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December 18, 2018

Susan Huang
Aptim Environmental & Infrastructure, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS18120004**

Laboratory Results for: **Longhorn Army Ammunition Plant LHAAP-03**

Dear Susan,

ALS Environmental received 36 sample(s) on Nov 30, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

Client: Aptim Environmental & Infrastructure, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-03
Work Order: HS18120004

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18120004-01	03SB18-0.0-2.0	Soil		29-Nov-2018 10:00	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-02	03SB19-0.0-2.0	Soil		29-Nov-2018 10:18	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-03	03SB19-3.0-4.0	Soil		29-Nov-2018 10:20	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-04	03SB19-6.0-7.0	Soil		29-Nov-2018 10:24	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-05	03SB19-8.0-9.0	Soil		29-Nov-2018 10:26	30-Nov-2018 09:40	<input checked="" type="checkbox"/>
HS18120004-06	03SB20-0.0-2.0	Soil		29-Nov-2018 10:30	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-07	03SB20-0.0-2.0-FD	Soil		29-Nov-2018 10:30	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-08	03SB20-3.0-4.0	Soil		29-Nov-2018 10:35	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-09	03SB20-6.0-7.0	Soil		29-Nov-2018 10:38	30-Nov-2018 09:40	<input checked="" type="checkbox"/>
HS18120004-10	03SB21-0.0-2.0	Soil		29-Nov-2018 10:45	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-11	03SB21-3.0-4.0	Soil		29-Nov-2018 10:50	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-12	03SB21-6.0-7.0	Soil		29-Nov-2018 10:55	30-Nov-2018 09:40	<input checked="" type="checkbox"/>
HS18120004-13	03SB22-0.0-2.0	Soil		29-Nov-2018 11:05	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-14	03SB22-3.0-4.0	Soil		29-Nov-2018 11:10	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-15	03SB22-3.0-4.0-FD	Soil		29-Nov-2018 11:10	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-16	03SB22-6.0-7.0	Soil		29-Nov-2018 11:13	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-17	03SB22-8.0-9.0	Soil		29-Nov-2018 11:15	30-Nov-2018 09:40	<input checked="" type="checkbox"/>
HS18120004-18	03SB23-0.0-2.0	Soil		29-Nov-2018 11:30	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-19	03SB23-3.0-4.0	Soil		29-Nov-2018 11:33	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-20	03SB23-6.0-7.0	Soil		29-Nov-2018 11:35	30-Nov-2018 09:40	<input checked="" type="checkbox"/>
HS18120004-21	03SB24-0.0-2.0	Soil		29-Nov-2018 11:45	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-22	03SB25-0.0-2.0	Soil		29-Nov-2018 11:40	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-23	03SB26-0.0-2.0	Soil		29-Nov-2018 10:05	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-24	03SB26-0.0-2.0-FD	Soil		29-Nov-2018 10:05	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-25	03SB26-3.0-4.0	Soil		29-Nov-2018 10:10	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-26	03SB26-6.0-7.0	Soil		29-Nov-2018 10:13	30-Nov-2018 09:40	<input type="checkbox"/>

Client: Aptim Environmental & Infrastructure, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-03
Work Order: HS18120004

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18120004-27	03SB26-8.0-9.0	Soil		29-Nov-2018 10:15	30-Nov-2018 09:40	<input checked="" type="checkbox"/>
HS18120004-28	03SB27-0.0-2.0	Soil		29-Nov-2018 11:55	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-29	03SB27-3.0-4.0	Soil		29-Nov-2018 12:00	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-30	03SB27-6.0-7.0	Soil		29-Nov-2018 12:05	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-31	03SB27-8.0-9.0	Soil		29-Nov-2018 12:08	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-32	03SB28-0.0-2.0	Soil		29-Nov-2018 12:15	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-33	03SB28-3.0-4.0	Soil		29-Nov-2018 12:18	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-34	03SB28-6.0-7.0	Soil		29-Nov-2018 12:20	30-Nov-2018 09:40	<input type="checkbox"/>
HS18120004-35	03SB28-8.0-9.0	Soil		29-Nov-2018 12:24	30-Nov-2018 09:40	<input checked="" type="checkbox"/>
HS18120004-36	Trip Blank	Water	ALS-111418-61	29-Nov-2018 00:00	30-Nov-2018 09:40	<input checked="" type="checkbox"/>

Client: Aptim Environmental & Infrastructure, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-03
Work Order: HS18120004

CASE NARRATIVE

Metals by Method SW6020

Batch ID: 135452

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: 135451

Sample ID: 03SB27-3.0-4.0 (HS18120004-29MS)

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB18-0.0-2.0
 Collection Date: 29-Nov-2018 10:00

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	1.56		0.0661	0.0944	0.472	mg/Kg	1	14-Dec-2018 19:53
Lead	6.15		0.0123	0.0944	0.472	mg/Kg	1	14-Dec-2018 19:53

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB19-0.0-2.0
 Collection Date: 29-Nov-2018 10:18

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-02
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	2.63		0.0645	0.0921	0.460	mg/Kg	1	14-Dec-2018 19:55
Lead	9.52		0.0120	0.0921	0.460	mg/Kg	1	14-Dec-2018 19:55

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB19-3.0-4.0
 Collection Date: 29-Nov-2018 10:20

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-03
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	1.14		0.0639	0.0913	0.456	mg/Kg	1	14-Dec-2018 19:58
Lead	7.89		0.0119	0.0913	0.456	mg/Kg	1	14-Dec-2018 19:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB19-6.0-7.0
 Collection Date: 29-Nov-2018 10:24

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-04
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	2.99		0.0682	0.0975	0.487	mg/Kg	1	14-Dec-2018 20:00
Lead	5.71		0.0127	0.0975	0.487	mg/Kg	1	14-Dec-2018 20:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB20-0.0-2.0
 Collection Date: 29-Nov-2018 10:30

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-06
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	1.54		0.0684	0.0977	0.489	mg/Kg	1	14-Dec-2018 20:02
Lead	8.26		0.0127	0.0977	0.489	mg/Kg	1	14-Dec-2018 20:02

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB20-0.0-2.0-FD
 Collection Date: 29-Nov-2018 10:30

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-07
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	4.05		0.0669	0.0955	0.478	mg/Kg	1	14-Dec-2018 20:04
Lead	11.3		0.0124	0.0955	0.478	mg/Kg	1	14-Dec-2018 20:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB20-3.0-4.0
 Collection Date: 29-Nov-2018 10:35

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-08
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	3.90		0.0681	0.0973	0.486	mg/Kg	1	14-Dec-2018 20:07
Lead	16.3		0.0126	0.0973	0.486	mg/Kg	1	14-Dec-2018 20:07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB21-0.0-2.0
 Collection Date: 29-Nov-2018 10:45

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-10
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	1.74		0.0642	0.0917	0.458	mg/Kg	1	14-Dec-2018 20:16
Lead	10.2		0.0119	0.0917	0.458	mg/Kg	1	14-Dec-2018 20:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB21-3.0-4.0
 Collection Date: 29-Nov-2018 10:50

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-11
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	0.974		0.0640	0.0915	0.457	mg/Kg	1	14-Dec-2018 20:27
Lead	4.97		0.0119	0.0915	0.457	mg/Kg	1	14-Dec-2018 20:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB22-0.0-2.0
 Collection Date: 29-Nov-2018 11:05

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-13
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018	Analyst: JCJ	
Arsenic	1.79		0.0660	0.0943	0.472	mg/Kg	1	14-Dec-2018 20:29
Lead	9.07		0.0123	0.0943	0.472	mg/Kg	1	14-Dec-2018 20:29

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB22-3.0-4.0
 Collection Date: 29-Nov-2018 11:10

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-14
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	4.61		0.0665	0.0950	0.475	mg/Kg	1	14-Dec-2018 20:31
Lead	8.66		0.0124	0.0950	0.475	mg/Kg	1	14-Dec-2018 20:31

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB22-3.0-4.0-FD
 Collection Date: 29-Nov-2018 11:10

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-15
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	0.709		0.0660	0.0943	0.471	mg/Kg	1	14-Dec-2018 20:33
Lead	6.26		0.0123	0.0943	0.471	mg/Kg	1	14-Dec-2018 20:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB22-6.0-7.0
 Collection Date: 29-Nov-2018 11:13

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-16
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018	Analyst: JCJ	
Arsenic	2.63		0.0672	0.0959	0.480	mg/Kg	1	14-Dec-2018 22:30
Lead	7.62		0.0125	0.0959	0.480	mg/Kg	1	14-Dec-2018 22:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB23-0.0-2.0
 Collection Date: 29-Nov-2018 11:30

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-18
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020		Prep:SW3050A / 11-Dec-2018				Analyst: JCJ	
Arsenic	1.93		0.0648	0.0926	0.463	mg/Kg	1	14-Dec-2018 22:32
Lead	12.3		0.0120	0.0926	0.463	mg/Kg	1	14-Dec-2018 22:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB23-3.0-4.0
 Collection Date: 29-Nov-2018 11:33

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-19
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	4.16		0.0645	0.0922	0.461	mg/Kg	1	14-Dec-2018 22:35
Lead	7.12		0.0120	0.0922	0.461	mg/Kg	1	14-Dec-2018 22:35

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB24-0.0-2.0
 Collection Date: 29-Nov-2018 11:45

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-21
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	1.66		0.0661	0.0944	0.472	mg/Kg	1	14-Dec-2018 22:37
Lead	14.3		0.0123	0.0944	0.472	mg/Kg	1	14-Dec-2018 22:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB25-0.0-2.0
 Collection Date: 29-Nov-2018 11:40

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-22
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018	Analyst: JCJ	
Arsenic	1.42		0.0681	0.0972	0.486	mg/Kg	1	14-Dec-2018 22:39
Lead	8.02		0.0126	0.0972	0.486	mg/Kg	1	14-Dec-2018 22:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB26-0.0-2.0
 Collection Date: 29-Nov-2018 10:05

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-23
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	5.83		0.0684	0.0977	0.489	mg/Kg	1	14-Dec-2018 22:41
Lead	8.60		0.0127	0.0977	0.489	mg/Kg	1	14-Dec-2018 22:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB26-0.0-2.0-FD
 Collection Date: 29-Nov-2018 10:05

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-24
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	1.92		0.0674	0.0963	0.481	mg/Kg	1	14-Dec-2018 22:44
Lead	8.38		0.0125	0.0963	0.481	mg/Kg	1	14-Dec-2018 22:44

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB26-3.0-4.0
 Collection Date: 29-Nov-2018 10:10

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-25
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018	Analyst: JCJ	
Arsenic	0.740		0.0646	0.0923	0.461	mg/Kg	1	14-Dec-2018 22:46
Lead	4.14		0.0120	0.0923	0.461	mg/Kg	1	14-Dec-2018 22:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB26-6.0-7.0
 Collection Date: 29-Nov-2018 10:13

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-26
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	2.94		0.0680	0.0971	0.486	mg/Kg	1	12-Dec-2018 20:26
Lead	6.96		0.0126	0.0971	0.486	mg/Kg	1	12-Dec-2018 20:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB27-0.0-2.0
 Collection Date: 29-Nov-2018 11:55

ANALYTICAL REPORT
 WorkOrder:HS18120004
 Lab ID:HS18120004-28
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	1.41		0.0680	0.0971	0.486	mg/Kg	1	12-Dec-2018 20:29
Lead	8.66		0.0126	0.0971	0.486	mg/Kg	1	12-Dec-2018 20:29

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB27-3.0-4.0
 Collection Date: 29-Nov-2018 12:00

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-29
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	2.84		0.0642	0.0917	0.459	mg/Kg	1	12-Dec-2018 20:31
Lead	7.36		0.0119	0.0917	0.459	mg/Kg	1	12-Dec-2018 20:31

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB27-6.0-7.0
 Collection Date: 29-Nov-2018 12:05

ANALYTICAL REPORT
 WorkOrder:HS18120004
 Lab ID:HS18120004-30
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	5.02		0.0640	0.0915	0.457	mg/Kg	1	12-Dec-2018 20:42
Lead	7.29		0.0119	0.0915	0.457	mg/Kg	1	12-Dec-2018 20:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB27-8.0-9.0
 Collection Date: 29-Nov-2018 12:08

ANALYTICAL REPORT
 WorkOrder:HS18120004
 Lab ID:HS18120004-31
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	2.33		0.0660	0.0943	0.471	mg/Kg	1	12-Dec-2018 20:53
Lead	4.67		0.0123	0.0943	0.471	mg/Kg	1	12-Dec-2018 20:53

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB28-0.0-2.0
 Collection Date: 29-Nov-2018 12:15

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-32
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	1.59		0.0655	0.0936	0.468	mg/Kg	1	12-Dec-2018 20:55
Lead	8.27		0.0122	0.0936	0.468	mg/Kg	1	12-Dec-2018 20:55

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB28-3.0-4.0
 Collection Date: 29-Nov-2018 12:18

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-33
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 11-Dec-2018		Analyst: JCJ
Arsenic	0.565		0.0642	0.0917	0.458	mg/Kg	1	12-Dec-2018 20:58
Lead	5.29		0.0119	0.0917	0.458	mg/Kg	1	12-Dec-2018 20:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: Longhorn Army Ammunition Plant LHAAP-03
 Sample ID: 03SB28-6.0-7.0
 Collection Date: 29-Nov-2018 12:20

ANALYTICAL REPORT

WorkOrder:HS18120004
 Lab ID:HS18120004-34
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020		Prep:SW3050A / 11-Dec-2018				Analyst: JCJ	
Arsenic	1.60		0.0675	0.0965	0.482	mg/Kg	1	12-Dec-2018 21:00
Lead	5.96		0.0125	0.0965	0.482	mg/Kg	1	12-Dec-2018 21:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

WEIGHT LOG

Client: Aptim Environmental & Infrastructure, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-03
WorkOrder: HS18120004

Batch ID: 135451 **Method:** METALS BY SW6020A **Prep:** 3050_I_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18120004-26	1	0.5149	50 (mL)	97.11
HS18120004-28	1	0.5147	50 (mL)	97.14
HS18120004-29	1	0.545	50 (mL)	91.74
HS18120004-30	1	0.5466	50 (mL)	91.47
HS18120004-31	1	0.5304	50 (mL)	94.27
HS18120004-32	1	0.5343	50 (mL)	93.58
HS18120004-33	1	0.5454	50 (mL)	91.68
HS18120004-34	1	0.5183	50 (mL)	96.47

Batch ID: 135452 **Method:** METALS BY SW6020A **Prep:** 3050_I_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18120004-01	1	0.5298	50 (mL)	94.38
HS18120004-02	1	0.543	50 (mL)	92.08
HS18120004-03	1	0.5479	50 (mL)	91.26
HS18120004-04	1	0.513	50 (mL)	97.47
HS18120004-06	1	0.5116	50 (mL)	97.73
HS18120004-07	1	0.5233	50 (mL)	95.55
HS18120004-08	1	0.514	50 (mL)	97.28
HS18120004-10	1	0.5455	50 (mL)	91.66
HS18120004-11	1	0.5465	50 (mL)	91.49
HS18120004-13	1	0.53	50 (mL)	94.34
HS18120004-14	1	0.5262	50 (mL)	95.02
HS18120004-15	1	0.5305	50 (mL)	94.25
HS18120004-16	1	0.5212	50 (mL)	95.93
HS18120004-18	1	0.54	50 (mL)	92.59
HS18120004-19	1	0.5425	50 (mL)	92.17
HS18120004-21	1	0.5296	50 (mL)	94.41
HS18120004-22	1	0.5143	50 (mL)	97.22
HS18120004-23	1	0.5117	50 (mL)	97.71
HS18120004-24	1	0.5193	50 (mL)	96.28
HS18120004-25	1	0.5419	50 (mL)	92.27

Client: Aptim Environmental & Infrastructure, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-03
WorkOrder: HS18120004

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 135451	Test Name : METALS BY SW6020A			Matrix: Soil		
HS18120004-26	03SB26-6.0-7.0	29 Nov 2018 10:13		11 Dec 2018 13:27	12 Dec 2018 20:26	1
HS18120004-28	03SB27-0.0-2.0	29 Nov 2018 11:55		11 Dec 2018 13:27	12 Dec 2018 20:29	1
HS18120004-29	03SB27-3.0-4.0	29 Nov 2018 12:00		11 Dec 2018 13:27	12 Dec 2018 20:31	1
HS18120004-30	03SB27-6.0-7.0	29 Nov 2018 12:05		11 Dec 2018 13:27	12 Dec 2018 20:42	1
HS18120004-31	03SB27-8.0-9.0	29 Nov 2018 12:08		11 Dec 2018 13:27	12 Dec 2018 20:53	1
HS18120004-32	03SB28-0.0-2.0	29 Nov 2018 12:15		11 Dec 2018 13:27	12 Dec 2018 20:55	1
HS18120004-33	03SB28-3.0-4.0	29 Nov 2018 12:18		11 Dec 2018 13:27	12 Dec 2018 20:58	1
HS18120004-34	03SB28-6.0-7.0	29 Nov 2018 12:20		11 Dec 2018 13:27	12 Dec 2018 21:00	1
Batch ID 135452	Test Name : METALS BY SW6020A			Matrix: Soil		
HS18120004-01	03SB18-0.0-2.0	29 Nov 2018 10:00		11 Dec 2018 13:33	14 Dec 2018 19:53	1
HS18120004-02	03SB19-0.0-2.0	29 Nov 2018 10:18		11 Dec 2018 13:33	14 Dec 2018 19:55	1
HS18120004-03	03SB19-3.0-4.0	29 Nov 2018 10:20		11 Dec 2018 13:33	14 Dec 2018 19:58	1
HS18120004-04	03SB19-6.0-7.0	29 Nov 2018 10:24		11 Dec 2018 13:33	14 Dec 2018 20:00	1
HS18120004-06	03SB20-0.0-2.0	29 Nov 2018 10:30		11 Dec 2018 13:33	14 Dec 2018 20:02	1
HS18120004-07	03SB20-0.0-2.0-FD	29 Nov 2018 10:30		11 Dec 2018 13:33	14 Dec 2018 20:04	1
HS18120004-08	03SB20-3.0-4.0	29 Nov 2018 10:35		11 Dec 2018 13:33	14 Dec 2018 20:07	1
HS18120004-10	03SB21-0.0-2.0	29 Nov 2018 10:45		11 Dec 2018 13:33	14 Dec 2018 20:16	1
HS18120004-11	03SB21-3.0-4.0	29 Nov 2018 10:50		11 Dec 2018 13:33	14 Dec 2018 20:27	1
HS18120004-13	03SB22-0.0-2.0	29 Nov 2018 11:05		11 Dec 2018 13:33	14 Dec 2018 20:29	1
HS18120004-14	03SB22-3.0-4.0	29 Nov 2018 11:10		11 Dec 2018 13:33	14 Dec 2018 20:31	1
HS18120004-15	03SB22-3.0-4.0-FD	29 Nov 2018 11:10		11 Dec 2018 13:33	14 Dec 2018 20:33	1
HS18120004-16	03SB22-6.0-7.0	29 Nov 2018 11:13		11 Dec 2018 13:33	14 Dec 2018 22:30	1
HS18120004-18	03SB23-0.0-2.0	29 Nov 2018 11:30		11 Dec 2018 13:33	14 Dec 2018 22:32	1
HS18120004-19	03SB23-3.0-4.0	29 Nov 2018 11:33		11 Dec 2018 13:33	14 Dec 2018 22:35	1
HS18120004-21	03SB24-0.0-2.0	29 Nov 2018 11:45		11 Dec 2018 13:33	14 Dec 2018 22:37	1
HS18120004-22	03SB25-0.0-2.0	29 Nov 2018 11:40		11 Dec 2018 13:33	14 Dec 2018 22:39	1
HS18120004-23	03SB26-0.0-2.0	29 Nov 2018 10:05		11 Dec 2018 13:33	14 Dec 2018 22:41	1
HS18120004-24	03SB26-0.0-2.0-FD	29 Nov 2018 10:05		11 Dec 2018 13:33	14 Dec 2018 22:44	1
HS18120004-25	03SB26-3.0-4.0	29 Nov 2018 10:10		11 Dec 2018 13:33	14 Dec 2018 22:46	1

Client: Aptim Environmental & Infrastructure, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-03
WorkOrder: HS18120004

QC BATCH REPORT

Batch ID: 135451		Instrument: ICPMS04		Method: SW6020						
MBLK	Sample ID: MBLK-135451	Units: mg/Kg			Analysis Date: 12-Dec-2018 19:57					
Client ID:		Run ID: ICPMS04_329054	SeqNo: 4861941	PrepDate: 11-Dec-2018	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.100	0.500								U
Lead	0.100	0.500								U
LCS	Sample ID: LCS-135451	Units: mg/Kg			Analysis Date: 12-Dec-2018 19:59					
Client ID:		Run ID: ICPMS04_329054	SeqNo: 4861942	PrepDate: 11-Dec-2018	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	9.119	0.500	10	0	91.2	80 - 120				
Lead	9.458	0.500	10	0	94.6	80 - 120				
MS	Sample ID: HS18120004-29MS	Units: mg/Kg			Analysis Date: 12-Dec-2018 20:35					
Client ID: 03SB27-3.0-4.0		Run ID: ICPMS04_329054	SeqNo: 4861959	PrepDate: 11-Dec-2018	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	11.66	0.462	9.244	2.842	95.4	75 - 125				
Lead	16.52	0.462	9.244	7.362	99.1	75 - 125				
MSD	Sample ID: HS18120004-29MSD	Units: mg/Kg			Analysis Date: 12-Dec-2018 20:38					
Client ID: 03SB27-3.0-4.0		Run ID: ICPMS04_329054	SeqNo: 4861960	PrepDate: 11-Dec-2018	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	11.67	0.464	9.28	2.842	95.1	75 - 125	11.66	0.0452	20	
Lead	16.98	0.464	9.28	7.362	104	75 - 125	16.52	2.74	20	
PDS	Sample ID: HS18120004-29PDS	Units: mg/Kg			Analysis Date: 12-Dec-2018 20:40					
Client ID: 03SB27-3.0-4.0		Run ID: ICPMS04_329054	SeqNo: 4861961	PrepDate: 11-Dec-2018	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	11.46	0.459	9.174	2.842	93.9	75 - 125				
Lead	16.07	0.459	9.174	7.362	94.9	75 - 125				

Client: Aptim Environmental & Infrastructure, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-03
WorkOrder: HS18120004

QC BATCH REPORT

Batch ID: 135451 **Instrument:** ICPMS04 **Method:** SW6020

SD	Sample ID: HS18120004-29SD	Units: mg/Kg		Analysis Date: 12-Dec-2018 20:33						
Client ID: 03SB27-3.0-4.0	Run ID: ICPMS04_329054	SeqNo: 4861958	PrepDate: 11-Dec-2018	DF: 5						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	Limit	Qual
Arsenic	3.005	2.29					2.842	5.71	10	
Lead	7.315	2.29					7.362	0.645	10	

The following samples were analyzed in this batch:

HS18120004-26	HS18120004-28	HS18120004-29	HS18120004-30
HS18120004-31	HS18120004-32	HS18120004-33	HS18120004-34

Client: Aptim Environmental & Infrastructure, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-03
WorkOrder: HS18120004

QC BATCH REPORT

Batch ID: 135452		Instrument: ICPMS04		Method: SW6020						
MBLK	Sample ID: MBLK-135452	Units: mg/Kg			Analysis Date: 14-Dec-2018 19:49					
Client ID:		Run ID: ICPMS04_329261	SeqNo: 4866984	PrepDate: 11-Dec-2018	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.100	0.500								U
Lead	0.100	0.500								U
LCS	Sample ID: LCS-135452	Units: mg/Kg			Analysis Date: 14-Dec-2018 19:51					
Client ID:		Run ID: ICPMS04_329261	SeqNo: 4866985	PrepDate: 11-Dec-2018	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	9.338	0.500	10	0	93.4	80 - 120				
Lead	9.804	0.500	10	0	98.0	80 - 120				
MS	Sample ID: HS18120004-10MS	Units: mg/Kg			Analysis Date: 14-Dec-2018 20:20					
Client ID: 03SB21-0.0-2.0		Run ID: ICPMS04_329261	SeqNo: 4866998	PrepDate: 11-Dec-2018	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.17	0.459	9.184	1.743	91.8	75 - 125				
Lead	19.21	0.459	9.184	10.17	98.5	75 - 125				
MSD	Sample ID: HS18120004-10MSD	Units: mg/Kg			Analysis Date: 14-Dec-2018 20:22					
Client ID: 03SB21-0.0-2.0		Run ID: ICPMS04_329261	SeqNo: 4866999	PrepDate: 11-Dec-2018	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	11.17	0.464	9.287	1.743	102	75 - 125	10.17	9.37	20	
Lead	21.34	0.464	9.287	10.17	120	75 - 125	19.21	10.5	20	
PDS	Sample ID: HS18120004-10PDS	Units: mg/Kg			Analysis Date: 14-Dec-2018 20:25					
Client ID: 03SB21-0.0-2.0		Run ID: ICPMS04_329261	SeqNo: 4867000	PrepDate: 11-Dec-2018	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.9	0.458	9.166	1.743	99.9	75 - 125				
Lead	20	0.458	9.166	10.17	107	75 - 125				

Client: Aptim Environmental & Infrastructure, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-03
WorkOrder: HS18120004

QC BATCH REPORT

Batch ID: 135452		Instrument: ICPMS04		Method: SW6020						
SD	Sample ID: HS18120004-10SD	Units: mg/Kg		Analysis Date: 14-Dec-2018 20:18						
Client ID: 03SB21-0.0-2.0	Run ID: ICPMS04_329261	SeqNo: 4866997	PrepDate: 11-Dec-2018	DF: 5						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	Limit	Qual

Arsenic	1.71	2.29					1.743	0	10	J
Lead	10.41	2.29					10.17	2.42	10	

The following samples were analyzed in this batch:

HS18120004-01	HS18120004-02	HS18120004-03	HS18120004-04
HS18120004-06	HS18120004-07	HS18120004-08	HS18120004-10
HS18120004-11	HS18120004-13	HS18120004-14	HS18120004-15
HS18120004-16	HS18120004-18	HS18120004-19	HS18120004-21
HS18120004-22	HS18120004-23	HS18120004-24	HS18120004-25

Client: Aptim Environmental & Infrastructure, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-03
WorkOrder: HS18120004

**QUALIFIERS,
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS18120004

Date/Time Received: 30-Nov-2018 09:40
Received by: PJM

Checklist completed by: Pablo Marinez 1-Dec-2018
Reviewed by: RJ Modashia 3-Dec-2018

Matrices: SOIL, WATER Carrier name: FedEx Priority Overnight

- Shipping container/cooler in good condition? Yes [checked] No [] Not Present []
Custody seals intact on shipping container/cooler? Yes [checked] No [] Not Present []
Custody seals intact on sample bottles? Yes [] No [] Not Present [checked]
Chain of custody present? Yes [checked] No []
Chain of custody signed when relinquished and received? Yes [checked] No []
Chain of custody agrees with sample labels? Yes [checked] No []
Samples in proper container/bottle? Yes [checked] No []
Sample containers intact? Yes [checked] No []
TX1005 solids received in hermetically sealed vials? Yes [] No [] N/A [checked]
Sufficient sample volume for indicated test? Yes [checked] No []
All samples received within holding time? Yes [checked] No []
Container/Temp Blank temperature in compliance? Yes [checked] No []

Temperature(s)/Thermometer(s): 2.1C/2.5C UC/C IR # 11
Cooler(s)/Kit(s): 44426
Date/Time sample(s) sent to storage: 12/1/18 9:20

- Water - VOA vials have zero headspace? Yes [checked] No [] No VOA vials submitted []
Water - pH acceptable upon receipt? Yes [] No [] N/A [checked]
pH adjusted? Yes [] No [] N/A [checked]
pH adjusted by:

Login Notes: Trip Blank not listed on CoC, logged in on hold

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:


Corrective Action:

COC ID: LHAAP03-NOV2018-ALSHT-1811-29		TURNAROUND TIME: normal		RUSH: Page 1 of 3	
PROJECT/CLIENT INFO			LABORATORY		OTHER INFO
Facility Name: Longhorn AAP	Project Number: 501032	Address: LHAAP-03 1203-B East Grand Avenue PMB 202 City: Marshall State: TX Postal Code: 75670 Phone Number: 713 243 7264 Project Manager: Praveen Srivastav	Lab Name: AJS Laboratories	Lab Contact: RJ Modashia Email: RJ.Modashia@alsglobal.com Address: 10450 Stanciliff Rd., Suite 210 City: Houston State: TX Postal Code: 77099 Phone Number: 281.575.2279 or 281.530.5656	Email Invoice To: FedInvoices@aptim.com Email Report To: Susan.Huang@aptim.com Mail Reports To: Susan Huang Address: 4005 Port Chicago Highway, Suit 200 City: Concord State: CA Postal Code: 94520 Country: USA Shipping Company: Fedex

SAMPLE DETAILS								ANALYSIS REQUESTED		
Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	Metals (As & Pb) by 6020
03SB18-0.0-2.0	03SB18	0	2	FT	S ₀₁	11/28/18	1000	1	X	
03SB19-0.0-2.0	03SB19	0	2	FT			1018	1	X	
03SB19-3.0-4.0	03SB19	3	4				1020	1	X	
03SB19-6.0-7.0	03SB19	6	7				1024	1	X	
03SB19-8.0-9.0	03SB19	8	9				1026	1	X	HOLD SAMPLE
03SB20-0.0-2.0	03SB20	0	2				1034	1	X	
03SB20-0.0-2.0-FD	03SB20	0	2				1030	1	X	
03SB20-3.0-4.0	03SB20	3	4				1035	1	X	
03SB20-6.0-7.0	03SB20	6	7				1038	1	X	HOLD SAMPLE
03SB21-0.0-2.0	03SB21	0	2				1045	1	X	
03SB21-0.0-2.0-M6	03SB21	0	2				1045	1	X	
03SB21-0.0-2.0-M6B	03SB21	0	2				1045	1	X	
03SB21-3.0-4.0	03SB21	3	4				1050	1	X	
03SB21-6.0-7.0	03SB21	6	7				1055	1	X	HOLD SAMPLE
03SB22-0.0-2.0	03SB22	0	2				1105	1	X	
03SB22-3.0-4.0	03SB22	3	4				1110	1	X	

HS18120004

Aptim Environmental & Infrastructure, Inc.
Longhorn Army Ammunition Plant LHAAP-29



ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	<i>[Signature]</i>	11/29/18 1900	PJM/PLS	11/30/18 09:40

Cooler 44426
Terra 2.1
1/21
CFM4

COC ID: LHAAP03-NOV2018-ALSHT-1811- 2a		TURNAROUND TIME: normal		RUSH: Page 2 of 3	
PROJECT/CLIENT INFO			LABORATORY		OTHER INFO
Facility Name: Longhorn AAP			Lab Name: AES Laboratories		Email Invoice To: FedInvoices@aptim.com
Project Number: 501032			Lab Contact: RJ Modashia		
Address: LHAAP-03 1203-B East Grand Avenue PMD 202			Email: RJ.Modashia@elsglobal.com		Email Report To: Susan.Huang@aptim.com
City: Marshall State: TX			Address: 10450 Stancliff Rd., Suite 210		Mail Reports To: Susan Huang
Postal Code: 75670 Country: USA			City: Houston State: TX		Address: 4005 Port Chicago Highway, Suit 200
Phone Number: 713.243.7264			Postal Code: 77099 Country: USA		City: Coucord State: CA
Project Manager: Praveen Srivastav			Phone Number: 281.575.2279 or 281.530.5656		Postal Code: 94520 Country: USA
			Shipping Company: Fedex		

SAMPLE DETAILS										ANALYSIS REQUESTED	
Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	Metals (As % Pb) by 6020	
035B22-3.0-4.0-FD	035B22	3	4	FT	Soil	11/21/18	1110	1	X		
035B22-6.0-7.0	035B22	6	7				1113	1	X		
035B22-8.0-9.0	035B22	8	9				1115	1	X	- HOLD SAMPLE	
035B23-0.0-2.0	035B23	0	2				1130	1	X		
035B23-3.0-4.0	035B23	3	4				1133	1	X		
035B23-6.0-7.0	035B23	6	7				1135	1	X	- HOLD SAMPLE	
035B24-0.0-2.0	035B24	0	2				1145	1	X		
035B25-0.0-2.0	035B25	0	2				1140	1	X		
035B26-0.0-2.0	035B26	0	2				1005	1	X		
035B26-0.0-2.0-FD	035B26	0	2				1005	1	X		
035B26-3.0-4.0	035B26	3	4				1010	1	X		
035B26-6.0-7.0	035B26	6	7				1013	1	X		
035B26-8.0-9.0	035B26	8	9				1015	1	X	- HOLD SAMPLE	
035B27-0.0-2.0	035B27	0	2				1155	1	X		
035B27-3.0-4.0	035B27	3	4				1200	1	X		
035B27-3.0-4.0-MS	035B27	3	4				1200	1	X		
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS					RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION		DATE/TIME		
					<i>M. M. M.</i>	11/21/18 1900	<i>R.M. / AES</i>		11/2/18 07:40		



Aptim Environmental & Infrastructure, Inc.
 Longhorn Army Ammunition Plant LHAAP-29
HS18120004


Coder 44426
Page 2 of 3
11/11
CF 0.4

COC ID: LHAAP03-NOV2018-ALSHT-1811-29		TURNAROUND TIME: normal		RUSII: Page 3 of 3	
PROJECT/CLIENT INFO			LABORATORY		OTHER INFO
Facility Name: Longhorn AAP	Project Number: 501032		Lab Name: ALS Laboratories		Email Invoice To: FedInvoices@aptim.com
Address: LHAAP-03 1203-B East Grand Avenue PMB 202		City: Marshall	State: TX	Email Report To: Susan.Huang@aptim.com	
Postal Code: 75670	Country: USA	Address: 10450 Stancliff Rd., Suite 210		Mail Reports To: Susan Huang	Address: 4005 Port Chicago Highway, Suit 200
Phone Number: 713.243.7264	Country: USA	City: Houston	State: TX	Postal Code: 77099	City: Concord
Project Manager: Praveen Srivastav		Country: USA	Postal Code: 77099	Country: USA	Postal Code: 94520
			Phone Number: 281.575.2279 or 281.530.5656		Shipping Company: Fedex

SAMPLE DETAILS								ANALYSIS REQUESTED					
Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	Metals (As & Pb) by 6020			
035B27-3.0-4.0-MSD	035B27	3	4	FT	Soil	11/29/18	1200	1	X				
035B27-6.0-7.0	035B27	6	7				1205	1	X				
035B27-8.0-9.0	035B27	8	9				1208	1	X				
035B28-0.0-2.0	035B28	0	2				1215	1	X				
035B28-3.0-4.0	035B28	3	4				1218	1	X				
035B28-6.0-7.0	035B28	6	7				1220	1	X				
035B28-8.0-9.0	035B28	8	9	✓	✓	✓	1224	1	X	- HOLD SAMPLE			


HS18120004

Aptim Environmental & Infrastructure, Inc.
Longhorn Army Ammunition Plant LHAAP-29



ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	<i>[Signature]</i>	11/29/18 1900	<i>[Signature]</i>	11/29/18 09:40

*Order 44426
Trans 2.1
11/29/18
CF-0.1*

 ALS 10450 Stancliff Rd., Suite 2 Houston, Te 77099 Tel. +1 281 5656 Fax. +1 281 5887	CUSTODY SEAL		Taken By: PR Date: 11/30/16
	Date: 11/30/16	Time: 12:00	
	Name: IAH	Company: IAH	

FedEx
 TRACKING: **4380 9534 7170**
AB SGRA 44426 77099
 TX-US IAH
 FRI - 30 NOV 10:30A
 PRIORITY OVERNIGHT



8475872 11/20 58212/EAG/DCAS



10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

August 31, 2019

Susan Huang
Aptim Environmental & Infrastructure, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS19080691**

Laboratory Results for: **LHAAP- Borrow Source**

Dear Susan,

ALS Environmental received 8 sample(s) on Aug 14, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Raj. P. Modashia', enclosed in a simple oval scribble.

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
Work Order: HS19080691

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19080691-01	BS-1-190813	Soil		13-Aug-2019 08:50	14-Aug-2019 08:44	<input type="checkbox"/>
HS19080691-02	BS-2-190813	Soil		13-Aug-2019 08:57	14-Aug-2019 08:44	<input type="checkbox"/>
HS19080691-03	BS-3-190813	Soil		13-Aug-2019 09:04	14-Aug-2019 08:44	<input type="checkbox"/>
HS19080691-04	BS-4-190813	Soil		13-Aug-2019 09:11	14-Aug-2019 08:44	<input type="checkbox"/>
HS19080691-05	BS-5-190813	Soil		13-Aug-2019 09:18	14-Aug-2019 08:44	<input type="checkbox"/>
HS19080691-06	BS-6-190813	Soil		13-Aug-2019 09:24	14-Aug-2019 08:44	<input type="checkbox"/>
HS19080691-07	BS-7-190813	Soil		13-Aug-2019 09:30	14-Aug-2019 08:44	<input type="checkbox"/>
HS19080691-08	BS-8-190813	Soil		13-Aug-2019 09:39	14-Aug-2019 08:44	<input type="checkbox"/>

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
Work Order:

CASE NARRATIVE

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.
- The analysis for Dioxins/Furans was subcontracted to our ALS Houston TX, High Resolution Lab. Final report attached.

GCMS Semivolatiles by Method SW8270**Batch ID: 144158****Sample ID: BS-1-190813 (HS19080691-01MS)**

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

Sample ID: BS-1-190813 (HS19080691-01MSD)

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference. The RPD between the MS and MSD was outside of the control

GCMS Volatiles by Method SW8260**Batch ID: R344632****Sample ID: HS19080725-04MS**

- MS and MSD are for an unrelated sample

HPLC by Method SW8330**Batch ID: 144196**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW7471A**Batch ID: 144271**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020**Batch ID: 144180****Sample ID: BS-1-190813 (HS19080691-01MS)**

- Antimony and Calcium failed on the MS/MSD but passed on the PDS. Barium and Zinc failed on the MS but passed on the MSD and PDS.
- The MS and/or MSD recovery was outside of the control; however, the result in the parent sample is greater than 4x the spike amount. Aluminum, Iron, Vanadium.

Sample ID: BS-1-190813 (HS19080691-01MSD)

- Arsenic, Chromium, Manganese, Potassium and Selenium failed on the MSD but passed on the PDS. Due to non-homogeneity of the soil sample matrix the MS/MSD RPD were outside the control limits for Zinc.

Sample ID: BS-1-190813 (HS19080691-01PDS)

- The PDS recovery was outside method control limits, however the result in the parent sample is greater than 4x the spike amount. Aluminum.

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
Work Order:

CASE NARRATIVE

Metals by Method SW6020

Batch ID: 144600

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

WetChemistry by Method ASTM D2216

Batch ID: R344368

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-1-190813
 Collection Date: 13-Aug-2019 08:50

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED	
VOLATILES ORGANICS BY SW8260C		Method:SW8260						Analyst: WLR	
1,1,1-Trichloroethane	1.4	U	0.59	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
1,1,2,2-Tetrachloroethane	1.4	U	0.95	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
1,1,2-Trichlor-1,2,2-trifluoroethane	1.4	U	0.83	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
1,1,2-Trichloroethane	1.4	U	0.59	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
1,1-Dichloroethane	1.4	U	0.59	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
1,1-Dichloroethene	1.4	U	0.59	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
1,2,4-Trichlorobenzene	1.4	U	1.2	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
1,2-Dibromo-3-chloropropane	3.0	U	1.2	3.0	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
1,2-Dibromoethane	1.4	U	0.59	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
1,2-Dichlorobenzene	1.4	U	1.2	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
1,2-Dichloroethane	1.4	U	0.71	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
1,2-Dichloropropane	1.4	U	0.95	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
1,3-Dichlorobenzene	1.4	U	1.2	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
1,4-Dichlorobenzene	1.4	U	1.2	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
2-Butanone	3.0	U	1.5	3.0	12	ug/Kg-dry	1	20-Aug-2019 20:26	
2-Hexanone	3.0	U	1.7	3.0	12	ug/Kg-dry	1	20-Aug-2019 20:26	
4-Methyl-2-pentanone	3.0	U	2.4	3.0	12	ug/Kg-dry	1	20-Aug-2019 20:26	
Acetone	3.0	U	2.4	3.0	12	ug/Kg-dry	1	20-Aug-2019 20:26	
Benzene	1.4	U	0.59	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
Bromodichloromethane	1.4	U	0.59	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
Bromoform	3.0	U	0.71	3.0	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
Bromomethane	1.4	U	1.2	1.4	12	ug/Kg-dry	1	20-Aug-2019 20:26	
Carbon disulfide	3.0	U	1.2	3.0	12	ug/Kg-dry	1	20-Aug-2019 20:26	
Carbon tetrachloride	1.4	U	0.71	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
Chlorobenzene	1.4	U	0.71	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
Chloroethane	1.4	U	0.95	1.4	12	ug/Kg-dry	1	20-Aug-2019 20:26	
Chloroform	1.4	U	0.59	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
Chloromethane	1.4	U	0.59	1.4	12	ug/Kg-dry	1	20-Aug-2019 20:26	
cis-1,2-Dichloroethene	1.4	U	0.95	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
cis-1,3-Dichloropropene	1.4	U	0.59	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
Cyclohexane	1.4	nU	1.2	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
Dibromochloromethane	1.4	U	0.59	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
Dichlorodifluoromethane	1.4	U	0.83	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
Ethylbenzene	1.4	U	0.83	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
Isopropylbenzene	1.4	U	1.1	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
m,p-Xylene	3.0	U	1.9	3.0	12	ug/Kg-dry	1	20-Aug-2019 20:26	
Methyl acetate	1.4	U	0.83	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
Methyl tert-butyl ether	1.4	U	0.59	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
Methylcyclohexane	1.4	U	1.2	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-1-190813
 Collection Date: 13-Aug-2019 08:50

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED	
VOLATILES ORGANICS BY SW8260C		Method:SW8260						Analyst: WLR	
Methylene chloride	3.0	U	1.2	3.0	12	ug/Kg-dry	1	20-Aug-2019 20:26	
o-Xylene	1.4	U	1.2	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
Styrene	1.4	U	0.83	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
Tetrachloroethene	1.4	U	0.83	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
Toluene	1.4	U	0.71	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
trans-1,2-Dichloroethene	1.4	U	0.59	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
trans-1,3-Dichloropropene	1.4	U	0.71	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
Trichloroethene	1.4	U	0.71	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
Trichlorofluoromethane	1.4	U	0.59	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
Vinyl chloride	1.4	U	0.95	1.4	2.4	ug/Kg-dry	1	20-Aug-2019 20:26	
Xylenes, Total	1.4	U	1.2	1.4	5.9	ug/Kg-dry	1	20-Aug-2019 20:26	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>75.6</i>			<i>0</i>	<i>71-136</i>	<i>%REC</i>	<i>1</i>	<i>20-Aug-2019 20:26</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>84.5</i>			<i>0</i>	<i>79-119</i>	<i>%REC</i>	<i>1</i>	<i>20-Aug-2019 20:26</i>	
<i>Surr: Dibromofluoromethane</i>	<i>82.9</i>			<i>0</i>	<i>78-119</i>	<i>%REC</i>	<i>1</i>	<i>20-Aug-2019 20:26</i>	
<i>Surr: Toluene-d8</i>	<i>85.3</i>			<i>0</i>	<i>85-116</i>	<i>%REC</i>	<i>1</i>	<i>20-Aug-2019 20:26</i>	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-1-190813
 Collection Date: 13-Aug-2019 08:50

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES BY 8270D		Method:SW8270				Prep:SW3541 / 14-Aug-2019		Analyst: SGA
1,1'-Biphenyl	110	U	43	110	180	ug/Kg-dry	1	15-Aug-2019 13:16
2,4,5-Trichlorophenol	35	U	22	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
2,4,6-Trichlorophenol	35	U	12	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
2,4-Dichlorophenol	35	U	13	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
2,4-Dimethylphenol	35	U	14	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
2,4-Dinitrophenol	110	U	12	110	180	ug/Kg-dry	1	15-Aug-2019 13:16
2,4-Dinitrotoluene	35	U	14	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
2,6-Dinitrotoluene	35	U	11	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
2-Chloronaphthalene	35	U	13	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
2-Chlorophenol	35	U	11	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
2-Methylnaphthalene	35	U	28	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
2-Methylphenol	35	U	14	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
2-Nitroaniline	35	U	17	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
2-Nitrophenol	35	U	19	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
3&4-Methylphenol	35	U	14	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
3,3'-Dichlorobenzidine	35	U	20	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
3-Nitroaniline	35	U	16	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
4,6-Dinitro-2-methylphenol	35	U	17	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
4-Bromophenyl phenyl ether	35	U	16	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
4-Chloro-3-methylphenol	110	U	35	110	180	ug/Kg-dry	1	15-Aug-2019 13:16
4-Chloroaniline	35	U	16	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
4-Chlorophenyl phenyl ether	35	U	17	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
4-Nitroaniline	35	U	14	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
4-Nitrophenol	35	U	17	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Acenaphthene	35	U	16	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Acenaphthylene	35	U	12	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Acetophenone	35	U	12	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Anthracene	35	U	13	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Atrazine	110	U	42	110	180	ug/Kg-dry	1	15-Aug-2019 13:16
Benzaldehyde	110	nU	42	110	180	ug/Kg-dry	1	15-Aug-2019 13:16
Benzo(a)anthracene	35	U	21	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Benzo(a)pyrene	35	U	13	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Benzo(b)fluoranthene	35	U	13	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Benzo(g,h,i)perylene	12	J	12	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Benzo(k)fluoranthene	35	U	16	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Bis(2-chloroethoxy)methane	35	U	13	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Bis(2-chloroethyl)ether	35	U	14	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Bis(2-chloroisopropyl)ether	35	U	12	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Bis(2-ethylhexyl)phthalate	35	U	14	35	180	ug/Kg-dry	1	15-Aug-2019 13:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-1-190813
 Collection Date: 13-Aug-2019 08:50

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES BY 8270D		Method:SW8270				Prep:SW3541 / 14-Aug-2019		Analyst: SGA
Butyl benzyl phthalate	35	U	13	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Caprolactam	110	U	54	110	180	ug/Kg-dry	1	15-Aug-2019 13:16
Carbazole	35	U	14	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Chrysene	35	U	18	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Di-n-butyl phthalate	35	U	13	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Di-n-octyl phthalate	35	U	20	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Dibenz(a,h)anthracene	35	U	16	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Dibenzofuran	35	U	15	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Diethyl phthalate	35	U	13	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Dimethyl phthalate	35	U	16	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Fluoranthene	35	U	15	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Fluorene	35	U	18	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Hexachlorobenzene	35	U	16	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Hexachlorobutadiene	35	U	15	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Hexachlorocyclopentadiene	35	U	15	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Hexachloroethane	35	U	12	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Indeno(1,2,3-cd)pyrene	35	U	15	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Isophorone	35	U	12	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
N-Nitrosodi-n-propylamine	35	U	18	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
N-Nitrosodiphenylamine	35	U	13	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Naphthalene	35	U	14	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Nitrobenzene	35	U	15	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Pentachlorophenol	35	U	12	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Phenanthrene	35	U	15	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Phenol	35	U	12	35	180	ug/Kg-dry	1	15-Aug-2019 13:16
Pyrene	110	U	45	110	180	ug/Kg-dry	1	15-Aug-2019 13:16
<i>Surr: 2,4,6-Tribromophenol</i>	<i>109</i>			0	<i>39-132</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 13:16</i>
<i>Surr: 2-Fluorobiphenyl</i>	<i>78.2</i>			0	<i>44-115</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 13:16</i>
<i>Surr: 2-Fluorophenol</i>	<i>64.7</i>			0	<i>35-115</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 13:16</i>
<i>Surr: 4-Terphenyl-d14</i>	<i>70.8</i>			0	<i>54-127</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 13:16</i>
<i>Surr: Nitrobenzene-d5</i>	<i>69.6</i>			0	<i>37-122</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 13:16</i>
<i>Surr: Phenol-d6</i>	<i>63.9</i>			0	<i>33-122</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 13:16</i>

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-1-190813
 Collection Date: 13-Aug-2019 08:50

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
EXPLOSIVES BY SW8330A			Method:SW8330			Prep:SW8330 / 15-Aug-2019		Analyst: NPI
1,3,5-Trinitrobenzene	26.6	U	12.7	26.6	63.9	ug/Kg-dry	1	18-Aug-2019 17:44
1,3-Dinitrobenzene	26.6	U	13.1	26.6	63.9	ug/Kg-dry	1	18-Aug-2019 17:44
2,4,6-Trinitrotoluene	26.6	U	5.28	26.6	63.9	ug/Kg-dry	1	18-Aug-2019 17:44
2,4-Dinitrotoluene	26.6	U	4.73	26.6	63.9	ug/Kg-dry	1	18-Aug-2019 17:44
2,6-Dinitrotoluene	26.6	U	11.5	26.6	63.9	ug/Kg-dry	1	18-Aug-2019 17:44
2-Amino-4,6-dinitrotoluene	26.6	U	9.90	26.6	63.9	ug/Kg-dry	1	18-Aug-2019 17:44
2-Nitrotoluene	26.6	U	9.87	26.6	63.9	ug/Kg-dry	1	18-Aug-2019 17:44
3-Nitrotoluene	26.6	U	5.23	26.6	63.9	ug/Kg-dry	1	18-Aug-2019 17:44
4-Amino-2,6-dinitrotoluene	26.6	U	10.4	26.6	63.9	ug/Kg-dry	1	18-Aug-2019 17:44
4-Nitrotoluene	26.6	U	11.9	26.6	63.9	ug/Kg-dry	1	18-Aug-2019 17:44
HMX	26.6	U	9.95	26.6	63.9	ug/Kg-dry	1	18-Aug-2019 17:44
Nitrobenzene	26.6	U	12.1	26.6	63.9	ug/Kg-dry	1	18-Aug-2019 17:44
RDX	26.6	U	6.45	26.6	63.9	ug/Kg-dry	1	18-Aug-2019 17:44
<i>Surr: 1,2-Dinitrobenzene</i>	<i>81.8</i>			<i>0</i>	<i>50-150</i>	<i>%REC</i>	<i>1</i>	<i>18-Aug-2019 17:44</i>
METALS BY SW6020A			Method:SW6020			Prep:SW3050A / 15-Aug-2019		Analyst: JC
Aluminum	21,000		47.4	204	408	mg/Kg-dry	200	21-Aug-2019 13:07
Antimony	0.237	J	0.0664	0.102	0.511	mg/Kg-dry	1	20-Aug-2019 16:30
Arsenic	17.4		0.357	0.511	2.55	mg/Kg-dry	5	20-Aug-2019 17:37
Barium	17.2		0.0306	0.102	0.511	mg/Kg-dry	1	20-Aug-2019 16:30
Beryllium	0.216	J	0.0214	0.102	0.511	mg/Kg-dry	1	20-Aug-2019 16:30
Cadmium	0.102	U	0.0276	0.102	0.511	mg/Kg-dry	1	20-Aug-2019 16:30
Calcium	34.8	J	5.07	10.2	51.1	mg/Kg-dry	1	20-Aug-2019 16:30
Chromium	33.0		0.117	0.511	2.55	mg/Kg-dry	5	20-Aug-2019 17:37
Cobalt	0.793		0.0153	0.102	0.511	mg/Kg-dry	1	20-Aug-2019 16:30
Copper	3.42		0.0388	0.102	0.204	mg/Kg-dry	1	20-Aug-2019 16:30
Iron	56,600		374	2040	10200	mg/Kg-dry	200	21-Aug-2019 13:07
Lead	10.2		0.0133	0.102	0.511	mg/Kg-dry	1	20-Aug-2019 16:30
Magnesium	382		12.8	51.1	255	mg/Kg-dry	5	20-Aug-2019 17:37
Manganese	11.1		0.220	0.511	2.55	mg/Kg-dry	5	20-Aug-2019 17:37
Nickel	4.08		0.245	0.511	2.55	mg/Kg-dry	5	20-Aug-2019 17:37
Potassium	535		6.86	10.2	51.1	mg/Kg-dry	1	20-Aug-2019 16:30
Selenium	0.734		0.0929	0.102	0.511	mg/Kg-dry	1	20-Aug-2019 16:30
Silver	0.0302	J	0.0153	0.102	0.511	mg/Kg-dry	1	20-Aug-2019 16:30
Sodium	11.5	J	4.26	10.2	51.1	mg/Kg-dry	1	20-Aug-2019 16:30
Thallium	0.255	U	0.228	0.255	0.511	mg/Kg-dry	1	20-Aug-2019 16:30
Vanadium	78.2		0.383	0.511	2.55	mg/Kg-dry	5	20-Aug-2019 17:37
Zinc	11.8		0.868	1.02	2.55	mg/Kg-dry	5	20-Aug-2019 17:37
MERCURY BY SW7471B			Method:SW7471A			Prep:SW7471A / 19-Aug-2019		Analyst: FO
Mercury	23.4		0.521	1.66	3.69	ug/Kg-dry	1	19-Aug-2019 18:58

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ANALYTICAL REPORT

WorkOrder:HS19080691
 Lab ID:HS19080691-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216		Method:ASTM D2216						Analyst: DFF
Percent Moisture	6.06		0.0100	0.0100	0.0100	wt%	1	15-Aug-2019 11:16
SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A		Method:NA						Analyst: SUB
Subcontract Analysis	See Attached		0	0			1	23-Aug-2019 16:44
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		Method:NA						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA-dry	1	20-Aug-2019 14:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-2-190813
 Collection Date: 13-Aug-2019 08:57

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-02
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED	
VOLATILES ORGANICS BY SW8260C		Method:SW8260						Analyst: WLR	
1,1,1-Trichloroethane	1.2	U	0.48	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
1,1,2,2-Tetrachloroethane	1.2	U	0.77	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
1,1,2-Trichlor-1,2,2-trifluoroethane	1.2	U	0.67	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
1,1,2-Trichloroethane	1.2	U	0.48	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
1,1-Dichloroethane	1.2	U	0.48	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
1,1-Dichloroethene	1.2	U	0.48	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
1,2,4-Trichlorobenzene	1.2	U	0.96	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
1,2-Dibromo-3-chloropropane	2.4	U	0.96	2.4	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
1,2-Dibromoethane	1.2	U	0.48	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
1,2-Dichlorobenzene	1.2	U	0.96	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
1,2-Dichloroethane	1.2	U	0.58	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
1,2-Dichloropropane	1.2	U	0.77	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
1,3-Dichlorobenzene	1.2	U	0.96	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
1,4-Dichlorobenzene	1.2	U	0.96	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
2-Butanone	2.4	U	1.2	2.4	9.6	ug/Kg-dry	1	20-Aug-2019 20:49	
2-Hexanone	2.4	U	1.3	2.4	9.6	ug/Kg-dry	1	20-Aug-2019 20:49	
4-Methyl-2-pentanone	2.4	U	1.9	2.4	9.6	ug/Kg-dry	1	20-Aug-2019 20:49	
Acetone	2.4	U	1.9	2.4	9.6	ug/Kg-dry	1	20-Aug-2019 20:49	
Benzene	1.2	U	0.48	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
Bromodichloromethane	1.2	U	0.48	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
Bromoform	2.4	U	0.58	2.4	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
Bromomethane	1.2	U	0.96	1.2	9.6	ug/Kg-dry	1	20-Aug-2019 20:49	
Carbon disulfide	2.4	U	0.96	2.4	9.6	ug/Kg-dry	1	20-Aug-2019 20:49	
Carbon tetrachloride	1.2	U	0.58	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
Chlorobenzene	1.2	U	0.58	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
Chloroethane	1.2	U	0.77	1.2	9.6	ug/Kg-dry	1	20-Aug-2019 20:49	
Chloroform	1.2	U	0.48	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
Chloromethane	1.2	U	0.48	1.2	9.6	ug/Kg-dry	1	20-Aug-2019 20:49	
cis-1,2-Dichloroethene	1.2	U	0.77	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
cis-1,3-Dichloropropene	1.2	U	0.48	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
Cyclohexane	1.2	nU	0.96	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
Dibromochloromethane	1.2	U	0.48	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
Dichlorodifluoromethane	1.2	U	0.67	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
Ethylbenzene	1.2	U	0.67	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
Isopropylbenzene	1.2	U	0.86	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
m,p-Xylene	2.4	U	1.5	2.4	9.6	ug/Kg-dry	1	20-Aug-2019 20:49	
Methyl acetate	1.2	U	0.67	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
Methyl tert-butyl ether	1.2	U	0.48	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
Methylcyclohexane	1.2	U	0.96	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	

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Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-2-190813
 Collection Date: 13-Aug-2019 08:57

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-02
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED	
VOLATILES ORGANICS BY SW8260C		Method:SW8260						Analyst: WLR	
Methylene chloride	2.4	U	0.96	2.4	9.6	ug/Kg-dry	1	20-Aug-2019 20:49	
o-Xylene	1.2	U	0.96	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
Styrene	1.2	U	0.67	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
Tetrachloroethene	1.2	U	0.67	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
Toluene	1.2	U	0.58	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
trans-1,2-Dichloroethene	1.2	U	0.48	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
trans-1,3-Dichloropropene	1.2	U	0.58	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
Trichloroethene	1.2	U	0.58	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
Trichlorofluoromethane	1.2	U	0.48	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
Vinyl chloride	1.2	U	0.77	1.2	1.9	ug/Kg-dry	1	20-Aug-2019 20:49	
Xylenes, Total	1.2	U	0.96	1.2	4.8	ug/Kg-dry	1	20-Aug-2019 20:49	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>79.7</i>			0	<i>71-136</i>	<i>%REC</i>	<i>1</i>	<i>20-Aug-2019 20:49</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>86.7</i>			0	<i>79-119</i>	<i>%REC</i>	<i>1</i>	<i>20-Aug-2019 20:49</i>	
<i>Surr: Dibromofluoromethane</i>	<i>82.5</i>			0	<i>78-119</i>	<i>%REC</i>	<i>1</i>	<i>20-Aug-2019 20:49</i>	
<i>Surr: Toluene-d8</i>	<i>86.2</i>			0	<i>85-116</i>	<i>%REC</i>	<i>1</i>	<i>20-Aug-2019 20:49</i>	

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ANALYTICAL REPORT
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 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES BY 8270D		Method:SW8270				Prep:SW3541 / 14-Aug-2019		Analyst: SGA
1,1'-Biphenyl	110	U	44	110	180	ug/Kg-dry	1	15-Aug-2019 14:19
2,4,5-Trichlorophenol	36	U	23	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
2,4,6-Trichlorophenol	36	U	12	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
2,4-Dichlorophenol	36	U	13	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
2,4-Dimethylphenol	36	U	14	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
2,4-Dinitrophenol	110	U	12	110	180	ug/Kg-dry	1	15-Aug-2019 14:19
2,4-Dinitrotoluene	36	U	14	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
2,6-Dinitrotoluene	36	U	11	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
2-Chloronaphthalene	36	U	13	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
2-Chlorophenol	36	U	11	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
2-Methylnaphthalene	36	U	29	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
2-Methylphenol	36	U	14	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
2-Nitroaniline	36	U	17	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
2-Nitrophenol	36	U	19	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
3&4-Methylphenol	36	U	14	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
3,3'-Dichlorobenzidine	36	U	21	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
3-Nitroaniline	36	U	16	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
4,6-Dinitro-2-methylphenol	36	U	17	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
4-Bromophenyl phenyl ether	36	U	16	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
4-Chloro-3-methylphenol	110	U	36	110	180	ug/Kg-dry	1	15-Aug-2019 14:19
4-Chloroaniline	36	U	16	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
4-Chlorophenyl phenyl ether	36	U	17	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
4-Nitroaniline	36	U	14	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
4-Nitrophenol	36	U	17	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Acenaphthene	36	U	16	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Acenaphthylene	36	U	12	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Acetophenone	36	U	12	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Anthracene	36	U	13	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Atrazine	110	U	43	110	180	ug/Kg-dry	1	15-Aug-2019 14:19
Benzaldehyde	110	nU	43	110	180	ug/Kg-dry	1	15-Aug-2019 14:19
Benzo(a)anthracene	36	U	22	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Benzo(a)pyrene	36	U	13	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Benzo(b)fluoranthene	36	U	13	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Benzo(g,h,i)perylene	36	U	12	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Benzo(k)fluoranthene	36	U	16	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Bis(2-chloroethoxy)methane	36	U	13	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Bis(2-chloroethyl)ether	36	U	14	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Bis(2-chloroisopropyl)ether	36	U	12	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Bis(2-ethylhexyl)phthalate	36	U	14	36	180	ug/Kg-dry	1	15-Aug-2019 14:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-2-190813
 Collection Date: 13-Aug-2019 08:57

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-02
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES BY 8270D		Method:SW8270				Prep:SW3541 / 14-Aug-2019		Analyst: SGA
Butyl benzyl phthalate	36	U	13	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Caprolactam	110	U	55	110	180	ug/Kg-dry	1	15-Aug-2019 14:19
Carbazole	36	U	14	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Chrysene	36	U	18	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Di-n-butyl phthalate	36	U	13	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Di-n-octyl phthalate	36	U	21	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Dibenz(a,h)anthracene	36	U	16	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Dibenzofuran	36	U	15	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Diethyl phthalate	36	U	13	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Dimethyl phthalate	36	U	16	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Fluoranthene	24	J	15	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Fluorene	36	U	18	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Hexachlorobenzene	36	U	16	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Hexachlorobutadiene	36	U	15	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Hexachlorocyclopentadiene	36	U	15	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Hexachloroethane	36	U	12	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Indeno(1,2,3-cd)pyrene	36	U	15	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Isophorone	36	U	12	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
N-Nitrosodi-n-propylamine	36	U	18	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
N-Nitrosodiphenylamine	36	U	13	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Naphthalene	36	U	14	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Nitrobenzene	36	U	15	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Pentachlorophenol	36	U	12	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Phenanthrene	37	J	15	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Phenol	36	U	12	36	180	ug/Kg-dry	1	15-Aug-2019 14:19
Pyrene	110	U	47	110	180	ug/Kg-dry	1	15-Aug-2019 14:19
<i>Surr: 2,4,6-Tribromophenol</i>	<i>119</i>			0	<i>39-132</i>	%REC	<i>1</i>	<i>15-Aug-2019 14:19</i>
<i>Surr: 2-Fluorobiphenyl</i>	<i>85.3</i>			0	<i>44-115</i>	%REC	<i>1</i>	<i>15-Aug-2019 14:19</i>
<i>Surr: 2-Fluorophenol</i>	<i>67.5</i>			0	<i>35-115</i>	%REC	<i>1</i>	<i>15-Aug-2019 14:19</i>
<i>Surr: 4-Terphenyl-d14</i>	<i>79.8</i>			0	<i>54-127</i>	%REC	<i>1</i>	<i>15-Aug-2019 14:19</i>
<i>Surr: Nitrobenzene-d5</i>	<i>73.0</i>			0	<i>37-122</i>	%REC	<i>1</i>	<i>15-Aug-2019 14:19</i>
<i>Surr: Phenol-d6</i>	<i>62.2</i>			0	<i>33-122</i>	%REC	<i>1</i>	<i>15-Aug-2019 14:19</i>

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-2-190813
 Collection Date: 13-Aug-2019 08:57

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-02
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED	
EXPLOSIVES BY SW8330A		Method:SW8330				Prep:SW8330 / 15-Aug-2019		Analyst: NPI	
1,3,5-Trinitrobenzene	27.3	U	13.0	27.3	65.5	ug/Kg-dry	1	18-Aug-2019 19:50	
1,3-Dinitrobenzene	27.3	U	13.4	27.3	65.5	ug/Kg-dry	1	18-Aug-2019 19:50	
2,4,6-Trinitrotoluene	27.3	U	5.42	27.3	65.5	ug/Kg-dry	1	18-Aug-2019 19:50	
2,4-Dinitrotoluene	27.3	U	4.85	27.3	65.5	ug/Kg-dry	1	18-Aug-2019 19:50	
2,6-Dinitrotoluene	27.3	U	11.8	27.3	65.5	ug/Kg-dry	1	18-Aug-2019 19:50	
2-Amino-4,6-dinitrotoluene	27.3	U	10.2	27.3	65.5	ug/Kg-dry	1	18-Aug-2019 19:50	
2-Nitrotoluene	27.3	U	10.1	27.3	65.5	ug/Kg-dry	1	18-Aug-2019 19:50	
3-Nitrotoluene	27.3	U	5.36	27.3	65.5	ug/Kg-dry	1	18-Aug-2019 19:50	
4-Amino-2,6-dinitrotoluene	27.3	U	10.7	27.3	65.5	ug/Kg-dry	1	18-Aug-2019 19:50	
4-Nitrotoluene	27.3	U	12.2	27.3	65.5	ug/Kg-dry	1	18-Aug-2019 19:50	
HMX	27.3	U	10.2	27.3	65.5	ug/Kg-dry	1	18-Aug-2019 19:50	
Nitrobenzene	27.3	U	12.4	27.3	65.5	ug/Kg-dry	1	18-Aug-2019 19:50	
RDX	27.3	U	6.62	27.3	65.5	ug/Kg-dry	1	18-Aug-2019 19:50	
<i>Surr: 1,2-Dinitrobenzene</i>	<i>82.4</i>			0	<i>50-150</i>	<i>%REC</i>	<i>1</i>	<i>18-Aug-2019 19:50</i>	
SPLP METALS BY SW6020A		Method:SW6020			Leache:SW1312 / 27-Aug-2019		Prep:SW3010A / 27-Aug-2019		Analyst: JC
Chromium	0.00100	U	0.000400	0.00100	0.00500	mg/L	1	27-Aug-2019 20:31	
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	27-Aug-2019 20:31	

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Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
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ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-02
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A			Method:SW6020			Prep:SW3050A / 15-Aug-2019		Analyst: JC
Aluminum	17,900		48.5	209	418	mg/Kg-dry	200	21-Aug-2019 13:13
Antimony	0.276	J	0.0680	0.105	0.523	mg/Kg-dry	1	20-Aug-2019 16:47
Arsenic	22.9		0.0732	0.105	0.523	mg/Kg-dry	1	20-Aug-2019 16:47
Barium	19.7		0.0314	0.105	0.523	mg/Kg-dry	1	20-Aug-2019 16:47
Beryllium	0.279	J	0.0220	0.105	0.523	mg/Kg-dry	1	20-Aug-2019 16:47
Cadmium	0.105	U	0.0282	0.105	0.523	mg/Kg-dry	1	20-Aug-2019 16:47
Calcium	82.0		5.19	10.5	52.3	mg/Kg-dry	1	20-Aug-2019 16:47
Chromium	56.3		0.0240	0.105	0.523	mg/Kg-dry	1	20-Aug-2019 16:47
Cobalt	0.982		0.0157	0.105	0.523	mg/Kg-dry	1	20-Aug-2019 16:47
Copper	3.57		0.0397	0.105	0.209	mg/Kg-dry	1	20-Aug-2019 16:47
Iron	74,000		383	2090	10500	mg/Kg-dry	200	21-Aug-2019 13:13
Lead	9.35		0.0136	0.105	0.523	mg/Kg-dry	1	20-Aug-2019 16:47
Magnesium	319		2.62	10.5	52.3	mg/Kg-dry	1	20-Aug-2019 16:47
Manganese	21.0		0.0450	0.105	0.523	mg/Kg-dry	1	20-Aug-2019 16:47
Nickel	3.48		0.0502	0.105	0.523	mg/Kg-dry	1	20-Aug-2019 16:47
Potassium	406		7.03	10.5	52.3	mg/Kg-dry	1	20-Aug-2019 16:47
Selenium	1.12		0.0952	0.105	0.523	mg/Kg-dry	1	20-Aug-2019 16:47
Silver	0.0366	J	0.0157	0.105	0.523	mg/Kg-dry	1	20-Aug-2019 16:47
Sodium	10.9	J	4.36	10.5	52.3	mg/Kg-dry	1	20-Aug-2019 16:47
Thallium	0.261	U	0.233	0.261	0.523	mg/Kg-dry	1	20-Aug-2019 16:47
Vanadium	106		0.0784	0.105	0.523	mg/Kg-dry	1	20-Aug-2019 16:47
Zinc	11.0		0.178	0.209	0.523	mg/Kg-dry	1	20-Aug-2019 16:47
MERCURY BY SW7471B			Method:SW7471A			Prep:SW7471A / 19-Aug-2019		Analyst: FO
Mercury	25.5		0.538	1.72	3.80	ug/Kg-dry	1	19-Aug-2019 19:03
MOISTURE - ASTM D2216			Method:ASTM D2216					Analyst: DFF
Percent Moisture	8.43		0.0100	0.0100	0.0100	wt%	1	15-Aug-2019 11:16
SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A			Method:NA					Analyst: SUB
Subcontract Analysis	See Attached		0	0			1	23-Aug-2019 16:44
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			Method:NA					Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA-dry	1	20-Aug-2019 14:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-3-190813
 Collection Date: 13-Aug-2019 09:04

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-03
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY SW8260C		Method:SW8260						
								Analyst: WLR
1,1,1-Trichloroethane	1.2	U	0.49	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
1,1,2,2-Tetrachloroethane	1.2	U	0.79	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
1,1,2-Trichlor-1,2,2-trifluoroethane	1.2	U	0.69	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
1,1,2-Trichloroethane	1.2	U	0.49	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
1,1-Dichloroethane	1.2	U	0.49	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
1,1-Dichloroethene	1.2	U	0.49	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
1,2,4-Trichlorobenzene	1.2	U	0.99	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
1,2-Dibromo-3-chloropropane	2.5	U	0.99	2.5	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
1,2-Dibromoethane	1.2	U	0.49	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
1,2-Dichlorobenzene	1.2	U	0.99	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
1,2-Dichloroethane	1.2	U	0.59	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
1,2-Dichloropropane	1.2	U	0.79	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
1,3-Dichlorobenzene	1.2	U	0.99	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
1,4-Dichlorobenzene	1.2	U	0.99	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
2-Butanone	2.5	U	1.3	2.5	9.9	ug/Kg-dry	1	20-Aug-2019 21:12
2-Hexanone	2.5	U	1.4	2.5	9.9	ug/Kg-dry	1	20-Aug-2019 21:12
4-Methyl-2-pentanone	2.5	U	2.0	2.5	9.9	ug/Kg-dry	1	20-Aug-2019 21:12
Acetone	2.5	U	2.0	2.5	9.9	ug/Kg-dry	1	20-Aug-2019 21:12
Benzene	1.2	U	0.49	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
Bromodichloromethane	1.2	U	0.49	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
Bromoform	2.5	U	0.59	2.5	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
Bromomethane	1.2	U	0.99	1.2	9.9	ug/Kg-dry	1	20-Aug-2019 21:12
Carbon disulfide	2.5	U	0.99	2.5	9.9	ug/Kg-dry	1	20-Aug-2019 21:12
Carbon tetrachloride	1.2	U	0.59	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
Chlorobenzene	1.2	U	0.59	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
Chloroethane	1.2	U	0.79	1.2	9.9	ug/Kg-dry	1	20-Aug-2019 21:12
Chloroform	1.2	U	0.49	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
Chloromethane	1.2	U	0.49	1.2	9.9	ug/Kg-dry	1	20-Aug-2019 21:12
cis-1,2-Dichloroethene	1.2	U	0.79	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
cis-1,3-Dichloropropene	1.2	U	0.49	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
Cyclohexane	1.2	nU	0.99	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
Dibromochloromethane	1.2	U	0.49	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
Dichlorodifluoromethane	1.2	U	0.69	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
Ethylbenzene	1.2	U	0.69	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
Isopropylbenzene	1.2	U	0.89	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
m,p-Xylene	2.5	U	1.6	2.5	9.9	ug/Kg-dry	1	20-Aug-2019 21:12
Methyl acetate	1.2	U	0.69	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
Methyl tert-butyl ether	1.2	U	0.49	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12
Methylcyclohexane	1.2	U	0.99	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-3-190813
 Collection Date: 13-Aug-2019 09:04

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-03
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED	
VOLATILES ORGANICS BY SW8260C		Method:SW8260						Analyst: WLR	
Methylene chloride	2.5	U	0.99	2.5	9.9	ug/Kg-dry	1	20-Aug-2019 21:12	
o-Xylene	1.2	U	0.99	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12	
Styrene	1.2	U	0.69	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12	
Tetrachloroethene	1.2	U	0.69	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12	
Toluene	1.2	U	0.59	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12	
trans-1,2-Dichloroethene	1.2	U	0.49	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12	
trans-1,3-Dichloropropene	1.2	U	0.59	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12	
Trichloroethene	1.2	U	0.59	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12	
Trichlorofluoromethane	1.2	U	0.49	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12	
Vinyl chloride	1.2	U	0.79	1.2	2.0	ug/Kg-dry	1	20-Aug-2019 21:12	
Xylenes, Total	1.2	U	0.99	1.2	4.9	ug/Kg-dry	1	20-Aug-2019 21:12	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>78.8</i>			0	<i>71-136</i>	<i>%REC</i>	<i>1</i>	<i>20-Aug-2019 21:12</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>87.0</i>			0	<i>79-119</i>	<i>%REC</i>	<i>1</i>	<i>20-Aug-2019 21:12</i>	
<i>Surr: Dibromofluoromethane</i>	<i>84.5</i>			0	<i>78-119</i>	<i>%REC</i>	<i>1</i>	<i>20-Aug-2019 21:12</i>	
<i>Surr: Toluene-d8</i>	<i>89.5</i>			0	<i>85-116</i>	<i>%REC</i>	<i>1</i>	<i>20-Aug-2019 21:12</i>	

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ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-03
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES BY 8270D		Method:SW8270				Prep:SW3541 / 14-Aug-2019		Analyst: SGA
1,1'-Biphenyl	100	U	43	100	170	ug/Kg-dry	1	15-Aug-2019 14:40
2,4,5-Trichlorophenol	34	U	22	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
2,4,6-Trichlorophenol	34	U	11	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
2,4-Dichlorophenol	34	U	13	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
2,4-Dimethylphenol	34	U	14	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
2,4-Dinitrophenol	100	U	11	100	170	ug/Kg-dry	1	15-Aug-2019 14:40
2,4-Dinitrotoluene	34	U	14	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
2,6-Dinitrotoluene	34	U	10	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
2-Chloronaphthalene	34	U	13	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
2-Chlorophenol	34	U	10	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
2-Methylnaphthalene	34	U	28	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
2-Methylphenol	34	U	14	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
2-Nitroaniline	34	U	17	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
2-Nitrophenol	34	U	19	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
3&4-Methylphenol	34	U	14	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
3,3'-Dichlorobenzidine	34	U	20	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
3-Nitroaniline	34	U	16	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
4,6-Dinitro-2-methylphenol	34	U	17	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
4-Bromophenyl phenyl ether	34	U	16	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
4-Chloro-3-methylphenol	100	U	34	100	170	ug/Kg-dry	1	15-Aug-2019 14:40
4-Chloroaniline	34	U	16	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
4-Chlorophenyl phenyl ether	34	U	17	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
4-Nitroaniline	34	U	14	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
4-Nitrophenol	100	U	17	100	170	ug/Kg-dry	1	15-Aug-2019 14:40
Acenaphthene	34	U	16	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Acenaphthylene	34	U	11	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Acetophenone	34	U	11	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Anthracene	34	U	13	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Atrazine	100	U	42	100	170	ug/Kg-dry	1	15-Aug-2019 14:40
Benzaldehyde	100	nU	42	100	170	ug/Kg-dry	1	15-Aug-2019 14:40
Benzo(a)anthracene	34	U	21	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Benzo(a)pyrene	34	U	13	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Benzo(b)fluoranthene	34	U	13	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Benzo(g,h,i)perylene	34	U	11	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Benzo(k)fluoranthene	34	U	16	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Bis(2-chloroethoxy)methane	34	U	13	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Bis(2-chloroethyl)ether	34	U	14	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Bis(2-chloroisopropyl)ether	34	U	11	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Bis(2-ethylhexyl)phthalate	34	U	14	34	170	ug/Kg-dry	1	15-Aug-2019 14:40

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-3-190813
 Collection Date: 13-Aug-2019 09:04

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-03
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES BY 8270D		Method:SW8270				Prep:SW3541 / 14-Aug-2019		Analyst: SGA
Butyl benzyl phthalate	34	U	13	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Caprolactam	100	U	53	100	170	ug/Kg-dry	1	15-Aug-2019 14:40
Carbazole	34	U	14	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Chrysene	34	U	18	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Di-n-butyl phthalate	34	U	13	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Di-n-octyl phthalate	34	U	20	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Dibenz(a,h)anthracene	34	U	16	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Dibenzofuran	34	U	15	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Diethyl phthalate	34	U	13	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Dimethyl phthalate	34	U	16	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Fluoranthene	34	U	15	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Fluorene	34	U	18	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Hexachlorobenzene	34	U	16	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Hexachlorobutadiene	34	U	15	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Hexachlorocyclopentadiene	34	U	15	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Hexachloroethane	34	U	11	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Indeno(1,2,3-cd)pyrene	34	U	15	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Isophorone	34	U	11	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
N-Nitrosodi-n-propylamine	34	U	18	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
N-Nitrosodiphenylamine	34	U	13	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Naphthalene	34	U	14	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Nitrobenzene	34	U	15	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Pentachlorophenol	34	U	11	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Phenanthrene	34	U	15	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Phenol	34	U	11	34	170	ug/Kg-dry	1	15-Aug-2019 14:40
Pyrene	100	U	45	100	170	ug/Kg-dry	1	15-Aug-2019 14:40
<i>Surr: 2,4,6-Tribromophenol</i>	<i>120</i>			<i>0</i>	<i>39-132</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 14:40</i>
<i>Surr: 2-Fluorobiphenyl</i>	<i>78.1</i>			<i>0</i>	<i>44-115</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 14:40</i>
<i>Surr: 2-Fluorophenol</i>	<i>41.3</i>			<i>0</i>	<i>35-115</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 14:40</i>
<i>Surr: 4-Terphenyl-d14</i>	<i>76.8</i>			<i>0</i>	<i>54-127</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 14:40</i>
<i>Surr: Nitrobenzene-d5</i>	<i>53.4</i>			<i>0</i>	<i>37-122</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 14:40</i>
<i>Surr: Phenol-d6</i>	<i>40.7</i>			<i>0</i>	<i>33-122</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 14:40</i>

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-3-190813
 Collection Date: 13-Aug-2019 09:04

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-03
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
EXPLOSIVES BY SW8330A			Method:SW8330			Prep:SW8330 / 15-Aug-2019		Analyst: NPI
1,3,5-Trinitrobenzene	26.5	U	12.6	26.5	63.7	ug/Kg-dry	1	18-Aug-2019 20:32
1,3-Dinitrobenzene	26.5	U	13.0	26.5	63.7	ug/Kg-dry	1	18-Aug-2019 20:32
2,4,6-Trinitrotoluene	26.5	U	5.26	26.5	63.7	ug/Kg-dry	1	18-Aug-2019 20:32
2,4-Dinitrotoluene	26.5	U	4.71	26.5	63.7	ug/Kg-dry	1	18-Aug-2019 20:32
2,6-Dinitrotoluene	26.5	U	11.5	26.5	63.7	ug/Kg-dry	1	18-Aug-2019 20:32
2-Amino-4,6-dinitrotoluene	26.5	U	9.87	26.5	63.7	ug/Kg-dry	1	18-Aug-2019 20:32
2-Nitrotoluene	26.5	U	9.83	26.5	63.7	ug/Kg-dry	1	18-Aug-2019 20:32
3-Nitrotoluene	26.5	U	5.21	26.5	63.7	ug/Kg-dry	1	18-Aug-2019 20:32
4-Amino-2,6-dinitrotoluene	26.5	U	10.4	26.5	63.7	ug/Kg-dry	1	18-Aug-2019 20:32
4-Nitrotoluene	26.5	U	11.9	26.5	63.7	ug/Kg-dry	1	18-Aug-2019 20:32
HMX	26.5	U	9.92	26.5	63.7	ug/Kg-dry	1	18-Aug-2019 20:32
Nitrobenzene	26.5	U	12.1	26.5	63.7	ug/Kg-dry	1	18-Aug-2019 20:32
RDX	26.5	U	6.43	26.5	63.7	ug/Kg-dry	1	18-Aug-2019 20:32
<i>Surr: 1,2-Dinitrobenzene</i>	<i>84.4</i>			<i>0</i>	<i>50-150</i>	<i>%REC</i>	<i>1</i>	<i>18-Aug-2019 20:32</i>
METALS BY SW6020A			Method:SW6020			Prep:SW3050A / 15-Aug-2019		Analyst: JC
Aluminum	5,610		23.3	101	201	mg/Kg-dry	100	21-Aug-2019 13:16
Antimony	0.0953	J	0.0654	0.101	0.503	mg/Kg-dry	1	20-Aug-2019 16:49
Arsenic	4.18		0.0704	0.101	0.503	mg/Kg-dry	1	20-Aug-2019 16:49
Barium	32.3		0.0302	0.101	0.503	mg/Kg-dry	1	20-Aug-2019 16:49
Beryllium	0.144	J	0.0211	0.101	0.503	mg/Kg-dry	1	20-Aug-2019 16:49
Cadmium	0.101	U	0.0272	0.101	0.503	mg/Kg-dry	1	20-Aug-2019 16:49
Calcium	189		4.99	10.1	50.3	mg/Kg-dry	1	20-Aug-2019 16:49
Chromium	11.8		0.0231	0.101	0.503	mg/Kg-dry	1	20-Aug-2019 16:49
Cobalt	0.544		0.0151	0.101	0.503	mg/Kg-dry	1	20-Aug-2019 16:49
Copper	1.65		0.0382	0.101	0.201	mg/Kg-dry	1	20-Aug-2019 16:49
Iron	13,900		1.84	10.1	50.3	mg/Kg-dry	1	20-Aug-2019 16:49
Lead	4.29		0.0131	0.101	0.503	mg/Kg-dry	1	20-Aug-2019 16:49
Magnesium	177		2.53	10.1	50.3	mg/Kg-dry	1	20-Aug-2019 16:49
Manganese	16.4		0.0433	0.101	0.503	mg/Kg-dry	1	20-Aug-2019 16:49
Nickel	1.77		0.0483	0.101	0.503	mg/Kg-dry	1	20-Aug-2019 16:49
Potassium	177		6.76	10.1	50.3	mg/Kg-dry	1	20-Aug-2019 16:49
Selenium	0.491	J	0.0916	0.201	0.503	mg/Kg-dry	1	20-Aug-2019 16:49
Silver	0.0226	J	0.0151	0.101	0.503	mg/Kg-dry	1	20-Aug-2019 16:49
Sodium	11.4	J	4.20	10.1	50.3	mg/Kg-dry	1	20-Aug-2019 16:49
Thallium	0.252	U	0.224	0.252	0.503	mg/Kg-dry	1	20-Aug-2019 16:49
Vanadium	26.0		0.0755	0.101	0.503	mg/Kg-dry	1	20-Aug-2019 16:49
Zinc	4.60		0.171	0.201	0.503	mg/Kg-dry	1	20-Aug-2019 16:49
MERCURY BY SW7471B			Method:SW7471A			Prep:SW7471A / 19-Aug-2019		Analyst: FO
Mercury	13.8		0.525	1.68	3.71	ug/Kg-dry	1	19-Aug-2019 19:05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-3-190813
 Collection Date: 13-Aug-2019 09:04

ANALYTICAL REPORT

WorkOrder:HS19080691
 Lab ID:HS19080691-03
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216	Method:ASTM D2216							Analyst: DFF
Percent Moisture	5.74		0.0100	0.0100	0.0100	wt%	1	15-Aug-2019 11:16
SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A	Method:NA							Analyst: SUB
Subcontract Analysis	See Attached		0	0			1	23-Aug-2019 16:44
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	Method:NA							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA-dry	1	20-Aug-2019 14:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-4-190813
 Collection Date: 13-Aug-2019 09:11

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-04
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED	
VOLATILES ORGANICS BY SW8260C		Method:SW8260						Analyst: WLR	
1,1,1-Trichloroethane	1.3	U	0.53	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
1,1,2,2-Tetrachloroethane	1.3	U	0.85	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
1,1,2-Trichlor-1,2,2-trifluoroethane	1.3	U	0.75	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
1,1,2-Trichloroethane	1.3	U	0.53	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
1,1-Dichloroethane	1.3	U	0.53	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
1,1-Dichloroethene	1.3	U	0.53	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
1,2,4-Trichlorobenzene	1.3	U	1.1	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
1,2-Dibromo-3-chloropropane	2.7	U	1.1	2.7	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
1,2-Dibromoethane	1.3	U	0.53	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
1,2-Dichlorobenzene	1.3	U	1.1	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
1,2-Dichloroethane	1.3	U	0.64	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
1,2-Dichloropropane	1.3	U	0.85	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
1,3-Dichlorobenzene	1.3	U	1.1	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
1,4-Dichlorobenzene	1.3	U	1.1	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
2-Butanone	2.7	U	1.4	2.7	11	ug/Kg-dry	1	20-Aug-2019 21:35	
2-Hexanone	2.7	U	1.5	2.7	11	ug/Kg-dry	1	20-Aug-2019 21:35	
4-Methyl-2-pentanone	2.7	U	2.1	2.7	11	ug/Kg-dry	1	20-Aug-2019 21:35	
Acetone	2.7	U	2.1	2.7	11	ug/Kg-dry	1	20-Aug-2019 21:35	
Benzene	1.3	U	0.53	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
Bromodichloromethane	1.3	U	0.53	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
Bromoform	2.7	U	0.64	2.7	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
Bromomethane	1.3	U	1.1	1.3	11	ug/Kg-dry	1	20-Aug-2019 21:35	
Carbon disulfide	2.7	U	1.1	2.7	11	ug/Kg-dry	1	20-Aug-2019 21:35	
Carbon tetrachloride	1.3	U	0.64	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
Chlorobenzene	1.3	U	0.64	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
Chloroethane	1.3	U	0.85	1.3	11	ug/Kg-dry	1	20-Aug-2019 21:35	
Chloroform	1.3	U	0.53	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
Chloromethane	1.3	U	0.53	1.3	11	ug/Kg-dry	1	20-Aug-2019 21:35	
cis-1,2-Dichloroethene	1.3	U	0.85	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
cis-1,3-Dichloropropene	1.3	U	0.53	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
Cyclohexane	1.3	nU	1.1	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
Dibromochloromethane	1.3	U	0.53	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
Dichlorodifluoromethane	1.3	U	0.75	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
Ethylbenzene	1.3	U	0.75	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
Isopropylbenzene	1.3	U	0.96	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
m,p-Xylene	2.7	U	1.7	2.7	11	ug/Kg-dry	1	20-Aug-2019 21:35	
Methyl acetate	1.3	U	0.75	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
Methyl tert-butyl ether	1.3	U	0.53	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
Methylcyclohexane	1.3	U	1.1	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	

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Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-4-190813
 Collection Date: 13-Aug-2019 09:11

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-04
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED	
VOLATILES ORGANICS BY SW8260C		Method:SW8260						Analyst: WLR	
Methylene chloride	2.7	U	1.1	2.7	11	ug/Kg-dry	1	20-Aug-2019 21:35	
o-Xylene	1.3	U	1.1	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
Styrene	1.3	U	0.75	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
Tetrachloroethene	1.3	U	0.75	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
Toluene	1.3	U	0.64	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
trans-1,2-Dichloroethene	1.3	U	0.53	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
trans-1,3-Dichloropropene	1.3	U	0.64	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
Trichloroethene	1.3	U	0.64	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
Trichlorofluoromethane	1.3	U	0.53	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
Vinyl chloride	1.3	U	0.85	1.3	2.1	ug/Kg-dry	1	20-Aug-2019 21:35	
Xylenes, Total	1.3	U	1.1	1.3	5.3	ug/Kg-dry	1	20-Aug-2019 21:35	
Surr: 1,2-Dichloroethane-d4	78.1			0	71-136	%REC	1	20-Aug-2019 21:35	
Surr: 4-Bromofluorobenzene	82.1			0	79-119	%REC	1	20-Aug-2019 21:35	
Surr: Dibromofluoromethane	82.7			0	78-119	%REC	1	20-Aug-2019 21:35	
Surr: Toluene-d8	85.2			0	85-116	%REC	1	20-Aug-2019 21:35	

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ANALYTICAL REPORT
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ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES BY 8270D		Method:SW8270				Prep:SW3541 / 14-Aug-2019		Analyst: SGA
1,1'-Biphenyl	110	U	46	110	190	ug/Kg-dry	1	15-Aug-2019 15:01
2,4,5-Trichlorophenol	37	U	24	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
2,4,6-Trichlorophenol	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
2,4-Dichlorophenol	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
2,4-Dimethylphenol	37	U	15	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
2,4-Dinitrophenol	110	U	12	110	190	ug/Kg-dry	1	15-Aug-2019 15:01
2,4-Dinitrotoluene	37	U	15	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
2,6-Dinitrotoluene	37	U	11	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
2-Chloronaphthalene	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
2-Chlorophenol	37	U	11	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
2-Methylnaphthalene	37	U	30	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
2-Methylphenol	37	U	15	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
2-Nitroaniline	37	U	18	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
2-Nitrophenol	37	U	20	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
3&4-Methylphenol	37	U	15	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
3,3'-Dichlorobenzidine	37	U	21	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
3-Nitroaniline	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
4,6-Dinitro-2-methylphenol	37	U	18	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
4-Bromophenyl phenyl ether	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
4-Chloro-3-methylphenol	110	U	37	110	190	ug/Kg-dry	1	15-Aug-2019 15:01
4-Chloroaniline	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
4-Chlorophenyl phenyl ether	37	U	18	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
4-Nitroaniline	37	U	15	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
4-Nitrophenol	37	U	18	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Acenaphthene	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Acenaphthylene	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Acetophenone	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Anthracene	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Atrazine	110	U	45	110	190	ug/Kg-dry	1	15-Aug-2019 15:01
Benzaldehyde	110	nU	45	110	190	ug/Kg-dry	1	15-Aug-2019 15:01
Benzo(a)anthracene	37	U	22	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Benzo(a)pyrene	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Benzo(b)fluoranthene	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Benzo(g,h,i)perylene	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Benzo(k)fluoranthene	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Bis(2-chloroethoxy)methane	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Bis(2-chloroethyl)ether	37	U	15	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Bis(2-chloroisopropyl)ether	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Bis(2-ethylhexyl)phthalate	37	U	15	37	190	ug/Kg-dry	1	15-Aug-2019 15:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-4-190813
 Collection Date: 13-Aug-2019 09:11

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-04
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES BY 8270D	Method:SW8270					Prep:SW3541 / 14-Aug-2019		Analyst: SGA
Butyl benzyl phthalate	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Caprolactam	110	U	57	110	190	ug/Kg-dry	1	15-Aug-2019 15:01
Carbazole	37	U	15	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Chrysene	37	U	19	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Di-n-butyl phthalate	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Di-n-octyl phthalate	37	U	21	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Dibenz(a,h)anthracene	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Dibenzofuran	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Diethyl phthalate	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Dimethyl phthalate	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Fluoranthene	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Fluorene	37	U	19	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Hexachlorobenzene	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Hexachlorobutadiene	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Hexachlorocyclopentadiene	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Hexachloroethane	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Indeno(1,2,3-cd)pyrene	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Isophorone	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
N-Nitrosodi-n-propylamine	37	U	19	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
N-Nitrosodiphenylamine	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Naphthalene	37	U	15	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Nitrobenzene	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Pentachlorophenol	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Phenanthrene	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Phenol	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 15:01
Pyrene	110	U	48	110	190	ug/Kg-dry	1	15-Aug-2019 15:01
<i>Surr: 2,4,6-Tribromophenol</i>	116			0	39-132	%REC	1	15-Aug-2019 15:01
<i>Surr: 2-Fluorobiphenyl</i>	83.0			0	44-115	%REC	1	15-Aug-2019 15:01
<i>Surr: 2-Fluorophenol</i>	67.1			0	35-115	%REC	1	15-Aug-2019 15:01
<i>Surr: 4-Terphenyl-d14</i>	84.6			0	54-127	%REC	1	15-Aug-2019 15:01
<i>Surr: Nitrobenzene-d5</i>	73.8			0	37-122	%REC	1	15-Aug-2019 15:01
<i>Surr: Phenol-d6</i>	65.0			0	33-122	%REC	1	15-Aug-2019 15:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-4-190813
 Collection Date: 13-Aug-2019 09:11

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-04
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
EXPLOSIVES BY SW8330A			Method:SW8330			Prep:SW8330 / 15-Aug-2019		Analyst: NPI
1,3,5-Trinitrobenzene	28.3	U	13.5	28.3	68.0	ug/Kg-dry	1	18-Aug-2019 21:13
1,3-Dinitrobenzene	28.3	U	13.9	28.3	68.0	ug/Kg-dry	1	18-Aug-2019 21:13
2,4,6-Trinitrotoluene	28.3	U	5.62	28.3	68.0	ug/Kg-dry	1	18-Aug-2019 21:13
2,4-Dinitrotoluene	28.3	U	5.03	28.3	68.0	ug/Kg-dry	1	18-Aug-2019 21:13
2,6-Dinitrotoluene	28.3	U	12.2	28.3	68.0	ug/Kg-dry	1	18-Aug-2019 21:13
2-Amino-4,6-dinitrotoluene	28.3	U	10.5	28.3	68.0	ug/Kg-dry	1	18-Aug-2019 21:13
2-Nitrotoluene	28.3	U	10.5	28.3	68.0	ug/Kg-dry	1	18-Aug-2019 21:13
3-Nitrotoluene	28.3	U	5.56	28.3	68.0	ug/Kg-dry	1	18-Aug-2019 21:13
4-Amino-2,6-dinitrotoluene	28.3	U	11.1	28.3	68.0	ug/Kg-dry	1	18-Aug-2019 21:13
4-Nitrotoluene	28.3	U	12.7	28.3	68.0	ug/Kg-dry	1	18-Aug-2019 21:13
HMX	28.3	U	10.6	28.3	68.0	ug/Kg-dry	1	18-Aug-2019 21:13
Nitrobenzene	28.3	U	12.9	28.3	68.0	ug/Kg-dry	1	18-Aug-2019 21:13
RDX	28.3	U	6.86	28.3	68.0	ug/Kg-dry	1	18-Aug-2019 21:13
<i>Surr: 1,2-Dinitrobenzene</i>	<i>84.0</i>			<i>0</i>	<i>50-150</i>	<i>%REC</i>	<i>1</i>	<i>18-Aug-2019 21:13</i>
METALS BY SW6020A			Method:SW6020			Prep:SW3050A / 15-Aug-2019		Analyst: JC
Aluminum	11,400		49.6	214	428	mg/Kg-dry	200	21-Aug-2019 13:18
Antimony	0.0758	J	0.0695	0.107	0.535	mg/Kg-dry	1	20-Aug-2019 16:51
Arsenic	9.56		0.0749	0.107	0.535	mg/Kg-dry	1	20-Aug-2019 16:51
Barium	11.1		0.0321	0.107	0.535	mg/Kg-dry	1	20-Aug-2019 16:51
Beryllium	0.162	J	0.0225	0.107	0.535	mg/Kg-dry	1	20-Aug-2019 16:51
Cadmium	0.107	U	0.0289	0.107	0.535	mg/Kg-dry	1	20-Aug-2019 16:51
Calcium	22.3	J	5.31	10.7	53.5	mg/Kg-dry	1	20-Aug-2019 16:51
Chromium	21.5		0.0246	0.107	0.535	mg/Kg-dry	1	20-Aug-2019 16:51
Cobalt	0.475	J	0.0160	0.107	0.535	mg/Kg-dry	1	20-Aug-2019 16:51
Copper	3.11		0.0406	0.107	0.214	mg/Kg-dry	1	20-Aug-2019 16:51
Iron	50,100		391	2140	10700	mg/Kg-dry	200	21-Aug-2019 13:18
Lead	7.80		0.0139	0.107	0.535	mg/Kg-dry	1	20-Aug-2019 16:51
Magnesium	196		2.68	10.7	53.5	mg/Kg-dry	1	20-Aug-2019 16:51
Manganese	6.07		0.0460	0.107	0.535	mg/Kg-dry	1	20-Aug-2019 16:51
Nickel	1.88		0.0513	0.107	0.535	mg/Kg-dry	1	20-Aug-2019 16:51
Potassium	331		7.19	10.7	53.5	mg/Kg-dry	1	20-Aug-2019 16:51
Selenium	1.24		0.0973	0.107	0.535	mg/Kg-dry	1	20-Aug-2019 16:51
Silver	0.0348	J	0.0160	0.107	0.535	mg/Kg-dry	1	20-Aug-2019 16:51
Sodium	10.9	J	4.46	10.7	53.5	mg/Kg-dry	1	20-Aug-2019 16:51
Thallium	0.267	U	0.239	0.267	0.535	mg/Kg-dry	1	20-Aug-2019 16:51
Vanadium	49.7		0.0802	0.107	0.535	mg/Kg-dry	1	20-Aug-2019 16:51
Zinc	7.39		0.182	0.214	0.535	mg/Kg-dry	1	20-Aug-2019 16:51
MERCURY BY SW7471B			Method:SW7471A			Prep:SW7471A / 19-Aug-2019		Analyst: FO
Mercury	20.1		0.546	1.74	3.86	ug/Kg-dry	1	19-Aug-2019 19:06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-4-190813
 Collection Date: 13-Aug-2019 09:11

ANALYTICAL REPORT

WorkOrder:HS19080691
 Lab ID:HS19080691-04
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216	Method:ASTM D2216							Analyst: DFF
Percent Moisture	11.7		0.0100	0.0100	0.0100	wt%	1	15-Aug-2019 11:16
SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A	Method:NA							Analyst: SUB
Subcontract Analysis	See Attached		0	0			1	23-Aug-2019 16:44
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	Method:NA							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA-dry	1	20-Aug-2019 14:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-5-190813
 Collection Date: 13-Aug-2019 09:18

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-05
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED	
VOLATILES ORGANICS BY SW8260C		Method:SW8260						Analyst: WLR	
1,1,1-Trichloroethane	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
1,1,2,2-Tetrachloroethane	1.3	U	0.87	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
1,1,2-Trichlor-1,2,2-trifluoroethane	1.3	U	0.76	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
1,1,2-Trichloroethane	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
1,1-Dichloroethane	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
1,1-Dichloroethene	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
1,2,4-Trichlorobenzene	1.3	U	1.1	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
1,2-Dibromo-3-chloropropane	2.7	U	1.1	2.7	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
1,2-Dibromoethane	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
1,2-Dichlorobenzene	1.3	U	1.1	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
1,2-Dichloroethane	1.3	U	0.65	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
1,2-Dichloropropane	1.3	U	0.87	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
1,3-Dichlorobenzene	1.3	U	1.1	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
1,4-Dichlorobenzene	1.3	U	1.1	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
2-Butanone	2.7	U	1.4	2.7	11	ug/Kg-dry	1	20-Aug-2019 22:20	
2-Hexanone	2.7	U	1.5	2.7	11	ug/Kg-dry	1	20-Aug-2019 22:20	
4-Methyl-2-pentanone	2.7	U	2.2	2.7	11	ug/Kg-dry	1	20-Aug-2019 22:20	
Acetone	2.7	U	2.2	2.7	11	ug/Kg-dry	1	20-Aug-2019 22:20	
Benzene	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
Bromodichloromethane	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
Bromoform	2.7	U	0.65	2.7	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
Bromomethane	1.3	U	1.1	1.3	11	ug/Kg-dry	1	20-Aug-2019 22:20	
Carbon disulfide	2.7	U	1.1	2.7	11	ug/Kg-dry	1	20-Aug-2019 22:20	
Carbon tetrachloride	1.3	U	0.65	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
Chlorobenzene	1.3	U	0.65	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
Chloroethane	1.3	U	0.87	1.3	11	ug/Kg-dry	1	20-Aug-2019 22:20	
Chloroform	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
Chloromethane	1.3	U	0.54	1.3	11	ug/Kg-dry	1	20-Aug-2019 22:20	
cis-1,2-Dichloroethene	1.3	U	0.87	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
cis-1,3-Dichloropropene	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
Cyclohexane	1.3	nU	1.1	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
Dibromochloromethane	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
Dichlorodifluoromethane	1.3	U	0.76	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
Ethylbenzene	1.3	U	0.76	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
Isopropylbenzene	1.3	U	0.98	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
m,p-Xylene	2.7	U	1.7	2.7	11	ug/Kg-dry	1	20-Aug-2019 22:20	
Methyl acetate	1.3	U	0.76	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
Methyl tert-butyl ether	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
Methylcyclohexane	1.3	U	1.1	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-5-190813
 Collection Date: 13-Aug-2019 09:18

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-05
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED	
VOLATILES ORGANICS BY SW8260C		Method:SW8260						Analyst: WLR	
Methylene chloride	2.7	U	1.1	2.7	11	ug/Kg-dry	1	20-Aug-2019 22:20	
o-Xylene	1.3	U	1.1	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
Styrene	1.3	U	0.76	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
Tetrachloroethene	1.3	U	0.76	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
Toluene	1.3	U	0.65	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
trans-1,2-Dichloroethene	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
trans-1,3-Dichloropropene	1.3	U	0.65	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
Trichloroethene	1.3	U	0.65	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
Trichlorofluoromethane	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
Vinyl chloride	1.3	U	0.87	1.3	2.2	ug/Kg-dry	1	20-Aug-2019 22:20	
Xylenes, Total	1.3	U	1.1	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 22:20	
Surr: 1,2-Dichloroethane-d4	74.3			0	71-136	%REC	1	20-Aug-2019 22:20	
Surr: 4-Bromofluorobenzene	87.0			0	79-119	%REC	1	20-Aug-2019 22:20	
Surr: Dibromofluoromethane	81.7			0	78-119	%REC	1	20-Aug-2019 22:20	
Surr: Toluene-d8	88.0			0	85-116	%REC	1	20-Aug-2019 22:20	

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Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-5-190813
 Collection Date: 13-Aug-2019 09:18

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-05
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES BY 8270D		Method:SW8270				Prep:SW3541 / 14-Aug-2019		Analyst: SGA
1,1'-Biphenyl	110	U	45	110	180	ug/Kg-dry	1	15-Aug-2019 15:22
2,4,5-Trichlorophenol	37	U	23	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
2,4,6-Trichlorophenol	37	U	12	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
2,4-Dichlorophenol	37	U	13	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
2,4-Dimethylphenol	37	U	14	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
2,4-Dinitrophenol	110	U	12	110	180	ug/Kg-dry	1	15-Aug-2019 15:22
2,4-Dinitrotoluene	37	U	14	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
2,6-Dinitrotoluene	37	U	11	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
2-Chloronaphthalene	37	U	13	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
2-Chlorophenol	37	U	11	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
2-Methylnaphthalene	37	U	30	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
2-Methylphenol	37	U	14	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
2-Nitroaniline	37	U	18	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
2-Nitrophenol	37	U	20	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
3&4-Methylphenol	37	U	14	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
3,3'-Dichlorobenzidine	37	U	21	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
3-Nitroaniline	37	U	17	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
4,6-Dinitro-2-methylphenol	37	U	18	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
4-Bromophenyl phenyl ether	37	U	17	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
4-Chloro-3-methylphenol	110	U	37	110	180	ug/Kg-dry	1	15-Aug-2019 15:22
4-Chloroaniline	37	U	17	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
4-Chlorophenyl phenyl ether	37	U	18	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
4-Nitroaniline	37	U	14	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
4-Nitrophenol	110	U	18	110	180	ug/Kg-dry	1	15-Aug-2019 15:22
Acenaphthene	37	U	17	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Acenaphthylene	37	U	12	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Acetophenone	37	U	12	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Anthracene	37	U	13	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Atrazine	110	U	44	110	180	ug/Kg-dry	1	15-Aug-2019 15:22
Benzaldehyde	110	nU	44	110	180	ug/Kg-dry	1	15-Aug-2019 15:22
Benzo(a)anthracene	37	U	22	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Benzo(a)pyrene	37	U	13	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Benzo(b)fluoranthene	37	U	13	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Benzo(g,h,i)perylene	37	U	12	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Benzo(k)fluoranthene	37	U	17	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Bis(2-chloroethoxy)methane	37	U	13	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Bis(2-chloroethyl)ether	37	U	14	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Bis(2-chloroisopropyl)ether	37	U	12	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Bis(2-ethylhexyl)phthalate	37	U	14	37	180	ug/Kg-dry	1	15-Aug-2019 15:22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-5-190813
 Collection Date: 13-Aug-2019 09:18

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-05
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES BY 8270D	Method:SW8270					Prep:SW3541 / 14-Aug-2019		Analyst: SGA
Butyl benzyl phthalate	37	U	13	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Caprolactam	110	U	56	110	180	ug/Kg-dry	1	15-Aug-2019 15:22
Carbazole	37	U	14	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Chrysene	37	U	19	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Di-n-butyl phthalate	37	U	13	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Di-n-octyl phthalate	37	U	21	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Dibenz(a,h)anthracene	37	U	17	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Dibenzofuran	37	U	16	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Diethyl phthalate	37	U	13	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Dimethyl phthalate	37	U	17	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Fluoranthene	37	U	16	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Fluorene	37	U	19	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Hexachlorobenzene	37	U	17	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Hexachlorobutadiene	37	U	16	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Hexachlorocyclopentadiene	37	U	16	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Hexachloroethane	37	U	12	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Indeno(1,2,3-cd)pyrene	37	U	16	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Isophorone	37	U	12	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
N-Nitrosodi-n-propylamine	37	U	19	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
N-Nitrosodiphenylamine	37	U	13	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Naphthalene	37	U	14	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Nitrobenzene	37	U	16	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Pentachlorophenol	37	U	12	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Phenanthrene	37	U	16	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Phenol	37	U	12	37	180	ug/Kg-dry	1	15-Aug-2019 15:22
Pyrene	110	U	48	110	180	ug/Kg-dry	1	15-Aug-2019 15:22
<i>Surr: 2,4,6-Tribromophenol</i>	<i>120</i>			<i>0</i>	<i>39-132</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 15:22</i>
<i>Surr: 2-Fluorobiphenyl</i>	<i>88.6</i>			<i>0</i>	<i>44-115</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 15:22</i>
<i>Surr: 2-Fluorophenol</i>	<i>70.3</i>			<i>0</i>	<i>35-115</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 15:22</i>
<i>Surr: 4-Terphenyl-d14</i>	<i>83.7</i>			<i>0</i>	<i>54-127</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 15:22</i>
<i>Surr: Nitrobenzene-d5</i>	<i>76.5</i>			<i>0</i>	<i>37-122</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 15:22</i>
<i>Surr: Phenol-d6</i>	<i>68.3</i>			<i>0</i>	<i>33-122</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 15:22</i>

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-5-190813
 Collection Date: 13-Aug-2019 09:18

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-05
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
EXPLOSIVES BY SW8330A			Method:SW8330			Prep:SW8330 / 15-Aug-2019		Analyst: NPI
1,3,5-Trinitrobenzene	28.0	U	13.3	28.0	67.2	ug/Kg-dry	1	18-Aug-2019 21:55
1,3-Dinitrobenzene	28.0	U	13.8	28.0	67.2	ug/Kg-dry	1	18-Aug-2019 21:55
2,4,6-Trinitrotoluene	28.0	U	5.55	28.0	67.2	ug/Kg-dry	1	18-Aug-2019 21:55
2,4-Dinitrotoluene	28.0	U	4.97	28.0	67.2	ug/Kg-dry	1	18-Aug-2019 21:55
2,6-Dinitrotoluene	28.0	U	12.1	28.0	67.2	ug/Kg-dry	1	18-Aug-2019 21:55
2-Amino-4,6-dinitrotoluene	28.0	U	10.4	28.0	67.2	ug/Kg-dry	1	18-Aug-2019 21:55
2-Nitrotoluene	28.0	U	10.4	28.0	67.2	ug/Kg-dry	1	18-Aug-2019 21:55
3-Nitrotoluene	28.0	U	5.50	28.0	67.2	ug/Kg-dry	1	18-Aug-2019 21:55
4-Amino-2,6-dinitrotoluene	28.0	U	10.9	28.0	67.2	ug/Kg-dry	1	18-Aug-2019 21:55
4-Nitrotoluene	28.0	U	12.5	28.0	67.2	ug/Kg-dry	1	18-Aug-2019 21:55
HMX	28.0	U	10.5	28.0	67.2	ug/Kg-dry	1	18-Aug-2019 21:55
Nitrobenzene	28.0	U	12.8	28.0	67.2	ug/Kg-dry	1	18-Aug-2019 21:55
RDX	28.0	U	6.79	28.0	67.2	ug/Kg-dry	1	18-Aug-2019 21:55
<i>Surr: 1,2-Dinitrobenzene</i>	<i>82.3</i>			<i>0</i>	<i>50-150</i>	<i>%REC</i>	<i>1</i>	<i>18-Aug-2019 21:55</i>
METALS BY SW6020A			Method:SW6020			Prep:SW3050A / 15-Aug-2019		Analyst: JC
Aluminum	11,500		50.7	219	437	mg/Kg-dry	200	21-Aug-2019 13:30
Antimony	0.0900	J	0.0710	0.109	0.546	mg/Kg-dry	1	20-Aug-2019 16:53
Arsenic	5.91		0.0765	0.109	0.546	mg/Kg-dry	1	20-Aug-2019 16:53
Barium	11.2		0.0328	0.109	0.546	mg/Kg-dry	1	20-Aug-2019 16:53
Beryllium	0.0969	J	0.0229	0.109	0.546	mg/Kg-dry	1	20-Aug-2019 16:53
Cadmium	0.109	U	0.0295	0.109	0.546	mg/Kg-dry	1	20-Aug-2019 16:53
Calcium	7.50	J	5.42	10.9	54.6	mg/Kg-dry	1	20-Aug-2019 16:53
Chromium	16.3		0.0251	0.109	0.546	mg/Kg-dry	1	20-Aug-2019 16:53
Cobalt	0.469	J	0.0164	0.109	0.546	mg/Kg-dry	1	20-Aug-2019 16:53
Copper	2.38		0.0415	0.109	0.219	mg/Kg-dry	1	20-Aug-2019 16:53
Iron	15,300		2.00	10.9	54.6	mg/Kg-dry	1	20-Aug-2019 16:53
Lead	6.37		0.0142	0.109	0.546	mg/Kg-dry	1	20-Aug-2019 16:53
Magnesium	200		2.74	10.9	54.6	mg/Kg-dry	1	20-Aug-2019 16:53
Manganese	6.76		0.0470	0.109	0.546	mg/Kg-dry	1	20-Aug-2019 16:53
Nickel	1.96		0.0524	0.109	0.546	mg/Kg-dry	1	20-Aug-2019 16:53
Potassium	282		7.34	10.9	54.6	mg/Kg-dry	1	20-Aug-2019 16:53
Selenium	0.631		0.0994	0.109	0.546	mg/Kg-dry	1	20-Aug-2019 16:53
Silver	0.0399	J	0.0164	0.109	0.546	mg/Kg-dry	1	20-Aug-2019 16:53
Sodium	8.11	J	4.56	10.9	54.6	mg/Kg-dry	1	20-Aug-2019 16:53
Thallium	0.273	U	0.244	0.273	0.546	mg/Kg-dry	1	20-Aug-2019 16:53
Vanadium	42.9		0.0819	0.109	0.546	mg/Kg-dry	1	20-Aug-2019 16:53
Zinc	4.60		0.186	0.219	0.546	mg/Kg-dry	1	20-Aug-2019 16:53
MERCURY BY SW7471B			Method:SW7471A			Prep:SW7471A / 19-Aug-2019		Analyst: FO
Mercury	13.7		0.541	1.73	3.83	ug/Kg-dry	1	19-Aug-2019 19:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-5-190813
 Collection Date: 13-Aug-2019 09:18

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-05
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216	Method:ASTM D2216							Analyst: DFF
Percent Moisture	10.7		0.0100	0.0100	0.0100	wt%	1	15-Aug-2019 11:16
SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A	Method:NA							Analyst: SUB
Subcontract Analysis	See Attached		0	0			1	23-Aug-2019 16:44
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	Method:NA							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA-dry	1	20-Aug-2019 14:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-6-190813
 Collection Date: 13-Aug-2019 09:24

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-06
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED	
VOLATILES ORGANICS BY SW8260C		Method:SW8260						Analyst: WLR	
1,1,1-Trichloroethane	1.1	U	0.47	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
1,1,2,2-Tetrachloroethane	1.1	U	0.75	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
1,1,2-Trichlor-1,2,2-trifluoroethane	1.1	U	0.65	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
1,1,2-Trichloroethane	1.1	U	0.47	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
1,1-Dichloroethane	1.1	U	0.47	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
1,1-Dichloroethene	1.1	U	0.47	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
1,2,4-Trichlorobenzene	1.1	U	0.93	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
1,2-Dibromo-3-chloropropane	2.3	U	0.93	2.3	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
1,2-Dibromoethane	1.1	U	0.47	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
1,2-Dichlorobenzene	1.1	U	0.93	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
1,2-Dichloroethane	1.1	U	0.56	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
1,2-Dichloropropane	1.1	U	0.75	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
1,3-Dichlorobenzene	1.1	U	0.93	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
1,4-Dichlorobenzene	1.1	U	0.93	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
2-Butanone	2.3	U	1.2	2.3	9.3	ug/Kg-dry	1	20-Aug-2019 22:43	
2-Hexanone	2.3	U	1.3	2.3	9.3	ug/Kg-dry	1	20-Aug-2019 22:43	
4-Methyl-2-pentanone	2.3	U	1.9	2.3	9.3	ug/Kg-dry	1	20-Aug-2019 22:43	
Acetone	2.3	U	1.9	2.3	9.3	ug/Kg-dry	1	20-Aug-2019 22:43	
Benzene	1.1	U	0.47	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
Bromodichloromethane	1.1	U	0.47	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
Bromoform	2.3	U	0.56	2.3	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
Bromomethane	1.1	U	0.93	1.1	9.3	ug/Kg-dry	1	20-Aug-2019 22:43	
Carbon disulfide	2.3	U	0.93	2.3	9.3	ug/Kg-dry	1	20-Aug-2019 22:43	
Carbon tetrachloride	1.1	U	0.56	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
Chlorobenzene	1.1	U	0.56	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
Chloroethane	1.1	U	0.75	1.1	9.3	ug/Kg-dry	1	20-Aug-2019 22:43	
Chloroform	1.1	U	0.47	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
Chloromethane	1.1	U	0.47	1.1	9.3	ug/Kg-dry	1	20-Aug-2019 22:43	
cis-1,2-Dichloroethene	1.1	U	0.75	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
cis-1,3-Dichloropropene	1.1	U	0.47	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
Cyclohexane	1.1	nU	0.93	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
Dibromochloromethane	1.1	U	0.47	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
Dichlorodifluoromethane	1.1	U	0.65	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
Ethylbenzene	1.1	U	0.65	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
Isopropylbenzene	1.1	U	0.84	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
m,p-Xylene	2.3	U	1.5	2.3	9.3	ug/Kg-dry	1	20-Aug-2019 22:43	
Methyl acetate	1.1	U	0.65	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
Methyl tert-butyl ether	1.1	U	0.47	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
Methylcyclohexane	1.1	U	0.93	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-6-190813
 Collection Date: 13-Aug-2019 09:24

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-06
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED	
VOLATILES ORGANICS BY SW8260C		Method:SW8260						Analyst: WLR	
Methylene chloride	2.3	U	0.93	2.3	9.3	ug/Kg-dry	1	20-Aug-2019 22:43	
o-Xylene	1.1	U	0.93	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
Styrene	1.1	U	0.65	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
Tetrachloroethene	1.1	U	0.65	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
Toluene	1.1	U	0.56	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
trans-1,2-Dichloroethene	1.1	U	0.47	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
trans-1,3-Dichloropropene	1.1	U	0.56	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
Trichloroethene	1.1	U	0.56	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
Trichlorofluoromethane	1.1	U	0.47	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
Vinyl chloride	1.1	U	0.75	1.1	1.9	ug/Kg-dry	1	20-Aug-2019 22:43	
Xylenes, Total	1.1	U	0.93	1.1	4.7	ug/Kg-dry	1	20-Aug-2019 22:43	
Surr: 1,2-Dichloroethane-d4	72.1			0	71-136	%REC	1	20-Aug-2019 22:43	
Surr: 4-Bromofluorobenzene	83.8			0	79-119	%REC	1	20-Aug-2019 22:43	
Surr: Dibromofluoromethane	78.8			0	78-119	%REC	1	20-Aug-2019 22:43	
Surr: Toluene-d8	87.0			0	85-116	%REC	1	20-Aug-2019 22:43	

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ANALYTICAL REPORT
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 Lab ID:HS19080691-06
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES BY 8270D		Method:SW8270				Prep:SW3541 / 14-Aug-2019		Analyst: SGA
1,1'-Biphenyl	110	U	46	110	190	ug/Kg-dry	1	15-Aug-2019 15:43
2,4,5-Trichlorophenol	37	U	23	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
2,4,6-Trichlorophenol	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
2,4-Dichlorophenol	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
2,4-Dimethylphenol	37	U	15	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
2,4-Dinitrophenol	110	U	12	110	190	ug/Kg-dry	1	15-Aug-2019 15:43
2,4-Dinitrotoluene	37	U	15	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
2,6-Dinitrotoluene	37	U	11	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
2-Chloronaphthalene	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
2-Chlorophenol	37	U	11	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
2-Methylnaphthalene	37	U	30	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
2-Methylphenol	37	U	15	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
2-Nitroaniline	37	U	18	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
2-Nitrophenol	37	U	20	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
3&4-Methylphenol	37	U	15	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
3,3'-Dichlorobenzidine	37	U	21	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
3-Nitroaniline	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
4,6-Dinitro-2-methylphenol	37	U	18	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
4-Bromophenyl phenyl ether	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
4-Chloro-3-methylphenol	110	U	37	110	190	ug/Kg-dry	1	15-Aug-2019 15:43
4-Chloroaniline	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
4-Chlorophenyl phenyl ether	37	U	18	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
4-Nitroaniline	37	U	15	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
4-Nitrophenol	37	U	18	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Acenaphthene	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Acenaphthylene	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Acetophenone	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Anthracene	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Atrazine	110	U	45	110	190	ug/Kg-dry	1	15-Aug-2019 15:43
Benzaldehyde	110	nU	45	110	190	ug/Kg-dry	1	15-Aug-2019 15:43
Benzo(a)anthracene	37	U	22	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Benzo(a)pyrene	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Benzo(b)fluoranthene	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Benzo(g,h,i)perylene	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Benzo(k)fluoranthene	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Bis(2-chloroethoxy)methane	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Bis(2-chloroethyl)ether	37	U	15	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Bis(2-chloroisopropyl)ether	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Bis(2-ethylhexyl)phthalate	37	U	15	37	190	ug/Kg-dry	1	15-Aug-2019 15:43

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-6-190813
 Collection Date: 13-Aug-2019 09:24

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-06
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES BY 8270D		Method:SW8270				Prep:SW3541 / 14-Aug-2019		Analyst: SGA
Butyl benzyl phthalate	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Caprolactam	110	U	57	110	190	ug/Kg-dry	1	15-Aug-2019 15:43
Carbazole	37	U	15	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Chrysene	37	U	19	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Di-n-butyl phthalate	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Di-n-octyl phthalate	37	U	21	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Dibenz(a,h)anthracene	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Dibenzofuran	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Diethyl phthalate	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Dimethyl phthalate	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Fluoranthene	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Fluorene	37	U	19	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Hexachlorobenzene	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Hexachlorobutadiene	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Hexachlorocyclopentadiene	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Hexachloroethane	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Indeno(1,2,3-cd)pyrene	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Isophorone	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
N-Nitrosodi-n-propylamine	37	U	19	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
N-Nitrosodiphenylamine	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Naphthalene	37	U	15	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Nitrobenzene	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Pentachlorophenol	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Phenanthrene	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Phenol	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 15:43
Pyrene	110	U	48	110	190	ug/Kg-dry	1	15-Aug-2019 15:43
<i>Surr: 2,4,6-Tribromophenol</i>	<i>114</i>			0	<i>39-132</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 15:43</i>
<i>Surr: 2-Fluorobiphenyl</i>	<i>80.8</i>			0	<i>44-115</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 15:43</i>
<i>Surr: 2-Fluorophenol</i>	<i>66.0</i>			0	<i>35-115</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 15:43</i>
<i>Surr: 4-Terphenyl-d14</i>	<i>86.1</i>			0	<i>54-127</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 15:43</i>
<i>Surr: Nitrobenzene-d5</i>	<i>71.3</i>			0	<i>37-122</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 15:43</i>
<i>Surr: Phenol-d6</i>	<i>64.2</i>			0	<i>33-122</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 15:43</i>

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-6-190813
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ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-06
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
EXPLOSIVES BY SW8330A			Method:SW8330			Prep:SW8330 / 15-Aug-2019		Analyst: NPI
1,3,5-Trinitrobenzene	28.2	U	13.4	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:01
1,3-Dinitrobenzene	28.2	U	13.9	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:01
2,4,6-Trinitrotoluene	28.2	U	5.59	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:01
2,4-Dinitrotoluene	28.2	U	5.00	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:01
2,6-Dinitrotoluene	28.2	U	12.2	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:01
2-Amino-4,6-dinitrotoluene	28.2	U	10.5	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:01
2-Nitrotoluene	28.2	U	10.4	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:01
3-Nitrotoluene	28.2	U	5.53	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:01
4-Amino-2,6-dinitrotoluene	28.2	U	11.0	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:01
4-Nitrotoluene	28.2	U	12.6	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:01
HMX	28.2	U	10.5	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:01
Nitrobenzene	28.2	U	12.8	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:01
RDX	28.2	U	6.82	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:01
<i>Surr: 1,2-Dinitrobenzene</i>	<i>83.1</i>			<i>0</i>	<i>50-150</i>	<i>%REC</i>	<i>1</i>	<i>19-Aug-2019 00:01</i>
METALS BY SW6020A			Method:SW6020			Prep:SW3050A / 15-Aug-2019		Analyst: JC
Aluminum	24,700		50.9	220	439	mg/Kg-dry	200	21-Aug-2019 13:32
Antimony	0.163	J	0.0713	0.110	0.549	mg/Kg-dry	1	20-Aug-2019 16:55
Arsenic	11.5		0.0768	0.110	0.549	mg/Kg-dry	1	20-Aug-2019 16:55
Barium	25.8		0.0329	0.110	0.549	mg/Kg-dry	1	20-Aug-2019 16:55
Beryllium	0.272	J	0.0230	0.110	0.549	mg/Kg-dry	1	20-Aug-2019 16:55
Cadmium	0.110	U	0.0296	0.110	0.549	mg/Kg-dry	1	20-Aug-2019 16:55
Calcium	139		5.44	11.0	54.9	mg/Kg-dry	1	20-Aug-2019 16:55
Chromium	33.5		0.0252	0.110	0.549	mg/Kg-dry	1	20-Aug-2019 16:55
Cobalt	1.54		0.0165	0.110	0.549	mg/Kg-dry	1	20-Aug-2019 16:55
Copper	4.93		0.0417	0.110	0.220	mg/Kg-dry	1	20-Aug-2019 16:55
Iron	39,200		402	2200	11000	mg/Kg-dry	200	21-Aug-2019 13:32
Lead	8.54		0.0143	0.110	0.549	mg/Kg-dry	1	20-Aug-2019 16:55
Magnesium	612		2.75	11.0	54.9	mg/Kg-dry	1	20-Aug-2019 16:55
Manganese	17.3		0.0472	0.110	0.549	mg/Kg-dry	1	20-Aug-2019 16:55
Nickel	5.39		0.0527	0.110	0.549	mg/Kg-dry	1	20-Aug-2019 16:55
Potassium	643		7.38	11.0	54.9	mg/Kg-dry	1	20-Aug-2019 16:55
Selenium	1.25		0.0999	0.220	0.549	mg/Kg-dry	1	20-Aug-2019 16:55
Silver	0.0404	J	0.0165	0.110	0.549	mg/Kg-dry	1	20-Aug-2019 16:55
Sodium	19.4	J	4.58	11.0	54.9	mg/Kg-dry	1	20-Aug-2019 16:55
Thallium	0.274	U	0.245	0.274	0.549	mg/Kg-dry	1	20-Aug-2019 16:55
Vanadium	82.7		0.0823	0.110	0.549	mg/Kg-dry	1	20-Aug-2019 16:55
Zinc	11.7		0.187	0.220	0.549	mg/Kg-dry	1	20-Aug-2019 16:55
MERCURY BY SW7471B			Method:SW7471A			Prep:SW7471A / 19-Aug-2019		Analyst: FO
Mercury	34.0		0.550	1.76	3.89	ug/Kg-dry	1	19-Aug-2019 19:10

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 Sample ID: BS-6-190813
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ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-06
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216	Method:ASTM D2216							Analyst: DFF
Percent Moisture	11.2		0.0100	0.0100	0.0100	wt%	1	15-Aug-2019 11:16
SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A	Method:NA							Analyst: SUB
Subcontract Analysis	See Attached		0	0			1	23-Aug-2019 16:44
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	Method:NA							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA-dry	1	20-Aug-2019 14:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-7-190813
 Collection Date: 13-Aug-2019 09:30

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-07
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED	
VOLATILES ORGANICS BY SW8260C		Method:SW8260						Analyst: WLR	
1,1,1-Trichloroethane	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
1,1,2,2-Tetrachloroethane	1.3	U	0.86	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
1,1,2-Trichlor-1,2,2-trifluoroethane	1.3	U	0.76	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
1,1,2-Trichloroethane	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
1,1-Dichloroethane	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
1,1-Dichloroethene	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
1,2,4-Trichlorobenzene	1.3	U	1.1	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
1,2-Dibromo-3-chloropropane	2.7	U	1.1	2.7	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
1,2-Dibromoethane	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
1,2-Dichlorobenzene	1.3	U	1.1	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
1,2-Dichloroethane	1.3	U	0.65	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
1,2-Dichloropropane	1.3	U	0.86	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
1,3-Dichlorobenzene	1.3	U	1.1	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
1,4-Dichlorobenzene	1.3	U	1.1	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
2-Butanone	2.7	U	1.4	2.7	11	ug/Kg-dry	1	20-Aug-2019 23:06	
2-Hexanone	2.7	U	1.5	2.7	11	ug/Kg-dry	1	20-Aug-2019 23:06	
4-Methyl-2-pentanone	2.7	U	2.2	2.7	11	ug/Kg-dry	1	20-Aug-2019 23:06	
Acetone	2.7	U	2.2	2.7	11	ug/Kg-dry	1	20-Aug-2019 23:06	
Benzene	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
Bromodichloromethane	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
Bromoform	2.7	U	0.65	2.7	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
Bromomethane	1.3	U	1.1	1.3	11	ug/Kg-dry	1	20-Aug-2019 23:06	
Carbon disulfide	2.7	U	1.1	2.7	11	ug/Kg-dry	1	20-Aug-2019 23:06	
Carbon tetrachloride	1.3	U	0.65	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
Chlorobenzene	1.3	U	0.65	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
Chloroethane	1.3	U	0.86	1.3	11	ug/Kg-dry	1	20-Aug-2019 23:06	
Chloroform	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
Chloromethane	1.3	U	0.54	1.3	11	ug/Kg-dry	1	20-Aug-2019 23:06	
cis-1,2-Dichloroethene	1.3	U	0.86	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
cis-1,3-Dichloropropene	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
Cyclohexane	1.3	nU	1.1	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
Dibromochloromethane	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
Dichlorodifluoromethane	1.3	U	0.76	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
Ethylbenzene	1.3	U	0.76	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
Isopropylbenzene	1.3	U	0.97	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
m,p-Xylene	2.7	U	1.7	2.7	11	ug/Kg-dry	1	20-Aug-2019 23:06	
Methyl acetate	1.3	U	0.76	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
Methyl tert-butyl ether	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
Methylcyclohexane	1.3	U	1.1	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	

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 Project: LHAAP- Borrow Source
 Sample ID: BS-7-190813
 Collection Date: 13-Aug-2019 09:30

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-07
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED	
VOLATILES ORGANICS BY SW8260C		Method:SW8260						Analyst: WLR	
Methylene chloride	2.7	U	1.1	2.7	11	ug/Kg-dry	1	20-Aug-2019 23:06	
o-Xylene	1.3	U	1.1	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
Styrene	1.3	U	0.76	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
Tetrachloroethene	1.3	U	0.76	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
Toluene	1.3	U	0.65	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
trans-1,2-Dichloroethene	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
trans-1,3-Dichloropropene	1.3	U	0.65	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
Trichloroethene	1.3	U	0.65	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
Trichlorofluoromethane	1.3	U	0.54	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
Vinyl chloride	1.3	U	0.86	1.3	2.2	ug/Kg-dry	1	20-Aug-2019 23:06	
Xylenes, Total	1.3	U	1.1	1.3	5.4	ug/Kg-dry	1	20-Aug-2019 23:06	
Surr: 1,2-Dichloroethane-d4	75.5			0	71-136	%REC	1	20-Aug-2019 23:06	
Surr: 4-Bromofluorobenzene	84.4			0	79-119	%REC	1	20-Aug-2019 23:06	
Surr: Dibromofluoromethane	83.8			0	78-119	%REC	1	20-Aug-2019 23:06	
Surr: Toluene-d8	89.7			0	85-116	%REC	1	20-Aug-2019 23:06	

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ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES BY 8270D		Method:SW8270				Prep:SW3541 / 14-Aug-2019		Analyst: SGA
1,1'-Biphenyl	110	U	46	110	190	ug/Kg-dry	1	15-Aug-2019 16:46
2,4,5-Trichlorophenol	37	U	23	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
2,4,6-Trichlorophenol	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
2,4-Dichlorophenol	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
2,4-Dimethylphenol	37	U	14	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
2,4-Dinitrophenol	110	U	12	110	190	ug/Kg-dry	1	15-Aug-2019 16:46
2,4-Dinitrotoluene	37	U	14	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
2,6-Dinitrotoluene	37	U	11	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
2-Chloronaphthalene	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
2-Chlorophenol	37	U	11	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
2-Methylnaphthalene	37	U	30	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
2-Methylphenol	37	U	14	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
2-Nitroaniline	37	U	18	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
2-Nitrophenol	37	U	20	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
3&4-Methylphenol	37	U	14	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
3,3'-Dichlorobenzidine	37	U	21	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
3-Nitroaniline	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
4,6-Dinitro-2-methylphenol	37	U	18	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
4-Bromophenyl phenyl ether	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
4-Chloro-3-methylphenol	110	U	37	110	190	ug/Kg-dry	1	15-Aug-2019 16:46
4-Chloroaniline	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
4-Chlorophenyl phenyl ether	37	U	18	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
4-Nitroaniline	37	U	14	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
4-Nitrophenol	37	U	18	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Acenaphthene	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Acenaphthylene	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Acetophenone	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Anthracene	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Atrazine	110	U	44	110	190	ug/Kg-dry	1	15-Aug-2019 16:46
Benzaldehyde	110	nU	44	110	190	ug/Kg-dry	1	15-Aug-2019 16:46
Benzo(a)anthracene	37	U	22	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Benzo(a)pyrene	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Benzo(b)fluoranthene	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Benzo(g,h,i)perylene	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Benzo(k)fluoranthene	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Bis(2-chloroethoxy)methane	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Bis(2-chloroethyl)ether	37	U	14	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Bis(2-chloroisopropyl)ether	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Bis(2-ethylhexyl)phthalate	37	U	14	37	190	ug/Kg-dry	1	15-Aug-2019 16:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-07
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES BY 8270D		Method:SW8270				Prep:SW3541 / 14-Aug-2019		Analyst: SGA
Butyl benzyl phthalate	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Caprolactam	110	U	57	110	190	ug/Kg-dry	1	15-Aug-2019 16:46
Carbazole	37	U	14	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Chrysene	37	U	19	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Di-n-butyl phthalate	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Di-n-octyl phthalate	37	U	21	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Dibenz(a,h)anthracene	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Dibenzofuran	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Diethyl phthalate	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Dimethyl phthalate	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Fluoranthene	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Fluorene	37	U	19	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Hexachlorobenzene	37	U	17	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Hexachlorobutadiene	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Hexachlorocyclopentadiene	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Hexachloroethane	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Indeno(1,2,3-cd)pyrene	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Isophorone	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
N-Nitrosodi-n-propylamine	37	U	19	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
N-Nitrosodiphenylamine	37	U	13	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Naphthalene	37	U	14	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Nitrobenzene	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Pentachlorophenol	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Phenanthrene	37	U	16	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Phenol	37	U	12	37	190	ug/Kg-dry	1	15-Aug-2019 16:46
Pyrene	110	U	48	110	190	ug/Kg-dry	1	15-Aug-2019 16:46
<i>Surr: 2,4,6-Tribromophenol</i>	<i>120</i>			<i>0</i>	<i>39-132</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 16:46</i>
<i>Surr: 2-Fluorobiphenyl</i>	<i>80.8</i>			<i>0</i>	<i>44-115</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 16:46</i>
<i>Surr: 2-Fluorophenol</i>	<i>41.8</i>			<i>0</i>	<i>35-115</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 16:46</i>
<i>Surr: 4-Terphenyl-d14</i>	<i>78.6</i>			<i>0</i>	<i>54-127</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 16:46</i>
<i>Surr: Nitrobenzene-d5</i>	<i>63.1</i>			<i>0</i>	<i>37-122</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 16:46</i>
<i>Surr: Phenol-d6</i>	<i>41.9</i>			<i>0</i>	<i>33-122</i>	<i>%REC</i>	<i>1</i>	<i>15-Aug-2019 16:46</i>

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 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
EXPLOSIVES BY SW8330A		Method:SW8330				Prep:SW8330 / 15-Aug-2019		Analyst: NPI
1,3,5-Trinitrobenzene	28.2	U	13.4	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:42
1,3-Dinitrobenzene	28.2	U	13.9	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:42
2,4,6-Trinitrotoluene	28.2	U	5.59	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:42
2,4-Dinitrotoluene	28.2	U	5.00	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:42
2,6-Dinitrotoluene	28.2	U	12.2	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:42
2-Amino-4,6-dinitrotoluene	28.2	U	10.5	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:42
2-Nitrotoluene	28.2	U	10.4	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:42
3-Nitrotoluene	28.2	U	5.53	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:42
4-Amino-2,6-dinitrotoluene	28.2	U	11.0	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:42
4-Nitrotoluene	28.2	U	12.6	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:42
HMX	28.2	U	10.5	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:42
Nitrobenzene	28.2	U	12.8	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:42
RDX	28.2	U	6.82	28.2	67.6	ug/Kg-dry	1	19-Aug-2019 00:42
<i>Surr: 1,2-Dinitrobenzene</i>	<i>82.9</i>			<i>0</i>	<i>50-150</i>	<i>%REC</i>	<i>1</i>	<i>19-Aug-2019 00:42</i>
SPLP METALS BY SW6020A		Method:SW6020		Leache:SW1312 / 27-Aug-2019		Prep:SW3010A / 27-Aug-2019		Analyst: JC
Arsenic	0.00100	U	0.000400	0.00100	0.00500	mg/L	1	27-Aug-2019 20:41
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	27-Aug-2019 20:41

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ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A			Method:SW6020			Prep:SW3050A / 15-Aug-2019		Analyst: JC
Aluminum	16,300		48.4	209	417	mg/Kg-dry	200	21-Aug-2019 13:34
Antimony	0.178	J	0.0678	0.104	0.522	mg/Kg-dry	1	20-Aug-2019 16:57
Arsenic	23.0		0.0730	0.104	0.522	mg/Kg-dry	1	20-Aug-2019 16:57
Barium	13.4		0.0313	0.104	0.522	mg/Kg-dry	1	20-Aug-2019 16:57
Beryllium	0.271	J	0.0219	0.104	0.522	mg/Kg-dry	1	20-Aug-2019 16:57
Cadmium	0.104	U	0.0282	0.104	0.522	mg/Kg-dry	1	20-Aug-2019 16:57
Calcium	49.5	J	5.18	10.4	52.2	mg/Kg-dry	1	20-Aug-2019 16:57
Chromium	47.8		0.0240	0.104	0.522	mg/Kg-dry	1	20-Aug-2019 16:57
Cobalt	0.783		0.0157	0.104	0.522	mg/Kg-dry	1	20-Aug-2019 16:57
Copper	3.28		0.0397	0.104	0.209	mg/Kg-dry	1	20-Aug-2019 16:57
Iron	83,500		382	2090	10400	mg/Kg-dry	200	21-Aug-2019 13:34
Lead	11.5		0.0136	0.104	0.522	mg/Kg-dry	1	20-Aug-2019 16:57
Magnesium	249		2.62	10.4	52.2	mg/Kg-dry	1	20-Aug-2019 16:57
Manganese	8.43		0.0449	0.104	0.522	mg/Kg-dry	1	20-Aug-2019 16:57
Nickel	2.58		0.0501	0.104	0.522	mg/Kg-dry	1	20-Aug-2019 16:57
Potassium	365		7.01	10.4	52.2	mg/Kg-dry	1	20-Aug-2019 16:57
Selenium	1.07		0.0950	0.104	0.522	mg/Kg-dry	1	20-Aug-2019 16:57
Silver	0.0322	J	0.0157	0.104	0.522	mg/Kg-dry	1	20-Aug-2019 16:57
Sodium	10.9	J	4.35	10.4	52.2	mg/Kg-dry	1	20-Aug-2019 16:57
Thallium	0.261	U	0.233	0.261	0.522	mg/Kg-dry	1	20-Aug-2019 16:57
Vanadium	106		0.0783	0.104	0.522	mg/Kg-dry	1	20-Aug-2019 16:57
Zinc	11.9		0.177	0.209	0.522	mg/Kg-dry	1	20-Aug-2019 16:57
MERCURY BY SW7471B			Method:SW7471A			Prep:SW7471A / 19-Aug-2019		Analyst: FO
Mercury	20.2		0.544	1.74	3.85	ug/Kg-dry	1	19-Aug-2019 19:15
MOISTURE - ASTM D2216			Method:ASTM D2216					Analyst: DFF
Percent Moisture	11.2		0.0100	0.0100	0.0100	wt%	1	15-Aug-2019 11:16
SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A			Method:NA					Analyst: SUB
Subcontract Analysis	See Attached		0	0			1	23-Aug-2019 16:44
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			Method:NA					Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA-dry	1	20-Aug-2019 14:27

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ANALYTICAL REPORT
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 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED	
VOLATILES ORGANICS BY SW8260C		Method:SW8260						Analyst: WLR	
1,1,1-Trichloroethane	1.5	U	0.62	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
1,1,2,2-Tetrachloroethane	1.5	U	1.0	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
1,1,2-Trichlor-1,2,2-trifluoroethane	1.5	U	0.87	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
1,1,2-Trichloroethane	1.5	U	0.62	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
1,1-Dichloroethane	1.5	U	0.62	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
1,1-Dichloroethene	1.5	U	0.62	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
1,2,4-Trichlorobenzene	1.5	U	1.2	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
1,2-Dibromo-3-chloropropane	3.1	U	1.2	3.1	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
1,2-Dibromoethane	1.5	U	0.62	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
1,2-Dichlorobenzene	1.5	U	1.2	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
1,2-Dichloroethane	1.5	U	0.75	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
1,2-Dichloropropane	1.5	U	1.0	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
1,3-Dichlorobenzene	1.5	U	1.2	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
1,4-Dichlorobenzene	1.5	U	1.2	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
2-Butanone	3.1	U	1.6	3.1	12	ug/Kg-dry	1	20-Aug-2019 23:29	
2-Hexanone	3.1	U	1.7	3.1	12	ug/Kg-dry	1	20-Aug-2019 23:29	
4-Methyl-2-pentanone	3.1	U	2.5	3.1	12	ug/Kg-dry	1	20-Aug-2019 23:29	
Acetone	3.1	U	2.5	3.1	12	ug/Kg-dry	1	20-Aug-2019 23:29	
Benzene	1.5	U	0.62	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
Bromodichloromethane	1.5	U	0.62	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
Bromoform	3.1	U	0.75	3.1	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
Bromomethane	1.5	U	1.2	1.5	12	ug/Kg-dry	1	20-Aug-2019 23:29	
Carbon disulfide	3.1	U	1.2	3.1	12	ug/Kg-dry	1	20-Aug-2019 23:29	
Carbon tetrachloride	1.5	U	0.75	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
Chlorobenzene	1.5	U	0.75	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
Chloroethane	1.5	U	1.0	1.5	12	ug/Kg-dry	1	20-Aug-2019 23:29	
Chloroform	1.5	U	0.62	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
Chloromethane	1.5	U	0.62	1.5	12	ug/Kg-dry	1	20-Aug-2019 23:29	
cis-1,2-Dichloroethene	1.5	U	1.0	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
cis-1,3-Dichloropropene	1.5	U	0.62	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
Cyclohexane	1.5	nU	1.2	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
Dibromochloromethane	1.5	U	0.62	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
Dichlorodifluoromethane	1.5	U	0.87	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
Ethylbenzene	1.5	U	0.87	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
Isopropylbenzene	1.5	U	1.1	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
m,p-Xylene	3.1	U	2.0	3.1	12	ug/Kg-dry	1	20-Aug-2019 23:29	
Methyl acetate	1.5	U	0.87	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
Methyl tert-butyl ether	1.5	U	0.62	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
Methylcyclohexane	1.5	U	1.2	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	

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 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED	
VOLATILES ORGANICS BY SW8260C		Method:SW8260						Analyst: WLR	
Methylene chloride	3.1	U	1.2	3.1	12	ug/Kg-dry	1	20-Aug-2019 23:29	
o-Xylene	1.5	U	1.2	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
Styrene	1.5	U	0.87	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
Tetrachloroethene	1.5	U	0.87	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
Toluene	1.5	U	0.75	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
trans-1,2-Dichloroethene	1.5	U	0.62	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
trans-1,3-Dichloropropene	1.5	U	0.75	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
Trichloroethene	1.5	U	0.75	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
Trichlorofluoromethane	1.5	U	0.62	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
Vinyl chloride	1.5	U	1.0	1.5	2.5	ug/Kg-dry	1	20-Aug-2019 23:29	
Xylenes, Total	1.5	U	1.2	1.5	6.2	ug/Kg-dry	1	20-Aug-2019 23:29	
Surr: 1,2-Dichloroethane-d4	78.4			0	71-136	%REC	1	20-Aug-2019 23:29	
Surr: 4-Bromofluorobenzene	84.5			0	79-119	%REC	1	20-Aug-2019 23:29	
Surr: Dibromofluoromethane	85.0			0	78-119	%REC	1	20-Aug-2019 23:29	
Surr: Toluene-d8	87.3			0	85-116	%REC	1	20-Aug-2019 23:29	

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ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES BY 8270D		Method:SW8270				Prep:SW3541 / 14-Aug-2019		Analyst: SGA
1,1'-Biphenyl	110	U	43	110	180	ug/Kg-dry	1	15-Aug-2019 16:25
2,4,5-Trichlorophenol	35	U	22	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
2,4,6-Trichlorophenol	35	U	12	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
2,4-Dichlorophenol	35	U	13	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
2,4-Dimethylphenol	35	U	14	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
2,4-Dinitrophenol	110	U	12	110	180	ug/Kg-dry	1	15-Aug-2019 16:25
2,4-Dinitrotoluene	35	U	14	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
2,6-Dinitrotoluene	35	U	11	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
2-Chloronaphthalene	35	U	13	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
2-Chlorophenol	35	U	11	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
2-Methylnaphthalene	35	U	28	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
2-Methylphenol	35	U	14	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
2-Nitroaniline	35	U	17	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
2-Nitrophenol	35	U	19	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
3&4-Methylphenol	35	U	14	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
3,3'-Dichlorobenzidine	35	U	20	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
3-Nitroaniline	35	U	16	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
4,6-Dinitro-2-methylphenol	35	U	17	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
4-Bromophenyl phenyl ether	35	U	16	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
4-Chloro-3-methylphenol	110	U	35	110	180	ug/Kg-dry	1	15-Aug-2019 16:25
4-Chloroaniline	35	U	16	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
4-Chlorophenyl phenyl ether	35	U	17	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
4-Nitroaniline	35	U	14	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
4-Nitrophenol	110	U	17	110	180	ug/Kg-dry	1	15-Aug-2019 16:25
Acenaphthene	35	U	16	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Acenaphthylene	35	U	12	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Acetophenone	35	U	12	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Anthracene	35	U	13	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Atrazine	110	U	42	110	180	ug/Kg-dry	1	15-Aug-2019 16:25
Benzaldehyde	110	nU	42	110	180	ug/Kg-dry	1	15-Aug-2019 16:25
Benzo(a)anthracene	35	U	21	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Benzo(a)pyrene	35	U	13	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Benzo(b)fluoranthene	35	U	13	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Benzo(g,h,i)perylene	35	U	12	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Benzo(k)fluoranthene	35	U	16	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Bis(2-chloroethoxy)methane	35	U	13	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Bis(2-chloroethyl)ether	35	U	14	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Bis(2-chloroisopropyl)ether	35	U	12	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Bis(2-ethylhexyl)phthalate	35	U	14	35	180	ug/Kg-dry	1	15-Aug-2019 16:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-8-190813
 Collection Date: 13-Aug-2019 09:39

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-08
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES BY 8270D	Method:SW8270					Prep:SW3541 / 14-Aug-2019		Analyst: SGA
Butyl benzyl phthalate	35	U	13	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Caprolactam	110	U	54	110	180	ug/Kg-dry	1	15-Aug-2019 16:25
Carbazole	35	U	14	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Chrysene	35	U	18	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Di-n-butyl phthalate	35	U	13	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Di-n-octyl phthalate	35	U	20	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Dibenz(a,h)anthracene	35	U	16	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Dibenzofuran	35	U	15	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Diethyl phthalate	35	U	13	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Dimethyl phthalate	35	U	16	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Fluoranthene	35	U	15	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Fluorene	35	U	18	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Hexachlorobenzene	35	U	16	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Hexachlorobutadiene	35	U	15	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Hexachlorocyclopentadiene	35	U	15	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Hexachloroethane	35	U	12	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Indeno(1,2,3-cd)pyrene	35	U	15	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Isophorone	35	U	12	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
N-Nitrosodi-n-propylamine	35	U	18	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
N-Nitrosodiphenylamine	35	U	13	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Naphthalene	35	U	14	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Nitrobenzene	35	U	15	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Pentachlorophenol	35	U	12	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Phenanthrene	35	U	15	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Phenol	35	U	12	35	180	ug/Kg-dry	1	15-Aug-2019 16:25
Pyrene	110	U	45	110	180	ug/Kg-dry	1	15-Aug-2019 16:25
<i>Surr: 2,4,6-Tribromophenol</i>	121			0	39-132	%REC	1	15-Aug-2019 16:25
<i>Surr: 2-Fluorobiphenyl</i>	87.9			0	44-115	%REC	1	15-Aug-2019 16:25
<i>Surr: 2-Fluorophenol</i>	69.9			0	35-115	%REC	1	15-Aug-2019 16:25
<i>Surr: 4-Terphenyl-d14</i>	92.2			0	54-127	%REC	1	15-Aug-2019 16:25
<i>Surr: Nitrobenzene-d5</i>	75.6			0	37-122	%REC	1	15-Aug-2019 16:25
<i>Surr: Phenol-d6</i>	66.2			0	33-122	%REC	1	15-Aug-2019 16:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-8-190813
 Collection Date: 13-Aug-2019 09:39

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-08
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
EXPLOSIVES BY SW8330A			Method:SW8330			Prep:SW8330 / 15-Aug-2019		Analyst: NPI
1,3,5-Trinitrobenzene	26.5	U	12.6	26.5	63.5	ug/Kg-dry	1	19-Aug-2019 01:24
1,3-Dinitrobenzene	26.5	U	13.0	26.5	63.5	ug/Kg-dry	1	19-Aug-2019 01:24
2,4,6-Trinitrotoluene	26.5	U	5.25	26.5	63.5	ug/Kg-dry	1	19-Aug-2019 01:24
2,4-Dinitrotoluene	26.5	U	4.70	26.5	63.5	ug/Kg-dry	1	19-Aug-2019 01:24
2,6-Dinitrotoluene	26.5	U	11.4	26.5	63.5	ug/Kg-dry	1	19-Aug-2019 01:24
2-Amino-4,6-dinitrotoluene	26.5	U	9.85	26.5	63.5	ug/Kg-dry	1	19-Aug-2019 01:24
2-Nitrotoluene	26.5	U	9.81	26.5	63.5	ug/Kg-dry	1	19-Aug-2019 01:24
3-Nitrotoluene	26.5	U	5.20	26.5	63.5	ug/Kg-dry	1	19-Aug-2019 01:24
4-Amino-2,6-dinitrotoluene	26.5	U	10.3	26.5	63.5	ug/Kg-dry	1	19-Aug-2019 01:24
4-Nitrotoluene	26.5	U	11.9	26.5	63.5	ug/Kg-dry	1	19-Aug-2019 01:24
HMX	26.5	U	9.90	26.5	63.5	ug/Kg-dry	1	19-Aug-2019 01:24
Nitrobenzene	26.5	U	12.1	26.5	63.5	ug/Kg-dry	1	19-Aug-2019 01:24
RDX	26.5	U	6.42	26.5	63.5	ug/Kg-dry	1	19-Aug-2019 01:24
<i>Surr: 1,2-Dinitrobenzene</i>	<i>83.1</i>			<i>0</i>	<i>50-150</i>	<i>%REC</i>	<i>1</i>	<i>19-Aug-2019 01:24</i>
METALS BY SW6020A			Method:SW6020			Prep:SW3050A / 15-Aug-2019		Analyst: JC
Aluminum	10,300		22.7	97.8	196	mg/Kg-dry	100	21-Aug-2019 13:36
Antimony	0.172	J	0.0636	0.0978	0.489	mg/Kg-dry	1	20-Aug-2019 17:00
Arsenic	10.5		0.0685	0.0978	0.489	mg/Kg-dry	1	20-Aug-2019 17:00
Barium	22.1		0.0294	0.0978	0.489	mg/Kg-dry	1	20-Aug-2019 17:00
Beryllium	0.256	J	0.0205	0.0978	0.489	mg/Kg-dry	1	20-Aug-2019 17:00
Cadmium	0.0978	U	0.0264	0.0978	0.489	mg/Kg-dry	1	20-Aug-2019 17:00
Calcium	149		4.85	9.78	48.9	mg/Kg-dry	1	20-Aug-2019 17:00
Chromium	32.4		0.0225	0.0978	0.489	mg/Kg-dry	1	20-Aug-2019 17:00
Cobalt	0.813		0.0147	0.0978	0.489	mg/Kg-dry	1	20-Aug-2019 17:00
Copper	2.83		0.0372	0.0978	0.196	mg/Kg-dry	1	20-Aug-2019 17:00
Iron	42,100		179	978	4890	mg/Kg-dry	100	21-Aug-2019 13:36
Lead	7.89		0.0127	0.0978	0.489	mg/Kg-dry	1	20-Aug-2019 17:00
Magnesium	254		2.46	9.78	48.9	mg/Kg-dry	1	20-Aug-2019 17:00
Manganese	29.6		0.0421	0.0978	0.489	mg/Kg-dry	1	20-Aug-2019 17:00
Nickel	2.72		0.0470	0.0978	0.489	mg/Kg-dry	1	20-Aug-2019 17:00
Potassium	296		6.57	9.78	48.9	mg/Kg-dry	1	20-Aug-2019 17:00
Selenium	0.680		0.0890	0.196	0.489	mg/Kg-dry	1	20-Aug-2019 17:00
Silver	0.0395	J	0.0147	0.0978	0.489	mg/Kg-dry	1	20-Aug-2019 17:00
Sodium	12.9	J	4.08	9.78	48.9	mg/Kg-dry	1	20-Aug-2019 17:00
Thallium	0.245	U	0.218	0.245	0.489	mg/Kg-dry	1	20-Aug-2019 17:00
Vanadium	55.7		0.0734	0.0978	0.489	mg/Kg-dry	1	20-Aug-2019 17:00
Zinc	7.86		0.166	0.196	0.489	mg/Kg-dry	1	20-Aug-2019 17:00
MERCURY BY SW7471B			Method:SW7471A			Prep:SW7471A / 19-Aug-2019		Analyst: FO
Mercury	26.0		0.501	1.60	3.54	ug/Kg-dry	1	19-Aug-2019 19:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP- Borrow Source
 Sample ID: BS-8-190813
 Collection Date: 13-Aug-2019 09:39

ANALYTICAL REPORT
 WorkOrder:HS19080691
 Lab ID:HS19080691-08
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216	Method:ASTM D2216							Analyst: DFF
Percent Moisture	5.55		0.0100	0.0100	0.0100	wt%	1	15-Aug-2019 11:16
SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A	Method:NA							Analyst: SUB
Subcontract Analysis	See Attached		0	0			1	23-Aug-2019 16:44
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	Method:NA							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA-dry	1	20-Aug-2019 14:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

WEIGHT LOG

Client: Aptim Environmental & Infrastructure, Inc.

Project: LHAAP- Borrow Source

WorkOrder: HS19080691

Batch ID: 3260 Method: VOLATILES ORGANICS BY SW8260C

SampID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS19080691-01	1	4.494 (g)	5 (mL)	1.11	TerraCore (5035A)
HS19080691-02	1	5.709 (g)	5 (mL)	0.88	TerraCore (5035A)
HS19080691-03	1	5.382 (g)	5 (mL)	0.93	TerraCore (5035A)
HS19080691-04	1	5.314 (g)	5 (mL)	0.94	TerraCore (5035A)
HS19080691-05	1	5.137 (g)	5 (mL)	0.97	TerraCore (5035A)
HS19080691-06	1	6.03 (g)	5 (mL)	0.83	TerraCore (5035A)
HS19080691-07	1	5.192 (g)	5 (mL)	0.96	TerraCore (5035A)
HS19080691-08	1	4.248 (g)	5 (mL)	1.18	TerraCore (5035A)

Batch ID: 144158 Method: SEMIVOLATILES BY 8270D Prep: 3541_B

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19080691-01	1	30.27	1 (mL)	0.03304
HS19080691-02	1	30.28	1 (mL)	0.03303
HS19080691-03	1	30.51	1 (mL)	0.03278
HS19080691-04	1	30.29	1 (mL)	0.03301
HS19080691-05	1	30.33	1 (mL)	0.03297
HS19080691-06	1	30.28	1 (mL)	0.03303
HS19080691-07	1	30.41	1 (mL)	0.03288
HS19080691-08	1	30.1	1 (mL)	0.03322

Batch ID: 144180 Method: METALS BY SW6020A Prep: 3050_I_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19080691-01	1	0.5212	50 (mL)	95.93
HS19080691-02	1	0.5222	50 (mL)	95.75
HS19080691-03	1	0.5271	50 (mL)	94.86
HS19080691-04	1	0.5294	50 (mL)	94.45
HS19080691-05	1	0.5125	50 (mL)	97.56
HS19080691-06	1	0.513	50 (mL)	97.47
HS19080691-07	1	0.5396	50 (mL)	92.66
HS19080691-08	1	0.5411	50 (mL)	92.4

Batch ID: 144196 Method: EXPLOSIVES BY SW8330A Prep: 8330_SPR

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19080691-01	1	2	10 (mL)	5
HS19080691-02	1	2	10 (mL)	5
HS19080691-03	1	2	10 (mL)	5
HS19080691-04	1	2	10 (mL)	5
HS19080691-05	1	2	10 (mL)	5
HS19080691-06	1	2	10 (mL)	5
HS19080691-07	1	2	10 (mL)	5
HS19080691-08	1	2	10 (mL)	5

WEIGHT LOG

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

Batch ID: 144271 **Method:** MERCURY BY SW7471B **Prep:** HG_S_LOWPR

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19080691-01	1	0.5762	40 (mL)	69.42
HS19080691-02	1	0.5726	40 (mL)	69.86
HS19080691-03	1	0.5699	40 (mL)	70.19
HS19080691-04	1	0.5848	40 (mL)	68.4
HS19080691-05	1	0.5835	40 (mL)	68.55
HS19080691-06	1	0.5771	40 (mL)	69.31
HS19080691-07	1	0.5833	40 (mL)	68.58
HS19080691-08	1	0.5962	40 (mL)	67.09

Batch ID: 144600 **Method:** SPLP METALS BY SW6020A **Prep:** 3010A_SPLP

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19080691-02	1	10	10 (mL)	1
HS19080691-07	1	10	10 (mL)	1

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: 144158 (0)		Test Name : SEMIVOLATILES BY 8270D			Matrix: Soil	
HS19080691-01	BS-1-190813	13 Aug 2019 08:50		14 Aug 2019 12:45	15 Aug 2019 13:16	1
HS19080691-02	BS-2-190813	13 Aug 2019 08:57		14 Aug 2019 12:45	15 Aug 2019 14:19	1
HS19080691-03	BS-3-190813	13 Aug 2019 09:04		14 Aug 2019 12:45	15 Aug 2019 14:40	1
HS19080691-04	BS-4-190813	13 Aug 2019 09:11		14 Aug 2019 12:45	15 Aug 2019 15:01	1
HS19080691-05	BS-5-190813	13 Aug 2019 09:18		14 Aug 2019 12:45	15 Aug 2019 15:22	1
HS19080691-06	BS-6-190813	13 Aug 2019 09:24		14 Aug 2019 12:45	15 Aug 2019 15:43	1
HS19080691-07	BS-7-190813	13 Aug 2019 09:30		14 Aug 2019 12:45	15 Aug 2019 16:46	1
HS19080691-08	BS-8-190813	13 Aug 2019 09:39		14 Aug 2019 12:45	15 Aug 2019 16:25	1
Batch ID: 144180 (0)		Test Name : METALS BY SW6020A			Matrix: Soil	
HS19080691-01	BS-1-190813	13 Aug 2019 08:50		15 Aug 2019 10:58	21 Aug 2019 13:07	200
HS19080691-01	BS-1-190813	13 Aug 2019 08:50		15 Aug 2019 10:58	20 Aug 2019 17:37	5
HS19080691-01	BS-1-190813	13 Aug 2019 08:50		15 Aug 2019 10:58	20 Aug 2019 16:30	1
HS19080691-02	BS-2-190813	13 Aug 2019 08:57		15 Aug 2019 10:58	21 Aug 2019 13:13	200
HS19080691-02	BS-2-190813	13 Aug 2019 08:57		15 Aug 2019 10:58	20 Aug 2019 16:47	1
HS19080691-03	BS-3-190813	13 Aug 2019 09:04		15 Aug 2019 10:58	21 Aug 2019 13:16	100
HS19080691-03	BS-3-190813	13 Aug 2019 09:04		15 Aug 2019 10:58	20 Aug 2019 16:49	1
HS19080691-04	BS-4-190813	13 Aug 2019 09:11		15 Aug 2019 10:58	21 Aug 2019 13:18	200
HS19080691-04	BS-4-190813	13 Aug 2019 09:11		15 Aug 2019 10:58	20 Aug 2019 16:51	1
HS19080691-05	BS-5-190813	13 Aug 2019 09:18		15 Aug 2019 10:58	21 Aug 2019 13:30	200
HS19080691-05	BS-5-190813	13 Aug 2019 09:18		15 Aug 2019 10:58	20 Aug 2019 16:53	1
HS19080691-06	BS-6-190813	13 Aug 2019 09:24		15 Aug 2019 10:58	21 Aug 2019 13:32	200
HS19080691-06	BS-6-190813	13 Aug 2019 09:24		15 Aug 2019 10:58	20 Aug 2019 16:55	1
HS19080691-07	BS-7-190813	13 Aug 2019 09:30		15 Aug 2019 10:58	21 Aug 2019 13:34	200
HS19080691-07	BS-7-190813	13 Aug 2019 09:30		15 Aug 2019 10:58	20 Aug 2019 16:57	1
HS19080691-08	BS-8-190813	13 Aug 2019 09:39		15 Aug 2019 10:58	21 Aug 2019 13:36	100
HS19080691-08	BS-8-190813	13 Aug 2019 09:39		15 Aug 2019 10:58	20 Aug 2019 17:00	1
Batch ID: 144196 (0)		Test Name : EXPLOSIVES BY SW8330A			Matrix: Soil	
HS19080691-01	BS-1-190813	13 Aug 2019 08:50		15 Aug 2019 16:34	18 Aug 2019 17:44	1
HS19080691-02	BS-2-190813	13 Aug 2019 08:57		15 Aug 2019 16:34	18 Aug 2019 19:50	1
HS19080691-03	BS-3-190813	13 Aug 2019 09:04		15 Aug 2019 16:34	18 Aug 2019 20:32	1
HS19080691-04	BS-4-190813	13 Aug 2019 09:11		15 Aug 2019 16:34	18 Aug 2019 21:13	1
HS19080691-05	BS-5-190813	13 Aug 2019 09:18		15 Aug 2019 16:34	18 Aug 2019 21:55	1
HS19080691-06	BS-6-190813	13 Aug 2019 09:24		15 Aug 2019 16:34	19 Aug 2019 00:01	1
HS19080691-07	BS-7-190813	13 Aug 2019 09:30		15 Aug 2019 16:34	19 Aug 2019 00:42	1
HS19080691-08	BS-8-190813	13 Aug 2019 09:39		15 Aug 2019 16:34	19 Aug 2019 01:24	1

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: 144271 (0)		Test Name : MERCURY BY SW7471B			Matrix: Soil	
HS19080691-01	BS-1-190813	13 Aug 2019 08:50		19 Aug 2019 11:30	19 Aug 2019 18:58	1
HS19080691-02	BS-2-190813	13 Aug 2019 08:57		19 Aug 2019 11:30	19 Aug 2019 19:03	1
HS19080691-03	BS-3-190813	13 Aug 2019 09:04		19 Aug 2019 11:30	19 Aug 2019 19:05	1
HS19080691-04	BS-4-190813	13 Aug 2019 09:11		19 Aug 2019 11:30	19 Aug 2019 19:06	1
HS19080691-05	BS-5-190813	13 Aug 2019 09:18		19 Aug 2019 11:30	19 Aug 2019 19:08	1
HS19080691-06	BS-6-190813	13 Aug 2019 09:24		19 Aug 2019 11:30	19 Aug 2019 19:10	1
HS19080691-07	BS-7-190813	13 Aug 2019 09:30		19 Aug 2019 11:30	19 Aug 2019 19:15	1
HS19080691-08	BS-8-190813	13 Aug 2019 09:39		19 Aug 2019 11:30	19 Aug 2019 19:17	1
Batch ID: 144600 (0)		Test Name : SPLP METALS BY SW6020A			Matrix: Soil	
HS19080691-02	BS-2-190813	13 Aug 2019 08:57	27 Aug 2019 08:00	27 Aug 2019 17:00	27 Aug 2019 20:31	1
HS19080691-07	BS-7-190813	13 Aug 2019 09:30	27 Aug 2019 08:00	27 Aug 2019 17:00	27 Aug 2019 20:41	1
Batch ID: R344368 (0)		Test Name : MOISTURE - ASTM D2216			Matrix: Soil	
HS19080691-01	BS-1-190813	13 Aug 2019 08:50			15 Aug 2019 11:16	1
HS19080691-02	BS-2-190813	13 Aug 2019 08:57			15 Aug 2019 11:16	1
HS19080691-03	BS-3-190813	13 Aug 2019 09:04			15 Aug 2019 11:16	1
HS19080691-04	BS-4-190813	13 Aug 2019 09:11			15 Aug 2019 11:16	1
HS19080691-05	BS-5-190813	13 Aug 2019 09:18			15 Aug 2019 11:16	1
HS19080691-06	BS-6-190813	13 Aug 2019 09:24			15 Aug 2019 11:16	1
HS19080691-07	BS-7-190813	13 Aug 2019 09:30			15 Aug 2019 11:16	1
HS19080691-08	BS-8-190813	13 Aug 2019 09:39			15 Aug 2019 11:16	1
Batch ID: R344592 (0)		Test Name : SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			Matrix: Soil	
HS19080691-01	BS-1-190813	13 Aug 2019 08:50			20 Aug 2019 14:27	1
HS19080691-02	BS-2-190813	13 Aug 2019 08:57			20 Aug 2019 14:27	1
HS19080691-03	BS-3-190813	13 Aug 2019 09:04			20 Aug 2019 14:27	1
HS19080691-04	BS-4-190813	13 Aug 2019 09:11			20 Aug 2019 14:27	1
HS19080691-05	BS-5-190813	13 Aug 2019 09:18			20 Aug 2019 14:27	1
HS19080691-06	BS-6-190813	13 Aug 2019 09:24			20 Aug 2019 14:27	1
HS19080691-07	BS-7-190813	13 Aug 2019 09:30			20 Aug 2019 14:27	1
HS19080691-08	BS-8-190813	13 Aug 2019 09:39			20 Aug 2019 14:27	1
Batch ID: R344632 (0)		Test Name : VOLATILES ORGANICS BY SW8260C			Matrix: Soil	
HS19080691-01	BS-1-190813	13 Aug 2019 08:50			20 Aug 2019 20:26	1
HS19080691-02	BS-2-190813	13 Aug 2019 08:57			20 Aug 2019 20:49	1
HS19080691-03	BS-3-190813	13 Aug 2019 09:04			20 Aug 2019 21:12	1
HS19080691-04	BS-4-190813	13 Aug 2019 09:11			20 Aug 2019 21:35	1
HS19080691-05	BS-5-190813	13 Aug 2019 09:18			20 Aug 2019 22:20	1
HS19080691-06	BS-6-190813	13 Aug 2019 09:24			20 Aug 2019 22:43	1
HS19080691-07	BS-7-190813	13 Aug 2019 09:30			20 Aug 2019 23:06	1
HS19080691-08	BS-8-190813	13 Aug 2019 09:39			20 Aug 2019 23:29	1

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: R344881 (0)		Test Name : SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A			Matrix: Soil	
HS19080691-01	BS-1-190813	13 Aug 2019 08:50			23 Aug 2019 16:44	1
HS19080691-02	BS-2-190813	13 Aug 2019 08:57			23 Aug 2019 16:44	1
HS19080691-03	BS-3-190813	13 Aug 2019 09:04			23 Aug 2019 16:44	1
HS19080691-04	BS-4-190813	13 Aug 2019 09:11			23 Aug 2019 16:44	1
HS19080691-05	BS-5-190813	13 Aug 2019 09:18			23 Aug 2019 16:44	1
HS19080691-06	BS-6-190813	13 Aug 2019 09:24			23 Aug 2019 16:44	1
HS19080691-07	BS-7-190813	13 Aug 2019 09:30			23 Aug 2019 16:44	1
HS19080691-08	BS-8-190813	13 Aug 2019 09:39			23 Aug 2019 16:44	1

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144196 (0)		Instrument: HPLC3		Method: EXPLOSIVES BY SW8330A						
MBLK	Sample ID: MBLK-144196	Units: ug/Kg			Analysis Date: 18-Aug-2019 15:39					
Client ID:	Run ID: HPLC3_344575	SeqNo: 5216367		PrepDate: 15-Aug-2019		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,3,5-Trinitrobenzene	25.0	60.0								U
1,3-Dinitrobenzene	25.0	60.0								U
2,4,6-Trinitrotoluene	25.0	60.0								U
2,4-Dinitrotoluene	25.0	60.0								U
2,6-Dinitrotoluene	25.0	60.0								U
2-Amino-4,6-dinitrotoluene	25.0	60.0								U
2-Nitrotoluene	25.0	60.0								U
3-Nitrotoluene	25.0	60.0								U
4-Amino-2,6-dinitrotoluene	25.0	60.0								U
4-Nitrotoluene	25.0	60.0								U
HMX	25.0	60.0								U
Nitrobenzene	25.0	60.0								U
RDX	25.0	60.0								U
<i>Surr: 1,2-Dinitrobenzene</i>	<i>1024</i>	<i>60.0</i>	<i>1250</i>	<i>0</i>	<i>81.9</i>	<i>50 - 150</i>				

LCS	Sample ID: LCS-144196	Units: ug/Kg			Analysis Date: 18-Aug-2019 17:02					
Client ID:	Run ID: HPLC3_344575	SeqNo: 5216368		PrepDate: 15-Aug-2019		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,3,5-Trinitrobenzene	1289	60.0	1250	0	103	81 - 123				
1,3-Dinitrobenzene	1287	60.0	1250	0	103	84 - 124				
2,4,6-Trinitrotoluene	1259	60.0	1250	0	101	75 - 125				
2,4-Dinitrotoluene	1276	60.0	1250	0	102	82 - 123				
2,6-Dinitrotoluene	1281	60.0	1250	0	102	86 - 119				
2-Amino-4,6-dinitrotoluene	1257	60.0	1250	0	101	87 - 121				
2-Nitrotoluene	1365	60.0	1250	0	109	84 - 124				
3-Nitrotoluene	1272	60.0	1250	0	102	79 - 127				
4-Amino-2,6-dinitrotoluene	1264	60.0	1250	0	101	84 - 124				
4-Nitrotoluene	1340	60.0	1250	0	107	83 - 122				
HMX	1348	60.0	1250	0	108	77 - 122				
Nitrobenzene	1275	60.0	1250	0	102	80 - 128				
RDX	1328	60.0	1250	0	106	82 - 128				
<i>Surr: 1,2-Dinitrobenzene</i>	<i>1286</i>	<i>60.0</i>	<i>1250</i>	<i>0</i>	<i>103</i>	<i>50 - 150</i>				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144196 (0)		Instrument: HPLC3		Method: EXPLOSIVES BY SW8330A						
MS	Sample ID: HS19080691-01MS	Units: ug/Kg			Analysis Date: 18-Aug-2019 18:26					
Client ID: BS-1-190813	Run ID: HPLC3_344575	SeqNo: 5216370		PrepDate: 15-Aug-2019		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,3,5-Trinitrobenzene	1469	60.0	1250	0	118	81 - 123				
1,3-Dinitrobenzene	1365	60.0	1250	0	109	84 - 124				
2,4,6-Trinitrotoluene	1009	60.0	1250	0	80.7	75 - 125				
2,4-Dinitrotoluene	1327	60.0	1250	0	106	82 - 123				
2,6-Dinitrotoluene	1325	60.0	1250	0	106	86 - 119				
2-Amino-4,6-dinitrotoluene	1255	60.0	1250	0	100	87 - 121				
2-Nitrotoluene	1442	60.0	1250	0	115	84 - 124				
3-Nitrotoluene	1358	60.0	1250	0	109	79 - 127				
4-Amino-2,6-dinitrotoluene	1334	60.0	1250	0	107	84 - 124				
4-Nitrotoluene	1405	60.0	1250	0	112	83 - 122				
HMX	1406	60.0	1250	0	112	77 - 122				
Nitrobenzene	1306	60.0	1250	0	104	80 - 128				
RDX	1325	60.0	1250	0	106	82 - 128				
<i>Surr: 1,2-Dinitrobenzene</i>	<i>1100</i>	<i>60.0</i>	<i>1250</i>	<i>0</i>	<i>88.0</i>	<i>50 - 150</i>				

MSD	Sample ID: HS19080691-01MSD	Units: ug/Kg			Analysis Date: 18-Aug-2019 19:08					
Client ID: BS-1-190813	Run ID: HPLC3_344575	SeqNo: 5216371		PrepDate: 15-Aug-2019		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,3,5-Trinitrobenzene	1446	60.0	1250	0	116	81 - 123	1469	1.58	30	
1,3-Dinitrobenzene	1332	60.0	1250	0	107	84 - 124	1365	2.48	30	
2,4,6-Trinitrotoluene	979.5	60.0	1250	0	78.4	75 - 125	1009	2.95	30	
2,4-Dinitrotoluene	1307	60.0	1250	0	105	82 - 123	1327	1.51	30	
2,6-Dinitrotoluene	1312	60.0	1250	0	105	86 - 119	1325	1	30	
2-Amino-4,6-dinitrotoluene	1301	60.0	1250	0	104	87 - 121	1255	3.53	30	
2-Nitrotoluene	1394	60.0	1250	0	112	84 - 124	1442	3.37	30	
3-Nitrotoluene	1362	60.0	1250	0	109	79 - 127	1358	0.228	30	
4-Amino-2,6-dinitrotoluene	1339	60.0	1250	0	107	84 - 124	1334	0.437	30	
4-Nitrotoluene	1384	60.0	1250	0	111	83 - 122	1405	1.55	30	
HMX	1399	60.0	1250	0	112	77 - 122	1406	0.501	30	
Nitrobenzene	1288	60.0	1250	0	103	80 - 128	1306	1.33	30	
RDX	1294	60.0	1250	0	104	82 - 128	1325	2.36	30	
<i>Surr: 1,2-Dinitrobenzene</i>	<i>1083</i>	<i>60.0</i>	<i>1250</i>	<i>0</i>	<i>86.6</i>	<i>50 - 150</i>	<i>1100</i>	<i>1.55</i>	<i>30</i>	

The following samples were analyzed in this batch: HS19080691-01 HS19080691-02 HS19080691-03 HS19080691-04
 HS19080691-05 HS19080691-06 HS19080691-07 HS19080691-08

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144180 (0)		Instrument: ICPMS04		Method: METALS BY SW6020A						
MBLK	Sample ID: MBLK-144180	Units: mg/Kg			Analysis Date: 21-Aug-2019 13:03					
Client ID:	Run ID: ICPMS04_344672	SeqNo: 5218396	PrepDate: 15-Aug-2019	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.3982	1.98								J
Antimony	0.0990	0.495								U
Arsenic	0.0990	0.495								U
Barium	0.0990	0.495								U
Beryllium	0.0990	0.495								U
Cadmium	0.0990	0.495								U
Calcium	9.90	49.5								U
Chromium	0.0990	0.495								U
Cobalt	0.0990	0.495								U
Copper	0.0990	0.198								U
Iron	9.90	49.5								U
Lead	0.0990	0.495								U
Magnesium	9.90	49.5								U
Manganese	0.0990	0.495								U
Nickel	0.0990	0.495								U
Potassium	9.90	49.5								U
Selenium	0.0990	0.495								U
Silver	0.0990	0.495								U
Sodium	9.90	49.5								U
Thallium	0.247	0.495								U
Vanadium	0.0990	0.495								U
Zinc	0.198	0.495								U

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144180 (0)	Instrument: ICPMS04	Method: METALS BY SW6020A
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LCS		Sample ID: LCS-144180			Units: mg/Kg		Analysis Date: 20-Aug-2019 16:10			
Client ID:		Run ID: ICPMS04_344582			SeqNo: 5216938		PrepDate: 15-Aug-2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	51.11	2.02	60.48	0	84.5	80 - 120				
Antimony	8.492	0.504	10.08	0	84.2	80 - 120				
Barium	9.954	0.504	10.08	0	98.7	80 - 120				
Beryllium	10.26	0.504	10.08	0	102	80 - 120				
Cadmium	9.928	0.504	10.08	0	98.5	80 - 120				
Calcium	831.2	50.4	1008	0	82.5	80 - 120				
Chromium	8.379	0.504	10.08	0	83.1	80 - 120				
Cobalt	8.519	0.504	10.08	0	84.5	80 - 120				
Copper	8.561	0.202	10.08	0	84.9	80 - 120				
Iron	858.4	50.4	1008	0	85.2	80 - 120				
Lead	9.768	0.504	10.08	0	96.9	80 - 120				
Magnesium	848.9	50.4	1008	0	84.2	80 - 120				
Manganese	8.522	0.504	10.08	0	84.5	80 - 120				
Nickel	8.565	0.504	10.08	0	85.0	80 - 120				
Potassium	852.4	50.4	1008	0	84.6	80 - 120				
Selenium	8.169	0.504	10.08	0	81.0	80 - 120				
Silver	9.224	0.504	10.08	0	91.5	80 - 120				
Sodium	842.3	50.4	1008	0	83.6	80 - 120				
Thallium	9.289	0.504	10.08	0	92.1	80 - 120				
Vanadium	8.3	0.504	10.08	0	82.3	80 - 120				
Zinc	8.495	0.504	10.08	0	84.3	80 - 120				

LCS		Sample ID: LCS-144180			Units: mg/Kg		Analysis Date: 21-Aug-2019 13:05			
Client ID:		Run ID: ICPMS04_344672			SeqNo: 5218397		PrepDate: 15-Aug-2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	8.944	0.504	10.08	0	88.7	82 - 118				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144180 (0)		Instrument: ICPMS04		Method: METALS BY SW6020A						
MS		Sample ID: HS19080691-01MS		Units: mg/Kg		Analysis Date: 20-Aug-2019 16:34				
Client ID: BS-1-190813		Run ID: ICPMS04_344582		SeqNo: 5216971		PrepDate: 15-Aug-2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	18450	1.92	9.597	16230	23100	78 - 124				SEO
Antimony	2.513	0.480	9.597	0.2226	23.9	72 - 124				S
Arsenic	23.48	0.480	9.597	13.93	99.5	82 - 118				
Barium	28.05	0.480	9.597	16.19	124	86 - 116				S
Beryllium	10.31	0.480	9.597	0.2027	105	80 - 120				
Cadmium	9.431	0.480	9.597	0.01247	98.1	84 - 116				
Calcium	849.6	48.0	959.7	32.66	85.1	86 - 118				S
Chromium	36.05	0.480	9.597	26.53	99.2	83 - 119				
Cobalt	9.312	0.480	9.597	0.7454	89.3	84 - 115				
Copper	11.43	0.192	9.597	3.217	85.6	84 - 119				
Iron	43770	48.0	959.7	42870	93.9	81 - 124				EO
Lead	19.34	0.480	9.597	9.586	102	84 - 118				
Magnesium	1174	48.0	959.7	301.8	90.9	80 - 123				
Manganese	17.85	0.480	9.597	9.037	91.8	85 - 116				
Nickel	12.5	0.480	9.597	3.25	96.4	84 - 119				
Potassium	1319	48.0	959.7	502.5	85.1	85 - 119				
Selenium	8.603	0.480	9.597	0.6891	82.5	80 - 119				
Silver	8.457	0.480	9.597	0.0284	87.8	83 - 118				
Sodium	849.9	48.0	959.7	10.83	87.4	79 - 125				
Thallium	9.116	0.480	9.597	0.1081	93.9	83 - 118				
Vanadium	82.1	0.480	9.597	64.47	184	82 - 116				SO
Zinc	26.15	0.480	9.597	9.476	174	82 - 119				S

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144180 (0) **Instrument:** ICPMS04 **Method:** METALS BY SW6020A

MSD		Sample ID: HS19080691-01MSD			Units: mg/Kg		Analysis Date: 20-Aug-2019 16:36			
Client ID: BS-1-190813		Run ID: ICPMS04_344582			SeqNo: 5216972		PrepDate: 15-Aug-2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	17540	1.95	9.731	16230	13500	78 - 124	18450	5.05	20	SEO
Antimony	2.373	0.487	9.731	0.2226	22.1	72 - 124	2.513	5.72	20	S
Arsenic	21.87	0.487	9.731	13.93	81.6	82 - 118	23.48	7.09	20	S
Barium	27.31	0.487	9.731	16.19	114	86 - 116	28.05	2.67	20	
Beryllium	10.49	0.487	9.731	0.2027	106	80 - 120	10.31	1.76	20	
Cadmium	9.569	0.487	9.731	0.01247	98.2	84 - 116	9.431	1.45	20	
Calcium	852.1	48.7	973.1	32.66	84.2	86 - 118	849.6	0.289	20	S
Chromium	34.3	0.487	9.731	26.53	79.8	83 - 119	36.05	4.99	20	S
Cobalt	9.238	0.487	9.731	0.7454	87.3	84 - 115	9.312	0.798	20	
Copper	11.47	0.195	9.731	3.217	84.9	84 - 119	11.43	0.401	20	
Iron	39510	48.7	973.1	42870	-346	81 - 124	43770	10.2	20	SEO
Lead	18.94	0.487	9.731	9.586	96.1	84 - 118	19.34	2.1	20	
Magnesium	1186	48.7	973.1	301.8	90.9	80 - 123	1174	1.05	20	
Manganese	17.26	0.487	9.731	9.037	84.5	85 - 116	17.85	3.36	20	S
Nickel	12.44	0.487	9.731	3.25	94.4	84 - 119	12.5	0.51	20	
Potassium	1306	48.7	973.1	502.5	82.6	85 - 119	1319	0.964	20	S
Selenium	8.105	0.487	9.731	0.6891	76.2	80 - 119	8.603	5.97	20	S
Silver	8.62	0.487	9.731	0.0284	88.3	83 - 118	8.457	1.92	20	
Sodium	847	48.7	973.1	10.83	85.9	79 - 125	849.9	0.337	20	
Thallium	9.235	0.487	9.731	0.1081	93.8	83 - 118	9.116	1.3	20	
Vanadium	79.01	0.487	9.731	64.47	149	82 - 116	82.1	3.84	20	SO
Zinc	17.82	0.487	9.731	9.476	85.7	82 - 119	26.15	37.9	20	R

PDS		Sample ID: HS19080691-01PDS			Units: mg/Kg		Analysis Date: 21-Aug-2019 13:11			
Client ID: BS-1-190813		Run ID: ICPMS04_344672			SeqNo: 5218400		PrepDate: 15-Aug-2019		DF: 200	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	21070	384	1919	19730	70.0	80 - 120				SO
Iron	252500	9590	191900	53190	104	80 - 120				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144180 (0)		Instrument: ICPMS04		Method: METALS BY SW6020A						
PDS		Sample ID: HS19080691-01PDS		Units: mg/Kg		Analysis Date: 20-Aug-2019 16:38				
Client ID: BS-1-190813		Run ID: ICPMS04_344582		SeqNo: 5216973		PrepDate: 15-Aug-2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Antimony	9.34	0.480	9.593	0.2226	95.0	80 - 120				
Barium	26.61	0.480	9.593	16.19	109	80 - 120				
Beryllium	10.08	0.480	9.593	0.2027	103	80 - 120				
Cadmium	10.02	0.480	9.593	0.01247	104	80 - 120				
Calcium	888.7	48.0	959.3	32.66	89.2	80 - 120				
Cobalt	9.763	0.480	9.593	0.7454	94.0	80 - 120				
Copper	12.3	0.192	9.593	3.217	94.7	80 - 120				
Lead	19.62	0.480	9.593	9.586	105	80 - 120				
Manganese	17.62	0.480	9.593	9.037	89.5	80 - 120				
Potassium	1368	48.0	959.3	502.5	90.2	80 - 120				
Selenium	9.272	0.480	9.593	0.6891	89.5	80 - 120				
Silver	8.458	0.480	9.593	0.0284	87.9	80 - 120				
Sodium	919	48.0	959.3	10.83	94.7	80 - 120				
Thallium	9.714	0.480	9.593	0.1081	100	80 - 120				

PDS		Sample ID: HS19080691-01PDS		Units: mg/Kg		Analysis Date: 20-Aug-2019 17:41			
Client ID: BS-1-190813		Run ID: ICPMS04_344582		SeqNo: 5217070		PrepDate: 15-Aug-2019		DF: 5	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Arsenic	64.96	2.40	47.97	16.3	101	80 - 120			
Chromium	81.59	2.40	47.97	31.03	105	80 - 120			
Magnesium	5630	240	4797	359.2	110	80 - 120			
Manganese	61.84	2.40	47.97	10.4	107	80 - 120			
Nickel	55.21	2.40	47.97	3.831	107	80 - 120			
Vanadium	122.9	2.40	47.97	73.45	103	80 - 120			
Zinc	63.49	2.40	47.97	11.05	109	80 - 120			

SD		Sample ID: HS19080691-01SD		Units: mg/Kg		Analysis Date: 21-Aug-2019 13:09			
Client ID: BS-1-190813		Run ID: ICPMS04_344672		SeqNo: 5218399		PrepDate: 15-Aug-2019		DF: 1000	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit Qual
Aluminum	20890	1920					19730	5.91	10
Iron	53440	48000					53190	0.471	10

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144180 (0)		Instrument: ICPMS04		Method: METALS BY SW6020A						
SD	Sample ID: HS19080691-01SD	Units: mg/Kg		Analysis Date: 20-Aug-2019 16:32						
Client ID: BS-1-190813	Run ID: ICPMS04_344582	SeqNo: 5216970		PrepDate: 15-Aug-2019		DF: 5				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Antimony	0.480	2.40					0.2226	0	10	U
Barium	16.69	2.40					16.19	3.09	10	
Beryllium	0.2191	2.40					0.2027	0	10	J
Cadmium	0.480	2.40					0.01247	0	10	U
Calcium	45.27	240					32.66	0	10	J
Cobalt	0.8746	2.40					0.7454	0	10	J
Lead	9.918	2.40					9.586	3.46	10	
Selenium	0.7669	2.40					0.6891	0	10	J
Silver	0.480	2.40					0.0284	0	10	U
Sodium	48.0	240					10.83	0	10	U
Thallium	1.20	2.40					0.1081	0	10	U

SD	Sample ID: HS19080691-01SD	Units: mg/Kg		Analysis Date: 20-Aug-2019 17:39						
Client ID: BS-1-190813	Run ID: ICPMS04_344582	SeqNo: 5217069		PrepDate: 15-Aug-2019		DF: 25				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	16.19	12.0					16.3	0.666	10	
Chromium	31.24	12.0					31.03	0.646	10	
Magnesium	371	1200					359.2	0	10	J
Manganese	10.19	12.0					10.4	0	10	J
Nickel	4.238	12.0					3.831	0	10	J
Vanadium	73.56	12.0					73.45	0.16	10	
Zinc	12.57	12.0					11.05	0	10	

SD	Sample ID: HS19080691-01SD	Units: mg/Kg		Analysis Date: 20-Aug-2019 17:15						
Client ID: BS-1-190813	Run ID: ICPMS04_344582	SeqNo: 5217003		PrepDate: 15-Aug-2019		DF: 5				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Potassium	548.4	240					502.5	9.14	10	

The following samples were analyzed in this batch:

HS19080691-01	HS19080691-02	HS19080691-03	HS19080691-04
HS19080691-05	HS19080691-06	HS19080691-07	HS19080691-08

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144271 (0)		Instrument: HG03		Method: MERCURY BY SW7471B						
MBLK	Sample ID: MBLK-144271	Units: ug/Kg		Analysis Date: 19-Aug-2019 18:54						
Client ID:		Run ID: HG03_344544	SeqNo: 5215504	PrepDate: 19-Aug-2019	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	1.50	3.32								U
LCS	Sample ID: LCS-144271	Units: ug/Kg		Analysis Date: 19-Aug-2019 18:56						
Client ID:		Run ID: HG03_344544	SeqNo: 5215505	PrepDate: 19-Aug-2019	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	330.7	3.32	333.3	0	99.2	80 - 124				
MS	Sample ID: HS19080691-01MS	Units: ug/Kg		Analysis Date: 19-Aug-2019 18:59						
Client ID: BS-1-190813		Run ID: HG03_344544	SeqNo: 5215507	PrepDate: 19-Aug-2019	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	352.2	3.47	348.1	21.94	94.9	80 - 124				
MSD	Sample ID: HS19080691-01MSD	Units: ug/Kg		Analysis Date: 19-Aug-2019 19:01						
Client ID: BS-1-190813		Run ID: HG03_344544	SeqNo: 5215508	PrepDate: 19-Aug-2019	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	352.1	3.45	345.9	21.94	95.5	80 - 124	352.2	0.0334	20	

The following samples were analyzed in this batch:

HS19080691-01	HS19080691-02	HS19080691-03	HS19080691-04
HS19080691-05	HS19080691-06	HS19080691-07	HS19080691-08

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144600 (0)		Instrument: ICPMS04		Method: SPLP METALS BY SW6020A						
MBLK	Sample ID: MBLKP1-144600	Units: mg/L		Analysis Date: 27-Aug-2019 20:27						
Client ID:	Run ID: ICPMS04_345018	SeqNo: 5227056		PrepDate: 27-Aug-2019			DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.00100	0.00500								U
Chromium	0.00100	0.00500								U
Vanadium	0.00100	0.00500								U
MBLK	Sample ID: MBLK-144600	Units: mg/L		Analysis Date: 27-Aug-2019 20:25						
Client ID:	Run ID: ICPMS04_345018	SeqNo: 5227055		PrepDate: 27-Aug-2019			DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.00100	0.00500								U
Chromium	0.00100	0.00500								U
Vanadium	0.00100	0.00500								U
LCS	Sample ID: LCS-144600	Units: mg/L		Analysis Date: 27-Aug-2019 20:29						
Client ID:	Run ID: ICPMS04_345018	SeqNo: 5227057		PrepDate: 27-Aug-2019			DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04882	0.00500	0.05	0	97.6	80 - 120				
Chromium	0.05002	0.00500	0.05	0	100	80 - 120				
Vanadium	0.0496	0.00500	0.05	0	99.2	80 - 120				
MS	Sample ID: HS19080691-02MS	Units: mg/L		Analysis Date: 27-Aug-2019 20:35						
Client ID: BS-2-190813	Run ID: ICPMS04_345018	SeqNo: 5227060		PrepDate: 27-Aug-2019			DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05392	0.00500	0.05	0.000132	108	80 - 120				
Chromium	0.05434	0.00500	0.05	0.000232	108	80 - 120				
Vanadium	0.05507	0.00500	0.05	0.000134	110	80 - 120				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144600 (0) **Instrument:** ICPMS04 **Method:** SPLP METALS BY SW6020A

MSD		Sample ID: HS19080691-02MSD			Units: mg/L		Analysis Date: 27-Aug-2019 20:37			
Client ID: BS-2-190813		Run ID: ICPMS04_345018			SeqNo: 5227061		PrepDate: 27-Aug-2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05093	0.00500	0.05	0.000132	102	80 - 120	0.05392	5.71	20	
Chromium	0.05088	0.00500	0.05	0.000232	101	80 - 120	0.05434	6.58	20	
Vanadium	0.05092	0.00500	0.05	0.000134	102	80 - 120	0.05507	7.83	20	

PDS		Sample ID: HS19080691-02PDS			Units: mg/L		Analysis Date: 27-Aug-2019 20:39			
Client ID: BS-2-190813		Run ID: ICPMS04_345018			SeqNo: 5227062		PrepDate: 27-Aug-2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1073	0.00500	0.1	0.000132	107	75 - 125				
Chromium	0.1065	0.00500	0.1	0.000232	106	75 - 125				
Vanadium	0.1066	0.00500	0.1	0.000134	106	75 - 125				

SD		Sample ID: HS19080691-02SD			Units: mg/L		Analysis Date: 27-Aug-2019 20:33			
Client ID: BS-2-190813		Run ID: ICPMS04_345018			SeqNo: 5227059		PrepDate: 27-Aug-2019		DF: 5	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.00500	0.0250					0.000132	0	10	U
Chromium	0.00500	0.0250					0.000232	0	10	U
Vanadium	0.00500	0.0250					0.000134	0	10	U

The following samples were analyzed in this batch: HS19080691-02 HS19080691-07

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144158 (0)		Instrument: SV-4		Method: SEMIVOLATILES BY 8270D						
MBLK	Sample ID: MBLK-144158	Units: ug/Kg			Analysis Date: 15-Aug-2019 12:55					
Client ID:	Run ID: SV-4_344309	SeqNo: 5210961	PrepDate: 14-Aug-2019	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1'-Biphenyl	100	170								U
2,4,5-Trichlorophenol	33	170								U
2,4,6-Trichlorophenol	33	170								U
2,4-Dichlorophenol	33	170								U
2,4-Dimethylphenol	33	170								U
2,4-Dinitrophenol	100	170								U
2,4-Dinitrotoluene	33	170								U
2,6-Dinitrotoluene	33	170								U
2-Chloronaphthalene	33	170								U
2-Chlorophenol	33	170								U
2-Methylnaphthalene	33	170								U
2-Methylphenol	33	170								U
2-Nitroaniline	33	170								U
2-Nitrophenol	33	170								U
3&4-Methylphenol	33	170								U
3,3'-Dichlorobenzidine	33	170								U
3-Nitroaniline	33	170								U
4,6-Dinitro-2-methylphenol	33	170								U
4-Bromophenyl phenyl ether	33	170								U
4-Chloro-3-methylphenol	100	170								U
4-Chloroaniline	33	170								U
4-Chlorophenyl phenyl ether	33	170								U
4-Nitroaniline	33	170								U
4-Nitrophenol	33	170								U
Acenaphthene	33	170								U
Acenaphthylene	33	170								U
Acetophenone	33	170								U
Anthracene	33	170								U
Atrazine	100	170								U
Benzaldehyde	100	170								U
Benzo(a)anthracene	33	170								U
Benzo(a)pyrene	33	170								U
Benzo(b)fluoranthene	33	170								U
Benzo(g,h,i)perylene	33	170								U

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144158 (0)		Instrument: SV-4		Method: SEMIVOLATILES BY 8270D						
MBLK	Sample ID: MBLK-144158	Units: ug/Kg			Analysis Date: 15-Aug-2019 12:55					
Client ID:	Run ID: SV-4_344309	SeqNo: 5210961		PrepDate: 14-Aug-2019		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzo(k)fluoranthene	33	170								U
Bis(2-chloroethoxy)methane	33	170								U
Bis(2-chloroethyl)ether	33	170								U
Bis(2-chloroisopropyl)ether	33	170								U
Bis(2-ethylhexyl)phthalate	33	170								U
Butyl benzyl phthalate	33	170								U
Caprolactam	100	170								U
Carbazole	33	170								U
Chrysene	33	170								U
Dibenz(a,h)anthracene	33	170								U
Dibenzofuran	33	170								U
Diethyl phthalate	33	170								U
Dimethyl phthalate	33	170								U
Di-n-butyl phthalate	33	170								U
Di-n-octyl phthalate	33	170								U
Fluoranthene	33	170								U
Fluorene	33	170								U
Hexachlorobenzene	33	170								U
Hexachlorobutadiene	33	170								U
Hexachlorocyclopentadiene	33	170								U
Hexachloroethane	33	170								U
Indeno(1,2,3-cd)pyrene	33	170								U
Isophorone	33	170								U
Naphthalene	33	170								U
Nitrobenzene	33	170								U
N-Nitrosodi-n-propylamine	33	170								U
N-Nitrosodiphenylamine	33	170								U
Pentachlorophenol	33	170								U
Phenanthrene	33	170								U
Phenol	33	170								U
Pyrene	100	170								U
Surr: 2,4,6-Tribromophenol	4092	170	3333	0	123	39 - 132				
Surr: 2-Fluorobiphenyl	2710	170	3333	0	81.3	44 - 115				
Surr: 2-Fluorophenol	1900	170	3333	0	57.0	35 - 115				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144158 (0)		Instrument: SV-4		Method: SEMIVOLATILES BY 8270D						
MBLK	Sample ID: MBLK-144158	Units: ug/Kg			Analysis Date: 15-Aug-2019 12:55					
Client ID:	Run ID: SV-4_344309	SeqNo: 5210961		PrepDate: 14-Aug-2019		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
<i>Surr: 4-Terphenyl-d14</i>	2740	170	3333	0	82.2	54 - 127				
<i>Surr: Nitrobenzene-d5</i>	2751	170	3333	0	82.5	37 - 122				
<i>Surr: Phenol-d6</i>	1912	170	3333	0	57.4	33 - 122				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144158 (0)		Instrument: SV-4		Method: SEMIVOLATILES BY 8270D						
LCS	Sample ID: LCS-144158	Units: ug/Kg			Analysis Date: 15-Aug-2019 12:14					
Client ID:	Run ID: SV-4_344309	SeqNo: 5210960	PrepDate: 14-Aug-2019	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1'-Biphenyl	1197	170	1667	0	71.8	40 - 117				
2,4,5-Trichlorophenol	2771	170	3333	0	83.1	41 - 124				
2,4,6-Trichlorophenol	2868	170	3333	0	86.0	39 - 126				
2,4-Dichlorophenol	2439	170	3333	0	73.2	40 - 122				
2,4-Dimethylphenol	2168	170	3333	0	65.0	30 - 127				
2,4-Dinitrophenol	2410	170	3333	0	72.3	40 - 125				
2,4-Dinitrotoluene	1500	170	1667	0	90.0	48 - 126				
2,6-Dinitrotoluene	1336	170	1667	0	80.1	46 - 124				
2-Chloronaphthalene	1471	170	1667	0	88.3	41 - 114				
2-Chlorophenol	1961	170	3333	0	58.8	34 - 121				
2-Methylnaphthalene	1128	170	1667	0	67.7	38 - 122				
2-Methylphenol	1944	170	3333	0	58.3	32 - 122				
2-Nitroaniline	1417	170	1667	0	85.0	44 - 127				
2-Nitrophenol	2192	170	3333	0	65.8	36 - 123				
3&4-Methylphenol	3141	170	3333	0	94.2	34 - 119				
3,3'-Dichlorobenzidine	893.8	170	1667	0	53.6	22 - 121				
3-Nitroaniline	948.8	170	1667	0	56.9	33 - 119				
4,6-Dinitro-2-methylphenol	3087	170	3333	0	92.6	29 - 132				
4-Bromophenyl phenyl ether	1480	170	1667	0	88.8	46 - 124				
4-Chloro-3-methylphenol	2695	170	3333	0	80.9	45 - 122				
4-Chloroaniline	511	170	1667	0	30.7	17 - 106				
4-Chlorophenyl phenyl ether	1456	170	1667	0	87.3	45 - 121				
4-Nitroaniline	1195	170	1667	0	71.7	55 - 120				
4-Nitrophenol	3826	170	3333	0	115	30 - 132				
Acenaphthene	1231	170	1667	0	73.8	40 - 123				
Acenaphthylene	1099	170	1667	0	65.9	32 - 132				
Acetophenone	1155	170	1667	0	69.3	33 - 115				
Anthracene	1375	170	1667	0	82.5	47 - 123				
Atrazine	2055	170	1667	0	123	47 - 127				
Benzaldehyde	370.4	170	1667	0	22.2	20 - 132				
Benzo(a)anthracene	1339	170	1667	0	80.3	49 - 126				
Benzo(a)pyrene	927.2	170	1667	0	55.6	45 - 129				
Benzo(b)fluoranthene	1099	170	1667	0	65.9	45 - 132				
Benzo(g,h,i)perylene	943.8	170	1667	0	56.6	43 - 134				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144158 (0)		Instrument: SV-4		Method: SEMIVOLATILES BY 8270D						
LCS	Sample ID: LCS-144158	Units: ug/Kg			Analysis Date: 15-Aug-2019 12:14					
Client ID:	Run ID: SV-4_344309	SeqNo: 5210960	PrepDate: 14-Aug-2019	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzo(k)fluoranthene	938.8	170	1667	0	56.3	47 - 132				
Bis(2-chloroethoxy)methane	957.2	170	1667	0	57.4	36 - 121				
Bis(2-chloroethyl)ether	1217	170	1667	0	73.0	31 - 120				
Bis(2-chloroisopropyl)ether	1018	170	1667	0	61.1	33 - 131				
Bis(2-ethylhexyl)phthalate	1357	170	1667	0	81.4	51 - 133				
Butyl benzyl phthalate	1341	170	1667	0	80.5	48 - 132				
Caprolactam	1655	170	1667	0	99.3	46 - 117				
Carbazole	1423	170	1667	0	85.4	50 - 123				
Chrysene	1450	170	1667	0	87.0	50 - 124				
Dibenz(a,h)anthracene	945.5	170	1667	0	56.7	45 - 134				
Dibenzofuran	1269	170	1667	0	76.1	44 - 120				
Diethyl phthalate	1523	170	1667	0	91.4	50 - 124				
Dimethyl phthalate	1459	170	1667	0	87.5	48 - 124				
Di-n-butyl phthalate	1525	170	1667	0	91.5	51 - 128				
Di-n-octyl phthalate	893.8	170	1667	0	53.6	45 - 140				
Fluoranthene	1552	170	1667	0	93.1	50 - 127				
Fluorene	1370	170	1667	0	82.2	43 - 125				
Hexachlorobenzene	1689	170	1667	0	101	45 - 122				
Hexachlorobutadiene	1483	170	1667	0	89.0	32 - 123				
Hexachlorocyclopentadiene	1303	170	1667	0	78.1	50 - 120				
Hexachloroethane	1069	170	1667	0	64.1	28 - 117				
Indeno(1,2,3-cd)pyrene	978.8	170	1667	0	58.7	45 - 133				
Isophorone	1090	170	1667	0	65.4	30 - 122				
Naphthalene	1104	170	1667	0	66.2	35 - 123				
Nitrobenzene	1038	170	1667	0	62.3	34 - 122				
N-Nitrosodi-n-propylamine	911	170	1667	0	54.6	36 - 120				
N-Nitrosodiphenylamine	1353	170	1667	0	81.2	38 - 127				
Pentachlorophenol	3075	170	3333	0	92.3	25 - 133				
Phenanthrene	1458	170	1667	0	87.5	50 - 121				
Phenol	1788	170	3333	0	53.6	34 - 121				
Pyrene	1317	170	1667	0	79.0	47 - 127				
Surr: 2,4,6-Tribromophenol	3395	170	3333	0	102	39 - 132				
Surr: 2-Fluorobiphenyl	2165	170	3333	0	65.0	44 - 115				
Surr: 2-Fluorophenol	1727	170	3333	0	51.8	35 - 115				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144158 (0)		Instrument: SV-4		Method: SEMIVOLATILES BY 8270D						
LCS	Sample ID: LCS-144158	Units: ug/Kg			Analysis Date: 15-Aug-2019 12:14					
Client ID:	Run ID: SV-4_344309	SeqNo: 5210960		PrepDate: 14-Aug-2019		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
<i>Surr: 4-Terphenyl-d14</i>	2542	170	3333	0	76.3	54 - 127				
<i>Surr: Nitrobenzene-d5</i>	1800	170	3333	0	54.0	37 - 122				
<i>Surr: Phenol-d6</i>	1697	170	3333	0	50.9	33 - 122				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144158 (0)		Instrument: SV-4		Method: SEMIVOLATILES BY 8270D						
MS		Sample ID: HS19080691-01MS		Units: ug/Kg		Analysis Date: 15-Aug-2019 13:37				
Client ID: BS-1-190813		Run ID: SV-4_344309		SeqNo: 5212557		PrepDate: 14-Aug-2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1'-Biphenyl	1717	170	1659	0	103	40 - 117				
2,4,5-Trichlorophenol	3832	170	3318	0	116	41 - 124				
2,4,6-Trichlorophenol	3791	170	3318	0	114	39 - 126				
2,4-Dichlorophenol	3822	170	3318	0	115	40 - 122				
2,4-Dimethylphenol	3361	170	3318	0	101	30 - 127				
2,4-Dinitrophenol	4061	170	3318	0	122	40 - 125				
2,4-Dinitrotoluene	1898	170	1659	0	114	48 - 126				
2,6-Dinitrotoluene	1817	170	1659	0	110	46 - 124				
2-Chloronaphthalene	1923	170	1659	0	116	41 - 114				S
2-Chlorophenol	3484	170	3318	0	105	34 - 121				
2-Methylnaphthalene	1890	170	1659	0	114	38 - 122				
2-Methylphenol	3402	170	3318	0	103	32 - 122				
2-Nitroaniline	1893	170	1659	0	114	44 - 127				
2-Nitrophenol	3498	170	3318	0	105	36 - 123				
3&4-Methylphenol	5246	170	3318	0	158	34 - 119				S
3,3'-Dichlorobenzidine	1299	170	1659	0	78.3	22 - 121				
3-Nitroaniline	1130	170	1659	0	68.1	33 - 119				
4,6-Dinitro-2-methylphenol	4136	170	3318	0	125	29 - 132				
4-Bromophenyl phenyl ether	2071	170	1659	0	125	46 - 124				S
4-Chloro-3-methylphenol	3742	170	3318	0	113	45 - 122				
4-Chloroaniline	961.2	170	1659	0	57.9	17 - 106				
4-Chlorophenyl phenyl ether	2075	170	1659	0	125	45 - 121				S
4-Nitroaniline	1488	170	1659	0	89.7	55 - 120				
4-Nitrophenol	4608	170	3318	0	139	30 - 132				S
Acenaphthene	1807	170	1659	0	109	40 - 123				
Acenaphthylene	1764	170	1659	0	106	32 - 132				
Acetophenone	1707	170	1659	0	103	33 - 115				
Anthracene	1846	170	1659	6.626	111	47 - 123				
Atrazine	1924	170	1659	0	116	47 - 127				
Benzaldehyde	1886	170	1659	0	114	20 - 132				
Benzo(a)anthracene	1647	170	1659	10.32	98.7	49 - 126				
Benzo(a)pyrene	1146	170	1659	9.014	68.5	45 - 129				
Benzo(b)fluoranthene	1085	170	1659	7.581	64.9	45 - 132				
Benzo(g,h,i)perylene	1153	170	1659	10.99	68.8	43 - 134				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144158 (0)		Instrument: SV-4		Method: SEMIVOLATILES BY 8270D						
MS		Sample ID: HS19080691-01MS		Units: ug/Kg		Analysis Date: 15-Aug-2019 13:37				
Client ID: BS-1-190813		Run ID: SV-4_344309		SeqNo: 5212557		PrepDate: 14-Aug-2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Benzo(k)fluoranthene	1122	170	1659	9.892	67.0	47 - 132				
Bis(2-chloroethoxy)methane	1604	170	1659	0	96.7	36 - 121				
Bis(2-chloroethyl)ether	1620	170	1659	0	97.6	31 - 120				
Bis(2-chloroisopropyl)ether	1859	170	1659	0	112	33 - 131				
Bis(2-ethylhexyl)phthalate	1799	170	1659	11.66	108	51 - 133				
Butyl benzyl phthalate	1704	170	1659	6.704	102	48 - 132				
Caprolactam	2206	170	1659	0	133	46 - 117			S	
Carbazole	1735	170	1659	0	105	50 - 123				
Chrysene	1730	170	1659	9.073	104	50 - 124				
Dibenz(a,h)anthracene	1113	170	1659	9.245	66.5	45 - 134				
Dibenzofuran	1844	170	1659	0	111	44 - 120				
Diethyl phthalate	1996	170	1659	0	120	50 - 124				
Dimethyl phthalate	1872	170	1659	0	113	48 - 124				
Di-n-butyl phthalate	1947	170	1659	0	117	51 - 128				
Di-n-octyl phthalate	1176	170	1659	8.202	70.4	45 - 140				
Fluoranthene	1891	170	1659	3.593	114	50 - 127				
Fluorene	1908	170	1659	0	115	43 - 125				
Hexachlorobenzene	2187	170	1659	0	132	45 - 122			S	
Hexachlorobutadiene	2372	170	1659	0	143	32 - 123			S	
Hexachlorocyclopentadiene	2100	170	1659	0	127	50 - 120			S	
Hexachloroethane	1756	170	1659	0	106	28 - 117				
Indeno(1,2,3-cd)pyrene	1195	170	1659	10.01	71.4	45 - 133				
Isophorone	1617	170	1659	0	97.4	30 - 122				
Naphthalene	1815	170	1659	0	109	35 - 123				
Nitrobenzene	1630	170	1659	0	98.3	34 - 122				
N-Nitrosodi-n-propylamine	1632	170	1659	0	98.3	36 - 120				
N-Nitrosodiphenylamine	1784	170	1659	0	108	38 - 127				
Pentachlorophenol	4407	170	3318	0	133	25 - 133				
Phenanthrene	1791	170	1659	5.728	108	50 - 121				
Phenol	3184	170	3318	0	96.0	34 - 121				
Pyrene	1618	170	1659	2.142	97.4	47 - 127				
<i>Surr: 2,4,6-Tribromophenol</i>	<i>4195</i>	<i>170</i>	<i>3318</i>	<i>0</i>	<i>126</i>	<i>39 - 132</i>				
<i>Surr: 2-Fluorobiphenyl</i>	<i>3127</i>	<i>170</i>	<i>3318</i>	<i>0</i>	<i>94.3</i>	<i>44 - 115</i>				
<i>Surr: 2-Fluorophenol</i>	<i>2798</i>	<i>170</i>	<i>3318</i>	<i>0</i>	<i>84.4</i>	<i>35 - 115</i>				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144158 (0)		Instrument: SV-4		Method: SEMIVOLATILES BY 8270D						
MS	Sample ID: HS19080691-01MS	Units: ug/Kg			Analysis Date: 15-Aug-2019 13:37					
Client ID: BS-1-190813	Run ID: SV-4_344309	SeqNo: 5212557		PrepDate: 14-Aug-2019		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
<i>Surr: 4-Terphenyl-d14</i>	2906	170	3318	0	87.6	54 - 127				
<i>Surr: Nitrobenzene-d5</i>	2662	170	3318	0	80.2	37 - 122				
<i>Surr: Phenol-d6</i>	2622	170	3318	0	79.0	33 - 122				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144158 (0)		Instrument: SV-4		Method: SEMIVOLATILES BY 8270D						
MSD		Sample ID: HS19080691-01MSD		Units: ug/Kg		Analysis Date: 15-Aug-2019 13:58				
Client ID: BS-1-190813		Run ID: SV-4_344309		SeqNo: 5212558		PrepDate: 14-Aug-2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1'-Biphenyl	1733	160	1646	0	105	40 - 117	1717	0.927	20	
2,4,5-Trichlorophenol	3772	160	3290	0	115	41 - 124	3832	1.57	20	
2,4,6-Trichlorophenol	4172	160	3290	0	127	39 - 126	3791	9.57	20	S
2,4-Dichlorophenol	3789	160	3290	0	115	40 - 122	3822	0.875	20	
2,4-Dimethylphenol	3192	160	3290	0	97.0	30 - 127	3361	5.17	20	
2,4-Dinitrophenol	4154	160	3290	0	126	40 - 125	4061	2.25	20	S
2,4-Dinitrotoluene	1900	160	1646	0	115	48 - 126	1898	0.0987	20	
2,6-Dinitrotoluene	1770	160	1646	0	108	46 - 124	1817	2.6	20	
2-Chloronaphthalene	2085	160	1646	0	127	41 - 114	1923	8.09	20	S
2-Chlorophenol	3416	160	3290	0	104	34 - 121	3484	1.96	20	
2-Methylnaphthalene	1827	160	1646	0	111	38 - 122	1890	3.38	20	
2-Methylphenol	3273	160	3290	0	99.5	32 - 122	3402	3.88	20	
2-Nitroaniline	1902	160	1646	0	116	44 - 127	1893	0.447	20	
2-Nitrophenol	3540	160	3290	0	108	36 - 123	3498	1.19	20	
3&4-Methylphenol	5194	160	3290	0	158	34 - 119	5246	0.997	20	S
3,3'-Dichlorobenzidine	1095	160	1646	0	66.5	22 - 121	1299	17.1	20	
3-Nitroaniline	823.1	160	1646	0	50.0	33 - 119	1130	31.4	20	R
4,6-Dinitro-2-methylphenol	4159	160	3290	0	126	29 - 132	4136	0.574	20	
4-Bromophenyl phenyl ether	1992	160	1646	0	121	46 - 124	2071	3.86	20	
4-Chloro-3-methylphenol	3729	160	3290	0	113	45 - 122	3742	0.361	20	
4-Chloroaniline	701.7	160	1646	0	42.6	17 - 106	961.2	31.2	20	R
4-Chlorophenyl phenyl ether	2054	160	1646	0	125	45 - 121	2075	1.05	20	S
4-Nitroaniline	1339	160	1646	0	81.4	55 - 120	1488	10.5	20	
4-Nitrophenol	4643	160	3290	0	141	30 - 132	4608	0.766	20	S
Acenaphthene	1800	160	1646	0	109	40 - 123	1807	0.403	20	
Acenaphthylene	1771	160	1646	0	108	32 - 132	1764	0.375	20	
Acetophenone	1705	160	1646	0	104	33 - 115	1707	0.108	20	
Anthracene	1800	160	1646	6.626	109	47 - 123	1846	2.53	20	
Atrazine	1845	160	1646	0	112	47 - 127	1924	4.19	20	
Benzaldehyde	1766	160	1646	0	107	20 - 132	1886	6.56	20	
Benzo(a)anthracene	1656	160	1646	10.32	100	49 - 126	1647	0.527	20	
Benzo(a)pyrene	1144	160	1646	9.014	69.0	45 - 129	1146	0.204	20	
Benzo(b)fluoranthene	1208	160	1646	7.581	72.9	45 - 132	1085	10.7	20	
Benzo(g,h,i)perylene	1097	160	1646	10.99	66.0	43 - 134	1153	5.04	20	

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144158 (0)		Instrument: SV-4		Method: SEMIVOLATILES BY 8270D						
MSD		Sample ID: HS19080691-01MSD		Units: ug/Kg		Analysis Date: 15-Aug-2019 13:58				
Client ID: BS-1-190813		Run ID: SV-4_344309		SeqNo: 5212558		PrepDate: 14-Aug-2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzo(k)fluoranthene	989.1	160	1646	9.892	59.5	47 - 132	1122	12.6	20	
Bis(2-chloroethoxy)methane	1570	160	1646	0	95.4	36 - 121	1604	2.14	20	
Bis(2-chloroethyl)ether	1442	160	1646	0	87.6	31 - 120	1620	11.6	20	
Bis(2-chloroisopropyl)ether	1696	160	1646	0	103	33 - 131	1859	9.19	20	
Bis(2-ethylhexyl)phthalate	1807	160	1646	11.66	109	51 - 133	1799	0.429	20	
Butyl benzyl phthalate	1716	160	1646	6.704	104	48 - 132	1704	0.702	20	
Caprolactam	2492	160	1646	0	151	46 - 117	2206	12.2	20	S
Carbazole	1704	160	1646	0	104	50 - 123	1735	1.83	20	
Chrysene	1751	160	1646	9.073	106	50 - 124	1730	1.25	20	
Dibenz(a,h)anthracene	1175	160	1646	9.245	70.9	45 - 134	1113	5.48	20	
Dibenzofuran	1836	160	1646	0	112	44 - 120	1844	0.399	20	
Diethyl phthalate	1919	160	1646	0	117	50 - 124	1996	3.9	20	
Dimethyl phthalate	1868	160	1646	0	114	48 - 124	1872	0.173	20	
Di-n-butyl phthalate	1840	160	1646	0	112	51 - 128	1947	5.64	20	
Di-n-octyl phthalate	1224	160	1646	8.202	73.9	45 - 140	1176	3.97	20	
Fluoranthene	1806	160	1646	3.593	110	50 - 127	1891	4.59	20	
Fluorene	1906	160	1646	0	116	43 - 125	1908	0.0963	20	
Hexachlorobenzene	2144	160	1646	0	130	45 - 122	2187	1.98	20	S
Hexachlorobutadiene	2279	160	1646	0	138	32 - 123	2372	4.01	20	S
Hexachlorocyclopentadiene	2181	160	1646	0	133	50 - 120	2100	3.79	20	S
Hexachloroethane	1739	160	1646	0	106	28 - 117	1756	0.973	20	
Indeno(1,2,3-cd)pyrene	1142	160	1646	10.01	68.8	45 - 133	1195	4.53	20	
Isophorone	1608	160	1646	0	97.7	30 - 122	1617	0.525	20	
Naphthalene	1818	160	1646	0	110	35 - 123	1815	0.132	20	
Nitrobenzene	1712	160	1646	0	104	34 - 122	1630	4.89	20	
N-Nitrosodi-n-propylamine	1543	160	1646	0	93.8	36 - 120	1632	5.6	20	
N-Nitrosodiphenylamine	1793	160	1646	0	109	38 - 127	1784	0.499	20	
Pentachlorophenol	4403	160	3290	0	134	25 - 133	4407	0.103	20	S
Phenanthrene	1858	160	1646	5.728	113	50 - 121	1791	3.68	20	
Phenol	3161	160	3290	0	96.1	34 - 121	3184	0.725	20	
Pyrene	1729	160	1646	2.142	105	47 - 127	1618	6.64	20	
<i>Surr: 2,4,6-Tribromophenol</i>	<i>3872</i>	<i>160</i>	<i>3290</i>	<i>0</i>	<i>118</i>	<i>39 - 132</i>	<i>4195</i>	<i>8.01</i>	<i>20</i>	
<i>Surr: 2-Fluorobiphenyl</i>	<i>3049</i>	<i>160</i>	<i>3290</i>	<i>0</i>	<i>92.7</i>	<i>44 - 115</i>	<i>3127</i>	<i>2.53</i>	<i>20</i>	
<i>Surr: 2-Fluorophenol</i>	<i>2715</i>	<i>160</i>	<i>3290</i>	<i>0</i>	<i>82.5</i>	<i>35 - 115</i>	<i>2798</i>	<i>3.03</i>	<i>20</i>	

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: 144158 (0) **Instrument:** SV-4 **Method:** SEMIVOLATILES BY 8270D

MSD	Sample ID: HS19080691-01MSD	Units: ug/Kg		Analysis Date: 15-Aug-2019 13:58						
Client ID: BS-1-190813	Run ID: SV-4_344309	SeqNo: 5212558		PrepDate: 14-Aug-2019		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
<i>Surr: 4-Terphenyl-d14</i>	2948	160	3290	0	89.6	54 - 127	2906	1.44	20	
<i>Surr: Nitrobenzene-d5</i>	2682	160	3290	0	81.5	37 - 122	2662	0.731	20	
<i>Surr: Phenol-d6</i>	2606	160	3290	0	79.2	33 - 122	2622	0.588	20	

The following samples were analyzed in this batch:

HS19080691-01	HS19080691-02	HS19080691-03	HS19080691-04
HS19080691-05	HS19080691-06	HS19080691-07	HS19080691-08

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: R344632 (0)		Instrument: VOA8		Method: VOLATILES ORGANICS BY SW8260C						
MBLK	Sample ID: VBLKS1-082119	Units: ug/Kg			Analysis Date: 20-Aug-2019 18:54					
Client ID:	Run ID: VOA8_344632	SeqNo: 5217208	PrepDate:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1.2	5.0								U
1,1,2,2-Tetrachloroethane	1.2	5.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	1.2	5.0								U
1,1,2-Trichloroethane	1.2	5.0								U
1,1-Dichloroethane	1.2	5.0								U
1,1-Dichloroethene	1.2	5.0								U
1,2,4-Trichlorobenzene	1.2	5.0								U
1,2-Dibromo-3-chloropropane	2.5	5.0								U
1,2-Dibromoethane	1.2	5.0								U
1,2-Dichlorobenzene	1.2	5.0								U
1,2-Dichloroethane	1.2	5.0								U
1,2-Dichloropropane	1.2	5.0								U
1,3-Dichlorobenzene	1.2	5.0								U
1,4-Dichlorobenzene	1.2	5.0								U
2-Butanone	2.5	10								U
2-Hexanone	2.5	10								U
4-Methyl-2-pentanone	2.5	10								U
Acetone	2.5	10								U
Benzene	1.2	5.0								U
Bromodichloromethane	1.2	5.0								U
Bromoform	2.5	5.0								U
Bromomethane	1.2	10								U
Carbon disulfide	2.5	10								U
Carbon tetrachloride	1.2	5.0								U
Chlorobenzene	1.2	5.0								U
Chloroethane	1.2	10								U
Chloroform	1.2	5.0								U
Chloromethane	1.2	10								U
cis-1,2-Dichloroethene	1.2	5.0								U
cis-1,3-Dichloropropene	1.2	5.0								U
Cyclohexane	1.2	5.0								U
Dibromochloromethane	1.2	5.0								U
Dichlorodifluoromethane	1.2	5.0								U
Ethylbenzene	1.2	5.0								U

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: R344632 (0)		Instrument: VOA8		Method: VOLATILES ORGANICS BY SW8260C						
MBLK	Sample ID: VBLKS1-082119	Units: ug/Kg			Analysis Date: 20-Aug-2019 18:54					
Client ID:	Run ID: VOA8_344632	SeqNo: 5217208	PrepDate:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Isopropylbenzene	1.2	5.0								U
m,p-Xylene	2.5	10								U
Methyl acetate	1.2	5.0								U
Methyl tert-butyl ether	1.2	5.0								U
Methylcyclohexane	1.2	5.0								U
Methylene chloride	2.5	10								U
o-Xylene	1.2	5.0								U
Styrene	1.2	5.0								U
Tetrachloroethene	1.2	5.0								U
Toluene	1.2	5.0								U
trans-1,2-Dichloroethene	1.2	5.0								U
trans-1,3-Dichloropropene	1.2	5.0								U
Trichloroethene	1.2	5.0								U
Trichlorofluoromethane	1.2	5.0								U
Vinyl chloride	1.2	2.0								U
Xylenes, Total	1.2	5.0								U
<i>Surr: Toluene-d8</i>	<i>43.37</i>	<i>5.0</i>	<i>50</i>	<i>0</i>	<i>86.7</i>	<i>85 - 116</i>				
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>38.15</i>	<i>5.0</i>	<i>50</i>	<i>0</i>	<i>76.3</i>	<i>71 - 136</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>41.65</i>	<i>5.0</i>	<i>50</i>	<i>0</i>	<i>83.3</i>	<i>79 - 119</i>				
<i>Surr: Dibromofluoromethane</i>	<i>40.2</i>	<i>5.0</i>	<i>50</i>	<i>0</i>	<i>80.4</i>	<i>78 - 119</i>				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: R344632 (0)		Instrument: VOA8		Method: VOLATILES ORGANICS BY SW8260C						
LCS	Sample ID: VLCSS1-082119	Units: ug/Kg			Analysis Date: 20-Aug-2019 18:08					
Client ID:	Run ID: VOA8_344632	SeqNo: 5217207	PrepDate:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	50.34	5.0	50	0	101	73 - 130				
1,1,2,2-Tetrachloroethane	55.71	5.0	50	0	111	70 - 124				
1,1,2-Trichlor-1,2,2-trifluoroethane	49.29	5.0	50	0	98.6	66 - 136				
1,1,2-Trichloroethane	55.49	5.0	50	0	111	78 - 121				
1,1-Dichloroethane	54.19	5.0	50	0	108	76 - 125				
1,1-Dichloroethene	50.14	5.0	50	0	100	70 - 131				
1,2,4-Trichlorobenzene	50.21	5.0	50	0	100	67 - 129				
1,2-Dibromo-3-chloropropane	54.66	5.0	50	0	109	61 - 132				
1,2-Dibromoethane	56.21	5.0	50	0	112	78 - 122				
1,2-Dichlorobenzene	56.53	5.0	50	0	113	78 - 121				
1,2-Dichloroethane	54.38	5.0	50	0	109	73 - 128				
1,2-Dichloropropane	51.46	5.0	50	0	103	76 - 123				
1,3-Dichlorobenzene	52.78	5.0	50	0	106	77 - 121				
1,4-Dichlorobenzene	55.89	5.0	50	0	112	75 - 120				
2-Butanone	97.63	10	100	0	97.6	51 - 148				
2-Hexanone	103.3	10	100	0	103	53 - 145				
4-Methyl-2-pentanone	110.4	10	100	0	110	65 - 135				
Acetone	102.5	10	100	0	103	36 - 164				
Benzene	51.45	5.0	50	0	103	77 - 121				
Bromodichloromethane	50.87	5.0	50	0	102	75 - 127				
Bromoform	51.26	5.0	50	0	103	67 - 132				
Bromomethane	47.09	10	50	0	94.2	53 - 143				
Carbon disulfide	98.69	10	100	0	98.7	63 - 132				
Carbon tetrachloride	50.91	5.0	50	0	102	70 - 135				
Chlorobenzene	55.53	5.0	50	0	111	79 - 120				
Chloroethane	49.19	10	50	0	98.4	59 - 139				
Chloroform	50.51	5.0	50	0	101	78 - 123				
Chloromethane	48.24	10	50	0	96.5	50 - 136				
cis-1,2-Dichloroethene	49.77	5.0	50	0	99.5	77 - 123				
cis-1,3-Dichloropropene	50.11	5.0	50	0	100	74 - 126				
Cyclohexane	51.76	5.0	50	0	104	67 - 131				
Dibromochloromethane	55.14	5.0	50	0	110	74 - 126				
Dichlorodifluoromethane	47.42	5.0	50	0	94.8	29 - 149				
Ethylbenzene	52.48	5.0	50	0	105	76 - 122				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: R344632 (0)		Instrument: VOA8		Method: VOLATILES ORGANICS BY SW8260C						
LCS	Sample ID: VLCSS1-082119	Units: ug/Kg			Analysis Date: 20-Aug-2019 18:08					
Client ID:	Run ID: VOA8_344632	SeqNo: 5217207		PrepDate:			DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Isopropylbenzene	52.93	5.0	50	0	106	68 - 134				
m,p-Xylene	111.5	10	100	0	111	77 - 124				
Methyl acetate	50.41	5.0	50	0	101	53 - 144				
Methyl tert-butyl ether	53.51	5.0	50	0	107	73 - 125				
Methylcyclohexane	52.17	5.0	50	0	104	66 - 133				
Methylene chloride	49.45	10	50	0	98.9	70 - 128				
o-Xylene	53.98	5.0	50	0	108	77 - 123				
Styrene	55.9	5.0	50	0	112	76 - 124				
Tetrachloroethene	52.68	5.0	50	0	105	73 - 128				
Toluene	56.45	5.0	50	0	113	77 - 121				
trans-1,2-Dichloroethene	51.5	5.0	50	0	103	74 - 125				
trans-1,3-Dichloropropene	50.11	5.0	50	0	100	71 - 130				
Trichloroethene	51.36	5.0	50	0	103	77 - 123				
Trichlorofluoromethane	49.99	5.0	50	0	100.0	62 - 140				
Vinyl chloride	49.17	2.0	50	0	98.3	56 - 135				
Xylenes, Total	165.5	5.0	150	0	110	77 - 124				
<i>Surr: Toluene-d8</i>	<i>43.78</i>	<i>5.0</i>	<i>50</i>	<i>0</i>	<i>87.6</i>	<i>85 - 116</i>				
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>40.64</i>	<i>5.0</i>	<i>50</i>	<i>0</i>	<i>81.3</i>	<i>71 - 136</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>42.51</i>	<i>5.0</i>	<i>50</i>	<i>0</i>	<i>85.0</i>	<i>79 - 119</i>				
<i>Surr: Dibromofluoromethane</i>	<i>41.3</i>	<i>5.0</i>	<i>50</i>	<i>0</i>	<i>82.6</i>	<i>78 - 119</i>				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: R344632 (0)		Instrument: VOA8		Method: VOLATILES ORGANICS BY SW8260C						
MS	Sample ID: HS19080725-04MS	Units: ug/Kg			Analysis Date: 20-Aug-2019 19:40					
Client ID:	Run ID: VOA8_344632	SeqNo: 5217210	PrepDate:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	40.95	4.9	49	0	83.6	73 - 130				
1,1,2,2-Tetrachloroethane	33.12	4.9	49	0	67.6	70 - 124				S
1,1,2-Trichlor-1,2,2-trifluoroethane	40.91	4.9	49	0	83.5	66 - 136				
1,1,2-Trichloroethane	36.18	4.9	49	0	73.8	78 - 121				S
1,1-Dichloroethane	43.27	4.9	49	0	88.3	76 - 125				
1,1-Dichloroethene	42.11	4.9	49	0	85.9	70 - 131				
1,2,4-Trichlorobenzene	15.33	4.9	49	0	31.3	67 - 129				S
1,2-Dibromo-3-chloropropane	28.03	4.9	49	0	57.2	61 - 132				S
1,2-Dibromoethane	34.39	4.9	49	0	70.2	78 - 122				S
1,2-Dichlorobenzene	23.57	4.9	49	0	48.1	78 - 121				S
1,2-Dichloroethane	37.5	4.9	49	0	76.5	73 - 128				
1,2-Dichloropropane	37.21	4.9	49	0	75.9	76 - 123				S
1,3-Dichlorobenzene	24.63	4.9	49	0	50.3	77 - 121				S
1,4-Dichlorobenzene	23.4	4.9	49	0	47.8	75 - 120				S
2-Butanone	74.37	9.8	98	0	75.9	51 - 148				
2-Hexanone	60.4	9.8	98	0	61.6	53 - 145				
4-Methyl-2-pentanone	73.32	9.8	98	0	74.8	65 - 135				
Acetone	173.8	9.8	98	30.4	146	36 - 164				
Benzene	38.59	4.9	49	0	78.7	77 - 121				
Bromodichloromethane	35.27	4.9	49	0	72.0	75 - 127				S
Bromoform	28.76	4.9	49	0	58.7	67 - 132				S
Bromomethane	37.57	9.8	49	0	76.7	53 - 143				
Carbon disulfide	78.4	9.8	98	0	80.0	63 - 132				
Carbon tetrachloride	39.15	4.9	49	0	79.9	70 - 135				
Chlorobenzene	34.02	4.9	49	0	69.4	79 - 120				S
Chloroethane	42.74	9.8	49	0	87.2	59 - 139				
Chloroform	38.91	4.9	49	0	79.4	78 - 123				
Chloromethane	42.04	9.8	49	0	85.8	50 - 136				
cis-1,2-Dichloroethene	38.04	4.9	49	0	77.6	77 - 123				
cis-1,3-Dichloropropene	29.78	4.9	49	0	60.8	74 - 126				S
Cyclohexane	39.27	4.9	49	0	80.1	67 - 131				
Dibromochloromethane	38.02	4.9	49	0	77.6	74 - 126				
Dichlorodifluoromethane	43.62	4.9	49	0	89.0	29 - 149				
Ethylbenzene	36.09	4.9	49	0	73.7	76 - 122				S

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: R344632 (0)		Instrument: VOA8		Method: VOLATILES ORGANICS BY SW8260C						
MS	Sample ID: HS19080725-04MS	Units: ug/Kg			Analysis Date: 20-Aug-2019 19:40					
Client ID:	Run ID: VOA8_344632	SeqNo: 5217210	PrepDate:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Isopropylbenzene	35.47	4.9	49	0	72.4	68 - 134				
m,p-Xylene	73.23	9.8	98	0	74.7	77 - 124				S
Methyl acetate	40.41	4.9	49	0	82.5	53 - 144				
Methyl tert-butyl ether	36.54	4.9	49	0	74.6	73 - 125				
Methylcyclohexane	33.9	4.9	49	0	69.2	66 - 133				
Methylene chloride	35.92	9.8	49	0	73.3	70 - 128				
o-Xylene	36.09	4.9	49	0	73.7	77 - 123				S
Styrene	30.3	4.9	49	0	61.8	76 - 124				S
Tetrachloroethene	35.7	4.9	49	0	72.8	73 - 128				S
Toluene	39.88	4.9	49	0	81.4	77 - 121				
trans-1,2-Dichloroethene	39.27	4.9	49	0	80.1	74 - 125				
trans-1,3-Dichloropropene	29.78	4.9	49	0	60.8	71 - 130				S
Trichloroethene	36.73	4.9	49	0	75.0	77 - 123				S
Trichlorofluoromethane	42.21	4.9	49	0	86.1	62 - 140				
Vinyl chloride	42.69	2.0	49	0	87.1	56 - 135				
Xylenes, Total	109.3	4.9	147	0	74.4	77 - 124				S
<i>Surr: Toluene-d8</i>	<i>42.34</i>	<i>4.9</i>	<i>49</i>	<i>0</i>	<i>86.4</i>	<i>85 - 116</i>				
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>39.72</i>	<i>4.9</i>	<i>49</i>	<i>0</i>	<i>81.1</i>	<i>71 - 136</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>41.31</i>	<i>4.9</i>	<i>49</i>	<i>0</i>	<i>84.3</i>	<i>79 - 119</i>				
<i>Surr: Dibromofluoromethane</i>	<i>40.33</i>	<i>4.9</i>	<i>49</i>	<i>0</i>	<i>82.3</i>	<i>78 - 119</i>				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: R344632 (0)		Instrument: VOA8		Method: VOLATILES ORGANICS BY SW8260C						
MSD	Sample ID: HS19080725-04MSD	Units: ug/Kg			Analysis Date: 20-Aug-2019 20:03					
Client ID:	Run ID: VOA8_344632	SeqNo: 5217211	PrepDate:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	48.2	4.9	49	0	98.4	73 - 130	40.95	16.3	20	
1,1,2,2-Tetrachloroethane	40.74	4.9	49	0	83.1	70 - 124	33.12	20.6	20	R
1,1,2-Trichlor-1,2,2-trifluoroethane	46.39	4.9	49	0	94.7	66 - 136	40.91	12.6	20	
1,1,2-Trichloroethane	44.62	4.9	49	0	91.1	78 - 121	36.18	20.9	20	R
1,1-Dichloroethane	52.22	4.9	49	0	107	76 - 125	43.27	18.8	20	
1,1-Dichloroethene	48.57	4.9	49	0	99.1	70 - 131	42.11	14.3	20	
1,2,4-Trichlorobenzene	19.69	4.9	49	0	40.2	67 - 129	15.33	24.9	20	SR
1,2-Dibromo-3-chloropropane	34.52	4.9	49	0	70.4	61 - 132	28.03	20.7	20	R
1,2-Dibromoethane	41.86	4.9	49	0	85.4	78 - 122	34.39	19.6	20	
1,2-Dichlorobenzene	30.01	4.9	49	0	61.2	78 - 121	23.57	24	20	SR
1,2-Dichloroethane	46.84	4.9	49	0	95.6	73 - 128	37.5	22.2	20	R
1,2-Dichloropropane	46.72	4.9	49	0	95.4	76 - 123	37.21	22.7	20	R
1,3-Dichlorobenzene	29.86	4.9	49	0	60.9	77 - 121	24.63	19.2	20	S
1,4-Dichlorobenzene	29.65	4.9	49	0	60.5	75 - 120	23.4	23.6	20	SR
2-Butanone	92.37	9.8	98	0	94.3	51 - 148	74.37	21.6	20	R
2-Hexanone	75.69	9.8	98	0	77.2	53 - 145	60.4	22.5	20	R
4-Methyl-2-pentanone	92.81	9.8	98	0	94.7	65 - 135	73.32	23.5	20	R
Acetone	195.5	9.8	98	30.4	169	36 - 164	173.8	11.8	20	S
Benzene	47.18	4.9	49	0	96.3	77 - 121	38.59	20	20	R
Bromodichloromethane	43.75	4.9	49	0	89.3	75 - 127	35.27	21.5	20	R
Bromoform	35.39	4.9	49	0	72.2	67 - 132	28.76	20.7	20	R
Bromomethane	44.28	9.8	49	0	90.4	53 - 143	37.57	16.4	20	
Carbon disulfide	90.39	9.8	98	0	92.2	63 - 132	78.4	14.2	20	
Carbon tetrachloride	44.46	4.9	49	0	90.7	70 - 135	39.15	12.7	20	
Chlorobenzene	39.84	4.9	49	0	81.3	79 - 120	34.02	15.8	20	
Chloroethane	50.02	9.8	49	0	102	59 - 139	42.74	15.7	20	
Chloroform	48.34	4.9	49	0	98.7	78 - 123	38.91	21.6	20	R
Chloromethane	48.22	9.8	49	0	98.4	50 - 136	42.04	13.7	20	
cis-1,2-Dichloroethene	45.7	4.9	49	0	93.3	77 - 123	38.04	18.3	20	
cis-1,3-Dichloropropene	37.74	4.9	49	0	77.0	74 - 126	29.78	23.6	20	R
Cyclohexane	43.73	4.9	49	0	89.2	67 - 131	39.27	10.7	20	
Dibromochloromethane	45.65	4.9	49	0	93.2	74 - 126	38.02	18.2	20	
Dichlorodifluoromethane	49.75	4.9	49	0	102	29 - 149	43.62	13.1	20	
Ethylbenzene	40.34	4.9	49	0	82.3	76 - 122	36.09	11.1	20	

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: R344632 (0)		Instrument: VOA8		Method: VOLATILES ORGANICS BY SW8260C						
MSD	Sample ID: HS19080725-04MSD	Units: ug/Kg			Analysis Date: 20-Aug-2019 20:03					
Client ID:	Run ID: VOA8_344632	SeqNo: 5217211		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Isopropylbenzene	38.76	4.9	49	0	79.1	68 - 134	35.47	8.86	20	
m,p-Xylene	83.25	9.8	98	0	85.0	77 - 124	73.23	12.8	20	
Methyl acetate	45.97	4.9	49	0	93.8	53 - 144	40.41	12.9	20	
Methyl tert-butyl ether	47.36	4.9	49	0	96.6	73 - 125	36.54	25.8	20	R
Methylcyclohexane	36.85	4.9	49	0	75.2	66 - 133	33.9	8.33	20	
Methylene chloride	47.07	9.8	49	0	96.1	70 - 128	35.92	26.9	20	R
o-Xylene	42.07	4.9	49	0	85.8	77 - 123	36.09	15.3	20	
Styrene	37.79	4.9	49	0	77.1	76 - 124	30.3	22	20	R
Tetrachloroethene	39.66	4.9	49	0	80.9	73 - 128	35.7	10.5	20	
Toluene	46.99	4.9	49	0	95.9	77 - 121	39.88	16.4	20	
trans-1,2-Dichloroethene	45.79	4.9	49	0	93.5	74 - 125	39.27	15.3	20	
trans-1,3-Dichloropropene	37.74	4.9	49	0	77.0	71 - 130	29.78	23.6	20	R
Trichloroethene	43.04	4.9	49	0	87.8	77 - 123	36.73	15.8	20	
Trichlorofluoromethane	48.9	4.9	49	0	99.8	62 - 140	42.21	14.7	20	
Vinyl chloride	49.64	2.0	49	0	101	56 - 135	42.69	15	20	
Xylenes, Total	125.3	4.9	147	0	85.2	77 - 124	109.3	13.6	20	
Surr: Toluene-d8	41.8	4.9	49	0	85.3	85 - 116	42.34	1.28	20	
Surr: 1,2-Dichloroethane-d4	39.77	4.9	49	0	81.2	71 - 136	39.72	0.117	20	
Surr: 4-Bromofluorobenzene	40.68	4.9	49	0	83.0	79 - 119	41.31	1.54	20	
Surr: Dibromofluoromethane	40.36	4.9	49	0	82.4	78 - 119	40.33	0.0541	20	

The following samples were analyzed in this batch:

HS19080691-01	HS19080691-02	HS19080691-03	HS19080691-04
HS19080691-05	HS19080691-06	HS19080691-07	HS19080691-08

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

QC BATCH REPORT

Batch ID: R344368 (0)		Instrument: Balance1		Method: MOISTURE - ASTM D2216						
DUP	Sample ID: HS19080691-08DUP	Units: wt%		Analysis Date: 15-Aug-2019 11:16						
Client ID: BS-8-190813	Run ID: Balance1_344368	SeqNo: 5212115		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Percent Moisture	5.3	0.0100					5.55	4.61	20
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The following samples were analyzed in this batch:

HS19080691-01	HS19080691-02	HS19080691-03	HS19080691-04
HS19080691-05	HS19080691-06	HS19080691-07	HS19080691-08

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP- Borrow Source
WorkOrder: HS19080691

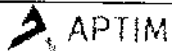
**QUALIFIERS,
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019	30-Apr-2020
Oklahoma	2019-141	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020



COC ID: IHAAP-Borrow Source-Aug2019-ALSIF-190813

TURNAROUND TIME: 5 Business Days

RUSH: 5 Business Days

PROJECT/CLIENT INFO				LABORATORY			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories		
Project Number	501032			Lab Contact	RJ Modashia		
	Borrow Source			Email	RJ.Modashia@alsglobal.com		
Address	1203-B East Grand Avenue			Address	10450 Stancliff Rd., Suite 210		
	PMB 202				Susan.Huang@aptim.com		
City	Marshall	State	TX	City	Houston	State	TX
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2279 or 281.530.5656		
Project Manager	Praveen Srivastav						

SAMPLE DETAILS							ANALYSIS REQUESTED					
Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	TerraCores, 1 vial w/methanol, 2 vials w/sodium bisulfate	1x 4oz CWM jar	1-8oz CWM jar
BS-1-190813	Moore Pit				Soil	8/13/2019	850	5		3	1	1
BS-2-190813	Moore Pit				Soil	8/13/2019	857	5		3	1	1
BS-3-190813	Moore Pit				Soil	8/13/2019	904	5		3	1	1
BS-4-190813	Moore Pit				Soil	8/13/2019	911	5		3	1	1
BS-5-190813	Moore Pit				Soil	8/13/2019	918	5		3	1	1
BS-6-190813	Moore Pit				Soil	8/13/2019	924	5		3	1	1
BS-7-190813	Moore Pit				Soil	8/13/2019	930	5		3	1	1
BS-8-190813	Moore Pit				Soil	8/13/2019	939	5		3	1	1
					Soil							
					Soil							
					Soil							
					Soil							

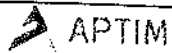


Aptim Environmental & Infrastructure, Inc.
 Longhorn Army Ammunition Plant

HS19080691

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED	DATE/TIME
	<i>[Signature]</i>	8/14/19 11:57	<i>[Signature]</i>	8/12/19 08:44

1.3°
 2378 - 1.6°
 #2; cll-o-o



COC ID: LHAAP-Barron Source-Aug2019-ALSHT-190813

TURNAROUND TIME: 5 Business Days RUSH: 5 Business Days

PROJECT/CLIENT INFO				LABORATORY			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories		
Project Number	501032			Lab Contact	RJ Modashia		
	Borrow Source			Email	RJ.Modashia@alsglobal.com		
Address	1203-B East Grand Avenue			Address	10450 Stancliff Rd., Suite 210		
	PMB 202				Susan.Huang@aptim.com		
City	Marshall	State	TX	City	Houston	State	TX
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2279 or 281.530.5656		
Project Manager	Praveen Srivastav				Susan Huang		
					4005 Port Chicago Hwy		
					Concord	State	CA
					94520	Country	USA

SAMPLE DETAILS

ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	Containers and Preservative	TerraCores, 1 vial w/methanol, 2 vials w/sodium bisulfate	1x 4oz CWM jar	1-Roz CWM jar				
											VOCs by SW8260	Dioxins by SW8290	SVOCs (SW8270, Metals (SW6020/7471), Exp (SW8330))				
BS-1-190813	Moore Pit				Soil	8/13/2019	850	5		3	1	1					
BS-2-190813	Moore Pit				Soil	8/13/2019	857	5		3	1	1					
BS-3-190813	Moore Pit				Soil	8/13/2019	904	5		3	1	1					
BS-4-190813	Moore Pit				Soil	8/13/2019	911	5		3	1	1					
BS-5-190813	Moore Pit				Soil	8/13/2019	918	5		3	1	1					
BS-6-190813	Moore Pit				Soil	8/13/2019	924	5		3	1	1					
BS-7-190813	Moore Pit				Soil	8/13/2019	930	5		3	1	1					
BS-8-190813	Moore Pit				Soil	8/13/2019	939	5		3	1	1					
					Soil												
					Soil												
					Soil												
					Soil												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION


DATE/TIME

ACCEPTED

DATE/TIME

[Signature] APTIM 08/14/19
 8/14/19 08:44

23478.

