-363 Acq:12-JUL-2004 15:25:14 GC EI+ Voltage SIR 70S
Sample#6 File Text:CAS HOUSTN Text:ICAL HRCC5 Exp:8290CA

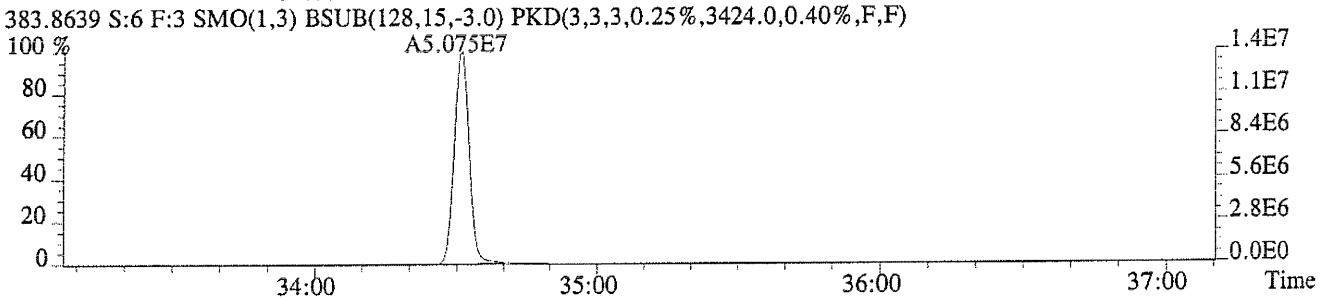
373.8207 S:6 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5120.0,0.40%,F,F)



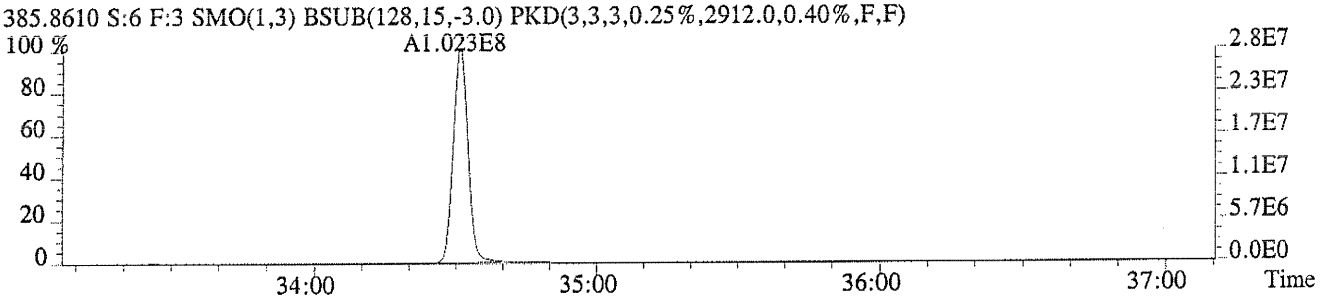
375.8178 S:6 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3192.0,0.40%,F,F)



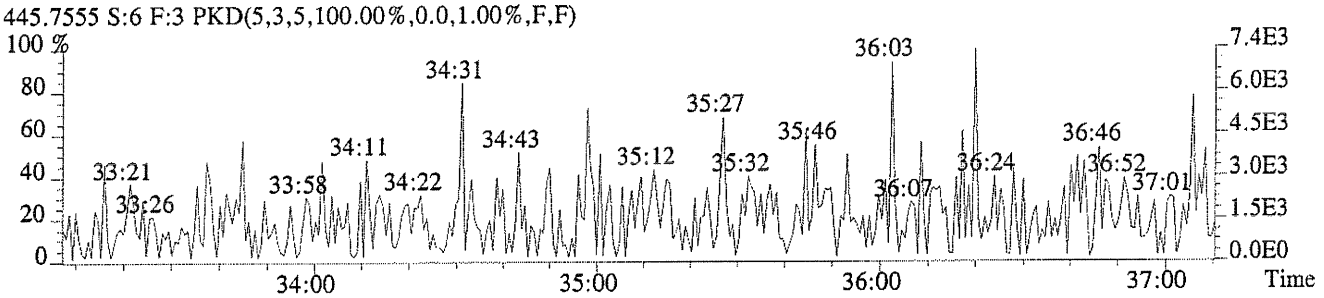
383.8639 S:6 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3424.0,0.40%,F,F)



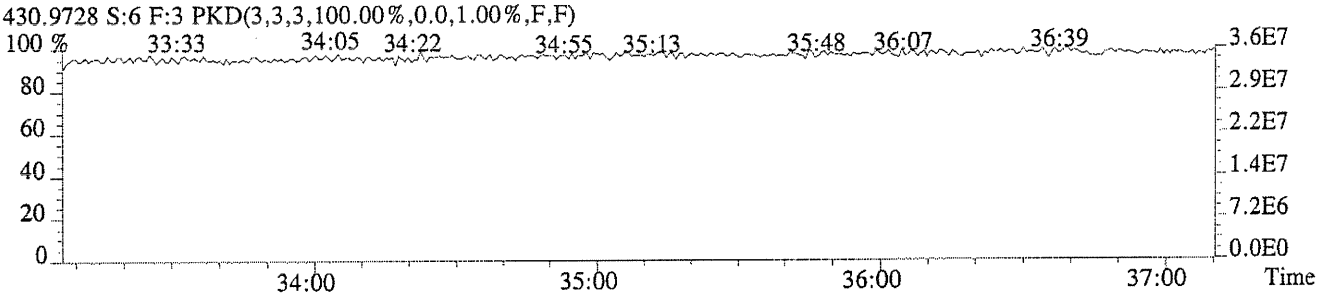
385.8610 S:6 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2912.0,0.40%,F,F)



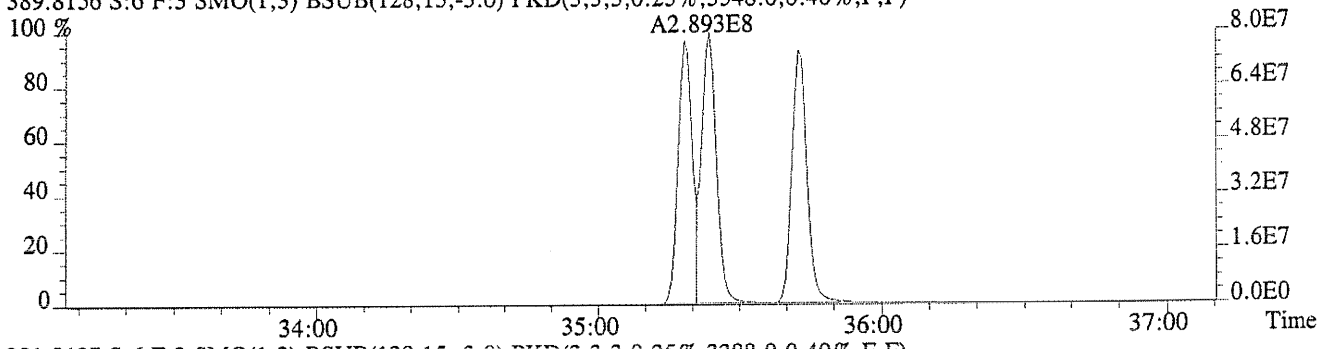
445.7555 S:6 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



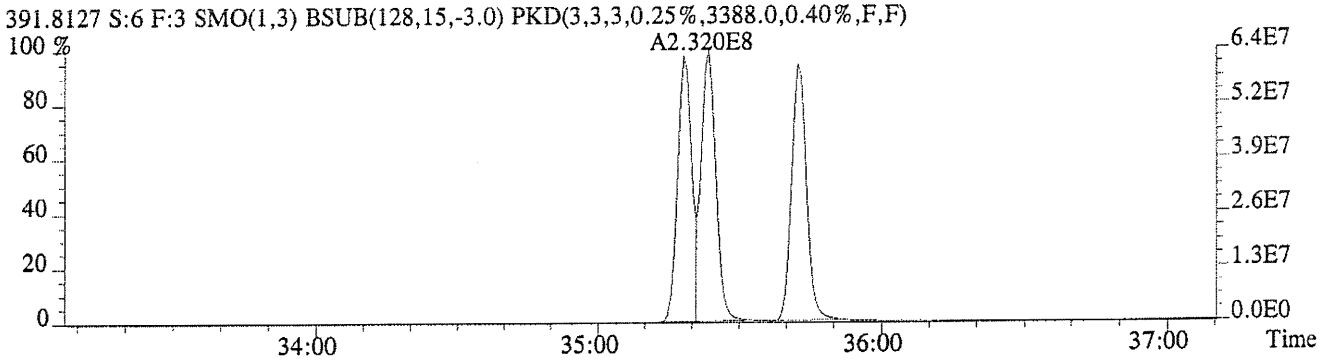
430.9728 S:6 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



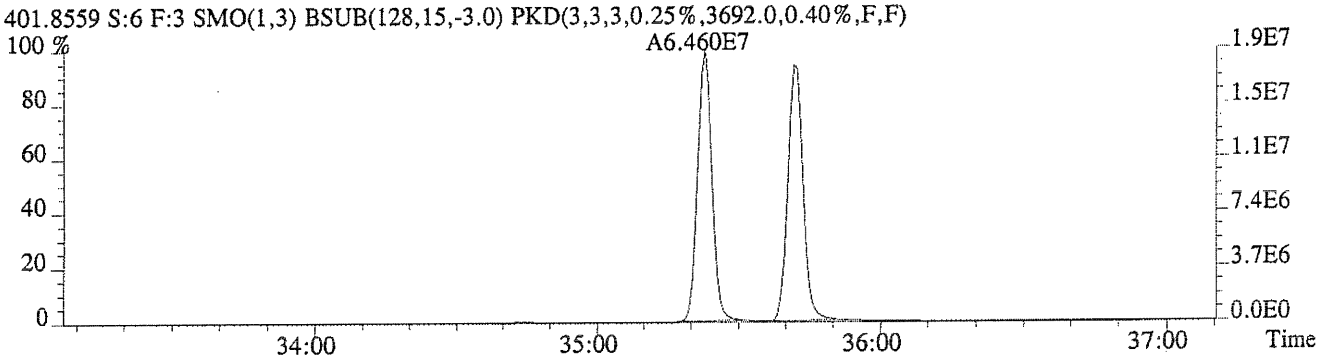
File:C12900 #1-363 Acq:12-JUL-2004 15:25:14 GC EI+ Voltage SIR 70S
Sample#6 File Text:CAS HOUSTN Text:ICAL HRCC5 Exp:8290CA
389.8156 S:6 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3548.0,0.40%,F,F)



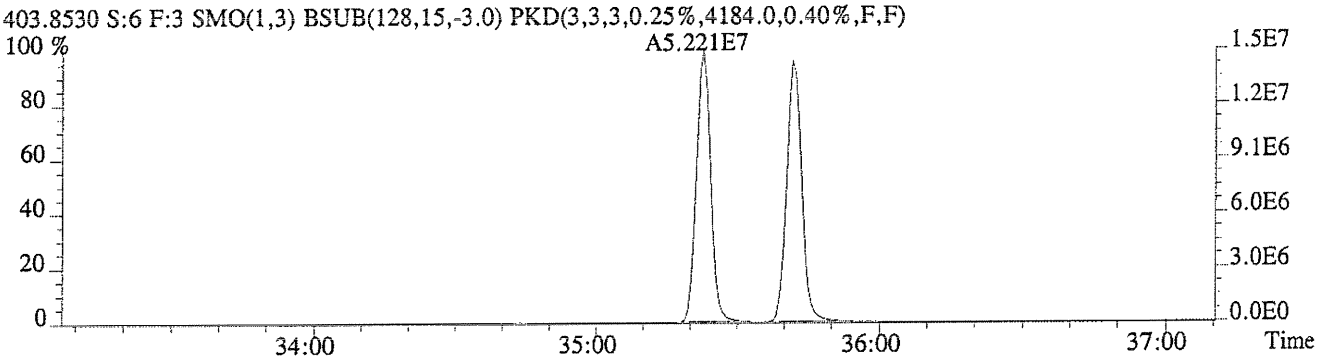
391.8127 S:6 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3388.0,0.40%,F,F)



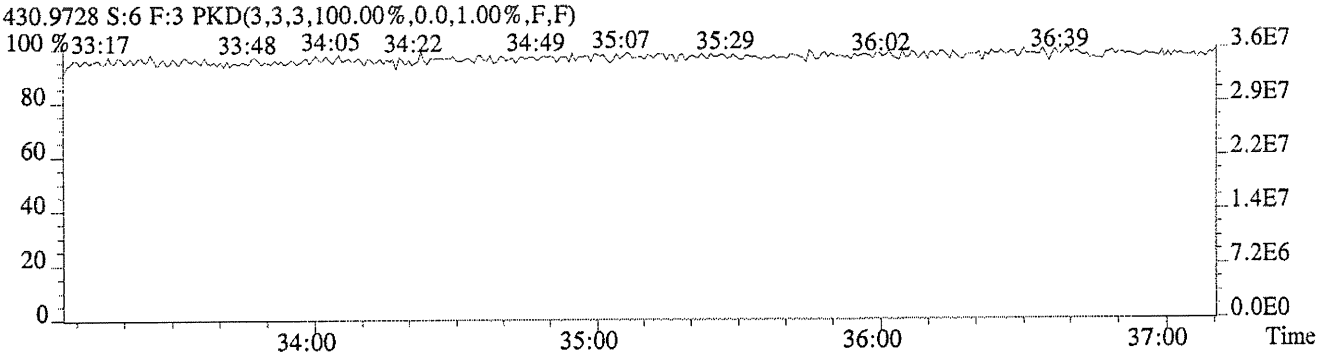
401.8559 S:6 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3692.0,0.40%,F,F)



403.8530 S:6 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4184.0,0.40%,F,F)



430.9728 S:6 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



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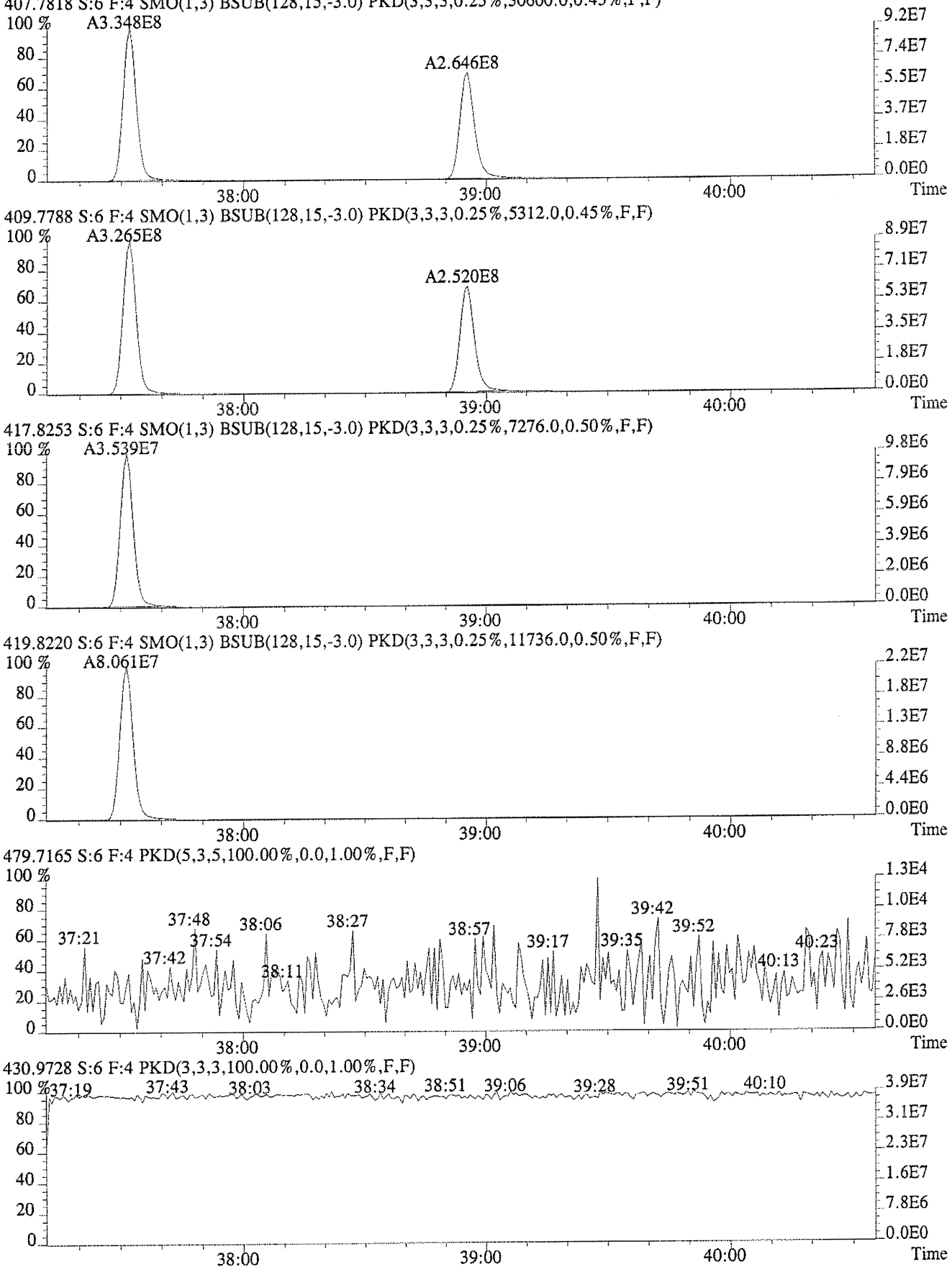
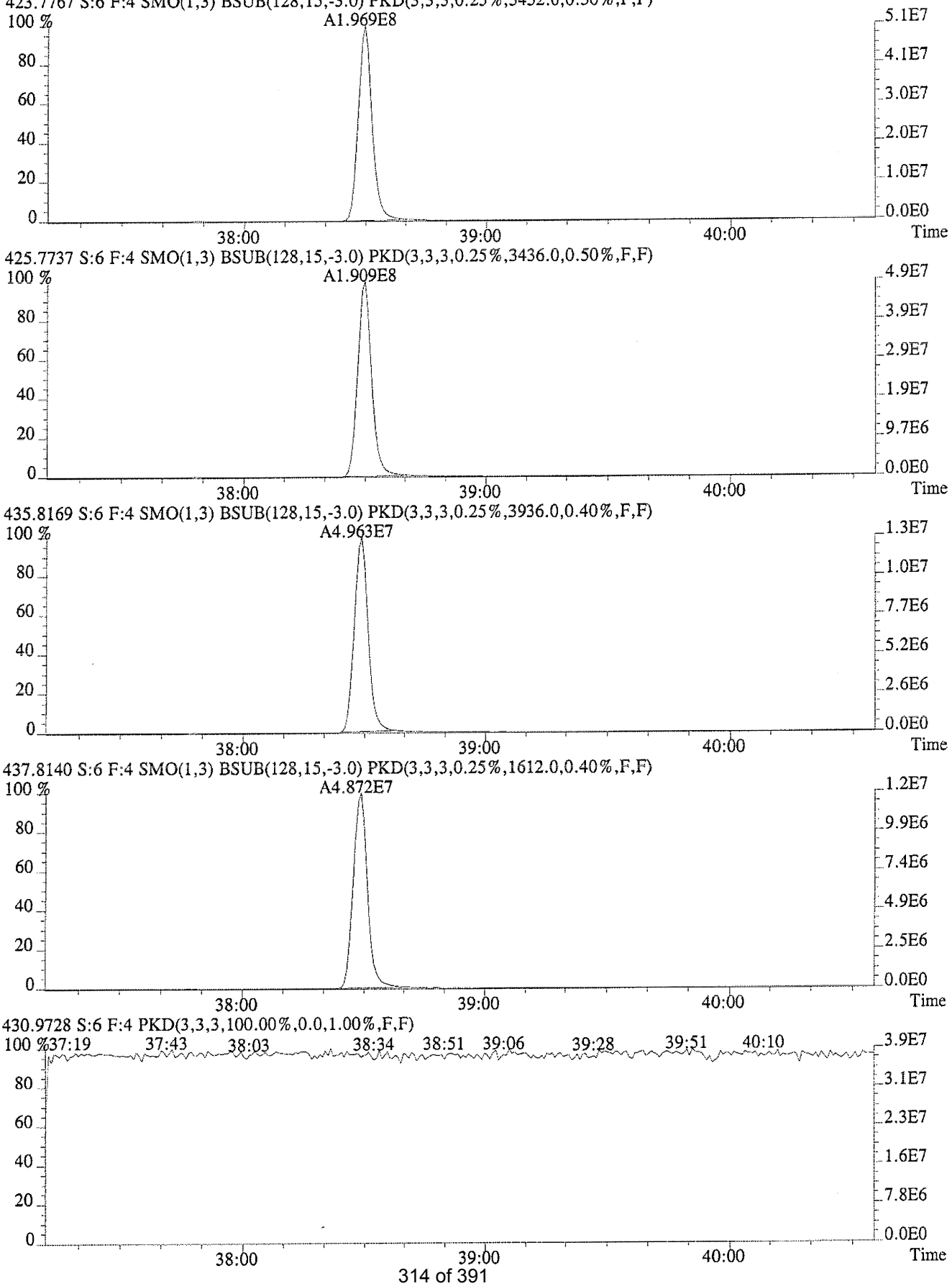
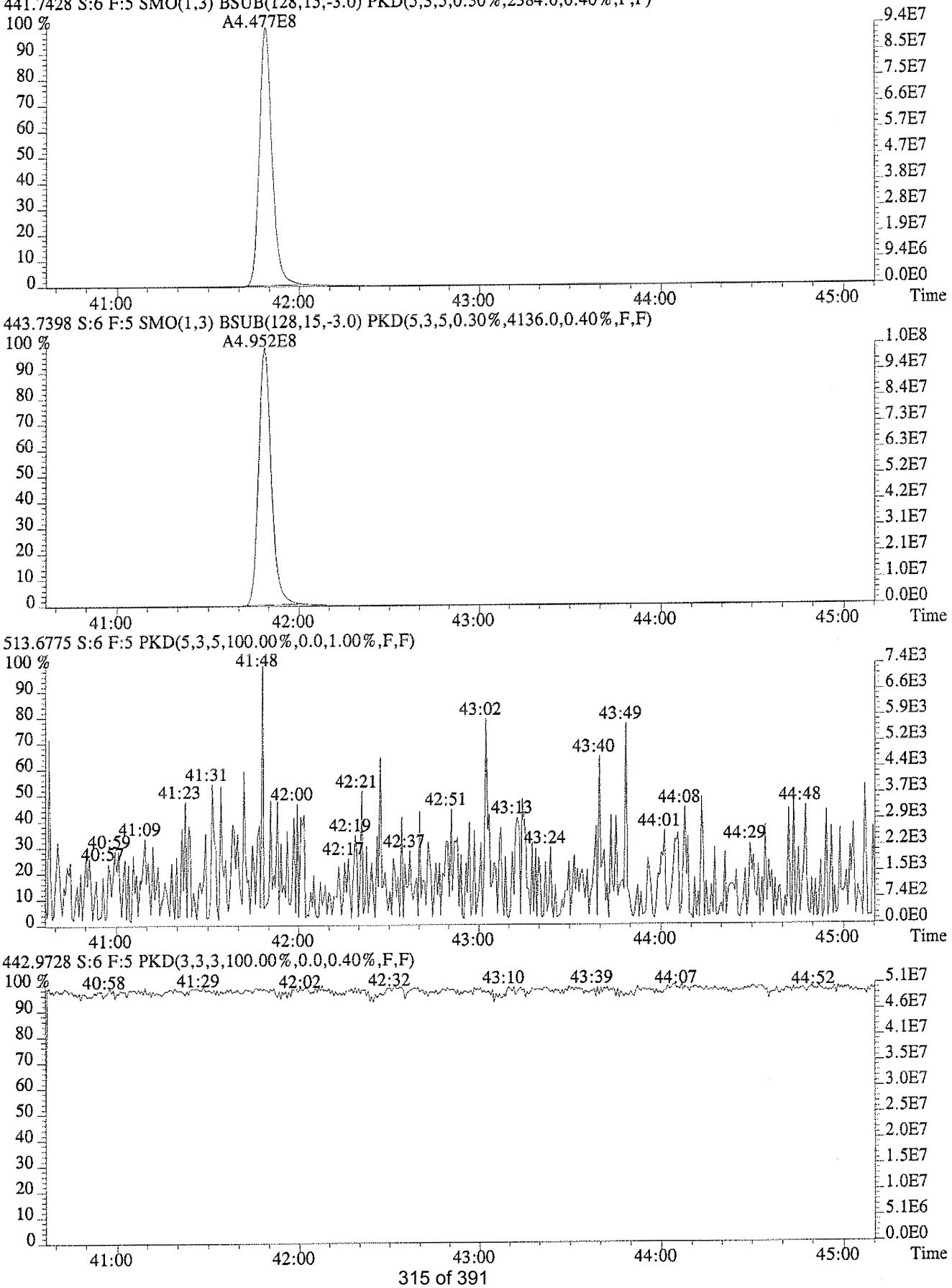
Sample#6 File Text:CAS HOUSTN Text:ICAL HRCC5 Exp:8290CA



File:C12900 #1-304 Acq:12-JUL-2004 15:25:14 GC EI+ Voltage SIR 70S
Sample#6 File Text:CAS HOUSTN Text:ICAL HRCC5 Exp:8290CA

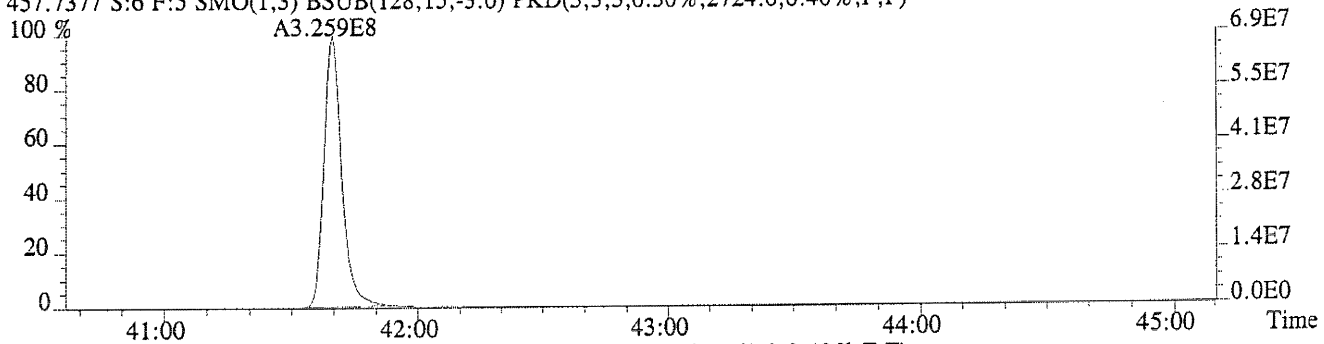


File:C12900 #1-497 Acq:12-JUL-2004 15:25:14 GC EI+ Voltage SIR 70S
Sample#6 File Text:CAS HOUSTN Text:ICAL HRCC5 Exp:8290CA

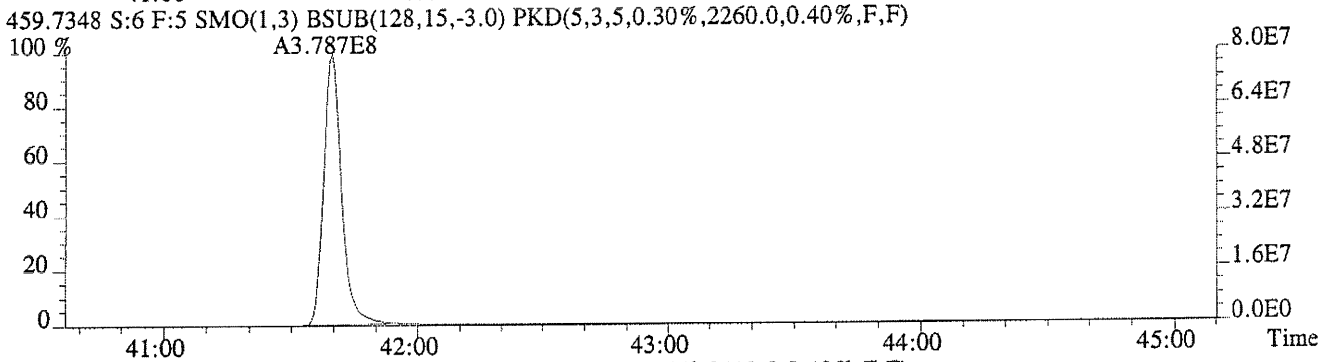


File:C12900 #1-497 Acq:12-JUL-2004 15:25:14 GC EI+ Voltage SIR 70S
Sample#6 File Text:CAS HOUSTN Text:ICAL HRCC5 Exp:8290CA

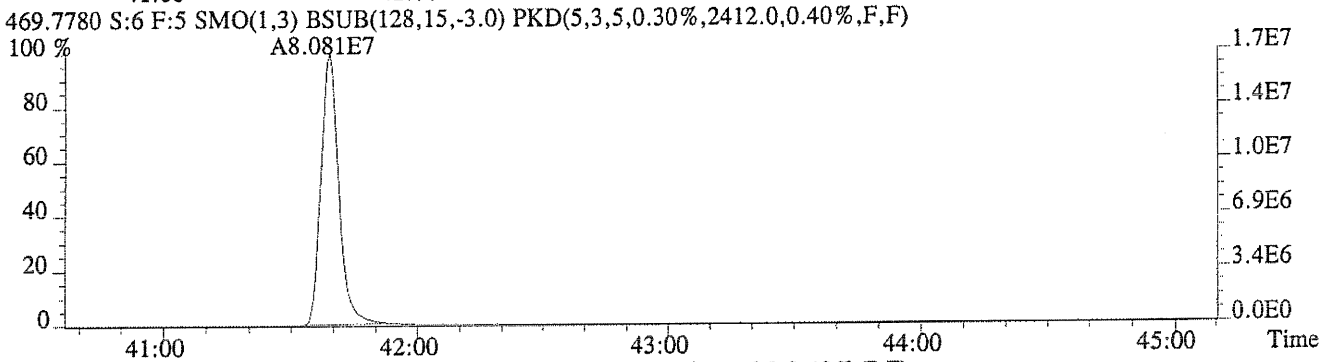
457.7377 S:6 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2724.0,0.40%,F,F)



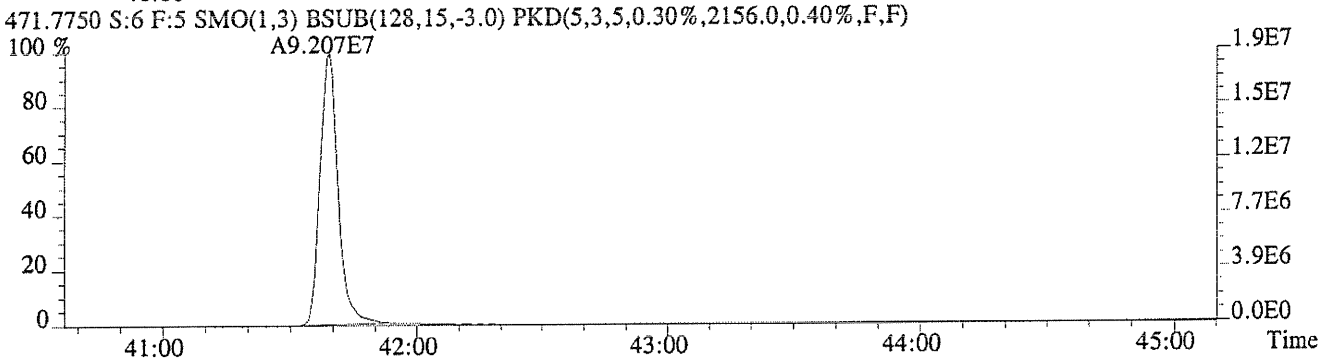
459.7348 S:6 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2260.0,0.40%,F,F)



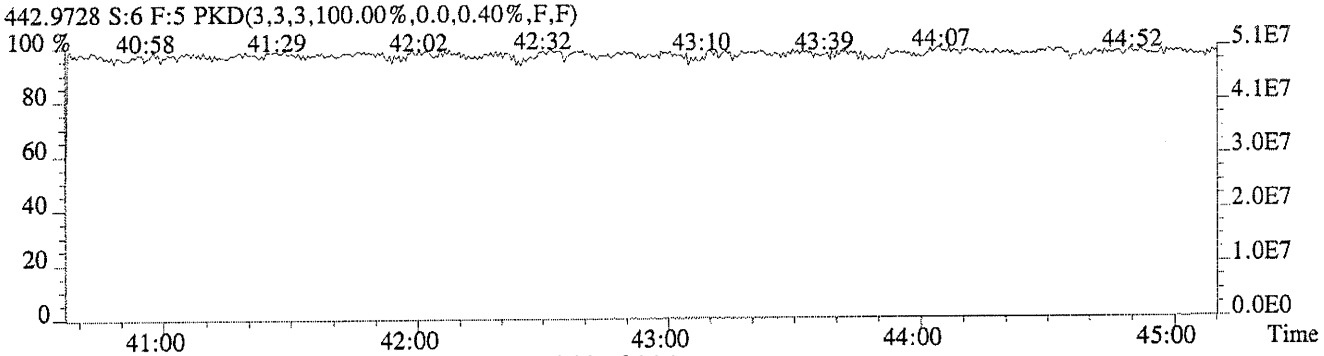
469.7780 S:6 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2412.0,0.40%,F,F)



471.7750 S:6 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2156.0,0.40%,F,F)



442.9728 S:6 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



Initial Calibration QC Checklist

317

ICAL Name: U401104829OI

Date: 11/4/04

Method: 1613 / (8290) / Tetra / TCDD Only / TCDF Conf / 8280 / 613 / M23

Retention Window/Column Performance Check	Analyst	Second Check
Windows in and first and last eluters labeled	✓	✓
Column Performance shows less than or equal to 25% valley between column specific 2378 isomer and it's closest eluters	✓	✓
No QC ion deflections affect column specific 2378 isomer or it's closest eluters	✓	✓

Initial Calibration	Analyst	Second Check
Percent RSD within method criteria	✓	✓
All relative abundance ratios meet method criteria	✓	✓
No QC ion deflections of greater than 20%	✓	✓
Mass spectrometer resolution greater than or equal to 10,000 and documented	✓	✓
2378-TCDD elutes at 25 minutes or later on the DB-5 column	N/A ✓	N/A
Signal-to-noise of all target analytes and their labeled standards at least 10:1	✓	✓
Valley between labeled 123478 and 123678 HxCDD peaks less than or equal to 50%	N/A ✓	N/A
All Manual Intergrations signed and dated and first and final copies of Ical summary included	✓	✓

Analyst: [signature]

Second QC: [signature]

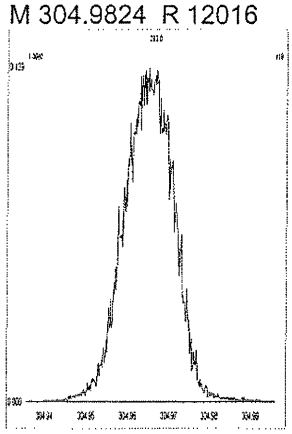
Experiment Calibration Report **MassLynx 4.0 SCN503** Page 1 of 1

File: Experiment: 8290CAS.exp Reference: pfk.ref Function: 1 @ 200 (ppm)

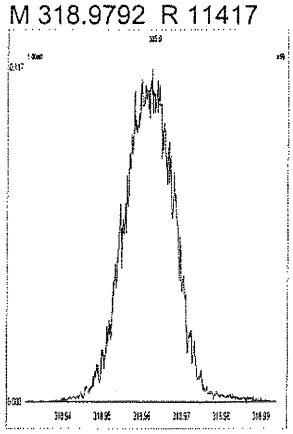
Printed: Thursday, November 04, 2004 10:33:19 Central Standard Time

M 292.9824 R 11627

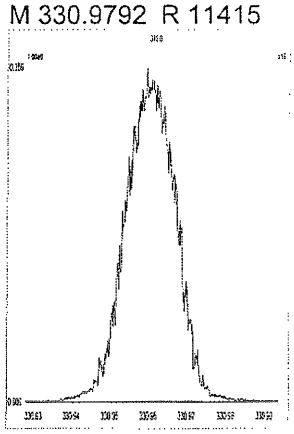
M 304.9824 R 12016



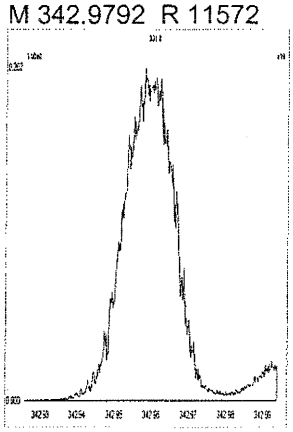
M 318.9792 R 11417



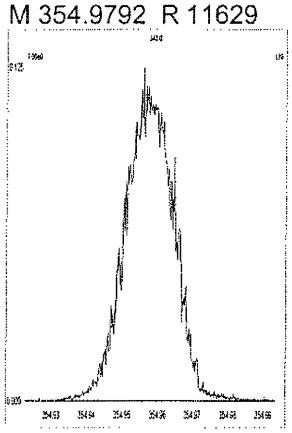
M 330.9792 R 11415



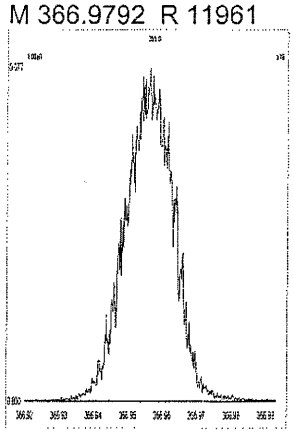
M 342.9792 R 11572



M 354.9792 R 11629



M 366.9792 R 11961

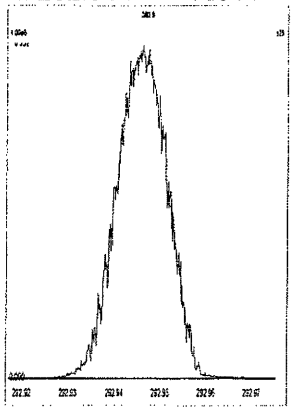


M 380.9760 R 12198

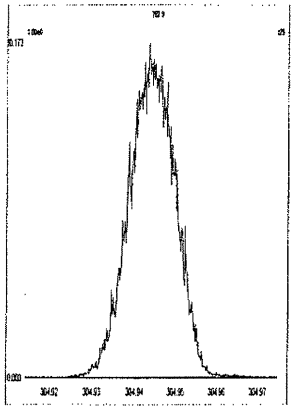
File: Experiment: 8290CAS.exp Reference: pfk.ref Function: 1 @ 200 (ppm)

Printed: Thursday, November 04, 2004 18:43:47 Central Standard Time

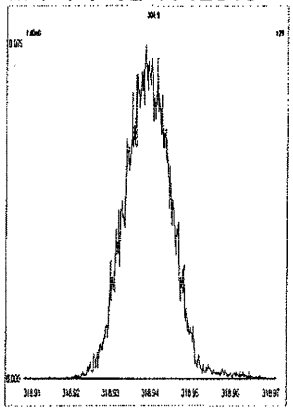
M 292.9824 R 12314



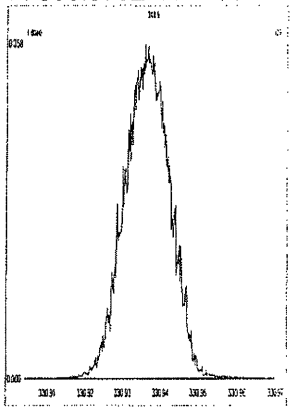
M 304.9824 R 12257



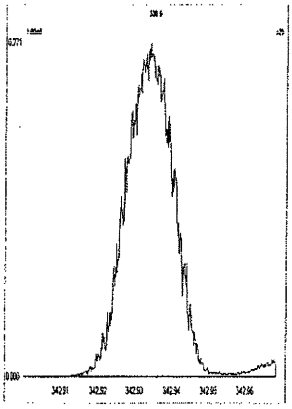
M 318.9792 R 12815



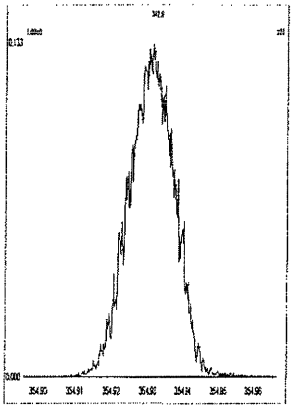
M 330.9792 R 12631



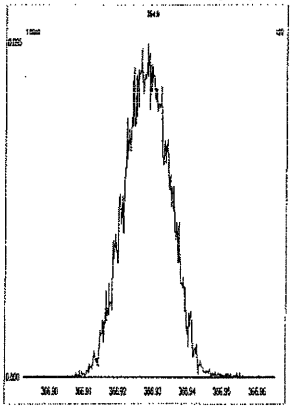
M 342.9792 R 12559



M 354.9792 R 13021



M 366.9792 R 12818



M 380.9760 R 12817

CAS HOUSTON INC.

5DFC

PCDD/PCDF ANALYTICAL SEQUENCE SUMMARY

Name: Columbia Analytical Services, Houston Contract

Lab Code: TX01411 CASE No.: Client No: SDG No.:

GC Column: DB-5 ID: 0.25 (mm) Instrument ID: AutoSpec-Ultima

Init. Calib. Date: 11/04/04

Init. Calib.Times: 10:34

THE ANALYTICAL SEQUENCE OF STANDARDS, SAMPLES, BLANKS, SPIKES AND DUPLICATES IS AS FOLLOWS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
WINDOW DEFINE		U20395#1	4-NOV-04	10:34:35
ICAL HRCC1		U20402#1	4-NOV-04	16:06:05
ICAL HRCC2		U20401#1	4-NOV-04	15:14:49
ICAL HRCC3		U20400#1	4-NOV-04	14:27:55
ICAL HRCC4		U20403#1	4-NOV-04	16:57:07
ICAL HRCC5		U20404#1	4-NOV-04	17:44:32

HRGC/HRMS RUN LOG

U20394RES

CAS HOUSTON 10655 Richmond Avenue, Suite 130-A Houston, TX 77042

Acq Method: 8290CAS/1613
GC Method: 8290CAS/1613

Result File: U40110482901
EDD File: _____

Archive Tape: _____
Instrument ID: AutoSpec 2

Columbia Analytical Services inc.
An Employee Owned Company

Date	Time	File	CAS ID	Client ID	Batch #	Analyst	Comments	RE
11/4/14	05:09	U20394	Ical CS3	D6-54-1		KC		
	10:34	U20395	Window Defeat	D4-90-2				
	11:20	396	EB19057-MB	Method Blank				
	12:07	397	F040107G-001.01	Composite #2, #2 HWD BP				
	12:54	398	F040107G-002.01	Composite #3 Softwood BP, I			Tetra ↓ TCDD	
	13:41	399	F040114Z-001.01	2981	EB19059			
	14:27	U20400	Ical HRCC3	D5-49-3				
	15:14	401	Ical HRCC2	D5-49-4				
	16:06	402	Ical HRCC1	D5-49-5				
	16:57	403	Ical HRCC4	D5-49-2				
	17:44	404	Ical HRCC5	D5-49-1				
		405	Window Defeat	D4-90-2				
		406	Ical HRCC3	D5-49-3				
		407	EB19058-MB	Method Blank				
		408	F040103Z-006.01	SP0027	EB19058			
		409	F040107Y-002.01	SR-SW-03(4-12') ↓	↓	↓		

Reviewed by: Lee

5DFA

WINDOW DEFINING MIX SUMMARY

CLIENT ID

WDM

Lab Name: COLUMBIA ANALYTICAL SERVICES

Lab Code: CAS Case No.: _____ SDG No.: _____

GC Column: DB-5 ID: 0.25 (mm) Lab File ID: U20395#1

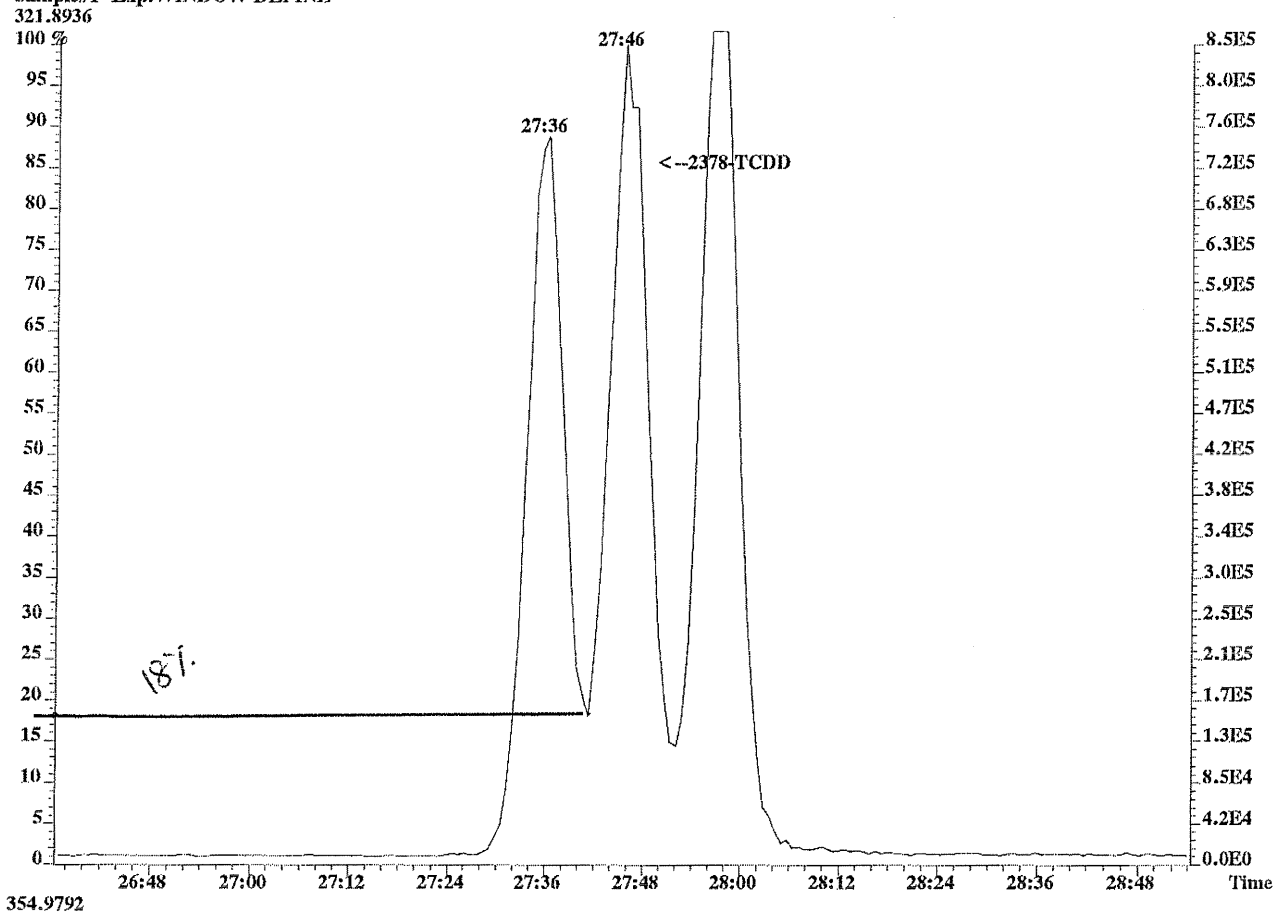
Date Analyzed: 04/11/2004

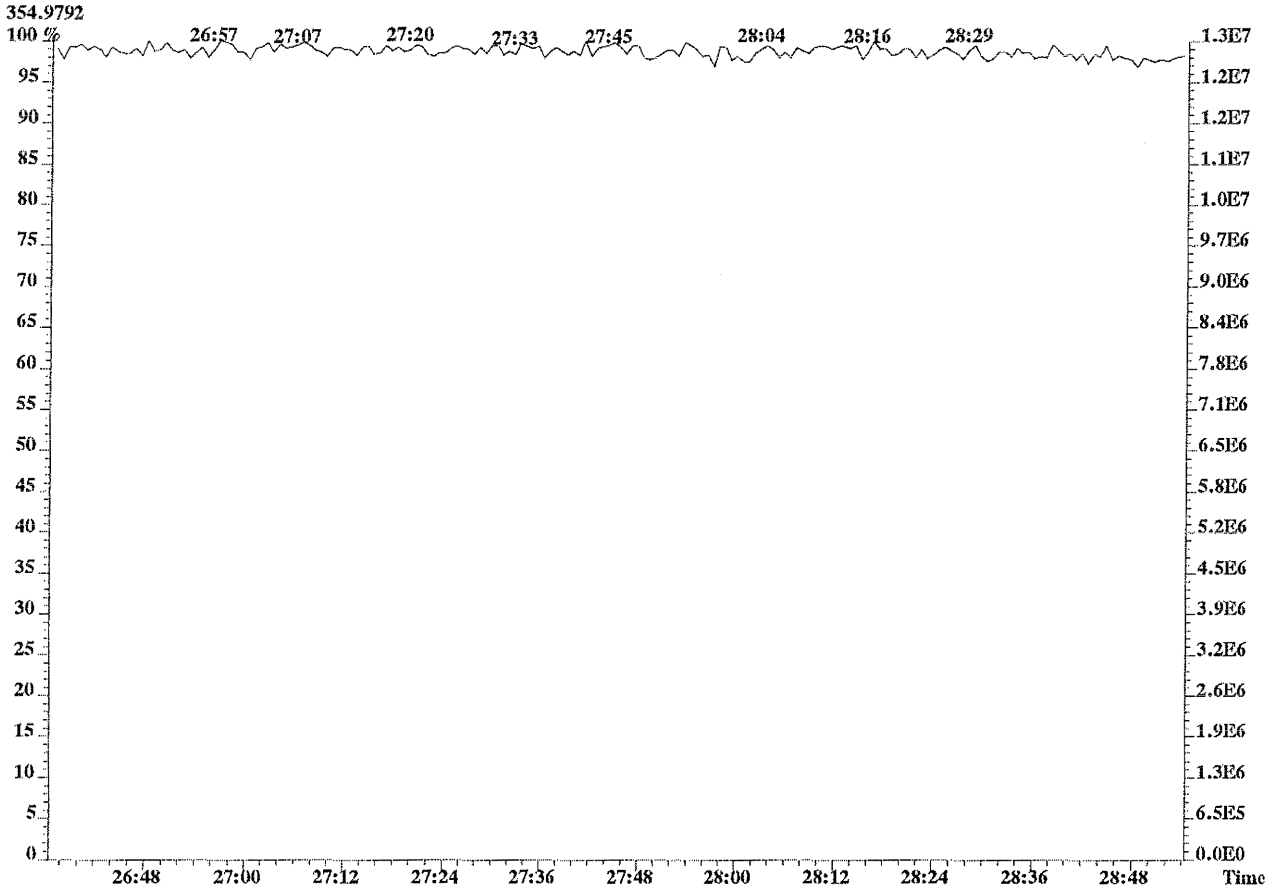
Time Analyzed: 10:34:35

CONGENER	RT FIRST ELUTING	RT LAST ELUTING
TCDF	22:30	29:02
TCDD	24:07	29:02
PeCDF	29:23	33:36
PeCDD	30:55	33:27
HxCDF	34:33	36:57
HxCDD	35:05	36:38
HpCDF	38:21	39:32
HpCDD	38:35	39:10

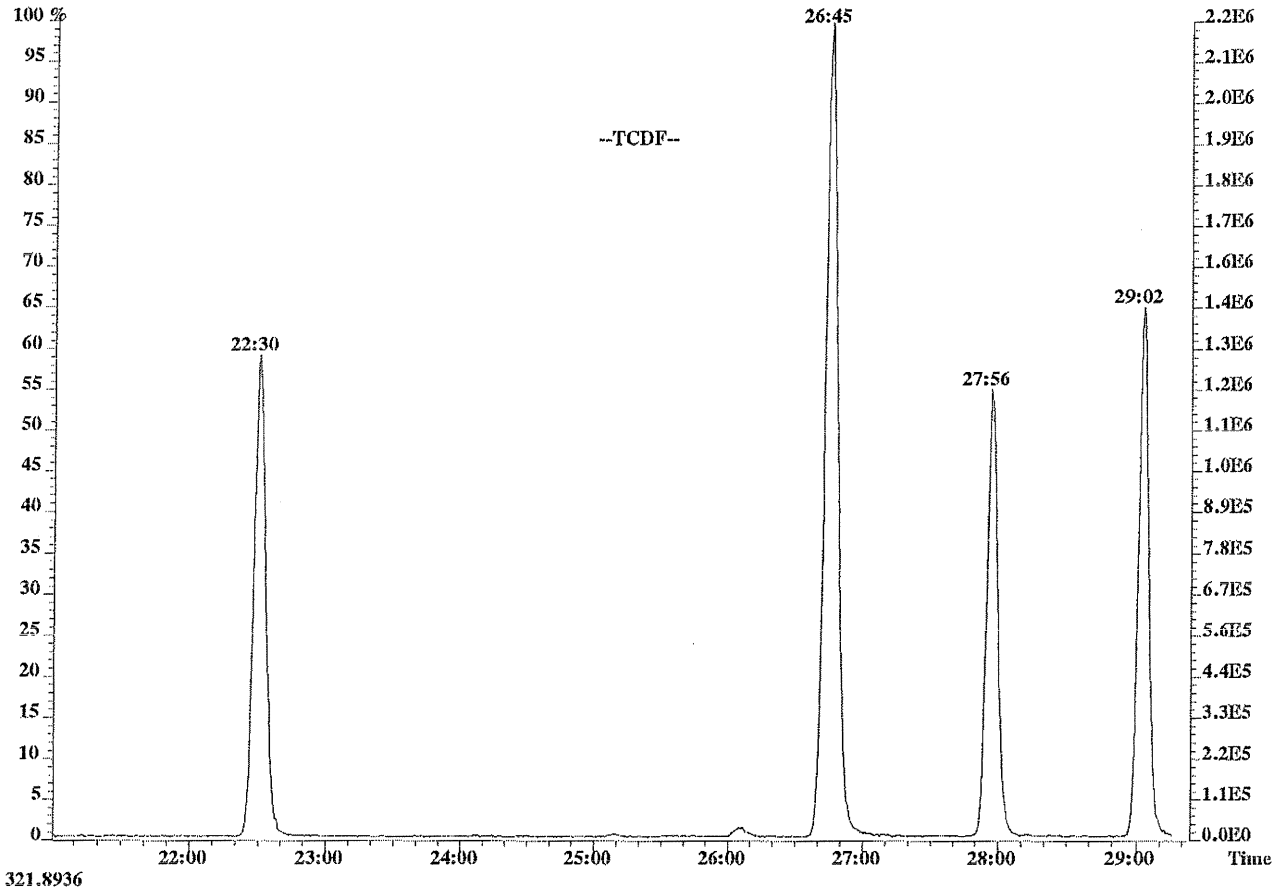
% Valley 2378-TCDD: 18%

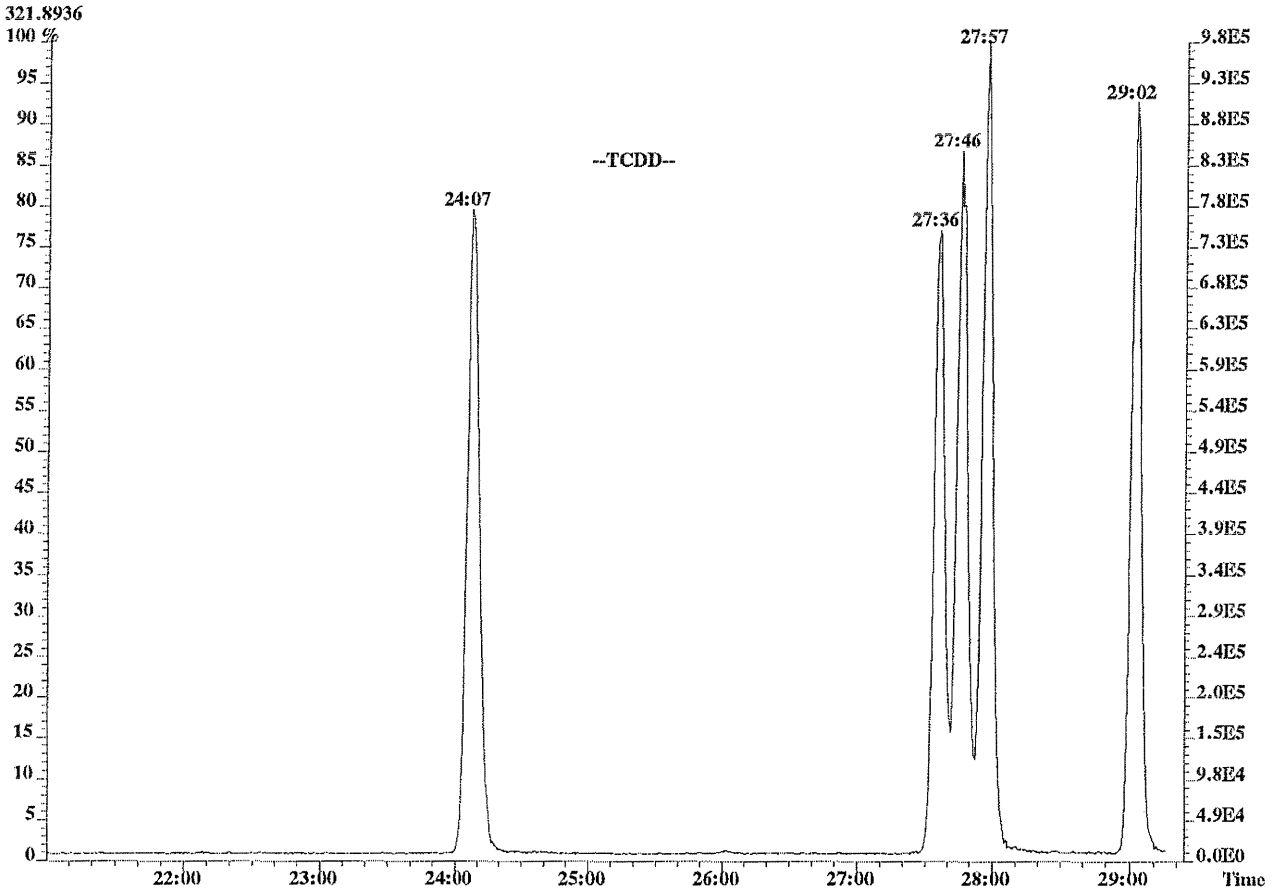
File:U20395 #1-689 Acq: 4-NOV-2004 10:34:35 Probe EI+ Magnet SIR VG BioTech Mass spectrom
Sample#1 Exp:WINDOW DEFINE



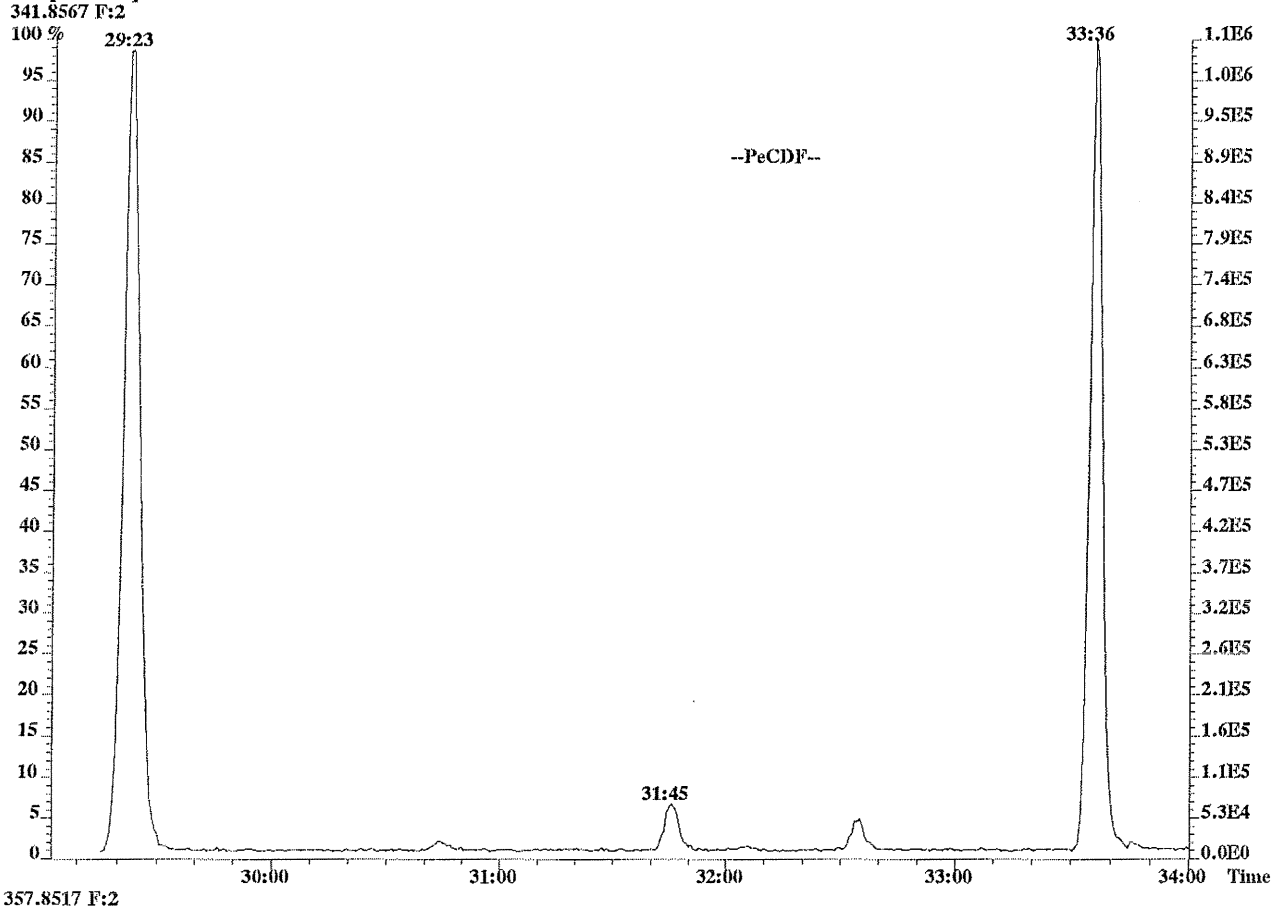


File:U20395 #1-689 Acq: 4-NOV-2004 10:34:35 Probe EI+ Magnet SIR VG BioTech Mass spectrom
Sample#1 Exp:WINDOW DEFINE

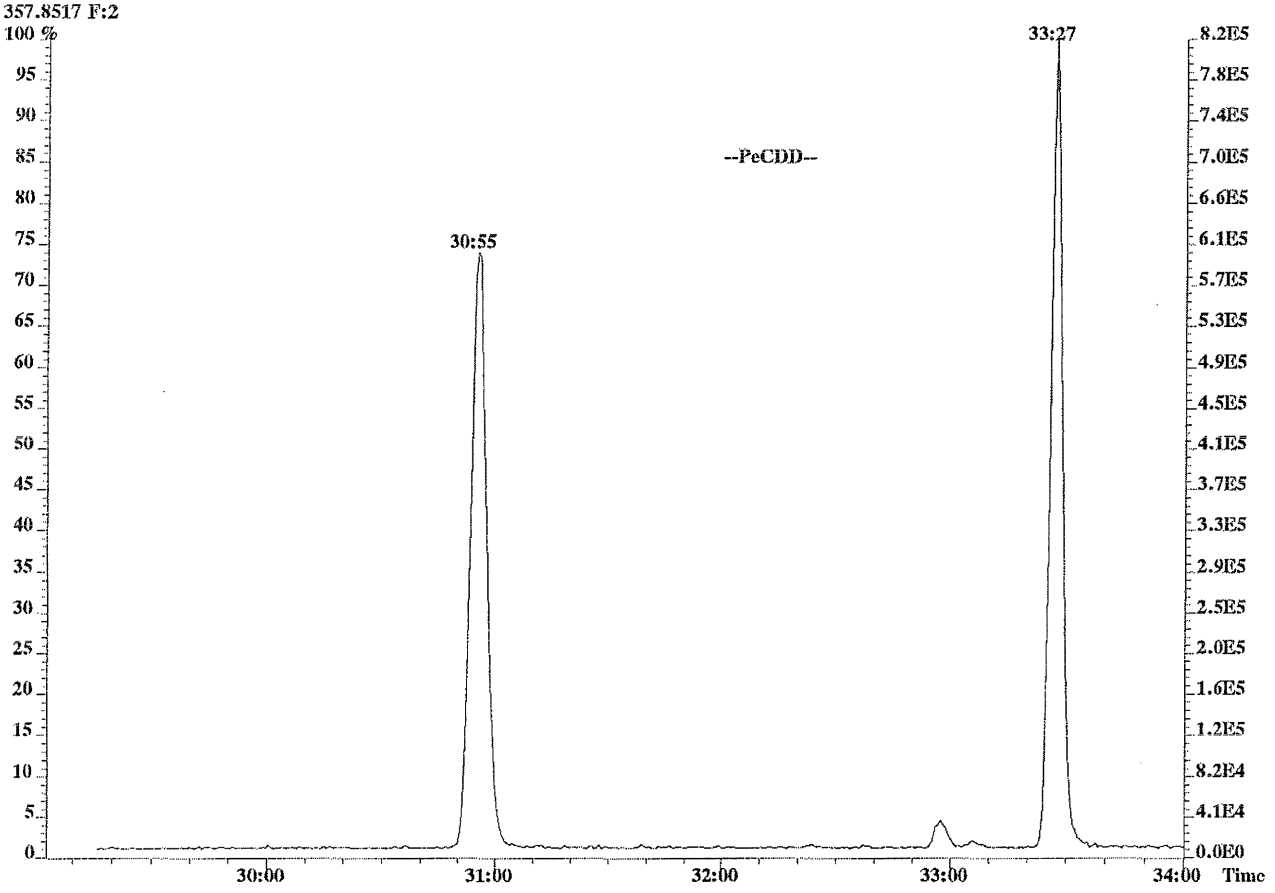




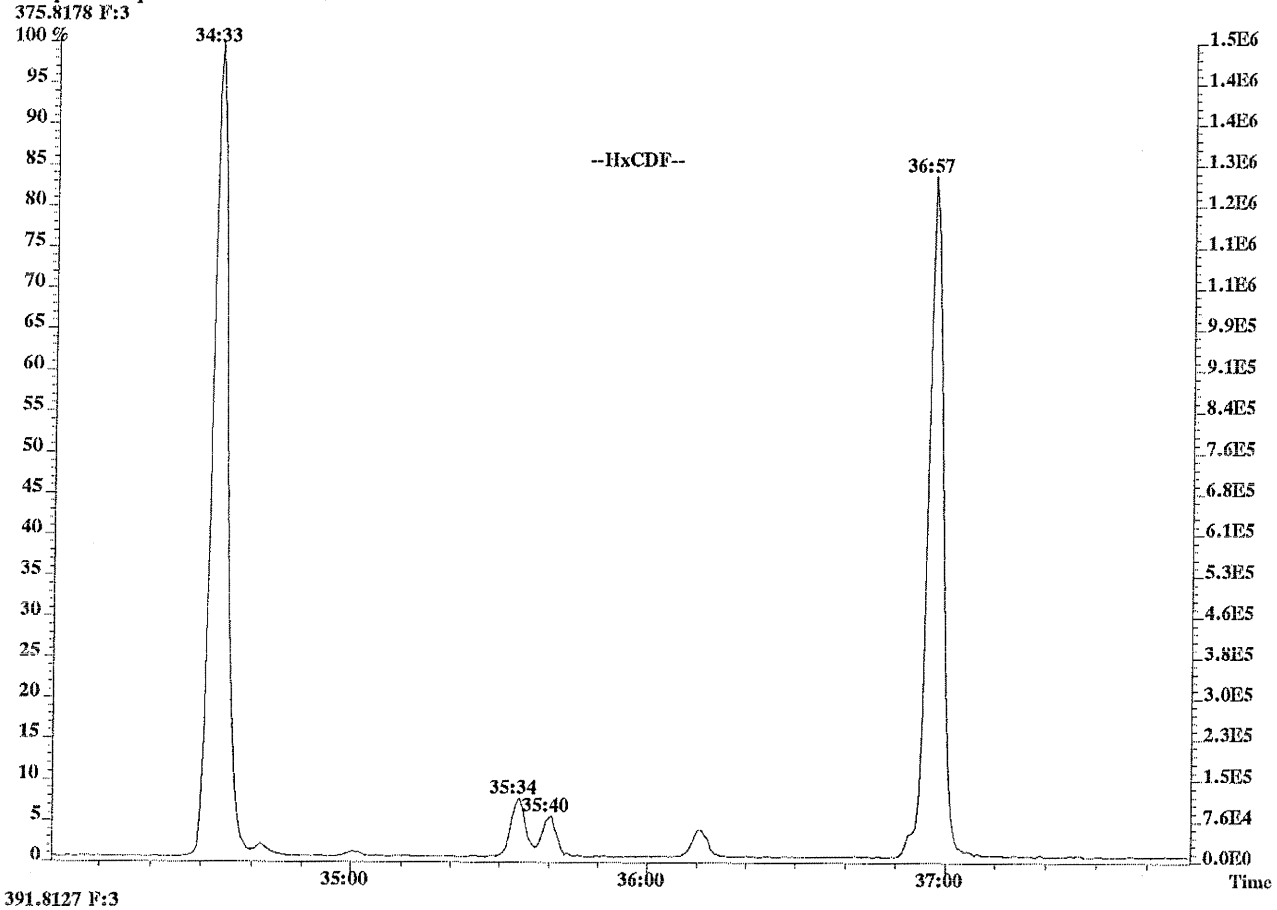
File:U20395 #1-431 Acq: 4-NOV-2004 10:34:35 Probe EI+ Magnet SIR VG BioTech Mass spectrom
Sample#1 Exp:WINDOW DEFINE
341.8567 F:2



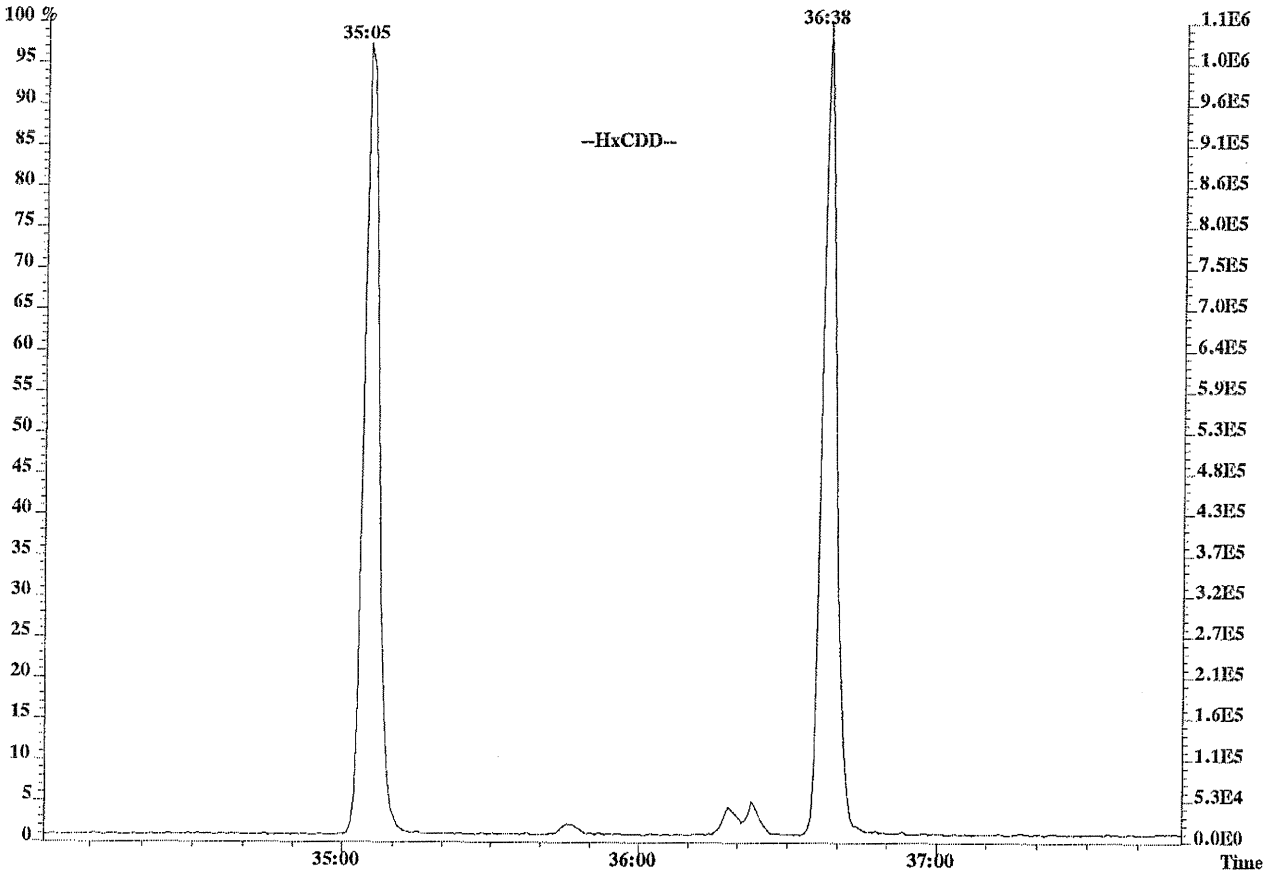
357.8517 F:2



File:U20395 #1-346 Acq: 4-NOV-2004 10:34:35 Probe EI+ Magnet SIR VG BioTech Mass spectrom
Sample#1 Exp:WINDOW DEFINE
375.8178 F:3



391.8127 F:3



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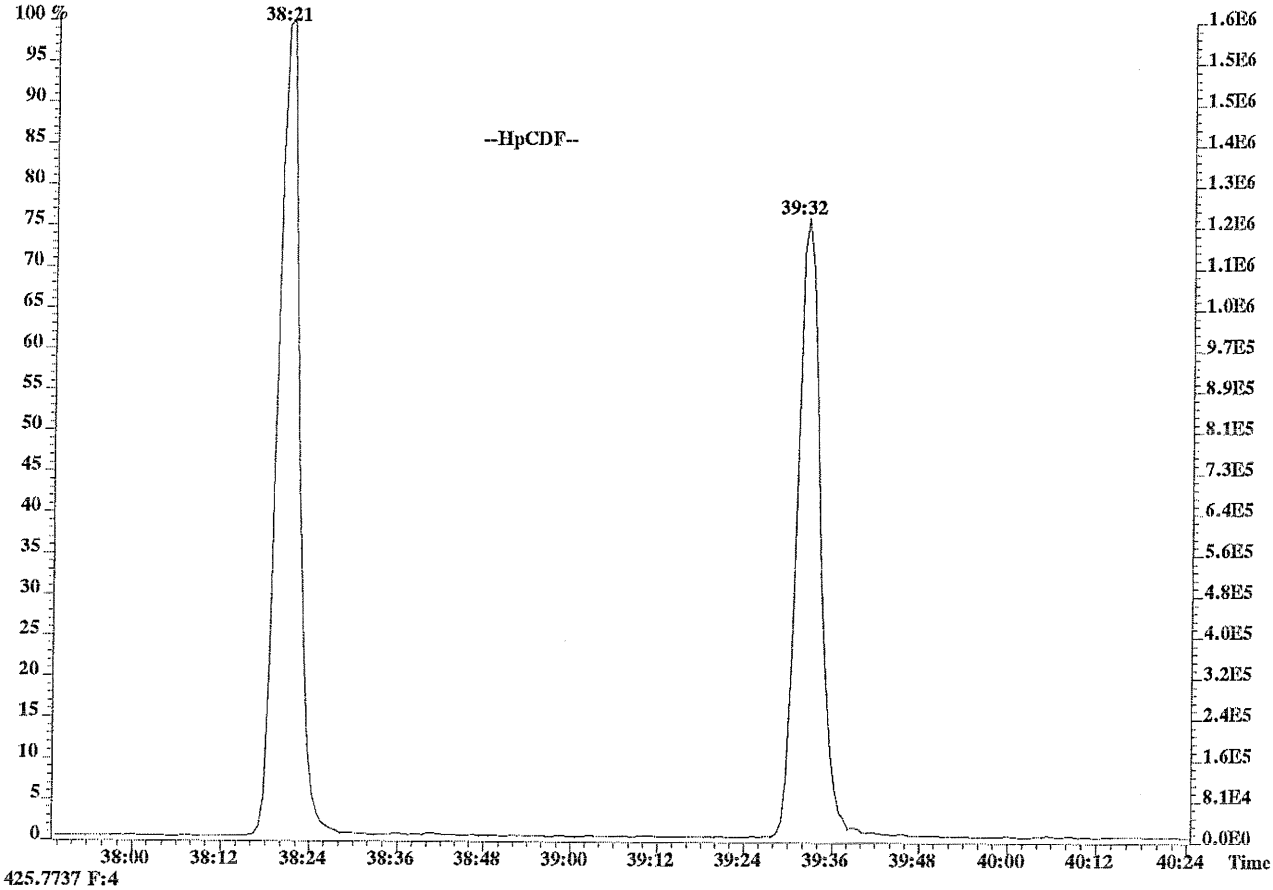
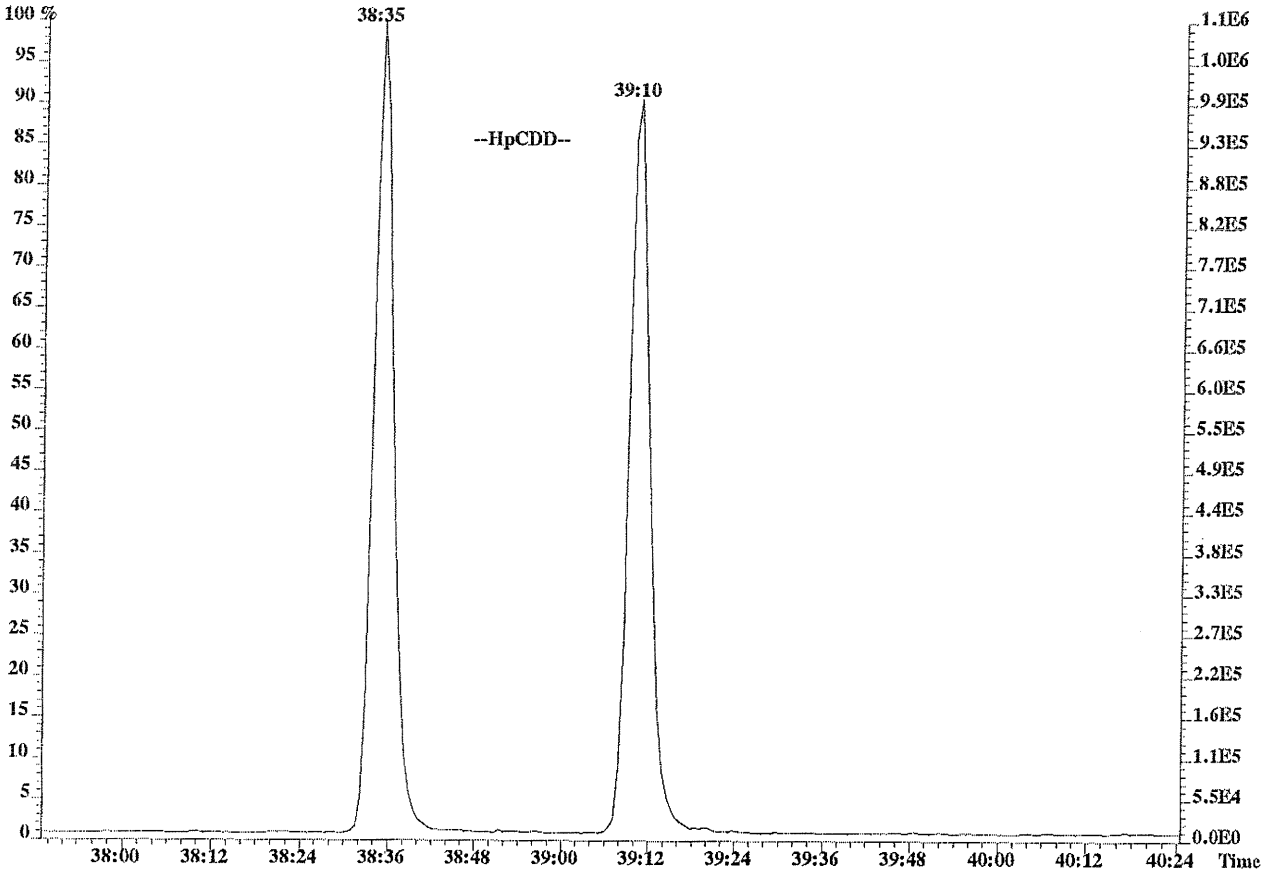
Sample#1 Exp:WINDOW DEFINE
409.7789 F:4



425.7737 F:4



FORM 3A
PCDD/PCDF INITIAL CALIBRATION RELATIVE RESPONSES

Lab Name: Columbia Analytical Services Episode No.:

Contract No.: SDG No.:

Initial Calibration Date: 11/04/04

Instrument ID: AutoSpec-Ultima GC Column ID: DB-5

HRCC1 Data Filename: U20402#1 HRCC4 Data Filename: U20403#1

HRCC2 Data Filename: U20401#1 HRCC5 Data Filename: U20404#1

HRCC3 Data Filename: U20400#1

	RELATIVE RESPONSE (RR)					MEAN RR	Cv (RSD) (1)
NATIVE ANALYTES	HRCC1	HRCC2	HRCC3	HRCC4	HRCC5		
2,3,7,8-TCDD	0.93	0.94	0.98	0.95	0.98	0.96	2.56
1,2,3,7,8-PeCDD	0.95	0.97	0.95	0.97	0.98	0.97	1.39
1,2,3,4,7,8-HxCDD	1.01	1.10	1.07	1.10	1.11	1.08	3.96
1,2,3,6,7,8-HxCDD	1.21	1.24	1.20	1.17	1.17	1.20	2.52
1,2,3,7,8,9-HxCDD	1.14	1.21	1.18	1.13	1.15	1.16	3.01
1,2,3,4,6,7,8-HpCDD	0.99	1.06	1.04	1.01	1.02	1.03	2.84
OCDD	1.15	1.19	1.07	1.07	1.08	1.11	4.95
2,3,7,8-TCDF	0.95	0.97	0.92	1.01	1.01	0.97	3.76
1,2,3,7,8-PeCDF	0.96	1.02	0.99	1.01	1.01	1.00	2.33
2,3,4,7,8-PeCDF	1.04	1.10	1.06	1.07	1.07	1.07	2.22
1,2,3,4,7,8-HxCDF	1.24	1.32	1.33	1.28	1.29	1.29	2.88
1,2,3,6,7,8-HxCDF	1.27	1.34	1.37	1.27	1.28	1.31	3.62
1,2,3,7,8,9-HxCDF	1.07	1.10	1.17	1.04	1.09	1.09	4.37
2,3,4,6,7,8-HxCDF	1.18	1.25	1.28	1.19	1.21	1.22	3.43
1,2,3,4,6,7,8-HpCDF	1.54	1.63	1.54	1.55	1.55	1.56	2.32
1,2,3,4,7,8,9-HpCDF	1.18	1.25	1.22	1.17	1.23	1.21	2.54
OCDF	1.38	1.44	1.35	1.39	1.40	1.39	2.33

(1) The %RSD for the 17 unlabeled standard must not exceed +/- 20%, see Section 7.7.2.1, Method 8290.

8290F3A

FORM 3B
PCDD/PCDF INITIAL CALIBRATION RELATIVE RESPONSES

Lab Name: Columbia Analytical Services Episode No.:

Contract No.: SDG No.:

Initial Calibration Date: 11/04/04

Instrument ID: AutoSpec-Ultima GC Column ID: DB-5

HCC1 Data Filename: U20402#1 HCC4 Data Filename: U20403#1

HCC2 Data Filename: U20401#1 HCC5 Data Filename: U20404#1

HCC3 Data Filename: U20400#1

	RELATIVE RESPONSE (RR)					MEAN RR	Cv (RSD) (1)
LABELED COMPOUNDS	HRCC1	HRCC2	HRCC3	HRCC4	HRCC5		
13C-2,3,7,8-TCDD	1.08	1.06	1.08	1.04	1.09	1.07	1.94
13C-1,2,3,7,8-PeCDD	1.01	1.05	1.07	0.92	0.98	1.01	5.89
13C-1,2,3,6,7,8-HxCDD	0.96	0.95	1.04	0.99	0.98	0.98	3.40
13C-1,2,3,4,6,7,8-HpCDD	1.00	0.99	1.03	1.02	1.03	1.01	1.69
13C-OCDD	1.02	1.01	1.10	1.02	1.07	1.04	3.60
13C-2,3,7,8-TCDF	1.48	1.45	1.60	1.39	1.47	1.48	5.05
13C-1,2,3,7,8-PeCDF	1.51	1.53	1.60	1.41	1.52	1.51	4.64
13C-1,2,3,4,7,8-HxCDF	1.40	1.39	1.42	1.46	1.42	1.42	1.71
13C-1,2,3,4,6,7,8-HpCDF	1.15	1.14	1.21	1.19	1.18	1.17	2.57
CLEANUP STANDARD							
37Cl-2,3,7,8-TCDD	0.95	1.01	1.03	0.97	1.04	1.00	3.96

(1) The %RSD for the nine labeled reference compounds must not exceed +/- 30%, see Section 7.7.2.1, Method 8290.

8290F3B

FORM 3C
PCDD/PCDF INITIAL CALIBRATION ION ABUNDANCE RATIOS

Lab Name: Columbia Analytical Services Episode No.:

Contract No.: SDG No.:

Initial Calibration Date: 11/04/04

Instrument ID: AutoSpec-Ultima GC Column ID: DB-5

HCC1 Data Filename: U20402#1 HCC4 Data Filename: U20403#1

HCC2 Data Filename: U20401#1 HCC5 Data Filename: U20404#1

HCC3 Data Filename: U20400#1

NATIVE ANALYTES	M/Z'S FORMING RATIO	ION ABUNDANCE RATIO HRCC1	HRCC2	HRCC3	HRCC4	HRCC5	QC LIMITS (2)
2,3,7,8-TCDD	M/M+2	0.79	0.79	0.79	0.78	0.78	0.65-0.89
1,2,3,7,8-PeCDD	M+2/M+4	1.60	1.60	1.57	1.58	1.58	1.32-1.78
1,2,3,4,7,8-HxCDD	M+2/M+4	1.30	1.28	1.27	1.26	1.27	1.05-1.43
1,2,3,6,7,8-HxCDD	M+2/M+4	1.28	1.29	1.27	1.29	1.28	1.05-1.43
1,2,3,7,8,9-HxCDD	M+2/M+4	1.29	1.27	1.26	1.26	1.28	1.05-1.43
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.07	1.06	1.05	1.06	1.06	0.88-1.20
OCDD	M+2/M+4	0.91	0.91	0.90	0.91	0.90	0.76-1.02
2,3,7,8-TCDF	M/M+2	0.78	0.80	0.80	0.80	0.80	0.65-0.89
1,2,3,7,8-PeCDF	M+2/M+4	1.62	1.58	1.61	1.57	1.57	1.32-1.78
2,3,4,7,8-PeCDF	M+2/M+4	1.61	1.60	1.59	1.59	1.58	1.32-1.78
1,2,3,4,7,8-HxCDF	M+2/M+4	1.29	1.29	1.28	1.27	1.27	1.05-1.43
1,2,3,6,7,8-HxCDF	M+2/M+4	1.28	1.27	1.28	1.28	1.28	1.05-1.43
1,2,3,7,8,9-HxCDF	M+2/M+4	1.29	1.31	1.28	1.29	1.28	1.05-1.43
2,3,4,6,7,8-HxCDF	M+2/M+4	1.23	1.27	1.26	1.26	1.27	1.05-1.43
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.05	1.04	1.06	1.05	1.05	0.88-1.20
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.06	1.05	1.04	1.05	1.05	0.88-1.20
OCDF	M+2/M+4	0.92	0.93	0.91	0.93	0.92	0.76-1.02

(1) See Table 6, Method 8290, for m/z specifications.

(2) Ion Abundance Ratio Control Limits from Table 8, Method 8290.

8290F3C

FORM 3D
PCDD/PCDF INITIAL CALIBRATION ION ABUNDANCE RATIOS

Lab Name: Columbia Analytical Services Episode No.:

Contract No.: SDG No.:

Initial Calibration Date: 11/04/04

Instrument ID: AutoSpec-Ultima GC Column ID: DB-5

HRCC1 Data Filename: U20402#1 HRCC4 Data Filename: U20403#1

HRCC2 Data Filename: U20401#1 HRCC5 Data Filename: U20404#1

HRCC3 Data Filename: U20400#1

LABELED COMPOUNDS	M/Z'S FORMING RATIO	ION ABUNDANCE RATIO HRCC1	HRCC2	HRCC3	HRCC4	HRCC5	QC LIMITS (2)
13C-2,3,7,8-TCDD	M/M+2	0.79	0.76	0.79	0.79	0.78	0.65-0.89
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.55	1.57	1.58	1.55	1.57	1.32-1.78
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.27	1.26	1.25	1.26	1.05-1.43
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.05	1.06	1.06	1.07	1.06	0.88-1.20
13C-OCDD	M+2/M+4	0.92	0.93	0.92	0.93	0.92	0.76-1.02
13C-2,3,7,8-TCDF	M/M+2	0.78	0.80	0.79	0.79	0.79	0.65-0.89
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.59	1.58	1.59	1.58	1.58	1.32-1.78
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.53	0.53	0.53	0.53	0.53	0.43-0.59
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.46	0.45	0.46	0.46	0.45	0.37-0.51

(1) See Table 6, Method 8290, for m/z specifications.Method 8290.

(2) Ion Abundance Ratio Control Limits from Table 8,

8290F3D

Columbia Analytical Services, Inc.

Sample Response Summary

CLIENT ID.
ICAL HRCC1

Run #1 Filename U20402#1 Samp: 1 Inj: 1 Acquired: 4-NOV-04 16:06:05
Processed: 5-NOV-04 15:48:14 Sample ID:

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	26:45	9.770e+02	1.255e+03	0.78	yes	no
2	Unk	1,2,3,7,8-PeCDF	31:46	3.563e+03	2.201e+03	1.62	yes	no
3	Unk	2,3,4,7,8-PeCDF	32:35	3.845e+03	2.396e+03	1.61	yes	no
4	Unk	1,2,3,4,7,8-HxCDF	35:34	3.782e+03	2.938e+03	1.29	yes	no
5	Unk	1,2,3,6,7,8-HxCDF	35:40	3.890e+03	3.029e+03	1.28	yes	no
6	Unk	2,3,4,6,7,8-HxCDF	36:11	3.534e+03	2.862e+03	1.23	yes	no
7	Unk	1,2,3,7,8,9-HxCDF	36:54	3.269e+03	2.525e+03	1.29	yes	no
8	Unk	1,2,3,4,6,7,8-HpCDF	38:21	3.509e+03	3.341e+03	1.05	yes	no
9	Unk	1,2,3,4,7,8,9-HpCDF	39:33	2.706e+03	2.561e+03	1.06	yes	no
10	Unk	OCDF	42:02	5.233e+03	5.687e+03	0.92	yes	no
11	Unk	2,3,7,8-TCDD	27:46	7.046e+02	8.867e+02	0.79	yes	no
12	Unk	1,2,3,7,8-PeCDD	32:58	2.351e+03	1.471e+03	1.60	yes	no
13	Unk	1,2,3,4,7,8-HxCDD	36:19	2.113e+03	1.624e+03	1.30	yes	no
14	Unk	1,2,3,6,7,8-HxCDD	36:23	2.514e+03	1.964e+03	1.28	yes	no
15	Unk	1,2,3,7,8,9-HxCDD	36:41	2.373e+03	1.845e+03	1.29	yes	no
16	Unk	1,2,3,4,6,7,8-HpCDD	39:10	1.979e+03	1.857e+03	1.07	yes	no
17	Unk	OCDD	41:54	4.332e+03	4.764e+03	0.91	yes	no
18	IS	13C-2,3,7,8-TCDF	26:44	5.153e+04	6.576e+04	0.78	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	31:45	7.384e+04	4.644e+04	1.59	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	35:33	9.394e+04	1.775e+05	0.53	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	38:20	6.998e+04	1.528e+05	0.46	yes	no
22	IS	13C-2,3,7,8-TCDD	27:45	3.769e+04	4.799e+04	0.79	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	32:57	4.881e+04	3.150e+04	1.55	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	36:23	1.037e+05	8.201e+04	1.26	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	39:10	9.947e+04	9.460e+04	1.05	yes	no
26	IS	13C-OCDD	41:53	1.907e+05	2.062e+05	0.92	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	27:28	3.511e+04	4.436e+04	0.79	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	36:40	1.078e+05	8.585e+04	1.26	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	27:46	1.507e+03				

Columbia Analytical Services, Inc.
10655 Richmond Ave., Suite 130A
Houston, TX 77042
Office(713)266-1599. Fax(713)266-0130

Columbia Analytical Services,Inc. CLIENT ID.
Signal/Noise Height Ratio Summary ICAL HRCC1

Run #1 Filename U20402 #1 Samp: 1 Inj: 1 Acquired: 4-NOV-04 16:06:05

Processed: 5-NOV-04 15:48:14 LAB. ID: ICAL HRCC1

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	9.88e+04	9.80e+02	1.0e+02	1.27e+05	1.05e+03	1.2e+02
2	1,2,3,7,8-PeCDF	5.22e+05	6.00e+02	8.7e+02	3.25e+05	1.40e+03	2.3e+02
3	2,3,4,7,8-PeCDF	5.66e+05	6.00e+02	9.4e+02	3.70e+05	1.40e+03	2.7e+02
4	1,2,3,4,7,8-HxCDF	6.94e+05	7.60e+02	9.1e+02	5.34e+05	6.24e+02	8.6e+02
5	1,2,3,6,7,8-HxCDF	6.32e+05	7.60e+02	8.3e+02	4.89e+05	6.24e+02	7.8e+02
6	2,3,4,6,7,8-HxCDF	6.38e+05	7.60e+02	8.4e+02	5.01e+05	6.24e+02	8.0e+02
7	1,2,3,7,8,9-HxCDF	5.56e+05	7.60e+02	7.3e+02	4.17e+05	6.24e+02	6.7e+02
8	1,2,3,4,6,7,8-HpCDF	6.75e+05	1.20e+03	5.6e+02	6.26e+05	1.25e+03	5.0e+02
9	1,2,3,4,7,8,9-HpCDF	4.55e+05	1.20e+03	3.8e+02	4.36e+05	1.25e+03	3.5e+02
10	OCDF	6.28e+05	8.04e+02	7.8e+02	7.08e+05	1.22e+03	5.8e+02
11	2,3,7,8-TCDD	8.53e+04	6.72e+02	1.3e+02	9.84e+04	6.00e+02	1.6e+02
12	1,2,3,7,8-PeCDD	3.71e+05	6.60e+02	5.6e+02	2.28e+05	6.40e+02	3.6e+02
13	1,2,3,4,7,8-HxCDD	4.15e+05	8.32e+02	5.0e+02	3.18e+05	6.40e+02	5.0e+02
14	1,2,3,6,7,8-HxCDD	4.24e+05	8.32e+02	5.1e+02	3.33e+05	6.40e+02	5.2e+02
15	1,2,3,7,8,9-HxCDD	4.32e+05	8.32e+02	5.2e+02	3.32e+05	6.40e+02	5.2e+02
16	1,2,3,4,6,7,8-HpCDD	3.63e+05	6.44e+02	5.6e+02	3.40e+05	7.60e+02	4.5e+02
17	OCDD	5.15e+05	1.26e+03	4.1e+02	5.78e+05	7.80e+02	7.4e+02
18	13C-2,3,7,8-TCDF	5.30e+06	2.31e+03	2.3e+03	6.79e+06	7.92e+02	8.6e+03
19	13C-1,2,3,7,8-PeCDF	1.06e+07	1.10e+03	9.6e+03	6.62e+06	6.80e+02	9.7e+03
20	13C-1,2,3,4,7,8-HxCDF	1.62e+07	8.28e+02	2.0e+04	3.07e+07	9.04e+02	3.4e+04
21	13C-1,2,3,4,6,7,8-HpCDF	1.33e+07	3.61e+03	3.7e+03	2.89e+07	2.42e+03	1.2e+04
22	13C-2,3,7,8-TCDD	4.30e+06	2.30e+03	1.9e+03	5.48e+06	1.76e+03	3.1e+03
23	13C-1,2,3,7,8-PeCDD	7.56e+06	6.92e+02	1.1e+04	4.92e+06	6.24e+02	7.9e+03
24	13C-1,2,3,6,7,8-HxCDD	1.89e+07	1.90e+03	9.9e+03	1.49e+07	1.58e+03	9.5e+03
25	13C-1,2,3,4,6,7,8-HpCDD	1.83e+07	1.95e+03	9.4e+03	1.75e+07	9.92e+02	1.8e+04
26	13C-OCDD	2.33e+07	1.23e+03	1.9e+04	2.52e+07	9.56e+02	2.6e+04
27	13C-1,2,3,4-TCDD	4.35e+06	2.30e+03	1.9e+03	5.49e+06	1.76e+03	3.1e+03
28	13C-1,2,3,7,8,9-HxCDD	1.95e+07	1.90e+03	1.0e+04	1.56e+07	1.58e+03	9.9e+03
29	37Cl-2,3,7,8-TCDD	1.73e+05	9.40e+02	1.8e+02			

Columbia Analytical Services, Inc.
10655 Richmond Ave., Suite 130A
Houston, TX 77042
Office:(713)266-1599. Fax:(713)266-0130

File:U20402 #1-689 Acq: 4-NOV-2004 16:06:05 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC1

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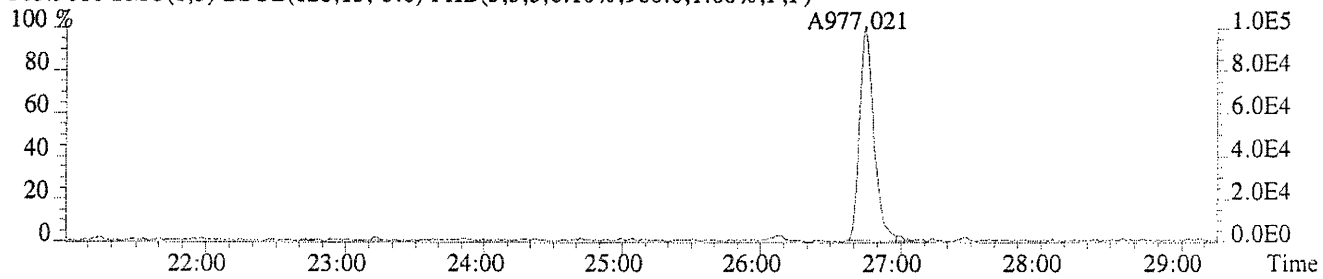

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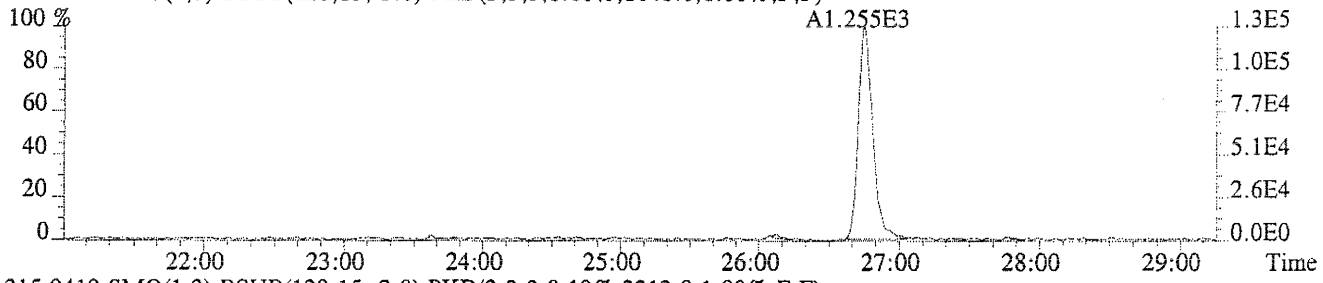
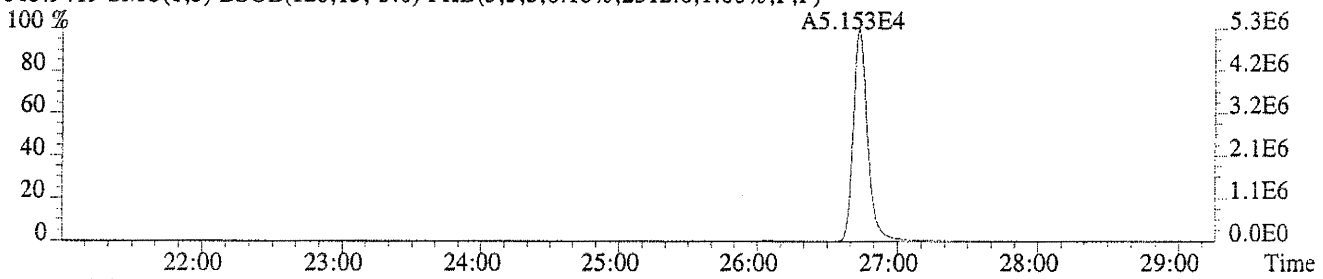
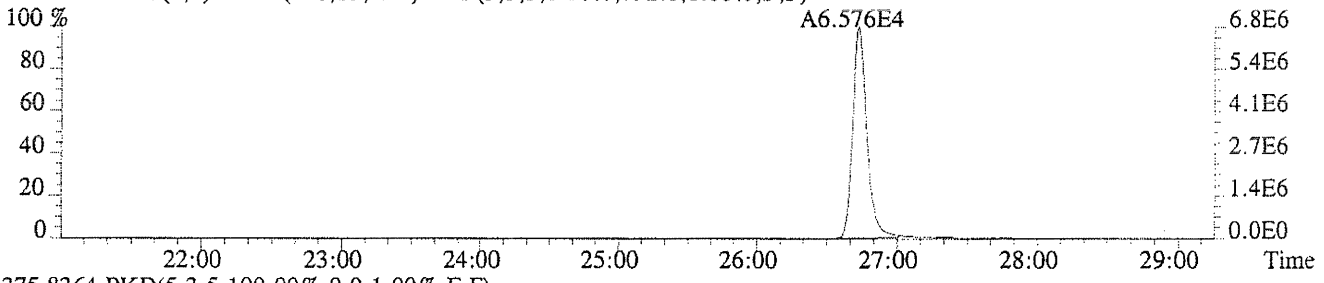


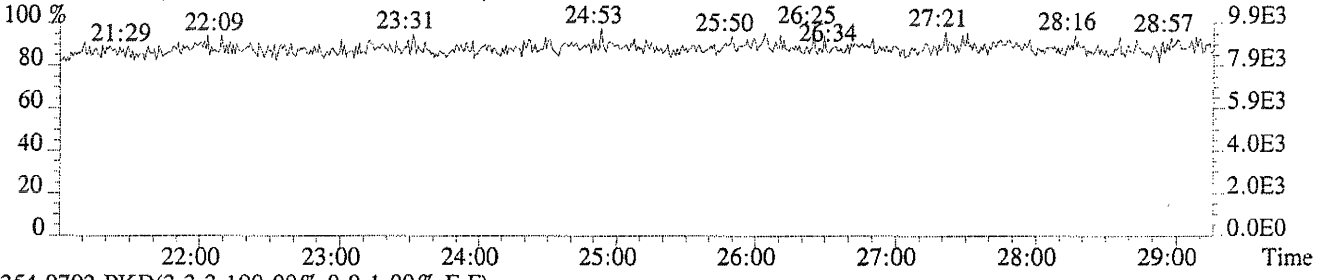
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2312.0,1.00%,F,F)



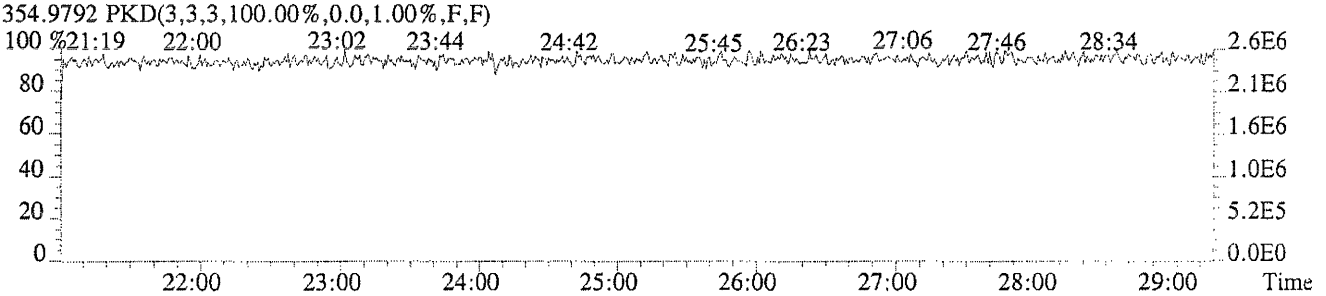
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,792.0,1.00%,F,F)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

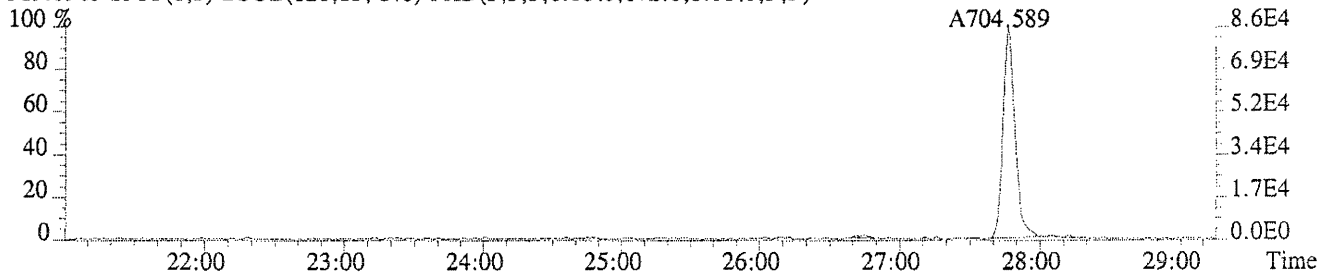


354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

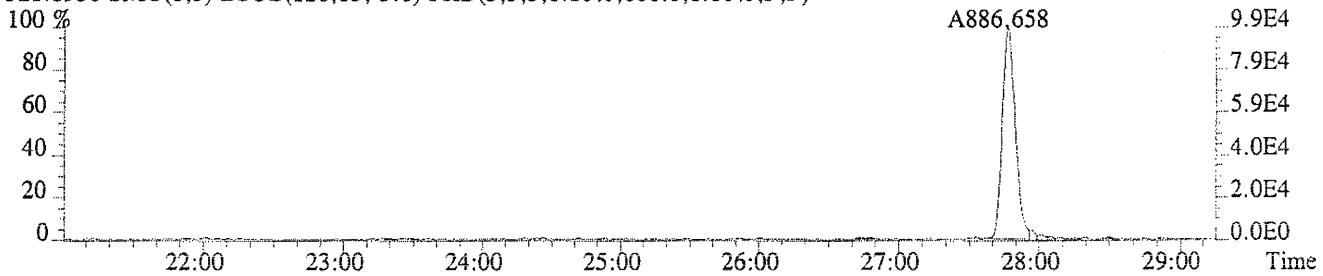


File:U20402 #1-689 Acq: 4-NOV-2004 16:06:05 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC1

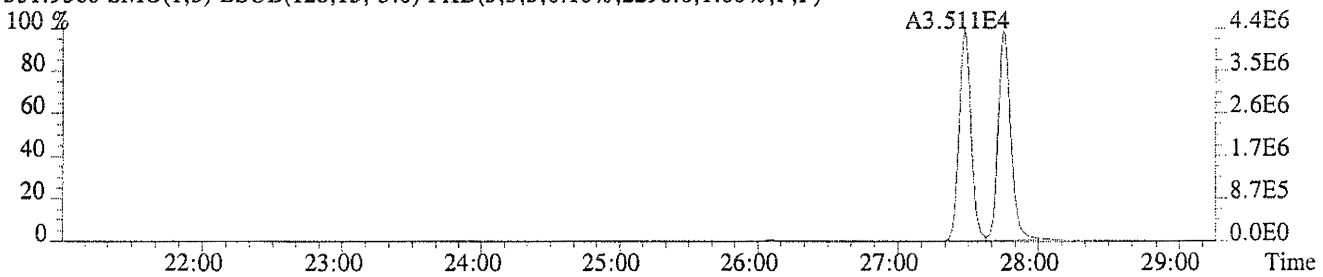
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,672.0,1.00%,F,F)



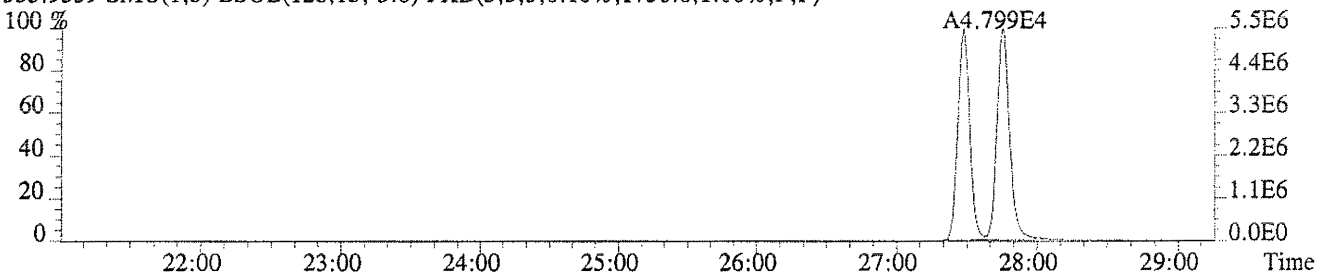
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,600.0,1.00%,F,F)



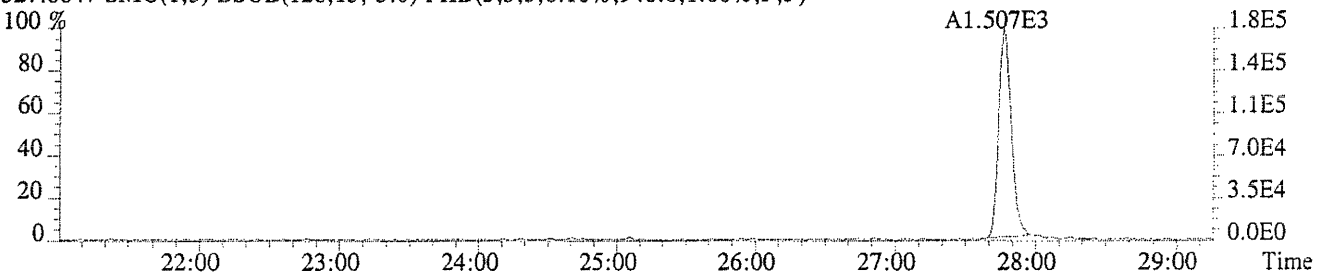
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2296.0,1.00%,F,F)



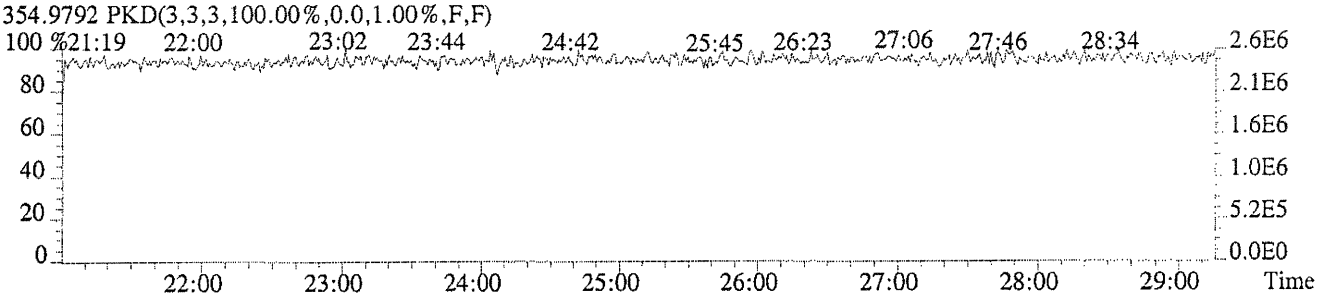
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1756.0,1.00%,F,F)



327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,940.0,1.00%,F,F)

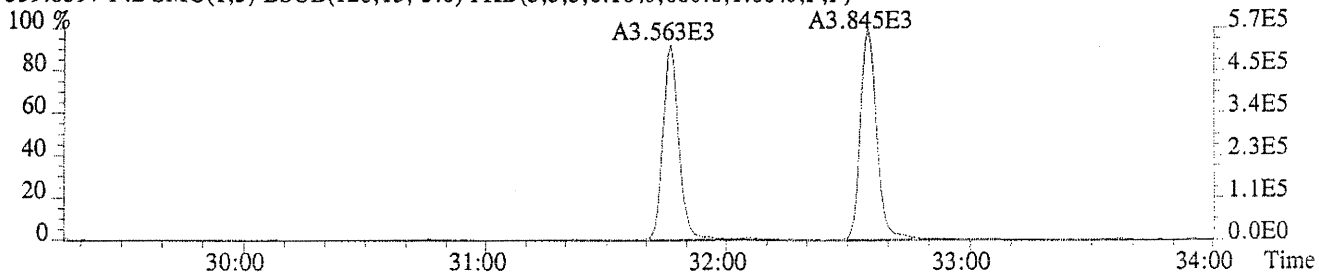


354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

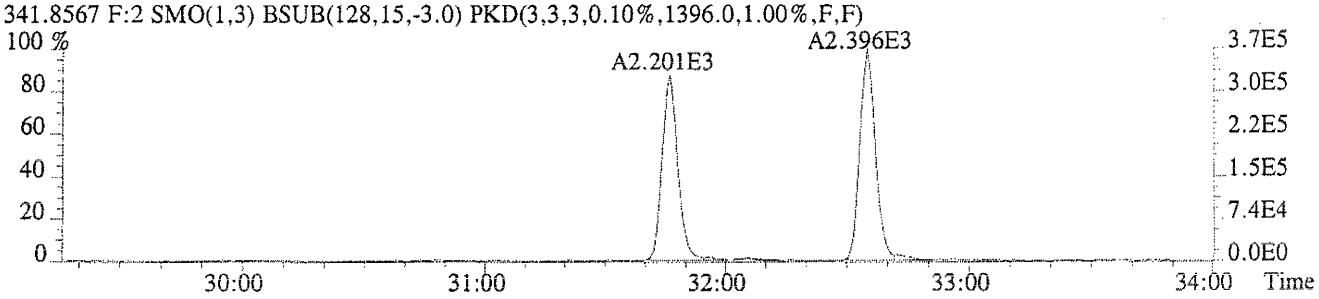


File:U20402 #1-431 Acq: 4-NOV-2004 16:06:05 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC1

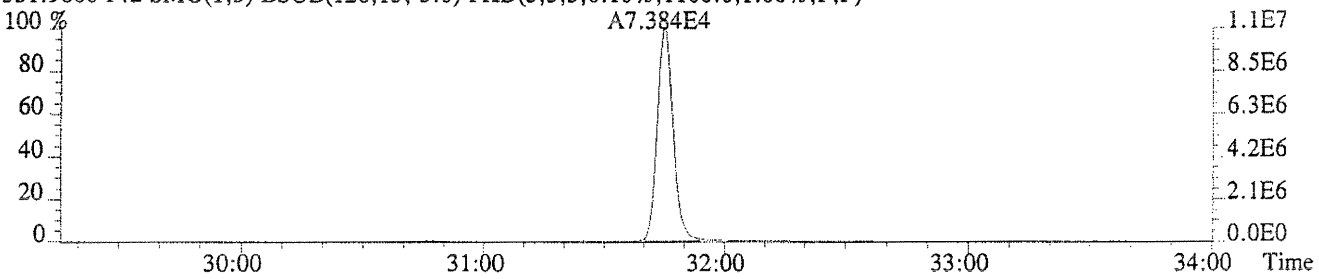
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,600.0,1.00%,F,F)



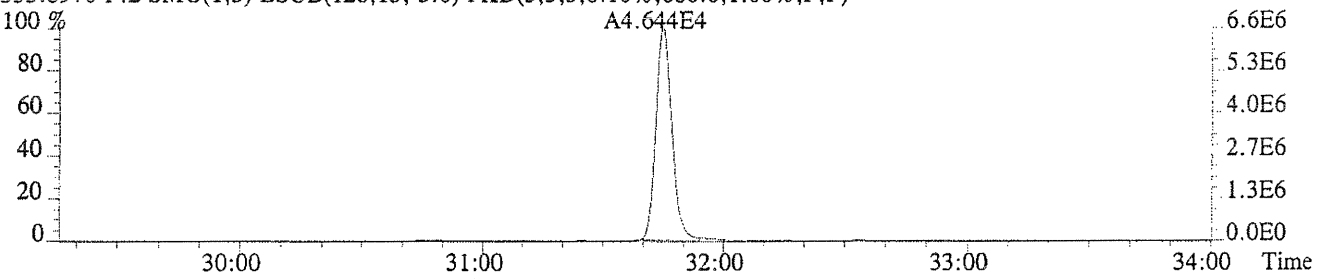
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1396.0,1.00%,F,F)



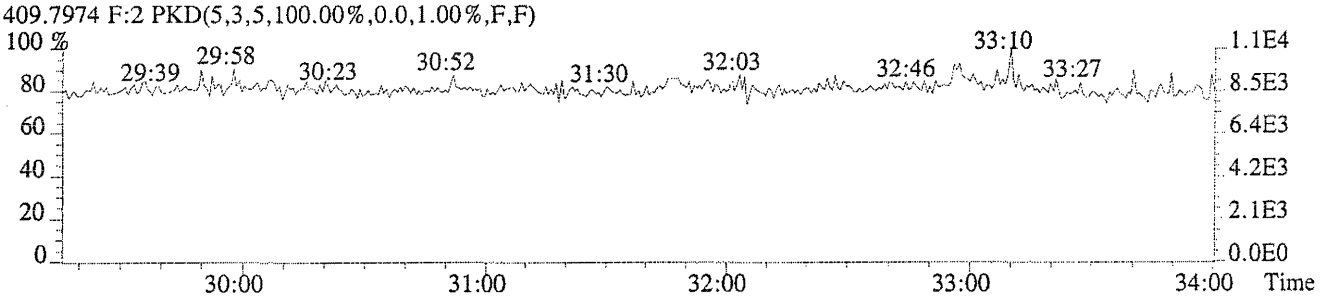
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1100.0,1.00%,F,F)



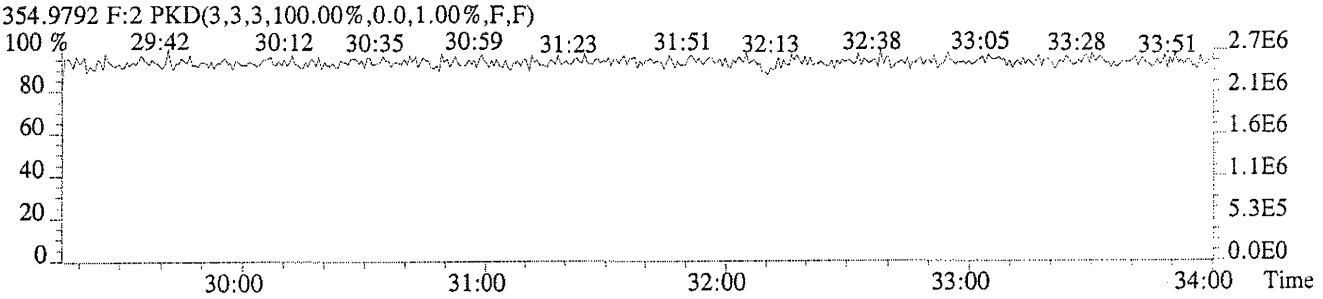
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,680.0,1.00%,F,F)



409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

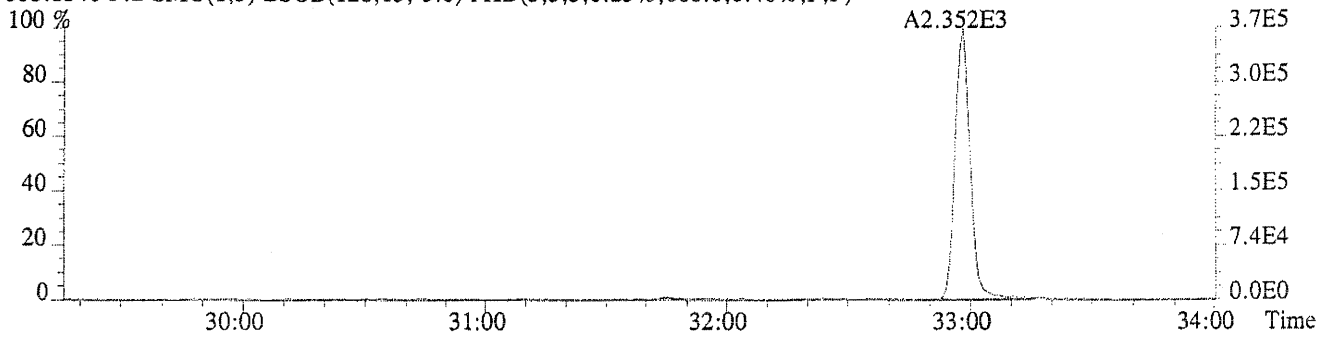


354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

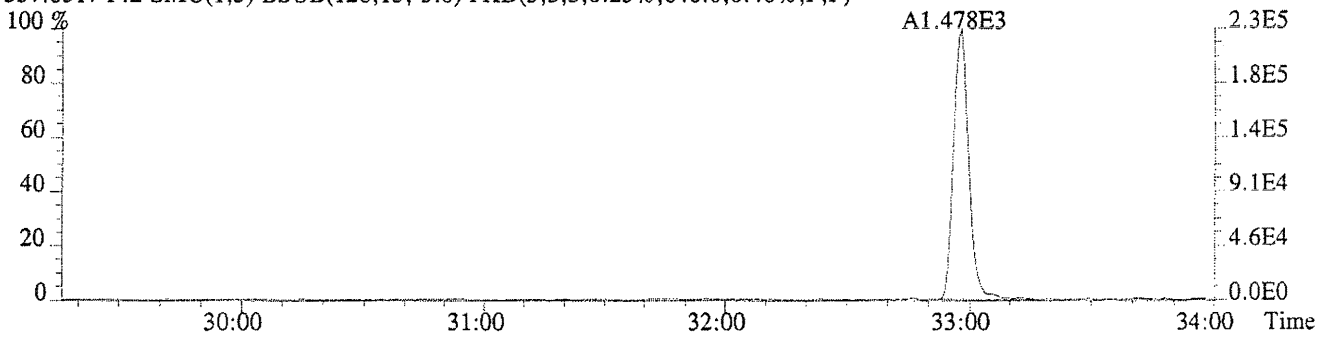


File:U20402 #1-431 Acq: 4-NOV-2004 16:06:05 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC1

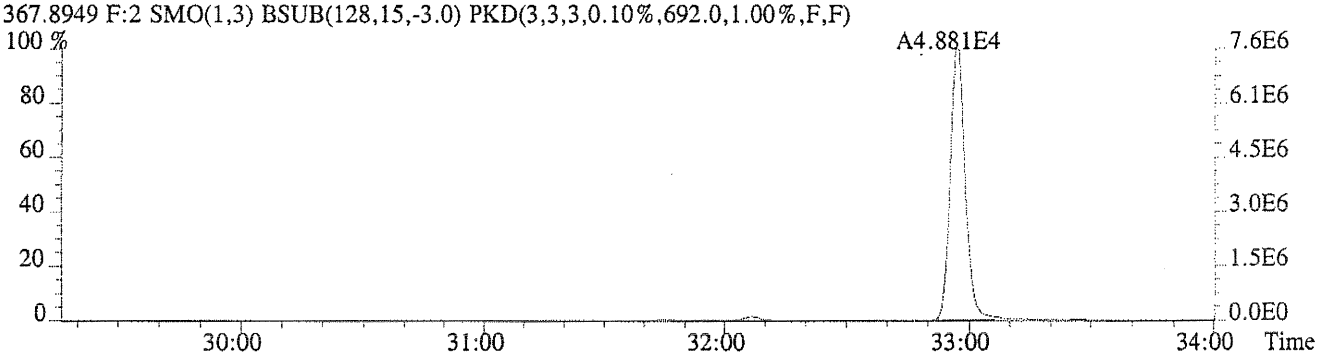
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,660.0,0.40%,F,F)



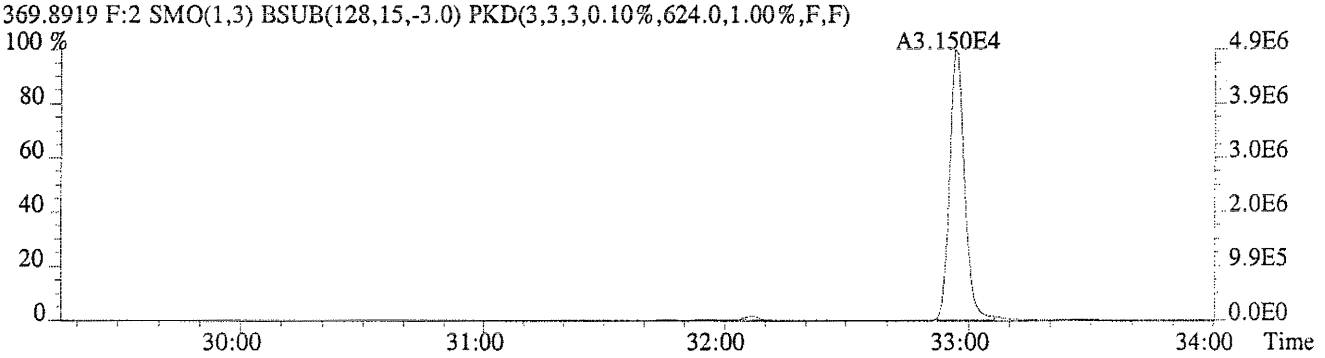
357.8517 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,640.0,0.40%,F,F)



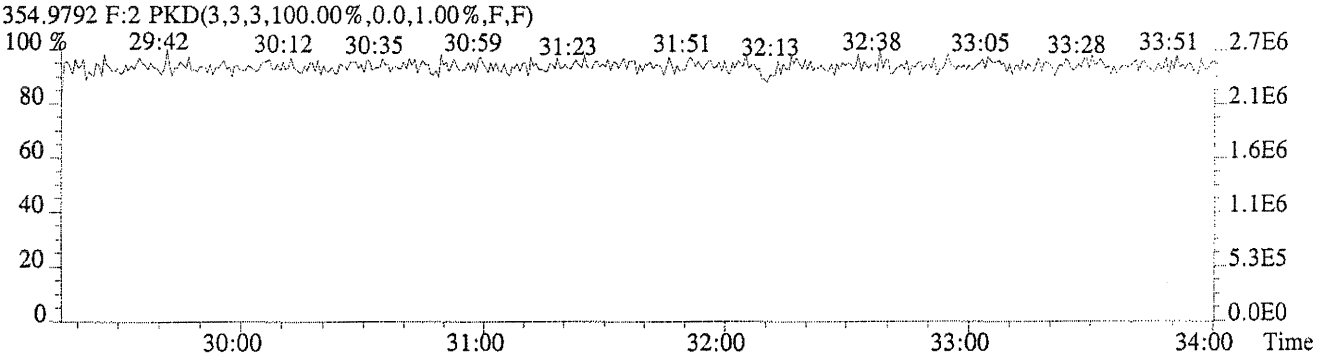
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,692.0,1.00%,F,F)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,624.0,1.00%,F,F)

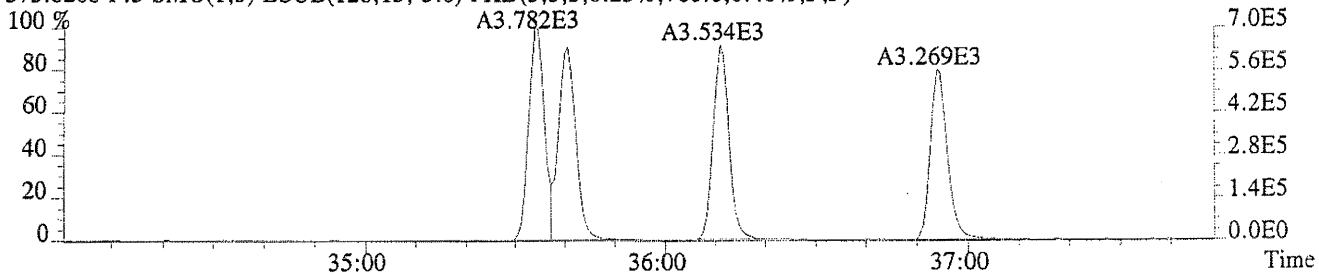


354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

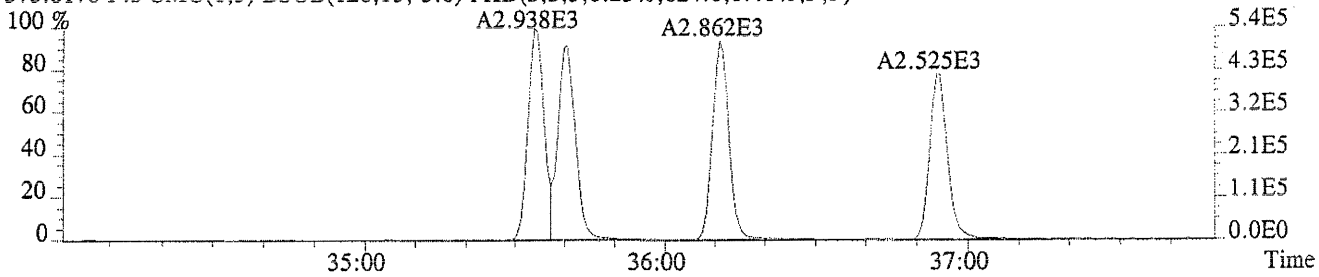


File:U20402 #1-346 Acq: 4-NOV-2004 16:06:05 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC1

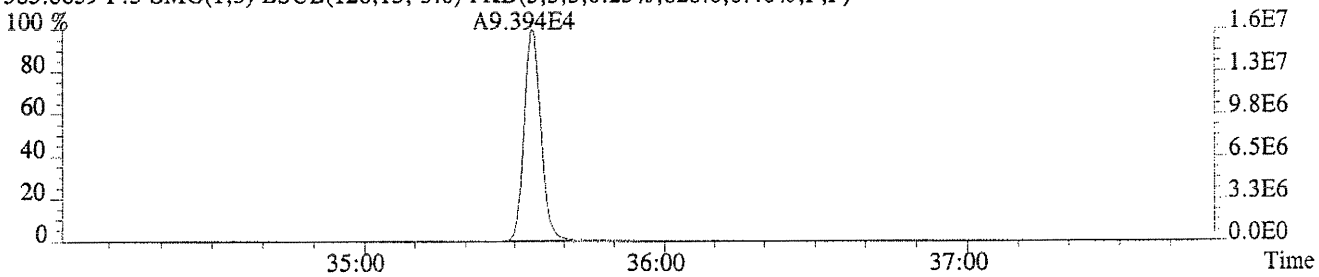
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,760.0,0.40%,F,F)



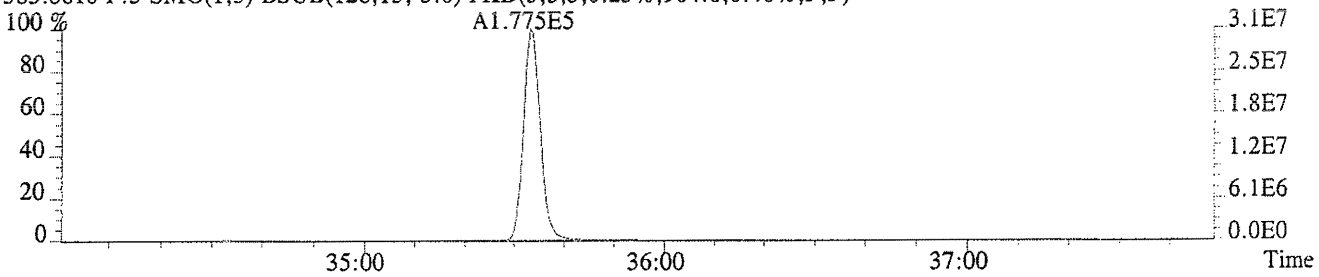
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,624.0,0.40%,F,F)



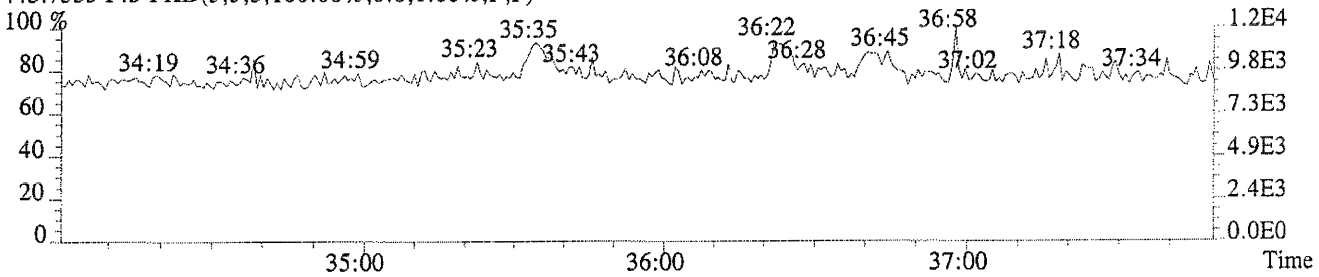
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,828.0,0.40%,F,F)



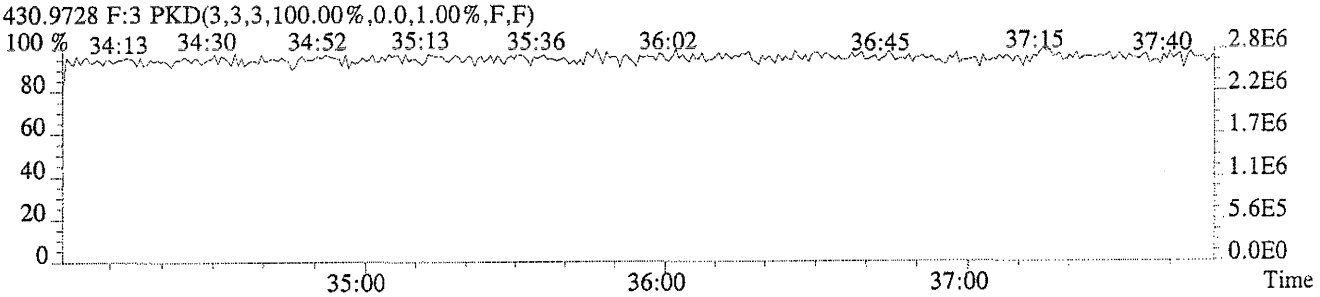
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,904.0,0.40%,F,F)



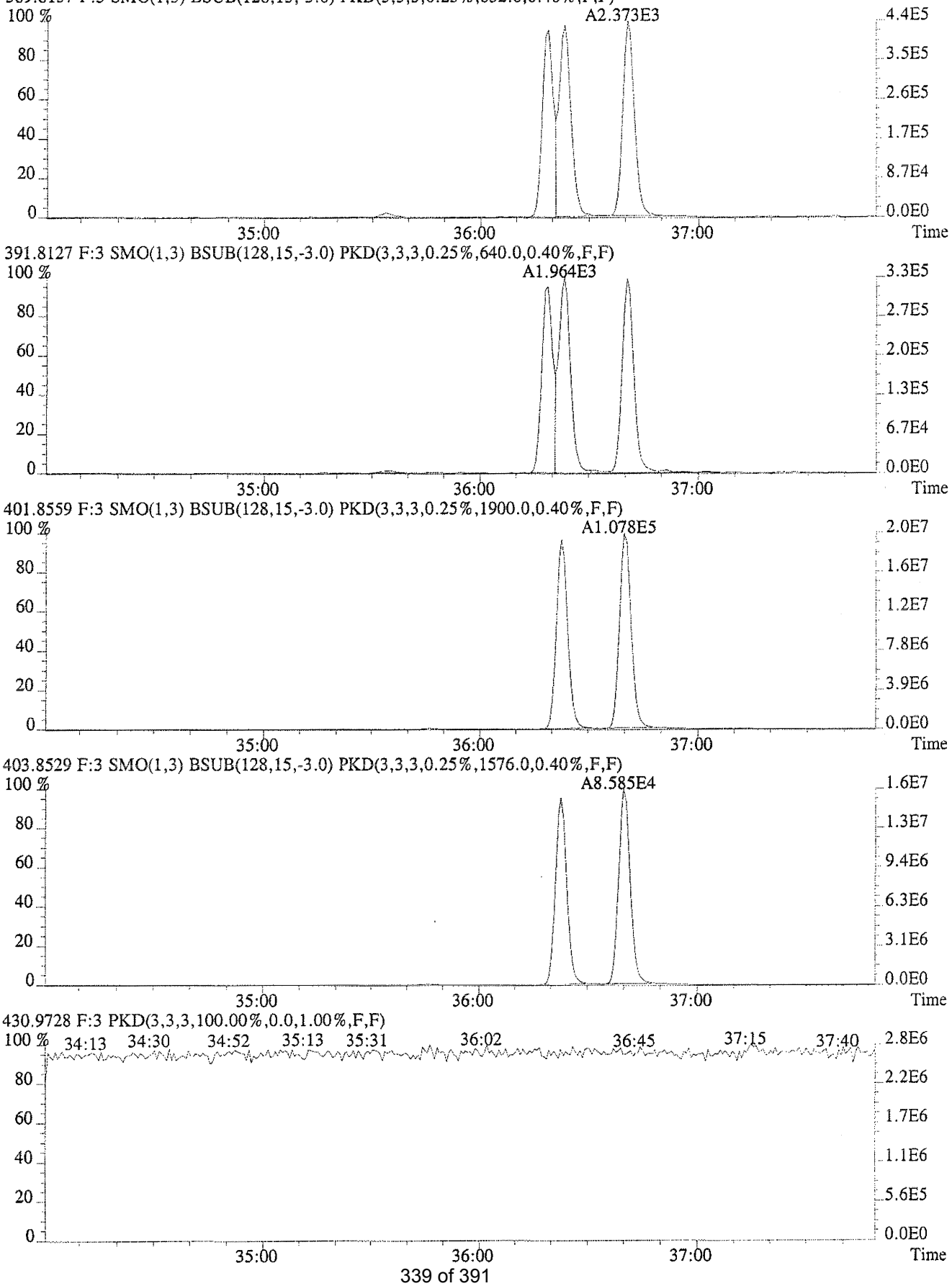
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



430.9728 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

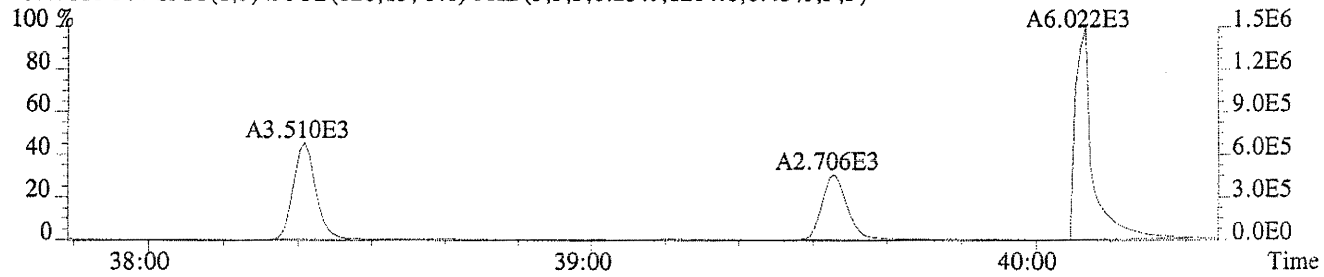


File:U20402 #1-346 Acq: 4-NOV-2004 16:06:05 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC1

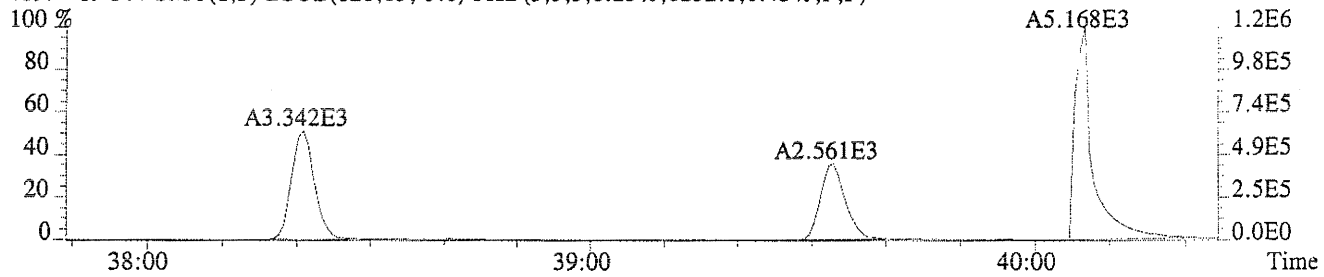


File:U20402 #1-236 Acq: 4-NOV-2004 16:06:05 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC1

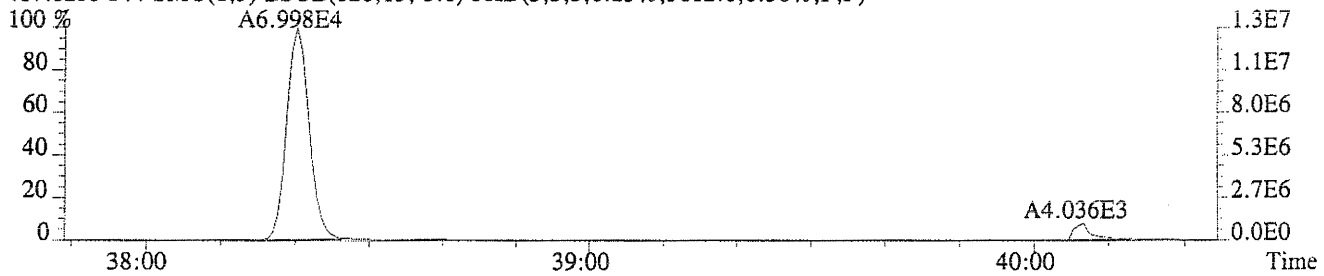
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1204.0,0.45%,F,F)



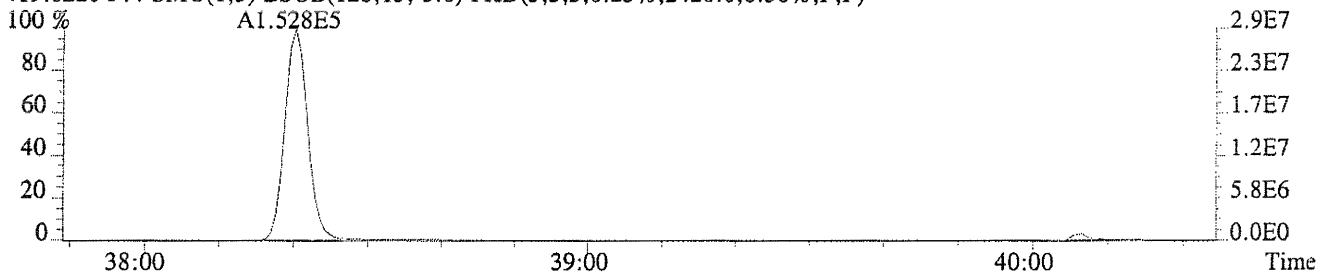
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1252.0,0.45%,F,F)



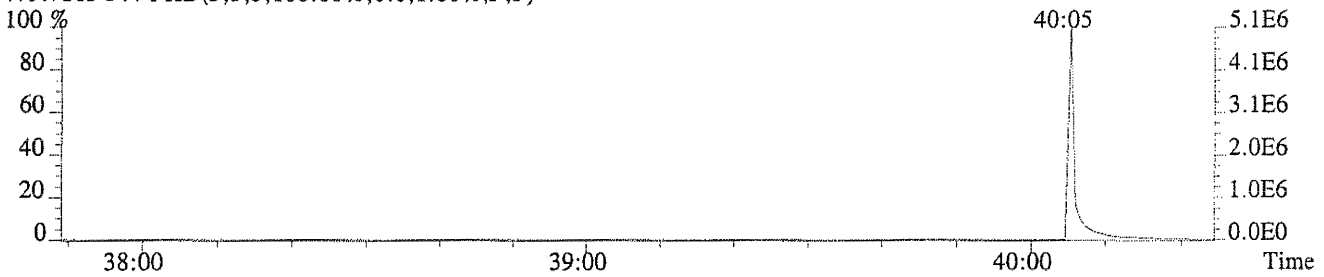
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3612.0,0.50%,F,F)



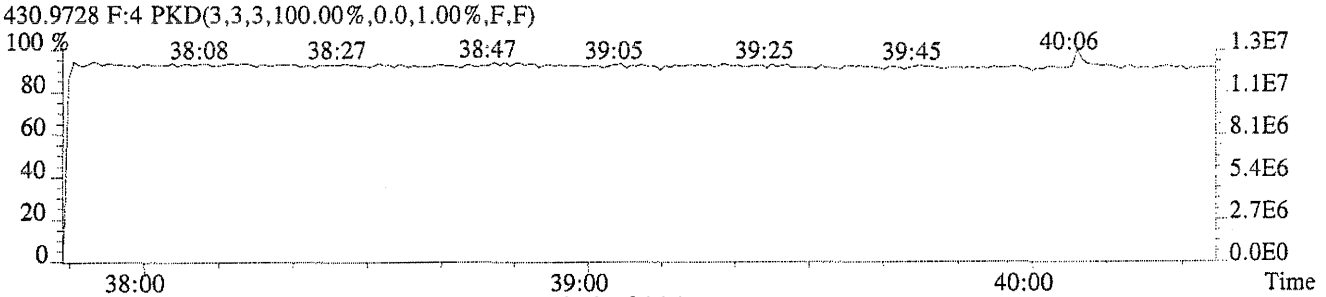
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2420.0,0.50%,F,F)



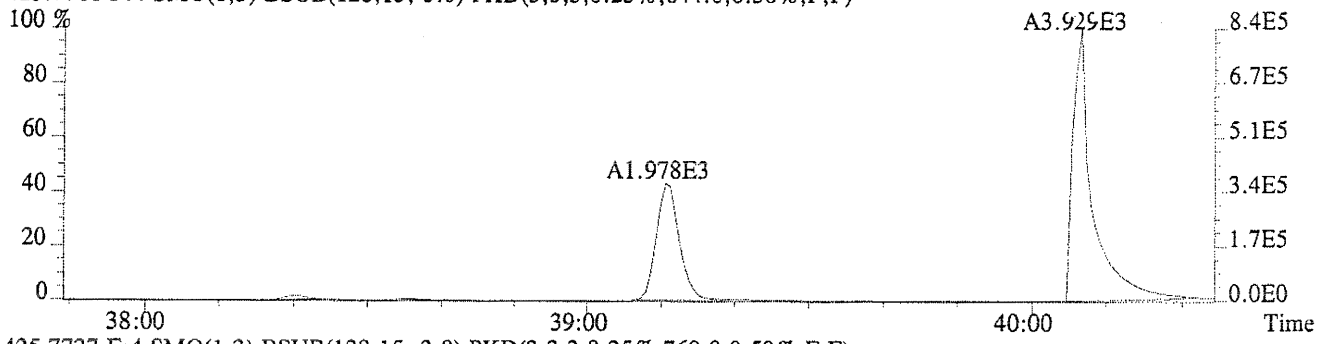
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



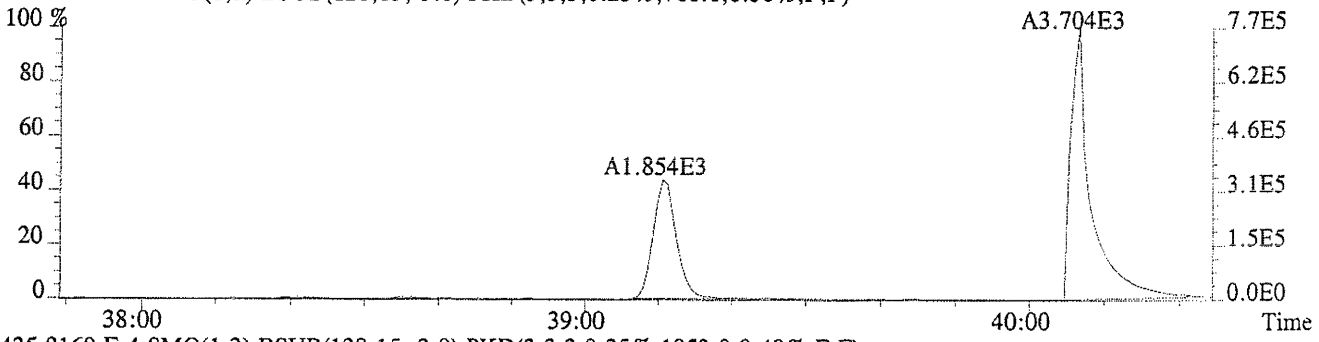
430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



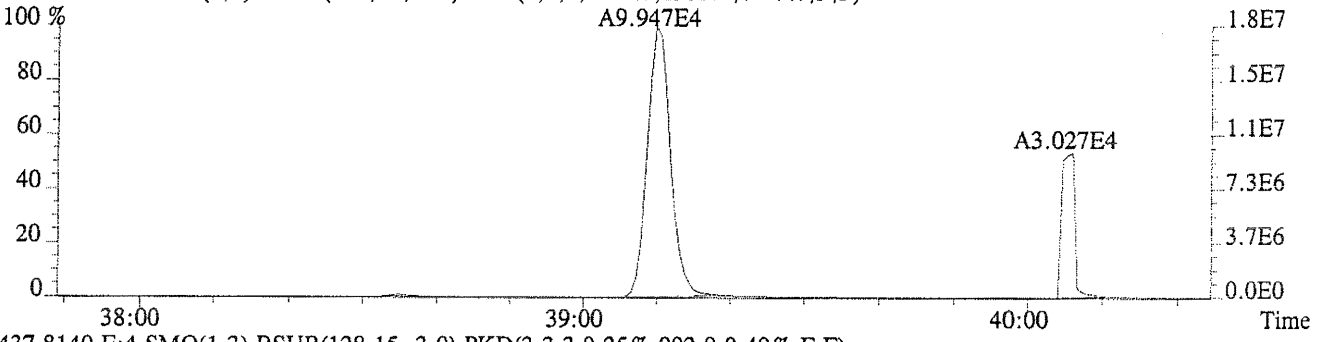
File:U20402 #1-236 Acq: 4-NOV-2004 16:06:05 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC1
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,644.0,0.50%,F,F)



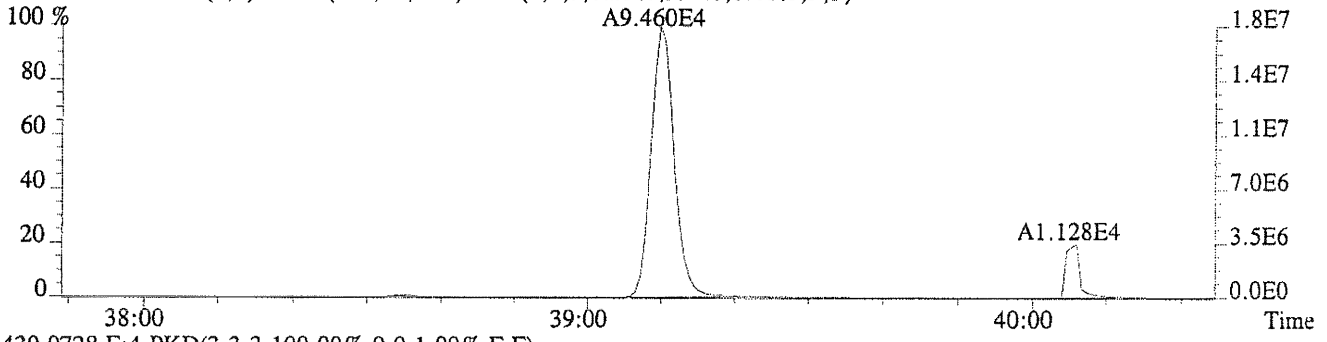
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,760.0,0.50%,F,F)



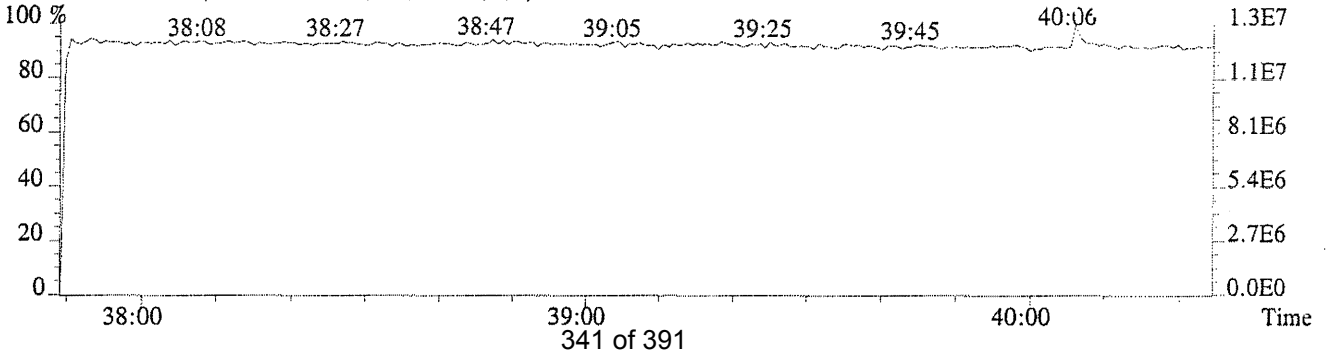
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1952.0,0.40%,F,F)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,992.0,0.40%,F,F)

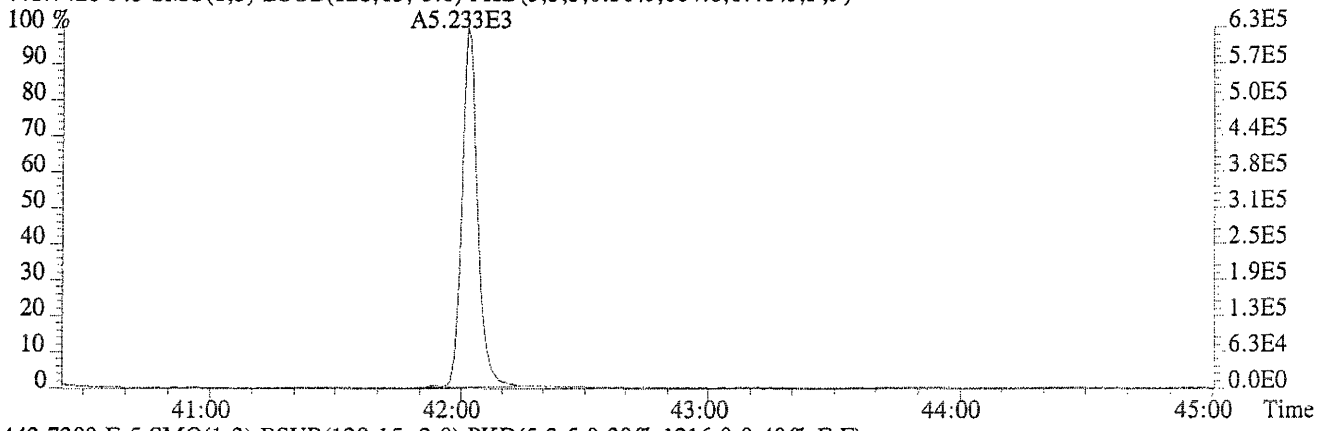


430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

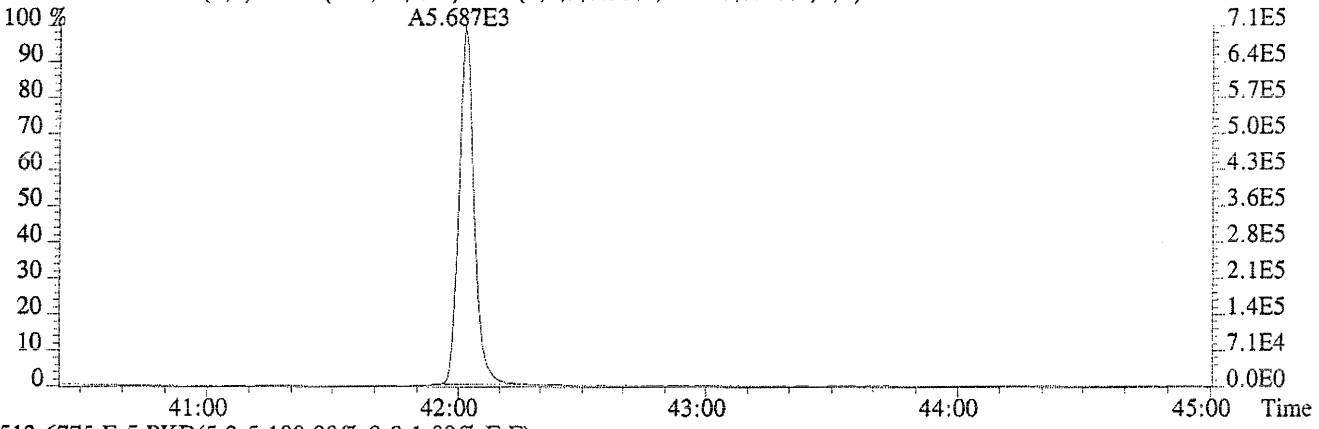


File:U20402 #1-508 Acq: 4-NOV-2004 16:06:05 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC1

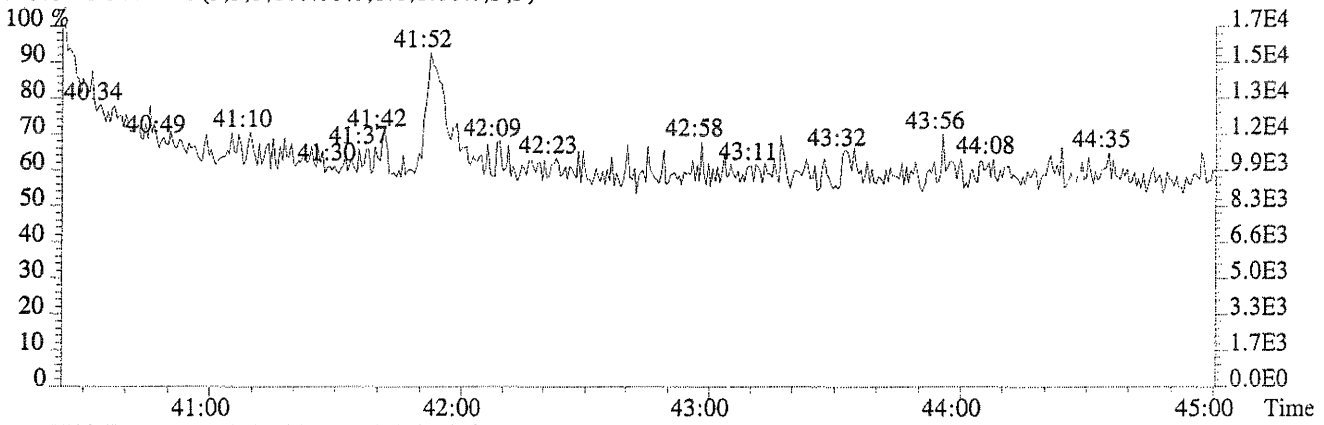
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,804.0,0.40%,F,F)



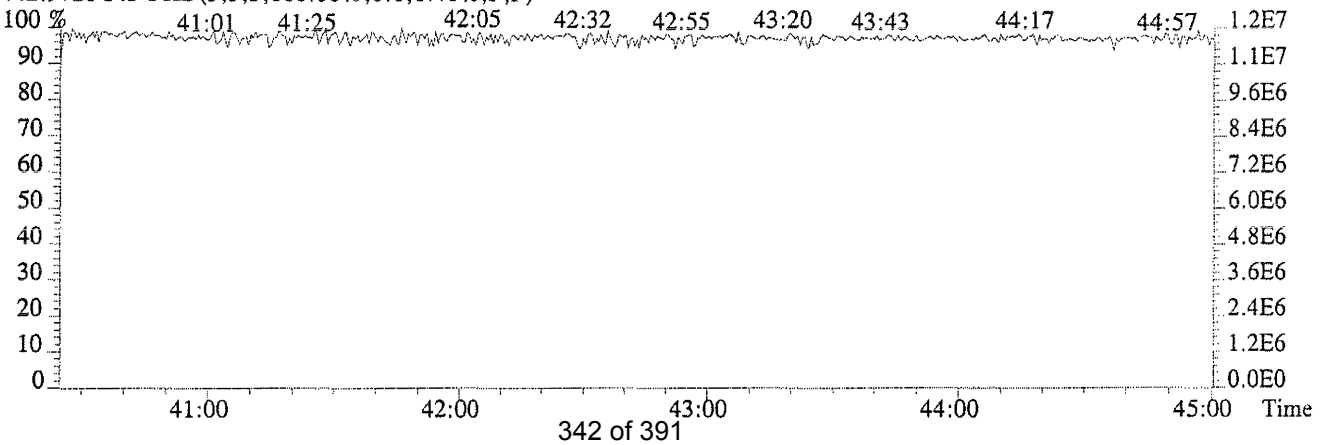
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1216.0,0.40%,F,F)



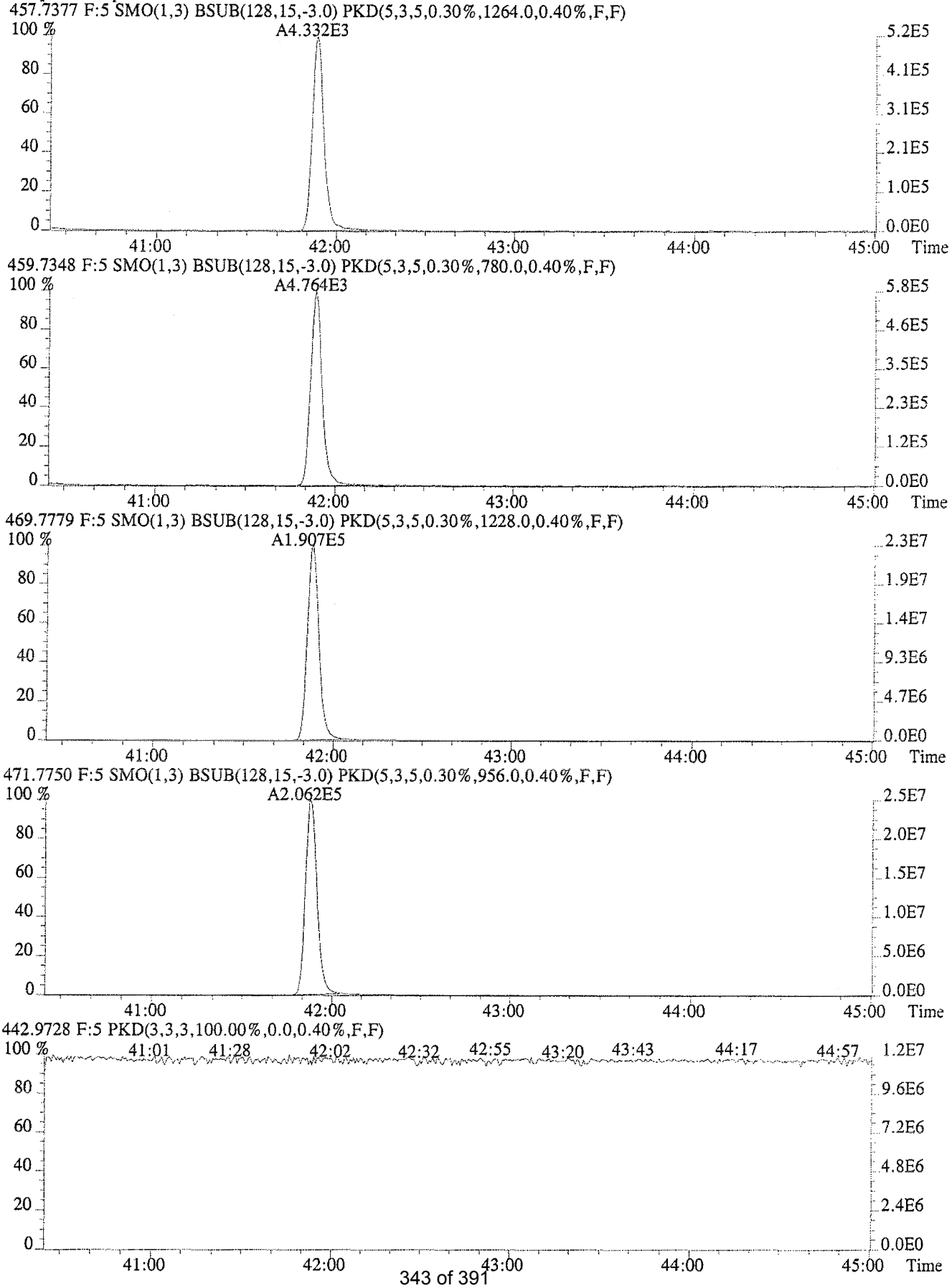
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



File:U20402 #1-508 Acq: 4-NOV-2004 16:06:05 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC1



Columbia Analytical Services, Inc.
Sample Response Summary

CLIENT ID.
ICAL HRCC2

Run #2 Filename U20401#1 Samp: 1 Inj: 1 Acquired: 4-NOV-04 15:14:49
Processed: 5-NOV-04 15:49:03 Sample ID:

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	26:45	2.440e+03	3.050e+03	0.80	yes	no
2	Unk	1,2,3,7,8-PeCDF	31:46	9.309e+03	5.891e+03	1.58	yes	no
3	Unk	2,3,4,7,8-PeCDF	32:35	1.015e+04	6.356e+03	1.60	yes	no
4	Unk	1,2,3,4,7,8-HxCDF	35:34	9.619e+03	7.471e+03	1.29	yes	no
5	Unk	1,2,3,6,7,8-HxCDF	35:40	9.658e+03	7.614e+03	1.27	yes	no
6	Unk	2,3,4,6,7,8-HxCDF	36:11	9.012e+03	7.095e+03	1.27	yes	no
7	Unk	1,2,3,7,8,9-HxCDF	36:54	8.096e+03	6.159e+03	1.31	yes	no
8	Unk	1,2,3,4,6,7,8-HpCDF	38:21	8.742e+03	8.369e+03	1.04	yes	no
9	Unk	1,2,3,4,7,8,9-HpCDF	39:33	6.727e+03	6.382e+03	1.05	yes	no
10	Unk	OCDF	42:02	1.293e+04	1.396e+04	0.93	yes	no
11	Unk	2,3,7,8-TCDD	27:46	1.723e+03	2.184e+03	0.79	yes	no
12	Unk	1,2,3,7,8-PeCDD	32:57	6.121e+03	3.833e+03	1.60	yes	no
13	Unk	1,2,3,4,7,8-HxCDD	36:18	5.472e+03	4.261e+03	1.28	yes	no
14	Unk	1,2,3,6,7,8-HxCDD	36:23	6.188e+03	4.806e+03	1.29	yes	no
15	Unk	1,2,3,7,8,9-HxCDD	36:41	6.000e+03	4.715e+03	1.27	yes	no
16	Unk	1,2,3,4,6,7,8-HpCDD	39:10	5.023e+03	4.737e+03	1.06	yes	no
17	Unk	OCDD	41:53	1.061e+04	1.169e+04	0.91	yes	no
18	IS	13C-2,3,7,8-TCDF	26:44	5.016e+04	6.298e+04	0.80	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	31:45	7.336e+04	4.635e+04	1.58	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	35:33	8.910e+04	1.693e+05	0.53	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	38:20	6.553e+04	1.449e+05	0.45	yes	no
22	IS	13C-2,3,7,8-TCDD	27:45	3.601e+04	4.723e+04	0.76	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	32:57	4.995e+04	3.186e+04	1.57	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	36:23	9.892e+04	7.810e+04	1.27	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	39:10	9.449e+04	8.923e+04	1.06	yes	no
26	IS	13C-OCDD	41:52	1.798e+05	1.943e+05	0.93	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	27:28	3.459e+04	4.361e+04	0.79	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	36:40	1.034e+05	8.202e+04	1.26	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	27:46	3.931e+03				

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Columbia Analytical Services,Inc. CLIENT ID.
Signal/Noise Height Ratio Summary ICAL HRCC2

Run #2 Filename U20401 #1 Samp: 1 Inj: 1 Acquired: 4-NOV-04 15:14:49

Processed: 5-NOV-04 15:49:03 LAB. ID: ICAL HRCC2

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	2.65e+05	1.50e+03	1.8e+02	3.21e+05	1.52e+03	2.1e+02
2	1,2,3,7,8-PeCDF	1.38e+06	7.44e+02	1.9e+03	8.52e+05	8.88e+02	9.6e+02
3	2,3,4,7,8-PeCDF	1.54e+06	7.44e+02	2.1e+03	9.61e+05	8.88e+02	1.1e+03
4	1,2,3,4,7,8-HxCDF	1.74e+06	6.96e+02	2.5e+03	1.34e+06	6.92e+02	1.9e+03
5	1,2,3,6,7,8-HxCDF	1.60e+06	6.96e+02	2.3e+03	1.29e+06	6.92e+02	1.9e+03
6	2,3,4,6,7,8-HxCDF	1.62e+06	6.96e+02	2.3e+03	1.27e+06	6.92e+02	1.8e+03
7	1,2,3,7,8,9-HxCDF	1.37e+06	6.96e+02	2.0e+03	1.07e+06	6.92e+02	1.5e+03
8	1,2,3,4,6,7,8-HpCDF	1.60e+06	2.47e+03	6.5e+02	1.52e+06	1.36e+03	1.1e+03
9	1,2,3,4,7,8,9-HpCDF	1.12e+06	2.47e+03	4.5e+02	1.07e+06	1.36e+03	7.9e+02
10	OCDF	1.55e+06	7.32e+02	2.1e+03	1.62e+06	8.40e+02	1.9e+03
11	2,3,7,8-TCDD	1.97e+05	8.00e+02	2.5e+02	2.62e+05	8.72e+02	3.0e+02
12	1,2,3,7,8-PeCDD	9.53e+05	1.24e+03	7.7e+02	5.95e+05	9.40e+02	6.3e+02
13	1,2,3,4,7,8-HxCDD	1.04e+06	8.68e+02	1.2e+03	8.14e+05	5.52e+02	1.5e+03
14	1,2,3,6,7,8-HxCDD	1.09e+06	8.68e+02	1.3e+03	8.43e+05	5.52e+02	1.5e+03
15	1,2,3,7,8,9-HxCDD	1.12e+06	8.68e+02	1.3e+03	8.72e+05	5.52e+02	1.6e+03
16	1,2,3,4,6,7,8-HpCDD	9.21e+05	6.96e+02	1.3e+03	8.77e+05	6.48e+02	1.4e+03
17	OCDD	1.33e+06	7.20e+02	1.9e+03	1.47e+06	1.12e+03	1.3e+03
18	13C-2,3,7,8-TCDF	5.36e+06	2.42e+03	2.2e+03	6.74e+06	1.28e+03	5.3e+03
19	13C-1,2,3,7,8-PeCDF	1.09e+07	8.60e+02	1.3e+04	6.87e+06	1.14e+03	6.0e+03
20	13C-1,2,3,4,7,8-HxCDF	1.56e+07	5.28e+02	2.9e+04	2.96e+07	1.32e+03	2.2e+04
21	13C-1,2,3,4,6,7,8-HpCDF	1.21e+07	4.06e+03	3.0e+03	2.63e+07	5.32e+03	4.9e+03
22	13C-2,3,7,8-TCDD	4.24e+06	3.22e+03	1.3e+03	5.46e+06	2.02e+03	2.7e+03
23	13C-1,2,3,7,8-PeCDD	7.98e+06	9.96e+02	8.0e+03	5.13e+06	9.48e+02	5.4e+03
24	13C-1,2,3,6,7,8-HxCDD	1.84e+07	1.64e+03	1.1e+04	1.44e+07	1.39e+03	1.0e+04
25	13C-1,2,3,4,6,7,8-HpCDD	1.74e+07	1.54e+03	1.1e+04	1.64e+07	7.00e+02	2.3e+04
26	13C-OCDD	2.26e+07	1.01e+03	2.2e+04	2.48e+07	7.84e+02	3.2e+04
27	13C-1,2,3,4-TCDD	4.38e+06	3.22e+03	1.4e+03	5.51e+06	2.02e+03	2.7e+03
28	13C-1,2,3,7,8,9-HxCDD	1.91e+07	1.64e+03	1.2e+04	1.52e+07	1.39e+03	1.1e+04
29	37Cl-2,3,7,8-TCDD	4.64e+05	1.13e+03	4.1e+02			

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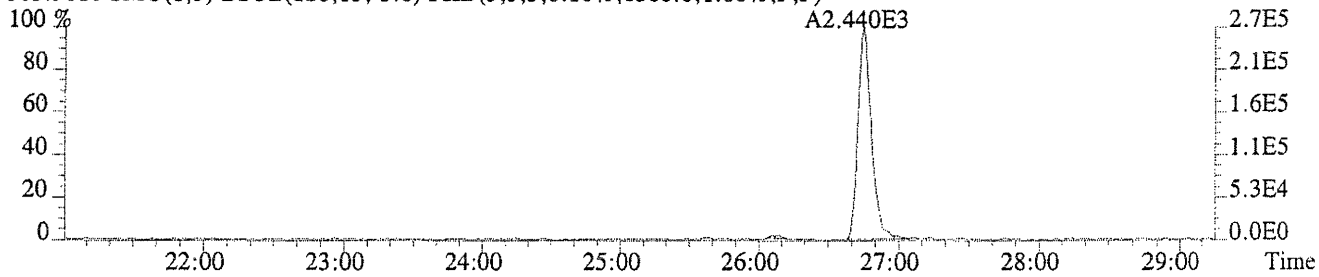
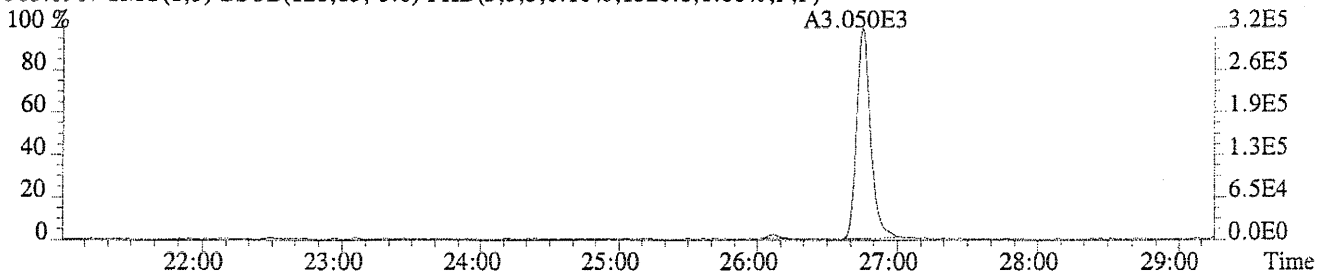
File:U20401 #1-689 Acq: 4-NOV-2004 15:14:49 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC2

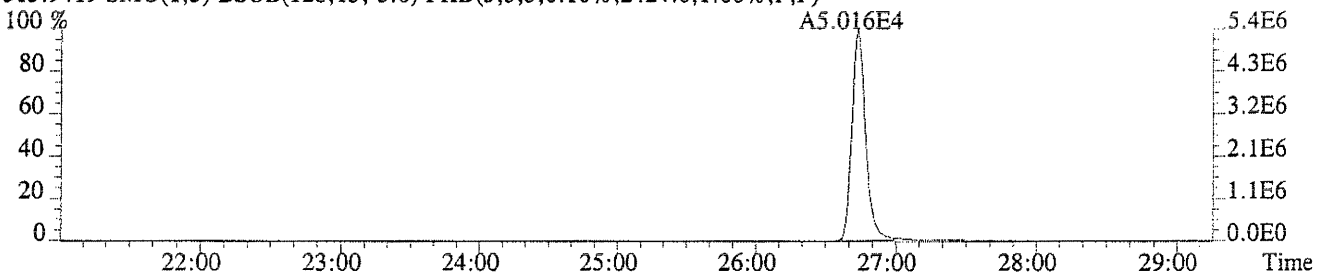
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1500.0,1.00%,F,F)



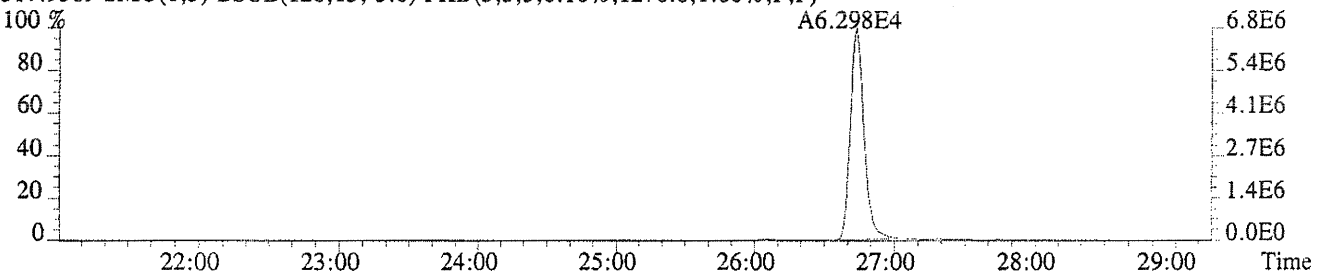
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1520.0,1.00%,F,F)



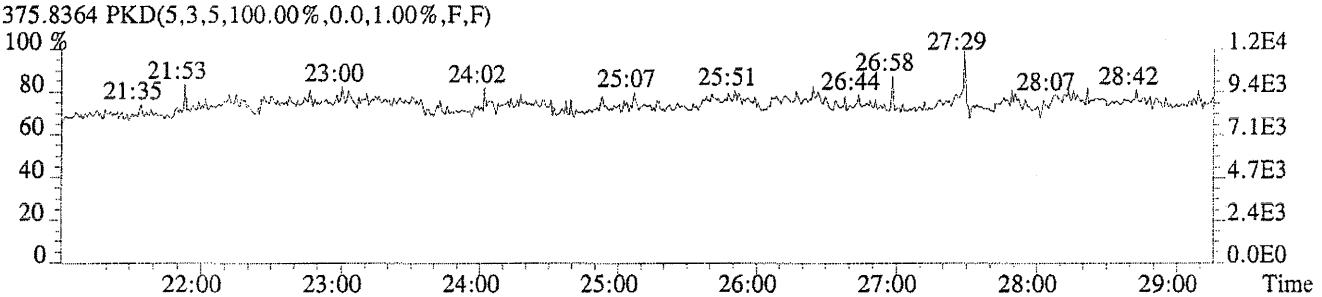
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2424.0,1.00%,F,F)



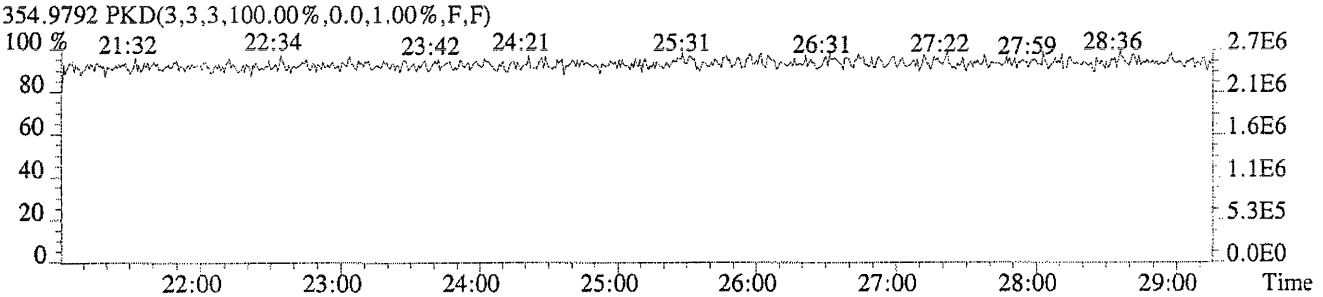
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1276.0,1.00%,F,F)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

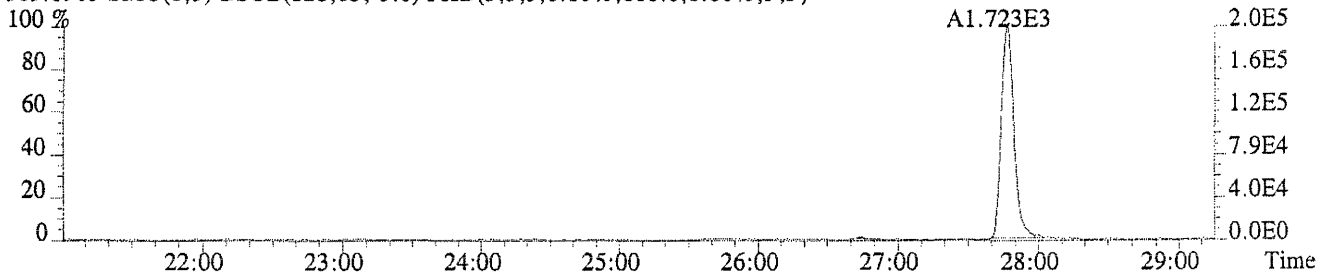


354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

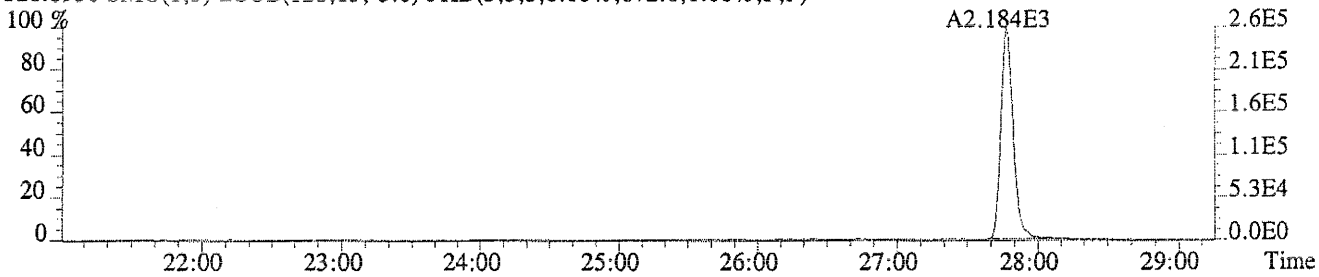


File:U20401 #1-689 Acq: 4-NOV-2004 15:14:49 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC2

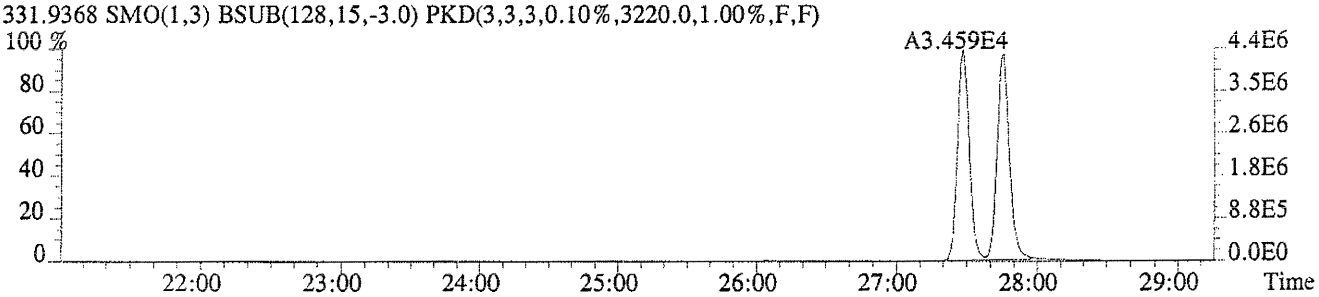
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,800.0,1.00%,F,F)



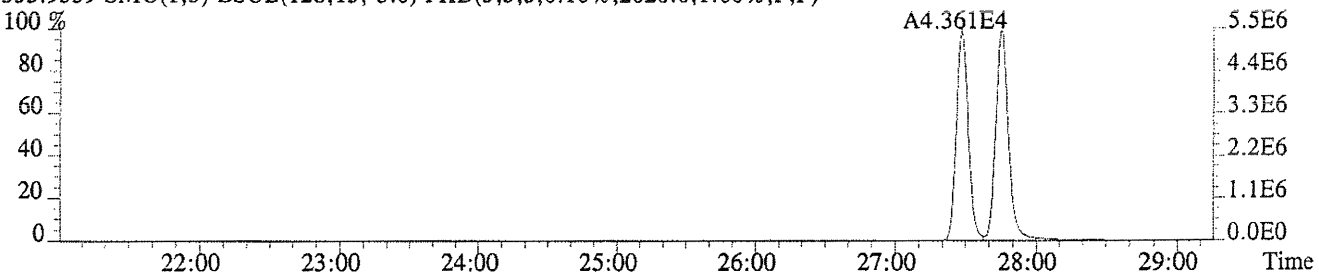
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,872.0,1.00%,F,F)



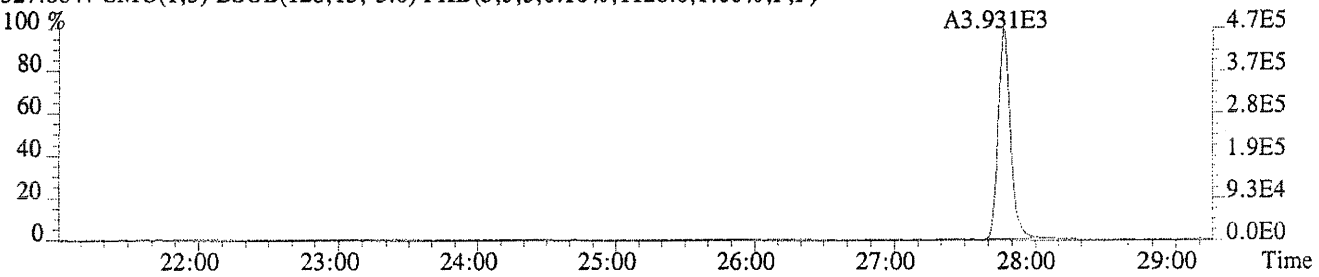
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3220.0,1.00%,F,F)



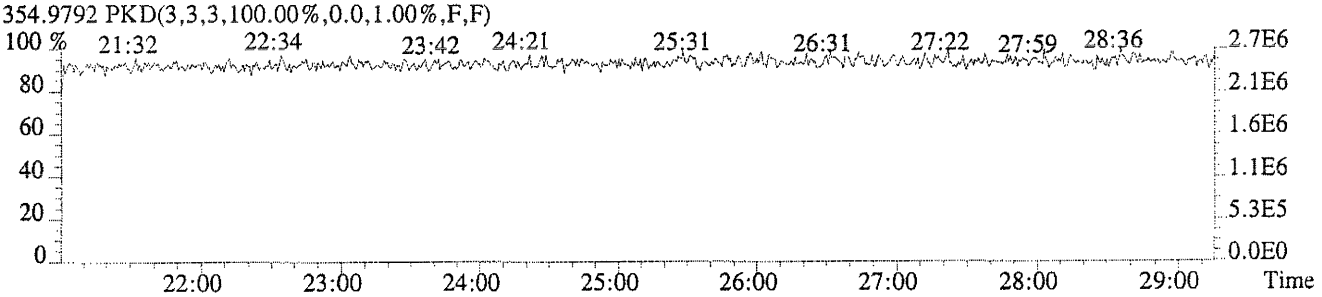
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2020.0,1.00%,F,F)



327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1128.0,1.00%,F,F)

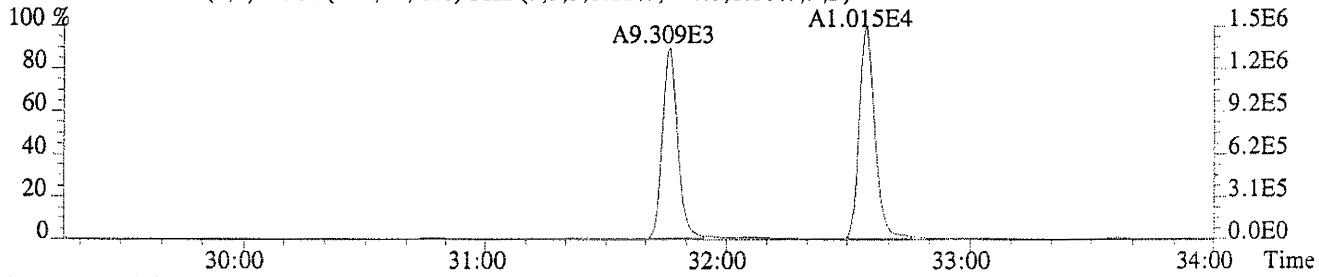


354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

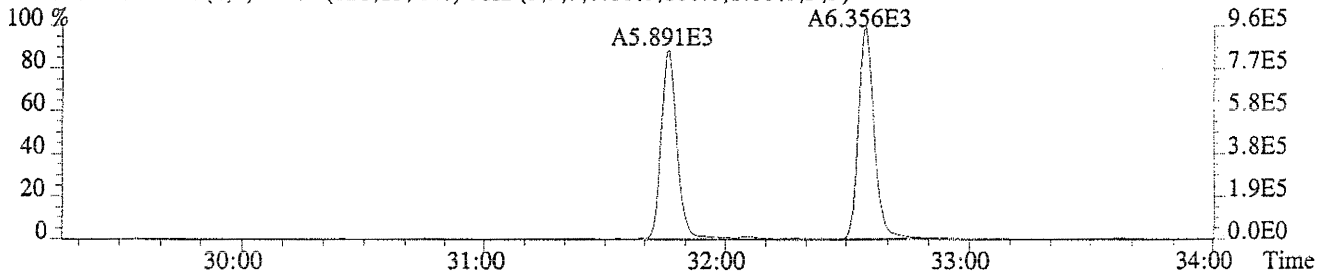


File:U20401 #1-431 Acq: 4-NOV-2004 15:14:49 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC2

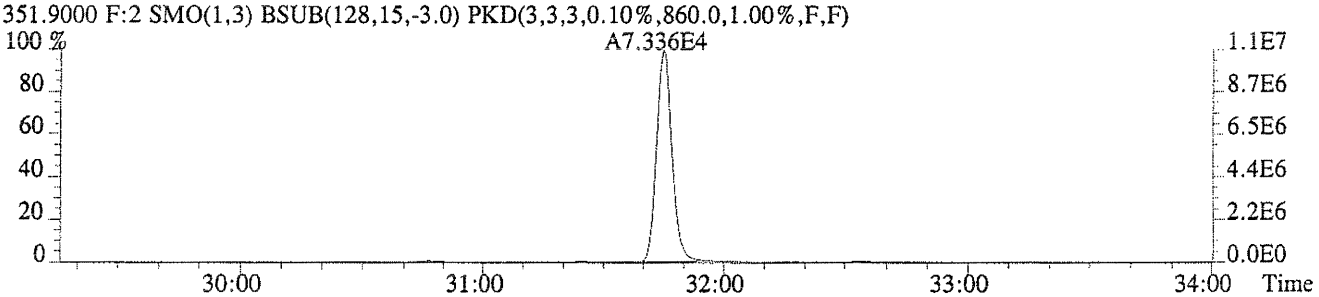
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,744.0,1.00%,F,F)



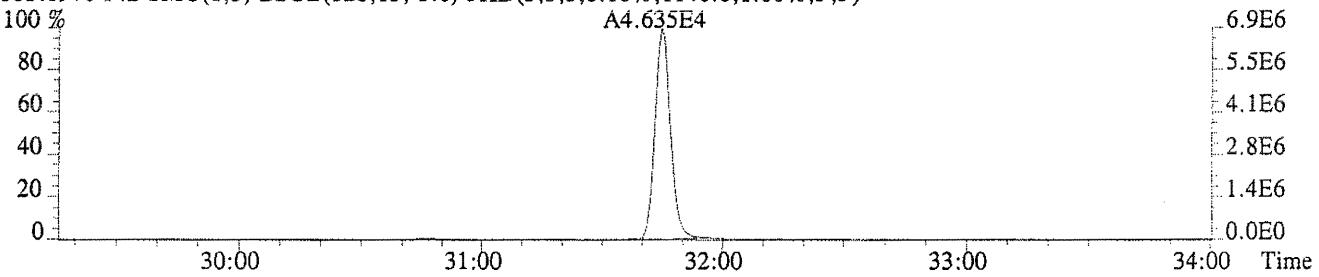
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,888.0,1.00%,F,F)



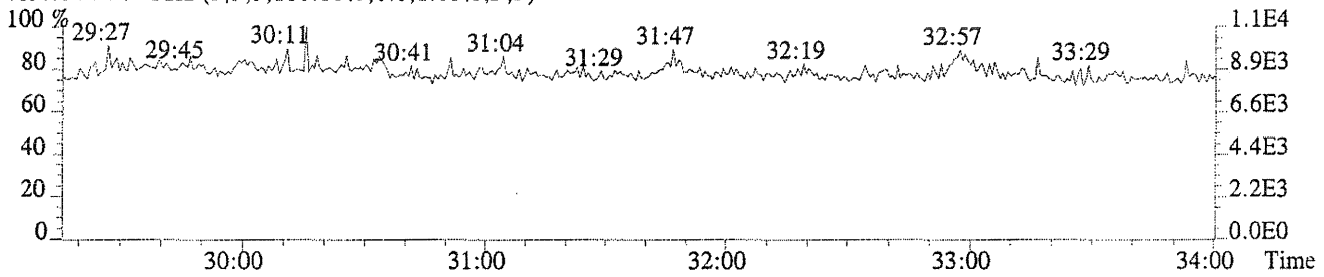
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,860.0,1.00%,F,F)



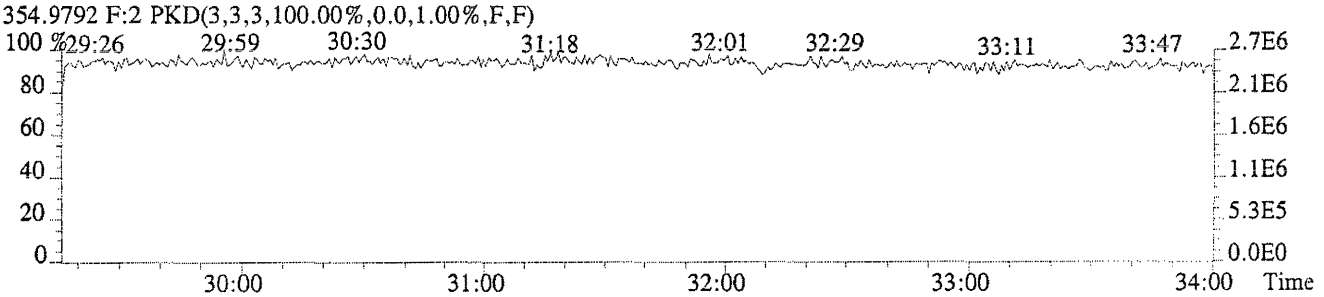
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1140.0,1.00%,F,F)



409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

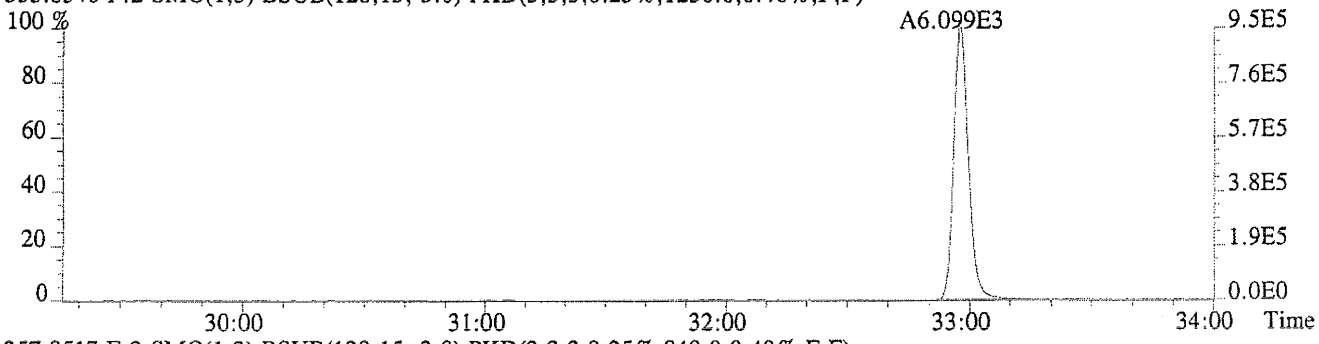


354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

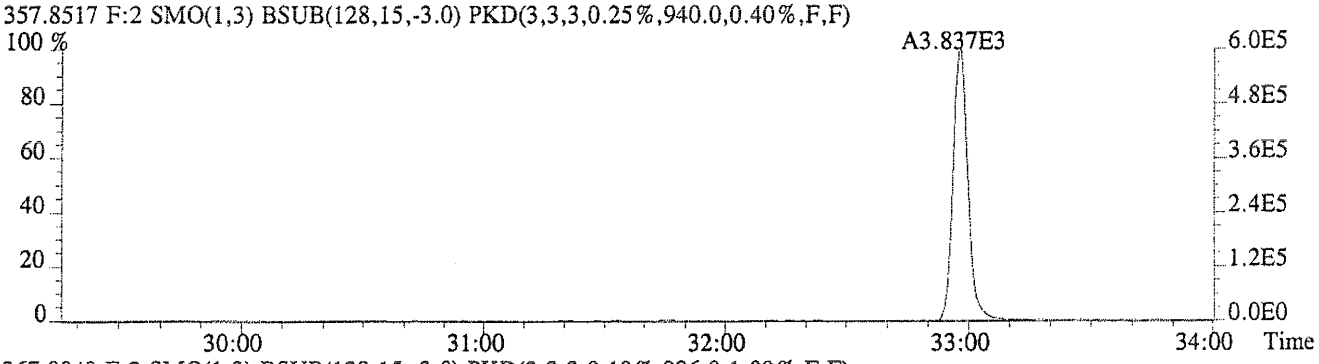


File:U20401 #1-431 Acq: 4-NOV-2004 15:14:49 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC2

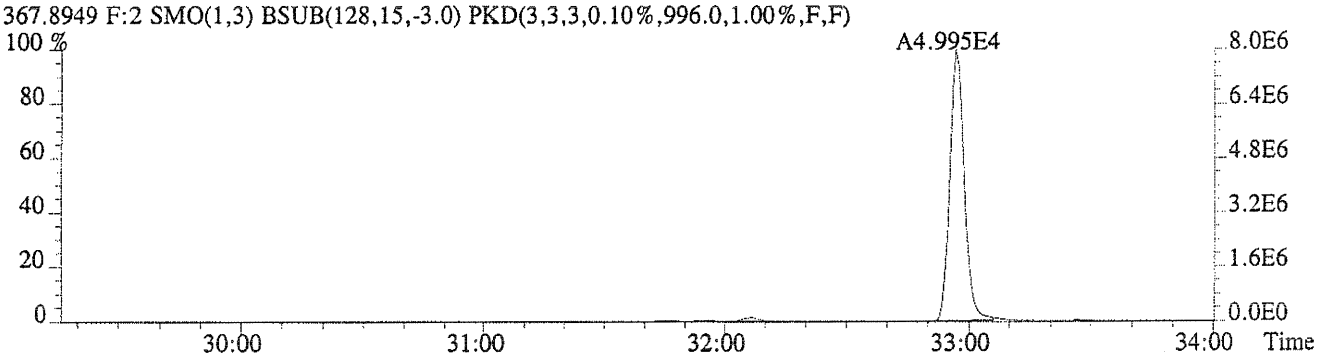
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1236.0,0.40%,F,F)



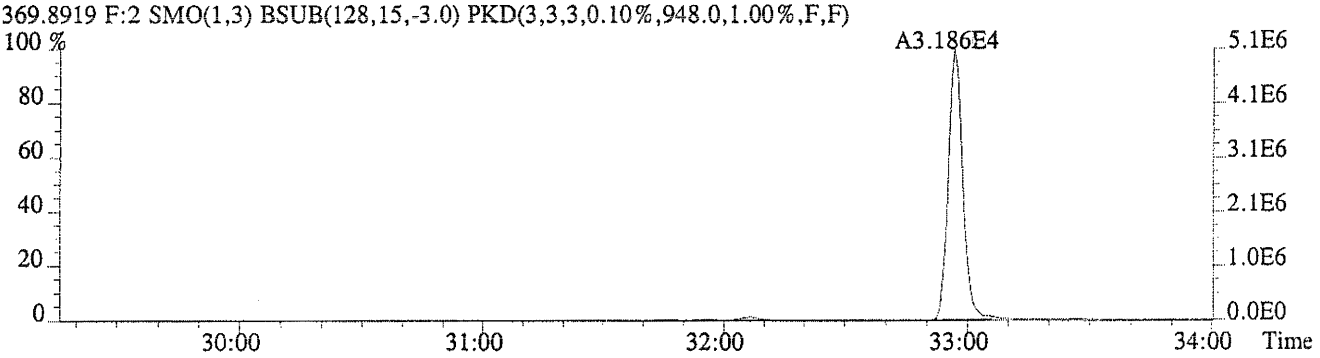
357.8517 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,940.0,0.40%,F,F)



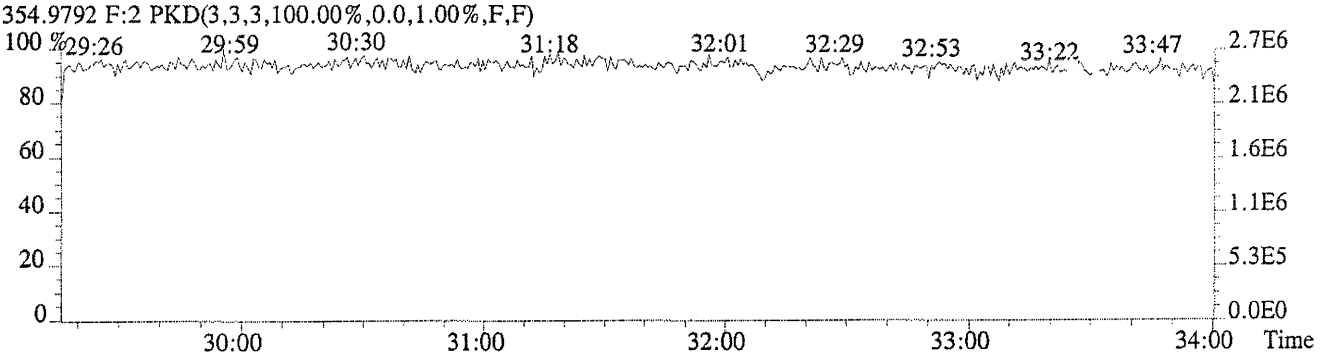
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,996.0,1.00%,F,F)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,948.0,1.00%,F,F)

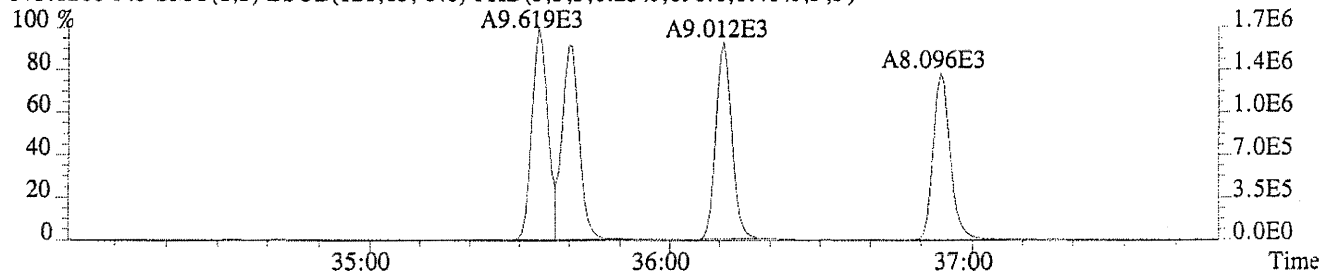


354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

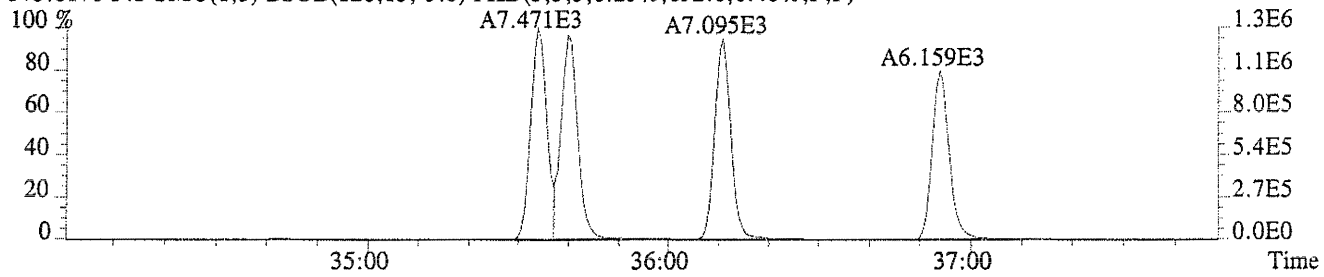


File:U20401 #1-346 Acq: 4-NOV-2004 15:14:49 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC2

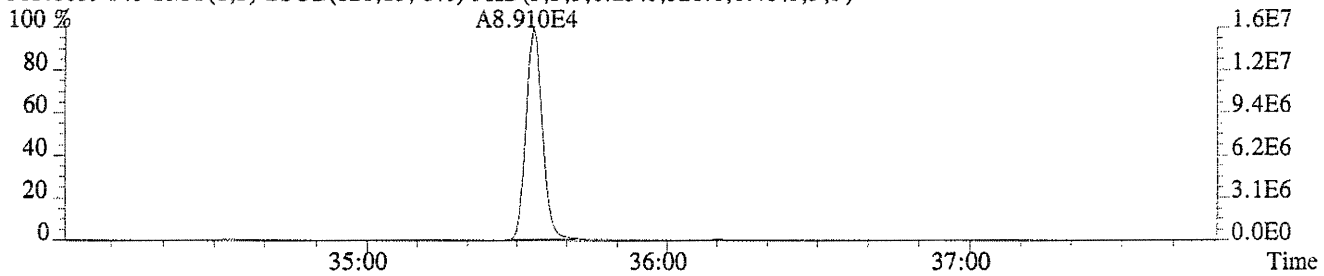
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,696.0,0.40%,F,F)



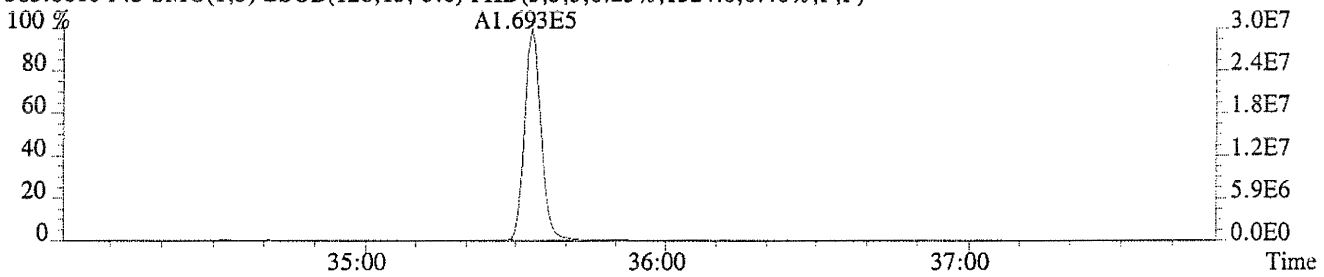
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,692.0,0.40%,F,F)



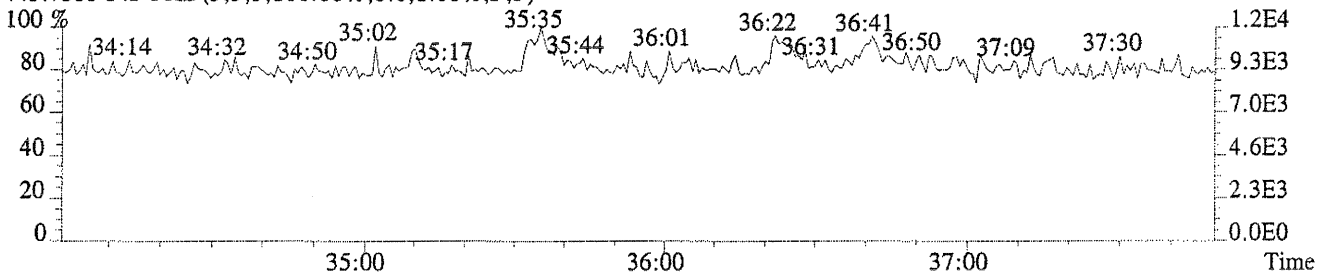
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,528.0,0.40%,F,F)



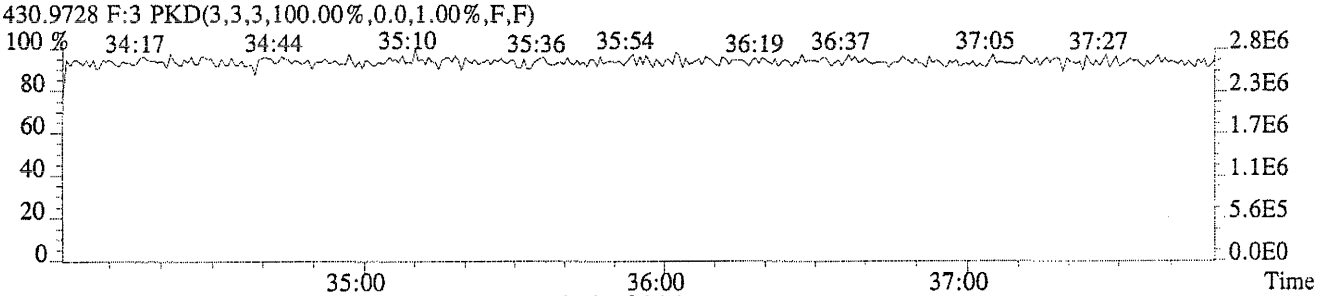
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1324.0,0.40%,F,F)



445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

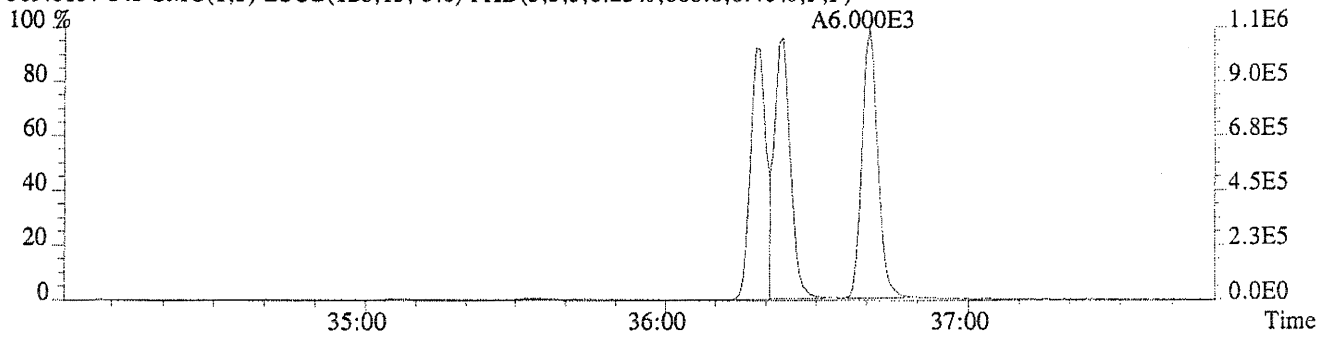


430.9728 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

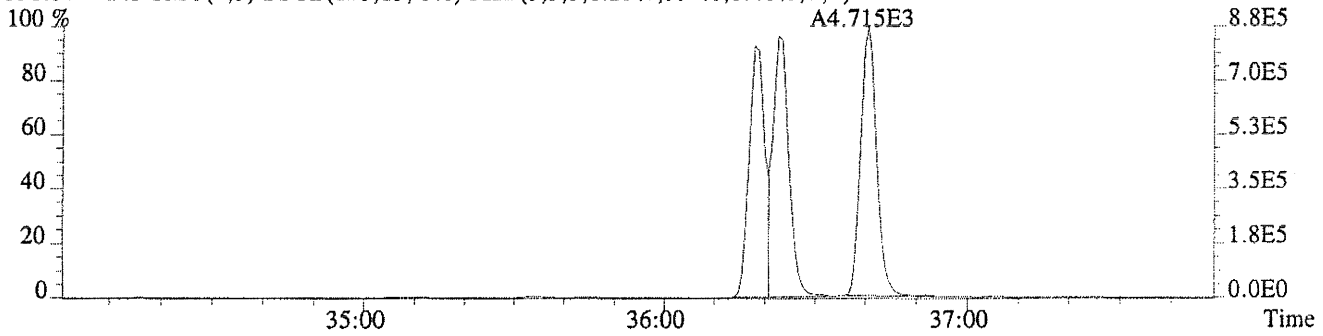


File:U20401 #1-346 Acq: 4-NOV-2004 15:14:49 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC2

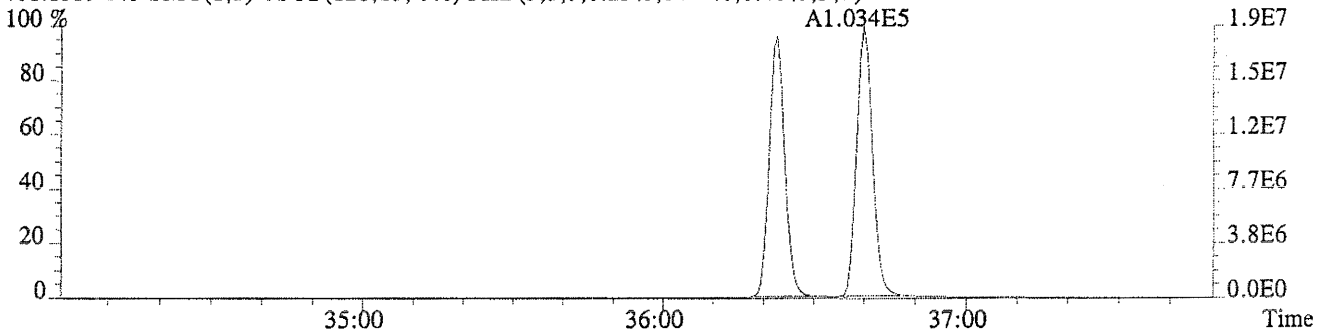
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,868.0,0.40%,F,F)



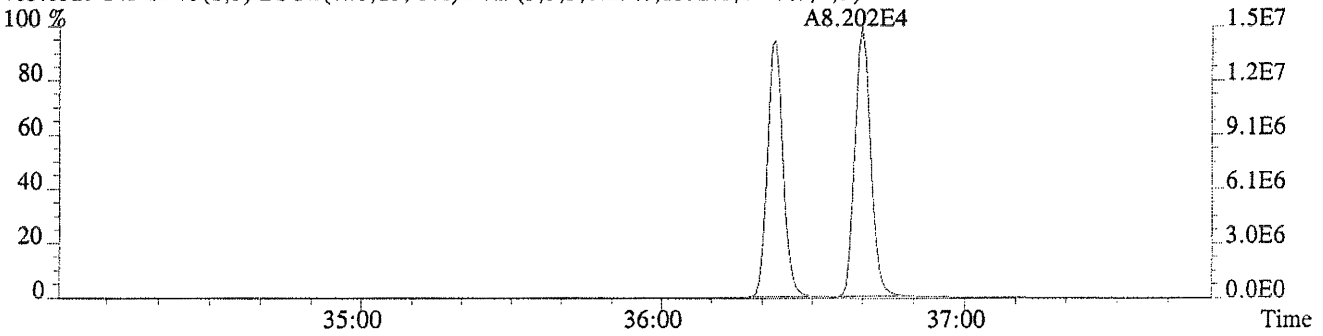
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,552.0,0.40%,F,F)



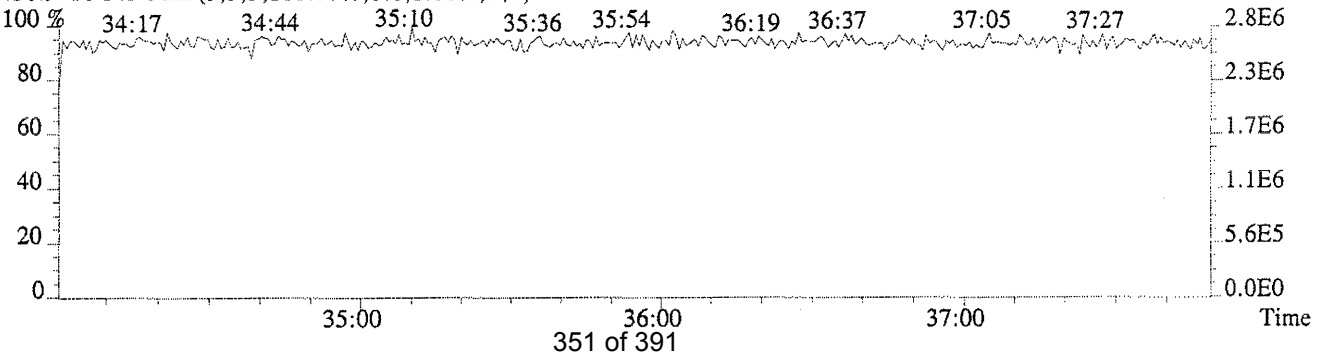
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1644.0,0.40%,F,F)



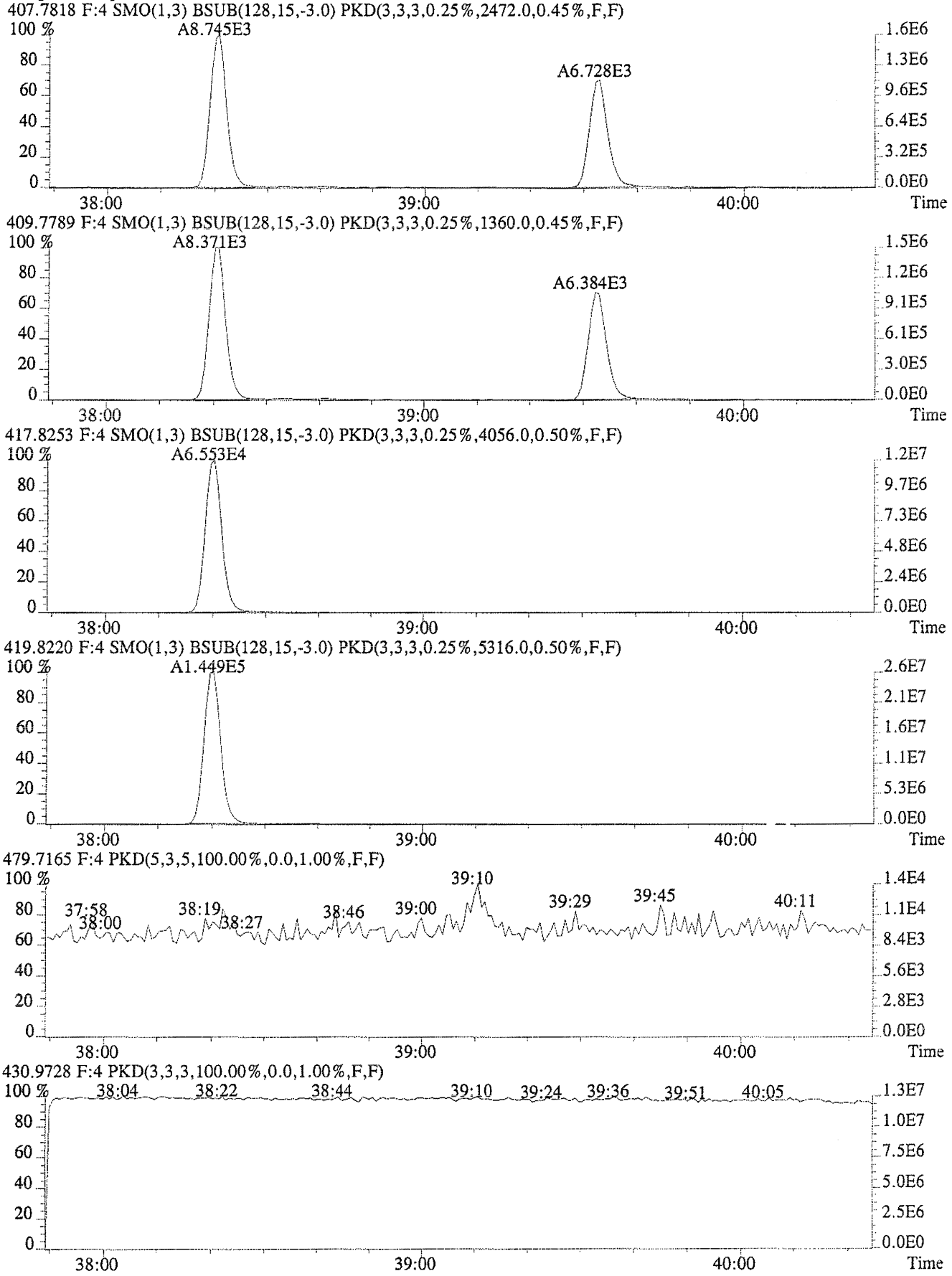
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1392.0,0.40%,F,F)



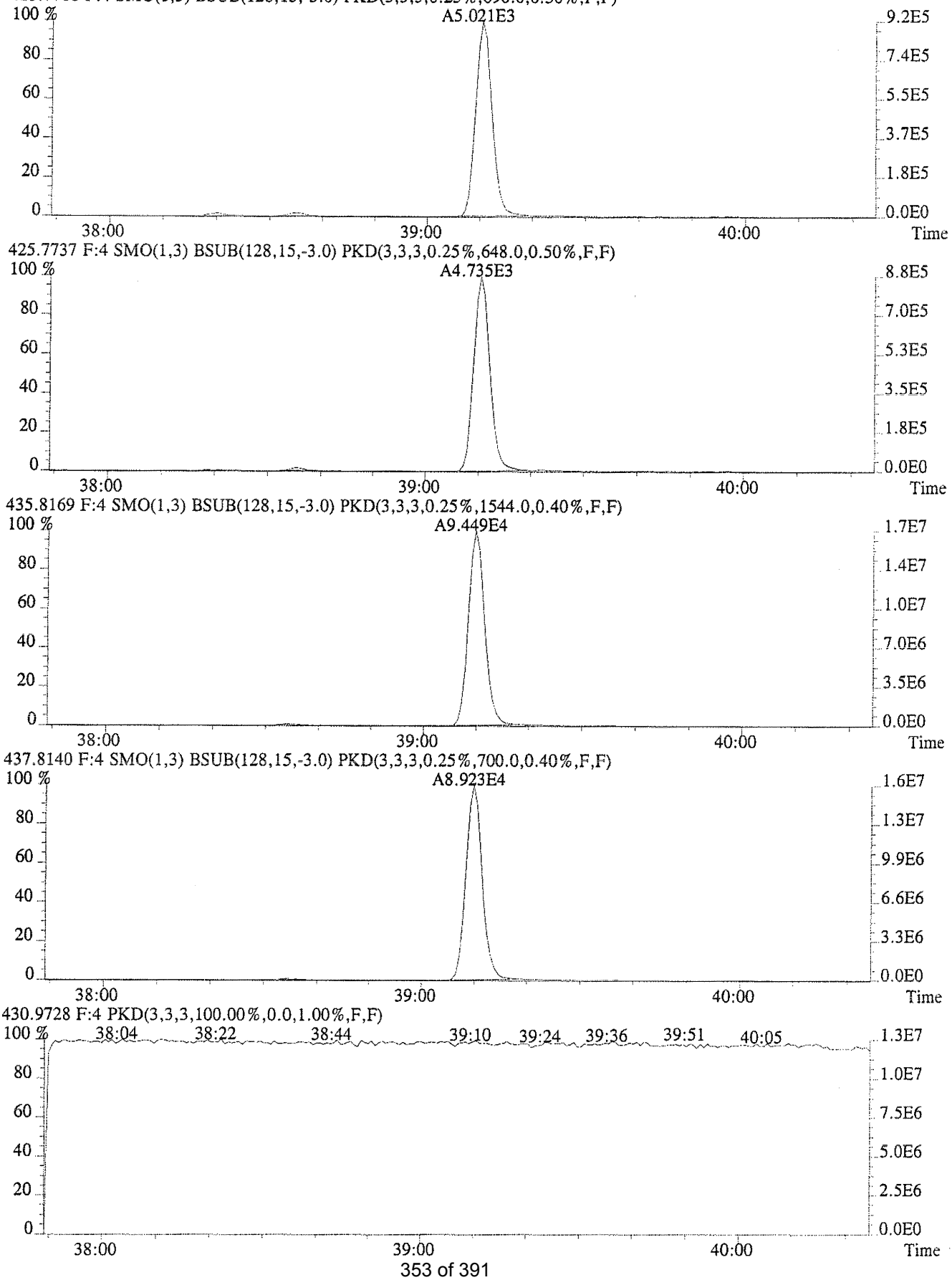
430.9728 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



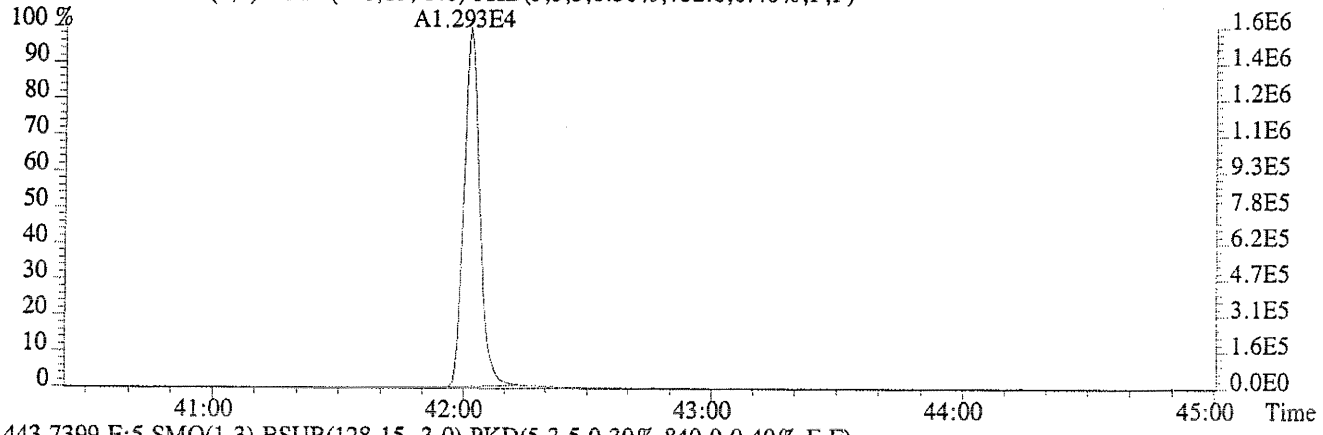
File:U20401 #1-236 Acq: 4-NOV-2004 15:14:49 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC2



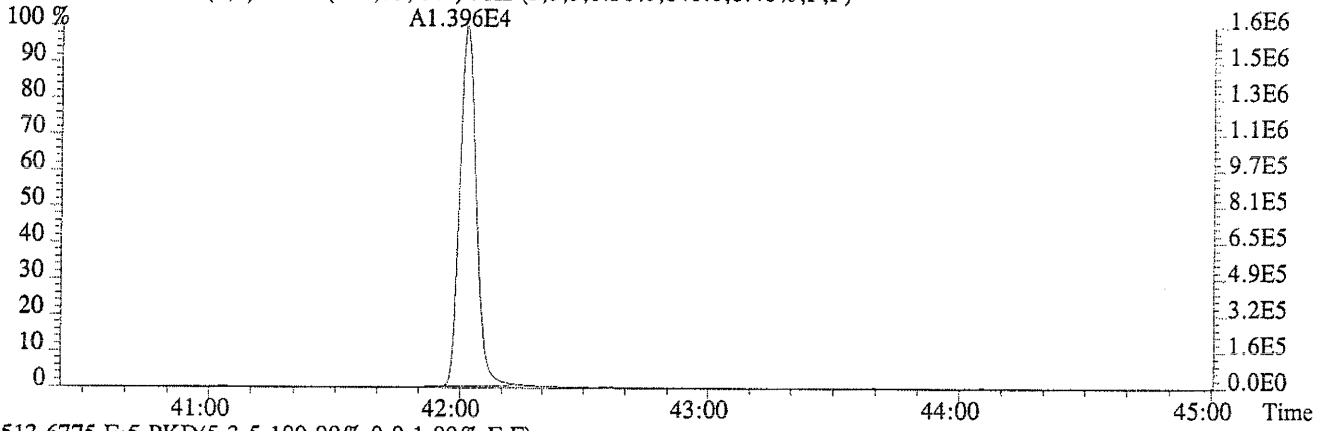
File:U20401 #1-236 Acq: 4-NOV-2004 15:14:49 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC2



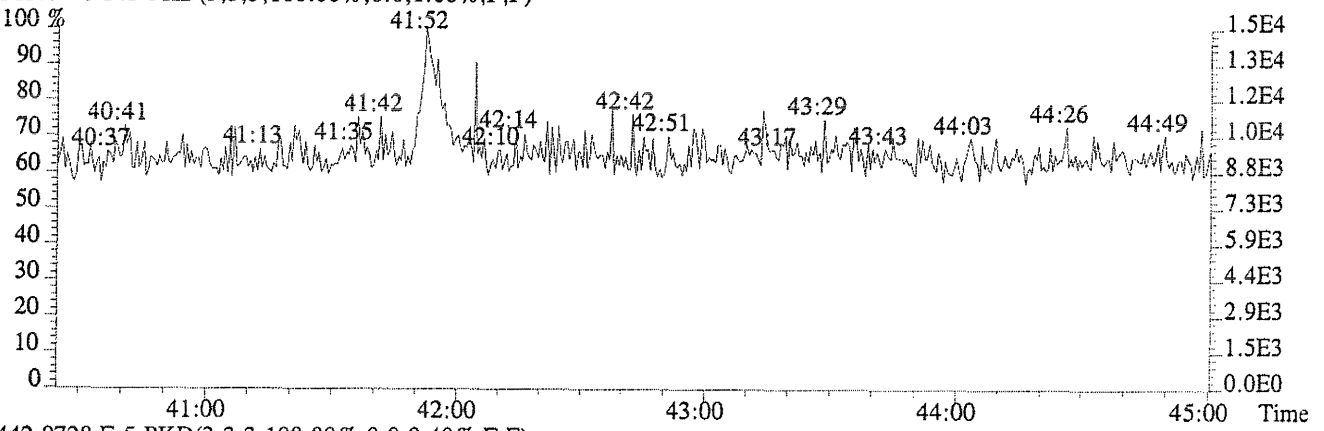
File:U20401 #1-508 Acq: 4-NOV-2004 15:14:49 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC2
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,732.0,0.40%,F,F)



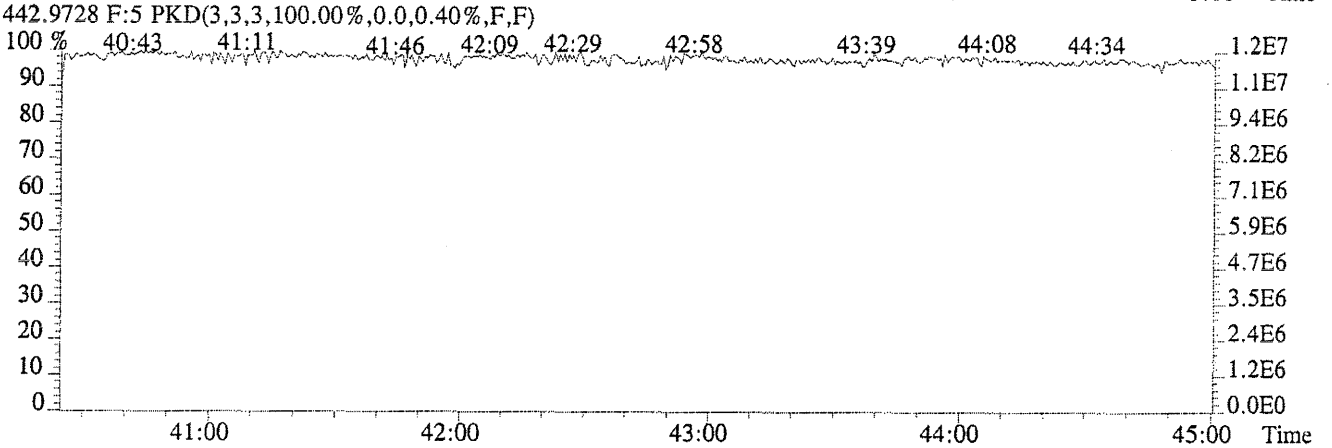
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,840.0,0.40%,F,F)



513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

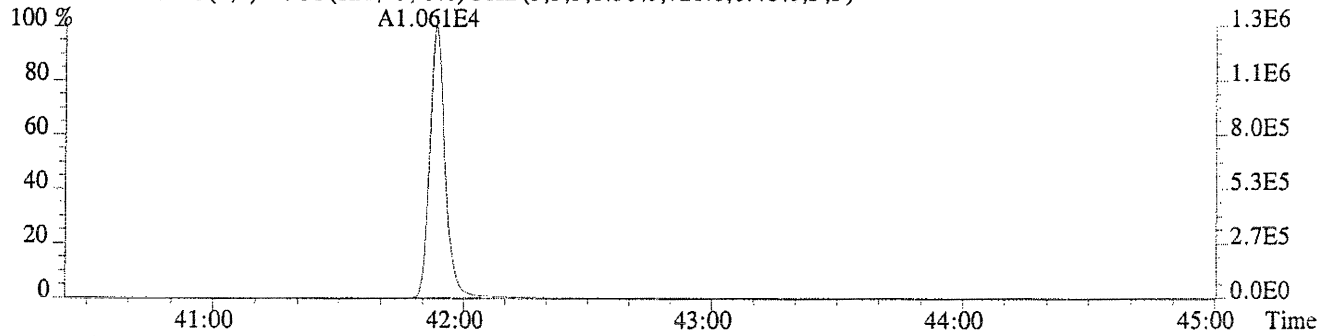


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

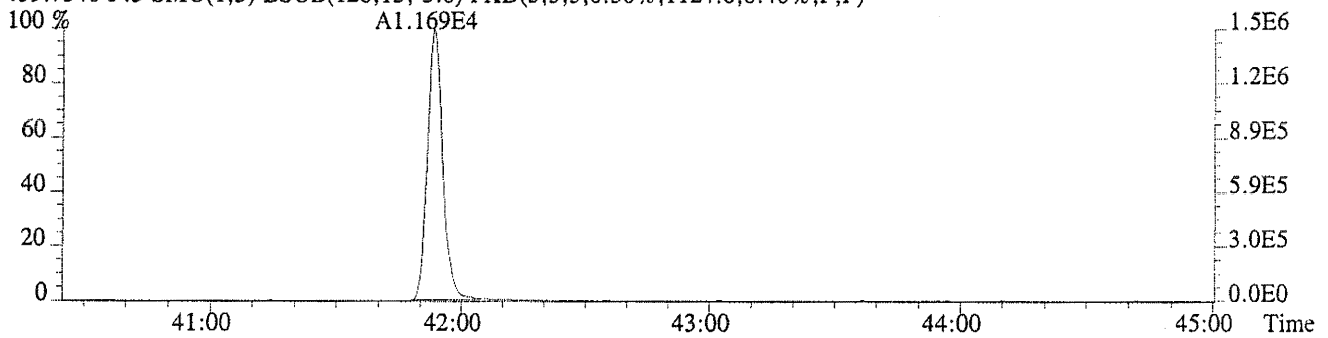


File:U20401 #1-508 Acq: 4-NOV-2004 15:14:49 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC2

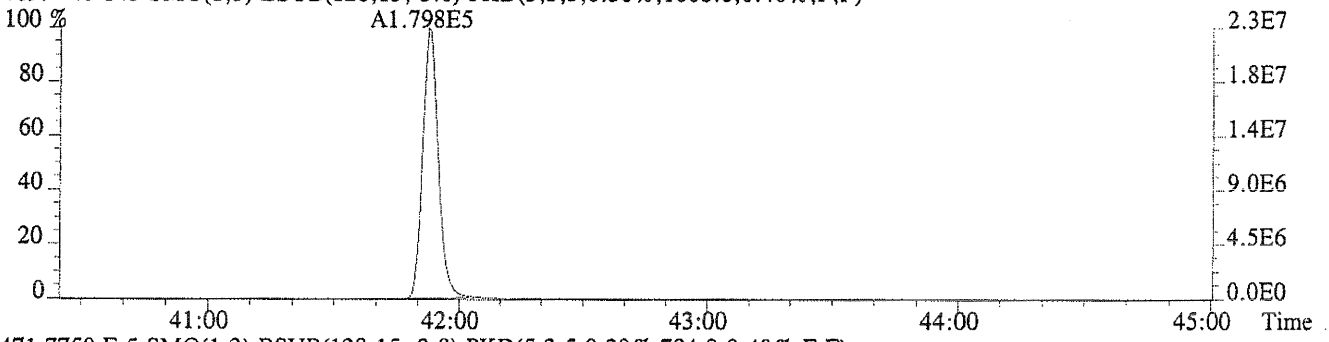
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,720.0,0.40%,F,F)



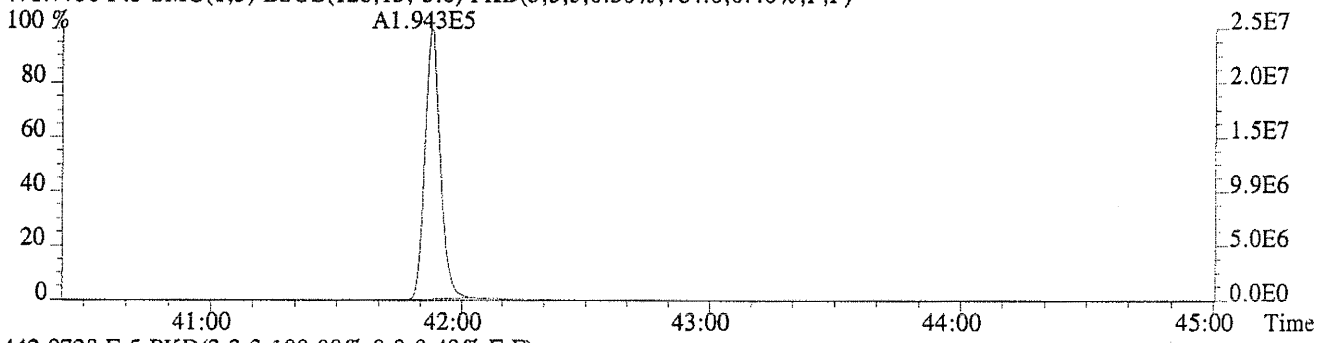
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1124.0,0.40%,F,F)



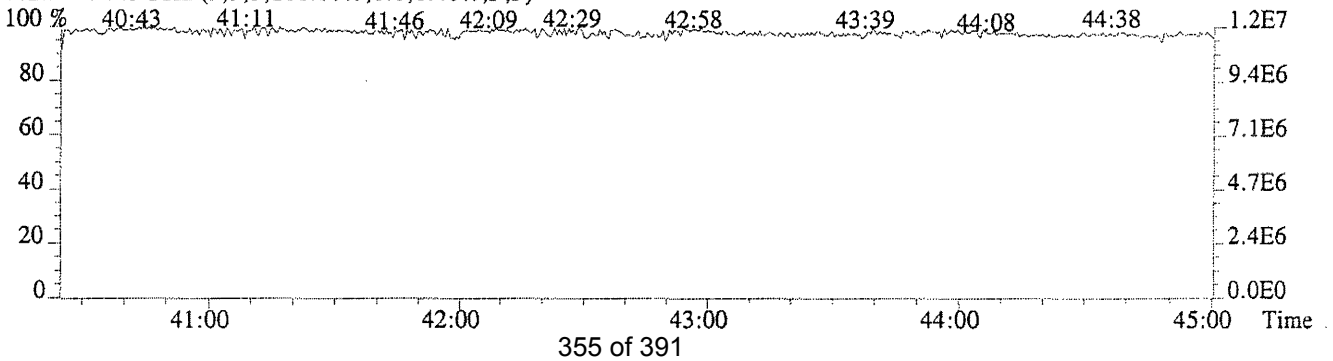
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1008.0,0.40%,F,F)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,784.0,0.40%,F,F)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



Columbia Analytical Services, Inc.
Sample Response Summary

CLIENT ID.
ICAL HRCC3

Run #3 Filename U20400#1 Samp: 1 Inj: 1 Acquired: 4-NOV-04 14:27:55
Processed: 5-NOV-04 15:49:04 Sample ID:

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	26:45	1.568e+04	1.956e+04	0.80	yes	no
2	Unk	1,2,3,7,8-PeCDF	31:46	5.887e+04	3.650e+04	1.61	yes	no
3	Unk	2,3,4,7,8-PeCDF	32:35	6.246e+04	3.932e+04	1.59	yes	no
4	Unk	1,2,3,4,7,8-HxCDF	35:34	5.519e+04	4.324e+04	1.28	yes	no
5	Unk	1,2,3,6,7,8-HxCDF	35:40	5.719e+04	4.451e+04	1.28	yes	no
6	Unk	2,3,4,6,7,8-HxCDF	36:11	5.303e+04	4.193e+04	1.26	yes	no
7	Unk	1,2,3,7,8,9-HxCDF	36:54	4.848e+04	3.793e+04	1.28	yes	no
8	Unk	1,2,3,4,6,7,8-HpCDF	38:21	4.987e+04	4.720e+04	1.06	yes	no
9	Unk	1,2,3,4,7,8,9-HpCDF	39:32	3.907e+04	3.746e+04	1.04	yes	no
10	Unk	OCDF	42:02	7.339e+04	8.072e+04	0.91	yes	no
11	Unk	2,3,7,8-TCDD	27:46	1.122e+04	1.418e+04	0.79	yes	no
12	Unk	1,2,3,7,8-PeCDD	32:58	3.743e+04	2.378e+04	1.57	yes	no
13	Unk	1,2,3,4,7,8-HxCDD	36:18	3.243e+04	2.563e+04	1.27	yes	no
14	Unk	1,2,3,6,7,8-HxCDD	36:23	3.648e+04	2.861e+04	1.27	yes	no
15	Unk	1,2,3,7,8,9-HxCDD	36:41	3.554e+04	2.830e+04	1.26	yes	no
16	Unk	1,2,3,4,6,7,8-HpCDD	39:10	2.879e+04	2.737e+04	1.05	yes	no
17	Unk	OCDD	41:54	5.777e+04	6.428e+04	0.90	yes	no
18	IS	13C-2,3,7,8-TCDF	26:44	8.457e+04	1.068e+05	0.79	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	31:45	1.178e+05	7.430e+04	1.59	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	35:33	1.282e+05	2.421e+05	0.53	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	38:20	9.831e+04	2.159e+05	0.46	yes	no
22	IS	13C-2,3,7,8-TCDD	27:46	5.690e+04	7.227e+04	0.79	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	32:57	7.860e+04	4.973e+04	1.58	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	36:23	1.506e+05	1.198e+05	1.26	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	39:10	1.383e+05	1.308e+05	1.06	yes	no
26	IS	13C-OCDD	41:53	2.741e+05	2.972e+05	0.92	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	27:29	5.288e+04	6.690e+04	0.79	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	36:40	1.457e+05	1.146e+05	1.27	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	27:46	2.466e+04				

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Columbia Analytical Services,Inc.
Signal/Noise Height Ratio Summary

CLIENT ID.
ICAL HRCC3

Run #3 Filename U20400 #1 Samp: 1 Inj: 1 Acquired: 4-NOV-04 14:27:55

Processed: 5-NOV-04 15:49:04 LAB. ID: ICAL HRCC3

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	1.54e+06	1.09e+03	1.4e+03	1.95e+06	1.26e+03	1.5e+03
2	1,2,3,7,8-PeCDF	8.28e+06	8.04e+02	1.0e+04	5.14e+06	1.24e+03	4.1e+03
3	2,3,4,7,8-PeCDF	8.90e+06	8.04e+02	1.1e+04	5.59e+06	1.24e+03	4.5e+03
4	1,2,3,4,7,8-HxCDF	9.49e+06	8.56e+02	1.1e+04	7.43e+06	6.28e+02	1.2e+04
5	1,2,3,6,7,8-HxCDF	9.35e+06	8.56e+02	1.1e+04	7.41e+06	6.28e+02	1.2e+04
6	2,3,4,6,7,8-HxCDF	9.16e+06	8.56e+02	1.1e+04	7.26e+06	6.28e+02	1.2e+04
7	1,2,3,7,8,9-HxCDF	8.27e+06	8.56e+02	9.7e+03	6.43e+06	6.28e+02	1.0e+04
8	1,2,3,4,6,7,8-HpCDF	8.92e+06	5.74e+03	1.6e+03	8.42e+06	2.37e+03	3.6e+03
9	1,2,3,4,7,8,9-HpCDF	6.48e+06	5.74e+03	1.1e+03	6.23e+06	2.37e+03	2.6e+03
10	OCDF	8.31e+06	9.32e+02	8.9e+03	9.02e+06	7.08e+02	1.3e+04
11	2,3,7,8-TCDD	1.24e+06	9.36e+02	1.3e+03	1.56e+06	6.60e+02	2.4e+03
12	1,2,3,7,8-PeCDD	5.71e+06	8.24e+02	6.9e+03	3.64e+06	7.00e+02	5.2e+03
13	1,2,3,4,7,8-HxCDD	5.89e+06	8.64e+02	6.8e+03	4.66e+06	6.12e+02	7.6e+03
14	1,2,3,6,7,8-HxCDD	6.21e+06	8.64e+02	7.2e+03	4.86e+06	6.12e+02	7.9e+03
15	1,2,3,7,8,9-HxCDD	6.33e+06	8.64e+02	7.3e+03	5.00e+06	6.12e+02	8.2e+03
16	1,2,3,4,6,7,8-HpCDD	5.08e+06	1.12e+03	4.6e+03	4.84e+06	8.72e+02	5.5e+03
17	OCDD	6.93e+06	8.12e+02	8.5e+03	7.62e+06	9.40e+02	8.1e+03
18	13C-2,3,7,8-TCDF	8.35e+06	2.35e+03	3.5e+03	1.06e+07	8.76e+02	1.2e+04
19	13C-1,2,3,7,8-PeCDF	1.67e+07	6.32e+02	2.6e+04	1.06e+07	6.56e+02	1.6e+04
20	13C-1,2,3,4,7,8-HxCDF	2.14e+07	7.48e+02	2.9e+04	4.05e+07	1.49e+03	2.7e+04
21	13C-1,2,3,4,6,7,8-HpCDF	1.78e+07	4.54e+03	3.9e+03	3.88e+07	6.83e+03	5.7e+03
22	13C-2,3,7,8-TCDD	6.36e+06	2.81e+03	2.3e+03	7.99e+06	2.53e+03	3.2e+03
23	13C-1,2,3,7,8-PeCDD	1.19e+07	7.56e+02	1.6e+04	7.61e+06	6.96e+02	1.1e+04
24	13C-1,2,3,6,7,8-HxCDD	2.66e+07	1.89e+03	1.4e+04	2.11e+07	1.29e+03	1.6e+04
25	13C-1,2,3,4,6,7,8-HpCDD	2.45e+07	1.98e+03	1.2e+04	2.31e+07	1.74e+03	1.3e+04
26	13C-OCDD	3.29e+07	1.16e+03	2.8e+04	3.55e+07	1.13e+03	3.1e+04
27	13C-1,2,3,4-TCDD	6.12e+06	2.81e+03	2.2e+03	7.70e+06	2.53e+03	3.0e+03
28	13C-1,2,3,7,8,9-HxCDD	2.62e+07	1.89e+03	1.4e+04	2.07e+07	1.29e+03	1.6e+04
29	37Cl-2,3,7,8-TCDD	2.76e+06	1.19e+03	2.3e+03			

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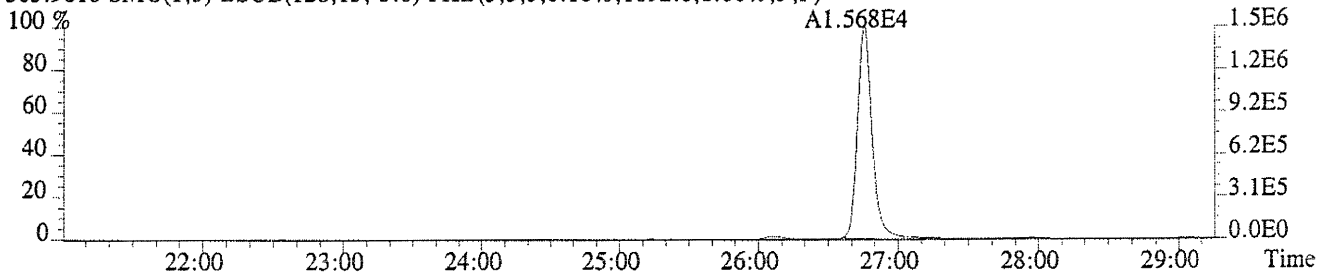
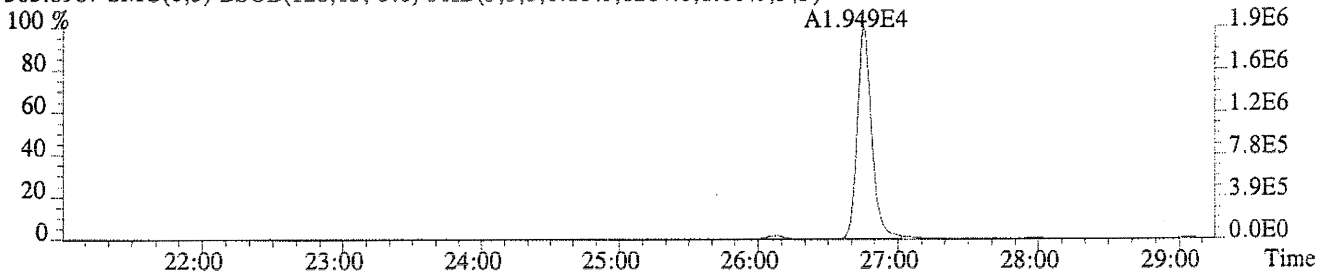
File:U20400 #1-689 Acq: 4-NOV-2004 14:27:55 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC3

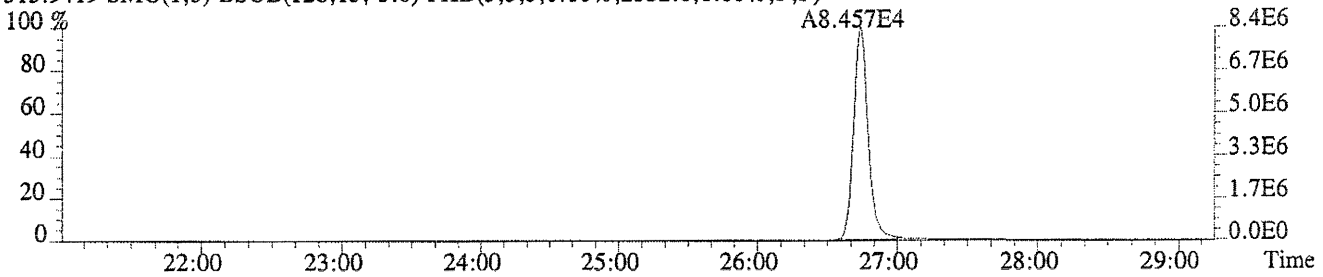
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1092.0,1.00%,F,F)



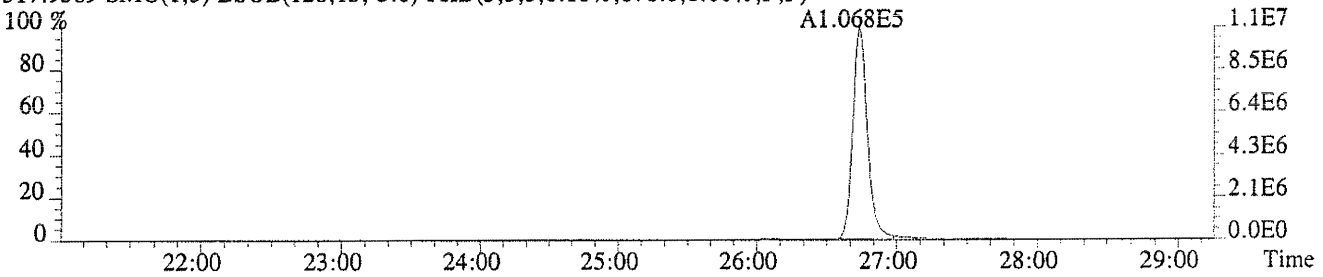
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1264.0,1.00%,F,F)



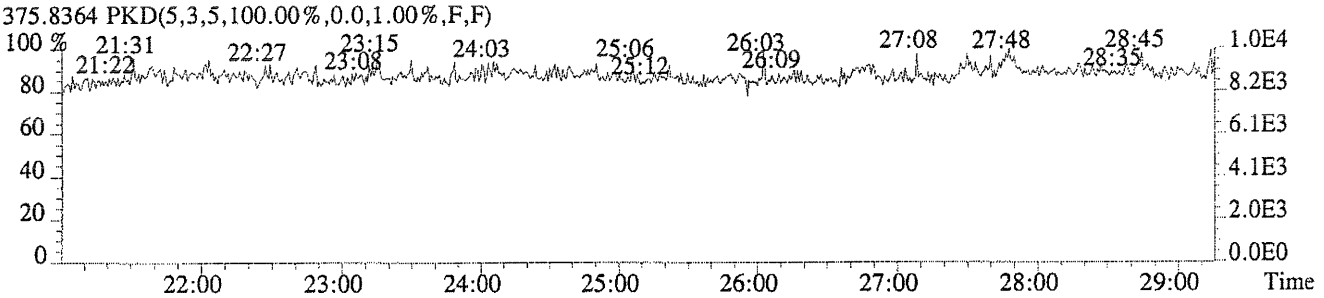
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2352.0,1.00%,F,F)



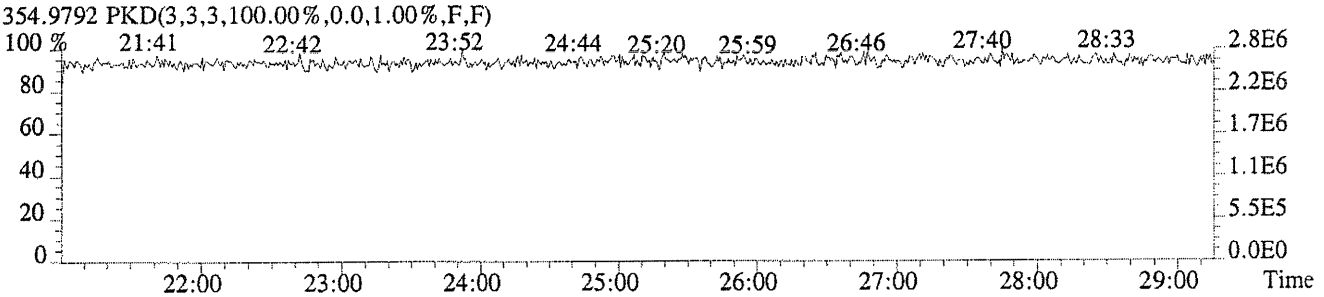
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,876.0,1.00%,F,F)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

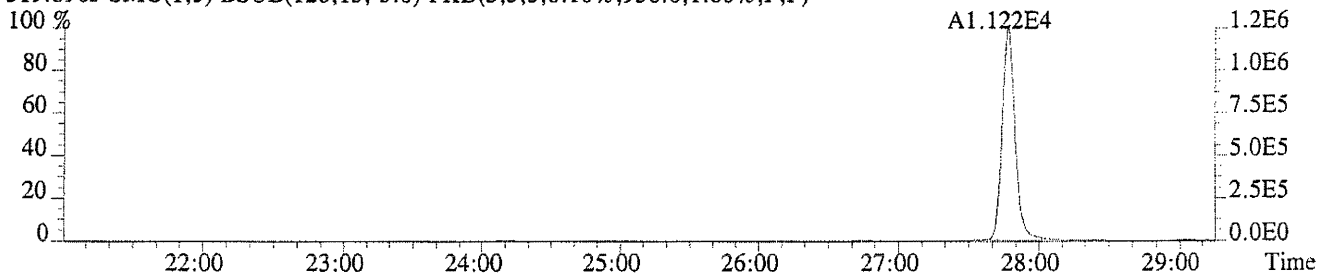


354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

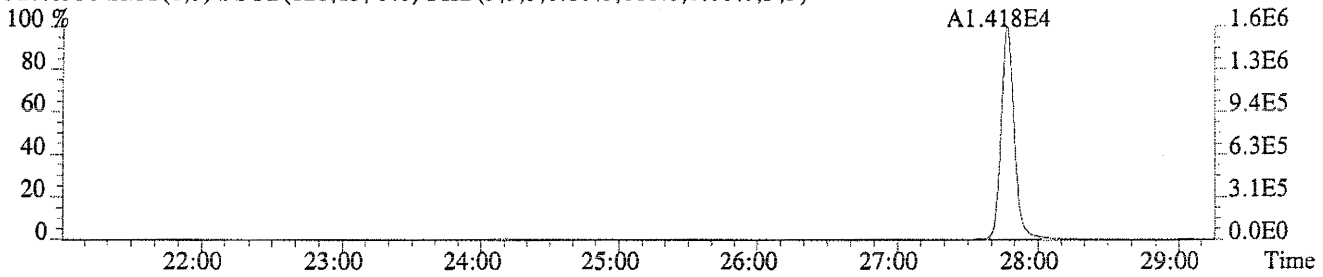


File:U20400 #1-689 Acq: 4-NOV-2004 14:27:55 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC3

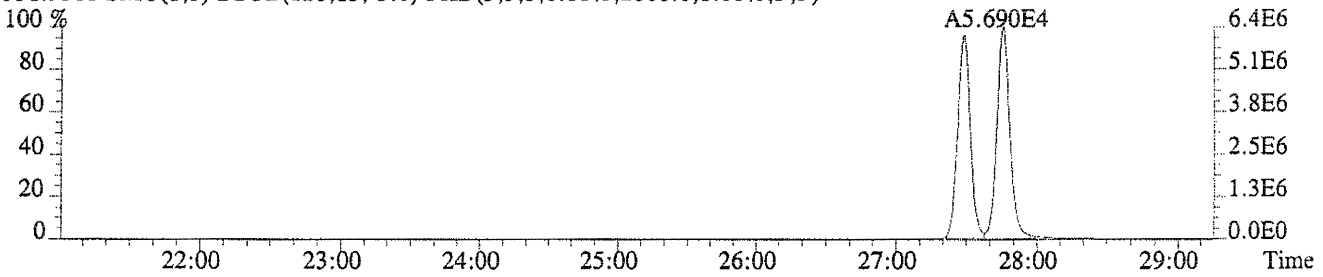
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,936.0,1.00%,F,F)



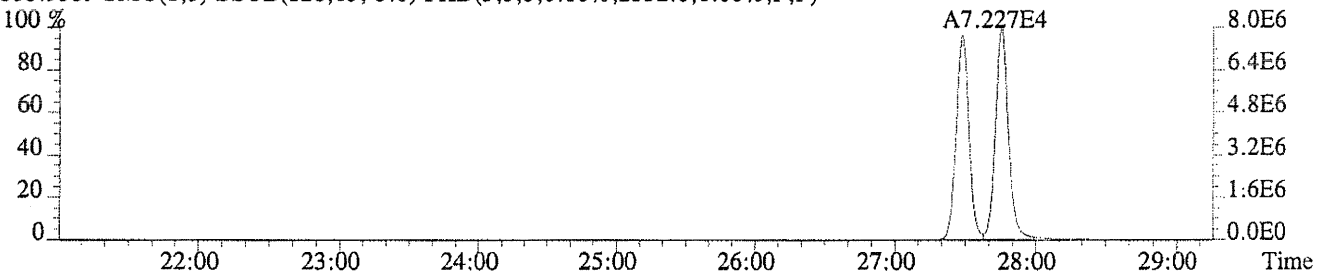
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,660.0,1.00%,F,F)



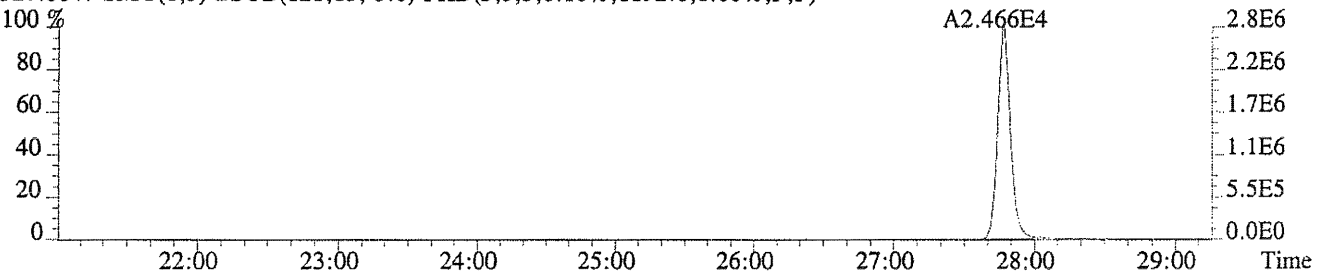
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2808.0,1.00%,F,F)



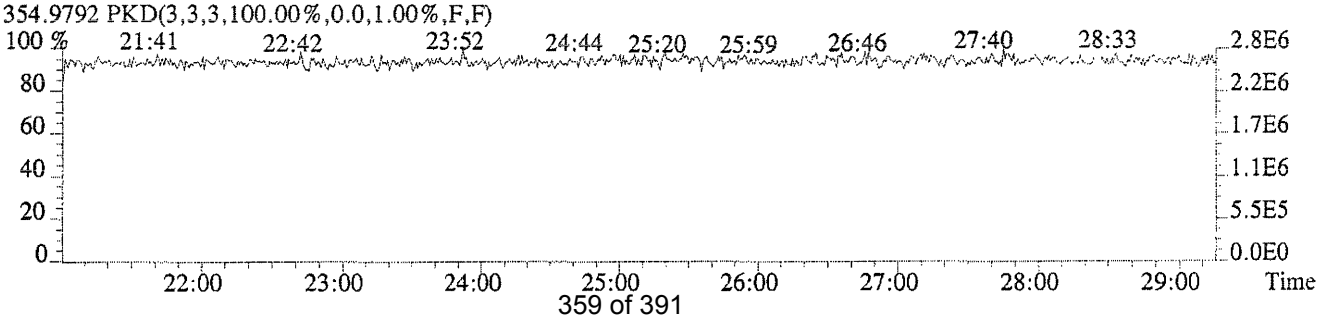
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2532.0,1.00%,F,F)



327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1192.0,1.00%,F,F)

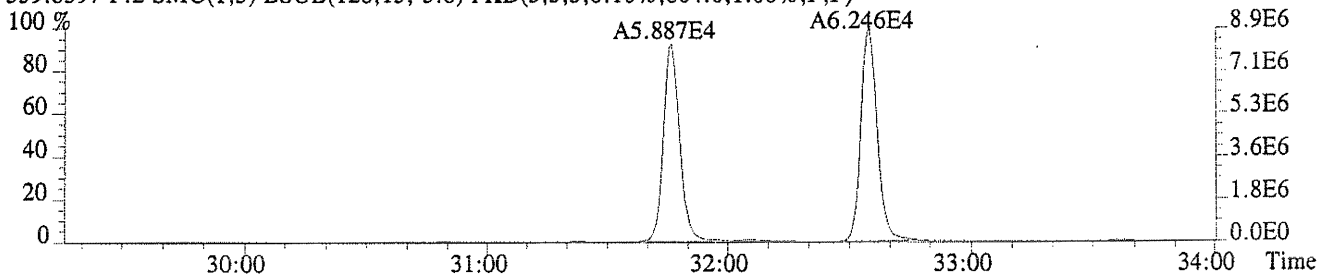


354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

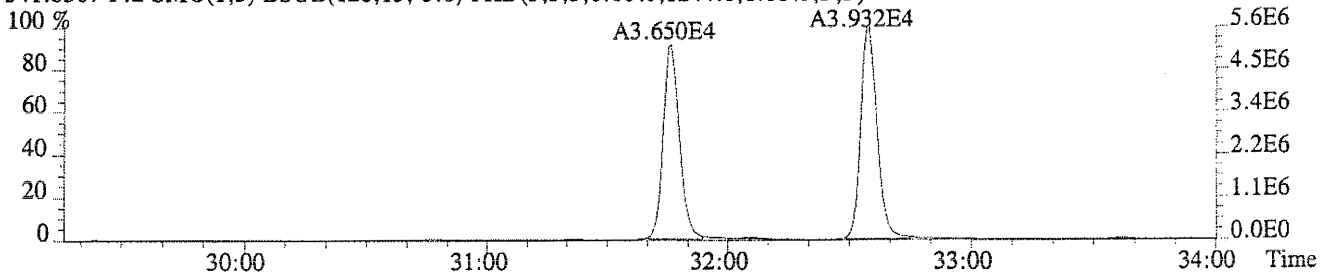


File:U20400 #1-431 Acq: 4-NOV-2004 14:27:55 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC3

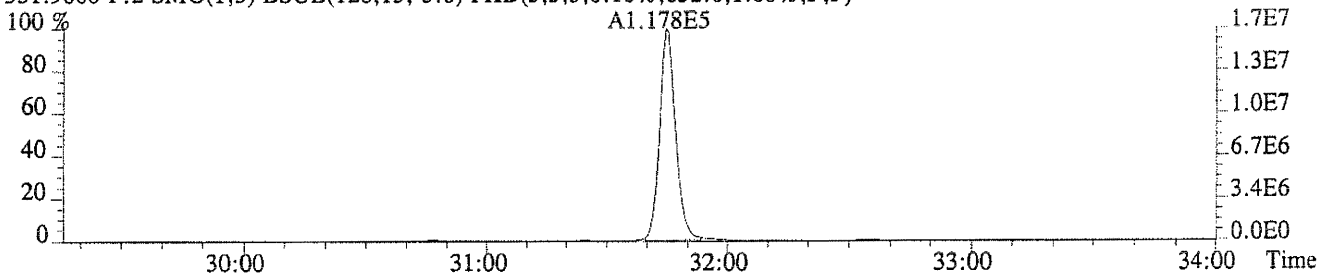
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,804.0,1.00%,F,F)



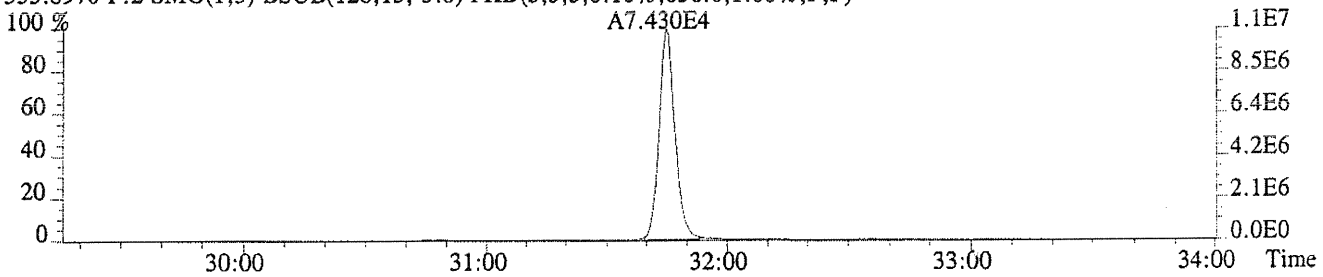
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1244.0,1.00%,F,F)



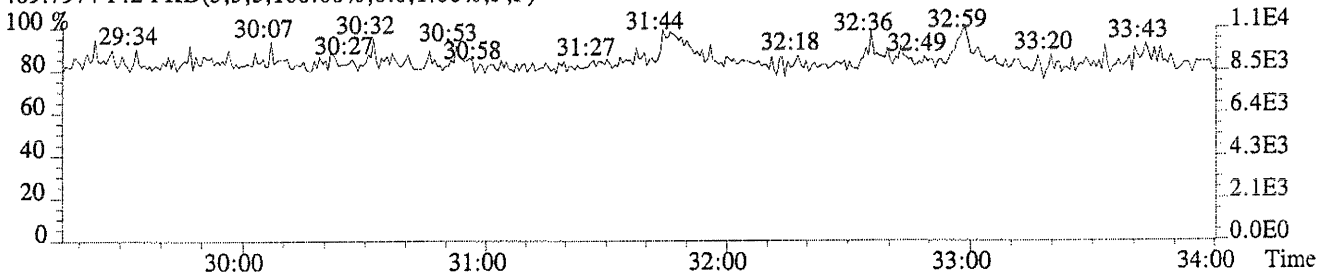
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,632.0,1.00%,F,F)



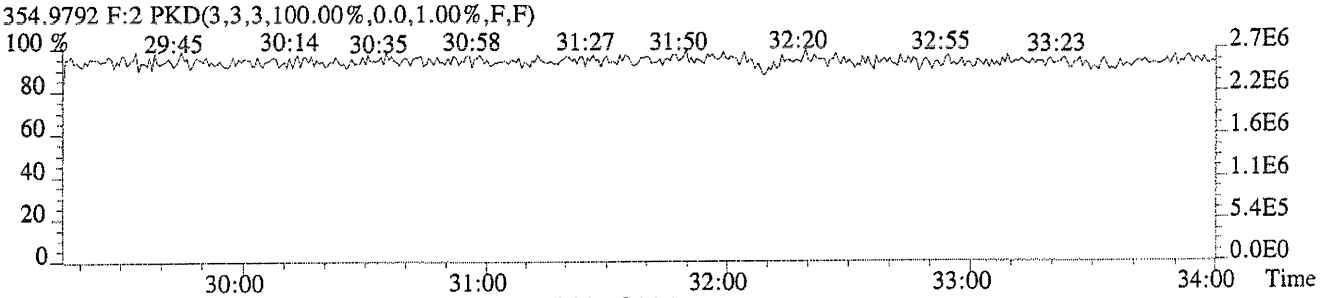
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,656.0,1.00%,F,F)



409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

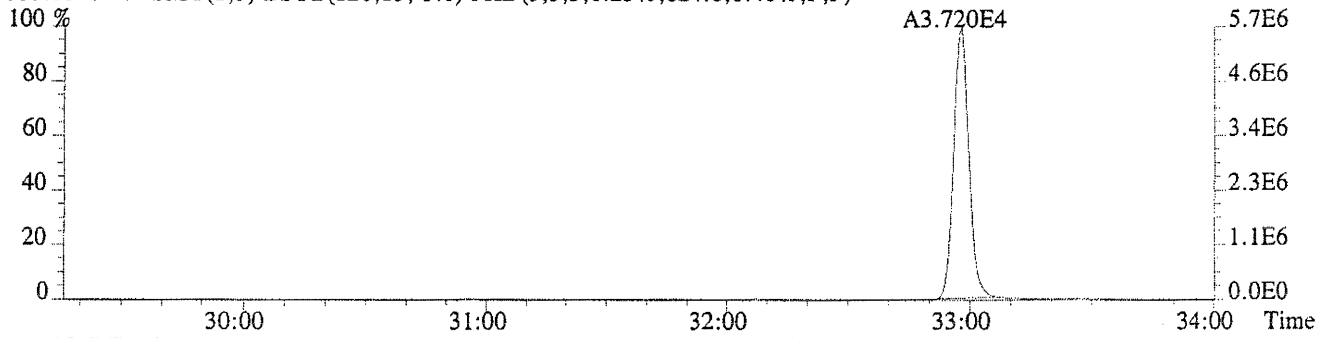


354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

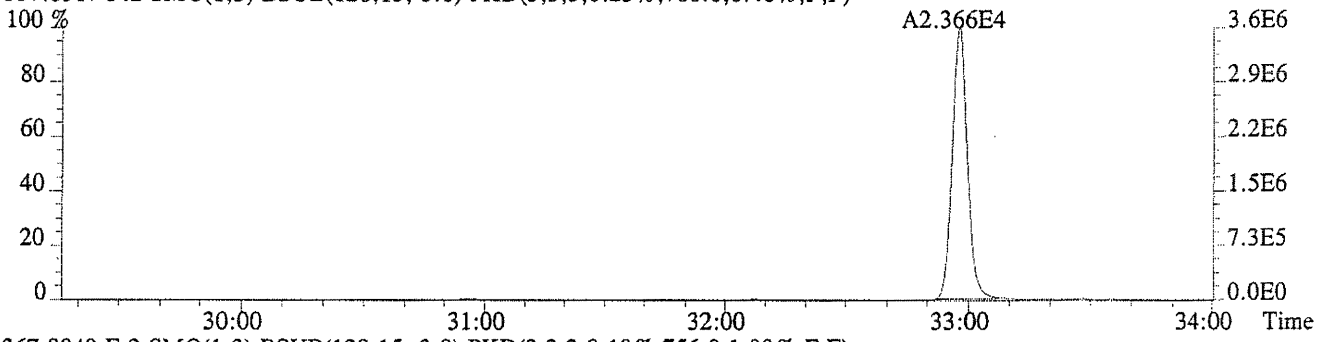


File:U20400 #1-431 Acq: 4-NOV-2004 14:27:55 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC3

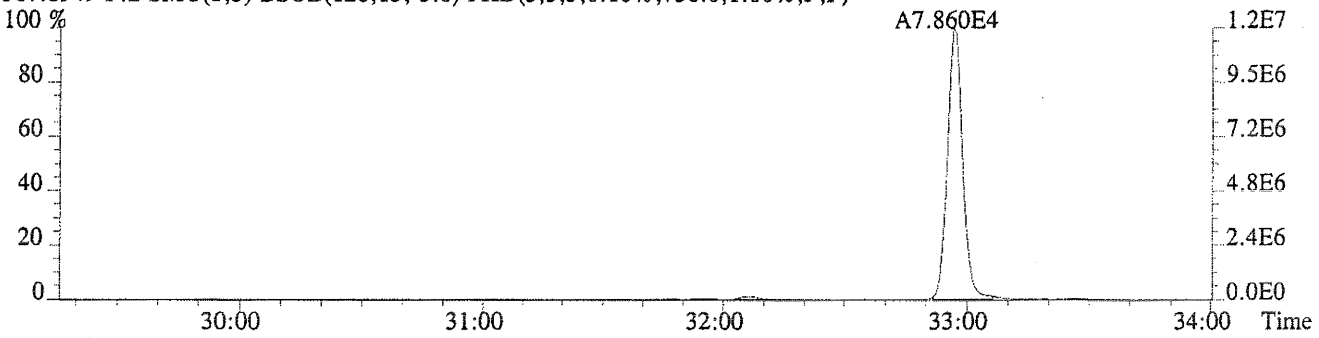
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,824.0,0.40%,F,F)



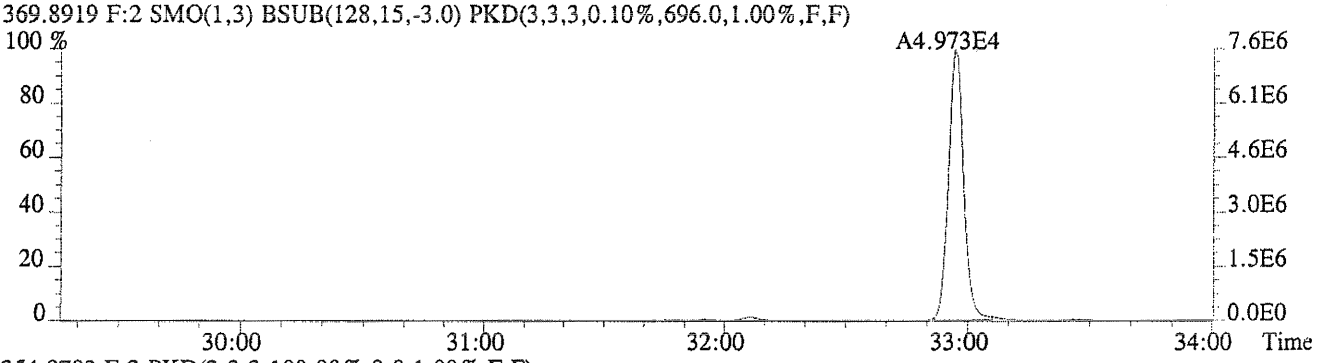
357.8517 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,700.0,0.40%,F,F)



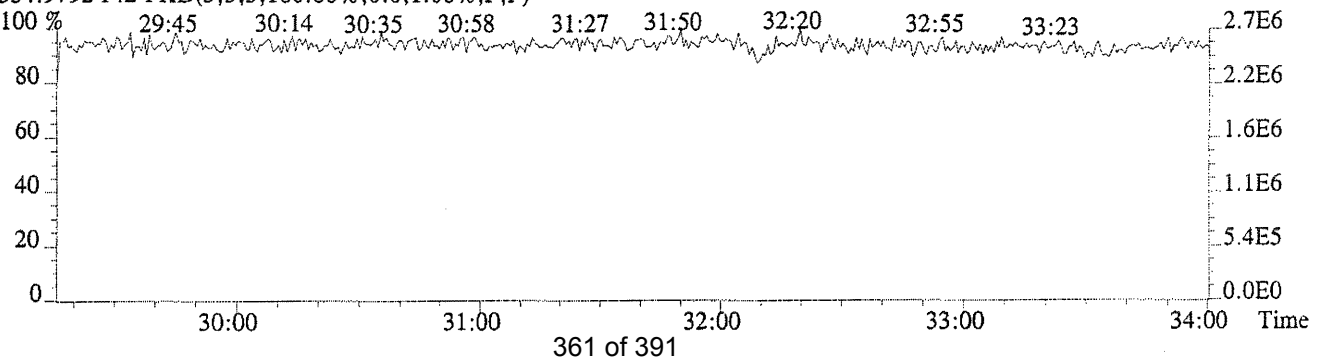
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,756.0,1.00%,F,F)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,696.0,1.00%,F,F)

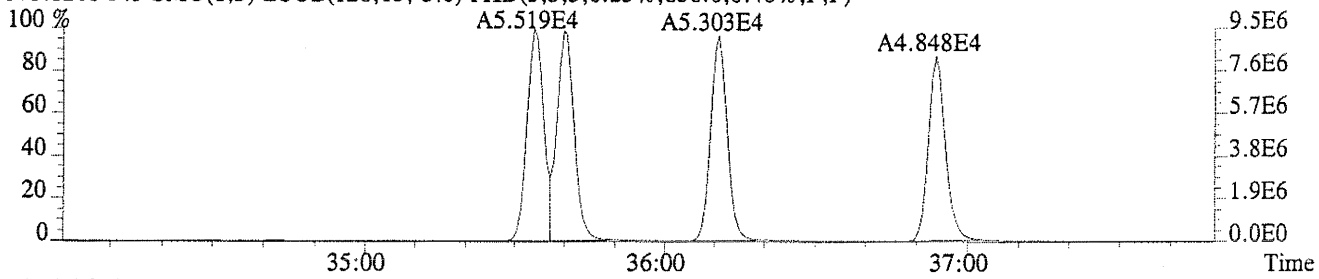


354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

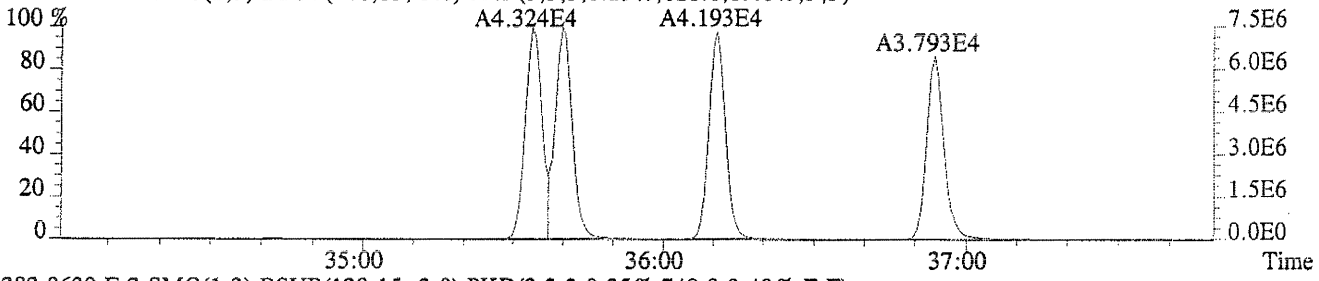


File:U20400 #1-346 Acq: 4-NOV-2004 14:27:55 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC3

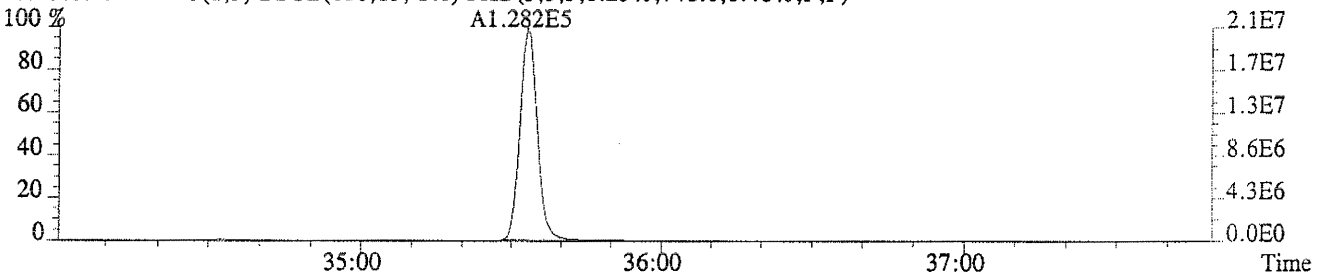
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,856.0,0.40%,F,F)



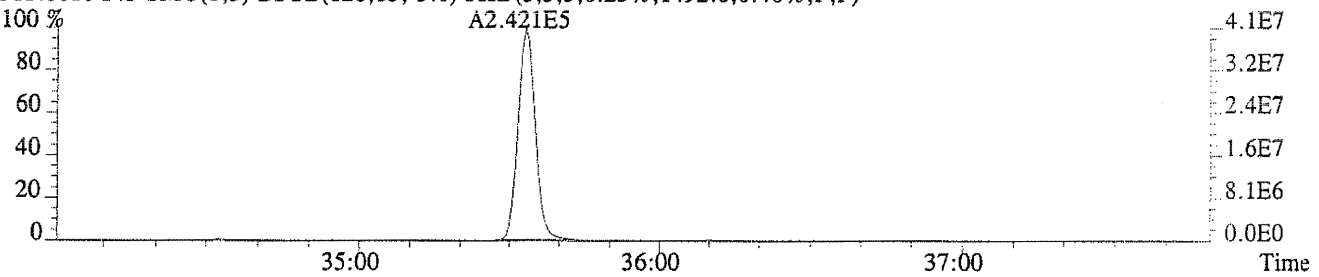
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,628.0,0.40%,F,F)



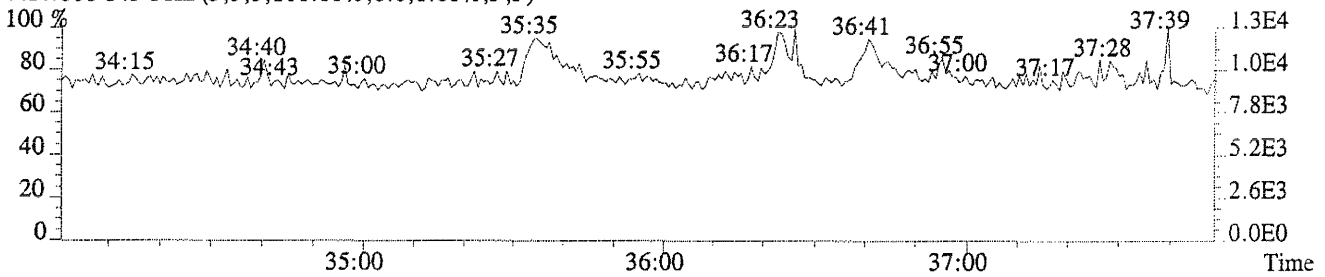
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,748.0,0.40%,F,F)



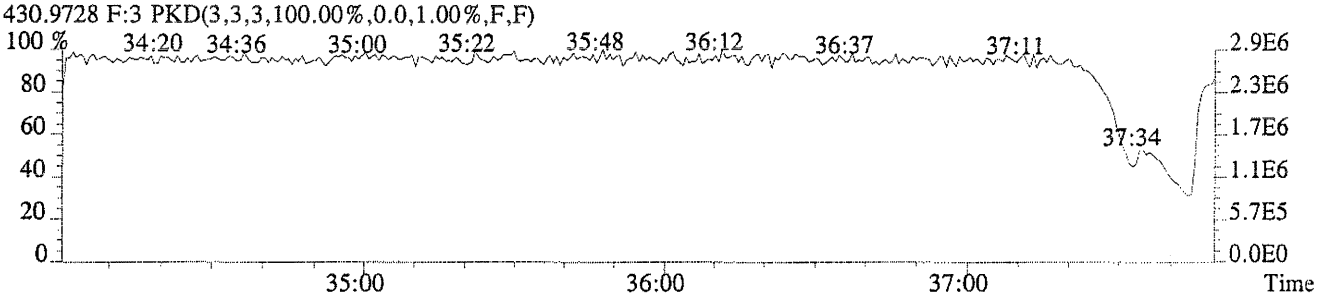
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1492.0,0.40%,F,F)



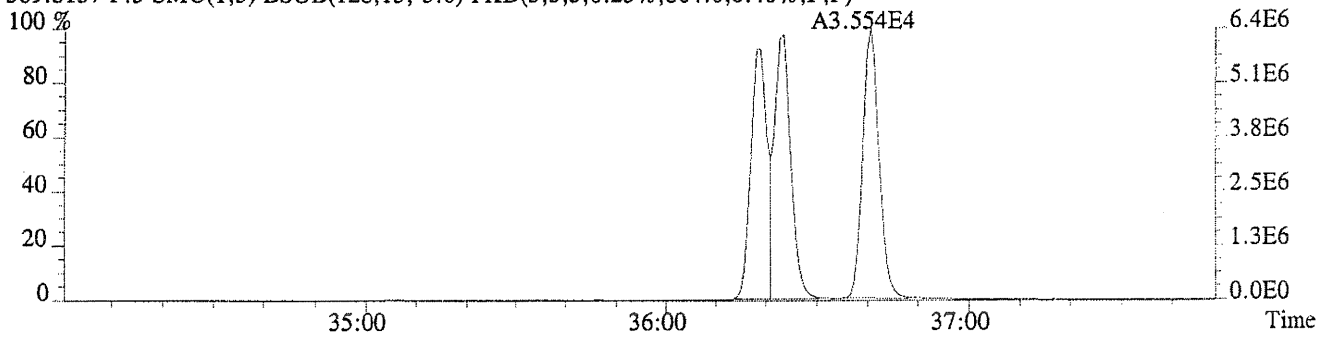
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



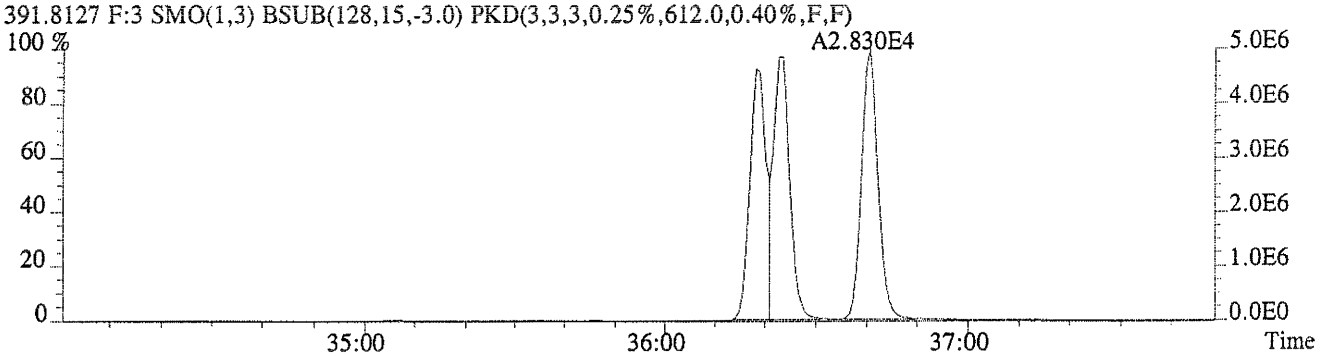
430.9728 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



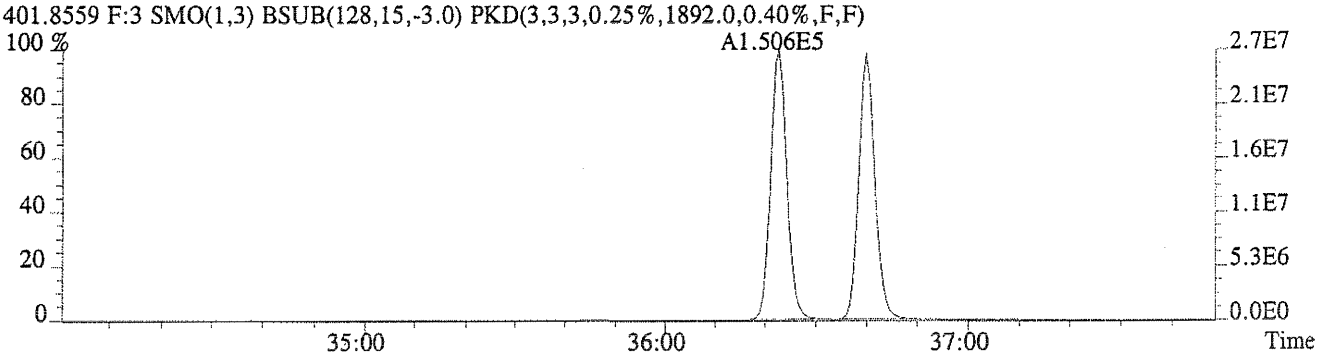
File:U20400 #1-346 Acq: 4-NOV-2004 14:27:55 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC3
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,864.0,0.40%,F,F)



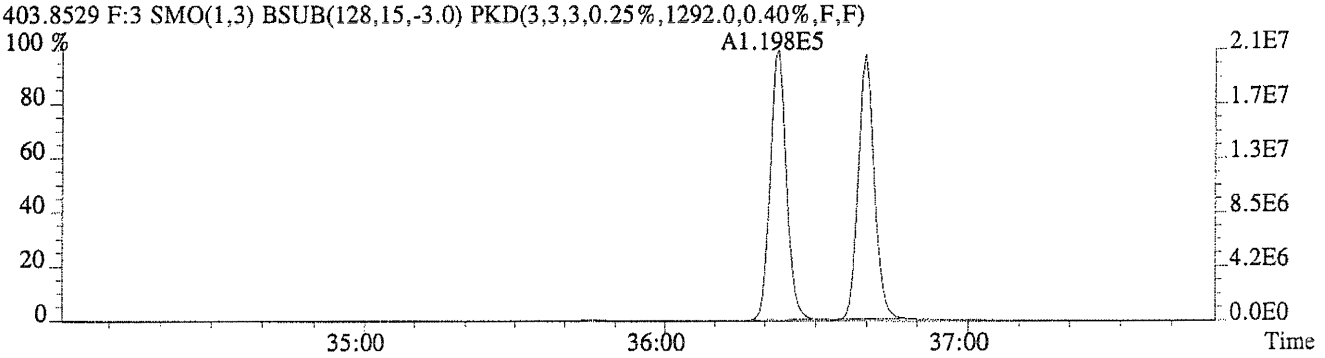
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,612.0,0.40%,F,F)



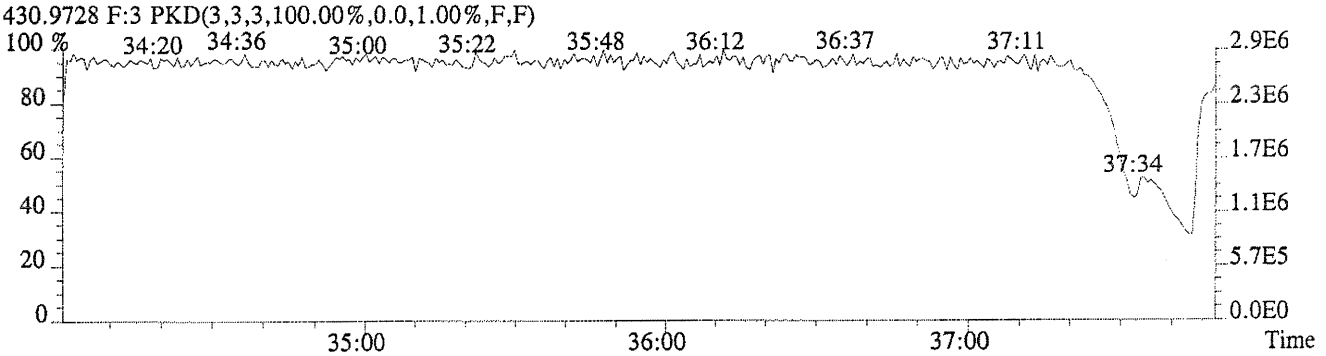
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1892.0,0.40%,F,F)



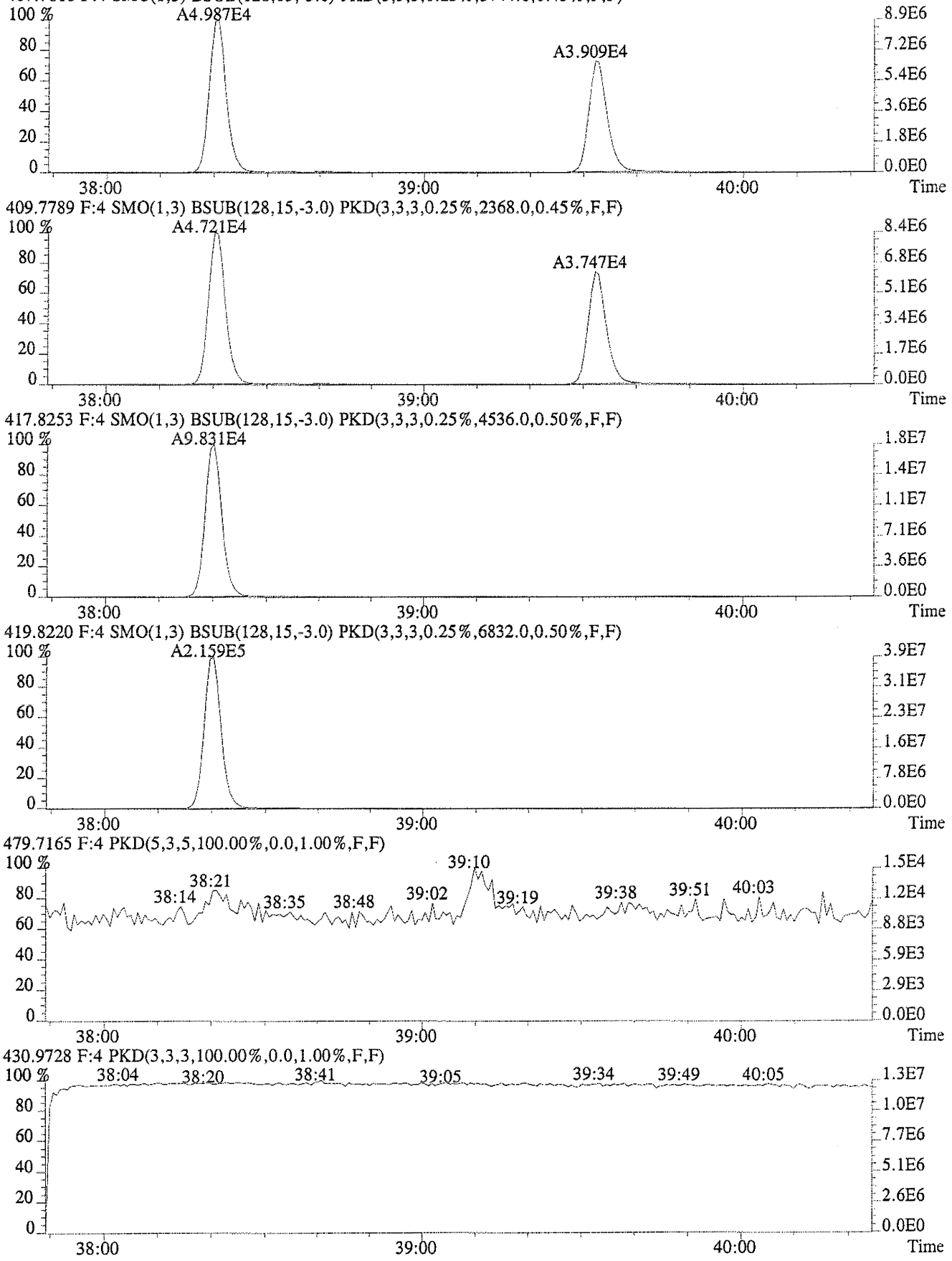
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1292.0,0.40%,F,F)



430.9728 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

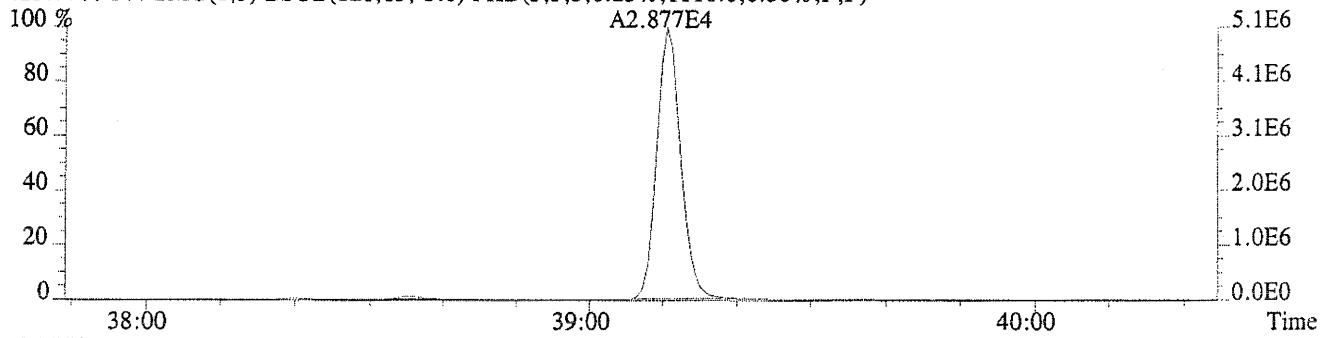


File:U20400 #1-236 Acq: 4-NOV-2004 14:27:55 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC3

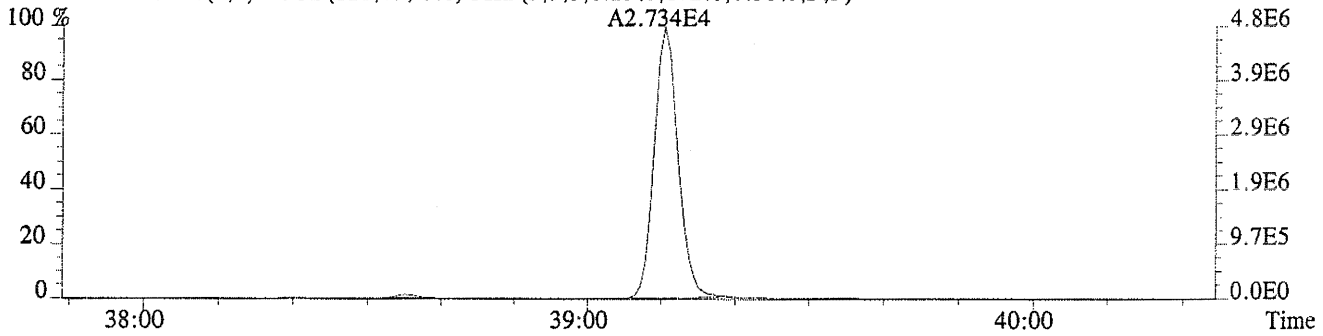


File:U20400 #1-236 Acq: 4-NOV-2004 14:27:55 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC3

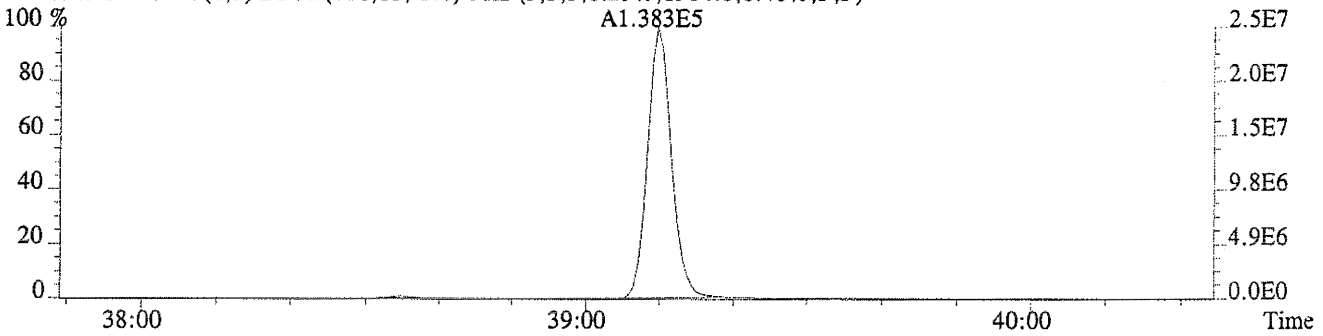
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1116.0,0.50%,F,F)



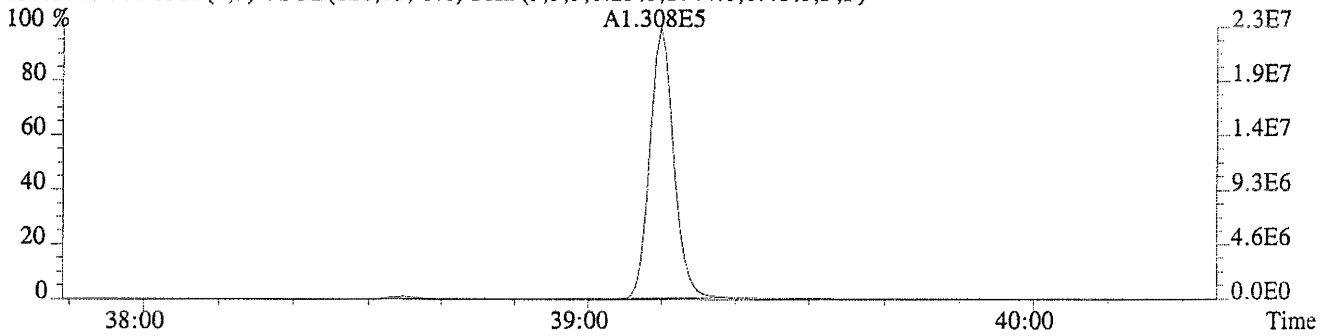
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,872.0,0.50%,F,F)



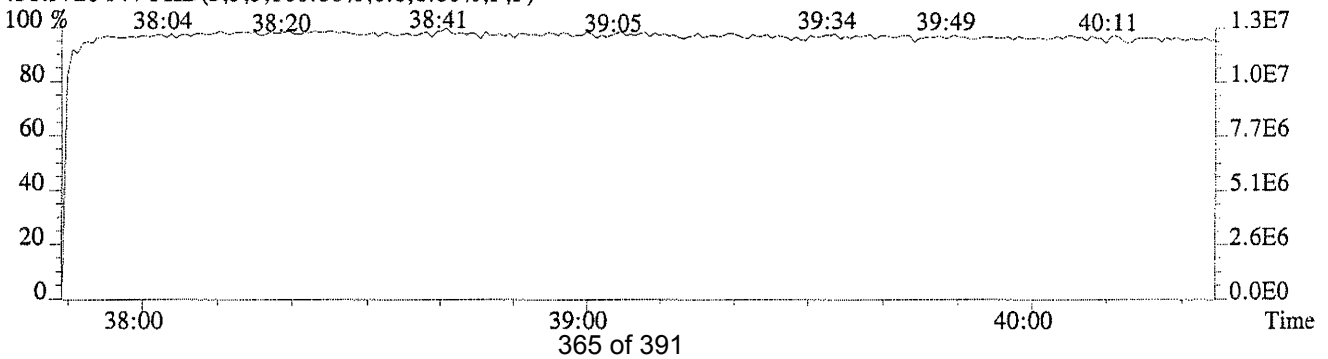
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1984.0,0.40%,F,F)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1744.0,0.40%,F,F)

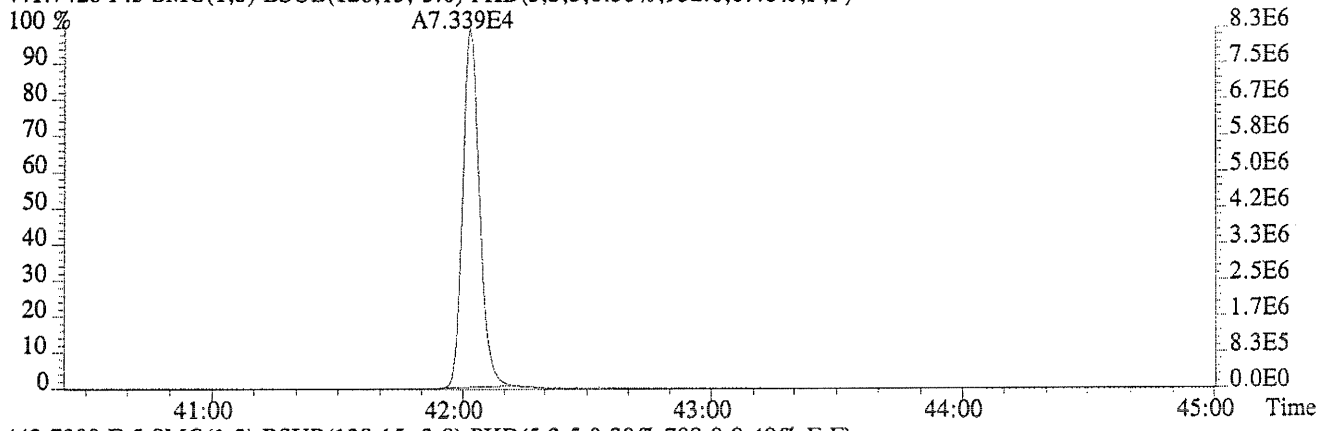


430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

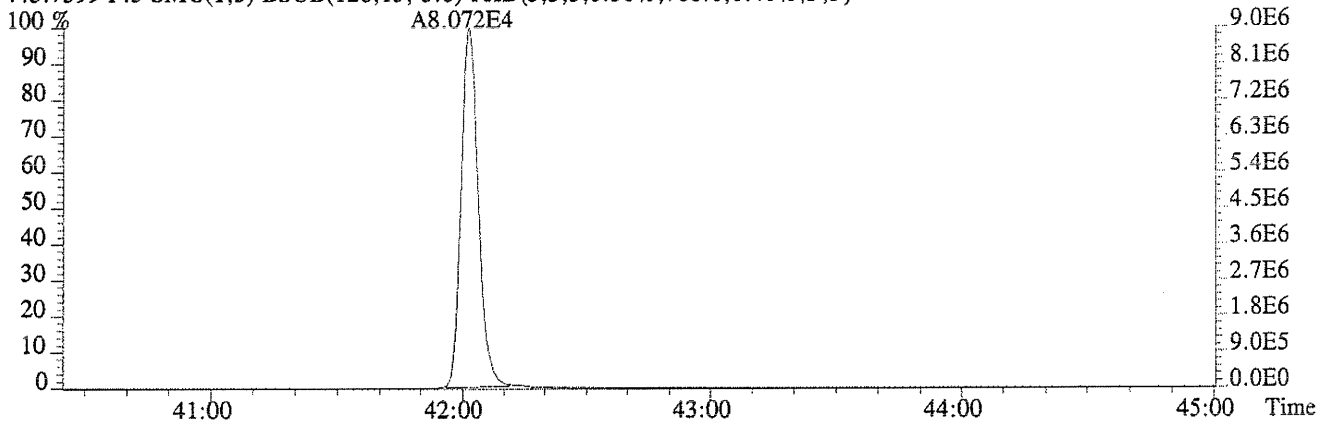


File:U20400 #1-508 Acq: 4-NOV-2004 14:27:55 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC3

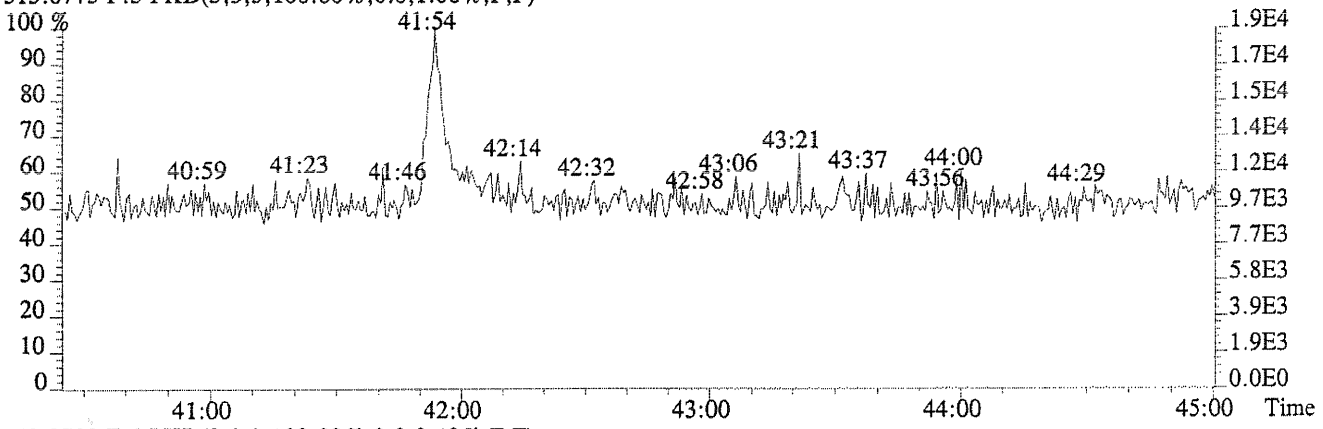
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,932.0,0.40%,F,F)



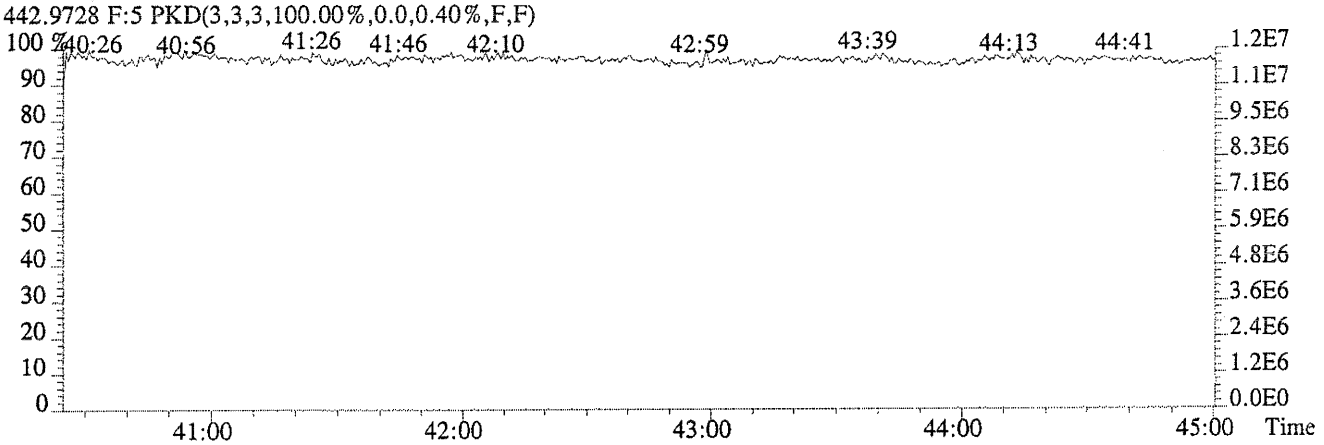
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,708.0,0.40%,F,F)



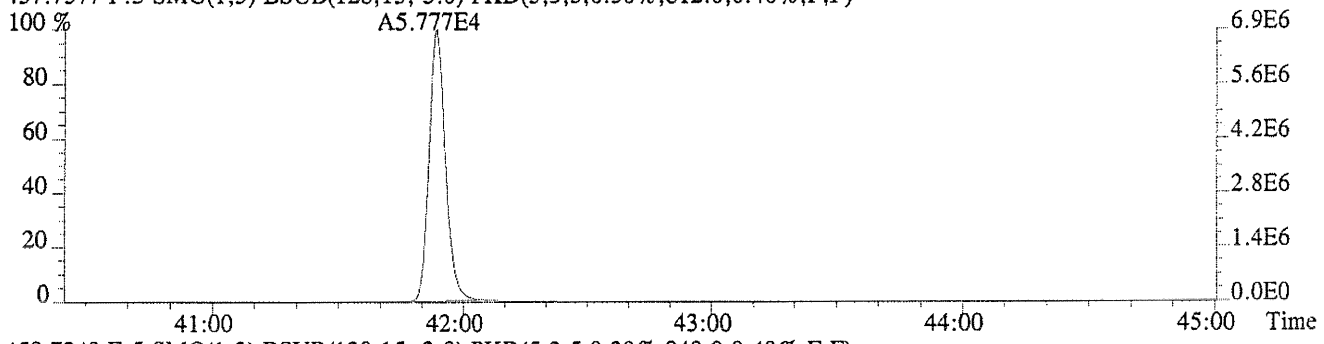
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



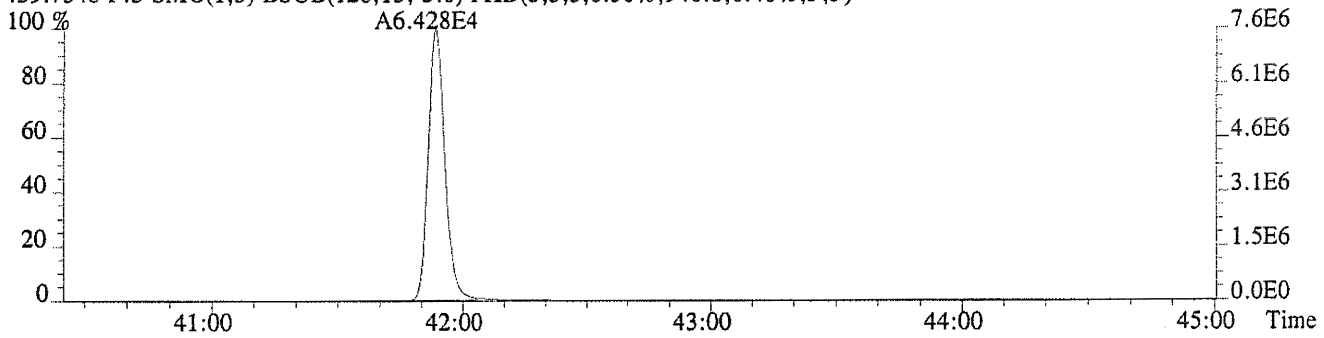
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



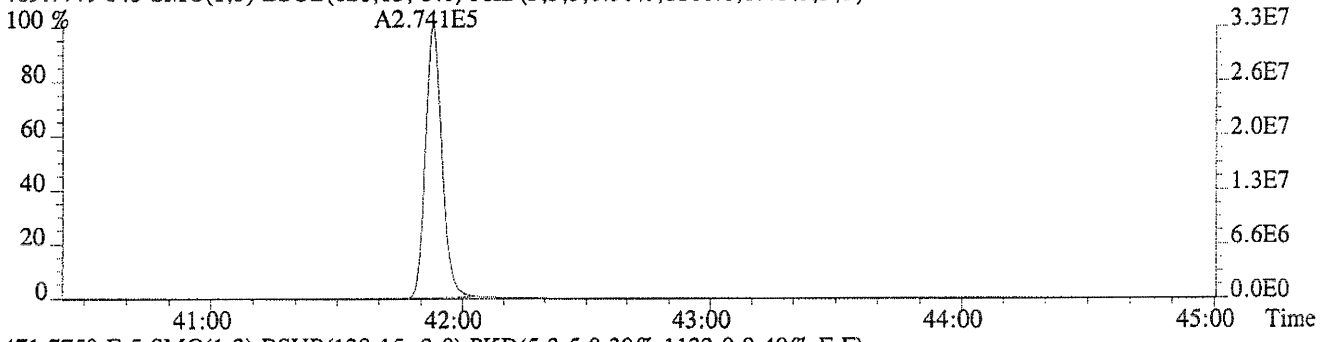
File:U20400 #1-508 Acq: 4-NOV-2004 14:27:55 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC3
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,812.0,0.40%,F,F)



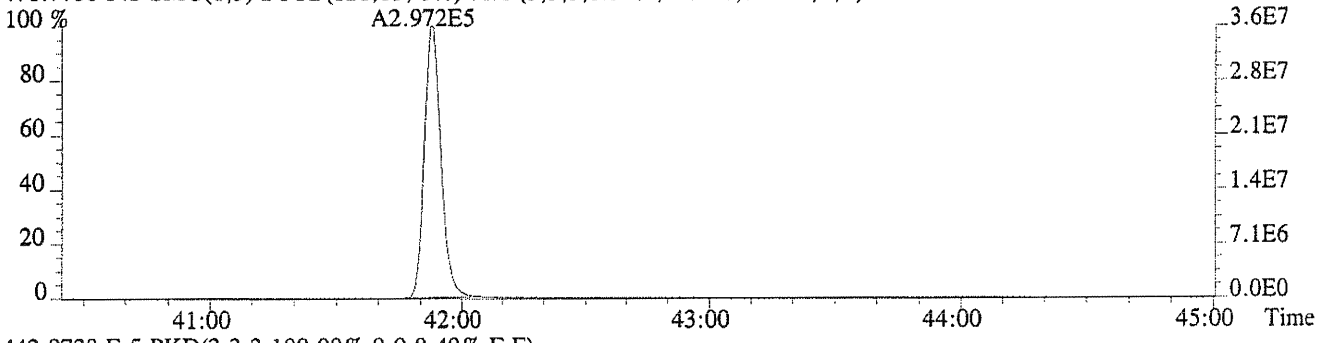
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,940.0,0.40%,F,F)



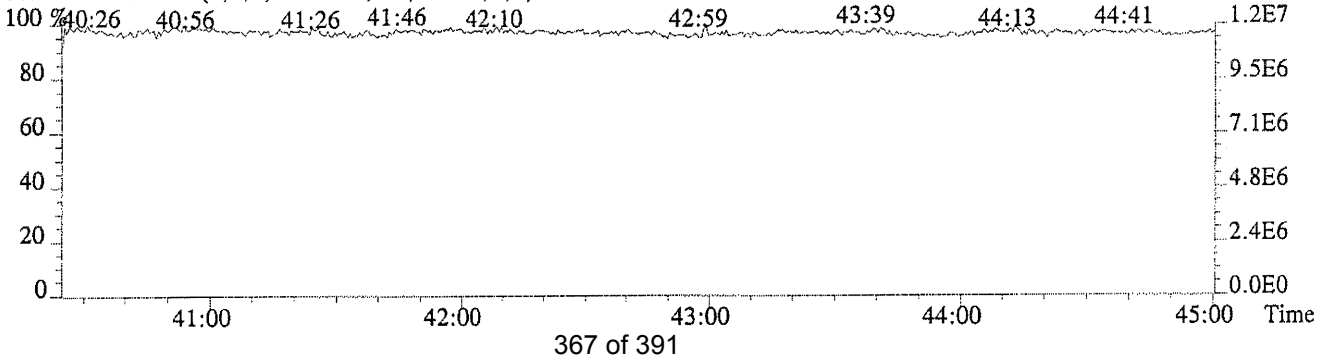
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1160.0,0.40%,F,F)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1132.0,0.40%,F,F)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



Columbia Analytical Services, Inc.
Sample Response Summary

CLIENT ID.
ICAL HRCC4

Run #4 Filename U20403#1 Samp: 1 Inj: 1 Acquired: 4-NOV-04 16:57:07
Processed: 5-NOV-04 15:49:05 Sample ID:

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	26:45	4.087e+04	5.079e+04	0.80	yes	no
2	Unk	1,2,3,7,8-PeCDF	31:45	1.418e+05	9.046e+04	1.57	yes	no
3	Unk	2,3,4,7,8-PeCDF	32:34	1.512e+05	9.504e+04	1.59	yes	no
4	Unk	1,2,3,4,7,8-HxCDF	35:34	1.470e+05	1.158e+05	1.27	yes	no
5	Unk	1,2,3,6,7,8-HxCDF	35:40	1.465e+05	1.140e+05	1.28	yes	no
6	Unk	2,3,4,6,7,8-HxCDF	36:10	1.371e+05	1.086e+05	1.26	yes	no
7	Unk	1,2,3,7,8,9-HxCDF	36:54	1.203e+05	9.358e+04	1.29	yes	no
8	Unk	1,2,3,4,6,7,8-HpCDF	38:20	1.337e+05	1.276e+05	1.05	yes	no
9	Unk	1,2,3,4,7,8,9-HpCDF	39:32	1.012e+05	9.672e+04	1.05	yes	no
10	Unk	OCDF	42:01	1.923e+05	2.072e+05	0.93	yes	no
11	Unk	2,3,7,8-TCDD	27:46	2.829e+04	3.619e+04	0.78	yes	no
12	Unk	1,2,3,7,8-PeCDD	32:57	8.950e+04	5.658e+04	1.58	yes	no
13	Unk	1,2,3,4,7,8-HxCDD	36:18	8.599e+04	6.832e+04	1.26	yes	no
14	Unk	1,2,3,6,7,8-HxCDD	36:23	9.225e+04	7.134e+04	1.29	yes	no
15	Unk	1,2,3,7,8,9-HxCDD	36:41	8.793e+04	6.956e+04	1.26	yes	no
16	Unk	1,2,3,4,6,7,8-HpCDD	39:10	7.450e+04	7.052e+04	1.06	yes	no
17	Unk	OCDD	41:53	1.470e+05	1.614e+05	0.91	yes	no
18	IS	13C-2,3,7,8-TCDF	26:44	4.022e+04	5.096e+04	0.79	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	31:45	5.633e+04	3.571e+04	1.58	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	35:33	7.109e+04	1.347e+05	0.53	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	38:20	5.296e+04	1.158e+05	0.46	yes	no
22	IS	13C-2,3,7,8-TCDD	27:45	2.979e+04	3.793e+04	0.79	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	32:57	3.653e+04	2.358e+04	1.55	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	36:22	7.790e+04	6.208e+04	1.25	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	39:10	7.417e+04	6.955e+04	1.07	yes	no
26	IS	13C-OCDD	41:52	1.388e+05	1.486e+05	0.93	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	27:28	2.901e+04	3.637e+04	0.80	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	36:40	7.850e+04	6.277e+04	1.25	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	27:46	6.325e+04				

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Columbia Analytical Services,Inc. CLIENT ID.
Signal/Noise Height Ratio Summary ICAL HRCC4

Run #4 Filename U20403 #1 Samp: 1 Inj: 1 Acquired: 4-NOV-04 16:57:07

Processed: 5-NOV-04 15:49:05 LAB. ID: ICAL HRCC4

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	4.18e+06	9.44e+02	4.4e+03	5.20e+06	1.08e+03	4.8e+03
2	1,2,3,7,8-PeCDF	2.12e+07	7.44e+02	2.9e+04	1.35e+07	1.28e+03	1.1e+04
3	2,3,4,7,8-PeCDF	2.39e+07	7.44e+02	3.2e+04	1.49e+07	1.28e+03	1.2e+04
4	1,2,3,4,7,8-HxCDF	2.67e+07	1.60e+03	1.7e+04	2.08e+07	7.12e+02	2.9e+04
5	1,2,3,6,7,8-HxCDF	2.59e+07	1.60e+03	1.6e+04	2.04e+07	7.12e+02	2.9e+04
6	2,3,4,6,7,8-HxCDF	2.45e+07	1.60e+03	1.5e+04	1.95e+07	7.12e+02	2.7e+04
7	1,2,3,7,8,9-HxCDF	2.11e+07	1.60e+03	1.3e+04	1.64e+07	7.12e+02	2.3e+04
8	1,2,3,4,6,7,8-HpCDF	2.50e+07	8.40e+03	3.0e+03	2.41e+07	2.27e+03	1.1e+04
9	1,2,3,4,7,8,9-HpCDF	1.78e+07	8.40e+03	2.1e+03	1.70e+07	2.27e+03	7.5e+03
10	OCDF	2.33e+07	7.00e+02	3.3e+04	2.52e+07	1.12e+03	2.2e+04
11	2,3,7,8-TCDD	3.35e+06	5.44e+02	6.2e+03	4.21e+06	4.24e+02	9.9e+03
12	1,2,3,7,8-PeCDD	1.43e+07	7.76e+02	1.8e+04	9.08e+06	7.64e+02	1.2e+04
13	1,2,3,4,7,8-HxCDD	1.61e+07	6.32e+02	2.6e+04	1.28e+07	5.12e+02	2.5e+04
14	1,2,3,6,7,8-HxCDD	1.66e+07	6.32e+02	2.6e+04	1.29e+07	5.12e+02	2.5e+04
15	1,2,3,7,8,9-HxCDD	1.62e+07	6.32e+02	2.6e+04	1.27e+07	5.12e+02	2.5e+04
16	1,2,3,4,6,7,8-HpCDD	1.40e+07	8.64e+02	1.6e+04	1.32e+07	1.78e+03	7.4e+03
17	OCDD	1.84e+07	9.52e+02	1.9e+04	2.01e+07	9.40e+02	2.1e+04
18	13C-2,3,7,8-TCDF	4.20e+06	2.04e+03	2.1e+03	5.29e+06	8.96e+02	5.9e+03
19	13C-1,2,3,7,8-PeCDF	8.51e+06	5.60e+02	1.5e+04	5.41e+06	7.36e+02	7.3e+03
20	13C-1,2,3,4,7,8-HxCDF	1.26e+07	6.92e+02	1.8e+04	2.38e+07	1.04e+03	2.3e+04
21	13C-1,2,3,4,6,7,8-HpCDF	9.85e+06	2.86e+03	3.4e+03	2.17e+07	1.00e+04	2.2e+03
22	13C-2,3,7,8-TCDD	3.54e+06	2.59e+03	1.4e+03	4.52e+06	1.83e+03	2.5e+03
23	13C-1,2,3,7,8-PeCDD	5.94e+06	5.60e+02	1.1e+04	3.78e+06	8.48e+02	4.5e+03
24	13C-1,2,3,6,7,8-HxCDD	1.41e+07	2.36e+03	6.0e+03	1.13e+07	1.36e+03	8.3e+03
25	13C-1,2,3,4,6,7,8-HpCDD	1.39e+07	7.24e+02	1.9e+04	1.30e+07	7.56e+02	1.7e+04
26	13C-OCDD	1.75e+07	8.24e+02	2.1e+04	1.87e+07	8.84e+02	2.1e+04
27	13C-1,2,3,4-TCDD	3.57e+06	2.59e+03	1.4e+03	4.46e+06	1.83e+03	2.4e+03
28	13C-1,2,3,7,8,9-HxCDD	1.46e+07	2.36e+03	6.2e+03	1.15e+07	1.36e+03	8.5e+03
29	37Cl-2,3,7,8-TCDD	7.37e+06	1.12e+03	6.6e+03			

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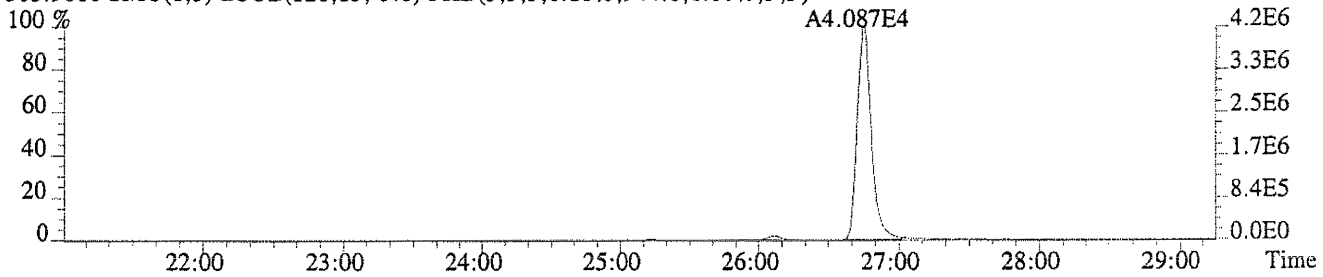
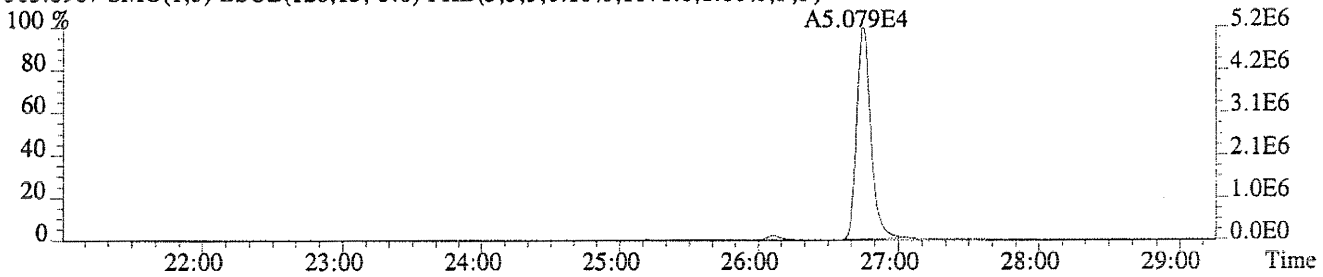
File:U20403 #1-689 Acq: 4-NOV-2004 16:57:07 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC4

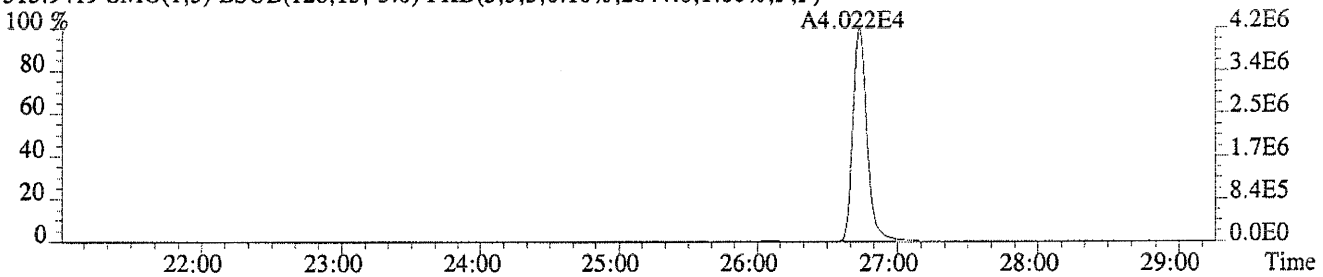
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,944.0,1.00%,F,F)



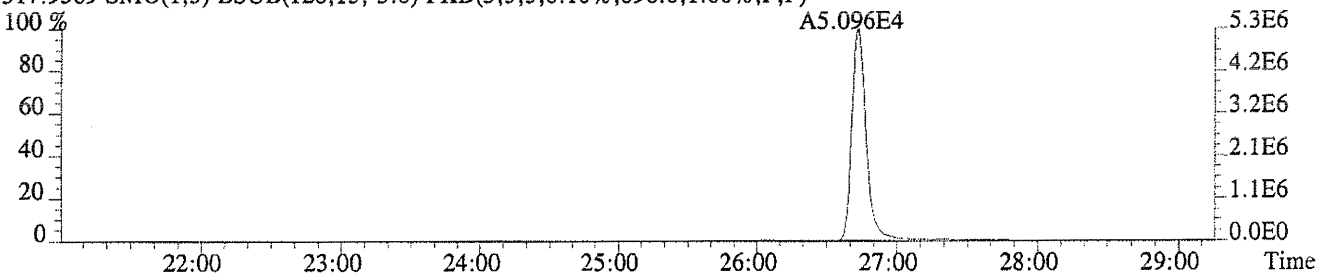
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1076.0,1.00%,F,F)



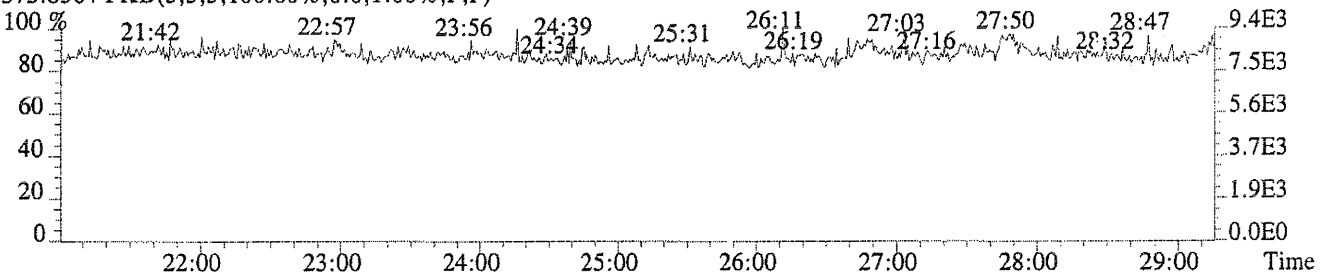
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2044.0,1.00%,F,F)



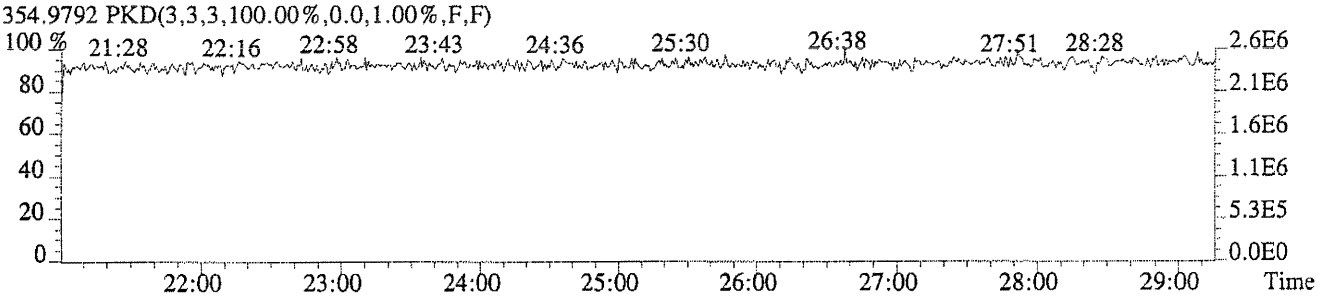
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,896.0,1.00%,F,F)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

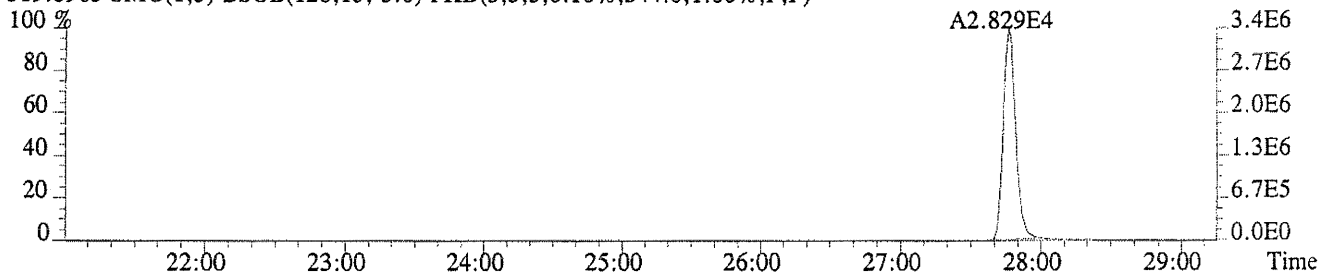


354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

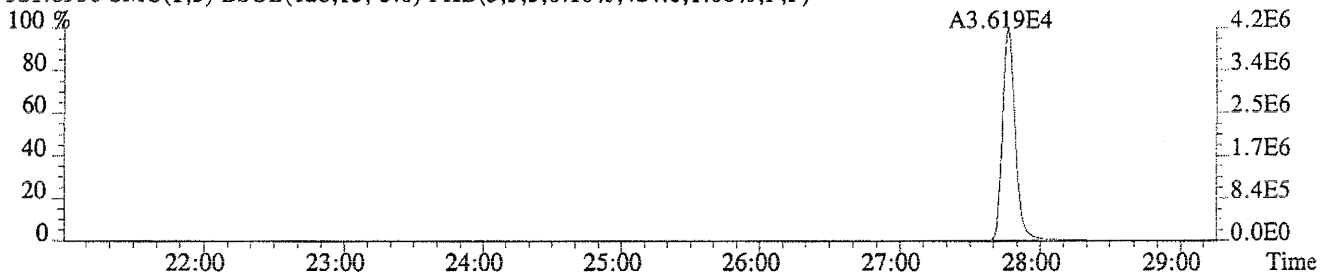


File:U20403 #1-689 Acq: 4-NOV-2004 16:57:07 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC4

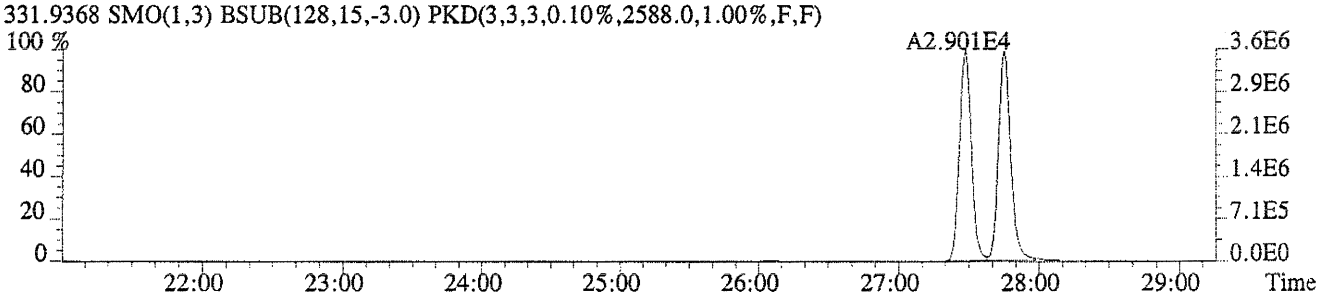
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,544.0,1.00%,F,F)



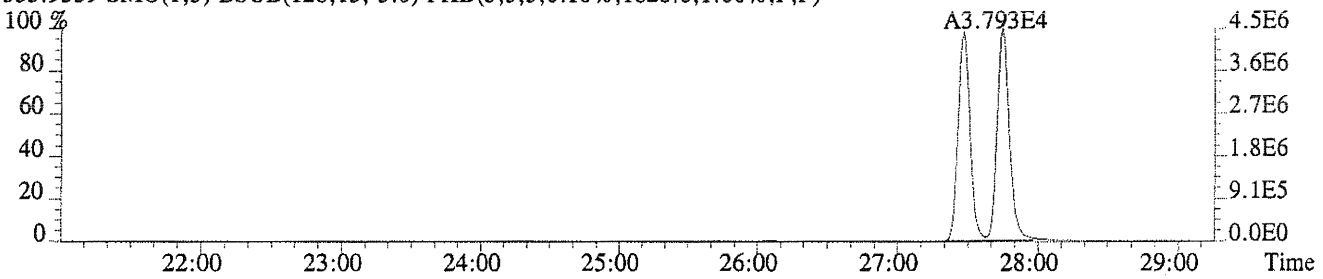
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,424.0,1.00%,F,F)



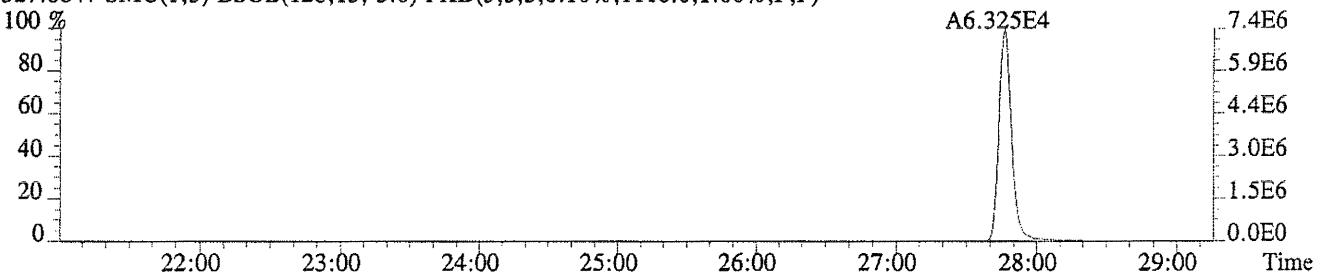
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2588.0,1.00%,F,F)



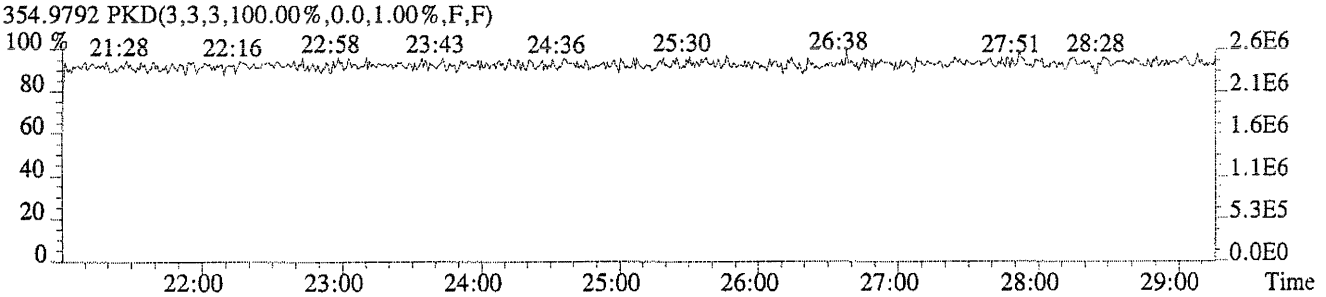
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1828.0,1.00%,F,F)



327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1116.0,1.00%,F,F)

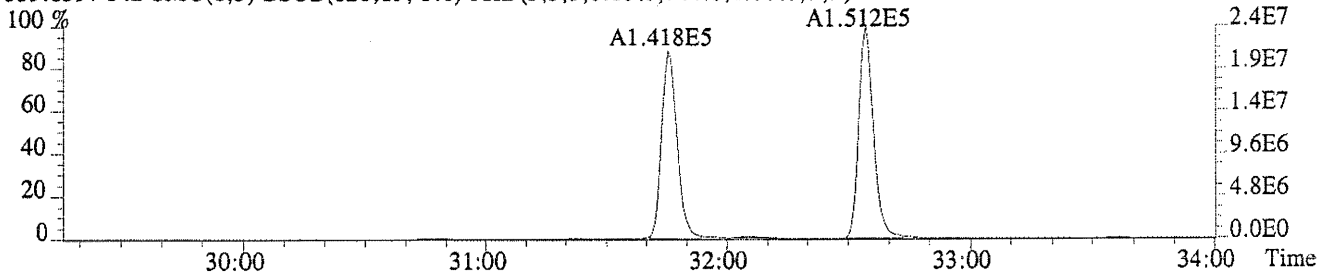


354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

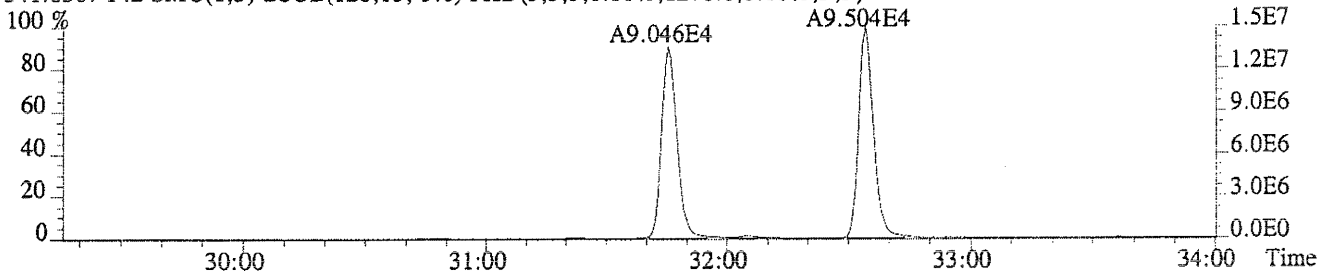


File:U20403 #1-431 Acq: 4-NOV-2004 16:57:07 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC4

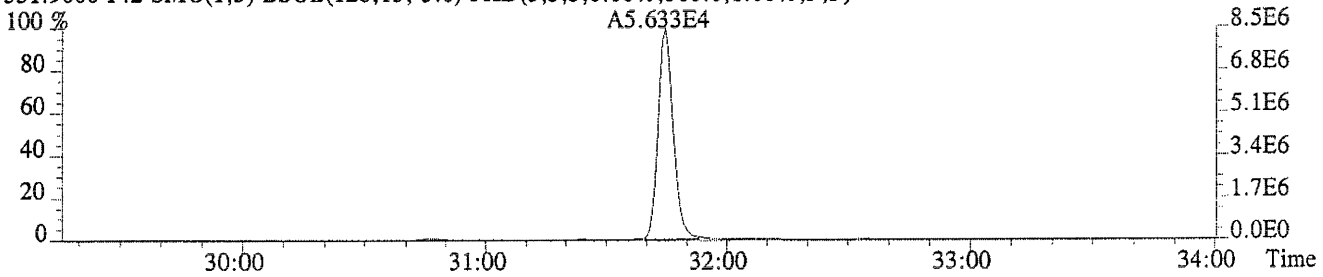
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,744.0,1.00%,F,F)



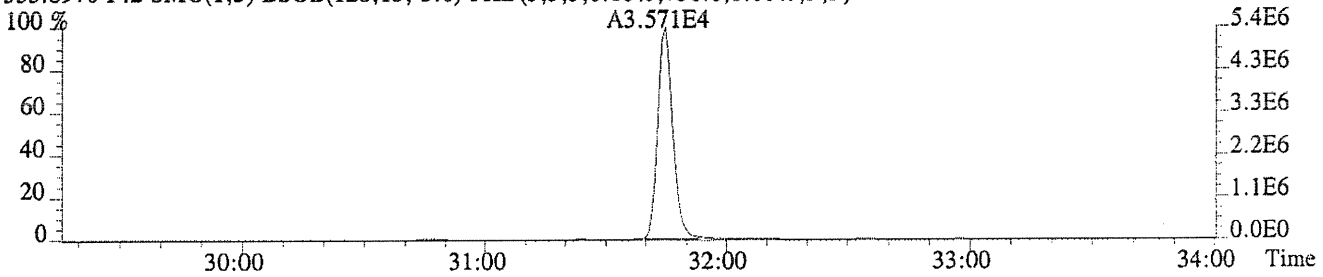
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1276.0,1.00%,F,F)



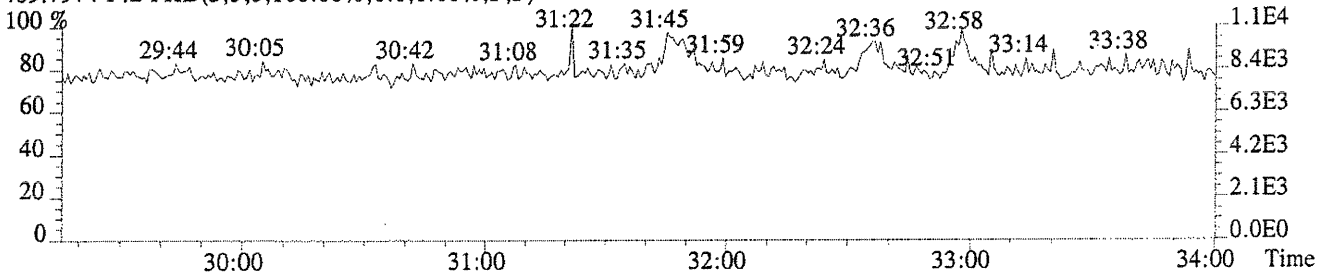
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,560.0,1.00%,F,F)



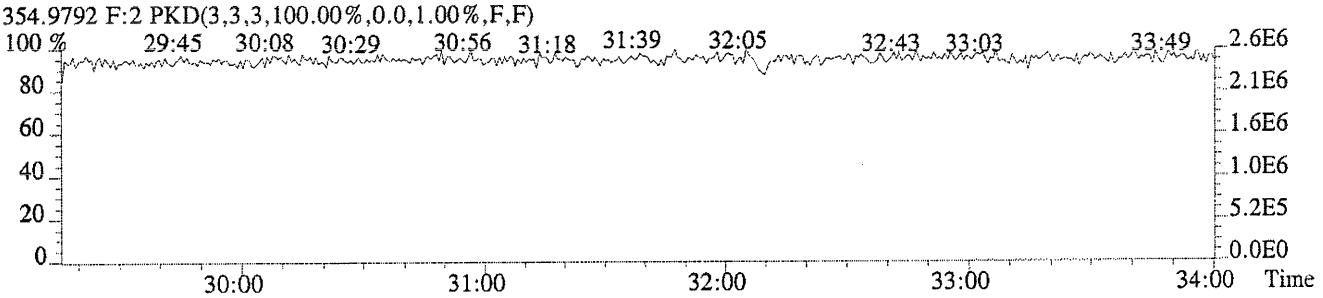
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,736.0,1.00%,F,F)



409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

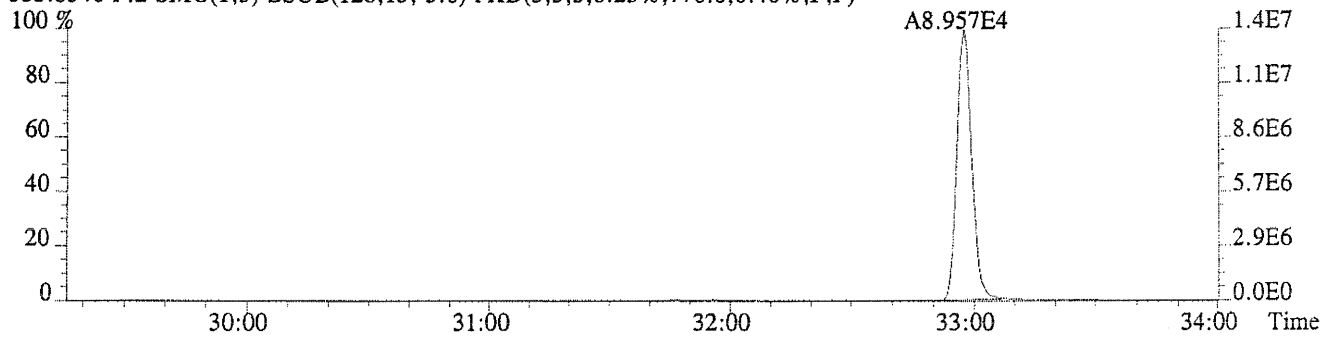


354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

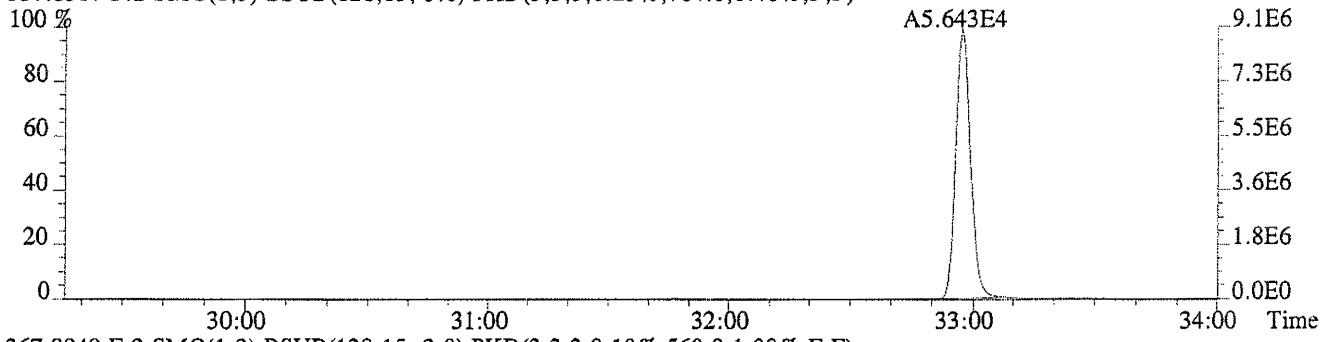


File:U20403 #1-431 Acq: 4-NOV-2004 16:57:07 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC4

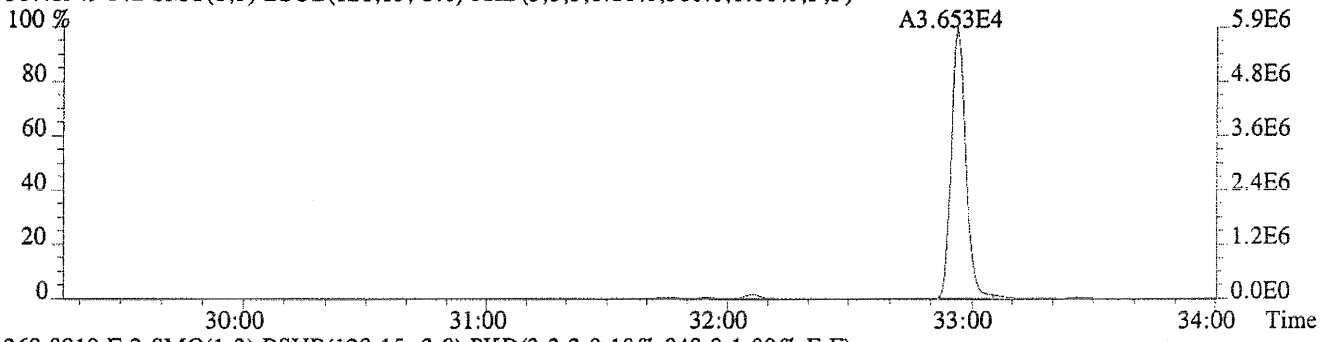
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,776.0,0.40%,F,F)



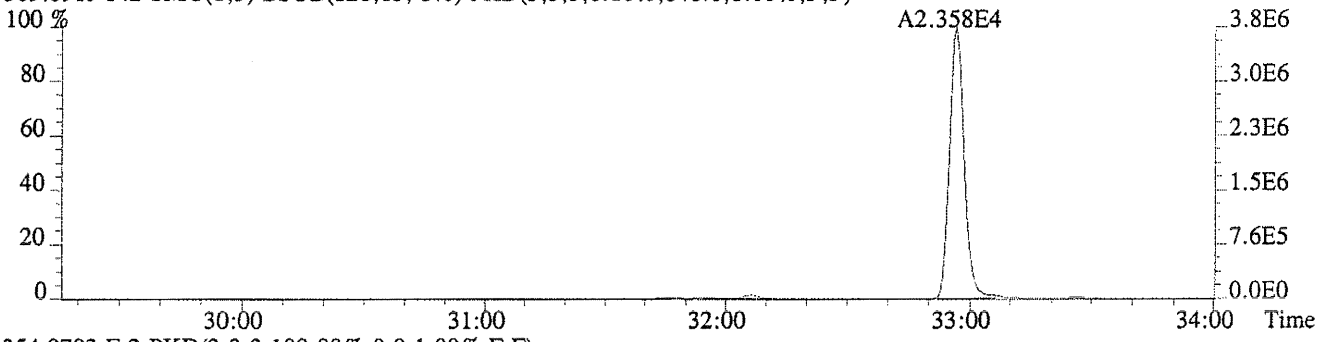
357.8517 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,764.0,0.40%,F,F)



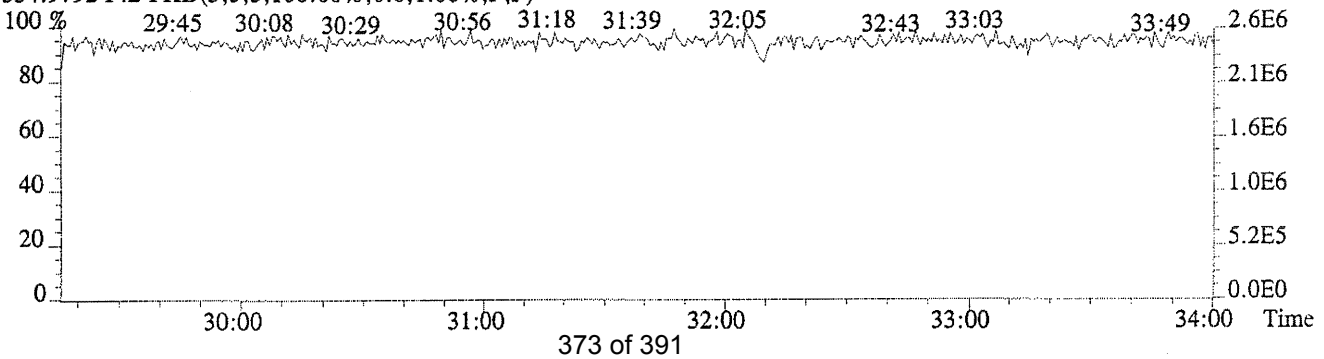
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,560.0,1.00%,F,F)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,848.0,1.00%,F,F)

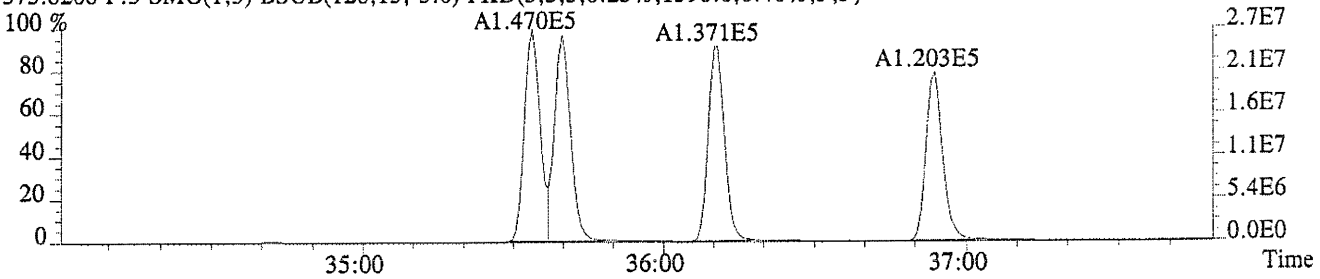


354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

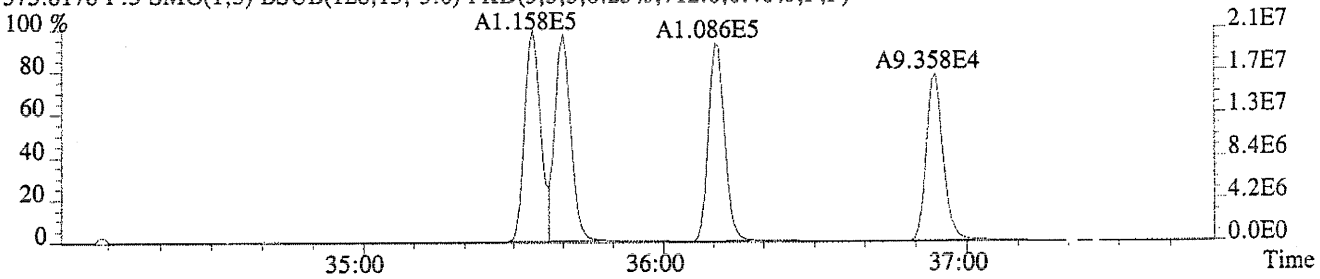


File:U20403 #1-346 Acq: 4-NOV-2004 16:57:07 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC4

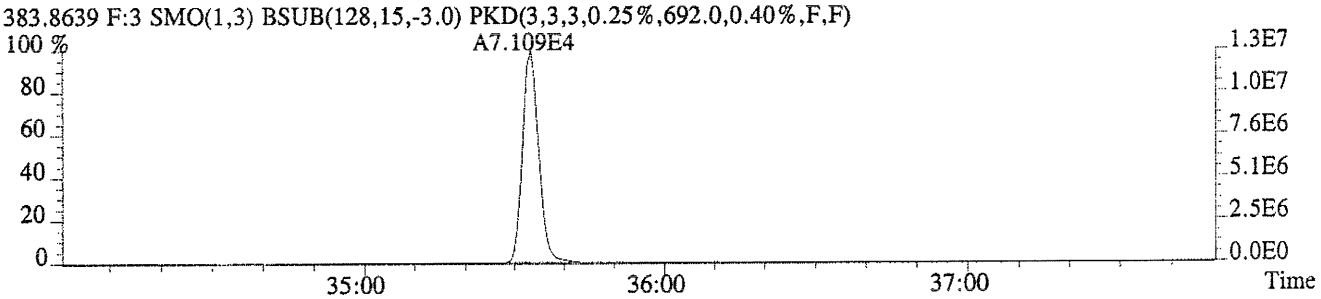
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1596.0,0.40%,F,F)



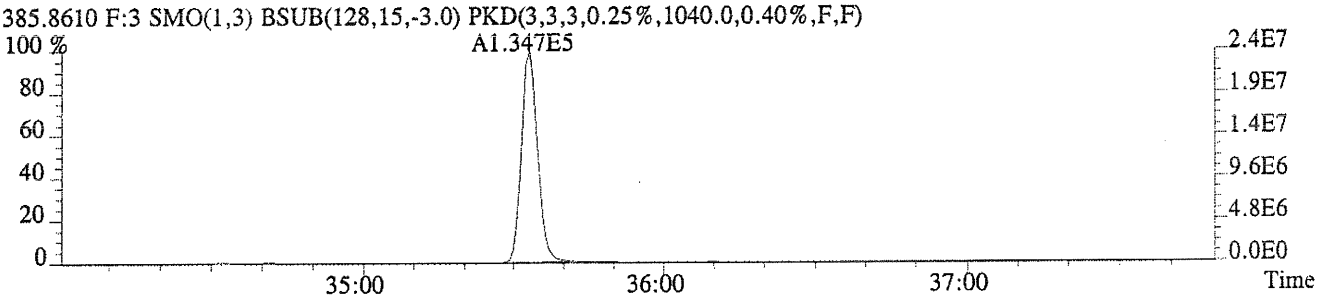
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,712.0,0.40%,F,F)



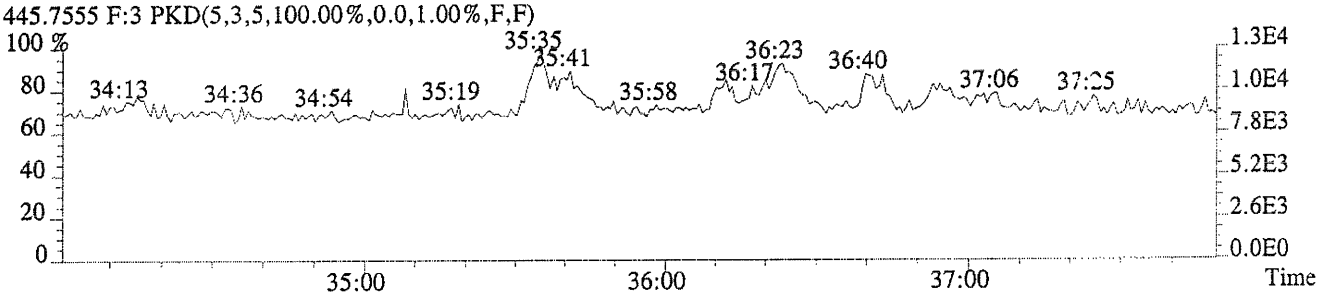
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,692.0,0.40%,F,F)



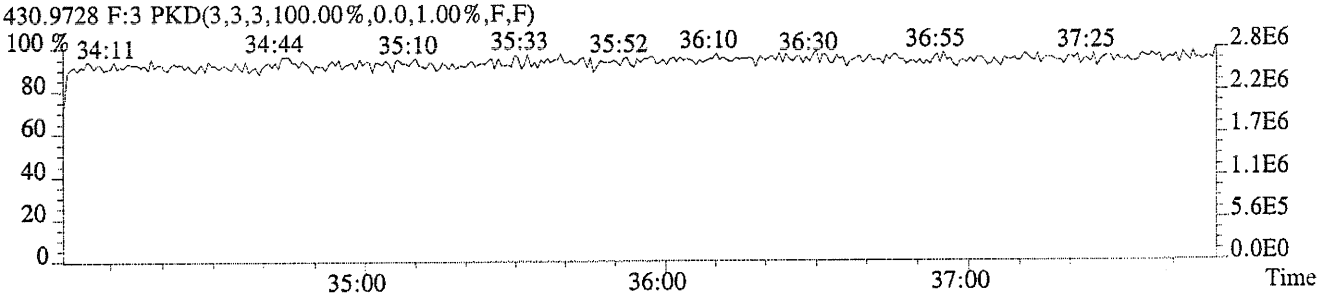
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1040.0,0.40%,F,F)



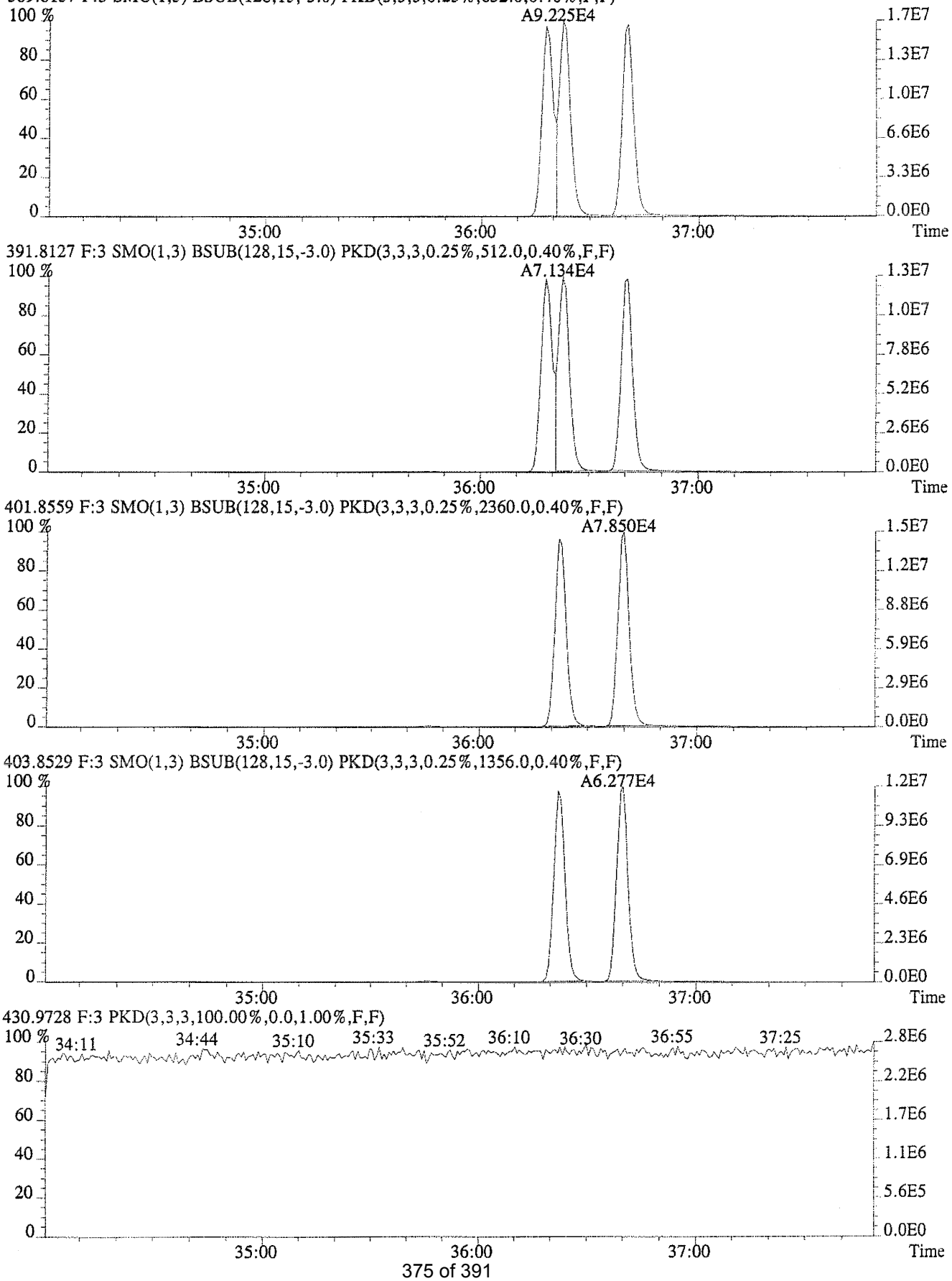
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



430.9728 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

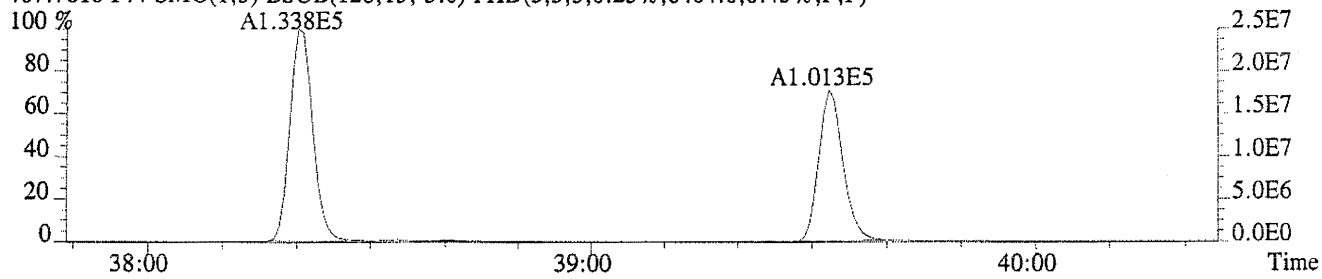


File:U20403 #1-346 Acq: 4-NOV-2004 16:57:07 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC4

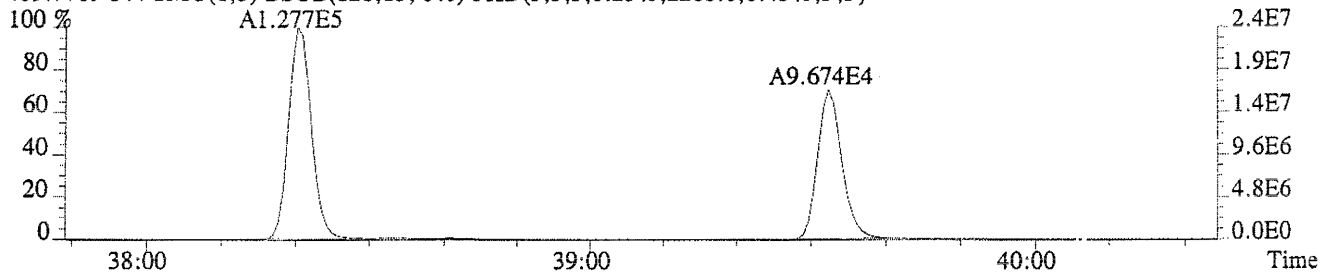


File:U20403 #1-236 Acq: 4-NOV-2004 16:57:07 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC4

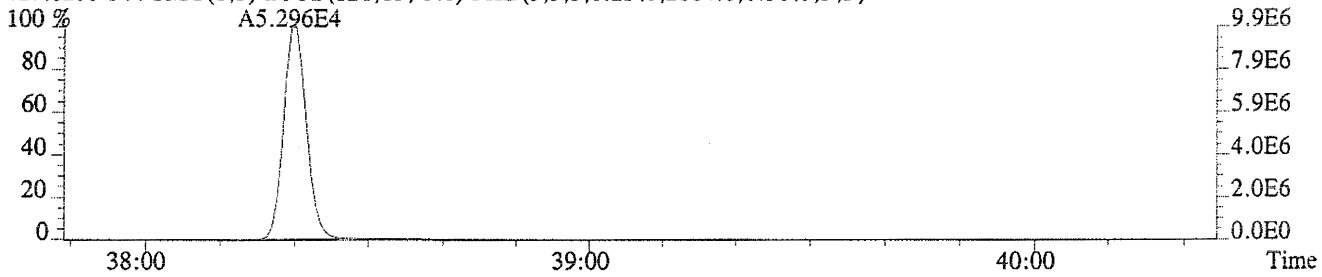
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,8404.0,0.45%,F,F)



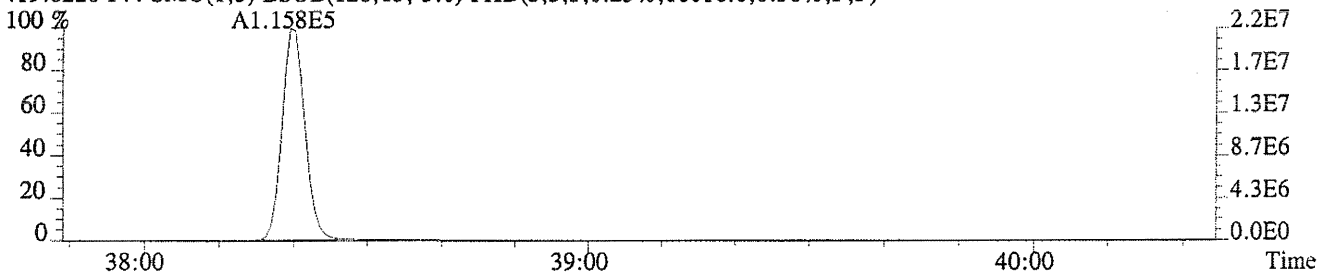
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2268.0,0.45%,F,F)



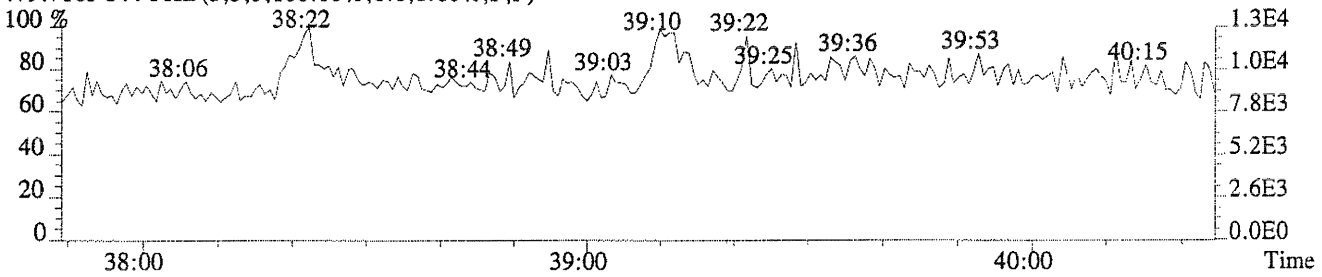
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2864.0,0.50%,F,F)



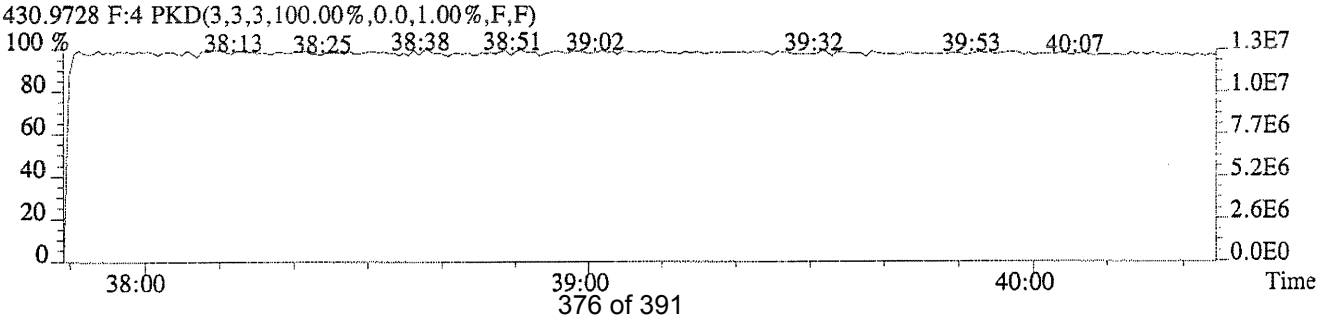
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,10016.0,0.50%,F,F)



479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

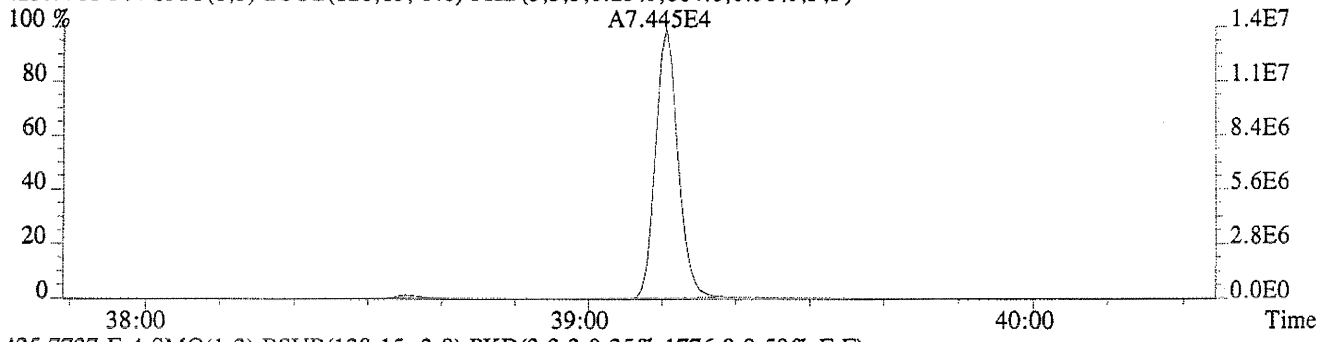


430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

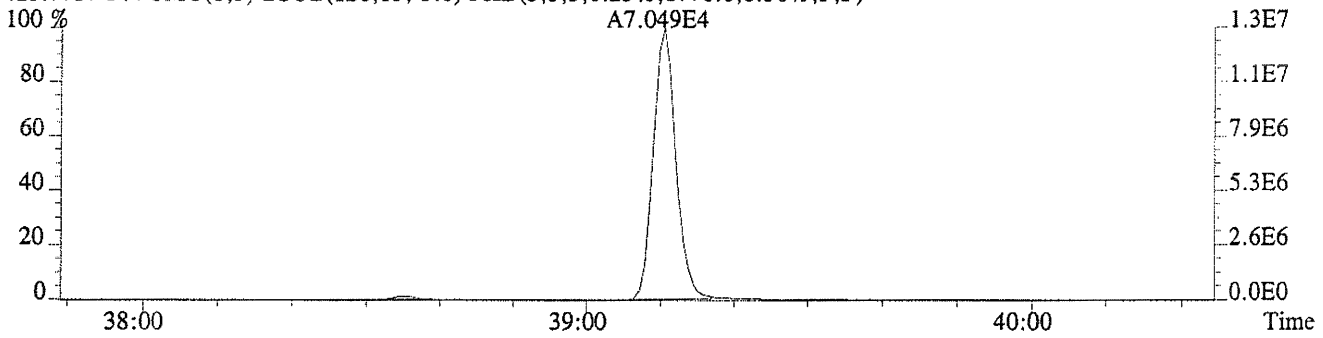


File:U20403 #1-236 Acq: 4-NOV-2004 16:57:07 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC4

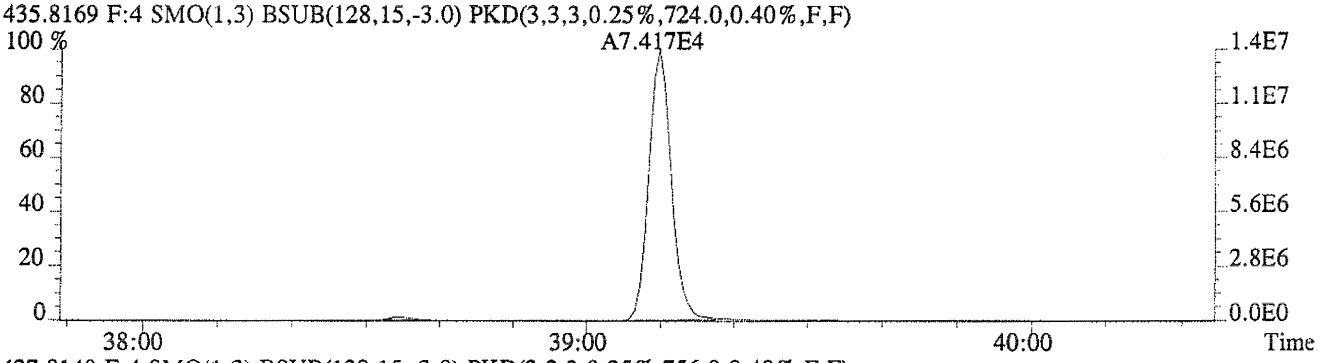
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,864.0,0.50%,F,F)



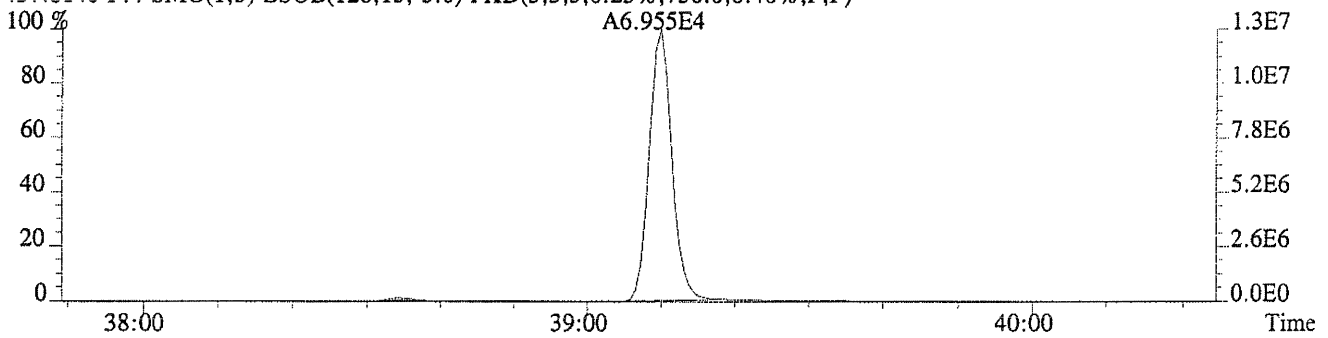
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1776.0,0.50%,F,F)



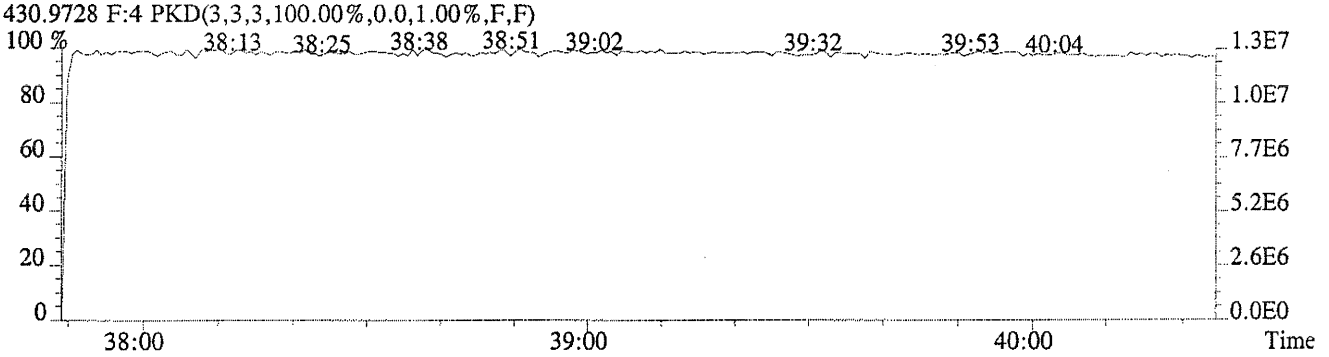
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,724.0,0.40%,F,F)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,756.0,0.40%,F,F)

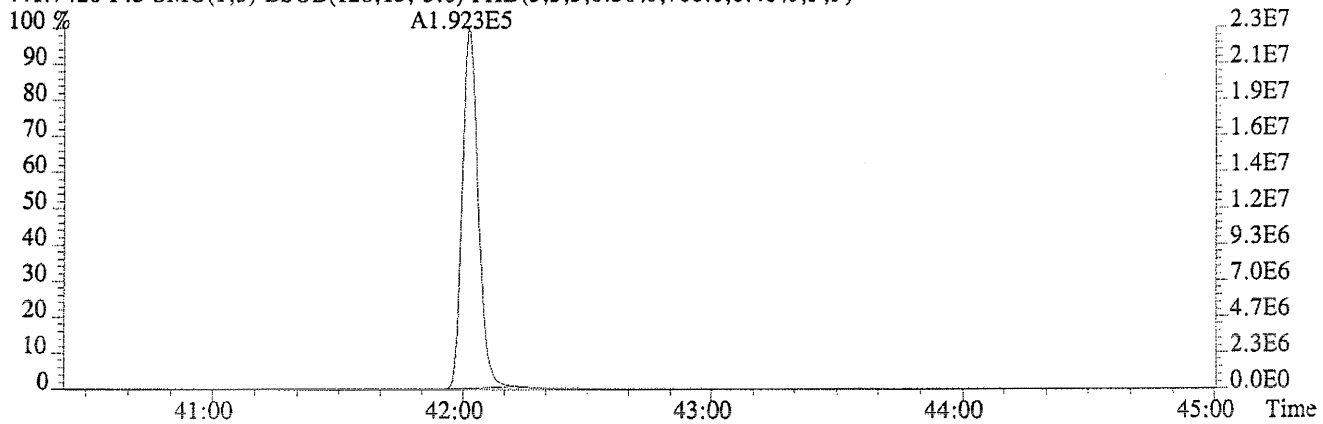


430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

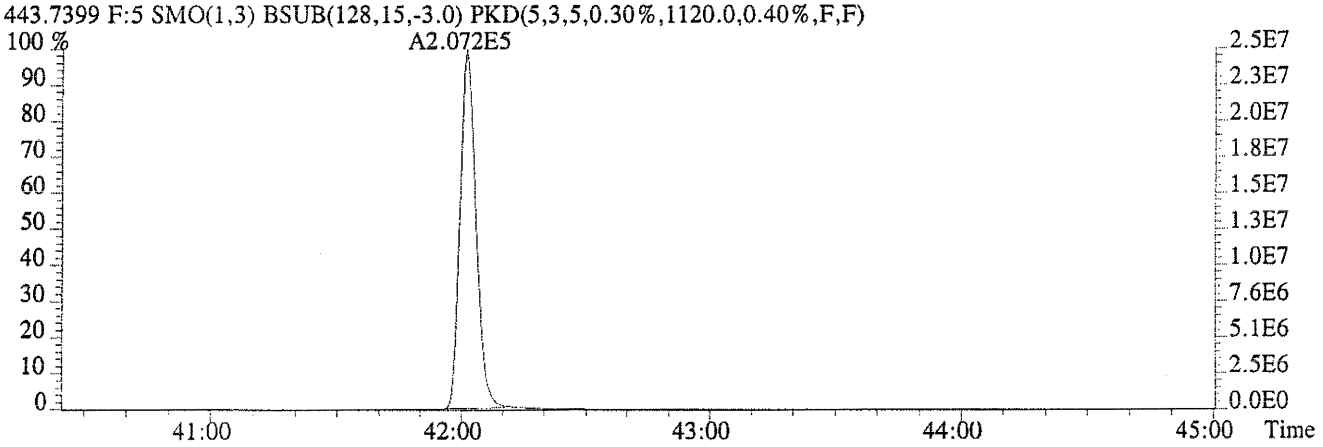


File:U20403 #1-508 Acq: 4-NOV-2004 16:57:07 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC4

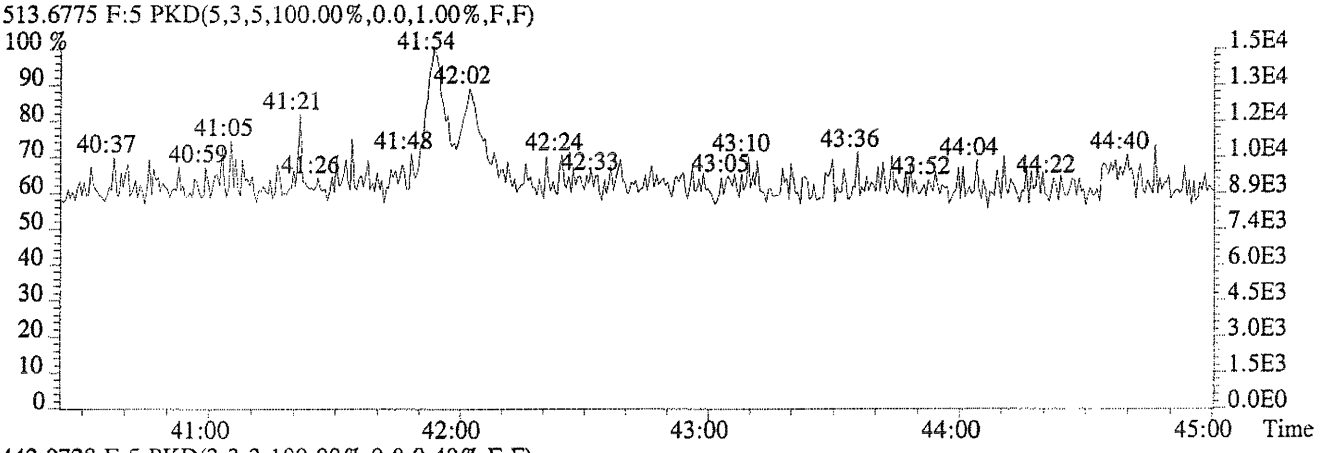
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,700.0,0.40%,F,F)



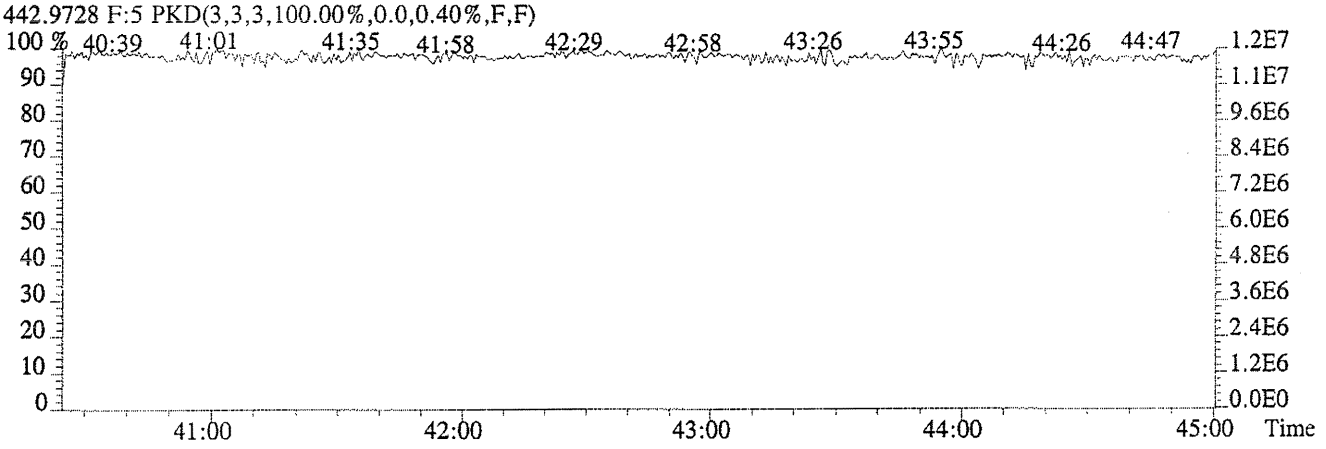
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1120.0,0.40%,F,F)



513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

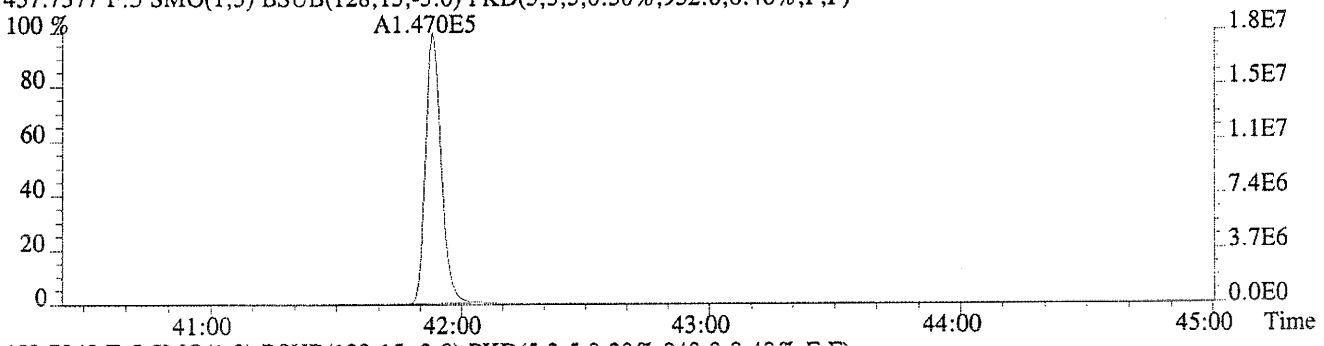


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

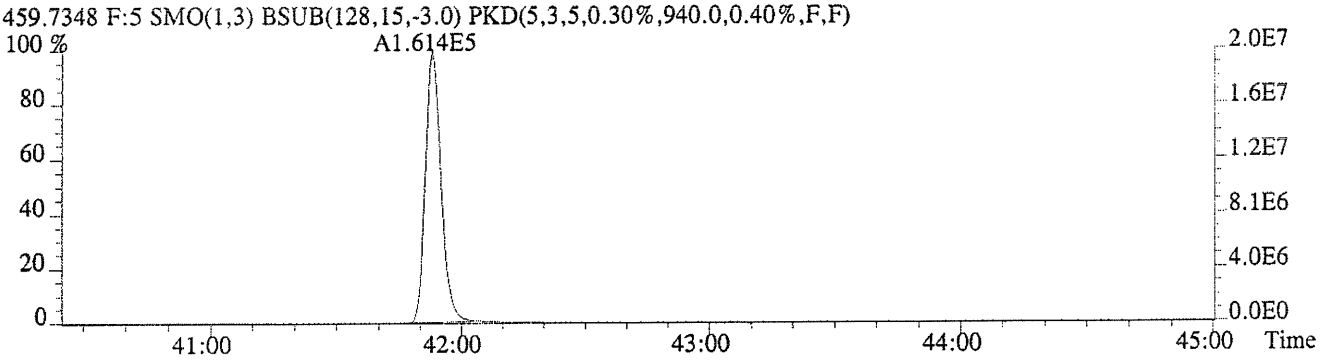


File:U20403 #1-508 Acq: 4-NOV-2004 16:57:07 Probe EI+ Magnet SIR VG BioTech Mass spectrf
Sample#1 Exp:ICAL HRCC4

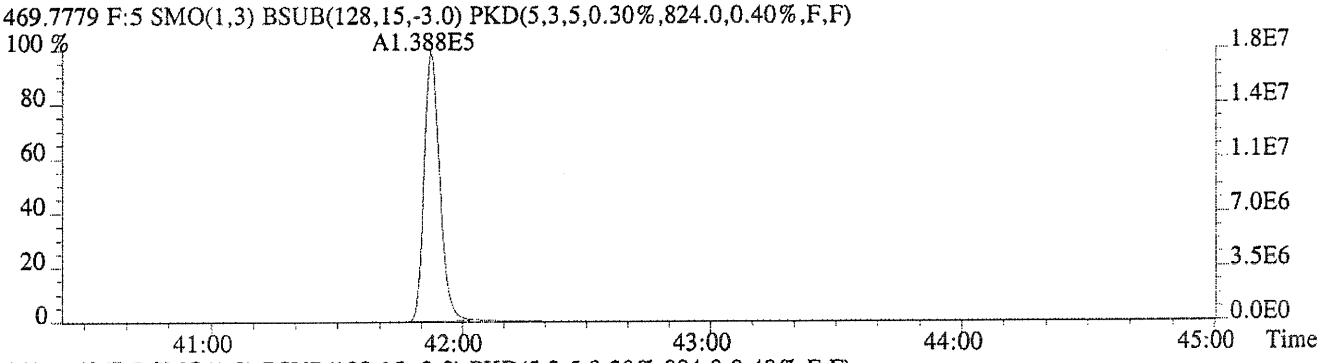
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,952.0,0.40%,F,F)



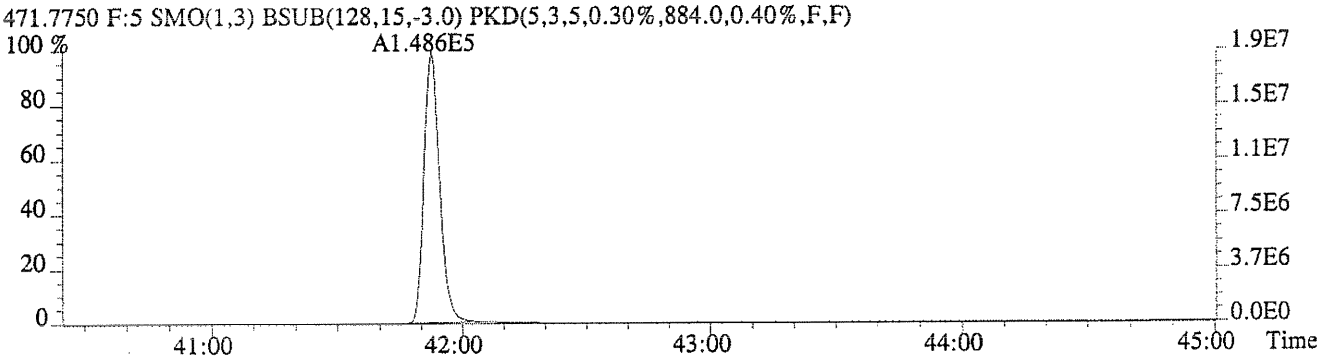
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,940.0,0.40%,F,F)



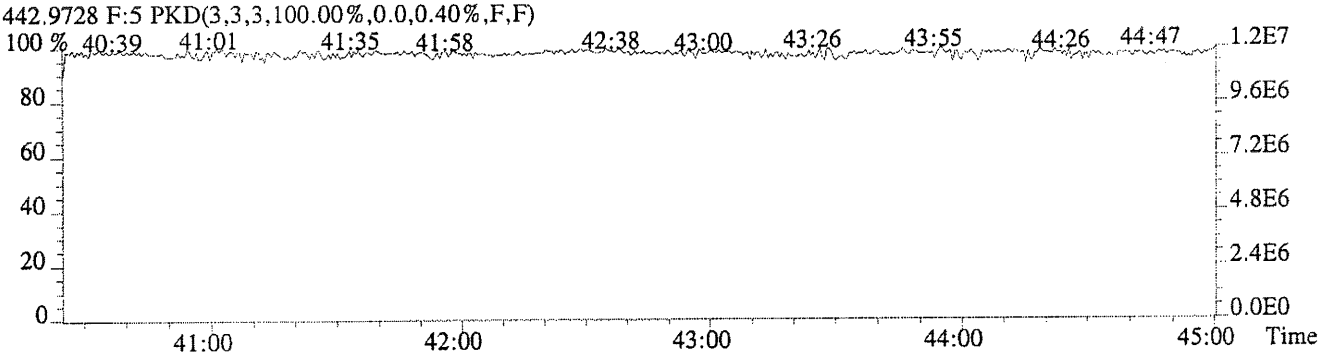
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,824.0,0.40%,F,F)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,884.0,0.40%,F,F)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



Columbia Analytical Services, Inc.
Sample Response Summary

CLIENT ID.
ICAL HRCC5

Run #5 Filename U20404#1 Samp: 1 Inj: 1 Acquired: 4-NOV-04 17:44:32
Processed: 5-NOV-04 15:49:06 Sample ID:

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?
1	Unk	2,3,7,8-TCDF	26:44	1.863e+05	2.339e+05	0.80	yes	no
2	Unk	1,2,3,7,8-PeCDF	31:45	6.624e+05	4.226e+05	1.57	yes	no
3	Unk	2,3,4,7,8-PeCDF	32:34	7.027e+05	4.436e+05	1.58	yes	no
4	Unk	1,2,3,4,7,8-HxCDF	35:34	6.823e+05	5.374e+05	1.27	yes	no
5	Unk	1,2,3,6,7,8-HxCDF	35:40	6.795e+05	5.313e+05	1.28	yes	no
6	Unk	2,3,4,6,7,8-HxCDF	36:10	6.452e+05	5.061e+05	1.27	yes	no
7	Unk	1,2,3,7,8,9-HxCDF	36:54	5.790e+05	4.518e+05	1.28	yes	no
8	Unk	1,2,3,4,6,7,8-HpCDF	38:20	6.284e+05	5.981e+05	1.05	yes	no
9	Unk	1,2,3,4,7,8,9-HpCDF	39:32	4.975e+05	4.721e+05	1.05	yes	no
10	Unk	OCDF	42:01	9.510e+05	1.036e+06	0.92	yes	no
11	Unk	2,3,7,8-TCDD	27:46	1.330e+05	1.701e+05	0.78	yes	no
12	Unk	1,2,3,7,8-PeCDD	32:57	4.194e+05	2.650e+05	1.58	yes	no
13	Unk	1,2,3,4,7,8-HxCDD	36:18	4.065e+05	3.207e+05	1.27	yes	no
14	Unk	1,2,3,6,7,8-HxCDD	36:23	4.304e+05	3.366e+05	1.28	yes	no
15	Unk	1,2,3,7,8,9-HxCDD	36:41	4.229e+05	3.313e+05	1.28	yes	no
16	Unk	1,2,3,4,6,7,8-HpCDD	39:10	3.592e+05	3.397e+05	1.06	yes	no
17	Unk	OCDD	41:53	7.281e+05	8.055e+05	0.90	yes	no
18	IS	13C-2,3,7,8-TCDF	26:43	4.596e+04	5.842e+04	0.79	yes	no
19	IS	13C-1,2,3,7,8-PeCDF	31:45	6.583e+04	4.173e+04	1.58	yes	no
20	IS	13C-1,2,3,4,7,8-HxCDF	35:33	8.231e+04	1.549e+05	0.53	yes	no
21	IS	13C-1,2,3,4,6,7,8-HpCDF	38:20	6.163e+04	1.358e+05	0.45	yes	no
22	IS	13C-2,3,7,8-TCDD	27:45	3.396e+04	4.336e+04	0.78	yes	no
23	IS	13C-1,2,3,7,8-PeCDD	32:57	4.255e+04	2.709e+04	1.57	yes	no
24	IS	13C-1,2,3,6,7,8-HxCDD	36:22	9.128e+04	7.250e+04	1.26	yes	no
25	IS	13C-1,2,3,4,6,7,8-HpCDD	39:10	8.812e+04	8.287e+04	1.06	yes	no
26	IS	13C-OCDD	41:52	1.708e+05	1.848e+05	0.92	yes	no
27	RS/RT	13C-1,2,3,4-TCDD	27:28	3.136e+04	3.962e+04	0.79	yes	no
28	RS/RT	13C-1,2,3,7,8,9-HxCDD	36:40	9.305e+04	7.377e+04	1.26	yes	no
29	C/Up	37Cl-2,3,7,8-TCDD	27:46	2.954e+05				

Columbia Analytical Services, Inc.
10655 Richmond Ave., Suite 130A
Houston, TX 77042
Office(713)266-1599. Fax(713)266-0130

Columbia Analytical Services,Inc.
Signal/Noise Height Ratio Summary

CLIENT ID.
ICAL HRCC5

Run #5 Filename U20404 #1 Samp: 1 Inj: 1 Acquired: 4-NOV-04 17:44:32

Processed: 5-NOV-04 15:49:06 LAB. ID: ICAL HRCC5

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	2.06e+07	8.36e+02	2.5e+04	2.56e+07	1.57e+03	1.6e+04
2	1,2,3,7,8-PeCDF	1.02e+08	6.48e+02	1.6e+05	6.52e+07	1.49e+03	4.4e+04
3	2,3,4,7,8-PeCDF	1.13e+08	6.48e+02	1.7e+05	7.10e+07	1.49e+03	4.8e+04
4	1,2,3,4,7,8-HxCDF	1.25e+08	2.64e+03	4.7e+04	9.84e+07	2.40e+03	4.1e+04
5	1,2,3,6,7,8-HxCDF	1.23e+08	2.64e+03	4.7e+04	9.69e+07	2.40e+03	4.0e+04
6	2,3,4,6,7,8-HxCDF	1.17e+08	2.64e+03	4.4e+04	9.26e+07	2.40e+03	3.9e+04
7	1,2,3,7,8,9-HxCDF	1.03e+08	2.64e+03	3.9e+04	8.02e+07	2.40e+03	3.3e+04
8	1,2,3,4,6,7,8-HpCDF	1.19e+08	1.11e+04	1.1e+04	1.14e+08	4.29e+04	2.7e+03
9	1,2,3,4,7,8,9-HpCDF	8.96e+07	1.11e+04	8.1e+03	8.53e+07	4.29e+04	2.0e+03
10	OCDF	1.19e+08	8.92e+02	1.3e+05	1.28e+08	1.25e+03	1.0e+05
11	2,3,7,8-TCDD	1.64e+07	8.92e+02	1.8e+04	2.09e+07	1.05e+03	2.0e+04
12	1,2,3,7,8-PeCDD	6.99e+07	9.36e+02	7.5e+04	4.44e+07	6.88e+02	6.5e+04
13	1,2,3,4,7,8-HxCDD	7.82e+07	1.14e+03	6.9e+04	6.17e+07	7.24e+02	8.5e+04
14	1,2,3,6,7,8-HxCDD	7.85e+07	1.14e+03	6.9e+04	6.21e+07	7.24e+02	8.6e+04
15	1,2,3,7,8,9-HxCDD	7.89e+07	1.14e+03	6.9e+04	6.14e+07	7.24e+02	8.5e+04
16	1,2,3,4,6,7,8-HpCDD	6.74e+07	3.65e+03	1.8e+04	6.36e+07	4.78e+03	1.3e+04
17	OCDD	9.01e+07	1.13e+03	8.0e+04	9.97e+07	1.12e+03	8.9e+04
18	13C-2,3,7,8-TCDF	5.22e+06	2.26e+03	2.3e+03	6.57e+06	1.41e+03	4.7e+03
19	13C-1,2,3,7,8-PeCDF	1.03e+07	6.20e+02	1.7e+04	6.50e+06	7.56e+02	8.6e+03
20	13C-1,2,3,4,7,8-HxCDF	1.49e+07	6.48e+02	2.3e+04	2.78e+07	1.19e+03	2.3e+04
21	13C-1,2,3,4,6,7,8-HpCDF	1.16e+07	2.04e+03	5.7e+03	2.56e+07	9.24e+03	2.8e+03
22	13C-2,3,7,8-TCDD	4.23e+06	4.16e+03	1.0e+03	5.38e+06	3.01e+03	1.8e+03
23	13C-1,2,3,7,8-PeCDD	7.19e+06	7.04e+02	1.0e+04	4.56e+06	5.04e+02	9.0e+03
24	13C-1,2,3,6,7,8-HxCDD	1.67e+07	2.35e+03	7.1e+03	1.33e+07	1.22e+03	1.1e+04
25	13C-1,2,3,4,6,7,8-HpCDD	1.65e+07	1.51e+03	1.1e+04	1.55e+07	2.07e+03	7.5e+03
26	13C-OCDD	2.14e+07	8.64e+02	2.5e+04	2.30e+07	1.15e+03	2.0e+04
27	13C-1,2,3,4-TCDD	3.85e+06	4.16e+03	9.2e+02	4.86e+06	3.01e+03	1.6e+03
28	13C-1,2,3,7,8,9-HxCDD	1.74e+07	2.35e+03	7.4e+03	1.36e+07	1.22e+03	1.1e+04
29	37Cl-2,3,7,8-TCDD	3.65e+07	2.31e+03	1.6e+04			

Columbia Analytical Services, Inc.
10655 Richmond Ave., Suite 130A
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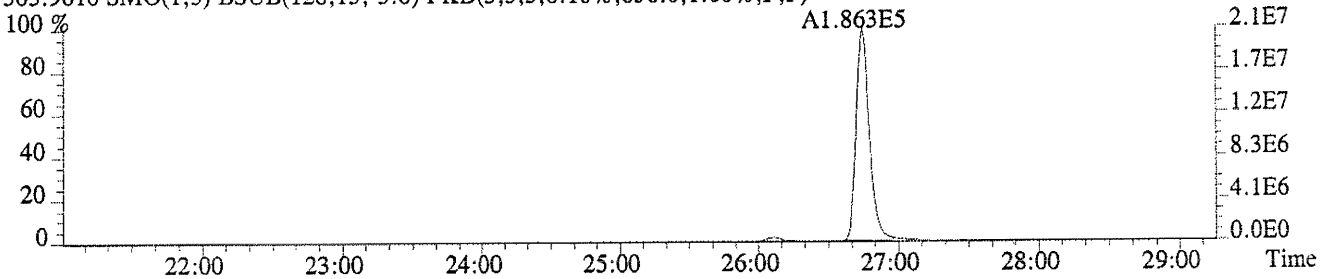
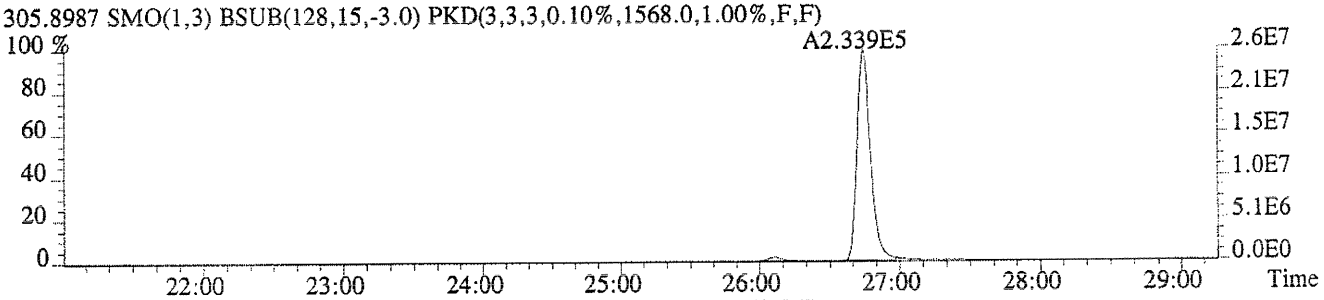
File:U20404 #1-689 Acq: 4-NOV-2004 17:44:32 Probe EI+ Magnet SIR VG BioTech Mass spectrf
Sample#1 Exp:ICAL HRCC5

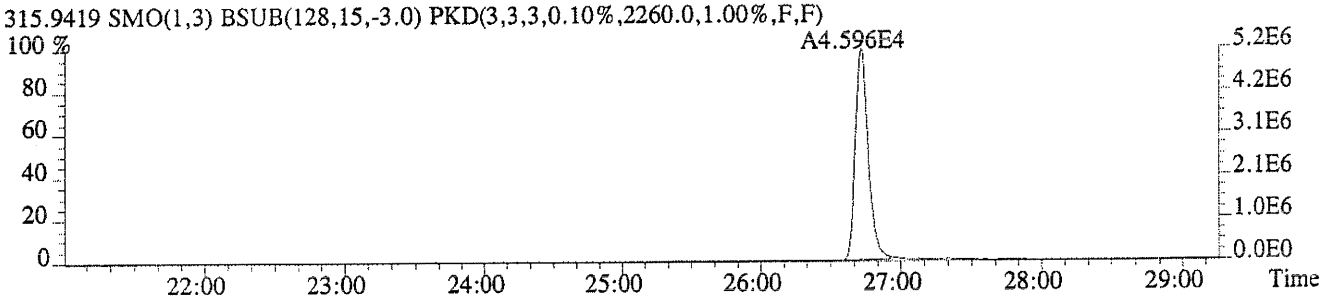
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,836.0,1.00%,F,F)



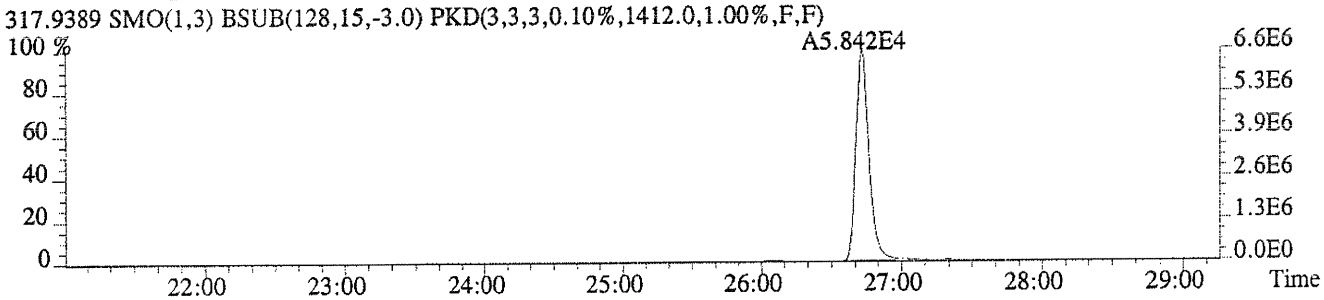
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1568.0,1.00%,F,F)



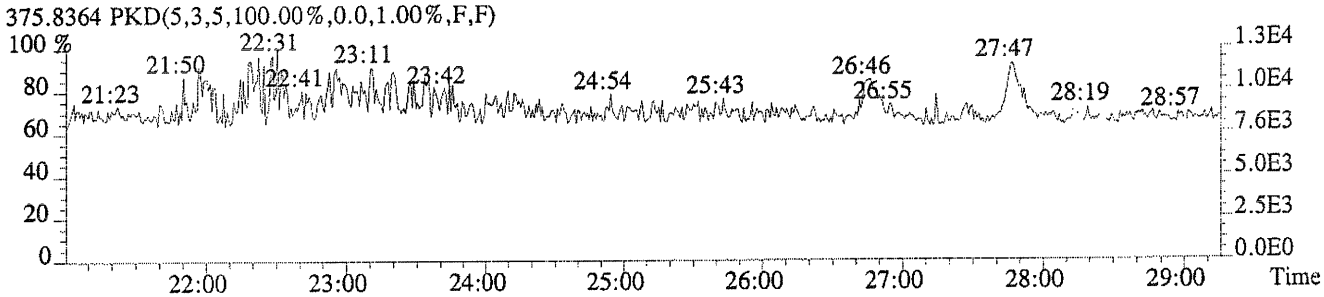
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2260.0,1.00%,F,F)



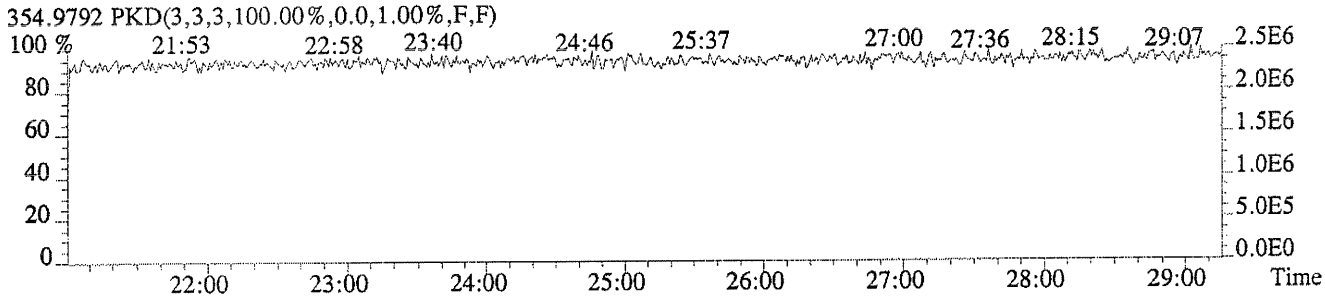
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1412.0,1.00%,F,F)



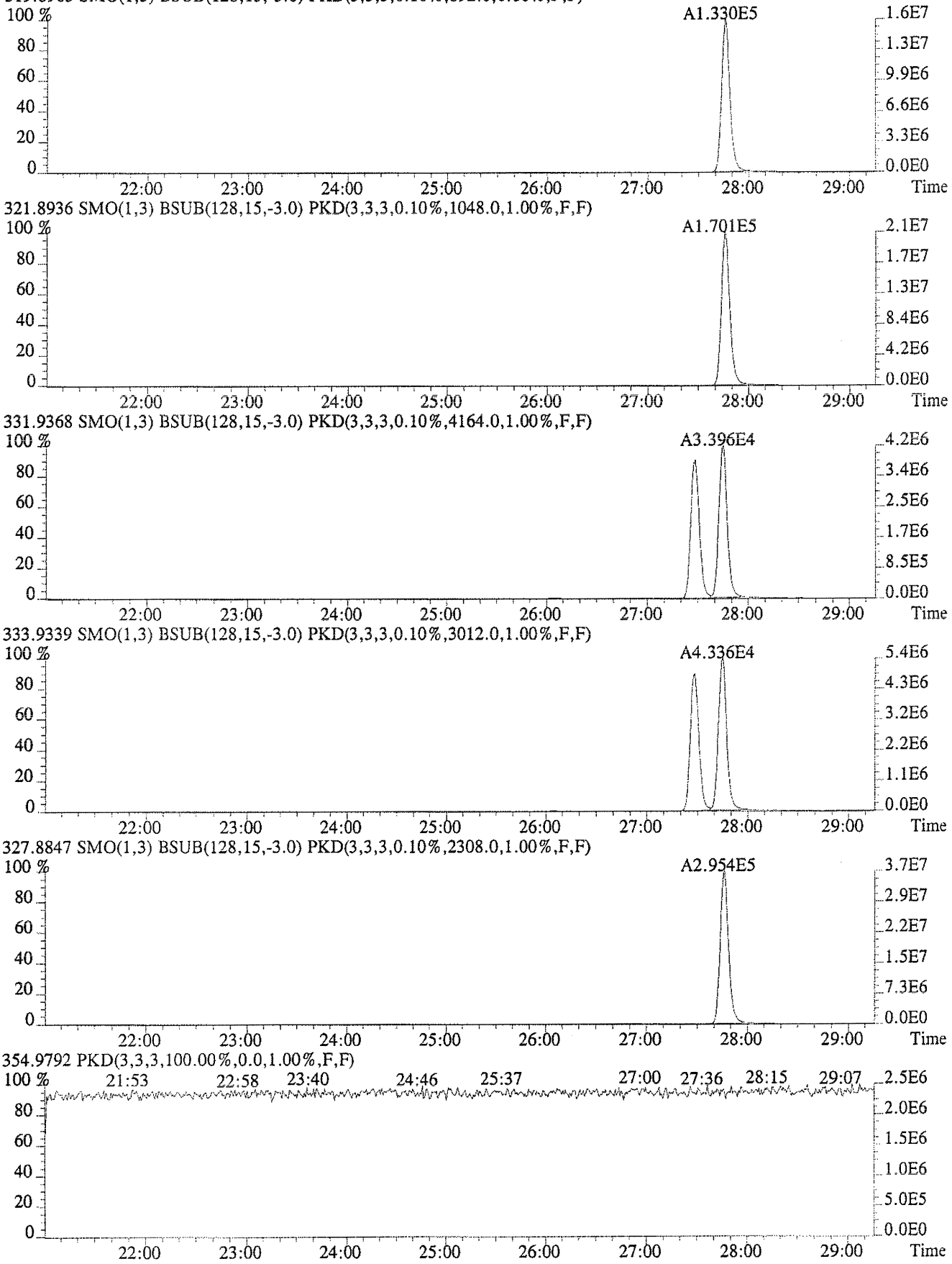
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

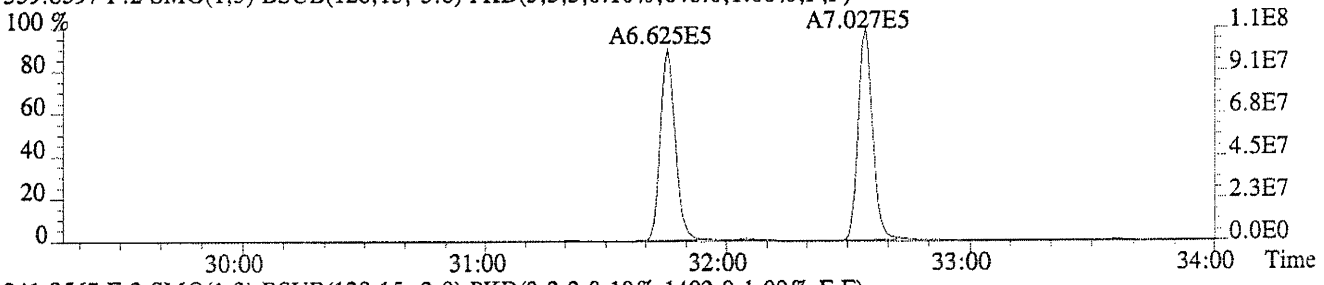


File:U20404 #1-689 Acq: 4-NOV-2004 17:44:32 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC5

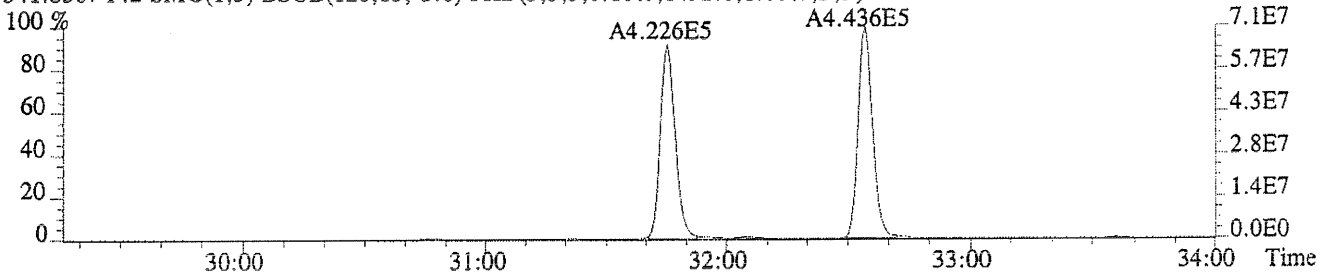


File:U20404 #1-431 Acq: 4-NOV-2004 17:44:32 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC5

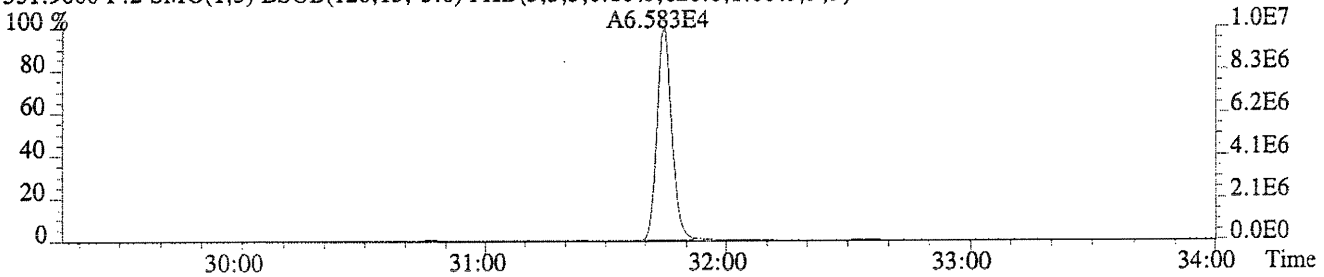
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,648.0,1.00%,F,F)



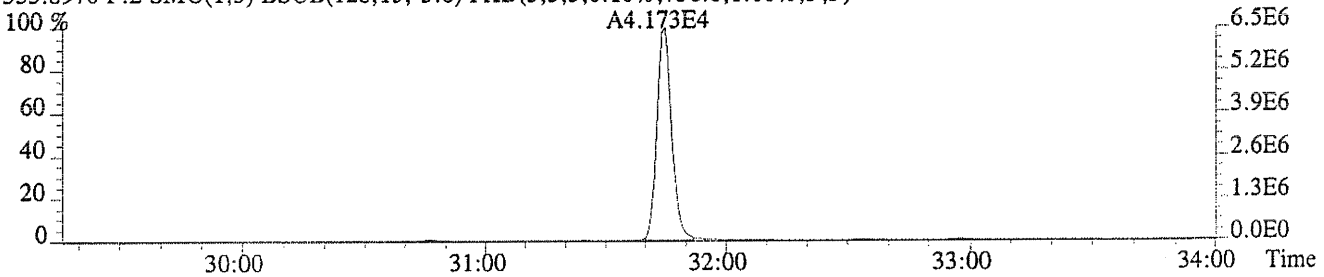
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1492.0,1.00%,F,F)



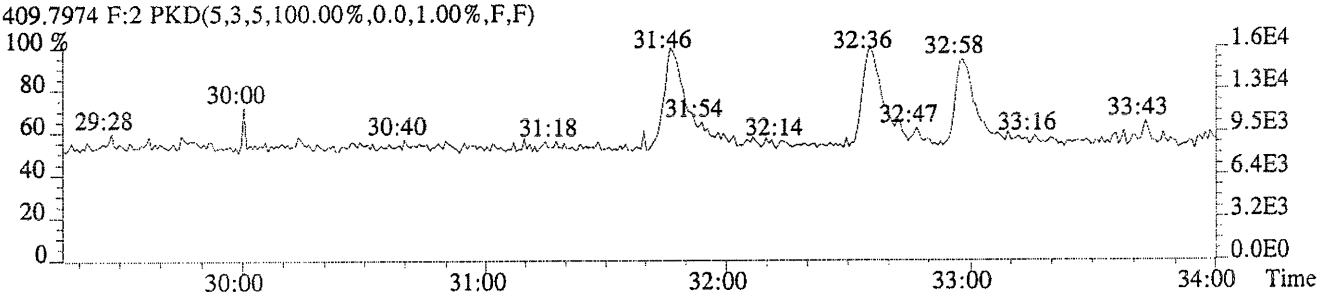
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,620.0,1.00%,F,F)



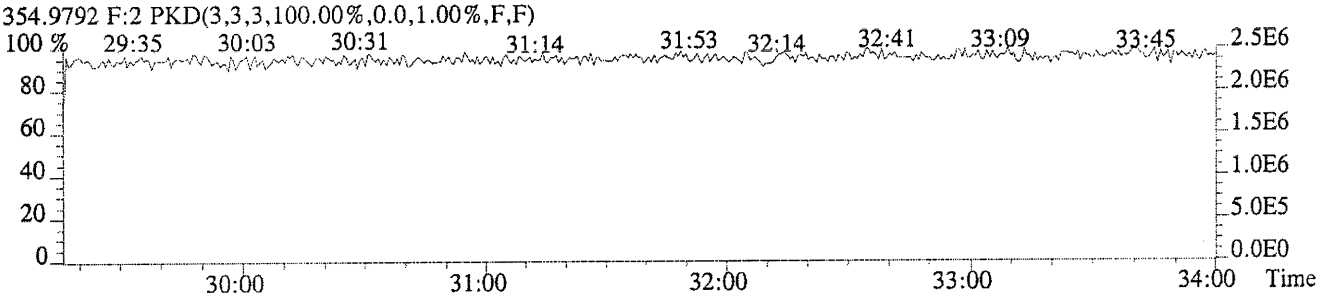
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,756.0,1.00%,F,F)



409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

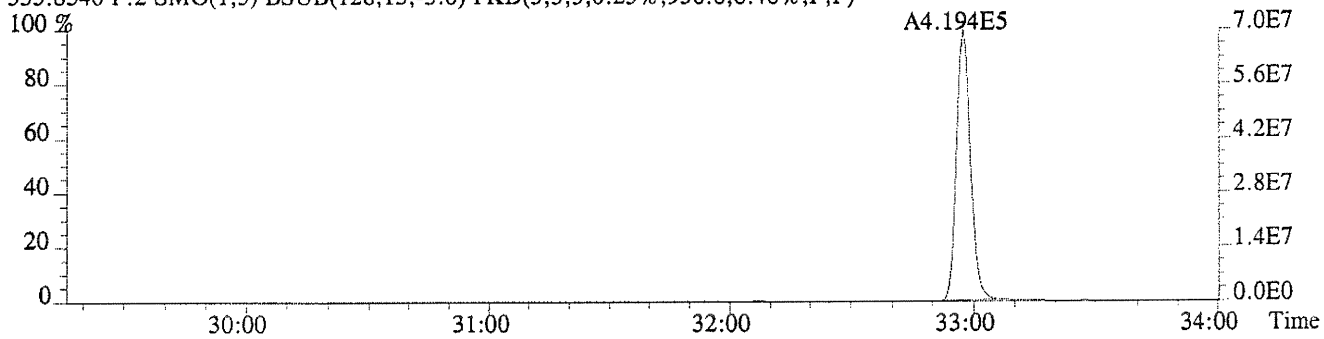


354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

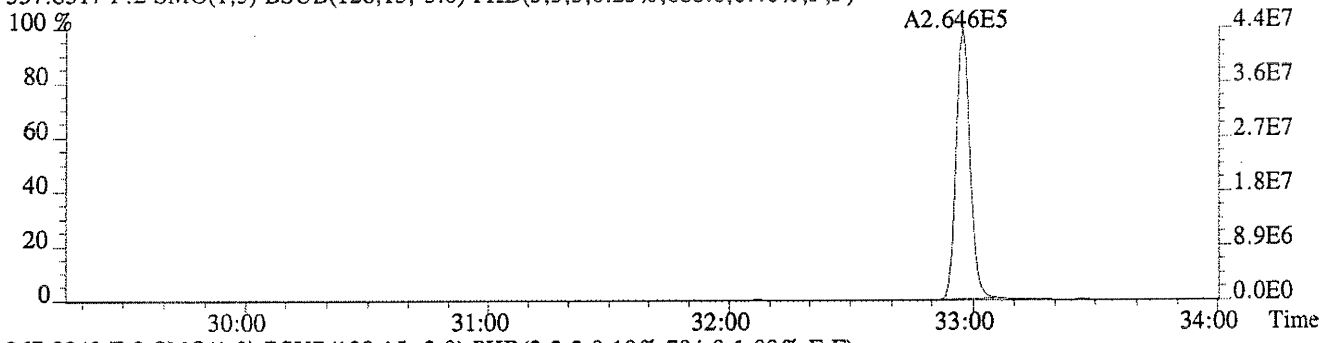


File:U20404 #1-431 Acq: 4-NOV-2004 17:44:32 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC5

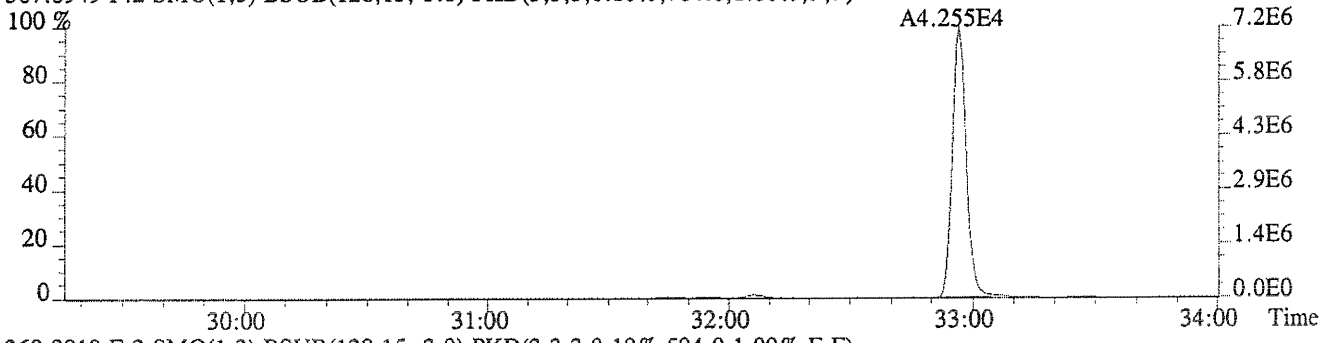
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,936.0,0.40%,F,F)