 ALS 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5666 Fax. +1 281 530 5867	CUSTODY SEAL		Seal Broken By:
	Date: <u>08/14/19</u>	Time: <u>1:58</u>	<u>SW</u>
	Name: <u>Richard [unclear]</u>	Company: <u>[unclear]</u>	Date: <u>08/14/19</u>

4-0676

AUG 14 2019

 ALS 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5666 Fax. +1 281 530 5867	CUSTODY SEAL		Seal Broken By:
	Date: <u>08/14/19</u>	Time: <u>1:58</u>	<u>SW</u>
	Name: <u>Richard [unclear]</u>	Company: <u>[unclear]</u>	Date: <u>08/14/19</u>

10:30 A
 917
 803

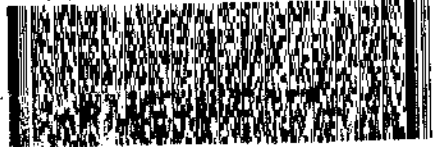
**Must Deliver Next Business Day
Time and Tempature Sensitive!**

IN. QIN ID: SGRA (903) 930-6193
 SCOTT BEESINGER
 APTIM ENVIRONMENTAL & INFRASTRUCTURE
 1263-B EAST GRAND AVE
 PHB 202
 MARSHALL, TX 75670
 UNITED STATES US

SHIP DATE: 31 JUL 19
 ACTWGT: 1.00 LB PAN
 CAD: 900130/CFE3211
 DIMS: 26x14x14 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
 (281) 530-5666
 REF: LHAAP - RJ

RMA: III 5114 III



WED - 14 AUG 19 - SAT
PRIORITY OVERNIGHT

FedEx
 TRK# 4809 7836 3275
 0221


AB SGRA

77099
 TX-US IAH



 ALS 150 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel: +1 281 530 5856 Fax: +1 281 530 5887	CUSTODY SEAL		Seal Broken By:
	Date: <u>07-17</u>	Time: <u>10:55</u>	Date:
	Name: <u>APTIM</u>	Comp: <u>APTIM</u>	Date:

03-175 AUG 14 2011

 ALS 1045 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel: +1 281 530 5856 Fax: +1 281 530 5887	CUSTODY SEAL		Seal Broken By:
	Date: <u>07-17</u>	Time: <u>1:00</u>	Date:
	Name: <u>APTIM</u>	Comp: <u>APTIM</u>	Date:

**Must Deliver Next Business Day
Time and Temperature Sensitive**



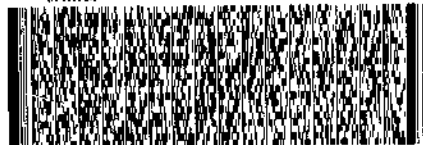
ORIGIN ID: SGRA (903) 930-6193
 SCOTT BEESINGER
 APTIM ENVIRONMENTAL & INFRASTRUCTURE
 1203-B EAST GRAND AVE
 PAB 202
 MARSHALL, TX 75670
 UNITED STATES US

SHIP DATE: 31JUL19
 ACTWT: 1.00 LB MAN
 CAD: 300130/CAFE3211
 DIMS: 26x14x14 IN

TO: **CLIENT SERVICES
 ALS LABORATORY GROUP
 10450 STANCLIFF ROAD
 SUITE 210
 HOUSTON TX 77099**

(281) 530-6856
 REF: LHAAP - RJ

RMA: ||| ||| |||



FedEx
 TRK# 4809 7836 3286
 0221

WED - 14 AUG 10:30A
 PRIORITY OVERNIGHT

AB SGRA

77099
 TX-US IAH





Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1923183

Client: ALS Laboratories (Houston, TX)
Matrix: Soil
ELMS Batch (HBN): 2283 (245818)

General Set Information: There were eight field samples in this Work Order. These samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 1.00 to 1.20 g aliquot of each sample was combined with 9.95mL of ASTM Type II water. 50 μL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, sonicated for at least 15 minutes and filtered into autosampler vial using Phenex PES membrane 0.45 μm Syringe Filters. If necessary, the samples were centrifuged at 2700rpm for 15 minutes prior to filtering in order to remove excess particulates from the extract.

Holding Times: Holding times were met for all analyses.

Dilutions: NA

Method QC data: The method blank (668947) was less than 1/2 the CRDL. The recovery for the LCS (668948) was within acceptable parameters.



MS/MSD Analysis: Matrix Spike and Duplicates (MS/MSD) were performed on sample 1923181001 (Client ID: BS-1-190813). The Matrix Spike/Duplicates passed QC acceptance criteria for percent recoveries and relative percent differences (RPD's).

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): None were required for this set.

Sample Calculation: Samples were reported in $\mu\text{g}/\text{Kg}$. Results were calculated in $\mu\text{g}/\text{Kg}$ by the equation $(A) \times (B) \times (C) \times (D)$,

where: A = Analyte concentration from the standard curve ($\mu\text{g}/\text{L}$)
B = Conversion factor from $\mu\text{g}/\text{L}$ to $\mu\text{g}/\text{kg}$ (10mL/1.0g)
C = Dilution performed at time of analysis
D = Moisture correction

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1, Table F-12. The Reporting Limit Verification Standard (RLVS – 668945) was reported from the analysis of the Laboratory Control Sample (LCS – 668948) at a level of $40. \mu\text{g}/\text{Kg}$. Due to limitations of the Chemstation Software, some of the chromatographic peaks may require manual integrations. A manual integration was performed for one of the Initial Calibration analyses (datafile: 19MARI03).

Thomas Bosch August 19, 2019
Analyst Date



ANALYTICAL REPORT

Report Date: August 20, 2019

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1923183**

Project ID: HS19080691Longhorn AAP

Purchase Order: HS19080691

Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
BS-1-190813	1923183001	08/13/19	08/14/19	Moore Pit
BS-2-190813	1923183002	08/13/19	08/14/19	Moore Pit
BS-3-190813	1923183003	08/13/19	08/14/19	Moore Pit
BS-4-190813	1923183004	08/13/19	08/14/19	Moore Pit
BS-5-190813	1923183005	08/13/19	08/14/19	Moore Pit
BS-6-190813	1923183006	08/13/19	08/14/19	Moore Pit
BS-7-190813	1923183007	08/13/19	08/14/19	Moore Pit
BS-8-190813	1923183008	08/13/19	08/14/19	Moore Pit

ADDRESS 960 West LeVoy Drive, Salt Lake City, Utah, 84123 USA | PHONE +1 801 266 7700 | FAX +1 801 268 9992

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Environmental

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ANALYTICAL REPORT

Workorder: **34-1923183**

Client: ALS Environmental
(Houston)

Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: BS-1-190813	Sampling Site: Moore Pit	Collected: 08/13/2019				
Lab ID: 1923183001	Media: 4 oz Amber Glass Jar	Received: 08/14/2019				
Matrix: Soil/Solid/Sediment	Sampling Parameter: NA					
Analysis Method - EPA 6850, DoD QSM						
Preparation: Not Applicable	Analysis: EPA 6850, DoD QSM Soil Batch: ELMS/2283 (HBN: 245818) Analyzed: 08/16/2019 09:30	Instrument ID: LCMS04 %Solids: 95.5 Report Basis: Dry				
Analyte	Result (ug/Kg)	DL (ug/Kg)	LOD (ug/Kg)	LOQ (ug/Kg)	Dilution	Qual
Perchlorate	ND	10	10	21	1	U

Sample ID: BS-2-190813	Sampling Site: Moore Pit	Collected: 08/13/2019				
Lab ID: 1923183002	Media: 4 oz Amber Glass Jar	Received: 08/14/2019				
Matrix: Soil/Solid/Sediment	Sampling Parameter: NA					
Analysis Method - EPA 6850, DoD QSM						
Preparation: Not Applicable	Analysis: EPA 6850, DoD QSM Soil Batch: ELMS/2283 (HBN: 245818) Analyzed: 08/16/2019 10:13	Instrument ID: LCMS04 %Solids: 89.4 Report Basis: Dry				
Analyte	Result (ug/Kg)	DL (ug/Kg)	LOD (ug/Kg)	LOQ (ug/Kg)	Dilution	Qual
Perchlorate	ND	11	11	22	1	U

Sample ID: BS-3-190813	Sampling Site: Moore Pit	Collected: 08/13/2019				
Lab ID: 1923183003	Media: 4 oz Amber Glass Jar	Received: 08/14/2019				
Matrix: Soil/Solid/Sediment	Sampling Parameter: NA					
Analysis Method - EPA 6850, DoD QSM						
Preparation: Not Applicable	Analysis: EPA 6850, DoD QSM Soil Batch: ELMS/2283 (HBN: 245818) Analyzed: 08/16/2019 10:27	Instrument ID: LCMS04 %Solids: 93.4 Report Basis: Dry				
Analyte	Result (ug/Kg)	DL (ug/Kg)	LOD (ug/Kg)	LOQ (ug/Kg)	Dilution	Qual
Perchlorate	ND	11	11	21	1	U

Sample ID: BS-4-190813	Sampling Site: Moore Pit	Collected: 08/13/2019				
Lab ID: 1923183004	Media: 4 oz Amber Glass Jar	Received: 08/14/2019				
Matrix: Soil/Solid/Sediment	Sampling Parameter: NA					
Analysis Method - EPA 6850, DoD QSM						
Preparation: Not Applicable	Analysis: EPA 6850, DoD QSM Soil Batch: ELMS/2283 (HBN: 245818) Analyzed: 08/16/2019 10:41	Instrument ID: LCMS04 %Solids: 89.4 Report Basis: Dry				
Analyte	Result (ug/Kg)	DL (ug/Kg)	LOD (ug/Kg)	LOQ (ug/Kg)	Dilution	Qual
Perchlorate	ND	11	11	22	1	U



ANALYTICAL REPORT

Workorder: **34-1923183**

Client: ALS Environmental
(Houston)

Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: BS-5-190813	Sampling Site: Moore Pit	Collected: 08/13/2019				
Lab ID: 1923183005	Media: 4 oz Amber Glass Jar	Received: 08/14/2019				
Matrix: Soil/Solid/Sediment	Sampling Parameter: NA					
Analysis Method - EPA 6850, DoD QSM						
Preparation: Not Applicable	Analysis: EPA 6850, DoD QSM Soil Batch: ELMS/2283 (HBN: 245818) Analyzed: 08/16/2019 10:55	Instrument ID: LCMS04 %Solids: 89.5 Report Basis: Dry				
Analyte	Result (ug/Kg)	DL (ug/Kg)	LOD (ug/Kg)	LOQ (ug/Kg)	Dilution	Qual
Perchlorate	ND	11	11	22	1	U

Sample ID: BS-6-190813	Sampling Site: Moore Pit	Collected: 08/13/2019				
Lab ID: 1923183006	Media: 4 oz Amber Glass Jar	Received: 08/14/2019				
Matrix: Soil/Solid/Sediment	Sampling Parameter: NA					
Analysis Method - EPA 6850, DoD QSM						
Preparation: Not Applicable	Analysis: EPA 6850, DoD QSM Soil Batch: ELMS/2283 (HBN: 245818) Analyzed: 08/16/2019 11:09	Instrument ID: LCMS04 %Solids: 90.0 Report Basis: Dry				
Analyte	Result (ug/Kg)	DL (ug/Kg)	LOD (ug/Kg)	LOQ (ug/Kg)	Dilution	Qual
Perchlorate	ND	11	11	22	1	U

Sample ID: BS-7-190813	Sampling Site: Moore Pit	Collected: 08/13/2019				
Lab ID: 1923183007	Media: 4 oz Amber Glass Jar	Received: 08/14/2019				
Matrix: Soil/Solid/Sediment	Sampling Parameter: NA					
Analysis Method - EPA 6850, DoD QSM						
Preparation: Not Applicable	Analysis: EPA 6850, DoD QSM Soil Batch: ELMS/2283 (HBN: 245818) Analyzed: 08/16/2019 11:24	Instrument ID: LCMS04 %Solids: 90.3 Report Basis: Dry				
Analyte	Result (ug/Kg)	DL (ug/Kg)	LOD (ug/Kg)	LOQ (ug/Kg)	Dilution	Qual
Perchlorate	ND	11	11	22	1	U

Sample ID: BS-8-190813	Sampling Site: Moore Pit	Collected: 08/13/2019				
Lab ID: 1923183008	Media: 4 oz Amber Glass Jar	Received: 08/14/2019				
Matrix: Soil/Solid/Sediment	Sampling Parameter: NA					
Analysis Method - EPA 6850, DoD QSM						
Preparation: Not Applicable	Analysis: EPA 6850, DoD QSM Soil Batch: ELMS/2283 (HBN: 245818) Analyzed: 08/16/2019 11:38	Instrument ID: LCMS04 %Solids: 91.0 Report Basis: Dry				
Analyte	Result (ug/Kg)	DL (ug/Kg)	LOD (ug/Kg)	LOQ (ug/Kg)	Dilution	Qual
Perchlorate	ND	11	11	22	1	U



ANALYTICAL REPORT

Workorder: **34-1923183**

Client: ALS Environmental
(Houston)

Project Manager: Kevin W. Griffiths

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 08/19/2019 11:08	/S/ Stephen Brose 08/20/2019 09:18
Solids/Moisture Determination	/S/ Ilse J. Ovalle 08/20/2019 10:02	/S/ Jeff Ward 08/20/2019 11:30

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: als@alstglobal.com
Web: www.alssl.com

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L17-506	http://www.pjllabs.com
	PJLA (ISO 17025)	L17-507-R1	http://www.pjllabs.com
	Utah (TNI)	UT00953	http://lams.nelac-institute.org/search
	Iowa (TNI)	IA# 376	http://www.shl.uiowa.edu/labcert/idnr/
	Kansas	E-10416	http://www.kdheks.gov/envlab/disclaimer.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L18-606	http://www.pjllabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L17-507-R1	http://www.pjllabs.com



ANALYTICAL REPORT

Workorder: 34-1923183

Client: ALS Environmental
(Houston)

Project Manager: Kevin W. Griffiths

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.

RL = Reporting Limit, a verified value of method/media/instrument sensitivity.

CRDL = Contract Required Detection Limit

Reg. Limit = Regulatory Limit.

ND = Not Detected, testing result not detected above the MDL or RL.

< Means this testing result is less than the numerical value.

** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.

J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.

B = Qualifier indicates that the analyte was detected in the blank.

E = Qualifier indicates that the analyte result exceeds calibration range.

P = Qualifier indicates that the RPD between the two columns is greater than 40%.



Quality Control Sample Batch Report

Analysis Information

Workorder: 1923183

Limits: Client SOW/Contract Specified
Basis: DoD QSM

Preparation: NA
Batch: NA
Prepared By: NA

Analysis: EPA 6850, DoD QSM
Batch: ELMS/2283 (HBN: 245818)
Analyzed By: Thomas Bosch

Blank

LMB: 668947 Analyzed: 08/16/2019 09:16 Units: ug/Kg			
Analyte	Result	MDL	RL
Perchlorate	ND	10	10.0

Laboratory Control Sample

LCS: 668948 Analyzed: 08/16/2019 08:47 Dilution: 1 Units: ug/Kg				
Analyte	Result	Target	% Rec	QC Limits
Perchlorate	40.0	40.0	99.9	84.0 121.0

Matrix Spike - Matrix Spike Duplicate

Sample: 1923183001 Analyzed: 08/16/2019 09:30 Dilution: 1 Units: ug/Kg		MS: 668949 Analyzed: 08/16/2019 09:44 Dilution: 1 Units: ug/Kg				MSD: 668950 Analyzed: 08/16/2019 09:58 Dilution: 1 Units: ug/Kg			
Analyte	Result	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits
Perchlorate	ND	34.3	40	85.6	78.8 123.8	37.6	94.0	9.27	0.0 20.0

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch 08/19/2019 11:11	/S/ Stephen Brose 08/20/2019 09:18

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

- RPD - Relative % Difference (Spike / Spike Duplicate)
- ND - Not Detected (U - Qualifier also flags analyte as not detected)
- NA - Not Applicable
- QC results are not adjusted for moisture correction, where applicable



COC ID: LHAAP-BorrowSource-Aug2019-ALSHIT-190813

TURNAROUND TIME: 5 Business Days

RUSH: 5 Business Days

W. Huang
~~1855~~ / #1
 1923183
 Page 1 of 1

PROJECT/CLIENT INFO

Facility Name	Longhorn AAP
Project Number	501032
Borrow Source	1203-B East Grand Avenue
Address	PMB 202
City	Marshall
Postal Code	75670
Phone Number	713.243.7264
Project Manager	Praveen Srivastava

LABORATORY

Lab Name	ALS Laboratories
Lab Contact	Kevin Griffiths/RJ Modashia
Email	kevin.griffiths@alsglobal.com
Address	960 West Levey Drive
City	Salt Lake
Postal Code	84123
Phone Number	801.266.7700

SAMPLE DETAILS

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	
									Containers and Preservative	Perchlorate by SW6850
BS-1-190813	Moore Pit				Soil	8/13/2019	850	1	1	
BS-2-190813	Moore Pit				Soil	8/13/2019	857	1	1	
BS-3-190813	Moore Pit				Soil	8/13/2019	904	1	1	
BS-4-190813	Moore Pit				Soil	8/13/2019	911	1	1	
BS-5-190813	Moore Pit				Soil	8/13/2019	918	1	1	
BS-6-190813	Moore Pit				Soil	8/13/2019	924	1	1	
BS-7-190813	Moore Pit				Soil	8/13/2019	930	1	1	
BS-8-190813	Moore Pit				Soil	8/13/2019	939	1	1	

ANALYSIS REQUESTED

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED

DATE/TIME

Praveen Srivastava
 08-13-19 / 10:31
 08-14-19 9:19
W. Huang



ALS Environmental CHAIN-OF-CUSTODY

Project / Job / Task: 501032		Workorder ID: 1923183		Level: ENV_LVL4		Requested Analysis	
Client: ALS Environmental (Houston)				Account: 8101		Type: 4ozAGWM	
Comments:							
Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	ID(s)	Count
1	08/13/2019 08:50	BS-1-190813	1923183001		Soil/Solid/Sediment	A	1
2	08/13/2019 08:57	BS-2-190813	1923183002		Soil/Solid/Sediment	A	1
3	08/13/2019 09:04	BS-3-190813	1923183003		Soil/Solid/Sediment	A	1
4	08/13/2019 09:11	BS-4-190813	1923183004		Soil/Solid/Sediment	A	1
5	08/13/2019 09:18	BS-5-190813	1923183005		Soil/Solid/Sediment	A	1
6	08/13/2019 09:24	BS-6-190813	1923183006		Soil/Solid/Sediment	A	1
7	08/13/2019 09:30	BS-7-190813	1923183007		Soil/Solid/Sediment	A	1
8	08/13/2019 09:30	BS-8-190813	1923183008		Soil/Solid/Sediment	A	1
9							
10							

BALANCE ID: 40090067

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY				SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY			
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Sample Login	Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
<i>Julie Ward</i>	08/14/2019 09:19	ALS Sample Receiving	STAGE CLOTH ANALYSIS				
R-33-1	8/14/19 1400	3C					
	8-15-19/08:00	T. Bush					

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

1923183

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill in or Circle)

Client Name: ARTIM Project/Task/Site: 501032
 Date/Time of Receipt: 08-14-19 9:19 Number of Coolers Received: 1

Condition of Coolers: Acceptable/Unacceptable Temperature Control: Present/Not Included
 Cooler Custody Seals: Present/Absent/NA
Intact/Broken/NA Location Temp Taken: Control/Between Samples
 Container Custody Seals: Present/Absent/NA
Intact/Broken/NA Are all temperatures within project specific guidelines? Yes/No/NA
 Ice Present: Yes/No/NA VOA Headspace Present? Yes/No/NA
Frozen/Melted/NA

pH Check Performed:	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH-418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C19 <u>9821</u>	<u>2</u> °C	4	C19	°C	7	C19	°C
2	C19	°C	5	C19	°C	8	C19	°C
3	C19	°C	6	C19	°C	9	C19	°C

Taken By: Jamir J. J. T. Vantassel T. Vantassel 08-14-19
Signature Printed Name Date

CLIENT-RELATED INFORMATION

- | | | | |
|--|---|--|---|
| <input type="checkbox"/> Missing Cooler | <input type="checkbox"/> Missing Samples/Bottles | <input type="checkbox"/> Incorrect Preservation | <input type="checkbox"/> Insufficient Sample Volume |
| <input type="checkbox"/> Cooler Conditions | <input type="checkbox"/> Broken/Leaking Samples | <input type="checkbox"/> pH Criteria Not Met | <input type="checkbox"/> Chain of Custody Problems |
| <input type="checkbox"/> Missing Paperwork | <input type="checkbox"/> Incorrect Bottle Type | <input type="checkbox"/> Residual Chlorine Present | <input type="checkbox"/> Other: |
| <input type="checkbox"/> Missing/Incorrect Bottle Labels | <input type="checkbox"/> Cooler Temperatures Out of Range | <input type="checkbox"/> Head Space in Bottles | |

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? Yes No

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ Returned to Sample Receipt by: _____ Date: _____
Printed Name Signature

ORIGIN ID:SHVA (210) 247-8085
MICHAEL MARTINEZ

CONFIDENTIAL PRGNG-DONOT SHARE
10450 STANCLIFF RD
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 13AUG19
ACTWGT: 44.40 LB
CAD: 006993541/SSFE2002
DIMS: 24x13x14 IN

BILL THIRD PARTY

TO **RJ MODASHIA**
ATTN: SAMPLE RECEIVING
960 WEST LEVOY DRIVE

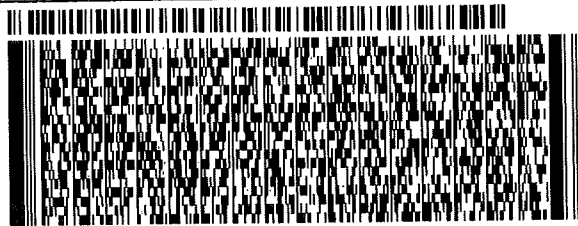
SALT LAKE CITY UT 84123

(281) 630-6668

REF:

INU:

DEPT:



FedEx
Express



J182019062401uv

TRK# 7891 1602 2169
0201

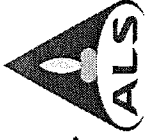
WED - 14 AUG 10:30A
PRIORITY OVERNIGHT

AX BTFA

84123
UT-US SLC



Batch Worklist



Batch: ELMS/ 2283

Rule: EPA 6850, DoD QSM Soil

Workorder: 1923183 [ENV_LVL4]

Created: 8/16/2019 08:01

Analyst: T. Bosch

Instrument:

Status: W/P

HBN: 245818



Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mix	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	668944	CCV for HBN 245818 [ELMS/2283]				CCV	3		E685041C4Q	5311		8/21/2019	
2	668945	RLVS for HBN 245818 [ELMS/2283]				RLVS	4		E6850Q414Q	5311		8/21/2019	
3	668946	ICS for HBN 245818 [ELMS/2283]				ICS	3		E6850..D4Q	5311		8/21/2019	
4	668947	LMB for HBN 245818 [ELMS/2283]				LMB	4		E6850Q414Q	5311		8/21/2019	
5	668948	LCS for HBN 245818 [ELMS/2283]				LCS	4		E6850Q414Q	5311		8/21/2019	
6	1923183001	BS-1-190813				SAMPLE	4	1923183001-A	E6850Q41.4	5480	9/10/2019	8/21/2019	
7	668949	BS-1-190813(1923183001MS)				MS	4		E6850Q414Q	5311		8/21/2019	
8	668950	BS-1-190813(1923183001MSD)				MSD	4		E6850Q414Q	5311		8/21/2019	
9	1923183002	BS-2-190813				SAMPLE	4	1923183002-A	E6850Q41.4	5480	9/10/2019	8/21/2019	
10	1923183003	BS-3-190813				SAMPLE	4	1923183003-A	E6850Q41.4	5480	9/10/2019	8/21/2019	
11	1923183004	BS-4-190813				SAMPLE	4	1923183004-A	E6850Q41.4	5480	9/10/2019	8/21/2019	
12	1923183005	BS-5-190813				SAMPLE	4	1923183005-A	E6850Q41.4	5480	9/10/2019	8/21/2019	
13	1923183006	BS-6-190813				SAMPLE	4	1923183006-A	E6850Q41.4	5480	9/10/2019	8/21/2019	
14	1923183007	BS-7-190813				SAMPLE	4	1923183007-A	E6850Q41.4	5480	9/10/2019	8/21/2019	
15	1923183008	BS-8-190813				SAMPLE	4	1923183008-A	E6850Q41.4	5480	9/10/2019	8/21/2019	
16	668951	CCV for HBN 245818 [ELMS/2283]				CCV	3		E685041C4Q	5311		8/21/2019	



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #'s: 1913183 (001-08)
ELMS Batch/HBN ID: 2283 (245818)
Prep Date: 08/15/2019 Analysis Date: 08/16/2019
Sequence: \\HPCHEM1\SEQUENCE\CLO4\2019\AUG\16AUG19D.s
Analyte: Perchlorate Method: 6850 Matrix: Soil Analyst: Tom Bosch
Instrument DL/LOD: 10.0µg/Kg Reported LOQ: 20.0µg/Kg

SAMPLE PREPARATION/ANALYSIS:

Soil: Samples were prepared by Tom Bosch. A 1.0 g (+/- 0.1g; Balance ID: 40090067) aliquot of sample was weighed into a 15mL centrifuge tube. 9.95mL of ASTM Type II water was added to each sample and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. Each sample was capped, vortexed, sonicated for at least 10 minutes and centrifuged (if necessary) at 2700rpm for 15 minutes. The samples are then filtered into autosampler vials using Phenex PES membrane 0.45µm Syringe filters. Sample weight have been scanned into the HBN folder.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 43730. Dilutions of Working Standard Solution ID 43702 used for CCV's and ICS.

CALIBRATION CURVE: Used curve from 03/19/2019, sequence 19MAR19L.s Offline Quantitation Method: CLO4-DP2.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-DOD.M Fragmentor: 160 Output Gain: 10 Injection Volume: 50µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: Eluent A1 - 70%; Eluent B1 - 30% Run Time: 12.0min.

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.70
5.8	0.70
5.9	0.25
10.3	0.25
10.5	0.70

QC DATA:

Soil: Blank and QC samples were prepared using washed Ottawa sand (EM Science Lot# 36211706). A 4.0µL of QC Solution Horizon ID 47516 was used for LCS 668948; Targets = 40.0 µg/Kg. ASTM type II water was used for the LMB 668947.

CONVERSION: µg/L * 10.mL/1.0g * L/1,000mL * 1,000g/Kg = 10.µg/Kg

MS/MSD:

Soil: Matrix Spike and Duplicates (MS/MSD) were performed on sample 1923183001 (Client ID: BS-1-190813). The Matrix Spike/Duplicates passed QC acceptance criteria for percent recoveries and relative percent differences (RPD's).

COMMENTS:

- 1) Soil results reported in µg/Kg, with moisture corrections.
- 2) All QC, Blank and CCV results were within method parameters.
- 3) Sample data: \\ALS1TWS013\LCMS\LCMS04\2019\AUG\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
- 4) Notebook: \\als1tws013\ORGANIC\BOSCH\LCMS\Perchlorates\Soils\2019\245818-ALS-Hstn-DOD-NBK-LCMS4 or through \\ALS1TWS013\DATAREVIEW\HBN#
- 5) The Reporting Limit Verification Standard (RLVS – 668945) was reported from the analysis of the Laboratory Control Sample (LCS – 668948) at a level of 40.µg/Kg.
- 6) Due to limitations of the Chemstation Software, some of the chromatographic peaks may require manual integrations. A manual integration was performed for one of the Initial Calibration analyses (datafile: 19MARI03).

5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

<u>Chromatography (GC, HPLC, LC/MS) Technical Review Criteria</u>	<u>Analyst Initials</u>	<u>Reviewer Initials</u>
<u>Batch(es)/SDG: ELMS: 2283 HBN: 245818</u>		
<u>Sample Set IDs if Applicable: 1923183</u>		
<u>Calibration standards analyzed and meets criteria</u>	TB	SB
<u>Standards traceability checked and meets criteria</u>	TB	SB
<u>Standard curve coefficients evaluated and meet criteria</u>	TB	SB
<u>ICVs analyzed and meet acceptance criteria</u>	TB	SB
<u>CCVs analyzed and meet acceptance criteria</u>	TB	SB
<u>Method Blanks analyzed and meet acceptance criteria</u>	TB	SB
<u>Retention Time Windows checked</u>	TB	SB
<u>For method 8081A, Endrin/DDT Breakdown is checked for compliance</u>	—	—
<u>Surrogate recoveries checked and appropriately addressed</u>	—	—
<u>Method Preparation Blanks analyzed and meet acceptance criteria</u>	TB	SB
<u>MSs, MSDs, and/or MDs analyzed and calculations checked; applicable flags applied on QC reports; LCSs analyzed and meet acceptance criteria when performed</u>	TB	SB
<u>RLVS analyzed</u>	TB	SB
<u>Preparation and analysis hold times met</u>	TB	SB
<u>Preparation deviations and re-preparations noted when performed</u>	TB	SB
<u>Analysis deviations and re-analyses noted when performed</u>	TB	SB
<u>Sample dilution factors noted on reports</u>	TB	SB
<u>Electronic records in HBN transcription accuracy and completeness checked</u>	TB	SB
<u>Preparation and analysis calculations checked</u>	TB	SB
<u>NCRs are completed as necessary NC/CAR#</u>	—	—
<u>Report forms are complete and accurate</u>	TB	SB
<u>Manual integrations checked</u>	TB	SB



STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK		Description - 6850.WKG-Std-100.ug/L	
Standard: 43702	Created By: Thomas Bosch	Amount: 10 mL	
MFG: ALS/SLC	Create Date: 09/18/2018 02:09PM	Expires: 09/18/2019	
MFG Lot: TNB: 09/18/2018		Usable: Yes	
Pipette ID: Not Provided		Lab Lot: CLO4 WRK	

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL

Composition					
Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43701	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	09/18/2019



STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK		Description - 6850 Stock AccStd 1,000ug/mL	
Standard: 43659	Created By: Thomas Bosch	Amount: 100 mL	
MFG: AccuStandard	Create Date: 09/17/2018 09:09AM	Expires: 07/25/2020	
MFG Lot: 218065075		Usable: No	
Part ID: IC-PER-10X-1		Lab Lot: CLO4 STOCK	
Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL



STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water	
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L	
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025	
MFG Lot: Not Provided		Usable: Yes	
Part ID: Not Provided		Lab Lot: LAB 109	
Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			



STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT		Description - 6850 Intermdt AccStd 10.ug/mL	
Standard: 43701	Created By: Thomas Bosch	Amount: 10 mL	
MFG: ALS/SLC	Create Date: 09/18/2018 02:09PM	Expires: 09/18/2019	
MFG Lot: TNB: 09/18/2018		Usable: Yes	
Pipette ID: Not Provided		Lab Lot: CLO4 INT	

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition					
Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43659	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	07/25/2020



STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK		Description - 6850 QC WKG STD 100ug/L	
Standard: 47516	Created By: Thomas Bosch	Amount: 10 mL	
MFG: ALS/SLC	Create Date: 05/06/2019 03:05PM	Expires: 03/31/2020	
MFG Lot: TNB: 05/06/2019		Usable: Yes	
Pipette ID: Not Provided		Lab Lot: CLO4 QC WRK 100.ug/L	

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
47515	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	03/31/2020



STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water	
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L	
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025	
MFG Lot: Not Provided		Usable: Yes	
Part ID: Not Provided		Lab Lot: LAB 109	
Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			



STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK		Description - 6850 QC Stock STD 1,000ug/mL	
Standard: 36748	Created By: Thomas Bosch	Amount: 100 mL	
MFG: Ultra Scientific	Create Date: 05/11/2017 01:05PM	Expires: 03/31/2020	
MFG Lot: CP-0860		Usable: Yes	
Part ID: ICC-013		Lab Lot: CLO4 QC STOCK	
Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL



STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT		Description - 6850 QC Intrmdt Std-QC 10ug/mL			
Standard: 47515 MFG: ALS/SLC MFG Lot: TNB: 05/06/2019 Pipette ID: Not Provided		Created By: Thomas Bosch Create Date: 05/06/2019 03:05PM		Amount: 10 mL Expires: 03/31/2020 Usable: Yes Lab Lot: CLO4 QC INT 10.ug/mL	
Pos.	Analyte	Name	Concentration		
1	14797-73-0	Perchlorate	10 ug/mL		
Composition					
Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020



STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK		Description - Perchlorate ISTD Wrk 1,000ug/L	
Standard: 43730	Created By: Thomas Bosch	Amount: 25 mL	
MFG: ALS/SLC	Create Date: 09/20/2018 09:09AM	Expires: 09/20/2019	
MFG Lot: TNB: 05/09/2018	Verified By: Thomas Bosch	Usable: Yes	
Pipette ID: Not Provided	Verify Date:	Lab Lot: CLO4ISTDWRK	

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition					
Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
43729	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.25 mL	04/28/2026



STANDARD REPORT

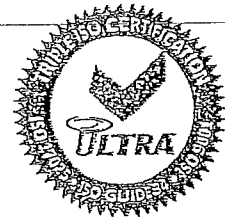
Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock	
Standard: 43729	Created By: Thomas Bosch	Amount: 1 mL	
MFG: Cambridge Isotope	Create Date: 09/20/2018 09:09AM	Expires: 04/28/2026	
MFG Lot: SDFF-012A	Verified By: Thomas Bosch	Usable: Yes	
Part ID: OLM-7310-S	Verify Date:	Lab Lot: CLO4ISTDSTK	
Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL



Certificate of Analysis



ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

LoI Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 31.41A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.





Certificate of Analysis

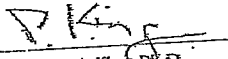


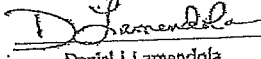
ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.


Peter A. King, Ph.D.
VP, Technical Operations


Daniel J. Lamendola
Director of QA/RA



125 Market Street
New Haven, CT 06513
USA



AccuStandard®

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS



43659

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO₄)
SRM: Ind. Std.
Lot: 218065075
Matrix: Water
Hazards: Refer to SDS for complete safety information

Date Certified: Jun 25, 2018
Expiration: Jul 25, 2020
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO 17034 Scope of Accreditation: Yes



Signal Word: None

Component	SRM #	Prepared Concentration (µg/mL)
ClO ₄ Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.24%.

The final solution was checked against an independent standard to verify its concentration.

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.

All solutions are filtered through a 0.2 µm filter prior to being bottled.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are triple rinsed with deionized water prior to use.

Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By:

Meigan O'Leary

Meigan O'Leary, Inorganic QC Manager

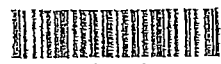
For use in routine laboratory analysis.



Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP



23118

Product Name: PERCHLORIC ACID, SODIUM SALT
(Isotopic Label & Enrichment Specification) (18O4, 90%+) 100 UG/ML IN WATER

Lot Number: SDDG-013

Catalog Number: OLM-7310-S

Product Information

Chemical Purity Specification: $\geq 98\%$

Labeled CAS Number: NA

Unlabeled CAS Number: 7601-89-0

MW*: 130.4

Chemical Formula: NaClO₄

Storage: Store at room temperature away from light and moisture.

Stability: See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number. Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

* For isotopically labeled compounds, MW listed is for the fully enriched product.

Approved by: T. J. Eckersley
Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Batch Review Method:

C:\HPCHEM\1\METHODS\CLO4-DP2.M

['#' ==> Run has not been reprocessed with Batch Review Method

['*' ==> Run has been saved with batch file]

#*	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount	
*	668944	CCV@25	Vial 71	1	Control	1	1.56124e6	7.946	24.63047
*	668948	QC@40.	Vial 72	1	Control	2	2.81386e5	7.978	39.96089
*	668946	ICS@4.0	Vial 73	1	Control	3	2.30156e5	7.785	3.45714
*	668947	LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	1923183001		Vial 75	1	Sample	5	0.00000	0.000	0.00000
*	668949	231831S	Vial 76	1	Sample	6	2.52137e5	8.114	34.25941
*	668950	231831D	Vial 77	1	Sample	7	2.79089e5	8.162	37.59086
*	1923183002		Vial 78	1	Sample	8	0.00000	0.000	0.00000
*	1923183003		Vial 79	1	Sample	9	0.00000	0.000	0.00000
*	1923183004		Vial 80	1	Sample	10	0.00000	0.000	0.00000
*	1923183005		Vial 81	1	Sample	11	0.00000	0.000	0.00000
*	1923183006		Vial 82	1	Sample	12	0.00000	0.000	0.00000
*	1923183007		Vial 83	1	Sample	13	0.00000	0.000	0.00000
*	1923183008		Vial 84	1	Sample	14	0.00000	0.000	0.00000
*	668951	CCV@25	Vial 71	1	Control	15	1.61778e6	7.895	24.75216

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount	
*	668944	CCV@25	Vial 71	1	Control	1	4.84435e5	7.957	25.68739
*	668948	QC@40.	Vial 72	1	Control	2	9.52364e4	7.995	43.93145
*	668946	ICS@4.0	Vial 73	1	Control	3	8.20296e4	7.818	3.97504
*	668947	LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	1923183001		Vial 75	1	Sample	5	0.00000	0.000	0.00000
*	668949	231831S	Vial 76	1	Sample	6	8.48652e4	8.140	37.25873
*	668950	231831D	Vial 77	1	Sample	7	9.23182e4	8.178	40.34656
*	1923183002		Vial 78	1	Sample	8	0.00000	0.000	0.00000
*	1923183003		Vial 79	1	Sample	9	0.00000	0.000	0.00000
*	1923183004		Vial 80	1	Sample	10	0.00000	0.000	0.00000
*	1923183005		Vial 81	1	Sample	11	0.00000	0.000	0.00000
*	1923183006		Vial 82	1	Sample	12	0.00000	0.000	0.00000
*	1923183007		Vial 83	1	Sample	13	0.00000	0.000	0.00000
*	1923183008		Vial 84	1	Sample	14	0.00000	0.000	0.00000
*	668951	CCV@25	Vial 71	1	Control	15	4.98759e5	7.911	25.65781

#*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount	
*	668944	CCV@25	Vial 71	1	Control	1	1.93018e5	7.956	5.00000
*	668948	QC@40.	Vial 72	1	Control	2	2.32037e5	8.001	50.00000
*	668946	ICS@4.0	Vial 73	1	Control	3	2.21057e5	7.810	5.00000
*	668947	LMB	Vial 74	1	Control	4	2.54280e5	8.141	50.00000
*	1923183001		Vial 75	1	Sample	5	2.25393e5	8.112	48.64000
*	668949	231831S	Vial 76	1	Sample	6	2.36019e5	8.132	48.35500
*	668950	231831D	Vial 77	1	Sample	7	2.37424e5	8.201	48.45000
*	1923183002		Vial 78	1	Sample	8	2.45483e5	8.203	48.40500
*	1923183003		Vial 79	1	Sample	9	2.32879e5	8.128	48.92500
*	1923183004		Vial 80	1	Sample	10	2.30341e5	8.206	47.32000
*	1923183005		Vial 81	1	Sample	11	2.40396e5	8.153	46.95000
*	1923183006		Vial 82	1	Sample	12	2.34349e5	8.112	46.90500
*	1923183007		Vial 83	1	Sample	13	2.29435e5	8.102	48.17000
*	1923183008		Vial 84	1	Sample	14	2.35974e5	8.092	48.97000
*	668951	CCV@25	Vial 71	1	Control	15	1.98966e5	7.926	5.00000

*** End of Report ***

Sequence Table:

Method and Injection Info Part:

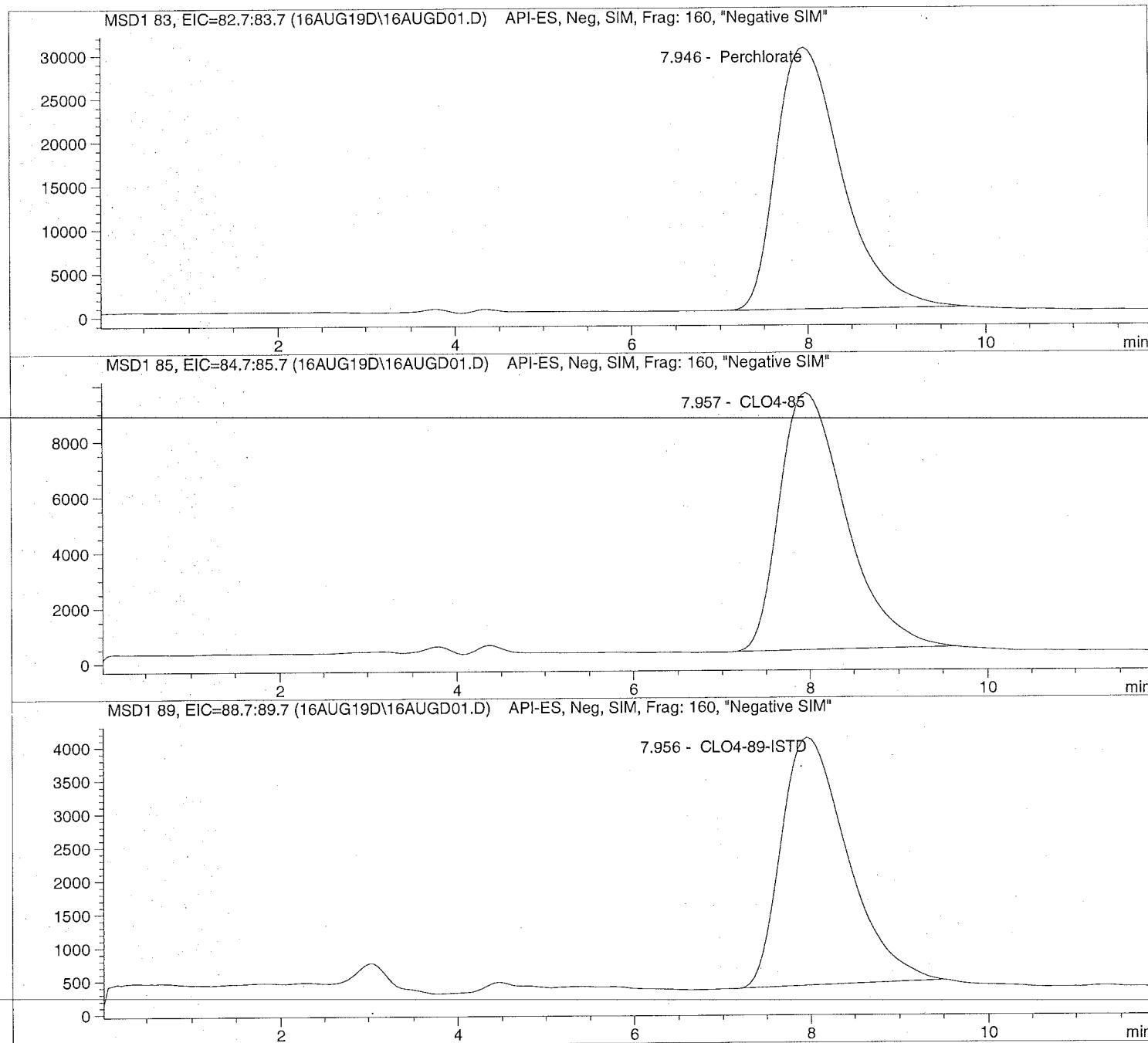
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
====	=====	=====	=====	===	=====	=====	=====
1	Vial 71	668944	CCV@25	CLO4-AQN	1	Ctrl Samp	
2	Vial 72	668948	QC@40.	CLO4-AQN	1	Ctrl Samp	
3	Vial 73	668946	ICS@4.0	CLO4-AQN	1	Ctrl Samp	
4	Vial 74	668947	LMB	CLO4-AQN	1	Ctrl Samp	
5	Vial 75	1923183001		CLO4-AQN	1	Sample	
6	Vial 76	668949	231831S	CLO4-AQN	1	Sample	
7	Vial 77	668950	231831D	CLO4-AQN	1	Sample	
8	Vial 78	1923183002		CLO4-AQN	1	Sample	
9	Vial 79	1923183003		CLO4-AQN	1	Sample	
10	Vial 80	1923183004		CLO4-AQN	1	Sample	
11	Vial 81	1923183005		CLO4-AQN	1	Sample	
12	Vial 82	1923183006		CLO4-AQN	1	Sample	
13	Vial 83	1923183007		CLO4-AQN	1	Sample	
14	Vial 84	1923183008		CLO4-AQN	1	Sample	
15	Vial 71	668951	CCV@25	CLO4-AQN	1	Ctrl Samp	

Injection Date: 8/16/2019 08:30:30
Sample Name: 668944 CCV@25
Acq Operator: TNB

Seq Line: 1
Location: Vial 71
Inj. No.: 1
Inj. Vol.: 50 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41

Perchlorate analysis



```
=====
Injection Date: 8/16/2019 08:30:30      Seq Line: 1
Sample Name: 668944 CCV@25              Location: Vial 71
Acq Operator: TNB                        Inj. No.: 1
                                           Inj. Vol.: 50 µl
=====
```

```
Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41
```

Perchlorate analysis

===== Sample Information =====

```
Sorted By: Signal
Calib. Data Modified: Fri, 12. Apr. 2019,07:52:58 am
Multiplier: 1.000000
Dilution: 1.000000
Sample Amount: 25.000
```

===== LCMS Results =====

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.946	PBA	1561235.8	24.6305	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.957	PBA	484435.1	25.6874	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.956	PBA	193017.5	5.0000	CLO4-89-ISTD

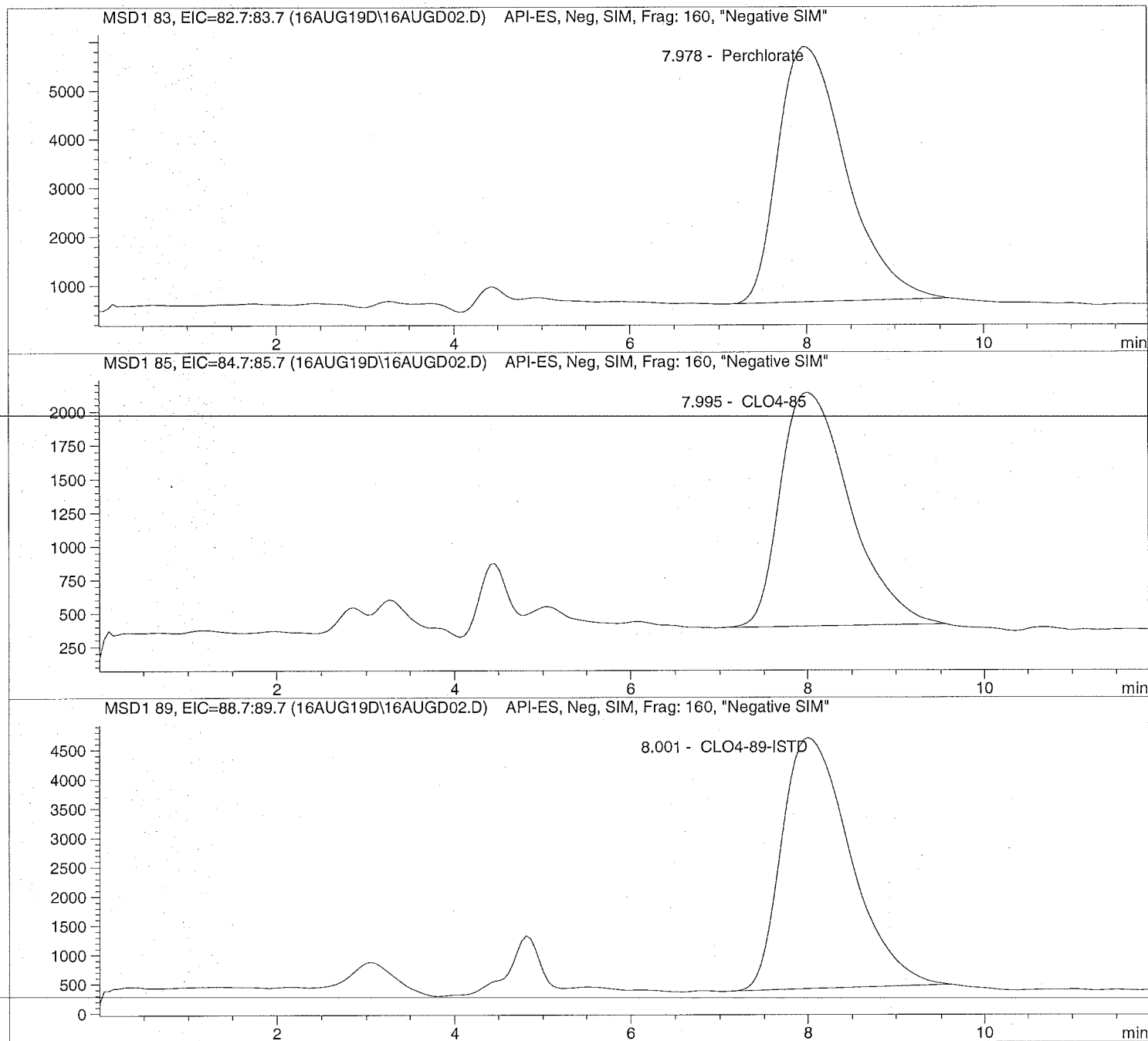
=====
*** End of Report ***

Injection Date: 8/16/2019 08:47:39
Sample Name: 668948 QC@40.
Acq Operator: TNB

Seq Line: 2
Location: Vial 72
Inj. No.: 1
Inj. Vol.: 50 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41

Perchlorate analysis



=====
Injection Date: 8/16/2019 08:47:39 Seq Line: 2
Sample Name: 668948 QC@40. Location: Vial 72
Acq Operator: TNB Inj. No.: 1
Inj. Vol.: 50 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41

Perchlorate analysis

=====
Sample Information
=====

Sorted By: Signal
Calib. Data Modified: Fri, 12. Apr. 2019,07:52:58 am
Multiplier: 10.000000
Dilution: 1.000000
Sample Amount: 40.000

=====
LCMS Results
=====

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.978	PBA	281385.7	39.9609	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.995	PBA	95236.4	43.9315	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.001	PBA	232037.4	50.0000	CLO4-89-ISTD

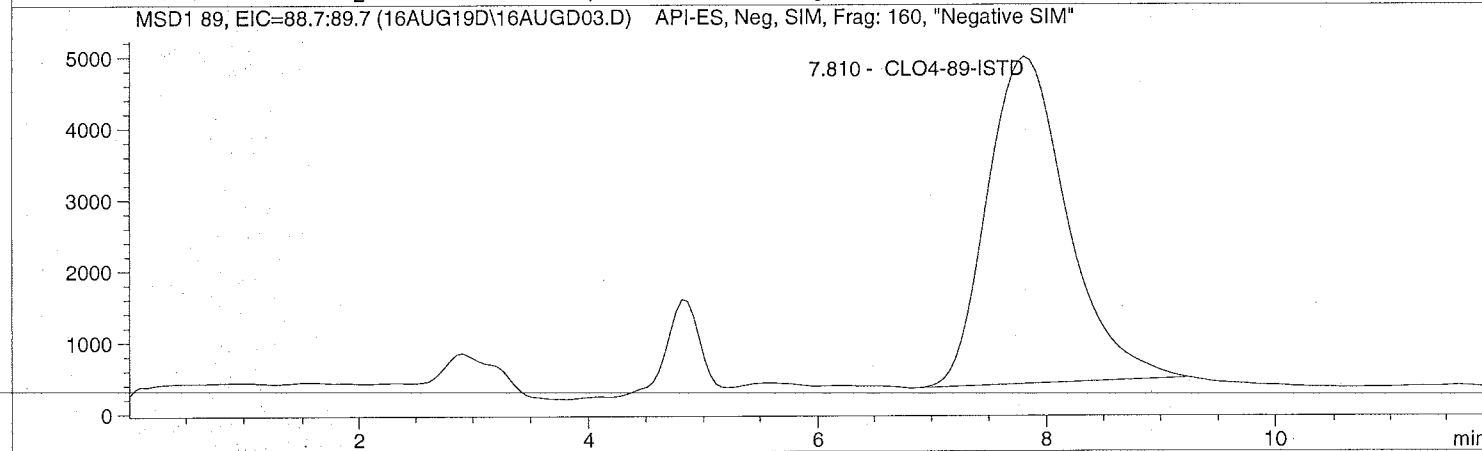
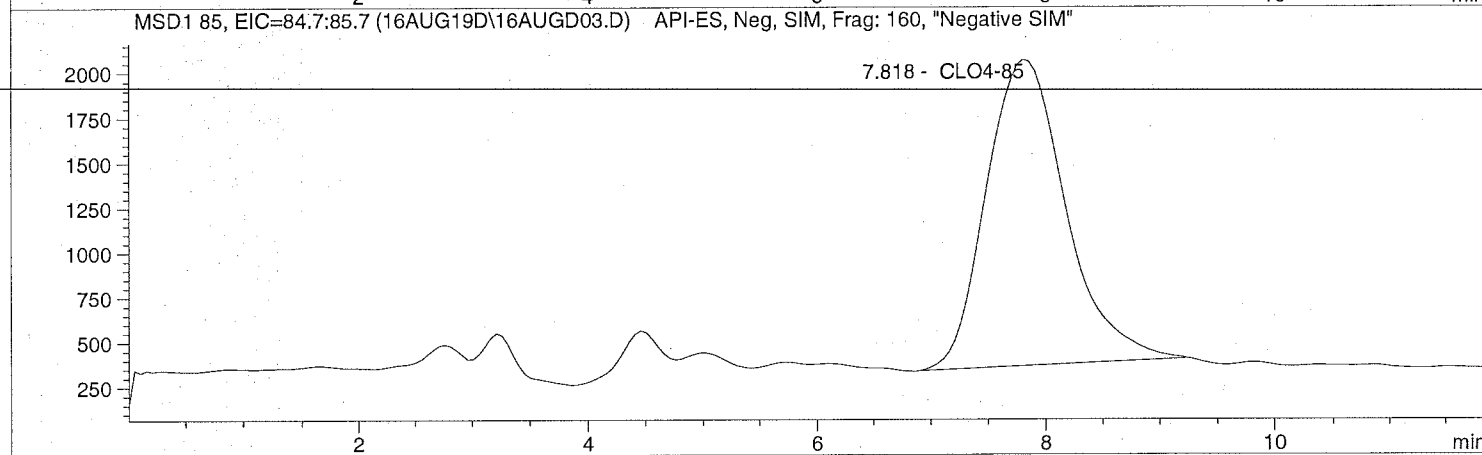
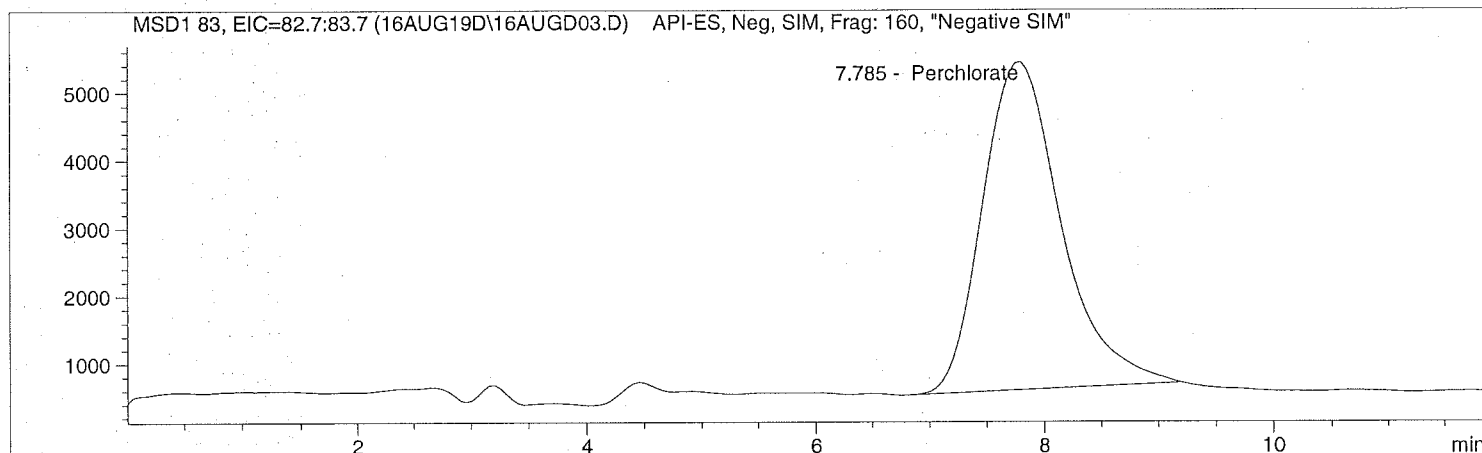
=====
*** End of Report ***
=====

Injection Date: 8/16/2019 09:01:51
Sample Name: 668946 ICS@4.0
Acq Operator: TNB

Seq Line: 3
Location: Vial 73
Inj. No.: 1
Inj. Vol.: 50 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41

Perchlorate analysis



Injection Date: 8/16/2019 09:01:51 Seq Line: 3
Sample Name: 668946 ICS@4.0 Location: Vial 73
Acq Operator: TNB Inj. No.: 1
Inj. Vol.: 50 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Fri, 12. Apr. 2019,07:52:58 am
Multiplier: 1.000000
Dilution: 1.000000
Sample Amount: 4.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.785	PBA	230155.7	3.4571	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.818	PBA	82029.6	3.9750	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.810	PBA	221056.5	5.0000	CLO4-89-ISTD

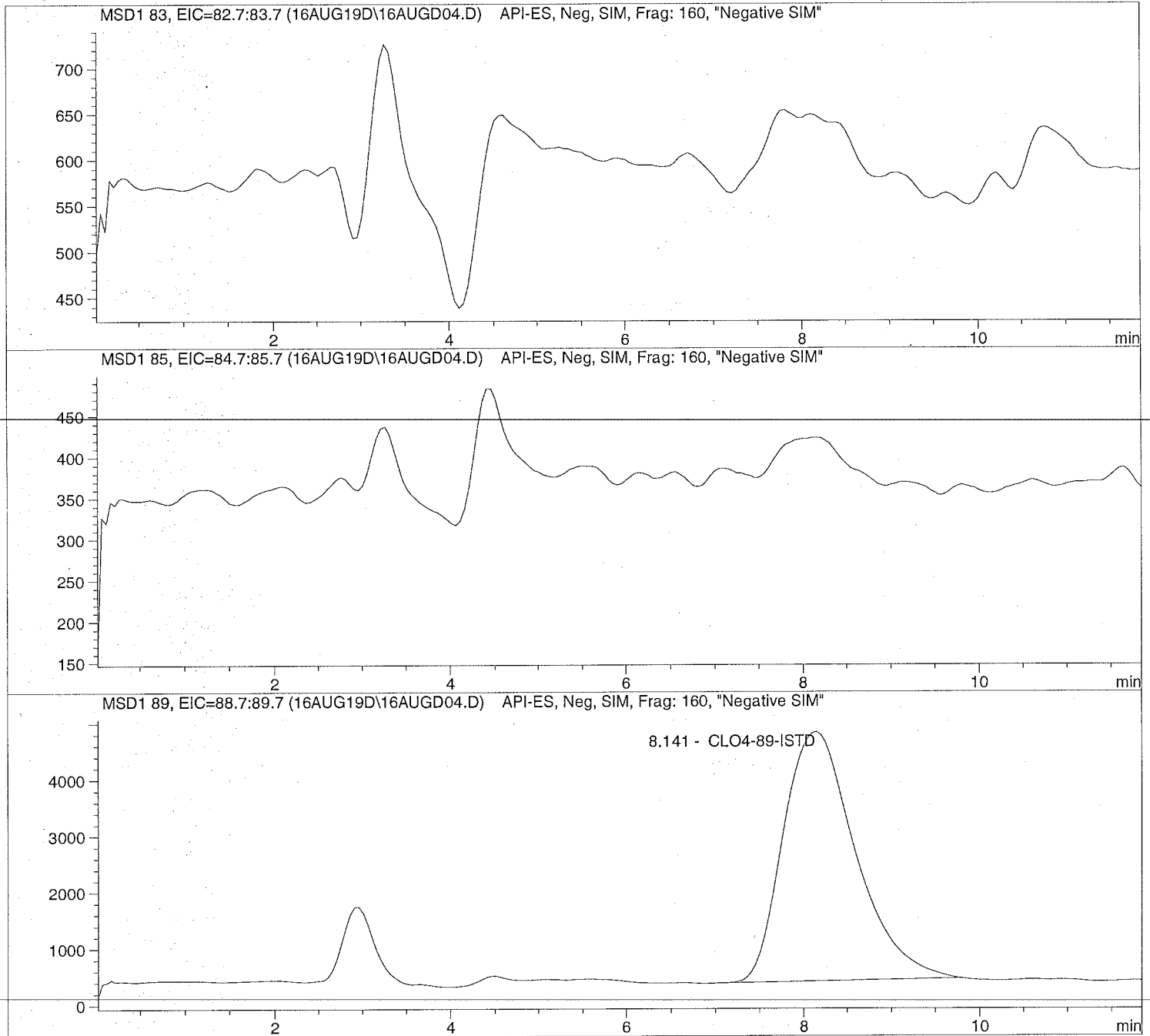
*** End of Report ***

Injection Date: 8/16/2019 09:16:11
Sample Name: 668947 LMB
Acq Operator: TNB

Seq Line: 4
Location: Vial 74
Inj. No.: 1
Inj. Vol.: 50 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41

Perchlorate analysis



```
=====
Injection Date: 8/16/2019 09:16:11      Seq Line: 4
Sample Name: 668947 LMB                  Location: Vial 74
Acq Operator: TNB                        Inj. No.: 1
                                           Inj. Vol.: 50 µl
=====
```

```
Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41
=====
```

Perchlorate analysis

===== Sample Information =====

```
Sorted By: Signal
Calib. Data Modified: Fri, 12. Apr. 2019,07:52:58 am
Multiplier: 10.000000
Dilution: 1.000000
Sample Amount: 0.000
=====
```

===== LCMS Results =====

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.141	PBA	254279.8	50.0000	CLO4-89-ISTD

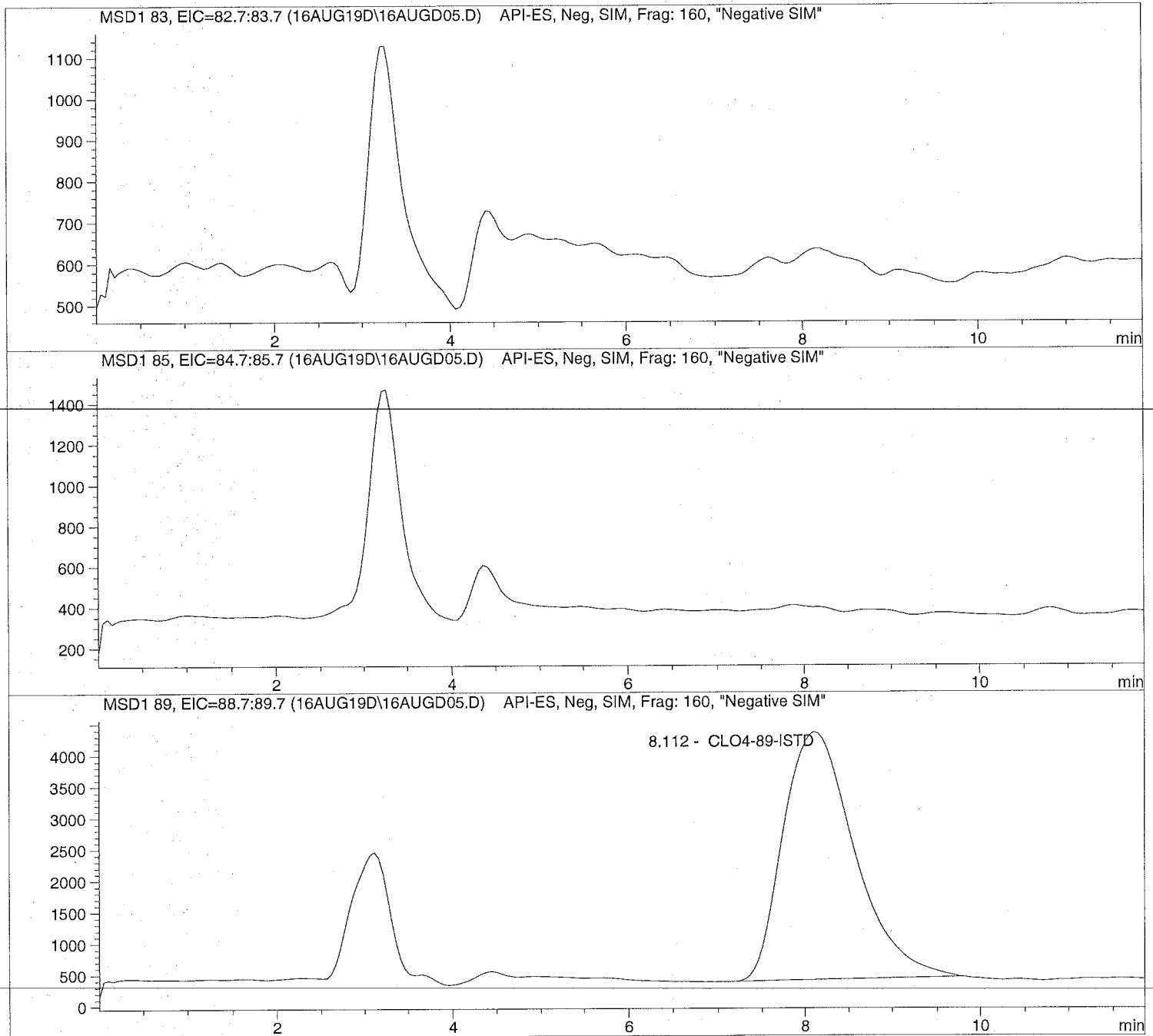
=====
*** End of Report ***
=====

Injection Date: 8/16/2019 09:30:24
Sample Name: 1923183001
Acq Operator: TNB

Seq Line: 5
Location: Vial 75
Inj. No.: 1
Inj. Vol.: 50 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41

Perchlorate analysis



```
=====  
Injection Date: 8/16/2019 09:30:24      Seq Line: 5  
Sample Name: 1923183001                Location: Vial 75  
Acq Operator: TNB                       Inj. No.: 1  
                                           Inj. Vol.: 50 µl  
=====
```

```
Acq. Method: CLO4-AQN.M  
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M  
Last Changed: 8/16/2019 09:26:41  
=====
```

Perchlorate analysis

=====
Sample Information
=====

```
Sorted By: Signal  
Calib. Data Modified: Fri, 12. Apr. 2019, 07:52:58 am  
Multiplier: 9.728000  
Dilution: 1.000000  
Sample Amount: 0.000  
=====
```

=====
LCMS Results
=====

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.112	PBA	225393.0	48.6400	CLO4-89-ISTD

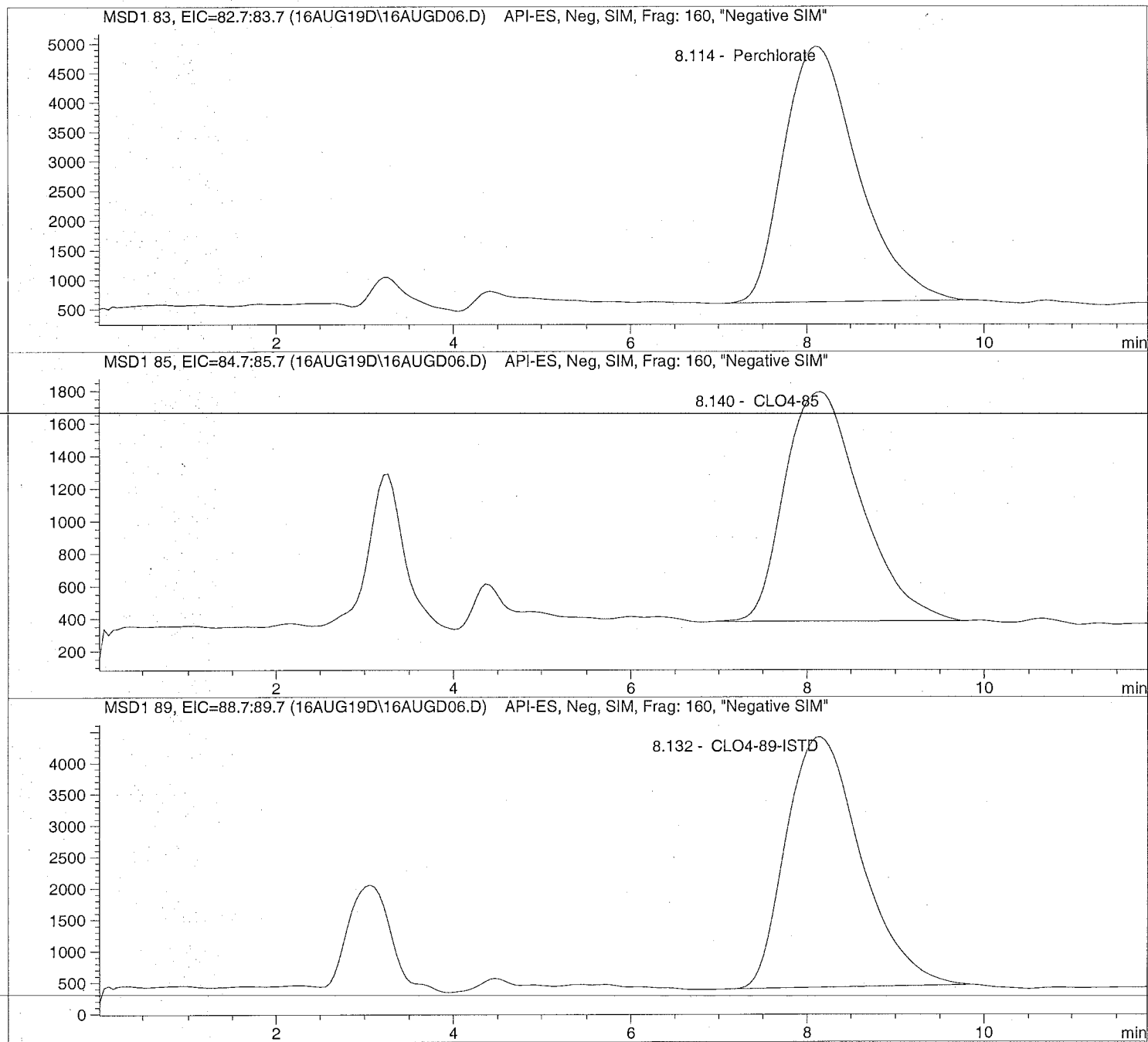
=====
*** End of Report ***
=====

Injection Date: 8/16/2019 09:44:36
Sample Name: 668949 231831S
Acq Operator: TNB

Seq Line: 6
Location: Vial 76
Inj. No.: 1
Inj. Vol.: 50 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41

Perchlorate analysis



Injection Date: 8/16/2019 09:44:36 Seq Line: 6
Sample Name: 668949 231831S Location: Vial 76
Acq Operator: TNB Inj. No.: 1
Inj. Vol.: 50 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Fri, 12. Apr. 2019, 07:52:58 am
Multiplier: 9.671000
Dilution: 1.000000
Sample Amount: 0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.114	PBA	252137.5	34.2594	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.140	PBA	84865.2	37.2587	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.132	PBA	236018.6	48.3550	CLO4-89-ISTD

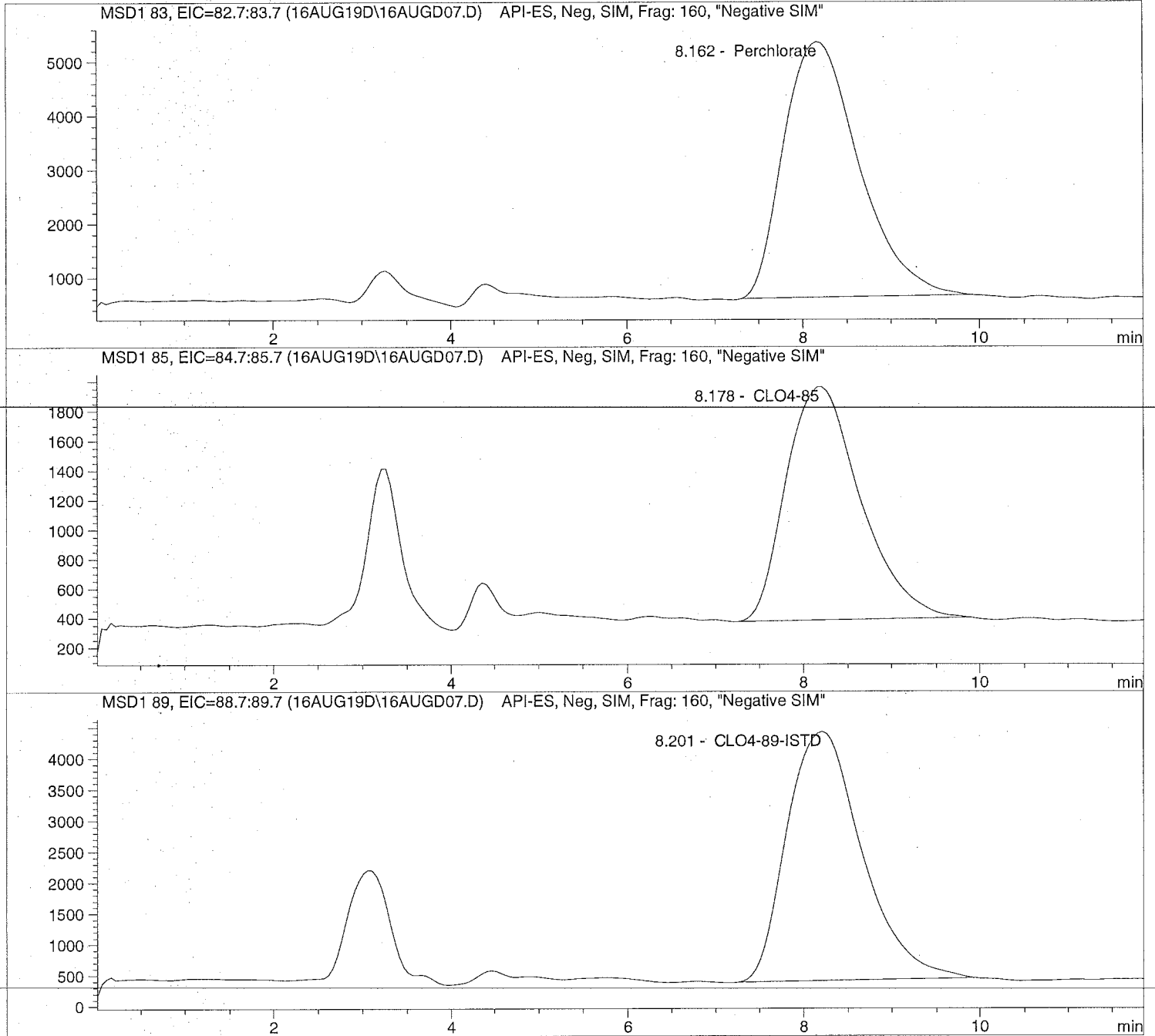
*** End of Report ***

Injection Date: 8/16/2019 09:58:49
Sample Name: 668950 231831D
Acq Operator: TNB

Seq Line: 7
Location: Vial 77
Inj. No.: 1
Inj. Vol.: 50 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41

Perchlorate analysis



```
=====  
Injection Date: 8/16/2019 09:58:49      Seq Line: 7  
Sample Name: 668950 231831D           Location: Vial 77  
Acq Operator: TNB                      Inj. No.: 1  
                                         Inj. Vol.: 50 µl
```

```
Acq. Method: CLO4-AQN.M  
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M  
Last Changed: 8/16/2019 09:26:41
```

Perchlorate analysis

=====
Sample Information
=====

```
Sorted By: Signal  
Calib. Data Modified: Fri, 12. Apr. 2019,07:52:58 am  
Multiplier: 9.690000  
Dilution: 1.000000  
Sample Amount: 0.000
```

=====
LCMS Results
=====

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.162	PBA	279089.2	37.5909	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.178	PBA	92318.2	40.3466	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.201	PBA	237424.3	48.4500	CLO4-89-ISTD

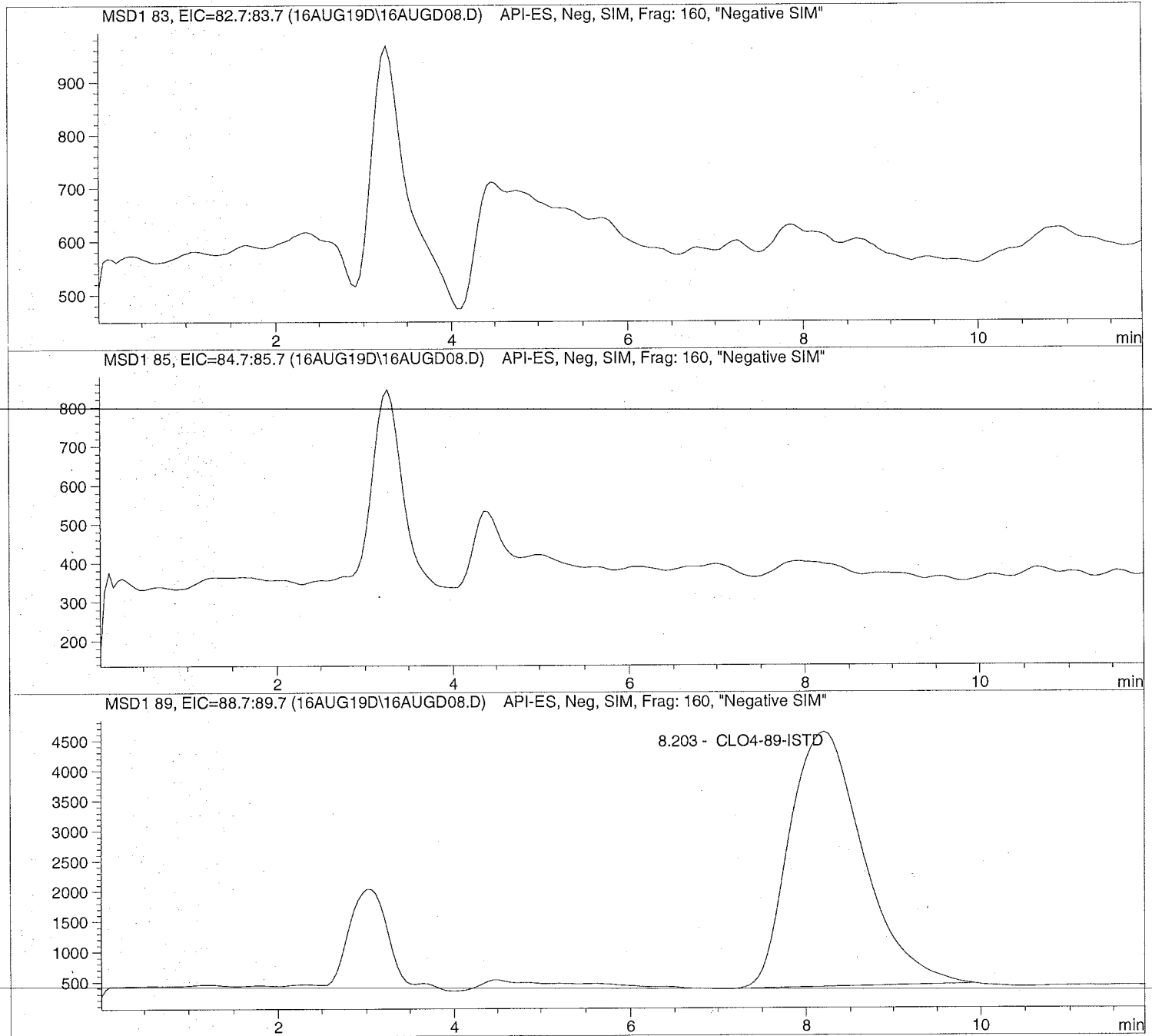
=====
*** End of Report ***
=====

Injection Date: 8/16/2019 10:13:03
Sample Name: 1923183002
Acq Operator: TNB

Seq Line: 8
Location: Vial 78
Inj. No.: 1
Inj. Vol.: 50 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41

Perchlorate analysis



```
=====
Injection Date: 8/16/2019 10:13:03      Seq Line:      8
Sample Name:    1923183002              Location:      Vial 78
Acq Operator:   TNB                     Inj. No.:     1
                                           Inj. Vol.:    50 µl
=====
```

```
Acq. Method:    CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed:   8/16/2019 09:26:41
=====
```

Perchlorate analysis

===== Sample Information =====

```
Sorted By:      Signal
Calib. Data Modified: Fri, 12. Apr. 2019,07:52:58 am
Multiplier:     9.681000
Dilution:       1.000000
Sample Amount:  0.000
=====
```

===== LCMS Results =====

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

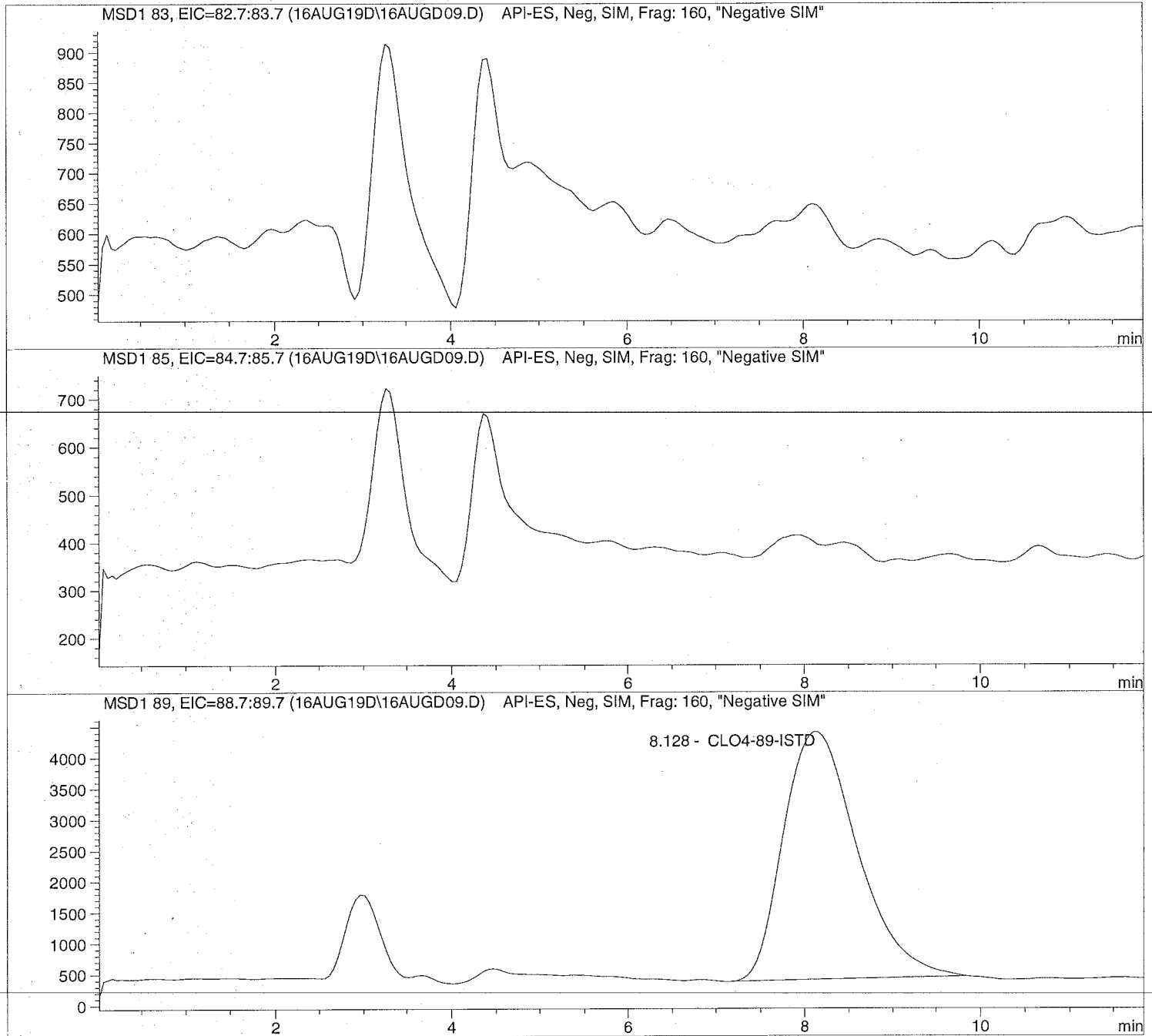
RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.203	PBA	245483.2	48.4050	CLO4-89-ISTD

=====
*** End of Report ***
=====

Injection Date: 8/16/2019 10:27:16 Seq Line: 9
Sample Name: 1923183003 Location: Vial 79
Acq Operator: TNB Inj. No.: 1
 Inj. Vol.: 50 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41

Perchlorate analysis



```
=====
Injection Date: 8/16/2019 10:27:16      Seq Line: 9
Sample Name: 1923183003                Location: Vial 79
Acq Operator: TNB                      Inj. No.: 1
                                           Inj. Vol.: 50 µl
=====
```

```
Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41
=====
```

Perchlorate analysis

===== Sample Information =====

```
Sorted By: Signal
Calib. Data Modified: Fri, 12. Apr. 2019,07:52:58 am
Multiplier: 9.785000
Dilution: 1.000000
Sample Amount: 0.000
=====
```

===== LCMS Results =====

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

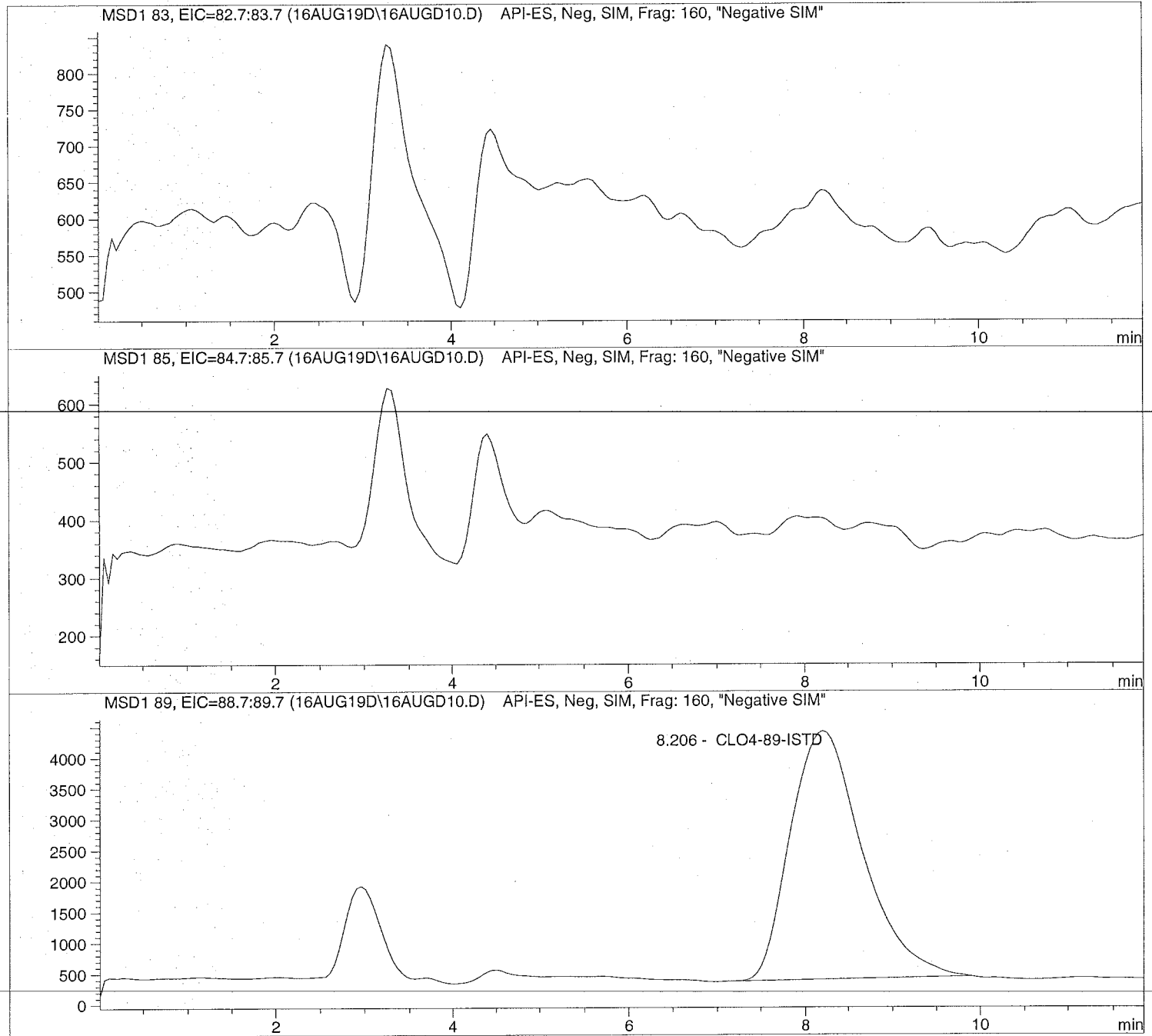
RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.128	PBA	232878.7	48.9250	CLO4-89-ISTD

=====
*** End of Report ***
=====

Injection Date: 8/16/2019 10:41:30 Seq Line: 10
Sample Name: 1923183004 Location: Vial 80
Acq Operator: TNB Inj. No.: 1
Inj. Vol.: 50 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41

Perchlorate analysis




```
=====  
Injection Date: 8/16/2019 10:41:30      Seq Line: 10  
Sample Name: 1923183004                 Location: Vial 80  
Acq Operator: TNB                       Inj. No.: 1  
                                           Inj. Vol.: 50 µl  
=====
```

```
Acq. Method: CLO4-AQN.M  
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M  
Last Changed: 8/16/2019 09:26:41
```

Perchlorate analysis

=====
Sample Information
=====

```
Sorted By: Signal  
Calib. Data Modified: Fri, 12. Apr. 2019,07:52:58 am  
Multiplier: 9.464000  
Dilution: 1.000000  
Sample Amount: 0.000
```

=====
LCMS Results
=====

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.206	PBA	230341.5	47.3200	CLO4-89-ISTD

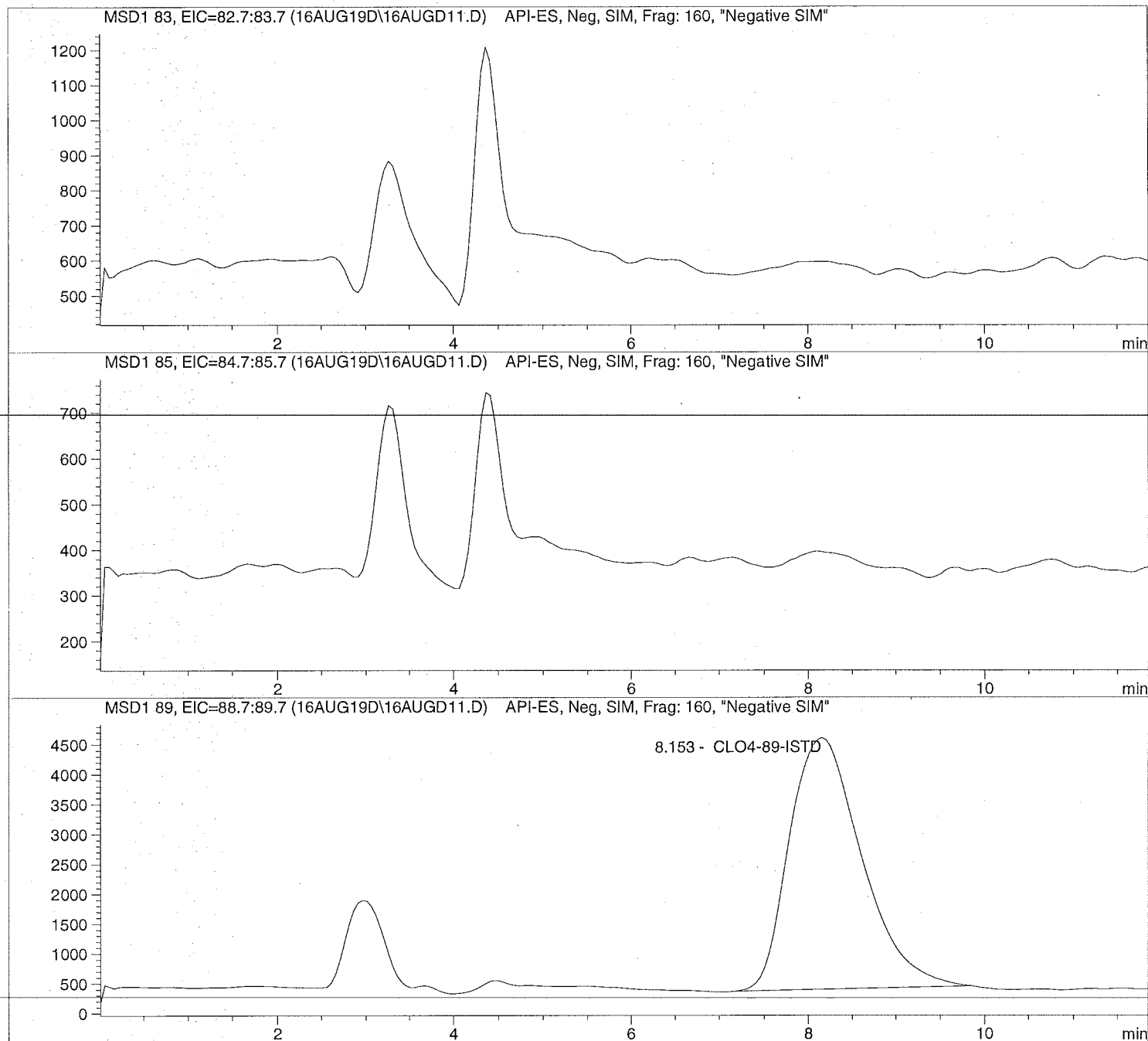
=====
*** End of Report ***
=====

Injection Date: 8/16/2019 10:55:42
Sample Name: 1923183005
Acq Operator: TNB

Seq Line: 11
Location: Vial 81
Inj. No.: 1
Inj. Vol.: 50 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41

Perchlorate analysis



```
=====
Injection Date: 8/16/2019 10:55:42      Seq Line: 11
Sample Name: 1923183005                  Location: Vial 81
Acq Operator: TNB                        Inj. No.: 1
                                           Inj. Vol.: 50 µl
=====
```

```
Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41
=====
```

Perchlorate analysis

===== Sample Information =====

```
Sorted By: Signal
Calib. Data Modified: Fri, 12. Apr. 2019,07:52:58 am
Multiplier: 9.390000
Dilution: 1.000000
Sample Amount: 0.000
=====
```

===== LCMS Results =====

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

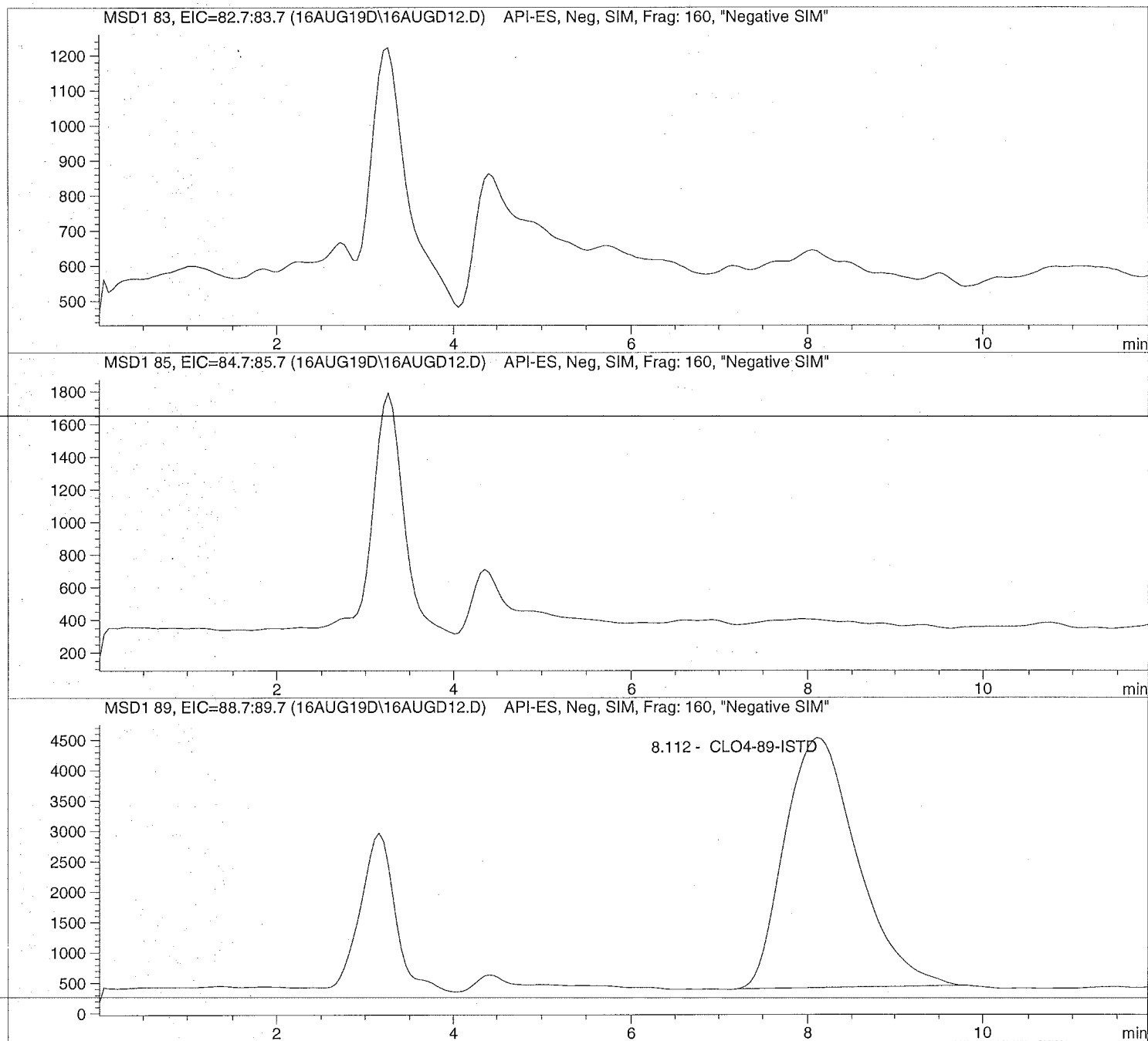
RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.153	PBA	240396.1	46.9500	CLO4-89-ISTD

=====
*** End of Report ***
=====

Injection Date: 8/16/2019 11:09:52 Seq Line: 12
Sample Name: 1923183006 Location: Vial 82
Acq Operator: TNB Inj. No.: 1
Inj. Vol.: 50 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41

Perchlorate analysis



```
=====
Injection Date: 8/16/2019 11:09:52      Seq Line: 12
Sample Name: 1923183006                 Location: Vial 82
Acq Operator: TNB                       Inj. No.: 1
                                           Inj. Vol.: 50 µl
=====
```

```
Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41
=====
```

Perchlorate analysis

===== Sample Information =====

```
Sorted By: Signal
Calib. Data Modified: Fri, 12. Apr. 2019,07:52:58 am
Multiplier: 9.381000
Dilution: 1.000000
Sample Amount: 0.000
=====
```

===== LCMS Results =====

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.112	PBA	234348.7	46.9050	CLO4-89-ISTD

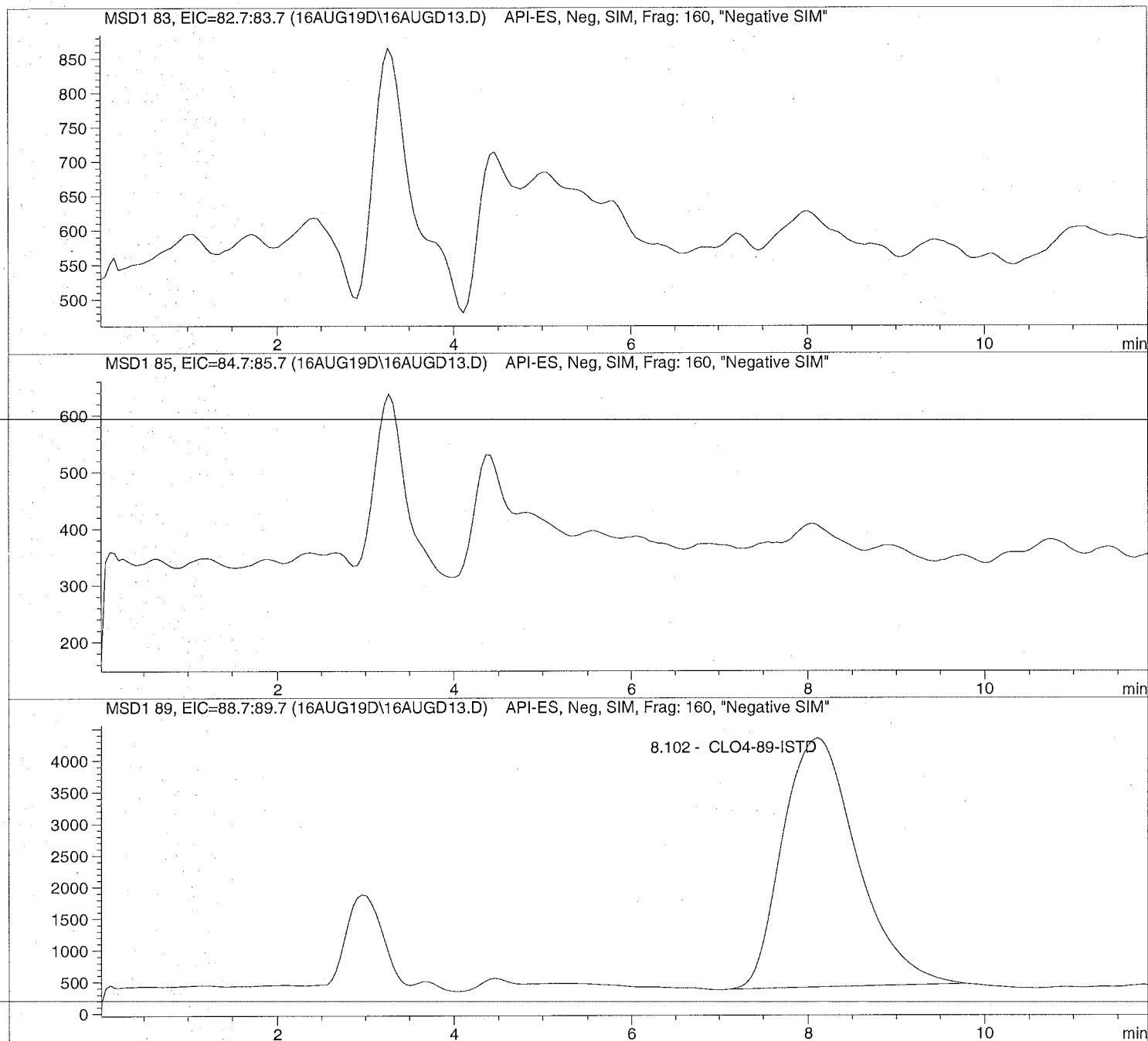
=====
*** End of Report ***
=====

Injection Date: 8/16/2019 11:24:01
Sample Name: 1923183007
Acq Operator: TNB

Seq Line: 13
Location: Vial 83
Inj. No.: 1
Inj. Vol.: 50 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41

Perchlorate analysis



```
=====  
Injection Date: 8/16/2019 11:24:01      Seq Line: 13  
Sample Name: 1923183007                 Location: Vial 83  
Acq Operator: TNB                       Inj. No.: 1  
                                           Inj. Vol.: 50 µl
```

```
Acq. Method: CLO4-AQN.M  
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M  
Last Changed: 8/16/2019 09:26:41
```

Perchlorate analysis

=====
Sample Information
=====

```
Sorted By: Signal  
Calib. Data Modified: Fri, 12. Apr. 2019,07:52:58 am  
Multiplier: 9.634000  
Dilution: 1.000000  
Sample Amount: 0.000
```

=====
LCMS Results
=====

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.102	PBA	229434.9	48.1700	CLO4-89-ISTD

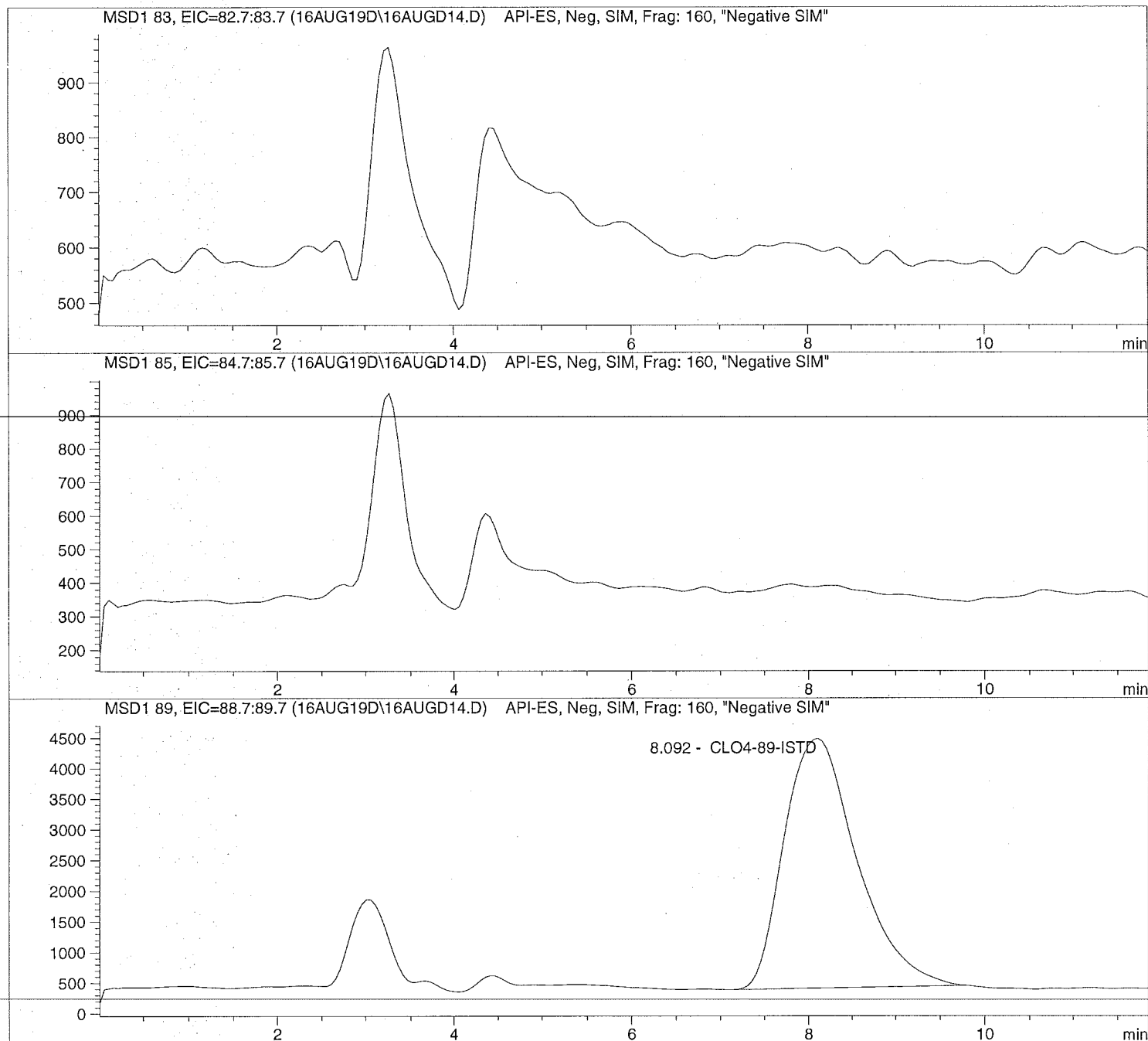
=====
*** End of Report ***
=====

Injection Date: 8/16/2019 11:38:10
Sample Name: 1923183008
Acq Operator: TNB

Seq Line: 14
Location: Vial 84
Inj. No.: 1
Inj. Vol.: 50 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41

Perchlorate analysis




```
=====
Injection Date: 8/16/2019 11:38:10      Seq Line: 14
Sample Name: 1923183008                 Location: Vial 84
Acq Operator: TNB                       Inj. No.: 1
                                           Inj. Vol.: 50 µl
=====
```

```
Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41
```

Perchlorate analysis

===== Sample Information =====

```
Sorted By: Signal
Calib. Data Modified: Fri, 12. Apr. 2019,07:52:58 am
Multiplier: 9.794000
Dilution: 1.000000
Sample Amount: 0.000
```

===== LCMS Results =====

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

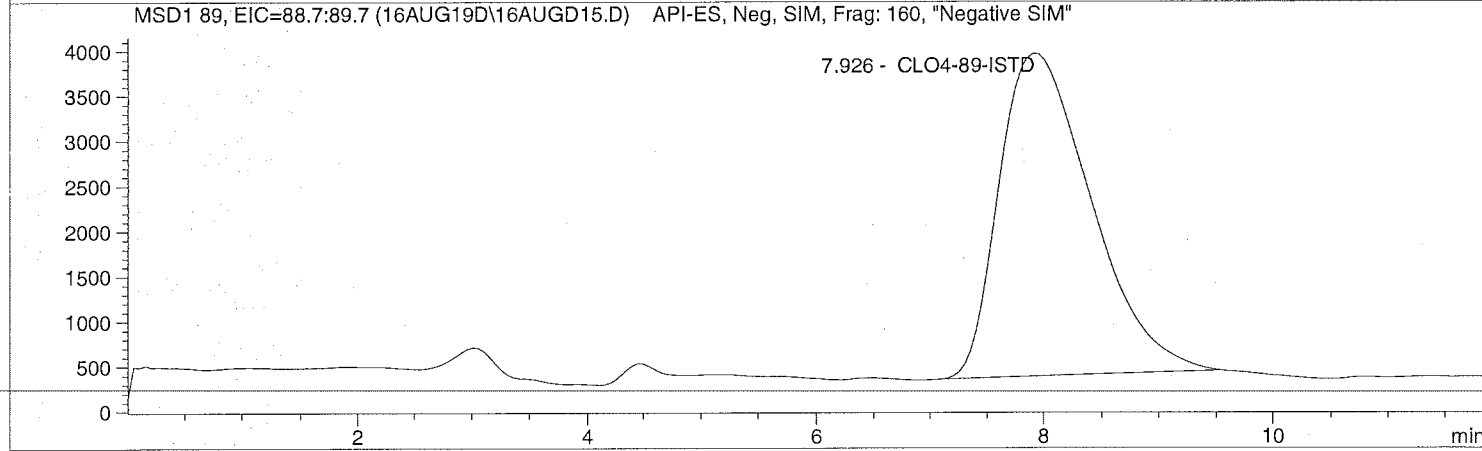
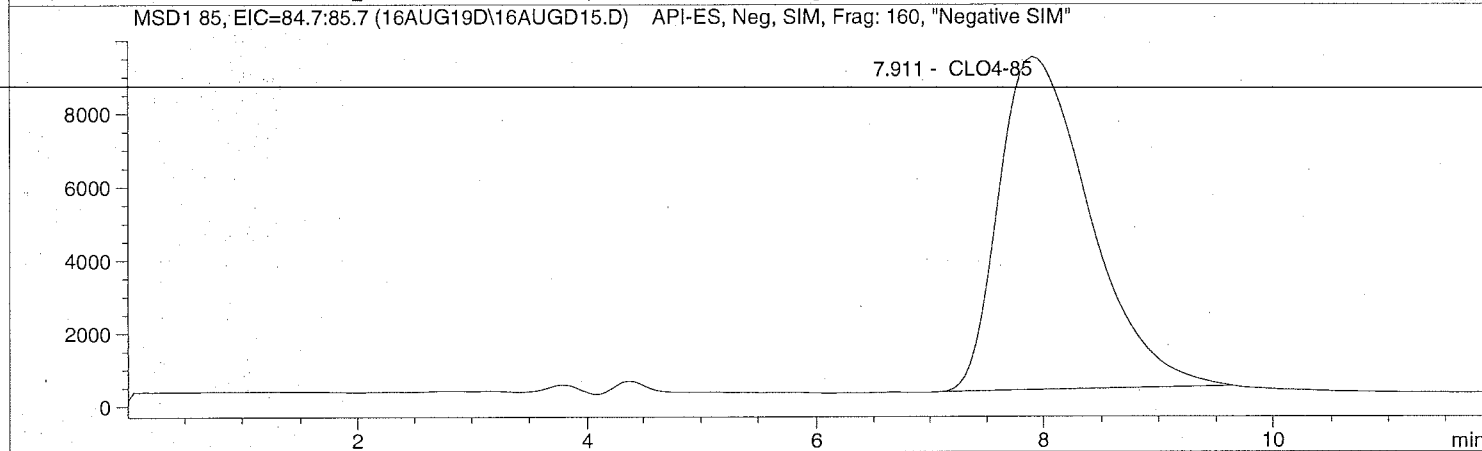
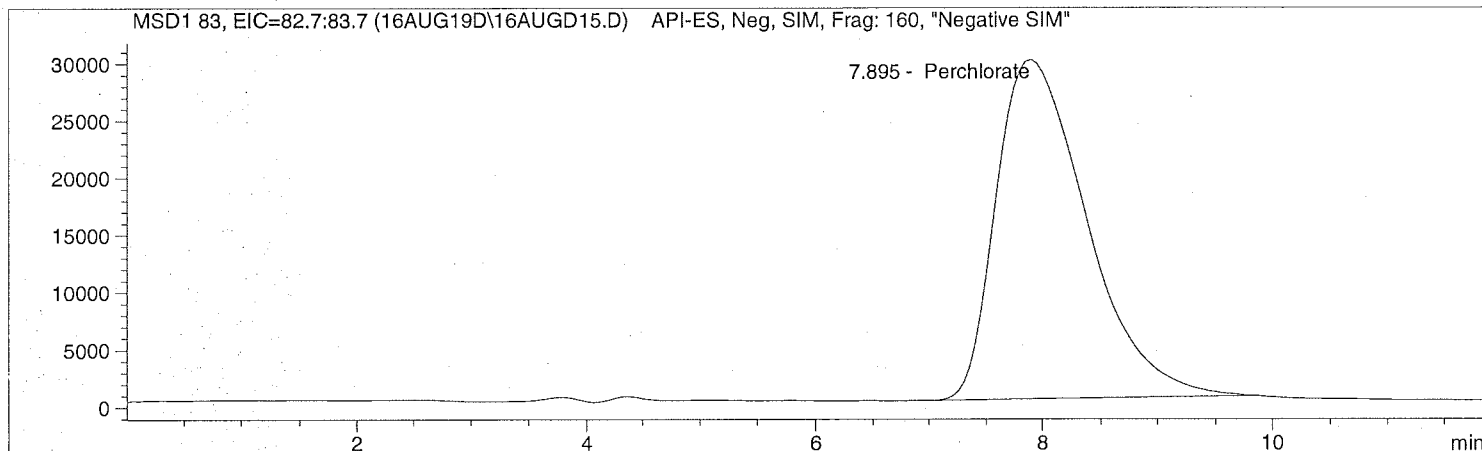
RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.092	PBA	235973.9	48.9700	CLO4-89-ISTD

=====
*** End of Report ***

Injection Date: 8/16/2019 12:00:14 Seq Line: 15
Sample Name: 668951 CCV@25 Location: Vial 71
Acq Operator: TNB Inj. No.: 1
Inj. Vol.: 50 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41

Perchlorate analysis



Injection Date: 8/16/2019 12:00:14 Seq Line: 15
Sample Name: 668951 CCV@25 Location: Vial 71
Acq Operator: TNB Inj. No.: 1
Inj. Vol.: 50 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 8/16/2019 09:26:41

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Fri, 12. Apr. 2019, 07:52:58 am
Multiplier: 1.000000
Dilution: 1.000000
Sample Amount: 25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.895	PBA	1617775.5	24.7522	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.911	PBA	498759.1	25.6578	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.926	PBA	198966.1	5.0000	CLO4-89-ISTD

*** End of Report ***



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

**Initial
Calibration**

=====
 Calibration Table
 =====

Perchlorate

Calib. Data Modified : 3/19/2019 2:35:19 PM

Calculate : Internal Standard
 Based on : Peak Area

Rel. Reference Window : 20.000 %
 Abs. Reference Window : 0.000 min
 Rel. Non-ref. Window : 20.000 %
 Abs. Non-ref. Window : 0.000 min
 Use Multiplier & Dilution Factor with ISTDs
 Uncalibrated Peaks : not reported
 Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
 Origin : Ignored (some peaks differ, see below)
 Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
 Average Response : Average all calibrations
 Average Retention Time: Floating Average New 75%

Calibration Report Options :
 Printout of recalibrations within a sequence:
 Calibration Table after Recalibration
 Normal Report after Recalibration

 If the sequence is done with bracketing:
 Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD ISTD Amount Name
 #

-----|-----|-----
 1 5.00000 CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
 Signal 2: MSD1 85, EIC=84.7:85.7
 Signal 3: MSD1 89, EIC=88.7:89.7

RetTime	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
[min]	Sig						
8.744	1	1	1.00000	7.76074e4	1.28854e-5	1	Perchlorate
		2	2.00000	1.35273e5	1.47849e-5		
		3	5.00000	3.37764e5	1.48033e-5		
		4	10.00000	6.83454e5	1.46316e-5		
		5	25.00000	2.08433e6	1.19943e-5		
		6	50.00000	4.13334e6	1.20968e-5		
		7	75.00000	5.99313e6	1.25143e-5		
8.755	2	1	1.00000	2.36780e4	4.22333e-5	1	CLO4-85
		2	2.00000	4.69486e4	4.25998e-5		
		3	5.00000	1.06124e5	4.71147e-5		
		4	10.00000	2.13523e5	4.68335e-5		
		5	25.00000	6.14295e5	4.06971e-5		
		6	50.00000	1.19814e6	4.17315e-5		
		7	75.00000	1.78355e6	4.20509e-5		
8.766	3	1	5.00000	2.73208e5	1.83011e-5	+I1	CLO4-89-ISTD
		2	5.00000	2.24886e5	2.22335e-5		
		3	5.00000	2.33196e5	2.14412e-5		
		4	5.00000	2.34454e5	2.13262e-5		
		5	5.00000	2.50568e5	1.99547e-5		
		6	5.00000	2.30977e5	2.16472e-5		

RetTime [min]	Lvl Sig	Amount	Area	Amt/Area	Ref Grp Name
	7	5.00000	2.21504e5	2.25729e-5	

More compound-specific settings:

Compound: Perchlorate

Time Window : From 6.654 min To 12.544 min
 Curve Type : Quadratic
 Origin : Ignored
 Calibration Level Weights:/
 Level 1 : 1
 Level 2 : 0.5
 Level 3 : 0.2
 Level 4 : 0.1
 Level 5 : 0.04
 Level 6 : 0.02
 Level 7 : 0.013333

Compound: CLO4-85

Time Window : From 6.650 min To 12.505 min
 Curve Type : Quadratic
 Origin : Ignored
 Calibration Level Weights:/
 Level 1 : 1
 Level 2 : 0.5
 Level 3 : 0.2
 Level 4 : 0.1
 Level 5 : 0.04
 Level 6 : 0.02
 Level 7 : 0.013333

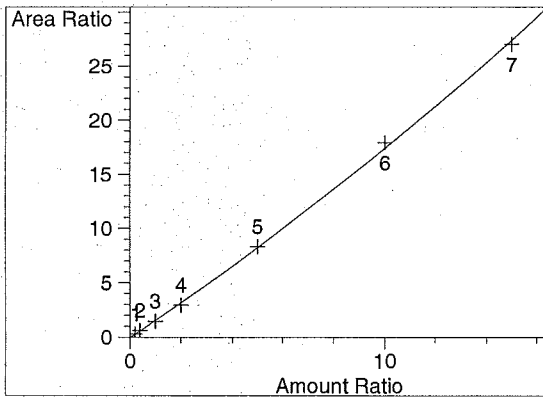
Compound: CLO4-89-ISTD

Time Window : From 6.659 min To 12.466 min
 Curve Type : Linear
 Origin : Included
 Calibration Level Weights:/
 Level 1 : 1
 Level 2 : 1
 Level 3 : 1
 Level 4 : 1
 Level 5 : 1
 Level 6 : 1
 Level 7 : 1

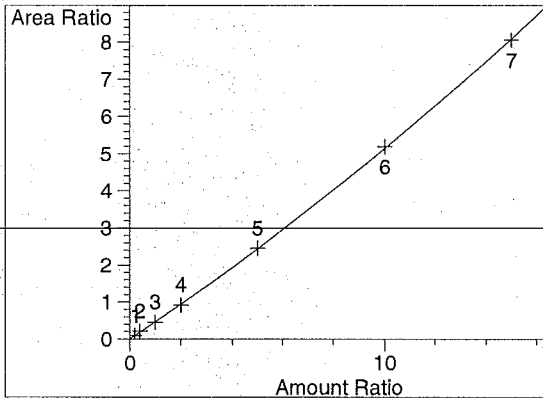
=====
 Peak Sum Table
 =====

No Entries in table
 =====

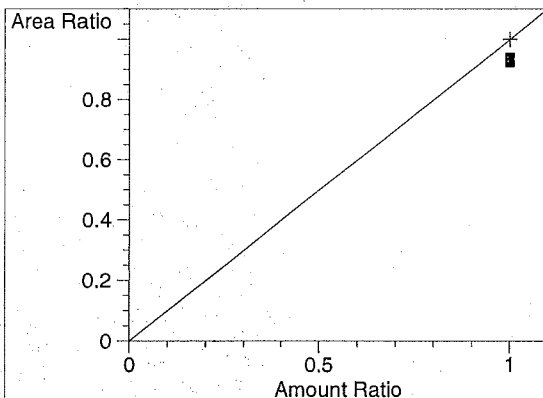
=====
 Calibration Curves
 =====



Perchlorate at exp. RT: 8.744
 MSD1 83, EIC=82.7:83.7
 Correlation: 0.99957
 Residual Std. Dev.: 0.30744
 Formula: $y = ax^2 + bx + c$
 a: 1.76988e-2
 b: 1.56480
 c: -4.92430e-2
 x: Amount Ratio
 y: Area Ratio
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.5
 Level 3 : 0.2
 Level 4 : 0.1
 Level 5 : 0.04
 Level 6 : 0.02
 Level 7 : 0.013333



CLO4-85 at exp. RT: 8.755
 MSD1 85, EIC=84.7:85.7
 Correlation: 0.99983
 Residual Std. Dev.: 0.03473
 Formula: $y = ax^2 + bx + c$
 a: 5.13396e-3
 b: 4.62055e-1
 c: 4.97209e-4
 x: Amount Ratio
 y: Area Ratio
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.5
 Level 3 : 0.2
 Level 4 : 0.1
 Level 5 : 0.04
 Level 6 : 0.02
 Level 7 : 0.013333



CLO4-89-ISTD at exp. RT: 8.766
 MSD1 89, EIC=88.7:89.7
 Correlation: 1.00000
 Residual Std. Dev.: 0.00000
 Formula: $y = mx + b$
 m: 1.00000
 b: 0.00000
 x: Amount Ratio
 y: Area Ratio
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 1
 Level 3 : 1
 Level 4 : 1
 Level 5 : 1
 Level 6 : 1
 Level 7 : 1

Batch Review Method:

C:\HPCHEM\1\METHODS\CLO4-DP2.M

['#' ==> Run has not been reprocessed with Batch Review Method
 '**' ==> Run has been saved with batch file]

#*	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	7.76074e4	8.744	1.06245
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	1.35273e5	8.992	2.06969
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	3.37764e5	8.586	4.73474
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	6.83454e5	8.698	9.27727
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	2.08433e6	8.451	25.29036
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	4.13334e6	8.810	51.36844
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	5.99313e6	8.586	74.16754
#*	ICAL Verf@10ug/L	Vial 80	1	Control	10	7.34719e5	8.702	9.25940

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	2.36780e4	8.755	9.30535e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	4.69486e4	9.012	2.24255
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	1.06124e5	8.602	4.86656
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	2.13523e5	8.713	9.64312
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	6.14295e5	8.468	25.12159
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	1.19814e6	8.825	50.46721
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.78355e6	8.603	74.72019
#*	ICAL Verf@10ug/L	Vial 80	1	Control	10	2.27495e5	8.721	9.54024

#*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	2.73208e5	8.766	5.00000
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	2.24886e5	9.012	5.00000
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.33196e5	8.609	5.00000
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	2.34454e5	8.716	5.00000
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	2.50568e5	8.472	5.00000
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	2.30977e5	8.825	5.00000
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	2.21504e5	8.610	5.00000
#*	ICAL Verf@10ug/L	Vial 80	1	Control	10	2.52544e5	8.725	5.00000

*** End of Report ***

Sequence Table:

Method and Injection Info Part:

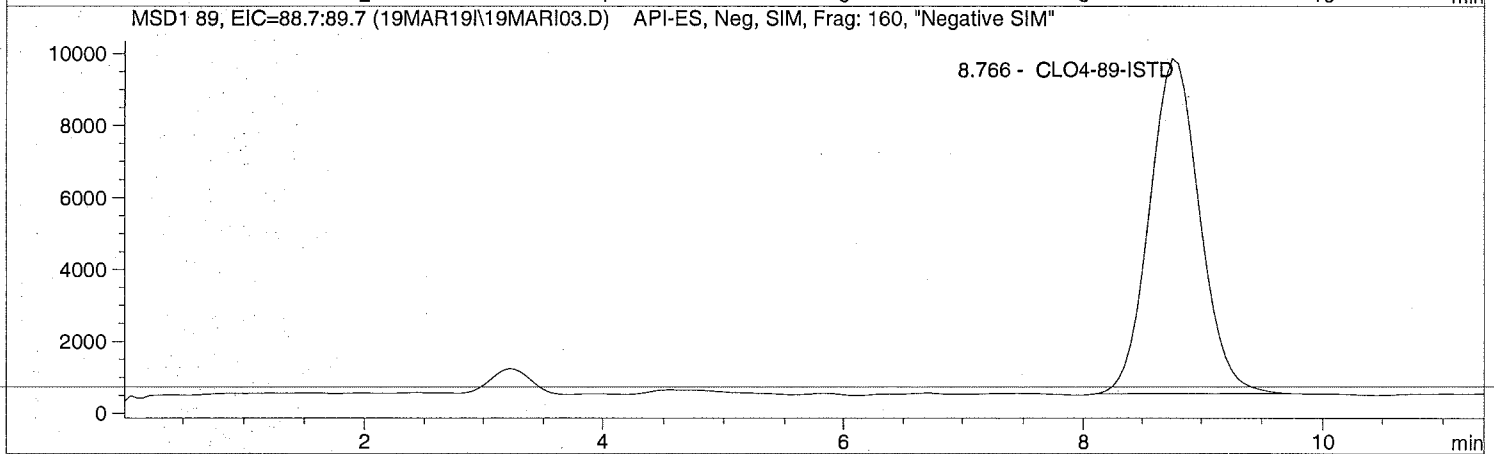
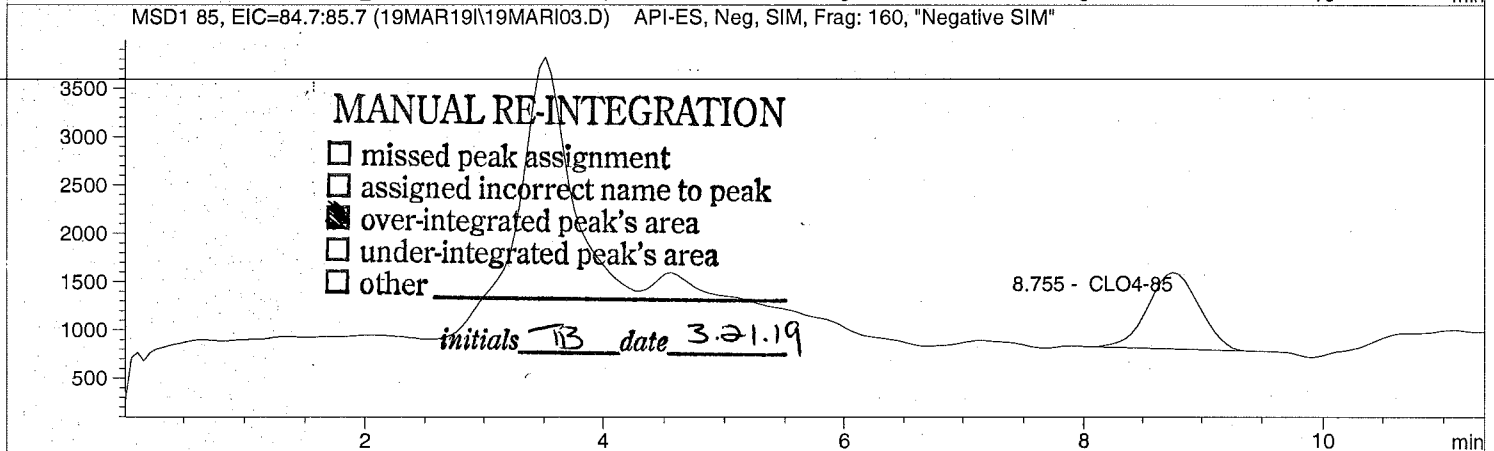
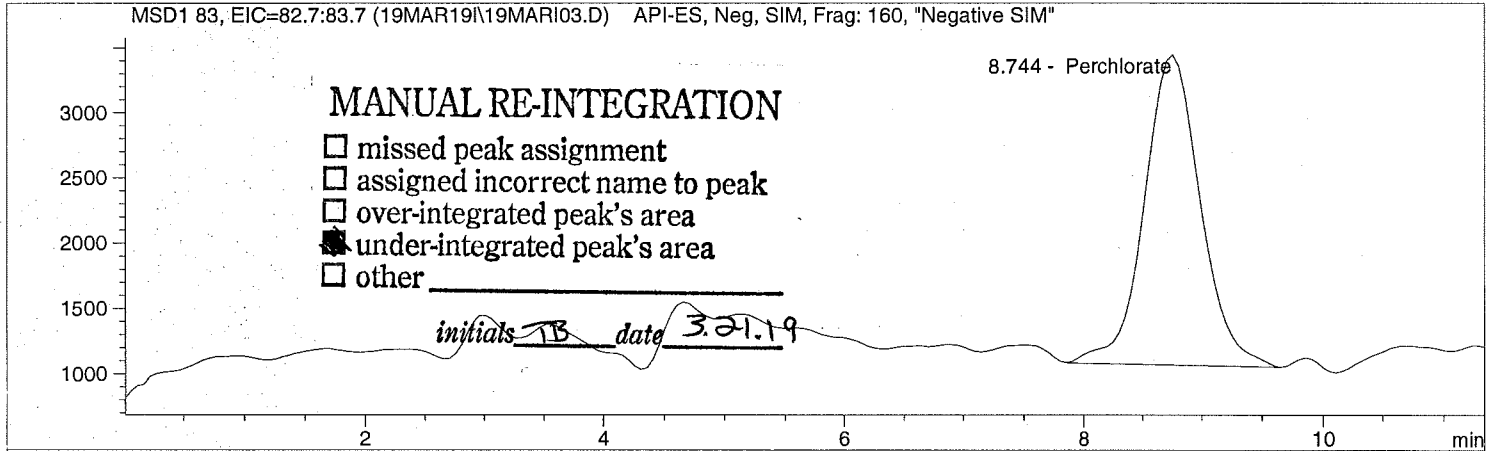
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
====	=====	=====	=====	===	=====	=====	=====
1	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 80	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		

Injection Date: 3/19/2019 09:39:40
Sample Name: CLO4@ 1.0ug/L
Acq Operator: TNB

Seq Line: 3
Location: Vial 73
Inj. No.: 1
Inj. Vol.: 30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 3/19/2019 14:35:22

Perchlorate analysis



Injection Date: 3/19/2019 09:39:40 Seq Line: 3
Sample Name: CLO4@ 1.0ug/L Location: Vial 73
Acq Operator: TNB Inj. No.: 1
Inj. Vol.: 30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 3/19/2019 14:35:22

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Tue, 19. Mar. 2019,02:35:19 pm
Multiplier: 1.000000
Dilution: 1.000000
Sample Amount: 1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.744	MM	77607.4	1.0625	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.755	MM	23678.0	0.9305	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.766	BBA	273207.6	5.0000	CLO4-89-ISTD

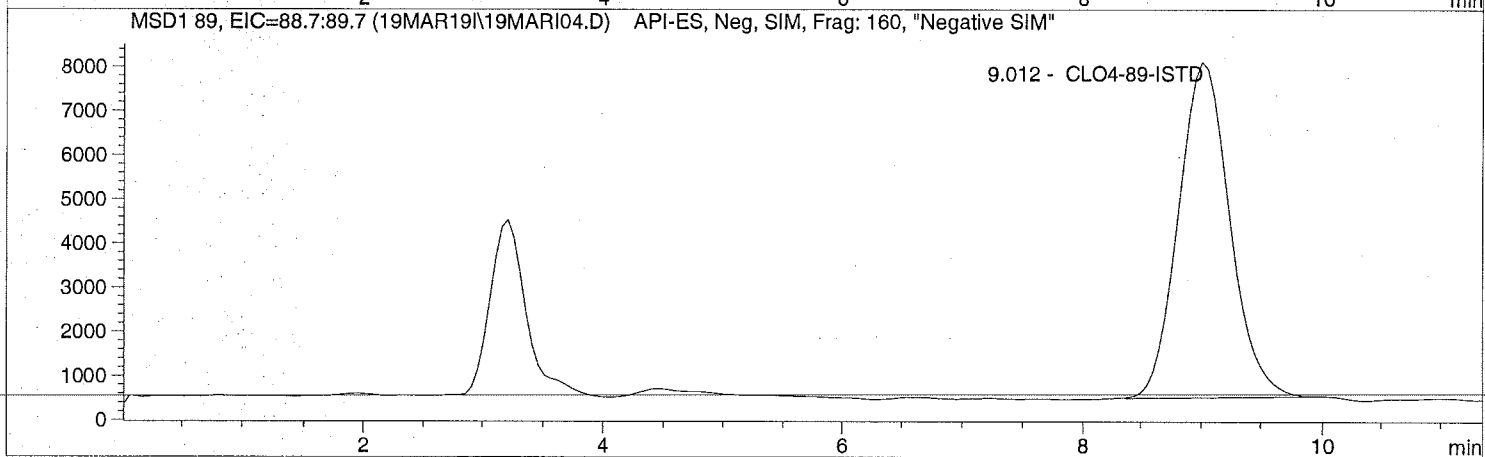
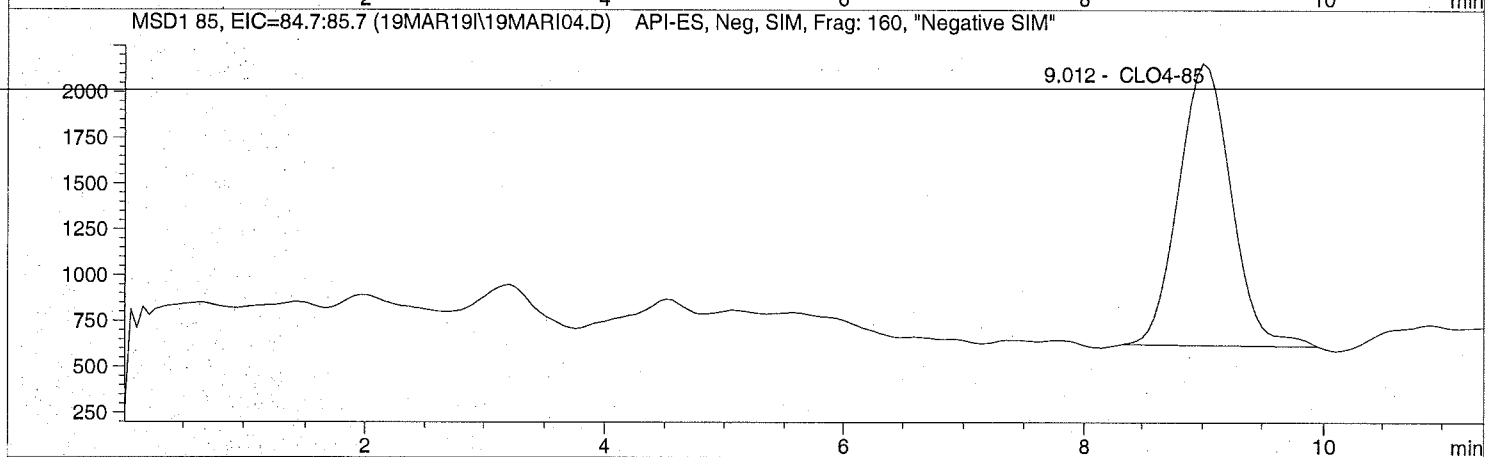
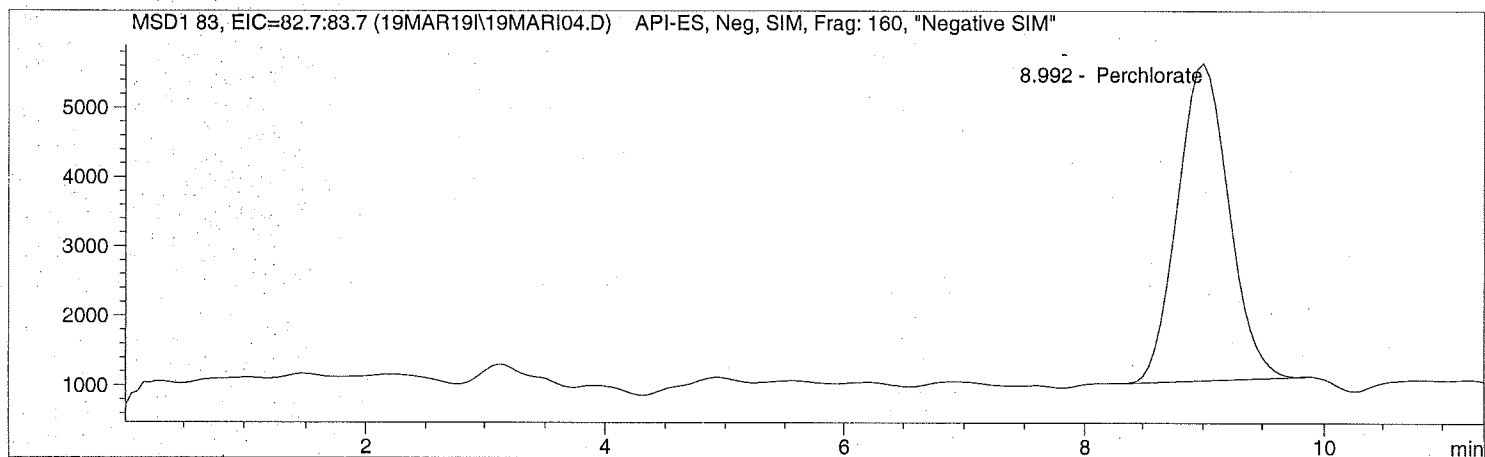
*** End of Report ***

Injection Date: 3/19/2019 09:53:00
Sample Name: CLO4@ 2.0ug/L
Acq Operator: TNB

Seq Line: 4
Location: Vial 74
Inj. No.: 1
Inj. Vol.: 30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 3/19/2019 14:35:22

Perchlorate analysis



```
=====
Injection Date: 3/19/2019 09:53:00      Seq Line:          4
Sample Name:    CLO4@ 2.0ug/L           Location:         Vial 74
Acq Operator:   TNB                     Inj. No.:        1
                                           Inj. Vol.:       30 µl
=====
```

```
Acq. Method:    CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed:   3/19/2019 14:35:22
=====
```

Perchlorate analysis

===== Sample Information =====

```
Sorted By:      Signal
Calib. Data Modified: Tue, 19. Mar. 2019, 02:35:19 pm
Multiplier:     1.000000
Dilution:       1.000000
Sample Amount:  2.000
=====
```

===== LCMS Results =====

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.992	BBA	135272.8	2.0697	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.012	BBA	46948.6	2.2425	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.012	BBA	224885.9	5.0000	CLO4-89-ISTD

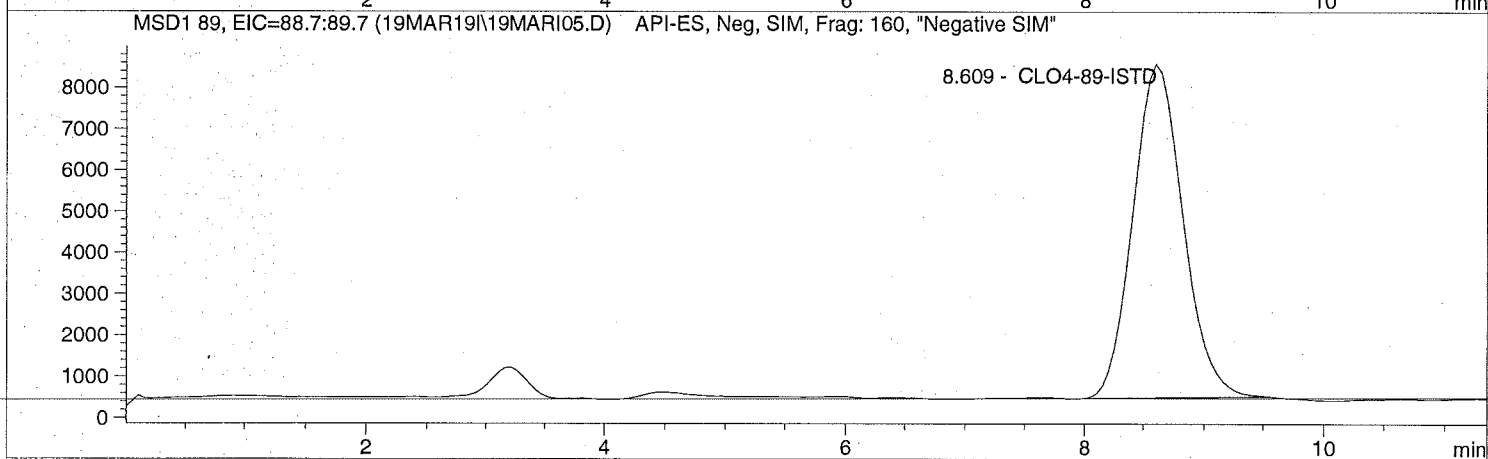
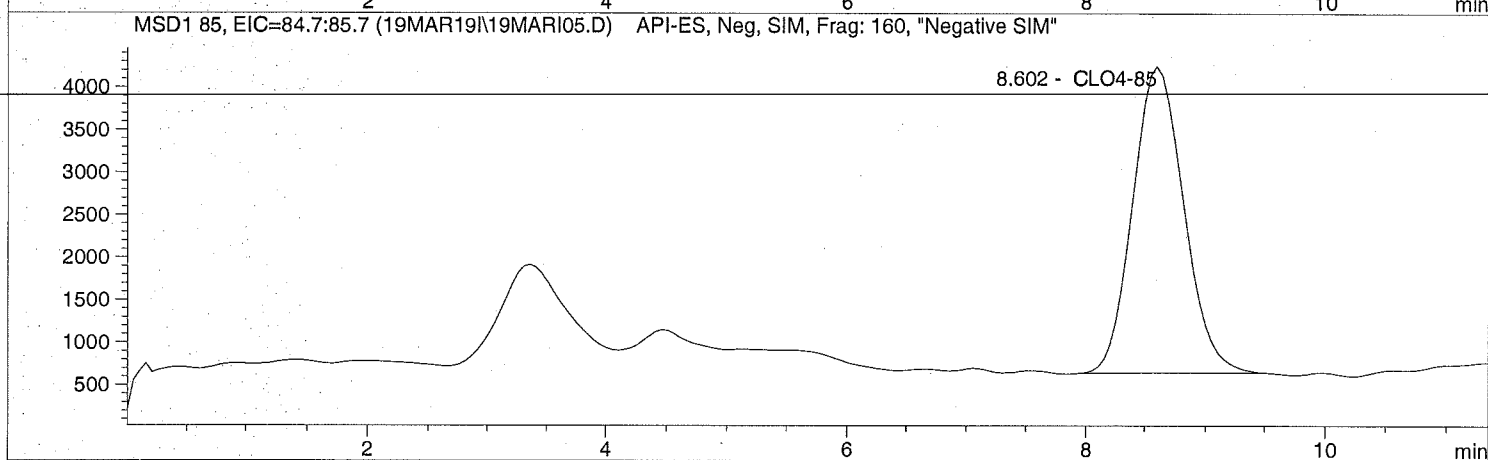
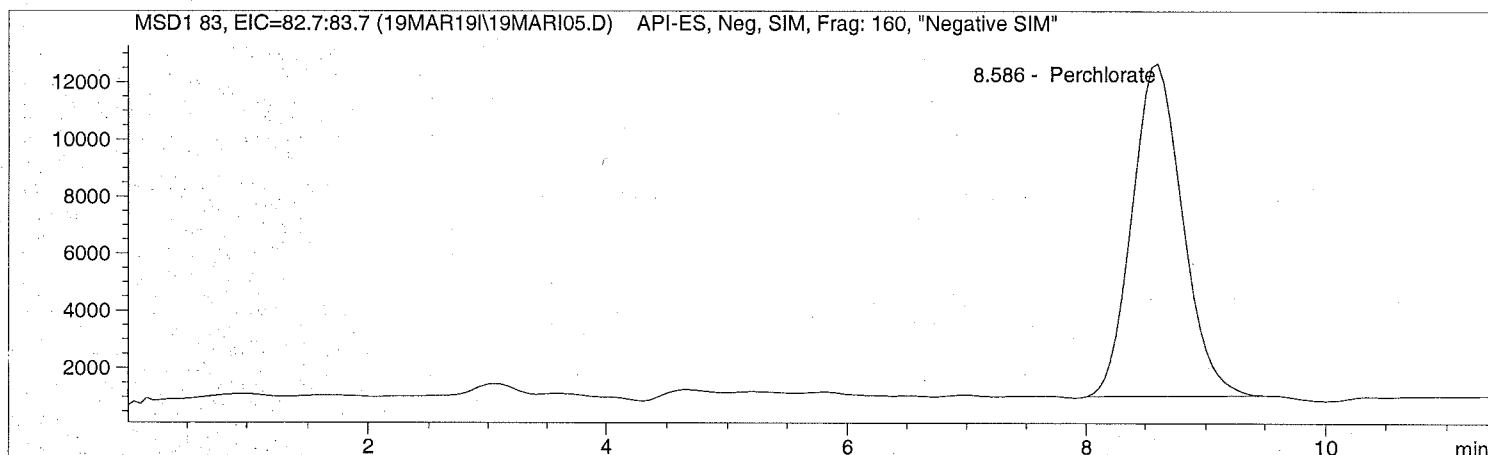
=====
*** End of Report ***
=====

Injection Date: 3/19/2019 10:06:16
Sample Name: CLO4@ 5.0ug/L
Acq Operator: TNB

Seq Line: 5
Location: Vial 75
Inj. No.: 1
Inj. Vol.: 30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 3/19/2019 14:35:22

Perchlorate analysis



```

=====
Injection Date: 3/19/2019 10:06:16      Seq Line: 5
Sample Name:    CLO4@ 5.0ug/L           Location:  Vial 75
Acq Operator:   TNB                     Inj. No.: 1
                                           Inj. Vol.: 30 µl
    
```

```

Acq. Method:    CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed:   3/19/2019 14:35:22
    
```

Perchlorate analysis

Sample Information

```

Sorted By:      Signal
Calib. Data Modified: Tue, 19. Mar. 2019,02:35:19 pm
Multiplier:     1.000000
Dilution:       1.000000
Sample Amount:  5.000
    
```

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.586	PBA	337763.6	4.7347	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.602	PBA	106124.0	4.8666	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.609	PBA	233196.3	5.0000	CLO4-89-ISTD

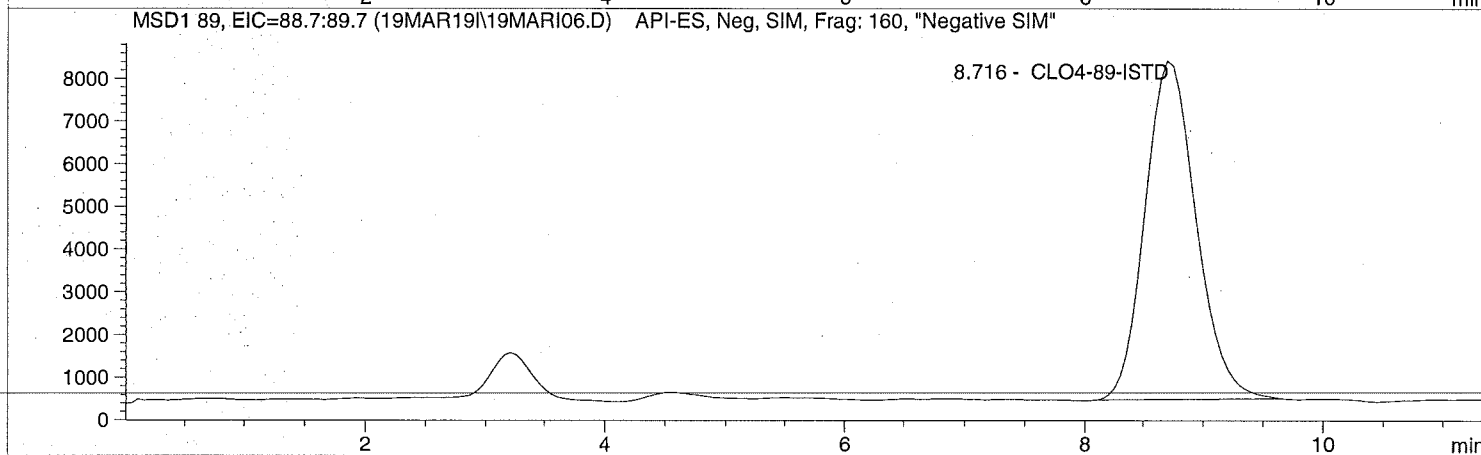
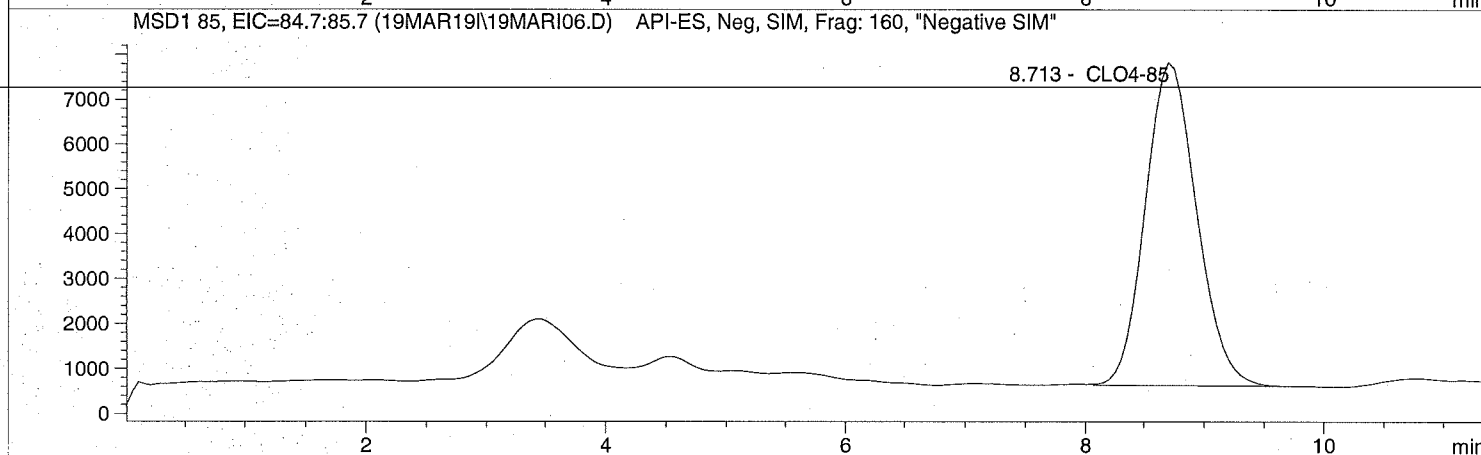
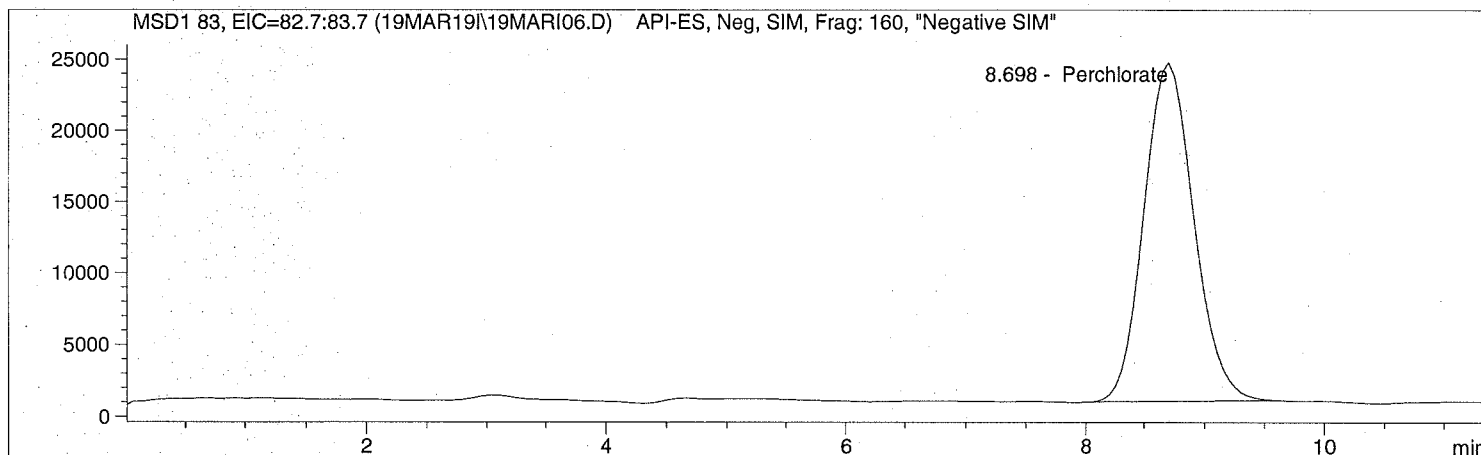
*** End of Report ***

Injection Date: 3/19/2019 10:19:32
Sample Name: CLO4@ 10.ug/L
Acq Operator: TNB

Seq Line: 6
Location: Vial 76
Inj. No.: 1
Inj. Vol.: 30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 3/19/2019 14:35:22

Perchlorate analysis




```
=====
Injection Date: 3/19/2019 10:19:32      Seq Line:          6
Sample Name:    CLO4@ 10.ug/L           Location:          Vial 76
Acq Operator:   TNB                     Inj. No.:         1
                                           Inj. Vol.:        30 µl
=====
```

```
Acq. Method:    CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed:   3/19/2019 14:35:22
=====
```

Perchlorate analysis

Sample Information

```
Sorted By:      Signal
Calib. Data Modified: Tue, 19. Mar. 2019,02:35:19 pm
Multiplier:     1.000000
Dilution:       1.000000
Sample Amount:  10.000
=====
```

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.698	PBA	683454.4	9.2773	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.713	BBA	213522.6	9.6431	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.716	PBA	234453.6	5.0000	CLO4-89-ISTD

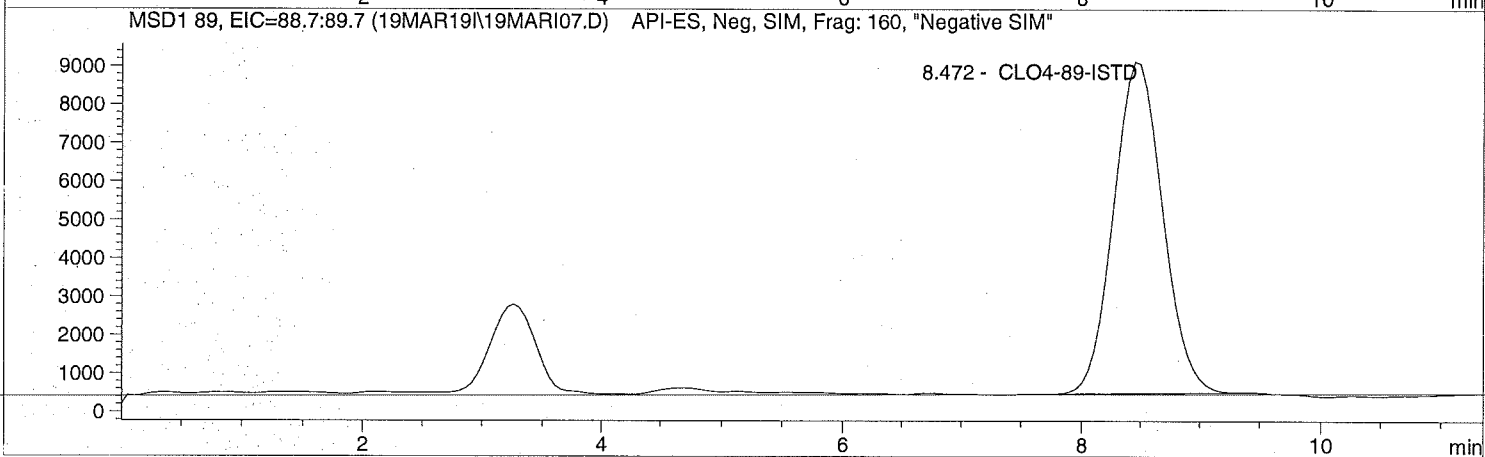
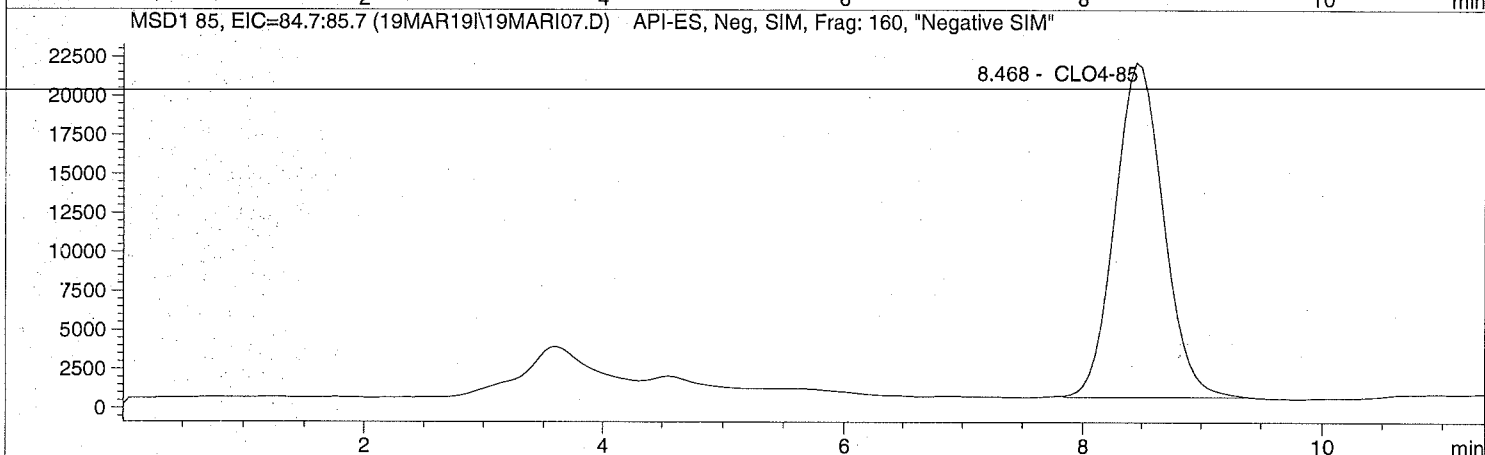
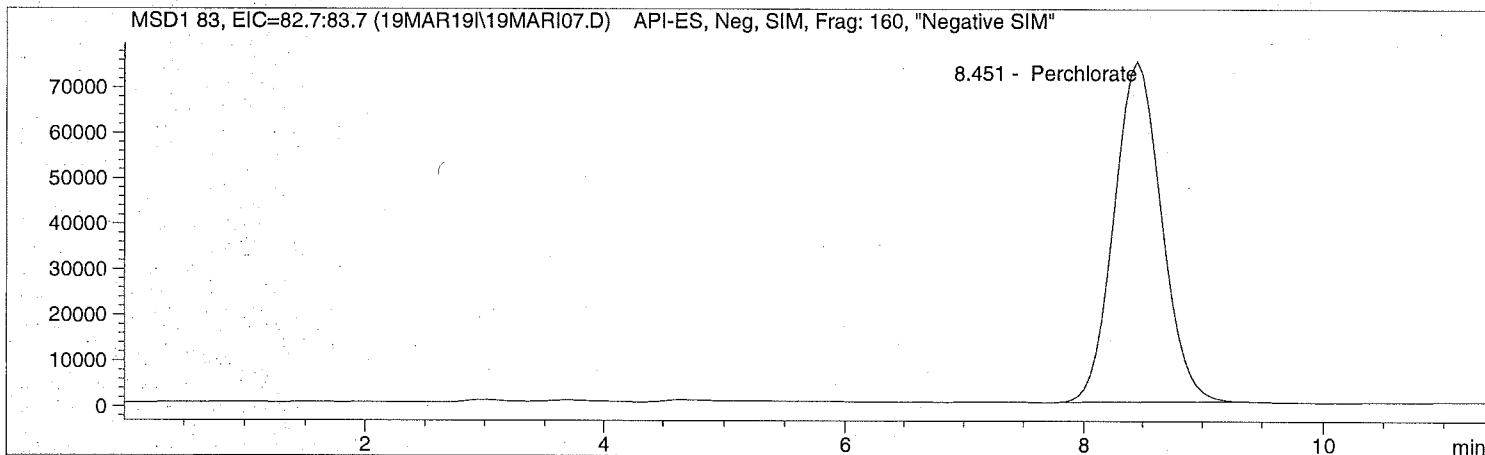
*** End of Report ***

Injection Date: 3/19/2019 10:32:49
Sample Name: CLO4@ 25.ug/L
Acq Operator: TNB

Seq Line: 7
Location: Vial 77
Inj. No.: 1
Inj. Vol.: 30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 3/19/2019 14:35:22

Perchlorate analysis



```

=====
Injection Date: 3/19/2019 10:32:49      Seq Line:      7
Sample Name:    CLO4@ 25.ug/L           Location:      Vial 77
Acq Operator:   TNB                     Inj. No.:     1
                                           Inj. Vol.:    30 µl
    
```

```

Acq. Method:    CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed:   3/19/2019 14:35:22
    
```

Perchlorate analysis

Sample Information

```

Sorted By:      Signal
Calib. Data Modified: Tue, 19. Mar. 2019, 02:35:19 pm
Multiplier:     1.000000
Dilution:       1.000000
Sample Amount:  25.000
    
```

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.451	PBA	2084327.4	25.2904	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.468	BBA	614294.8	25.1216	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.472	BBA	250568.0	5.0000	CLO4-89-ISTD

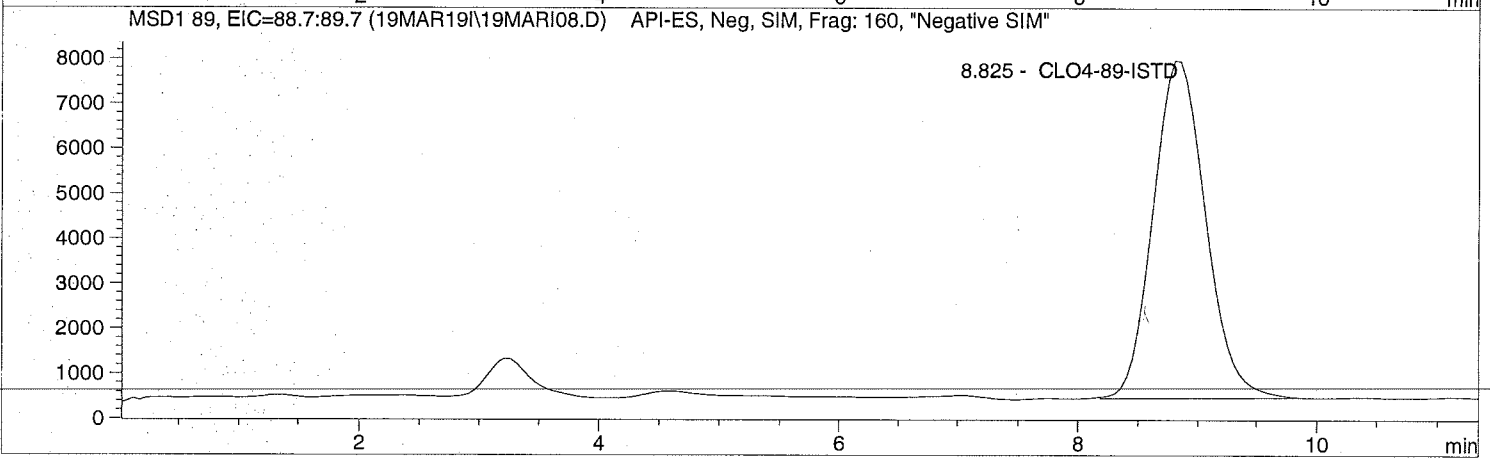
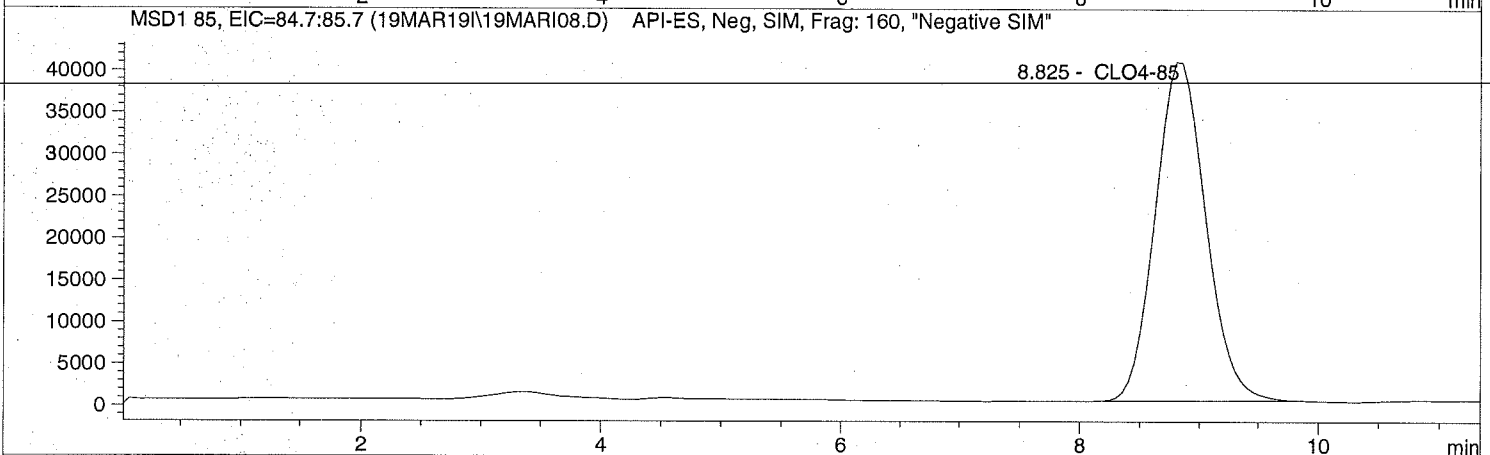
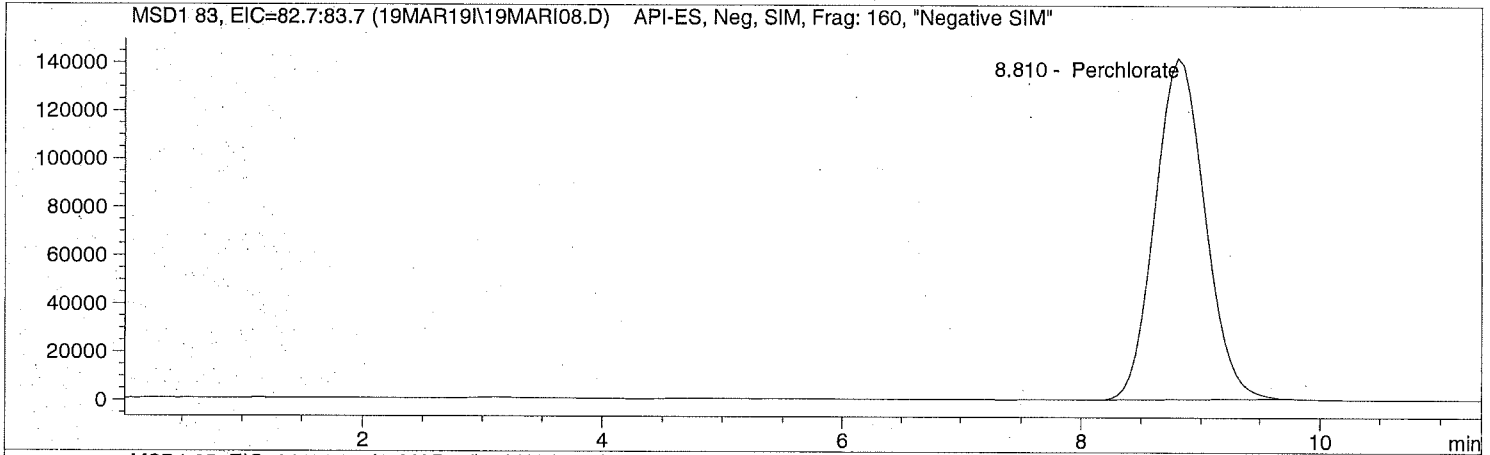
*** End of Report ***

Injection Date: 3/19/2019 10:46:05
Sample Name: CLO4@ 50.ug/L
Acq Operator: TNB

Seq Line: 8
Location: Vial 78
Inj. No.: 1
Inj. Vol.: 30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 3/19/2019 14:35:22

Perchlorate analysis



Injection Date: 3/19/2019 10:46:05 Seq Line: 8
Sample Name: CLO4@ 50.ug/L Location: Vial 78
Acq Operator: TNB Inj. No.: 1
Inj. Vol.: 30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 3/19/2019 14:35:22

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Tue, 19. Mar. 2019,02:35:19 pm
Multiplier: 1.000000
Dilution: 1.000000
Sample Amount: 50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.810	PBA	4133340.5	51.3684	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.825	BBA	1198135.6	50.4672	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.825	BBA	230976.7	5.0000	CLO4-89-ISTD

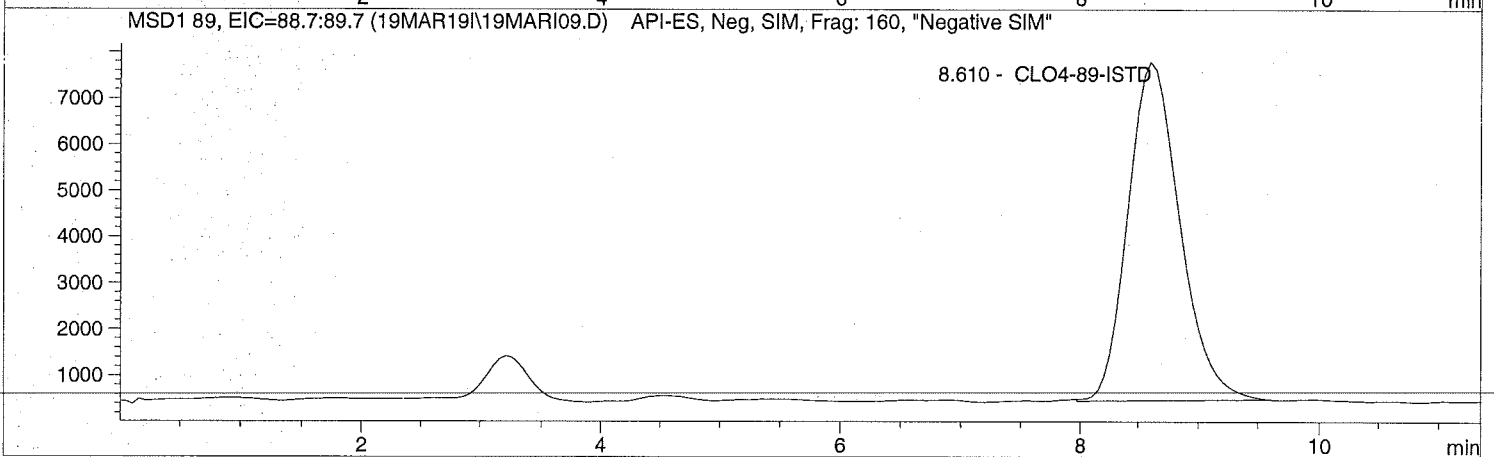
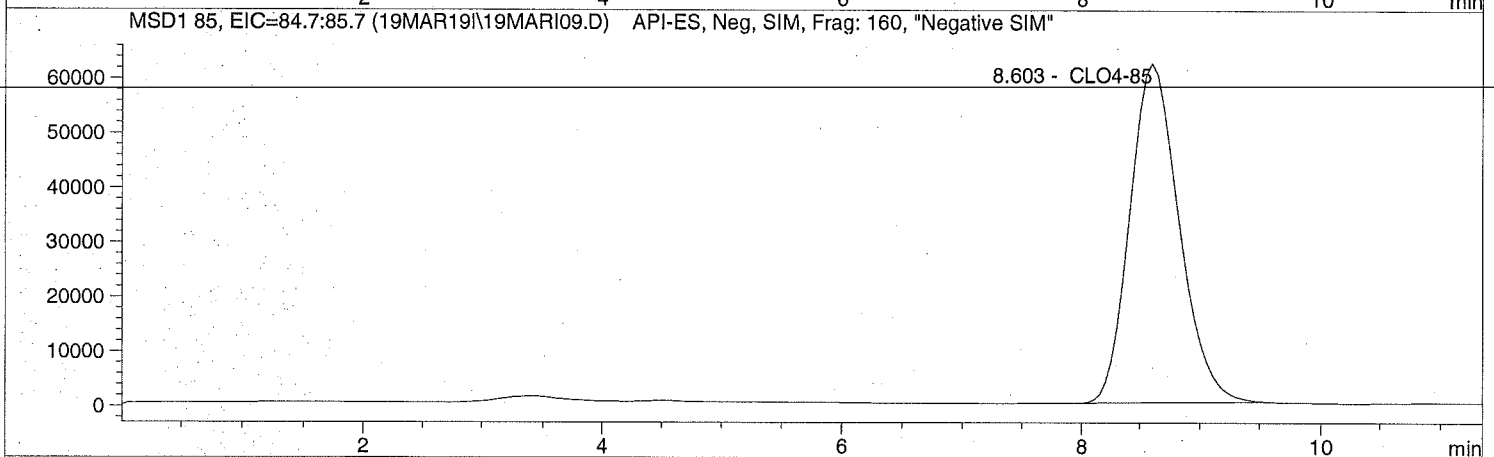
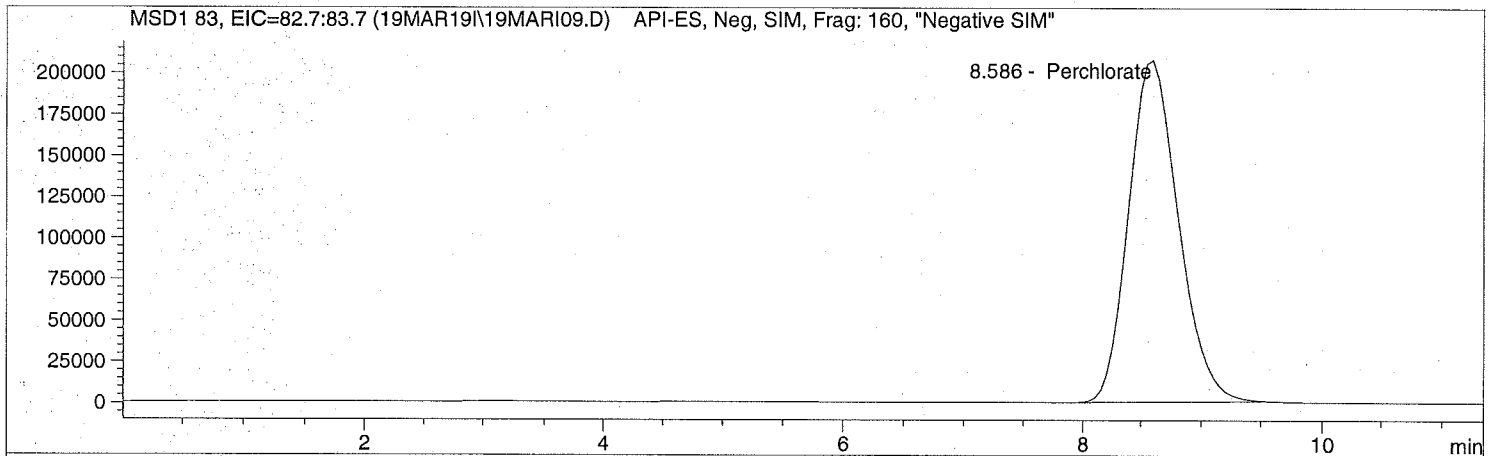
*** End of Report ***

Injection Date: 3/19/2019 10:59:22
Sample Name: CLO4@ 75.ug/L
Acq Operator: TNB

Seq Line: 9
Location: Vial 79
Inj. No.: 1
Inj. Vol.: 30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 3/19/2019 14:35:22

Perchlorate analysis



Injection Date: 3/19/2019 10:59:22 Seq Line: 9
Sample Name: CLO4@ 75.ug/L Location: Vial 79
Acq Operator: TNB Inj. No.: 1
Inj. Vol.: 30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 3/19/2019 14:35:22

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Tue, 19. Mar. 2019, 02:35:19 pm
Multiplier: 1.000000
Dilution: 1.000000
Sample Amount: 75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.586	PBA	5993128.0	74.1675	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.603	PBA	1783554.4	74.7202	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.610	BBA	221504.5	5.0000	CLO4-89-ISTD

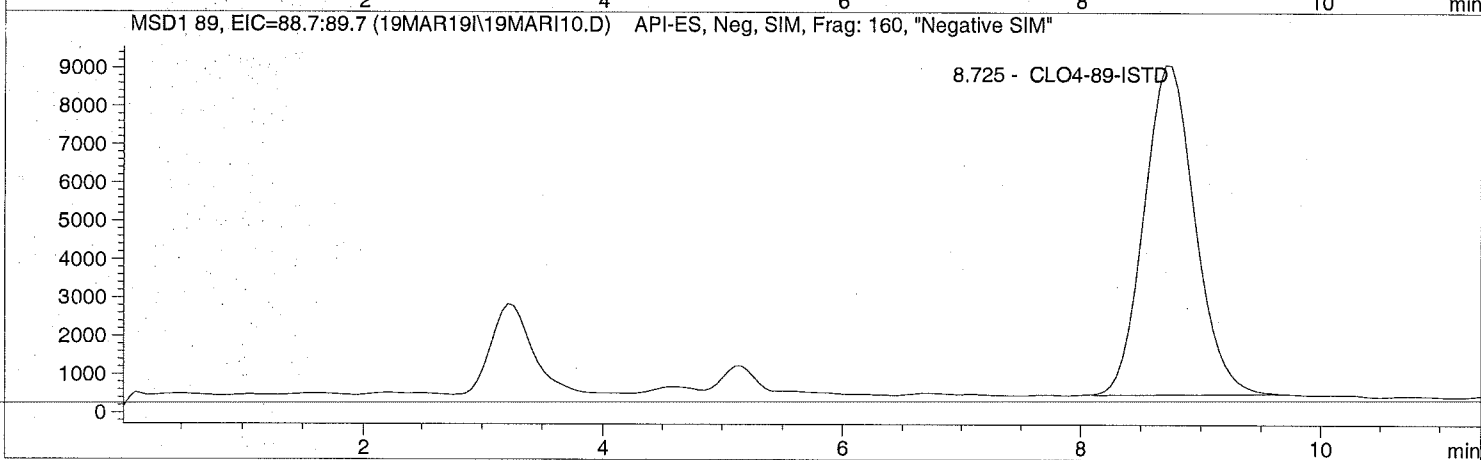
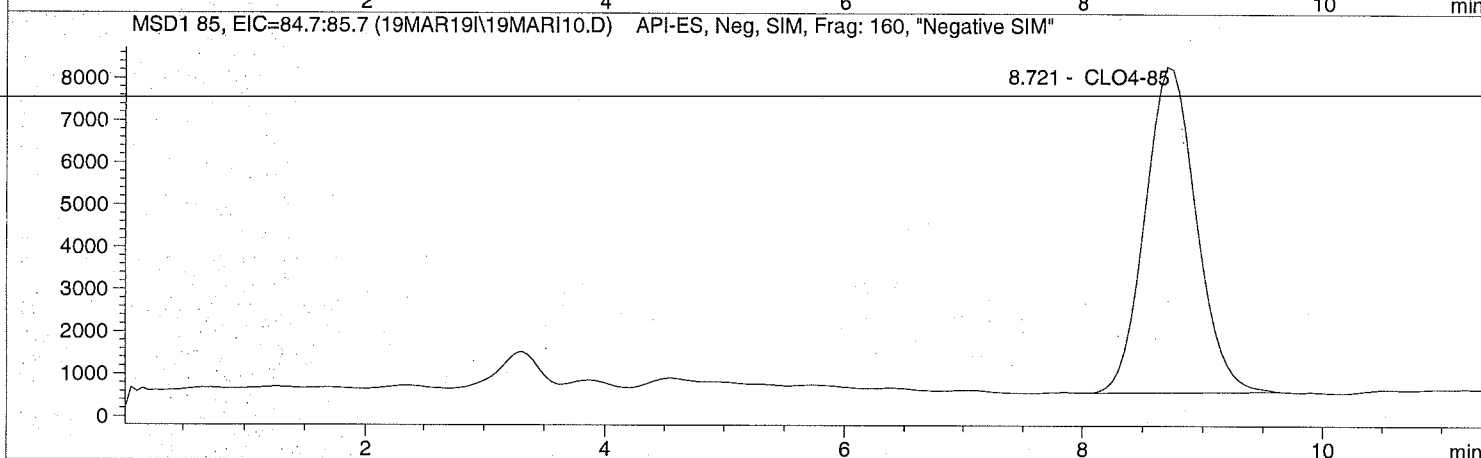
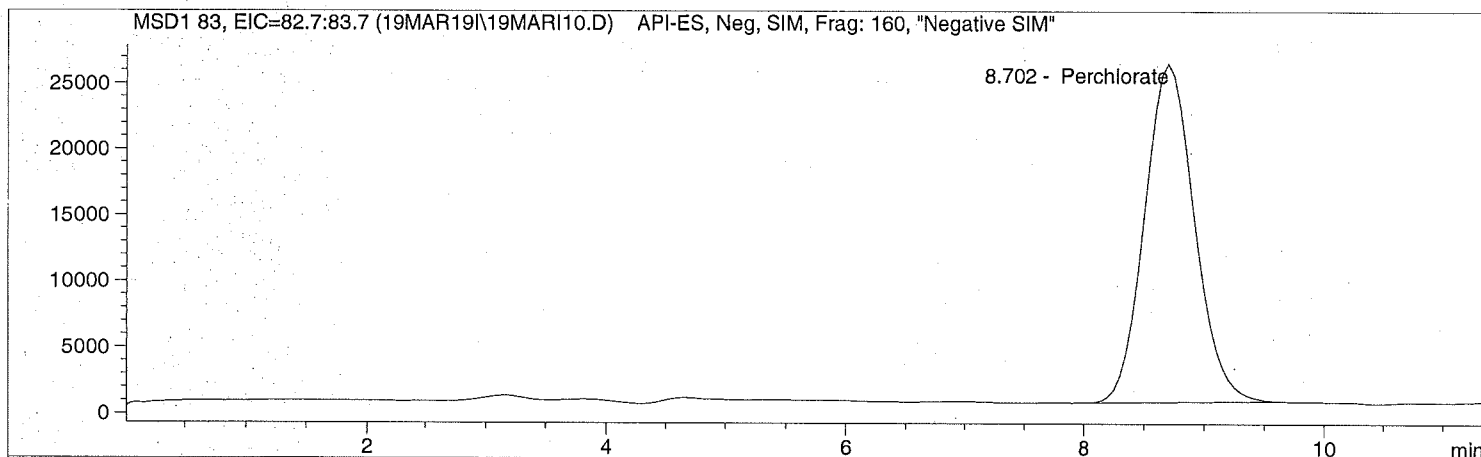
*** End of Report ***

Injection Date: 3/19/2019 11:12:42
Sample Name: ICAL Verf@10ug/L
Acq Operator: TNB

Seq Line: 10
Location: Vial 80
Inj. No.: 1
Inj. Vol.: 30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 3/19/2019 14:35:22

Perchlorate analysis



Injection Date: 3/19/2019 11:12:42 Seq Line: 10
Sample Name: ICAL Verf@10ug/L Location: Vial 80
Acq Operator: TNB Inj. No.: 1
Inj. Vol.: 30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 3/19/2019 14:35:22

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Tue, 19. Mar. 2019, 02:35:19 pm
Multiplier: 1.000000
Dilution: 1.000000
Sample Amount: 10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.702	PBA	734718.7	9.2594	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.721	PBA	227494.7	9.5402	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.725	BBA	252544.4	5.0000	CLO4-89-ISTD

*** End of Report ***



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

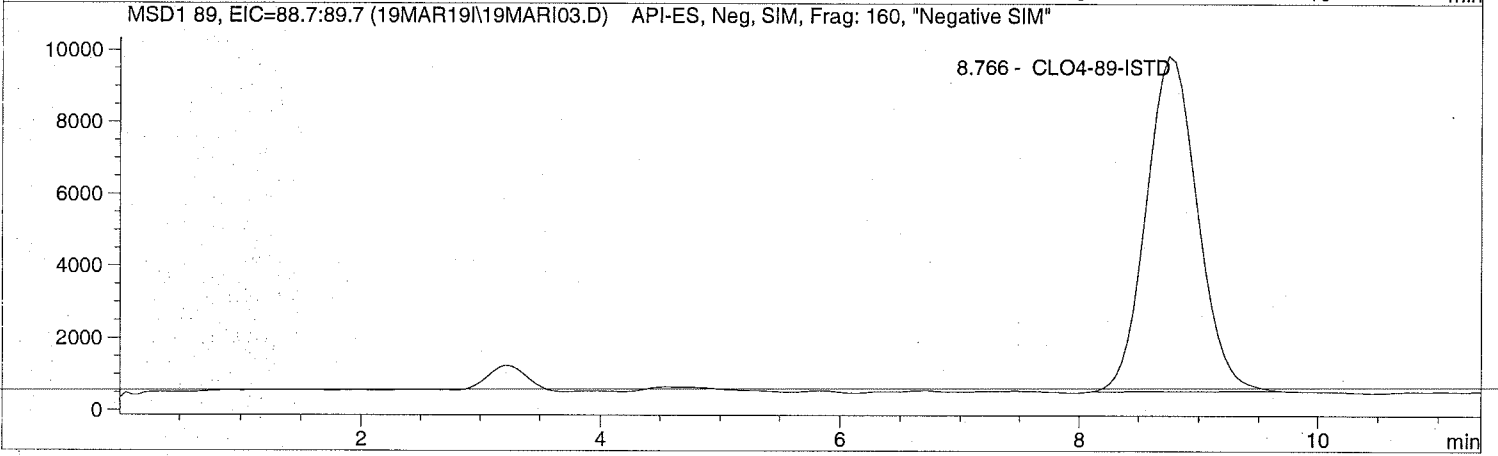
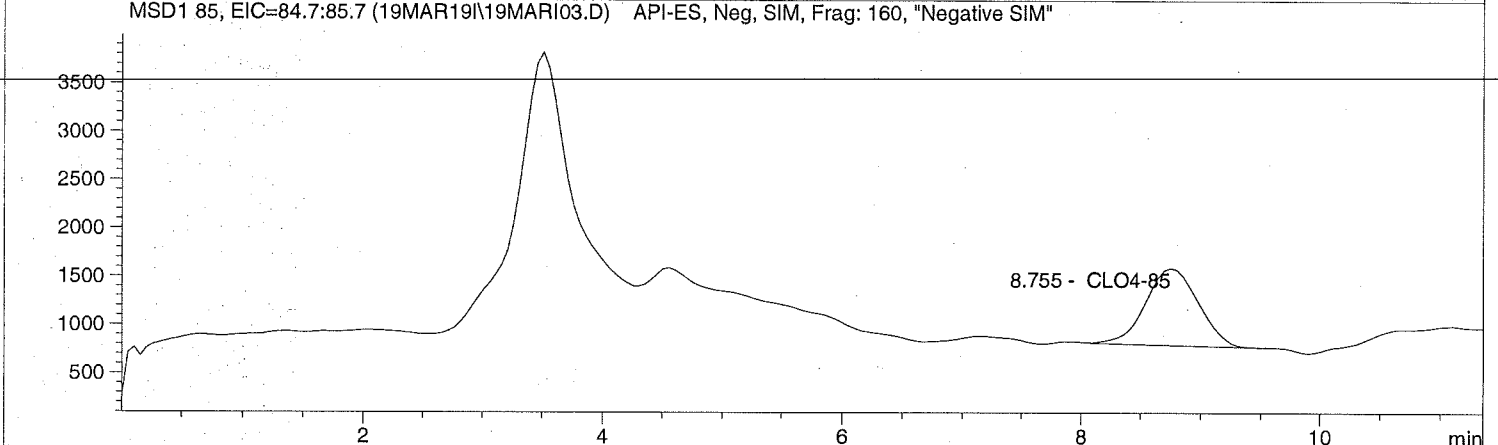
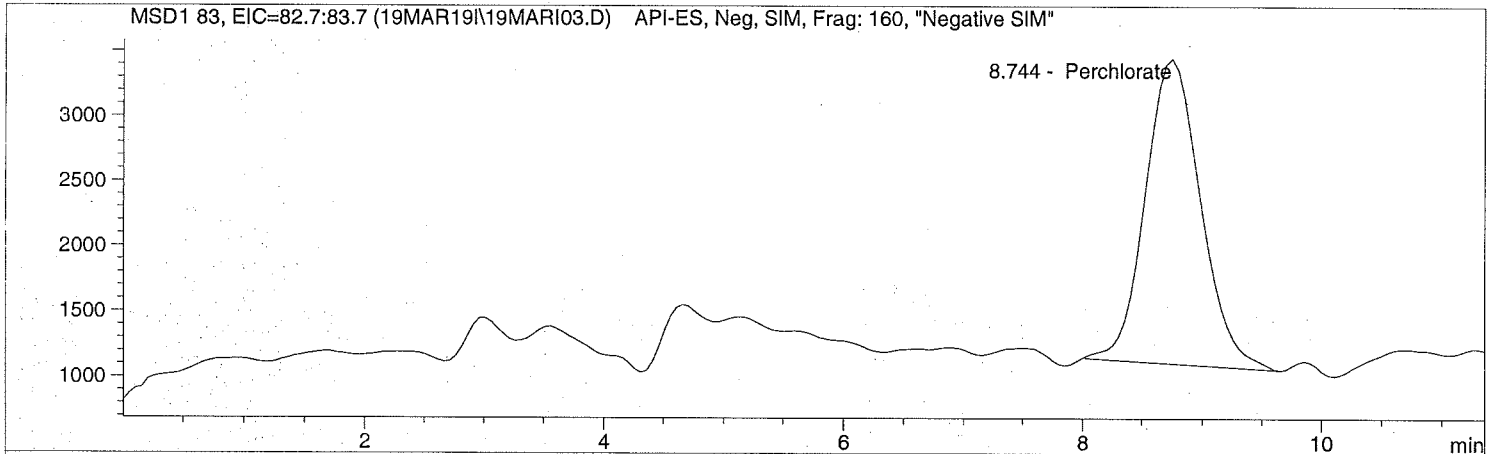
Unmodified

Injection Date: 3/19/2019 09:39:40
Sample Name: CLO4@ 1.0ug/L
Acq Operator: TNB

Seq Line: 3
Location: Vial 73
Inj. No.: 1
Inj. Vol.: 30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 3/19/2019 14:38:25

Perchlorate analysis



Injection Date: 3/19/2019 09:39:40 Seq Line: 3
Sample Name: CLO4@ 1.0ug/L Location: Vial 73
Acq Operator: TNB Inj. No.: 1
Inj. Vol.: 30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP2.M
Last Changed: 3/19/2019 14:38:25

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Tue, 19. Mar. 2019,02:35:19 pm
Multiplier: 1.000000
Dilution: 1.000000
Sample Amount: 1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.744	BBA	74166.3	1.0224	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.755	BBA	24138.1	0.9487	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.766	BBA	273207.6	5.0000	CLO4-89-ISTD

*** End of Report ***



August 23, 2019

Service Request No:E1900593

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

Laboratory Results for: HS19080691

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory August 14, 2019
For your reference, these analyses have been assigned our service request number **E1900593**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the final 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 TNI 2009 Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Corey Grandits
Project Manager

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 281 530 5656 | FAX +1 281 530 5887
ALS Group USA, Corp.
dba ALS Environmental



Certificate of Analysis

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Environmental

Client: ALS Houston
Project: HS19080691
Sample Matrix: Soil

Service Request No.: E1900593
Date Received: 08/14/19

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

The samples were received for analysis at ALS Environmental in Houston on 08/14/19.