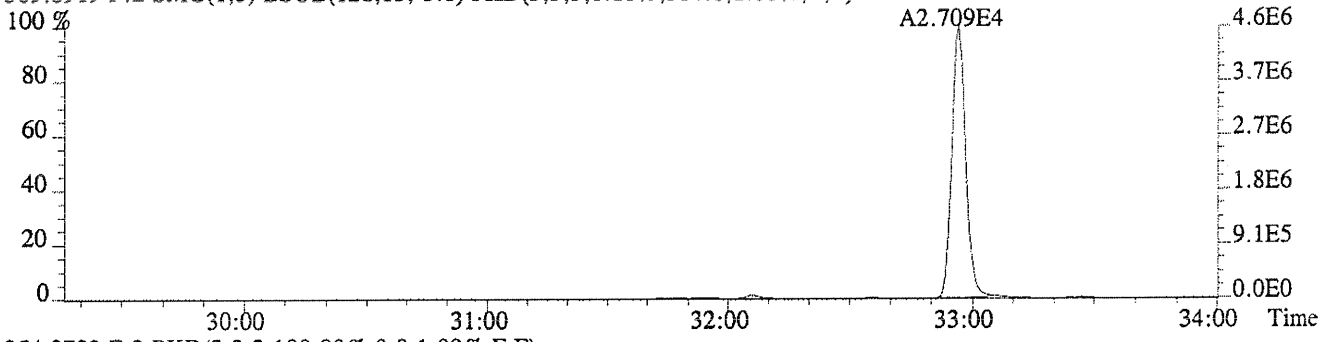
357.8517 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,688.0,0.40%,F,F)



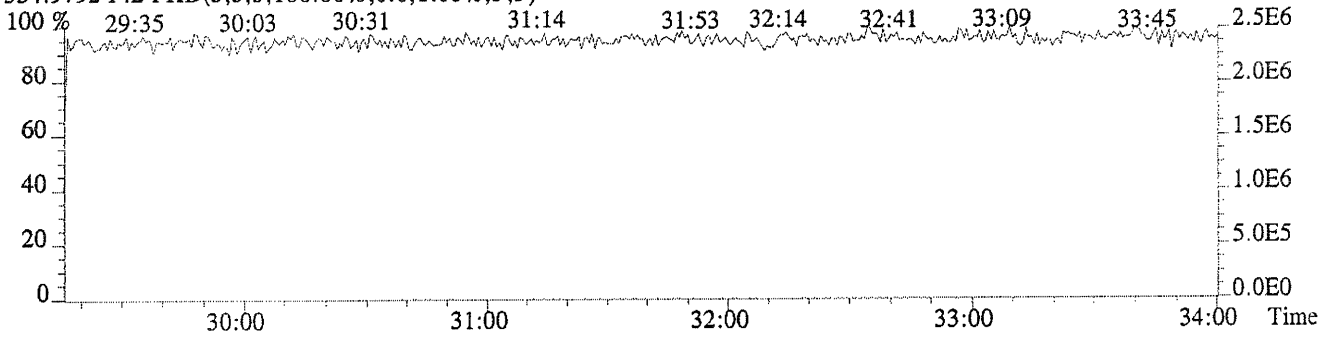
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,704.0,1.00%,F,F)



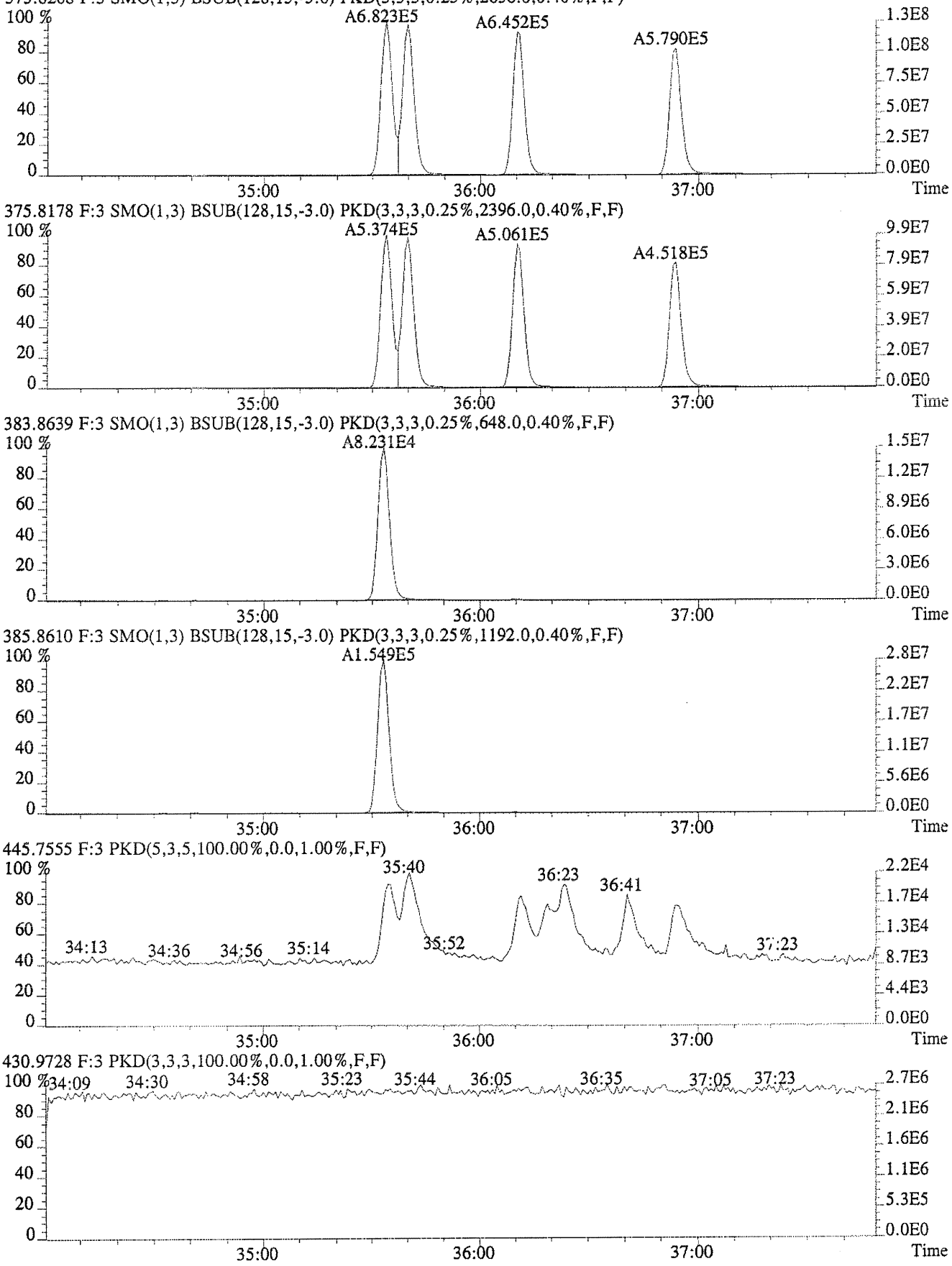
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,504.0,1.00%,F,F)



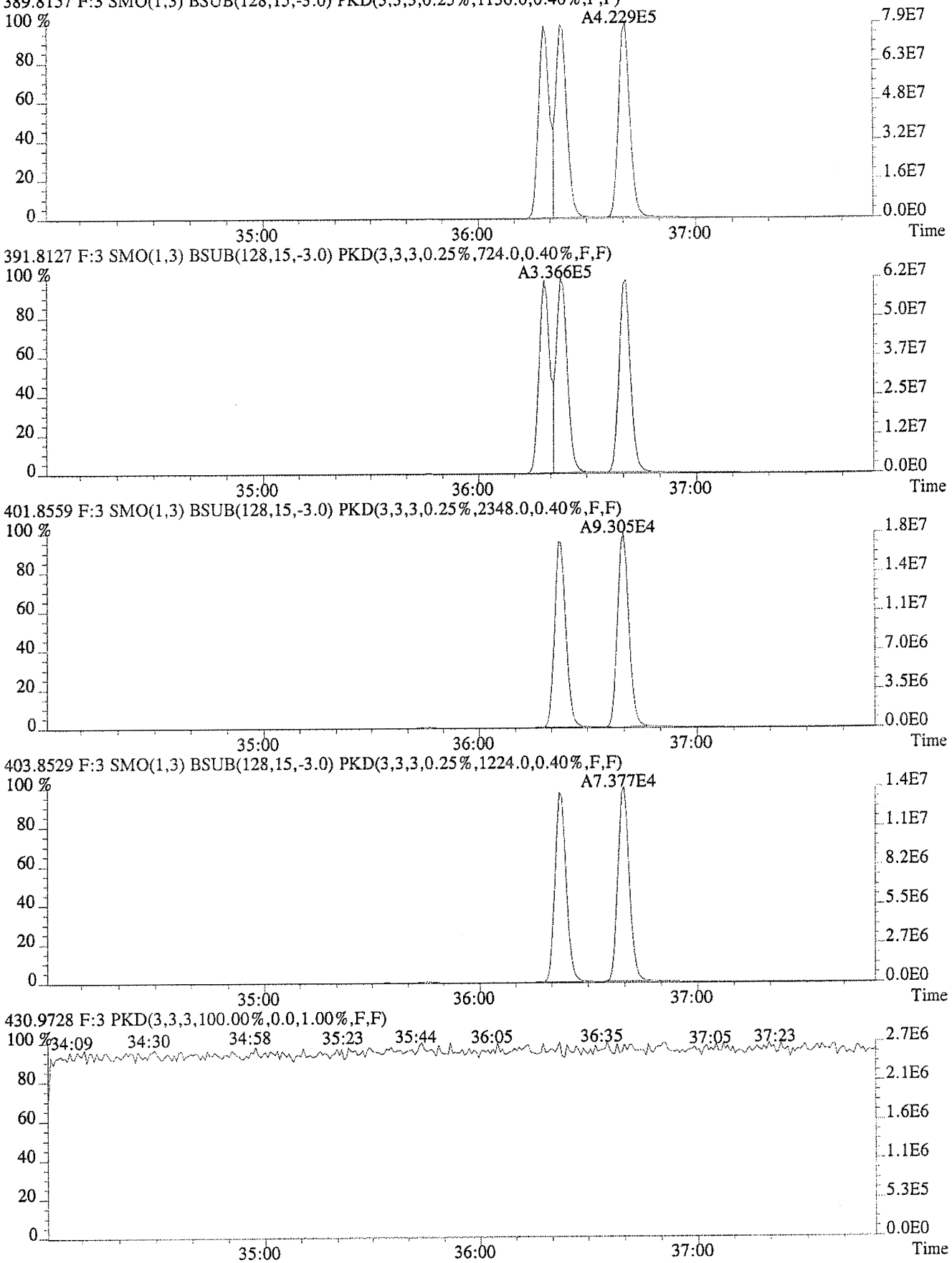
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



File:U20404 #1-346 Acq: 4-NOV-2004 17:44:32 Probe EI+ Magnet SIR VG BioTech Mass spectrf
Sample#1 Exp:ICAL HRCC5

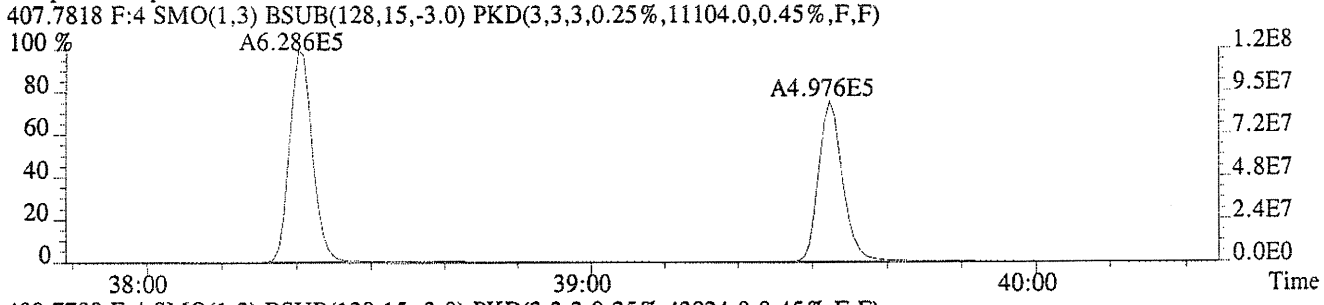


File:U20404 #1-346 Acq: 4-NOV-2004 17:44:32 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC5

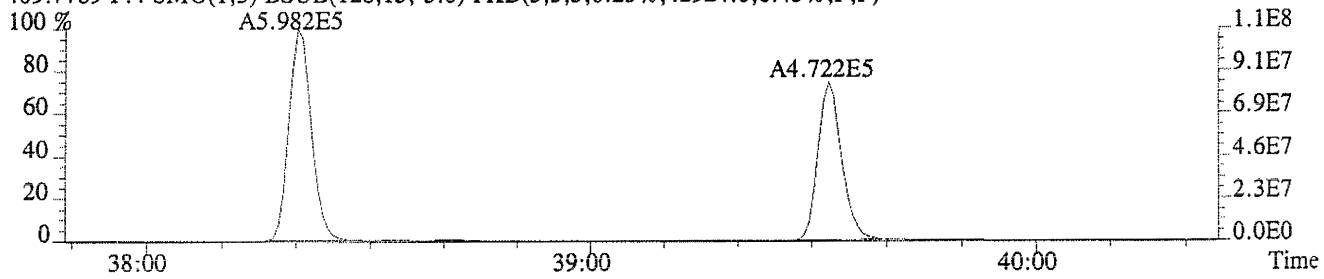


File:U20404 #1-236 Acq: 4-NOV-2004 17:44:32 Probe EI+ Magnet SIR VG BioTech Mass spectrf
Sample#1 Exp:ICAL HRCC5

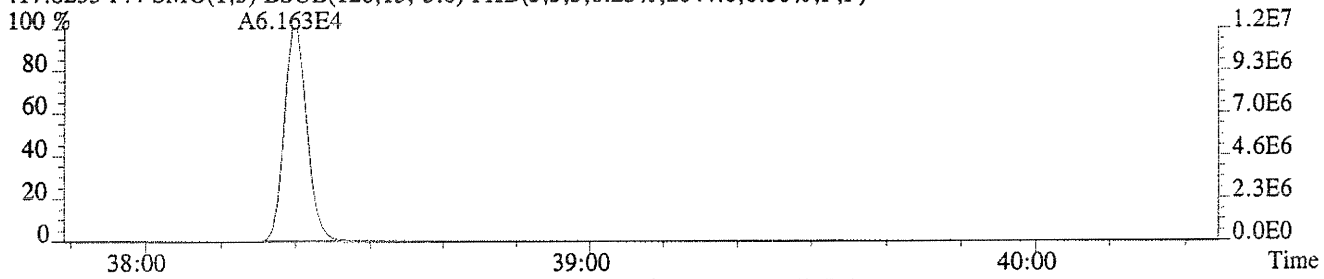
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,11104.0,0.45%,F,F)



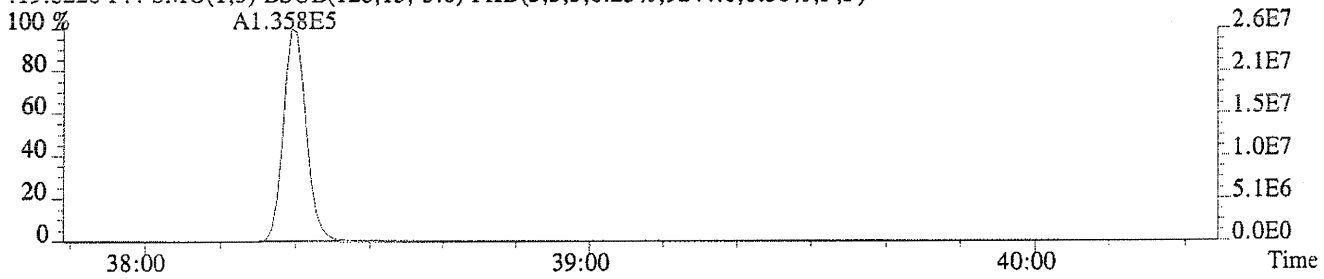
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,42924.0,0.45%,F,F)



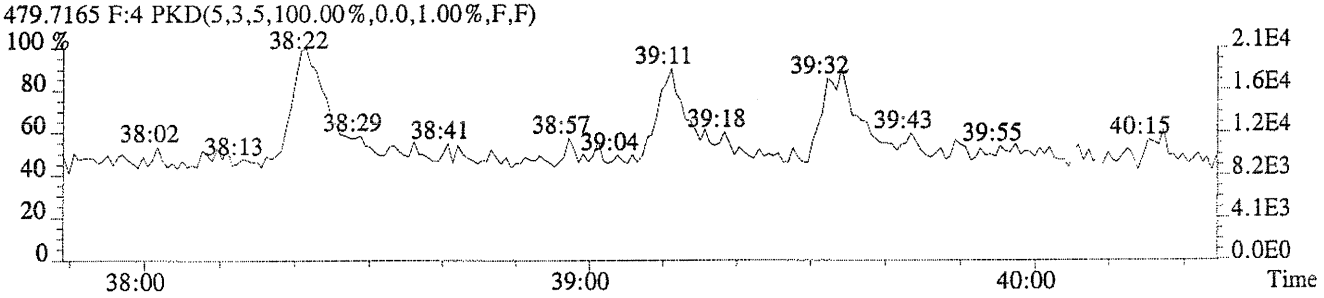
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2044.0,0.50%,F,F)



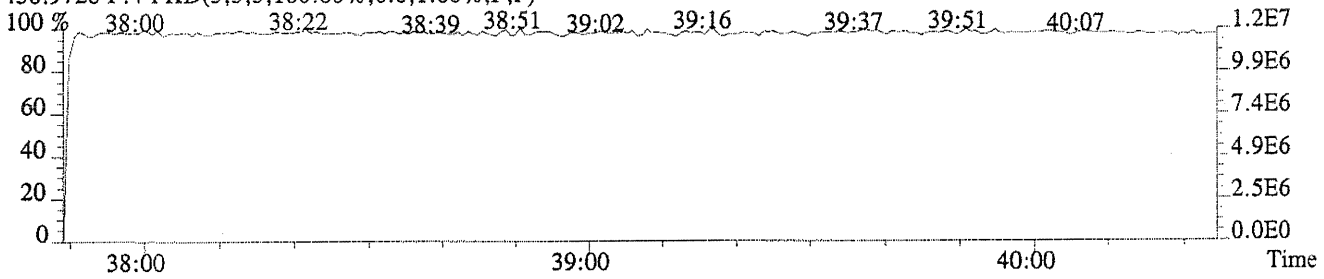
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,9244.0,0.50%,F,F)



479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

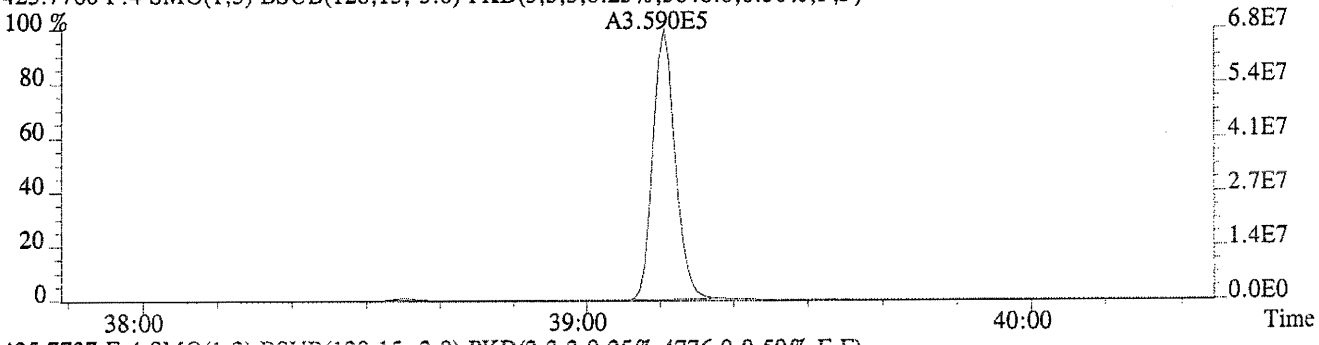


430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

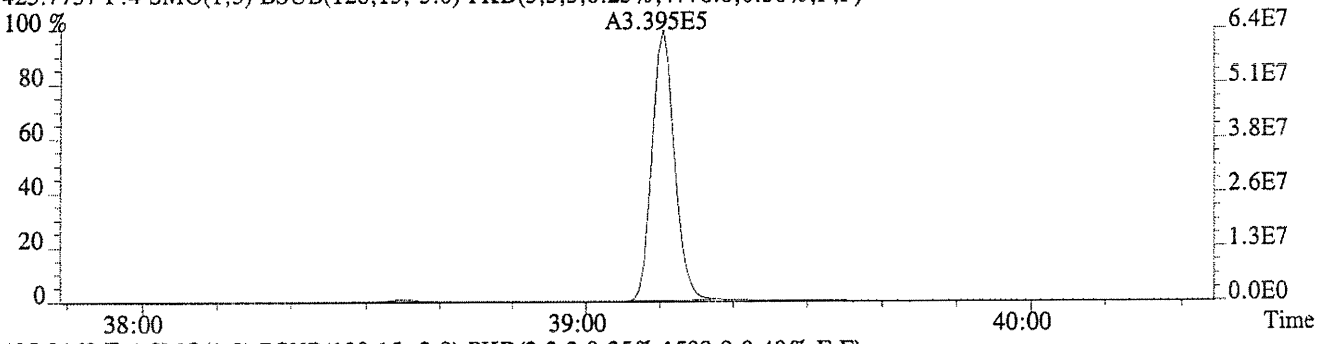


File:U20404 #1-236 Acq: 4-NOV-2004 17:44:32 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC5

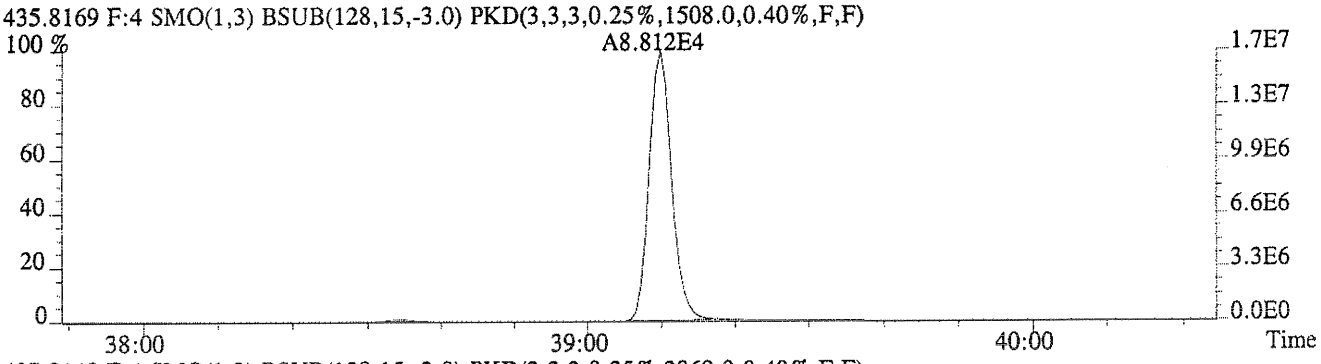
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3648.0,0.50%,F,F)



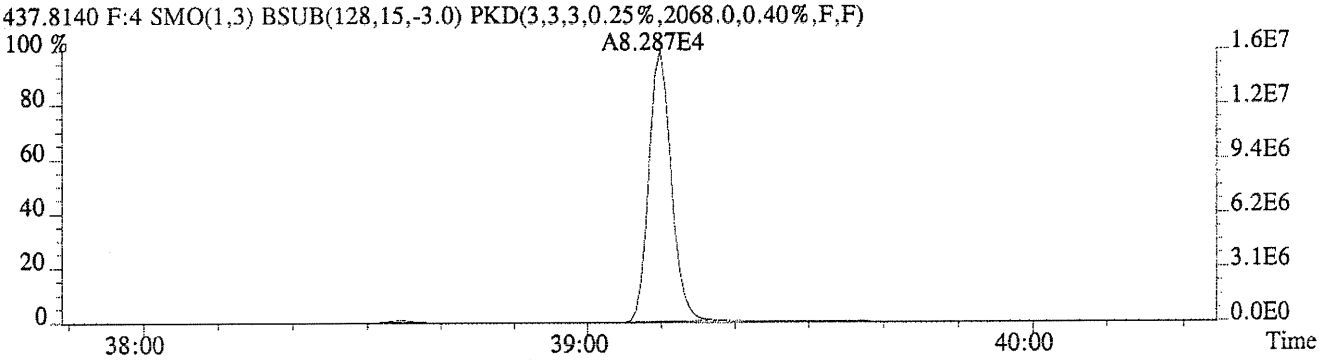
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4776.0,0.50%,F,F)



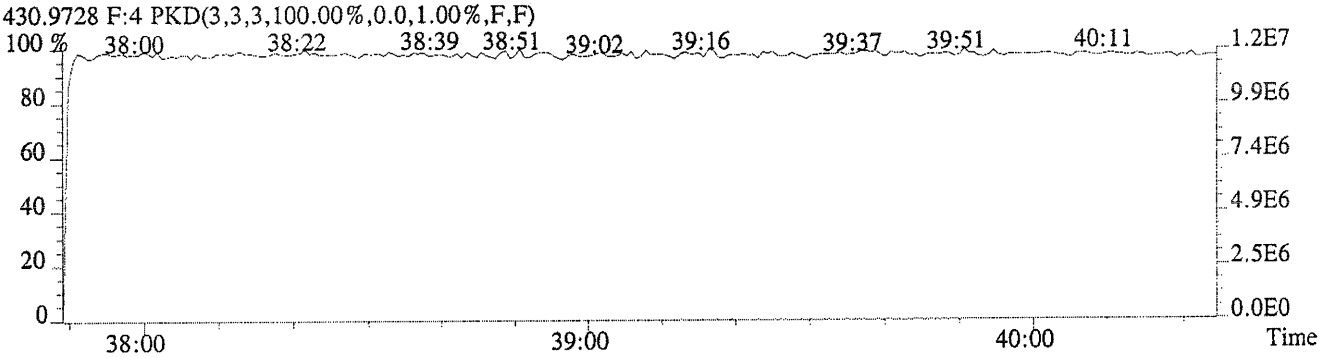
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1508.0,0.40%,F,F)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2068.0,0.40%,F,F)

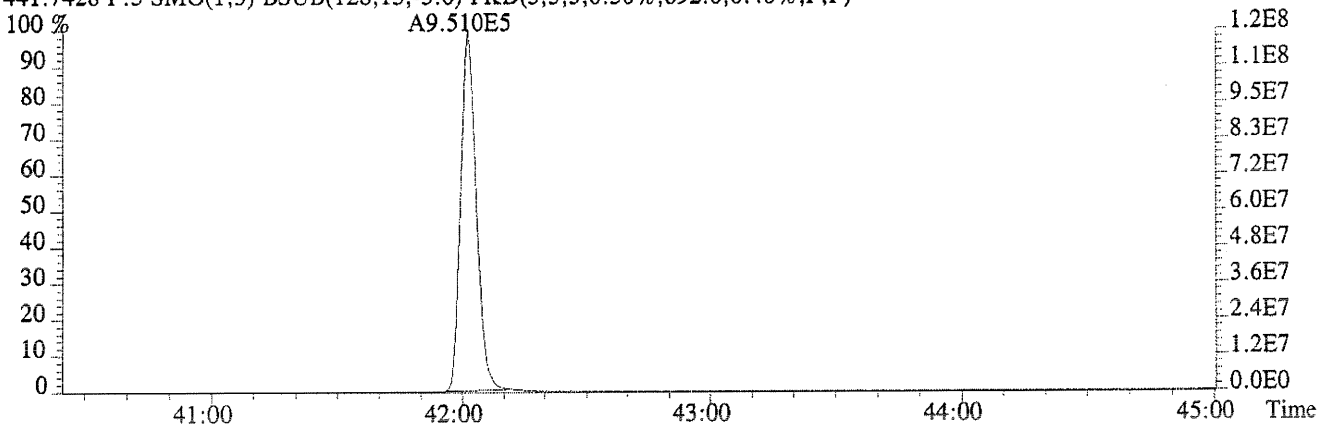


430.9728 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

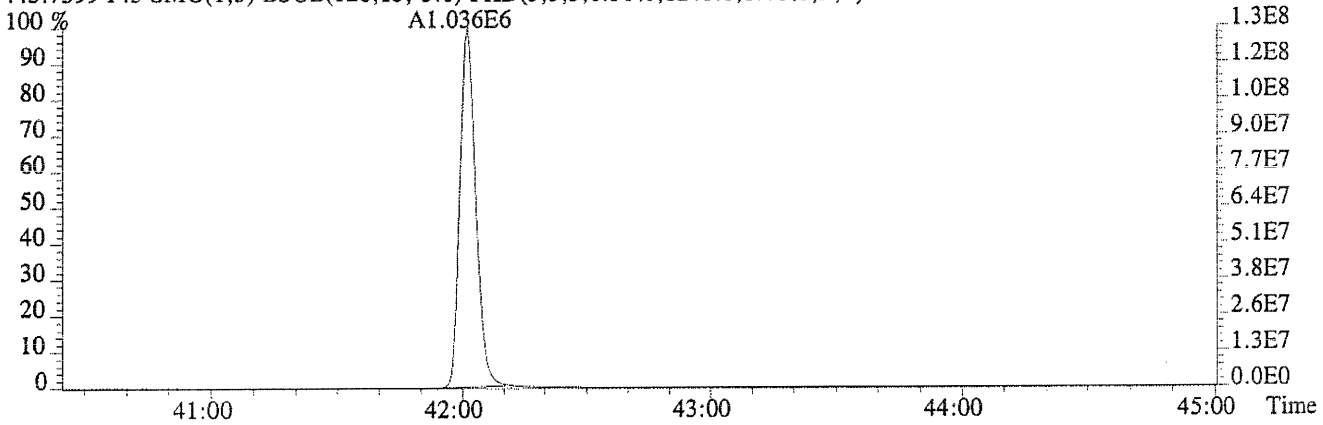


File:U20404 #1-508 Acq: 4-NOV-2004 17:44:32 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC5

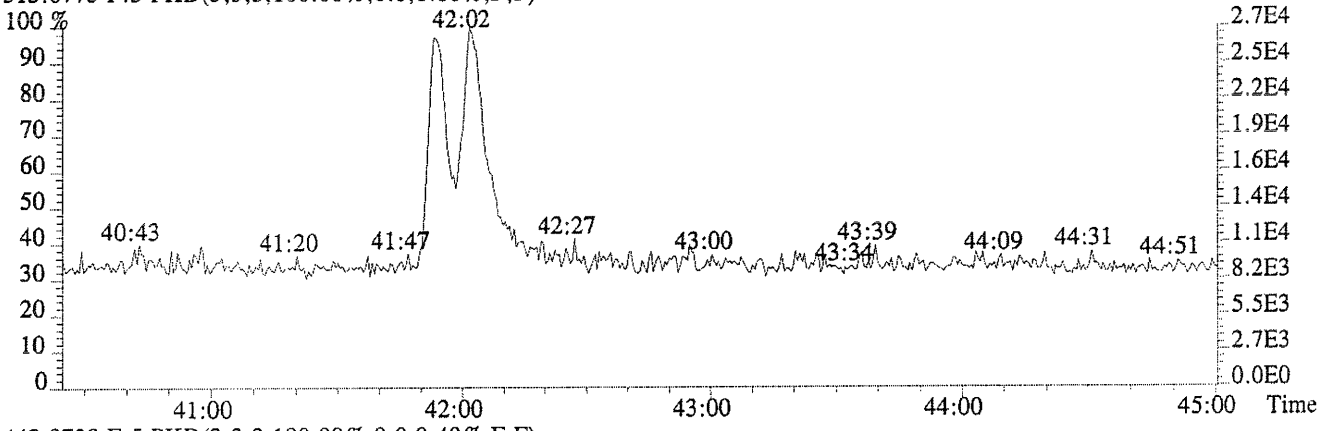
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,892.0,0.40%,F,F)



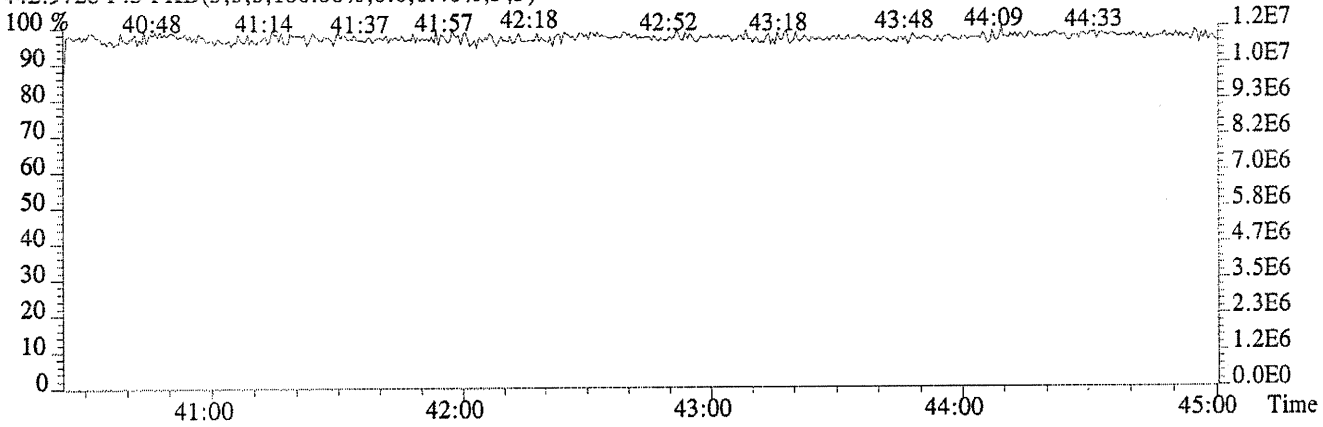
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1248.0,0.40%,F,F)



513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

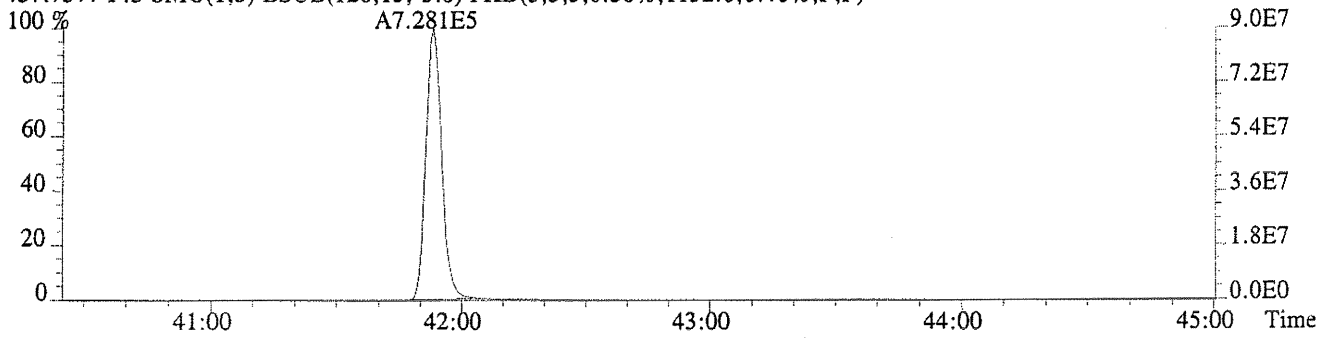


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

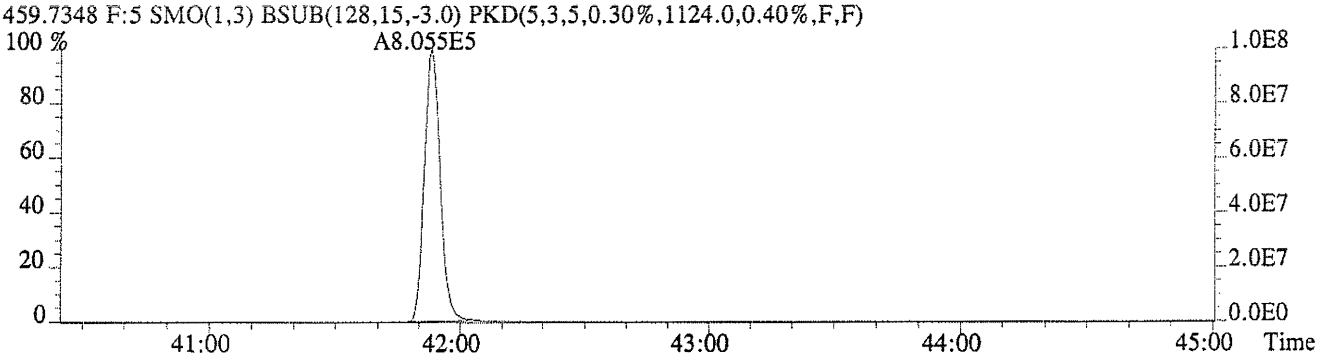


File:U20404 #1-508 Acq: 4-NOV-2004 17:44:32 Probe EI+ Magnet SIR VG BioTech Mass spectr£
Sample#1 Exp:ICAL HRCC5

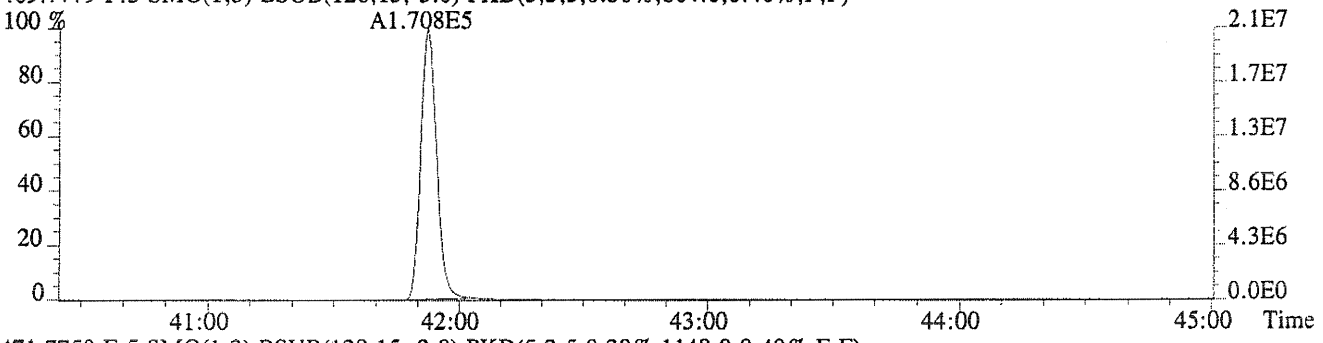
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1132.0,0.40%,F,F)



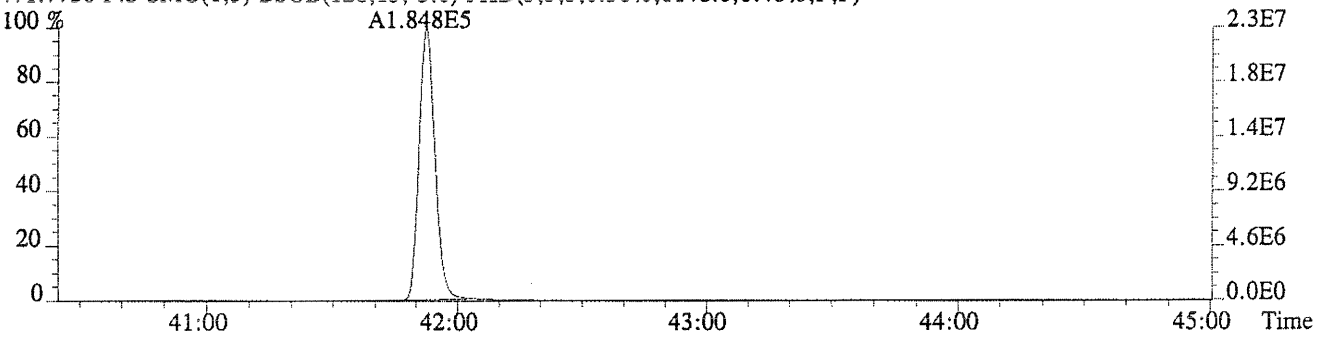
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1124.0,0.40%,F,F)



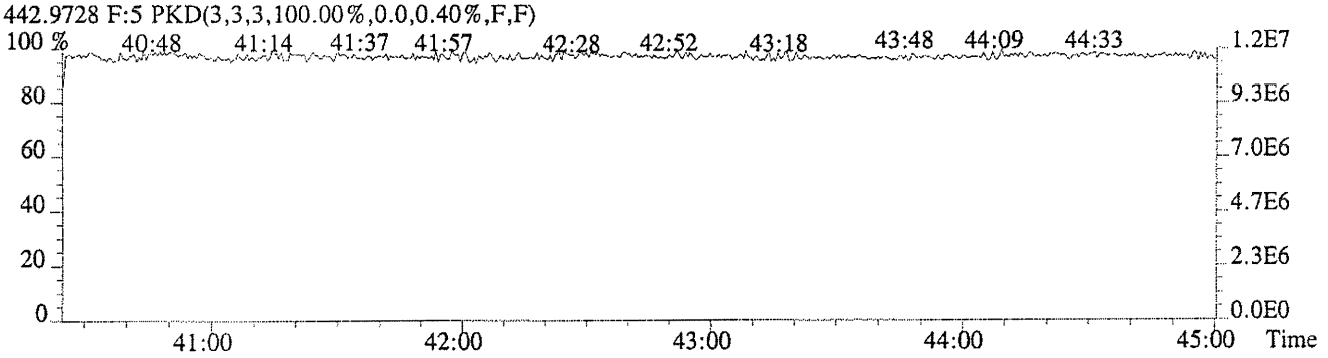
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,864.0,0.40%,F,F)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1148.0,0.40%,F,F)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



1317 South 13th Avenue P.O. Box 479 Kelso, Washington 98626 (360) 577-7222 (360) 636-1068 fax

Columbia Analytical Services INC
An Employee - Owned Company

October 11, 2007 Analytical Report for Service Request No: K0708364

Marta Nelson
Barr Engineering
4700 West 77th Street
Minneapolis, MN 55435

RE: Joslyn-Sediment/23/27-110Y07 720

Dear Marta:

Enclosed are the results of the sample(s) submitted to our laboratory on September 15, 2007. For your reference, these analyses have been assigned our service request number K0708364.

All analyses were performed according to our laboratory's quality assurance program. Where applicable, the methods cited conform to the Methods Update Rule (effective 4/11/2007), which relates to the use of analytical methods for the drinking water and waste water programs. The test results meet requirements of the NELAC standards. Exceptions are noted in the case narrative report where applicable. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3358. You may also contact me via Email at LHuckestein@kelso.caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Lynda Huckestein
Client Services Manager

LH/lb

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
B	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.
*	The duplicate analysis not within control limits. See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a chromatographic interference.
X	See case narrative.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Program	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Colorado DPHE	-
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Utah DOH	COLU
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Barr Engineering	**Service Request No.:**	K0708364
Project:	23/27-110Y07 720	**Date Received:**	9/15/2007
Sample Matrix:	Sediment		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Additional quality control analyses reported herein include: Laboratory Duplicate (DUP), Matrix Spike (MS), and Laboratory Control Sample (LCS).

Sample Receipt

Seventeen sediment samples were received for analysis at Columbia Analytical Services on 9/15/2007. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Approved by _____ **Date** 10/11/07

Chain of Custody Documentation

BARR

Chain of Custody

4700 West 77th Street
Minneapolis, MN 55435-4803
(952) 832-2600

Container Supply Number 6633

COC 1 of 1

Project Manager: KAE

Project Contact: MPD

Sampled by: ECL

Laboratory: CAS-Kelso

Project Number: 23/27-110Y07 720

Project Name: Joslyn-Sediment

№ 24313

Sample Identification	Collection Date	Collection Time	Matrix: Water	Matrix: Soil	Matrix: Sed.	Type: Grab	Type: Comp.	Type: QC	Volatile Organics (Pres.) *1	Semivolatile Organics *2	Dissolved Metals (HNO_3)	Total Metals (HNO_3)	General (Unpreserved) *3	Water: Cyanide (NaOH)	Water: Nutrients (H_2SO_4) *4	Water: Oil and Grease (H_2SO_4)	Water: Sulfide (Zn Acetate)	Water: Methane	Water: Bacteria ($Na_2S_2O_3$)	Water: DRO (HCl)	Soil: VOCs (2-oz tared MeOH) *1	Soil: GRO, BTEX (2-oz tared MeOH) *1	Soil: DRO (2-oz tared) - 25 grams	Soil: Metals (2-oz unpreserved)	Soil: SVOCs (2 or 4-oz unpres.) *2	Soil: % Moisture (plastic vial, unpres.)	Soil: 8 oz. Unpreserved	Total No. Of Containers
1. Ref-3-NB	9/12/07	1537			X		X																				1	1
2. Ref-3-B	9/12/07	1252			X		X																				1	1
3. Ref-4-B	9/12/07	1900			X		X																				1	1
4. Ref-4-NB	9/12/07	1740			X		X																				1	1
5. Ref-5-NB	9/13/07	906			X		X																				1	1
6. Ref-5-B	9/13/07	1147			X		X																				1	1
7. Ref-6-B	9/14/07	1035			X		X																				1	1
8. Ref-6-NB	9/13/07	1410			X		X																				1	1
9. Ref-7-NB	9/13/07	1622			X		X																				1	1
10. Ref-7-B	9/14/07	840			X		X																				1	1
11.																												
12.																												

Remarks:

Please Homogenize Samples Immediately Prior to Analysis - Total Organic Carbon

Common Parameter/Container - Preservation Key

*1 - Volatile Organics = BTEX, GRO, TPH, Full List
*2 - Semivolatile Organics = PAHs, PCP, Dioxins, Full List, Herbicide/Pesticide/PCBs
*3 - General = pH, Chloride, Flouride, Alkalinity, TSS, TDS, TS, Sulfate
*4 - Nutrients = COD, TOC, Phenols, Ammonia Nitrogen, TKN

Relinquished By:	On Ice? Y N	Date	Time	Received by:	Date	Time
	Y N	9/14/07	1235		9/15/07	0800
Relinquished By:	On Ice? Y N	Date	Time	Received by:	Date	Time

Samples Shipped VIA: ☐ Air Freight ☐ Federal Express ☐ Sampler ☐ Other

Air Bill Number:

Distribution: White-Original Accompanies Shipment to Lab; Yellow - Field Copy; Pink - Lab Coordinator

H:\RLG\STDFORMS\Chain Of Custody Form RLG Rev. 07\01\05

BARR

Chain of Custody

4700 West 77th Street
Minneapolis, MN 55435-4803
(952) 832-2600

Container Supply Number
6633

COC 1 of 1

0009

Project Number: 23/27-110407 720

Project Name: Joslyn - Sediment

№ 24314

Project Manager: KAE

Project Contact: MDP

Sampled by: ECL

Laboratory: LAS-Kelso

	Sample Identification	Collection Date	Collection Time	Matrix: Water	Matrix: Soil	Matrix: Sed	Type: Grab	Type: Comp.	Type: QC	Water: Volatile Organics (Pres.) *1	Semivolatile Organics *2	Dissolved Metals (HNO_3)	Total Metals (HNO_3)	General (Unpreserved) *3	Cyanide (NaOH)	Nutrients (H_2SO_4) *4	Oil and Grease (H_2SO_4)	Sulfide (Zn Acetate)	Methane	Bacteria ($Na_2S_2O_3$)	DRO (HCl)	Soil: VOCs (2-oz tared MeOH) *1	GRO, BTEX (2-oz tared MeOH) *1	DRO (2-oz tared) - 25 grams	Metals (2-oz unpreserved)	SVOCs (2 or 4-oz unpres.) *2	% Moisture (plastic vial, unpres.)	32 oz unpreserved	Total No. Of Containers
1.	Dup-1	9/12/07	—			X			X																			1	1
2.	MTL-B	9/11/07	1102			X		X																				1	1
3.	MTL-NB	9/11/07	1331			X		X																				1	1
4.	Ref2-NB	9/12/07	1052			X		X																				1	1
5.	Ref1-NB	9/11/07	1612			X		X																				1	1
6.	Ref-2-B	9/10/07	855			X		X																				1	1
7.	Ref-1-NB	9/11/07	1815			X		X																				1	1
8.																													
9.	? Btl labeled Ref 1-B @ 1612 FA																												
10.																													
11.																													
12.																													

Remarks: ~~Please~~ Please Homogenize Samples Immediately Prior To Analysis.
- Total Organic Carbon

Relinquished By:	On Ice?	Date	Time	Received by:	Date	Time
[signature]	Y N	9/14/07	1235	[signature]	9/18/07	0800
Relinquished By:	On Ice? Y N	Date	Time	Received by:	Date	Time

Samples Shipped VIA: ☐ Air Freight ☐ Federal Express ☐ Sampler ☐ Other ______

Air Bill Number:

Common Parameter/Container - Preservation Key

*1 - Volatile Organics = BTEX, GRO, TPH, Full List
*2 - Semivolatile Organics = PAHs, PCP, Dioxins, Full List, Herbicide/Pesticide/PCBs
*3 - General = pH, Chloride, Flouride, Alkalinity, TSS, TDS, TS, Sulfate
*4 - Nutrients = COD, TOC, Phenols, Ammonia Nitrogen, TKN

Distribution: White-Original Accompanies Shipment to Lab; Yellow - Field Copy; Pink - Lab Coordinator

H:RLG\STDFORMS\Chain Of Custody Form RLG Rev. 07\01\05

Columbia Analytical Services, Inc.

Cooler Receipt and Preservation Form

Client / Project: BARK Service Request K07 08364

Received: 9/15/07 Opened: 9/15/07 By: [illegible]

1. Samples were received via? US Mail *Fed Ex* (circled) UPS DHL GH GS PDX Courier Hand Delivered
2. Samples were received in: (circle) *Cooler* (circled) Box Envelope Other ______ NA
3. Were custody seals on coolers? NA **Y** (circled) N If yes, how many and where? 2F

   If present, were custody seals intact? **Y** (circled) N If present, were they signed and dated? **Y** (circled) N
4. Is shipper's air-bill filed? If not, record air-bill number: 7219597/2073 NA Y **N** (circled)

   7219597/2062
5. Temperature of cooler(s) upon receipt (°C): 0.4 4.2

   Temperature Blank (°C): 8.1 6.4
6. If applicable, list Chain of Custody Numbers:
7. Were custody papers properly filled out (ink, signed, etc.)? NA **Y** (circled) N
8. Packing material used. *Inserts* (circled) Bubble Wrap Gel Packs *Wet Ice* (circled) Sleeves Other ______
9. Did all bottles arrive in good condition (unbroken)? Indicate in the table below. NA **Y** (circled) N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? **Y** (circled) N
11. Did all sample labels and tags agree with custody papers? Indicate in the table below ~~Y~~ [initials] **N** (circled)
12. Were the correct types of bottles used for the tests indicated? NA **Y** (circled) N
13. Were all of the preserved bottles received at the lab with the appropriate pH? Indicate in the table below **NA** (circled) Y N
14. Were VOA vials and 1631 Mercury bottles checked for absence of air bubbles? Indicate in the table below. **NA** (circled) Y N
15. Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection? **NA** (circled) Y N
16. Was C12/Res negative? **NA** (circled) Y N

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Sample ID	Bottle Count	Bottle Type	Out of Temp	Head-space	Broken	pH	Reagent	Volume added	Reagent Lot Number	Initials

Additional Notes, Discrepancies, & Resolutions: Temp Blanks not located near ice

Sample Ref-1-WB listed twice, Determined

was Ref-1-B @ 1612 as on BTL -

0010

General Chemistry Parameters

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Barr Engineering Company
Project Name : Joslyn-Sediment
Project Number : 23/27-110Y07 720
Sample Matrix : SEDIMENT

Service Request : K0708364
Date Collected : 09/11-14/07
Date Received : 09/15/07

Carbon, Total Organic

Prep Method : Method
Analysis Method : ASTM D4129-82M
Test Notes :

Units : Percent
Basis : Dry

Sample Name	Lab Code	MRL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
Ref-3-NB	K0708364-001	0.05	1	9/28/2007	10/05/07	1.08	
Ref-3-B	K0708364-002	0.05	1	9/28/2007	10/05/07	0.56	
Ref-4-B	K0708364-003	0.05	1	9/28/2007	10/05/07	0.13	
Ref-4-NB	K0708364-004	0.05	1	9/28/2007	10/05/07	1.06	
Ref-5-NB	K0708364-005	0.05	1	9/28/2007	10/05/07	1.38	
Ref-5-B	K0708364-006	0.05	1	9/28/2007	10/05/07	0.21	
Ref-6-B	K0708364-007	0.05	1	9/28/2007	10/05/07	0.19	
Ref-6-NB	K0708364-008	0.05	1	9/28/2007	10/05/07	0.73	
Ref-7-NB	K0708364-009	0.05	1	9/28/2007	10/05/07	0.98	
Ref-7-B	K0708364-010	0.05	1	9/28/2007	10/05/07	0.47	
Dup-1	K0708364-011	0.05	1	9/28/2007	10/05/07	0.97	
MTL-B	K0708364-012	0.05	1	9/28/2007	10/05/07	1.14	
MTL-NB	K0708364-013	0.05	1	9/28/2007	10/05/07	0.53	
Ref-2-NB	K0708364-014	0.05	1	9/28/2007	10/05/07	1.24	
Ref-1-B	K0708364-015	0.05	1	9/28/2007	10/05/07	0.85	
Ref-2-B	K0708364-016	0.05	1	9/28/2007	10/05/07	0.14	
Ref-1-NB	K0708364-017	0.05	1	9/28/2007	10/05/07	10.5	
Method Blank	K0708364-MB	0.05	1	9/28/2007	10/05/07	ND	

Report By: CLEAF

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Barr Engineering Company	**Service Request :**	K0708364
Project Name :	Joslyn-Sediment	**Date Collected :**	9/11/2007
Project Number :	23/27-110Y07 720	**Date Received :**	9/15/2007
Sample Matrix :	SEDIMENT	**Date Prepared :**	09/28/07
		Date Analyzed :	10/05/07

Duplicate Summary
Inorganic Parameters

Sample Name :	Ref-1-NB	Units :	Percent
Lab Code :	K0708364-017DUP	Basis :	Dry
Test Notes :			

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Carbon, Total Organic	Method	ASTM D4129-82M	0.05	10.5	11.0	10.8	5	

Report By: CLEAF

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Barr Engineering Company
Project Name : Joslyn-Sediment
Project Number : 23/27-110Y07 720
Sample Matrix : SEDIMENT

Service Request : K0708364
Date Collected : 9/11/2007
Date Received : 9/15/2007
Date Prepared : 09/28/07
Date Analyzed : 10/05/07

Matrix Spike Summary
Inorganic Parameters

Sample Name : Ref-1-NB
Lab Code : K0708364-017MS
Test Notes :

Units : Percent
Basis : Dry

Analyte	Prep Method	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Carbon, Total Organic	Method	ASTM D4129-82M	0.05	12.8	10.5	21.4	85	75-114	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Barr Engineering Company	**Service Request :**	K0708364
Project Name :	Joslyn-Sediment	**Date Collected :**	NA
Project Number :	23/27-110Y07 720	**Date Received :**	NA
Sample Matrix :	SEDIMENT	**Date Prepared :**	09/28/07
		Date Analyzed :	10/05/07

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Lab Control Sample	Units :	Percent
Lab Code :	K0708364-LCS	Basis :	Dry
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Carbon, Total Organic	Method	ASTM D4129-82M	0.89	0.78	88	74-123	

Report By:CLEAF

Columbia Analytical Services, Inc.

96088

Service Request #: _____ Method: 9060s / PSEP (Combustion/Coulometric)

Analysis For: Total Organic Carbon (TOC) Matrix: Soil / Dry Weight Basis

Sample Number	mg Sample Injected	Sample Reading, µg C	Baseline Reading, µg C	Net µg C	% Carbon
CCV-1	9.5	1791.2	13.0	1778.2	18.7
CCB-1	50.0	11.7	13.0	-1.3	< 0.05
LCS	50.2	406.7	13.0	393.7	0.78
MB	50.0	8.9	13.0	-4.1	< 0.05
K8364-1	48.9	543.2	13.0	530.2	1.08
K8364-2	50.9	296.7	13.0	283.7	0.56
K8364-3	47.0	75.7	13.0	62.7	0.13
K8364-4	50.6	550.8	13.0	537.8	1.06
K8364-5	22.3	320.8	13.0	307.8	1.38
K8364-6	50.3	116.8	13.0	103.8	0.21
K8364-7	51.0	111.4	13.0	98.4	0.19
K8364-8	49.3	375.0	13.0	362.0	0.73
CCV-2	11.4	2171.7	13.0	2158.7	18.9
CCB-2	50.0	18.3	13.0	5.3	< 0.05
K8364-9	48.4	489.3	13.0	476.3	0.98
K8364-10	52.4	261.4	13.0	248.4	0.47
K8364-11	46.7	468.3	13.0	455.3	0.97
K8364-12	51.3	595.8	13.0	582.8	1.14
K8364-13	45.9	255.5	13.0	242.5	0.53
K8364-14	45.6	577.2	13.0	564.2	1.24
K8364-15	45.9	401.4	13.0	388.4	0.85
K8364-16	52.7	85.7	13.0	72.7	0.14
K8364-17	22.2	2349.5	13.0	2336.5	10.5
K8364-17d	22.9	2525.0	13.0	2512.0	11.0
CCV-3	10.9	2096.7	13.0	2083.7	19.1
CCB-3	50.0	14.3	13.0	1.3	< 0.05
K8364-17ms	11.1	2391.3	13.0	2378.3	21.4
K8588-3	45.4	1939.1	13.0	1926.1	4.24

Acid Purge Time: 1 minute **Reading Time:** 5 minutes **TOC % =** $\frac{\text{(Net Reading)(µg 0.1)}}{\text{mg Sample Injected}}$

CCV : Urea Baker (lot #A17584) ID#: TOCS/1-10-J TV = 20.0%C

CCV1 = 94 CCV2 = 95 CCV3=96

LCS: ERA Cat#: 542 Lot#: D047542 ID#: TOCS/1-10-R TV = 0.89%C %REC= 88

Comments :

K8364-17ms=7.1 mg x 20/11.1=12.8 x=10.8 RPD=5 %REC=85

Analyzed By: A Chelling	Date: 10-5-07 Time: 0930
Reveiwed By:	Date:

TOC.XLT

Columbia Analytical Services, Inc.

96088

Service Request #: _____ Method: 9060s / PSEP (Combustion/Coulometric)

Analysis For: Total Organic Carbon (TOC) Matrix: Soil / Dry Weight Basis

Sample Number	mg Sample Injected	Sample Reading, µg C	Baseline Reading, µg C	Net µg C	% Carbon
K8588-4	46.7	2615.1	13.0	2602.1	5.57
K8597-1	18.5	5118.1	13.0	5105.1	27.6
K8974-1	25.3	11759.4	13.0	11746.4	46.4
K8723-1	44.1	270.4	13.0	257.4	0.58
K8723-2	48.6	211.1	13.0	198.1	0.41
K8723-2d	47.0	222.6	13.0	209.6	0.45
K8723-2ms	25.2	601.1	13.0	588.1	2.33
K8723-3	54.2	222.2	13.0	209.2	0.39
CCV-4	11.4	2265.9	13.0	2252.9	19.8
CCB-4	50.0	13.7	13.0	0.7	< 0.05
K8723-4	44.1	234.2	13.0	221.2	0.50
K8723-5	44.9	186.9	13.0	173.9	0.39
K8723-6	45.5	180.2	13.0	167.2	0.37
K8723-7	50.3	192.6	13.0	179.6	0.36
K8723-8	48.9	189.9	13.0	176.9	0.36
K8723-9	46.6	172.5	13.0	159.5	0.34
K8723-10	50.1	177.5	13.0	164.5	0.33
K8723-11	48.5	246.4	13.0	233.4	0.48
MB	50.0	14.8	13.0	1.8	< 0.05
LCS	48.8	463.6	13.0	450.6	0.92
CCV-5	10.4	1992.6	13.0	1979.6	19.0
CCB-5	50.0	17.2	13.0	4.2	< 0.05

Acid Purge Time: 1 minute **Reading Time:** 5 minutes **TOC % =** $\frac{\text{(Net Reading)(µg 0.1)}}{\text{mg Sample Injected}}$

CCV : Urea Baker (lot #A17584) ID#: TOCS/1-10-J TV = 20.0%C

CCV4=99 CCV5=95

LCS: ERA Cat#: 542 Lot#: D047542 ID#: TOCS/1-10-R TV = 0.89%C %REC= #VALUE!

Comments :

K8723-2ms2.0mg x 20/25.2=1.59 x=0.43 RPD=9 %REC=121

Analyzed By: A Chatterley	Date: 10-5-07	Time: 0930
Reveiwed By:	Date:	

TOC.XLT

TOC Soil Benchsheet

96088

Sample #	mg Sample	Reading	Date Baked	Baseline
CCV-1	9.5	1791.2		12.8
CCB-1	50.0	11.7		17.5
LCS	50.2	406.7		8.7
MB	50.0	8.9		Avg
K8364-1	48.9	543.2	9-28-07 70*C 1830	13.0
K8364-2	50.9	296.7	9-28-07 70*C 1830	
K8364-3	47.0	75.7	9-28-07 70*C 1830	
K8364-4	50.6	550.8	9-28-07 70*C 1830	
K8364-5	22.3	320.8	9-28-07 70*C 1830	
K8364-6	50.3	116.8	9-28-07 70*C 1830	
K8364-7	51.0	111.4	9-28-07 70*C 1830	
K8364-8	49.3	375.0	9-28-07 70*C 1830	
CCV-2	11.4	2171.7		
CCB-2	50.0	18.3		
K8364-9	48.4	489.3	9-28-07 70*C 1830	
K8364-10	52.4	261.4	9-28-07 70*C 1830	
K8364-11	46.7	468.3	9-28-07 70*C 1830	
K8364-12	51.3	595.8	9-28-07 70*C 1830	
K8364-13	45.9	255.5	9-28-07 70*C 1830	
K8364-14	45.6	577.2	9-28-07 70*C 1830	
K8364-15	45.9	401.4	9-28-07 70*C 1830	
K8364-16	52.7	85.7	9-28-07 70*C 1830	
K8364-17	22.2	2349.5	9-28-07 70*C 1830	
K8364-17d	22.9	2525.0	9-28-07 70*C 1830	
CCV-3	10.9	2096.7		
CCB-3	50.0	14.3		
K8364-17ms	11.1	2391.3	9-28-07 70*C 1830	
K8588-3	45.4	1939.1	10-3-07 70*C 1830	
K8588-4	46.7	2615.1	10-3-07 70*C 1830	
K8597-1	18.5	5118.1	10-3-07 70*C 1830	
K8974-1	25.3	11759.4	10-3-07 70*C 1830	
K8723-1	44.1	270.4	9-28-07 70*C 1830	
K8723-2	48.6	211.1	9-28-07 70*C 1830	
K8723-2d	47.0	222.6	9-28-07 70*C 1830	
K8723-2ms	25.2	601.1	9-28-07 70*C 1830	
K8723-3	54.2	222.2	9-28-07 70*C 1830	
CCV-4	11.4	2265.9		
CCB-4	50.0	13.7		
K8723-4	44.1	234.2	9-28-07 70*C 1830	
K8723-5	44.9	186.9	9-28-07 70*C 1830	
K8723-6	45.5	180.2	9-28-07 70*C 1830	
K8723-7	50.3	192.6	9-28-07 70*C 1830	
K8723-8	48.9	189.9	9-28-07 70*C 1830	
K8723-9	46.6	172.5	9-28-07 70*C 1830	
K8723-10	50.1	177.5	9-28-07 70*C 1830	
K8723-11	48.5	246.4	9-28-07 70*C 1830	
MB	50.0	14.8		
LCS	48.8	463.6		
CCV-5	10.4	1992.6		
CCB-5	50.0	17.2		

A Chatterley 10-5-07 0930

TOC Soil Benchsheet

Sample #	mg Sample	Reading	Date Baked	Baseline
CCV-1	9.5	1791.2		12.8
CCB-1	50.0	11.7		17.5
LCS	50.2	406.7		8.7
MB	50.0	8.9		13.0 Avg
KB364-1	48.9	543.2	9.28.07 70° 1830	
-2	509	296.7		
-3	47.0	75.7		
-4	50.6	550.8		
-5	22.3	320.8		
-6	50.3	114.8		
-7	51.0	111.4		
-8	49.3	375.0		
CCV-2	11.4	2171.7		
CCB-2	50.0	18.3		
-9	48.4	489.3		
-10	52.4	261.4		
-11	46.7	468.3		
-12	51.3	595.8		
-13	45.9	255.5		
-14	45.6	577.2		
-15	45.9	401.4		
-16	52.7	85.7		
-17	22.2 (10.5)	2349.5		
-17d	22.9	2525.0		
CCV-3	10.9	2096.7		
CCB-3	50.0	14.3		
↓ -17ms	11.1 ~~10.4~~ ~~11.8~~	~~3911.3~~ ~~BS8850~~	↓	
KB588-3	45.4	1939.1	10.3.07 70° 1415	
↓ -4	44.7	2615.1		
KB597-1	18.5	5118.1		
KB974-1	25.3	11759.4	↓	
KB723-1	441	270.4	9.28.07 70° 1830	
-2	484 (0.44)	211.1		
-2d	47.0	2226		
-2ms	25.2	6011		
-3	54.2 ~~50.1~~	222.2		
CCV-4	11.4	2265.9		
CCB-4	50.0	13.7		
-4	44.1	234.2		
-5	44.9	1869		
-6	45.5	180.2		
-7	50.3	192.6		
-8	48.9	189.9		
-9	46.4	172.5		
-10	50.1	177.5		
↓ -11	48.5	244.4		
MB	50.0	14.8		
LCS	48.8	463.0		
CCV-5	10.4 ~~11.4~~	~~1993.8~~ ~~2023.6~~		
CCB-5	50.0	17.2		

~~B364-17ms: 19.1 mg × 20/10.4 = 34.7~~

B364-17ms = 7.1mg × 20/11.1 = 12.8

B723-2ms = 2.0mg × 20/25.2 = 1.59

~~B723-2ms: mg×~~

8L 10/9/07

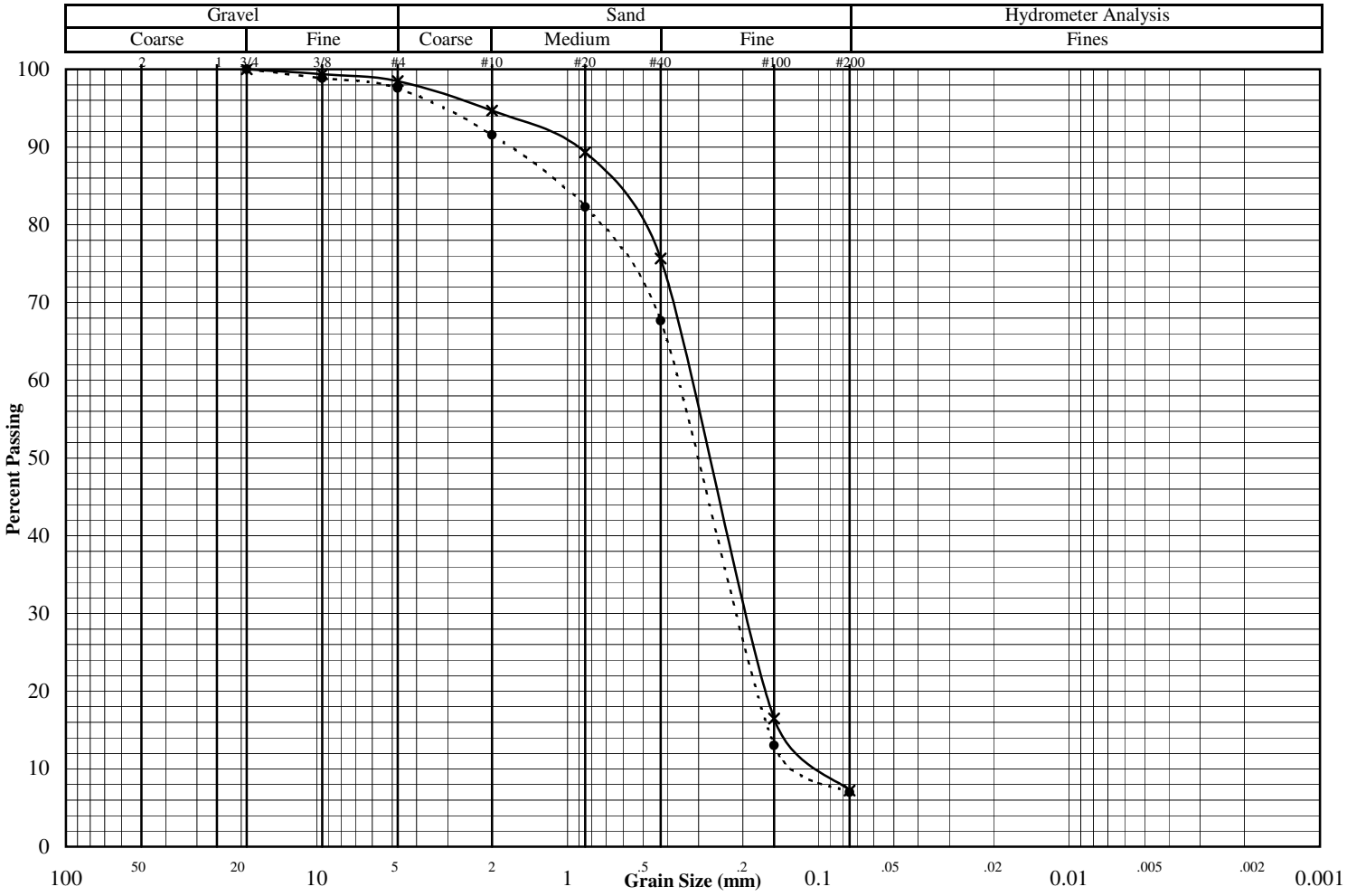
0 A Cheatham 10.5.07 0930

Grain Size Distribution ASTM D422

Job No. : **6244**

Project:	Middletwin Lake - #23/27 1107-Y07720	Test Date:	9/19/07
Reported To:	Barr Engineering Company	Report Date:	9/24/07

	Location / Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Classification
*		MTL-B		Bag	Sand w/silt, fine grained (SP-SM)
●		MTL-NB		Bag	Sand w/silt w/a trace of gravel, fine grained (SP-SM)
◇					



Other Tests	*	●	◇
Liquid Limit			
Plastic Limit			
Plasticity Index			
Water Content	19.7	25.6	
Dry Density (pcf)			
Specific Gravity			
Porosity			
Organic Content			
pH			
Shrinkage Limit			
Penetrometer			
Qu (psf)			

(* = assumed)

Percent Passing	*	●	◇
Mass (g)	752.6	652.8	
2"			
1.5"			
1"			
3/4"	100.0	100.0	
3/8"	99.4	98.8	
#4	98.5	97.6	
#10	94.7	91.6	
#20	89.3	82.3	
#40	75.7	67.6	
#100	16.5	13.0	
#200	7.2	7.0	

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

9301 Bryant Ave. South, Suite 107

SOIL ENGINEERING TESTING, INC.

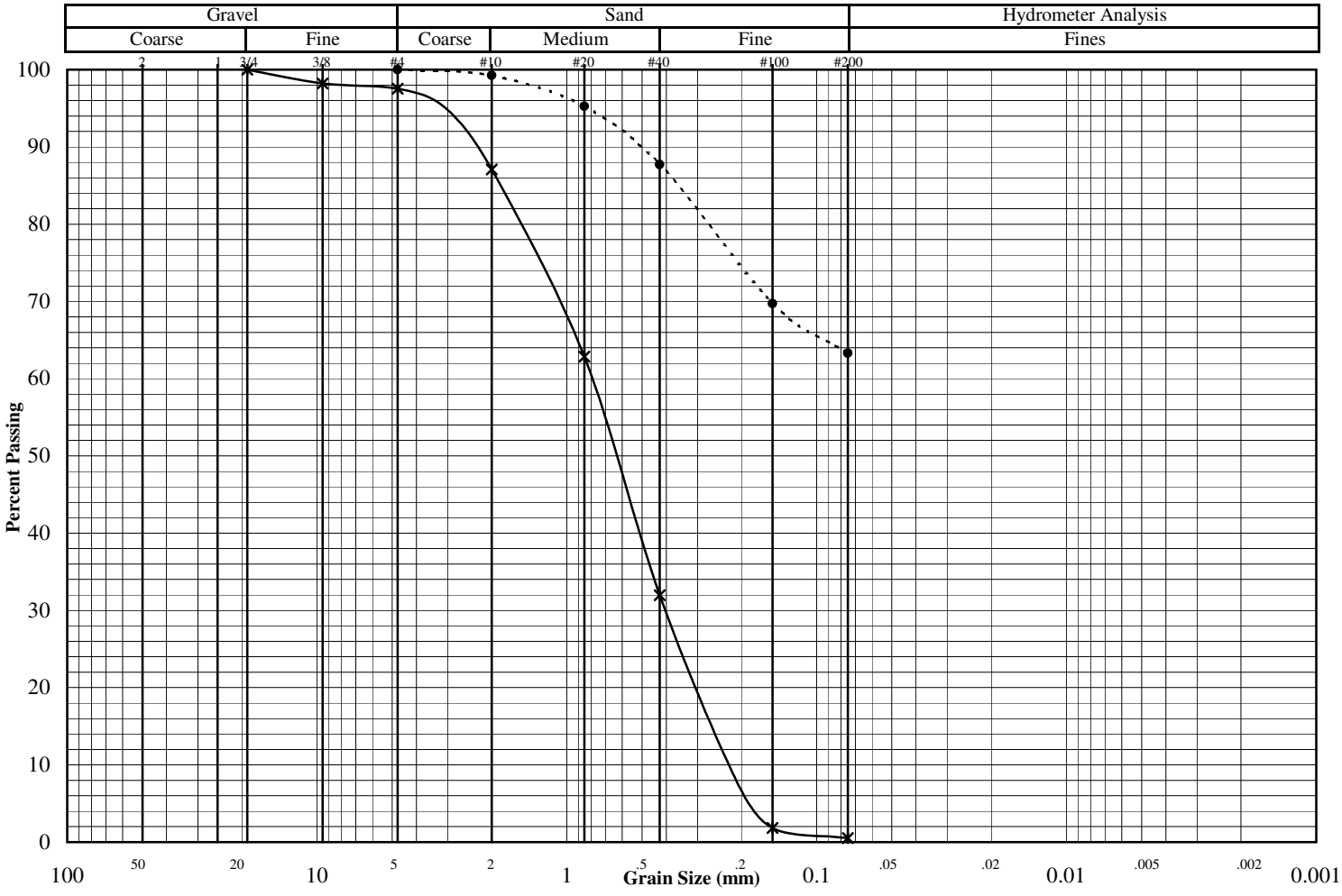
Bloomington, Minnesota 55420-3436

Grain Size Distribution ASTM D422

Job No. : **6244**

Project:	Middletwin Lake - #23/27 1107-Y07720	Test Date:	9/19/07
Reported To:	Barr Engineering Company	Report Date:	9/25/07

	Location / Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Classification
*		REF-1-B		Bag	Sand w/a trace of gravel, medium to fine grained (SP)
●		REF-1-NB		Bag	Sandy Silt w/organic material & shell fragments (ML)
◇					



Other Tests	*	●	◇
Liquid Limit			
Plastic Limit			
Plasticity Index			
Water Content	16.0	314.1	
Dry Density (pcf)			
Specific Gravity			
Porosity			
Organic Content			
pH			
Shrinkage Limit			
Penetrometer			
Qu (psf)			

(* = assumed)

Percent Passing	*	●	◇
Mass (g)	682.3	86.6	
2"			
1.5"			
1"			
3/4"	100.0		
3/8"	98.2		
#4	97.6	100.0	
#10	87.1	99.2	
#20	62.8	95.3	
#40	32.0	87.7	
#100	1.8	69.7	
#200	0.5	63.3	

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

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SOIL ENGINEERING TESTING, INC.

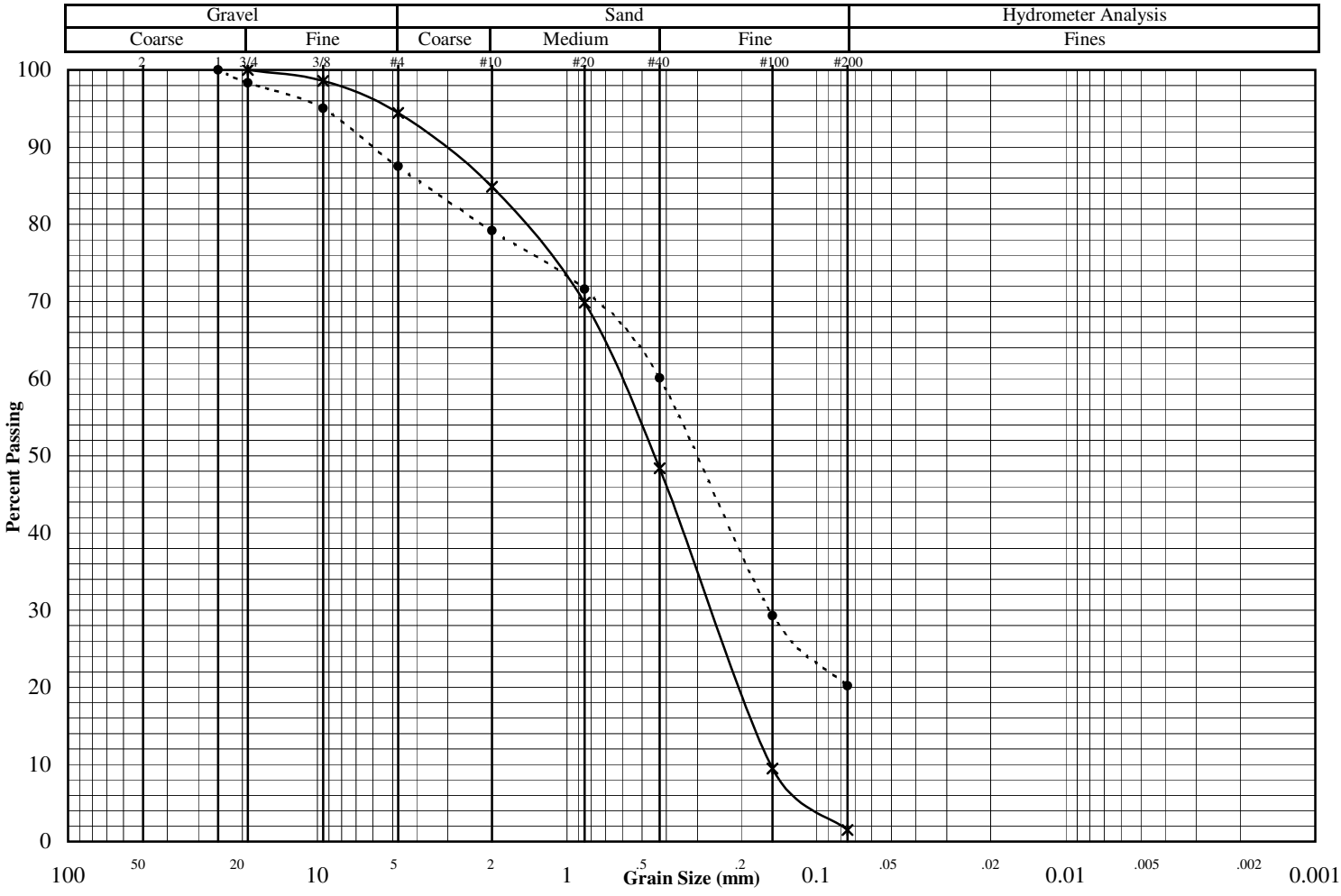
Bloomington, Minnesota 55420-3436

Grain Size Distribution ASTM D422

Job No. : **6244**

Project:	Middletwin Lake - #23/27 1107-Y07720	Test Date:	9/19/07
Reported To:	Barr Engineering Company	Report Date:	9/25/07

	Location / Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Classification
*		REF-2-B		Bag	Sand w/a little gravel, fine to medium grained (SP)
●		REF-2-NB		Bag	Silty Sand w/a little gravel (SM)
◇					



Other Tests

	*	●	◇
Liquid Limit			
Plastic Limit			
Plasticity Index			
Water Content	14.3	17.7	
Dry Density (pcf)			
Specific Gravity			
Porosity			
Organic Content			
pH			
Shrinkage Limit			
Penetrometer			
Qu (psf)			

(* = assumed)

Percent Passing

	*	●	◇
Mass (g)	586.4	926.4	
2"			
1.5"			
1"		100.0	
3/4"	100.0	98.3	
3/8"	98.6	95.0	
#4	94.4	87.5	
#10	84.9	79.2	
#20	69.8	71.6	
#40	48.4	60.1	
#100	9.4	29.3	
#200	1.5	20.2	

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

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SOIL ENGINEERING TESTING, INC.

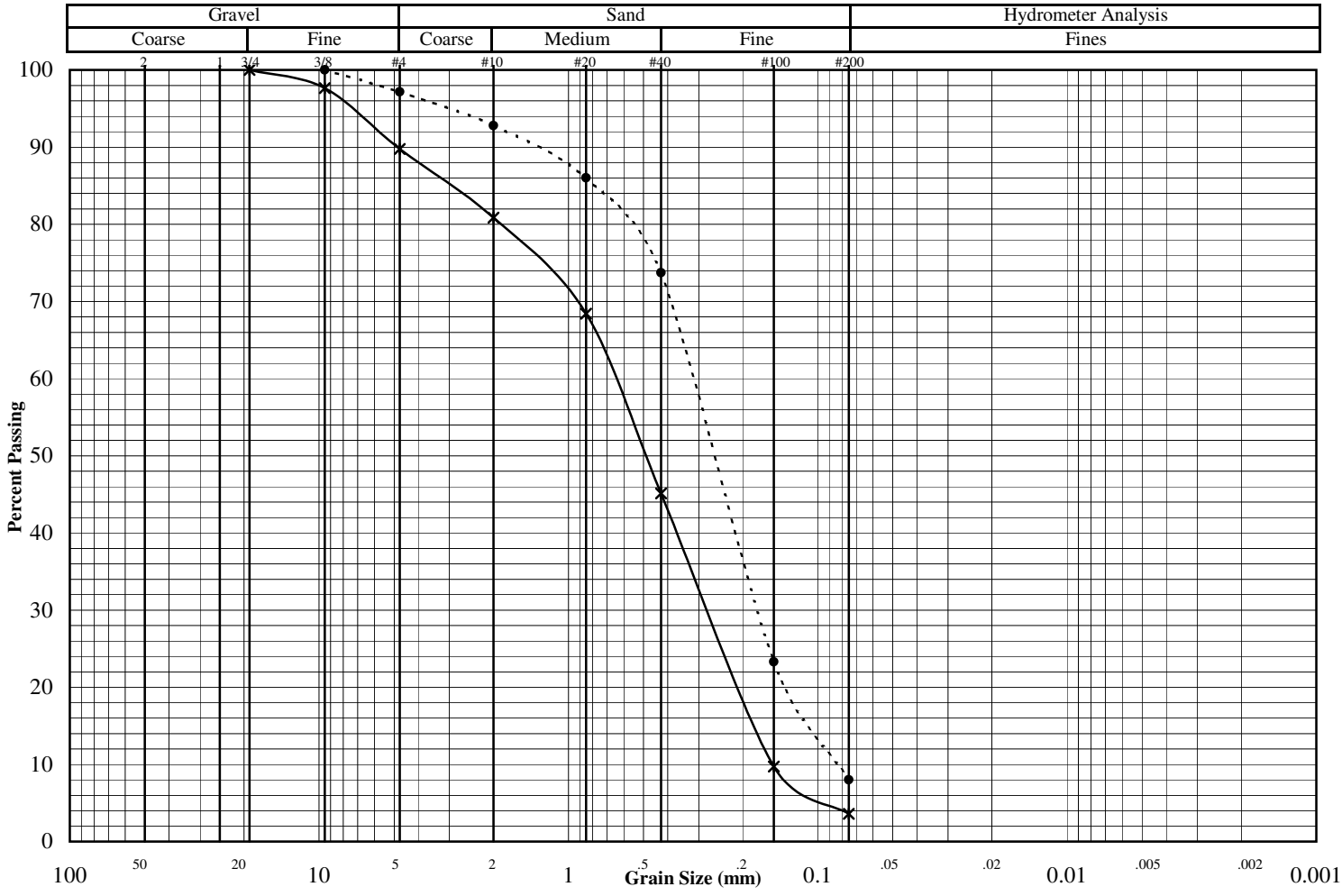
Bloomington, Minnesota 55420-3436

Grain Size Distribution ASTM D422

Job No. : **6244**

Project:	Middletwin Lake - #23/27 1107-Y07720	Test Date:	9/19/07
Reported To:	Barr Engineering Company	Report Date:	9/25/07

	Location / Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Classification
*		REF-3-B		Bag	Sand w/a little gravel, fine to medium grained (SP)
●		REF-3-NB		Bag	Sand w/silt and a trace of gravel, fine grained (SP-SM)
◇					



Other Tests	*	●	◇
Liquid Limit			
Plastic Limit			
Plasticity Index			
Water Content	12.9	43.0	
Dry Density (pcf)			
Specific Gravity			
Porosity			
Organic Content			
pH			
Shrinkage Limit			
Penetrometer			
Qu (psf)			

(* = assumed)

Percent Passing	*	●	◇
Mass (g)	618.1	320.8	
2"			
1.5"			
1"			
3/4"	100.0		
3/8"	97.7	100.0	
#4	89.7	97.2	
#10	80.9	92.8	
#20	68.4	86.0	
#40	45.1	73.7	
#100	9.7	23.3	
#200	3.6	8.0	

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

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SOIL ENGINEERING TESTING, INC.

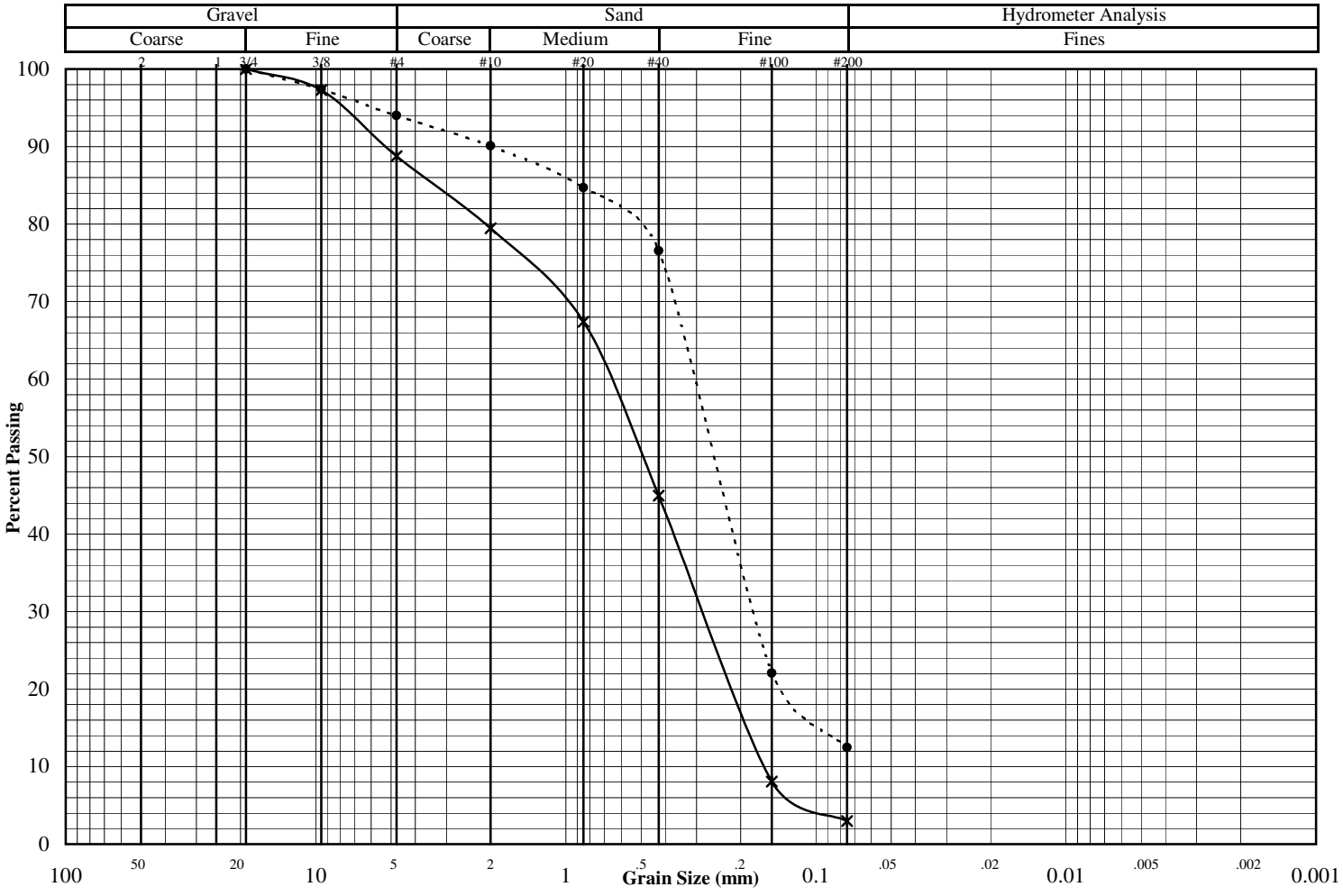
Bloomington, Minnesota 55420-3436

Grain Size Distribution ASTM D422

Job No. : **6244**

Project:	Middletwin Lake - #23/27 1107-Y07720	Test Date:	9/19/07
Reported To:	Barr Engineering Company	Report Date:	9/25/07

	Location / Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Classification
*		REF-4-B		Bag	Sand w/a little gravel, fine to medium grained (SP)
●		REF-4-NB		Bag	Silty Sand w/a little gravel (SM)
◇					



Other Tests	*	●	◇
Liquid Limit			
Plastic Limit			
Plasticity Index			
Water Content	14.4	28.4	
Dry Density (pcf)			
Specific Gravity			
Porosity			
Organic Content			
pH			
Shrinkage Limit			
Penetrometer			
Qu (psf)			

(* = assumed)

Percent Passing	*	●	◇
Mass (g)	466.1	652.4	
2"			
1.5"			
1"			
3/4"	100.0	100.0	
3/8"	97.3	97.4	
#4	88.8	94.0	
#10	79.4	90.1	
#20	67.4	84.7	
#40	45.0	76.6	
#100	8.1	22.1	
#200	3.0	12.5	

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

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SOIL ENGINEERING TESTING, INC.

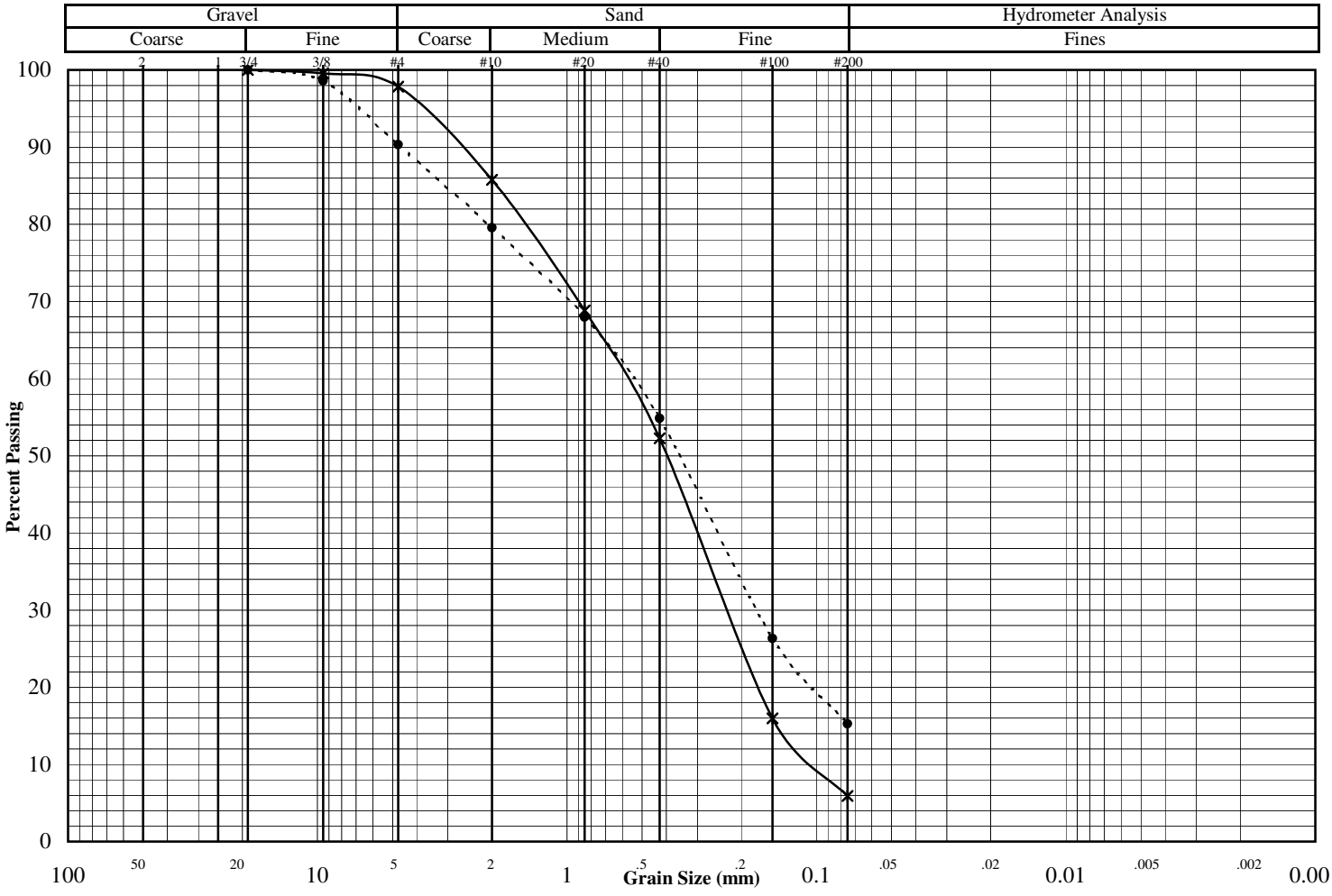
Bloomington, Minnesota 55420-3436

Grain Size Distribution ASTM D422

Job No. : **6244**

Project:	Middletwin Lake - #23/27 1107-Y07720	Test Date:	9/19/07
Reported To:	Barr Engineering Company	Report Date:	9/25/07

	Location / Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Classification
*		REF-5-B		Bag	Sand w/silt and a trace of gravel, fine to medium grained (SP-SM/SP)
●		REF-5-NB		Bag	Silty Sand w/a little gravel (SM)
◇					



Other Tests	*	●	◇
Liquid Limit			
Plastic Limit			
Plasticity Index			
Water Content	21.5	42.7	
Dry Density (pcf)			
Specific Gravity			
Porosity			
Organic Content			
pH			
Shrinkage Limit			
Penetrometer			
Qu (psf)			

(* = assumed)

Percent Passing	*	●	◇
Mass (g)	506.4	431.0	
2"			
1.5"			
1"			
3/4"	100.0	100.0	
3/8"	99.5	98.6	
#4	97.8	90.3	
#10	85.8	79.6	
#20	68.8	68.0	
#40	52.3	54.8	
#100	16.0	26.3	
#200	5.9	15.3	

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

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SOIL ENGINEERING TESTING, INC.

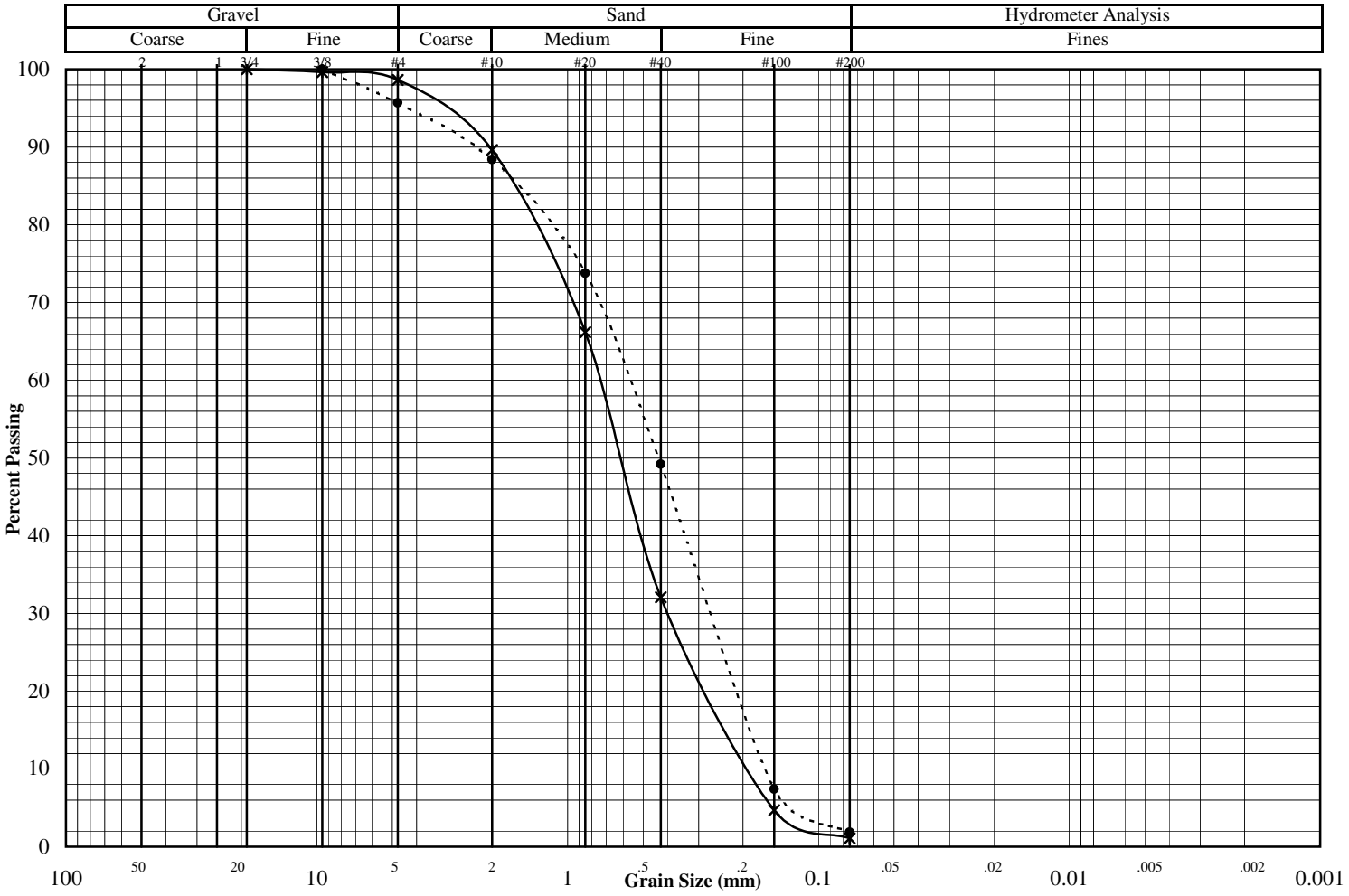
Bloomington, Minnesota 55420-3436

Grain Size Distribution ASTM D422

Job No. : **6244**

Project:	Middletwin Lake - #23/27 1107-Y07720	Test Date:	9/19/07
Reported To:	Barr Engineering Company	Report Date:	9/25/07

	Location / Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Classification
*		REF-6-B		Bag	Sand, medium to fine grained (SP)
●		REF-6-NB		Bag	Sand w/a trace of gravel, fine to medium grained (SP)
◇					



Other Tests	*	●	◇
Liquid Limit			
Plastic Limit			
Plasticity Index			
Water Content	15.5	21.5	
Dry Density (pcf)			
Specific Gravity			
Porosity			
Organic Content			
pH			
Shrinkage Limit			
Penetrometer			
Qu (psf)			

(* = assumed)

Percent Passing	*	●	◇
Mass (g)	594.3	595.3	
2"			
1.5"			
1"			
3/4"	100.0		
3/8"	99.6	100.0	
#4	98.6	95.7	
#10	89.6	88.4	
#20	66.2	73.7	
#40	32.1	49.2	
#100	4.7	7.4	
#200	1.1	1.8	

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

9301 Bryant Ave. South, Suite 107

SOIL ENGINEERING TESTING, INC.

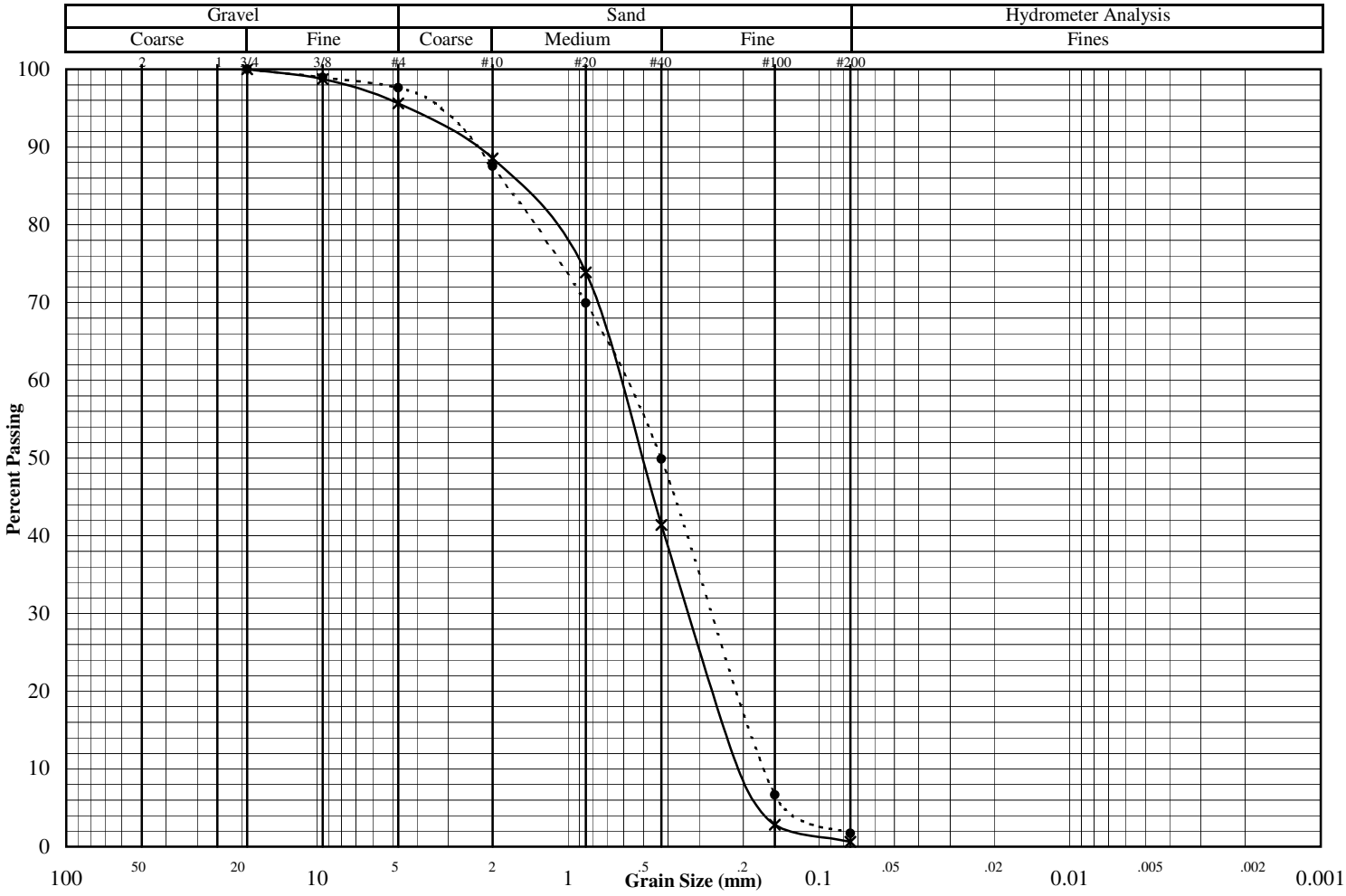
Bloomington, Minnesota 55420-3436

Grain Size Distribution ASTM D422

Job No. : **6244**

Project:	Middletwin Lake - #23/27 1107-Y07720	Test Date:	9/19/07
Reported To:	Barr Engineering Company	Report Date:	9/25/07

	Location / Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Classification
*		REF-7-B		Bag	Sand w/a trace of gravel, medium to fine grained (SP)
●		REF-7-NB		Bag	Sand w/a trace of gravel, fine to medium grained (SP)
◇					



Other Tests	*	●	◇
Liquid Limit			
Plastic Limit			
Plasticity Index			
Water Content	16.0	17.8	
Dry Density (pcf)			
Specific Gravity			
Porosity			
Organic Content			
pH			
Shrinkage Limit			
Penetrometer			
Qu (psf)			

(* = assumed)

Percent Passing	*	●	◇
Mass (g)	609.7	527.4	
2"			
1.5"			
1"			
3/4"	100.0	100.0	
3/8"	98.7	99.0	
#4	95.6	97.6	
#10	88.5	87.5	
#20	73.9	69.9	
#40	41.4	49.9	
#100	2.8	6.7	
#200	0.6	1.7	

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

9301 Bryant Ave. South, Suite 107

SOIL ENGINEERING TESTING, INC.

Bloomington, Minnesota 55420-3436

Pace Analytical™
www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Chris Brueske
Minnesota Dept. of Health
601 Robert Street North
Saint Paul MN 55101

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

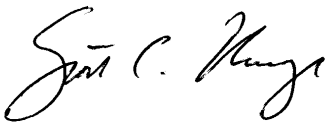
Pace Project #: 1058949
Sample Receipt Date: 09/14/2007
Client Project #: Joslyn MPCA-PL
Client Sub PO #: 34169370
State Cert #: N/A

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 4 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed and prepared by:



Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

ACCREDITED IN ACCORDANCE WITH nelac

Report of Laboratory Analysis

Report Prepared Date:
November 16, 2007

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on two samples submitted by a representative of Minnesota Department of Health. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. Reporting limits were set to correspond to one-fifth of the lowest calibration points.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 38-98%. With the exception of one low value, which was flagged "P" on the results table, the labeled standard recoveries obtained for this project were within the 40-135% target range specified in the method. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results, found at the beginning of Appendix C, show the blank to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample processing steps did not contribute significantly to the levels reported for the field samples.

A laboratory spike sample was also prepared with the sample batch using clean sand that had been fortified with native standard materials. Recoveries of the spiked native compounds ranged from 81-122%. This indicates a high degree of accuracy for these determinations.

The response obtained for the native OCDF in calibration standard analysis U70926A_19 was outside the target range. As specified in the method, the average of the daily response factors for this compound was used in the calculations for the samples from this runshift. The affected values were flagged "*" on the results tables. It should be noted that the accuracy of the field sample determinations was not affected by this deviation.

Pace Analytical Services, Inc.
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2,3,7,8-TCDD Equivalency Factors (TEFs) for the Polychlorinated Dibenzo-p-dioxins and Dibenzofurans

WHO2005 Factors

Compound	TEF
2,3,7,8-TCDD	1.000000
1,2,3,7,8-PeCDD	1.000000
1,2,3,4,7,8-HxCDD	0.100000
1,2,3,6,7,8-HxCDD	0.100000
1,2,3,7,8,9-HxCDD	0.100000
1,2,3,4,6,7,8-HpCDD	0.010000
OCDD	0.000300
Total TCDD	0.000000
Total PeCDD	0.000000
Total HxCDD	0.000000
Total HpCDD	0.000000
2,3,7,8-TCDF	0.100000
1,2,3,7,8-PeCDF	0.030000
2,3,4,7,8-PeCDF	0.300000
1,2,3,4,7,8-HxCDF	0.100000
1,2,3,6,7,8-HxCDF	0.100000
2,3,4,6,7,8-HxCDF	0.100000
1,2,3,7,8,9-HxCDF	0.100000
1,2,3,4,6,7,8-HpCDF	0.010000
1,2,3,4,7,8,9-HpCDF	0.010000
OCDF	0.000300
Total TCDF	0.000000
Total PeCDF	0.000000
Total HxCDF	0.000000
Total HpCDF	0.000000

REPORT OF LABORATORY ANALYSIS

Appendix A

Sample Management

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Sample ID Cross Reference

Client Sample ID	Pace Sample ID	Date Received	Sample Type
MTLB-200729487	1058949001	09/14/2007	Solid
MTLNB-200729488	1058949002	09/14/2007	Solid

REPORT OF LABORATORY ANALYSIS

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

1058949

Page: 1 of 1

1122193

Section A Required Client Information:

Company:	MDH
Address:	601 Robert St. N St. Paul, MN 55164
Email To:	chris.brueske@state.mn.us
Phone: 651-201-5554	Fax: 651-201-5301
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Chris Brueske
Copy To:	N/A
Purchase Order No.:	3416937Ø ~~C-26~~ 9-13-07
Project Name:	09/18/07 ~~Ritari~~ Joslyn ①
Project Number:	MPCA-PL

Section C Invoice Information:

Attention:	Chris Brueske
Company Name:	MDH
Address:	601 Robert St. N
Pace Quote Reference:	N/A
Pace Project Manager:	Scott Unze
Pace Profile #:	N/A

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: MN

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

Requested Analysis Filtered (Y/N): Y/N = N

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test: Dioxin 8290	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MTLB-20072Q487	SL	G			9/14/07	11:02	5.2	1	X								X	N	001
2	MTLNB-20072Q488	SL	G			9/14/07	13:31	5.2	1	X								X		002
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12	① Change per Chris Brueske. Entry error by Steve Schoff. ② 09/18/07																			

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Please email ~~C-26~~ 9-13-07 report + invoice only. No mail.				Yong Thao Pace	9/14/07	925	3.2	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

6 of 213

Report No.:1058949_8290

Sample Condition Upon Receipt

Pace Analytical

Client Name: MDH Project # 1058949

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Optional:
Proj Due Date:
Proj Name:

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer Used 230194010 Type of Ice: (Wet) Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 3.2°C Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: YT 09/14/07

Temp should be above freezing to 6°C

		Comments:
Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☐Yes ☑No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☑No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☐Yes ☑No ☐N/A	12. On COC ID is MTLB 200729487 and MTLNB-200729488 on sample ID is
-Includes date/time/ID/Analysis Matrix: SL		
All containers needing preservation have been checked.	☐Yes ☐No ☑N/A	13. just MTLB and MTLNB
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☑N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☑No	Initial when completed / Lot # of added preservative
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	15.
Trip Blank Present:	☐Yes ☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: @ **Date:** 09/17/07

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

DIOXIN EXTRACTION WORKSHEET

Setup By KH | EB-6282 | **Extraction Batch : EB-06282**

Extraction On (Date/Time):
20-Sep-2007 15:45

Extraction Off (Date/Time):
21-Sep-2007 09:30

Extract Solvents
Toluene Lot # 072462
Hexane Lot #
MeCl Lot #

Acid Base:
Sulphuric Acid Lot # 071679
Buffer Soln # 141

Silica:
Neutral Batch # 501
Basic Batch # 684
Acid Batch # 990

Method 1613/8290
Matrix Solid

Standards
Internal Std BI2-7033-31
Cleanup Std dwcl4-7033-35
Recovery Std CR3-7033-36
Tridecane A0237994
Native BN1-6279-137
Others M.Oil 126
Alumina Lot 66

Alumina:
Date 9/21/2007
Initials DB
Temp
Hexane Lot # 070893
60% Batch # 1081
Humidity 34%

Silica:
Date 9/21/2007
Initials KH
Temp
Hexane Lot # 070893
Humidity 44%

Carbon:
Date 9/29/2007
Initials NMS/DB
Temp
Toluene Lot # 071351
75% Batch # 192
50% Batch # 337
Hexane Lot # 070893
Humidity 28%

	Sample #	Labeled Stds	Native Stds	mL or g Extracted	Filtered	Cl-37 Std	Mineral Oil	Acid	Buffer Soln	Silica	Alumina	Carbon	Rec Std	Glassware Set	Comments
1	BLANK-14266	I		20.23		I	I	1	1	I	I	I	I	58/3	
2	LCS-14267	I	I	20.30		I	I	1	1	I	I	I	I	77/78	
3	20553013-MS	I	I	11.74		I	I			I	I	I	I	94	
4	20553013-MSD	I	I	11.64		I	I			I	I	I	I	71	
5	20553013	I		11.55		I	I			I	I	I	I	53	
6	20553011	I		13.02		I	I			I	I	I	I	84	
7	1058439001	I		10.26		I	I			I	I	I	I	61	
8	1058439002	I		10.00		I	I			I	I	I	I	10	
9	1058439003	I		10.11		I	I			I	I	I	I	17	
10	1058439004	I		10.15		I	I			I	I	I	I	35	
11	1058535001	I		16.22		I	I	2	1	I	I	I	I	13	D. Stark
12	1058720001	I		20.95		I	I	2	1	I	I	I	I	106/80	1
13	1058720002	I		20.14		I	I	2	1	I	I	I	I	25	1
14	1058720003	I		20.90		I	I	2	1	I	I	I	I	55	1, 2,3
15	1058949001	I		12.36		I	I			I	I	I	I	8	
16	1058949002	I		13.47		I	I			I	I	I	I	50	
17	1058955001	I		15.23		I	I			I	I	I	I	3/2	D. Stark
18	1059235001	I		13.19		I	I			I	I	I	I	69	
19	1059235002	I		13.10		I	I			I	I	I	I	64	
20	1059235003	I		12.87		I	I			I	I	I	I	80/91	
21	1059235004	I		10.99		I	I			I	I	I	I	23	
22	1058626001	I		23.29		I	I	3	1	I	I	I	I	63/34	D. Stark,4
23	1058437001	I		152.02		I	I	2	1	I	I	I	I	96	D. Stark, depleted
24	1058986001	I		49.11		I	I	3	1	I	I	I	I	97	D. Stark,4

Data Entry Reviewed By: _____ **Date:** _____

Extracts Relinquished By: _____ **Received By:** _____ **Date:** _____

Extraction Notes

Note 1: Samples turned to sludge when acid was added. Hexane layer decanted from acid/sludge layer into new vial. 2-10mL hexane rinses vortexed with sludge left over and combined. Continued as usual. KH 9/21/07

Note 2: Overloaded and locked up during silica cleanup. Contents emptied into beaker and sonicated with rinses of hexane. Continued as usual. KH 9/21/07

NOTE 3: AN EXTRA 10ML HEXANE WAS ELUTED THROUGH ALUMINA COLUMN BECAUSE SAMPLE WAS OILY. DB 9/21/07

Note 4: Sample decanted after final transfer and addition of recovery standard. DB 9/22/07

Pace Analytical Services, Inc.
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Solid Sample Moisture Log

Sample ID	Container Weight	Adjusted Wet Weight	Adjusted Dry Weight	% Moisture	% Solids	Amount Extracted
BLANK-14266	0.00	0.00	0.00	0.00	100.00	20.23
LCS-14267	0.00	0.00	0.00	0.00	100.00	20.30
20553013-MS	1.03	7.51	6.55	12.86	87.14	11.74
20553013-MSD	1.03	7.51	6.55	12.86	87.14	11.64
20553013	1.03	7.51	6.55	12.86	87.14	11.55
20553011	1.03	8.73	6.71	23.12	76.88	13.02
1058439001	0.00	0.00	0.00	0.00	100.00	10.26
1058439002	0.00	0.00	0.00	0.00	100.00	10.00
1058439003	0.00	0.00	0.00	0.00	100.00	10.11
1058439004	0.00	0.00	0.00	0.00	100.00	10.15
1058535001	0.00	0.00	0.00	37.69	62.31	16.22
1058720001	0.00	0.00	0.00	3.66	96.34	20.95
1058720002	0.00	0.00	0.00	0.27	99.73	20.14
1058720003	0.00	0.00	0.00	3.72	96.28	20.90
1058949001	1.04	5.65	4.66	17.51	82.49	12.36
1058949002	1.03	6.97	5.25	24.67	75.33	13.47
1058955001	1.04	6.20	4.14	33.26	66.74	15.23
1059235001	1.05	6.49	5.07	21.85	78.15	13.19
1059235002	1.04	5.59	4.32	22.67	77.33	13.10
1059235003	1.06	5.12	4.00	21.95	78.05	12.87
1059235004	1.02	6.45	5.92	8.25	91.75	10.99
1058626001	0.00	0.00	0.00	56.70	43.30	23.29
1058437001	0.00	0.00	0.00	96.98	3.02	152.02
1058986001	1.02	5.35	1.10	79.50	20.50	49.11

Client names have been blacked out on notebook pages in order to preserve client confidentiality

Pace Analytical™

INSTRUMENT RUN LOG

Instrument 10MSHR09 Method 1613 B INJ Volume=1uL Date 8/29/07

User (Initials)	File Name	Sample ID	PR	Que	Comments

	File Name	File Text	Method	MS File	Inlet File	Bottle	Vol
1	P70829A_01	CAL CPM-6279-102 - AE	1613DW	TCDD-DW	TCDD-DW	Tray01:1	1.0
2	P70829A_02	CAL CS3-5176-126 - AE	1613DW	TCDD-DW	TCDD-DW	Tray01:2	1.0
3	P70829A_03	LCS LCS-14014 - AE	1613DW	TCDD-DW	TCDD-DW	Tray01:4	1.0
4	P70829A_04	LCS LCSD-14015 - AE	1613DW	TCDD-DW	TCDD-DW	Tray01:5	1.0
5	P70829A_05	BLANK BLANK-14013 - AE	1613DW	TCDD-DW	TCDD-DW	Tray01:6	1.0
6	P70829A_06	SAMP 1057029001 - AE [redacted]	1613DW	TCDD-DW	TCDD-DW	Tray01:7	1.0
7	P70829A_07	SAMP 1057031001 - AE [redacted]	1613DW	TCDD-DW	TCDD-DW	Tray01:8	1.0
8	P70829A_08	LCS STD-14042 - AE	1613DW	TCDD-DW	TCDD-DW	Tray01:9	1.0

(2)

	File Name	File Text	Method	MS File	Inlet File	Bottle	Vol
1	P70829B_01	CAL CS3/CPM-5176-122 - BAL	8290/1613	dioxfur	dioxfur	Tray01:1	1.0
2	P70829B_02	CAL CS3/CPM-5176-122 - BAL	8290/1613	dioxfur	dioxfur	Tray01:1	1.0
3	P70829B_03	CAL CS2-5176-102 - BAL	8290/1613	dioxfur	dioxfur	Tray01:3	1.0
4	P70829B_04	CAL CS1-5176-101 - BAL	8290/1613	dioxfur	dioxfur	Tray01:4	1.0
5	P70829B_05	CAL CS5-5176-104 - BAL	8290/1613	dioxfur	dioxfur	Tray01:5	1.0
6	P70829B_06	CAL CS4-5176-103 - BAL	8290/1613	dioxfur	dioxfur	Tray01:6	1.0
7	P70829B_07	BLANK NONANE - BAL	HOUSE	dioxfur	dioxfur	Tray01:2	1.0
8	P70829B_08	CAL STD-10368 - BAL 2NDSRC	8290/1613	dioxfur	dioxfur	Tray01:7	1.0
9	P70829B_09	CAL CS3/CPM-5176-122 - BAL	8290/1613	dioxfur	dioxfur	Tray01:1	1.0
10	P70829B_10	LCS LCS-14037 - BAL	8290/1613	dioxfur	dioxfur	Tray01:8	1.0
11	P70829B_11	LCS LCSD-14038 - BAL	8290/1613	dioxfur	dioxfur	Tray01:9	1.0
12	P70829B_12	BLANK NONANE - BAL	HOUSE	dioxfur	dioxfur	Tray01:2	1.0
13	P70829B_13	BLANK BLANK-14036 - BAL	8290/1613	dioxfur	dioxfur	Tray01:10	1.0
14	P70829B_14	SAMP 1057446005 - BAL [redacted]	8290	dioxfur	dioxfur	Tray01:11	1.0
15	P70829B_15	SAMP 1057446006 - BAL [redacted]	8290	dioxfur	dioxfur	Tray01:12	1.0
16	P70829B_16	SAMP 1057446007 - BAL [redacted]	8290	dioxfur	dioxfur	Tray01:13	1.0
17	P70829B_17	SAMP 1057446008 - BAL [redacted]	8290	dioxfur	dioxfur	Tray01:14	1.0
18	P70829B_18	SAMP 1057446009 - BAL [redacted]	8290	dioxfur	dioxfur	Tray01:15	1.0
19	P70829B_19	SAMP 1057446010 - BAL [redacted]	8290	dioxfur	dioxfur	Tray01:16	1.0
20	P70829B_20	SAMP 1057446011 - BAL [redacted]	8290	dioxfur	dioxfur	Tray01:17	1.0
21	P70829B_21	SAMP 1057446012 - BAL [redacted]	8290	dioxfur	dioxfur	Tray01:18	1.0
22	P70829B_22	SAMP 1057120001-R - BAL [redacted]	1613	dioxfur	dioxfur	Tray01:19	1.0
23	P70829B_23	SAMP 1057339001 - BAL [redacted]	8290	dioxfur	dioxfur	Tray01:20	1.0
24	P70829B_24	BLANK NONANE - BAL	HOUSE	dioxfur	dioxfur	Tray01:2	1.0
25	P70829B_25	CAL CS3/CPM-5176-122 - BAL	8290/1613	dioxfur	dioxfur	Tray01:1	1.0

AE sent 9/5/07

sent 9/5/07

Comments ① Tune and calibrated prior to running samples — AE sent, 8/29/07

② Tune + Cal, BR 8/29/07

PR = Preliminary Review

Pace Analytical™

INSTRUMENT RUN LOG

Instrument 10MSHR06

Date 9/21/07

User (Initials)	File Name	Sample ID	PR	Copy	Que	Method No.	Inj. Vol.	Comments

	File Name	File Text	Method	MS File	Inlet File	Bottle	Inject Volum
1	U70921A_01	Blank Nonane - CVS	8290/1613	dioxfur	dioxfur	17	1.000000
2	U70921A_02	CAL CS3/CPM-5176-129 - CVS Front End	8290/1613	dioxfur	dioxfur	16	1.000000
3	U70921A_03	Blank Nonane - CVS	8290/1613	dioxfur	dioxfur	17	1.000000
4	U70921A_04	CAL CS3/CPM-5176-129 - CVS HpD low, tune	8290/1613	dioxfur	dioxfur	16	1.000000
5	U70921A_05	LCS LCS-14227 - CVS	8290/1613	dioxfur	dioxfur	18	1.000000
6	U70921A_06	CAL CS3/CPM-5176-129 - CVS	8290/1613	dioxfur	dioxfur	16	1.000000
7	U70921A_07	CAL CS3/CPM-5176-129 - BAL retune	8290/1613	dioxfur	dioxfur	16	1.000000
8	U70921A_08	CAL CS3/CPM-5176-129 - BAL retune	8290/1613	dioxfur	dioxfur	16	1.000000
9	U70921A_09	CAL CS2-5176-102 - BAL	8290/1613	dioxfur	dioxfur	31	1.000000
10	U70921A_10	CAL CS1-5176-101 - BAL	8290/1613	dioxfur	dioxfur	32	1.000000
11	U70921A_11	CAL CS5-5176-104 - BAL	8290/1613	dioxfur	dioxfur	33	1.000000
12	U70921A_12	CAL CS4-5176-103 - BAL	8290/1613	dioxfur	dioxfur	34	1.000000
13	U70921A_13	Blank Nonane - BAL	HOUSE	dioxfur	dioxfur	17	1.000000
14	U70921A_14	Blank Nonane - BAL new syringe	HOUSE	dioxfur	dioxfur	17	1.000000
15	U70921A_15	CAL CS3/CPM-5176-129 - BAL	8290/1613	dioxfur	dioxfur	16	1.000000
16	U70921A_16	CAL CS2-5176-102 - BAL	8290/1613	dioxfur	dioxfur	31	1.000000
17	U70921A_17	CAL CS1-5176-101 - BAL	8290/1613	dioxfur	dioxfur	32	1.000000
18	U70921A_18	CAL CS5-5176-104 - BAL	8290/1613	dioxfur	dioxfur	33	1.000000
19	U70921A_19	CAL CS4-5176-103 - BAL	8290/1613	dioxfur	dioxfur	34	1.000000
20	U70921A_20	Blank Nonane - BAL	HOUSE	dioxfur	dioxfur	17	1.000000
21	U70921A_21	CAL STD-10666 - BAL 2NDSRC	8290/1613	dioxfur	dioxfur	35	1.000000
22	U70921A_22	CAL CS3/CPM-5176-129 - BAL	8290/1613	dioxfur	dioxfur	16	1.000000
23	U70921A_23	LCS LCS-14227 - CVS	8290/1613	dioxfur	dioxfur	18	1.000000
24	U70921A_24	Blank Nonane - CVS	8290/1613	dioxfur	dioxfur	17	1.000000
25	U70921A_25	Blank Blank-14226 - CVS	8290/1613	dioxfur	dioxfur	19	1.000000
26	U70921A_26	Samp 1058418004 - CVS [redacted]	1613	dioxfur	dioxfur	20	1.000000
27	U70921A_27	Samp 1058418005 - CVS [redacted]	1613	dioxfur	dioxfur	21	1.000000
28	U70921A_28	Samp 1058418002 - CVS [redacted] 50X	1613	dioxfur	dioxfur	22	1.000000
29	U70921A_29	Samp 1058418003 - CVS [redacted] 50X	1613	dioxfur	dioxfur	23	1.000000
30	U70921A_30	Blank Nonane - CVS	1613	dioxfur	dioxfur	17	1.000000
31	U70921A_31	Samp 1059016001 - CVS [redacted]	1613	dioxfur	dioxfur	24	1.000000
32	U70921A_32	Samp 1059016002 - CVS [redacted]	1613	dioxfur	dioxfur	25	1.000000
33	U70921A_33	Blank Nonane - CVS	1613	dioxfur	dioxfur	17	1.000000
34	U70921A_34	BLANK BLANK-14155 - BAL	8290/1613	dioxfur	dioxfur	26	1.000000
35	U70921A_35	SAMP 1058186001 - BAL [redacted]	8290	dioxfur	dioxfur	27	1.000000
36	U70921A_36	SAMP 1058186002 - BAL [redacted]	8290	dioxfur	dioxfur	28	1.000000
37	U70921A_37	LCS LCS-14156 - BAL	8290/1613	dioxfur	dioxfur	29	1.000000
38	U70921A_38	Blank Nonane - BAL	8290/1613	dioxfur	dioxfur	17	1.000000
39	U70921A_39	CAL CS3/CPM-5176-129 - BAL	8290/1613	dioxfur	dioxfur	16	1.000000

(1)

Comments

(1) ICAL failed. Too much carryover. Changed syringe. BAL 9/21/07

PR = Preliminary Review

Pace Analytical™

INSTRUMENT RUN LOG

Instrument 10MSHR06

Date 09-26-07

User (Initials)	File Name	Sample ID	PR	Copy	Que	Method No.	Inj. Vol.	Comments
								(1)

	File Name	File Text	Method	MS File	Inlet File	Bottle	Inject Volume
1	U70926A_01	CAL CS3/CPM-5176-129 - SMT co	8290/1613	dioxfur	dioxfur	16	1.000000
2	U70926A_02	BLANK NONANE - SMT s/s	HOUSE	dioxfur	dioxfur	17	1.000000
3	U70926A_03	CAL CS3/CPM-5176-129 - SMT	8290/1613	dioxfur	dioxfur	16	1.000000
4	U70926A_04	CAL CS3-5176-135 - SMT	23	dioxfur	dioxfur	18	1.000000
5	U70926A_05	LCS LCS-14240 - SMT	8290/1613	dioxfur	dioxfur	19	1.000000
6	U70926A_06	LCS LCSD-14241 - SMT	8290/1613	dioxfur	dioxfur	20	1.000000
7	U70926A_07	LCS LCS-14277 - SMT	8290/tetras	dioxfur	dioxfur	21	1.000000
8	U70926A_08	LCS LCSD-14278 - SMT	8290/tetras	dioxfur	dioxfur	22	1.000000
9	U70926A_09	LCS LCS-14267 - SMT	8290/1613	dioxfur	dioxfur	23	1.000000
10	U70926A_10	BLANK NONANE - SMT	HOUSE	dioxfur	dioxfur	17	1.000000
11	U70926A_11	BLANK BLANK-14276 - SMT	8290/tetras	dioxfur	dioxfur	24	1.000000
12	U70926A_12	BLANK BLANK-14266 - SMT	8290/1613	dioxfur	dioxfur	25	1.000000
13	U70926A_13	BLANK BLANK-14239 - SMT	8290/1613	dioxfur	dioxfur	26	1.000000
14	U70926A_14	SAMP 1058647001 - SMT [redacted]	1613	dioxfur	dioxfur	27	1.000000
15	U70926A_15	SAMP 1058647002 - SMT [redacted]	1613	dioxfur	dioxfur	28	1.000000
16	U70926A_16	SAMP 1058647003 - SMT [redacted]	1613	dioxfur	dioxfur	29	1.000000
17	U70926A_17	SAMP 1058647004 - SMT [redacted]	1613	dioxfur	dioxfur	30	1.000000
18	U70926A_18	BLANK NONANE - SMT	HOUSE	dioxfur	dioxfur	17	1.000000
19	U70926A_19	CAL CS3/CPM-5176-129 - SMT	8290/1613	dioxfur	dioxfur	16	1.000000 1613 TD only

	File Name	File Text	Method	MS File	Inlet File	Bottle	Inject Volume
1	U70926B_01	BLANK NONANE - BAL	HOUSE	dioxfur	dioxfur	17	1.000000
2	U70926B_02	BLANK BLANK-14246 - BAL [redacted]	1613	dioxfur	dioxfur	31	1.000000
3	U70926B_03	SAMP 1058875001 - BAL [redacted]	1613-TD	dioxfur	dioxfur	32	1.000000
4	U70926B_04	SAMP 1058877001 - BAL [redacted]	1613-TD	dioxfur	dioxfur	33	1.000000
5	U70926B_05	SAMP 1058880001 - BAL [redacted]	1613-TD	dioxfur	dioxfur	34	1.000000
6	U70926B_06	SAMP 1058873001 - BAL [redacted]	1613-TD	dioxfur	dioxfur	35	1.000000
7	U70926B_07	SAMP 1058384001 - BAL [redacted] decanted	1613	dioxfur	dioxfur	36	1.000000
8	U70926B_08	SAMP 1058384002 - BAL [redacted] decanted	1613	dioxfur	dioxfur	37	1.000000
9	U70926B_09	SAMP 1058374001 - BAL [redacted]	1613-TD/F	dioxfur	dioxfur	38	1.000000
10	U70926B_10	SAMP 1058431001 - BAL [redacted]	1613	dioxfur	dioxfur	39	1.000000
11	U70926B_11	LCS LCS-14247 - BAL	1613	dioxfur	dioxfur	40	1.000000
12	U70926B_12	LCS LCSD-14248 - BAL	1613	dioxfur	dioxfur	41	1.000000

Swm 10/4/07

Comments (1) - [illegible] 09-26-07

PR = Preliminary Review

H003a (18OCT03)

Peer Review/Date Swm 10/4/07

Pace Analytical™

INSTRUMENT RUN LOG

Instrument 10MSHR09 Method 1613 B INJ Volume=1uL Date 09.27.07

User (Initials)	File Name	Sample ID	PR	Que	Comments
					①

	File Name	File Text	Method	MS File	Inlet File	Bottle	Vol
1	P70927A_01	BLANK NONANE - SMT fe	HOUSE	DFScreen	DFScreen	Tray01:2	1.0
2	P70927A_02	CAL CS3/CPM-5176-129 - SMT	8290/1613	dioxfur	dioxfur	Tray01:1	1.0
3	P70927A_03	BLANK NONANE - SMT	HOUSE	dioxfur	dioxfur	Tray01:2	1.0
4	P70927A_04	BLANK BLANK-14246 - SMT [redacted]	1613	dioxfur	dioxfur	Tray01:3	1.0
5	P70927A_05	BLANK BLANK-14276 - SMT	8290/1613	dioxfur	dioxfur	Tray01:4	1.0
6	P70927A_06	BLANK BLANK-14266 - SMT	8290/1613	dioxfur	dioxfur	Tray01:5	1.0
7	P70927A_07	SAMP 1058374001 - SMT [redacted]	1613-TD/F	dioxfur	dioxfur	Tray01:6	1.0
8	P70927A_08	SAMP 1058384001 - SMT [redacted]	1613	dioxfur	dioxfur	Tray01:7	1.0
9	P70927A_09	SAMP 1058384002 - SMT [redacted]	1613	dioxfur	dioxfur	Tray01:8	1.0
10	P70927A_10	SAMP 1058453001 - SMT [redacted]	8290	dioxfur	dioxfur	Tray01:9	1.0
11	P70927A_11	SAMP 1058949001 - SMT [redacted]	8290	dioxfur	dioxfur	Tray01:10	1.0
12	P70927A_12	SAMP 1058949002 - SMT [redacted]	8290	dioxfur	dioxfur	Tray01:11	1.0
13	P70927A_13	SAMP 1058431001 - SMT [redacted]	1613	dioxfur	dioxfur	Tray01:12	1.0
14	P70927A_14	SAMP 1058437001 - SMT [redacted] decnt'd	1613	dioxfur	dioxfur	Tray01:13	1.0
15	P70927A_15	LCS LCS-14247 - SMT	1613	dioxfur	dioxfur	Tray01:14	1.0
16	P70927A_16	LCS LCSD-14248 - SMT	1613	dioxfur	dioxfur	Tray01:15	1.0
17	P70927A_17	CAL CS3/CPM-5176-129 - SMT	8290/1613	dioxfur	dioxfur	Tray01:1	1.0

	File Name	File Text	Method	MS File	Inlet File	Bottle	Vol
1	P70927B_01	BLANK NONANE - BAL	HOUSE	dioxfur	dioxfur	Tray01:2	1.0
2	P70927B_02	BLANK NONANE - BAL	HOUSE	dioxfur	dioxfur	Tray01:2	1.0
3	P70927B_03	SAMP 1058557001 - BAL [redacted]	1613	dioxfur	dioxfur	Tray01:16	1.0
4	P70927B_04	SAMP 1058535001 - BAL [redacted]	1613	dioxfur	dioxfur	Tray01:17	1.0
5	P70927B_05	SAMP 1058720001 - BAL [redacted]	1613	dioxfur	dioxfur	Tray01:18	1.0
6	P70927B_06	SAMP 1058720002 - BAL [redacted]	1613	dioxfur	dioxfur	Tray01:19	1.0
7	P70927B_07	SAMP 1058720003 - BAL [redacted]	1613	dioxfur	dioxfur	Tray01:20	1.0
8	P70927B_08	SAMP 1058467001 - BAL [redacted]	1613	dioxfur	dioxfur	Tray01:21	1.0
9	P70927B_09	SAMP 1058430001 - BAL [redacted]	1613	dioxfur	dioxfur	Tray01:22	1.0
10	P70927B_10	SAMP 1058697001 - BAL [redacted]	1613	dioxfur	dioxfur	Tray01:23	1.0
11	P70927B_11	SAMP 1058647001 - BAL [redacted]	1613	dioxfur	dioxfur	Tray01:24	1.0
12	P70927B_12	SAMP 1058647002 - BAL [redacted]	1613	dioxfur	dioxfur	Tray01:25	1.0
13	P70927B_13	SAMP 1058647003 - BAL [redacted]	1613	dioxfur	dioxfur	Tray01:26	1.0
14	P70927B_14	SAMP 1058647004 - BAL [redacted]	1613	dioxfur	dioxfur	Tray01:27	1.0

Comments ① [illegible] 09.27.07

PR = Preliminary Review

BARR
Barr Engineering Company
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An EEO Employer

Minneapolis, MN • Hibbing, MN • Duluth, MN • Ann Arbor, MI • Jefferson City, MO

September 10, 2007

Mr. Steven M. Schoff
Project Manager
Superfund Unit 1
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

RE: Sediment Sampling and Analysis Plan and Quality Assurance Project Plan; Middle Twin Lake; Brooklyn Center, Minnesota

Dear Mr. Schoff,

Joslyn has received your letter dated September 5, 2007 which approved and provided comments on the Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP). Barr Engineering Co. (Barr) has prepared this letter on behalf of Joslyn Manufacturing Co. (Joslyn) to respond to MPCA's comments and to submit a revised QAPP for the work.

MPCA's letter specified that MPCA will split both the beach and non-beach samples from Middle Twin Lake for concurrent analysis by Pace Analytical Services (Pace). Joslyn requests that the MPCA require Pace to perform data quality protocols as specified in the recently-approved QAPP. Additionally, Joslyn requests an opportunity to review Pace's Contract Laboratory Program (CLP) data packages generated in association with this project to assure that proper QA/QC procedures have been implemented.

As communicated in an email to you dated September 6, 2007, Barr intends to initiate field sampling activities September 11, 2007, at 9:30 am at the Middle Twin Lake beach area.

The remaining portion of this letter responds to MPCA's QAPP-related comments. A revised QAPP is also enclosed with this letter.

1. **Comment: A1 - Title and Approval Sheet**: *While it is important that the laboratory project managers be aware of the requirements of the project, the positions are not usually responsible for laboratory operations and may not have the authority to stop operations, make changes to schedules, or require corrective actions be performed. I would recommend changing the Approval Signatures to the appropriate laboratory directors (or operations managers). I would also recommend adding the laboratory QA managers to the signature page.*

   Response: The project managers from Columbia Analytical Service (both Houston and Kelso) do have the authority to stop operations, make changes to the schedule, or require

corrective actions be performed relative to this project. Nonetheless, QA officers have been added to signature page.

2. **Comment: A3 – Distribution List,** page 1 of 3: *Barr should consider adding the laboratory directors and laboratory QA Officers to the distribution list.*

   Response: The QA officers have been added to the distribution list.

3. **Comment: A3 – Acronym List,** page 2 of 3: *CLP should be the Contract Laboratory Program. Barr should correct the acronym list.*

   Response: The requested changes have been made to the acronym list.

4. **Comment: A4 – Introduction,** page 1 of 1: *The publication date for R-5 is March of 2001. Barr should correct the date. I would also recommend referencing EPA Guidance for Quality Assurance Project Plans, EPA QA/G-5, December 2002.*

   Response: The requested changes have been made to the publication date and recommended Guidance Document reference has been added to the QAPP.

5. **Comment: A5 – Project Organization,** page 1 of 6: *At the end of March, 2007, Bill Scruton accepted a permanent QA position with the MPCA. In August, 2007, Luke Charpentier accepted the position of supervisor of the Performance Management and Quality Unit at the MPCA. Bill Scruton will serve as the MPCA's QA Officer for this project. Barr should re-do Figure 1 to reflect these changes and the addition of the laboratory directors and QA Officers. Barr should also identify the person responsible for maintaining and distributing the official approved QAPP.*

   Response: Figure 1 has been updated to reflect the changes in the organizational structure at the MPCA. Additionally, laboratory project managers and QA officers have been included in the organizational chart. The responsibility for maintenance and distribution of the QAPP has been added to section A.5.2.3.

6. **Comment: A5.3 – Columbia Analytical Services, Inc.,** page 4 of 6: *CAS is **not** certified by NELAC to perform environmental analyses in the State of Minnesota. CAS **is** certified by the Minnesota Department of Health through the Environmental Laboratory Certification Program to perform environmental analyses. Barr should correct the certification agency.*

   Response: CAS certifications have been updated to reflect the needs of this project.

7. **Comment: A5.3.1,** page 4 of 6: *Barr should add the project responsibilities for the Columbia Analytical Services, Inc. lab directors. Lynda Huchestein and Jane Freemyer are CAS project managers. Their positions are not responsible for laboratory operations and they may not have the authority to stop operations, make changes to schedules, or require corrective actions be performed.*

Response: Please see response to comment number 1, above.

8. **Comment: A5.3.2,** page 4 of 6: *Jane Freemyer is identified as one of the CAS QA Officers for the project. She is also identified as a project manager for the project. This may present a conflict of interest. There needs to be a clear separation between the QA Officer duties and the operational duties of a project manager. Barr should ask CAS to consider these assignments and the impact on the project.*

Response: Project assignments have been charged at CAS (Houston) to reflect this concern. Darren Biles has been assigned as the project manager and Jane Freemyer will remain the QA officer for this project.

9. **Comment: A7,** page 1 of 2: *The proposed sampling locations in Middle Twin Lake are shown on Figure 2. Figure 3 is a map of reference lakes. Barr should correct the reference.*

Response: The figure reference in this paragraph has been changed.

10. **Comment: A7,** page 1 of 2: *What is the general schedule for the sample collection, sample analyses, and report writing?*

Response: Details regarding the general schedule for sample collection, sample analyses and report writing have been added to A7.

11. **Comment: A7.1,** page 1 of 2: *Table 2 lists the MRLs for dioxins/furans in units of ng/kg. Will the results be reported on a "dry weight" basis? Barr should clarify.*

Response: Table 2 has been updated to reflect that the sediment samples will be reported on a dry-weight basis.

12. **Comment: A8.2,** page 1 of 1: *The Houston, Texas laboratory is not listed as a certified laboratory with the Minnesota Department of Health. Since dioxins/furans are available for certification, has the laboratory applied to the MDH program for certification?*

Appendix F of the Quality Assurance Manual lists the certificates that the lab holds but the analytes are not listed. Barr should supply the laboratory certificates pertinent to the project in an Appendix and reference them in this section.

Response: PCDD/PCDF analyses for soils and solids are not currently a certifiable parameter in the State of Minnesota and therefore the MDH certification requested by the MPCA is not achievable. However, PCDD/PCDF analyses are certifiable for non-potable and drinking water. The MDH certification requirement of PCDD/PCDF in waters is a relatively recent development (June 24, 2007) and the laboratory is currently in the process applying this MN certification. Appendix B of the QAPP now includes the CAS (Houston) certificate and analyte list. Also included in this appendix are copies of CAS's (Kelso) MDH certificate and analyte list.

13. **Comment: A9.1.1,** page 1 of 8: *In Step 2 of Table 3, Barr states that the PCDD/PCDF concentrations will be compared to the MDH's Sediment Screening Value of 50 ppt TEQ. What is TEC? Is it TCDD Toxic Equivalent Concentration? How is the TEQ calculated? Since dioxins differ in potency, what factors are used to adjust the raw concentration to get the TEQ? Barr should clarify this.*

Response: The acronym TEQ has been clarified in the acronym list and on Table 3. 2005 WHO_{DF}TEFs will be used to calculate TEQs per the MDH guidance document, *Methods for Estimating the Carcinogenic Health Risks from Dioxin-Like Compounds* (2006).

14. **Comment: A9.2.2.2,** page 6 of 8: *In the PCDD/PCDF analysis, are surrogates added to each sample? If they are, Barr should include this information in their discussion.*

Response: A discussion of isotopically-labeled standard recoveries has been added to the referenced paragraph.

15. **Comment: A9.3.1,** page 8 of 8: *Barr defined the frequency for collecting field blanks. However, the QC acceptance criteria are not identified. Barr should provide this information.*

Response: QC acceptance criterion for field blanks has been identified in the referenced section.

16. **Comment: A10,** pages 1 and 2 of 2: *Barr should include information on how the current copy (and future revisions) of the QAPP will be distributed. Barr should also describe*

where the project files will be retained, whether the reports are needed in an electronic format or just a hard copy, and what will be the disposition of the records (off-site storage, return to the MPCA, or destruction). Does Barr have a retention schedule for this material?

Response: QAPP distribution and maintenance has been clarified (see response to comment 5). Details regarding the retention of data and project files have been added to the section.

17. **Comment: B2.1,** page 1 of 5: *Barr should describe what happens if equipment breaks down (are replacements borrowed, purchased, or extras available in the field?) or if sample containers are broken.*

Response: Equipment break-down and broken sample container protocols have been included in the referenced section.

18. **Comment: B3.3,** pages 2 and 3 of 3: *Barr should describe what happens to any remaining sample aliquots after sample analysis (are the samples returned to the site or will the laboratory dispose of them?).*

Response: Final disposition of all remaining sample aliquots has been added to the referenced section. It is expected that the laboratory will dispose of all remaining samples.

19. **Comment: B5.1,** page 1 of 2: *Barr should describe the corrective actions to be taken if problems arise in the field (along with who's responsible for the implementation of the actions).*

Response: Barr's field staff is well trained and experienced in sediment investigations. Should any corrective action be required, team members will contact either the project manager or the QA manager (or both) before proceeding with any corrective action. Clarification of these roles has been added to the referenced section.

20. **Comment: C1,** page 1 of 2: *Barr states that audits of field and laboratory activities include both internal and external components. However, the rest of Section C1 deals with just the laboratory. Barr should also discuss field audits.*

Response: The schedule of the field portion of this investigation is expected to take less than two weeks for completion and no field audit is anticipated.

21. **Comment: C1.1.2,** page 2 of 2: *Barr should include a requirement to analyze Proficiency Testing (PT) Samples as part of the external laboratory assessment. The results of the PT samples should be forwarded to the Project Managers.*

Response: CAS, Houston and Kelso, are involved in ongoing proficiency testing (PT) as part of laboratory accreditation. The results of the most recent associated PT evaluations have been added to Appendix B.

22. **Comment: C2,** page 1 of 3: *The first sentence indicates that there are three classes of problems. However, only two are described. Barr should clarify whether there are two or three classes of problems.*

Response: Changes to the paragraph to clarify two classes of problems exist.

Please let me know if you have any questions about our responses to your comments or the QAPP revisions.

Sincerely,

Dale W. Finnesgaard

Dale W. Finnesgaard
Vice President

Encl.

CC: Carl Grabinski (Joslyn)
Carlos Stern (Carlos Stern and Associates)
Jim Payne (Environmental Law Group)
Bill Scruton (MPCA)

From: "Chris Brueske" <Chris.Brueske@state.mn.us>
To: "Scott Unze" <Scott.Unze@pacelabs.com>
Date: 11/14/2007 4:40:03 PM
Subject: Fwd: FW: Dioxin Report

Hi Scott

We need to request a level 4 CLP data package for the attached samples that Pace analyzed for Dioxin. Please send the price and the time line for completed this package to Bill Scruton and CC Myra and myself. Please also make Myra Kunas your primary contact for MDH work and keep me as your secondary contact. Since MDH was the client for this work you can send the invoice and the data package to us when it is complete, and we will forward on to Bill.

Thanks,

Chris

Chris Brueske
Operations Coordinator

Environmental Section
Public Health Laboratory Division
Minnesota Department of Health
601 Robert Street North
St. Paul, MN 55155-2531

Phone: 651-201-5454
Fax: 651-201-5301

CC: "Myra Kunas" <Myra.Kunas@state.mn.us>

Appendix B

Sample Analysis Summary

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Minnesota Dept. of Health

Client's Sample ID	MTLB-200729487		
Lab Sample ID	1058949001		
Filename	P70927A_11		
Injected By	SMT		
Total Amount Extracted	12.4 g	Matrix	Solid
% Moisture	17.5	Dilution	NA
Dry Weight Extracted	10.2 g	Collected	09/11/2007
ICAL Date	08/29/2007	Received	09/14/2007
CCal Filename(s)	P70927A_02 & P70927A_17	Extracted	09/20/2007
Method Blank ID	BLANK-14266	Analyzed	09/27/2007 15:37

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.20		2,3,7,8-TCDF-13C	2.00	83
Total TCDF	ND	-----	0.20		2,3,7,8-TCDD-13C	2.00	84
					1,2,3,7,8-PeCDF-13C	2.00	80
2,3,7,8-TCDD	ND	-----	0.20		2,3,4,7,8-PeCDF-13C	2.00	82
Total TCDD	ND	-----	0.20		1,2,3,7,8-PeCDD-13C	2.00	98
					1,2,3,4,7,8-HxCDF-13C	2.00	89
1,2,3,7,8-PeCDF	ND	-----	0.98		1,2,3,6,7,8-HxCDF-13C	2.00	81
2,3,4,7,8-PeCDF	ND	-----	0.98		2,3,4,6,7,8-HxCDF-13C	2.00	82
Total PeCDF	ND	-----	0.98		1,2,3,7,8,9-HxCDF-13C	2.00	76
					1,2,3,4,7,8-HxCDD-13C	2.00	94
1,2,3,7,8-PeCDD	ND	-----	0.98		1,2,3,6,7,8-HxCDD-13C	2.00	88
Total PeCDD	ND	-----	0.98		1,2,3,4,6,7,8-HpCDF-13C	2.00	73
					1,2,3,4,7,8,9-HpCDF-13C	2.00	56
1,2,3,4,7,8-HxCDF	ND	-----	0.98		1,2,3,4,6,7,8-HpCDD-13C	2.00	61
1,2,3,6,7,8-HxCDF	ND	-----	0.98		OCDD-13C	4.00	38 P
2,3,4,6,7,8-HxCDF	ND	-----	0.98				
1,2,3,7,8,9-HxCDF	ND	-----	0.98		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.98		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.98		2,3,7,8-TCDD-37Cl4	0.20	78
1,2,3,6,7,8-HxCDD	ND	-----	0.98				
1,2,3,7,8,9-HxCDD	ND	-----	0.98				
Total HxCDD	ND	-----	0.98				
1,2,3,4,6,7,8-HpCDF	ND	-----	0.98		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.98		Equivalence: 0.018 ng/Kg		
Total HpCDF	ND	-----	0.98		(Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	1.5	-----	0.98	J			
Total HpCDD	4.0	-----	0.98	J			
OCDF	ND	-----	2.00				
OCDD	9.1	-----	2.300	JA			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Value below calibration range
A = Reporting Limit based on signal to noise
P = Recovery outside target range

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Sample Analysis Results

Client - Minnesota Dept. of Health

Client's Sample ID	MTLNB-200729488		
Lab Sample ID	1058949002		
Filename	P70927A_12		
Injected By	SMT		
Total Amount Extracted	13.5 g	Matrix	Solid
% Moisture	24.7	Dilution	NA
Dry Weight Extracted	10.1 g	Collected	09/11/2007
ICAL Date	08/29/2007	Received	09/14/2007
CCal Filename(s)	P70927A_02 & P70927A_17	Extracted	09/20/2007
Method Blank ID	BLANK-14266	Analyzed	09/27/2007 16:25

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.20		2,3,7,8-TCDF-13C	2.00	86
Total TCDF	ND	-----	0.20		2,3,7,8-TCDD-13C	2.00	88
					1,2,3,7,8-PeCDF-13C	2.00	80
2,3,7,8-TCDD	ND	-----	0.20		2,3,4,7,8-PeCDF-13C	2.00	80
Total TCDD	ND	-----	0.20		1,2,3,7,8-PeCDD-13C	2.00	93
					1,2,3,4,7,8-HxCDF-13C	2.00	87
1,2,3,7,8-PeCDF	ND	-----	0.99		1,2,3,6,7,8-HxCDF-13C	2.00	79
2,3,4,7,8-PeCDF	ND	-----	0.99		2,3,4,6,7,8-HxCDF-13C	2.00	79
Total PeCDF	ND	-----	0.99		1,2,3,7,8,9-HxCDF-13C	2.00	81
					1,2,3,4,7,8-HxCDD-13C	2.00	93
1,2,3,7,8-PeCDD	ND	-----	0.99		1,2,3,6,7,8-HxCDD-13C	2.00	83
Total PeCDD	ND	-----	0.99		1,2,3,4,6,7,8-HpCDF-13C	2.00	75
					1,2,3,4,7,8,9-HpCDF-13C	2.00	65
1,2,3,4,7,8-HxCDF	ND	-----	0.99		1,2,3,4,6,7,8-HpCDD-13C	2.00	80
1,2,3,6,7,8-HxCDF	ND	-----	0.99		OCDD-13C	4.00	58
2,3,4,6,7,8-HxCDF	ND	-----	0.99				
1,2,3,7,8,9-HxCDF	ND	-----	0.99		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.99		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.99		2,3,7,8-TCDD-37Cl4	0.20	88
1,2,3,6,7,8-HxCDD	ND	-----	0.99				
1,2,3,7,8,9-HxCDD	ND	-----	0.99				
Total HxCDD	2.3	-----	0.99	J			
1,2,3,4,6,7,8-HpCDF	1.4	-----	0.99	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.99		Equivalence: 0.085 ng/Kg		
Total HpCDF	4.2	-----	0.99	J	(Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	5.7	-----	0.99				
Total HpCDD	13.0	-----	0.99				
OCDF	3.0	-----	2.00	J			
OCDD	44.0	-----	2.00				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Value below calibration range

REPORT OF LABORATORY ANALYSIS

Appendix C

QC and Calibration Results Summary

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-14266	Matrix	Solid
Filename	P70927A_06	Dilution	NA
Total Amount Extracted	20.2 g	Extracted	09/20/2007
ICAL Date	08/29/2007	Analyzed	09/27/2007 11:27
CCal Filename(s)	P70927A_02 & P70927A_17	Injected By	SMT

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.099	2,3,7,8-TCDF-13C	2.00	88
Total TCDF	ND	-----	0.099	2,3,7,8-TCDD-13C	2.00	91
				1,2,3,7,8-PeCDF-13C	2.00	82
2,3,7,8-TCDD	ND	-----	0.099	2,3,4,7,8-PeCDF-13C	2.00	89
Total TCDD	ND	-----	0.099	1,2,3,7,8-PeCDD-13C	2.00	99
				1,2,3,4,7,8-HxCDF-13C	2.00	86
1,2,3,7,8-PeCDF	ND	-----	0.490	1,2,3,6,7,8-HxCDF-13C	2.00	83
2,3,4,7,8-PeCDF	ND	-----	0.490	2,3,4,6,7,8-HxCDF-13C	2.00	84
Total PeCDF	ND	-----	0.490	1,2,3,7,8,9-HxCDF-13C	2.00	87
				1,2,3,4,7,8-HxCDD-13C	2.00	96
1,2,3,7,8-PeCDD	ND	-----	0.490	1,2,3,6,7,8-HxCDD-13C	2.00	93
Total PeCDD	ND	-----	0.490	1,2,3,4,6,7,8-HpCDF-13C	2.00	88
				1,2,3,4,7,8,9-HpCDF-13C	2.00	76
1,2,3,4,7,8-HxCDF	ND	-----	0.490	1,2,3,4,6,7,8-HpCDD-13C	2.00	96
1,2,3,6,7,8-HxCDF	ND	-----	0.490	OCDD-13C	4.00	81
2,3,4,6,7,8-HxCDF	ND	-----	0.490			
1,2,3,7,8,9-HxCDF	ND	-----	0.490	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.490	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.490	2,3,7,8-TCDD-37Cl4	0.20	88
1,2,3,6,7,8-HxCDD	ND	-----	0.490			
1,2,3,7,8,9-HxCDD	ND	-----	0.490			
Total HxCDD	ND	-----	0.490			
1,2,3,4,6,7,8-HpCDF	ND	-----	0.490	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.490	Equivalence: 0.00 ng/Kg		
Total HpCDF	ND	-----	0.490	(Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.490			
Total HpCDD	ND	-----	0.490			
OCDF	ND	-----	0.990			
OCDD	ND	-----	0.990			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-14267		
Filename	U70926A_09	Matrix	Solid
Total Amount Extracted	20.3 g	Dilution	NA
ICAL Date	09/21/2007	Extracted	09/20/2007
CCal Filename(s)	U70926A_03 & U70926A_19	Analyzed	09/26/2007 13:56
Method Blank ID	BLANK-14266	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.16	81	2,3,7,8-TCDF-13C	2.00	88
Total TCDF				2,3,7,8-TCDD-13C	2.00	81
				1,2,3,7,8-PeCDF-13C	2.00	78
2,3,7,8-TCDD	0.20	0.18	91	2,3,4,7,8-PeCDF-13C	2.00	84
Total TCDD				1,2,3,7,8-PeCDD-13C	2.00	97
				1,2,3,4,7,8-HxCDF-13C	2.00	74
1,2,3,7,8-PeCDF	1.00	0.81	81	1,2,3,6,7,8-HxCDF-13C	2.00	70
2,3,4,7,8-PeCDF	1.00	0.81	81	2,3,4,6,7,8-HxCDF-13C	2.00	69
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.00	68
				1,2,3,4,7,8-HxCDD-13C	2.00	89
1,2,3,7,8-PeCDD	1.00	0.83	83	1,2,3,6,7,8-HxCDD-13C	2.00	88
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.00	81
				1,2,3,4,7,8,9-HpCDF-13C	2.00	68
1,2,3,4,7,8-HxCDF	1.00	0.85	85	1,2,3,4,6,7,8-HpCDD-13C	2.00	87
1,2,3,6,7,8-HxCDF	1.00	0.87	87	OCDD-13C	4.00	71
2,3,4,6,7,8-HxCDF	1.00	0.90	90			
1,2,3,7,8,9-HxCDF	1.00	0.88	88	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	0.87	87	2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,6,7,8-HxCDD	1.00	0.86	86			
1,2,3,7,8,9-HxCDD	1.00	0.84	84			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.00	0.99	99			
1,2,3,4,7,8,9-HpCDF	1.00	1.02	102			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.00	0.90	90			
Total HpCDD						
OCDF	2.00	1.97	99 Y			
OCDD	2.00	2.03	101			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
P = Recovery outside of target range
X = Background subtracted value
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

Initial Calibration (ICAL) - Response Factor Summary
Method 1613/8290

ICAL ID	P70829	Data Files:		Time	Injected
Calibration Date	08/29/2007	CS-1	P70829B_04	18:38	BAL
Instrument	10MSHR09 (P)	CS-2	P70829B_03	17:51	BAL
Column Phase	DB-5MS 0.25mm	CS-3	P70829B_02	16:49	BAL
Column ID No.	US6872627H	CS-4	P70829B_06	20:14	BAL
		CS-5	P70829B_05	19:26	BAL

Isomer	CS-1	CS-2	CS-3	CS-4	CS-5	Ave RF	%RSD
2,3,7,8-TCDF	1.0411	1.0991	1.1147	1.1922	1.1850	1.1264	5.60
2,3,7,8-TCDD	0.9298	0.9940	1.1040	1.0570	1.0707	1.0311	6.72
1,2,3,7,8-PeCDF	0.9688	0.9892	0.9995	1.0831	1.0627	1.0207	4.85
2,3,4,7,8-PeCDF	1.0042	1.0572	1.0629	1.1189	1.1038	1.0694	4.20
1,2,3,7,8-PeCDD	1.0342	1.0513	1.0688	1.1462	1.1139	1.0829	4.27
1,2,3,4,7,8-HxCDF	1.2081	1.2447	1.2240	1.2928	1.2475	1.2434	2.57
1,2,3,6,7,8-HxCDF	1.1123	1.1709	1.1886	1.2397	1.2018	1.1826	3.96
2,3,4,6,7,8-HxCDF	1.1476	1.1564	1.1920	1.2740	1.2139	1.1968	4.25
1,2,3,7,8,9-HxCDF	1.1192	1.1549	1.1433	1.2739	1.1923	1.1767	5.13
1,2,3,4,7,8-HxCDD	1.0401	1.0656	1.0725	1.1482	1.1028	1.0859	3.81
1,2,3,6,7,8-HxCDD	0.9514	1.0030	0.9995	1.0496	1.0163	1.0040	3.53
1,2,3,7,8,9-HxCDD	1.0402	0.9946	1.0682	1.1241	1.0664	1.0587	4.45
1,2,3,4,6,7,8-HpCDF	1.3347	1.4258	1.3985	1.4989	1.4291	1.4174	4.18
1,2,3,4,7,8,9-HpCDF	1.2292	1.2365	1.2473	1.3481	1.2948	1.2712	3.94
1,2,3,4,6,7,8-HpCDD	1.0241	1.0790	1.0554	1.1505	1.0976	1.0813	4.39
OCDF	1.2463	1.3725	1.4065	1.6024	1.5023	1.4260	9.44
OCDD	1.0766	1.1286	1.1026	1.2262	1.1199	1.1308	5.03
Total PeCDF	0.9865	1.0232	1.0312	1.1010	1.0832	1.0450	4.46
Total HxCDF	1.1468	1.1817	1.1870	1.2701	1.2139	1.1999	3.83
Total HxCDD	1.0106	1.0211	1.0467	1.1073	1.0618	1.0495	3.64
Total HpCDF	1.2820	1.3312	1.3229	1.4235	1.3620	1.3443	3.92
2,3,7,8-TCDF-13C	1.4861	1.4883	1.5201	1.4721	1.5333	1.5000	1.71
2,3,7,8-TCDD-13C	1.0173	1.0098	1.0163	0.9937	1.0543	1.0183	2.19
2,3,7,8-TCDD-37Cl4	1.0665	1.0633	1.0498	1.0965	1.1480	1.0848	3.61
1,2,3,7,8-PeCDF-13C	1.2927	1.2855	1.2983	1.2256	1.4109	1.3026	5.16
2,3,4,7,8-PeCDF-13C	1.2718	1.2833	1.3229	1.2298	1.4061	1.3028	5.11
1,2,3,7,8-PeCDD-13C	0.7285	0.7395	0.7645	0.7157	0.8182	0.7533	5.38
1,2,3,4,7,8-HxCDF-13C	1.1586	1.1686	1.1635	1.1732	1.2097	1.1747	1.73
1,2,3,6,7,8-HxCDF-13C	1.4420	1.4958	1.4616	1.4646	1.4731	1.4674	1.33
2,3,4,6,7,8-HxCDF-13C	1.3399	1.3933	1.3710	1.3505	1.3874	1.3684	1.68
1,2,3,7,8,9-HxCDF-13C	1.1444	1.1386	1.1372	1.1258	1.1934	1.1479	2.30
1,2,3,4,7,8-HxCDD-13C	0.8414	0.8512	0.8459	0.8626	0.8891	0.8580	2.22
1,2,3,6,7,8-HxCDD-13C	1.0630	1.0989	1.0927	1.0977	1.0857	1.0876	1.35
1,2,3,4,6,7,8-HpCDF-13C	0.9756	0.9871	0.9873	0.9623	1.0002	0.9825	1.45
1,2,3,4,7,8,9-HpCDF-13C	0.8759	0.8728	0.8494	0.8515	0.9239	0.8747	3.43
1,2,3,4,6,7,8-HpCDD-13C	0.7321	0.7286	0.7453	0.7271	0.7686	0.7403	2.34
OCDD-13C	0.7165	0.6716	0.6967	0.6999	0.7659	0.7101	4.94

REPORT OF LABORATORY ANALYSIS

Initial Calibration (ICAL) - Isotope Ratio Summary
Method 1613/8290

ICAL ID	P70829	Data Files:		Time	Injected
Calibration Date	08/29/2007	CS-1	P70829B_04	18:38	BAL
Instrument	10MSHR09 (P)	CS-2	P70829B_03	17:51	BAL
Column Phase	DB-5MS 0.25mm	CS-3	P70829B_02	16:49	BAL
Column ID No.	US6872627H	CS-4	P70829B_06	20:14	BAL
		CS-5	P70829B_05	19:26	BAL

Isomer	CS-1	CS-2	CS-3	CS-4	CS-5	Limits
2,3,7,8-TCDF	0.85	0.77	0.78	0.77	0.78	0.65 - 0.89
2,3,7,8-TCDD	0.80	0.78	0.81	0.78	0.79	0.65 - 0.89
1,2,3,7,8-PeCDF	1.53	1.55	1.55	1.57	1.57	1.32 - 1.78
2,3,4,7,8-PeCDF	1.63	1.57	1.55	1.56	1.57	1.32 - 1.78
1,2,3,7,8-PeCDD	0.59	0.60	0.63	0.62	0.64	0.52 - 0.70
1,2,3,4,7,8-HxCDF	1.22	1.28	1.26	1.25	1.25	1.05 - 1.43
1,2,3,6,7,8-HxCDF	1.18	1.25	1.28	1.24	1.27	1.05 - 1.43
2,3,4,6,7,8-HxCDF	1.29	1.25	1.24	1.24	1.26	1.05 - 1.43
1,2,3,7,8,9-HxCDF	1.16	1.34	1.23	1.25	1.27	1.05 - 1.43
1,2,3,4,7,8-HxCDD	1.27	1.23	1.26	1.31	1.27	1.05 - 1.43
1,2,3,6,7,8-HxCDD	1.19	1.23	1.26	1.22	1.27	1.05 - 1.43
1,2,3,7,8,9-HxCDD	1.23	1.23	1.25	1.26	1.26	1.05 - 1.43
1,2,3,4,6,7,8-HpCDF	1.05	1.07	1.05	1.04	1.05	0.88 - 1.20
1,2,3,4,7,8,9-HpCDF	1.03	1.11	1.02	1.04	1.05	0.88 - 1.20
1,2,3,4,6,7,8-HpCDD	1.06	1.08	1.03	1.04	1.06	0.88 - 1.20
OCDF	0.93	0.89	0.89	0.91	0.91	0.76 - 1.02
OCDD	0.97	0.87	0.89	0.90	0.90	0.76 - 1.02
1,2,3,4-TCDD-13C	0.80	0.81	0.80	0.79	0.80	0.65 - 0.89
1,2,3,7,8,9-HxCDD-13C	1.24	1.28	1.27	1.28	1.28	1.05 - 1.43
2,3,7,8-TCDF-13C	0.79	0.80	0.79	0.79	0.81	0.65 - 0.89
2,3,7,8-TCDD-13C	0.79	0.79	0.81	0.79	0.80	0.65 - 0.89
1,2,3,7,8-PeCDF-13C	1.60	1.60	1.65	1.61	1.60	1.32 - 1.78
2,3,4,7,8-PeCDF-13C	1.59	1.60	1.58	1.59	1.61	1.32 - 1.78
1,2,3,7,8-PeCDD-13C	1.60	1.61	1.62	1.60	1.59	1.32 - 1.78
1,2,3,4,7,8-HxCDF-13C	0.52	0.52	0.53	0.53	0.52	0.43 - 0.59
1,2,3,6,7,8-HxCDF-13C	0.52	0.52	0.53	0.53	0.54	0.43 - 0.59
2,3,4,6,7,8-HxCDF-13C	0.53	0.52	0.52	0.53	0.53	0.43 - 0.59
1,2,3,7,8,9-HxCDF-13C	0.54	0.53	0.52	0.52	0.53	0.43 - 0.59
1,2,3,4,7,8-HxCDD-13C	1.29	1.28	1.27	1.27	1.29	1.05 - 1.43
1,2,3,6,7,8-HxCDD-13C	1.26	1.26	1.26	1.26	1.26	1.05 - 1.43
1,2,3,4,6,7,8-HpCDF-13C	0.45	0.45	0.45	0.45	0.45	0.37 - 0.51
1,2,3,4,7,8,9-HpCDF-13C	0.45	0.45	0.47	0.45	0.45	0.37 - 0.51
1,2,3,4,6,7,8-HpCDD-13C	1.07	1.05	1.05	1.07	1.05	0.88 - 1.20
OCDD-13C	0.90	0.90	0.90	0.89	0.90	0.76 - 1.02

REPORT OF LABORATORY ANALYSIS

Initial Calibration (ICAL) - Response Factor Summary
Method 1613/8290

ICAL ID	U70921	Data Files:		Time	Injected
Calibration Date	09/21/2007	CS-1	U70921A_17	18:00	BAL
Instrument	10MSHR06 (U)	CS-2	U70921A_16	17:12	BAL
Column Phase	DB-5MS 0.25mm	CS-3	U70921A_15	16:20	BAL
Column ID No.	US6809245H	CS-4	U70921A_19	19:35	BAL
		CS-5	U70921A_18	18:47	BAL

Isomer	CS-1	CS-2	CS-3	CS-4	CS-5	Ave RF	%RSD
2,3,7,8-TCDF	1.3343	1.3421	1.3167	1.2744	1.2790	1.3093	2.38
2,3,7,8-TCDD	1.0895	1.0798	1.1025	1.0581	1.0069	1.0673	3.51
1,2,3,7,8-PeCDF	1.2006	1.1659	1.1569	1.1656	1.1368	1.1652	1.98
2,3,4,7,8-PeCDF	1.2732	1.2218	1.2025	1.1892	1.1856	1.2145	2.95
1,2,3,7,8-PeCDD	1.1316	1.1130	1.1068	1.1289	1.1008	1.1162	1.21
1,2,3,4,7,8-HxCDF	1.3784	1.3520	1.3276	1.3597	1.3269	1.3489	1.63
1,2,3,6,7,8-HxCDF	1.3537	1.2736	1.2644	1.2783	1.2588	1.2858	3.01
2,3,4,6,7,8-HxCDF	1.3422	1.2922	1.2667	1.2645	1.2771	1.2885	2.48
1,2,3,7,8,9-HxCDF	1.3243	1.2744	1.2487	1.2965	1.2635	1.2815	2.31
1,2,3,4,7,8-HxCDD	1.1920	1.1661	1.1257	1.1552	1.1122	1.1502	2.77
1,2,3,6,7,8-HxCDD	1.1305	1.0740	1.0599	1.0762	1.0352	1.0752	3.25
1,2,3,7,8,9-HxCDD	1.1607	1.1290	1.1042	1.1712	1.0987	1.1328	2.87
1,2,3,4,6,7,8-HpCDF	1.4542	1.4267	1.4055	1.4543	1.3856	1.4253	2.12
1,2,3,4,7,8,9-HpCDF	1.3112	1.2718	1.2440	1.2966	1.2266	1.2700	2.77
1,2,3,4,6,7,8-HpCDD	1.1346	1.1485	1.1305	1.2142	1.1280	1.1512	3.14
OCDF	1.4315	1.4681	1.4910	1.6246	1.5735	1.5177	5.22
OCDD	1.1467	1.1605	1.1164	1.1961	1.1246	1.1489	2.76
Total PeCDF	1.2369	1.1938	1.1797	1.1774	1.1612	1.1898	2.42
Total HxCDF	1.3496	1.2980	1.2768	1.2998	1.2816	1.3012	2.22
Total HxCDD	1.1611	1.1231	1.0966	1.1342	1.0821	1.1194	2.78
Total HpCDF	1.3827	1.3492	1.3247	1.3755	1.3061	1.3476	2.42
2,3,7,8-TCDF-13C	1.4121	1.4000	1.3979	1.4135	1.4587	1.4164	1.74
2,3,7,8-TCDD-13C	1.0290	1.0207	1.0258	1.0290	1.0760	1.0361	2.18
2,3,7,8-TCDD-37Cl4	1.1627	1.1365	1.0991	1.1214	1.1369	1.1313	2.06
1,2,3,7,8-PeCDF-13C	1.3084	1.3174	1.3340	1.3813	1.4824	1.3647	5.24
2,3,4,7,8-PeCDF-13C	1.2485	1.2786	1.3017	1.3490	1.4511	1.3258	5.96
1,2,3,7,8-PeCDD-13C	0.7391	0.7460	0.7543	0.7709	0.8422	0.7705	5.42
1,2,3,4,7,8-HxCDF-13C	1.3373	1.3519	1.3539	1.3361	1.3357	1.3430	0.68
1,2,3,6,7,8-HxCDF-13C	1.5737	1.6108	1.5819	1.5633	1.5436	1.5746	1.57
2,3,4,6,7,8-HxCDF-13C	1.4963	1.5167	1.5237	1.4972	1.4610	1.4990	1.63
1,2,3,7,8,9-HxCDF-13C	1.3097	1.3080	1.2919	1.3272	1.3195	1.3113	1.02
1,2,3,4,7,8-HxCDD-13C	0.8854	0.8887	0.8952	0.8737	0.8945	0.8875	0.98
1,2,3,6,7,8-HxCDD-13C	1.0407	1.0619	1.0512	1.0261	1.0365	1.0433	1.32
1,2,3,4,6,7,8-HpCDF-13C	0.9448	0.9547	0.9460	0.9136	0.9524	0.9423	1.76
1,2,3,4,7,8,9-HpCDF-13C	0.8554	0.8578	0.8160	0.8535	0.8913	0.8548	3.12
1,2,3,4,6,7,8-HpCDD-13C	0.6894	0.7052	0.6794	0.6610	0.6907	0.6851	2.39
OCDD-13C	0.6877	0.6810	0.6290	0.6974	0.7558	0.6902	6.56

REPORT OF LABORATORY ANALYSIS

Initial Calibration (ICAL) - Isotope Ratio Summary
Method 1613/8290

ICAL ID	U70921	Data Files:		Time	Injected
Calibration Date	09/21/2007	CS-1	U70921A_17	18:00	BAL
Instrument	10MSHR06 (U)	CS-2	U70921A_16	17:12	BAL
Column Phase	DB-5MS 0.25mm	CS-3	U70921A_15	16:20	BAL
Column ID No.	US6809245H	CS-4	U70921A_19	19:35	BAL
		CS-5	U70921A_18	18:47	BAL

Isomer	CS-1	CS-2	CS-3	CS-4	CS-5	Limits
2,3,7,8-TCDF	0.87	0.82	0.78	0.78	0.80	0.65 - 0.89
2,3,7,8-TCDD	0.80	0.82	0.78	0.79	0.80	0.65 - 0.89
1,2,3,7,8-PeCDF	1.53	1.58	1.57	1.58	1.59	1.32 - 1.78
2,3,4,7,8-PeCDF	1.56	1.49	1.59	1.57	1.58	1.32 - 1.78
1,2,3,7,8-PeCDD	0.64	0.63	0.65	0.63	0.64	0.52 - 0.70
1,2,3,4,7,8-HxCDF	1.26	1.28	1.27	1.25	1.26	1.05 - 1.43
1,2,3,6,7,8-HxCDF	1.26	1.26	1.27	1.29	1.26	1.05 - 1.43
2,3,4,6,7,8-HxCDF	1.27	1.21	1.26	1.26	1.27	1.05 - 1.43
1,2,3,7,8,9-HxCDF	1.25	1.27	1.28	1.27	1.27	1.05 - 1.43
1,2,3,4,7,8-HxCDD	1.32	1.32	1.29	1.28	1.29	1.05 - 1.43
1,2,3,6,7,8-HxCDD	1.20	1.22	1.27	1.27	1.28	1.05 - 1.43
1,2,3,7,8,9-HxCDD	1.24	1.33	1.26	1.25	1.27	1.05 - 1.43
1,2,3,4,6,7,8-HpCDF	1.10	1.08	1.07	1.06	1.06	0.88 - 1.20
1,2,3,4,7,8,9-HpCDF	1.07	1.07	1.05	1.05	1.05	0.88 - 1.20
1,2,3,4,6,7,8-HpCDD	1.05	1.07	1.03	1.04	1.06	0.88 - 1.20
OCDF	0.96	0.92	0.94	0.93	0.93	0.76 - 1.02
OCDD	0.85	0.90	0.92	0.90	0.91	0.76 - 1.02
1,2,3,4-TCDD-13C	0.80	0.79	0.79	0.79	0.80	0.65 - 0.89
1,2,3,7,8,9-HxCDD-13C	1.26	1.24	1.25	1.26	1.28	1.05 - 1.43
2,3,7,8-TCDF-13C	0.80	0.82	0.80	0.81	0.80	0.65 - 0.89
2,3,7,8-TCDD-13C	0.79	0.78	0.79	0.79	0.80	0.65 - 0.89
1,2,3,7,8-PeCDF-13C	1.60	1.62	1.63	1.66	1.63	1.32 - 1.78
2,3,4,7,8-PeCDF-13C	1.57	1.61	1.61	1.62	1.62	1.32 - 1.78
1,2,3,7,8-PeCDD-13C	1.59	1.58	1.58	1.58	1.59	1.32 - 1.78
1,2,3,4,7,8-HxCDF-13C	0.55	0.53	0.54	0.55	0.53	0.43 - 0.59
1,2,3,6,7,8-HxCDF-13C	0.55	0.54	0.55	0.55	0.54	0.43 - 0.59
2,3,4,6,7,8-HxCDF-13C	0.54	0.53	0.54	0.54	0.54	0.43 - 0.59
1,2,3,7,8,9-HxCDF-13C	0.54	0.55	0.54	0.55	0.55	0.43 - 0.59
1,2,3,4,7,8-HxCDD-13C	1.28	1.28	1.27	1.26	1.29	1.05 - 1.43
1,2,3,6,7,8-HxCDD-13C	1.26	1.25	1.26	1.26	1.28	1.05 - 1.43
1,2,3,4,6,7,8-HpCDF-13C	0.46	0.46	0.46	0.46	0.47	0.37 - 0.51
1,2,3,4,7,8,9-HpCDF-13C	0.46	0.46	0.46	0.45	0.46	0.37 - 0.51
1,2,3,4,6,7,8-HpCDD-13C	1.07	1.07	1.05	1.07	1.06	0.88 - 1.20
OCDD-13C	0.89	0.90	0.89	0.90	0.91	0.76 - 1.02

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

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Method 8290
PCDD/PCDF Calibration Verification

Run Name:	U70926A_03	Instrument ID	10MSHR06 (U)
Standard	CS3/CPM-5176-129	GC Column ID	US6809245H
Analyzed	09/26/2007 09:11	ICAL Date	09/21/2007

Compound	Known Conc.	Conc Found	Ion Abund. Ratio	Average RF	Daily RF	Deviation (%)
2,3,7,8-TCDF	10	8.6	0.81	1.3093	1.1272	-13.9
2,3,7,8-TCDD	10	10.4	0.73	1.0673	1.1134	4.3
1,2,3,7,8-PeCDF	50	43.6	1.59	1.1652	1.0164	-12.8
2,3,4,7,8-PeCDF	50	42.9	1.52	1.2145	1.0424	-14.2
1,2,3,7,8-PeCDD	50	46.4	0.62	1.1162	1.0370	-7.1
1,2,3,4,7,8-HxCDF	50	46.0	1.26	1.3489	1.2418	-7.9
1,2,3,6,7,8-HxCDF	50	45.9	1.22	1.2858	1.1800	-8.2
2,3,4,6,7,8-HxCDF	50	46.6	1.31	1.2885	1.2008	-6.8
1,2,3,7,8,9-HxCDF	50	45.3	1.24	1.2815	1.1611	-9.4
1,2,3,4,7,8-HxCDD	50	45.0	1.21	1.1502	1.0359	-9.9
1,2,3,6,7,8-HxCDD	50	48.4	1.31	1.0752	1.0401	-3.3
1,2,3,7,8,9-HxCDD	50	45.4	1.26	1.1328	1.0286	-9.2
1,2,3,4,6,7,8-HpCDF	50	51.8	1.02	1.4253	1.4764	3.6
1,2,3,4,7,8,9-HpCDF	50	49.8	1.06	1.2700	1.2639	-0.5
1,2,3,4,6,7,8-HpCDD	50	49.6	1.11	1.1512	1.1414	-0.8
OCDF	100	86.8	0.89	1.5177	1.3181	-13.2
OCDD	100	112.1	0.88	1.1489	1.2881	12.1
Total PeCDF	100	86.5	NA	1.1898	1.0294	-13.5
Total HxCDF	200	183.8	NA	1.3012	1.1959	-8.1
Total HxCDD	150	138.8	NA	1.1194	1.0349	-7.6
Total HpCDF	100	101.6	NA	1.3476	1.3701	1.7
2,3,7,8-TCDF-13C	100	94.5	0.82	1.4164	1.3391	-5.5
2,3,7,8-TCDD-13C	100	92.7	0.83	1.0361	0.9610	-7.3
2,3,7,8-TCDD-37Cl4	10	9.7	NA	1.1313	1.0975	-3.0
1,2,3,7,8-PeCDF-13C	100	85.0	1.59	1.3647	1.1594	-15.0
2,3,4,7,8-PeCDF-13C	100	85.4	1.57	1.3258	1.1326	-14.6
1,2,3,7,8-PeCDD-13C	100	93.2	1.54	0.7705	0.7184	-6.8
1,2,3,4,7,8-HxCDF-13C	100	90.0	0.54	1.3430	1.2082	-10.0
1,2,3,6,7,8-HxCDF-13C	100	88.5	0.53	1.5746	1.3941	-11.5
2,3,4,6,7,8-HxCDF-13C	100	87.6	0.55	1.4990	1.3132	-12.4
1,2,3,7,8,9-HxCDF-13C	100	84.8	0.52	1.3113	1.1126	-15.2
1,2,3,4,7,8-HxCDD-13C	100	110.2	1.30	0.8875	0.9784	10.2
1,2,3,6,7,8-HxCDD-13C	100	99.2	1.23	1.0433	1.0352	-0.8
1,2,3,4,6,7,8-HpCDF-13C	100	108.2	0.48	0.9423	1.0192	8.2
1,2,3,4,7,8,9-HpCDF-13C	100	98.1	0.44	0.8548	0.8387	-1.9
1,2,3,4,6,7,8-HpCDD-13C	100	106.5	1.09	0.6851	0.7299	6.5
OCDD-13C	200	208.2	0.91	0.6902	0.7183	4.1
1,2,3,4-TCDD-13C	100	NA	0.82	NA	NA	NA
1,2,3,7,8,9-HxCDD-13C	100	NA	1.28	NA	NA	NA

Concentrations expressed as pg/ul NA = Not Applicable * = Outside target range

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Method 8290
PCDD/PCDF Calibration Verification

Run Name:	U70926A_19	Instrument ID	10MSHR06 (U)
Standard	CS3/CPM-5176-129	GC Column ID	US6809245H
Analyzed	09/26/2007 21:52	ICAL Date	09/21/2007

Compound	Known Conc.	Conc Found	Ion Abund. Ratio	Average RF	Daily RF	Deviation (%)
2,3,7,8-TCDF	10	8.1	0.78	1.3093	1.0559	-19.4
2,3,7,8-TCDD	10	10.0	0.83	1.0673	1.0682	0.1
1,2,3,7,8-PeCDF	50	41.9	1.54	1.1652	0.9761	-16.2
2,3,4,7,8-PeCDF	50	41.5	1.45	1.2145	1.0083	-17.0
1,2,3,7,8-PeCDD	50	44.4	0.62	1.1162	0.9905	-11.3
1,2,3,4,7,8-HxCDF	50	44.5	1.25	1.3489	1.2016	-10.9
1,2,3,6,7,8-HxCDF	50	43.6	1.25	1.2858	1.1214	-12.8
2,3,4,6,7,8-HxCDF	50	45.0	1.24	1.2885	1.1590	-10.1
1,2,3,7,8,9-HxCDF	50	43.9	1.28	1.2815	1.1242	-12.3
1,2,3,4,7,8-HxCDD	50	43.8	1.20	1.1502	1.0082	-12.4
1,2,3,6,7,8-HxCDD	50	44.3	1.19	1.0752	0.9520	-11.5
1,2,3,7,8,9-HxCDD	50	43.5	1.26	1.1328	0.9852	-13.0
1,2,3,4,6,7,8-HpCDF	50	48.8	1.05	1.4253	1.3915	-2.4
1,2,3,4,7,8,9-HpCDF	50	49.5	1.02	1.2700	1.2564	-1.1
1,2,3,4,6,7,8-HpCDD	50	49.6	1.06	1.1512	1.1414	-0.9
OCDF	100	77.9	0.95	1.5177	1.1827	* -22.1
OCDD	100	95.4	0.94	1.1489	1.0961	-4.6
Total PeCDF	100	83.4	NA	1.1898	0.9922	-16.6
Total HxCDF	200	177.0	NA	1.3012	1.1515	-11.5
Total HxCDD	150	131.6	NA	1.1194	0.9818	-12.3
Total HpCDF	100	98.3	NA	1.3476	1.3240	-1.8
2,3,7,8-TCDF-13C	100	92.0	0.77	1.4164	1.3028	-8.0
2,3,7,8-TCDD-13C	100	95.3	0.83	1.0361	0.9874	-4.7
2,3,7,8-TCDD-37Cl4	10	9.5	NA	1.1313	1.0760	-4.9
1,2,3,7,8-PeCDF-13C	100	85.6	1.59	1.3647	1.1688	-14.4
2,3,4,7,8-PeCDF-13C	100	92.0	1.55	1.3258	1.2198	-8.0
1,2,3,7,8-PeCDD-13C	100	106.0	1.56	0.7705	0.8170	6.0
1,2,3,4,7,8-HxCDF-13C	100	82.2	0.55	1.3430	1.1046	-17.8
1,2,3,6,7,8-HxCDF-13C	100	81.4	0.52	1.5746	1.2818	-18.6
2,3,4,6,7,8-HxCDF-13C	100	82.5	0.53	1.4990	1.2374	-17.5
1,2,3,7,8,9-HxCDF-13C	100	80.6	0.53	1.3113	1.0570	-19.4
1,2,3,4,7,8-HxCDD-13C	100	102.5	1.28	0.8875	0.9101	2.5
1,2,3,6,7,8-HxCDD-13C	100	101.6	1.23	1.0433	1.0598	1.6
1,2,3,4,6,7,8-HpCDF-13C	100	110.0	0.45	0.9423	1.0367	10.0
1,2,3,4,7,8,9-HpCDF-13C	100	104.2	0.45	0.8548	0.8903	4.2
1,2,3,4,6,7,8-HpCDD-13C	100	113.3	1.08	0.6851	0.7766	13.3
OCDD-13C	200	226.8	0.92	0.6902	0.7827	13.4
1,2,3,4-TCDD-13C	100	NA	0.81	NA	NA	NA
1,2,3,7,8,9-HxCDD-13C	100	NA	1.27	NA	NA	NA

Concentrations expressed as pg/ul NA = Not Applicable * = Outside target range

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Method 8290
PCDD/PCDF Calibration Verification

Run Name:	P70927A_02	Instrument ID	10MSHR09 (P)
Standard	CS3/CPM-5176-129	GC Column ID	US6872627H
Analyzed	09/27/2007 08:10	ICAL Date	08/29/2007

Compound	Known Conc.	Conc Found	Ion Abund. Ratio	Average RF	Daily RF	Deviation (%)
2,3,7,8-TCDF	10	10.0	0.74	1.1264	1.1221	-0.4
2,3,7,8-TCDD	10	10.1	0.74	1.0311	1.0457	1.4
1,2,3,7,8-PeCDF	50	47.1	1.60	1.0207	0.9608	-5.9
2,3,4,7,8-PeCDF	50	47.6	1.54	1.0694	1.0185	-4.8
1,2,3,7,8-PeCDD	50	46.2	0.62	1.0829	1.0014	-7.5
1,2,3,4,7,8-HxCDF	50	47.6	1.23	1.2434	1.1841	-4.8
1,2,3,6,7,8-HxCDF	50	47.3	1.23	1.1826	1.1187	-5.4
2,3,4,6,7,8-HxCDF	50	46.3	1.25	1.1968	1.1087	-7.4
1,2,3,7,8,9-HxCDF	50	47.3	1.25	1.1767	1.1128	-5.4
1,2,3,4,7,8-HxCDD	50	49.8	1.26	1.0859	1.0822	-0.3
1,2,3,6,7,8-HxCDD	50	46.3	1.24	1.0040	0.9304	-7.3
1,2,3,7,8,9-HxCDD	50	49.6	1.25	1.0587	1.0494	-0.9
1,2,3,4,6,7,8-HpCDF	50	48.6	1.03	1.4174	1.3765	-2.9
1,2,3,4,7,8,9-HpCDF	50	48.4	1.03	1.2712	1.2295	-3.3
1,2,3,4,6,7,8-HpCDD	50	50.0	1.05	1.0813	1.0820	0.1
OCDF	100	93.6	0.89	1.4260	1.3342	-6.4
OCDD	100	97.3	0.90	1.1308	1.1005	-2.7
Total PeCDF	100	94.7	NA	1.0450	0.9896	-5.3
Total HxCDF	200	188.5	NA	1.1999	1.1311	-5.7
Total HxCDD	150	145.7	NA	1.0495	1.0207	-2.7
Total HpCDF	100	96.9	NA	1.3443	1.3030	-3.1
2,3,7,8-TCDF-13C	100	91.3	0.79	1.5000	1.3702	-8.7
2,3,7,8-TCDD-13C	100	98.2	0.78	1.0183	0.9999	-1.8
2,3,7,8-TCDD-37Cl4	10	9.5	NA	1.0848	1.0318	-4.9
1,2,3,7,8-PeCDF-13C	100	87.8	1.57	1.3026	1.1442	-12.2
2,3,4,7,8-PeCDF-13C	100	84.6	1.59	1.3028	1.1021	-15.4
1,2,3,7,8-PeCDD-13C	100	94.3	1.58	0.7533	0.7101	-5.7
1,2,3,4,7,8-HxCDF-13C	100	90.6	0.52	1.1747	1.0642	-9.4
1,2,3,6,7,8-HxCDF-13C	100	89.7	0.52	1.4674	1.3164	-10.3
2,3,4,6,7,8-HxCDF-13C	100	93.6	0.52	1.3684	1.2807	-6.4
1,2,3,7,8,9-HxCDF-13C	100	93.0	0.52	1.1479	1.0670	-7.0
1,2,3,4,7,8-HxCDD-13C	100	95.0	1.27	0.8580	0.8151	-5.0
1,2,3,6,7,8-HxCDD-13C	100	97.3	1.26	1.0876	1.0584	-2.7
1,2,3,4,6,7,8-HpCDF-13C	100	98.5	0.46	0.9825	0.9677	-1.5
1,2,3,4,7,8,9-HpCDF-13C	100	100.1	0.44	0.8747	0.8758	0.1
1,2,3,4,6,7,8-HpCDD-13C	100	101.9	1.06	0.7403	0.7544	1.9
OCDD-13C	200	195.7	0.90	0.7101	0.6947	-2.2
1,2,3,4-TCDD-13C	100	NA	0.80	NA	NA	NA
1,2,3,7,8,9-HxCDD-13C	100	NA	1.25	NA	NA	NA

Concentrations expressed as pg/ul NA = Not Applicable * = Outside target range

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290
PCDD/PCDF Calibration Verification

Run Name:	P70927A_17	Instrument ID	10MSHR09 (P)
Standard	CS3/CPM-5176-129	GC Column ID	US6872627H
Analyzed	09/27/2007 20:35	ICAL Date	08/29/2007

Compound	Known Conc.	Conc Found	Ion Abund. Ratio	Average RF	Daily RF	Deviation (%)
2,3,7,8-TCDF	10	10.0	0.80	1.1264	1.1317	0.5
2,3,7,8-TCDD	10	10.6	0.77	1.0311	1.0893	5.6
1,2,3,7,8-PeCDF	50	48.2	1.55	1.0207	0.9841	-3.6
2,3,4,7,8-PeCDF	50	47.6	1.55	1.0694	1.0179	-4.8
1,2,3,7,8-PeCDD	50	48.3	0.62	1.0829	1.0450	-3.5
1,2,3,4,7,8-HxCDF	50	48.6	1.28	1.2434	1.2085	-2.8
1,2,3,6,7,8-HxCDF	50	48.1	1.25	1.1826	1.1378	-3.8
2,3,4,6,7,8-HxCDF	50	48.3	1.26	1.1968	1.1557	-3.4
1,2,3,7,8,9-HxCDF	50	48.3	1.26	1.1767	1.1374	-3.3
1,2,3,4,7,8-HxCDD	50	47.8	1.26	1.0859	1.0372	-4.5
1,2,3,6,7,8-HxCDD	50	49.0	1.28	1.0040	0.9831	-2.1
1,2,3,7,8,9-HxCDD	50	48.8	1.25	1.0587	1.0327	-2.5
1,2,3,4,6,7,8-HpCDF	50	48.2	1.05	1.4174	1.3654	-3.7
1,2,3,4,7,8,9-HpCDF	50	47.5	1.05	1.2712	1.2072	-5.0
1,2,3,4,6,7,8-HpCDD	50	50.8	1.05	1.0813	1.0991	1.6
OCDF	100	93.4	0.89	1.4260	1.3316	-6.6
OCDD	100	96.9	0.91	1.1308	1.0953	-3.1
Total PeCDF	100	95.8	NA	1.0450	1.0010	-4.2
Total HxCDF	200	193.3	NA	1.1999	1.1599	-3.3
Total HxCDD	150	145.5	NA	1.0495	1.0177	-3.0
Total HpCDF	100	95.6	NA	1.3443	1.2863	-4.3
2,3,7,8-TCDF-13C	100	89.6	0.79	1.5000	1.3434	-10.4
2,3,7,8-TCDD-13C	100	97.9	0.78	1.0183	0.9970	-2.1
2,3,7,8-TCDD-37Cl4	10	9.5	NA	1.0848	1.0343	-4.7
1,2,3,7,8-PeCDF-13C	100	91.1	1.57	1.3026	1.1861	-8.9
2,3,4,7,8-PeCDF-13C	100	89.7	1.58	1.3028	1.1682	-10.3
1,2,3,7,8-PeCDD-13C	100	96.4	1.59	0.7533	0.7259	-3.6
1,2,3,4,7,8-HxCDF-13C	100	94.3	0.53	1.1747	1.1072	-5.7
1,2,3,6,7,8-HxCDF-13C	100	93.5	0.53	1.4674	1.3723	-6.5
2,3,4,6,7,8-HxCDF-13C	100	92.3	0.53	1.3684	1.2634	-7.7
1,2,3,7,8,9-HxCDF-13C	100	91.3	0.52	1.1479	1.0480	-8.7
1,2,3,4,7,8-HxCDD-13C	100	102.0	1.26	0.8580	0.8752	2.0
1,2,3,6,7,8-HxCDD-13C	100	97.0	1.26	1.0876	1.0553	-3.0
1,2,3,4,6,7,8-HpCDF-13C	100	95.4	0.45	0.9825	0.9378	-4.6
1,2,3,4,7,8,9-HpCDF-13C	100	92.1	0.46	0.8747	0.8055	-7.9
1,2,3,4,6,7,8-HpCDD-13C	100	92.8	1.08	0.7403	0.6868	-7.2
OCDD-13C	200	174.6	0.90	0.7101	0.6198	-12.7
1,2,3,4-TCDD-13C	100	NA	0.79	NA	NA	NA
1,2,3,7,8,9-HxCDD-13C	100	NA	1.28	NA	NA	NA

Concentrations expressed as pg/ul NA = Not Applicable * = Outside target range

REPORT OF LABORATORY ANALYSIS

Appendix D

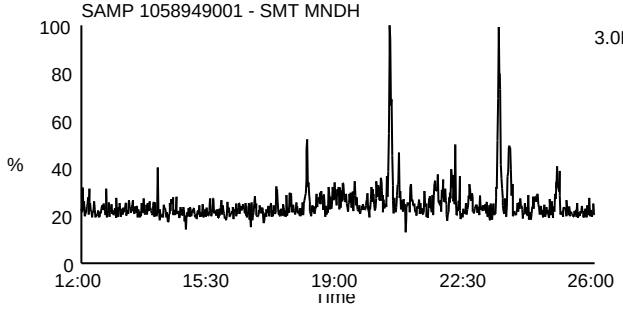
Sample Raw Data

Homologue Group: Tetras

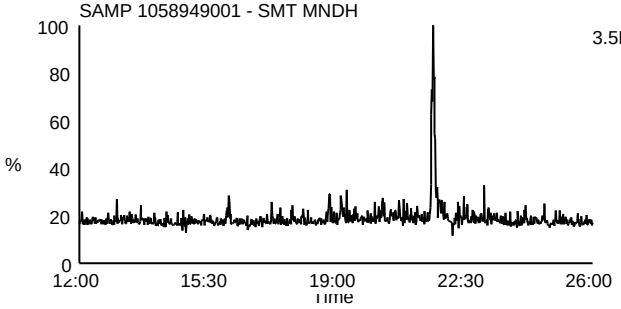
Data File Name: P70927A_11
Date Acquired: 9/27/2007
Sample Description: SAMP 1058949001 - SMT MNDH

Lab Sample ID: 1058949001
Client Sample ID: MTLB-200729487
Instrument: 10MSHR09 (P)

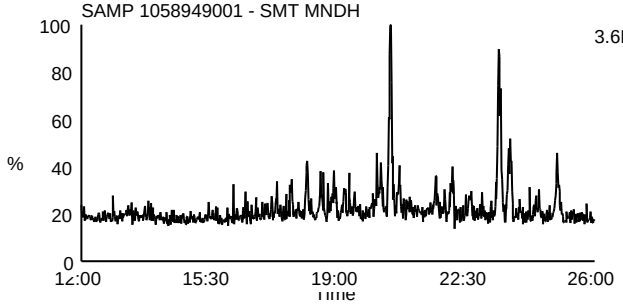
Data File: P70927A_11 G1 C1 - 303.9016
SAMP 1058949001 - SMT MNDH



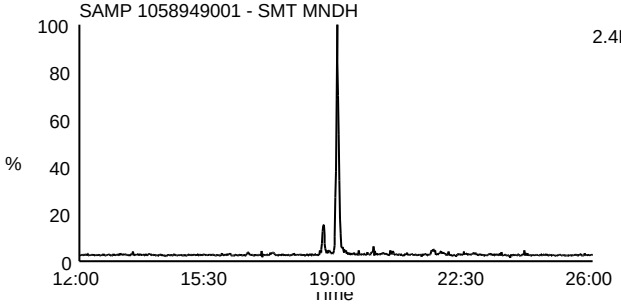
Data File: P70927A_11 G1 C7 - 319.8965
SAMP 1058949001 - SMT MNDH



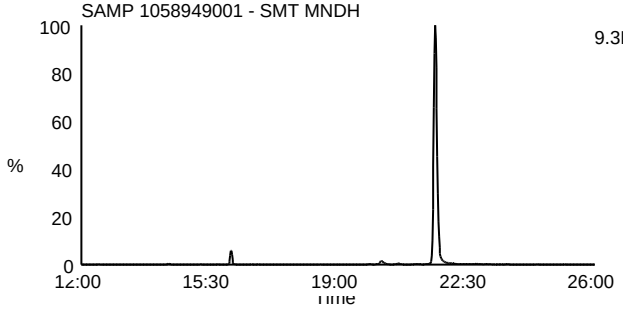
Data File: P70927A_11 G1 C2 - 305.8987
SAMP 1058949001 - SMT MNDH



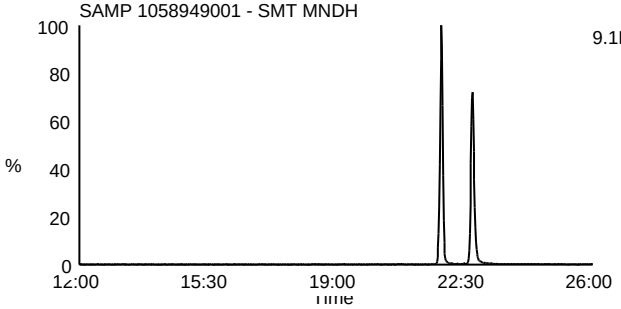
Data File: P70927A_11 G1 C8 - 321.8936
SAMP 1058949001 - SMT MNDH



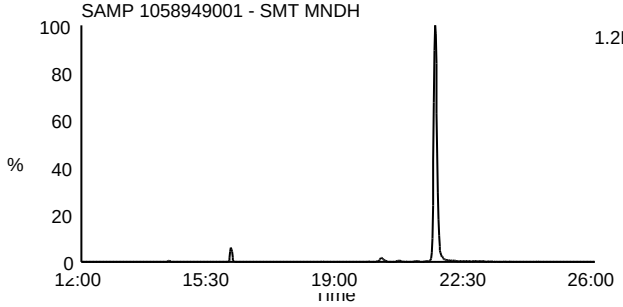
Data File: P70927A_11 G1 C3 - 315.9418
SAMP 1058949001 - SMT MNDH



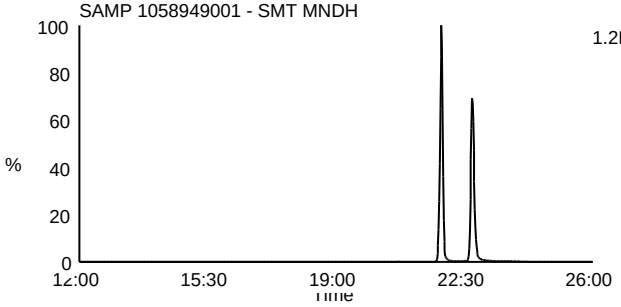
Data File: P70927A_11 G1 C10 - 331.9367
SAMP 1058949001 - SMT MNDH



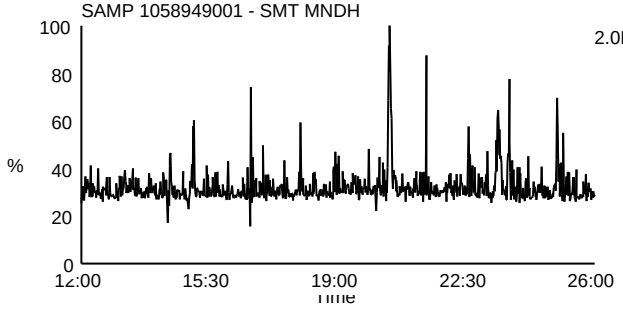
Data File: P70927A_11 G1 C4 - 317.9389
SAMP 1058949001 - SMT MNDH



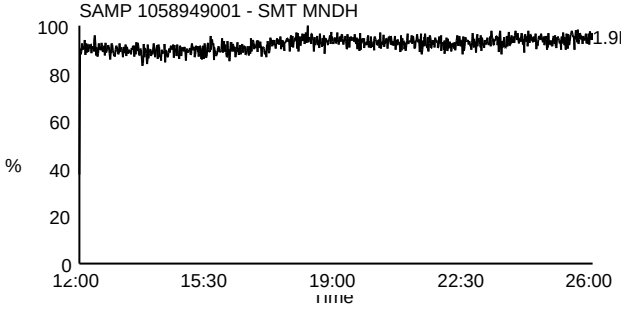
Data File: P70927A_11 G1 C11 - 333.9338
SAMP 1058949001 - SMT MNDH



Data File: P70927A_11 G1 C14 - 375.8364
SAMP 1058949001 - SMT MNDH



Data File: P70927A_11 G1 C5 - 318.9792
SAMP 1058949001 - SMT MNDH

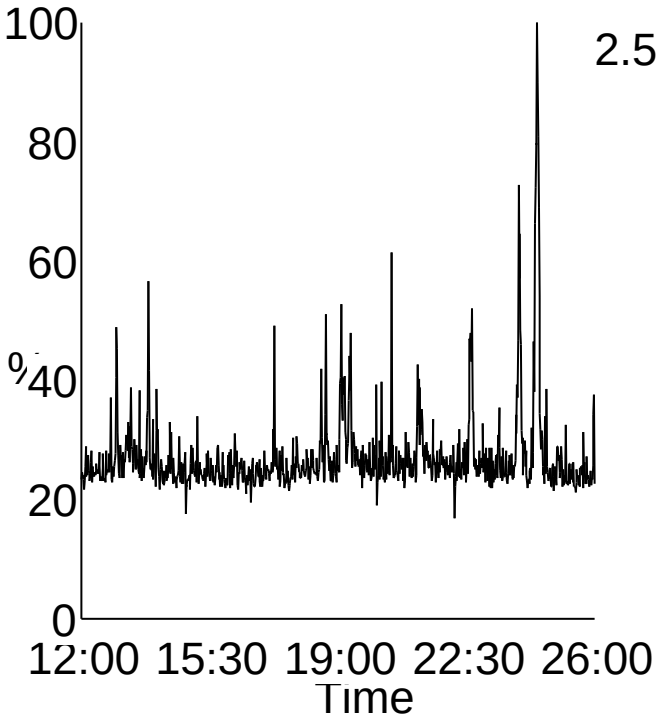


Homologue Group: Penta & Cleanup

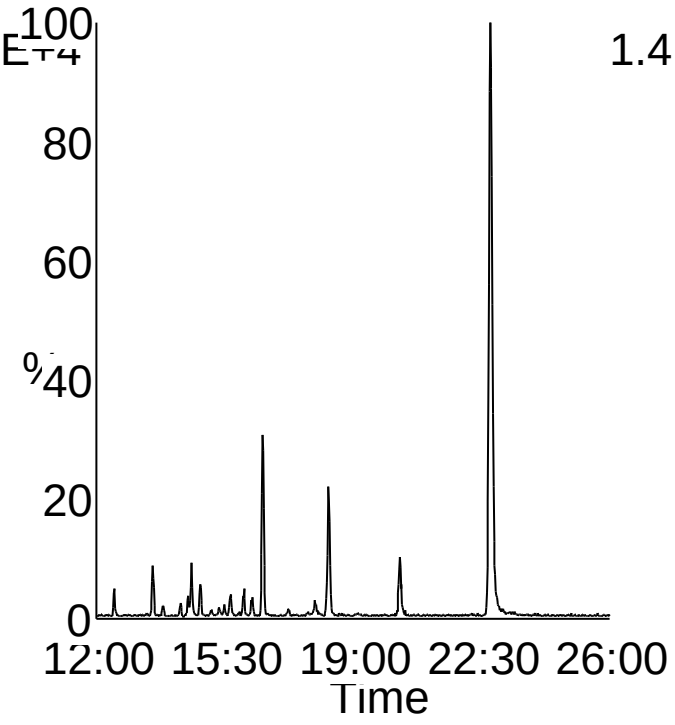
Data File Name: P70927A_11
Date Acquired: 9/27/2007
Sample Description: SAMP 1058949001 - SMT MNDH

Lab Sample ID: 1058949001
Client Sample ID: MTLB-200729487
Instrument: 10MSHR09 (P)

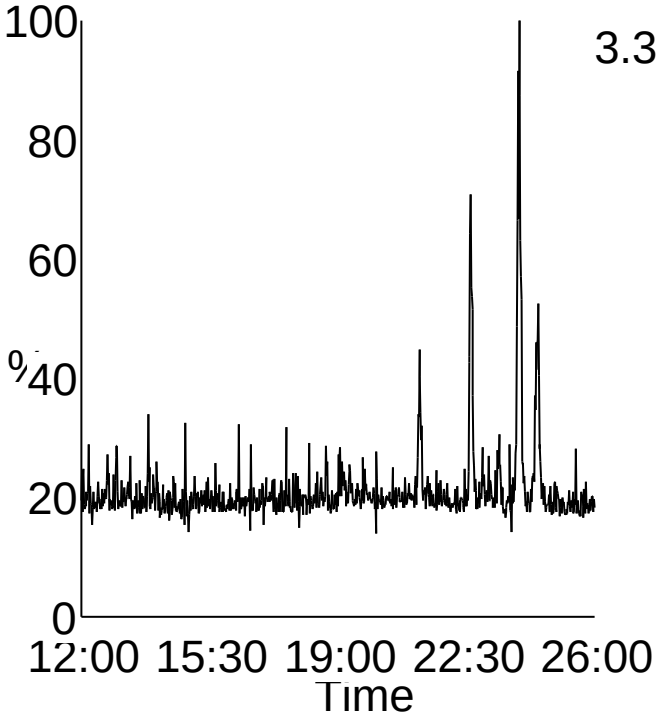
Data File: P70927A_11 G1 C12 - 339.8597
SAMP 1058949001 - SMT MNDH



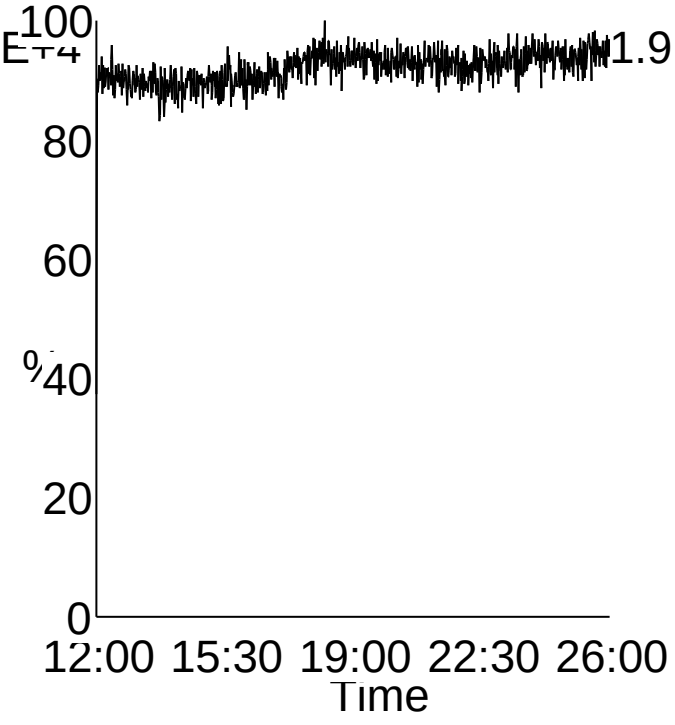
Data File: P70927A_11 G1 C9 - 327.8847
SAMP 1058949001 - SMT MNDH



Data File: P70927A_11 G1 C13 - 341.8567
SAMP 1058949001 - SMT MNDH



Data File: P70927A_11 G1 C5 - 318.9792
SAMP 1058949001 - SMT MNDH

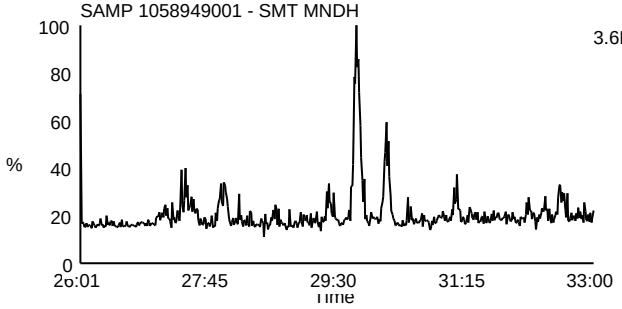


Homologue Group: Pentas

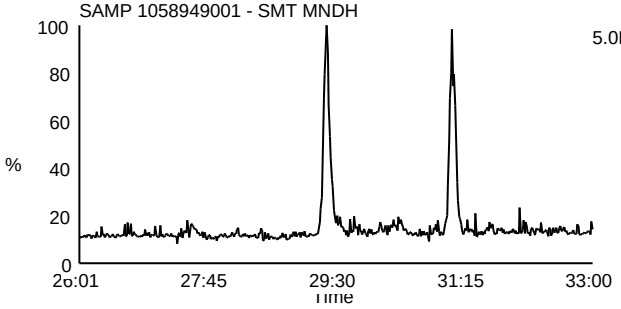
Data File Name: P70927A_11
Date Acquired: 9/27/2007
Sample Description: SAMP 1058949001 - SMT MNDH

Lab Sample ID: 1058949001
Client Sample ID: MTLB-200729487
Instrument: 10MSHR09 (P)

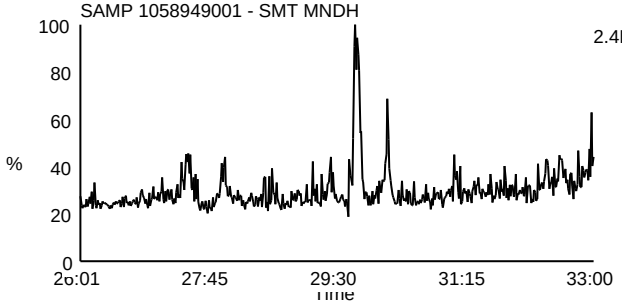
Data File: P70927A_11 G2 C1 - 339.8597
SAMP 1058949001 - SMT MNDH
3.6E+4



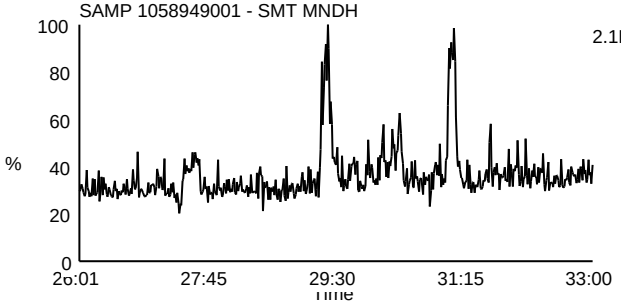
Data File: P70927A_11 G2 C4 - 353.8576
SAMP 1058949001 - SMT MNDH
5.0E+4



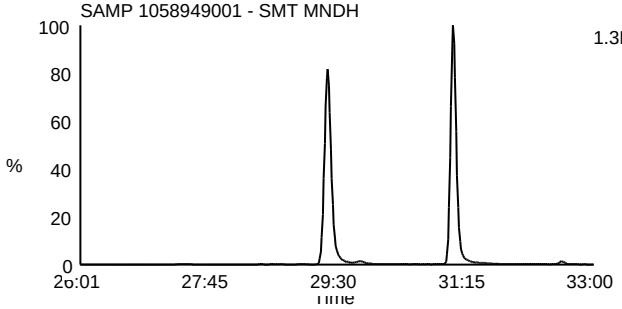
Data File: P70927A_11 G2 C2 - 341.8567
SAMP 1058949001 - SMT MNDH
2.4E+4



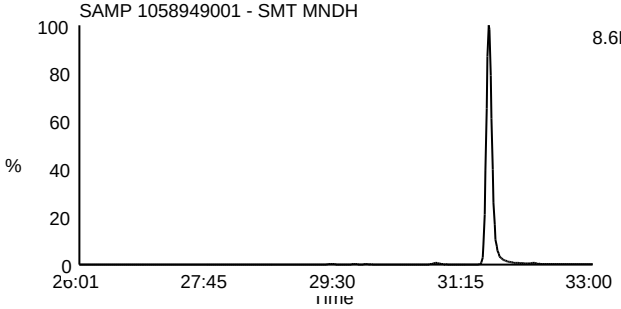
Data File: P70927A_11 G2 C8 - 355.8546
SAMP 1058949001 - SMT MNDH
2.1E+4



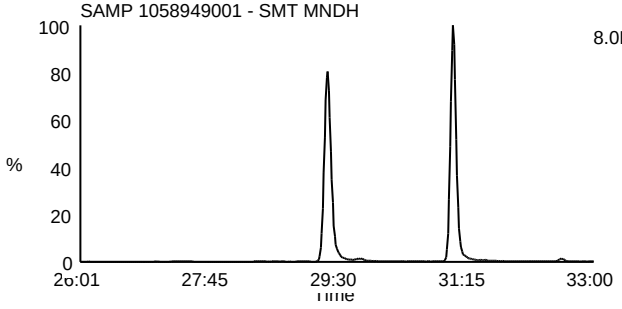
Data File: P70927A_11 G2 C3 - 351.8999
SAMP 1058949001 - SMT MNDH
1.3E+7



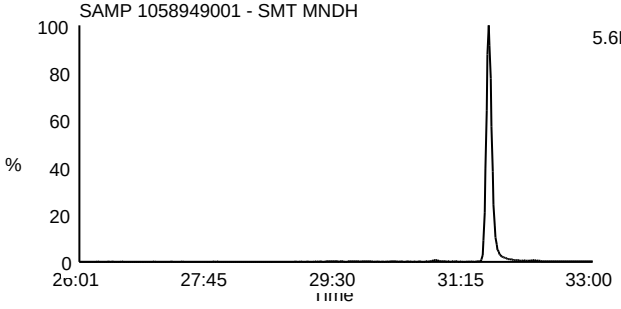
Data File: P70927A_11 G2 C10 - 367.8948
SAMP 1058949001 - SMT MNDH
8.6E+6



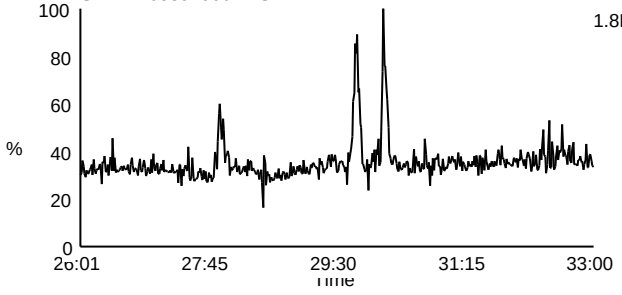
Data File: P70927A_11 G2 C5 - 353.8969
SAMP 1058949001 - SMT MNDH
8.0E+6



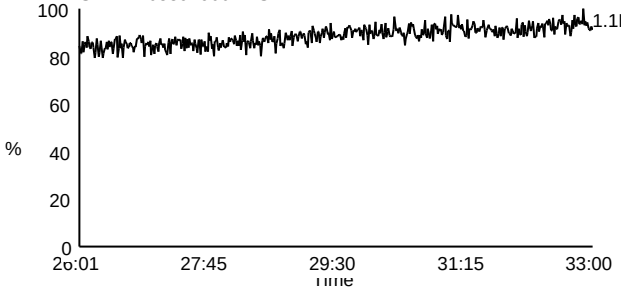
Data File: P70927A_11 G2 C11 - 369.8918
SAMP 1058949001 - SMT MNDH
5.6E+6



Data File: P70927A_11 G2 C12 - 409.7974
SAMP 1058949001 - SMT MNDH
1.8E+4



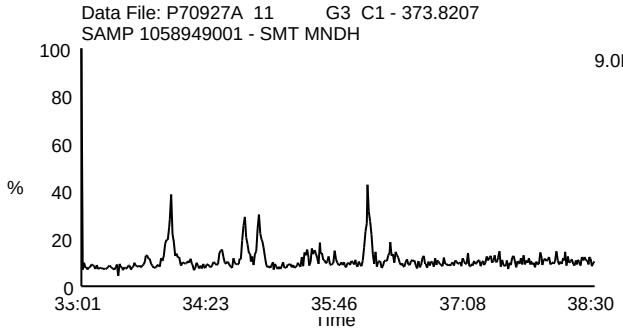
Data File: P70927A_11 G2 C6 - 354.9792
SAMP 1058949001 - SMT MNDH
1.1E+6

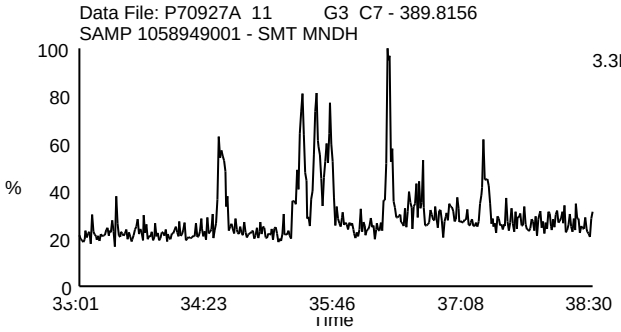


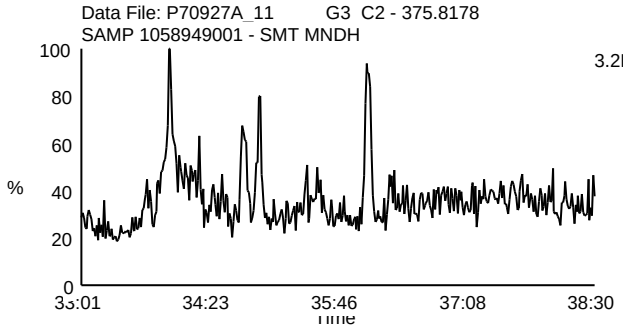
Homologue Group: Hexas

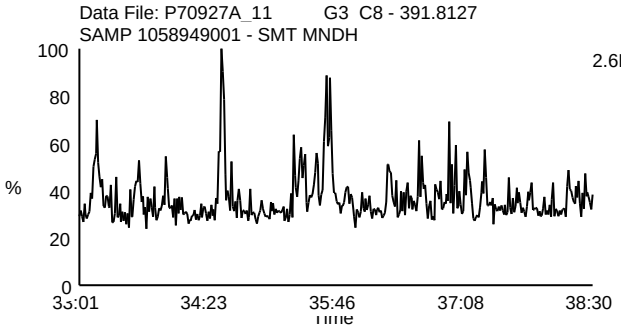
Data File Name: P70927A_11
Date Acquired: 9/27/2007
Sample Description: SAMP 1058949001 - SMT MNDH

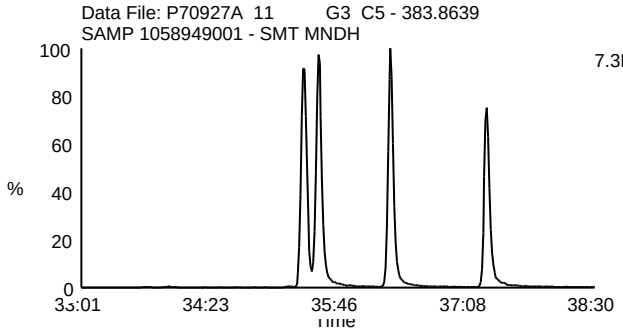
Lab Sample ID: 1058949001
Client Sample ID: MTLB-200729487
Instrument: 10MSHR09 (P)

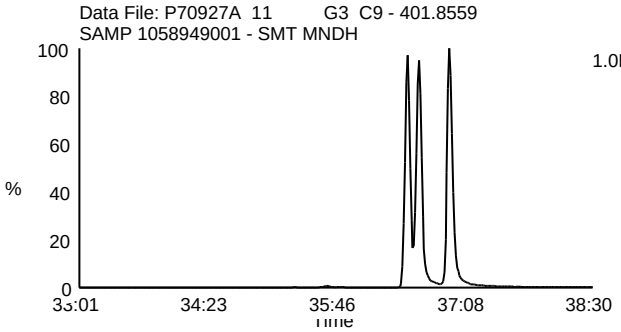


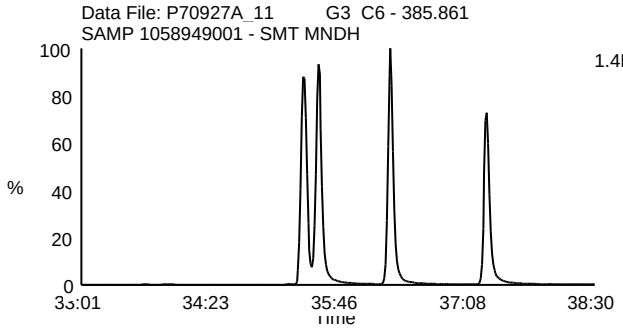


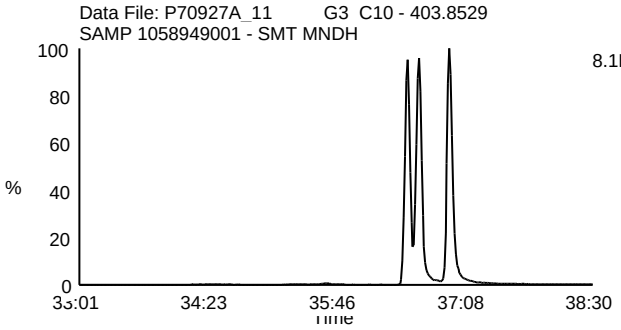


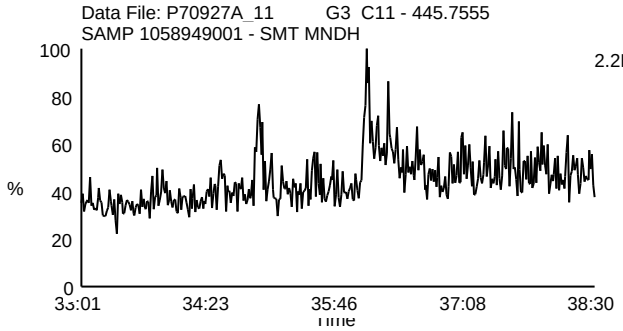


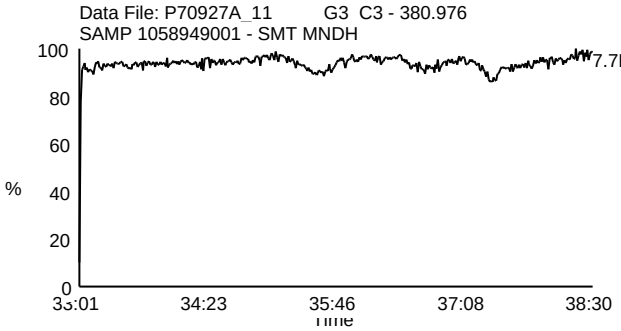










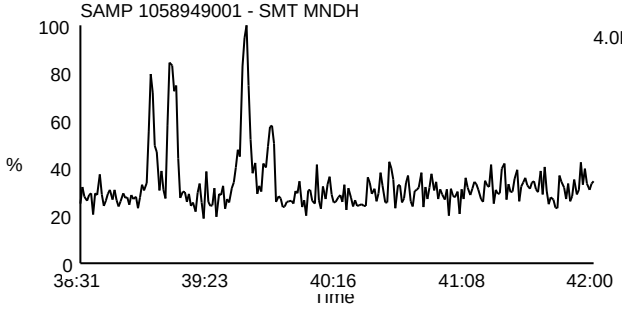


Homologue Group: Heptas

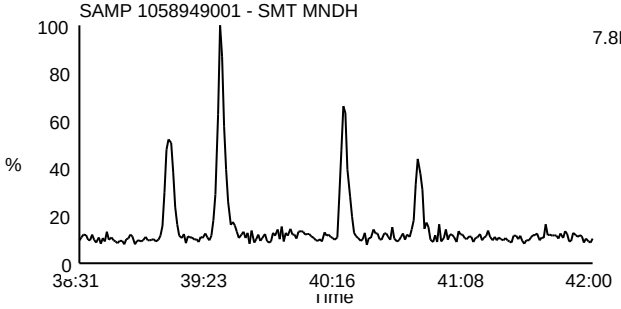
Data File Name: P70927A_11
Date Acquired: 9/27/2007
Sample Description: SAMP 1058949001 - SMT MNDH

Lab Sample ID: 1058949001
Client Sample ID: MTLB-200729487
Instrument: 10MSHR09 (P)

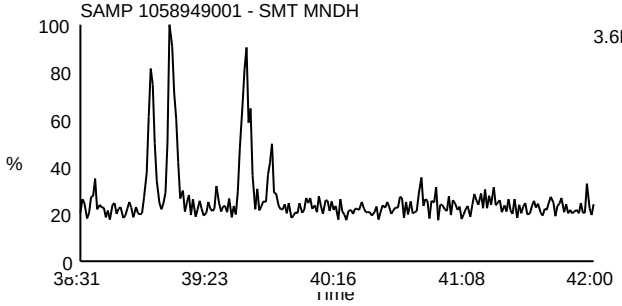
Data File: P70927A_11 G4 C3 - 407.7818
SAMP 1058949001 - SMT MNDH
4.0E+4



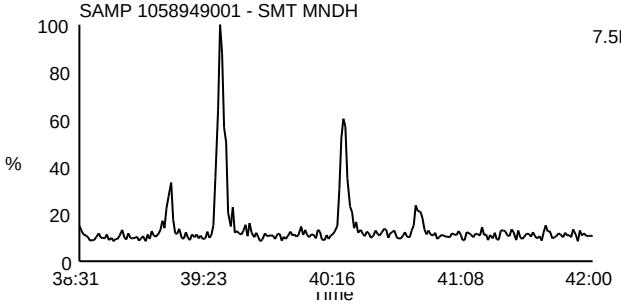
Data File: P70927A_11 G4 C8 - 423.7767
SAMP 1058949001 - SMT MNDH
7.8E+4



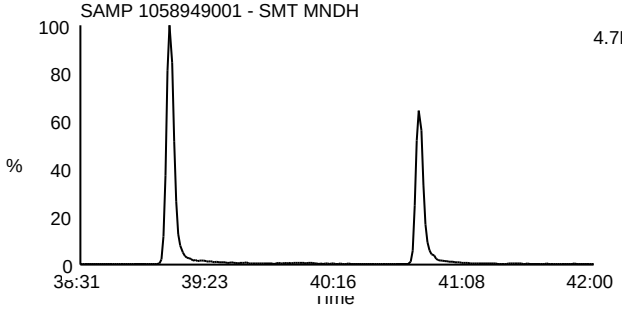
Data File: P70927A_11 G4 C4 - 409.7788
SAMP 1058949001 - SMT MNDH
3.6E+4



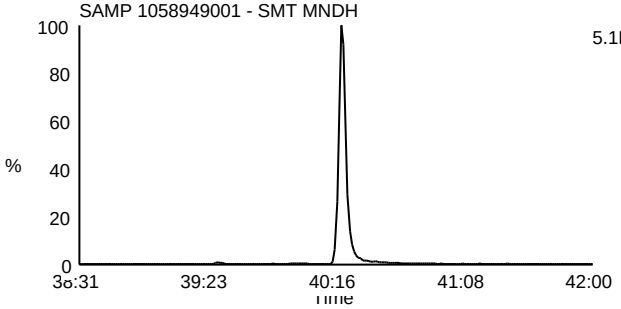
Data File: P70927A_11 G4 C9 - 425.7737
SAMP 1058949001 - SMT MNDH
7.5E+4



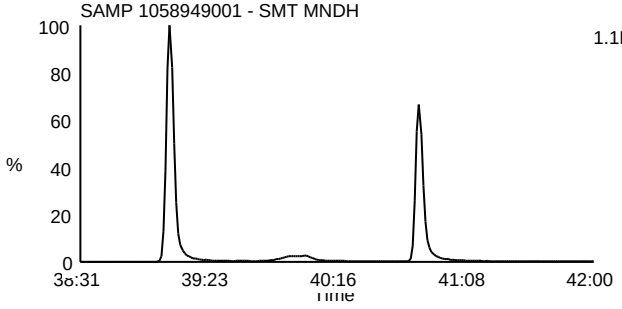
Data File: P70927A_11 G4 C6 - 417.825
SAMP 1058949001 - SMT MNDH
4.7E+6



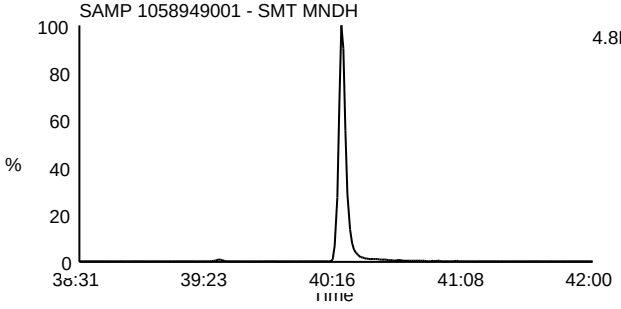
Data File: P70927A_11 G4 C11 - 435.8169
SAMP 1058949001 - SMT MNDH
5.1E+6



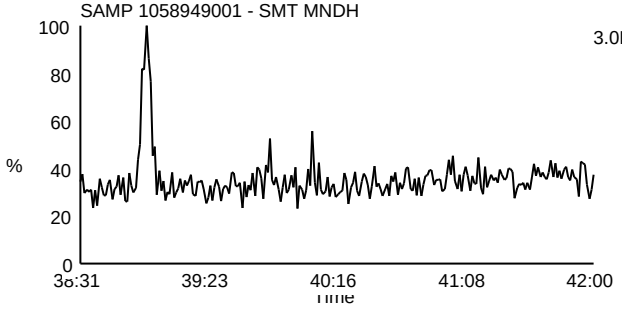
Data File: P70927A_11 G4 C7 - 419.822
SAMP 1058949001 - SMT MNDH
1.1E+7



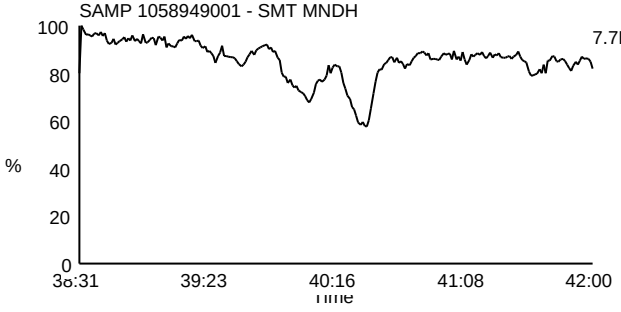
Data File: P70927A_11 G4 C12 - 437.814
SAMP 1058949001 - SMT MNDH
4.8E+6



Data File: P70927A_11 G4 C13 - 479.7165
SAMP 1058949001 - SMT MNDH
3.0E+4



Data File: P70927A_11 G4 C1 - 380.976
SAMP 1058949001 - SMT MNDH
7.7E+6

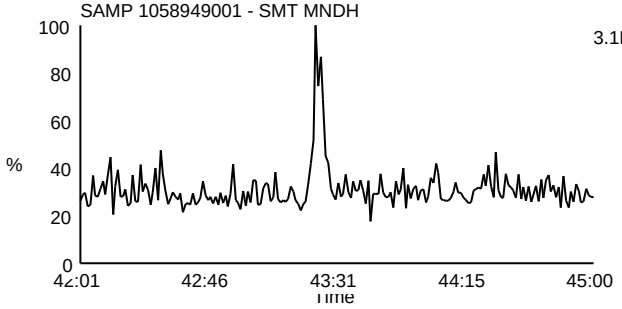


Homologue Group: Octas

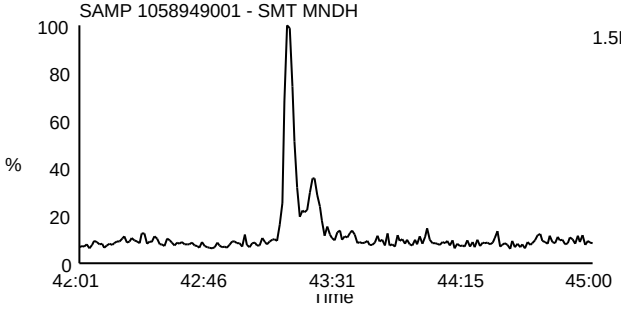
Data File Name: P70927A_11
Date Acquired: 9/27/2007
Sample Description: SAMP 1058949001 - SMT MNDH

Lab Sample ID: 1058949001
Client Sample ID: MTLB-200729487
Instrument: 10MSHR09 (P)

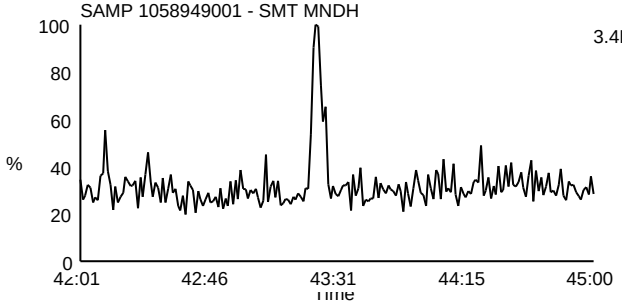
Data File: P70927A_11 G5 C4 - 441.7428
SAMP 1058949001 - SMT MNDH



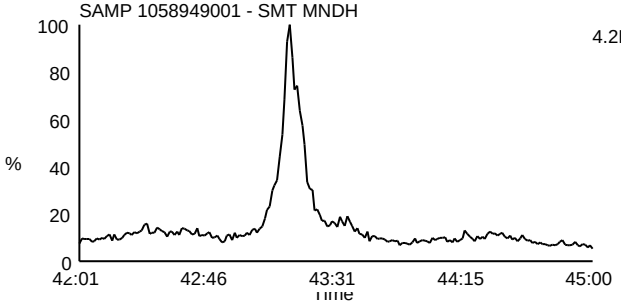
Data File: P70927A_11 G5 C8 - 457.7377
SAMP 1058949001 - SMT MNDH



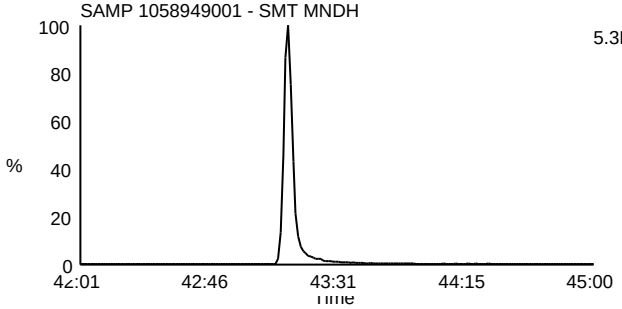
Data File: P70927A_11 G5 C5 - 443.7398
SAMP 1058949001 - SMT MNDH



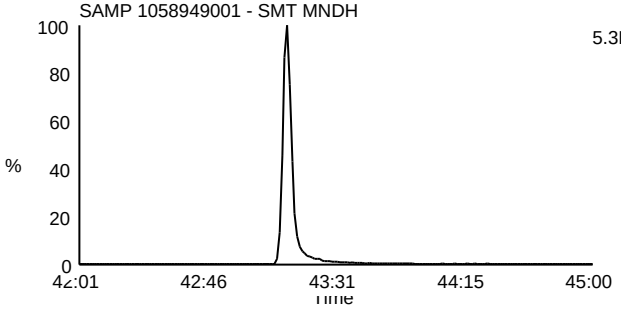
Data File: P70927A_11 G5 C9 - 459.7347
SAMP 1058949001 - SMT MNDH



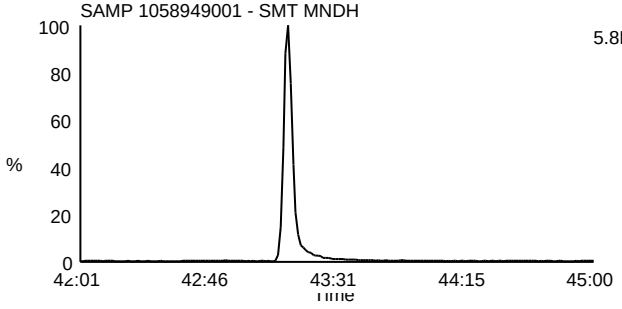
Data File: P70927A_11 G5 C11 - 469.7779
SAMP 1058949001 - SMT MNDH



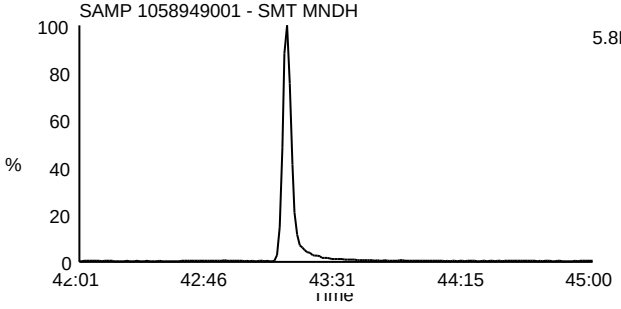
Data File: P70927A_11 G5 C11 - 469.7779
SAMP 1058949001 - SMT MNDH



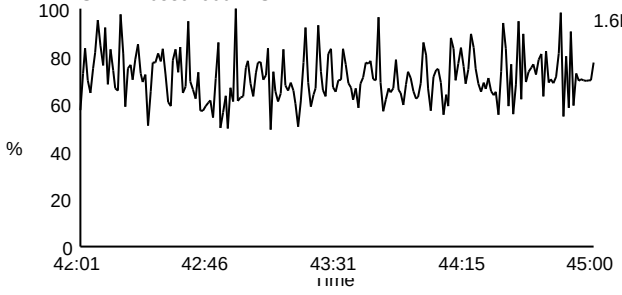
Data File: P70927A_11 G5 C12 - 471.7749
SAMP 1058949001 - SMT MNDH



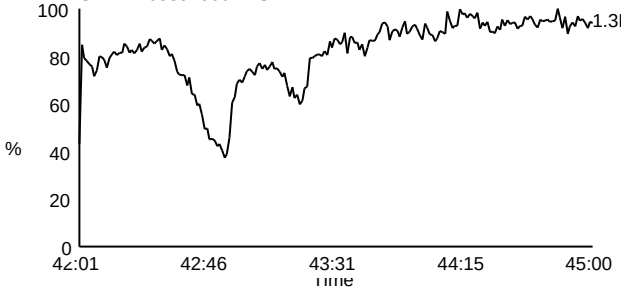
Data File: P70927A_11 G5 C12 - 471.7749
SAMP 1058949001 - SMT MNDH



Data File: P70927A_11 G5 C13 - 513.6775
SAMP 1058949001 - SMT MNDH



Data File: P70927A_11 G5 C2 - 430.9728
SAMP 1058949001 - SMT MNDH

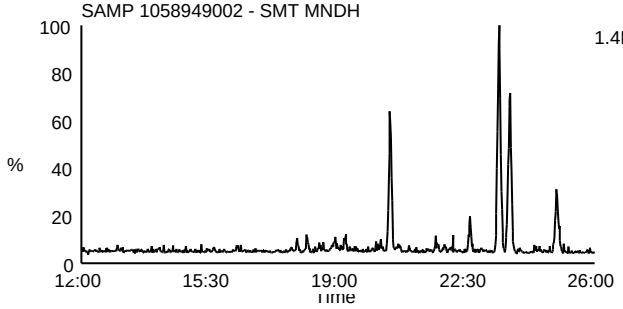


Homologue Group: Tetras

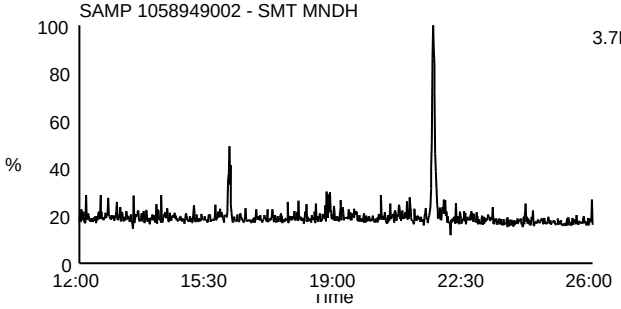
Data File Name: P70927A_12
Date Acquired: 9/27/2007
Sample Description: SAMP 1058949002 - SMT MNDH

Lab Sample ID: 1058949002
Client Sample ID: MTLNB-200729488
Instrument: 10MSHR09 (P)

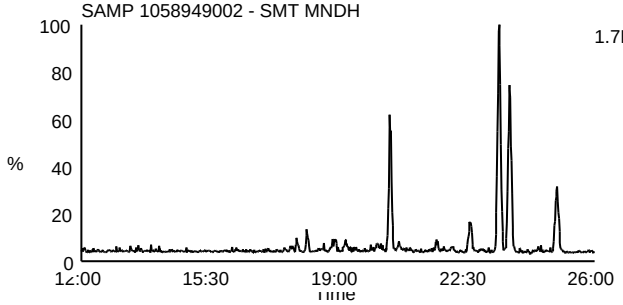
Data File: P70927A_12 G1 C1 - 303.9016
SAMP 1058949002 - SMT MNDH
1.4E+5



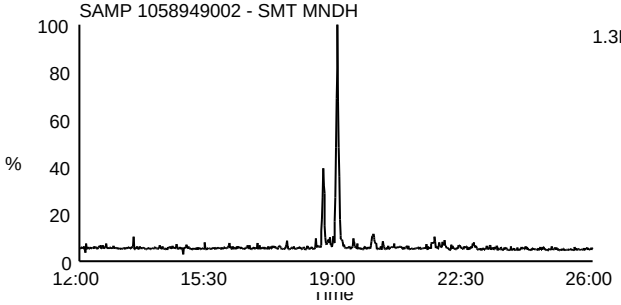
Data File: P70927A_12 G1 C7 - 319.8965
SAMP 1058949002 - SMT MNDH
3.7E+4



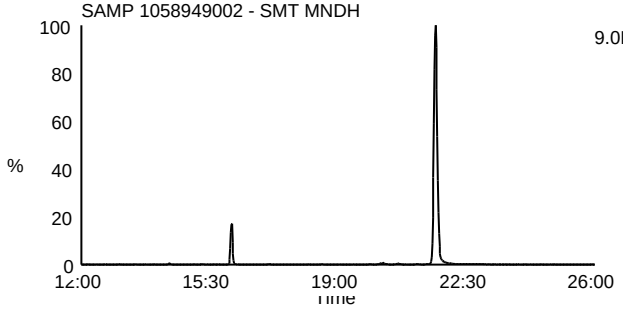
Data File: P70927A_12 G1 C2 - 305.8987
SAMP 1058949002 - SMT MNDH
1.7E+5



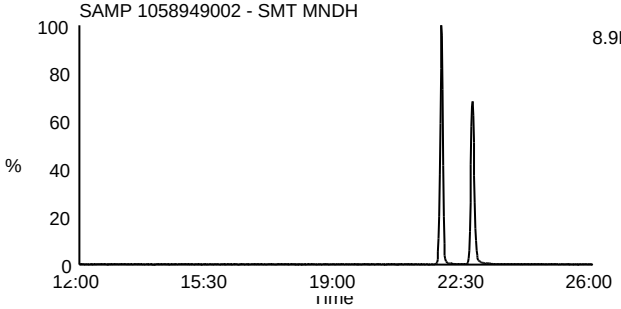
Data File: P70927A_12 G1 C8 - 321.8936
SAMP 1058949002 - SMT MNDH
1.3E+5



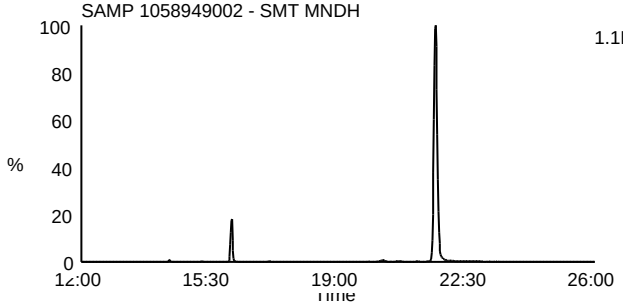
Data File: P70927A_12 G1 C3 - 315.9418
SAMP 1058949002 - SMT MNDH
9.0E+6



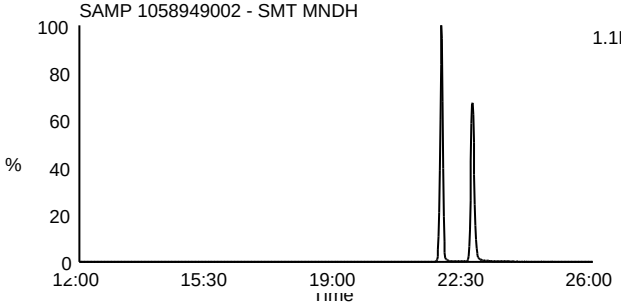
Data File: P70927A_12 G1 C10 - 331.9367
SAMP 1058949002 - SMT MNDH
8.9E+6



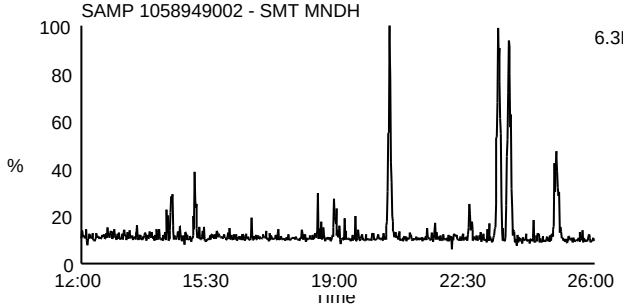
Data File: P70927A_12 G1 C4 - 317.9389
SAMP 1058949002 - SMT MNDH
1.1E+7



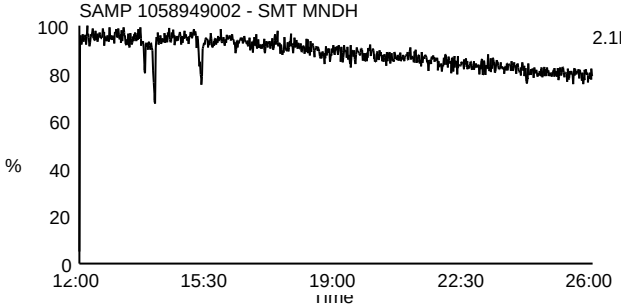
Data File: P70927A_12 G1 C11 - 333.9338
SAMP 1058949002 - SMT MNDH
1.1E+7



Data File: P70927A_12 G1 C14 - 375.8364
SAMP 1058949002 - SMT MNDH
6.3E+4



Data File: P70927A_12 G1 C5 - 318.9792
SAMP 1058949002 - SMT MNDH
2.1E+6

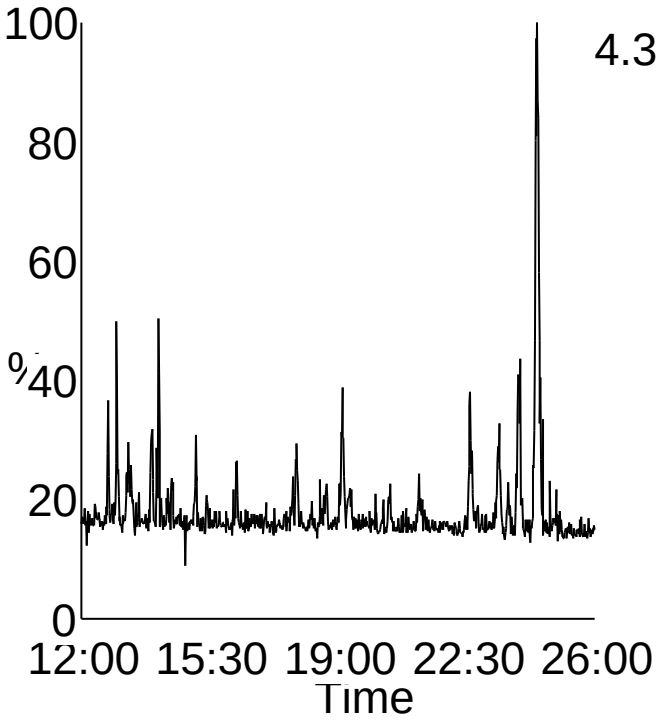


Homologue Group: Penta & Cleanup

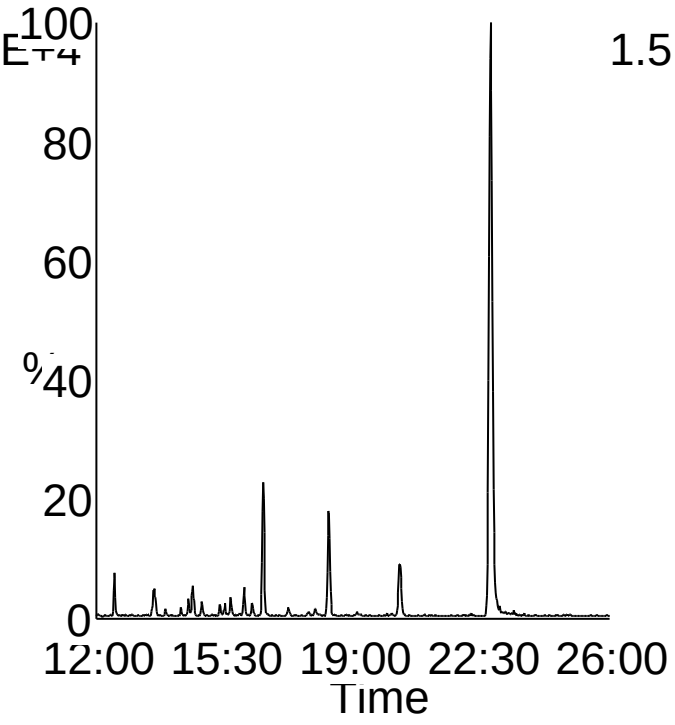
Data File Name: P70927A_12
Date Acquired: 9/27/2007
Sample Description: SAMP 1058949002 - SMT MNDH

Lab Sample ID: 1058949002
Client Sample ID: MTLNB-200729488
Instrument: 10MSHR09 (P)

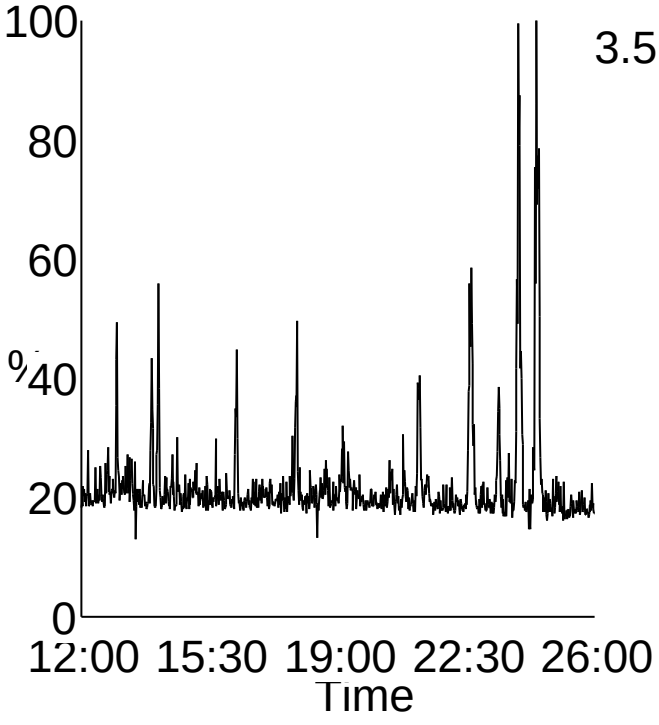
Data File: P7G1 C12 - 339.8597
SAMP 1058949002 - SMT MNDH



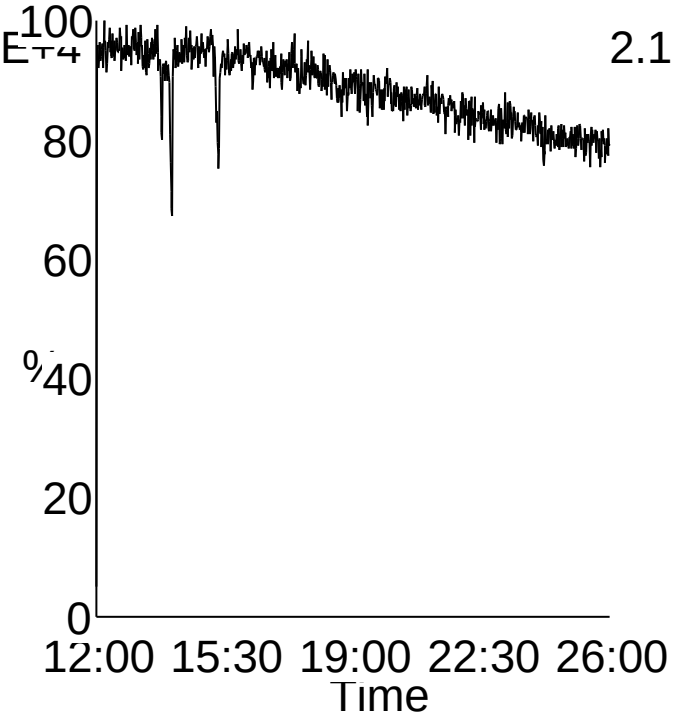
Data File: P7G1 C9 - 327.8847
SAMP 1058949002 - SMT MNDH



Data File: P7G1 C13 - 341.8567
SAMP 1058949002 - SMT MNDH



Data File: P7G1 C5 - 318.9792
SAMP 1058949002 - SMT MNDH

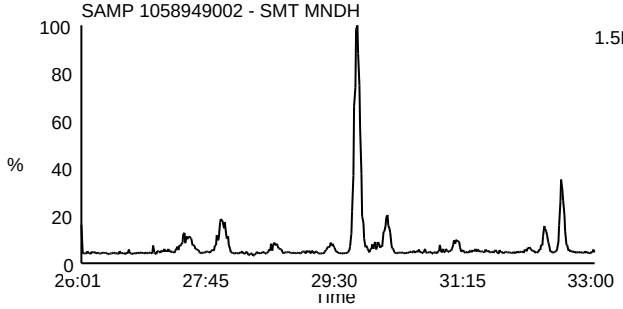


Homologue Group: Pentas

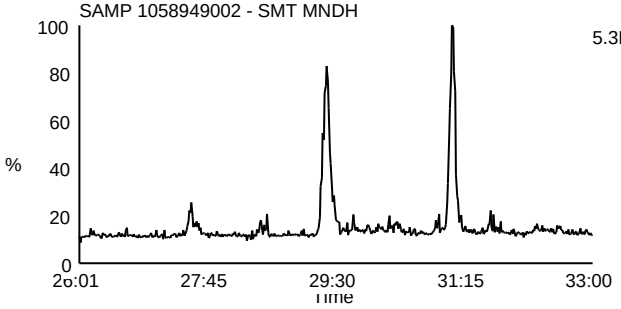
Data File Name: P70927A_12
Date Acquired: 9/27/2007
Sample Description: SAMP 1058949002 - SMT MNDH

Lab Sample ID: 1058949002
Client Sample ID: MTLNB-200729488
Instrument: 10MSHR09 (P)

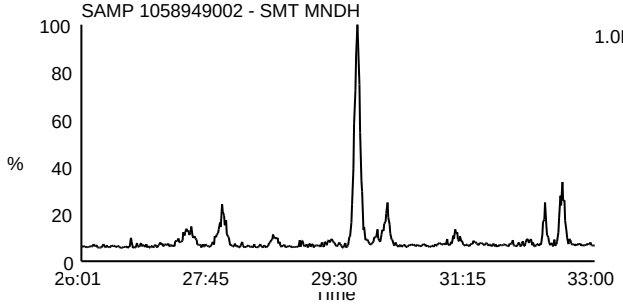
Data File: P70927A_12 G2 C1 - 339.8597
SAMP 1058949002 - SMT MNDH
1.5E+5



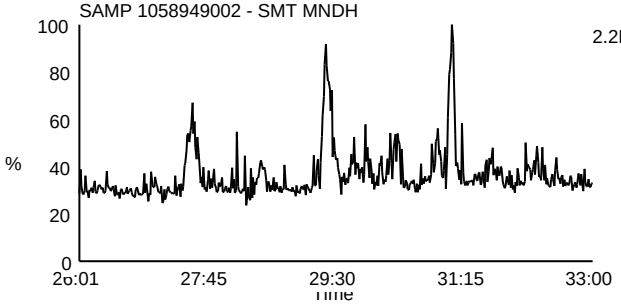
Data File: P70927A_12 G2 C4 - 353.8576
SAMP 1058949002 - SMT MNDH
5.3E+4



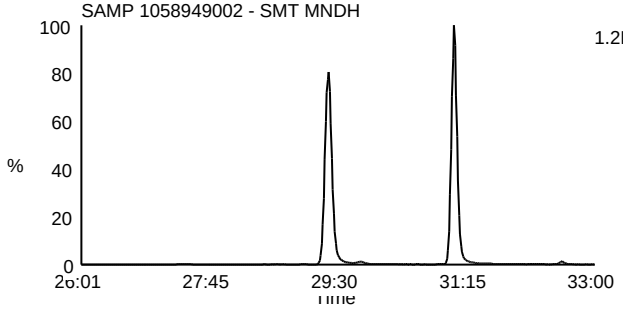
Data File: P70927A_12 G2 C2 - 341.8567
SAMP 1058949002 - SMT MNDH
1.0E+5



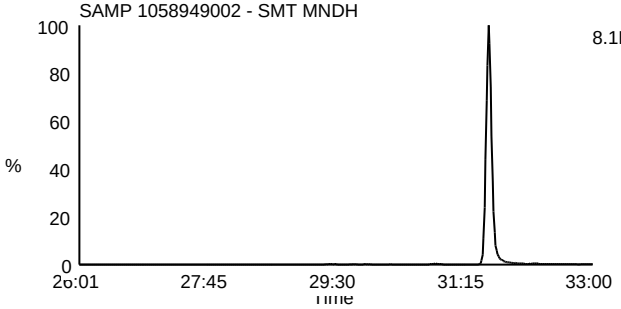
Data File: P70927A_12 G2 C8 - 355.8546
SAMP 1058949002 - SMT MNDH
2.2E+4



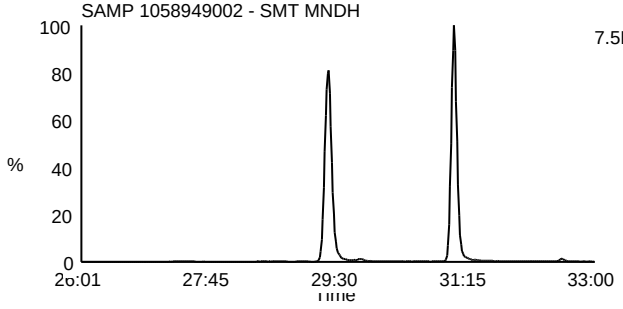
Data File: P70927A_12 G2 C3 - 351.8999
SAMP 1058949002 - SMT MNDH
1.2E+7



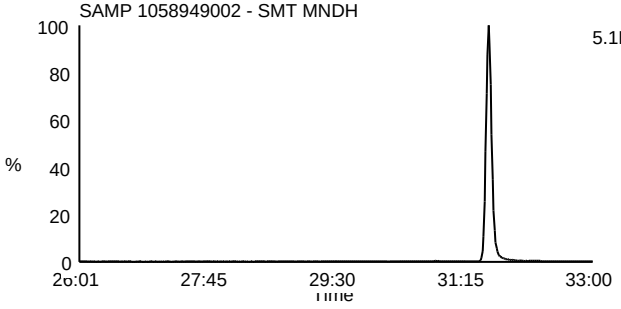
Data File: P70927A_12 G2 C10 - 367.8948
SAMP 1058949002 - SMT MNDH
8.1E+6



Data File: P70927A_12 G2 C5 - 353.8969
SAMP 1058949002 - SMT MNDH
7.5E+6



Data File: P70927A_12 G2 C11 - 369.8918
SAMP 1058949002 - SMT MNDH
5.1E+6



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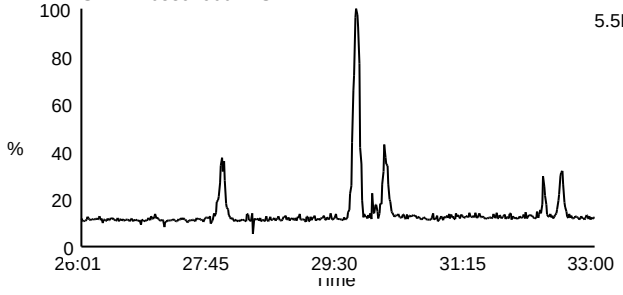
SAMP 1058949002 - SMT MNDH
5.5E+4



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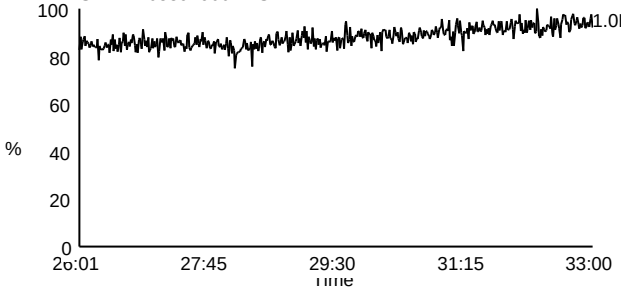
SAMP 1058949002 - SMT MNDH
1.0E+6

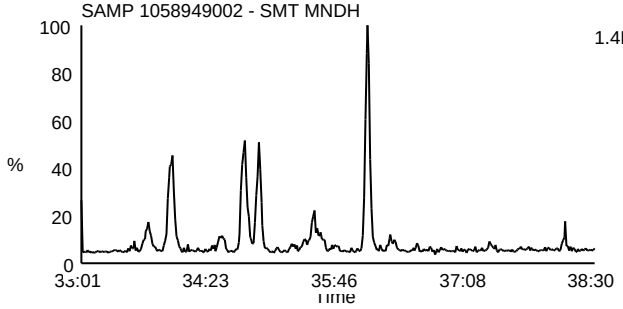


Homologue Group: Hexas

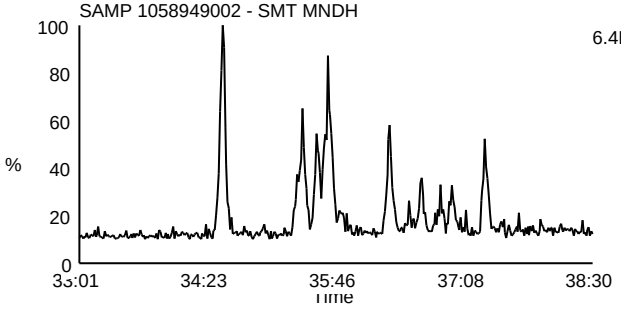
Data File Name: P70927A_12
Date Acquired: 9/27/2007
Sample Description: SAMP 1058949002 - SMT MNDH

Lab Sample ID: 1058949002
Client Sample ID: MTLNB-200729488
Instrument: 10MSHR09 (P)

Data File: P70927A_12 G3 C1 - 373.8207
SAMP 1058949002 - SMT MNDH
1.4E+5



Data File: P70927A_12 G3 C7 - 389.8156
SAMP 1058949002 - SMT MNDH
6.4E+4



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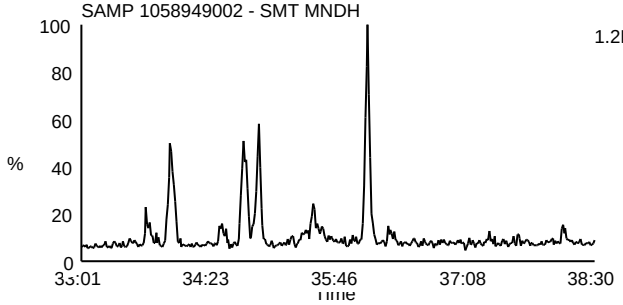
1.2E+5



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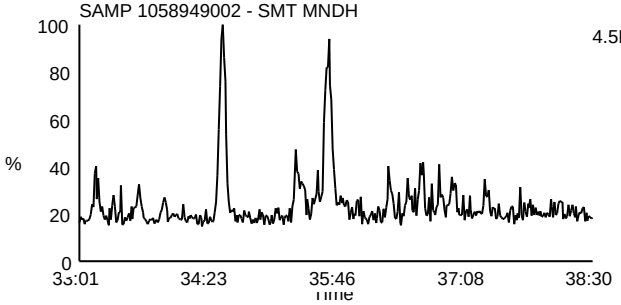
SAMP 1058949002 - SMT MNDH
4.5E+4



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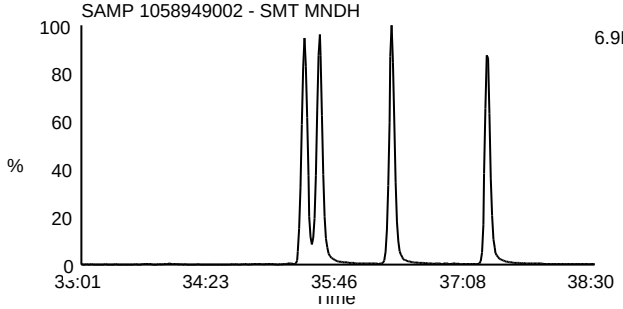
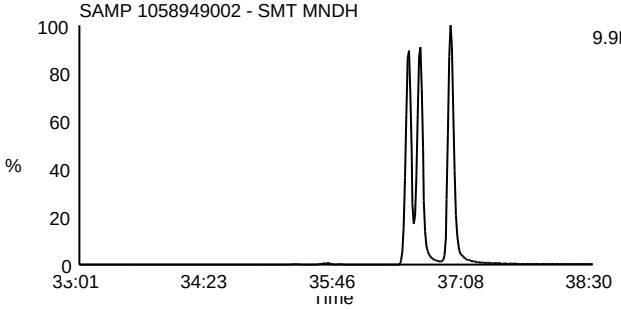
SAMP 1058949002 - SMT MNDH
6.9E+6



Data File: P70927A_12 G3 C9 - 401.8559
SAMP 1058949002 - SMT MNDH
9.9E+6



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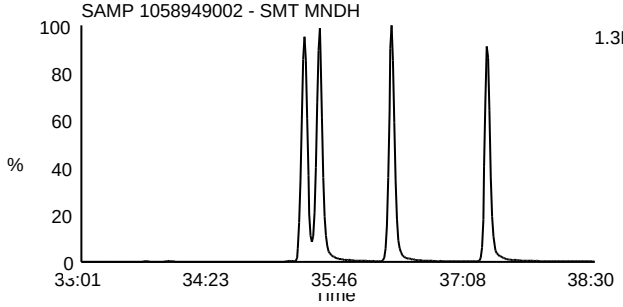
SAMP 1058949002 - SMT MNDH
1.3E+7



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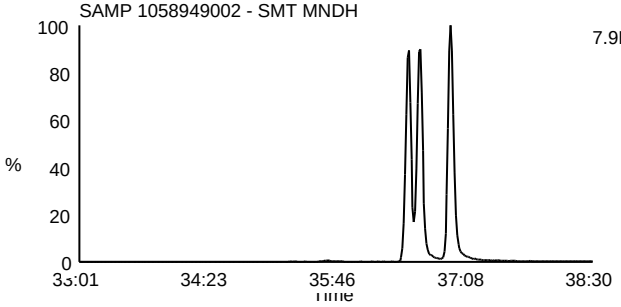
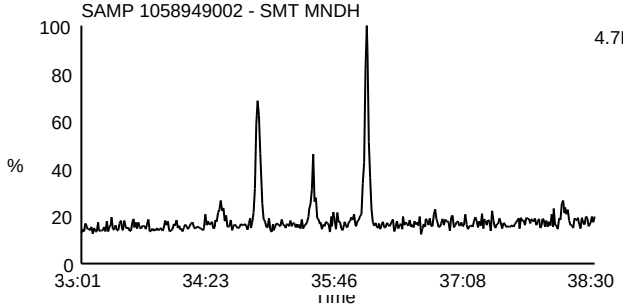
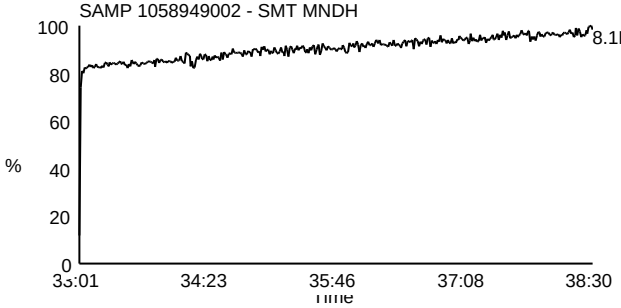
SAMP 1058949002 - SMT MNDH
7.9E+6



Data File: P70927A_12 G3 C11 - 445.7555
SAMP 1058949002 - SMT MNDH
4.7E+4



Data File: P70927A_12 G3 C3 - 380.976
SAMP 1058949002 - SMT MNDH
8.1E+6

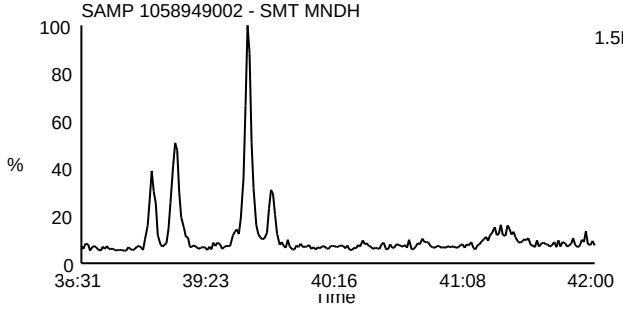


Homologue Group: Heptas

Data File Name: P70927A_12
Date Acquired: 9/27/2007
Sample Description: SAMP 1058949002 - SMT MNDH

Lab Sample ID: 1058949002
Client Sample ID: MTLNB-200729488
Instrument: 10MSHR09 (P)

Data File: P70927A 12 G4 C3 - 407.7818
SAMP 1058949002 - SMT MNDH
1.5E+5



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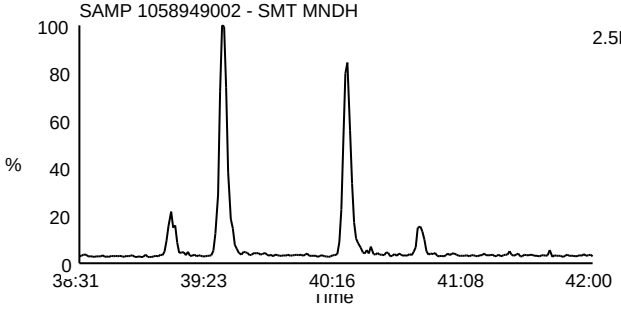
SAMP 1058949002 - SMT MNDH
2.5E+5



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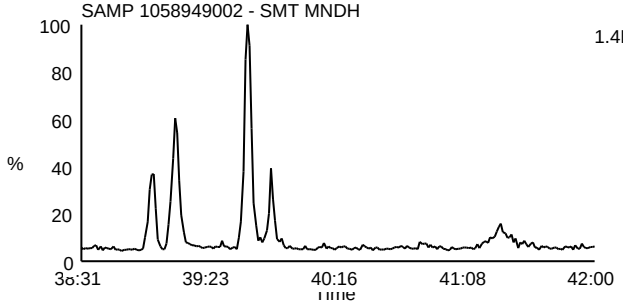
SAMP 1058949002 - SMT MNDH
1.4E+5



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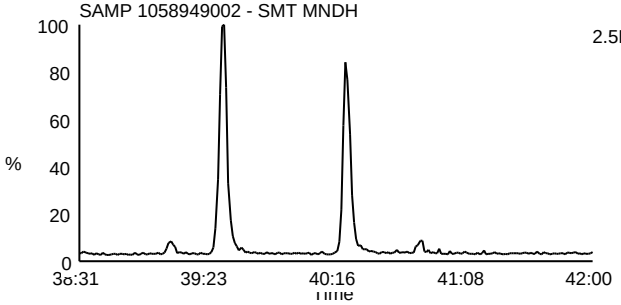
SAMP 1058949002 - SMT MNDH
2.5E+5



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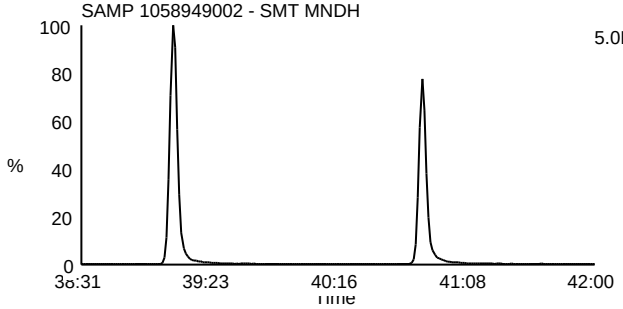
SAMP 1058949002 - SMT MNDH
5.0E+6



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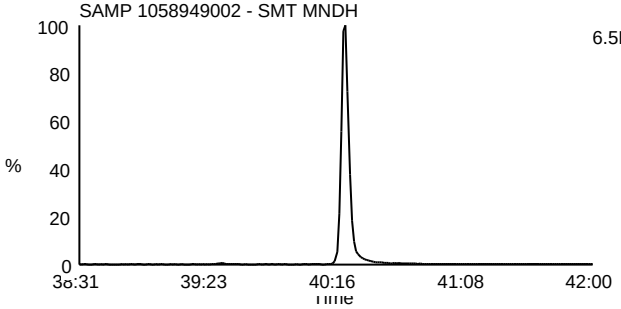
SAMP 1058949002 - SMT MNDH
6.5E+6



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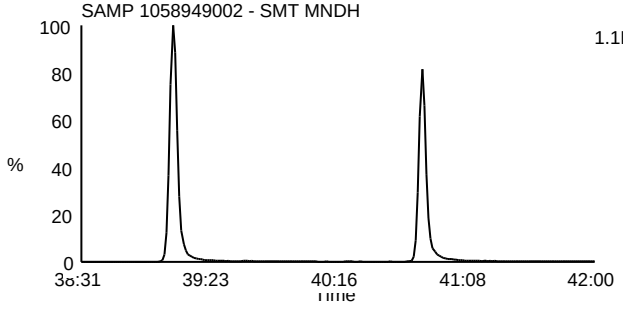
SAMP 1058949002 - SMT MNDH
1.1E+7



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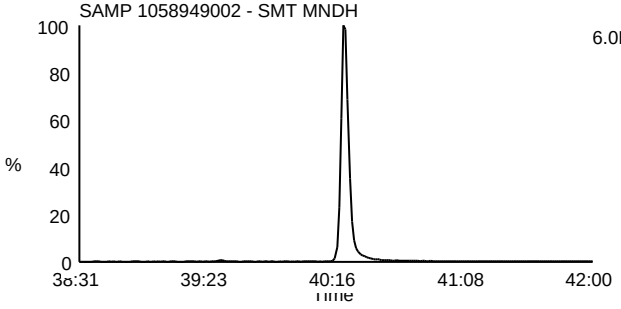
SAMP 1058949002 - SMT MNDH
6.0E+6



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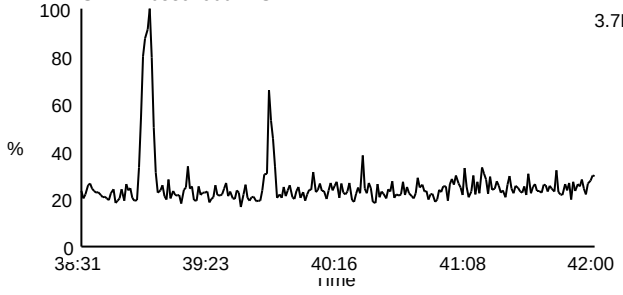
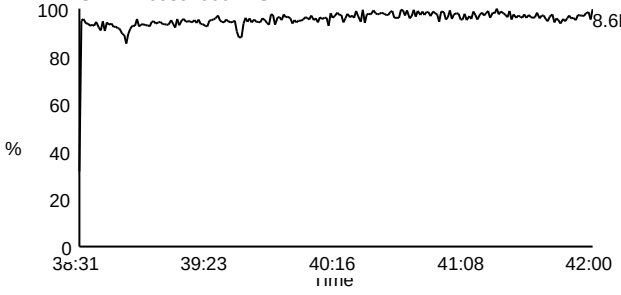
SAMP 1058949002 - SMT MNDH
3.7E+4



Data File: P70927A_12 G4 C1 - 380.976
SAMP 1058949002 - SMT MNDH
8.6E+6

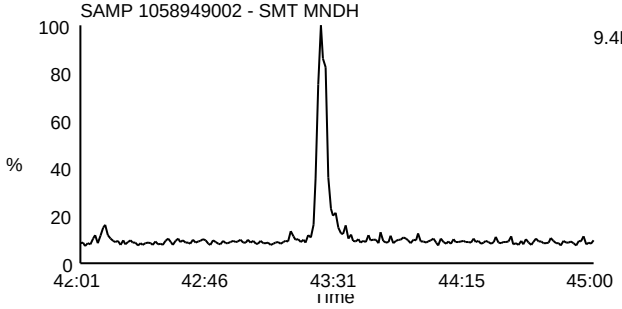


Homologue Group: Octas

Data File Name: P70927A_12
Date Acquired: 9/27/2007
Sample Description: SAMP 1058949002 - SMT MNDH

Lab Sample ID: 1058949002
Client Sample ID: MTLNB-200729488
Instrument: 10MSHR09 (P)

Data File: P70927A_12 G5 C4 - 441.7428
SAMP 1058949002 - SMT MNDH
9.4E+4



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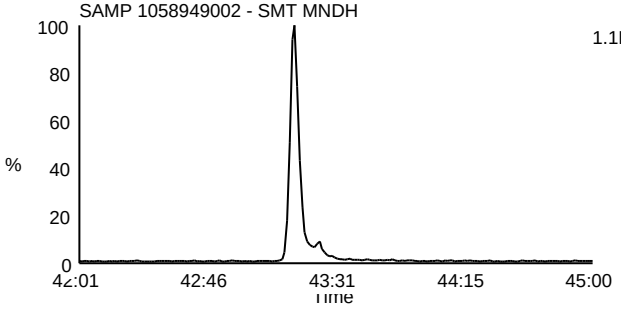
1.1E+6



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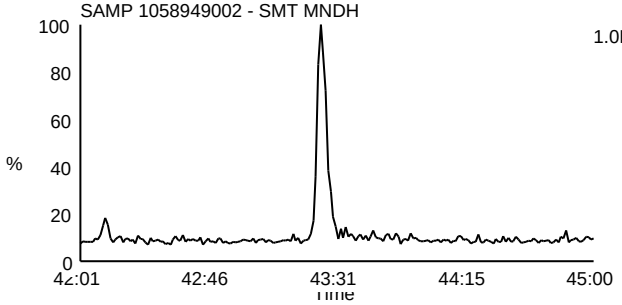
SAMP 1058949002 - SMT MNDH
1.0E+5



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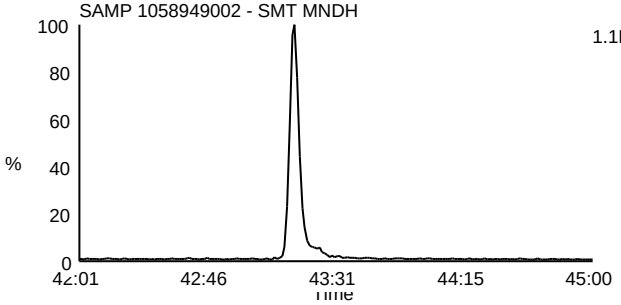
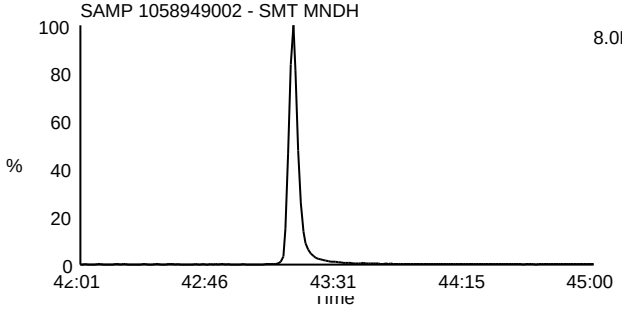
1.1E+6



Data File: P70927A_12 G5 C11 - 469.7779
SAMP 1058949002 - SMT MNDH
8.0E+6



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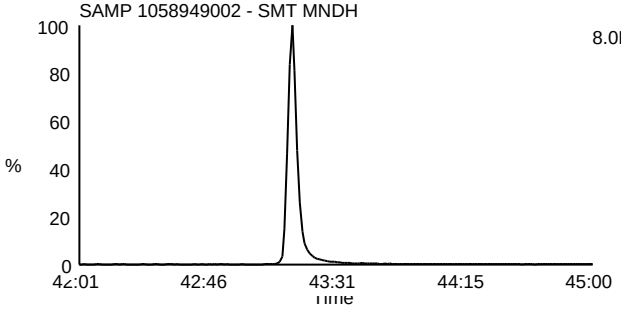
8.0E+6



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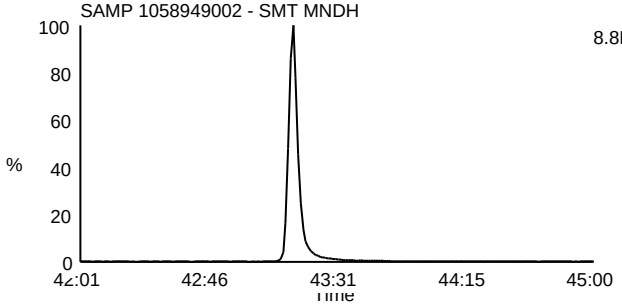
SAMP 1058949002 - SMT MNDH
8.8E+6



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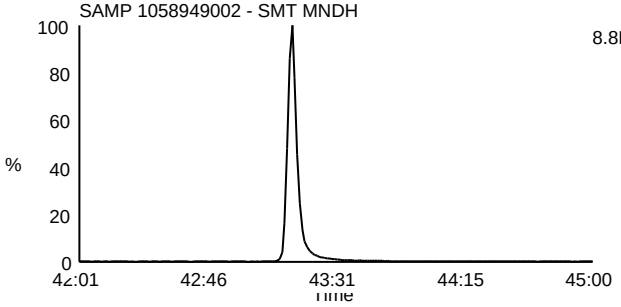
8.8E+6



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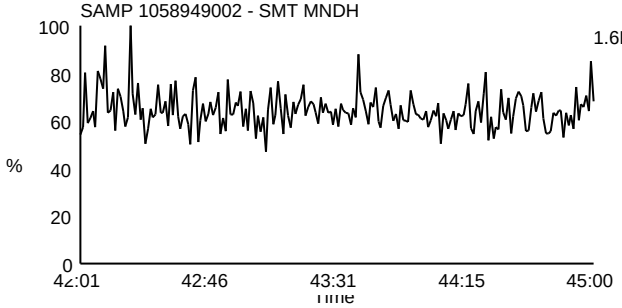
1.6E+4



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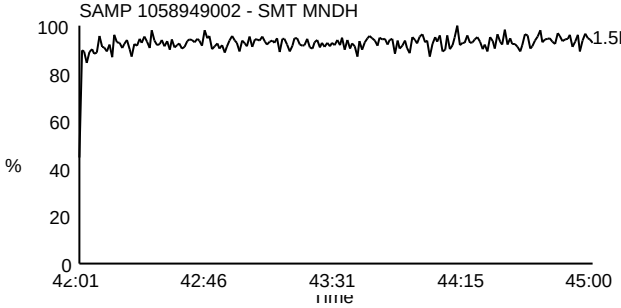
1.5E+6



Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

PCDD/PCDF Detected Peak List

Prepared By _____ Date _____

Reviewed By _____ Date _____

Client Name	Minnesota Dept. of Health		
Client ID	MTLB-200729487	Injected By	SMT
Lab ID	1058949001	Instrument ID	10MSHR09 (P)
Filename	P70927A_11	GC Column ID	US6872627H
Analyzed	09/27/2007 15:37	ICAL Date	08/29/2007

Tetra-Furans:		RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
2,3,7,8-TCDF-13C		21:39	5.94e7	7.57e7	9.34e6	1.15e7	2.031e3	9.681e3	0.79	
2,3,7,8-TCDF		21:41	3.06e4	3.35e4	4.63e3	6.06e3	1.338e3	1.378e3	0.91	I
Other TCDF	1	20:39	2.32e4	3.53e4					0.66	
Ethers	1	24:59	4.14e4	5.74e4					0.72	E
	2	23:41	5.93e4	8.06e4					0.74	E
	3	20:25	1.22e5	1.58e5					0.77	E
	4	23:23	1.20e5	1.54e5					0.78	E

Tetra-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4-TCDD-13C	21:52	4.84e7	6.06e7	9.13e6	1.16e7	4.093e3	2.451e3	0.80	
2,3,7,8-TCDD-13C	22:44	4.21e7	5.18e7	6.57e6	7.99e6	3.216e3	7.624e2	0.81	
2,3,7,8-TCDD-37Cl4	22:46	9.18e6		1.38e6		2.974e3	-----		
2,3,7,8-TCDD	22:47	ND	ND	ND	ND	9.020e2	1.274e3		

Penta-Furans:		RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDF-13C		29:23	6.97e7	4.38e7	1.03e7	6.43e6	5.626e3	1.252e4	1.59	
2,3,4,7,8-PeCDF-13C		31:06	7.18e7	4.53e7	1.26e7	7.98e6	8.908e3	8.527e3	1.59	
1,2,3,7,8-PeCDF		29:24	2.72e4	2.04e4	5.67e3	4.63e3	1.172e3	9.526e2	1.33	
2,3,4,7,8-PeCDF		31:08	2.36e4	1.78e4	6.78e3	4.67e3	1.468e3	1.287e3	1.32	
Other PeCDF	1	32:34	3.10e4	2.16e4					1.43	
Ethers	1	27:58	4.81e4	3.44e4					1.40	E
	2	29:47	1.84e5	1.11e5					1.65	E
	3	30:11	7.14e4	4.02e4					1.78	E

Penta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDD-13C	31:36	4.93e7	3.15e7	8.55e6	5.62e6	5.783e4	1.582e4	1.56	
1,2,3,7,8-PeCDD	31:39	ND	ND	ND	ND	2.263e3	1.426e3		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Client Name	Minnesota Dept. of Health		
Client ID	MTLB-200729487	Injected By	SMT
Lab ID	1058949001	Instrument ID	10MSHR09 (P)
Filename	P70927A_11	GC Column ID	US6872627H
Analyzed	09/27/2007 15:37	ICAL Date	08/29/2007

Hexa-Furans:		RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDF-13C		35:24	2.91e7	5.52e7	6.67e6	1.24e7	1.070e3	1.532e3	0.53	
1,2,3,6,7,8-HxCDF-13C		35:34	3.28e7	6.19e7	7.07e6	1.31e7	2.607e4	3.813e4	0.53	
2,3,4,6,7,8-HxCDF-13C		36:20	3.07e7	5.90e7	7.27e6	1.41e7	1.125e3	1.980e3	0.52	
1,2,3,7,8,9-HxCDF-13C		37:22	2.42e7	4.60e7	5.45e6	1.02e7	5.321e3	1.899e3	0.53	
1,2,3,4,7,8-HxCDF		35:25	ND	ND	ND	ND	1.451e3	2.646e3		
1,2,3,6,7,8-HxCDF		35:35	ND	ND	ND	ND	1.451e3	2.646e3		
2,3,4,6,7,8-HxCDF		36:21	ND	ND	ND	ND	2.984e3	2.412e3		
1,2,3,7,8,9-HxCDF		37:23	ND	ND	ND	ND	1.716e3	2.543e3		
Other HxCDF	1	34:46	7.98e4	7.35e4					1.09	
Ethers	1	34:55	8.20e4	7.06e4					1.16	E
	2	36:05	1.22e5	1.06e5					1.15	E

Hexa-Dioxins:		RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDD-13C		36:31	3.64e7	2.85e7	9.93e6	7.65e6	6.000e4	4.373e4	1.28	
1,2,3,6,7,8-HxCDD-13C		36:39	4.32e7	3.38e7	9.74e6	7.73e6	3.759e3	5.063e3	1.28	
1,2,3,7,8,9-HxCDD-13C		36:59	4.43e7	3.59e7	1.03e7	8.06e6	4.408e3	4.733e4	1.23	
1,2,3,4,7,8-HxCDD		36:32	ND	ND	ND	ND	2.214e3	2.028e3		
1,2,3,6,7,8-HxCDD		36:39	3.25e4	2.66e4	8.92e3	7.84e3	3.003e3	2.028e3	1.22	
1,2,3,7,8,9-HxCDD		37:01	ND	ND	ND	ND	2.214e3	1.334e3		
Other HxCDD	1	34:33	6.80e4	6.23e4					1.09	
	2	35:42	9.84e4	8.25e4					1.19	

Hepta-Furans:		RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDF-13C		39:08	1.78e7	3.98e7	4.73e6	1.05e7	8.003e3	7.400e3	0.45	
1,2,3,4,7,8,9-HpCDF-13C		40:50	1.19e7	2.71e7	3.04e6	6.98e6	4.837e3	2.606e3	0.44	
1,2,3,4,6,7,8-HpCDF		39:09	1.06e5	1.03e5	2.20e4	2.76e4	3.787e3	2.543e3	1.03	
1,2,3,4,7,8,9-HpCDF		40:50	ND	ND	ND	ND	3.941e3	2.512e3		
Ethers	1	39:00	9.25e4	7.70e4					1.20	E

Hepta-Dioxins:		RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDD-13C		40:18	1.88e7	1.75e7	5.06e6	4.81e6	5.317e3	4.624e3	1.07	
1,2,3,4,6,7,8-HpCDD		40:19	1.53e5	1.51e5	4.28e4	3.68e4	3.350e3	2.786e3	1.01	
Other HpCDD	1	39:29	2.62e5	2.35e5					1.12	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Client Name	Minnesota Dept. of Health		
Client ID	MTLB-200729487	Injected By	SMT
Lab ID	1058949001	Instrument ID	10MSHR09 (P)
Filename	P70927A_11	GC Column ID	US6872627H
Analyzed	09/27/2007 15:37	ICAL Date	08/29/2007

Octa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDF	43:25	1.03e5	1.14e5	2.16e4	2.37e4	2.533e3	3.137e3	0.90	

Octa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDD-13C	43:14	2.04e7	2.24e7	5.25e6	5.78e6	4.161e3	7.221e3	0.91	
OCDD	43:14	5.35e5	5.86e5	1.42e5	3.89e5	6.592e3	2.260e4	0.91	

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PCDD/PCDF Detected Peak List

Prepared By _____ Date _____

Reviewed By _____ Date _____

Client Name	Minnesota Dept. of Health		
Client ID	MTLNB-200729488	Injected By	SMT
Lab ID	1058949002	Instrument ID	10MSHR09 (P)
Filename	P70927A_12	GC Column ID	US6872627H
Analyzed	09/27/2007 16:25	ICAL Date	08/29/2007

Tetra-Furans:		RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
2,3,7,8-TCDF-13C		21:40	5.93e7	7.46e7	9.00e6	1.12e7	2.491e4	3.057e3	0.80	
2,3,7,8-TCDF		21:41	4.01e4	4.58e4	9.75e3	9.01e3	2.245e3	1.167e3	0.88	
Other TCDF	1	17:53	3.89e4	4.63e4					0.84	
	2	18:09	5.15e4	6.99e4					0.74	
	3	19:12	5.09e4	6.08e4					0.84	
Ethers	1	18:55	6.53e4	8.19e4					0.80	E
	2	20:25	4.46e5	5.38e5					0.83	E
	3	22:36	9.04e4	1.36e5					0.66	E
	4	23:23	8.20e5	1.00e6					0.82	E
	5	23:41	5.94e5	7.64e5					0.78	E
	6	24:58	2.48e5	3.33e5					0.75	E

Tetra-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4-TCDD-13C	21:53	4.60e7	5.76e7	8.85e6	1.13e7	4.107e3	2.155e3	0.80	
2,3,7,8-TCDD-13C	22:44	4.10e7	5.19e7	6.04e6	7.55e6	4.156e3	3.464e3	0.79	
2,3,7,8-TCDD-37Cl4	22:46	9.88e6		1.49e6		2.168e3	-----		
2,3,7,8-TCDD	22:47	ND	ND	ND	ND	9.643e2	1.223e3		

Penta-Furans:		RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDF-13C		29:23	6.66e7	4.19e7	9.67e6	6.09e6	1.530e4	5.869e3	1.59	
2,3,4,7,8-PeCDF-13C		31:06	6.69e7	4.15e7	1.20e7	7.51e6	4.073e3	6.051e3	1.61	
1,2,3,7,8-PeCDF		29:25	4.09e4	2.16e4	6.00e3	2.89e3	1.222e3	1.115e3	1.89	I
2,3,4,7,8-PeCDF		31:08	5.14e4	3.28e4	7.68e3	6.79e3	1.403e3	6.453e2	1.57	
Other PeCDF	1	27:27	1.24e5	8.61e4					1.44	
	2	28:39	5.26e4	3.18e4					1.65	
	3	24:25	2.67e5	1.90e5					1.41	
Ethers	1	27:56	1.67e5	1.18e5					1.42	E
	2	29:46	8.24e5	5.54e5					1.49	E
	3	30:11	1.32e5	9.52e4					1.38	E
	4	32:19	7.46e4	5.65e4					1.32	E
	5	32:33	1.94e5	1.24e5					1.56	E

REPORT OF LABORATORY ANALYSIS

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Client Name	Minnesota Dept. of Health		
Client ID	MTLNB-200729488	Injected By	SMT
Lab ID	1058949002	Instrument ID	10MSHR09 (P)
Filename	P70927A_12	GC Column ID	US6872627H
Analyzed	09/27/2007 16:25	ICAL Date	08/29/2007

Penta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDD-13C	31:36	4.47e7	2.81e7	8.11e6	5.04e6	2.077e4	1.270e4	1.59	
1,2,3,7,8-PeCDD	31:37	1.71e4	1.41e4	2.69e4	3.28e3	1.597e3	1.109e3	1.22	I

Hexa-Furans:		RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDF-13C		35:25	2.82e7	5.39e7	6.47e6	1.22e7	2.189e4	2.526e3	0.52	
1,2,3,6,7,8-HxCDF-13C		35:34	3.20e7	6.12e7	6.57e6	1.27e7	2.189e4	3.360e4	0.52	
2,3,4,6,7,8-HxCDF-13C		36:21	3.00e7	5.74e7	6.85e6	1.28e7	1.718e3	8.609e2	0.52	
1,2,3,7,8,9-HxCDF-13C		37:22	2.52e7	4.99e7	5.97e6	1.16e7	8.683e3	5.105e3	0.51	
1,2,3,4,7,8-HxCDF		35:24	2.68e4	2.49e4	6.62e3	7.47e3	1.801e3	3.558e3	1.08	
1,2,3,6,7,8-HxCDF		35:36	3.67e4	3.42e4	2.35e4	1.99e4	1.801e3	1.991e3	1.07	
2,3,4,6,7,8-HxCDF		36:20	4.85e4	4.28e4	9.13e3	9.37e3	1.801e3	3.639e3	1.13	
1,2,3,7,8,9-HxCDF		37:23	ND	ND	ND	ND	1.801e3	2.386e3		
Other HxCDF	1	33:58	2.76e5	2.31e5					1.20	
	2	34:46	2.81e5	2.22e5					1.26	
Ethers	1	35:30	1.11e5	9.33e4					1.19	E
	2	34:31	4.78e4	4.54e4					1.05	E
	3	34:55	2.24e5	2.05e5					1.09	E
	4	36:04	4.80e5	3.87e5					1.24	E

Hexa-Dioxins:		RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDD-13C		36:32	3.60e7	2.83e7	8.81e6	7.05e6	5.402e4	5.717e3	1.27	
1,2,3,6,7,8-HxCDD-13C		36:39	4.03e7	3.24e7	8.94e6	7.08e6	5.481e4	2.092e4	1.25	
1,2,3,7,8,9-HxCDD-13C		36:60	4.47e7	3.60e7	9.89e6	7.88e6	7.799e3	5.157e3	1.24	
1,2,3,4,7,8-HxCDD		36:33	2.81e4	2.85e4	8.54e3	7.30e3	2.780e3	2.284e3	0.99	I
1,2,3,6,7,8-HxCDD		36:40	5.95e4	4.71e4	1.46e4	1.04e4	2.383e3	2.284e3	1.26	
1,2,3,7,8,9-HxCDD		37:01	5.16e4	3.27e4	1.22e4	7.28e3	2.156e3	2.369e3	1.58	I
Other HxCDD	1	34:33	2.34e5	1.78e5					1.32	
	2	35:41	2.35e5	1.85e5					1.27	

Hepta-Furans:		RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDF-13C		39:09	1.89e7	4.10e7	4.96e6	1.08e7	2.682e3	3.930e3	0.46	
1,2,3,4,7,8,9-HpCDF-13C		40:51	1.37e7	3.20e7	3.85e6	8.77e6	2.423e3	1.884e3	0.43	
1,2,3,4,6,7,8-HpCDF		39:10	2.92e5	3.08e5	6.63e4	7.80e4	5.343e3	2.583e3	0.95	
1,2,3,4,7,8,9-HpCDF		40:51	ND	ND	ND	ND	2.417e3	1.929e3		
Other HpCDF	1	39:39	5.14e5	5.00e5					1.03	

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
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Tel: 612-607-1700
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Client Name	Minnesota Dept. of Health		
Client ID	MTLNB-200729488	Injected By	SMT
Lab ID	1058949002	Instrument ID	10MSHR09 (P)
Filename	P70927A_12	GC Column ID	US6872627H
Analyzed	09/27/2007 16:25	ICAL Date	08/29/2007

Ethers	1	39:49	1.42e5	1.39e5					1.02	E
	2	39:00	1.67e5	1.65e5					1.01	E

Hepta-Dioxins:		RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDD-13C		40:19	2.48e7	2.31e7	6.52e6	6.04e6	7.072e2	1.639e3	1.07	
1,2,3,4,6,7,8-HpCDD		40:20	7.54e5	7.37e5	2.03e5	1.99e5	1.719e3	5.740e2	1.02	
Other HpCDD	1	39:30	9.64e5	9.61e5					1.00	

Octa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDF	43:25	3.50e5	3.85e5	8.60e4	9.28e4	1.216e3	2.008e3	0.91	

Octa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDD-13C	43:16	3.20e7	3.50e7	8.00e6	8.74e6	2.798e3	3.184e3	0.91	
OCDD	43:17	3.98e6	4.54e6	1.04e6	1.14e6	2.634e3	4.463e3	0.88	

REPORT OF LABORATORY ANALYSIS

Appendix E

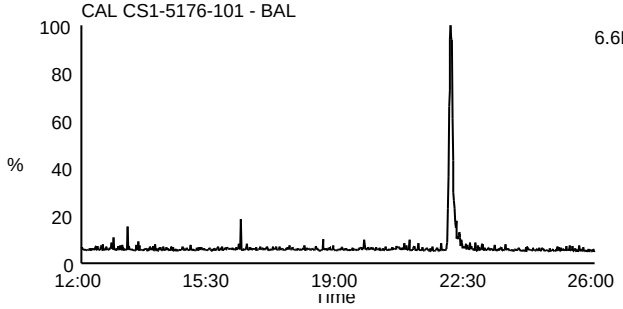
Calibration Raw Data

Homologue Group: Tetras

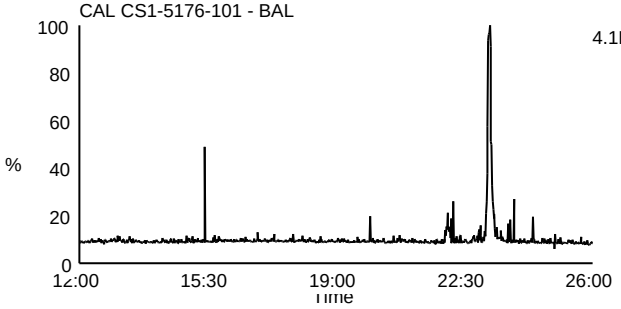
Data File Name: P70829B_04
Date Acquired: 8/29/2007
Sample Description: CAL CS1-5176-101 - BAL

Lab Sample ID: 5176-101
Client Sample ID: CS-1
Instrument: 10MSHR09 (P)

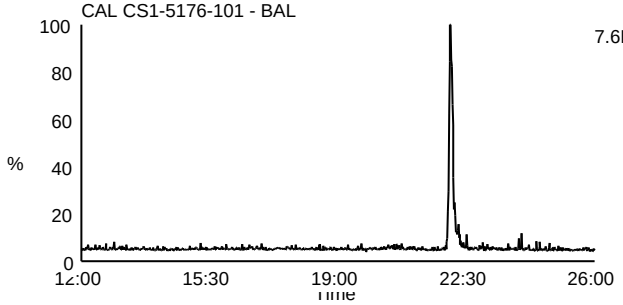
Data File: P70829B 04 G1 C1 - 303.9016
CAL CS1-5176-101 - BAL



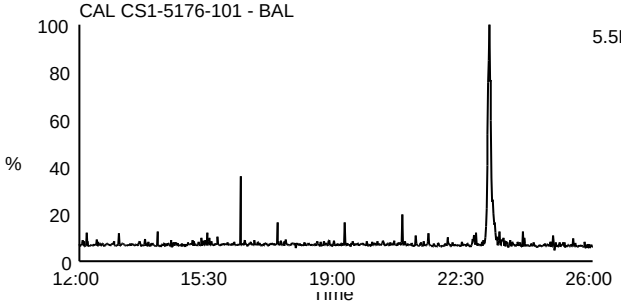
Data File: P70829B 04 G1 C7 - 319.8965
CAL CS1-5176-101 - BAL



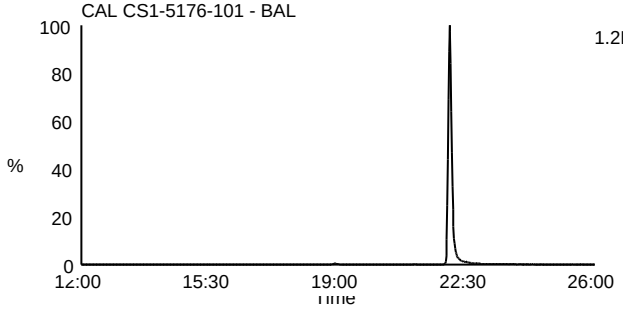
Data File: P70829B_04 G1 C2 - 305.8987
CAL CS1-5176-101 - BAL



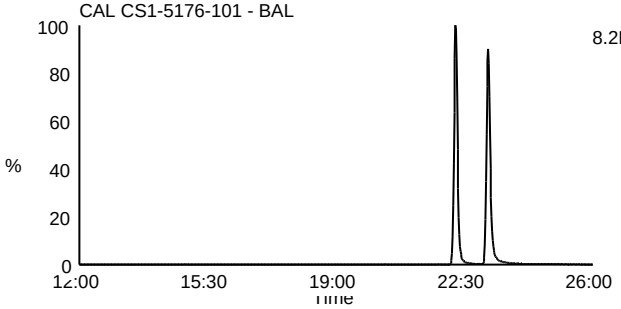
Data File: P70829B_04 G1 C8 - 321.8936
CAL CS1-5176-101 - BAL



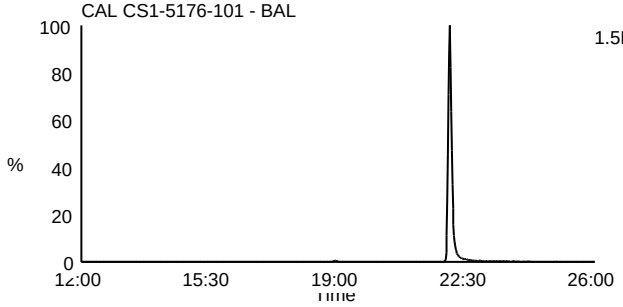
Data File: P70829B 04 G1 C3 - 315.9418
CAL CS1-5176-101 - BAL



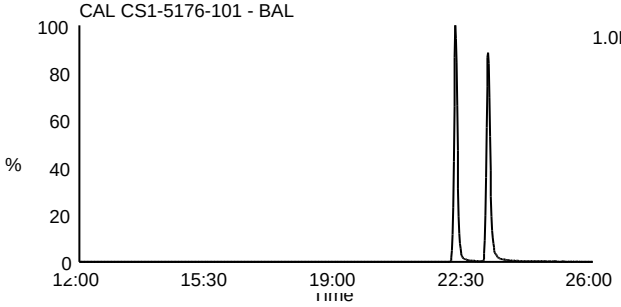
Data File: P70829B 04 G1 C10 - 331.9367
CAL CS1-5176-101 - BAL



Data File: P70829B_04 G1 C4 - 317.9389
CAL CS1-5176-101 - BAL



Data File: P70829B_04 G1 C11 - 333.9338
CAL CS1-5176-101 - BAL



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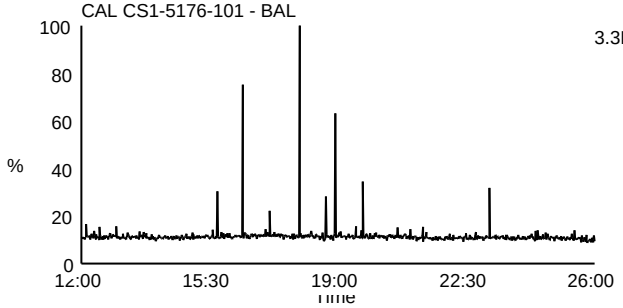
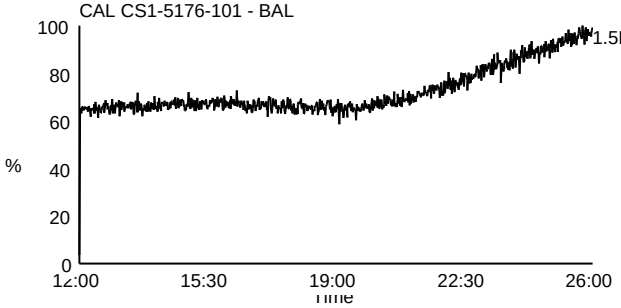
CAL CS1-5176-101 - BAL



Data File: P70829B_04 G1 C5 - 318.9792
CAL CS1-5176-101 - BAL

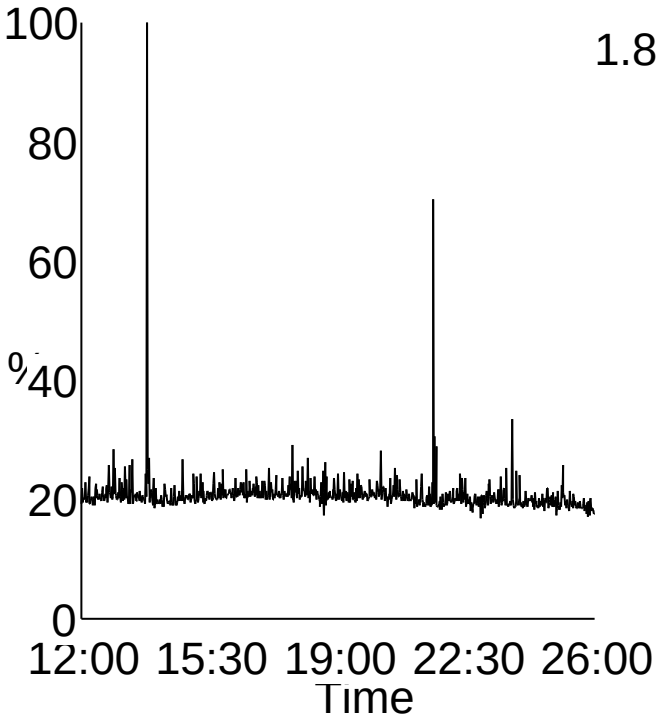


Homologue Group: Penta & Cleanup

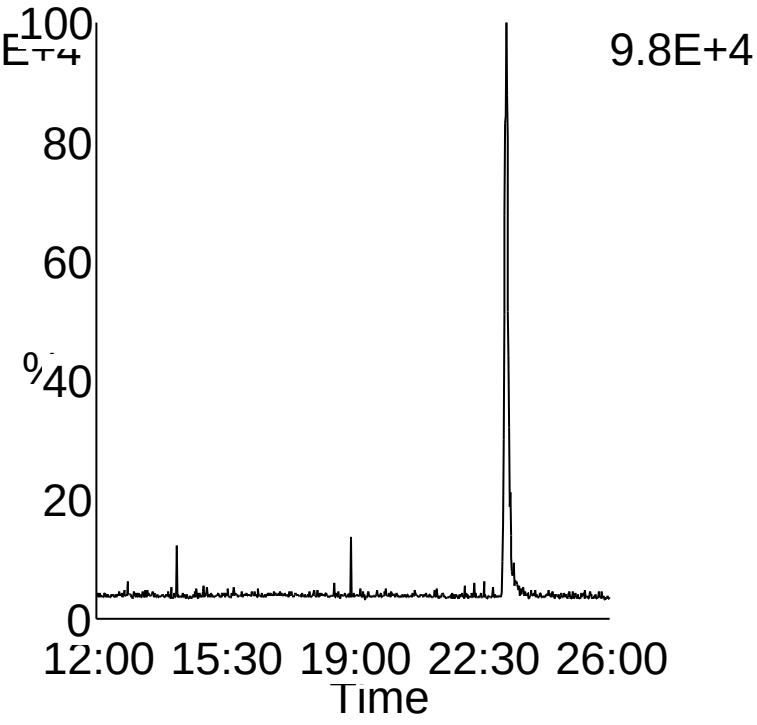
Data File Name: P70829B_04
Date Acquired: 8/29/2007
Sample Description: CAL CS1-5176-101 - BAL

Lab Sample ID: 5176-101
Client Sample ID: CS-1
Instrument: 10MSHR09 (P)

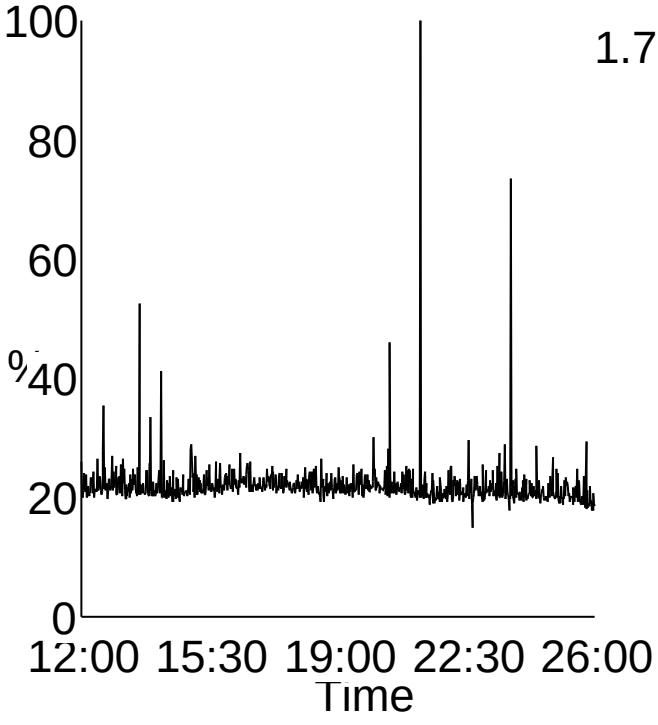
Data File: P70829B_04 G1 C12 - 339.8597
CAL CS1-5176-101 - BAL



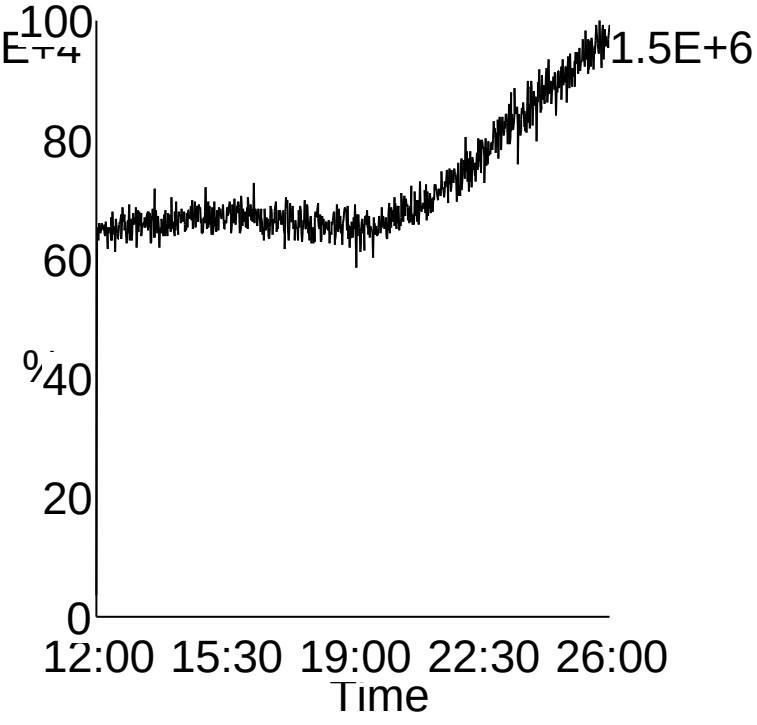
Data File: P70829B_04 G1 C9 - 327.8847
CAL CS1-5176-101 - BAL



Data File: P70829B_04 G1 C13 - 341.8567
CAL CS1-5176-101 - BAL



Data File: P70829B_04 G1 C5 - 318.9792
CAL CS1-5176-101 - BAL

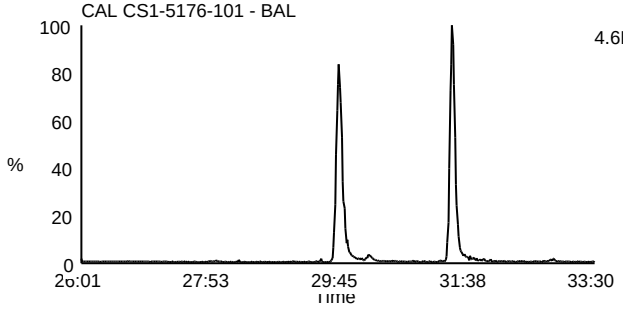


Homologue Group: Pentas

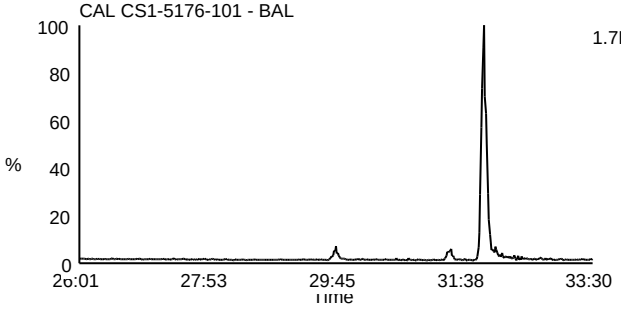
Data File Name: P70829B_04
Date Acquired: 8/29/2007
Sample Description: CAL CS1-5176-101 - BAL

Lab Sample ID: 5176-101
Client Sample ID: CS-1
Instrument: 10MSHR09 (P)

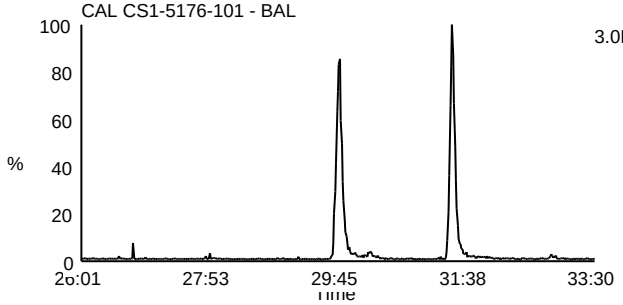
Data File: P70829B_04 G2 C1 - 339.8597
CAL CS1-5176-101 - BAL



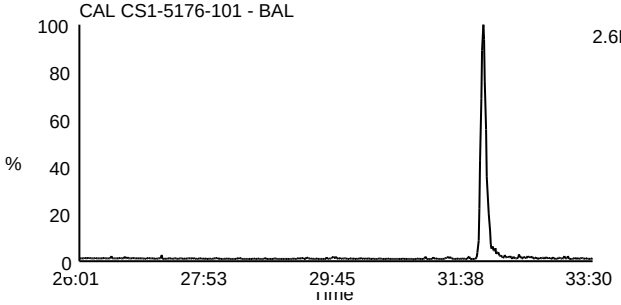
Data File: P70829B_04 G2 C4 - 353.8576
CAL CS1-5176-101 - BAL



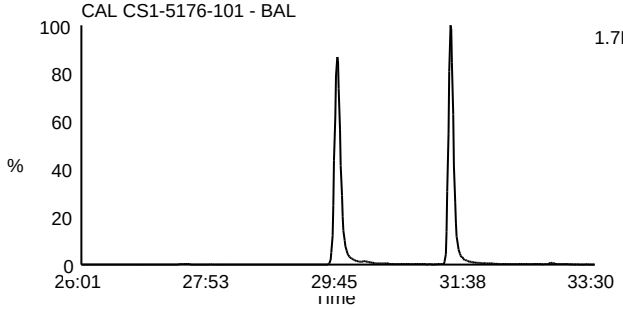
Data File: P70829B_04 G2 C2 - 341.8567
CAL CS1-5176-101 - BAL



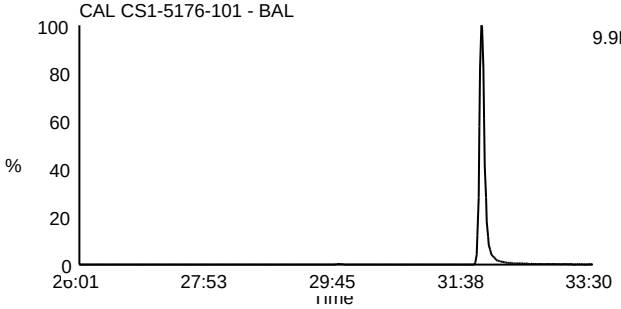
Data File: P70829B_04 G2 C8 - 355.8546
CAL CS1-5176-101 - BAL



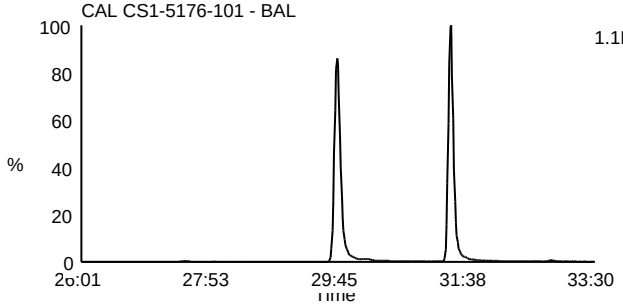
Data File: P70829B_04 G2 C3 - 351.8999
CAL CS1-5176-101 - BAL



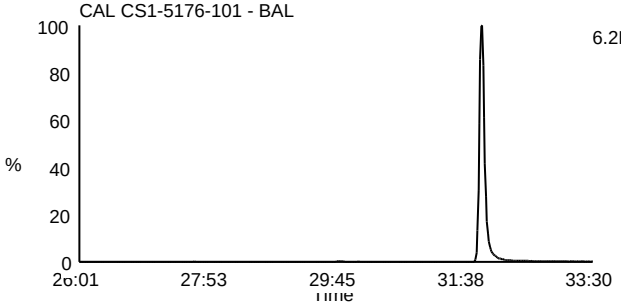
Data File: P70829B_04 G2 C10 - 367.8948
CAL CS1-5176-101 - BAL



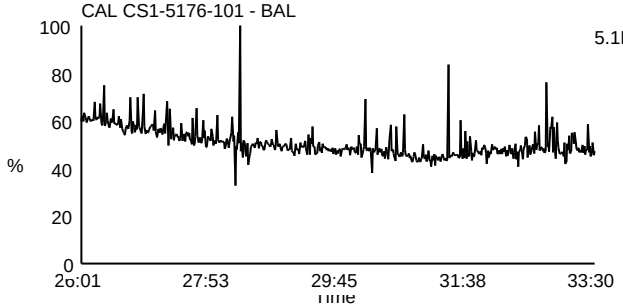
Data File: P70829B_04 G2 C5 - 353.8969
CAL CS1-5176-101 - BAL



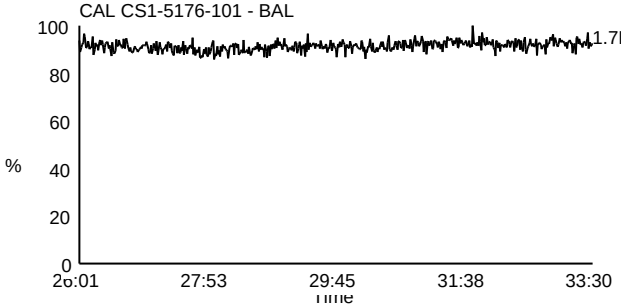
Data File: P70829B_04 G2 C11 - 369.8918
CAL CS1-5176-101 - BAL



Data File: P70829B_04 G2 C12 - 409.7974
CAL CS1-5176-101 - BAL



Data File: P70829B_04 G2 C6 - 354.9792
CAL CS1-5176-101 - BAL

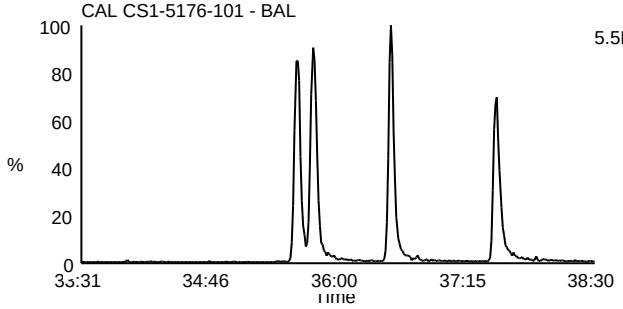


Homologue Group: Hexas

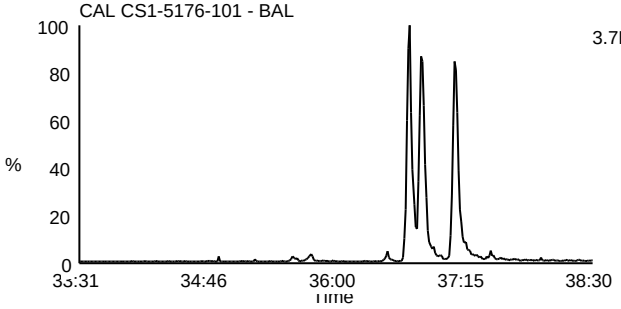
Data File Name: P70829B_04
Date Acquired: 8/29/2007
Sample Description: CAL CS1-5176-101 - BAL

Lab Sample ID: 5176-101
Client Sample ID: CS-1
Instrument: 10MSHR09 (P)

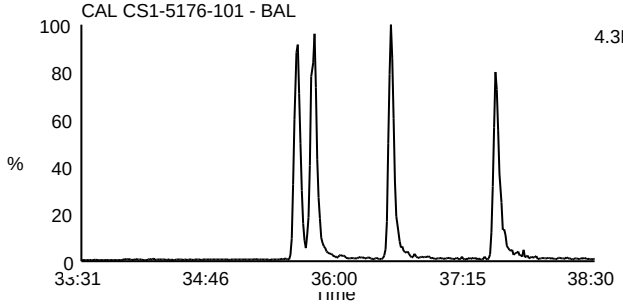
Data File: P70829B 04 G3 C1 - 373.8207
CAL CS1-5176-101 - BAL



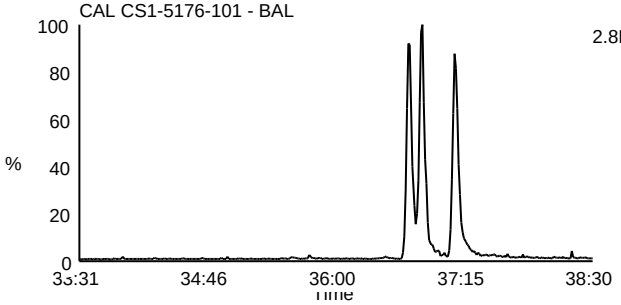
Data File: P70829B 04 G3 C7 - 389.8156
CAL CS1-5176-101 - BAL



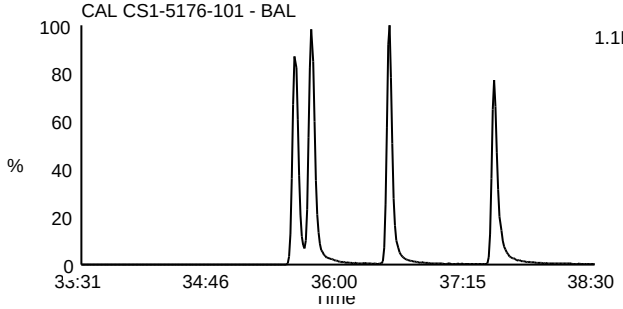
Data File: P70829B_04 G3 C2 - 375.8178
CAL CS1-5176-101 - BAL



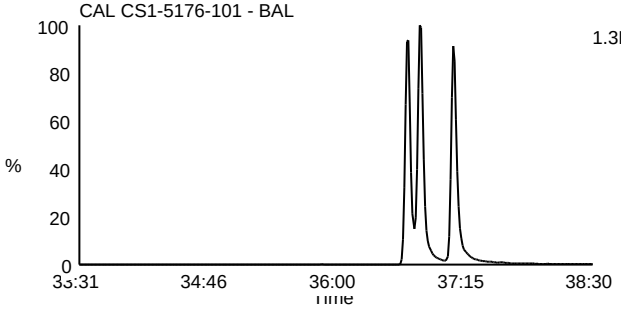
Data File: P70829B_04 G3 C8 - 391.8127
CAL CS1-5176-101 - BAL



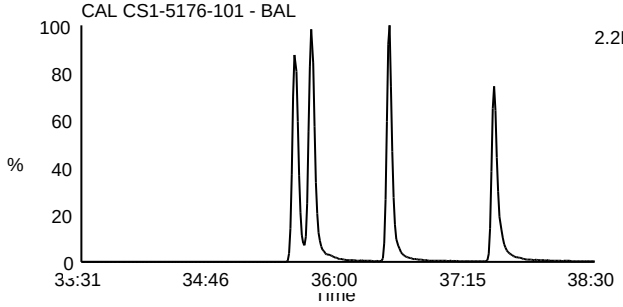
Data File: P70829B 04 G3 C5 - 383.8639
CAL CS1-5176-101 - BAL



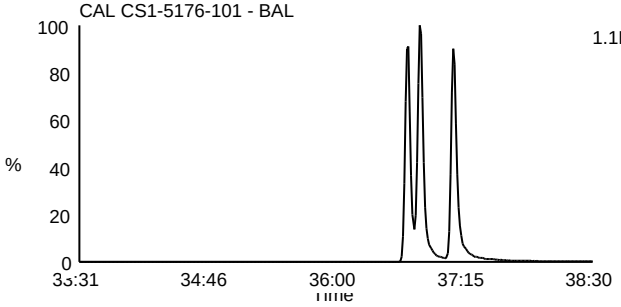
Data File: P70829B 04 G3 C9 - 401.8559
CAL CS1-5176-101 - BAL



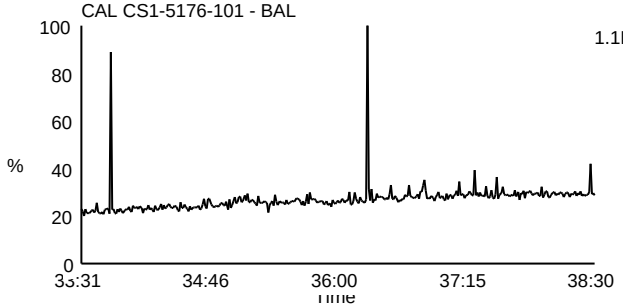
Data File: P70829B_04 G3 C6 - 385.861
CAL CS1-5176-101 - BAL



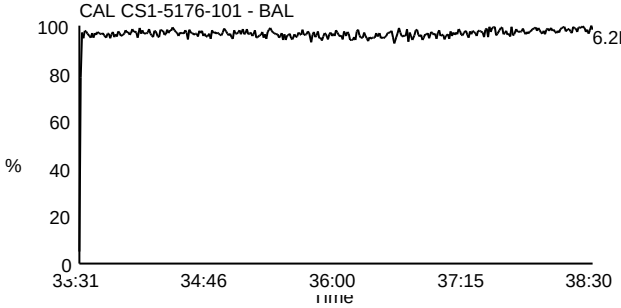
Data File: P70829B_04 G3 C10 - 403.8529
CAL CS1-5176-101 - BAL



Data File: P70829B_04 G3 C11 - 445.7555
CAL CS1-5176-101 - BAL



Data File: P70829B_04 G3 C3 - 380.976
CAL CS1-5176-101 - BAL

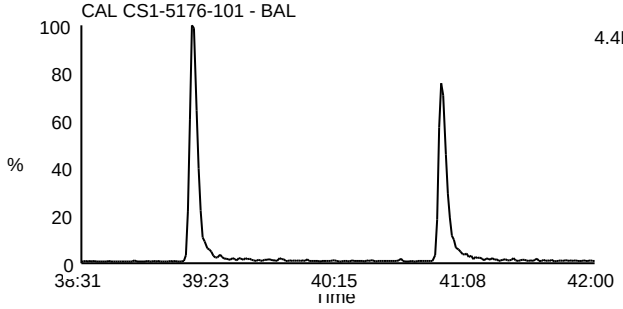


Homologue Group: Heptas

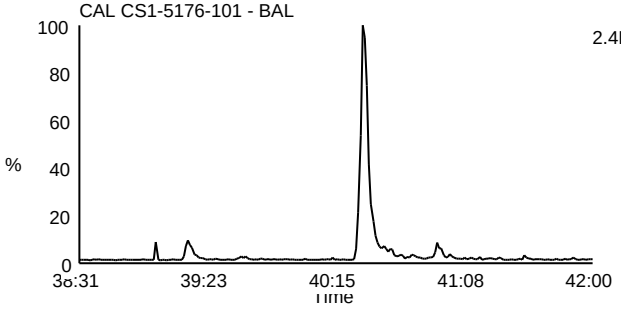
Data File Name: P70829B_04
Date Acquired: 8/29/2007
Sample Description: CAL CS1-5176-101 - BAL

Lab Sample ID: 5176-101
Client Sample ID: CS-1
Instrument: 10MSHR09 (P)

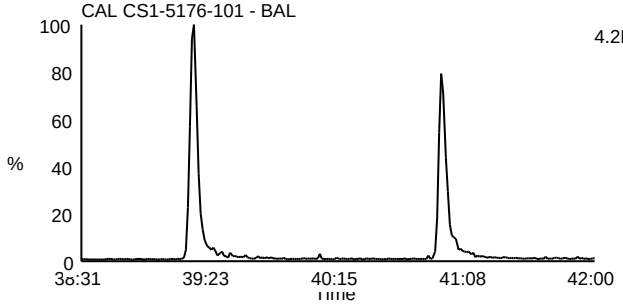
Data File: P70829B_04 G4 C3 - 407.7818
CAL CS1-5176-101 - BAL



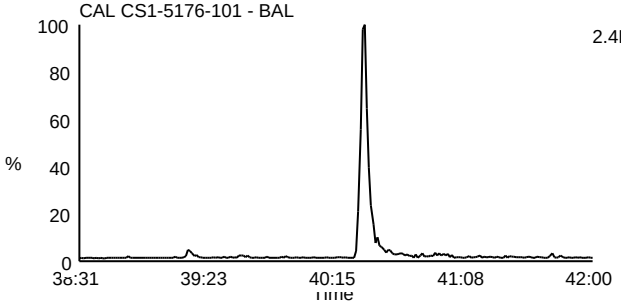
Data File: P70829B_04 G4 C8 - 423.7767
CAL CS1-5176-101 - BAL



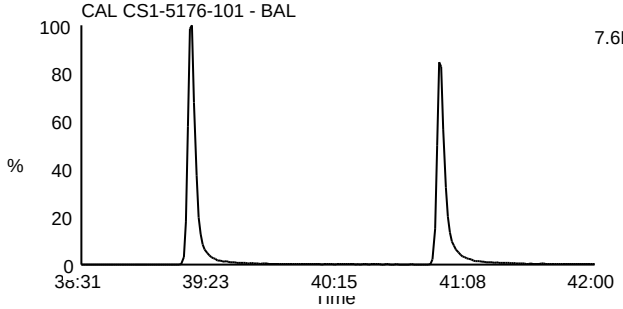
Data File: P70829B_04 G4 C4 - 409.7788
CAL CS1-5176-101 - BAL



Data File: P70829B_04 G4 C9 - 425.7737
CAL CS1-5176-101 - BAL



Data File: P70829B_04 G4 C6 - 417.825
CAL CS1-5176-101 - BAL



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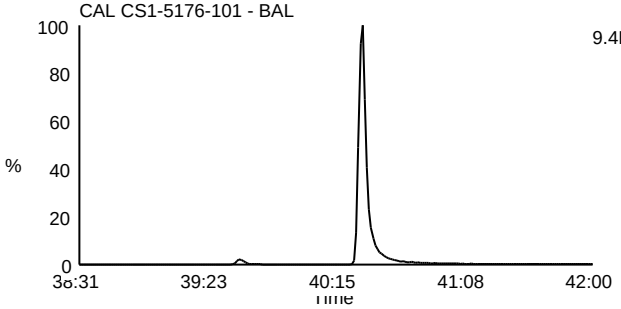
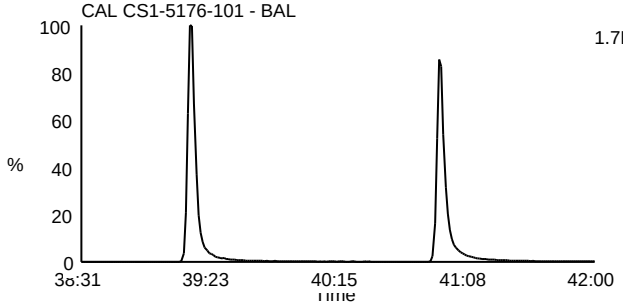
CAL CS1-5176-101 - BAL



Data File: P70829B_04 G4 C7 - 419.822
CAL CS1-5176-101 - BAL



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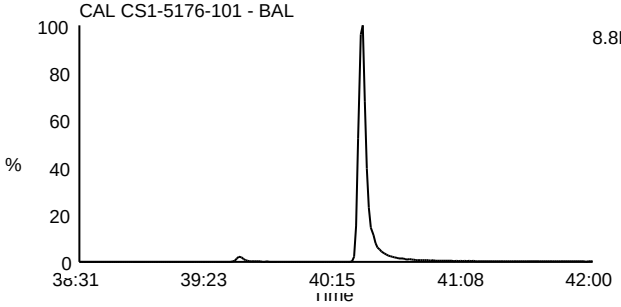
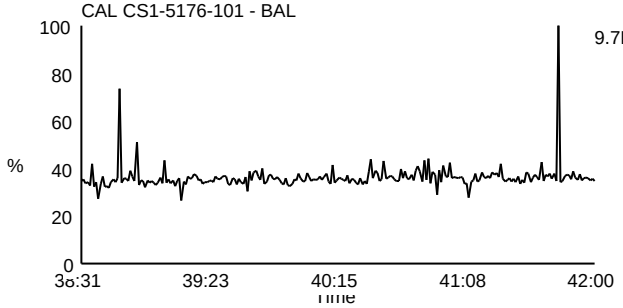
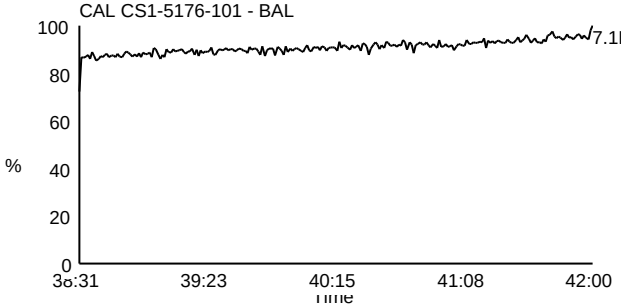
CAL CS1-5176-101 - BAL



Data File: P70829B_04 G4 C13 - 479.7165
CAL CS1-5176-101 - BAL



Data File: P70829B_04 G4 C1 - 380.976
CAL CS1-5176-101 - BAL

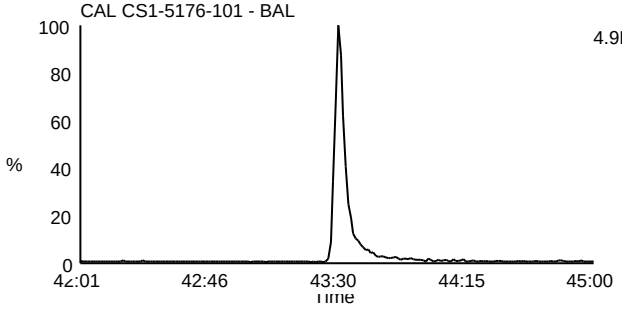


Homologue Group: Octas

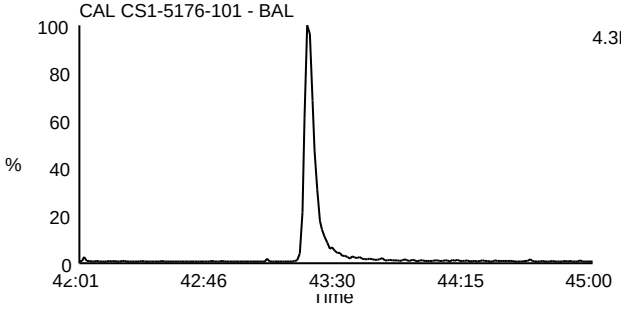
Data File Name: P70829B_04
Date Acquired: 8/29/2007
Sample Description: CAL CS1-5176-101 - BAL

Lab Sample ID: 5176-101
Client Sample ID: CS-1
Instrument: 10MSHR09 (P)

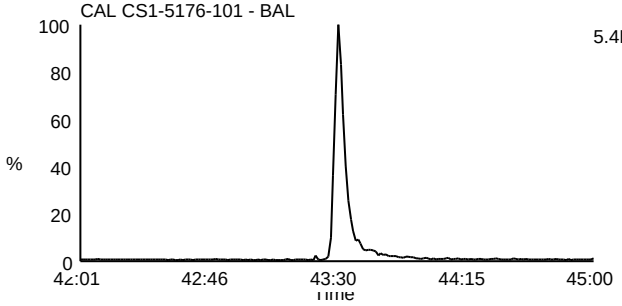
Data File: P70829B 04 G5 C4 - 441.7428
CAL CS1-5176-101 - BAL



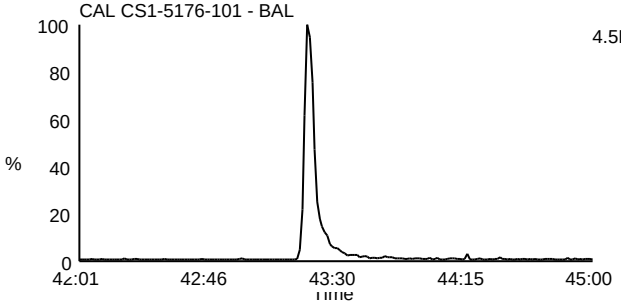
Data File: P70829B 04 G5 C8 - 457.7377
CAL CS1-5176-101 - BAL



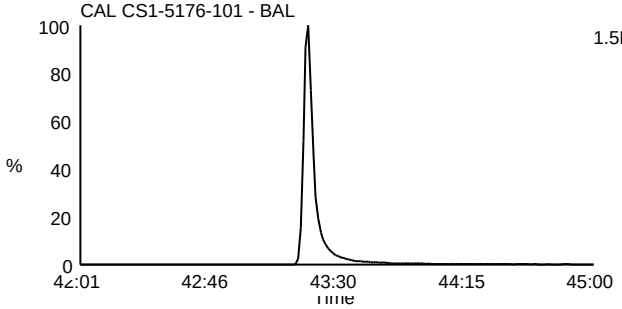
Data File: P70829B_04 G5 C5 - 443.7398
CAL CS1-5176-101 - BAL



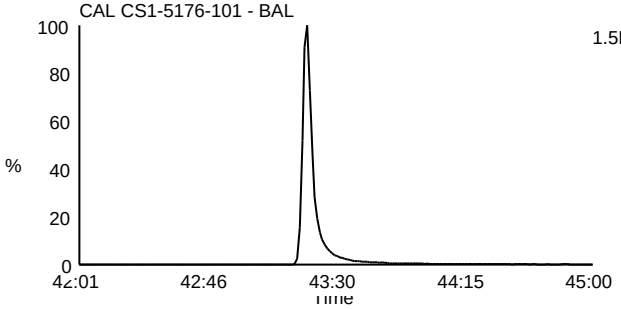
Data File: P70829B_04 G5 C9 - 459.7347
CAL CS1-5176-101 - BAL



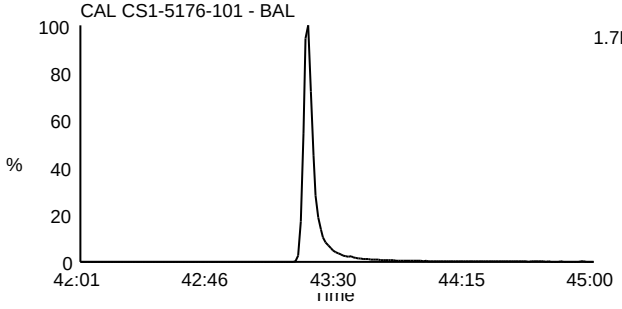
Data File: P70829B 04 G5 C11 - 469.7779
CAL CS1-5176-101 - BAL



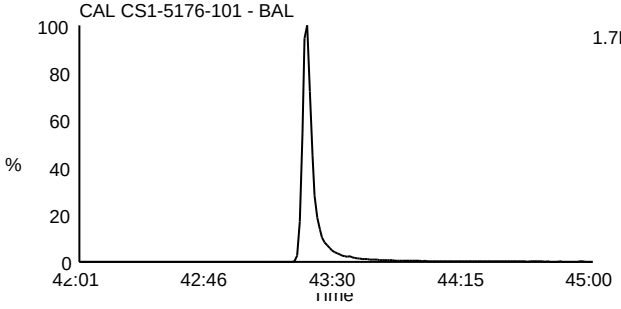
Data File: P70829B 04 G5 C11 - 469.7779
CAL CS1-5176-101 - BAL



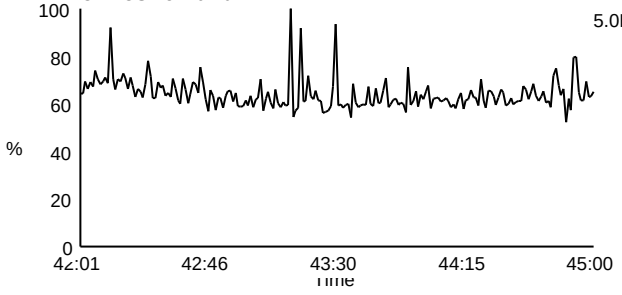
Data File: P70829B_04 G5 C12 - 471.7749
CAL CS1-5176-101 - BAL



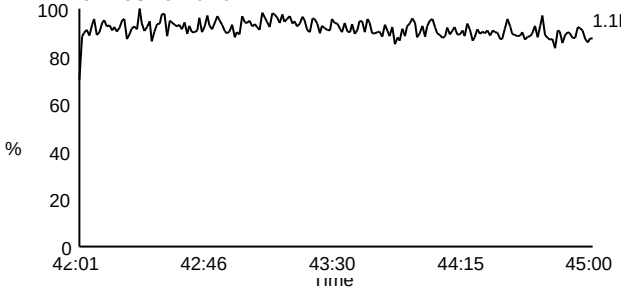
Data File: P70829B_04 G5 C12 - 471.7749
CAL CS1-5176-101 - BAL



Data File: P70829B_04 G5 C13 - 513.6775
CAL CS1-5176-101 - BAL



Data File: P70829B_04 G5 C2 - 430.9728
CAL CS1-5176-101 - BAL

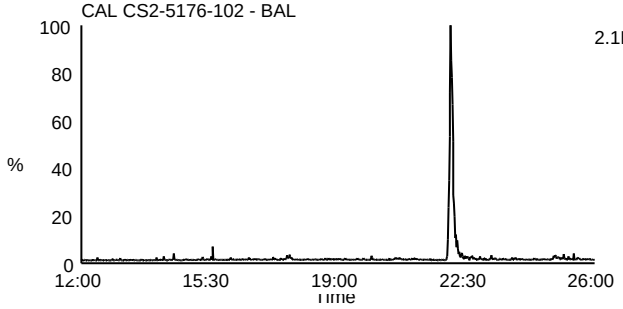


Homologue Group: Tetras

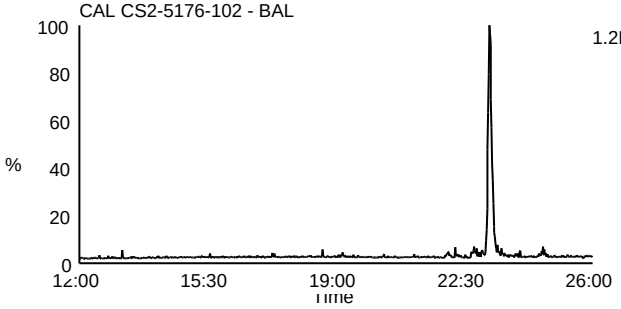
Data File Name: P70829B_03
Date Acquired: 8/29/2007
Sample Description: CAL CS2-5176-102 - BAL

Lab Sample ID: 5176-102
Client Sample ID: CS-2
Instrument: 10MSHR09 (P)

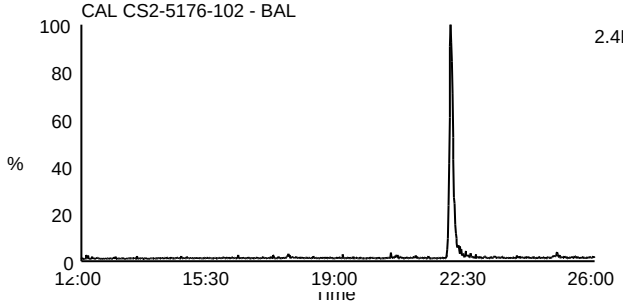
Data File: P70829B 03 G1 C1 - 303.9016
CAL CS2-5176-102 - BAL



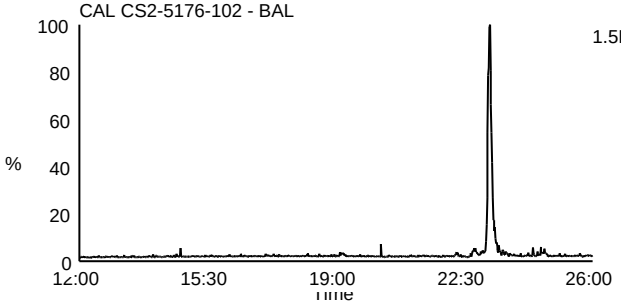
Data File: P70829B 03 G1 C7 - 319.8965
CAL CS2-5176-102 - BAL



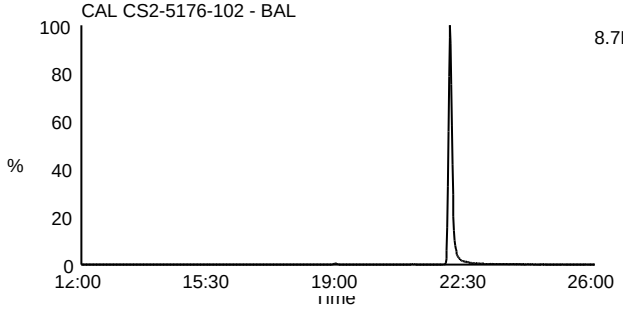
Data File: P70829B_03 G1 C2 - 305.8987
CAL CS2-5176-102 - BAL



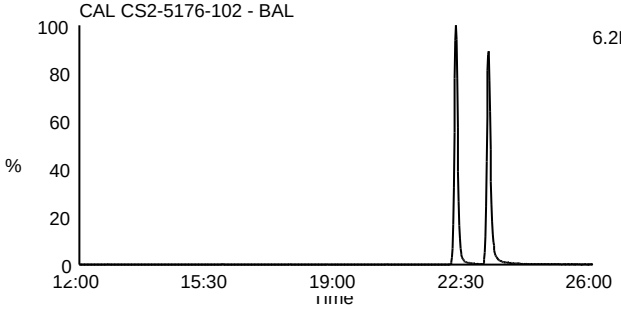
Data File: P70829B_03 G1 C8 - 321.8936
CAL CS2-5176-102 - BAL



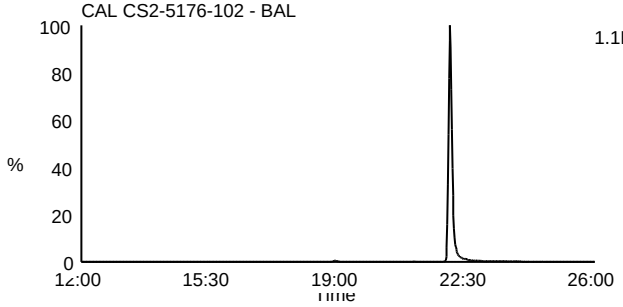
Data File: P70829B 03 G1 C3 - 315.9418
CAL CS2-5176-102 - BAL



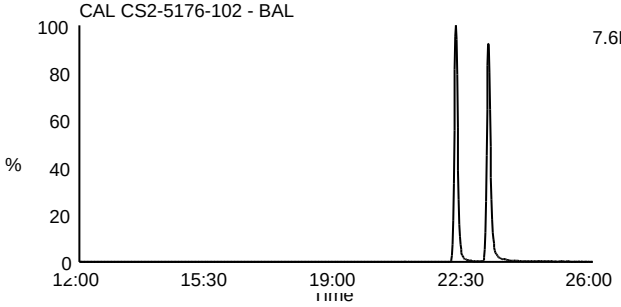
Data File: P70829B 03 G1 C10 - 331.9367
CAL CS2-5176-102 - BAL



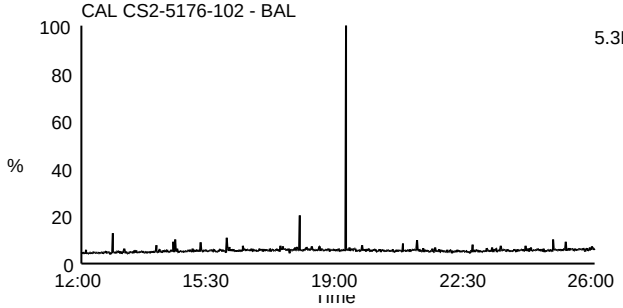
Data File: P70829B_03 G1 C4 - 317.9389
CAL CS2-5176-102 - BAL



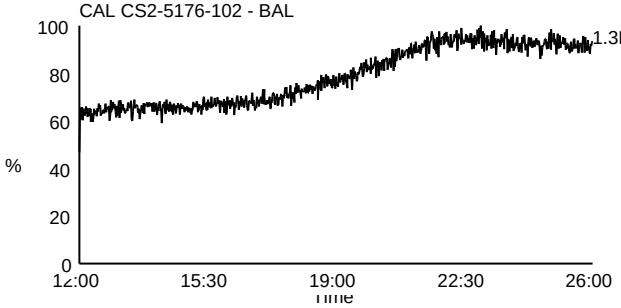
Data File: P70829B_03 G1 C11 - 333.9338
CAL CS2-5176-102 - BAL



Data File: P70829B_03 G1 C14 - 375.8364
CAL CS2-5176-102 - BAL



Data File: P70829B_03 G1 C5 - 318.9792
CAL CS2-5176-102 - BAL

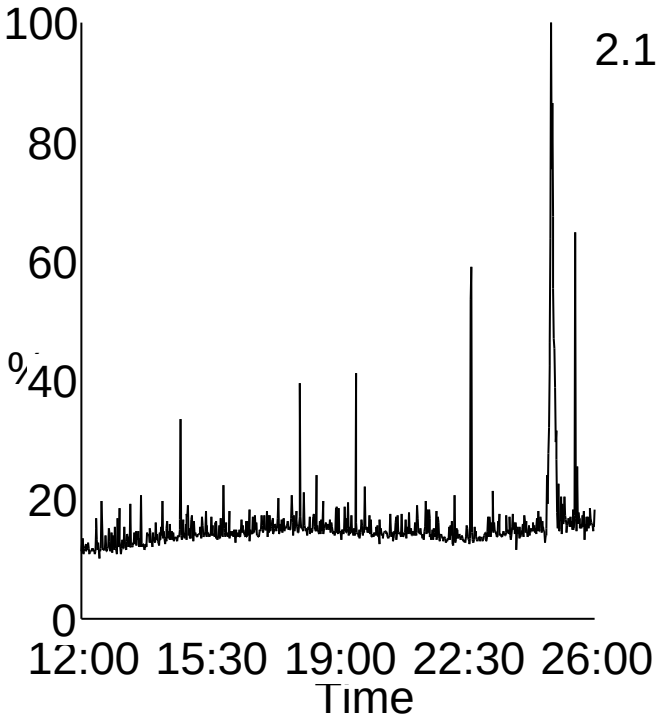


Homologue Group: Penta & Cleanup

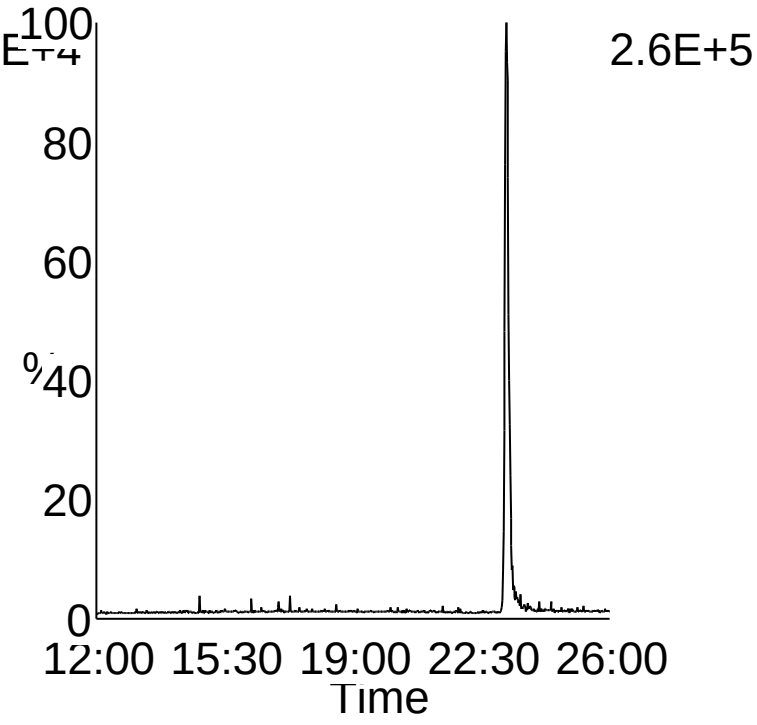
Data File Name: P70829B_03
Date Acquired: 8/29/2007
Sample Description: CAL CS2-5176-102 - BAL

Lab Sample ID: 5176-102
Client Sample ID: CS-2
Instrument: 10MSHR09 (P)

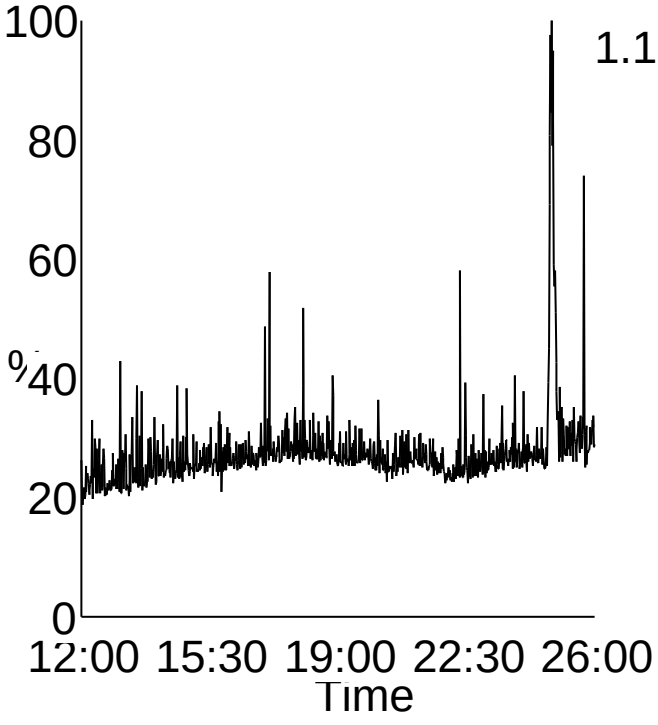
Data File: P70829B_03 G1 C12 - 339.8597
CAL CS2-5176-102 - BAL



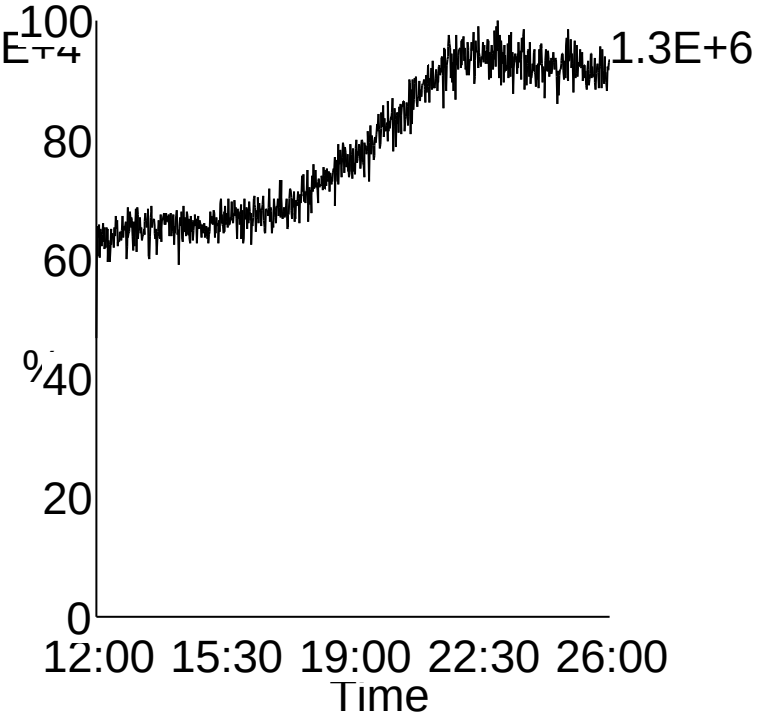
Data File: P70829B_03 G1 C9 - 327.8847
CAL CS2-5176-102 - BAL



Data File: P70829B_03 G1 C13 - 341.8567
CAL CS2-5176-102 - BAL



Data File: P70829B_03 G1 C5 - 318.9792
CAL CS2-5176-102 - BAL

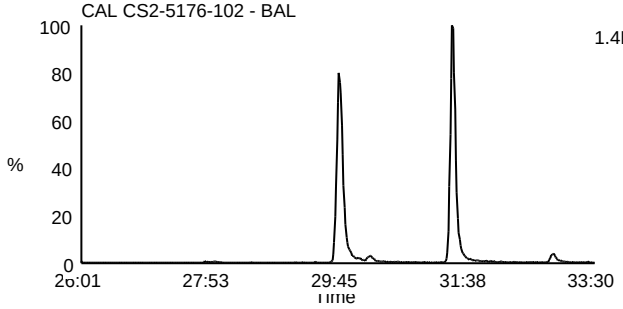


Homologue Group: Pentas

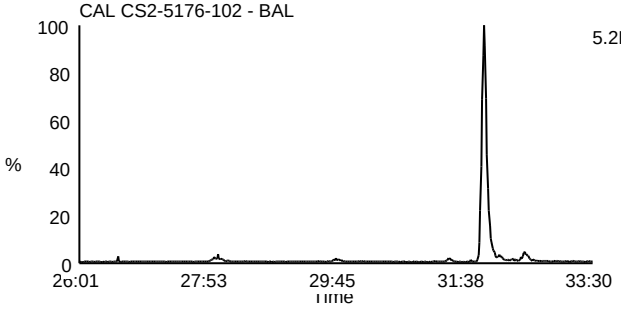
Data File Name: P70829B_03
Date Acquired: 8/29/2007
Sample Description: CAL CS2-5176-102 - BAL

Lab Sample ID: 5176-102
Client Sample ID: CS-2
Instrument: 10MSHR09 (P)

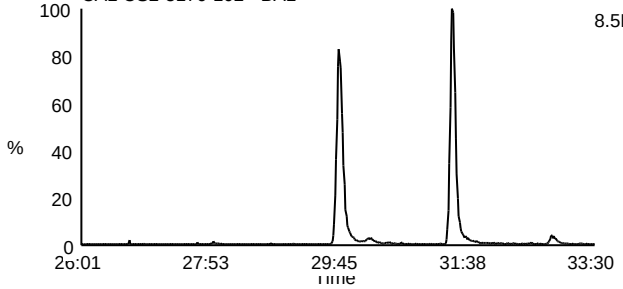
Data File: P70829B 03 G2 C1 - 339.8597
CAL CS2-5176-102 - BAL



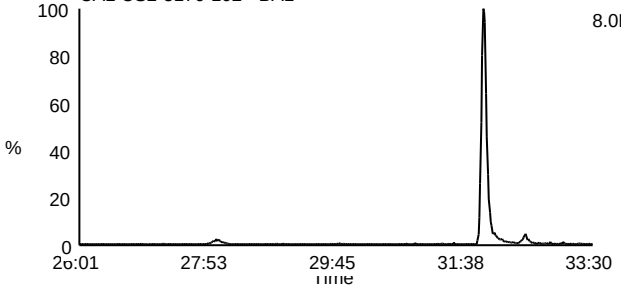
Data File: P70829B 03 G2 C4 - 353.8576
CAL CS2-5176-102 - BAL



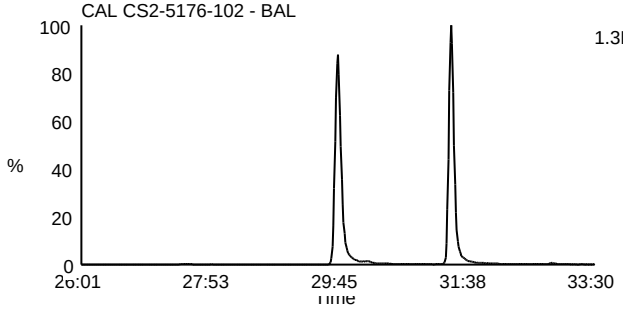
Data File: P70829B_03 G2 C2 - 341.8567
CAL CS2-5176-102 - BAL



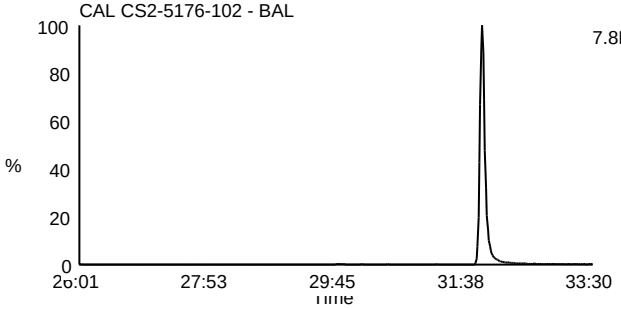
Data File: P70829B_03 G2 C8 - 355.8546
CAL CS2-5176-102 - BAL



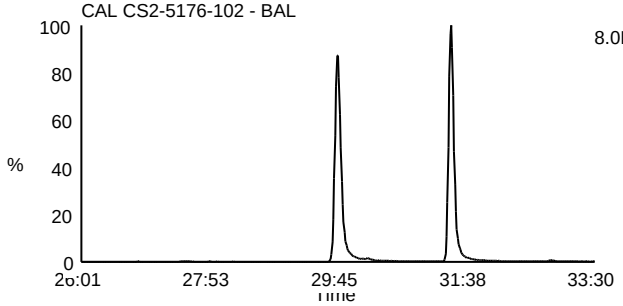
Data File: P70829B 03 G2 C3 - 351.8999
CAL CS2-5176-102 - BAL



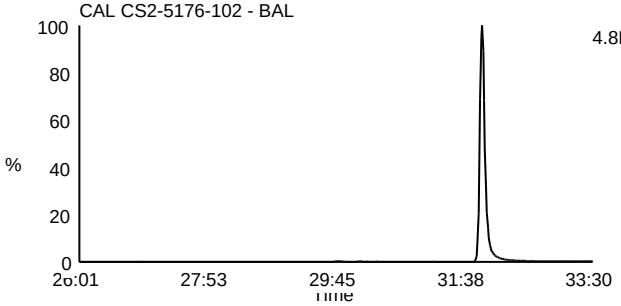
Data File: P70829B 03 G2 C10 - 367.8948
CAL CS2-5176-102 - BAL



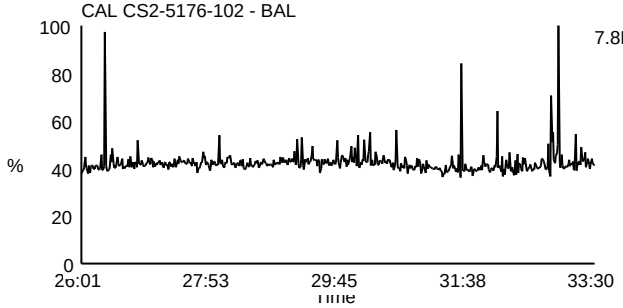
Data File: P70829B_03 G2 C5 - 353.8969
CAL CS2-5176-102 - BAL



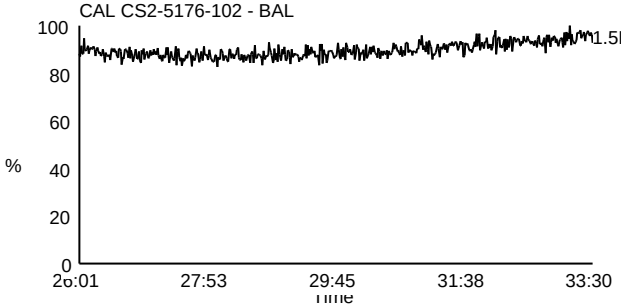
Data File: P70829B_03 G2 C11 - 369.8918
CAL CS2-5176-102 - BAL



Data File: P70829B_03 G2 C12 - 409.7974
CAL CS2-5176-102 - BAL



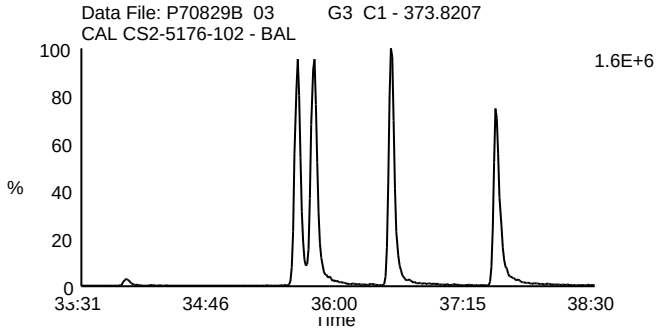
Data File: P70829B_03 G2 C6 - 354.9792
CAL CS2-5176-102 - BAL

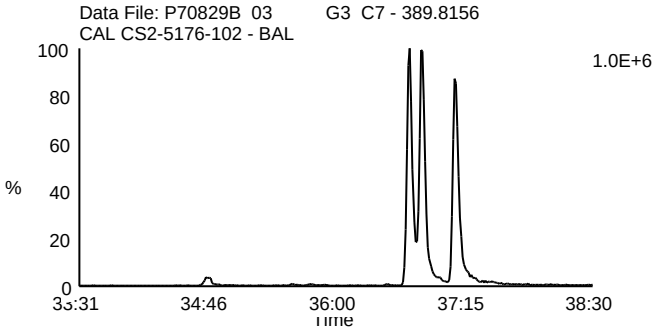


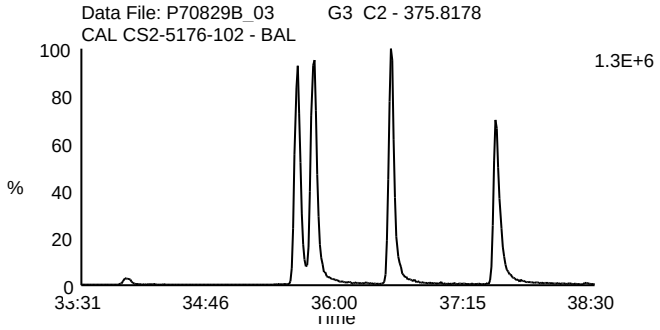
Homologue Group: Hexas

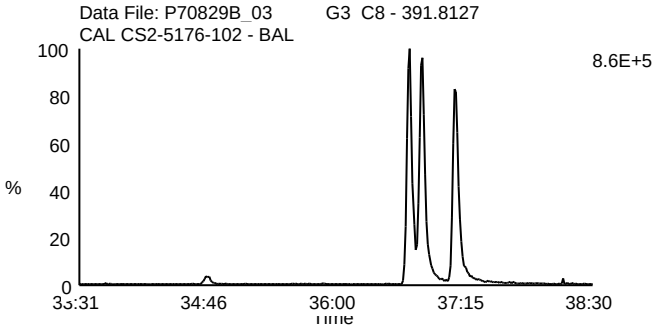
Data File Name: P70829B_03
Date Acquired: 8/29/2007
Sample Description: CAL CS2-5176-102 - BAL

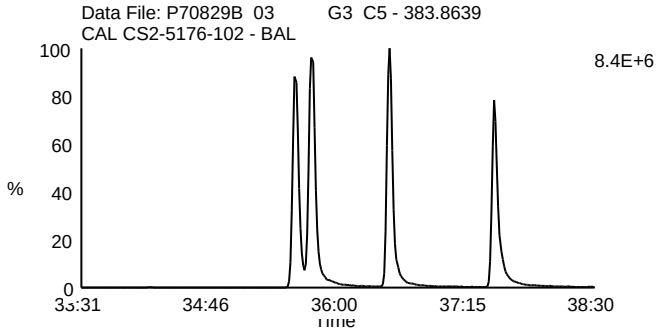
Lab Sample ID: 5176-102
Client Sample ID: CS-2
Instrument: 10MSHR09 (P)

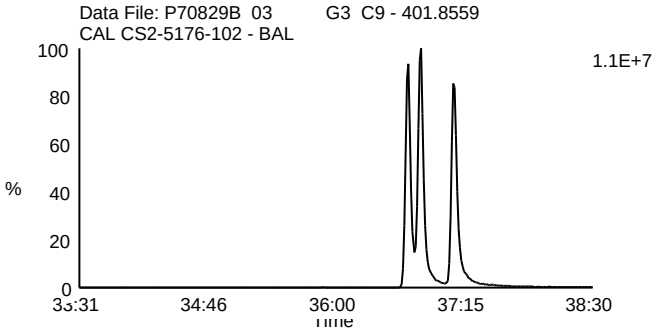


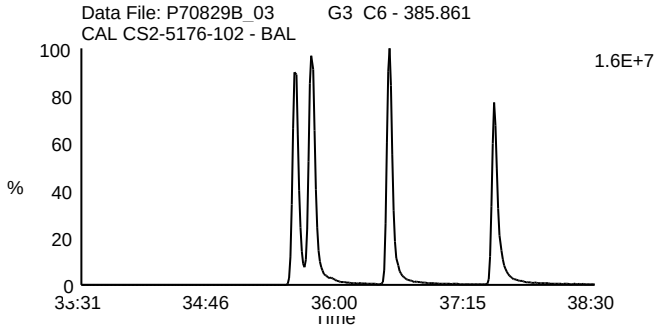


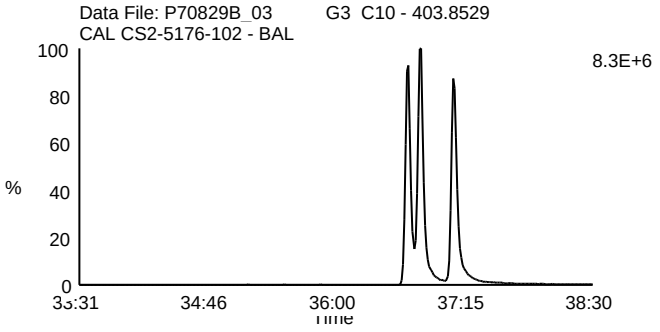


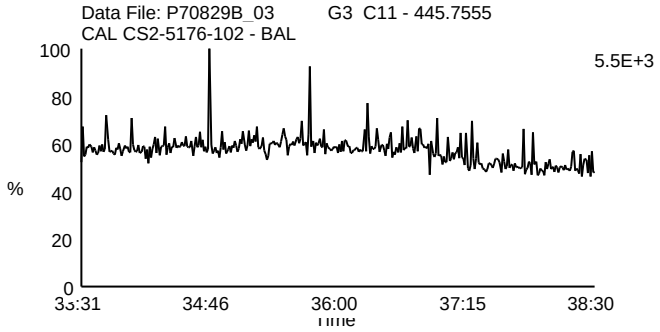


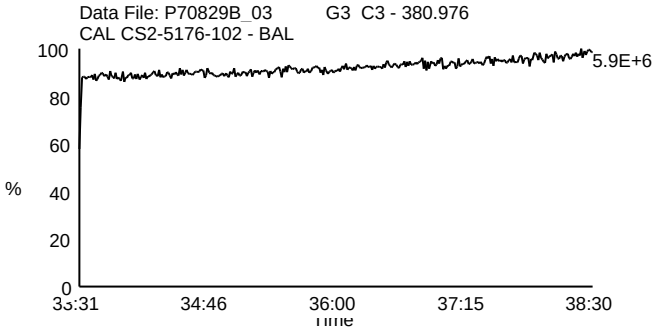










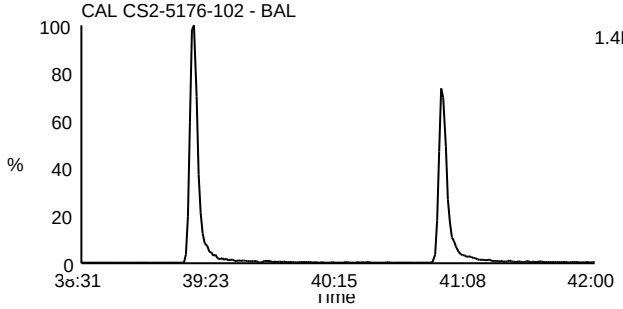


Homologue Group: Heptas

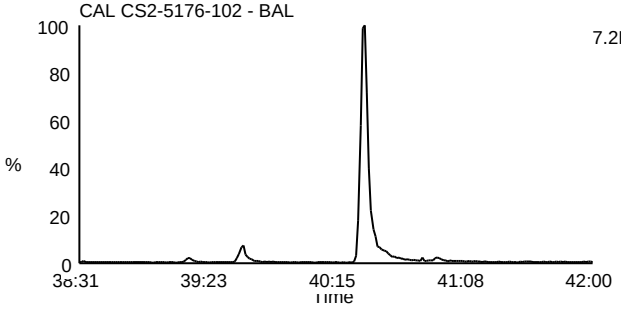
Data File Name: P70829B_03
Date Acquired: 8/29/2007
Sample Description: CAL CS2-5176-102 - BAL

Lab Sample ID: 5176-102
Client Sample ID: CS-2
Instrument: 10MSHR09 (P)

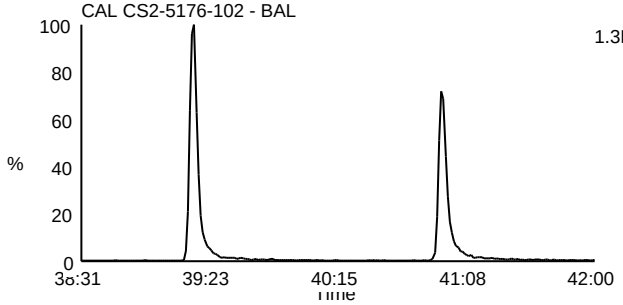
Data File: P70829B 03 G4 C3 - 407.7818
CAL CS2-5176-102 - BAL



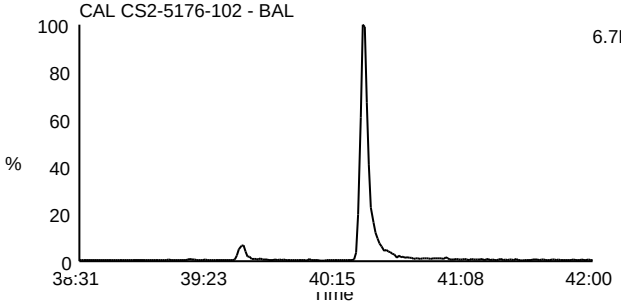
Data File: P70829B 03 G4 C8 - 423.7767
CAL CS2-5176-102 - BAL



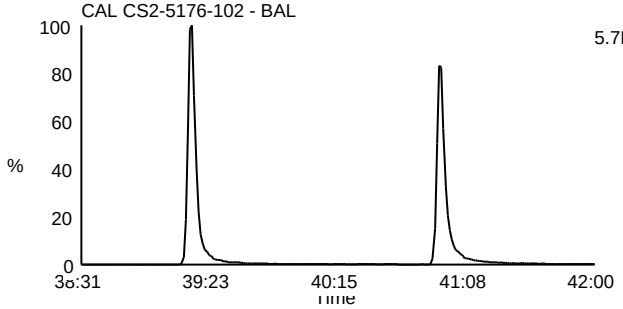
Data File: P70829B_03 G4 C4 - 409.7788
CAL CS2-5176-102 - BAL



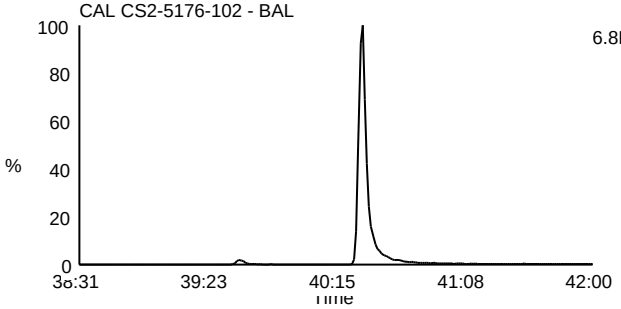
Data File: P70829B_03 G4 C9 - 425.7737
CAL CS2-5176-102 - BAL



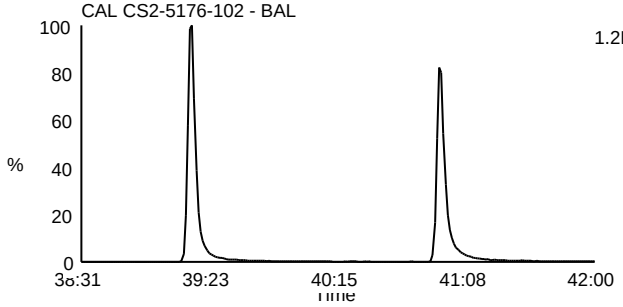
Data File: P70829B 03 G4 C6 - 417.825
CAL CS2-5176-102 - BAL



Data File: P70829B 03 G4 C11 - 435.8169
CAL CS2-5176-102 - BAL



Data File: P70829B_03 G4 C7 - 419.822
CAL CS2-5176-102 - BAL



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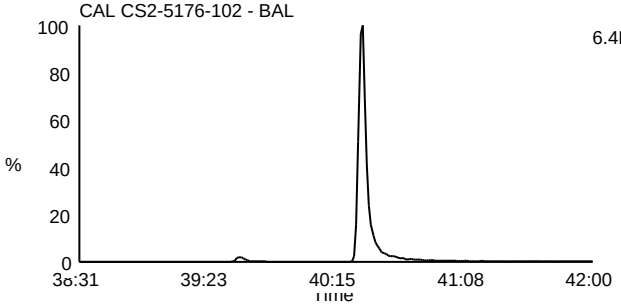
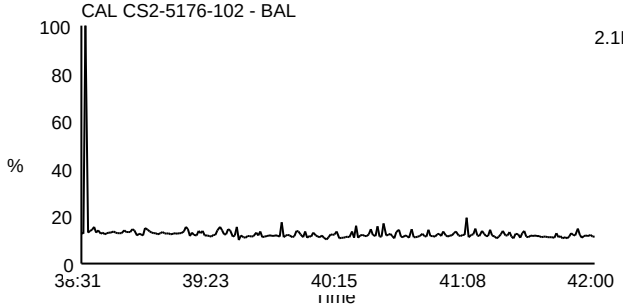
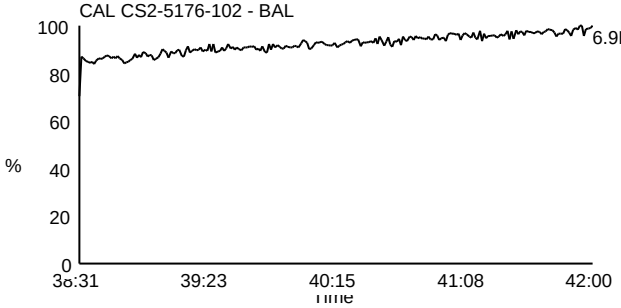
CAL CS2-5176-102 - BAL



Data File: P70829B_03 G4 C13 - 479.7165
CAL CS2-5176-102 - BAL



Data File: P70829B_03 G4 C1 - 380.976
CAL CS2-5176-102 - BAL

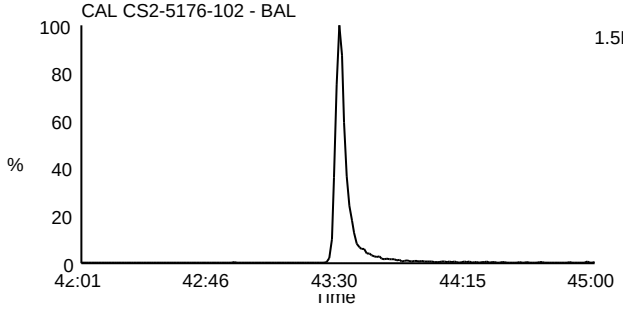


Homologue Group: Octas

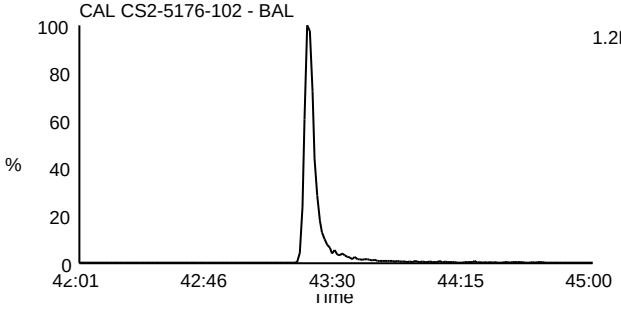
Data File Name: P70829B_03
Date Acquired: 8/29/2007
Sample Description: CAL CS2-5176-102 - BAL

Lab Sample ID: 5176-102
Client Sample ID: CS-2
Instrument: 10MSHR09 (P)

Data File: P70829B 03 G5 C4 - 441.7428
CAL CS2-5176-102 - BAL



Data File: P70829B 03 G5 C8 - 457.7377
CAL CS2-5176-102 - BAL



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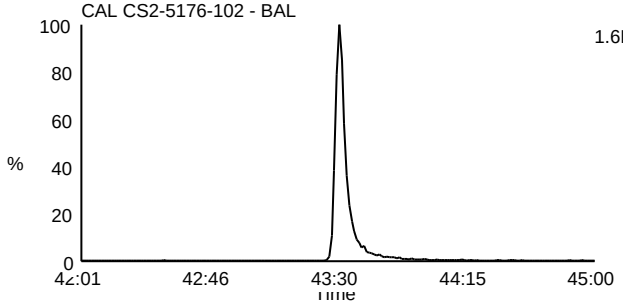
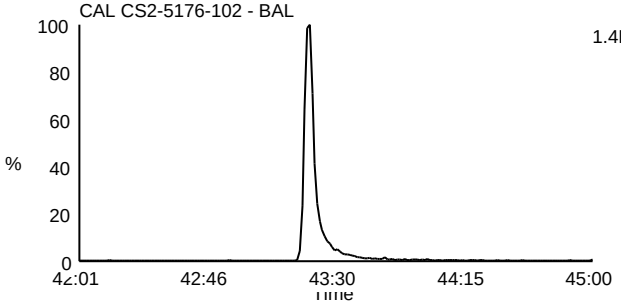
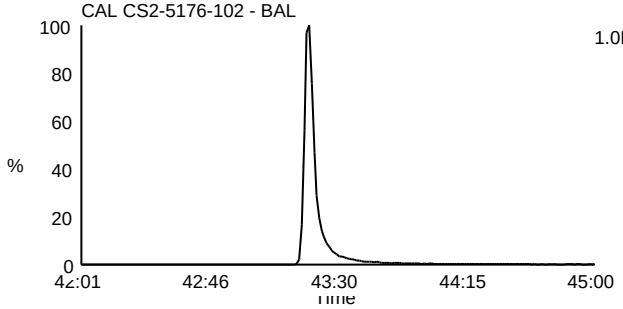
CAL CS2-5176-102 - BAL



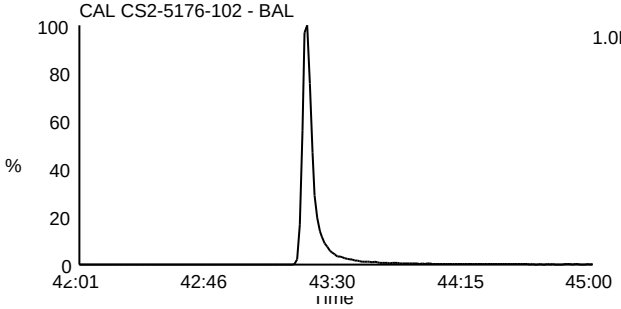
Data File: P70829B_03 G5 C9 - 459.7347
CAL CS2-5176-102 - BAL



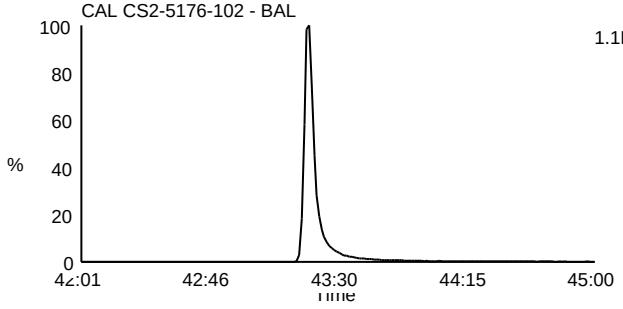
Data File: P70829B 03 G5 C11 - 469.7779
CAL CS2-5176-102 - BAL



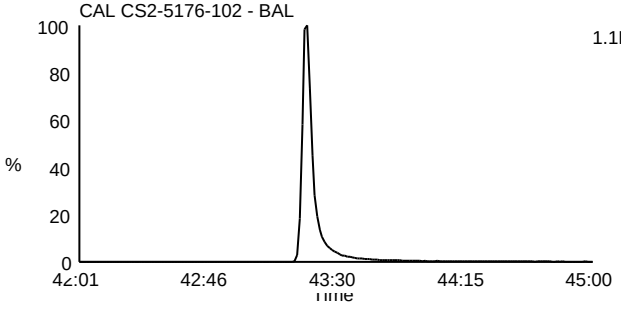
Data File: P70829B 03 G5 C11 - 469.7779
CAL CS2-5176-102 - BAL



Data File: P70829B_03 G5 C12 - 471.7749
CAL CS2-5176-102 - BAL



Data File: P70829B_03 G5 C12 - 471.7749
CAL CS2-5176-102 - BAL



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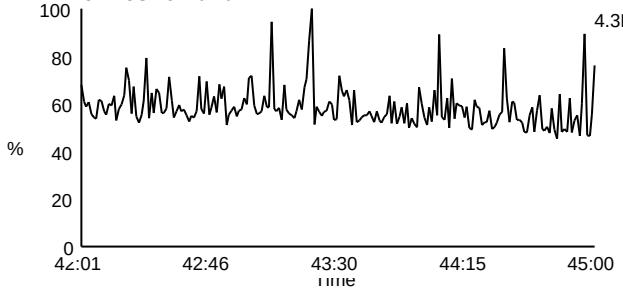
CAL CS2-5176-102 - BAL



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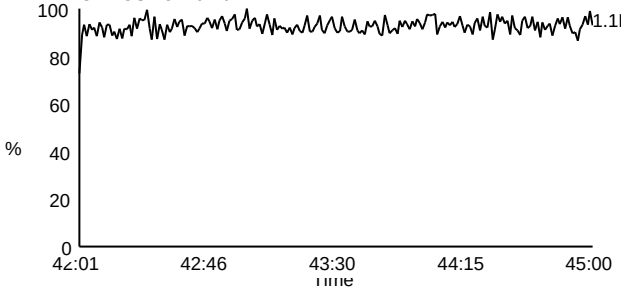
CAL CS2-5176-102 - BAL

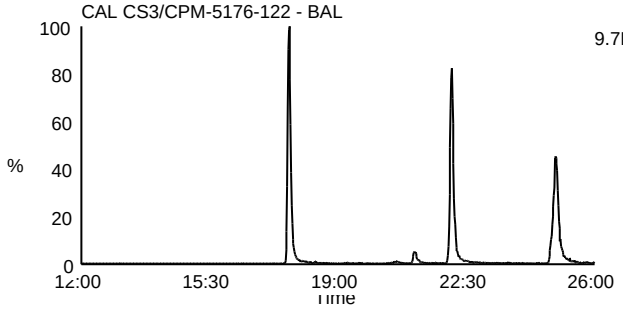


Homologue Group: Tetras

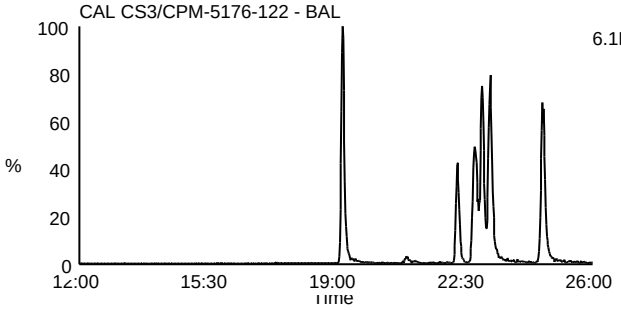
Data File Name: P70829B_02
Date Acquired: 8/29/2007
Sample Description: CAL CS3/CPM-5176-122 - BAL

Lab Sample ID: 5176-129
Client Sample ID: CS-3
Instrument: 10MSHR09 (P)

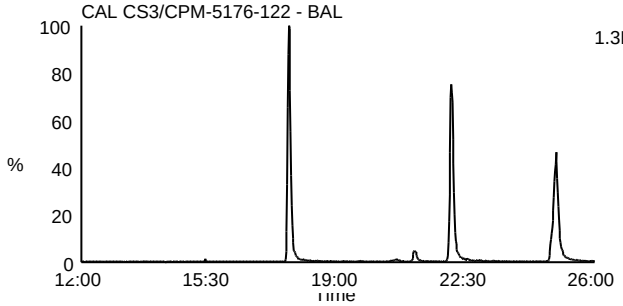
Data File: P70829B_02 G1 C1 - 303.9016
CAL CS3/CPM-5176-122 - BAL



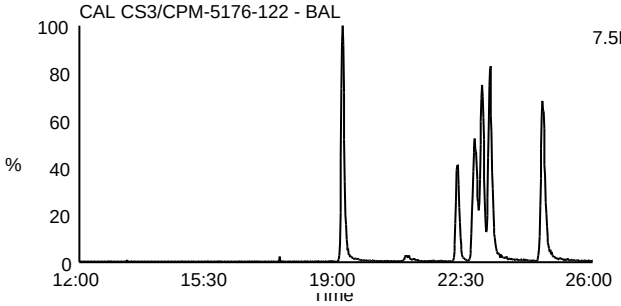
Data File: P70829B_02 G1 C7 - 319.8965
CAL CS3/CPM-5176-122 - BAL



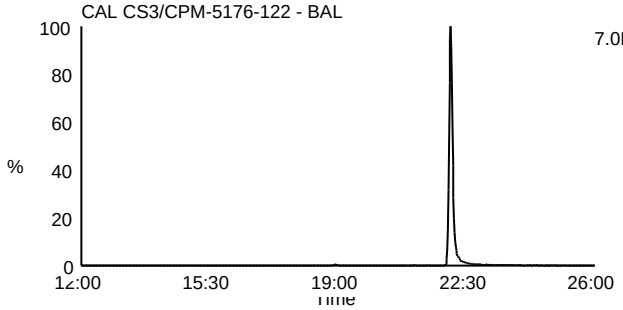
Data File: P70829B_02 G1 C2 - 305.8987
CAL CS3/CPM-5176-122 - BAL



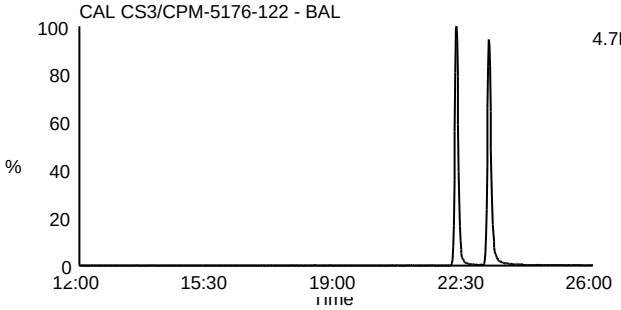
Data File: P70829B_02 G1 C8 - 321.8936
CAL CS3/CPM-5176-122 - BAL



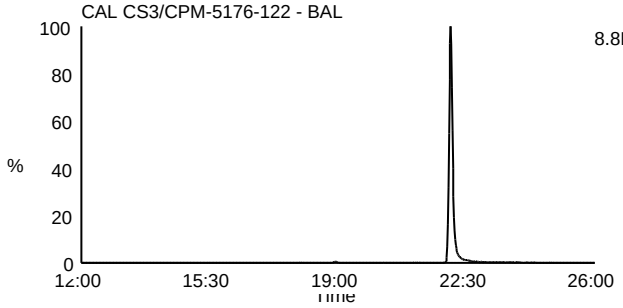
Data File: P70829B_02 G1 C3 - 315.9418
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G1 C10 - 331.9367
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G1 C4 - 317.9389
CAL CS3/CPM-5176-122 - BAL



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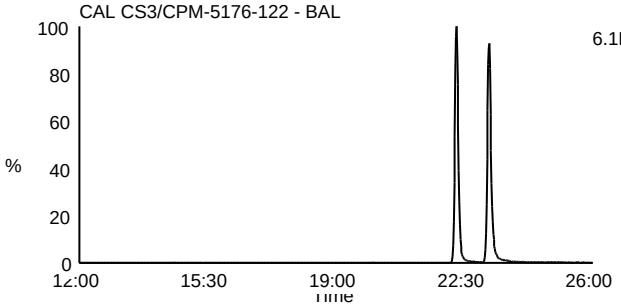
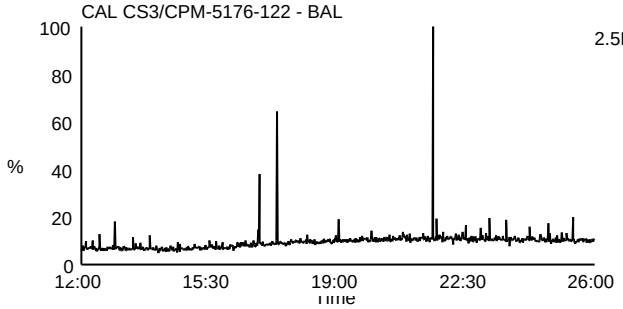
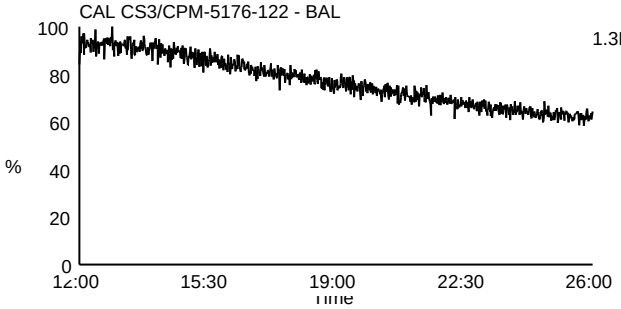
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G1 C14 - 375.8364
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G1 C5 - 318.9792
CAL CS3/CPM-5176-122 - BAL

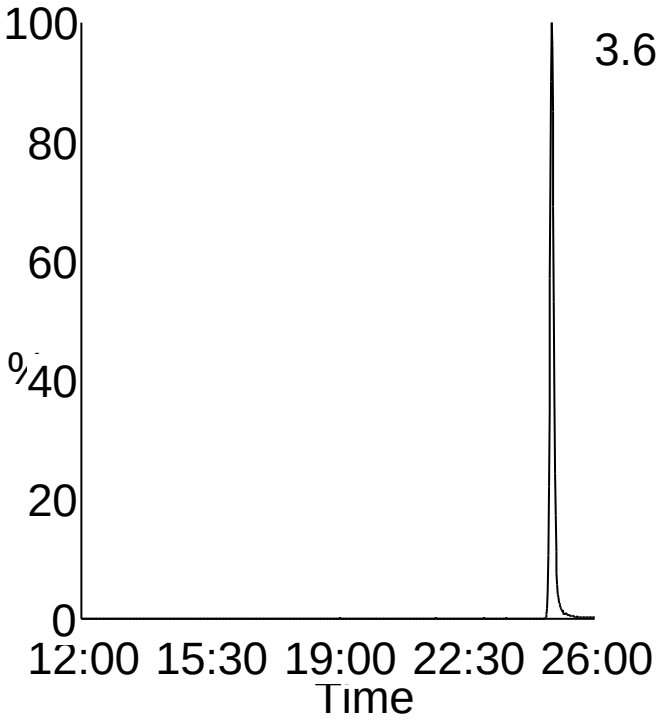


Homologue Group: Penta & Cleanup

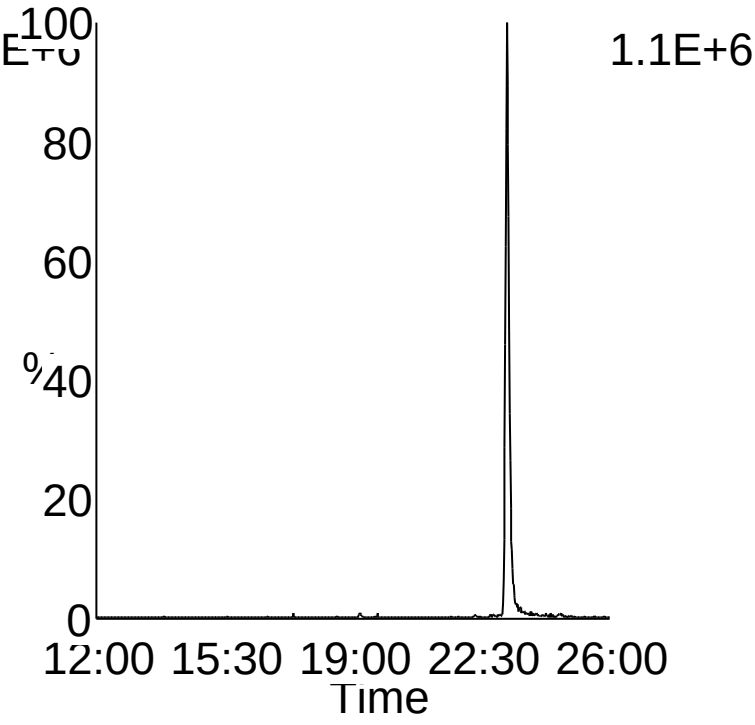
Data File Name: P70829B_02
Date Acquired: 8/29/2007
Sample Description: CAL CS3/CPM-5176-122 - BAL

Lab Sample ID: 5176-129
Client Sample ID: CS-3
Instrument: 10MSHR09 (P)

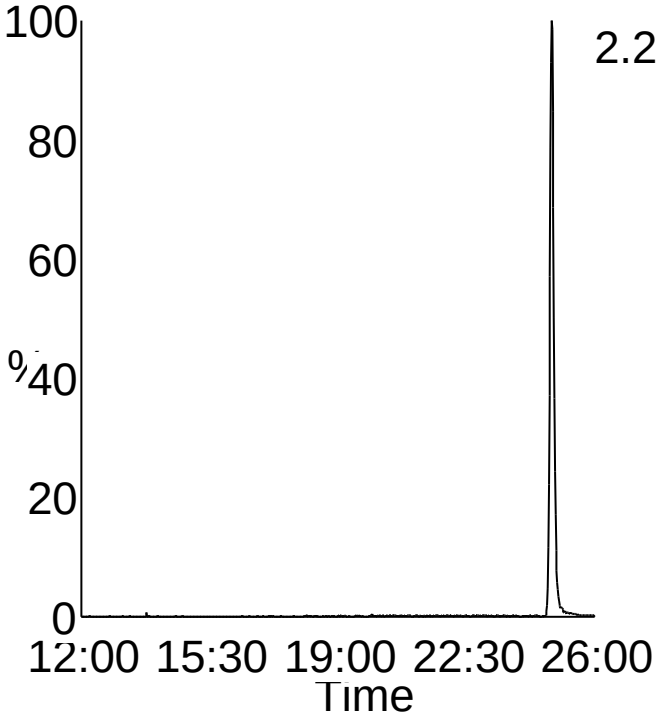
Data File: P70829B_02 C12 - 339.8597
CAL CS3/CPM-5176-122 - BAL



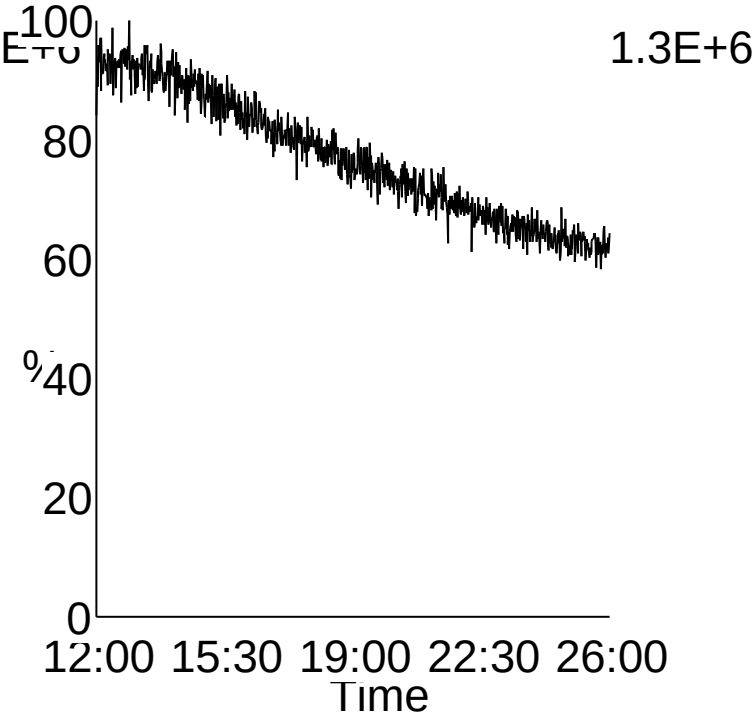
Data File: P70829B_02 C9 - 327.8847
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 C13 - 341.8567
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 C5 - 318.9792
CAL CS3/CPM-5176-122 - BAL

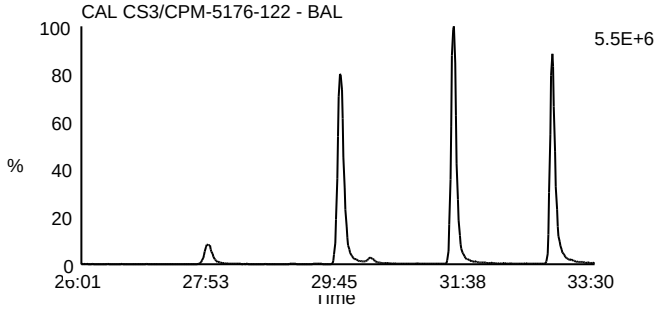


Homologue Group: Pentas

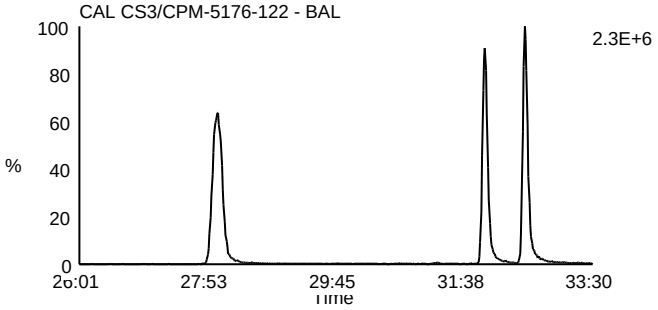
Data File Name: P70829B_02
Date Acquired: 8/29/2007
Sample Description: CAL CS3/CPM-5176-122 - BAL

Lab Sample ID: 5176-129
Client Sample ID: CS-3
Instrument: 10MSHR09 (P)

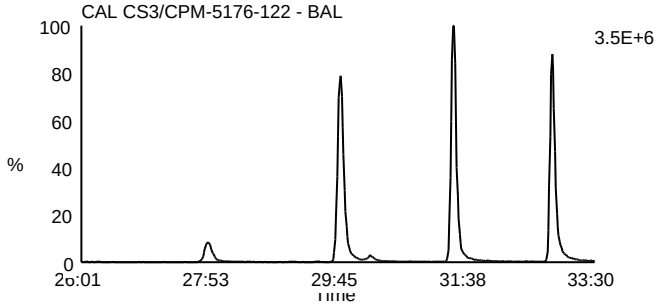
Data File: P70829B_02 G2 C1 - 339.8597
CAL CS3/CPM-5176-122 - BAL



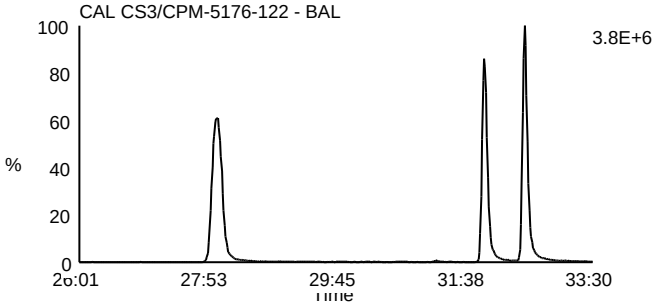
Data File: P70829B_02 G2 C4 - 353.8576
CAL CS3/CPM-5176-122 - BAL



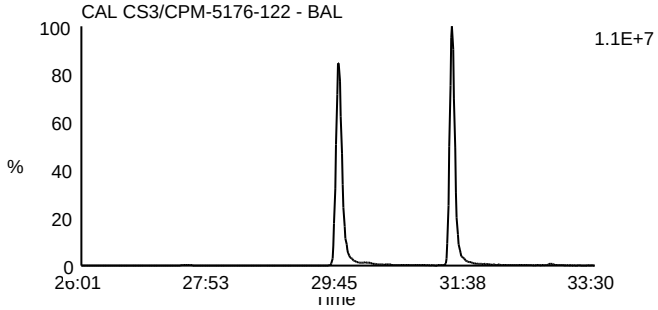
Data File: P70829B_02 G2 C2 - 341.8567
CAL CS3/CPM-5176-122 - BAL



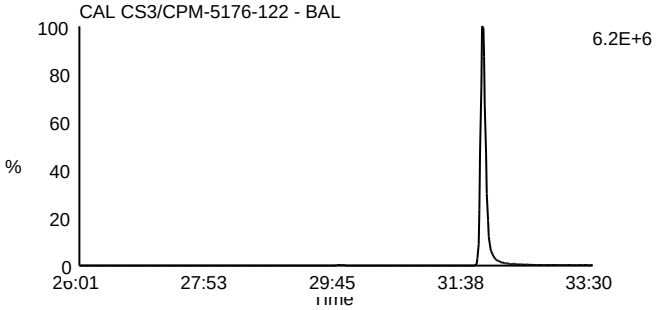
Data File: P70829B_02 G2 C8 - 355.8546
CAL CS3/CPM-5176-122 - BAL



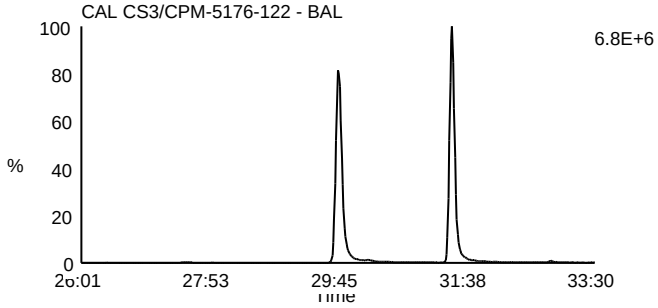
Data File: P70829B_02 G2 C3 - 351.8999
CAL CS3/CPM-5176-122 - BAL



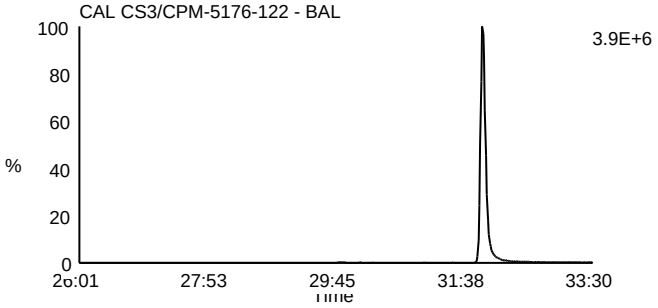
Data File: P70829B_02 G2 C10 - 367.8948
CAL CS3/CPM-5176-122 - BAL



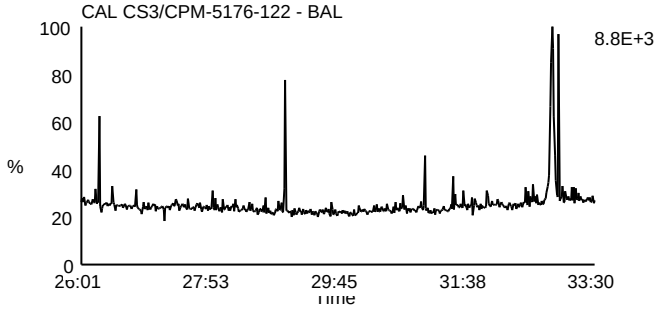
Data File: P70829B_02 G2 C5 - 353.8969
CAL CS3/CPM-5176-122 - BAL



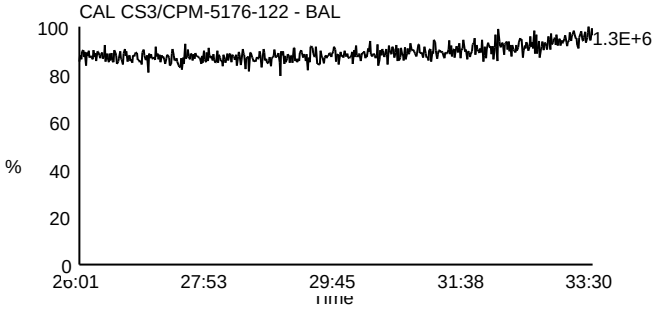
Data File: P70829B_02 G2 C11 - 369.8918
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G2 C12 - 409.7974
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G2 C6 - 354.9792
CAL CS3/CPM-5176-122 - BAL

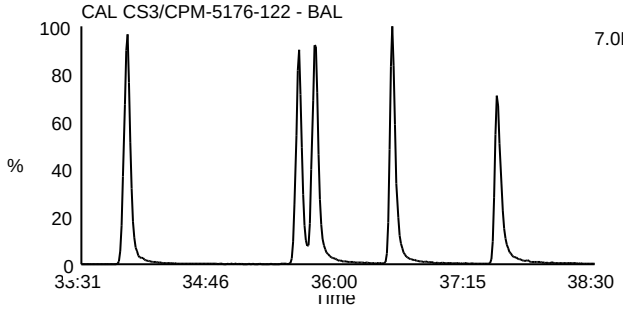


Homologue Group: Hexas

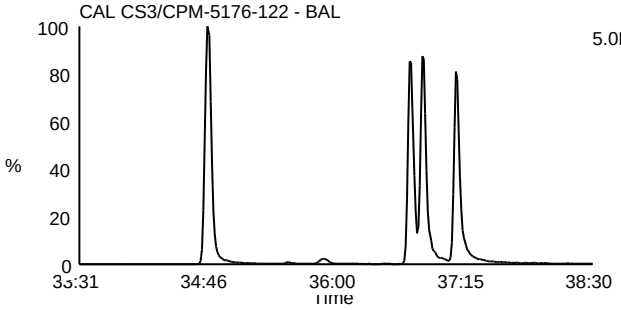
Data File Name: P70829B_02
Date Acquired: 8/29/2007
Sample Description: CAL CS3/CPM-5176-122 - BAL

Lab Sample ID: 5176-129
Client Sample ID: CS-3
Instrument: 10MSHR09 (P)

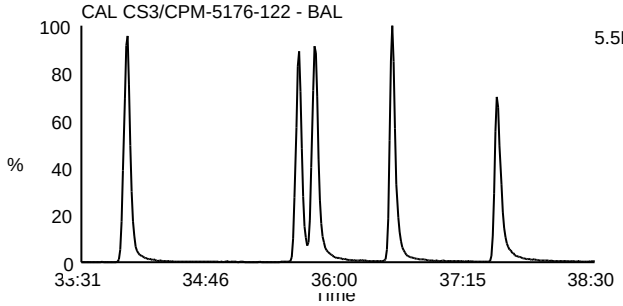
Data File: P70829B_02 G3 C1 - 373.8207
CAL CS3/CPM-5176-122 - BAL



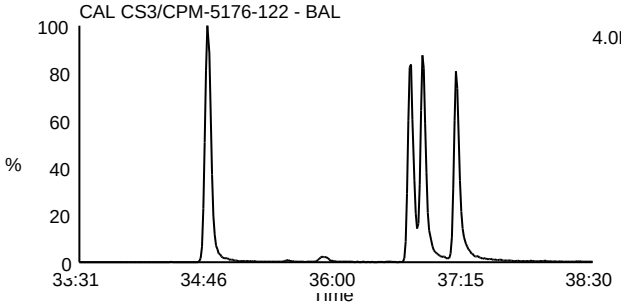
Data File: P70829B_02 G3 C7 - 389.8156
CAL CS3/CPM-5176-122 - BAL



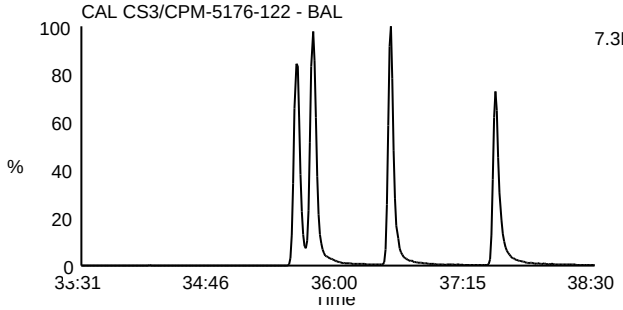
Data File: P70829B_02 G3 C2 - 375.8178
CAL CS3/CPM-5176-122 - BAL



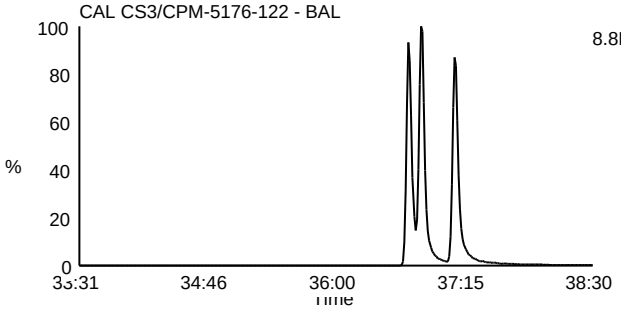
Data File: P70829B_02 G3 C8 - 391.8127
CAL CS3/CPM-5176-122 - BAL



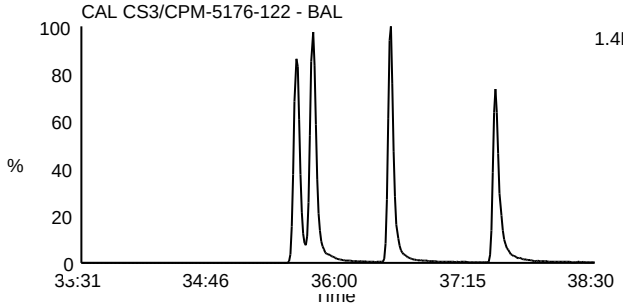
Data File: P70829B_02 G3 C5 - 383.8639
CAL CS3/CPM-5176-122 - BAL



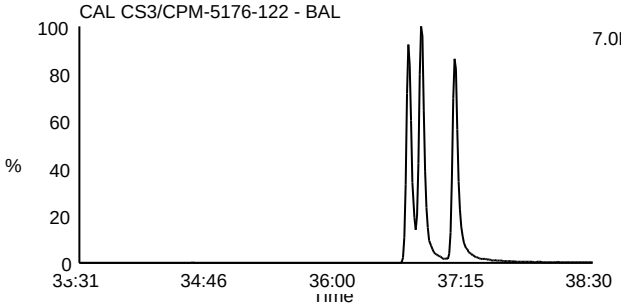
Data File: P70829B_02 G3 C9 - 401.8559
CAL CS3/CPM-5176-122 - BAL



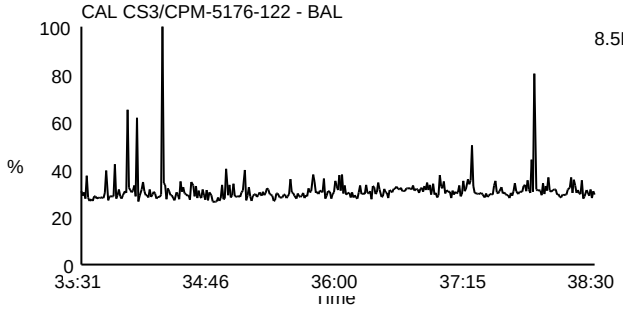
Data File: P70829B_02 G3 C6 - 385.861
CAL CS3/CPM-5176-122 - BAL



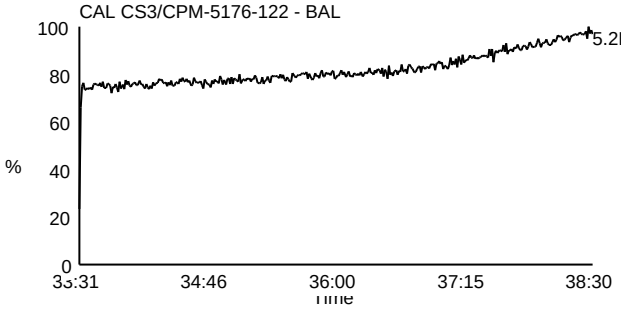
Data File: P70829B_02 G3 C10 - 403.8529
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G3 C11 - 445.7555
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G3 C3 - 380.976
CAL CS3/CPM-5176-122 - BAL

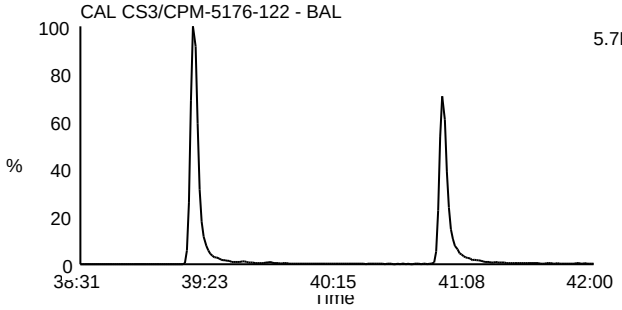


Homologue Group: Heptas

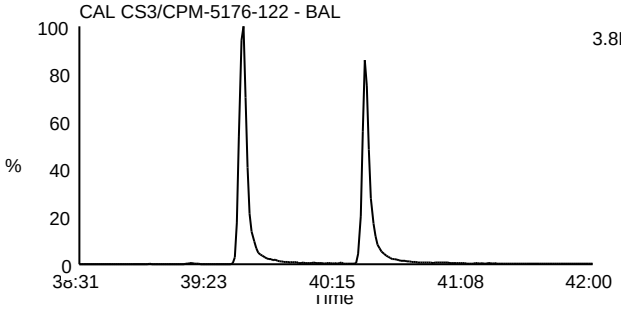
Data File Name: P70829B_02
Date Acquired: 8/29/2007
Sample Description: CAL CS3/CPM-5176-122 - BAL

Lab Sample ID: 5176-129
Client Sample ID: CS-3
Instrument: 10MSHR09 (P)

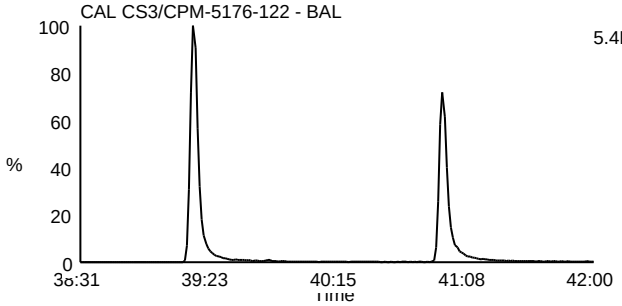
Data File: P70829B_02 G4 C3 - 407.7818
CAL CS3/CPM-5176-122 - BAL



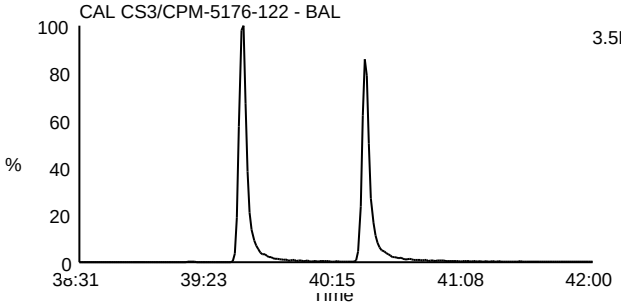
Data File: P70829B_02 G4 C8 - 423.7767
CAL CS3/CPM-5176-122 - BAL



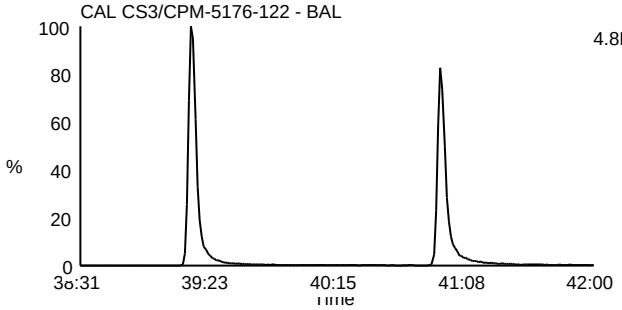
Data File: P70829B_02 G4 C4 - 409.7788
CAL CS3/CPM-5176-122 - BAL



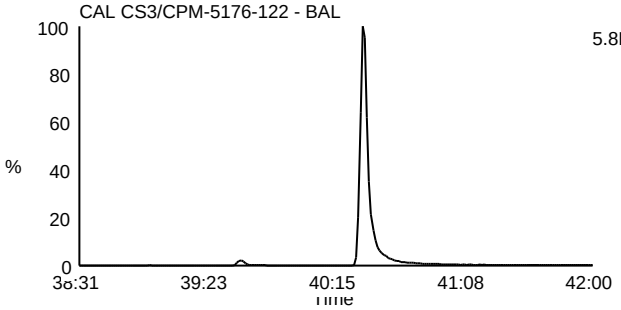
Data File: P70829B_02 G4 C9 - 425.7737
CAL CS3/CPM-5176-122 - BAL



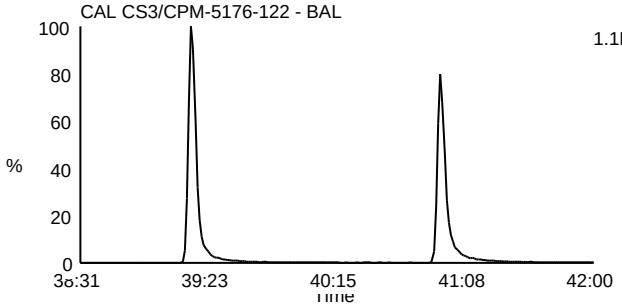
Data File: P70829B_02 G4 C6 - 417.825
CAL CS3/CPM-5176-122 - BAL



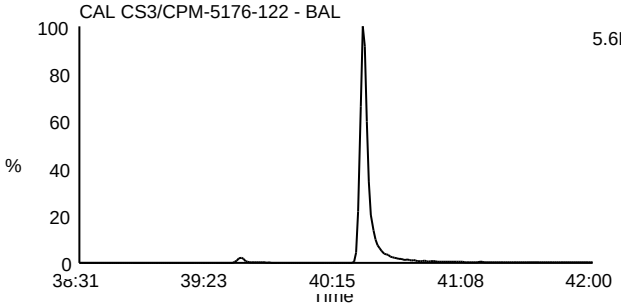
Data File: P70829B_02 G4 C11 - 435.8169
CAL CS3/CPM-5176-122 - BAL



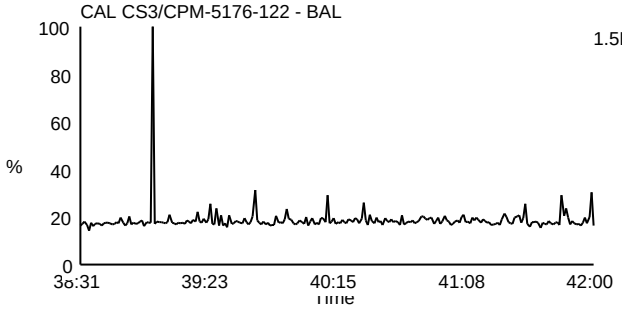
Data File: P70829B_02 G4 C7 - 419.822
CAL CS3/CPM-5176-122 - BAL



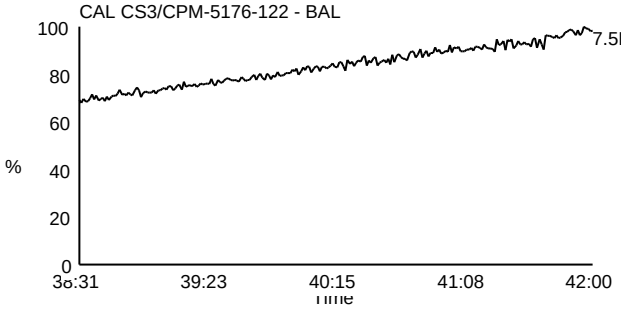
Data File: P70829B_02 G4 C12 - 437.814
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G4 C13 - 479.7165
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G4 C1 - 380.976
CAL CS3/CPM-5176-122 - BAL

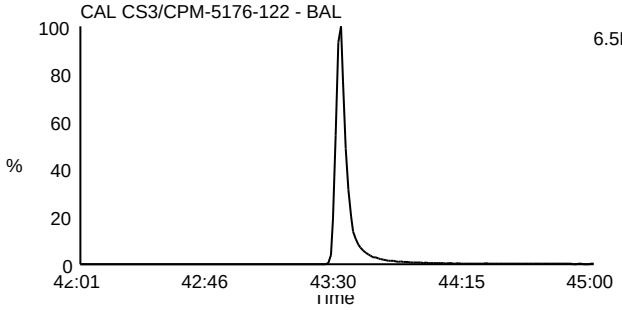


Homologue Group: Octas

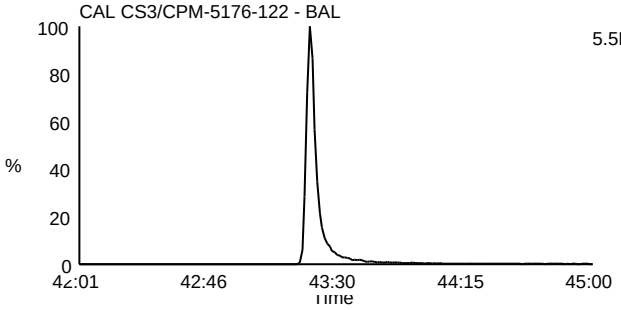
Data File Name: P70829B_02
Date Acquired: 8/29/2007
Sample Description: CAL CS3/CPM-5176-122 - BAL

Lab Sample ID: 5176-129
Client Sample ID: CS-3
Instrument: 10MSHR09 (P)

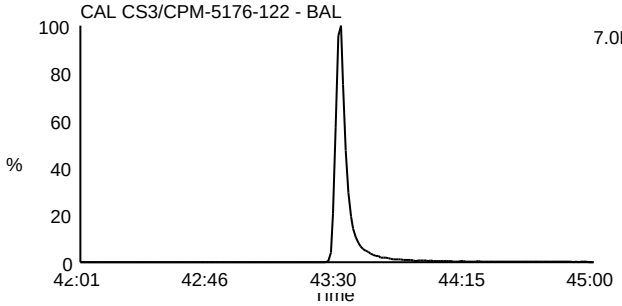
Data File: P70829B_02 G5 C4 - 441.7428
CAL CS3/CPM-5176-122 - BAL



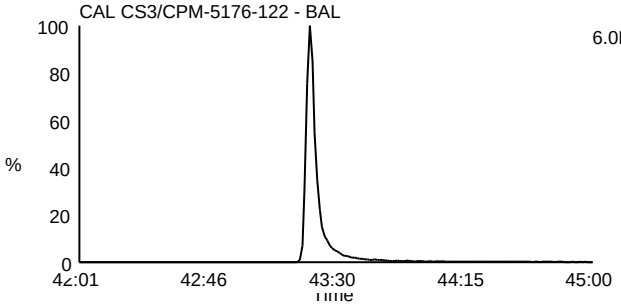
Data File: P70829B_02 G5 C8 - 457.7377
CAL CS3/CPM-5176-122 - BAL



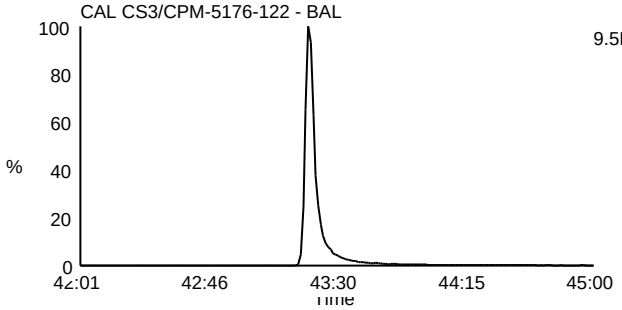
Data File: P70829B_02 G5 C5 - 443.7398
CAL CS3/CPM-5176-122 - BAL



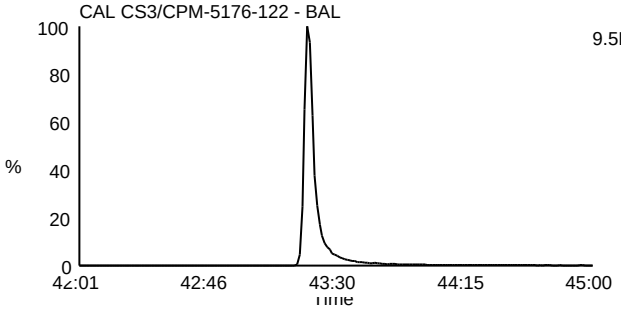
Data File: P70829B_02 G5 C9 - 459.7347
CAL CS3/CPM-5176-122 - BAL