The samples were received at 4.0°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.

Data Validation Notes and Discussion

Precision and Accuracy:

EQ1900282: A Laboratory Control Spike (LCS) sample was analyzed and reported in addition to a MS/MSD for this extraction batch. The batch precision (MS/DMS) measurements were determined on another order in the extraction batch. The MS/DMS results are not included in this report. The OCDD recovery in the LCS is above control limits; the associated compound in the samples should be considered potentially bias high.

B flags – Method Blank

The Method Blank EQ1900282-01 contained low levels of target dioxin and furan compounds above the EDL however below the Method Reporting Limit (MRL).

One compound, OCDF, was above the MRL (CRQL). ALS/Houston follows the *EPA National Functional Guidelines for CDDs and CDFs, September 2005*, which states on page 31, “The concentration of OCDF in the method blank must be <3x the CRQL (MRL).” OCDD was detected above the MRL (>MRL).

The associated compounds in the samples are flagged with ‘B’ flags where the sample result is less than ten times the level detected in the method blank. The B flag is only applied when the MB result is at least one half the MRL per DOD requirements.

Y flags – Cleanup Standard

Select recoveries for the cleanup standard, 37Cl-2,3,7,8-TCDD are below control limits. The sample results are not affected since this labeled standard is provided as a means of demonstrating that both the sample extraction and subsequent cleanup steps performed as expected, and is not used in quantitation of target analytes.

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.

E flags

When OCDD exceeds the upper method calibration limit (MCL), we use an 'E' flag on the Sample Analytical Report results page when the detector is not saturated. Sample BS-6-190813 is reported with an 'E' flag to denote that the sample had a concentration greater than the highest calibration point. The process of dilution is counter to the isotopic dilution technique that the laboratory uses to determine recovery and produces variability in the final value. The laboratory only dilutes when detector saturation occurs.

Y flags – Labeled Standards

Target labeled standards were recovered below QC limits in the client samples (all recoveries > 20%). Quantification of the native 2,3,7,8-substituted congeners is based on isotopic dilution, which automatically corrects for variation in extraction efficiency and provides accurate values even with poor recovery. Samples that had recoveries of labeled standards outside the acceptance limits are qualified with 'Y' flags on the Labeled Compound summary pages. In all cases, the signal-to-noise ratios are greater than 10:1 and detection limits were below the Method Reporting Limits.

Detection Limits

Detection limits are calculated for each analyte 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 MRL = DOD LOQ, but the EDL is not directly correlated to LOD. The LOD is instrument and prep-method specific.

Manual Integrations

For this type of instrumentation and software, manual integration may be required frequently to correct inaccurate integrations performed by the processing software. These manual integrations are indicated in the raw data with a before and after chromatogram and are stamped with the reason for integration. (Sample E1900593-001 through E1900593-008)

The TEQ Summary results for each sample have been calculated by ALS/Houston to include:

- WHO-2005 TEFs, The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds (M. Van den Berg et al., Toxicological Sciences 93(2):223-241, 2006)
- Non-detected compounds are not included in the 'Total'

Certification is held for the state of Texas, and DOD, for the method/matrix/analytes provided in this report.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use

ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

Client: ALS Environmental - US
Project: HS19080691

Service Request:E1900593

SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
E1900593-001	BS-1-190813	8/13/2019	0850
E1900593-002	BS-2-190813	8/13/2019	0857
E1900593-003	BS-3-190813	8/13/2019	0904
E1900593-004	BS-4-190813	8/13/2019	0911
E1900593-005	BS-5-190813	8/13/2019	0918
E1900593-006	BS-6-190813	8/13/2019	0924
E1900593-007	BS-7-190813	8/13/2019	0930
E1900593-008	BS-8-190813	8/13/2019	0939

Service Request Summary

Folder #: E1900593
Client Name: ALS Environmental - US
Project Name: HS19080691
Project Number:

Report To: RJ Modashia
 ALS Laboratory Group
 10450 Stancliff Road
 Houston, TX 77099-4338
 USA
Phone Number: 281-530-5656
Cell Number:
Fax Number: 281-530-5887
E-mail: rj.modashia@alsglobal.com

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 08/14/19
Internal Due Date: 8/21/2019
QAP: LAB QAP
Qualifier Set: HRMS Qualifier Set
Formset: Lab Standard
Merged?: N
Report to MDL?: Y
P.O. Number: HS19080691
EDD: No EDD Specified

8 4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
Location: EHRMS-WIC 3A
Pressure Gas:
Rush

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON	
				PCDD PCDF/8290	Total Solids/ALS SOP
E1900593-001	BS-1-190813	Soil	08/13/19 0850	IV	IV
E1900593-002	BS-2-190813	Soil	08/13/19 0857	IV	IV
E1900593-003	BS-3-190813	Soil	08/13/19 0904	IV	IV
E1900593-004	BS-4-190813	Soil	08/13/19 0911	IV	IV
E1900593-005	BS-5-190813	Soil	08/13/19 0918	IV	IV
E1900593-006	BS-6-190813	Soil	08/13/19 0924	IV	IV
E1900593-007	BS-7-190813	Soil	08/13/19 0930	IV	IV
E1900593-008	BS-8-190813	Soil	08/13/19 0939	IV	IV

Service Request Summary

Folder #: E1900593
Client Name: ALS Environmental - US
Project Name: HS19080691
Project Number:

Report To: RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Houston, TX 77099-4338
USA
Phone Number: 281-530-5656
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Fax Number: 281-530-5887
E-mail: rj.modashia@alsglobal.com

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 08/14/19
Internal Due Date: 8/21/2019
QAP: LAB QAP
Qualifier Set: HRMS Qualifier Set
Formset: Lab Standard
Merged?: N
Report to MDL?: Y
P.O. Number: HS19080691
EDD: No EDD Specified

8 4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
Location: EHRMS-WIC 3A
Pressure Gas:
Rush

Superset Summary

Service Request: E1900593

SuperSet Reference: 19-0000518902 rev 00

Analytical Method: 8290

Calibrations: 04/25/19

Data Files:

Raw Data	Begin CCAL	Method Blank	Lab ID
P523637	P523635	P523637	EQ1900282-01
P523642	P523635	P523637	EQ1900282-02

Calibrations: 08/01/19

Data Files:

Raw Data	Begin CCAL	Method Blank	Lab ID
P618694	P618686	P523637	E1900593-001
P618636	P618631	P523637	E1900593-002
P618637	P618631	P523637	E1900593-003
P618638	P618631	P523637	E1900593-004
P618695	P618686	P523637	E1900593-005
P618640	P618631	P523637	E1900593-006
P618641	P618631	P523637	E1900593-007
P618646	P618643	P523637	E1900593-008

Data Qualifiers

HRMS Qualifier Set

- B Indicates the associated analyte was found in the method blank at >1/10th the reported value.
- E Estimated value. The reported concentration is above the calibration range of the instrument.
- H Sample extracted and/or analyzed out of suggested holding time.
- J Estimated value. The reported concentration is below the MRL.
- K The ion abundance ratio between the primary and secondary ions were outside of theoretical acceptance limits. The concentration of this analyte should be considered as an estimate.
- P Chlorodiphenyl ether interference was present at the retention time of the target analyte. Reported result should be considered an estimate.
- Q Monitored lock-mass indicates matrix-interference. Reported result is estimated.
- S Signal saturated detector. Result reported from dilution.
- U Compound was analyzed for, but was not detected (ND).
- X See Case Narrative.
- Y Isotopically Labeled Standard recovery outside of acceptance limits. In all cases, the signal-to-noise ratios are greater than 10:1, making the recoveries acceptable.
 - i The MDL/MRL have been elevated due to a matrix interference.

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCEntration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
American Association for Laboratory Accreditation	2897.01	11/30/2019
Arizona Department of Health Services	AZ0793	5/27/2020
Arkansas Department of Environmental Quality	19-028-0	3/27/2020
California Department of Health Services	2919	4/30/2020
Department of Defense	A2LA 2897.01	11/30/2019
Hawaii Department of Health	TX02694	4/30/2020
Louisiana Department of Environmental Quality	03087	6/30/2020
Louisiana Department of Health and Hospitals	LA028	12/31/2019
Maine Center for Disease Control and Prevention	201815	6/5/2020
Maryland Department of the Environment	343	6/30/2020
Minnesota Department of Health	1556965	12/31/2019
Nebraska Department of Health and Human Services	NE-OS-25-13	4/30/2020
New Hampshire Environmental Laboratory Accreditation Program	209419	4/24/2020
New Jersey Department of Environmental Protection	NLC190001	6/30/2020
New York Department of Health	11707	3/31/2020
Oklahoma Department of Environmental Quality	2018-156	8/31/2019
Pennsylvania Department of Environmental Protection	68-03441-013	6/30/2020
Tennessee Department of Environment and Conservation	04016	6/30/2020
Texas Commission on Environmental Quality	TX104704231-19-23	4/30/2020
United States Department of Agriculture	P330-18-00368	12/14/2019
Washington Department of Health	C819	11/14/2019
West Virginia Department of Environmental Protection	347	6/30/2020

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID E1900593

DB-5MSUI

SPB-Octyl

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

Date:	Analyst:	Samples:
08/22/19	LKL	002 - 004, 006, 007

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

Date:	Analyst:	Samples:
08/22/19	kw	002-004, 006-007

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID 61900593

DB-5MSUI

SPB-Octyl

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

Date:	Analyst:	Samples:
08/23/19	LKL	001,005

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

Date:	Analyst:	Samples:
08/23/19	KW	001,005

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID

E1900593

DB-5MSUI

SPB-Octyl

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

Date:	Analyst:	Samples:
08/22/19	LKL	008

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

Date:	Analyst:	Samples:
08/22/19	kw	008



Chain of Custody

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com



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 Houston, TX 77099
 T: +1 281 530 5656
 F: +1 281 530 5887
 www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: Texas

E1900593

5

COC ID: 11979

SUBCONTRACT TO:

ALS Environmental
 10450 Stancliff Road Suite 210
 Houston, TX 77084

ALS Laboratory Group
 HS19080691



Phone: +1 281 530 5656

CUSTOMER INFORMATION:

Company: ALS Houston
Contact: RJ Modashia
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Email: RJ.Modashia@alsglobal.com
Alternate Contact:
Contact:
Email:

INVOICE INFORMATION:

Company: ALS Houston
Contact: Accounts Payable
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Reference: HS19080691
TSR: Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	HS19080691-01	BS-1-190813	Soil	13 Aug 2019 08:50
	SUB_DIOXINS/FURANS			21 Aug 2019
2.	HS19080691-02	BS-2-190813	Soil	13 Aug 2019 08:57
	SUB_DIOXINS/FURANS			21 Aug 2019
3.	HS19080691-03	BS-3-190813	Soil	13 Aug 2019 09:04
	SUB_DIOXINS/FURANS			21 Aug 2019
4.	HS19080691-04	BS-4-190813	Soil	13 Aug 2019 09:11
	SUB_DIOXINS/FURANS			21 Aug 2019
5.	HS19080691-05	BS-5-190813	Soil	13 Aug 2019 09:18
	SUB_DIOXINS/FURANS			21 Aug 2019
6.	HS19080691-06	BS-6-190813	Soil	13 Aug 2019 09:24
	SUB_DIOXINS/FURANS			21 Aug 2019
7.	HS19080691-07	BS-7-190813	Soil	13 Aug 2019 09:30
	SUB_DIOXINS/FURANS			21 Aug 2019
8.	HS19080691-08	BS-8-190813	Soil	13 Aug 2019 09:39
	SUB_DIOXINS/FURANS			21 Aug 2019



Subcontract Chain of Custody

SAMPLING STATE: Texas

COC ID: 11979

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: SM

Date/Time: 8-14-19

Received By: _____

Date/Time: 8/14/19 1200

Cooler ID(s): _____

Temperature(s): _____

CH

 Client/Project ALS-11

 Thermometer ID SMV4

 Date/Time Received: 8/14/14 Initials: CH Date/Time Logged in: 8/14/14 Initials CH

1. Method of delivery: US Mail Fed Ex UPS DHL ^{ALS} Courier Client
2. Samples received in: Cooler Box Envelope Other _____
3. Were custody seals on coolers? Yes No If yes, how many and where?
- Were they intact? Yes No N/A
- Were they signed and dated? Yes No N/A
4. Packing Material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Sleeves Other _____
5. Foreign or Regulated Soil? Yes No Location of Sampling: _____

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
-		8/14/14	1200	CH	3.6/4.0	<input checked="" type="checkbox"/>
						<input type="checkbox"/>
						<input type="checkbox"/>
						<input type="checkbox"/>

6. Were custody papers properly filled out (ink, signed, dated, etc)? Yes No
7. Did all bottles arrive in good condition (not broken, no signs of leakage)? Yes No
8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? Yes No
9. Were appropriate bottles/containers and volumes received for the requested tests? Yes No
10. Did sample labels and tags agree with custody documents? Yes No

Notes, Discrepancies, & Resolutions:



10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 713 266 1599
F: +1 713 266 1599
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sample. The COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6°C.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10°C.
- ✓ Air samples are shipped and stored cold, at 0 to 6°C
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report



Preparation Information Benchsheets

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 342558
Team: Semivoa GCMS/JGUIN

Prep Workflow: OrgExtDioxS(30)
Prep Method: Method

Status: Prepped
Prep Date/Time: 8/14/19 15:00

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E1900591-001	SS006_Super_Sack-SO-01	.01	8290/PCDD PCDF			Soil	10.001g	Brown Soil
2	E1900591-002	SS006_Super_Sack-SO-901	.01	8290/PCDD PCDF			Soil	10.035g	Brown Soil
3	E1900591-003	SS006_Super_Sack-SO-02	.01	8290/PCDD PCDF			Soil	10.406g	Brown Soil
4	E1900591-004	SS006_Super_Sack-SO-03	.01	8290/PCDD PCDF			Soil	10.665g	Brown Soil
5	E1900593-001	BS-1-190813	.01	8290/PCDD PCDF			Soil	10.228g	Orange soil
6	E1900593-002	BS-2-190813	.01	8290/PCDD PCDF			Soil	10.216g	Orange soil
7	E1900593-003	BS-3-190813	.01	8290/PCDD PCDF			Soil	10.717g	Orange soil
8	E1900593-004	BS-4-190813	.01	8290/PCDD PCDF			Soil	10.287g	Orange soil
9	E1900593-005	BS-5-190813	.01	8290/PCDD PCDF			Soil	10.165g	Orange soil
10	E1900593-006	BS-6-190813	.01	8290/PCDD PCDF			Soil	10.227g	Orange soil
11	E1900593-007	BS-7-190813	.01	8290/PCDD PCDF			Soil	10.078g	Orange soil
12	E1900593-008	BS-8-190813	.01	8290/PCDD PCDF			Soil	10.768g	Orange soil
13	E1900594-001	19-08-0245-Ash Box 8505	.01	8290/PCDD PCDF			Solid	10.722g	Gray dirt w/ rocks
14	EQ1900282-01	MB		8290/PCDD PCDF			Solid	10.712g	
15	EQ1900282-02	LCS		8290/PCDD PCDF			Solid	10.058g	
16	EQ1900282-03	SS006_Super_Sack-SO-02 MS	.01	8290/PCDD PCDF			Solid	10.719g	
17	EQ1900282-04	SS006_Super_Sack-SO-02 DMS	.01	8290/PCDD PCDF			Solid	10.058g	

Spiking Solutions

Name: 1613B Matrix Working Standard	Inventory ID: 201735	Logbook Ref: 201735 8/5/19 JG 2-20ng/ml	Expires On: 02/01/2020
--	-----------------------------	--	-------------------------------

EQ1900282-02 100.00µL EQ1900282-03 100.00µL EQ1900282-04 100.00µL

Name: 1613B Labeled Working Standard	Inventory ID: 201966	Logbook Ref: 201966 JG 8/12/19 2-4ng/ml	Expires On: 12/17/2019
---	-----------------------------	--	-------------------------------

E1900591-001 1,000.00µL E1900591-002 1,000.00µL E1900591-003 1,000.00µL E1900591-004 1,000.00µL E1900593-001 1,000.00µL E1900593-002 1,000.00µL
 E1900593-003 1,000.00µL E1900593-004 1,000.00µL E1900593-005 1,000.00µL E1900593-006 1,000.00µL E1900593-007 1,000.00µL E1900593-008 1,000.00µL
 E1900594-001 1,000.00µL EQ1900282-01 1,000.00µL EQ1900282-02 1,000.00µL EQ1900282-03 1,000.00µL EQ1900282-04 1,000.00µL

Name: 8290/1613B Cleanup Working Standard	Inventory ID: 202012	Logbook Ref: 202012 JG 8/13/19	Expires On: 09/15/2019
--	-----------------------------	---------------------------------------	-------------------------------

E1900591-001 100.00µL E1900591-002 100.00µL E1900591-003 100.00µL E1900591-004 100.00µL E1900593-001 100.00µL E1900593-002 100.00µL
 E1900593-003 100.00µL E1900593-004 100.00µL E1900593-005 100.00µL E1900593-006 100.00µL E1900593-007 100.00µL E1900593-008 100.00µL
 E1900594-001 100.00µL EQ1900282-01 100.00µL EQ1900282-02 100.00µL EQ1900282-03 100.00µL EQ1900282-04 100.00µL

Preparation Information Benchsheet

Prep Run#: 342558
Team: Semivoa GCMS/JGUIN

Prep WorkFlow: OrgExtDioxS(30)
Prep Method: Method

Status: Prepped
Prep Date/Time: 8/14/19 15:00

Preparation Materials

Carbon, High Purity	JG 8/2/19 (201658)	Ethyl Acetate 99.9% Minimum EtOAc	JG 7/16/19 (201129)	Glass Wool	JG 8/1/19 (201624)
Hexanes 95%	JG 7/23/19 (201339)	Dichloromethane (Methylene Chloride) 99.9% MeCl2	JG 7/19/19 (201263)	Sodium Chloride 5%	308051706 (202016)
Sodium Hydroxide 1N NaOH	TW 6/14/18 (191093)	Sodium Sulfate Anhydrous Reagent Grade Na2SO4	JG 8/14/19 (202064)	Tridecane (n-Tridecane)	JG 6/25/19 (200486)
Silica Gel	silica gel 073119 tw (201591)	sulfuric acid	JG 6/18/19 (200325)	Toluene 99.9% Minimum	JG 7/23/19 (201341)

Preparation Steps

Step: Extraction	Step: Acid Clean	Step: Silica Gel Clean	Step: Final Volume
Started: 8/14/19 15:00	Started: 8/15/19 10:00	Started: 8/15/19 12:00	Started: 8/16/19 10:00
Finished: 8/15/19 08:50	Finished: 8/15/19 11:00	Finished: 8/15/19 15:00	Finished: 8/16/19 13:00
By: JGUIN	By: CGRANDITS	By: CGRANDITS	By: CGRANDITS
Comments	Comments	Comments	Comments

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____	Date: _____	<u>Extracts Examined</u>
Received By: _____	Date: _____	Yes No



Analytical Results

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil

Sample Name: BS-1-190813
Lab Code: E1900593-001

Service Request: E1900593
Date Collected: 08/13/19 08:50
Date Received: 08/14/19 12:00

Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.228g

Data File Name: P618694
ICAL Date: 08/01/19

Date Analyzed: 08/22/19 22:02
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618686

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.979	1.56	1.56			1
1,2,3,7,8-PeCDD	0.315J		0.183	1.56	2.60	1.43	1.000	1
1,2,3,4,7,8-HxCDD	0.438J		0.248	1.56	2.60	1.25	1.000	1
1,2,3,6,7,8-HxCDD	0.605JK		0.233	1.56	2.60	1.45	1.000	1
1,2,3,7,8,9-HxCDD	0.517J		0.244	1.56	2.60	1.23	1.007	1
1,2,3,4,6,7,8-HpCDD	37.1		0.252	1.56	2.60	1.08	1.000	1
OCDD	3240		2.44	3.12	5.21	0.88	1.000	1
2,3,7,8-TCDF	ND	U	0.759	1.56	1.56			1
1,2,3,7,8-PeCDF	ND	U	0.160	1.56	2.60			1
2,3,4,7,8-PeCDF	ND	U	0.154	1.56	2.60			1
1,2,3,4,7,8-HxCDF	ND	U	0.245	1.56	2.60			1
1,2,3,6,7,8-HxCDF	ND	U	0.259	1.56	2.60			1
1,2,3,7,8,9-HxCDF	ND	U	0.346	1.56	2.60			1
2,3,4,6,7,8-HxCDF	ND	U	0.290	1.56	2.60			1
1,2,3,4,6,7,8-HpCDF	1.52BJ		0.173	1.56	2.60	1.05	1.000	1
1,2,3,4,7,8,9-HpCDF	0.216J		0.201	1.56	2.60	1.11	1.000	1
OCDF	9.72B		0.292	3.12	5.21	0.76	1.004	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-1-190813
Lab Code: E1900593-001

Service Request: E1900593
Date Collected: 08/13/19 08:50
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.228g
Data File Name: P618694
ICAL Date: 08/01/19

Date Analyzed: 08/22/19 22:02
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618686

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.979	0.979	0.979			1
Total Penta-Dioxins	0.315J		0.183	1.56	2.60	1.43		1
Total Hexa-Dioxins	0.955J		0.241	4.69	4.69	1.25		1
Total Hepta-Dioxins	70.5		0.252	1.56	2.60	1.01		1
Total Tetra-Furans	ND	U	0.759	0.759	0.759			1
Total Penta-Furans	ND	U	0.157	3.12	3.12			1
Total Hexa-Furans	0.421J		0.281	6.25	6.25	1.06		1
Total Hepta-Furans	7.38		0.191	3.12	3.12	1.05		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil

Sample Name: BS-1-190813
Lab Code: E1900593-001

Service Request: E1900593
Date Collected: 08/13/19 08:50
Date Received: 08/14/19 12:00

Units: Percent
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.228g

Data File Name: P618694
ICAL Date: 08/01/19

Date Analyzed: 08/22/19 22:02
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618686

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	616.982	31	Y	40-135	0.75	1.029
13C-1,2,3,7,8-PeCDD	2000	1029.626	51		40-135	1.58	1.245
13C-1,2,3,4,7,8-HxCDD	2000	1012.098	51		40-135	1.27	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1148.417	57		40-135	1.21	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1081.558	54		40-135	1.04	1.071
13C-OCDD	4000	1847.971	46		40-135	0.90	1.140
13C-2,3,7,8-TCDF	2000	478.887	24	Y	40-135	0.80	0.990
13C-1,2,3,7,8-PeCDF	2000	854.859	43		40-135	1.55	1.191
13C-2,3,4,7,8-PeCDF	2000	906.050	45		40-135	1.58	1.233
13C-1,2,3,4,7,8-HxCDF	2000	958.645	48		40-135	0.52	0.968
13C-1,2,3,6,7,8-HxCDF	2000	893.561	45		40-135	0.52	0.971
13C-1,2,3,7,8,9-HxCDF	2000	959.140	48		40-135	0.50	1.008
13C-2,3,4,6,7,8-HxCDF	2000	910.105	46		40-135	0.51	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	900.943	45		40-135	0.43	1.046
13C-1,2,3,4,7,8,9-HpCDF	2000	1119.430	56		40-135	0.44	1.083
37Cl-2,3,7,8-TCDD	800	201.137	25	Y	40-135	NA	1.031

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-1-190813
Lab Code: E1900593-001

Service Request: E1900593
Date Collected: 08/13/19 08:50
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.979	1.56	1	1	
1,2,3,7,8-PeCDD	0.315	0.183	2.60	1	1	0.315
1,2,3,4,7,8-HxCDD	0.438	0.248	2.60	1	0.1	0.0438
1,2,3,6,7,8-HxCDD	0.605	0.233	2.60	1	0.1	0.0605
1,2,3,7,8,9-HxCDD	0.517	0.244	2.60	1	0.1	0.0517
1,2,3,4,6,7,8-HpCDD	37.1	0.252	2.60	1	0.01	0.371
OCDD	3240	2.44	5.21	1	0.0003	0.972
2,3,7,8-TCDF	ND	0.759	1.56	1	0.1	
1,2,3,7,8-PeCDF	ND	0.160	2.60	1	0.03	
2,3,4,7,8-PeCDF	ND	0.154	2.60	1	0.3	
1,2,3,4,7,8-HxCDF	ND	0.245	2.60	1	0.1	
1,2,3,6,7,8-HxCDF	ND	0.259	2.60	1	0.1	
1,2,3,7,8,9-HxCDF	ND	0.346	2.60	1	0.1	
2,3,4,6,7,8-HxCDF	ND	0.290	2.60	1	0.1	
1,2,3,4,6,7,8-HpCDF	1.52	0.173	2.60	1	0.01	0.0152
1,2,3,4,7,8,9-HpCDF	0.216	0.201	2.60	1	0.01	0.00216
OCDF	9.72	0.292	5.21	1	0.0003	0.00292
Total TEQ						1.83

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-1-190813
Lab Code: E1900593-001

Service Request: E1900593
Date Collected: 08/13/19 08:50
Date Received: 08/14/19 12:00
Units: Percent
Basis: As Received

Total Solids

Analysis Method: ALS SOP
5.397g

Date Analyzed: 08/15/19 09:10
NA
E-Balance-01

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
Total Solids	93.9		-	-	-			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-2-190813
Lab Code: E1900593-002

Service Request: E1900593
Date Collected: 08/13/19 08:57
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.216g
Data File Name: P618636
ICAL Date: 08/01/19

Date Analyzed: 08/20/19 17:06
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618631

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.546	1.62	1.62			1
1,2,3,7,8-PeCDD	ND	U	0.447	1.62	2.70			1
1,2,3,4,7,8-HxCDD	ND	U	1.10	1.62	2.70			1
1,2,3,6,7,8-HxCDD	1.27J		0.943	1.62	2.70	1.19	1.000	1
1,2,3,7,8,9-HxCDD	ND	U	1.04	1.62	2.70			1
1,2,3,4,6,7,8-HpCDD	31.9		1.78	1.78	2.70	1.00	1.000	1
OCDD	2670		3.20	3.24	5.40	0.89	1.000	1
2,3,7,8-TCDF	ND	U	0.547	1.62	1.62			1
1,2,3,7,8-PeCDF	ND	U	0.186	1.62	2.70			1
2,3,4,7,8-PeCDF	0.334J		0.197	1.62	2.70	1.48	1.000	1
1,2,3,4,7,8-HxCDF	0.431JK		0.219	1.62	2.70	1.55	1.000	1
1,2,3,6,7,8-HxCDF	0.357J		0.234	1.62	2.70	1.41	1.001	1
1,2,3,7,8,9-HxCDF	ND	U	0.298	1.62	2.70			1
2,3,4,6,7,8-HxCDF	0.580JK		0.261	1.62	2.70	1.54	1.000	1
1,2,3,4,6,7,8-HpCDF	1.78BJ		0.286	1.62	2.70	1.20	1.000	1
1,2,3,4,7,8,9-HpCDF	0.622J		0.332	1.62	2.70	1.11	1.000	1
OCDF	10.3B		0.823	3.24	5.40	0.96	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-2-190813
Lab Code: E1900593-002

Service Request: E1900593
Date Collected: 08/13/19 08:57
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.216g
Data File Name: P618636
ICAL Date: 08/01/19

Date Analyzed: 08/20/19 17:06
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618631

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.546	0.546	0.546			1
Total Penta-Dioxins	ND	U	0.447	1.62	2.70			1
Total Hexa-Dioxins	3.39J		1.03	4.86	4.86	1.09		1
Total Hepta-Dioxins	65.5		1.78	1.78	2.70	0.98		1
Total Tetra-Furans	ND	U	0.547	0.547	0.547			1
Total Penta-Furans	0.334J		0.191	3.24	3.24	1.48		1
Total Hexa-Furans	0.677J		0.250	6.48	6.48	1.35		1
Total Hepta-Furans	6.98		0.315	3.24	3.24	1.20		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil

Sample Name: BS-2-190813
Lab Code: E1900593-002

Service Request: E1900593
Date Collected: 08/13/19 08:57
Date Received: 08/14/19 12:00

Units: Percent
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.216g

Data File Name: P618636
ICAL Date: 08/01/19

Date Analyzed: 08/20/19 17:06
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618631

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1242.066	62		40-135	0.77	1.029
13C-1,2,3,7,8-PeCDD	2000	1575.766	79		40-135	1.58	1.237
13C-1,2,3,4,7,8-HxCDD	2000	1180.949	59		40-135	1.35	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1284.043	64		40-135	1.24	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1091.181	55		40-135	1.07	1.070
13C-OCDD	4000	1514.843	38	Y	40-135	0.88	1.140
13C-2,3,7,8-TCDF	2000	1100.238	55		40-135	0.77	0.989
13C-1,2,3,7,8-PeCDF	2000	1395.748	70		40-135	1.56	1.185
13C-2,3,4,7,8-PeCDF	2000	1417.869	71		40-135	1.55	1.226
13C-1,2,3,4,7,8-HxCDF	2000	1193.301	60		40-135	0.52	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1086.549	54		40-135	0.51	0.971
13C-1,2,3,7,8,9-HxCDF	2000	1253.855	63		40-135	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1097.125	55		40-135	0.52	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	988.769	49		40-135	0.43	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1222.393	61		40-135	0.43	1.083
37Cl-2,3,7,8-TCDD	800	456.430	57		40-135	NA	1.029

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-2-190813
Lab Code: E1900593-002

Service Request: E1900593
Date Collected: 08/13/19 08:57
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.546	1.62	1	1	
1,2,3,7,8-PeCDD	ND	0.447	2.70	1	1	
1,2,3,4,7,8-HxCDD	ND	1.10	2.70	1	0.1	
1,2,3,6,7,8-HxCDD	1.27	0.943	2.70	1	0.1	0.127
1,2,3,7,8,9-HxCDD	ND	1.04	2.70	1	0.1	
1,2,3,4,6,7,8-HpCDD	31.9	1.78	2.70	1	0.01	0.319
OCDD	2670	3.20	5.40	1	0.0003	0.801
2,3,7,8-TCDF	ND	0.547	1.62	1	0.1	
1,2,3,7,8-PeCDF	ND	0.186	2.70	1	0.03	
2,3,4,7,8-PeCDF	0.334	0.197	2.70	1	0.3	0.100
1,2,3,4,7,8-HxCDF	0.431	0.219	2.70	1	0.1	0.0431
1,2,3,6,7,8-HxCDF	0.357	0.234	2.70	1	0.1	0.0357
1,2,3,7,8,9-HxCDF	ND	0.298	2.70	1	0.1	
2,3,4,6,7,8-HxCDF	0.580	0.261	2.70	1	0.1	0.0580
1,2,3,4,6,7,8-HpCDF	1.78	0.286	2.70	1	0.01	0.0178
1,2,3,4,7,8,9-HpCDF	0.622	0.332	2.70	1	0.01	0.00622
OCDF	10.3	0.823	5.40	1	0.0003	0.00309
Total TEQ						1.51

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-2-190813
Lab Code: E1900593-002

Service Request: E1900593
Date Collected: 08/13/19 08:57
Date Received: 08/14/19 12:00
Units: Percent
Basis: As Received

Total Solids

Analysis Method: ALS SOP
5.512g

Date Analyzed: 08/15/19 09:10
NA
E-Balance-01

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
Total Solids	90.6		-	-	-			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-3-190813
Lab Code: E1900593-003

Service Request: E1900593
Date Collected: 08/13/19 09:04
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.717g
Data File Name: P618637
ICAL Date: 08/01/19

Date Analyzed: 08/20/19 17:55
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618631

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.749	1.50	1.50			1
1,2,3,7,8-PeCDD	ND	U	0.440	1.50	2.50			1
1,2,3,4,7,8-HxCDD	ND	U	0.892	1.50	2.50			1
1,2,3,6,7,8-HxCDD	ND	U	0.810	1.50	2.50			1
1,2,3,7,8,9-HxCDD	ND	U	0.863	1.50	2.50			1
1,2,3,4,6,7,8-HpCDD	8.40B		1.70	1.70	2.50	1.12	1.000	1
OCDD	687		2.58	3.00	5.01	0.89	1.000	1
2,3,7,8-TCDF	ND	U	0.451	1.50	1.50			1
1,2,3,7,8-PeCDF	ND	U	0.155	1.50	2.50			1
2,3,4,7,8-PeCDF	ND	U	0.156	1.50	2.50			1
1,2,3,4,7,8-HxCDF	0.340JK		0.247	1.50	2.50	0.98	1.000	1
1,2,3,6,7,8-HxCDF	ND	U	0.269	1.50	2.50			1
1,2,3,7,8,9-HxCDF	ND	U	0.328	1.50	2.50			1
2,3,4,6,7,8-HxCDF	ND	U	0.291	1.50	2.50			1
1,2,3,4,6,7,8-HpCDF	2.19BJK		0.182	1.50	2.50	1.30	1.000	1
1,2,3,4,7,8,9-HpCDF	0.399J		0.204	1.50	2.50	1.11	1.000	1
OCDF	50.6B		0.745	3.00	5.01	0.83	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-3-190813
Lab Code: E1900593-003

Service Request: E1900593
Date Collected: 08/13/19 09:04
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.717g
Data File Name: P618637
ICAL Date: 08/01/19

Date Analyzed: 08/20/19 17:55
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618631

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.749	0.749	0.749			1
Total Penta-Dioxins	ND	U	0.440	1.50	2.50			1
Total Hexa-Dioxins	ND	U	0.853	4.51	4.51			1
Total Hepta-Dioxins	8.40		1.70	1.70	2.50	1.12		1
Total Tetra-Furans	ND	U	0.451	0.451	0.501			1
Total Penta-Furans	ND	U	0.155	3.00	3.00			1
Total Hexa-Furans	0.466J		0.282	6.01	6.01	1.35		1
Total Hepta-Furans	0.399J		0.197	3.00	3.00	1.11		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil

Sample Name: BS-3-190813
Lab Code: E1900593-003

Service Request: E1900593
Date Collected: 08/13/19 09:04
Date Received: 08/14/19 12:00

Units: Percent
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.717g

Data File Name: P618637
ICAL Date: 08/01/19

Date Analyzed: 08/20/19 17:55
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618631

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1109.686	55		40-135	0.78	1.029
13C-1,2,3,7,8-PeCDD	2000	1553.800	78		40-135	1.58	1.238
13C-1,2,3,4,7,8-HxCDD	2000	1217.459	61		40-135	1.27	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1291.073	65		40-135	1.27	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1087.282	54		40-135	1.06	1.070
13C-OCDD	4000	1650.005	41		40-135	0.90	1.139
13C-2,3,7,8-TCDF	2000	975.663	49		40-135	0.77	0.990
13C-1,2,3,7,8-PeCDF	2000	1325.131	66		40-135	1.55	1.186
13C-2,3,4,7,8-PeCDF	2000	1361.824	68		40-135	1.55	1.226
13C-1,2,3,4,7,8-HxCDF	2000	1152.948	58		40-135	0.51	0.968
13C-1,2,3,6,7,8-HxCDF	2000	1069.573	53		40-135	0.51	0.971
13C-1,2,3,7,8,9-HxCDF	2000	1266.567	63		40-135	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1105.365	55		40-135	0.51	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	977.924	49		40-135	0.43	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1263.897	63		40-135	0.43	1.082
37Cl-2,3,7,8-TCDD	800	407.236	51		40-135	NA	1.030

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-3-190813
Lab Code: E1900593-003

Service Request: E1900593
Date Collected: 08/13/19 09:04
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.749	1.50	1	1	
1,2,3,7,8-PeCDD	ND	0.440	2.50	1	1	
1,2,3,4,7,8-HxCDD	ND	0.892	2.50	1	0.1	
1,2,3,6,7,8-HxCDD	ND	0.810	2.50	1	0.1	
1,2,3,7,8,9-HxCDD	ND	0.863	2.50	1	0.1	
1,2,3,4,6,7,8-HpCDD	8.40	1.70	2.50	1	0.01	0.0840
OCDD	687	2.58	5.01	1	0.0003	0.206
2,3,7,8-TCDF	ND	0.451	1.50	1	0.1	
1,2,3,7,8-PeCDF	ND	0.155	2.50	1	0.03	
2,3,4,7,8-PeCDF	ND	0.156	2.50	1	0.3	
1,2,3,4,7,8-HxCDF	0.340	0.247	2.50	1	0.1	0.0340
1,2,3,6,7,8-HxCDF	ND	0.269	2.50	1	0.1	
1,2,3,7,8,9-HxCDF	ND	0.328	2.50	1	0.1	
2,3,4,6,7,8-HxCDF	ND	0.291	2.50	1	0.1	
1,2,3,4,6,7,8-HpCDF	2.19	0.182	2.50	1	0.01	0.0219
1,2,3,4,7,8,9-HpCDF	0.399	0.204	2.50	1	0.01	0.00399
OCDF	50.6	0.745	5.01	1	0.0003	0.0152
Total TEQ						0.365

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-3-190813
Lab Code: E1900593-003

Service Request: E1900593
Date Collected: 08/13/19 09:04
Date Received: 08/14/19 12:00
Units: Percent
Basis: As Received

Total Solids

Analysis Method: ALS SOP
5.387g

Date Analyzed: 08/15/19 09:10
NA
E-Balance-01

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
Total Solids	93.2		-	-	-			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-4-190813
Lab Code: E1900593-004

Service Request: E1900593
Date Collected: 08/13/19 09:11
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.287g
Data File Name: P618638
ICAL Date: 08/01/19

Date Analyzed: 08/20/19 18:44
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618631

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.399	1.66	1.66			1
1,2,3,7,8-PeCDD	ND	U	0.391	1.66	2.76			1
1,2,3,4,7,8-HxCDD	ND	U	0.824	1.66	2.76			1
1,2,3,6,7,8-HxCDD	ND	U	0.761	1.66	2.76			1
1,2,3,7,8,9-HxCDD	ND	U	0.805	1.66	2.76			1
1,2,3,4,6,7,8-HpCDD	21.7		1.49	1.66	2.76	0.99	1.000	1
OCDD	2150		3.68	3.68	5.52	0.88	1.000	1
2,3,7,8-TCDF	ND	U	0.334	1.66	1.66			1
1,2,3,7,8-PeCDF	0.401J		0.143	1.66	2.76	1.38	1.001	1
2,3,4,7,8-PeCDF	0.258JK		0.154	1.66	2.76	0.79	1.001	1
1,2,3,4,7,8-HxCDF	1.67J		0.194	1.66	2.76	1.17	1.000	1
1,2,3,6,7,8-HxCDF	0.812J		0.203	1.66	2.76	1.13	1.000	1
1,2,3,7,8,9-HxCDF	0.457JK		0.205	1.66	2.76	0.92	1.000	1
2,3,4,6,7,8-HxCDF	0.501J		0.236	1.66	2.76	1.20	1.000	1
1,2,3,4,6,7,8-HpCDF	9.57B		0.222	1.66	2.76	0.96	1.000	1
1,2,3,4,7,8,9-HpCDF	1.81J		0.239	1.66	2.76	1.00	1.000	1
OCDF	143		0.708	3.31	5.52	0.87	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-4-190813
Lab Code: E1900593-004

Service Request: E1900593
Date Collected: 08/13/19 09:11
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.287g
Data File Name: P618638
ICAL Date: 08/01/19

Date Analyzed: 08/20/19 18:44
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618631

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.399	0.399	0.552			1
Total Penta-Dioxins	ND	U	0.391	1.66	2.76			1
Total Hexa-Dioxins	ND	U	0.795	4.97	4.97			1
Total Hepta-Dioxins	40.9		1.49	1.66	2.76	0.94		1
Total Tetra-Furans	ND	U	0.334	0.334	0.552			1
Total Penta-Furans	0.401J		0.148	3.31	3.31	1.38		1
Total Hexa-Furans	3.50J		0.209	6.63	6.63	1.42		1
Total Hepta-Furans	18.4		0.236	3.31	3.31	0.96		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-4-190813
Lab Code: E1900593-004

Service Request: E1900593
Date Collected: 08/13/19 09:11
Date Received: 08/14/19 12:00
Units: Percent
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.287g
Data File Name: P618638
ICAL Date: 08/01/19

Date Analyzed: 08/20/19 18:44
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618631

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1383.340	69		40-135	0.79	1.029
13C-1,2,3,7,8-PeCDD	2000	1643.452	82		40-135	1.57	1.239
13C-1,2,3,4,7,8-HxCDD	2000	1191.552	60		40-135	1.26	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1213.175	61		40-135	1.25	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	995.346	50		40-135	1.09	1.070
13C-OCDD	4000	1550.245	39	Y	40-135	0.91	1.139
13C-2,3,7,8-TCDF	2000	1212.286	61		40-135	0.76	0.990
13C-1,2,3,7,8-PeCDF	2000	1510.205	76		40-135	1.56	1.186
13C-2,3,4,7,8-PeCDF	2000	1450.346	73		40-135	1.56	1.226
13C-1,2,3,4,7,8-HxCDF	2000	1155.072	58		40-135	0.51	0.968
13C-1,2,3,6,7,8-HxCDF	2000	1018.504	51		40-135	0.52	0.971
13C-1,2,3,7,8,9-HxCDF	2000	1393.409	70		40-135	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	983.762	49		40-135	0.50	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	901.251	45		40-135	0.43	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1168.760	58		40-135	0.44	1.082
37Cl-2,3,7,8-TCDD	800	503.502	63		40-135	NA	1.030

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-4-190813
Lab Code: E1900593-004

Service Request: E1900593
Date Collected: 08/13/19 09:11
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.399	1.66	1	1	
1,2,3,7,8-PeCDD	ND	0.391	2.76	1	1	
1,2,3,4,7,8-HxCDD	ND	0.824	2.76	1	0.1	
1,2,3,6,7,8-HxCDD	ND	0.761	2.76	1	0.1	
1,2,3,7,8,9-HxCDD	ND	0.805	2.76	1	0.1	
1,2,3,4,6,7,8-HpCDD	21.7	1.49	2.76	1	0.01	0.217
OCDD	2150	3.68	5.52	1	0.0003	0.645
2,3,7,8-TCDF	ND	0.334	1.66	1	0.1	
1,2,3,7,8-PeCDF	0.401	0.143	2.76	1	0.03	0.0120
2,3,4,7,8-PeCDF	0.258	0.154	2.76	1	0.3	0.0774
1,2,3,4,7,8-HxCDF	1.67	0.194	2.76	1	0.1	0.167
1,2,3,6,7,8-HxCDF	0.812	0.203	2.76	1	0.1	0.0812
1,2,3,7,8,9-HxCDF	0.457	0.205	2.76	1	0.1	0.0457
2,3,4,6,7,8-HxCDF	0.501	0.236	2.76	1	0.1	0.0501
1,2,3,4,6,7,8-HpCDF	9.57	0.222	2.76	1	0.01	0.0957
1,2,3,4,7,8,9-HpCDF	1.81	0.239	2.76	1	0.01	0.0181
OCDF	143	0.708	5.52	1	0.0003	0.0429
Total TEQ						1.45

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-4-190813
Lab Code: E1900593-004

Service Request: E1900593
Date Collected: 08/13/19 09:11
Date Received: 08/14/19 12:00
Units: Percent
Basis: As Received

Total Solids

Analysis Method: ALS SOP
5.462g

Date Analyzed: 08/15/19 09:10
NA
E-Balance-01

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
Total Solids	88.0		-	-	-			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-5-190813
Lab Code: E1900593-005

Service Request: E1900593
Date Collected: 08/13/19 09:18
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.165g
Data File Name: P618695
ICAL Date: 08/01/19

Date Analyzed: 08/22/19 22:52
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618686

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	1.09	1.66	1.66			1
1,2,3,7,8-PeCDD	ND	U	0.238	1.66	2.77			1
1,2,3,4,7,8-HxCDD	0.355J		0.179	1.66	2.77	1.13	1.000	1
1,2,3,6,7,8-HxCDD	0.345J		0.164	1.66	2.77	1.29	1.000	1
1,2,3,7,8,9-HxCDD	0.512J		0.174	1.66	2.77	1.42	1.008	1
1,2,3,4,6,7,8-HpCDD	11.5B		0.332	1.66	2.77	0.97	1.000	1
OCDD	2200		2.24	3.32	5.54	0.88	1.000	1
2,3,7,8-TCDF	ND	U	0.988	1.66	1.66			1
1,2,3,7,8-PeCDF	ND	U	0.119	1.66	2.77			1
2,3,4,7,8-PeCDF	ND	U	0.0957	1.66	2.77			1
1,2,3,4,7,8-HxCDF	ND	U	0.251	1.66	2.77			1
1,2,3,6,7,8-HxCDF	ND	U	0.270	1.66	2.77			1
1,2,3,7,8,9-HxCDF	ND	U	0.333	1.66	2.77			1
2,3,4,6,7,8-HxCDF	ND	U	0.272	1.66	2.77			1
1,2,3,4,6,7,8-HpCDF	0.974BJ		0.106	1.66	2.77	1.14	1.000	1
1,2,3,4,7,8,9-HpCDF	0.126JK		0.111	1.66	2.77	1.63	1.000	1
OCDF	5.76B		0.317	3.32	5.54	0.81	1.004	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-5-190813
Lab Code: E1900593-005

Service Request: E1900593
Date Collected: 08/13/19 09:18
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.165g
Data File Name: P618695
ICAL Date: 08/01/19

Date Analyzed: 08/22/19 22:52
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618686

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	1.09	1.09	1.09			1
Total Penta-Dioxins	ND	U	0.238	1.66	2.77			1
Total Hexa-Dioxins	2.16J		0.172	4.99	4.99	1.26		1
Total Hepta-Dioxins	23.2		0.332	1.66	2.77	0.98		1
Total Tetra-Furans	ND	U	0.988	0.988	0.988			1
Total Penta-Furans	ND	U	0.107	3.32	3.32			1
Total Hexa-Furans	ND	U	0.279	6.65	6.65			1
Total Hepta-Furans	4.23		0.111	3.32	3.32	1.14		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil

Sample Name: BS-5-190813
Lab Code: E1900593-005

Service Request: E1900593
Date Collected: 08/13/19 09:18
Date Received: 08/14/19 12:00

Units: Percent
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.165g

Data File Name: P618695
ICAL Date: 08/01/19

Date Analyzed: 08/22/19 22:52
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618686

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	500.464	25	Y	40-135	0.75	1.030
13C-1,2,3,7,8-PeCDD	2000	1064.765	53		40-135	1.53	1.245
13C-1,2,3,4,7,8-HxCDD	2000	1142.467	57		40-135	1.22	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1193.719	60		40-135	1.29	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1110.275	56		40-135	1.03	1.071
13C-OCDD	4000	1920.676	48		40-135	0.87	1.140
13C-2,3,7,8-TCDF	2000	393.619	20	Y	40-135	0.77	0.990
13C-1,2,3,7,8-PeCDF	2000	768.014	38	Y	40-135	1.60	1.192
13C-2,3,4,7,8-PeCDF	2000	964.624	48		40-135	1.60	1.233
13C-1,2,3,4,7,8-HxCDF	2000	922.418	46		40-135	0.50	0.968
13C-1,2,3,6,7,8-HxCDF	2000	884.453	44		40-135	0.50	0.971
13C-1,2,3,7,8,9-HxCDF	2000	1034.132	52		40-135	0.52	1.008
13C-2,3,4,6,7,8-HxCDF	2000	977.103	49		40-135	0.51	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	906.308	45		40-135	0.43	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1192.799	60		40-135	0.44	1.083
37Cl-2,3,7,8-TCDD	800	176.718	22	Y	40-135	NA	1.031

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-5-190813
Lab Code: E1900593-005

Service Request: E1900593
Date Collected: 08/13/19 09:18
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	1.09	1.66	1	1	
1,2,3,7,8-PeCDD	ND	0.238	2.77	1	1	
1,2,3,4,7,8-HxCDD	0.355	0.179	2.77	1	0.1	0.0355
1,2,3,6,7,8-HxCDD	0.345	0.164	2.77	1	0.1	0.0345
1,2,3,7,8,9-HxCDD	0.512	0.174	2.77	1	0.1	0.0512
1,2,3,4,6,7,8-HpCDD	11.5	0.332	2.77	1	0.01	0.115
OCDD	2200	2.24	5.54	1	0.0003	0.660
2,3,7,8-TCDF	ND	0.988	1.66	1	0.1	
1,2,3,7,8-PeCDF	ND	0.119	2.77	1	0.03	
2,3,4,7,8-PeCDF	ND	0.0957	2.77	1	0.3	
1,2,3,4,7,8-HxCDF	ND	0.251	2.77	1	0.1	
1,2,3,6,7,8-HxCDF	ND	0.270	2.77	1	0.1	
1,2,3,7,8,9-HxCDF	ND	0.333	2.77	1	0.1	
2,3,4,6,7,8-HxCDF	ND	0.272	2.77	1	0.1	
1,2,3,4,6,7,8-HpCDF	0.974	0.106	2.77	1	0.01	0.00974
1,2,3,4,7,8,9-HpCDF	0.126	0.111	2.77	1	0.01	0.00126
OCDF	5.76	0.317	5.54	1	0.0003	0.00173
Total TEQ						0.909

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-5-190813
Lab Code: E1900593-005

Service Request: E1900593
Date Collected: 08/13/19 09:18
Date Received: 08/14/19 12:00
Units: Percent
Basis: As Received

Total Solids

Analysis Method: ALS SOP
5.351g

Date Analyzed: 08/15/19 09:10
NA
E-Balance-01

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
Total Solids	88.8		-	-	-			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-6-190813
Lab Code: E1900593-006

Service Request: E1900593
Date Collected: 08/13/19 09:24
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.227g
Data File Name: P618640
ICAL Date: 08/01/19

Date Analyzed: 08/20/19 20:23
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618631

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.751	1.68	1.68			1
1,2,3,7,8-PeCDD	ND	U	0.642	1.68	2.80			1
1,2,3,4,7,8-HxCDD	ND	U	1.55	1.68	2.80			1
1,2,3,6,7,8-HxCDD	ND	U	1.42	1.68	2.80			1
1,2,3,7,8,9-HxCDD	ND	U	1.51	1.68	2.80			1
1,2,3,4,6,7,8-HpCDD	34.2		1.99	1.99	2.80	0.96	1.000	1
OCDD	10300E		10.4	10.4	10.4	0.87	1.000	1
2,3,7,8-TCDF	ND	U	0.726	1.68	1.68			1
1,2,3,7,8-PeCDF	ND	U	0.147	1.68	2.80			1
2,3,4,7,8-PeCDF	ND	U	0.152	1.68	2.80			1
1,2,3,4,7,8-HxCDF	ND	U	0.184	1.68	2.80			1
1,2,3,6,7,8-HxCDF	ND	U	0.203	1.68	2.80			1
1,2,3,7,8,9-HxCDF	ND	U	0.267	1.68	2.80			1
2,3,4,6,7,8-HxCDF	ND	U	0.234	1.68	2.80			1
1,2,3,4,6,7,8-HpCDF	0.636BJK		0.147	1.68	2.80	0.86	1.000	1
1,2,3,4,7,8,9-HpCDF	0.225J		0.171	1.68	2.80	1.03	1.000	1
OCDF	2.71BJK		0.672	3.36	5.59	0.57	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-6-190813
Lab Code: E1900593-006

Service Request: E1900593
Date Collected: 08/13/19 09:24
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.227g
Data File Name: P618640
ICAL Date: 08/01/19

Date Analyzed: 08/20/19 20:23
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618631

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.751	0.751	0.751			1
Total Penta-Dioxins	ND	U	0.642	1.68	2.80			1
Total Hexa-Dioxins	2.28J		1.49	5.03	5.03	1.23		1
Total Hepta-Dioxins	76.0		1.99	1.99	2.80	1.06		1
Total Tetra-Furans	ND	U	0.726	0.726	0.726			1
Total Penta-Furans	ND	U	0.149	3.36	3.36			1
Total Hexa-Furans	ND	U	0.219	6.71	6.71			1
Total Hepta-Furans	1.82J		0.163	3.36	3.36	1.00		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil

Sample Name: BS-6-190813
Lab Code: E1900593-006

Service Request: E1900593
Date Collected: 08/13/19 09:24
Date Received: 08/14/19 12:00

Units: Percent
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.227g

Data File Name: P618640
ICAL Date: 08/01/19

Date Analyzed: 08/20/19 20:23
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618631

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1141.160	57		40-135	0.78	1.029
13C-1,2,3,7,8-PeCDD	2000	1541.501	77		40-135	1.59	1.238
13C-1,2,3,4,7,8-HxCDD	2000	1264.667	63		40-135	1.28	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1346.848	67		40-135	1.29	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1124.329	56		40-135	1.06	1.070
13C-OCDD	4000	1794.616	45		40-135	0.91	1.139
13C-2,3,7,8-TCDF	2000	1031.340	52		40-135	0.77	0.990
13C-1,2,3,7,8-PeCDF	2000	1376.432	69		40-135	1.56	1.186
13C-2,3,4,7,8-PeCDF	2000	1407.028	70		40-135	1.58	1.226
13C-1,2,3,4,7,8-HxCDF	2000	1198.457	60		40-135	0.52	0.968
13C-1,2,3,6,7,8-HxCDF	2000	1114.224	56		40-135	0.52	0.971
13C-1,2,3,7,8,9-HxCDF	2000	1206.020	60		40-135	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1089.356	54		40-135	0.49	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1041.328	52		40-135	0.43	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1278.770	64		40-135	0.44	1.082
37Cl-2,3,7,8-TCDD	800	420.363	53		40-135	NA	1.029

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-6-190813
Lab Code: E1900593-006

Service Request: E1900593
Date Collected: 08/13/19 09:24
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.751	1.68	1	1	
1,2,3,7,8-PeCDD	ND	0.642	2.80	1	1	
1,2,3,4,7,8-HxCDD	ND	1.55	2.80	1	0.1	
1,2,3,6,7,8-HxCDD	ND	1.42	2.80	1	0.1	
1,2,3,7,8,9-HxCDD	ND	1.51	2.80	1	0.1	
1,2,3,4,6,7,8-HpCDD	34.2	1.99	2.80	1	0.01	0.342
OCDD	10300	10.4	10.4	1	0.0003	3.09
2,3,7,8-TCDF	ND	0.726	1.68	1	0.1	
1,2,3,7,8-PeCDF	ND	0.147	2.80	1	0.03	
2,3,4,7,8-PeCDF	ND	0.152	2.80	1	0.3	
1,2,3,4,7,8-HxCDF	ND	0.184	2.80	1	0.1	
1,2,3,6,7,8-HxCDF	ND	0.203	2.80	1	0.1	
1,2,3,7,8,9-HxCDF	ND	0.267	2.80	1	0.1	
2,3,4,6,7,8-HxCDF	ND	0.234	2.80	1	0.1	
1,2,3,4,6,7,8-HpCDF	0.636	0.147	2.80	1	0.01	0.00636
1,2,3,4,7,8,9-HpCDF	0.225	0.171	2.80	1	0.01	0.00225
OCDF	2.71	0.672	5.59	1	0.0003	0.000813
Total TEQ						3.44

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-6-190813
Lab Code: E1900593-006

Service Request: E1900593
Date Collected: 08/13/19 09:24
Date Received: 08/14/19 12:00
Units: Percent
Basis: As Received

Total Solids

Analysis Method: ALS SOP
5.302g

Date Analyzed: 08/15/19 09:10
NA
E-Balance-01

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
Total Solids	87.4		-	-	-			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-7-190813
Lab Code: E1900593-007

Service Request: E1900593
Date Collected: 08/13/19 09:30
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.078g
Data File Name: P618641
ICAL Date: 08/01/19

Date Analyzed: 08/20/19 21:12
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618631

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.893	1.64	1.64			1
1,2,3,7,8-PeCDD	ND	U	0.813	1.64	2.74			1
1,2,3,4,7,8-HxCDD	ND	U	1.06	1.64	2.74			1
1,2,3,6,7,8-HxCDD	ND	U	0.995	1.64	2.74			1
1,2,3,7,8,9-HxCDD	ND	U	1.05	1.64	2.74			1
1,2,3,4,6,7,8-HpCDD	31.4		2.11	2.11	2.74	0.93	1.000	1
OCDD	3040		4.82	4.82	5.48	0.89	1.000	1
2,3,7,8-TCDF	ND	U	0.678	1.64	1.64			1
1,2,3,7,8-PeCDF	ND	U	0.217	1.64	2.74			1
2,3,4,7,8-PeCDF	ND	U	0.211	1.64	2.74			1
1,2,3,4,7,8-HxCDF	ND	U	0.245	1.64	2.74			1
1,2,3,6,7,8-HxCDF	0.475JK		0.264	1.64	2.74	0.98	1.000	1
1,2,3,7,8,9-HxCDF	ND	U	0.304	1.64	2.74			1
2,3,4,6,7,8-HxCDF	ND	U	0.280	1.64	2.74			1
1,2,3,4,6,7,8-HpCDF	3.47B		0.215	1.64	2.74	1.03	1.000	1
1,2,3,4,7,8,9-HpCDF	0.453J		0.236	1.64	2.74	1.05	1.000	1
OCDF	23.7B		0.732	3.29	5.48	0.86	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-7-190813
Lab Code: E1900593-007

Service Request: E1900593
Date Collected: 08/13/19 09:30
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.078g
Data File Name: P618641
ICAL Date: 08/01/19

Date Analyzed: 08/20/19 21:12
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618631

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.893	0.893	0.893			1
Total Penta-Dioxins	ND	U	0.813	1.64	2.74			1
Total Hexa-Dioxins	1.74J		1.03	4.93	4.93	1.13		1
Total Hepta-Dioxins	60.8		2.11	2.11	2.74	1.02		1
Total Tetra-Furans	ND	U	0.678	0.678	0.678			1
Total Penta-Furans	ND	U	0.214	3.29	3.29			1
Total Hexa-Furans	2.17J		0.272	6.58	6.58	1.41		1
Total Hepta-Furans	15.6		0.231	3.29	3.29	1.03		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-7-190813
Lab Code: E1900593-007

Service Request: E1900593
Date Collected: 08/13/19 09:30
Date Received: 08/14/19 12:00
Units: Percent
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.078g
Data File Name: P618641
ICAL Date: 08/01/19

Date Analyzed: 08/20/19 21:12
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618631

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	776.218	39	Y	40-135	0.76	1.029
13C-1,2,3,7,8-PeCDD	2000	1327.734	66		40-135	1.56	1.238
13C-1,2,3,4,7,8-HxCDD	2000	1083.879	54		40-135	1.29	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1209.905	60		40-135	1.28	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	989.499	49		40-135	1.08	1.071
13C-OCDD	4000	1577.404	39	Y	40-135	0.89	1.140
13C-2,3,7,8-TCDF	2000	612.280	31	Y	40-135	0.74	0.990
13C-1,2,3,7,8-PeCDF	2000	1076.069	54		40-135	1.57	1.186
13C-2,3,4,7,8-PeCDF	2000	1196.226	60		40-135	1.56	1.226
13C-1,2,3,4,7,8-HxCDF	2000	1041.728	52		40-135	0.51	0.969
13C-1,2,3,6,7,8-HxCDF	2000	954.447	48		40-135	0.51	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1190.157	60		40-135	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1014.022	51		40-135	0.51	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	908.313	45		40-135	0.43	1.046
13C-1,2,3,4,7,8,9-HpCDF	2000	1155.927	58		40-135	0.43	1.083
37Cl-2,3,7,8-TCDD	800	280.840	35	Y	40-135	NA	1.029

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-7-190813
Lab Code: E1900593-007

Service Request: E1900593
Date Collected: 08/13/19 09:30
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.893	1.64	1	1	
1,2,3,7,8-PeCDD	ND	0.813	2.74	1	1	
1,2,3,4,7,8-HxCDD	ND	1.06	2.74	1	0.1	
1,2,3,6,7,8-HxCDD	ND	0.995	2.74	1	0.1	
1,2,3,7,8,9-HxCDD	ND	1.05	2.74	1	0.1	
1,2,3,4,6,7,8-HpCDD	31.4	2.11	2.74	1	0.01	0.314
OCDD	3040	4.82	5.48	1	0.0003	0.912
2,3,7,8-TCDF	ND	0.678	1.64	1	0.1	
1,2,3,7,8-PeCDF	ND	0.217	2.74	1	0.03	
2,3,4,7,8-PeCDF	ND	0.211	2.74	1	0.3	
1,2,3,4,7,8-HxCDF	ND	0.245	2.74	1	0.1	
1,2,3,6,7,8-HxCDF	0.475	0.264	2.74	1	0.1	0.0475
1,2,3,7,8,9-HxCDF	ND	0.304	2.74	1	0.1	
2,3,4,6,7,8-HxCDF	ND	0.280	2.74	1	0.1	
1,2,3,4,6,7,8-HpCDF	3.47	0.215	2.74	1	0.01	0.0347
1,2,3,4,7,8,9-HpCDF	0.453	0.236	2.74	1	0.01	0.00453
OCDF	23.7	0.732	5.48	1	0.0003	0.00711
Total TEQ						1.32

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-7-190813
Lab Code: E1900593-007

Service Request: E1900593
Date Collected: 08/13/19 09:30
Date Received: 08/14/19 12:00
Units: Percent
Basis: As Received

Total Solids

Analysis Method: ALS SOP
5.399g

Date Analyzed: 08/15/19 09:10
NA
E-Balance-01

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
Total Solids	90.5		-	-	-			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-8-190813
Lab Code: E1900593-008

Service Request: E1900593
Date Collected: 08/13/19 09:39
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.768g
Data File Name: P618646
ICAL Date: 08/01/19

Date Analyzed: 08/21/19 01:32
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618643

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.398	1.50	1.50			1
1,2,3,7,8-PeCDD	ND	U	0.422	1.50	2.46			1
1,2,3,4,7,8-HxCDD	ND	U	0.698	1.50	2.46			1
1,2,3,6,7,8-HxCDD	0.812J		0.632	1.50	2.46	1.31	1.000	1
1,2,3,7,8,9-HxCDD	ND	U	0.675	1.50	2.46			1
1,2,3,4,6,7,8-HpCDD	20.0		1.11	1.50	2.46	1.03	1.000	1
OCDD	2690		1.91	3.00	4.91	0.88	1.000	1
2,3,7,8-TCDF	ND	U	0.344	1.50	1.50			1
1,2,3,7,8-PeCDF	ND	U	0.103	1.50	2.46			1
2,3,4,7,8-PeCDF	ND	U	0.104	1.50	2.46			1
1,2,3,4,7,8-HxCDF	0.194JK		0.113	1.50	2.46	0.96	1.000	1
1,2,3,6,7,8-HxCDF	0.159JK		0.112	1.50	2.46	1.55	1.000	1
1,2,3,7,8,9-HxCDF	0.174JK		0.135	1.50	2.46	0.65	1.001	1
2,3,4,6,7,8-HxCDF	0.222J		0.132	1.50	2.46	1.31	1.000	1
1,2,3,4,6,7,8-HpCDF	1.72BJ		0.139	1.50	2.46	0.95	1.000	1
1,2,3,4,7,8,9-HpCDF	0.270J		0.151	1.50	2.46	1.06	1.000	1
OCDF	7.61B		0.346	3.00	4.91	0.80	1.004	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-8-190813
Lab Code: E1900593-008

Service Request: E1900593
Date Collected: 08/13/19 09:39
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.768g
Data File Name: P618646
ICAL Date: 08/01/19

Date Analyzed: 08/21/19 01:32
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618643

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.398	0.398	0.491			1
Total Penta-Dioxins	ND	U	0.422	1.50	2.46			1
Total Hexa-Dioxins	0.812J		0.667	4.50	4.50	1.31		1
Total Hepta-Dioxins	40.5		1.11	1.50	2.46	1.02		1
Total Tetra-Furans	ND	U	0.344	0.344	0.491			1
Total Penta-Furans	0.246J		0.104	3.00	3.00	1.59		1
Total Hexa-Furans	0.222J		0.123	6.00	6.00	1.31		1
Total Hepta-Furans	6.40		0.148	3.00	3.00	0.95		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-8-190813
Lab Code: E1900593-008

Service Request: E1900593
Date Collected: 08/13/19 09:39
Date Received: 08/14/19 12:00
Units: Percent
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.768g
Data File Name: P618646
ICAL Date: 08/01/19

Date Analyzed: 08/21/19 01:32
Date Extracted: 8/14/19
Instrument Name: E-HRMS-08
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P618643

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1124.798	56		40-135	0.79	1.029
13C-1,2,3,7,8-PeCDD	2000	1600.049	80		40-135	1.56	1.239
13C-1,2,3,4,7,8-HxCDD	2000	1244.433	62		40-135	1.26	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1299.316	65		40-135	1.24	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1106.456	55		40-135	1.04	1.070
13C-OCDD	4000	1661.680	42		40-135	0.90	1.140
13C-2,3,7,8-TCDF	2000	1029.622	51		40-135	0.79	0.990
13C-1,2,3,7,8-PeCDF	2000	1375.878	69		40-135	1.53	1.186
13C-2,3,4,7,8-PeCDF	2000	1448.595	72		40-135	1.58	1.227
13C-1,2,3,4,7,8-HxCDF	2000	1086.334	54		40-135	0.50	0.968
13C-1,2,3,6,7,8-HxCDF	2000	1061.948	53		40-135	0.51	0.971
13C-1,2,3,7,8,9-HxCDF	2000	1320.720	66		40-135	0.50	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1052.408	53		40-135	0.51	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	968.795	48		40-135	0.43	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1292.583	65		40-135	0.43	1.082
37Cl-2,3,7,8-TCDD	800	434.750	54		40-135	NA	1.030

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-8-190813
Lab Code: E1900593-008

Service Request: E1900593
Date Collected: 08/13/19 09:39
Date Received: 08/14/19 12:00
Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.398	1.50	1	1	
1,2,3,7,8-PeCDD	ND	0.422	2.46	1	1	
1,2,3,4,7,8-HxCDD	ND	0.698	2.46	1	0.1	
1,2,3,6,7,8-HxCDD	0.812	0.632	2.46	1	0.1	0.0812
1,2,3,7,8,9-HxCDD	ND	0.675	2.46	1	0.1	
1,2,3,4,6,7,8-HpCDD	20.0	1.11	2.46	1	0.01	0.200
OCDD	2690	1.91	4.91	1	0.0003	0.807
2,3,7,8-TCDF	ND	0.344	1.50	1	0.1	
1,2,3,7,8-PeCDF	ND	0.103	2.46	1	0.03	
2,3,4,7,8-PeCDF	ND	0.104	2.46	1	0.3	
1,2,3,4,7,8-HxCDF	0.194	0.113	2.46	1	0.1	0.0194
1,2,3,6,7,8-HxCDF	0.159	0.112	2.46	1	0.1	0.0159
1,2,3,7,8,9-HxCDF	0.174	0.135	2.46	1	0.1	0.0174
2,3,4,6,7,8-HxCDF	0.222	0.132	2.46	1	0.1	0.0222
1,2,3,4,6,7,8-HpCDF	1.72	0.139	2.46	1	0.01	0.0172
1,2,3,4,7,8,9-HpCDF	0.270	0.151	2.46	1	0.01	0.00270
OCDF	7.61	0.346	4.91	1	0.0003	0.00228
Total TEQ						1.19

2005 WHO TEFs, ND = 0

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil
Sample Name: BS-8-190813
Lab Code: E1900593-008

Service Request: E1900593
Date Collected: 08/13/19 09:39
Date Received: 08/14/19 12:00
Units: Percent
Basis: As Received

Total Solids

Analysis Method: ALS SOP
5.514g

Date Analyzed: 08/15/19 09:10
NA
E-Balance-01

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
Total Solids	94.5		-	-	-			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil

Service Request: E1900593
Date Collected: NA
Date Received: NA

Sample Name: Method Blank
Lab Code: EQ1900282-01

Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.712g

Data File Name: P523637
ICAL Date: 04/25/19

Date Analyzed: 08/16/19 12:15
Date Extracted: 8/14/19
Instrument Name: E-HRMS-07
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P523635

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.512	1.50	1.50			1
1,2,3,7,8-PeCDD	0.489JK		0.192	1.50	2.33	1.17	1.000	1
1,2,3,4,7,8-HxCDD	0.415JK		0.143	1.50	2.33	0.82	1.000	1
1,2,3,6,7,8-HxCDD	0.340JK		0.127	1.50	2.33	0.76	1.000	1
1,2,3,7,8,9-HxCDD	0.355JK		0.131	1.50	2.33	1.61	1.007	1
1,2,3,4,6,7,8-HpCDD	1.81J		0.188	1.50	2.33	0.89	1.000	1
OCDD	17.6		0.331	3.00	4.67	0.87	1.000	1
2,3,7,8-TCDF	ND	U	0.332	1.50	1.50			1
1,2,3,7,8-PeCDF	0.380JK		0.143	1.50	2.33	1.00	1.001	1
2,3,4,7,8-PeCDF	0.512J		0.156	1.50	2.33	1.36	1.000	1
1,2,3,4,7,8-HxCDF	0.412JK		0.150	1.50	2.33	1.55	1.000	1
1,2,3,6,7,8-HxCDF	0.343JK		0.161	1.50	2.33	1.03	1.000	1
1,2,3,7,8,9-HxCDF	0.606JK		0.216	1.50	2.33	0.86	1.000	1
2,3,4,6,7,8-HxCDF	0.502J		0.178	1.50	2.33	1.19	1.000	1
1,2,3,4,6,7,8-HpCDF	2.19J		0.0984	1.50	2.33	0.99	1.000	1
1,2,3,4,7,8,9-HpCDF	0.729JK		0.131	1.50	2.33	1.28	1.000	1
OCDF	12.8		0.460	3.00	4.67	0.93	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil

Service Request: E1900593
Date Collected: NA
Date Received: NA

Sample Name: Method Blank
Lab Code: EQ1900282-01

Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.712g

Date Analyzed: 08/16/19 12:15
Date Extracted: 8/14/19
Instrument Name: E-HRMS-07
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P523635

Data File Name: P523637
ICAL Date: 04/25/19

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.512	0.512	0.512			1
Total Penta-Dioxins	ND	U	0.192	1.50	2.33			1
Total Hexa-Dioxins	0.186J		0.133	4.50	4.50	1.36		1
Total Hepta-Dioxins	3.60		0.188	1.50	2.33	1.16		1
Total Tetra-Furans	ND	U	0.332	0.332	0.467			1
Total Penta-Furans	0.512J		0.149	3.00	3.00	1.36		1
Total Hexa-Furans	0.502J		0.173	6.00	6.00	1.19		1
Total Hepta-Furans	3.34		0.113	3.00	3.00	0.99		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil

Service Request: E1900593
Date Collected: NA
Date Received: NA

Sample Name: Method Blank
Lab Code: EQ1900282-01

Units: Percent
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.712g

Date Analyzed: 08/16/19 12:15
Date Extracted: 8/14/19
Instrument Name: E-HRMS-07
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P523635

Data File Name: P523637
ICAL Date: 04/25/19

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	587.056	29	Y	40-135	0.79	1.021
13C-1,2,3,7,8-PeCDD	2000	633.806	32	Y	40-135	1.59	1.182
13C-1,2,3,4,7,8-HxCDD	2000	679.454	34	Y	40-135	1.28	0.991
13C-1,2,3,6,7,8-HxCDD	2000	781.905	39	Y	40-135	1.28	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	566.092	28	Y	40-135	1.08	1.066
13C-OCDD	4000	794.767	20	Y	40-135	0.90	1.141
13C-2,3,7,8-TCDF	2000	512.804	26	Y	40-135	0.79	0.993
13C-1,2,3,7,8-PeCDF	2000	599.108	30	Y	40-135	1.60	1.140
13C-2,3,4,7,8-PeCDF	2000	577.050	29	Y	40-135	1.57	1.173
13C-1,2,3,4,7,8-HxCDF	2000	710.643	36	Y	40-135	0.51	0.972
13C-1,2,3,6,7,8-HxCDF	2000	653.397	33	Y	40-135	0.52	0.974
13C-1,2,3,7,8,9-HxCDF	2000	616.063	31	Y	40-135	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	635.568	32	Y	40-135	0.52	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	537.982	27	Y	40-135	0.44	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	593.264	30	Y	40-135	0.44	1.079
37Cl-2,3,7,8-TCDD	800	238.687	30	Y	40-135	NA	1.021



Accuracy & Precision

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil

Service Request: E1900593
Date Analyzed: 08/16/19
Date Extracted: 08/14/19

Lab Control Sample Summary

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method

Units: ng/Kg
Basis: Dry
Analysis Lot: 648329

Lab Control Sample

EQ1900282-02

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
1,2,3,4,6,7,8-HpCDD	117	99.4	118	76-125
1,2,3,4,7,8-HxCDD	102	99.4	103	72-131
1,2,3,6,7,8-HxCDD	86.8	99.4	87	74-134
1,2,3,7,8,9-HxCDD	90.0	99.4	91	71-138
1,2,3,7,8-PeCDD	93.0	99.4	94	74-125
2,3,7,8-TCDD	18.3	19.9	92	70-128
OCDD	353	199	177 *	73-135
1,2,3,4,6,7,8-HpCDF	102	99.4	102	73-135
1,2,3,4,7,8,9-HpCDF	99.8	99.4	100	72-131
1,2,3,4,7,8-HxCDF	90.9	99.4	91	77-130
1,2,3,6,7,8-HxCDF	95.0	99.4	96	73-134
1,2,3,7,8,9-HxCDF	91.4	99.4	92	74-135
1,2,3,7,8-PeCDF	89.1	99.4	90	77-131
2,3,4,6,7,8-HxCDF	93.2	99.4	94	74-133
2,3,4,7,8-PeCDF	98.7	99.4	99	75-128
2,3,7,8-TCDF	18.2	19.9	92	75-135
OCDF	217	199	109	66-144

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil

Service Request: E1900593
Date Collected: NA
Date Received: NA

Sample Name: Lab Control Sample
Lab Code: EQ1900282-02

Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.058g

Data File Name: P523642
ICAL Date: 04/25/19

Date Analyzed: 08/16/19 16:21
Date Extracted: 8/14/19
Instrument Name: E-HRMS-07
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P523635

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	18.3		0.643	1.50	1.50	0.81	1.001	1
1,2,3,7,8-PeCDD	93.0		0.595	1.50	2.49	1.58	1.000	1
1,2,3,4,7,8-HxCDD	102		0.924	1.50	2.49	1.22	1.000	1
1,2,3,6,7,8-HxCDD	86.8		0.848	1.50	2.49	1.22	1.000	1
1,2,3,7,8,9-HxCDD	90.0		0.863	1.50	2.49	1.29	1.007	1
1,2,3,4,6,7,8-HpCDD	117		1.28	1.50	2.49	1.08	1.000	1
OCDD	353		1.22	3.00	4.97	0.87	1.000	1
2,3,7,8-TCDF	18.2		0.492	1.50	1.50	0.70	1.001	1
1,2,3,7,8-PeCDF	89.1		0.523	1.50	2.49	1.49	1.001	1
2,3,4,7,8-PeCDF	98.7		0.538	1.50	2.49	1.50	1.000	1
1,2,3,4,7,8-HxCDF	90.9		3.04	3.04	3.04	1.21	1.000	1
1,2,3,6,7,8-HxCDF	95.0		3.19	3.19	3.19	1.18	1.000	1
1,2,3,7,8,9-HxCDF	91.4		3.94	3.94	3.94	1.22	1.000	1
2,3,4,6,7,8-HxCDF	93.2		3.38	3.38	3.38	1.17	1.000	1
1,2,3,4,6,7,8-HpCDF	102		1.73	1.73	2.49	1.00	1.000	1
1,2,3,4,7,8,9-HpCDF	99.8		2.11	2.11	2.49	0.98	1.000	1
OCDF	217		1.87	3.00	4.97	0.85	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil

Service Request: E1900593
Date Collected: NA
Date Received: NA

Sample Name: Lab Control Sample
Lab Code: EQ1900282-02

Units: ng/Kg
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.058g

Date Analyzed: 08/16/19 16:21
Date Extracted: 8/14/19
Instrument Name: E-HRMS-07
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P523635

Data File Name: P523642
ICAL Date: 04/25/19

Native Analyte Results

Analyte Name	Result	Q	EDL	LOD	LOQ	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	18.3		0.643	0.643	0.643	0.81		1
Total Penta-Dioxins	93.0		0.595	1.50	2.49	1.58		1
Total Hexa-Dioxins	279		0.877	4.50	4.50	1.22		1
Total Hepta-Dioxins	131		1.28	1.50	2.49	1.05		1
Total Tetra-Furans	18.2		0.492	0.492	0.497	0.70		1
Total Penta-Furans	188		0.531	3.00	3.00	1.49		1
Total Hexa-Furans	370		3.36	6.00	6.00	1.21		1
Total Hepta-Furans	201		1.90	3.00	3.00	1.00		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: HS19080691
Sample Matrix: Soil

Service Request: E1900593
Date Collected: NA
Date Received: NA

Sample Name: Lab Control Sample
Lab Code: EQ1900282-02

Units: Percent
Basis: Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290
Prep Method: Method
Sample Amount: 10.058g

Date Analyzed: 08/16/19 16:21
Date Extracted: 8/14/19
Instrument Name: E-HRMS-07
GC Column: DB-5MSUI
Blank File Name: P523637
Cal Ver. File Name: P523635

Data File Name: P523642
ICAL Date: 04/25/19

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	383.508	19	Y	40-135	0.79	1.021
13C-1,2,3,7,8-PeCDD	2000	549.393	27	Y	40-135	1.57	1.182
13C-1,2,3,4,7,8-HxCDD	2000	566.191	28	Y	40-135	1.36	0.991
13C-1,2,3,6,7,8-HxCDD	2000	649.675	32	Y	40-135	1.22	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	535.215	27	Y	40-135	1.07	1.066
13C-OCDD	4000	807.468	20	Y	40-135	0.89	1.141
13C-2,3,7,8-TCDF	2000	329.647	16	Y	40-135	0.80	0.993
13C-1,2,3,7,8-PeCDF	2000	483.897	24	Y	40-135	1.58	1.140
13C-2,3,4,7,8-PeCDF	2000	494.269	25	Y	40-135	1.56	1.173
13C-1,2,3,4,7,8-HxCDF	2000	562.233	28	Y	40-135	0.51	0.971
13C-1,2,3,6,7,8-HxCDF	2000	531.185	27	Y	40-135	0.52	0.974
13C-1,2,3,7,8,9-HxCDF	2000	543.326	27	Y	40-135	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	536.992	27	Y	40-135	0.52	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	487.101	24	Y	40-135	0.44	1.041
13C-1,2,3,4,7,8,9-HpCDF	2000	566.227	28	Y	40-135	0.44	1.079
37Cl-2,3,7,8-TCDD	800	150.998	19	Y	40-135	NA	1.021



Chromatograms and Selected Ion Monitoring

ALS Environmental - Houston HRMS
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ALS ENVIRONMENTAL

Sample Response Summary

CLIENT ID.
BS-1-190813

Run #15 Filename P618694 Samp: 1 Inj: 1 Acquired: 22-AUG-19 22:02:58
Processed: 23-AUG-19 09:00:44 Sample ID: E1900593-001

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	NotFnd	*	*	*	no	yes	0.873
2 Unk	1,2,3,7,8-PeCDF	NotFnd	*	*	*	no	no	0.864
3 Unk	2,3,4,7,8-PeCDF	NotFnd	*	*	*	no	no	0.825
4 Unk	1,2,3,4,7,8-HxCDF	NotFnd	*	*	*	no	no	1.084
5 Unk	1,2,3,6,7,8-HxCDF	NotFnd	*	*	*	no	no	0.994
6 Unk	2,3,4,6,7,8-HxCDF	NotFnd	*	*	*	no	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	NotFnd	*	*	*	no	no	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	37:00	8.251e+01	7.893e+01	1.05	yes	no	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	38:20	1.069e+01	9.660e+00	1.11	yes	no	1.104
10 Unk	OCDF	40:31	3.256e+02	4.269e+02	0.76	yes	no	0.993
11 Unk	2,3,7,8-TCDD	NotFnd	*	*	*	no	yes	0.989
12 Unk	1,2,3,7,8-PeCDD	31:40	2.181e+01	1.526e+01	1.43	yes	no	0.954
13 Unk	1,2,3,4,7,8-HxCDD	35:04	2.942e+01	2.357e+01	1.25	yes	no	1.020
14 Unk	1,2,3,6,7,8-HxCDD	35:10	5.849e+01	4.034e+01	1.45	no	no	1.030
15 Unk	1,2,3,7,8,9-HxCDD	35:24	3.791e+01	3.079e+01	1.23	yes	no	1.007
16 Unk	1,2,3,4,6,7,8-HpCDD	37:55	2.021e+03	1.875e+03	1.08	yes	no	0.922
17 Unk	OCDD	40:21	1.255e+05	1.425e+05	0.88	yes	no	1.062
18 IS	13C-2,3,7,8-TCDF	25:10	7.877e+03	9.811e+03	0.80	yes	no	1.102
19 IS	13C-1,2,3,7,8-PeCDF	30:18	1.869e+04	1.208e+04	1.55	yes	no	1.074
20 IS	13C-2,3,4,7,8-PeCDF	31:22	1.869e+04	1.184e+04	1.58	yes	no	1.005
21 IS	13C-1,2,3,4,7,8-HxCDF	34:15	9.317e+03	1.801e+04	0.52	yes	no	1.059
22 IS	13C-1,2,3,6,7,8-HxCDF	34:22	1.044e+04	1.994e+04	0.52	yes	no	1.264
23 IS	13C-2,3,4,6,7,8-HxCDF	34:55	8.773e+03	1.733e+04	0.51	yes	no	1.066
24 IS	13C-1,2,3,7,8,9-HxCDF	35:41	6.905e+03	1.376e+04	0.50	yes	no	0.801
25 IS	13C-1,2,3,4,6,7,8-HpCDF	37:00	5.728e+03	1.341e+04	0.43	yes	no	0.789
26 IS	13C-1,2,3,4,7,8,9-HpCDF	38:20	5.400e+03	1.238e+04	0.44	yes	no	0.590
27 IS	13C-2,3,7,8-TCDD	26:11	7.418e+03	9.928e+03	0.75	yes	no	0.839
28 IS	13C-1,2,3,7,8-PeCDD	31:40	1.574e+04	9.932e+03	1.58	yes	no	0.744
29 IS	13C-1,2,3,4,7,8-HxCDD	35:03	1.382e+04	1.089e+04	1.27	yes	no	0.907
30 IS	13C-1,2,3,6,7,8-HxCDD	35:09	1.655e+04	1.367e+04	1.21	yes	no	0.978
31 IS	13C-1,2,3,4,6,7,8-HpCDD	37:54	1.211e+04	1.159e+04	1.04	yes	no	0.814
32 IS	13C-OCDD	40:21	1.537e+04	1.708e+04	0.90	yes	no	0.653
33 RS/RT	13C-1,2,3,4-TCDD	25:26	2.910e+04	3.796e+04	0.77	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	35:23	3.063e+04	2.319e+04	1.32	yes	no	-
35 C/Up	37C1-2,3,7,8-TCDD	26:13	6.029e+03				no	0.894

$$OCDD = \frac{(1.255e+05 + 1.425e+05) \times 4000 \text{ pg} \times 1}{(1.537e+04 + 1.708e+04) \times 10.228 \text{ g} \times 93.9 / 100 \times 1.062}$$

3238.9 ng/kg
L1608/23/19

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
BS-1-190813

Run #15 Filename P618694 Samp: 1 Inj: 1 Acquired: 22-AUG-19 22:02:58
Processed: 23-AUG-19 09:00:44 LAB. ID: E1900593-001

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	*	4.17e+02	*	*	2.62e+03	*
2	1,2,3,7,8-PeCDF	*	2.92e+02	*	*	1.00e+03	*
3	2,3,4,7,8-PeCDF	*	2.92e+02	*	*	1.00e+03	*
4	1,2,3,4,7,8-HxCDF	*	1.38e+03	*	*	1.52e+03	*
5	1,2,3,6,7,8-HxCDF	*	1.38e+03	*	*	1.52e+03	*
6	2,3,4,6,7,8-HxCDF	*	1.38e+03	*	*	1.52e+03	*
7	1,2,3,7,8,9-HxCDF	*	1.38e+03	*	*	1.52e+03	*
8	1,2,3,4,6,7,8-HpCDF	1.61e+04	4.52e+02	3.6e+01	1.93e+04	1.14e+03	1.7e+01
9	1,2,3,4,7,8,9-HpCDF	2.23e+03	4.52e+02	4.9e+00	3.03e+03	1.14e+03	2.7e+00
10	OCDF	6.60e+04	7.00e+02	9.4e+01	8.18e+04	1.09e+03	7.5e+01
11	2,3,7,8-TCDD	*	2.06e+03	*	*	2.62e+03	*
12	1,2,3,7,8-PeCDD	5.18e+03	1.12e+03	4.6e+00	3.11e+03	3.88e+02	8.0e+00
13	1,2,3,4,7,8-HxCDD	7.30e+03	1.22e+03	6.0e+00	4.96e+03	1.38e+03	3.6e+00
14	1,2,3,6,7,8-HxCDD	1.31e+04	1.22e+03	1.1e+01	9.22e+03	1.38e+03	6.7e+00
15	1,2,3,7,8,9-HxCDD	7.53e+03	1.22e+03	6.2e+00	6.20e+03	1.38e+03	4.5e+00
16	1,2,3,4,6,7,8-HpCDD	4.20e+05	1.32e+03	3.2e+02	4.01e+05	9.00e+02	4.5e+02
17	OCDD	2.47e+07	1.09e+04	2.3e+03	2.80e+07	5.05e+03	5.5e+03
18	13C-2,3,7,8-TCDF	1.05e+06	1.45e+04	7.3e+01	1.33e+06	7.08e+03	1.9e+02
19	13C-1,2,3,7,8-PeCDF	2.97e+06	6.36e+02	4.7e+03	1.90e+06	7.04e+02	2.7e+03
20	13C-2,3,4,7,8-PeCDF	3.23e+06	6.36e+02	5.1e+03	2.07e+06	7.04e+02	2.9e+03
21	13C-1,2,3,4,7,8-HxCDF	1.93e+06	1.34e+03	1.4e+03	3.73e+06	1.53e+03	2.4e+03
22	13C-1,2,3,6,7,8-HxCDF	1.97e+06	1.34e+03	1.5e+03	3.88e+06	1.53e+03	2.5e+03
23	13C-2,3,4,6,7,8-HxCDF	1.75e+06	1.34e+03	1.3e+03	3.51e+06	1.53e+03	2.3e+03
24	13C-1,2,3,7,8,9-HxCDF	1.41e+06	1.34e+03	1.0e+03	2.76e+06	1.53e+03	1.8e+03
25	13C-1,2,3,4,6,7,8-HpCDF	1.23e+06	1.68e+03	7.3e+02	2.91e+06	7.22e+03	4.0e+02
26	13C-1,2,3,4,7,8,9-HpCDF	1.15e+06	1.68e+03	6.8e+02	2.57e+06	7.22e+03	3.6e+02
27	13C-2,3,7,8-TCDD	1.07e+06	7.54e+03	1.4e+02	1.44e+06	4.83e+03	3.0e+02
28	13C-1,2,3,7,8-PeCDD	2.72e+06	1.88e+03	1.4e+03	1.76e+06	1.96e+03	9.0e+02
29	13C-1,2,3,4,7,8-HxCDD	2.97e+06	1.47e+03	2.0e+03	2.37e+06	9.64e+02	2.5e+03
30	13C-1,2,3,6,7,8-HxCDD	3.03e+06	1.47e+03	2.1e+03	2.59e+06	9.64e+02	2.7e+03
31	13C-1,2,3,4,6,7,8-HpCDD	2.54e+06	9.72e+02	2.6e+03	2.42e+06	9.52e+02	2.5e+03
32	13C-OCDD	3.06e+06	4.91e+03	6.2e+02	3.34e+06	2.50e+03	1.3e+03
33	13C-1,2,3,4-TCDD	4.04e+06	7.54e+03	5.4e+02	5.22e+06	4.83e+03	1.1e+03
34	13C-1,2,3,7,8,9-HxCDD	6.07e+06	1.47e+03	4.1e+03	4.80e+06	9.64e+02	5.0e+03
35	37Cl-2,3,7,8-TCDD	8.74e+05	3.70e+03	2.4e+02			

---Sample Calculation---

$$D/L \text{ TCDD} = \frac{2.5 \times (2.060e+03 + 2.618e+03) \times 2000}{(1.072e+06 + 1.437e+06) \times () \times 0.989} =$$

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ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

BS-1-190813

Entry: 40 Totals Name: Total Penta-Dioxins

Run: 15 File: P618694 Sample:1 Injection:1 Function:2

Acquired: 22-AUG-19 22:02:58 Processed: 23-AUG-19 09:00:44

Mass:	355.8550	357.8520	Tot Response: 3.71e+01		RRF: 0.9538				
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	31:40	2.18e+01	1.53e+01	1.43	yes	3.71e+01	1,2,3,7,8-PeCDD	n	n

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Peak List Summary

CLIENT ID.

BS-1-190813

Entry: 41 Totals Name: Total Hexa-Furans

Run: 15 File: P618694 Sample:1 Injection:1 Function:3

Acquired: 22-AUG-19 22:02:58 Processed: 23-AUG-19 09:00:44

Mass: 373.8210 375.8180 Tot Response: 5.40e+01 RRF: 1.022

#	RT	Resp	Resp Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	33:15	2.78e+01	2.62e+01	1.06	yes	5.40e+01	n	n

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Peak List Summary

CLIENT ID.

BS-1-190813

Entry: 42 Totals Name: Total Hexa-Dioxins

Run: 15 File: P618694 Sample:1 Injection:1 Function:3

Acquired: 22-AUG-19 22:02:58 Processed: 23-AUG-19 09:00:44

Mass:	389.8160	391.8130	Tot Response: 1.22e+02		RRF: 1.019				
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	35:04	2.94e+01	2.36e+01	1.25	yes	5.30e+01	1,2,3,4,7,8-HxCDD	n	n
2	35:24	3.79e+01	3.08e+01	1.23	yes	6.87e+01	1,2,3,7,8,9-HxCDD	n	n

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Peak List Summary

CLIENT ID.

BS-1-190813

Entry: 43 Totals Name: Total Hepta-Furans

Run: 15 File: P618694 Sample:1 Injection:1 Function:4

Acquired: 22-AUG-19 22:02:58 Processed: 23-AUG-19 09:00:44

Mass:	407.7820	409.7790	Tot Response: 7.35e+02		RRF: 1.104				
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	37:00	8.25e+01	7.89e+01	1.05	yes	1.61e+02	1,2,3,4,6,7,8-HpCDF	n	n
2	37:24	2.83e+02	2.69e+02	1.05	yes	5.53e+02		n	n
3	38:20	1.07e+01	9.66e+00	1.11	yes	2.03e+01	1,2,3,4,7,8,9-HpCDF	n	n

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ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

BS-1-190813

Entry: 44 Totals Name: Total Hepta-Dioxins

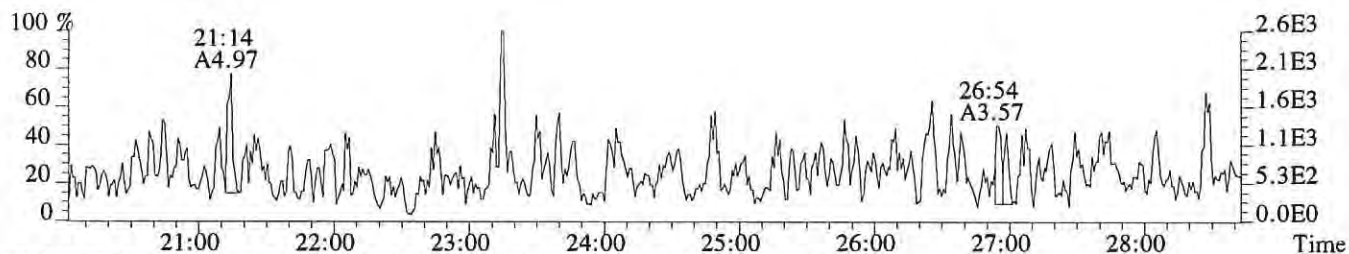
Run: 15 File: P618694 Sample:1 Injection:1 Function:4

Acquired: 22-AUG-19 22:02:58 Processed: 23-AUG-19 09:00:44

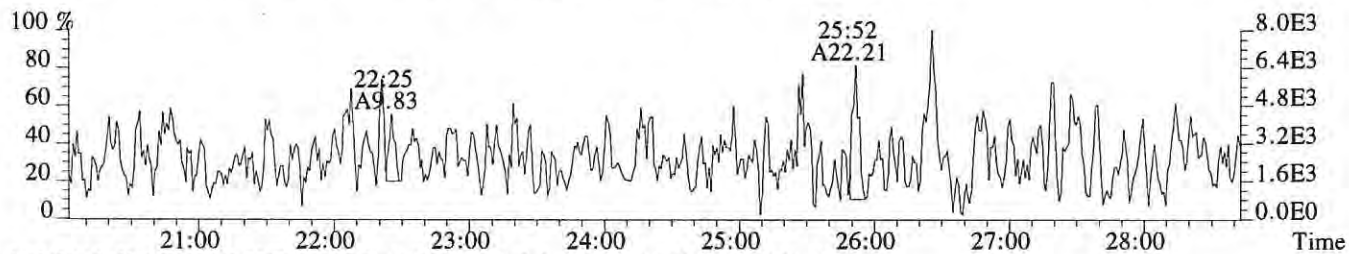
Mass:	423.7770	425.7740	Tot Response: 7.40e+03		RRF: 0.9218				
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	37:16	1.76e+03	1.74e+03	1.01	yes	3.50e+03		n	n
2	37:55	2.02e+03	1.88e+03	1.08	yes	3.90e+03	1,2,3,4,6,7,8-HpCDD	n	n

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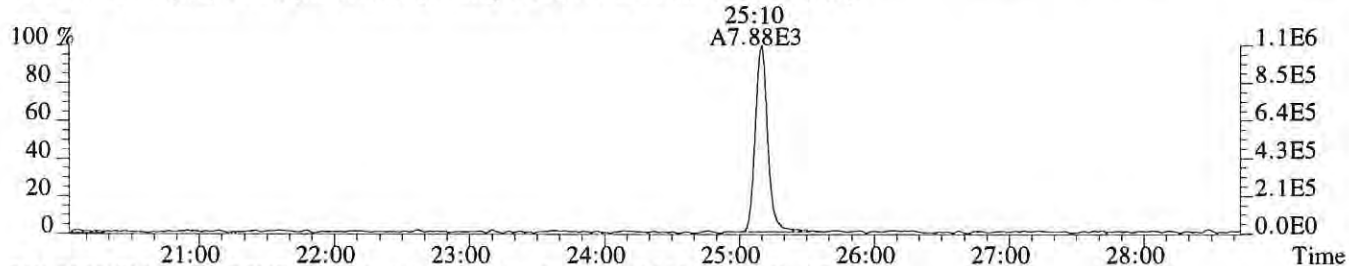
File:P618694 #1-616 Acq:22-AUG-2019 22:02:58 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-001
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,792.0,1.00%,F,T)



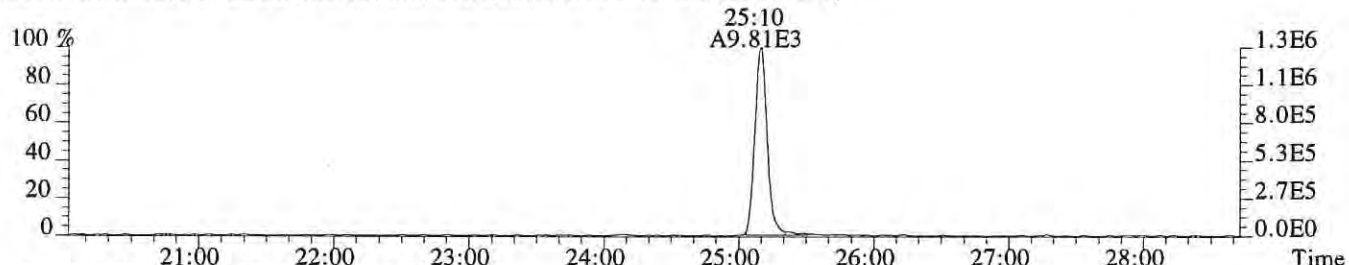
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3128.0,1.00%,F,T)



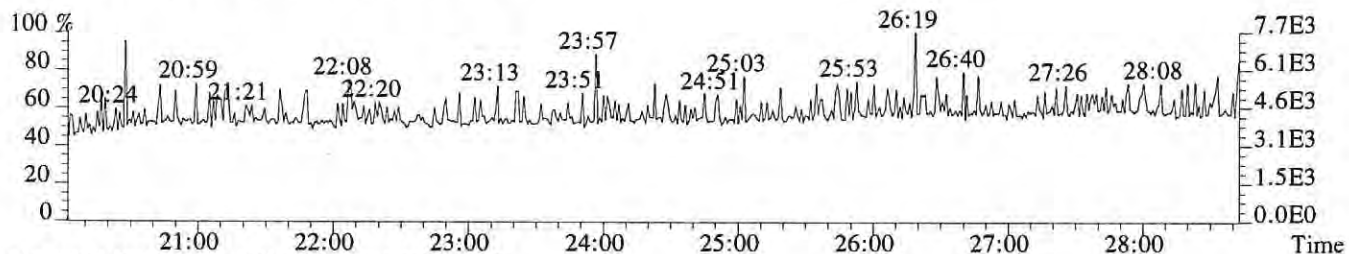
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,14500.0,1.00%,F,T)



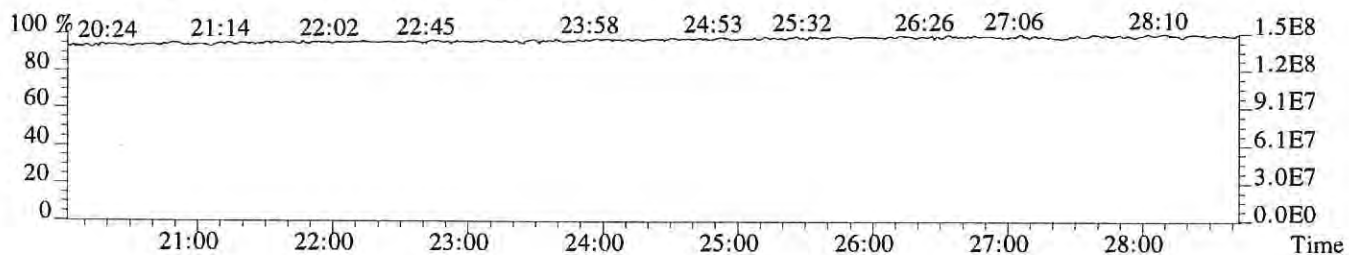
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,7080.0,1.00%,F,T)

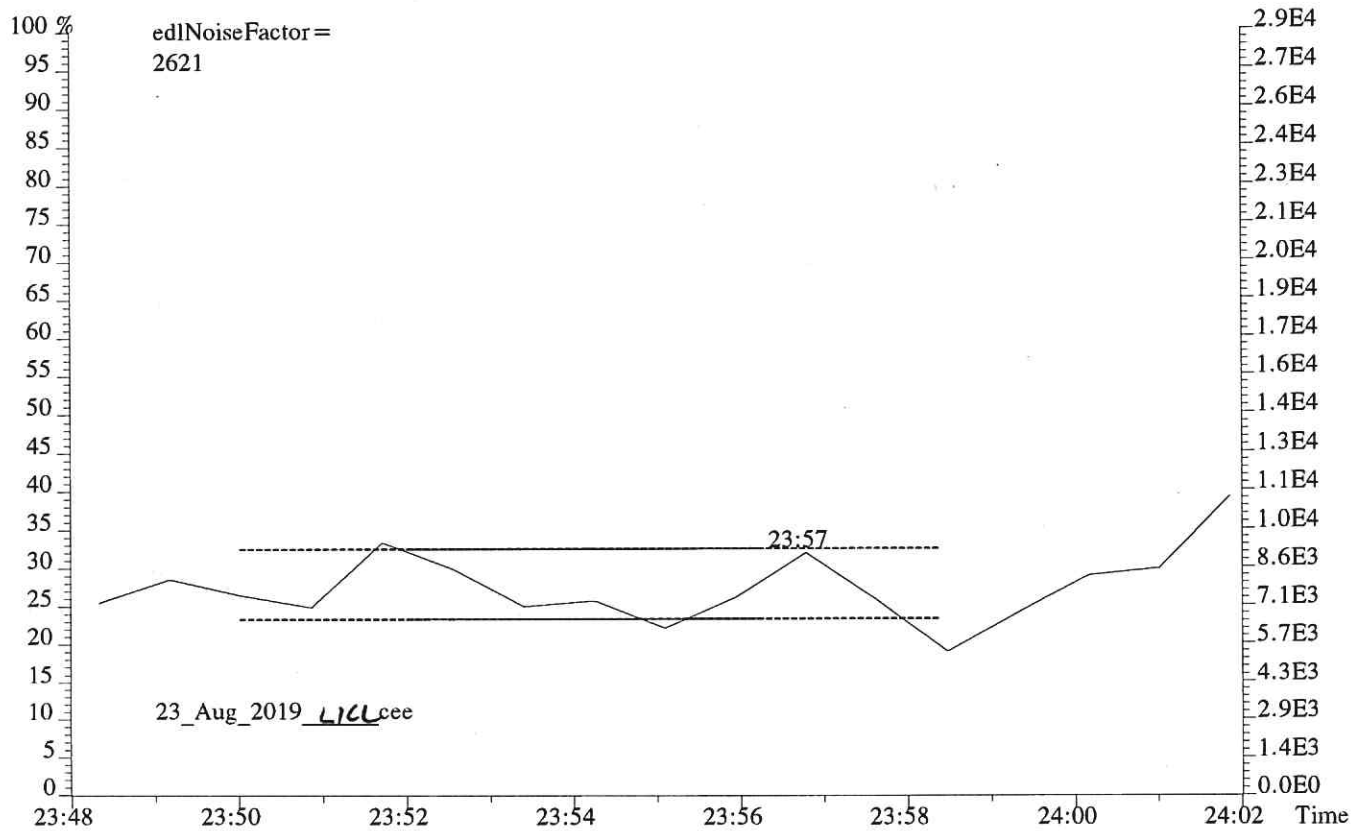
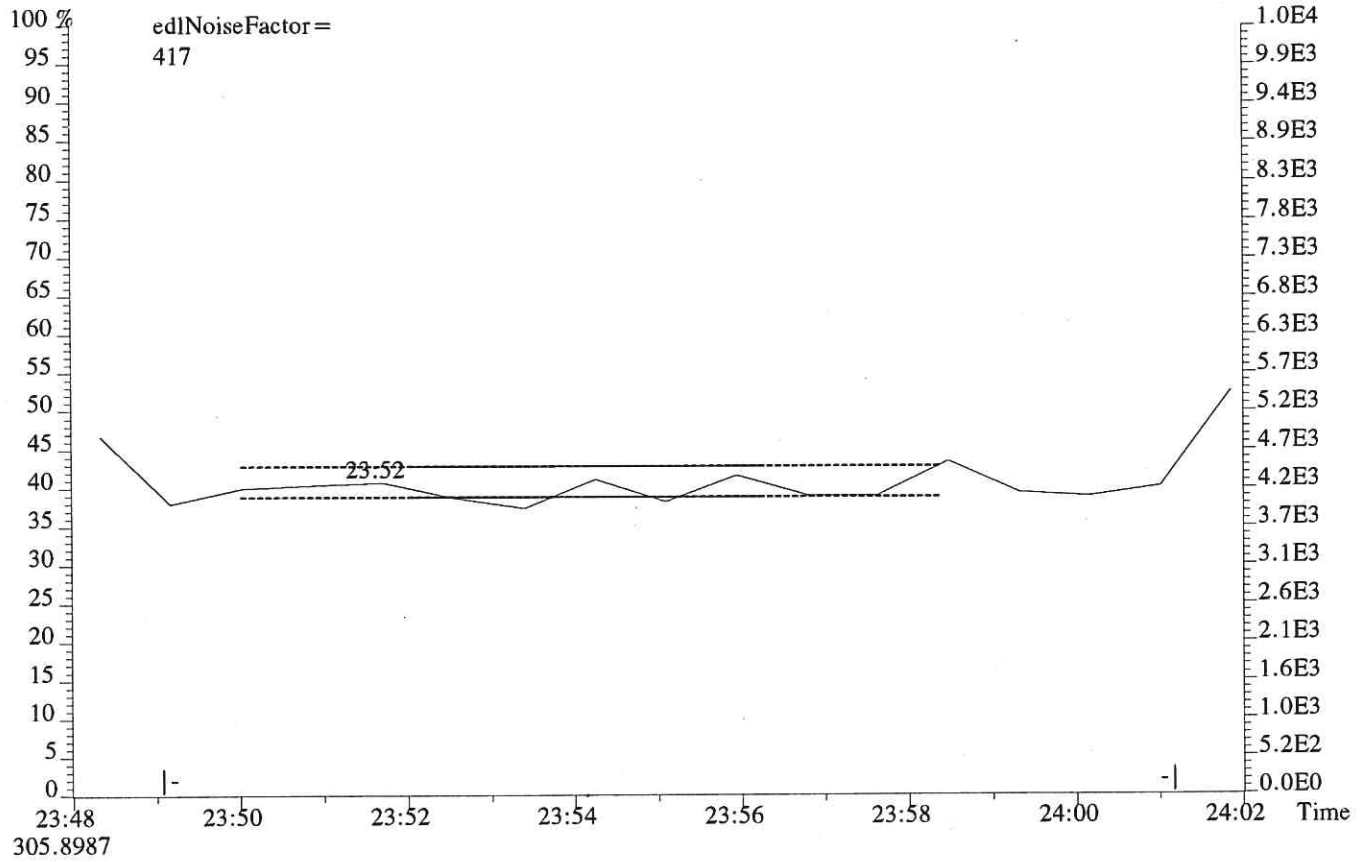


375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

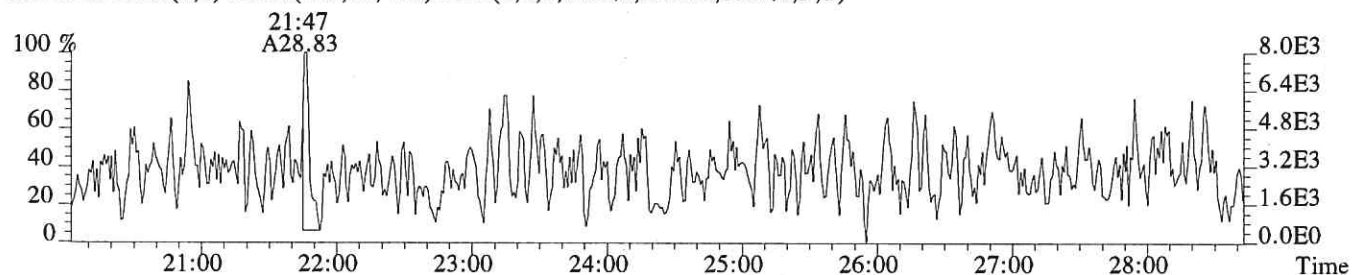




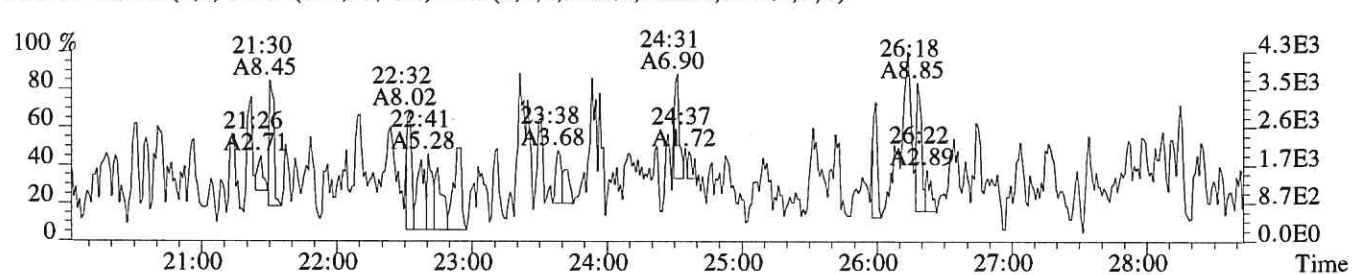
File:P618694 #1-616 Acq:22-AUG-2019 22:02:58 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:E1900593-001

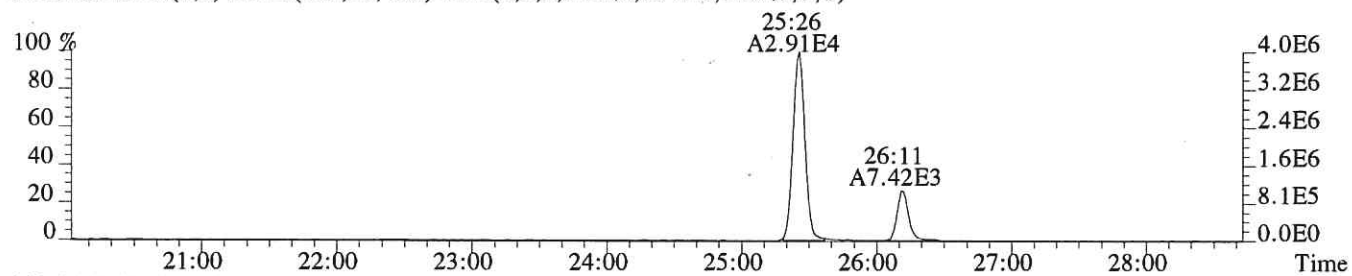
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3916.0,1.00%,F,T)



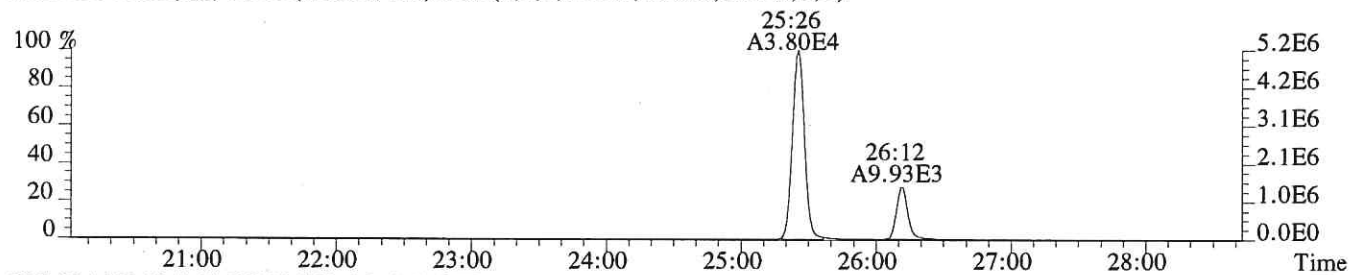
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1656.0,1.00%,F,T)



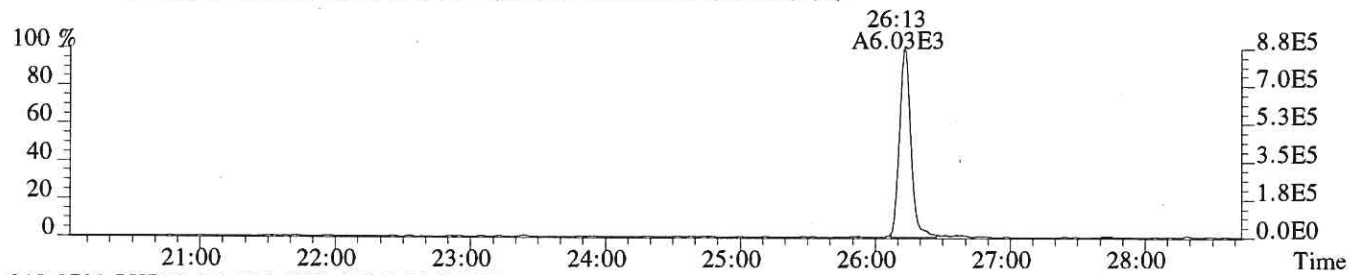
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,7544.0,1.00%,F,T)



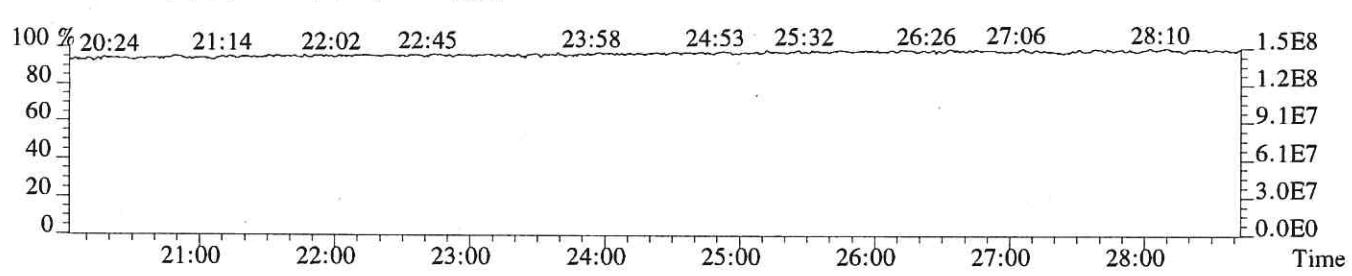
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4828.0,1.00%,F,T)

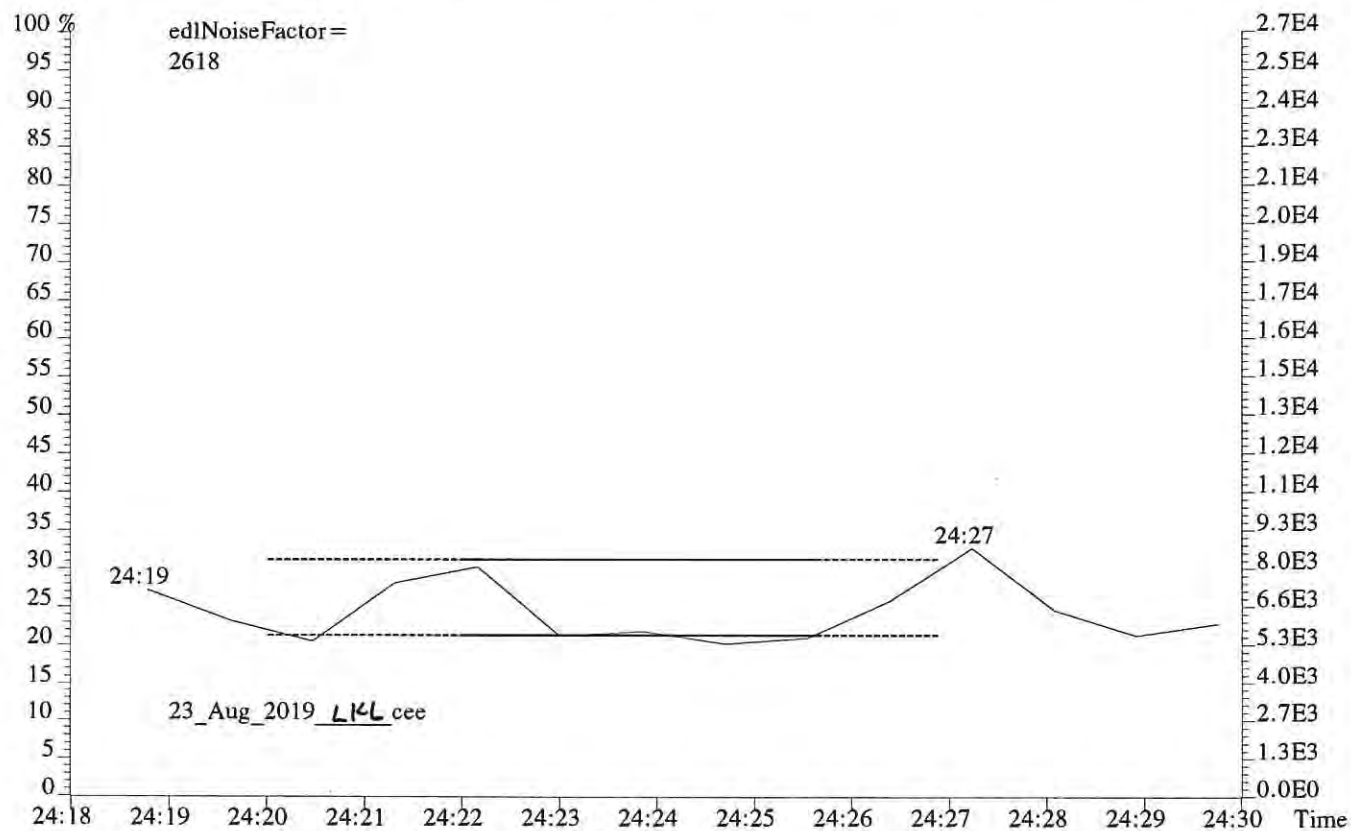
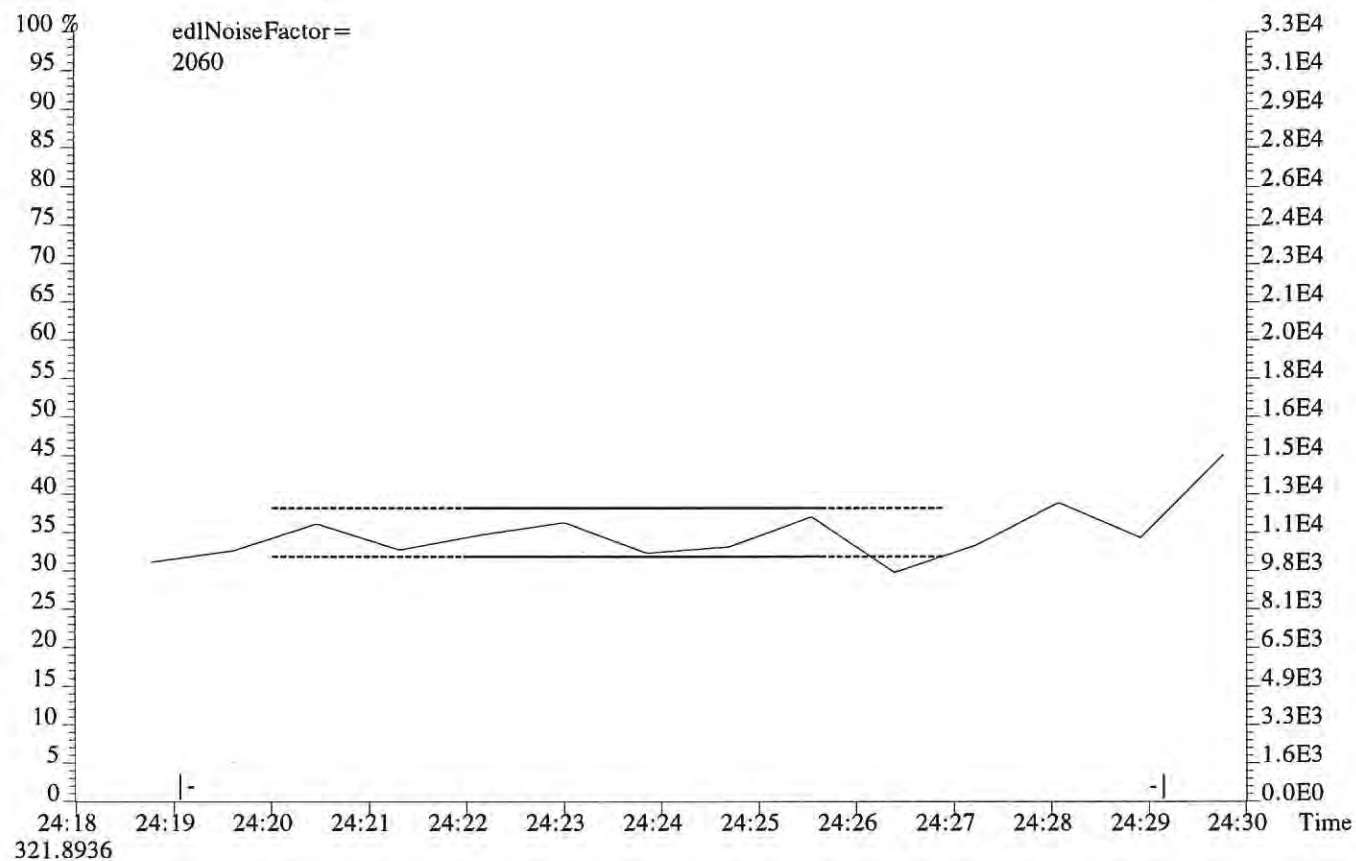


327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3700.0,1.00%,F,T)

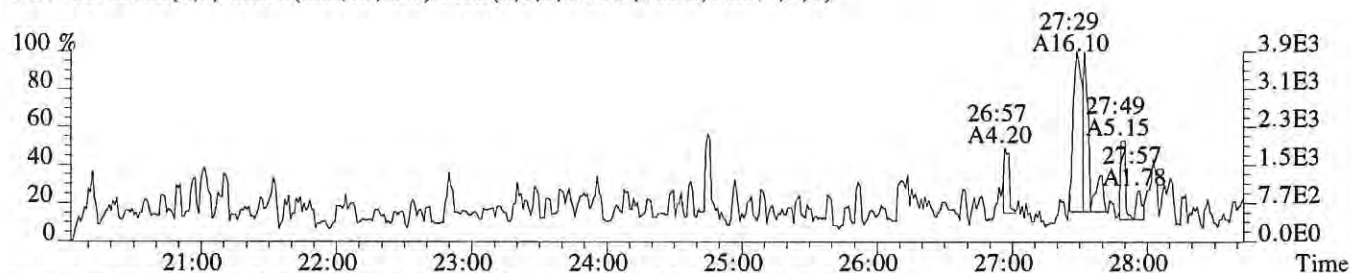


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

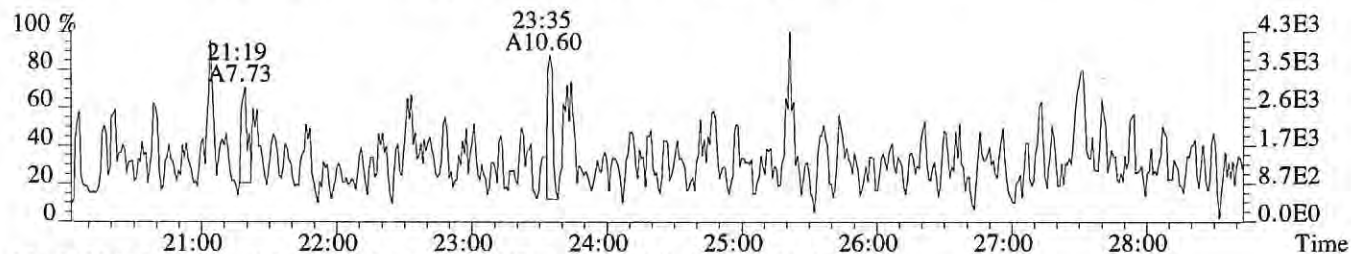




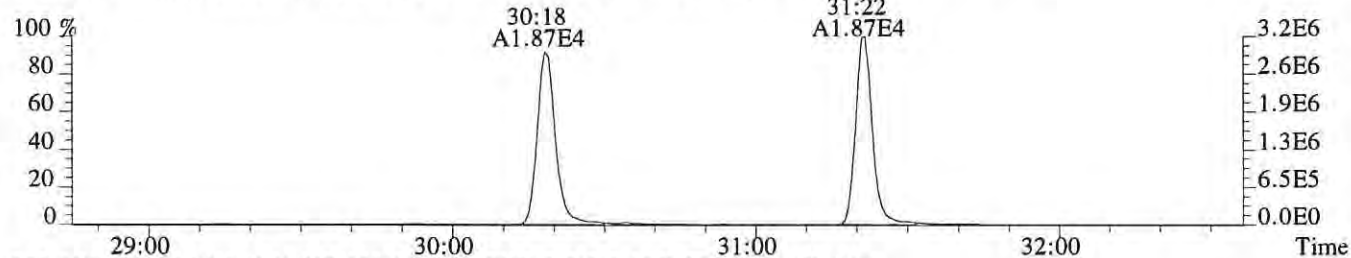
File:P618694 #1-616 Acq:22-AUG-2019 22:02:58 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:E1900593-001
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,792.0,1.00%,F,T)



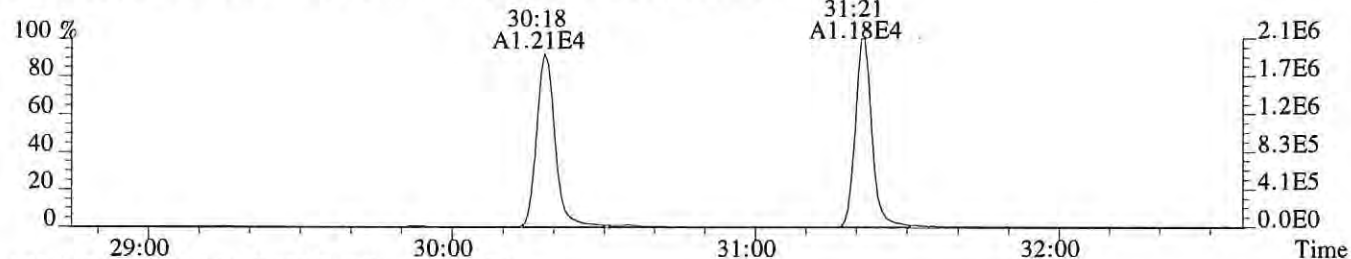
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1652.0,1.00%,F,T)



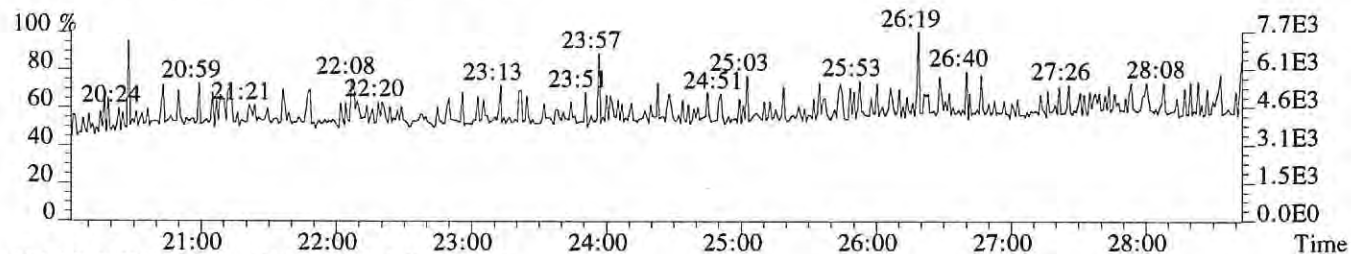
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,636.0,1.00%,F,T)



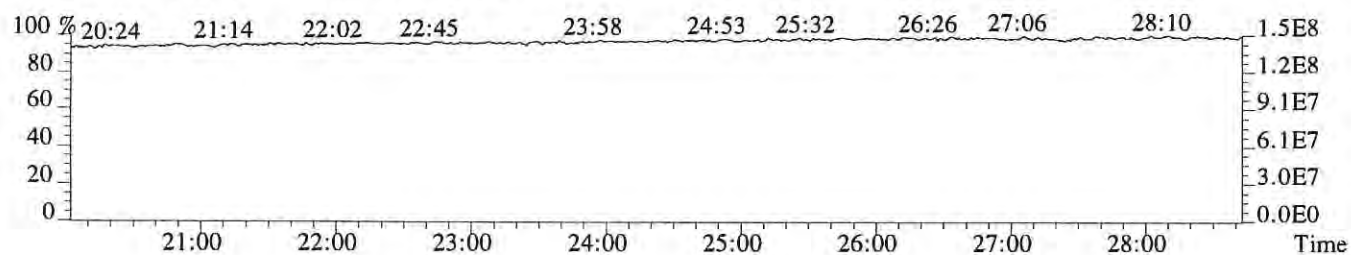
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,704.0,1.00%,F,T)



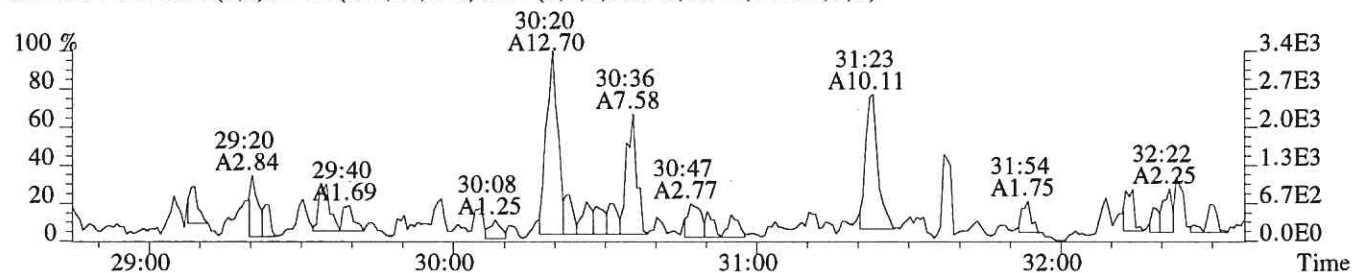
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



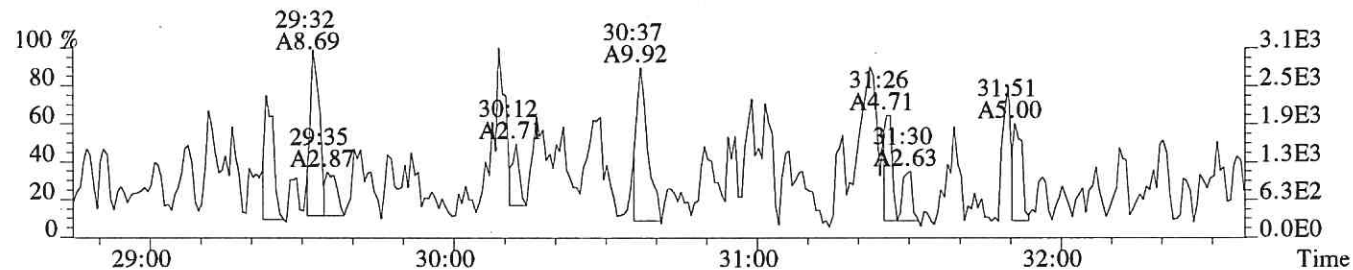
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



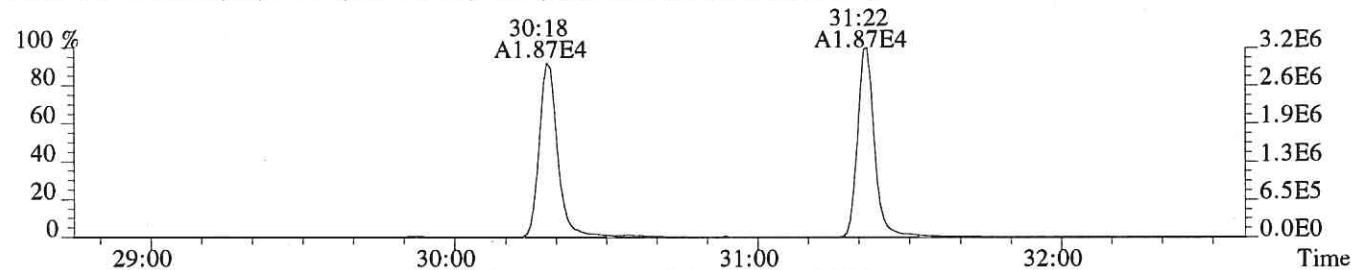
File:P618694 #1-348 Acq:22-AUG-2019 22:02:58 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:E1900593-001
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,292.0,1.00%,F,T)



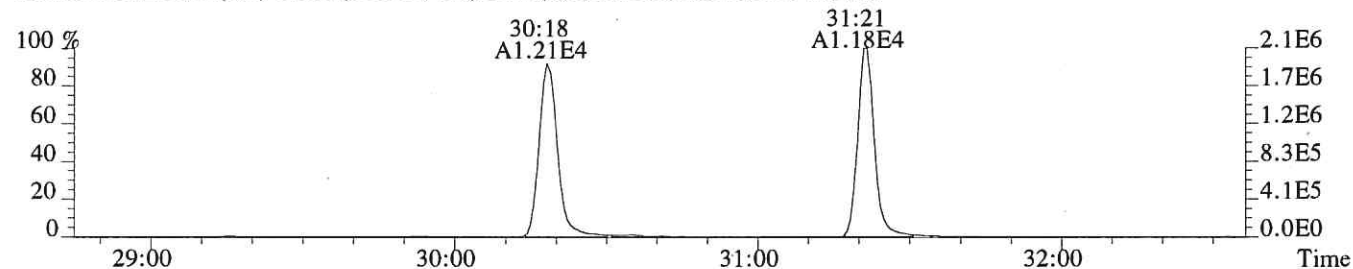
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1004.0,1.00%,F,T)



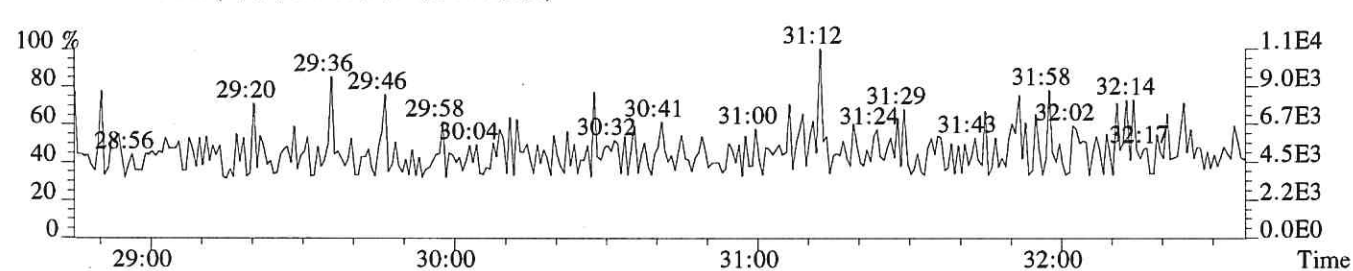
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,636.0,1.00%,F,T)



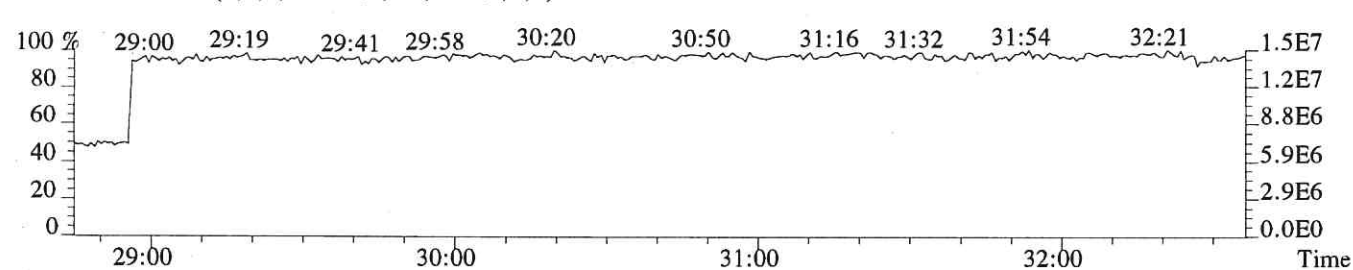
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,704.0,1.00%,F,T)



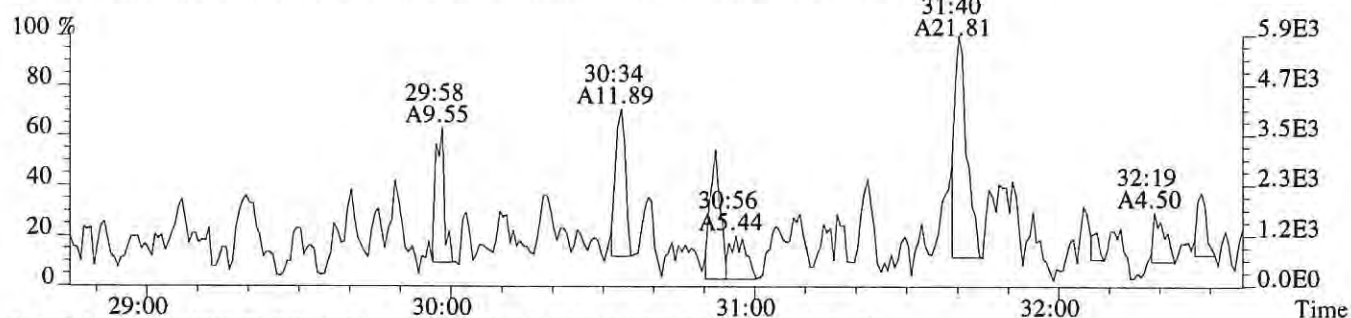
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



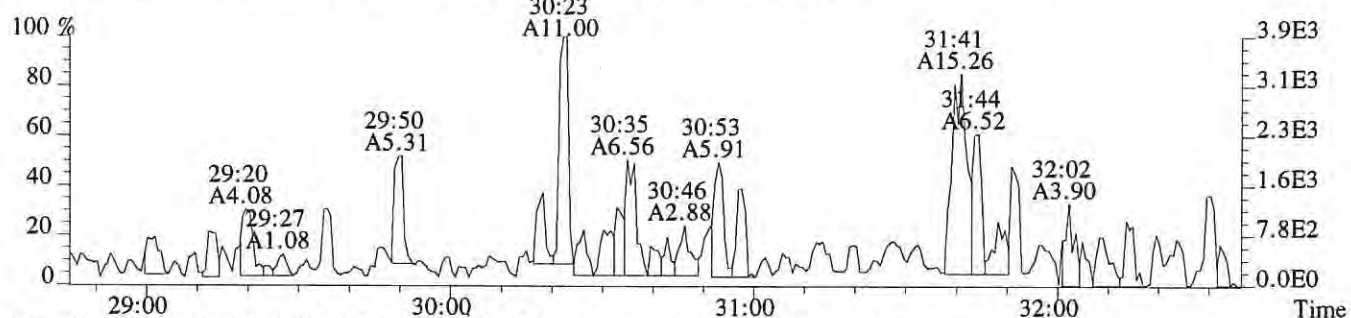
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



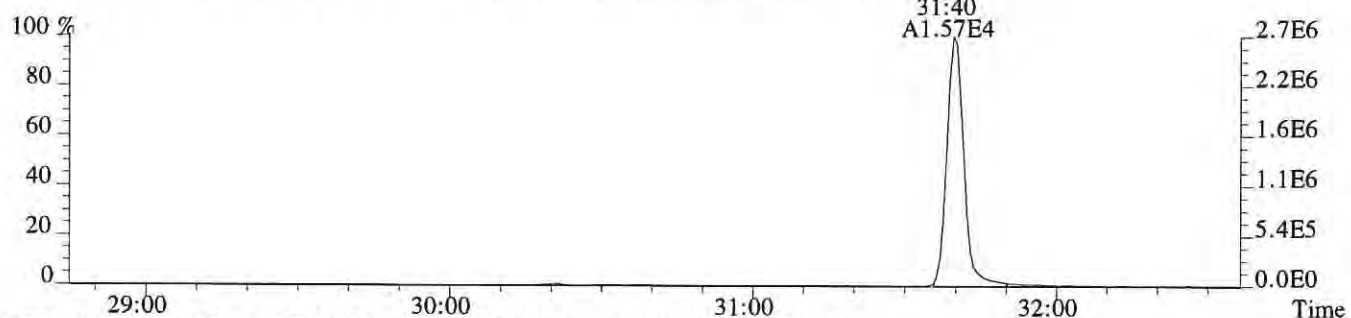
File:P618694 #1-348 Acq:22-AUG-2019 22:02:58 Probe EI+ Magnet SIR VG BioTech Mass spectf
 Sample#1 Exp:E1900593-001
 355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1116.0,1.00%,F,T)



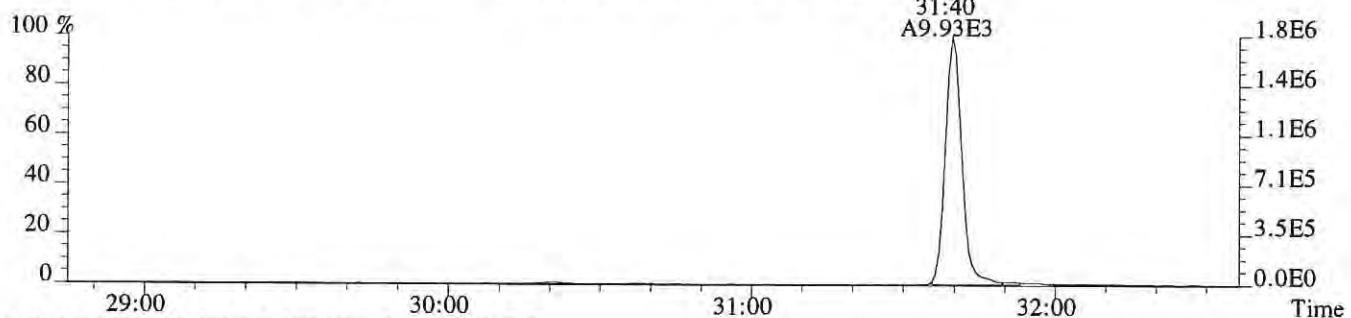
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,388.0,1.00%,F,T)



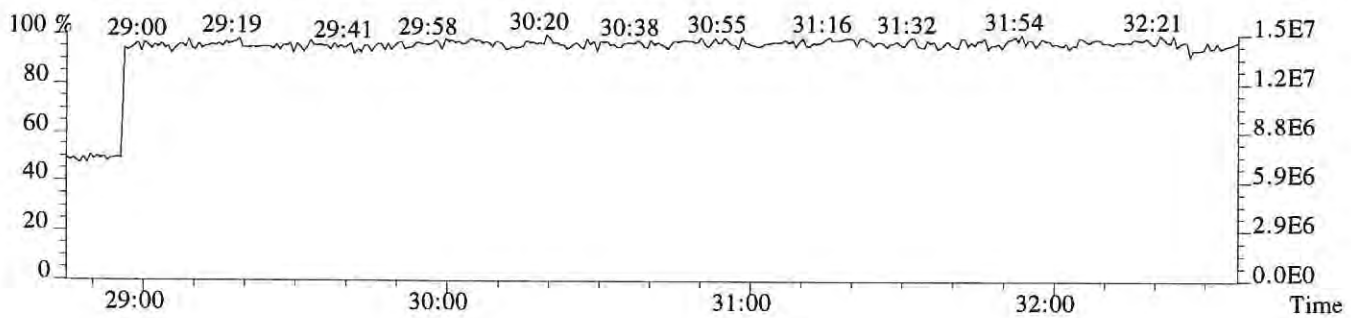
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1880.0,1.00%,F,T)



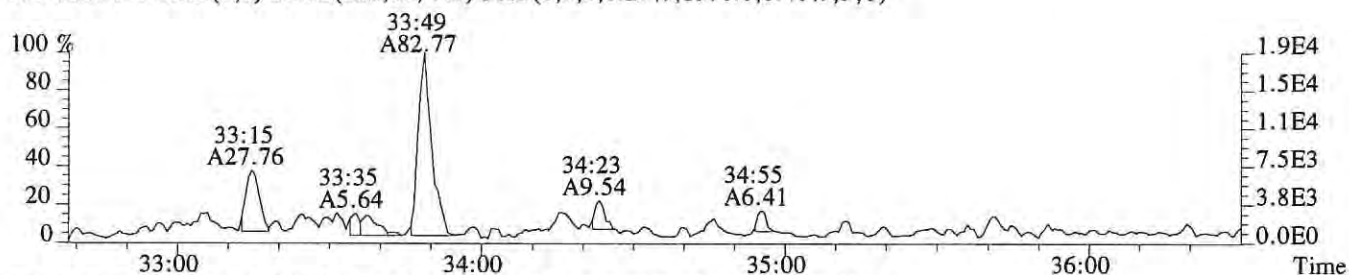
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1960.0,1.00%,F,T)



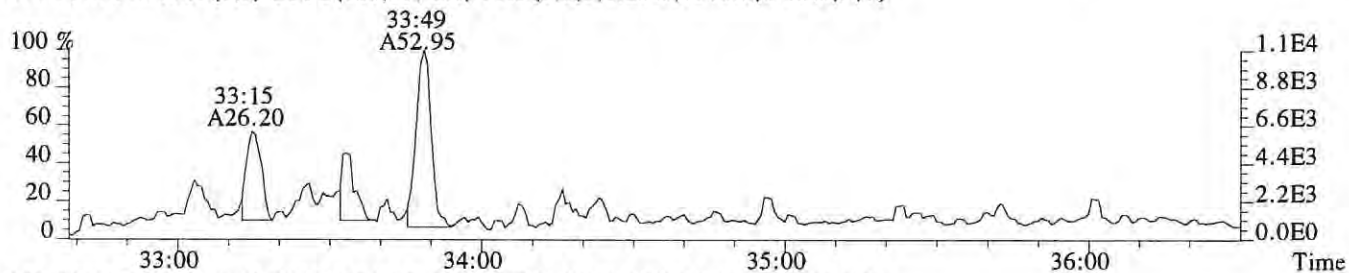
366.9792 F:2 PKD(3,3,3,100.0%,0.0,1.00%,F,F)



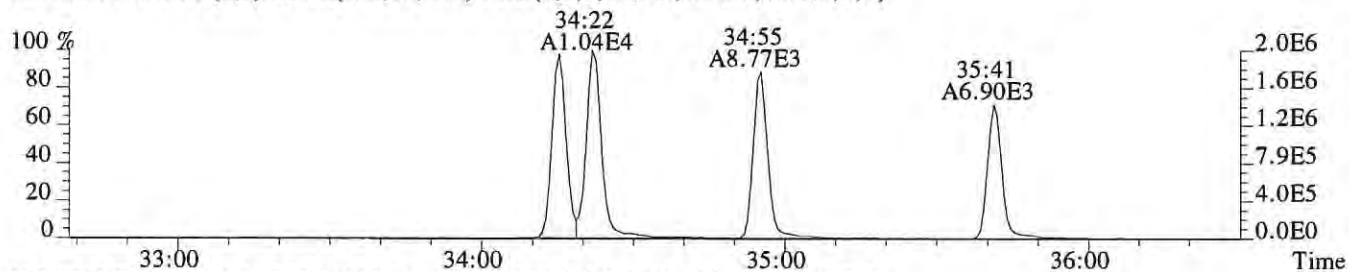
File:P618694 #1-348 Acq:22-AUG-2019 22:02:58 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-001
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1376.0,0.40%,F,T)



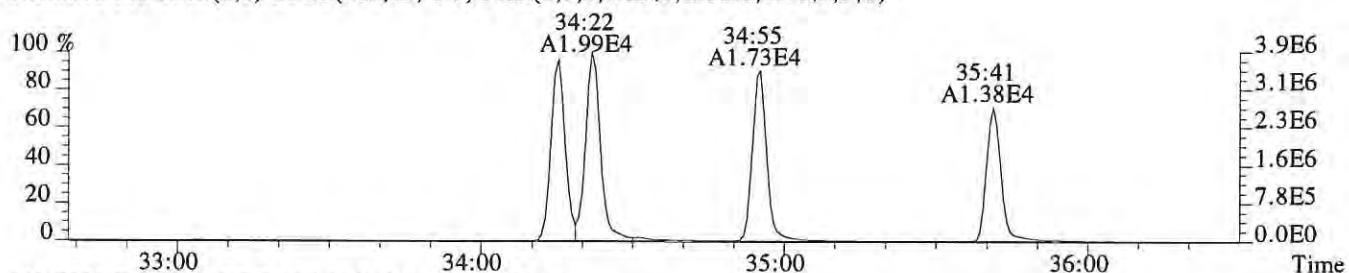
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1516.0,0.40%,F,T)



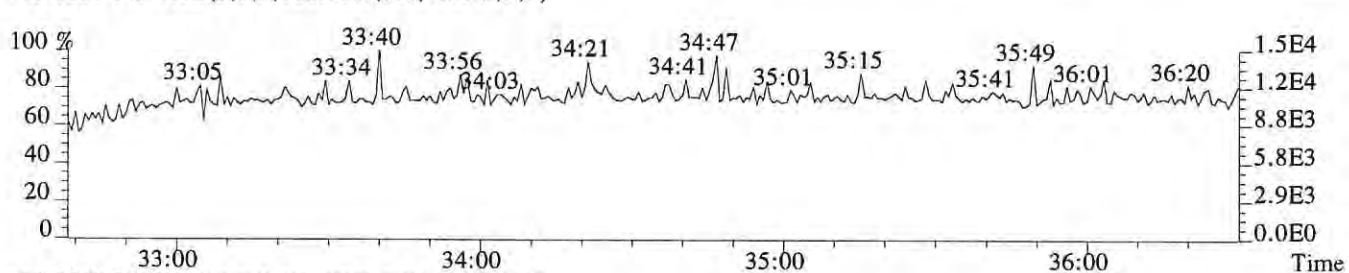
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1344.0,0.40%,F,T)



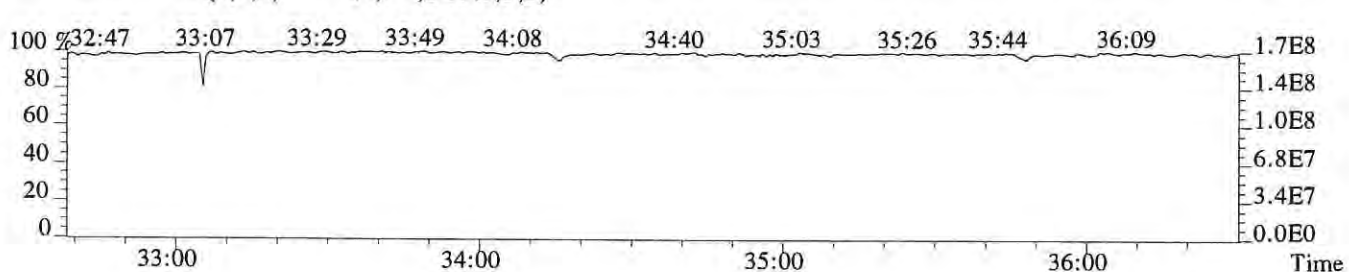
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1532.0,0.40%,F,T)



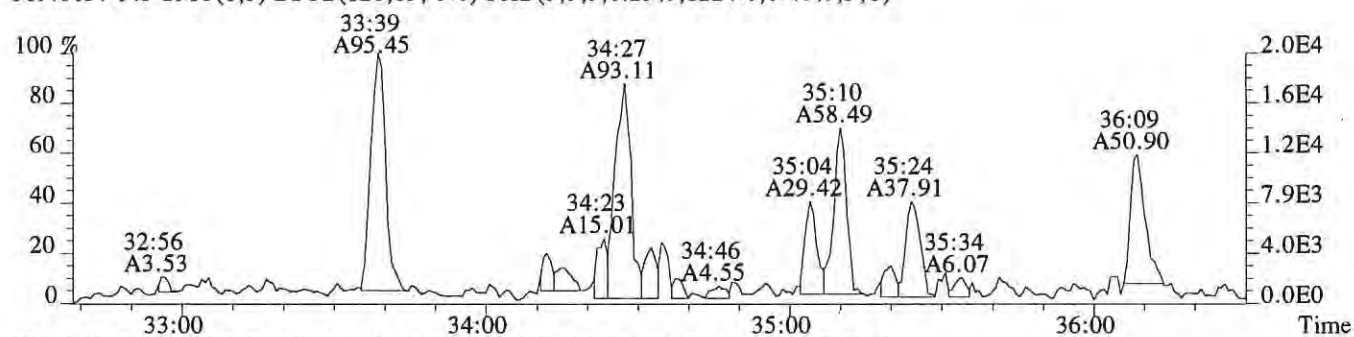
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



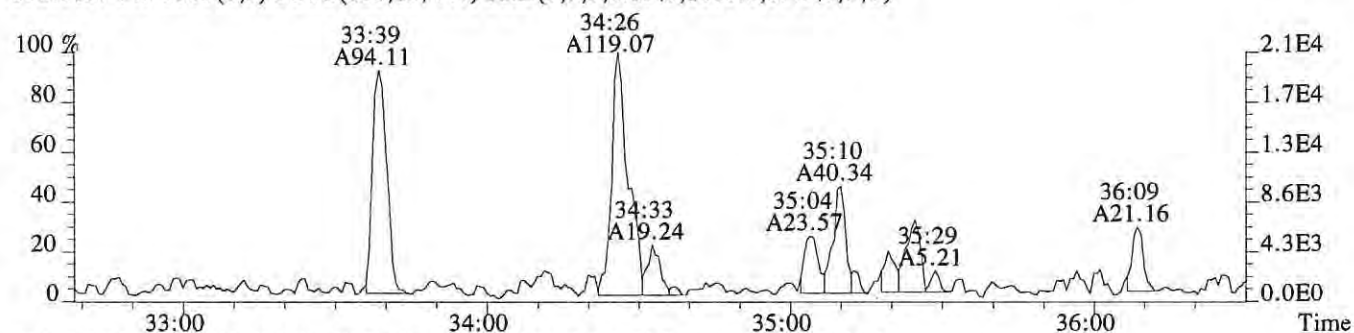
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



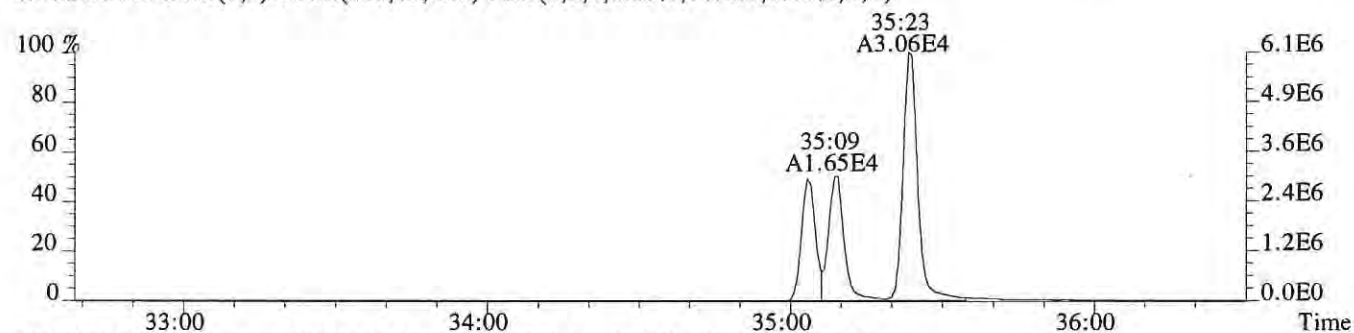
File:P618694 #1-348 Acq:22-AUG-2019 22:02:58 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:E1900593-001
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1224.0,0.40%,F,T)



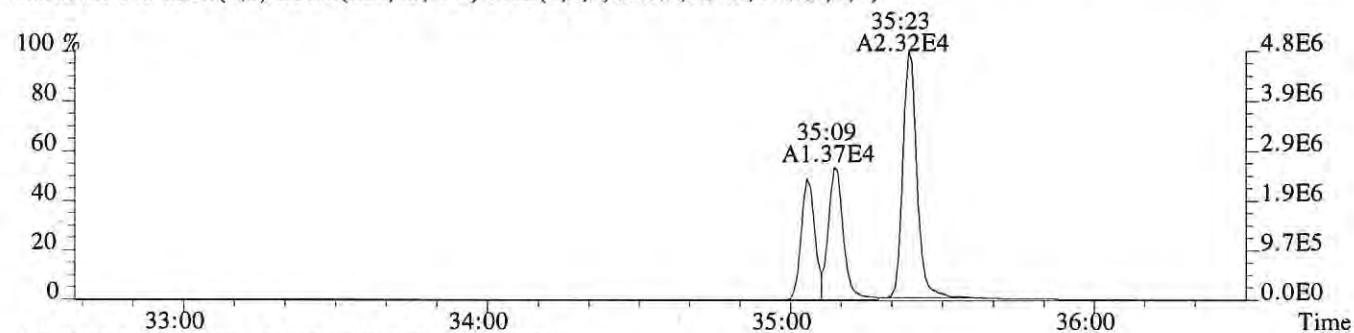
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1380.0,0.40%,F,T)



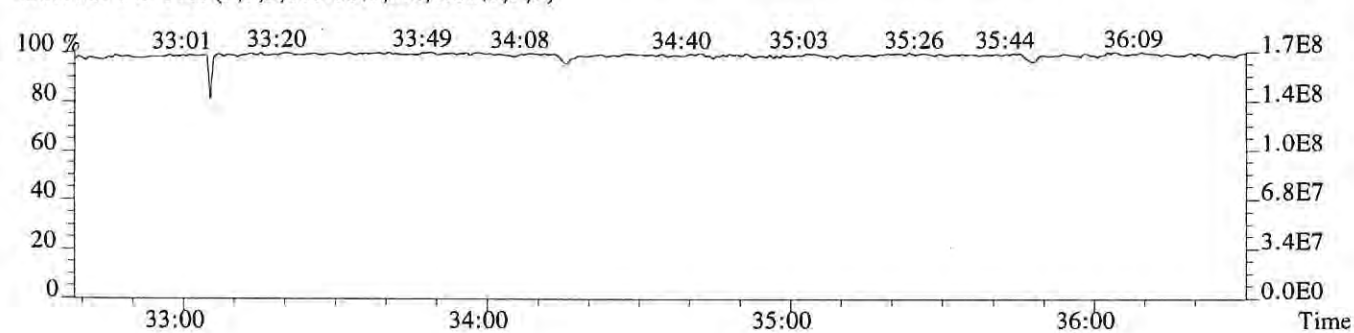
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1472.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,964.0,0.40%,F,T)



430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



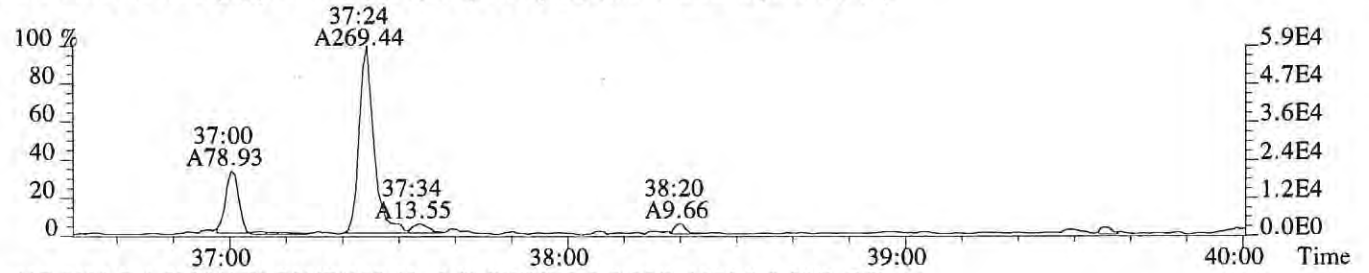
File:P618694 #1-313 Acq:22-AUG-2019 22:02:58 Probe EI+ Magnet SIR VG BioTech Mass spectF

Sample#1 Exp:E1900593-001

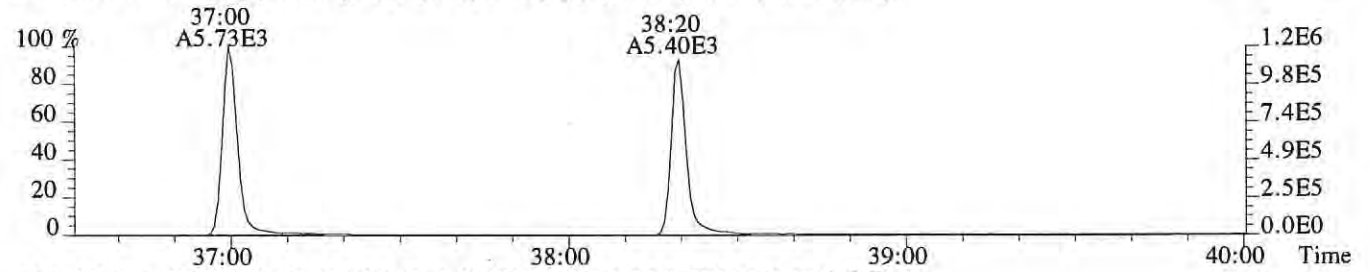
407.7818 F:4 SMO(1,3) BSM(128,15,-3.0) PKD(3,3,3,0.25%,452.0,0.50%,F,T)



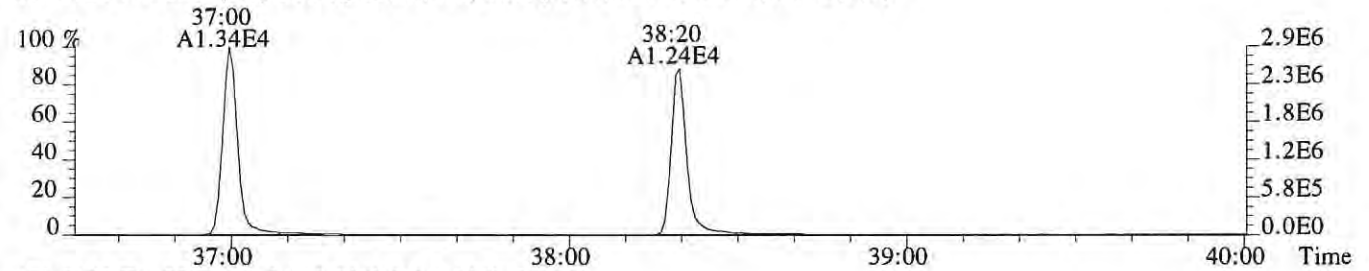
409.7789 F:4 SMO(1,3) BSM(128,15,-3.0) PKD(3,3,3,0.25%,1140.0,0.50%,F,T)



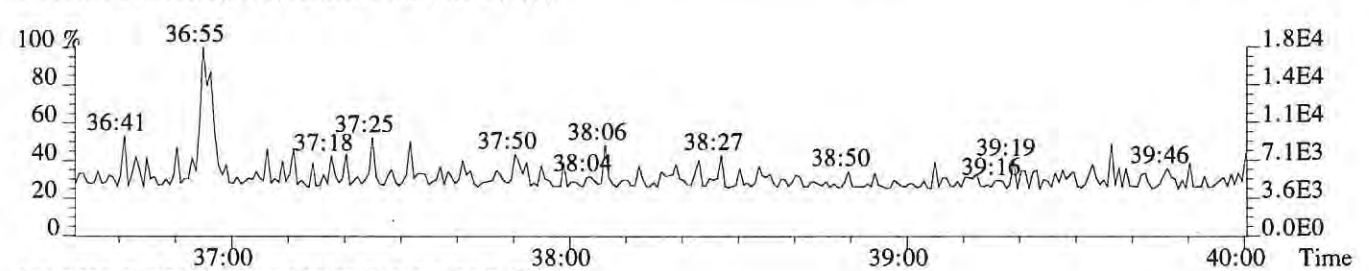
417.8253 F:4 SMO(1,3) BSM(128,15,-3.0) PKD(3,3,3,0.25%,1676.0,0.50%,F,T)



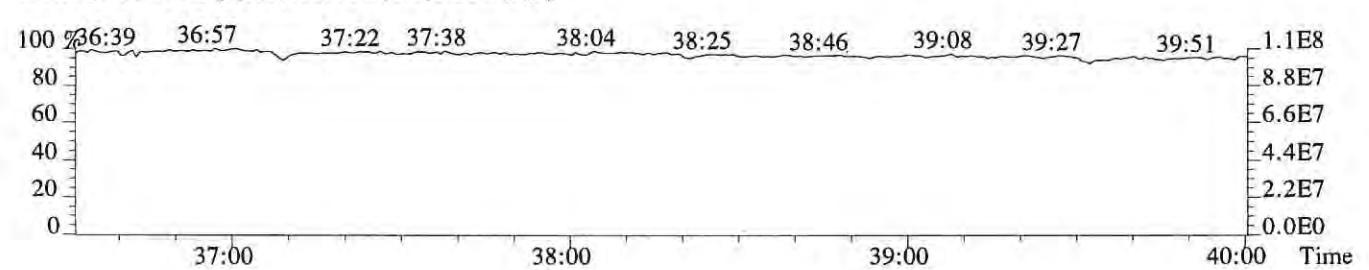
419.8220 F:4 SMO(1,3) BSM(128,15,-3.0) PKD(3,3,3,0.25%,7224.0,0.50%,F,T)



479.7165 F:4 PKD(5,3,5,100.0%,0.0,1.00%,F,F)



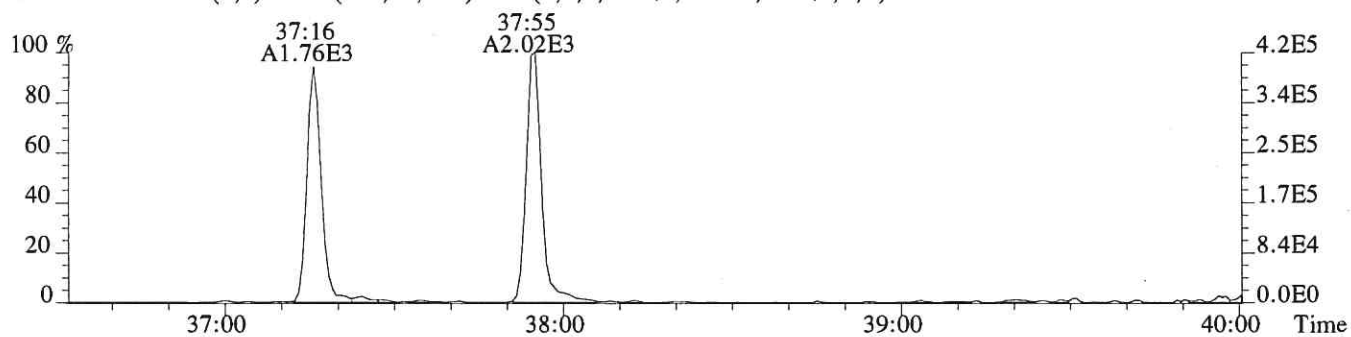
430.9729 F:4 PKD(3,3,3,100.0%,0.0,1.00%,F,F)



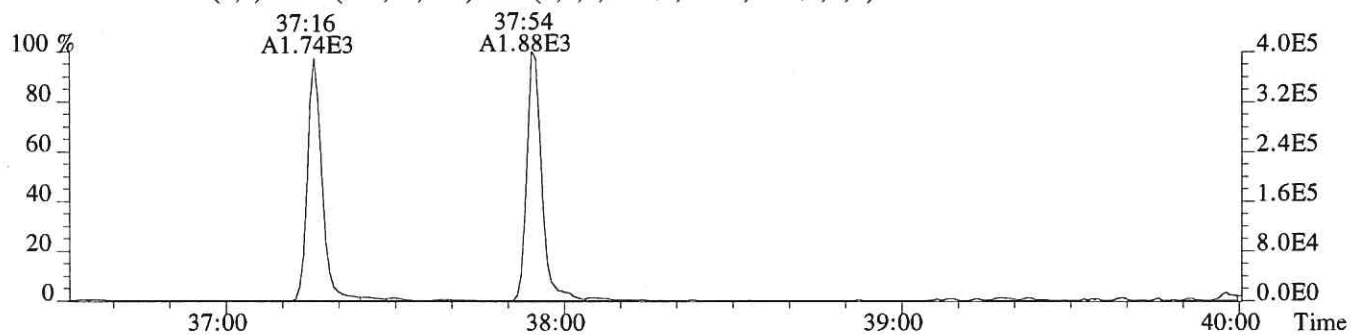
File:P618694 #1-313 Acq:22-AUG-2019 22:02:58 Probe EI+ Magnet SIR VG BioTech Mass spectr

Sample#1 Exp:E1900593-001

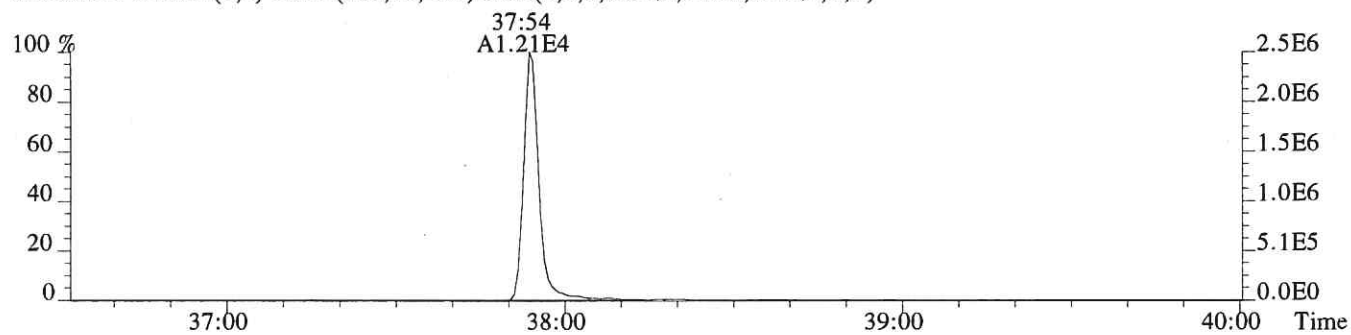
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1320.0,0.40%,F,T)



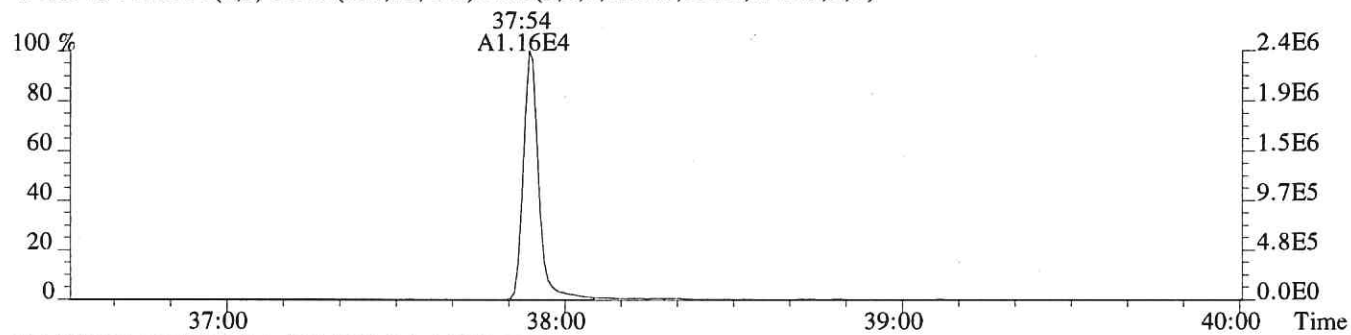
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,900.0,0.40%,F,T)



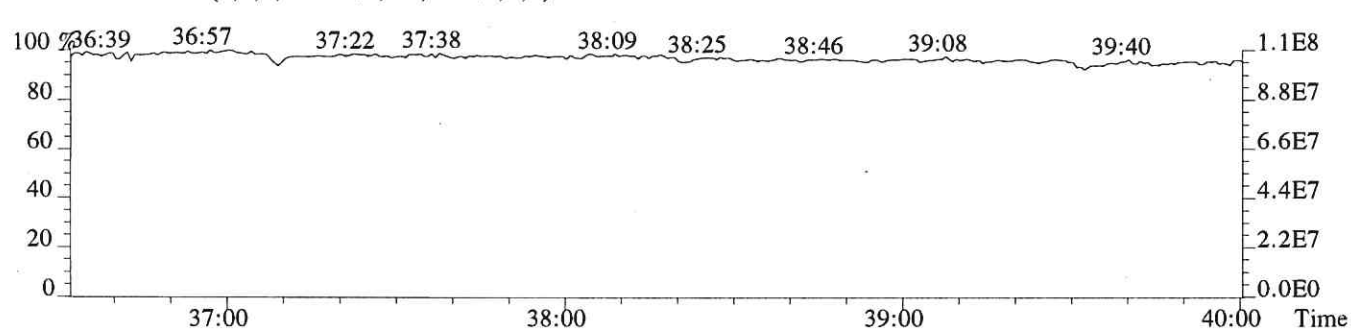
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,972.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,952.0,0.40%,F,T)



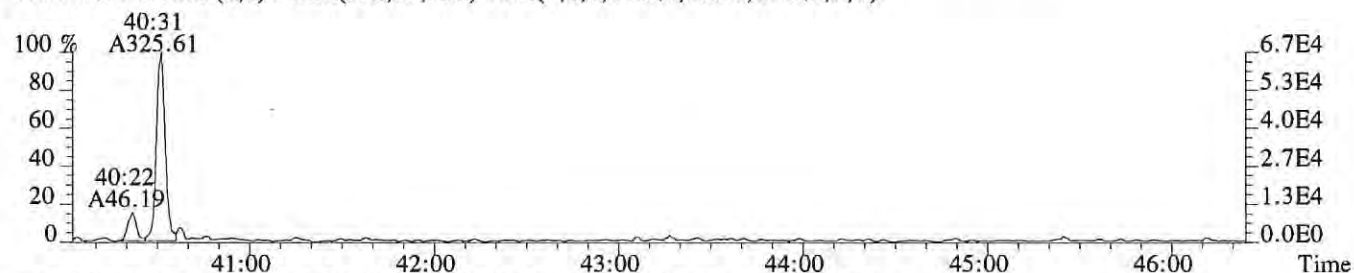
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



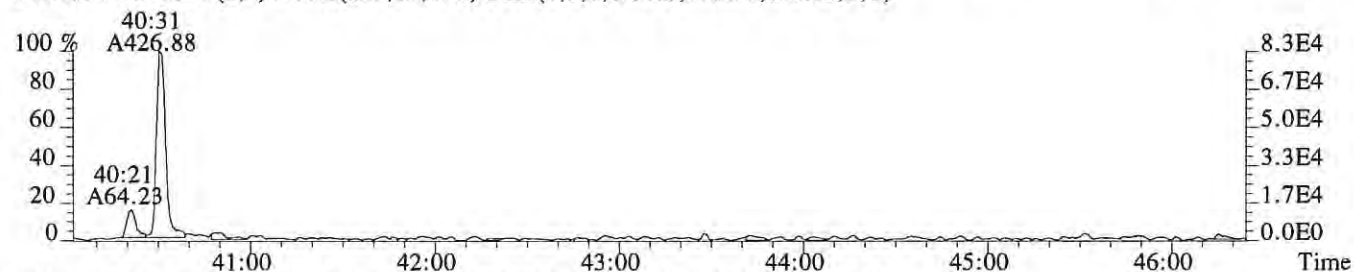
File:P618694 #1-573 Acq:22-AUG-2019 22:02:58 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:E1900593-001

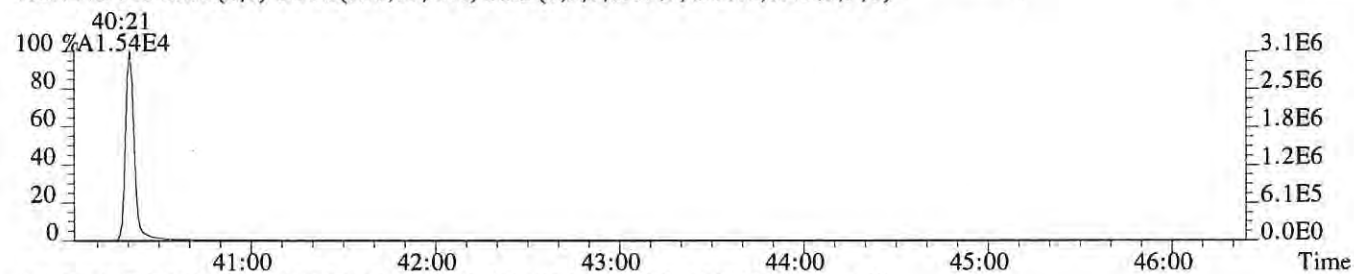
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,700.0,0.40%,F,T)



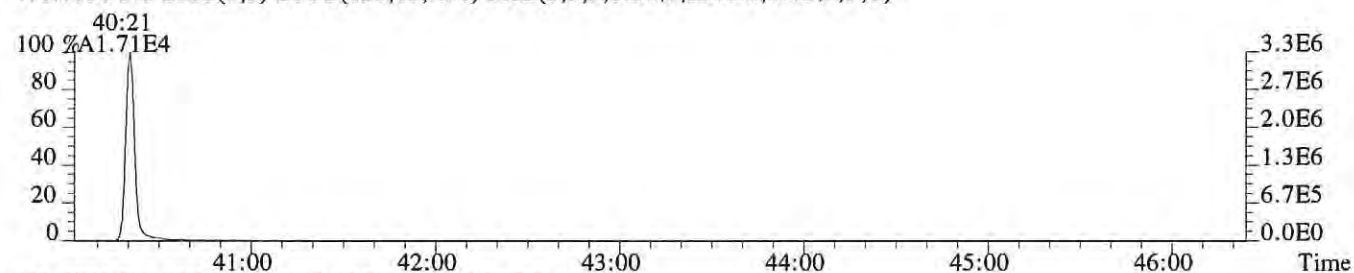
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1088.0,0.40%,F,T)



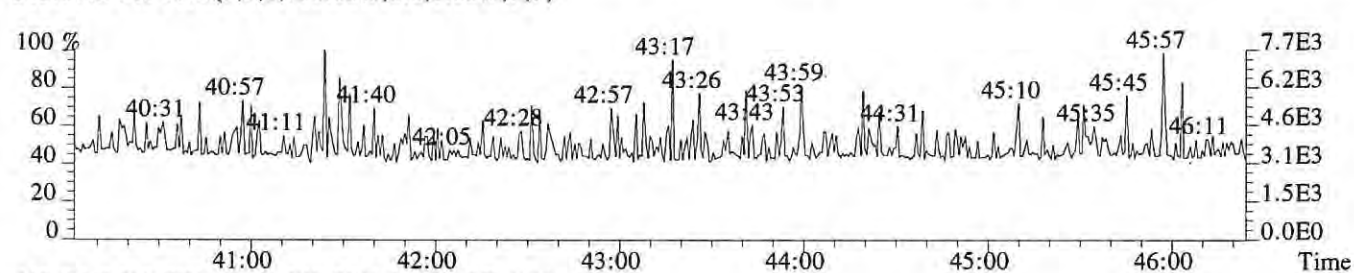
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4908.0,0.40%,F,T)



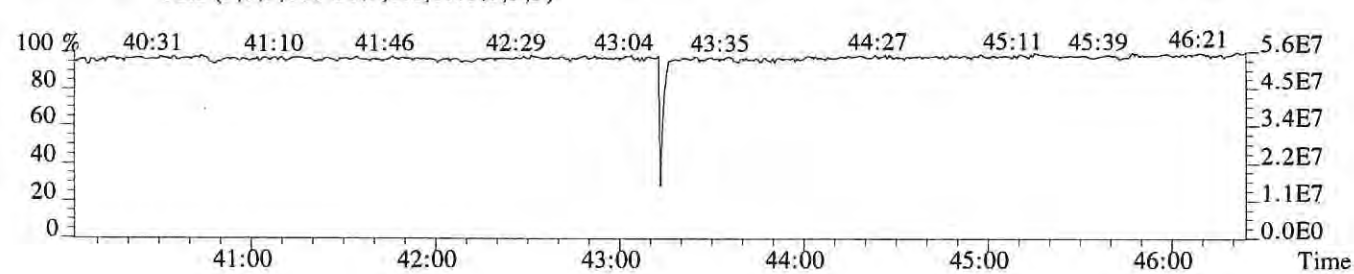
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2500.0,0.40%,F,T)



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

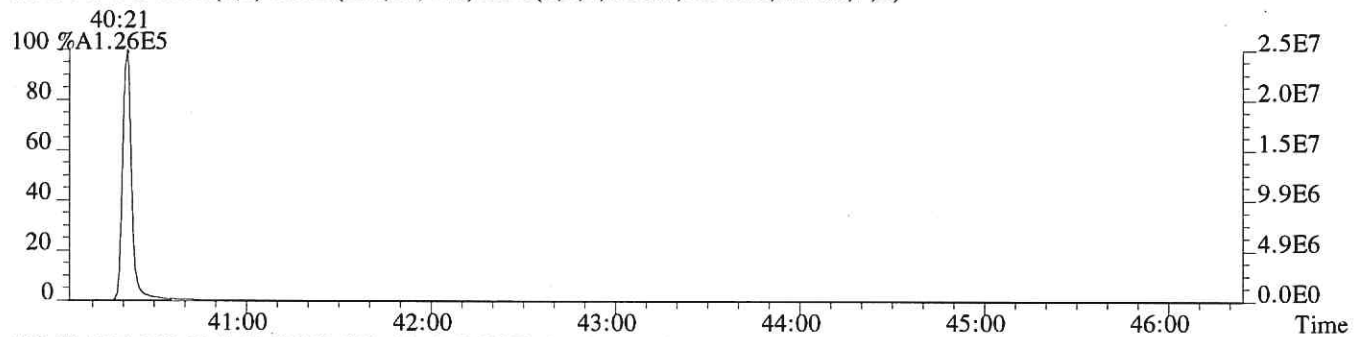


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

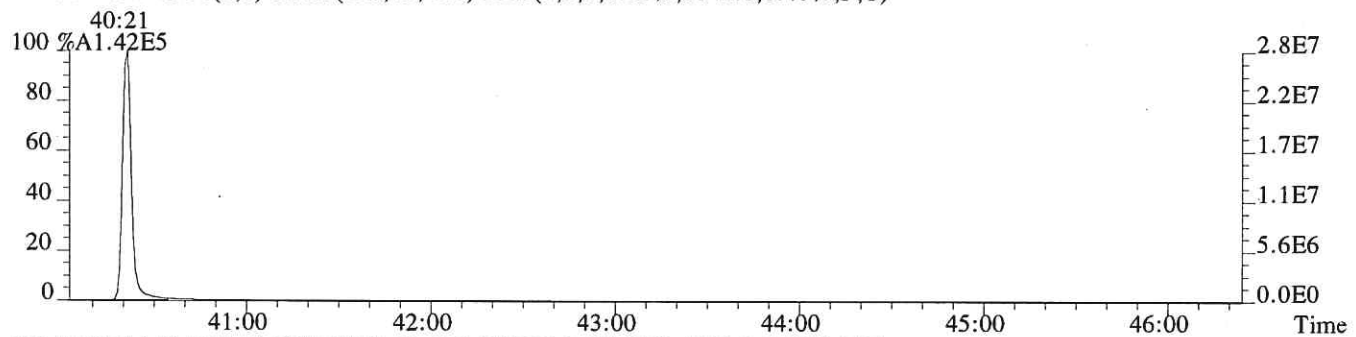


File:P618694 #1-573 Acq:22-AUG-2019 22:02:58 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-001

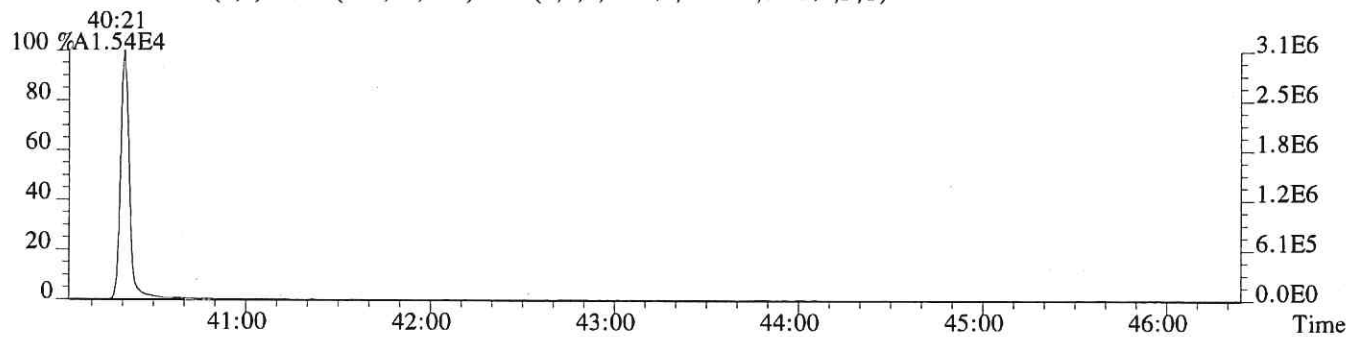
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,10912.0,0.40%,F,T)



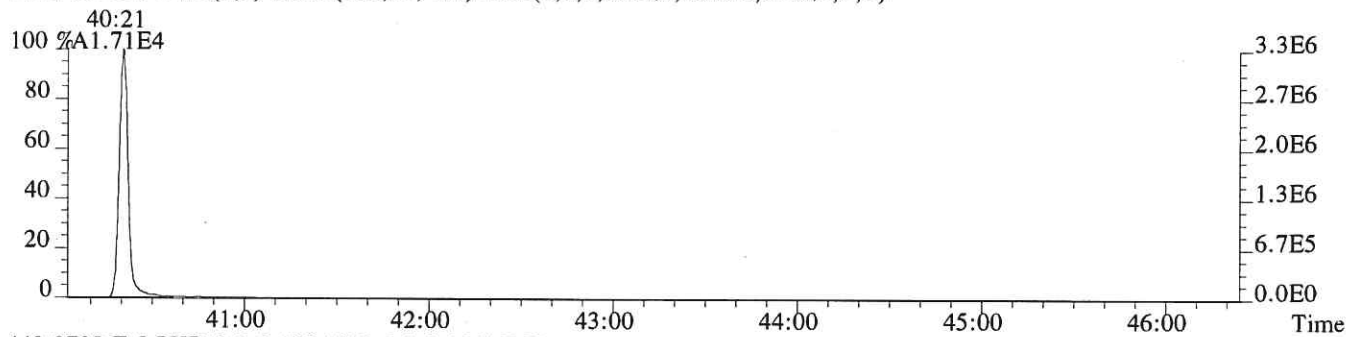
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,5048.0,0.40%,F,T)



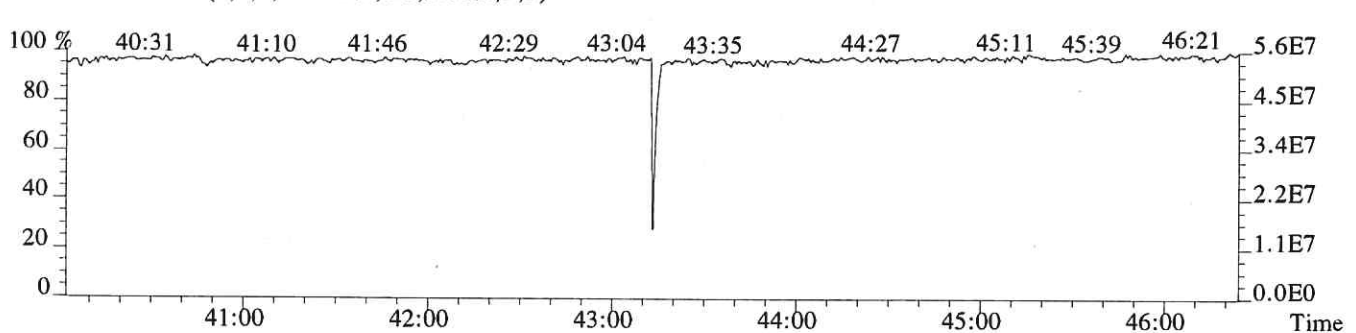
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4908.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2500.0,0.40%,F,T)



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



ALS ENVIRONMENTAL

Sample Response Summary

CLIENT ID.
BS-2-190813

Run #12 Filename P618636 Samp: 1 Inj: 1 Acquired: 20-AUG-19 17:06:34
Processed: 22-AUG-19 08:58:08 Sample ID: E1900593-002

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	NotFnd	*	*	*	no	no	0.873
2 Unk	1,2,3,7,8-PeCDF	NotFnd	*	*	*	no	no	0.864
3 Unk	2,3,4,7,8-PeCDF	31:31	3.720e+01	2.513e+01	1.48	yes	no	0.825
4 Unk	1,2,3,4,7,8-HxCDF	34:24	5.741e+01	3.697e+01	1.55	no	no	1.084
5 Unk	1,2,3,6,7,8-HxCDF	34:32	3.999e+01	2.846e+01	1.41	yes	no	0.994
6 Unk	2,3,4,6,7,8-HxCDF	35:04	6.445e+01	4.190e+01	1.54	no	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	NotFnd	*	*	*	no	yes	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	37:08	1.228e+02	1.027e+02	1.20	yes	no	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	38:27	3.662e+01	3.285e+01	1.11	yes	no	1.104
10 Unk	OCDF	40:40	3.467e+02	3.619e+02	0.96	yes	no	0.993
11 Unk	2,3,7,8-TCDD	NotFnd	*	*	*	no	no	0.989
12 Unk	1,2,3,7,8-PeCDD	NotFnd	*	*	*	no	no	0.954
13 Unk	1,2,3,4,7,8-HxCDD	NotFnd	*	*	*	no	yes	1.020
14 Unk	1,2,3,6,7,8-HxCDD	35:17	1.255e+02	1.054e+02	1.19	yes	yes	1.030
15 Unk	1,2,3,7,8,9-HxCDD	NotFnd	*	*	*	no	yes	1.007
16 Unk	1,2,3,4,6,7,8-HpCDD	38:02	1.836e+03	1.834e+03	1.00	yes	no	0.922
17 Unk	OCDD	40:30	9.228e+04	1.043e+05	0.89	yes	no	1.062
18 IS	13C-2,3,7,8-TCDF	25:26	1.803e+04	2.350e+04	0.77	yes	no	1.102
19 IS	13C-1,2,3,7,8-PeCDF	30:29	3.132e+04	2.002e+04	1.56	yes	no	1.074
20 IS	13C-2,3,4,7,8-PeCDF	31:31	2.969e+04	1.914e+04	1.55	yes	no	1.005
21 IS	13C-1,2,3,4,7,8-HxCDF	34:24	1.307e+04	2.525e+04	0.52	yes	no	1.059
22 IS	13C-1,2,3,6,7,8-HxCDF	34:30	1.407e+04	2.755e+04	0.51	yes	no	1.264
23 IS	13C-2,3,4,6,7,8-HxCDF	35:03	1.217e+04	2.328e+04	0.52	yes	no	1.066
24 IS	13C-1,2,3,7,8,9-HxCDF	35:49	1.025e+04	2.018e+04	0.51	yes	no	0.801
25 IS	13C-1,2,3,4,6,7,8-HpCDF	37:07	7.062e+03	1.660e+04	0.43	yes	no	0.789
26 IS	13C-1,2,3,4,7,8,9-HpCDF	38:27	6.555e+03	1.532e+04	0.43	yes	no	0.590
27 IS	13C-2,3,7,8-TCDD	26:27	1.556e+04	2.012e+04	0.77	yes	no	0.839
28 IS	13C-1,2,3,7,8-PeCDD	31:49	2.458e+04	1.557e+04	1.58	yes	no	0.744
29 IS	13C-1,2,3,4,7,8-HxCDD	35:11	1.866e+04	1.382e+04	1.35	yes	no	0.907
30 IS	13C-1,2,3,6,7,8-HxCDD	35:17	2.111e+04	1.696e+04	1.24	yes	no	0.978
31 IS	13C-1,2,3,4,6,7,8-HpCDD	38:01	1.390e+04	1.304e+04	1.07	yes	no	0.814
32 IS	13C-OCDD	40:29	1.400e+04	1.596e+04	0.88	yes	no	0.653
33 RS/RT	13C-1,2,3,4-TCDD	25:43	2.990e+04	3.862e+04	0.77	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	35:31	3.364e+04	2.699e+04	1.25	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	26:28	1.398e+04				no	0.894

$$OCDD = \frac{(9.228e+04 + 1.043e+05) \times 4000 \text{ pg} \times 1}{(1.400e+04 + 1.596e+04) \times 10.216 \text{ g} \times 90.6 / 100 \times 1.062}$$

2670 mg/Kg
L1608/22/19

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
BS-2-190813

Run #12 Filename P618636 Samp: 1 Inj: 1 Acquired: 20-AUG-19 17:06:34
Processed: 22-AUG-19 08:58:08 LAB. ID: E1900593-002

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	*	8.32e+02	*	*	4.02e+03	*
2	1,2,3,7,8-PeCDF	*	8.64e+02	*	*	1.65e+03	*
3	2,3,4,7,8-PeCDF	7.89e+03	8.64e+02	9.1e+00	6.87e+03	1.65e+03	4.2e+00
4	1,2,3,4,7,8-HxCDF	1.10e+04	1.88e+03	5.8e+00	8.34e+03	1.64e+03	5.1e+00
5	1,2,3,6,7,8-HxCDF	7.12e+03	1.88e+03	3.8e+00	6.39e+03	1.64e+03	3.9e+00
6	2,3,4,6,7,8-HxCDF	1.18e+04	1.88e+03	6.3e+00	9.65e+03	1.64e+03	5.9e+00
7	1,2,3,7,8,9-HxCDF	*	1.88e+03	*	*	1.64e+03	*
8	1,2,3,4,6,7,8-HpCDF	2.58e+04	1.44e+03	1.8e+01	2.24e+04	1.73e+03	1.3e+01
9	1,2,3,4,7,8,9-HpCDF	8.77e+03	1.44e+03	6.1e+00	6.81e+03	1.73e+03	3.9e+00
10	OCDF	6.31e+04	1.86e+03	3.4e+01	7.66e+04	2.68e+03	2.9e+01
11	2,3,7,8-TCDD	*	2.95e+03	*	*	2.28e+03	*
12	1,2,3,7,8-PeCDD	*	3.14e+03	*	*	2.44e+03	*
13	1,2,3,4,7,8-HxCDD	*	5.01e+03	*	*	8.72e+03	*
14	1,2,3,6,7,8-HxCDD	2.47e+04	5.01e+03	4.9e+00	2.65e+04	8.72e+03	3.0e+00
15	1,2,3,7,8,9-HxCDD	*	5.01e+03	*	*	8.72e+03	*
16	1,2,3,4,6,7,8-HpCDD	4.09e+05	8.50e+03	4.8e+01	4.02e+05	8.88e+03	4.5e+01
17	OCDD	1.83e+07	1.15e+04	1.6e+03	2.07e+07	7.40e+03	2.8e+03
18	13C-2,3,7,8-TCDF	2.40e+06	1.54e+04	1.6e+02	3.07e+06	6.35e+03	4.8e+02
19	13C-1,2,3,7,8-PeCDF	5.18e+06	1.48e+03	3.5e+03	3.26e+06	7.68e+02	4.2e+03
20	13C-2,3,4,7,8-PeCDF	5.12e+06	1.48e+03	3.5e+03	3.23e+06	7.68e+02	4.2e+03
21	13C-1,2,3,4,7,8-HxCDF	2.75e+06	1.42e+03	1.9e+03	5.24e+06	2.07e+03	2.5e+03
22	13C-1,2,3,6,7,8-HxCDF	2.75e+06	1.42e+03	1.9e+03	5.41e+06	2.07e+03	2.6e+03
23	13C-2,3,4,6,7,8-HxCDF	2.55e+06	1.42e+03	1.8e+03	4.83e+06	2.07e+03	2.3e+03
24	13C-1,2,3,7,8,9-HxCDF	2.05e+06	1.42e+03	1.4e+03	4.11e+06	2.07e+03	2.0e+03
25	13C-1,2,3,4,6,7,8-HpCDF	1.56e+06	1.74e+03	9.0e+02	3.58e+06	1.72e+03	2.1e+03
26	13C-1,2,3,4,7,8,9-HpCDF	1.41e+06	1.74e+03	8.1e+02	3.24e+06	1.72e+03	1.9e+03
27	13C-2,3,7,8-TCDD	2.26e+06	6.96e+03	3.3e+02	2.96e+06	3.78e+03	7.8e+02
28	13C-1,2,3,7,8-PeCDD	4.29e+06	1.88e+03	2.3e+03	2.75e+06	1.80e+03	1.5e+03
29	13C-1,2,3,4,7,8-HxCDD	3.87e+06	2.55e+03	1.5e+03	2.74e+06	2.07e+03	1.3e+03
30	13C-1,2,3,6,7,8-HxCDD	4.25e+06	2.55e+03	1.7e+03	3.36e+06	2.07e+03	1.6e+03
31	13C-1,2,3,4,6,7,8-HpCDD	2.92e+06	1.23e+03	2.4e+03	2.80e+06	1.21e+03	2.3e+03
32	13C-OCDD	2.82e+06	6.70e+03	4.2e+02	3.15e+06	5.36e+03	5.9e+02
33	13C-1,2,3,4-TCDD	4.19e+06	6.96e+03	6.0e+02	5.37e+06	3.78e+03	1.4e+03
34	13C-1,2,3,7,8,9-HxCDD	6.62e+06	2.55e+03	2.6e+03	5.31e+06	2.07e+03	2.6e+03
35	37Cl-2,3,7,8-TCDD	2.07e+06	4.04e+03	5.1e+02			

---Sample Calculation---

$$D/L \text{ TCDD} = \frac{2.5 \times (2.952e+03 + 2.284e+03) \times 2000}{(2.265e+06 + 2.964e+06) \times () \times 0.989} =$$

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ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

BS-2-190813

Entry: 39 Totals Name: Total Penta-Furans2

Run: 12 File: P618636 Sample:1 Injection:1 Function:2

Acquired: 20-AUG-19 17:06:34 Processed: 22-AUG-19 08:58:08

Mass:	339.8600	341.8570	Tot Response: 6.23e+01		RRF: 0.8452			
#	RT	Resp	Resp Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	31:31	3.72e+01	2.51e+01	1.48	yes 6.23e+01	2,3,4,7,8-PeCDF	n	n

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Peak List Summary

CLIENT ID.

BS-2-190813

Entry: 41 Totals Name: Total Hexa-Furans

Run: 12 File: P618636 Sample:1 Injection:1 Function:3

Acquired: 20-AUG-19 17:06:34 Processed: 22-AUG-19 08:58:08

Mass:	373.8210	375.8180	Tot Response: 1.24e+02		RRF: 1.022				
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	33:23	3.17e+01	2.35e+01	1.35	yes	5.52e+01		n	n
2	34:32	4.00e+01	2.85e+01	1.41	yes	6.85e+01	1,2,3,6,7,8-HxCDF	n	n

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Peak List Summary

CLIENT ID.

BS-2-190813

Entry: 42 Totals Name: Total Hexa-Dioxins

Run: 12 File: P618636 Sample:1 Injection:1 Function:3

Acquired: 20-AUG-19 17:06:34 Processed: 22-AUG-19 08:58:08

Mass:	389.8160	391.8130	Tot Response: 5.83e+02		RRF: 1.019				
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	33:48	1.57e+02	1.44e+02	1.09	yes	3.01e+02		n	n
2	35:17	1.26e+02	1.05e+02	1.19	yes	2.31e+02	1,2,3,6,7,8-HxCDD	y	y
3	35:20	2.89e+01	2.19e+01	1.32	yes	5.08e+01		y	y

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Peak List Summary

CLIENT ID.

BS-2-190813

Entry: 43 Totals Name: Total Hepta-Furans

Run: 12 File: P618636 Sample:1 Injection:1 Function:4

Acquired: 20-AUG-19 17:06:34 Processed: 22-AUG-19 08:58:08

Mass:	407.7820	409.7790	Tot Response: 8.28e+02		RRF: 1.104				
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	37:08	1.23e+02	1.03e+02	1.20	yes	2.25e+02	1,2,3,4,6,7,8-HpCDF	n	n
2	37:31	2.88e+02	2.45e+02	1.17	yes	5.33e+02		n	n
3	38:27	3.66e+01	3.29e+01	1.11	yes	6.95e+01	1,2,3,4,7,8,9-HpCDF	n	n

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ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

BS-2-190813

Entry: 44 Totals Name: Total Hepta-Dioxins

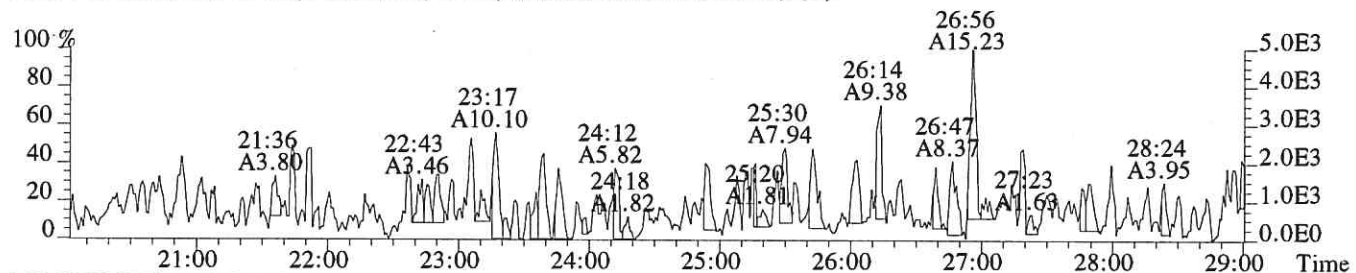
Run: 12 File: P618636 Sample:1 Injection:1 Function:4

Acquired: 20-AUG-19 17:06:34 Processed: 22-AUG-19 08:58:08

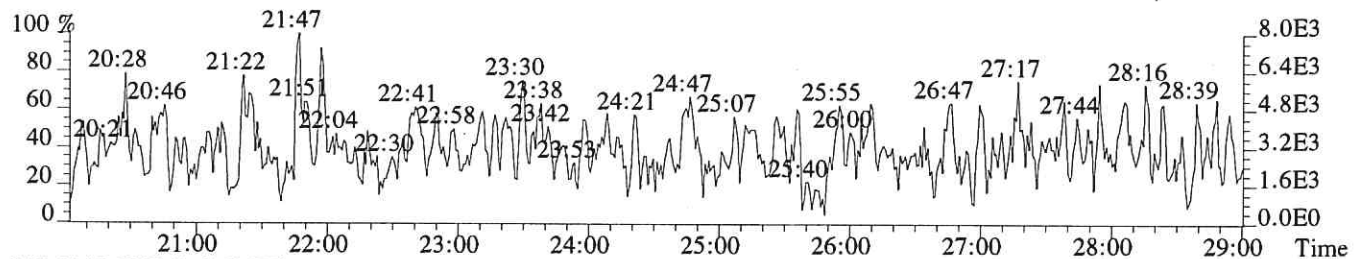
Mass:	423.7770	425.7740	Tot Response: 7.52e+03		RRF: 0.9218				
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	37:23	1.91e+03	1.94e+03	0.98	yes	3.85e+03		n	n
2	38:02	1.84e+03	1.83e+03	1.00	yes	3.67e+03	1,2,3,4,6,7,8-HpCDD	n	n

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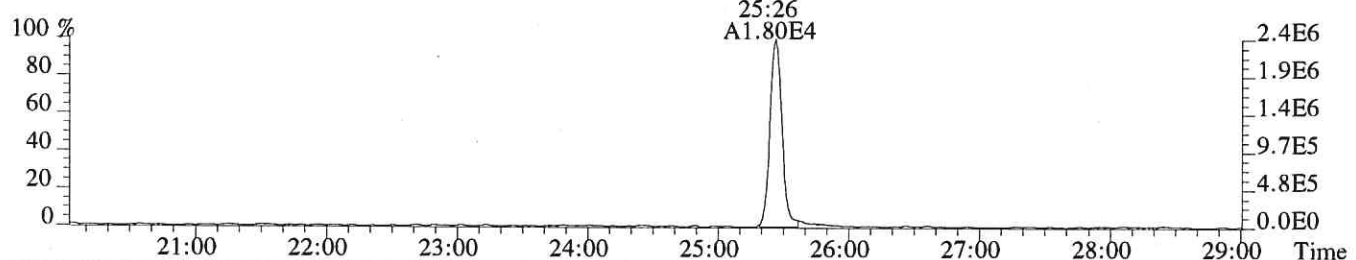
File:P618636 #1-637 Acq:20-AUG-2019 17:06:34 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-002
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,832.0,1.00%,F,T)



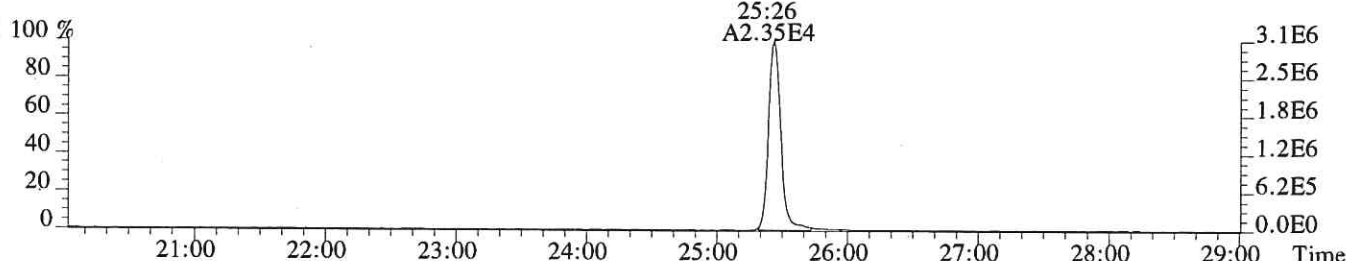
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4020.0,1.00%,F,T)



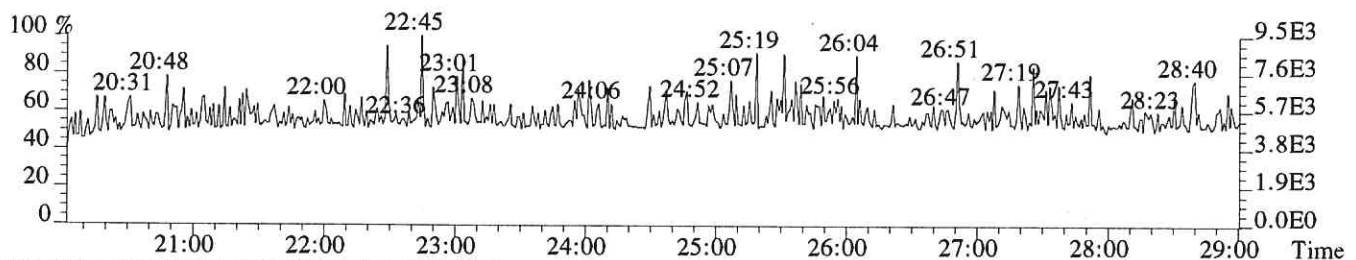
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,15404.0,1.00%,F,T)



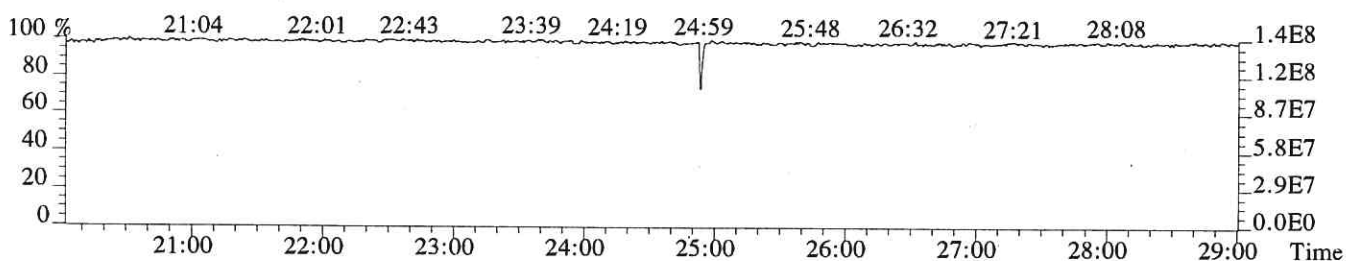
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6352.0,1.00%,F,T)



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



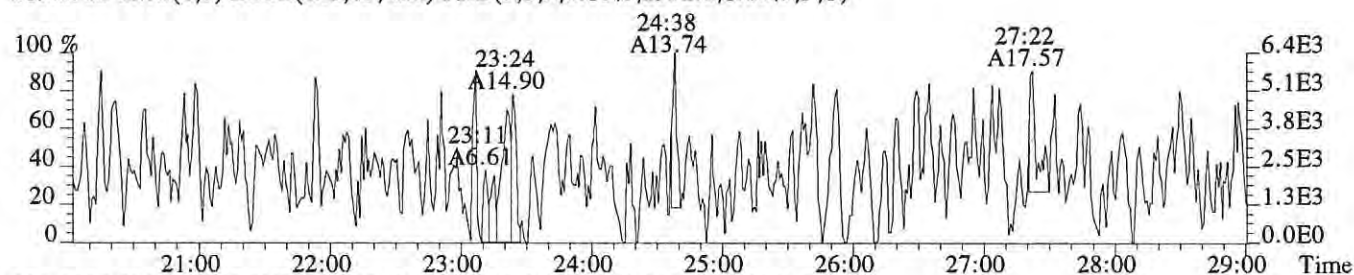
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



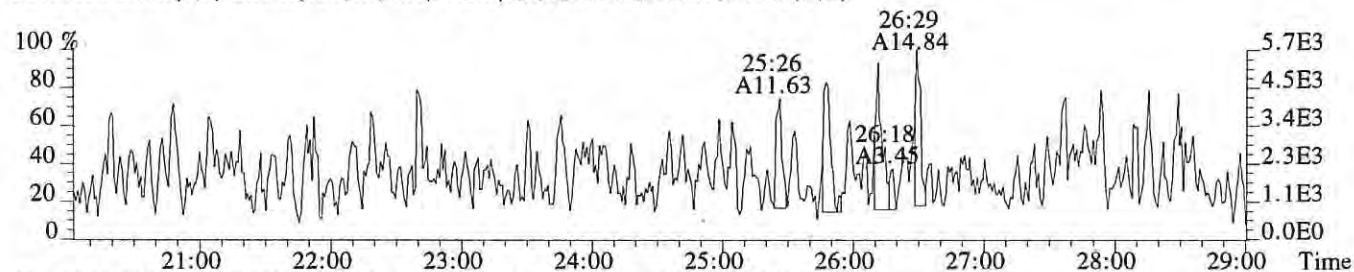
File:P618636 #1-637 Acq:20-AUG-2019 17:06:34 Probe EI+ Magnet SIR VG BioTech Mass spectr

Sample#1 Exp:E1900593-002

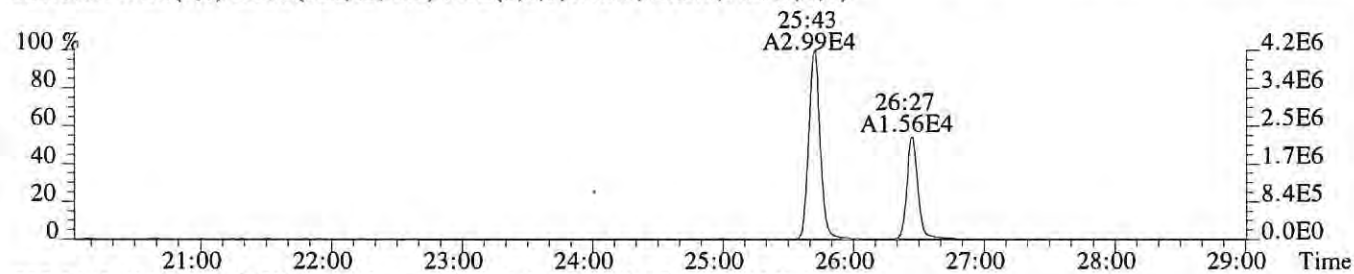
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2952.0,1.00%,F,T)



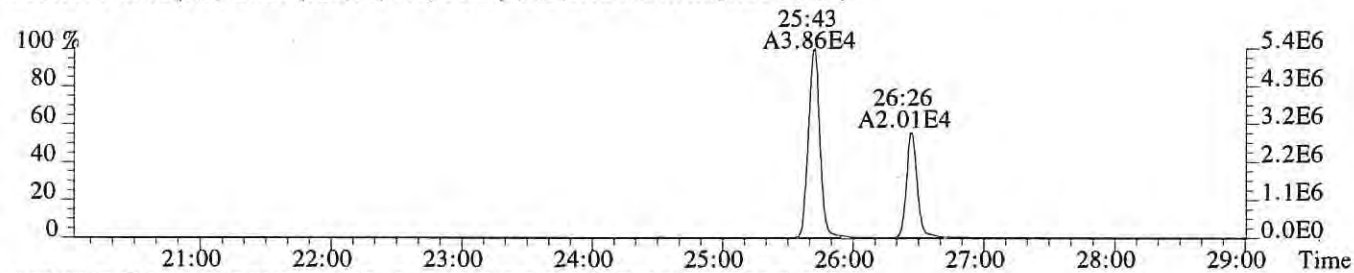
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2284.0,1.00%,F,T)



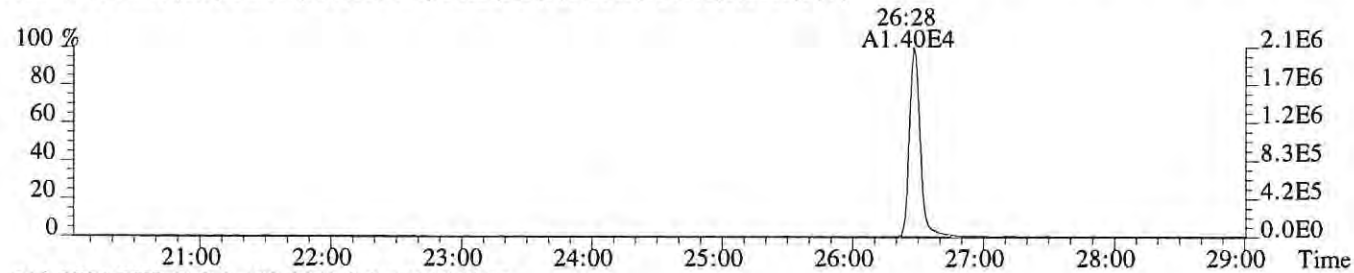
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6960.0,1.00%,F,T)



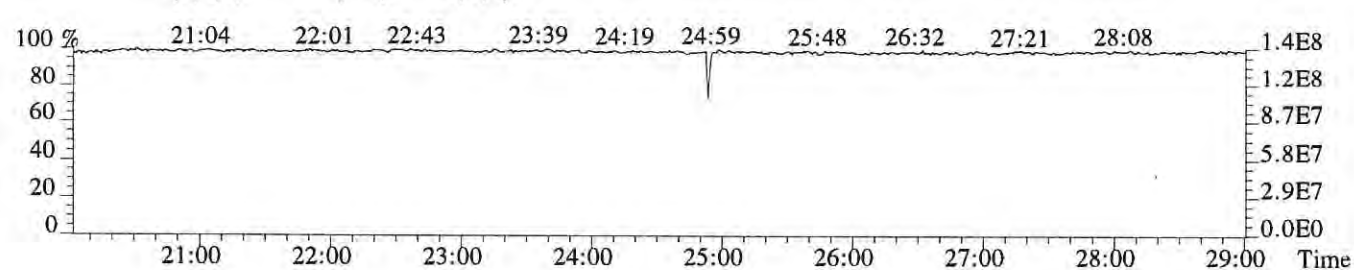
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3784.0,1.00%,F,T)

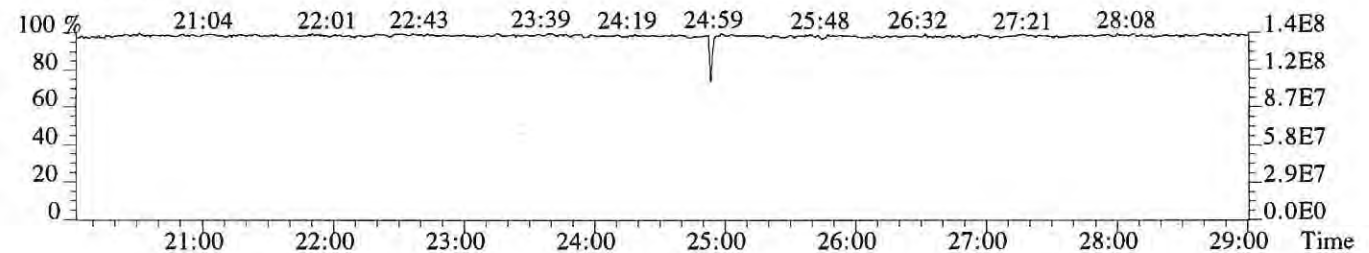
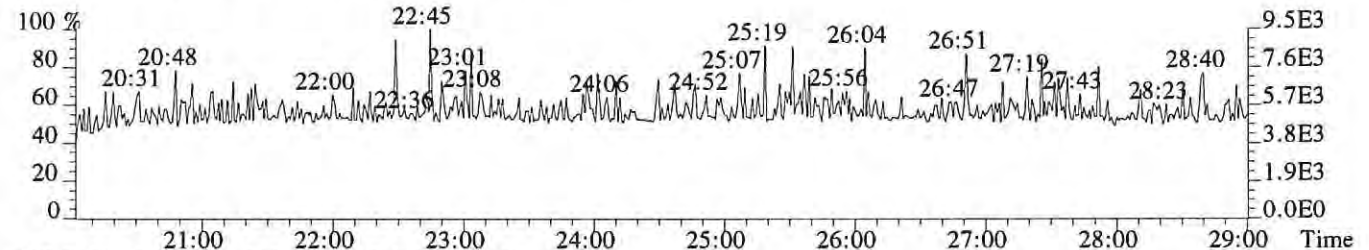
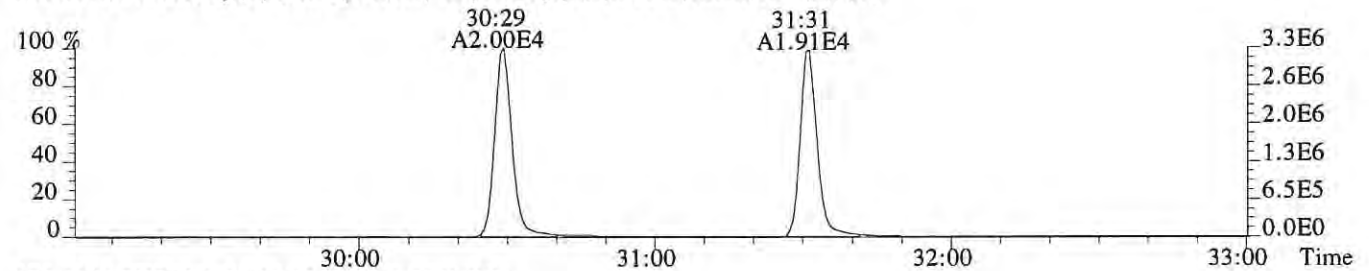
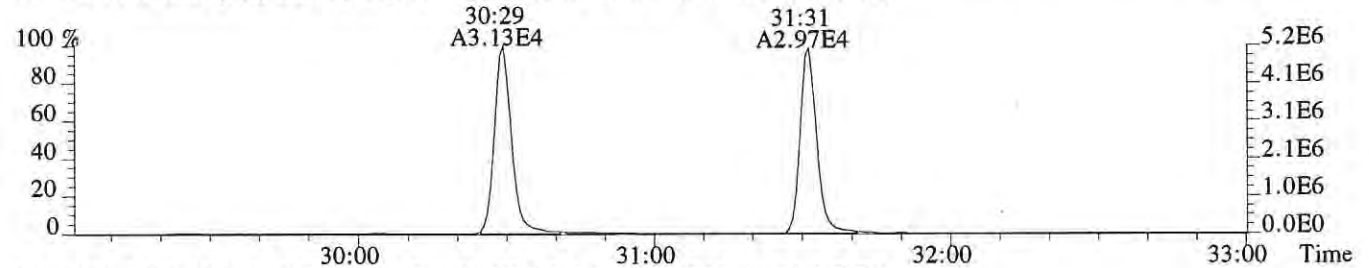
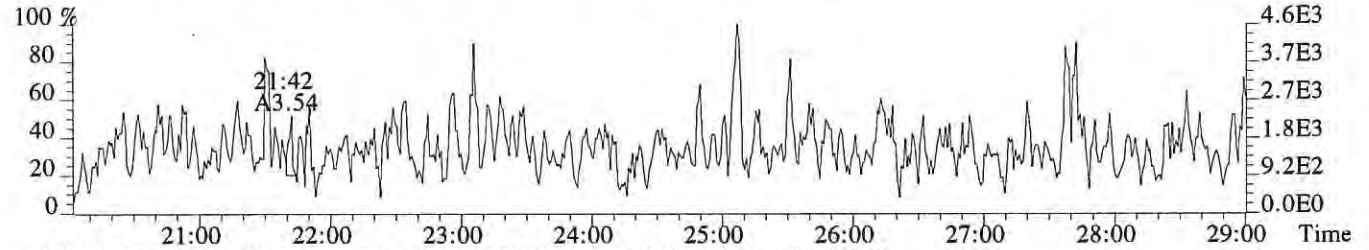
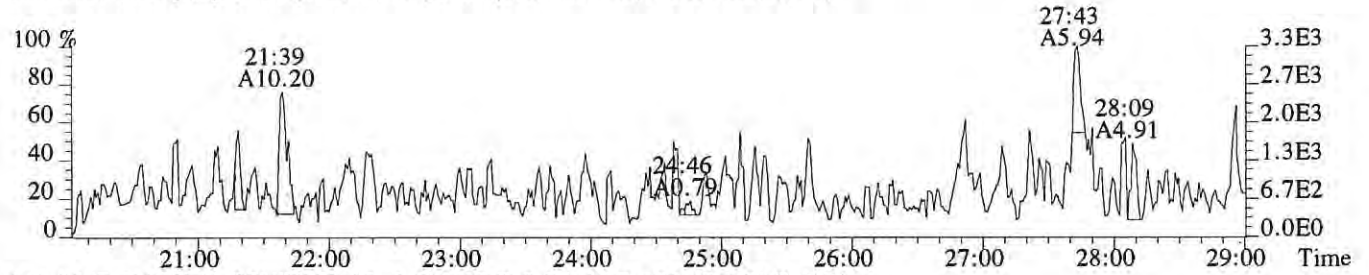


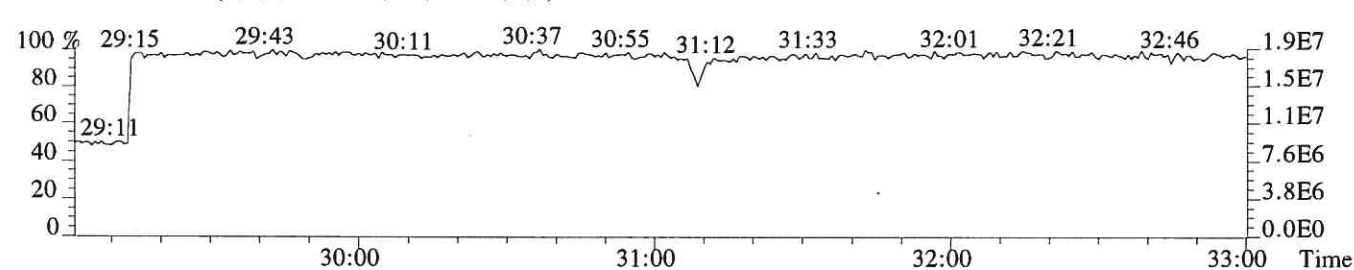
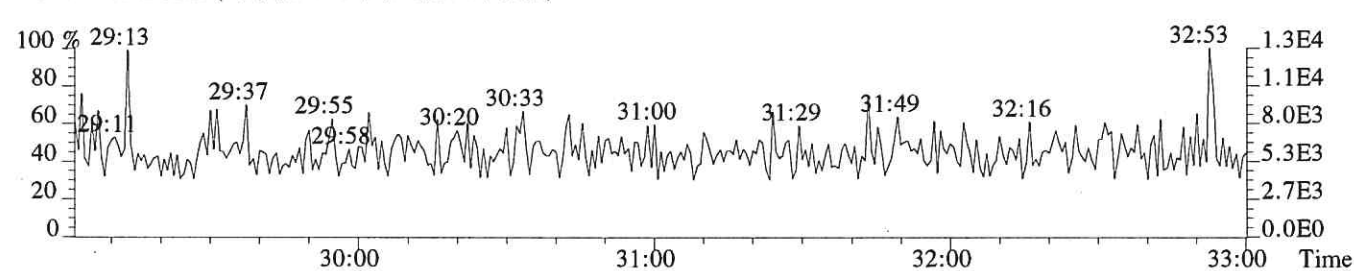
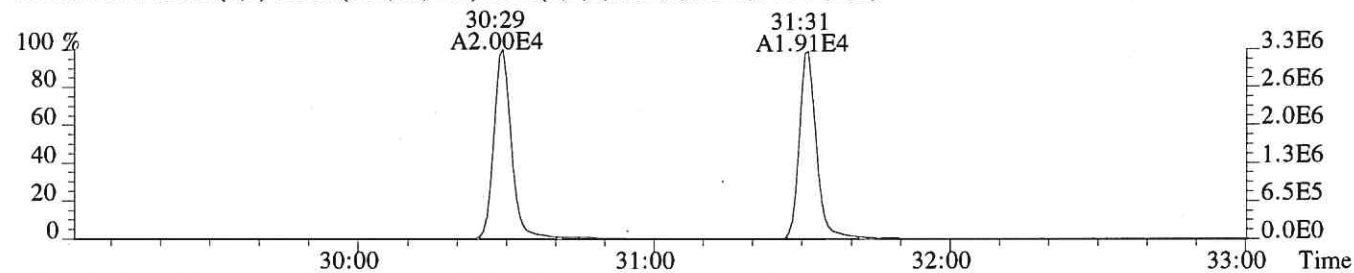
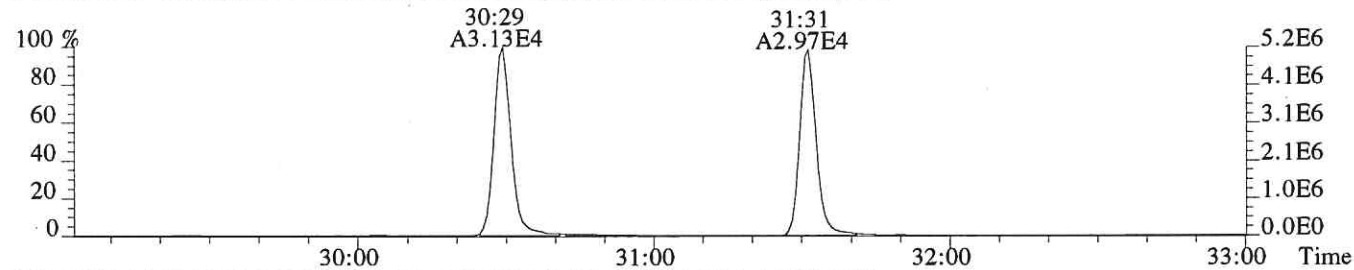
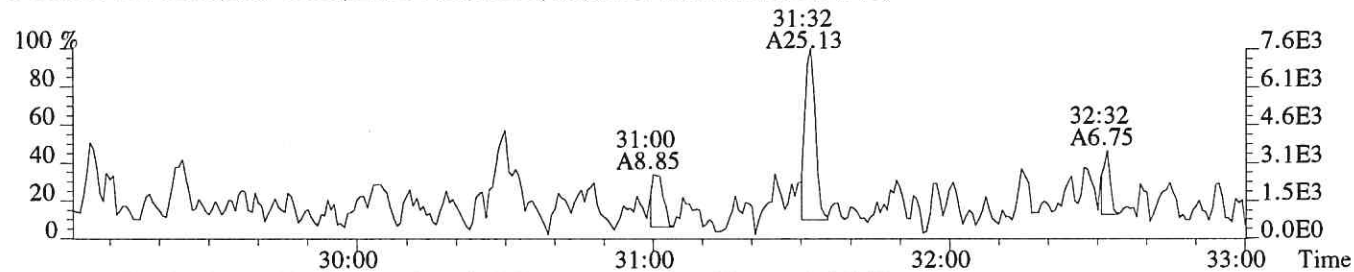
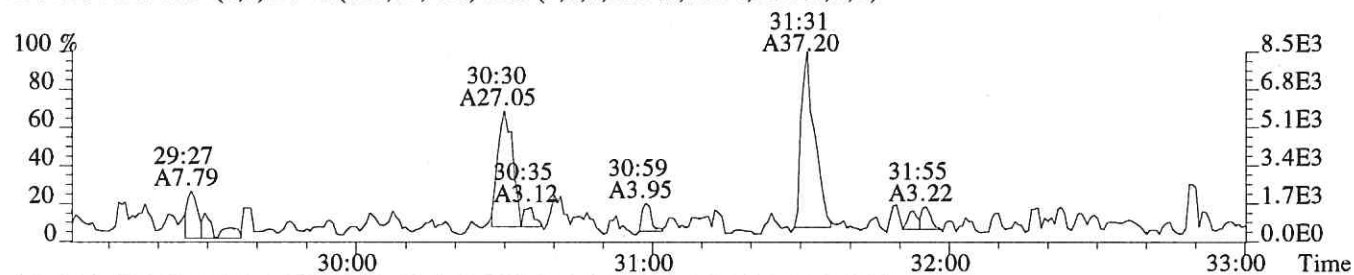
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4040.0,1.00%,F,T)



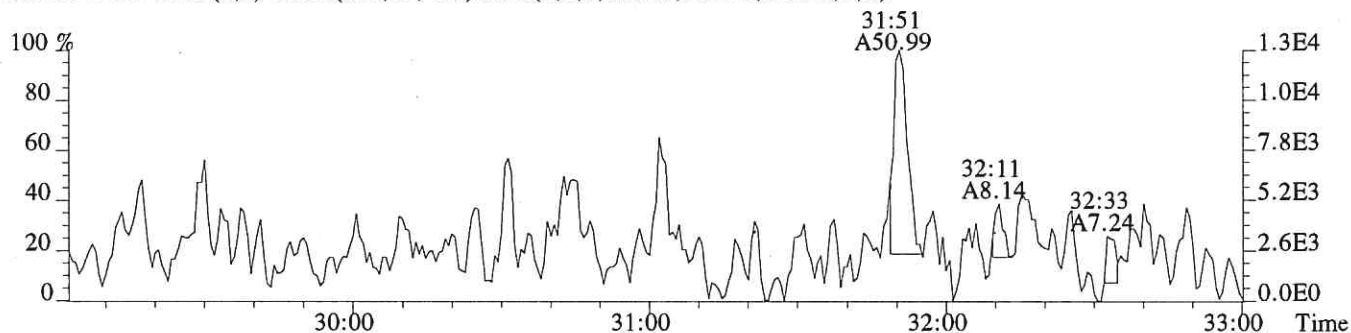
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



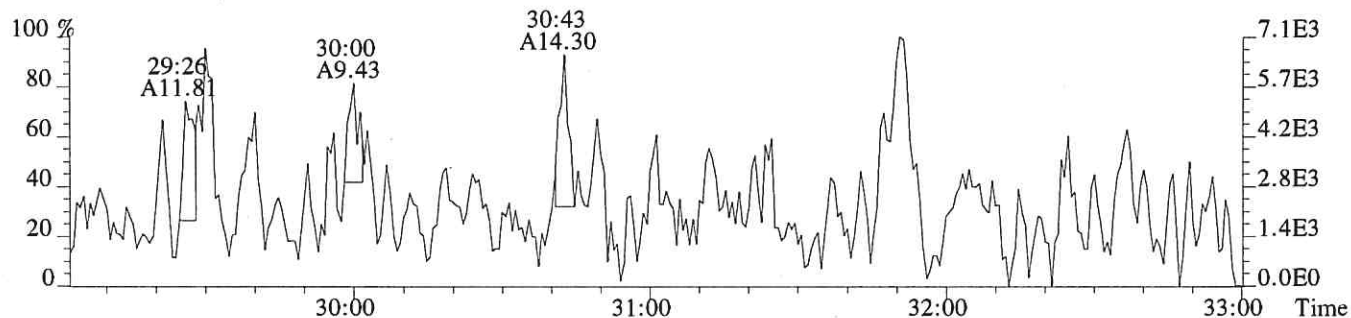




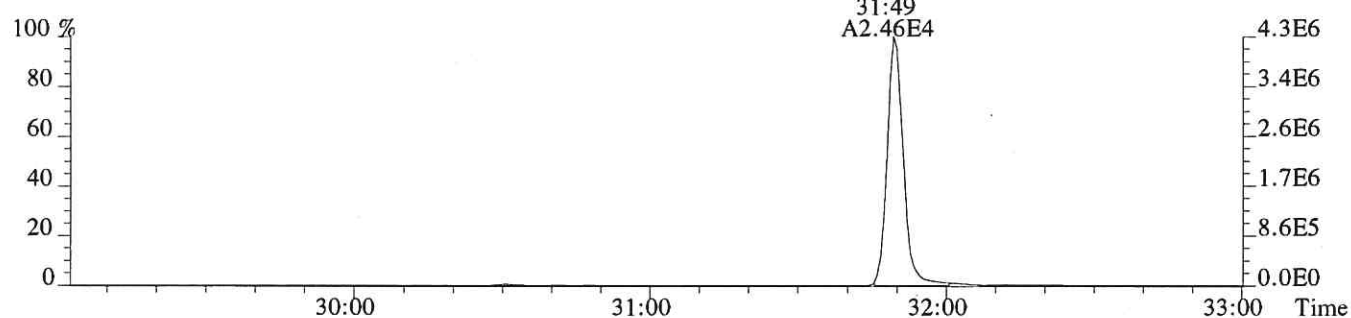
File:P618636 #1-357 Acq:20-AUG-2019 17:06:34 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-002
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3144.0,1.00%,F,T)



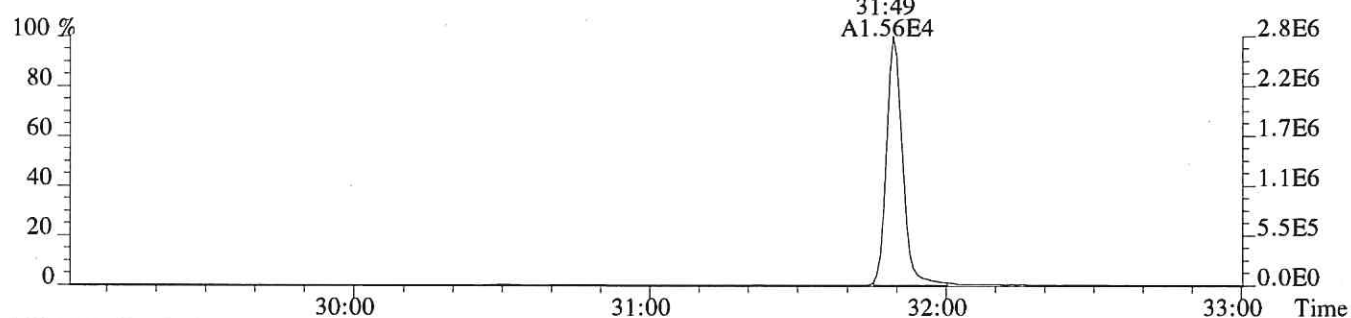
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2444.0,1.00%,F,T)



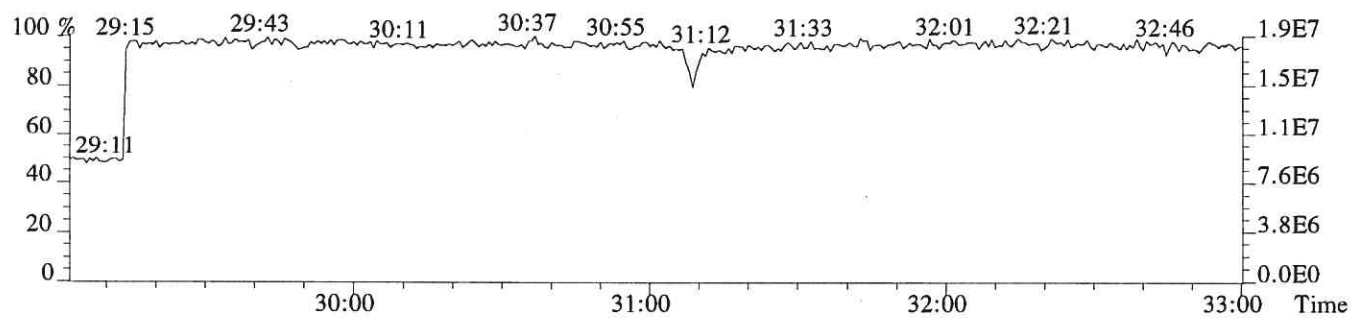
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1876.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1804.0,1.00%,F,T)

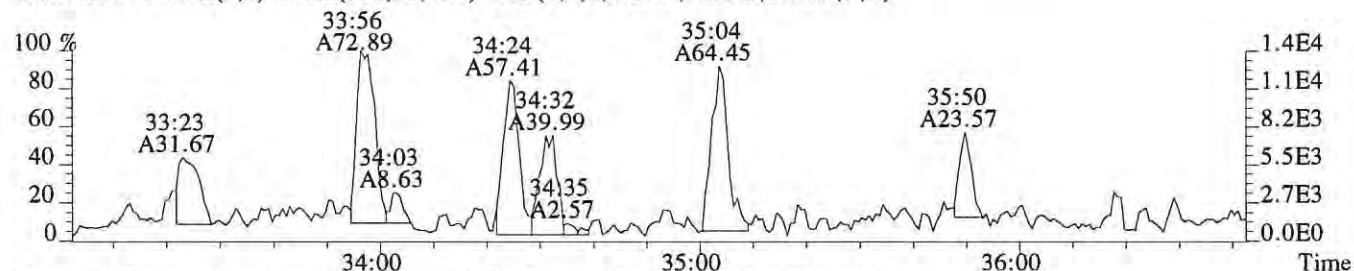


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

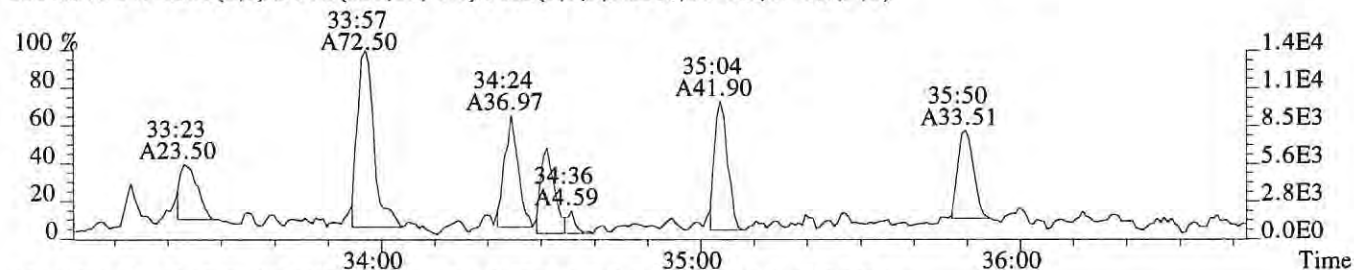


File:P618636 #1-331 Acq:20-AUG-2019 17:06:34 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-002

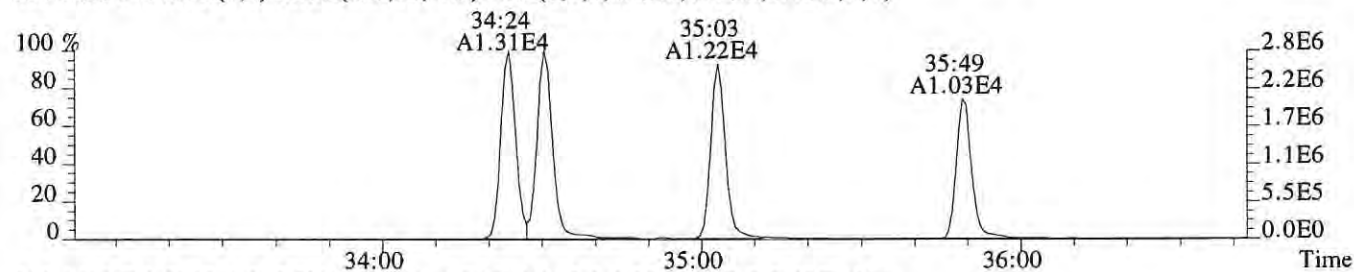
373.8208 F:3 SMO(1,3) BSM(128,15,-3.0) PKD(3,3,3,0.25%,1884.0,0.40%,F,T)



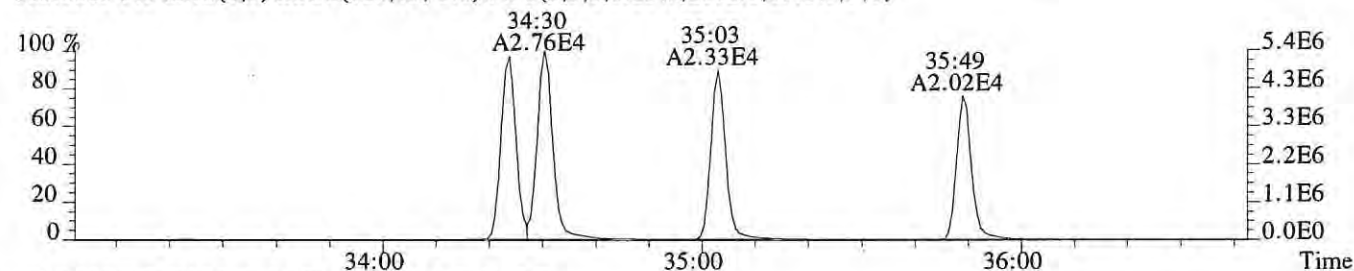
375.8178 F:3 SMO(1,3) BSM(128,15,-3.0) PKD(3,3,3,0.25%,1640.0,0.40%,F,T)



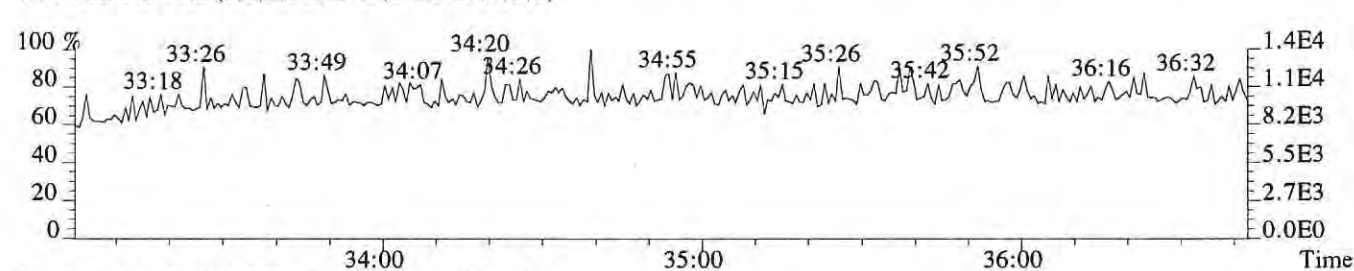
383.8639 F:3 SMO(1,3) BSM(128,15,-3.0) PKD(3,3,3,0.25%,1416.0,0.40%,F,T)



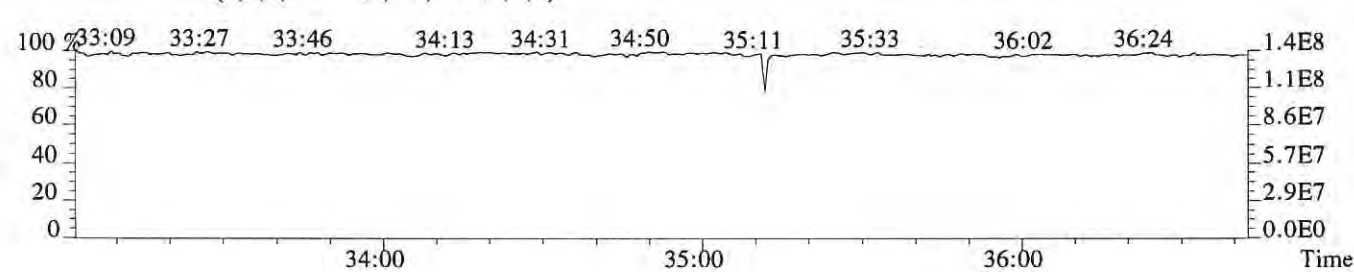
385.8610 F:3 SMO(1,3) BSM(128,15,-3.0) PKD(3,3,3,0.25%,2072.0,0.40%,F,T)



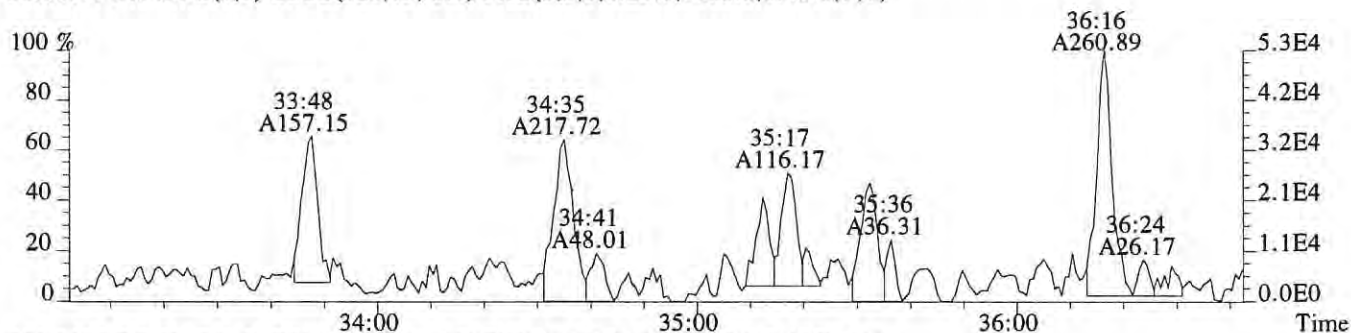
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



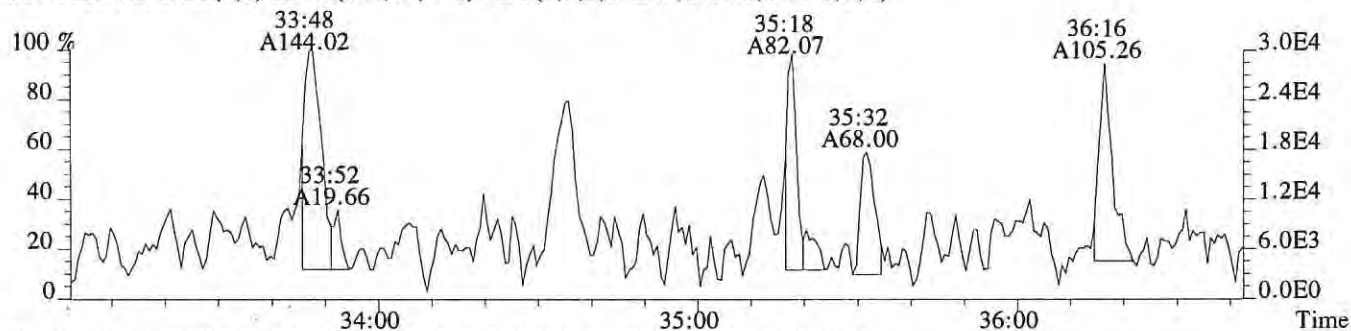
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



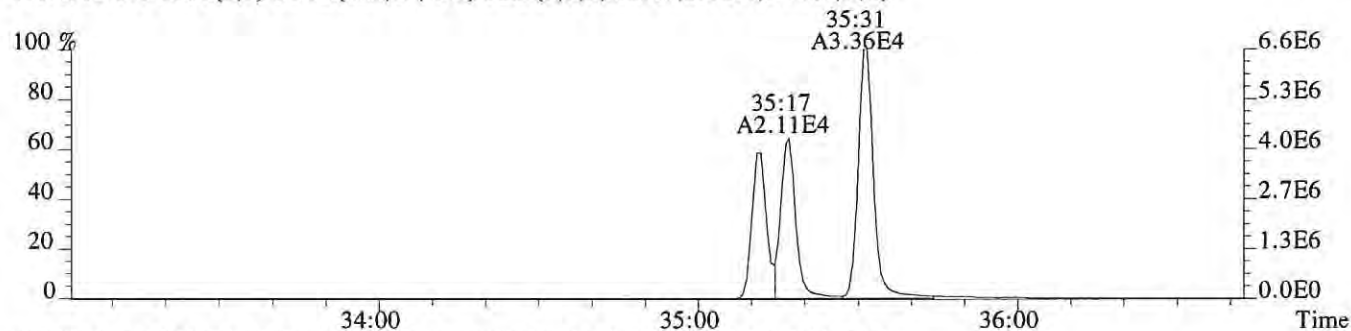
File:P618636 #1-331 Acq:20-AUG-2019 17:06:34 Probe EI+ Magnet SIR VG BioTech Mass spectf
 Sample#1 Exp:E1900593-002
 389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5008.0,0.40%,F,T)



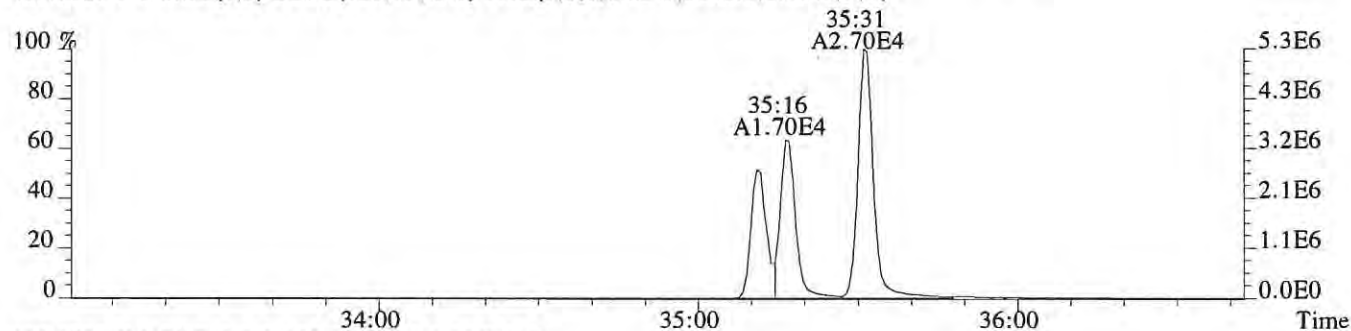
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,8716.0,0.40%,F,T)



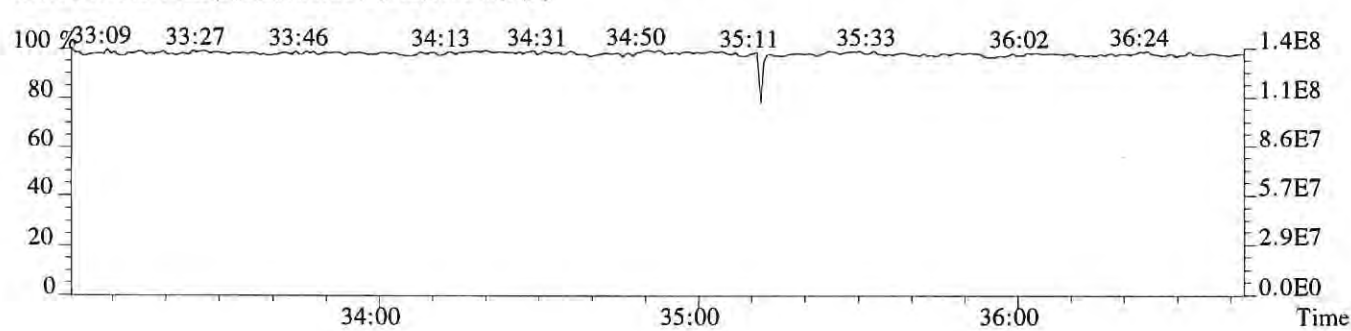
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2552.0,0.40%,F,T)



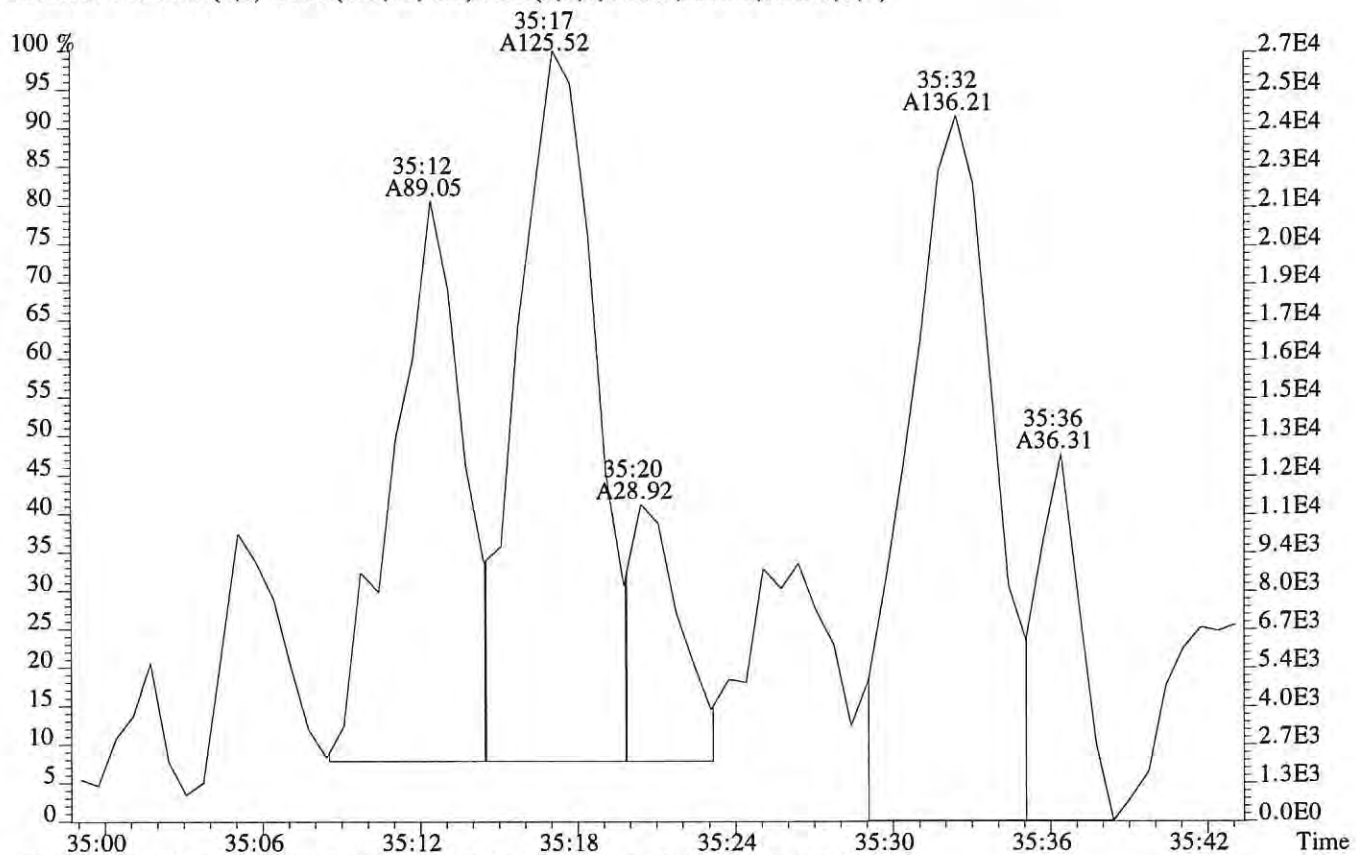
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2068.0,0.40%,F,T)



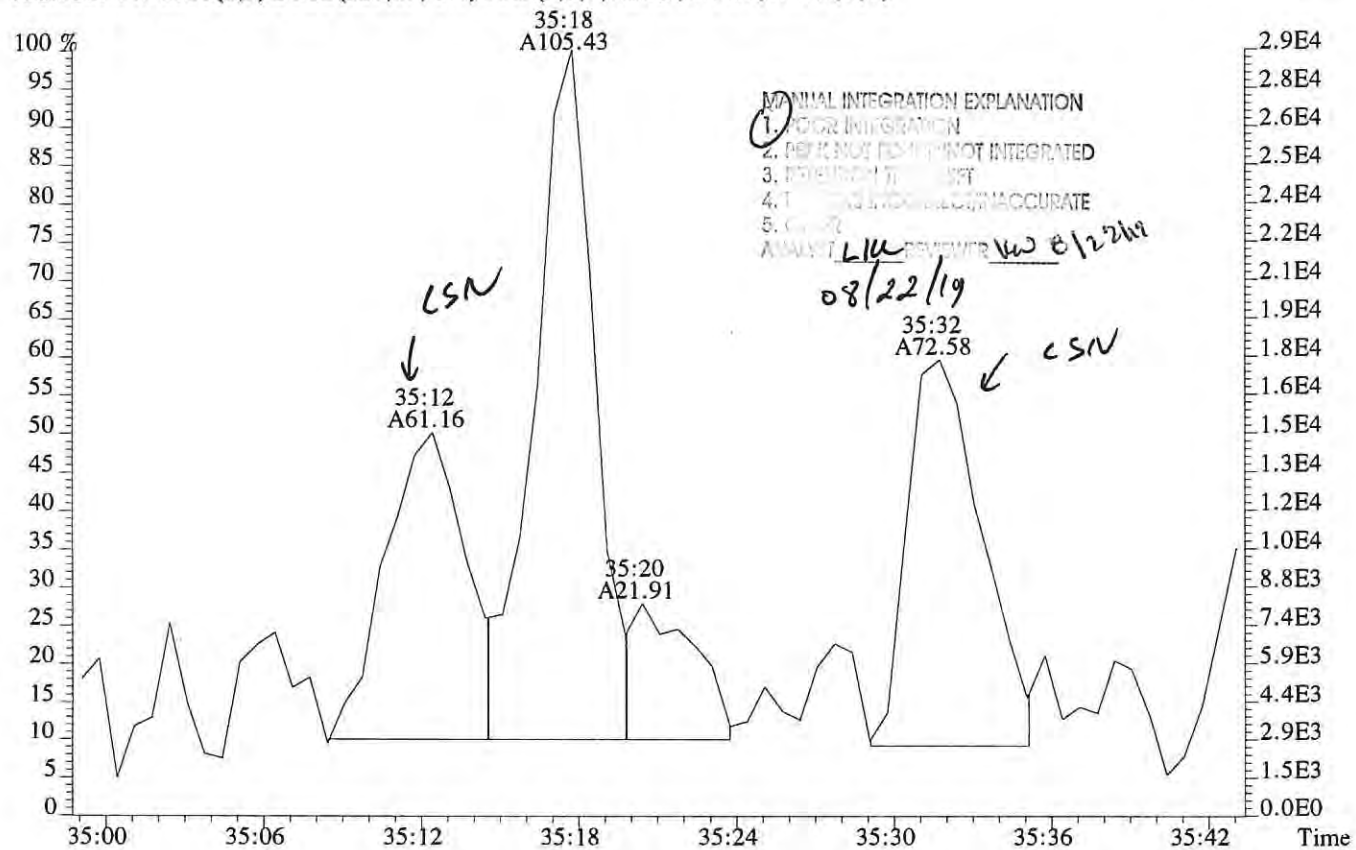
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



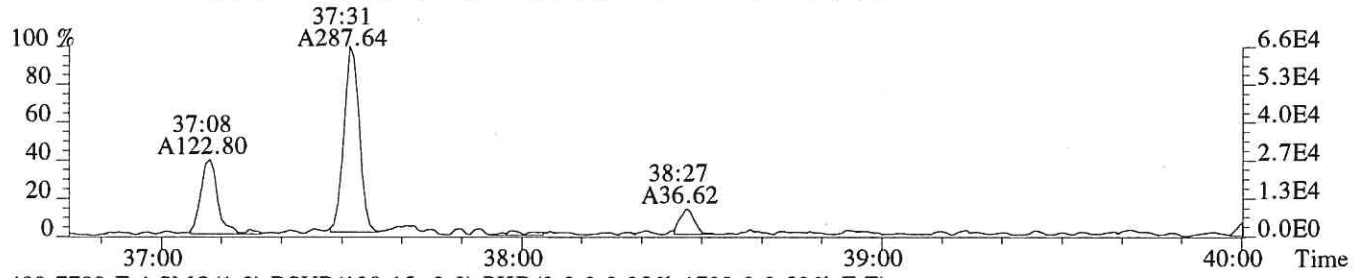
File:P618636 #1-331 Acq:20-AUG-2019 17:06:34 Probe EI+ Magnet SIR VG BioTech Mass spectf
 Sample#1 Exp:E1900593-002
 389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5008.0,0.40%,F,T)



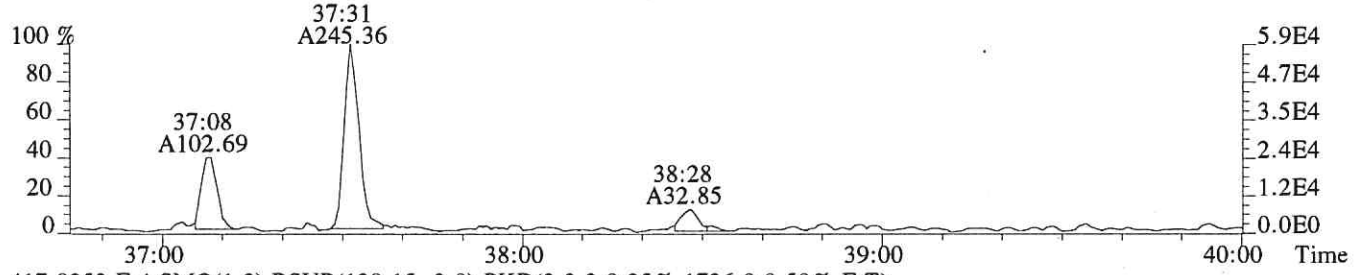
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,8716.0,0.40%,F,T)



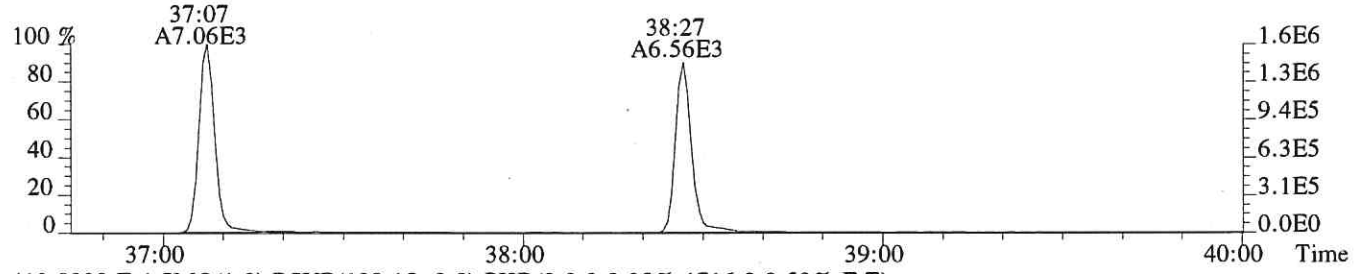
File:P618636 #1-294 Acq:20-AUG-2019 17:06:34 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-002
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1440.0,0.50%,F,T)



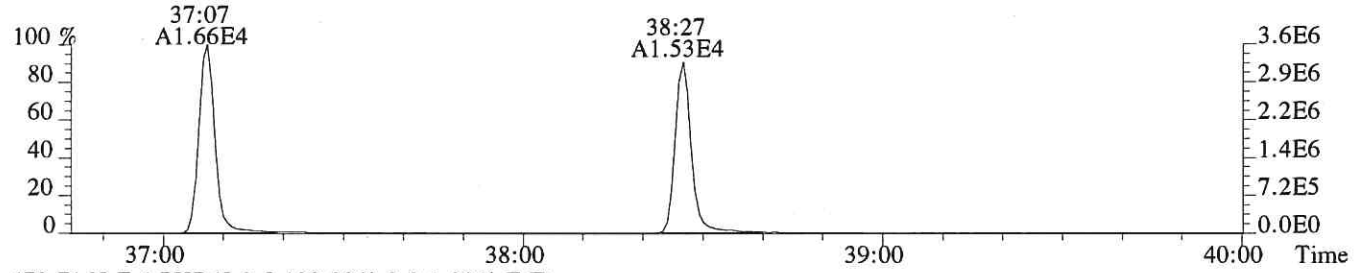
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1728.0,0.50%,F,T)



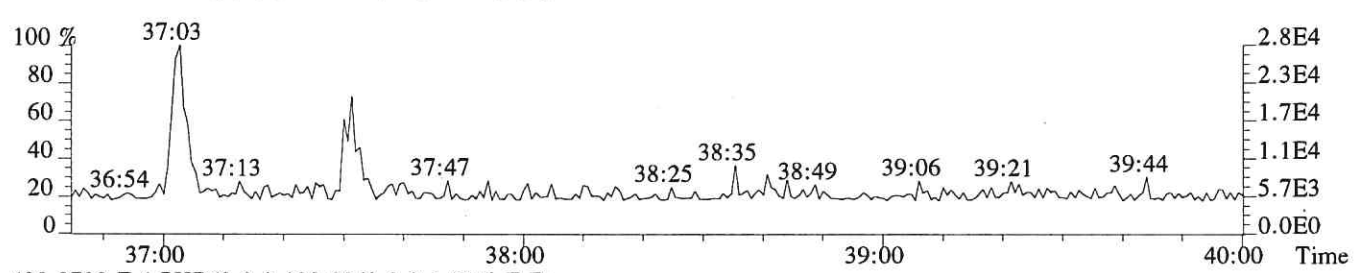
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1736.0,0.50%,F,T)



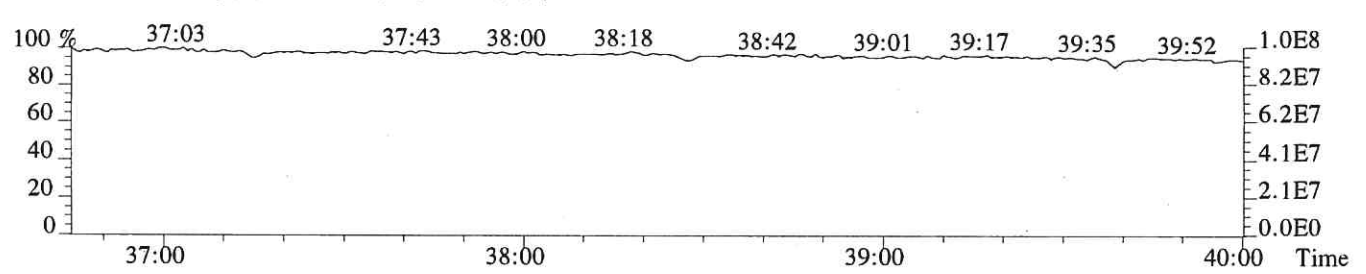
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1716.0,0.50%,F,T)

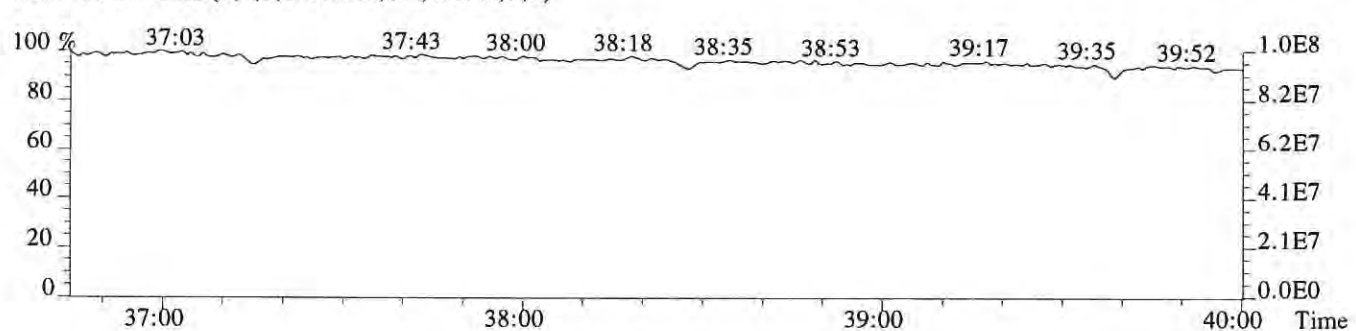
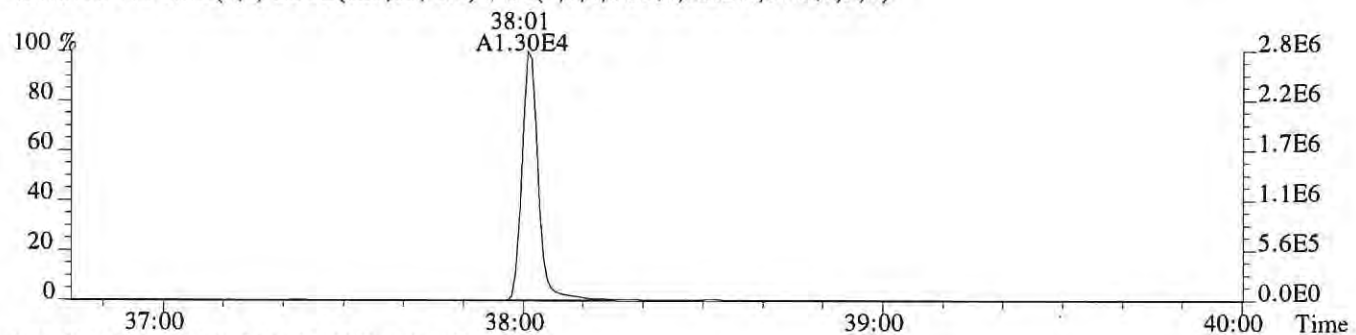
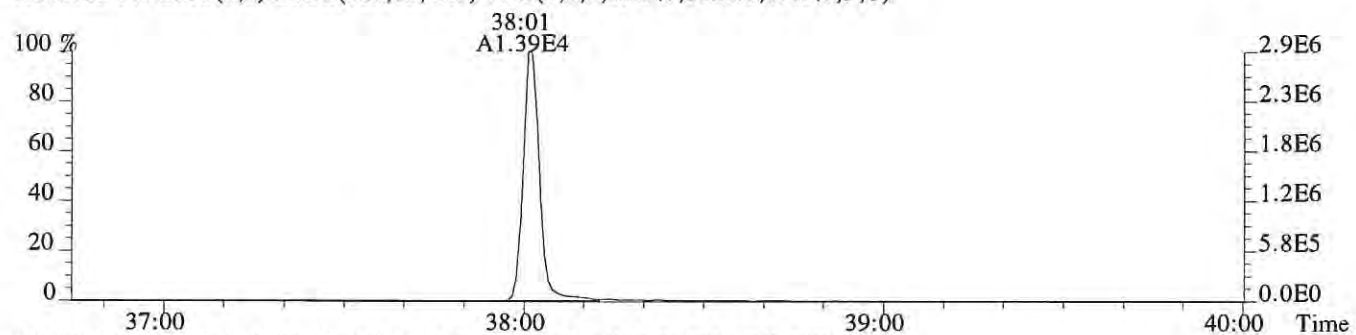
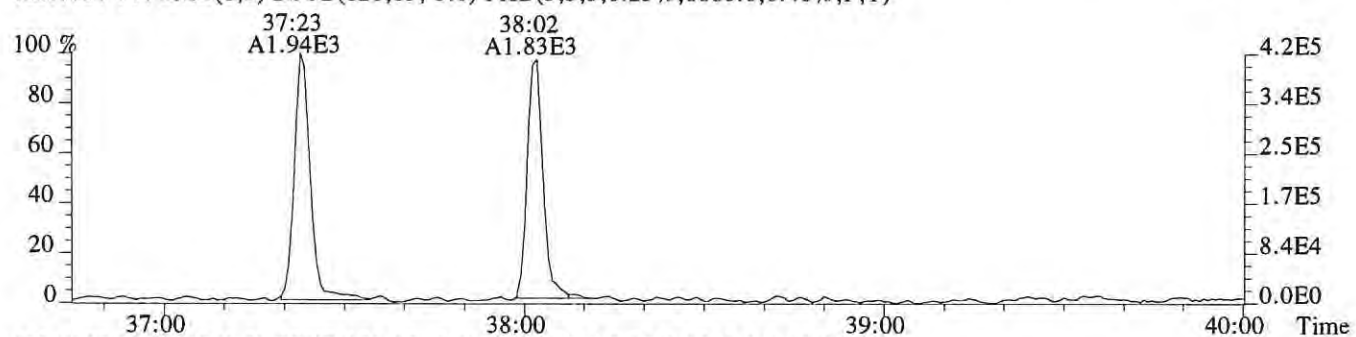
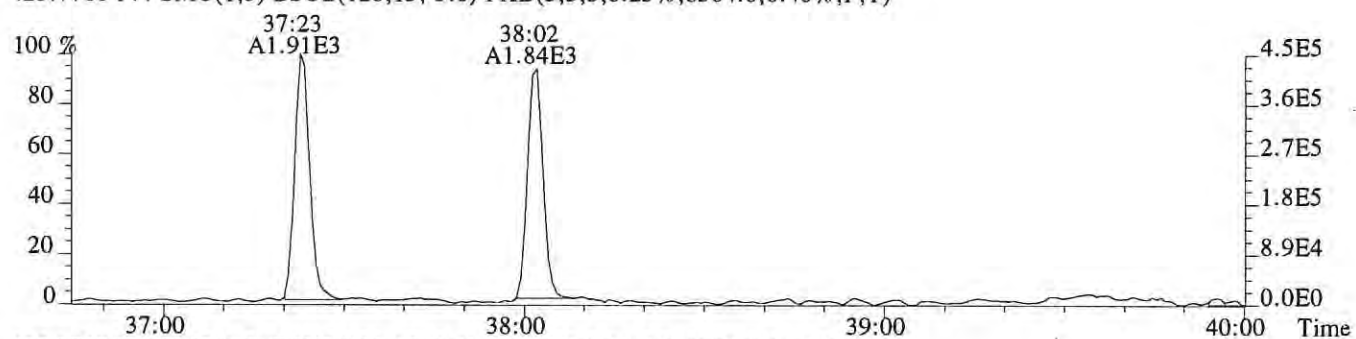


479.7165 F:4 PKD(5,3,5,100.0%,0.0,1.00%,F,F)

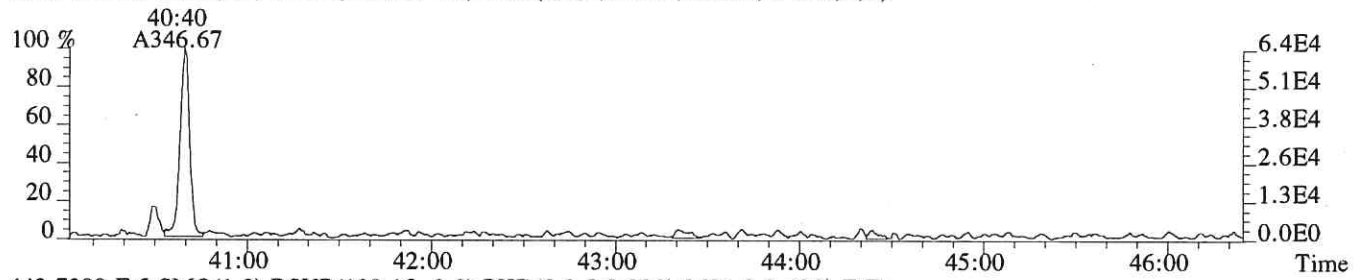


430.9729 F:4 PKD(3,3,3,100.0%,0.0,1.00%,F,F)

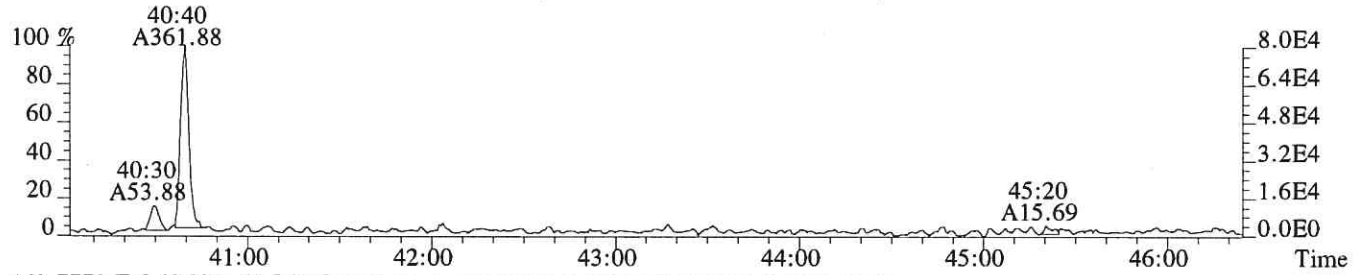




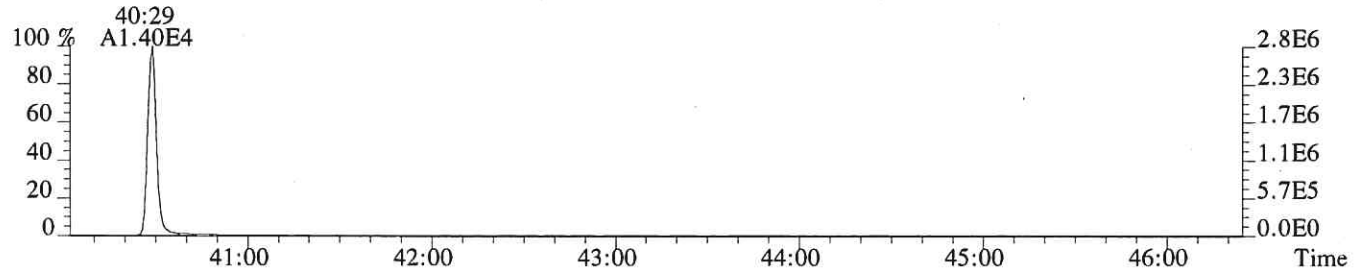
File:P618636 #1-574 Acq:20-AUG-2019 17:06:34 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-002
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1856.0,0.40%,F,T)



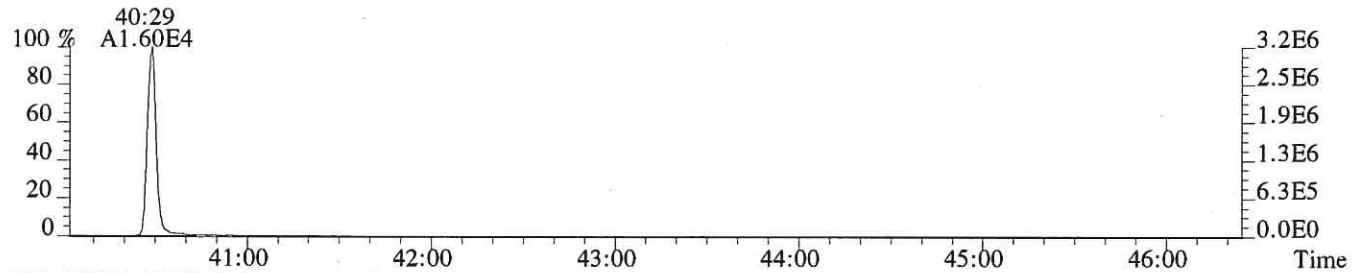
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2684.0,0.40%,F,T)



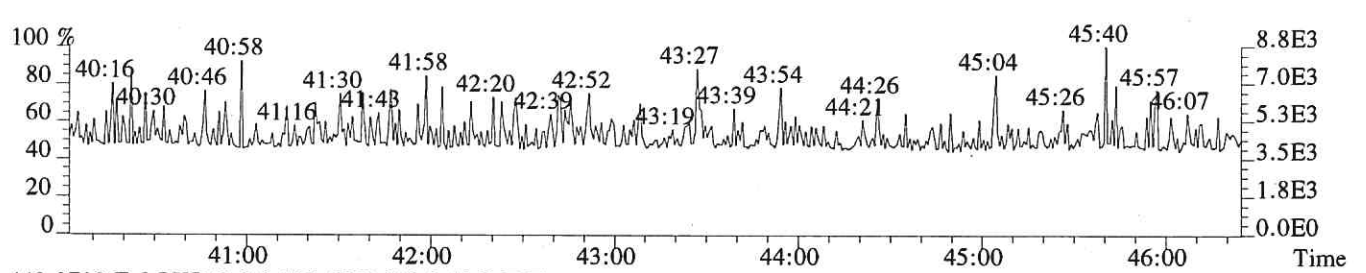
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6696.0,0.40%,F,T)



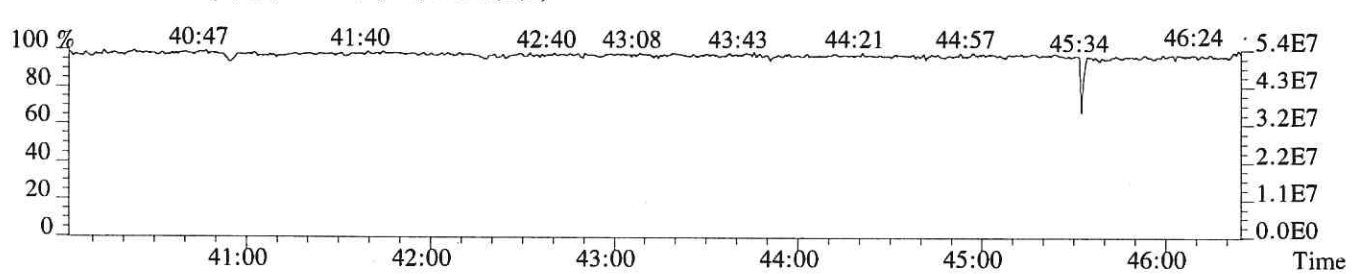
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,5364.0,0.40%,F,T)



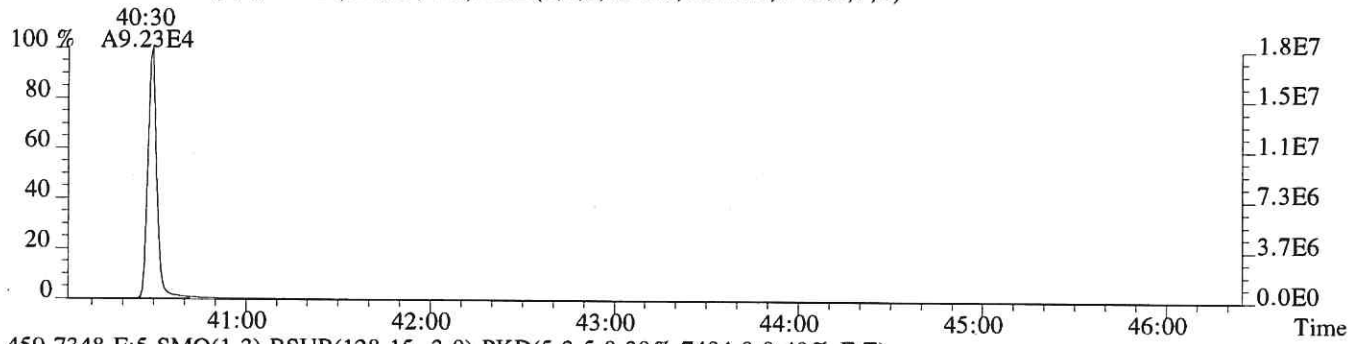
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



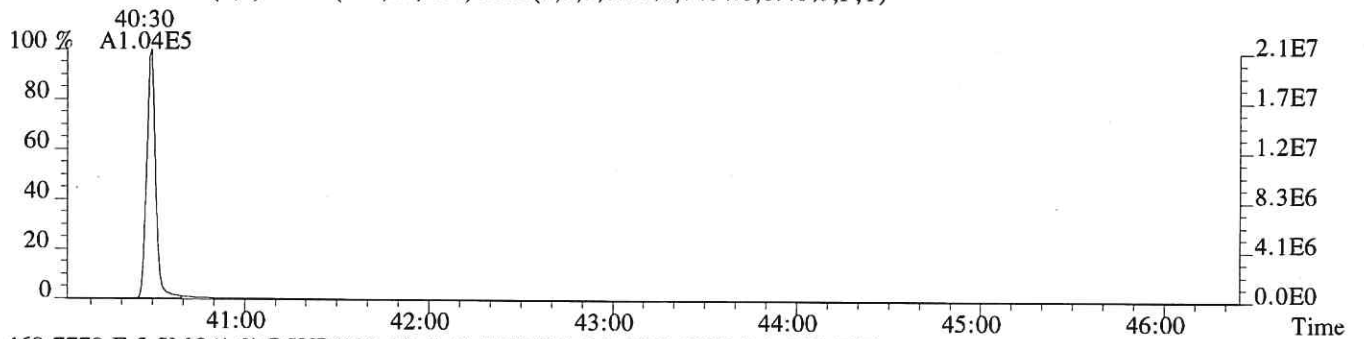
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



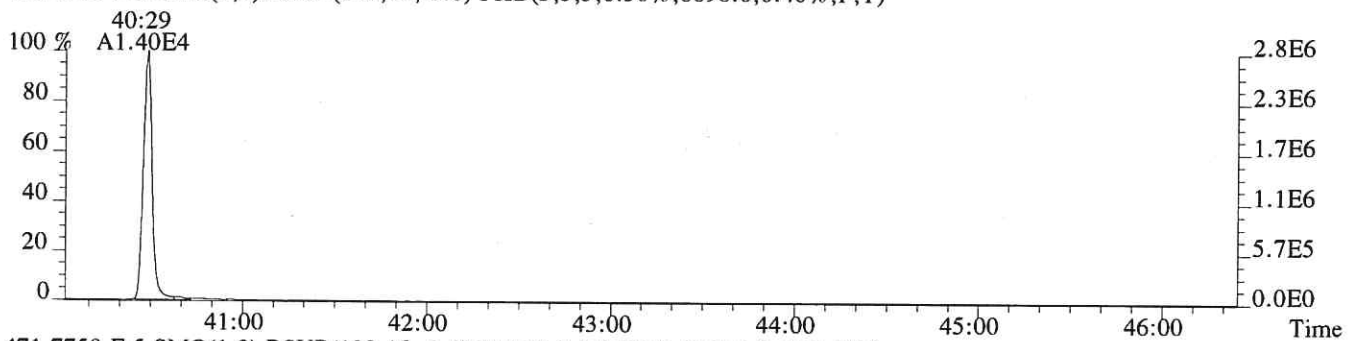
File:P618636 #1-574 Acq:20-AUG-2019 17:06:34 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-002
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,11476.0,0.40%,F,T)



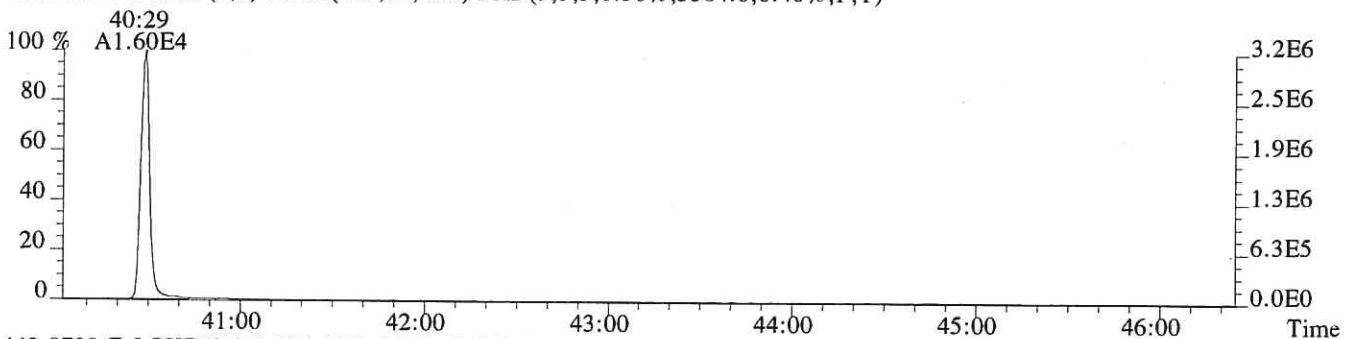
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,7404.0,0.40%,F,T)



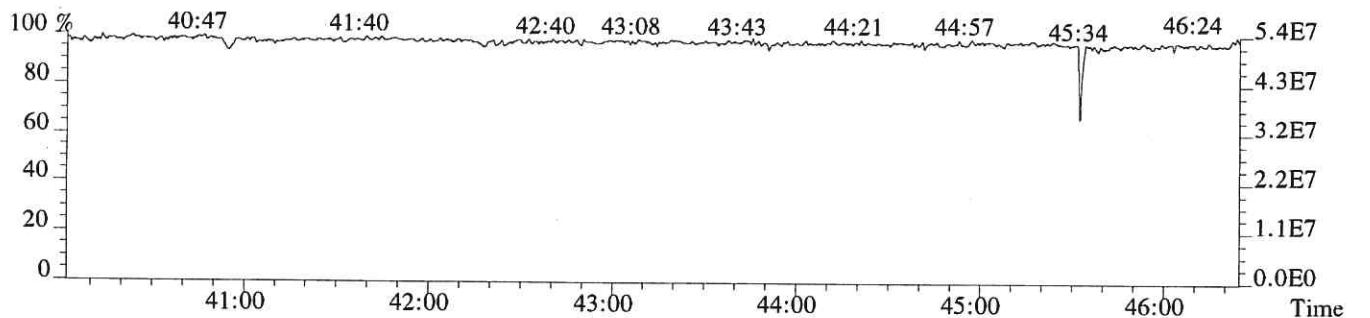
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6696.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,5364.0,0.40%,F,T)



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



ALS ENVIRONMENTAL

Sample Response Summary

CLIENT ID.
BS-3-190813

Run #13 Filename P618637 Samp: 1 Inj: 1 Acquired: 20-AUG-19 17:55:41
Processed: 22-AUG-19 08:59:09 Sample ID: E1900593-003

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	NotFnd	*	*	*	no	no	0.873
2 Unk	1,2,3,7,8-PeCDF	NotFnd	*	*	*	no	yes	0.864
3 Unk	2,3,4,7,8-PeCDF	NotFnd	*	*	*	no	no	0.825
4 Unk	1,2,3,4,7,8-HxCDF	34:24	3.949e+01	4.013e+01	0.98	no	yes	1.084
5 Unk	1,2,3,6,7,8-HxCDF	NotFnd	*	*	*	no	no	0.994
6 Unk	2,3,4,6,7,8-HxCDF	NotFnd	*	*	*	no	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	NotFnd	*	*	*	no	no	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	37:07	1.985e+02	1.521e+02	1.30	no	no	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	38:27	2.741e+01	2.476e+01	1.11	yes	no	1.104
10 Unk	OCDF	40:39	1.948e+03	2.346e+03	0.83	yes	no	0.993
11 Unk	2,3,7,8-TCDD	NotFnd	*	*	*	no	no	0.989
12 Unk	1,2,3,7,8-PeCDD	NotFnd	*	*	*	no	yes	0.954
13 Unk	1,2,3,4,7,8-HxCDD	NotFnd	*	*	*	no	no	1.020
14 Unk	1,2,3,6,7,8-HxCDD	NotFnd	*	*	*	no	no	1.030
15 Unk	1,2,3,7,8,9-HxCDD	NotFnd	*	*	*	no	no	1.007
16 Unk	1,2,3,4,6,7,8-HpCDD	38:01	5.750e+02	5.136e+02	1.12	yes	no	0.922
17 Unk	OCDD	40:29	2.940e+04	3.297e+04	0.89	yes	no	1.062
18 IS	13C-2,3,7,8-TCDF	25:26	1.706e+04	2.226e+04	0.77	yes	no	1.102
19 IS	13C-1,2,3,7,8-PeCDF	30:29	3.165e+04	2.039e+04	1.55	yes	no	1.074
20 IS	13C-2,3,4,7,8-PeCDF	31:31	3.043e+04	1.963e+04	1.55	yes	no	1.005
21 IS	13C-1,2,3,4,7,8-HxCDF	34:23	1.318e+04	2.564e+04	0.51	yes	no	1.059
22 IS	13C-1,2,3,6,7,8-HxCDF	34:30	1.451e+04	2.843e+04	0.51	yes	no	1.264
23 IS	13C-2,3,4,6,7,8-HxCDF	35:02	1.265e+04	2.479e+04	0.51	yes	no	1.066
24 IS	13C-1,2,3,7,8,9-HxCDF	35:49	1.099e+04	2.124e+04	0.52	yes	no	0.801
25 IS	13C-1,2,3,4,6,7,8-HpCDF	37:07	7.374e+03	1.716e+04	0.43	yes	no	0.789
26 IS	13C-1,2,3,4,7,8,9-HpCDF	38:26	7.075e+03	1.663e+04	0.43	yes	no	0.590
27 IS	13C-2,3,7,8-TCDD	26:26	1.489e+04	1.915e+04	0.78	yes	no	0.839
28 IS	13C-1,2,3,7,8-PeCDD	31:49	2.587e+04	1.638e+04	1.58	yes	no	0.744
29 IS	13C-1,2,3,4,7,8-HxCDD	35:11	1.962e+04	1.548e+04	1.27	yes	no	0.907
30 IS	13C-1,2,3,6,7,8-HxCDD	35:16	2.241e+04	1.771e+04	1.27	yes	no	0.978
31 IS	13C-1,2,3,4,6,7,8-HpCDD	38:01	1.449e+04	1.364e+04	1.06	yes	no	0.814
32 IS	13C-OCDD	40:28	1.619e+04	1.802e+04	0.90	yes	no	0.653
33 RS/RT	13C-1,2,3,4-TCDD	25:42	3.218e+04	4.097e+04	0.79	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	35:31	3.515e+04	2.839e+04	1.24	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	26:28	1.332e+04				no	0.894

$$\text{OCDD} = \frac{(2.940e+04 + 3.297e+04) \times 4000 \text{ pg} \times 1}{(1.619e+04 + 1.802e+04) \times 10.717 \text{ g} \times 93.2 / 100 \times 1.062}$$

687 ng/kg
L11008/22/19

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
BS-3-190813

Run #13 Filename P618637 Samp: 1 Inj: 1 Acquired: 20-AUG-19 17:55:41
Processed: 22-AUG-19 08:59:09 LAB. ID: E1900593-003

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	*	1.11e+03	*	*	3.02e+03	*
2	1,2,3,7,8-PeCDF	*	8.96e+02	*	*	1.38e+03	*
3	2,3,4,7,8-PeCDF	*	8.96e+02	*	*	1.38e+03	*
4	1,2,3,4,7,8-HxCDF	9.50e+03	1.87e+03	5.1e+00	9.46e+03	2.52e+03	3.8e+00
5	1,2,3,6,7,8-HxCDF	*	1.87e+03	*	*	2.52e+03	*
6	2,3,4,6,7,8-HxCDF	*	1.87e+03	*	*	2.52e+03	*
7	1,2,3,7,8,9-HxCDF	*	1.87e+03	*	*	2.52e+03	*
8	1,2,3,4,6,7,8-HpCDF	4.44e+04	8.88e+02	5.0e+01	3.23e+04	1.38e+03	2.4e+01
9	1,2,3,4,7,8,9-HpCDF	5.59e+03	8.88e+02	6.3e+00	6.42e+03	1.38e+03	4.7e+00
10	OCDF	3.70e+05	1.94e+03	1.9e+02	4.47e+05	3.01e+03	1.5e+02
11	2,3,7,8-TCDD	*	5.25e+03	*	*	2.36e+03	*
12	1,2,3,7,8-PeCDD	*	3.48e+03	*	*	2.82e+03	*
13	1,2,3,4,7,8-HxCDD	*	8.07e+03	*	*	5.61e+03	*
14	1,2,3,6,7,8-HxCDD	*	8.07e+03	*	*	5.61e+03	*
15	1,2,3,7,8,9-HxCDD	*	8.07e+03	*	*	5.61e+03	*
16	1,2,3,4,6,7,8-HpCDD	1.25e+05	1.03e+04	1.2e+01	1.15e+05	8.77e+03	1.3e+01
17	OCDD	5.74e+06	1.06e+04	5.4e+02	6.46e+06	7.70e+03	8.4e+02
18	13C-2,3,7,8-TCDF	2.31e+06	1.60e+04	1.4e+02	2.91e+06	6.12e+03	4.8e+02
19	13C-1,2,3,7,8-PeCDF	5.19e+06	1.20e+03	4.3e+03	3.34e+06	1.20e+03	2.8e+03
20	13C-2,3,4,7,8-PeCDF	5.39e+06	1.20e+03	4.5e+03	3.47e+06	1.20e+03	2.9e+03
21	13C-1,2,3,4,7,8-HxCDF	2.77e+06	8.44e+02	3.3e+03	5.41e+06	2.23e+03	2.4e+03
22	13C-1,2,3,6,7,8-HxCDF	2.76e+06	8.44e+02	3.3e+03	5.45e+06	2.23e+03	2.4e+03
23	13C-2,3,4,6,7,8-HxCDF	2.57e+06	8.44e+02	3.0e+03	5.07e+06	2.23e+03	2.3e+03
24	13C-1,2,3,7,8,9-HxCDF	2.22e+06	8.44e+02	2.6e+03	4.22e+06	2.23e+03	1.9e+03
25	13C-1,2,3,4,6,7,8-HpCDF	1.63e+06	1.79e+03	9.1e+02	3.73e+06	4.57e+03	8.1e+02
26	13C-1,2,3,4,7,8,9-HpCDF	1.51e+06	1.79e+03	8.4e+02	3.52e+06	4.57e+03	7.7e+02
27	13C-2,3,7,8-TCDD	2.24e+06	8.14e+03	2.8e+02	2.88e+06	3.51e+03	8.2e+02
28	13C-1,2,3,7,8-PeCDD	4.62e+06	1.96e+03	2.4e+03	2.88e+06	2.12e+03	1.4e+03
29	13C-1,2,3,4,7,8-HxCDD	4.18e+06	2.04e+03	2.1e+03	3.32e+06	1.58e+03	2.1e+03
30	13C-1,2,3,6,7,8-HxCDD	4.58e+06	2.04e+03	2.2e+03	3.61e+06	1.58e+03	2.3e+03
31	13C-1,2,3,4,6,7,8-HpCDD	3.14e+06	2.16e+03	1.5e+03	2.95e+06	1.12e+03	2.6e+03
32	13C-OCDD	3.18e+06	3.10e+03	1.0e+03	3.49e+06	1.95e+03	1.8e+03
33	13C-1,2,3,4-TCDD	4.65e+06	8.14e+03	5.7e+02	5.88e+06	3.51e+03	1.7e+03
34	13C-1,2,3,7,8,9-HxCDD	7.15e+06	2.04e+03	3.5e+03	5.76e+06	1.58e+03	3.6e+03
35	37Cl-2,3,7,8-TCDD	2.01e+06	3.32e+03	6.0e+02			

---Sample Calculation---

$$D/L \text{ TCDD} = \frac{2.5 \times (5.248e+03 + 2.360e+03) \times 2000}{(2.242e+06 + 2.884e+06) \times () \times 0.989} =$$

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Office: (281) 530-5656. Fax: (281) 530-5887

ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

BS-3-190813

Entry: 41 Totals Name: Total Hexa-Furans

Run: 13 File: P618637 Sample:1 Injection:1 Function:3

Acquired: 20-AUG-19 17:55:41 Processed: 22-AUG-19 08:59:09

Mass:	373.8210	375.8180	Tot Response: 9.00e+01		RRF: 1.022			
#	RT	Resp	Resp Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	33:57	5.16e+01	3.83e+01	1.35	yes	9.00e+01	Y	Y

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ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

BS-3-190813

Entry: 43 Totals Name: Total Hepta-Furans

Run: 13 File: P618637 Sample:1 Injection:1 Function:4

Acquired: 20-AUG-19 17:55:41 Processed: 22-AUG-19 08:59:09

Mass:	407.7820	409.7790	Tot Response: 5.22e+01		RRF: 1.104			
#	RT	Resp	Resp Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	38:27	2.74e+01	2.48e+01	1.11	yes 5.22e+01	1,2,3,4,7,8,9-HpCDF	n	n

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ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

BS-3-190813

Entry: 44 Totals Name: Total Hepta-Dioxins

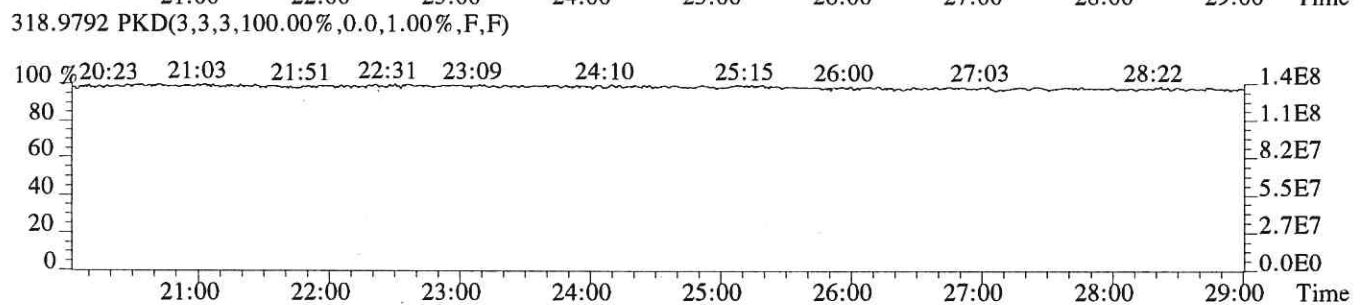
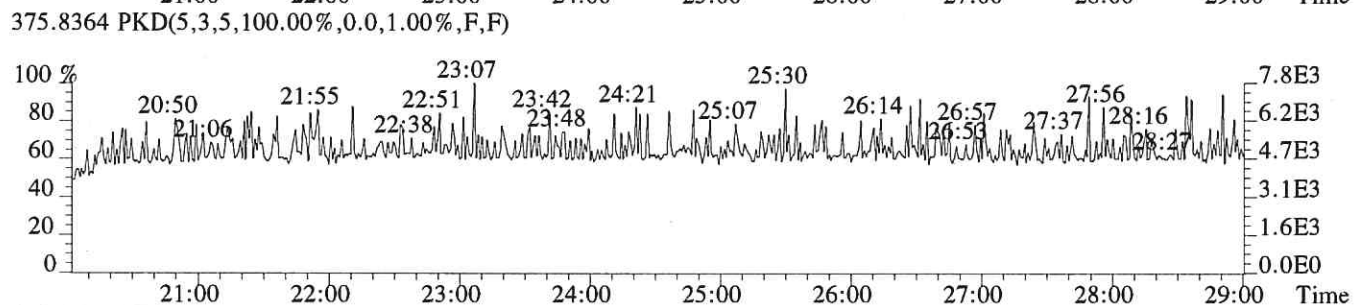
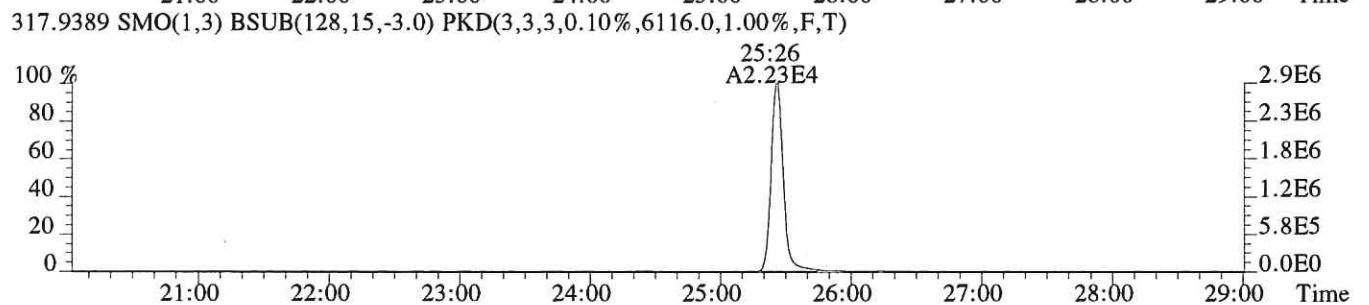
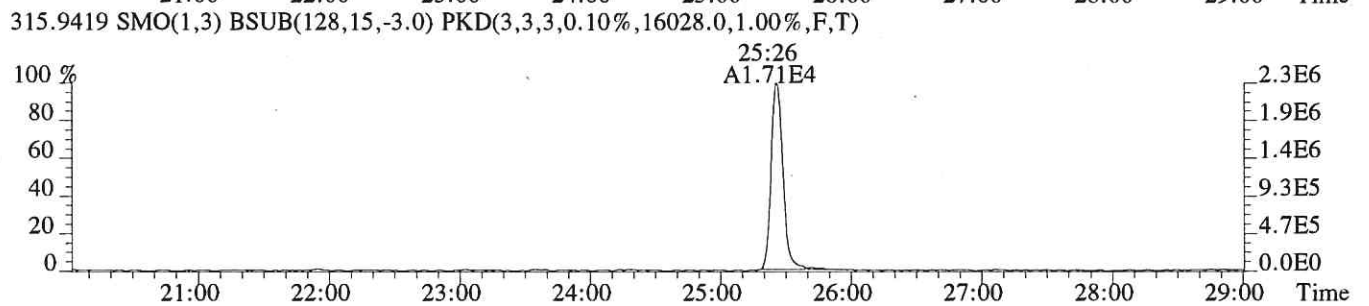
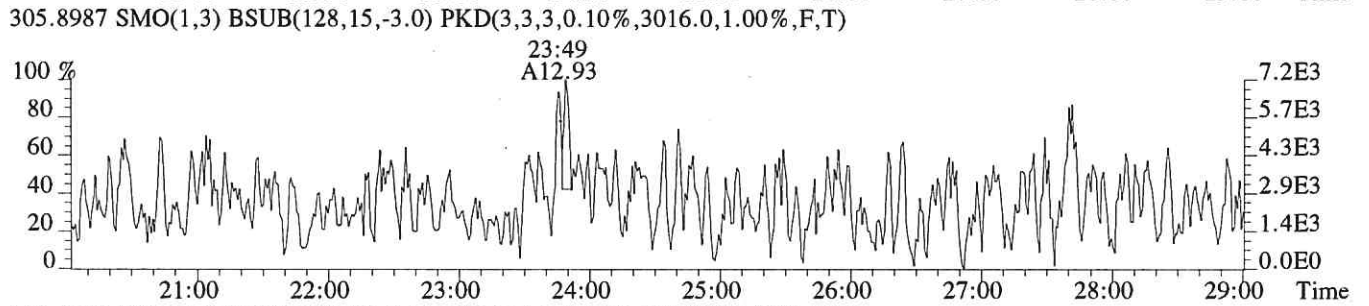
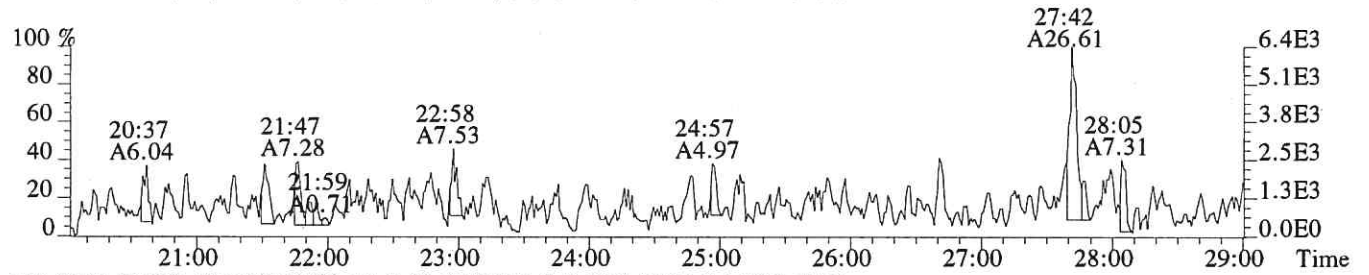
Run: 13 File: P618637 Sample:1 Injection:1 Function:4

Acquired: 20-AUG-19 17:55:41 Processed: 22-AUG-19 08:59:09

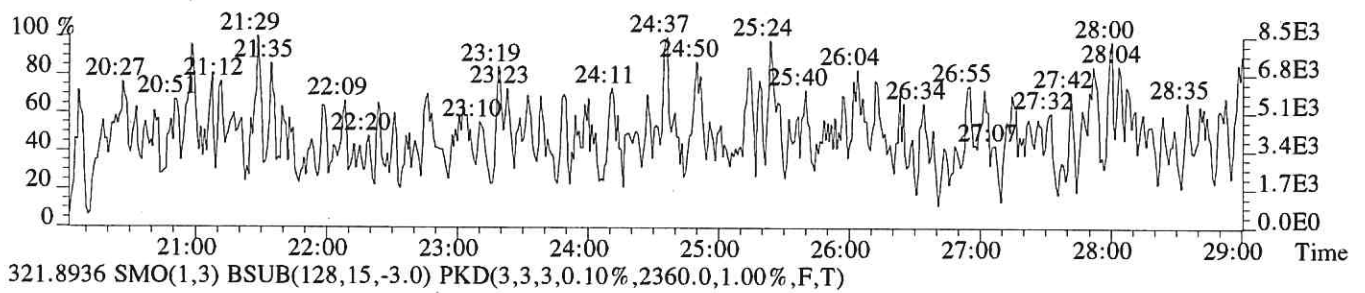
Mass:	423.7770	425.7740	Tot Response: 1.09e+03		RRF: 0.9218			
#	RT	Resp	Resp Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	38:01	5.75e+02	5.14e+02	1.12	yes 1.09e+03	1,2,3,4,6,7,8-HpCDD	n	n

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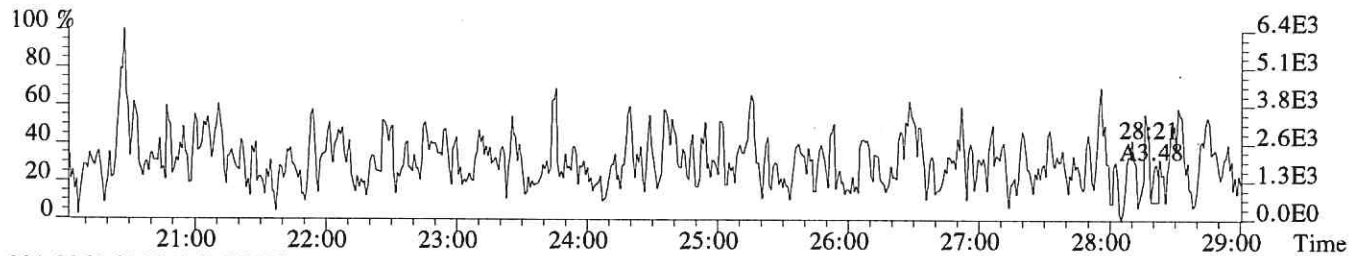
File:P618637 #1-637 Acq:20-AUG-2019 17:55:41 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-003
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1112.0,1.00%,F,T)



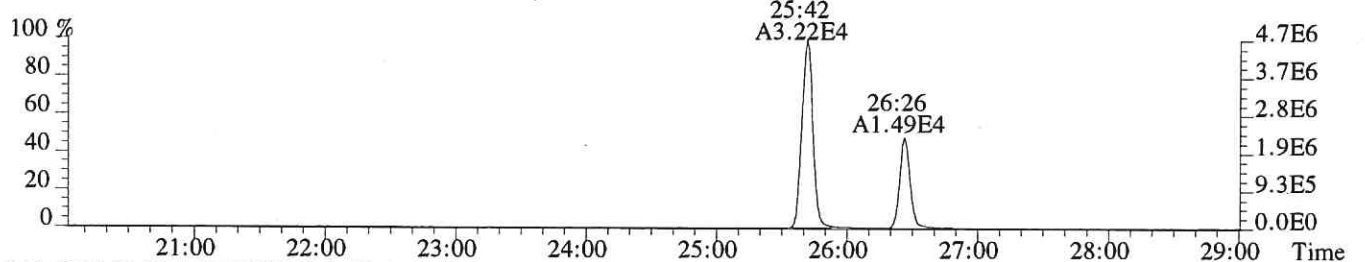
File:P618637 #1-637 Acq:20-AUG-2019 17:55:41 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-003
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5248.0,1.00%,F,T)



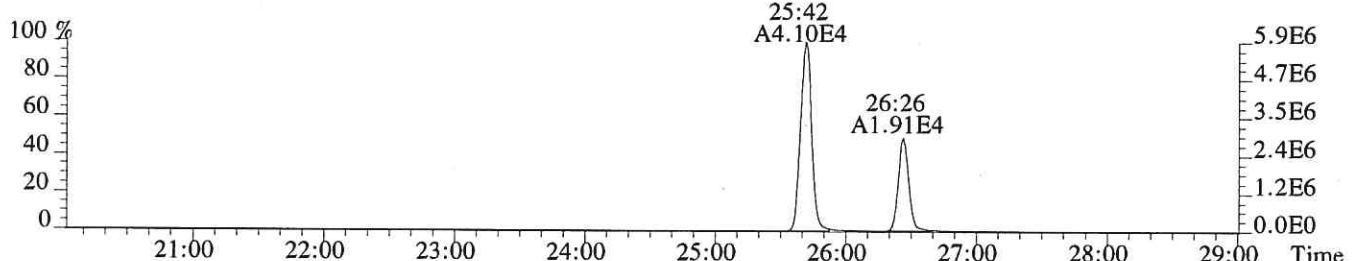
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2360.0,1.00%,F,T)



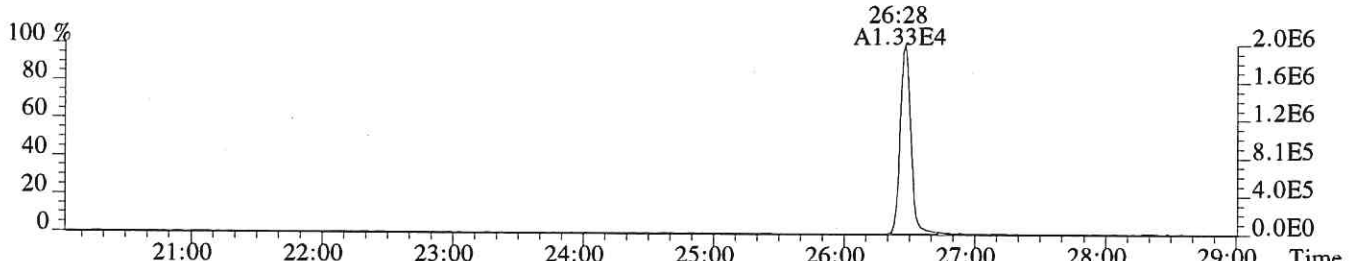
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,8136.0,1.00%,F,T)



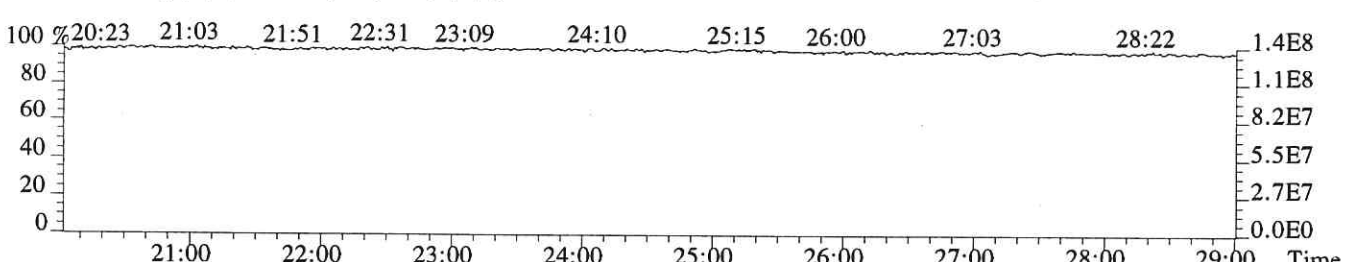
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3512.0,1.00%,F,T)



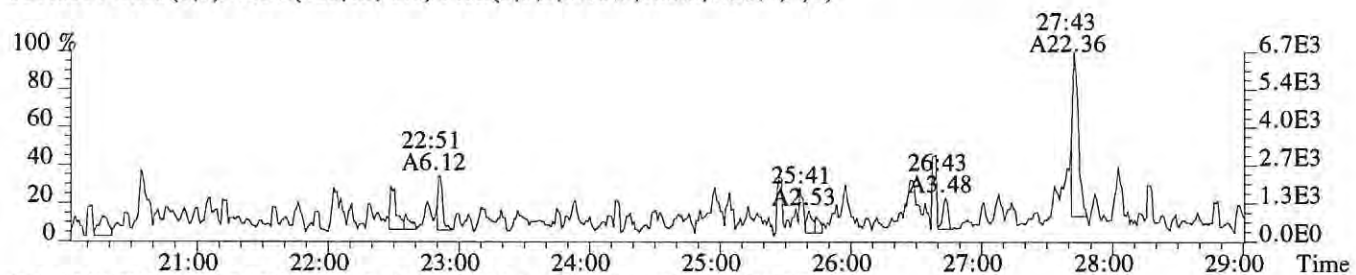
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3324.0,1.00%,F,T)



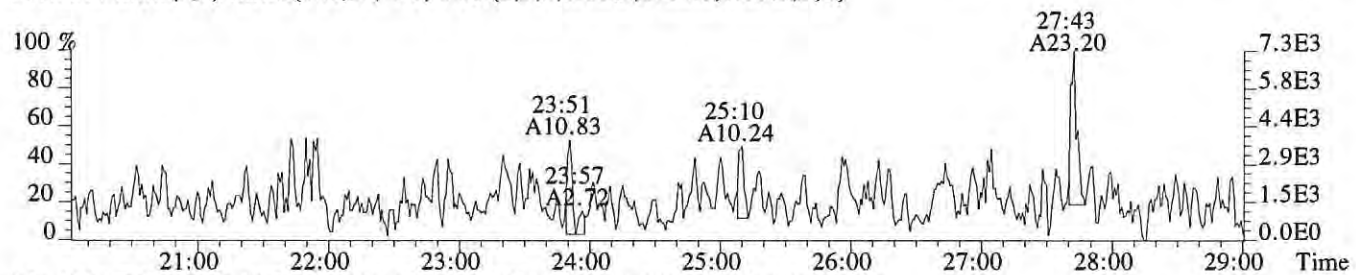
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



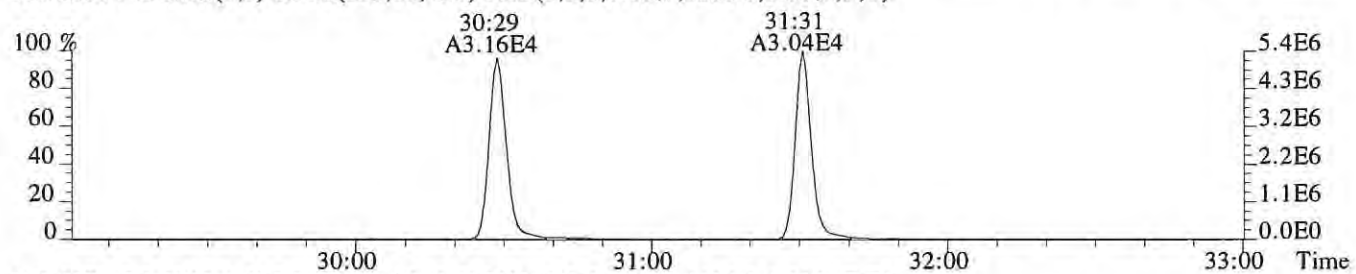
File:P618637 #1-637 Acq:20-AUG-2019 17:55:41 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:E1900593-003
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,960.0,1.00%,F,T)



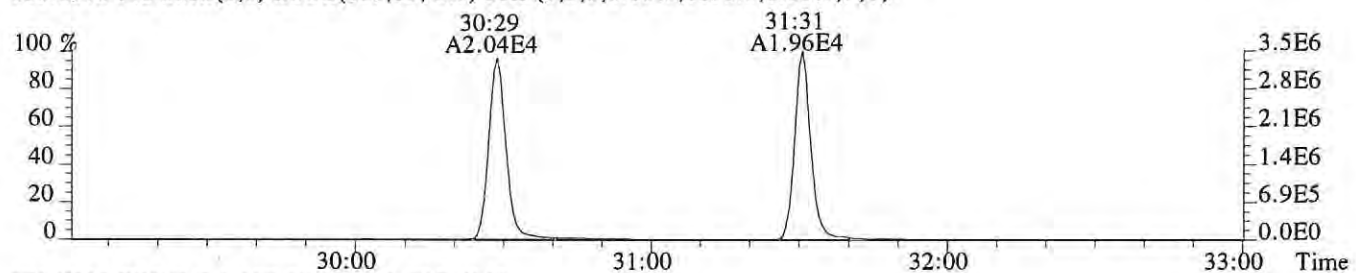
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1764.0,1.00%,F,T)



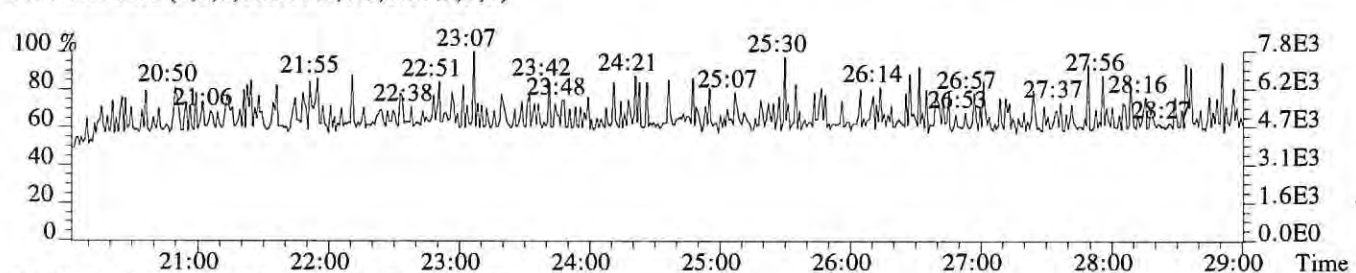
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1200.0,1.00%,F,T)



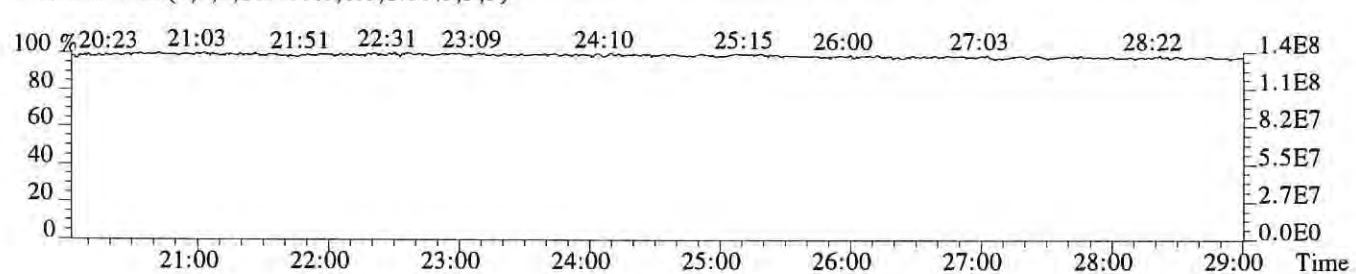
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1196.0,1.00%,F,T)



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

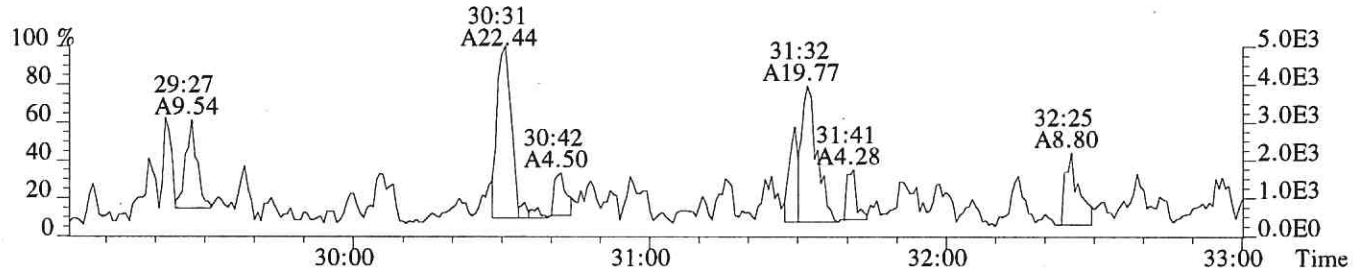


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

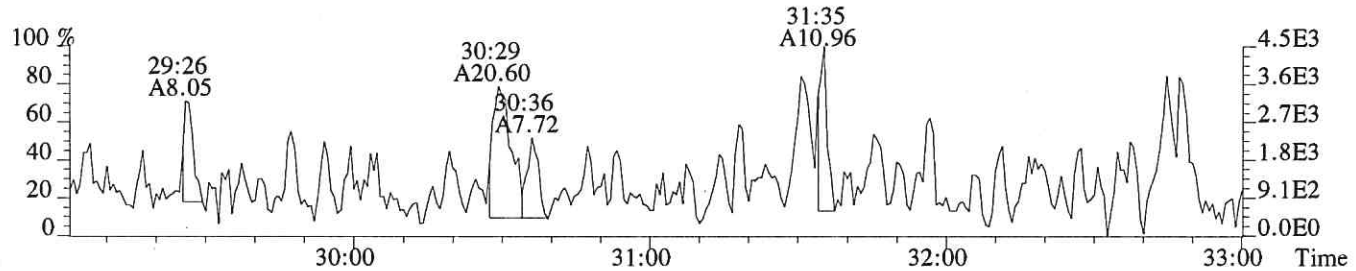


File:P618637 #1-357 Acq:20-AUG-2019 17:55:41 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-003

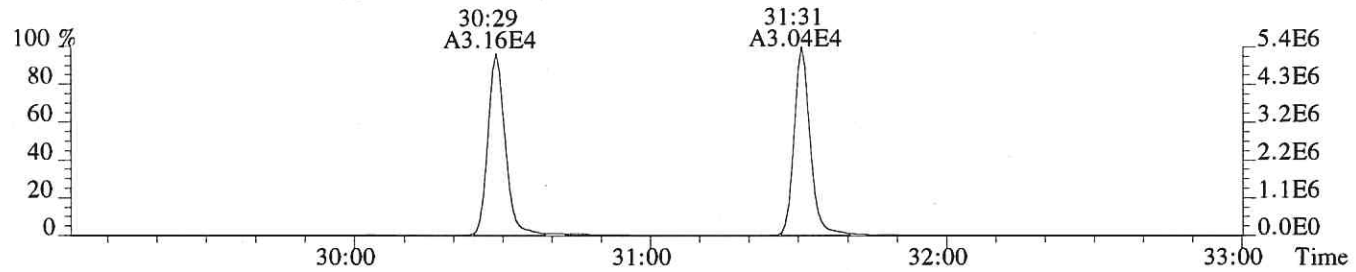
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,896.0,1.00%,F,T)



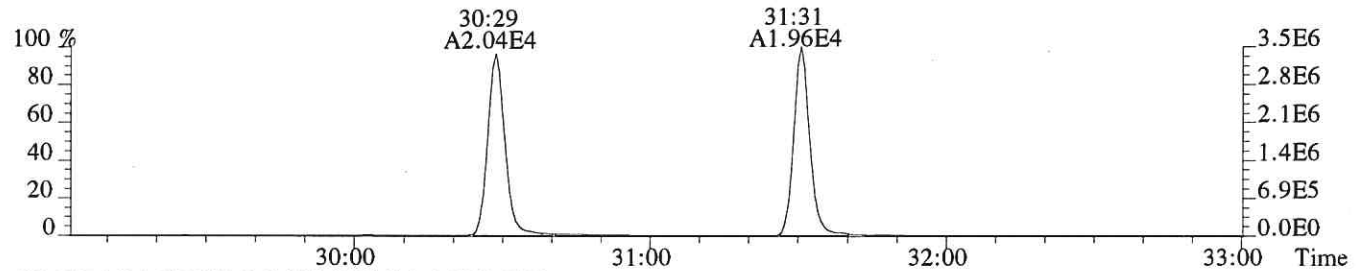
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1384.0,1.00%,F,T)



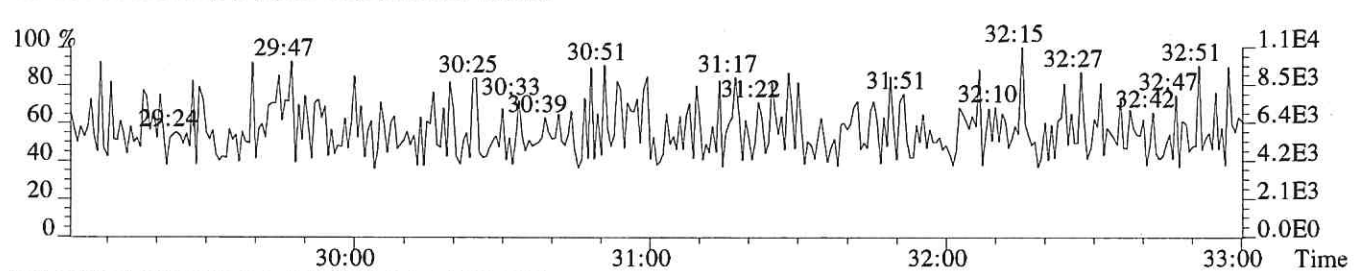
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1200.0,1.00%,F,T)



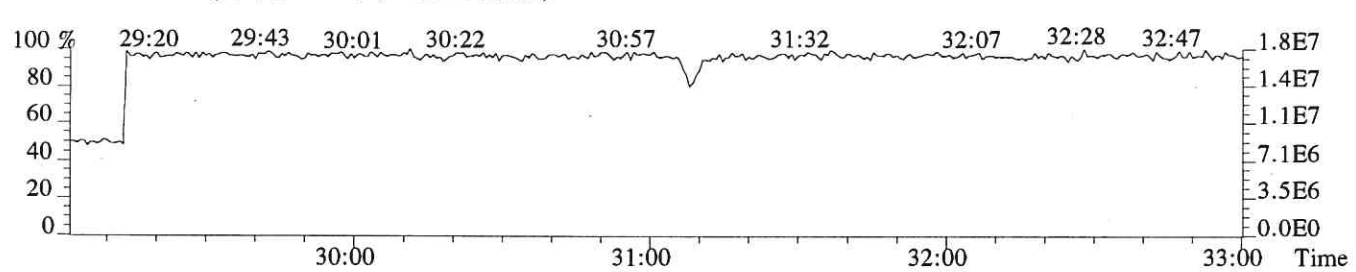
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1196.0,1.00%,F,T)



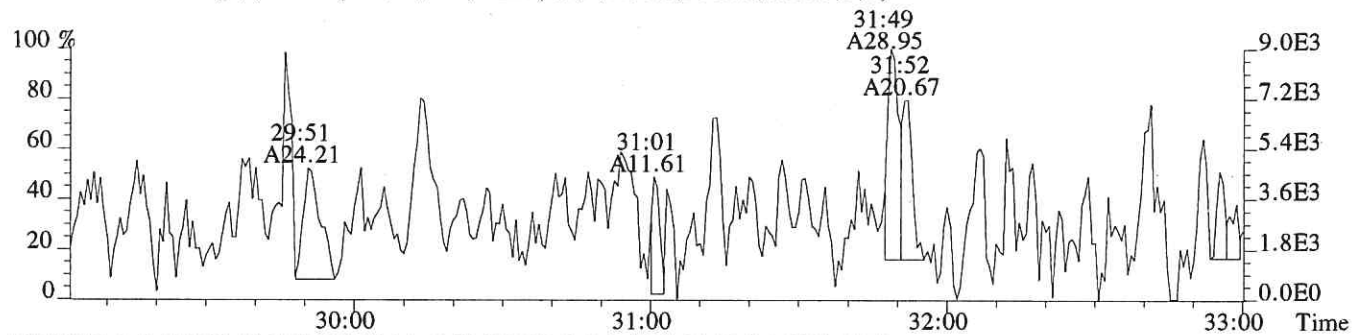
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



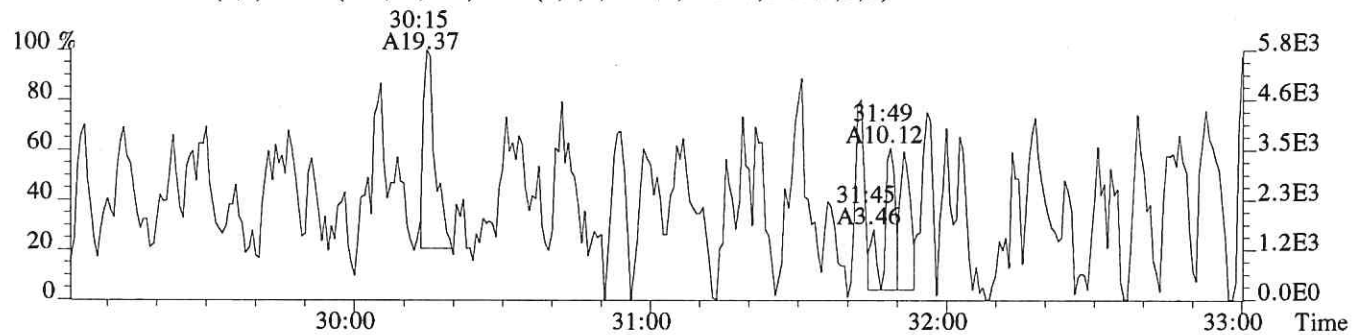
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



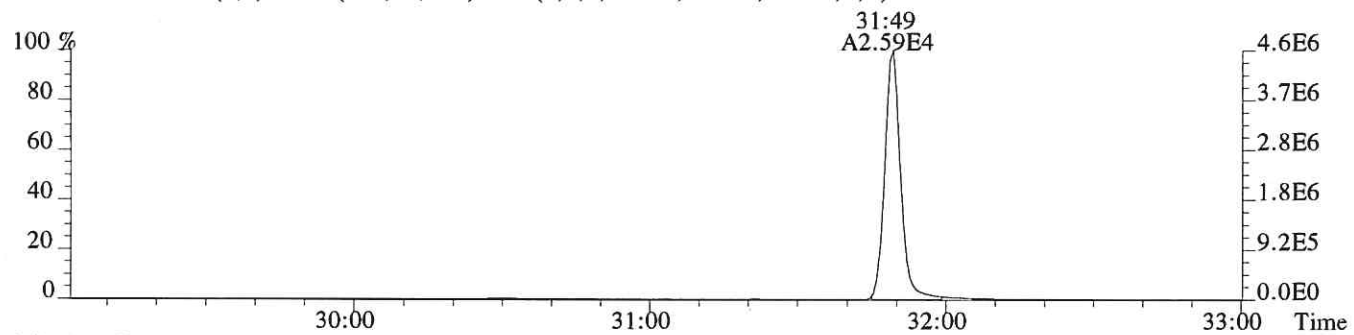
File:P618637 #1-357 Acq:20-AUG-2019 17:55:41 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-003
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3476.0,1.00%,F,T)



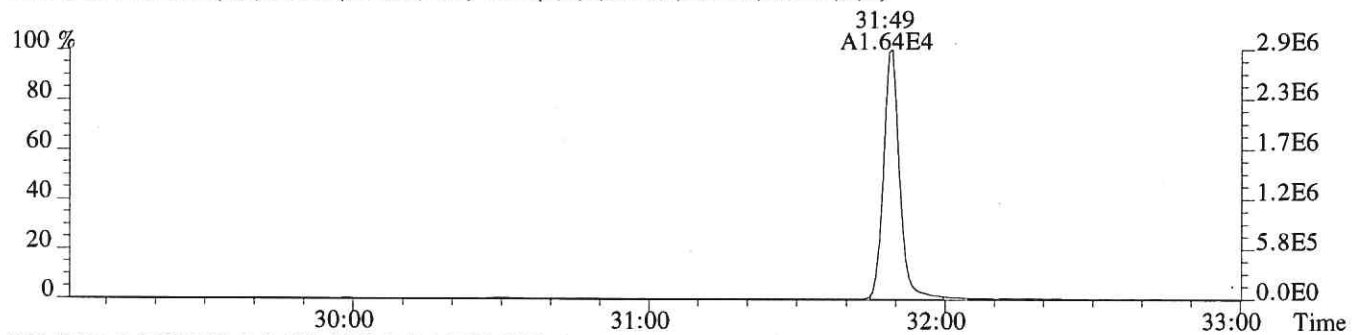
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2816.0,1.00%,F,T)



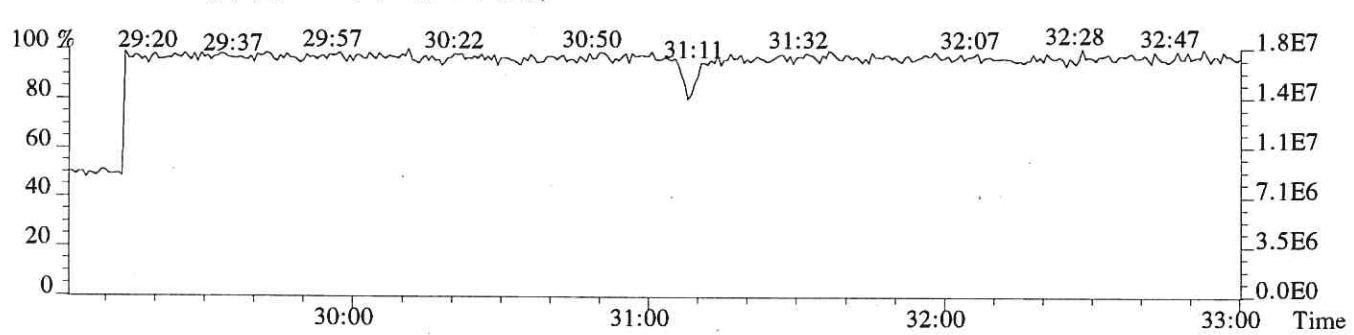
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1964.0,1.00%,F,T)



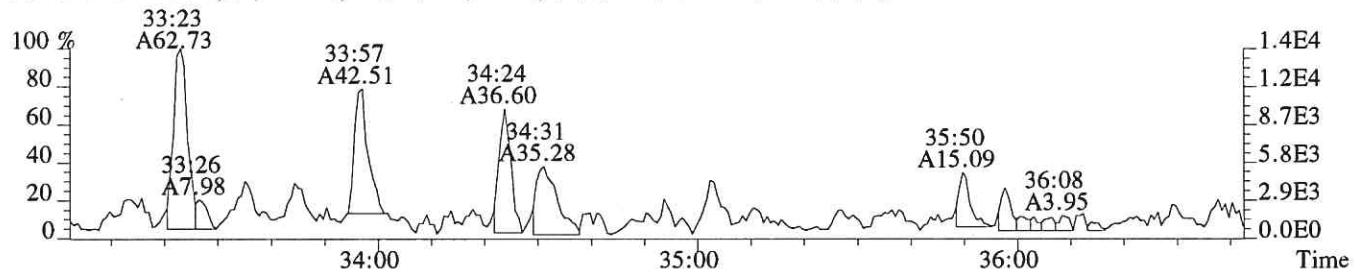
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2120.0,1.00%,F,T)



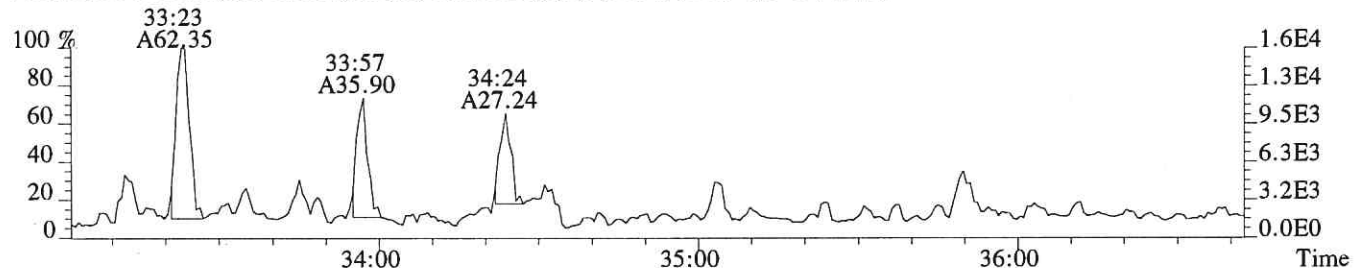
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



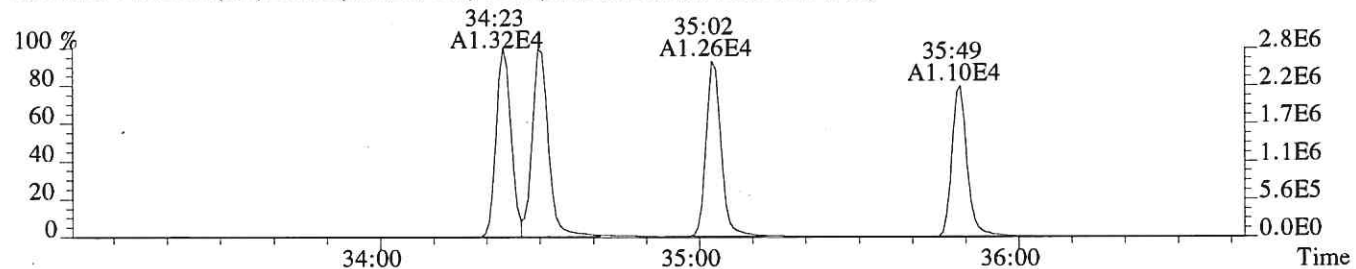
File:P618637 #1-331 Acq:20-AUG-2019 17:55:41 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-003
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1872.0,0.40%,F,T)



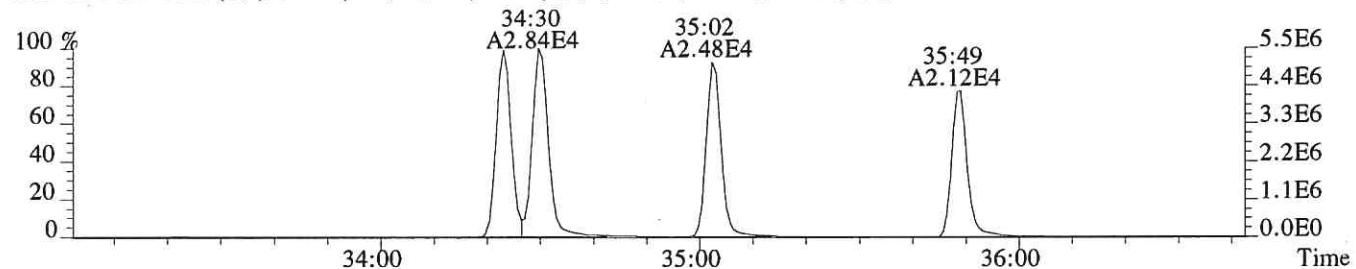
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2516.0,0.40%,F,T)



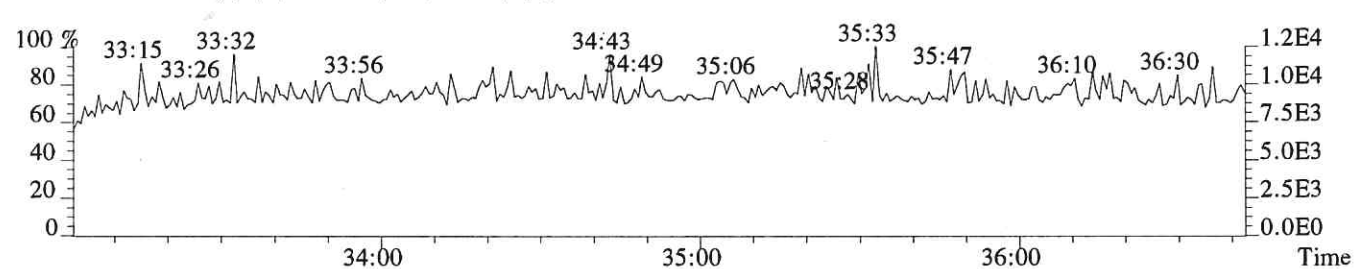
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,844.0,0.40%,F,T)



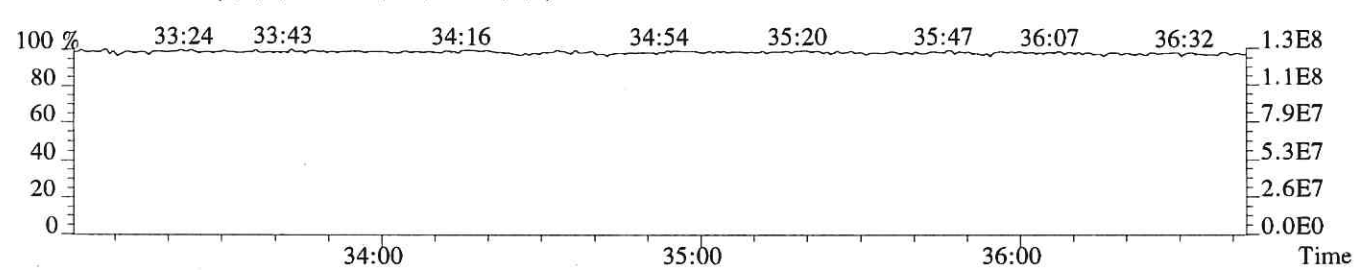
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2228.0,0.40%,F,T)



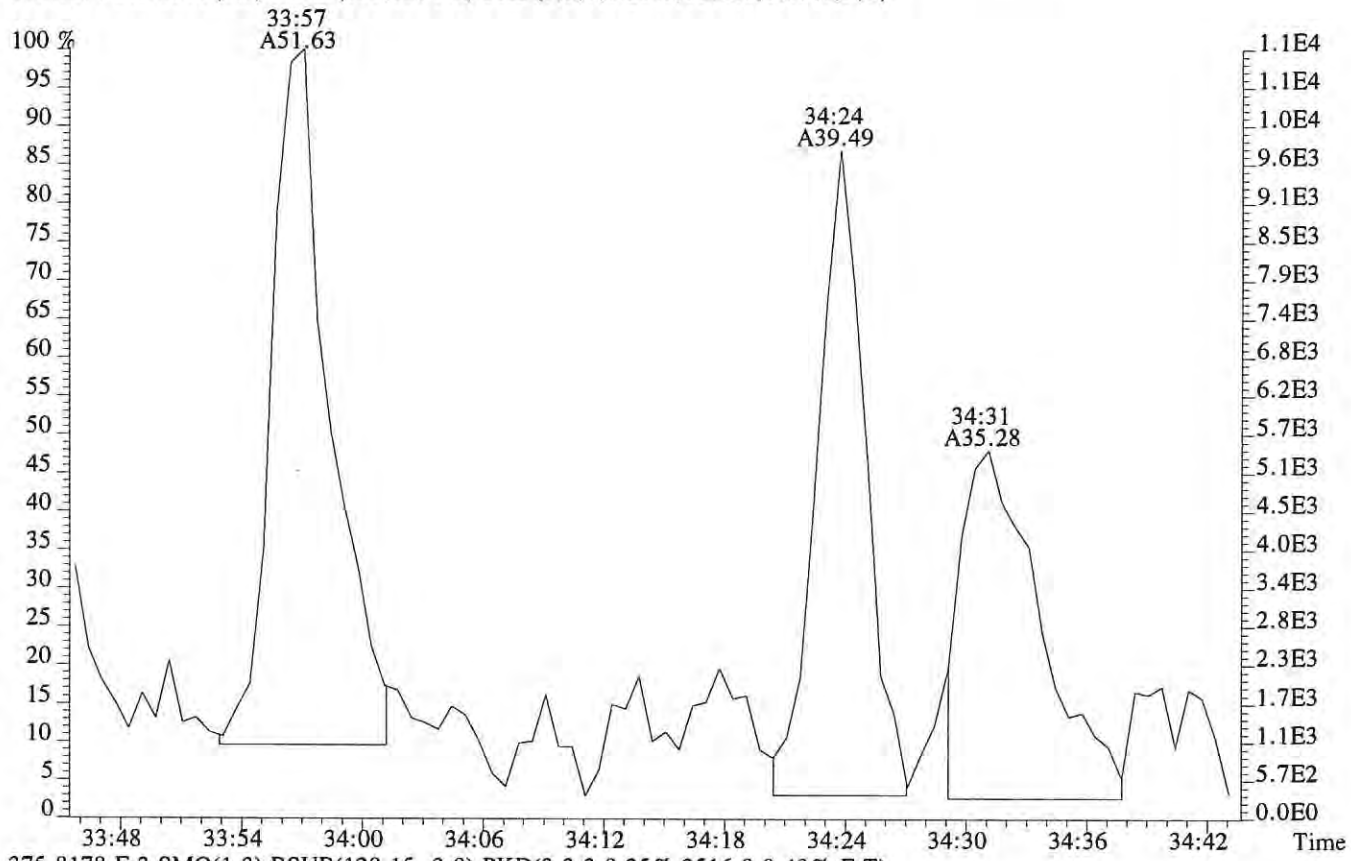
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



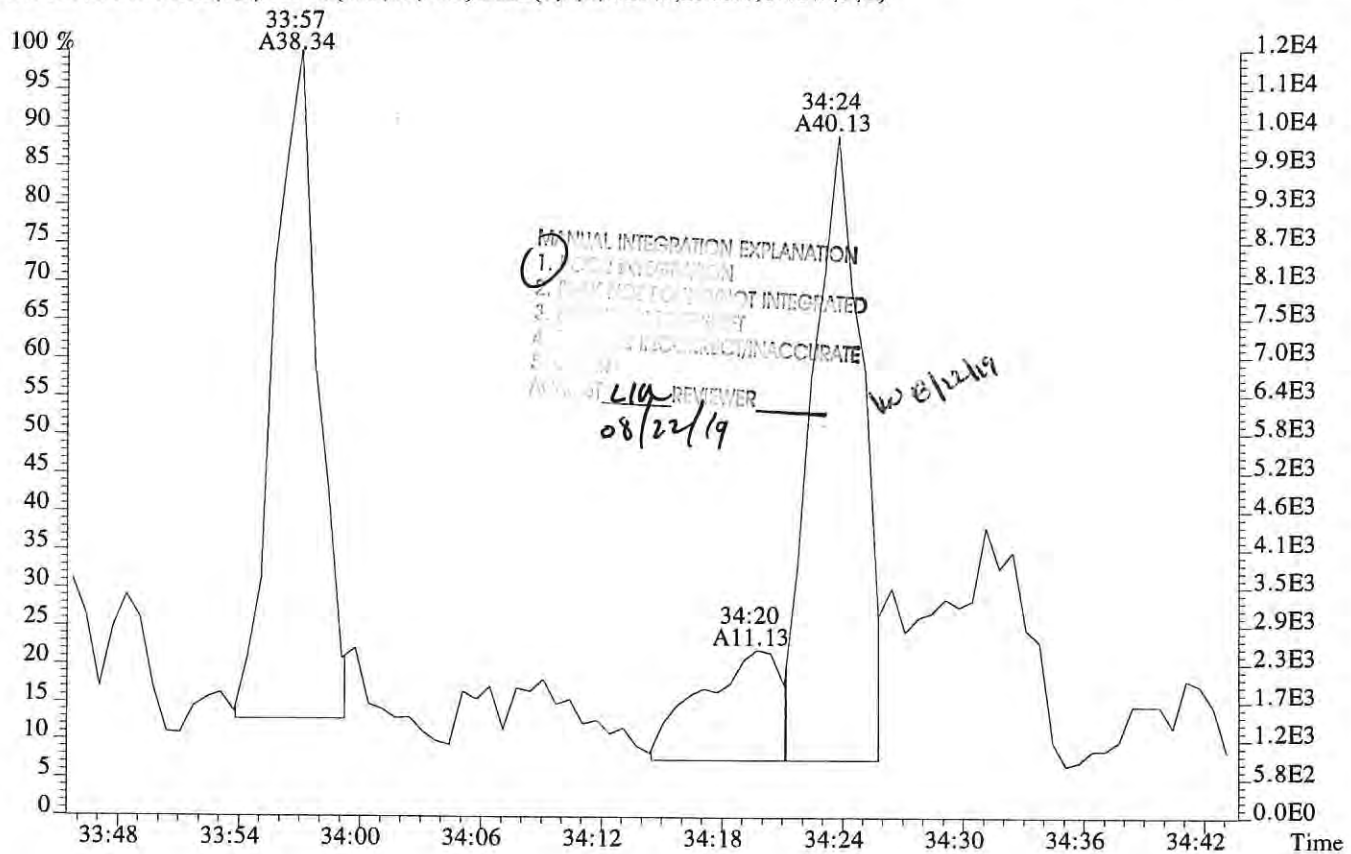
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



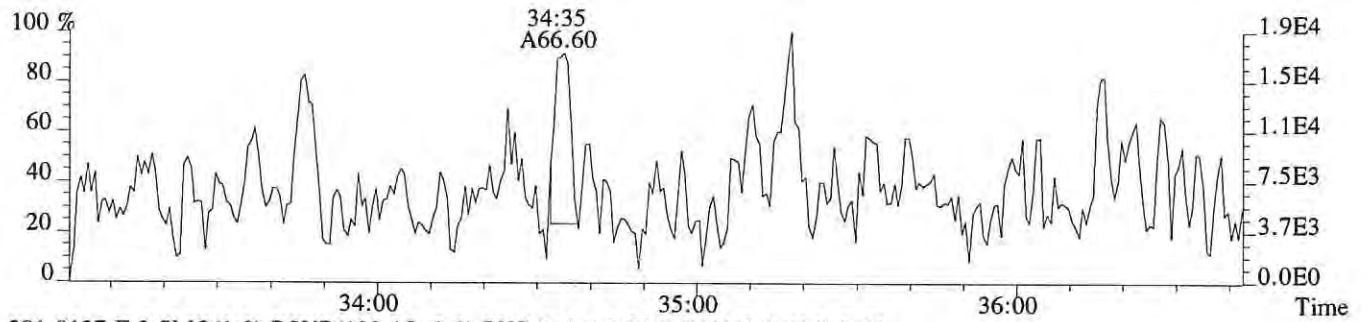
File:P618637 #1-331 Acq:20-AUG-2019 17:55:41 Probe EI+ Magnet SIR VG BioTech Mass spectf
 Sample#1 Exp:E1900593-003
 373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1872.0,0.40%,F,T)



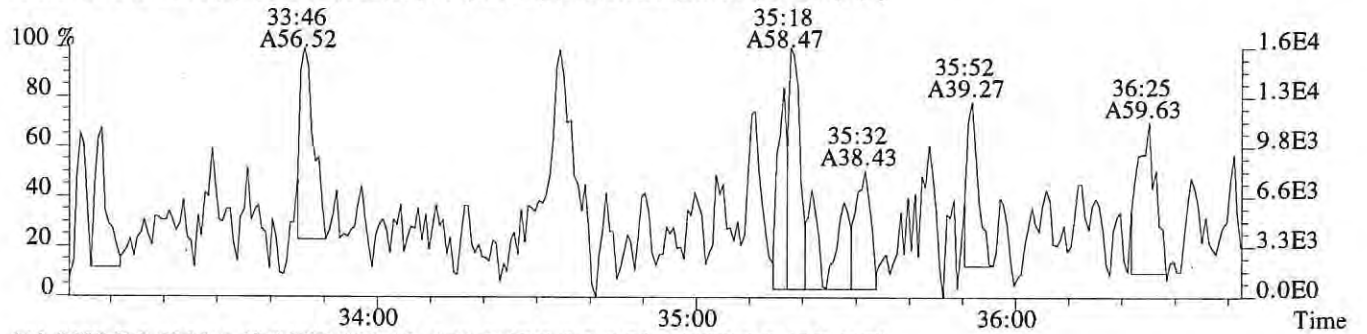
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2516.0,0.40%,F,T)



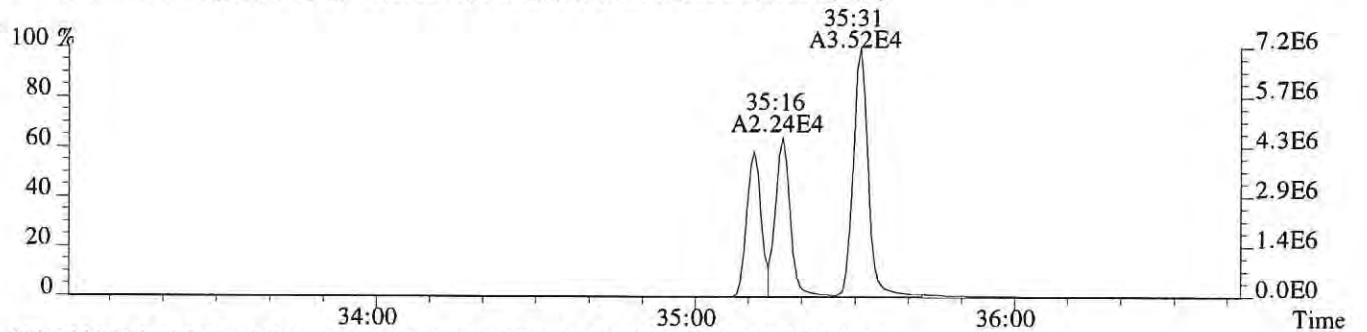
File: P618637 #1-331 Acq: 20-AUG-2019 17:55:41 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: E1900593-003
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,8072.0,0.40%,F,T)



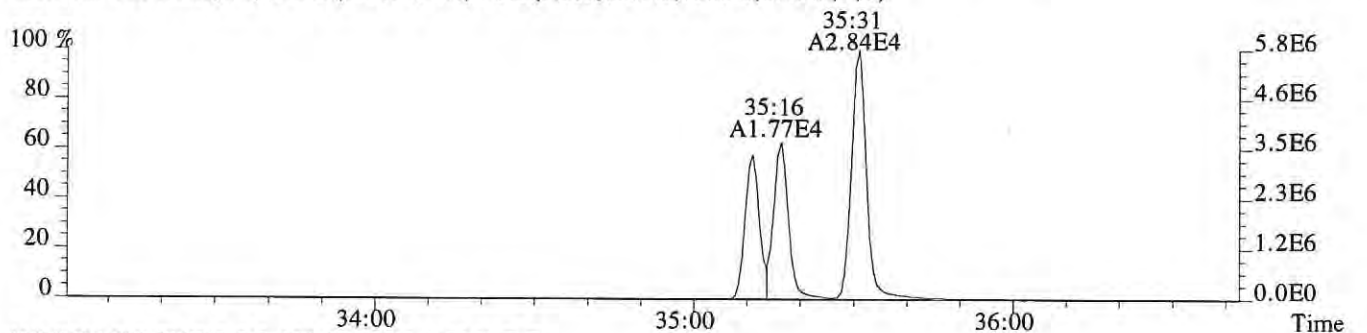
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5612.0,0.40%,F,T)



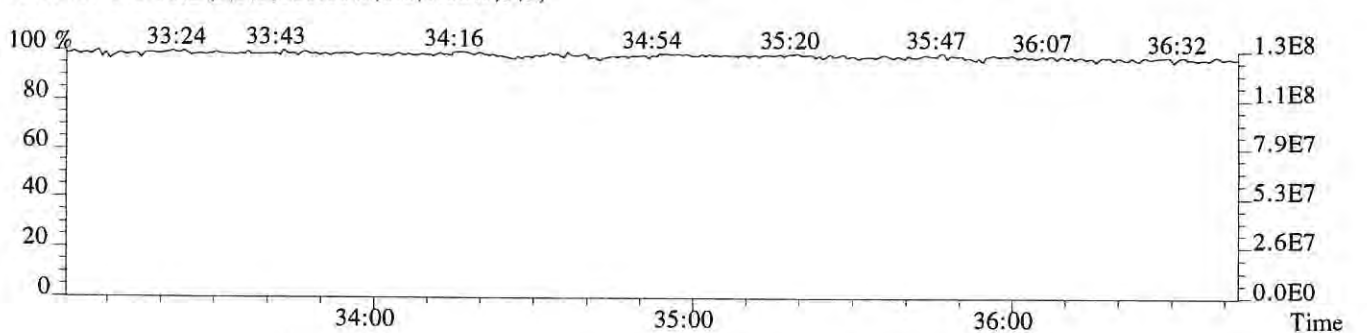
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2036.0,0.40%,F,T)



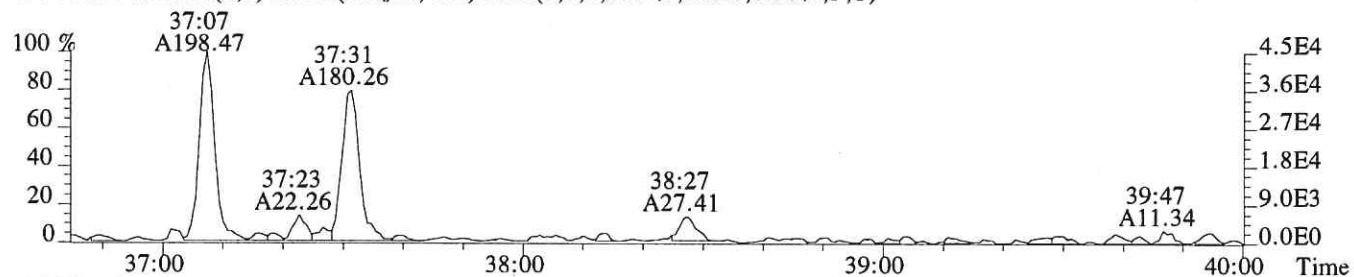
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1580.0,0.40%,F,T)



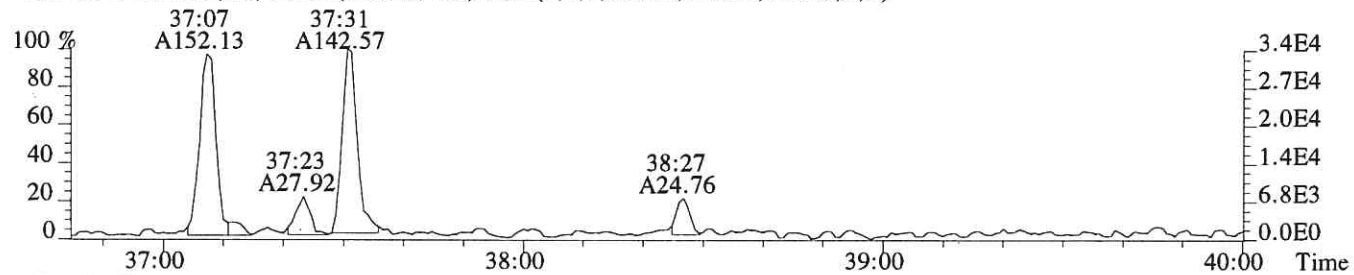
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



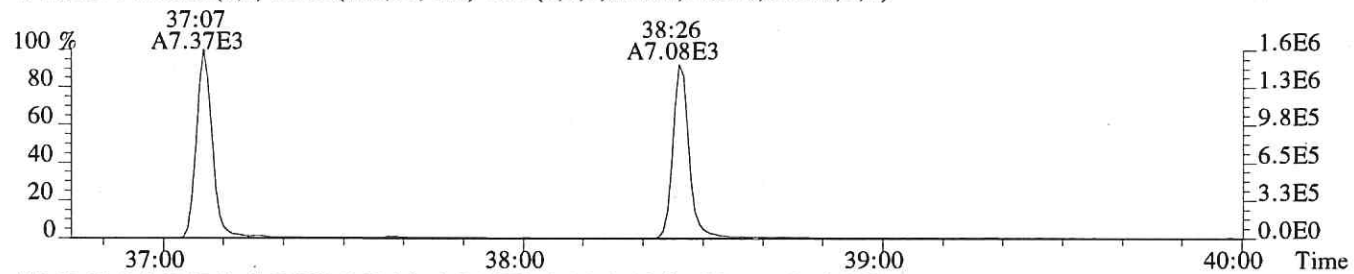
File:P618637 #1-294 Acq:20-AUG-2019 17:55:41 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-003
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,888.0,0.50%,F,T)



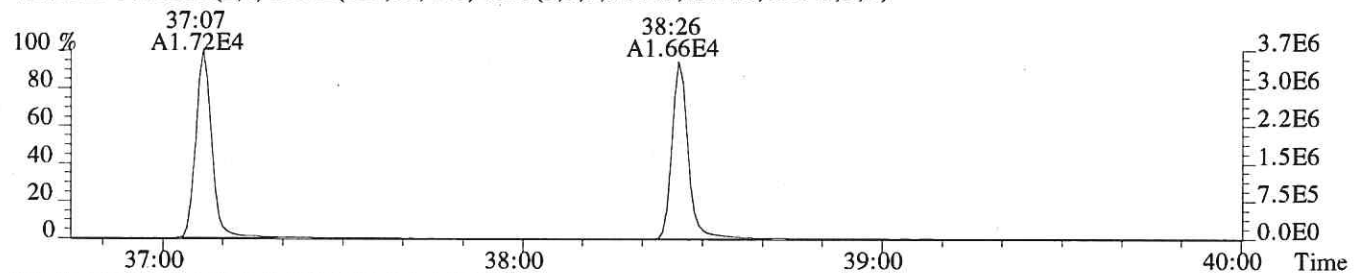
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1376.0,0.50%,F,T)



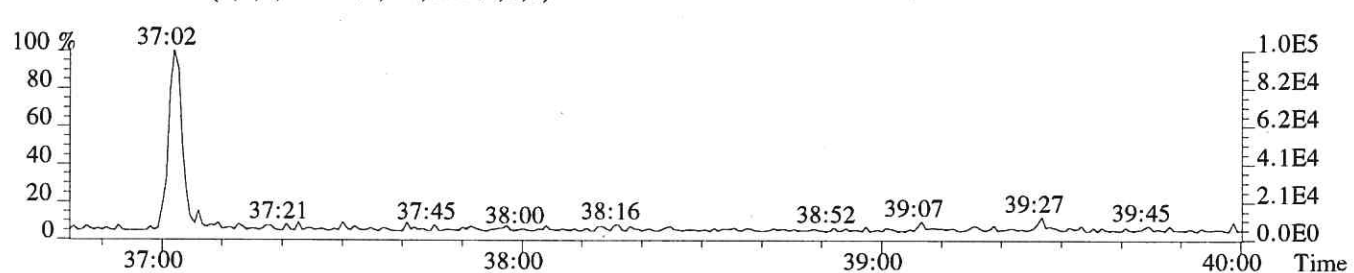
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1788.0,0.50%,F,T)



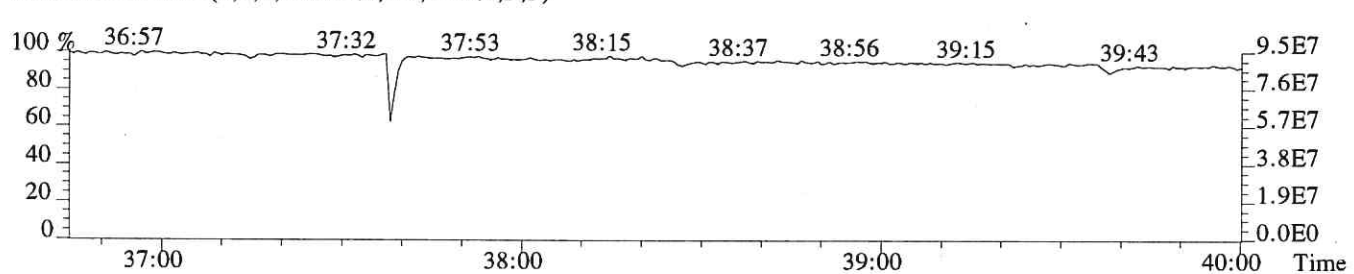
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4572.0,0.50%,F,T)

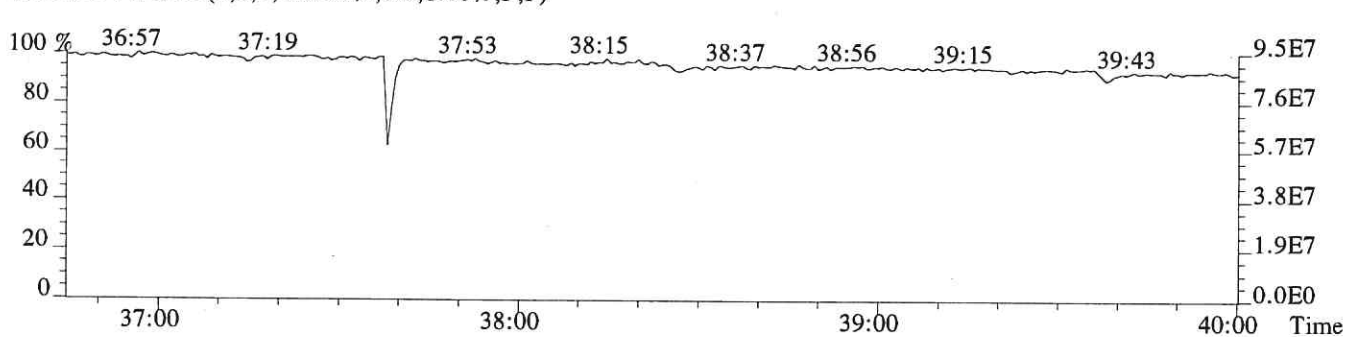
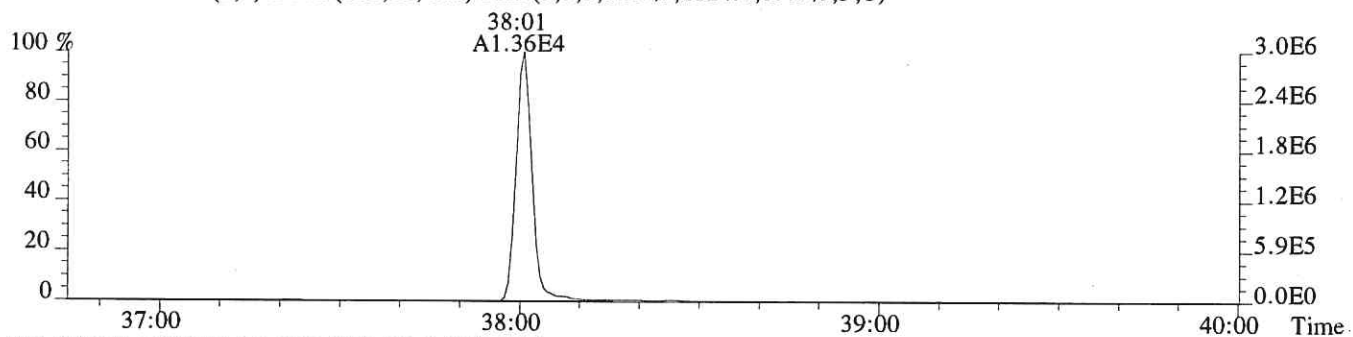
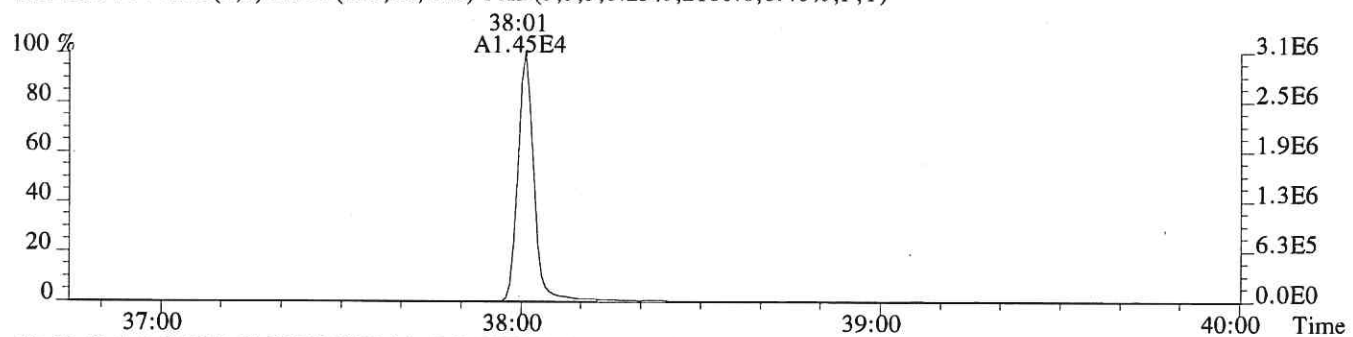
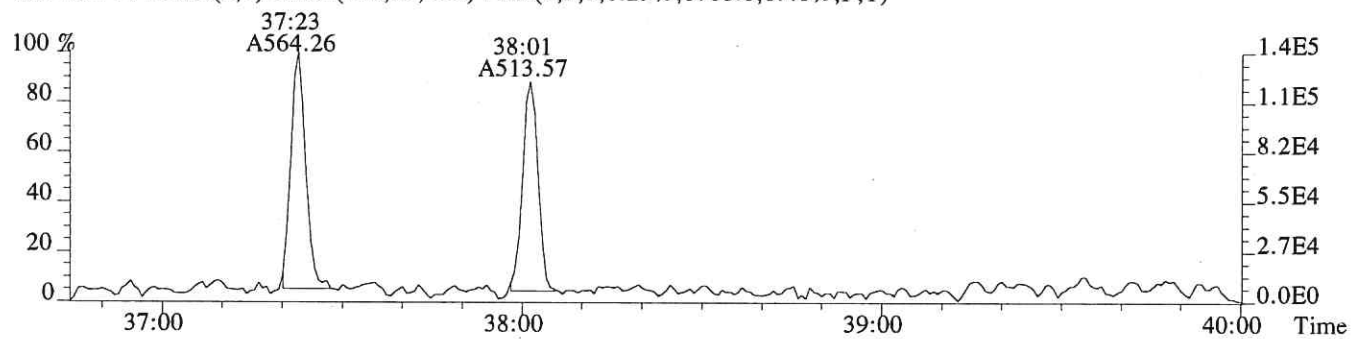
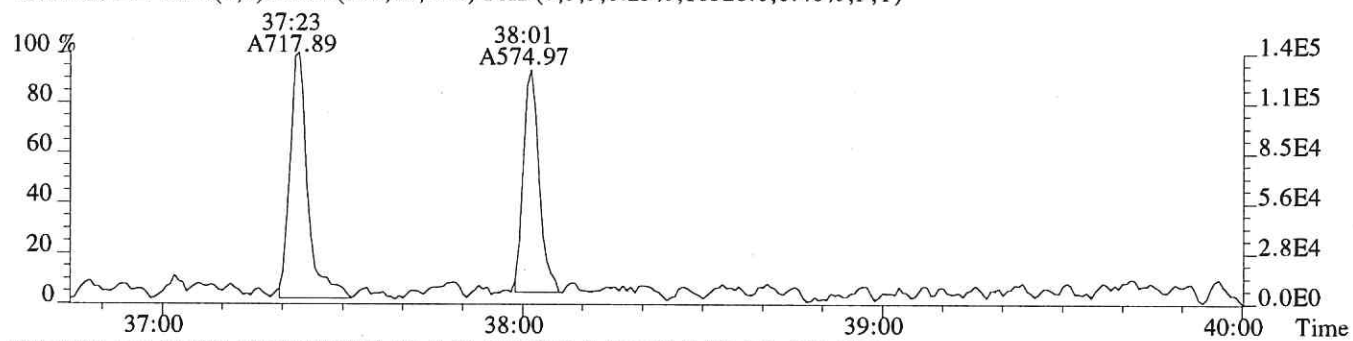


479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

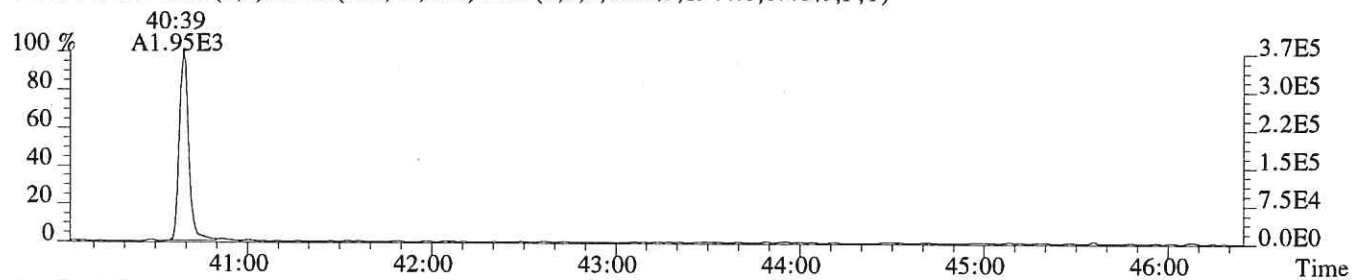


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

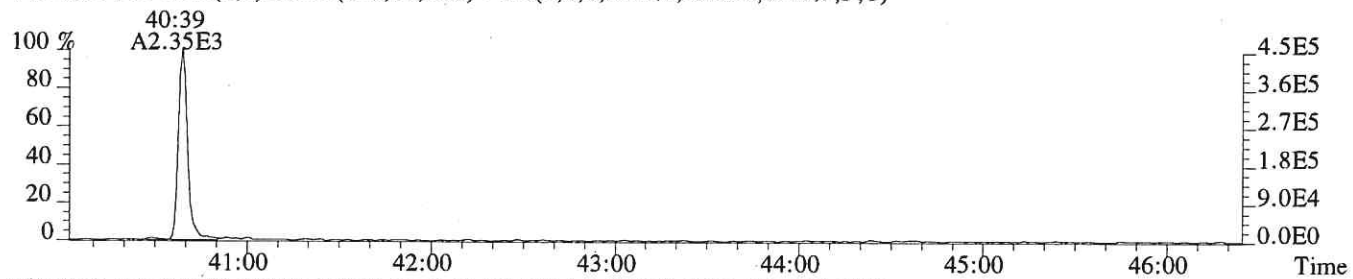




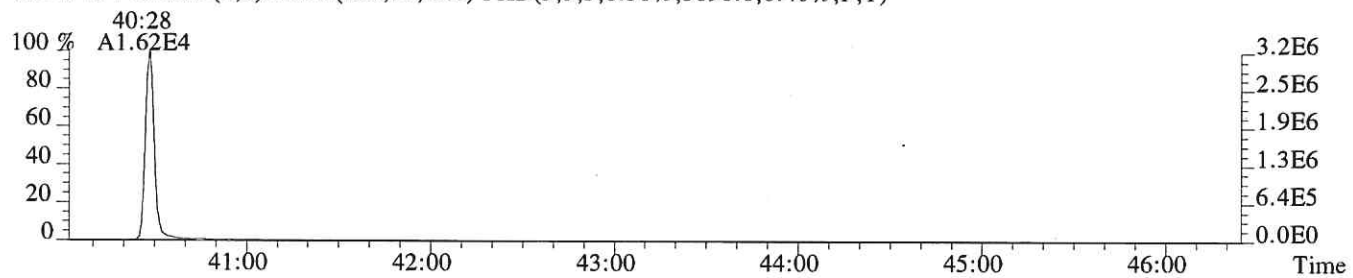
File:P618637 #1-574 Acq:20-AUG-2019 17:55:41 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-003
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1944.0,0.40%,F,T)



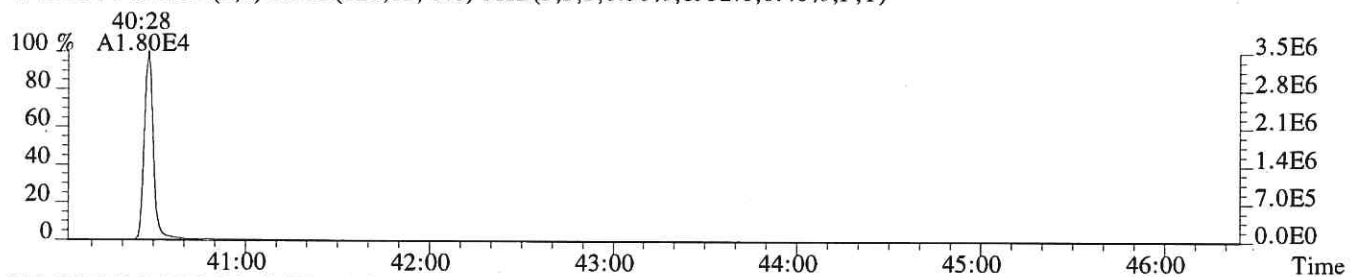
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3012.0,0.40%,F,T)



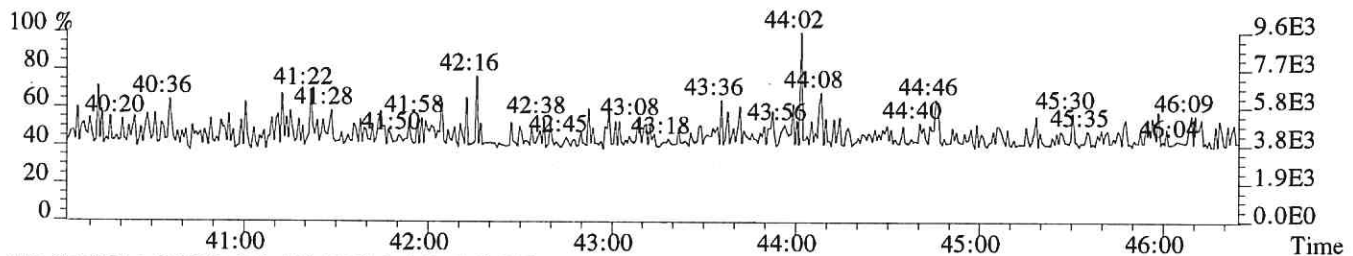
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3096.0,0.40%,F,T)



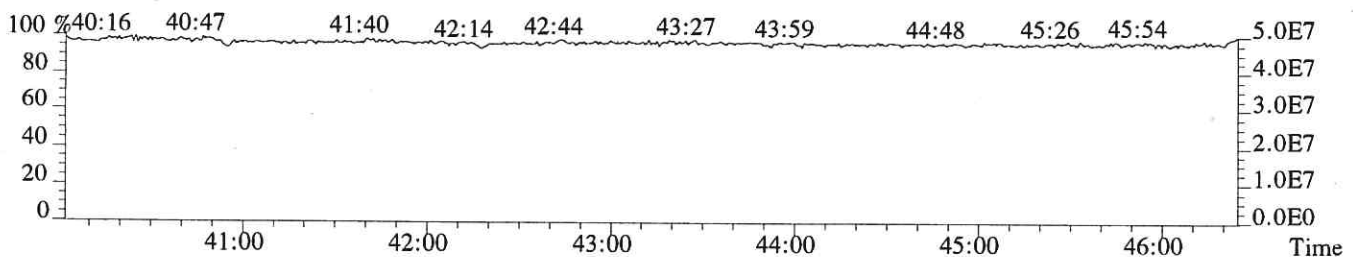
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1952.0,0.40%,F,T)



513.6775 F:5 PKD(5,3,5,100.0%,0.0,1.00%,F,F)



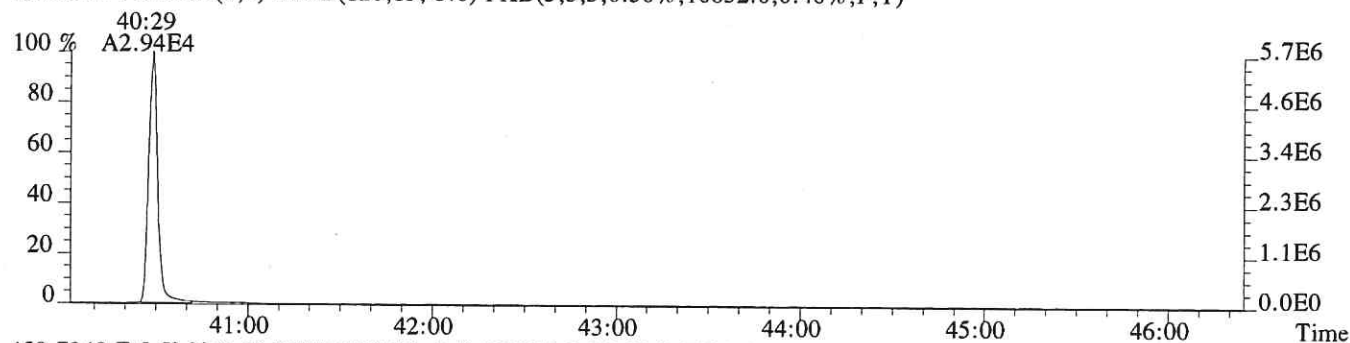
442.9728 F:5 PKD(3,3,3,100.0%,0.0,0.40%,F,F)



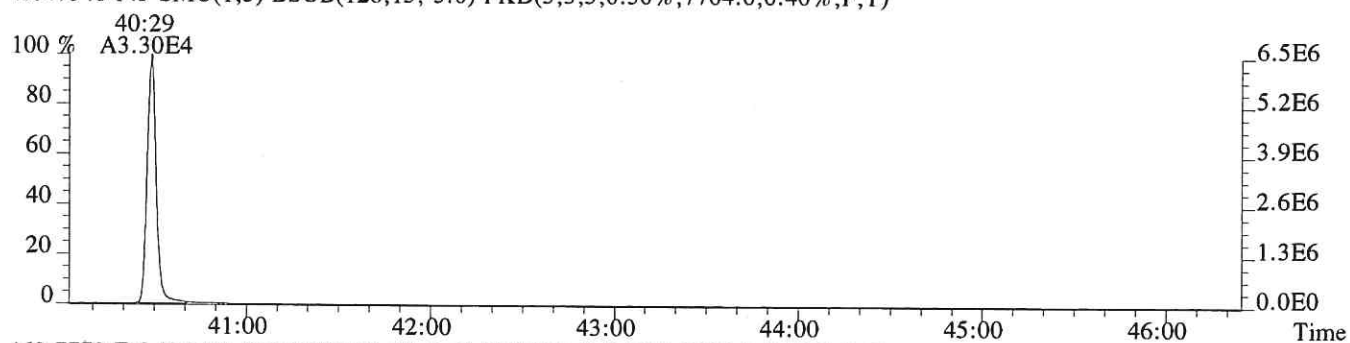
File:P618637 #1-574 Acq:20-AUG-2019.17:55:41 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:E1900593-003

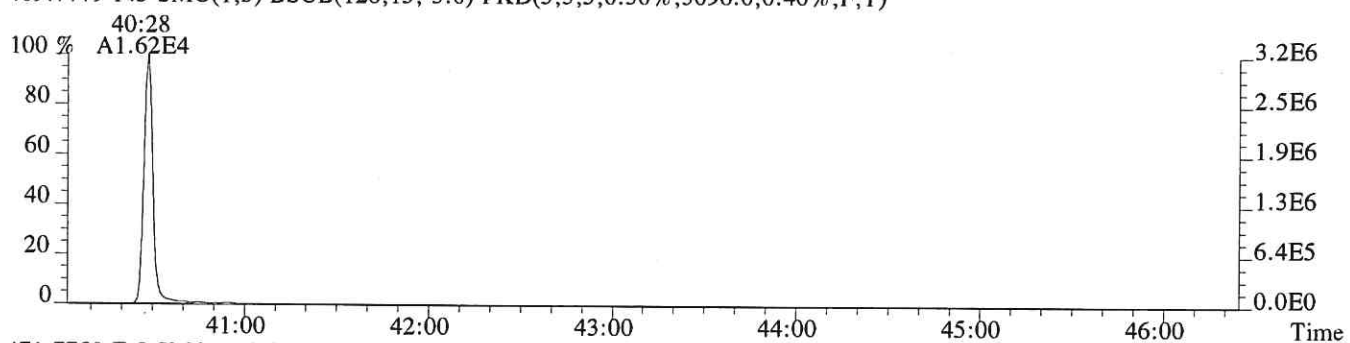
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,10632.0,0.40%,F,T)



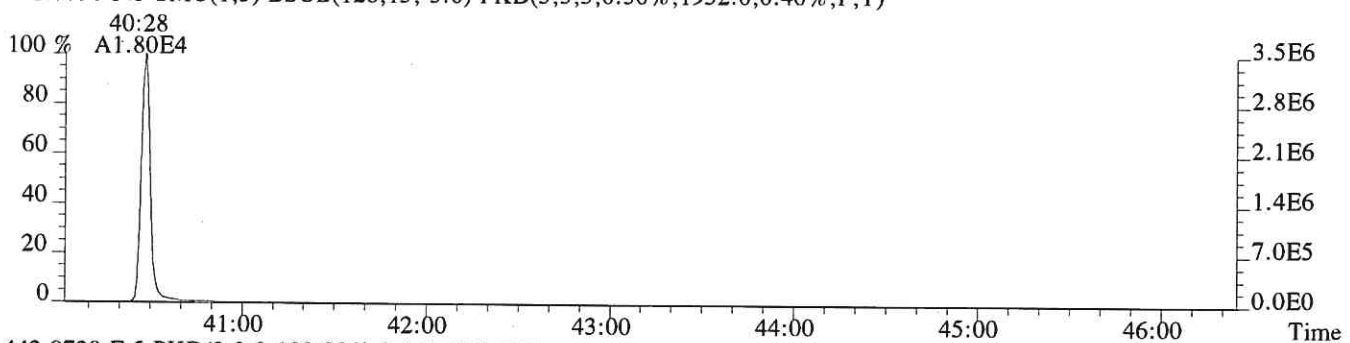
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,7704.0,0.40%,F,T)



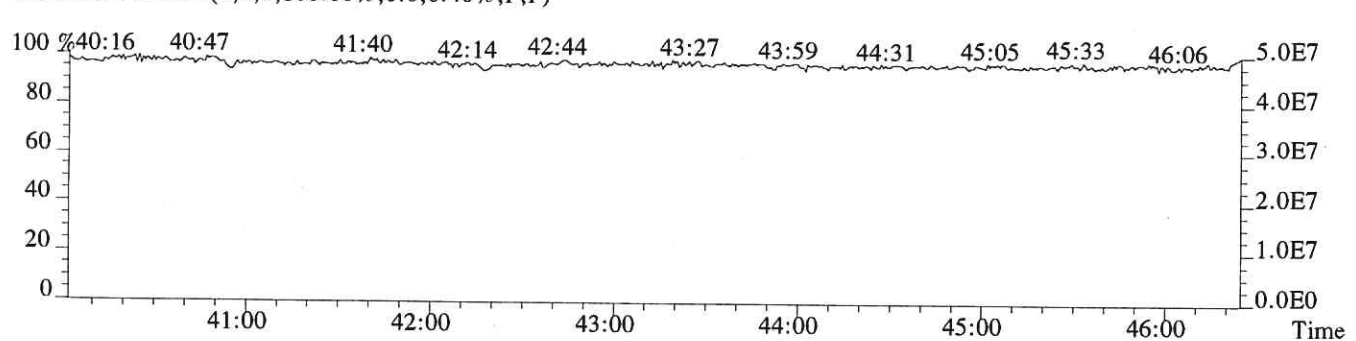
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3096.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1952.0,0.40%,F,T)



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



ALS ENVIRONMENTAL

Sample Response Summary

CLIENT ID.
BS-4-190813

Run #14 Filename P618638 Samp: 1 Inj: 1 Acquired: 20-AUG-19 18:44:47
Processed: 22-AUG-19 09:00:14 Sample ID: E1900593-004

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	NotFnd	*	*	*	no	no	0.873
2 Unk	1,2,3,7,8-PeCDF	30:29	6.256e+01	4.541e+01	1.38	yes	yes	0.864
3 Unk	2,3,4,7,8-PeCDF	31:31	3.630e+01	4.617e+01	0.79	no	yes	0.825
4 Unk	1,2,3,4,7,8-HxCDF	34:24	2.055e+02	1.754e+02	1.17	yes	no	1.084
5 Unk	1,2,3,6,7,8-HxCDF	34:30	9.463e+01	8.371e+01	1.13	yes	no	0.994
6 Unk	2,3,4,6,7,8-HxCDF	35:03	4.841e+01	4.042e+01	1.20	yes	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	35:50	5.027e+01	5.463e+01	0.92	no	no	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	37:07	6.626e+02	6.899e+02	0.96	yes	no	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	38:26	1.182e+02	1.178e+02	1.00	yes	no	1.104
10 Unk	OCDF	40:39	5.742e+03	6.568e+03	0.87	yes	no	0.993
11 Unk	2,3,7,8-TCDD	NotFnd	*	*	*	no	no	0.989
12 Unk	1,2,3,7,8-PeCDD	NotFnd	*	*	*	no	no	0.954
13 Unk	1,2,3,4,7,8-HxCDD	NotFnd	*	*	*	no	no	1.020
14 Unk	1,2,3,6,7,8-HxCDD	NotFnd	*	*	*	no	yes	1.030
15 Unk	1,2,3,7,8,9-HxCDD	NotFnd	*	*	*	no	no	1.007
16 Unk	1,2,3,4,6,7,8-HpCDD	38:01	1.382e+03	1.399e+03	0.99	yes	no	0.922
17 Unk	OCDD	40:28	9.297e+04	1.052e+05	0.88	yes	no	1.062
18 IS	13C-2,3,7,8-TCDF	25:26	2.455e+04	3.218e+04	0.76	yes	no	1.102
19 IS	13C-1,2,3,7,8-PeCDF	30:28	4.198e+04	2.689e+04	1.56	yes	no	1.074
20 IS	13C-2,3,4,7,8-PeCDF	31:30	3.775e+04	2.416e+04	1.56	yes	no	1.005
21 IS	13C-1,2,3,4,7,8-HxCDF	34:23	1.567e+04	3.071e+04	0.51	yes	no	1.059
22 IS	13C-1,2,3,6,7,8-HxCDF	34:30	1.661e+04	3.217e+04	0.52	yes	no	1.264
23 IS	13C-2,3,4,6,7,8-HxCDF	35:02	1.333e+04	2.642e+04	0.50	yes	no	1.066
24 IS	13C-1,2,3,7,8,9-HxCDF	35:49	1.434e+04	2.795e+04	0.51	yes	no	0.801
25 IS	13C-1,2,3,4,6,7,8-HpCDF	37:06	8.146e+03	1.882e+04	0.43	yes	no	0.789
26 IS	13C-1,2,3,4,7,8,9-HpCDF	38:25	7.982e+03	1.817e+04	0.44	yes	no	0.590
27 IS	13C-2,3,7,8-TCDD	26:26	2.173e+04	2.754e+04	0.79	yes	no	0.839
28 IS	13C-1,2,3,7,8-PeCDD	31:49	3.171e+04	2.019e+04	1.57	yes	no	0.744
29 IS	13C-1,2,3,4,7,8-HxCDD	35:11	2.286e+04	1.811e+04	1.26	yes	no	0.907
30 IS	13C-1,2,3,6,7,8-HxCDD	35:16	2.495e+04	2.002e+04	1.25	yes	no	0.978
31 IS	13C-1,2,3,4,6,7,8-HpCDD	38:00	1.600e+04	1.472e+04	1.09	yes	no	0.814
32 IS	13C-OCDD	40:28	1.830e+04	2.004e+04	0.91	yes	no	0.653
33 RS/RT	13C-1,2,3,4-TCDD	25:41	3.702e+04	4.792e+04	0.77	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	35:31	4.218e+04	3.362e+04	1.25	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	26:27	1.912e+04				no	0.894

$$\text{OCDD} = \frac{(9.297e+04 + 1.052e+05) \times 4000 \text{ pg} \times 1}{(1.830e+04 + 2.004e+04) \times 10.287 \text{ g} \times 88.0 / 100 \times 1.062}$$

*2150 ng/kg
LM08/22/19*

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
BS-4-190813

Run #14 Filename P618638 Samp: 1 Inj: 1 Acquired: 20-AUG-19 18:44:47
Processed: 22-AUG-19 09:00:14 LAB. ID: E1900593-004

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	*	9.24e+02	*	*	3.23e+03	*
2	1,2,3,7,8-PeCDF	1.08e+04	9.64e+02	1.1e+01	6.38e+03	1.68e+03	3.8e+00
3	2,3,4,7,8-PeCDF	6.15e+03	9.64e+02	6.4e+00	6.96e+03	1.68e+03	4.1e+00
4	1,2,3,4,7,8-HxCDF	4.24e+04	2.06e+03	2.1e+01	3.79e+04	1.59e+03	2.4e+01
5	1,2,3,6,7,8-HxCDF	1.96e+04	2.06e+03	9.5e+00	1.73e+04	1.59e+03	1.1e+01
6	2,3,4,6,7,8-HxCDF	1.18e+04	2.06e+03	5.7e+00	8.54e+03	1.59e+03	5.4e+00
7	1,2,3,7,8,9-HxCDF	9.22e+03	2.06e+03	4.5e+00	1.10e+04	1.59e+03	6.9e+00
8	1,2,3,4,6,7,8-HpCDF	1.50e+05	1.10e+03	1.4e+02	1.56e+05	1.65e+03	9.5e+01
9	1,2,3,4,7,8,9-HpCDF	2.52e+04	1.10e+03	2.3e+01	2.89e+04	1.65e+03	1.8e+01
10	OCDF	1.16e+06	1.74e+03	6.7e+02	1.29e+06	3.12e+03	4.1e+02
11	2,3,7,8-TCDD	*	3.26e+03	*	*	2.26e+03	*
12	1,2,3,7,8-PeCDD	*	4.02e+03	*	*	2.56e+03	*
13	1,2,3,4,7,8-HxCDD	*	7.33e+03	*	*	6.17e+03	*
14	1,2,3,6,7,8-HxCDD	*	7.33e+03	*	*	6.17e+03	*
15	1,2,3,7,8,9-HxCDD	*	7.33e+03	*	*	6.17e+03	*
16	1,2,3,4,6,7,8-HpCDD	3.14e+05	8.84e+03	3.5e+01	3.22e+05	8.59e+03	3.7e+01
17	OCDD	1.83e+07	1.68e+04	1.1e+03	2.10e+07	1.02e+04	2.1e+03
18	13C-2,3,7,8-TCDF	3.42e+06	1.48e+04	2.3e+02	4.44e+06	5.39e+03	8.2e+02
19	13C-1,2,3,7,8-PeCDF	7.24e+06	9.36e+02	7.7e+03	4.60e+06	1.10e+03	4.2e+03
20	13C-2,3,4,7,8-PeCDF	6.95e+06	9.36e+02	7.4e+03	4.51e+06	1.10e+03	4.1e+03
21	13C-1,2,3,4,7,8-HxCDF	3.26e+06	8.16e+02	4.0e+03	6.30e+06	1.50e+03	4.2e+03
22	13C-1,2,3,6,7,8-HxCDF	3.39e+06	8.16e+02	4.2e+03	6.60e+06	1.50e+03	4.4e+03
23	13C-2,3,4,6,7,8-HxCDF	2.92e+06	8.16e+02	3.6e+03	5.71e+06	1.50e+03	3.8e+03
24	13C-1,2,3,7,8,9-HxCDF	3.19e+06	8.16e+02	3.9e+03	6.26e+06	1.50e+03	4.2e+03
25	13C-1,2,3,4,6,7,8-HpCDF	1.78e+06	1.40e+03	1.3e+03	4.10e+06	1.76e+03	2.3e+03
26	13C-1,2,3,4,7,8,9-HpCDF	1.73e+06	1.40e+03	1.2e+03	4.03e+06	1.76e+03	2.3e+03
27	13C-2,3,7,8-TCDD	3.41e+06	8.12e+03	4.2e+02	4.29e+06	4.12e+03	1.0e+03
28	13C-1,2,3,7,8-PeCDD	5.95e+06	1.50e+03	4.0e+03	3.76e+06	1.99e+03	1.9e+03
29	13C-1,2,3,4,7,8-HxCDD	4.99e+06	2.32e+03	2.2e+03	3.87e+06	1.42e+03	2.7e+03
30	13C-1,2,3,6,7,8-HxCDD	5.30e+06	2.32e+03	2.3e+03	4.20e+06	1.42e+03	2.9e+03
31	13C-1,2,3,4,6,7,8-HpCDD	3.60e+06	1.05e+03	3.4e+03	3.40e+06	4.16e+02	8.2e+03
32	13C-OCDD	3.63e+06	3.74e+03	9.7e+02	3.97e+06	3.15e+03	1.3e+03
33	13C-1,2,3,4-TCDD	5.46e+06	8.12e+03	6.7e+02	7.11e+06	4.12e+03	1.7e+03
34	13C-1,2,3,7,8,9-HxCDD	8.85e+06	2.32e+03	3.8e+03	7.12e+06	1.42e+03	5.0e+03
35	37Cl-2,3,7,8-TCDD	2.99e+06	4.68e+03	6.4e+02			

---Sample Calculation---

$$D/L \text{ TCDD} = \frac{2.5 \times (3.260e+03 + 2.260e+03) \times 2000}{(3.410e+06 + 4.289e+06) \times () \times 0.989} =$$

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ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

BS-4-190813

Entry: 39 Totals Name: Total Penta-Furans2

Run: 14 File: P618638 Sample:1 Injection:1 Function:2

Acquired: 20-AUG-19 18:44:47 Processed: 22-AUG-19 09:00:14

Mass:	339.8600	341.8570	Tot Response: 1.08e+02		RRF: 0.8452			
#	RT	Resp	Resp Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	30:29	6.26e+01	4.54e+01	1.38	yes 1.08e+02	1,2,3,7,8-PeCDF	n	y

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ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

BS-4-190813

Entry: 41 Totals Name: Total Hexa-Furans

Run: 14 File: P618638 Sample:1 Injection:1 Function:3

Acquired: 20-AUG-19 18:44:47 Processed: 22-AUG-19 09:00:14

Mass:	373.8210	375.8180	Tot Response: 7.54e+02		RRF: 1.022				
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	33:12	3.00e+01	2.12e+01	1.42	yes	5.12e+01		n	n
2	33:44	2.98e+01	2.50e+01	1.20	yes	5.48e+01		n	n
3	34:24	2.06e+02	1.75e+02	1.17	yes	3.81e+02	1,2,3,4,7,8-HxCDF	n	n
4	34:30	9.46e+01	8.37e+01	1.13	yes	1.78e+02	1,2,3,6,7,8-HxCDF	n	n
5	35:03	4.84e+01	4.04e+01	1.20	yes	8.88e+01	2,3,4,6,7,8-HxCDF	n	n

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ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

BS-4-190813

Entry: 43 Totals Name: Total Hepta-Furans

Run: 14 File: P618638 Sample:1 Injection:1 Function:4

Acquired: 20-AUG-19 18:44:47 Processed: 22-AUG-19 09:00:14

Mass: 407.7820		409.7790		Tot Response: 2.51e+03		RRF: 1.104			
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	37:07	6.63e+02	6.90e+02	0.96	yes	1.35e+03	1,2,3,4,6,7,8-HpCDF	n	n
2	37:22	9.63e+01	1.01e+02	0.95	yes	1.98e+02		n	n
3	37:31	3.83e+02	3.45e+02	1.11	yes	7.28e+02		n	n
4	38:26	1.18e+02	1.18e+02	1.00	yes	2.36e+02	1,2,3,4,7,8,9-HpCDF	n	n

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ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

BS-4-190813

Entry: 44 Totals Name: Total Hepta-Dioxins

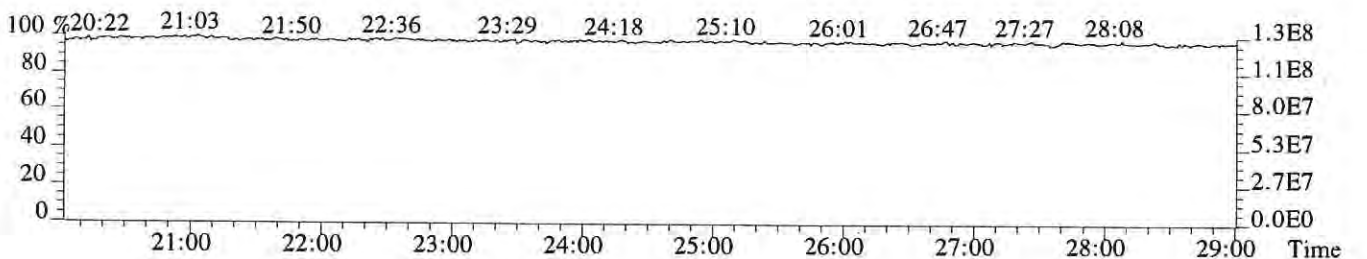
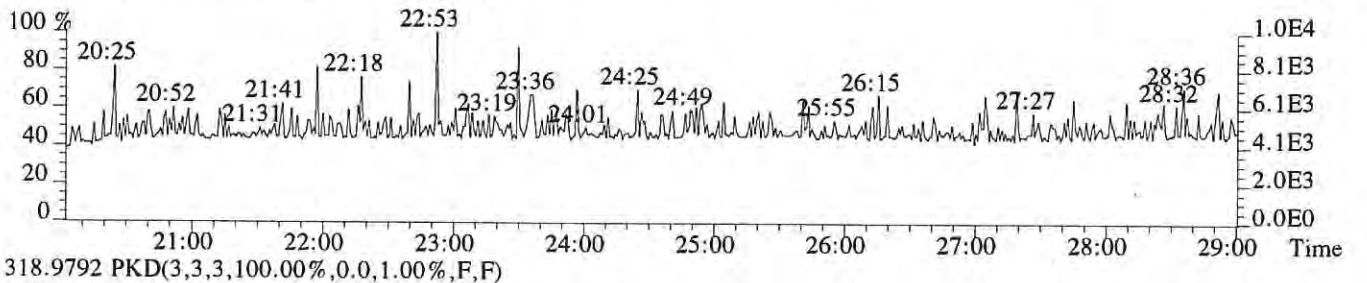
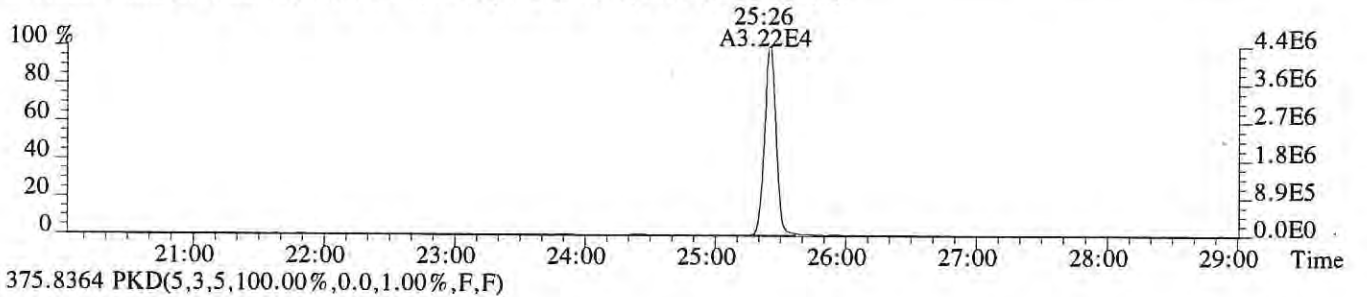
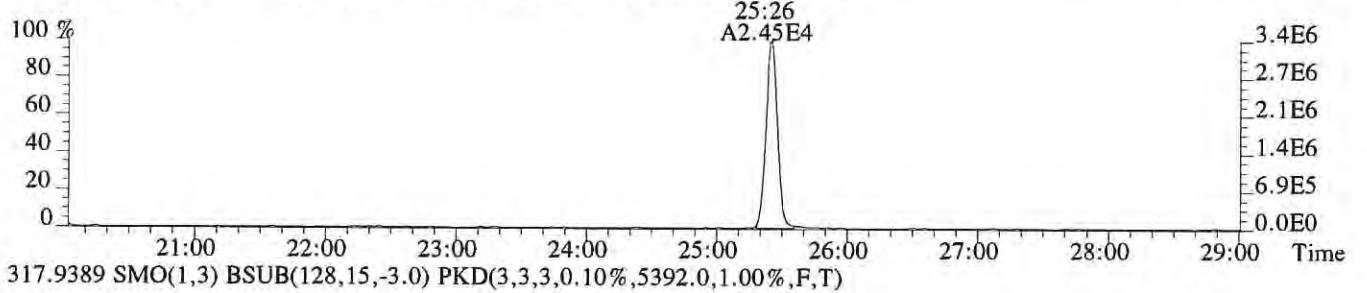
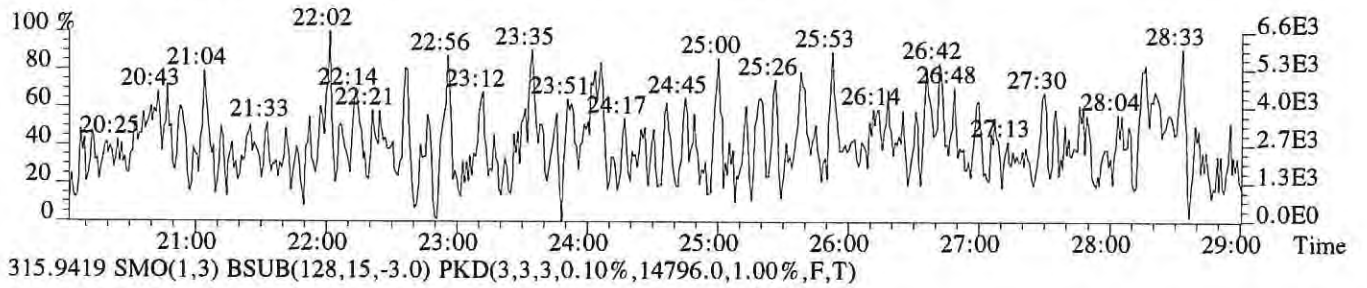
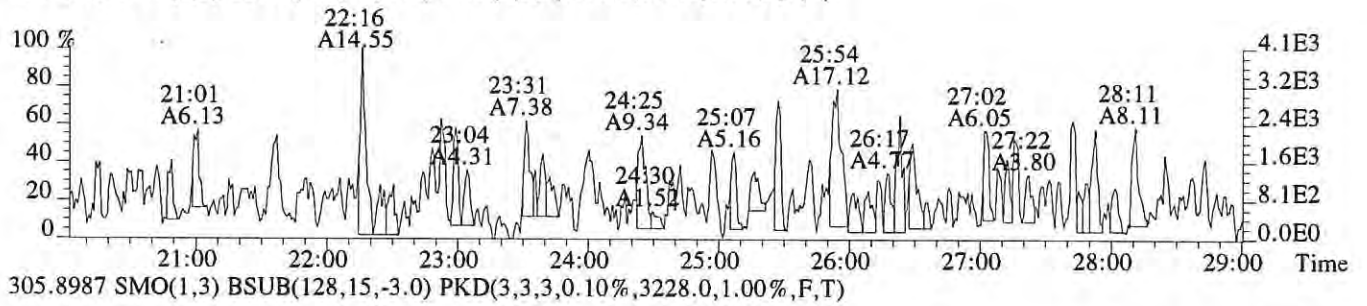
Run: 14 File: P618638 Sample:1 Injection:1 Function:4

Acquired: 20-AUG-19 18:44:47 Processed: 22-AUG-19 09:00:14

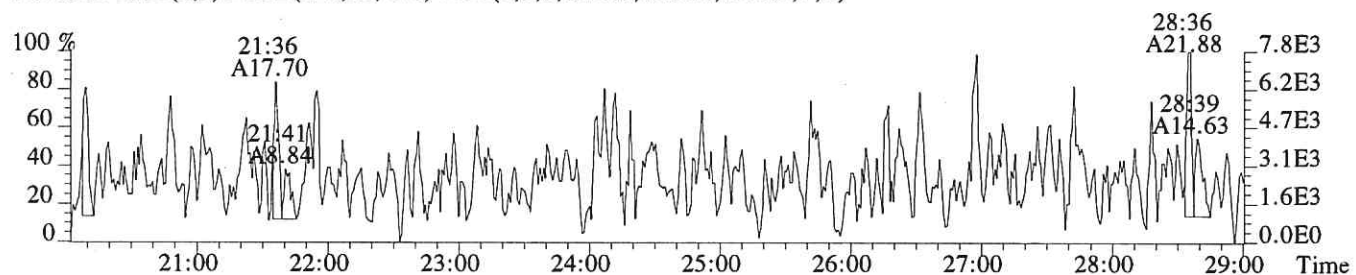
Mass:	423.7770	425.7740	Tot Response: 5.24e+03		RRF: 0.9218				
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	37:22	1.20e+03	1.27e+03	0.94	yes	2.46e+03		n	n
2	38:01	1.38e+03	1.40e+03	0.99	yes	2.78e+03	1,2,3,4,6,7,8-HpCDD	n	n

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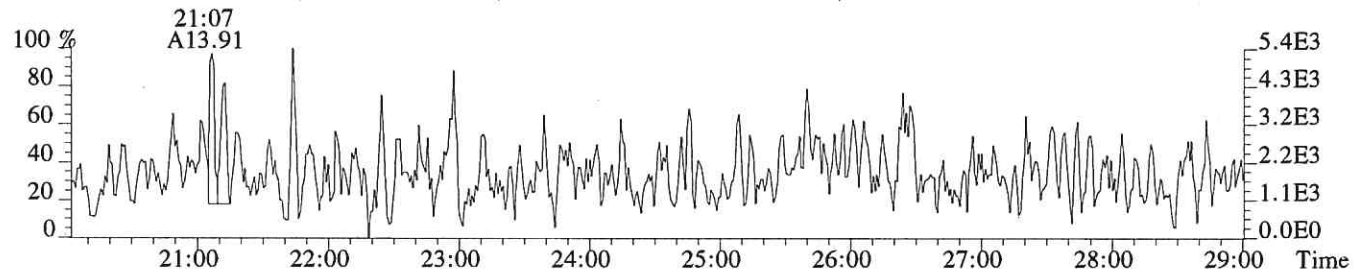
File:P618638 #1-637 Acq:20-AUG-2019 18:44:47 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-004
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,924.0,1.00%,F,T)



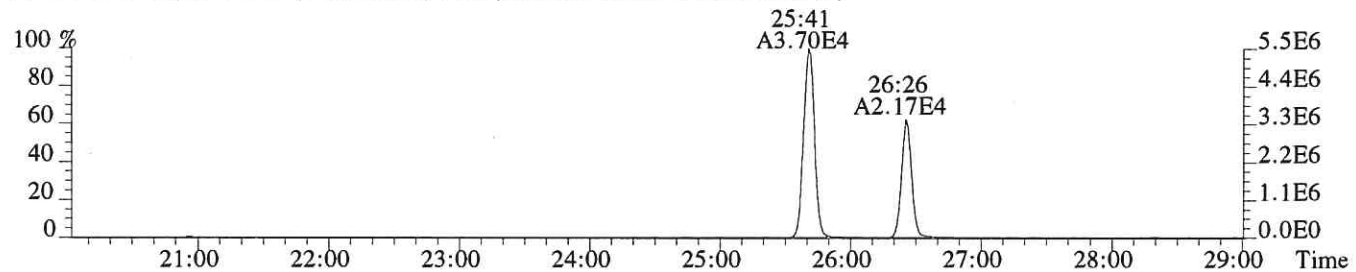
File:P618638 #1-637 Acq:20-AUG-2019 18:44:47 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-004
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3260.0,1.00%,F,T)



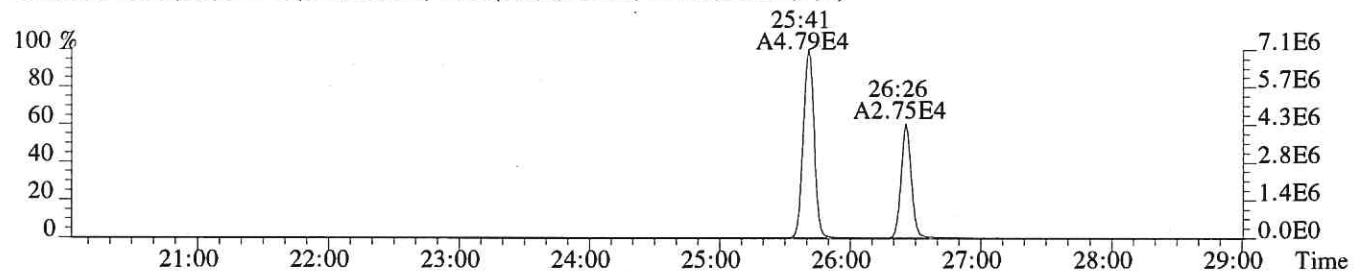
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2260.0,1.00%,F,T)