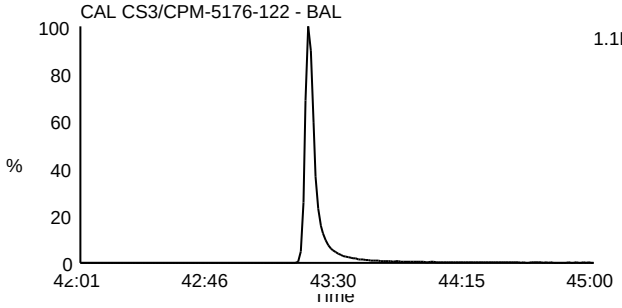
Data File: P70829B_02 G5 C11 - 469.7779
CAL CS3/CPM-5176-122 - BAL



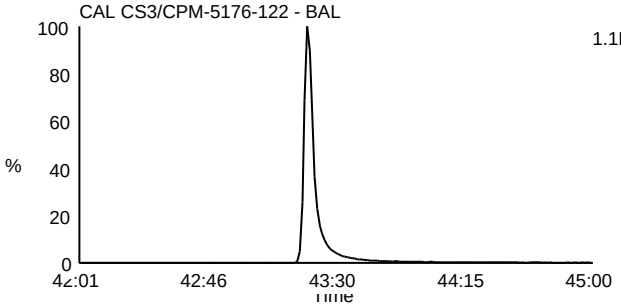
Data File: P70829B_02 G5 C11 - 469.7779
CAL CS3/CPM-5176-122 - BAL



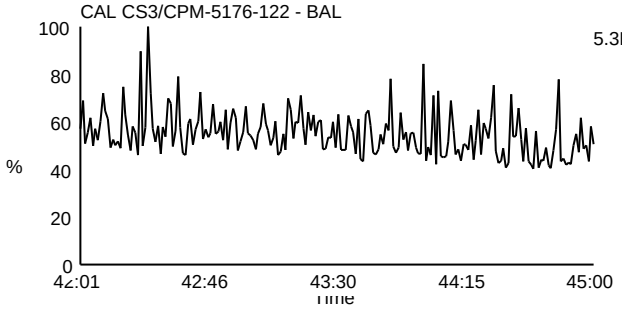
Data File: P70829B_02 G5 C12 - 471.7749
CAL CS3/CPM-5176-122 - BAL



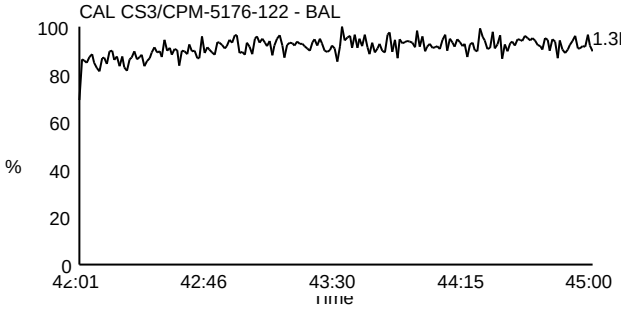
Data File: P70829B_02 G5 C12 - 471.7749
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G5 C13 - 513.6775
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G5 C2 - 430.9728
CAL CS3/CPM-5176-122 - BAL

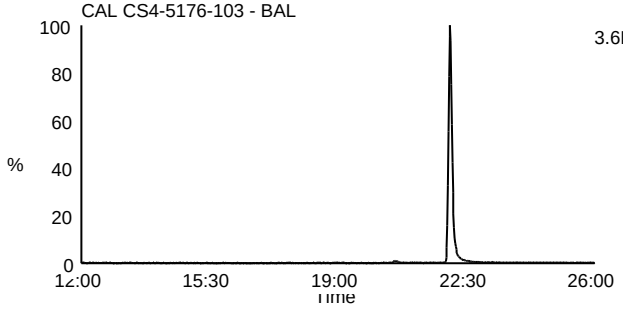


Homologue Group: Tetras

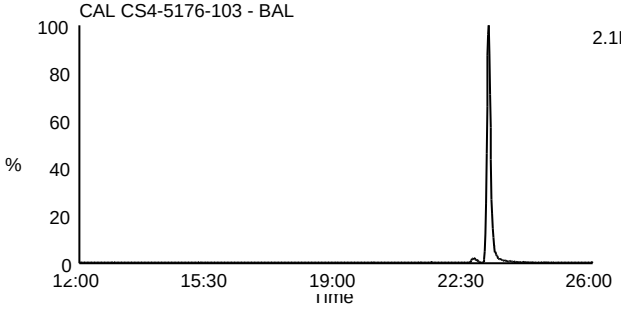
Data File Name: P70829B_06
Date Acquired: 8/29/2007
Sample Description: CAL CS4-5176-103 - BAL

Lab Sample ID: 5176-103
Client Sample ID: CS-4
Instrument: 10MSHR09 (P)

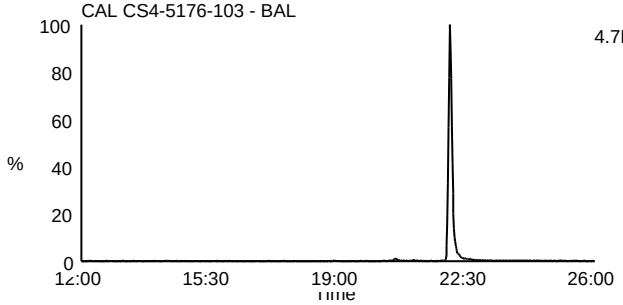
Data File: P70829B 06 G1 C1 - 303.9016
CAL CS4-5176-103 - BAL



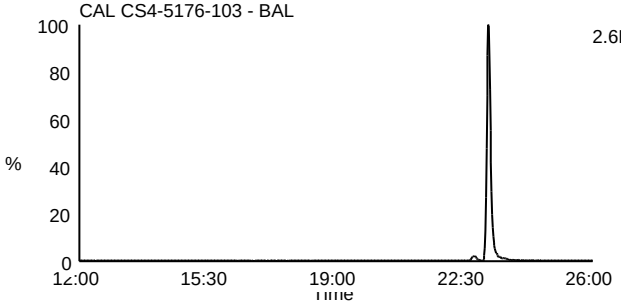
Data File: P70829B 06 G1 C7 - 319.8965
CAL CS4-5176-103 - BAL



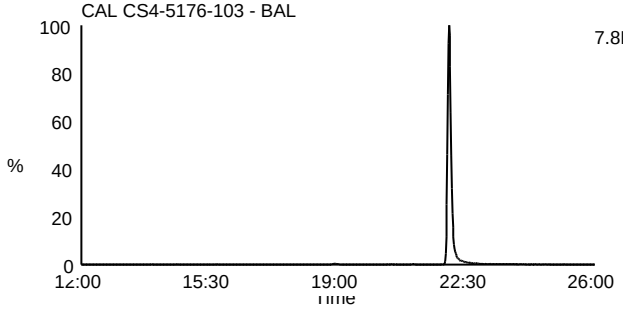
Data File: P70829B_06 G1 C2 - 305.8987
CAL CS4-5176-103 - BAL



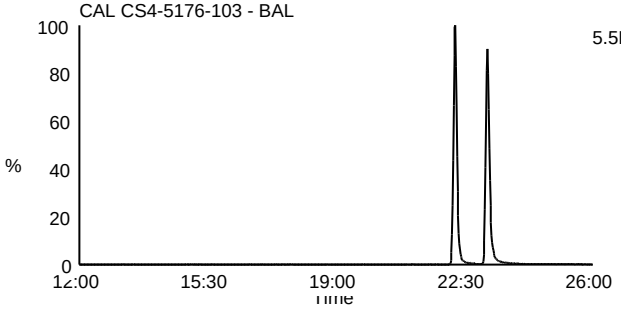
Data File: P70829B_06 G1 C8 - 321.8936
CAL CS4-5176-103 - BAL



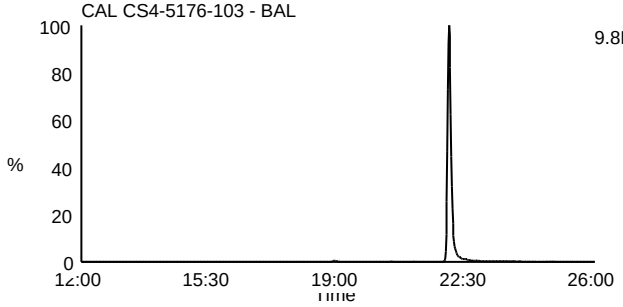
Data File: P70829B 06 G1 C3 - 315.9418
CAL CS4-5176-103 - BAL



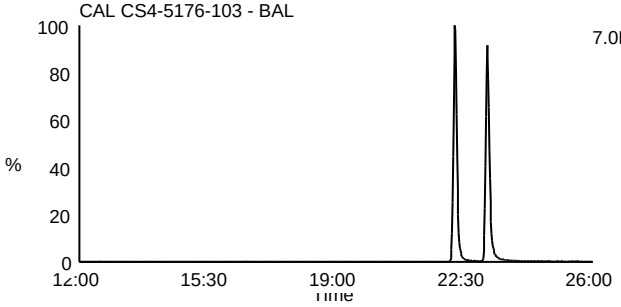
Data File: P70829B 06 G1 C10 - 331.9367
CAL CS4-5176-103 - BAL



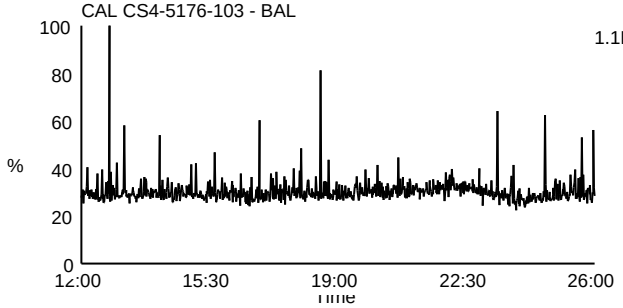
Data File: P70829B_06 G1 C4 - 317.9389
CAL CS4-5176-103 - BAL



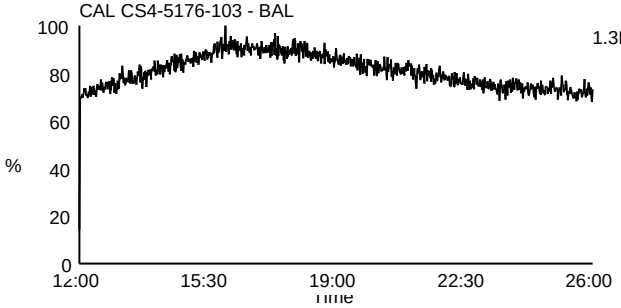
Data File: P70829B_06 G1 C11 - 333.9338
CAL CS4-5176-103 - BAL



Data File: P70829B_06 G1 C14 - 375.8364
CAL CS4-5176-103 - BAL



Data File: P70829B_06 G1 C5 - 318.9792
CAL CS4-5176-103 - BAL

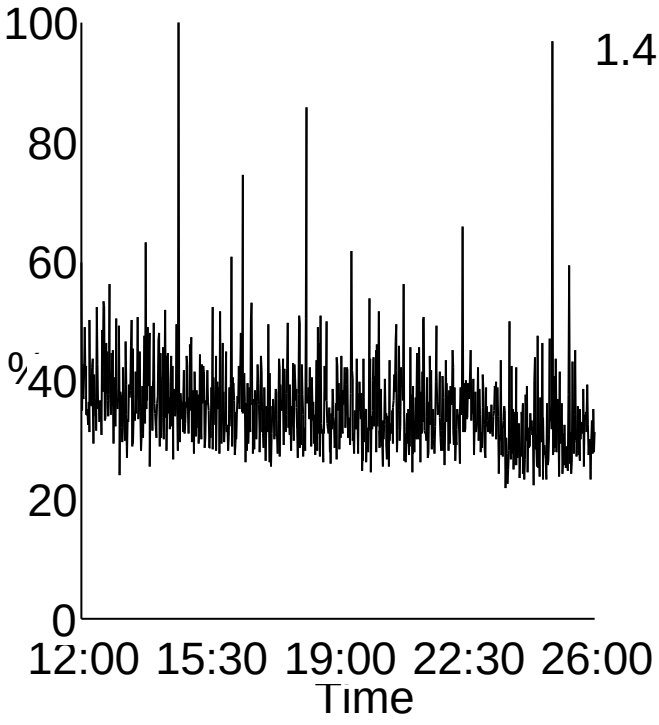


Homologue Group: Penta & Cleanup

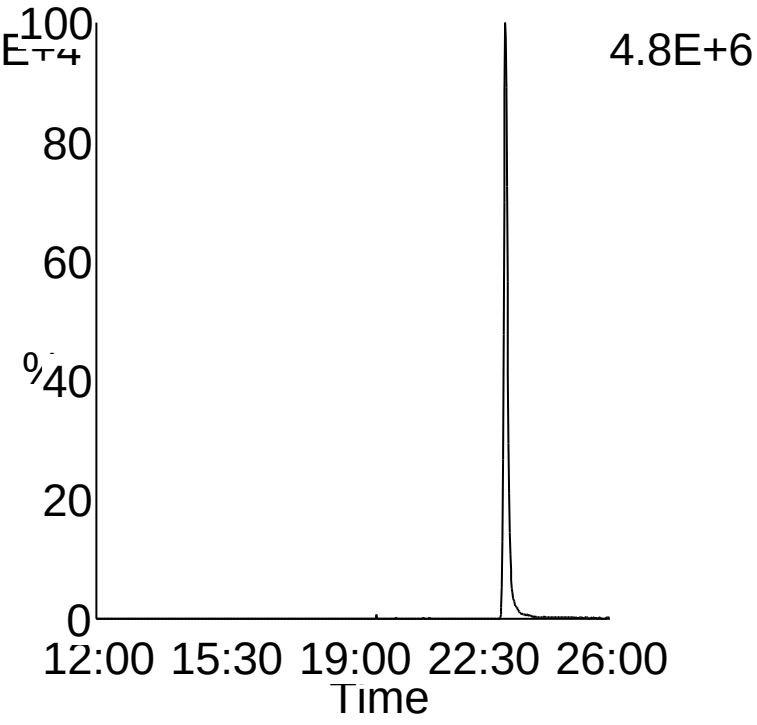
Data File Name: P70829B_06
Date Acquired: 8/29/2007
Sample Description: CAL CS4-5176-103 - BAL

Lab Sample ID: 5176-103
Client Sample ID: CS-4
Instrument: 10MSHR09 (P)

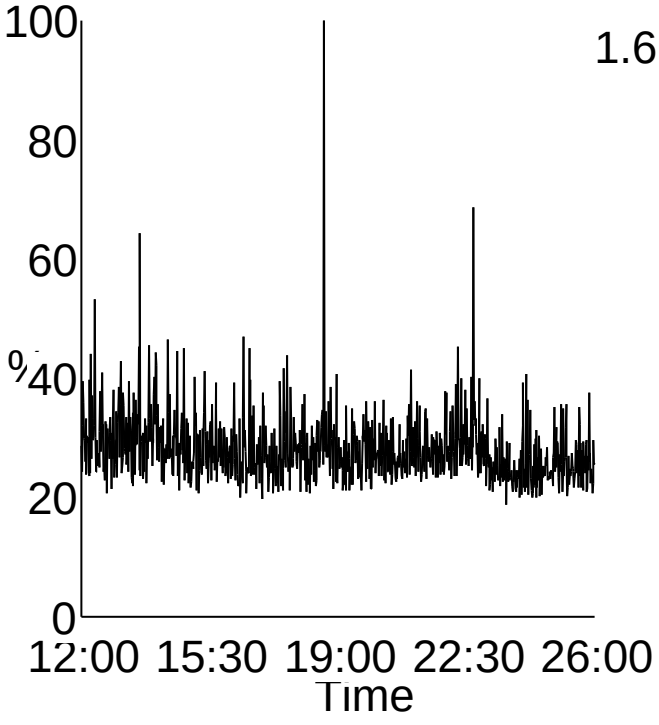
Data File: P7G1 C12 - 339.8597
CAL CS4-5176-103 - BAL



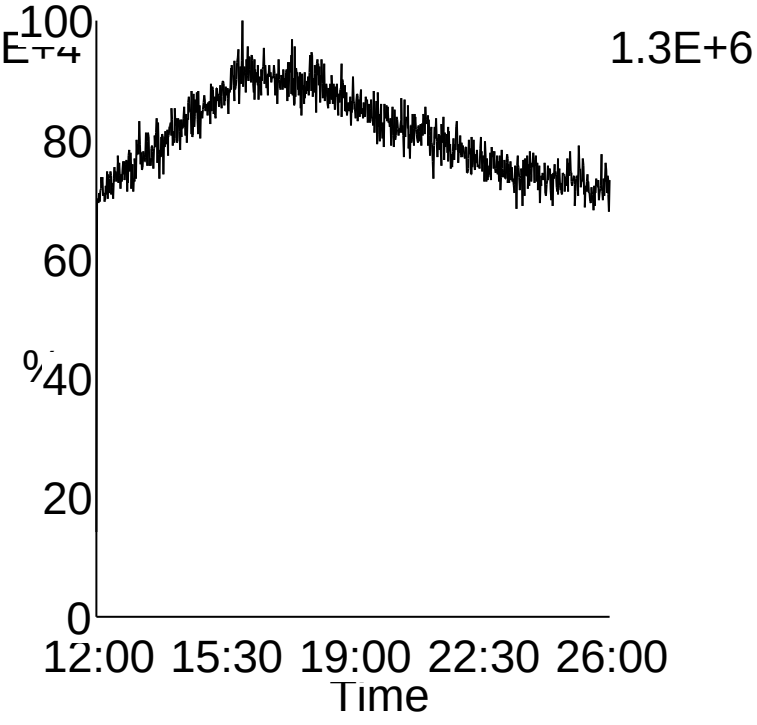
Data File: P7G1 C9 - 327.8847
CAL CS4-5176-103 - BAL



Data File: P7G1 C13 - 341.8567
CAL CS4-5176-103 - BAL



Data File: P7G1 C5 - 318.9792
CAL CS4-5176-103 - BAL

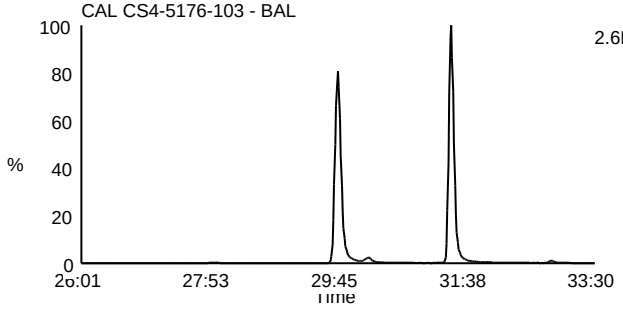


Homologue Group: Pentas

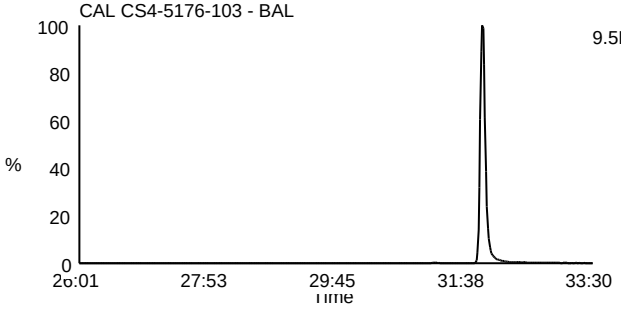
Data File Name: P70829B_06
Date Acquired: 8/29/2007
Sample Description: CAL CS4-5176-103 - BAL

Lab Sample ID: 5176-103
Client Sample ID: CS-4
Instrument: 10MSHR09 (P)

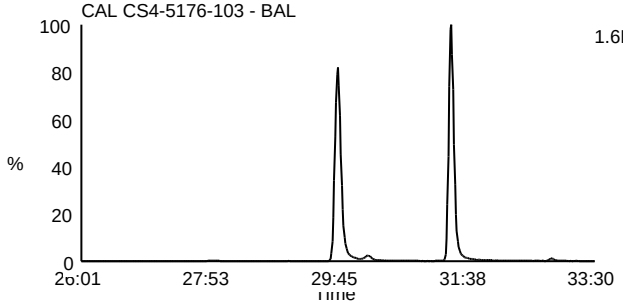
Data File: P70829B_06 G2 C1 - 339.8597
CAL CS4-5176-103 - BAL
2.6E+7



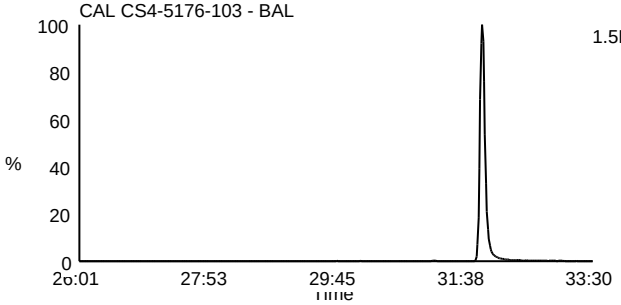
Data File: P70829B_06 G2 C4 - 353.8576
CAL CS4-5176-103 - BAL
9.5E+6



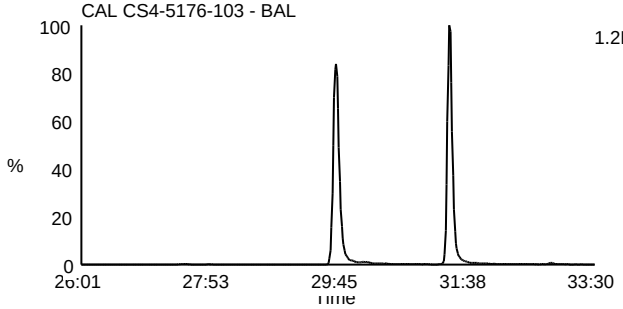
Data File: P70829B_06 G2 C2 - 341.8567
CAL CS4-5176-103 - BAL
1.6E+7



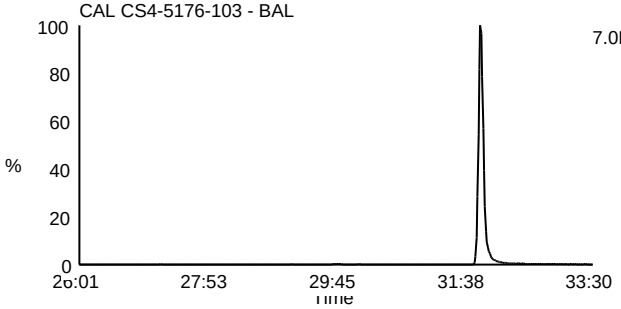
Data File: P70829B_06 G2 C8 - 355.8546
CAL CS4-5176-103 - BAL
1.5E+7



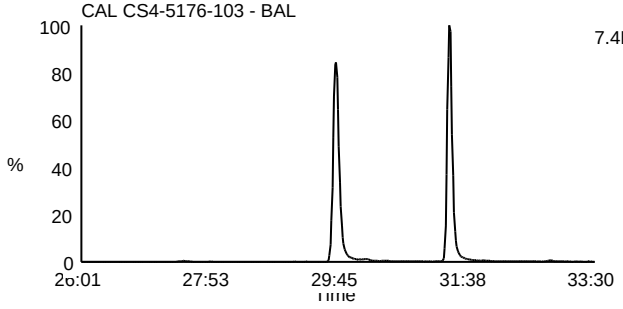
Data File: P70829B_06 G2 C3 - 351.8999
CAL CS4-5176-103 - BAL
1.2E+7



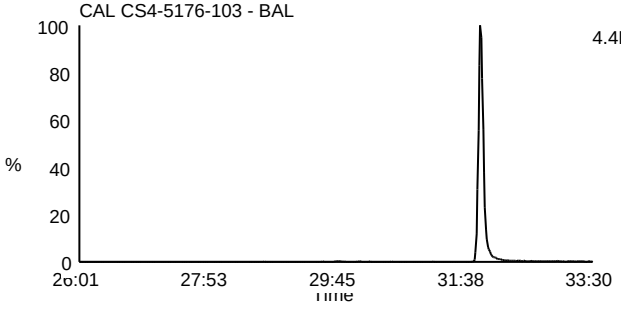
Data File: P70829B_06 G2 C10 - 367.8948
CAL CS4-5176-103 - BAL
7.0E+6



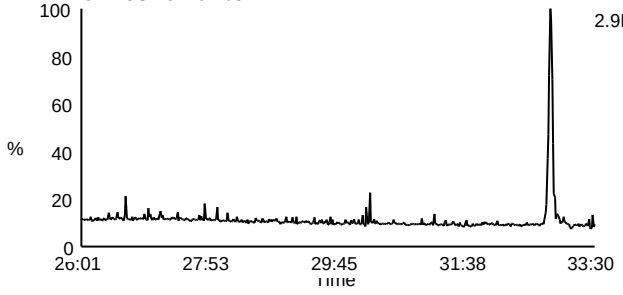
Data File: P70829B_06 G2 C5 - 353.8969
CAL CS4-5176-103 - BAL
7.4E+6



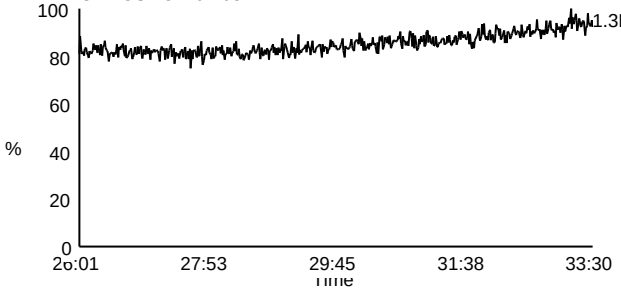
Data File: P70829B_06 G2 C11 - 369.8918
CAL CS4-5176-103 - BAL
4.4E+6



Data File: P70829B_06 G2 C12 - 409.7974
CAL CS4-5176-103 - BAL
2.9E+4



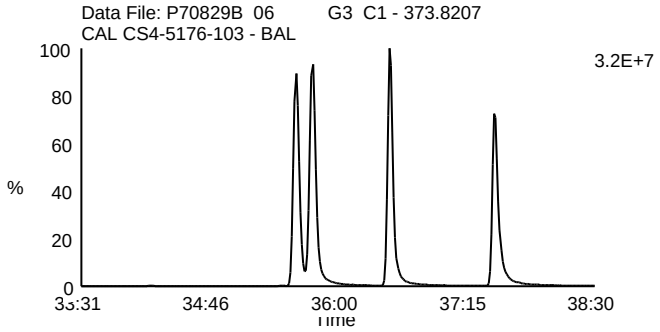
Data File: P70829B_06 G2 C6 - 354.9792
CAL CS4-5176-103 - BAL
1.3E+6

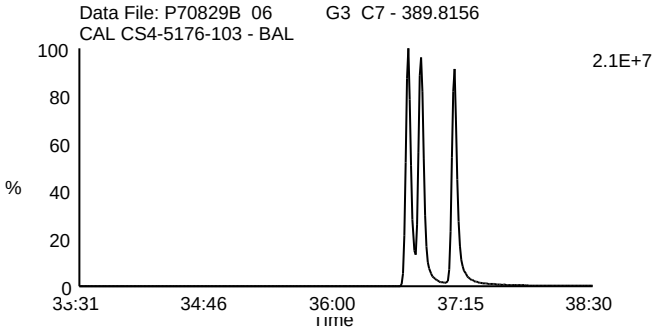


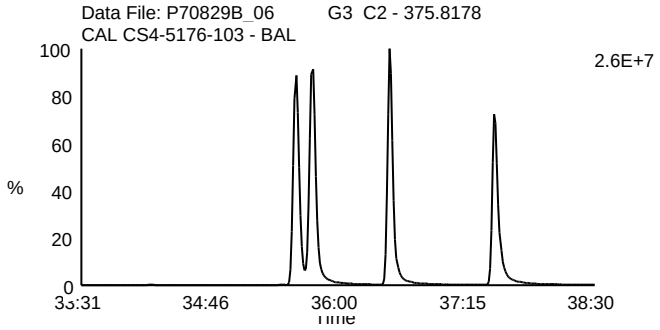
Homologue Group: Hexas

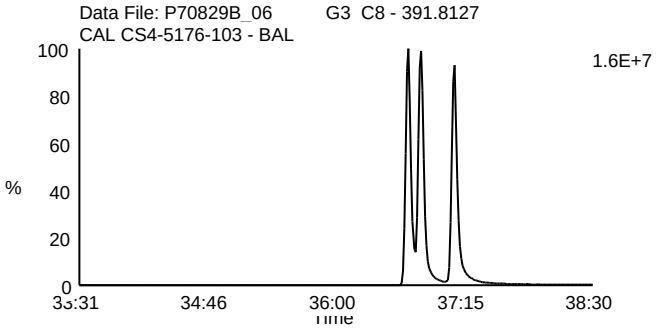
Data File Name: P70829B_06
Date Acquired: 8/29/2007
Sample Description: CAL CS4-5176-103 - BAL

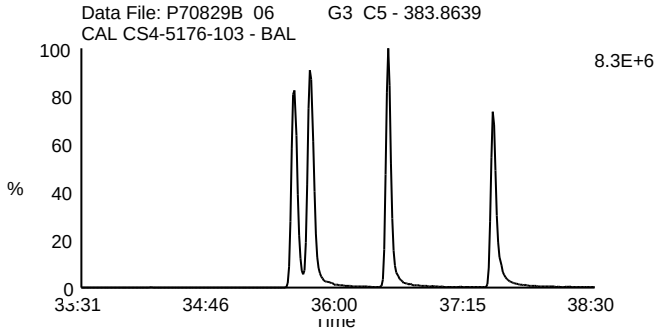
Lab Sample ID: 5176-103
Client Sample ID: CS-4
Instrument: 10MSHR09 (P)

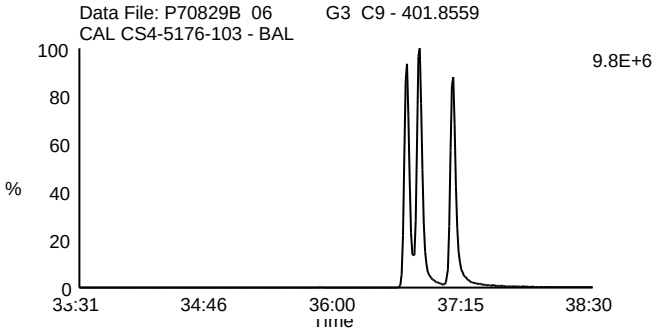


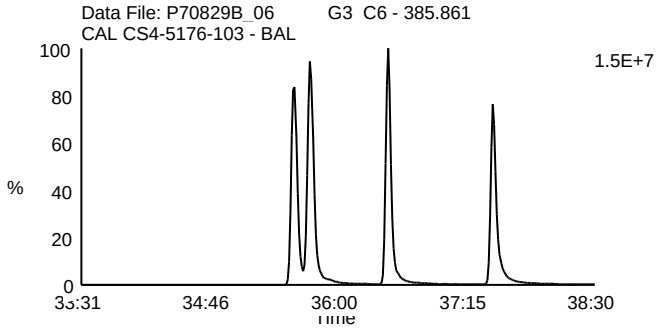


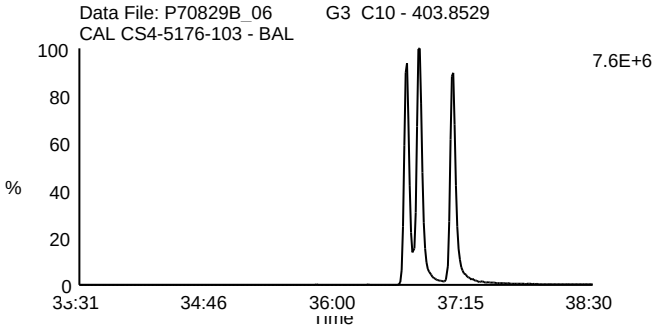


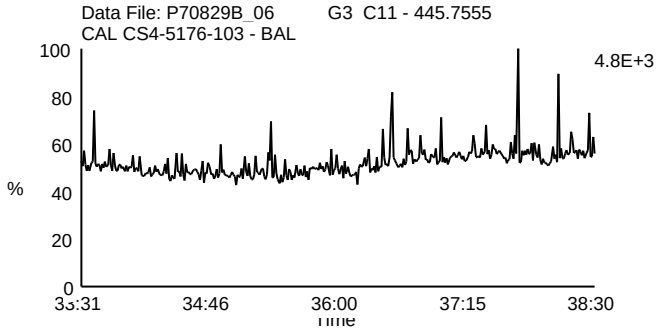


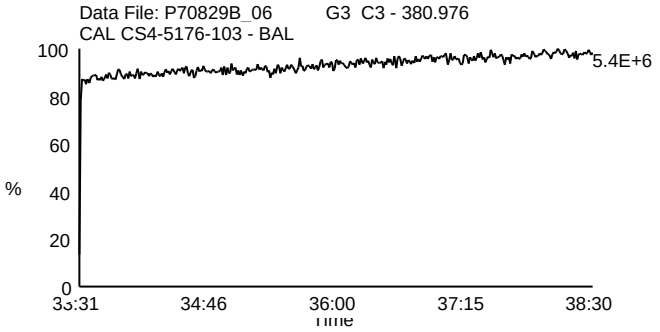










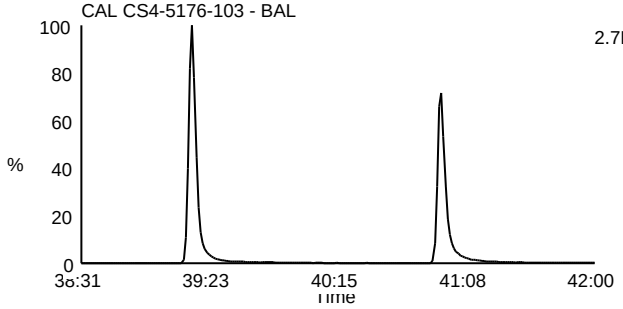


Homologue Group: Heptas

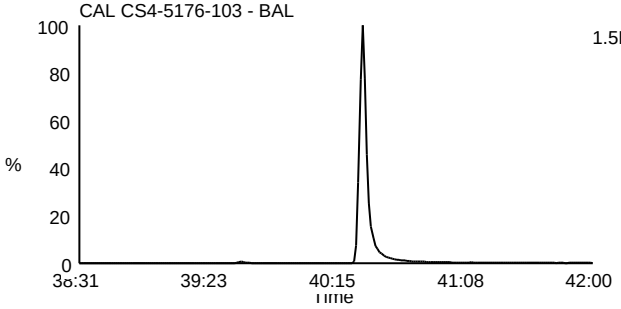
Data File Name: P70829B_06
Date Acquired: 8/29/2007
Sample Description: CAL CS4-5176-103 - BAL

Lab Sample ID: 5176-103
Client Sample ID: CS-4
Instrument: 10MSHR09 (P)

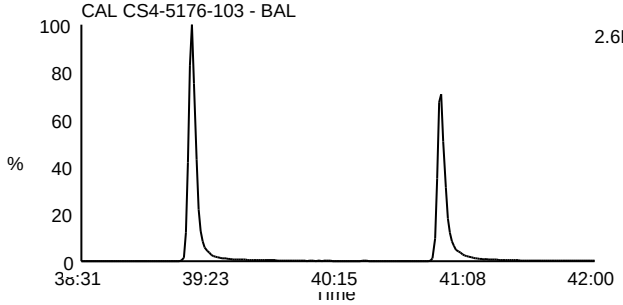
Data File: P70829B_06 G4 C3 - 407.7818
CAL CS4-5176-103 - BAL
2.7E+7



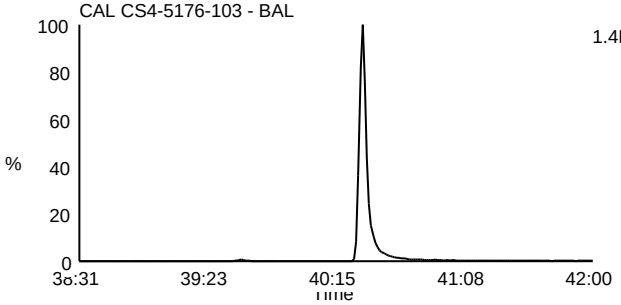
Data File: P70829B_06 G4 C8 - 423.7767
CAL CS4-5176-103 - BAL
1.5E+7



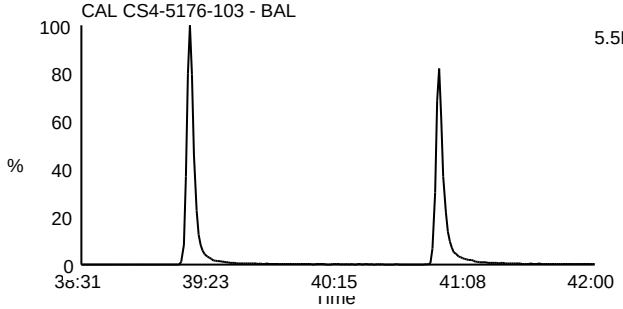
Data File: P70829B_06 G4 C4 - 409.7788
CAL CS4-5176-103 - BAL
2.6E+7



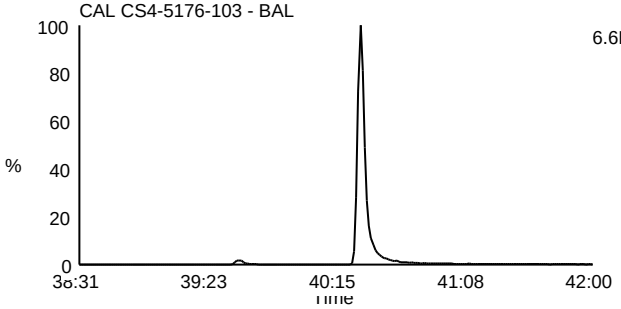
Data File: P70829B_06 G4 C9 - 425.7737
CAL CS4-5176-103 - BAL
1.4E+7



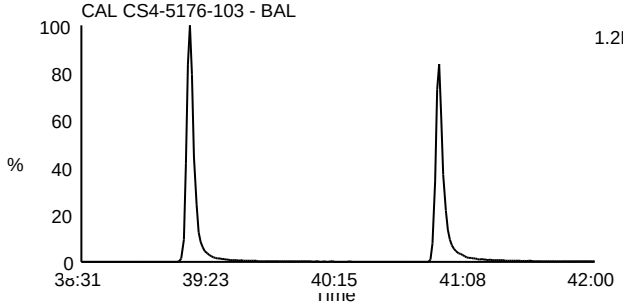
Data File: P70829B_06 G4 C6 - 417.825
CAL CS4-5176-103 - BAL
5.5E+6



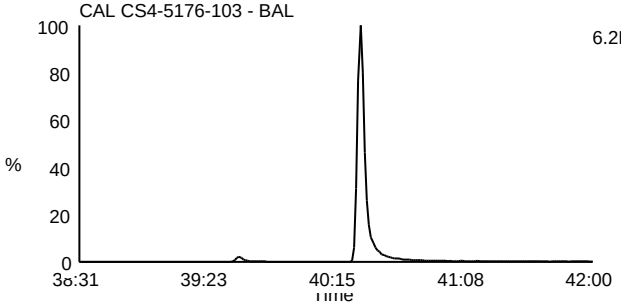
Data File: P70829B_06 G4 C11 - 435.8169
CAL CS4-5176-103 - BAL
6.6E+6



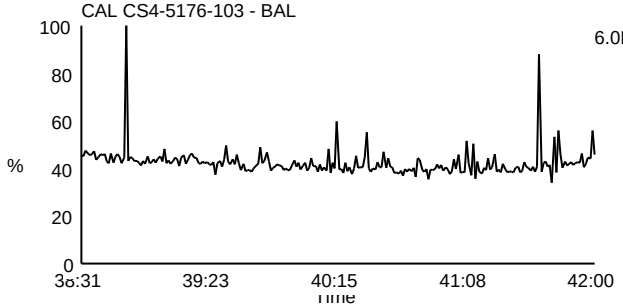
Data File: P70829B_06 G4 C7 - 419.822
CAL CS4-5176-103 - BAL
1.2E+7



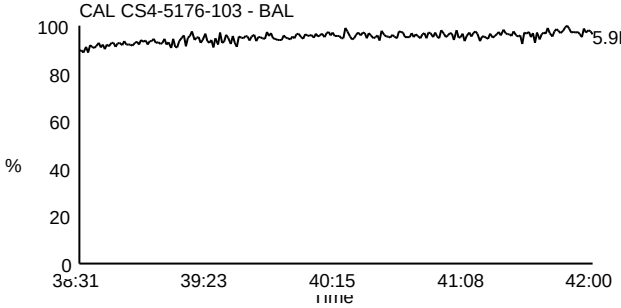
Data File: P70829B_06 G4 C12 - 437.814
CAL CS4-5176-103 - BAL
6.2E+6



Data File: P70829B_06 G4 C13 - 479.7165
CAL CS4-5176-103 - BAL
6.0E+3



Data File: P70829B_06 G4 C1 - 380.976
CAL CS4-5176-103 - BAL
5.9E+6

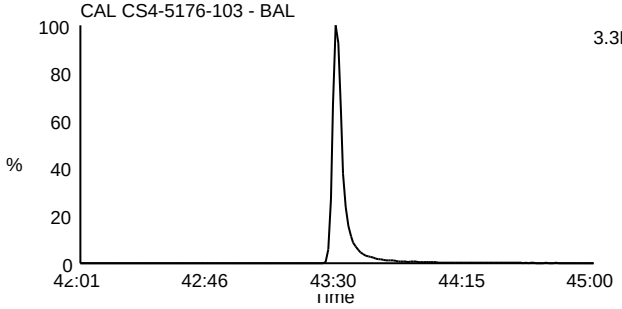


Homologue Group: Octas

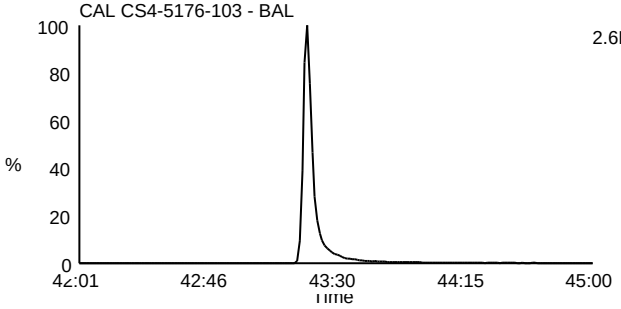
Data File Name: P70829B_06
Date Acquired: 8/29/2007
Sample Description: CAL CS4-5176-103 - BAL

Lab Sample ID: 5176-103
Client Sample ID: CS-4
Instrument: 10MSHR09 (P)

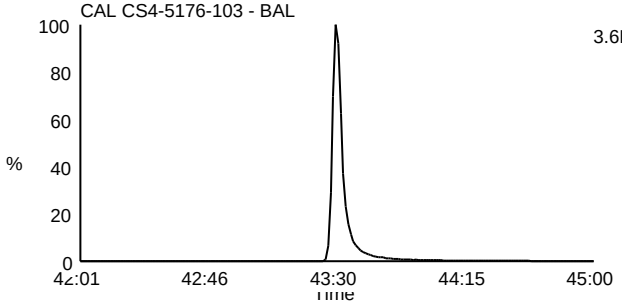
Data File: P70829B_06 G5 C4 - 441.7428
CAL CS4-5176-103 - BAL



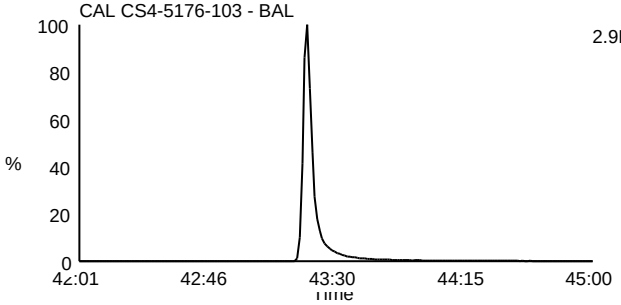
Data File: P70829B_06 G5 C8 - 457.7377
CAL CS4-5176-103 - BAL



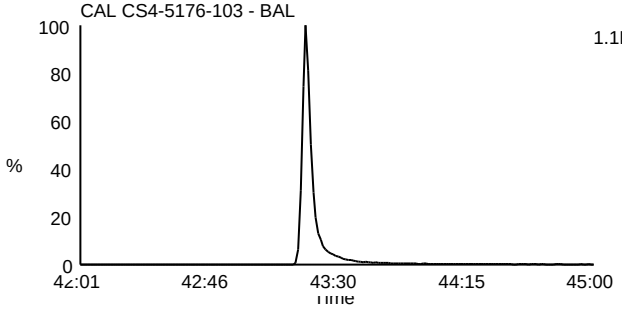
Data File: P70829B_06 G5 C5 - 443.7398
CAL CS4-5176-103 - BAL



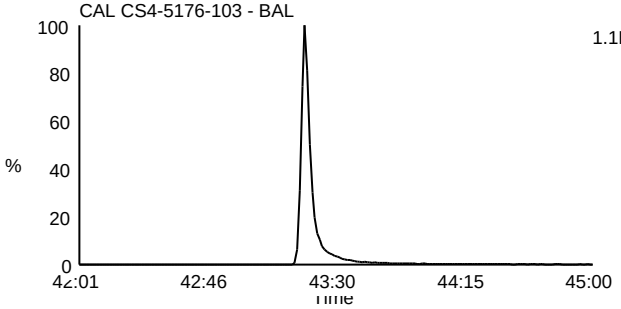
Data File: P70829B_06 G5 C9 - 459.7347
CAL CS4-5176-103 - BAL



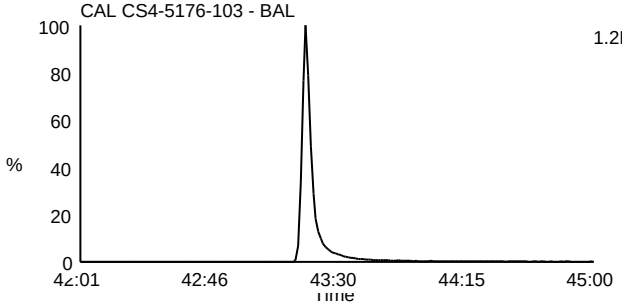
Data File: P70829B_06 G5 C11 - 469.7779
CAL CS4-5176-103 - BAL



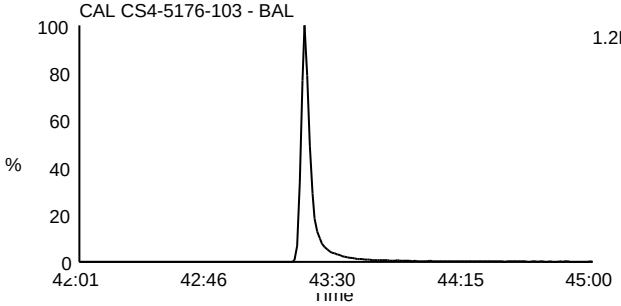
Data File: P70829B_06 G5 C11 - 469.7779
CAL CS4-5176-103 - BAL



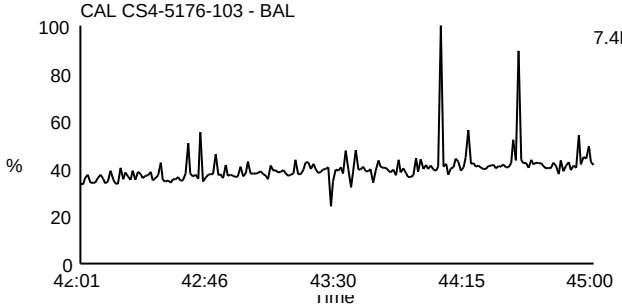
Data File: P70829B_06 G5 C12 - 471.7749
CAL CS4-5176-103 - BAL



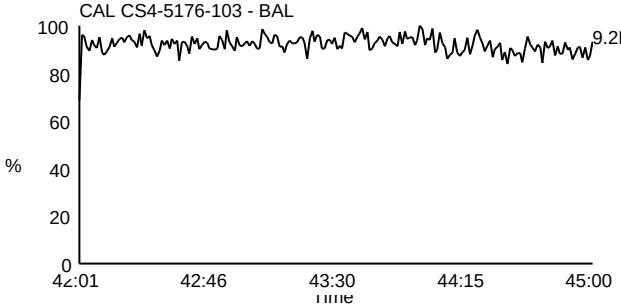
Data File: P70829B_06 G5 C12 - 471.7749
CAL CS4-5176-103 - BAL



Data File: P70829B_06 G5 C13 - 513.6775
CAL CS4-5176-103 - BAL



Data File: P70829B_06 G5 C2 - 430.9728
CAL CS4-5176-103 - BAL

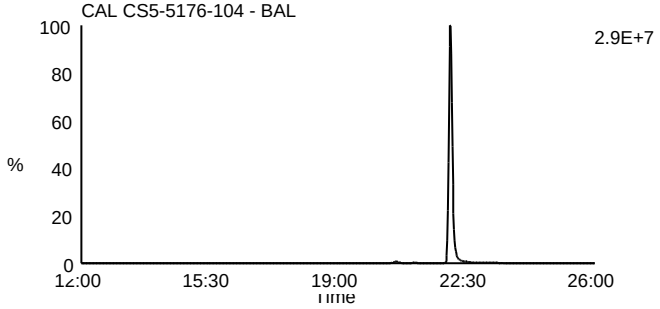


Homologue Group: Tetras

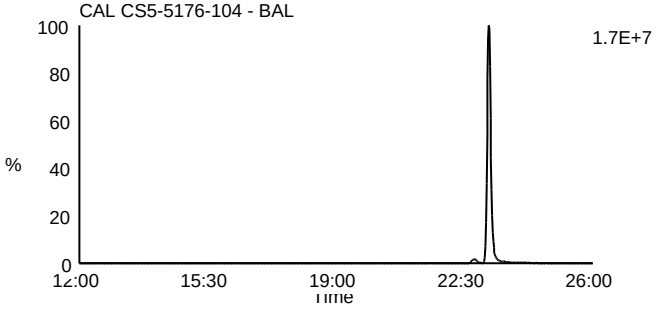
Data File Name: P70829B_05
Date Acquired: 8/29/2007
Sample Description: CAL CS5-5176-104 - BAL

Lab Sample ID: 5176-104
Client Sample ID: CS-5
Instrument: 10MSHR09 (P)

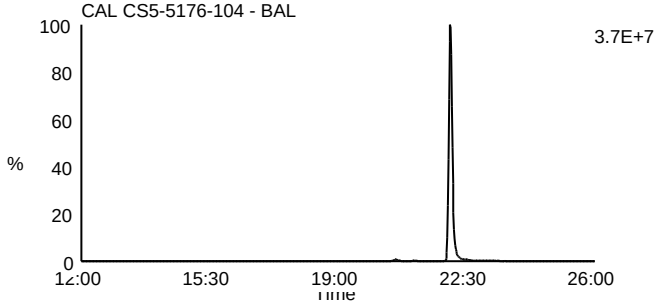
Data File: P70829B_05 G1 C1 - 303.9016
CAL CS5-5176-104 - BAL



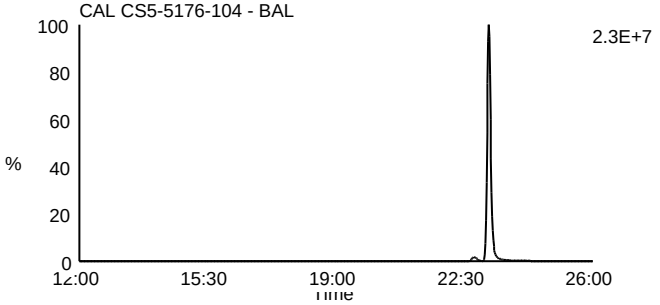
Data File: P70829B_05 G1 C7 - 319.8965
CAL CS5-5176-104 - BAL



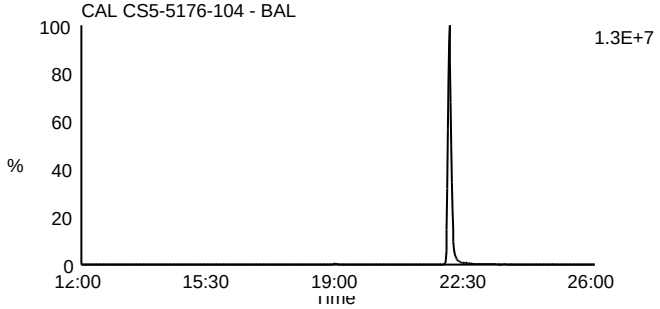
Data File: P70829B_05 G1 C2 - 305.8987
CAL CS5-5176-104 - BAL



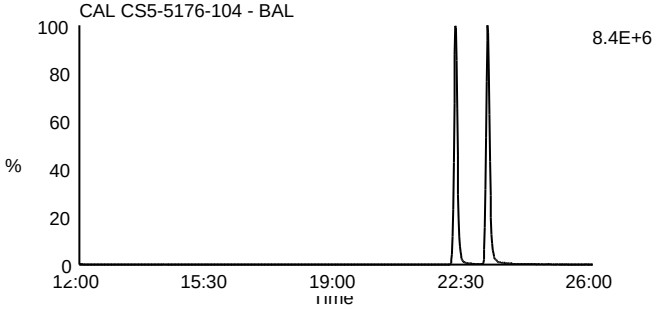
Data File: P70829B_05 G1 C8 - 321.8936
CAL CS5-5176-104 - BAL



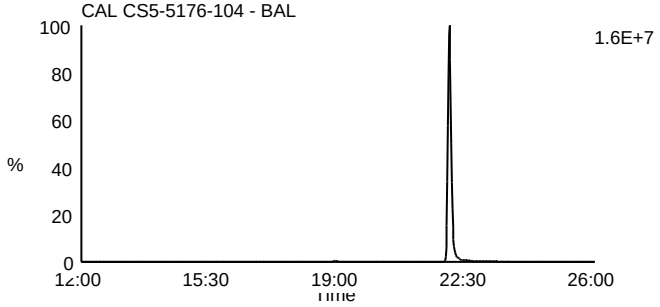
Data File: P70829B_05 G1 C3 - 315.9418
CAL CS5-5176-104 - BAL



Data File: P70829B_05 G1 C10 - 331.9367
CAL CS5-5176-104 - BAL



Data File: P70829B_05 G1 C4 - 317.9389
CAL CS5-5176-104 - BAL



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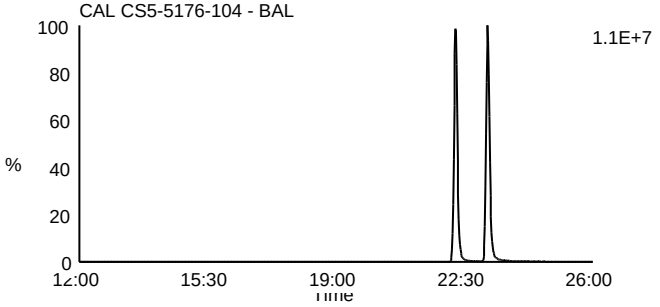
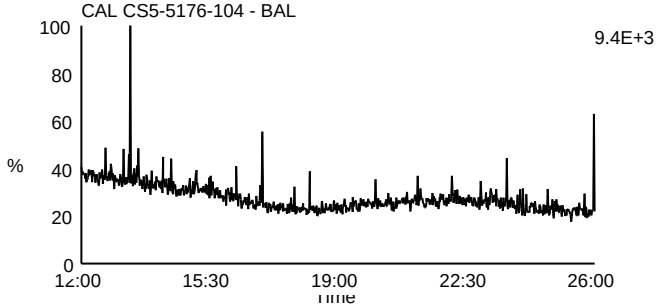
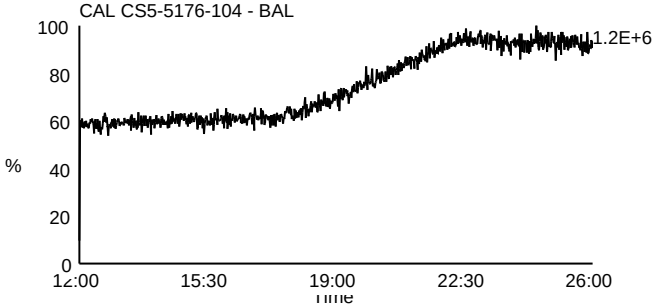
CAL CS5-5176-104 - BAL



Data File: P70829B_05 G1 C14 - 375.8364
CAL CS5-5176-104 - BAL



Data File: P70829B_05 G1 C5 - 318.9792
CAL CS5-5176-104 - BAL

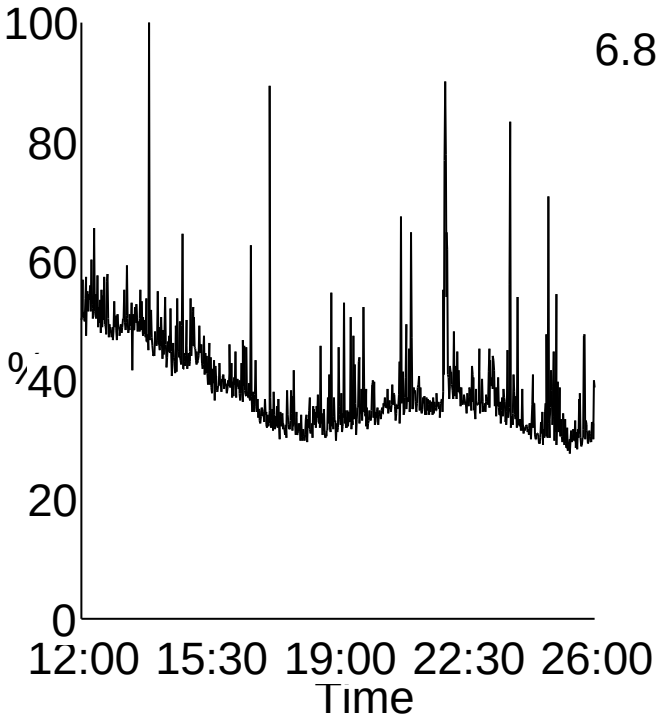


Homologue Group: Penta & Cleanup

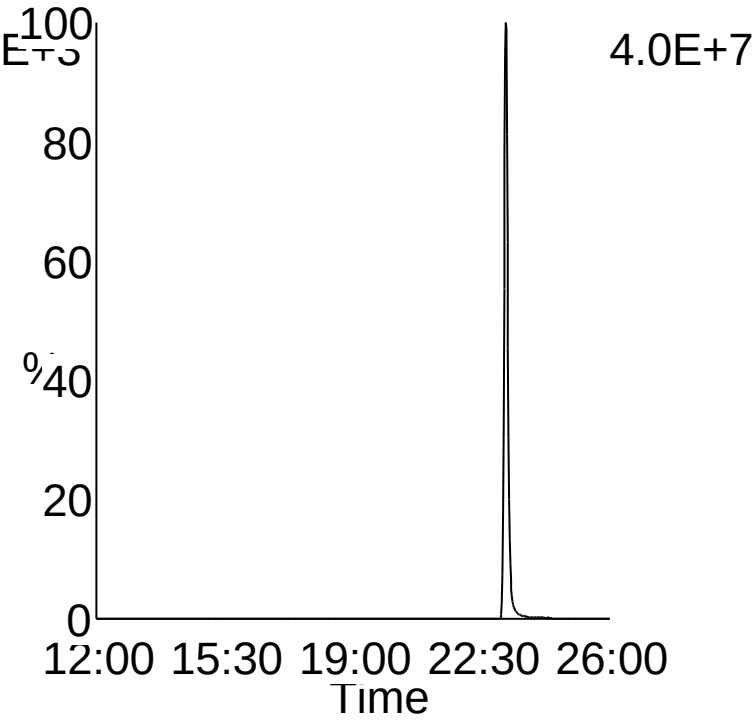
Data File Name: P70829B_05
Date Acquired: 8/29/2007
Sample Description: CAL CS5-5176-104 - BAL

Lab Sample ID: 5176-104
Client Sample ID: CS-5
Instrument: 10MSHR09 (P)

Data File: P7G1 C12 - 339.8597
CAL CS5-5176-104 - BAL



Data File: P7G1 C9 - 327.8847
CAL CS5-5176-104 - BAL



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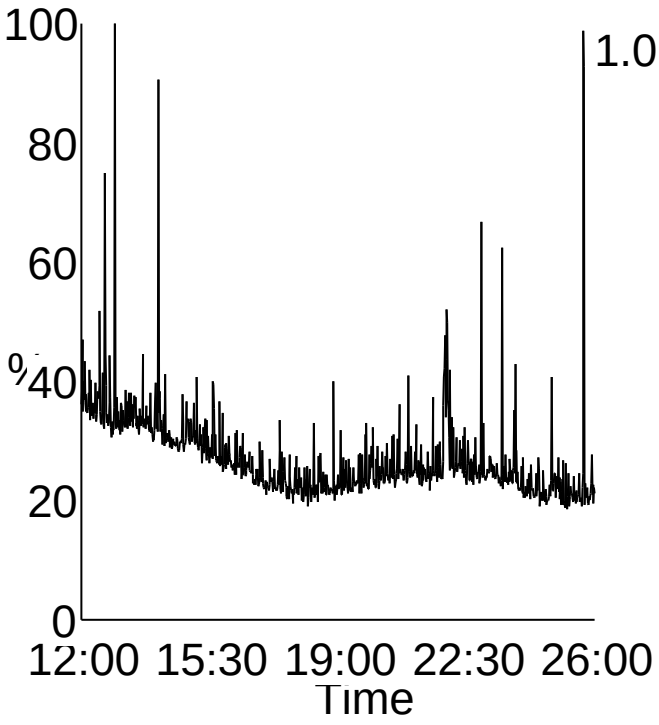
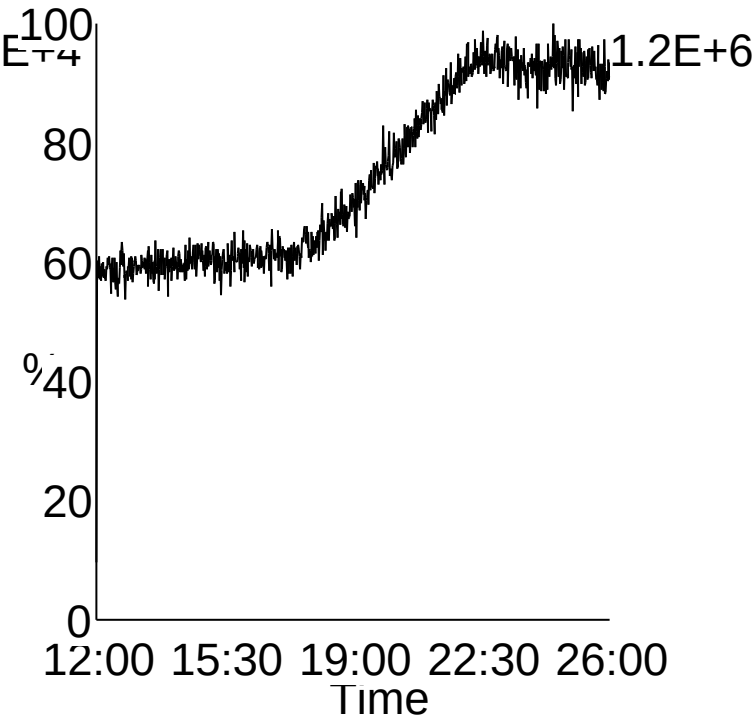
CAL CS5-5176-104 - BAL



Data File: P7G1 C5 - 318.9792
CAL CS5-5176-104 - BAL

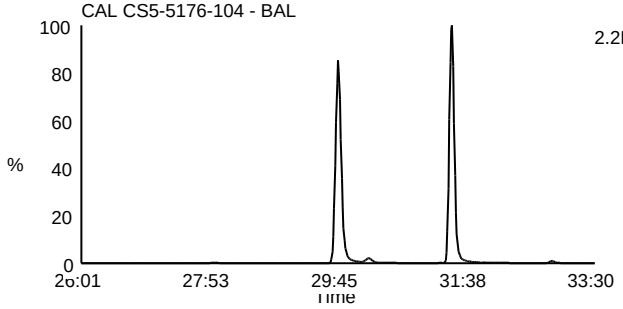


Homologue Group: Pentas

Data File Name: P70829B_05
Date Acquired: 8/29/2007
Sample Description: CAL CS5-5176-104 - BAL

Lab Sample ID: 5176-104
Client Sample ID: CS-5
Instrument: 10MSHR09 (P)

Data File: P70829B 05 G2 C1 - 339.8597
CAL CS5-5176-104 - BAL



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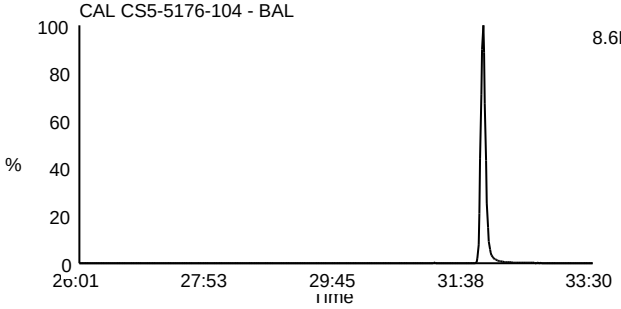
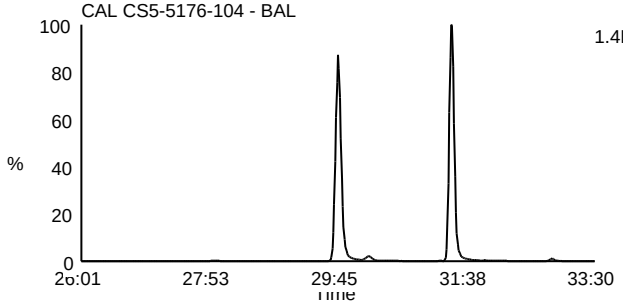
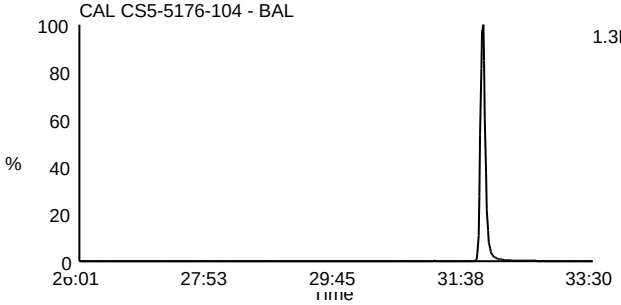
CAL CS5-5176-104 - BAL



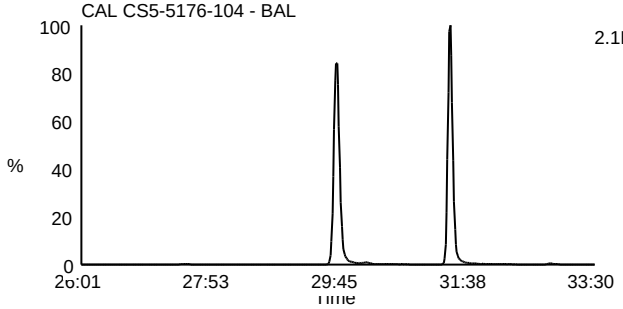
Data File: P70829B_05 G2 C2 - 341.8567
CAL CS5-5176-104 - BAL



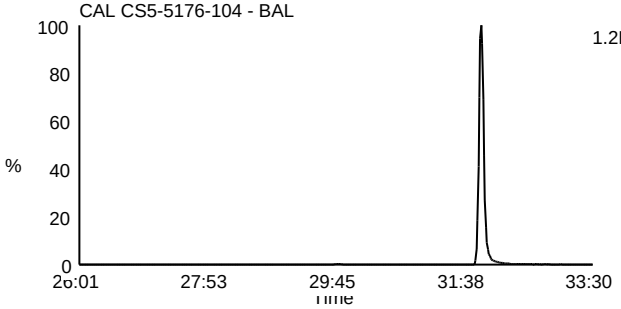
Data File: P70829B_05 G2 C8 - 355.8546
CAL CS5-5176-104 - BAL



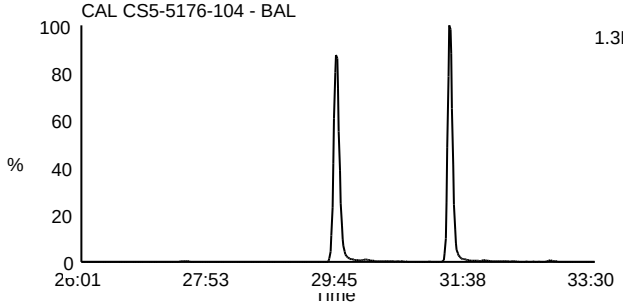
Data File: P70829B_05 G2 C3 - 351.8999
CAL CS5-5176-104 - BAL



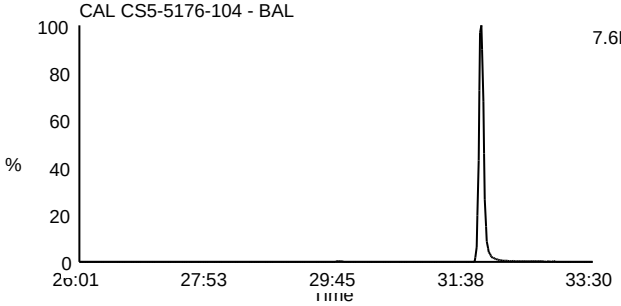
Data File: P70829B_05 G2 C10 - 367.8948
CAL CS5-5176-104 - BAL



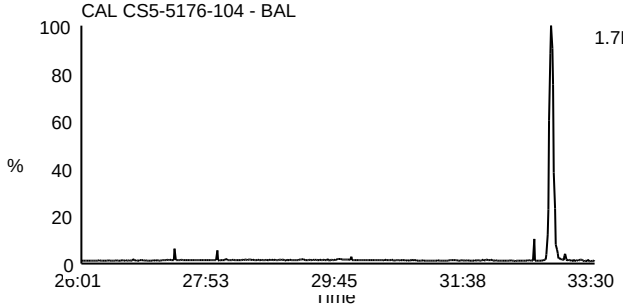
Data File: P70829B_05 G2 C5 - 353.8969
CAL CS5-5176-104 - BAL



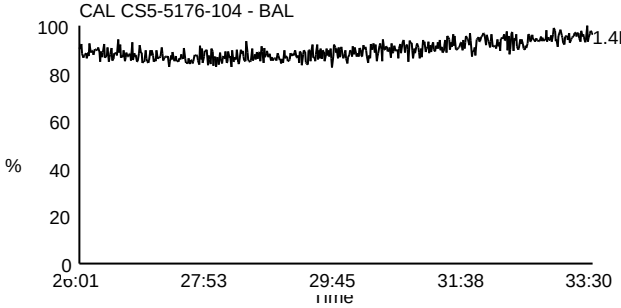
Data File: P70829B_05 G2 C11 - 369.8918
CAL CS5-5176-104 - BAL



Data File: P70829B_05 G2 C12 - 409.7974
CAL CS5-5176-104 - BAL



Data File: P70829B_05 G2 C6 - 354.9792
CAL CS5-5176-104 - BAL

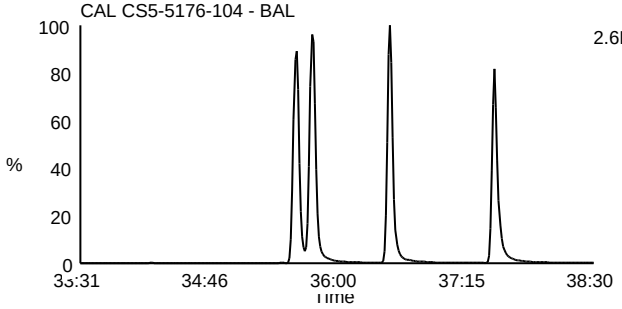


Homologue Group: Hexas

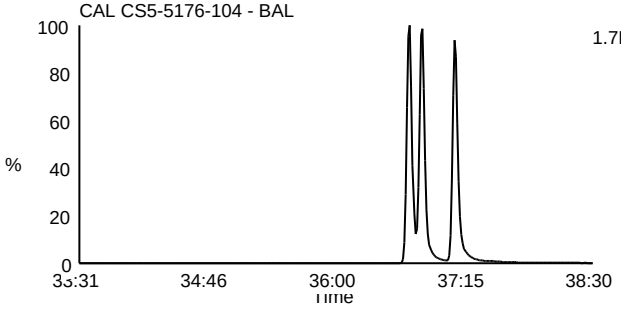
Data File Name: P70829B_05
Date Acquired: 8/29/2007
Sample Description: CAL CS5-5176-104 - BAL

Lab Sample ID: 5176-104
Client Sample ID: CS-5
Instrument: 10MSHR09 (P)

Data File: P70829B 05 G3 C1 - 373.8207
CAL CS5-5176-104 - BAL



Data File: P70829B 05 G3 C7 - 389.8156
CAL CS5-5176-104 - BAL



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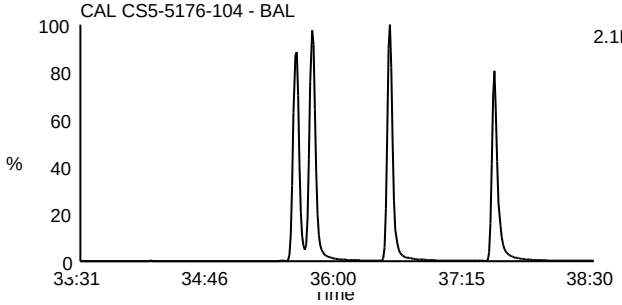
CAL CS5-5176-104 - BAL



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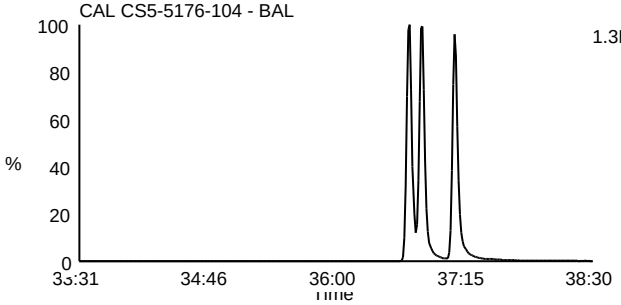
CAL CS5-5176-104 - BAL



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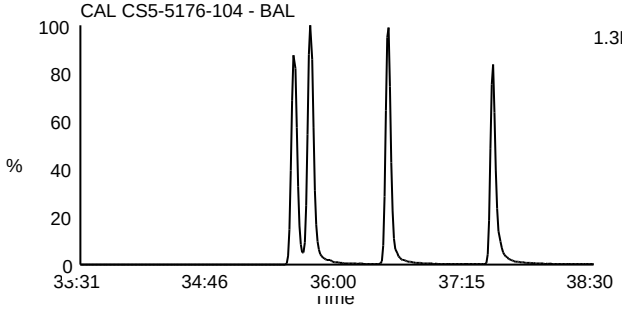
CAL CS5-5176-104 - BAL



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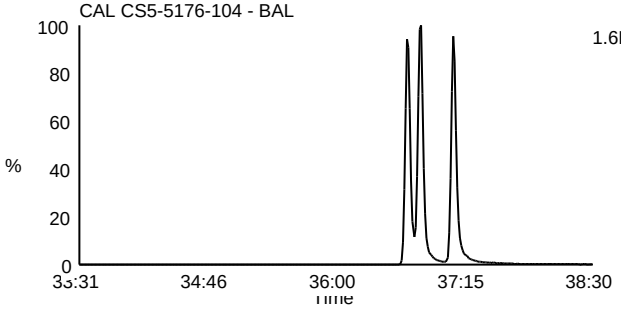
CAL CS5-5176-104 - BAL



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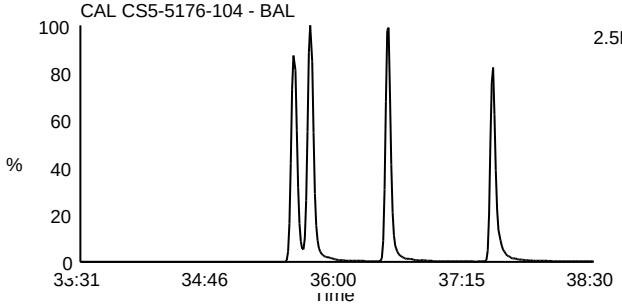
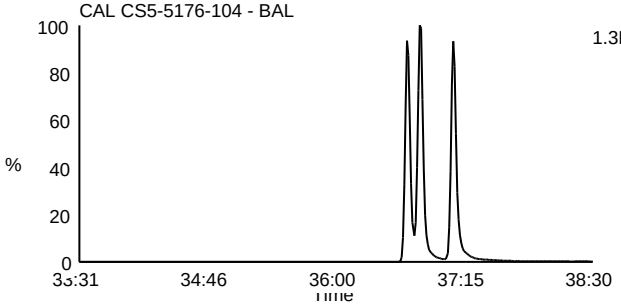
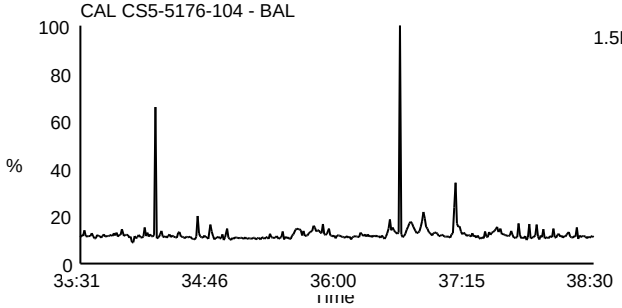
CAL CS5-5176-104 - BAL



Data File: P70829B_05 G3 C10 - 403.8529
CAL CS5-5176-104 - BAL



Data File: P70829B_05 G3 C11 - 445.7555
CAL CS5-5176-104 - BAL



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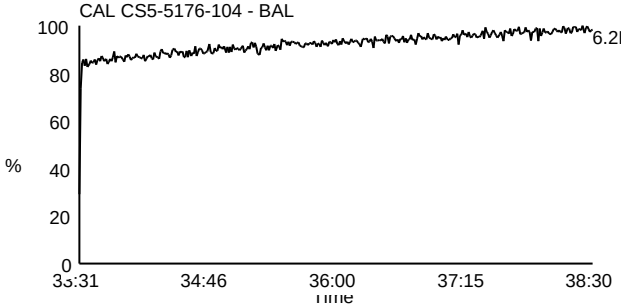
CAL CS5-5176-104 - BAL

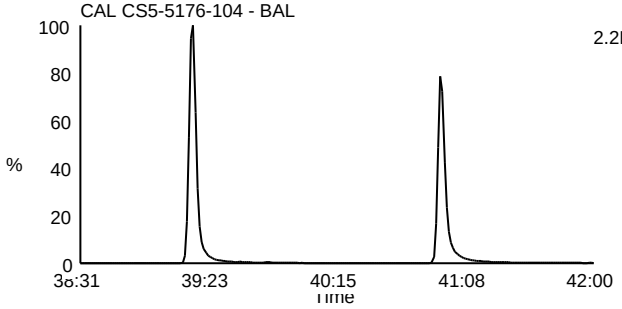


Homologue Group: Heptas

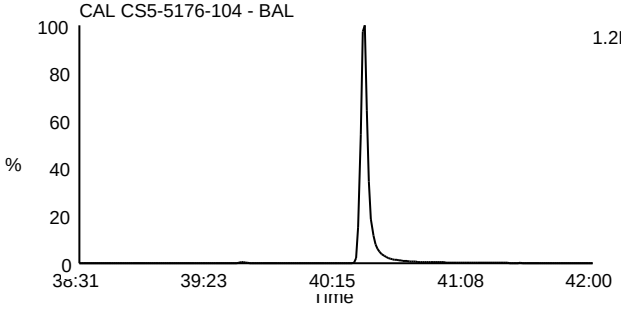
Data File Name: P70829B_05
Date Acquired: 8/29/2007
Sample Description: CAL CS5-5176-104 - BAL

Lab Sample ID: 5176-104
Client Sample ID: CS-5
Instrument: 10MSHR09 (P)

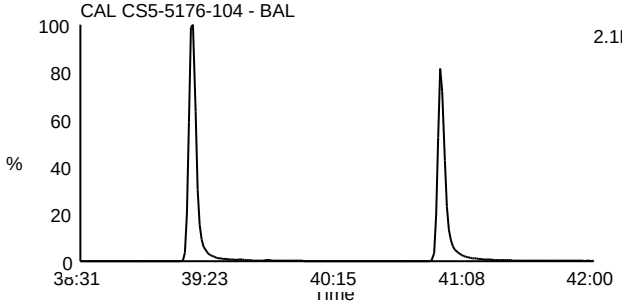
Data File: P70829B_05 G4 C3 - 407.7818
CAL CS5-5176-104 - BAL



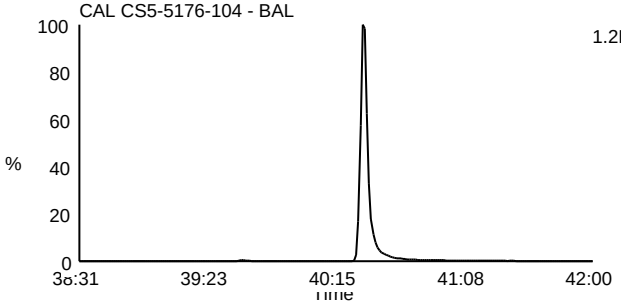
Data File: P70829B_05 G4 C8 - 423.7767
CAL CS5-5176-104 - BAL



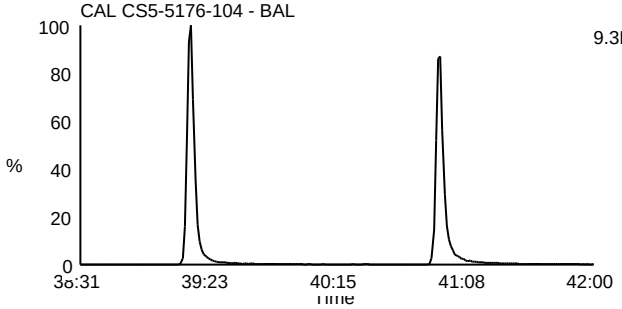
Data File: P70829B_05 G4 C4 - 409.7788
CAL CS5-5176-104 - BAL



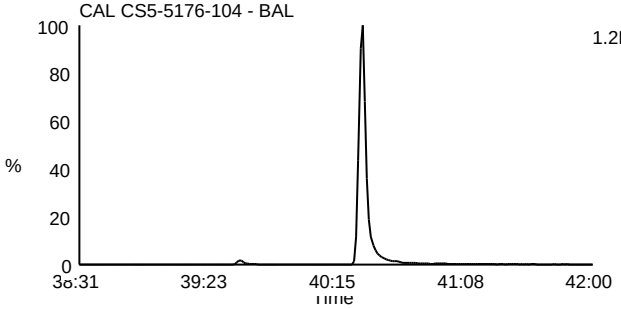
Data File: P70829B_05 G4 C9 - 425.7737
CAL CS5-5176-104 - BAL



Data File: P70829B_05 G4 C6 - 417.825
CAL CS5-5176-104 - BAL



Data File: P70829B_05 G4 C11 - 435.8169
CAL CS5-5176-104 - BAL



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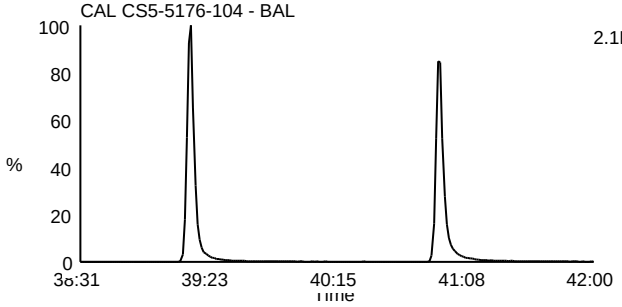
CAL CS5-5176-104 - BAL



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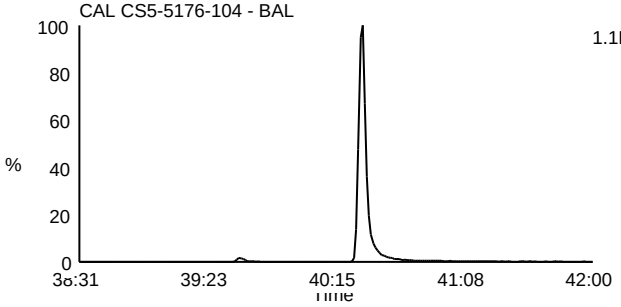
CAL CS5-5176-104 - BAL



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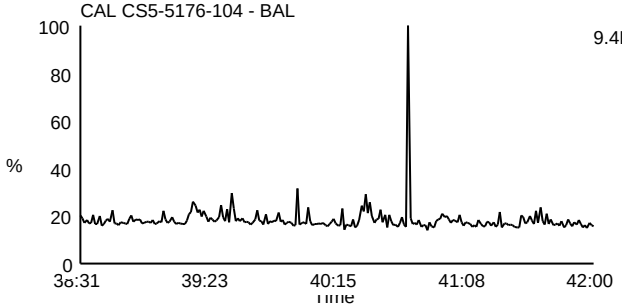
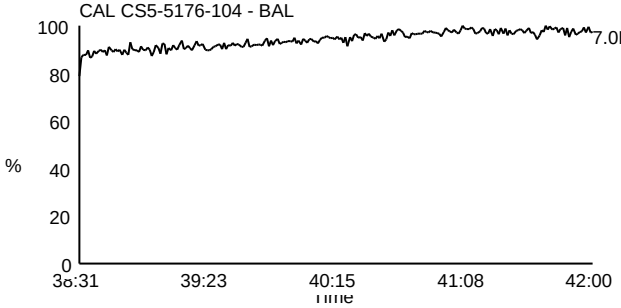
CAL CS5-5176-104 - BAL



Data File: P70829B_05 G4 C1 - 380.976
CAL CS5-5176-104 - BAL

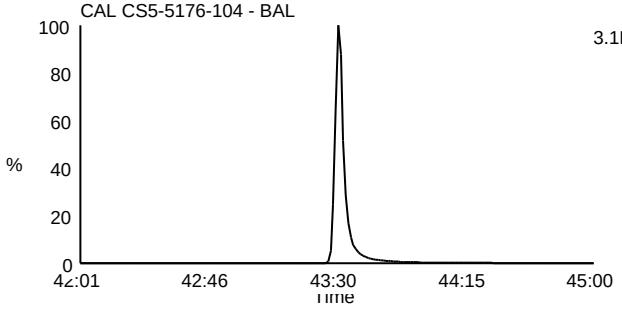


Homologue Group: Octas

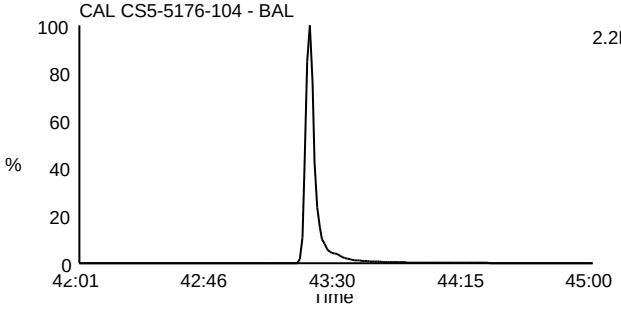
Data File Name: P70829B_05
Date Acquired: 8/29/2007
Sample Description: CAL CS5-5176-104 - BAL

Lab Sample ID: 5176-104
Client Sample ID: CS-5
Instrument: 10MSHR09 (P)

Data File: P70829B 05 G5 C4 - 441.7428
CAL CS5-5176-104 - BAL



Data File: P70829B 05 G5 C8 - 457.7377
CAL CS5-5176-104 - BAL



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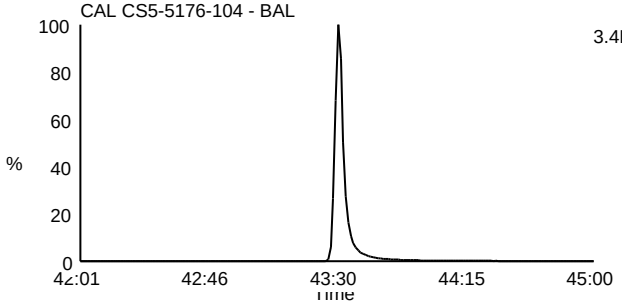
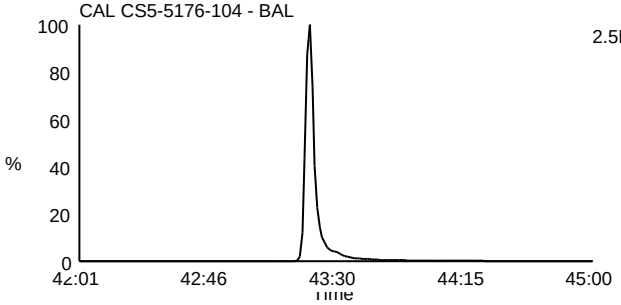
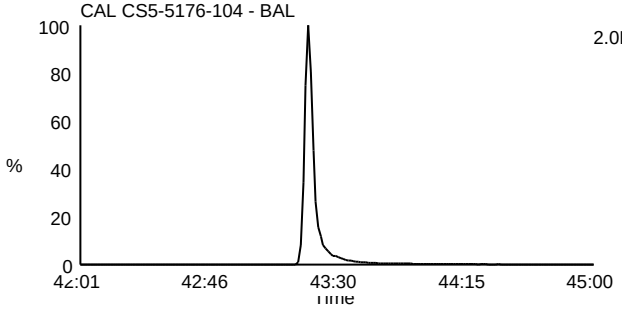
CAL CS5-5176-104 - BAL



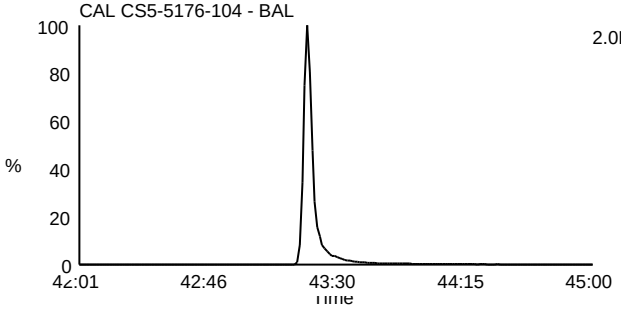
Data File: P70829B_05 G5 C9 - 459.7347
CAL CS5-5176-104 - BAL



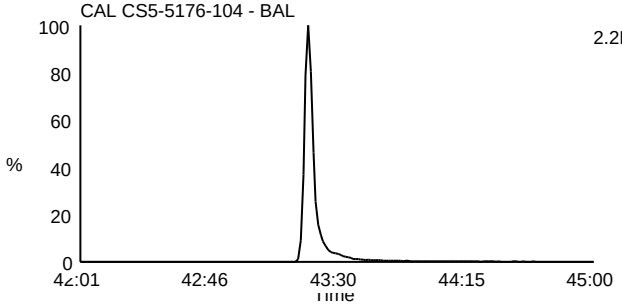
Data File: P70829B 05 G5 C11 - 469.7779
CAL CS5-5176-104 - BAL



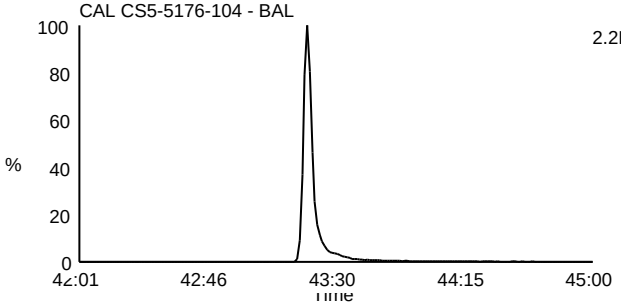
Data File: P70829B 05 G5 C11 - 469.7779
CAL CS5-5176-104 - BAL



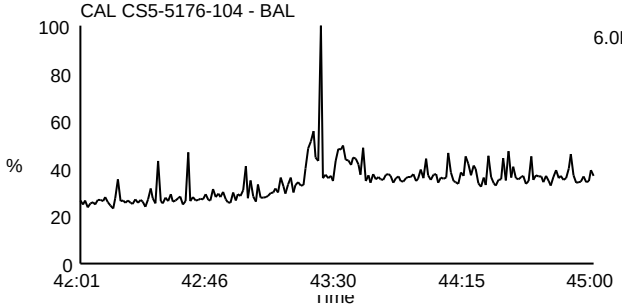
Data File: P70829B_05 G5 C12 - 471.7749
CAL CS5-5176-104 - BAL



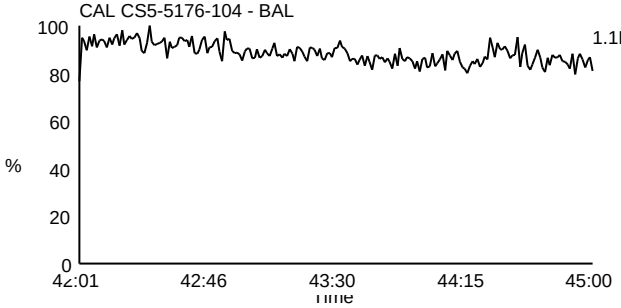
Data File: P70829B_05 G5 C12 - 471.7749
CAL CS5-5176-104 - BAL



Data File: P70829B_05 G5 C13 - 513.6775
CAL CS5-5176-104 - BAL



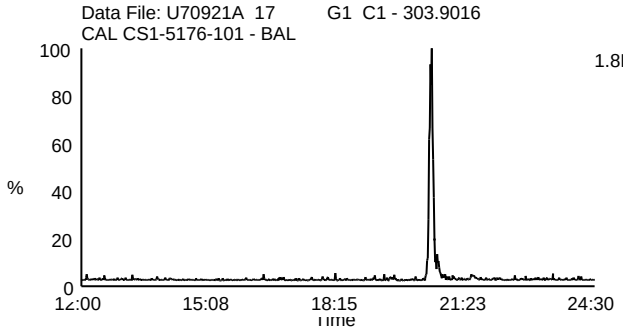
Data File: P70829B_05 G5 C2 - 430.9728
CAL CS5-5176-104 - BAL

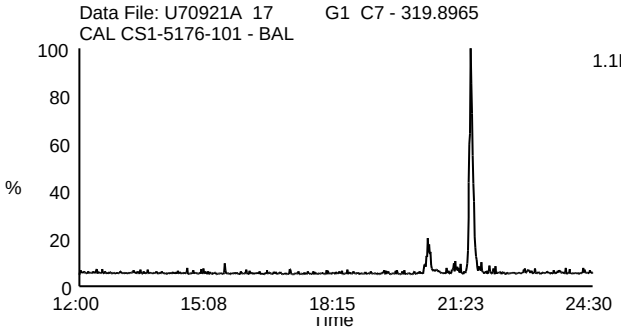


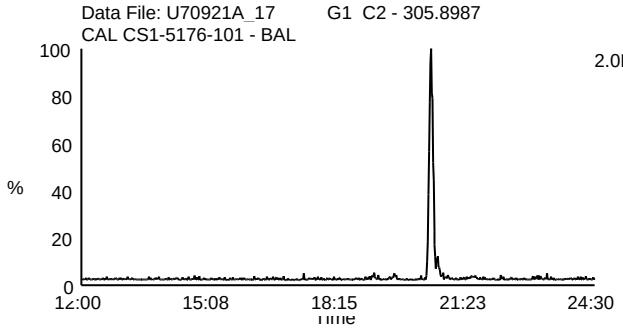
Homologue Group: Tetras

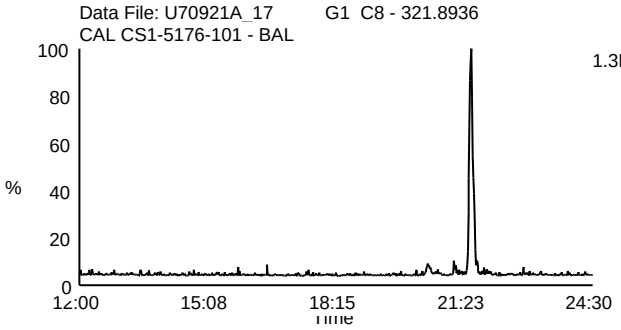
Data File Name: U70921A_17
Date Acquired: 9/21/2007
Sample Description: CAL CS1-5176-101 - BAL

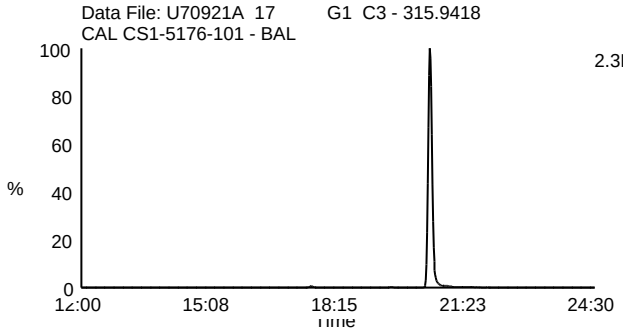
Lab Sample ID: 5176-101
Client Sample ID: CS-1
Instrument: 10MSHR06 (U)

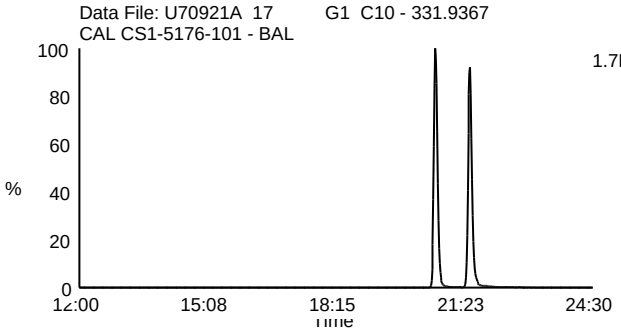


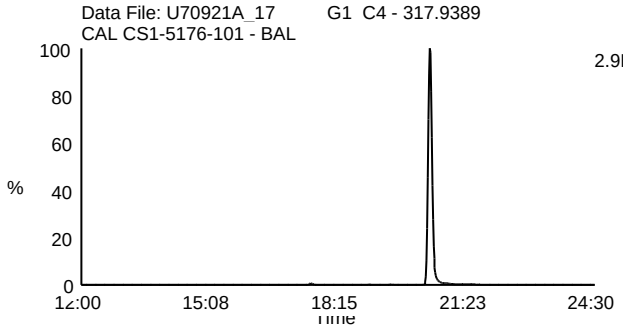


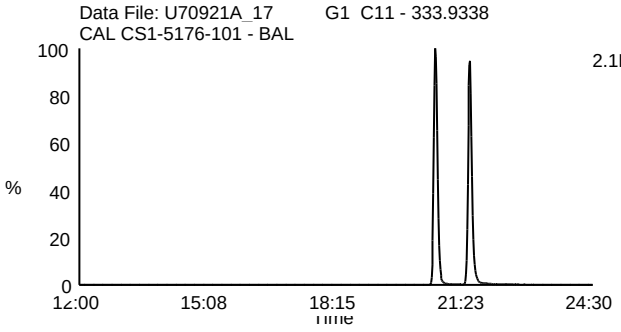


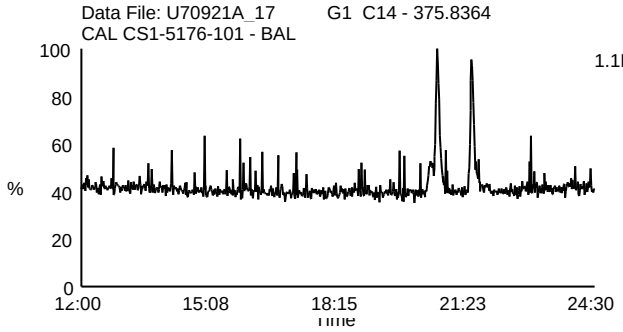


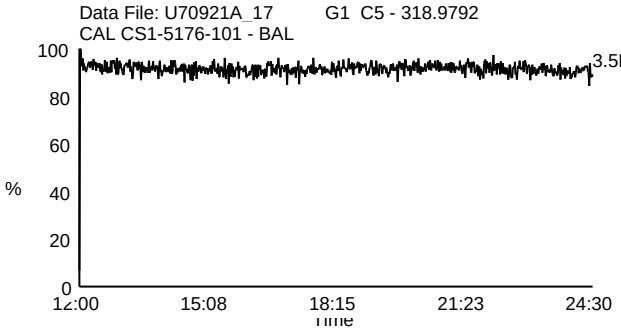










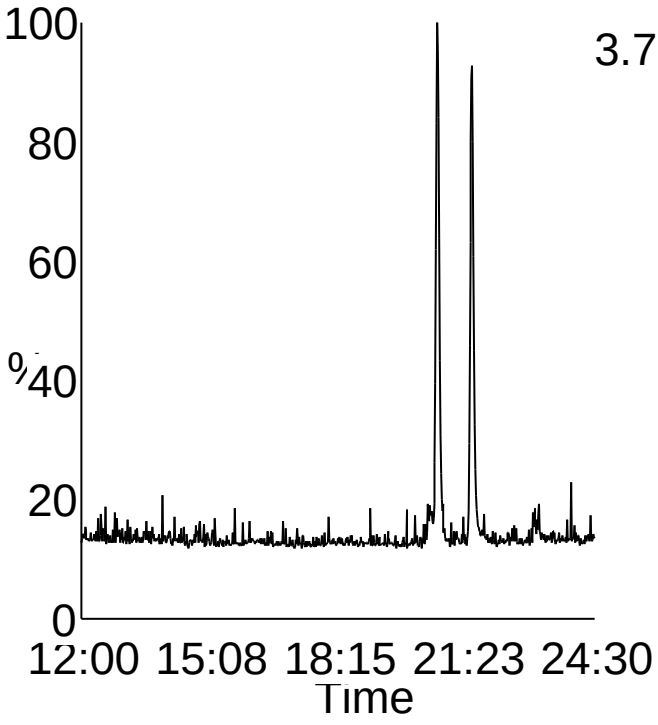


Homologue Group: Penta & Cleanup

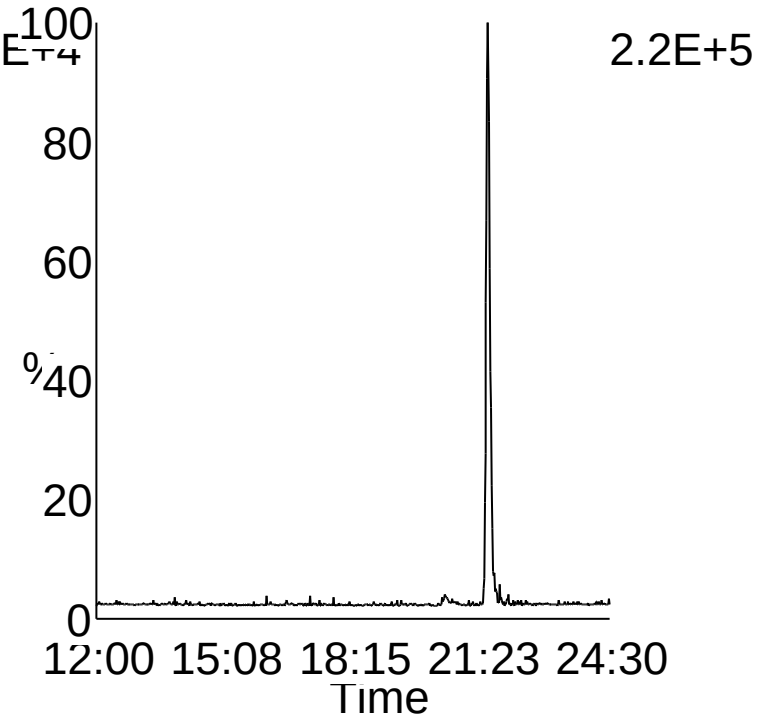
Data File Name: U70921A_17
Date Acquired: 9/21/2007
Sample Description: CAL CS1-5176-101 - BAL

Lab Sample ID: 5176-101
Client Sample ID: CS-1
Instrument: 10MSHR06 (U)

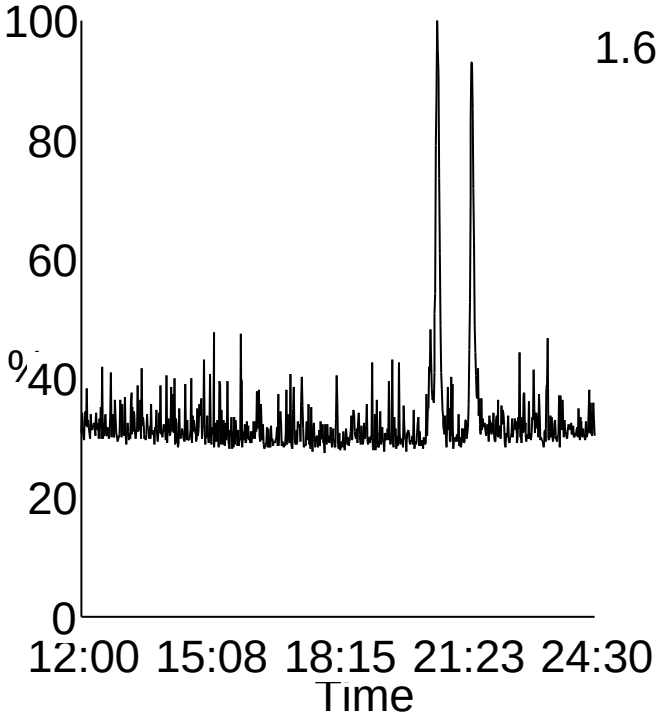
Data File: U_G1 C12 - 339.8597
CAL CS1-5176-101 - BAL



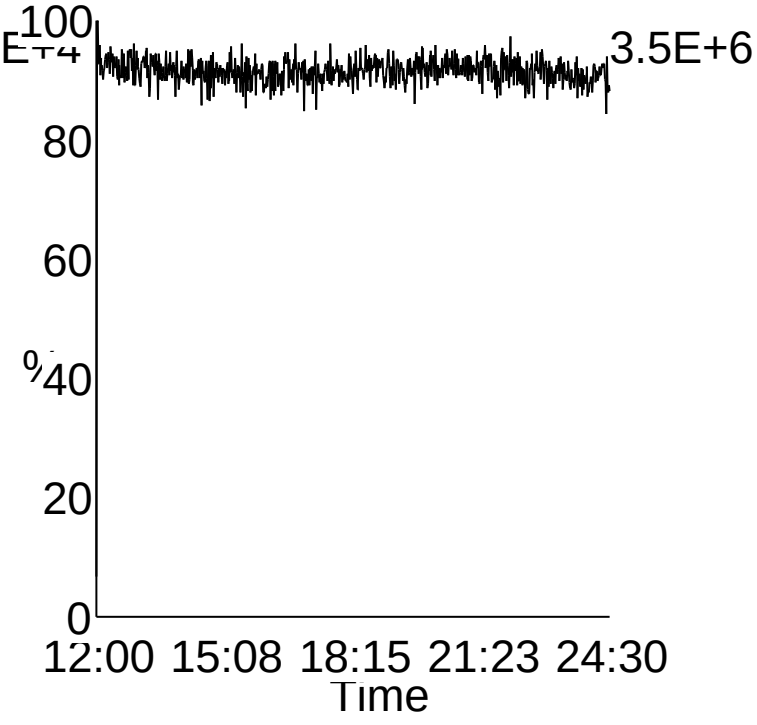
Data File: U_G1 C9 - 327.8847
CAL CS1-5176-101 - BAL



Data File: U_G1 C13 - 341.8567
CAL CS1-5176-101 - BAL



Data File: U_G1 C5 - 318.9792
CAL CS1-5176-101 - BAL

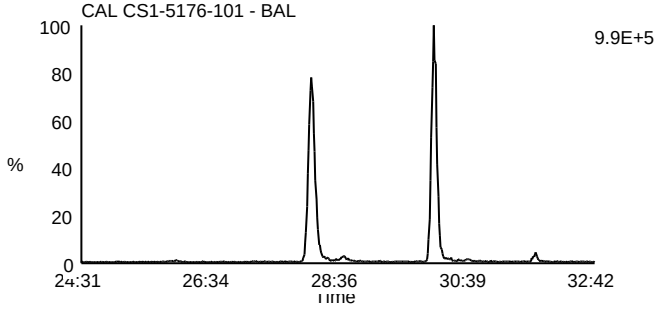


Homologue Group: Pentas

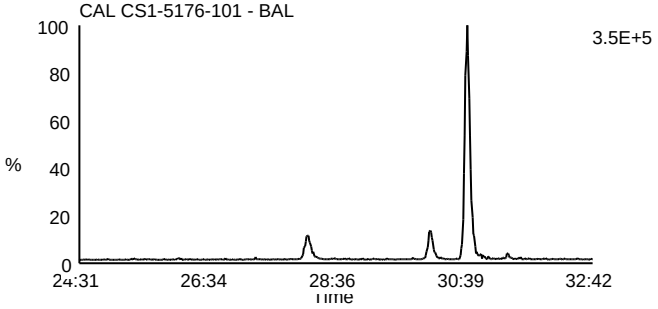
Data File Name: U70921A_17
Date Acquired: 9/21/2007
Sample Description: CAL CS1-5176-101 - BAL

Lab Sample ID: 5176-101
Client Sample ID: CS-1
Instrument: 10MSHR06 (U)

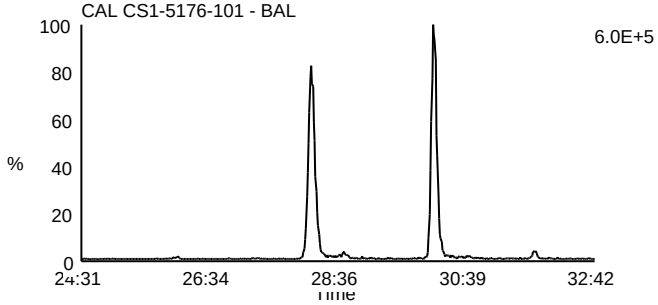
Data File: U70921A_17 G2 C1 - 339.8597
CAL CS1-5176-101 - BAL



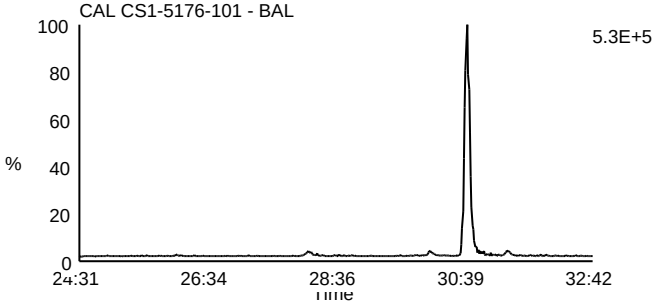
Data File: U70921A_17 G2 C4 - 353.8576
CAL CS1-5176-101 - BAL



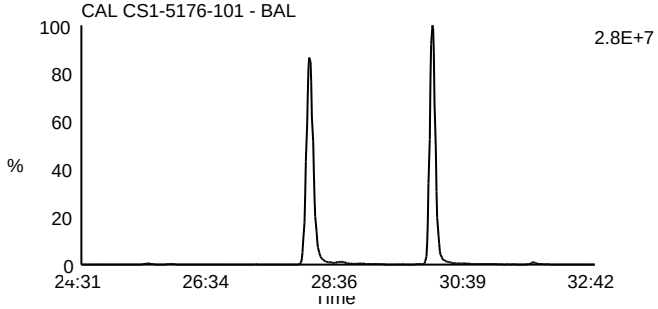
Data File: U70921A_17 G2 C2 - 341.8567
CAL CS1-5176-101 - BAL



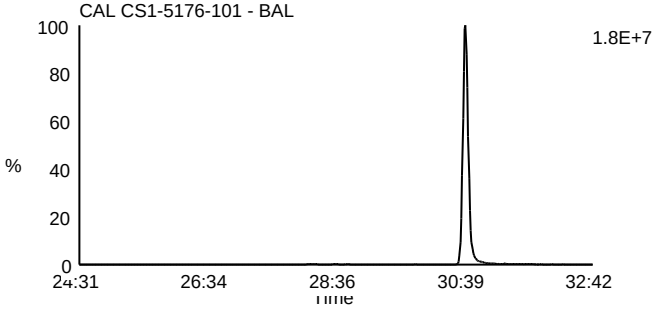
Data File: U70921A_17 G2 C8 - 355.8546
CAL CS1-5176-101 - BAL



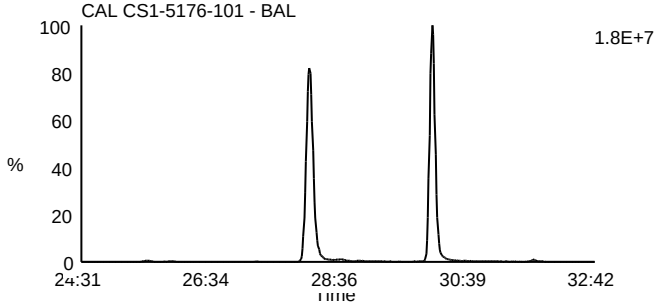
Data File: U70921A_17 G2 C3 - 351.8999
CAL CS1-5176-101 - BAL



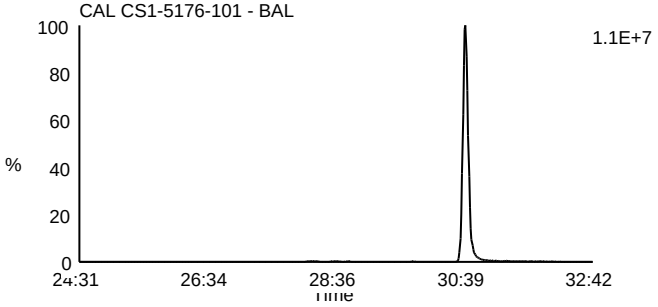
Data File: U70921A_17 G2 C10 - 367.8948
CAL CS1-5176-101 - BAL



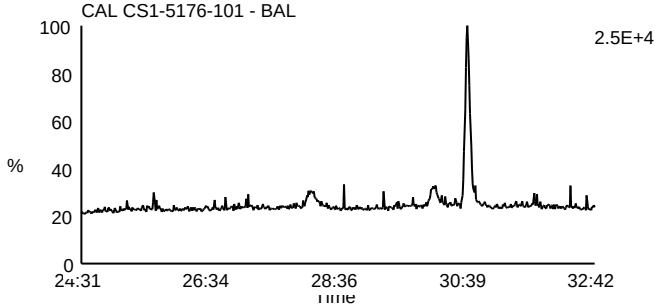
Data File: U70921A_17 G2 C5 - 353.8969
CAL CS1-5176-101 - BAL



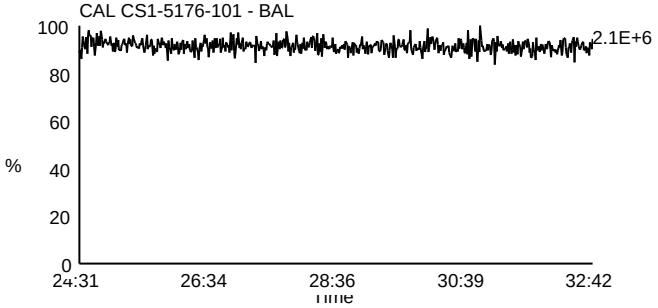
Data File: U70921A_17 G2 C11 - 369.8918
CAL CS1-5176-101 - BAL



Data File: U70921A_17 G2 C12 - 409.7974
CAL CS1-5176-101 - BAL



Data File: U70921A_17 G2 C6 - 354.9792
CAL CS1-5176-101 - BAL

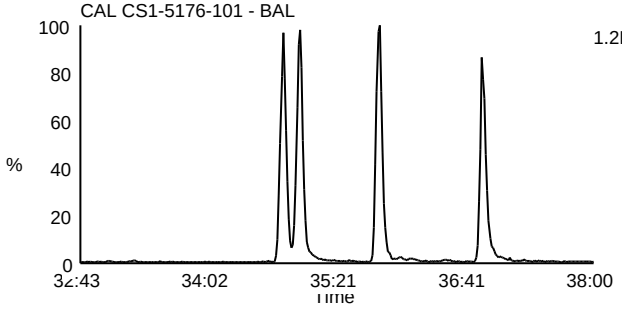


Homologue Group: Hexas

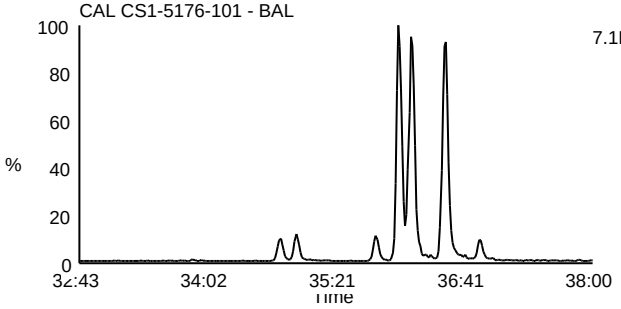
Data File Name: U70921A_17
Date Acquired: 9/21/2007
Sample Description: CAL CS1-5176-101 - BAL

Lab Sample ID: 5176-101
Client Sample ID: CS-1
Instrument: 10MSHR06 (U)

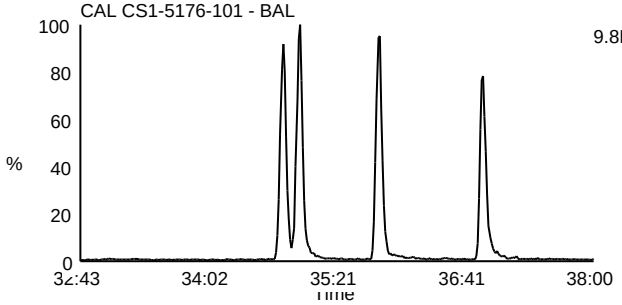
Data File: U70921A_17 G3 C1 - 373.8207
CAL CS1-5176-101 - BAL



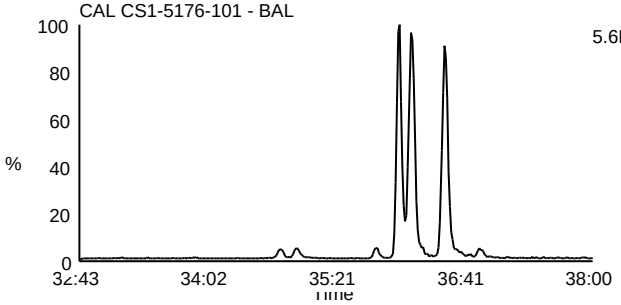
Data File: U70921A_17 G3 C7 - 389.8156
CAL CS1-5176-101 - BAL



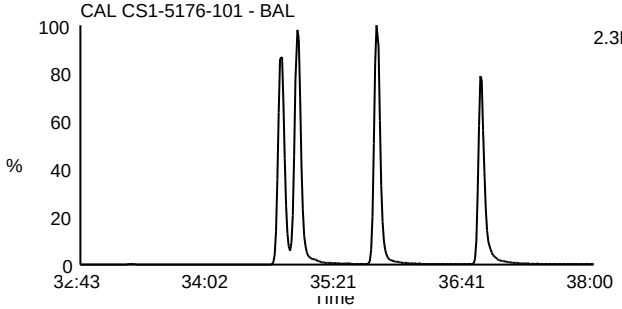
Data File: U70921A_17 G3 C2 - 375.8178
CAL CS1-5176-101 - BAL



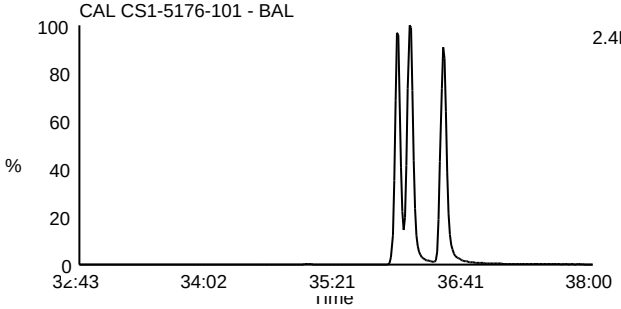
Data File: U70921A_17 G3 C8 - 391.8127
CAL CS1-5176-101 - BAL



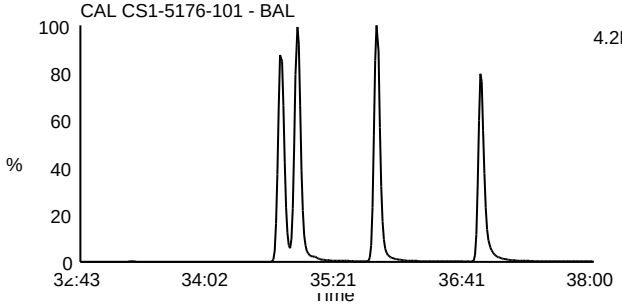
Data File: U70921A_17 G3 C5 - 383.8639
CAL CS1-5176-101 - BAL



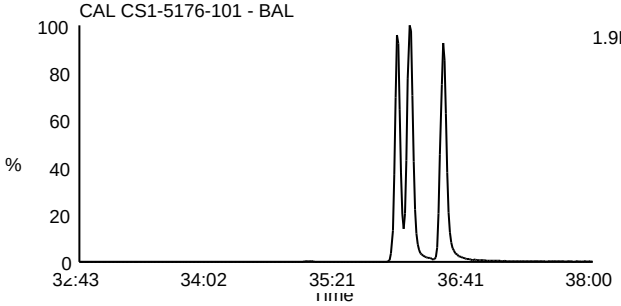
Data File: U70921A_17 G3 C9 - 401.8559
CAL CS1-5176-101 - BAL



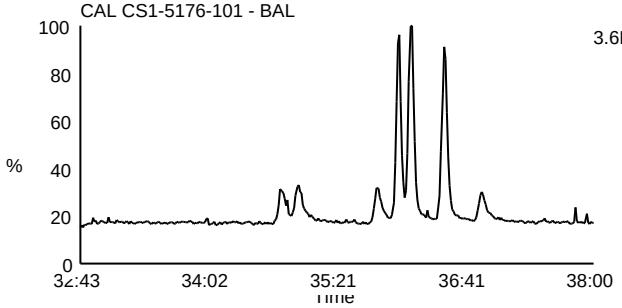
Data File: U70921A_17 G3 C6 - 385.861
CAL CS1-5176-101 - BAL



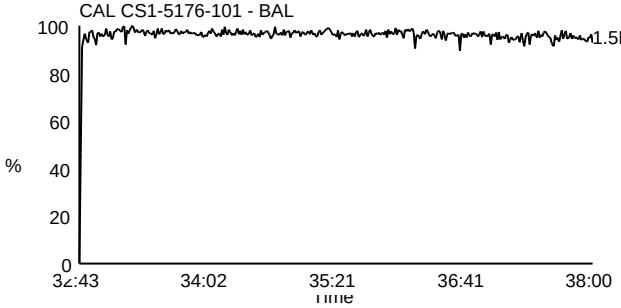
Data File: U70921A_17 G3 C10 - 403.8529
CAL CS1-5176-101 - BAL



Data File: U70921A_17 G3 C11 - 445.7555
CAL CS1-5176-101 - BAL



Data File: U70921A_17 G3 C3 - 380.976
CAL CS1-5176-101 - BAL

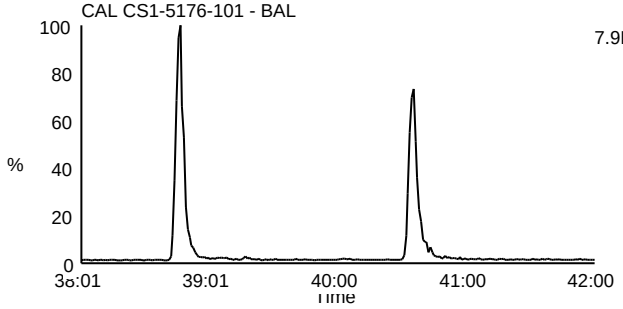


Homologue Group: Heptas

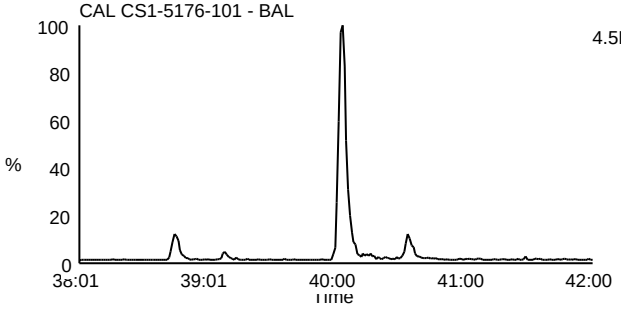
Data File Name: U70921A_17
Date Acquired: 9/21/2007
Sample Description: CAL CS1-5176-101 - BAL

Lab Sample ID: 5176-101
Client Sample ID: CS-1
Instrument: 10MSHR06 (U)

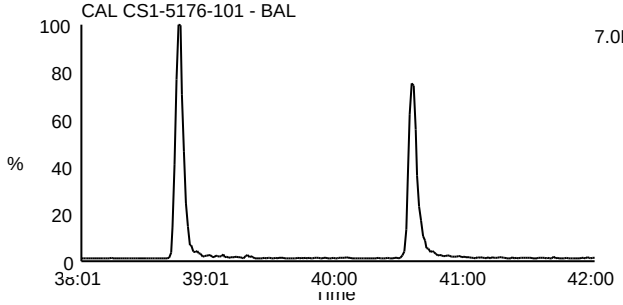
Data File: U70921A_17 G4 C3 - 407.7818
CAL CS1-5176-101 - BAL



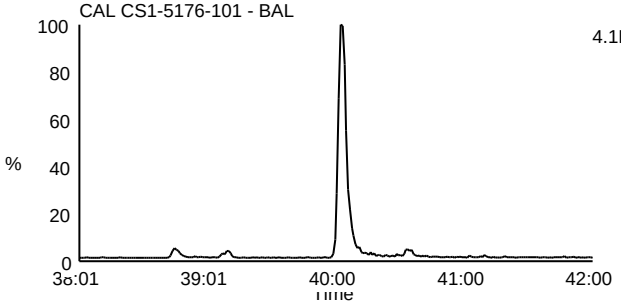
Data File: U70921A_17 G4 C8 - 423.7767
CAL CS1-5176-101 - BAL



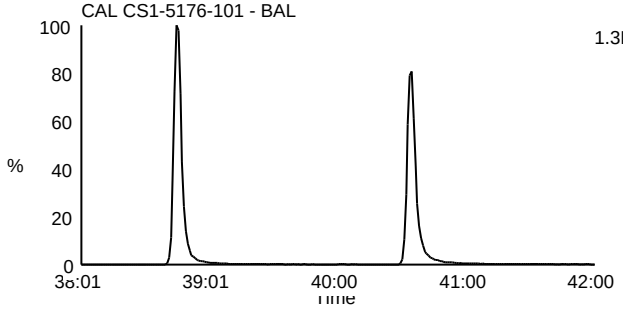
Data File: U70921A_17 G4 C4 - 409.7788
CAL CS1-5176-101 - BAL



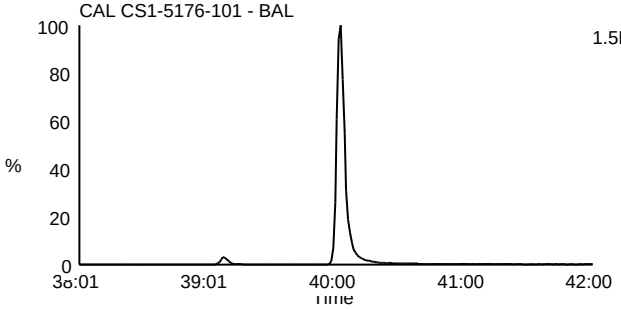
Data File: U70921A_17 G4 C9 - 425.7737
CAL CS1-5176-101 - BAL



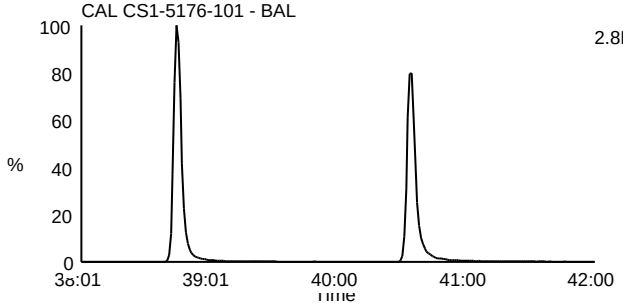
Data File: U70921A_17 G4 C6 - 417.825
CAL CS1-5176-101 - BAL



Data File: U70921A_17 G4 C11 - 435.8169
CAL CS1-5176-101 - BAL



Data File: U70921A_17 G4 C7 - 419.822
CAL CS1-5176-101 - BAL



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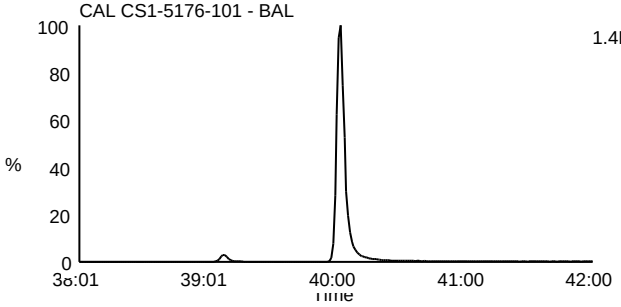
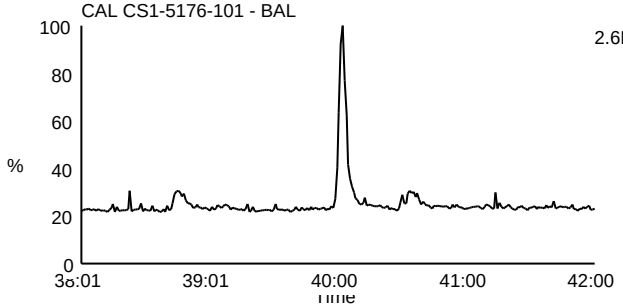
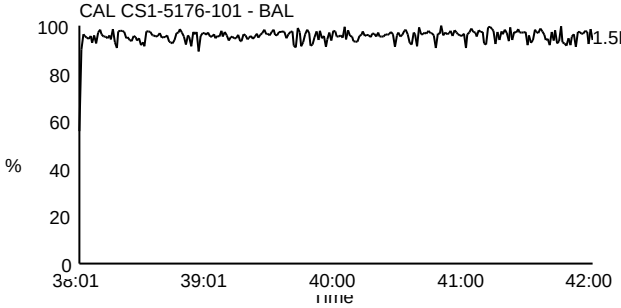
CAL CS1-5176-101 - BAL



Data File: U70921A_17 G4 C13 - 479.7165
CAL CS1-5176-101 - BAL



Data File: U70921A_17 G4 C1 - 380.976
CAL CS1-5176-101 - BAL

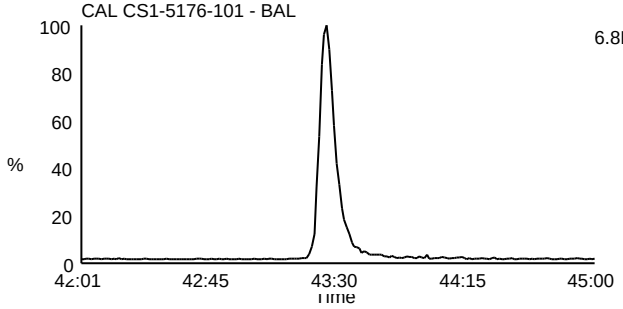


Homologue Group: Octas

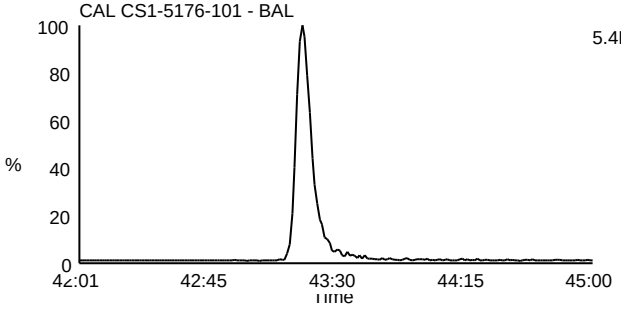
Data File Name: U70921A_17
Date Acquired: 9/21/2007
Sample Description: CAL CS1-5176-101 - BAL

Lab Sample ID: 5176-101
Client Sample ID: CS-1
Instrument: 10MSHR06 (U)

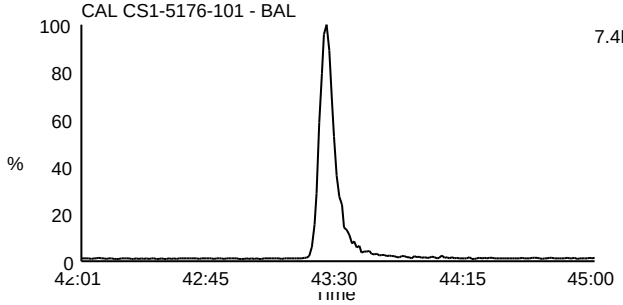
Data File: U70921A_17 G5 C4 - 441.7428
CAL CS1-5176-101 - BAL



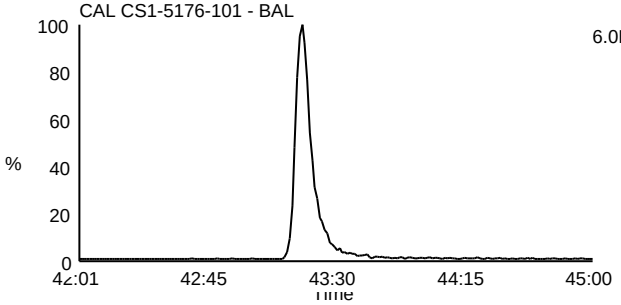
Data File: U70921A_17 G5 C8 - 457.7377
CAL CS1-5176-101 - BAL



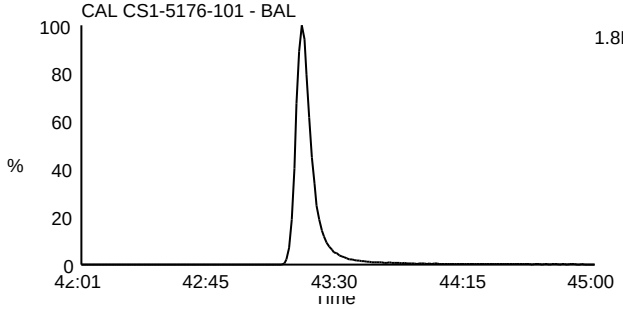
Data File: U70921A_17 G5 C5 - 443.7398
CAL CS1-5176-101 - BAL



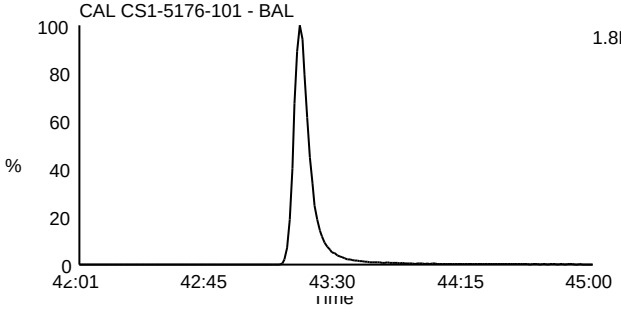
Data File: U70921A_17 G5 C9 - 459.7347
CAL CS1-5176-101 - BAL



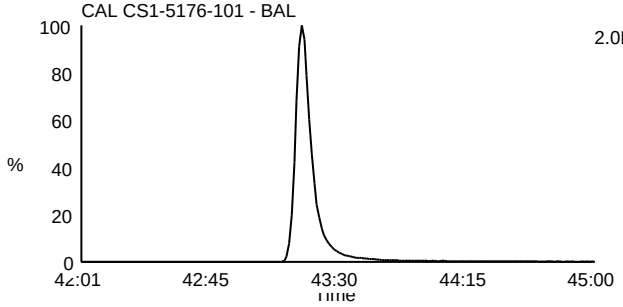
Data File: U70921A_17 G5 C11 - 469.7779
CAL CS1-5176-101 - BAL



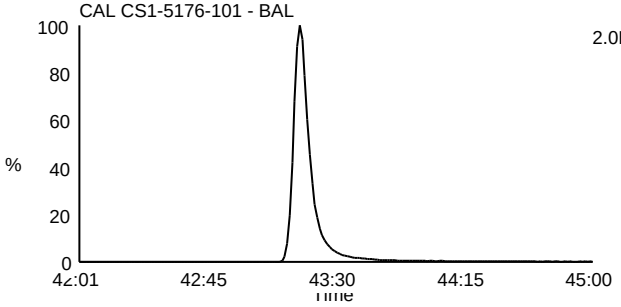
Data File: U70921A_17 G5 C11 - 469.7779
CAL CS1-5176-101 - BAL



Data File: U70921A_17 G5 C12 - 471.7749
CAL CS1-5176-101 - BAL



Data File: U70921A_17 G5 C12 - 471.7749
CAL CS1-5176-101 - BAL



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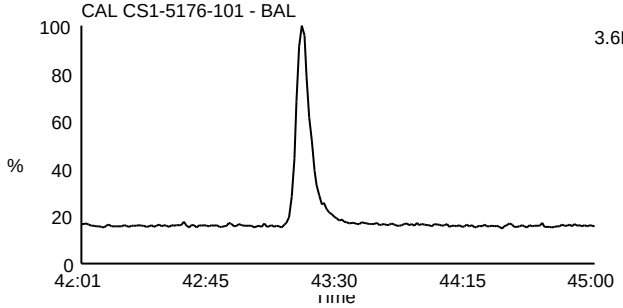
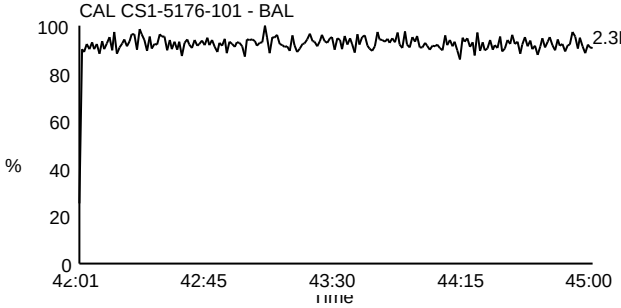
CAL CS1-5176-101 - BAL



Data File: U70921A_17 G5 C2 - 430.9728
CAL CS1-5176-101 - BAL

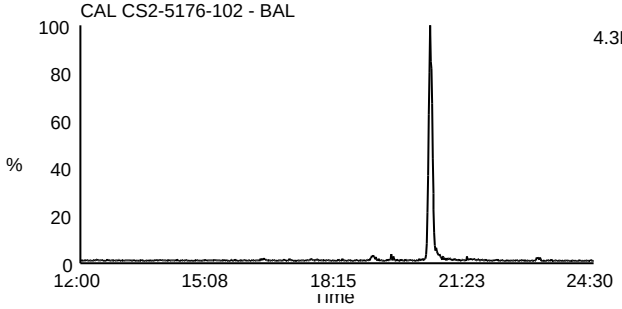


Homologue Group: Tetras

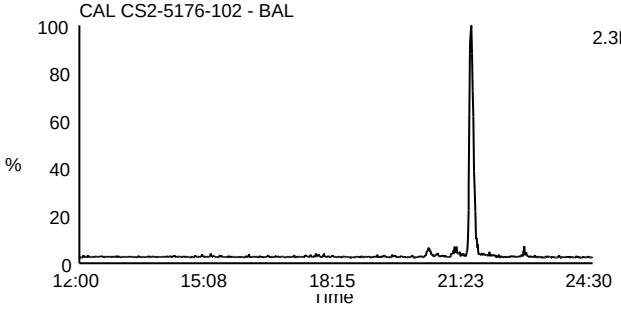
Data File Name: U70921A_16
Date Acquired: 9/21/2007
Sample Description: CAL CS2-5176-102 - BAL

Lab Sample ID: 5176-102
Client Sample ID: CS-2
Instrument: 10MSHR06 (U)

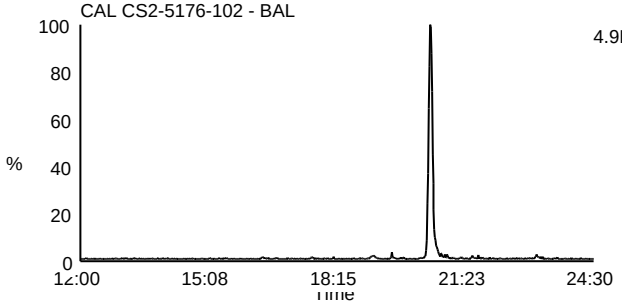
Data File: U70921A_16 G1 C1 - 303.9016
CAL CS2-5176-102 - BAL



Data File: U70921A_16 G1 C7 - 319.8965
CAL CS2-5176-102 - BAL



Data File: U70921A_16 G1 C2 - 305.8987
CAL CS2-5176-102 - BAL



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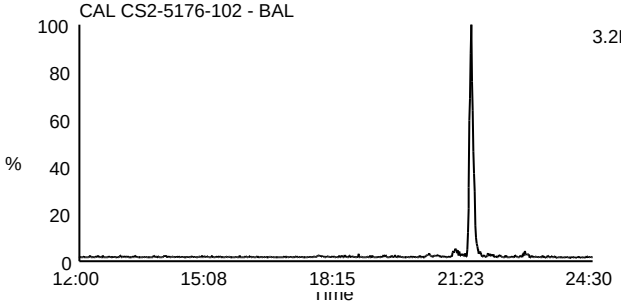
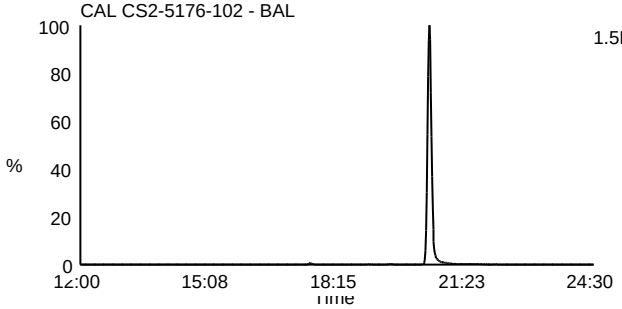
CAL CS2-5176-102 - BAL



Data File: U70921A_16 G1 C3 - 315.9418
CAL CS2-5176-102 - BAL



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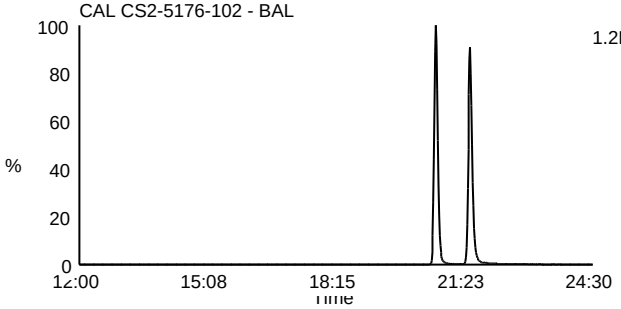
CAL CS2-5176-102 - BAL



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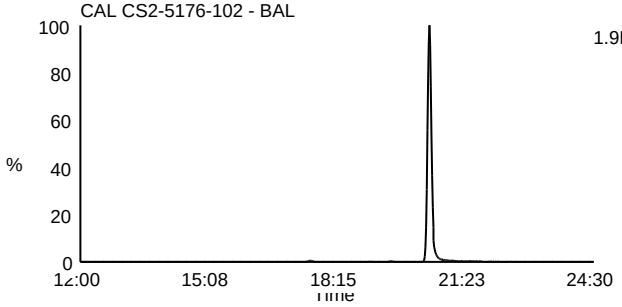
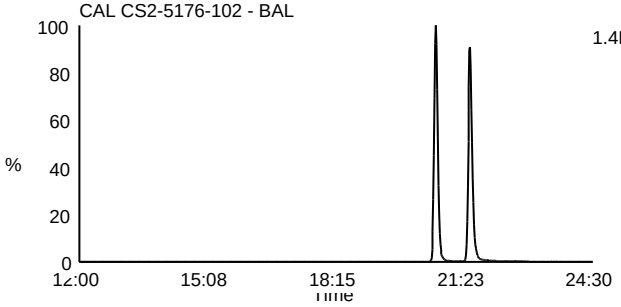
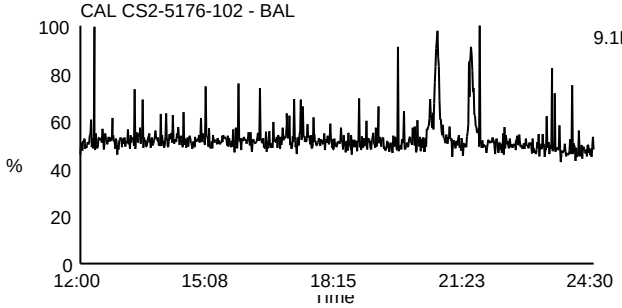
CAL CS2-5176-102 - BAL



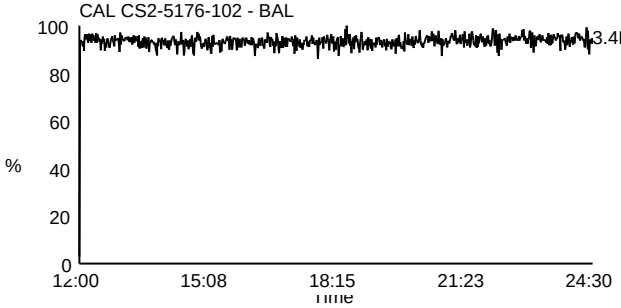
Data File: U70921A_16 G1 C11 - 333.9338
CAL CS2-5176-102 - BAL



Data File: U70921A_16 G1 C14 - 375.8364
CAL CS2-5176-102 - BAL



Data File: U70921A_16 G1 C5 - 318.9792
CAL CS2-5176-102 - BAL

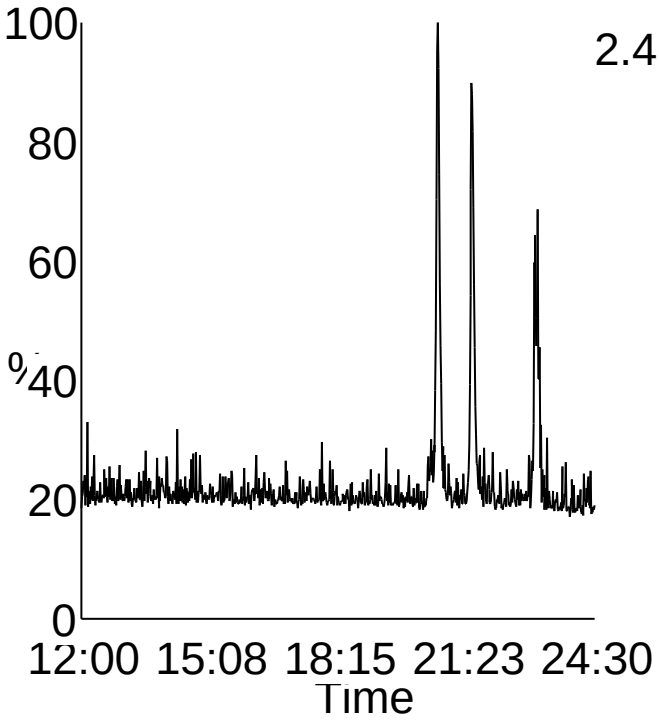


Homologue Group: Penta & Cleanup

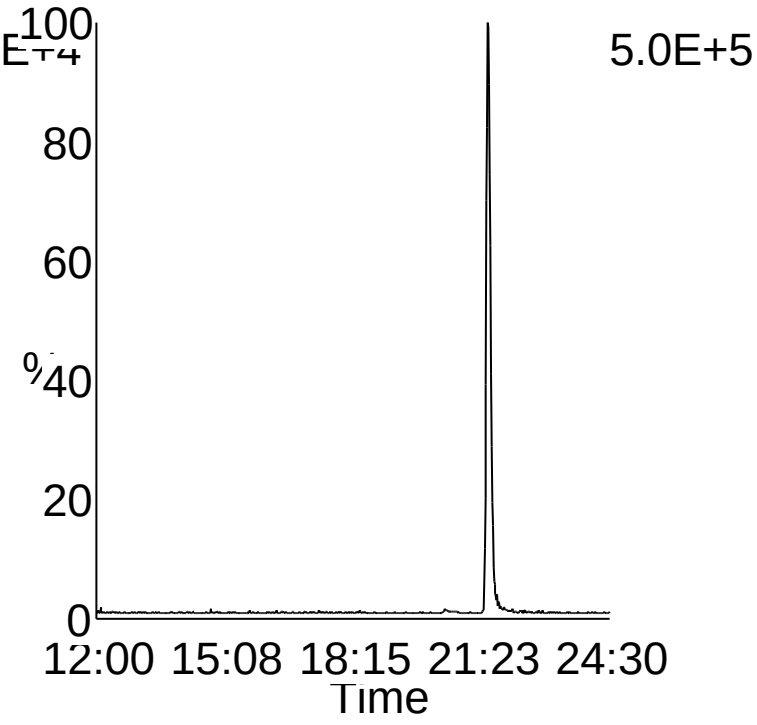
Data File Name: U70921A_16
Date Acquired: 9/21/2007
Sample Description: CAL CS2-5176-102 - BAL

Lab Sample ID: 5176-102
Client Sample ID: CS-2
Instrument: 10MSHR06 (U)

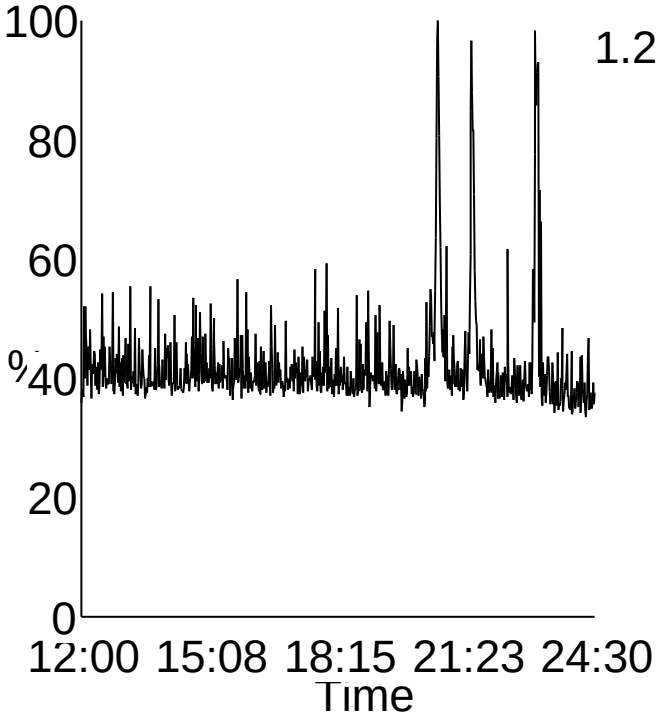
Data File: U_G1 C12 - 339.8597
CAL CS2-5176-102 - BAL



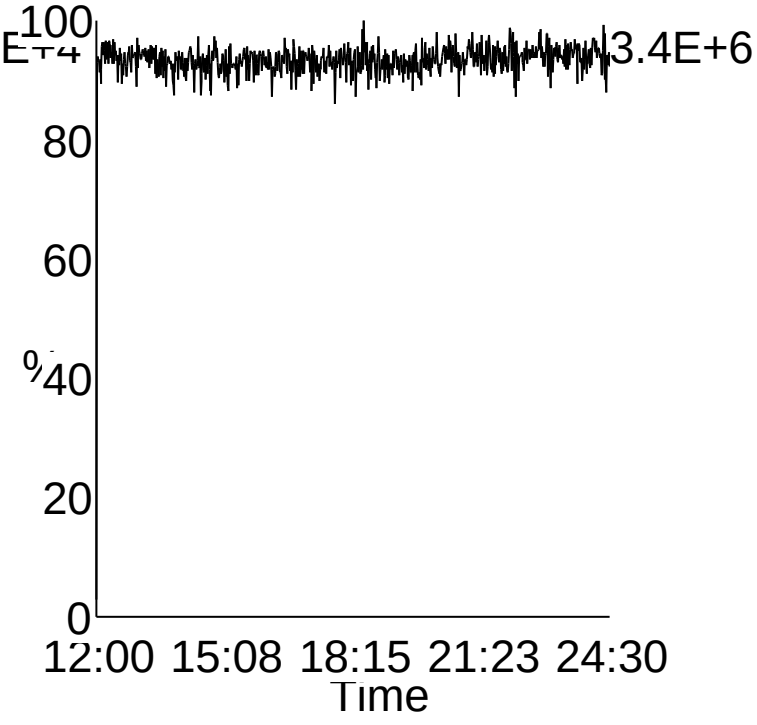
Data File: U_G1 C9 - 327.8847
CAL CS2-5176-102 - BAL



Data File: U_G1 C13 - 341.8567
CAL CS2-5176-102 - BAL



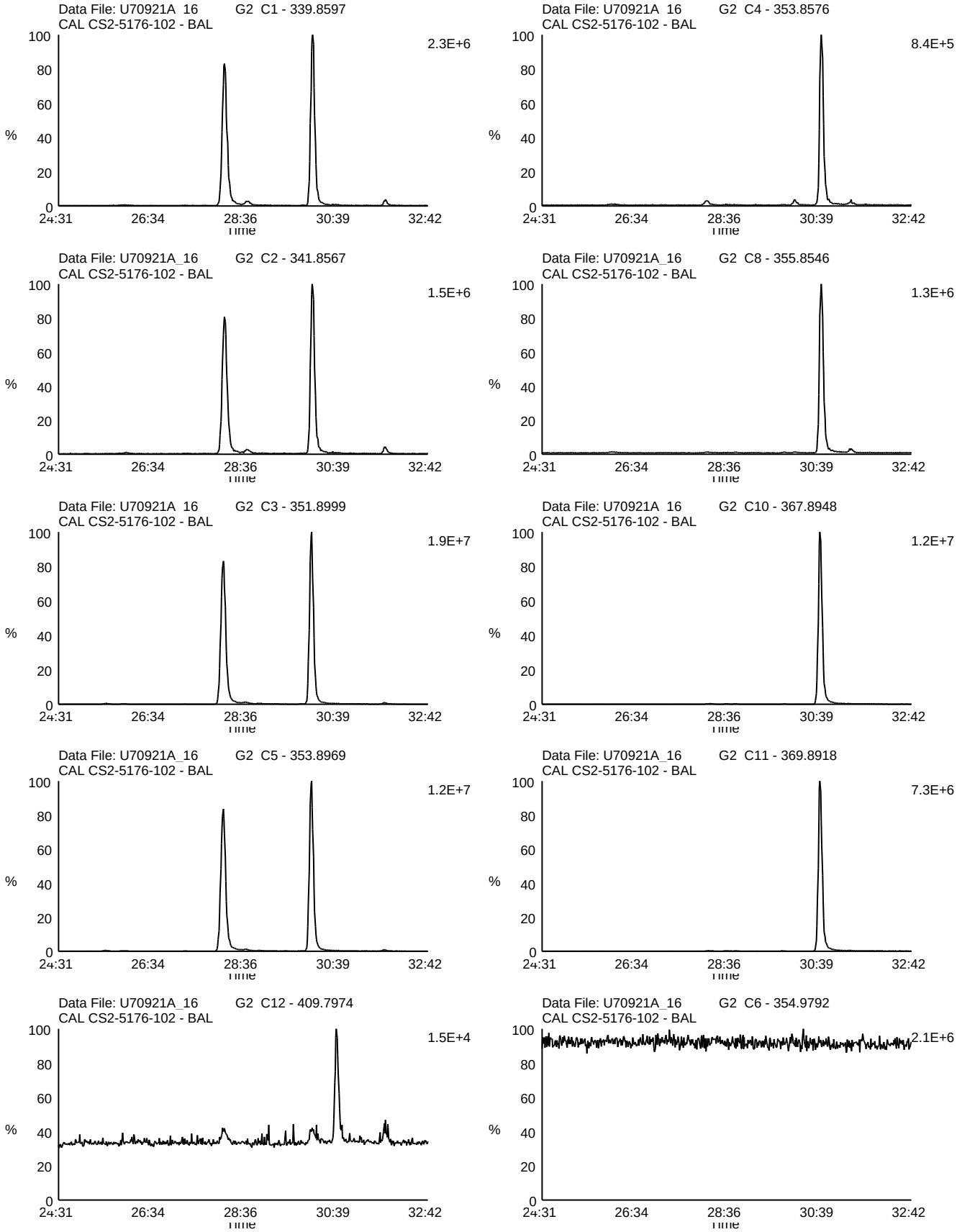
Data File: U_G1 C5 - 318.9792
CAL CS2-5176-102 - BAL



Homologue Group: Pentas

Data File Name: U70921A_16
Date Acquired: 9/21/2007
Sample Description: CAL CS2-5176-102 - BAL

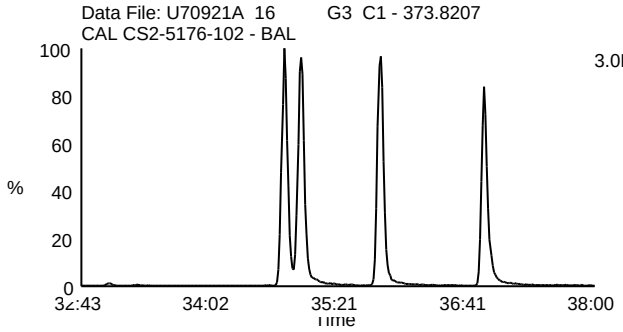
Lab Sample ID: 5176-102
Client Sample ID: CS-2
Instrument: 10MSHR06 (U)

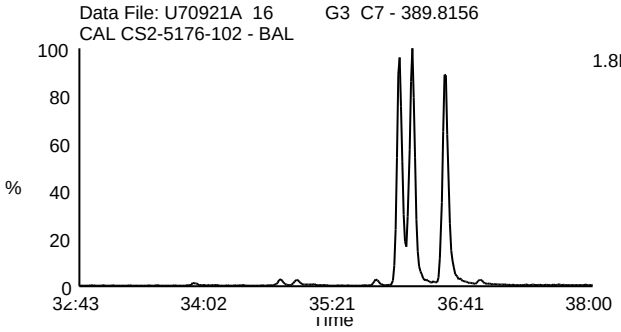


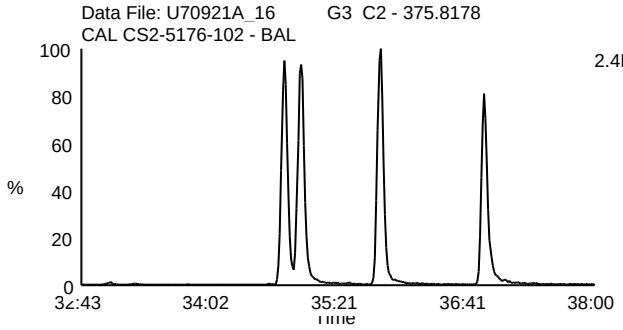
Homologue Group: Hexas

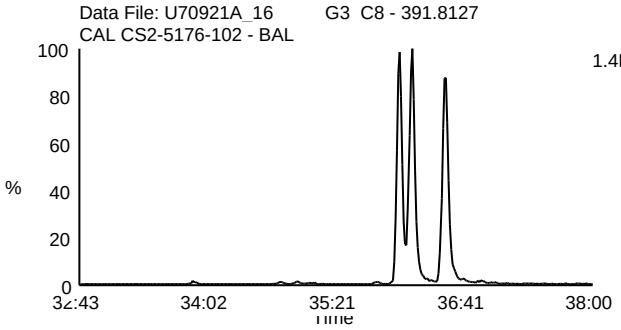
Data File Name: U70921A_16
Date Acquired: 9/21/2007
Sample Description: CAL CS2-5176-102 - BAL

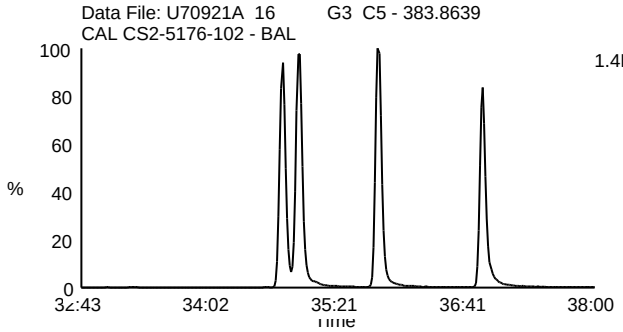
Lab Sample ID: 5176-102
Client Sample ID: CS-2
Instrument: 10MSHR06 (U)

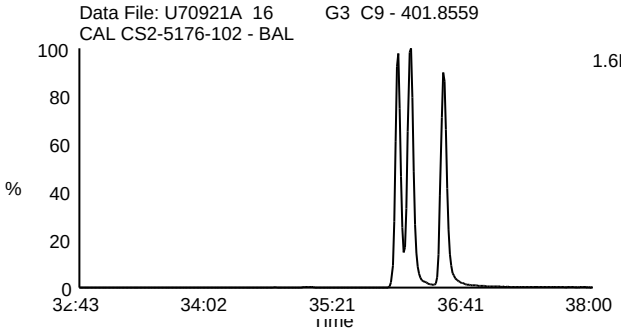


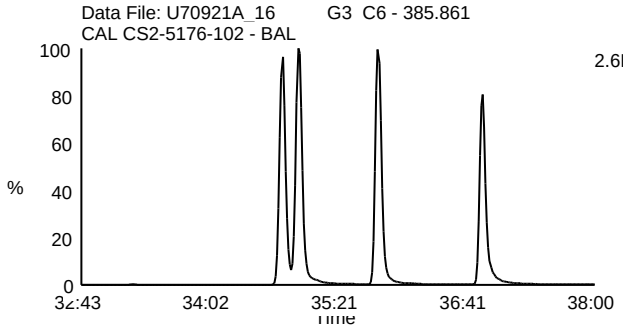


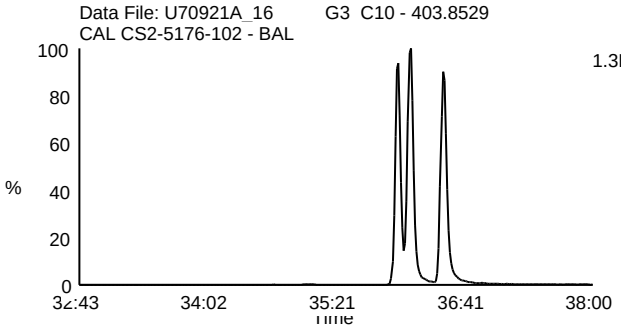


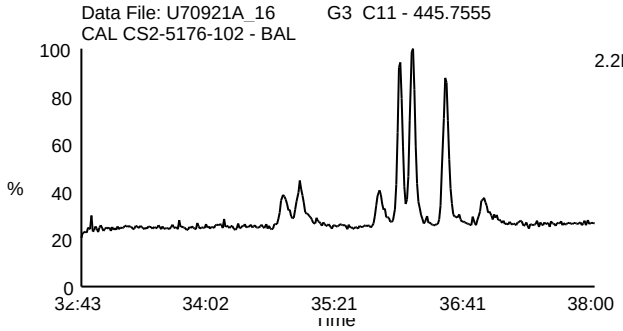


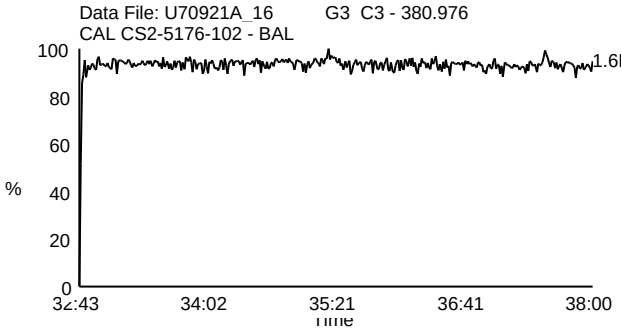










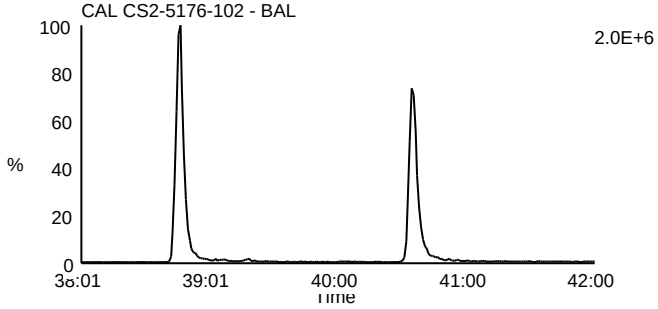


Homologue Group: Heptas

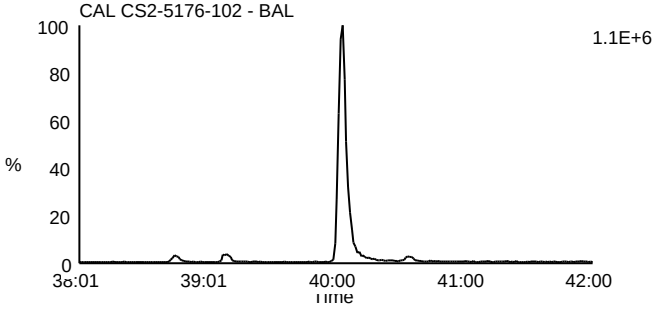
Data File Name: U70921A_16
Date Acquired: 9/21/2007
Sample Description: CAL CS2-5176-102 - BAL

Lab Sample ID: 5176-102
Client Sample ID: CS-2
Instrument: 10MSHR06 (U)

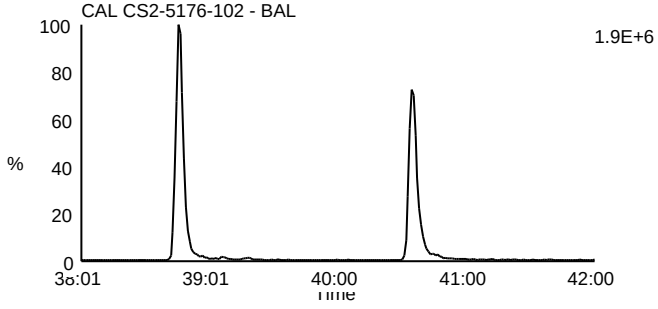
Data File: U70921A_16 G4 C3 - 407.7818
CAL CS2-5176-102 - BAL



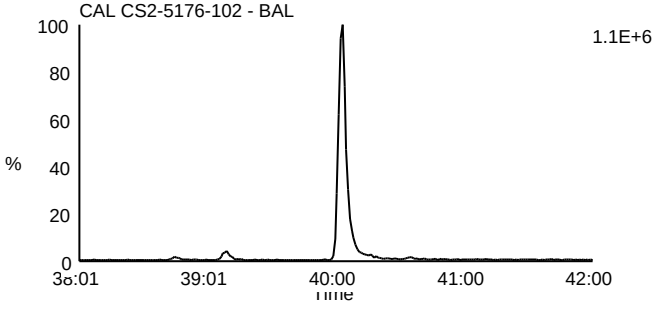
Data File: U70921A_16 G4 C8 - 423.7767
CAL CS2-5176-102 - BAL



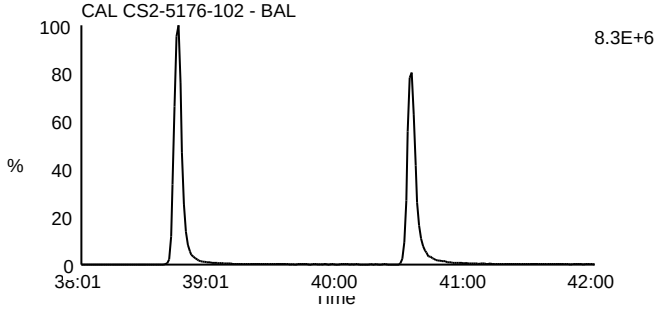
Data File: U70921A_16 G4 C4 - 409.7788
CAL CS2-5176-102 - BAL



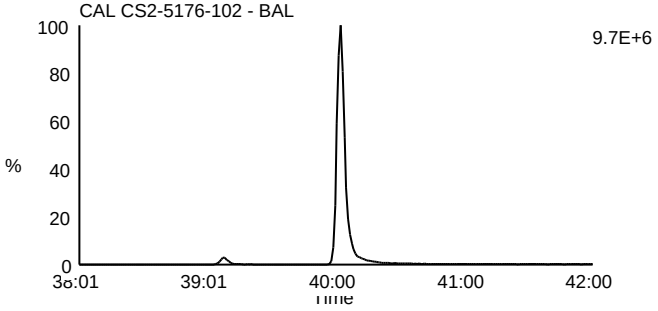
Data File: U70921A_16 G4 C9 - 425.7737
CAL CS2-5176-102 - BAL



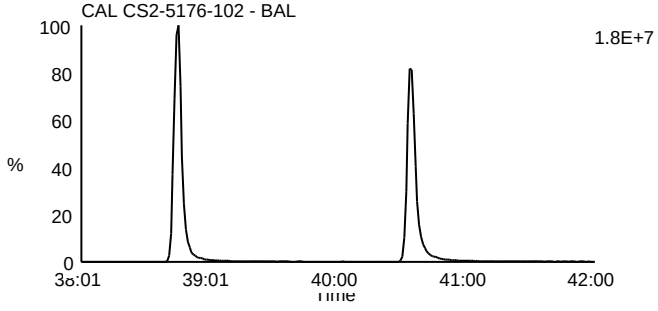
Data File: U70921A_16 G4 C6 - 417.825
CAL CS2-5176-102 - BAL



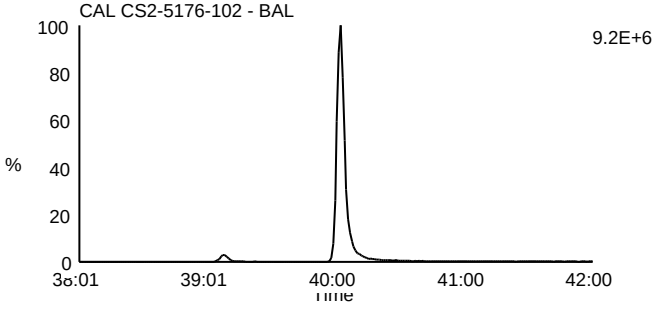
Data File: U70921A_16 G4 C11 - 435.8169
CAL CS2-5176-102 - BAL



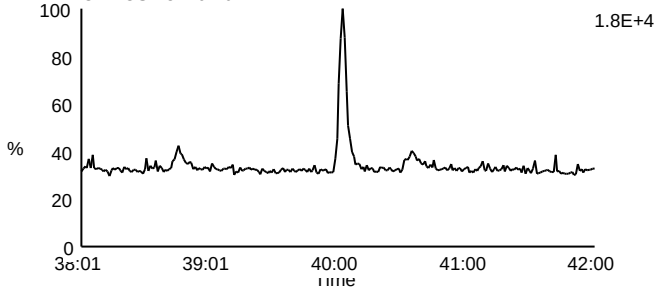
Data File: U70921A_16 G4 C7 - 419.822
CAL CS2-5176-102 - BAL



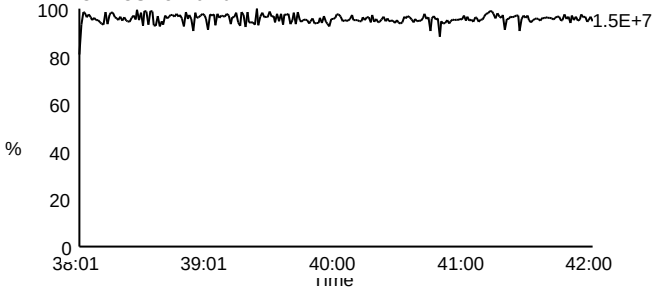
Data File: U70921A_16 G4 C12 - 437.814
CAL CS2-5176-102 - BAL



Data File: U70921A_16 G4 C13 - 479.7165
CAL CS2-5176-102 - BAL



Data File: U70921A_16 G4 C1 - 380.976
CAL CS2-5176-102 - BAL

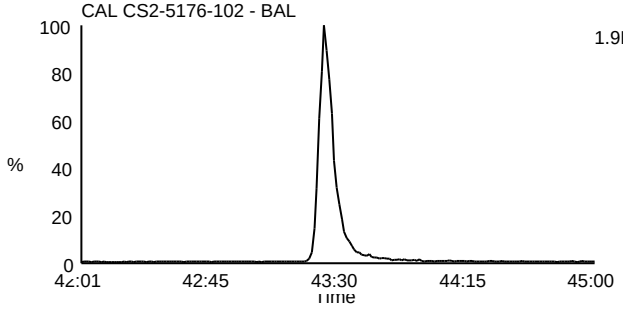


Homologue Group: Octas

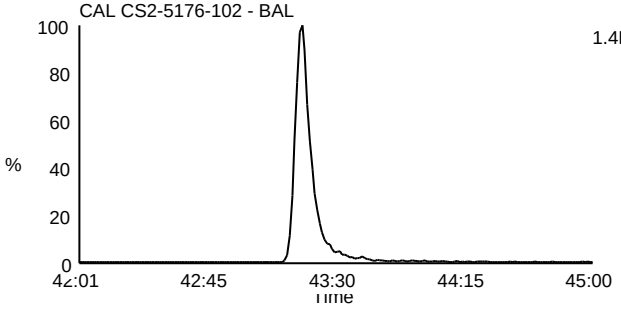
Data File Name: U70921A_16
Date Acquired: 9/21/2007
Sample Description: CAL CS2-5176-102 - BAL

Lab Sample ID: 5176-102
Client Sample ID: CS-2
Instrument: 10MSHR06 (U)

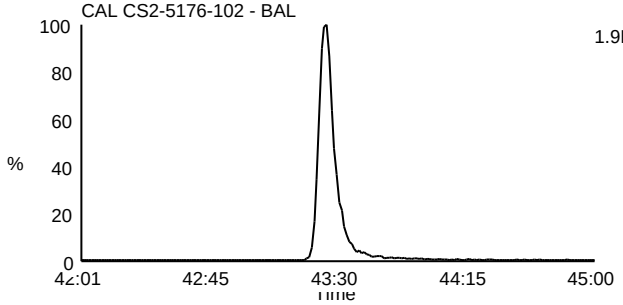
Data File: U70921A_16 G5 C4 - 441.7428
CAL CS2-5176-102 - BAL



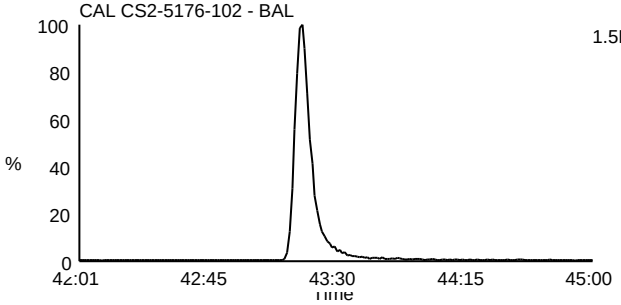
Data File: U70921A_16 G5 C8 - 457.7377
CAL CS2-5176-102 - BAL



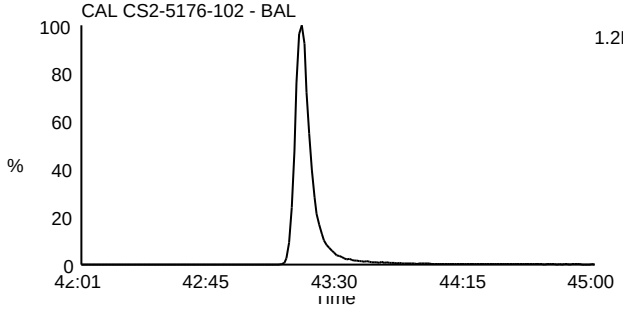
Data File: U70921A_16 G5 C5 - 443.7398
CAL CS2-5176-102 - BAL



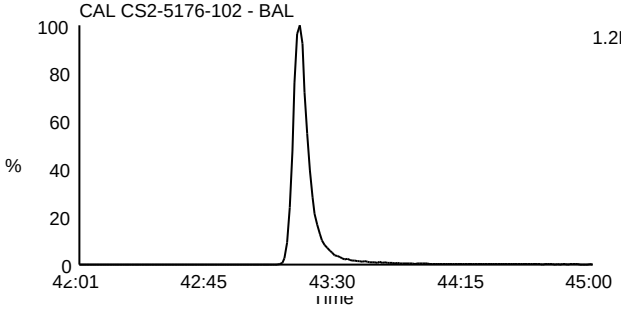
Data File: U70921A_16 G5 C9 - 459.7347
CAL CS2-5176-102 - BAL



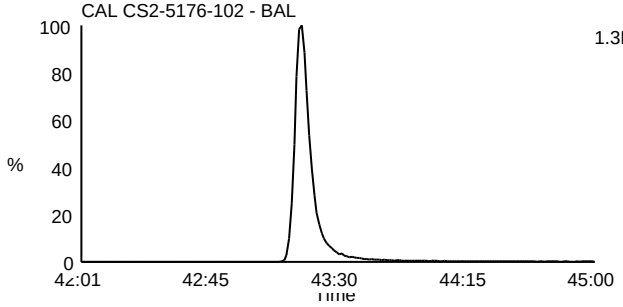
Data File: U70921A_16 G5 C11 - 469.7779
CAL CS2-5176-102 - BAL



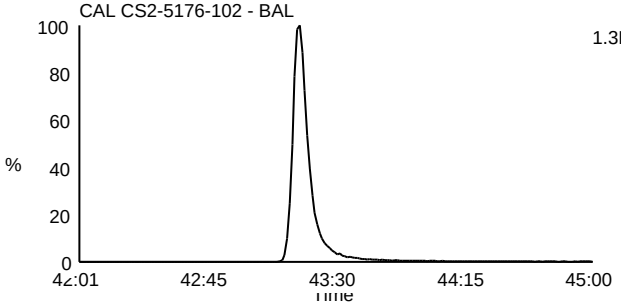
Data File: U70921A_16 G5 C11 - 469.7779
CAL CS2-5176-102 - BAL



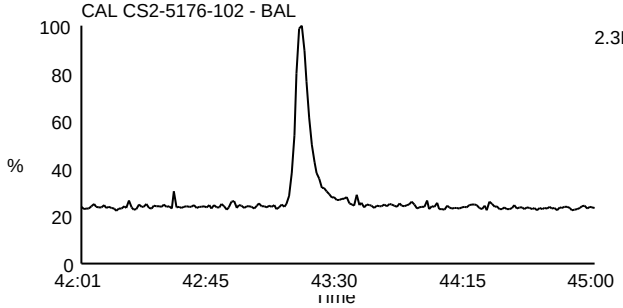
Data File: U70921A_16 G5 C12 - 471.7749
CAL CS2-5176-102 - BAL



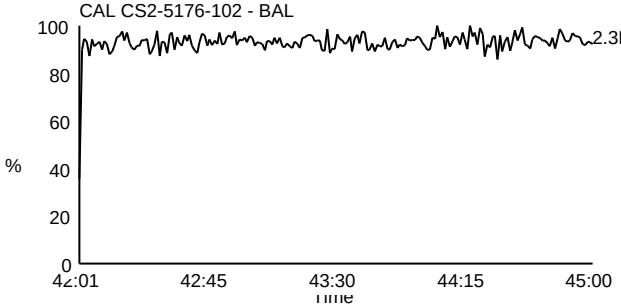
Data File: U70921A_16 G5 C12 - 471.7749
CAL CS2-5176-102 - BAL



Data File: U70921A_16 G5 C13 - 513.6775
CAL CS2-5176-102 - BAL



Data File: U70921A_16 G5 C2 - 430.9728
CAL CS2-5176-102 - BAL

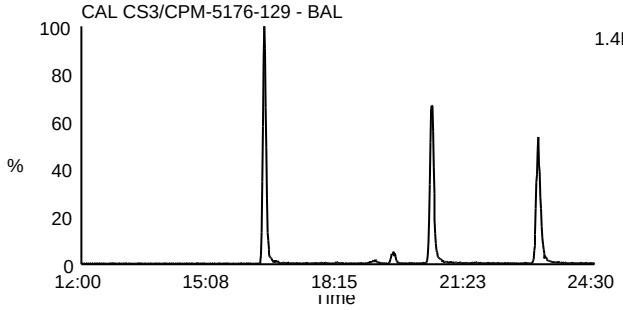


Homologue Group: Tetras

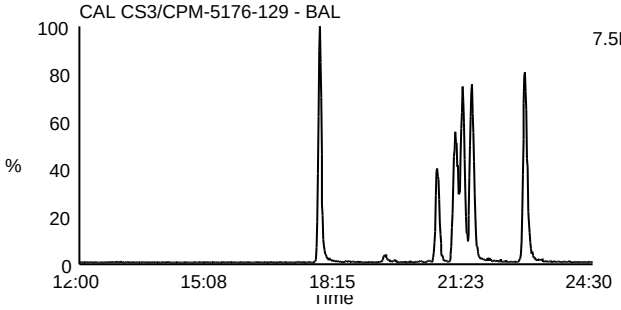
Data File Name: U70921A_15
Date Acquired: 9/21/2007
Sample Description: CAL CS3/CPM-5176-129 - BAL

Lab Sample ID: 5176-129
Client Sample ID: CS-3
Instrument: 10MSHR06 (U)

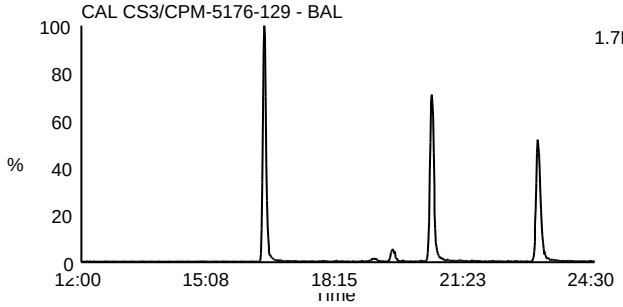
Data File: U70921A_15 G1 C1 - 303.9016
CAL CS3/CPM-5176-129 - BAL
1.4E+6



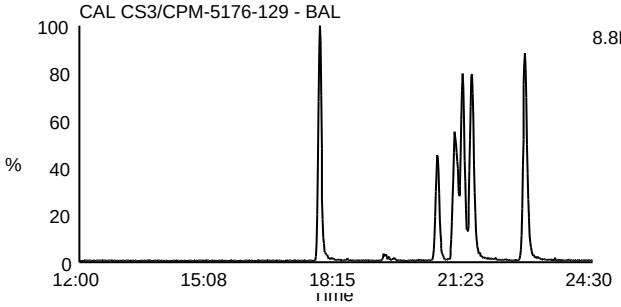
Data File: U70921A_15 G1 C7 - 319.8965
CAL CS3/CPM-5176-129 - BAL
7.5E+5



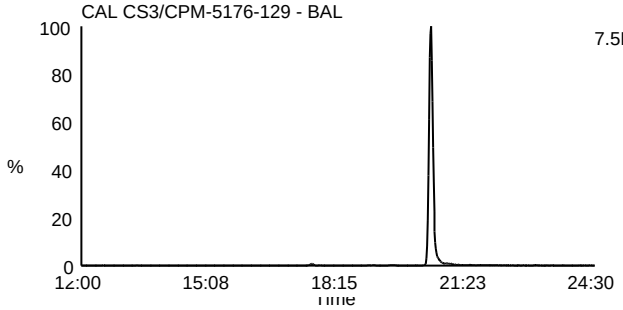
Data File: U70921A_15 G1 C2 - 305.8987
CAL CS3/CPM-5176-129 - BAL
1.7E+6



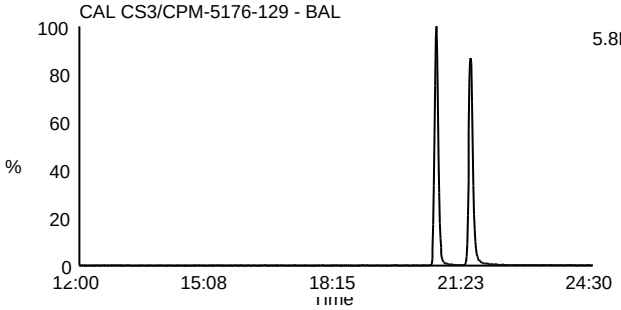
Data File: U70921A_15 G1 C8 - 321.8936
CAL CS3/CPM-5176-129 - BAL
8.8E+5



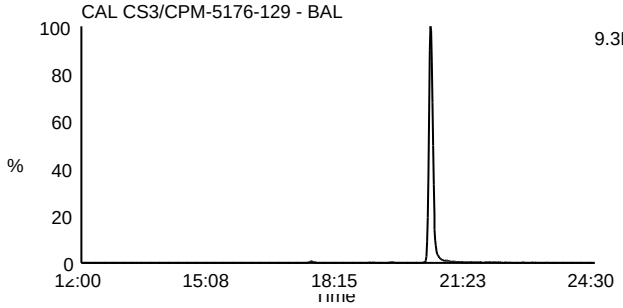
Data File: U70921A_15 G1 C3 - 315.9418
CAL CS3/CPM-5176-129 - BAL
7.5E+6



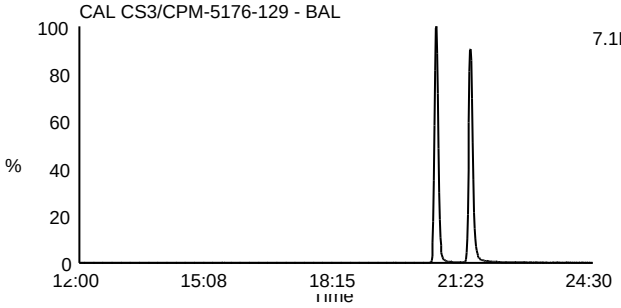
Data File: U70921A_15 G1 C10 - 331.9367
CAL CS3/CPM-5176-129 - BAL
5.8E+6



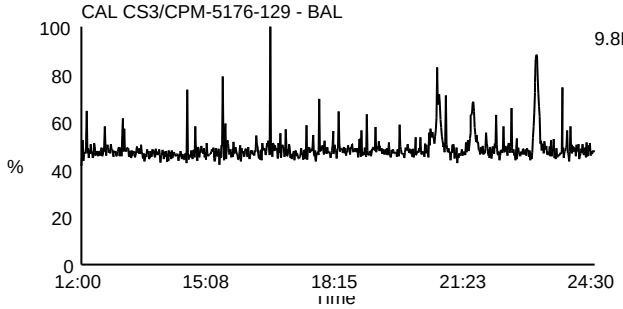
Data File: U70921A_15 G1 C4 - 317.9389
CAL CS3/CPM-5176-129 - BAL
9.3E+6



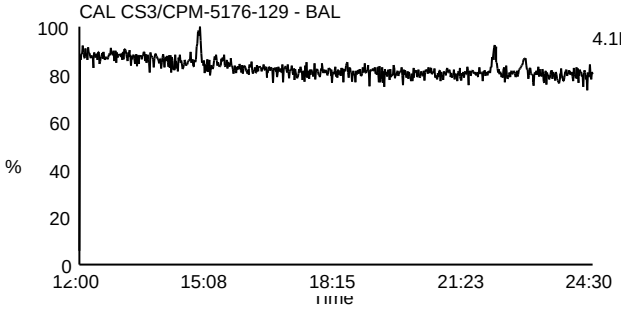
Data File: U70921A_15 G1 C11 - 333.9338
CAL CS3/CPM-5176-129 - BAL
7.1E+6



Data File: U70921A_15 G1 C14 - 375.8364
CAL CS3/CPM-5176-129 - BAL
9.8E+3



Data File: U70921A_15 G1 C5 - 318.9792
CAL CS3/CPM-5176-129 - BAL
4.1E+6

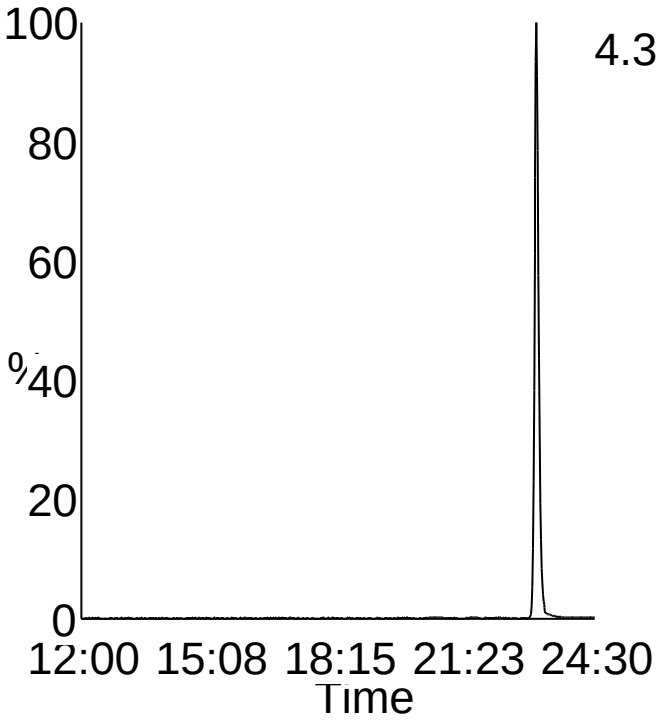


Homologue Group: Penta & Cleanup

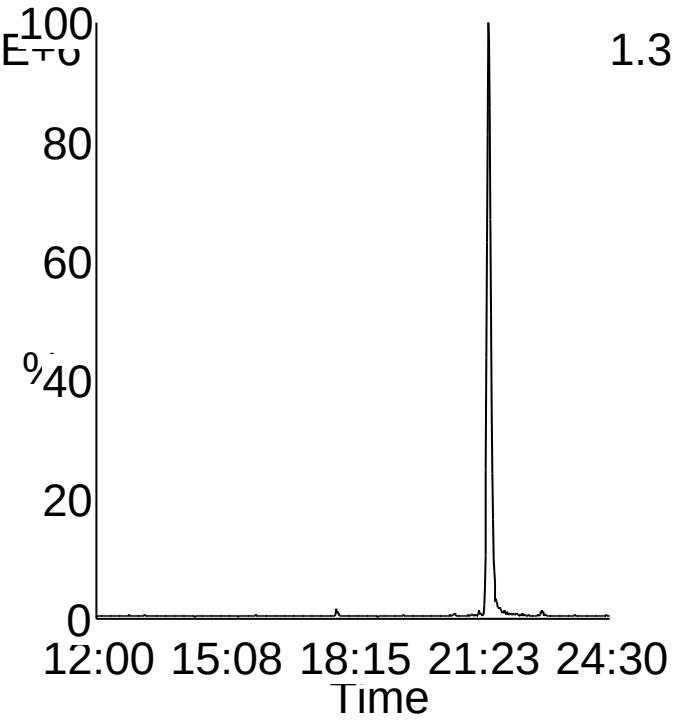
Data File Name: U70921A_15
Date Acquired: 9/21/2007
Sample Description: CAL CS3/CPM-5176-129 - BAL

Lab Sample ID: 5176-129
Client Sample ID: CS-3
Instrument: 10MSHR06 (U)

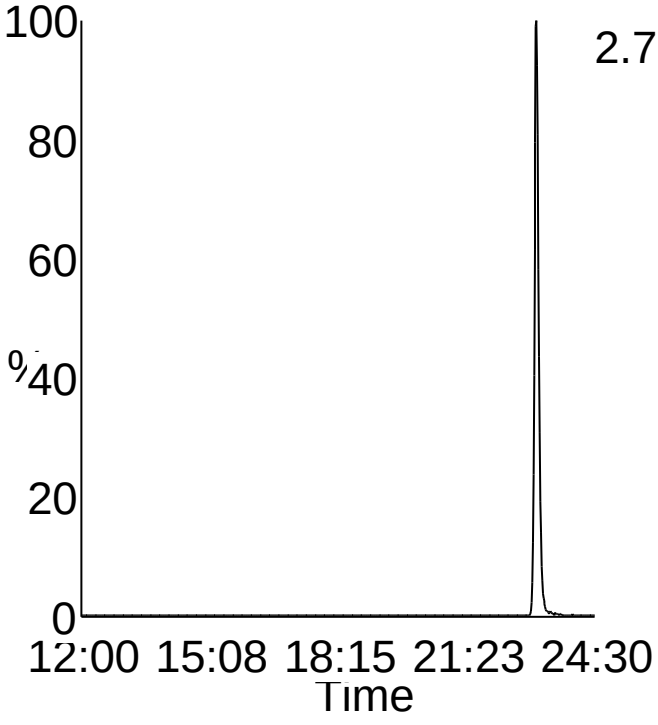
Data File: U_G1 C12 - 339.8597
CAL CS3/CPM-5176-129 - BAL



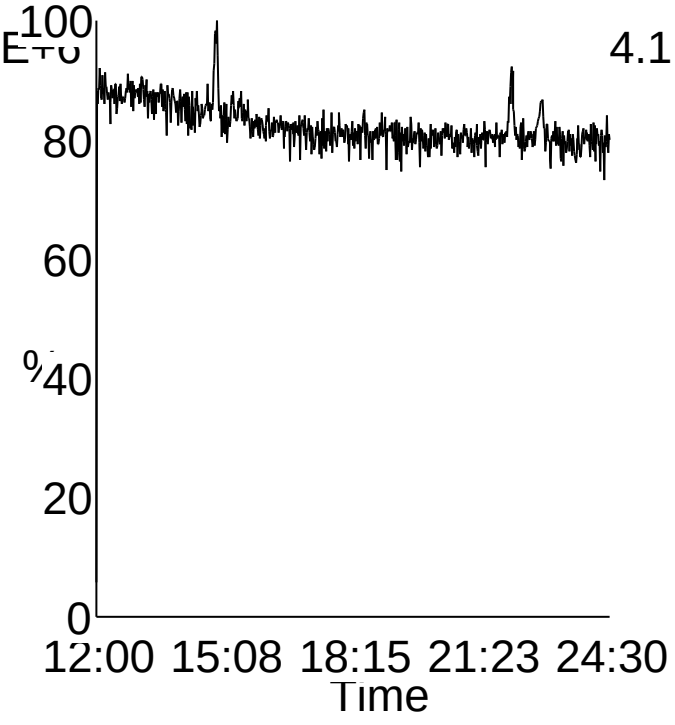
Data File: U_G1 C9 - 327.8847
CAL CS3/CPM-5176-129 - BAL



Data File: U_G1 C13 - 341.8567
CAL CS3/CPM-5176-129 - BAL



Data File: U_G1 C5 - 318.9792
CAL CS3/CPM-5176-129 - BAL

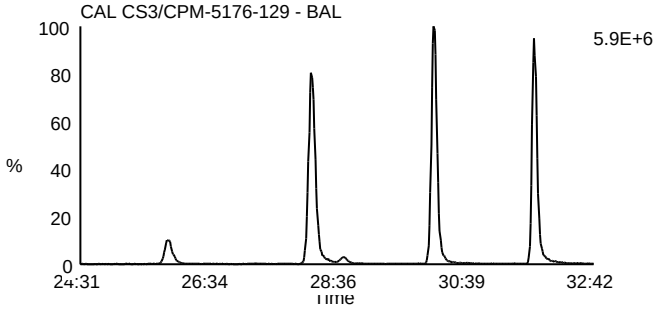


Homologue Group: Pentas

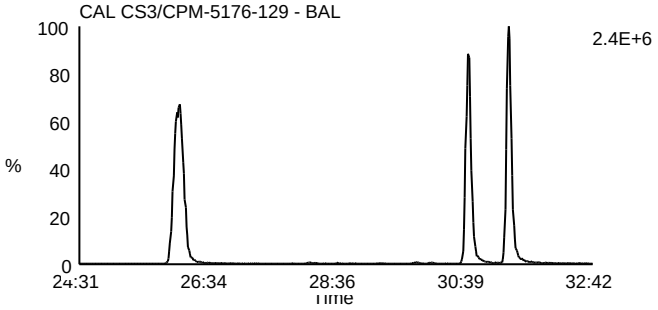
Data File Name: U70921A_15
Date Acquired: 9/21/2007
Sample Description: CAL CS3/CPM-5176-129 - BAL

Lab Sample ID: 5176-129
Client Sample ID: CS-3
Instrument: 10MSHR06 (U)

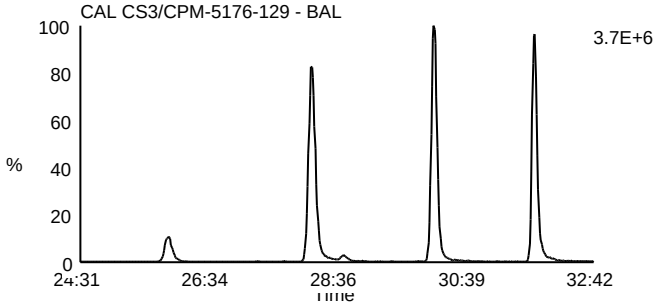
Data File: U70921A_15 G2 C1 - 339.8597
CAL CS3/CPM-5176-129 - BAL



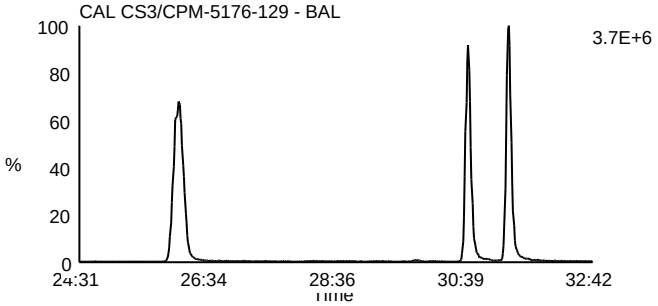
Data File: U70921A_15 G2 C4 - 353.8576
CAL CS3/CPM-5176-129 - BAL



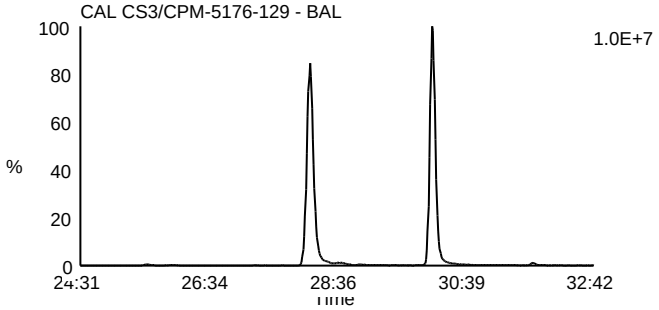
Data File: U70921A_15 G2 C2 - 341.8567
CAL CS3/CPM-5176-129 - BAL



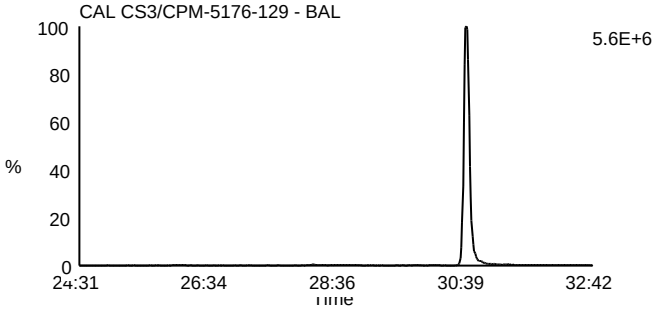
Data File: U70921A_15 G2 C8 - 355.8546
CAL CS3/CPM-5176-129 - BAL



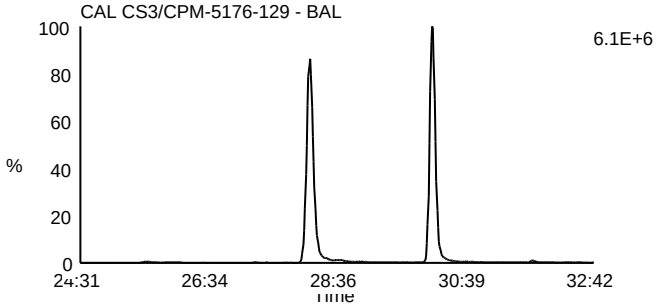
Data File: U70921A_15 G2 C3 - 351.8999
CAL CS3/CPM-5176-129 - BAL



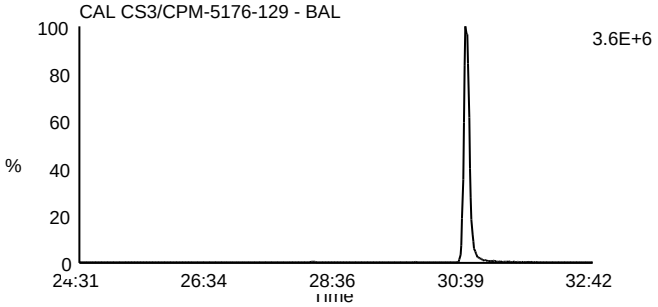
Data File: U70921A_15 G2 C10 - 367.8948
CAL CS3/CPM-5176-129 - BAL



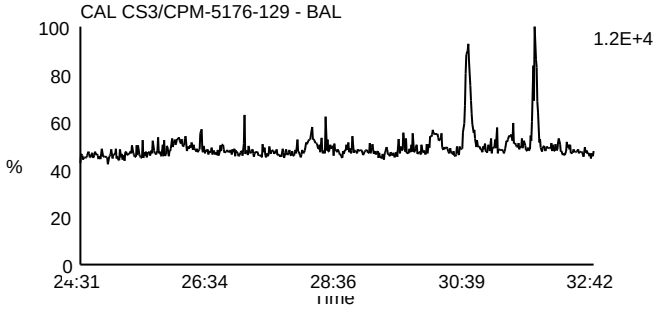
Data File: U70921A_15 G2 C5 - 353.8969
CAL CS3/CPM-5176-129 - BAL



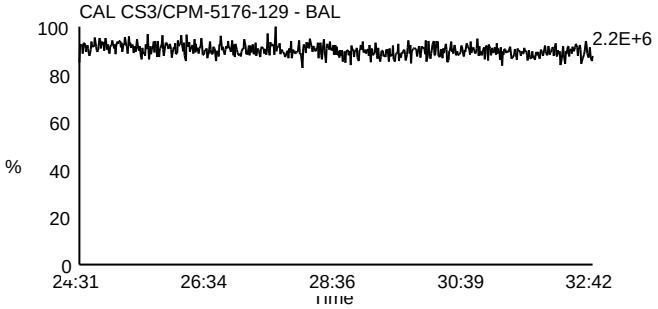
Data File: U70921A_15 G2 C11 - 369.8918
CAL CS3/CPM-5176-129 - BAL



Data File: U70921A_15 G2 C12 - 409.7974
CAL CS3/CPM-5176-129 - BAL



Data File: U70921A_15 G2 C6 - 354.9792
CAL CS3/CPM-5176-129 - BAL

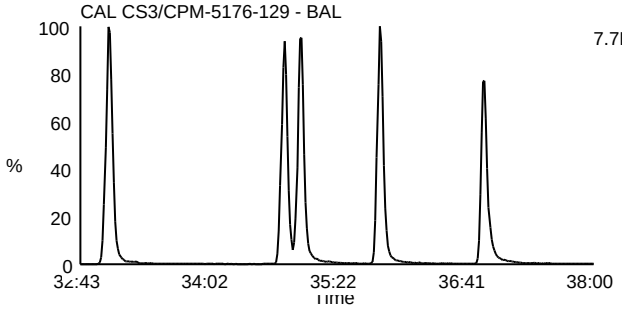


Homologue Group: Hexas

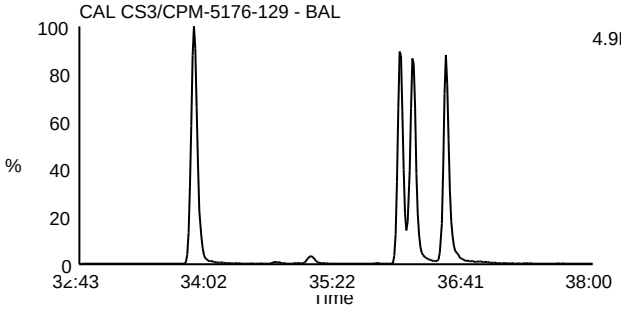
Data File Name: U70921A_15
Date Acquired: 9/21/2007
Sample Description: CAL CS3/CPM-5176-129 - BAL

Lab Sample ID: 5176-129
Client Sample ID: CS-3
Instrument: 10MSHR06 (U)

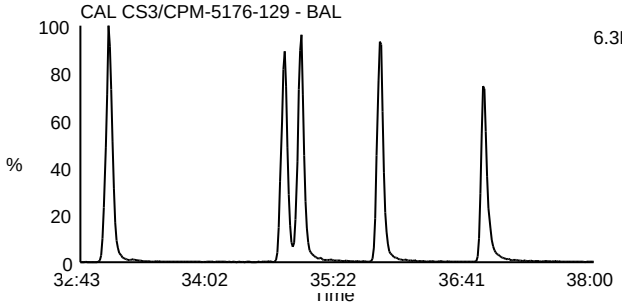
Data File: U70921A_15 G3 C1 - 373.8207
CAL CS3/CPM-5176-129 - BAL



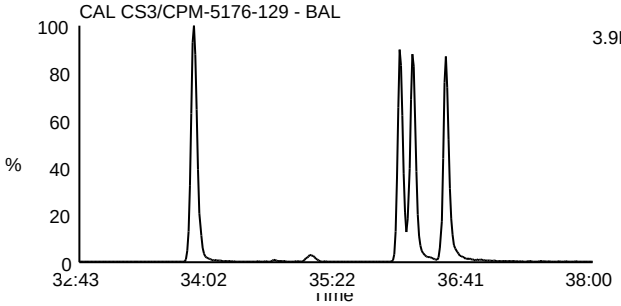
Data File: U70921A_15 G3 C7 - 389.8156
CAL CS3/CPM-5176-129 - BAL



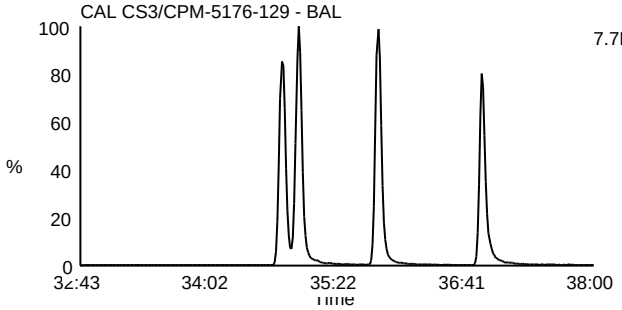
Data File: U70921A_15 G3 C2 - 375.8178
CAL CS3/CPM-5176-129 - BAL



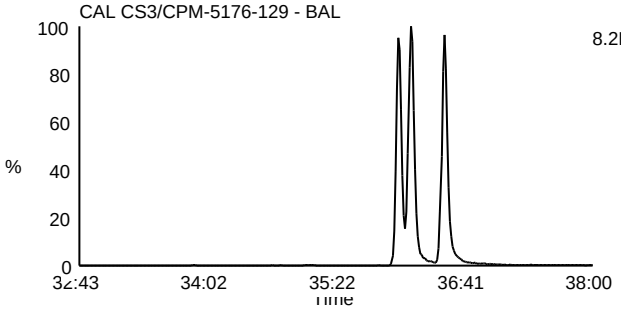
Data File: U70921A_15 G3 C8 - 391.8127
CAL CS3/CPM-5176-129 - BAL



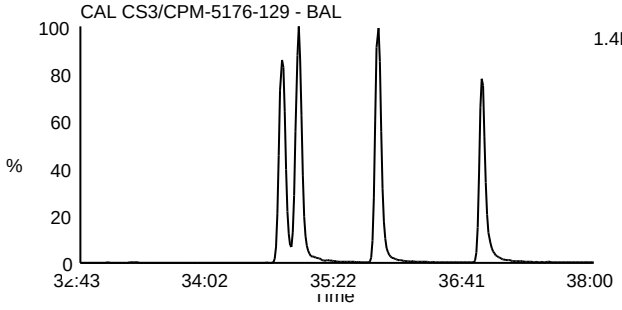
Data File: U70921A_15 G3 C5 - 383.8639
CAL CS3/CPM-5176-129 - BAL



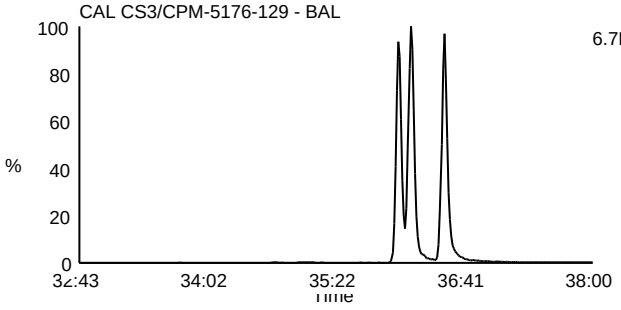
Data File: U70921A_15 G3 C9 - 401.8559
CAL CS3/CPM-5176-129 - BAL



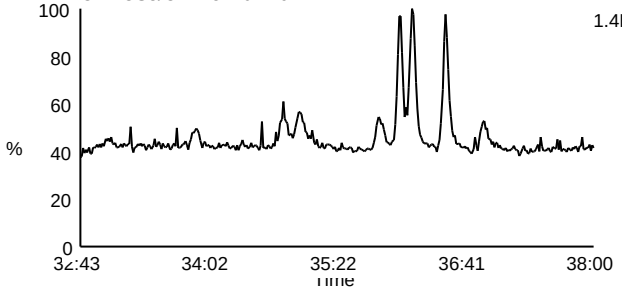
Data File: U70921A_15 G3 C6 - 385.861
CAL CS3/CPM-5176-129 - BAL



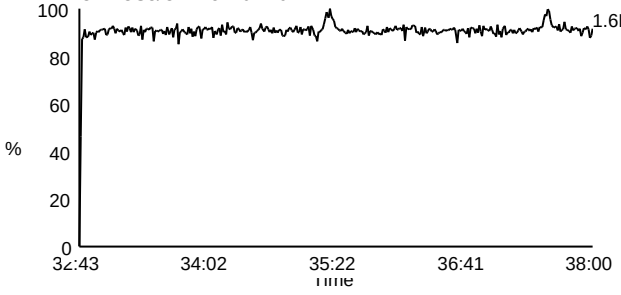
Data File: U70921A_15 G3 C10 - 403.8529
CAL CS3/CPM-5176-129 - BAL



Data File: U70921A_15 G3 C11 - 445.7555
CAL CS3/CPM-5176-129 - BAL



Data File: U70921A_15 G3 C3 - 380.976
CAL CS3/CPM-5176-129 - BAL

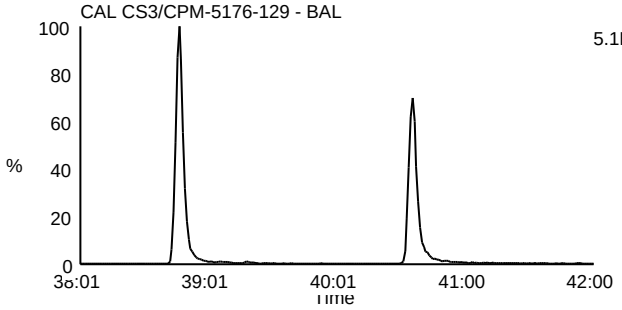


Homologue Group: Heptas

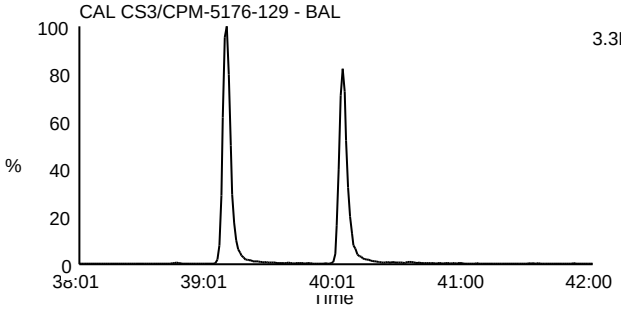
Data File Name: U70921A_15
Date Acquired: 9/21/2007
Sample Description: CAL CS3/CPM-5176-129 - BAL

Lab Sample ID: 5176-129
Client Sample ID: CS-3
Instrument: 10MSHR06 (U)

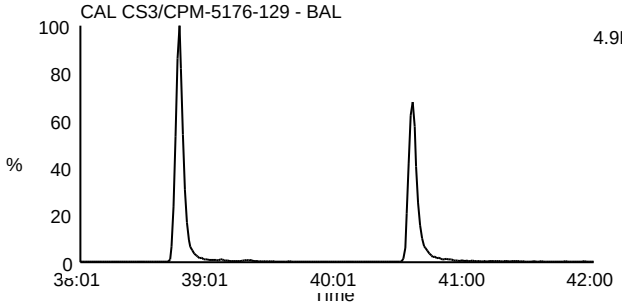
Data File: U70921A_15 G4 C3 - 407.7818
CAL CS3/CPM-5176-129 - BAL



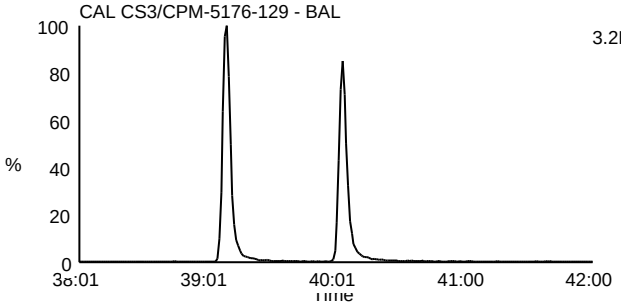
Data File: U70921A_15 G4 C8 - 423.7767
CAL CS3/CPM-5176-129 - BAL



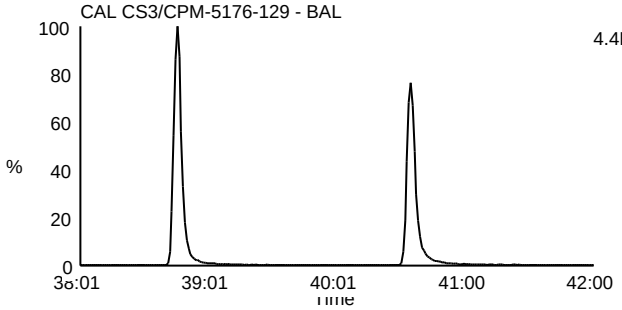
Data File: U70921A_15 G4 C4 - 409.7788
CAL CS3/CPM-5176-129 - BAL



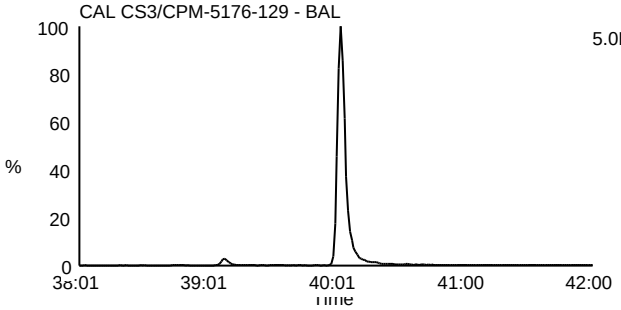
Data File: U70921A_15 G4 C9 - 425.7737
CAL CS3/CPM-5176-129 - BAL



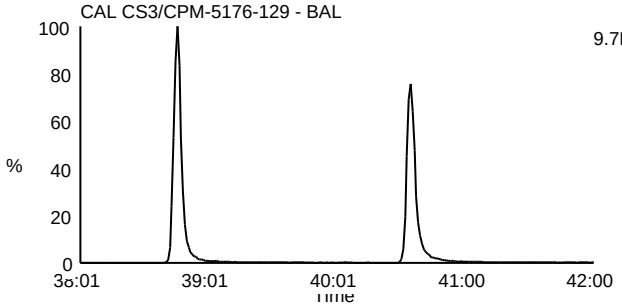
Data File: U70921A_15 G4 C6 - 417.825
CAL CS3/CPM-5176-129 - BAL