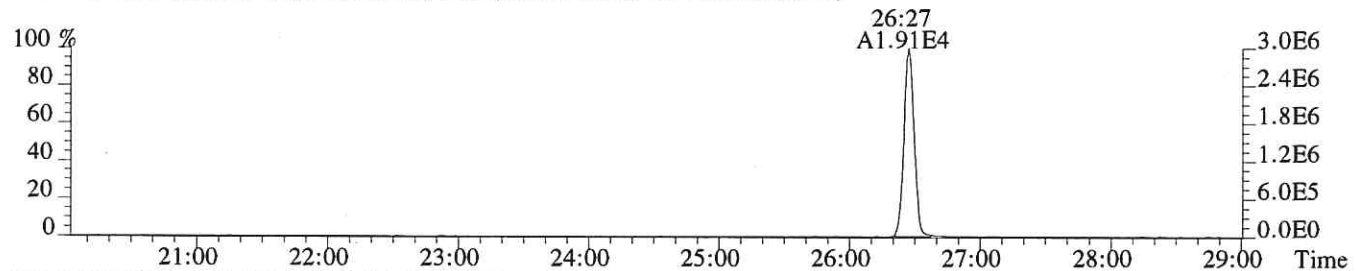
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,8116.0,1.00%,F,T)



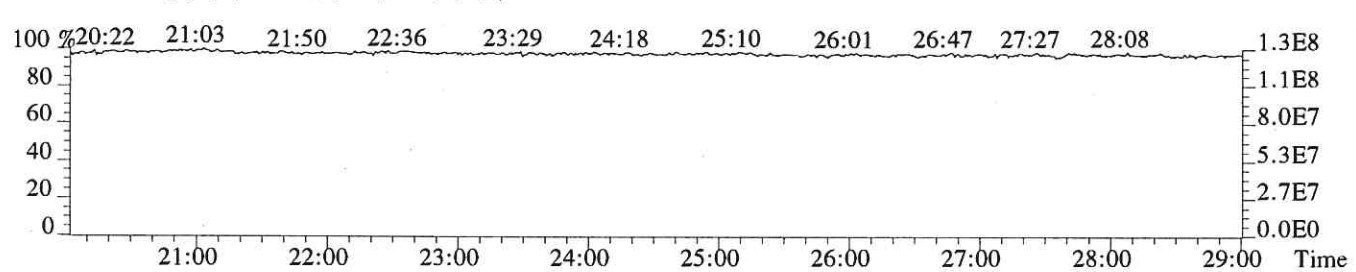
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4124.0,1.00%,F,T)



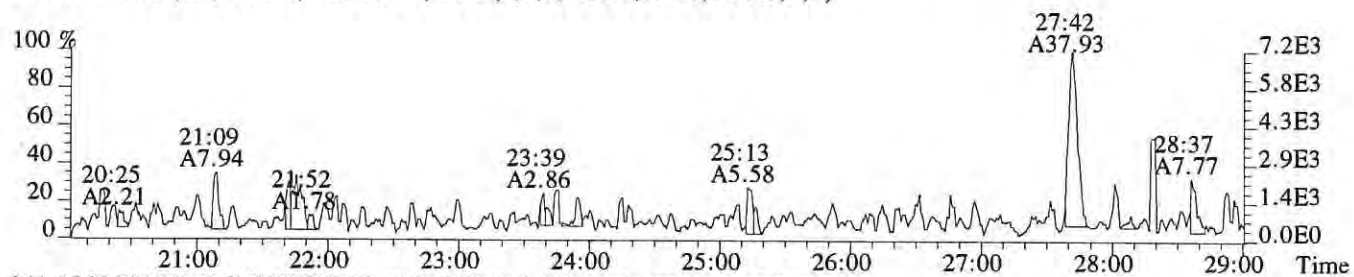
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4684.0,1.00%,F,T)



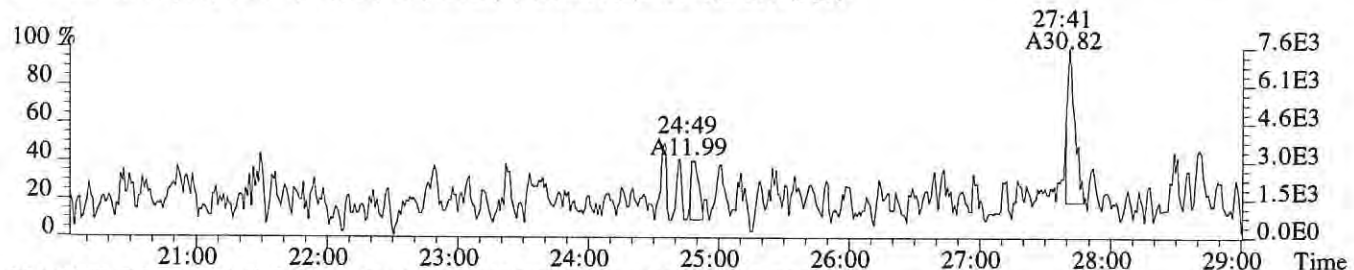
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



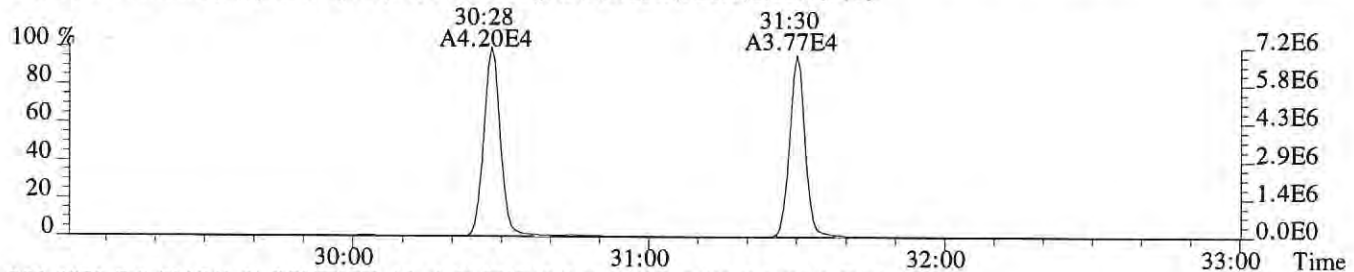
File:P618638 #1-637 Acq:20-AUG-2019 18:44:47 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-004
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,896.0,1.00%,F,T)



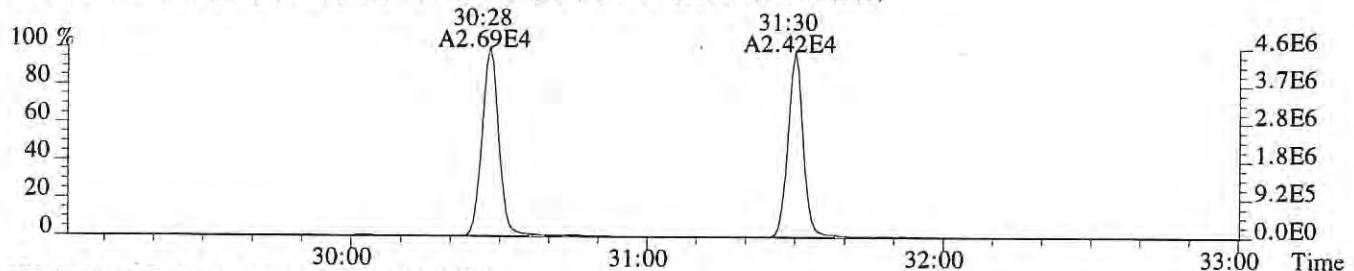
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2032.0,1.00%,F,T)



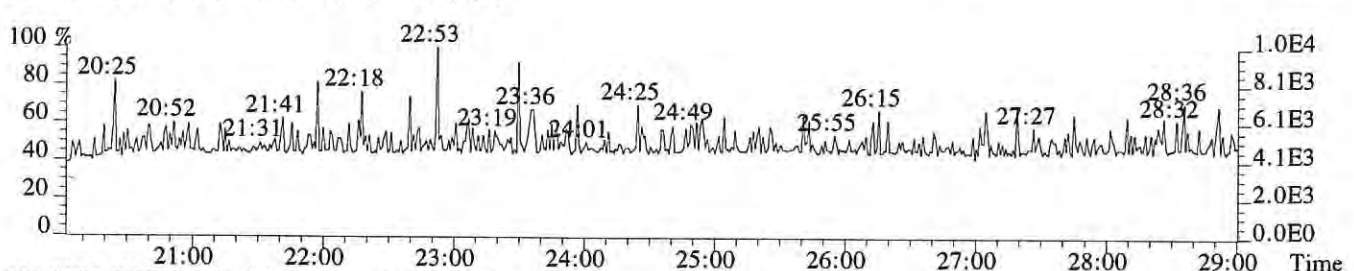
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,936.0,1.00%,F,T)



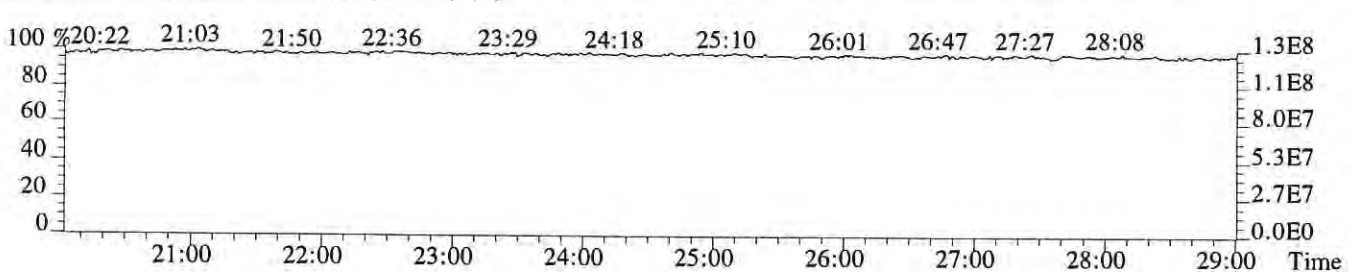
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1100.0,1.00%,F,T)



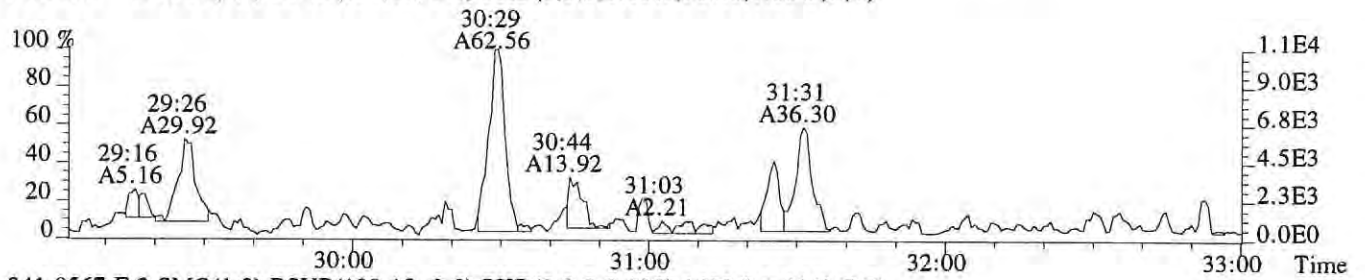
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



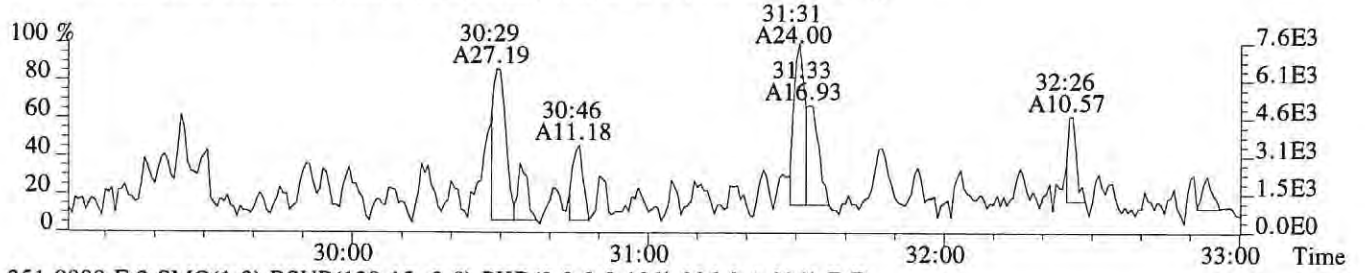
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



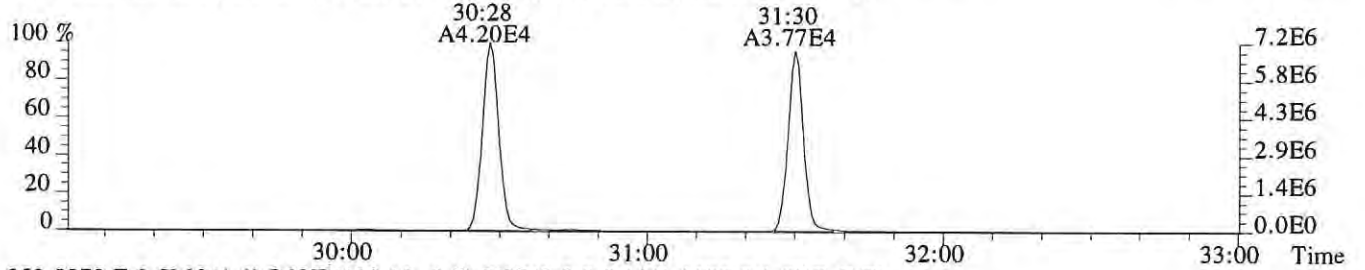
File:P618638 #1-357 Acq:20-AUG-2019 18:44:47 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-004
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,964.0,1.00%,F,T)



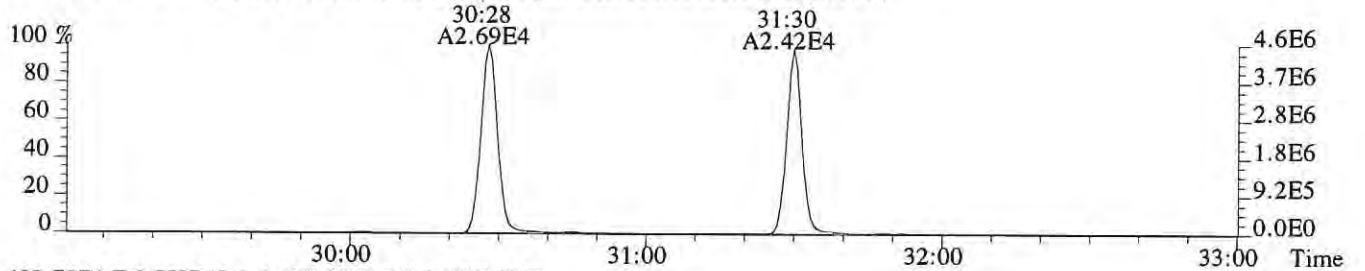
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1680.0,1.00%,F,T)



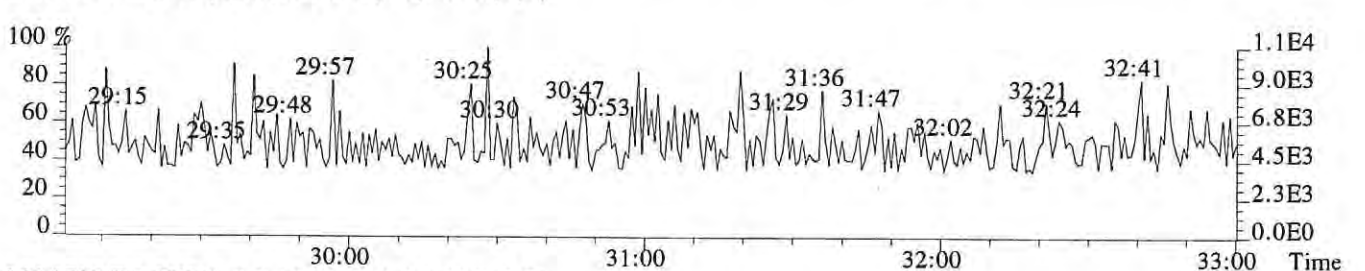
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,936.0,1.00%,F,T)



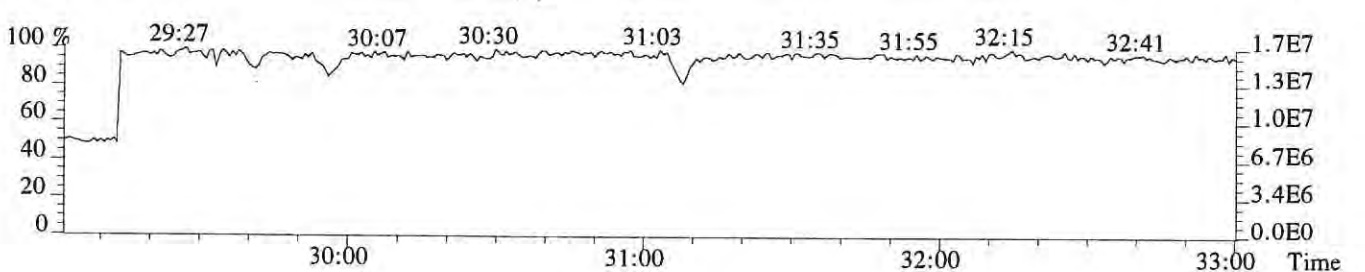
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1100.0,1.00%,F,T)



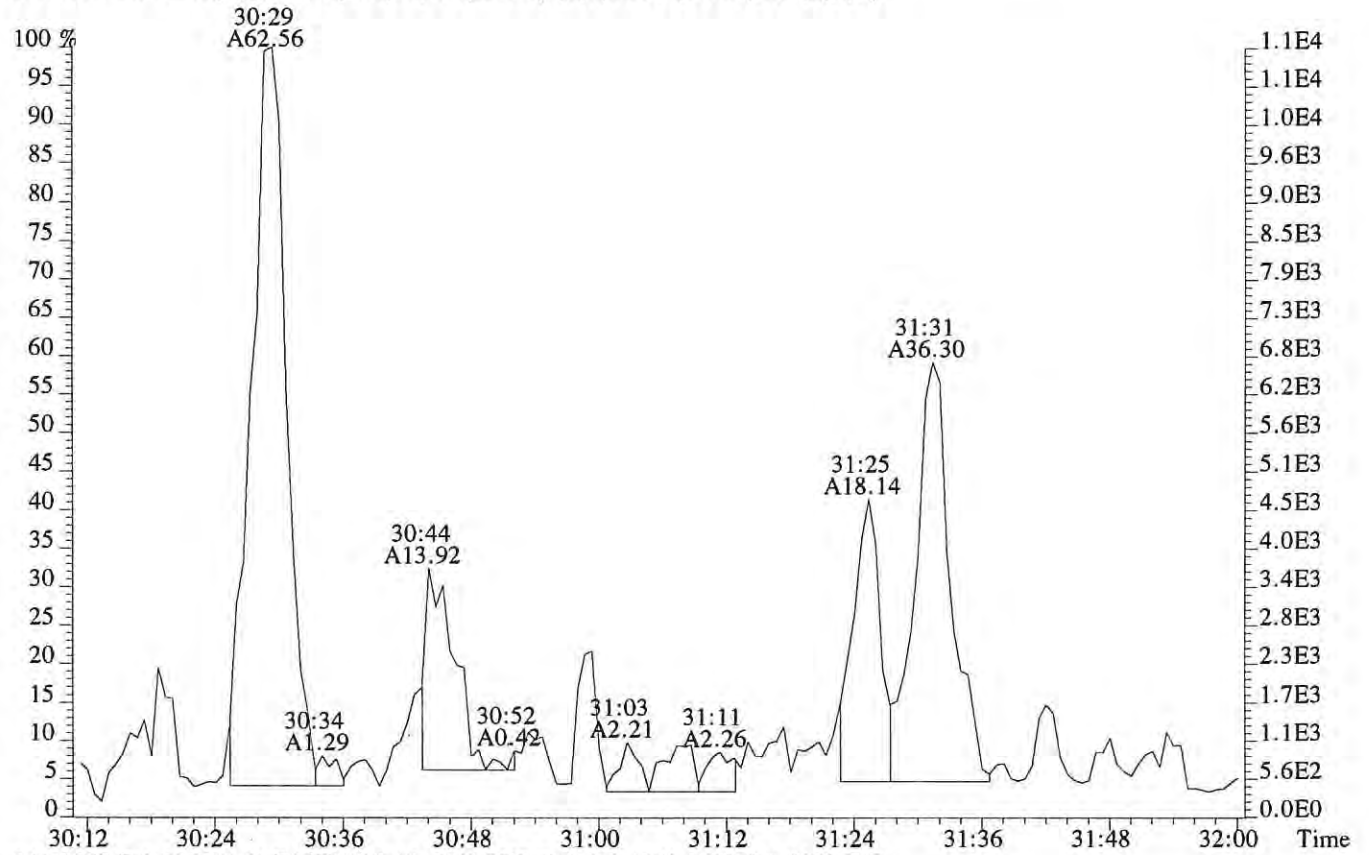
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



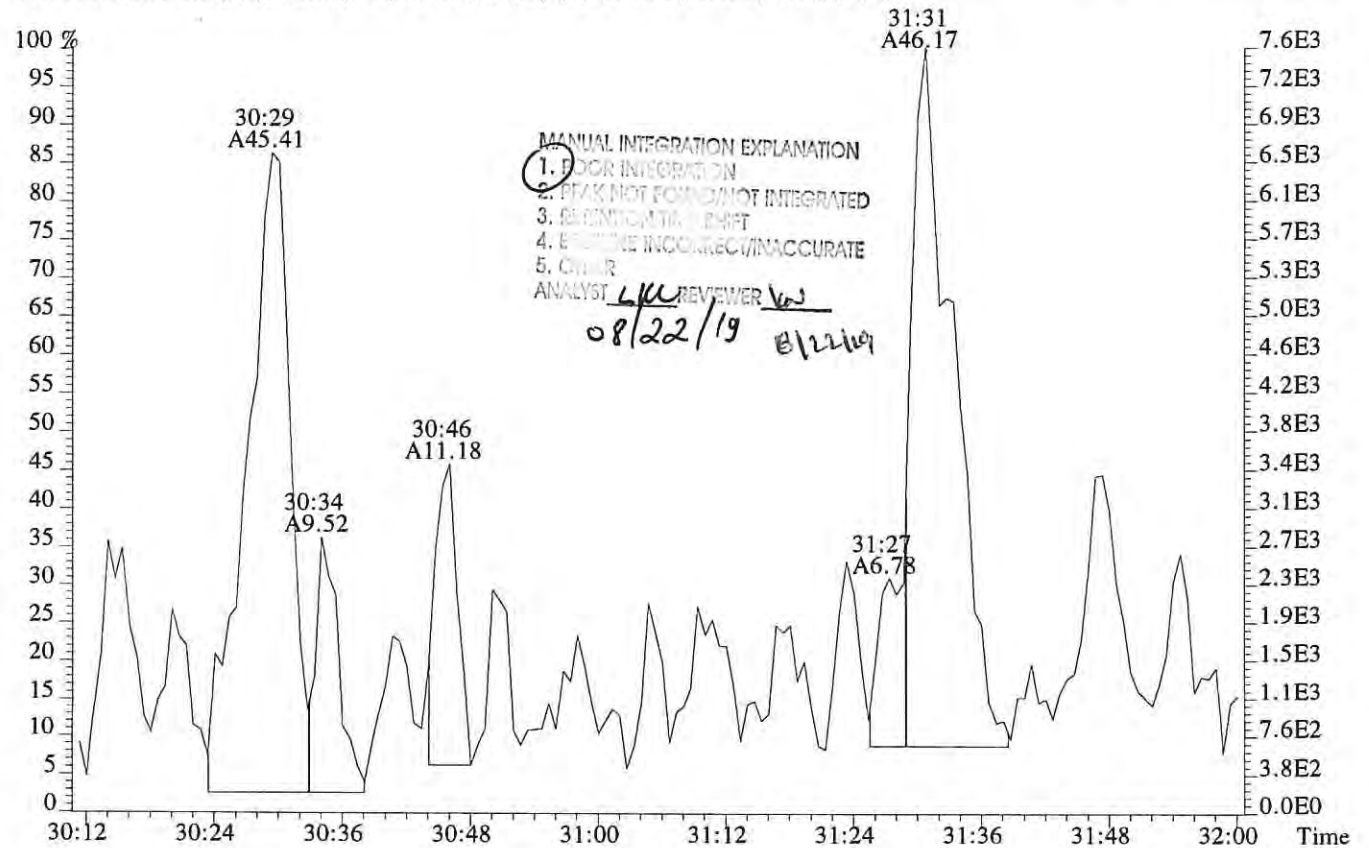
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



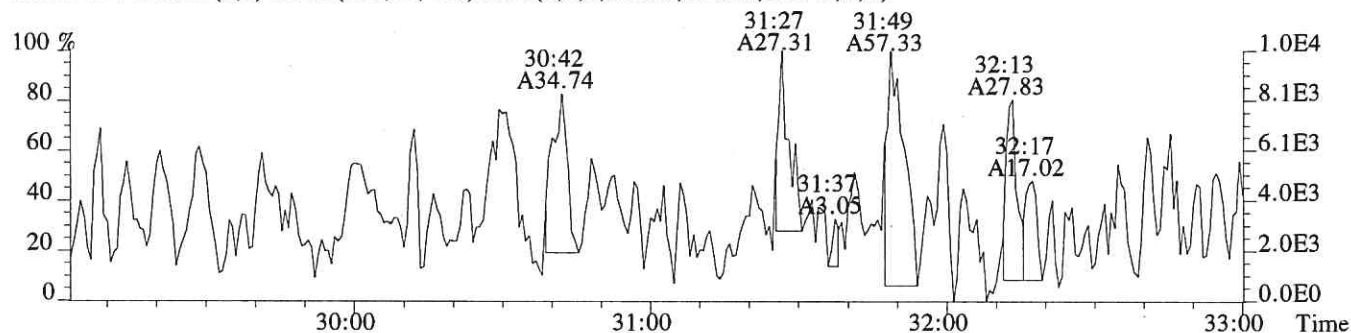
File:P618638 #1-357 Acq:20-AUG-2019 18:44:47 Probe EI+ Magnet SIR VG BioTech Mass spectf
 Sample#1 Exp:E1900593-004
 339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,964.0,1.00%,F,T)



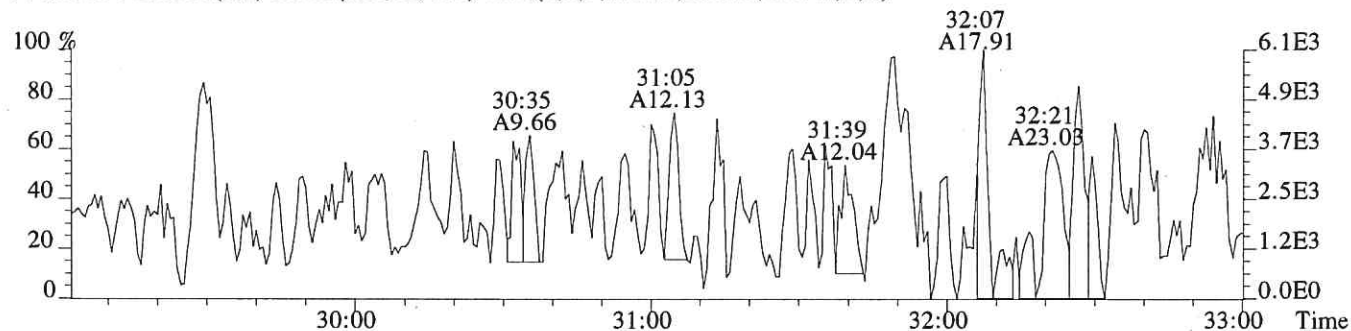
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1680.0,1.00%,F,T)



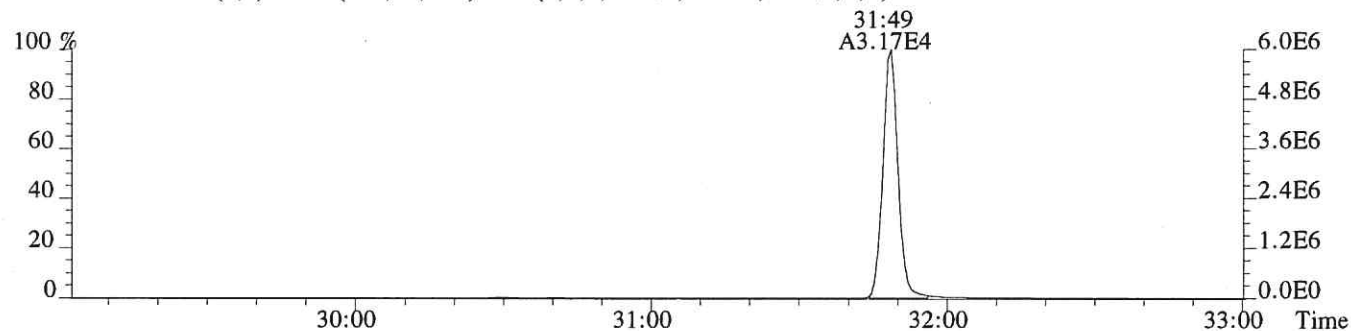
File:P618638 #1-357 Acq:20-AUG-2019 18:44:47 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-004
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4020.0,1.00%,F,T)



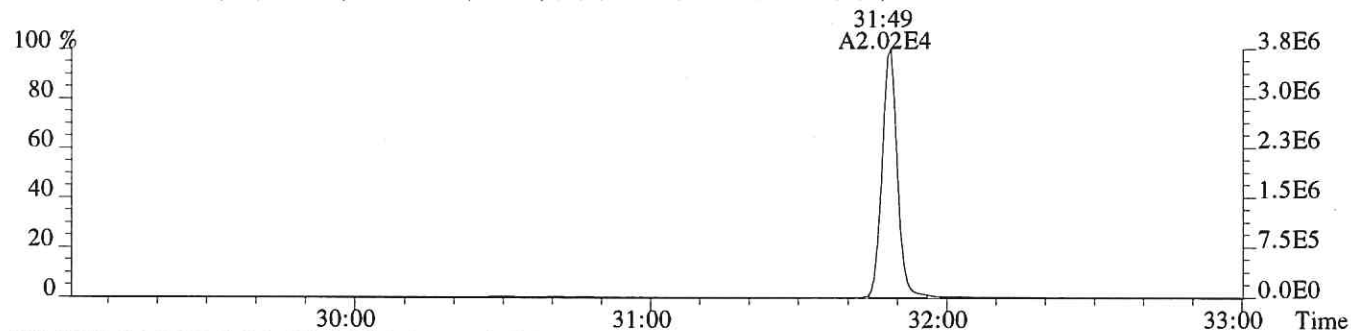
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2556.0,1.00%,F,T)



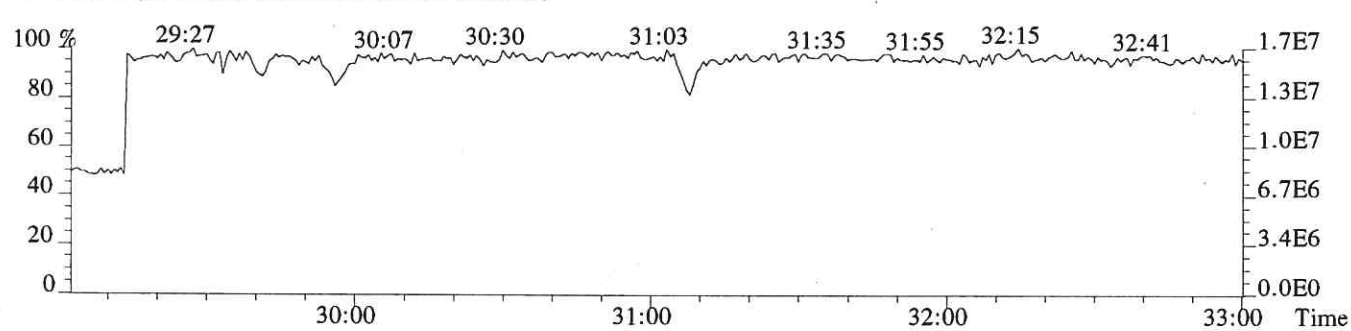
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1496.0,1.00%,F,T)



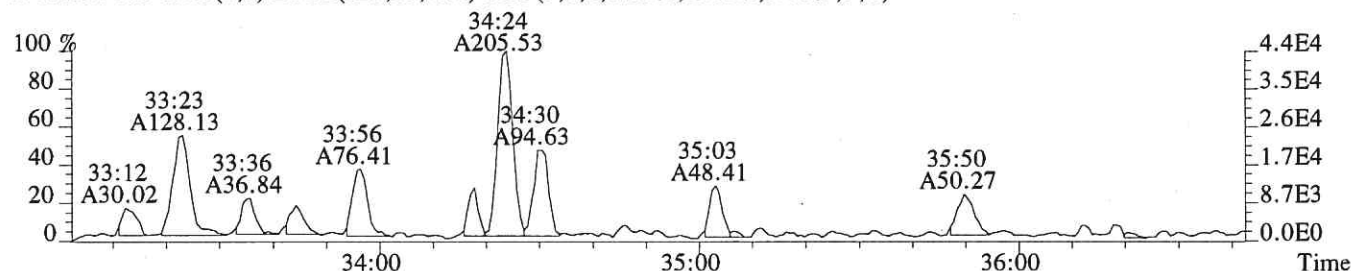
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1992.0,1.00%,F,T)



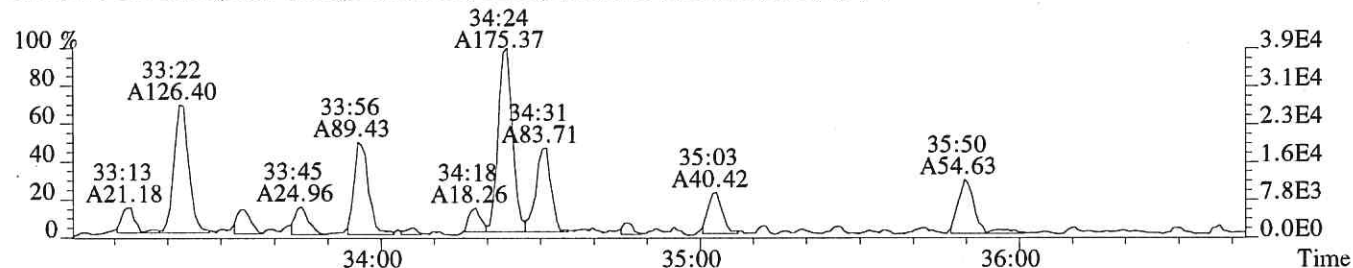
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



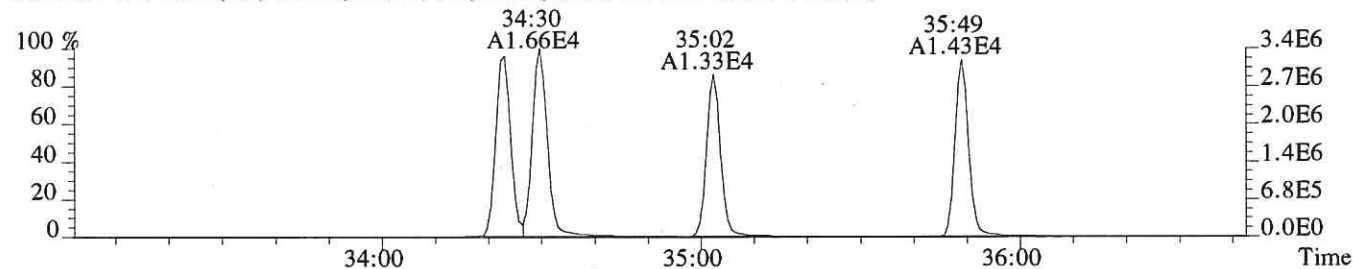
File:P618638 #1-331 Acq:20-AUG-2019 18:44:47 Probe EI+ Magnet SIR VG BioTech Mass spectF
Sample#1 Exp:E1900593-004
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2060.0,0.40%,F,T)



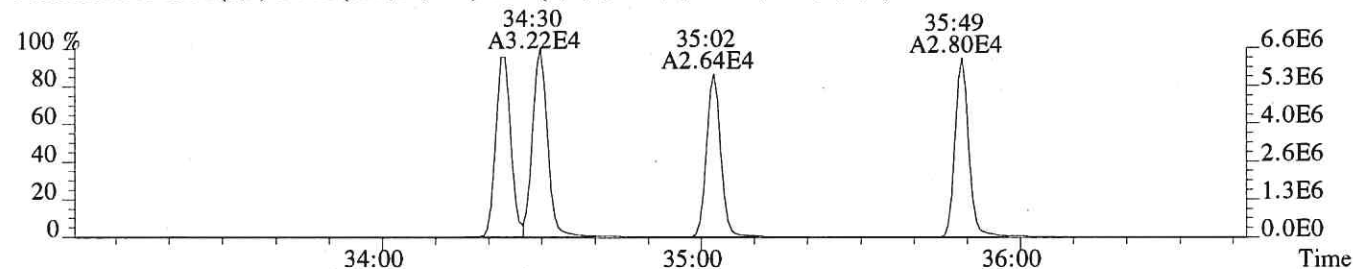
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1588.0,0.40%,F,T)



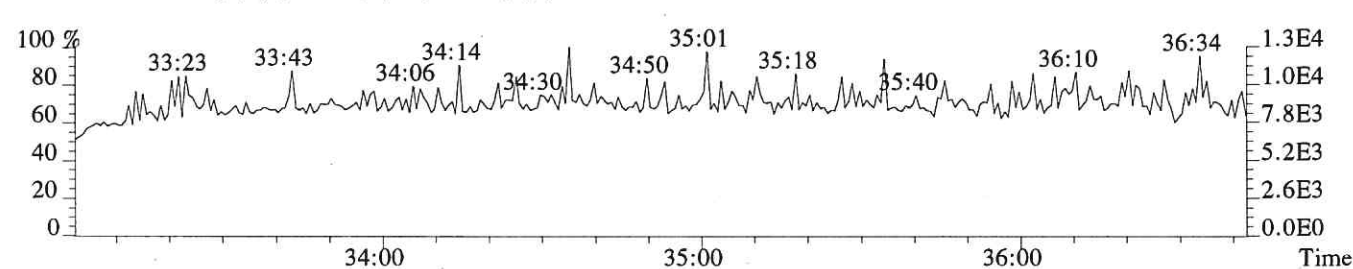
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,816.0,0.40%,F,T)



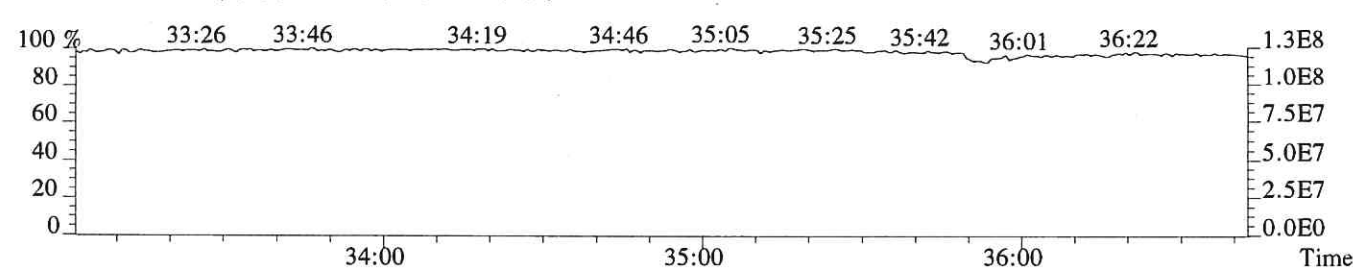
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1496.0,0.40%,F,T)



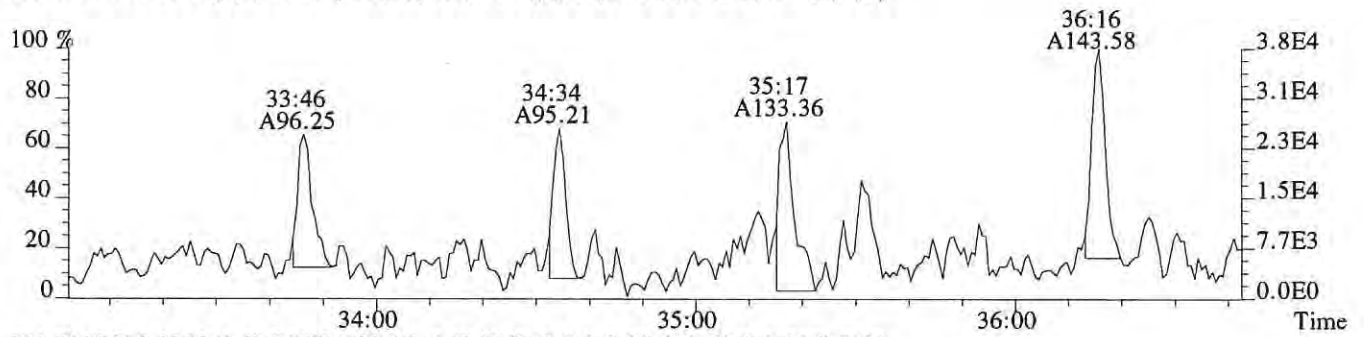
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



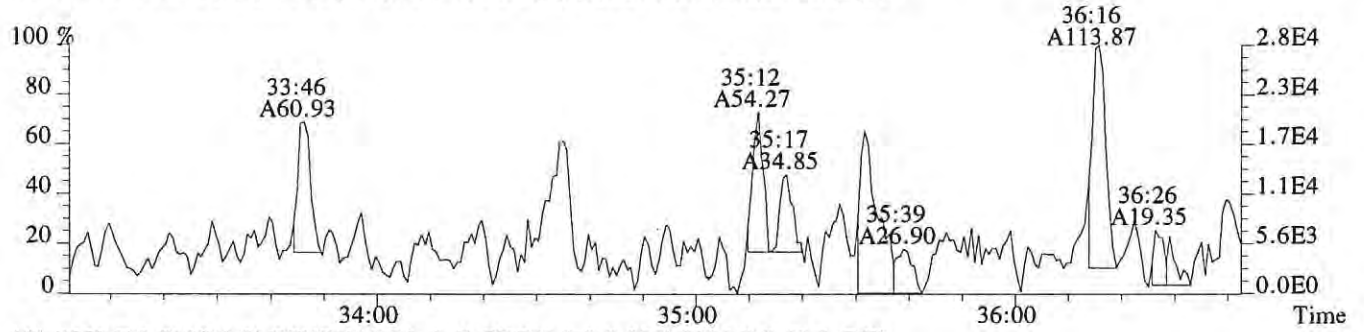
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



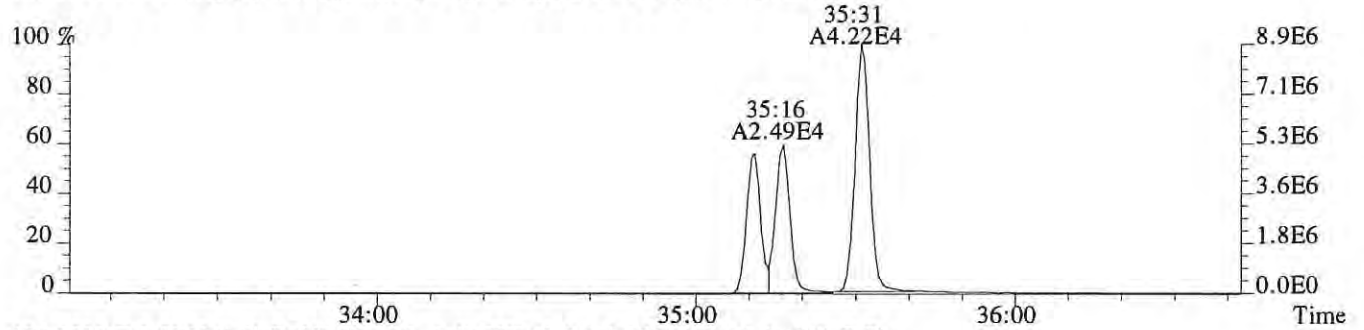
File:P618638 #1-331 Acq:20-AUG-2019 18:44:47 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-004
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,7332.0,0.40%,F,T)



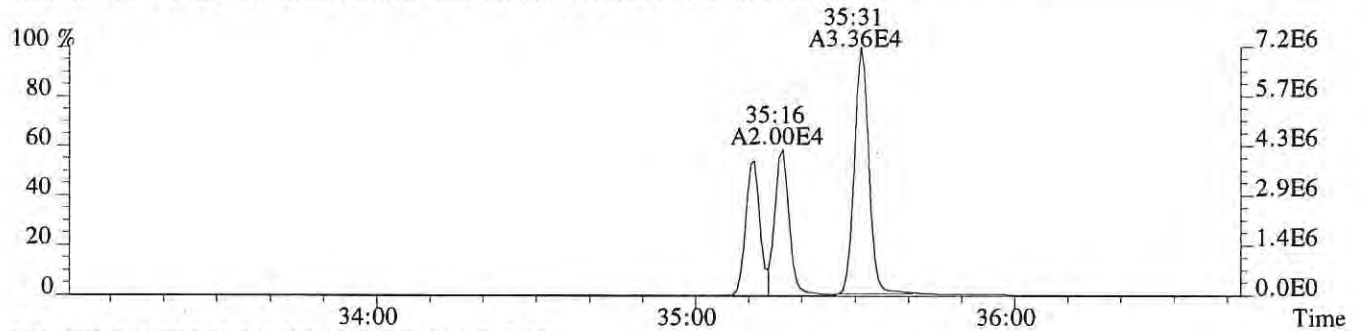
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,6172.0,0.40%,F,T)



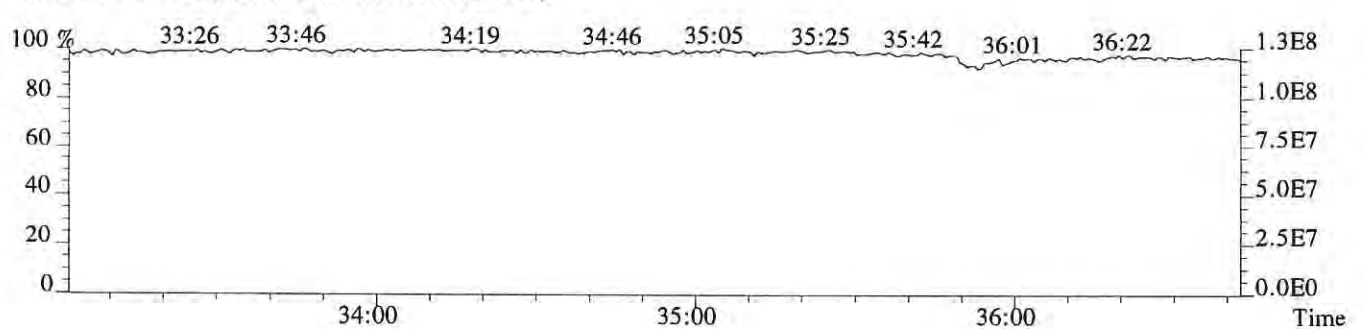
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2316.0,0.40%,F,T)



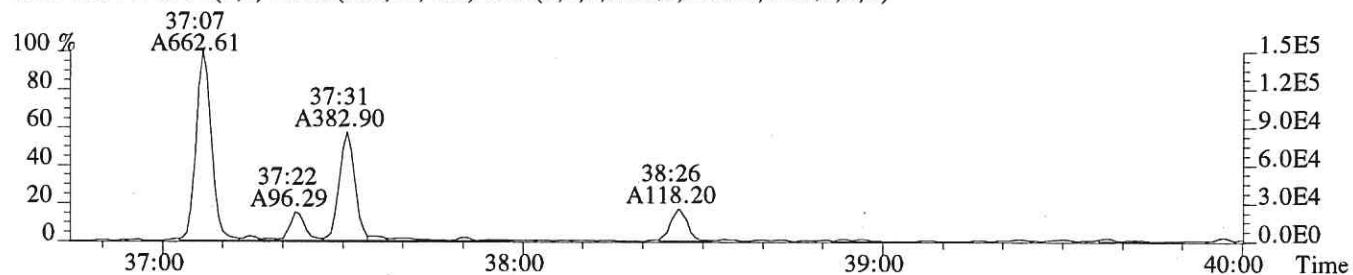
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1424.0,0.40%,F,T)



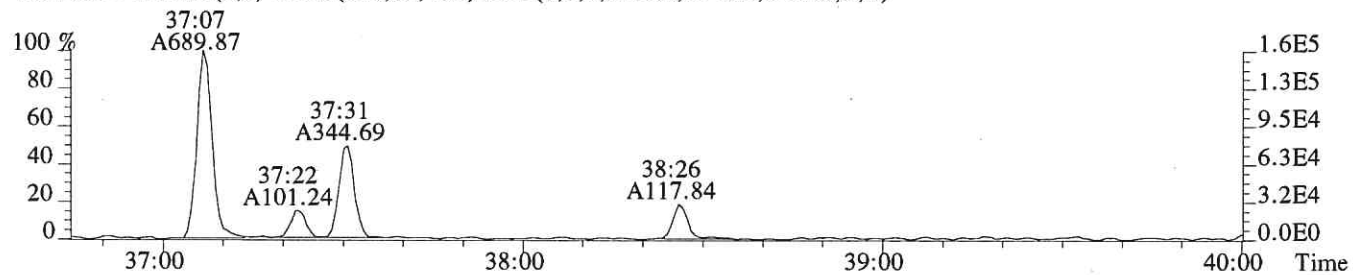
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



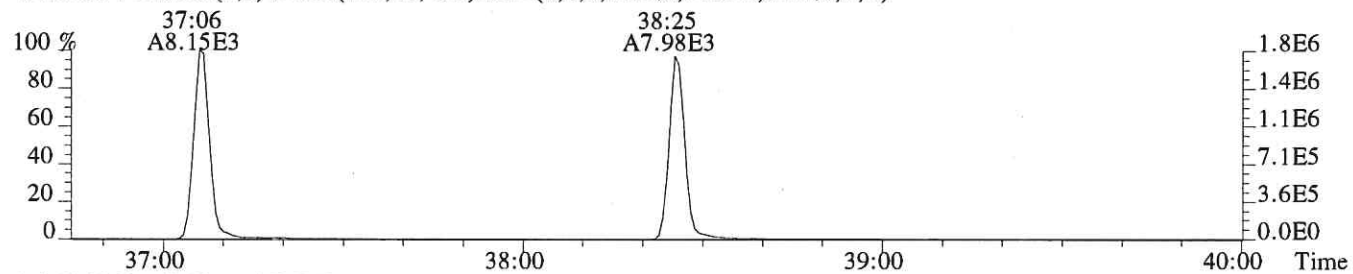
File:P618638 #1-294 Acq:20-AUG-2019 18:44:47 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-004
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1100.0,0.50%,F,T)



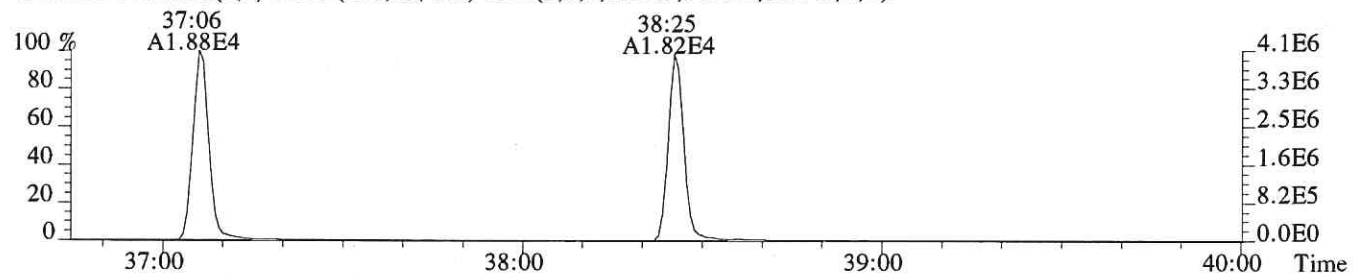
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1648.0,0.50%,F,T)



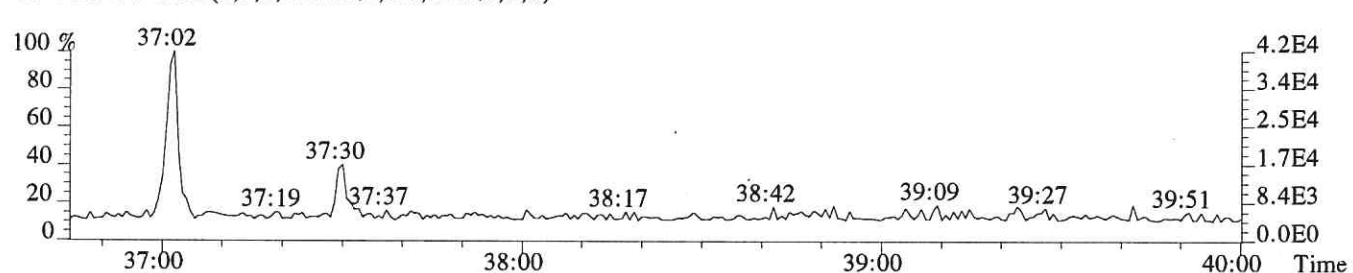
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1400.0,0.50%,F,T)



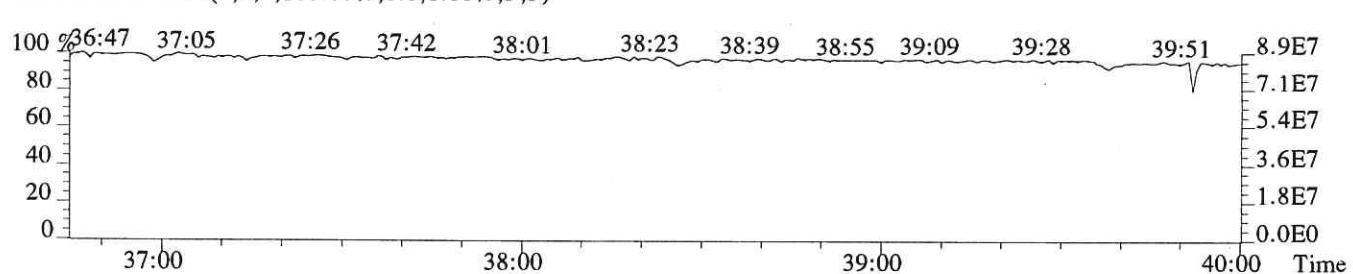
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1756.0,0.50%,F,T)



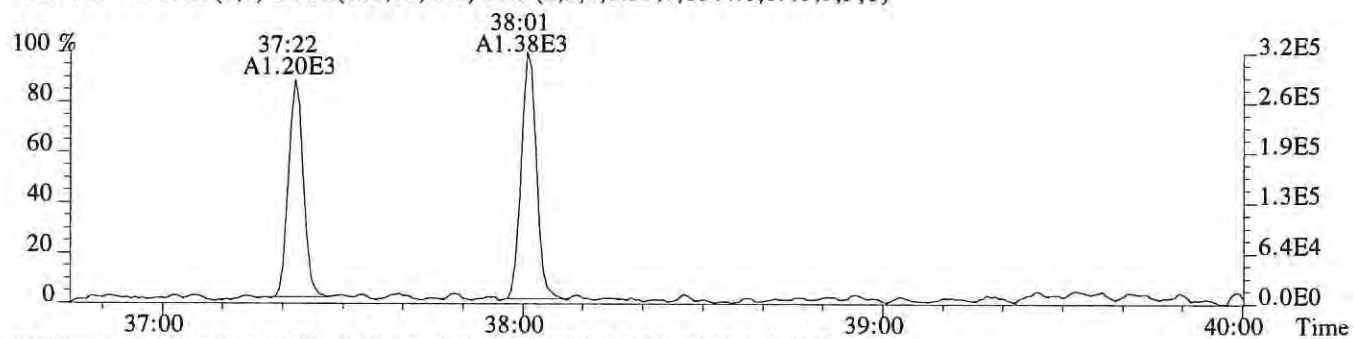
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



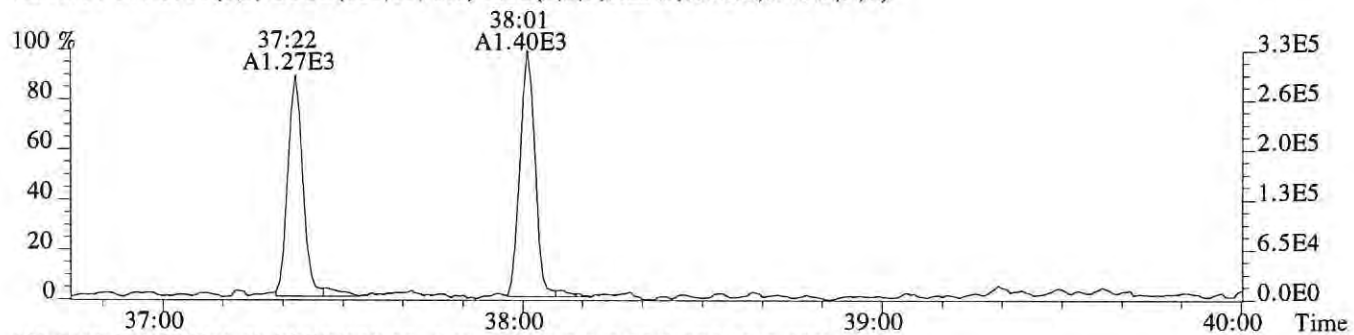
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



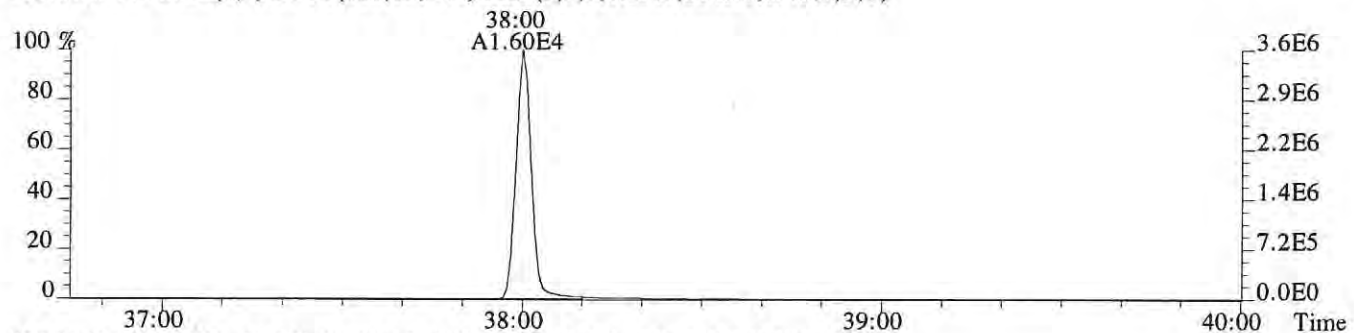
File:P618638 #1-294 Acq:20-AUG-2019 18:44:47 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-004
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,8844.0,0.40%,F,T)



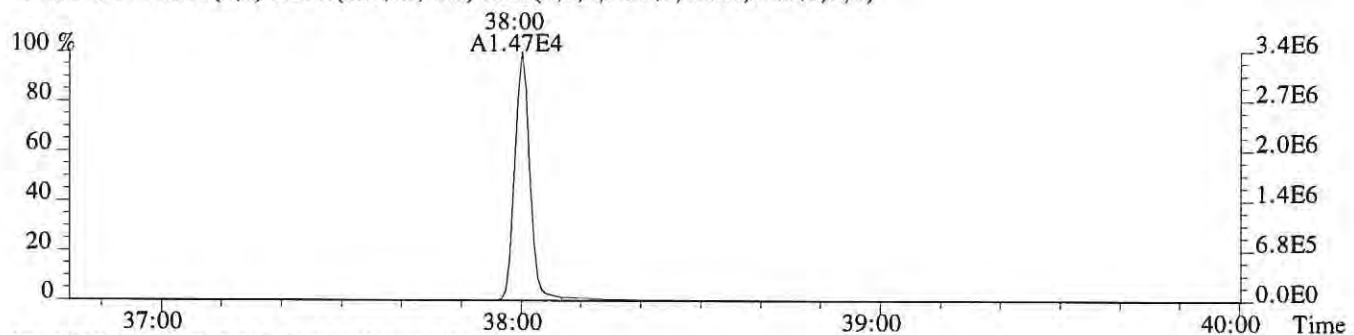
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,8592.0,0.40%,F,T)



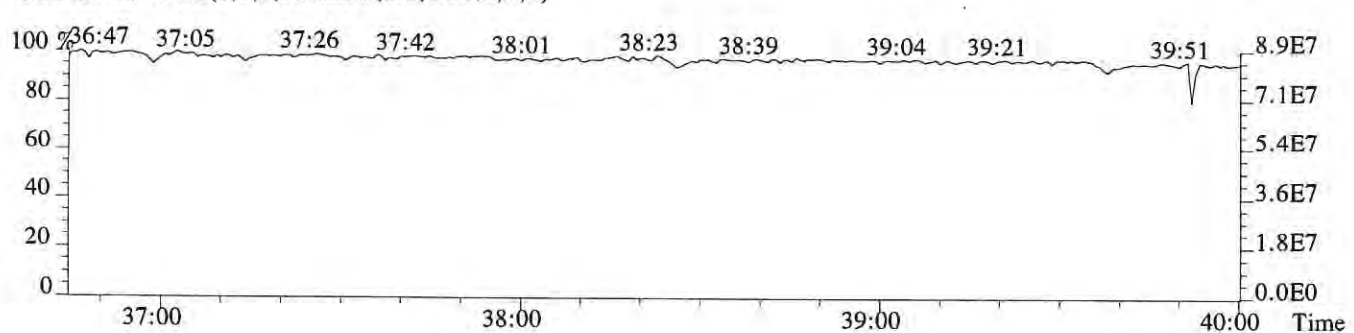
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1048.0,0.40%,F,T)



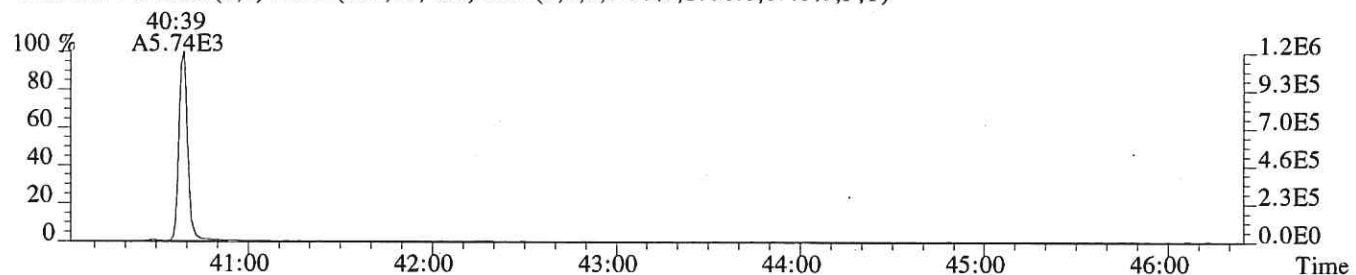
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,416.0,0.40%,F,T)



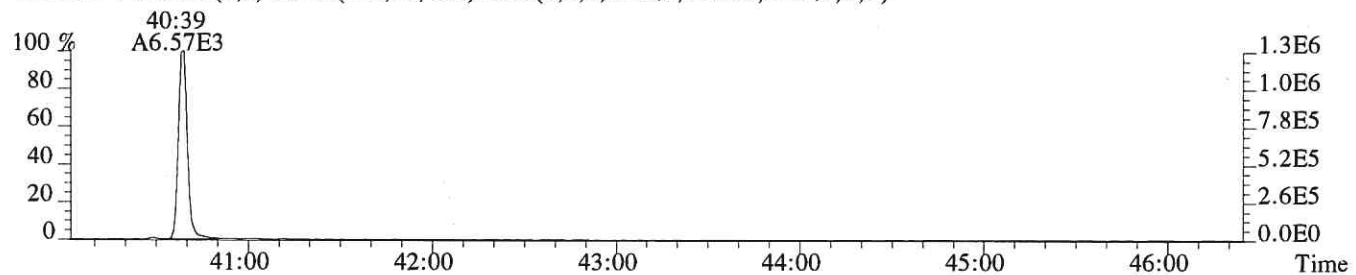
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



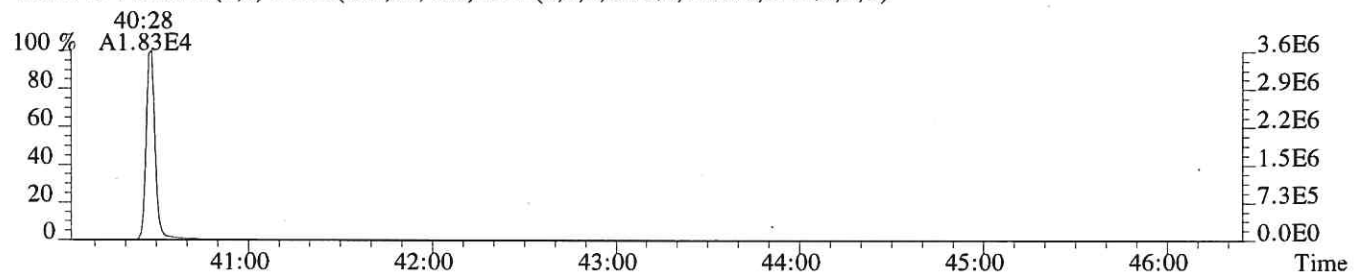
File:P618638 #1-574 Acq:20-AUG-2019 18:44:47 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-004
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1736.0,0.40%,F,T)



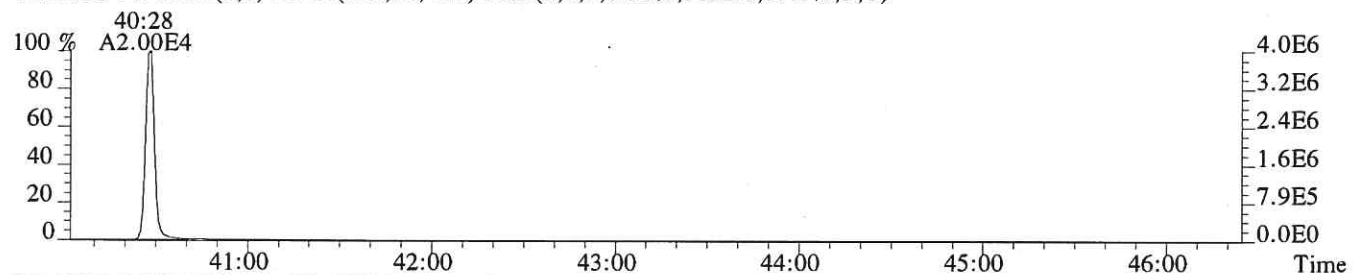
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3116.0,0.40%,F,T)



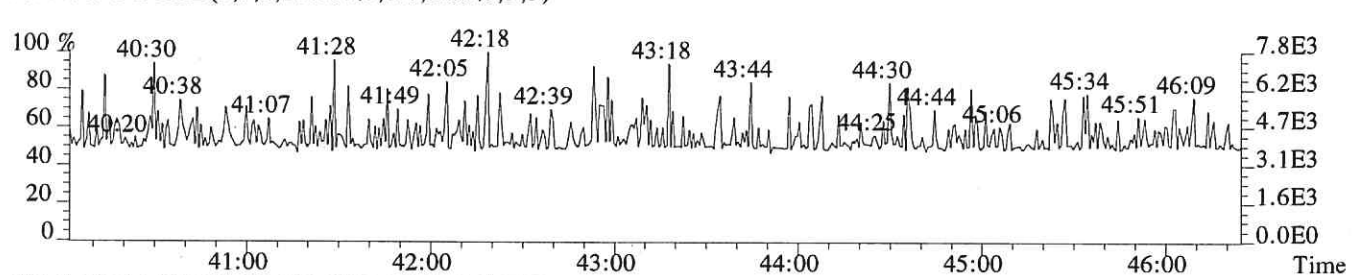
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3736.0,0.40%,F,T)



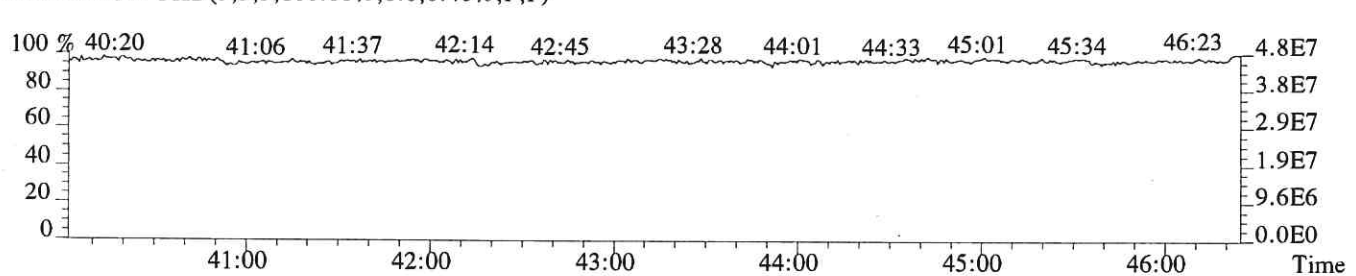
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3152.0,0.40%,F,T)



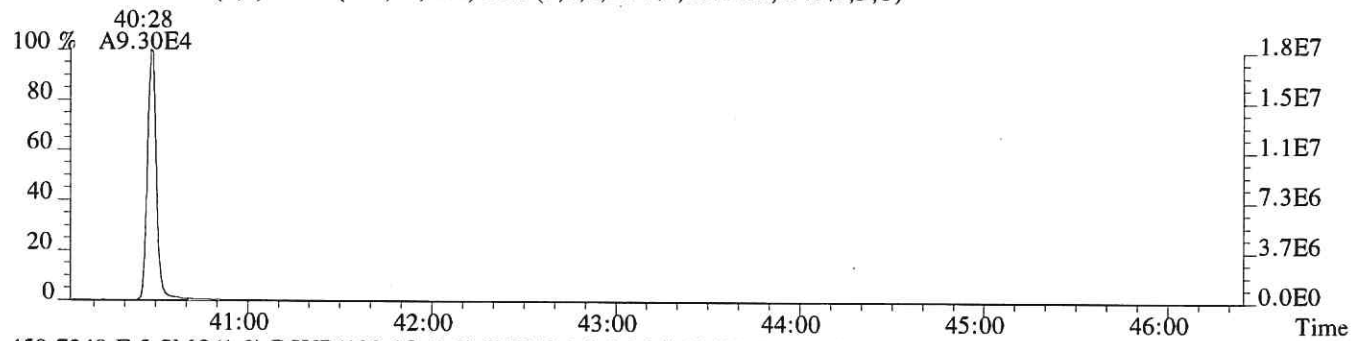
513.6775 F:5 PKD(5,3,5,100.0%,0.0,1.00%,F,F)



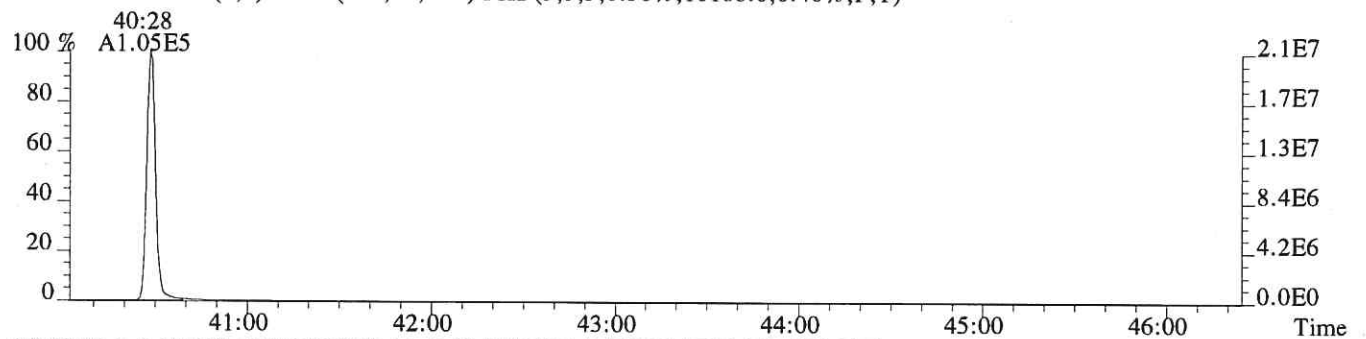
442.9728 F:5 PKD(3,3,3,100.0%,0.0,0.40%,F,F)



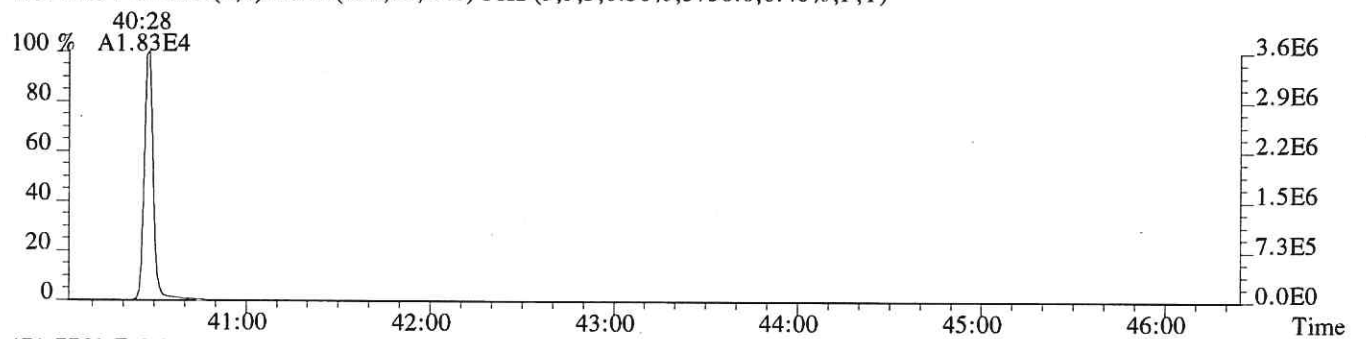
File:P618638 #1-574 Acq:20-AUG-2019 18:44:47 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-004
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,16752.0,0.40%,F,T)



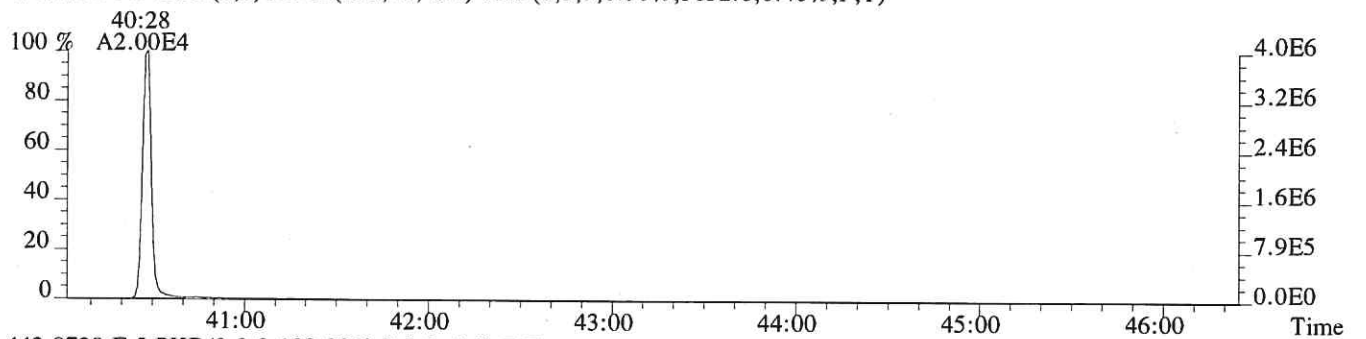
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,10188.0,0.40%,F,T)



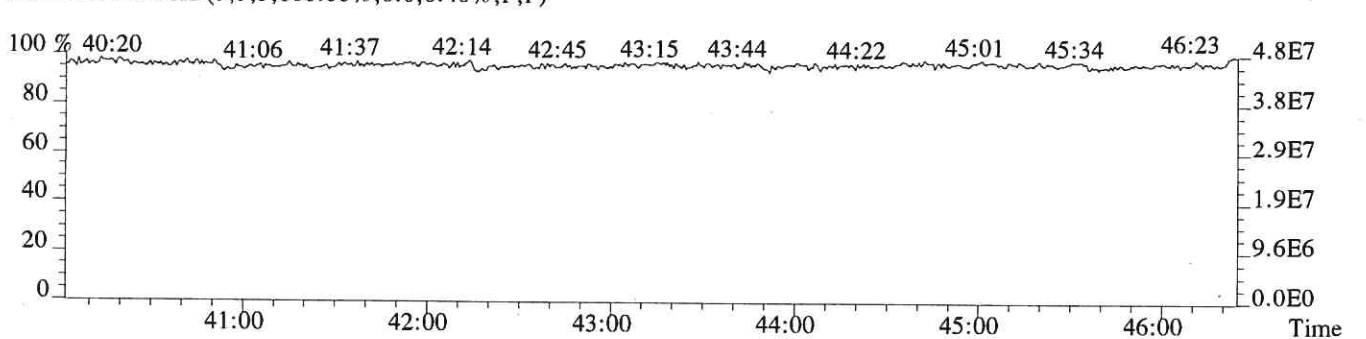
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3736.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3152.0,0.40%,F,T)



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



ALS ENVIRONMENTAL

Sample Response Summary

CLIENT ID.
BS-5-190813

Run #16 Filename P618695 Samp: 1 Inj: 1 Acquired: 22-AUG-19 22:52:06
Processed: 23-AUG-19 09:01:59 Sample ID: E1900593-005

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	NotFnd	*	*	*	no	no	0.873
2 Unk	1,2,3,7,8-PeCDF	NotFnd	*	*	*	no	no	0.864
3 Unk	2,3,4,7,8-PeCDF	NotFnd	*	*	*	no	no	0.825
4 Unk	1,2,3,4,7,8-HxCDF	NotFnd	*	*	*	no	no	1.084
5 Unk	1,2,3,6,7,8-HxCDF	NotFnd	*	*	*	no	no	0.994
6 Unk	2,3,4,6,7,8-HxCDF	NotFnd	*	*	*	no	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	NotFnd	*	*	*	no	no	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	37:00	5.436e+01	4.786e+01	1.14	yes	no	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	38:21	9.931e+00	6.098e+00	1.63	no	no	1.104
10 Unk	OCDF	40:31	2.034e+02	2.508e+02	0.81	yes	no	0.993
11 Unk	2,3,7,8-TCDD	NotFnd	*	*	*	no	yes	0.989
12 Unk	1,2,3,7,8-PeCDD	NotFnd	*	*	*	no	no	0.954
13 Unk	1,2,3,4,7,8-HxCDD	35:05	2.526e+01	2.235e+01	1.13	yes	no	1.020
14 Unk	1,2,3,6,7,8-HxCDD	35:10	2.964e+01	2.295e+01	1.29	yes	no	1.030
15 Unk	1,2,3,7,8,9-HxCDD	35:25	4.221e+01	2.981e+01	1.42	yes	no	1.007
16 Unk	1,2,3,4,6,7,8-HpCDD	37:55	5.998e+02	6.162e+02	0.97	yes	no	0.922
17 Unk	OCDD	40:21	8.709e+04	9.902e+04	0.88	yes	no	1.062
18 IS	13C-2,3,7,8-TCDF	25:10	6.773e+03	8.802e+03	0.77	yes	no	1.102
19 IS	13C-1,2,3,7,8-PeCDF	30:19	1.821e+04	1.141e+04	1.60	yes	no	1.074
20 IS	13C-2,3,4,7,8-PeCDF	31:22	2.143e+04	1.339e+04	1.60	yes	no	1.005
21 IS	13C-1,2,3,4,7,8-HxCDF	34:15	9.182e+03	1.827e+04	0.50	yes	no	1.059
22 IS	13C-1,2,3,6,7,8-HxCDF	34:23	1.044e+04	2.095e+04	0.50	yes	no	1.264
23 IS	13C-2,3,4,6,7,8-HxCDF	34:55	9.865e+03	1.939e+04	0.51	yes	no	1.066
24 IS	13C-1,2,3,7,8,9-HxCDF	35:41	7.950e+03	1.531e+04	0.52	yes	no	0.801
25 IS	13C-1,2,3,4,6,7,8-HpCDF	37:00	6.016e+03	1.408e+04	0.43	yes	no	0.789
26 IS	13C-1,2,3,4,7,8,9-HpCDF	38:20	6.018e+03	1.376e+04	0.44	yes	no	0.590
27 IS	13C-2,3,7,8-TCDD	26:12	6.441e+03	8.632e+03	0.75	yes	no	0.839
28 IS	13C-1,2,3,7,8-PeCDD	31:40	1.720e+04	1.124e+04	1.53	yes	no	0.744
29 IS	13C-1,2,3,4,7,8-HxCDD	35:04	1.603e+04	1.309e+04	1.22	yes	no	0.907
30 IS	13C-1,2,3,6,7,8-HxCDD	35:09	1.850e+04	1.429e+04	1.29	yes	no	0.978
31 IS	13C-1,2,3,4,6,7,8-HpCDD	37:54	1.286e+04	1.254e+04	1.03	yes	no	0.814
32 IS	13C-OCDD	40:21	1.634e+04	1.887e+04	0.87	yes	no	0.653
33 RS/RT	13C-1,2,3,4-TCDD	25:26	3.108e+04	4.075e+04	0.76	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	35:24	3.164e+04	2.454e+04	1.29	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	26:13	5.674e+03				no	0.894

$$OCDD = \frac{(8.709e+04 + 9.902e+04) \times 4000 \text{ pg} \times 1}{(1.634e+04 + 1.887e+04) \times 10.165 \text{ g} \times 88.8 \times 100 \times 1.062}$$

*2205 mg/kg
LMA 8/23/19*

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
BS-5-190813

Run #16 Filename P618695 Samp: 1 Inj: 1 Acquired: 22-AUG-19 22:52:06
Processed: 23-AUG-19 09:01:59 LAB. ID: E1900593-005

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	*	9.12e+02	*	*	2.46e+03	*
2	1,2,3,7,8-PeCDF	*	2.32e+02	*	*	6.52e+02	*
3	2,3,4,7,8-PeCDF	*	2.32e+02	*	*	6.52e+02	*
4	1,2,3,4,7,8-HxCDF	*	1.71e+03	*	*	1.18e+03	*
5	1,2,3,6,7,8-HxCDF	*	1.71e+03	*	*	1.18e+03	*
6	2,3,4,6,7,8-HxCDF	*	1.71e+03	*	*	1.18e+03	*
7	1,2,3,7,8,9-HxCDF	*	1.71e+03	*	*	1.18e+03	*
8	1,2,3,4,6,7,8-HpCDF	1.11e+04	4.84e+02	2.3e+01	1.16e+04	4.44e+02	2.6e+01
9	1,2,3,4,7,8,9-HpCDF	1.63e+03	4.84e+02	3.4e+00	1.54e+03	4.44e+02	3.5e+00
10	OCDF	3.93e+04	2.64e+02	1.5e+02	4.79e+04	1.72e+03	2.8e+01
11	2,3,7,8-TCDD	*	2.87e+03	*	*	1.48e+03	*
12	1,2,3,7,8-PeCDD	*	1.62e+03	*	*	4.88e+02	*
13	1,2,3,4,7,8-HxCDD	5.65e+03	1.08e+03	5.2e+00	5.33e+03	9.48e+02	5.6e+00
14	1,2,3,6,7,8-HxCDD	7.75e+03	1.08e+03	7.2e+00	4.82e+03	9.48e+02	5.1e+00
15	1,2,3,7,8,9-HxCDD	8.85e+03	1.08e+03	8.2e+00	6.56e+03	9.48e+02	6.9e+00
16	1,2,3,4,6,7,8-HpCDD	1.25e+05	2.15e+03	5.8e+01	1.33e+05	8.40e+02	1.6e+02
17	OCDD	1.72e+07	5.17e+03	3.3e+03	1.95e+07	9.80e+03	2.0e+03
18	13C-2,3,7,8-TCDF	9.62e+05	1.50e+04	6.4e+01	1.19e+06	6.74e+03	1.8e+02
19	13C-1,2,3,7,8-PeCDF	2.90e+06	4.32e+02	6.7e+03	1.85e+06	6.20e+02	3.0e+03
20	13C-2,3,4,7,8-PeCDF	3.86e+06	4.32e+02	8.9e+03	2.34e+06	6.20e+02	3.8e+03
21	13C-1,2,3,4,7,8-HxCDF	1.98e+06	9.68e+02	2.0e+03	3.88e+06	1.83e+03	2.1e+03
22	13C-1,2,3,6,7,8-HxCDF	1.97e+06	9.68e+02	2.0e+03	3.98e+06	1.83e+03	2.2e+03
23	13C-2,3,4,6,7,8-HxCDF	2.03e+06	9.68e+02	2.1e+03	3.89e+06	1.83e+03	2.1e+03
24	13C-1,2,3,7,8,9-HxCDF	1.56e+06	9.68e+02	1.6e+03	3.09e+06	1.83e+03	1.7e+03
25	13C-1,2,3,4,6,7,8-HpCDF	1.27e+06	2.04e+03	6.2e+02	2.94e+06	2.55e+03	1.2e+03
26	13C-1,2,3,4,7,8,9-HpCDF	1.27e+06	2.04e+03	6.2e+02	2.95e+06	2.55e+03	1.2e+03
27	13C-2,3,7,8-TCDD	9.57e+05	9.06e+03	1.1e+02	1.29e+06	3.54e+03	3.6e+02
28	13C-1,2,3,7,8-PeCDD	3.11e+06	1.19e+03	2.6e+03	2.03e+06	1.96e+03	1.0e+03
29	13C-1,2,3,4,7,8-HxCDD	3.41e+06	1.36e+03	2.5e+03	2.75e+06	1.16e+03	2.4e+03
30	13C-1,2,3,6,7,8-HxCDD	3.75e+06	1.36e+03	2.8e+03	2.89e+06	1.16e+03	2.5e+03
31	13C-1,2,3,4,6,7,8-HpCDD	2.76e+06	7.20e+02	3.8e+03	2.64e+06	3.84e+02	6.9e+03
32	13C-OCDD	3.24e+06	2.25e+03	1.4e+03	3.70e+06	4.16e+03	8.9e+02
33	13C-1,2,3,4-TCDD	4.42e+06	9.06e+03	4.9e+02	5.80e+06	3.54e+03	1.6e+03
34	13C-1,2,3,7,8,9-HxCDD	6.32e+06	1.36e+03	4.7e+03	4.96e+06	1.16e+03	4.3e+03
35	37Cl-2,3,7,8-TCDD	8.27e+05	3.68e+03	2.2e+02			

---Sample Calculation---

$$D/L \text{ TCDD} = \frac{2.5 \times (2.867e+03 + 1.481e+03) \times 2000}{(9.566e+05 + 1.288e+06) \times () \times 0.989}$$

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ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

BS-5-190813

Entry: 42 Totals Name: Total Hexa-Dioxins

Run: 16 File: P618695 Sample:1 Injection:1 Function:3

Acquired: 22-AUG-19 22:52:06 Processed: 23-AUG-19 09:01:59

Mass: 389.8160		391.8130		Tot Response: 3.07e+02		RRF: 1.019			
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	34:27	6.32e+01	5.02e+01	1.26	yes	1.13e+02		n	n
2	35:05	2.53e+01	2.23e+01	1.13	yes	4.76e+01	1,2,3,4,7,8-HxCDD	n	n
3	35:10	2.96e+01	2.29e+01	1.29	yes	5.26e+01	1,2,3,6,7,8-HxCDD	n	n
4	35:16	1.20e+01	9.18e+00	1.30	yes	2.11e+01		n	n
5	35:25	4.22e+01	2.98e+01	1.42	yes	7.20e+01	1,2,3,7,8,9-HxCDD	n	n

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Peak List Summary

CLIENT ID.

 BS-5-190813

Entry: 43 Totals Name: Total Hepta-Furans

Run: 16 File: P618695 Sample:1 Injection:1 Function:4

Acquired: 22-AUG-19 22:52:06 Processed: 23-AUG-19 09:01:59

Mass:	407.7820	409.7790	Tot Response: 4.26e+02		RRF: 1.104				
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	37:00	5.44e+01	4.79e+01	1.14	yes	1.02e+02	1,2,3,4,6,7,8-HpCDF	n	n
2	37:24	1.69e+02	1.55e+02	1.09	yes	3.24e+02		n	n

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Peak List Summary

CLIENT ID.

BS-5-190813

Entry: 44 Totals Name: Total Hepta-Dioxins

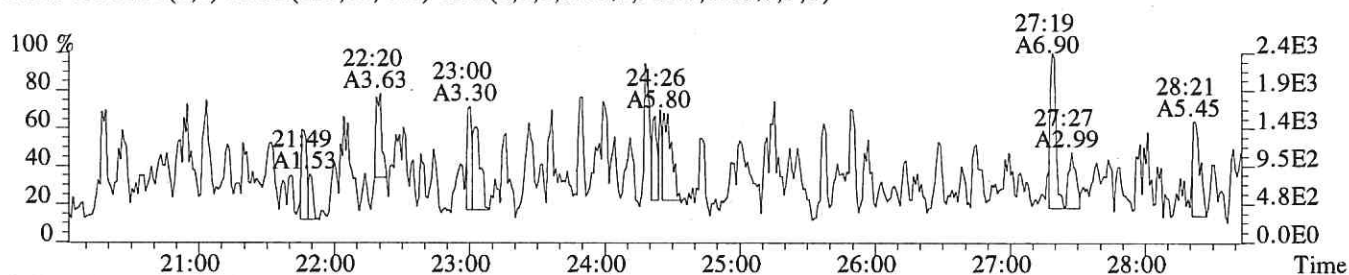
Run: 16 File: P618695 Sample:1 Injection:1 Function:4

Acquired: 22-AUG-19 22:52:06 Processed: 23-AUG-19 09:01:59

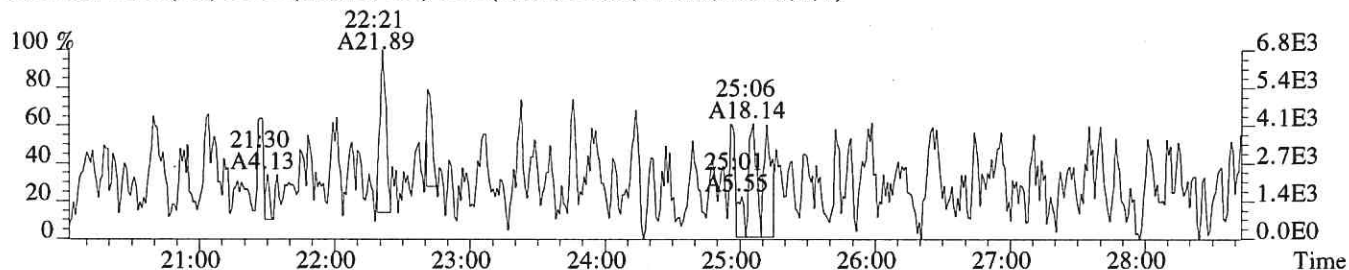
Mass:	423.7770	425.7740	Tot Response: 2.45e+03		RRF: 0.9218				
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	37:16	6.08e+02	6.22e+02	0.98	yes	1.23e+03		n	n
2	37:55	6.00e+02	6.16e+02	0.97	yes	1.22e+03	1,2,3,4,6,7,8-HpCDD	n	n

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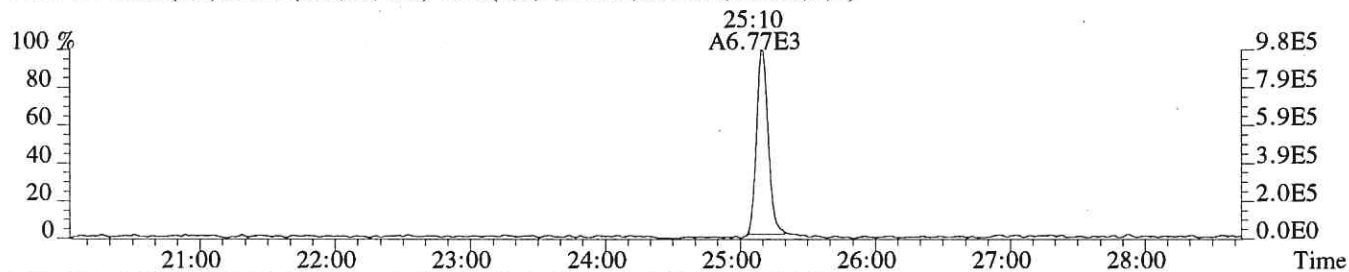
File:P618695 #1-616 Acq:22-AUG-2019 22:52:06 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-005
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,912.0,1.00%,F,T)



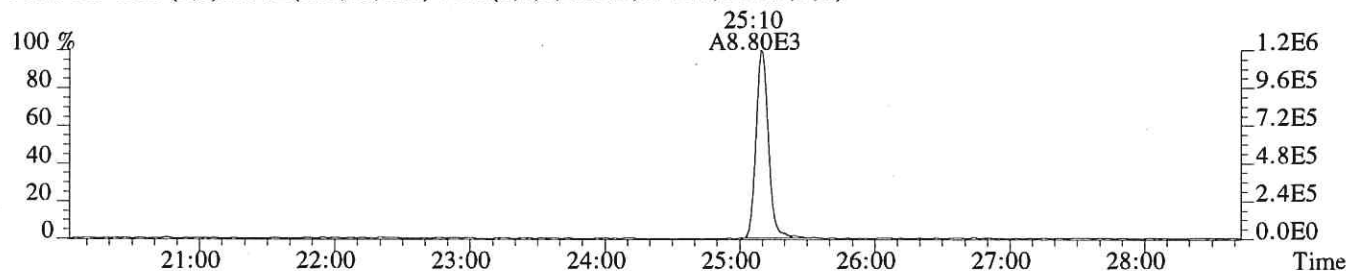
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2460.0,1.00%,F,T)



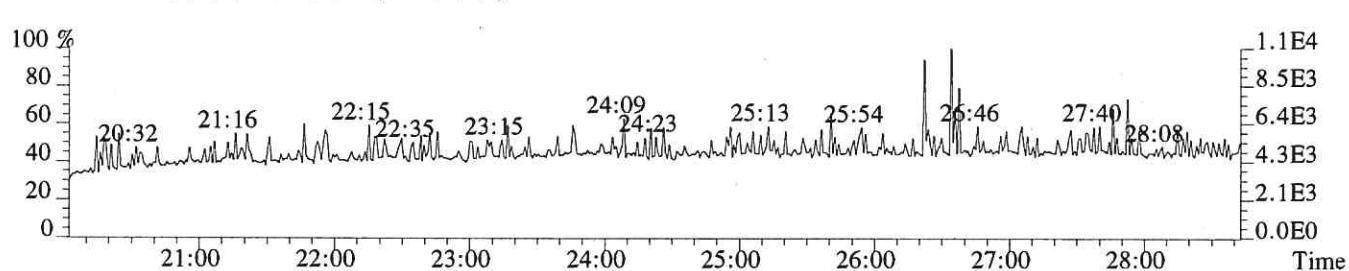
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,15016.0,1.00%,F,T)



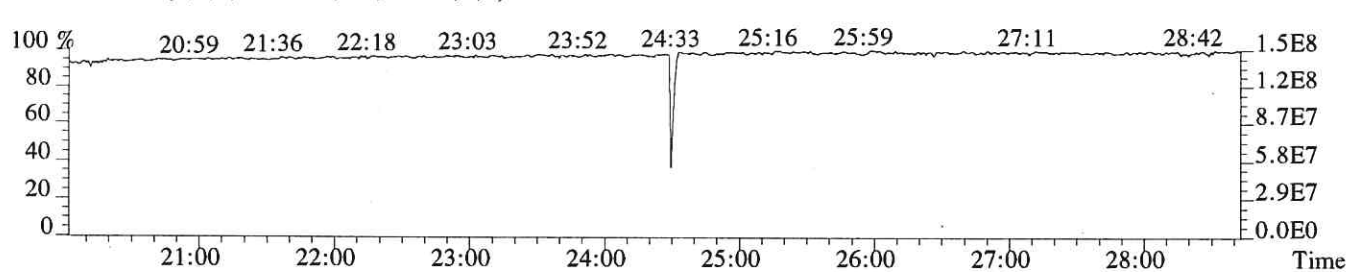
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6740.0,1.00%,F,T)



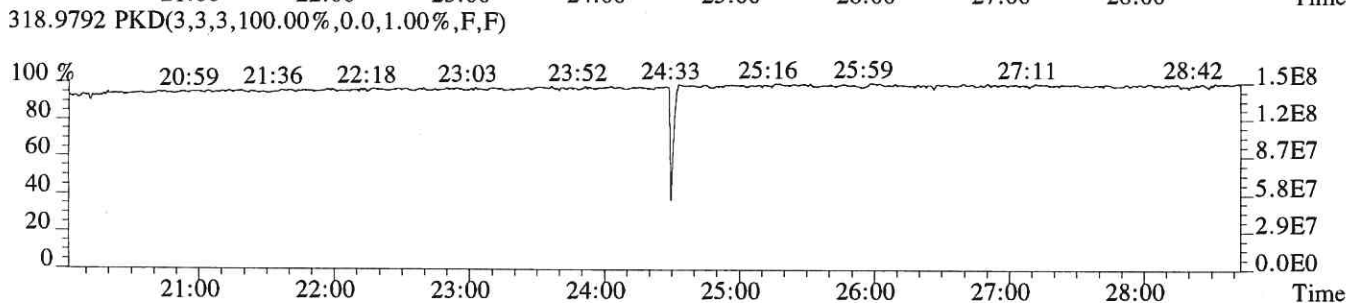
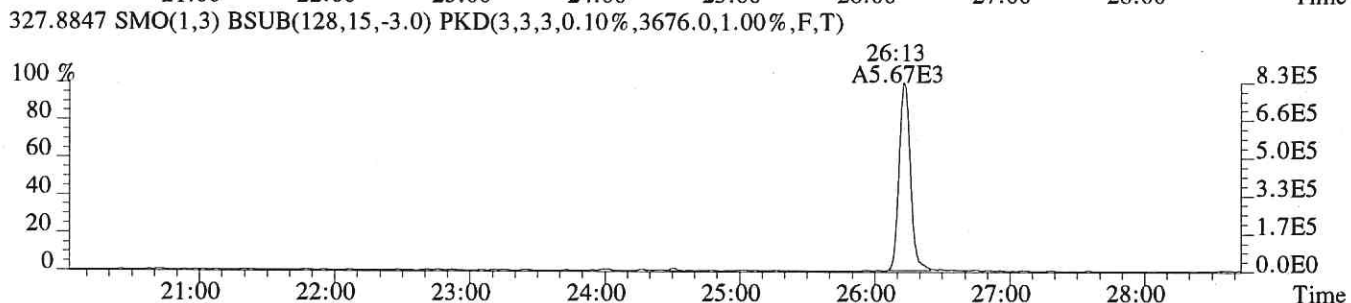
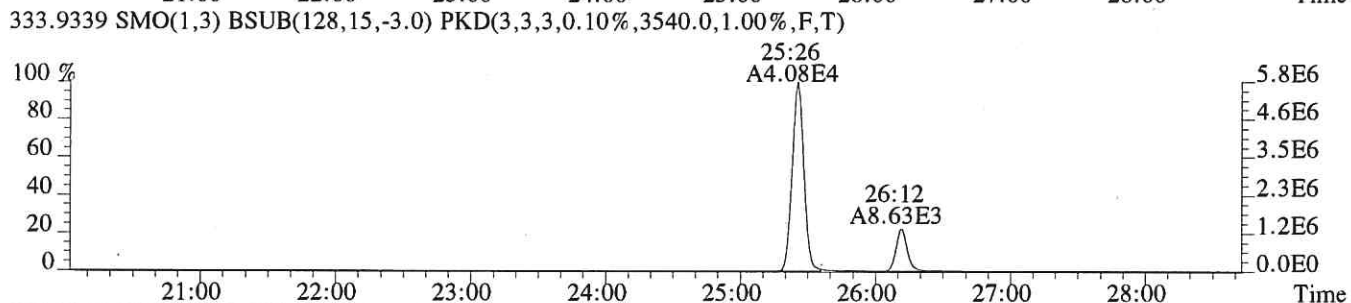
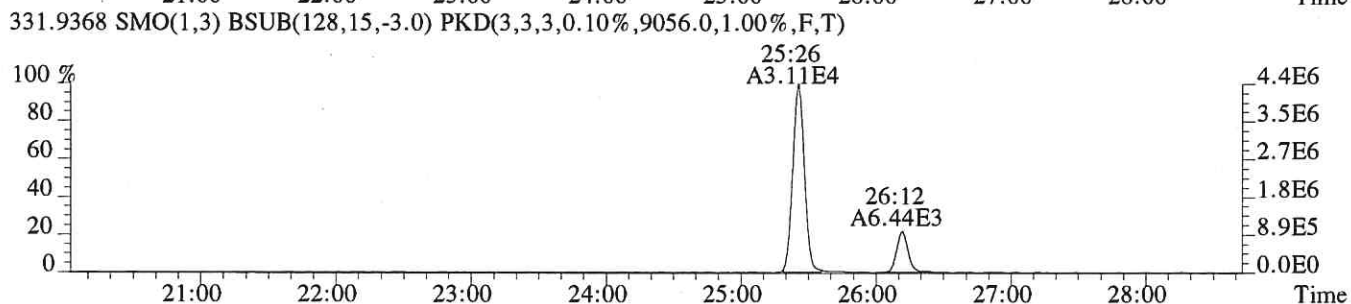
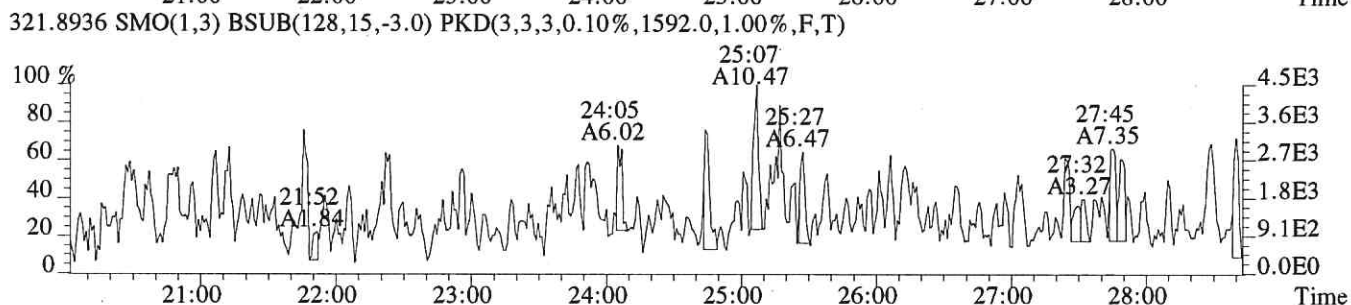
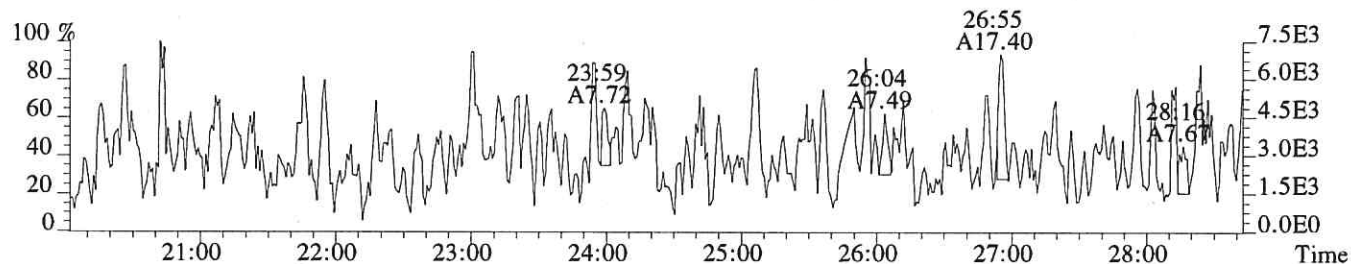
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

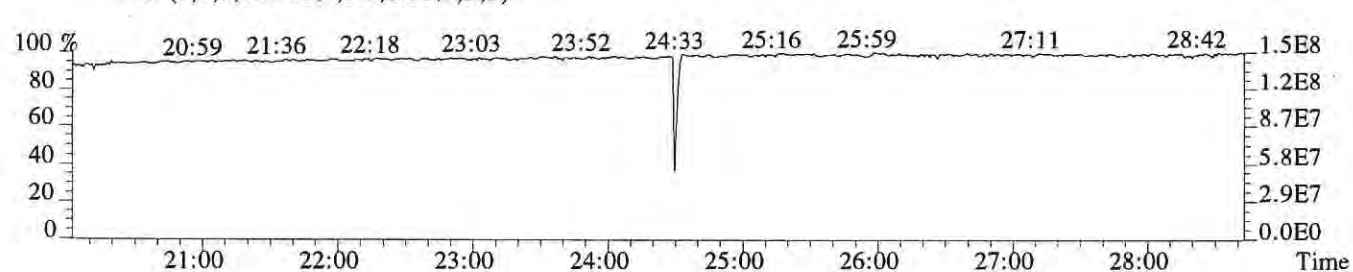
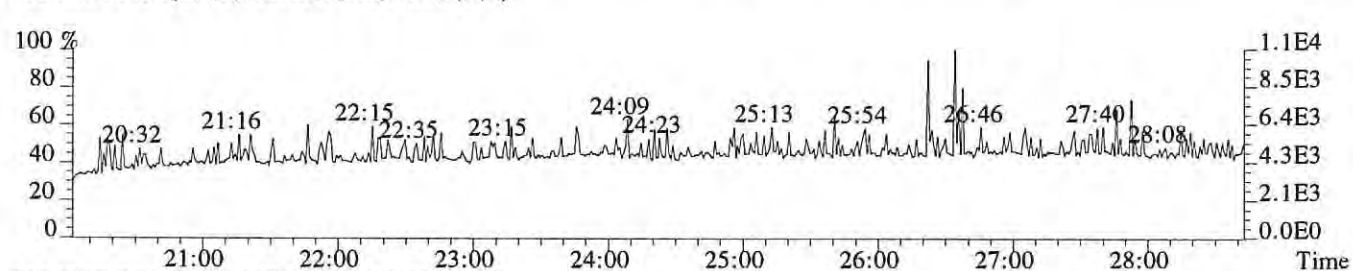
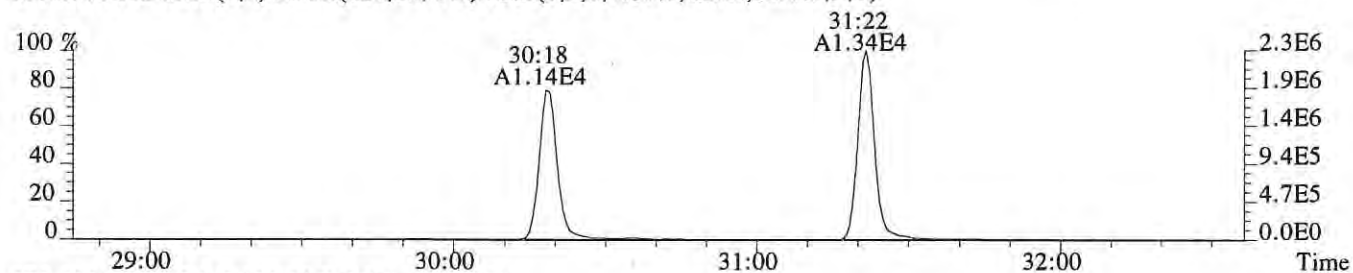
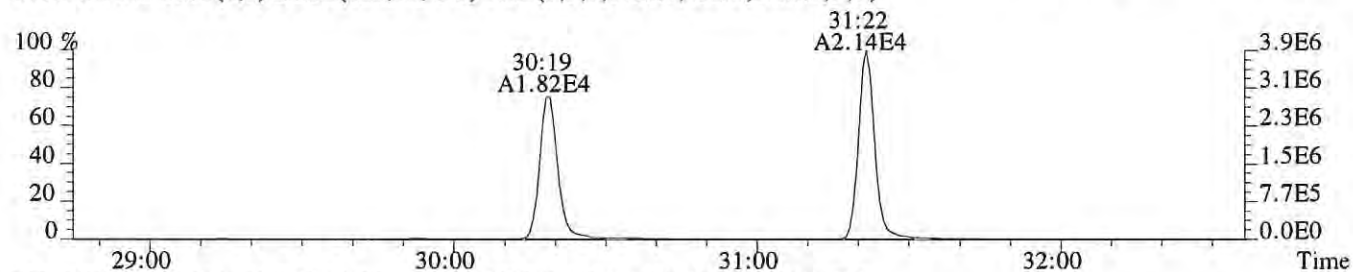
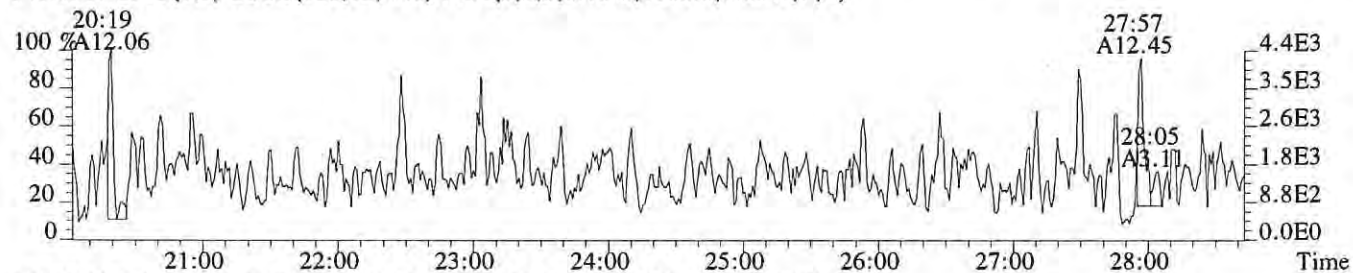
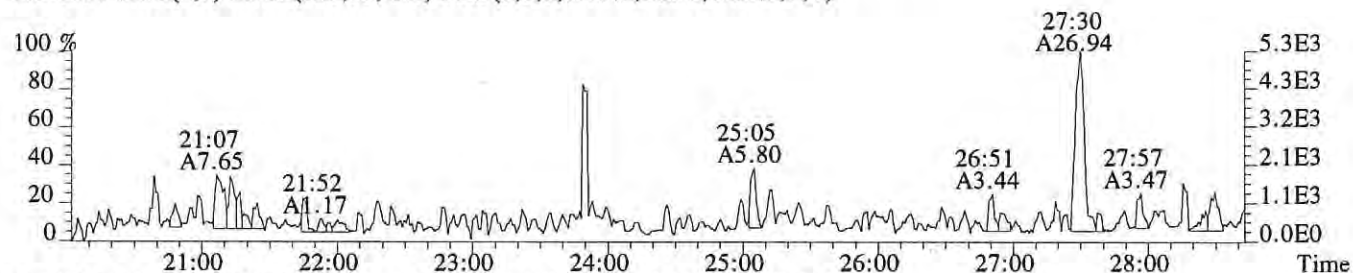


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

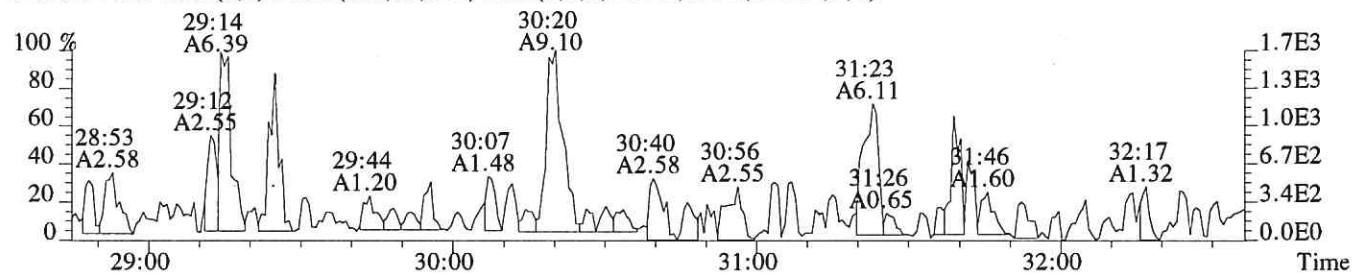


File:P618695 #1-616 Acq:22-AUG-2019 22:52:06 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-005
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3616.0,1.00%,F,T)

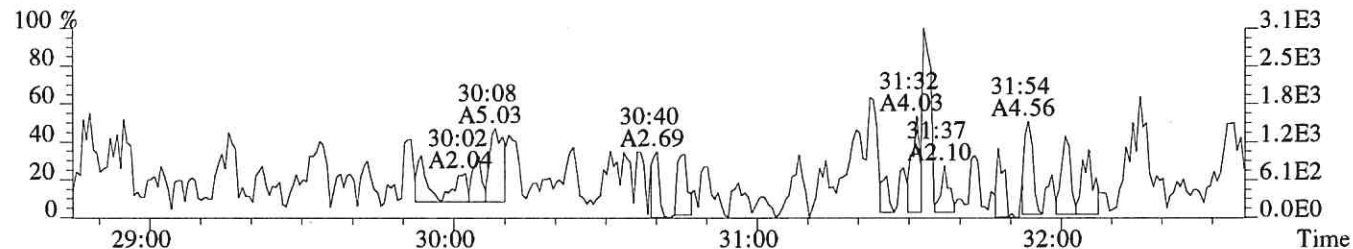




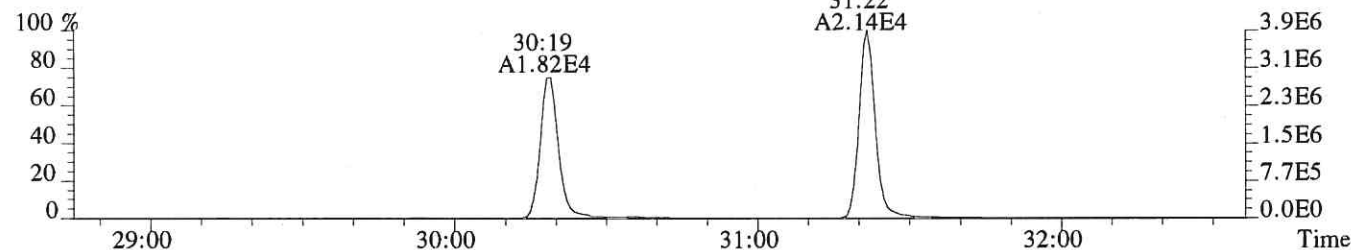
File:P618695 #1-348 Acq:22-AUG-2019 22:52:06 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:E1900593-005
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,232.0,1.00%,F,T)



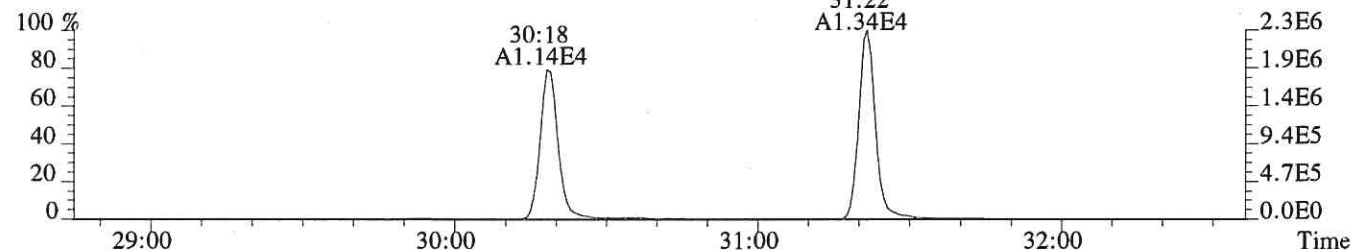
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,652.0,1.00%,F,T)



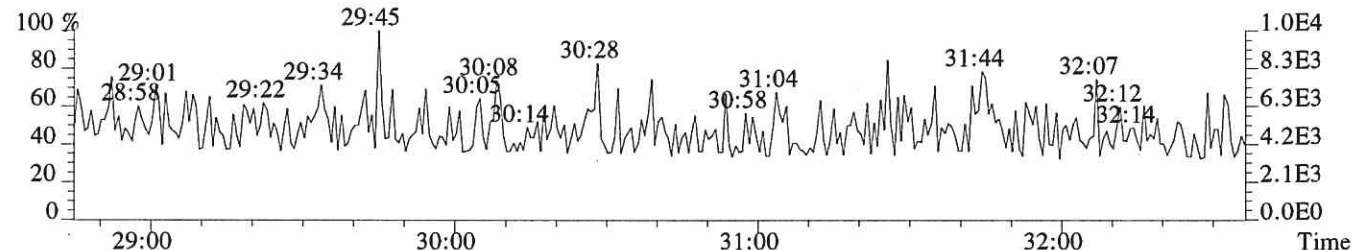
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,432.0,1.00%,F,T)



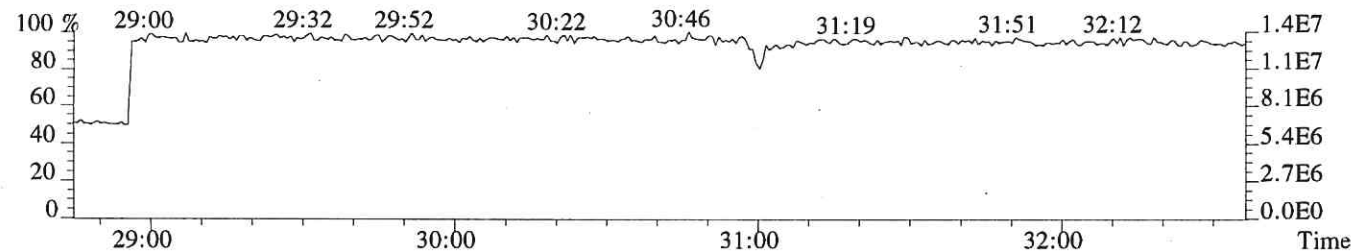
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,620.0,1.00%,F,T)



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



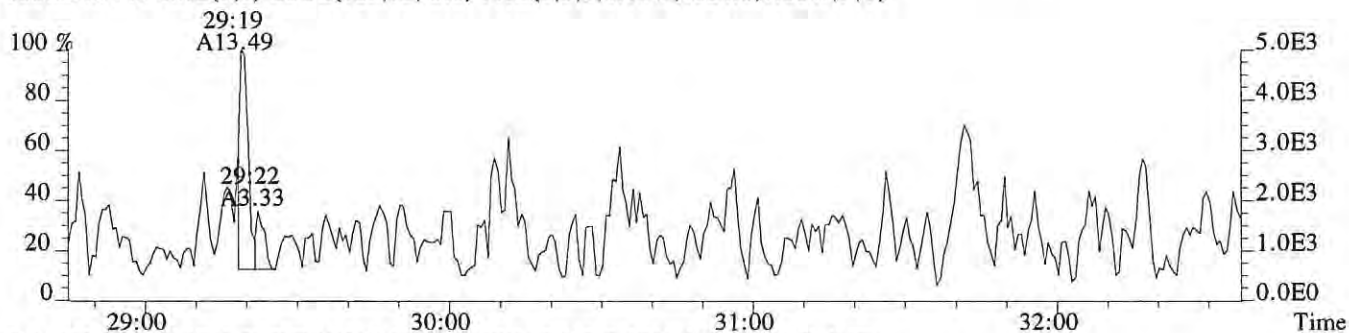
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



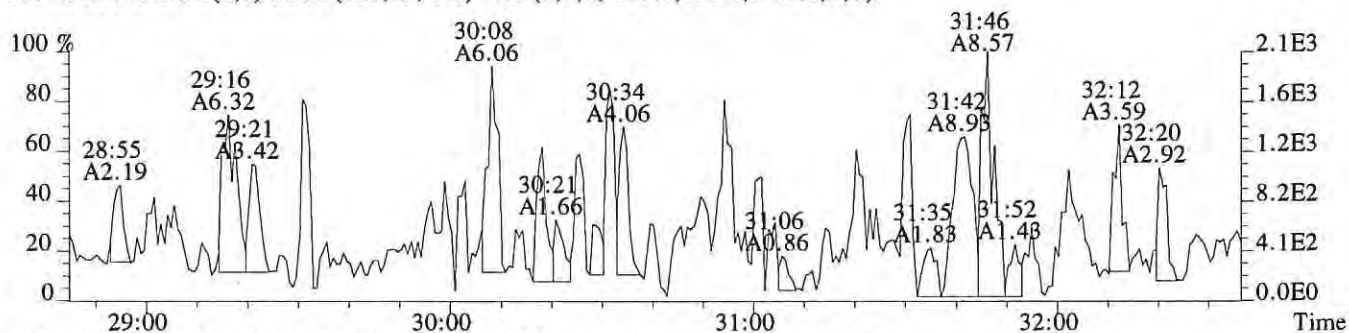
File:P618695 #1-348 Acq:22-AUG-2019 22:52:06 Probe EI+ Magnet SIR VG BioTech Mass spectr

Sample#1 Exp:E1900593-005

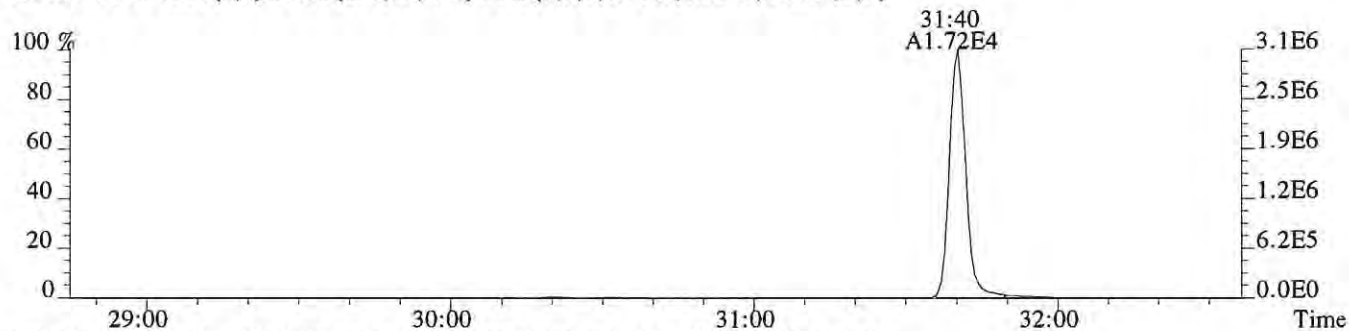
355.8546 F:2 SMO(1,3) BSM(128,15,-3.0) PKD(3,3,3,0.10%,1624.0,1.00%,F,T)



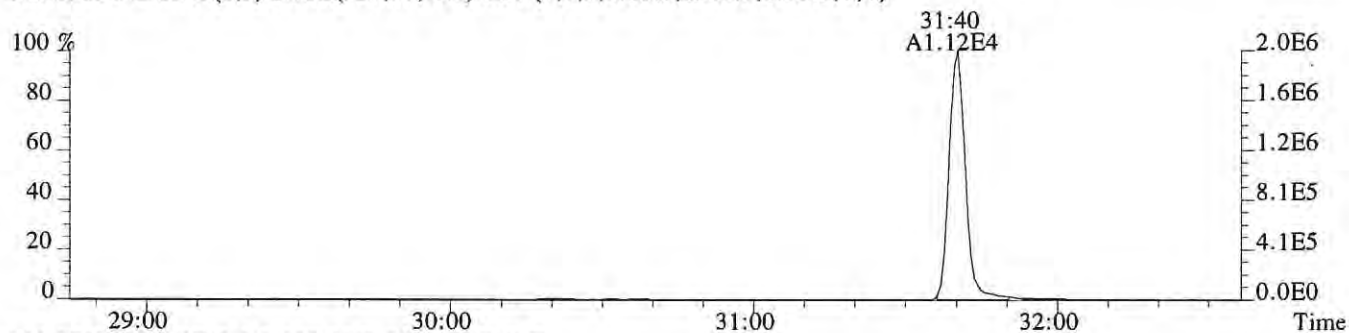
357.8516 F:2 SMO(1,3) BSM(128,15,-3.0) PKD(3,3,3,0.10%,488.0,1.00%,F,T)



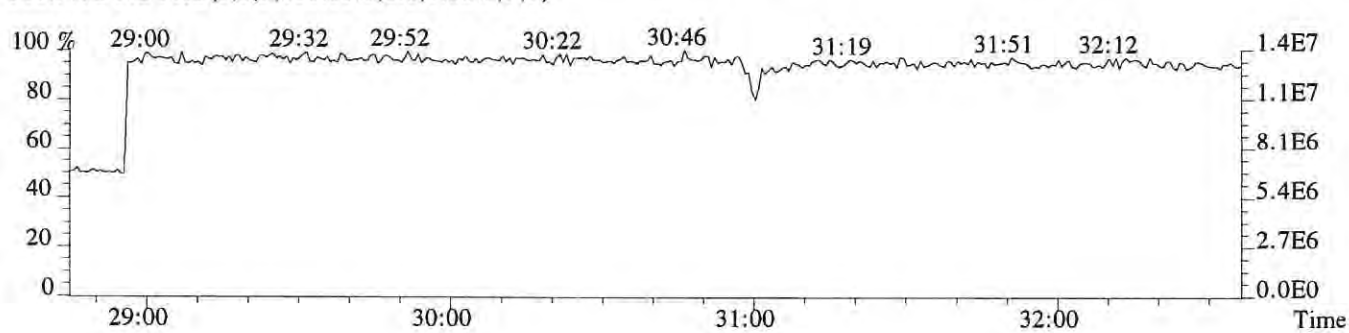
367.8949 F:2 SMO(1,3) BSM(128,15,-3.0) PKD(3,3,3,0.10%,1192.0,1.00%,F,T)



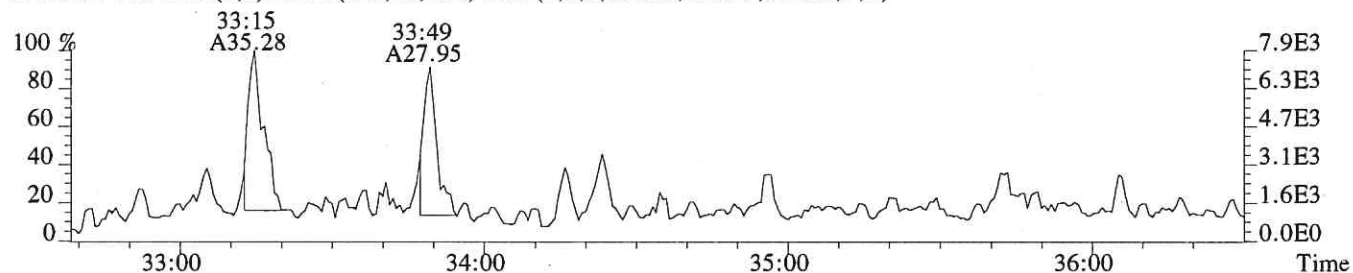
369.8919 F:2 SMO(1,3) BSM(128,15,-3.0) PKD(3,3,3,0.10%,1960.0,1.00%,F,T)



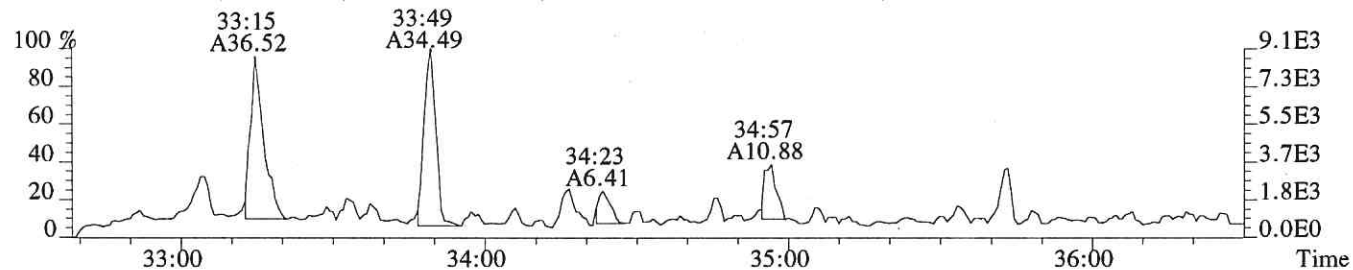
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



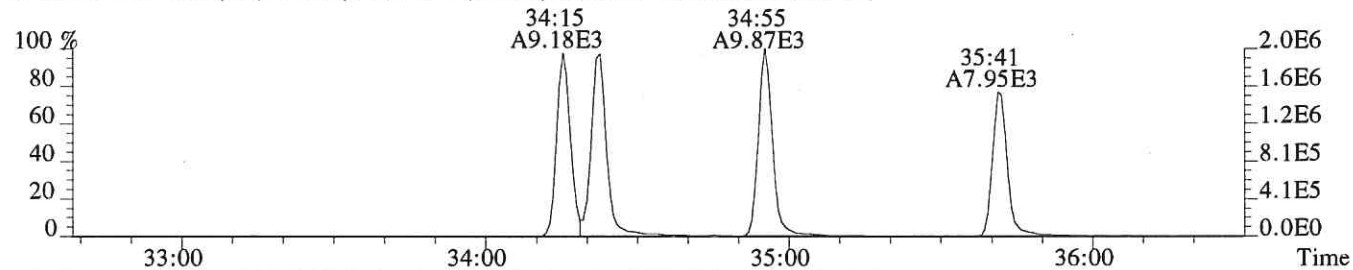
File:P618695 #1-348 Acq:22-AUG-2019 22:52:06 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:E1900593-005
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1708.0,0.40%,F,T)



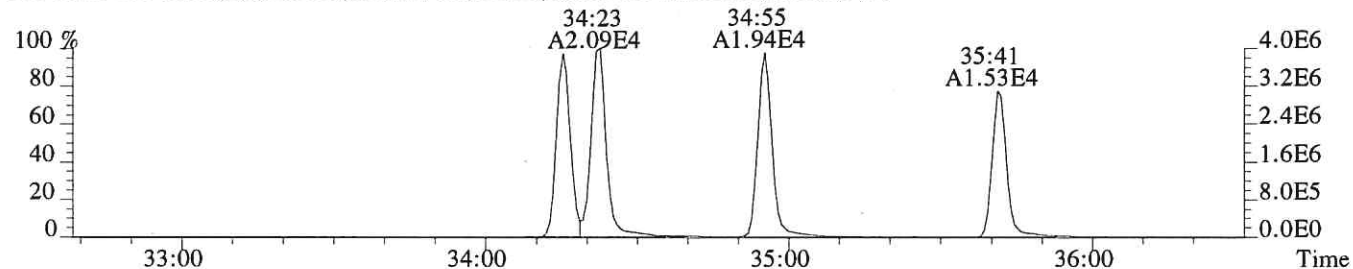
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1184.0,0.40%,F,T)



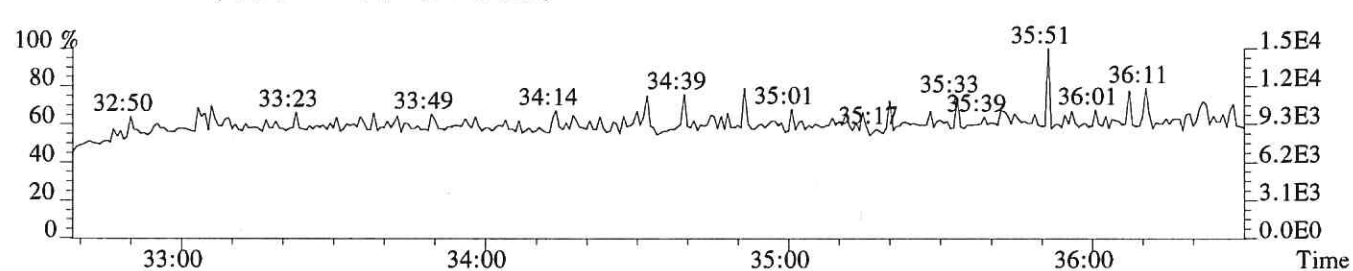
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,968.0,0.40%,F,T)



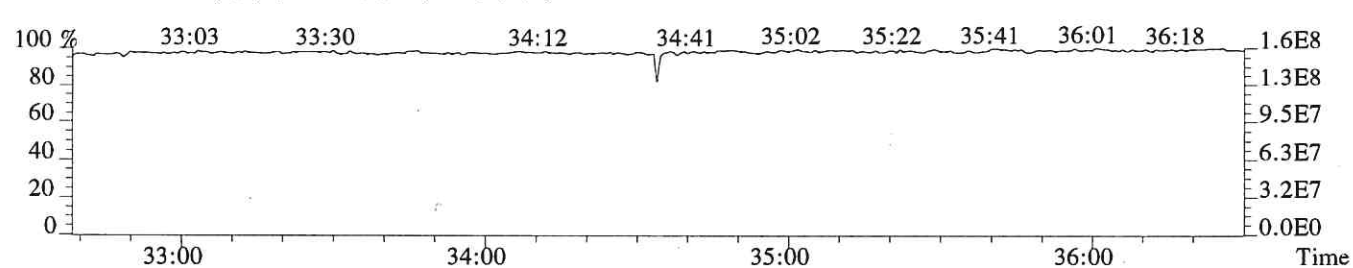
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1828.0,0.40%,F,T)



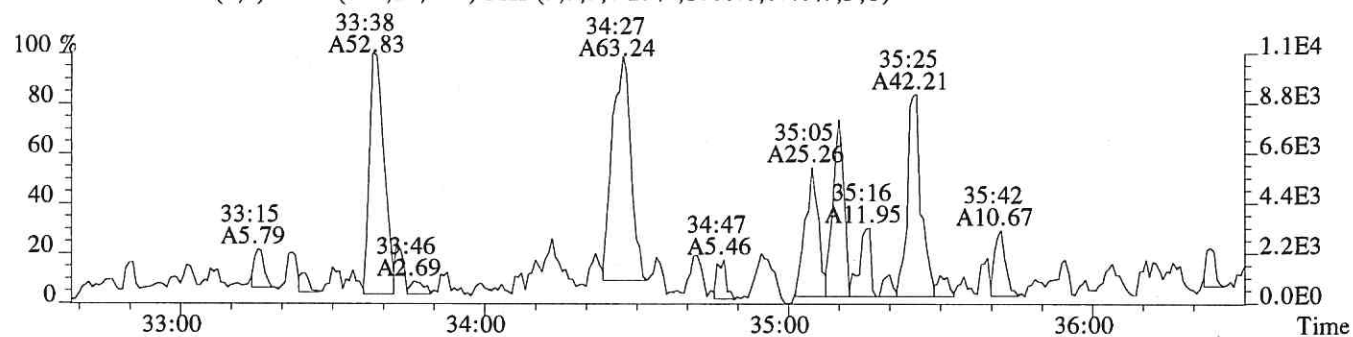
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



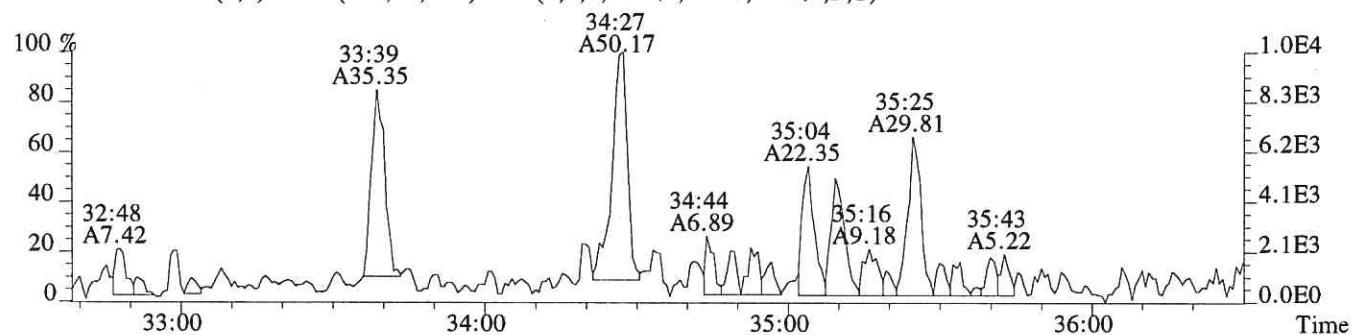
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



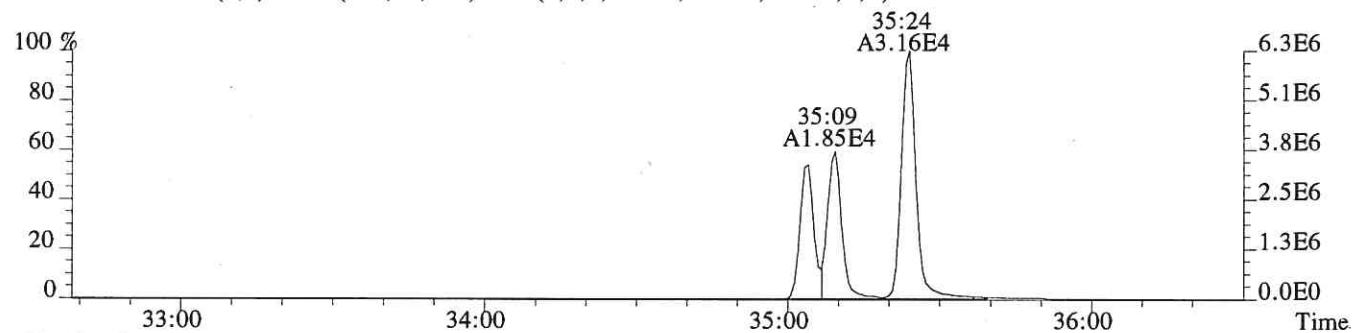
File:P618695 #1-348 Acq:22-AUG-2019 22:52:06 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:E1900593-005
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1080.0,0.40%,F,T)



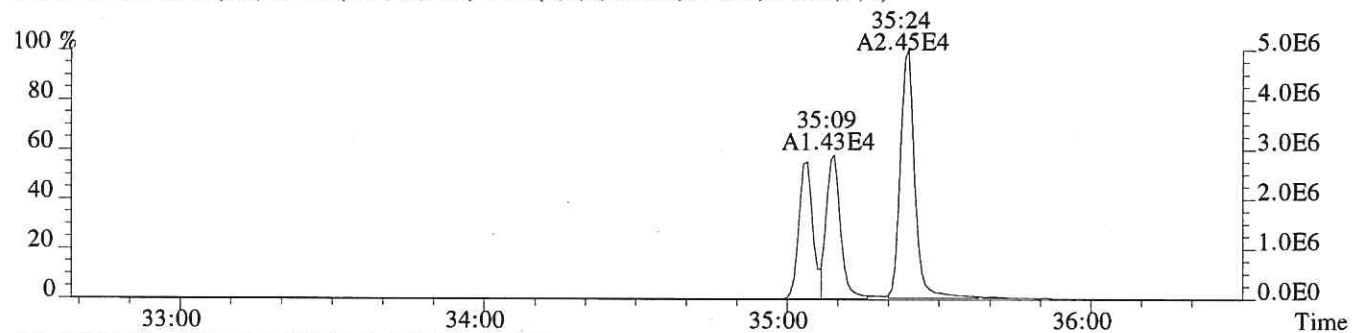
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,948.0,0.40%,F,T)



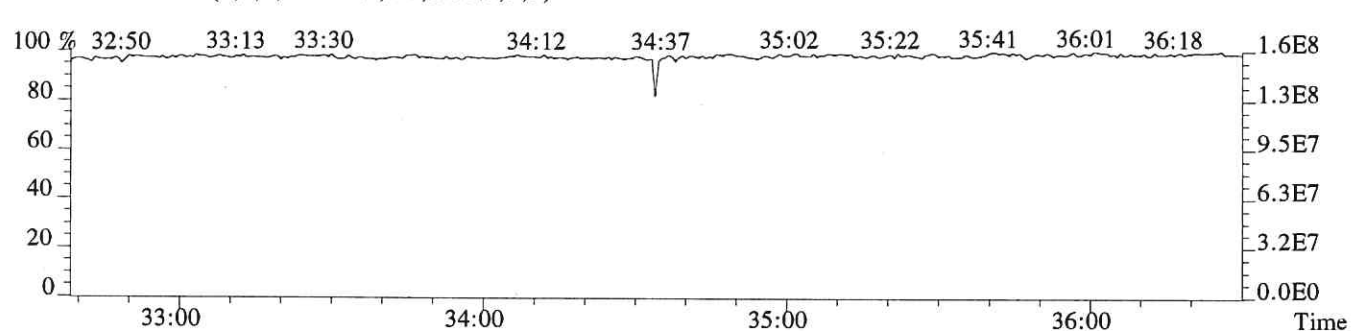
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1356.0,0.40%,F,T)



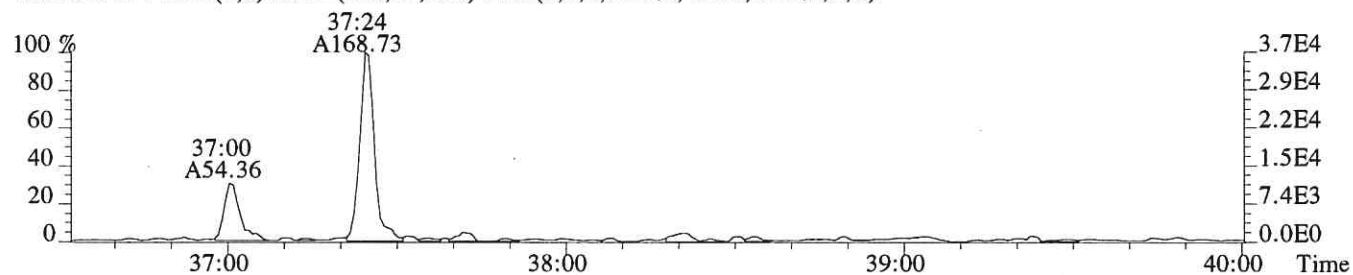
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1156.0,0.40%,F,T)



430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



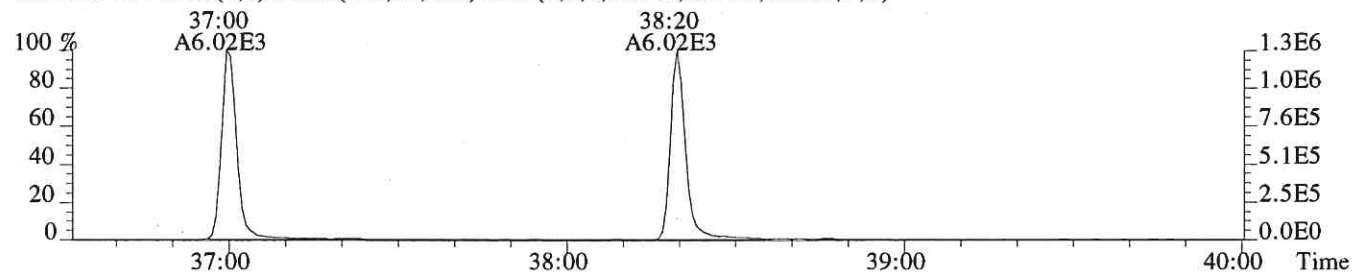
File:P618695 #1-313 Acq:22-AUG-2019 22:52:06 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:E1900593-005
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,484.0,0.50%,F,T)



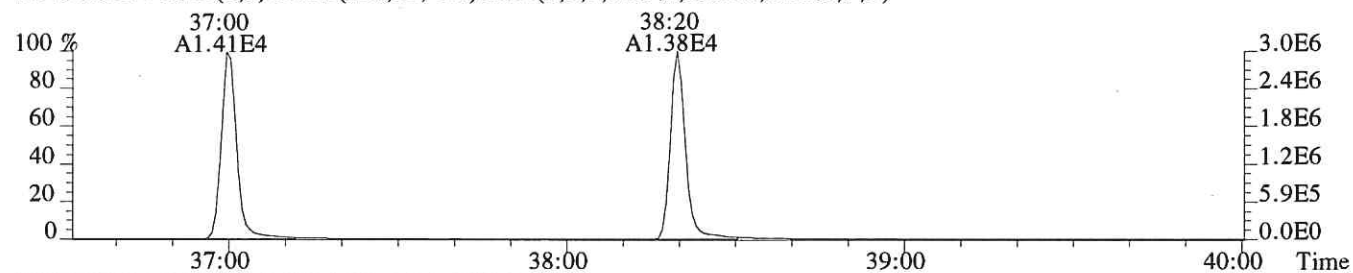
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,444.0,0.50%,F,T)



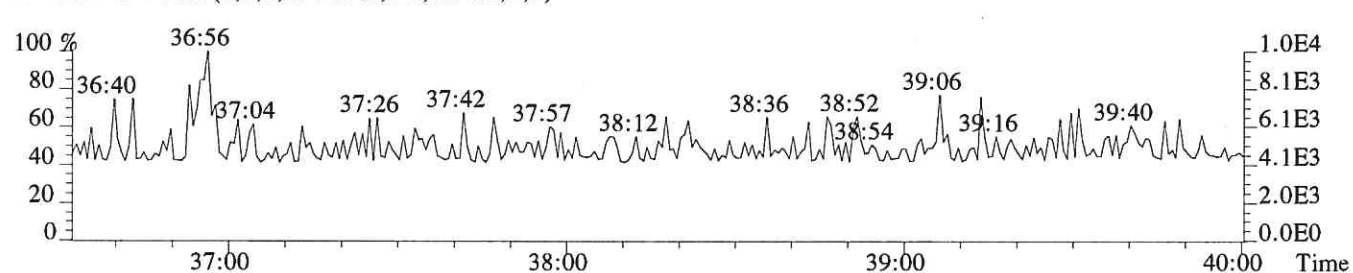
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2044.0,0.50%,F,T)



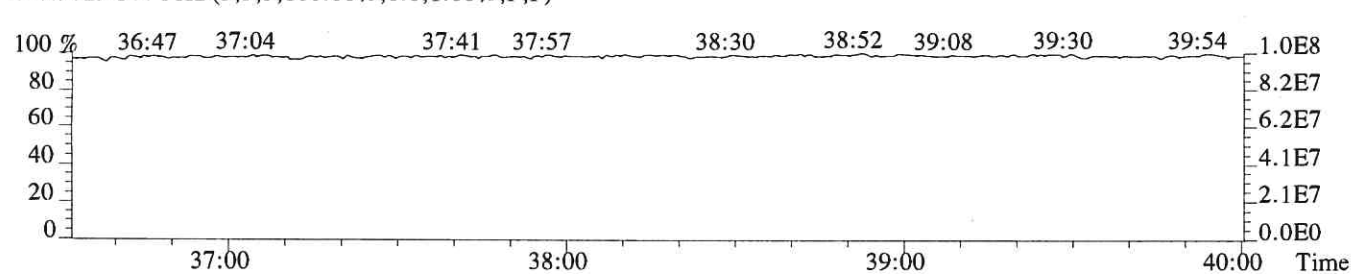
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2552.0,0.50%,F,T)



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



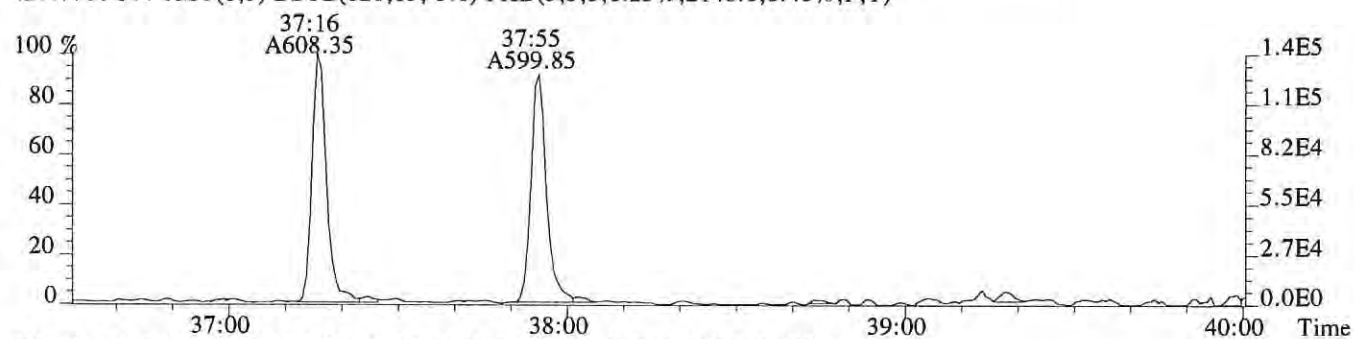
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



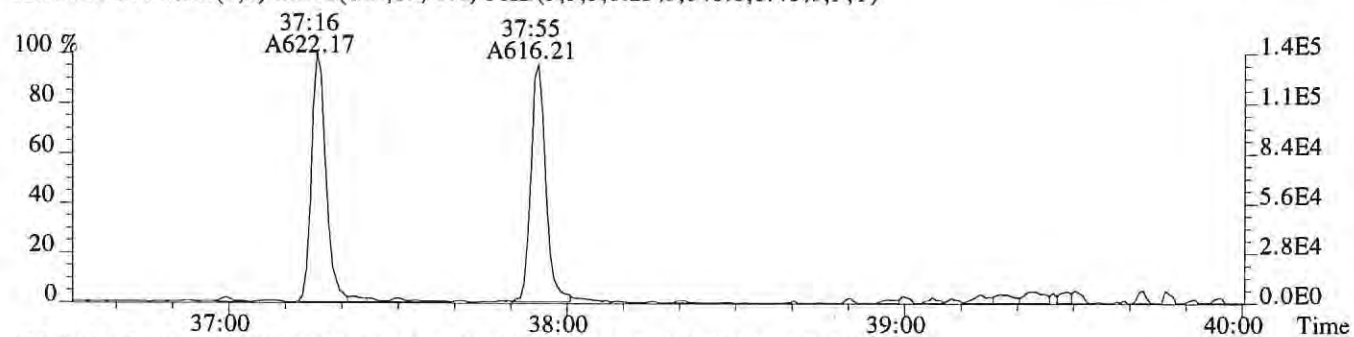
File:P618695 #1-313 Acq:22-AUG-2019 22:52:06 Probe EI+ Magnet SIR VG BioTech Mass spectr

Sample#1 Exp:E1900593-005

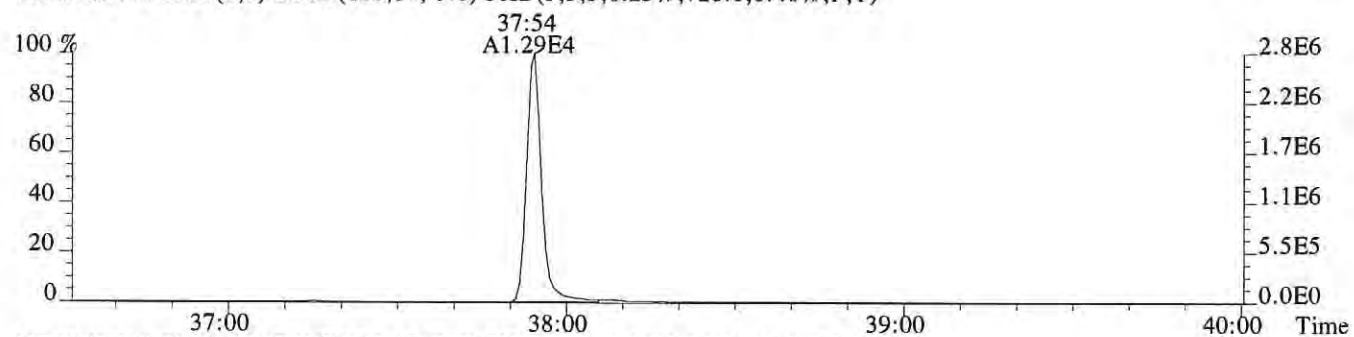
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2148.0,0.40%,F,T)



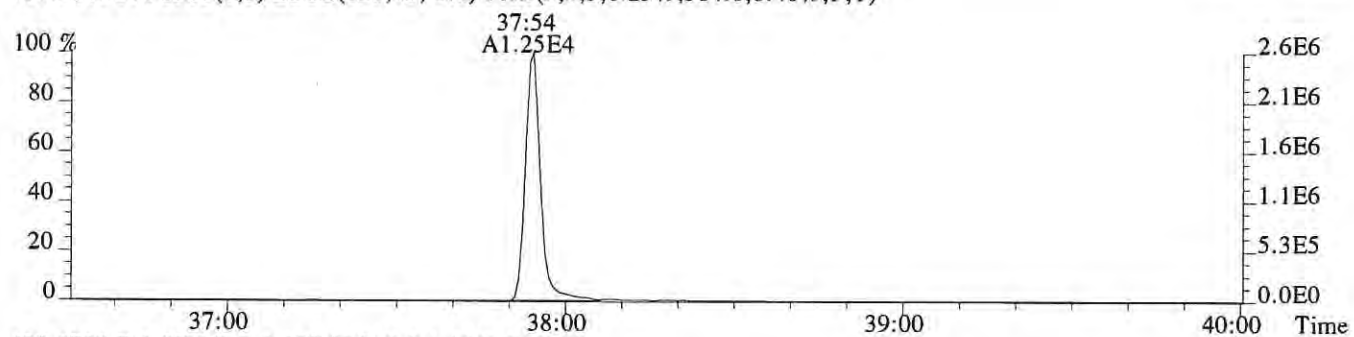
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,840.0,0.40%,F,T)



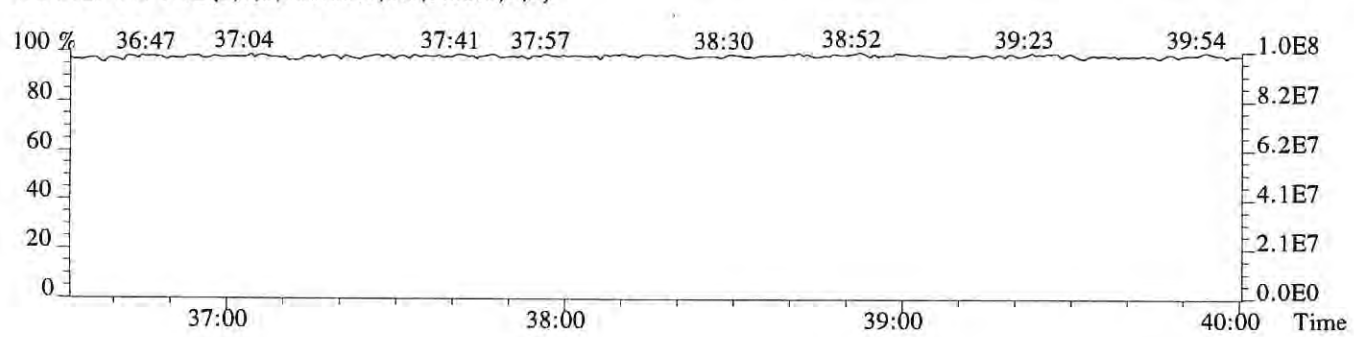
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,720.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,384.0,0.40%,F,T)



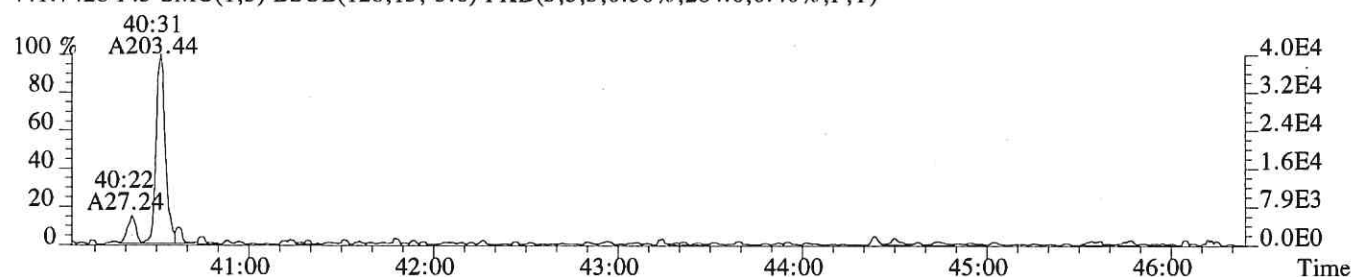
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



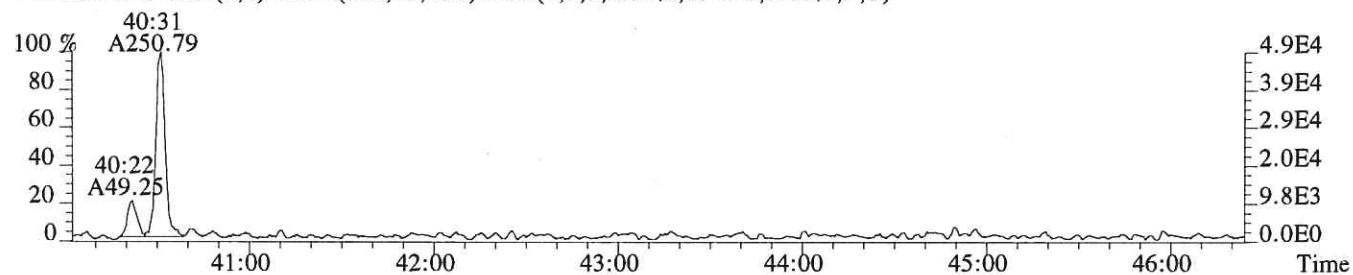
File:P618695 #1-573 Acq:22-AUG-2019 22:52:06 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:E1900593-005

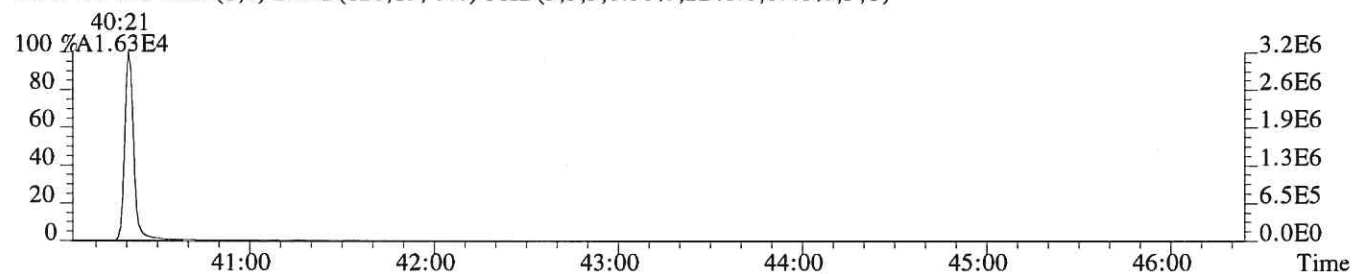
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,264.0,0.40%,F,T)



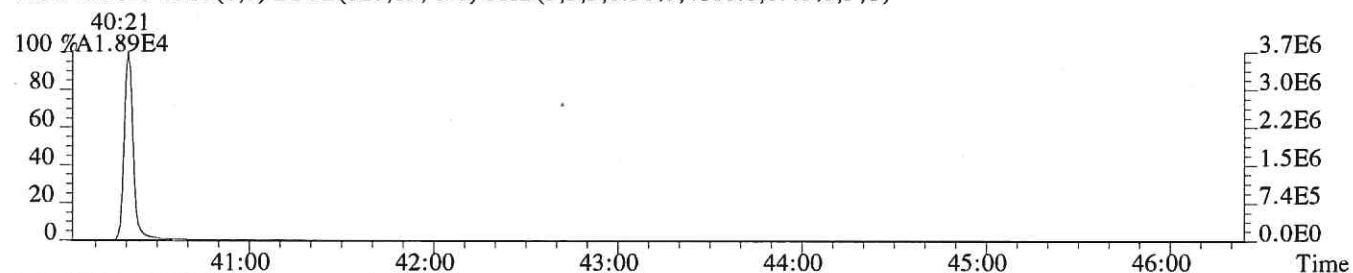
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1716.0,0.40%,F,T)



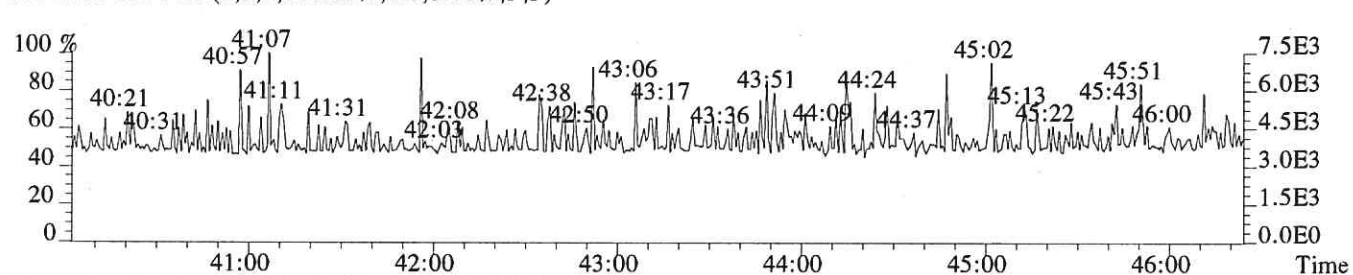
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2248.0,0.40%,F,T)



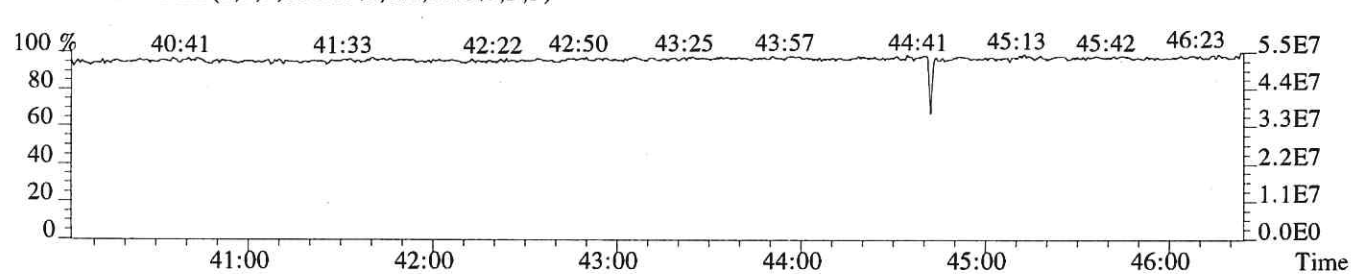
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4160.0,0.40%,F,T)



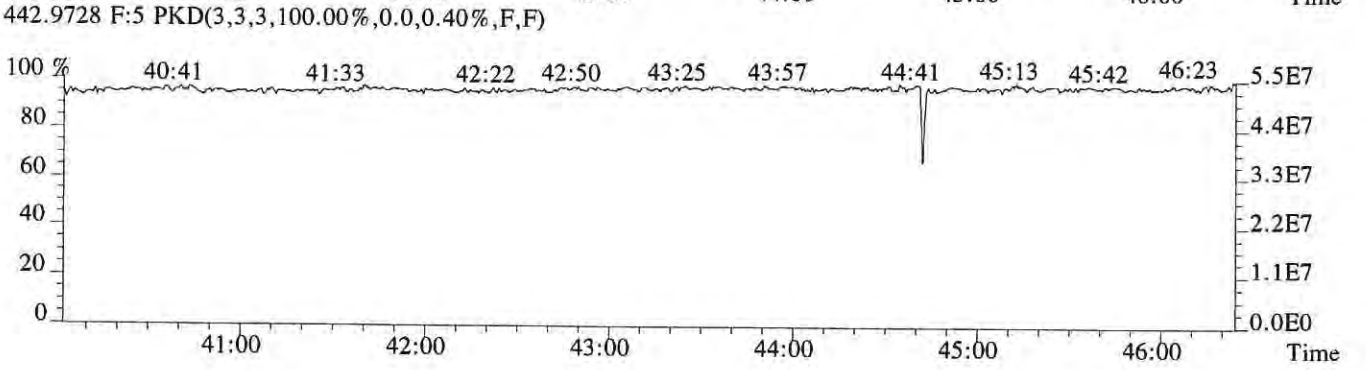
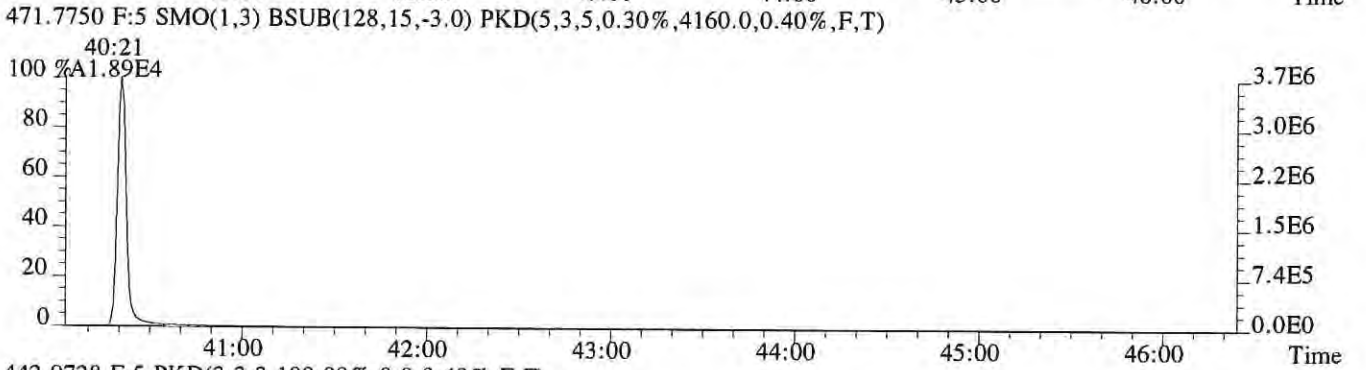
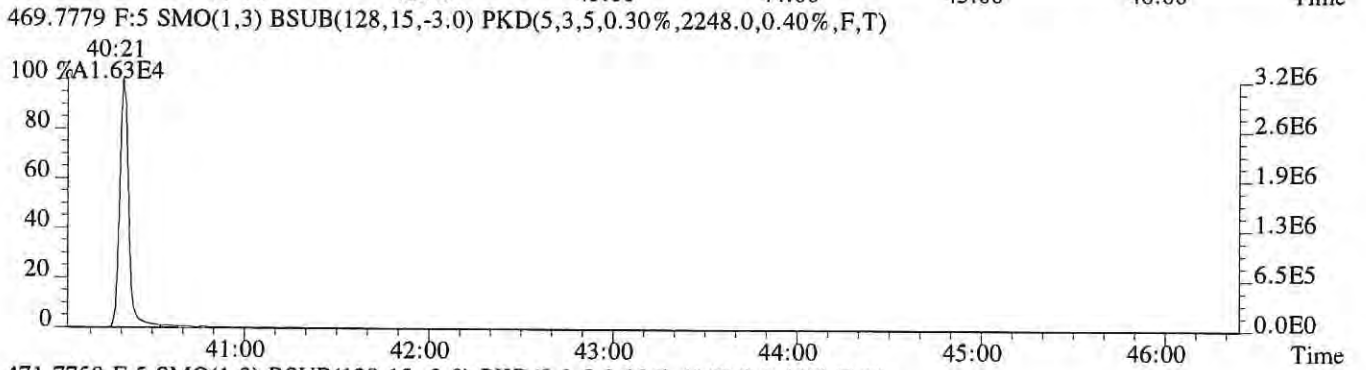
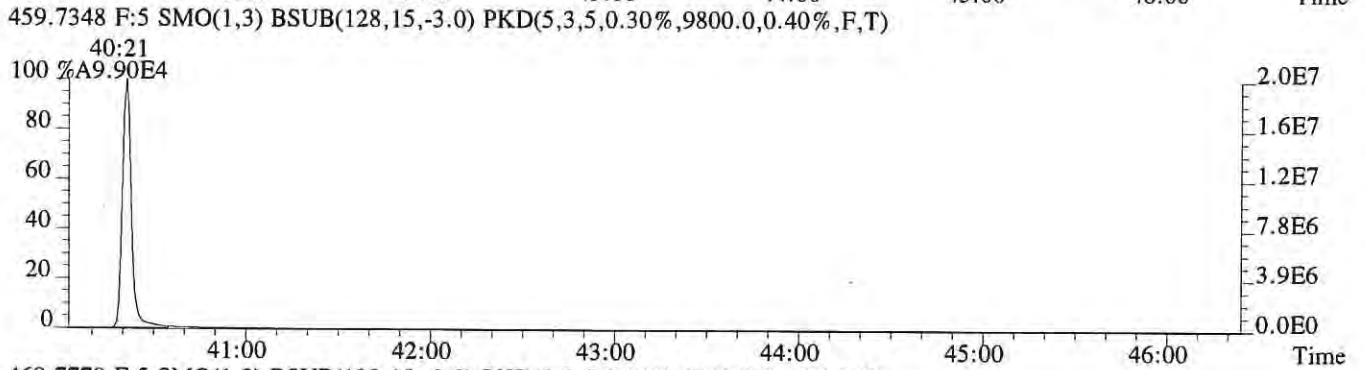
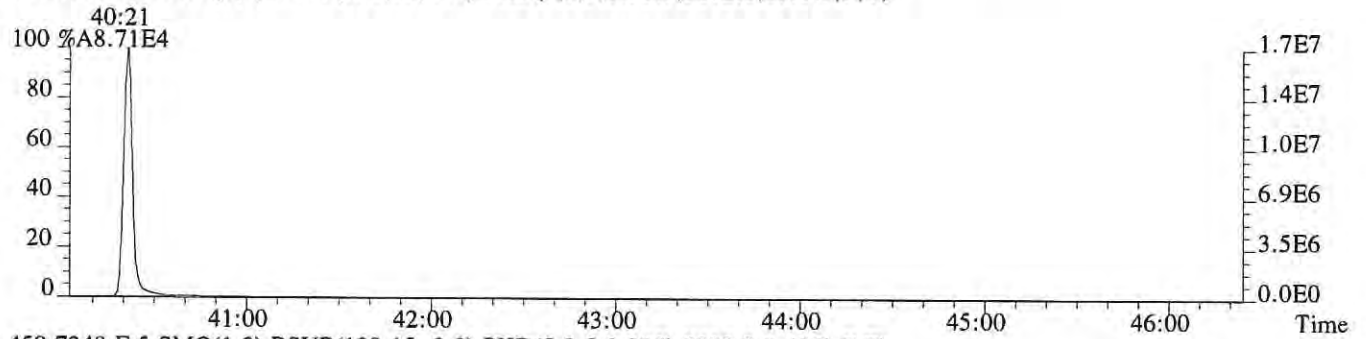
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



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



File:P618695 #1-573 Acq:22-AUG-2019 22:52:06 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-005
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,5172.0,0.40%,F,T)



ALS ENVIRONMENTAL

Sample Response Summary

CLIENT ID.
BS-6-190813

Run #16 Filename P618640 Samp: 1 Inj: 1 Acquired: 20-AUG-19 20:23:04
Processed: 22-AUG-19 09:02:02 Sample ID: E1900593-006

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	NotFnd	*	*	*	no	no	0.873
2 Unk	1,2,3,7,8-PeCDF	NotFnd	*	*	*	no	yes	0.864
3 Unk	2,3,4,7,8-PeCDF	NotFnd	*	*	*	no	no	0.825
4 Unk	1,2,3,4,7,8-HxCDF	NotFnd	*	*	*	no	no	1.084
5 Unk	1,2,3,6,7,8-HxCDF	NotFnd	*	*	*	no	no	0.994
6 Unk	2,3,4,6,7,8-HxCDF	NotFnd	*	*	*	no	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	NotFnd	*	*	*	no	no	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	37:08	3.227e+01	3.741e+01	0.86	no	no	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	38:27	9.938e+00	9.651e+00	1.03	yes	no	1.104
10 Unk	OCDF	40:39	7.753e+01	1.365e+02	0.57	no	no	0.993
11 Unk	2,3,7,8-TCDD	NotFnd	*	*	*	no	no	0.989
12 Unk	1,2,3,7,8-PeCDD	NotFnd	*	*	*	no	no	0.954
13 Unk	1,2,3,4,7,8-HxCDD	NotFnd	*	*	*	no	no	1.020
14 Unk	1,2,3,6,7,8-HxCDD	NotFnd	*	*	*	no	no	1.030
15 Unk	1,2,3,7,8,9-HxCDD	NotFnd	*	*	*	no	no	1.007
16 Unk	1,2,3,4,6,7,8-HpCDD	38:01	1.480e+03	1.538e+03	0.96	yes	no	0.922
17 Unk	OCDD	40:29	3.108e+05	3.559e+05	0.87	yes	no	1.062
18 IS	13C-2,3,7,8-TCDF	25:26	1.357e+04	1.765e+04	0.77	yes	no	1.102
19 IS	13C-1,2,3,7,8-PeCDF	30:29	2.476e+04	1.585e+04	1.56	yes	no	1.074
20 IS	13C-2,3,4,7,8-PeCDF	31:31	2.377e+04	1.509e+04	1.58	yes	no	1.005
21 IS	13C-1,2,3,4,7,8-HxCDF	34:23	1.019e+04	1.952e+04	0.52	yes	no	1.059
22 IS	13C-1,2,3,6,7,8-HxCDF	34:30	1.126e+04	2.168e+04	0.52	yes	no	1.264
23 IS	13C-2,3,4,6,7,8-HxCDF	35:02	8.974e+03	1.819e+04	0.49	yes	no	1.066
24 IS	13C-1,2,3,7,8,9-HxCDF	35:49	7.654e+03	1.494e+04	0.51	yes	no	0.801
25 IS	13C-1,2,3,4,6,7,8-HpCDF	37:07	5.792e+03	1.344e+04	0.43	yes	no	0.789
26 IS	13C-1,2,3,4,7,8,9-HpCDF	38:26	5.360e+03	1.230e+04	0.44	yes	no	0.590
27 IS	13C-2,3,7,8-TCDD	26:26	1.152e+04	1.478e+04	0.78	yes	no	0.839
28 IS	13C-1,2,3,7,8-PeCDD	31:49	1.933e+04	1.217e+04	1.59	yes	no	0.744
29 IS	13C-1,2,3,4,7,8-HxCDD	35:11	1.505e+04	1.179e+04	1.28	yes	no	0.907
30 IS	13C-1,2,3,6,7,8-HxCDD	35:16	1.736e+04	1.346e+04	1.29	yes	no	0.978
31 IS	13C-1,2,3,4,6,7,8-HpCDD	38:01	1.102e+04	1.040e+04	1.06	yes	no	0.814
32 IS	13C-OCDD	40:28	1.303e+04	1.436e+04	0.91	yes	no	0.653
33 RS/RT	13C-1,2,3,4-TCDD	25:42	2.401e+04	3.094e+04	0.78	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	35:31	2.546e+04	2.133e+04	1.19	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	26:27	1.033e+04				no	0.894

(3.108e+05 + 3.559e+05) x 4000 pg x 1

OCDD = ----- =
(1.303e+04 + 1.436e+04) x 10.227g x 87.4 / 100 x 1.062

10256.85 mg/Kg
LIM 08/22/19

ALS ENVIRONMENTAL -- HOUSTON HRMS
10450 Stancliff Rd., Suite 115
Houston, TX 77099
Office (281) 530-5656. Fax (281) 530-5887

ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
BS-6-190813

Run #16 Filename P618640 Samp: 1 Inj: 1 Acquired: 20-AUG-19 20:23:04
Processed: 22-AUG-19 09:02:02 LAB. ID: E1900593-006

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	*	1.04e+03	*	*	3.54e+03	*
2	1,2,3,7,8-PeCDF	*	4.24e+02	*	*	1.03e+03	*
3	2,3,4,7,8-PeCDF	*	4.24e+02	*	*	1.03e+03	*
4	1,2,3,4,7,8-HxCDF	*	1.21e+03	*	*	1.00e+03	*
5	1,2,3,6,7,8-HxCDF	*	1.21e+03	*	*	1.00e+03	*
6	2,3,4,6,7,8-HxCDF	*	1.21e+03	*	*	1.00e+03	*
7	1,2,3,7,8,9-HxCDF	*	1.21e+03	*	*	1.00e+03	*
8	1,2,3,4,6,7,8-HpCDF	6.01e+03	7.04e+02	8.5e+00	9.98e+03	5.64e+02	1.8e+01
9	1,2,3,4,7,8,9-HpCDF	2.30e+03	7.04e+02	3.3e+00	1.83e+03	5.64e+02	3.2e+00
10	OCDF	1.77e+04	1.43e+03	1.2e+01	2.71e+04	1.87e+03	1.4e+01
11	2,3,7,8-TCDD	*	3.44e+03	*	*	1.57e+03	*
12	1,2,3,7,8-PeCDD	*	3.26e+03	*	*	2.64e+03	*
13	1,2,3,4,7,8-HxCDD	*	9.01e+03	*	*	7.30e+03	*
14	1,2,3,6,7,8-HxCDD	*	9.01e+03	*	*	7.30e+03	*
15	1,2,3,7,8,9-HxCDD	*	9.01e+03	*	*	7.30e+03	*
16	1,2,3,4,6,7,8-HpCDD	3.30e+05	7.70e+03	4.3e+01	3.40e+05	7.49e+03	4.5e+01
17	OCDD	6.21e+07	2.33e+04	2.7e+03	7.08e+07	3.12e+04	2.3e+03
18	13C-2,3,7,8-TCDF	1.76e+06	1.57e+04	1.1e+02	2.26e+06	5.78e+03	3.9e+02
19	13C-1,2,3,7,8-PeCDF	3.89e+06	6.96e+02	5.6e+03	2.50e+06	7.40e+02	3.4e+03
20	13C-2,3,4,7,8-PeCDF	3.95e+06	6.96e+02	5.7e+03	2.52e+06	7.40e+02	3.4e+03
21	13C-1,2,3,4,7,8-HxCDF	2.13e+06	9.36e+02	2.3e+03	4.06e+06	1.03e+03	3.9e+03
22	13C-1,2,3,6,7,8-HxCDF	2.08e+06	9.36e+02	2.2e+03	4.05e+06	1.03e+03	3.9e+03
23	13C-2,3,4,6,7,8-HxCDF	1.78e+06	9.36e+02	1.9e+03	3.59e+06	1.03e+03	3.5e+03
24	13C-1,2,3,7,8,9-HxCDF	1.51e+06	9.36e+02	1.6e+03	2.96e+06	1.03e+03	2.9e+03
25	13C-1,2,3,4,6,7,8-HpCDF	1.24e+06	1.72e+03	7.2e+02	2.93e+06	2.82e+03	1.0e+03
26	13C-1,2,3,4,7,8,9-HpCDF	1.13e+06	1.72e+03	6.6e+02	2.63e+06	2.82e+03	9.3e+02
27	13C-2,3,7,8-TCDD	1.65e+06	7.08e+03	2.3e+02	2.11e+06	3.55e+03	6.0e+02
28	13C-1,2,3,7,8-PeCDD	3.29e+06	1.36e+03	2.4e+03	2.09e+06	1.63e+03	1.3e+03
29	13C-1,2,3,4,7,8-HxCDD	3.24e+06	2.06e+03	1.6e+03	2.52e+06	9.76e+02	2.6e+03
30	13C-1,2,3,6,7,8-HxCDD	3.50e+06	2.06e+03	1.7e+03	2.73e+06	9.76e+02	2.8e+03
31	13C-1,2,3,4,6,7,8-HpCDD	2.38e+06	1.14e+03	2.1e+03	2.25e+06	1.34e+03	1.7e+03
32	13C-OCDD	2.64e+06	1.14e+03	2.3e+03	2.88e+06	2.44e+03	1.2e+03
33	13C-1,2,3,4-TCDD	3.29e+06	7.08e+03	4.7e+02	4.20e+06	3.55e+03	1.2e+03
34	13C-1,2,3,7,8,9-HxCDD	5.19e+06	2.06e+03	2.5e+03	4.22e+06	9.76e+02	4.3e+03
35	37Cl-2,3,7,8-TCDD	1.47e+06	3.83e+03	3.8e+02			

---Sample Calculation---

$$D/L \text{ TCDD} = \frac{2.5 \times (3.440e+03 + 1.568e+03) \times 2000}{(1.646e+06 + 2.114e+06) \times () \times 0.989} =$$

ALS ENVIRONMENTAL
10450 Stancliff Rd., Suite 115
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Office: (281) 530-5656. Fax: (281) 530-5887

ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

BS-6-190813

Entry: 42 Totals Name: Total Hexa-Dioxins

Run: 16 File: P618640 Sample:1 Injection:1 Function:3

Acquired: 20-AUG-19 20:23:04 Processed: 22-AUG-19 09:02:02

Mass:	389.8160	391.8130	Tot Response: 2.99e+02		RRF: 1.019					
#	RT	Resp	Resp	Ratio	Meet	Tot	Resp	Name	Mod1?	Mod2
1	34:34	1.65e+02	1.34e+02	1.23	yes	2.99e+02			n	n

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ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

BS-6-190813

Entry: 43 Totals Name: Total Hepta-Furans

Run: 16 File: P618640 Sample:1 Injection:1 Function:4

Acquired: 20-AUG-19 20:23:04 Processed: 22-AUG-19 09:02:02

Mass:		407.7820 409.7790		Tot Response: 1.65e+02		RRF: 1.104			
#	RT	Resp	Resp Ratio	Meet	Tot Resp	Name	Mod1?	Mod2	
1	37:31	7.29e+01	7.27e+01	1.00	yes 1.46e+02		n	n	
2	38:27	9.94e+00	9.65e+00	1.03	yes 1.96e+01	1,2,3,4,7,8,9-HpCDF	n	n	

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ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

BS-6-190813

Entry: 44 Totals Name: Total Hepta-Dioxins

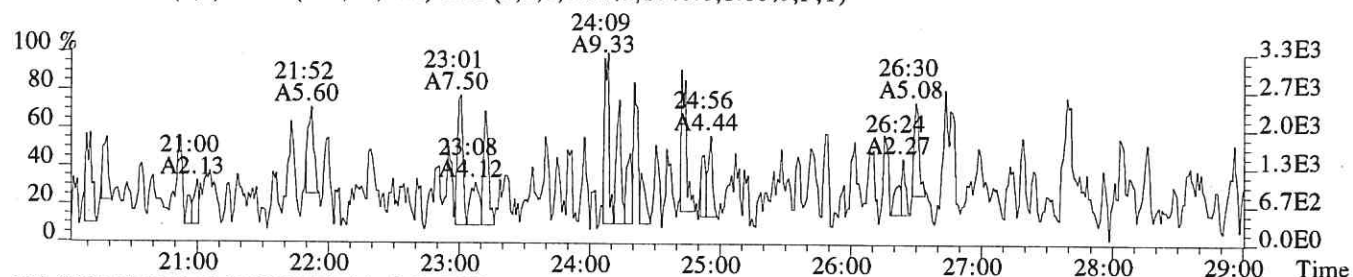
Run: 16 File: P618640 Sample:1 Injection:1 Function:4

Acquired: 20-AUG-19 20:23:04 Processed: 22-AUG-19 09:02:02

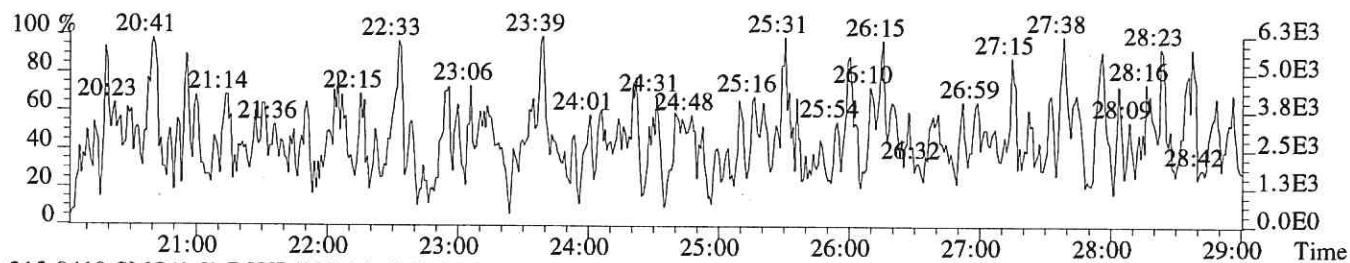
Mass:	423.7770	425.7740	Tot Response: 6.70e+03		RRF: 0.9218				
#	RT	Resp	Resp	Ratio	Meet	Tot. Resp	Name	Mod1?	Mod2
1	37:23	1.90e+03	1.79e+03	1.06	yes	3.69e+03		n	n
2	38:01	1.48e+03	1.54e+03	0.96	yes	3.02e+03	1,2,3,4,6,7,8-HpCDD	n	n

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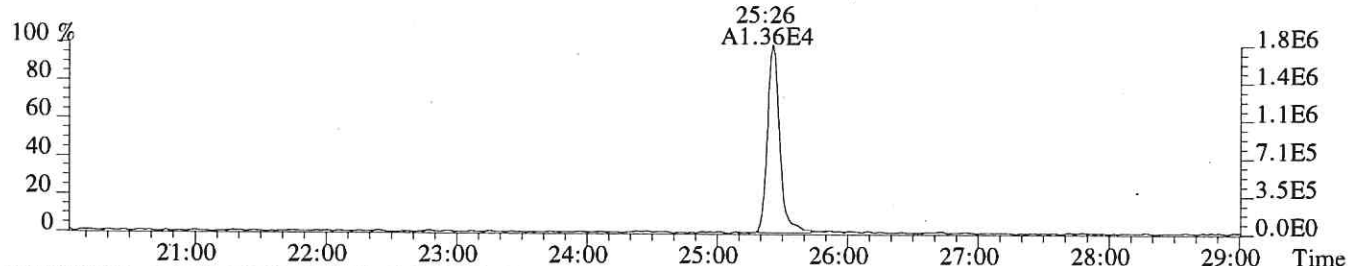
File:P618640 #1-637 Acq:20-AUG-2019 20:23:04 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-006
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1040.0,1.00%,F,T)



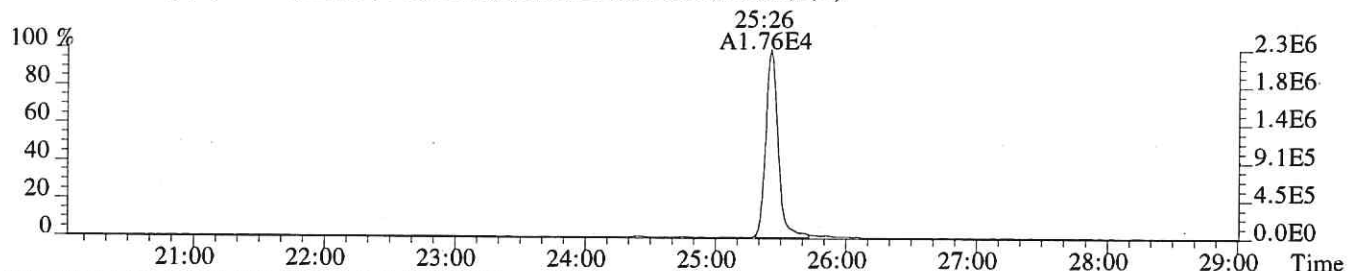
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3536.0,1.00%,F,T)



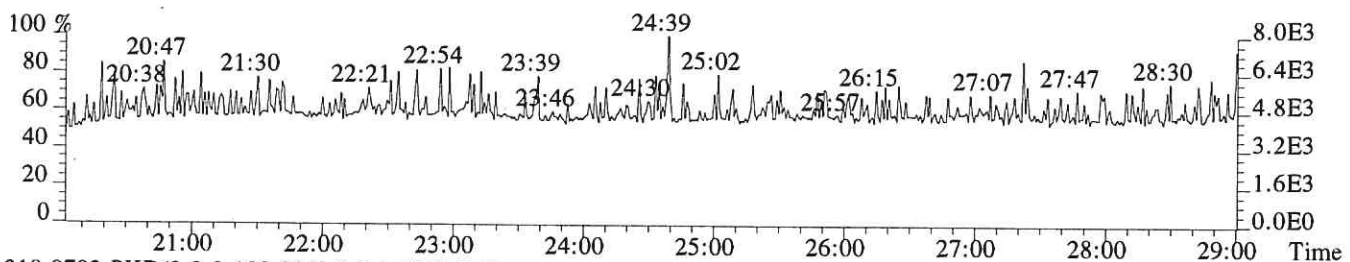
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,15688.0,1.00%,F,T)



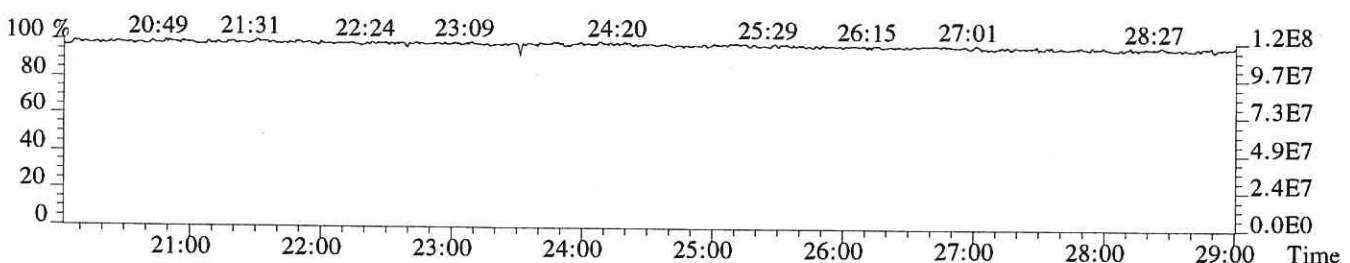
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5784.0,1.00%,F,T)



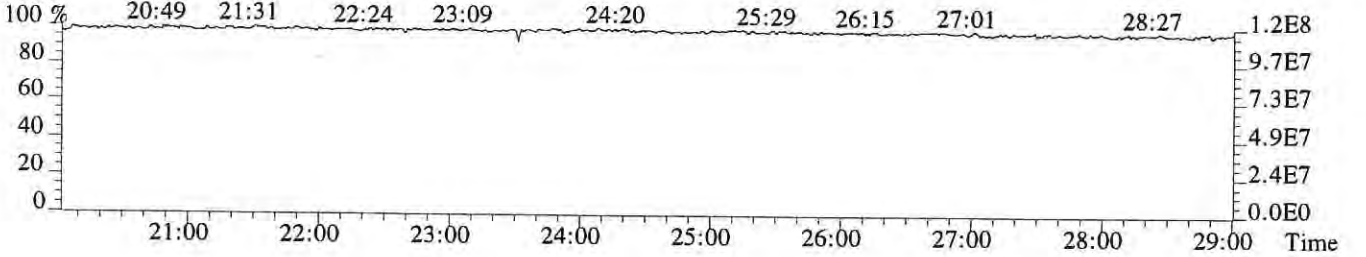
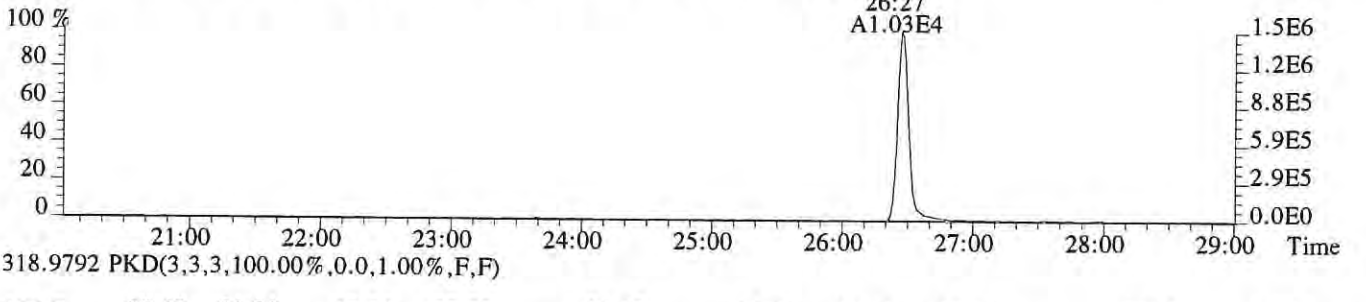
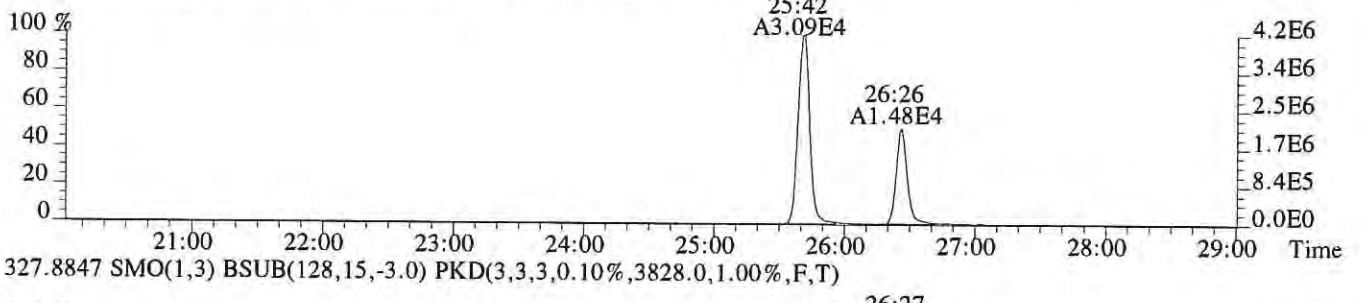
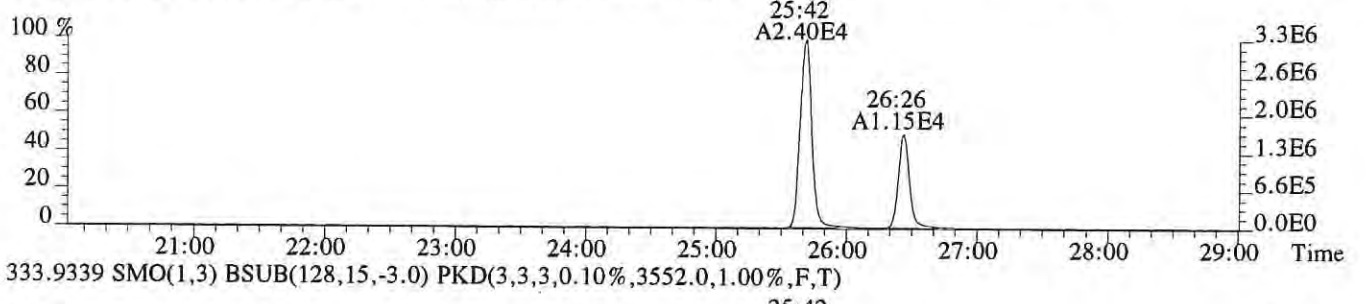
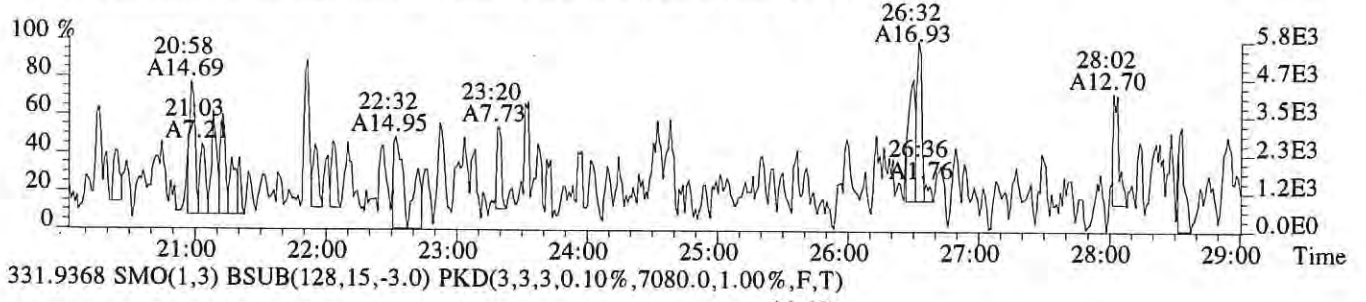
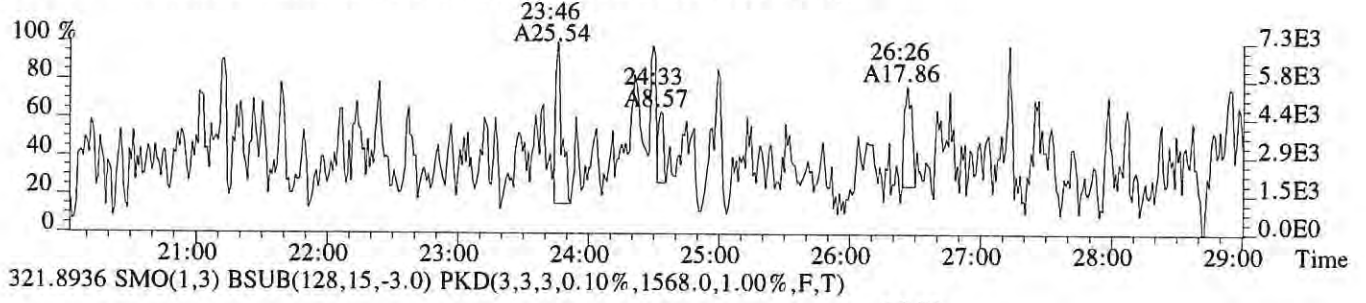
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



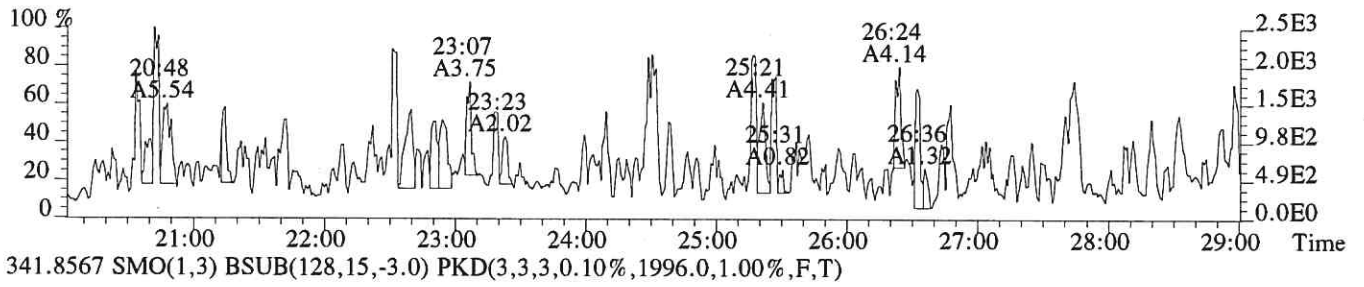
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



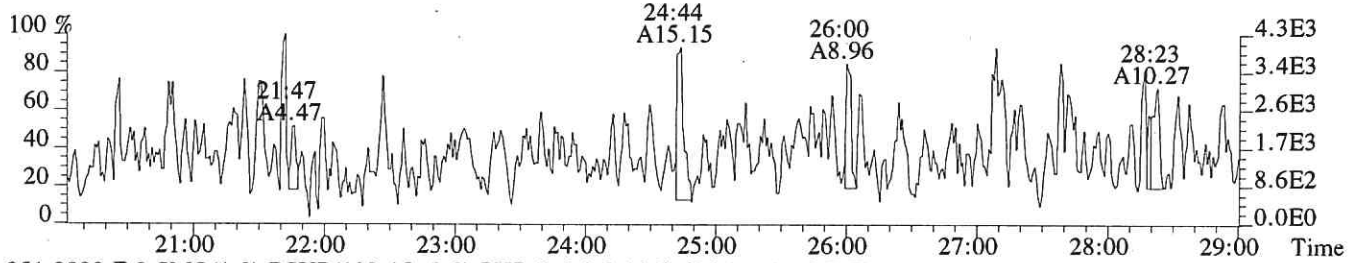
File:P618640 #1-637 Acq:20-AUG-2019 20:23:04 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-006
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3440.0,1.00%,F,T)



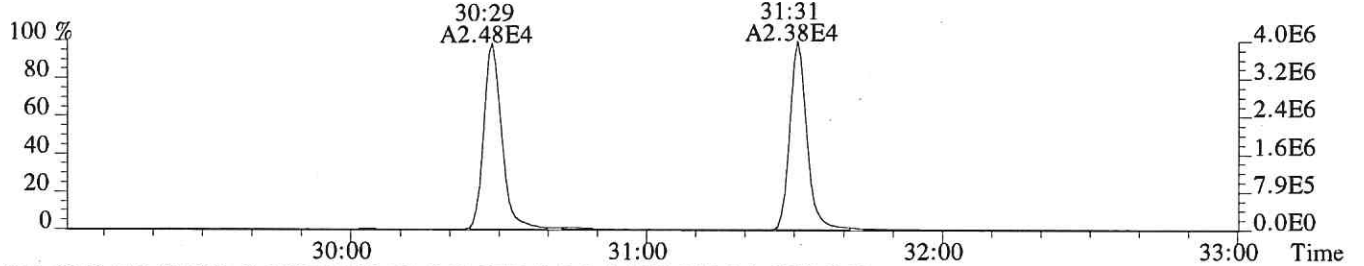
File:P618640 #1-637 Acq:20-AUG-2019 20:23:04 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-006
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,680.0,1.00%,F,T)



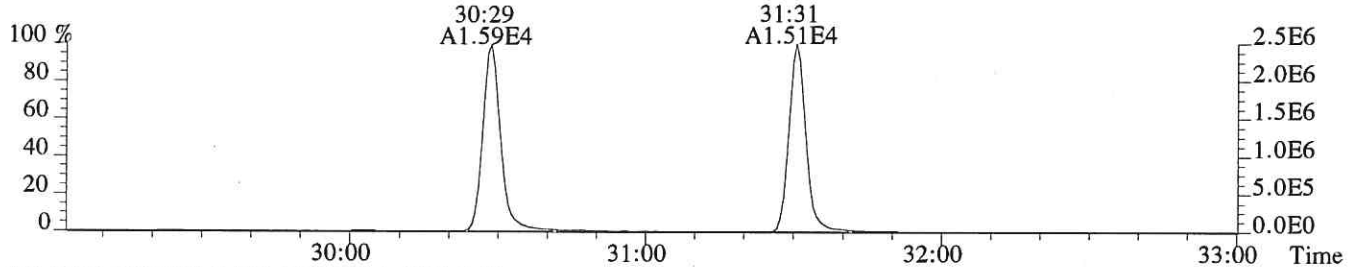
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1996.0,1.00%,F,T)



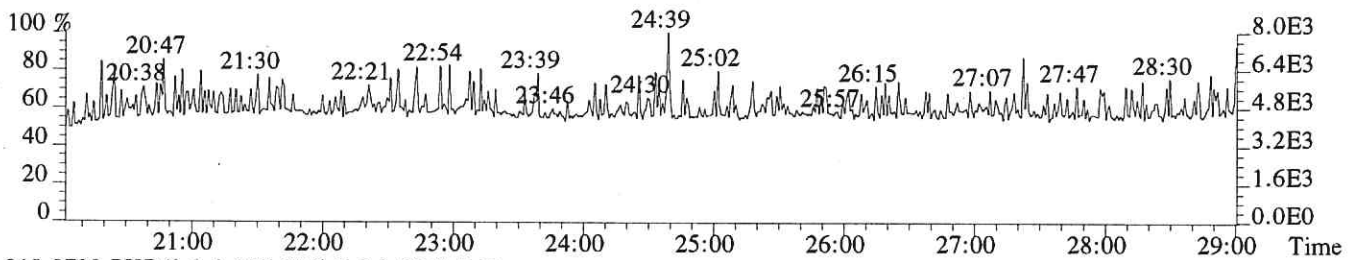
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,696.0,1.00%,F,T)



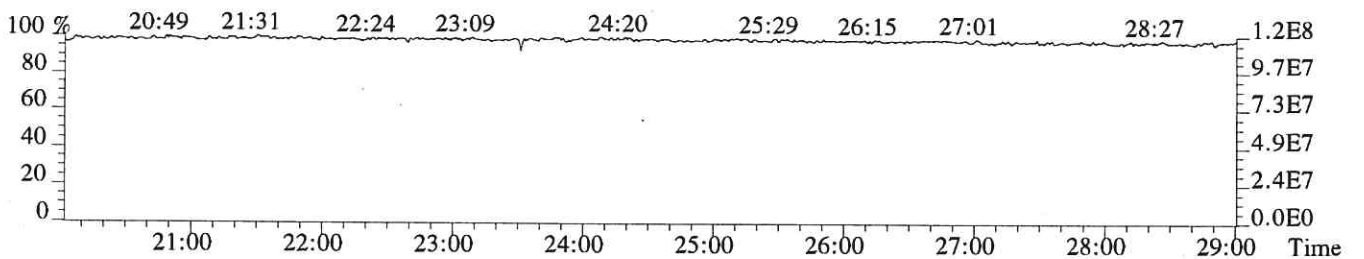
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,740.0,1.00%,F,T)



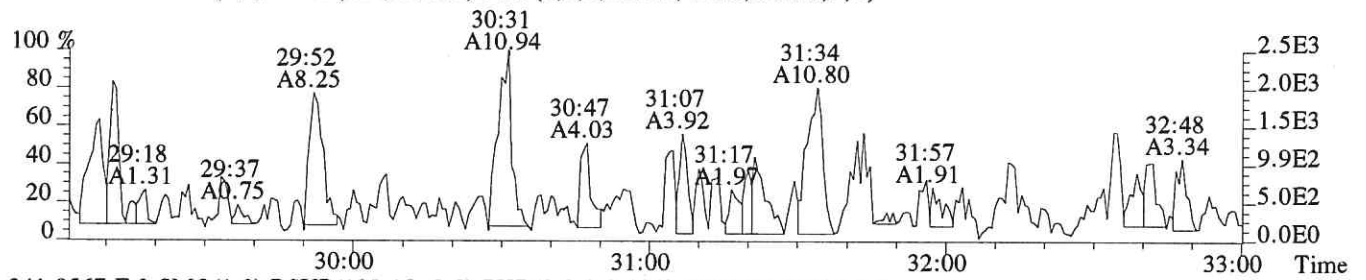
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



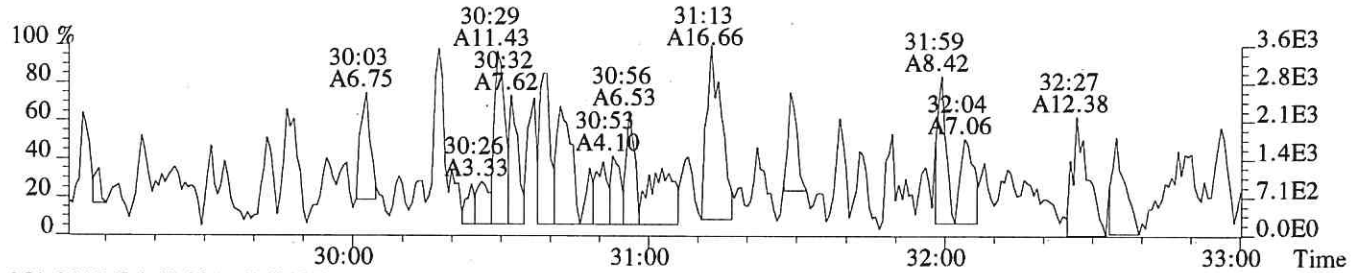
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



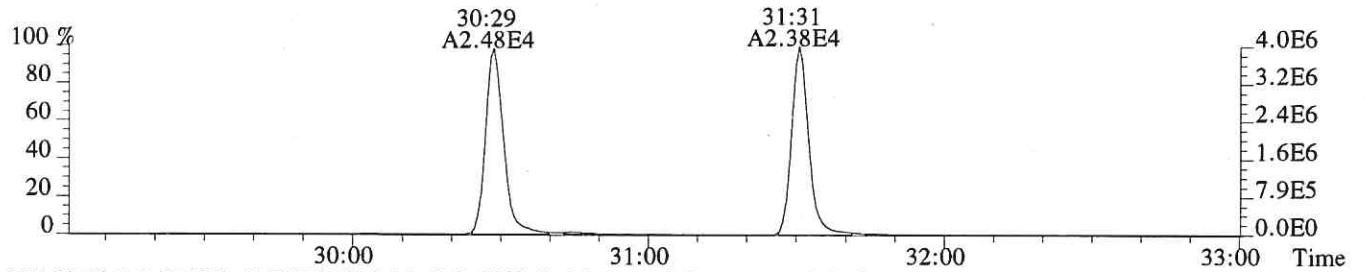
File: P618640 #1-357 Acq: 20-AUG-2019 20:23:04 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: E1900593-006
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,424.0,1.00%,F,T)



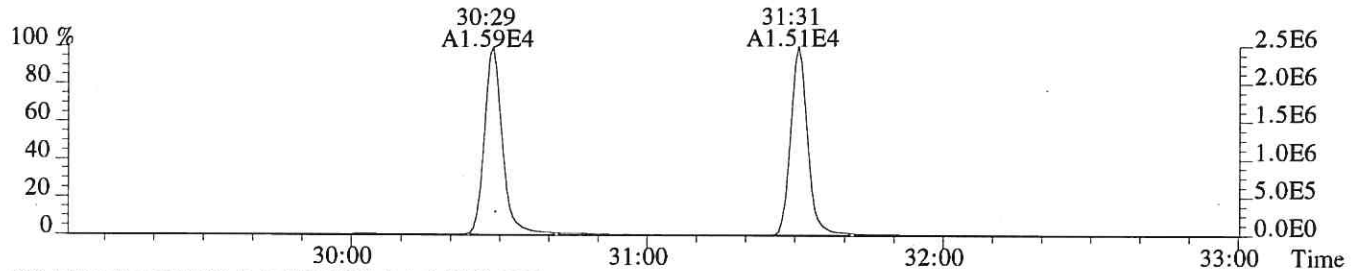
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1028.0,1.00%,F,T)



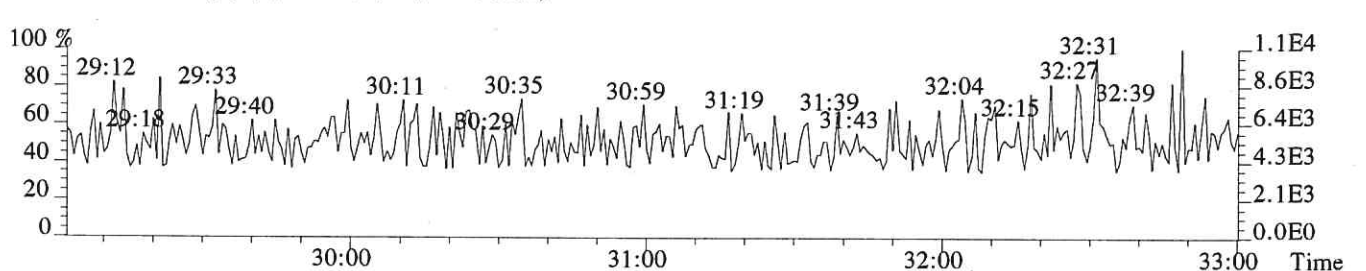
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,696.0,1.00%,F,T)



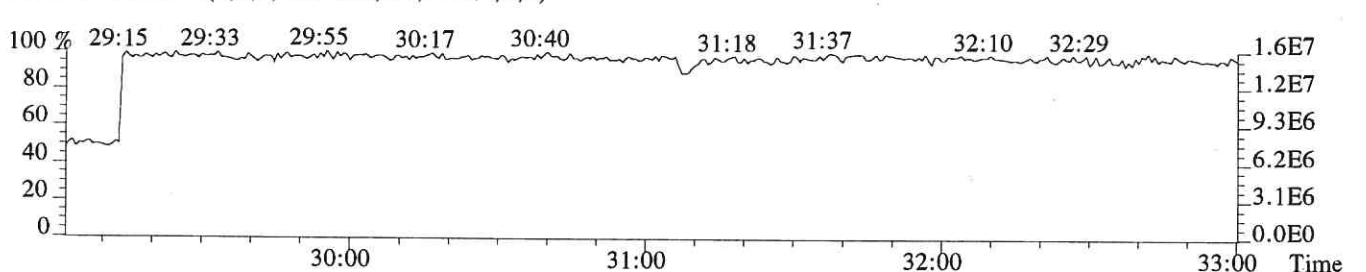
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,740.0,1.00%,F,T)



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



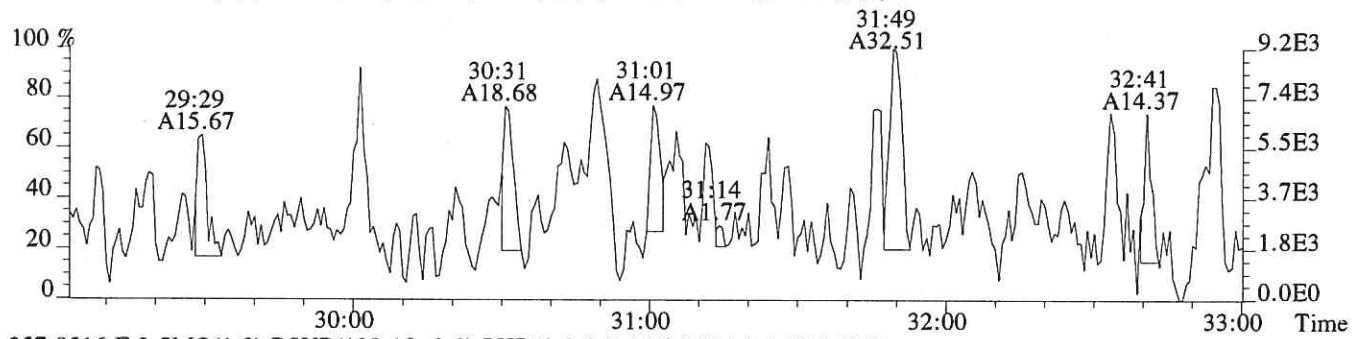
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



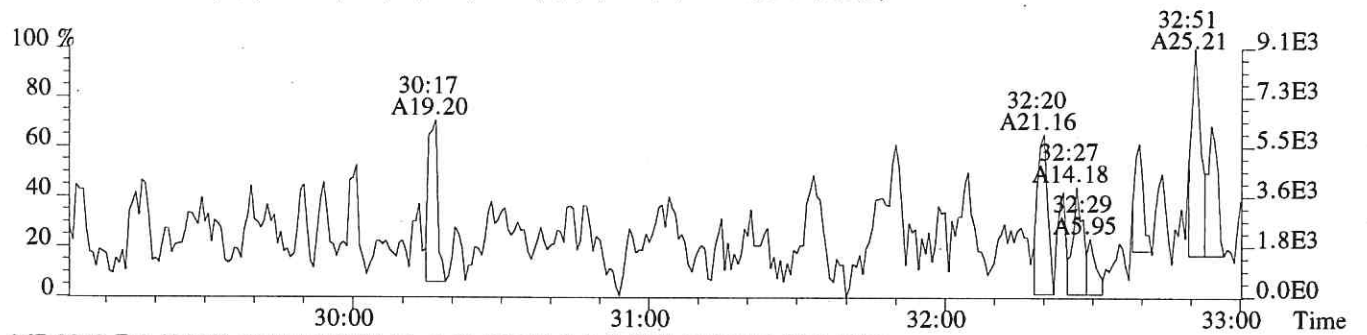
File: P618640 #1-357 Acq: 20-AUG-2019 20:23:04 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp: E1900593-006

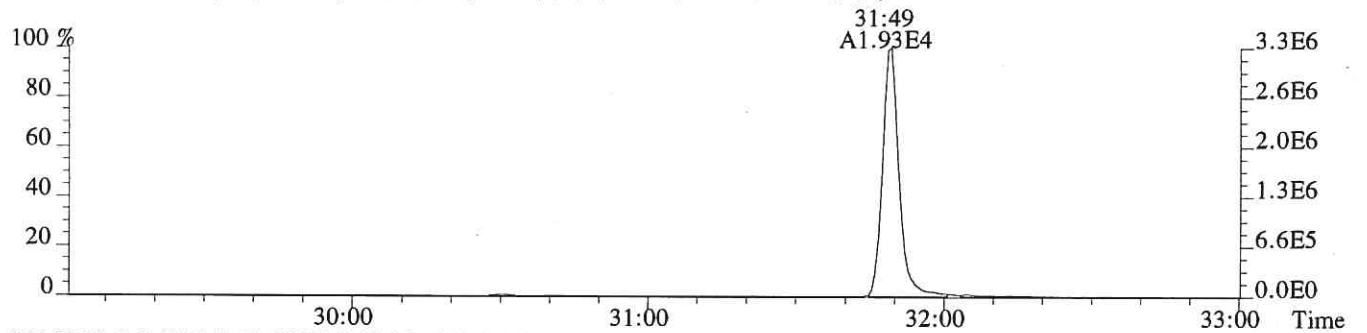
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3260.0,1.00%,F,T)



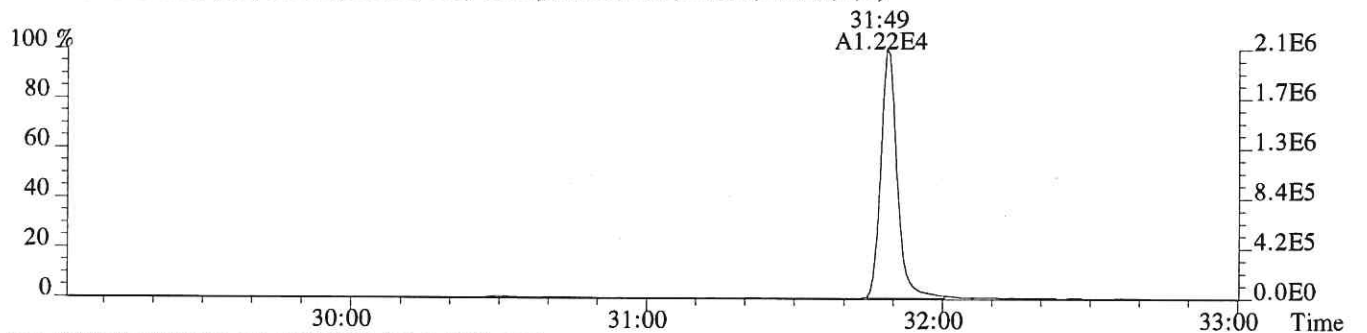
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2644.0,1.00%,F,T)



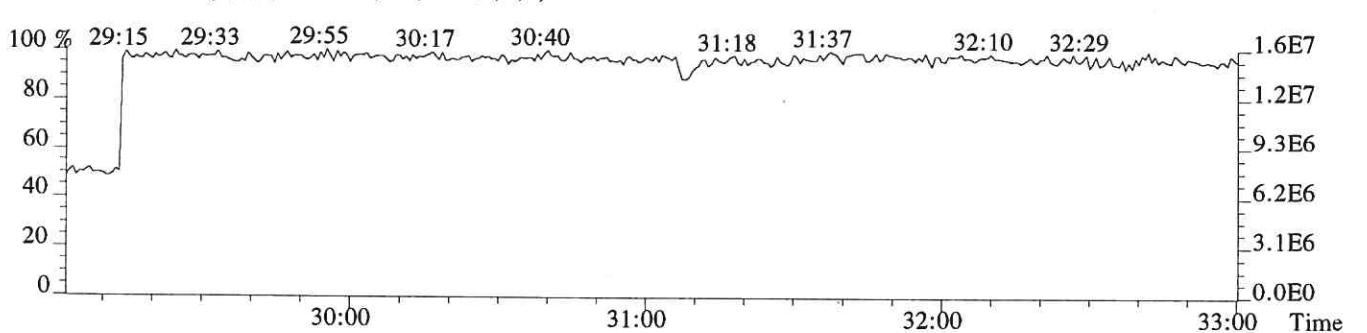
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1356.0,1.00%,F,T)



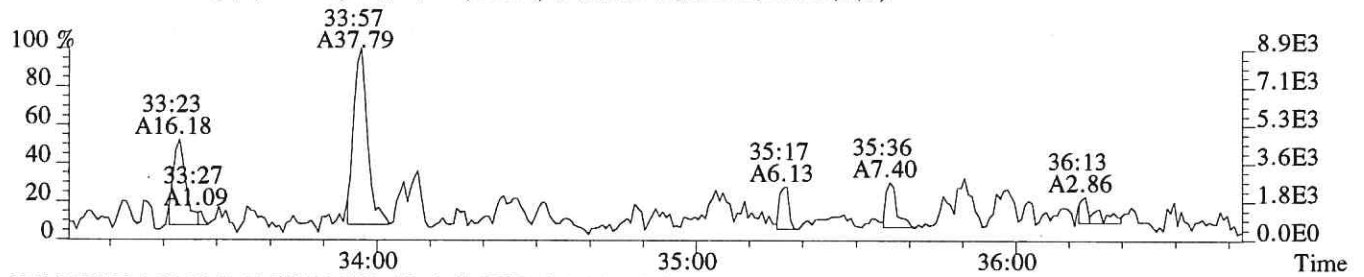
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1628.0,1.00%,F,T)



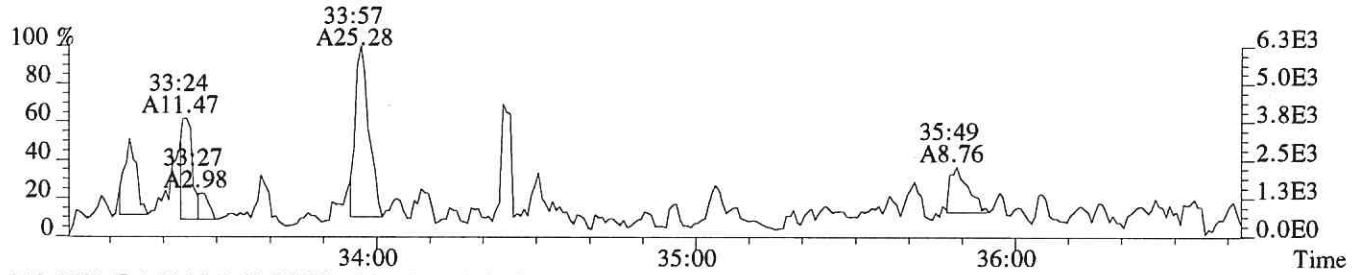
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



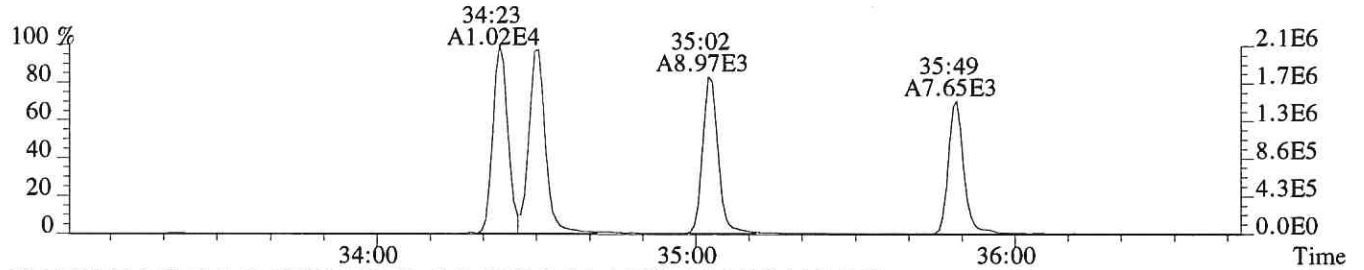
File:P618640 #1-331 Acq:20-AUG-2019 20:23:04 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-006
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1212.0,0.40%,F,T)



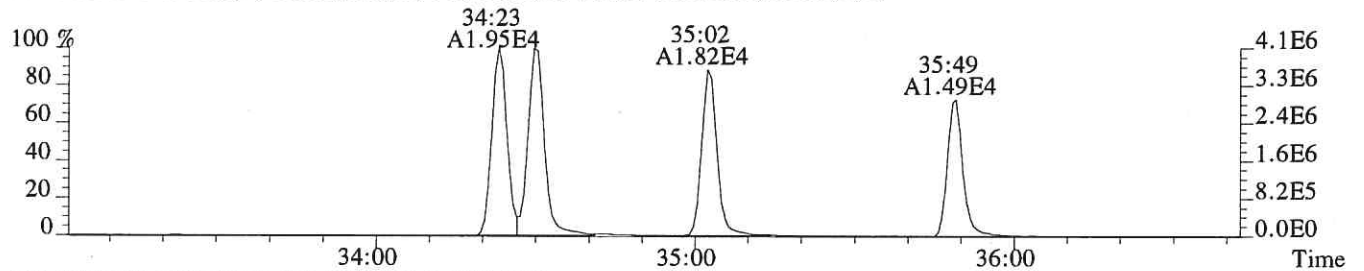
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1004.0,0.40%,F,T)



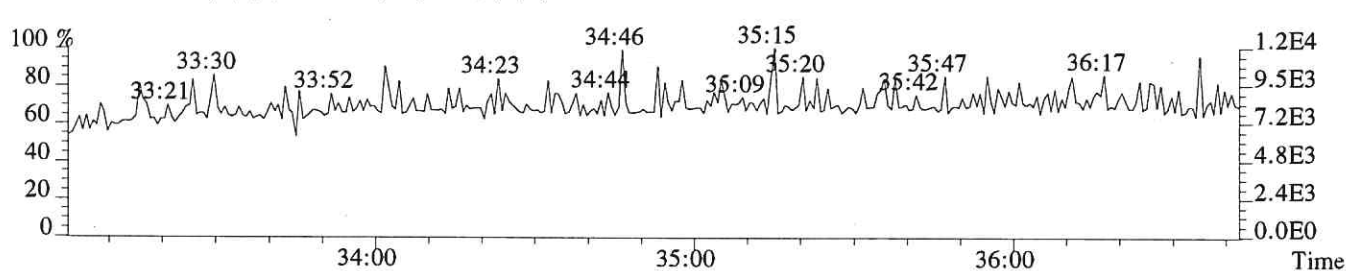
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,936.0,0.40%,F,T)



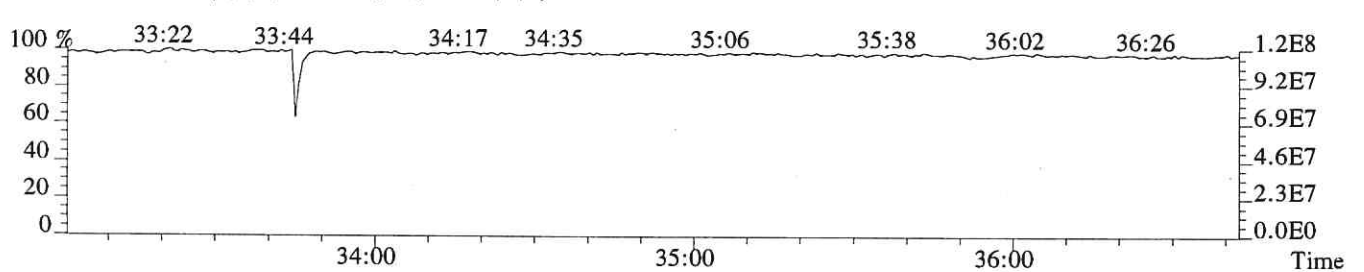
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1028.0,0.40%,F,T)



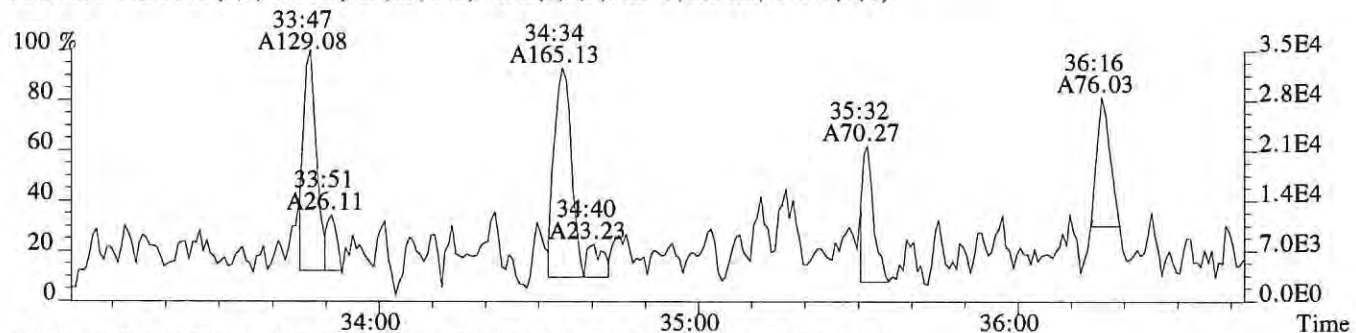
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



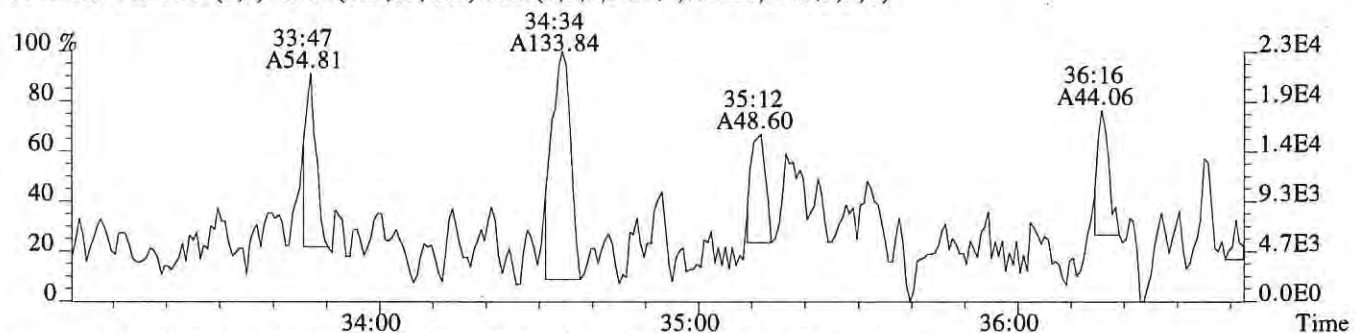
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



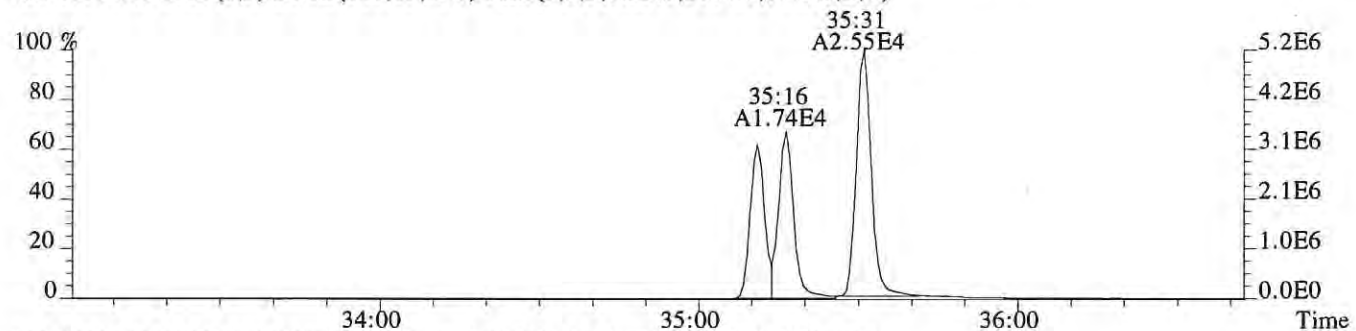
File:P618640 #1-331 Acq:20-AUG-2019 20:23:04 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-006
389.8157 F:3 SMO(1,3) BSMO(128,15,-3.0) PKD(3,3,3,0.25%,9008.0,0.40%,F,T)



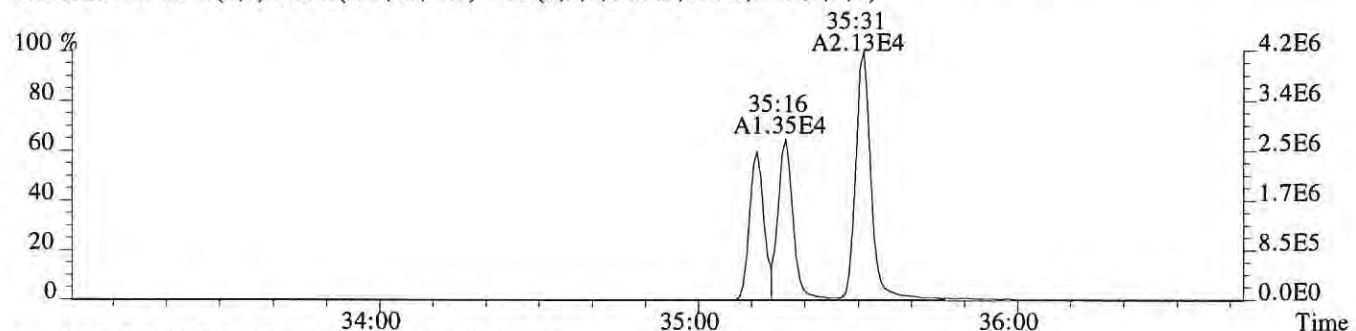
391.8127 F:3 SMO(1,3) BSMO(128,15,-3.0) PKD(3,3,3,0.25%,7304.0,0.40%,F,T)



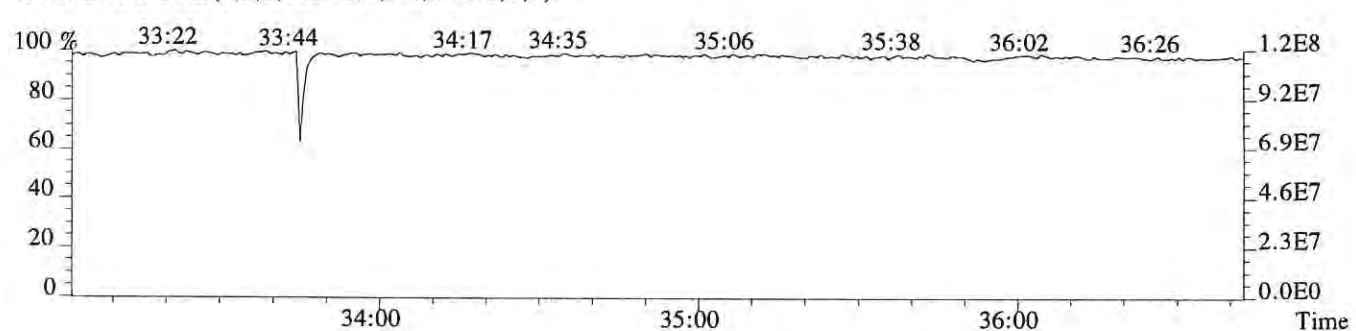
401.8559 F:3 SMO(1,3) BSMO(128,15,-3.0) PKD(3,3,3,0.25%,2064.0,0.40%,F,T)



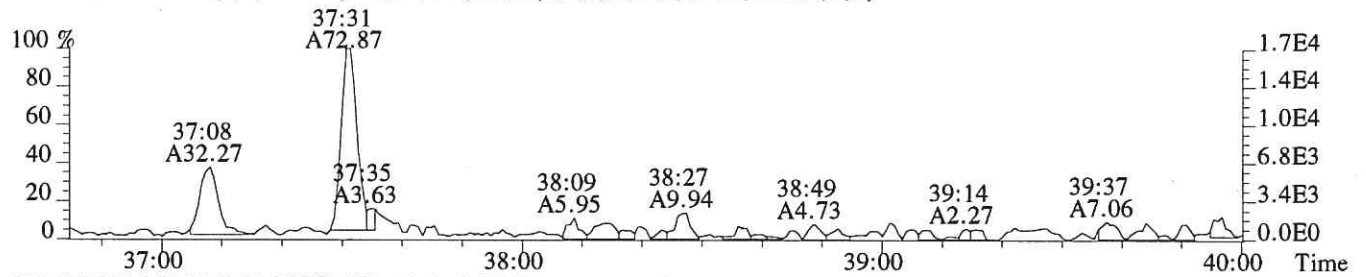
403.8529 F:3 SMO(1,3) BSMO(128,15,-3.0) PKD(3,3,3,0.25%,976.0,0.40%,F,T)



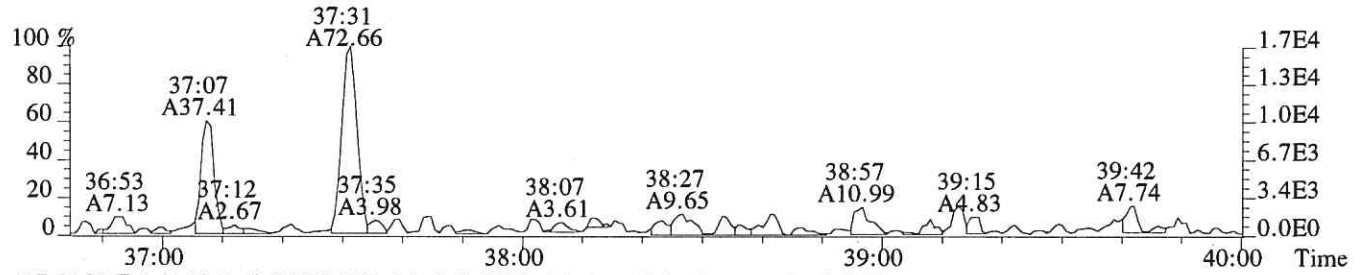
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



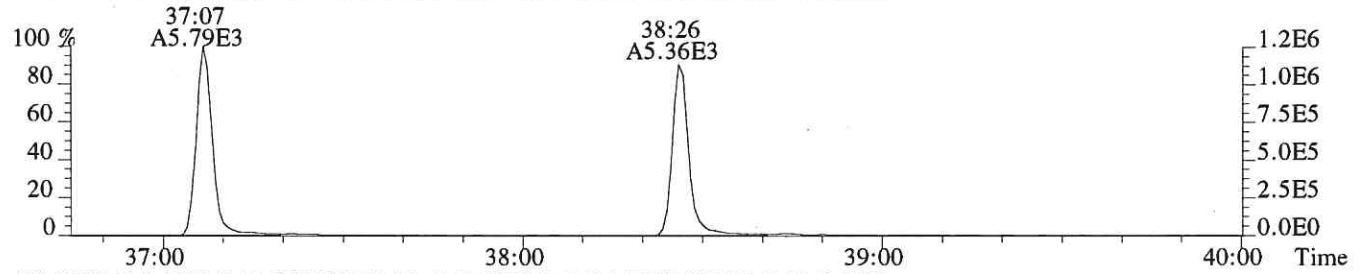
File:P618640 #1-294 Acq:20-AUG-2019 20:23:04 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-006
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,704.0,0.50%,F,T)



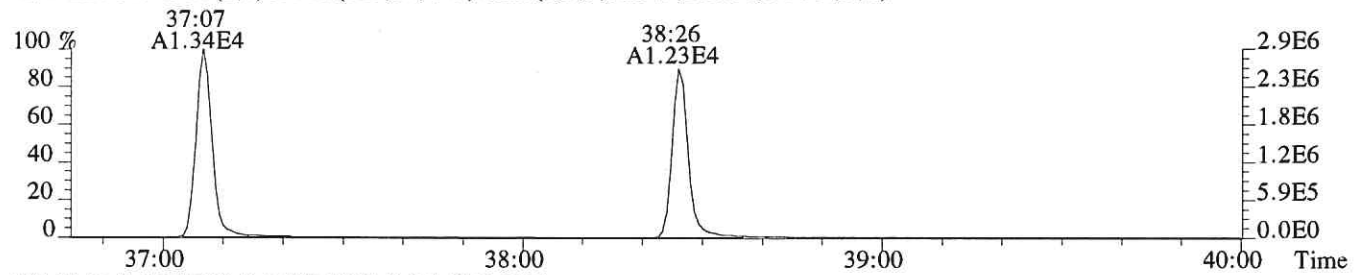
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,564.0,0.50%,F,T)



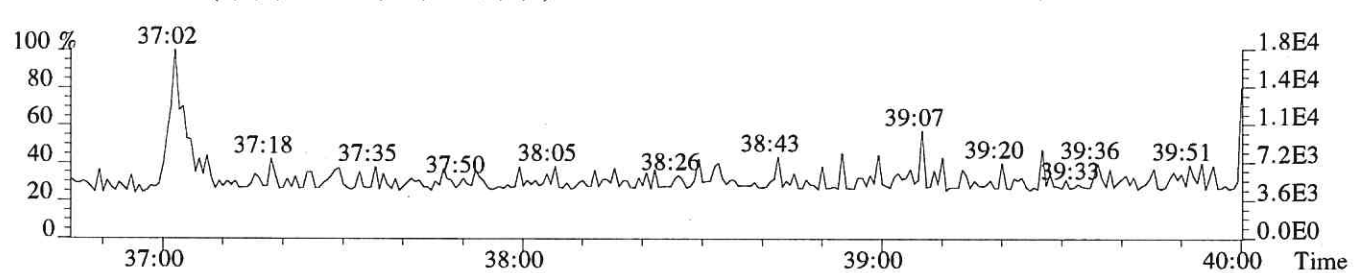
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1720.0,0.50%,F,T)



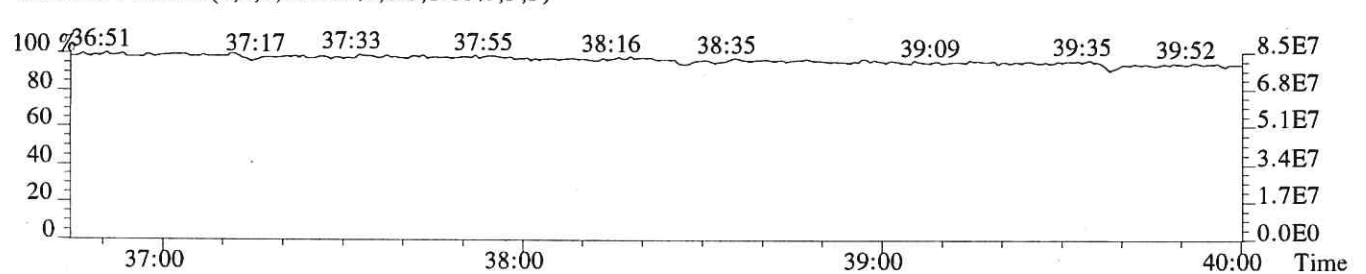
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2816.0,0.50%,F,T)



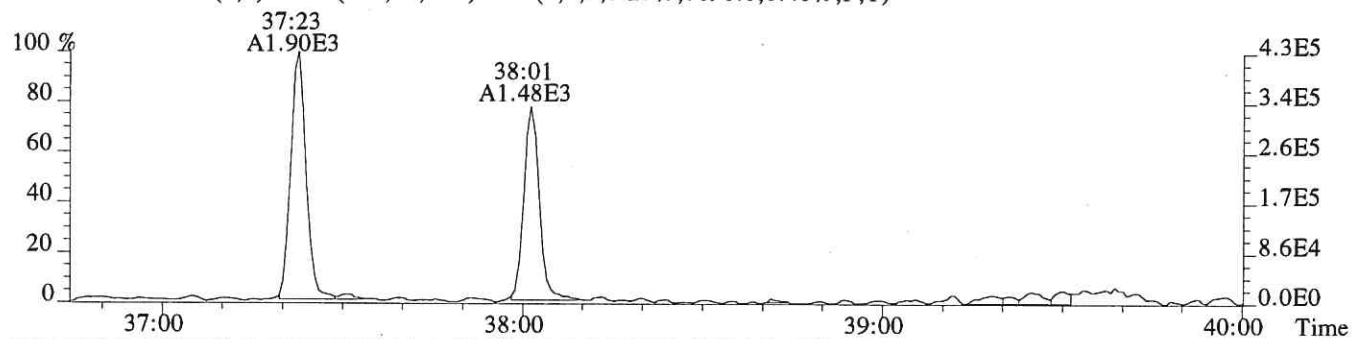
479.7165 F:4 PKD(5,3,5,100.0%,0.0,1.00%,F,F)



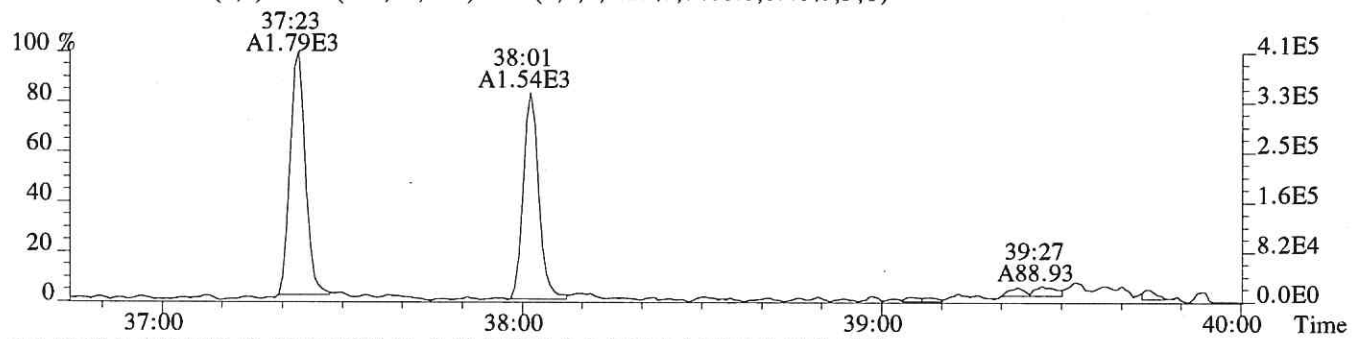
430.9729 F:4 PKD(3,3,3,100.0%,0.0,1.00%,F,F)



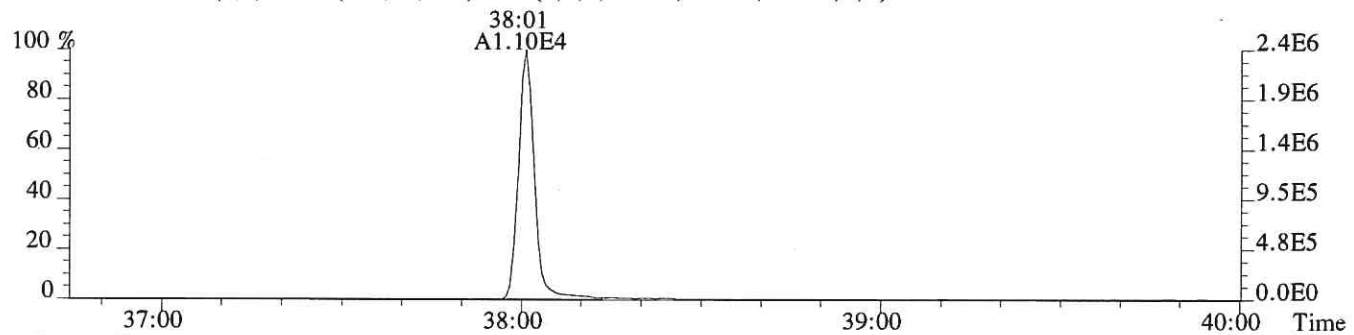
File: P618640 #1-294 Acq: 20-AUG-2019 20:23:04 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: E1900593-006
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,7696.0,0.40%,F,T)



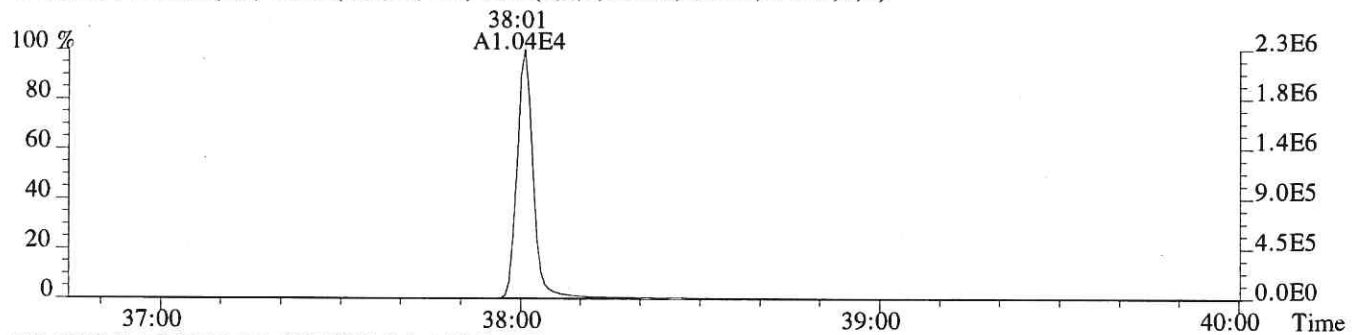
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,7488.0,0.40%,F,T)



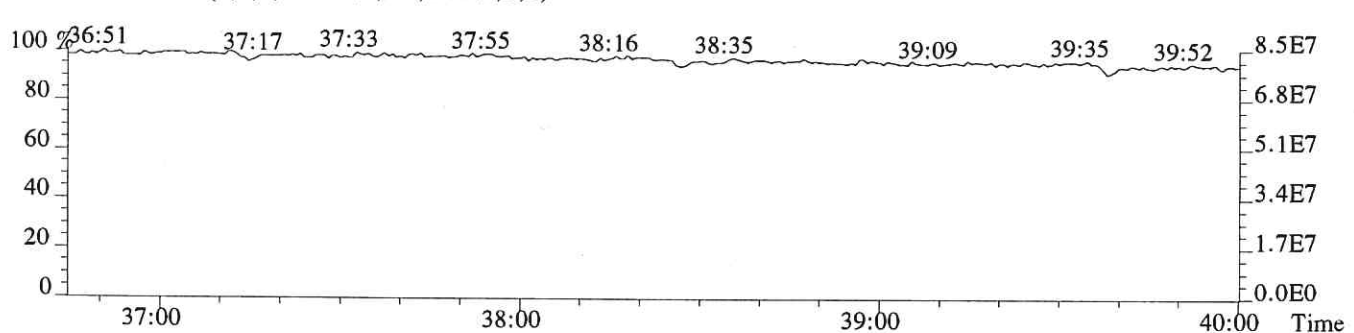
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1136.0,0.40%,F,T)



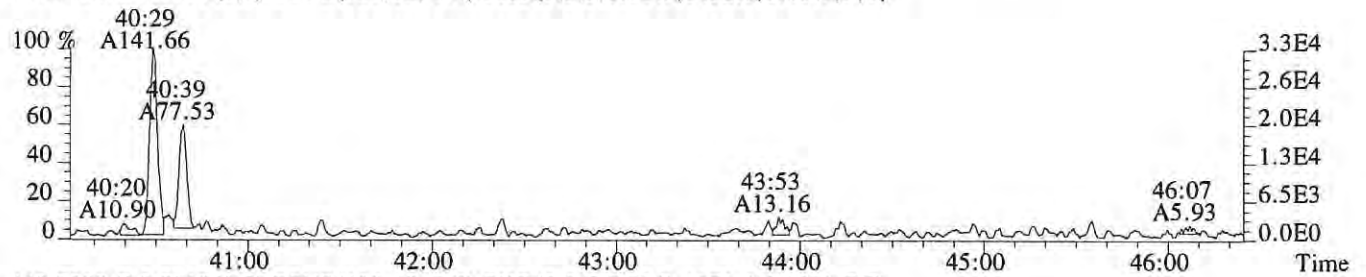
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1336.0,0.40%,F,T)



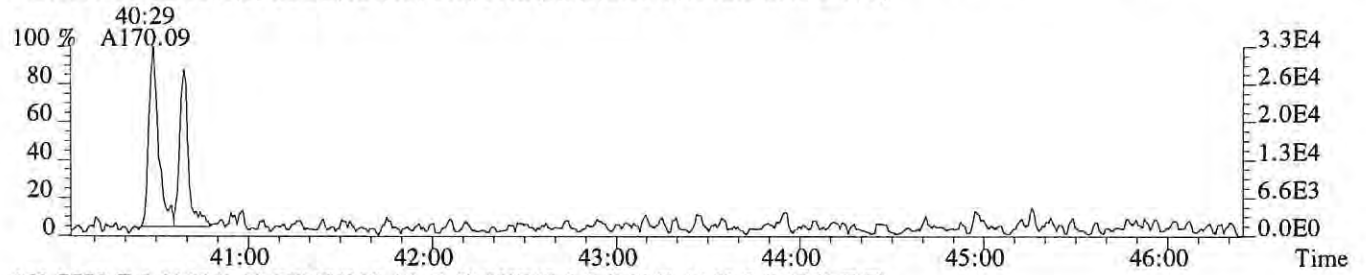
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



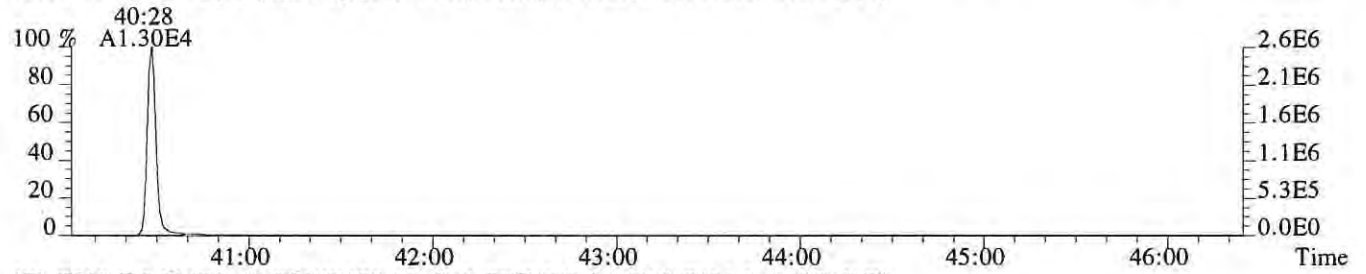
File:P618640 #1-574 Acq:20-AUG-2019 20:23:04 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-006
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1432.0,0.40%,F,T)



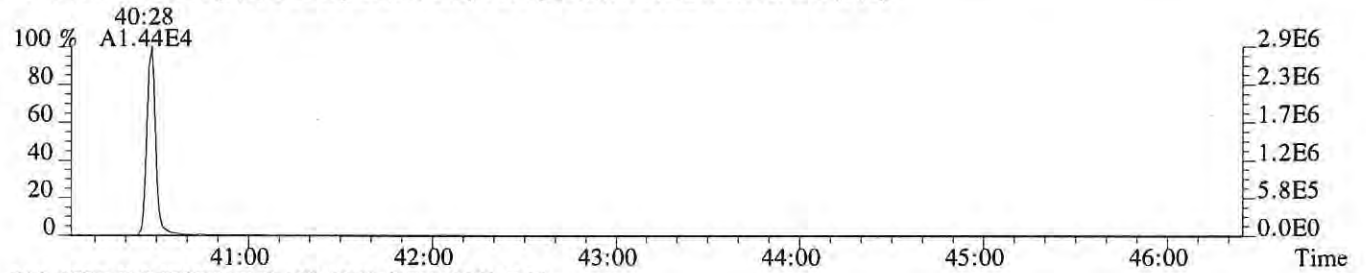
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1872.0,0.40%,F,T)



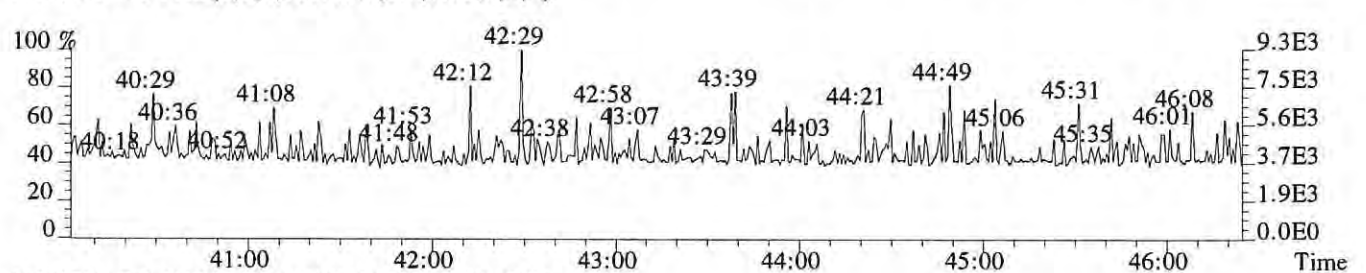
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1140.0,0.40%,F,T)



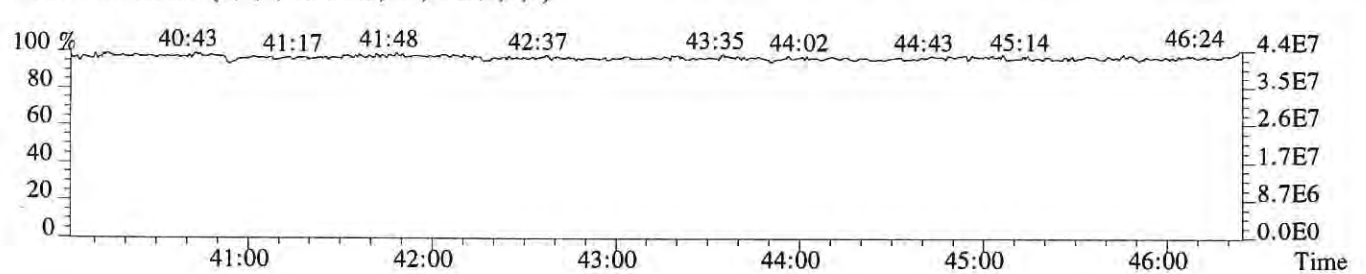
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2436.0,0.40%,F,T)



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



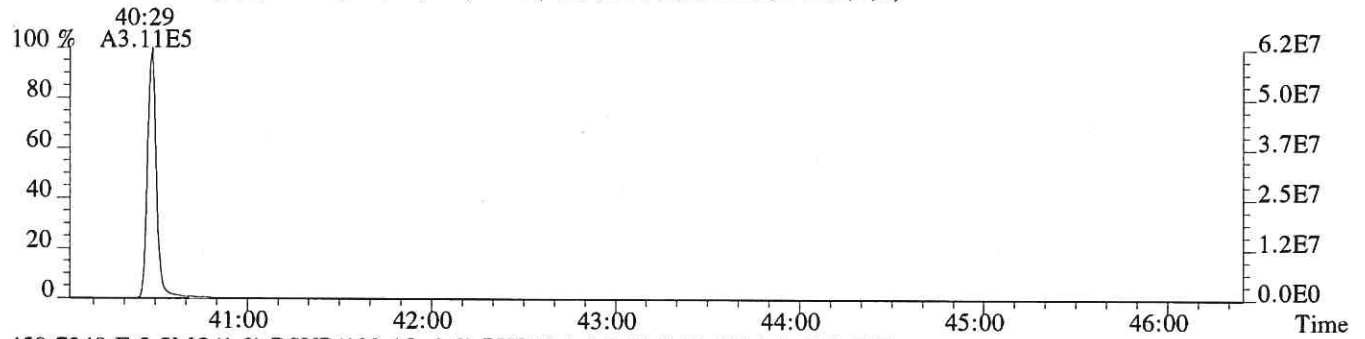
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



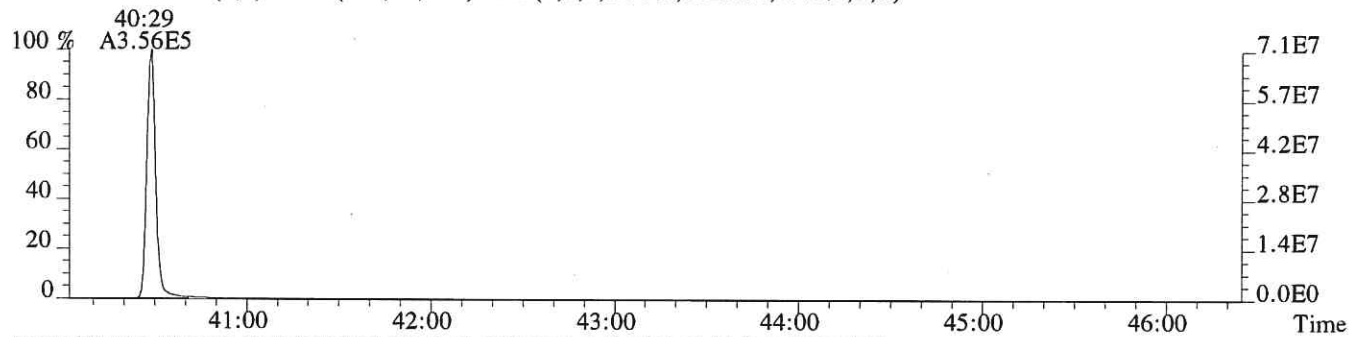
File:P618640 #1-574 Acq:20-AUG-2019 20:23:04 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:E1900593-006

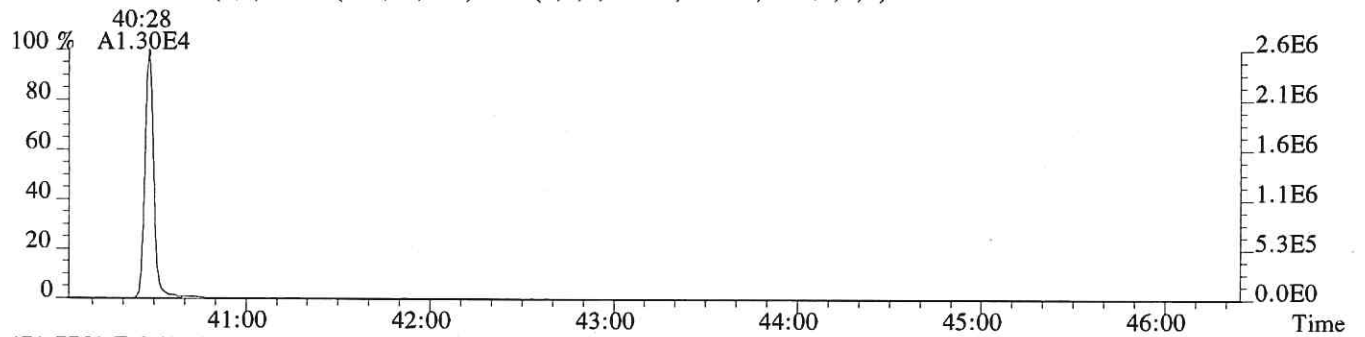
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,23276.0,0.40%,F,T)



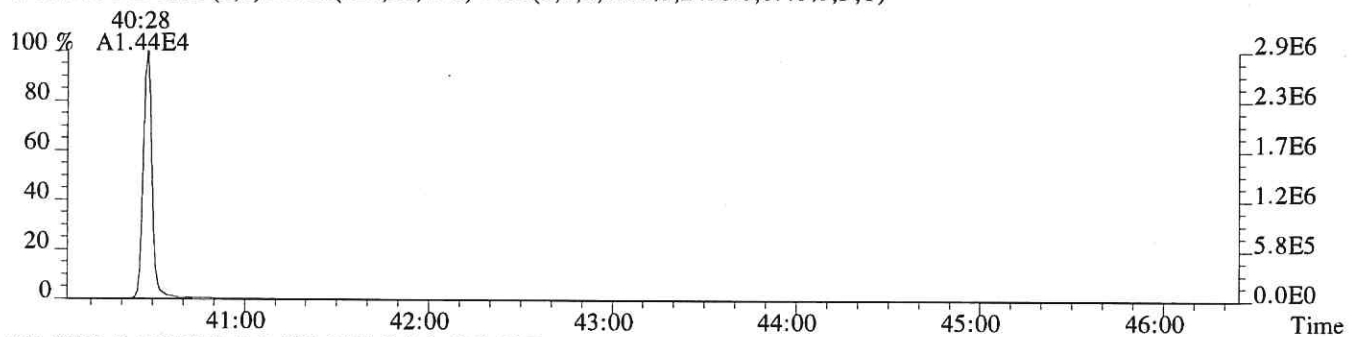
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,31232.0,0.40%,F,T)



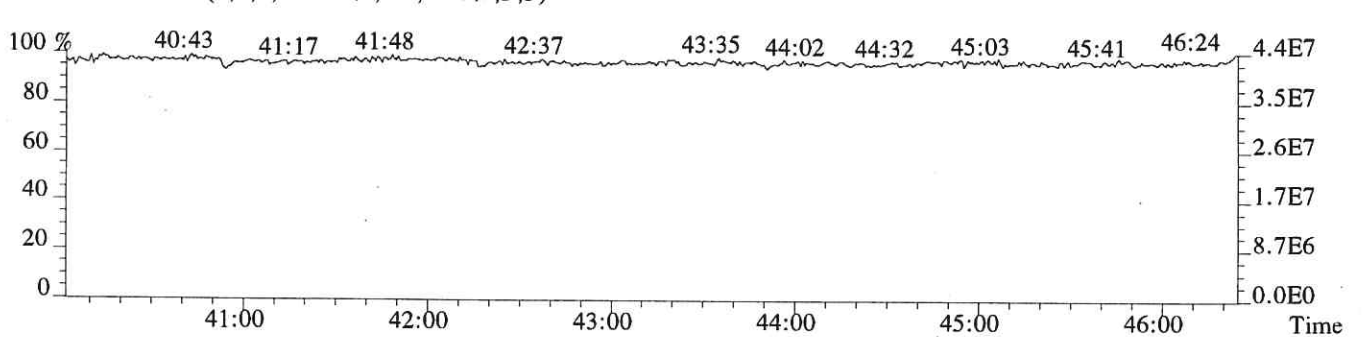
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1140.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2436.0,0.40%,F,T)



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



ALS ENVIRONMENTAL

Sample Response Summary

CLIENT ID.
BS-7-190813

Run #17 Filename P618641 Samp: 1 Inj: 1 Acquired: 20-AUG-19 21:12:13
Processed: 22-AUG-19 09:02:56 Sample ID: E1900593-007

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	NotFnd	*	*	*	no	no	0.873
2 Unk	1,2,3,7,8-PeCDF	NotFnd	*	*	*	no	no	0.864
3 Unk	2,3,4,7,8-PeCDF	NotFnd	*	*	*	no	no	0.825
4 Unk	1,2,3,4,7,8-HxCDF	NotFnd	*	*	*	no	yes	1.084
5 Unk	1,2,3,6,7,8-HxCDF	34:29	4.902e+01	5.020e+01	0.98	no	no	0.994
6 Unk	2,3,4,6,7,8-HxCDF	NotFnd	*	*	*	no	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	NotFnd	*	*	*	no	no	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	37:07	2.272e+02	2.205e+02	1.03	yes	no	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	38:26	2.717e+01	2.583e+01	1.05	yes	no	1.104
10 Unk	OCDF	40:39	8.705e+02	1.012e+03	0.86	yes	no	0.993
11 Unk	2,3,7,8-TCDD	NotFnd	*	*	*	no	no	0.989
12 Unk	1,2,3,7,8-PeCDD	NotFnd	*	*	*	no	no	0.954
13 Unk	1,2,3,4,7,8-HxCDD	NotFnd	*	*	*	no	no	1.020
14 Unk	1,2,3,6,7,8-HxCDD	NotFnd	*	*	*	no	no	1.030
15 Unk	1,2,3,7,8,9-HxCDD	NotFnd	*	*	*	no	no	1.007
16 Unk	1,2,3,4,6,7,8-HpCDD	38:01	1.750e+03	1.876e+03	0.93	yes	no	0.922
17 Unk	OCDD	40:28	1.218e+05	1.367e+05	0.89	yes	no	1.062
18 IS	13C-2,3,7,8-TCDF	25:26	1.140e+04	1.532e+04	0.74	yes	no	1.102
19 IS	13C-1,2,3,7,8-PeCDF	30:29	2.793e+04	1.784e+04	1.57	yes	no	1.074
20 IS	13C-2,3,4,7,8-PeCDF	31:31	2.898e+04	1.864e+04	1.56	yes	no	1.005
21 IS	13C-1,2,3,4,7,8-HxCDF	34:23	1.269e+04	2.493e+04	0.51	yes	no	1.059
22 IS	13C-1,2,3,6,7,8-HxCDF	34:30	1.383e+04	2.728e+04	0.51	yes	no	1.264
23 IS	13C-2,3,4,6,7,8-HxCDF	35:02	1.245e+04	2.439e+04	0.51	yes	no	1.066
24 IS	13C-1,2,3,7,8,9-HxCDF	35:48	1.098e+04	2.150e+04	0.51	yes	no	0.801
25 IS	13C-1,2,3,4,6,7,8-HpCDF	37:07	7.349e+03	1.710e+04	0.43	yes	no	0.789
26 IS	13C-1,2,3,4,7,8,9-HpCDF	38:26	6.952e+03	1.631e+04	0.43	yes	no	0.590
27 IS	13C-2,3,7,8-TCDD	26:26	1.113e+04	1.466e+04	0.76	yes	no	0.839
28 IS	13C-1,2,3,7,8-PeCDD	31:49	2.383e+04	1.528e+04	1.56	yes	no	0.744
29 IS	13C-1,2,3,4,7,8-HxCDD	35:10	1.885e+04	1.467e+04	1.29	yes	no	0.907
30 IS	13C-1,2,3,6,7,8-HxCDD	35:16	2.265e+04	1.769e+04	1.28	yes	no	0.978
31 IS	13C-1,2,3,4,6,7,8-HpCDD	38:01	1.428e+04	1.319e+04	1.08	yes	no	0.814
32 IS	13C-OCDD	40:28	1.655e+04	1.854e+04	0.89	yes	no	0.653
33 RS/RT	13C-1,2,3,4-TCDD	25:42	3.460e+04	4.463e+04	0.78	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	35:30	3.857e+04	2.961e+04	1.30	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	26:27	9.945e+03				no	0.894

$$\text{OCDD} = \frac{(1.218e+05 + 1.367e+05) \times 4000 \text{ pg} \times 1}{(1.655e+04 + 1.854e+04) \times 10.078 \times 90.5 / 100 \times 1.062} = 3042 \text{ ng/Kg}$$

LM 8/22/19

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
BS-7-190813

Run #17 Filename P618641 Samp: 1 Inj: 1 Acquired: 20-AUG-19 21:12:13
Processed: 22-AUG-19 09:02:56 LAB. ID: E1900593-007

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	*	1.06e+03	*	*	3.18e+03	*
2	1,2,3,7,8-PeCDF	*	7.84e+02	*	*	1.82e+03	*
3	2,3,4,7,8-PeCDF	*	7.84e+02	*	*	1.82e+03	*
4	1,2,3,4,7,8-HxCDF	*	1.86e+03	*	*	1.98e+03	*
5	1,2,3,6,7,8-HxCDF	7.83e+03	1.86e+03	4.2e+00	9.14e+03	1.98e+03	4.6e+00
6	2,3,4,6,7,8-HxCDF	*	1.86e+03	*	*	1.98e+03	*
7	1,2,3,7,8,9-HxCDF	*	1.86e+03	*	*	1.98e+03	*
8	1,2,3,4,6,7,8-HpCDF	4.92e+04	1.49e+03	3.3e+01	5.26e+04	9.04e+02	5.8e+01
9	1,2,3,4,7,8,9-HpCDF	7.33e+03	1.49e+03	4.9e+00	4.43e+03	9.04e+02	4.9e+00
10	OCDF	1.72e+05	1.17e+03	1.5e+02	1.99e+05	3.38e+03	5.9e+01
11	2,3,7,8-TCDD	*	3.87e+03	*	*	2.40e+03	*
12	1,2,3,7,8-PeCDD	*	6.21e+03	*	*	3.66e+03	*
13	1,2,3,4,7,8-HxCDD	*	7.61e+03	*	*	7.03e+03	*
14	1,2,3,6,7,8-HxCDD	*	7.61e+03	*	*	7.03e+03	*
15	1,2,3,7,8,9-HxCDD	*	7.61e+03	*	*	7.03e+03	*
16	1,2,3,4,6,7,8-HpCDD	3.99e+05	1.24e+04	3.2e+01	4.10e+05	8.32e+03	4.9e+01
17	OCDD	2.36e+07	1.61e+04	1.5e+03	2.69e+07	1.60e+04	1.7e+03
18	13C-2,3,7,8-TCDF	1.69e+06	1.79e+04	9.4e+01	2.23e+06	6.10e+03	3.6e+02
19	13C-1,2,3,7,8-PeCDF	4.62e+06	9.36e+02	4.9e+03	2.99e+06	1.40e+03	2.1e+03
20	13C-2,3,4,7,8-PeCDF	5.01e+06	9.36e+02	5.4e+03	3.20e+06	1.40e+03	2.3e+03
21	13C-1,2,3,4,7,8-HxCDF	2.69e+06	1.73e+03	1.6e+03	5.22e+06	9.24e+02	5.7e+03
22	13C-1,2,3,6,7,8-HxCDF	2.73e+06	1.73e+03	1.6e+03	5.26e+06	9.24e+02	5.7e+03
23	13C-2,3,4,6,7,8-HxCDF	2.61e+06	1.73e+03	1.5e+03	5.00e+06	9.24e+02	5.4e+03
24	13C-1,2,3,7,8,9-HxCDF	2.25e+06	1.73e+03	1.3e+03	4.45e+06	9.24e+02	4.8e+03
25	13C-1,2,3,4,6,7,8-HpCDF	1.60e+06	2.69e+03	5.9e+02	3.67e+06	2.74e+03	1.3e+03
26	13C-1,2,3,4,7,8,9-HpCDF	1.53e+06	2.69e+03	5.7e+02	3.47e+06	2.74e+03	1.3e+03
27	13C-2,3,7,8-TCDD	1.69e+06	8.93e+03	1.9e+02	2.19e+06	4.23e+03	5.2e+02
28	13C-1,2,3,7,8-PeCDD	4.23e+06	1.40e+03	3.0e+03	2.72e+06	2.07e+03	1.3e+03
29	13C-1,2,3,4,7,8-HxCDD	4.14e+06	2.09e+03	2.0e+03	3.25e+06	1.44e+03	2.3e+03
30	13C-1,2,3,6,7,8-HxCDD	4.38e+06	2.09e+03	2.1e+03	3.43e+06	1.44e+03	2.4e+03
31	13C-1,2,3,4,6,7,8-HpCDD	3.02e+06	1.08e+03	2.8e+03	2.81e+06	9.88e+02	2.8e+03
32	13C-OCDD	3.26e+06	2.45e+03	1.3e+03	3.59e+06	6.66e+03	5.4e+02
33	13C-1,2,3,4-TCDD	4.96e+06	8.93e+03	5.6e+02	6.40e+06	4.23e+03	1.5e+03
34	13C-1,2,3,7,8,9-HxCDD	7.73e+06	2.09e+03	3.7e+03	6.11e+06	1.44e+03	4.2e+03
35	37Cl-2,3,7,8-TCDD	1.50e+06	2.60e+03	5.8e+02			

---Sample Calculation---

$$2.5 \times (3.872e+03 + 2.404e+03) \times 2000$$

$$D/L \text{ TCDD} = \frac{\text{---}}{(1.686e+06 + 2.195e+06) \times (\quad) \times 0.989} = \text{---}$$

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ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

BS-7-190813

Entry: 41 Totals Name: Total Hexa-Furans

Run: 17 File: P618641 Sample:1 Injection:1 Function:3

Acquired: 20-AUG-19 21:12:13 Processed: 22-AUG-19 09:02:56

Mass:	373.8210	375.8180	Tot Response: 3.74e+02		RRF: 1.022				
#	RT	Resp	Resp Ratio	Meet	Tot Resp	Name	Mod1?	Mod2	
1	33:23	5.72e+01	4.05e+01	1.41	yes	9.77e+01	n	n	
2	33:56	1.51e+02	1.25e+02	1.21	yes	2.76e+02	n	n	

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ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

BS-7-190813

Entry: 42 Totals Name: Total Hexa-Dioxins

Run: 17 File: P618641 Sample:1 Injection:1 Function:3

Acquired: 20-AUG-19 21:12:13 Processed: 22-AUG-19 09:02:56

Mass: 389.8160 391.8130 Tot Response: 2.99e+02 RRF: 1.019

#	RT	Resp	Resp Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	33:46	1.59e+02	1.40e+02	1.13	yes	2.99e+02	Y	Y

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ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

BS-7-190813

Entry: 43 Totals Name: Total Hepta-Furans

Run: 17 File: P618641 Sample:1 Injection:1 Function:4

Acquired: 20-AUG-19 21:12:13 Processed: 22-AUG-19 09:02:56

Mass: 407.7820 409.7790 Tot Response: 1.90e+03 RRF: 1.104

#	RT	Resp	Resp Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	37:07	2.27e+02	2.21e+02	1.03	yes 4.48e+02	1,2,3,4,6,7,8-HpCDF	n	n
2	37:31	7.08e+02	6.88e+02	1.03	yes 1.40e+03		n	n
3	38:26	2.72e+01	2.58e+01	1.05	yes 5.30e+01	1,2,3,4,7,8,9-HpCDF	n	n

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ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

BS-7-190813

Entry: 44 Totals Name: Total Hepta-Dioxins

Run: 17 File: P618641 Sample:1 Injection:1 Function:4

Acquired: 20-AUG-19 21:12:13 Processed: 22-AUG-19 09:02:56

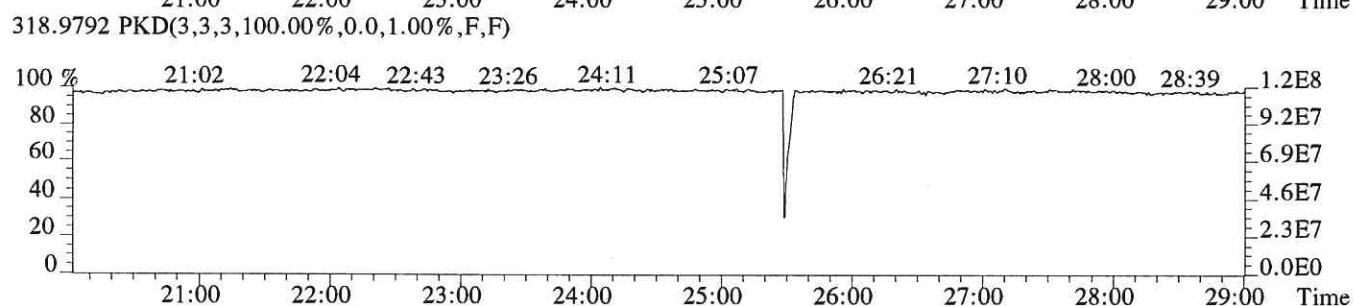
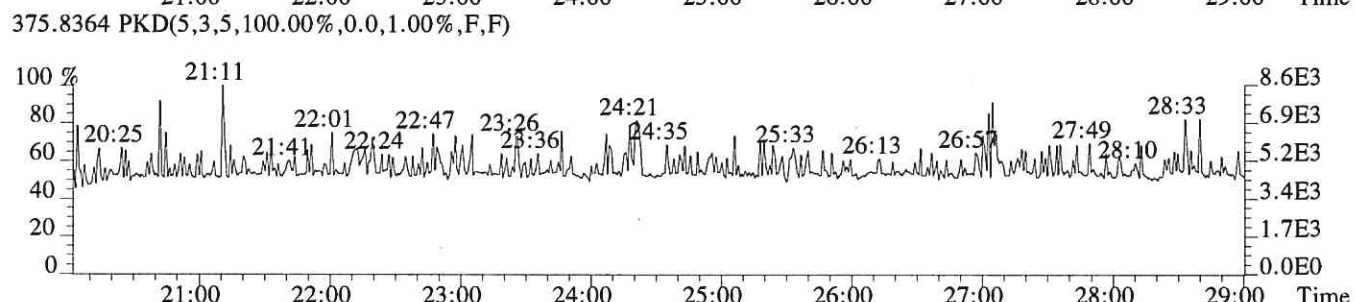
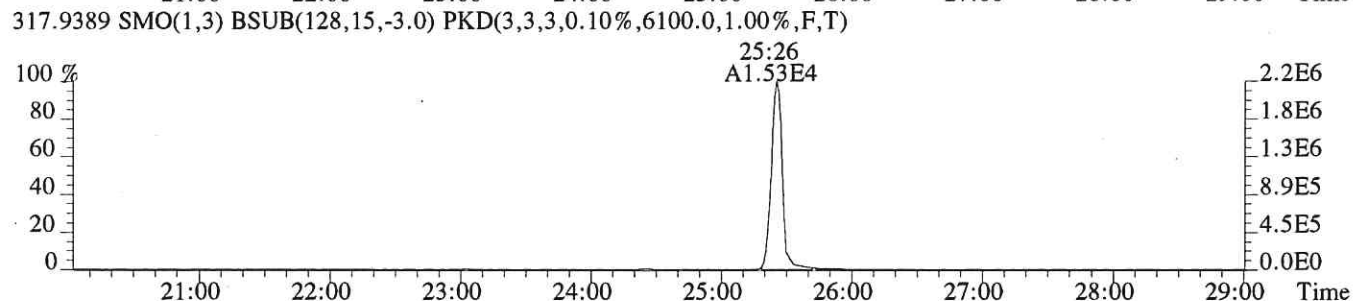
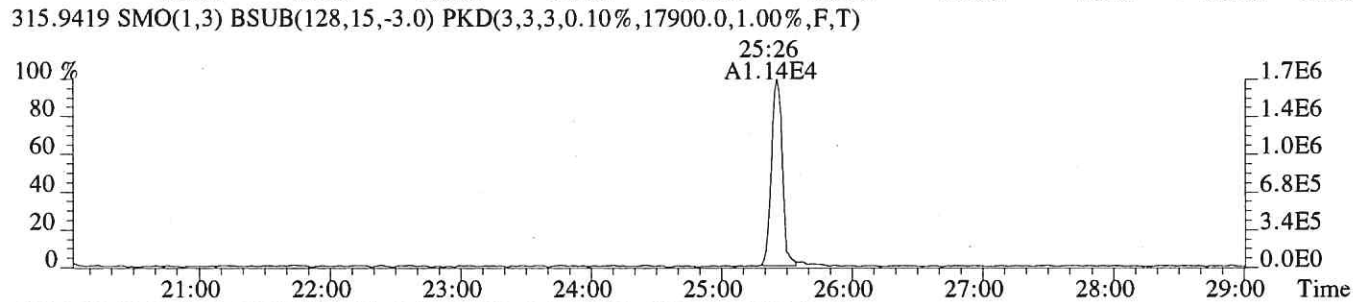
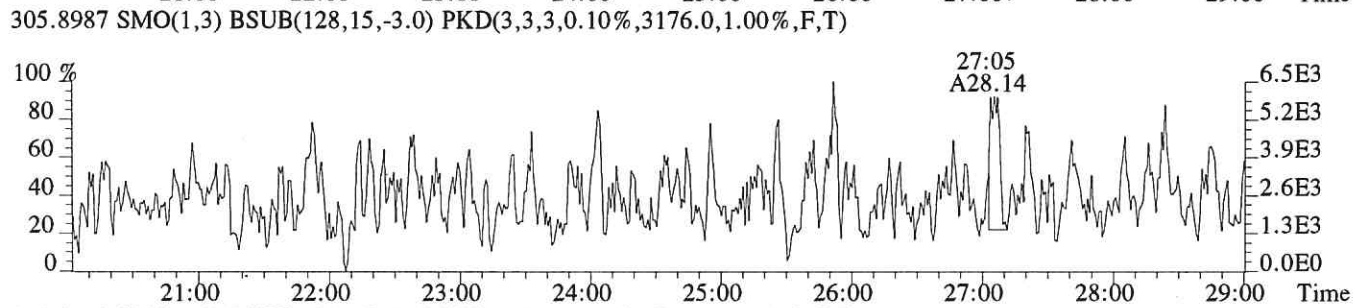
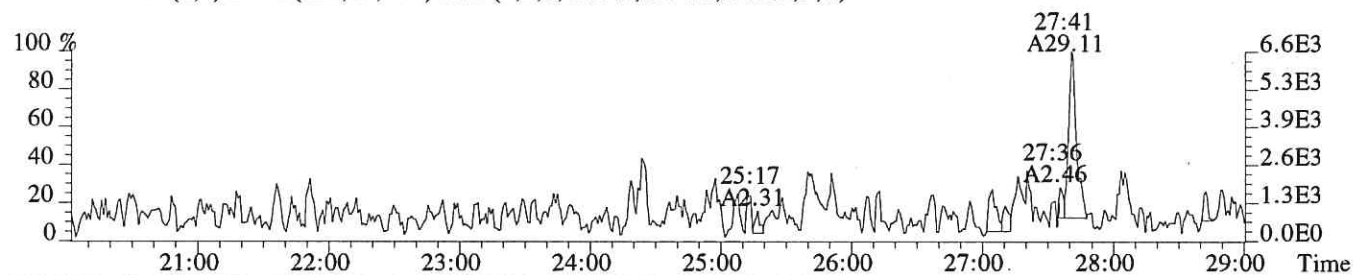
Mass:	423.7770	425.7740	Tot Response: 7.03e+03		RRF: 0.9218				
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	37:22	1.72e+03	1.68e+03	1.02	yes	3.40e+03		n	n
2	38:01	1.75e+03	1.88e+03	0.93	yes	3.63e+03	1,2,3,4,6,7,8-HpCDD	n	n

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File:P618641 #1-637 Acq:20-AUG-2019 21:12:13 Probe EI+ Magnet SIR VG BioTech Mass spectf

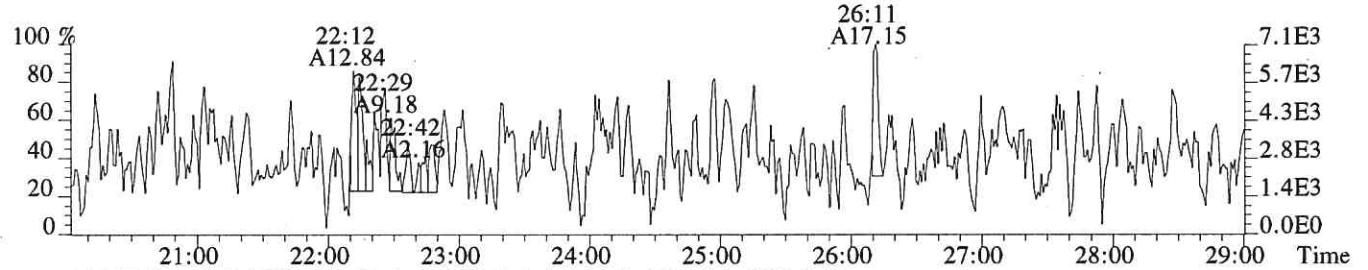
Sample#1 Exp:E1900593-007

303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1064.0,1.00%,F,T)

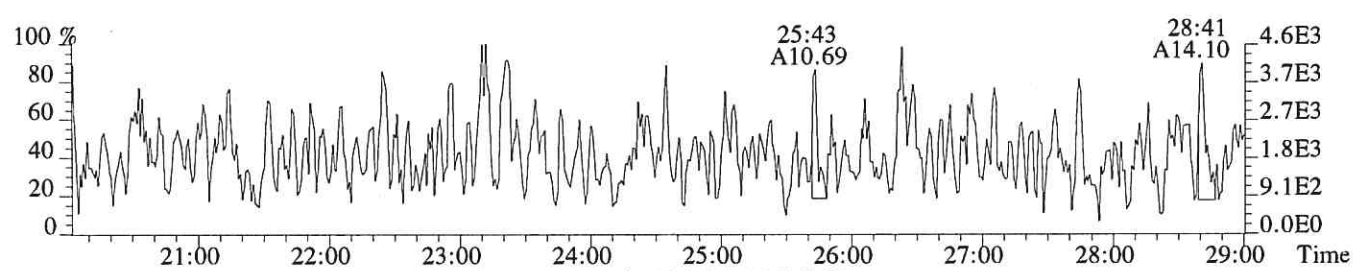


Sample#1 Exp:E1900593-007

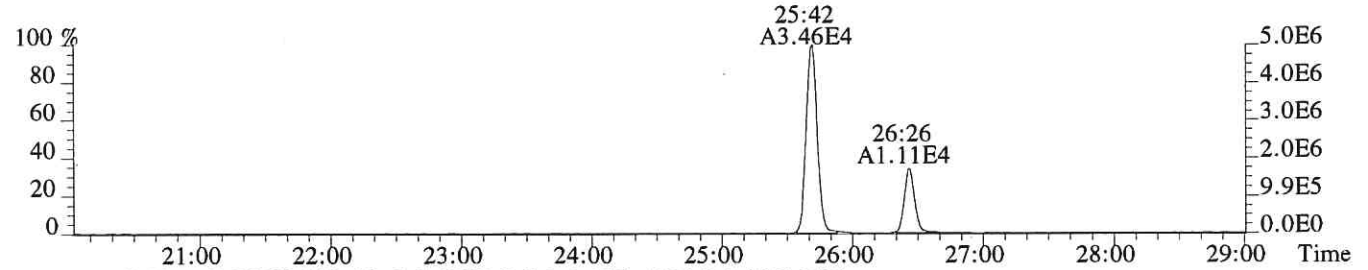
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3872.0,1.00%,F,T)



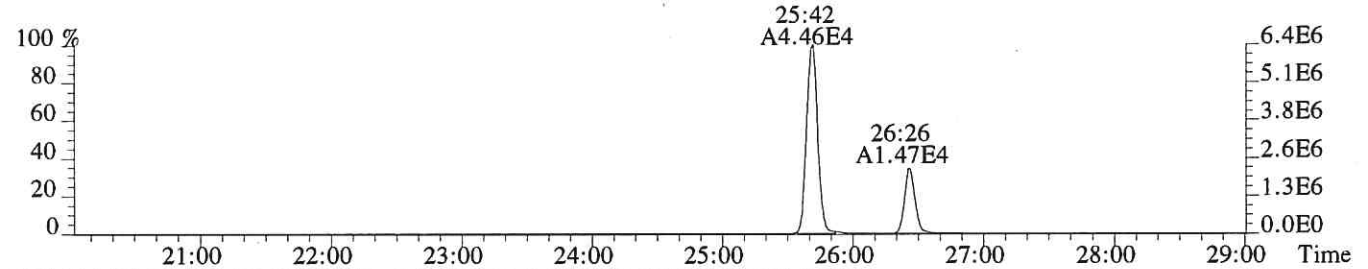
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2404.0,1.00%,F,T)



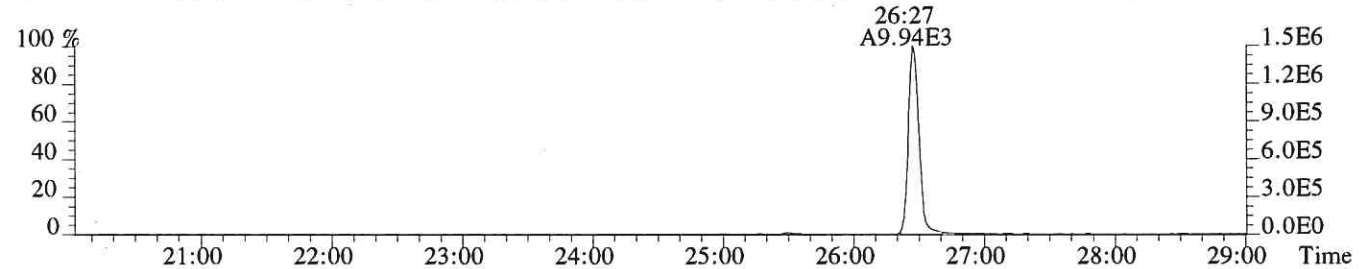
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,8932.0,1.00%,F,T)



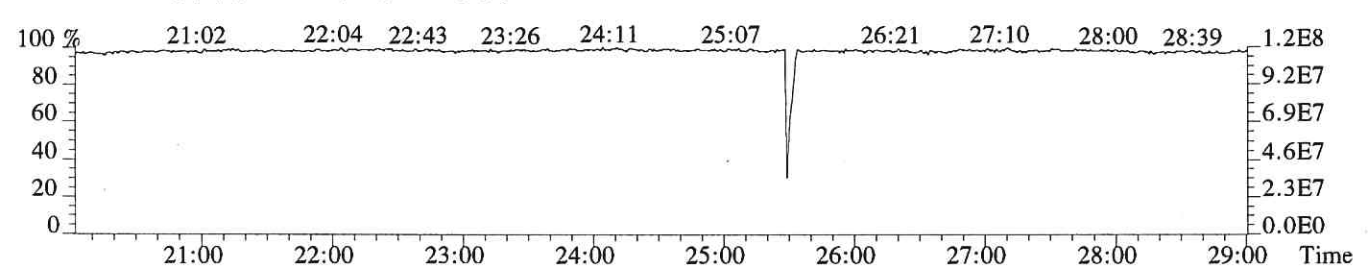
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4228.0,1.00%,F,T)

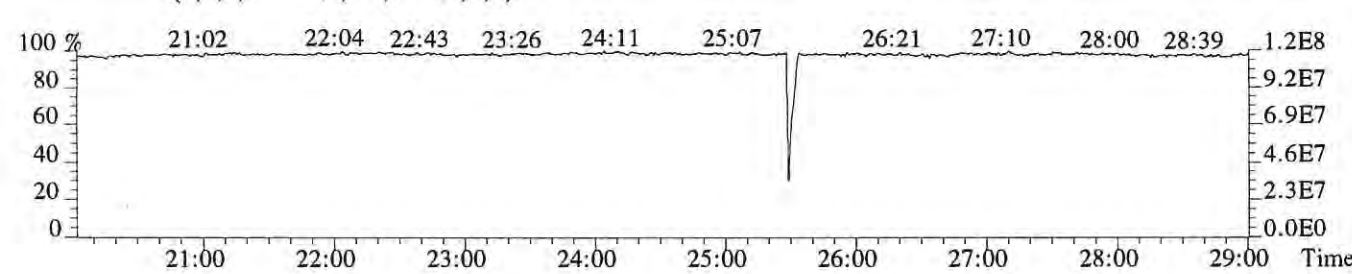
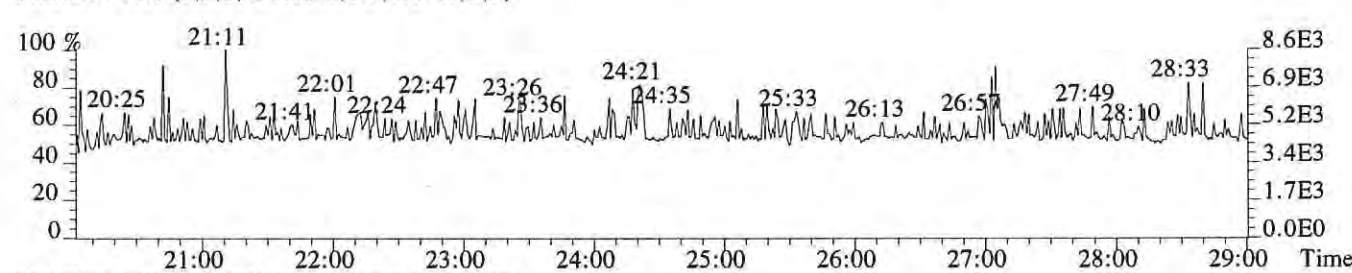
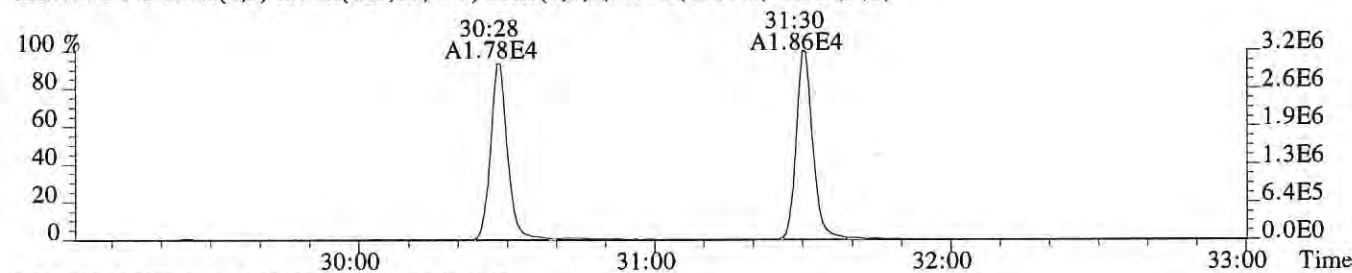
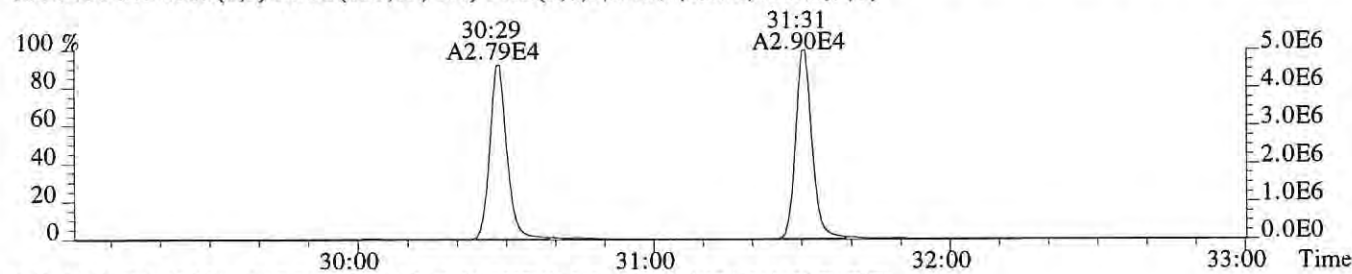
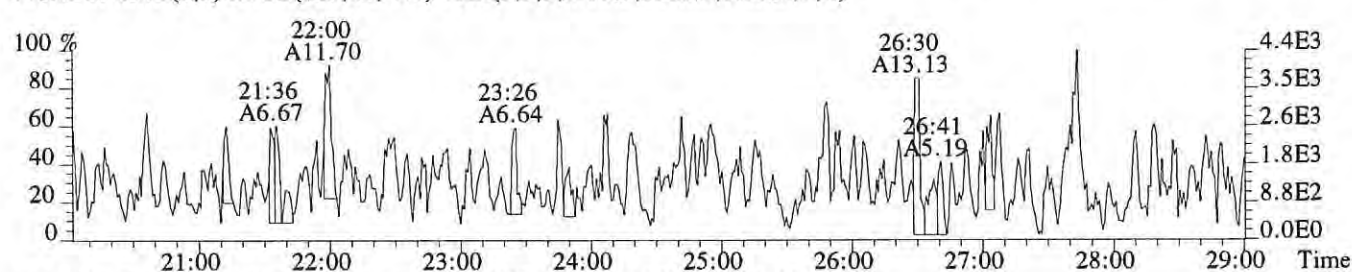
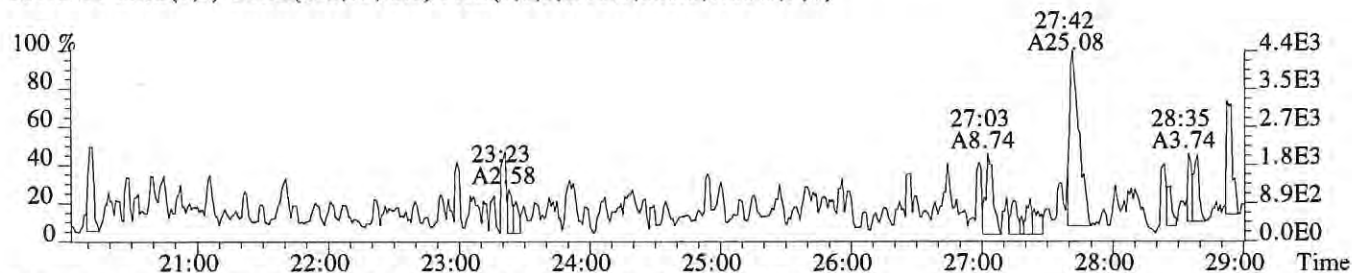


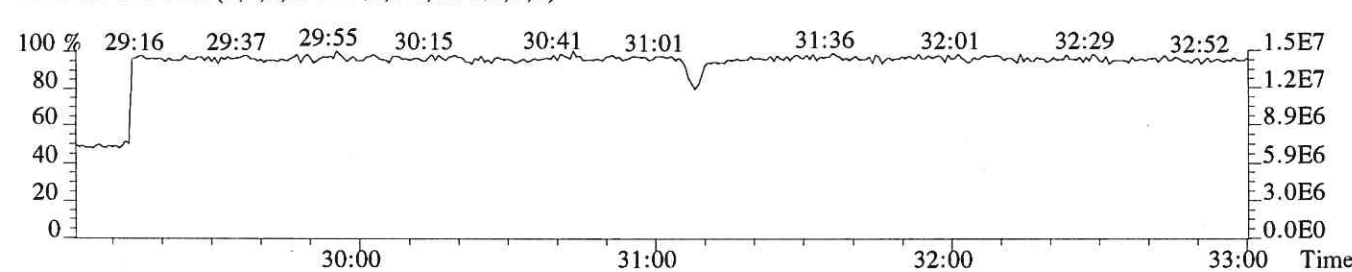
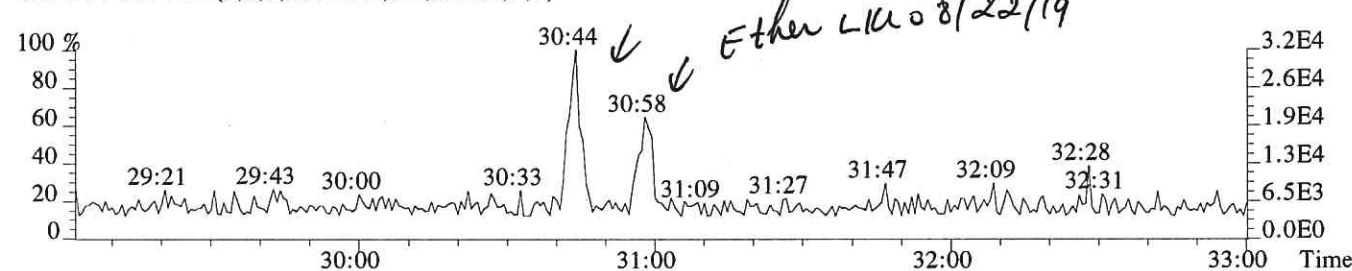
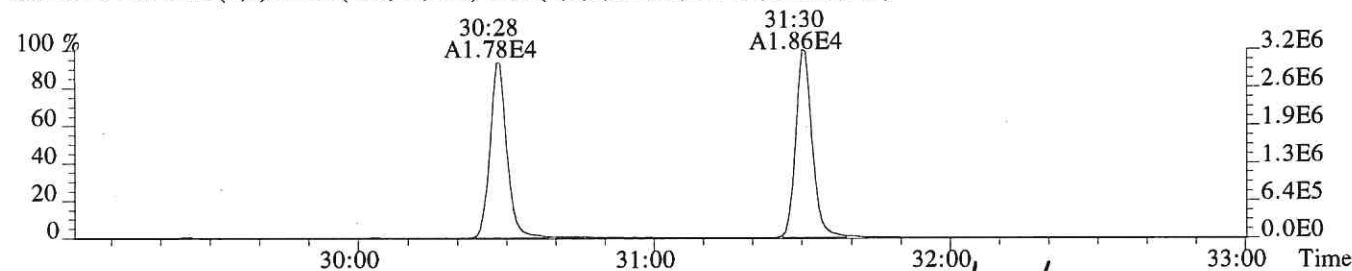
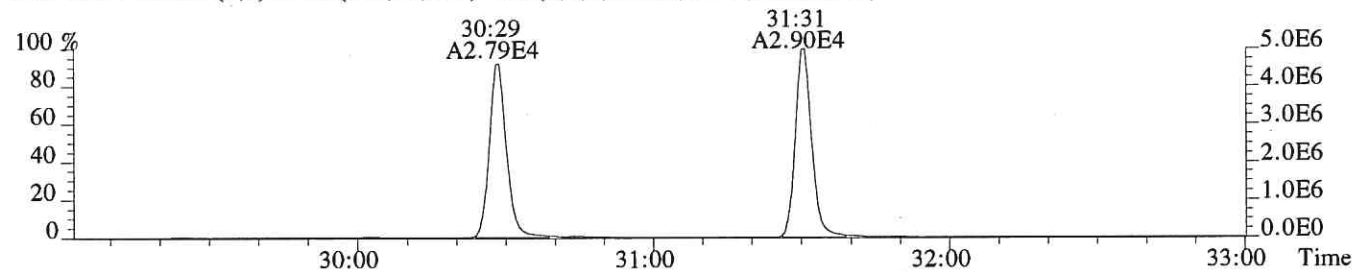
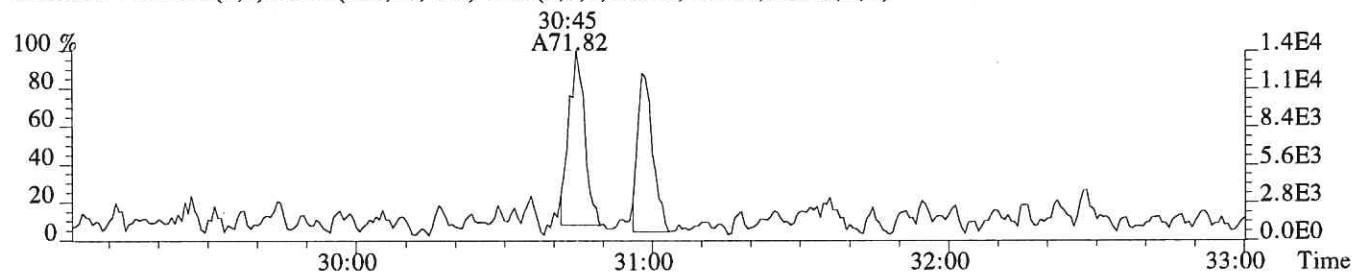
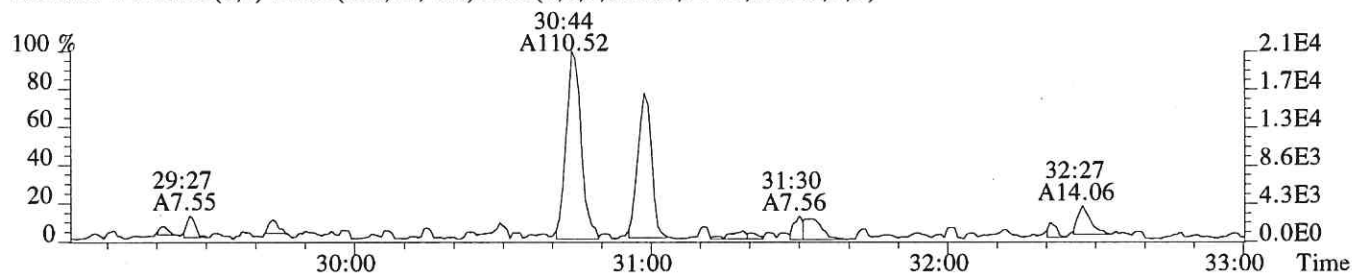
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2604.0,1.00%,F,T)



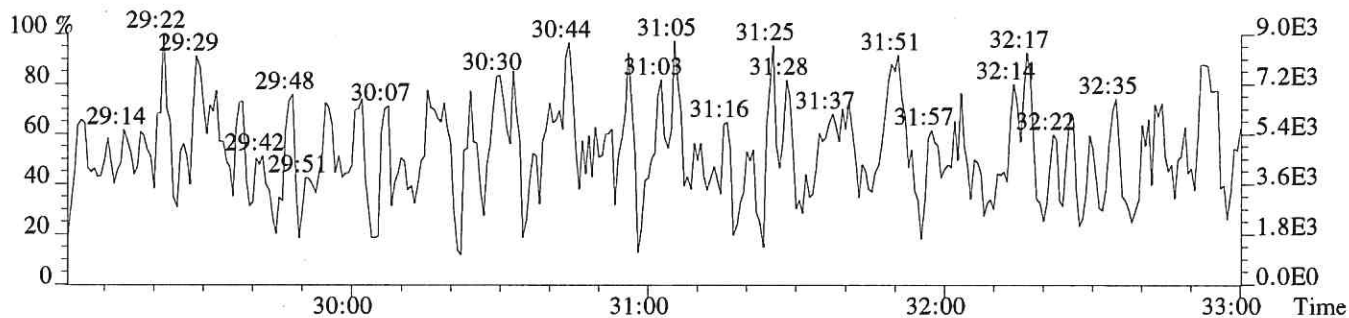
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



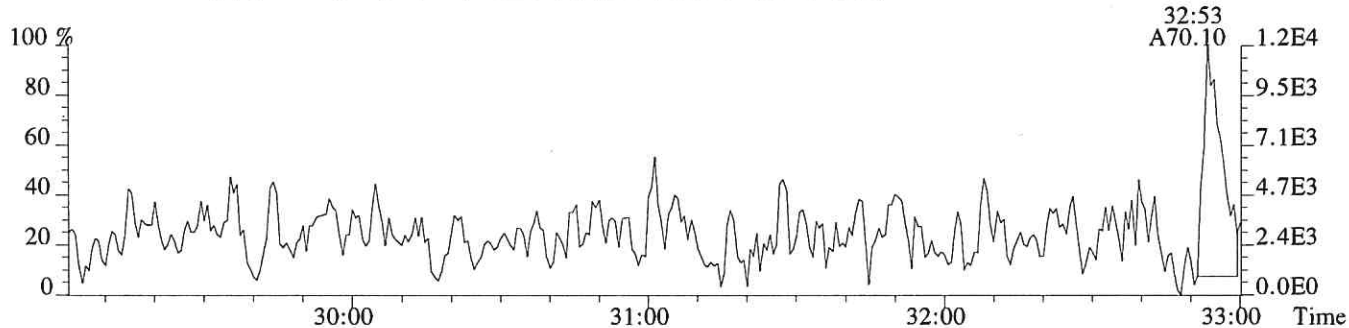




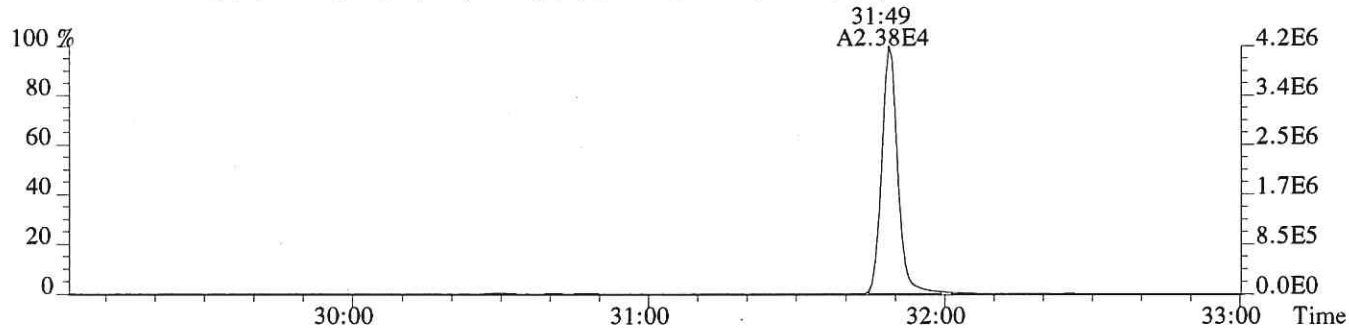
File:P618641 #1-357 Acq:20-AUG-2019 21:12:13 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-007
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6208.0,1.00%,F,T)



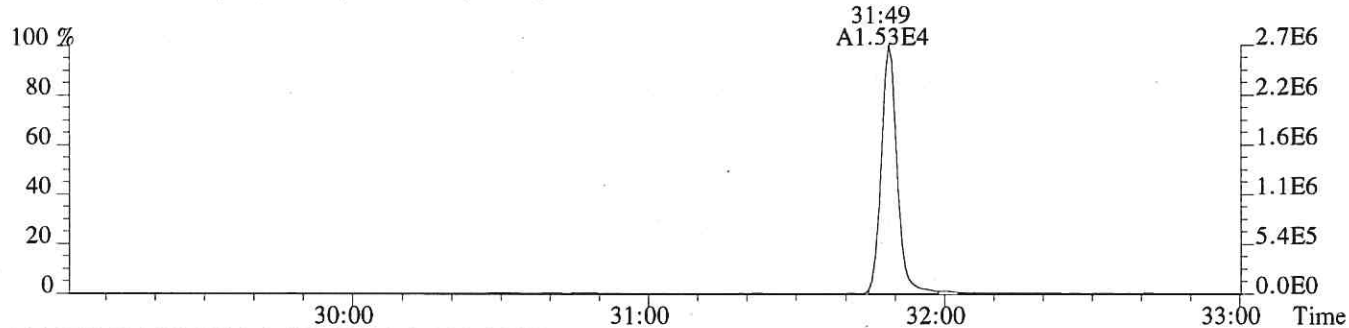
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3664.0,1.00%,F,T)



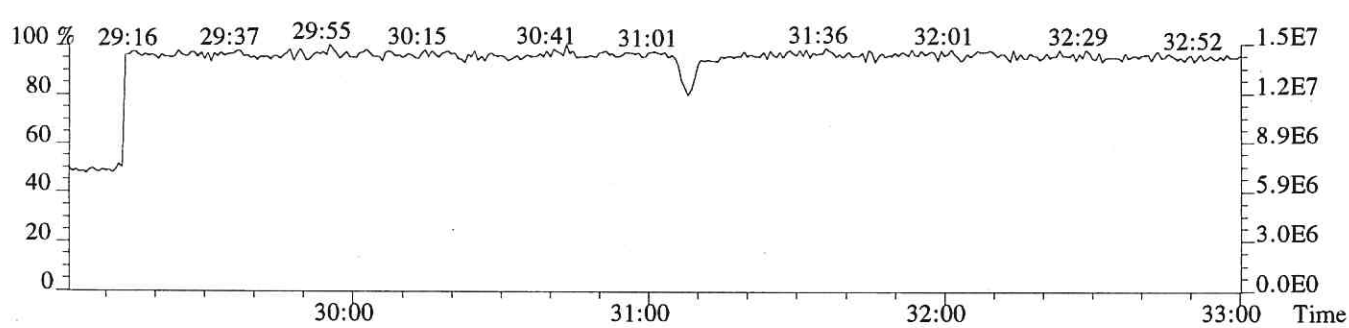
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1404.0,1.00%,F,T)



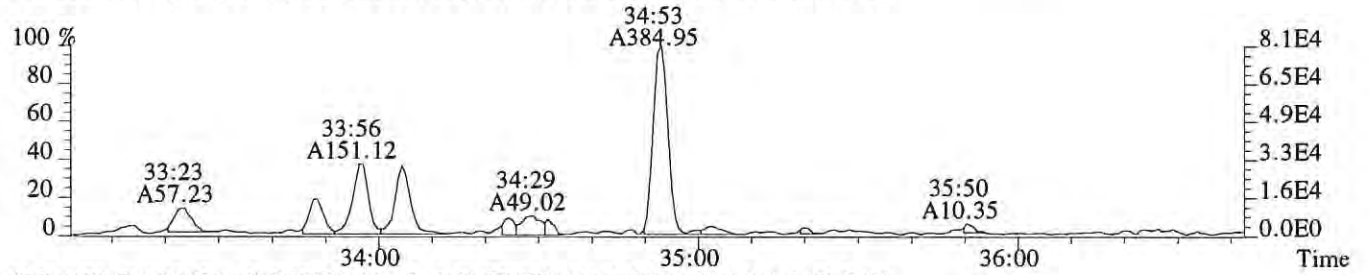
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2068.0,1.00%,F,T)



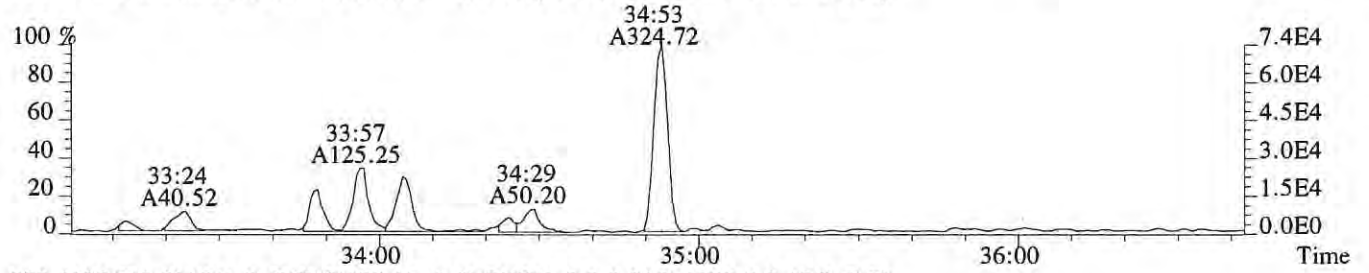
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



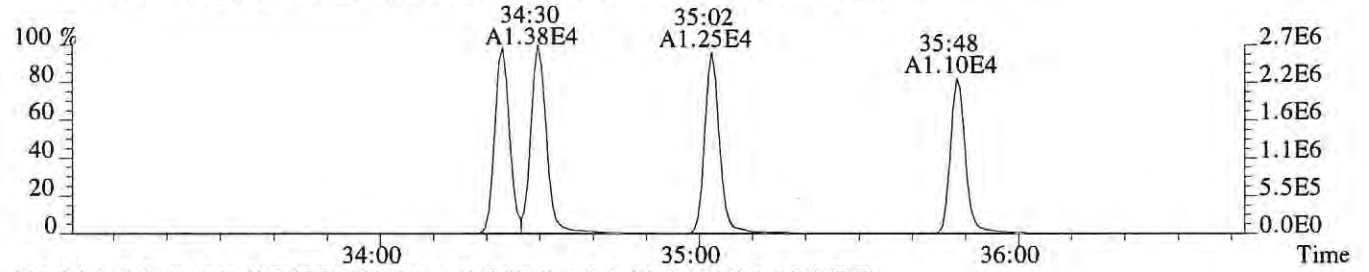
File:P618641 #1-331 Acq:20-AUG-2019 21:12:13 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:E1900593-007
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1864.0,0.40%,F,T)



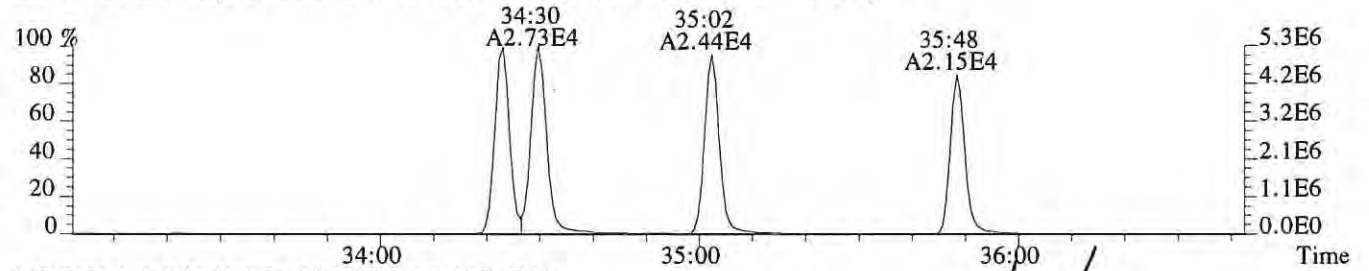
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1984.0,0.40%,F,T)



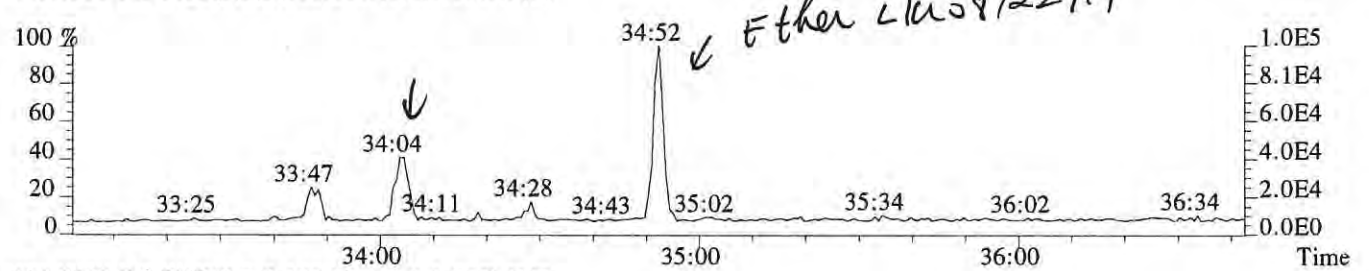
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1732.0,0.40%,F,T)



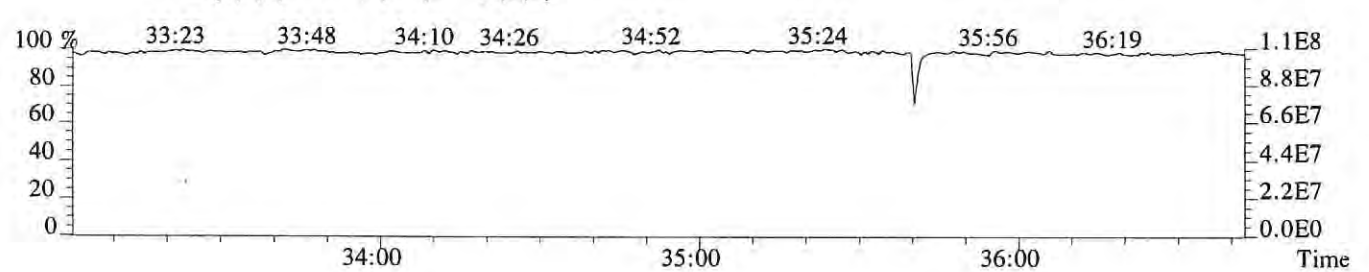
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,924.0,0.40%,F,T)



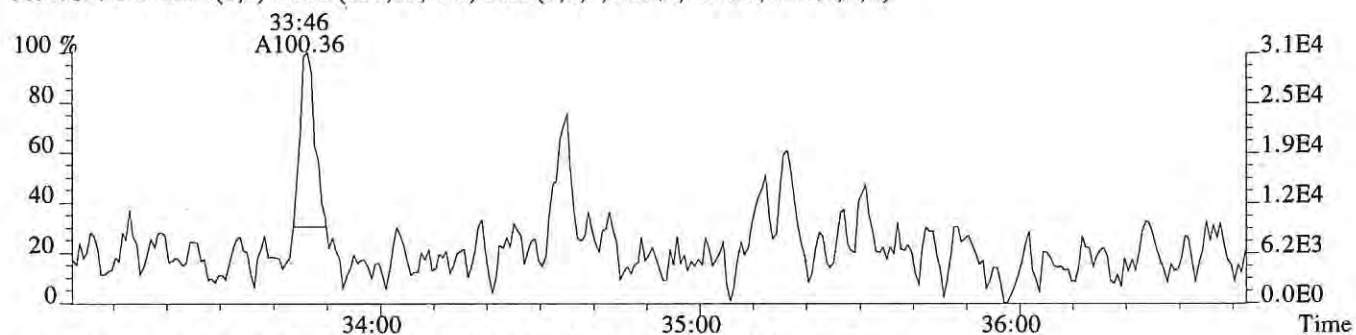
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



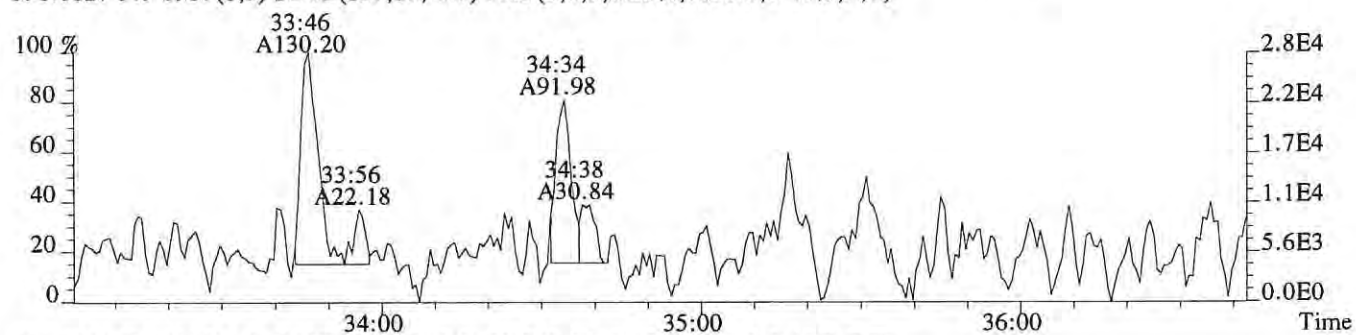
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



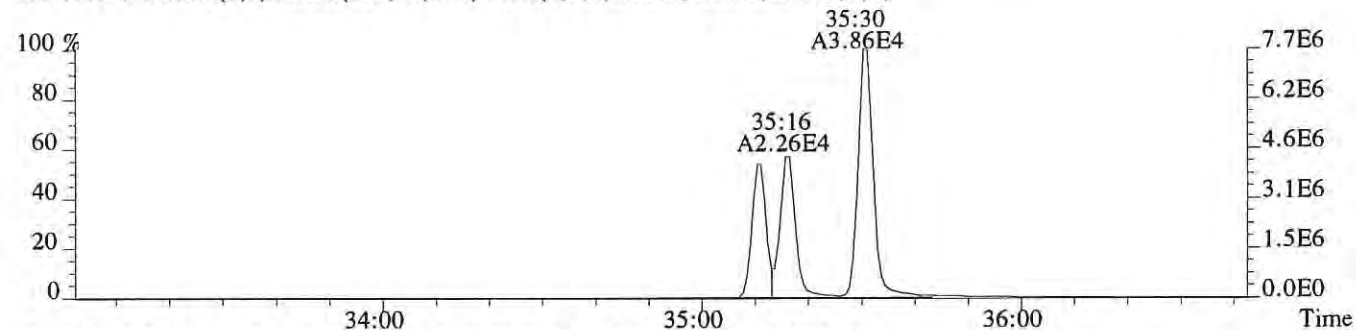
File:P618641 #1-331 Acq:20-AUG-2019 21:12:13 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:E1900593-007
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,7608.0,0.40%,F,T)



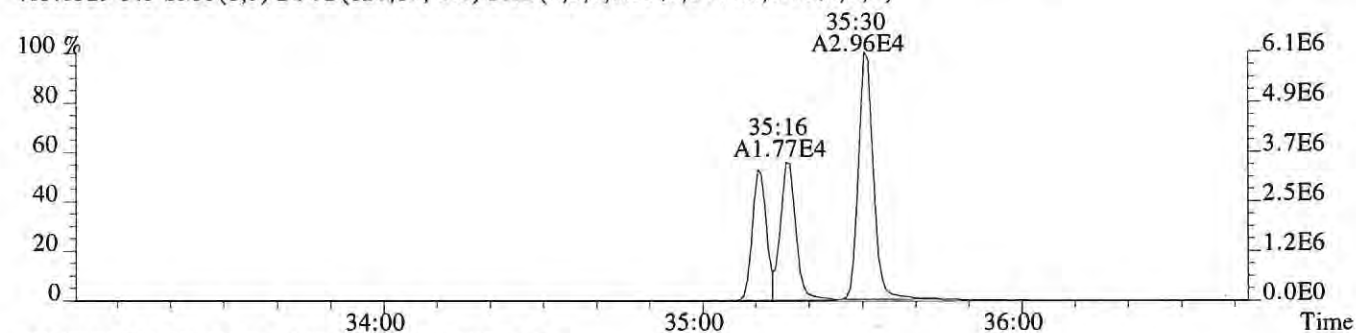
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,7028.0,0.40%,F,T)



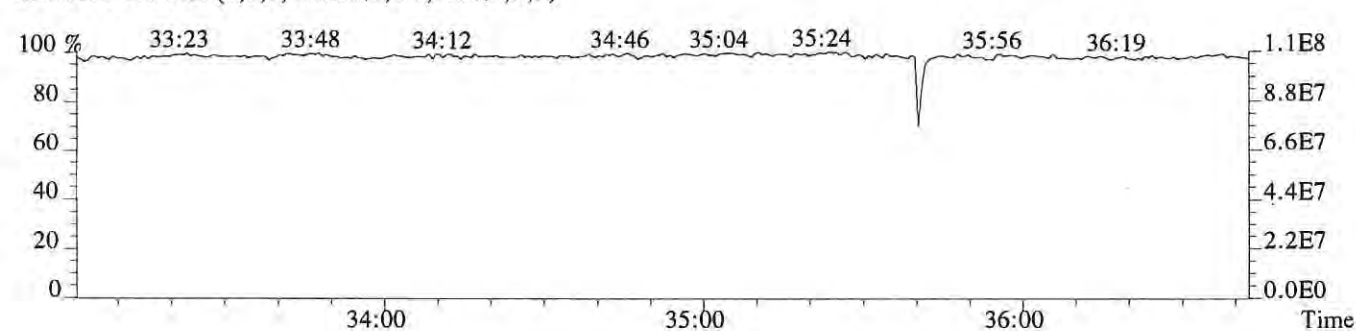
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2088.0,0.40%,F,T)



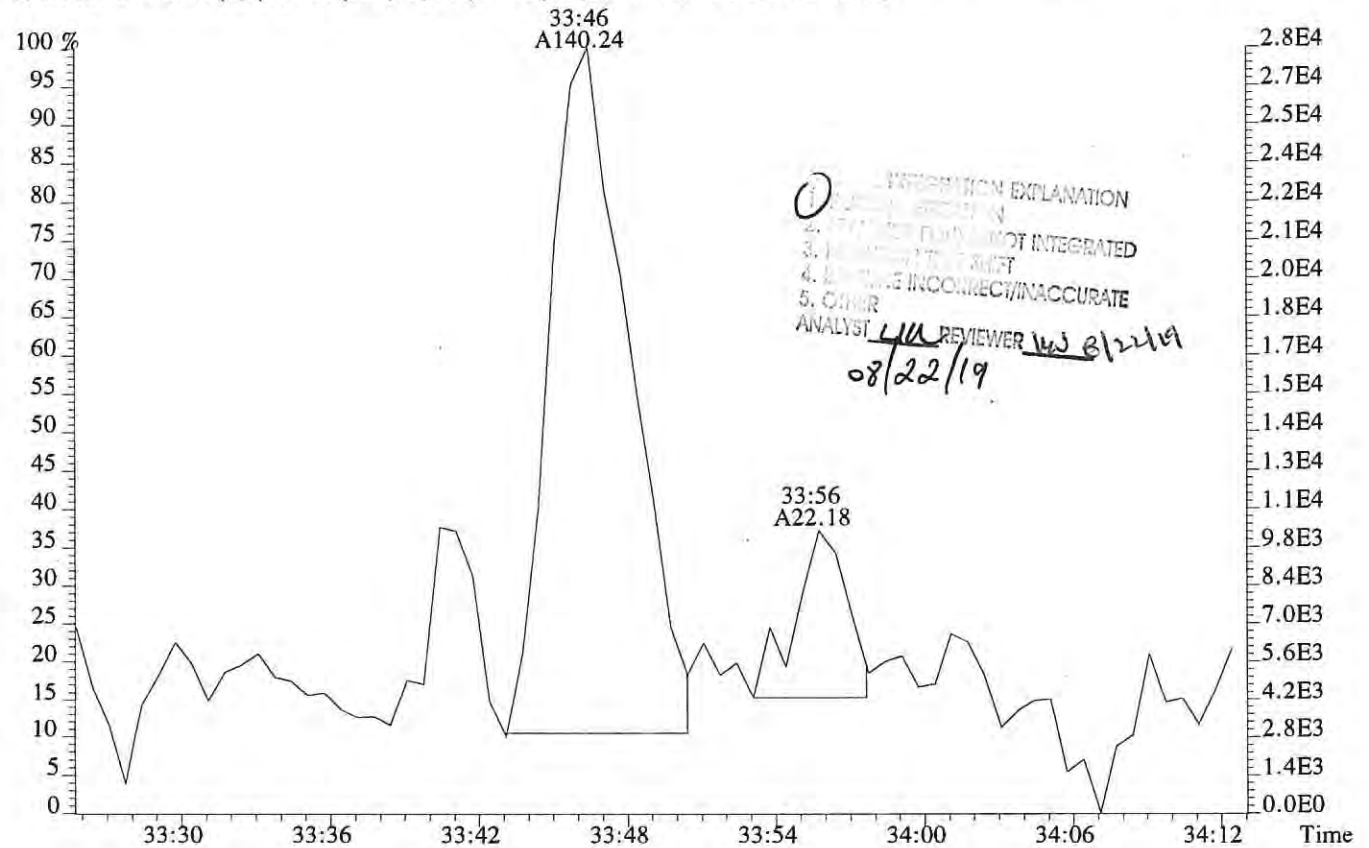
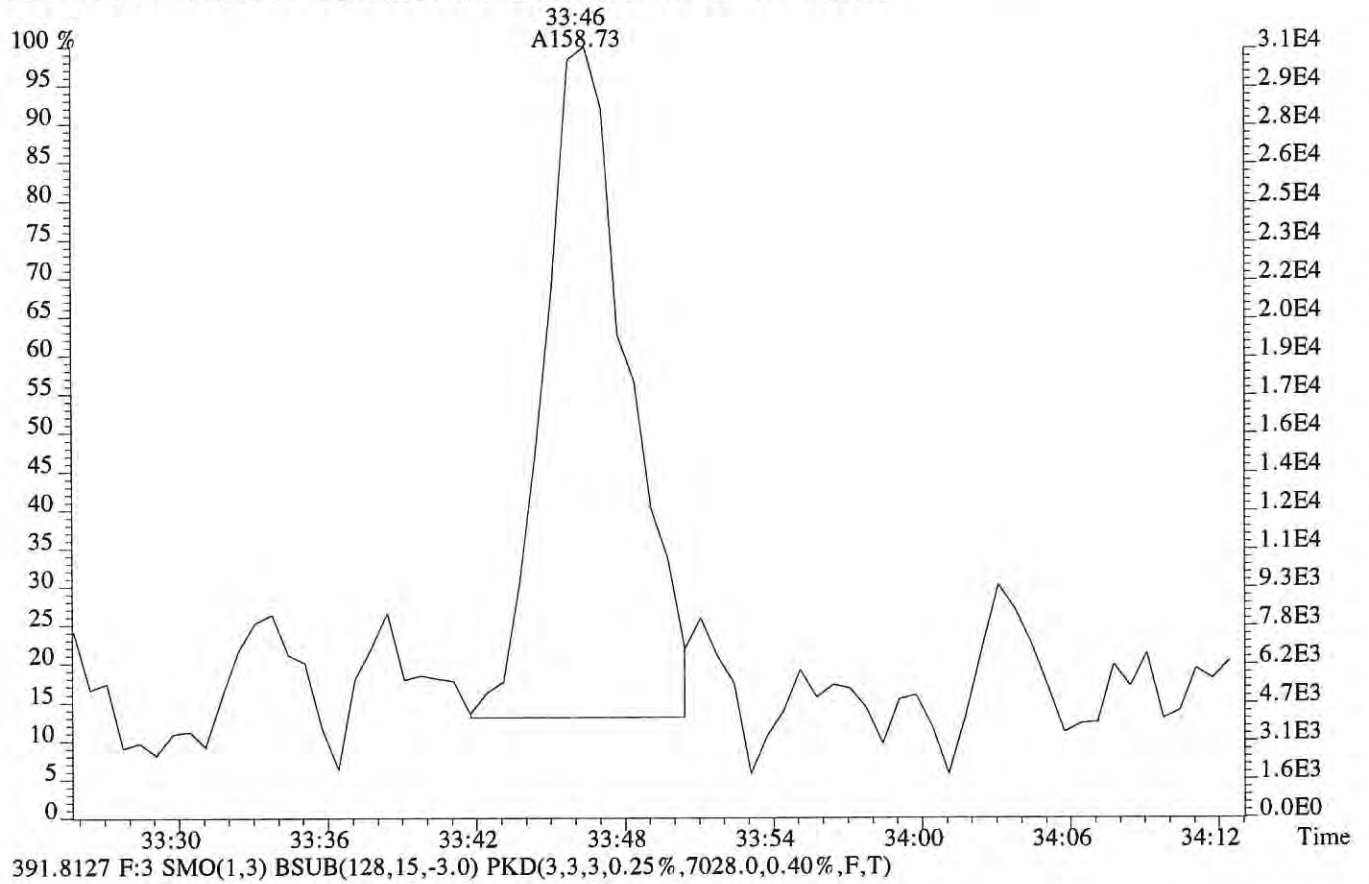
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1444.0,0.40%,F,T)



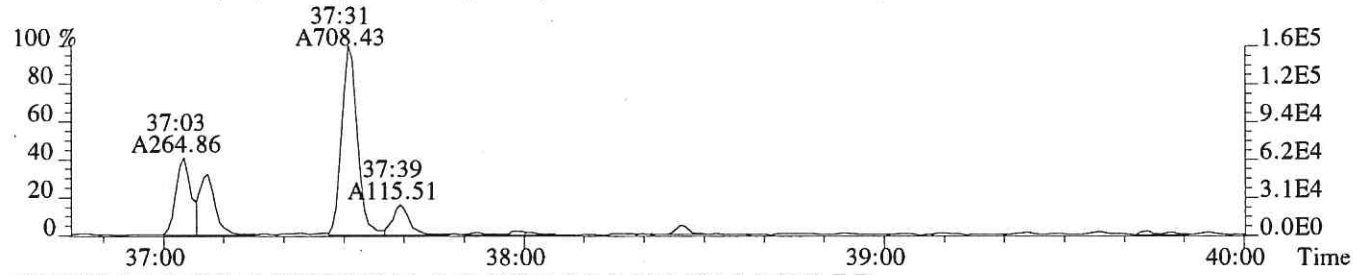
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



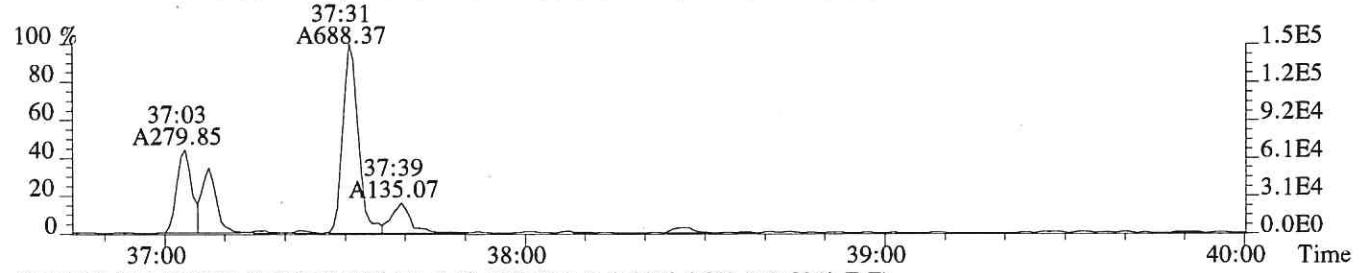
File:P618641 #1-331 Acq:20-AUG-2019 21:12:13 Probe EI+ Magnet SIR VG BioTech Mass spectr
 Sample#1 Exp:E1900593-007
 389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,7608.0,0.40%,F,T)



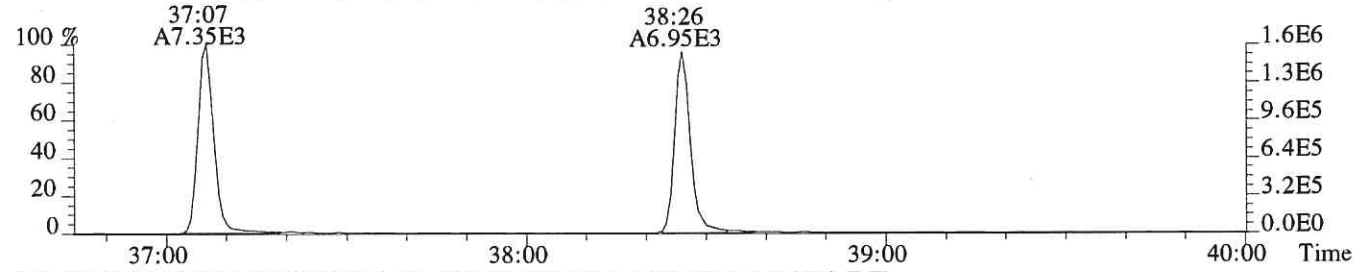
File:P618641 #1-294 Acq:20-AUG-2019 21:12:13 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-007
407.7818 F:4 SMO(1,3) BSMO(128,15,-3.0) PKD(3,3,3,0.25%,1492.0,0.50%,F,T)



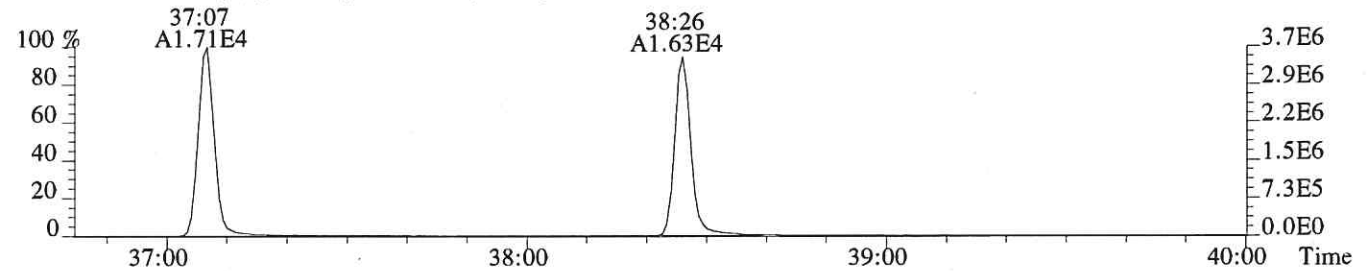
409.7789 F:4 SMO(1,3) BSMO(128,15,-3.0) PKD(3,3,3,0.25%,904.0,0.50%,F,T)



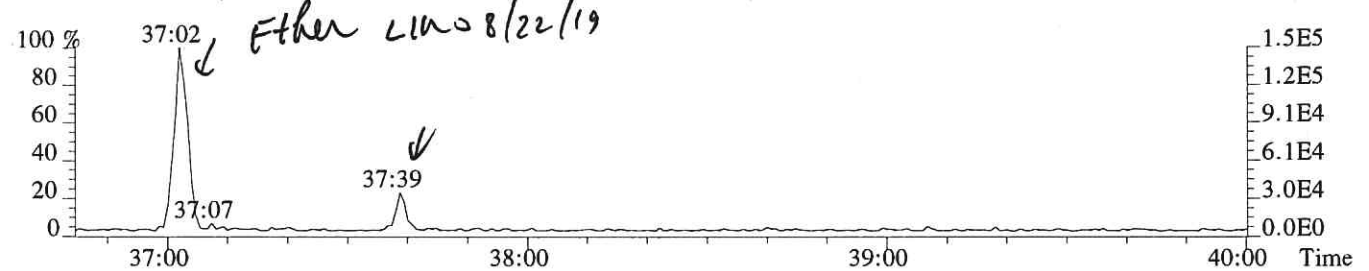
417.8253 F:4 SMO(1,3) BSMO(128,15,-3.0) PKD(3,3,3,0.25%,2692.0,0.50%,F,T)



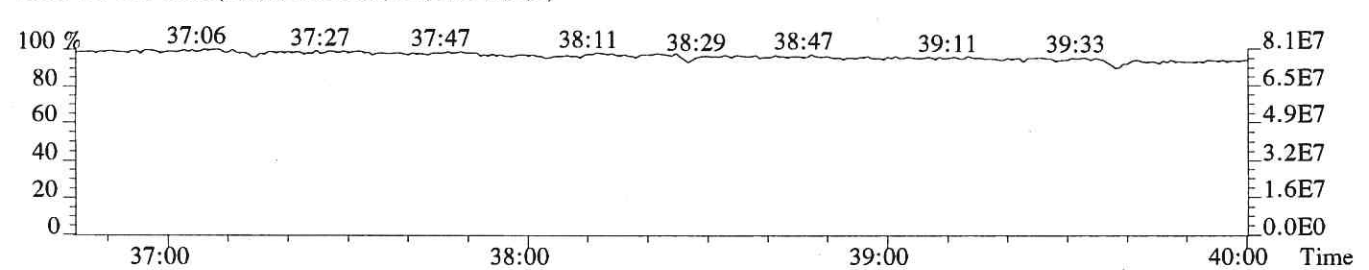
419.8220 F:4 SMO(1,3) BSMO(128,15,-3.0) PKD(3,3,3,0.25%,2740.0,0.50%,F,T)



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



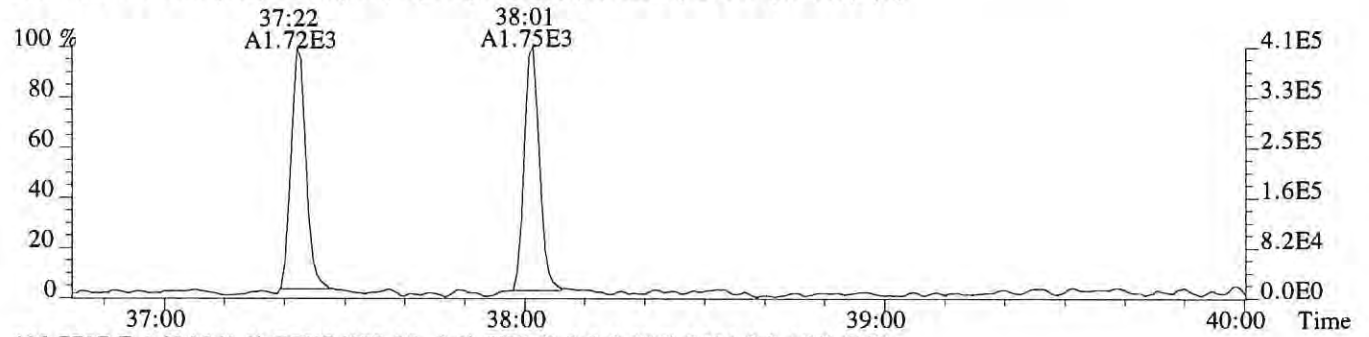
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



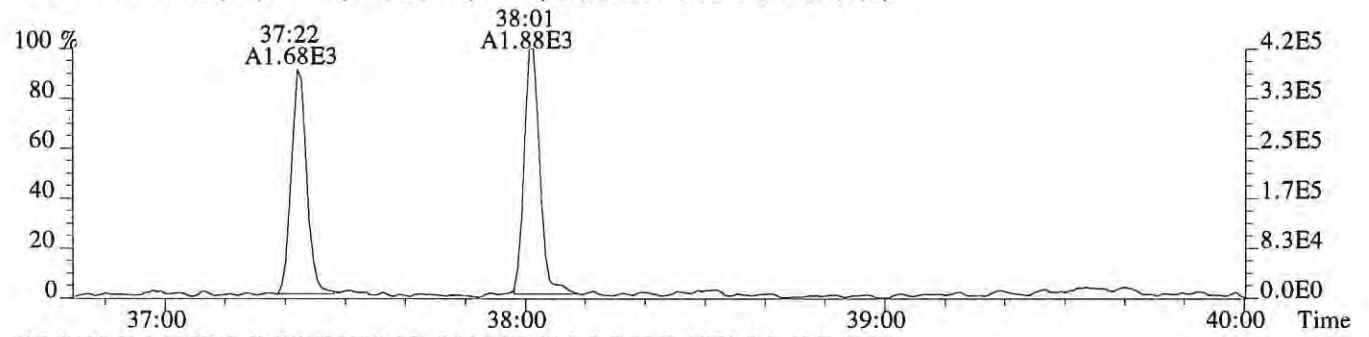
File:P618641 #1-294 Acq:20-AUG-2019 21:12:13 Probe EI+ Magnet SIR VG BioTech Mass spectr

Sample#1 Exp:E1900593-007

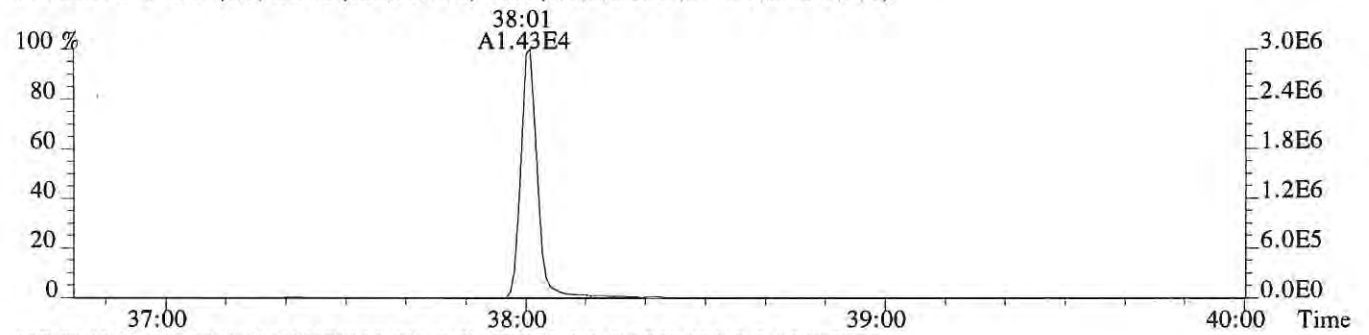
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,12368.0,0.40%,F,T)



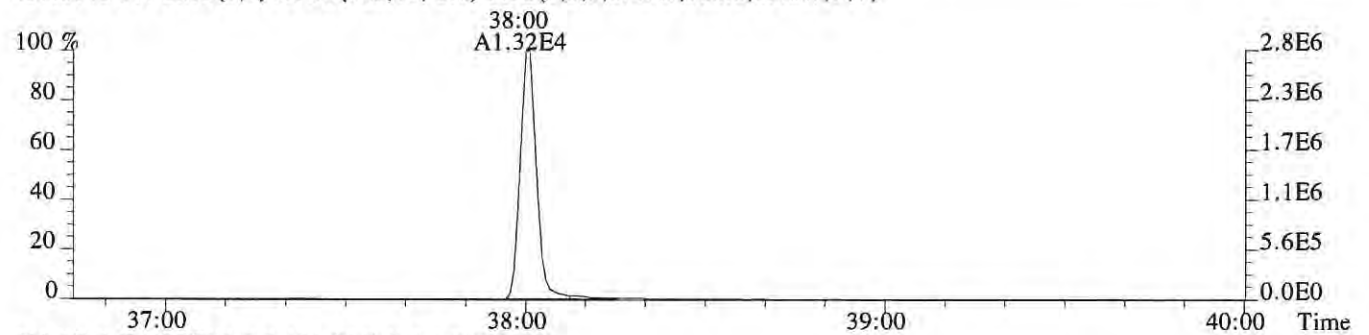
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,8324.0,0.40%,F,T)



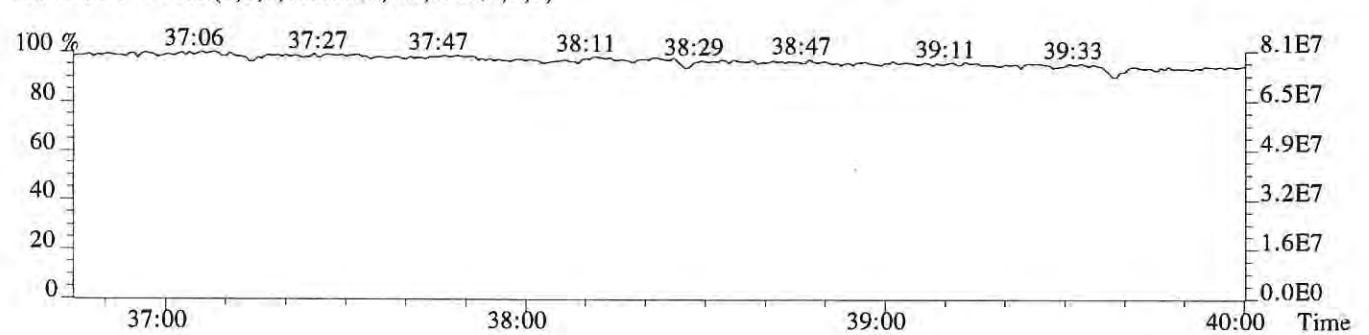
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1076.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,988.0,0.40%,F,T)



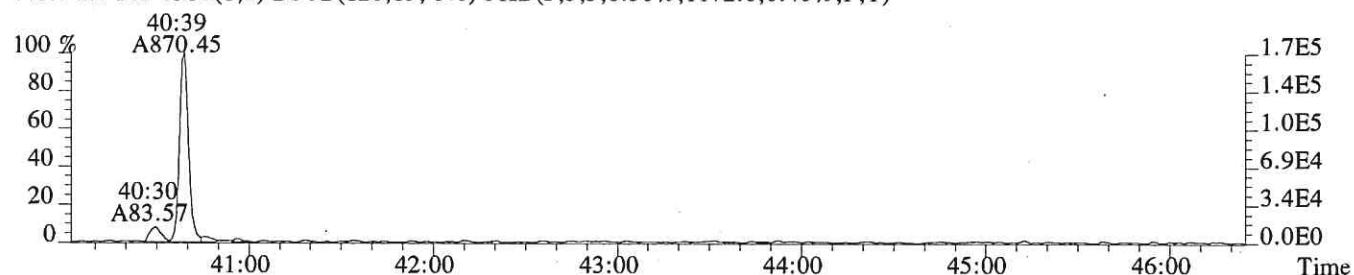
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



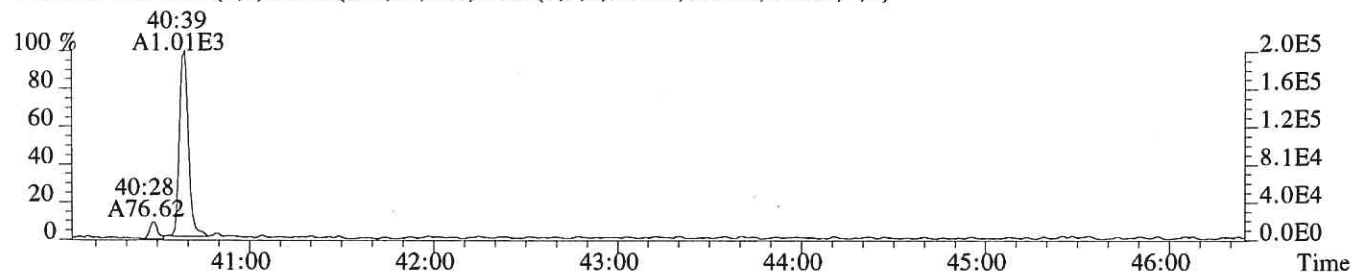
File:P618641 #1-574 Acq:20-AUG-2019 21:12:13 Probe EI+ Magnet SIR VG BioTech Mass spectr

Sample#1 Exp:E1900593-007

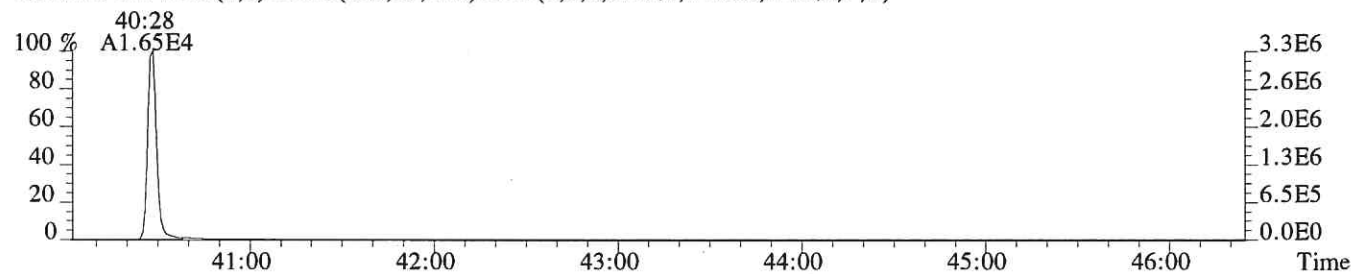
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1172.0,0.40%,F,T)



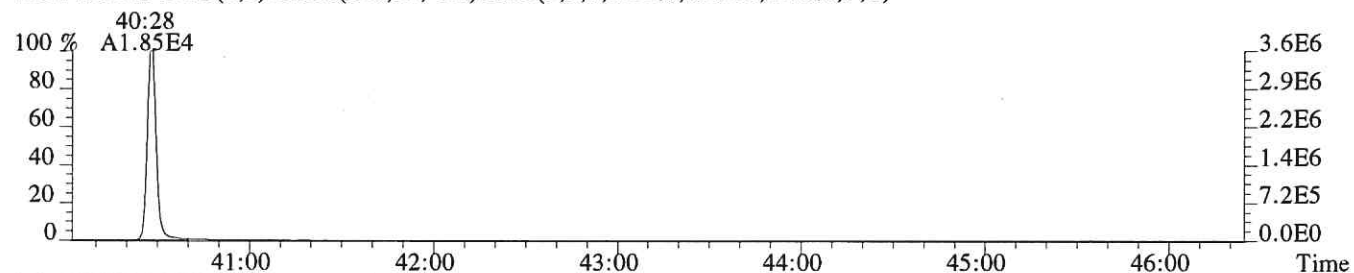
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3384.0,0.40%,F,T)



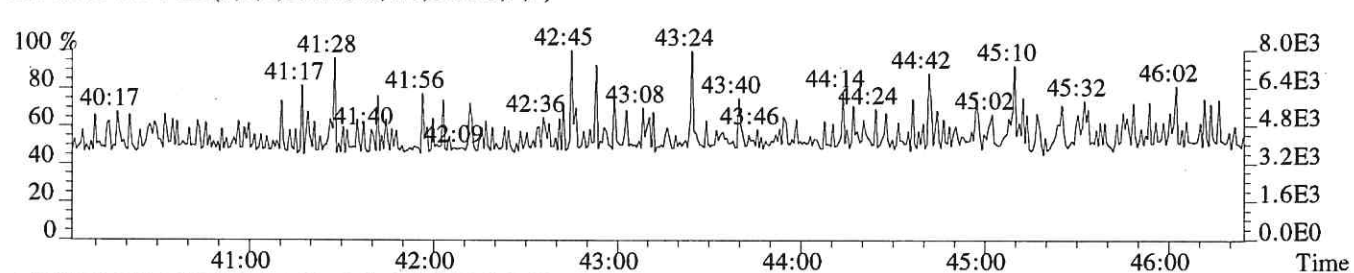
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2448.0,0.40%,F,T)



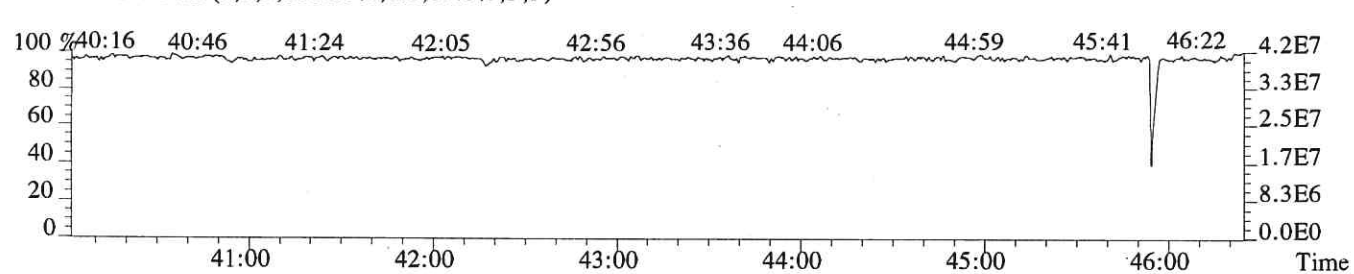
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6664.0,0.40%,F,T)



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

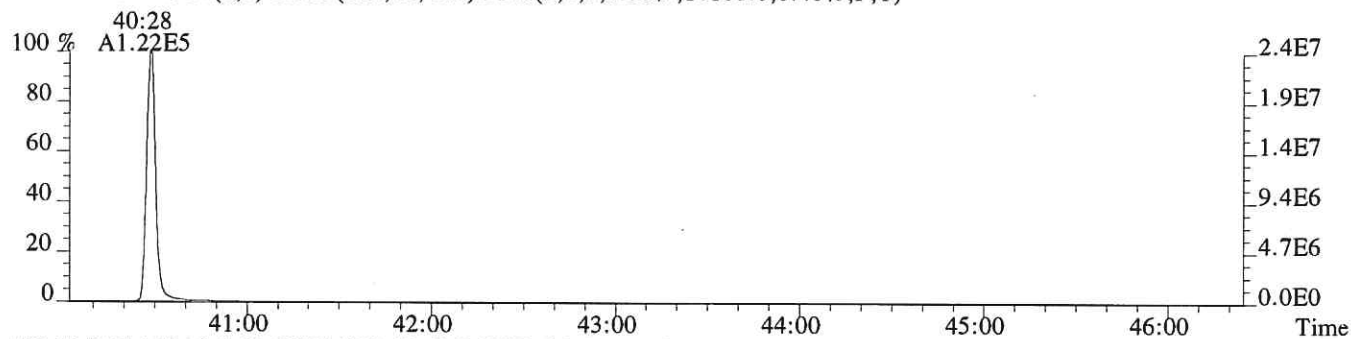


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

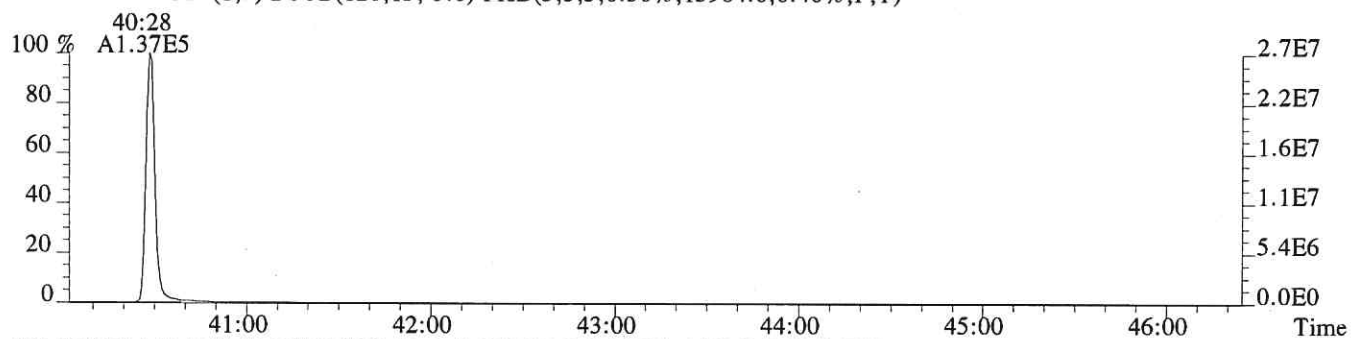


File:P618641 #1-574 Acq:20-AUG-2019 21:12:13 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-007

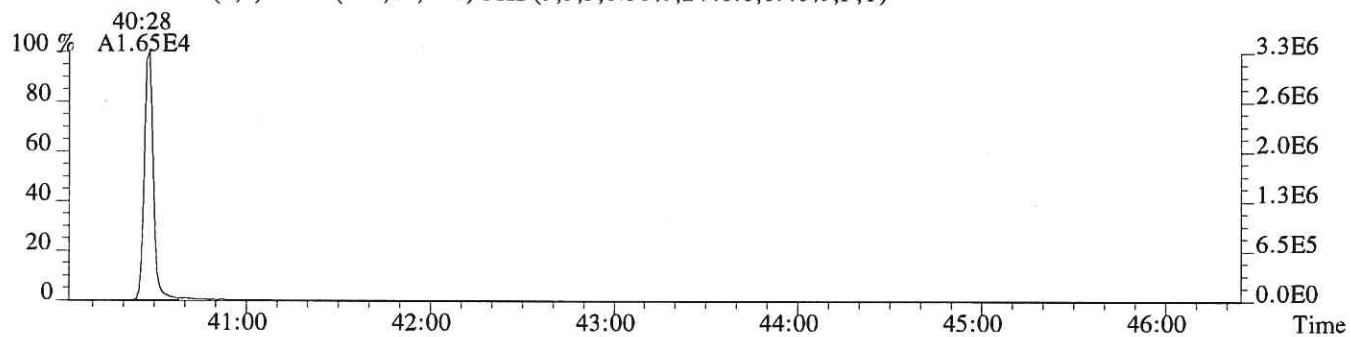
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,16108.0,0.40%,F,T)



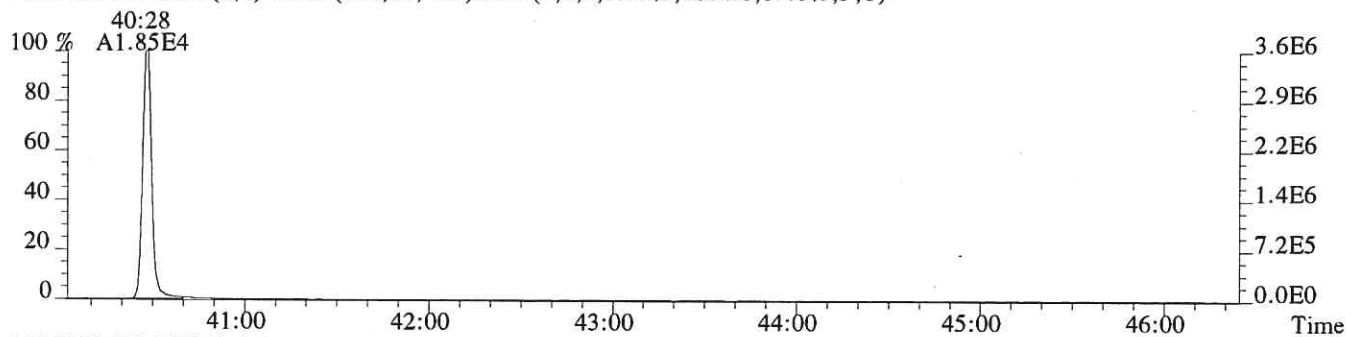
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,15964.0,0.40%,F,T)



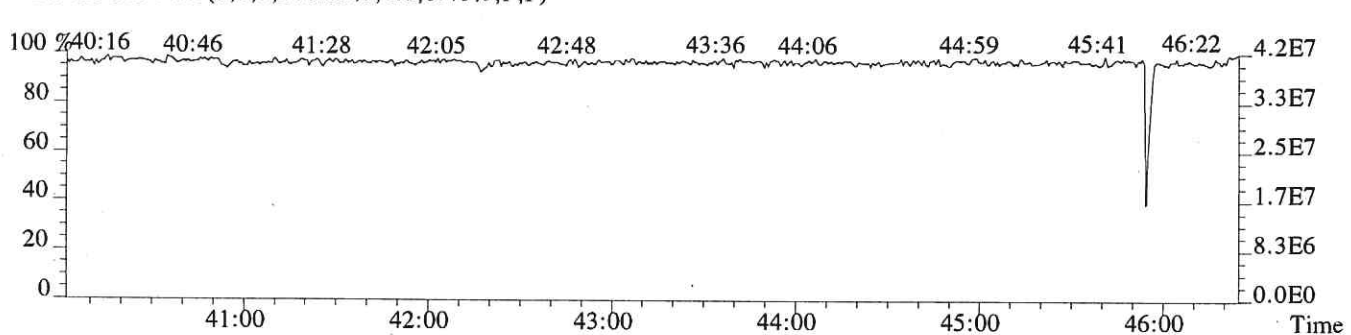
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2448.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6664.0,0.40%,F,T)



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



ALS ENVIRONMENTAL

Sample Response Summary

CLIENT ID.
BS-8-190813

Run #10 Filename P618646 Samp: 1 Inj: 1 Acquired: 21-AUG-19 01:32:33
Processed: 22-AUG-19 09:51:19 Sample ID: E1900593-008

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	NotFnd	*	*	*	no	no	0.873
2 Unk	1,2,3,7,8-PeCDF	NotFnd	*	*	*	no	no	0.864
3 Unk	2,3,4,7,8-PeCDF	NotFnd	*	*	*	no	yes	0.825
4 Unk	1,2,3,4,7,8-HxCDF	34:23	2.292e+01	2.391e+01	0.96	no	no	1.084
5 Unk	1,2,3,6,7,8-HxCDF	34:30	2.522e+01	1.623e+01	1.55	no	no	0.994
6 Unk	2,3,4,6,7,8-HxCDF	35:02	2.378e+01	1.816e+01	1.31	yes	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	35:50	1.805e+01	2.781e+01	0.65	no	no	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	37:07	1.270e+02	1.334e+02	0.95	yes	no	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	38:26	1.996e+01	1.890e+01	1.06	yes	no	1.104
10 Unk	OCDF	40:38	3.109e+02	3.894e+02	0.80	yes	no	0.993
11 Unk	2,3,7,8-TCDD	NotFnd	*	*	*	no	no	0.989
12 Unk	1,2,3,7,8-PeCDD	NotFnd	*	*	*	no	no	0.954
13 Unk	1,2,3,4,7,8-HxCDD	NotFnd	*	*	*	no	yes	1.020
14 Unk	1,2,3,6,7,8-HxCDD	35:16	1.029e+02	7.880e+01	1.31	yes	yes	1.030
15 Unk	1,2,3,7,8,9-HxCDD	NotFnd	*	*	*	no	no	1.007
16 Unk	1,2,3,4,6,7,8-HpCDD	38:01	1.441e+03	1.405e+03	1.03	yes	no	0.922
17 Unk	OCDD	40:28	1.243e+05	1.409e+05	0.88	yes	no	1.062
18 IS	13C-2,3,7,8-TCDF	25:24	1.891e+04	2.398e+04	0.79	yes	no	1.102
19 IS	13C-1,2,3,7,8-PeCDF	30:27	3.381e+04	2.205e+04	1.53	yes	no	1.074
20 IS	13C-2,3,4,7,8-PeCDF	31:30	3.372e+04	2.133e+04	1.58	yes	no	1.005
21 IS	13C-1,2,3,4,7,8-HxCDF	34:22	1.292e+04	2.575e+04	0.50	yes	no	1.059
22 IS	13C-1,2,3,6,7,8-HxCDF	34:29	1.517e+04	2.991e+04	0.51	yes	no	1.264
23 IS	13C-2,3,4,6,7,8-HxCDF	35:02	1.265e+04	2.504e+04	0.51	yes	no	1.066
24 IS	13C-1,2,3,7,8,9-HxCDF	35:48	1.185e+04	2.368e+04	0.50	yes	no	0.801
25 IS	13C-1,2,3,4,6,7,8-HpCDF	37:06	7.702e+03	1.799e+04	0.43	yes	no	0.789
26 IS	13C-1,2,3,4,7,8,9-HpCDF	38:25	7.721e+03	1.792e+04	0.43	yes	no	0.590
27 IS	13C-2,3,7,8-TCDD	26:25	1.569e+04	1.997e+04	0.79	yes	no	0.839
28 IS	13C-1,2,3,7,8-PeCDD	31:48	2.740e+04	1.758e+04	1.56	yes	no	0.744
29 IS	13C-1,2,3,4,7,8-HxCDD	35:10	2.114e+04	1.679e+04	1.26	yes	no	0.907
30 IS	13C-1,2,3,6,7,8-HxCDD	35:16	2.360e+04	1.909e+04	1.24	yes	no	0.978
31 IS	13C-1,2,3,4,6,7,8-HpCDD	38:00	1.543e+04	1.485e+04	1.04	yes	no	0.814
32 IS	13C-OCDD	40:28	1.730e+04	1.913e+04	0.90	yes	no	0.653
33 RS/RT	13C-1,2,3,4-TCDD	25:40	3.305e+04	4.256e+04	0.78	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	35:30	3.692e+04	3.027e+04	1.22	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	26:26	1.469e+04				no	0.894

$$\text{OCDD} = \frac{(1.243e+05 + 1.409e+05) \times 4000 \text{ pg} \times 1}{(1.730e+04 + 1.913e+04) \times 10.768 \text{ g} \times 94.5 / 100 \times 1.062} = 2694 \text{ ng/kg}$$

Liu 08/22/19

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
BS-8-190813

Run #10 Filename P618646 Samp: 1 Inj: 1 Acquired: 21-AUG-19 01:32:33
Processed: 22-AUG-19 09:51:19 LAB. ID: E1900593-008

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	*	9.72e+02	*	*	2.55e+03	*
2	1,2,3,7,8-PeCDF	*	7.64e+02	*	*	9.00e+02	*
3	2,3,4,7,8-PeCDF	*	7.64e+02	*	*	9.00e+02	*
4	1,2,3,4,7,8-HxCDF	4.48e+03	8.88e+02	5.0e+00	4.82e+03	1.17e+03	4.1e+00
5	1,2,3,6,7,8-HxCDF	5.61e+03	8.88e+02	6.3e+00	3.13e+03	1.17e+03	2.7e+00
6	2,3,4,6,7,8-HxCDF	5.95e+03	8.88e+02	6.7e+00	4.04e+03	1.17e+03	3.4e+00
7	1,2,3,7,8,9-HxCDF	2.72e+03	8.88e+02	3.1e+00	3.99e+03	1.17e+03	3.4e+00
8	1,2,3,4,6,7,8-HpCDF	3.01e+04	9.56e+02	3.2e+01	2.63e+04	8.92e+02	3.0e+01
9	1,2,3,4,7,8,9-HpCDF	4.23e+03	9.56e+02	4.4e+00	5.02e+03	8.92e+02	5.6e+00
10	OCDF	5.85e+04	6.92e+02	8.5e+01	7.46e+04	1.86e+03	4.0e+01
11	2,3,7,8-TCDD	*	2.25e+03	*	*	2.09e+03	*
12	1,2,3,7,8-PeCDD	*	3.08e+03	*	*	3.67e+03	*
13	1,2,3,4,7,8-HxCDD	*	6.20e+03	*	*	5.52e+03	*
14	1,2,3,6,7,8-HxCDD	1.83e+04	6.20e+03	3.0e+00	1.50e+04	5.52e+03	2.7e+00
15	1,2,3,7,8,9-HxCDD	*	6.20e+03	*	*	5.52e+03	*
16	1,2,3,4,6,7,8-HpCDD	3.31e+05	6.60e+03	5.0e+01	3.11e+05	7.07e+03	4.4e+01
17	OCDD	2.47e+07	6.32e+03	3.9e+03	2.79e+07	8.69e+03	3.2e+03
18	13C-2,3,7,8-TCDF	2.55e+06	1.28e+04	2.0e+02	3.19e+06	6.82e+03	4.7e+02
19	13C-1,2,3,7,8-PeCDF	5.51e+06	1.27e+03	4.3e+03	3.63e+06	8.92e+02	4.1e+03
20	13C-2,3,4,7,8-PeCDF	5.87e+06	1.27e+03	4.6e+03	3.67e+06	8.92e+02	4.1e+03
21	13C-1,2,3,4,7,8-HxCDF	2.72e+06	1.30e+03	2.1e+03	5.58e+06	1.90e+03	2.9e+03
22	13C-1,2,3,6,7,8-HxCDF	3.03e+06	1.30e+03	2.3e+03	6.05e+06	1.90e+03	3.2e+03
23	13C-2,3,4,6,7,8-HxCDF	2.62e+06	1.30e+03	2.0e+03	5.14e+06	1.90e+03	2.7e+03
24	13C-1,2,3,7,8,9-HxCDF	2.41e+06	1.30e+03	1.9e+03	4.82e+06	1.90e+03	2.5e+03
25	13C-1,2,3,4,6,7,8-HpCDF	1.70e+06	1.89e+03	9.0e+02	3.93e+06	4.88e+03	8.1e+02
26	13C-1,2,3,4,7,8,9-HpCDF	1.64e+06	1.89e+03	8.7e+02	3.81e+06	4.88e+03	7.8e+02
27	13C-2,3,7,8-TCDD	2.36e+06	7.44e+03	3.2e+02	3.04e+06	3.38e+03	9.0e+02
28	13C-1,2,3,7,8-PeCDD	4.99e+06	8.24e+02	6.1e+03	3.21e+06	1.23e+03	2.6e+03
29	13C-1,2,3,4,7,8-HxCDD	4.56e+06	1.73e+03	2.6e+03	3.52e+06	2.09e+03	1.7e+03
30	13C-1,2,3,6,7,8-HxCDD	4.94e+06	1.73e+03	2.9e+03	3.89e+06	2.09e+03	1.9e+03
31	13C-1,2,3,4,6,7,8-HpCDD	3.36e+06	1.10e+03	3.0e+03	3.21e+06	6.24e+02	5.1e+03
32	13C-OCDD	3.43e+06	3.62e+03	9.5e+02	3.82e+06	2.56e+03	1.5e+03
33	13C-1,2,3,4-TCDD	4.70e+06	7.44e+03	6.3e+02	6.10e+06	3.38e+03	1.8e+03
34	13C-1,2,3,7,8,9-HxCDD	7.70e+06	1.73e+03	4.5e+03	6.11e+06	2.09e+03	2.9e+03
35	37Cl-2,3,7,8-TCDD	2.24e+06	2.75e+03	8.2e+02			

---Sample Calculation---

$$\text{D/L TCDD} = \frac{2.5 \times (2.248e+03 + 2.092e+03) \times 2000}{(2.363e+06 + 3.042e+06) \times () \times 0.989} =$$

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ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

BS-8-190813

Entry: 38 Totals Name: Total Penta-Furans1

Run: 10 File: P618646 Sample:1 Injection:1 Function:1

Acquired: 21-AUG-19 01:32:33 Processed: 22-AUG-19 09:51:19

Mass:	339.8600	341.8570	Tot Response: 5.87e+01		RRF: 0.8452			
#	RT	Resp	Resp Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	27:41	3.61e+01	2.26e+01	1.59	yes	5.87e+01	n	n

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Peak List Summary

CLIENT ID.

BS-8-190813

Entry: 41 Totals Name: Total Hexa-Furans

Run: 10 File: P618646 Sample:1 Injection:1 Function:3

Acquired: 21-AUG-19 01:32:33 Processed: 22-AUG-19 09:51:19

Mass:	373.8210	375.8180	Tot Response: 4.19e+01		RRF: 1.022				
#	RT	Resp	Resp Ratio	Meet	Tot Resp	Name	Mod1?	Mod2	
1	35:02	2.38e+01	1.82e+01	1.31	yes 4.19e+01	2,3,4,6,7,8-HxCDF	n	n	

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Peak List Summary

CLIENT ID.

BS-8-190813

Entry: 42 Totals Name: Total Hexa-Dioxins

Run: 10 File: P618646 Sample:1 Injection:1 Function:3

Acquired: 21-AUG-19 01:32:33 Processed: 22-AUG-19 09:51:19

Mass:	389.8160	391.8130	Tot Response: 1.82e+02		RRF: 1.019				
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	35:16	1.03e+02	7.88e+01	1.31	yes	1.82e+02	1,2,3,6,7,8-HxCDD	y	y

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Peak List Summary

CLIENT ID.

BS-8-190813

Entry: 43 Totals Name: Total Hepta-Furans

Run: 10 File: P618646 Sample:1 Injection:1 Function:4

Acquired: 21-AUG-19 01:32:33 Processed: 22-AUG-19 09:51:19

Mass:	407.7820	409.7790	Tot Response: 9.35e+02		RRF: 1.104				
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	37:07	1.27e+02	1.33e+02	0.95	yes	2.60e+02	1,2,3,4,6,7,8-HpCDF	n	n
2	37:30	3.09e+02	3.26e+02	0.95	yes	6.35e+02		n	n
3	38:26	2.00e+01	1.89e+01	1.06	yes	3.89e+01	1,2,3,4,7,8,9-HpCDF	n	n

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Peak List Summary

CLIENT ID.

BS-8-190813

Entry: 44 Totals Name: Total Hepta-Dioxins

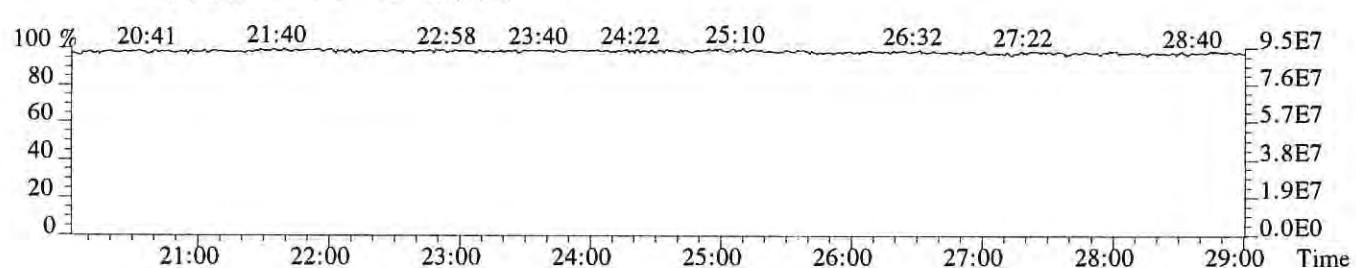
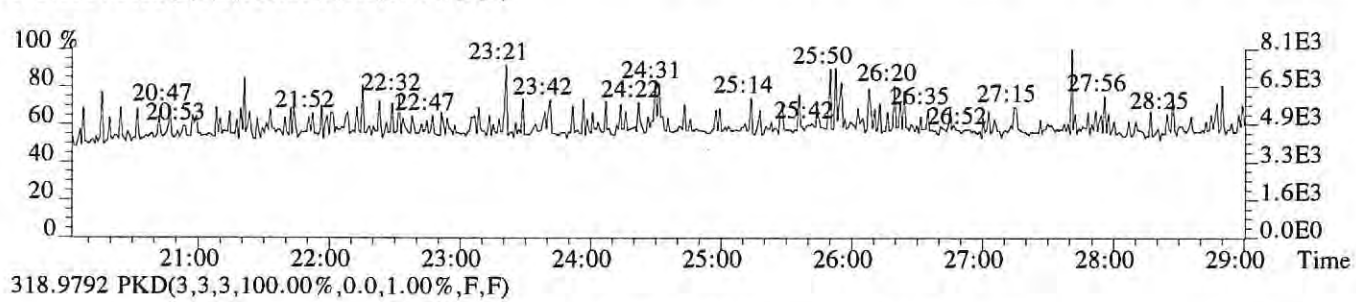
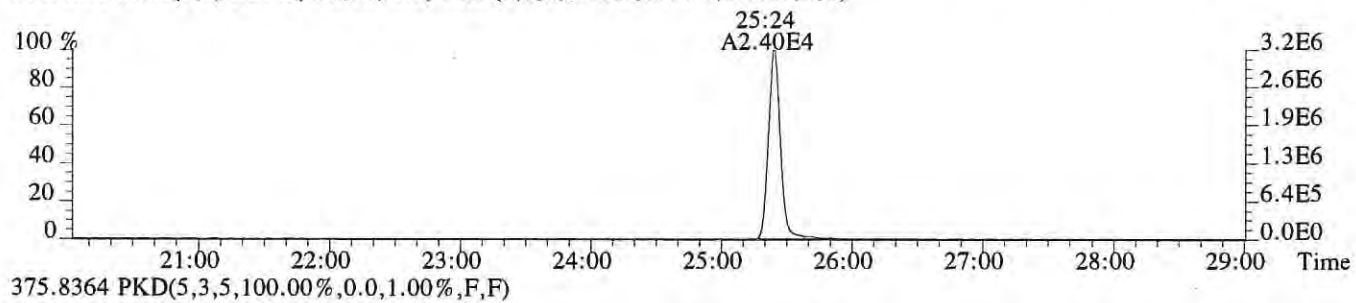
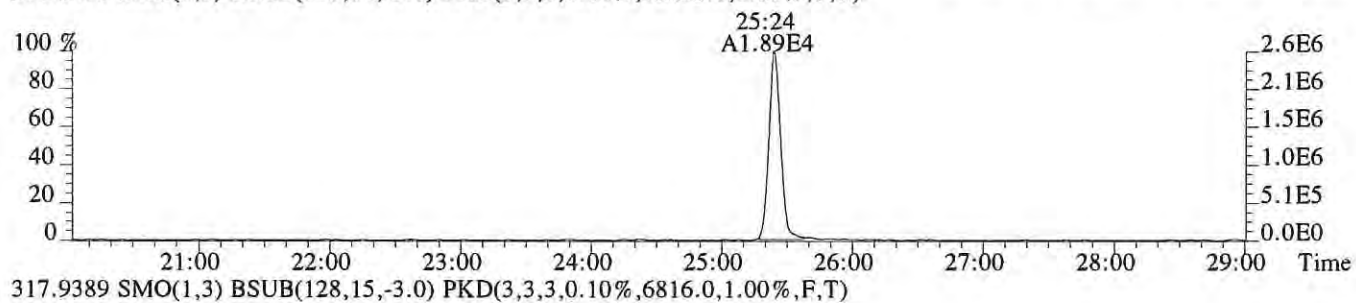
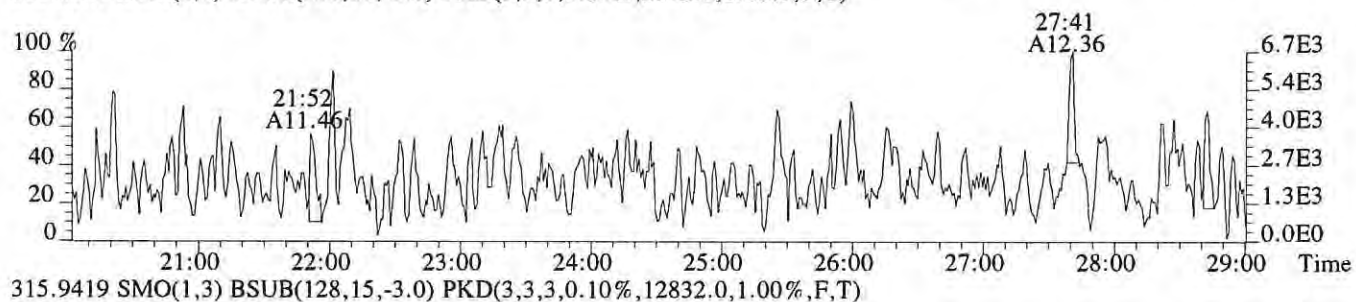
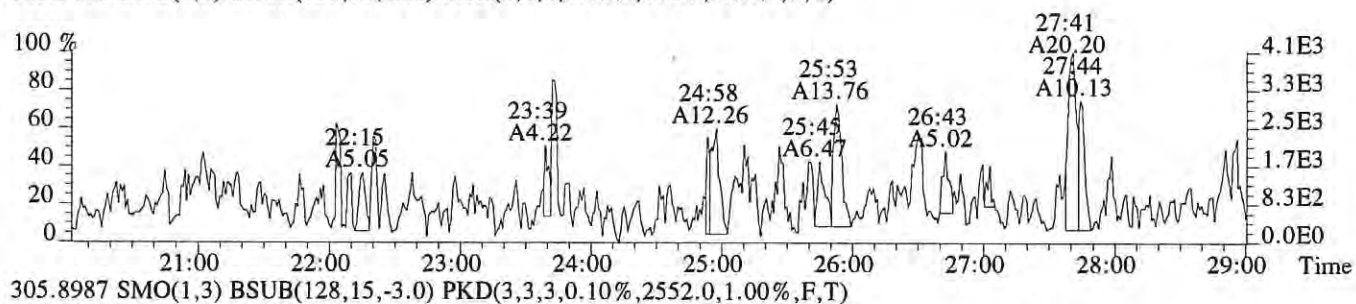
Run: 10 File: P618646 Sample:1 Injection:1 Function:4

Acquired: 21-AUG-19 01:32:33 Processed: 22-AUG-19 09:51:19

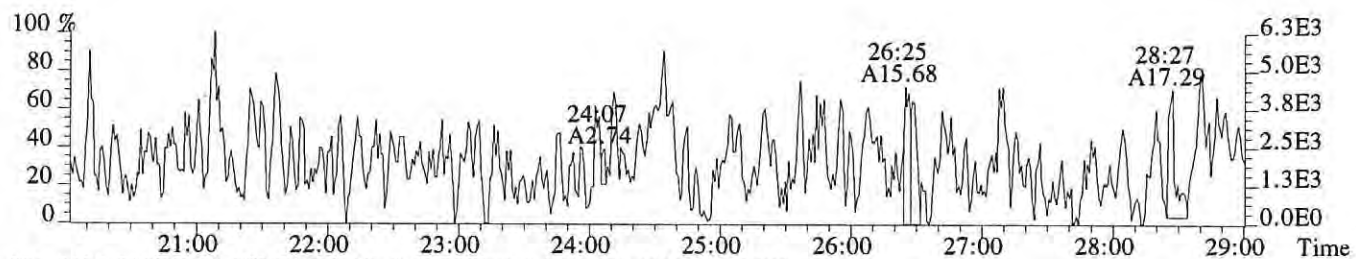
Mass:	423.7770	425.7740	Tot Response: 5.75e+03		RRF: 0.9218				
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	37:22	1.47e+03	1.44e+03	1.02	yes	2.90e+03		n	n
2	38:01	1.44e+03	1.41e+03	1.03	yes	2.85e+03	1,2,3,4,6,7,8-HpCDD	n	n

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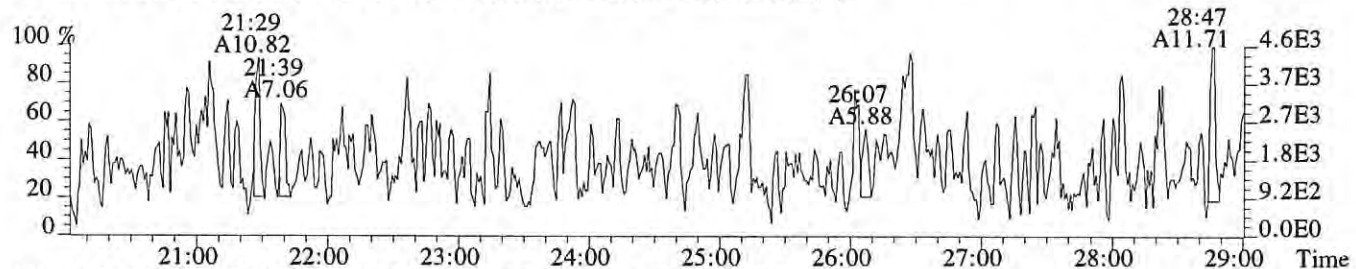
File:P618646 #1-637 Acq:21-AUG-2019 01:32:33 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-008
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,972.0,1.00%,F,T)



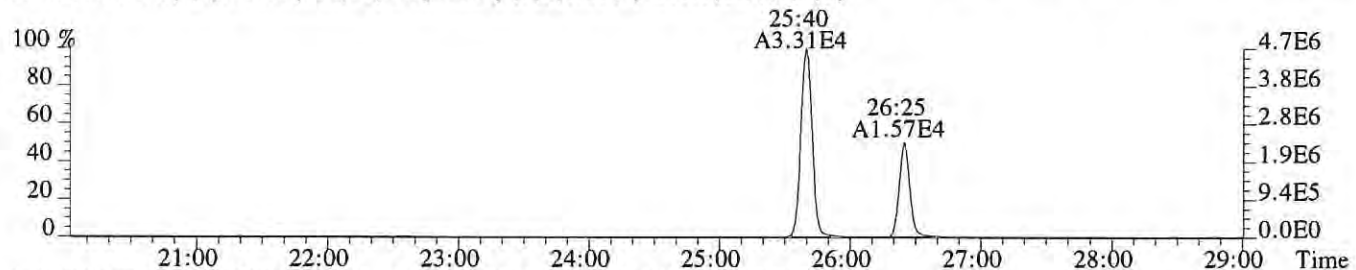
File:P618646 #1-637 Acq:21-AUG-2019 01:32:33 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-008
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2248.0,1.00%,F,T)



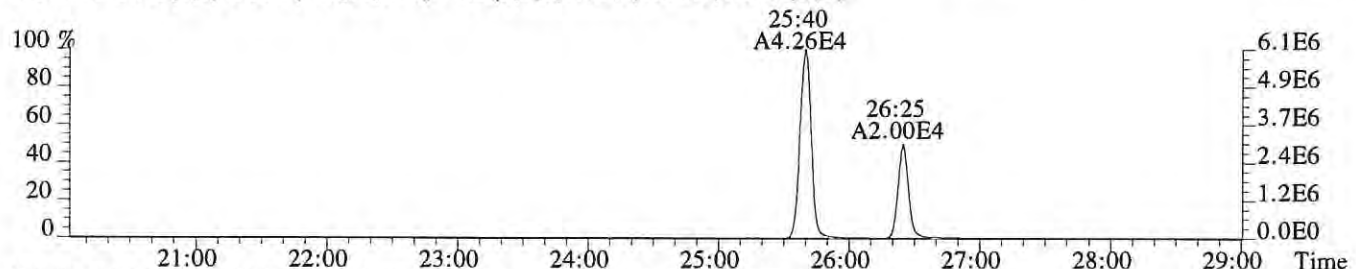
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2092.0,1.00%,F,T)



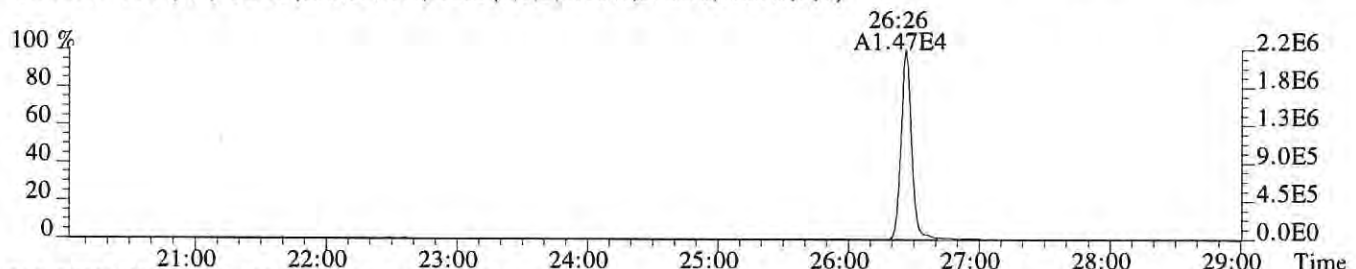
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,7440.0,1.00%,F,T)



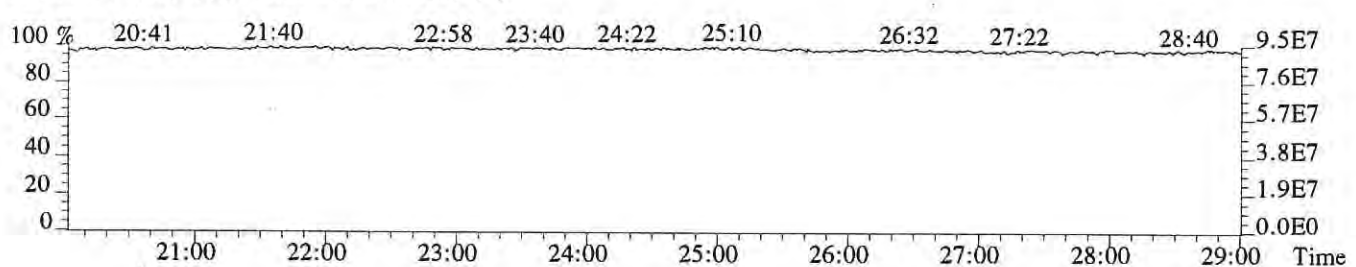
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3384.0,1.00%,F,T)



327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2748.0,1.00%,F,T)

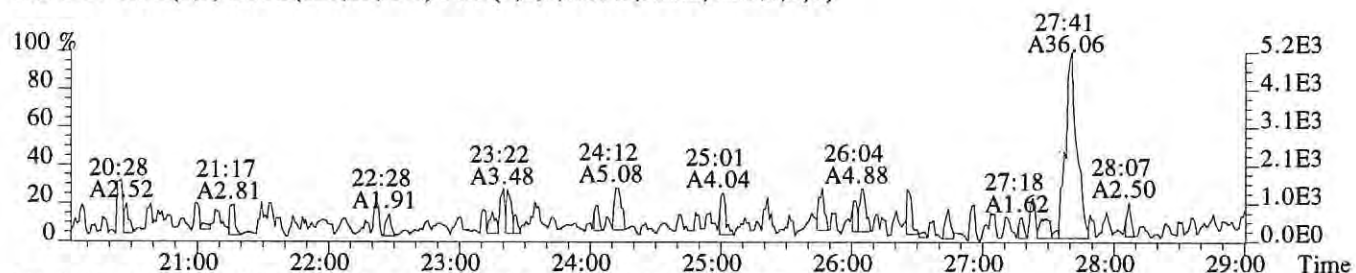


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

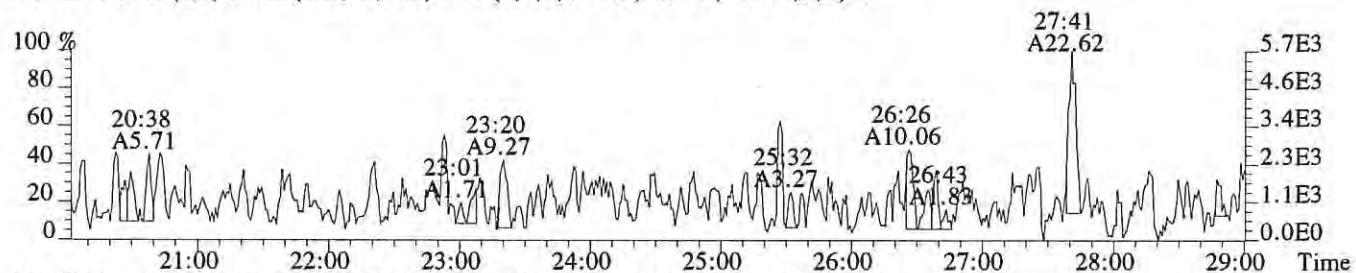


File:P618646 #1-637 Acq:21-AUG-2019 01:32:33 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-008

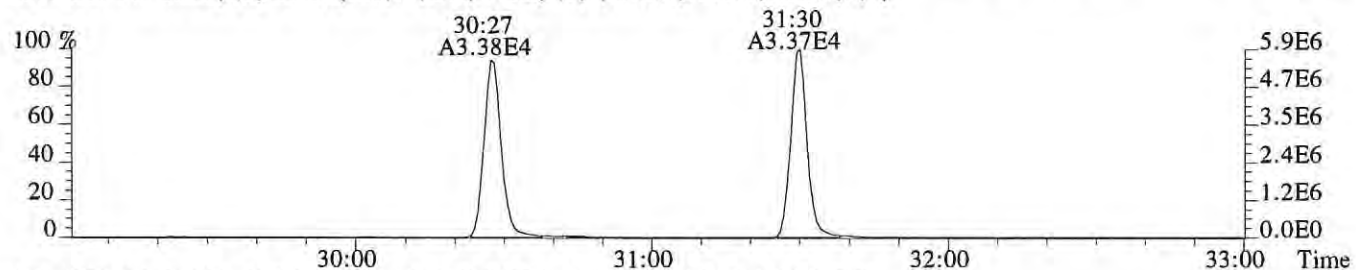
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,504.0,1.00%,F,T)



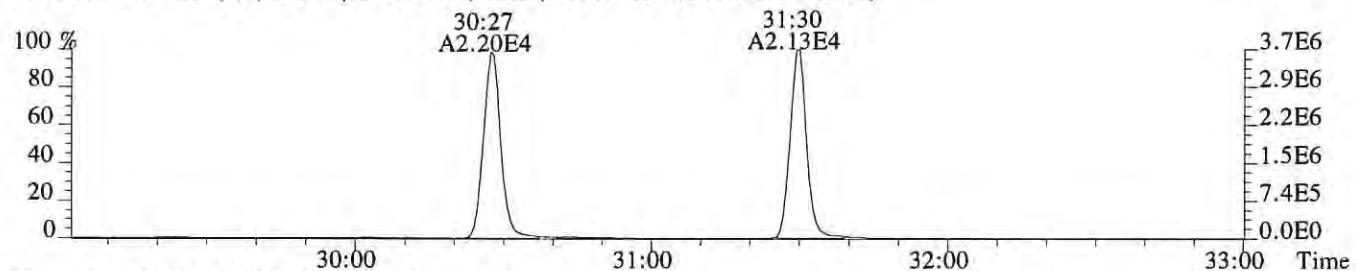
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1332.0,1.00%,F,T)



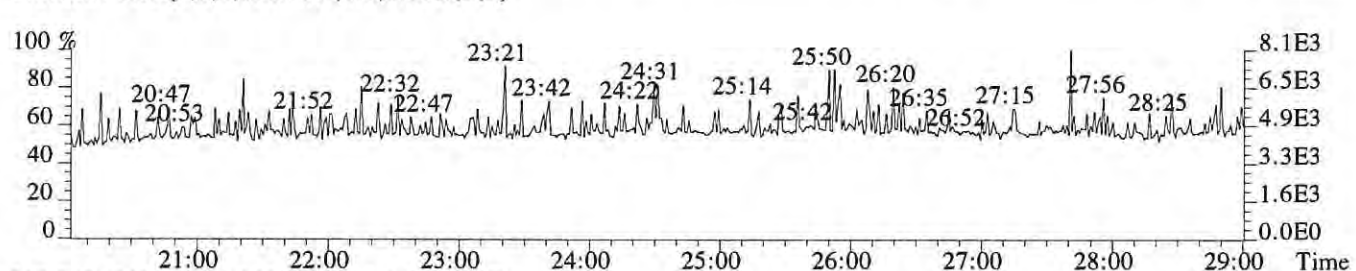
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1268.0,1.00%,F,T)



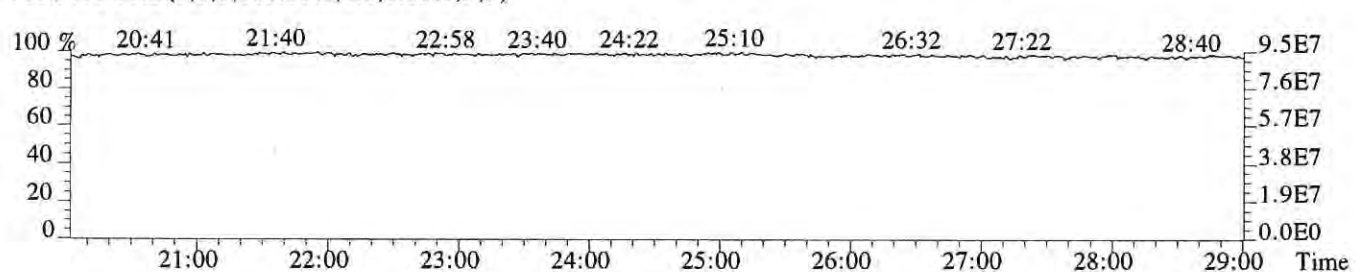
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,892.0,1.00%,F,T)



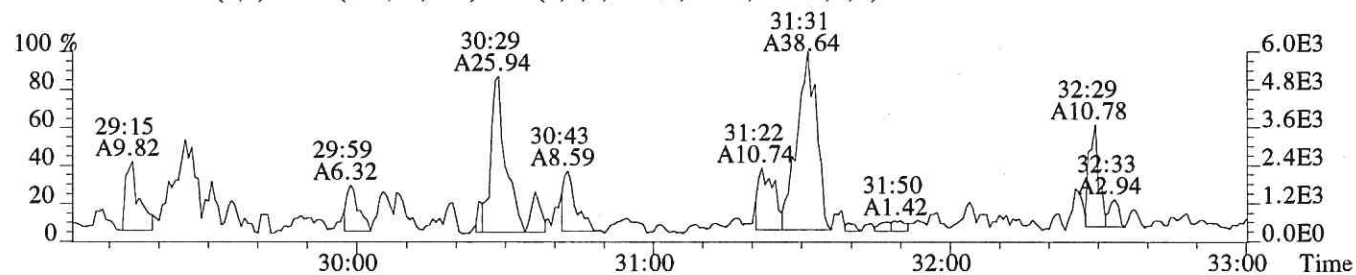
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



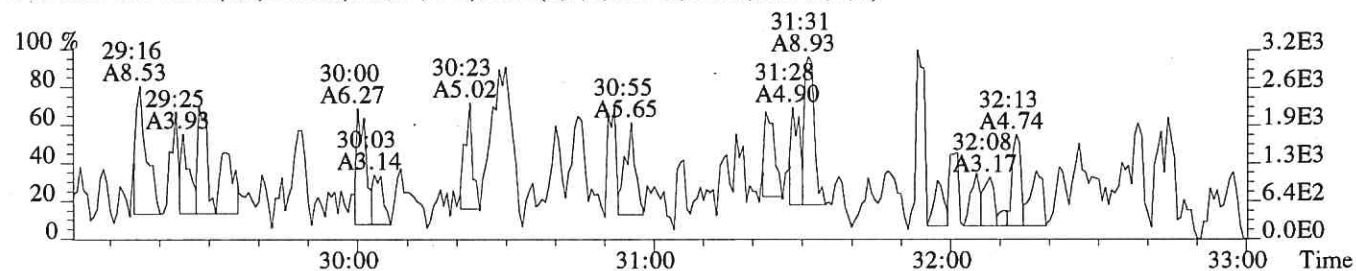
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



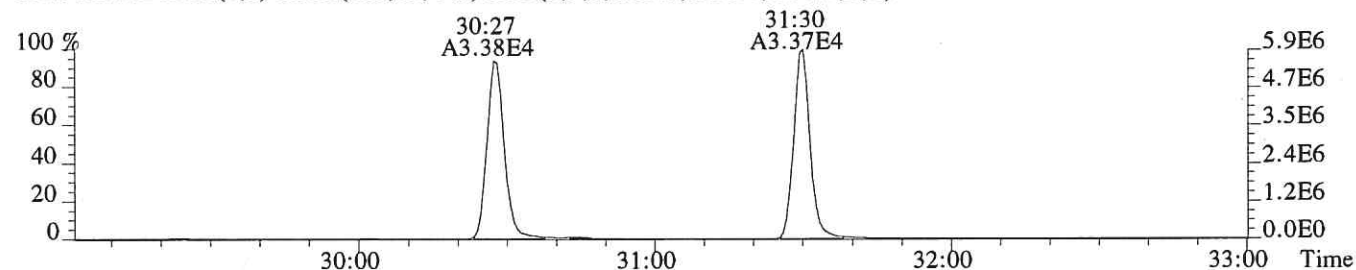
File:P618646 #1-357 Acq:21-AUG-2019 01:32:33 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-008
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,764.0,1.00%,F,T)



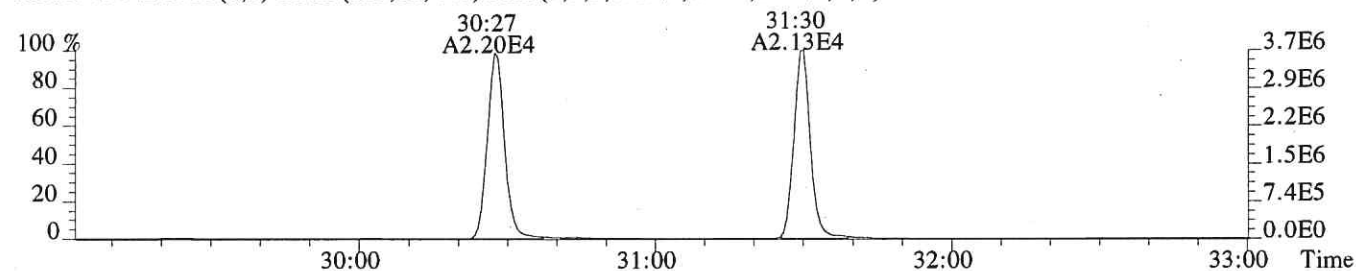
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,900.0,1.00%,F,T)



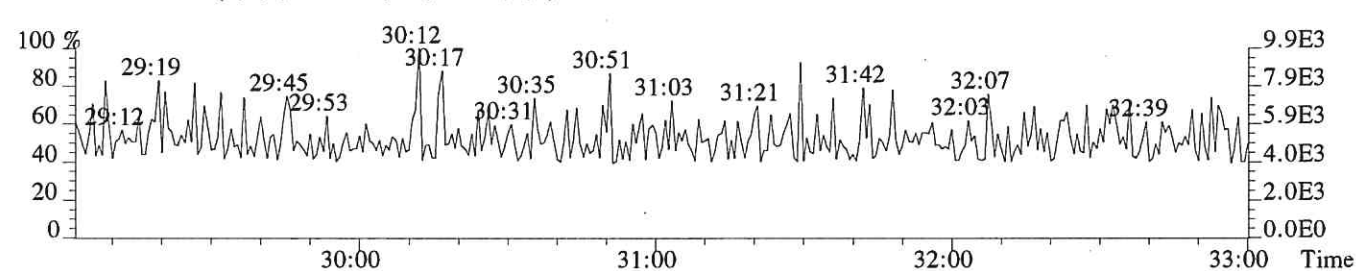
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1268.0,1.00%,F,T)



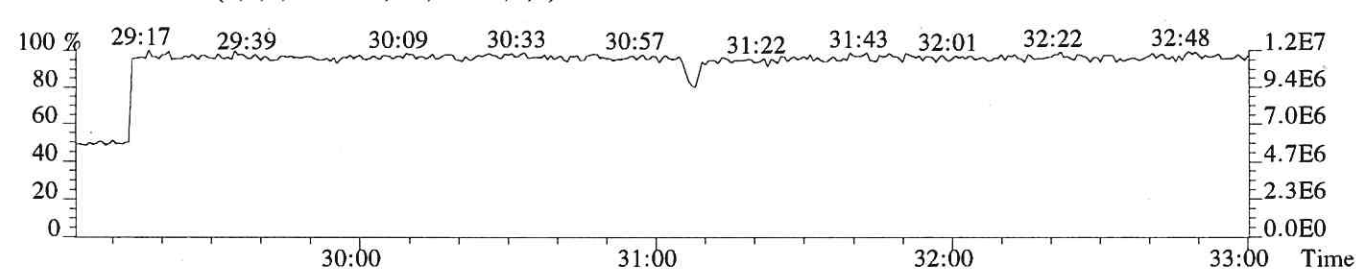
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,892.0,1.00%,F,T)



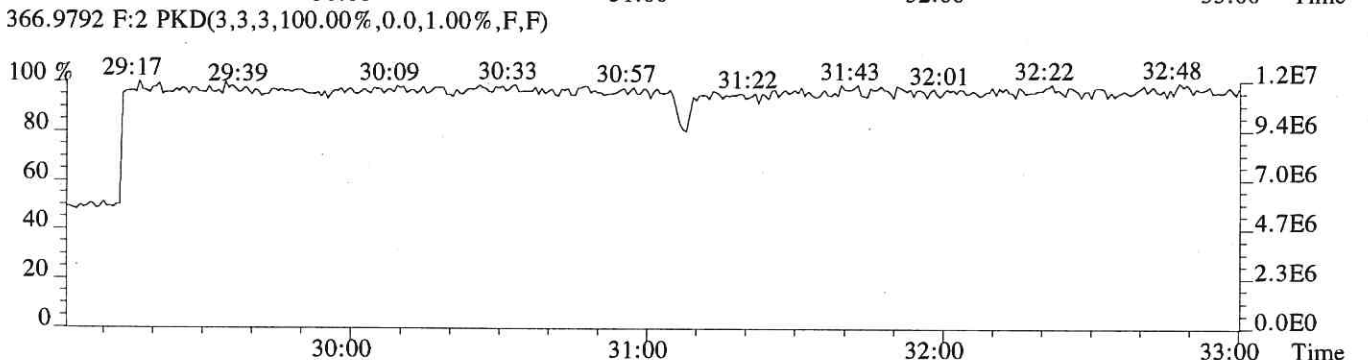
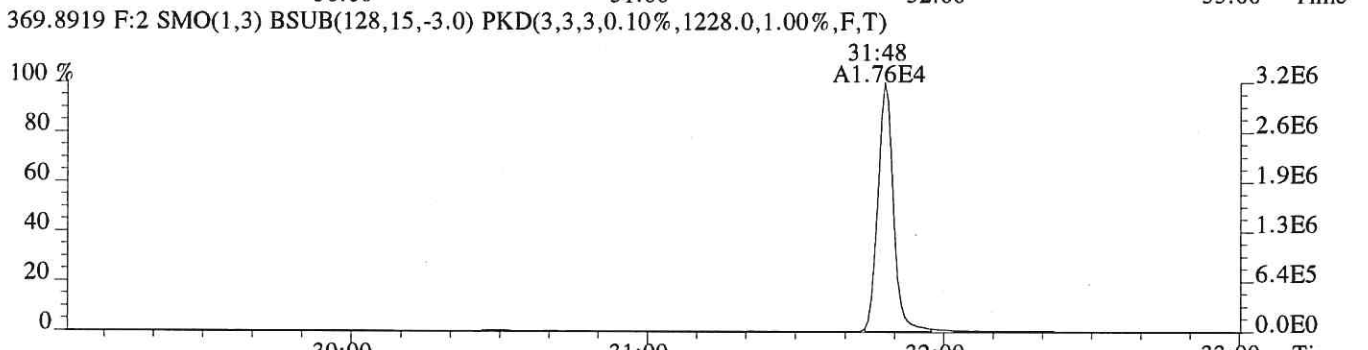
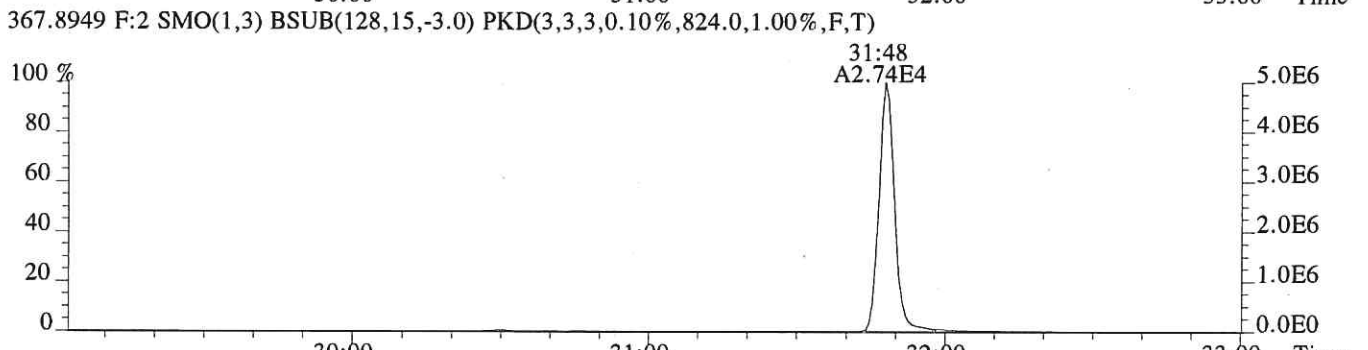
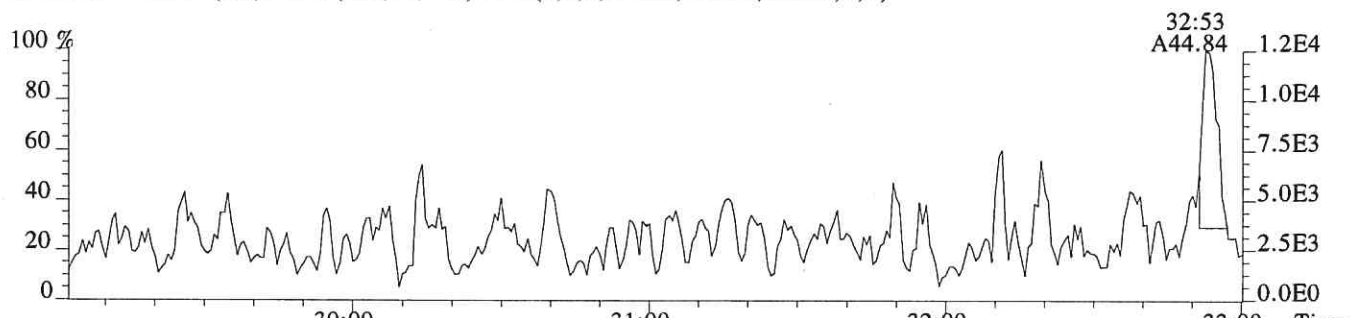
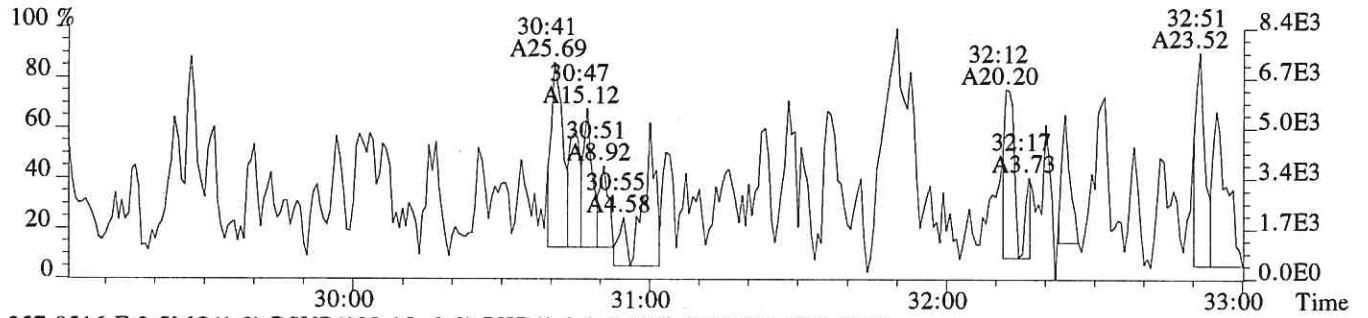
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



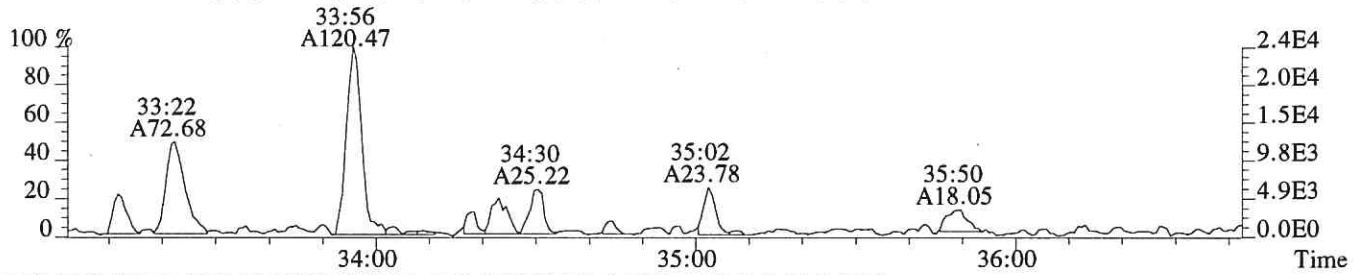
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



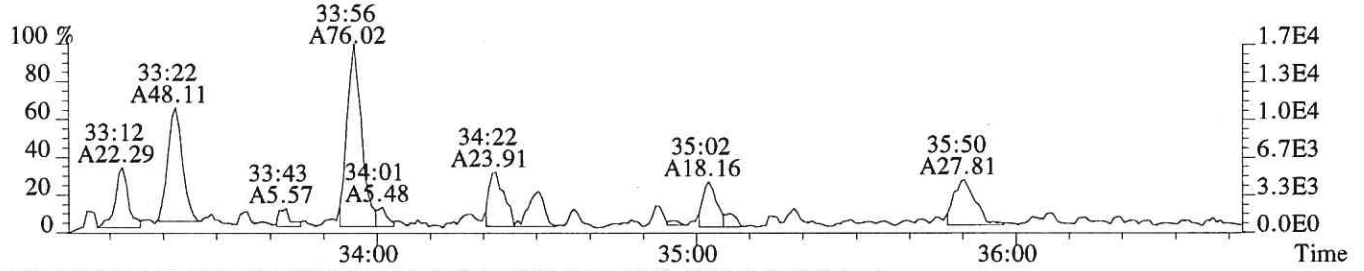
File:P618646 #1-357 Acq:21-AUG-2019 01:32:33 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-008
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3080.0,1.00%,F,T)



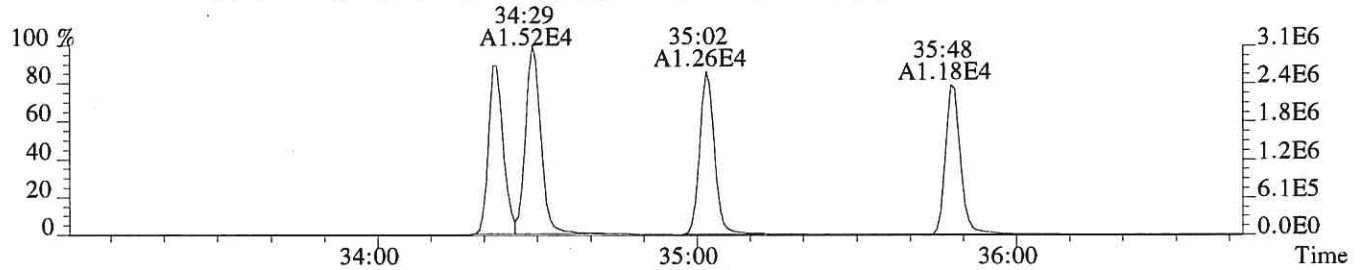
File:P618646 #1-331 Acq:21-AUG-2019 01:32:33 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-008
373.8208 F:3 SMO(1,3) BSM(128,15,-3.0) PKD(3,3,3,0.25%,888.0,0.40%,F,T)



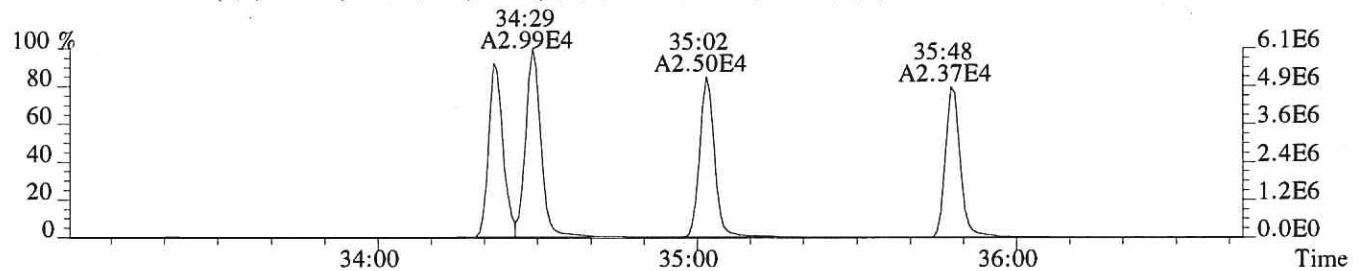
375.8178 F:3 SMO(1,3) BSM(128,15,-3.0) PKD(3,3,3,0.25%,1172.0,0.40%,F,T)



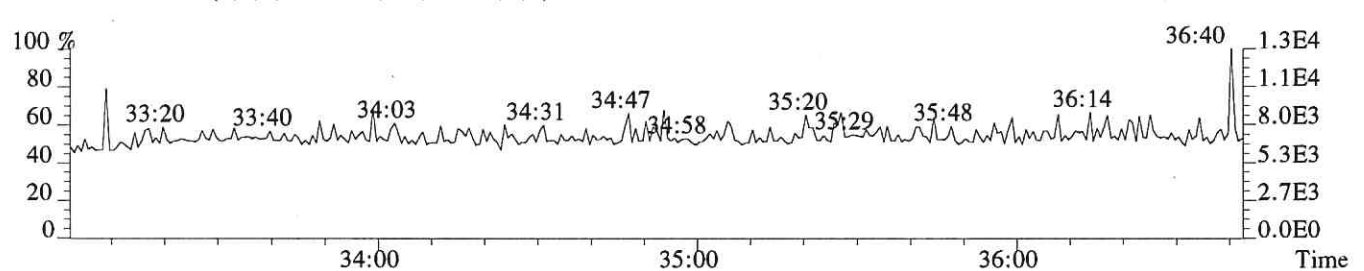
383.8639 F:3 SMO(1,3) BSM(128,15,-3.0) PKD(3,3,3,0.25%,1300.0,0.40%,F,T)



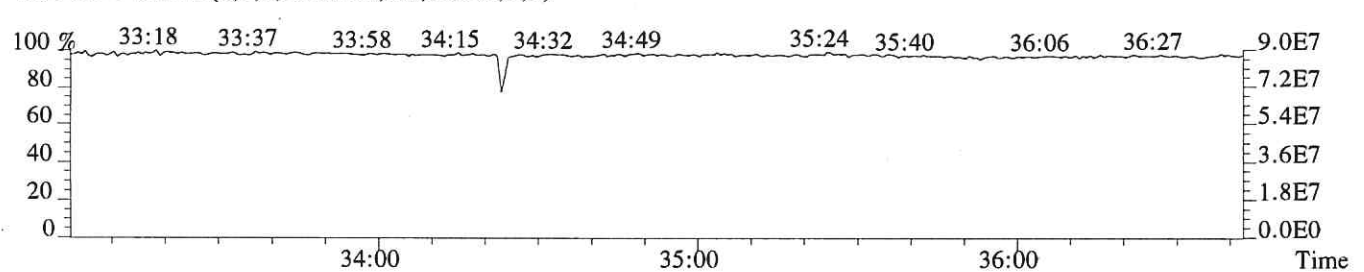
385.8610 F:3 SMO(1,3) BSM(128,15,-3.0) PKD(3,3,3,0.25%,1896.0,0.40%,F,T)