Data File: U70921A_15 G4 C11 - 435.8169
CAL CS3/CPM-5176-129 - BAL



Data File: U70921A_15 G4 C7 - 419.822
CAL CS3/CPM-5176-129 - BAL



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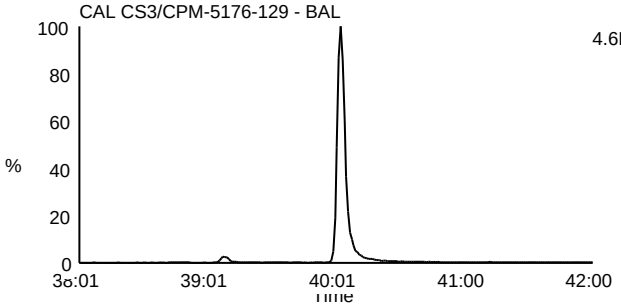
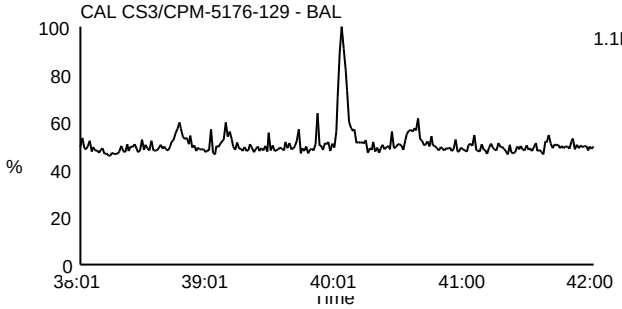
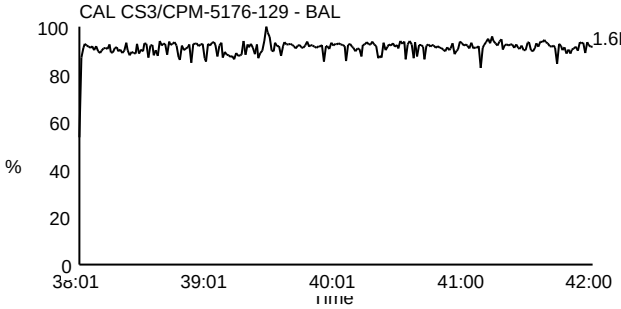
CAL CS3/CPM-5176-129 - BAL



Data File: U70921A_15 G4 C13 - 479.7165
CAL CS3/CPM-5176-129 - BAL



Data File: U70921A_15 G4 C1 - 380.976
CAL CS3/CPM-5176-129 - BAL

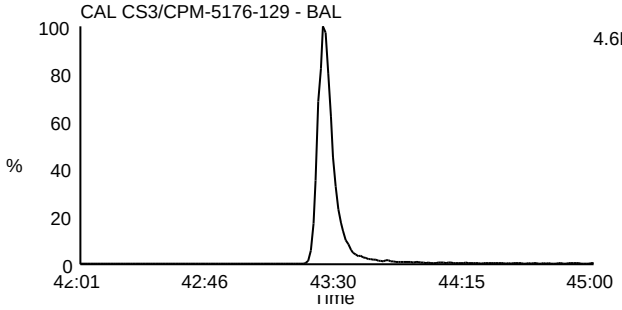


Homologue Group: Octas

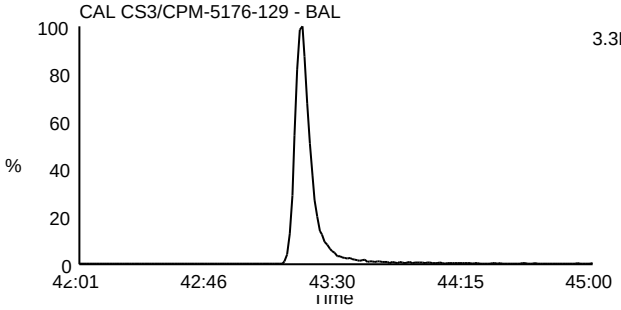
Data File Name: U70921A_15
Date Acquired: 9/21/2007
Sample Description: CAL CS3/CPM-5176-129 - BAL

Lab Sample ID: 5176-129
Client Sample ID: CS-3
Instrument: 10MSHR06 (U)

Data File: U70921A_15 G5 C4 - 441.7428
CAL CS3/CPM-5176-129 - BAL



Data File: U70921A_15 G5 C8 - 457.7377
CAL CS3/CPM-5176-129 - BAL



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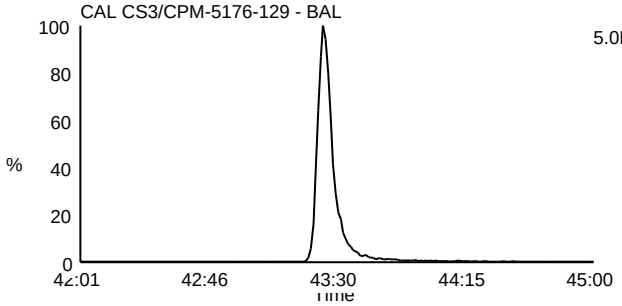
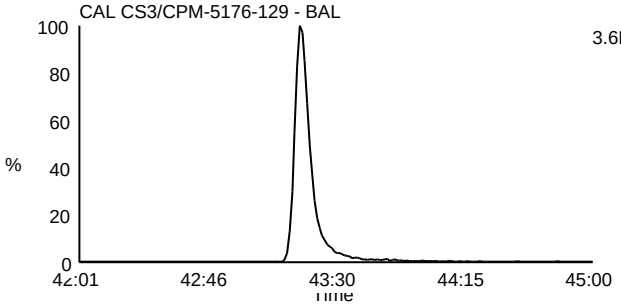
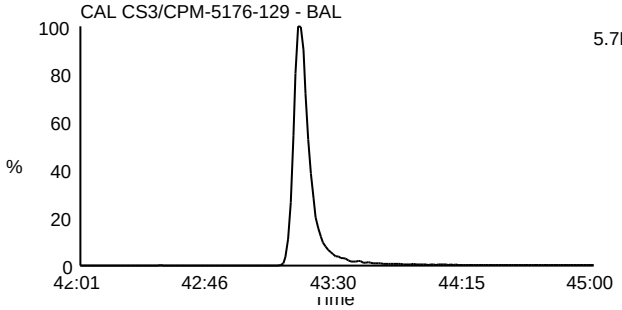
CAL CS3/CPM-5176-129 - BAL



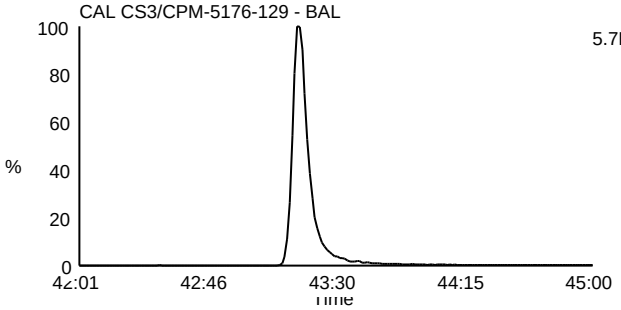
Data File: U70921A_15 G5 C9 - 459.7347
CAL CS3/CPM-5176-129 - BAL



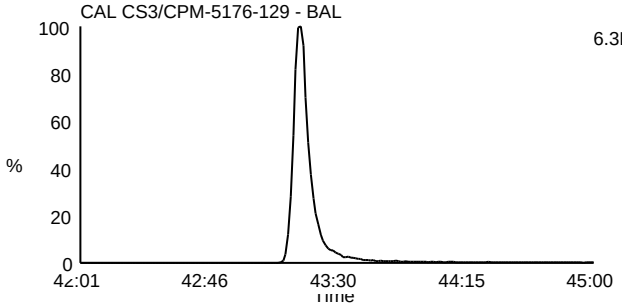
Data File: U70921A_15 G5 C11 - 469.7779
CAL CS3/CPM-5176-129 - BAL



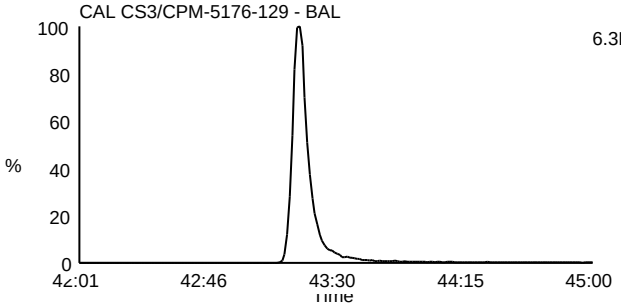
Data File: U70921A_15 G5 C11 - 469.7779
CAL CS3/CPM-5176-129 - BAL



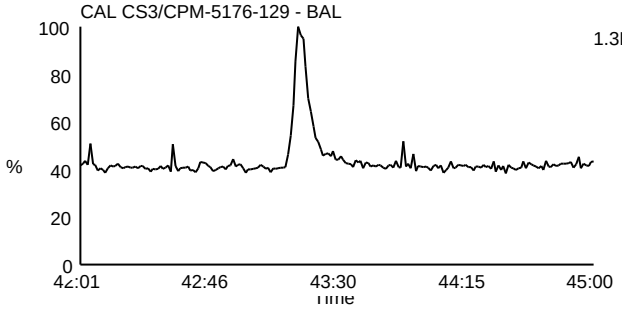
Data File: U70921A_15 G5 C12 - 471.7749
CAL CS3/CPM-5176-129 - BAL



Data File: U70921A_15 G5 C12 - 471.7749
CAL CS3/CPM-5176-129 - BAL



Data File: U70921A_15 G5 C13 - 513.6775
CAL CS3/CPM-5176-129 - BAL



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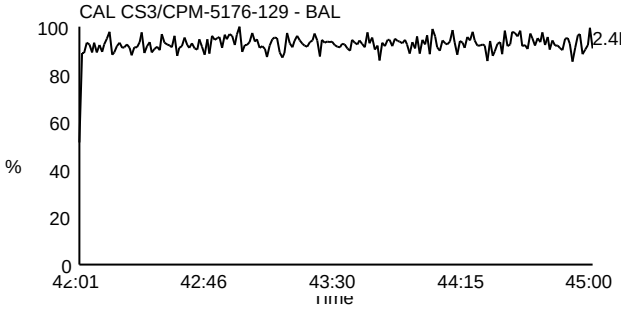
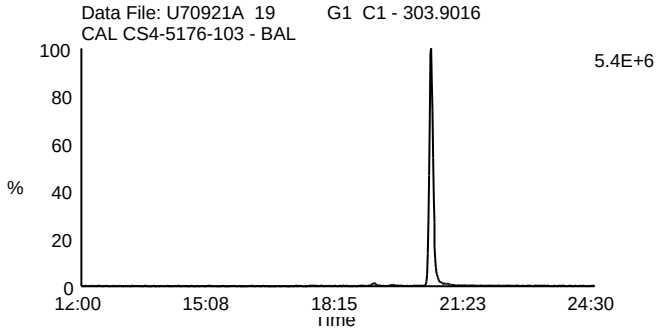
CAL CS3/CPM-5176-129 - BAL

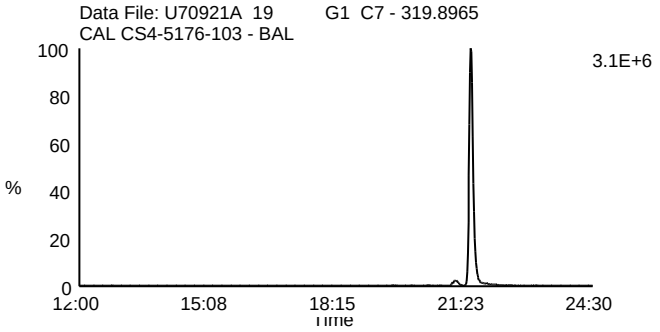


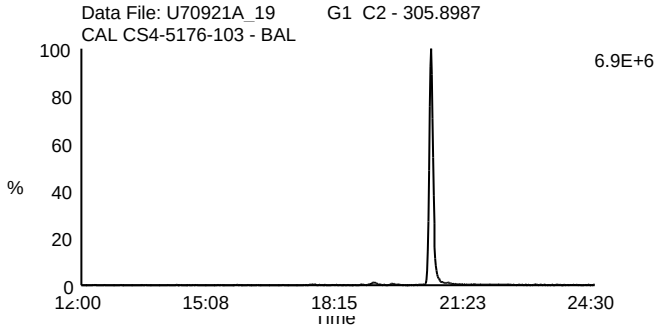
Homologue Group: Tetras

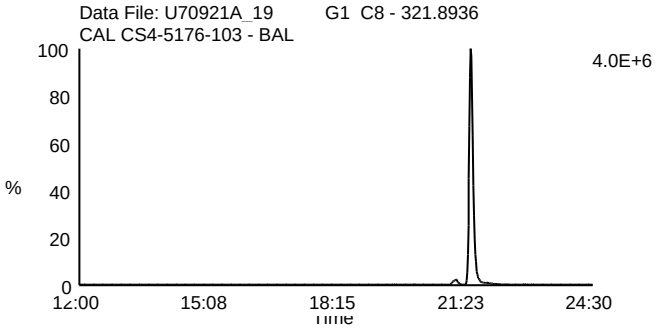
Data File Name: U70921A_19
Date Acquired: 9/22/2007
Sample Description: CAL CS4-5176-103 - BAL

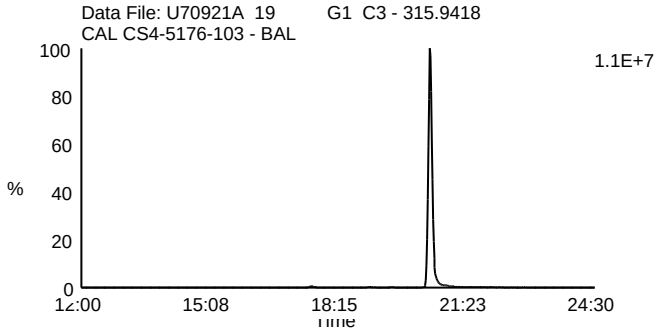
Lab Sample ID: 5176-103
Client Sample ID: CS-4
Instrument: 10MSHR06 (U)

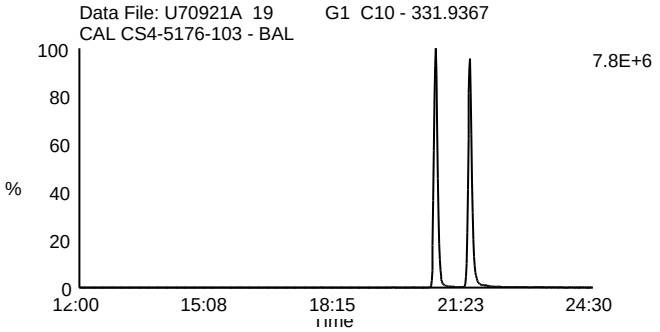


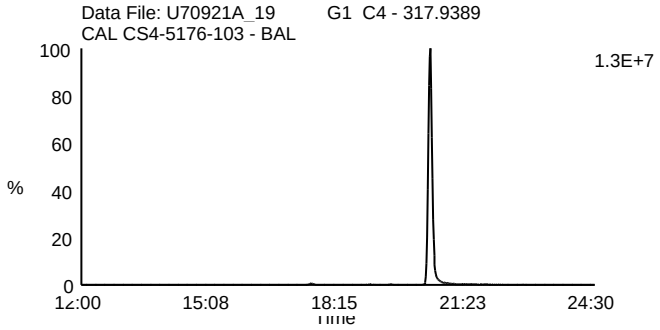


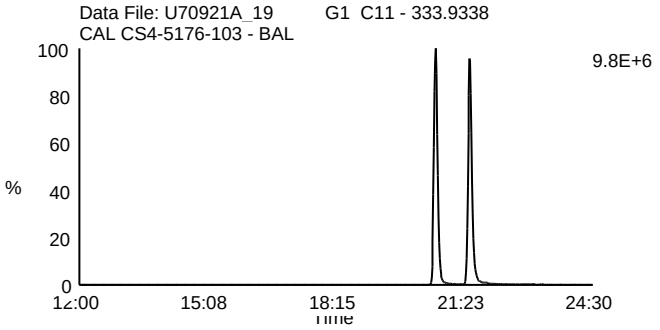


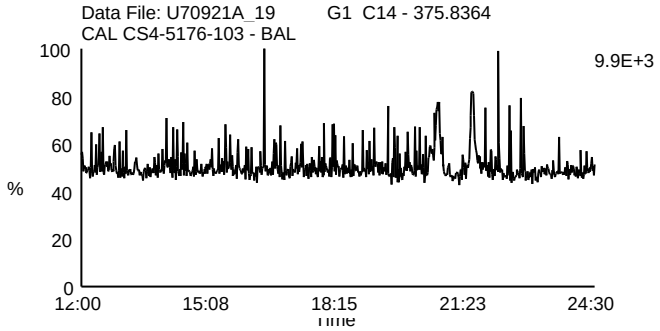


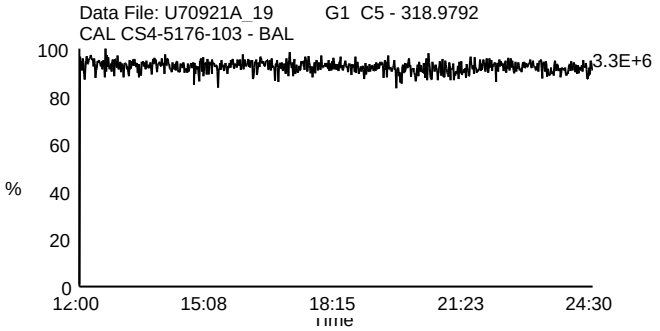










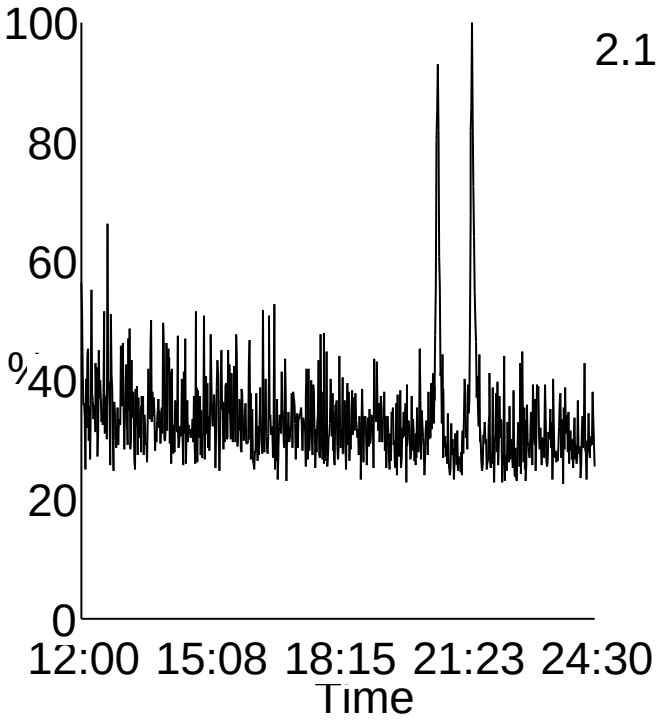


Homologue Group: Penta & Cleanup

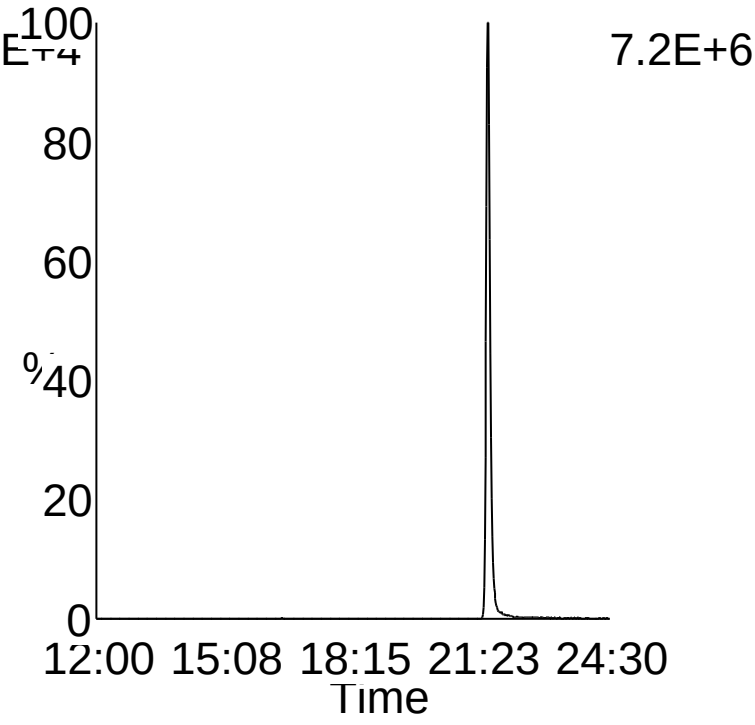
Data File Name: U70921A_19
Date Acquired: 9/22/2007
Sample Description: CAL CS4-5176-103 - BAL

Lab Sample ID: 5176-103
Client Sample ID: CS-4
Instrument: 10MSHR06 (U)

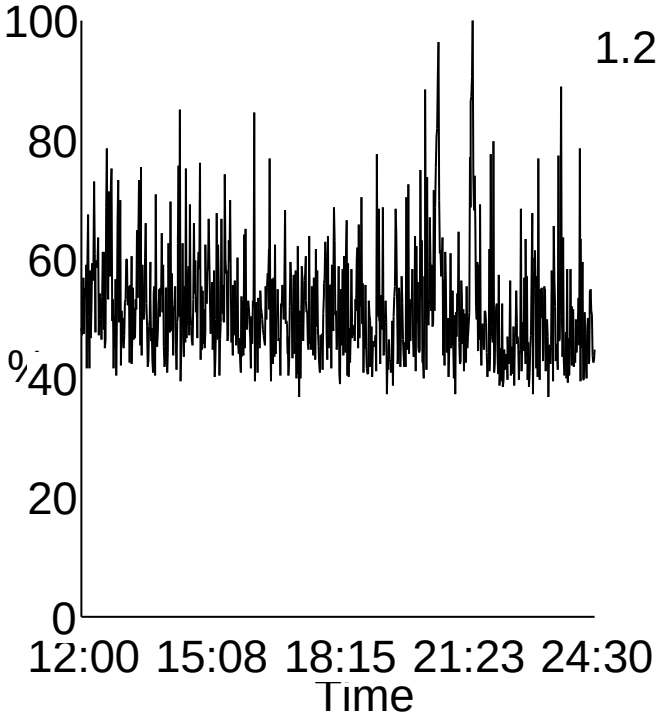
Data File: U_G1 C12 - 339.8597
CAL CS4-5176-103 - BAL



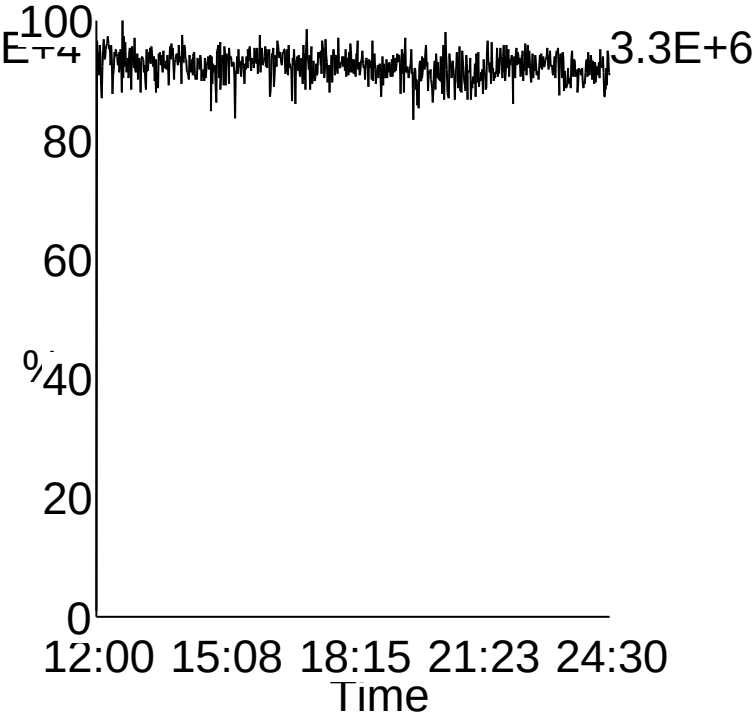
Data File: U_G1 C9 - 327.8847
CAL CS4-5176-103 - BAL



Data File: U_G1 C13 - 341.8567
CAL CS4-5176-103 - BAL



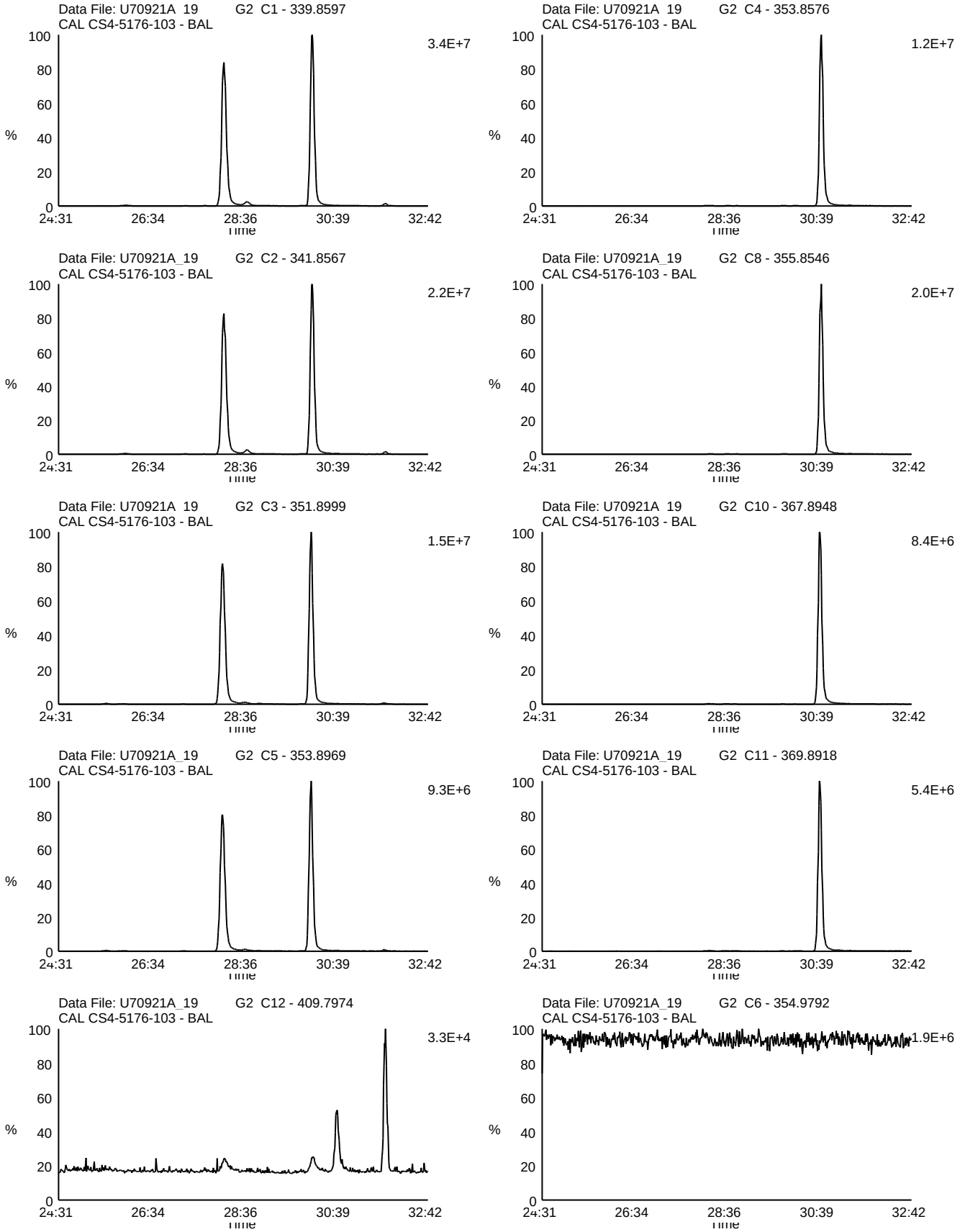
Data File: U_G1 C5 - 318.9792
CAL CS4-5176-103 - BAL



Homologue Group: Pentas

Data File Name: U70921A_19
Date Acquired: 9/22/2007
Sample Description: CAL CS4-5176-103 - BAL

Lab Sample ID: 5176-103
Client Sample ID: CS-4
Instrument: 10MSHR06 (U)

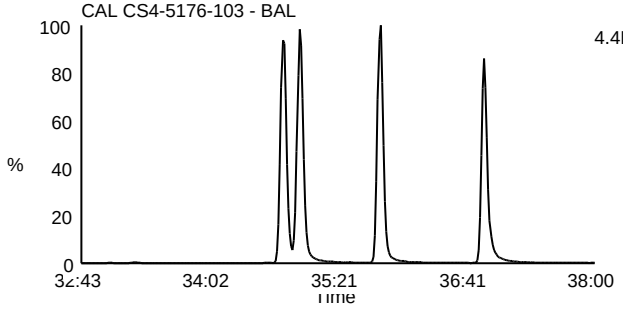


Homologue Group: Hexas

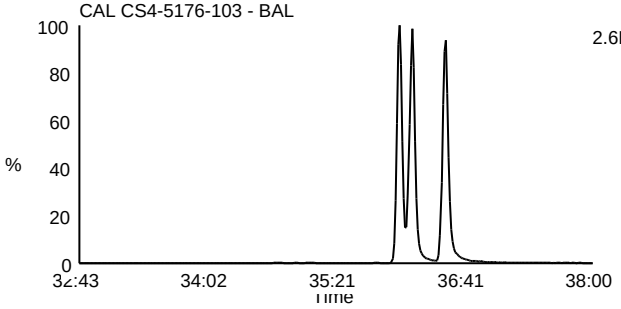
Data File Name: U70921A_19
Date Acquired: 9/22/2007
Sample Description: CAL CS4-5176-103 - BAL

Lab Sample ID: 5176-103
Client Sample ID: CS-4
Instrument: 10MSHR06 (U)

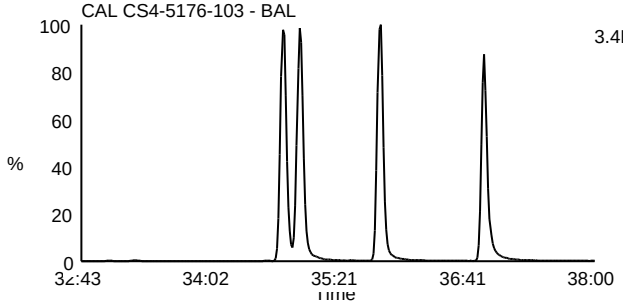
Data File: U70921A_19 G3 C1 - 373.8207
CAL CS4-5176-103 - BAL



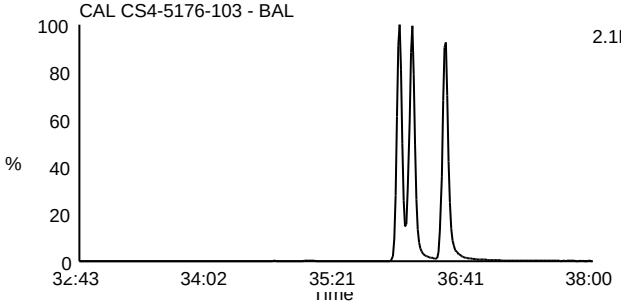
Data File: U70921A_19 G3 C7 - 389.8156
CAL CS4-5176-103 - BAL



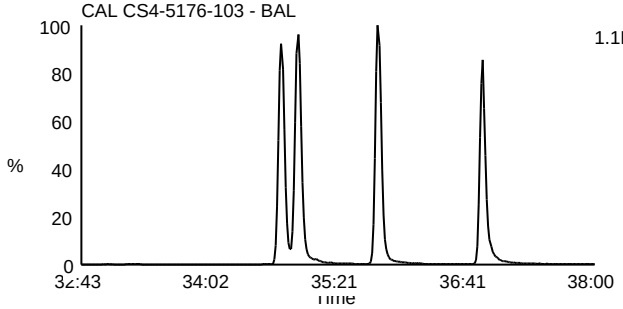
Data File: U70921A_19 G3 C2 - 375.8178
CAL CS4-5176-103 - BAL



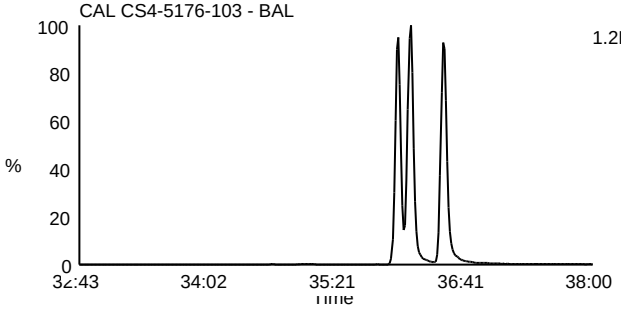
Data File: U70921A_19 G3 C8 - 391.8127
CAL CS4-5176-103 - BAL



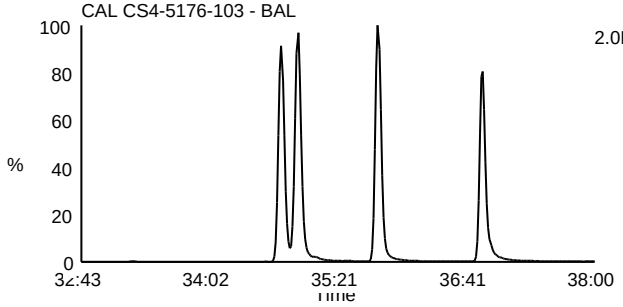
Data File: U70921A_19 G3 C5 - 383.8639
CAL CS4-5176-103 - BAL



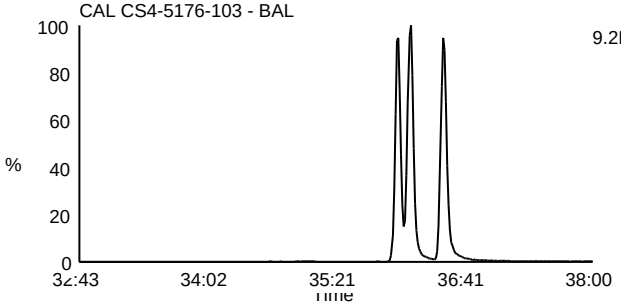
Data File: U70921A_19 G3 C9 - 401.8559
CAL CS4-5176-103 - BAL



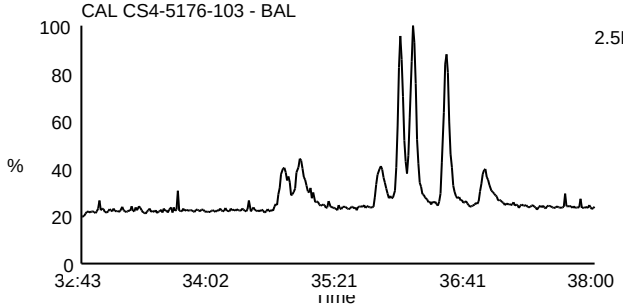
Data File: U70921A_19 G3 C6 - 385.861
CAL CS4-5176-103 - BAL



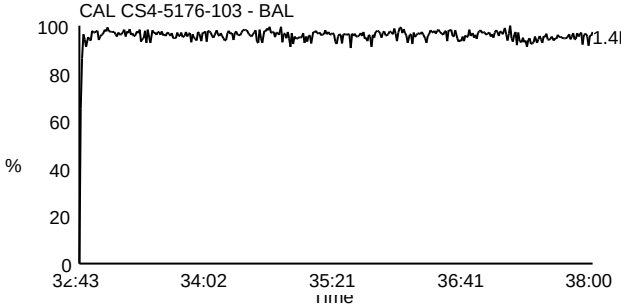
Data File: U70921A_19 G3 C10 - 403.8529
CAL CS4-5176-103 - BAL



Data File: U70921A_19 G3 C11 - 445.7555
CAL CS4-5176-103 - BAL



Data File: U70921A_19 G3 C3 - 380.976
CAL CS4-5176-103 - BAL

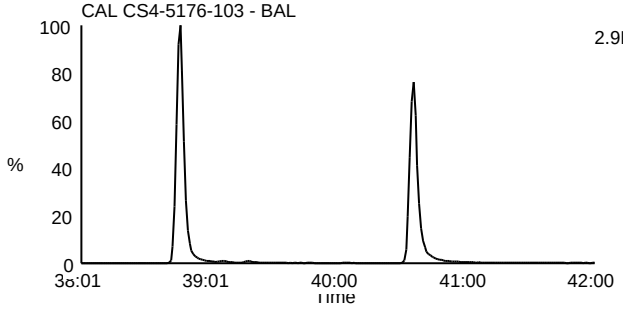


Homologue Group: Heptas

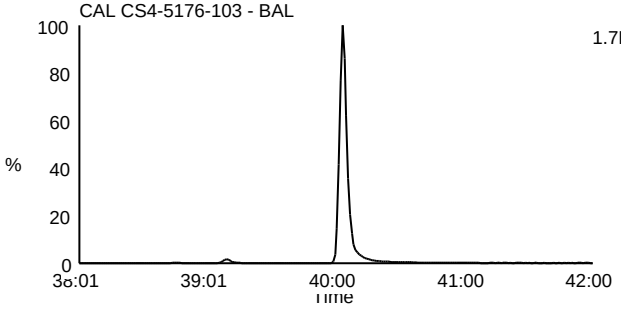
Data File Name: U70921A_19
Date Acquired: 9/22/2007
Sample Description: CAL CS4-5176-103 - BAL

Lab Sample ID: 5176-103
Client Sample ID: CS-4
Instrument: 10MSHR06 (U)

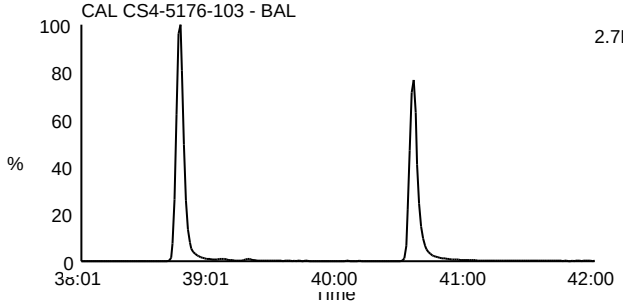
Data File: U70921A_19 G4 C3 - 407.7818
CAL CS4-5176-103 - BAL



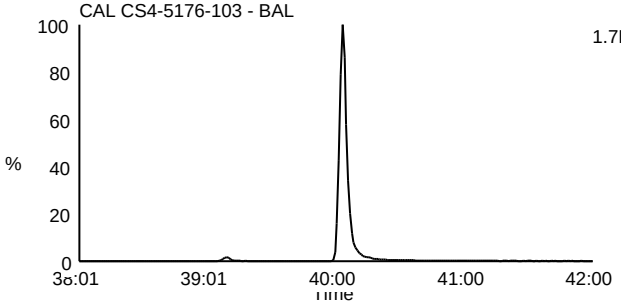
Data File: U70921A_19 G4 C8 - 423.7767
CAL CS4-5176-103 - BAL



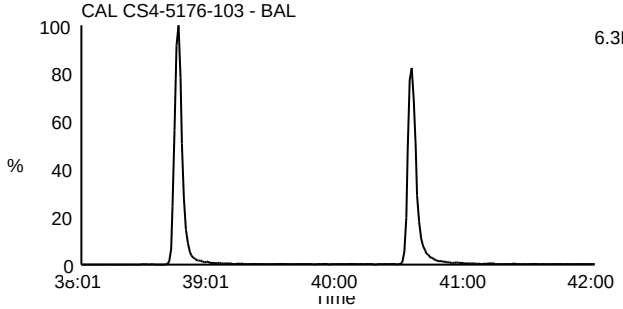
Data File: U70921A_19 G4 C4 - 409.7788
CAL CS4-5176-103 - BAL



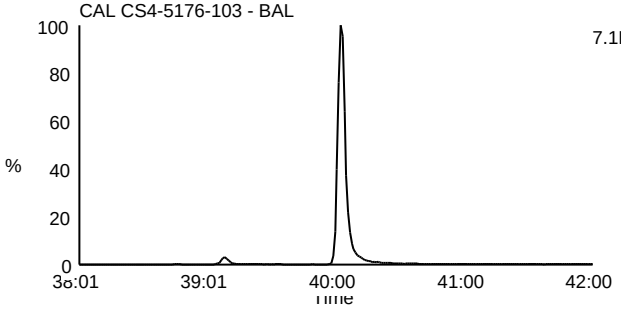
Data File: U70921A_19 G4 C9 - 425.7737
CAL CS4-5176-103 - BAL



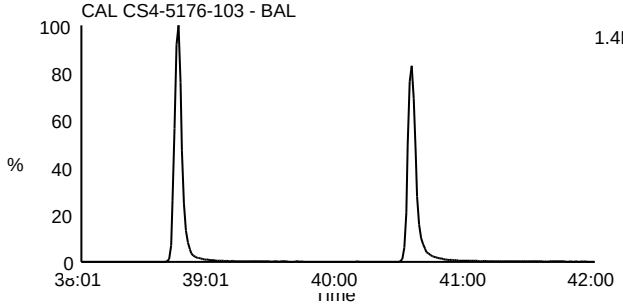
Data File: U70921A_19 G4 C6 - 417.825
CAL CS4-5176-103 - BAL



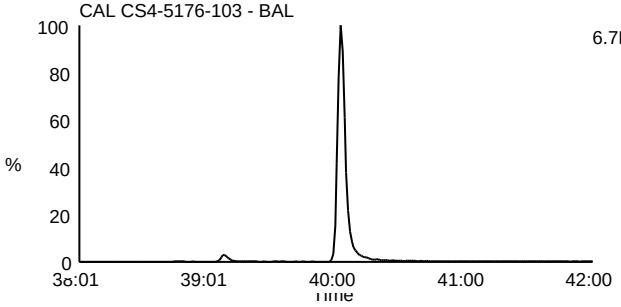
Data File: U70921A_19 G4 C11 - 435.8169
CAL CS4-5176-103 - BAL



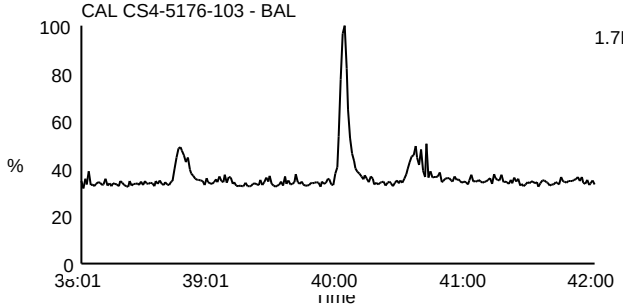
Data File: U70921A_19 G4 C7 - 419.822
CAL CS4-5176-103 - BAL



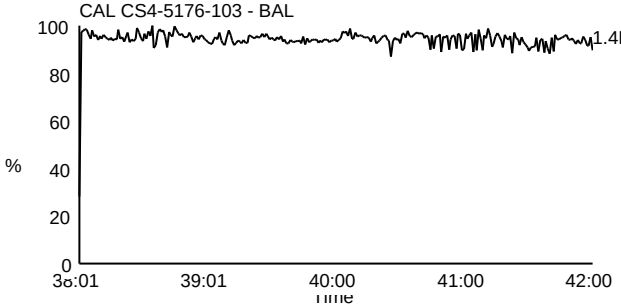
Data File: U70921A_19 G4 C12 - 437.814
CAL CS4-5176-103 - BAL



Data File: U70921A_19 G4 C13 - 479.7165
CAL CS4-5176-103 - BAL



Data File: U70921A_19 G4 C1 - 380.976
CAL CS4-5176-103 - BAL

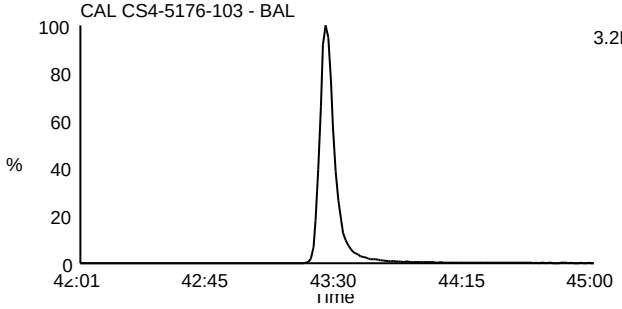


Homologue Group: Octas

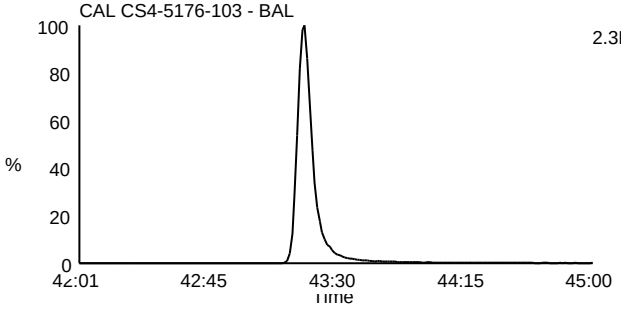
Data File Name: U70921A_19
Date Acquired: 9/22/2007
Sample Description: CAL CS4-5176-103 - BAL

Lab Sample ID: 5176-103
Client Sample ID: CS-4
Instrument: 10MSHR06 (U)

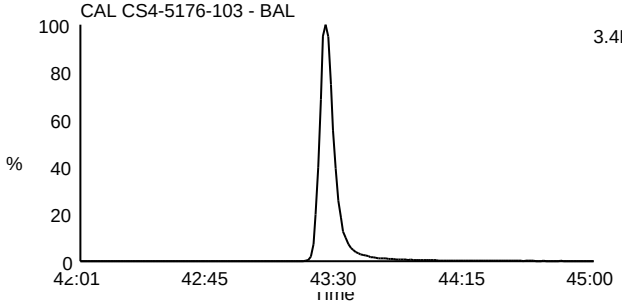
Data File: U70921A_19 G5 C4 - 441.7428
CAL CS4-5176-103 - BAL



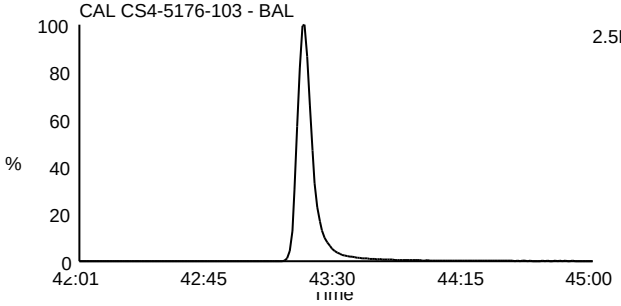
Data File: U70921A_19 G5 C8 - 457.7377
CAL CS4-5176-103 - BAL



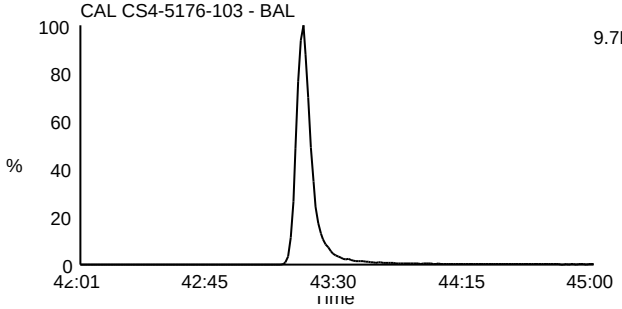
Data File: U70921A_19 G5 C5 - 443.7398
CAL CS4-5176-103 - BAL



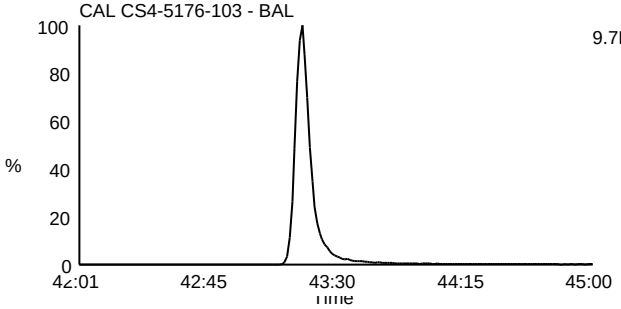
Data File: U70921A_19 G5 C9 - 459.7347
CAL CS4-5176-103 - BAL



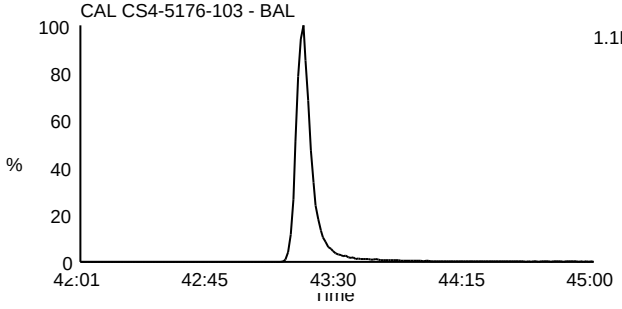
Data File: U70921A_19 G5 C11 - 469.7779
CAL CS4-5176-103 - BAL



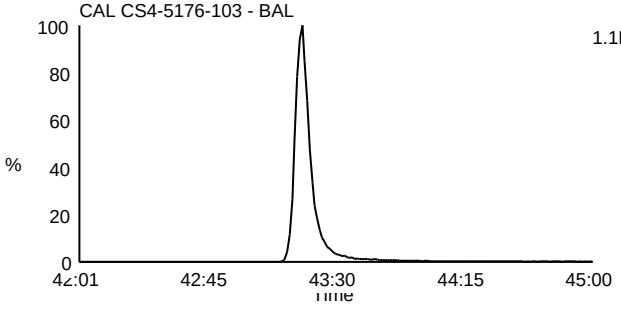
Data File: U70921A_19 G5 C11 - 469.7779
CAL CS4-5176-103 - BAL



Data File: U70921A_19 G5 C12 - 471.7749
CAL CS4-5176-103 - BAL



Data File: U70921A_19 G5 C12 - 471.7749
CAL CS4-5176-103 - BAL



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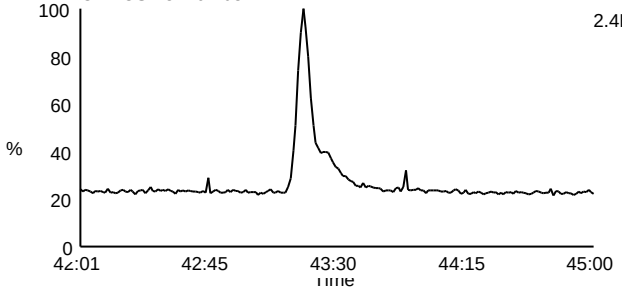
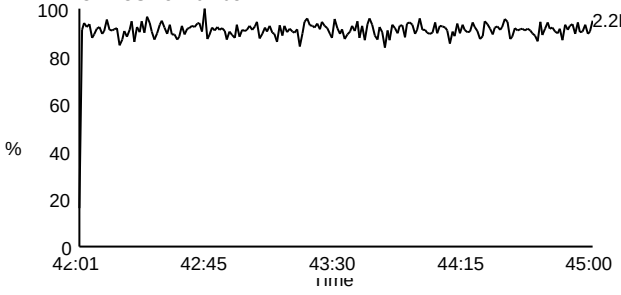
CAL CS4-5176-103 - BAL



Data File: U70921A_19 G5 C2 - 430.9728
CAL CS4-5176-103 - BAL

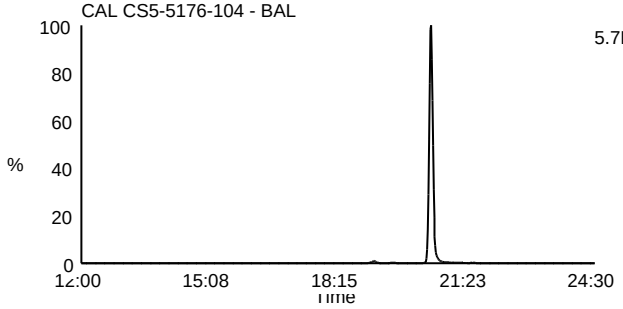


Homologue Group: Tetras

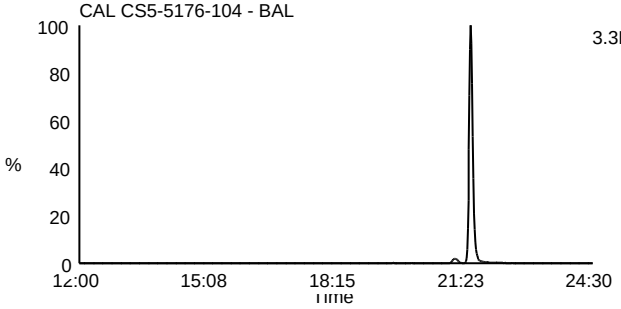
Data File Name: U70921A_18
Date Acquired: 9/22/2007
Sample Description: CAL CS5-5176-104 - BAL

Lab Sample ID: 5176-104
Client Sample ID: CS-5
Instrument: 10MSHR06 (U)

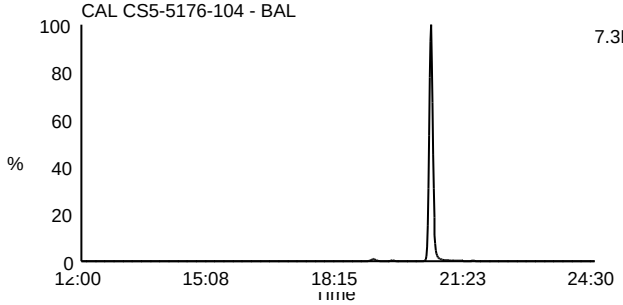
Data File: U70921A_18 G1 C1 - 303.9016
CAL CS5-5176-104 - BAL



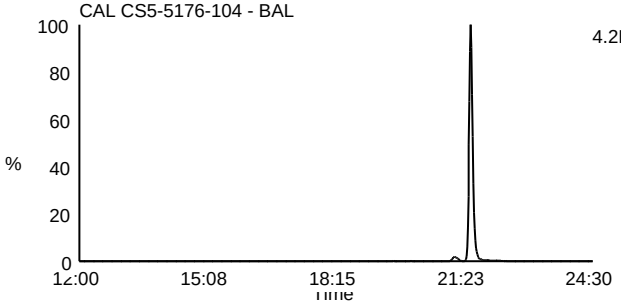
Data File: U70921A_18 G1 C7 - 319.8965
CAL CS5-5176-104 - BAL



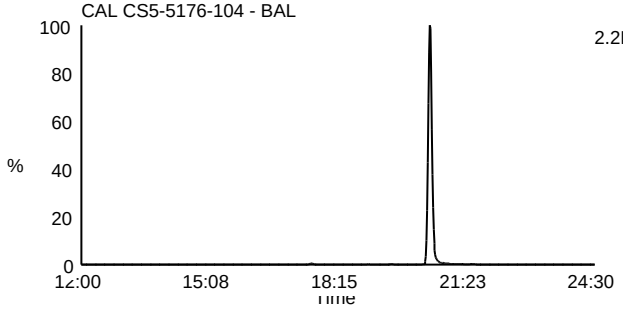
Data File: U70921A_18 G1 C2 - 305.8987
CAL CS5-5176-104 - BAL



Data File: U70921A_18 G1 C8 - 321.8936
CAL CS5-5176-104 - BAL



Data File: U70921A_18 G1 C3 - 315.9418
CAL CS5-5176-104 - BAL



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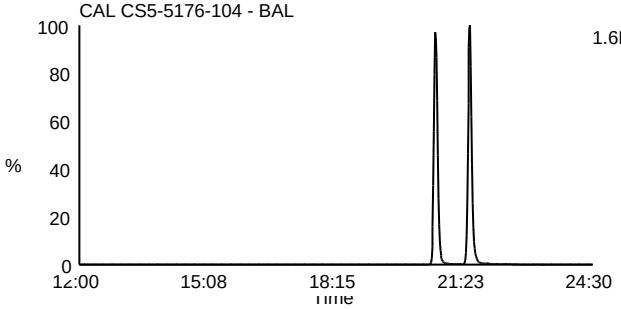
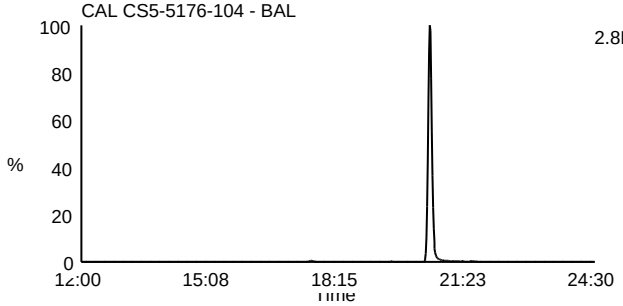
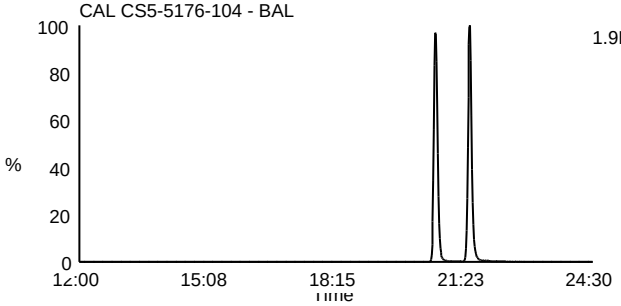
CAL CS5-5176-104 - BAL



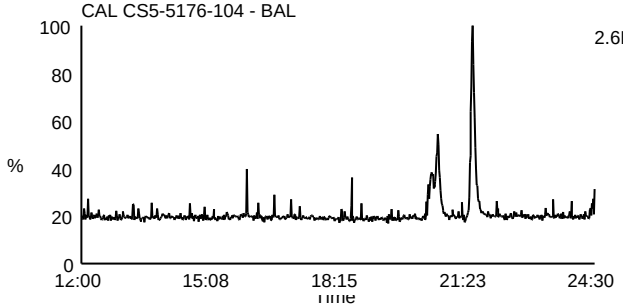
Data File: U70921A_18 G1 C4 - 317.9389
CAL CS5-5176-104 - BAL



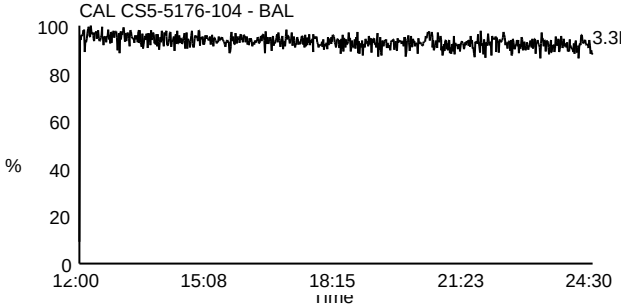
Data File: U70921A_18 G1 C11 - 333.9338
CAL CS5-5176-104 - BAL



Data File: U70921A_18 G1 C14 - 375.8364
CAL CS5-5176-104 - BAL



Data File: U70921A_18 G1 C5 - 318.9792
CAL CS5-5176-104 - BAL

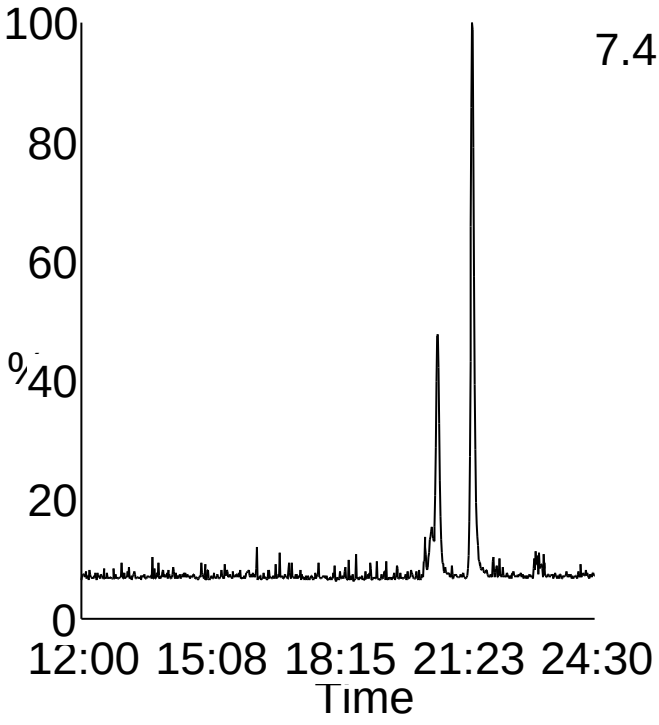


Homologue Group: Penta & Cleanup

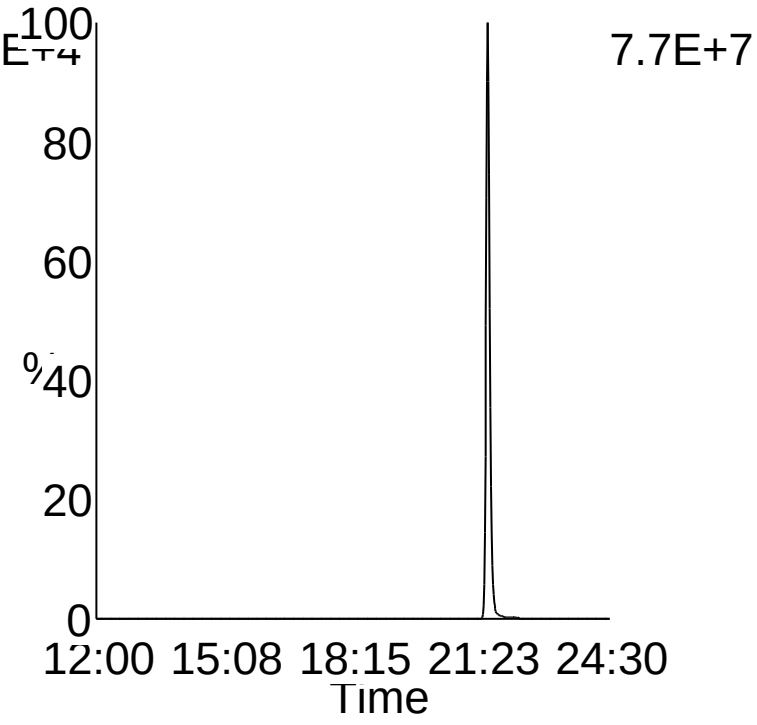
Data File Name: U70921A_18
Date Acquired: 9/22/2007
Sample Description: CAL CS5-5176-104 - BAL

Lab Sample ID: 5176-104
Client Sample ID: CS-5
Instrument: 10MSHR06 (U)

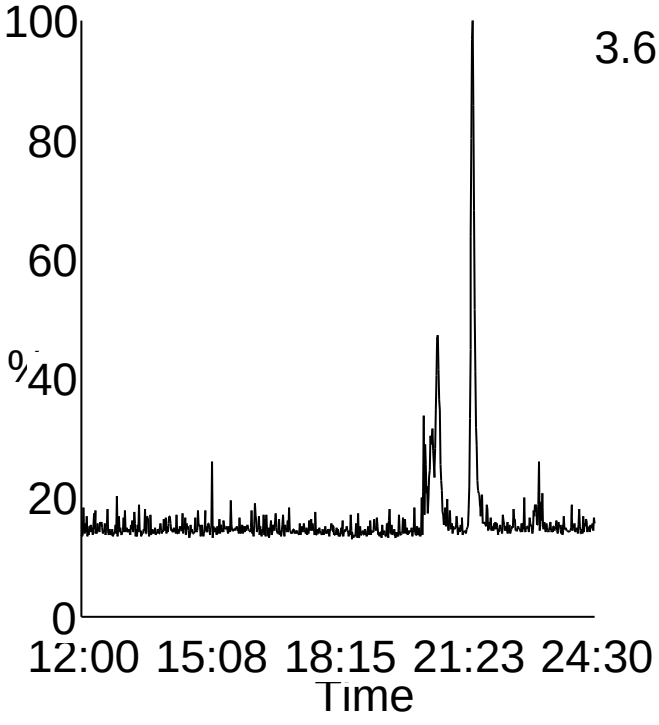
Data File: U_G1 C12 - 339.8597
CAL CS5-5176-104 - BAL



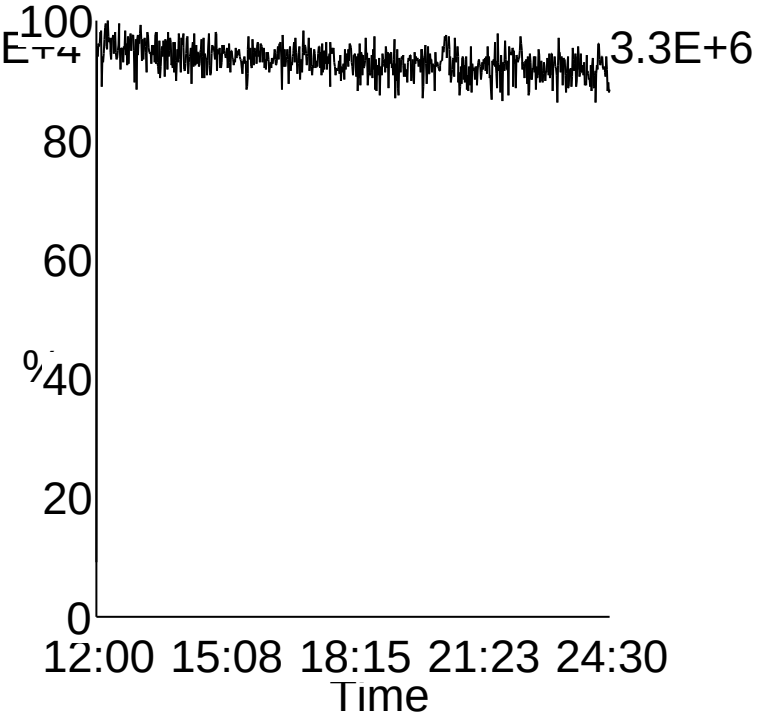
Data File: U_G1 C9 - 327.8847
CAL CS5-5176-104 - BAL



Data File: U_G1 C13 - 341.8567
CAL CS5-5176-104 - BAL



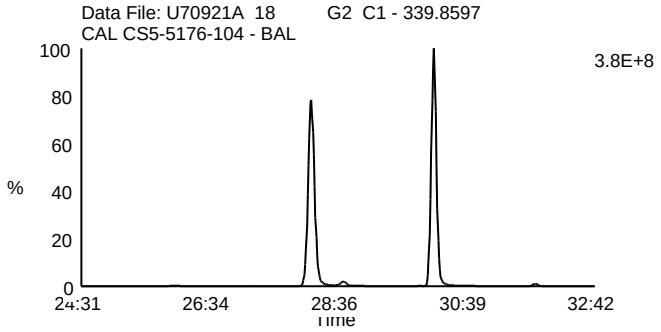
Data File: U_G1 C5 - 318.9792
CAL CS5-5176-104 - BAL

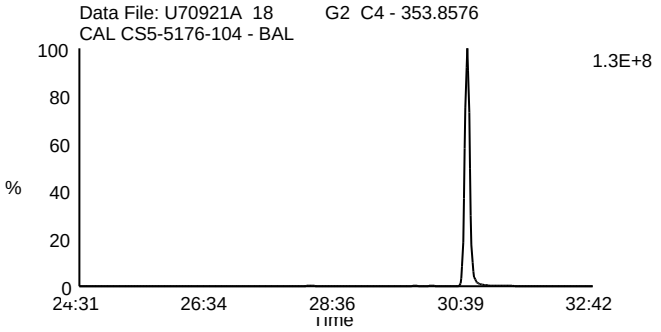


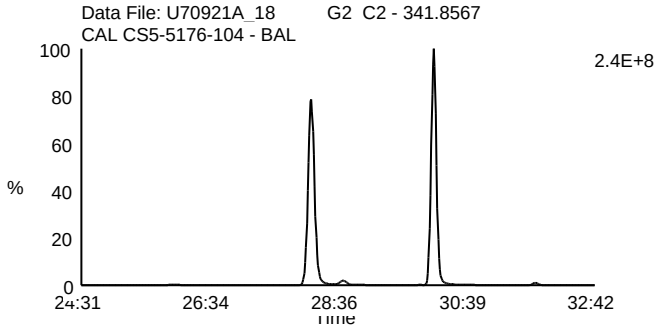
Homologue Group: Pentas

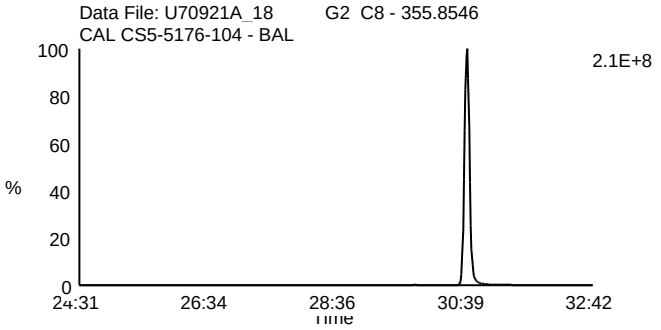
Data File Name: U70921A_18
Date Acquired: 9/22/2007
Sample Description: CAL CS5-5176-104 - BAL

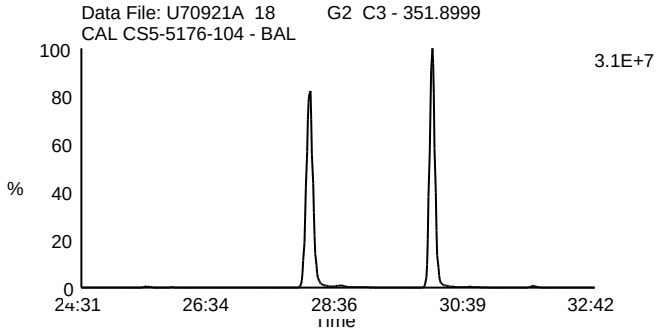
Lab Sample ID: 5176-104
Client Sample ID: CS-5
Instrument: 10MSHR06 (U)

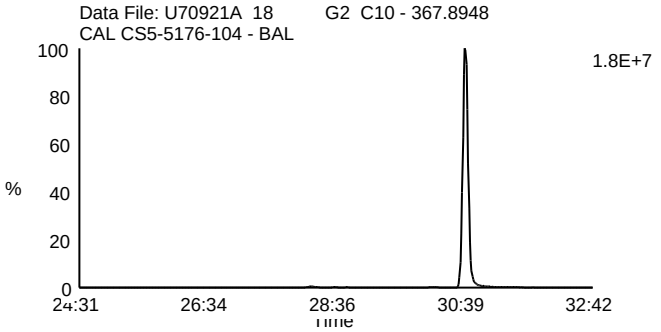


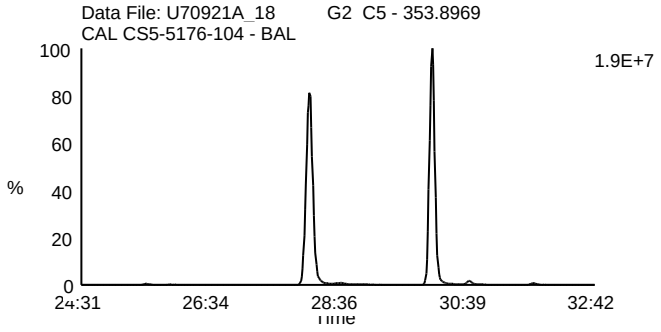


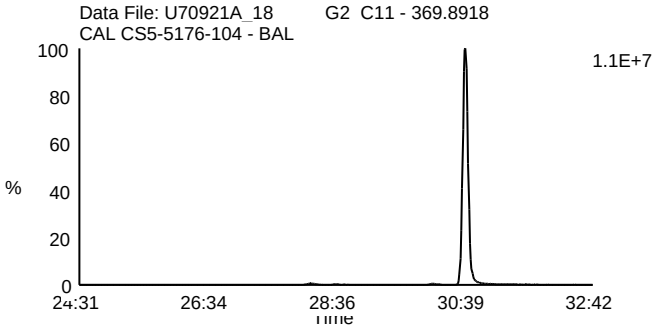


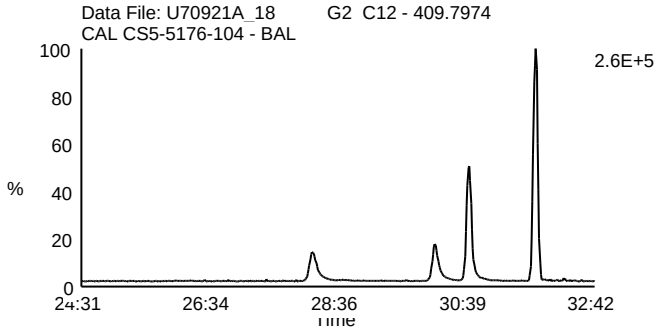


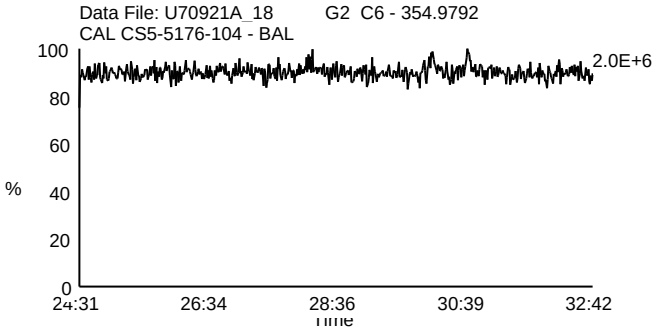










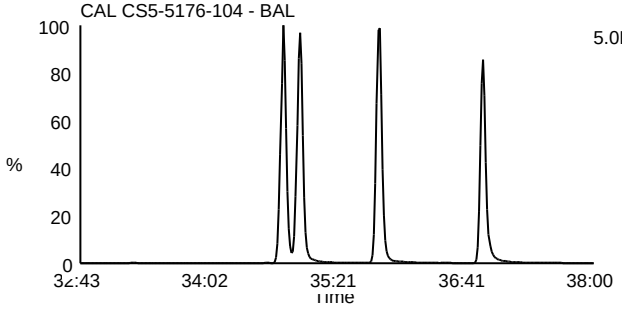


Homologue Group: Hexas

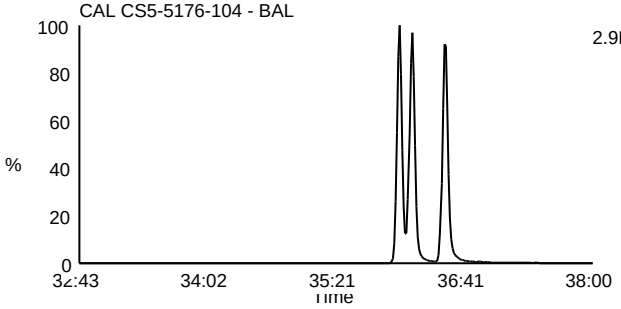
Data File Name: U70921A_18
Date Acquired: 9/22/2007
Sample Description: CAL CS5-5176-104 - BAL

Lab Sample ID: 5176-104
Client Sample ID: CS-5
Instrument: 10MSHR06 (U)

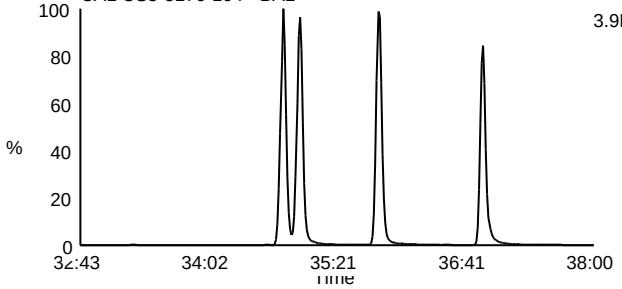
Data File: U70921A_18 G3 C1 - 373.8207
CAL CS5-5176-104 - BAL



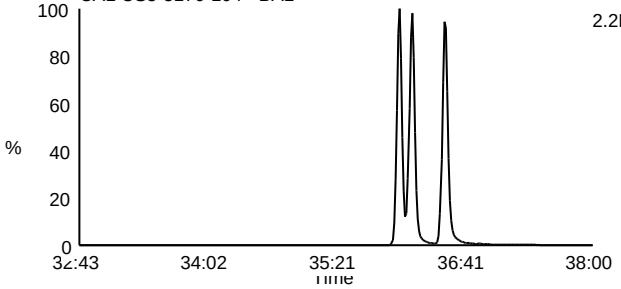
Data File: U70921A_18 G3 C7 - 389.8156
CAL CS5-5176-104 - BAL



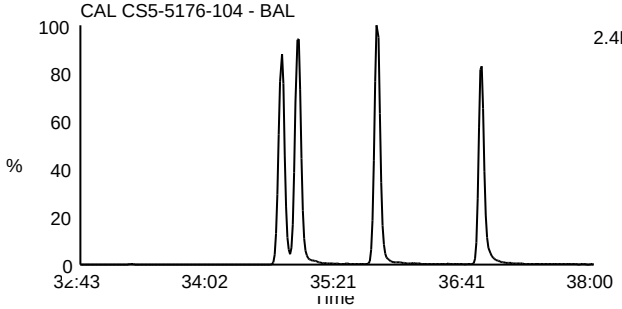
Data File: U70921A_18 G3 C2 - 375.8178
CAL CS5-5176-104 - BAL



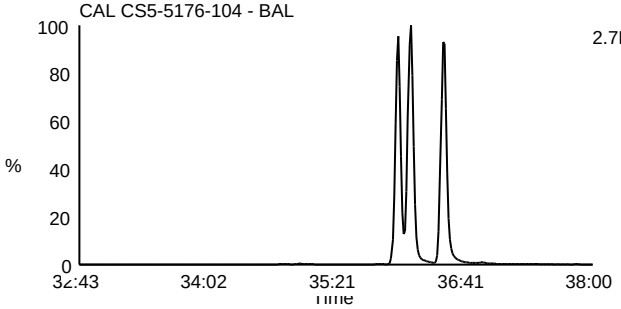
Data File: U70921A_18 G3 C8 - 391.8127
CAL CS5-5176-104 - BAL



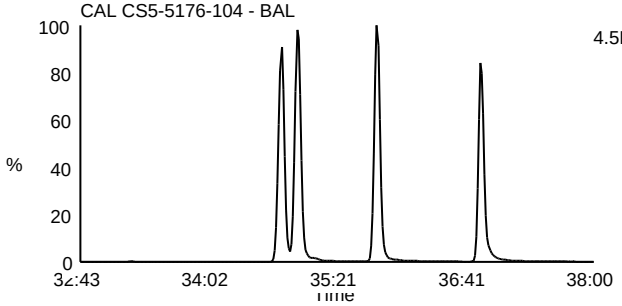
Data File: U70921A_18 G3 C5 - 383.8639
CAL CS5-5176-104 - BAL



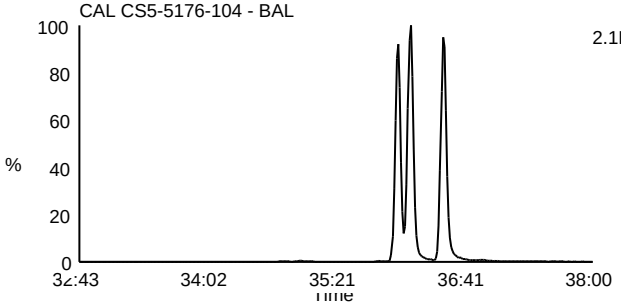
Data File: U70921A_18 G3 C9 - 401.8559
CAL CS5-5176-104 - BAL



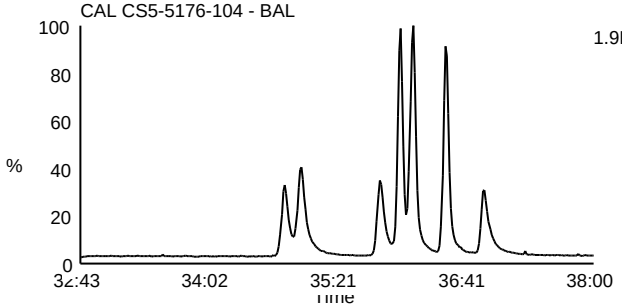
Data File: U70921A_18 G3 C6 - 385.861
CAL CS5-5176-104 - BAL



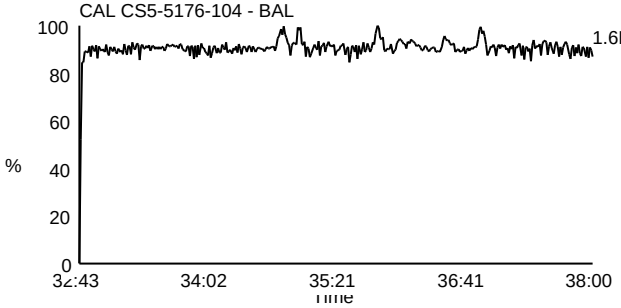
Data File: U70921A_18 G3 C10 - 403.8529
CAL CS5-5176-104 - BAL



Data File: U70921A_18 G3 C11 - 445.7555
CAL CS5-5176-104 - BAL



Data File: U70921A_18 G3 C3 - 380.976
CAL CS5-5176-104 - BAL

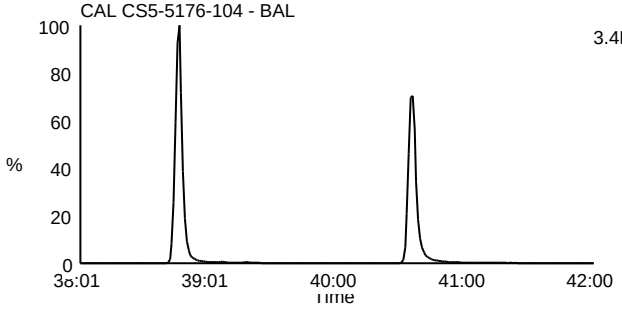


Homologue Group: Heptas

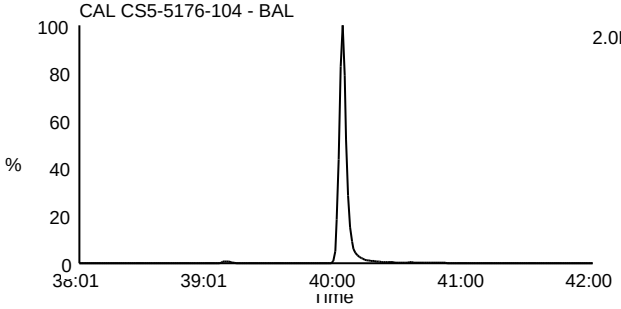
Data File Name: U70921A_18
Date Acquired: 9/22/2007
Sample Description: CAL CS5-5176-104 - BAL

Lab Sample ID: 5176-104
Client Sample ID: CS-5
Instrument: 10MSHR06 (U)

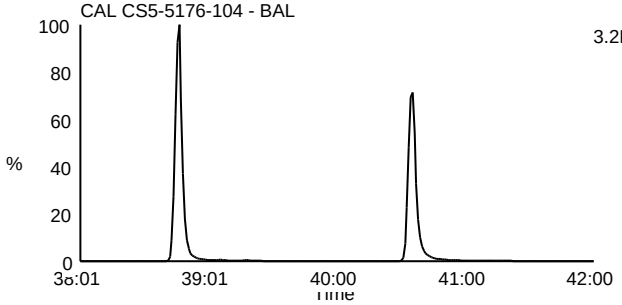
Data File: U70921A_18 G4 C3 - 407.7818
CAL CS5-5176-104 - BAL



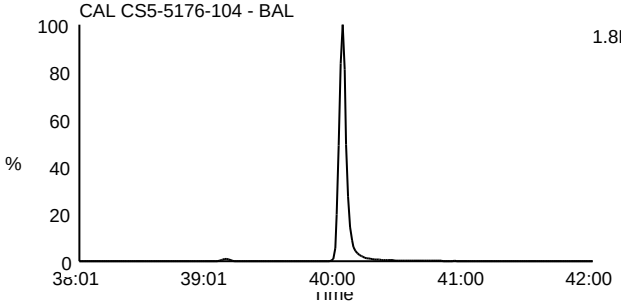
Data File: U70921A_18 G4 C8 - 423.7767
CAL CS5-5176-104 - BAL



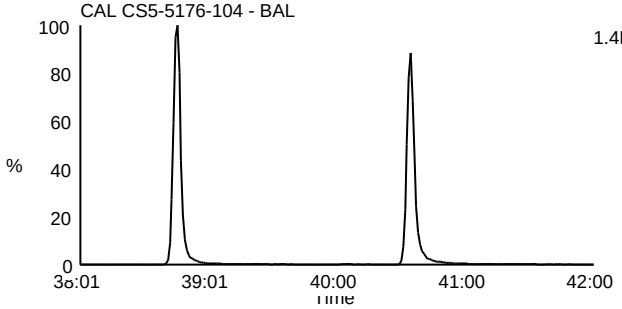
Data File: U70921A_18 G4 C4 - 409.7788
CAL CS5-5176-104 - BAL



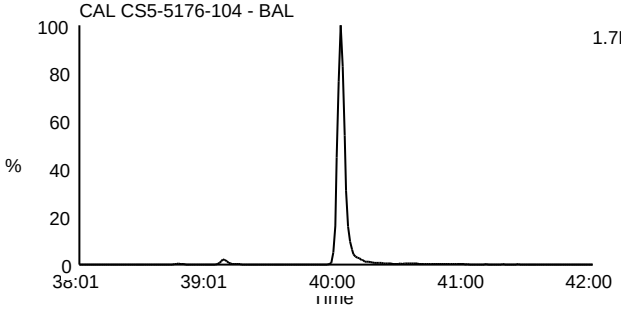
Data File: U70921A_18 G4 C9 - 425.7737
CAL CS5-5176-104 - BAL



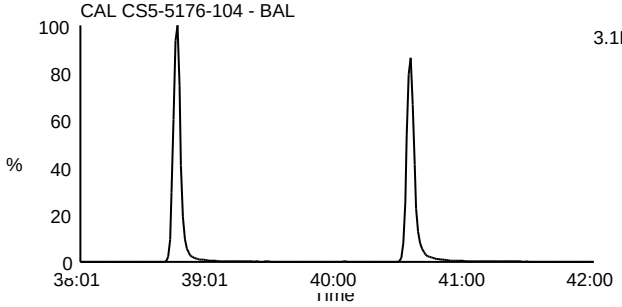
Data File: U70921A_18 G4 C6 - 417.825
CAL CS5-5176-104 - BAL



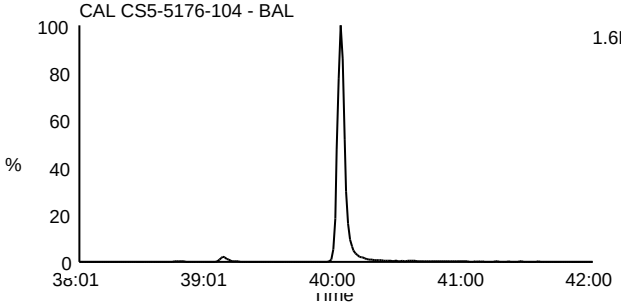
Data File: U70921A_18 G4 C11 - 435.8169
CAL CS5-5176-104 - BAL



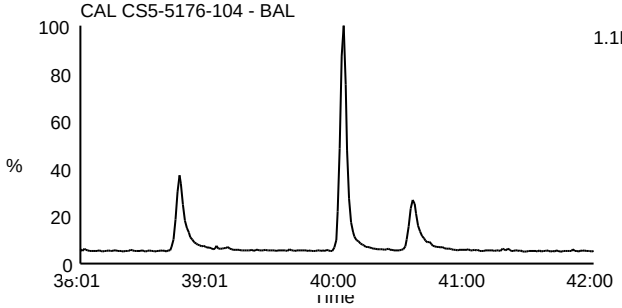
Data File: U70921A_18 G4 C7 - 419.822
CAL CS5-5176-104 - BAL



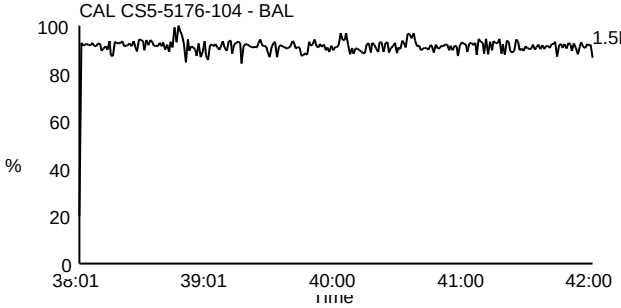
Data File: U70921A_18 G4 C12 - 437.814
CAL CS5-5176-104 - BAL



Data File: U70921A_18 G4 C13 - 479.7165
CAL CS5-5176-104 - BAL



Data File: U70921A_18 G4 C1 - 380.976
CAL CS5-5176-104 - BAL

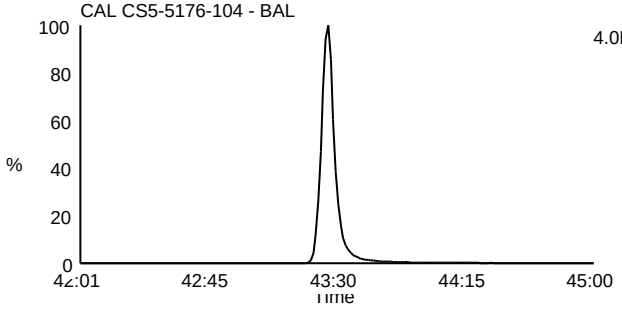


Homologue Group: Octas

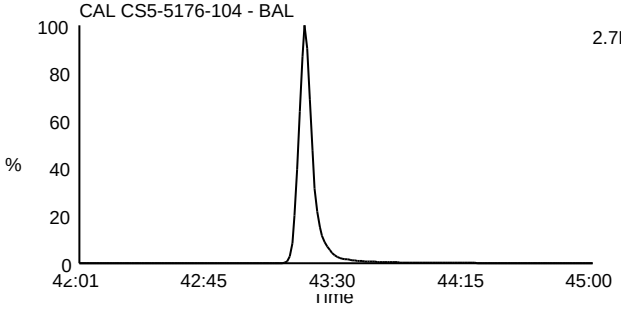
Data File Name: U70921A_18
Date Acquired: 9/22/2007
Sample Description: CAL CS5-5176-104 - BAL

Lab Sample ID: 5176-104
Client Sample ID: CS-5
Instrument: 10MSHR06 (U)

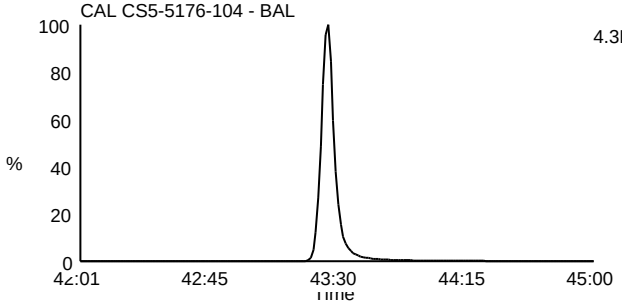
Data File: U70921A_18 G5 C4 - 441.7428
CAL CS5-5176-104 - BAL



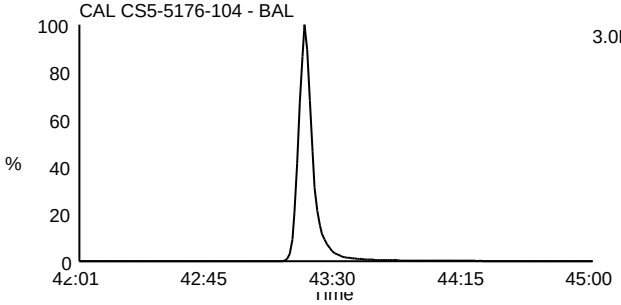
Data File: U70921A_18 G5 C8 - 457.7377
CAL CS5-5176-104 - BAL



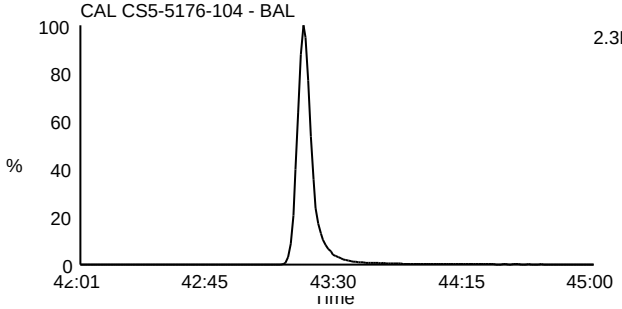
Data File: U70921A_18 G5 C5 - 443.7398
CAL CS5-5176-104 - BAL



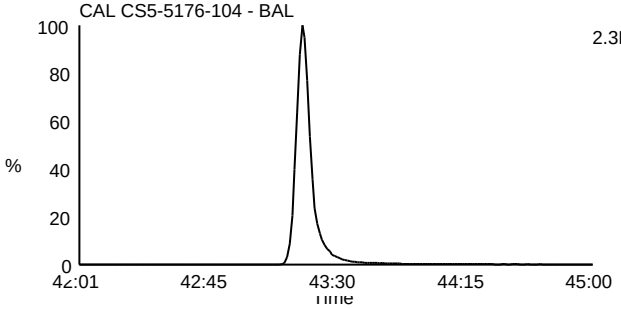
Data File: U70921A_18 G5 C9 - 459.7347
CAL CS5-5176-104 - BAL



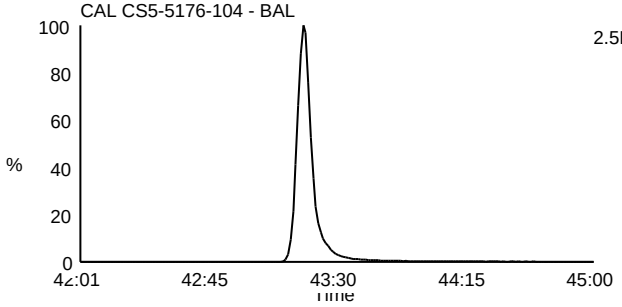
Data File: U70921A_18 G5 C11 - 469.7779
CAL CS5-5176-104 - BAL



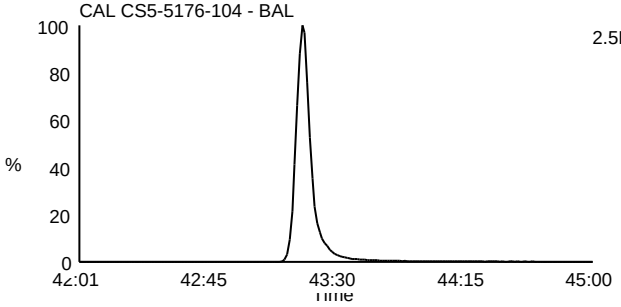
Data File: U70921A_18 G5 C11 - 469.7779
CAL CS5-5176-104 - BAL



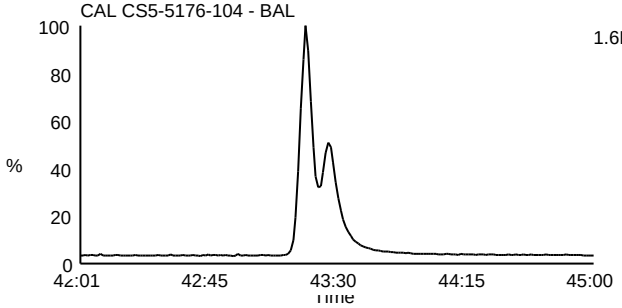
Data File: U70921A_18 G5 C12 - 471.7749
CAL CS5-5176-104 - BAL



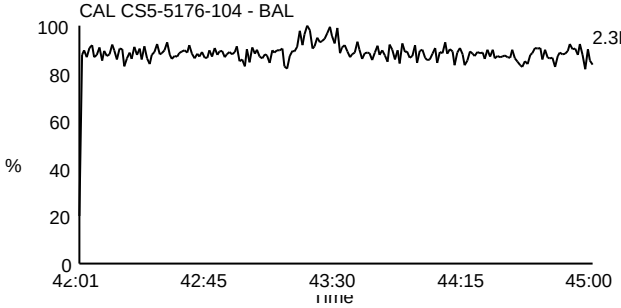
Data File: U70921A_18 G5 C12 - 471.7749
CAL CS5-5176-104 - BAL



Data File: U70921A_18 G5 C13 - 513.6775
CAL CS5-5176-104 - BAL



Data File: U70921A_18 G5 C2 - 430.9728
CAL CS5-5176-104 - BAL

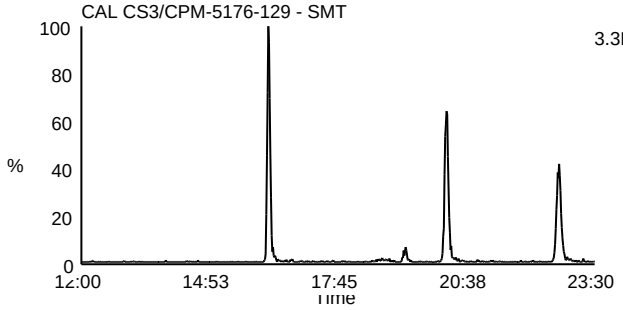


Homologue Group: Tetras

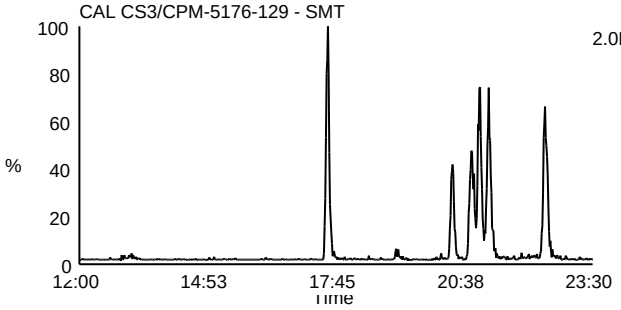
Data File Name: U70926A_03
Date Acquired: 9/26/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

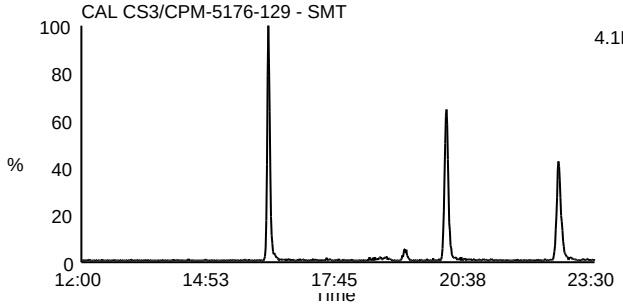
Data File: U70926A_03 G1 C1 - 303.9016
CAL CS3/CPM-5176-129 - SMT



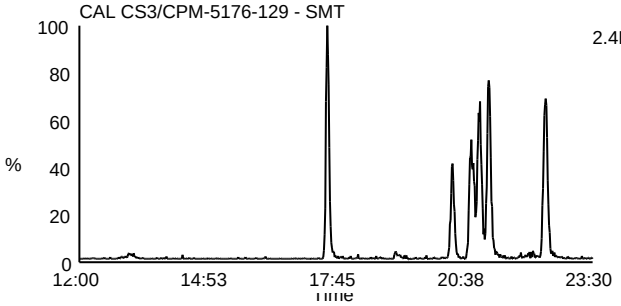
Data File: U70926A_03 G1 C7 - 319.8965
CAL CS3/CPM-5176-129 - SMT



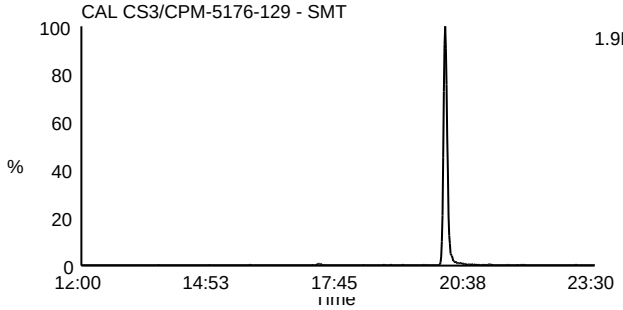
Data File: U70926A_03 G1 C2 - 305.8987
CAL CS3/CPM-5176-129 - SMT



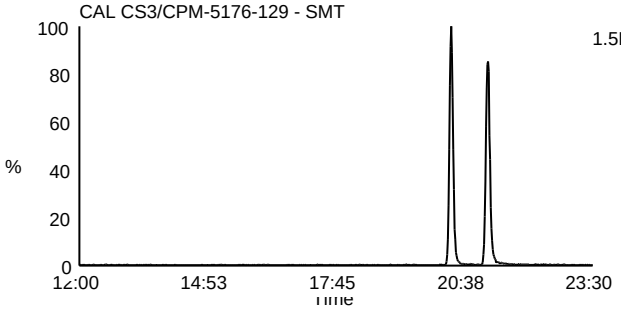
Data File: U70926A_03 G1 C8 - 321.8936
CAL CS3/CPM-5176-129 - SMT



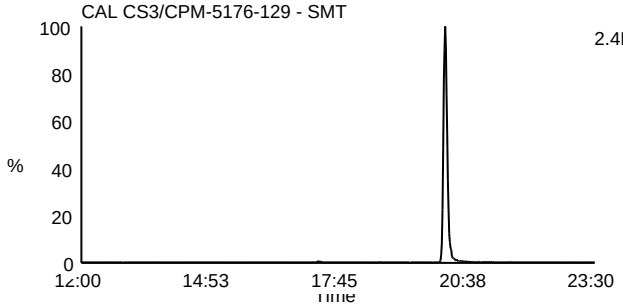
Data File: U70926A_03 G1 C3 - 315.9418
CAL CS3/CPM-5176-129 - SMT



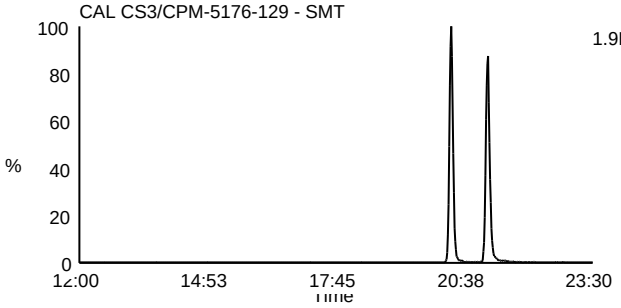
Data File: U70926A_03 G1 C10 - 331.9367
CAL CS3/CPM-5176-129 - SMT



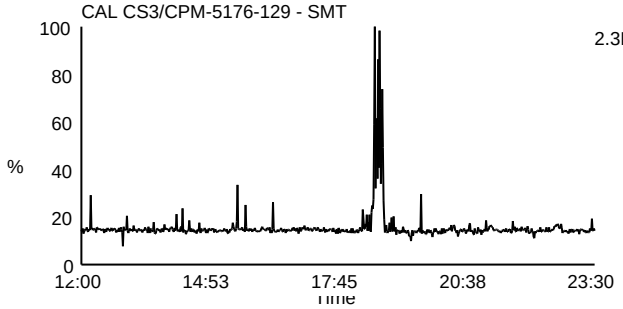
Data File: U70926A_03 G1 C4 - 317.9389
CAL CS3/CPM-5176-129 - SMT



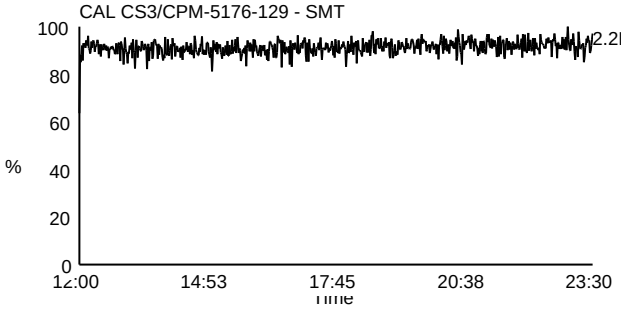
Data File: U70926A_03 G1 C11 - 333.9338
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_03 G1 C14 - 375.8364
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_03 G1 C5 - 318.9792
CAL CS3/CPM-5176-129 - SMT

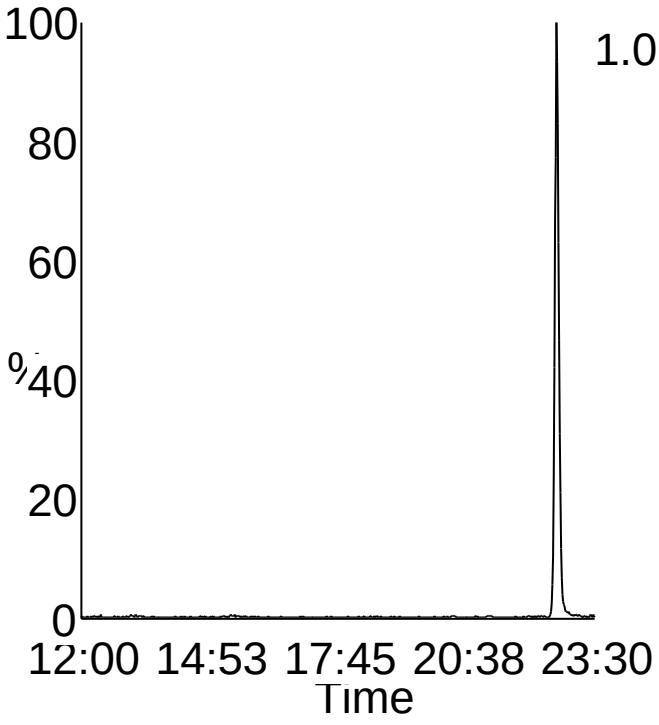


Homologue Group: Penta & Cleanup

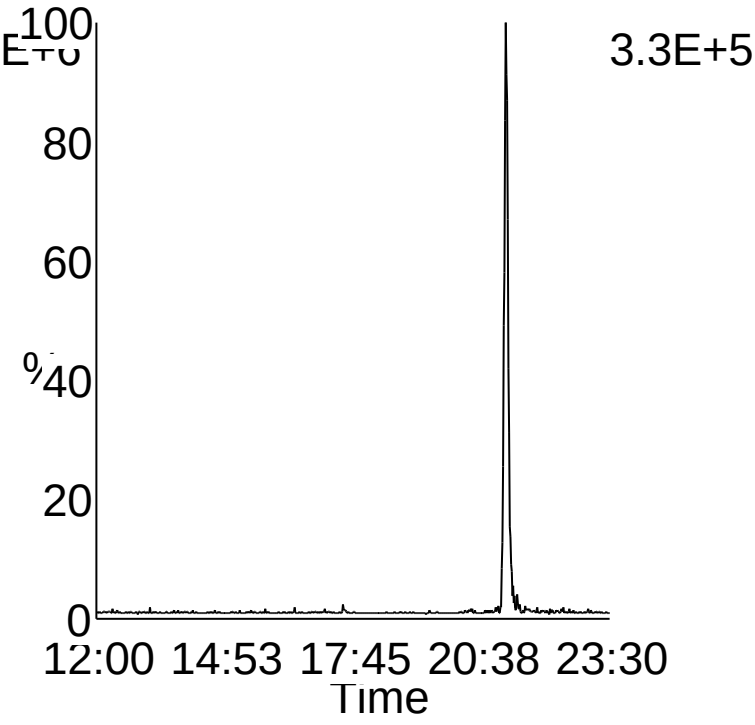
Data File Name: U70926A_03
Date Acquired: 9/26/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

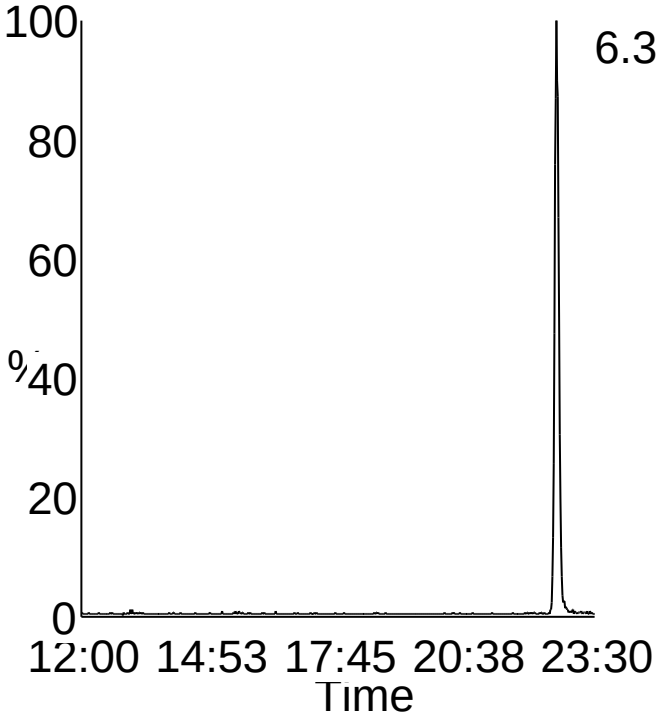
Data File: U70926A_03 G1 C12 - 339.8597
CAL CS3/CPM-5176-129 - SMT



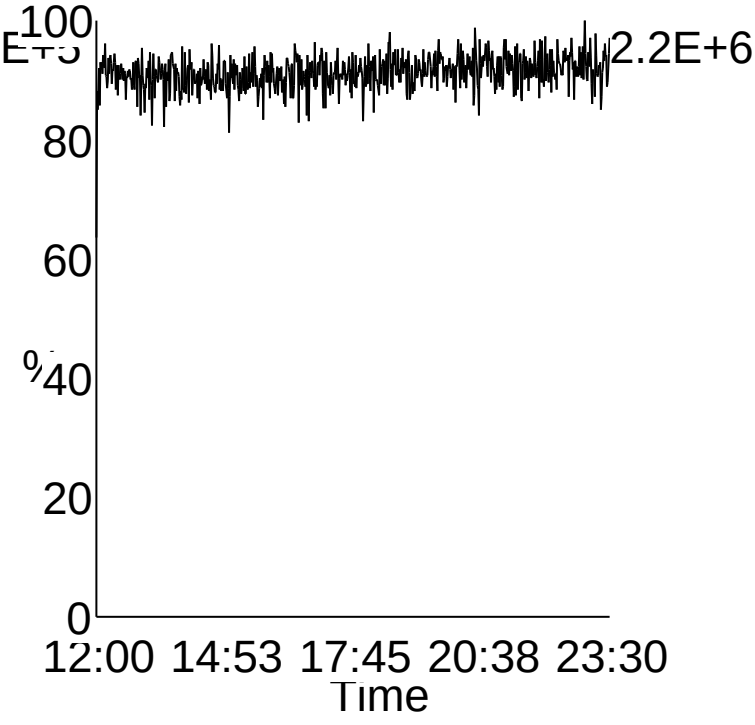
Data File: U70926A_03 G1 C9 - 327.8847
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_03 G1 C13 - 341.8567
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_03 G1 C5 - 318.9792
CAL CS3/CPM-5176-129 - SMT

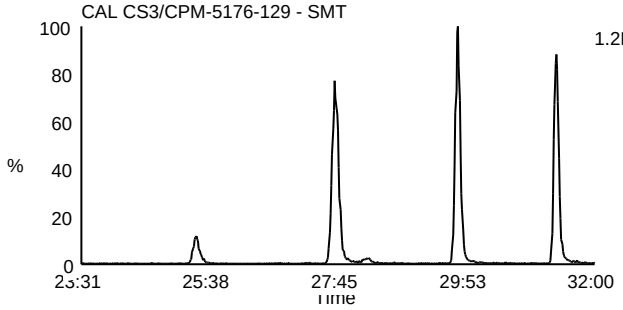


Homologue Group: Pentas

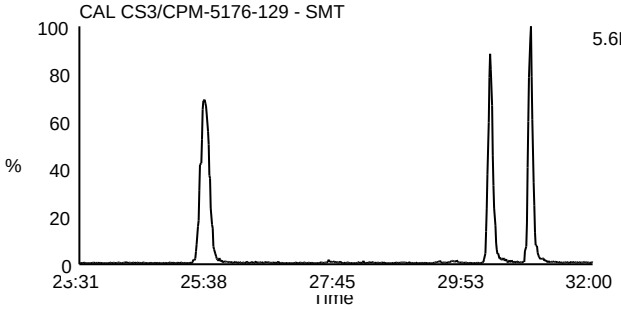
Data File Name: U70926A_03
Date Acquired: 9/26/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

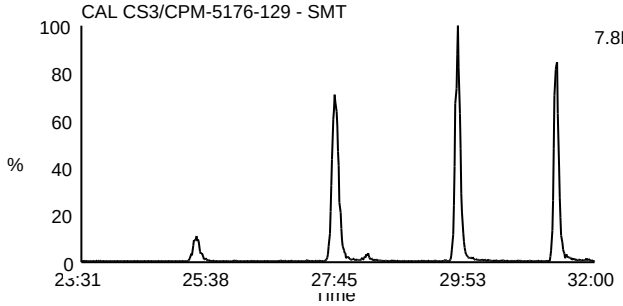
Data File: U70926A_03 G2 C1 - 339.8597
CAL CS3/CPM-5176-129 - SMT



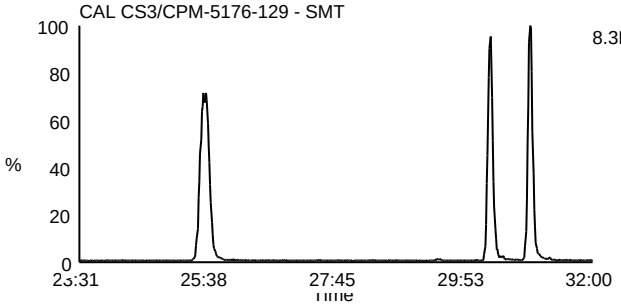
Data File: U70926A_03 G2 C4 - 353.8576
CAL CS3/CPM-5176-129 - SMT



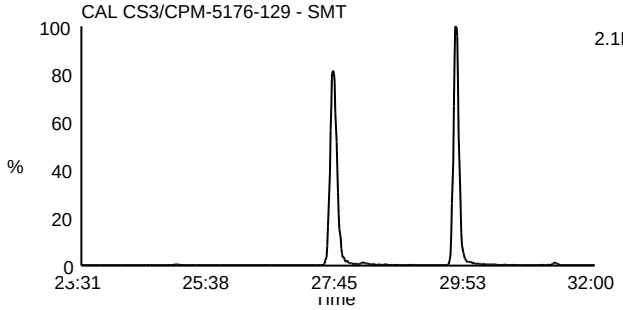
Data File: U70926A_03 G2 C2 - 341.8567
CAL CS3/CPM-5176-129 - SMT



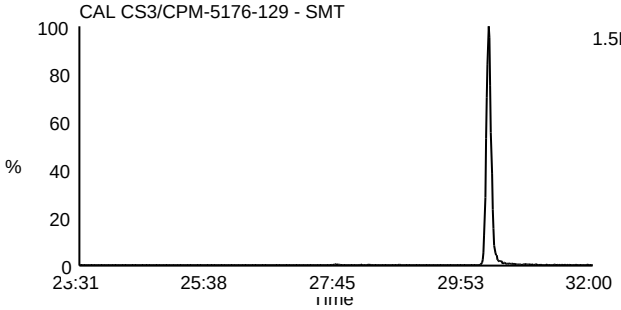
Data File: U70926A_03 G2 C8 - 355.8546
CAL CS3/CPM-5176-129 - SMT



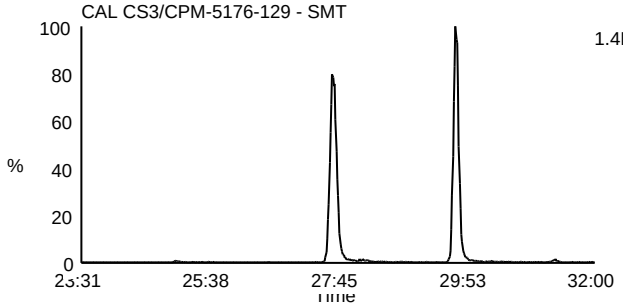
Data File: U70926A_03 G2 C3 - 351.8999
CAL CS3/CPM-5176-129 - SMT



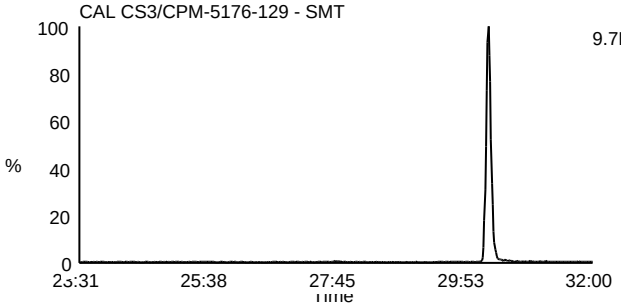
Data File: U70926A_03 G2 C10 - 367.8948
CAL CS3/CPM-5176-129 - SMT



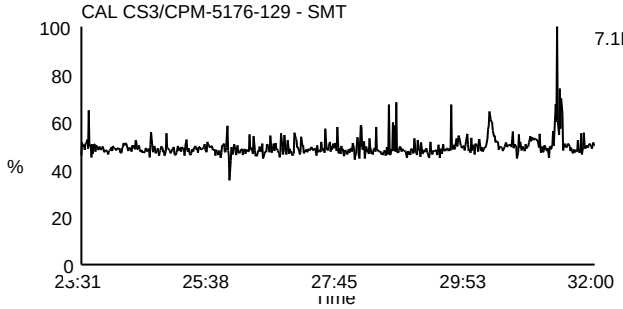
Data File: U70926A_03 G2 C5 - 353.8969
CAL CS3/CPM-5176-129 - SMT



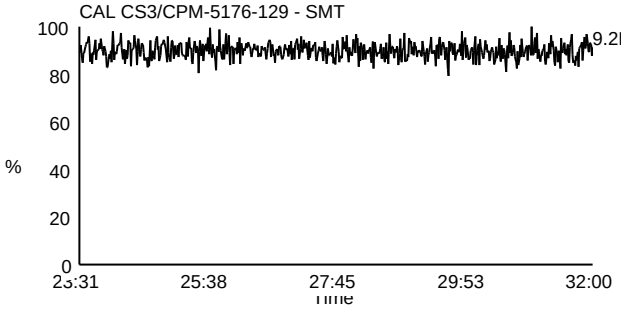
Data File: U70926A_03 G2 C11 - 369.8918
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_03 G2 C12 - 409.7974
CAL CS3/CPM-5176-129 - SMT



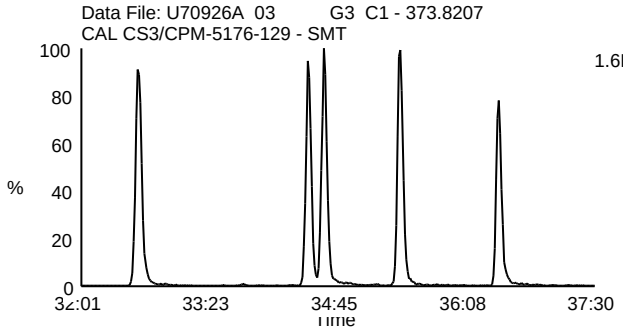
Data File: U70926A_03 G2 C6 - 354.9792
CAL CS3/CPM-5176-129 - SMT

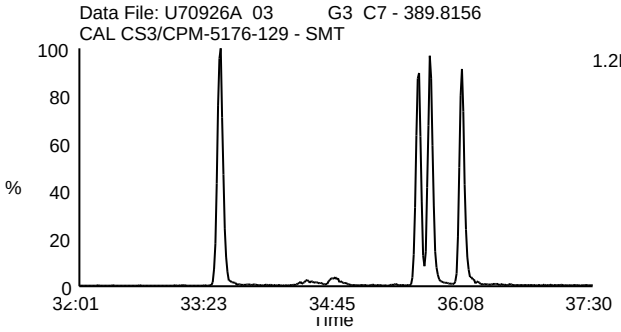


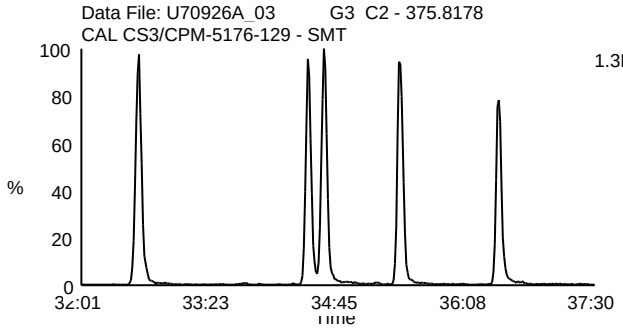
Homologue Group: Hexas

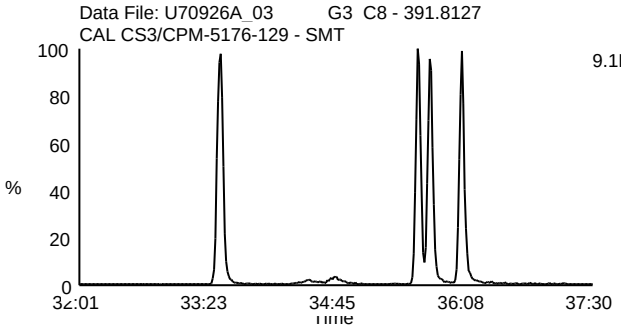
Data File Name: U70926A_03
Date Acquired: 9/26/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

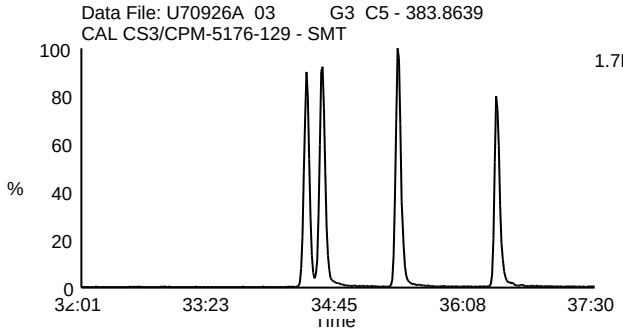
Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

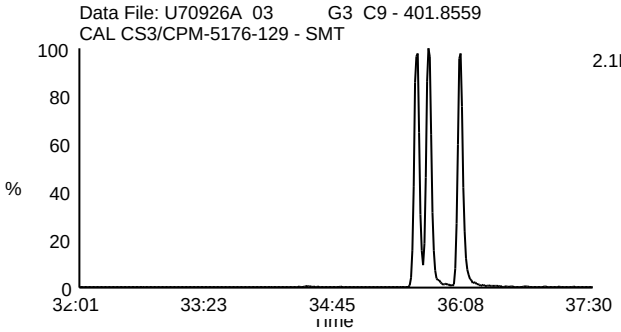


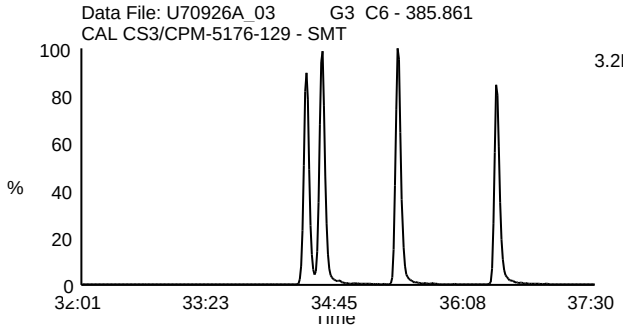


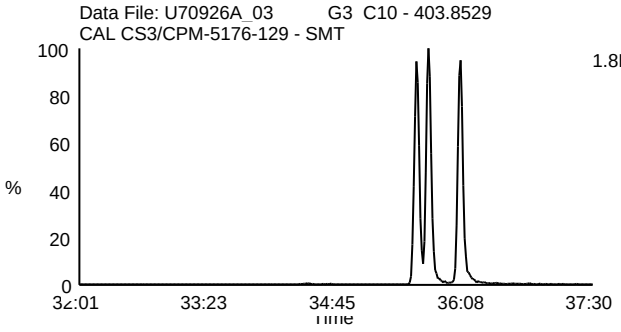


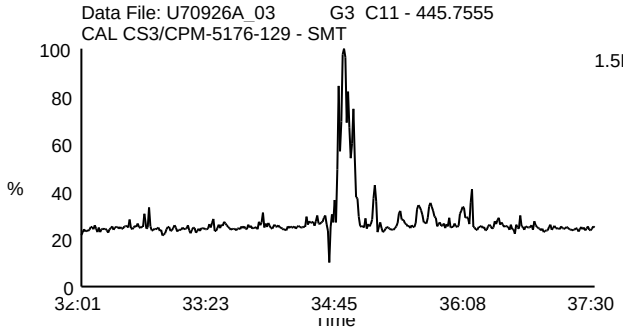


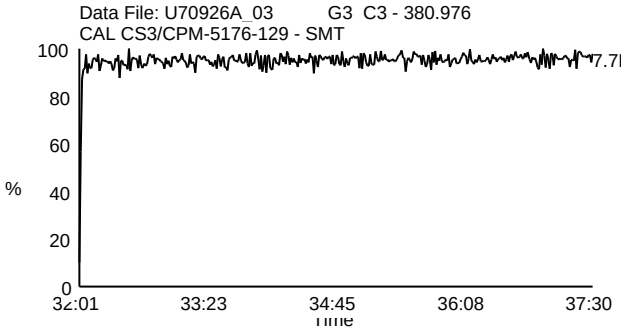








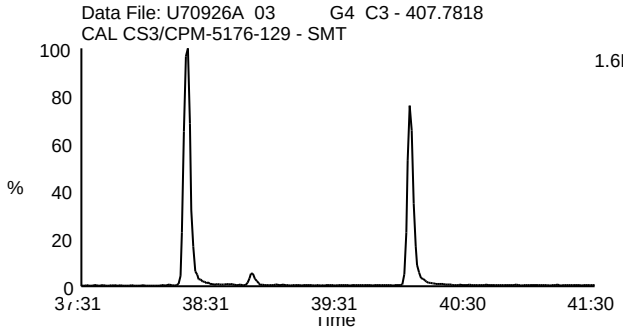


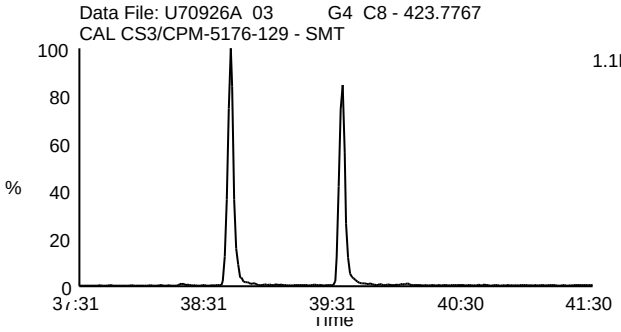


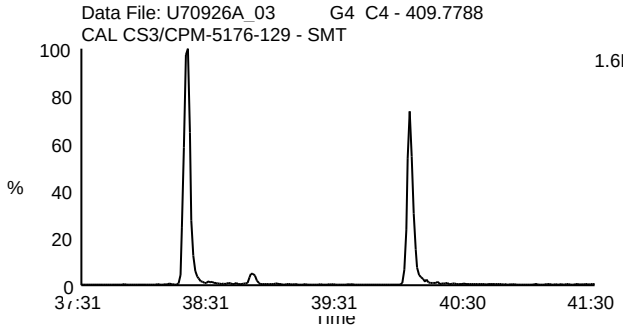
Homologue Group: Heptas

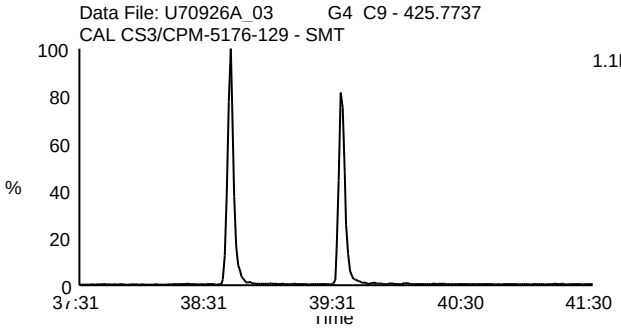
Data File Name: U70926A_03
Date Acquired: 9/26/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

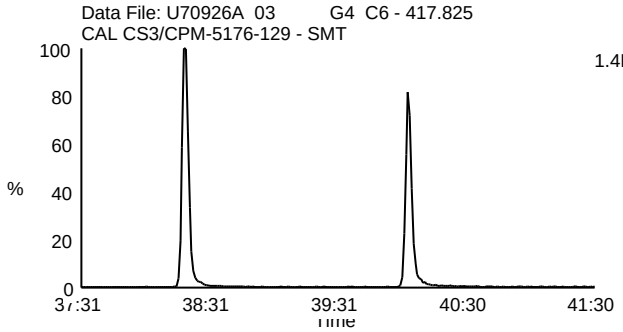
Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

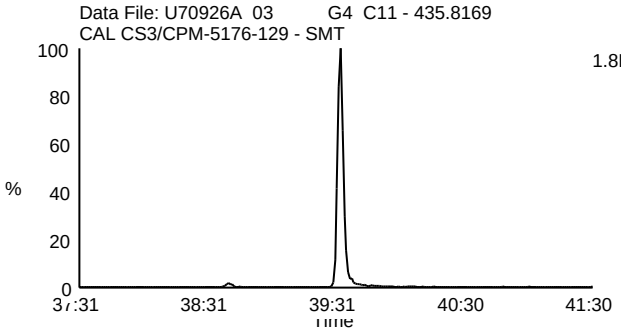


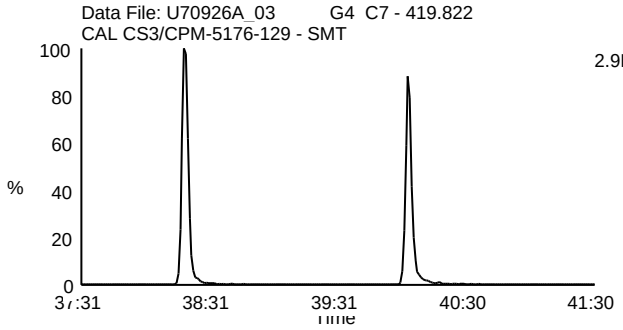


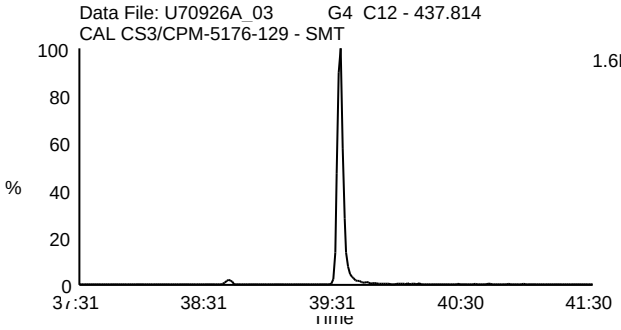


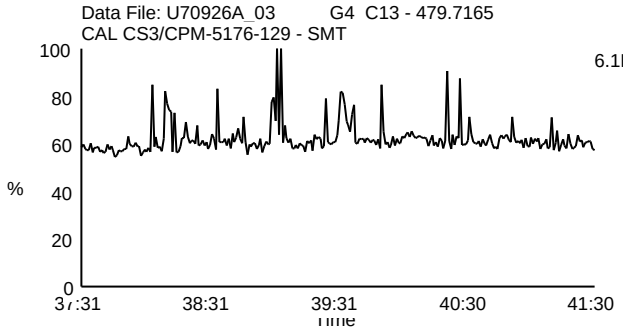


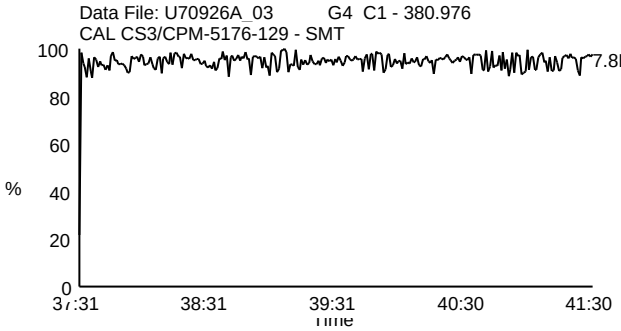










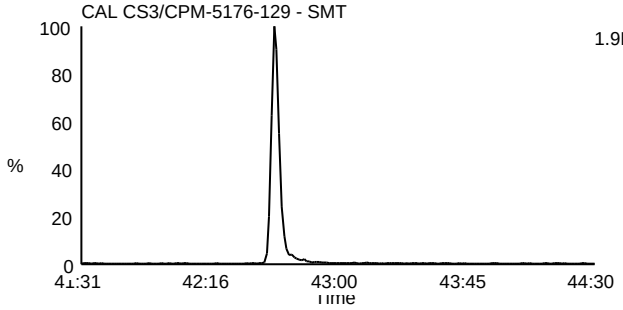


Homologue Group: Octas

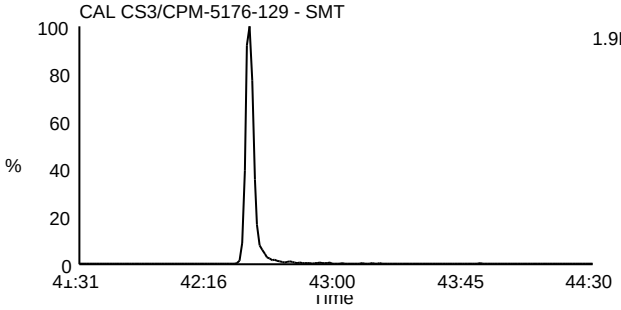
Data File Name: U70926A_03
Date Acquired: 9/26/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

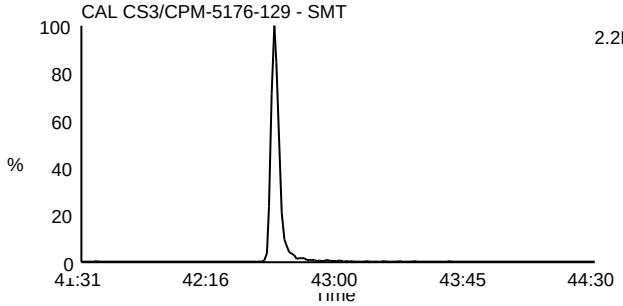
Data File: U70926A_03 G5 C4 - 441.7428
CAL CS3/CPM-5176-129 - SMT



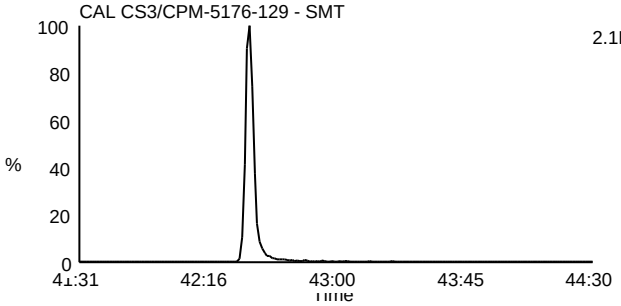
Data File: U70926A_03 G5 C8 - 457.7377
CAL CS3/CPM-5176-129 - SMT



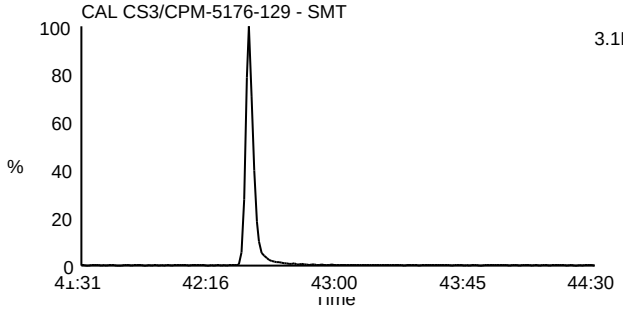
Data File: U70926A_03 G5 C5 - 443.7398
CAL CS3/CPM-5176-129 - SMT



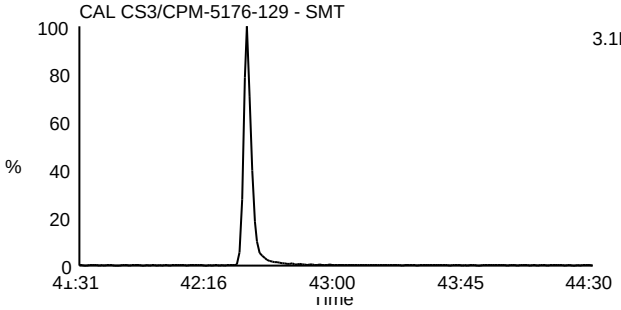
Data File: U70926A_03 G5 C9 - 459.7347
CAL CS3/CPM-5176-129 - SMT



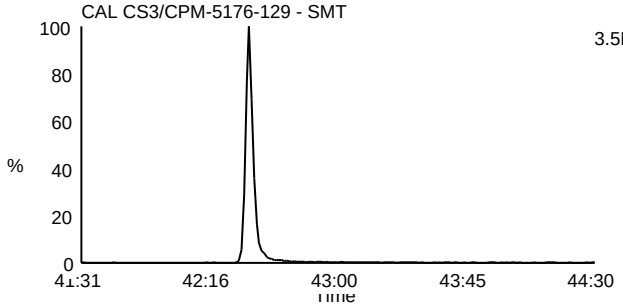
Data File: U70926A_03 G5 C11 - 469.7779
CAL CS3/CPM-5176-129 - SMT



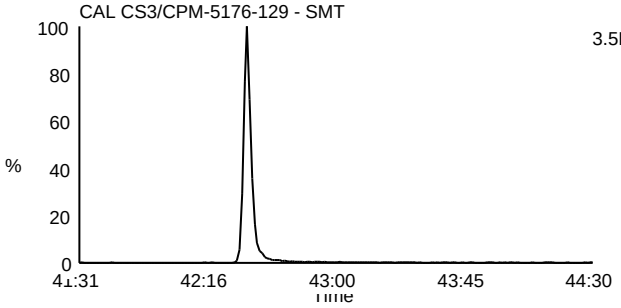
Data File: U70926A_03 G5 C11 - 469.7779
CAL CS3/CPM-5176-129 - SMT



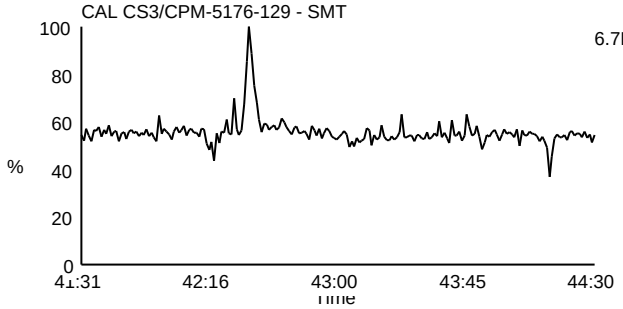
Data File: U70926A_03 G5 C12 - 471.7749
CAL CS3/CPM-5176-129 - SMT



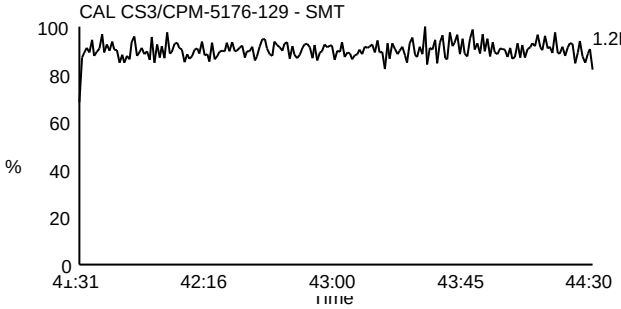
Data File: U70926A_03 G5 C12 - 471.7749
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_03 G5 C13 - 513.6775
CAL CS3/CPM-5176-129 - SMT



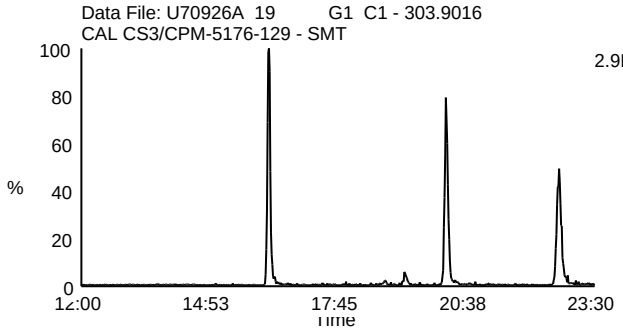
Data File: U70926A_03 G5 C2 - 430.9728
CAL CS3/CPM-5176-129 - SMT

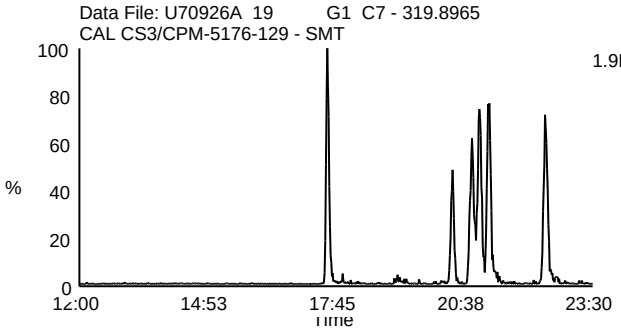


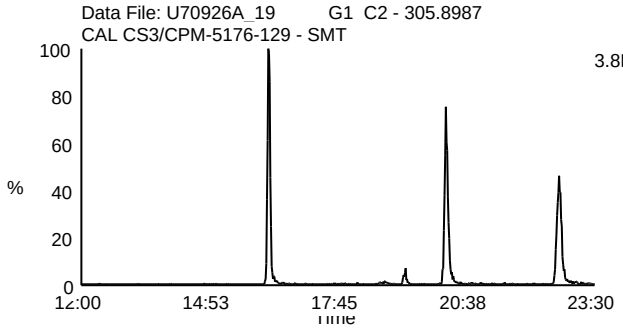
Homologue Group: Tetras

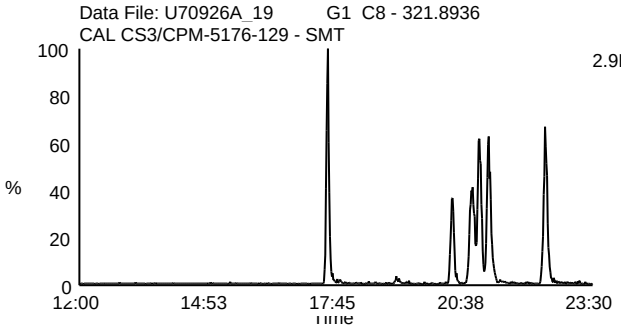
Data File Name: U70926A_19
Date Acquired: 9/26/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

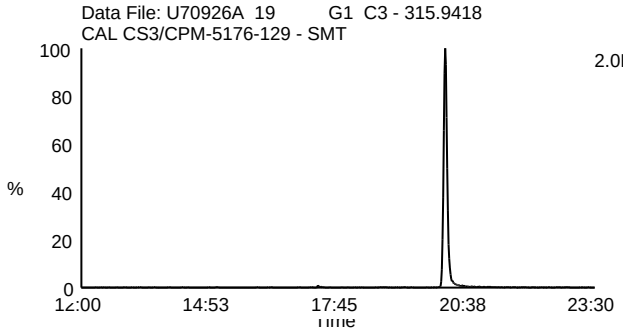
Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

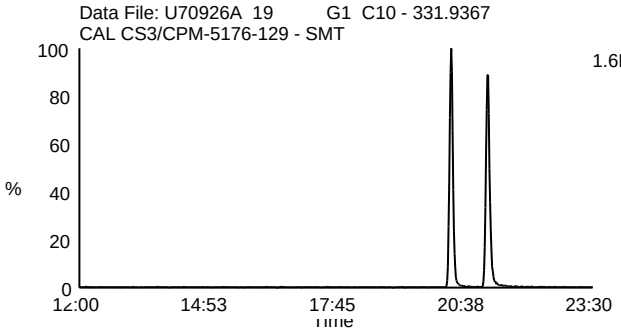


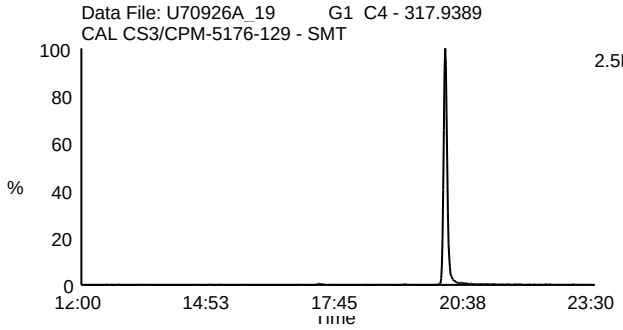


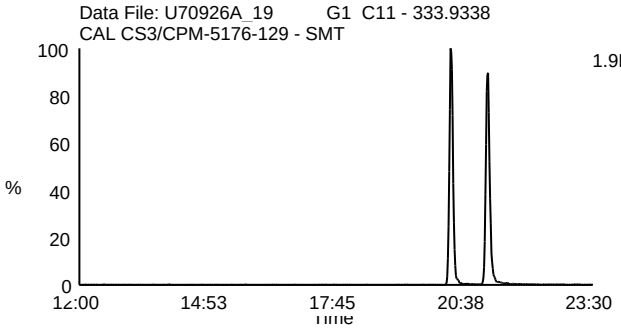


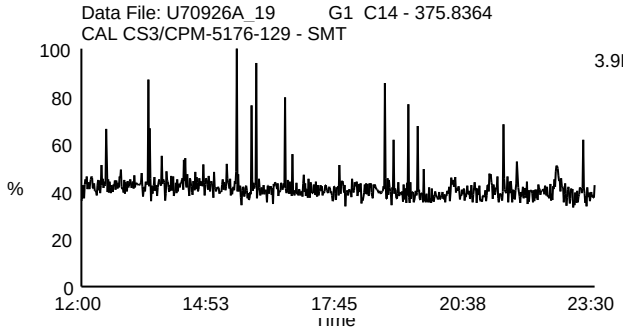


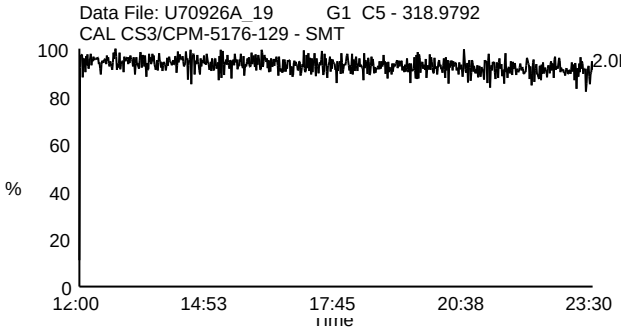










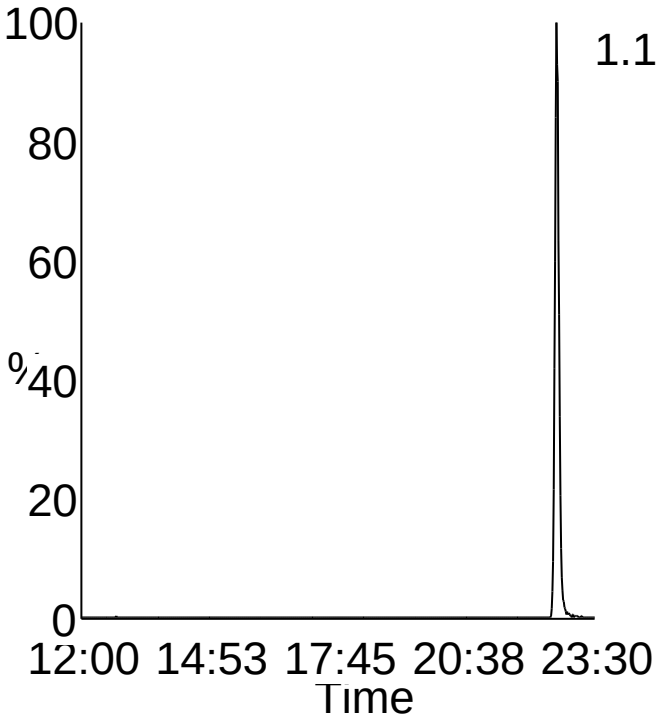


Homologue Group: Penta & Cleanup

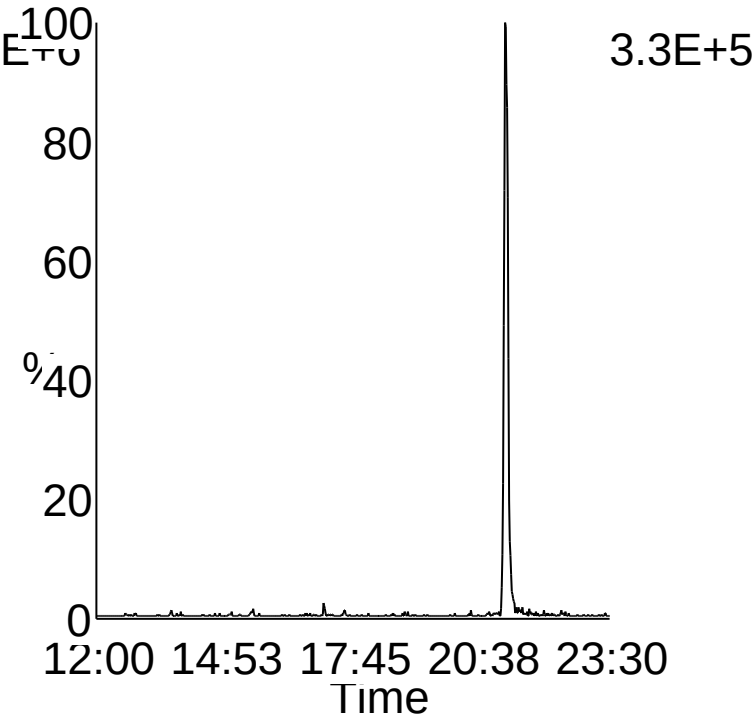
Data File Name: U70926A_19
Date Acquired: 9/26/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

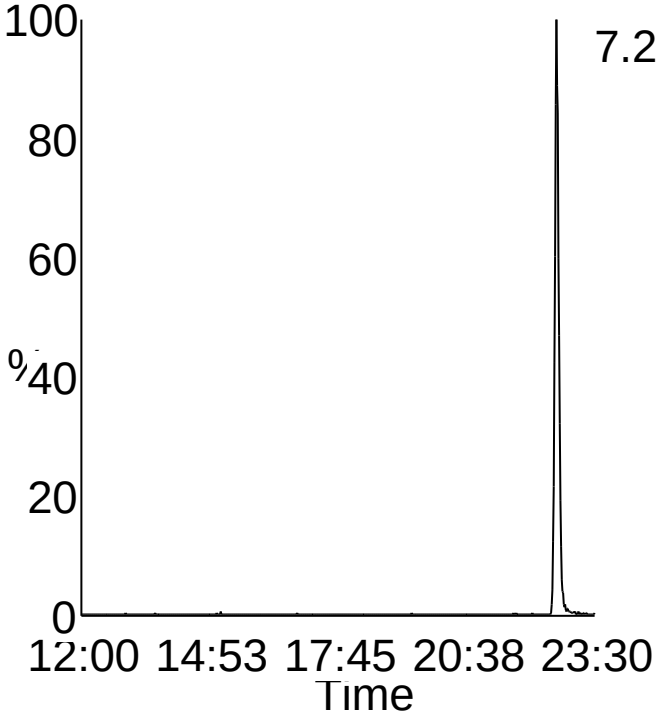
Data File: U70926A_19 C12 - 339.8597
CAL CS3/CPM-5176-129 - SMT



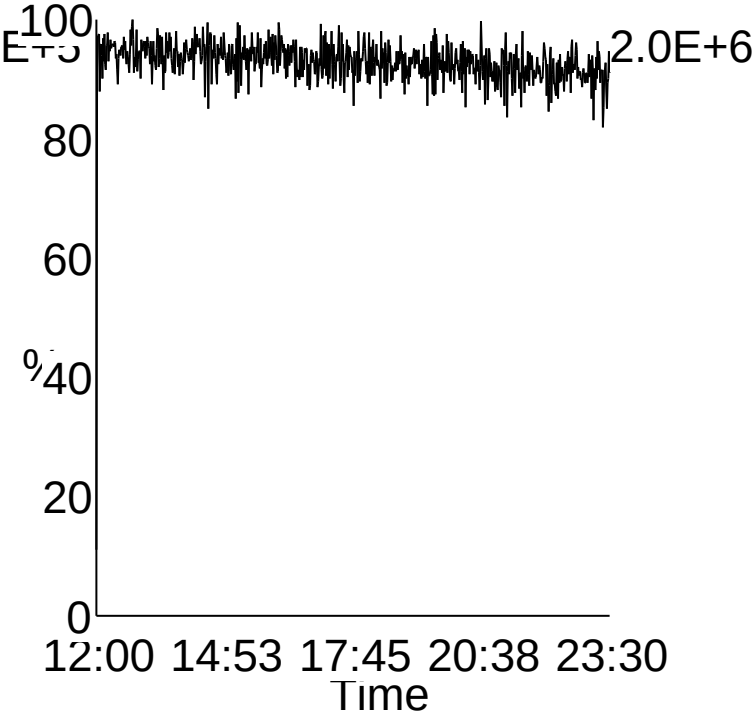
Data File: U70926A_19 C9 - 327.8847
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_19 C13 - 341.8567
CAL CS3/CPM-5176-129 - SMT



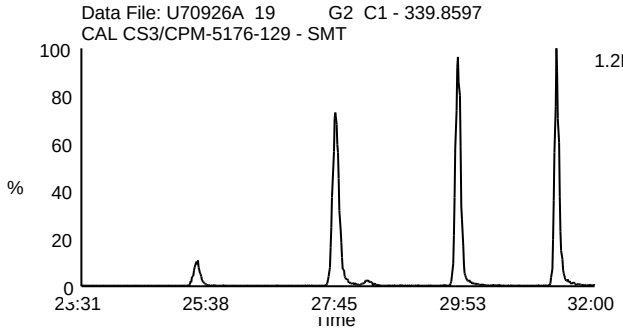
Data File: U70926A_19 C5 - 318.9792
CAL CS3/CPM-5176-129 - SMT

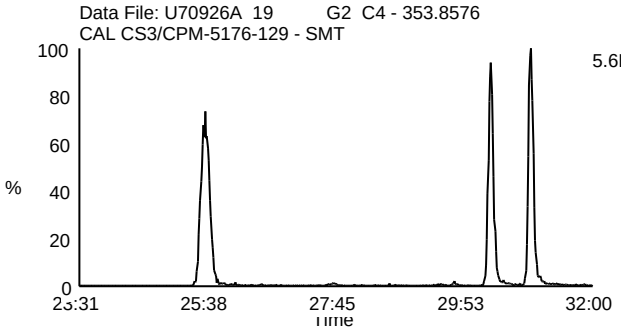


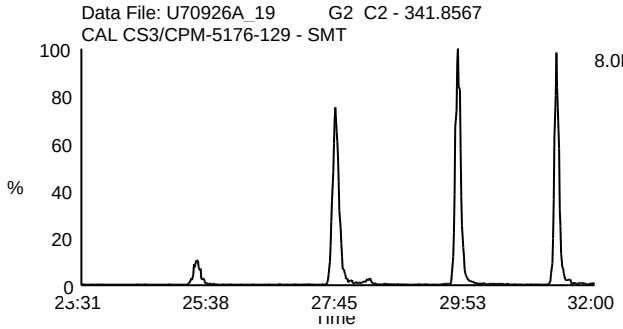
Homologue Group: Pentas

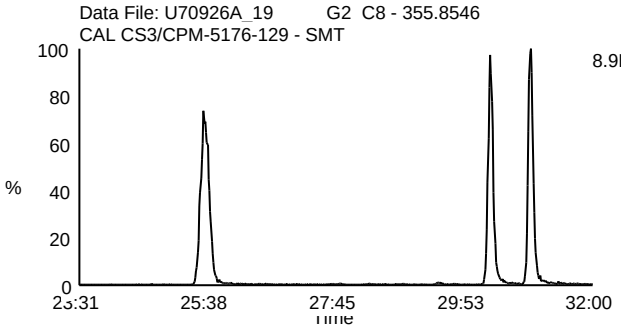
Data File Name: U70926A_19
Date Acquired: 9/26/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

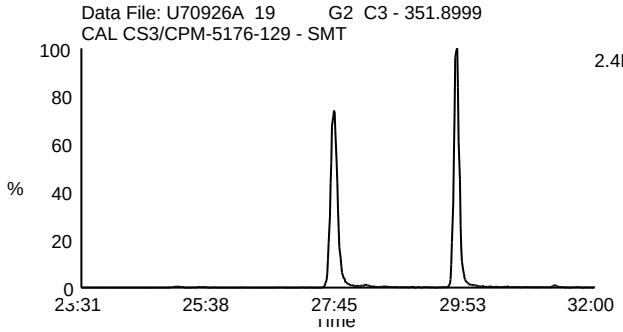
Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

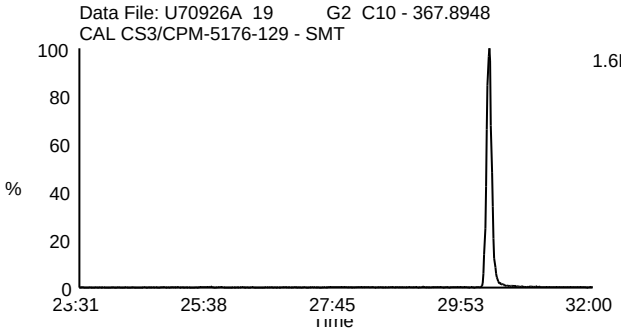


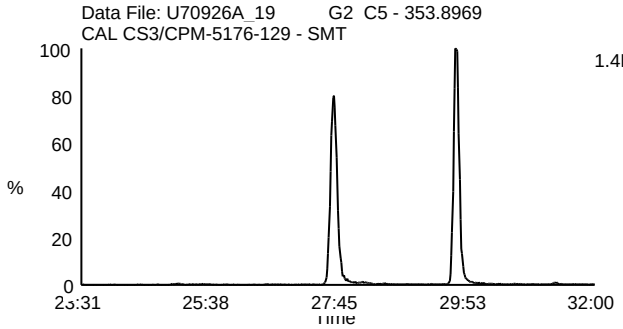


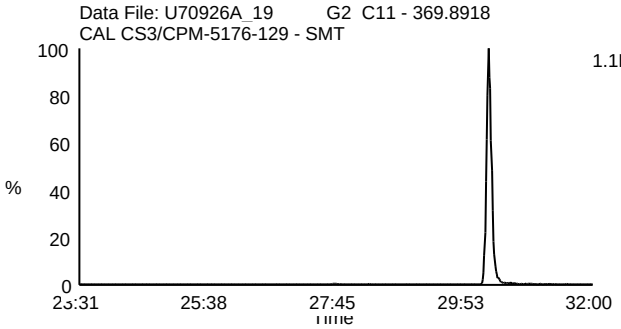


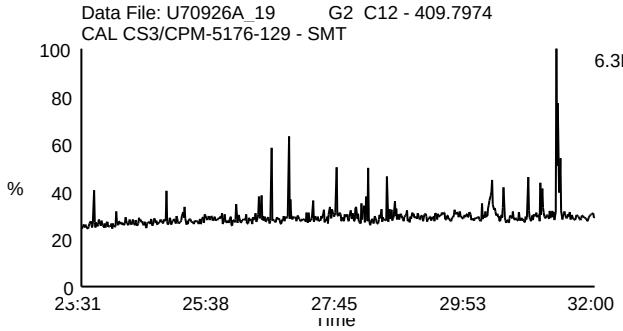


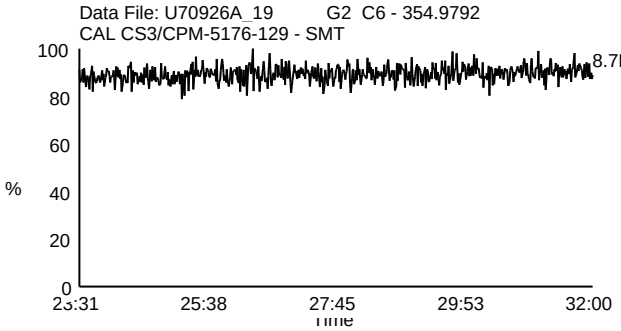










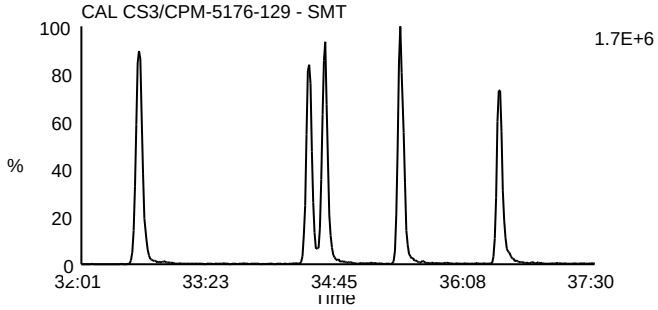


Homologue Group: Hexas

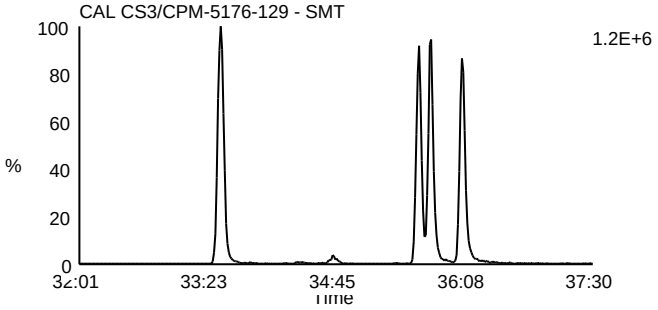
Data File Name: U70926A_19
Date Acquired: 9/26/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

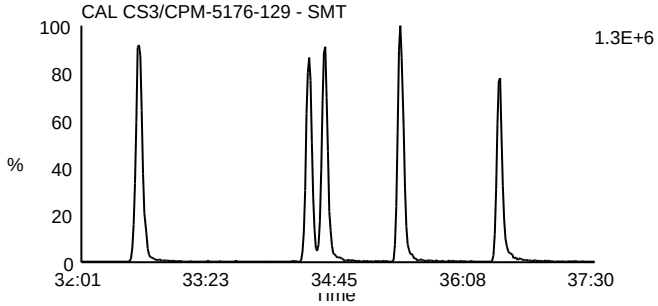
Data File: U70926A_19 G3 C1 - 373.8207
CAL CS3/CPM-5176-129 - SMT



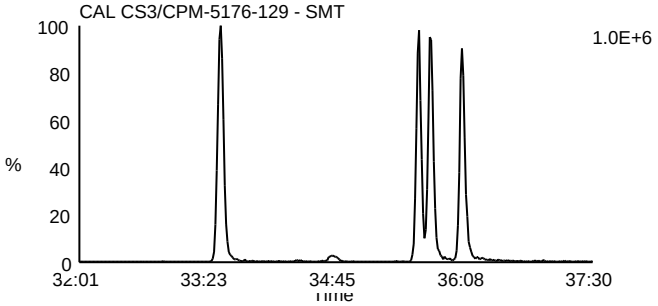
Data File: U70926A_19 G3 C7 - 389.8156
CAL CS3/CPM-5176-129 - SMT



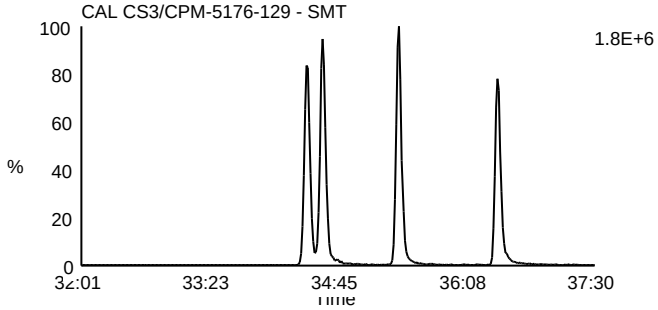
Data File: U70926A_19 G3 C2 - 375.8178
CAL CS3/CPM-5176-129 - SMT



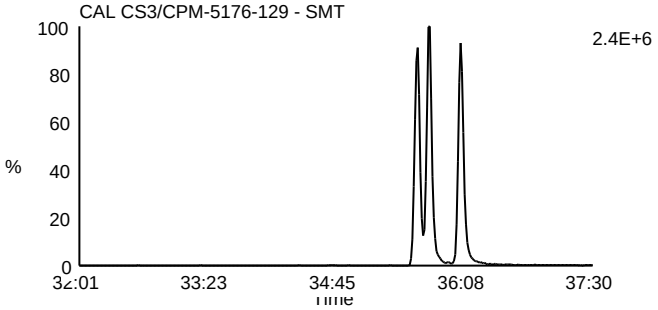
Data File: U70926A_19 G3 C8 - 391.8127
CAL CS3/CPM-5176-129 - SMT



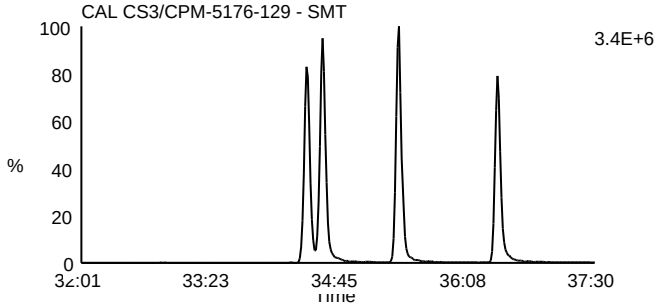
Data File: U70926A_19 G3 C5 - 383.8639
CAL CS3/CPM-5176-129 - SMT



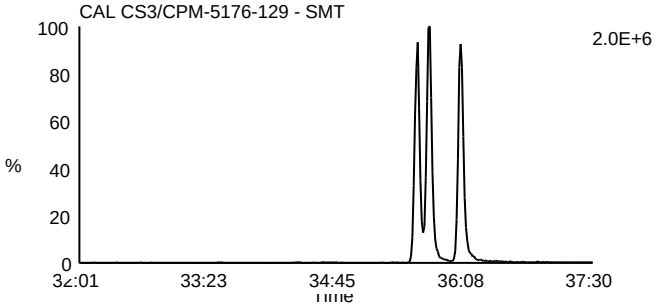
Data File: U70926A_19 G3 C9 - 401.8559
CAL CS3/CPM-5176-129 - SMT



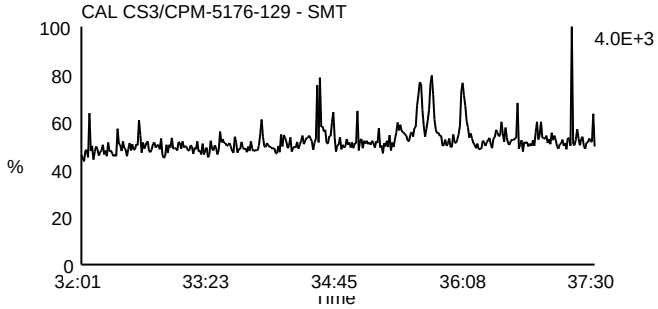
Data File: U70926A_19 G3 C6 - 385.861
CAL CS3/CPM-5176-129 - SMT



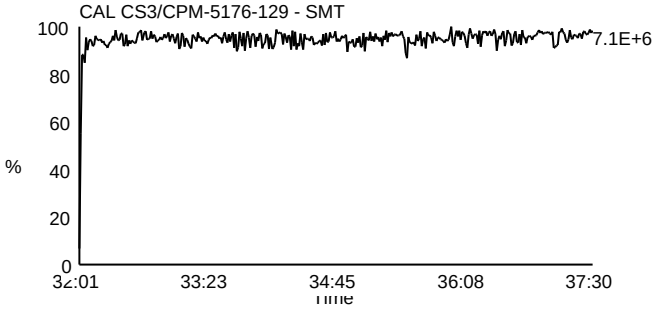
Data File: U70926A_19 G3 C10 - 403.8529
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_19 G3 C11 - 445.7555
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_19 G3 C3 - 380.976
CAL CS3/CPM-5176-129 - SMT

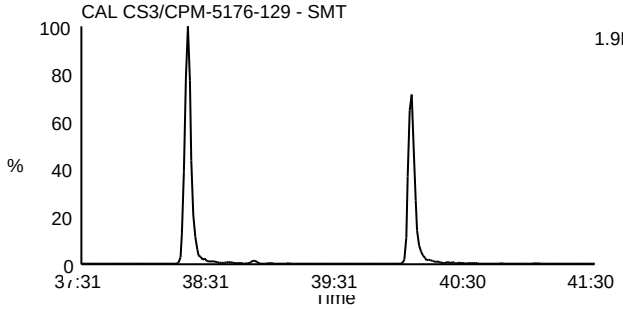


Homologue Group: Heptas

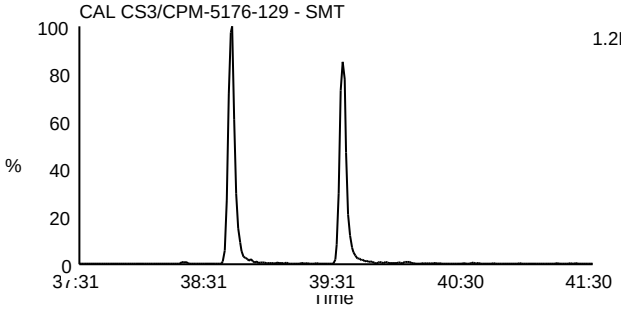
Data File Name: U70926A_19
Date Acquired: 9/26/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

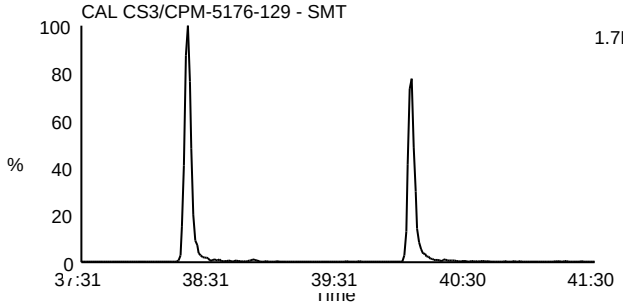
Data File: U70926A_19 G4 C3 - 407.7818
CAL CS3/CPM-5176-129 - SMT



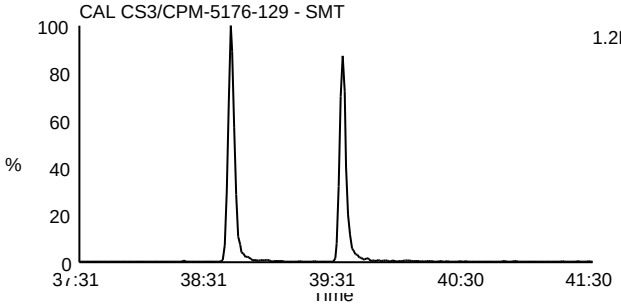
Data File: U70926A_19 G4 C8 - 423.7767
CAL CS3/CPM-5176-129 - SMT



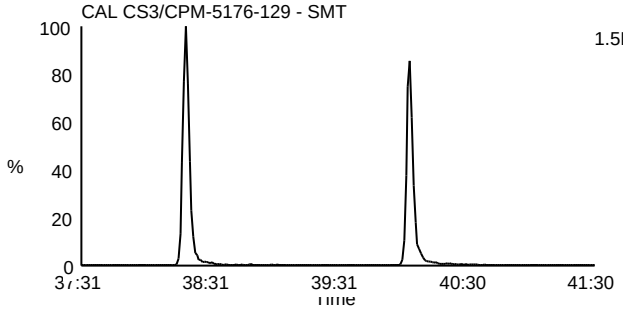
Data File: U70926A_19 G4 C4 - 409.7788
CAL CS3/CPM-5176-129 - SMT



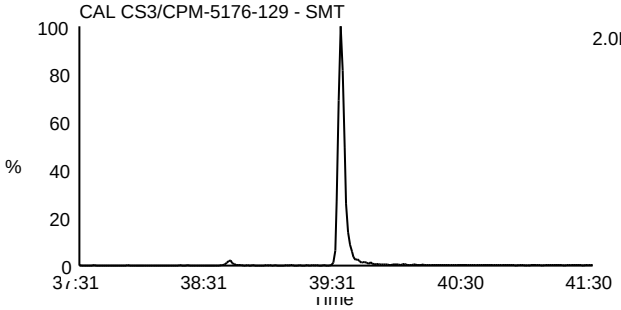
Data File: U70926A_19 G4 C9 - 425.7737
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_19 G4 C6 - 417.825
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_19 G4 C11 - 435.8169
CAL CS3/CPM-5176-129 - SMT



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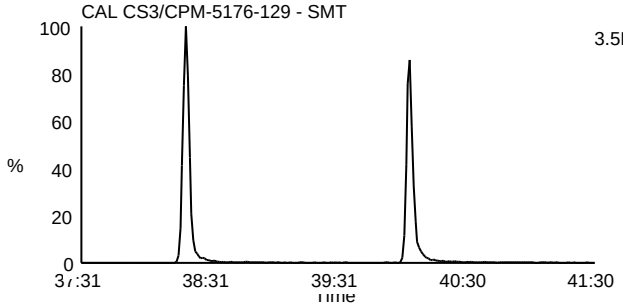
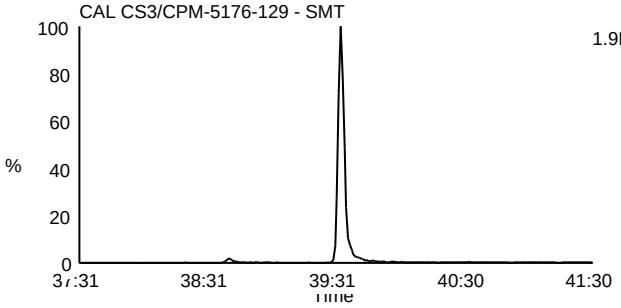
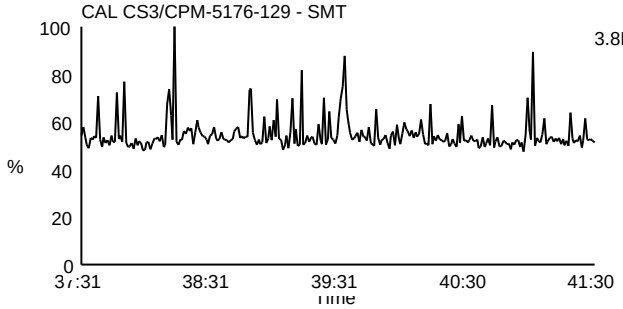
CAL CS3/CPM-5176-129 - SMT



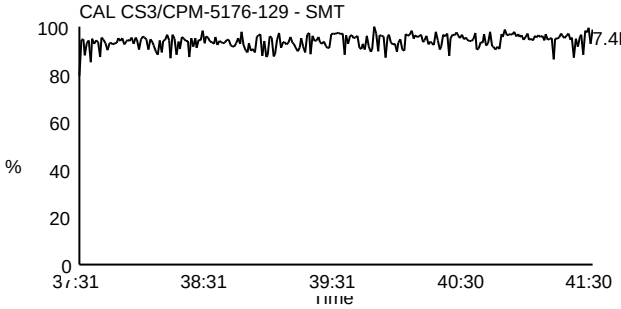
Data File: U70926A_19 G4 C12 - 437.814
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_19 G4 C13 - 479.7165
CAL CS3/CPM-5176-129 - SMT



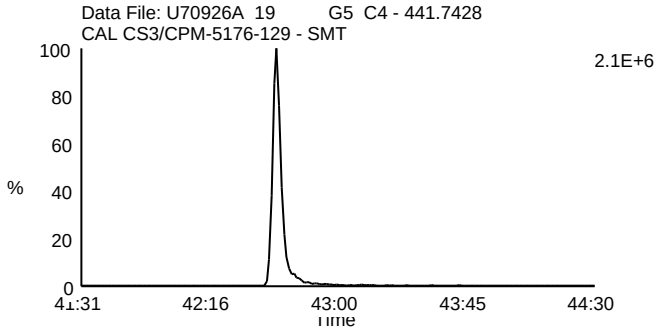
Data File: U70926A_19 G4 C1 - 380.976
CAL CS3/CPM-5176-129 - SMT

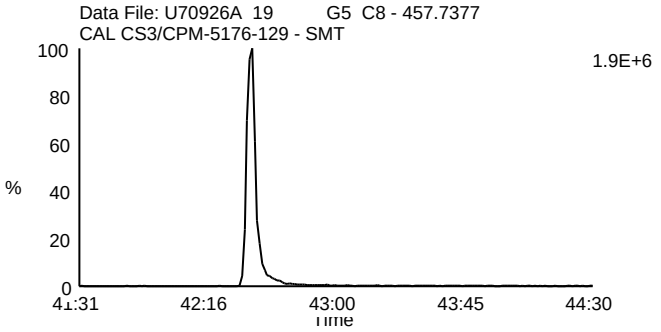


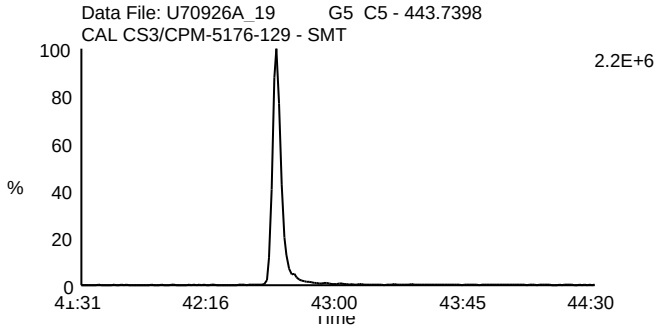
Homologue Group: Octas

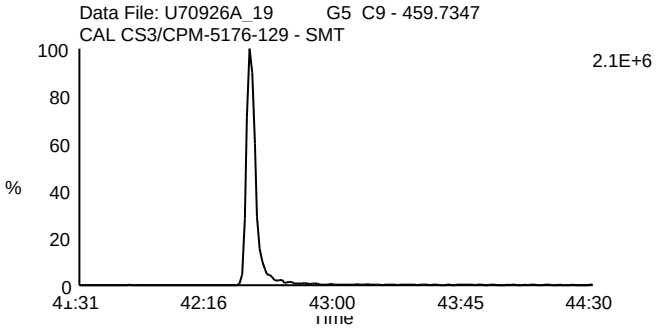
Data File Name: U70926A_19
Date Acquired: 9/26/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

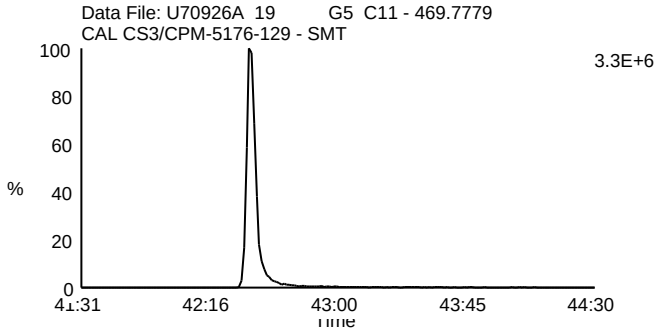
Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

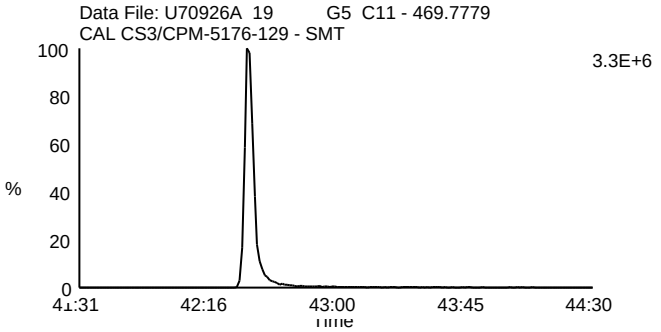


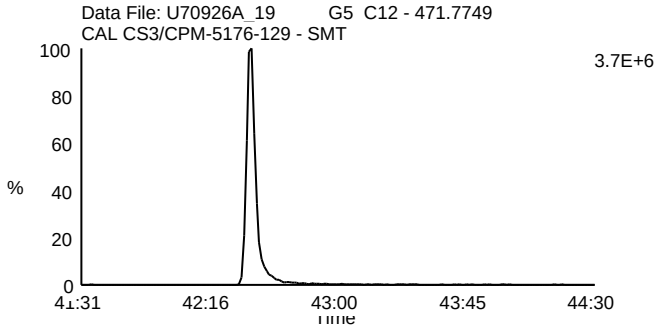


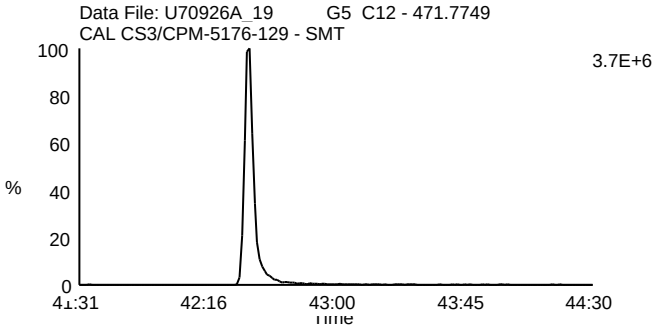


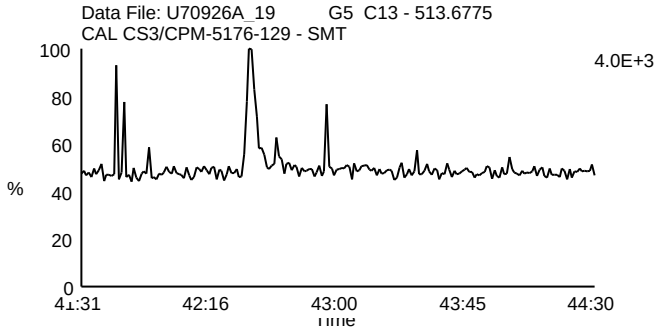


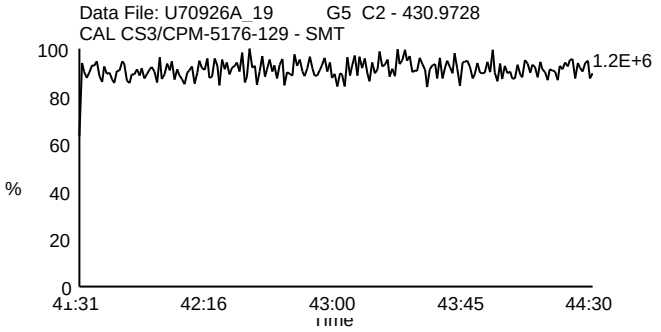










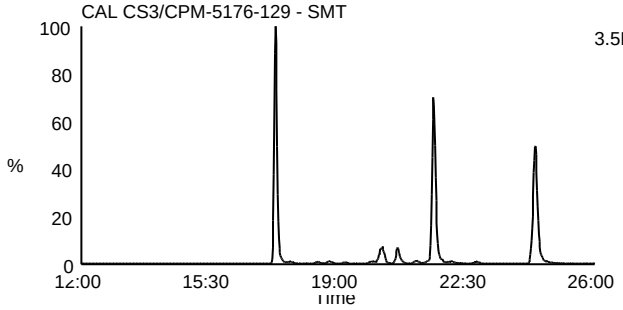


Homologue Group: Tetras

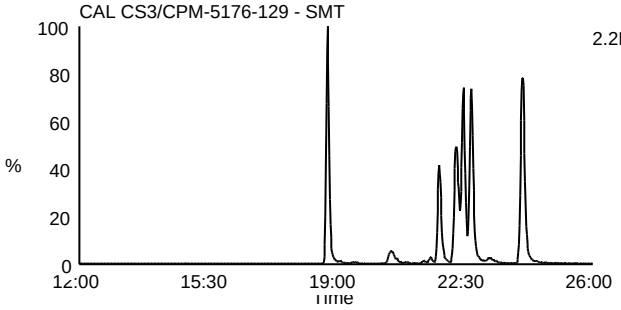
Data File Name: P70927A_02
Date Acquired: 9/27/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR09 (P)

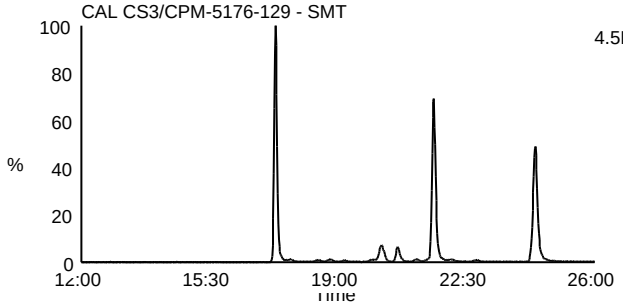
Data File: P70927A_02 G1 C1 - 303.9016
CAL CS3/CPM-5176-129 - SMT



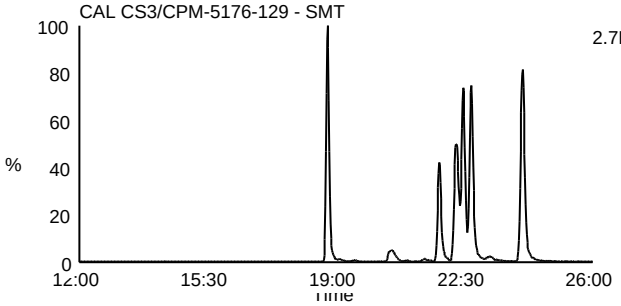
Data File: P70927A_02 G1 C7 - 319.8965
CAL CS3/CPM-5176-129 - SMT



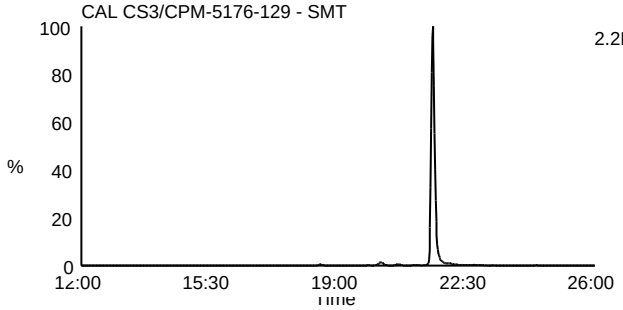
Data File: P70927A_02 G1 C2 - 305.8987
CAL CS3/CPM-5176-129 - SMT



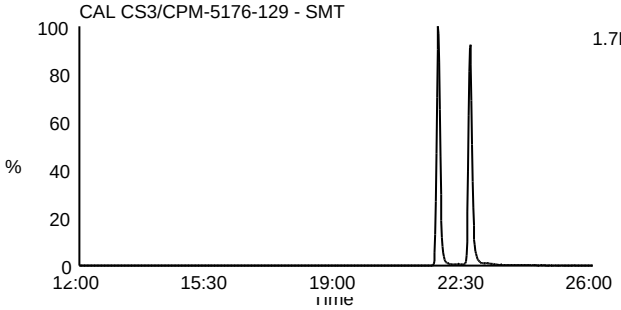
Data File: P70927A_02 G1 C8 - 321.8936
CAL CS3/CPM-5176-129 - SMT



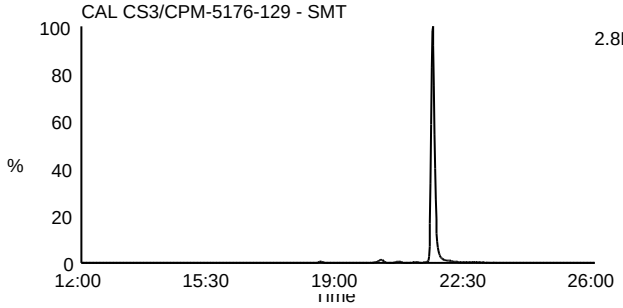
Data File: P70927A_02 G1 C3 - 315.9418
CAL CS3/CPM-5176-129 - SMT



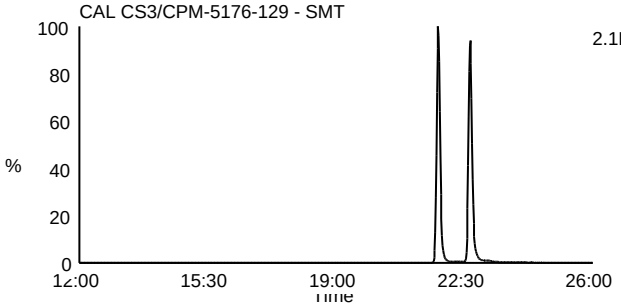
Data File: P70927A_02 G1 C10 - 331.9367
CAL CS3/CPM-5176-129 - SMT



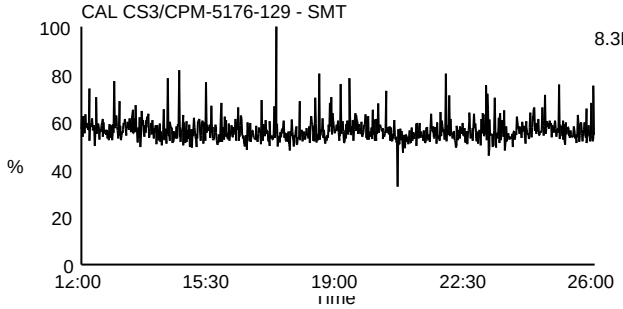
Data File: P70927A_02 G1 C4 - 317.9389
CAL CS3/CPM-5176-129 - SMT



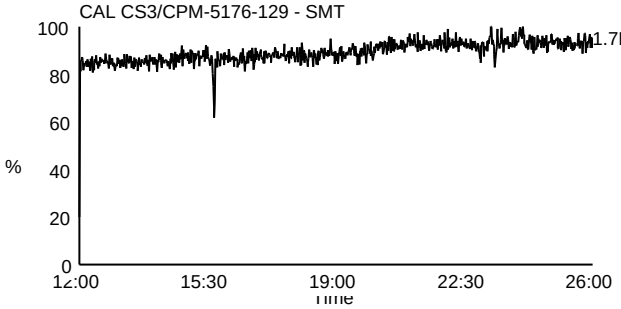
Data File: P70927A_02 G1 C11 - 333.9338
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02 G1 C14 - 375.8364
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02 G1 C5 - 318.9792
CAL CS3/CPM-5176-129 - SMT

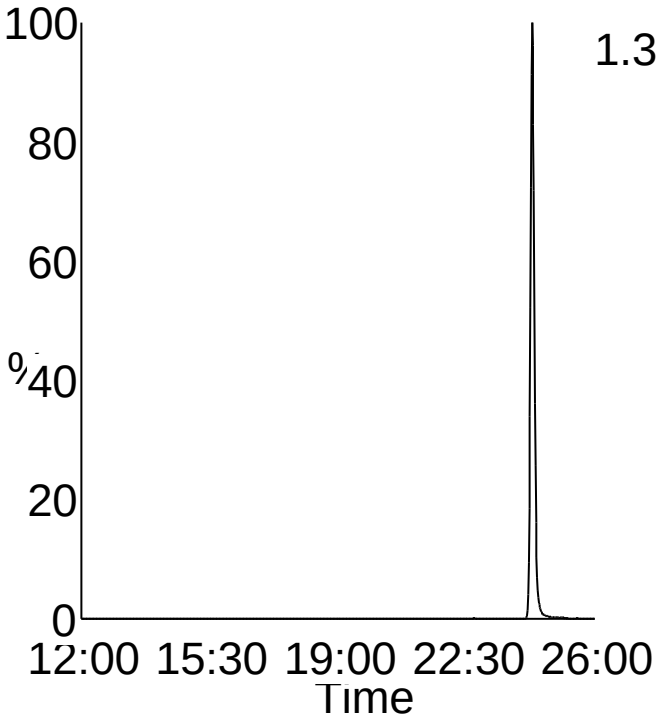


Homologue Group: Penta & Cleanup

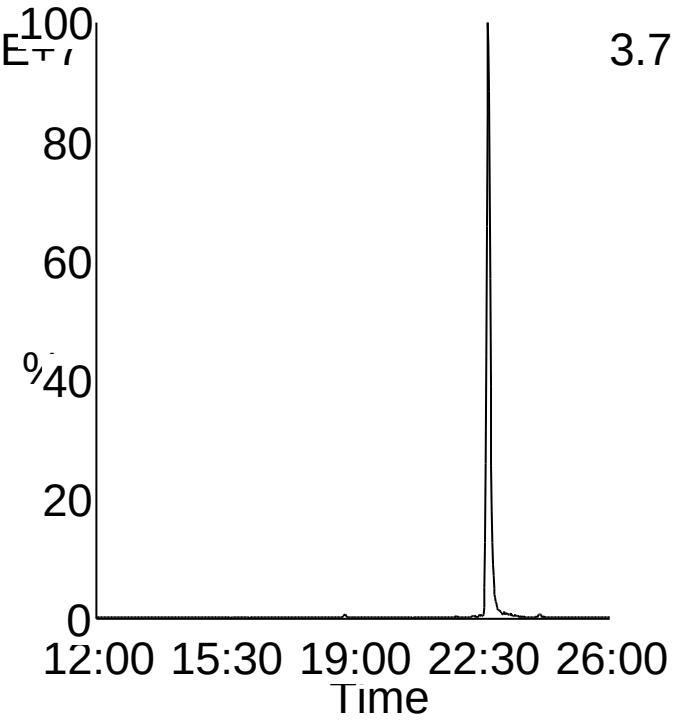
Data File Name: P70927A_02
Date Acquired: 9/27/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR09 (P)

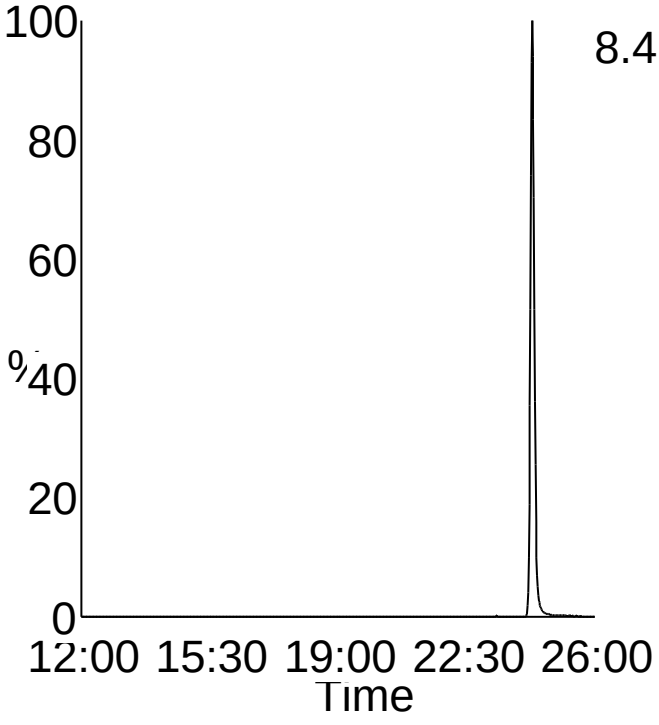
Data File: P70927A_02G1 C12 - 339.8597
CAL CS3/CPM-5176-129 - SMT



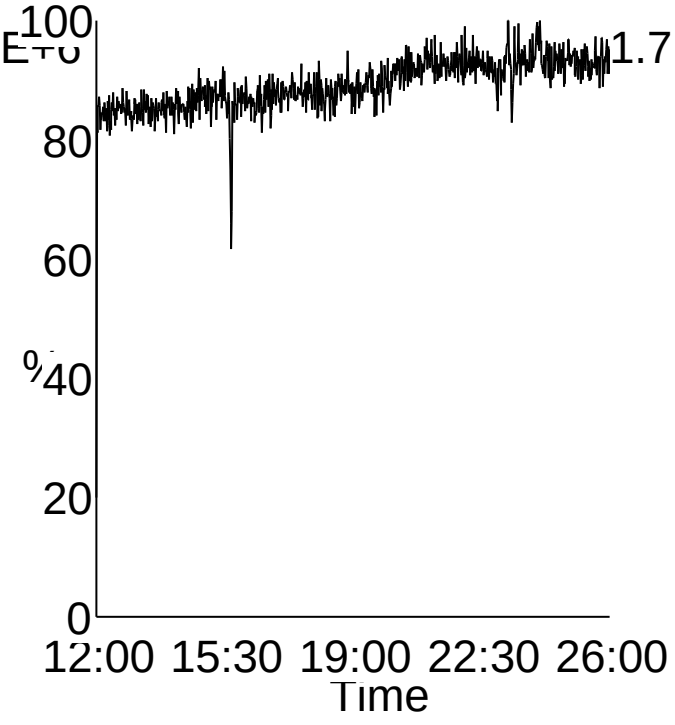
Data File: P70927A_02G1 C9 - 327.8847
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02G1 C13 - 341.8567
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02G1 C5 - 318.9792
CAL CS3/CPM-5176-129 - SMT

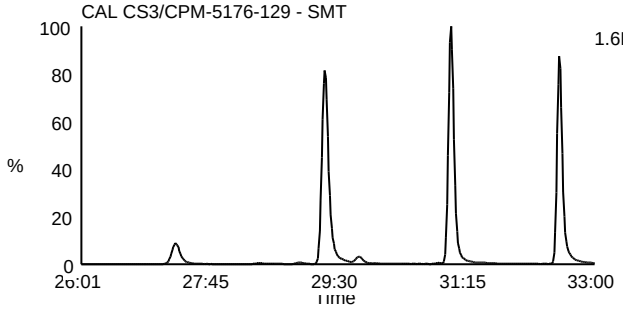


Homologue Group: Pentas

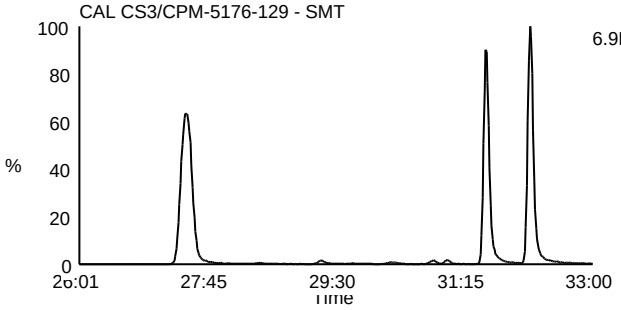
Data File Name: P70927A_02
Date Acquired: 9/27/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR09 (P)

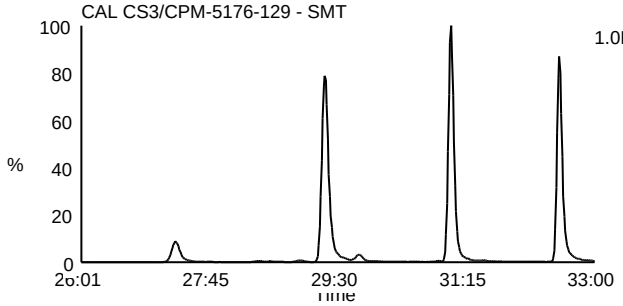
Data File: P70927A_02 G2 C1 - 339.8597
CAL CS3/CPM-5176-129 - SMT



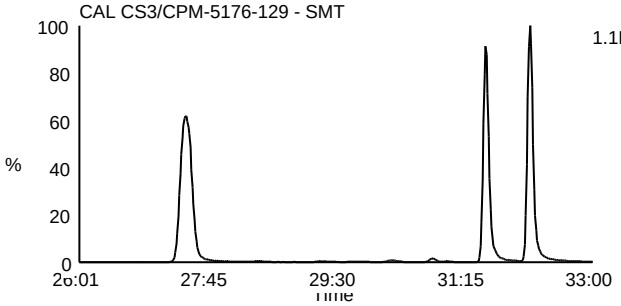
Data File: P70927A_02 G2 C4 - 353.8576
CAL CS3/CPM-5176-129 - SMT



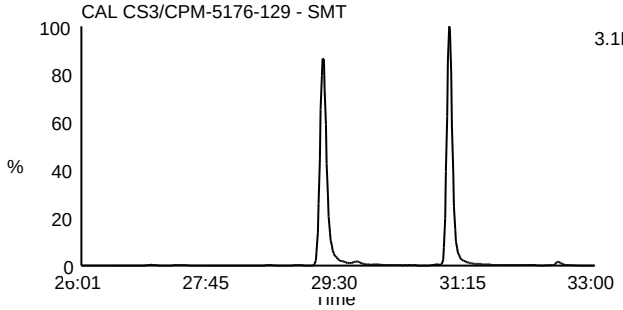
Data File: P70927A_02 G2 C2 - 341.8567
CAL CS3/CPM-5176-129 - SMT



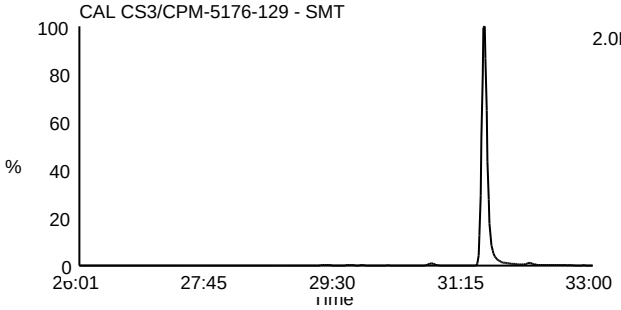
Data File: P70927A_02 G2 C8 - 355.8546
CAL CS3/CPM-5176-129 - SMT



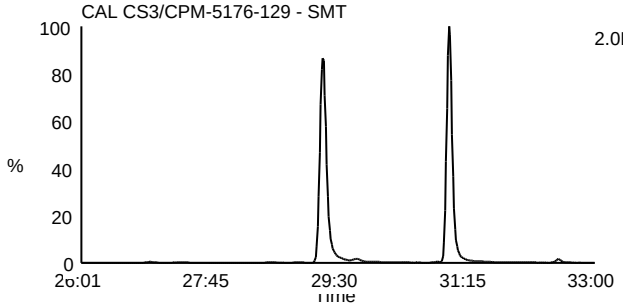
Data File: P70927A_02 G2 C3 - 351.8999
CAL CS3/CPM-5176-129 - SMT



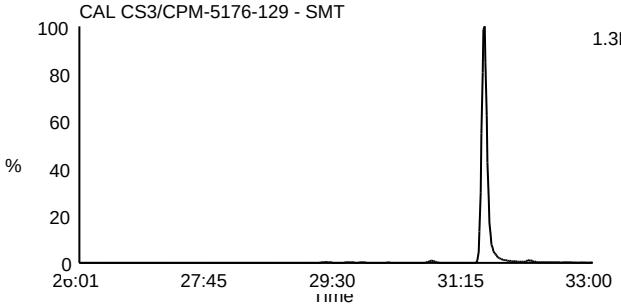
Data File: P70927A_02 G2 C10 - 367.8948
CAL CS3/CPM-5176-129 - SMT



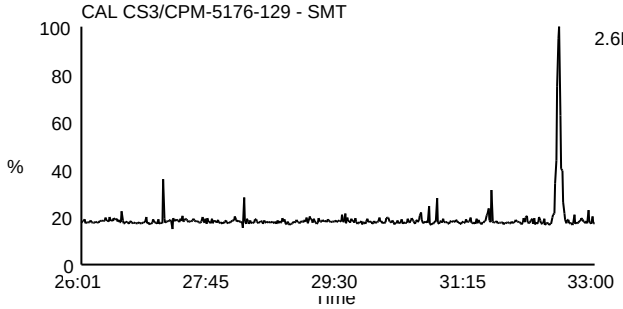
Data File: P70927A_02 G2 C5 - 353.8969
CAL CS3/CPM-5176-129 - SMT



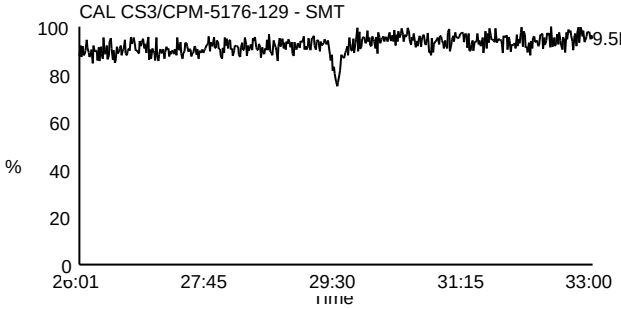
Data File: P70927A_02 G2 C11 - 369.8918
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02 G2 C12 - 409.7974
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02 G2 C6 - 354.9792
CAL CS3/CPM-5176-129 - SMT

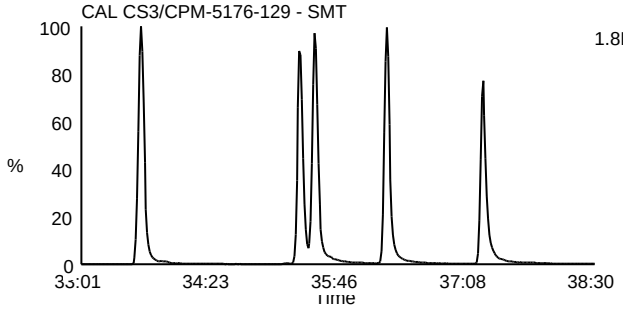


Homologue Group: Hexas

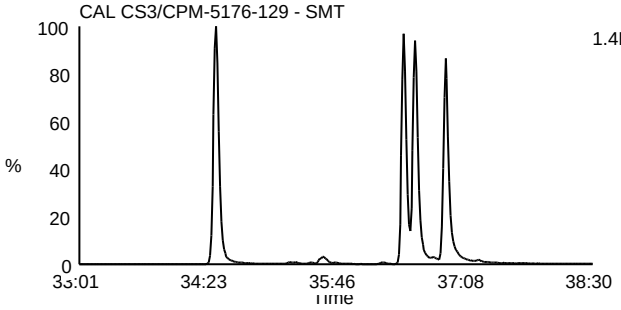
Data File Name: P70927A_02
Date Acquired: 9/27/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR09 (P)

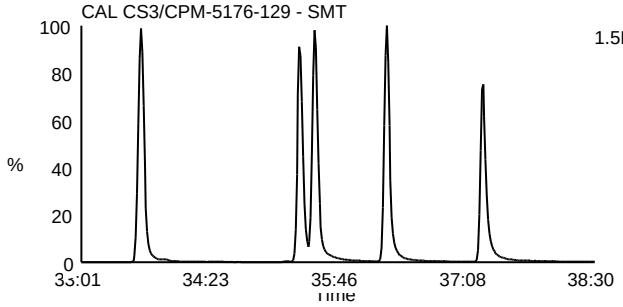
Data File: P70927A_02 G3 C1 - 373.8207
CAL CS3/CPM-5176-129 - SMT



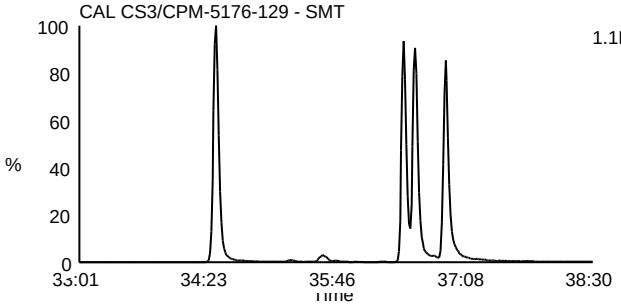
Data File: P70927A_02 G3 C7 - 389.8156
CAL CS3/CPM-5176-129 - SMT



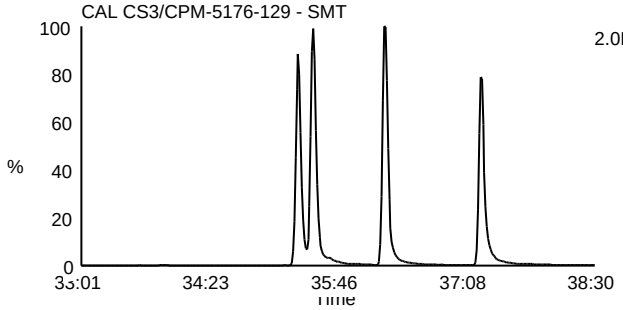
Data File: P70927A_02 G3 C2 - 375.8178
CAL CS3/CPM-5176-129 - SMT



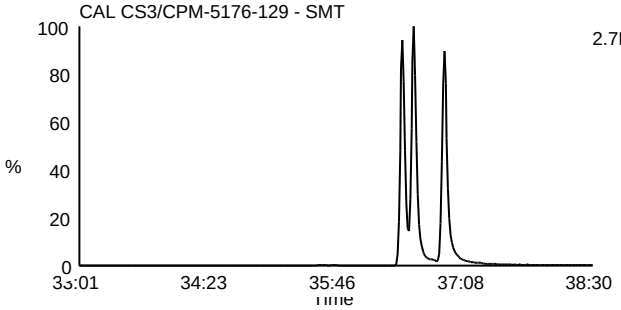
Data File: P70927A_02 G3 C8 - 391.8127
CAL CS3/CPM-5176-129 - SMT



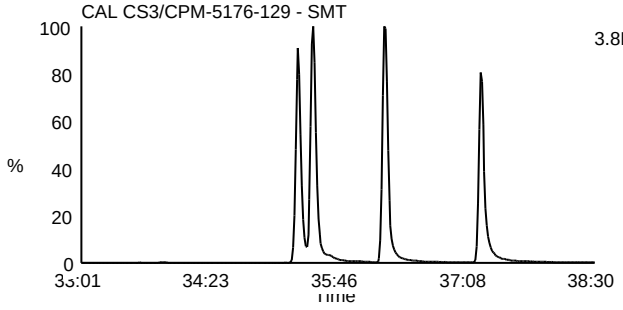
Data File: P70927A_02 G3 C5 - 383.8639
CAL CS3/CPM-5176-129 - SMT



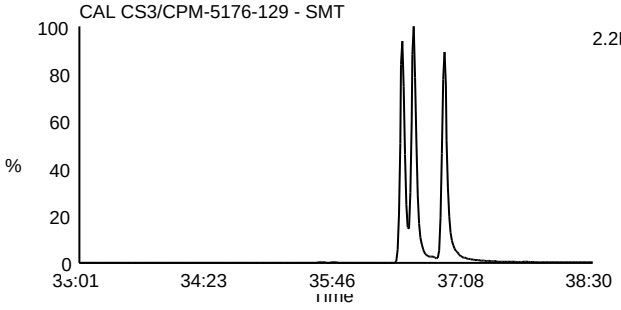
Data File: P70927A_02 G3 C9 - 401.8559
CAL CS3/CPM-5176-129 - SMT



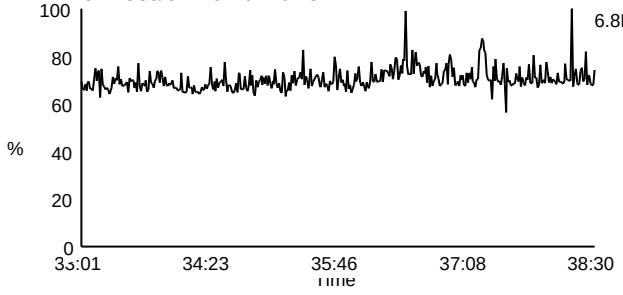
Data File: P70927A_02 G3 C6 - 385.861
CAL CS3/CPM-5176-129 - SMT



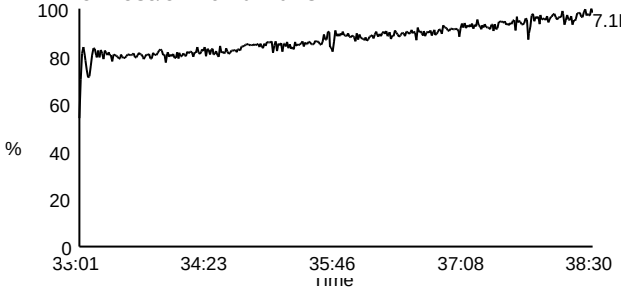
Data File: P70927A_02 G3 C10 - 403.8529
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02 G3 C11 - 445.7555
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02 G3 C3 - 380.976
CAL CS3/CPM-5176-129 - SMT

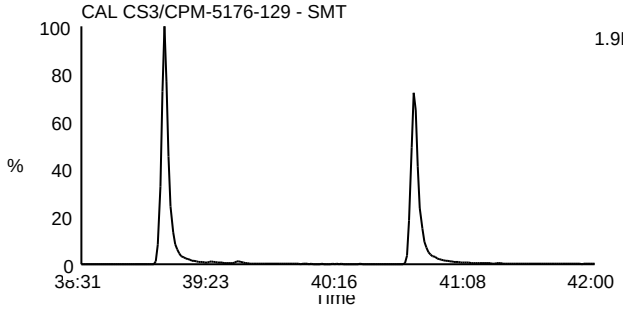


Homologue Group: Heptas

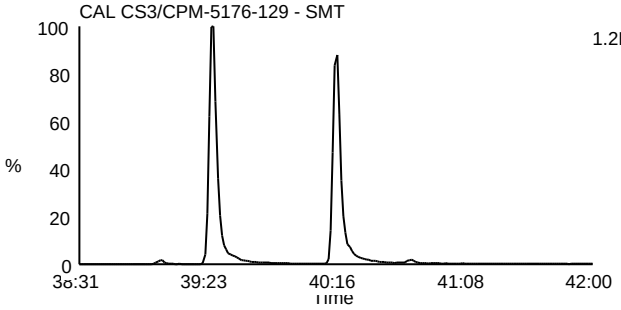
Data File Name: P70927A_02
Date Acquired: 9/27/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR09 (P)

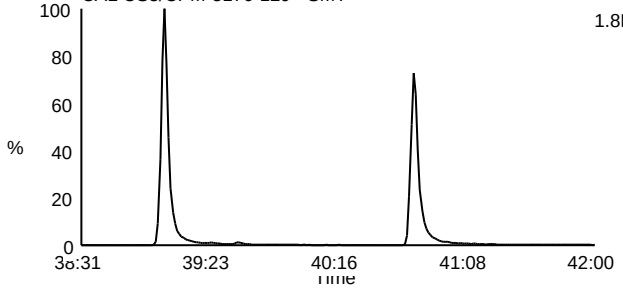
Data File: P70927A_02 G4 C3 - 407.7818
CAL CS3/CPM-5176-129 - SMT



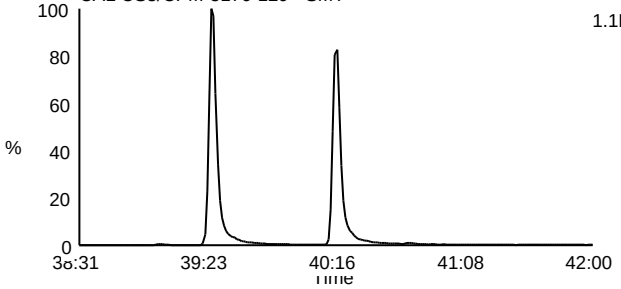
Data File: P70927A_02 G4 C8 - 423.7767
CAL CS3/CPM-5176-129 - SMT



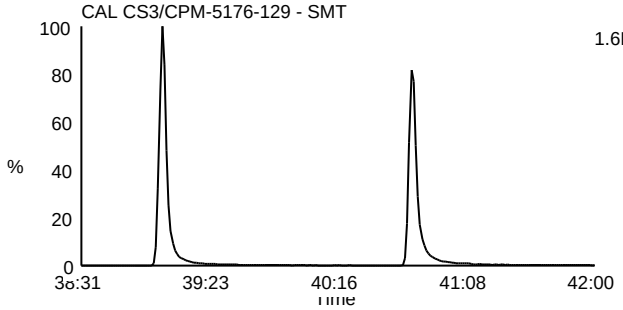
Data File: P70927A_02 G4 C4 - 409.7788
CAL CS3/CPM-5176-129 - SMT



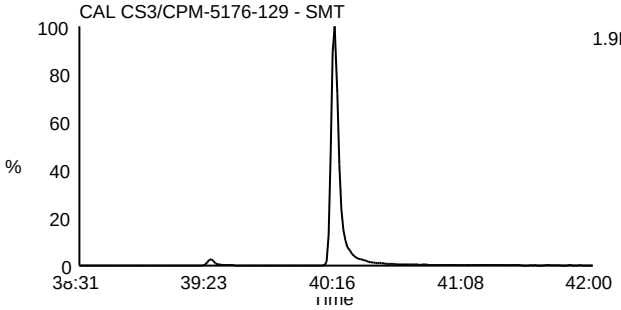
Data File: P70927A_02 G4 C9 - 425.7737
CAL CS3/CPM-5176-129 - SMT



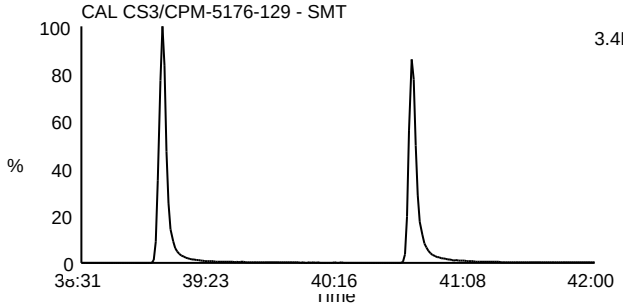
Data File: P70927A_02 G4 C6 - 417.825
CAL CS3/CPM-5176-129 - SMT



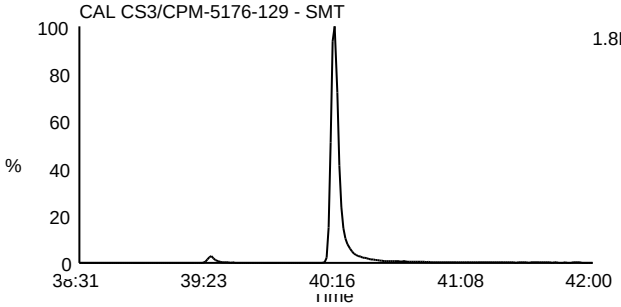
Data File: P70927A_02 G4 C11 - 435.8169
CAL CS3/CPM-5176-129 - SMT