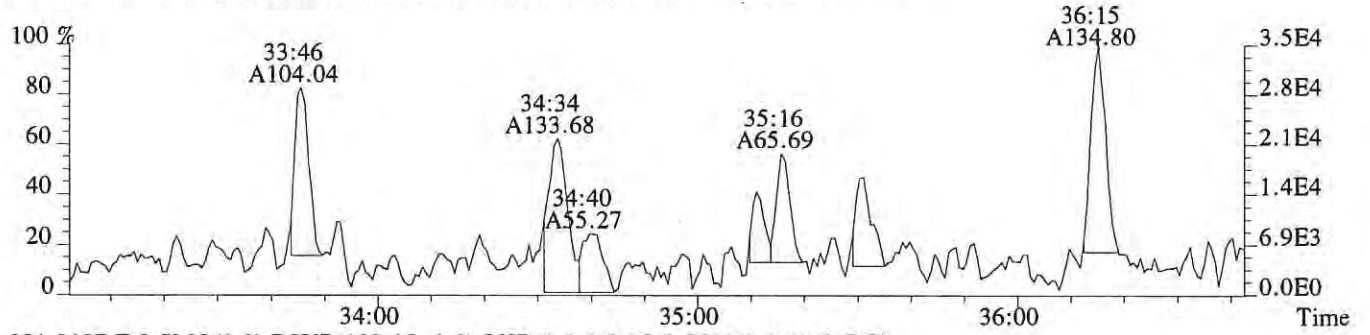
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



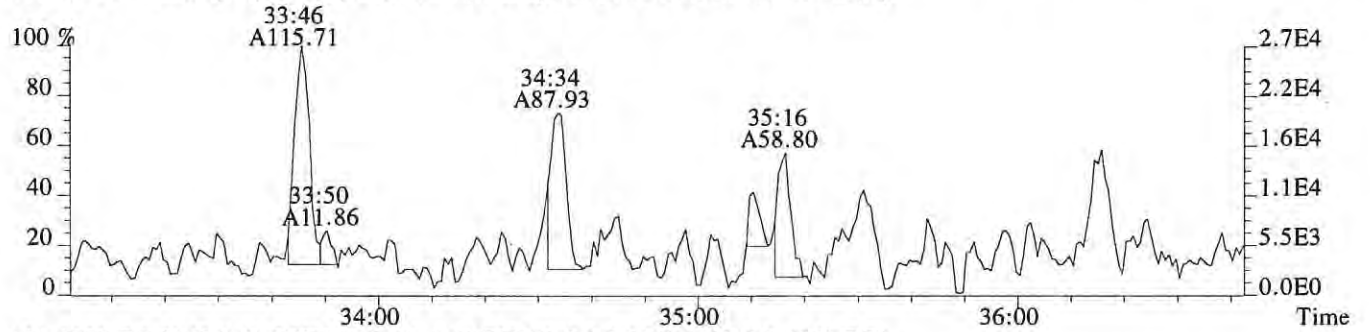
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



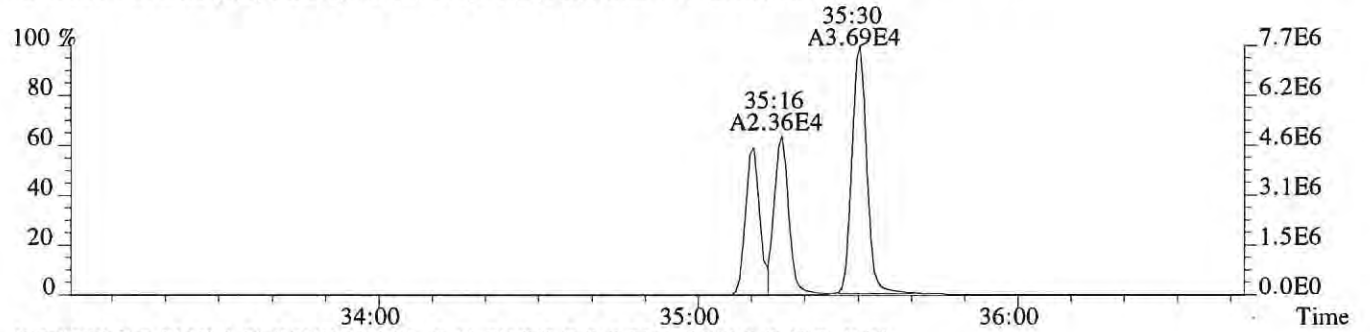
File:P618646 #1-331 Acq:21-AUG-2019 01:32:33 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-008
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,6200.0,0.40%,F,T)



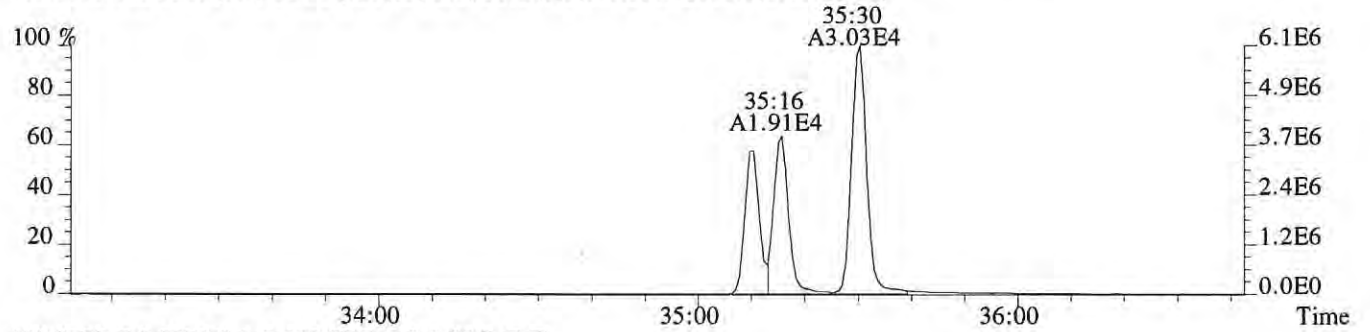
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5520.0,0.40%,F,T)



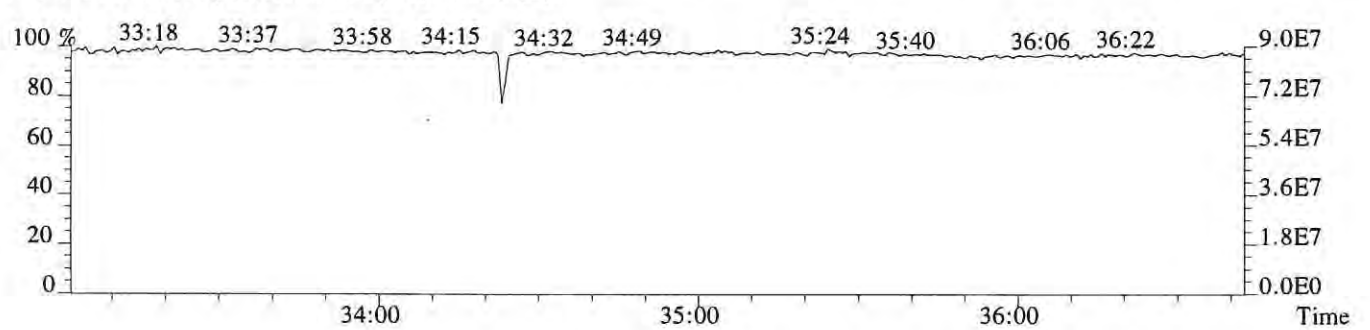
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1728.0,0.40%,F,T)



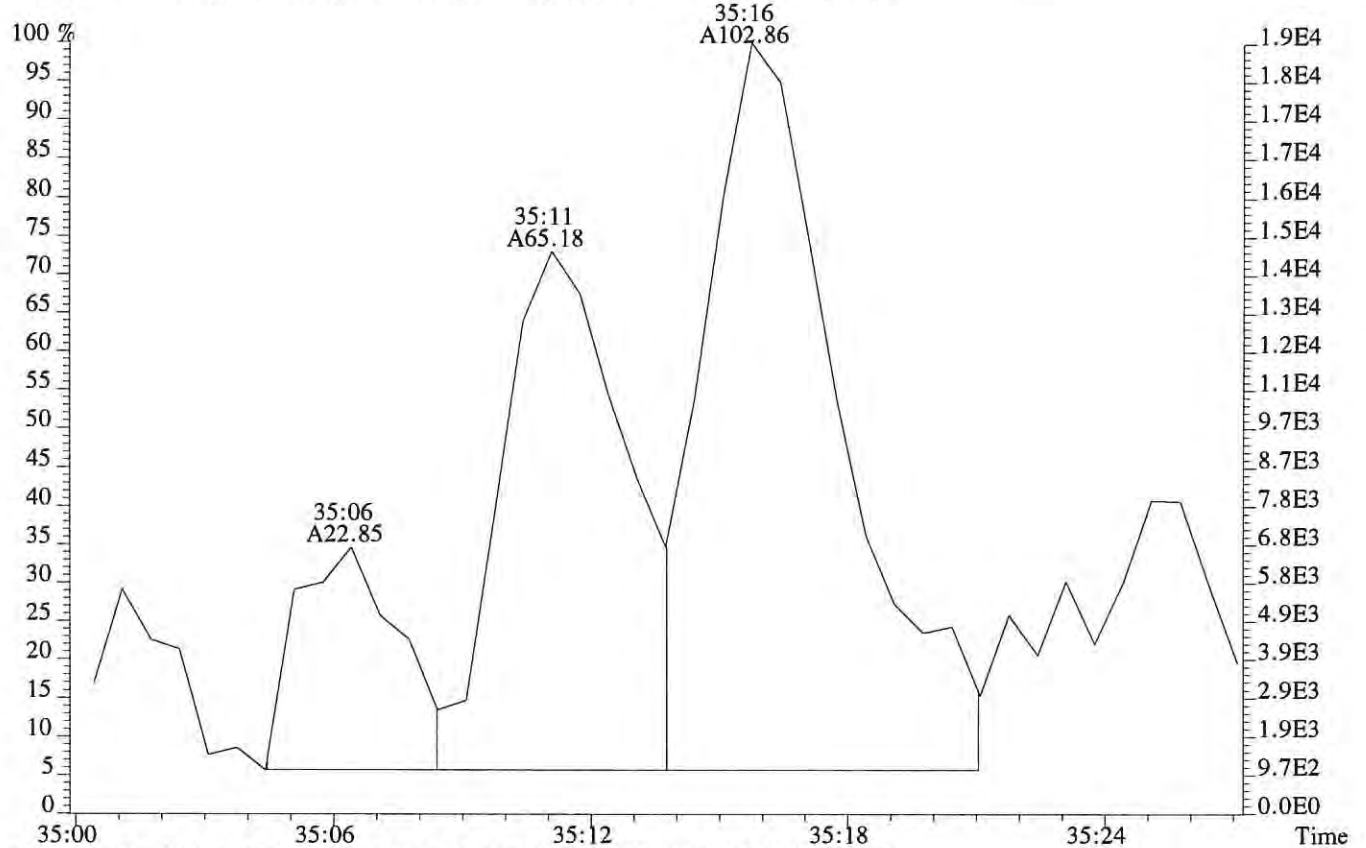
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2088.0,0.40%,F,T)



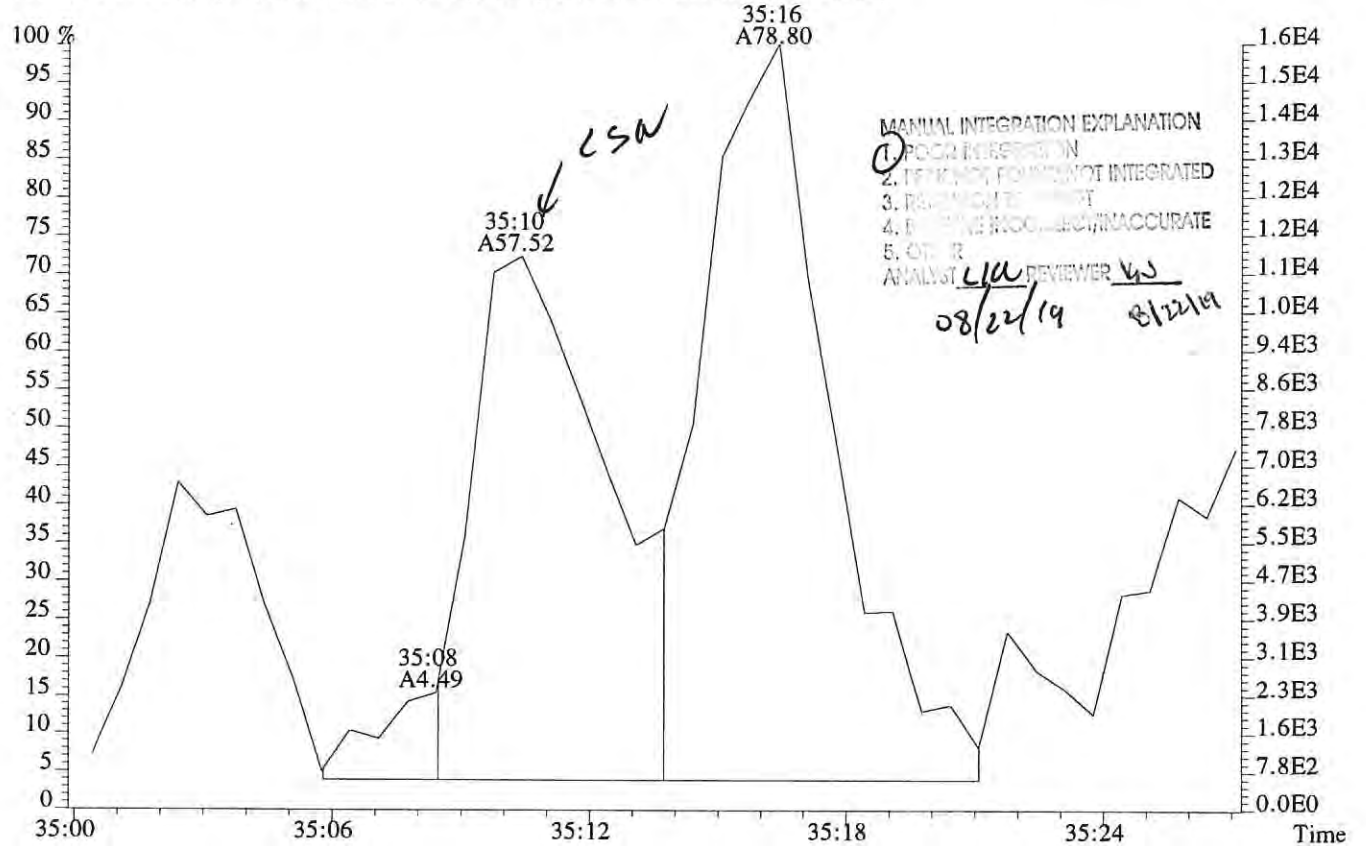
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



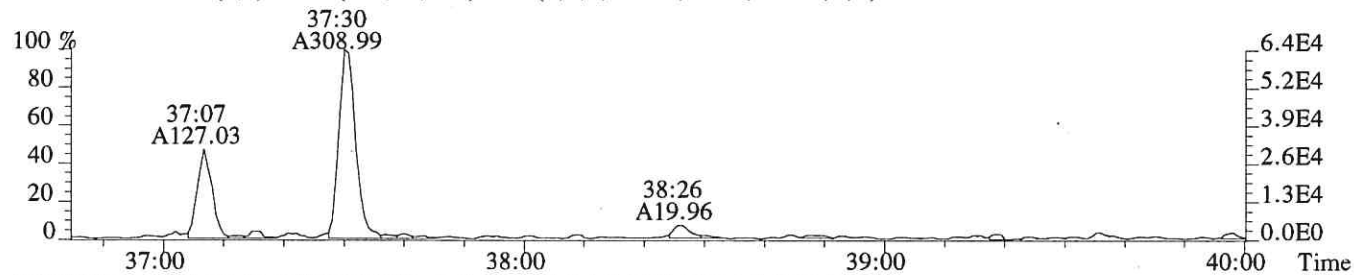
File:P618646 #1-331 Acq:21-AUG-2019 01:32:33 Probe EI+ Magnet SIR VG BioTech Mass spectf
 Sample#1 Exp:E1900593-008
 389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,6200.0,0.40%,F,T)



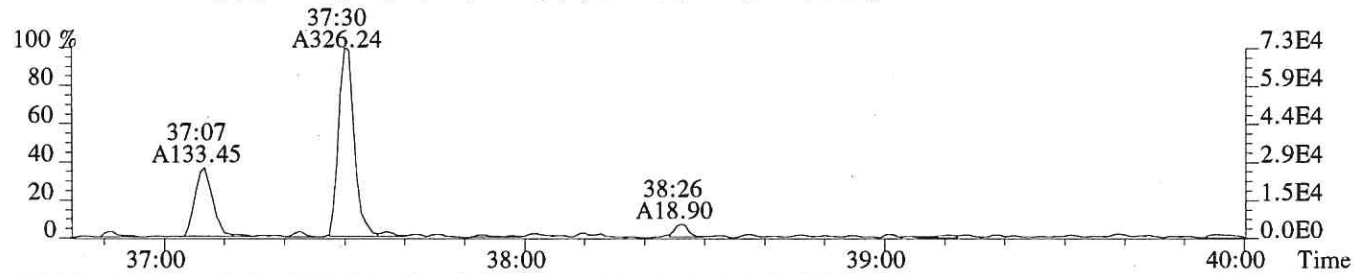
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5520.0,0.40%,F,T)



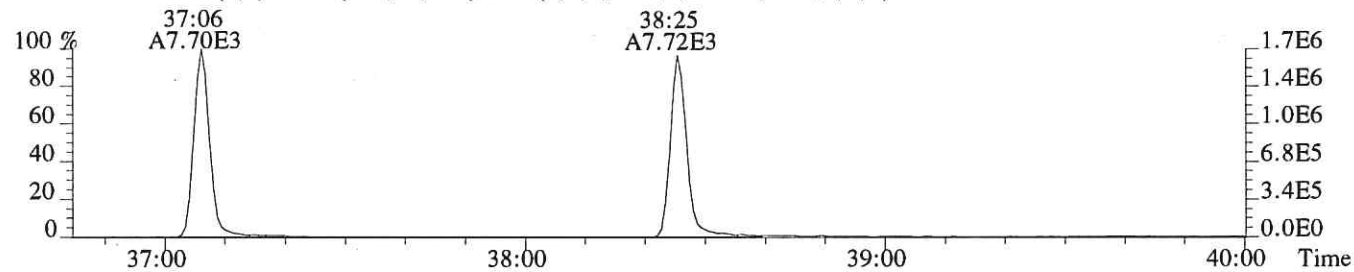
File:P618646 #1-294 Acq:21-AUG-2019 01:32:33 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-008
407.7818 F:4 SMO(1,3) BSM(128,15,-3.0) PKD(3,3,3,0.25%,956.0,0.50%,F,T)



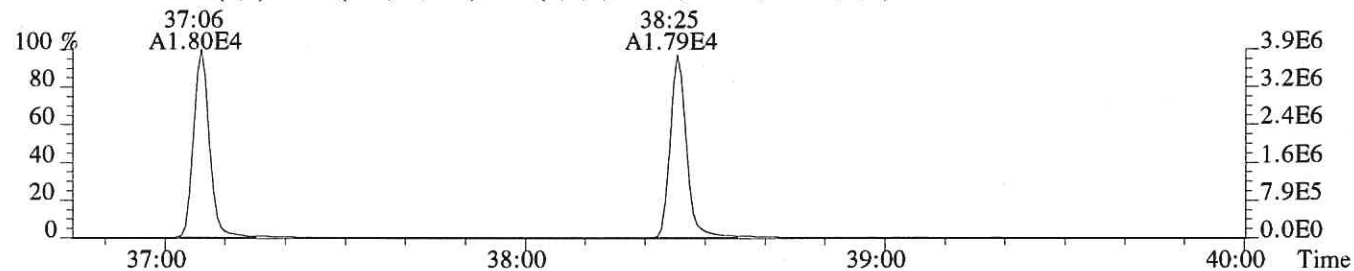
409.7789 F:4 SMO(1,3) BSM(128,15,-3.0) PKD(3,3,3,0.25%,892.0,0.50%,F,T)



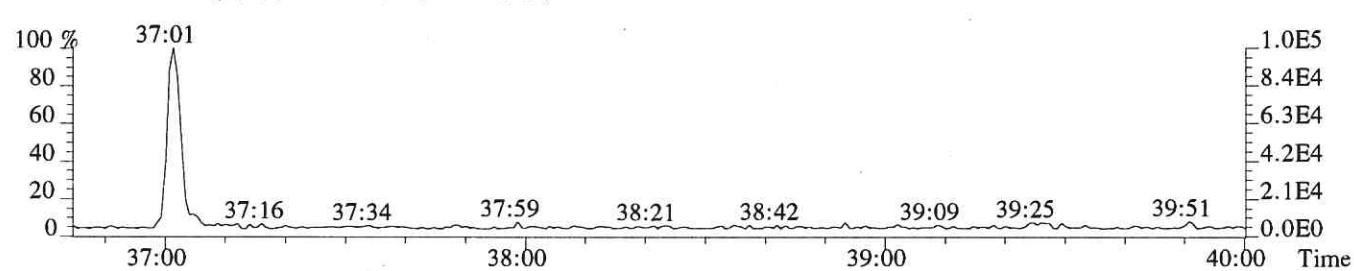
417.8253 F:4 SMO(1,3) BSM(128,15,-3.0) PKD(3,3,3,0.25%,1892.0,0.50%,F,T)



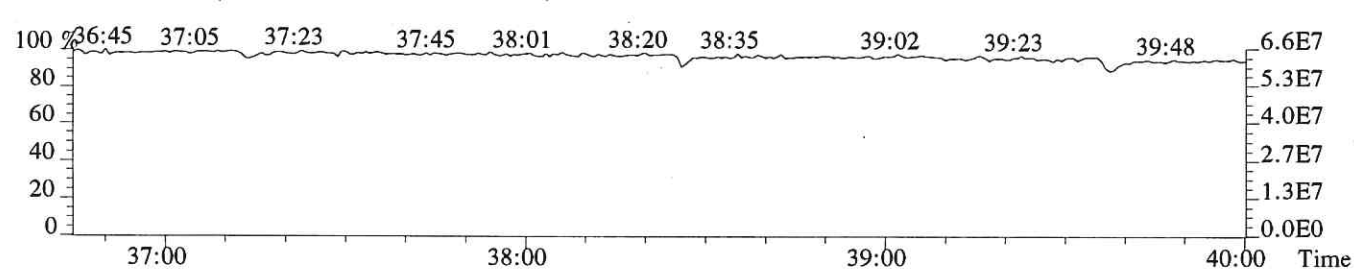
419.8220 F:4 SMO(1,3) BSM(128,15,-3.0) PKD(3,3,3,0.25%,4876.0,0.50%,F,T)



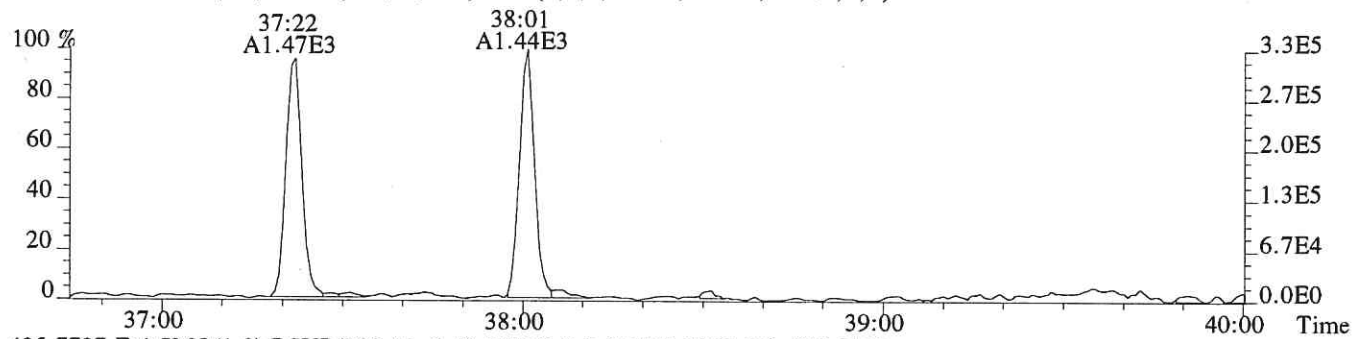
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



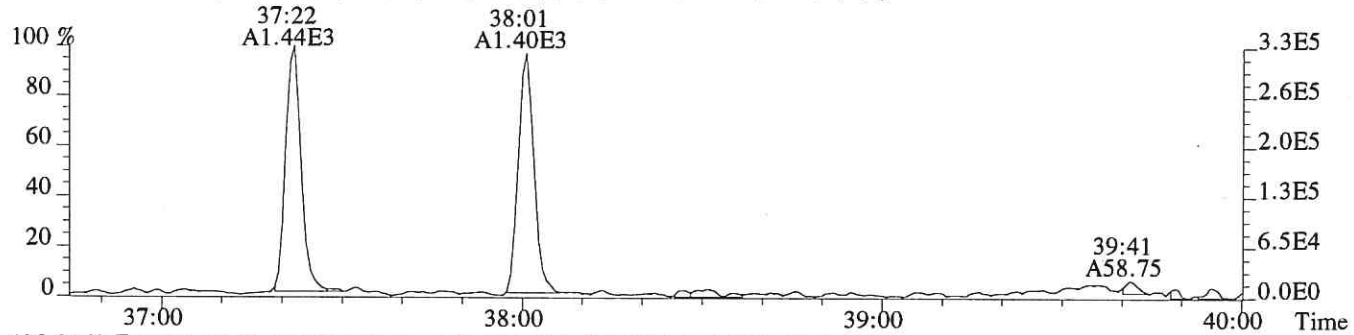
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



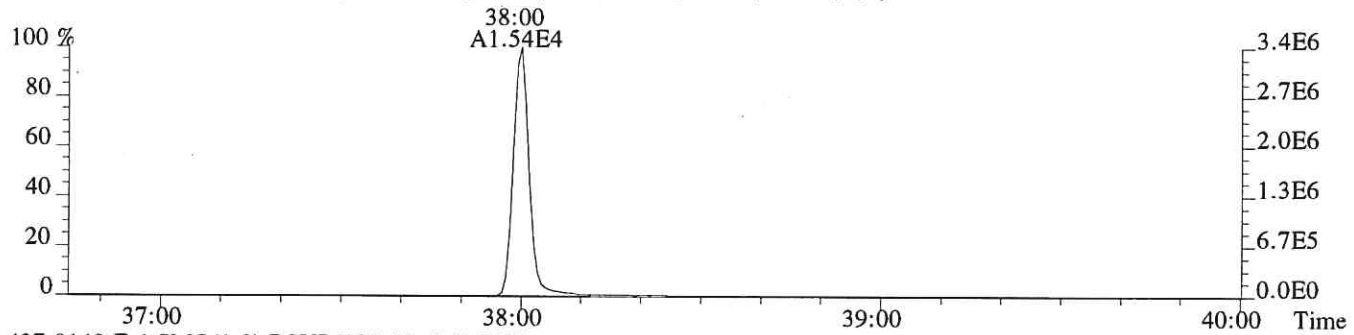
File:P618646 #1-294 Acq:21-AUG-2019 01:32:33 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-008
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,6604.0,0.40%,F,T)



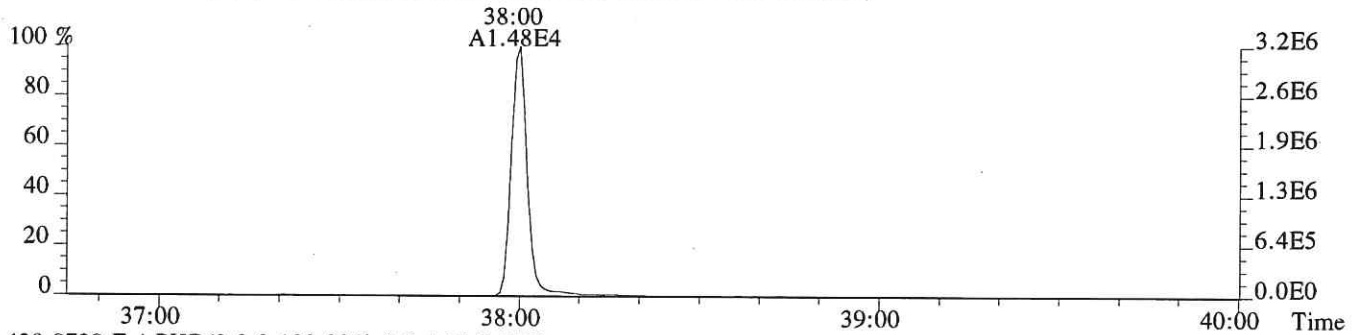
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,7068.0,0.40%,F,T)



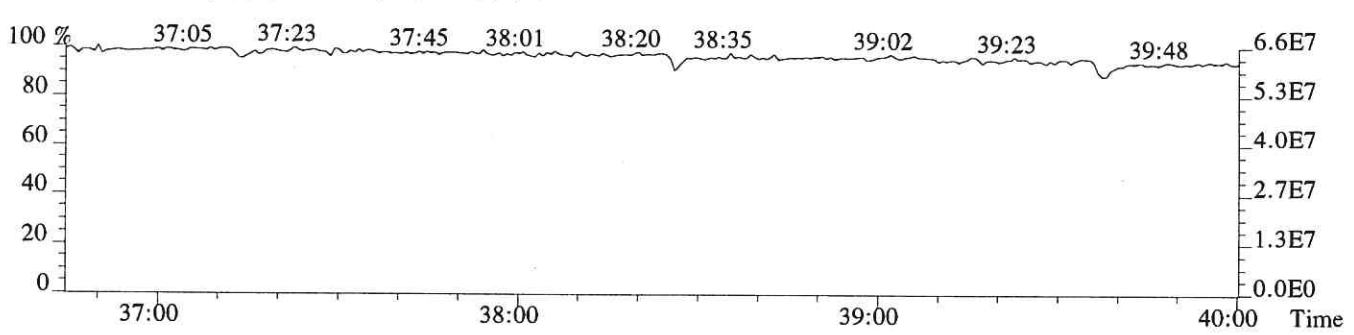
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1104.0,0.40%,F,T)



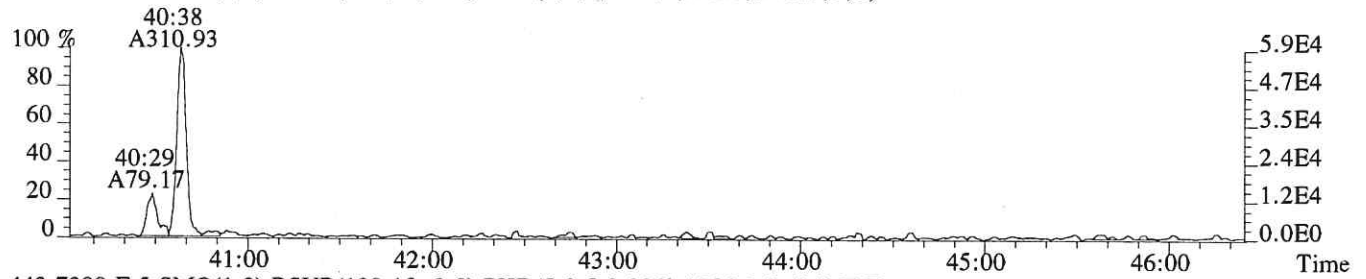
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,624.0,0.40%,F,T)



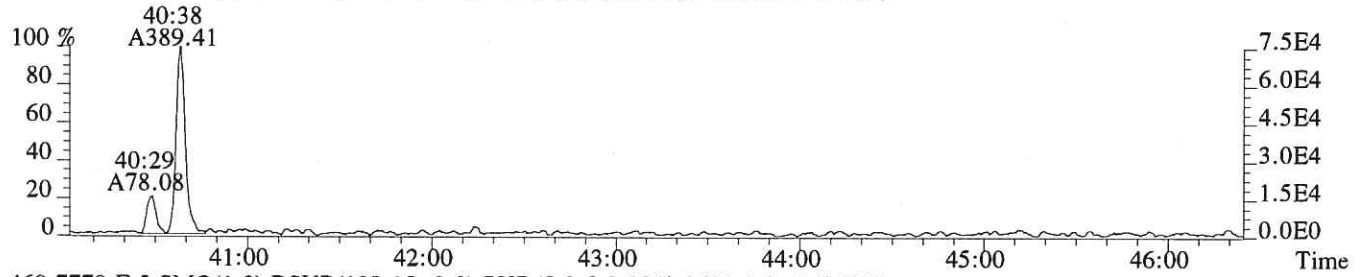
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



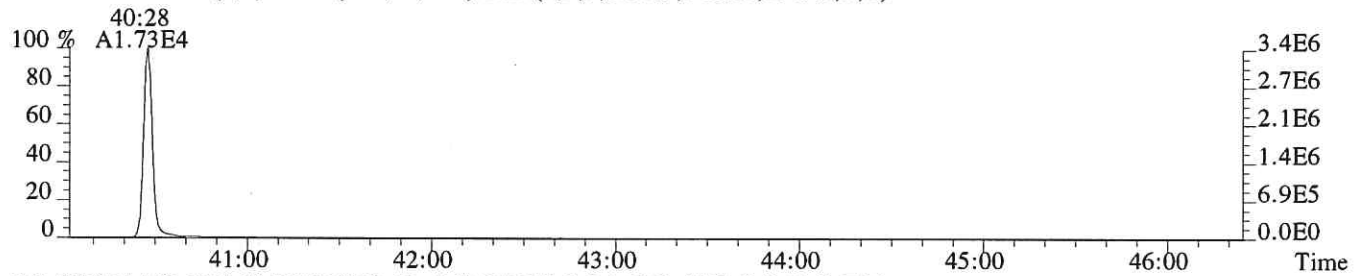
File:P618646 #1-574 Acq:21-AUG-2019 01:32:33 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-008
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,692.0,0.40%,F,T)



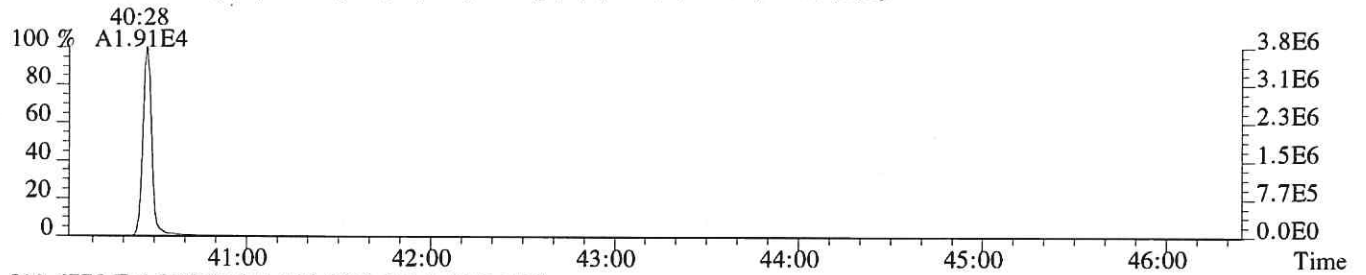
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1856.0,0.40%,F,T)



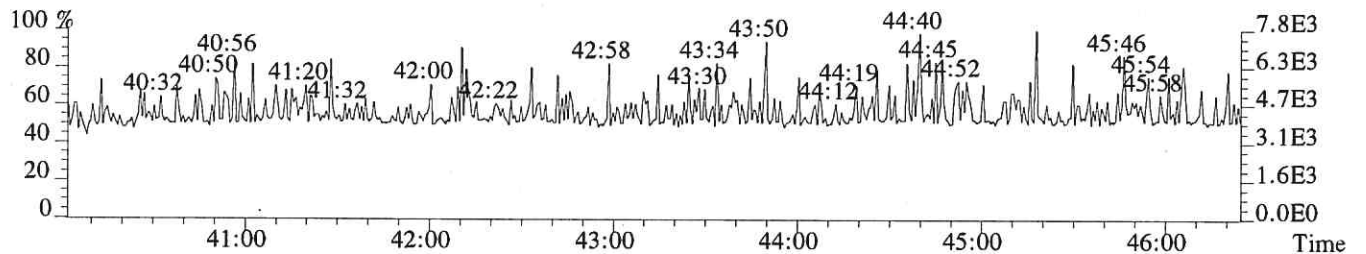
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3620.0,0.40%,F,T)



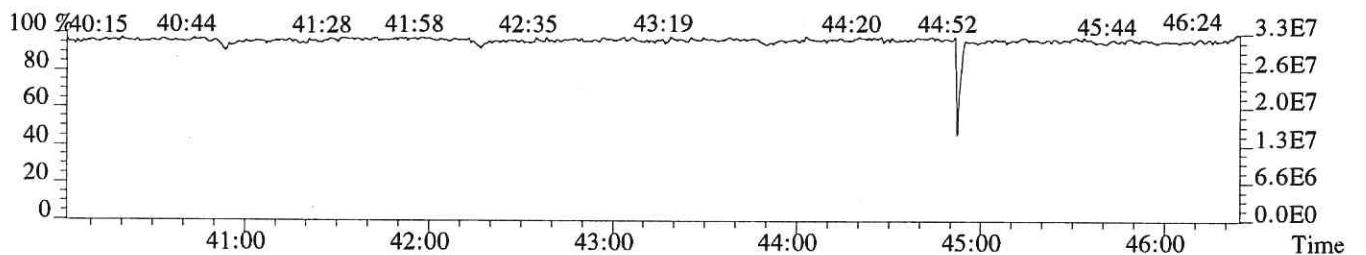
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2564.0,0.40%,F,T)



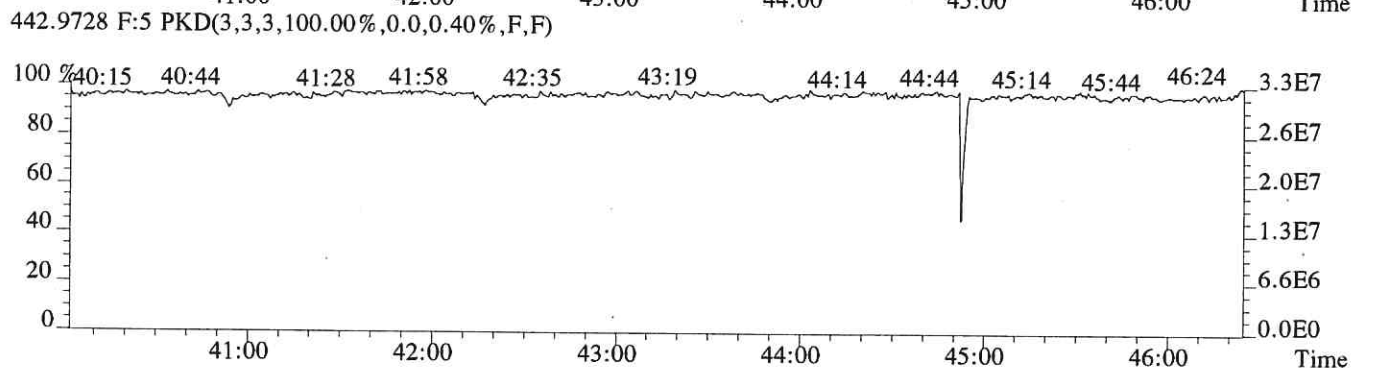
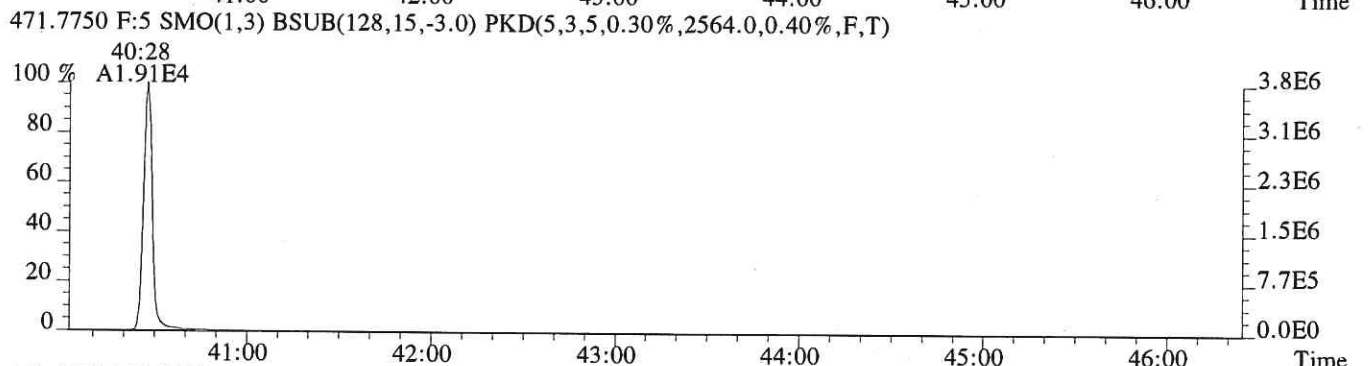
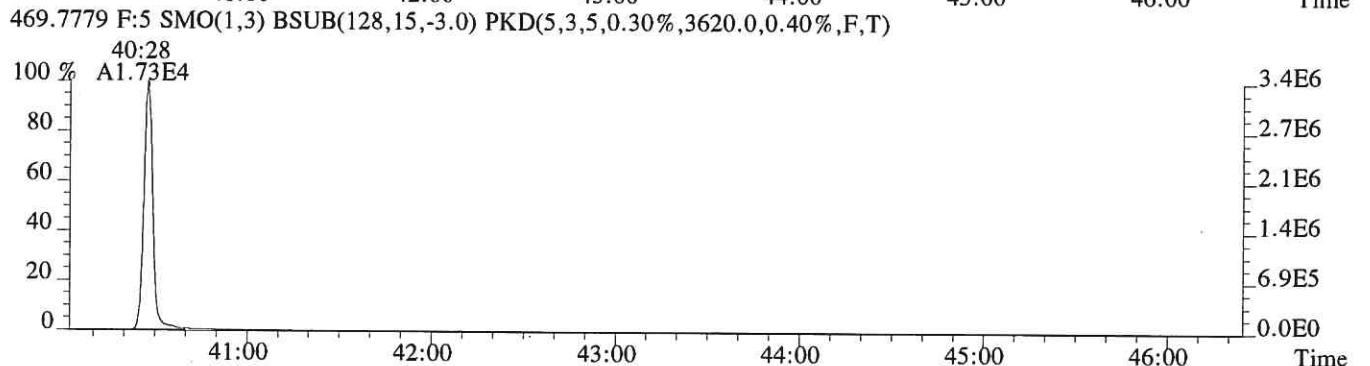
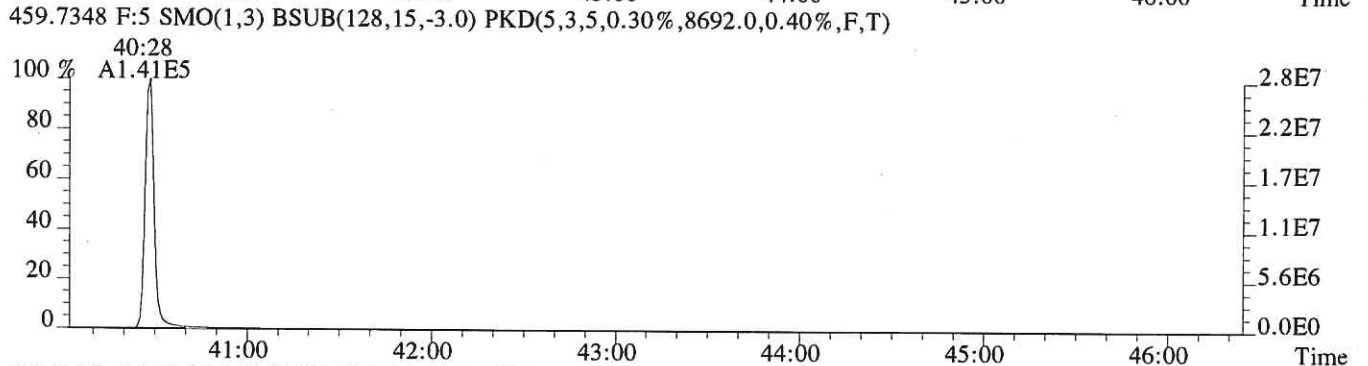
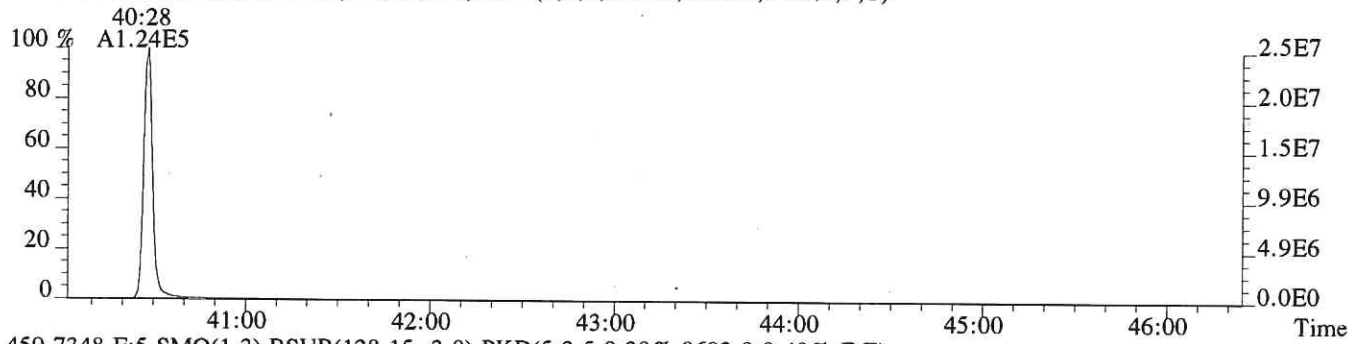
513.6775 F:5 PKD(5,3,5,100.0%,0.0,1.00%,F,F)



442.9728 F:5 PKD(3,3,3,100.0%,0.0,0.40%,F,F)



File:P618646 #1-574 Acq:21-AUG-2019 01:32:33 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:E1900593-008
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6316.0,0.40%,F,T)



ALS ENVIRONMENTAL

Sample Response Summary

CLIENT ID.
METHOD BLANK

Run #9 Filename P523637 Samp: 1 Inj: 1 Acquired: 16-AUG-19 12:15:02
Processed: 21-AUG-19 12:46:04 Sample ID: EQ1900282-01

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	NotFnd	*	*	*	no	no	0.962
2 Unk	1,2,3,7,8-PeCDF	32:22	6.887e+01	6.877e+01	1.00	no	yes	0.968
3 Unk	2,3,4,7,8-PeCDF	33:16	7.798e+01	5.754e+01	1.36	yes	yes	0.919
4 Unk	1,2,3,4,7,8-HxCDF	35:55	7.716e+01	4.988e+01	1.55	no	no	1.161
5 Unk	1,2,3,6,7,8-HxCDF	36:02	4.885e+01	4.731e+01	1.03	no	no	1.073
6 Unk	2,3,4,6,7,8-HxCDF	36:32	6.255e+01	5.273e+01	1.19	yes	no	1.069
7 Unk	1,2,3,7,8,9-HxCDF	37:17	6.588e+01	7.638e+01	0.86	no	no	1.096
8 Unk	1,2,3,4,6,7,8-HpCDF	38:31	2.030e+02	2.041e+02	0.99	yes	no	1.281
9 Unk	1,2,3,4,7,8,9-HpCDF	39:55	7.118e+01	5.565e+01	1.28	no	no	1.192
10 Unk	OCDF	42:24	5.780e+02	6.192e+02	0.93	yes	no	1.204
11 Unk	2,3,7,8-TCDD	NotFnd	*	*	*	no	no	1.077
12 Unk	1,2,3,7,8-PeCDD	33:33	6.754e+01	5.749e+01	1.17	no	yes	0.971
13 Unk	1,2,3,4,7,8-HxCDD	36:39	4.456e+01	5.458e+01	0.82	no	no	1.024
14 Unk	1,2,3,6,7,8-HxCDD	36:45	4.170e+01	5.485e+01	0.76	no	no	1.038
15 Unk	1,2,3,7,8,9-HxCDD	36:59	5.405e+01	3.366e+01	1.61	no	yes	1.055
16 Unk	1,2,3,4,6,7,8-HpCDD	39:26	1.234e+02	1.388e+02	0.89	yes	no	0.989
17 Unk	OCDD	42:12	6.950e+02	7.987e+02	0.87	yes	no	1.094
18 IS	13C-2,3,7,8-TCDF	28:10	1.970e+04	2.505e+04	0.79	yes	no	1.287
19 IS	13C-1,2,3,7,8-PeCDF	32:21	3.540e+04	2.212e+04	1.60	yes	no	1.416
20 IS	13C-2,3,4,7,8-PeCDF	33:16	3.285e+04	2.093e+04	1.57	yes	no	1.374
21 IS	13C-1,2,3,4,7,8-HxCDF	35:55	1.479e+04	2.881e+04	0.51	yes	no	1.114
22 IS	13C-1,2,3,6,7,8-HxCDF	36:01	1.530e+04	2.951e+04	0.52	yes	no	1.245
23 IS	13C-2,3,4,6,7,8-HxCDF	36:31	1.374e+04	2.639e+04	0.52	yes	no	1.146
24 IS	13C-1,2,3,7,8,9-HxCDF	37:16	1.123e+04	2.224e+04	0.51	yes	no	0.986
25 IS	13C-1,2,3,4,6,7,8-HpCDF	38:30	8.278e+03	1.884e+04	0.44	yes	no	0.915
26 IS	13C-1,2,3,4,7,8,9-HpCDF	39:54	7.392e+03	1.699e+04	0.44	yes	no	0.746
27 IS	13C-2,3,7,8-TCDD	28:57	1.636e+04	2.061e+04	0.79	yes	no	0.929
28 IS	13C-1,2,3,7,8-PeCDD	33:32	2.681e+04	1.689e+04	1.59	yes	no	1.017
29 IS	13C-1,2,3,4,7,8-HxCDD	36:39	1.986e+04	1.551e+04	1.28	yes	no	0.945
30 IS	13C-1,2,3,6,7,8-HxCDD	36:44	2.233e+04	1.747e+04	1.28	yes	no	0.924
31 IS	13C-1,2,3,4,6,7,8-HpCDD	39:25	1.417e+04	1.316e+04	1.08	yes	no	0.876
32 IS	13C-OCDD	42:11	1.372e+04	1.526e+04	0.90	yes	no	0.662
33 RS/RT	13C-1,2,3,4-TCDD	28:22	5.991e+04	7.573e+04	0.79	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	36:58	6.136e+04	4.883e+04	1.26	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	28:58	1.635e+04				no	1.010

$$\text{OCDD} = \frac{(6.950e+02 + 7.987e+02) \times 4000 \text{ pg} \times 1}{(1.372e+04 + 1.526e+04) \times \text{g} \times / 100 \times 1.094}$$

ALS ENVIRONMENTAL -- HOUSTON HRMS
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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
METHOD BLANK

Run #9 Filename P523637 Samp: 1 Inj: 1 Acquired: 16-AUG-19 12:15:02
Processed: 21-AUG-19 12:46:04 LAB. ID: EQ1900282-01

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	*	1.70e+03	*	*	4.12e+03	*
2	1,2,3,7,8-PeCDF	1.33e+04	8.84e+02	1.5e+01	1.53e+04	2.45e+03	6.2e+00
3	2,3,4,7,8-PeCDF	1.79e+04	8.84e+02	2.0e+01	9.62e+03	2.45e+03	3.9e+00
4	1,2,3,4,7,8-HxCDF	1.62e+04	2.07e+03	7.8e+00	1.14e+04	1.62e+03	7.1e+00
5	1,2,3,6,7,8-HxCDF	1.05e+04	2.07e+03	5.1e+00	1.01e+04	1.62e+03	6.2e+00
6	2,3,4,6,7,8-HxCDF	1.21e+04	2.07e+03	5.8e+00	1.14e+04	1.62e+03	7.0e+00
7	1,2,3,7,8,9-HxCDF	1.27e+04	2.07e+03	6.2e+00	1.51e+04	1.62e+03	9.3e+00
8	1,2,3,4,6,7,8-HpCDF	4.35e+04	6.68e+02	6.5e+01	4.06e+04	1.03e+03	4.0e+01
9	1,2,3,4,7,8,9-HpCDF	1.63e+04	6.68e+02	2.4e+01	1.17e+04	1.03e+03	1.1e+01
10	OCDF	1.01e+05	7.00e+02	1.4e+02	1.06e+05	2.47e+03	4.3e+01
11	2,3,7,8-TCDD	*	5.78e+03	*	*	2.95e+03	*
12	1,2,3,7,8-PeCDD	1.01e+04	2.45e+03	4.1e+00	1.11e+04	1.03e+03	1.1e+01
13	1,2,3,4,7,8-HxCDD	1.08e+04	1.30e+03	8.3e+00	1.08e+04	1.25e+03	8.6e+00
14	1,2,3,6,7,8-HxCDD	9.65e+03	1.30e+03	7.4e+00	9.55e+03	1.25e+03	7.6e+00
15	1,2,3,7,8,9-HxCDD	1.24e+04	1.30e+03	9.6e+00	7.89e+03	1.25e+03	6.3e+00
16	1,2,3,4,6,7,8-HpCDD	2.54e+04	1.11e+03	2.3e+01	3.19e+04	1.27e+03	2.5e+01
17	OCDD	1.34e+05	8.32e+02	1.6e+02	1.43e+05	1.24e+03	1.1e+02
18	13C-2,3,7,8-TCDF	3.76e+06	2.06e+04	1.8e+02	4.70e+06	6.85e+03	6.9e+02
19	13C-1,2,3,7,8-PeCDF	6.90e+06	1.63e+03	4.2e+03	4.31e+06	1.14e+03	3.8e+03
20	13C-2,3,4,7,8-PeCDF	6.66e+06	1.63e+03	4.1e+03	4.21e+06	1.14e+03	3.7e+03
21	13C-1,2,3,4,7,8-HxCDF	3.39e+06	2.25e+03	1.5e+03	6.48e+06	1.42e+03	4.6e+03
22	13C-1,2,3,6,7,8-HxCDF	3.40e+06	2.25e+03	1.5e+03	6.57e+06	1.42e+03	4.6e+03
23	13C-2,3,4,6,7,8-HxCDF	3.05e+06	2.25e+03	1.4e+03	6.00e+06	1.42e+03	4.2e+03
24	13C-1,2,3,7,8,9-HxCDF	2.42e+06	2.25e+03	1.1e+03	4.87e+06	1.42e+03	3.4e+03
25	13C-1,2,3,4,6,7,8-HpCDF	1.91e+06	3.60e+03	5.3e+02	4.35e+06	1.99e+03	2.2e+03
26	13C-1,2,3,4,7,8,9-HpCDF	1.54e+06	3.60e+03	4.3e+02	3.55e+06	1.99e+03	1.8e+03
27	13C-2,3,7,8-TCDD	3.26e+06	7.56e+03	4.3e+02	4.10e+06	3.28e+03	1.2e+03
28	13C-1,2,3,7,8-PeCDD	5.36e+06	2.43e+03	2.2e+03	3.36e+06	2.56e+03	1.3e+03
29	13C-1,2,3,4,7,8-HxCDD	4.55e+06	2.55e+03	1.8e+03	3.57e+06	1.73e+03	2.1e+03
30	13C-1,2,3,6,7,8-HxCDD	5.06e+06	2.55e+03	2.0e+03	3.98e+06	1.73e+03	2.3e+03
31	13C-1,2,3,4,6,7,8-HpCDD	3.07e+06	1.36e+03	2.3e+03	2.89e+06	7.76e+02	3.7e+03
32	13C-OCDD	2.55e+06	1.76e+03	1.4e+03	2.77e+06	1.30e+03	2.1e+03
33	13C-1,2,3,4-TCDD	1.17e+07	7.56e+03	1.6e+03	1.48e+07	3.28e+03	4.5e+03
34	13C-1,2,3,7,8,9-HxCDD	1.33e+07	2.55e+03	5.2e+03	1.07e+07	1.73e+03	6.2e+03
35	37Cl-2,3,7,8-TCDD	3.25e+06	3.72e+03	8.7e+02			

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Peak List Summary

CLIENT ID.

METHOD BLANK

Entry: 39 Totals Name: Total Penta-Furans2

Run: 9 File: P523637 Sample:1 Injection:1 Function:2

Acquired: 16-AUG-19 12:15:02 Processed: 21-AUG-19 12:46:04

Mass:	339.8600	341.8570	Tot Response: 1.36e+02		RRF: 0.9438			
#	RT	Resp	Resp Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	33:16	7.80e+01	5.75e+01	1.36	yes 1.36e+02	2,3,4,7,8-PeCDF	n	y

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Peak List Summary

CLIENT ID.

METHOD BLANK

Entry: 41 Totals Name: Total Hexa-Furans

Run: 9 File: P523637 Sample:1 Injection:1 Function:3

Acquired: 16-AUG-19 12:15:02 Processed: 21-AUG-19 12:46:04

Mass:	373.8210	375.8180	Tot Response: 1.15e+02		RRF: 1.099				
#	RT	Resp	Resp Ratio	Meet	Tot Resp	Name	Mod1?	Mod2	
1	36:32	6.26e+01	5.27e+01	1.19	yes 1.15e+02	2,3,4,6,7,8-HxCDF	n	n	

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Peak List Summary

CLIENT ID.

METHOD BLANK

Entry: 42 Totals Name: Total Hexa-Dioxins

Run: 9 File: P523637 Sample:1 Injection:1 Function:3

Acquired: 16-AUG-19 12:15:02 Processed: 21-AUG-19 12:46:04

Mass:	389.8160	391.8130	Tot Response: 3.89e+01		RRF: 1.039			
#	RT	Resp	Resp Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	35:20	2.25e+01	1.65e+01	1.36	yes	3.89e+01	n	n

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Peak List Summary

CLIENT ID.

METHOD BLANK

Entry: 43 Totals Name: Total Hepta-Furans

Run: 9 File: P523637 Sample:1 Injection:1 Function:4

Acquired: 16-AUG-19 12:15:02 Processed: 21-AUG-19 12:46:04

Mass:	407.7820	409.7790	Tot Response: 6.04e+02		RRF: 1.241				
#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	38:31	2.03e+02	2.04e+02	0.99	yes	4.07e+02	1,2,3,4,6,7,8-HpCDF	n	n
2	38:54	1.04e+02	9.23e+01	1.13	yes	1.97e+02		n	n

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Peak List Summary

CLIENT ID.

METHOD BLANK

Entry: 44 Totals Name: Total Hepta-Dioxins

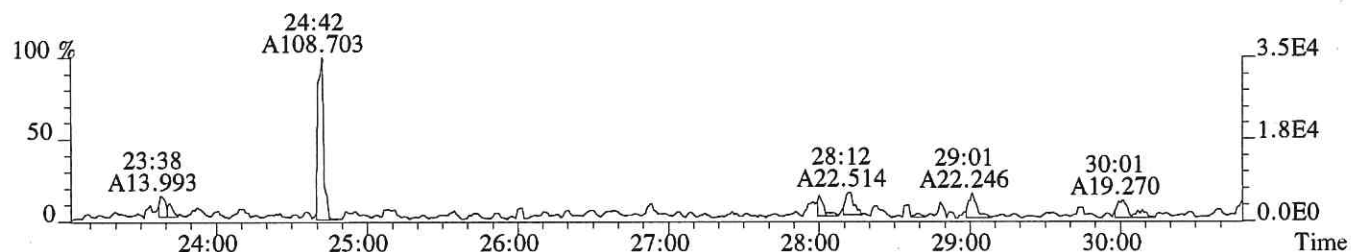
Run: 9 File: P523637 Sample:1 Injection:1 Function:4

Acquired: 16-AUG-19 12:15:02 Processed: 21-AUG-19 12:46:04

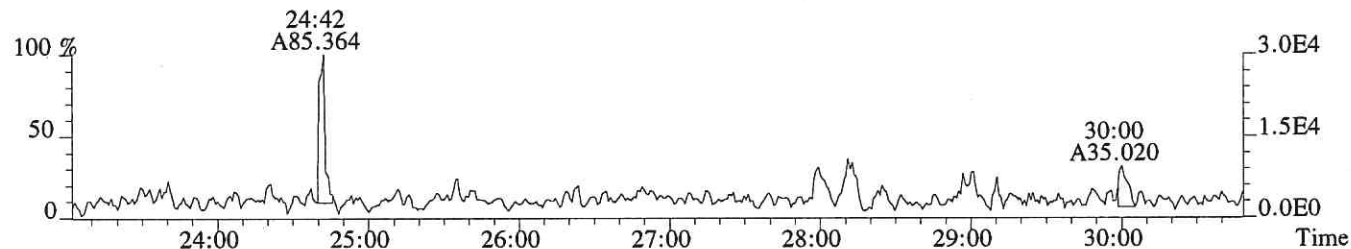
Mass:	423.7770	425.7740	Tot Response: 5.21e+02		RRF: 0.9886				
#	RT	Resp	Resp Ratio	Meet	Tot Resp	Name	Mod1?	Mod2	
1	38:46	1.39e+02	1.20e+02	1.16	yes 2.59e+02		n	n	
2	39:26	1.23e+02	1.39e+02	0.89	yes 2.62e+02	1,2,3,4,6,7,8-HpCDD	n	n	

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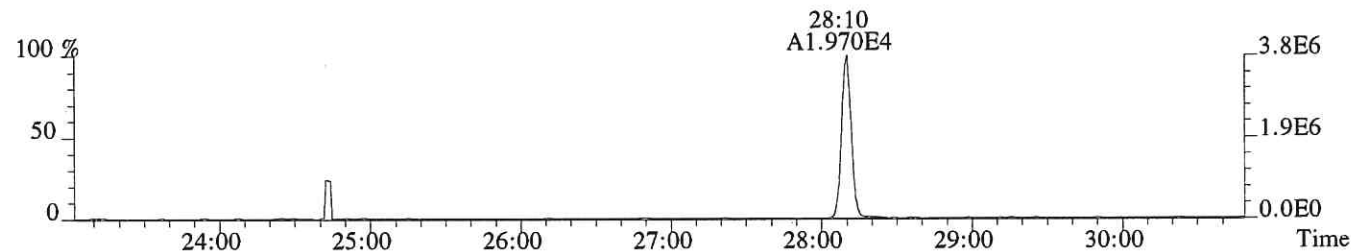
File:P523637 #1-552 Acq:16-AUG-2019 12:15:02 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:EQ1900282-01
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1700.0,1.00%,F,T)



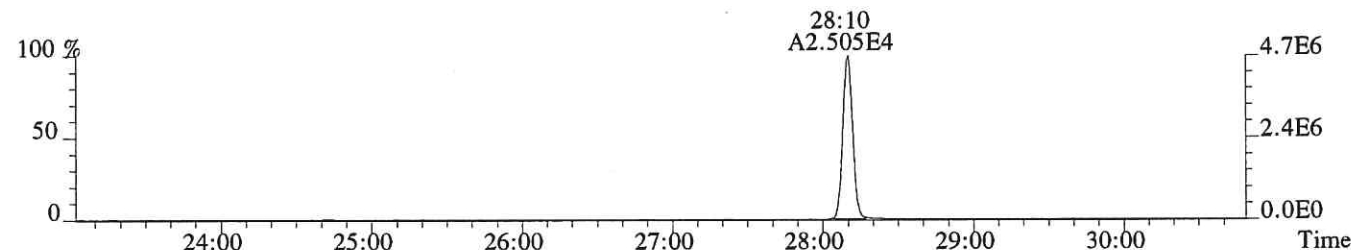
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4116.0,1.00%,F,T)



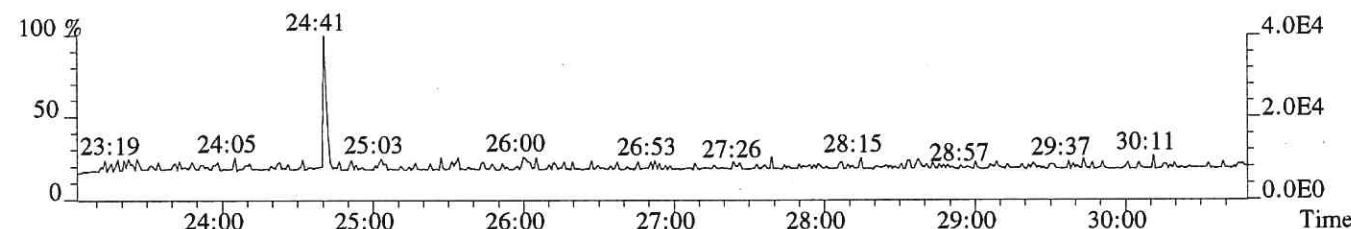
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,20556.0,1.00%,F,T)



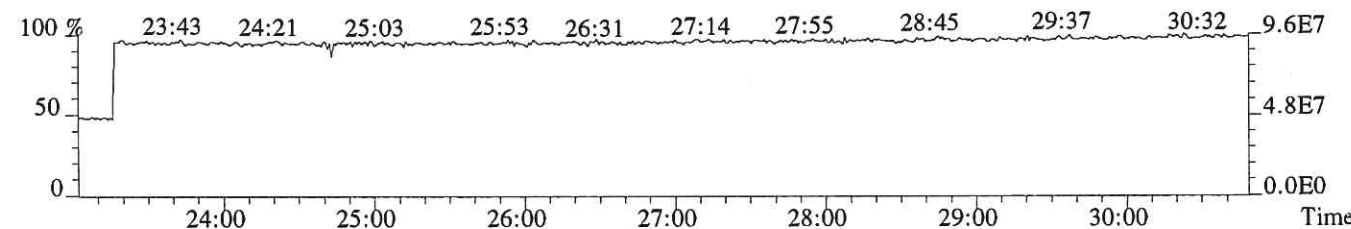
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6852.0,1.00%,F,T)



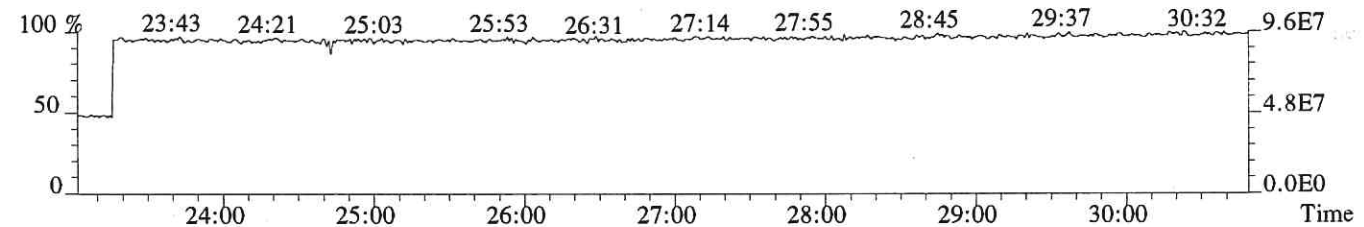
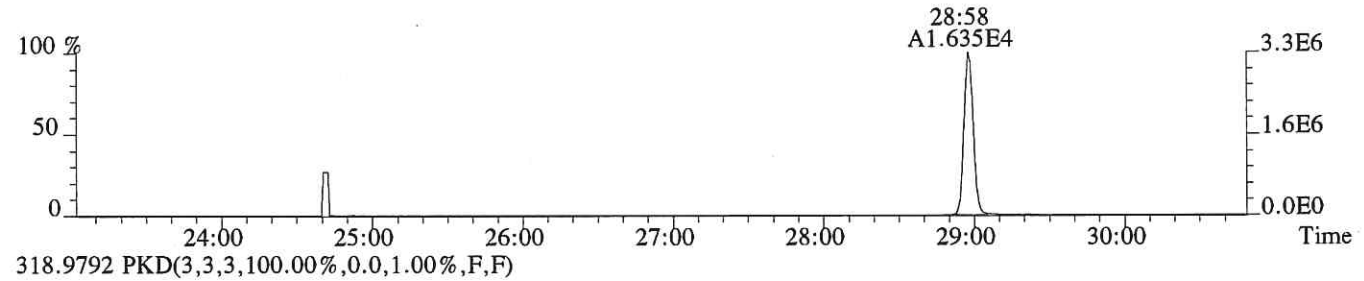
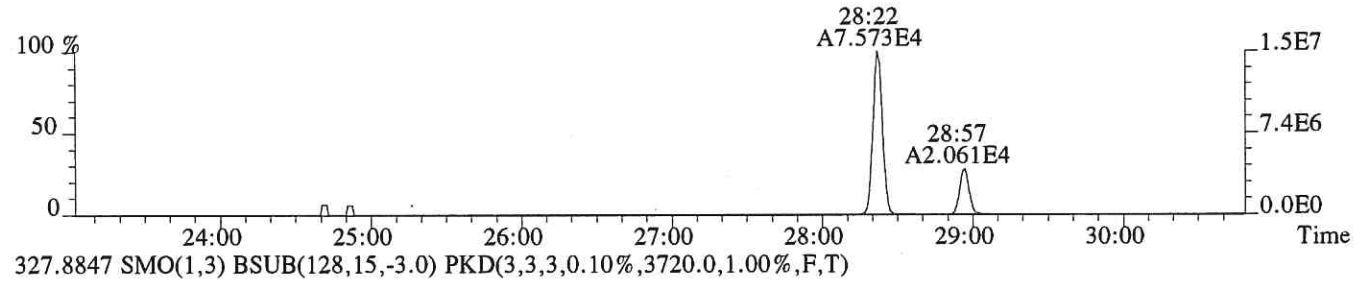
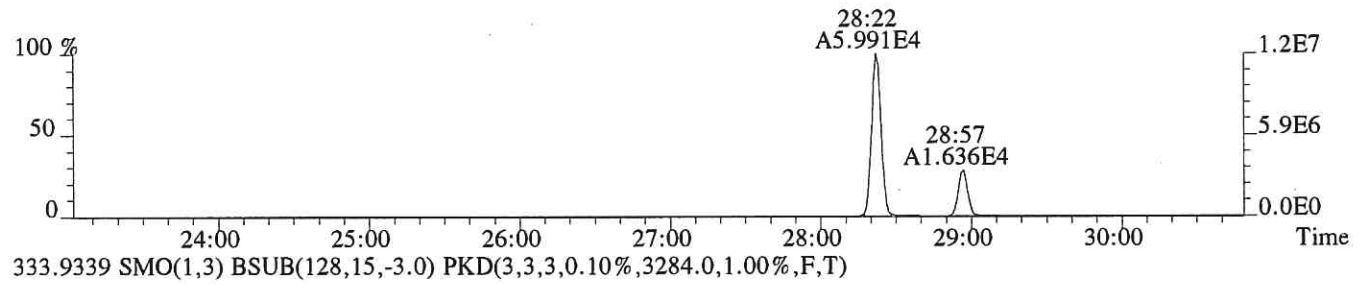
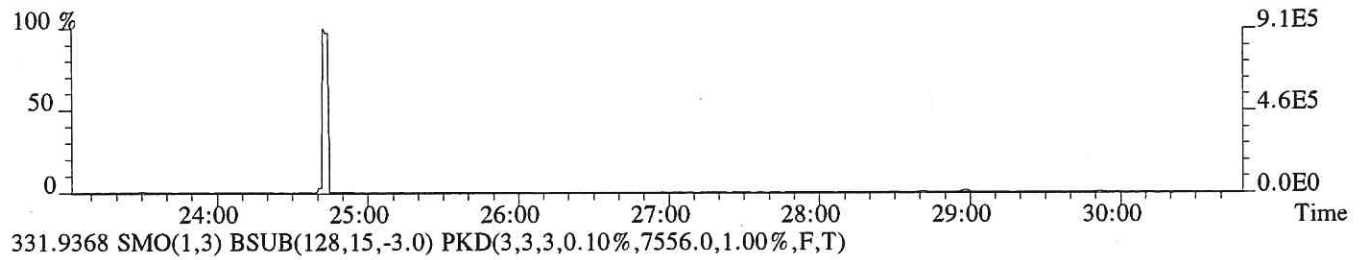
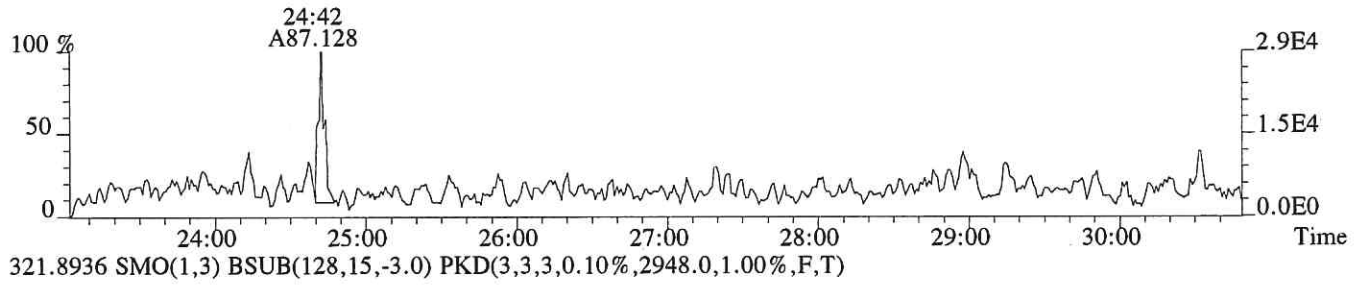
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



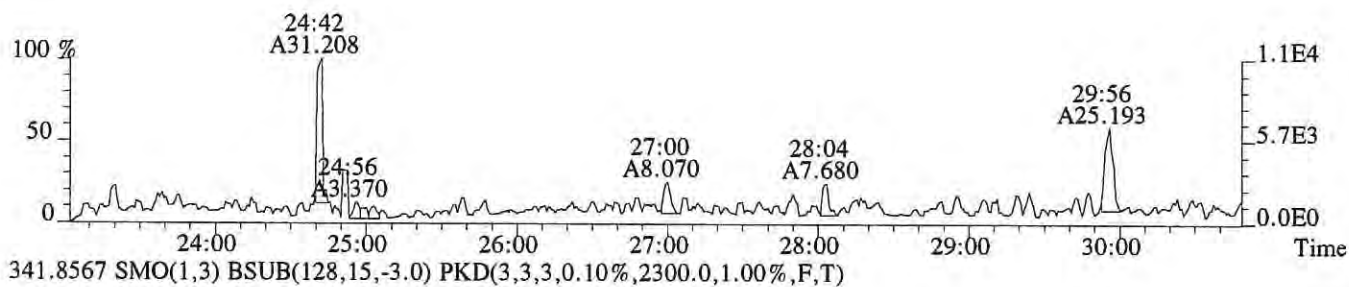
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



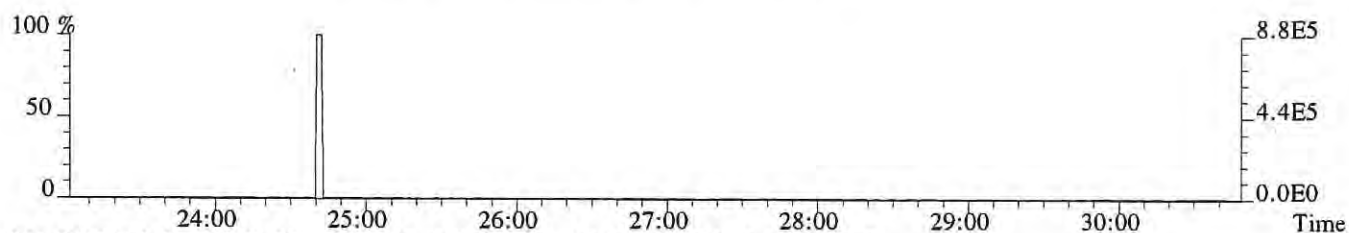
File:P523637 #1-552 Acq:16-AUG-2019 12:15:02 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:EQ1900282-01
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5784.0,1.00%,F,T)



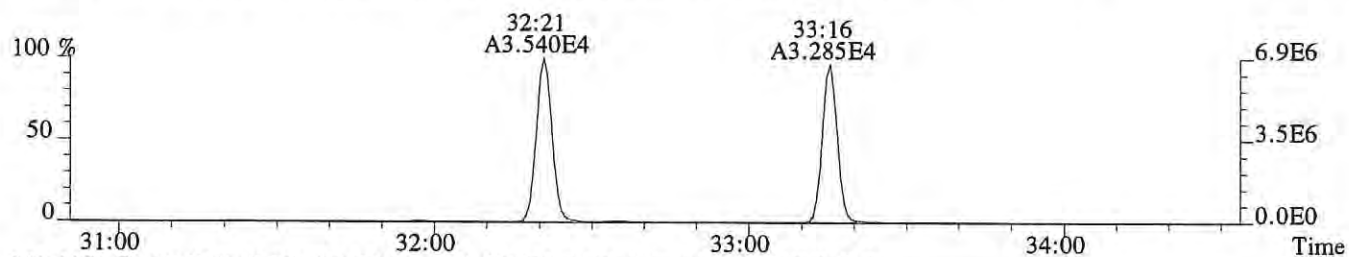
File:P523637 #1-552 Acq:16-AUG-2019 12:15:02 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:EQ1900282-01
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1276.0,1.00%,F,T)



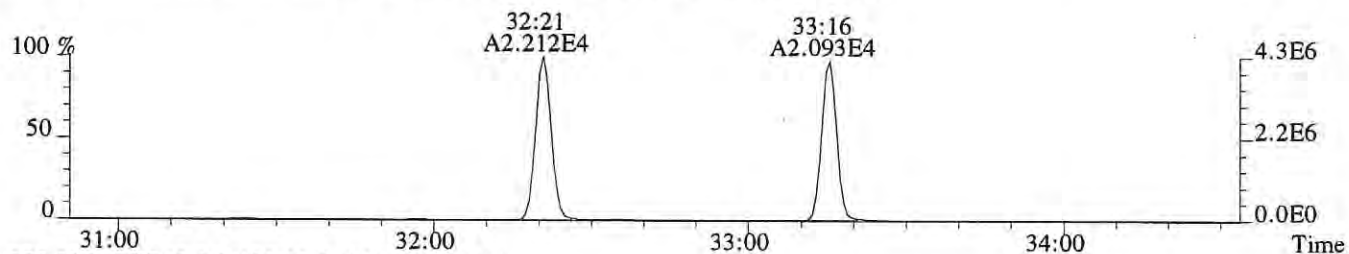
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2300.0,1.00%,F,T)



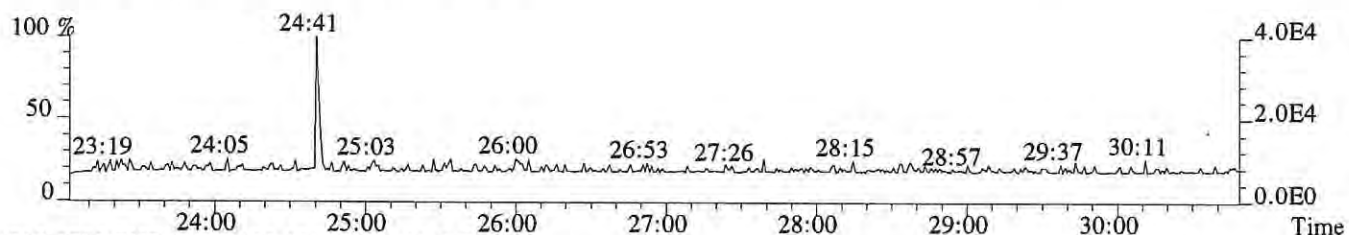
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1632.0,1.00%,F,T)



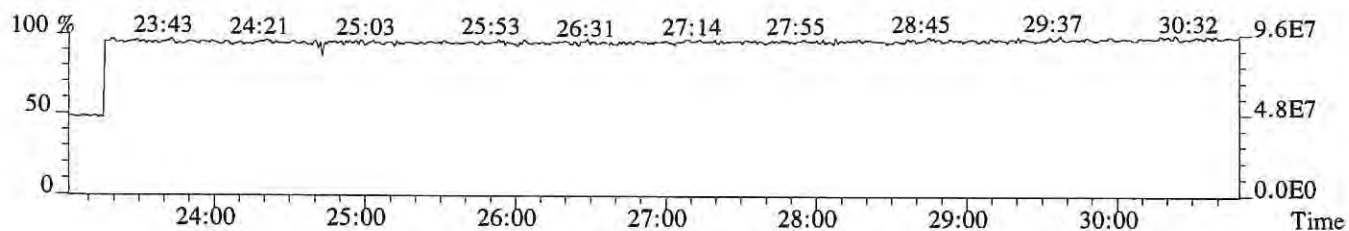
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1144.0,1.00%,F,T)



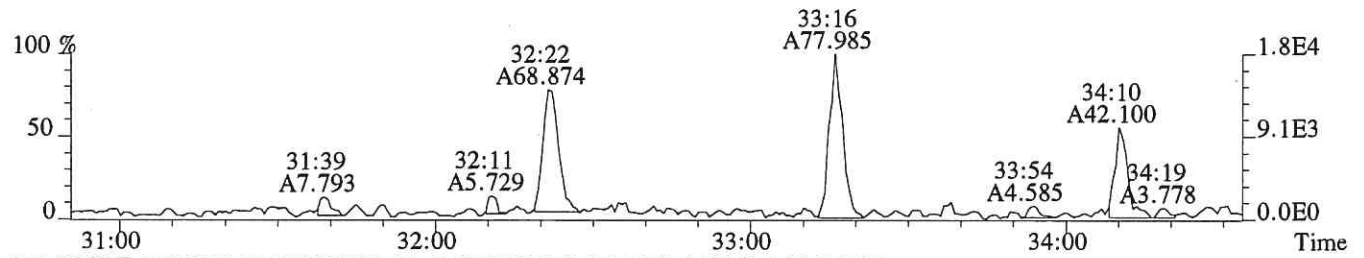
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



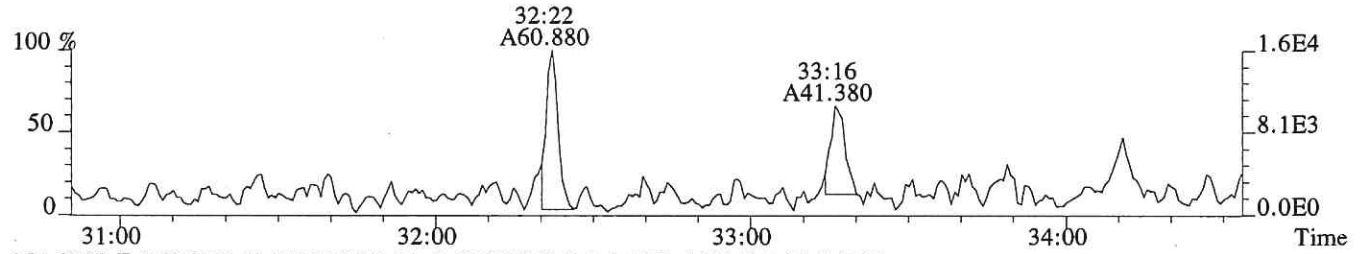
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



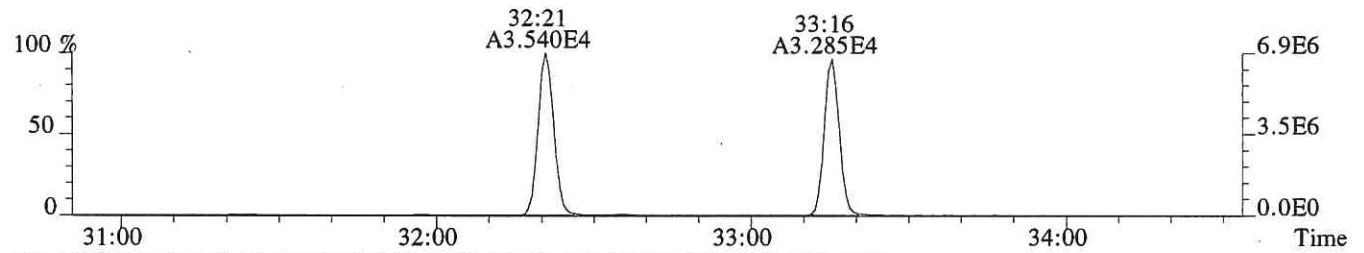
File:P523637 #1-335 Acq:16-AUG-2019 12:15:02 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:EQ1900282-01
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,884.0,1.00%,F,T)



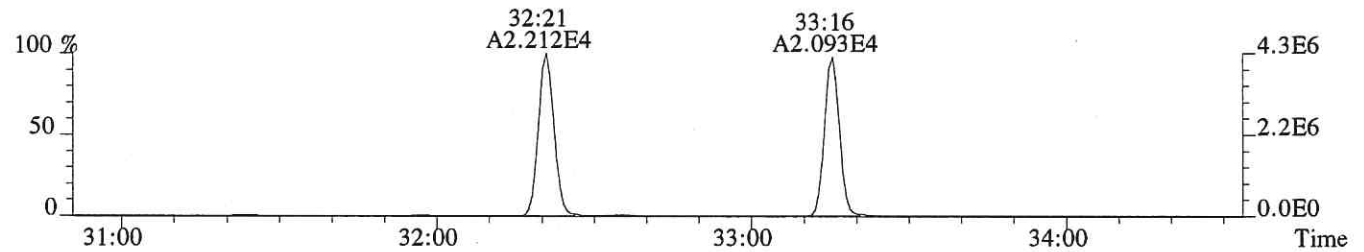
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2452.0,1.00%,F,T)



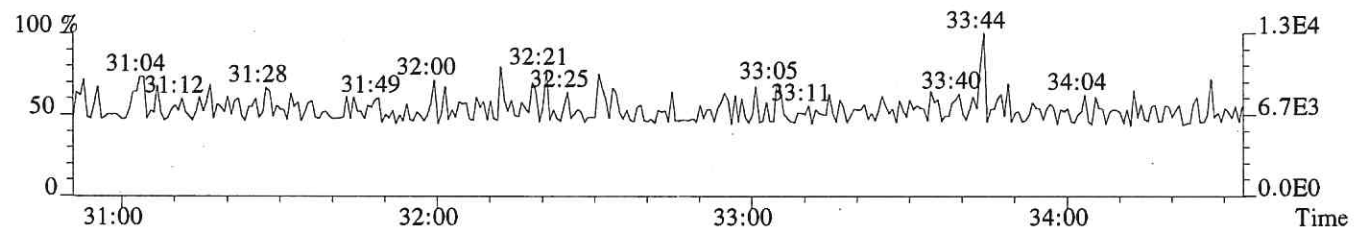
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1632.0,1.00%,F,T)



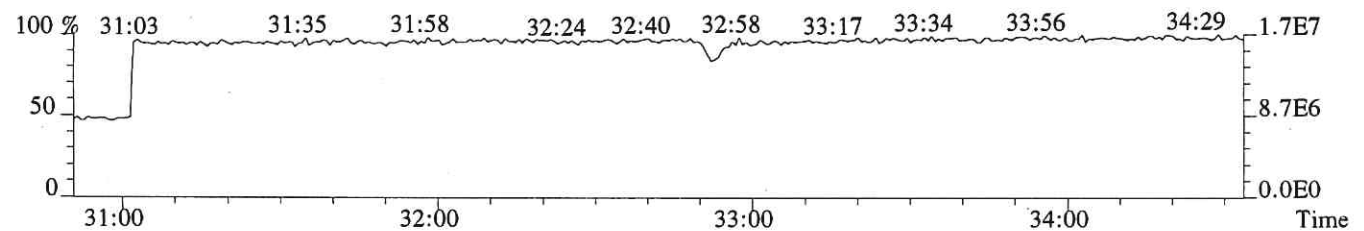
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1144.0,1.00%,F,T)



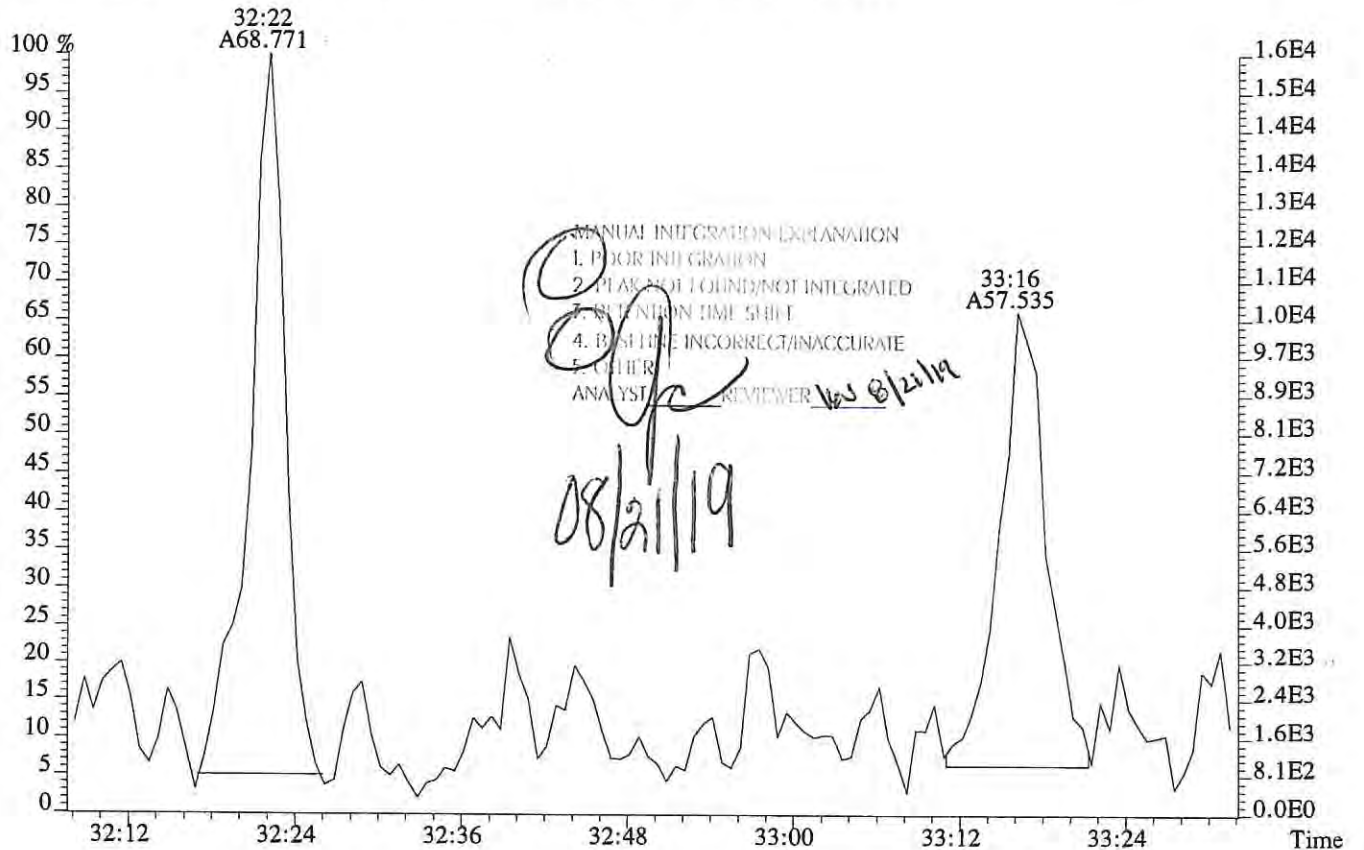
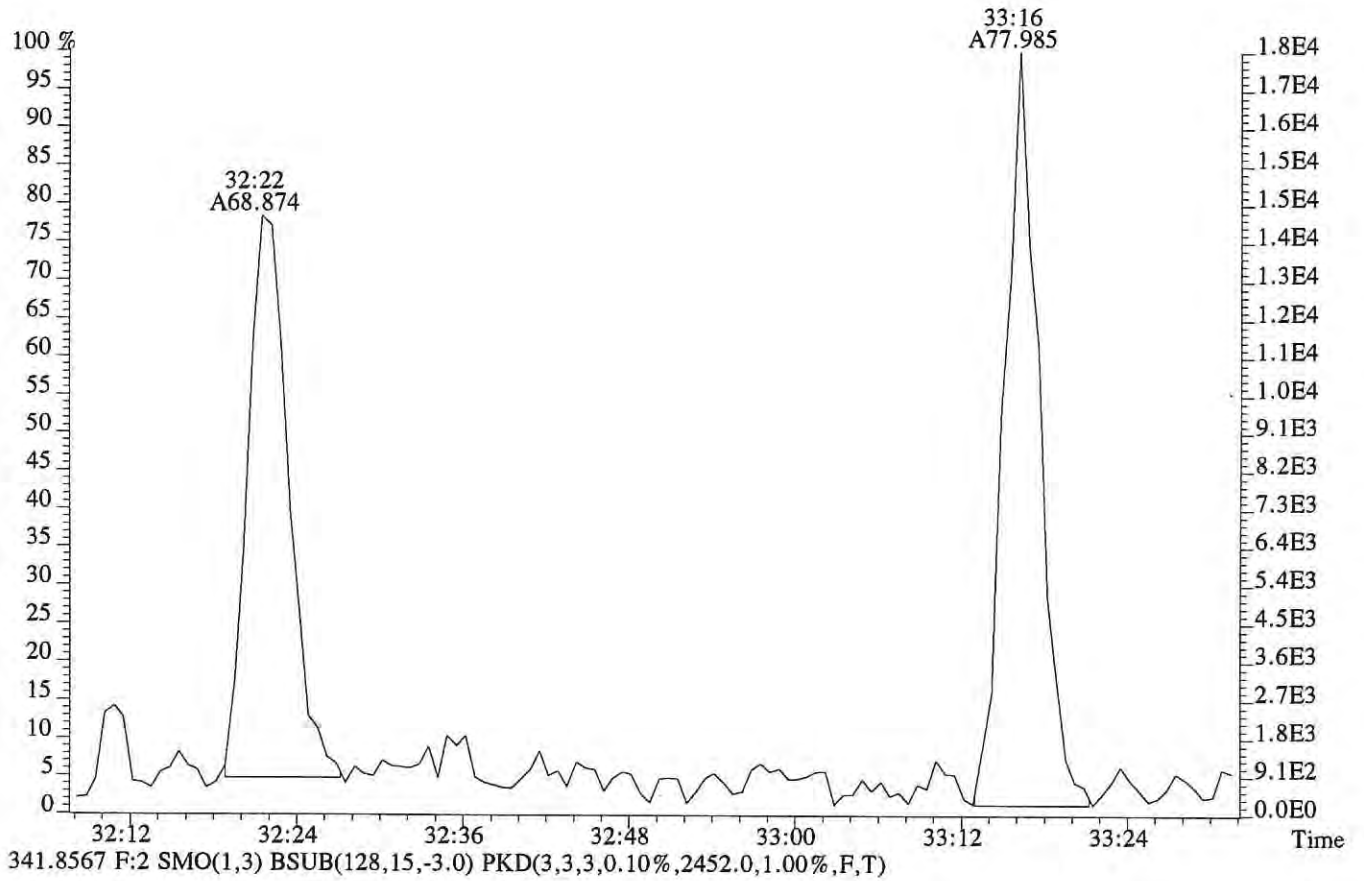
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



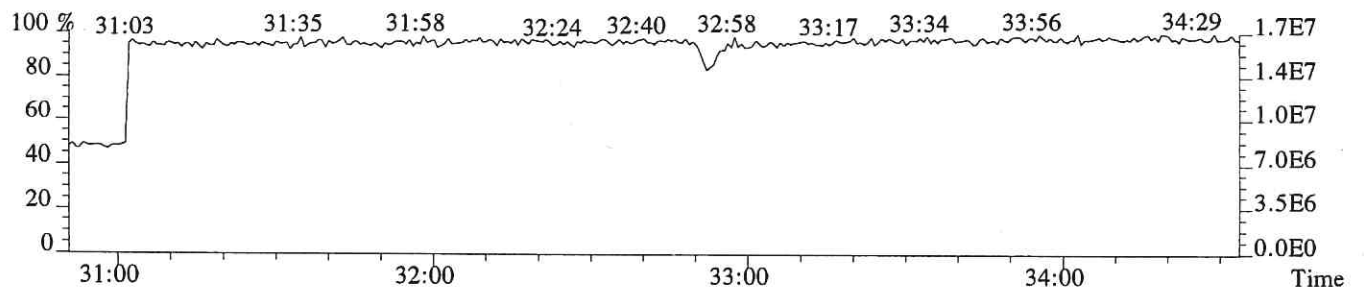
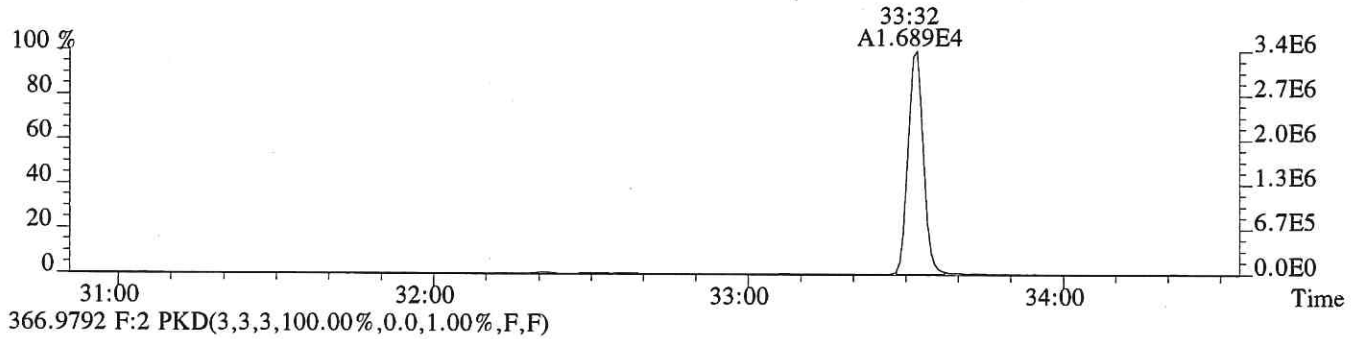
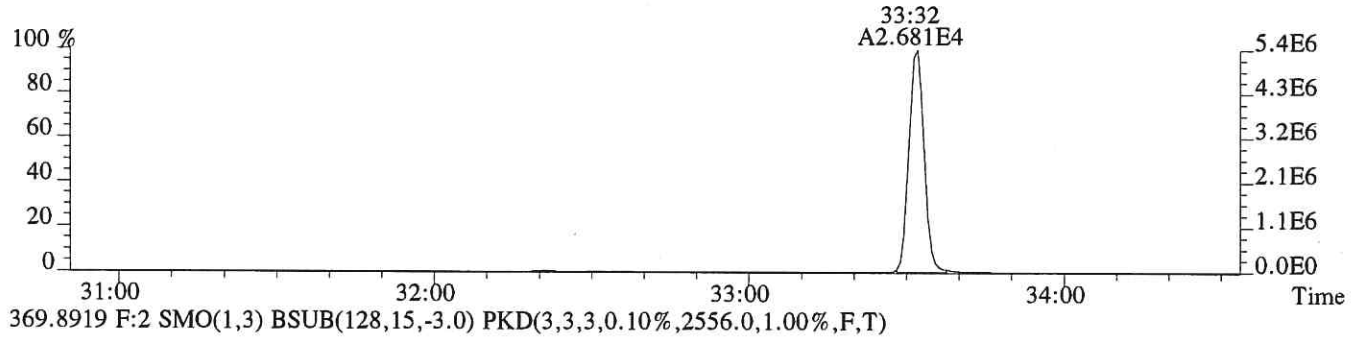
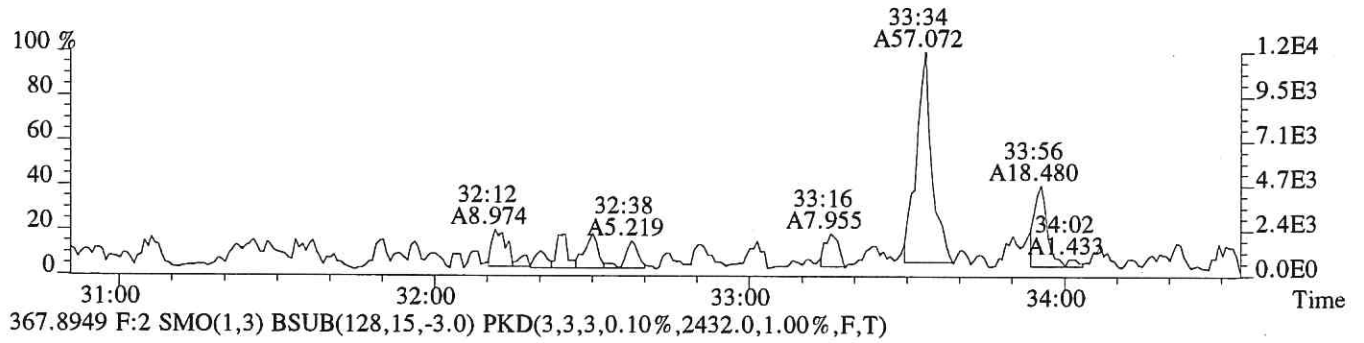
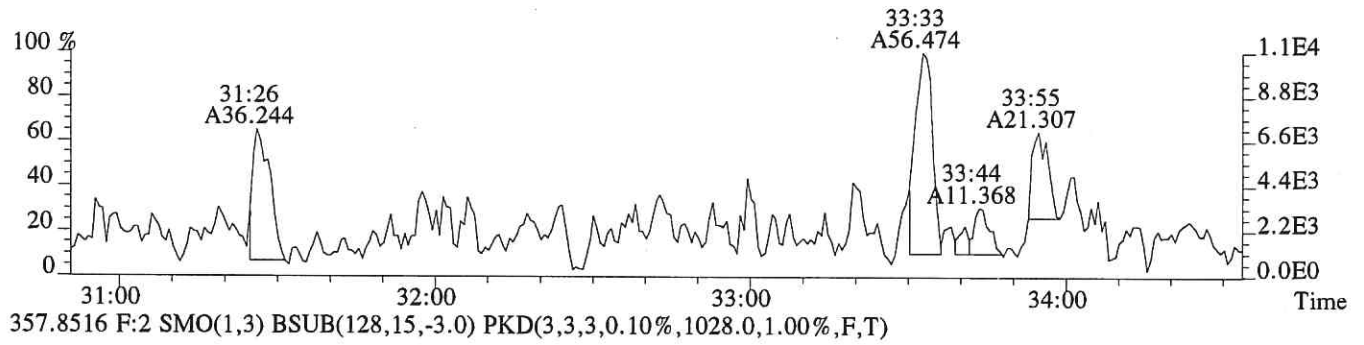
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



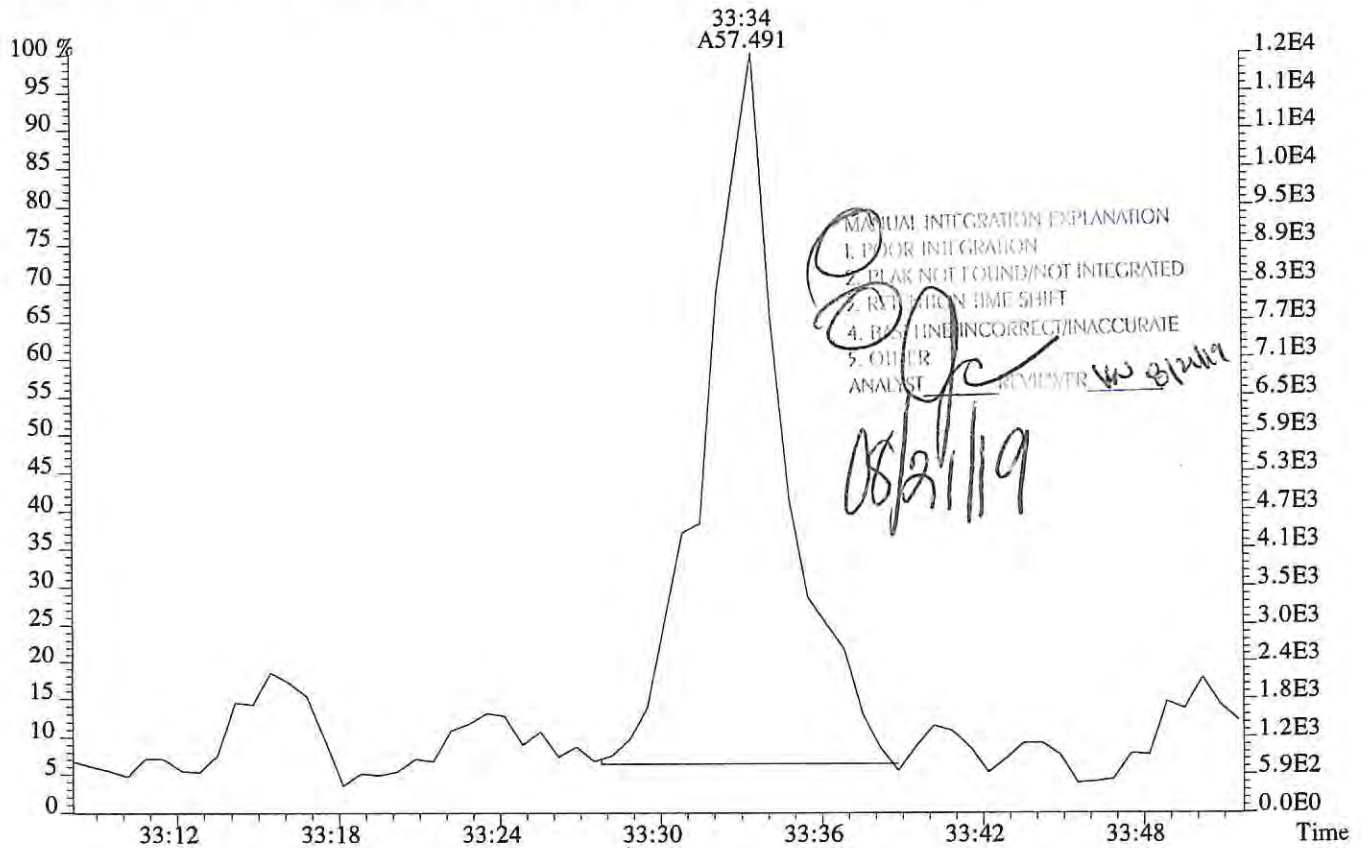
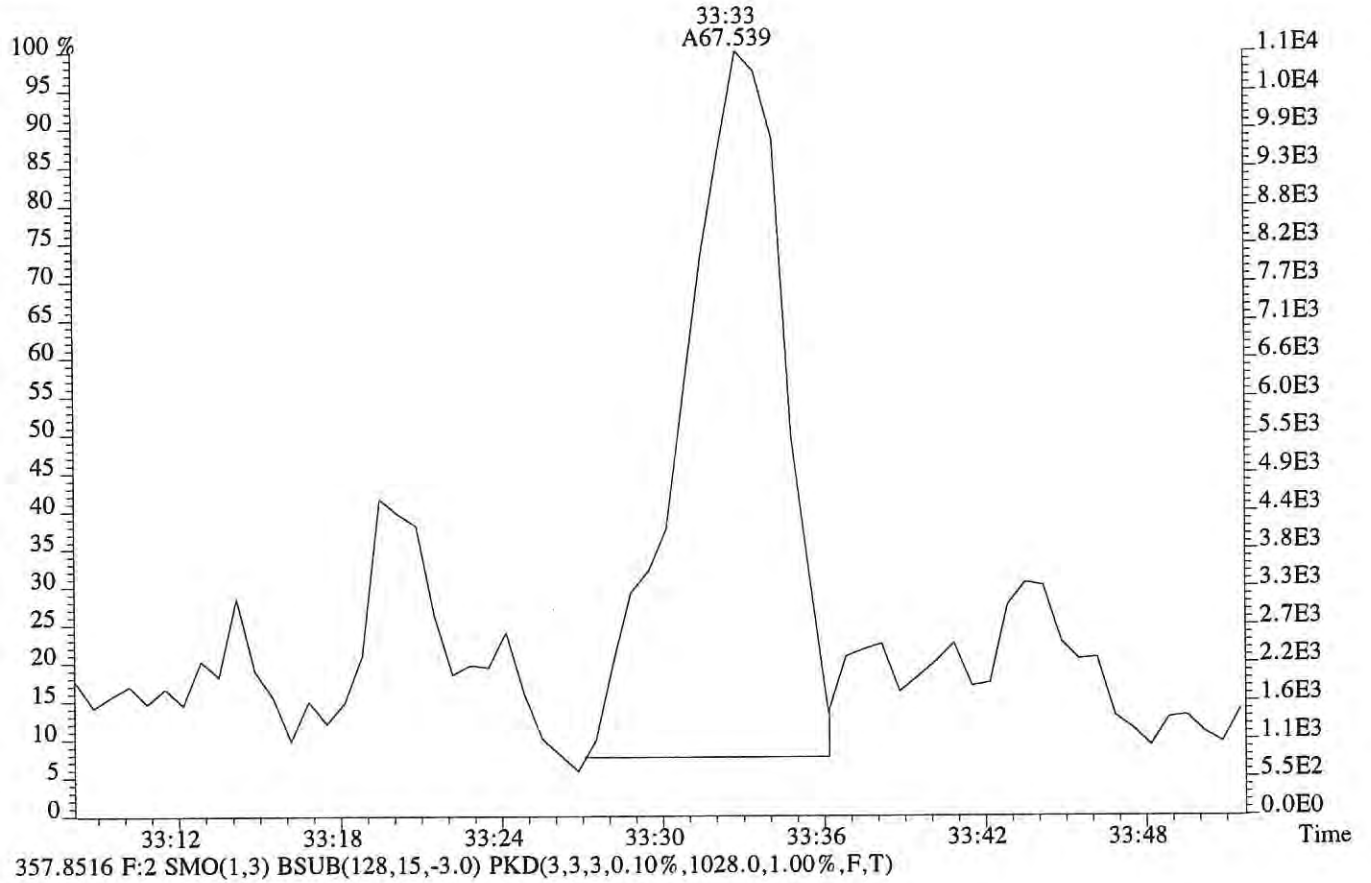
File:P523637 #1-335 Acq:16-AUG-2019 12:15:02 Probe EI+ Magnet SIR VG BioTech Mass spectr
 Sample#1 Exp:EQ1900282-01
 339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,884.0,1.00%,F,T)



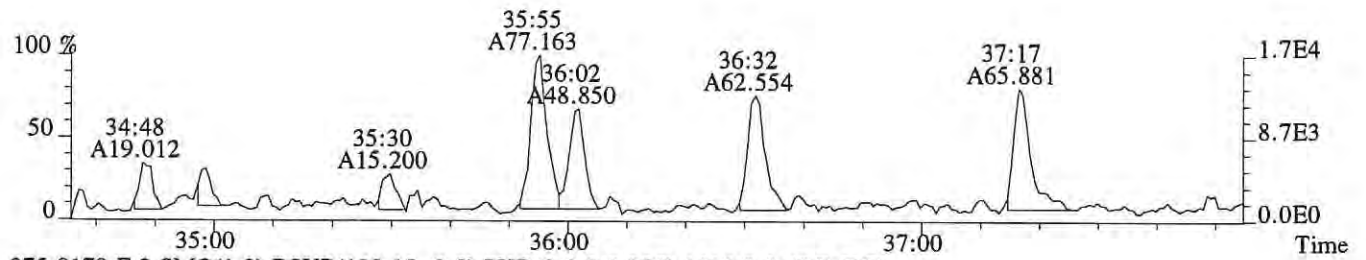
File:P523637 #1-335 Acq:16-AUG-2019 12:15:02 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:EQ1900282-01
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2448.0,1.00%,F,T)



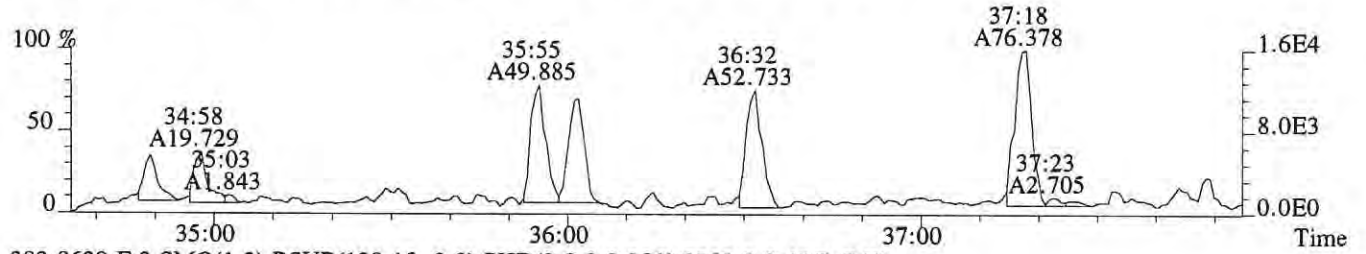
File:P523637 #1-335 Acq:16-AUG-2019 12:15:02 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:EQ1900282-01
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2448.0,1.00%,F,T)



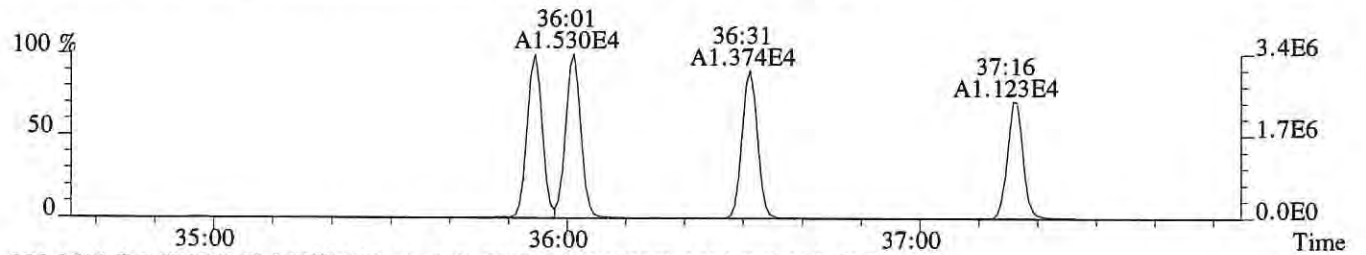
File:P523637 #1-299 Acq:16-AUG-2019 12:15:02 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:EQ1900282-01
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2072.0,0.40%,F,T)



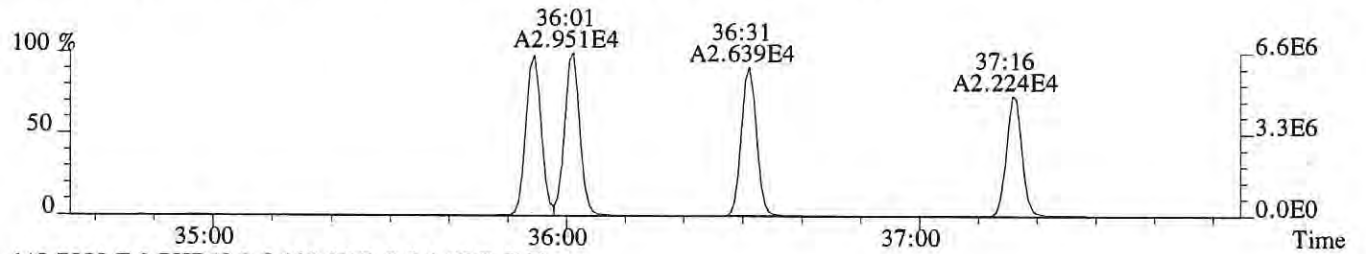
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1616.0,0.40%,F,T)



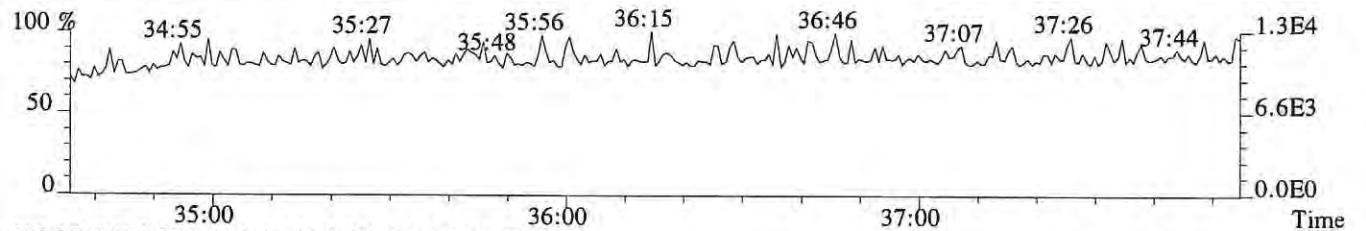
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2252.0,0.40%,F,T)



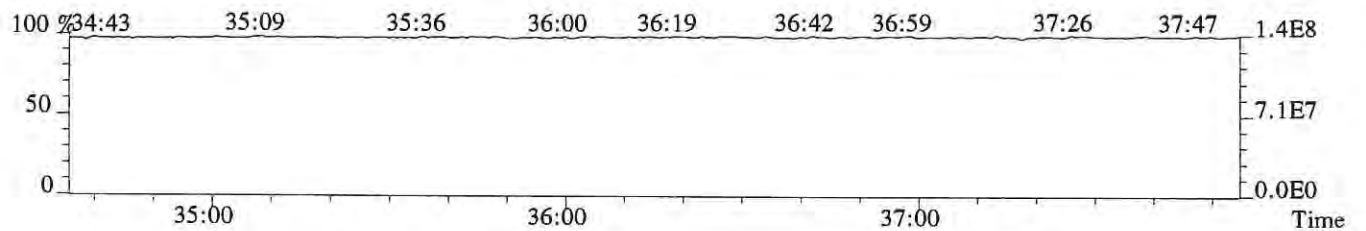
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1416.0,0.40%,F,T)



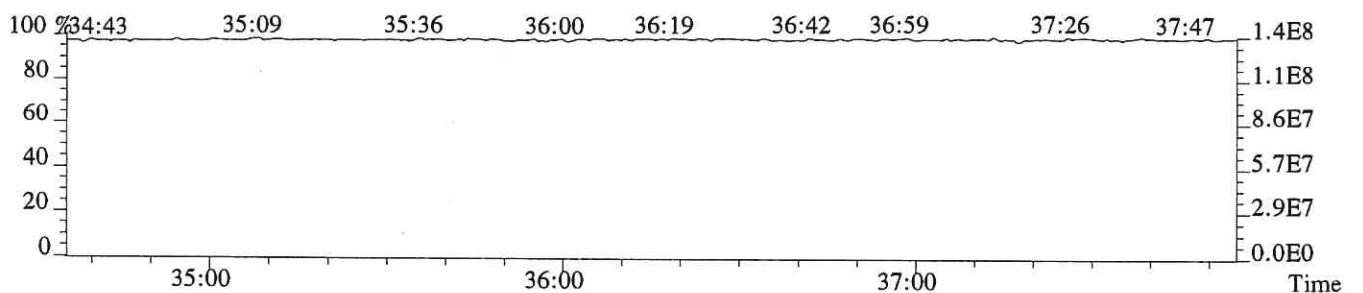
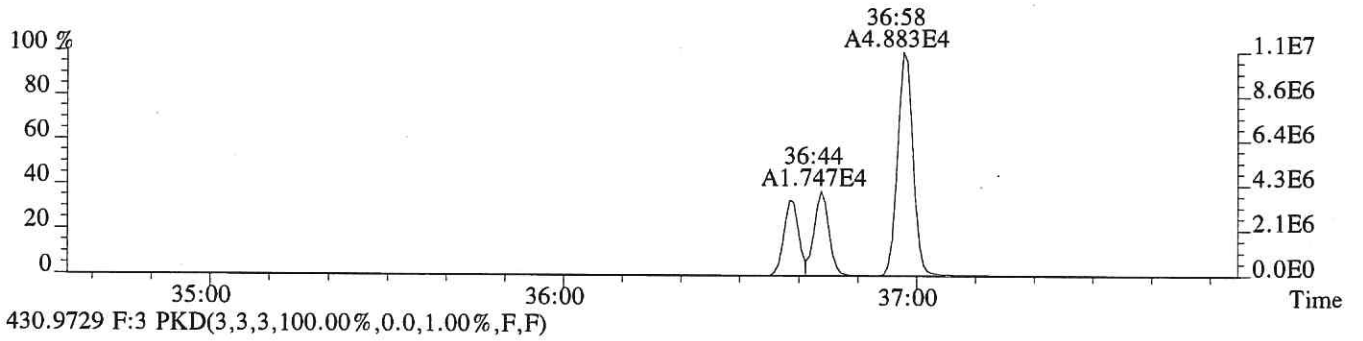
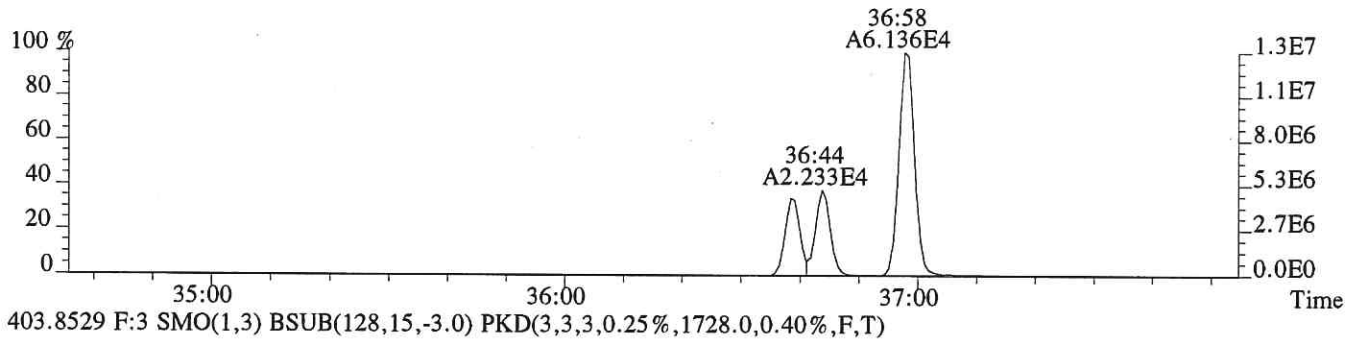
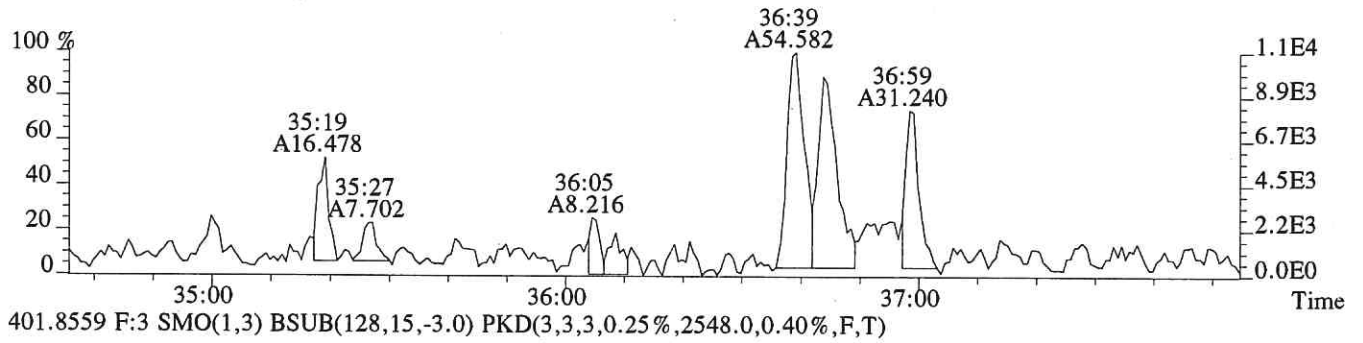
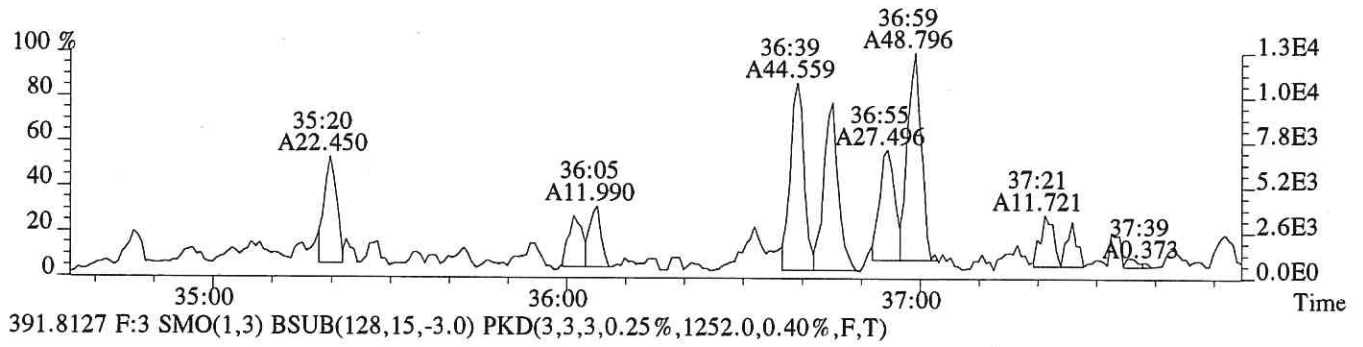
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



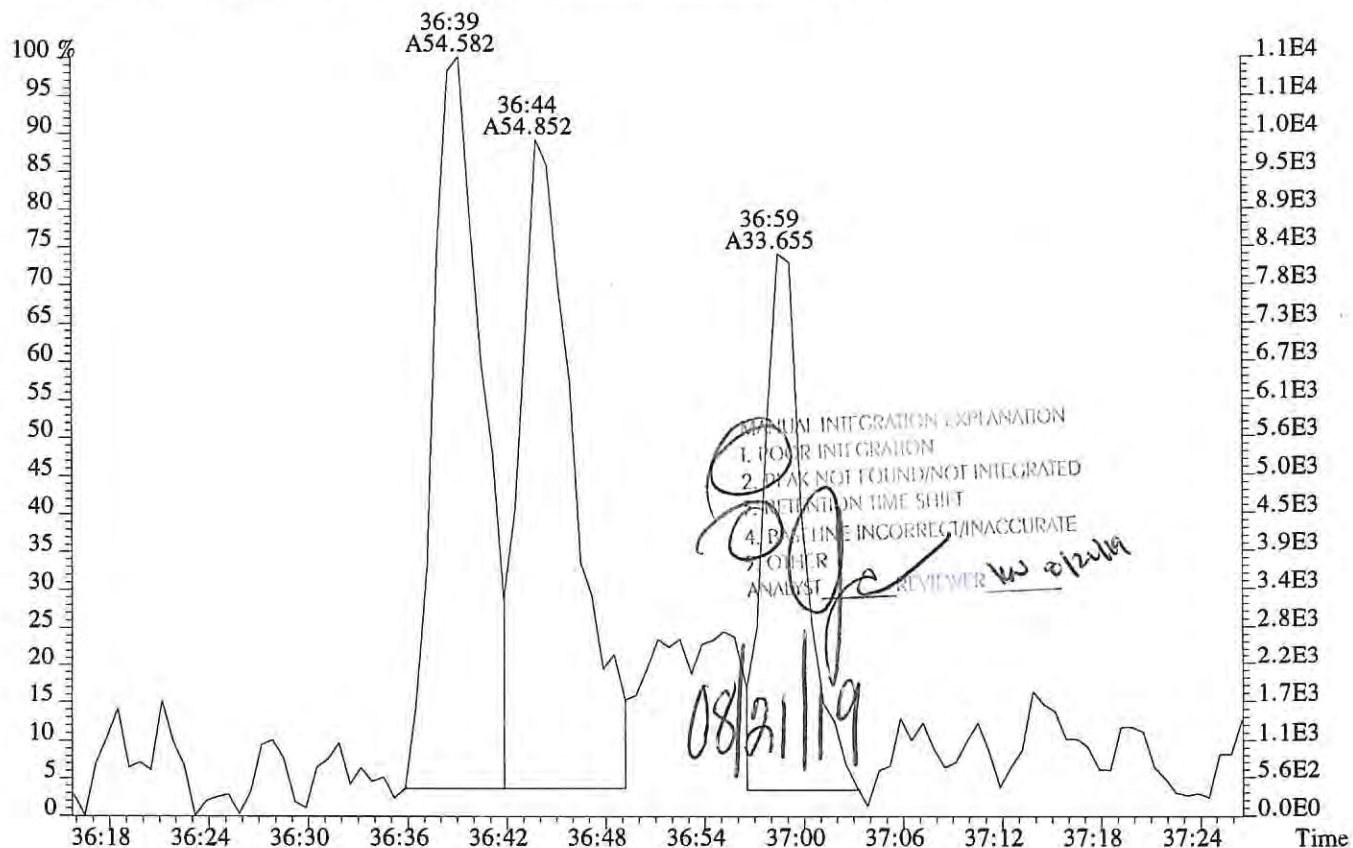
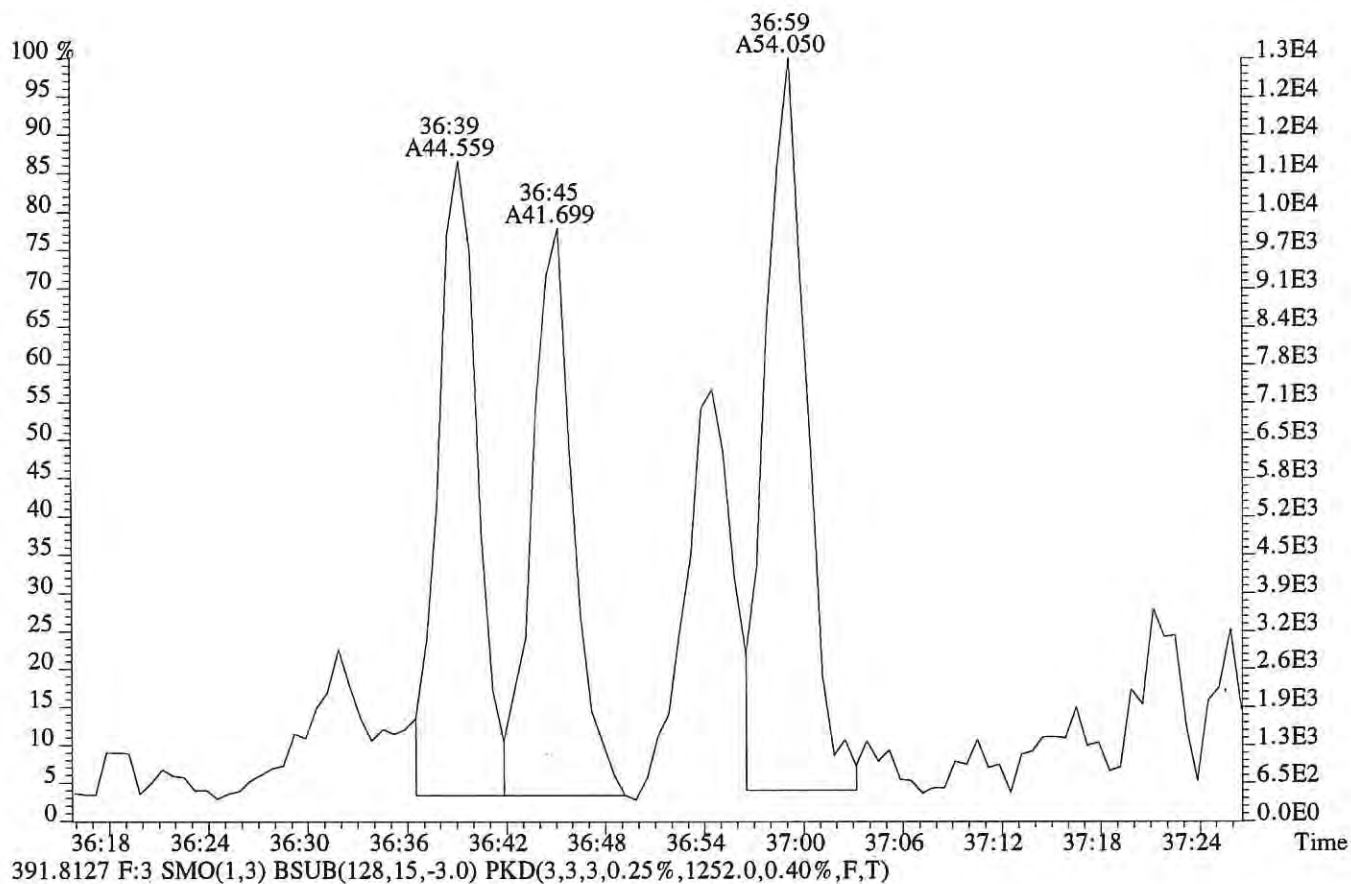
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



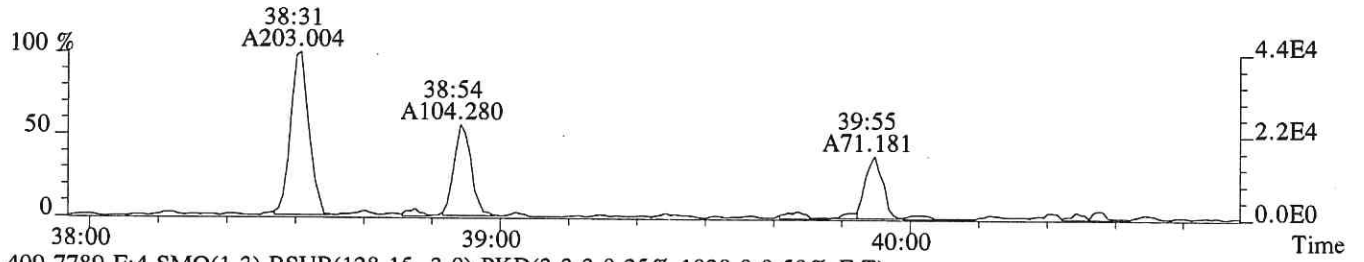
File:P523637 #1-299 Acq:16-AUG-2019 12:15:02 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:EQ1900282-01
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1296.0,0.40%,F,T)



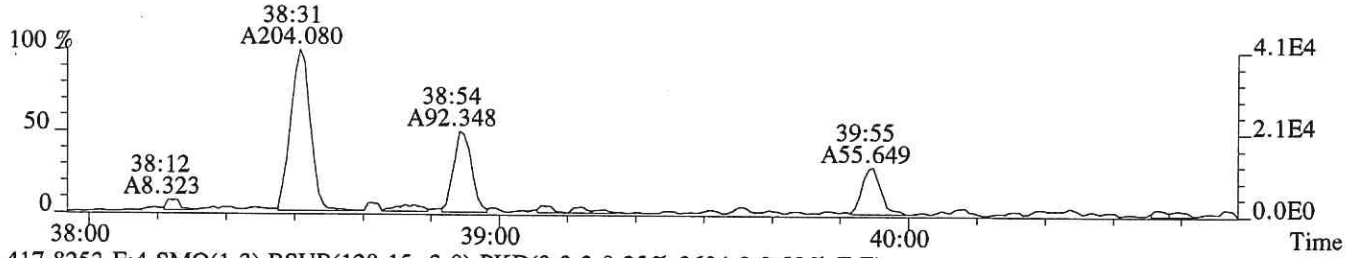
File:P523637 #1-299 Acq:16-AUG-2019 12:15:02 Probe EI+ Magnet SIR VG BioTech Mass spectf
 Sample#1 Exp:EQ1900282-01
 389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1296.0,0.40%,F,T)



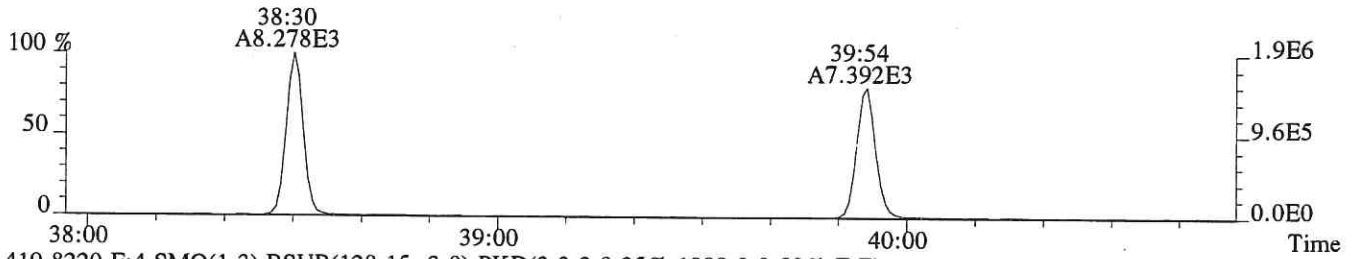
File:P523637 #1-258 Acq:16-AUG-2019 12:15:02 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:EQ1900282-01
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,668.0,0.50%,F,T)



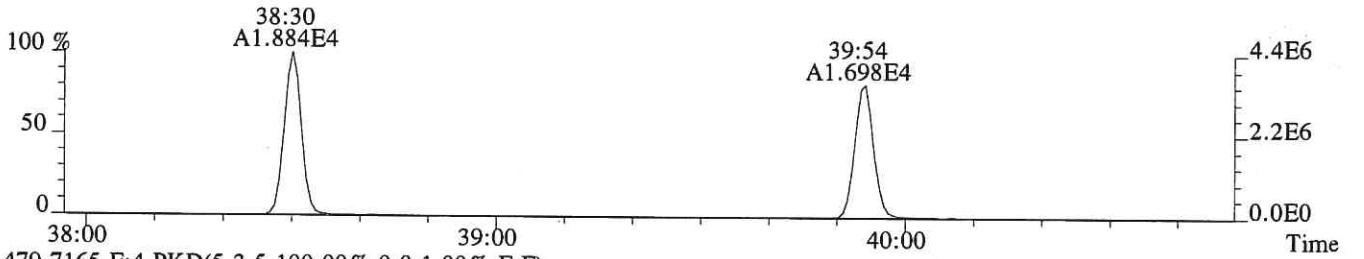
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1028.0,0.50%,F,T)



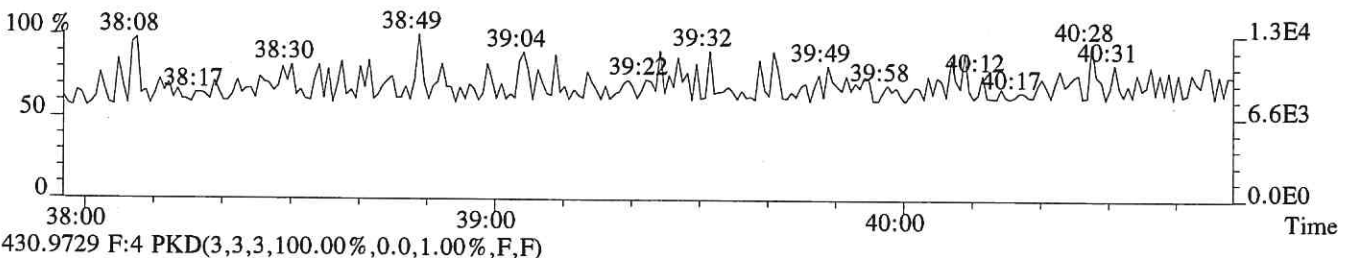
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3604.0,0.50%,F,T)



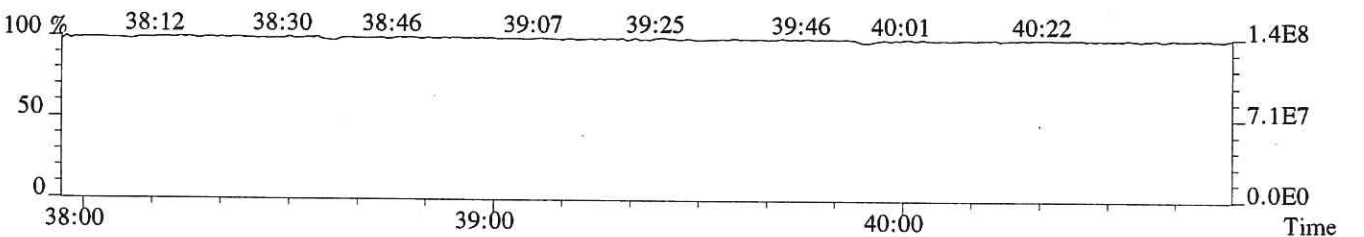
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1988.0,0.50%,F,T)



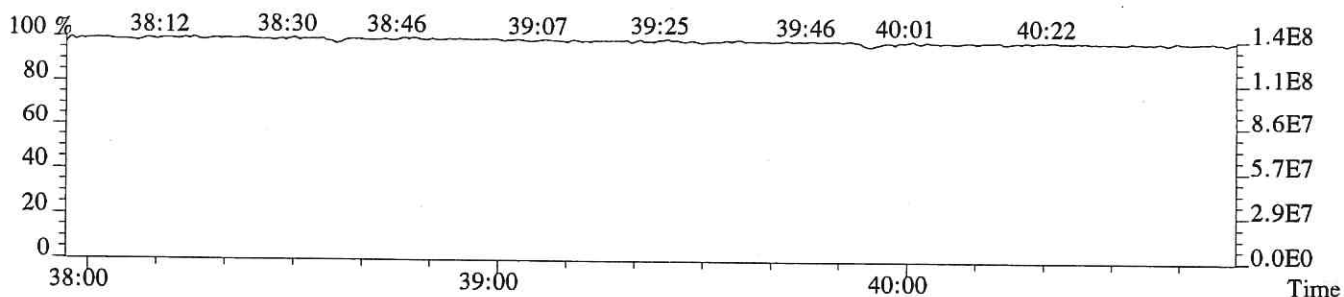
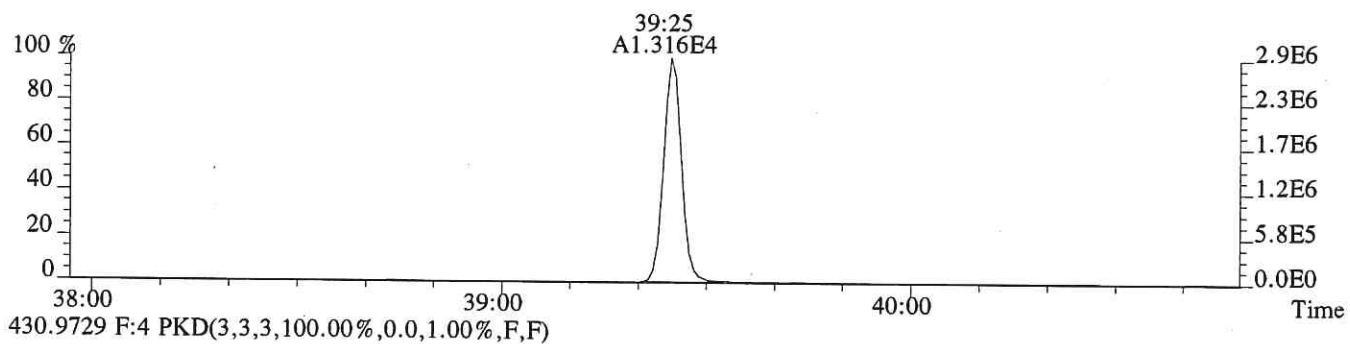
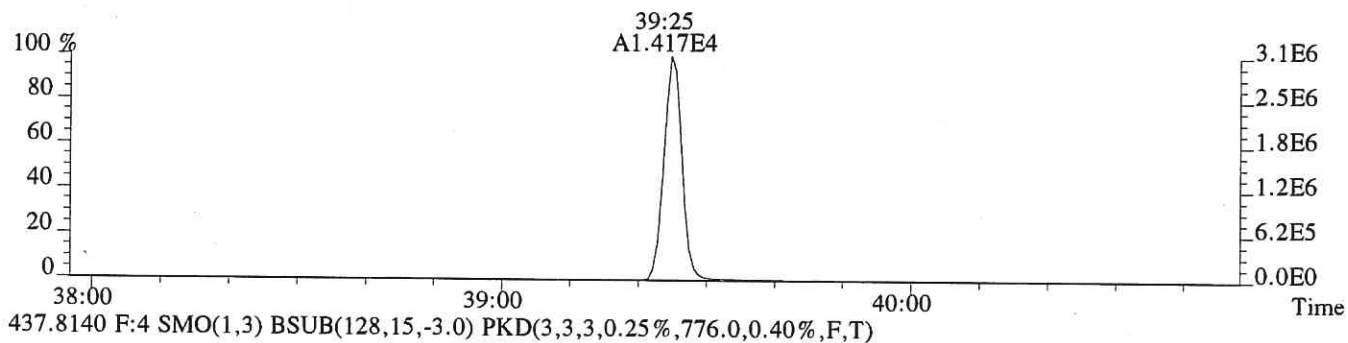
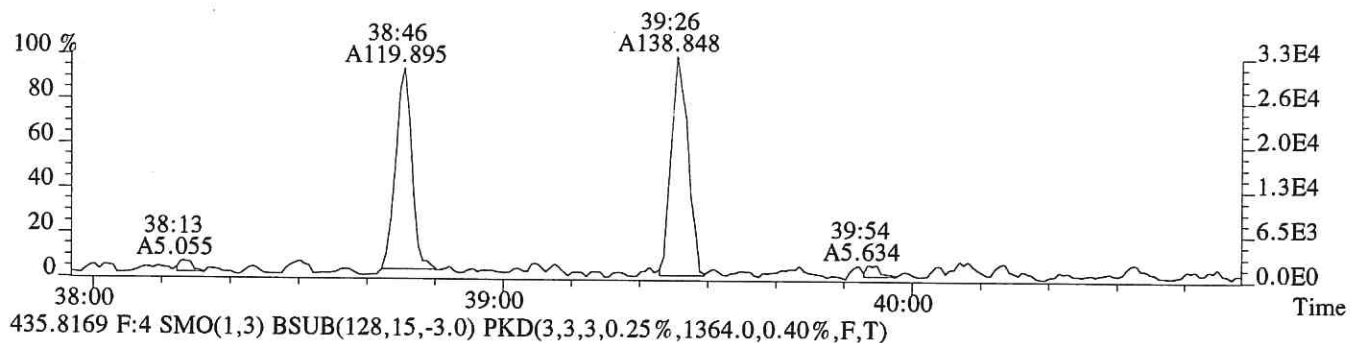
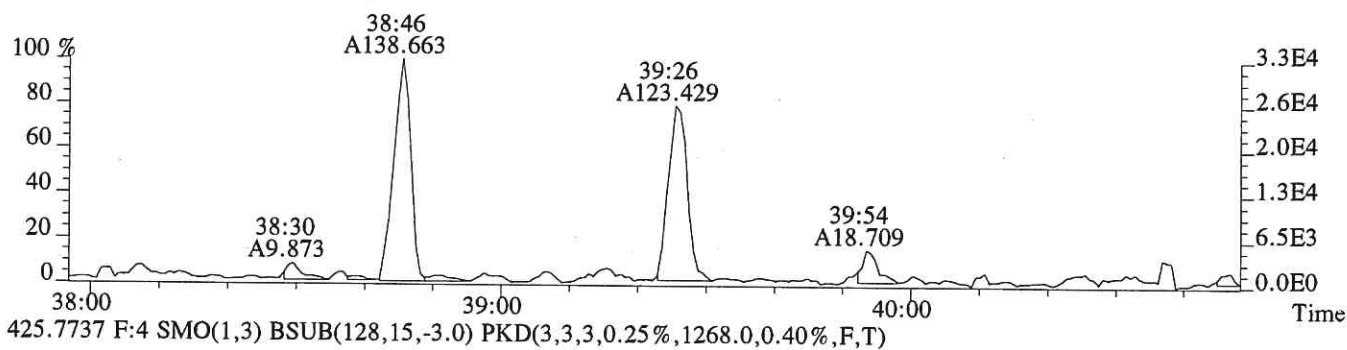
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



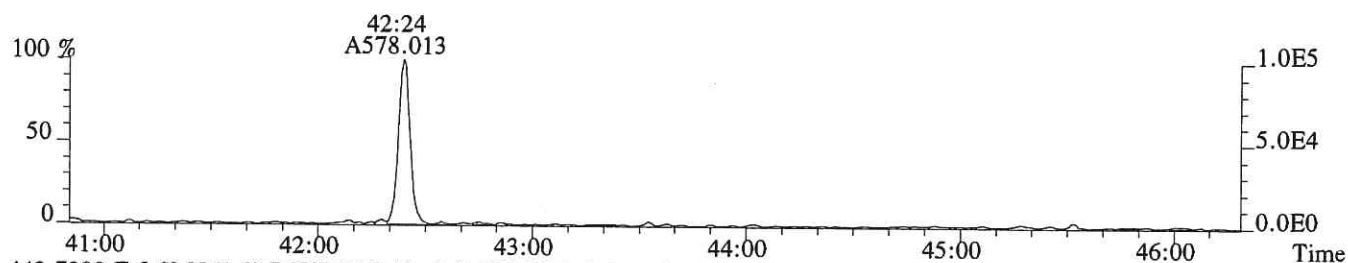
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



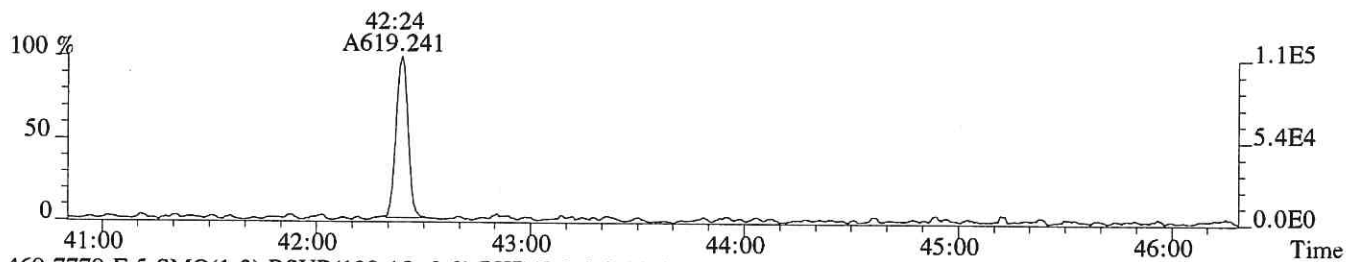
File:P523637 #1-258 Acq:16-AUG-2019 12:15:02 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:EQ1900282-01
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1112.0,0.40%,F,T)



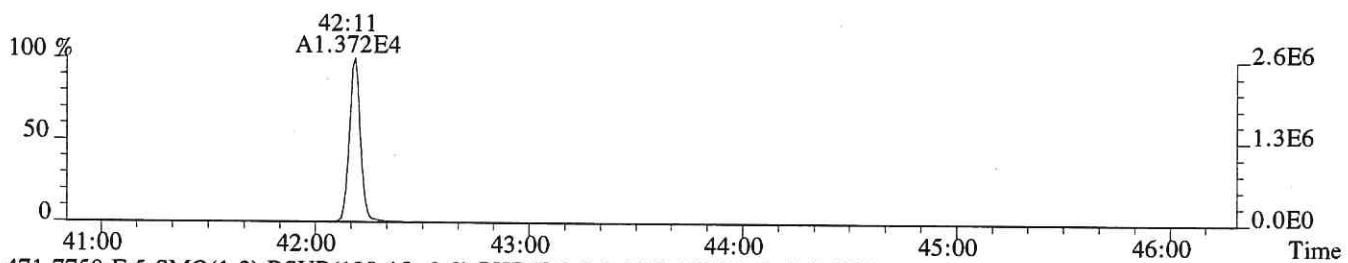
File:P523637 #1-493 Acq:16-AUG-2019 12:15:02 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:EQ1900282-01
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,700.0,0.40%,F,T)



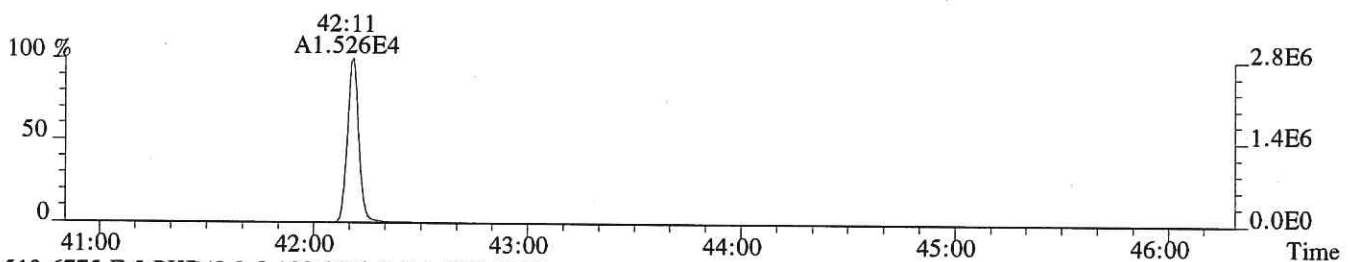
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2468.0,0.40%,F,T)



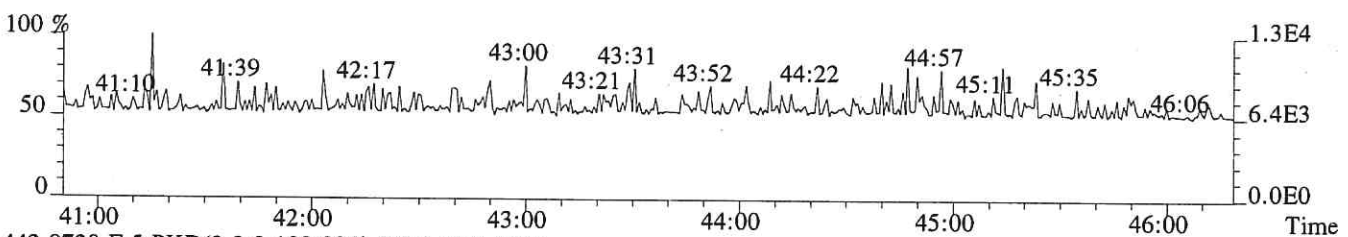
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1764.0,0.40%,F,T)



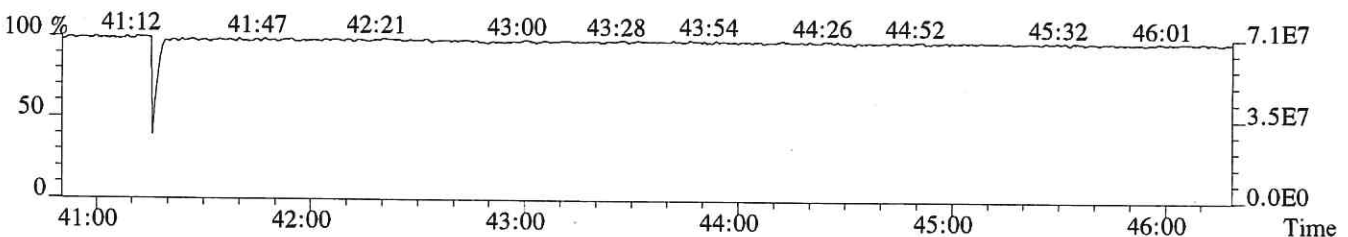
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1296.0,0.40%,F,T)



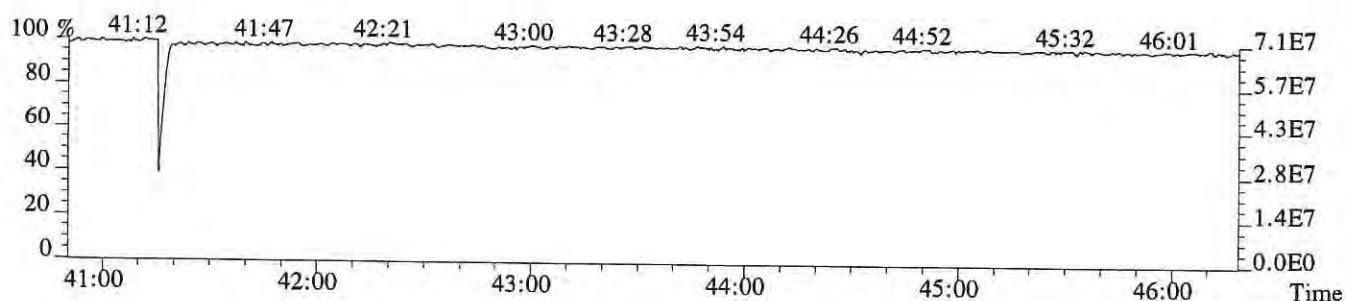
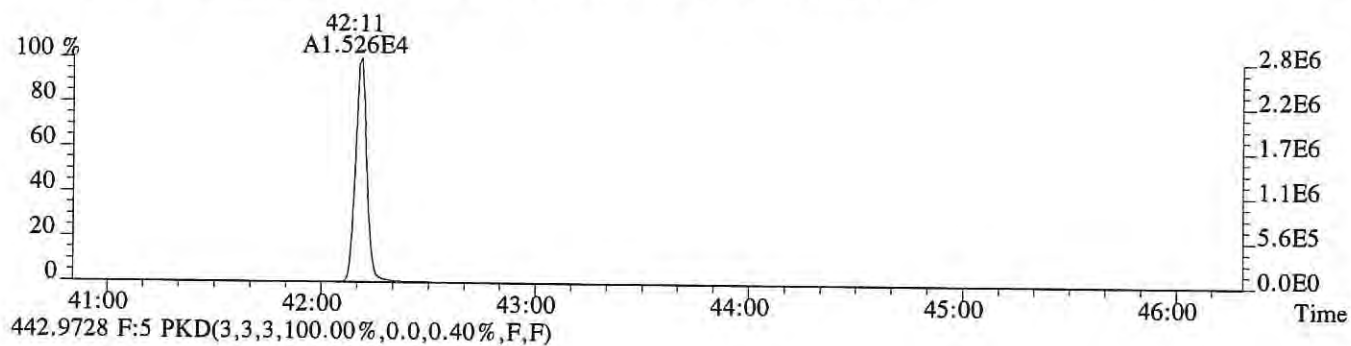
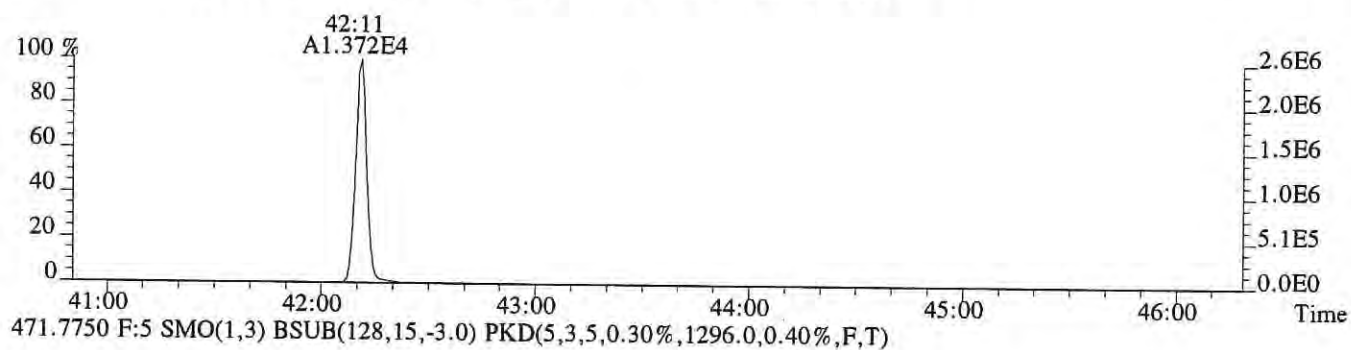
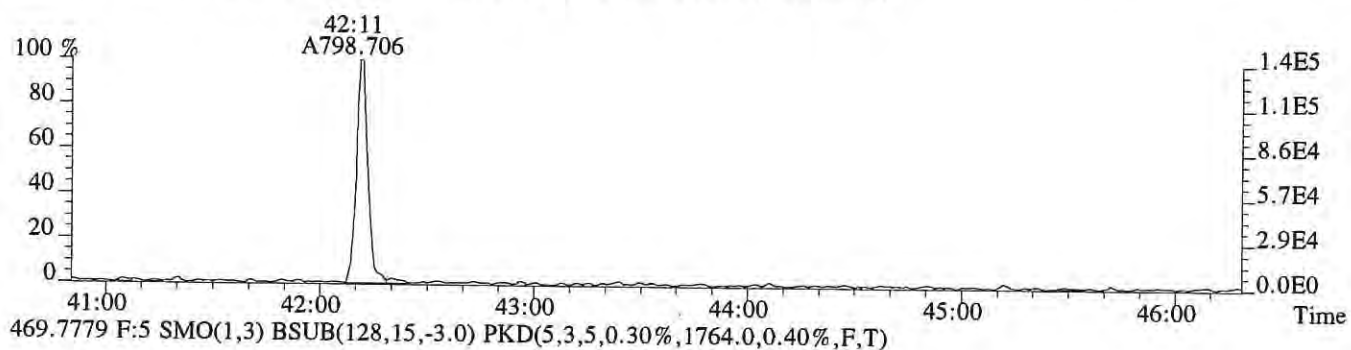
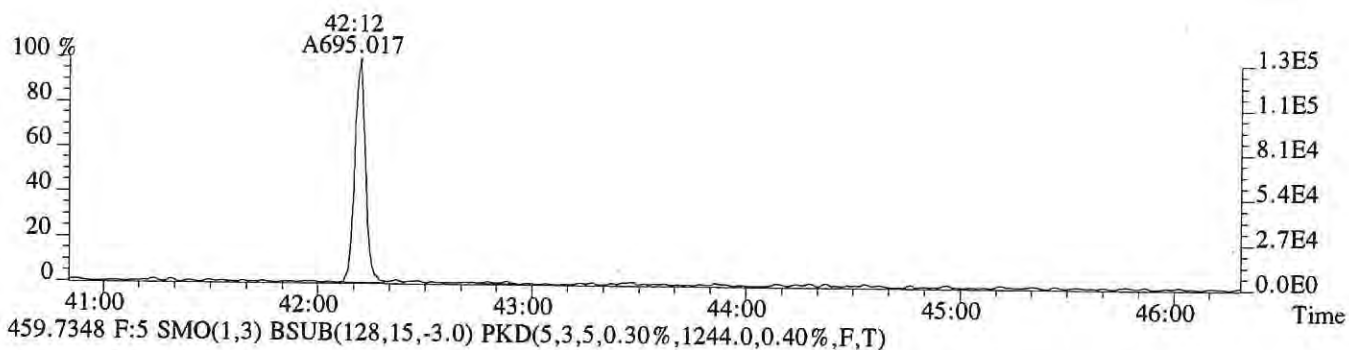
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



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



File:P523637 #1-493 Acq:16-AUG-2019 12:15:02 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:EQ1900282-01
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,832.0,0.40%,F,T)



ALS ENVIRONMENTAL

Sample Response Summary

CLIENT ID.
LCS

Run #14 Filename P523642 Samp: 1 Inj: 1 Acquired: 16-AUG-19 16:21:00
 Processed: 21-AUG-19 14:37:55 Sample ID: EQ1900282-02

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	28:11	1.243e+03	1.765e+03	0.70	yes	no	0.962
2 Unk	1,2,3,7,8-PeCDF	32:22	1.427e+04	9.589e+03	1.49	yes	no	0.968
3 Unk	2,3,4,7,8-PeCDF	33:16	1.493e+04	9.944e+03	1.50	yes	no	0.919
4 Unk	1,2,3,4,7,8-HxCDF	35:55	1.430e+04	1.184e+04	1.21	yes	no	1.161
5 Unk	1,2,3,6,7,8-HxCDF	36:02	1.447e+04	1.221e+04	1.18	yes	no	1.073
6 Unk	2,3,4,6,7,8-HxCDF	36:32	1.308e+04	1.118e+04	1.17	yes	no	1.069
7 Unk	1,2,3,7,8,9-HxCDF	37:17	1.168e+04	9.575e+03	1.22	yes	no	1.096
8 Unk	1,2,3,4,6,7,8-HpCDF	38:31	1.148e+04	1.152e+04	1.00	yes	no	1.281
9 Unk	1,2,3,4,7,8,9-HpCDF	39:55	9.850e+03	1.004e+04	0.98	yes	no	1.192
10 Unk	OCDF	42:24	1.267e+04	1.495e+04	0.85	yes	no	1.204
11 Unk	2,3,7,8-TCDD	28:58	1.270e+03	1.564e+03	0.81	yes	no	1.077
12 Unk	1,2,3,7,8-PeCDD	33:33	1.248e+04	7.881e+03	1.58	yes	no	0.971
13 Unk	1,2,3,4,7,8-HxCDD	36:40	1.219e+04	9.973e+03	1.22	yes	no	1.024
14 Unk	1,2,3,6,7,8-HxCDD	36:45	1.175e+04	9.649e+03	1.22	yes	no	1.038
15 Unk	1,2,3,7,8,9-HxCDD	36:59	1.202e+04	9.325e+03	1.29	yes	no	1.055
16 Unk	1,2,3,4,6,7,8-HpCDD	39:26	1.117e+04	1.035e+04	1.08	yes	no	0.989
17 Unk	OCDD	42:12	1.895e+04	2.187e+04	0.87	yes	no	1.094
18 IS	13C-2,3,7,8-TCDF	28:10	1.517e+04	1.889e+04	0.80	yes	no	1.287
19 IS	13C-1,2,3,7,8-PeCDF	32:21	3.370e+04	2.131e+04	1.58	yes	no	1.416
20 IS	13C-2,3,4,7,8-PeCDF	33:16	3.327e+04	2.127e+04	1.56	yes	no	1.374
21 IS	13C-1,2,3,4,7,8-HxCDF	35:55	1.660e+04	3.269e+04	0.51	yes	no	1.114
22 IS	13C-1,2,3,6,7,8-HxCDF	36:01	1.775e+04	3.431e+04	0.52	yes	no	1.245
23 IS	13C-2,3,4,6,7,8-HxCDF	36:31	1.663e+04	3.181e+04	0.52	yes	no	1.146
24 IS	13C-1,2,3,7,8,9-HxCDF	37:17	1.430e+04	2.788e+04	0.51	yes	no	0.986
25 IS	13C-1,2,3,4,6,7,8-HpCDF	38:30	1.077e+04	2.431e+04	0.44	yes	no	0.915
26 IS	13C-1,2,3,4,7,8,9-HpCDF	39:54	1.010e+04	2.315e+04	0.44	yes	no	0.746
27 IS	13C-2,3,7,8-TCDD	28:57	1.260e+04	1.600e+04	0.79	yes	no	0.929
28 IS	13C-1,2,3,7,8-PeCDD	33:32	2.739e+04	1.747e+04	1.57	yes	no	1.017
29 IS	13C-1,2,3,4,7,8-HxCDD	36:39	2.426e+04	1.784e+04	1.36	yes	no	0.945
30 IS	13C-1,2,3,6,7,8-HxCDD	36:44	2.599e+04	2.126e+04	1.22	yes	no	0.924
31 IS	13C-1,2,3,4,6,7,8-HpCDD	39:26	1.910e+04	1.782e+04	1.07	yes	no	0.876
32 IS	13C-OCDD	42:11	1.985e+04	2.223e+04	0.89	yes	no	0.662
33 RS/RT	13C-1,2,3,4-TCDD	28:22	7.160e+04	8.901e+04	0.80	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	36:59	8.735e+04	7.011e+04	1.25	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	28:58	1.225e+04				no	1.010

(1.895e+04 + 2.187e+04) x 4000 pg x 1

OCDD = -----
 (1.985e+04 + 2.223e+04) x g x / 100 x 1.094

ALS ENVIRONMENTAL -- HOUSTON HRMS
 10450 Stancliff Rd., Suite 115
 Houston, TX 77099
 Office (281) 530-5656. Fax (281) 530-5887

ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
LCS

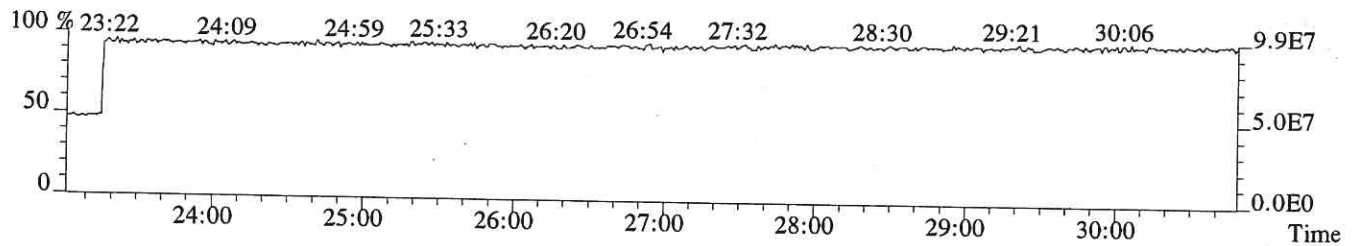
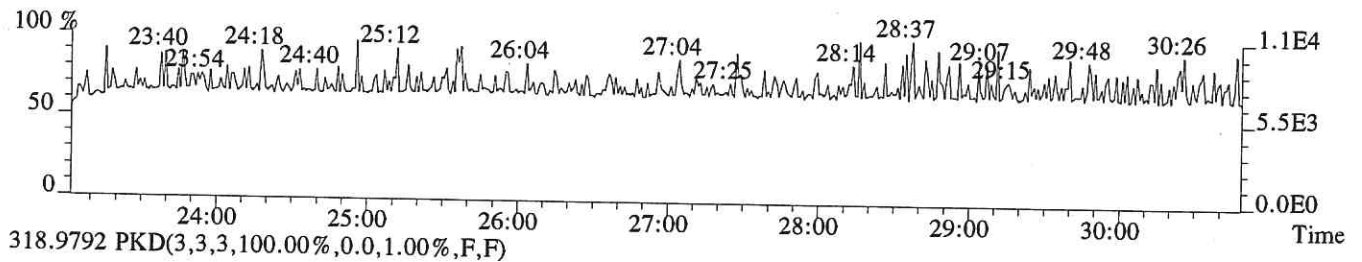
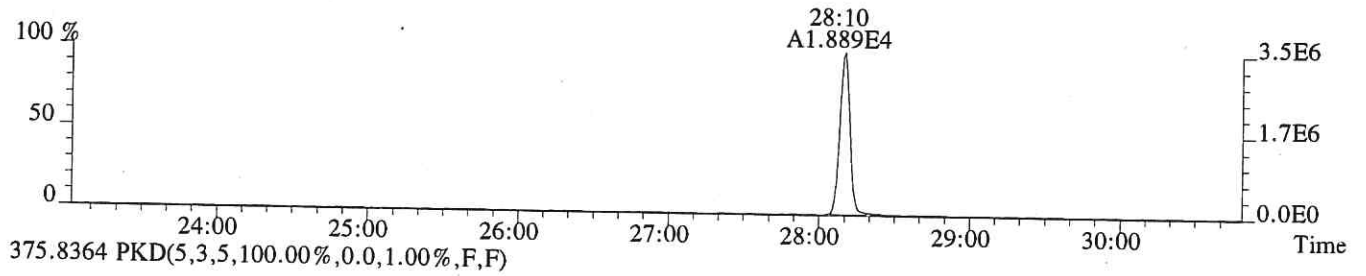
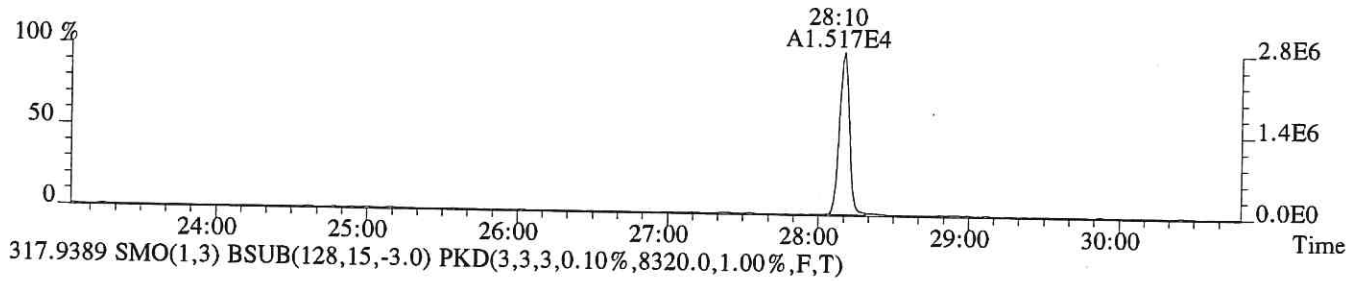
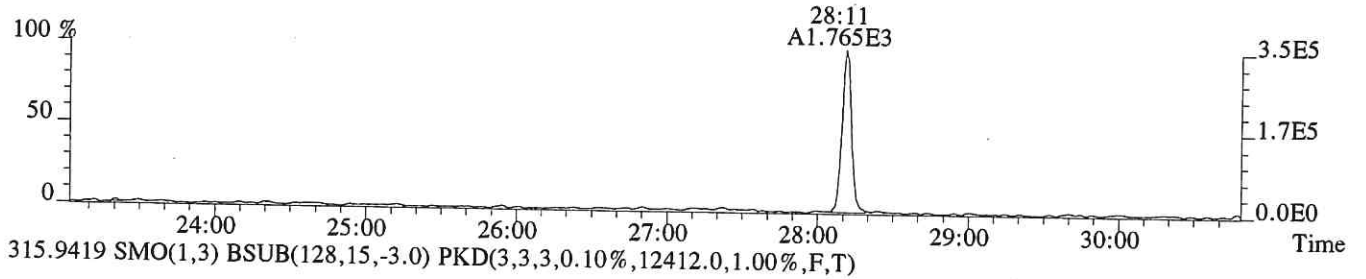
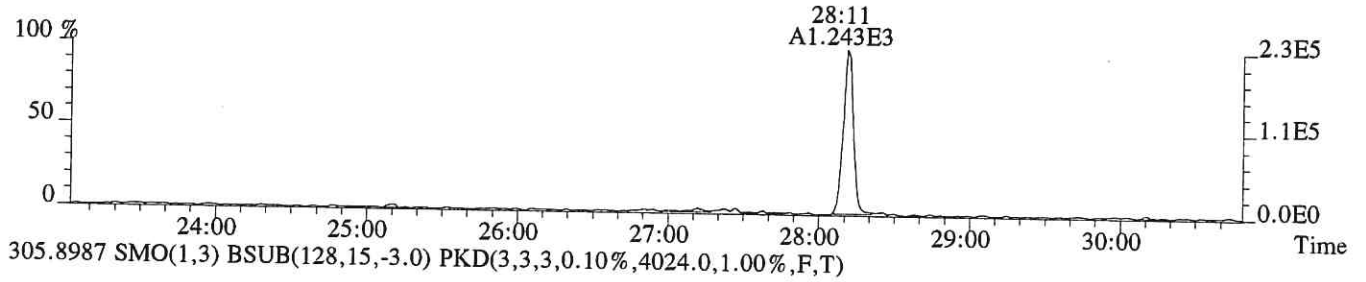
Run #14 Filename P523642 Samp: 1 Inj: 1 Acquired: 16-AUG-19 16:21:00
Processed: 21-AUG-19 14:37:55 LAB. ID: EQ1900282-02

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	2.26e+05	1.94e+03	1.2e+02	3.43e+05	4.02e+03	8.5e+01
2	1,2,3,7,8-PeCDF	2.73e+06	7.00e+03	3.9e+02	1.80e+06	3.89e+03	4.6e+02
3	2,3,4,7,8-PeCDF	2.99e+06	7.00e+03	4.3e+02	1.98e+06	3.89e+03	5.1e+02
4	1,2,3,4,7,8-HxCDF	3.18e+06	1.16e+04	2.7e+02	2.66e+06	6.65e+04	4.0e+01
5	1,2,3,6,7,8-HxCDF	3.13e+06	1.16e+04	2.7e+02	2.65e+06	6.65e+04	4.0e+01
6	2,3,4,6,7,8-HxCDF	2.90e+06	1.16e+04	2.5e+02	2.58e+06	6.65e+04	3.9e+01
7	1,2,3,7,8,9-HxCDF	2.53e+06	1.16e+04	2.2e+02	2.09e+06	6.65e+04	3.1e+01
8	1,2,3,4,6,7,8-HpCDF	2.60e+06	2.11e+04	1.2e+02	2.61e+06	1.38e+04	1.9e+02
9	1,2,3,4,7,8,9-HpCDF	2.09e+06	2.11e+04	9.9e+01	2.07e+06	1.38e+04	1.5e+02
10	OCDF	2.31e+06	9.39e+03	2.5e+02	2.74e+06	7.42e+03	3.7e+02
11	2,3,7,8-TCDD	2.49e+05	5.62e+03	4.4e+01	2.99e+05	2.32e+03	1.3e+02
12	1,2,3,7,8-PeCDD	2.48e+06	5.95e+03	4.2e+02	1.57e+06	4.44e+03	3.5e+02
13	1,2,3,4,7,8-HxCDD	2.76e+06	9.10e+03	3.0e+02	2.22e+06	9.32e+03	2.4e+02
14	1,2,3,6,7,8-HxCDD	2.62e+06	9.10e+03	2.9e+02	2.19e+06	9.32e+03	2.3e+02
15	1,2,3,7,8,9-HxCDD	2.62e+06	9.10e+03	2.9e+02	2.02e+06	9.32e+03	2.2e+02
16	1,2,3,4,6,7,8-HpCDD	2.40e+06	1.02e+04	2.4e+02	2.24e+06	9.93e+03	2.3e+02
17	OCDD	3.36e+06	4.09e+03	8.2e+02	3.84e+06	5.91e+03	6.5e+02
18	13C-2,3,7,8-TCDF	2.79e+06	1.24e+04	2.3e+02	3.45e+06	8.32e+03	4.1e+02
19	13C-1,2,3,7,8-PeCDF	6.53e+06	4.84e+03	1.4e+03	4.13e+06	2.65e+03	1.6e+03
20	13C-2,3,4,7,8-PeCDF	6.66e+06	4.84e+03	1.4e+03	4.25e+06	2.65e+03	1.6e+03
21	13C-1,2,3,4,7,8-HxCDF	3.70e+06	2.13e+03	1.7e+03	7.26e+06	6.12e+03	1.2e+03
22	13C-1,2,3,6,7,8-HxCDF	3.91e+06	2.13e+03	1.8e+03	7.34e+06	6.12e+03	1.2e+03
23	13C-2,3,4,6,7,8-HxCDF	3.68e+06	2.13e+03	1.7e+03	7.05e+06	6.12e+03	1.2e+03
24	13C-1,2,3,7,8,9-HxCDF	3.05e+06	2.13e+03	1.4e+03	5.90e+06	6.12e+03	9.6e+02
25	13C-1,2,3,4,6,7,8-HpCDF	2.40e+06	4.26e+03	5.6e+02	5.46e+06	1.33e+04	4.1e+02
26	13C-1,2,3,4,7,8,9-HpCDF	2.09e+06	4.26e+03	4.9e+02	4.79e+06	1.33e+04	3.6e+02
27	13C-2,3,7,8-TCDD	2.52e+06	8.91e+03	2.8e+02	3.16e+06	3.81e+03	8.3e+02
28	13C-1,2,3,7,8-PeCDD	5.48e+06	3.16e+03	1.7e+03	3.45e+06	3.08e+03	1.1e+03
29	13C-1,2,3,4,7,8-HxCDD	5.47e+06	6.89e+03	7.9e+02	4.15e+06	3.58e+03	1.2e+03
30	13C-1,2,3,6,7,8-HxCDD	5.77e+06	6.89e+03	8.4e+02	4.60e+06	3.58e+03	1.3e+03
31	13C-1,2,3,4,6,7,8-HpCDD	4.09e+06	8.47e+03	4.8e+02	3.81e+06	5.66e+03	6.7e+02
32	13C-OCDD	3.52e+06	7.04e+03	5.0e+02	3.90e+06	5.74e+03	6.8e+02
33	13C-1,2,3,4-TCDD	1.36e+07	8.91e+03	1.5e+03	1.69e+07	3.81e+03	4.4e+03
34	13C-1,2,3,7,8,9-HxCDD	1.94e+07	6.89e+03	2.8e+03	1.54e+07	3.58e+03	4.3e+03
35	37Cl-2,3,7,8-TCDD	2.39e+06	4.19e+03	5.7e+02			

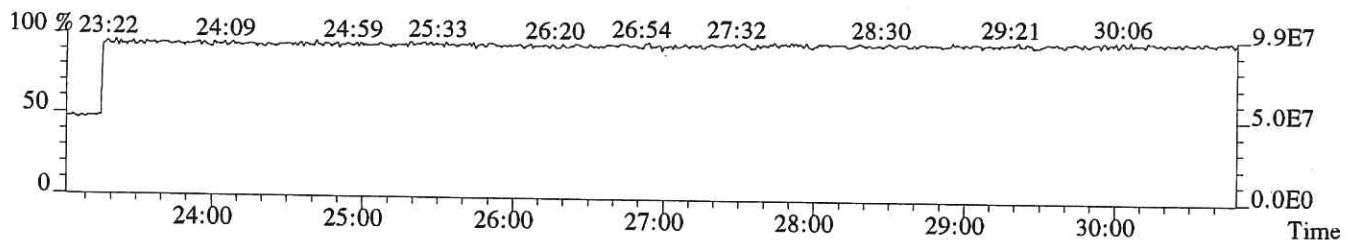
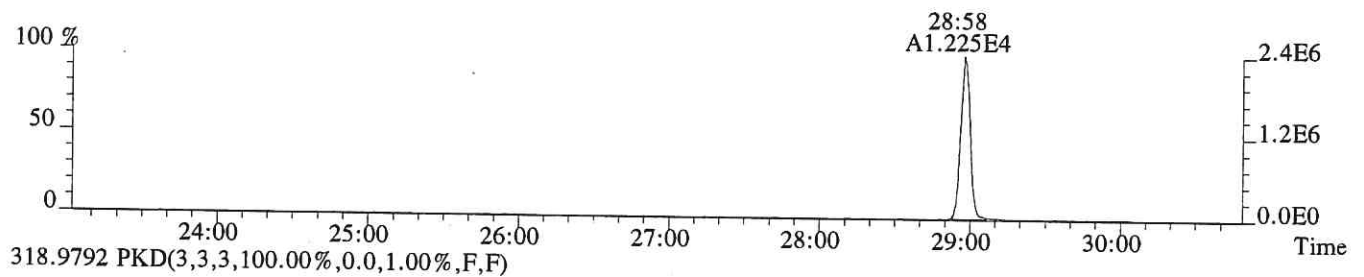
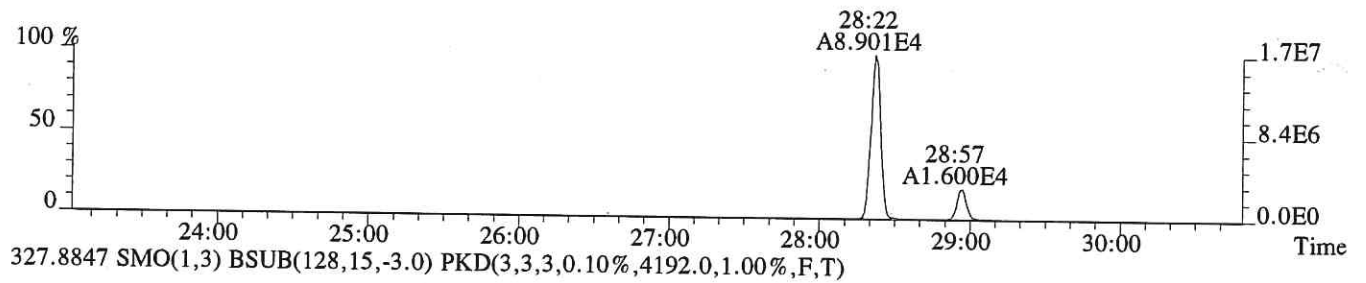
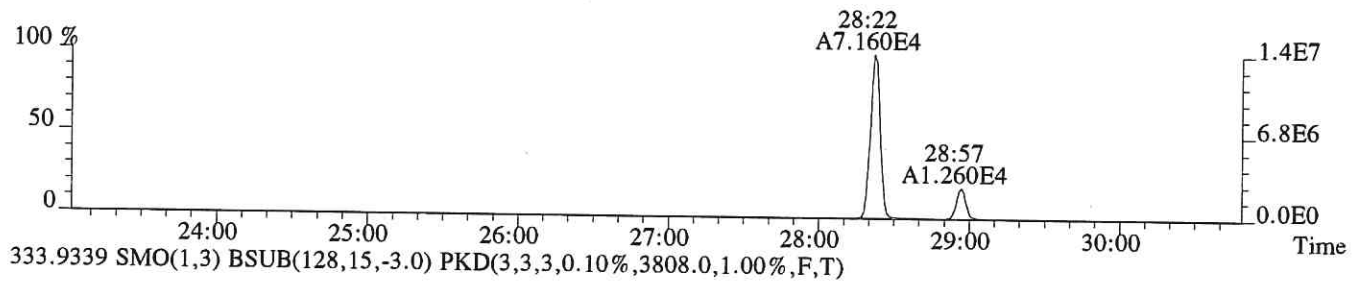
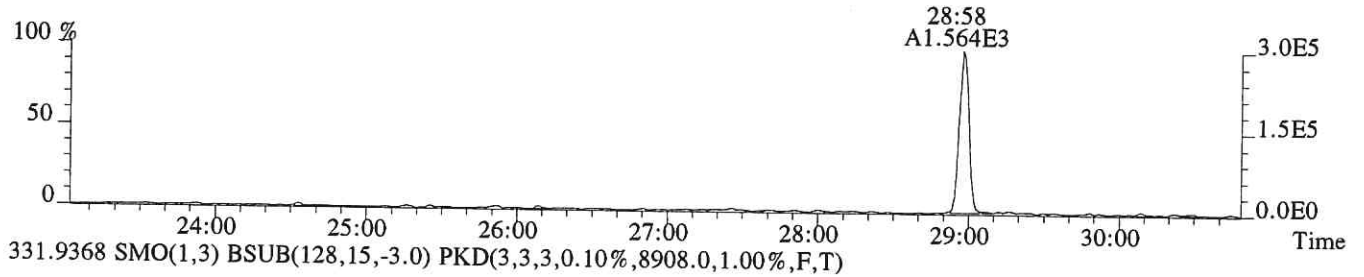
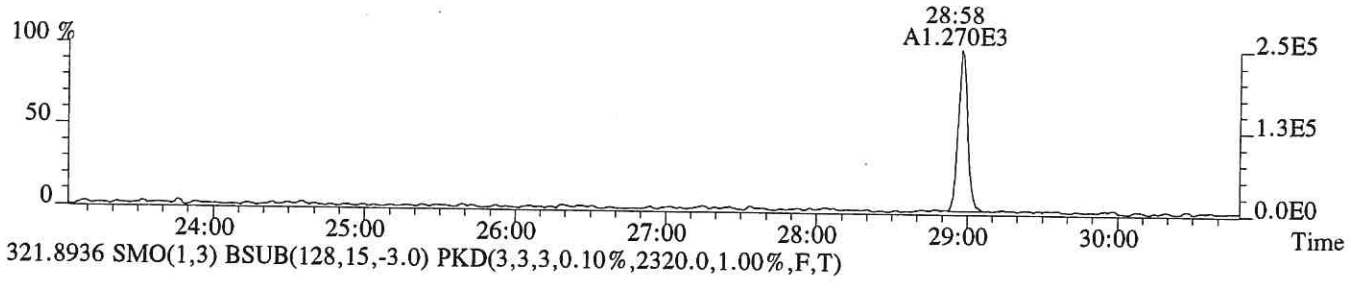
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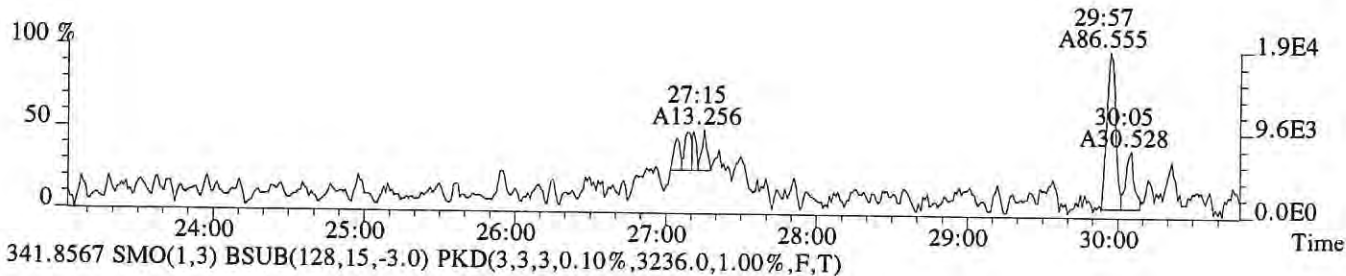
File:P523642 #1-552 Acq:16-AUG-2019 16:21:00 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:EQ1900282-02
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1940.0,1.00%,F,T)



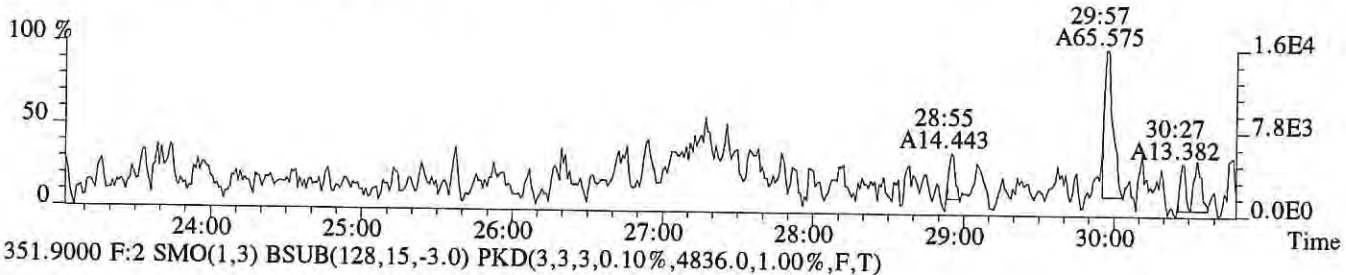
File:P523642 #1-552 Acq:16-AUG-2019 16:21:00 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:EQ1900282-02
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5624.0,1.00%,F,T)



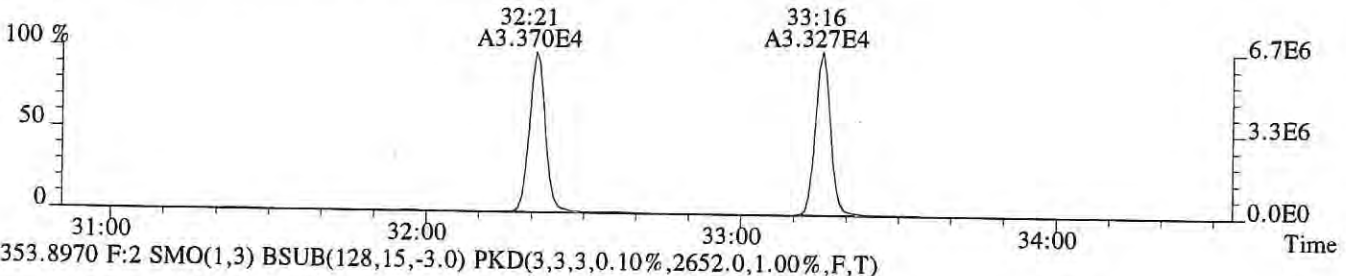
File:P523642 #1-552 Acq:16-AUG-2019 16:21:00 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:EQ1900282-02
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2708.0,1.00%,F,T)



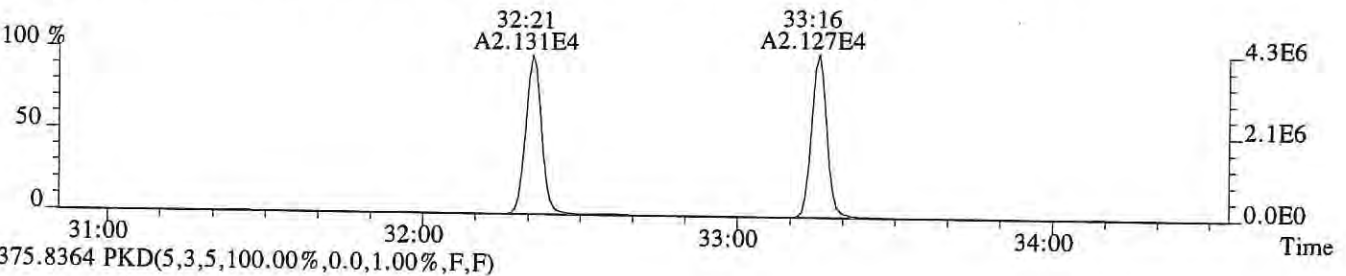
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3236.0,1.00%,F,T)



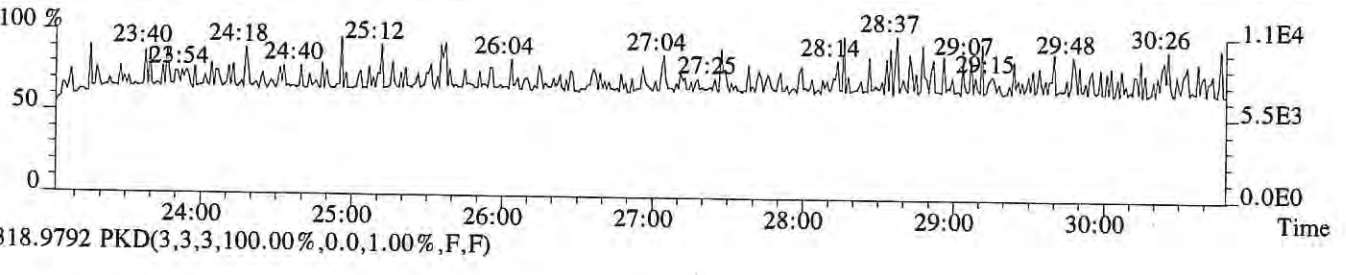
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4836.0,1.00%,F,T)



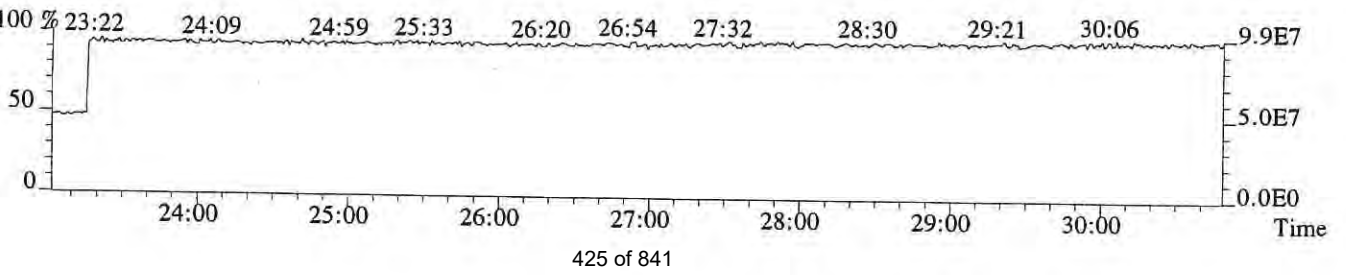
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2652.0,1.00%,F,T)



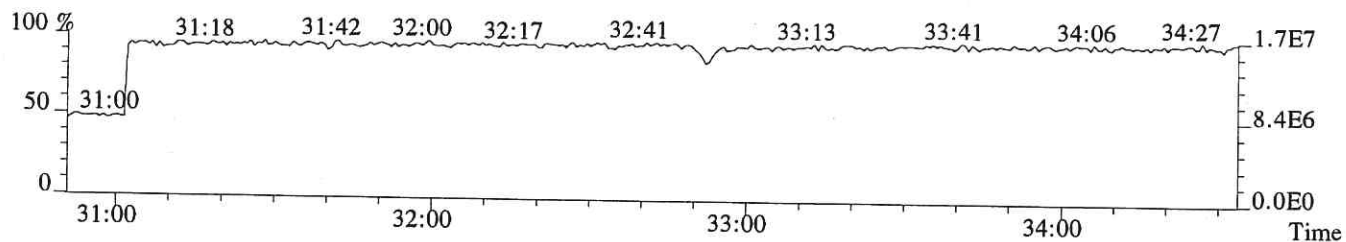
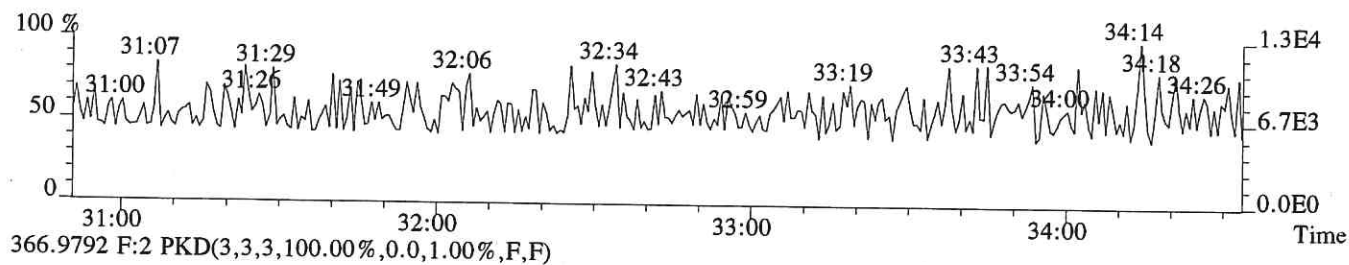
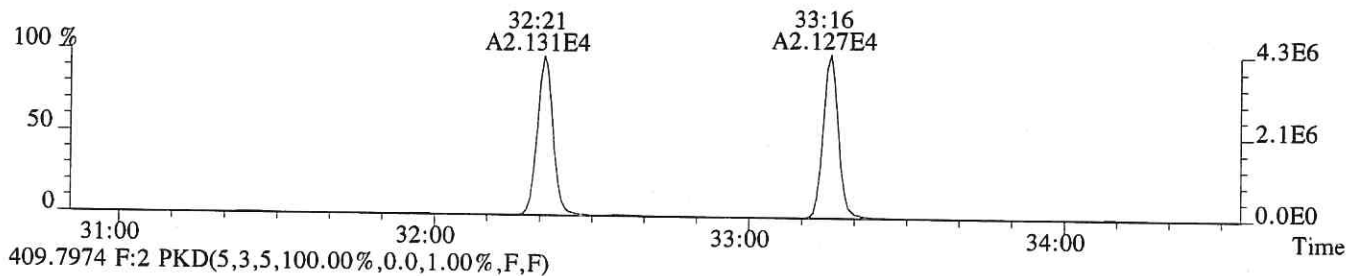
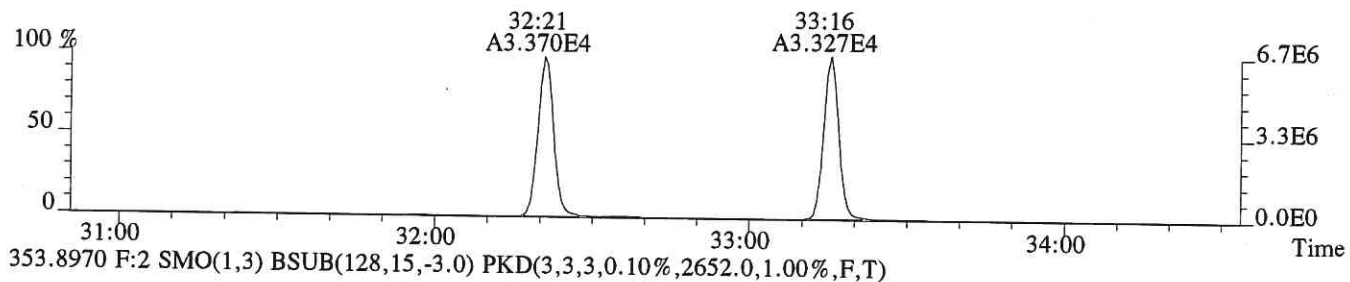
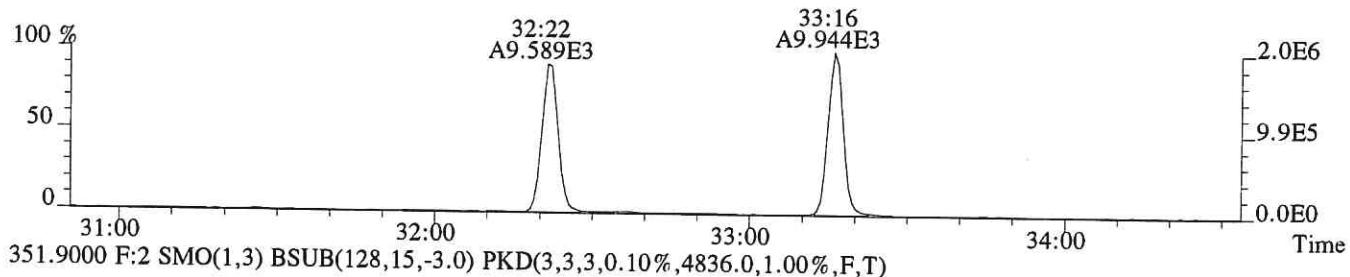
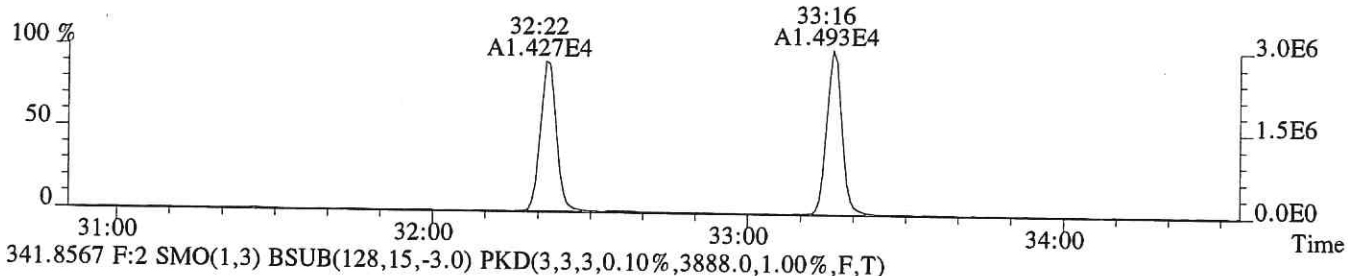
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



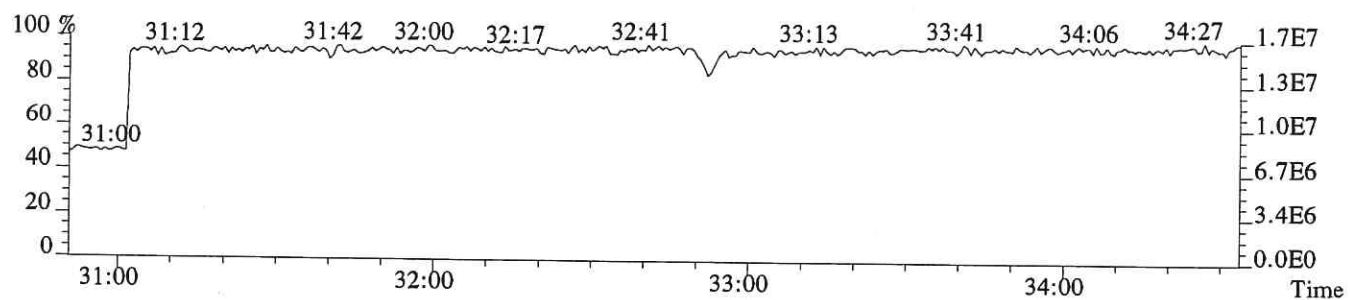
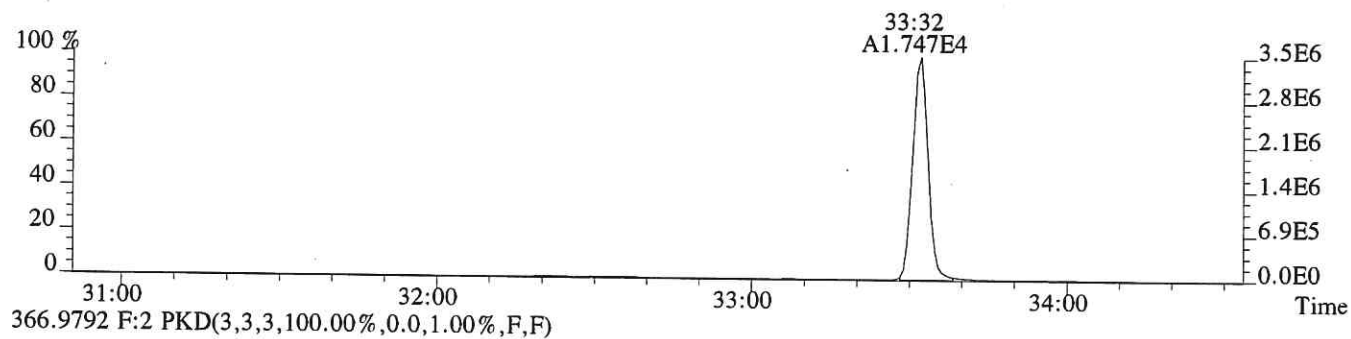
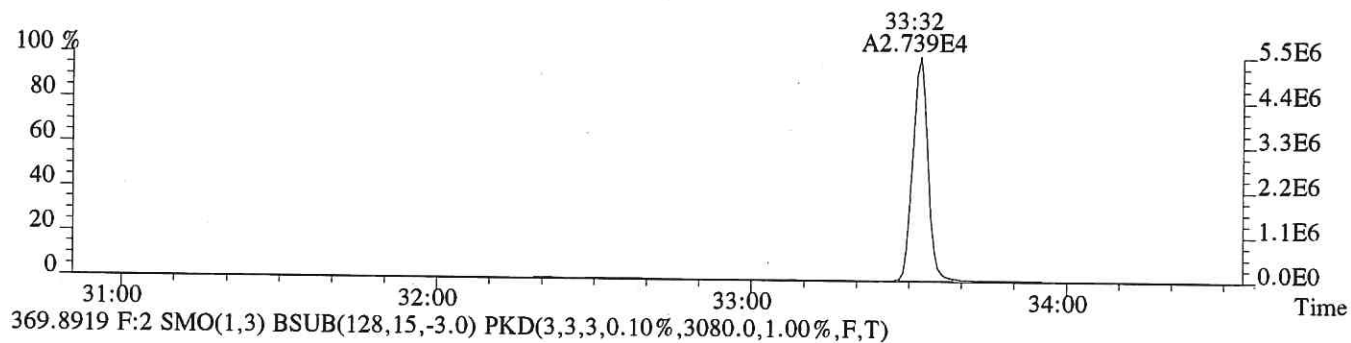
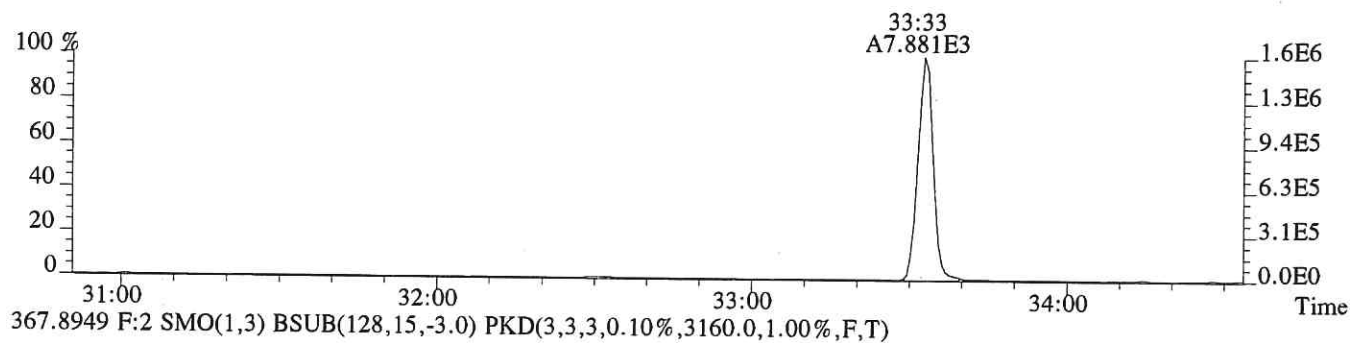
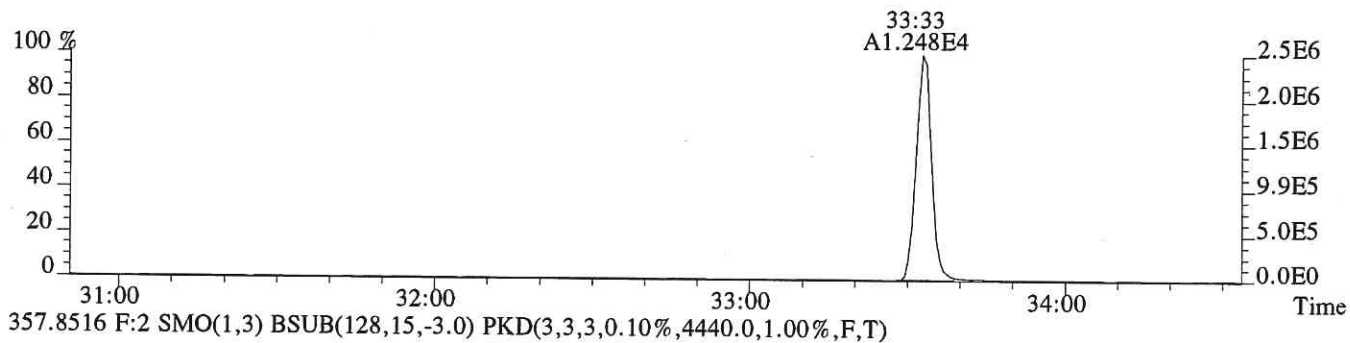
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



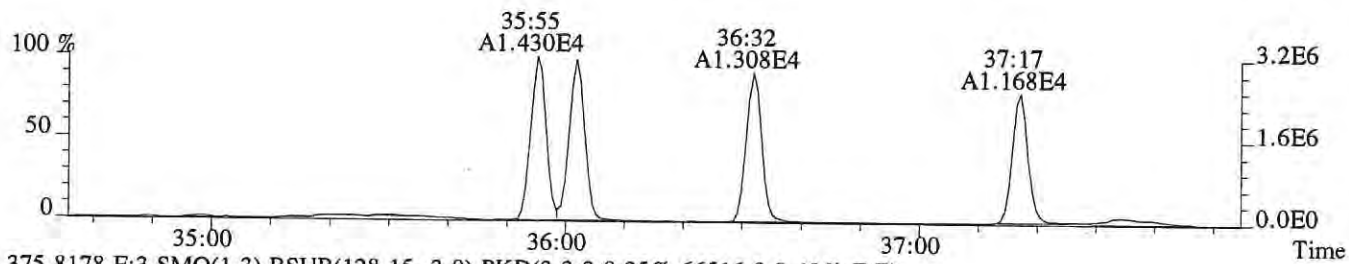
File:P523642 #1-335 Acq:16-AUG-2019 16:21:00 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:EQ1900282-02
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,7004.0,1.00%,F,T)



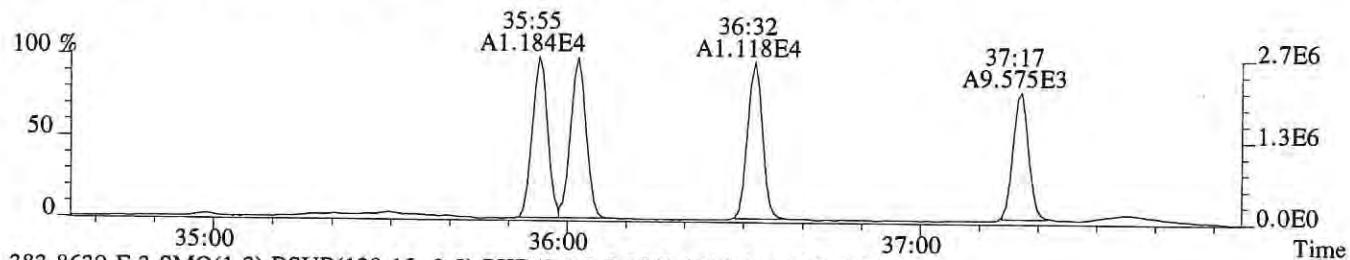
File:P523642 #1-335 Acq:16-AUG-2019 16:21:00 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:EQ1900282-02
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5948.0,1.00%,F,T)



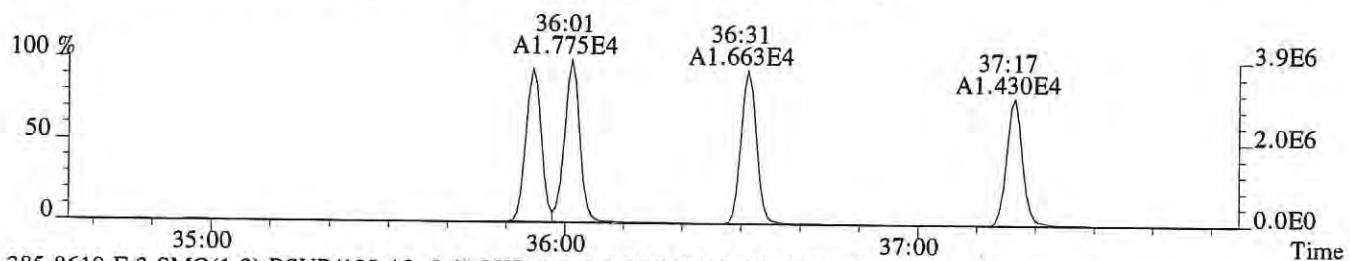
File:P523642 #1-299 Acq:16-AUG-2019 16:21:00 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:EQ1900282-02
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,11576.0,0.40%,F,T)