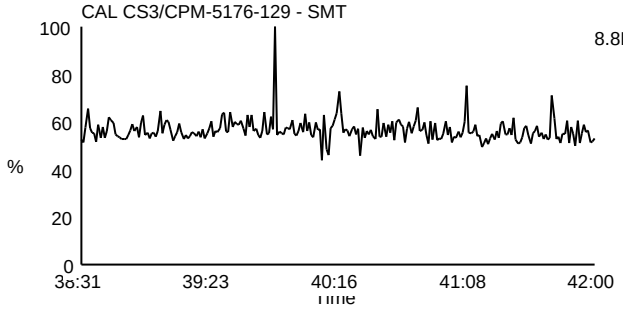
Data File: P70927A_02 G4 C7 - 419.822
CAL CS3/CPM-5176-129 - SMT



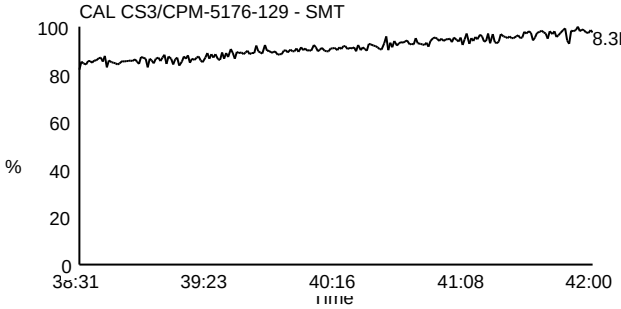
Data File: P70927A_02 G4 C12 - 437.814
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02 G4 C13 - 479.7165
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02 G4 C1 - 380.976
CAL CS3/CPM-5176-129 - SMT

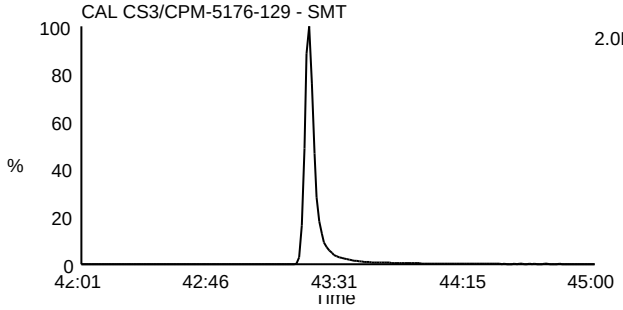


Homologue Group: Octas

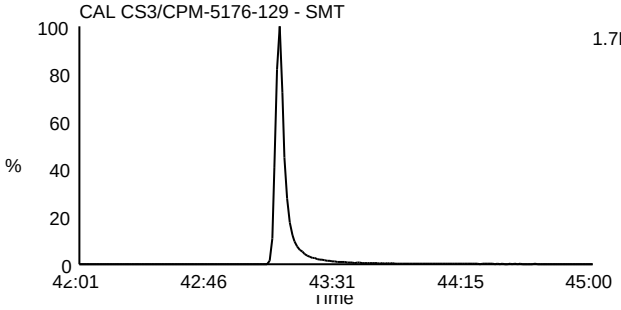
Data File Name: P70927A_02
Date Acquired: 9/27/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR09 (P)

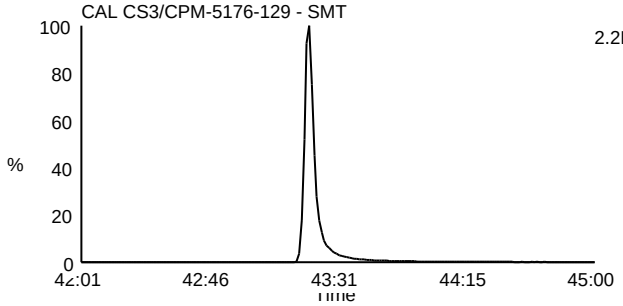
Data File: P70927A_02 G5 C4 - 441.7428
CAL CS3/CPM-5176-129 - SMT



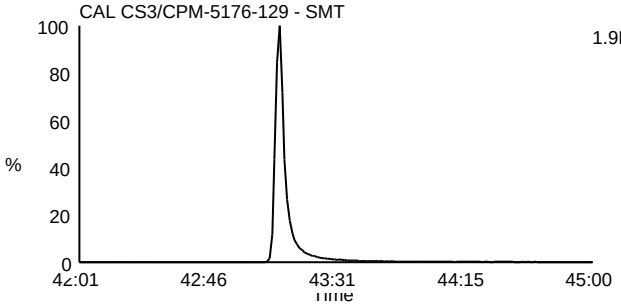
Data File: P70927A_02 G5 C8 - 457.7377
CAL CS3/CPM-5176-129 - SMT



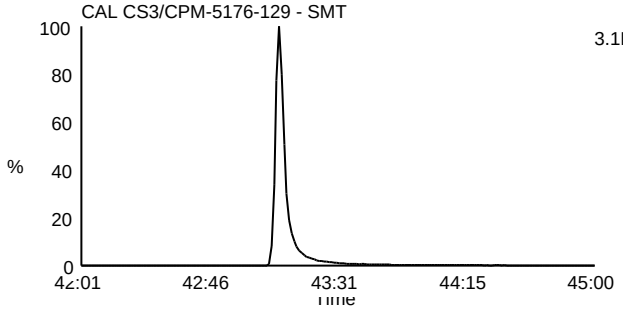
Data File: P70927A_02 G5 C5 - 443.7398
CAL CS3/CPM-5176-129 - SMT



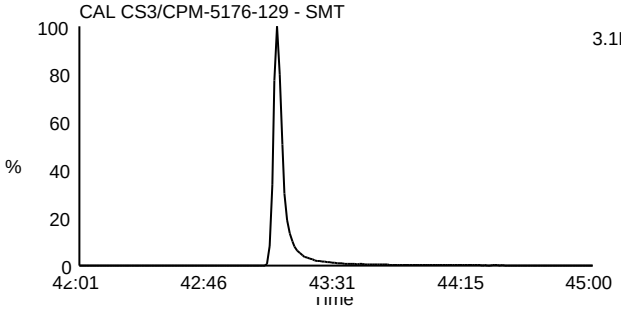
Data File: P70927A_02 G5 C9 - 459.7347
CAL CS3/CPM-5176-129 - SMT



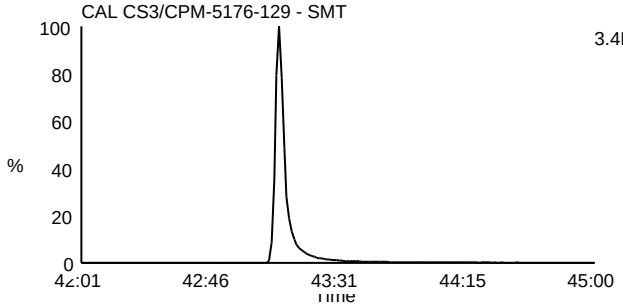
Data File: P70927A_02 G5 C11 - 469.7779
CAL CS3/CPM-5176-129 - SMT



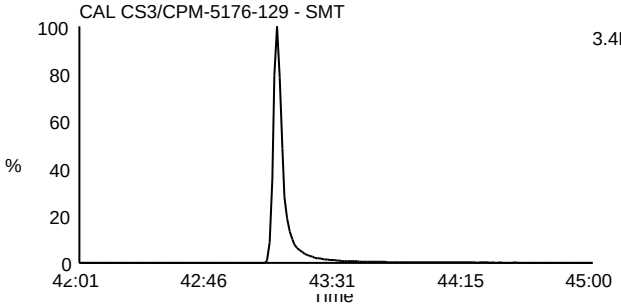
Data File: P70927A_02 G5 C11 - 469.7779
CAL CS3/CPM-5176-129 - SMT



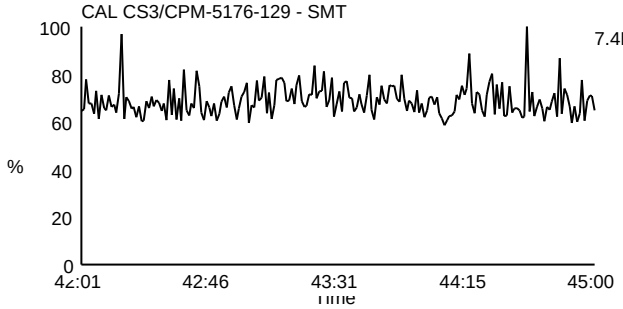
Data File: P70927A_02 G5 C12 - 471.7749
CAL CS3/CPM-5176-129 - SMT



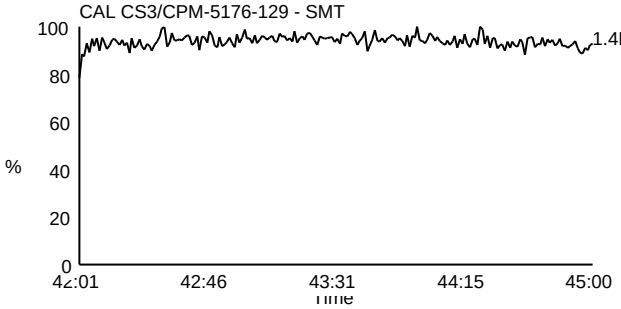
Data File: P70927A_02 G5 C12 - 471.7749
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02 G5 C13 - 513.6775
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02 G5 C2 - 430.9728
CAL CS3/CPM-5176-129 - SMT

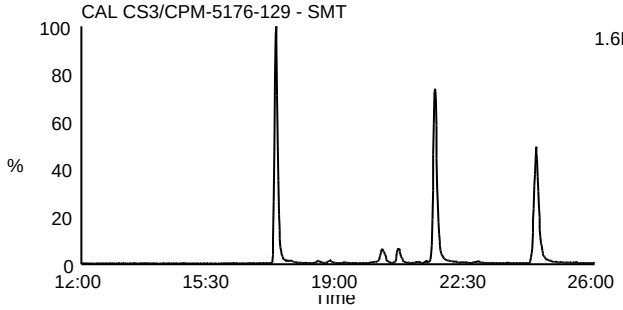


Homologue Group: Tetras

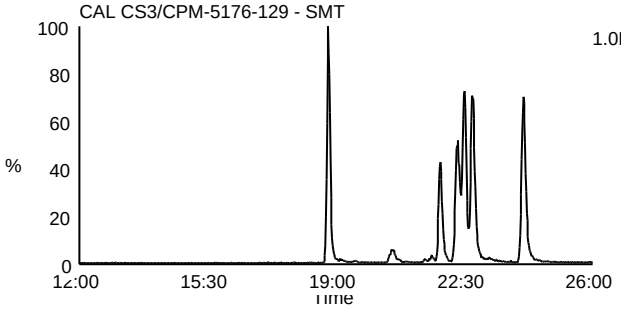
Data File Name: P70927A_17
Date Acquired: 9/27/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR09 (P)

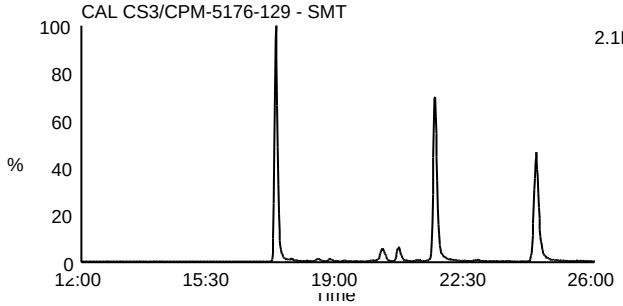
Data File: P70927A_17 G1 C1 - 303.9016
CAL CS3/CPM-5176-129 - SMT



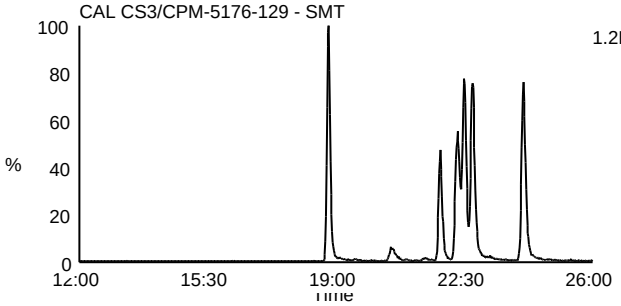
Data File: P70927A_17 G1 C7 - 319.8965
CAL CS3/CPM-5176-129 - SMT



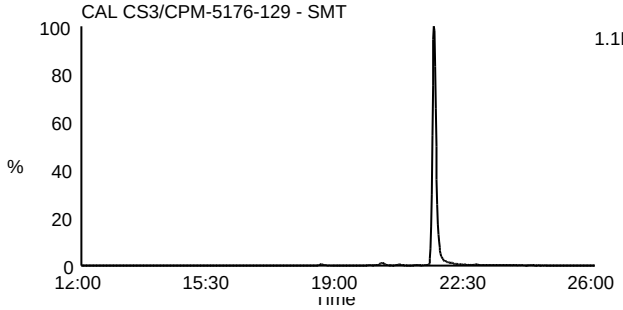
Data File: P70927A_17 G1 C2 - 305.8987
CAL CS3/CPM-5176-129 - SMT



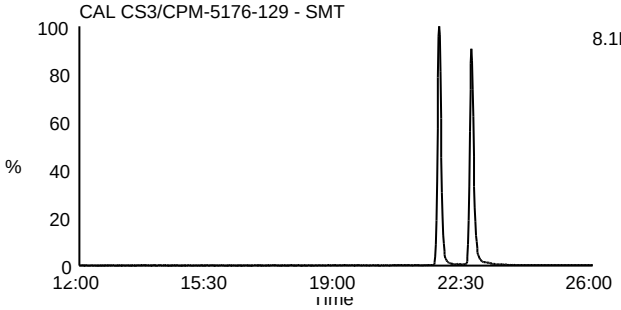
Data File: P70927A_17 G1 C8 - 321.8936
CAL CS3/CPM-5176-129 - SMT



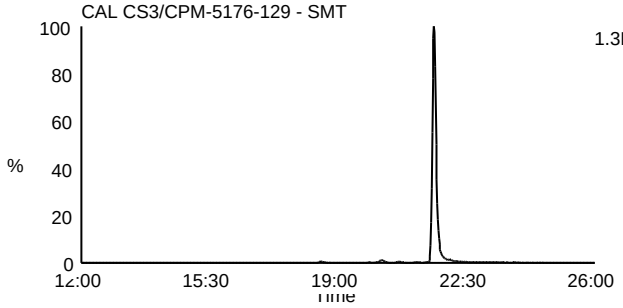
Data File: P70927A_17 G1 C3 - 315.9418
CAL CS3/CPM-5176-129 - SMT



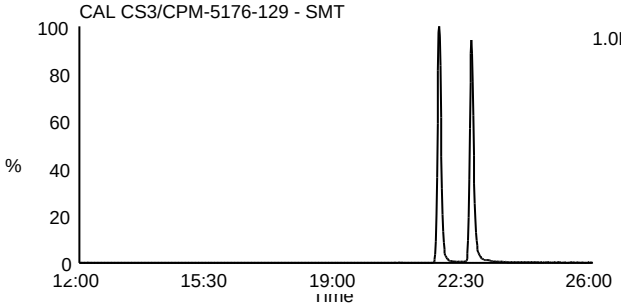
Data File: P70927A_17 G1 C10 - 331.9367
CAL CS3/CPM-5176-129 - SMT



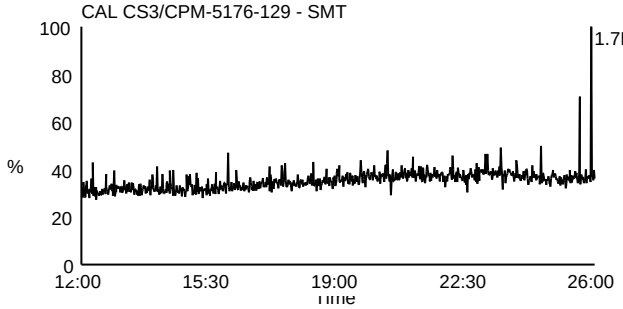
Data File: P70927A_17 G1 C4 - 317.9389
CAL CS3/CPM-5176-129 - SMT



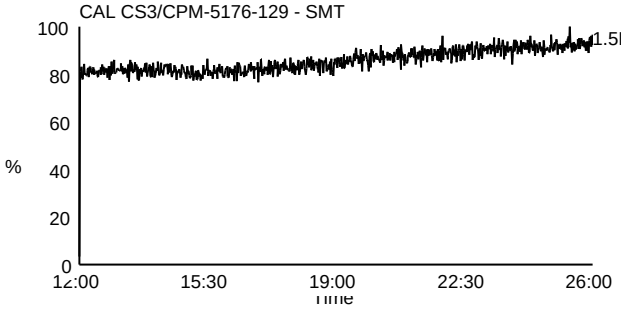
Data File: P70927A_17 G1 C11 - 333.9338
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_17 G1 C14 - 375.8364
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_17 G1 C5 - 318.9792
CAL CS3/CPM-5176-129 - SMT

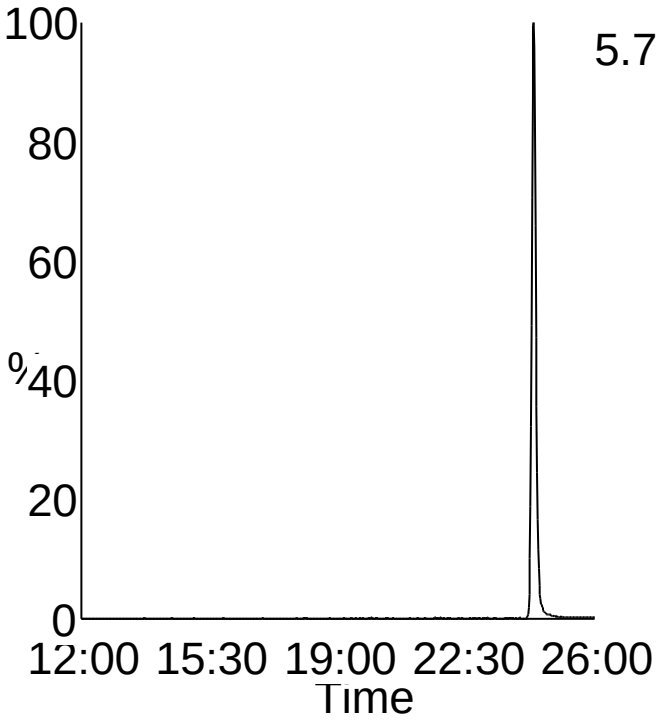


Homologue Group: Penta & Cleanup

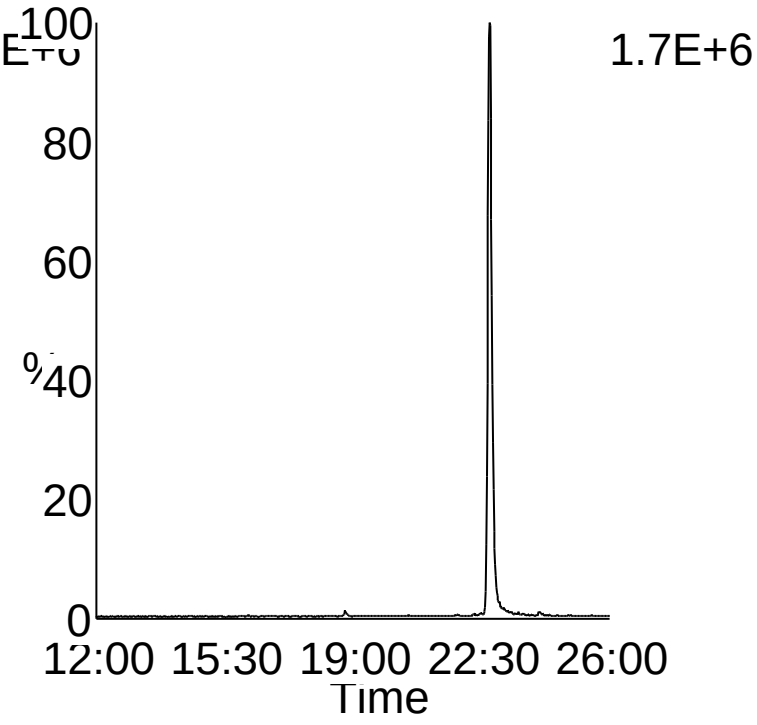
Data File Name: P70927A_17
Date Acquired: 9/27/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR09 (P)

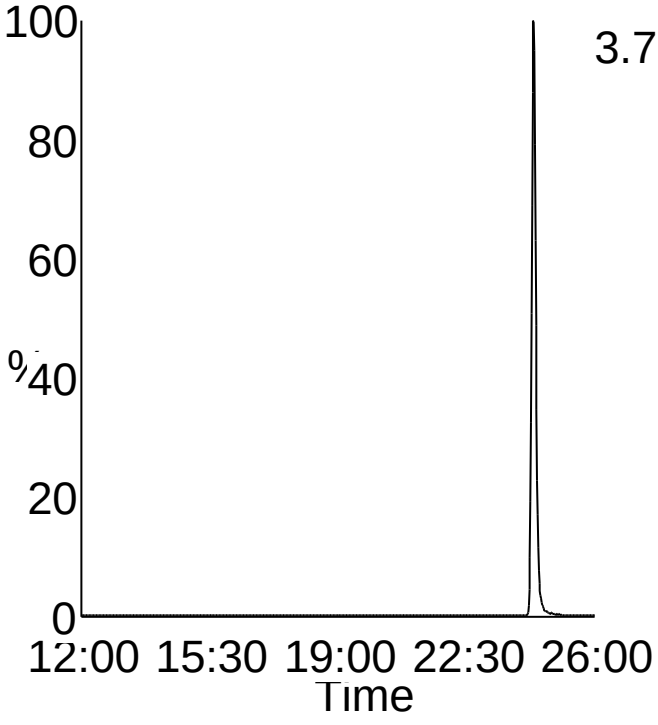
Data File: P70927A_17 G1 C12 - 339.8597
CAL CS3/CPM-5176-129 - SMT



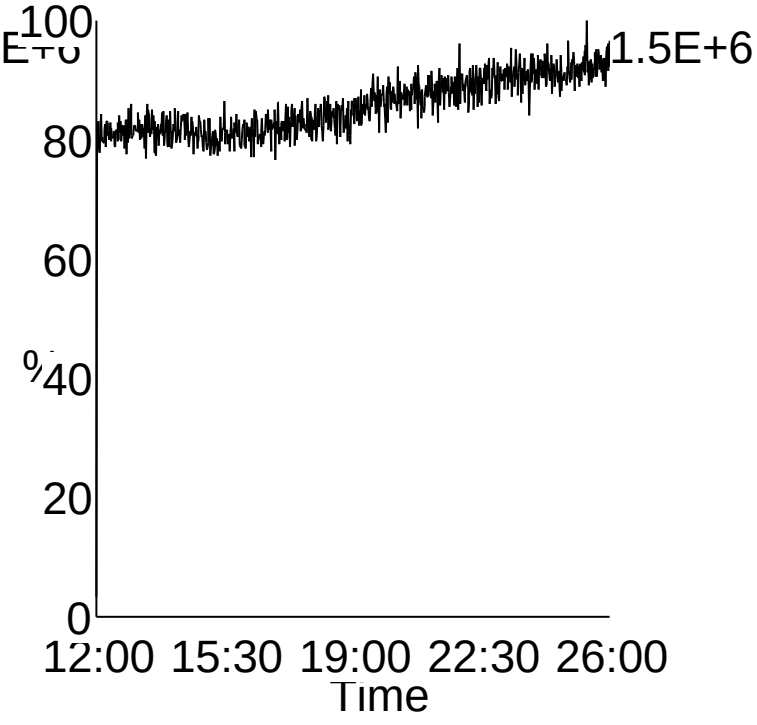
Data File: P70927A_17 G1 C9 - 327.8847
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_17 G1 C13 - 341.8567
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_17 G1 C5 - 318.9792
CAL CS3/CPM-5176-129 - SMT

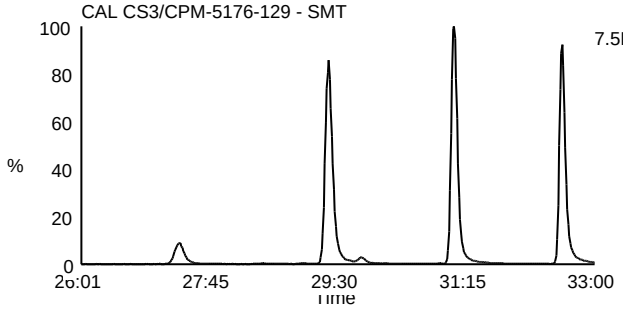


Homologue Group: Pentas

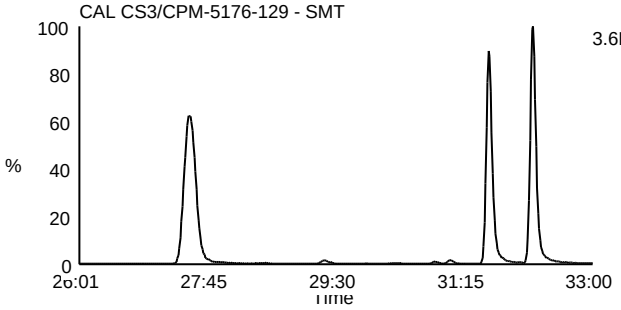
Data File Name: P70927A_17
Date Acquired: 9/27/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR09 (P)

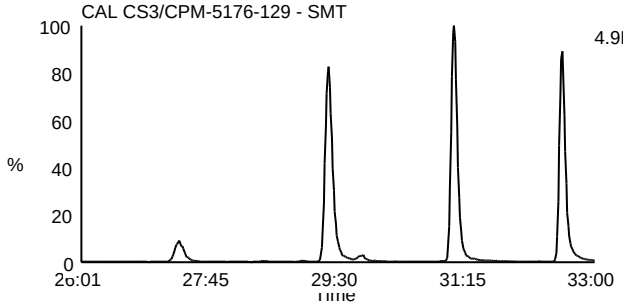
Data File: P70927A_17 G2 C1 - 339.8597
CAL CS3/CPM-5176-129 - SMT



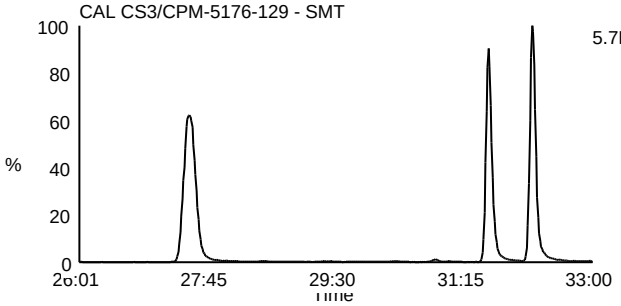
Data File: P70927A_17 G2 C4 - 353.8576
CAL CS3/CPM-5176-129 - SMT



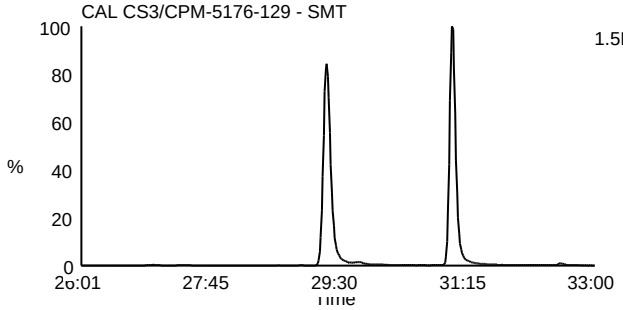
Data File: P70927A_17 G2 C2 - 341.8567
CAL CS3/CPM-5176-129 - SMT



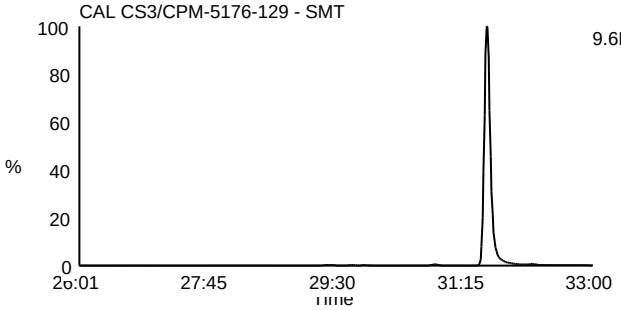
Data File: P70927A_17 G2 C8 - 355.8546
CAL CS3/CPM-5176-129 - SMT



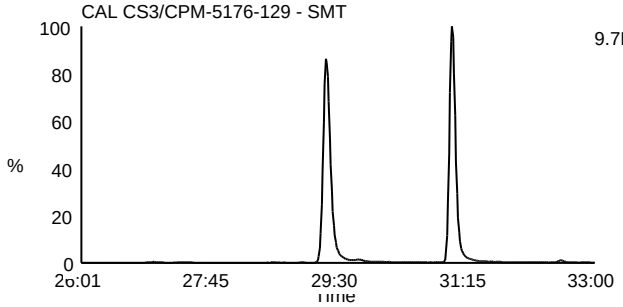
Data File: P70927A_17 G2 C3 - 351.8999
CAL CS3/CPM-5176-129 - SMT



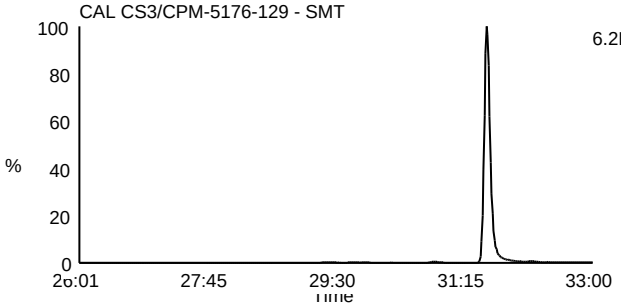
Data File: P70927A_17 G2 C10 - 367.8948
CAL CS3/CPM-5176-129 - SMT



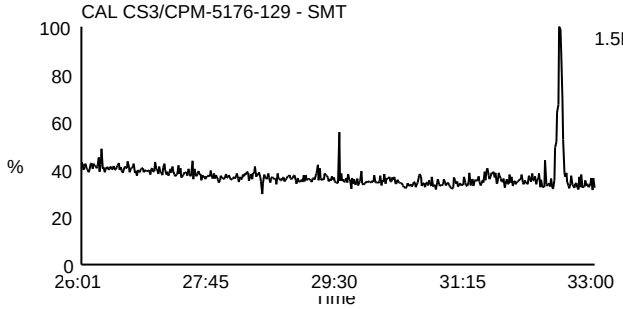
Data File: P70927A_17 G2 C5 - 353.8969
CAL CS3/CPM-5176-129 - SMT



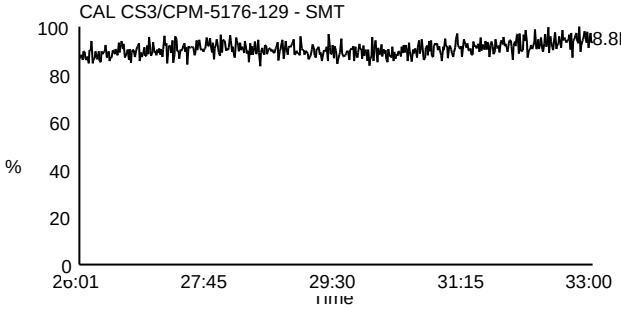
Data File: P70927A_17 G2 C11 - 369.8918
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_17 G2 C12 - 409.7974
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_17 G2 C6 - 354.9792
CAL CS3/CPM-5176-129 - SMT

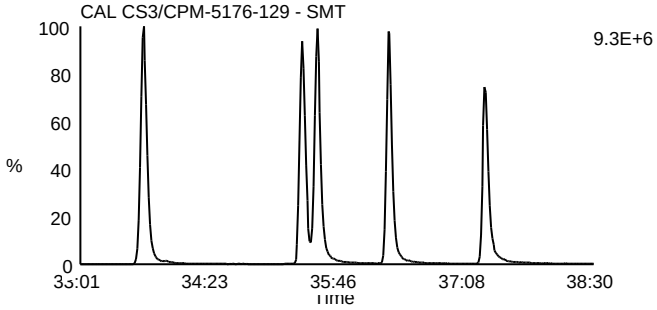


Homologue Group: Hexas

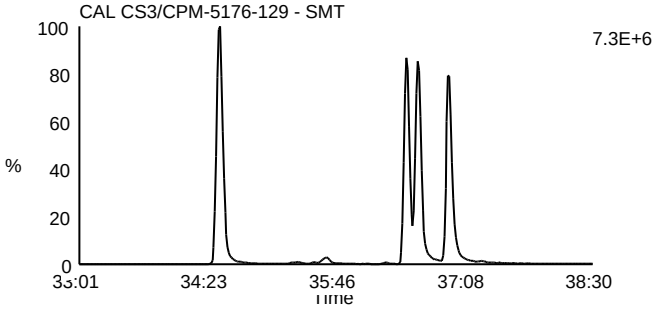
Data File Name: P70927A_17
Date Acquired: 9/27/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR09 (P)

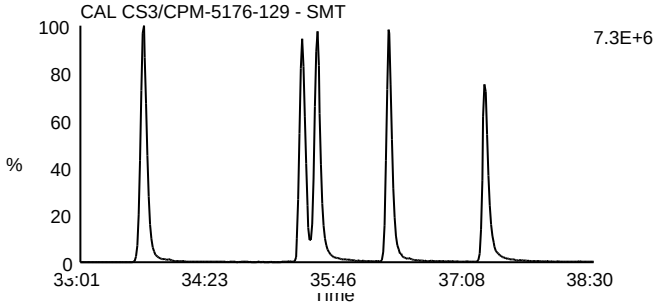
Data File: P70927A_17 G3 C1 - 373.8207
CAL CS3/CPM-5176-129 - SMT



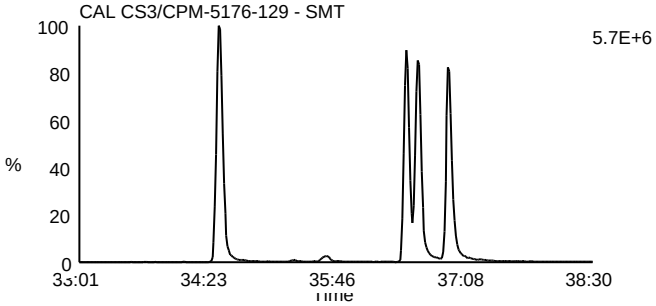
Data File: P70927A_17 G3 C7 - 389.8156
CAL CS3/CPM-5176-129 - SMT



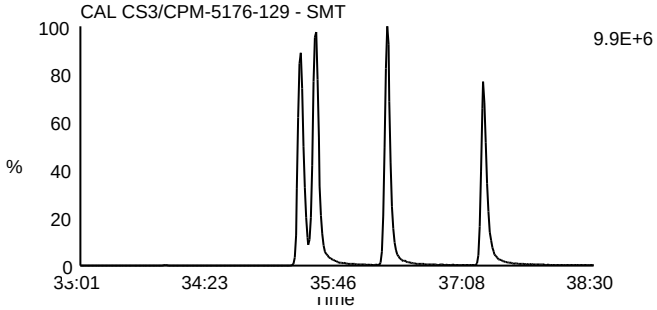
Data File: P70927A_17 G3 C2 - 375.8178
CAL CS3/CPM-5176-129 - SMT



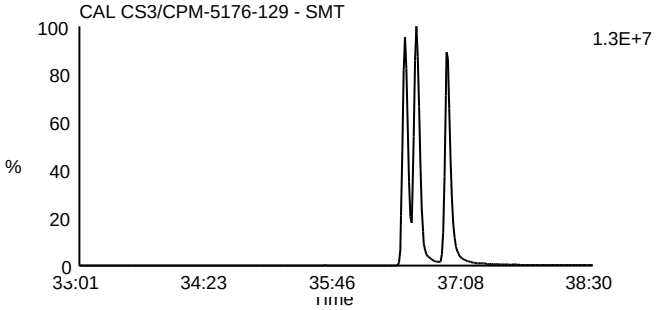
Data File: P70927A_17 G3 C8 - 391.8127
CAL CS3/CPM-5176-129 - SMT



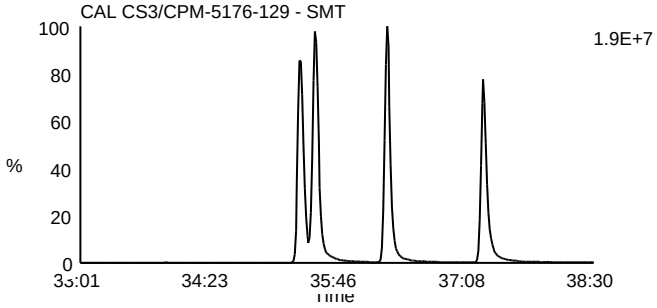
Data File: P70927A_17 G3 C5 - 383.8639
CAL CS3/CPM-5176-129 - SMT



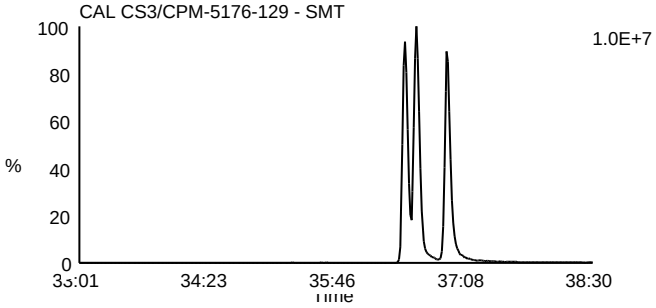
Data File: P70927A_17 G3 C9 - 401.8559
CAL CS3/CPM-5176-129 - SMT



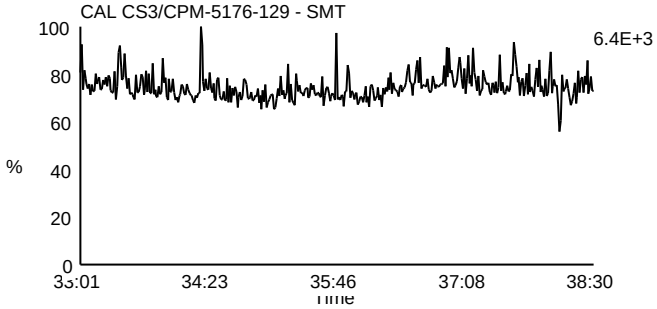
Data File: P70927A_17 G3 C6 - 385.861
CAL CS3/CPM-5176-129 - SMT



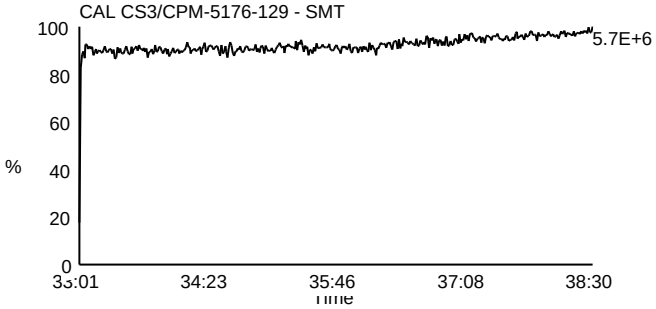
Data File: P70927A_17 G3 C10 - 403.8529
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_17 G3 C11 - 445.7555
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_17 G3 C3 - 380.976
CAL CS3/CPM-5176-129 - SMT

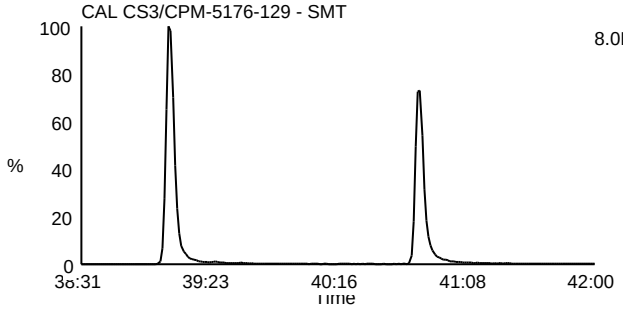


Homologue Group: Heptas

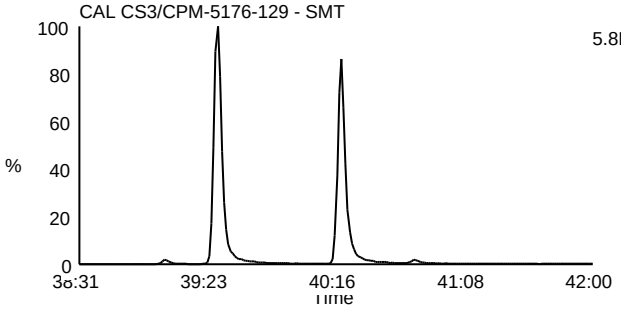
Data File Name: P70927A_17
Date Acquired: 9/27/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR09 (P)

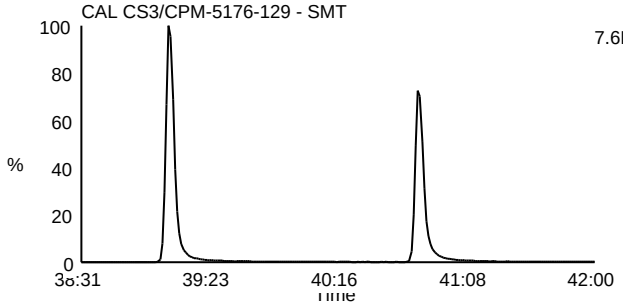
Data File: P70927A_17 G4 C3 - 407.7818
CAL CS3/CPM-5176-129 - SMT
8.0E+6



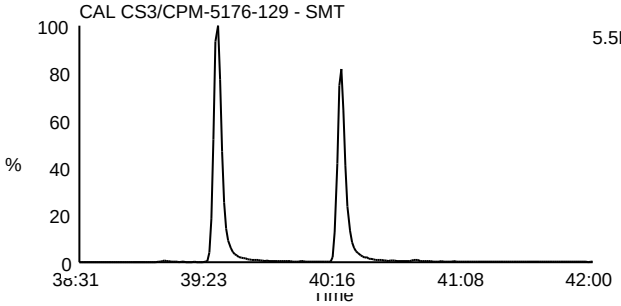
Data File: P70927A_17 G4 C8 - 423.7767
CAL CS3/CPM-5176-129 - SMT
5.8E+6



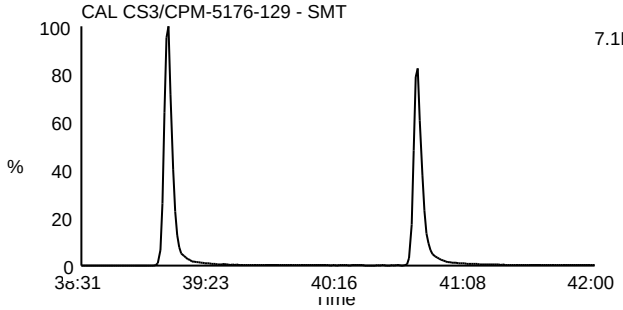
Data File: P70927A_17 G4 C4 - 409.7788
CAL CS3/CPM-5176-129 - SMT
7.6E+6



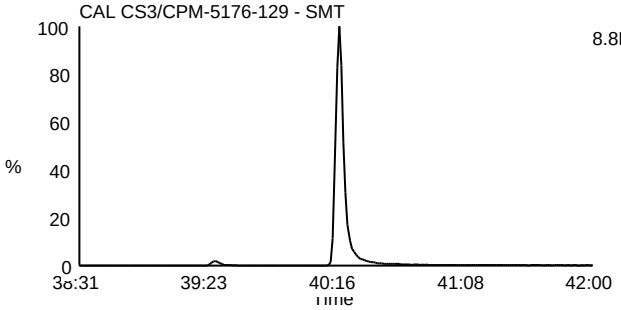
Data File: P70927A_17 G4 C9 - 425.7737
CAL CS3/CPM-5176-129 - SMT
5.5E+6



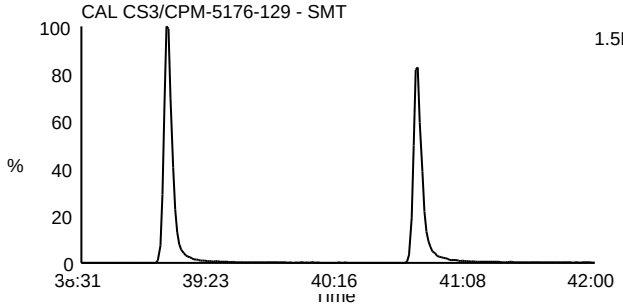
Data File: P70927A_17 G4 C6 - 417.825
CAL CS3/CPM-5176-129 - SMT
7.1E+6



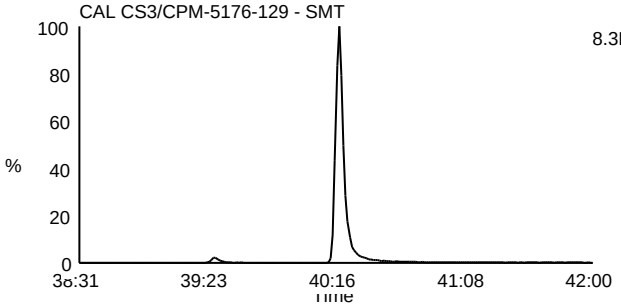
Data File: P70927A_17 G4 C11 - 435.8169
CAL CS3/CPM-5176-129 - SMT
8.8E+6



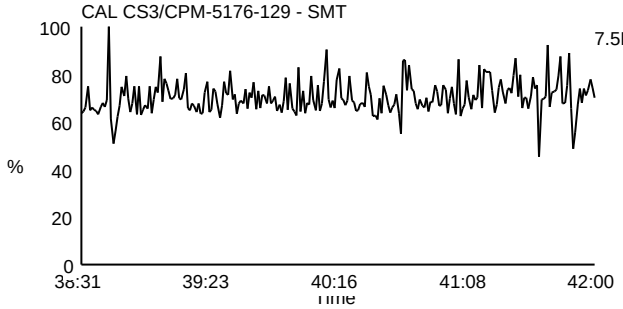
Data File: P70927A_17 G4 C7 - 419.822
CAL CS3/CPM-5176-129 - SMT
1.5E+7



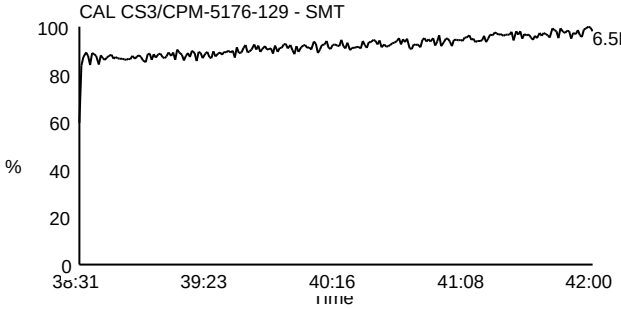
Data File: P70927A_17 G4 C12 - 437.814
CAL CS3/CPM-5176-129 - SMT
8.3E+6



Data File: P70927A_17 G4 C13 - 479.7165
CAL CS3/CPM-5176-129 - SMT
7.5E+3



Data File: P70927A_17 G4 C1 - 380.976
CAL CS3/CPM-5176-129 - SMT
6.5E+6

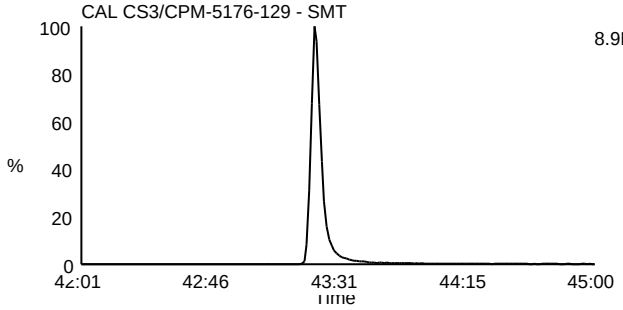


Homologue Group: Octas

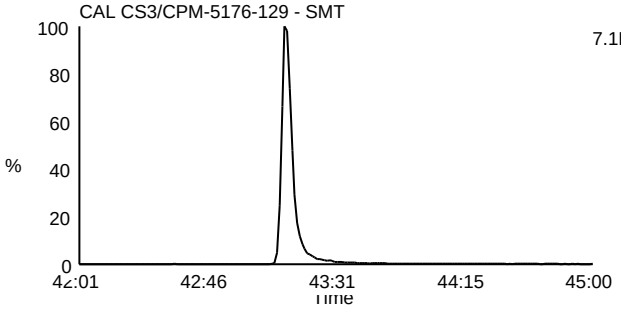
Data File Name: P70927A_17
Date Acquired: 9/27/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR09 (P)

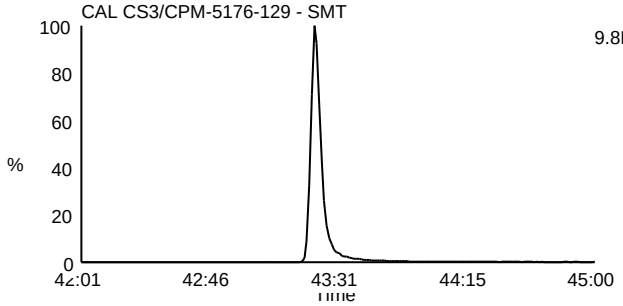
Data File: P70927A_17 G5 C4 - 441.7428
CAL CS3/CPM-5176-129 - SMT



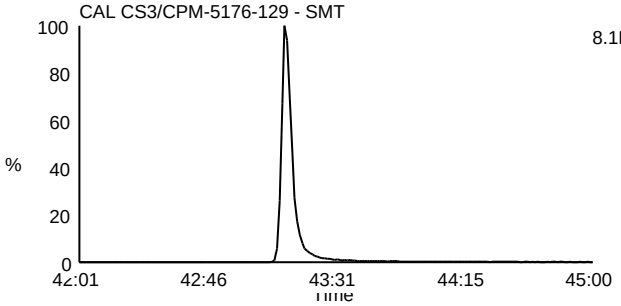
Data File: P70927A_17 G5 C8 - 457.7377
CAL CS3/CPM-5176-129 - SMT



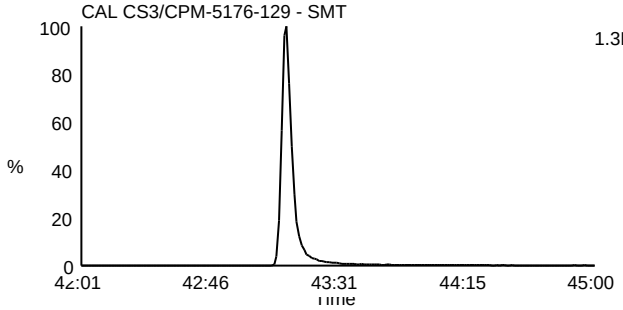
Data File: P70927A_17 G5 C5 - 443.7398
CAL CS3/CPM-5176-129 - SMT



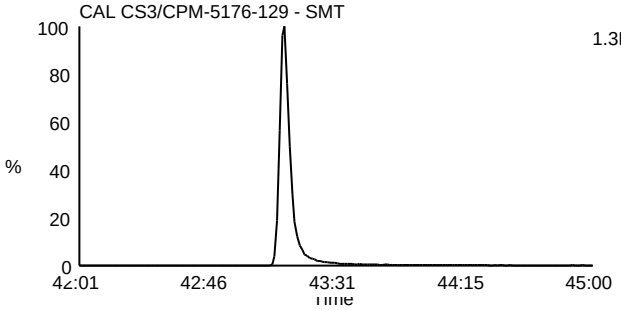
Data File: P70927A_17 G5 C9 - 459.7347
CAL CS3/CPM-5176-129 - SMT



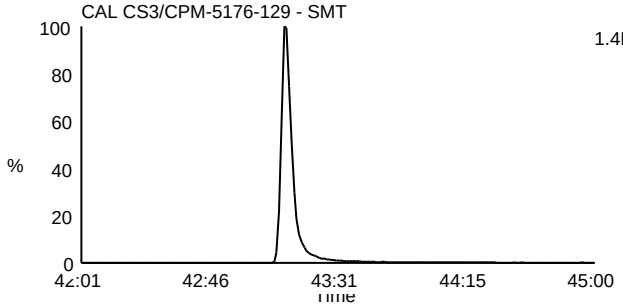
Data File: P70927A_17 G5 C11 - 469.7779
CAL CS3/CPM-5176-129 - SMT



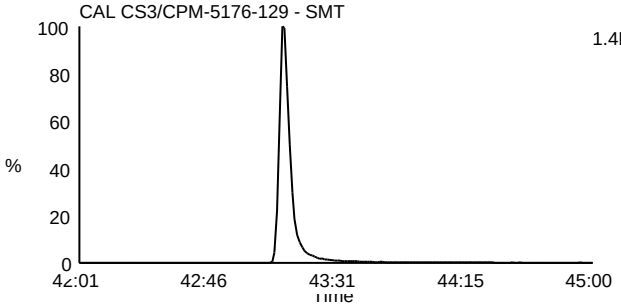
Data File: P70927A_17 G5 C11 - 469.7779
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_17 G5 C12 - 471.7749
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_17 G5 C12 - 471.7749
CAL CS3/CPM-5176-129 - SMT



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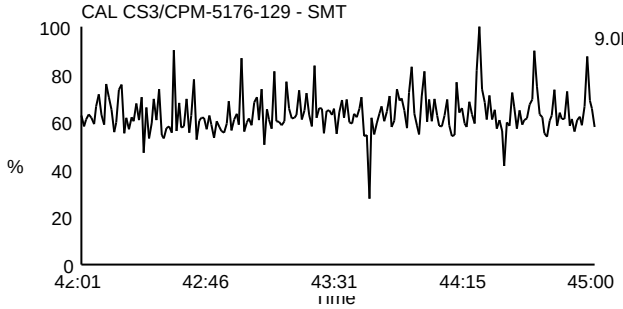

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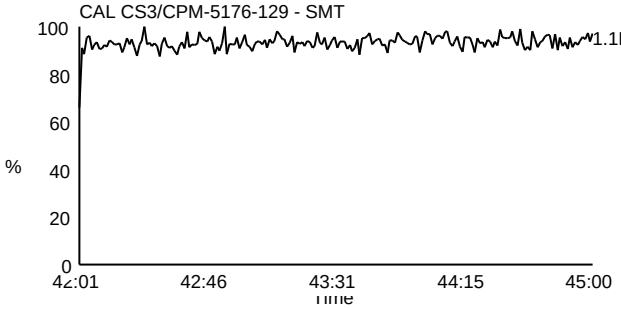

Pace Analytical Services, Inc.
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PCDD/PCDF Detected Peak List

Prepared By _____ Date _____

Reviewed By _____ Date _____

Client Name	Minnesota Dept. of Health		
Client ID	CS-1	Injected By	BAL
Lab ID	5176-101	Instrument ID	10MSHR09 (P)
Filename	P70829B_04	GC Column ID	US6872627H
Analyzed	08/29/2007 18:38	ICAL Date	08/29/2007

Tetra-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
2,3,7,8-TCDF-13C	22:03	8.16e7	1.03e8	1.17e7	1.46e7	-----	-----	0.79	
2,3,7,8-TCDF	22:05	4.42e5	5.18e5	6.20e4	7.22e4	-----	-----	0.85	

Tetra-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4-TCDD-13C	22:16	5.52e7	6.88e7	8.24e6	1.04e7	-----	-----	0.80	
2,3,7,8-TCDD-13C	23:10	5.56e7	7.06e7	7.42e6	9.21e6	-----	-----	0.79	
2,3,7,8-TCDD-37Cl4	23:11	6.62e5		9.38e4		-----	-----		
2,3,7,8-TCDD	23:11	2.61e5	3.26e5	3.68e4	5.09e4	-----	-----	0.80	

Penta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDF-13C	29:45	9.87e7	6.17e7	1.50e7	9.38e6	-----	-----	1.60	
2,3,4,7,8-PeCDF-13C	31:25	9.68e7	6.10e7	1.73e7	1.09e7	-----	-----	1.59	
1,2,3,7,8-PeCDF	29:47	2.35e6	1.53e6	3.76e5	2.52e5	-----	-----	1.53	
2,3,4,7,8-PeCDF	31:26	2.45e6	1.51e6	4.53e5	2.95e5	-----	-----	1.63	

Penta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDD-13C	31:54	5.56e7	3.48e7	9.88e6	6.15e6	-----	-----	1.60	
1,2,3,7,8-PeCDD	31:55	8.65e5	1.47e6	1.69e5	2.59e5	-----	-----	0.59	

Hexa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDF-13C	35:36	3.99e7	7.65e7	9.94e6	1.91e7	-----	-----	0.52	
1,2,3,6,7,8-HxCDF-13C	35:45	4.96e7	9.52e7	1.12e7	2.14e7	-----	-----	0.52	
2,3,4,6,7,8-HxCDF-13C	36:31	4.66e7	8.80e7	1.14e7	2.18e7	-----	-----	0.53	
1,2,3,7,8,9-HxCDF-13C	37:32	4.01e7	7.48e7	8.79e6	1.62e7	-----	-----	0.54	
1,2,3,4,7,8-HxCDF	35:37	1.93e6	1.58e6	4.63e5	3.89e5	-----	-----	1.22	
1,2,3,6,7,8-HxCDF	35:46	2.18e6	1.84e6	4.93e5	4.09e5	-----	-----	1.18	
2,3,4,6,7,8-HxCDF	36:32	2.17e6	1.69e6	5.44e5	4.25e5	-----	-----	1.29	
1,2,3,7,8,9-HxCDF	37:34	1.73e6	1.49e6	3.76e5	3.39e5	-----	-----	1.16	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Client Name	Minnesota Dept. of Health		
Client ID	CS-1	Injected By	BAL
Lab ID	5176-101	Instrument ID	10MSHR09 (P)
Filename	P70829B_04	GC Column ID	US6872627H
Analyzed	08/29/2007 18:38	ICAL Date	08/29/2007

Hexa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDD-13C	36:42	4.75e7	3.70e7	1.26e7	9.84e6	-----	-----	1.29	
1,2,3,6,7,8-HxCDD-13C	36:50	5.95e7	4.73e7	1.35e7	1.08e7	-----	-----	1.26	
1,2,3,7,8,9-HxCDD-13C	37:09	5.56e7	4.48e7	1.23e7	9.73e6	-----	-----	1.24	
1,2,3,4,7,8-HxCDD	36:43	1.23e6	9.69e5	3.63e5	2.58e5	-----	-----	1.27	
1,2,3,6,7,8-HxCDD	36:50	1.38e6	1.16e6	3.16e5	2.81e5	-----	-----	1.19	
1,2,3,7,8,9-HxCDD	37:11	1.37e6	1.11e6	3.08e5	2.46e5	-----	-----	1.23	

Hepta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDF-13C	39:16	3.05e7	6.75e7	7.64e6	1.66e7	-----	-----	0.45	
1,2,3,4,7,8,9-HpCDF-13C	40:58	2.74e7	6.05e7	6.45e6	1.42e7	-----	-----	0.45	
1,2,3,4,6,7,8-HpCDF	39:16	1.67e6	1.60e6	4.38e5	4.15e5	-----	-----	1.05	
1,2,3,4,7,8,9-HpCDF	40:58	1.37e6	1.33e6	3.31e5	3.28e5	-----	-----	1.03	

Hepta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDD-13C	40:27	3.80e7	3.56e7	9.43e6	8.76e6	-----	-----	1.07	
1,2,3,4,6,7,8-HpCDD	40:28	9.67e5	9.15e5	2.39e5	2.37e5	-----	-----	1.06	

Octa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDF	43:32	2.16e6	2.32e6	4.86e5	5.32e5	-----	-----	0.93	

Octa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDD-13C	43:21	6.82e7	7.57e7	1.52e7	1.66e7	-----	-----	0.90	
OCDD	43:22	1.91e6	1.97e6	4.30e5	4.42e5	-----	-----	0.97	

REPORT OF LABORATORY ANALYSIS

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PCDD/PCDF Detected Peak List

Prepared By _____ Date _____

Reviewed By _____ Date _____

Client Name	Minnesota Dept. of Health		
Client ID	CS-2	Injected By	BAL
Lab ID	5176-102	Instrument ID	10MSHR09 (P)
Filename	P70829B_03	GC Column ID	US6872627H
Analyzed	08/29/2007 17:51	ICAL Date	08/29/2007

Tetra-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
2,3,7,8-TCDF-13C	22:04	6.18e7	7.70e7	8.69e6	1.11e7	-----	-----	0.80	
2,3,7,8-TCDF	22:06	1.33e6	1.72e6	2.10e5	2.42e5	-----	-----	0.77	

Tetra-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4-TCDD-13C	22:17	4.17e7	5.16e7	6.17e6	7.55e6	-----	-----	0.81	
2,3,7,8-TCDD-13C	23:11	4.14e7	5.27e7	5.48e6	6.96e6	-----	-----	0.79	
2,3,7,8-TCDD-37Cl4	23:11	1.98e6		2.61e5		-----	-----		
2,3,7,8-TCDD	23:12	8.21e5	1.05e6	1.16e5	1.45e5	-----	-----	0.78	

Penta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDF-13C	29:46	7.38e7	4.61e7	1.14e7	6.99e6	-----	-----	1.60	
2,3,4,7,8-PeCDF-13C	31:25	7.36e7	4.61e7	1.30e7	8.00e6	-----	-----	1.60	
1,2,3,7,8-PeCDF	29:47	7.21e6	4.65e6	1.11e6	6.98e5	-----	-----	1.55	
2,3,4,7,8-PeCDF	31:27	7.73e6	4.93e6	1.39e6	8.43e5	-----	-----	1.57	

Penta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDD-13C	31:54	4.26e7	2.64e7	7.78e6	4.81e6	-----	-----	1.61	
1,2,3,7,8-PeCDD	31:55	2.73e6	4.52e6	5.16e5	7.97e5	-----	-----	0.60	

Hexa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDF-13C	35:36	2.99e7	5.75e7	7.38e6	1.42e7	-----	-----	0.52	
1,2,3,6,7,8-HxCDF-13C	35:45	3.85e7	7.34e7	8.05e6	1.53e7	-----	-----	0.52	
2,3,4,6,7,8-HxCDF-13C	36:31	3.55e7	6.88e7	8.33e6	1.58e7	-----	-----	0.52	
1,2,3,7,8,9-HxCDF-13C	37:33	2.96e7	5.56e7	6.54e6	1.22e7	-----	-----	0.53	
1,2,3,4,7,8-HxCDF	35:37	6.12e6	4.76e6	1.55e6	1.21e6	-----	-----	1.28	
1,2,3,6,7,8-HxCDF	35:47	7.29e6	5.82e6	1.54e6	1.24e6	-----	-----	1.25	
2,3,4,6,7,8-HxCDF	36:32	6.69e6	5.37e6	1.61e6	1.30e6	-----	-----	1.25	
1,2,3,7,8,9-HxCDF	37:34	5.63e6	4.21e6	1.21e6	9.06e5	-----	-----	1.34	

REPORT OF LABORATORY ANALYSIS

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Client Name	Minnesota Dept. of Health		
Client ID	CS-2	Injected By	BAL
Lab ID	5176-102	Instrument ID	10MSHR09 (P)
Filename	P70829B_03	GC Column ID	US6872627H
Analyzed	08/29/2007 17:51	ICAL Date	08/29/2007

Hexa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDD-13C	36:42	3.57e7	2.80e7	9.93e6	7.65e6	-----	-----	1.28	
1,2,3,6,7,8-HxCDD-13C	36:50	4.59e7	3.63e7	1.06e7	8.25e6	-----	-----	1.26	
1,2,3,7,8,9-HxCDD-13C	37:10	4.20e7	3.28e7	9.06e6	7.18e6	-----	-----	1.28	
1,2,3,4,7,8-HxCDD	36:43	3.75e6	3.04e6	1.04e6	8.61e5	-----	-----	1.23	
1,2,3,6,7,8-HxCDD	36:51	4.56e6	3.69e6	1.03e6	8.28e5	-----	-----	1.23	
1,2,3,7,8,9-HxCDD	37:11	4.01e6	3.25e6	8.98e5	7.12e5	-----	-----	1.23	

Hepta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDF-13C	39:16	2.31e7	5.08e7	5.66e6	1.25e7	-----	-----	0.45	
1,2,3,4,7,8,9-HpCDF-13C	40:58	2.01e7	4.52e7	4.69e6	1.02e7	-----	-----	0.45	
1,2,3,4,6,7,8-HpCDF	39:17	5.44e6	5.09e6	1.35e6	1.29e6	-----	-----	1.07	
1,2,3,4,7,8,9-HpCDF	40:59	4.25e6	3.82e6	9.93e5	9.16e5	-----	-----	1.11	

Hepta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDD-13C	40:27	2.80e7	2.66e7	6.80e6	6.41e6	-----	-----	1.05	
1,2,3,4,6,7,8-HpCDD	40:28	3.06e6	2.82e6	7.21e5	6.71e5	-----	-----	1.08	

Octa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDF	43:31	6.50e6	7.30e6	1.47e6	1.63e6	-----	-----	0.89	

Octa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDD-13C	43:21	4.76e7	5.30e7	1.04e7	1.15e7	-----	-----	0.90	
OCDD	43:22	5.27e6	6.07e6	1.19e6	1.35e6	-----	-----	0.87	

REPORT OF LABORATORY ANALYSIS

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PCDD/PCDF Detected Peak List

Prepared By _____ Date _____

Reviewed By _____ Date _____

Client Name	Minnesota Dept. of Health		
Client ID	CS-3	Injected By	BAL
Lab ID	5176-129	Instrument ID	10MSHR09 (P)
Filename	P70829B_02	GC Column ID	US6872627H
Analyzed	08/29/2007 16:49	ICAL Date	08/29/2007

Tetra-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
2,3,7,8-TCDF-13C	22:05	4.93e7	6.23e7	6.95e6	8.79e6	-----	-----	0.79	
2,3,7,8-TCDF	22:07	5.47e6	6.97e6	7.99e5	9.78e5	-----	-----	0.78	

Tetra-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4-TCDD-13C	22:18	3.25e7	4.09e7	4.75e6	6.08e6	-----	-----	0.80	
2,3,7,8-TCDD-13C	23:11	3.33e7	4.13e7	4.48e6	5.64e6	-----	-----	0.81	
2,3,7,8-TCDD-37Cl4	23:12	7.71e6		1.10e6		-----	-----		
2,3,7,8-TCDD	23:12	3.68e6	4.56e6	4.78e5	6.20e5	-----	-----	0.81	

Penta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDF-13C	29:47	5.93e7	3.60e7	9.00e6	5.52e6	-----	-----	1.65	
2,3,4,7,8-PeCDF-13C	31:26	5.94e7	3.77e7	1.06e7	6.79e6	-----	-----	1.58	
1,2,3,7,8-PeCDF	29:48	2.89e7	1.87e7	4.37e6	2.79e6	-----	-----	1.55	
2,3,4,7,8-PeCDF	31:27	3.14e7	2.02e7	5.48e6	3.54e6	-----	-----	1.55	

Penta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDD-13C	31:55	3.47e7	2.14e7	6.24e6	3.92e6	-----	-----	1.62	
1,2,3,7,8-PeCDD	31:56	1.16e7	1.84e7	2.08e6	3.26e6	-----	-----	0.63	

Hexa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDF-13C	35:36	2.54e7	4.83e7	6.12e6	1.17e7	-----	-----	0.53	
1,2,3,6,7,8-HxCDF-13C	35:46	3.19e7	6.07e7	7.10e6	1.33e7	-----	-----	0.53	
2,3,4,6,7,8-HxCDF-13C	36:32	2.98e7	5.71e7	7.25e6	1.36e7	-----	-----	0.52	
1,2,3,7,8,9-HxCDF-13C	37:33	2.46e7	4.75e7	5.28e6	9.96e6	-----	-----	0.52	
1,2,3,4,7,8-HxCDF	35:38	2.51e7	2.00e7	6.30e6	4.93e6	-----	-----	1.26	
1,2,3,6,7,8-HxCDF	35:47	3.09e7	2.41e7	6.42e6	5.05e6	-----	-----	1.28	
2,3,4,6,7,8-HxCDF	36:33	2.87e7	2.31e7	6.97e6	5.53e6	-----	-----	1.24	
1,2,3,7,8,9-HxCDF	37:34	2.28e7	1.84e7	4.91e6	3.86e6	-----	-----	1.23	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Tel: 612-607-1700
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Client Name	Minnesota Dept. of Health		
Client ID	CS-3	Injected By	BAL
Lab ID	5176-129	Instrument ID	10MSHR09 (P)
Filename	P70829B_02	GC Column ID	US6872627H
Analyzed	08/29/2007 16:49	ICAL Date	08/29/2007

Hexa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDD-13C	36:43	3.00e7	2.36e7	8.24e6	6.49e6	-----	-----	1.27	
1,2,3,6,7,8-HxCDD-13C	36:50	3.87e7	3.06e7	8.83e6	7.02e6	-----	-----	1.26	
1,2,3,7,8,9-HxCDD-13C	37:11	3.55e7	2.79e7	7.68e6	6.06e6	-----	-----	1.27	
1,2,3,4,7,8-HxCDD	36:44	1.60e7	1.27e7	4.23e6	3.38e6	-----	-----	1.26	
1,2,3,6,7,8-HxCDD	36:51	1.93e7	1.53e7	4.34e6	3.54e6	-----	-----	1.26	
1,2,3,7,8,9-HxCDD	37:12	1.83e7	1.46e7	4.02e6	3.26e6	-----	-----	1.25	

Hepta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDF-13C	39:16	1.95e7	4.31e7	4.80e6	1.08e7	-----	-----	0.45	
1,2,3,4,7,8,9-HpCDF-13C	40:59	1.72e7	3.66e7	3.97e6	8.63e6	-----	-----	0.47	
1,2,3,4,6,7,8-HpCDF	39:17	2.24e7	2.13e7	5.73e6	5.37e6	-----	-----	1.05	
1,2,3,4,7,8,9-HpCDF	40:59	1.70e7	1.66e7	4.03e6	3.85e6	-----	-----	1.02	

Hepta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDD-13C	40:28	2.42e7	2.30e7	5.80e6	5.63e6	-----	-----	1.05	
1,2,3,4,6,7,8-HpCDD	40:28	1.26e7	1.23e7	3.24e6	3.01e6	-----	-----	1.03	

Octa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDF	43:32	2.93e7	3.28e7	6.43e6	7.04e6	-----	-----	0.89	

Octa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDD-13C	43:22	4.17e7	4.66e7	9.49e6	1.07e7	-----	-----	0.90	
OCDD	43:22	2.29e7	2.58e7	5.48e6	5.99e6	-----	-----	0.89	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

PCDD/PCDF Detected Peak List

Prepared By _____ Date _____

Reviewed By _____ Date _____

Client Name	Minnesota Dept. of Health		
Client ID	CS-4	Injected By	BAL
Lab ID	5176-103	Instrument ID	10MSHR09 (P)
Filename	P70829B_06	GC Column ID	US6872627H
Analyzed	08/29/2007 20:14	ICAL Date	08/29/2007

Tetra-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
2,3,7,8-TCDF-13C	22:02	5.44e7	6.86e7	7.80e6	9.74e6	-----	-----	0.79	
2,3,7,8-TCDF	22:04	2.56e7	3.31e7	3.62e6	4.70e6	-----	-----	0.77	

Tetra-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4-TCDD-13C	22:15	3.70e7	4.66e7	5.52e6	6.95e6	-----	-----	0.79	
2,3,7,8-TCDD-13C	23:09	3.66e7	4.65e7	4.97e6	6.36e6	-----	-----	0.79	
2,3,7,8-TCDD-37Cl4	23:11	3.66e7		4.79e6		-----	-----		
2,3,7,8-TCDD	23:11	1.54e7	1.97e7	2.10e6	2.64e6	-----	-----	0.78	

Penta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDF-13C	29:44	6.31e7	3.93e7	9.94e6	6.18e6	-----	-----	1.61	
2,3,4,7,8-PeCDF-13C	31:23	6.31e7	3.97e7	1.19e7	7.35e6	-----	-----	1.59	
1,2,3,7,8-PeCDF	29:46	1.35e8	8.64e7	2.09e7	1.33e7	-----	-----	1.57	
2,3,4,7,8-PeCDF	31:25	1.40e8	8.97e7	2.59e7	1.62e7	-----	-----	1.56	

Penta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDD-13C	31:52	3.68e7	2.30e7	6.95e6	4.38e6	-----	-----	1.60	
1,2,3,7,8-PeCDD	31:54	5.25e7	8.46e7	9.51e6	1.54e7	-----	-----	0.62	

Hexa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDF-13C	35:35	2.73e7	5.18e7	6.81e6	1.28e7	-----	-----	0.53	
1,2,3,6,7,8-HxCDF-13C	35:45	3.43e7	6.44e7	7.52e6	1.45e7	-----	-----	0.53	
2,3,4,6,7,8-HxCDF-13C	36:30	3.14e7	5.97e7	8.26e6	1.53e7	-----	-----	0.53	
1,2,3,7,8,9-HxCDF-13C	37:31	2.61e7	4.98e7	6.07e6	1.17e7	-----	-----	0.52	
1,2,3,4,7,8-HxCDF	35:36	1.13e8	9.11e7	2.88e7	2.31e7	-----	-----	1.25	
1,2,3,6,7,8-HxCDF	35:46	1.35e8	1.09e8	3.01e7	2.39e7	-----	-----	1.24	
2,3,4,6,7,8-HxCDF	36:31	1.29e8	1.03e8	3.23e7	2.61e7	-----	-----	1.24	
1,2,3,7,8,9-HxCDF	37:33	1.07e8	8.59e7	2.34e7	1.88e7	-----	-----	1.25	

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
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Tel: 612-607-1700
Fax: 612- 607-6444

Client Name	Minnesota Dept. of Health		
Client ID	CS-4	Injected By	BAL
Lab ID	5176-103	Instrument ID	10MSHR09 (P)
Filename	P70829B_06	GC Column ID	US6872627H
Analyzed	08/29/2007 20:14	ICAL Date	08/29/2007

Hexa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDD-13C	36:41	3.25e7	2.56e7	9.15e6	7.13e6	-----	-----	1.27	
1,2,3,6,7,8-HxCDD-13C	36:50	4.13e7	3.27e7	9.80e6	7.60e6	-----	-----	1.26	
1,2,3,7,8,9-HxCDD-13C	37:09	3.79e7	2.95e7	8.61e6	6.81e6	-----	-----	1.28	
1,2,3,4,7,8-HxCDD	36:43	7.57e7	5.79e7	2.09e7	1.62e7	-----	-----	1.31	
1,2,3,6,7,8-HxCDD	36:50	8.54e7	7.00e7	2.02e7	1.61e7	-----	-----	1.22	
1,2,3,7,8,9-HxCDD	37:10	8.29e7	6.57e7	1.91e7	1.51e7	-----	-----	1.26	

Hepta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDF-13C	39:16	2.02e7	4.46e7	5.49e6	1.18e7	-----	-----	0.45	
1,2,3,4,7,8,9-HpCDF-13C	40:57	1.77e7	3.97e7	4.50e6	9.84e6	-----	-----	0.45	
1,2,3,4,6,7,8-HpCDF	39:16	9.92e7	9.53e7	2.67e7	2.56e7	-----	-----	1.04	
1,2,3,4,7,8,9-HpCDF	40:58	7.87e7	7.61e7	1.91e7	1.80e7	-----	-----	1.04	

Hepta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDD-13C	40:26	2.53e7	2.37e7	6.63e6	6.24e6	-----	-----	1.07	
1,2,3,4,6,7,8-HpCDD	40:27	5.76e7	5.52e7	1.51e7	1.44e7	-----	-----	1.04	

Octa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDF	43:31	1.44e8	1.59e8	3.31e7	3.59e7	-----	-----	0.91	

Octa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDD-13C	43:20	4.44e7	5.00e7	1.08e7	1.22e7	-----	-----	0.89	
OCDD	43:21	1.10e8	1.22e8	2.61e7	2.88e7	-----	-----	0.90	

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PCDD/PCDF Detected Peak List

Prepared By _____ Date _____

Reviewed By _____ Date _____

Client Name	Minnesota Dept. of Health		
Client ID	CS-5	Injected By	BAL
Lab ID	5176-104	Instrument ID	10MSHR09 (P)
Filename	P70829B_05	GC Column ID	US6872627H
Analyzed	08/29/2007 19:26	ICAL Date	08/29/2007

Tetra-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
2,3,7,8-TCDF-13C	22:03	8.52e7	1.06e8	1.33e7	1.63e7	-----	-----	0.81	
2,3,7,8-TCDF	22:04	1.97e8	2.54e8	2.87e7	3.66e7	-----	-----	0.78	

Tetra-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4-TCDD-13C	22:16	5.51e7	6.92e7	8.32e6	1.05e7	-----	-----	0.80	
2,3,7,8-TCDD-13C	23:09	5.83e7	7.28e7	8.34e6	1.06e7	-----	-----	0.80	
2,3,7,8-TCDD-37Cl4	23:11	2.86e8		3.96e7		-----	-----		
2,3,7,8-TCDD	23:11	1.24e8	1.57e8	1.74e7	2.26e7	-----	-----	0.79	

Penta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDF-13C	29:44	1.08e8	6.74e7	1.77e7	1.13e7	-----	-----	1.60	
2,3,4,7,8-PeCDF-13C	31:24	1.08e8	6.71e7	2.11e7	1.29e7	-----	-----	1.61	
1,2,3,7,8-PeCDF	29:46	1.14e9	7.27e8	1.91e8	1.23e8	-----	-----	1.57	
2,3,4,7,8-PeCDF	31:25	1.18e9	7.52e8	2.23e8	1.41e8	-----	-----	1.57	

Penta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDD-13C	31:53	6.24e7	3.94e7	1.21e7	7.59e6	-----	-----	1.59	
1,2,3,7,8-PeCDD	31:55	4.40e8	6.93e8	8.62e7	1.33e8	-----	-----	0.64	

Hexa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDF-13C	35:36	4.57e7	8.75e7	1.18e7	2.22e7	-----	-----	0.52	
1,2,3,6,7,8-HxCDF-13C	35:45	5.66e7	1.06e8	1.34e7	2.54e7	-----	-----	0.54	
2,3,4,6,7,8-HxCDF-13C	36:30	5.29e7	9.99e7	1.33e7	2.51e7	-----	-----	0.53	
1,2,3,7,8,9-HxCDF-13C	37:32	4.55e7	8.59e7	1.12e7	2.09e7	-----	-----	0.53	
1,2,3,4,7,8-HxCDF	35:36	9.24e8	7.38e8	2.33e8	1.85e8	-----	-----	1.25	
1,2,3,6,7,8-HxCDF	35:46	1.09e9	8.60e8	2.52e8	2.04e8	-----	-----	1.27	
2,3,4,6,7,8-HxCDF	36:32	1.03e9	8.22e8	2.62e8	2.09e8	-----	-----	1.26	
1,2,3,7,8,9-HxCDF	37:33	8.77e8	6.90e8	2.14e8	1.68e8	-----	-----	1.27	

REPORT OF LABORATORY ANALYSIS

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Client Name	Minnesota Dept. of Health		
Client ID	CS-5	Injected By	BAL
Lab ID	5176-104	Instrument ID	10MSHR09 (P)
Filename	P70829B_05	GC Column ID	US6872627H
Analyzed	08/29/2007 19:26	ICAL Date	08/29/2007

Hexa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDD-13C	36:42	5.51e7	4.28e7	1.54e7	1.21e7	-----	-----	1.29	
1,2,3,6,7,8-HxCDD-13C	36:50	6.67e7	5.29e7	1.63e7	1.29e7	-----	-----	1.26	
1,2,3,7,8,9-HxCDD-13C	37:09	6.18e7	4.83e7	1.56e7	1.21e7	-----	-----	1.28	
1,2,3,4,7,8-HxCDD	36:43	6.04e8	4.75e8	1.68e8	1.30e8	-----	-----	1.27	
1,2,3,6,7,8-HxCDD	36:50	6.79e8	5.36e8	1.65e8	1.29e8	-----	-----	1.27	
1,2,3,7,8,9-HxCDD	37:10	6.47e8	5.12e8	1.57e8	1.25e8	-----	-----	1.26	

Hepta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDF-13C	39:16	3.41e7	7.61e7	9.28e6	2.08e7	-----	-----	0.45	
1,2,3,4,7,8,9-HpCDF-13C	40:57	3.17e7	7.01e7	8.06e6	1.77e7	-----	-----	0.45	
1,2,3,4,6,7,8-HpCDF	39:16	8.07e8	7.67e8	2.23e8	2.06e8	-----	-----	1.05	
1,2,3,4,7,8,9-HpCDF	40:58	6.76e8	6.41e8	1.76e8	1.68e8	-----	-----	1.05	

Hepta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDD-13C	40:27	4.34e7	4.12e7	1.18e7	1.09e7	-----	-----	1.05	
1,2,3,4,6,7,8-HpCDD	40:28	4.77e8	4.52e8	1.24e8	1.18e8	-----	-----	1.06	

Octa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDF	43:31	1.21e9	1.32e9	3.14e8	3.42e8	-----	-----	0.91	

Octa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDD-13C	43:21	7.97e7	8.90e7	2.01e7	2.20e7	-----	-----	0.90	
OCDD	43:22	8.97e8	9.92e8	2.22e8	2.46e8	-----	-----	0.90	

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PCDD/PCDF Detected Peak List

Prepared By _____ Date _____

Reviewed By _____ Date _____

Client Name	Minnesota Dept. of Health		
Client ID	CS-1	Injected By	BAL
Lab ID	5176-101	Instrument ID	10MSHR06 (U)
Filename	U70921A_17	GC Column ID	US6809245H
Analyzed	09/21/2007 23:40	ICAL Date	09/21/2007

Tetra-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
2,3,7,8-TCDF-13C	20:30	1.51e8	1.88e8	2.34e7	2.88e7	-----	-----	0.80	
2,3,7,8-TCDF	20:32	1.06e6	1.21e6	1.75e5	1.92e5	-----	-----	0.87	

Tetra-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4-TCDD-13C	20:41	1.07e8	1.34e8	1.73e7	2.14e7	-----	-----	0.80	
2,3,7,8-TCDD-13C	21:31	1.10e8	1.38e8	1.59e7	2.03e7	-----	-----	0.79	
2,3,7,8-TCDD-37Cl4	21:33	1.40e6		2.10e5		-----	-----		
2,3,7,8-TCDD	21:33	5.99e5	7.49e5	1.05e5	1.20e5	-----	-----	0.80	

Penta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDF-13C	28:10	1.94e8	1.21e8	2.45e7	1.50e7	-----	-----	1.60	
2,3,4,7,8-PeCDF-13C	30:07	1.84e8	1.17e8	2.83e7	1.84e7	-----	-----	1.57	
1,2,3,7,8-PeCDF	28:11	5.71e6	3.73e6	7.63e5	4.91e5	-----	-----	1.53	
2,3,4,7,8-PeCDF	30:09	5.82e6	3.74e6	9.80e5	5.96e5	-----	-----	1.56	

Penta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDD-13C	30:41	1.09e8	6.86e7	1.77e7	1.11e7	-----	-----	1.59	
1,2,3,7,8-PeCDD	30:43	1.96e6	3.07e6	3.39e5	5.19e5	-----	-----	0.64	

Hexa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDF-13C	34:47	8.85e7	1.61e8	1.97e7	3.64e7	-----	-----	0.55	
1,2,3,6,7,8-HxCDF-13C	34:57	1.04e8	1.90e8	2.23e7	4.14e7	-----	-----	0.55	
2,3,4,6,7,8-HxCDF-13C	35:47	9.83e7	1.81e8	2.27e7	4.17e7	-----	-----	0.54	
1,2,3,7,8,9-HxCDF-13C	36:52	8.58e7	1.59e8	1.78e7	3.32e7	-----	-----	0.54	
1,2,3,4,7,8-HxCDF	34:49	4.80e6	3.82e6	1.16e6	8.91e5	-----	-----	1.26	
1,2,3,6,7,8-HxCDF	34:59	5.55e6	4.40e6	1.18e6	9.73e5	-----	-----	1.26	
2,3,4,6,7,8-HxCDF	35:48	5.26e6	4.13e6	1.20e6	9.26e5	-----	-----	1.27	
1,2,3,7,8,9-HxCDF	36:52	4.50e6	3.60e6	1.03e6	7.61e5	-----	-----	1.25	

REPORT OF LABORATORY ANALYSIS

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Tel: 612-607-1700
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Client Name	Minnesota Dept. of Health		
Client ID	CS-1	Injected By	BAL
Lab ID	5176-101	Instrument ID	10MSHR06 (U)
Filename	U70921A_17	GC Column ID	US6809245H
Analyzed	09/21/2007 23:40	ICAL Date	09/21/2007

Hexa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDD-13C	35:60	9.31e7	7.25e7	2.32e7	1.82e7	-----	-----	1.28	
1,2,3,6,7,8-HxCDD-13C	36:07	1.09e8	8.61e7	2.39e7	1.90e7	-----	-----	1.26	
1,2,3,7,8,9-HxCDD-13C	36:28	1.04e8	8.26e7	2.18e7	1.76e7	-----	-----	1.26	
1,2,3,4,7,8-HxCDD	36:00	2.80e6	2.13e6	7.01e5	5.51e5	-----	-----	1.32	
1,2,3,6,7,8-HxCDD	36:08	3.00e6	2.50e6	6.66e5	5.33e5	-----	-----	1.20	
1,2,3,7,8,9-HxCDD	36:29	2.89e6	2.33e6	6.48e5	5.02e5	-----	-----	1.24	

Hepta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDF-13C	38:46	5.55e7	1.21e8	1.25e7	2.76e7	-----	-----	0.46	
1,2,3,4,7,8,9-HpCDF-13C	40:35	5.02e7	1.10e8	1.01e7	2.21e7	-----	-----	0.46	
1,2,3,4,6,7,8-HpCDF	38:47	3.36e6	3.06e6	7.78e5	6.89e5	-----	-----	1.10	
1,2,3,4,7,8,9-HpCDF	40:36	2.71e6	2.54e6	5.66e5	5.14e5	-----	-----	1.07	

Hepta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDD-13C	40:03	6.65e7	6.24e7	1.45e7	1.37e7	-----	-----	1.07	
1,2,3,4,6,7,8-HpCDD	40:04	1.87e6	1.79e6	4.38e5	3.98e5	-----	-----	1.05	

Octa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDF	43:27	4.50e6	4.71e6	6.68e5	7.30e5	-----	-----	0.96	

Octa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDD-13C	43:19	1.21e8	1.36e8	1.81e7	2.01e7	-----	-----	0.89	
OCDD	43:19	3.40e6	3.97e6	5.33e5	5.95e5	-----	-----	0.85	

REPORT OF LABORATORY ANALYSIS

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PCDD/PCDF Detected Peak List

Prepared By _____ Date _____

Reviewed By _____ Date _____

Client Name	Minnesota Dept. of Health		
Client ID	CS-2	Injected By	BAL
Lab ID	5176-102	Instrument ID	10MSHR06 (U)
Filename	U70921A_16	GC Column ID	US6809245H
Analyzed	09/21/2007 22:51	ICAL Date	09/21/2007

Tetra-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
2,3,7,8-TCDF-13C	20:31	9.87e7	1.20e8	1.51e7	1.87e7	-----	-----	0.82	
2,3,7,8-TCDF	20:32	2.65e6	3.22e6	4.28e5	4.86e5	-----	-----	0.82	

Tetra-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4-TCDD-13C	20:42	6.88e7	8.74e7	1.15e7	1.44e7	-----	-----	0.79	
2,3,7,8-TCDD-13C	21:32	6.99e7	8.94e7	1.04e7	1.31e7	-----	-----	0.78	
2,3,7,8-TCDD-37Cl4	21:34	3.55e6		4.93e5		-----	-----		
2,3,7,8-TCDD	21:34	1.55e6	1.90e6	2.26e5	3.11e5	-----	-----	0.82	

Penta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDF-13C	28:11	1.27e8	7.84e7	1.61e7	1.00e7	-----	-----	1.62	
2,3,4,7,8-PeCDF-13C	30:08	1.23e8	7.64e7	1.94e7	1.20e7	-----	-----	1.61	
1,2,3,7,8-PeCDF	28:12	1.47e7	9.31e6	1.89e6	1.19e6	-----	-----	1.58	
2,3,4,7,8-PeCDF	30:09	1.46e7	9.79e6	2.27e6	1.47e6	-----	-----	1.49	

Penta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDD-13C	30:41	7.14e7	4.51e7	1.16e7	7.27e6	-----	-----	1.58	
1,2,3,7,8-PeCDD	30:43	5.01e6	7.96e6	8.37e5	1.25e6	-----	-----	0.63	

Hexa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDF-13C	34:47	5.66e7	1.07e8	1.33e7	2.52e7	-----	-----	0.53	
1,2,3,6,7,8-HxCDF-13C	34:57	6.81e7	1.27e8	1.38e7	2.62e7	-----	-----	0.54	
2,3,4,6,7,8-HxCDF-13C	35:47	6.40e7	1.20e8	1.41e7	2.60e7	-----	-----	0.53	
1,2,3,7,8,9-HxCDF-13C	36:52	5.64e7	1.02e8	1.19e7	2.10e7	-----	-----	0.55	
1,2,3,4,7,8-HxCDF	34:49	1.24e7	9.70e6	2.94e6	2.25e6	-----	-----	1.28	
1,2,3,6,7,8-HxCDF	34:59	1.38e7	1.10e7	2.83e6	2.21e6	-----	-----	1.26	
2,3,4,6,7,8-HxCDF	35:48	1.30e7	1.07e7	2.84e6	2.37e6	-----	-----	1.21	
1,2,3,7,8,9-HxCDF	36:52	1.13e7	8.88e6	2.47e6	1.91e6	-----	-----	1.27	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Tel: 612-607-1700
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Client Name	Minnesota Dept. of Health		
Client ID	CS-2	Injected By	BAL
Lab ID	5176-102	Instrument ID	10MSHR06 (U)
Filename	U70921A_16	GC Column ID	US6809245H
Analyzed	09/21/2007 22:51	ICAL Date	09/21/2007

Hexa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDD-13C	35:60	6.04e7	4.73e7	1.54e7	1.17e7	-----	-----	1.28	
1,2,3,6,7,8-HxCDD-13C	36:07	7.14e7	5.72e7	1.57e7	1.25e7	-----	-----	1.25	
1,2,3,7,8,9-HxCDD-13C	36:28	6.72e7	5.40e7	1.41e7	1.13e7	-----	-----	1.24	
1,2,3,4,7,8-HxCDD	36:01	7.13e6	5.42e6	1.74e6	1.37e6	-----	-----	1.32	
1,2,3,6,7,8-HxCDD	36:09	7.60e6	6.22e6	1.81e6	1.39e6	-----	-----	1.22	
1,2,3,7,8,9-HxCDD	36:29	7.60e6	5.73e6	1.61e6	1.22e6	-----	-----	1.33	

Hepta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDF-13C	38:46	3.66e7	7.91e7	8.25e6	1.78e7	-----	-----	0.46	
1,2,3,4,7,8,9-HpCDF-13C	40:35	3.26e7	7.13e7	6.61e6	1.45e7	-----	-----	0.46	
1,2,3,4,6,7,8-HpCDF	38:47	8.56e6	7.94e6	1.98e6	1.89e6	-----	-----	1.08	
1,2,3,4,7,8,9-HpCDF	40:36	6.83e6	6.38e6	1.45e6	1.38e6	-----	-----	1.07	

Hepta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDD-13C	40:03	4.41e7	4.13e7	9.70e6	9.14e6	-----	-----	1.07	
1,2,3,4,6,7,8-HpCDD	40:04	5.08e6	4.73e6	1.13e6	1.07e6	-----	-----	1.07	

Octa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDF	43:27	1.16e7	1.26e7	1.90e6	1.92e6	-----	-----	0.92	

Octa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDD-13C	43:18	7.84e7	8.66e7	1.18e7	1.31e7	-----	-----	0.90	
OCDD	43:19	9.05e6	1.01e7	1.38e6	1.49e6	-----	-----	0.90	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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PCDD/PCDF Detected Peak List

Prepared By _____ Date _____

Reviewed By _____ Date _____

Client Name	Minnesota Dept. of Health		
Client ID	CS-3	Injected By	BAL
Lab ID	5176-129	Instrument ID	10MSHR06 (U)
Filename	U70921A_15	GC Column ID	US6809245H
Analyzed	09/21/2007 22:03	ICAL Date	09/21/2007

Tetra-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
2,3,7,8-TCDF-13C	20:32	5.01e7	6.22e7	7.49e6	9.33e6	-----	-----	0.80	
2,3,7,8-TCDF	20:33	6.48e6	8.31e6	9.33e5	1.20e6	-----	-----	0.78	

Tetra-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4-TCDD-13C	20:43	3.54e7	4.49e7	5.78e6	7.08e6	-----	-----	0.79	
2,3,7,8-TCDD-13C	21:33	3.64e7	4.60e7	5.02e6	6.39e6	-----	-----	0.79	
2,3,7,8-TCDD-37Cl4	21:34	8.83e6		1.30e6		-----	-----		
2,3,7,8-TCDD	21:35	3.99e6	5.10e6	5.60e5	6.93e5	-----	-----	0.78	

Penta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDF-13C	28:11	6.64e7	4.07e7	8.56e6	5.25e6	-----	-----	1.63	
2,3,4,7,8-PeCDF-13C	30:08	6.45e7	4.01e7	1.01e7	6.08e6	-----	-----	1.61	
1,2,3,7,8-PeCDF	28:13	3.79e7	2.41e7	4.75e6	3.02e6	-----	-----	1.57	
2,3,4,7,8-PeCDF	30:10	3.86e7	2.43e7	5.90e6	3.65e6	-----	-----	1.59	

Penta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDD-13C	30:42	3.71e7	2.35e7	5.63e6	3.63e6	-----	-----	1.58	
1,2,3,7,8-PeCDD	30:43	1.32e7	2.04e7	2.13e6	3.34e6	-----	-----	0.65	

Hexa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDF-13C	34:48	3.04e7	5.61e7	6.56e6	1.20e7	-----	-----	0.54	
1,2,3,6,7,8-HxCDF-13C	34:58	3.58e7	6.53e7	7.69e6	1.40e7	-----	-----	0.55	
2,3,4,6,7,8-HxCDF-13C	35:48	3.42e7	6.32e7	7.59e6	1.39e7	-----	-----	0.54	
1,2,3,7,8,9-HxCDF-13C	36:52	2.91e7	5.35e7	6.17e6	1.09e7	-----	-----	0.54	
1,2,3,4,7,8-HxCDF	34:50	3.21e7	2.53e7	7.24e6	5.65e6	-----	-----	1.27	
1,2,3,6,7,8-HxCDF	34:59	3.57e7	2.82e7	7.35e6	6.09e6	-----	-----	1.27	
2,3,4,6,7,8-HxCDF	35:48	3.44e7	2.72e7	7.70e6	5.91e6	-----	-----	1.26	
1,2,3,7,8,9-HxCDF	36:53	2.89e7	2.27e7	5.95e6	4.71e6	-----	-----	1.28	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Tel: 612-607-1700
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Client Name	Minnesota Dept. of Health		
Client ID	CS-3	Injected By	BAL
Lab ID	5176-129	Instrument ID	10MSHR06 (U)
Filename	U70921A_15	GC Column ID	US6809245H
Analyzed	09/21/2007 22:03	ICAL Date	09/21/2007

Hexa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDD-13C	36:01	3.20e7	2.52e7	7.83e6	6.22e6	-----	-----	1.27	
1,2,3,6,7,8-HxCDD-13C	36:08	3.75e7	2.97e7	8.23e6	6.65e6	-----	-----	1.26	
1,2,3,7,8,9-HxCDD-13C	36:29	3.55e7	2.84e7	7.94e6	6.43e6	-----	-----	1.25	
1,2,3,4,7,8-HxCDD	36:01	1.81e7	1.41e7	4.40e6	3.52e6	-----	-----	1.29	
1,2,3,6,7,8-HxCDD	36:09	1.99e7	1.57e7	4.26e6	3.45e6	-----	-----	1.27	
1,2,3,7,8,9-HxCDD	36:30	1.92e7	1.52e7	4.33e6	3.40e6	-----	-----	1.26	

Hepta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDF-13C	38:47	1.90e7	4.15e7	4.36e6	9.71e6	-----	-----	0.46	
1,2,3,4,7,8,9-HpCDF-13C	40:35	1.64e7	3.58e7	3.32e6	7.35e6	-----	-----	0.46	
1,2,3,4,6,7,8-HpCDF	38:48	2.19e7	2.06e7	5.06e6	4.84e6	-----	-----	1.07	
1,2,3,4,7,8,9-HpCDF	40:36	1.66e7	1.58e7	3.52e6	3.27e6	-----	-----	1.05	

Hepta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDD-13C	40:03	2.22e7	2.12e7	4.99e6	4.62e6	-----	-----	1.05	
1,2,3,4,6,7,8-HpCDD	40:04	1.24e7	1.21e7	2.70e6	2.68e6	-----	-----	1.03	

Octa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDF	43:27	2.90e7	3.09e7	4.54e6	4.96e6	-----	-----	0.94	

Octa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDD-13C	43:18	3.78e7	4.26e7	5.71e6	6.30e6	-----	-----	0.89	
OCDD	43:19	2.15e7	2.33e7	3.29e6	3.62e6	-----	-----	0.92	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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PCDD/PCDF Detected Peak List

Prepared By _____ Date _____

Reviewed By _____ Date _____

Client Name	Minnesota Dept. of Health		
Client ID	CS-4	Injected By	BAL
Lab ID	5176-103	Instrument ID	10MSHR06 (U)
Filename	U70921A_19	GC Column ID	US6809245H
Analyzed	09/22/2007 01:17	ICAL Date	09/21/2007

Tetra-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
2,3,7,8-TCDF-13C	20:30	6.94e7	8.56e7	1.10e7	1.33e7	-----	-----	0.81	
2,3,7,8-TCDF	20:32	3.47e7	4.43e7	5.41e6	6.91e6	-----	-----	0.78	

Tetra-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4-TCDD-13C	20:41	4.83e7	6.13e7	7.79e6	9.78e6	-----	-----	0.79	
2,3,7,8-TCDD-13C	21:31	4.98e7	6.30e7	7.45e6	9.34e6	-----	-----	0.79	
2,3,7,8-TCDD-37Cl4	21:33	4.92e7		7.17e6		-----	-----		
2,3,7,8-TCDD	21:33	2.11e7	2.66e7	3.07e6	4.00e6	-----	-----	0.79	

Penta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDF-13C	28:10	9.45e7	5.70e7	1.22e7	7.47e6	-----	-----	1.66	
2,3,4,7,8-PeCDF-13C	30:07	9.14e7	5.65e7	1.49e7	9.33e6	-----	-----	1.62	
1,2,3,7,8-PeCDF	28:11	2.16e8	1.37e8	2.81e7	1.79e7	-----	-----	1.58	
2,3,4,7,8-PeCDF	30:09	2.15e8	1.37e8	3.35e7	2.16e7	-----	-----	1.57	

Penta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDD-13C	30:41	5.18e7	3.27e7	8.41e6	5.40e6	-----	-----	1.58	
1,2,3,7,8-PeCDD	30:43	7.38e7	1.17e8	1.22e7	1.99e7	-----	-----	0.63	

Hexa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDF-13C	34:47	4.31e7	7.89e7	1.00e7	1.86e7	-----	-----	0.55	
1,2,3,6,7,8-HxCDF-13C	34:57	5.05e7	9.22e7	1.04e7	1.97e7	-----	-----	0.55	
2,3,4,6,7,8-HxCDF-13C	35:47	4.77e7	8.89e7	1.08e7	2.03e7	-----	-----	0.54	
1,2,3,7,8,9-HxCDF-13C	36:52	4.29e7	7.82e7	9.27e6	1.64e7	-----	-----	0.55	
1,2,3,4,7,8-HxCDF	34:48	1.84e8	1.47e8	4.16e7	3.34e7	-----	-----	1.25	
1,2,3,6,7,8-HxCDF	34:58	2.06e8	1.59e8	4.37e7	3.36e7	-----	-----	1.29	
2,3,4,6,7,8-HxCDF	35:48	1.93e8	1.53e8	4.43e7	3.41e7	-----	-----	1.26	
1,2,3,7,8,9-HxCDF	36:52	1.75e8	1.39e8	3.81e7	2.98e7	-----	-----	1.27	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
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Tel: 612-607-1700
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Client Name	Minnesota Dept. of Health		
Client ID	CS-4	Injected By	BAL
Lab ID	5176-103	Instrument ID	10MSHR06 (U)
Filename	U70921A_19	GC Column ID	US6809245H
Analyzed	09/22/2007 01:17	ICAL Date	09/21/2007

Hexa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDD-13C	35:60	4.45e7	3.52e7	1.10e7	8.65e6	-----	-----	1.26	
1,2,3,6,7,8-HxCDD-13C	36:07	5.22e7	4.14e7	1.16e7	9.14e6	-----	-----	1.26	
1,2,3,7,8,9-HxCDD-13C	36:28	5.09e7	4.04e7	1.08e7	8.66e6	-----	-----	1.26	
1,2,3,4,7,8-HxCDD	36:00	1.03e8	8.09e7	2.62e7	2.05e7	-----	-----	1.28	
1,2,3,6,7,8-HxCDD	36:09	1.13e8	8.89e7	2.59e7	2.04e7	-----	-----	1.27	
1,2,3,7,8,9-HxCDD	36:29	1.13e8	9.03e7	2.46e7	1.90e7	-----	-----	1.25	

Hepta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDF-13C	38:47	2.63e7	5.71e7	6.28e6	1.38e7	-----	-----	0.46	
1,2,3,4,7,8,9-HpCDF-13C	40:35	2.42e7	5.37e7	5.15e6	1.15e7	-----	-----	0.45	
1,2,3,4,6,7,8-HpCDF	38:48	1.25e8	1.18e8	2.94e7	2.74e7	-----	-----	1.06	
1,2,3,4,7,8,9-HpCDF	40:36	1.04e8	9.84e7	2.24e7	2.10e7	-----	-----	1.05	

Hepta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDD-13C	40:03	3.12e7	2.91e7	7.12e6	6.74e6	-----	-----	1.07	
1,2,3,4,6,7,8-HpCDD	40:04	7.47e7	7.18e7	1.73e7	1.68e7	-----	-----	1.04	

Octa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDF	43:27	1.99e8	2.14e8	3.23e7	3.44e7	-----	-----	0.93	

Octa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDD-13C	43:19	6.03e7	6.69e7	9.64e6	1.07e7	-----	-----	0.90	
OCDD	43:20	1.44e8	1.60e8	2.25e7	2.47e7	-----	-----	0.90	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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PCDD/PCDF Detected Peak List

Prepared By _____ Date _____

Reviewed By _____ Date _____

Client Name	Minnesota Dept. of Health		
Client ID	CS-5	Injected By	BAL
Lab ID	5176-104	Instrument ID	10MSHR06 (U)
Filename	U70921A_18	GC Column ID	US6809245H
Analyzed	09/22/2007 00:29	ICAL Date	09/21/2007

Tetra-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
2,3,7,8-TCDF-13C	20:30	1.38e8	1.72e8	2.22e7	2.79e7	-----	-----	0.80	
2,3,7,8-TCDF	20:32	3.52e8	4.41e8	5.74e7	7.28e7	-----	-----	0.80	

Tetra-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4-TCDD-13C	20:41	9.45e7	1.18e8	1.51e7	1.88e7	-----	-----	0.80	
2,3,7,8-TCDD-13C	21:31	1.02e8	1.27e8	1.56e7	1.94e7	-----	-----	0.80	
2,3,7,8-TCDD-37Cl4	21:33	4.83e8		7.74e7		-----	-----		
2,3,7,8-TCDD	21:33	2.05e8	2.55e8	3.27e7	4.18e7	-----	-----	0.80	

Penta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDF-13C	28:10	1.95e8	1.20e8	2.58e7	1.57e7	-----	-----	1.63	
2,3,4,7,8-PeCDF-13C	30:07	1.91e8	1.18e8	3.14e7	1.94e7	-----	-----	1.62	
1,2,3,7,8-PeCDF	28:11	2.20e9	1.38e9	3.01e8	1.87e8	-----	-----	1.59	
2,3,4,7,8-PeCDF	30:08	2.24e9	1.42e9	3.83e8	2.39e8	-----	-----	1.58	

Penta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDD-13C	30:40	1.10e8	6.91e7	1.79e7	1.12e7	-----	-----	1.59	
1,2,3,7,8-PeCDD	30:43	7.67e8	1.20e9	1.34e8	2.06e8	-----	-----	0.64	

Hexa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDF-13C	34:47	9.09e7	1.70e8	2.15e7	4.06e7	-----	-----	0.53	
1,2,3,6,7,8-HxCDF-13C	34:57	1.05e8	1.96e8	2.30e7	4.38e7	-----	-----	0.54	
2,3,4,6,7,8-HxCDF-13C	35:47	1.01e8	1.85e8	2.44e7	4.47e7	-----	-----	0.54	
1,2,3,7,8,9-HxCDF-13C	36:51	9.11e7	1.67e8	2.02e7	3.75e7	-----	-----	0.55	
1,2,3,4,7,8-HxCDF	34:49	1.94e9	1.53e9	4.96e8	3.92e8	-----	-----	1.26	
1,2,3,6,7,8-HxCDF	34:59	2.12e9	1.68e9	4.81e8	3.78e8	-----	-----	1.26	
2,3,4,6,7,8-HxCDF	35:48	2.04e9	1.61e9	4.90e8	3.87e8	-----	-----	1.27	
1,2,3,7,8,9-HxCDF	36:52	1.82e9	1.44e9	4.25e8	3.31e8	-----	-----	1.27	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
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Client Name	Minnesota Dept. of Health		
Client ID	CS-5	Injected By	BAL
Lab ID	5176-104	Instrument ID	10MSHR06 (U)
Filename	U70921A_18	GC Column ID	US6809245H
Analyzed	09/22/2007 00:29	ICAL Date	09/21/2007

Hexa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDD-13C	35:60	9.86e7	7.63e7	2.53e7	1.91e7	-----	-----	1.29	
1,2,3,6,7,8-HxCDD-13C	36:07	1.14e8	8.90e7	2.65e7	2.07e7	-----	-----	1.28	
1,2,3,7,8,9-HxCDD-13C	36:28	1.10e8	8.59e7	2.47e7	1.96e7	-----	-----	1.28	
1,2,3,4,7,8-HxCDD	36:00	1.09e9	8.51e8	2.91e8	2.24e8	-----	-----	1.29	
1,2,3,6,7,8-HxCDD	36:09	1.18e9	9.22e8	2.82e8	2.19e8	-----	-----	1.28	
1,2,3,7,8,9-HxCDD	36:29	1.16e9	9.12e8	2.67e8	2.11e8	-----	-----	1.27	

Hepta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDF-13C	38:46	5.97e7	1.27e8	1.45e7	3.13e7	-----	-----	0.47	
1,2,3,4,7,8,9-HpCDF-13C	40:35	5.50e7	1.19e8	1.28e7	2.70e7	-----	-----	0.46	
1,2,3,4,6,7,8-HpCDF	38:47	1.33e9	1.25e9	3.42e8	3.24e8	-----	-----	1.06	
1,2,3,4,7,8,9-HpCDF	40:36	1.09e9	1.04e9	2.40e8	2.31e8	-----	-----	1.05	

Hepta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDD-13C	40:03	6.95e7	6.56e7	1.72e7	1.58e7	-----	-----	1.06	
1,2,3,4,6,7,8-HpCDD	40:04	7.85e8	7.39e8	1.95e8	1.81e8	-----	-----	1.06	

Octa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDF	43:28	2.25e9	2.41e9	4.01e8	4.28e8	-----	-----	0.93	

Octa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDD-13C	43:19	1.41e8	1.55e8	2.29e7	2.52e7	-----	-----	0.91	
OCDD	43:20	1.58e9	1.74e9	2.72e8	2.98e8	-----	-----	0.91	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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PCDD/PCDF Detected Peak List

Prepared By _____ Date _____

Reviewed By _____ Date _____

Client ID		Injected By	SMT
Lab ID	CS3/CPM-5176-129	Instrument ID	10MSHR06 (U)
Filename	U70926A_03	GC Column ID	US6809245H
Analyzed	09/26/2007 09:11	ICAL Date	09/21/2007

Tetra-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
2,3,7,8-TCDF-13C	20:10	1.16e7	1.42e7	1.89e6	2.34e6	-----	-----	0.82	
2,3,7,8-TCDF	20:12	1.30e6	1.61e6	2.10e5	2.65e5	-----	-----	0.81	

Tetra-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4-TCDD-13C	20:21	8.66e6	1.06e7	1.48e6	1.86e6	-----	-----	0.82	
2,3,7,8-TCDD-13C	21:09	8.39e6	1.01e7	1.26e6	1.62e6	-----	-----	0.83	
2,3,7,8-TCDD-37Cl4	21:11	2.11e6		3.27e5		-----	-----		
2,3,7,8-TCDD	21:11	8.70e5	1.19e6	1.45e5	1.86e5	-----	-----	0.73	

Penta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDF-13C	27:41	1.37e7	8.62e6	1.71e6	1.08e6	-----	-----	1.59	
2,3,4,7,8-PeCDF-13C	29:42	1.33e7	8.49e6	2.09e6	1.36e6	-----	-----	1.57	
1,2,3,7,8-PeCDF	27:43	6.97e6	4.38e6	9.01e5	5.49e5	-----	-----	1.59	
2,3,4,7,8-PeCDF	29:44	6.87e6	4.51e6	1.17e6	7.78e5	-----	-----	1.52	

Penta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDD-13C	30:17	8.40e6	5.44e6	1.49e6	9.64e5	-----	-----	1.54	
1,2,3,7,8-PeCDD	30:19	2.73e6	4.44e6	4.91e5	7.78e5	-----	-----	0.62	

Hexa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDF-13C	34:26	6.33e6	1.16e7	1.56e6	2.82e6	-----	-----	0.54	
1,2,3,6,7,8-HxCDF-13C	34:35	7.21e6	1.35e7	1.60e6	3.11e6	-----	-----	0.53	
2,3,4,6,7,8-HxCDF-13C	35:24	6.96e6	1.26e7	1.73e6	3.13e6	-----	-----	0.55	
1,2,3,7,8,9-HxCDF-13C	36:28	5.63e6	1.09e7	1.38e6	2.65e6	-----	-----	0.52	
1,2,3,4,7,8-HxCDF	34:27	6.23e6	4.93e6	1.55e6	1.22e6	-----	-----	1.26	
1,2,3,6,7,8-HxCDF	34:37	6.72e6	5.51e6	1.63e6	1.28e6	-----	-----	1.22	
2,3,4,6,7,8-HxCDF	35:25	6.66e6	5.06e6	1.62e6	1.21e6	-----	-----	1.31	
1,2,3,7,8,9-HxCDF	36:29	5.32e6	4.28e6	1.28e6	1.00e6	-----	-----	1.24	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Client ID		Injected By	SMT
Lab ID	CS3/CPM-5176-129	Instrument ID	10MSHR06 (U)
Filename	U70926A_03	GC Column ID	US6809245H
Analyzed	09/26/2007 09:11	ICAL Date	09/21/2007

Hexa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDD-13C	35:37	8.21e6	6.33e6	2.04e6	1.65e6	-----	-----	1.30	
1,2,3,6,7,8-HxCDD-13C	35:45	8.50e6	6.89e6	2.08e6	1.75e6	-----	-----	1.23	
1,2,3,7,8,9-HxCDD-13C	36:05	8.35e6	6.52e6	2.04e6	1.65e6	-----	-----	1.28	
1,2,3,4,7,8-HxCDD	35:38	4.13e6	3.40e6	1.06e6	9.03e5	-----	-----	1.21	
1,2,3,6,7,8-HxCDD	35:46	4.54e6	3.46e6	1.14e6	8.62e5	-----	-----	1.31	
1,2,3,7,8,9-HxCDD	36:07	4.29e6	3.41e6	1.08e6	8.92e5	-----	-----	1.26	

Hepta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDF-13C	38:19	4.92e6	1.02e7	1.36e6	2.87e6	-----	-----	0.48	
1,2,3,4,7,8,9-HpCDF-13C	40:04	3.80e6	8.67e6	1.11e6	2.54e6	-----	-----	0.44	
1,2,3,4,6,7,8-HpCDF	38:20	5.64e6	5.54e6	1.55e6	1.59e6	-----	-----	1.02	
1,2,3,4,7,8,9-HpCDF	40:04	4.05e6	3.83e6	1.18e6	1.16e6	-----	-----	1.06	

Hepta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDD-13C	39:32	5.65e6	5.20e6	1.76e6	1.60e6	-----	-----	1.09	
1,2,3,4,6,7,8-HpCDD	39:33	3.25e6	2.94e6	9.63e5	8.59e5	-----	-----	1.11	

Octa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDF	42:39	6.62e6	7.46e6	1.94e6	2.18e6	-----	-----	0.89	

Octa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDD-13C	42:30	1.02e7	1.12e7	3.10e6	3.54e6	-----	-----	0.91	
OCDD	42:31	6.45e6	7.31e6	1.87e6	2.08e6	-----	-----	0.88	

REPORT OF LABORATORY ANALYSIS

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PCDD/PCDF Detected Peak List

Prepared By _____ Date _____

Reviewed By _____ Date _____

Client ID		Injected By	SMT
Lab ID	CS3/CPM-5176-129	Instrument ID	10MSHR06 (U)
Filename	U70926A_19	GC Column ID	US6809245H
Analyzed	09/26/2007 21:52	ICAL Date	09/21/2007

Tetra-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
2,3,7,8-TCDF-13C	20:10	1.13e7	1.47e7	1.97e6	2.53e6	-----	-----	0.77	
2,3,7,8-TCDF	20:11	1.20e6	1.54e6	2.27e5	2.87e5	-----	-----	0.78	

Tetra-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4-TCDD-13C	20:21	8.95e6	1.10e7	1.63e6	1.91e6	-----	-----	0.81	
2,3,7,8-TCDD-13C	21:09	8.92e6	1.08e7	1.45e6	1.71e6	-----	-----	0.83	
2,3,7,8-TCDD-37Cl4	21:11	2.15e6		3.28e5		-----	-----		
2,3,7,8-TCDD	21:11	9.54e5	1.15e6	1.44e5	1.79e5	-----	-----	0.83	

Penta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDF-13C	27:42	1.43e7	9.02e6	1.73e6	1.15e6	-----	-----	1.59	
2,3,4,7,8-PeCDF-13C	29:43	1.48e7	9.54e6	2.35e6	1.44e6	-----	-----	1.55	
1,2,3,7,8-PeCDF	27:43	6.90e6	4.48e6	8.86e5	5.96e5	-----	-----	1.54	
2,3,4,7,8-PeCDF	29:45	7.27e6	5.00e6	1.17e6	7.96e5	-----	-----	1.45	

Penta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDD-13C	30:17	9.94e6	6.36e6	1.61e6	1.11e6	-----	-----	1.56	
1,2,3,7,8-PeCDD	30:19	3.09e6	4.99e6	5.29e5	8.58e5	-----	-----	0.62	

Hexa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDF-13C	34:26	6.79e6	1.23e7	1.53e6	2.85e6	-----	-----	0.55	
1,2,3,6,7,8-HxCDF-13C	34:36	7.55e6	1.46e7	1.74e6	3.26e6	-----	-----	0.52	
2,3,4,6,7,8-HxCDF-13C	35:24	7.42e6	1.40e7	1.84e6	3.43e6	-----	-----	0.53	
1,2,3,7,8,9-HxCDF-13C	36:29	6.33e6	1.19e7	1.43e6	2.72e6	-----	-----	0.53	
1,2,3,4,7,8-HxCDF	34:27	6.36e6	5.10e6	1.43e6	1.13e6	-----	-----	1.25	
1,2,3,6,7,8-HxCDF	34:37	6.91e6	5.51e6	1.59e6	1.19e6	-----	-----	1.25	
2,3,4,6,7,8-HxCDF	35:26	6.86e6	5.53e6	1.70e6	1.31e6	-----	-----	1.24	
1,2,3,7,8,9-HxCDF	36:29	5.77e6	4.50e6	1.24e6	1.02e6	-----	-----	1.28	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Client ID		Injected By	SMT
Lab ID	CS3/CPM-5176-129	Instrument ID	10MSHR06 (U)
Filename	U70926A_19	GC Column ID	US6809245H
Analyzed	09/26/2007 21:52	ICAL Date	09/21/2007

Hexa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDD-13C	35:37	8.84e6	6.89e6	2.21e6	1.81e6	-----	-----	1.28	
1,2,3,6,7,8-HxCDD-13C	35:45	1.01e7	8.20e6	2.43e6	1.95e6	-----	-----	1.23	
1,2,3,7,8,9-HxCDD-13C	36:06	9.66e6	7.62e6	2.26e6	1.80e6	-----	-----	1.27	
1,2,3,4,7,8-HxCDD	35:38	4.33e6	3.60e6	1.12e6	9.80e5	-----	-----	1.20	
1,2,3,6,7,8-HxCDD	35:46	4.73e6	3.99e6	1.16e6	9.51e5	-----	-----	1.19	
1,2,3,7,8,9-HxCDD	36:07	4.67e6	3.72e6	1.06e6	9.01e5	-----	-----	1.26	

Hepta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDF-13C	38:20	5.55e6	1.24e7	1.55e6	3.47e6	-----	-----	0.45	
1,2,3,4,7,8,9-HpCDF-13C	40:04	4.74e6	1.06e7	1.32e6	2.97e6	-----	-----	0.45	
1,2,3,4,6,7,8-HpCDF	38:21	6.39e6	6.07e6	1.84e6	1.66e6	-----	-----	1.05	
1,2,3,4,7,8,9-HpCDF	40:05	4.89e6	4.78e6	1.32e6	1.29e6	-----	-----	1.02	

Hepta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDD-13C	39:33	6.97e6	6.45e6	1.98e6	1.88e6	-----	-----	1.08	
1,2,3,4,6,7,8-HpCDD	39:34	3.94e6	3.72e6	1.01e6	1.03e6	-----	-----	1.06	

Octa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDF	42:39	7.78e6	8.22e6	2.11e6	2.22e6	-----	-----	0.95	

Octa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDD-13C	42:30	1.30e7	1.41e7	3.34e6	3.65e6	-----	-----	0.92	
OCDD	42:31	7.19e6	7.63e6	1.88e6	2.06e6	-----	-----	0.94	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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PCDD/PCDF Detected Peak List

Prepared By _____ Date _____

Reviewed By _____ Date _____

Client ID		Injected By	SMT
Lab ID	CS3/CPM-5176-129	Instrument ID	10MSHR09 (P)
Filename	P70927A_02	GC Column ID	US6872627H
Analyzed	09/27/2007 08:10	ICAL Date	08/29/2007

Tetra-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
2,3,7,8-TCDF-13C	21:36	1.56e8	1.97e8	2.24e7	2.80e7	-----	-----	0.79	
2,3,7,8-TCDF	21:37	1.68e7	2.28e7	2.42e6	3.14e6	-----	-----	0.74	

Tetra-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4-TCDD-13C	21:48	1.14e8	1.43e8	1.70e7	2.13e7	-----	-----	0.80	
2,3,7,8-TCDD-13C	22:40	1.12e8	1.45e8	1.56e7	2.00e7	-----	-----	0.78	
2,3,7,8-TCDD-37Cl4	22:42	2.65e7		3.67e6		-----	-----		
2,3,7,8-TCDD	22:42	1.15e7	1.54e7	1.58e6	2.04e6	-----	-----	0.74	

Penta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDF-13C	29:18	1.80e8	1.15e8	2.65e7	1.69e7	-----	-----	1.57	
2,3,4,7,8-PeCDF-13C	31:02	1.74e8	1.09e8	3.06e7	1.95e7	-----	-----	1.59	
1,2,3,7,8-PeCDF	29:20	8.71e7	5.44e7	1.26e7	8.03e6	-----	-----	1.60	
2,3,4,7,8-PeCDF	31:03	8.76e7	5.68e7	1.55e7	1.02e7	-----	-----	1.54	

Penta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDD-13C	31:32	1.12e8	7.08e7	1.98e7	1.27e7	-----	-----	1.58	
1,2,3,7,8-PeCDD	31:34	3.50e7	5.65e7	6.18e6	1.00e7	-----	-----	0.62	

Hexa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDF-13C	35:21	7.20e7	1.38e8	1.77e7	3.43e7	-----	-----	0.52	
1,2,3,6,7,8-HxCDF-13C	35:30	8.94e7	1.71e8	1.98e7	3.78e7	-----	-----	0.52	
2,3,4,6,7,8-HxCDF-13C	36:17	8.71e7	1.66e8	2.00e7	3.78e7	-----	-----	0.52	
1,2,3,7,8,9-HxCDF-13C	37:18	7.23e7	1.39e8	1.57e7	3.04e7	-----	-----	0.52	
1,2,3,4,7,8-HxCDF	35:21	6.88e7	5.57e7	1.65e7	1.34e7	-----	-----	1.23	
1,2,3,6,7,8-HxCDF	35:31	8.03e7	6.52e7	1.79e7	1.44e7	-----	-----	1.23	
2,3,4,6,7,8-HxCDF	36:17	7.80e7	6.24e7	1.82e7	1.46e7	-----	-----	1.25	
1,2,3,7,8,9-HxCDF	37:19	6.51e7	5.22e7	1.41e7	1.10e7	-----	-----	1.25	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Client ID		Injected By	SMT
Lab ID	CS3/CPM-5176-129	Instrument ID	10MSHR09 (P)
Filename	P70927A_02	GC Column ID	US6872627H
Analyzed	09/27/2007 08:10	ICAL Date	08/29/2007

Hexa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDD-13C	36:29	9.01e7	7.10e7	2.57e7	2.01e7	-----	-----	1.27	
1,2,3,6,7,8-HxCDD-13C	36:36	1.17e8	9.25e7	2.73e7	2.15e7	-----	-----	1.26	
1,2,3,7,8,9-HxCDD-13C	36:56	1.10e8	8.79e7	2.44e7	1.91e7	-----	-----	1.25	
1,2,3,4,7,8-HxCDD	36:30	4.86e7	3.85e7	1.35e7	1.06e7	-----	-----	1.26	
1,2,3,6,7,8-HxCDD	36:37	5.39e7	4.34e7	1.31e7	1.03e7	-----	-----	1.24	
1,2,3,7,8,9-HxCDD	36:56	5.39e7	4.33e7	1.21e7	9.65e6	-----	-----	1.25	

Hepta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDF-13C	39:05	6.04e7	1.31e8	1.61e7	3.43e7	-----	-----	0.46	
1,2,3,4,7,8,9-HpCDF-13C	40:46	5.28e7	1.20e8	1.31e7	2.96e7	-----	-----	0.44	
1,2,3,4,6,7,8-HpCDF	39:05	6.68e7	6.48e7	1.86e7	1.76e7	-----	-----	1.03	
1,2,3,4,7,8,9-HpCDF	40:47	5.40e7	5.24e7	1.34e7	1.28e7	-----	-----	1.03	

Hepta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDD-13C	40:16	7.69e7	7.22e7	1.92e7	1.76e7	-----	-----	1.06	
1,2,3,4,6,7,8-HpCDD	40:17	4.12e7	3.94e7	1.02e7	9.40e6	-----	-----	1.05	

Octa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDF	43:21	8.64e7	9.68e7	2.01e7	2.19e7	-----	-----	0.89	

Octa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDD-13C	43:11	1.30e8	1.44e8	3.08e7	3.43e7	-----	-----	0.90	
OCDD	43:11	7.15e7	7.96e7	1.72e7	1.91e7	-----	-----	0.90	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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PCDD/PCDF Detected Peak List

Prepared By _____ Date _____

Reviewed By _____ Date _____

Client ID		Injected By	SMT
Lab ID	CS3/CPM-5176-129	Instrument ID	10MSHR09 (P)
Filename	P70927A_17	GC Column ID	US6872627H
Analyzed	09/27/2007 20:35	ICAL Date	08/29/2007

Tetra-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
2,3,7,8-TCDF-13C	21:37	7.75e7	9.83e7	1.05e7	1.31e7	-----	-----	0.79	
2,3,7,8-TCDF	21:39	8.86e6	1.10e7	1.16e6	1.47e6	-----	-----	0.80	

Tetra-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4-TCDD-13C	21:49	5.77e7	7.31e7	8.12e6	1.00e7	-----	-----	0.79	
2,3,7,8-TCDD-13C	22:42	5.70e7	7.34e7	7.33e6	9.48e6	-----	-----	0.78	
2,3,7,8-TCDD-37Cl4	22:44	1.35e7		1.66e6		-----	-----		
2,3,7,8-TCDD	22:44	6.20e6	8.01e6	7.18e5	9.36e5	-----	-----	0.77	

Penta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDF-13C	29:22	9.49e7	6.03e7	1.30e7	8.31e6	-----	-----	1.57	
2,3,4,7,8-PeCDF-13C	31:04	9.36e7	5.92e7	1.54e7	9.64e6	-----	-----	1.58	
1,2,3,7,8-PeCDF	29:23	4.64e7	2.99e7	6.40e6	4.08e6	-----	-----	1.55	
2,3,4,7,8-PeCDF	31:06	4.73e7	3.05e7	7.47e6	4.93e6	-----	-----	1.55	

Penta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDD-13C	31:34	5.82e7	3.67e7	9.55e6	6.18e6	-----	-----	1.59	
1,2,3,7,8-PeCDD	31:36	1.89e7	3.07e7	3.21e6	5.19e6	-----	-----	0.62	

Hexa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDF-13C	35:22	3.82e7	7.27e7	8.80e6	1.61e7	-----	-----	0.53	
1,2,3,6,7,8-HxCDF-13C	35:33	4.79e7	8.96e7	9.65e6	1.85e7	-----	-----	0.53	
2,3,4,6,7,8-HxCDF-13C	36:18	4.36e7	8.30e7	9.87e6	1.89e7	-----	-----	0.53	
1,2,3,7,8,9-HxCDF-13C	37:20	3.58e7	6.92e7	7.59e6	1.46e7	-----	-----	0.52	
1,2,3,4,7,8-HxCDF	35:24	3.76e7	2.94e7	8.67e6	6.86e6	-----	-----	1.28	
1,2,3,6,7,8-HxCDF	35:34	4.34e7	3.48e7	9.16e6	7.09e6	-----	-----	1.25	
2,3,4,6,7,8-HxCDF	36:19	4.08e7	3.24e7	9.03e6	7.13e6	-----	-----	1.26	
1,2,3,7,8,9-HxCDF	37:22	3.33e7	2.64e7	6.87e6	5.46e6	-----	-----	1.26	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Client ID		Injected By	SMT
Lab ID	CS3/CPM-5176-129	Instrument ID	10MSHR09 (P)
Filename	P70927A_17	GC Column ID	US6872627H
Analyzed	09/27/2007 20:35	ICAL Date	08/29/2007

Hexa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDD-13C	36:30	4.89e7	3.88e7	1.25e7	9.76e6	-----	-----	1.26	
1,2,3,6,7,8-HxCDD-13C	36:38	5.90e7	4.67e7	1.31e7	1.04e7	-----	-----	1.26	
1,2,3,7,8,9-HxCDD-13C	36:58	5.62e7	4.40e7	1.17e7	9.33e6	-----	-----	1.28	
1,2,3,4,7,8-HxCDD	36:31	2.53e7	2.01e7	6.31e6	5.10e6	-----	-----	1.26	
1,2,3,6,7,8-HxCDD	36:39	2.91e7	2.28e7	6.20e6	4.86e6	-----	-----	1.28	
1,2,3,7,8,9-HxCDD	36:59	2.77e7	2.22e7	5.77e6	4.70e6	-----	-----	1.25	

Hepta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDF-13C	39:06	2.92e7	6.47e7	7.09e6	1.53e7	-----	-----	0.45	
1,2,3,4,7,8,9-HpCDF-13C	40:49	2.53e7	5.54e7	5.84e6	1.26e7	-----	-----	0.46	
1,2,3,4,6,7,8-HpCDF	39:07	3.29e7	3.12e7	7.94e6	7.55e6	-----	-----	1.05	
1,2,3,4,7,8,9-HpCDF	40:50	2.49e7	2.38e7	5.77e6	5.47e6	-----	-----	1.05	

Hepta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDD-13C	40:17	3.57e7	3.31e7	8.78e6	8.25e6	-----	-----	1.08	
1,2,3,4,6,7,8-HpCDD	40:18	1.93e7	1.85e7	4.96e6	4.46e6	-----	-----	1.05	

Octa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDF	43:23	3.90e7	4.36e7	8.87e6	9.79e6	-----	-----	0.89	

Octa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDD-13C	43:13	5.87e7	6.54e7	1.31e7	1.43e7	-----	-----	0.90	
OCDD	43:14	3.24e7	3.56e7	7.08e6	8.06e6	-----	-----	0.91	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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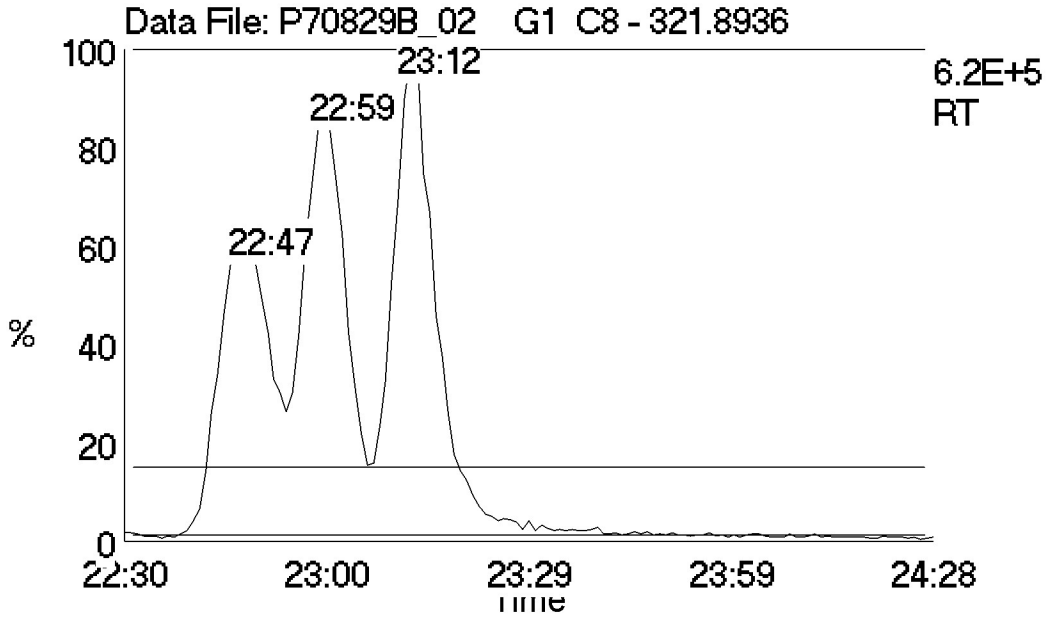
Column Performance Mix (CPM) / Window Defining Mix (WDM)

Lab Sample ID	CS3/CPM-5176-12	Injected By	BAL	
Raw Data File	P70829B_02	Instrument ID	10MSHR09 (P)	
Date Analyzed	8/29/2007	GC Column Type	DB-5MS	0.25 uM
Time Analyzed	16:49	GC Column S/N	US6872627H	
Resolution	**14.0%**			



Group	Mass	First Eluter	Last Eluter
TCDF	305.8987	17:41	24:58
PeCDF	341.8567	24:50	32:53
HxCDF	373.8207	33:58	37:33
HpCDF	407.7818	39:17	40:59
OCDF	441.7428	43:32	0:00
TCDD	321.8936	19:11	24:39
PeCDD	357.8517	28:00	32:30
HxCDD	391.8127	34:46	37:11
HpCDD	425.7737	39:38	40:27
OCDD	459.7347	43:21	0:00
1234-TCDD-13C(RS)	331.9367	22:18	0:00
123789-HxCDD-13C(RS)	401.8559	37:10	0:00

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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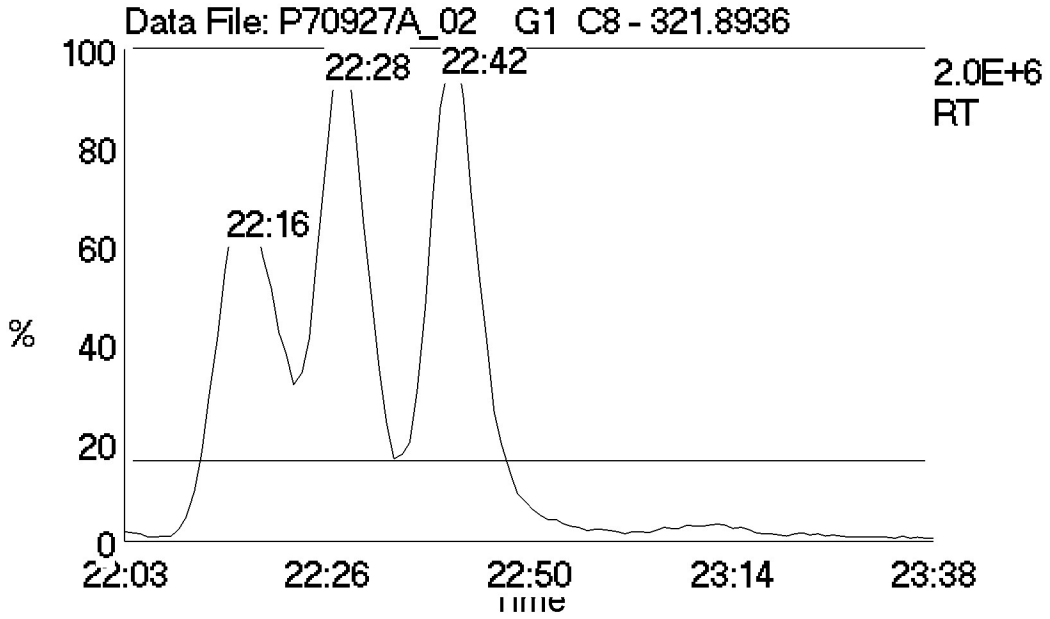
Column Performance Mix (CPM) / Window Defining Mix (WDM)

Lab Sample ID	CS3/CPM-5176-12	Injected By	SMT	
Raw Data File	P70927A_02	Instrument ID	10MSHR09 (P)	
Date Analyzed	9/27/2007	GC Column Type	DB-5MS	0.25 uM
Time Analyzed	00:00	GC Column S/N	US6872627H	
Resolution	**16.3%**			



Group	Mass	First Eluter	Last Eluter
TCDF	305.8987	17:18	24:24
PeCDF	341.8567	24:18	32:31
HxCDF	373.8207	33:39	37:19
HpCDF	407.7818	39:05	40:46
OCDF	441.7428	43:21	43:21
TCDD	321.8936	18:47	24:07
PeCDD	357.8517	27:26	32:08
HxCDD	391.8127	34:29	36:57
HpCDD	425.7737	39:25	40:16
OCDD	459.7347	43:11	43:11
1234-TCDD-13C(RS)	331.9367	21:46	21:46
123789-HxCDD-13C(RS)	401.8559	36:55	36:55

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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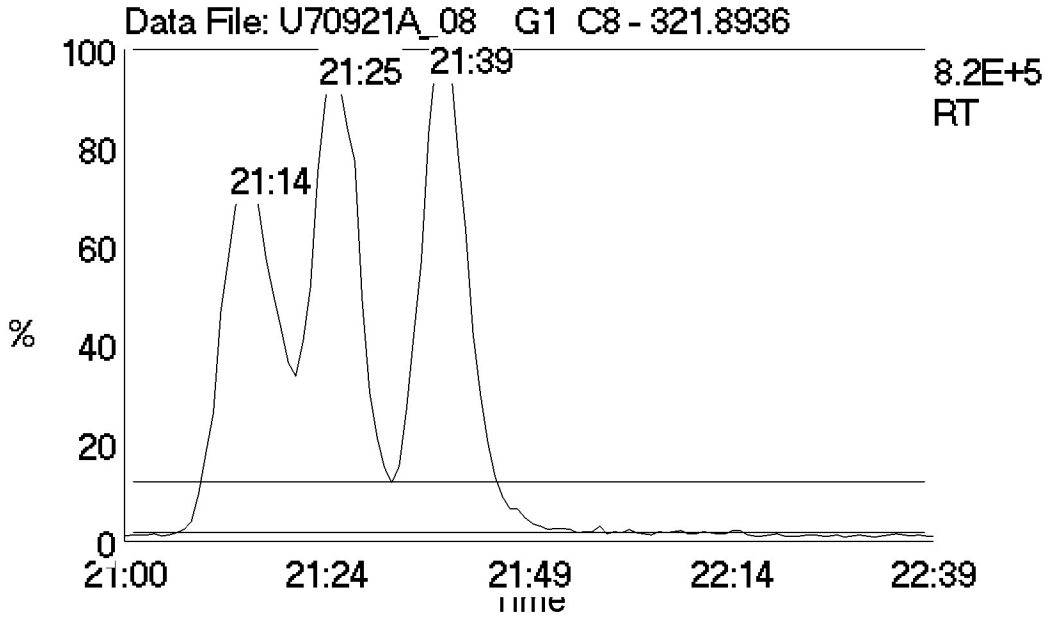
Column Performance Mix (CPM) / Window Defining Mix (WDM)

Lab Sample ID	CS3/CPM-5176-12	Injected By	BAL	
Raw Data File	U70921A_08	Instrument ID	10MSHR06 (U)	
Date Analyzed	9/21/2007	GC Column Type	DB-5MS	0.25 uM
Time Analyzed	16:20	GC Column S/N	US6809245H	
Resolution	**10.6%**			



Group	Mass	First Eluter	Last Eluter
TCDF	305.8987	16:31	23:13
PeCDF	341.8567	23:11	31:50
HxCDF	373.8207	33:03	36:55
HpCDF	407.7818	38:49	40:36
OCDF	441.7428	43:25	0:00
TCDD	321.8936	17:57	22:58
PeCDD	357.8517	26:13	31:25
HxCDD	391.8127	33:57	36:31
HpCDD	425.7737	39:11	40:04
OCDD	459.7347	43:17	0:00
1234-TCDD-13C(RS)	331.9367	20:47	0:00
123789-HxCDD-13C(RS)	401.8559	36:31	0:00

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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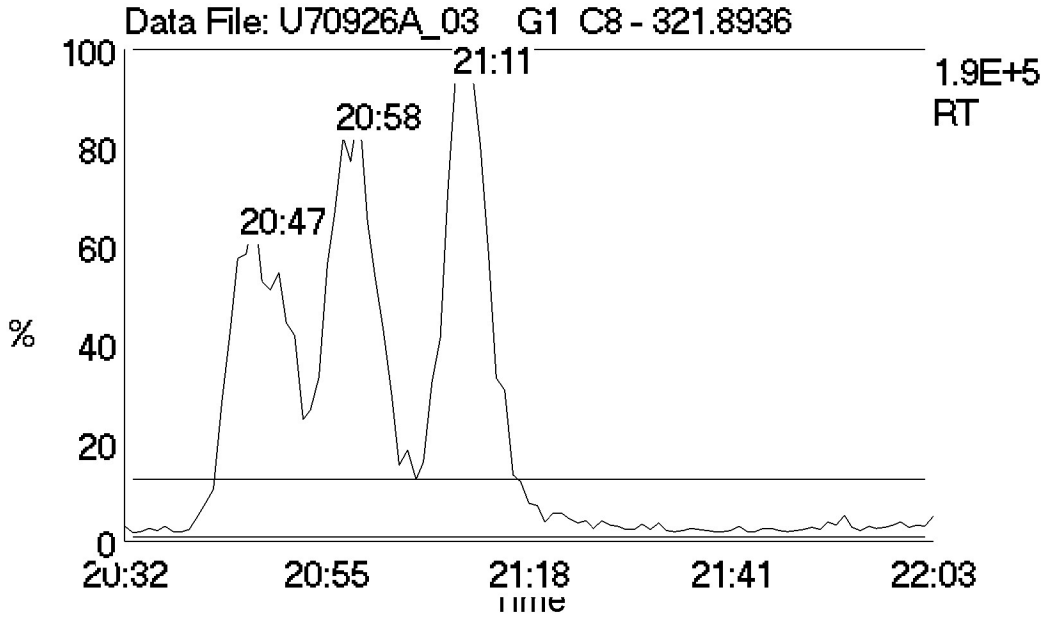
Column Performance Mix (CPM) / Window Defining Mix (WDM)

Lab Sample ID	CS3/CPM-5176-12	Injected By	SMT	
Raw Data File	U70926A_03	Instrument ID	10MSHR06 (U)	
Date Analyzed	9/26/2007	GC Column Type	DB-5MS	0.25 uM
Time Analyzed	00:00	GC Column S/N	US6809245H	
Resolution	**12.0%**			



Group	Mass	First Eluter	Last Eluter
TCDF	305.8987	16:10	22:42
PeCDF	341.8567	22:39	31:23
HxCDF	373.8207	32:37	36:28
HpCDF	407.7818	38:21	40:04
OCDF	441.7428	42:38	42:38
TCDD	321.8936	17:33	22:26
PeCDD	357.8517	25:36	30:57
HxCDD	391.8127	33:32	36:06
HpCDD	425.7737	38:42	39:33
OCDD	459.7347	42:30	42:30
1234-TCDD-13C(RS)	331.9367	20:20	20:20
123789-HxCDD-13C(RS)	401.8559	36:06	36:06

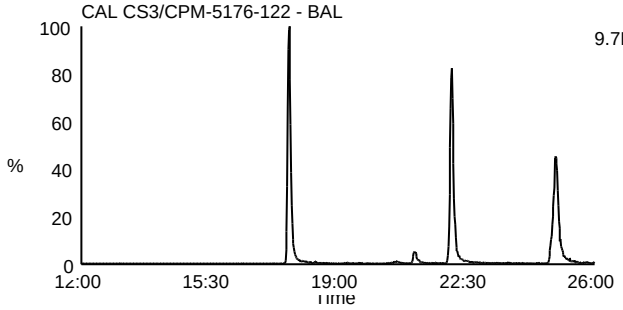
REPORT OF LABORATORY ANALYSIS

Homologue Group: Tetras

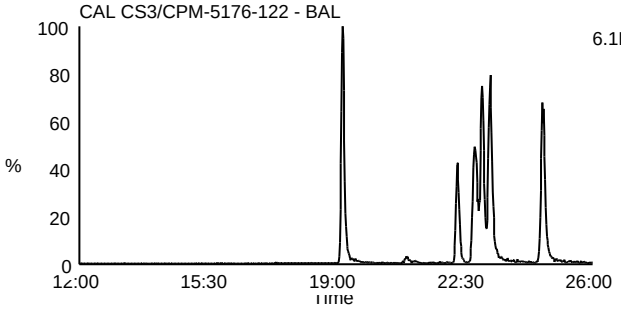
Data File Name: P70829B_02
Date Acquired: 8/29/2007
Sample Description: CAL CS3/CPM-5176-122 - BAL

Lab Sample ID: 5176-129
Client Sample ID: CS-3
Instrument: 10MSHR09 (P)

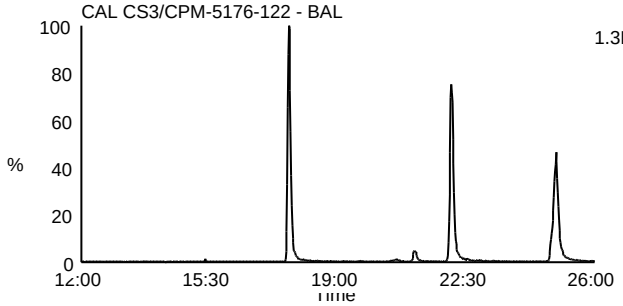
Data File: P70829B_02 G1 C1 - 303.9016
CAL CS3/CPM-5176-122 - BAL



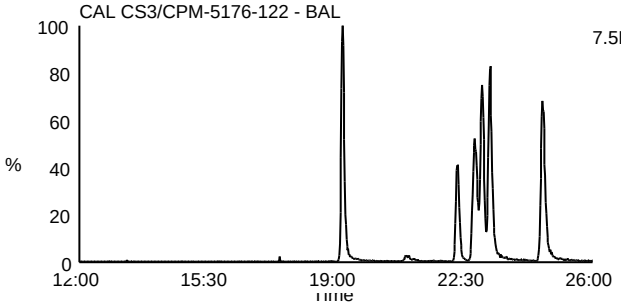
Data File: P70829B_02 G1 C7 - 319.8965
CAL CS3/CPM-5176-122 - BAL



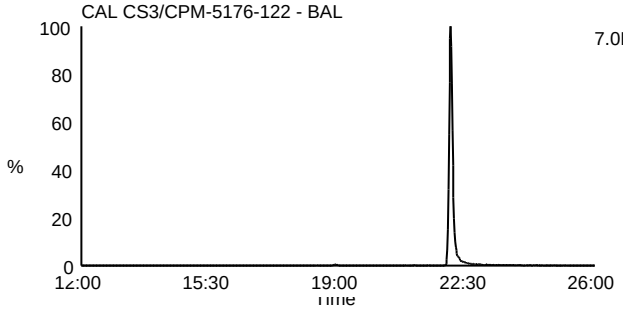
Data File: P70829B_02 G1 C2 - 305.8987
CAL CS3/CPM-5176-122 - BAL



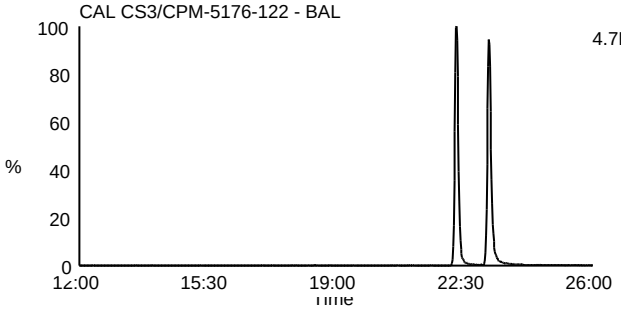
Data File: P70829B_02 G1 C8 - 321.8936
CAL CS3/CPM-5176-122 - BAL



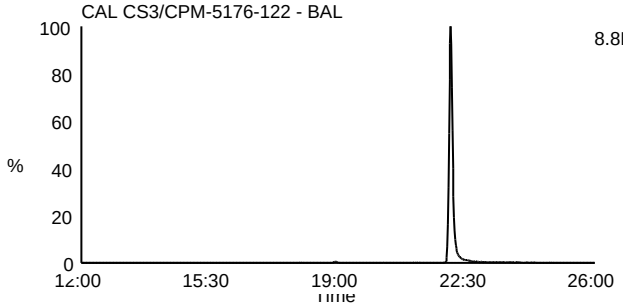
Data File: P70829B_02 G1 C3 - 315.9418
CAL CS3/CPM-5176-122 - BAL



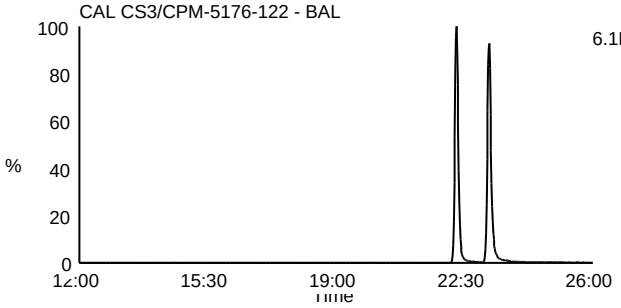
Data File: P70829B_02 G1 C10 - 331.9367
CAL CS3/CPM-5176-122 - BAL



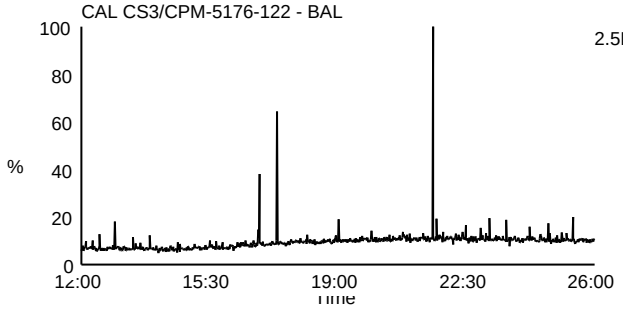
Data File: P70829B_02 G1 C4 - 317.9389
CAL CS3/CPM-5176-122 - BAL



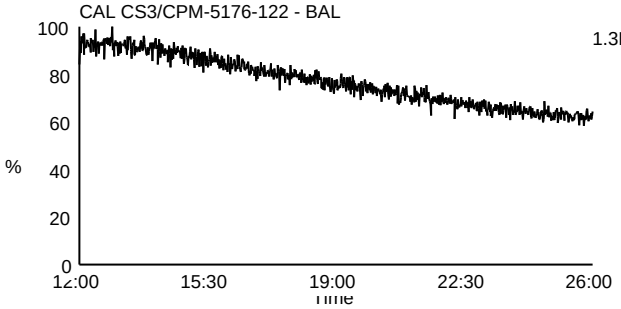
Data File: P70829B_02 G1 C11 - 333.9338
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G1 C14 - 375.8364
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G1 C5 - 318.9792
CAL CS3/CPM-5176-122 - BAL

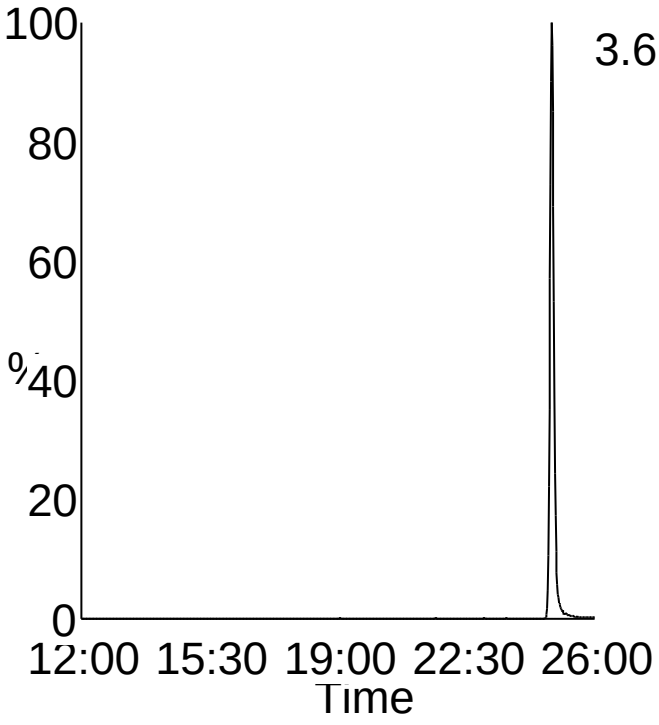


Homologue Group: Penta & Cleanup

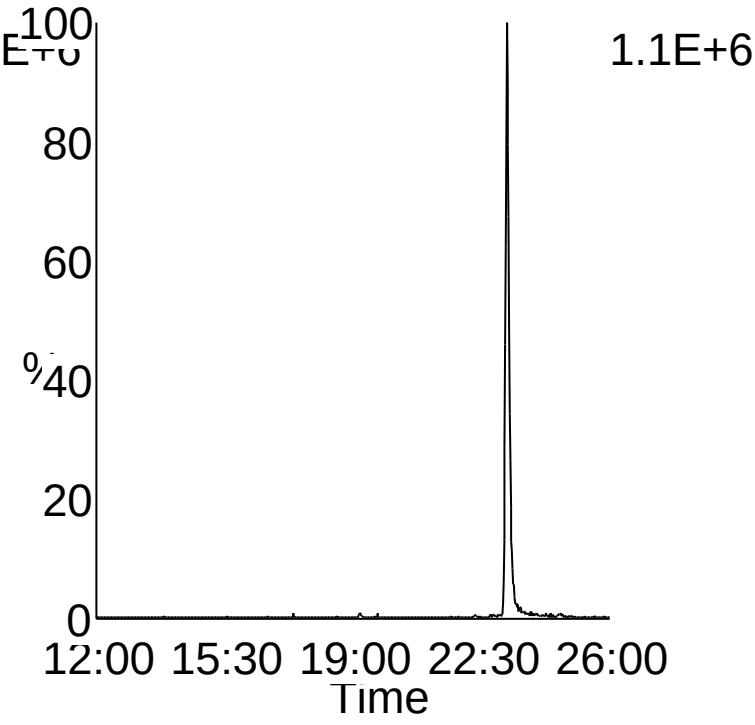
Data File Name: P70829B_02
Date Acquired: 8/29/2007
Sample Description: CAL CS3/CPM-5176-122 - BAL

Lab Sample ID: 5176-129
Client Sample ID: CS-3
Instrument: 10MSHR09 (P)

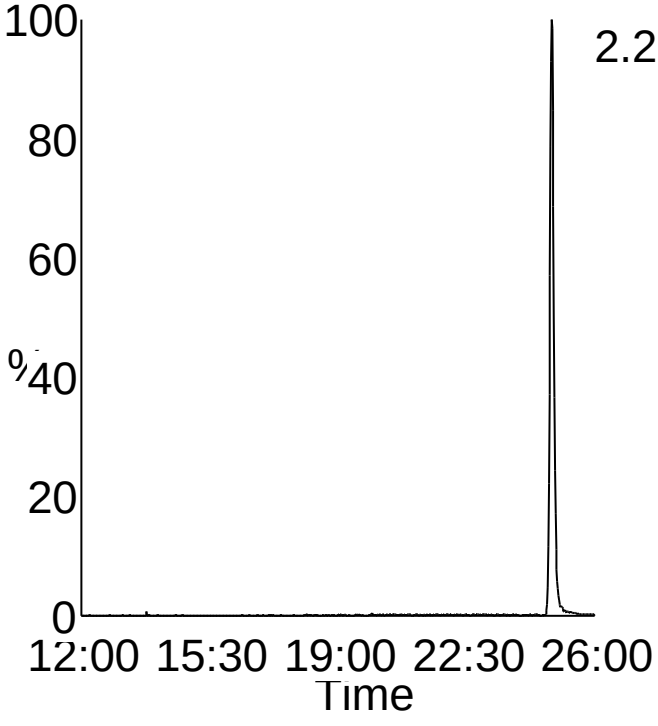
Data File: P70829B_02 C12 - 339.8597
CAL CS3/CPM-5176-122 - BAL



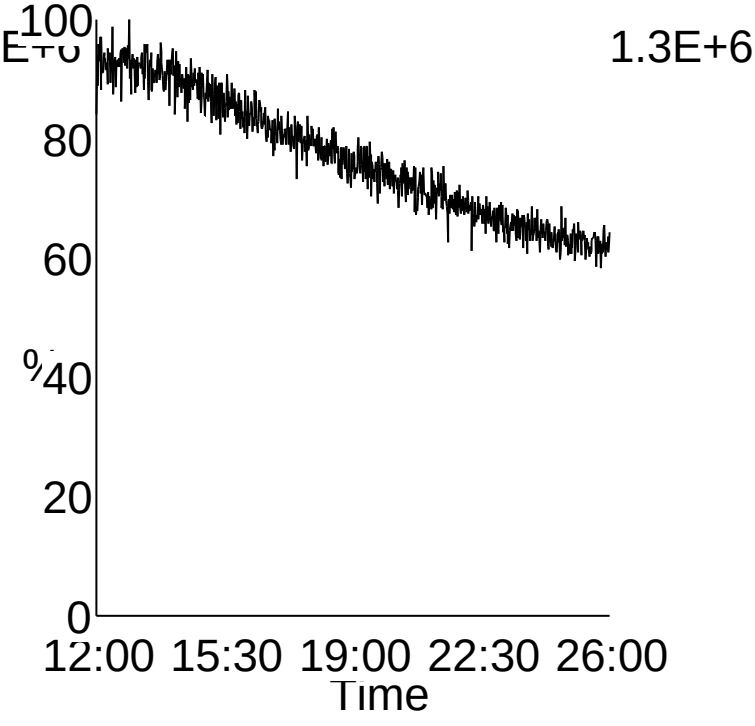
Data File: P70829B_02 C9 - 327.8847
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 C13 - 341.8567
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 C5 - 318.9792
CAL CS3/CPM-5176-122 - BAL

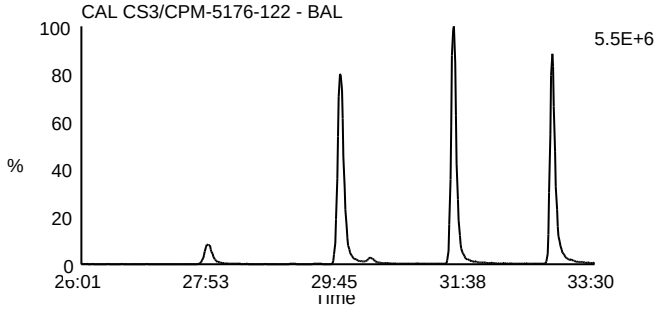


Homologue Group: Pentas

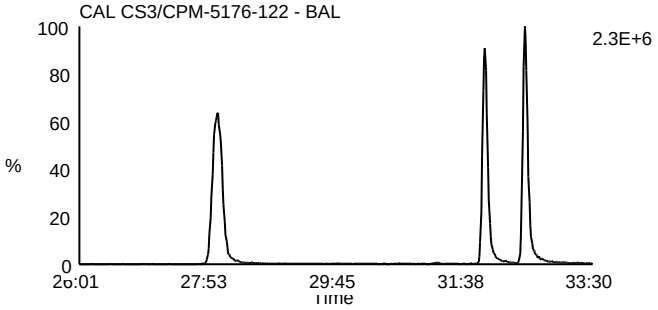
Data File Name: P70829B_02
Date Acquired: 8/29/2007
Sample Description: CAL CS3/CPM-5176-122 - BAL

Lab Sample ID: 5176-129
Client Sample ID: CS-3
Instrument: 10MSHR09 (P)

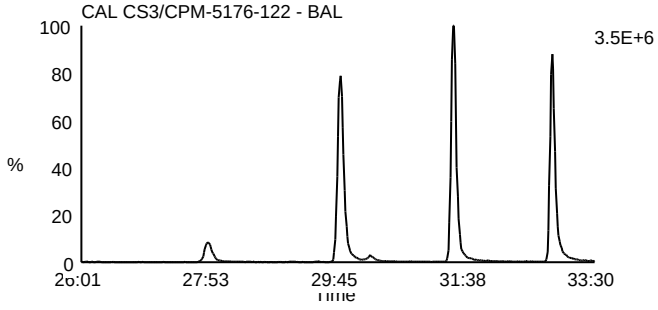
Data File: P70829B_02 G2 C1 - 339.8597
CAL CS3/CPM-5176-122 - BAL



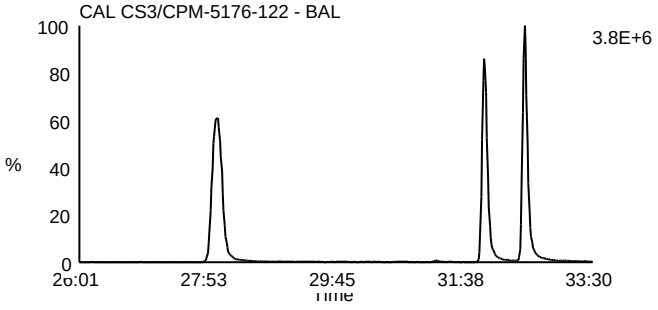
Data File: P70829B_02 G2 C4 - 353.8576
CAL CS3/CPM-5176-122 - BAL



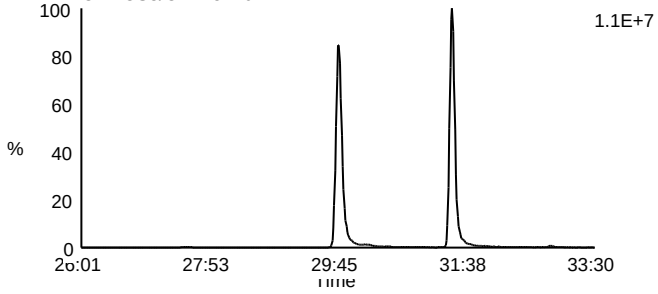
Data File: P70829B_02 G2 C2 - 341.8567
CAL CS3/CPM-5176-122 - BAL



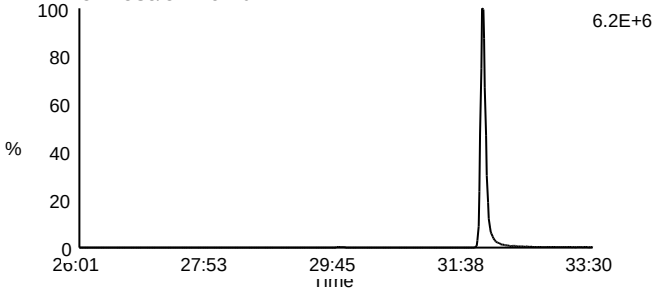
Data File: P70829B_02 G2 C8 - 355.8546
CAL CS3/CPM-5176-122 - BAL



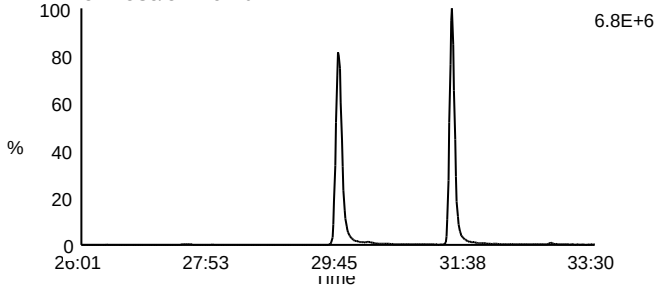
Data File: P70829B_02 G2 C3 - 351.8999
CAL CS3/CPM-5176-122 - BAL



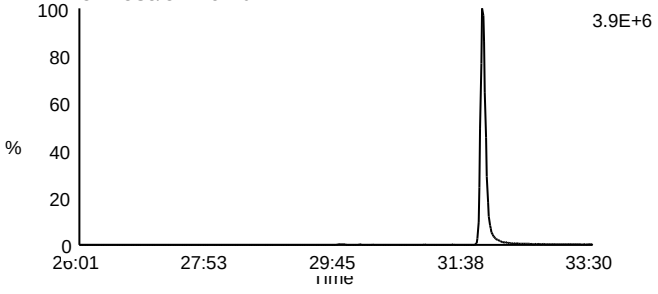
Data File: P70829B_02 G2 C10 - 367.8948
CAL CS3/CPM-5176-122 - BAL



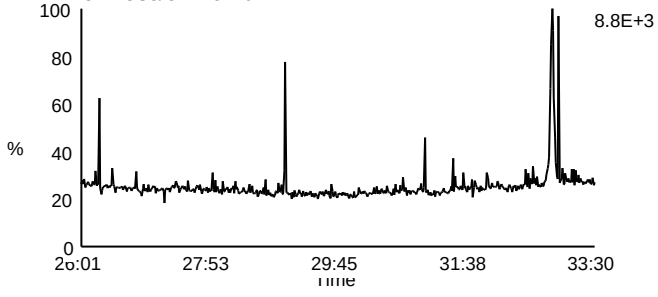
Data File: P70829B_02 G2 C5 - 353.8969
CAL CS3/CPM-5176-122 - BAL



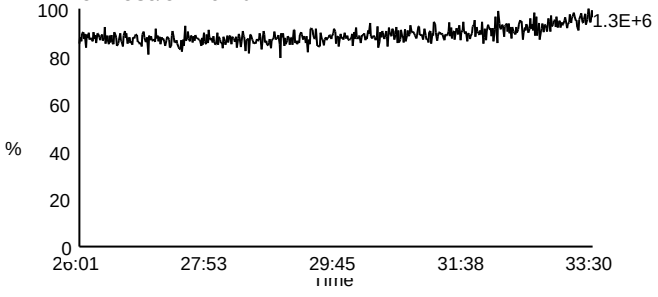
Data File: P70829B_02 G2 C11 - 369.8918
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G2 C12 - 409.7974
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G2 C6 - 354.9792
CAL CS3/CPM-5176-122 - BAL

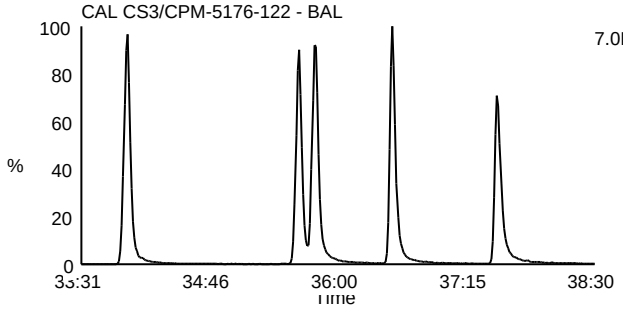


Homologue Group: Hexas

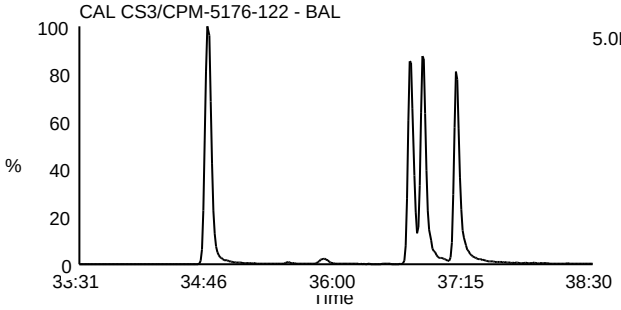
Data File Name: P70829B_02
Date Acquired: 8/29/2007
Sample Description: CAL CS3/CPM-5176-122 - BAL

Lab Sample ID: 5176-129
Client Sample ID: CS-3
Instrument: 10MSHR09 (P)

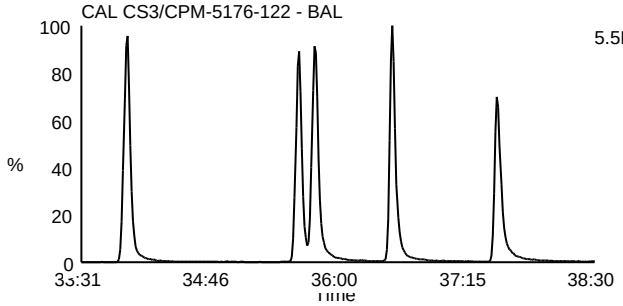
Data File: P70829B_02 G3 C1 - 373.8207
CAL CS3/CPM-5176-122 - BAL



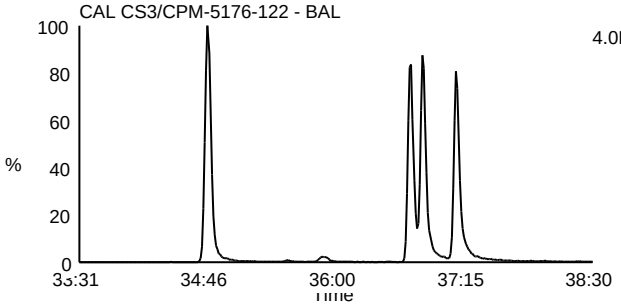
Data File: P70829B_02 G3 C7 - 389.8156
CAL CS3/CPM-5176-122 - BAL



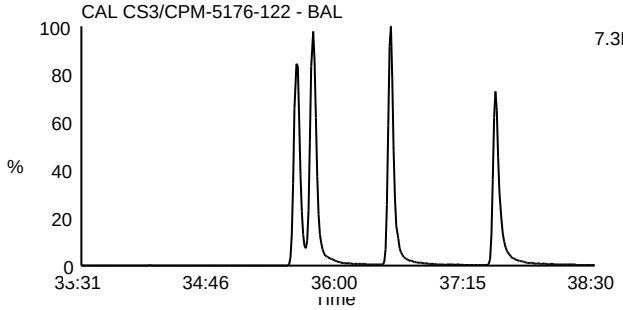
Data File: P70829B_02 G3 C2 - 375.8178
CAL CS3/CPM-5176-122 - BAL



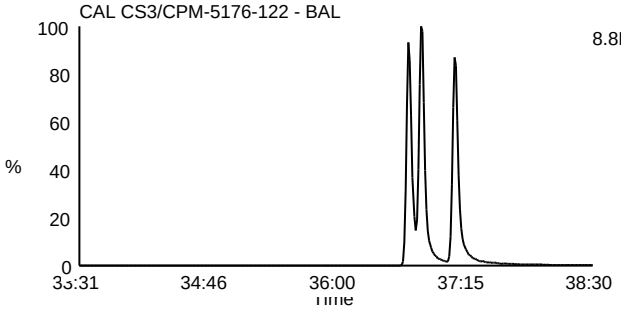
Data File: P70829B_02 G3 C8 - 391.8127
CAL CS3/CPM-5176-122 - BAL



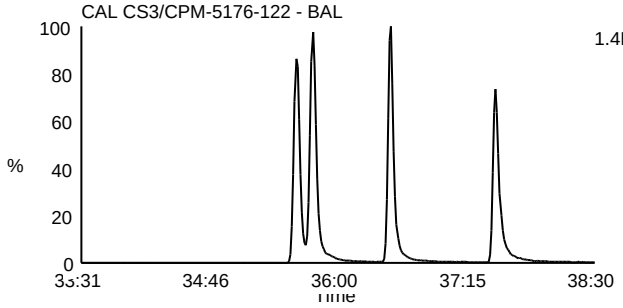
Data File: P70829B_02 G3 C5 - 383.8639
CAL CS3/CPM-5176-122 - BAL



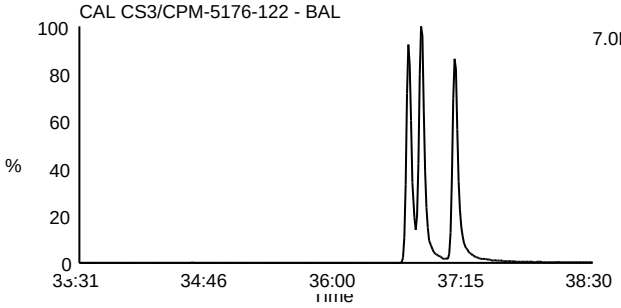
Data File: P70829B_02 G3 C9 - 401.8559
CAL CS3/CPM-5176-122 - BAL



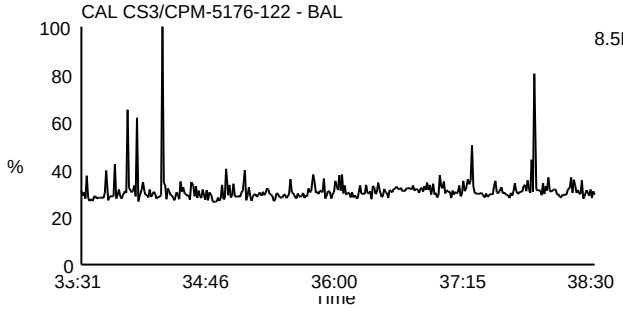
Data File: P70829B_02 G3 C6 - 385.861
CAL CS3/CPM-5176-122 - BAL



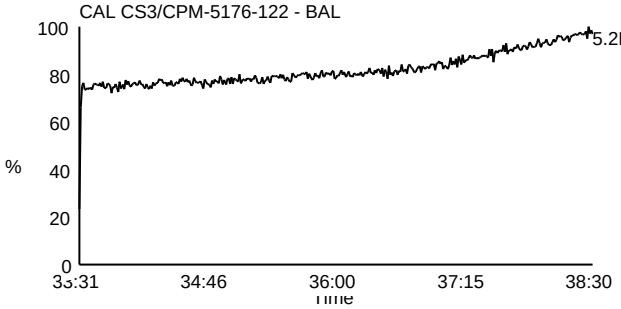
Data File: P70829B_02 G3 C10 - 403.8529
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G3 C11 - 445.7555
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G3 C3 - 380.976
CAL CS3/CPM-5176-122 - BAL

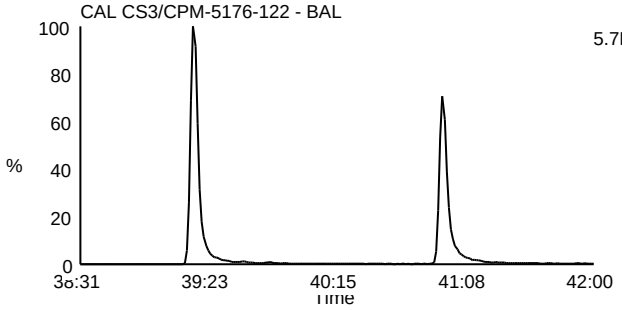


Homologue Group: Heptas

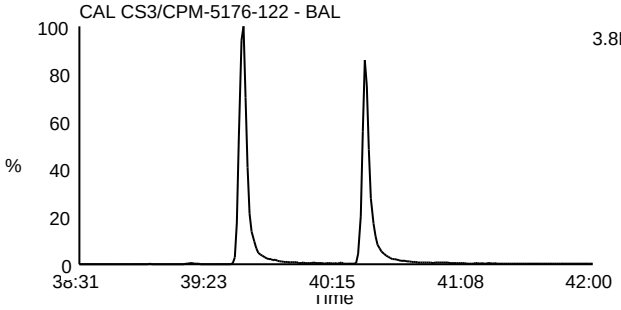
Data File Name: P70829B_02
Date Acquired: 8/29/2007
Sample Description: CAL CS3/CPM-5176-122 - BAL

Lab Sample ID: 5176-129
Client Sample ID: CS-3
Instrument: 10MSHR09 (P)

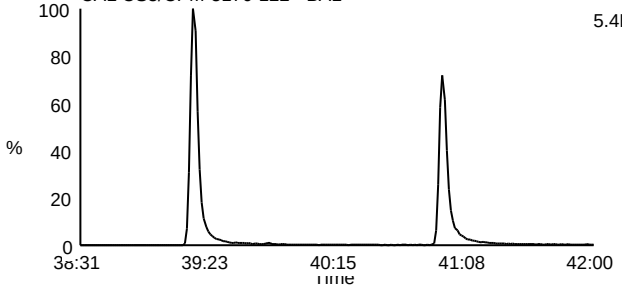
Data File: P70829B_02 G4 C3 - 407.7818
CAL CS3/CPM-5176-122 - BAL



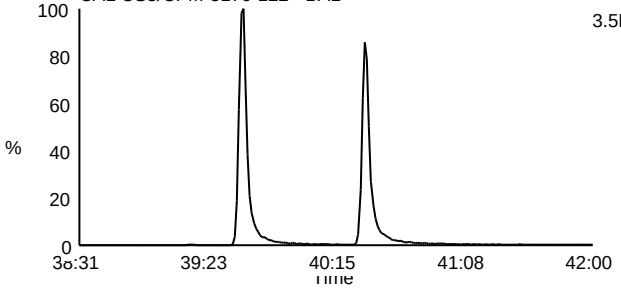
Data File: P70829B_02 G4 C8 - 423.7767
CAL CS3/CPM-5176-122 - BAL



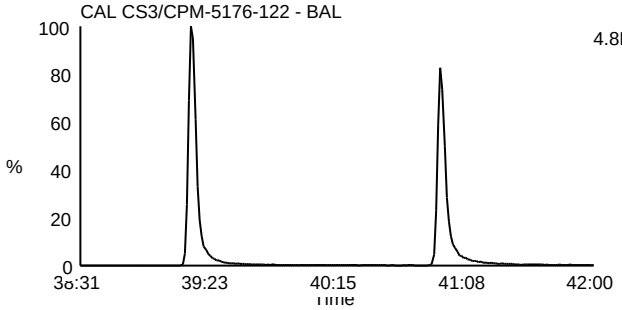
Data File: P70829B_02 G4 C4 - 409.7788
CAL CS3/CPM-5176-122 - BAL



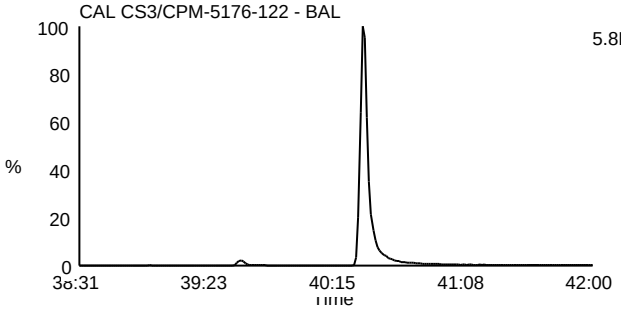
Data File: P70829B_02 G4 C9 - 425.7737
CAL CS3/CPM-5176-122 - BAL



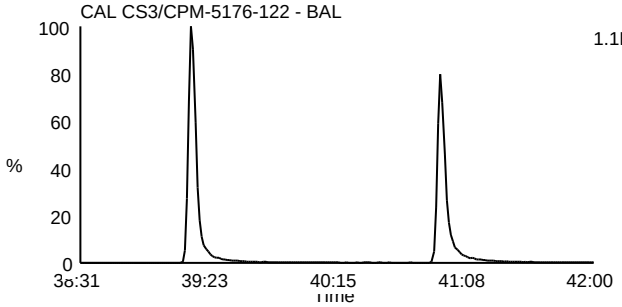
Data File: P70829B_02 G4 C6 - 417.825
CAL CS3/CPM-5176-122 - BAL



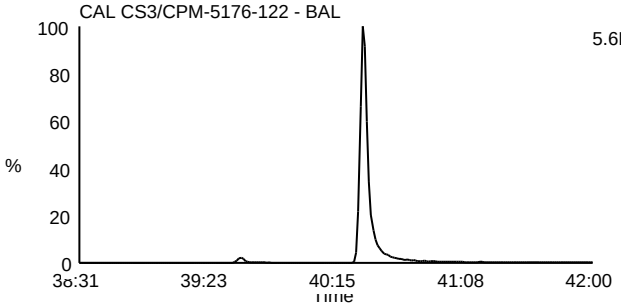
Data File: P70829B_02 G4 C11 - 435.8169
CAL CS3/CPM-5176-122 - BAL



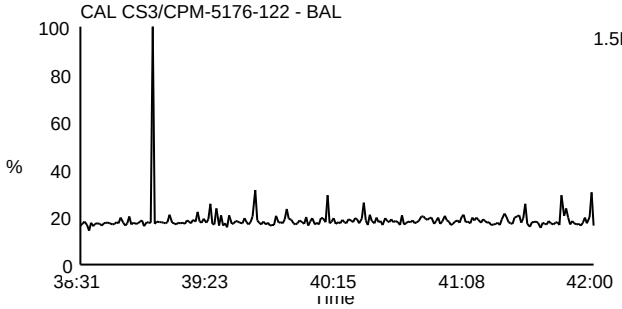
Data File: P70829B_02 G4 C7 - 419.822
CAL CS3/CPM-5176-122 - BAL



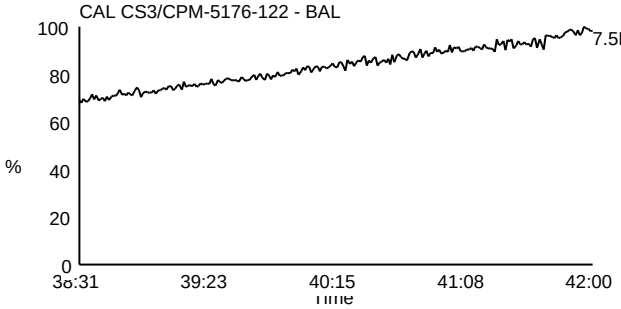
Data File: P70829B_02 G4 C12 - 437.814
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G4 C13 - 479.7165
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G4 C1 - 380.976
CAL CS3/CPM-5176-122 - BAL

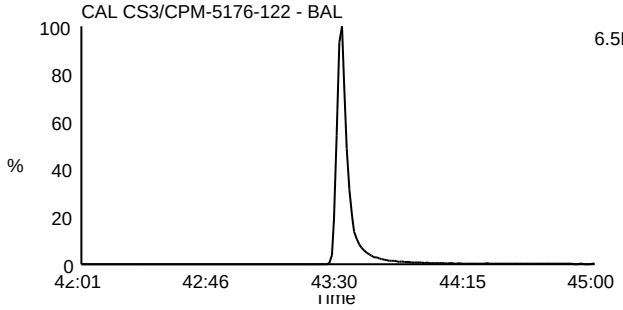


Homologue Group: Octas

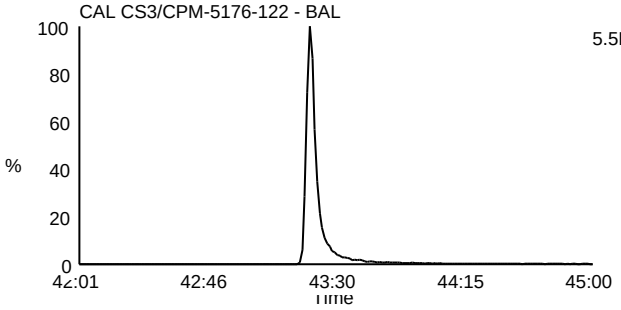
Data File Name: P70829B_02
Date Acquired: 8/29/2007
Sample Description: CAL CS3/CPM-5176-122 - BAL

Lab Sample ID: 5176-129
Client Sample ID: CS-3
Instrument: 10MSHR09 (P)

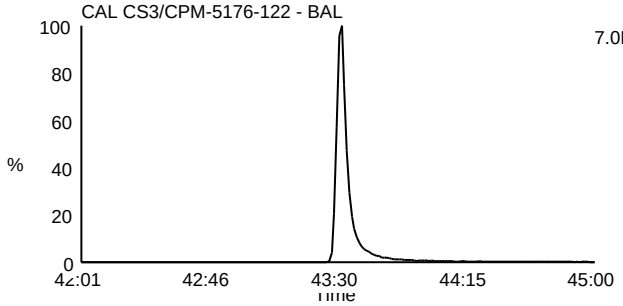
Data File: P70829B_02 G5 C4 - 441.7428
CAL CS3/CPM-5176-122 - BAL



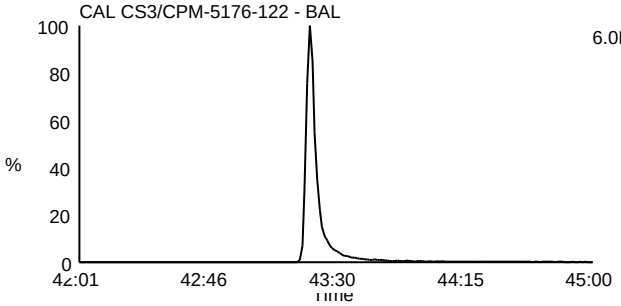
Data File: P70829B_02 G5 C8 - 457.7377
CAL CS3/CPM-5176-122 - BAL



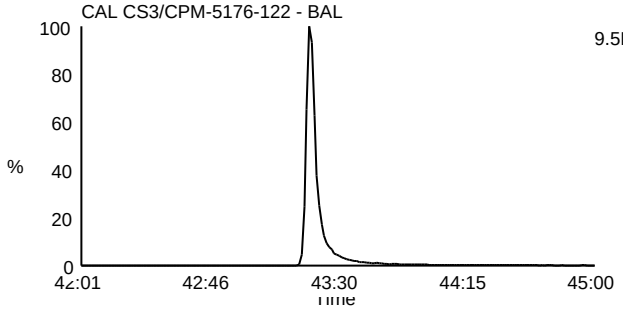
Data File: P70829B_02 G5 C5 - 443.7398
CAL CS3/CPM-5176-122 - BAL



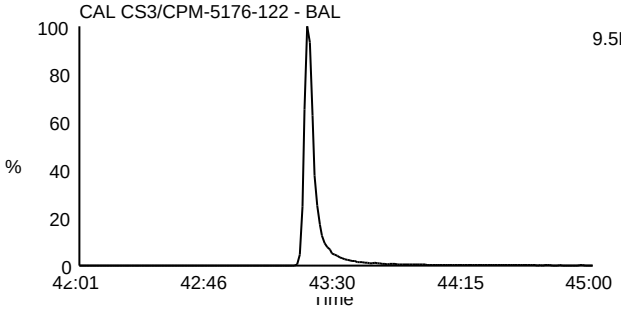
Data File: P70829B_02 G5 C9 - 459.7347
CAL CS3/CPM-5176-122 - BAL



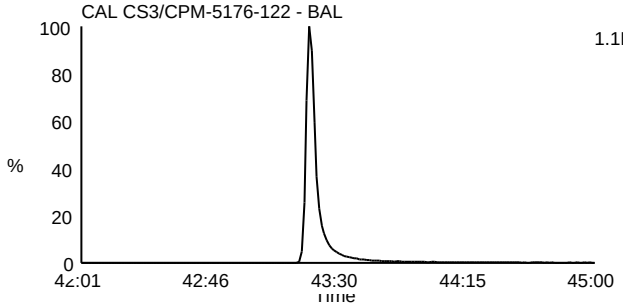
Data File: P70829B_02 G5 C11 - 469.7779
CAL CS3/CPM-5176-122 - BAL



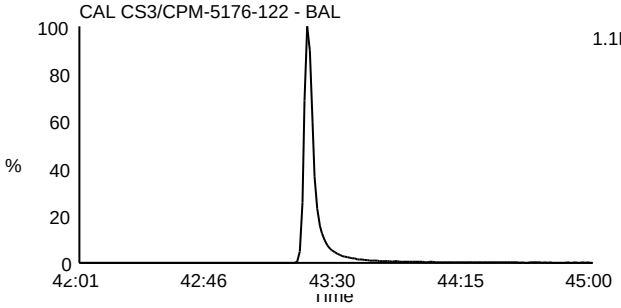
Data File: P70829B_02 G5 C11 - 469.7779
CAL CS3/CPM-5176-122 - BAL



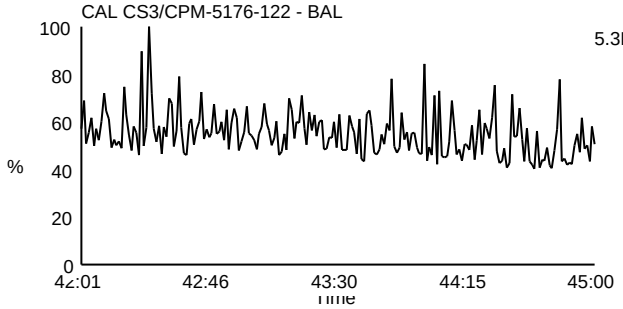
Data File: P70829B_02 G5 C12 - 471.7749
CAL CS3/CPM-5176-122 - BAL



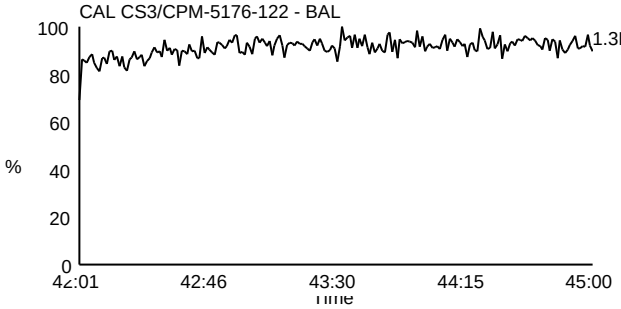
Data File: P70829B_02 G5 C12 - 471.7749
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G5 C13 - 513.6775
CAL CS3/CPM-5176-122 - BAL



Data File: P70829B_02 G5 C2 - 430.9728
CAL CS3/CPM-5176-122 - BAL

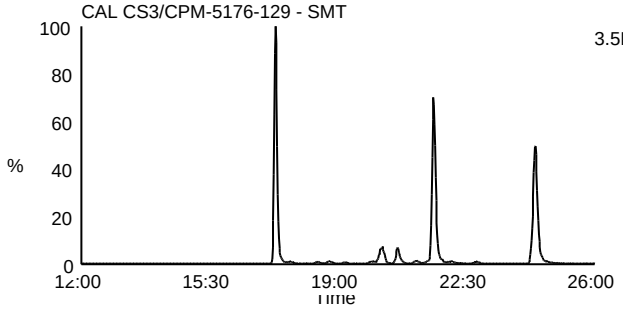


Homologue Group: Tetras

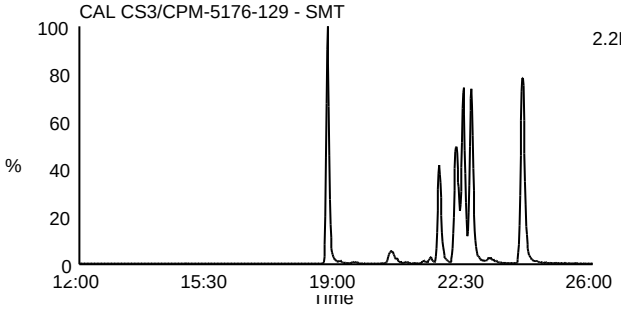
Data File Name: P70927A_02
Date Acquired: 9/27/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR09 (P)

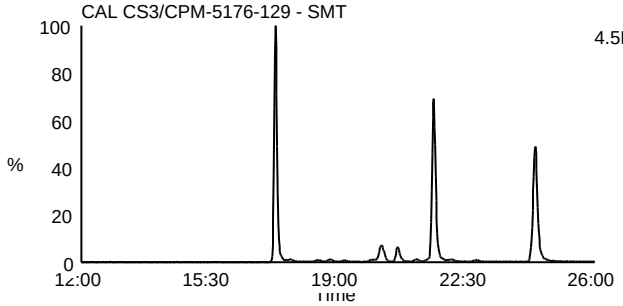
Data File: P70927A_02 G1 C1 - 303.9016
CAL CS3/CPM-5176-129 - SMT



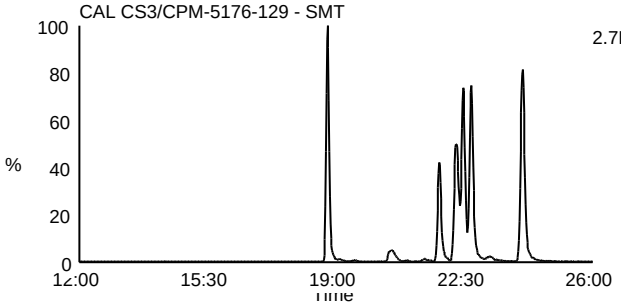
Data File: P70927A_02 G1 C7 - 319.8965
CAL CS3/CPM-5176-129 - SMT



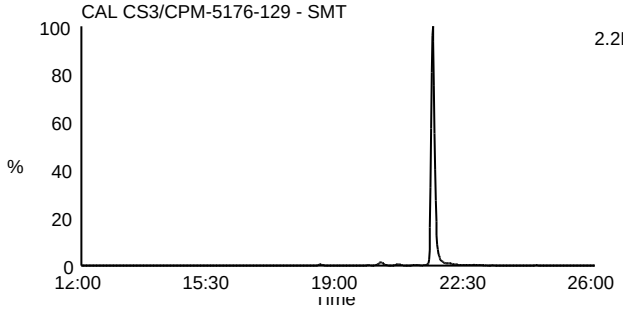
Data File: P70927A_02 G1 C2 - 305.8987
CAL CS3/CPM-5176-129 - SMT



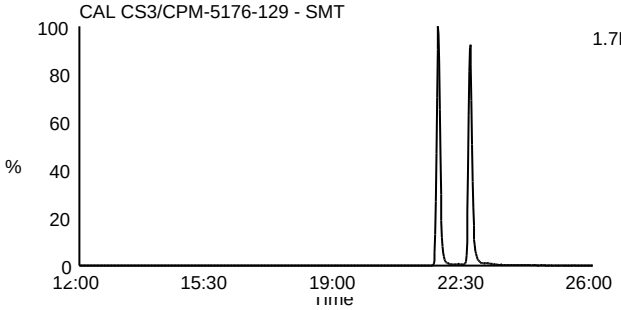
Data File: P70927A_02 G1 C8 - 321.8936
CAL CS3/CPM-5176-129 - SMT



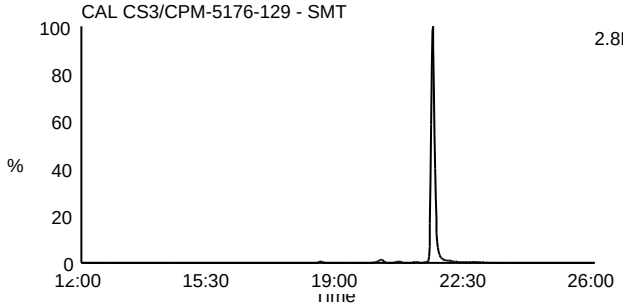
Data File: P70927A_02 G1 C3 - 315.9418
CAL CS3/CPM-5176-129 - SMT



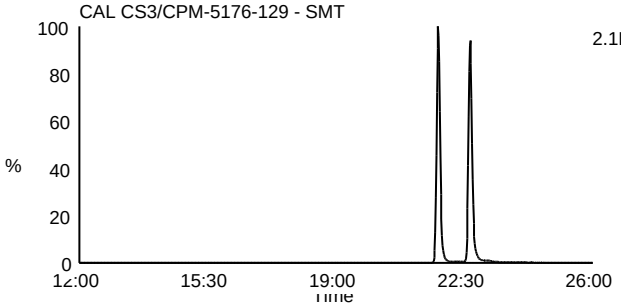
Data File: P70927A_02 G1 C10 - 331.9367
CAL CS3/CPM-5176-129 - SMT



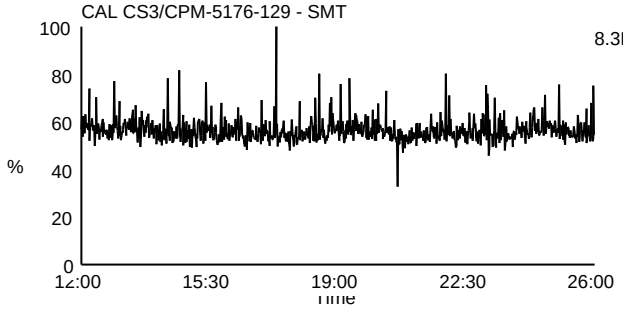
Data File: P70927A_02 G1 C4 - 317.9389
CAL CS3/CPM-5176-129 - SMT



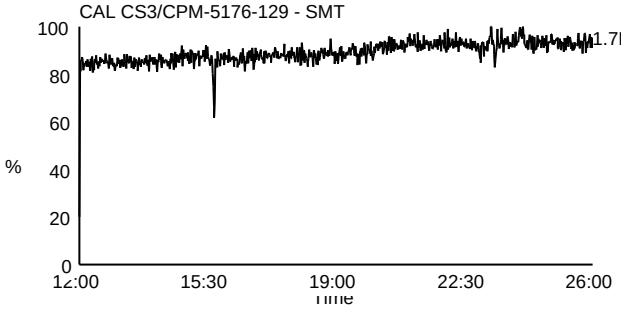
Data File: P70927A_02 G1 C11 - 333.9338
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02 G1 C14 - 375.8364
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02 G1 C5 - 318.9792
CAL CS3/CPM-5176-129 - SMT

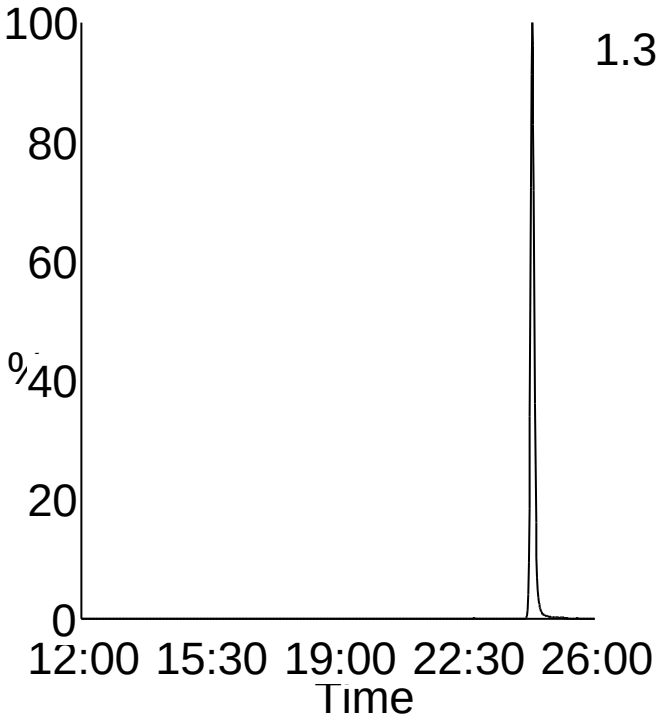


Homologue Group: Penta & Cleanup

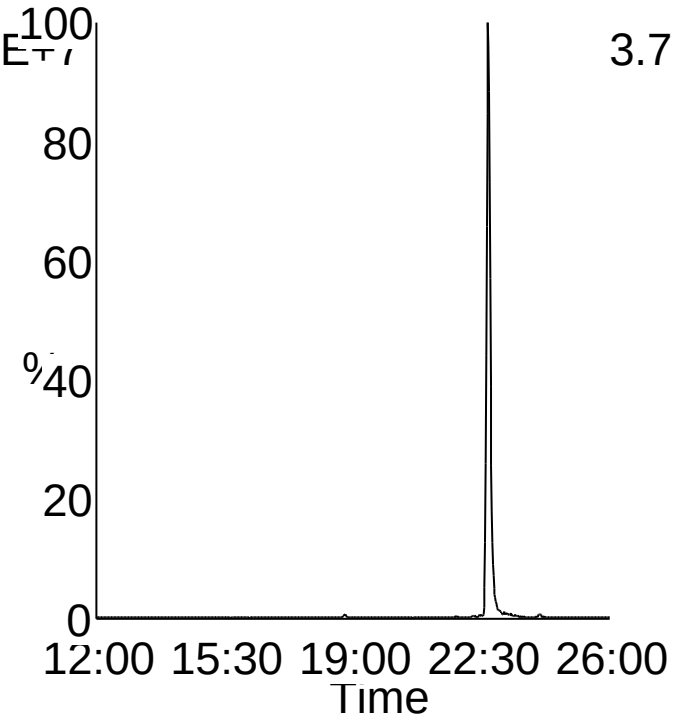
Data File Name: P70927A_02
Date Acquired: 9/27/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR09 (P)

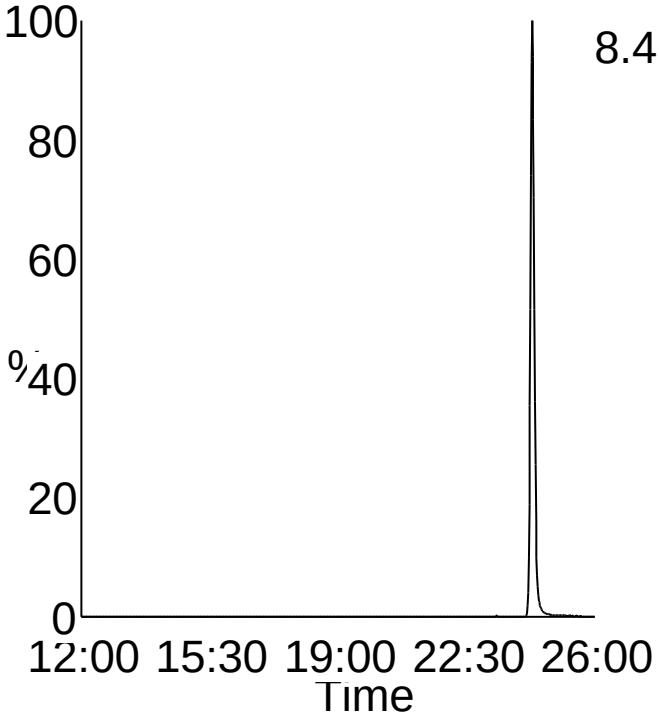
Data File: P70927A_02 G1 C12 - 339.8597
CAL CS3/CPM-5176-129 - SMT



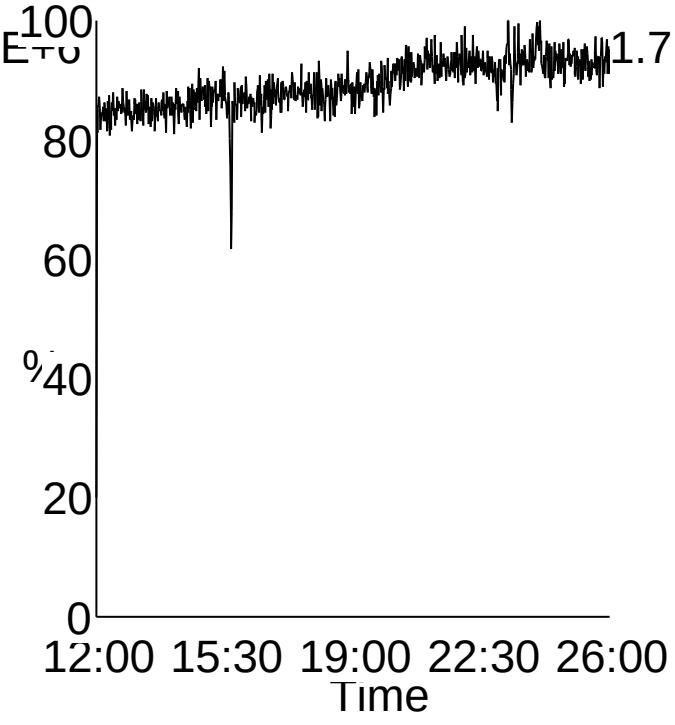
Data File: P70927A_02 G1 C9 - 327.8847
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02 G1 C13 - 341.8567
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02 G1 C5 - 318.9792
CAL CS3/CPM-5176-129 - SMT

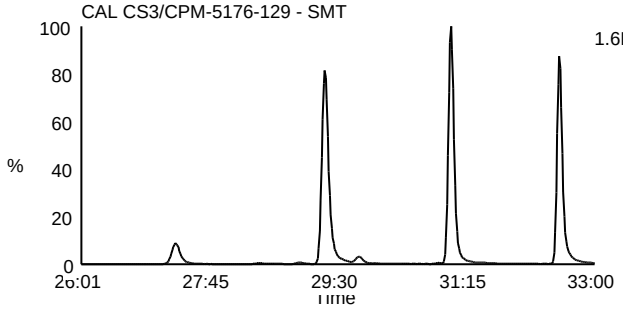


Homologue Group: Pentas

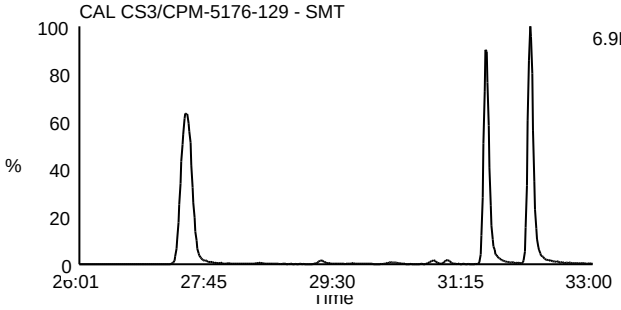
Data File Name: P70927A_02
Date Acquired: 9/27/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR09 (P)

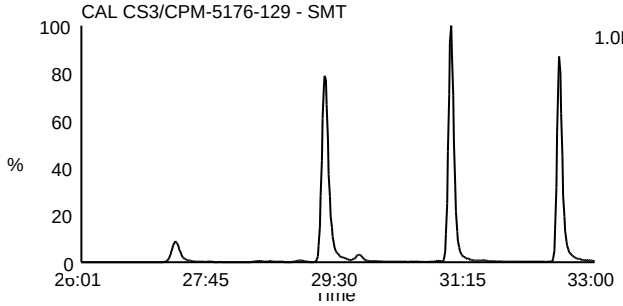
Data File: P70927A_02 G2 C1 - 339.8597
CAL CS3/CPM-5176-129 - SMT



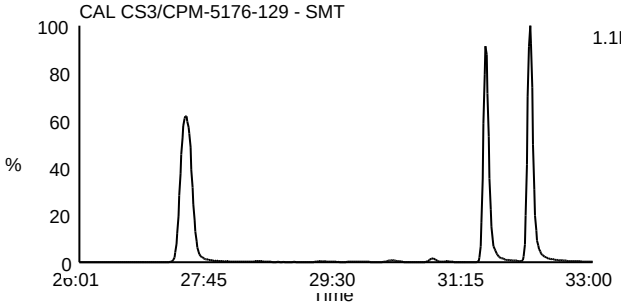
Data File: P70927A_02 G2 C4 - 353.8576
CAL CS3/CPM-5176-129 - SMT



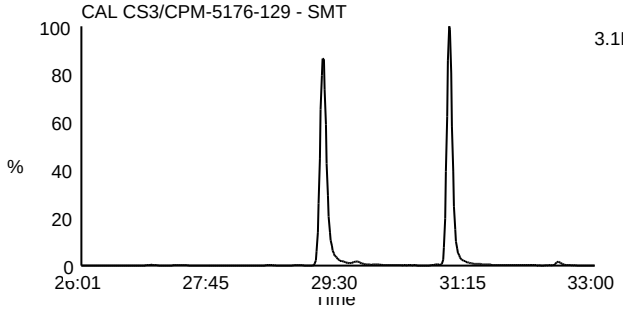
Data File: P70927A_02 G2 C2 - 341.8567
CAL CS3/CPM-5176-129 - SMT



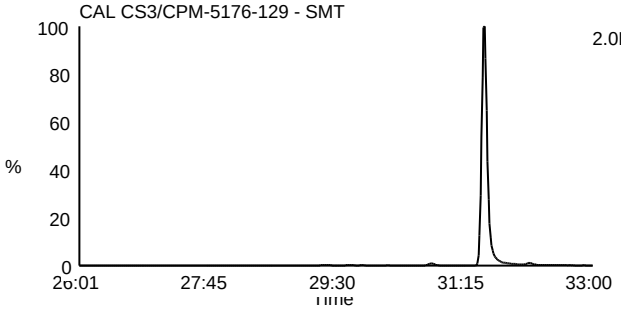
Data File: P70927A_02 G2 C8 - 355.8546
CAL CS3/CPM-5176-129 - SMT



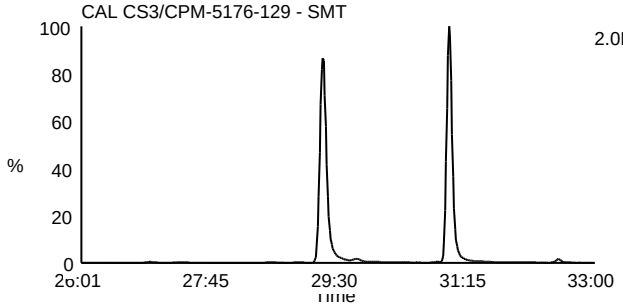
Data File: P70927A_02 G2 C3 - 351.8999
CAL CS3/CPM-5176-129 - SMT



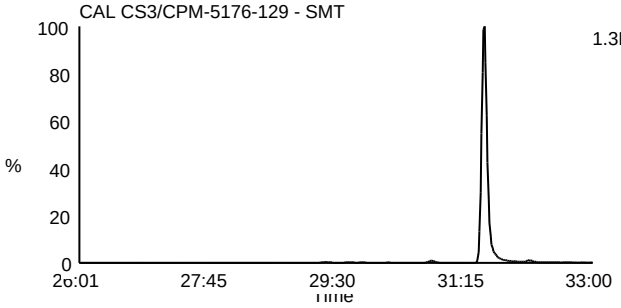
Data File: P70927A_02 G2 C10 - 367.8948
CAL CS3/CPM-5176-129 - SMT



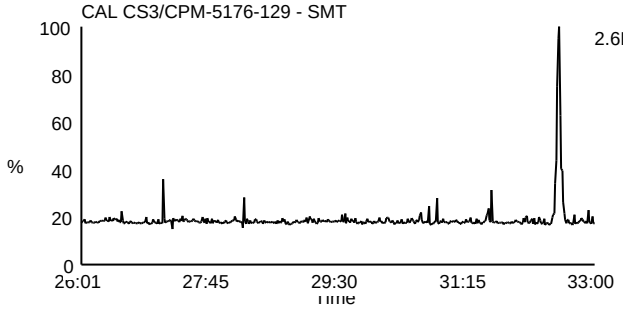
Data File: P70927A_02 G2 C5 - 353.8969
CAL CS3/CPM-5176-129 - SMT



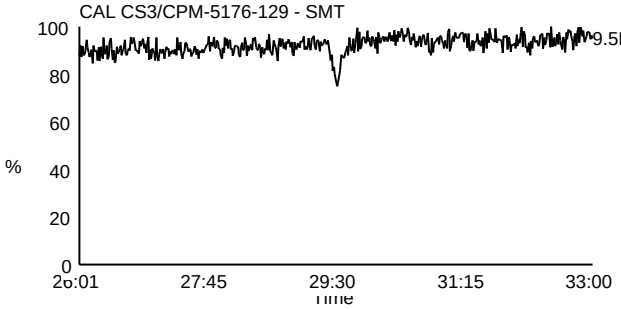
Data File: P70927A_02 G2 C11 - 369.8918
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02 G2 C12 - 409.7974
CAL CS3/CPM-5176-129 - SMT



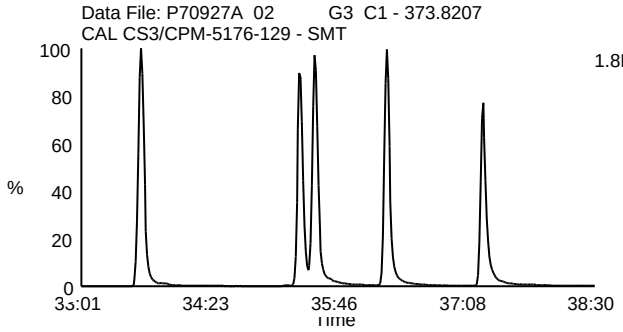
Data File: P70927A_02 G2 C6 - 354.9792
CAL CS3/CPM-5176-129 - SMT

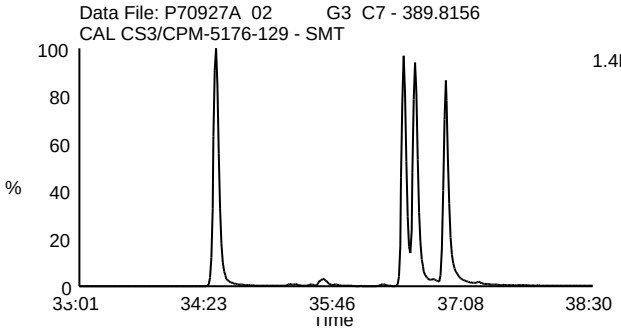


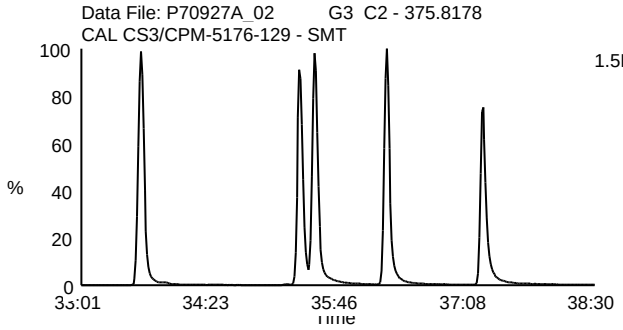
Homologue Group: Hexas

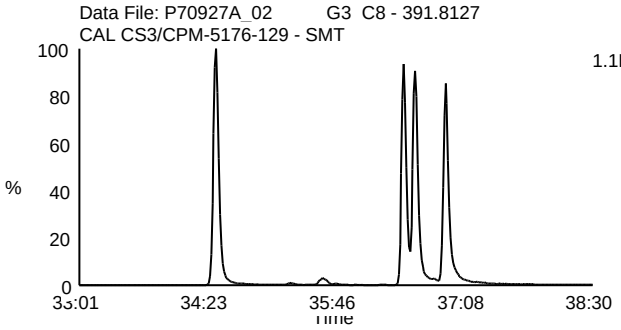
Data File Name: P70927A_02
Date Acquired: 9/27/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

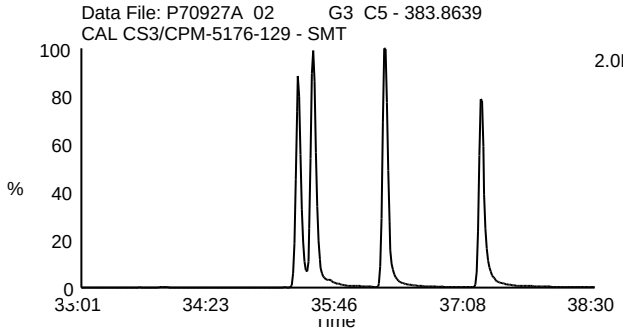
Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR09 (P)

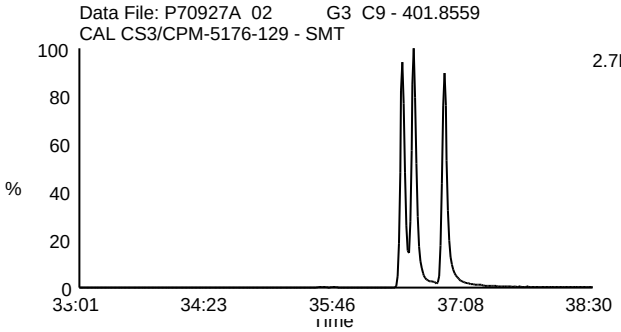


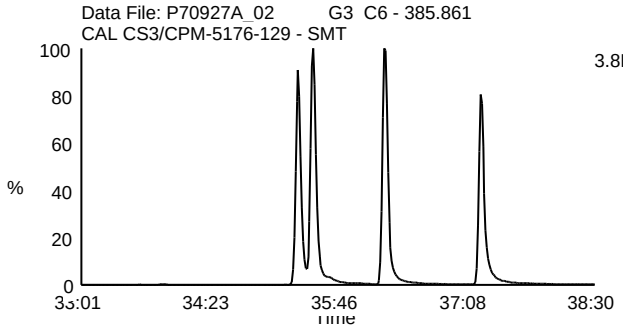


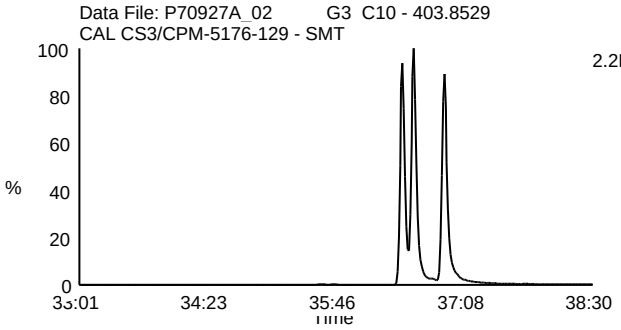


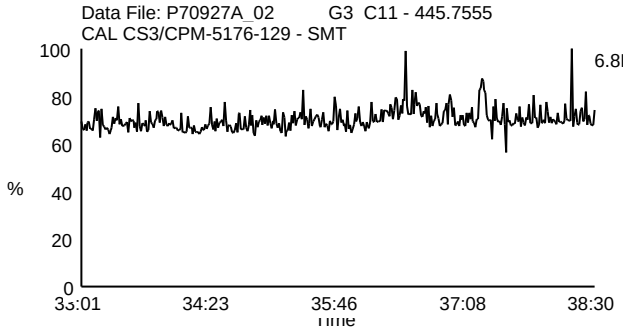


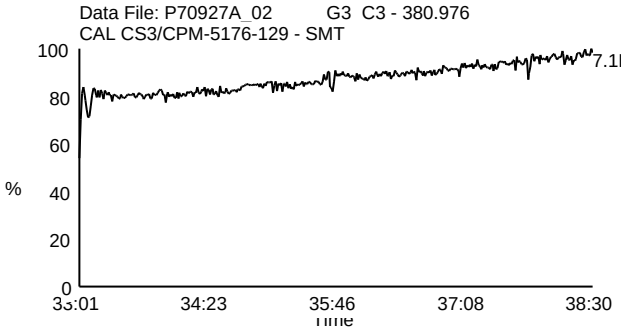










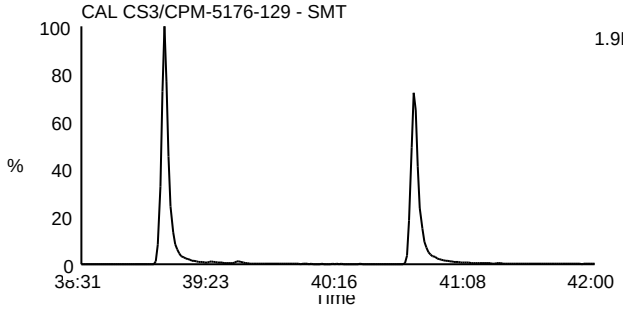


Homologue Group: Heptas

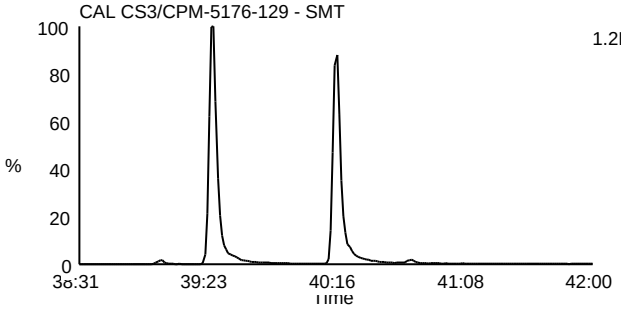
Data File Name: P70927A_02
Date Acquired: 9/27/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR09 (P)

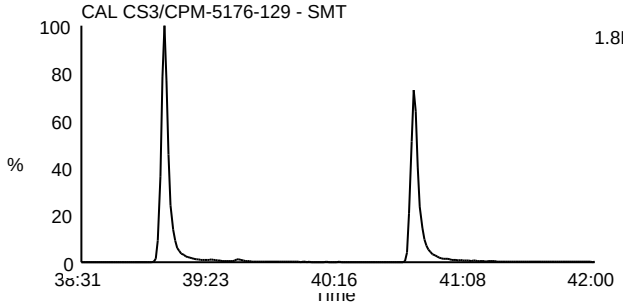
Data File: P70927A_02 G4 C3 - 407.7818
CAL CS3/CPM-5176-129 - SMT



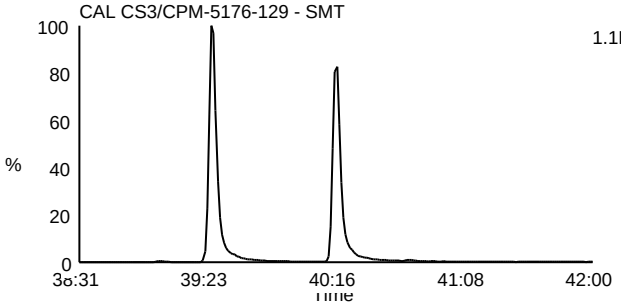
Data File: P70927A_02 G4 C8 - 423.7767
CAL CS3/CPM-5176-129 - SMT



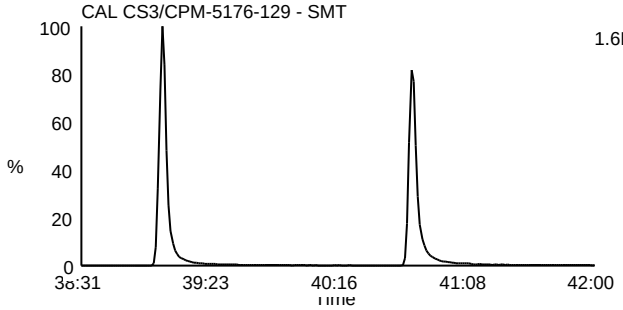
Data File: P70927A_02 G4 C4 - 409.7788
CAL CS3/CPM-5176-129 - SMT



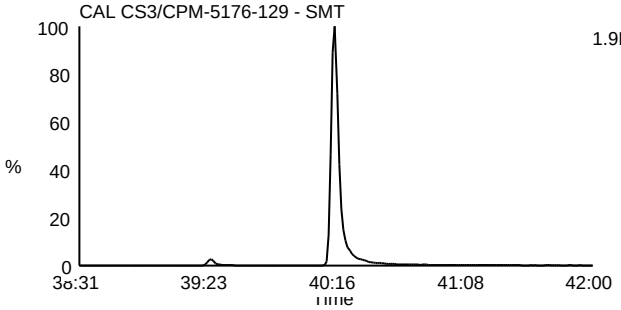
Data File: P70927A_02 G4 C9 - 425.7737
CAL CS3/CPM-5176-129 - SMT



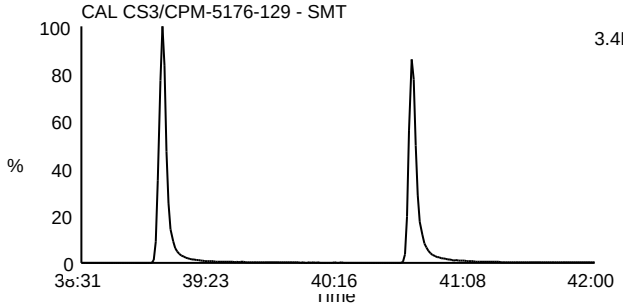
Data File: P70927A_02 G4 C6 - 417.825
CAL CS3/CPM-5176-129 - SMT



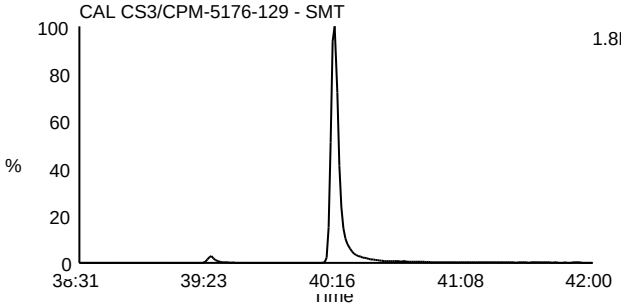
Data File: P70927A_02 G4 C11 - 435.8169
CAL CS3/CPM-5176-129 - SMT



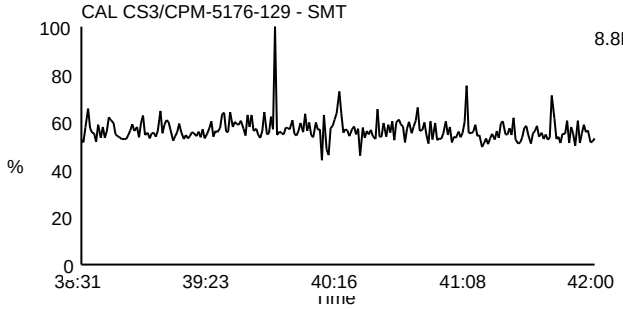
Data File: P70927A_02 G4 C7 - 419.822
CAL CS3/CPM-5176-129 - SMT



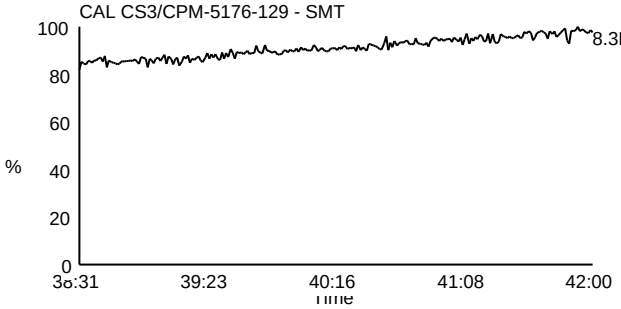
Data File: P70927A_02 G4 C12 - 437.814
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02 G4 C13 - 479.7165
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02 G4 C1 - 380.976
CAL CS3/CPM-5176-129 - SMT

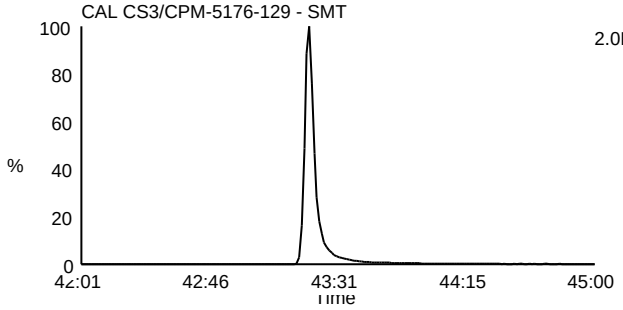


Homologue Group: Octas

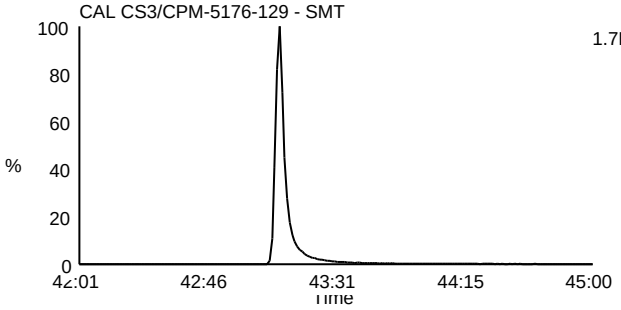
Data File Name: P70927A_02
Date Acquired: 9/27/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR09 (P)

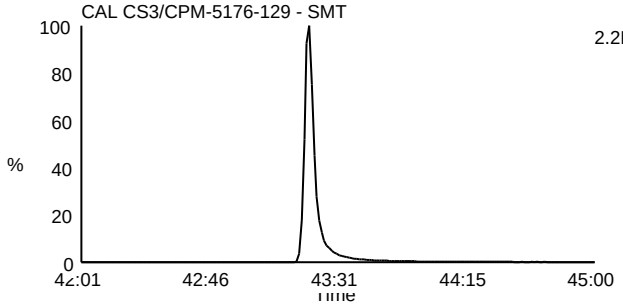
Data File: P70927A_02 G5 C4 - 441.7428
CAL CS3/CPM-5176-129 - SMT



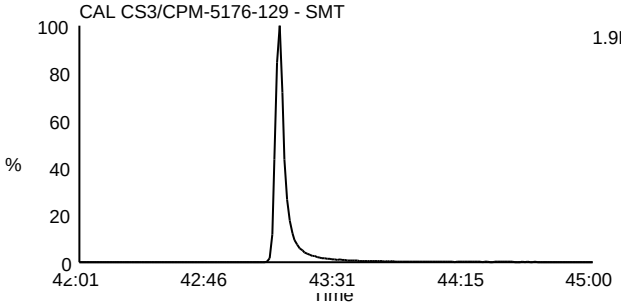
Data File: P70927A_02 G5 C8 - 457.7377
CAL CS3/CPM-5176-129 - SMT



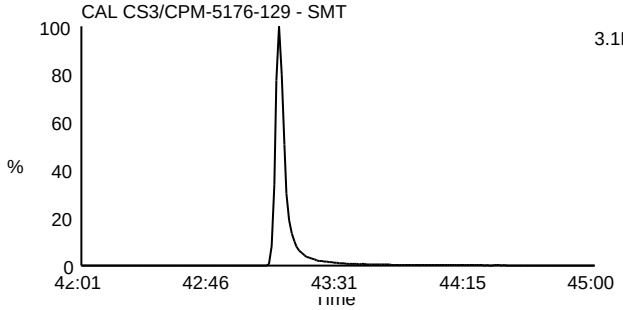
Data File: P70927A_02 G5 C5 - 443.7398
CAL CS3/CPM-5176-129 - SMT



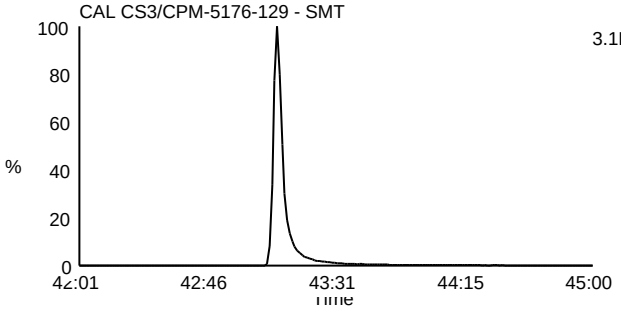
Data File: P70927A_02 G5 C9 - 459.7347
CAL CS3/CPM-5176-129 - SMT



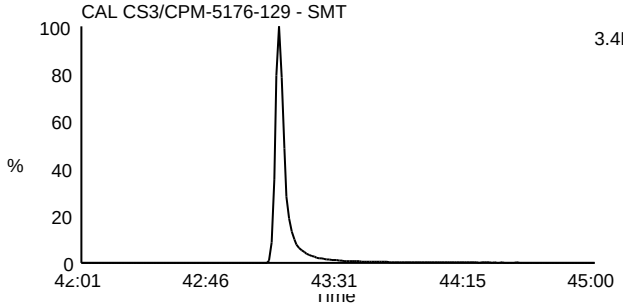
Data File: P70927A_02 G5 C11 - 469.7779
CAL CS3/CPM-5176-129 - SMT



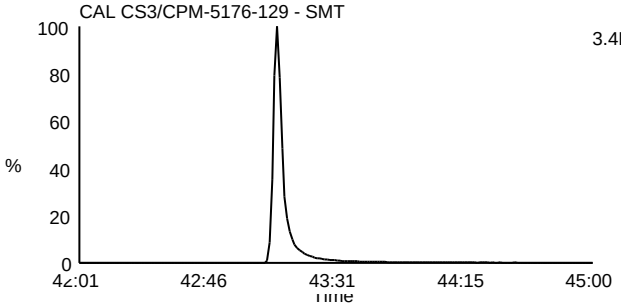
Data File: P70927A_02 G5 C11 - 469.7779
CAL CS3/CPM-5176-129 - SMT



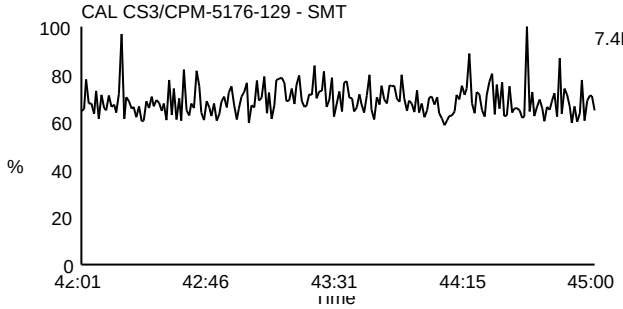
Data File: P70927A_02 G5 C12 - 471.7749
CAL CS3/CPM-5176-129 - SMT



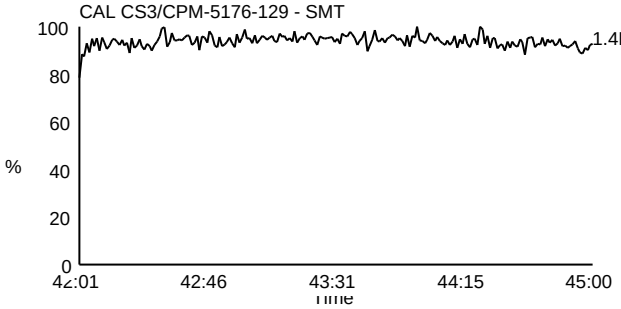
Data File: P70927A_02 G5 C12 - 471.7749
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02 G5 C13 - 513.6775
CAL CS3/CPM-5176-129 - SMT



Data File: P70927A_02 G5 C2 - 430.9728
CAL CS3/CPM-5176-129 - SMT

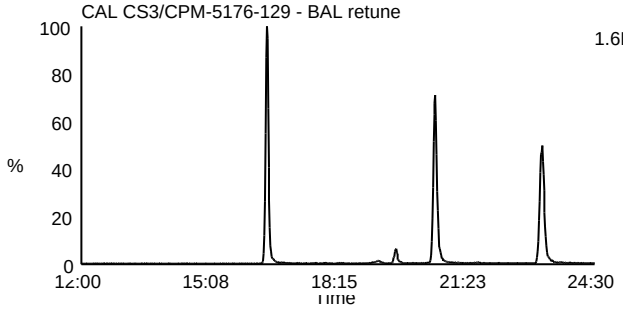


Homologue Group: Tetras

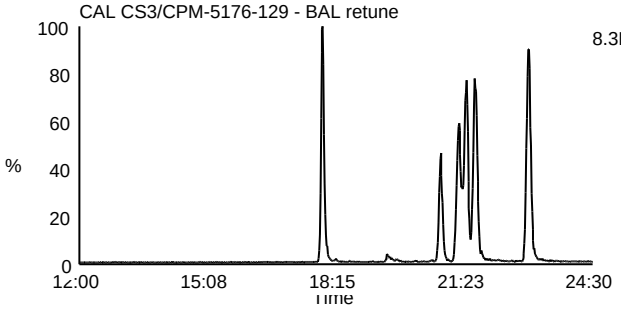
Data File Name: U70921A_08
Date Acquired: 9/21/2007
Sample Description: CAL CS3/CPM-5176-129 - BAL retune

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

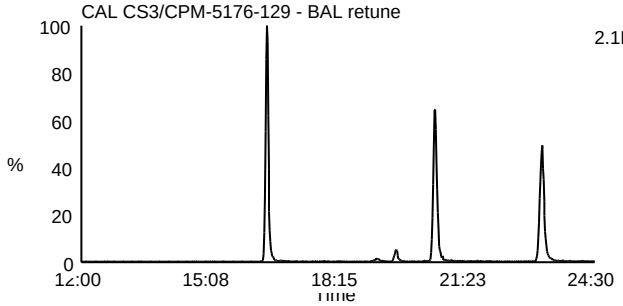
Data File: U70921A_08 G1 C1 - 303.9016
CAL CS3/CPM-5176-129 - BAL retune



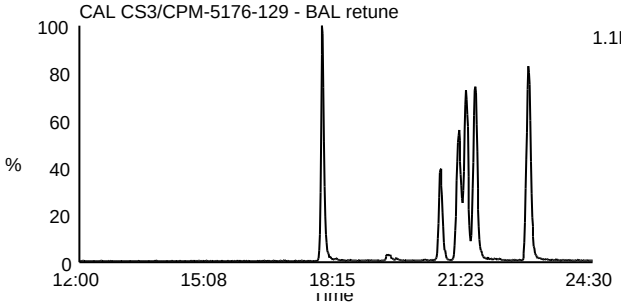
Data File: U70921A_08 G1 C7 - 319.8965
CAL CS3/CPM-5176-129 - BAL retune



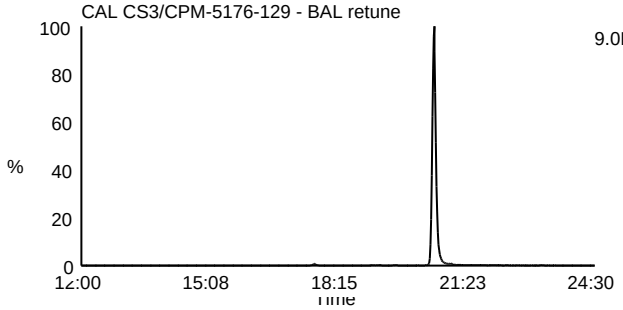
Data File: U70921A_08 G1 C2 - 305.8987
CAL CS3/CPM-5176-129 - BAL retune



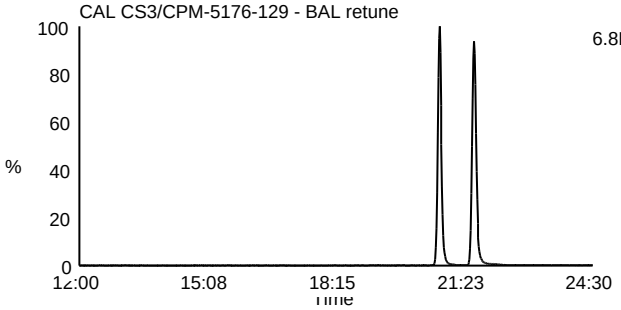
Data File: U70921A_08 G1 C8 - 321.8936
CAL CS3/CPM-5176-129 - BAL retune



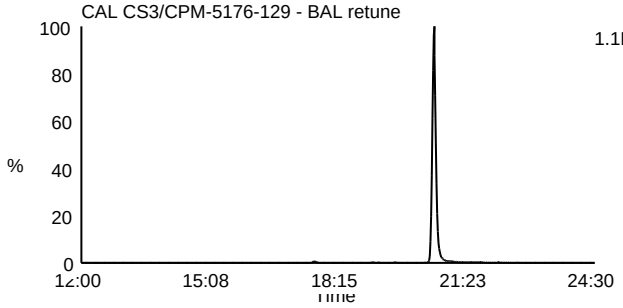
Data File: U70921A_08 G1 C3 - 315.9418
CAL CS3/CPM-5176-129 - BAL retune



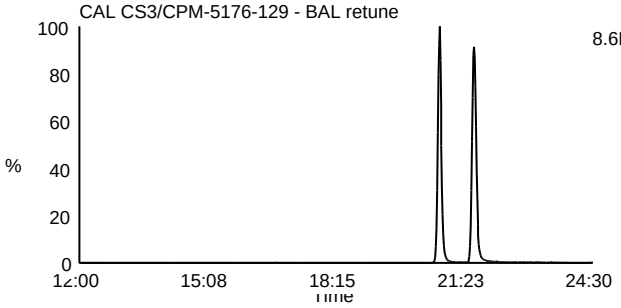
Data File: U70921A_08 G1 C10 - 331.9367
CAL CS3/CPM-5176-129 - BAL retune



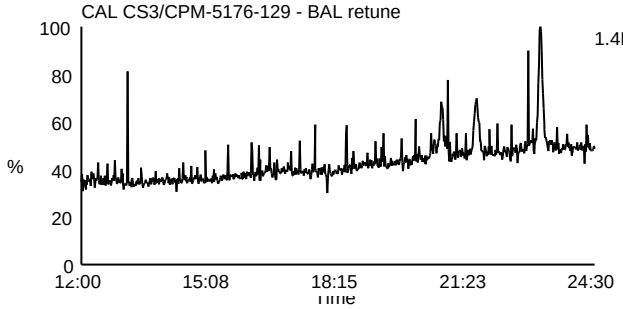
Data File: U70921A_08 G1 C4 - 317.9389
CAL CS3/CPM-5176-129 - BAL retune



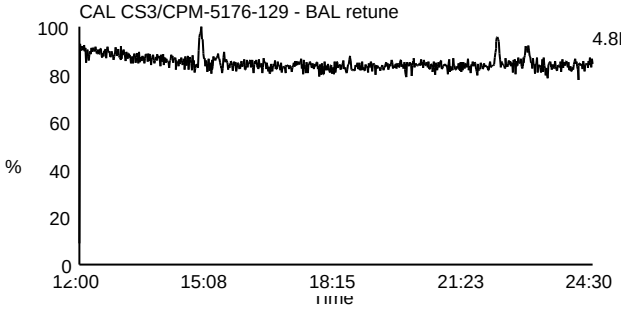
Data File: U70921A_08 G1 C11 - 333.9338
CAL CS3/CPM-5176-129 - BAL retune



Data File: U70921A_08 G1 C14 - 375.8364
CAL CS3/CPM-5176-129 - BAL retune



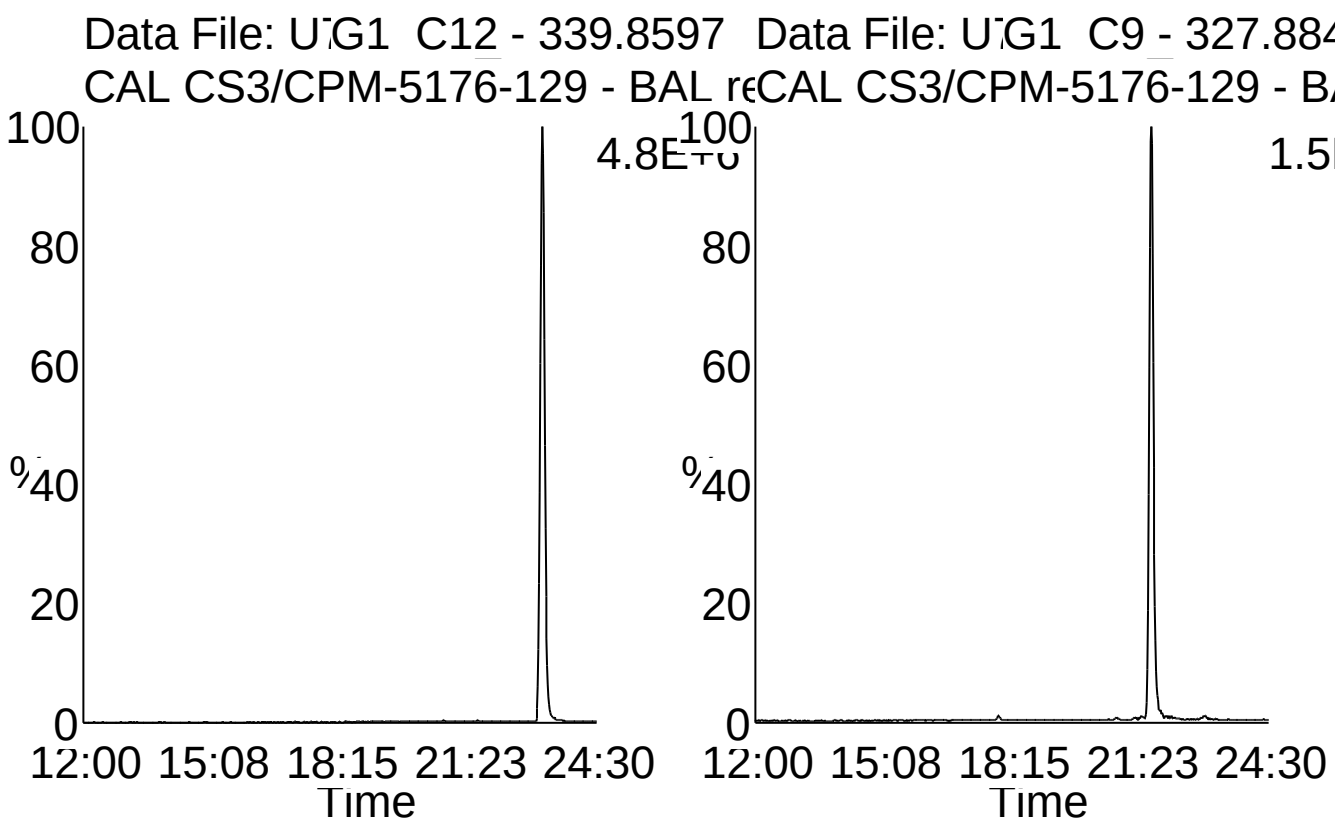
Data File: U70921A_08 G1 C5 - 318.9792
CAL CS3/CPM-5176-129 - BAL retune

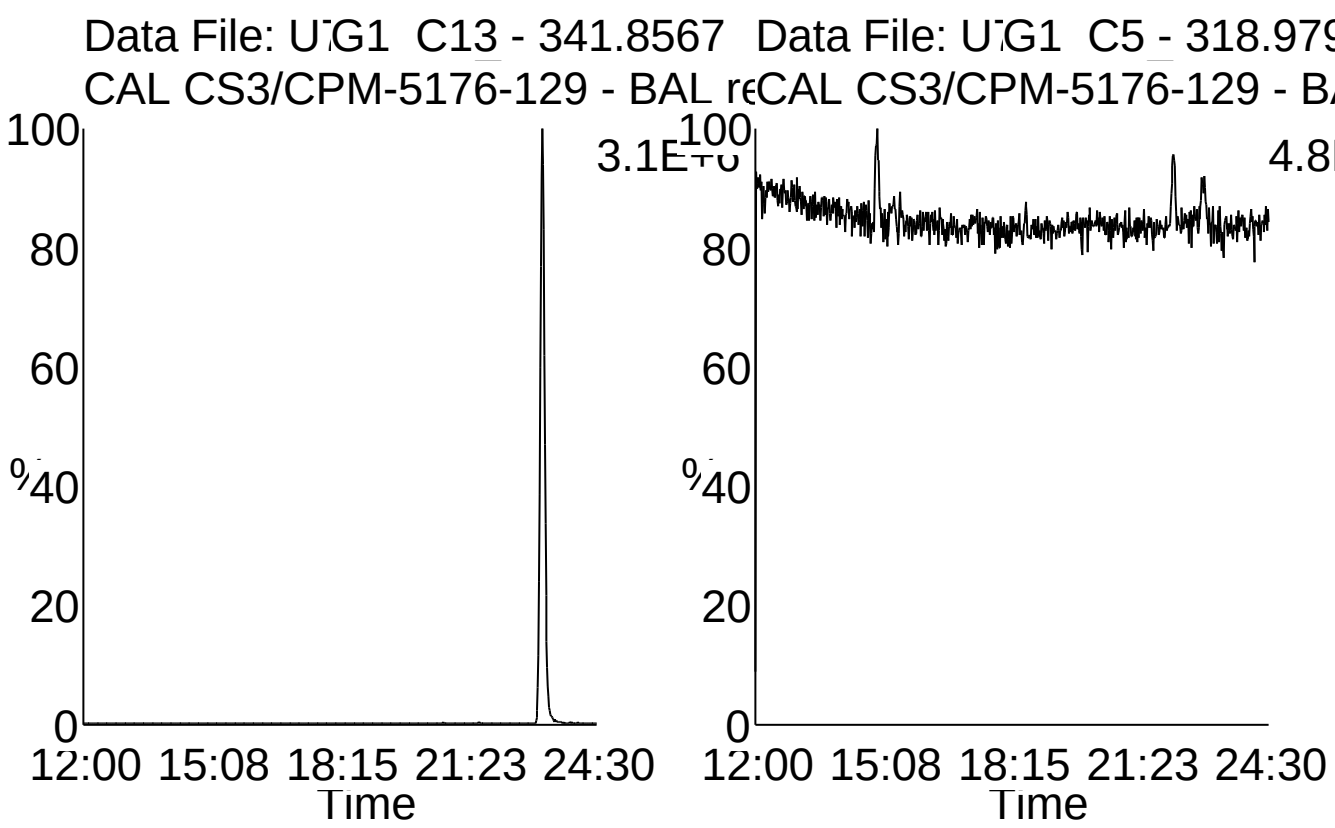


Homologue Group: Penta & Cleanup

Data File Name: U70921A_08
Date Acquired: 9/21/2007
Sample Description: CAL CS3/CPM-5176-129 - BAL retune

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)



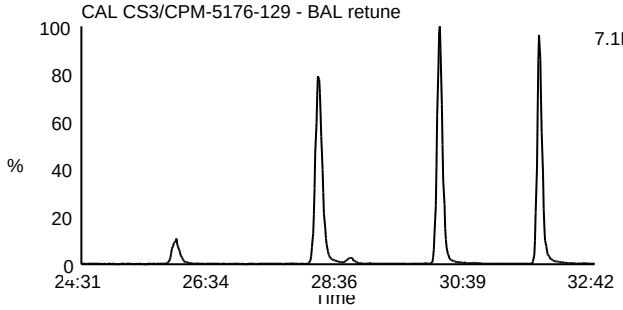


Homologue Group: Pentas

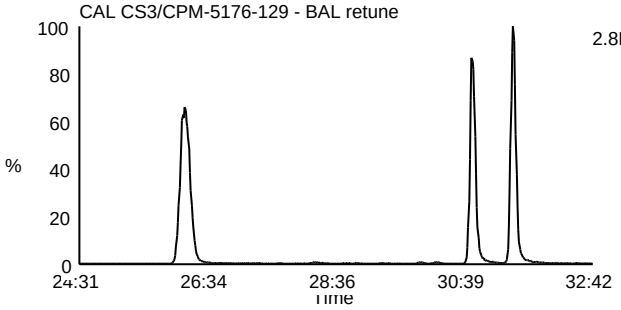
Data File Name: U70921A_08
Date Acquired: 9/21/2007
Sample Description: CAL CS3/CPM-5176-129 - BAL retune

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

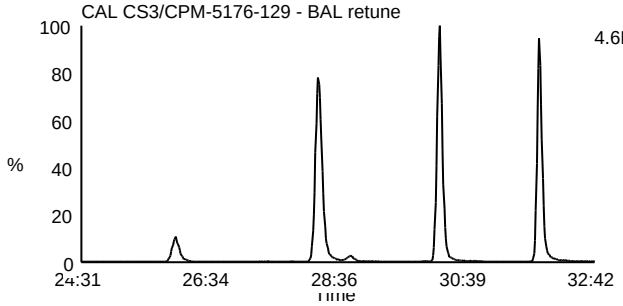
Data File: U70921A_08 G2 C1 - 339.8597
CAL CS3/CPM-5176-129 - BAL retune



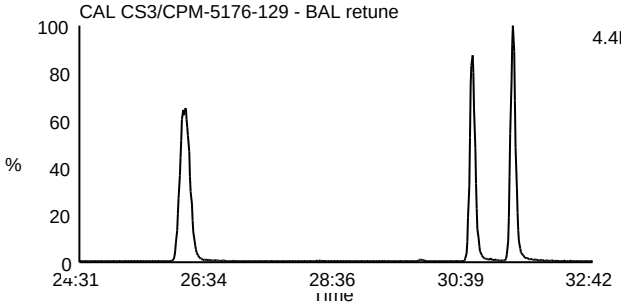
Data File: U70921A_08 G2 C4 - 353.8576
CAL CS3/CPM-5176-129 - BAL retune



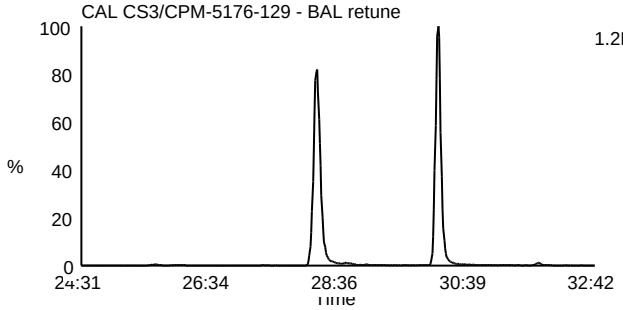
Data File: U70921A_08 G2 C2 - 341.8567
CAL CS3/CPM-5176-129 - BAL retune



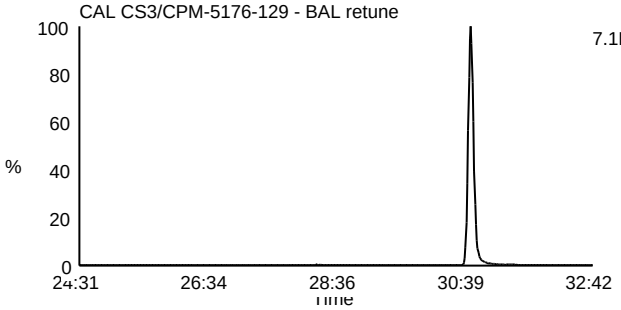
Data File: U70921A_08 G2 C8 - 355.8546
CAL CS3/CPM-5176-129 - BAL retune



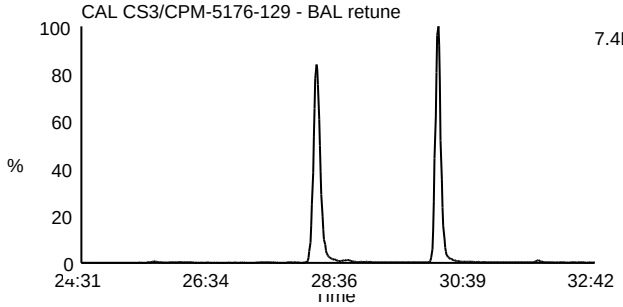
Data File: U70921A_08 G2 C3 - 351.8999
CAL CS3/CPM-5176-129 - BAL retune



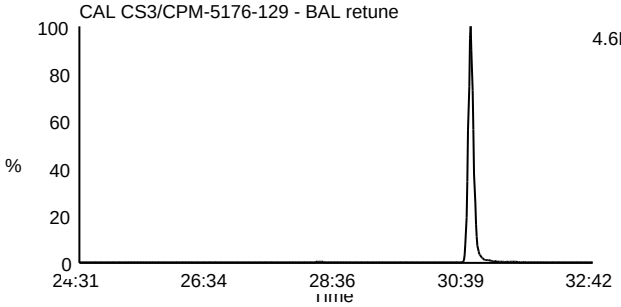
Data File: U70921A_08 G2 C10 - 367.8948
CAL CS3/CPM-5176-129 - BAL retune



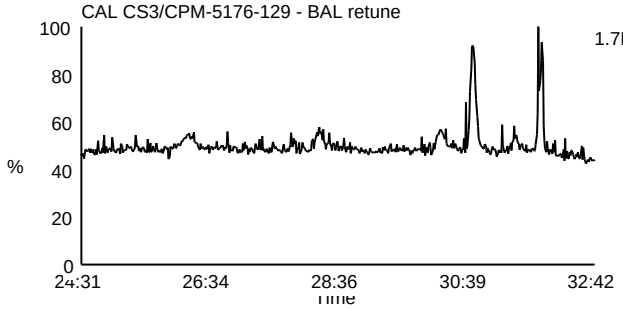
Data File: U70921A_08 G2 C5 - 353.8969
CAL CS3/CPM-5176-129 - BAL retune



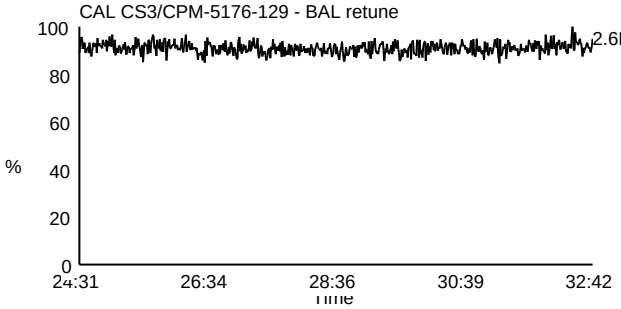
Data File: U70921A_08 G2 C11 - 369.8918
CAL CS3/CPM-5176-129 - BAL retune



Data File: U70921A_08 G2 C12 - 409.7974
CAL CS3/CPM-5176-129 - BAL retune



Data File: U70921A_08 G2 C6 - 354.9792
CAL CS3/CPM-5176-129 - BAL retune

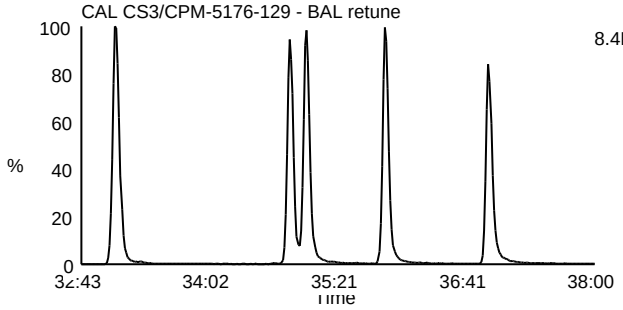


Homologue Group: Hexas

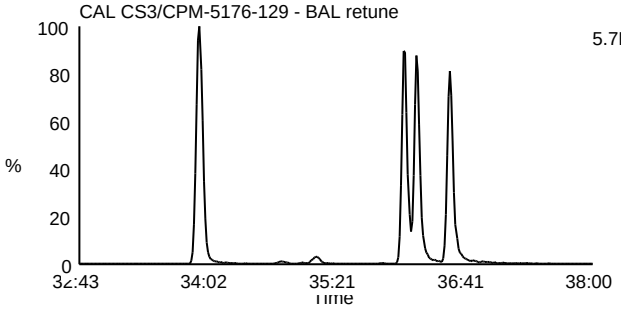
Data File Name: U70921A_08
Date Acquired: 9/21/2007
Sample Description: CAL CS3/CPM-5176-129 - BAL retune

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

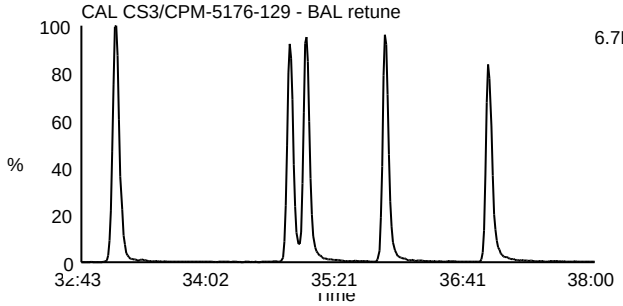
Data File: U70921A_08 G3 C1 - 373.8207
CAL CS3/CPM-5176-129 - BAL retune



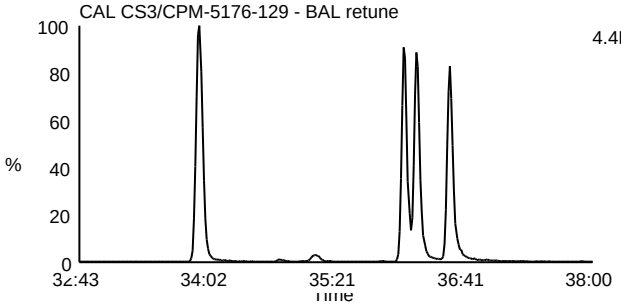
Data File: U70921A_08 G3 C7 - 389.8156
CAL CS3/CPM-5176-129 - BAL retune



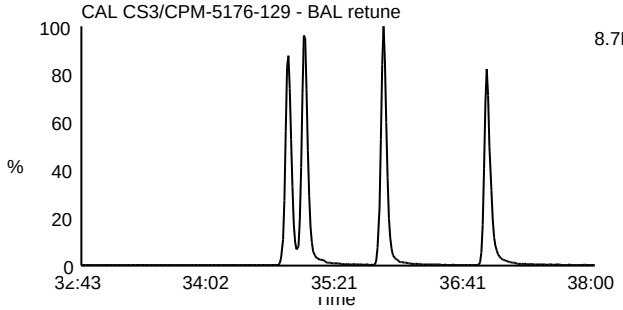
Data File: U70921A_08 G3 C2 - 375.8178
CAL CS3/CPM-5176-129 - BAL retune



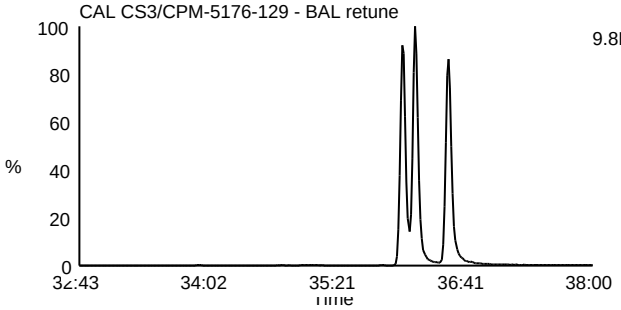
Data File: U70921A_08 G3 C8 - 391.8127
CAL CS3/CPM-5176-129 - BAL retune



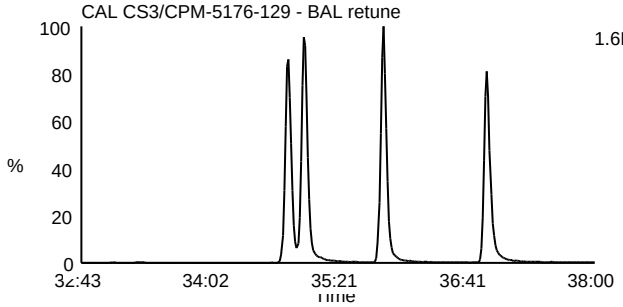
Data File: U70921A_08 G3 C5 - 383.8639
CAL CS3/CPM-5176-129 - BAL retune



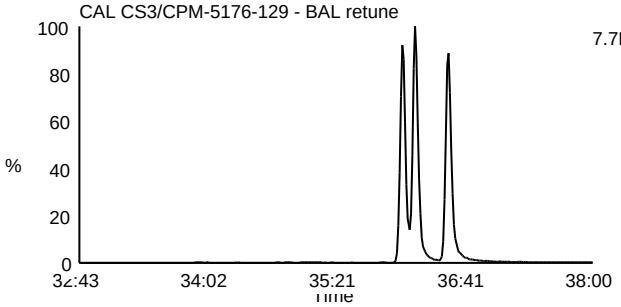
Data File: U70921A_08 G3 C9 - 401.8559
CAL CS3/CPM-5176-129 - BAL retune



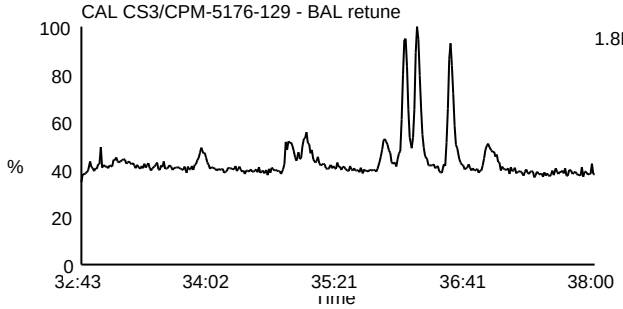
Data File: U70921A_08 G3 C6 - 385.861
CAL CS3/CPM-5176-129 - BAL retune



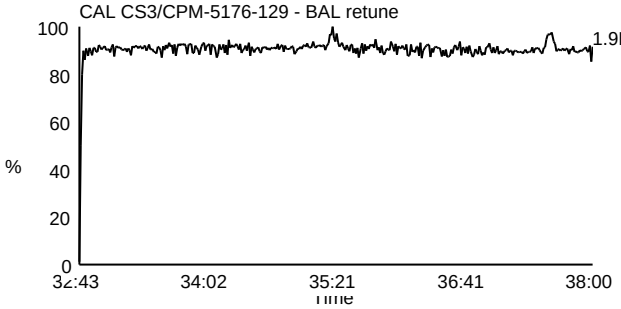
Data File: U70921A_08 G3 C10 - 403.8529
CAL CS3/CPM-5176-129 - BAL retune



Data File: U70921A_08 G3 C11 - 445.7555
CAL CS3/CPM-5176-129 - BAL retune



Data File: U70921A_08 G3 C3 - 380.976
CAL CS3/CPM-5176-129 - BAL retune

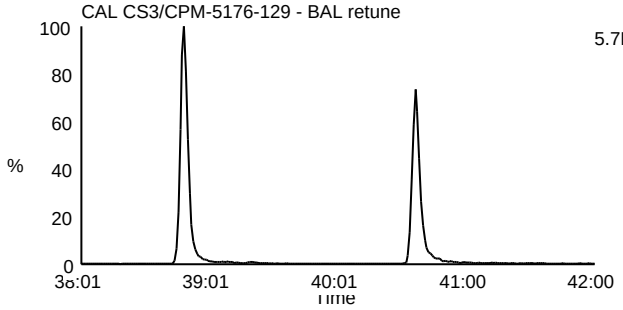


Homologue Group: Heptas

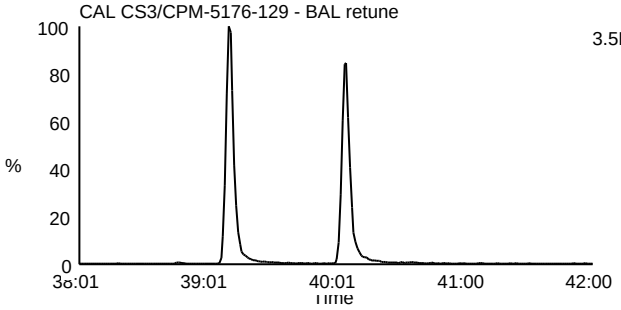
Data File Name: U70921A_08
Date Acquired: 9/21/2007
Sample Description: CAL CS3/CPM-5176-129 - BAL retune

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

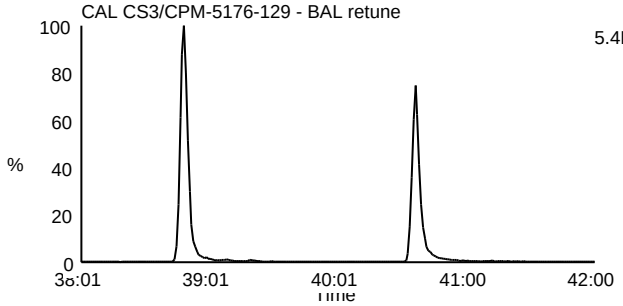
Data File: U70921A_08 G4 C3 - 407.7818
CAL CS3/CPM-5176-129 - BAL retune



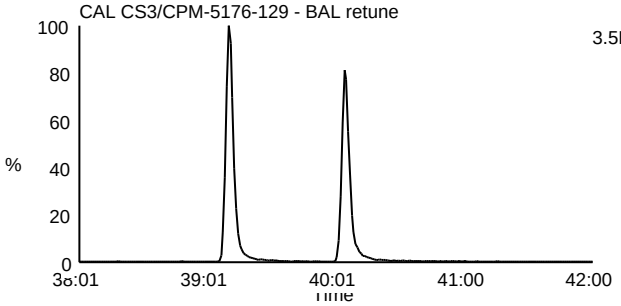
Data File: U70921A_08 G4 C8 - 423.7767
CAL CS3/CPM-5176-129 - BAL retune



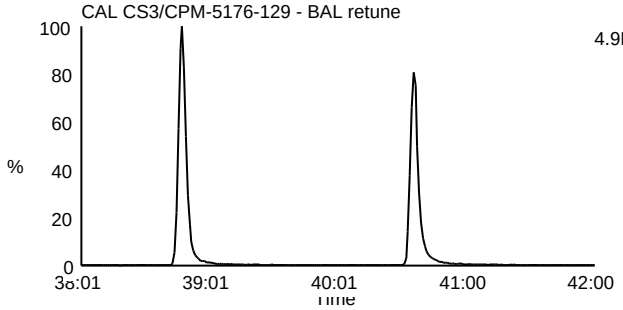
Data File: U70921A_08 G4 C4 - 409.7788
CAL CS3/CPM-5176-129 - BAL retune



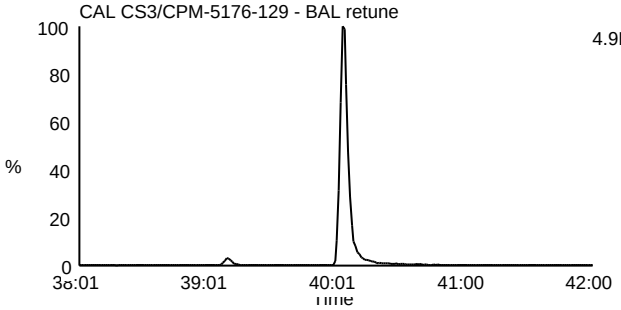
Data File: U70921A_08 G4 C9 - 425.7737
CAL CS3/CPM-5176-129 - BAL retune



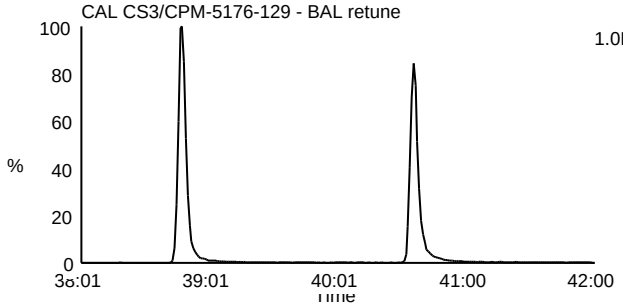
Data File: U70921A_08 G4 C6 - 417.825
CAL CS3/CPM-5176-129 - BAL retune



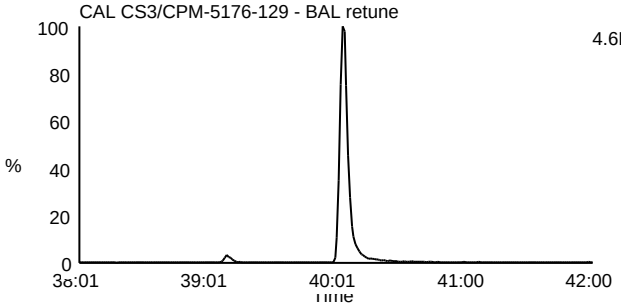
Data File: U70921A_08 G4 C11 - 435.8169
CAL CS3/CPM-5176-129 - BAL retune



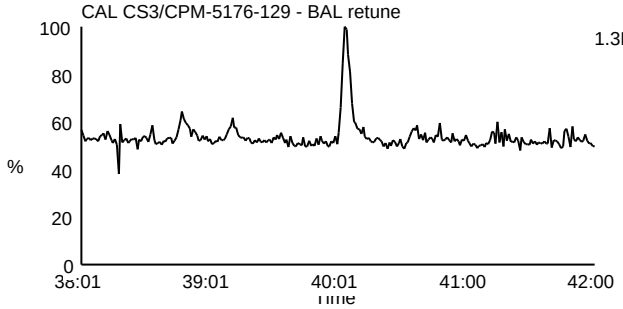
Data File: U70921A_08 G4 C7 - 419.822
CAL CS3/CPM-5176-129 - BAL retune



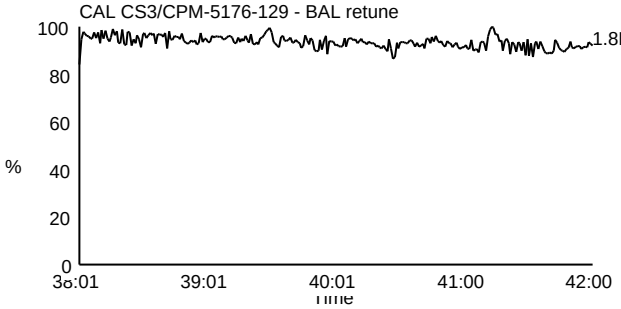
Data File: U70921A_08 G4 C12 - 437.814
CAL CS3/CPM-5176-129 - BAL retune



Data File: U70921A_08 G4 C13 - 479.7165
CAL CS3/CPM-5176-129 - BAL retune



Data File: U70921A_08 G4 C1 - 380.976
CAL CS3/CPM-5176-129 - BAL retune

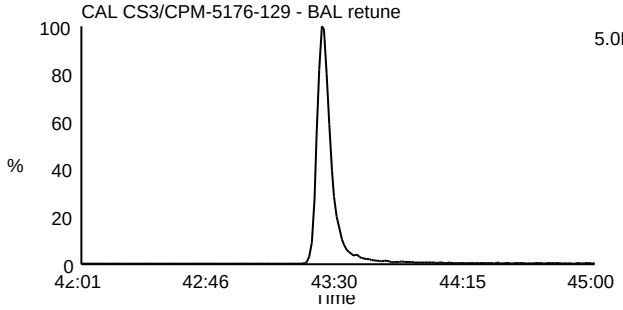


Homologue Group: Octas

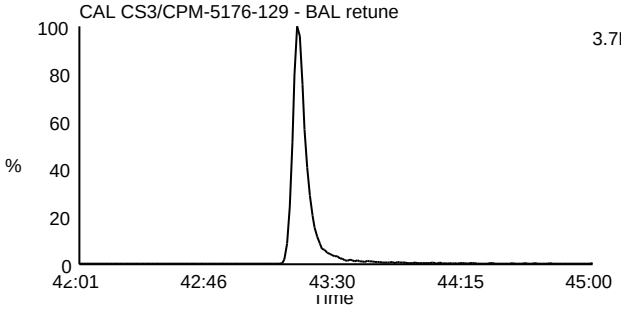
Data File Name: U70921A_08
Date Acquired: 9/21/2007
Sample Description: CAL CS3/CPM-5176-129 - BAL retune

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

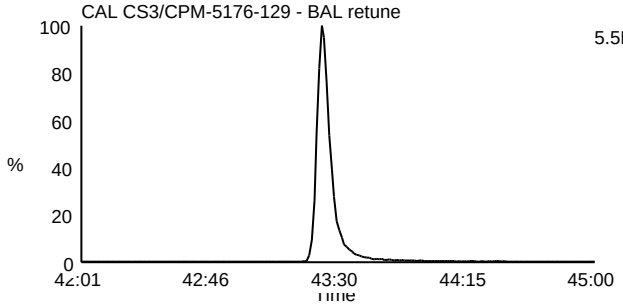
Data File: U70921A_08 G5 C4 - 441.7428
CAL CS3/CPM-5176-129 - BAL retune



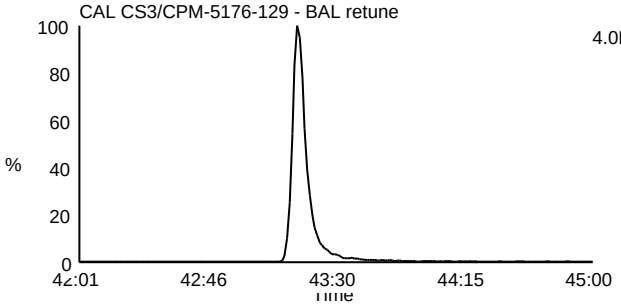
Data File: U70921A_08 G5 C8 - 457.7377
CAL CS3/CPM-5176-129 - BAL retune



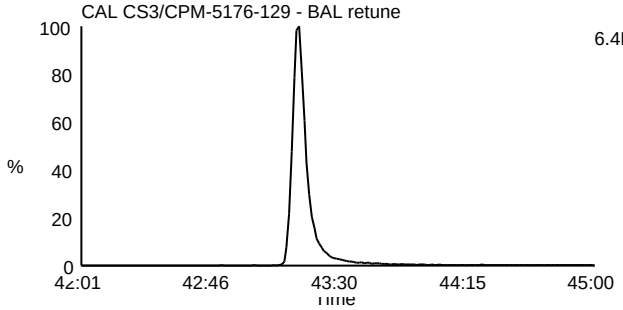
Data File: U70921A_08 G5 C5 - 443.7398
CAL CS3/CPM-5176-129 - BAL retune



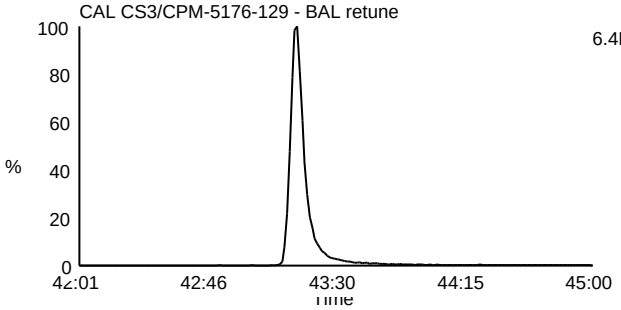
Data File: U70921A_08 G5 C9 - 459.7347
CAL CS3/CPM-5176-129 - BAL retune



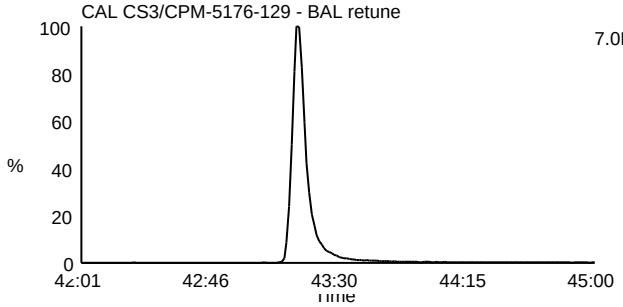
Data File: U70921A_08 G5 C11 - 469.7779
CAL CS3/CPM-5176-129 - BAL retune



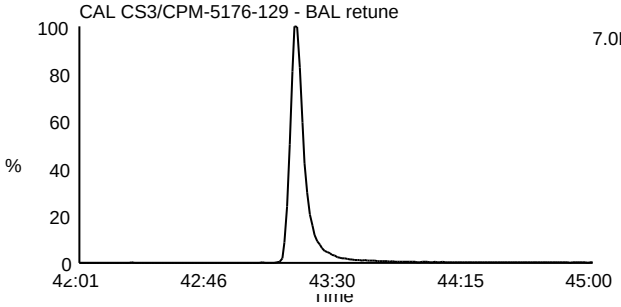
Data File: U70921A_08 G5 C11 - 469.7779
CAL CS3/CPM-5176-129 - BAL retune



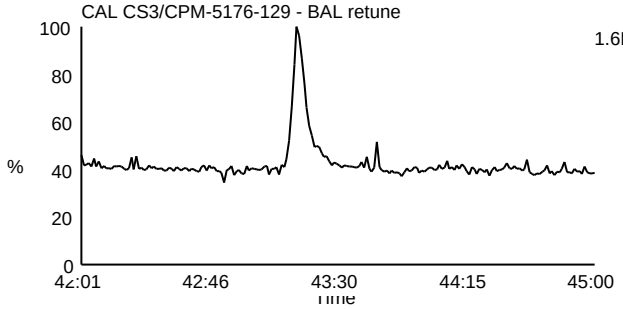
Data File: U70921A_08 G5 C12 - 471.7749
CAL CS3/CPM-5176-129 - BAL retune



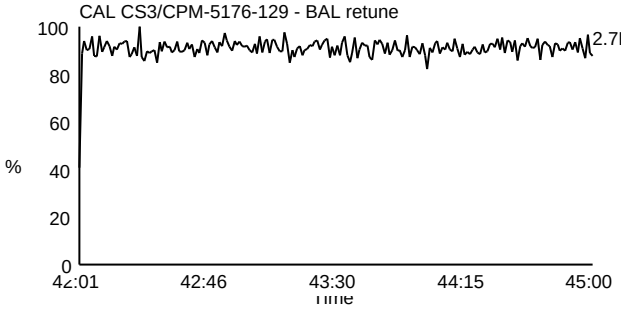
Data File: U70921A_08 G5 C12 - 471.7749
CAL CS3/CPM-5176-129 - BAL retune



Data File: U70921A_08 G5 C13 - 513.6775
CAL CS3/CPM-5176-129 - BAL retune



Data File: U70921A_08 G5 C2 - 430.9728
CAL CS3/CPM-5176-129 - BAL retune

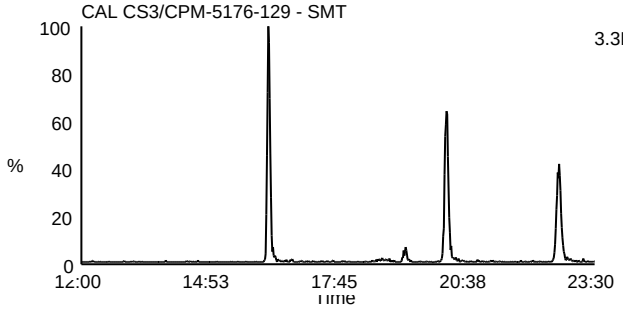


Homologue Group: Tetras

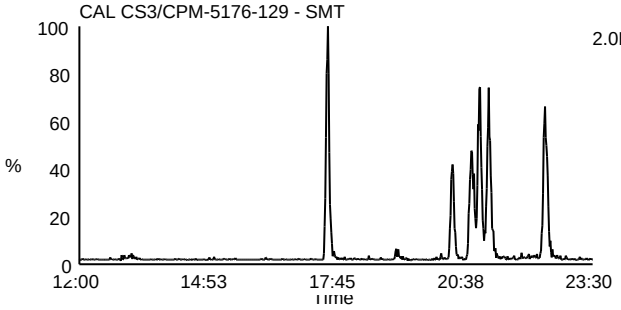
Data File Name: U70926A_03
Date Acquired: 9/26/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

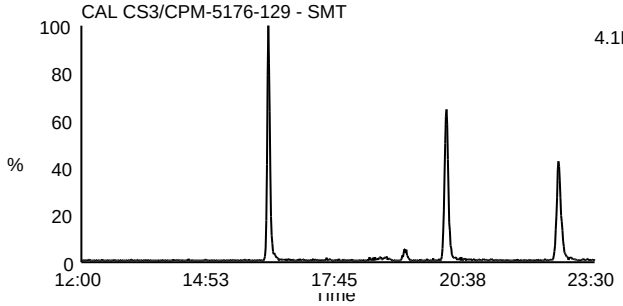
Data File: U70926A_03 G1 C1 - 303.9016
CAL CS3/CPM-5176-129 - SMT



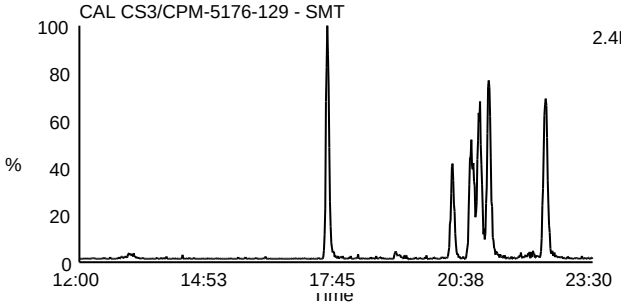
Data File: U70926A_03 G1 C7 - 319.8965
CAL CS3/CPM-5176-129 - SMT



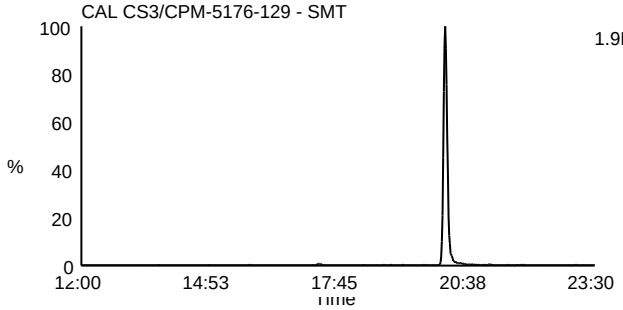
Data File: U70926A_03 G1 C2 - 305.8987
CAL CS3/CPM-5176-129 - SMT



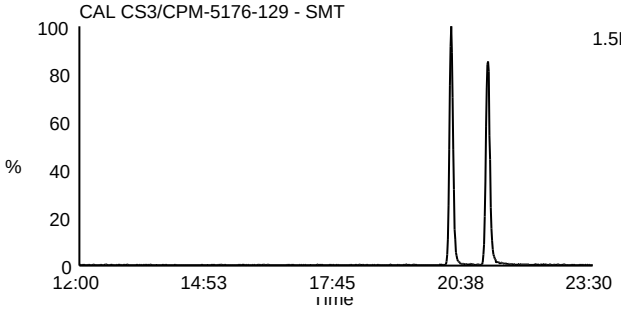
Data File: U70926A_03 G1 C8 - 321.8936
CAL CS3/CPM-5176-129 - SMT



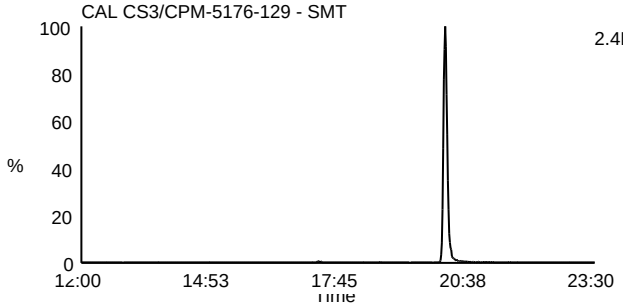
Data File: U70926A_03 G1 C3 - 315.9418
CAL CS3/CPM-5176-129 - SMT



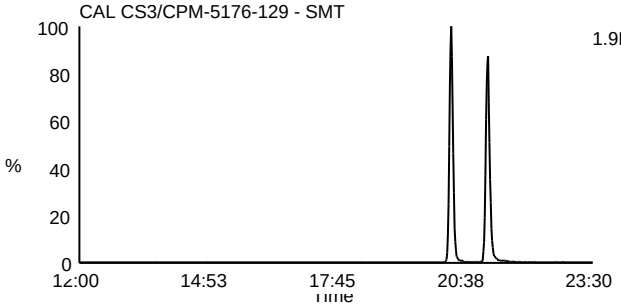
Data File: U70926A_03 G1 C10 - 331.9367
CAL CS3/CPM-5176-129 - SMT



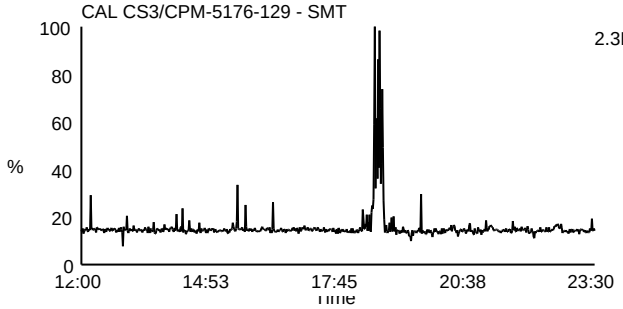
Data File: U70926A_03 G1 C4 - 317.9389
CAL CS3/CPM-5176-129 - SMT



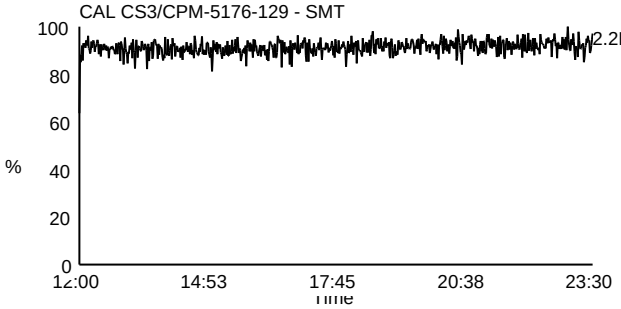
Data File: U70926A_03 G1 C11 - 333.9338
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_03 G1 C14 - 375.8364
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_03 G1 C5 - 318.9792
CAL CS3/CPM-5176-129 - SMT

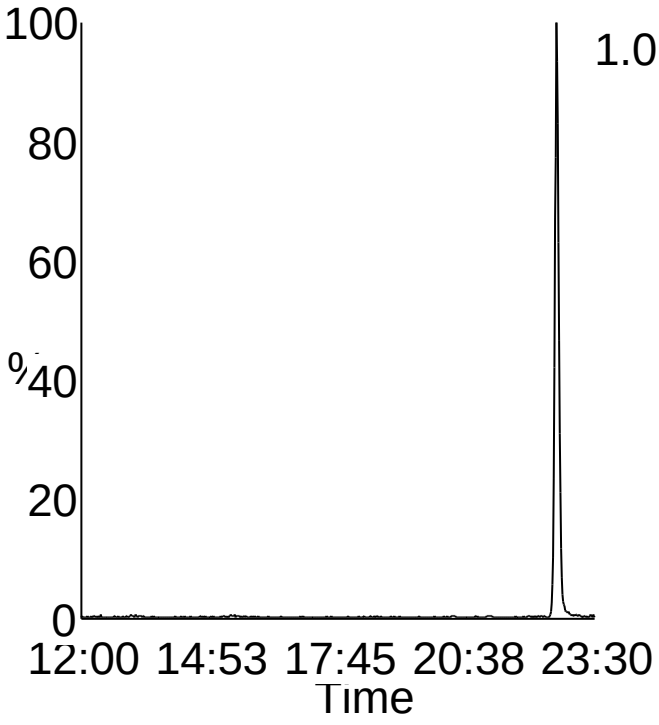


Homologue Group: Penta & Cleanup

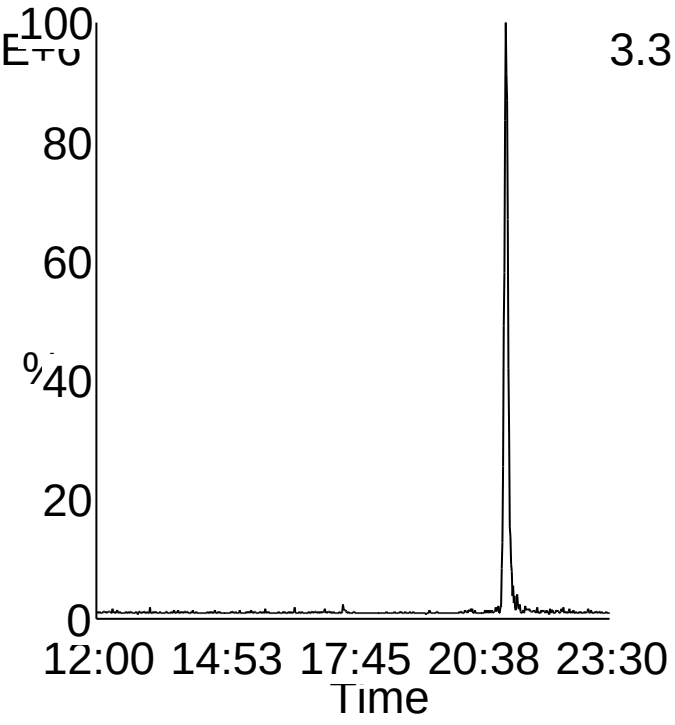
Data File Name: U70926A_03
Date Acquired: 9/26/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

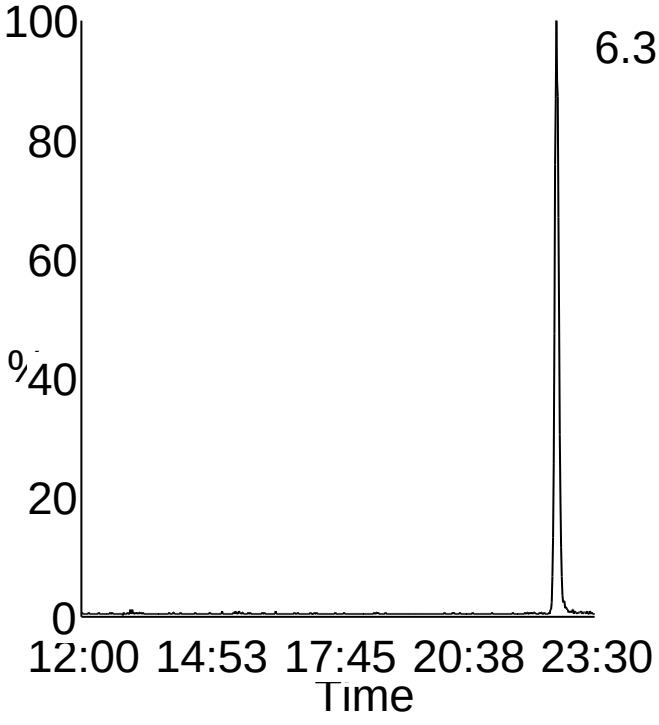
Data File: U70926A_03 G1 C12 - 339.8597
CAL CS3/CPM-5176-129 - SMT



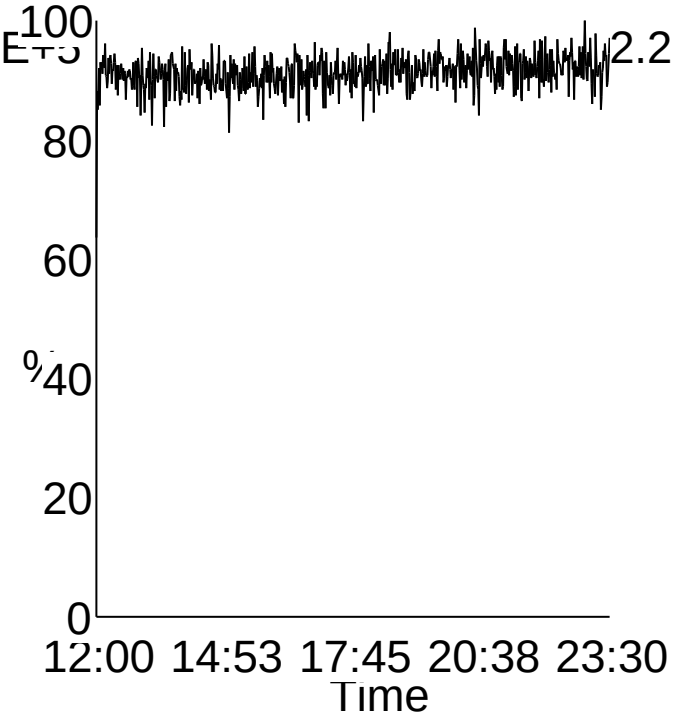
Data File: U70926A_03 G1 C9 - 327.8847
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_03 G1 C13 - 341.8567
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_03 G1 C5 - 318.9792
CAL CS3/CPM-5176-129 - SMT

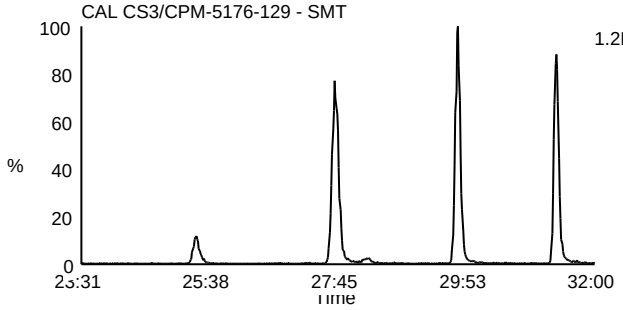


Homologue Group: Pentas

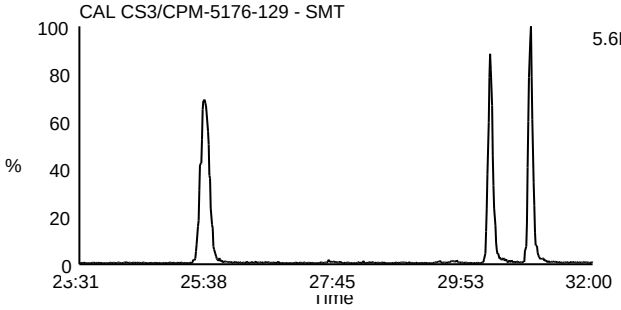
Data File Name: U70926A_03
Date Acquired: 9/26/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

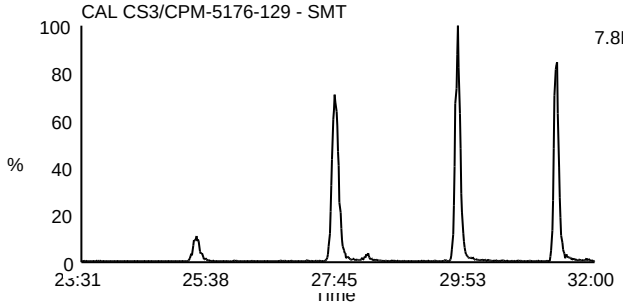
Data File: U70926A_03 G2 C1 - 339.8597
CAL CS3/CPM-5176-129 - SMT



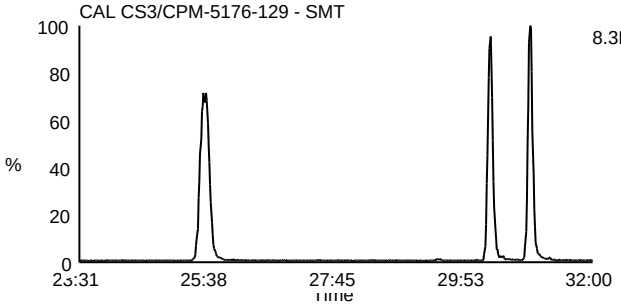
Data File: U70926A_03 G2 C4 - 353.8576
CAL CS3/CPM-5176-129 - SMT



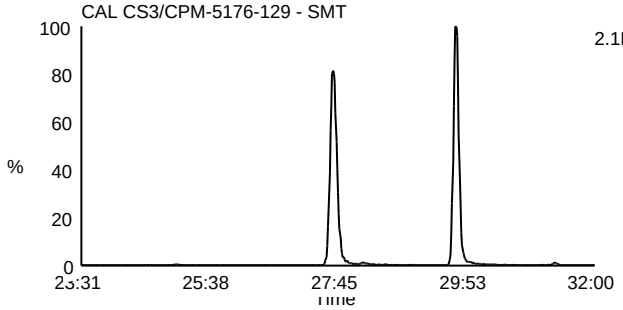
Data File: U70926A_03 G2 C2 - 341.8567
CAL CS3/CPM-5176-129 - SMT



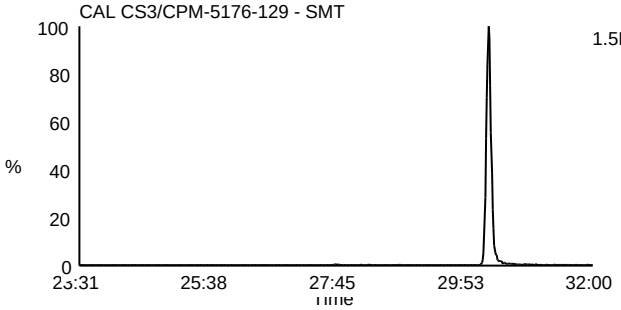
Data File: U70926A_03 G2 C8 - 355.8546
CAL CS3/CPM-5176-129 - SMT



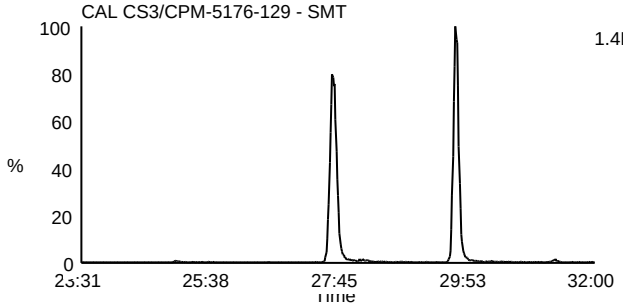
Data File: U70926A_03 G2 C3 - 351.8999
CAL CS3/CPM-5176-129 - SMT



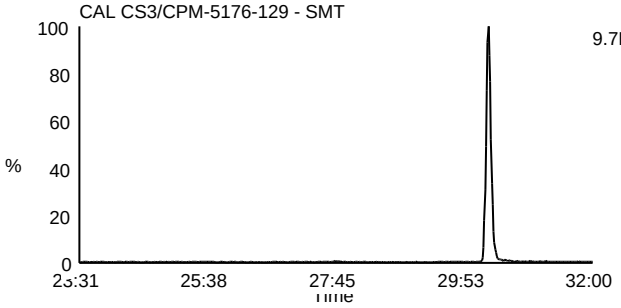
Data File: U70926A_03 G2 C10 - 367.8948
CAL CS3/CPM-5176-129 - SMT



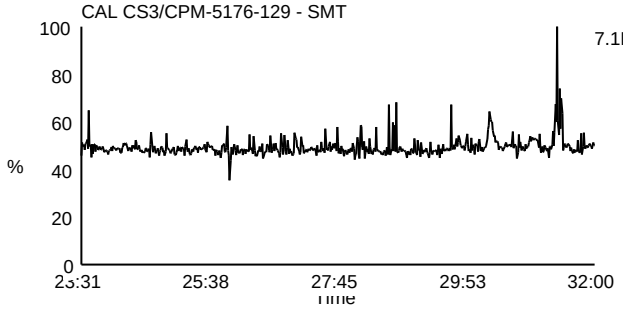
Data File: U70926A_03 G2 C5 - 353.8969
CAL CS3/CPM-5176-129 - SMT



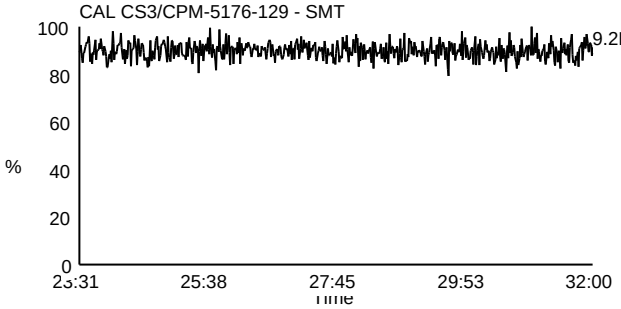
Data File: U70926A_03 G2 C11 - 369.8918
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_03 G2 C12 - 409.7974
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_03 G2 C6 - 354.9792
CAL CS3/CPM-5176-129 - SMT

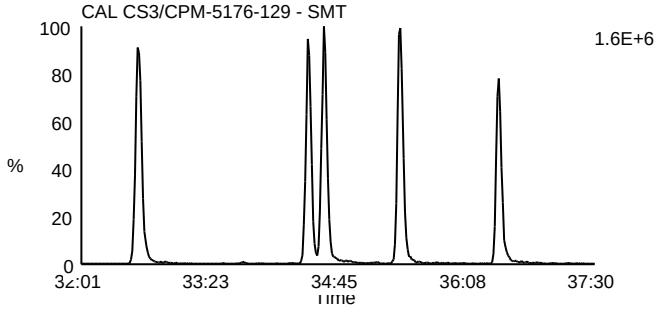


Homologue Group: Hexas

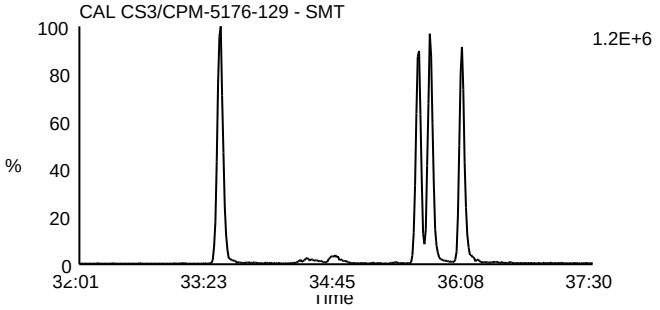
Data File Name: U70926A_03
Date Acquired: 9/26/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

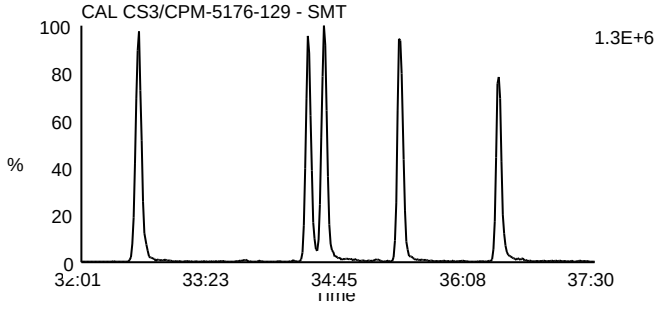
Data File: U70926A_03 G3 C1 - 373.8207
CAL CS3/CPM-5176-129 - SMT



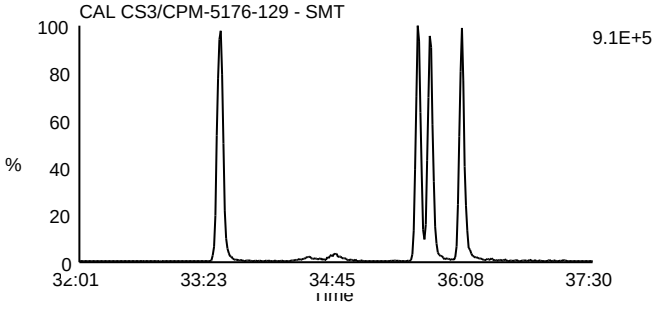
Data File: U70926A_03 G3 C7 - 389.8156
CAL CS3/CPM-5176-129 - SMT



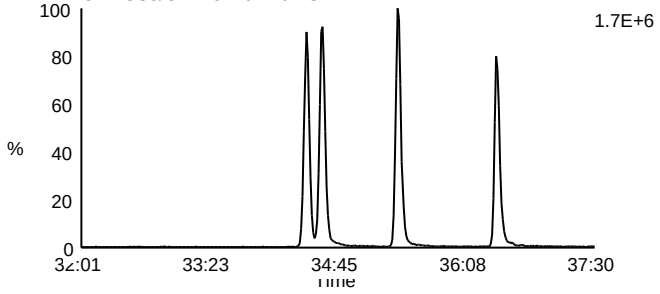
Data File: U70926A_03 G3 C2 - 375.8178
CAL CS3/CPM-5176-129 - SMT



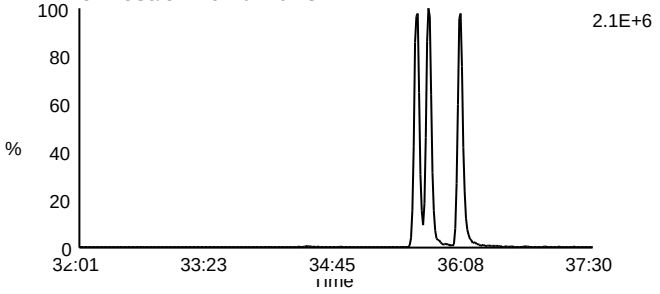
Data File: U70926A_03 G3 C8 - 391.8127
CAL CS3/CPM-5176-129 - SMT



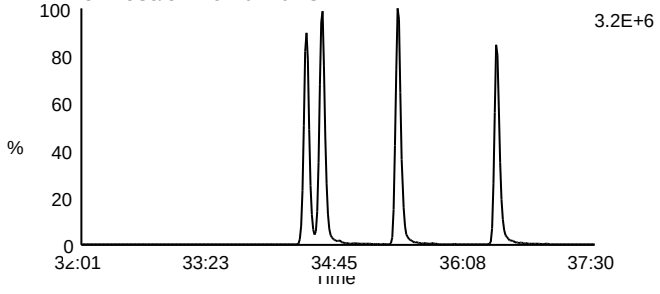
Data File: U70926A_03 G3 C5 - 383.8639
CAL CS3/CPM-5176-129 - SMT



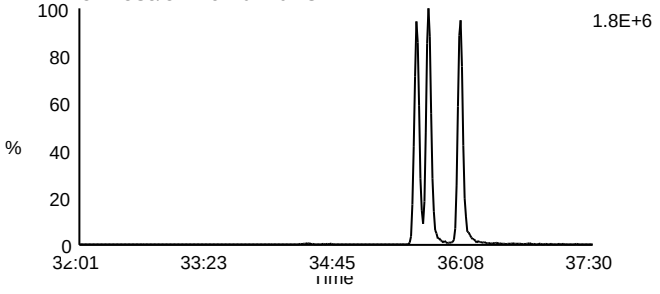
Data File: U70926A_03 G3 C9 - 401.8559
CAL CS3/CPM-5176-129 - SMT



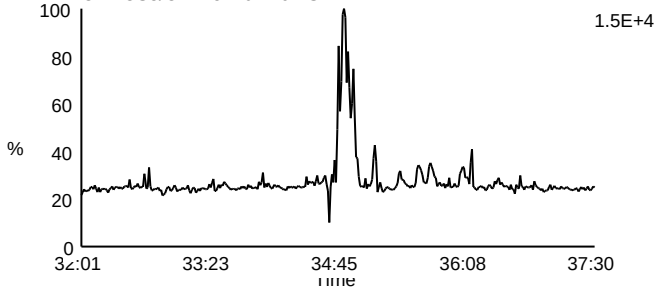
Data File: U70926A_03 G3 C6 - 385.861
CAL CS3/CPM-5176-129 - SMT



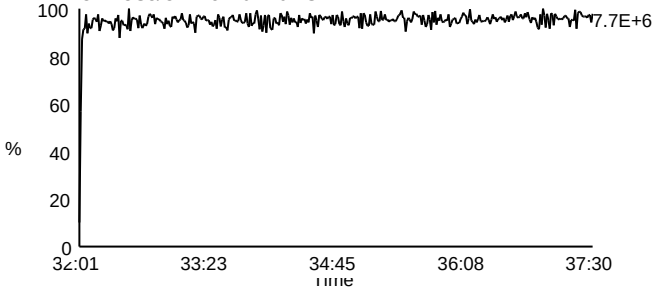
Data File: U70926A_03 G3 C10 - 403.8529
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_03 G3 C11 - 445.7555
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_03 G3 C3 - 380.976
CAL CS3/CPM-5176-129 - SMT

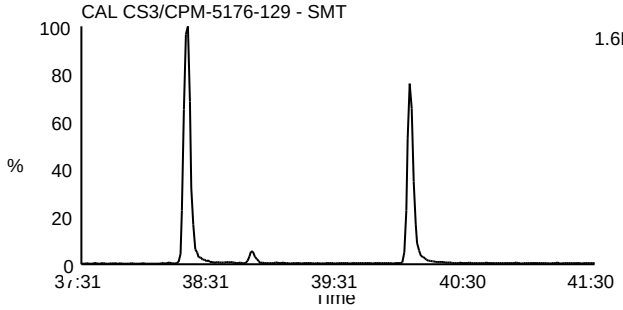


Homologue Group: Heptas

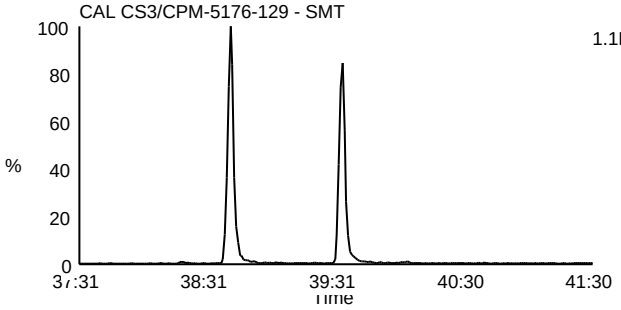
Data File Name: U70926A_03
Date Acquired: 9/26/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

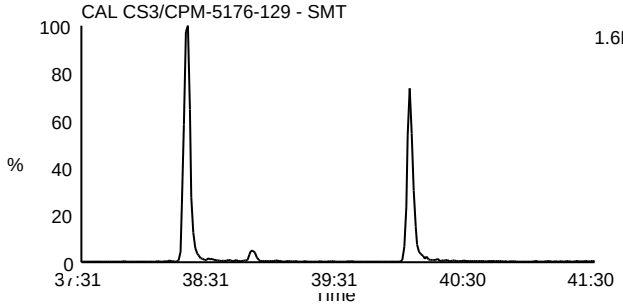
Data File: U70926A_03 G4 C3 - 407.7818
CAL CS3/CPM-5176-129 - SMT



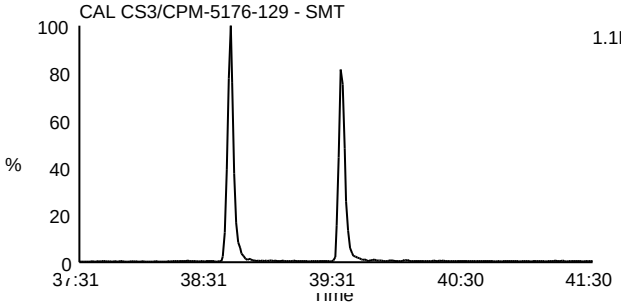
Data File: U70926A_03 G4 C8 - 423.7767
CAL CS3/CPM-5176-129 - SMT



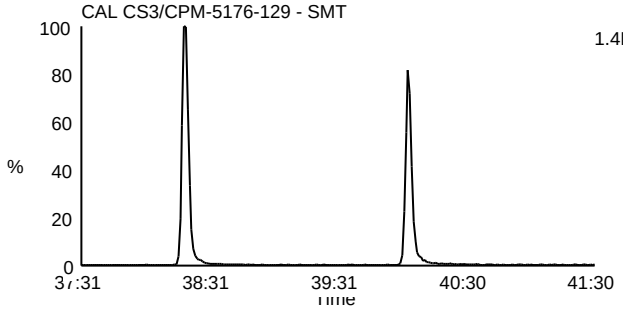
Data File: U70926A_03 G4 C4 - 409.7788
CAL CS3/CPM-5176-129 - SMT



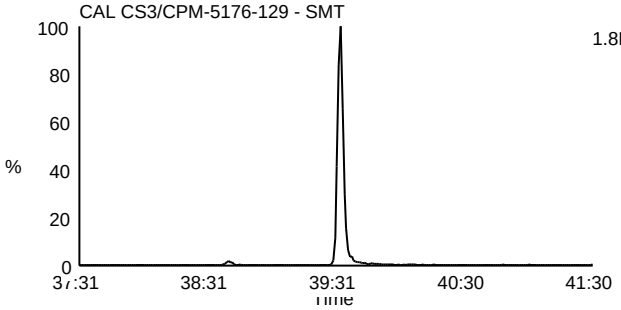
Data File: U70926A_03 G4 C9 - 425.7737
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_03 G4 C6 - 417.825
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_03 G4 C11 - 435.8169
CAL CS3/CPM-5176-129 - SMT



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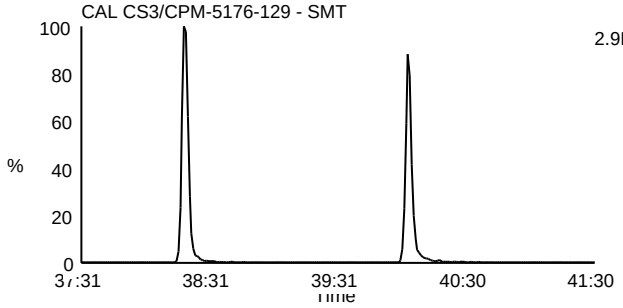
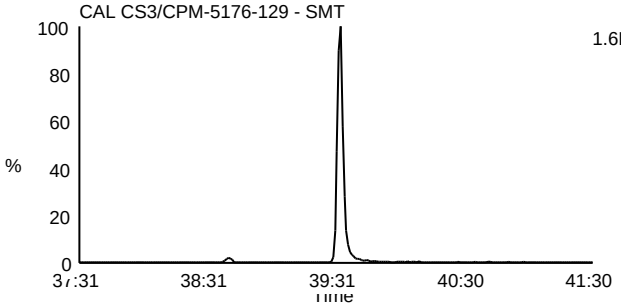
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_03 G4 C12 - 437.814
CAL CS3/CPM-5176-129 - SMT



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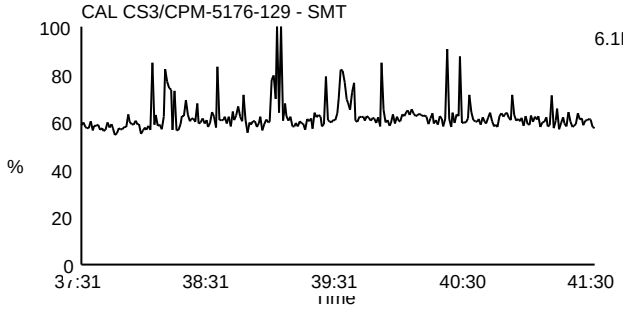
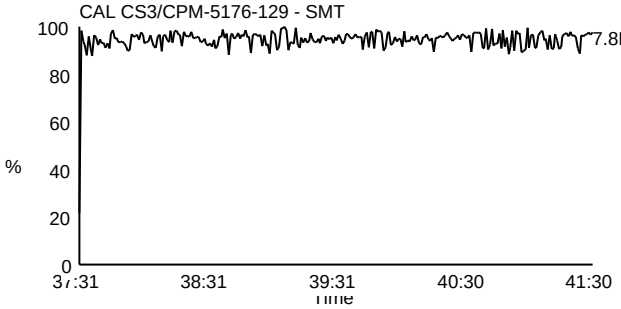
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_03 G4 C1 - 380.976
CAL CS3/CPM-5176-129 - SMT

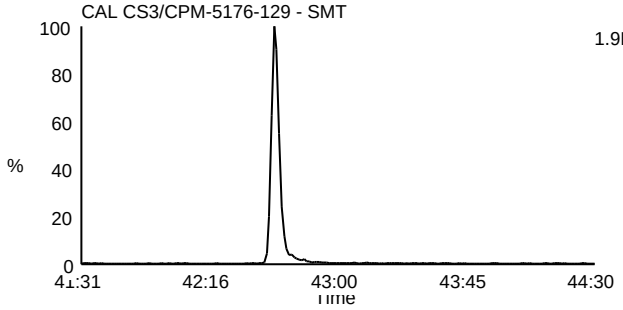


Homologue Group: Octas

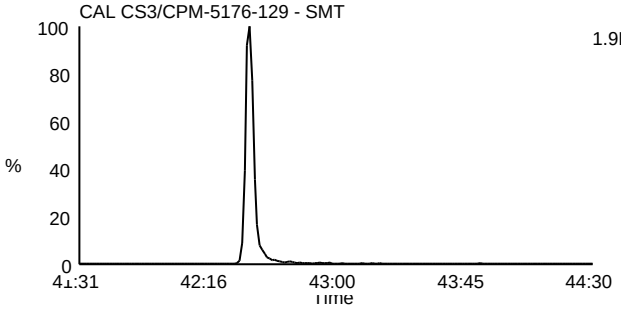
Data File Name: U70926A_03
Date Acquired: 9/26/2007
Sample Description: CAL CS3/CPM-5176-129 - SMT

Lab Sample ID: CS3/CPM-5176-129
Client Sample ID:
Instrument: 10MSHR06 (U)

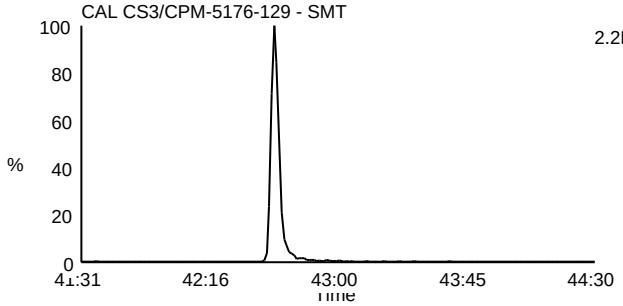
Data File: U70926A_03 G5 C4 - 441.7428
CAL CS3/CPM-5176-129 - SMT



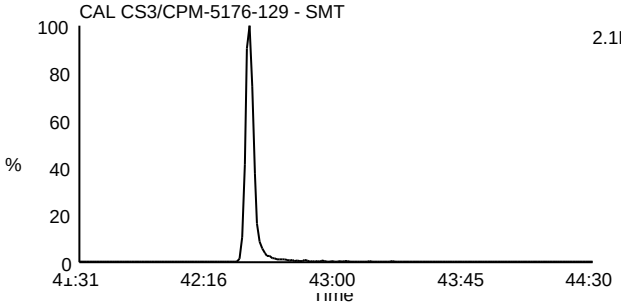
Data File: U70926A_03 G5 C8 - 457.7377
CAL CS3/CPM-5176-129 - SMT



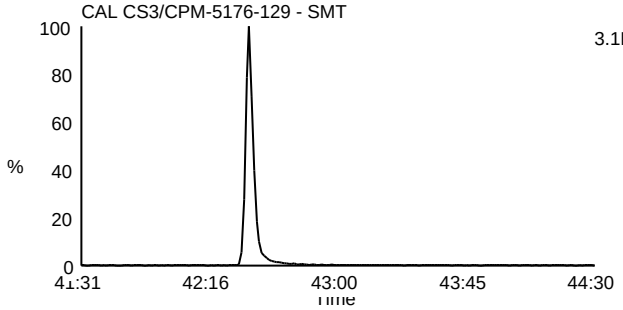
Data File: U70926A_03 G5 C5 - 443.7398
CAL CS3/CPM-5176-129 - SMT



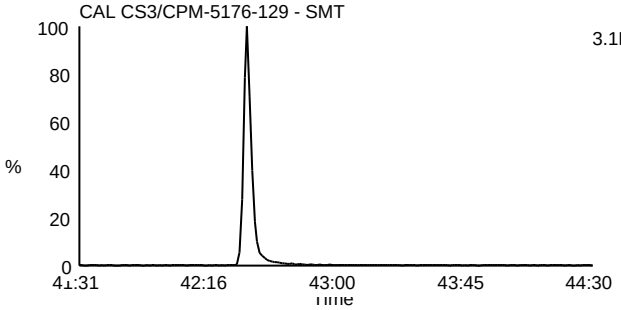
Data File: U70926A_03 G5 C9 - 459.7347
CAL CS3/CPM-5176-129 - SMT



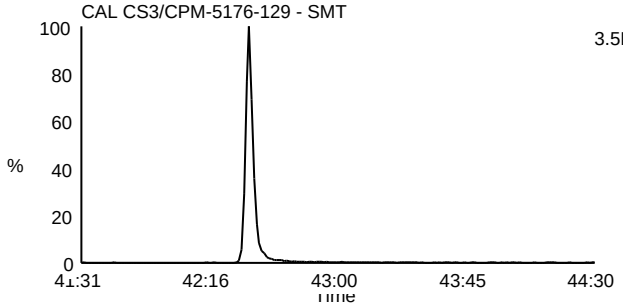
Data File: U70926A_03 G5 C11 - 469.7779
CAL CS3/CPM-5176-129 - SMT



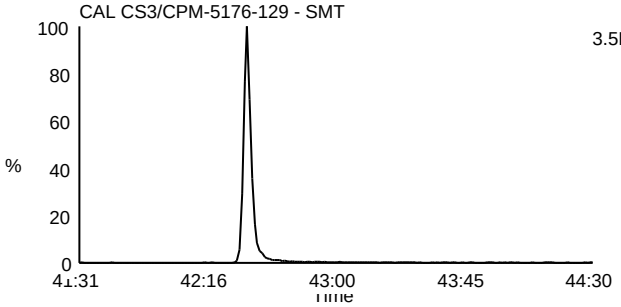
Data File: U70926A_03 G5 C11 - 469.7779
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_03 G5 C12 - 471.7749
CAL CS3/CPM-5176-129 - SMT



Data File: U70926A_03 G5 C12 - 471.7749
CAL CS3/CPM-5176-129 - SMT



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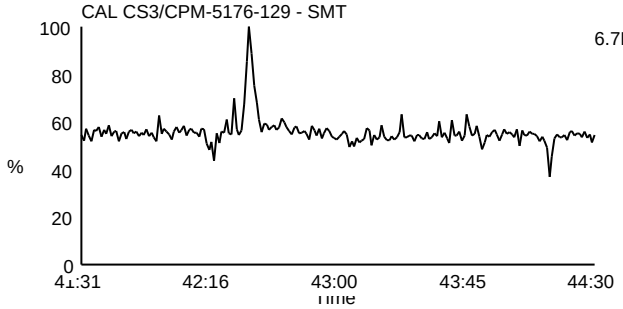
CAL CS3/CPM-5176-129 - SMT



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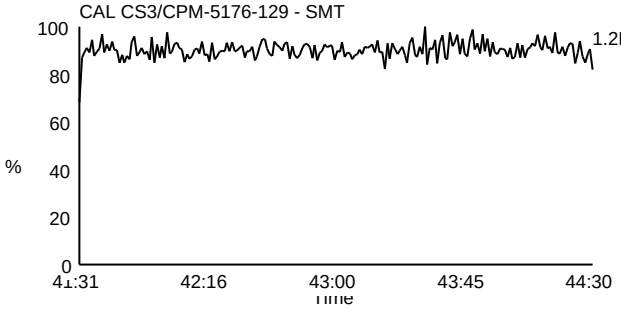
CAL CS3/CPM-5176-129 - SMT



Appendix F

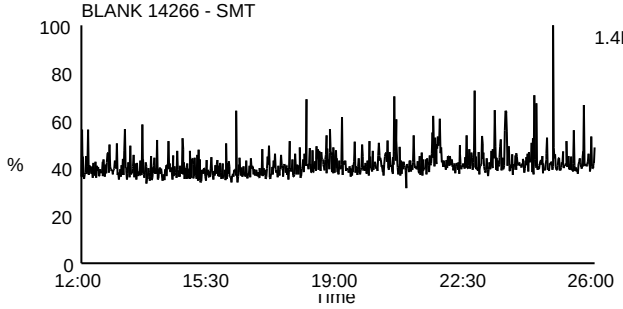
QC Raw Data

Homologue Group: Tetras

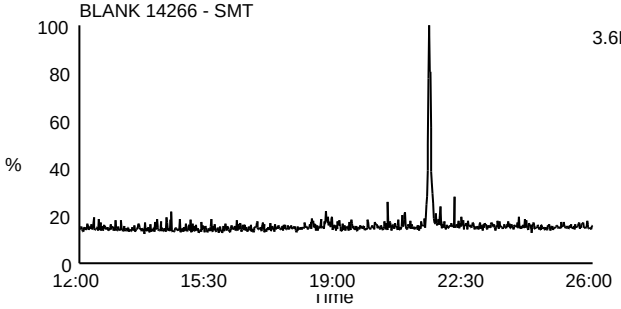
Data File Name: P70927A_06
Date Acquired: 9/27/2007
Sample Description: BLANK 14266 - SMT

Lab Sample ID: BLANK-14266
Client Sample ID: BLANK-14266
Instrument: 10MSHR09 (P)

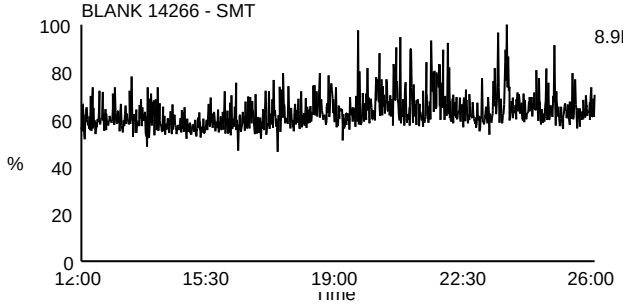
Data File: P70927A_06 G1 C1 - 303.9016
BLANK 14266 - SMT



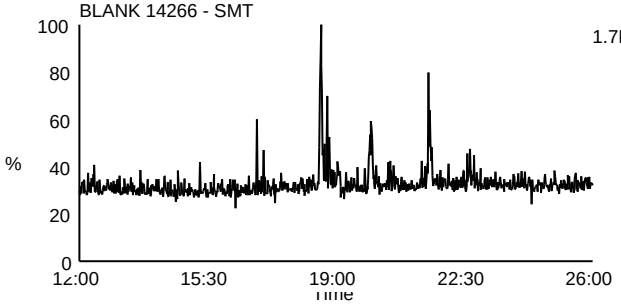
Data File: P70927A_06 G1 C7 - 319.8965
BLANK 14266 - SMT



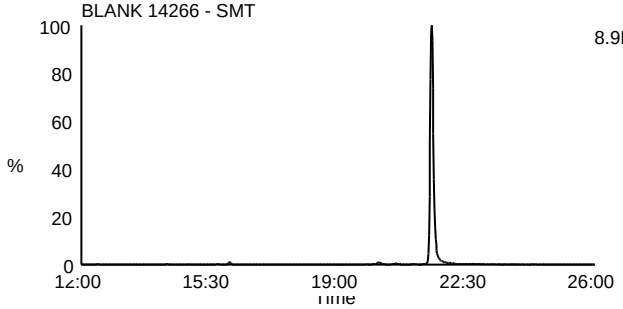
Data File: P70927A_06 G1 C2 - 305.8987
BLANK 14266 - SMT



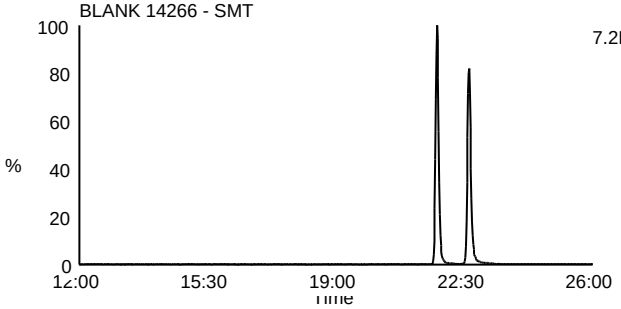
Data File: P70927A_06 G1 C8 - 321.8936
BLANK 14266 - SMT



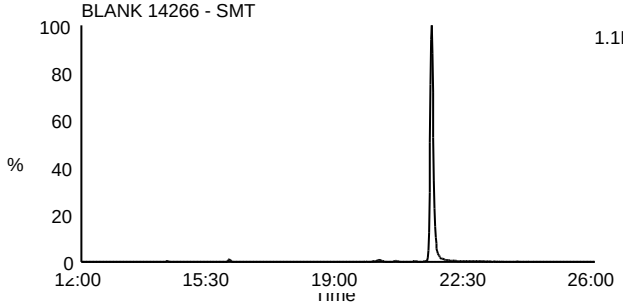
Data File: P70927A_06 G1 C3 - 315.9418
BLANK 14266 - SMT



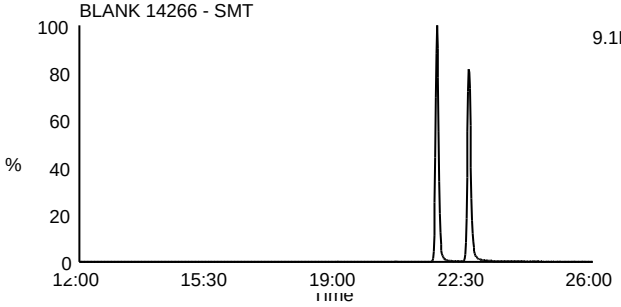
Data File: P70927A_06 G1 C10 - 331.9367
BLANK 14266 - SMT



Data File: P70927A_06 G1 C4 - 317.9389
BLANK 14266 - SMT



Data File: P70927A_06 G1 C11 - 333.9338
BLANK 14266 - SMT



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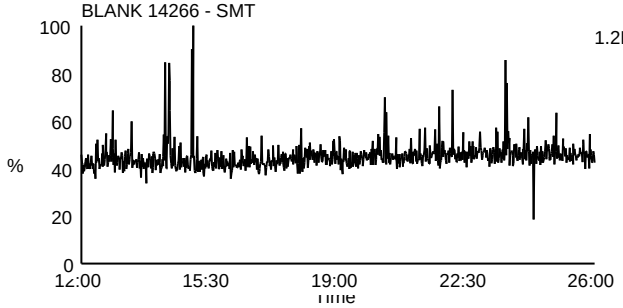
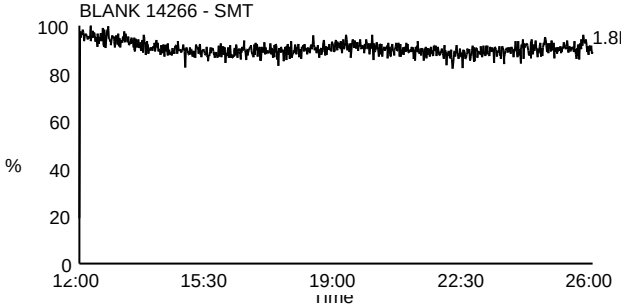
BLANK 14266 - SMT



Data File: P70927A_06 G1 C5 - 318.9792
BLANK 14266 - SMT

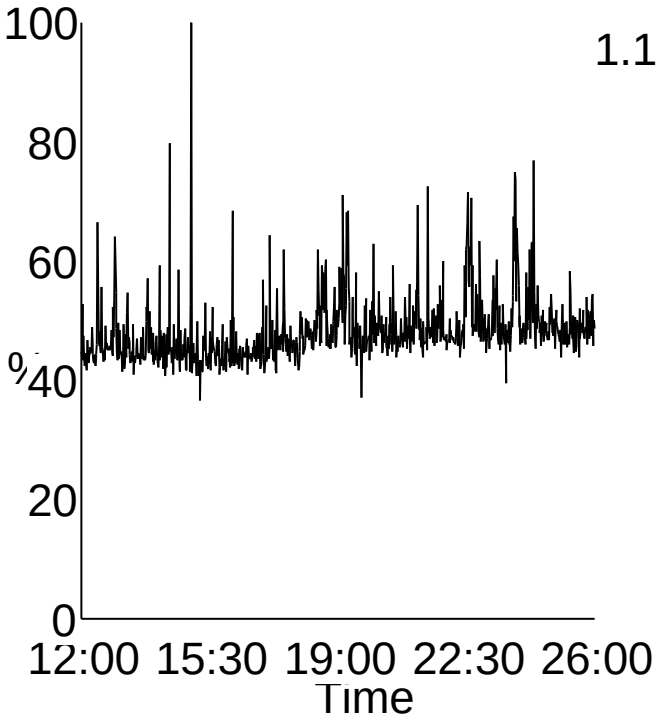


Homologue Group: Penta & Cleanup

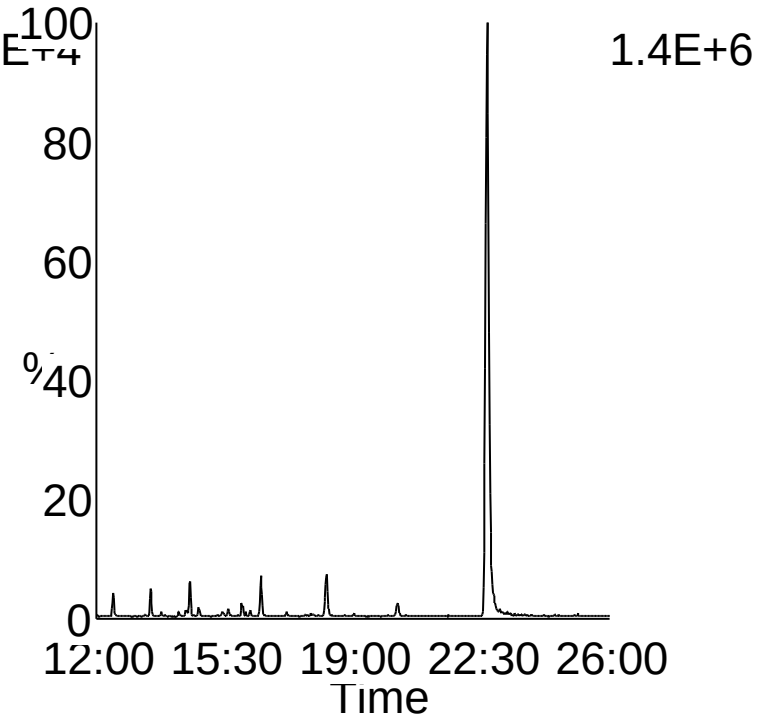
Data File Name: P70927A_06
Date Acquired: 9/27/2007
Sample Description: BLANK 14266 - SMT

Lab Sample ID: BLANK-14266
Client Sample ID: BLANK-14266
Instrument: 10MSHR09 (P)

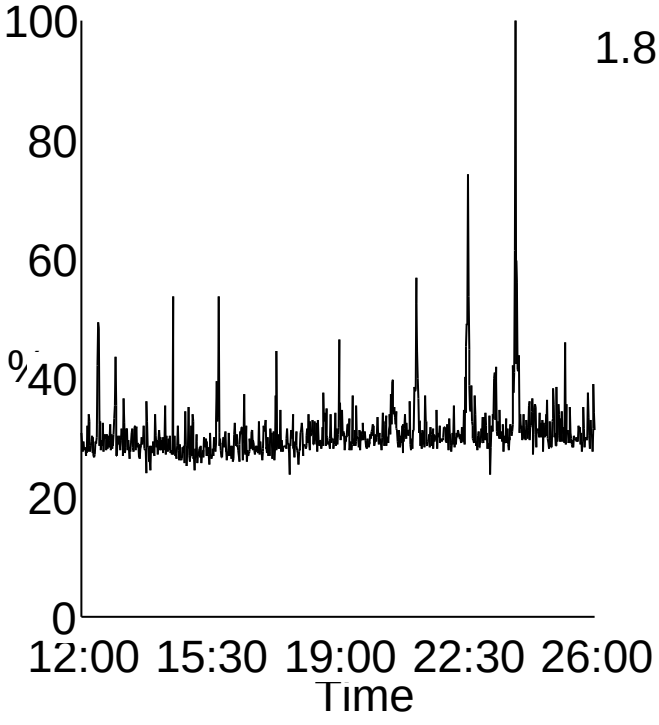
Data File: P7G1 C12 - 339.8597
BLANK 14266 - SMT



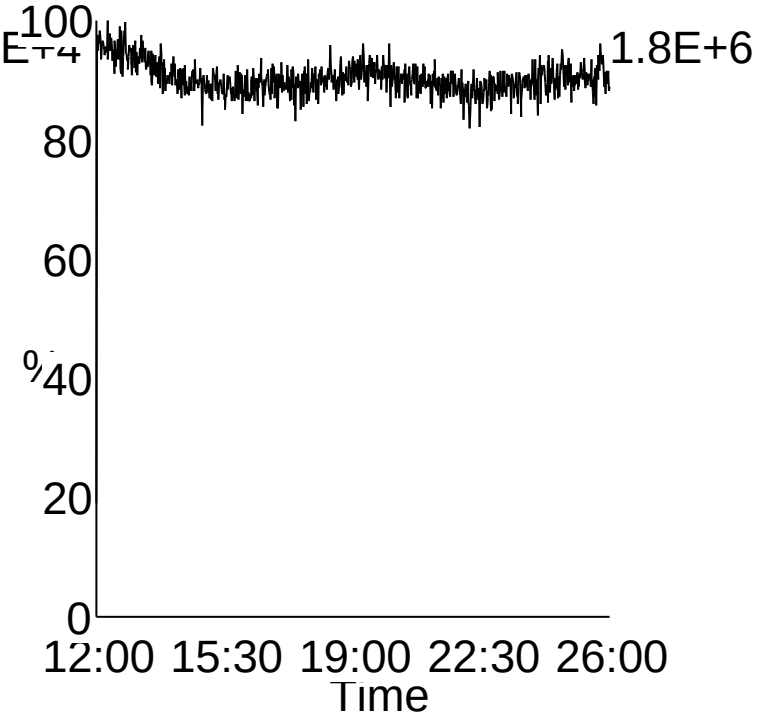
Data File: P7G1 C9 - 327.8847
BLANK 14266 - SMT



Data File: P7G1 C13 - 341.8567
BLANK 14266 - SMT



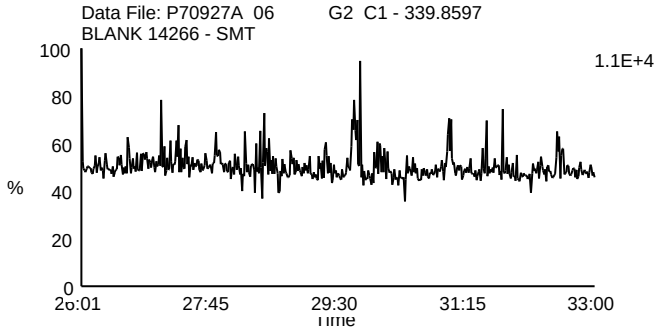
Data File: P7G1 C5 - 318.9792
BLANK 14266 - SMT

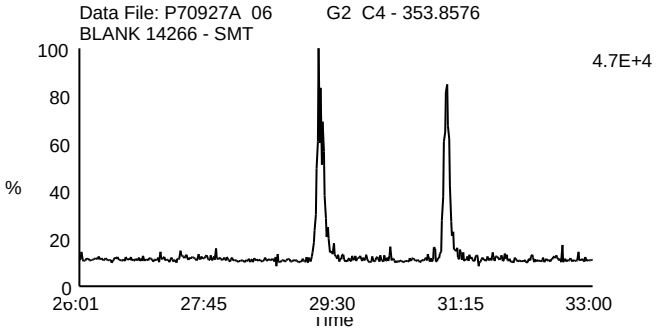


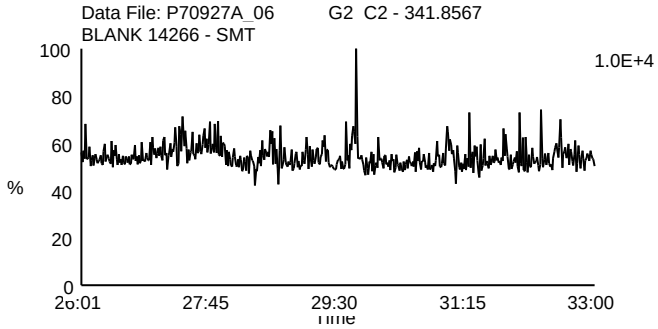
Homologue Group: Pentas

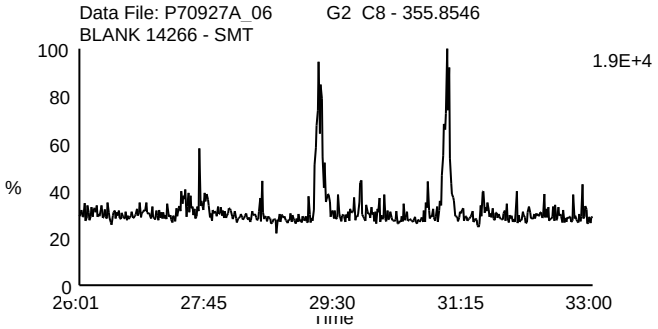
Data File Name: P70927A_06
Date Acquired: 9/27/2007
Sample Description: BLANK 14266 - SMT

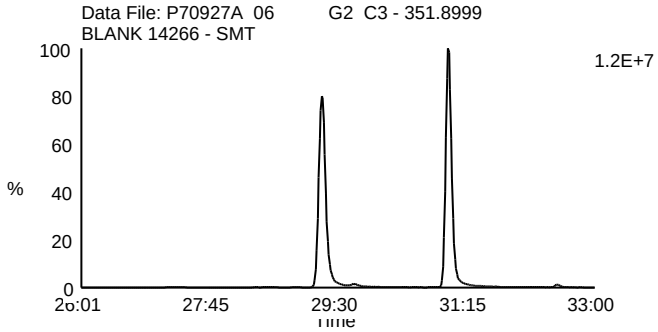
Lab Sample ID: BLANK-14266
Client Sample ID: BLANK-14266
Instrument: 10MSHR09 (P)

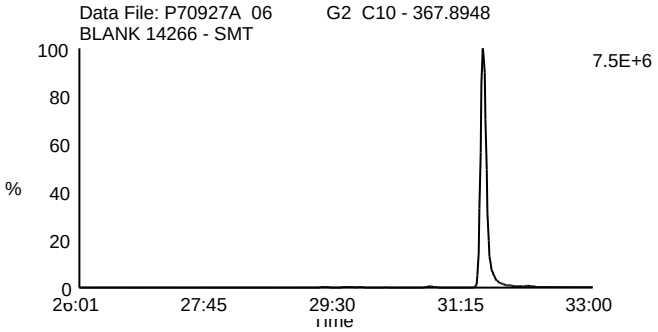


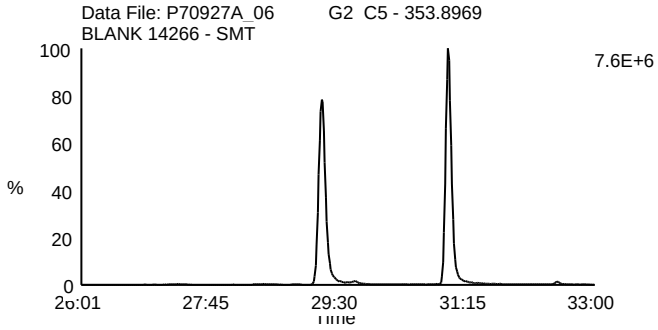


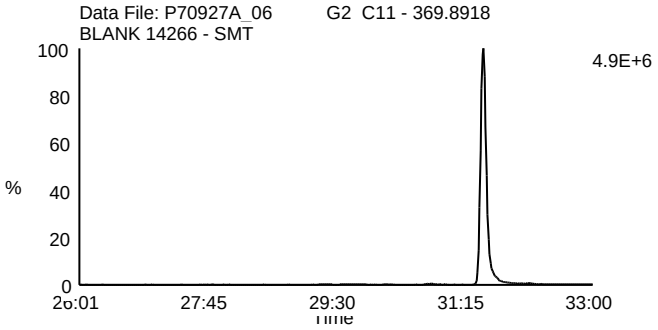


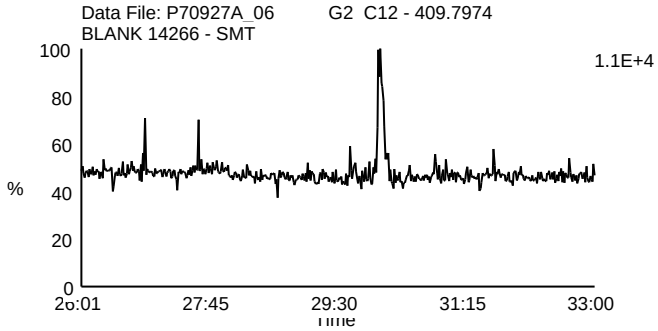


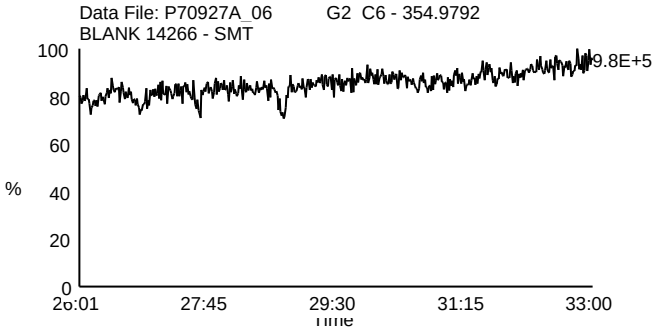








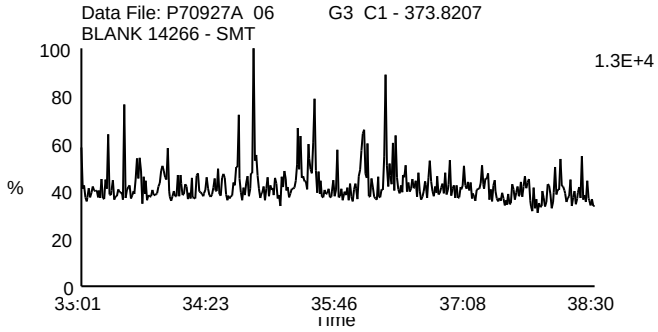


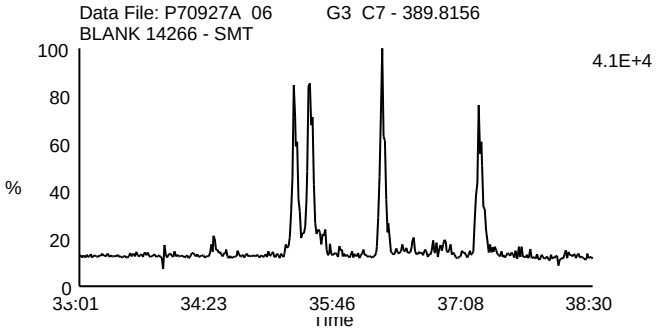


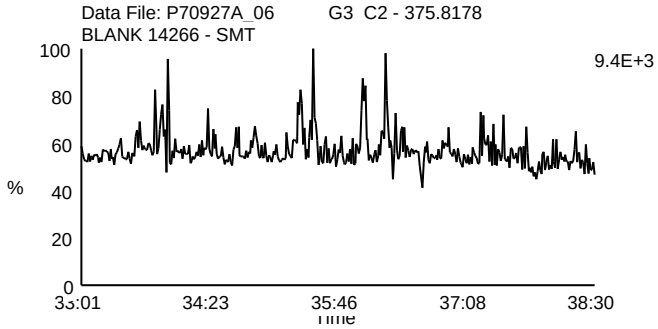
Homologue Group: Hexas

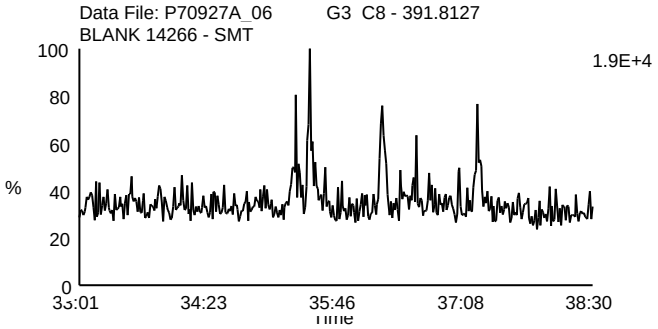
Data File Name: P70927A_06
Date Acquired: 9/27/2007
Sample Description: BLANK 14266 - SMT

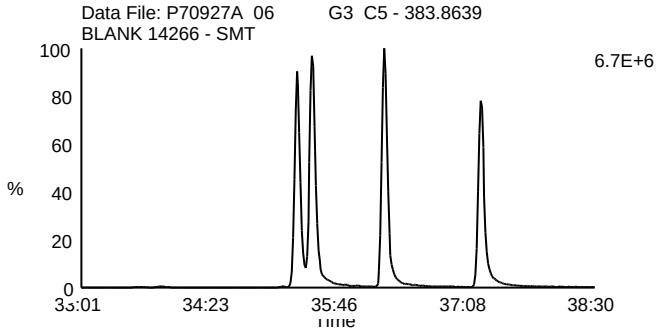
Lab Sample ID: BLANK-14266
Client Sample ID: BLANK-14266
Instrument: 10MSHR09 (P)

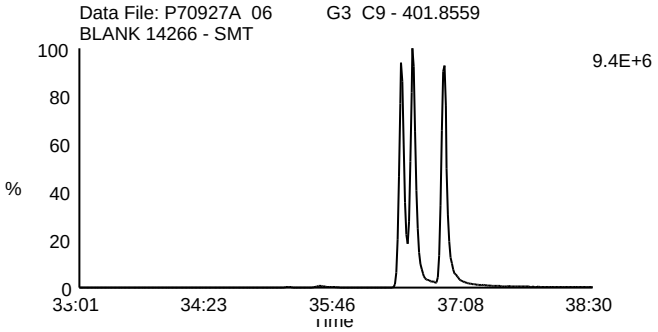


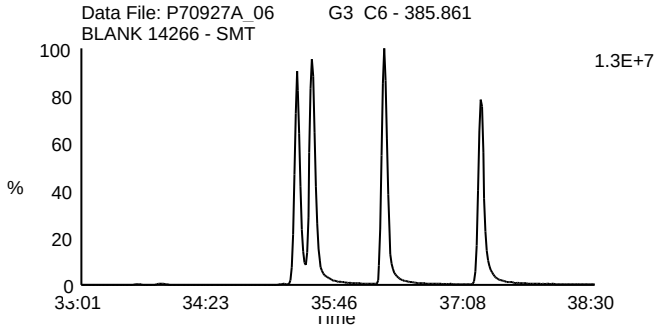


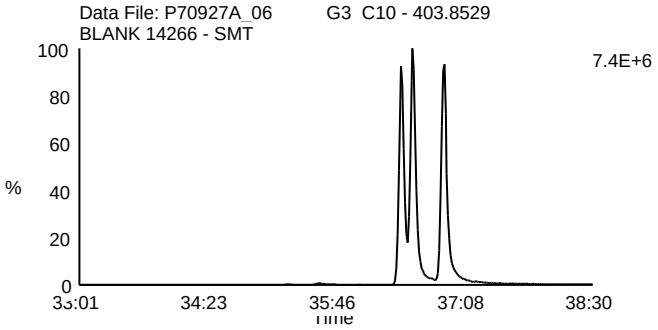


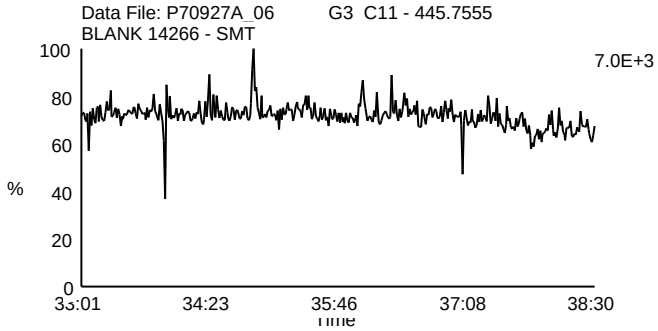


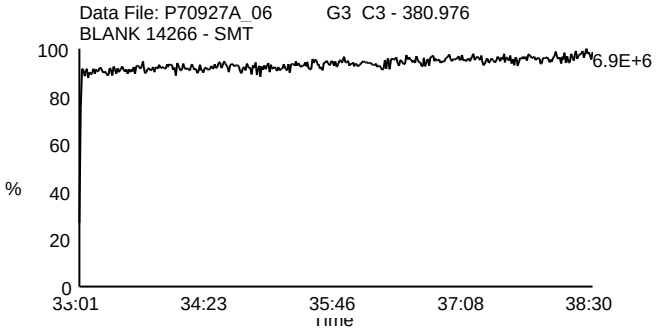










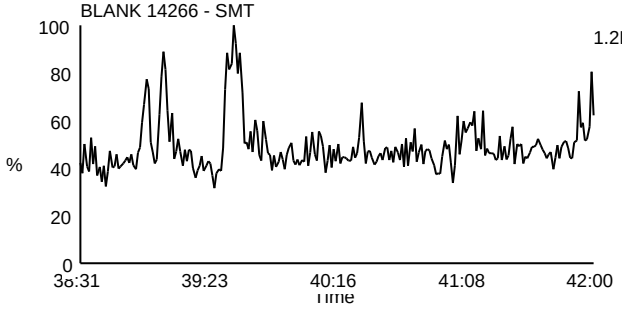


Homologue Group: Heptas

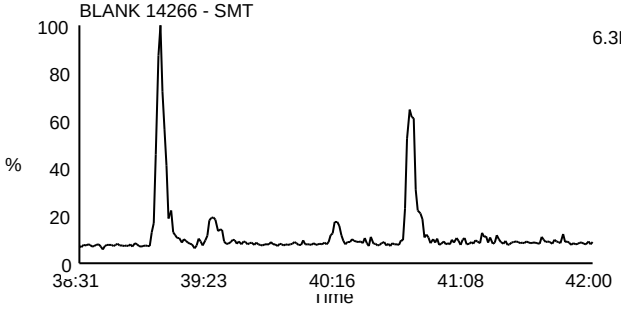
Data File Name: P70927A_06
Date Acquired: 9/27/2007
Sample Description: BLANK 14266 - SMT

Lab Sample ID: BLANK-14266
Client Sample ID: BLANK-14266
Instrument: 10MSHR09 (P)

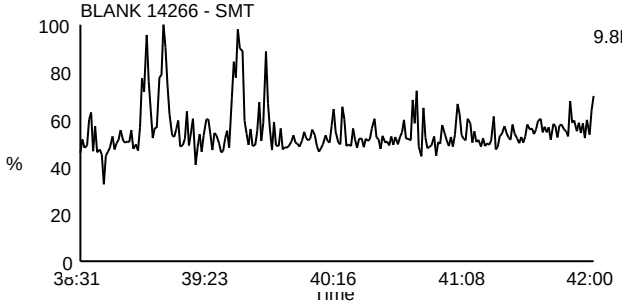
Data File: P70927A_06 G4 C3 - 407.7818
BLANK 14266 - SMT
1.2E+4



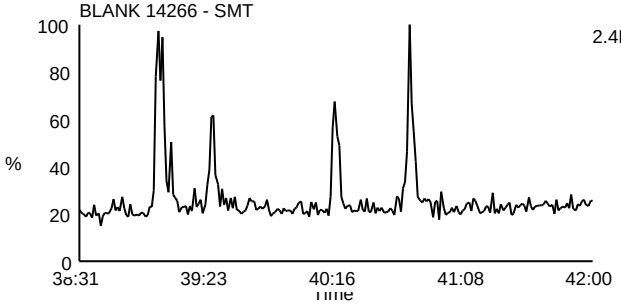
Data File: P70927A_06 G4 C8 - 423.7767
BLANK 14266 - SMT
6.3E+4



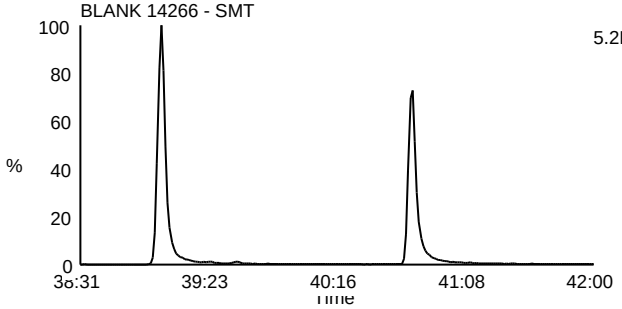
Data File: P70927A_06 G4 C4 - 409.7788
BLANK 14266 - SMT
9.8E+3



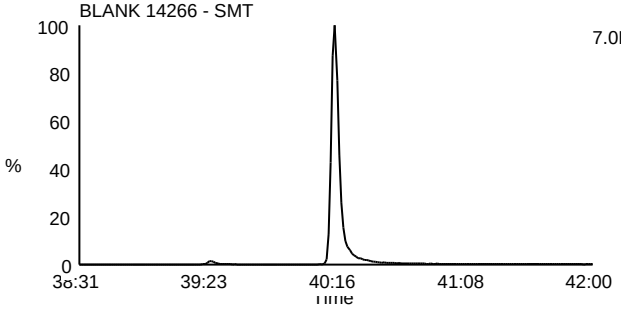
Data File: P70927A_06 G4 C9 - 425.7737
BLANK 14266 - SMT
2.4E+4



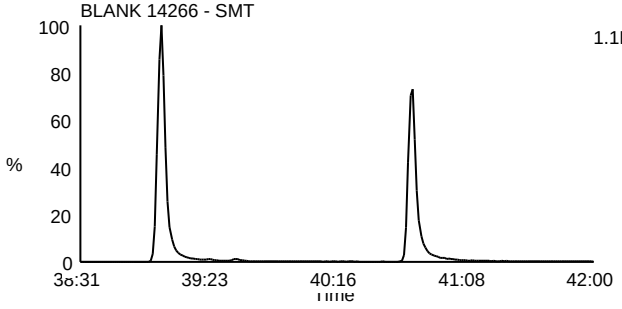
Data File: P70927A_06 G4 C6 - 417.825
BLANK 14266 - SMT
5.2E+6



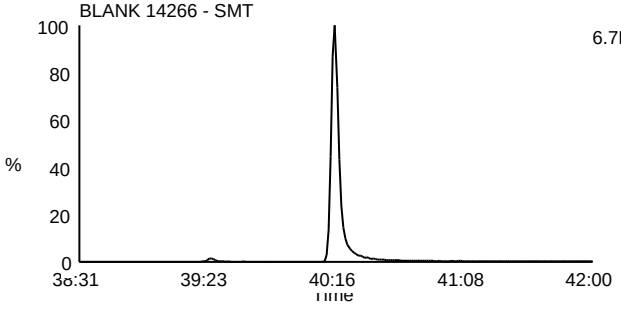
Data File: P70927A_06 G4 C11 - 435.8169
BLANK 14266 - SMT
7.0E+6



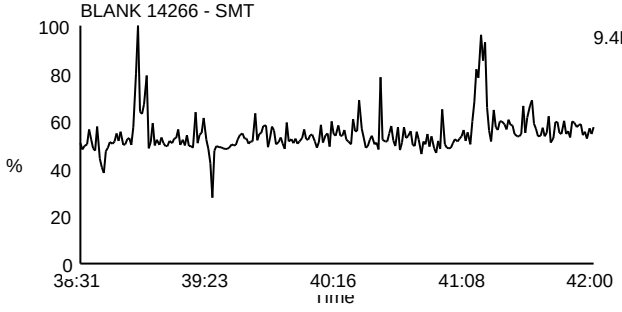
Data File: P70927A_06 G4 C7 - 419.822
BLANK 14266 - SMT
1.1E+7



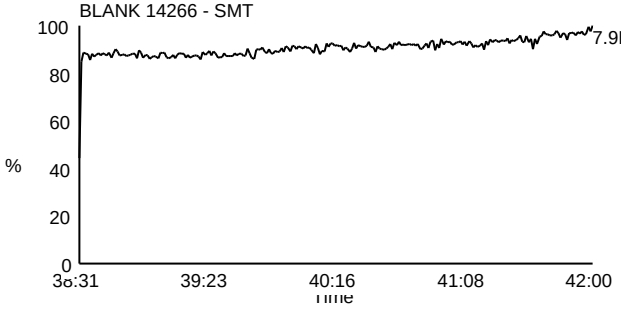
Data File: P70927A_06 G4 C12 - 437.814
BLANK 14266 - SMT
6.7E+6



Data File: P70927A_06 G4 C13 - 479.7165
BLANK 14266 - SMT
9.4E+3



Data File: P70927A_06 G4 C1 - 380.976
BLANK 14266 - SMT
7.9E+6

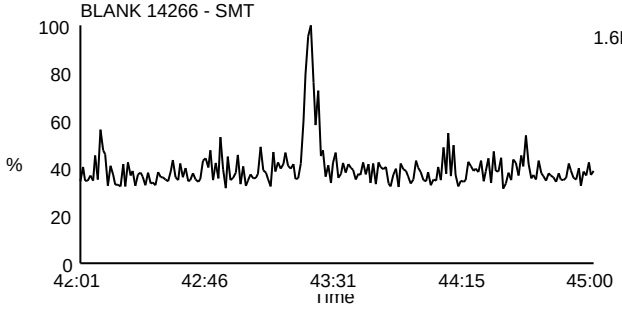


Homologue Group: Octas

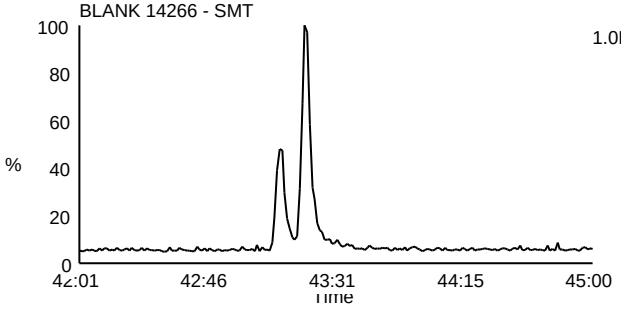
Data File Name: P70927A_06
Date Acquired: 9/27/2007
Sample Description: BLANK 14266 - SMT

Lab Sample ID: BLANK-14266
Client Sample ID: BLANK-14266
Instrument: 10MSHR09 (P)

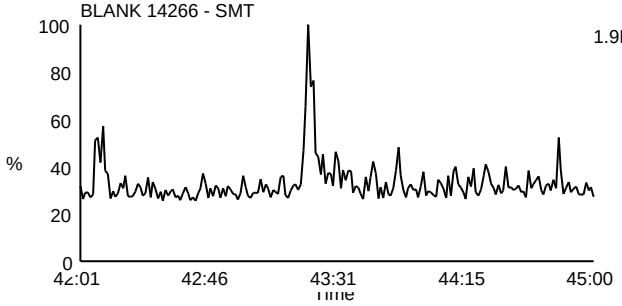
Data File: P70927A_06 G5 C4 - 441.7428
BLANK 14266 - SMT



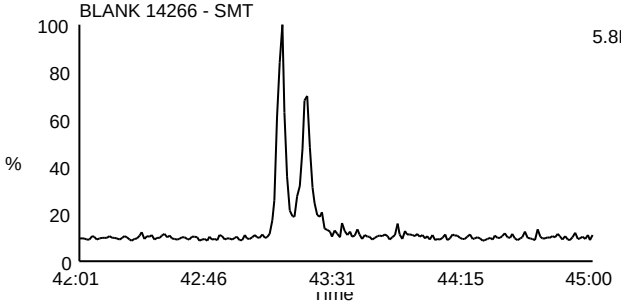
Data File: P70927A_06 G5 C8 - 457.7377
BLANK 14266 - SMT



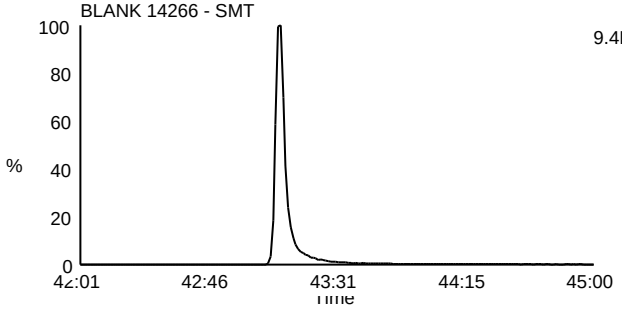
Data File: P70927A_06 G5 C5 - 443.7398
BLANK 14266 - SMT



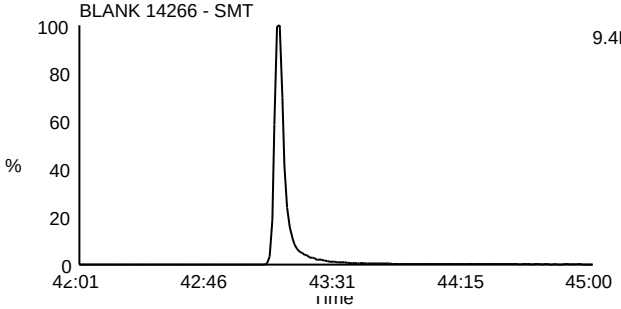
Data File: P70927A_06 G5 C9 - 459.7347
BLANK 14266 - SMT



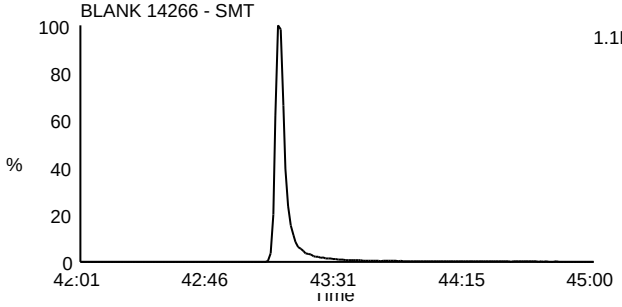
Data File: P70927A_06 G5 C11 - 469.7779
BLANK 14266 - SMT



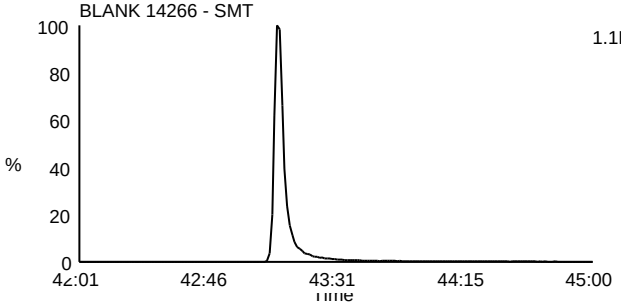
Data File: P70927A_06 G5 C11 - 469.7779
BLANK 14266 - SMT



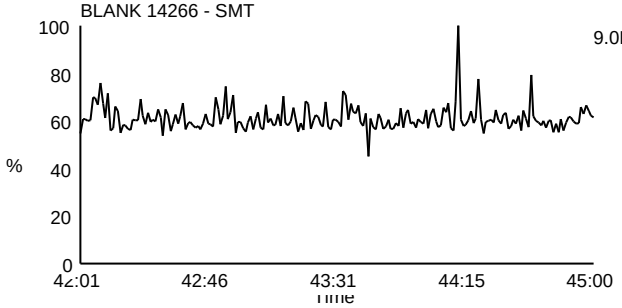
Data File: P70927A_06 G5 C12 - 471.7749
BLANK 14266 - SMT



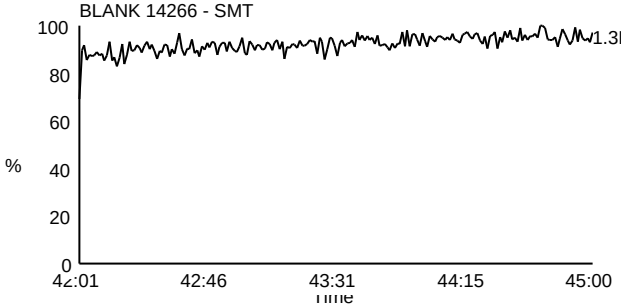
Data File: P70927A_06 G5 C12 - 471.7749
BLANK 14266 - SMT



Data File: P70927A_06 G5 C13 - 513.6775
BLANK 14266 - SMT



Data File: P70927A_06 G5 C2 - 430.9728
BLANK 14266 - SMT

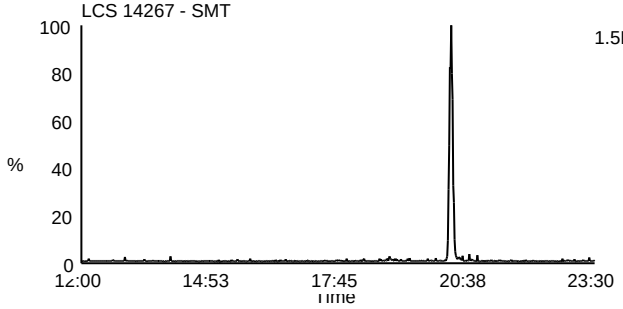


Homologue Group: Tetras

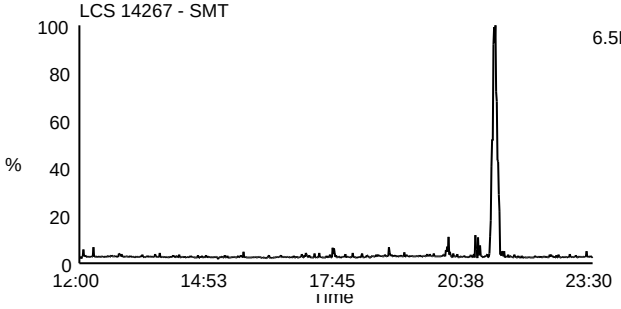
Data File Name: U70926A_09
Date Acquired: 9/26/2007
Sample Description: LCS 14267 - SMT

Lab Sample ID: LCS-14267
Client Sample ID: LCS-14267
Instrument: 10MSHR06 (U)

Data File: U70926A_09 G1 C1 - 303.9016
LCS 14267 - SMT



Data File: U70926A_09 G1 C7 - 319.8965
LCS 14267 - SMT



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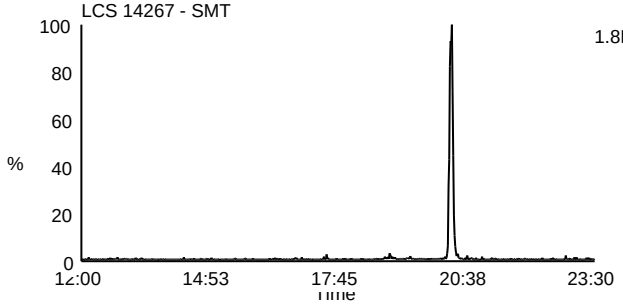
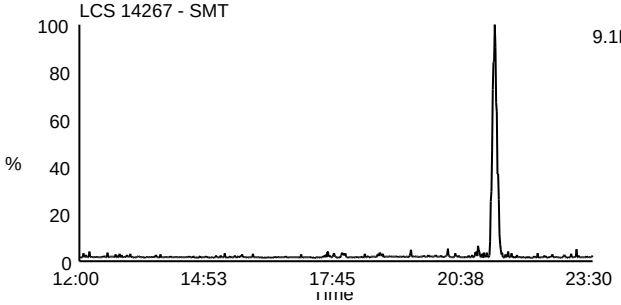
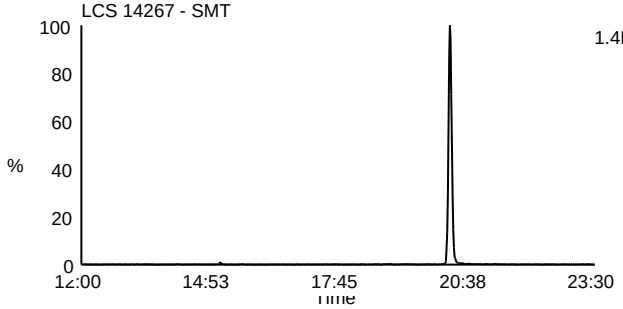
LCS 14267 - SMT



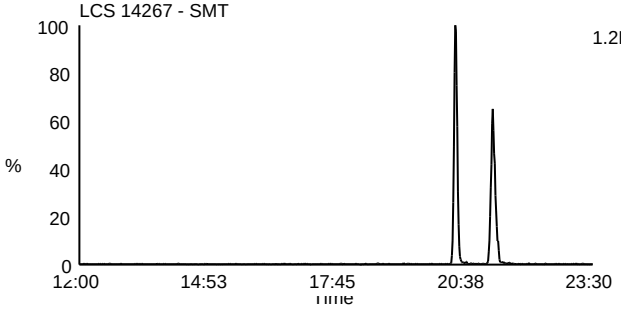
Data File: U70926A_09 G1 C8 - 321.8936
LCS 14267 - SMT



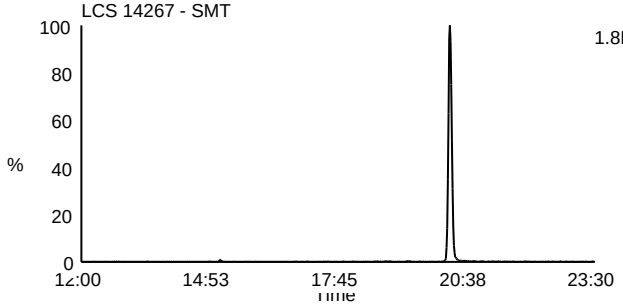
Data File: U70926A_09 G1 C3 - 315.9418
LCS 14267 - SMT



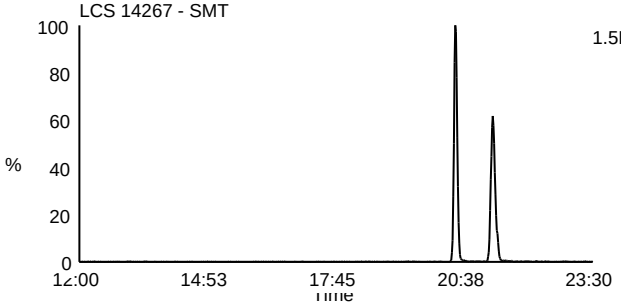
Data File: U70926A_09 G1 C10 - 331.9367
LCS 14267 - SMT



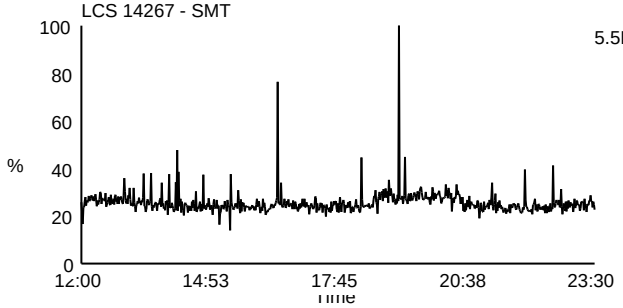
Data File: U70926A_09 G1 C4 - 317.9389
LCS 14267 - SMT



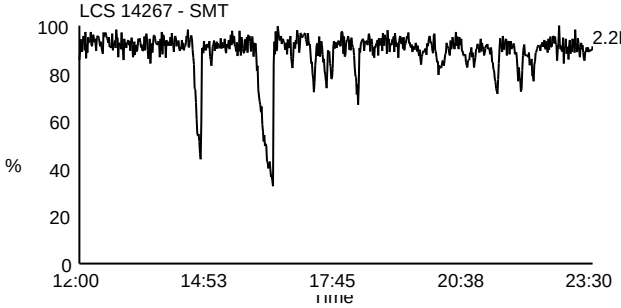
Data File: U70926A_09 G1 C11 - 333.9338
LCS 14267 - SMT



Data File: U70926A_09 G1 C14 - 375.8364
LCS 14267 - SMT



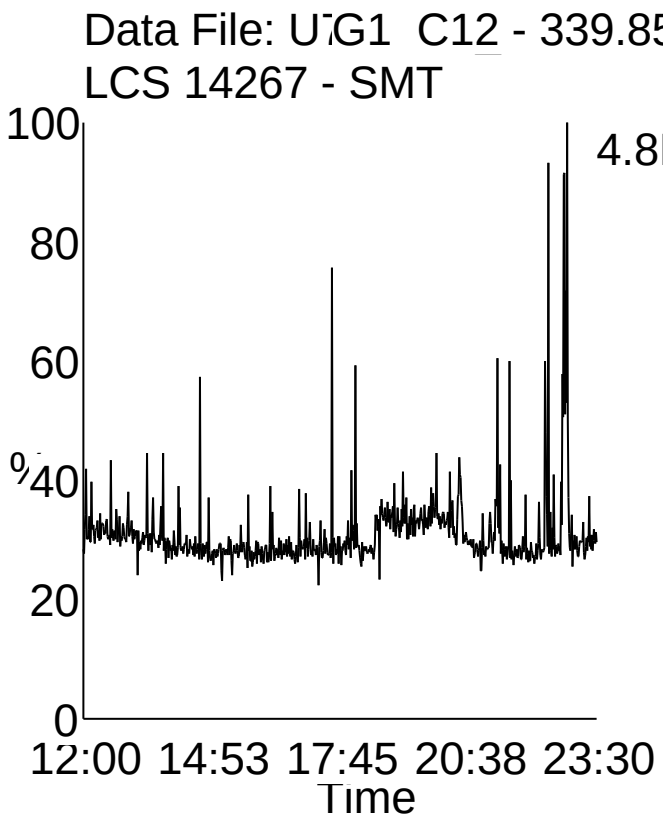
Data File: U70926A_09 G1 C5 - 318.9792
LCS 14267 - SMT

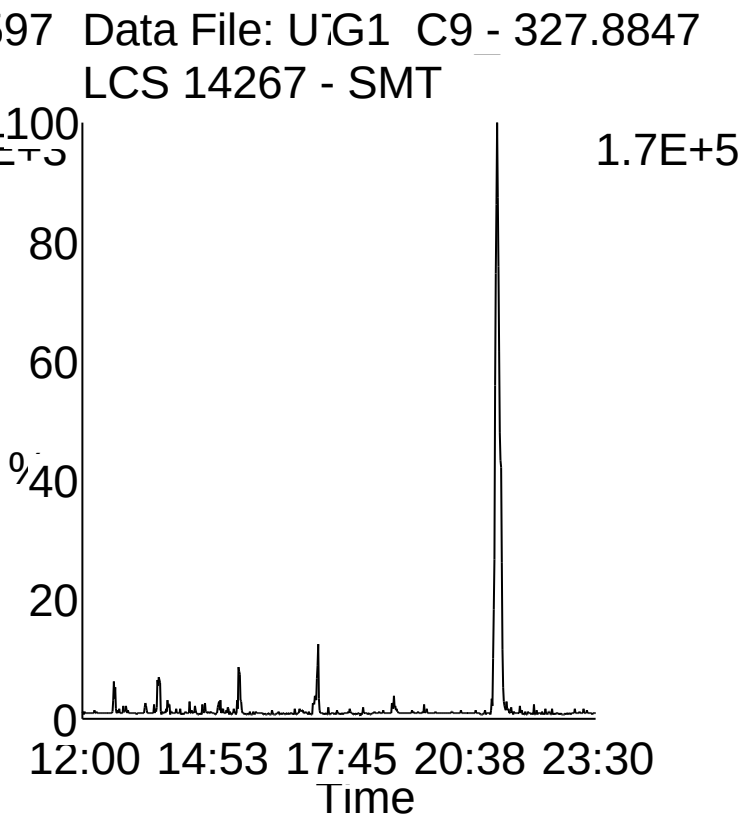


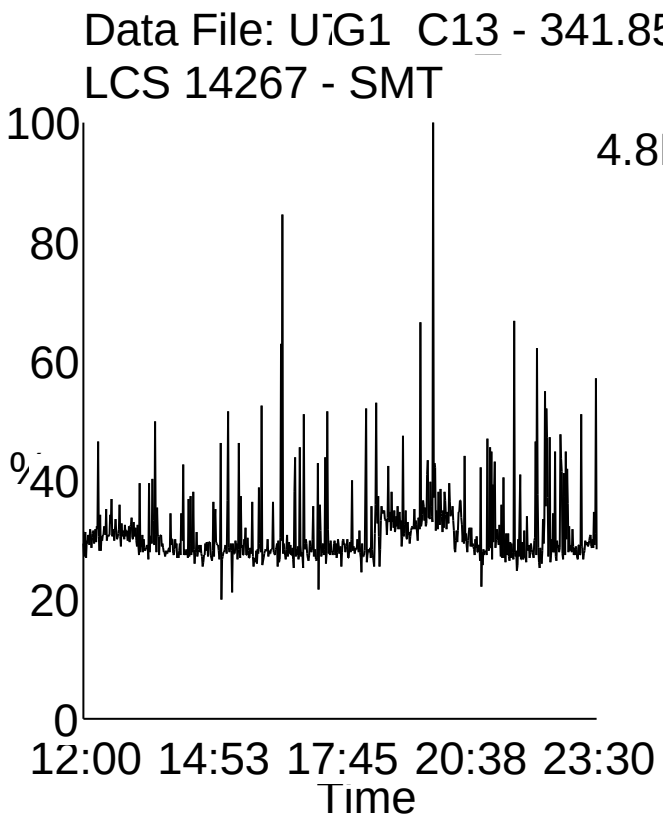
Homologue Group: Penta & Cleanup

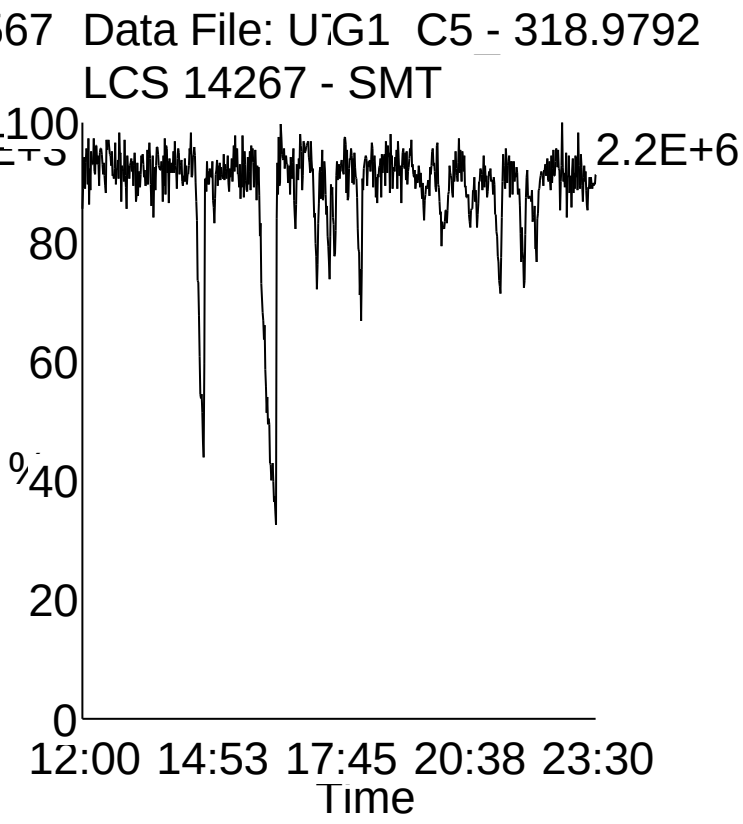
Data File Name: U70926A_09
Date Acquired: 9/26/2007
Sample Description: LCS 14267 - SMT

Lab Sample ID: LCS-14267
Client Sample ID: LCS-14267
Instrument: 10MSHR06 (U)







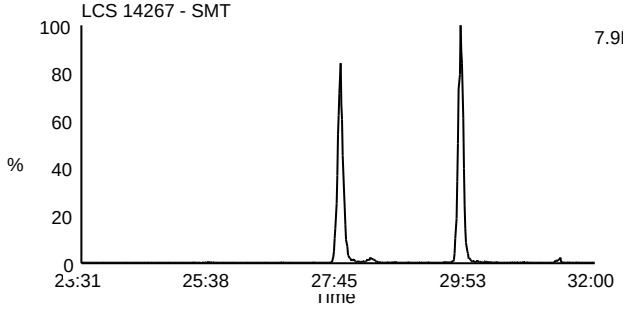


Homologue Group: Pentas

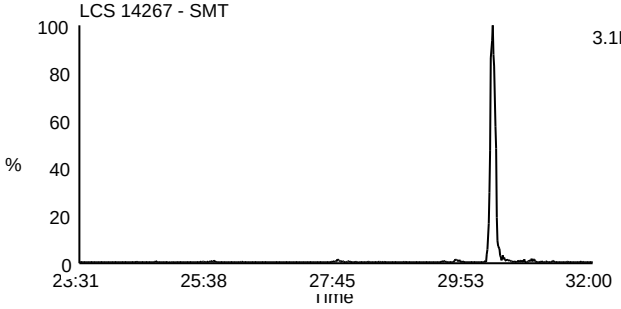
Data File Name: U70926A_09
Date Acquired: 9/26/2007
Sample Description: LCS 14267 - SMT

Lab Sample ID: LCS-14267
Client Sample ID: LCS-14267
Instrument: 10MSHR06 (U)

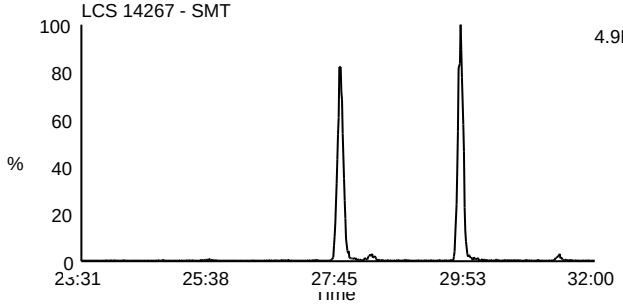
Data File: U70926A_09 G2 C1 - 339.8597
LCS 14267 - SMT



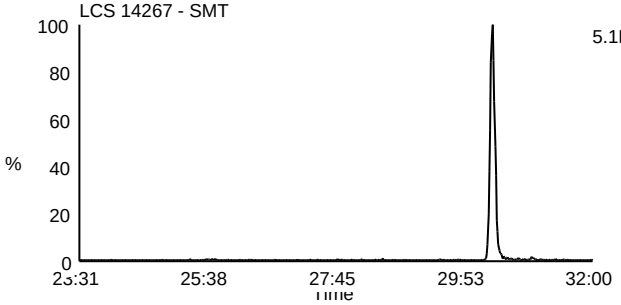
Data File: U70926A_09 G2 C4 - 353.8576
LCS 14267 - SMT



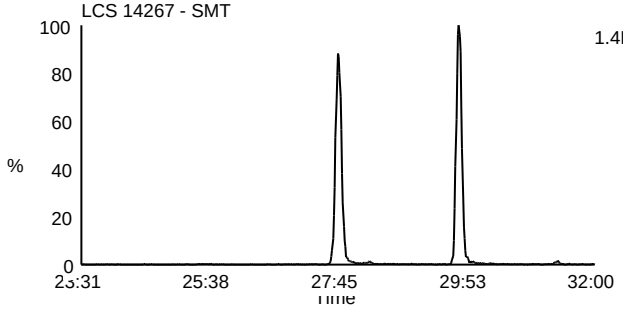
Data File: U70926A_09 G2 C2 - 341.8567
LCS 14267 - SMT



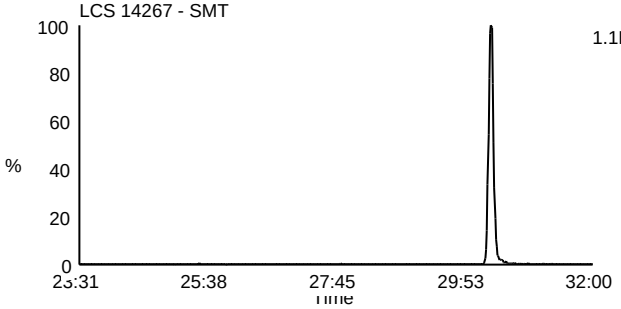
Data File: U70926A_09 G2 C8 - 355.8546
LCS 14267 - SMT



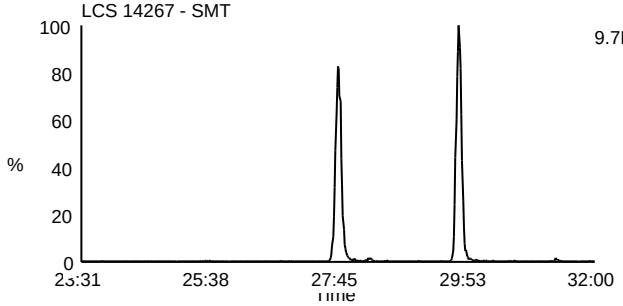
Data File: U70926A_09 G2 C3 - 351.8999
LCS 14267 - SMT



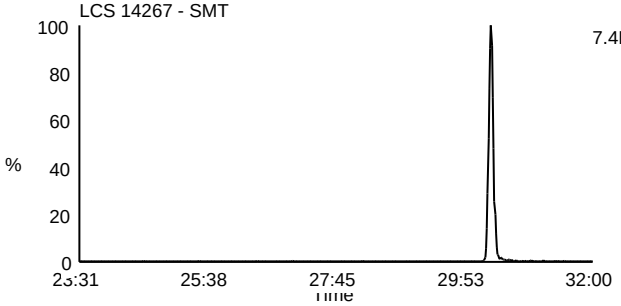
Data File: U70926A_09 G2 C10 - 367.8948
LCS 14267 - SMT



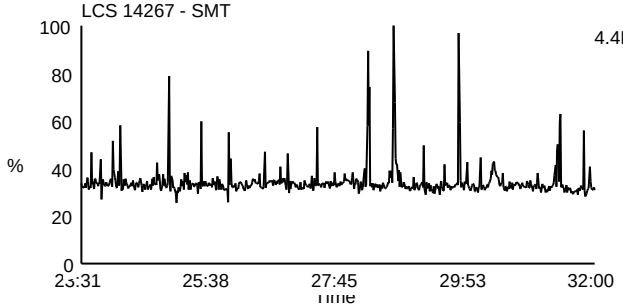
Data File: U70926A_09 G2 C5 - 353.8969
LCS 14267 - SMT



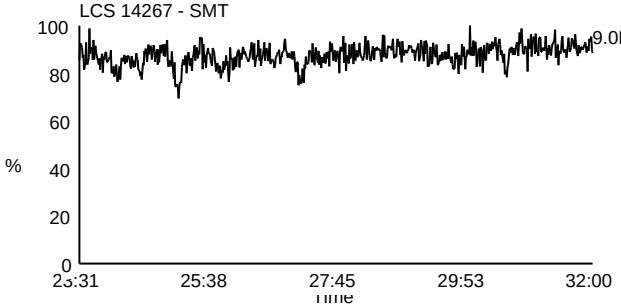
Data File: U70926A_09 G2 C11 - 369.8918
LCS 14267 - SMT



Data File: U70926A_09 G2 C12 - 409.7974
LCS 14267 - SMT



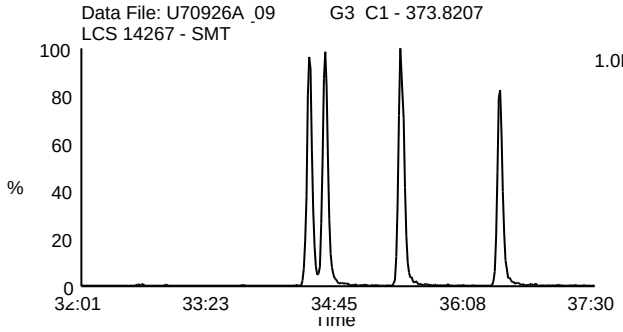
Data File: U70926A_09 G2 C6 - 354.9792
LCS 14267 - SMT

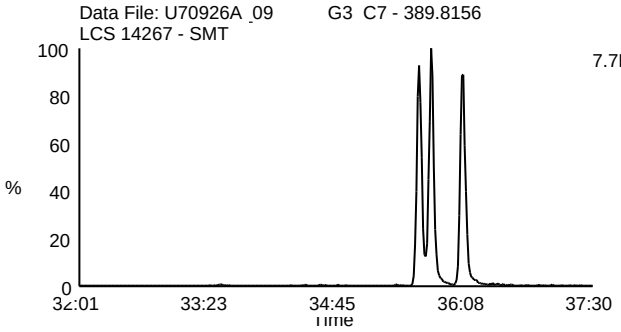


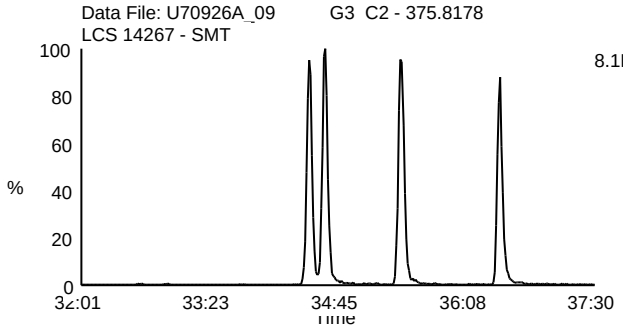
Homologue Group: Hexas

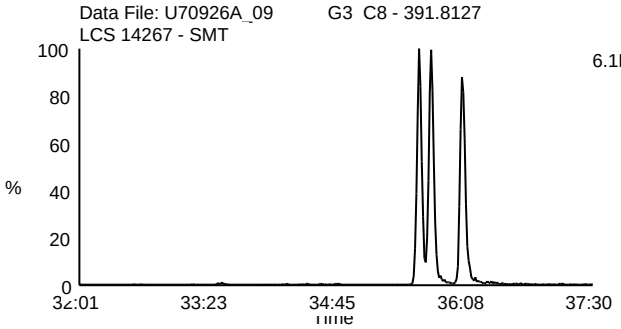
Data File Name: U70926A_09
Date Acquired: 9/26/2007
Sample Description: LCS 14267 - SMT

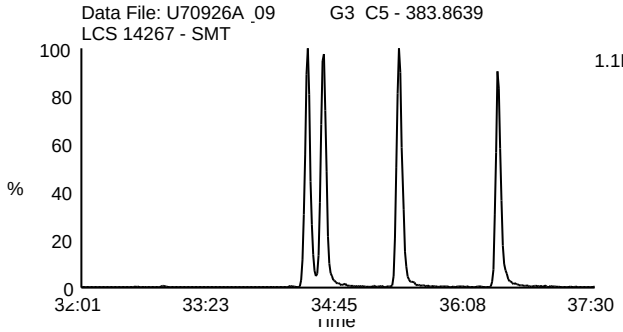
Lab Sample ID: LCS-14267
Client Sample ID: LCS-14267
Instrument: 10MSHR06 (U)

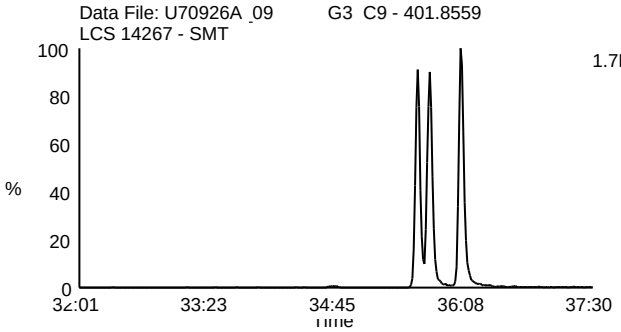


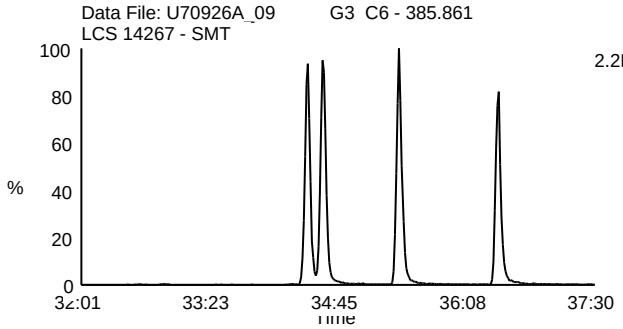


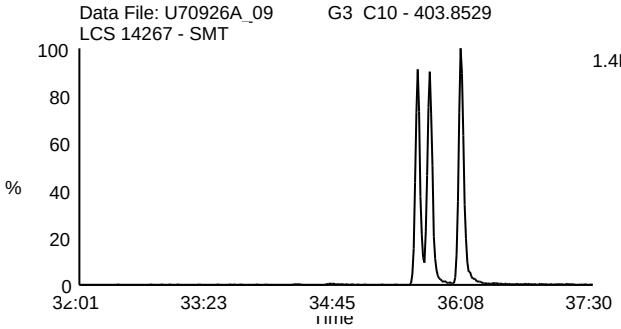


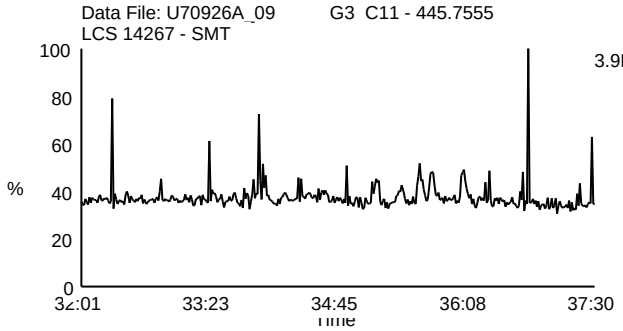


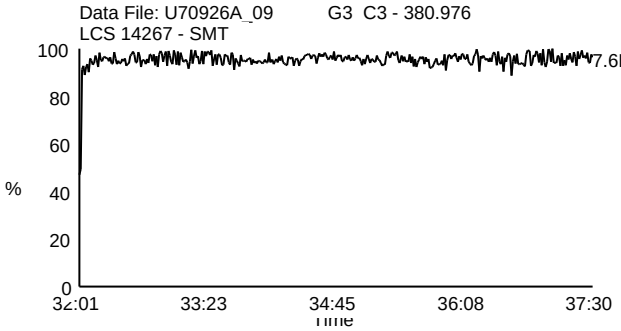








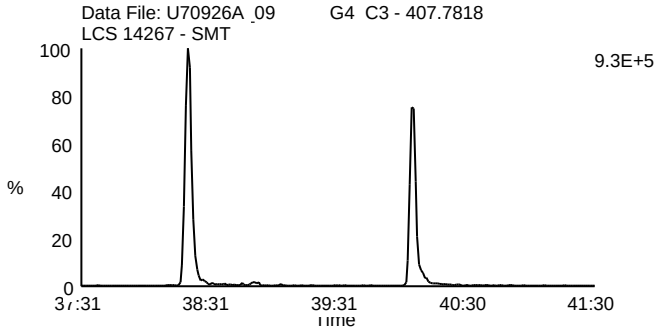


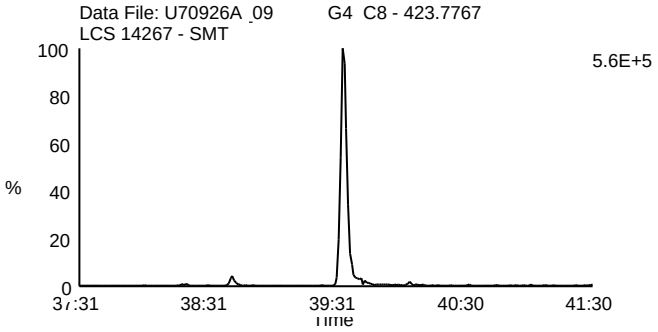


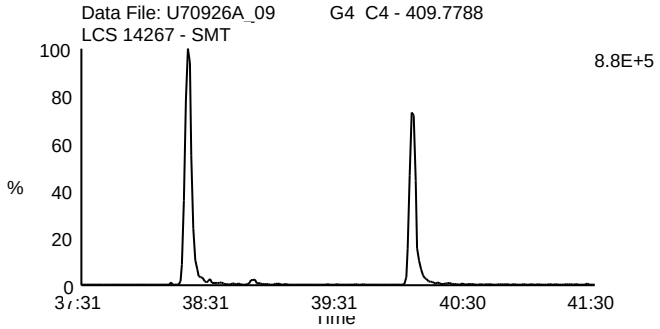
Homologue Group: Heptas

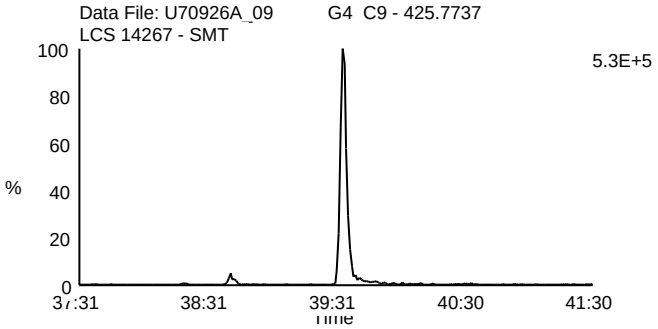
Data File Name: U70926A_09
Date Acquired: 9/26/2007
Sample Description: LCS 14267 - SMT

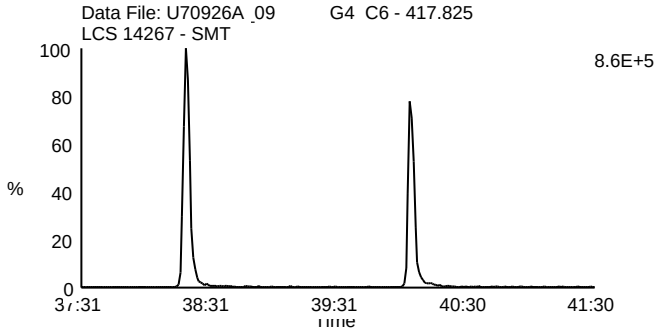
Lab Sample ID: LCS-14267
Client Sample ID: LCS-14267
Instrument: 10MSHR06 (U)

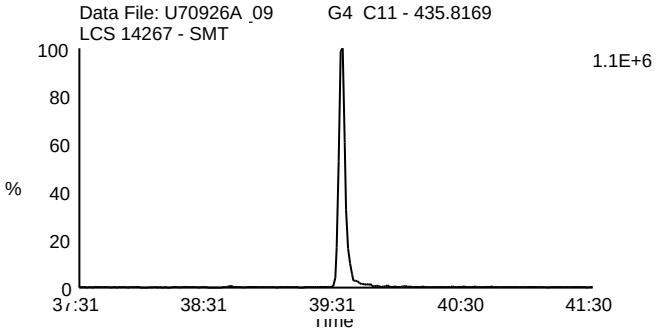


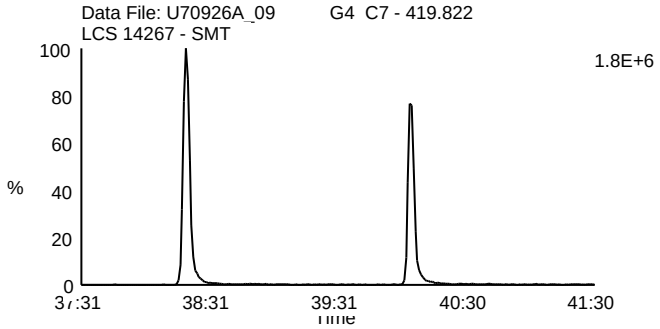


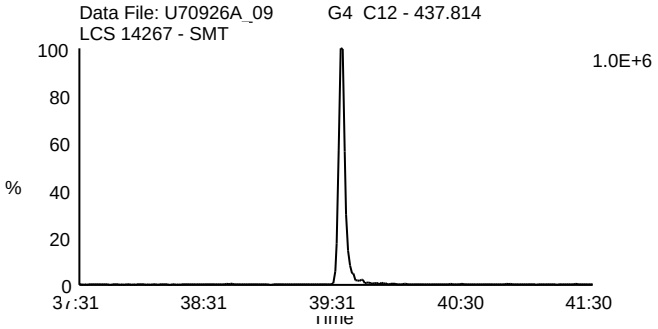


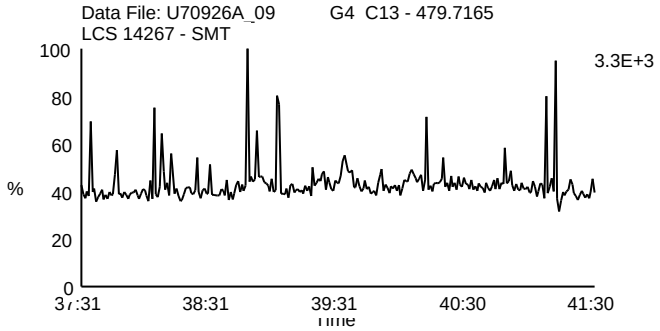


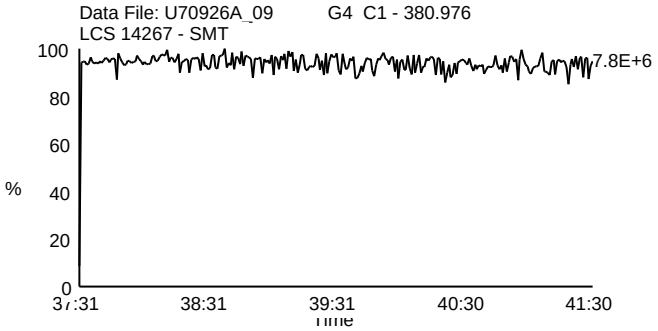








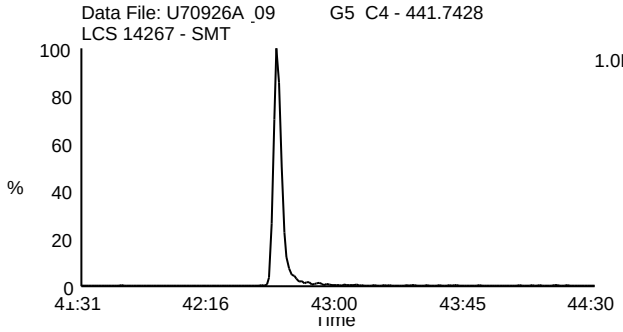


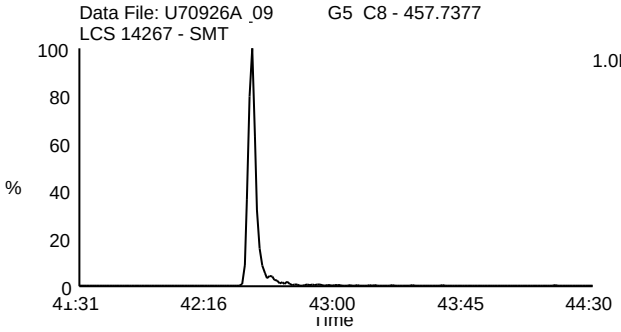


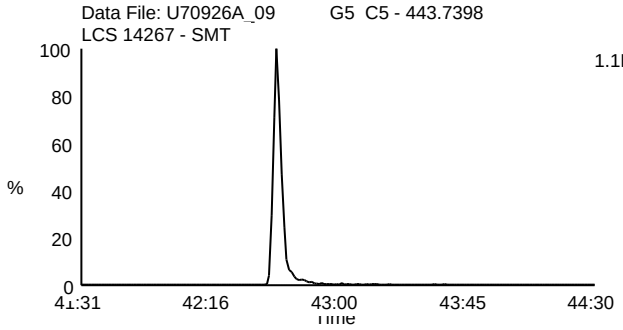
Homologue Group: Octas

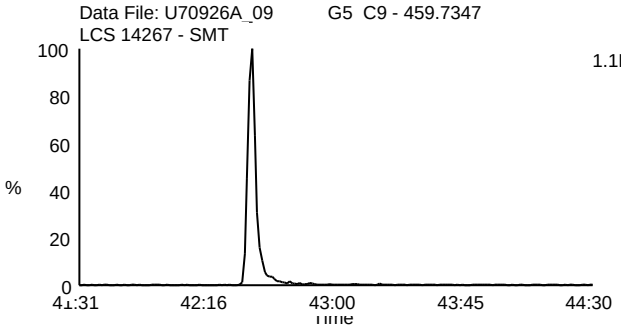
Data File Name: U70926A_09
Date Acquired: 9/26/2007
Sample Description: LCS 14267 - SMT

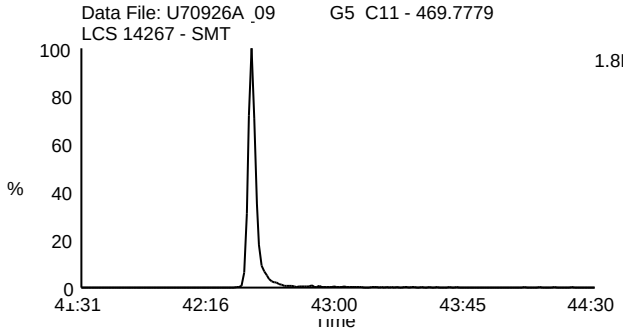
Lab Sample ID: LCS-14267
Client Sample ID: LCS-14267
Instrument: 10MSHR06 (U)

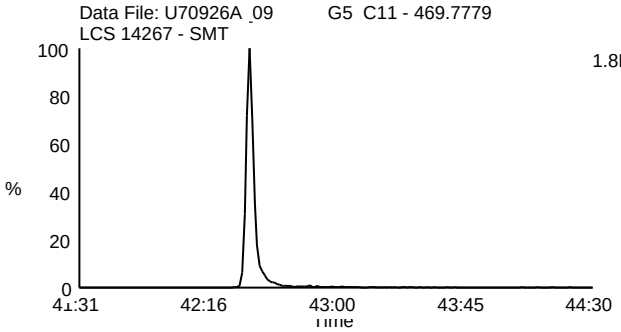


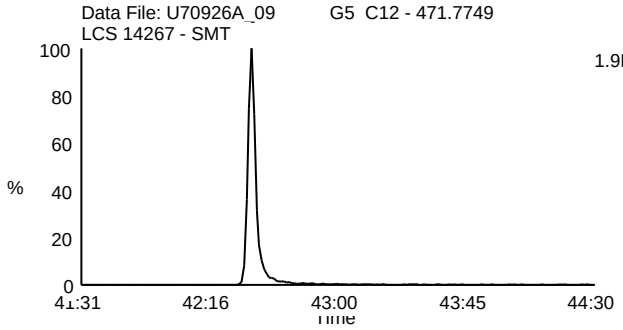


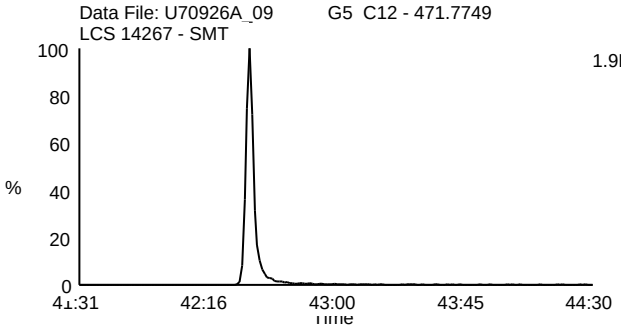


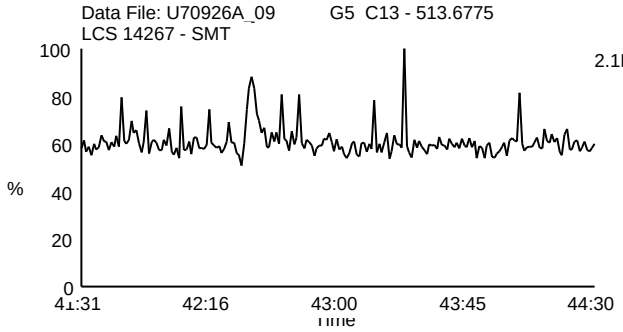


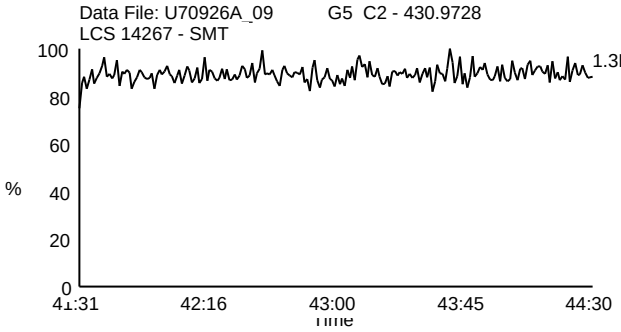












Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

PCDD/PCDF Detected Peak List

Prepared By _____ Date _____

Reviewed By _____ Date _____

Client ID	BLANK-14266	Injected By	SMT
Lab ID	BLANK-14266	Instrument ID	10MSHR09 (P)
Filename	P70927A_06	GC Column ID	US6872627H
Analyzed	09/27/2007 11:27	ICAL Date	08/29/2007

Tetra-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
2,3,7,8-TCDF-13C	21:34	5.89e7	7.13e7	8.86e6	1.13e7	1.506e3	7.489e2	0.83	
2,3,7,8-TCDF	21:36	ND	ND	ND	ND	1.001e3	9.896e2		

Tetra-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4-TCDD-13C	21:46	4.38e7	5.45e7	7.24e6	9.05e6	3.451e3	1.026e3	0.80	
2,3,7,8-TCDD-13C	22:38	4.07e7	5.05e7	5.93e6	7.37e6	4.888e3	1.159e3	0.81	
2,3,7,8-TCDD-37Cl4	22:40	9.36e6		1.40e6		1.576e3	-----		
2,3,7,8-TCDD	22:39	ND	ND	ND	ND	8.781e2	8.782e2		

Penta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDF-13C	29:18	6.42e7	4.10e7	9.48e6	5.94e6	6.638e3	5.264e2	1.57	
2,3,4,7,8-PeCDF-13C	31:01	6.98e7	4.37e7	1.17e7	7.58e6	1.255e5	3.300e3	1.60	
1,2,3,7,8-PeCDF	29:19	ND	ND	ND	ND	6.461e2	5.562e2		
2,3,4,7,8-PeCDF	31:02	8.51e3	7.21e3	2.49e3	1.43e3	5.962e2	6.915e2	1.18	I

Penta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDD-13C	31:31	4.48e7	2.81e7	7.50e6	4.85e6	3.287e4	7.888e2	1.59	
1,2,3,7,8-PeCDD	31:33	ND	ND	ND	ND	7.099e2	5.161e2		

Hexa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDF-13C	35:20	2.65e7	4.99e7	6.08e6	1.16e7	7.603e2	1.863e3	0.53	
1,2,3,6,7,8-HxCDF-13C	35:29	3.18e7	6.05e7	6.52e6	1.22e7	2.265e3	1.136e3	0.53	
2,3,4,6,7,8-HxCDF-13C	36:16	2.98e7	5.68e7	6.73e6	1.28e7	4.443e2	6.595e2	0.52	
1,2,3,7,8,9-HxCDF-13C	37:18	2.62e7	4.93e7	5.22e6	10.00e6	1.694e4	1.123e4	0.53	
1,2,3,4,7,8-HxCDF	35:21	1.15e4	1.19e4	3.21e3	2.58e3	1.097e3	7.922e2	0.97	I
1,2,3,6,7,8-HxCDF	35:29	1.40e4	1.06e4	4.79e3	4.11e3	1.398e3	7.714e2	1.32	
2,3,4,6,7,8-HxCDF	36:17	1.52e4	1.26e4	6.48e3	4.06e3	1.048e3	9.142e2	1.21	
1,2,3,7,8,9-HxCDF	37:19	ND	ND	ND	ND	9.600e2	4.590e2		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Client ID	BLANK-14266	Injected By	SMT
Lab ID	BLANK-14266	Instrument ID	10MSHR09 (P)
Filename	P70927A_06	GC Column ID	US6872627H
Analyzed	09/27/2007 11:27	ICAL Date	08/29/2007

Ethers	1	36:02	1.75e4	1.33e4				1.31	E

Hexa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDD-13C	36:28	3.50e7	2.75e7	8.83e6	6.85e6	1.941e4	3.027e4	1.27	
1,2,3,6,7,8-HxCDD-13C	36:35	4.29e7	3.39e7	9.38e6	7.44e6	4.982e4	1.925e3	1.27	
1,2,3,7,8,9-HxCDD-13C	36:56	4.26e7	3.32e7	8.70e6	6.93e6	4.283e4	1.762e3	1.28	
1,2,3,4,7,8-HxCDD	36:29	ND	ND	ND	ND	1.602e3	1.819e3		
1,2,3,6,7,8-HxCDD	36:36	ND	ND	ND	ND	1.550e3	1.949e3		
1,2,3,7,8,9-HxCDD	36:56	ND	ND	ND	ND	9.954e2	1.487e3		

Hepta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDF-13C	39:05	2.05e7	4.52e7	5.16e6	1.13e7	4.876e4	5.354e3	0.45	
1,2,3,4,7,8,9-HpCDF-13C	40:47	1.58e7	3.45e7	3.78e6	8.26e6	2.050e3	1.173e3	0.46	
1,2,3,4,6,7,8-HpCDF	39:05	2.15e4	2.01e4	5.02e3	4.57e3	1.068e3	7.834e2	1.07	
1,2,3,4,7,8,9-HpCDF	40:47	ND	ND	ND	ND	1.156e3	9.314e2		

Hepta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDD-13C	40:16	2.78e7	2.64e7	6.96e6	6.62e6	8.489e4	8.298e4	1.05	
1,2,3,4,6,7,8-HpCDD	40:16	2.30e4	3.47e4	6.11e3	1.11e4	1.210e3	9.746e2	0.66	I

Octa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDF	43:21	4.50e4	4.83e4	9.90e3	1.35e4	1.039e3	1.054e3	0.93	

Octa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDD-13C	43:12	4.07e7	4.59e7	9.38e6	1.05e7	9.095e2	1.733e2	0.89	
OCDD	43:12	1.69e5	1.70e5	4.21e4	5.19e4	1.602e3	1.414e3	0.99	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

PCDD/PCDF Detected Peak List

Prepared By _____ Date _____

Reviewed By _____ Date _____

Client ID	LCS-14267	Injected By	SMT
Lab ID	LCS-14267	Instrument ID	10MSHR06 (U)
Filename	U70926A_09	GC Column ID	US6809245H
Analyzed	09/26/2007 13:56	ICAL Date	09/21/2007

Tetra-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
2,3,7,8-TCDF-13C	20:16	7.42e6	9.47e6	1.43e6	1.75e6	-----	-----	0.78	
2,3,7,8-TCDF	20:17	8.13e5	9.76e5	1.54e5	1.77e5	-----	-----	0.83	

Tetra-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4-TCDD-13C	20:26	6.03e6	7.59e6	1.18e6	1.47e6	-----	-----	0.79	
2,3,7,8-TCDD-13C	21:16	5.15e6	6.34e6	7.71e5	9.06e5	-----	-----	0.81	
2,3,7,8-TCDD-37Cl4	21:18	1.16e6		1.65e5		-----	-----		
2,3,7,8-TCDD	21:19	4.78e5	6.44e5	6.38e4	8.98e4	-----	-----	0.74	

Penta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDF-13C	27:46	8.99e6	5.52e6	1.25e6	7.97e5	-----	-----	1.63	
2,3,4,7,8-PeCDF-13C	29:46	9.20e6	6.01e6	1.41e6	9.67e5	-----	-----	1.53	
1,2,3,7,8-PeCDF	27:48	4.15e6	2.70e6	6.64e5	3.99e5	-----	-----	1.54	
2,3,4,7,8-PeCDF	29:47	4.63e6	2.90e6	7.90e5	4.88e5	-----	-----	1.60	

Penta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,7,8-PeCDD-13C	30:20	6.21e6	3.93e6	1.08e6	7.37e5	-----	-----	1.58	
1,2,3,7,8-PeCDD	30:21	1.80e6	2.88e6	3.10e5	5.04e5	-----	-----	0.62	

Hexa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDF-13C	34:26	4.34e6	8.06e6	1.08e6	2.05e6	-----	-----	0.54	
1,2,3,6,7,8-HxCDF-13C	34:36	4.62e6	8.97e6	1.06e6	2.08e6	-----	-----	0.52	
2,3,4,6,7,8-HxCDF-13C	35:25	4.47e6	8.38e6	1.08e6	2.18e6	-----	-----	0.53	
1,2,3,7,8,9-HxCDF-13C	36:29	3.90e6	7.21e6	9.75e5	1.78e6	-----	-----	0.54	
1,2,3,4,7,8-HxCDF	34:27	4.00e6	3.10e6	9.80e5	7.70e5	-----	-----	1.29	
1,2,3,6,7,8-HxCDF	34:38	4.19e6	3.40e6	1.00e6	8.08e5	-----	-----	1.23	
2,3,4,6,7,8-HxCDF	35:26	4.18e6	3.30e6	1.02e6	7.72e5	-----	-----	1.27	
1,2,3,7,8,9-HxCDF	36:30	3.48e6	2.79e6	8.37e5	7.09e5	-----	-----	1.25	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

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Client ID	LCS-14267	Injected By	SMT
Lab ID	LCS-14267	Instrument ID	10MSHR06 (U)
Filename	U70926A_09	GC Column ID	US6809245H
Analyzed	09/26/2007 13:56	ICAL Date	09/21/2007

Hexa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,7,8-HxCDD-13C	35:38	5.44e6	4.35e6	1.54e6	1.25e6	-----	-----	1.25	
1,2,3,6,7,8-HxCDD-13C	35:46	6.31e6	5.04e6	1.52e6	1.24e6	-----	-----	1.25	
1,2,3,7,8,9-HxCDD-13C	36:06	6.79e6	5.61e6	1.69e6	1.38e6	-----	-----	1.21	
1,2,3,4,7,8-HxCDD	35:39	2.71e6	2.16e6	7.12e5	6.09e5	-----	-----	1.25	
1,2,3,6,7,8-HxCDD	35:47	2.91e6	2.32e6	7.68e5	6.06e5	-----	-----	1.25	
1,2,3,7,8,9-HxCDD	36:07	2.89e6	2.13e6	6.83e5	5.31e5	-----	-----	1.36	

Hepta-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDF-13C	38:20	2.98e6	6.49e6	8.57e5	1.78e6	-----	-----	0.46	
1,2,3,4,7,8,9-HpCDF-13C	40:04	2.30e6	4.93e6	6.66e5	1.36e6	-----	-----	0.47	
1,2,3,4,6,7,8-HpCDF	38:21	3.45e6	3.23e6	9.31e5	8.76e5	-----	-----	1.07	
1,2,3,4,7,8,9-HpCDF	40:05	2.41e6	2.28e6	7.00e5	6.39e5	-----	-----	1.05	

Hepta-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
1,2,3,4,6,7,8-HpCDD-13C	39:33	3.80e6	3.59e6	1.07e6	1.03e6	-----	-----	1.06	
1,2,3,4,6,7,8-HpCDD	39:34	1.92e6	1.89e6	5.54e5	5.26e5	-----	-----	1.02	

Octa-Furans:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDF	42:39	3.57e6	3.89e6	1.04e6	1.14e6	-----	-----	0.92	

Octa-Dioxins:	RT	Area 1	Area 2	Height 1	Height 2	Noise 1	Noise 2	Ratio	Code
OCDD-13C	42:31	5.79e6	6.30e6	1.80e6	1.92e6	-----	-----	0.92	
OCDD	42:32	3.25e6	3.79e6	1.01e6	1.11e6	-----	-----	0.86	

REPORT OF LABORATORY ANALYSIS

Data Validation Report
Laboratory Report K0708364

Middle Twin Lake Sediment Study - 2007
Joslyn Manufacturing Company, Brooklyn Center, MN
Date of Data Validation Report: December 18, 2007

The data validation of the Columbia Analytical Services, Inc. (CAS) laboratory data for the total organic carbon (TOC) analysis of the 2007 sediment samples associated with the Sediment Study performed at Middle Twin Lake on behalf of Joslyn Manufacturing Co. contained in CAS report K0708364.

The analytical data were reviewed in accordance with the Barr Standard Operation Procedure for Routine Level General Chemistry Data Review as specified in the Quality Assurance Project Plan (QAPP, Barr, June 2007b).

In general, the areas covered by the validation process included:

- Overall assessment
- Holding times, preservation and storage
- Continuing calibration verification
- Method blank analysis
- Laboratory control samples
- Matrix spike samples
- Laboratory and field duplicates

Overall Assessment

The data met the data quality objectives (DQOs) and are useable as reported.

Holding Times, Preservation and Storage

The samples were collected September 11, 12, 13 and 14, 2007, cooled to 4°C and sent to the laboratories. Per the chain-of-custody and subsequent receipt documentation, the laboratories received the samples in acceptable condition. Samples were stored at 4°C at CAS until analysis. All samples were analyzed within 28 days after sample collection.

Continuing Calibration Verification

Instrument stability is an important aspect of analytical systems. The continuing calibration verification (CCV) standard is used to evaluate if the initial calibration is still valid. Continuing calibration verification was performed periodically during each analytical run, typically at the beginning and end of the analytical run, and after every ten samples. The continuing calibration met all relevant acceptance criteria, including the frequency of the verifications and the percent recoveries of TOC in each standard.

Review of the above elements indicates a high level of instrument stability and no qualifiers are required.

Blank Analysis

Laboratory method blank and continuing calibration blank analyses are used to determine the existence and magnitude of contamination introduced at the laboratory.

None of the continuing calibration blanks had detections above the method reporting limits.

None of the method blanks had detections above the method reporting limit.

Laboratory Control Samples

The laboratory is required to prepare and analyze a sample of spiked reference matrix for measuring the accuracy of the analytical process/system/method.

The laboratories performed laboratory control sample (LCS) analyses at the appropriate frequency for the analytical batches. The LCS results met associated acceptance criteria for percent recovery of the spiked concentrations.

Matrix Spike Samples

Matrix spikes provide information about the effect of each sample matrix on the sample preparation procedures and analytical results. CAS performed matrix spike (MS) analyses as required by the methods. The MS analysis met laboratory acceptance criteria.

Laboratory and Field Duplicates

Laboratory and field duplicates are used to demonstrate acceptable precision and reproducibility of results by the laboratory. CAS analyzed laboratory duplicates as required by the methods at the

correct frequency, and one field duplicate was collected and analyzed. All laboratory and field duplicate data met acceptance criteria.

Data Validation Report
Laboratory Reports E0700903 (CAS) and 1058949 (Pace)

Middle Twin Lake Sediment Study - 2007
Joslyn Manufacturing Company, Brooklyn Center, MN
Date of Data Validation Report: November 30, 2007

The data validation of the Columbia Analytical Services, Inc. (CAS) and the Pace Analytical Services, Inc. (Pace) laboratory data for the polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (CDD/CDF) analysis of the 2007 sediment samples associated with the Sediment Study performed at Middle Twin Lake on behalf of Joslyn Manufacturing Co. contained in CAS report E0700903 and on behalf of the MPCA contained in Pace report 1058949 is complete as detailed below.

The analytical data were reviewed in accordance with the U.S. EPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review, Draft Final dated September, 2005 (Guidelines) as specified in the Quality Assurance Project Plan (QAPP, Barr, June 2007b). In addition to the Guidelines, specific SW-846 Method 8290 criteria were considered as slight differences in some of the performance aspects exist between the documents.

In general, the areas covered by the validation process included:

- Overall assessment
- Holding times, preservation and storage
- Mass calibration and mass spectrometer resolution
- Window defining mix
- Initial calibration
- Instrument stability and continuing calibration verification
- Method blank analysis
- Laboratory control samples
- Second column confirmation

Overall Assessment

Only two qualifiers were assigned to the sample results as a result of the data validation process. The two qualifiers were assigned due to potential impacts on sample concentrations based on positive laboratory method blank results of OCDD and 123478-HpCDD.

Because of the tiered analytical approach detailed in the Sampling and Analysis Plan and the QAPP associated with this study and the subsequent analysis (split to two laboratories), analysis were performed on only two samples. For this reason, no duplicate or blank samples were analyzed.

The data met the data quality objectives (DQOs) and are useable as reported.

Holding Times, Preservation and Storage

The samples were collected September 11, 2007, cooled to 4°C and sent to the laboratories. Per the chain-of-custody and subsequent receipt documentation, the laboratories received the samples in acceptable condition. Method 8290 and the QAPP for the project indicate that a 30-day extraction/45 day analysis holding times will apply. Due to the tiered approach of analysis as described in the Sampling and Analysis Plan for this study, initial analytical results for total organic carbon (TOC) were to be reviewed to determine which samples would be identified for subsequent dioxin/furan analysis. Samples were stored at 4°C at CAS until extraction. CAS extracted the samples on October 24, 2007 (noting that 3 individual aliquots were prepared and extracted, then combined for analysis). While this is slightly beyond the schedule set forth in the QAPP, Method 8290 states that these holding times are only recommendations as dioxins and furans are very stable in a variety of matrices. Subsequently, CAS re-extracted the MTLB (beach sample) due to low labeled standard recoveries on November 1, 2007. All samples were analyzed within 45 days following the extraction dates.

Samples analyzed at Pace were not involved in the TOC tiered analytical approach and therefore, were extracted within 30 days of receipt and were analyzed within 45 days of extraction. No qualifiers were applied due to extraction or analysis holding time deviations in the CAS analysis.

Mass Calibration and Mass Spectrometer Resolution

Mass calibration and mass spectrometer resolution (MC/MSR) checks are required to ensure that the mass calibration and mass spectrometer resolution is set at a $\geq$ 10,000 resolving power. This resolution is confirmed at the beginning and end of every 12-hour analysis period.

The Guidelines contain language referring to evaluation techniques that are obsolete due to upgrades in analytical system software. Specifically, the evaluation of the resolution by measuring of deviation between the exact m/z and the theoretical m/z at less than 5 ppm has been replaced with a function of instrumentation that implicitly sets the error to zero at all calibration points so there is no longer need to use peak matching conditions to verify the exact mass. Therefore, resolving power is evaluated by close review of the resolution of PFK peak profiles where high mass ion (380.9760) and low mass ion (304.9824) are reported.

The MC/MSRs checks were performed at the appropriate frequency and obtained acceptable results for the PFK calibrant confirming MC/MSRs at a resolving power of 10,000.

Window Defining Mix

The window defining mix (WDM) is necessary to establish the appropriate switching times for the selection of ion group descriptors. As stated in the Guidelines, the frequency of the WDM is every 12 hours prior to calibration verification. However, Method 8290, (Section 8.3.2.2.2) allows the laboratory, if running consecutive 12-hour shifts, to use the ending calibration verification (if all acceptance criteria are met) of the first 12-hour analysis period as the beginning calibration verification of the second 12-hour analysis period. In these cases, the WDM was analyzed after the calibration verification, but still within the 12-hour analytical period. While the Guidelines indicate the WDM must be analyzed prior to the calibration verification sample, alternate order of analysis for the system performance check samples did not affect the overall system instrumentation and no qualifiers have been applied.

The laboratories performed the WDM analysis for every 12-hour sample analysis period and presented the acceptable switching times for each homologue group.

Chromatographic Resolution

A check is performed to ascertain the separation of closely eluting dioxin/furan isomers. This is performed using SICP (selected ion current profile) of each isomer. The method and Guideline criteria requires that the 2,3,7,8-TCDD peak and the 1,2,3,8-TCDD peak be resolved with a valley of $\leq$ 25%.

The laboratories provided summary peak to valley results as required. In each case, the $\leq$ 25% criterion was met.

Initial Calibration

Satisfactory instrument calibration is crucial to ensuring the accurate qualitative and quantitative results for each of the CDD/CDF compounds. Initial calibration procedures define the linear range and mean relative response factors that will be used for sample quantitation.

For the analytical systems, the initial calibration summary information met all the relevant acceptance criteria including the relative response factors (RRFs) of <25% for native compounds and <35% for labeled compounds, ion abundance ratios (IARs) within +/- 15%, and absolute retention times within the WDM windows. Signal-to-noise ratios of at least 10:1 are required for each of the initial calibration standards. CAS provided this information within the data package, both numerically and visually and all initial calibration standards met the >10:1 signal-to-noise requirement. Pace signal-to-noise ratios were not presented numerically in their report, but visual inspection of the SICPs indicates that the 10:1 ratio was met.

Instrument Stability and Continuing Calibration Verification

Instrument stability is an important aspect of this analytical system. Ongoing calibration verification using a CS-3 standard is performed for every 12-hour period. This standard is used to evaluate the isomer retention times, ion abundance criteria, sensitivity and ongoing calibration criteria. The continuing calibration verification summary information met all relevant acceptance criteria including the frequency of the continuing calibration verifications at both the beginning and end of each 12-hour analytical run, the RRFs %D within <25% for native compounds and <35% for labeled compounds of initial calibration, the IARs within the +/-15%, and signal-to-noise ratios >10:1.

While the Guidelines indicate review of the relative responses (RR), absolute retention times (RT) of the first internal standard (^{13}C-1,2,3,4-TCDD) of ±15 seconds (of the initial calibration standard) and associated >25.0 minute absolute RT requirements are not specific to Method 8290. All the RTs for the internal standards in each CS-3 standard fell within the switching time window as defined by the WDM and each CS-3 standard recorded acceptable results in all other quality control aspects (i.e., ion abundance, analyte response). Additionally, while the absolute RT of the first internal standard was <25 minutes (during the Pace analyses), no overlap in switching times and adequate resolution were observed. Therefore, using professional judgment as stated in the Guidelines, no data were qualified based on the RT deviations.

Method 8290 has no criteria for relative responses (RR), as RR's are not used in final quantitation of sample results therefore, no review was performed.

Method Blank Analysis

The laboratory method blank analyses are used to determine the existence and magnitude of contamination introduced at the laboratory.

An interpretive modification from the Guidelines has been made as it relates to positive method or preparation blank sample results and their potential affect on corresponding sample results. In general, the Guidelines indicate that when sample concentrations are detected at or near the concentrations detected in the laboratory method blank samples, the results should be presented as the CRQL/MRL, with a corresponding "<" or "U" qualifier. However, for this project, the levels of the corresponding CRQLs are greater than the final laboratory reporting limits (MRLs) presented and approved in the QAPP. Therefore, when a project sample result is less than 5 times the associated method blank sample concentration, thus a suspected false positive, it is shown at the concentration reported in the sample with a "<" qualifier.

Laboratory method blank samples were prepared and analyzed at the appropriate frequency by both the laboratories. The Pace method blank had no positive detections of any CDD/CDFs at their reporting level (equivalent to one-third the lowest calibration standard). The CAS method blanks had positive detections of several CDD/CDF's, but below the corresponding CRQL/MRLs of the method thus meeting the criteria of the guidelines. The low level concentrations were within common laboratory practice levels and do not indicate a significant contamination issue, however samples containing less than 5 times the blank concentrations were qualified accordingly.

Laboratory Control Samples (Ongoing Precision/Accuracy)

The laboratory is required to prepare and analyze a sample of spiked reference matrix for measuring the accuracy of the analytical process/system/method.

The laboratories performed laboratory control sample (LCS) analyses at the appropriate frequency for the analytical batches. The LCS results met associated acceptance criteria for percent recovery of the spiked concentrations as presented the Guidelines. All relative retention time (RRT) (at 0.006 RT units) and IARs were also acceptable in the LCS samples associated with the analytical batches, indicating in-control analytical systems.

Labeled Compound Recovery (Surrogate Standard Recovery)

Because the introduced labeled compounds (CDD/CDFs) serve as the isotopic quantitative mechanism for this method, recoveries need to be monitored for laboratory and method effectiveness.

For both laboratories, the samples met the acceptance criteria for the labeled compound percent recoveries for the dioxin/furan analyses as presented in the Guidelines. It is noted that these dioxin/furan labeled compound recovery windows are somewhat wider than the method generated acceptance criteria. Labeled compound recoveries flagged in the original laboratory reports as being beyond method criteria still met the relevant criteria as presented in the Guidelines. No qualifiers were applied due to labeled compound recoveries in the dioxin/furan analyses.

Second Column Confirmation

No 2,3,7,8-TCDF was detected on the primary column analysis, therefore, no second column conformational analysis was required.