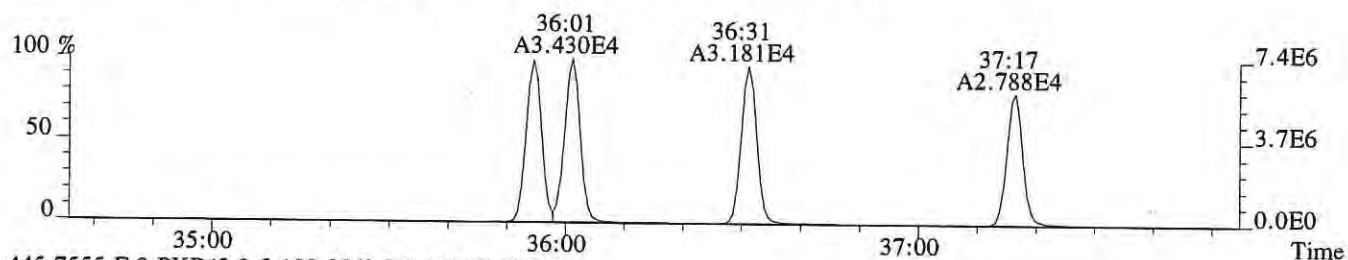
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,66516.0,0.40%,F,T)



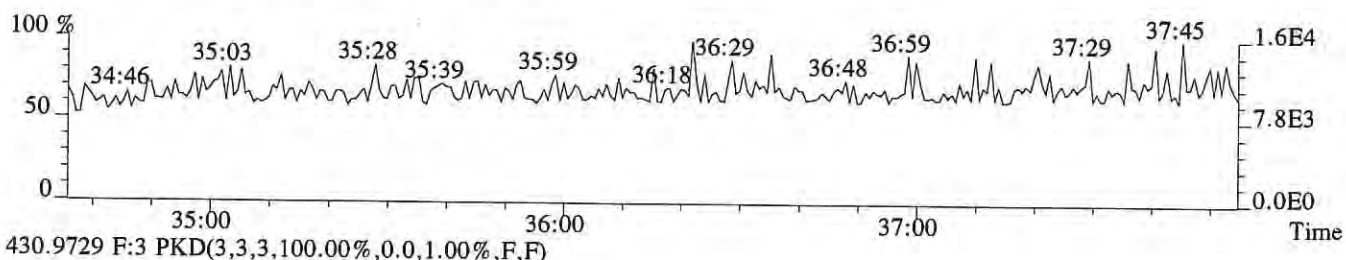
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2128.0,0.40%,F,T)



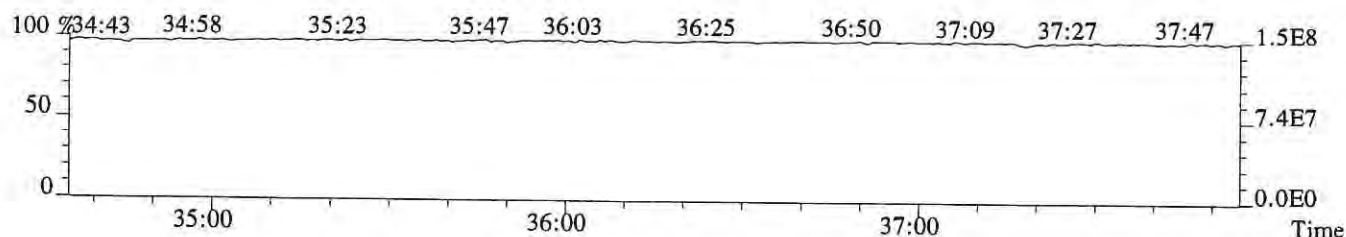
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,6120.0,0.40%,F,T)



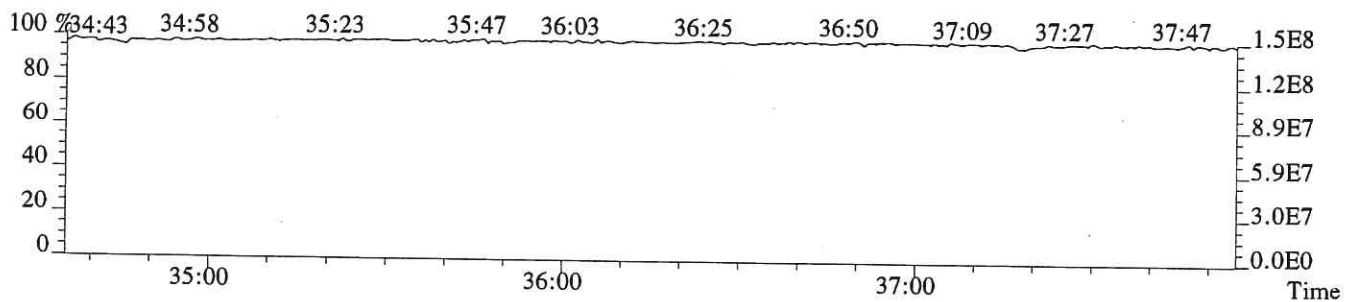
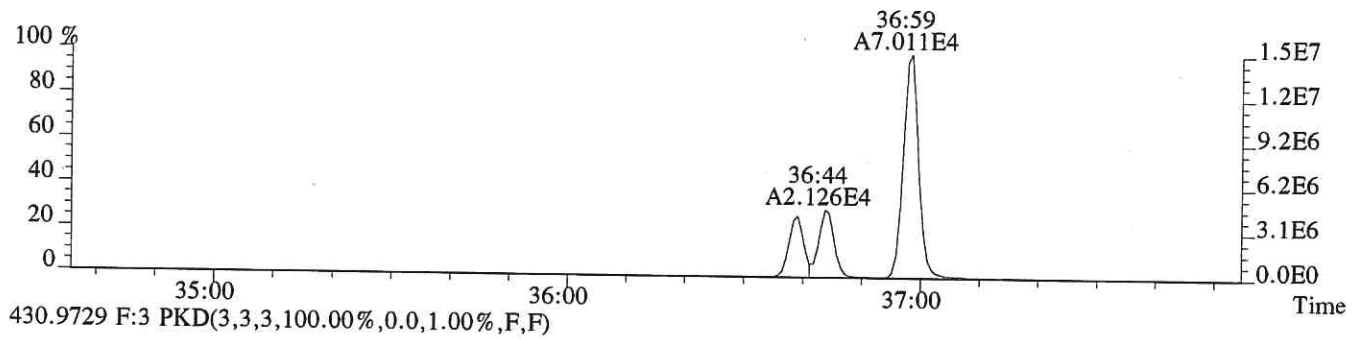
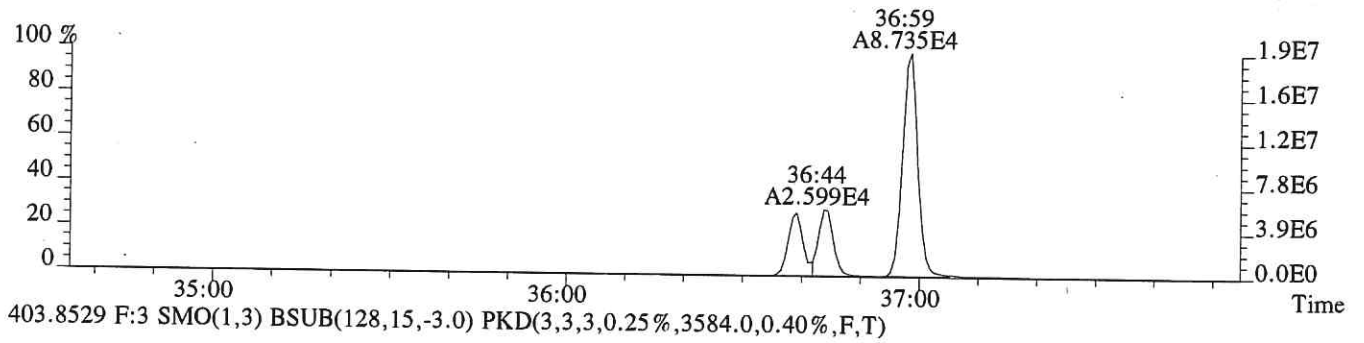
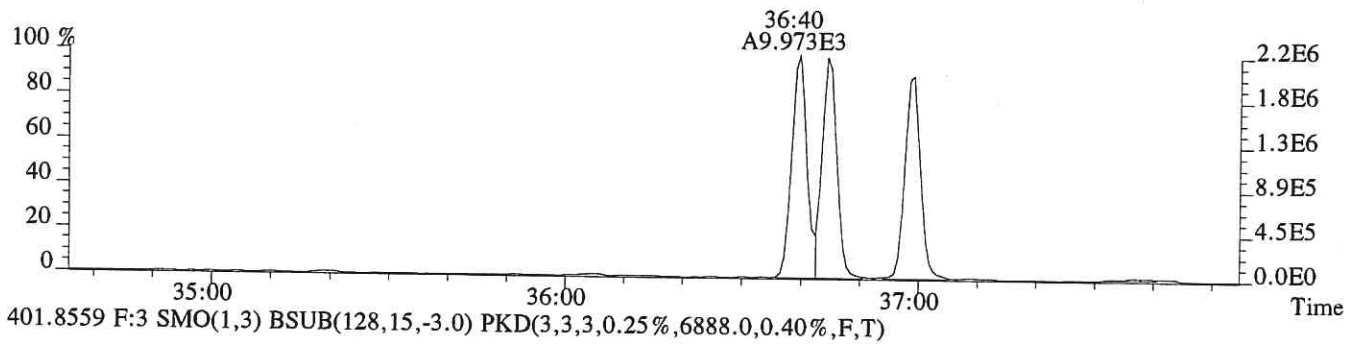
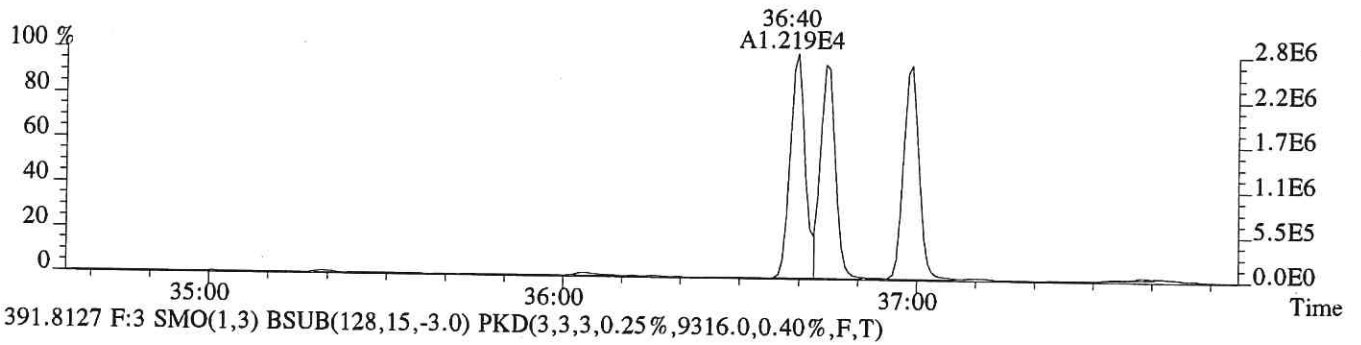
445.7555 F:3 PKD(5,3,5,100.0%,0.0,1.00%,F,F)



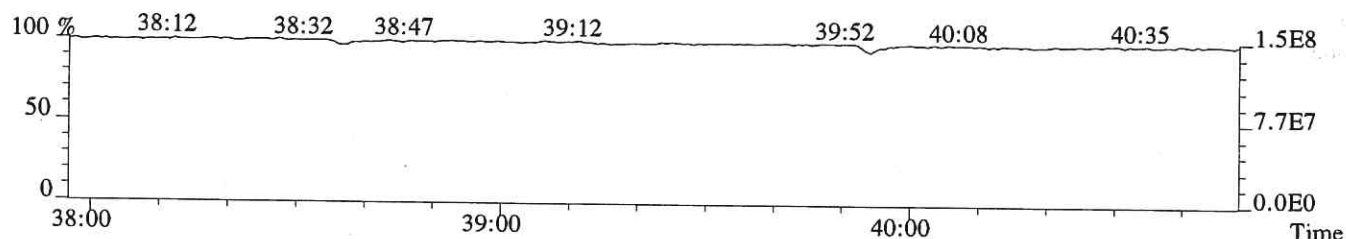
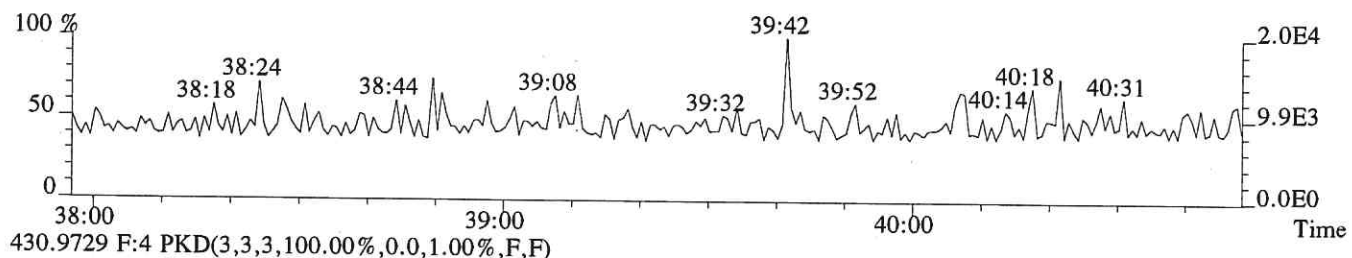
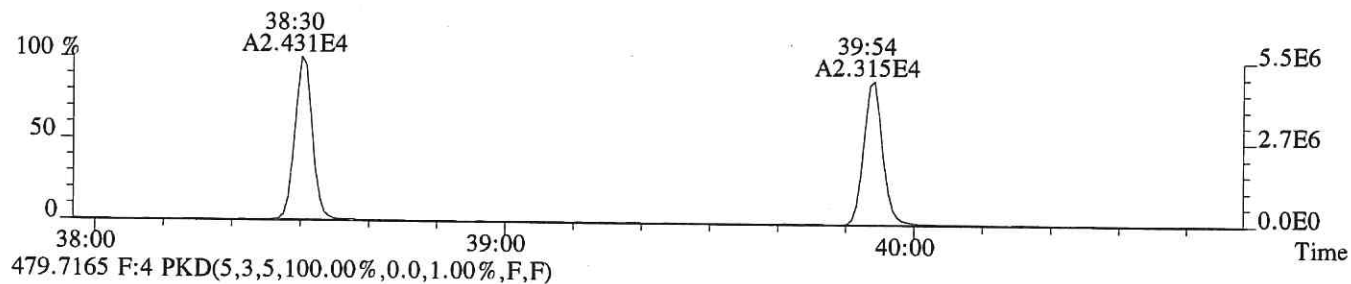
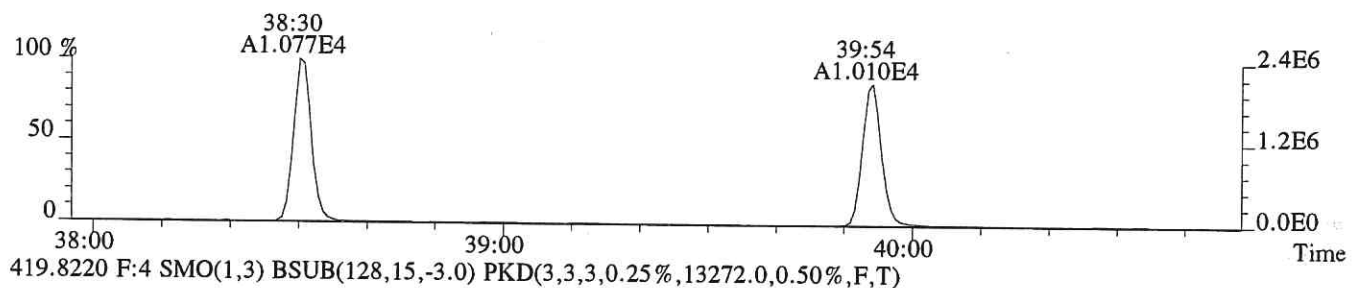
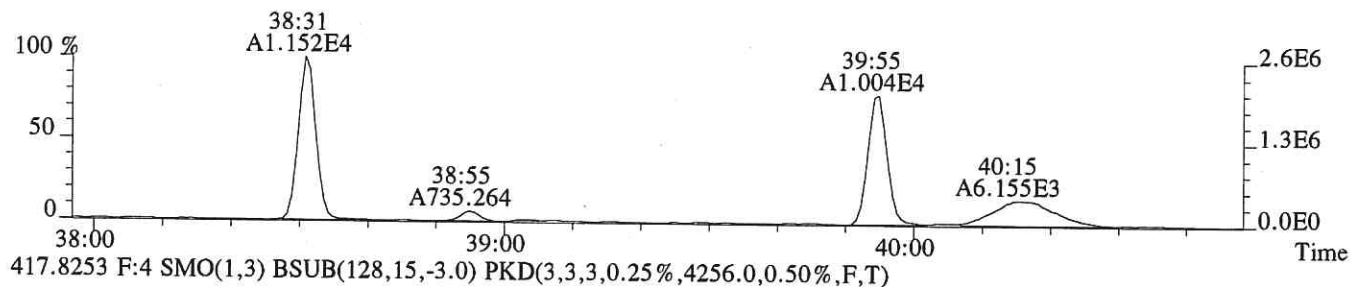
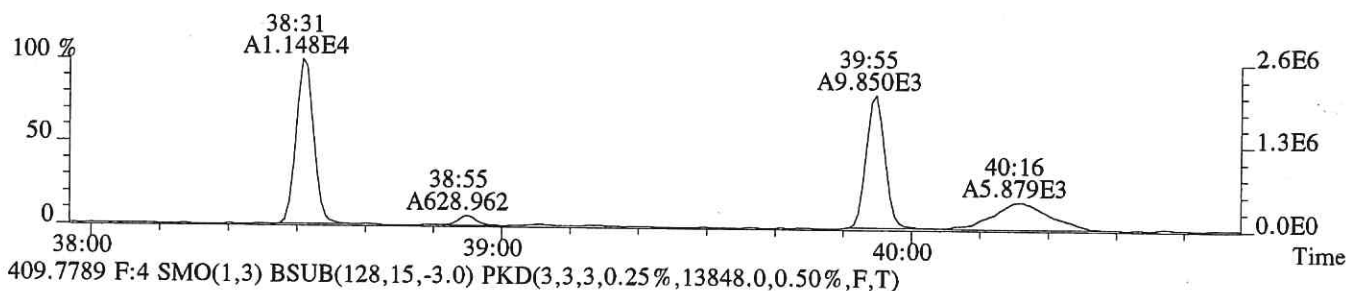
430.9729 F:3 PKD(3,3,3,100.0%,0.0,1.00%,F,F)



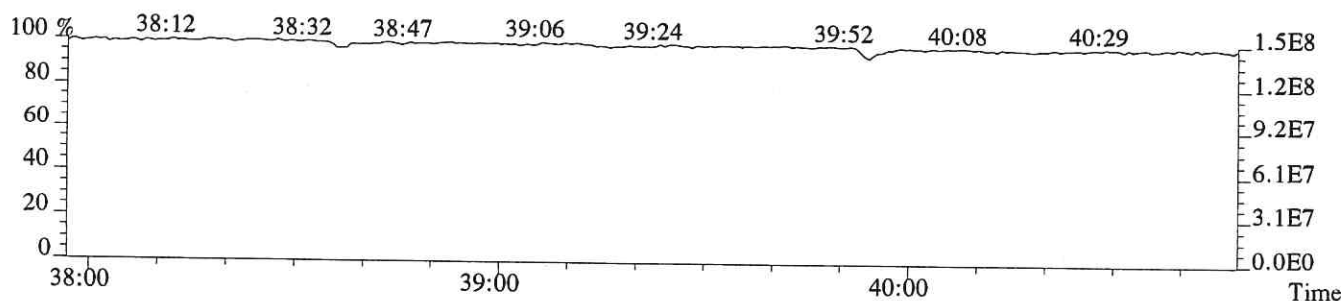
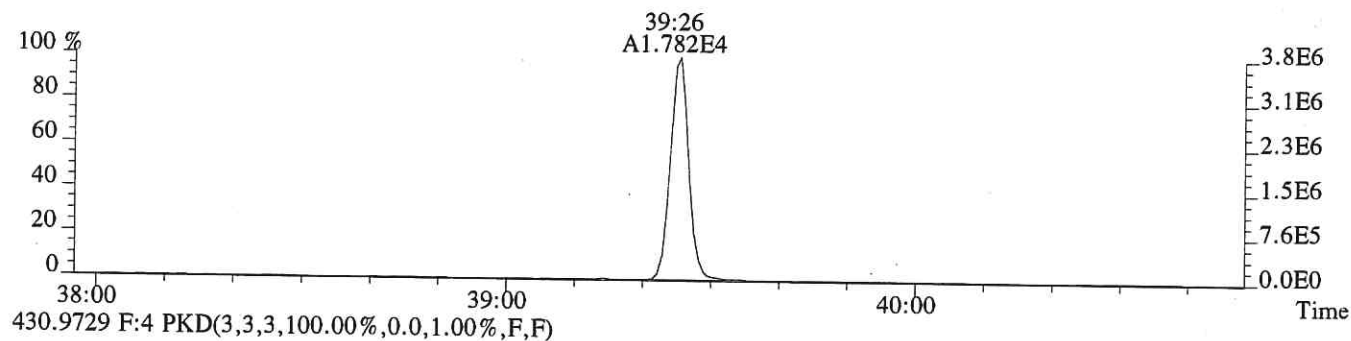
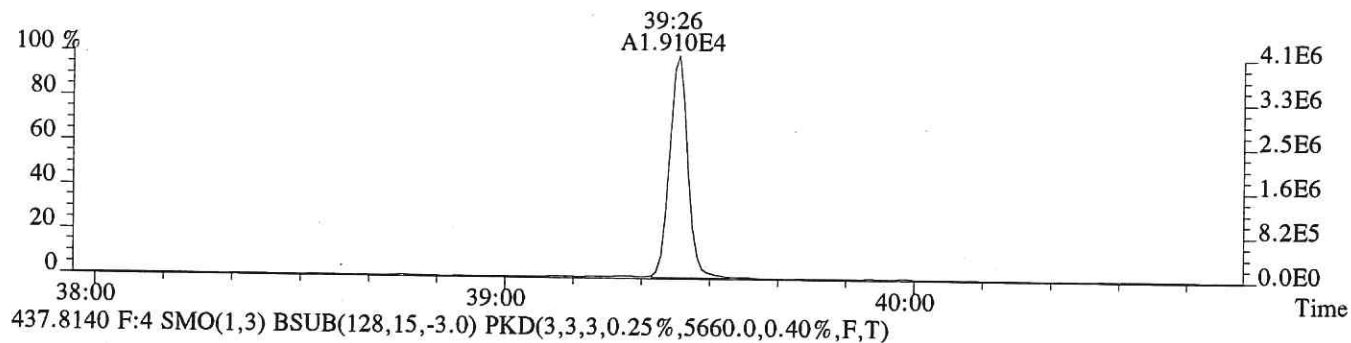
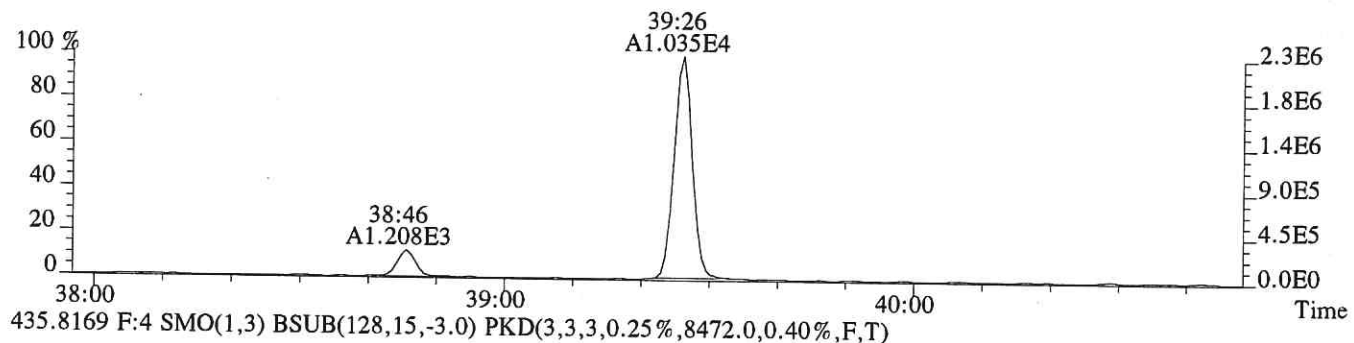
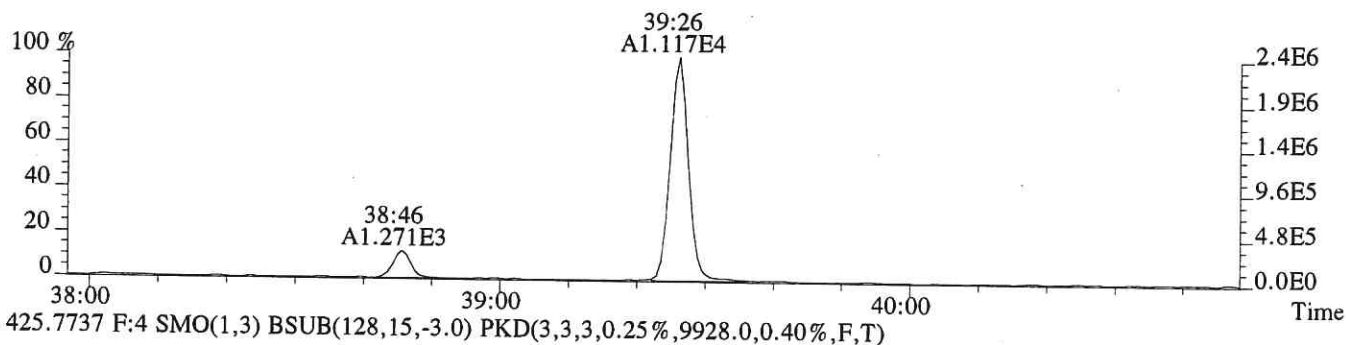
File:P523642 #1-299 Acq:16-AUG-2019 16:21:00 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:EQ1900282-02
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,9104.0,0.40%,F,T)



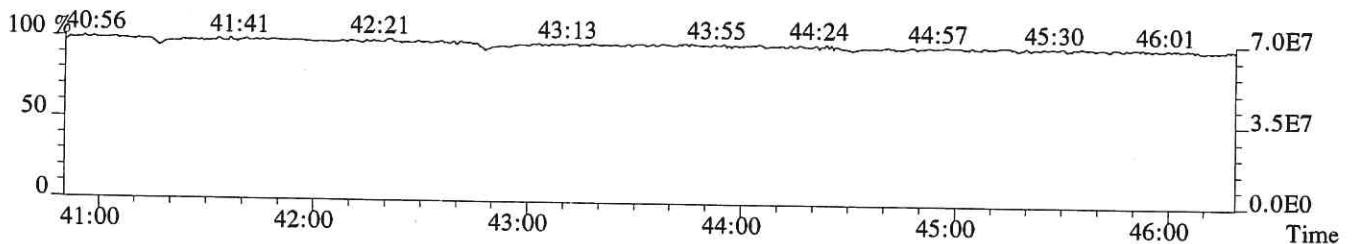
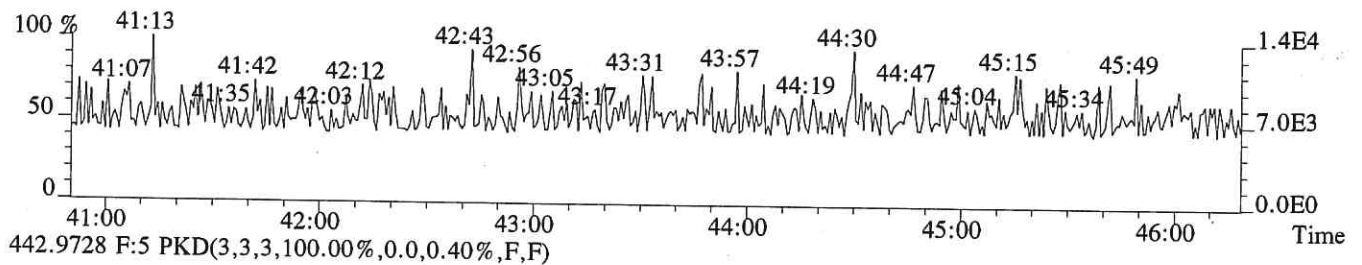
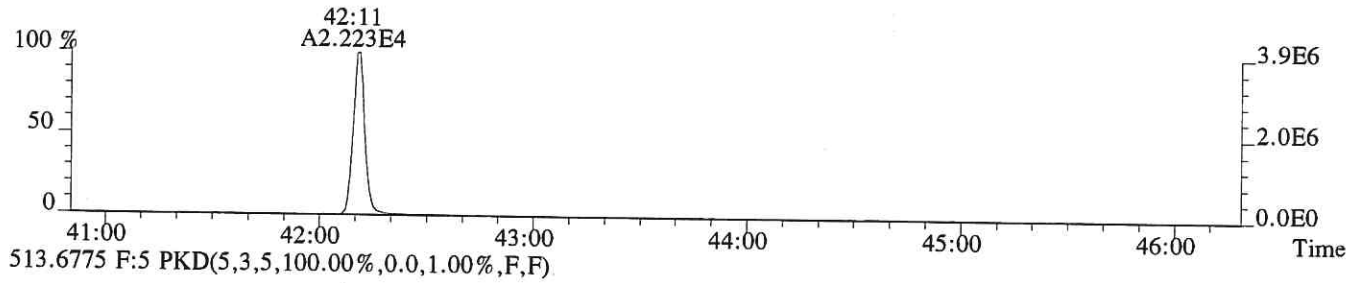
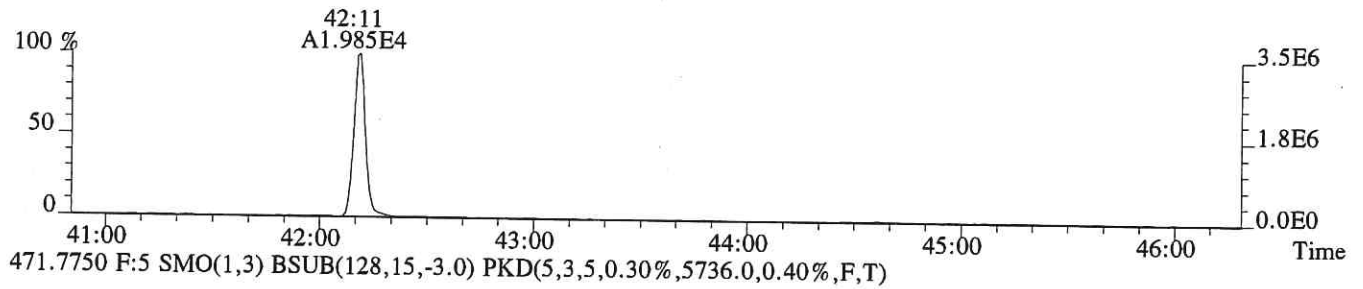
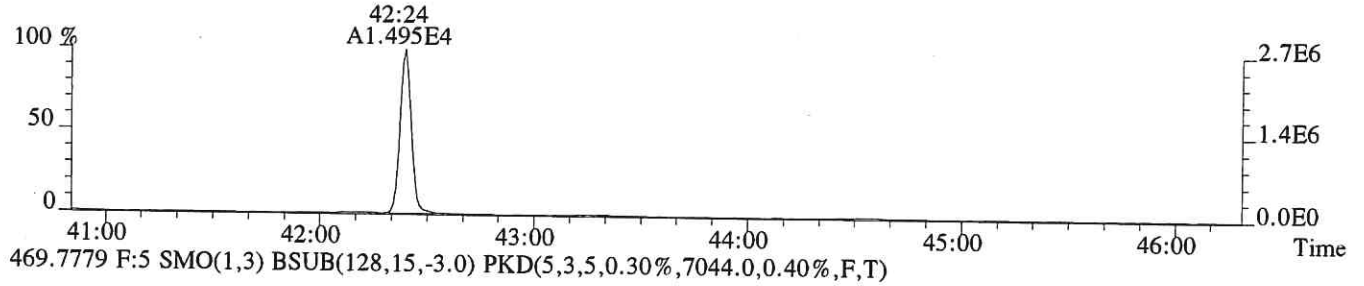
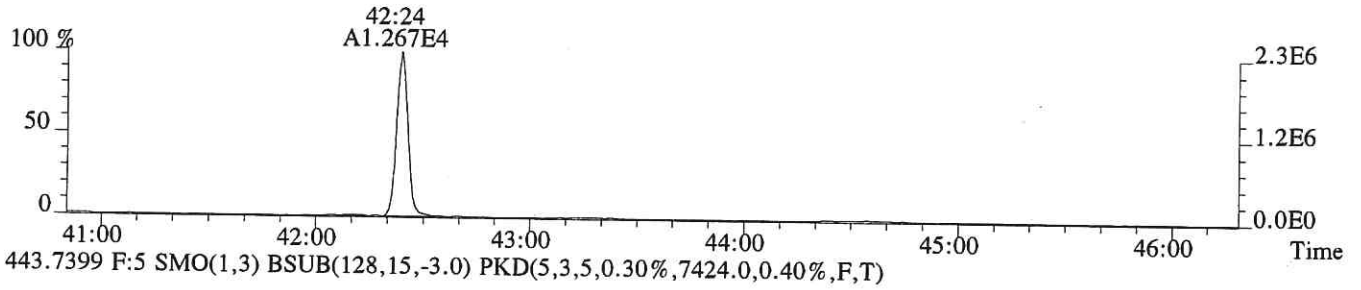
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Sample#1 Exp:EQ1900282-02
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,21100.0,0.50%,F,T)



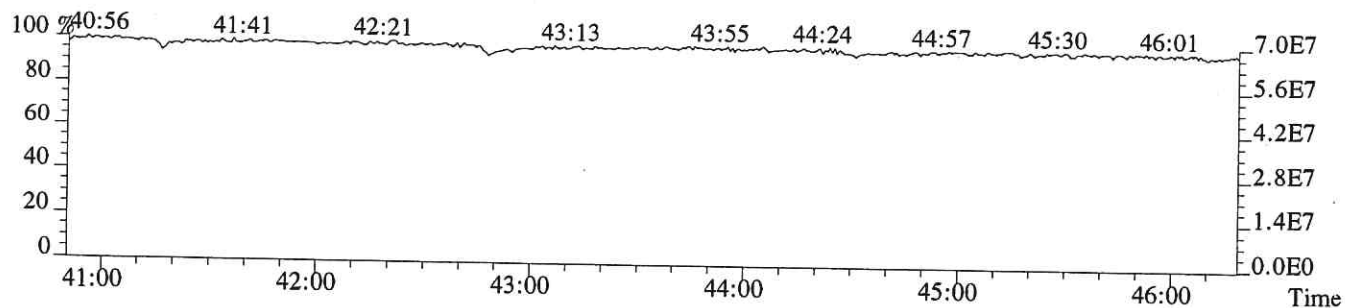
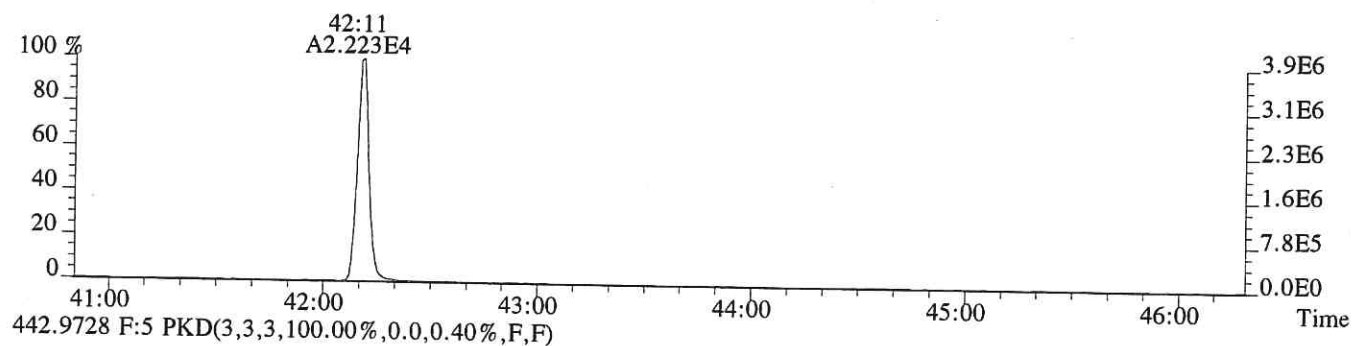
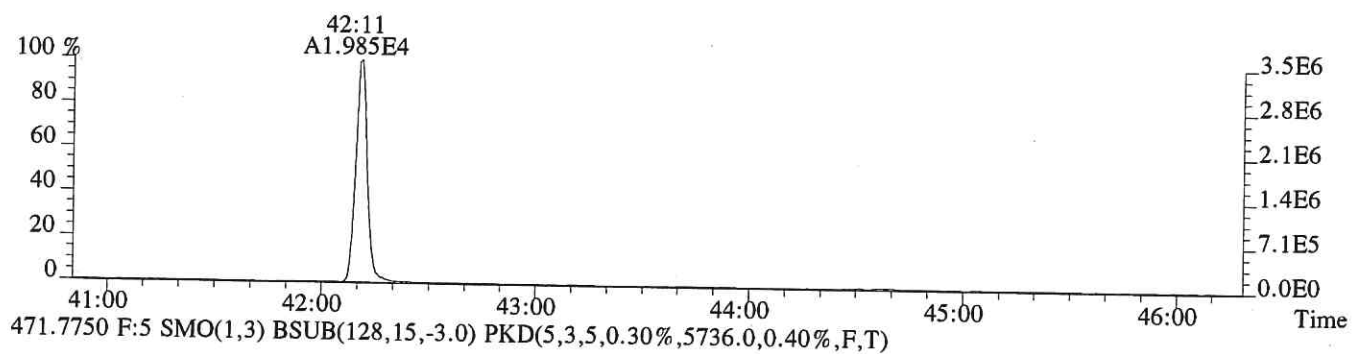
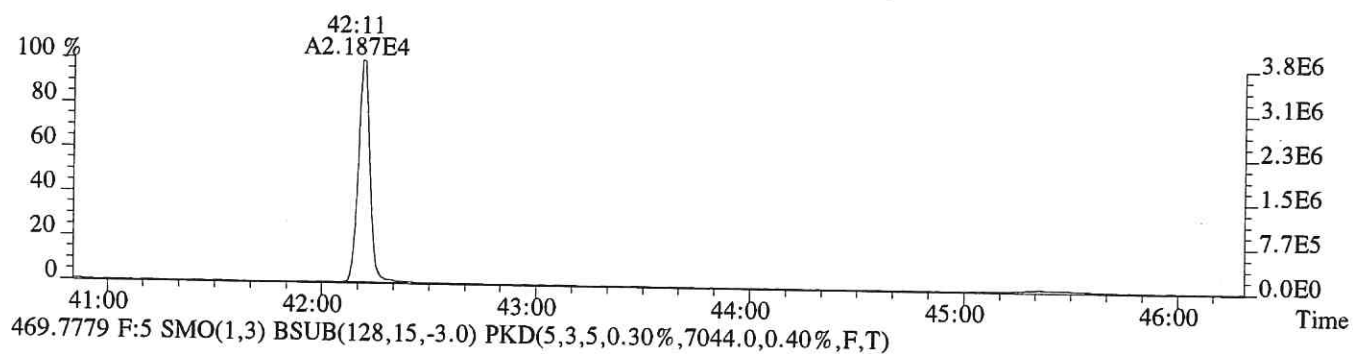
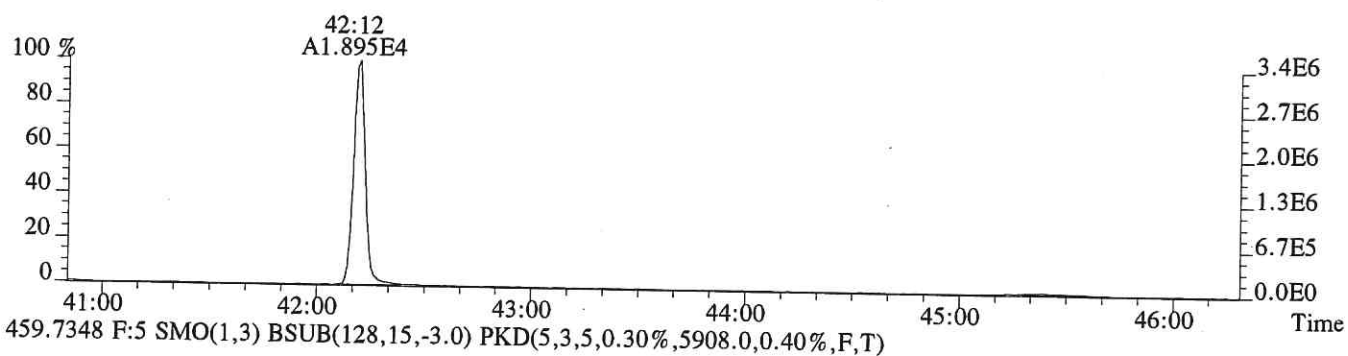
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Sample#1 Exp:EQ1900282-02
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,10204.0,0.40%,F,T)



File:P523642 #1-493 Acq:16-AUG-2019 16:21:00 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:EQ1900282-02
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,9392.0,0.40%,F,T)



File:P523642 #1-493 Acq:16-AUG-2019 16:21:00 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:EQ1900282-02
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4088.0,0.40%,F,T)





Continuing Calibration

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

CCAL HRCC3/CS3 Daily Calibration QC Checklist

Calibration File Name: P523635 - P523640

Date: 08/16/19

Circle one: Beginning / Ending

Method: 1613 / 1613E / 8290 / VCP / Tetra / TCDD Only / TCDF Conf / VCP Conf / 8280 / M23 / TO-9A

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 its closest eluters	✓	✓
No QC ion deflections affect column specific 2378 isomer or its closest eluters (HRMS Only)	✓	✓

CS3 Continuing Calibration Analyst Second Check

Percent RSD within method criteria	✓	✓
All relative abundance ratios meet method criteria	✓	✓
No QC ion deflections of greater than 20% (HRMS Only)	✓	✓
Mass spectrometer resolution greater than or equal to 10,000 and documented (HRMS Only)	✓	✓
2378-TCDD elutes at 25 minutes or later on the DB-5 column / DB-5MSUI column	✓	✓
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% (LRMS Only)	N/A	N/A
Ending Calibration injected prior to end of 12 hour clock	✓	✓

Analyst: 

Second QC: WJ

5DFC
PCDD/PCDF ANALYTICAL SEQUENCE SUMMARY

Lab Name: ALS ENVIRONMENTAL

Contract:

Lab Code:

Case No.:

Client No.:

SDG No.:

GC Column: DB-5MSUI

ID: 0.25 (mm)

Init. Calib. Date: 04/25/19

Init. Calib. Times: 21:22

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
201833	CS3	P523635	16-AUG-19	09:10:40
192977	WINDOW DEFINE	P523636	16-AUG-19	10:38:37
METHOD BLANK	EQ1900282-01	P523637	16-AUG-19	12:15:02
SS006_SUPER_SACK-S7	E1900591-001	P523638	16-AUG-19	13:03:39
SS006_SUPER_SACK-S7	E1900591-002	P523639	16-AUG-19	13:52:16
SS006_SUPER_SACK-S7	E1900591-003	P523640	16-AUG-19	14:40:54
SS006_SUPER_SACK-S7	E1900591-004	P523641	16-AUG-19	15:29:31
LCS	EQ1900282-02	P523642	16-AUG-19	16:21:00
MS	EQ1900282-03	P523643	16-AUG-19	17:08:51
DMS	EQ1900282-04	P523644	16-AUG-19	17:57:28
201833	DO NOT USE	P523645	16-AUG-19	18:54:17
201833	CS3	P523646	16-AUG-19	19:50:16

Sample List Report

MassLynx 4.1 SCN815 SCN795

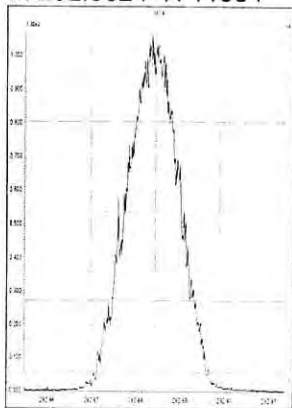
Sample List: C:\MassLynx\EHMS07.PRO\SampleDB\20190816A.SPL
 Last Modified: Wednesday, August 21, 2019 16:57:06 Central Daylight Time
 Printed: Wednesday, August 21, 2019 16:57:24 Central Daylight Time

OPUS 4: P523635res

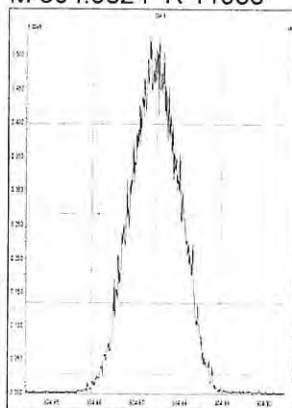
Date	Time	File Name	Sample ID	File Text	MS File	Inlet File	Bottle	Analyst	Comments
08/16/19	09:10	P523635	CS3	201833	EPA1613_ALS	Dioxin_ALS	Tray1:2	JC	HRMS CHECK 10:38
	10:38	P523636	WINDOWDEFINE	192977	EPA1613_ALS	Dioxin_ALS	Tray1:1		
	12:15	P523637	MB	EQ1900282-01	EPA1613_ALS	Dioxin_ALS	Tray1:3		
	13:03	P523638	E1900591-001	E1900591-001	EPA1613_ALS	Dioxin_ALS	Tray1:4		
	13:52	P523639	E1900591-002	E1900591-002	EPA1613_ALS	Dioxin_ALS	Tray1:5		
	14:40	P523640	E1900591-003	E1900591-003	EPA1613_ALS	Dioxin_ALS	Tray1:6		
	15:29	P523641	E1900591-004	E1900591-004	EPA1613_ALS	Dioxin_ALS	Tray1:7		
	16:21	P523642	LCS	EQ1900282-02	EPA1613_ALS	Dioxin_ALS	Tray1:8		
	17:08	P523643	MS	EQ1900282-03	EPA1613_ALS	Dioxin_ALS	Tray1:9		
	17:57	P523644	DMS	EQ1900282-04	EPA1613_ALS	Dioxin_ALS	Tray1:10		
	18:54	P523645	CS3	201833	EPA1613_ALS	Dioxin_ALS	Tray1:2		NOT USED
	19:50	P523646	CS3	201833	EPA1613_ALS	Dioxin_ALS	Tray1:2		HRMS CHECK 18:54

JC 08/21/19

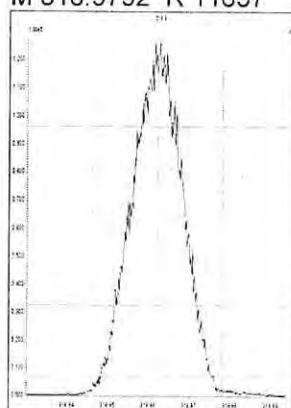
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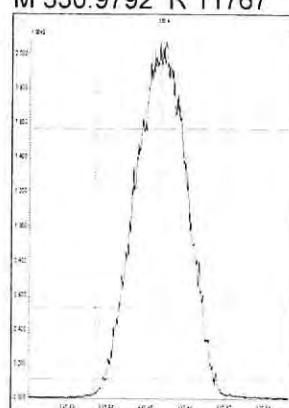
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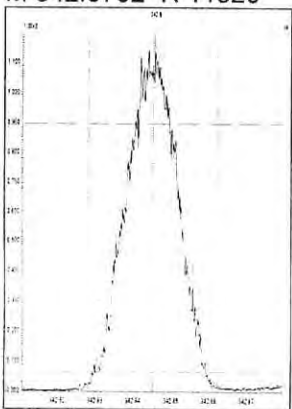
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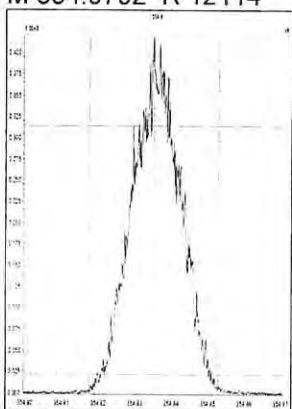
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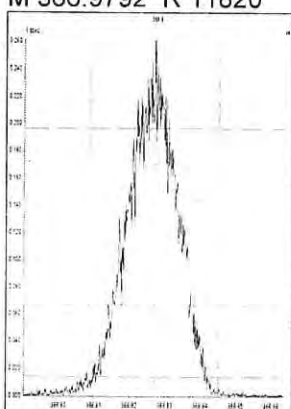
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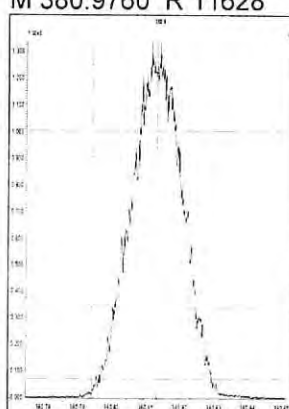
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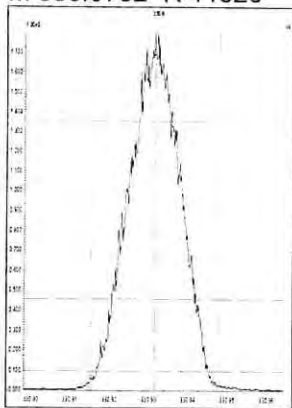
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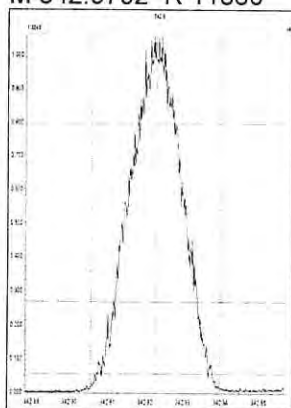
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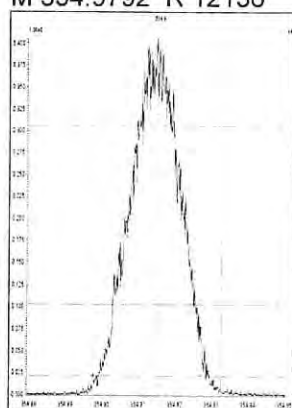
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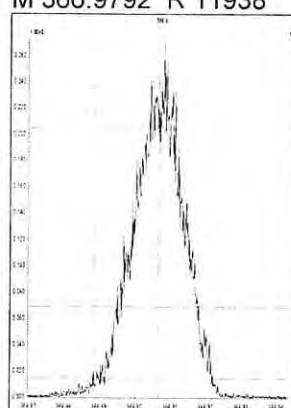
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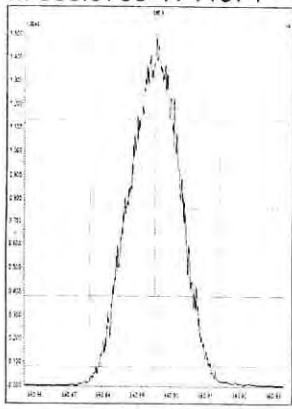
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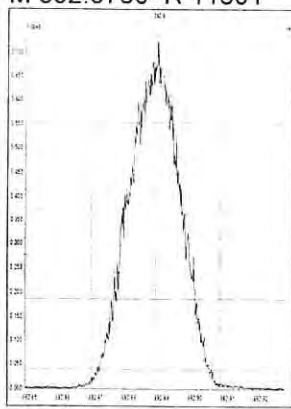
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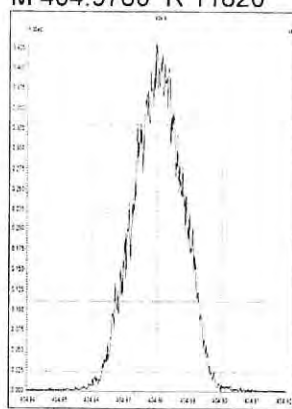
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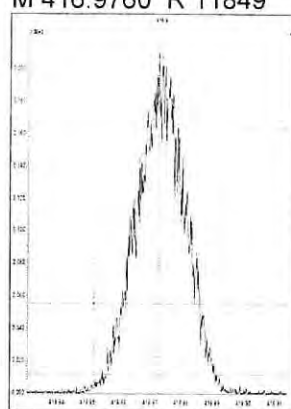
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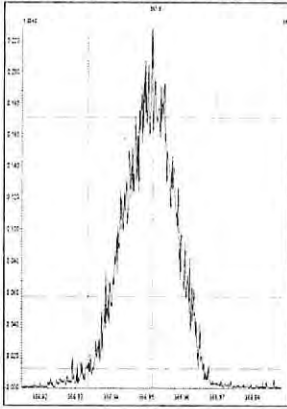
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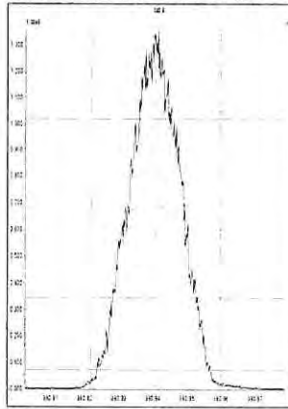
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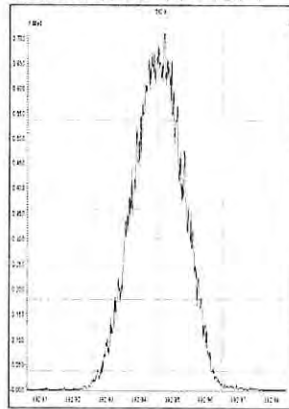
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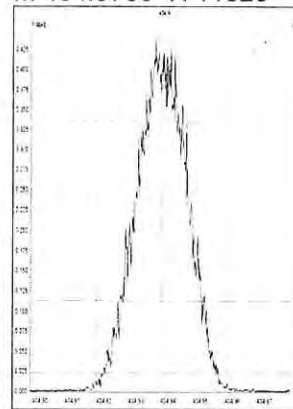
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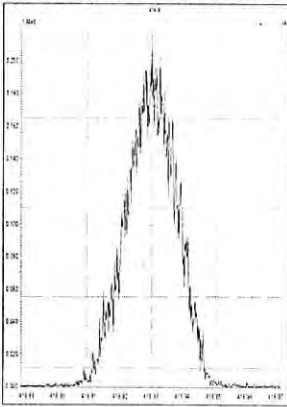
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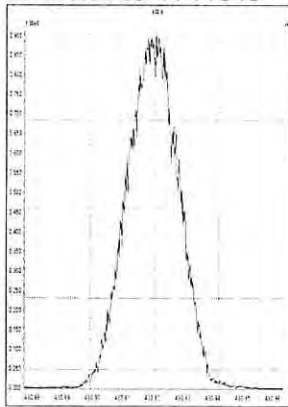
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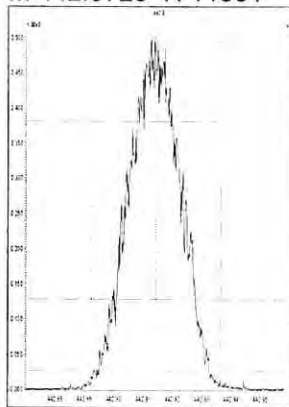
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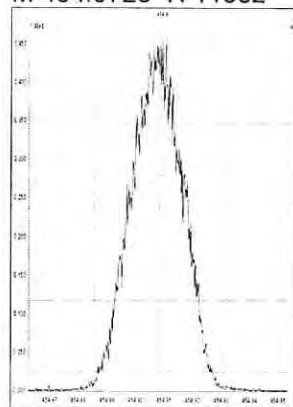
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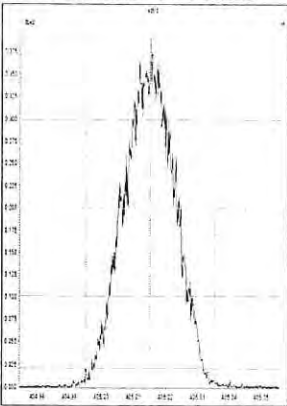
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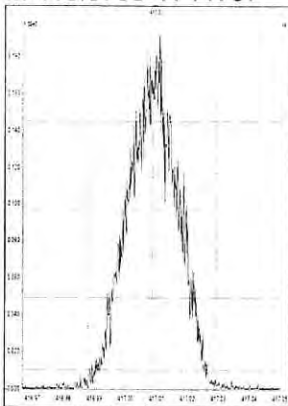
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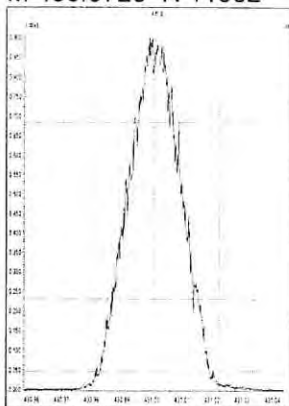
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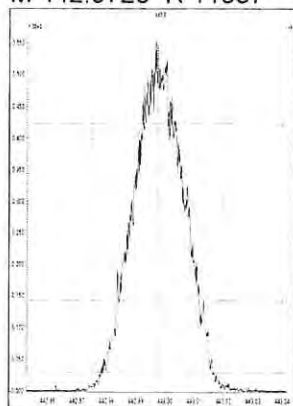
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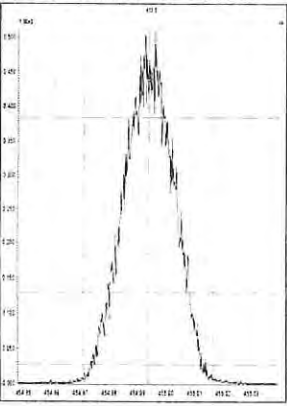
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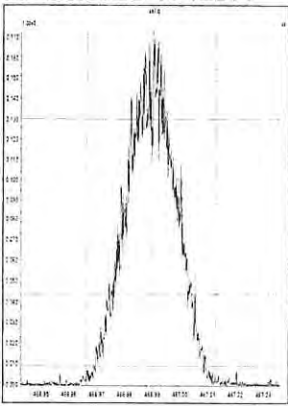
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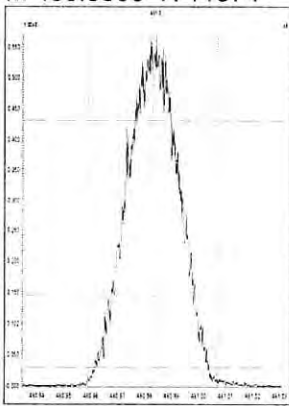
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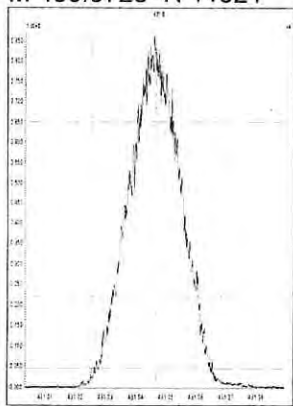
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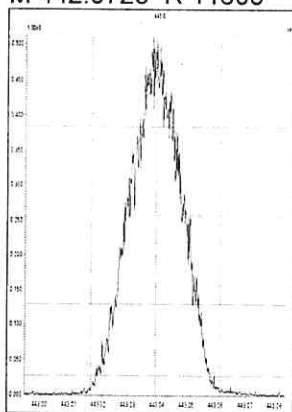


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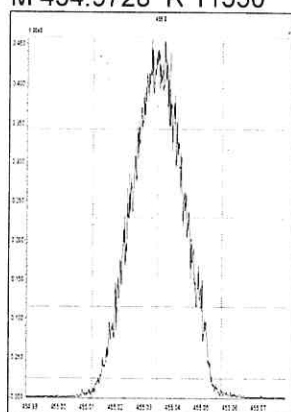


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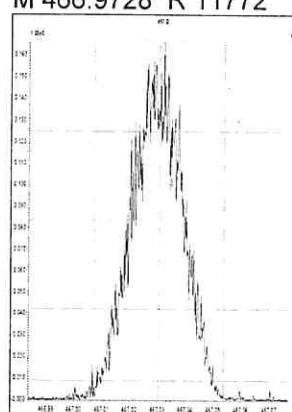
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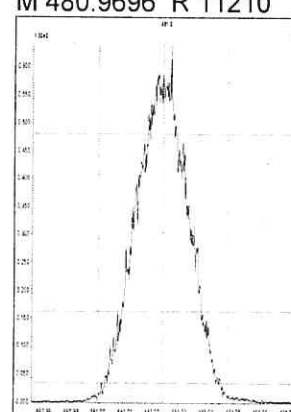
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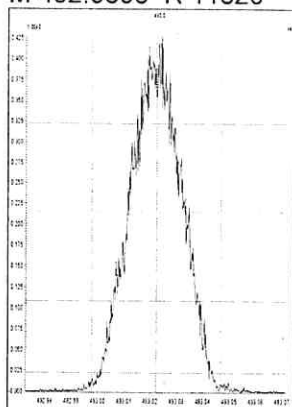
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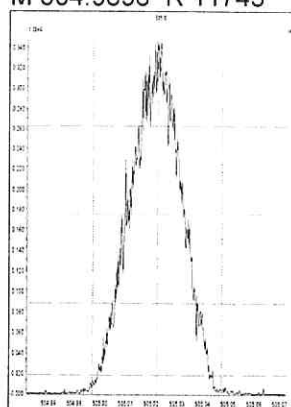
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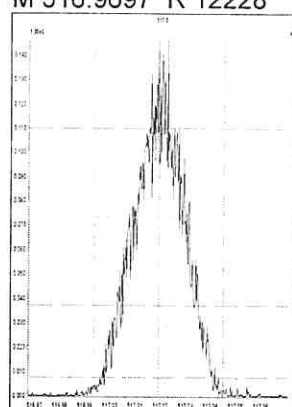
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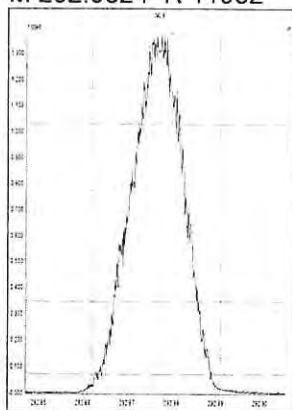


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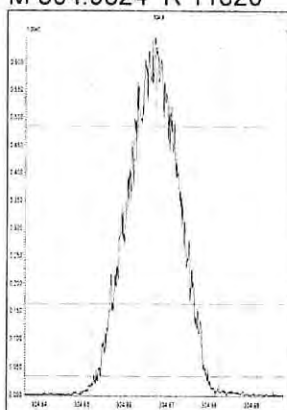


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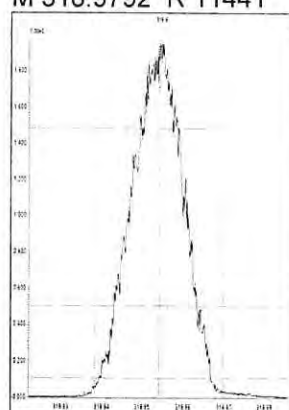
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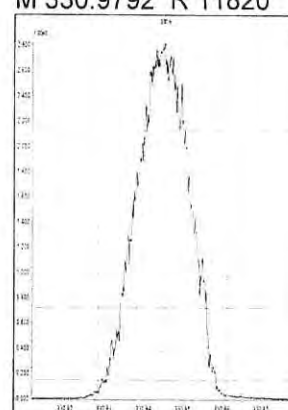
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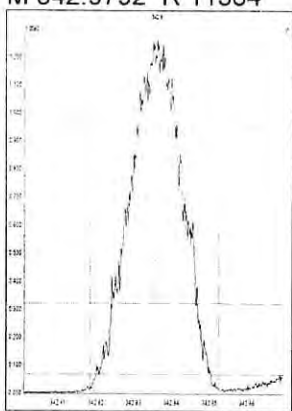
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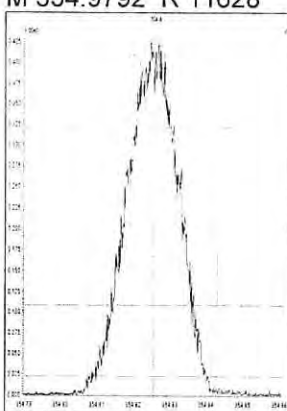
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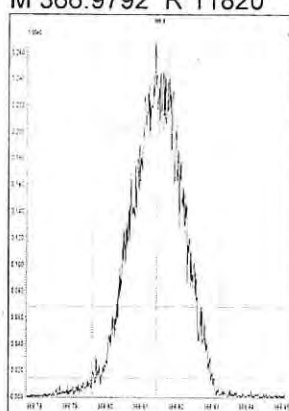
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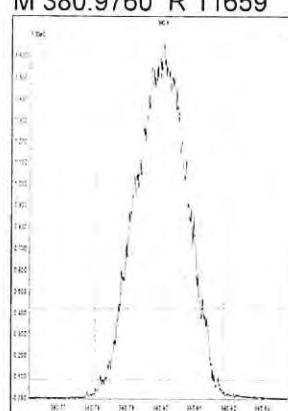
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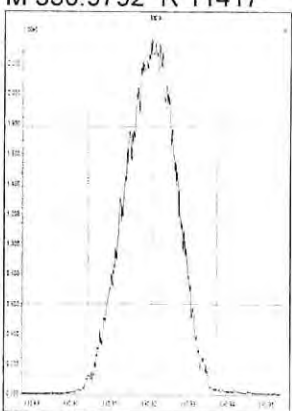
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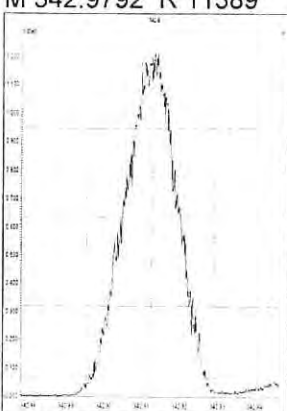
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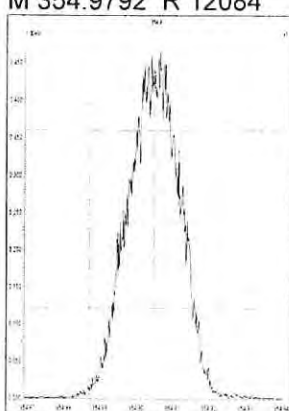
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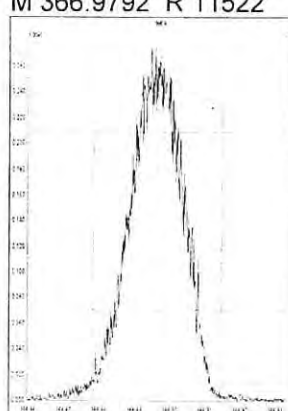
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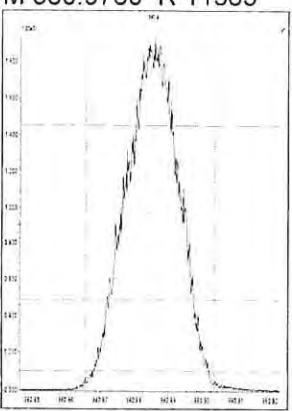
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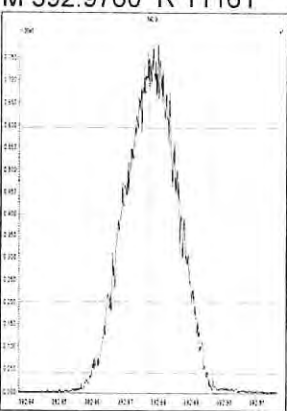
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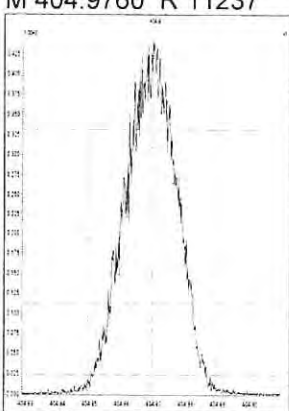
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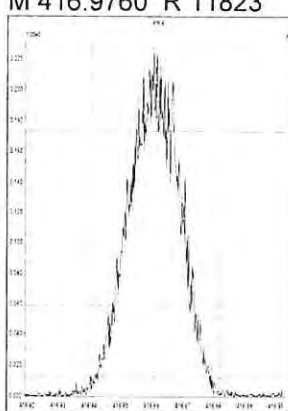
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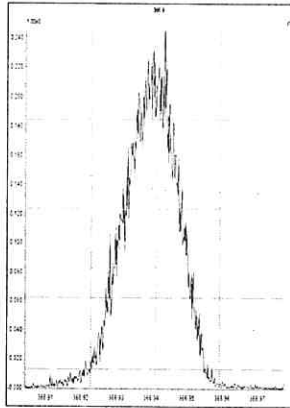
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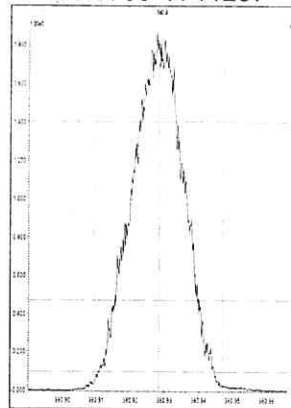
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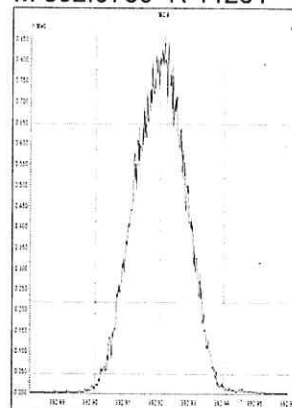
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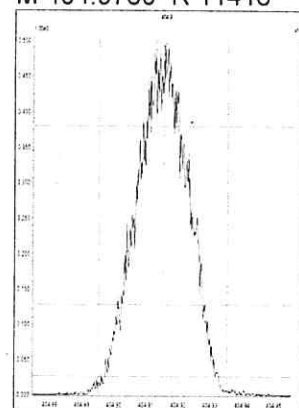
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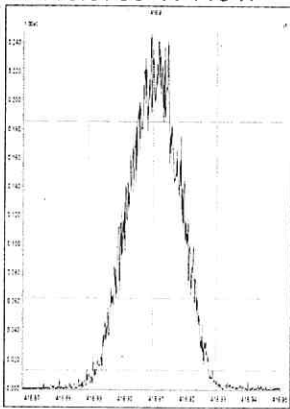
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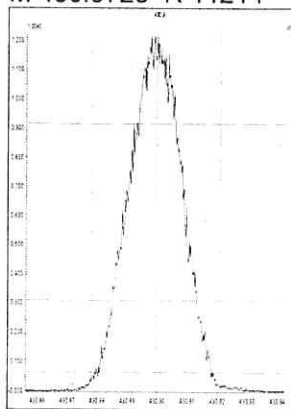
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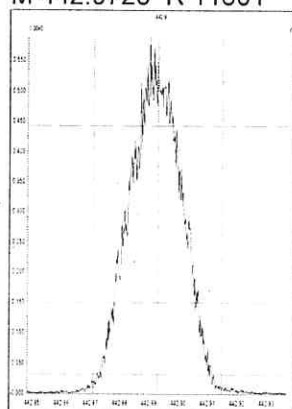
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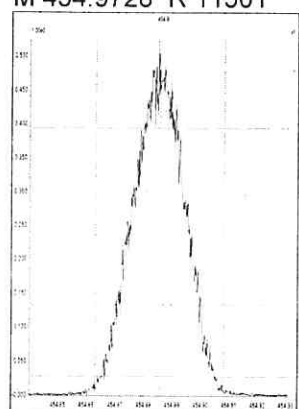
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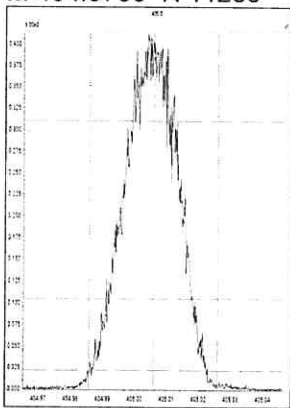
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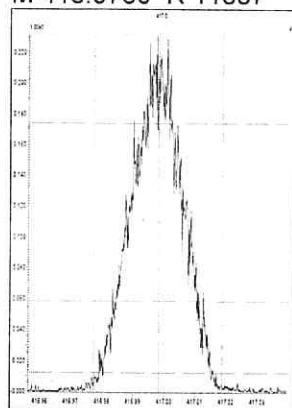
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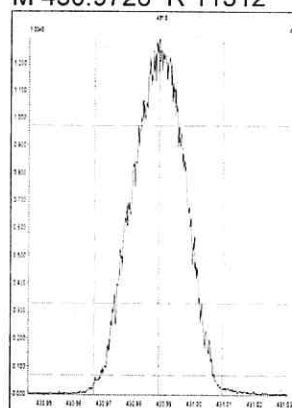
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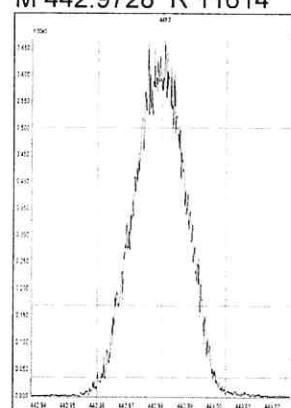
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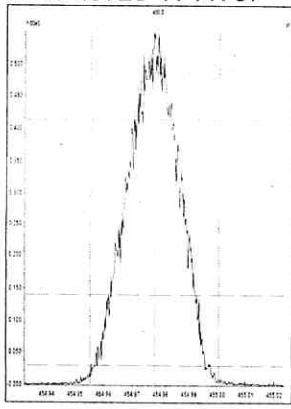
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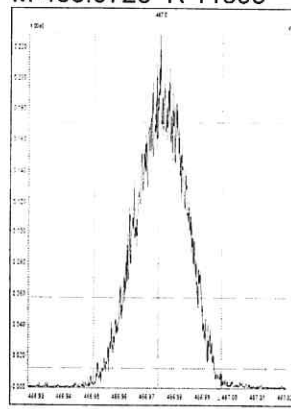
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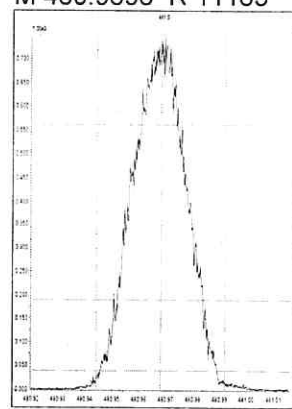
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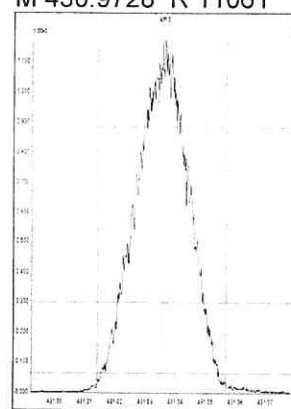
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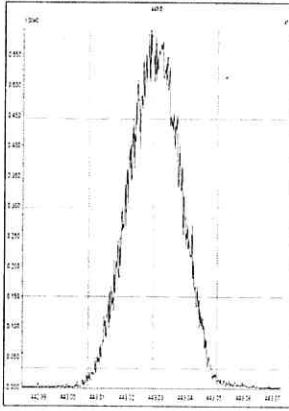
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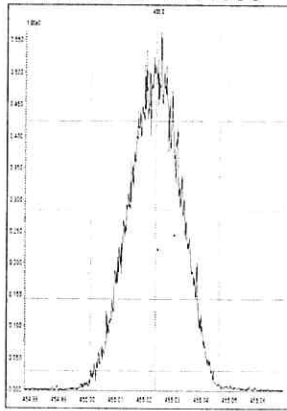
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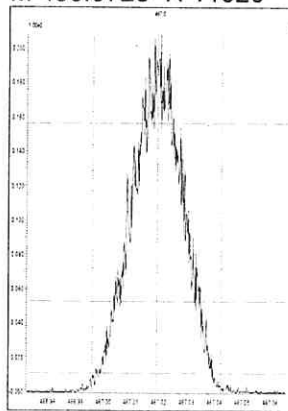
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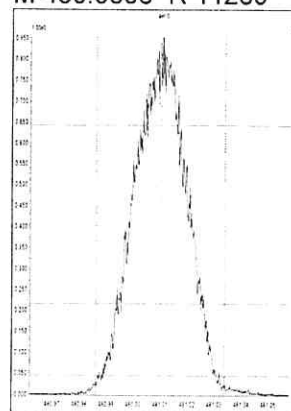
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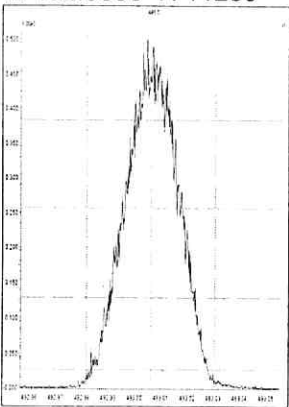
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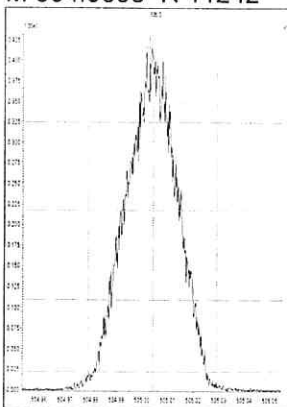
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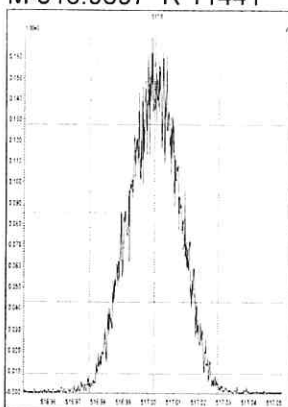
M 492.9696 R 11289



M 504.9696 R 11242



M 516.9697 R 11441



5DFA

WINDOW DEFINING MIX SUMMARY

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WDM

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 Lab Code: ALSTX
 GC Column: DB-5MSUI

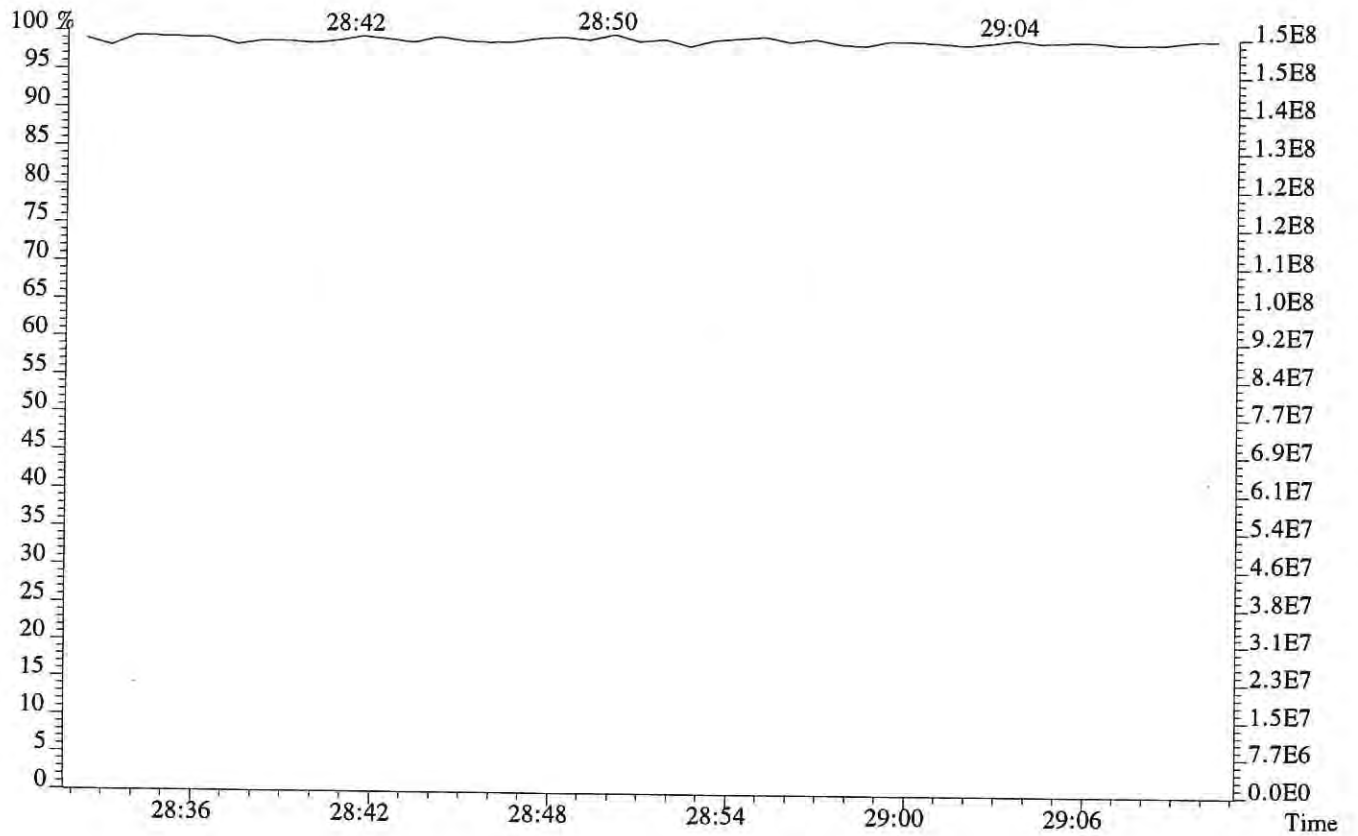
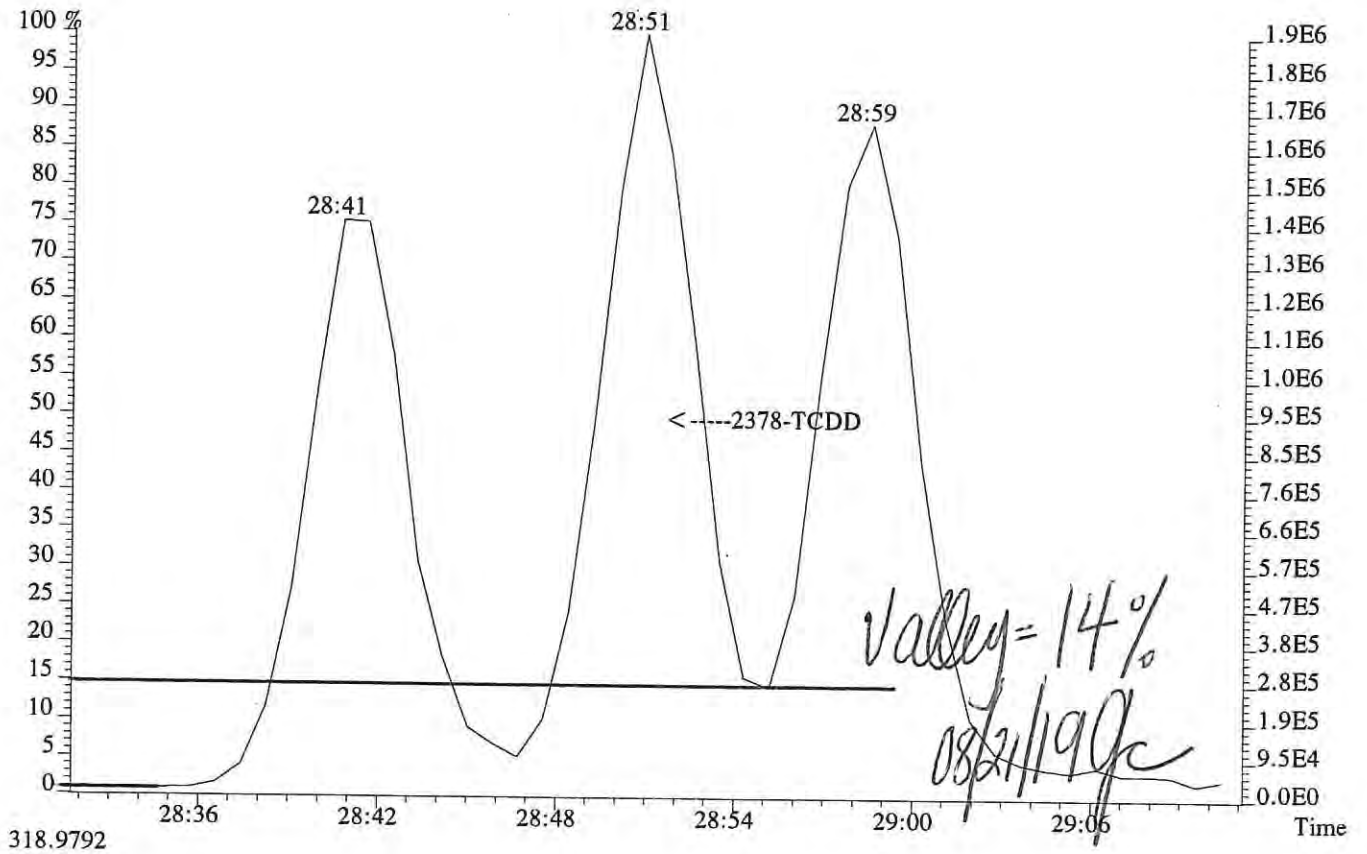
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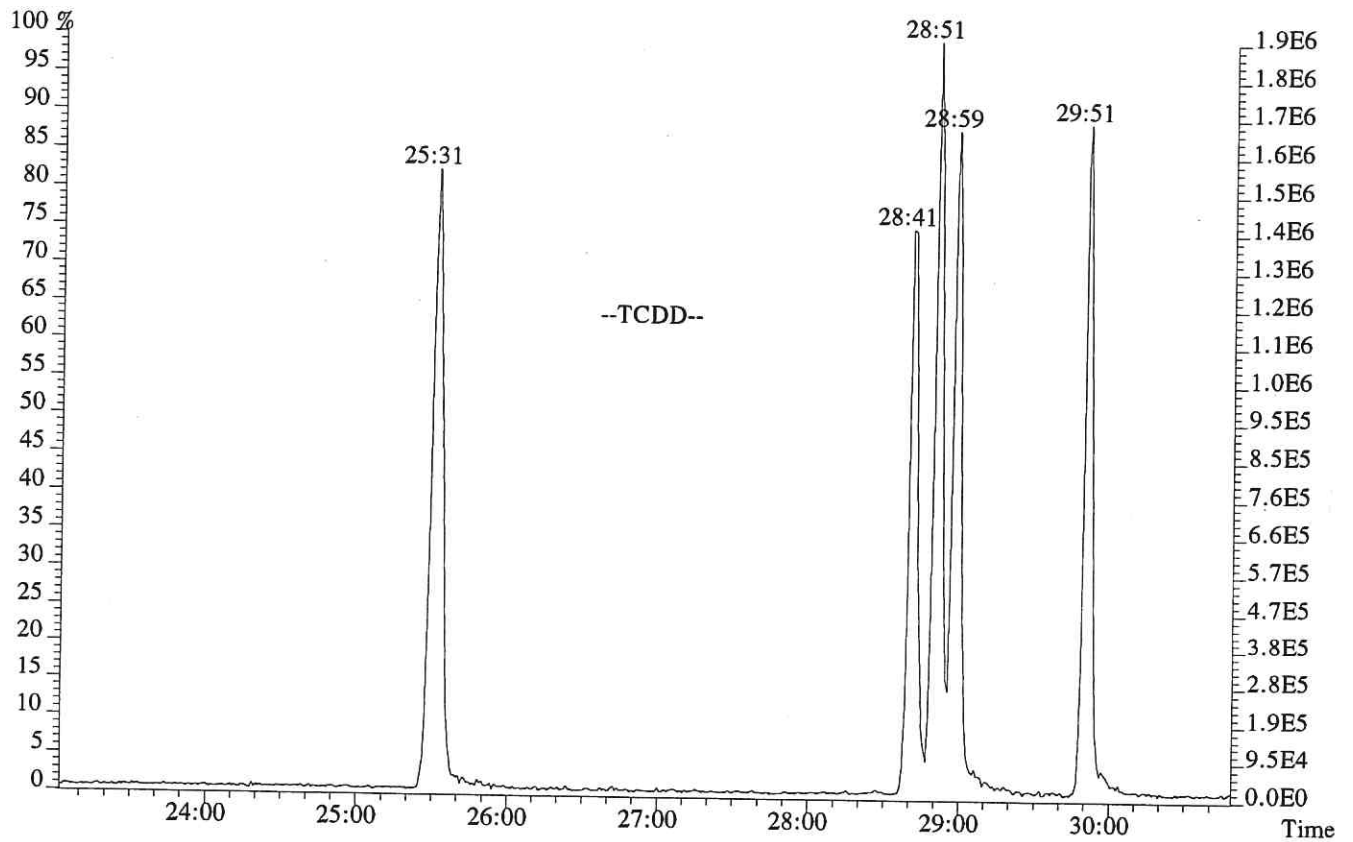
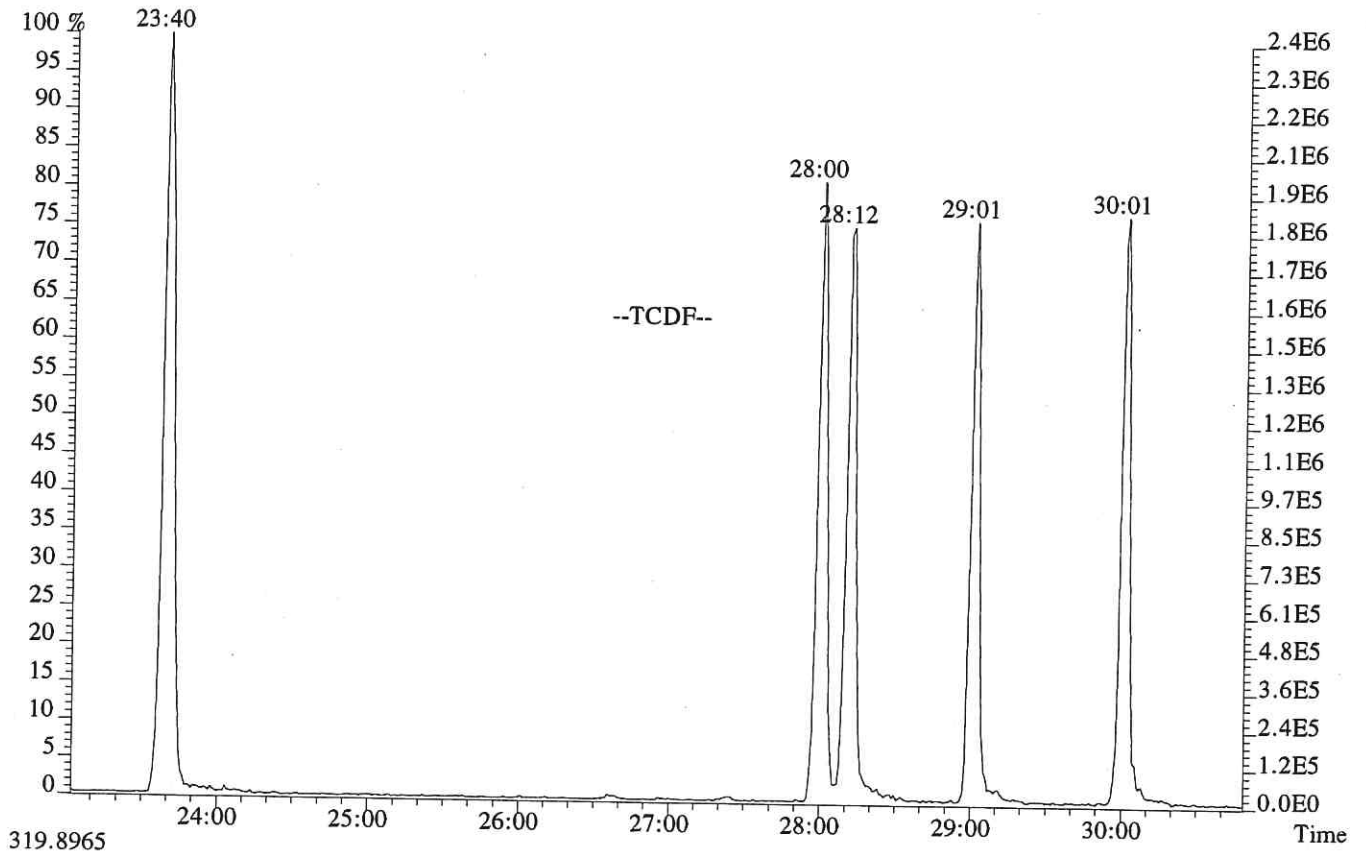
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 Lab File ID: P523636
 Date Analyzed: 16-AUG-2019
 Time Analyzed: 10:38:37

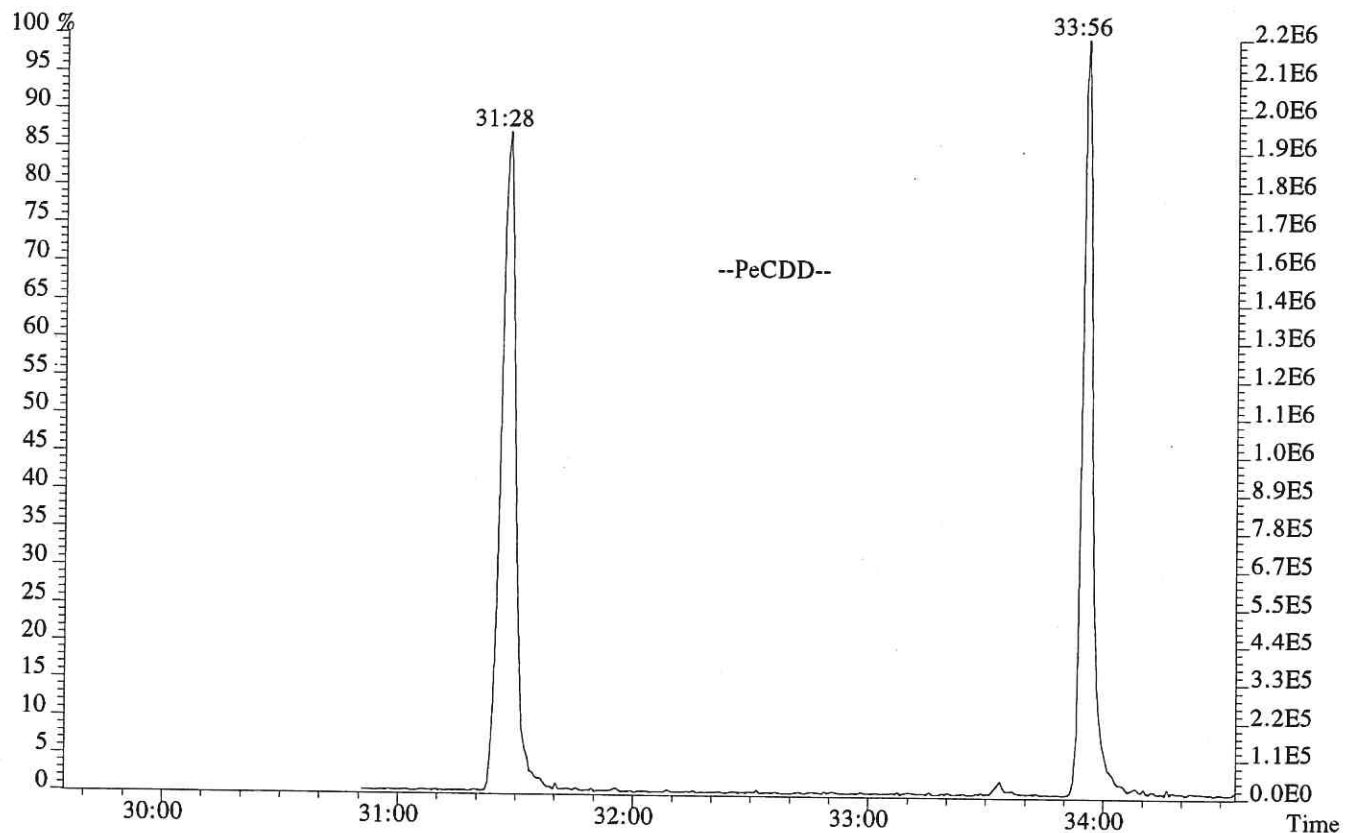
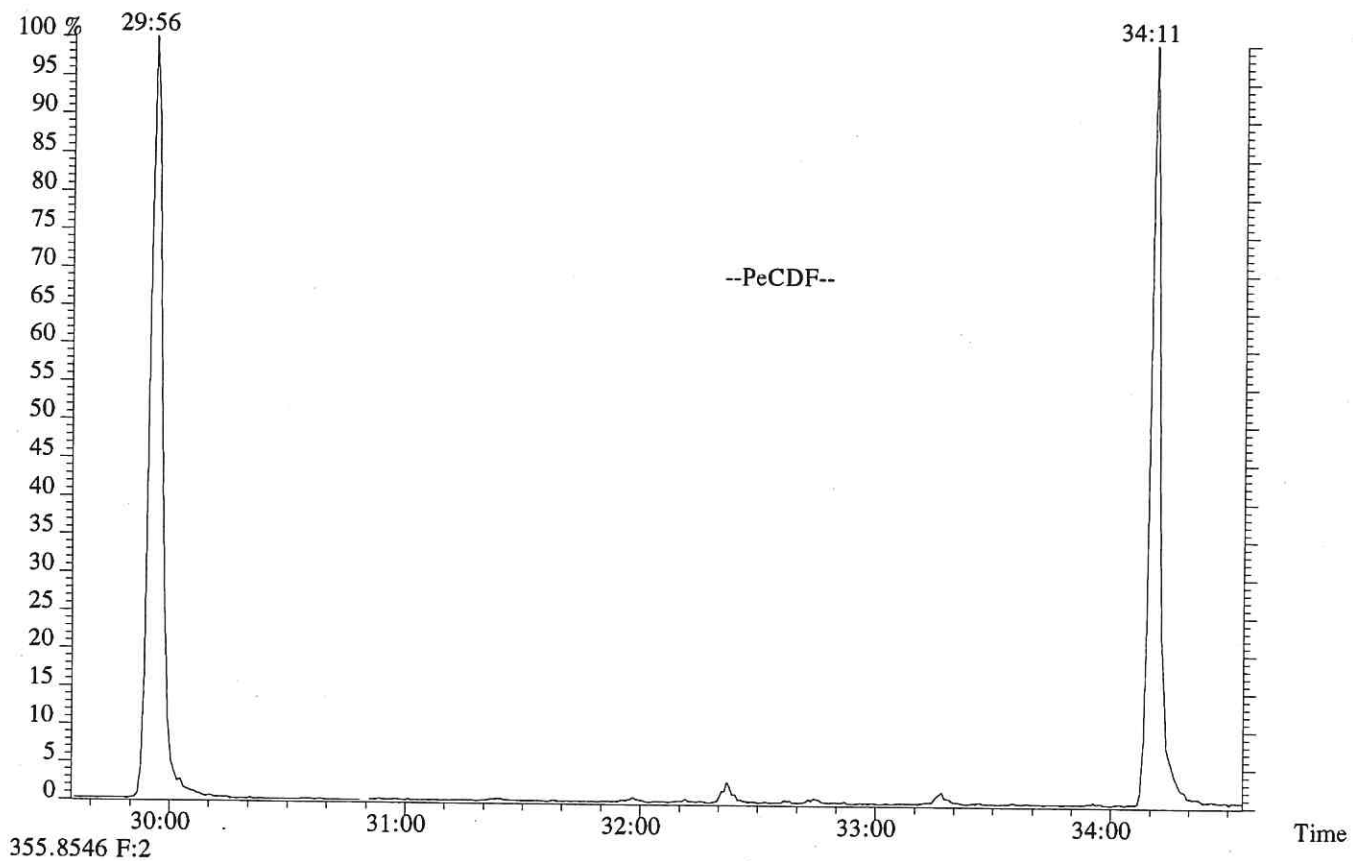
Congener	Retention Time First Eluting	Retention Time Last Eluting
TCDF	23:40	30:01
TCDD	25:31	29:51
PeCDF	29:56	34:11
PeCDD	31:28	33:56
HxCDF	34:49	37:19
HxCDD	35:19	36:55
HpCDF	38:31	39:55
HpCDD	38:46	39:26

% Valley 2378-TCDD: 14 %

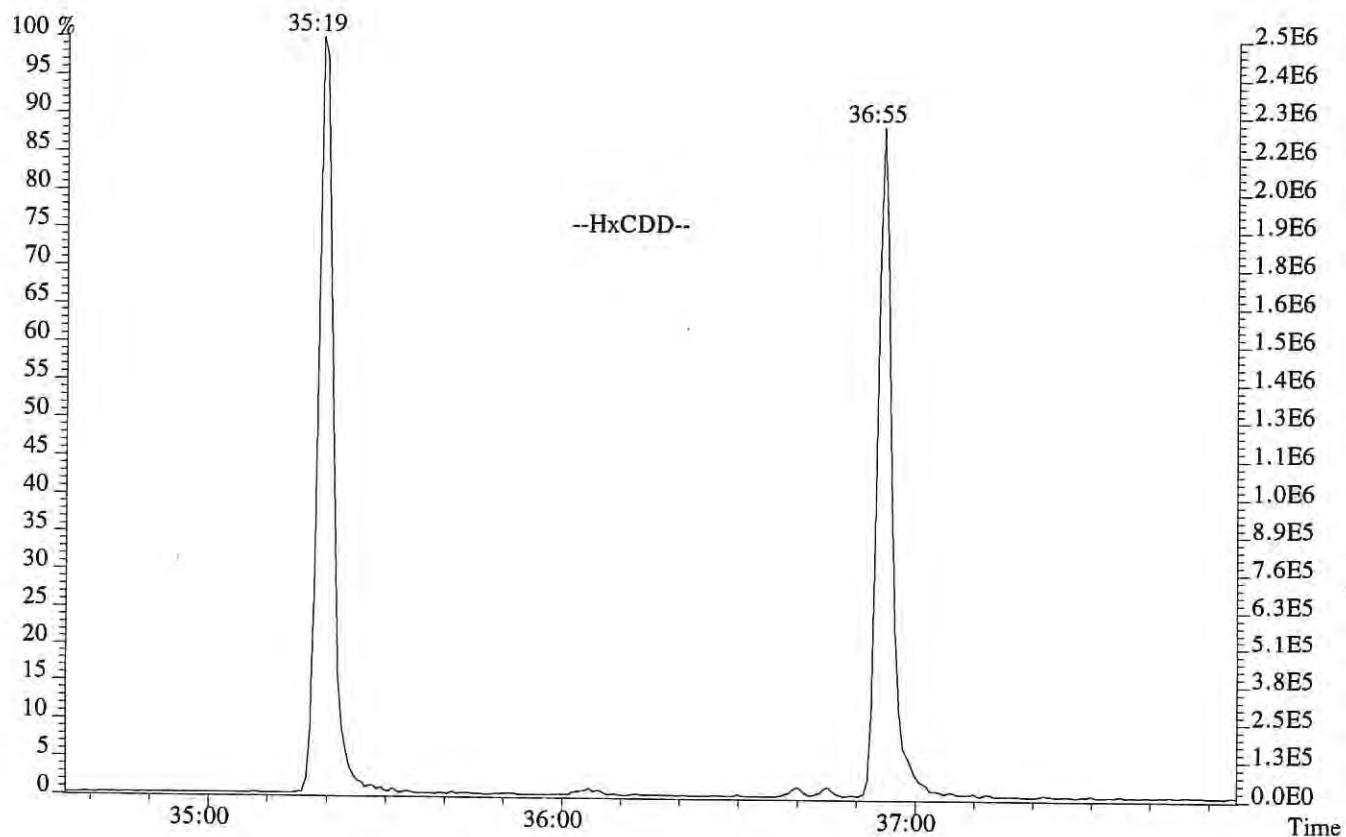
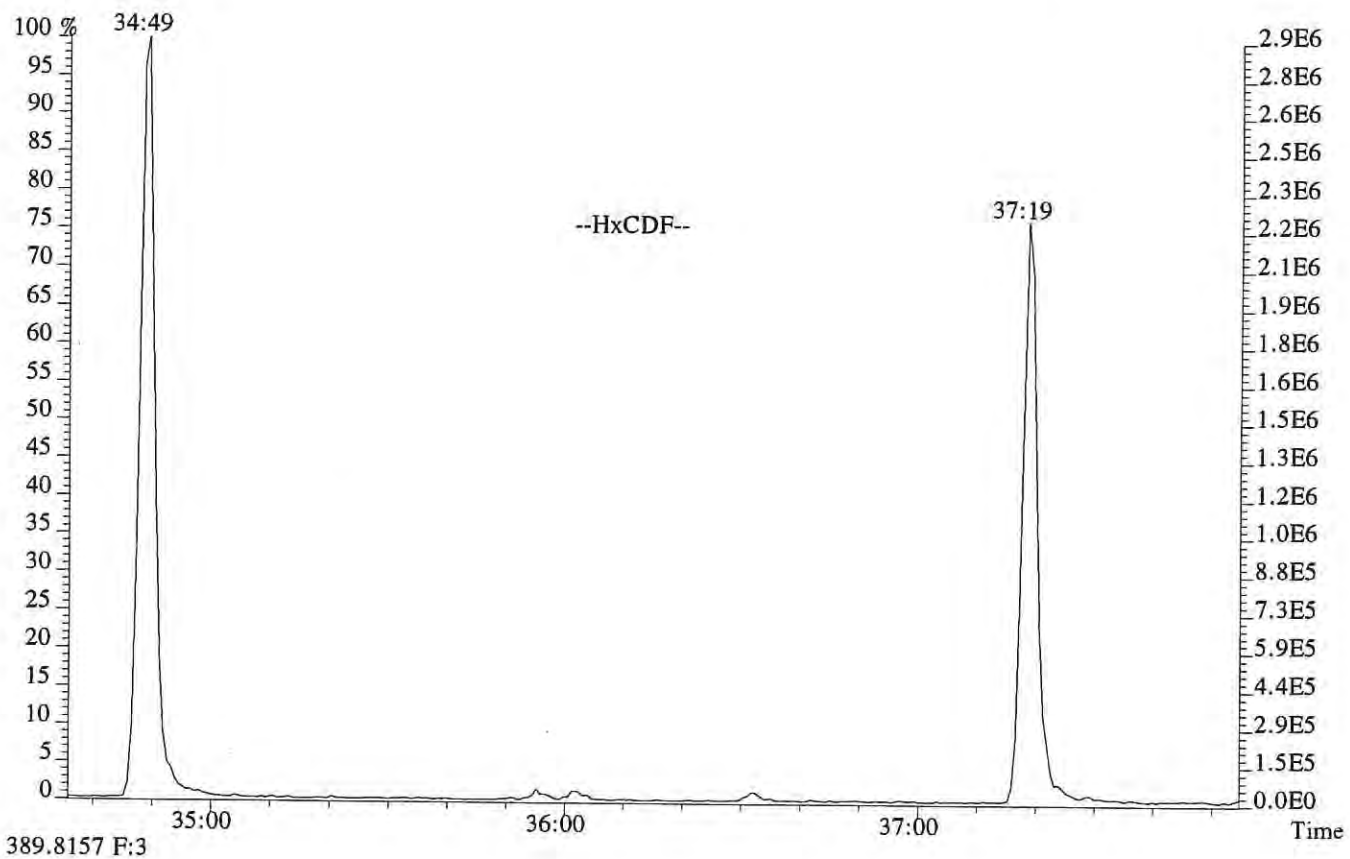
File: P523636 #1-552 Acq: 16-AUG-2019 10:38:37 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: 192977
319.8965

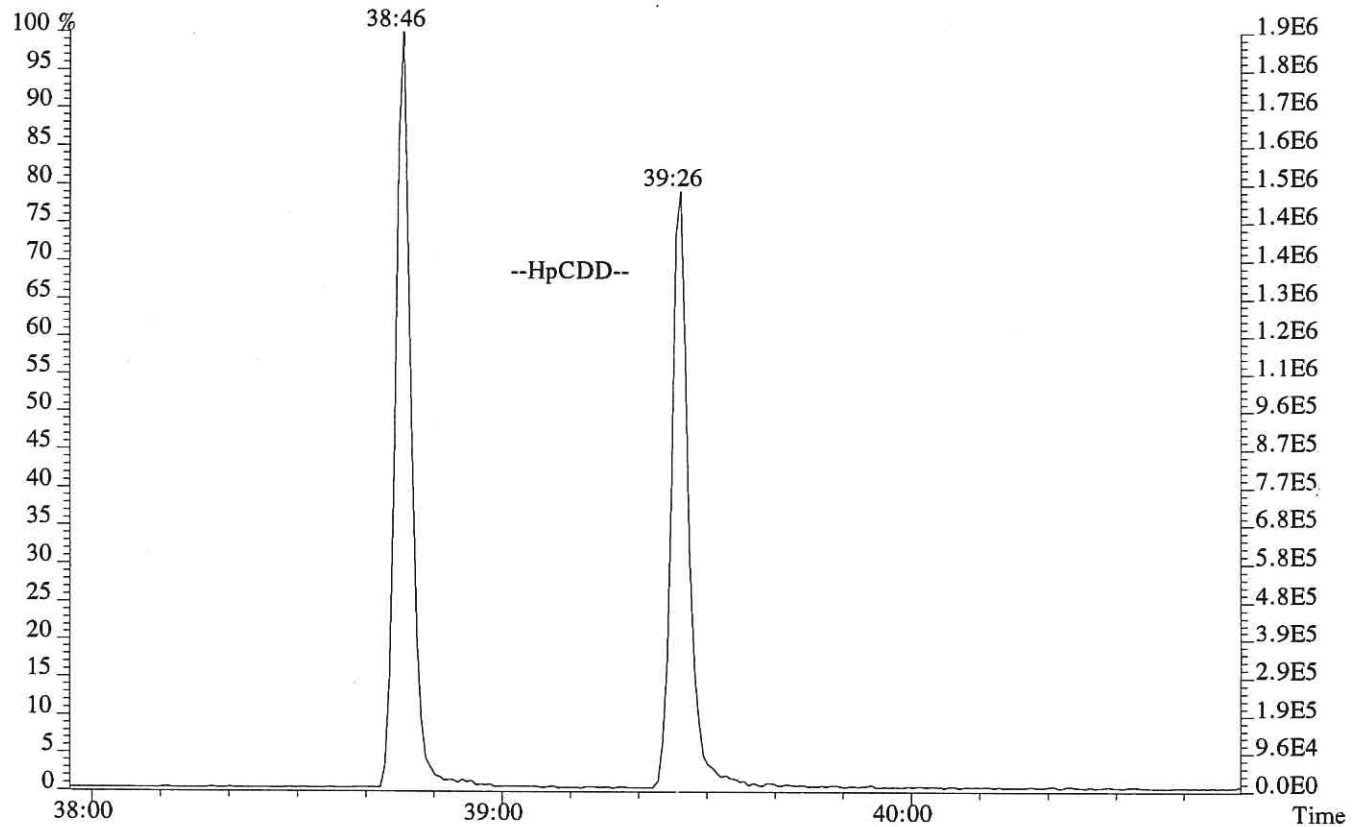
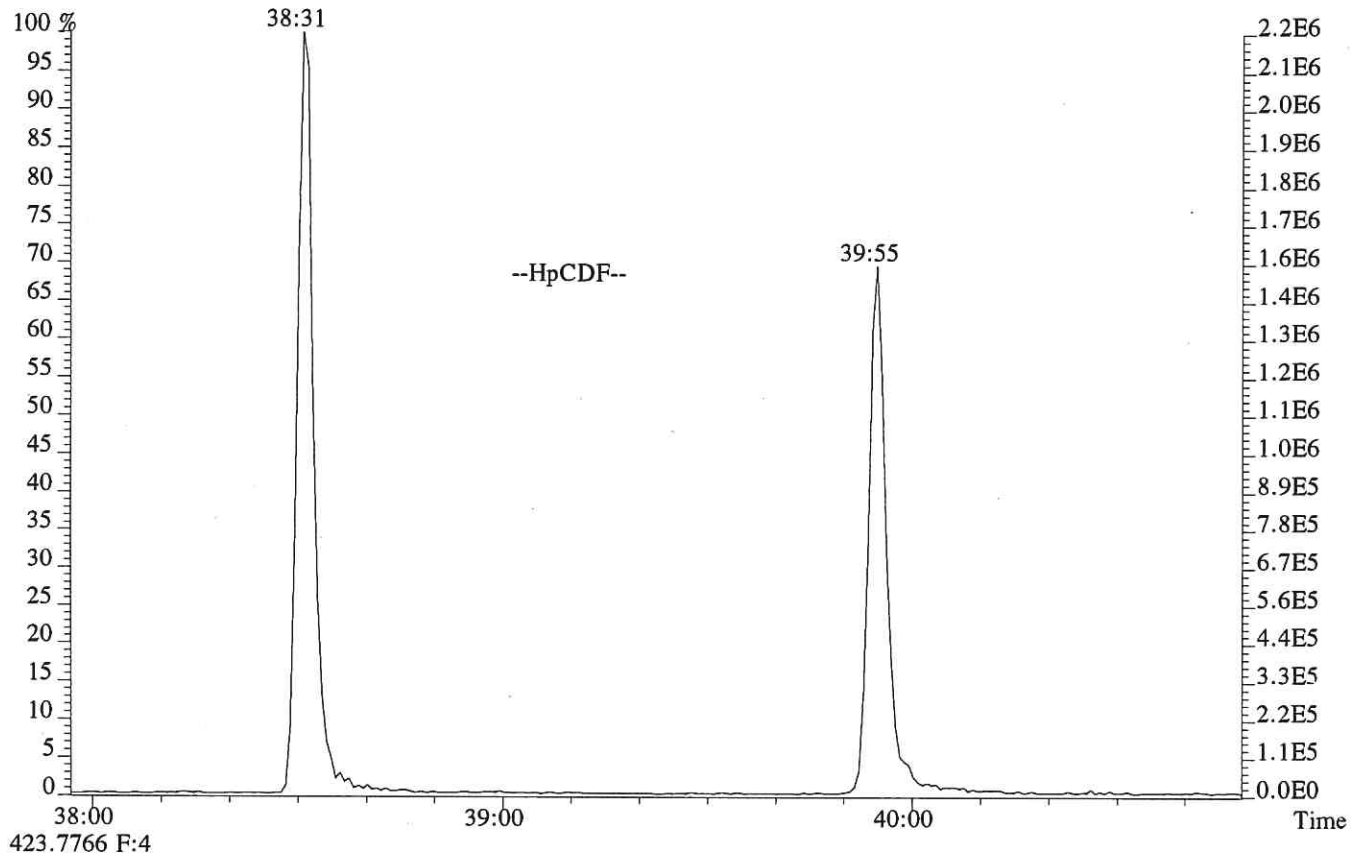






File:P523636 #1-299 Acq:16-AUG-2019 10:38:37 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:192977
373.8208 F:3





USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 04/25/19

Instrument ID: E-HRMS-07

GC Column ID: DB-5MSUI

VER Data Filename: P523635

Analysis Date: 16-AUG-19 Time: 09:10:40

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (4)
2,3,7,8-TCDD	M/M+2	0.75	0.65-0.89	9.5	7.8 - 12.9	-5.0
1,2,3,7,8-PeCDD	M+2/M+4	1.55	1.32-1.78	48	39 - 65	-4.6
1,2,3,4,7,8-HxCDD	M+2/M+4	1.31	1.05-1.43	48	39 - 64	-3.3
1,2,3,6,7,8-HxCDD	M+2/M+4	1.17	1.05-1.43	51	39 - 64	2.1
1,2,3,7,8,9-HxCDD	M+2/M+4	1.23	1.05-1.43	51	41 - 61	1.2
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.03	0.88-1.20	51	43 - 58	1.2
OCDD	M+2/M+4	0.87	0.76-1.02	100	79 - 126	-0.4
2,3,7,8-TCDF	M/M+2	0.76	0.65-0.89	9.5	8.4 - 12.0	-4.7
1,2,3,7,8-PeCDF	M+2/M+4	1.54	1.32-1.78	51	41 - 60	2.3
2,3,4,7,8-PeCDF	M+2/M+4	1.54	1.32-1.78	50	41 - 61	0.9
1,2,3,4,7,8-HxCDF	M+2/M+4	1.23	1.05-1.43	51	45 - 56	2.5
1,2,3,6,7,8-HxCDF	M+2/M+4	1.23	1.05-1.43	52	44 - 57	3.2
1,2,3,7,8,9-HxCDF	M+2/M+4	1.25	1.05-1.43	53	45 - 56	5.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.23	1.05-1.43	52	44 - 57	3.8
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.03	0.88-1.20	53	45 - 55	6.4
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.03	0.88-1.20	54	43 - 58	7.2
OCDF	M+2/M+4	0.90	0.76-1.02	99	63 - 159	-1.0

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range as specified in Table 6, Method 1613B, under VER.

(4) 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, Method 8290

12/2012
1613F4A.FRM

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 04/25/19

Instrument ID: E-HRMS-07

GC Column ID: DB-5MSUI

VER Data Filename: P523635

Analysis Date: 16-AUG-19 Time: 09:10:40

LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (5)
13C-2,3,7,8-TCDD	M/M+2	0.80	0.65-0.89	94	82 - 121	-5.9
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.55	1.32-1.78	93	62 - 160	-7.3
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	103	85 - 117	2.9
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.23	1.05-1.43	100	85 - 118	-0.4
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.07	0.88-1.20	94	72 - 138	-6.0
13C-OCDD	M+2/M+4	0.91	0.76-1.02	176	96 - 415	-11.8
13C-2,3,7,8-TCDF	M/M+2	0.80	0.65-0.89	92	71 - 140	-7.7
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.57	1.32-1.78	89	76 - 130	-10.8
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.58	1.32-1.78	90	77 - 130	-10.1
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.52	0.43-0.59	99	76 - 131	-1.0
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.53	0.43-0.59	98	70 - 143	-1.7
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.52	0.43-0.59	93	74 - 135	-7.0
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.52	0.43-0.59	98	73 - 137	-1.7
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.45	0.37-0.51	93	78 - 129	-7.0
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.45	0.37-0.51	91	77 - 129	-8.9
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD				9.3	7.8 - 12.7	-7.3

- (1) See Table 8, Method 1613B, for m/z specifications.
- (2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.
- (3) Contract-required concentration range, as specified in Table 6, Method 1613B, under VER.
- (4) No ion abundance ratio; report concentration found.
- (5) The beginning CCAL %RSD for the labeled standard must not exceed +/- 30% Section 7.7.4.2. The ending CCAL must not exceed +/- 35%, Sec 8.3.2.4 (8290)

12/2012
1613F4B.FRM

ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
201833

Run #7 Filename P523635 Samp: 1 Inj: 1 Acquired: 16-AUG-19 09:10:40
Processed: 21-AUG-19 12:46:03 Sample ID: CS3

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	28:11	7.295e+03	9.592e+03	0.76	yes	no	0.962
2 Unk	1,2,3,7,8-PeCDF	32:22	5.879e+04	3.811e+04	1.54	yes	no	0.968
3 Unk	2,3,4,7,8-PeCDF	33:16	5.385e+04	3.498e+04	1.54	yes	no	0.919
4 Unk	1,2,3,4,7,8-HxCDF	35:55	4.736e+04	3.843e+04	1.23	yes	no	1.161
5 Unk	1,2,3,6,7,8-HxCDF	36:01	4.897e+04	3.975e+04	1.23	yes	no	1.073
6 Unk	2,3,4,6,7,8-HxCDF	36:31	4.510e+04	3.673e+04	1.23	yes	no	1.069
7 Unk	1,2,3,7,8,9-HxCDF	37:17	3.837e+04	3.071e+04	1.25	yes	no	1.096
8 Unk	1,2,3,4,6,7,8-HpCDF	38:30	3.857e+04	3.729e+04	1.03	yes	no	1.281
9 Unk	1,2,3,4,7,8,9-HpCDF	39:54	2.889e+04	2.794e+04	1.03	yes	no	1.192
10 Unk	OCDF	42:23	4.308e+04	4.800e+04	0.90	yes	no	1.204
11 Unk	2,3,7,8-TCDD	28:58	5.953e+03	7.913e+03	0.75	yes	no	1.077
12 Unk	1,2,3,7,8-PeCDD	33:32	4.113e+04	2.654e+04	1.55	yes	no	0.971
13 Unk	1,2,3,4,7,8-HxCDD	36:39	3.567e+04	2.732e+04	1.31	yes	no	1.024
14 Unk	1,2,3,6,7,8-HxCDD	36:44	3.448e+04	2.938e+04	1.17	yes	no	1.038
15 Unk	1,2,3,7,8,9-HxCDD	36:59	3.649e+04	2.968e+04	1.23	yes	no	1.055
16 Unk	1,2,3,4,6,7,8-HpCDD	39:25	2.730e+04	2.663e+04	1.03	yes	no	0.989
17 Unk	OCDD	42:11	3.885e+04	4.445e+04	0.87	yes	no	1.094
18 IS	13C-2,3,7,8-TCDF	28:10	8.166e+04	1.024e+05	0.80	yes	no	1.287
19 IS	13C-1,2,3,7,8-PeCDF	32:20	1.195e+05	7.627e+04	1.57	yes	no	1.416
20 IS	13C-2,3,4,7,8-PeCDF	33:15	1.173e+05	7.409e+04	1.58	yes	no	1.374
21 IS	13C-1,2,3,4,7,8-HxCDF	35:54	4.943e+04	9.482e+04	0.52	yes	no	1.114
22 IS	13C-1,2,3,6,7,8-HxCDF	36:01	5.521e+04	1.050e+05	0.53	yes	no	1.245
23 IS	13C-2,3,4,6,7,8-HxCDF	36:31	5.071e+04	9.671e+04	0.52	yes	no	1.146
24 IS	13C-1,2,3,7,8,9-HxCDF	37:16	4.100e+04	7.898e+04	0.52	yes	no	0.986
25 IS	13C-1,2,3,4,6,7,8-HpCDF	38:30	3.429e+04	7.702e+04	0.45	yes	no	0.915
26 IS	13C-1,2,3,4,7,8,9-HpCDF	39:54	2.753e+04	6.138e+04	0.45	yes	no	0.746
27 IS	13C-2,3,7,8-TCDD	28:56	6.009e+04	7.535e+04	0.80	yes	no	0.929
28 IS	13C-1,2,3,7,8-PeCDD	33:32	8.883e+04	5.723e+04	1.55	yes	no	1.017
29 IS	13C-1,2,3,4,7,8-HxCDD	36:39	7.077e+04	5.649e+04	1.25	yes	no	0.945
30 IS	13C-1,2,3,6,7,8-HxCDD	36:43	6.638e+04	5.411e+04	1.23	yes	no	0.924
31 IS	13C-1,2,3,4,6,7,8-HpCDD	39:24	5.562e+04	5.219e+04	1.07	yes	no	0.876
32 IS	13C-OCDD	42:11	7.263e+04	8.018e+04	0.91	yes	no	0.662
33 RS/RT	13C-1,2,3,4-TCDD	28:22	6.910e+04	8.592e+04	0.80	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	36:58	7.252e+04	5.836e+04	1.24	yes	no	-
35 C/Up	37C1-2,3,7,8-TCDD	28:58	1.452e+04				no	1.010

ALS ENVIRONMENTAL
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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
201833

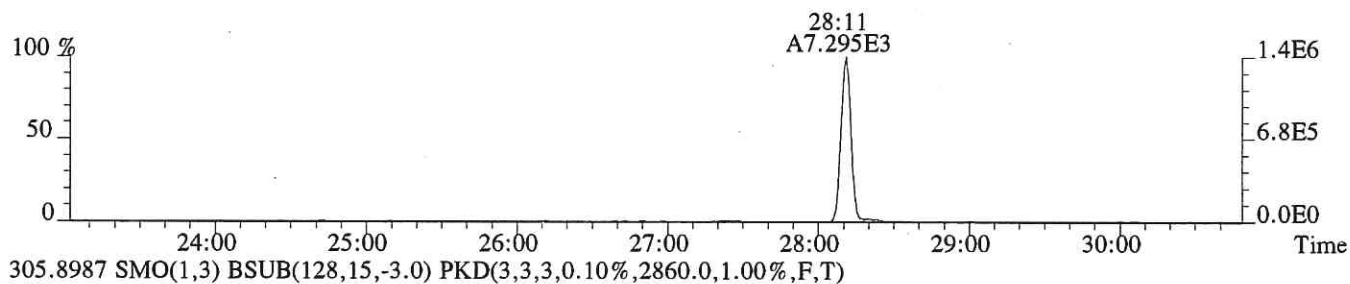
Run #7 Filename P523635 Samp: 1 Inj: 1 Acquired: 16-AUG-19 09:10:40
Processed: 21-AUG-19 12:46:03 LAB. ID: CS3

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	1.36e+06	1.82e+03	7.5e+02	1.80e+06	2.86e+03	6.3e+02
2	1,2,3,7,8-PeCDF	1.11e+07	1.44e+03	7.7e+03	7.15e+06	2.58e+03	2.8e+03
3	2,3,4,7,8-PeCDF	1.05e+07	1.44e+03	7.3e+03	6.84e+06	2.58e+03	2.7e+03
4	1,2,3,4,7,8-HxCDF	1.04e+07	1.93e+03	5.4e+03	8.50e+06	1.46e+03	5.8e+03
5	1,2,3,6,7,8-HxCDF	1.06e+07	1.93e+03	5.5e+03	8.67e+06	1.46e+03	5.9e+03
6	2,3,4,6,7,8-HxCDF	1.00e+07	1.93e+03	5.2e+03	8.19e+06	1.46e+03	5.6e+03
7	1,2,3,7,8,9-HxCDF	8.17e+06	1.93e+03	4.2e+03	6.43e+06	1.46e+03	4.4e+03
8	1,2,3,4,6,7,8-HpCDF	8.92e+06	2.84e+03	3.1e+03	8.64e+06	3.84e+03	2.3e+03
9	1,2,3,4,7,8,9-HpCDF	6.01e+06	2.84e+03	2.1e+03	5.73e+06	3.84e+03	1.5e+03
10	OCDF	7.88e+06	1.63e+03	4.8e+03	8.81e+06	2.69e+03	3.3e+03
11	2,3,7,8-TCDD	1.21e+06	5.89e+03	2.1e+02	1.61e+06	2.81e+03	5.7e+02
12	1,2,3,7,8-PeCDD	8.10e+06	2.88e+03	2.8e+03	5.29e+06	1.05e+03	5.0e+03
13	1,2,3,4,7,8-HxCDD	7.86e+06	1.58e+03	5.0e+03	6.22e+06	2.04e+03	3.1e+03
14	1,2,3,6,7,8-HxCDD	7.67e+06	1.58e+03	4.8e+03	6.29e+06	2.04e+03	3.1e+03
15	1,2,3,7,8,9-HxCDD	7.80e+06	1.58e+03	4.9e+03	6.27e+06	2.04e+03	3.1e+03
16	1,2,3,4,6,7,8-HpCDD	5.81e+06	1.98e+03	2.9e+03	5.67e+06	1.12e+03	5.0e+03
17	OCDD	7.06e+06	2.06e+03	3.4e+03	8.11e+06	2.63e+03	3.1e+03
18	13C-2,3,7,8-TCDF	1.52e+07	1.40e+04	1.1e+03	1.91e+07	8.84e+03	2.2e+03
19	13C-1,2,3,7,8-PeCDF	2.21e+07	1.58e+03	1.4e+04	1.44e+07	1.42e+03	1.0e+04
20	13C-2,3,4,7,8-PeCDF	2.33e+07	1.58e+03	1.5e+04	1.48e+07	1.42e+03	1.0e+04
21	13C-1,2,3,4,7,8-HxCDF	1.09e+07	2.82e+03	3.9e+03	2.09e+07	3.43e+03	6.1e+03
22	13C-1,2,3,6,7,8-HxCDF	1.21e+07	2.82e+03	4.3e+03	2.30e+07	3.43e+03	6.7e+03
23	13C-2,3,4,6,7,8-HxCDF	1.13e+07	2.82e+03	4.0e+03	2.16e+07	3.43e+03	6.3e+03
24	13C-1,2,3,7,8,9-HxCDF	8.73e+06	2.82e+03	3.1e+03	1.67e+07	3.43e+03	4.9e+03
25	13C-1,2,3,4,6,7,8-HpCDF	7.87e+06	4.73e+03	1.7e+03	1.77e+07	3.70e+03	4.8e+03
26	13C-1,2,3,4,7,8,9-HpCDF	5.79e+06	4.73e+03	1.2e+03	1.28e+07	3.70e+03	3.5e+03
27	13C-2,3,7,8-TCDD	1.16e+07	1.12e+04	1.0e+03	1.46e+07	4.64e+03	3.1e+03
28	13C-1,2,3,7,8-PeCDD	1.75e+07	2.64e+03	6.6e+03	1.12e+07	2.57e+03	4.4e+03
29	13C-1,2,3,4,7,8-HxCDD	1.55e+07	2.71e+03	5.7e+03	1.22e+07	2.44e+03	5.0e+03
30	13C-1,2,3,6,7,8-HxCDD	1.48e+07	2.71e+03	5.4e+03	1.20e+07	2.44e+03	4.9e+03
31	13C-1,2,3,4,6,7,8-HpCDD	1.20e+07	1.78e+03	6.7e+03	1.13e+07	1.95e+03	5.8e+03
32	13C-OCDD	1.34e+07	1.94e+03	6.9e+03	1.45e+07	1.70e+03	8.5e+03
33	13C-1,2,3,4-TCDD	1.31e+07	1.12e+04	1.2e+03	1.65e+07	4.64e+03	3.5e+03
34	13C-1,2,3,7,8,9-HxCDD	1.56e+07	2.71e+03	5.8e+03	1.25e+07	2.44e+03	5.1e+03
35	37Cl-2,3,7,8-TCDD	2.89e+06	2.11e+03	1.4e+03			

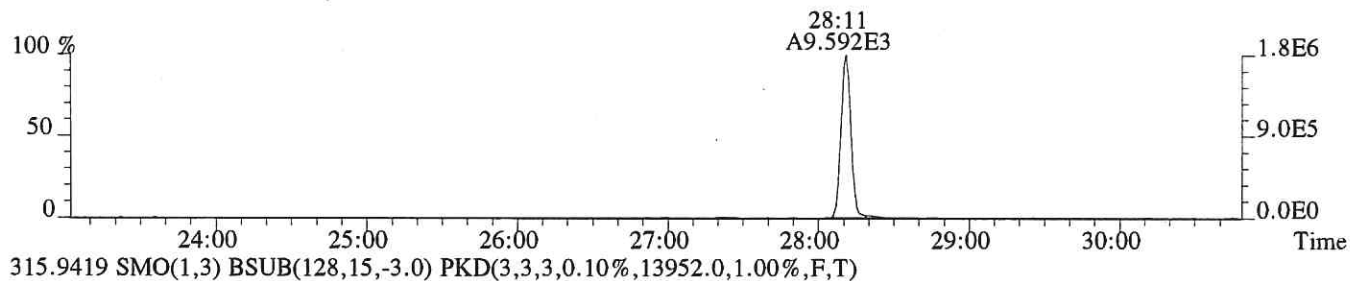
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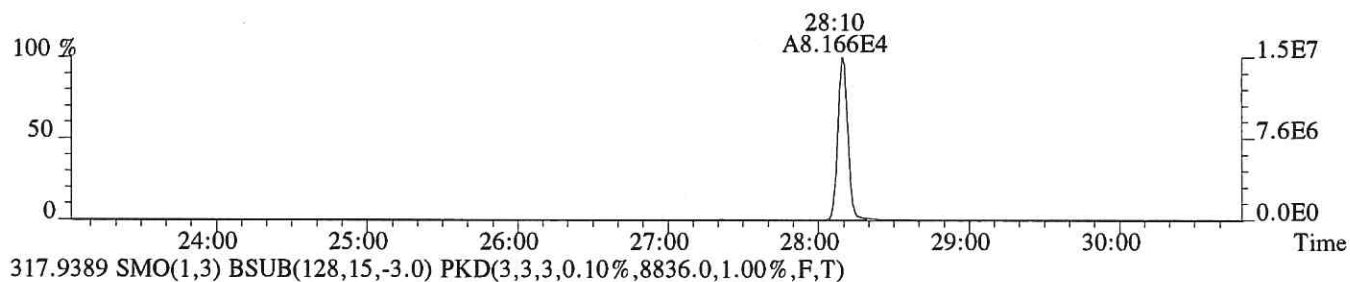
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Sample#1 Exp:201833
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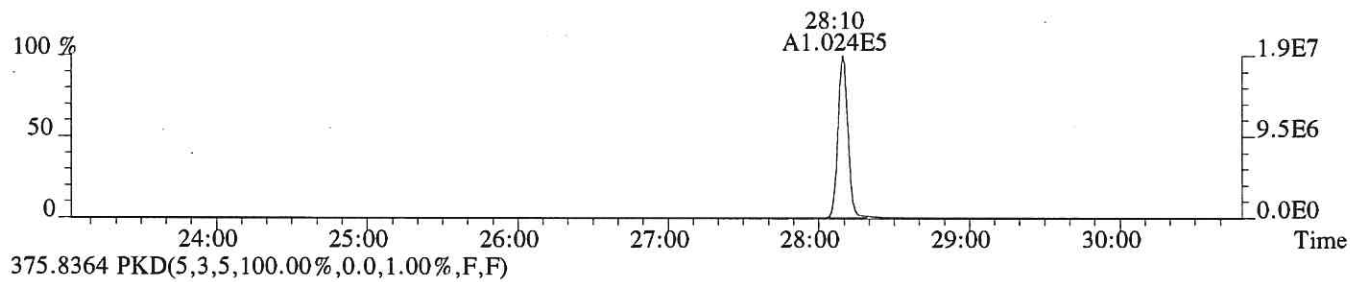
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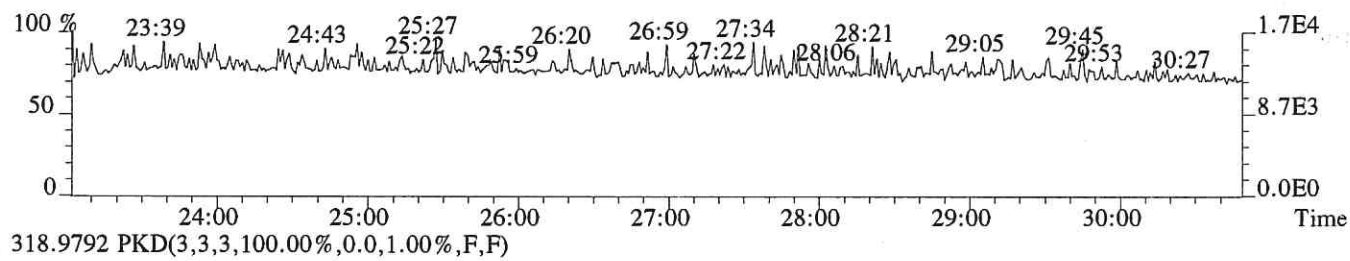
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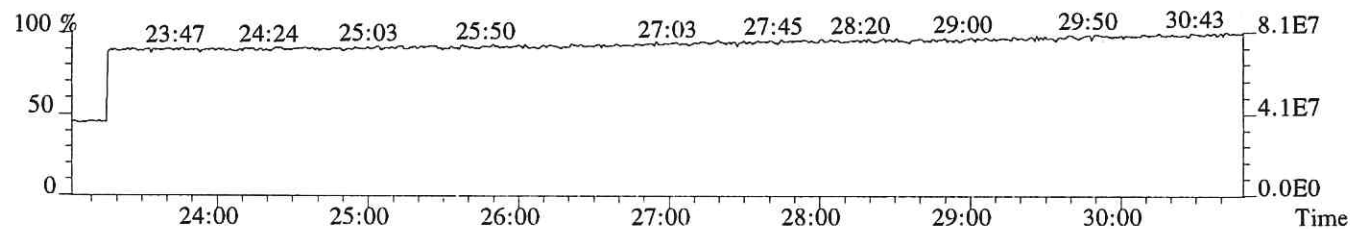
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,8836.0,1.00%,F,T)



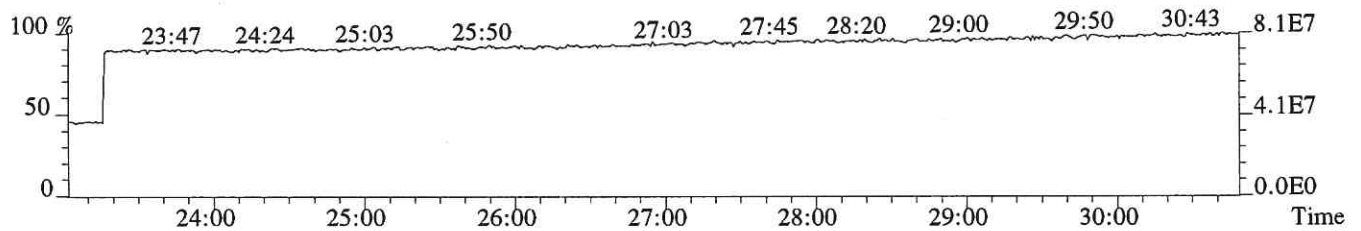
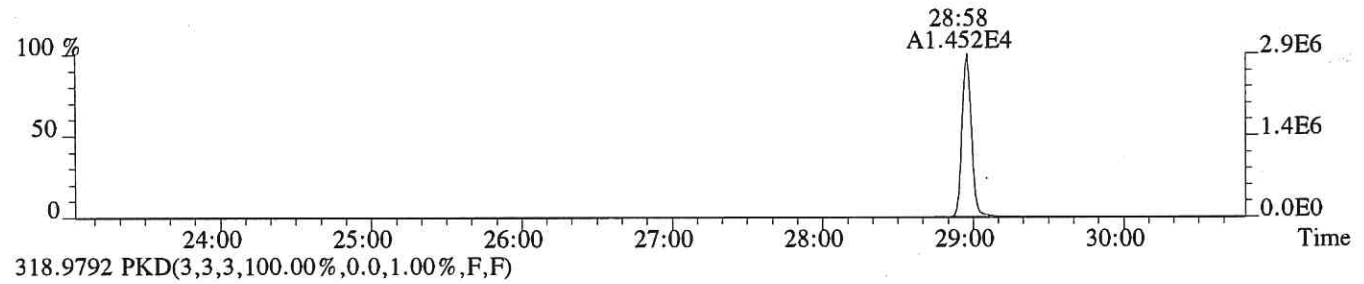
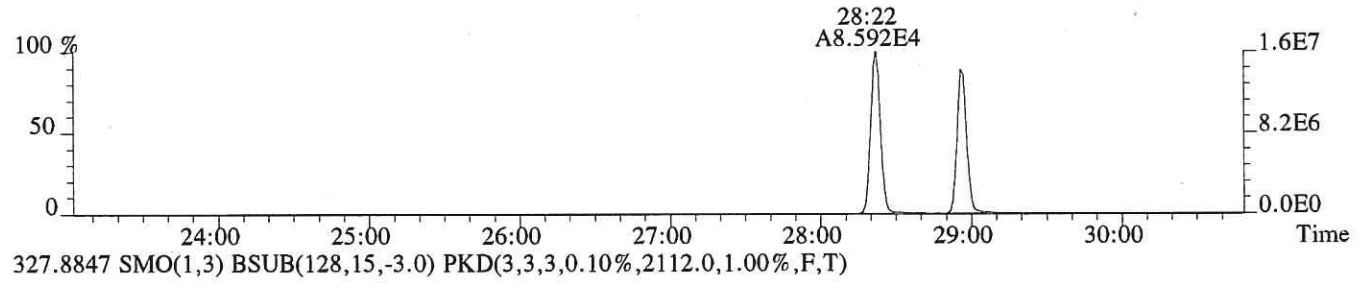
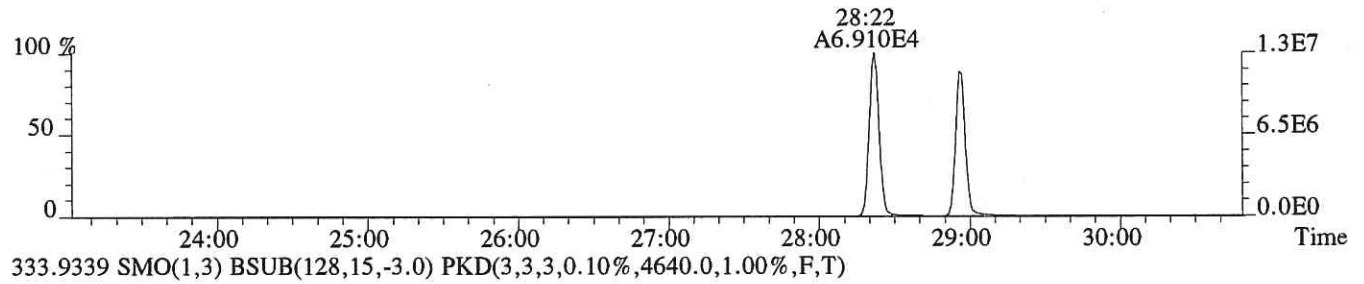
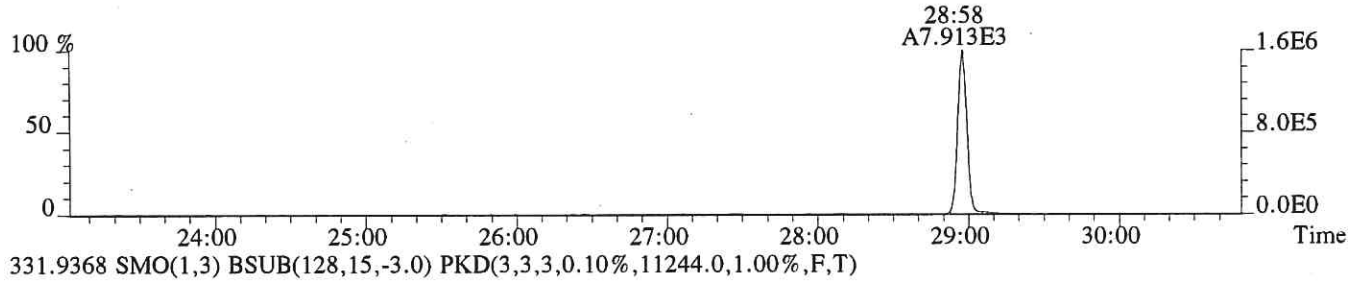
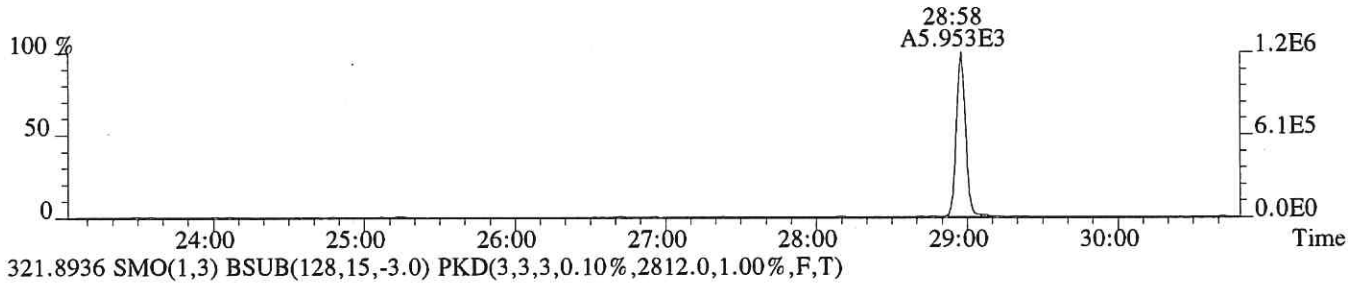
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



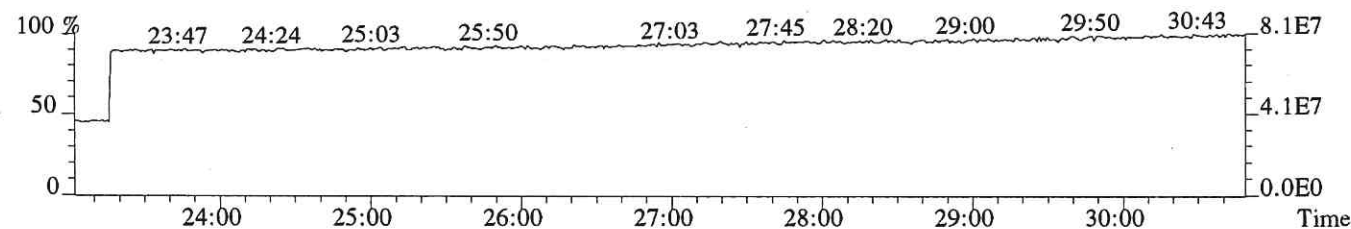
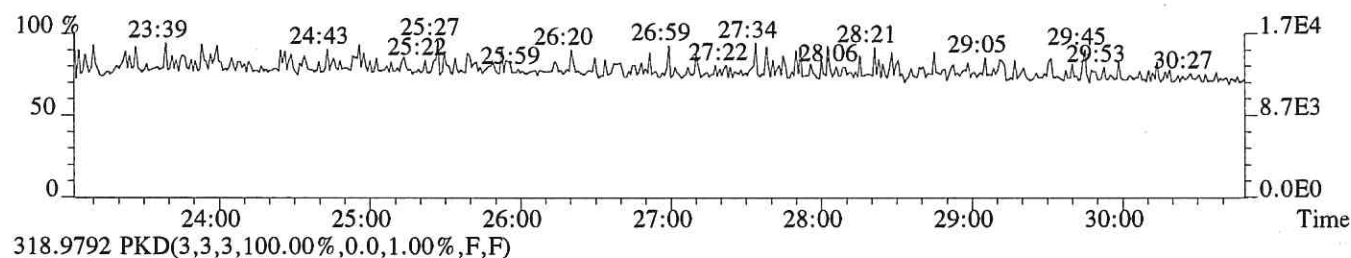
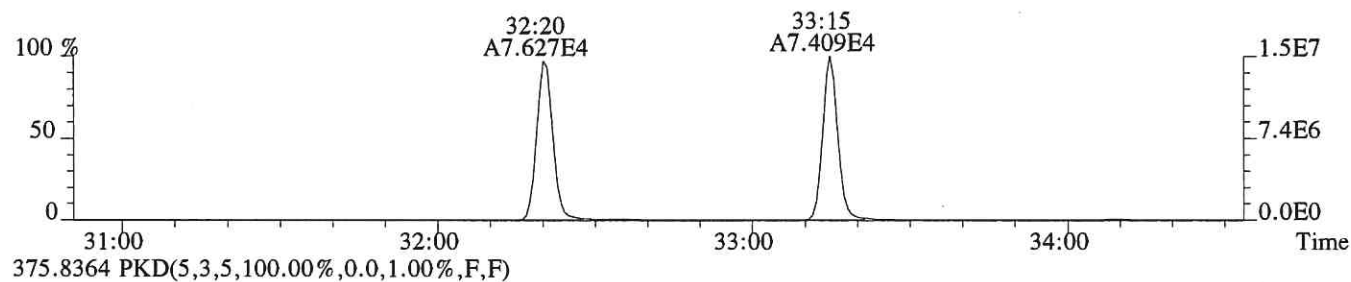
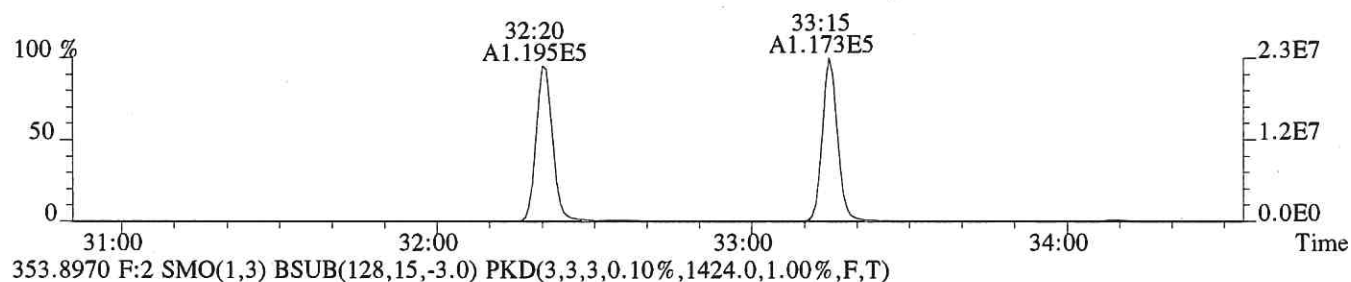
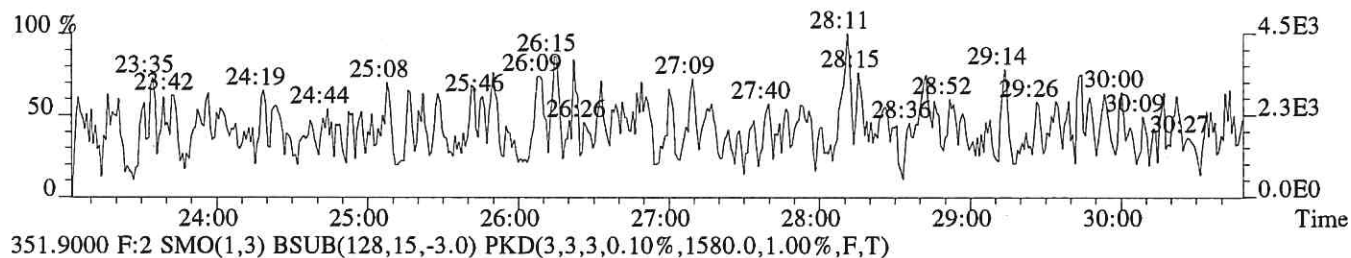
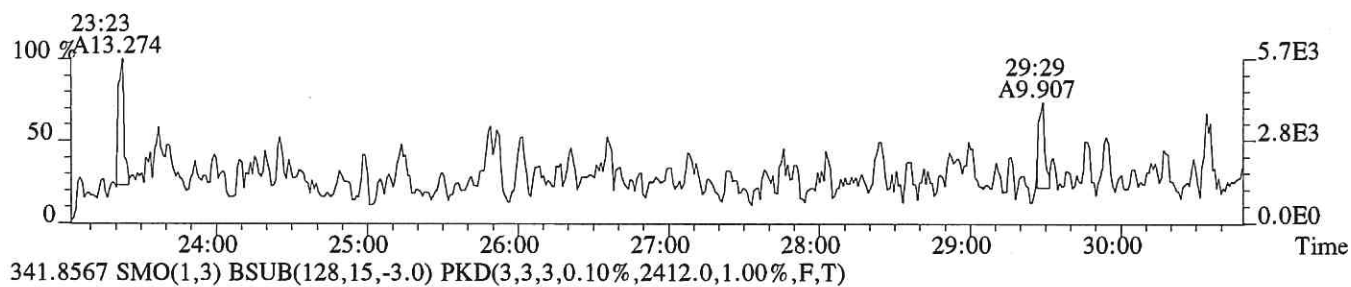
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



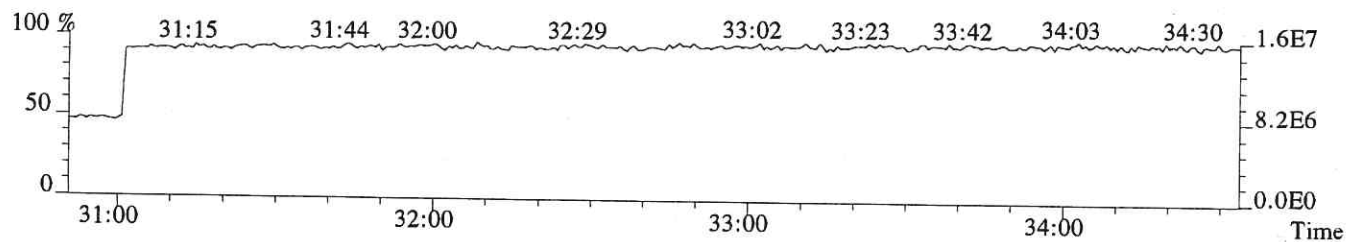
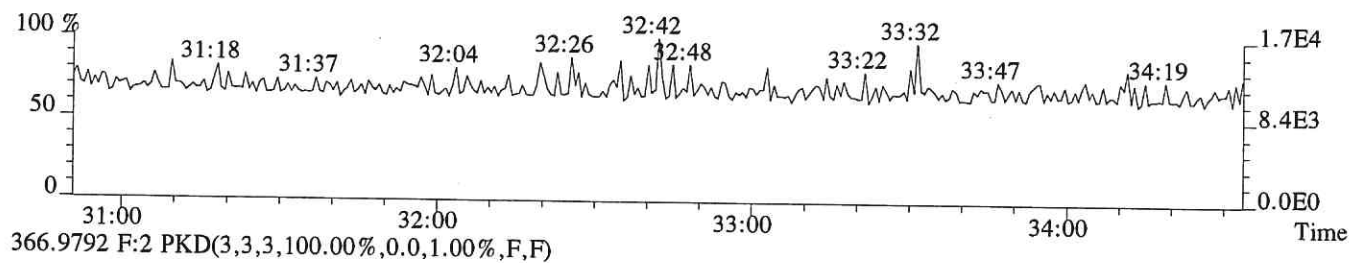
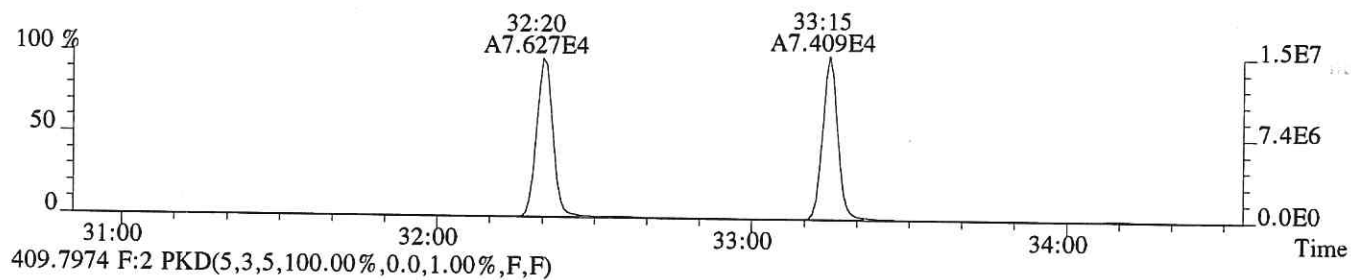
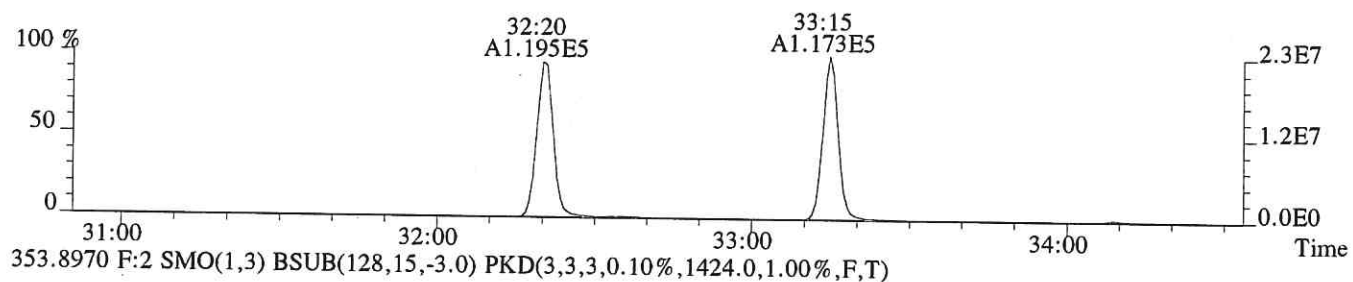
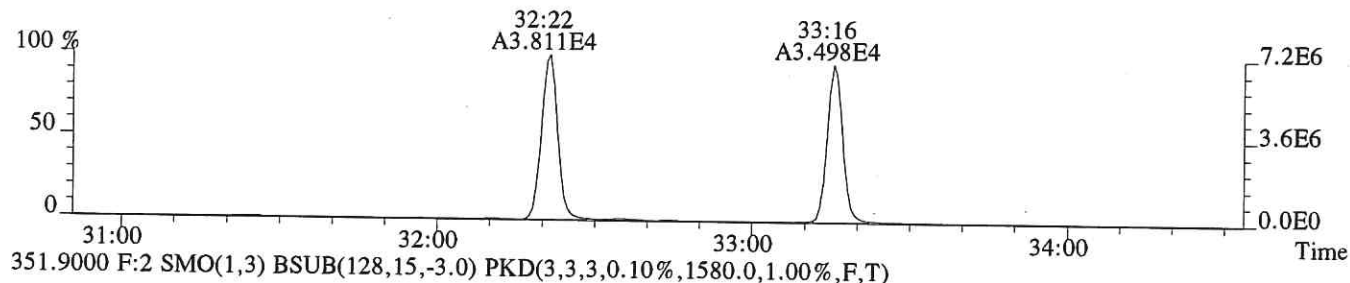
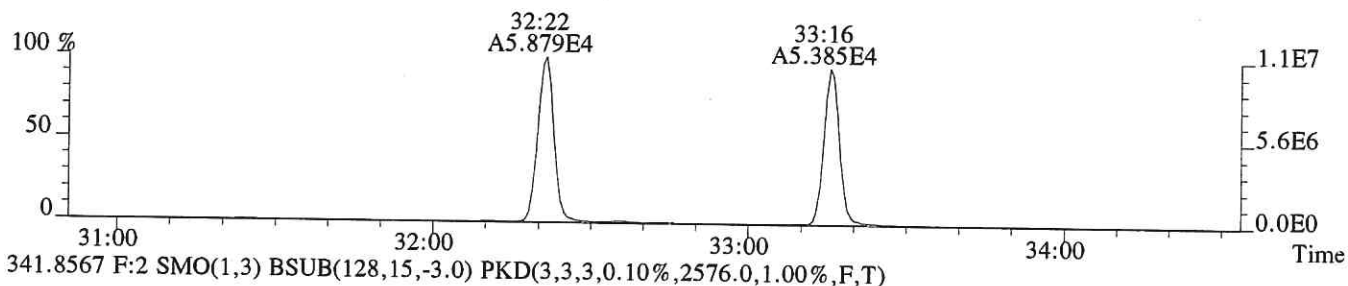
File:P523635 #1-552 Acq:16-AUG-2019 09:10:40 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:201833
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5888.0,1.00%,F,T)



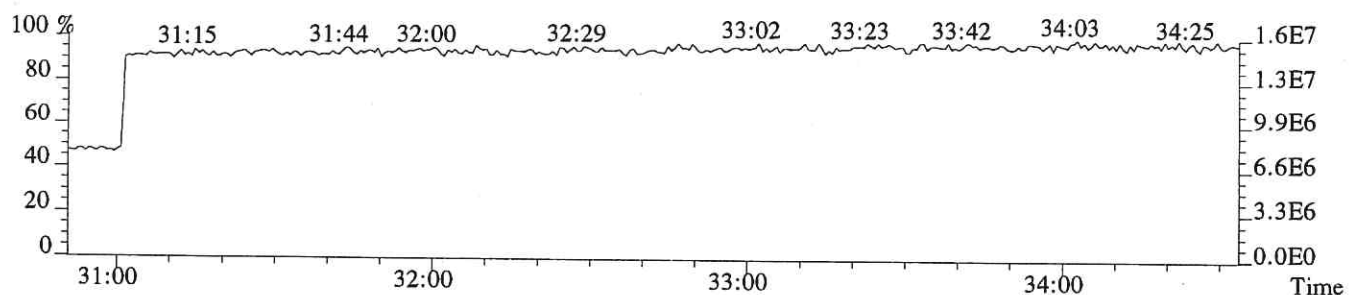
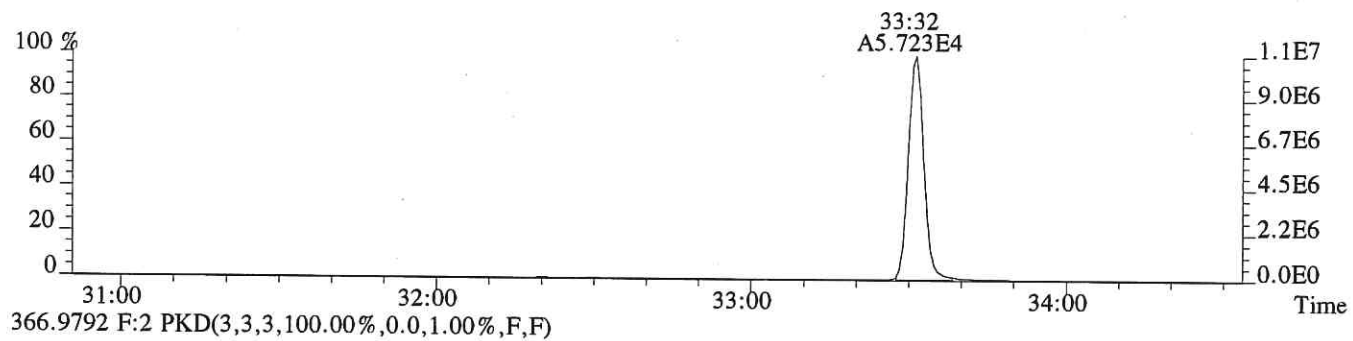
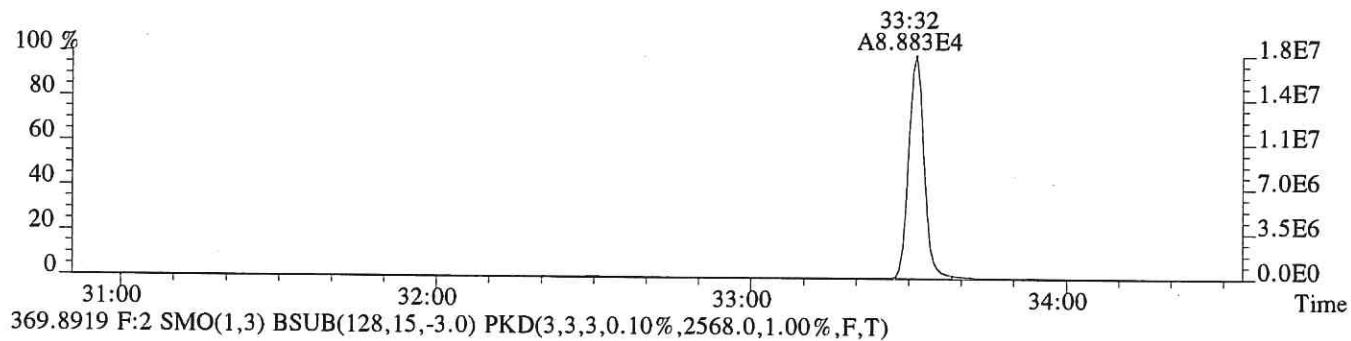
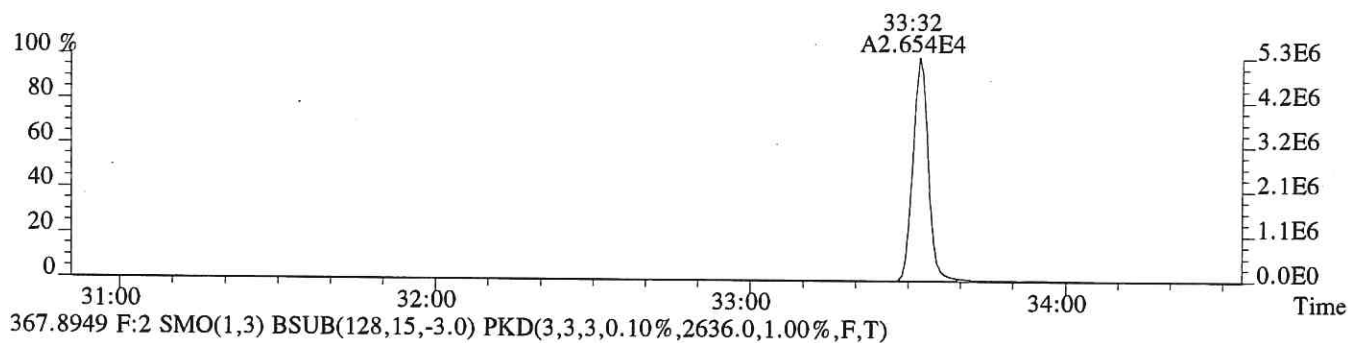
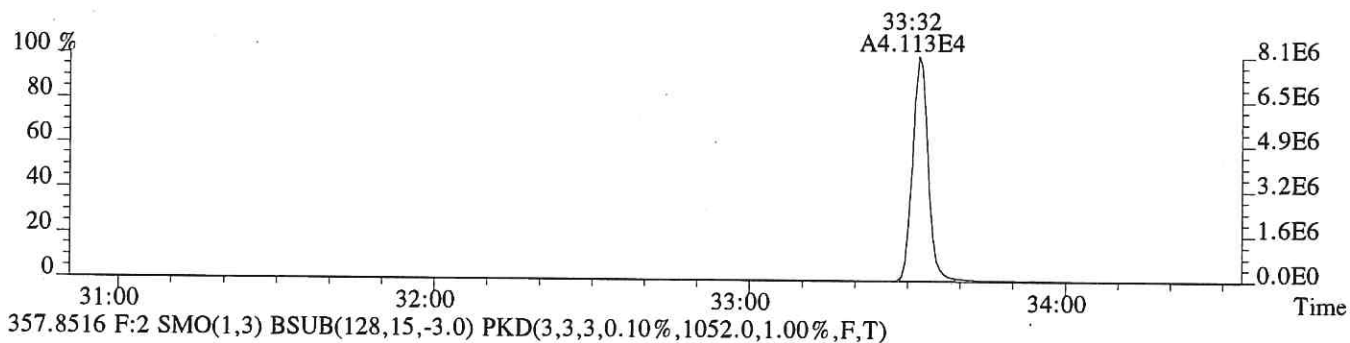
File:P523635 #1-552 Acq:16-AUG-2019 09:10:40 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:201833
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1960.0,1.00%,F,T)



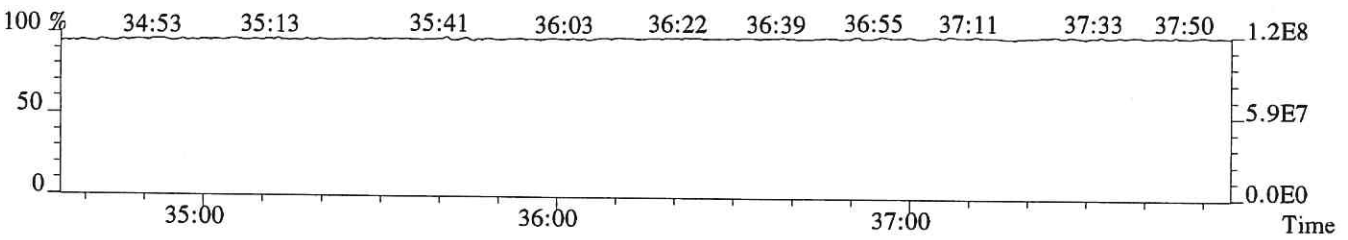
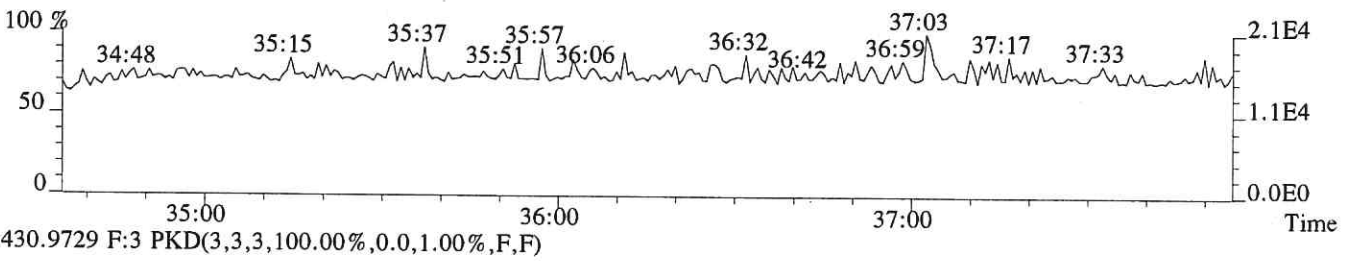
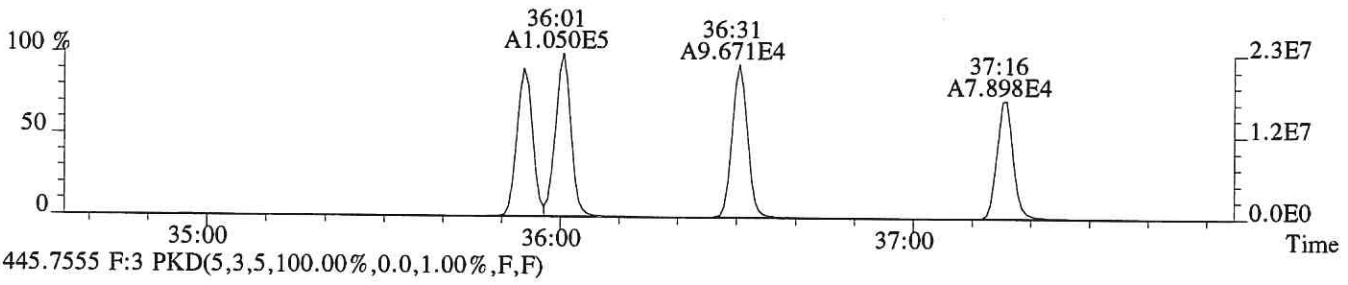
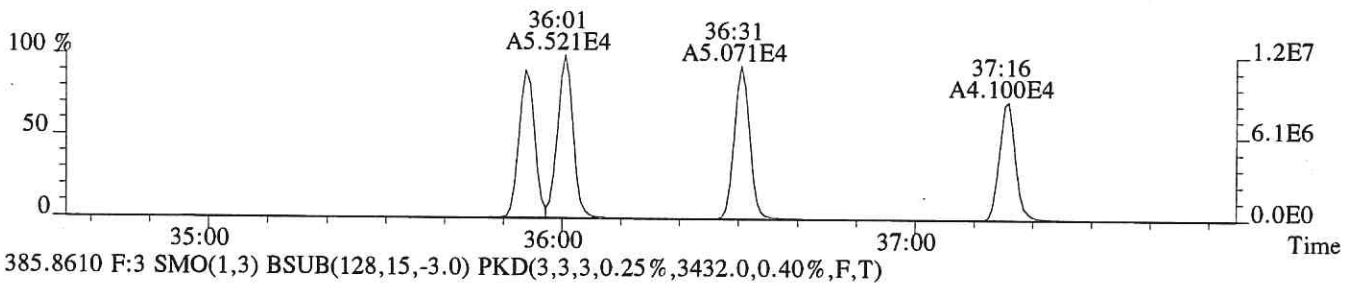
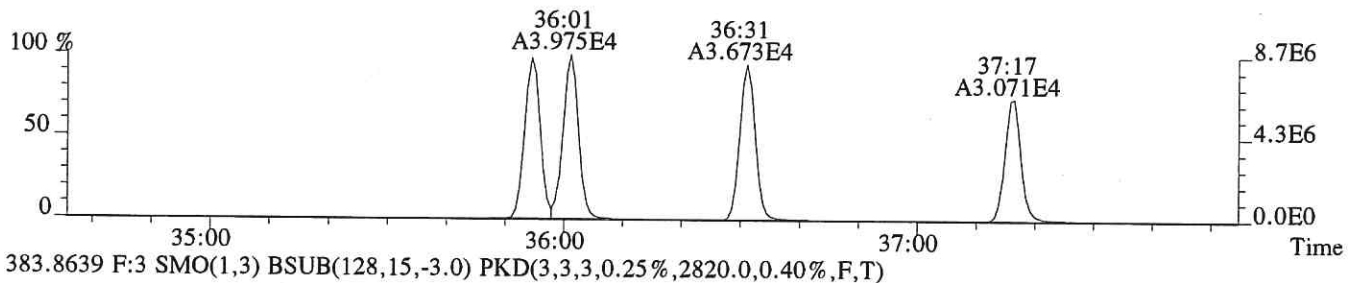
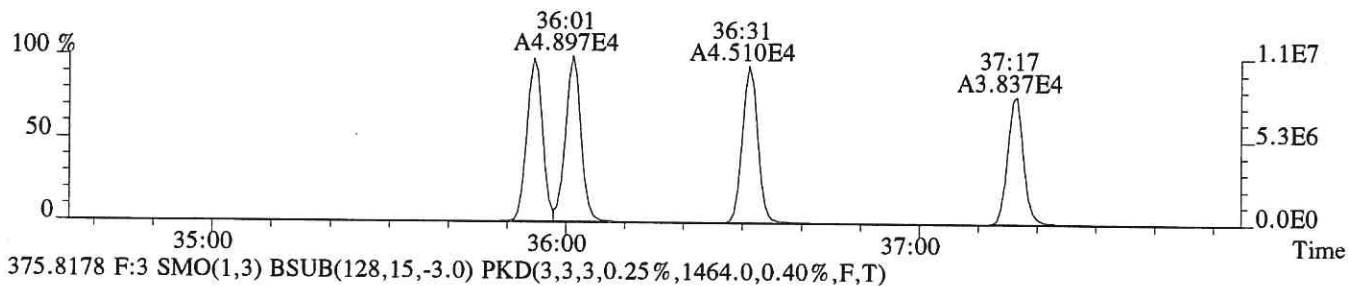
File:P523635 #1-335 Acq:16-AUG-2019 09:10:40 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:201833
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1440.0,1.00%,F,T)



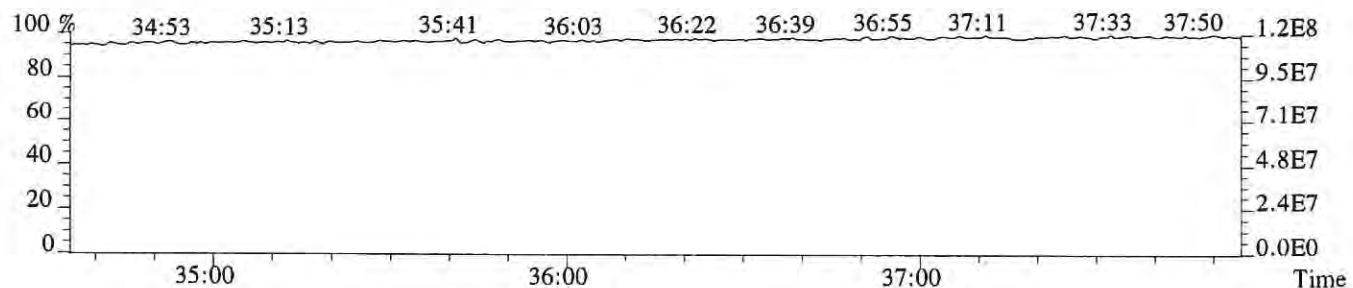
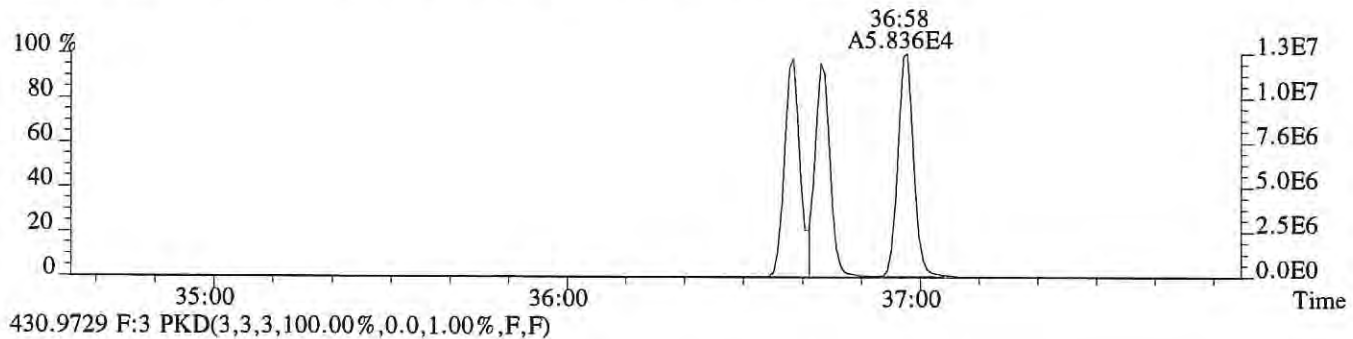
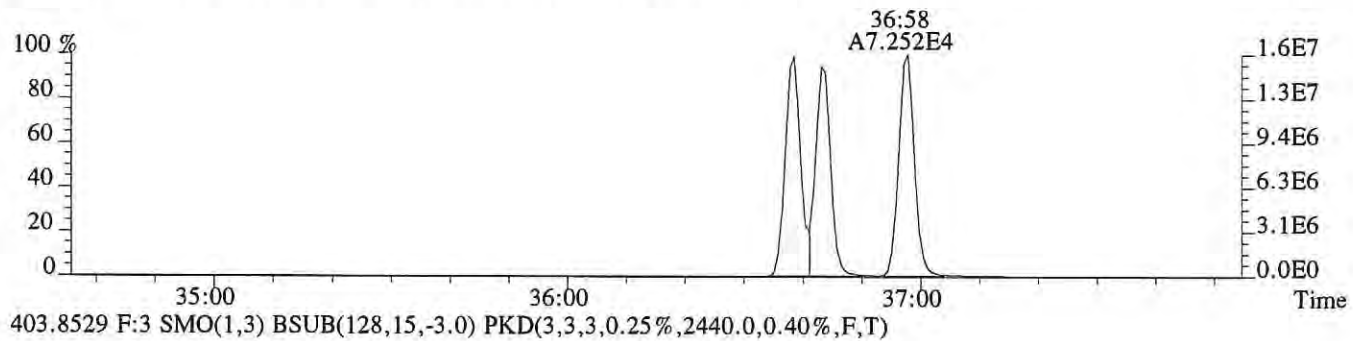
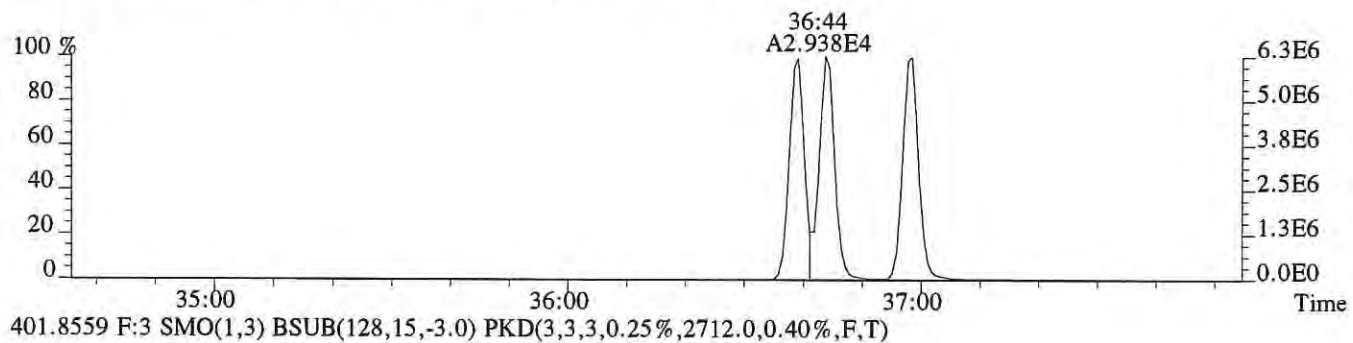
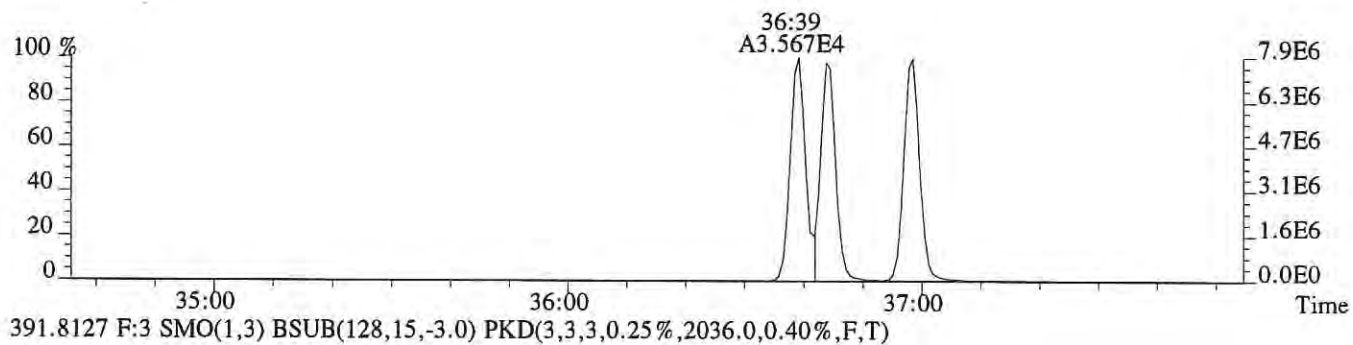
File:P523635 #1-335 Acq:16-AUG-2019 09:10:40 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:201833
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2880.0,1.00%,F,T)



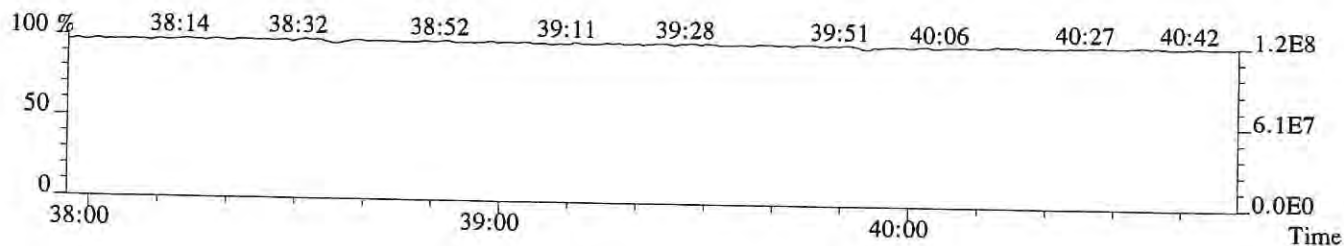
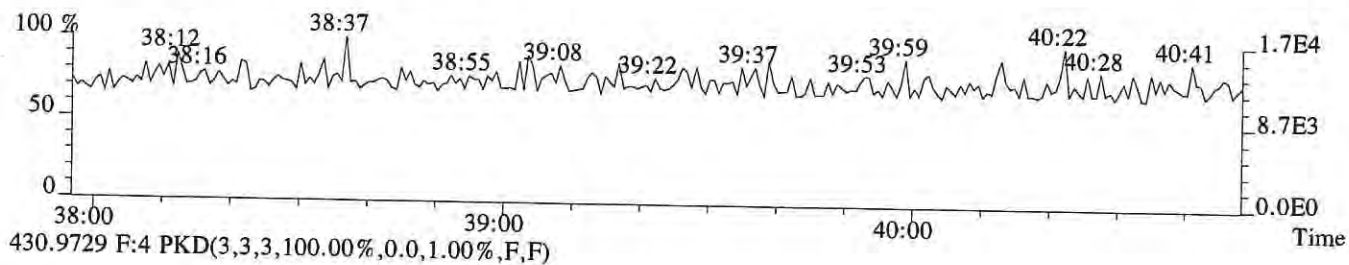
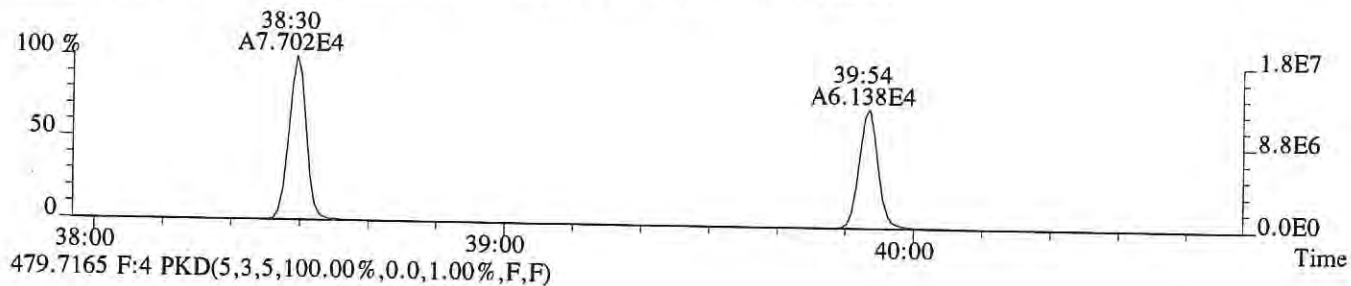
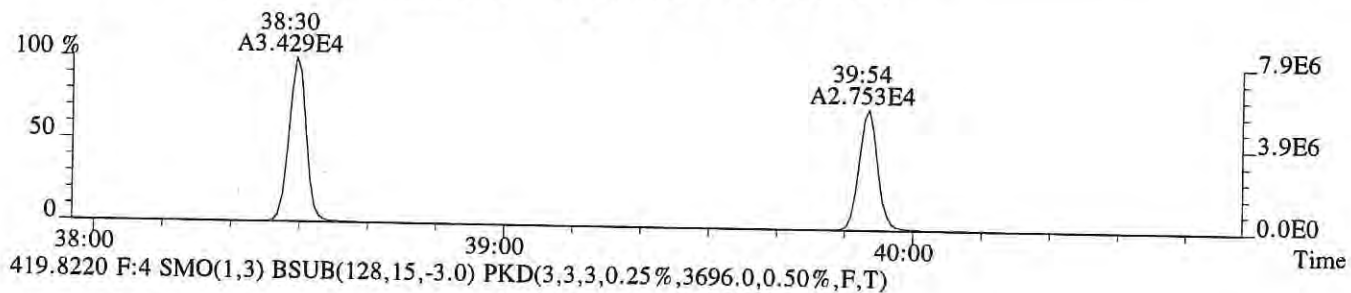
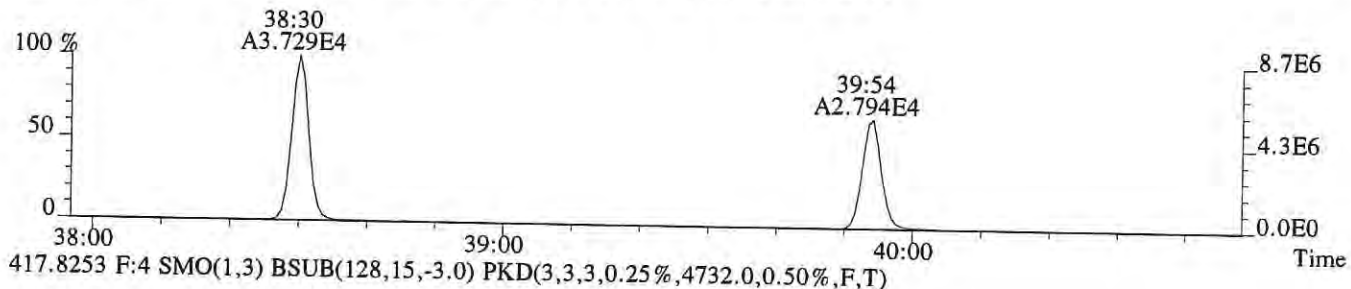
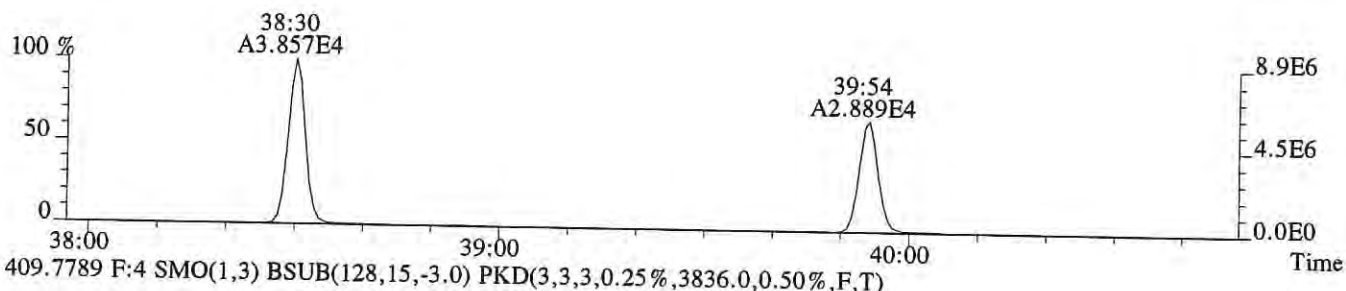
File:P523635 #1-299 Acq:16-AUG-2019 09:10:40 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:201833
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1928.0,0.40%,F,T)



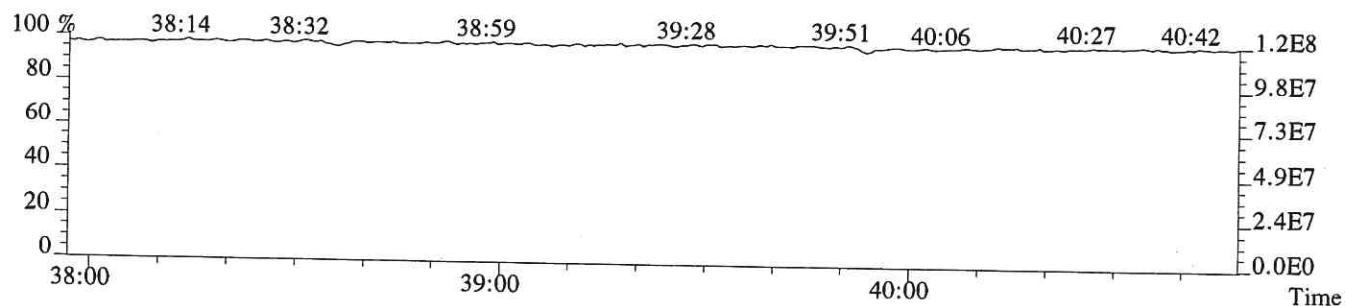
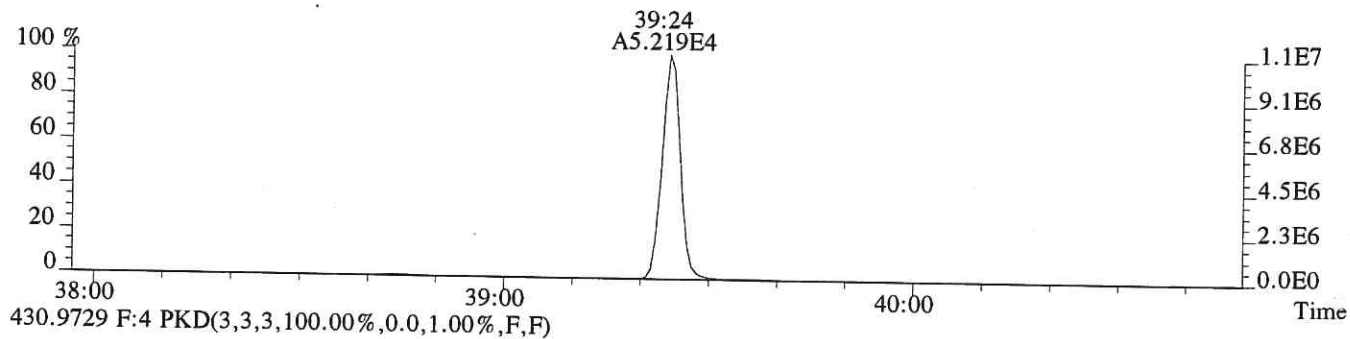
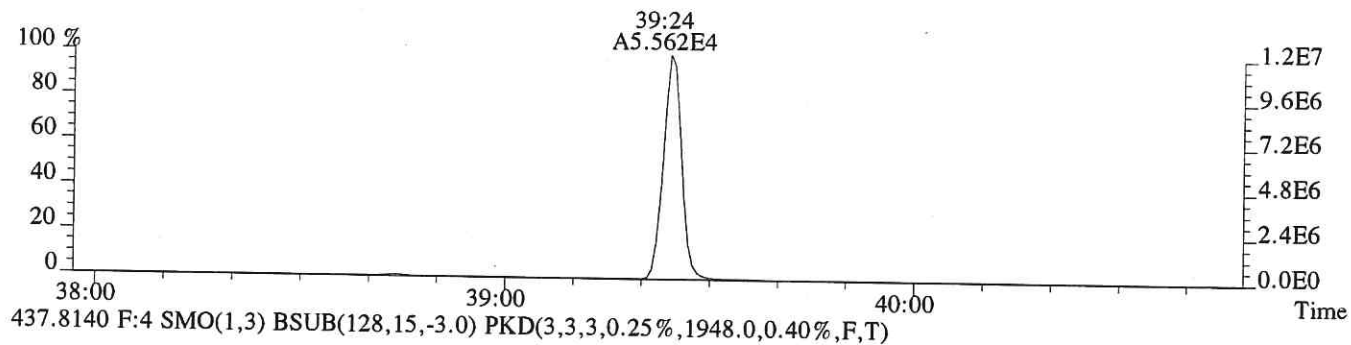
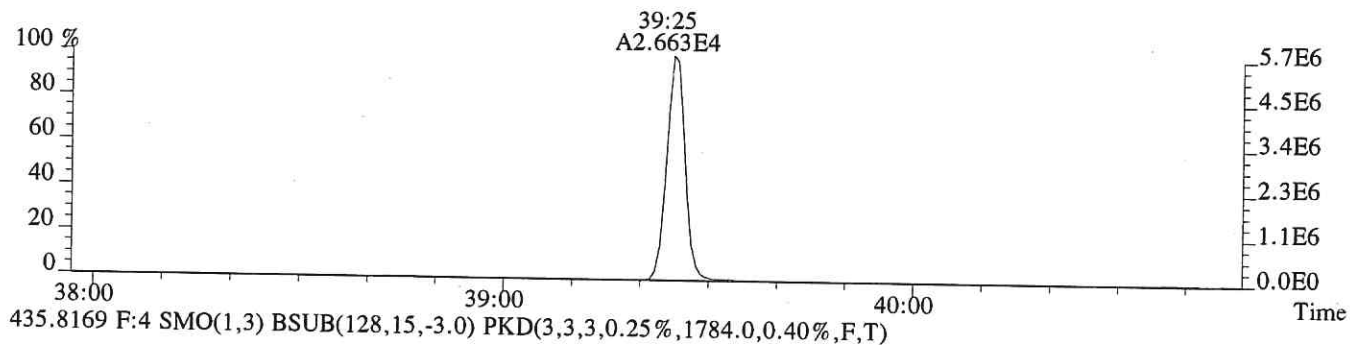
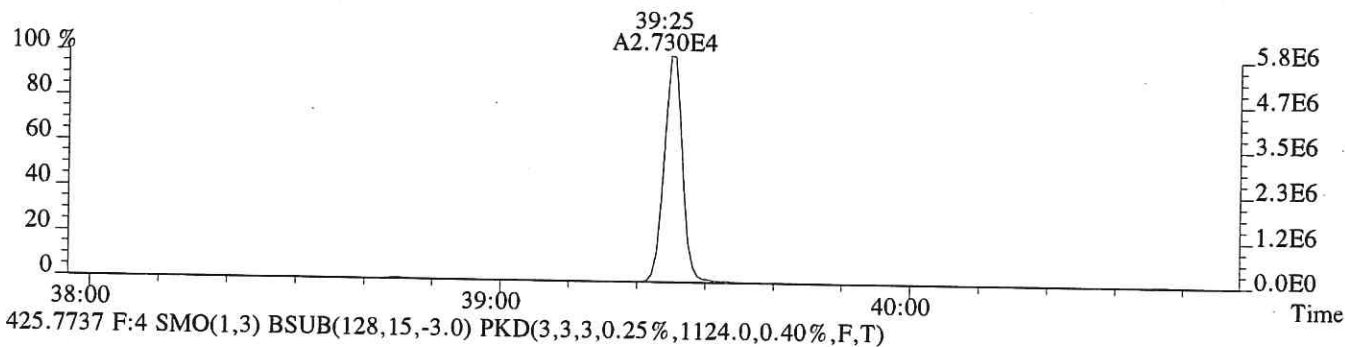
File:P523635 #1-299 Acq:16-AUG-2019 09:10:40 Probe EI+ Magnet SIR VG BioTech Mass spectE
Sample#1 Exp:201833
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1584.0,0.40%,F,T)



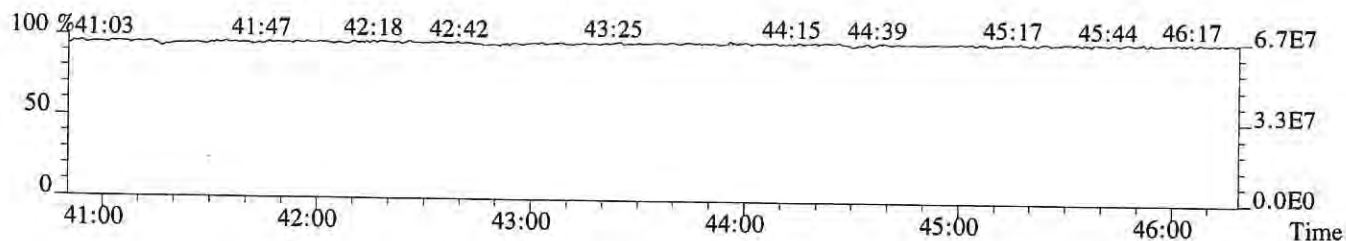
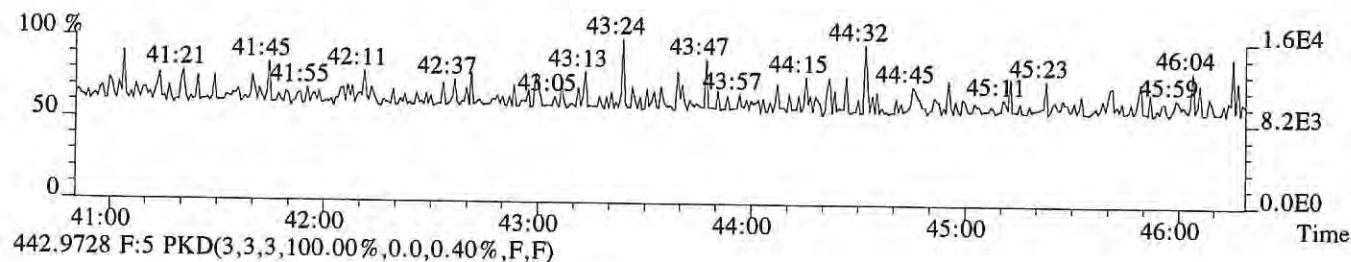
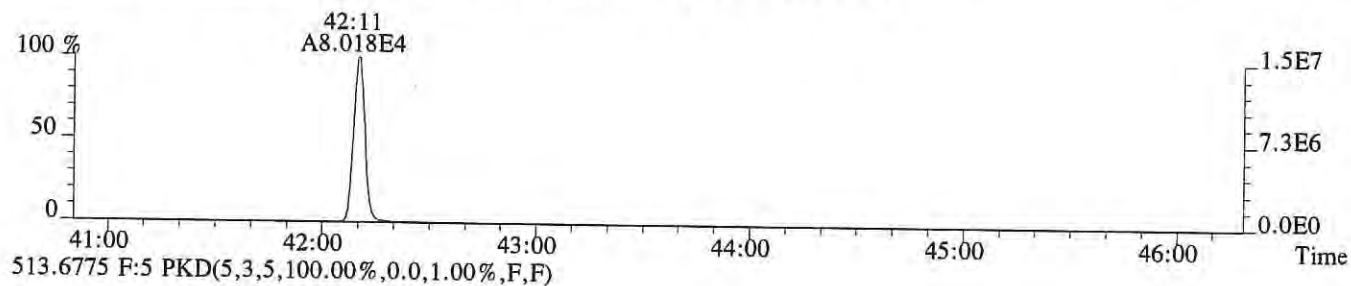
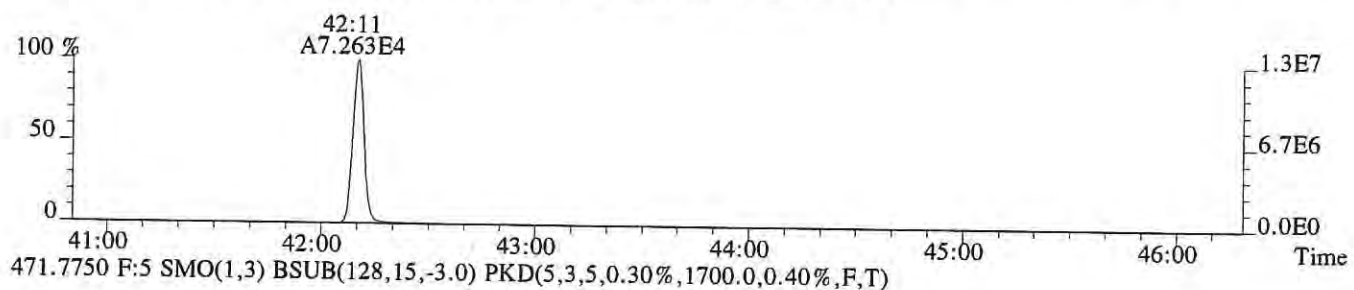
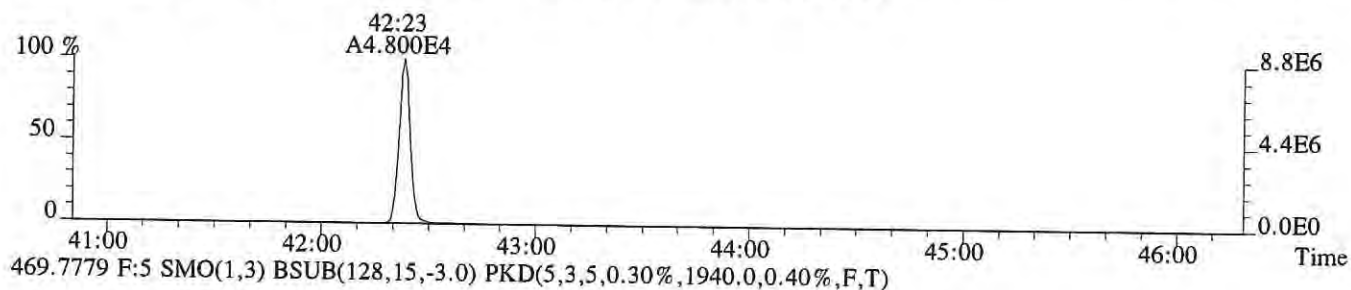
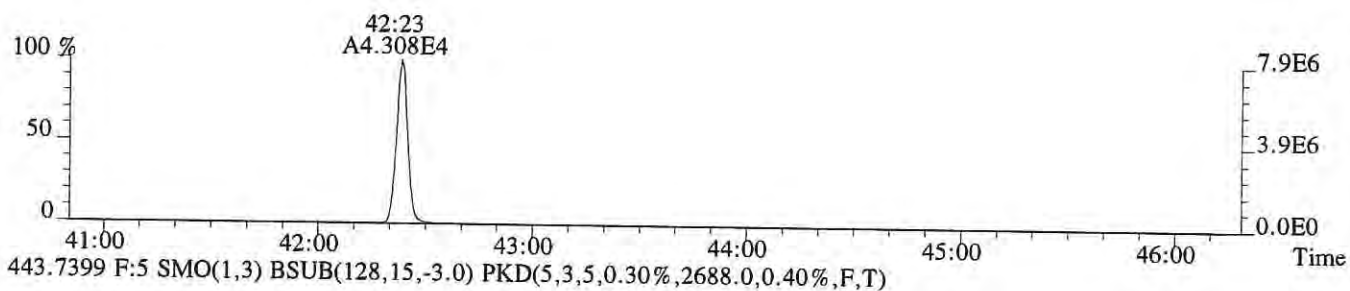
File:P523635 #1-258 Acq:16-AUG-2019 09:10:40 Probe EI+ Magnet SIR VG BioTech Mass spectE
Sample#1 Exp:201833
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2836.0,0.50%,F,T)



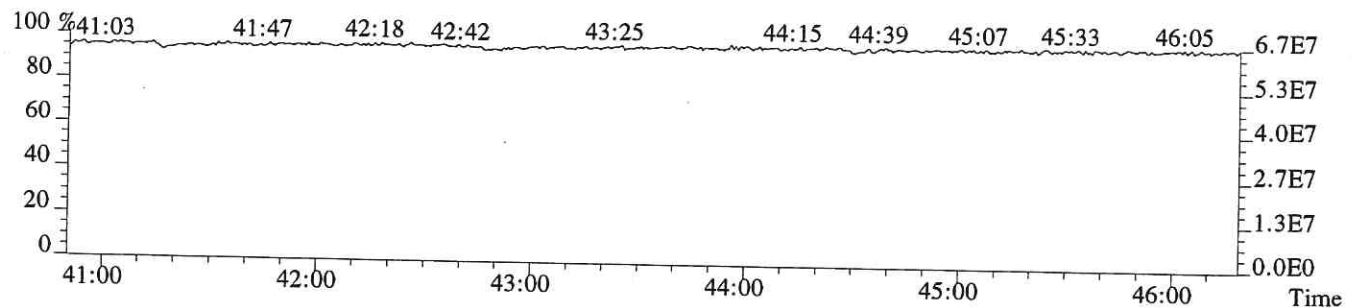
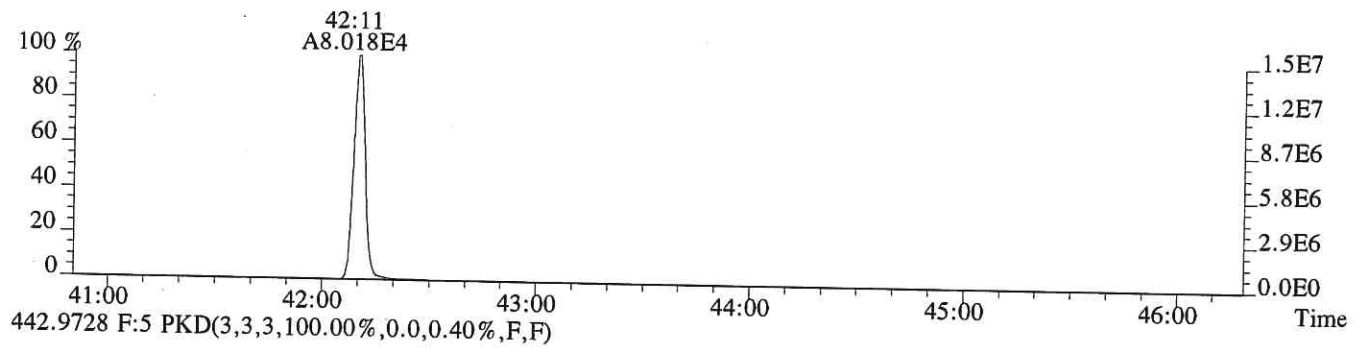
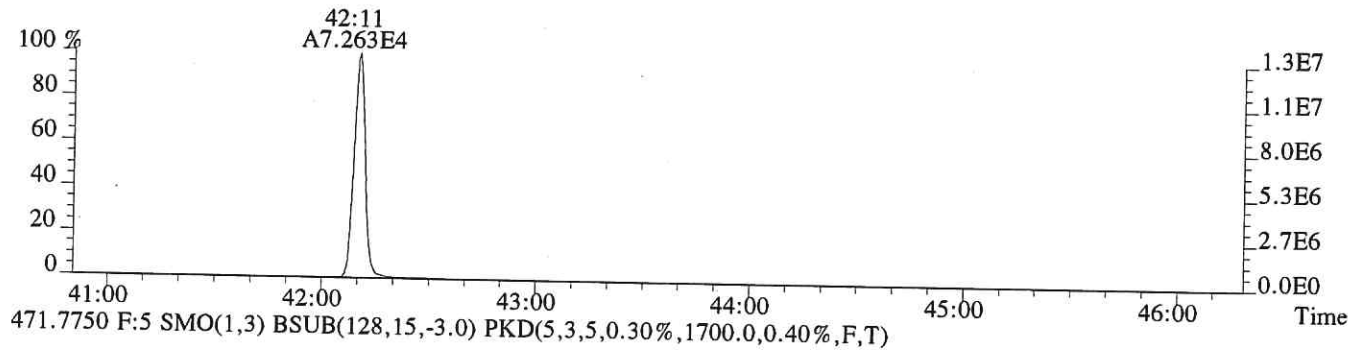
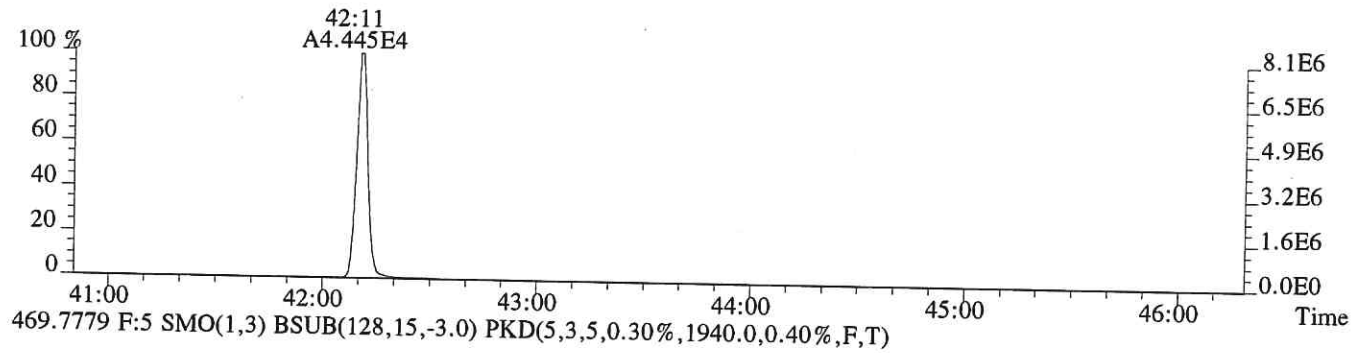
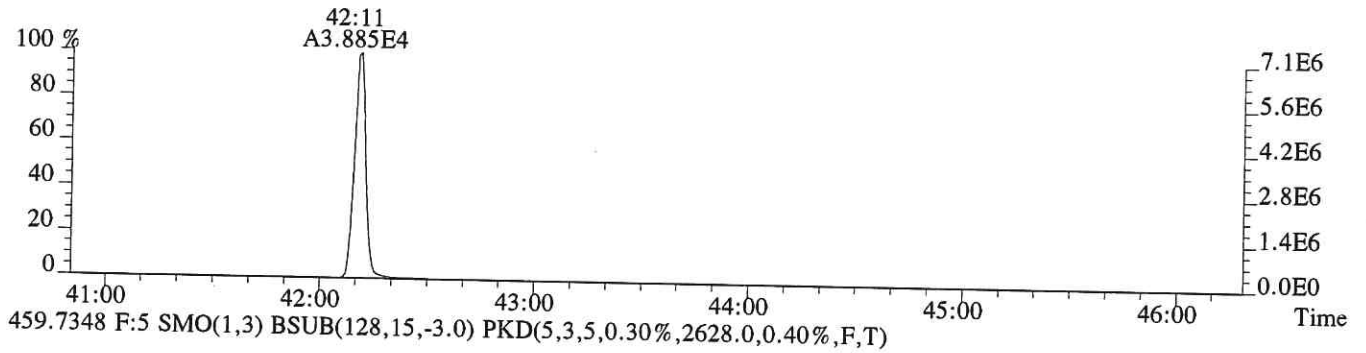
File:P523635 #1-258 Acq:16-AUG-2019 09:10:40 Probe EI+ Magnet SIR VG BioTech Mass spectE
Sample#1 Exp:201833
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1980.0,0.40%,F,T)



File:P523635 #1-493 Acq:16-AUG-2019 09:10:40 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:201833
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1632.0,0.40%,F,T)



File:P523635 #1-493 Acq:16-AUG-2019 09:10:40 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:201833
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2060.0,0.40%,F,T)



USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 04/25/19

Instrument ID: E-HRMS-07

GC Column ID: DB-5MSUI

VER Data Filename: P523646

Analysis Date: 16-AUG-19 Time: 19:50:16

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (4)
2,3,7,8-TCDD	M/M+2	0.77	0.65-0.89	9.7	7.8 - 12.9	-2.8
1,2,3,7,8-PeCDD	M+2/M+4	1.55	1.32-1.78	49	39 - 65	-2.9
1,2,3,4,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	50	39 - 64	0.5
1,2,3,6,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	50	39 - 64	0.1
1,2,3,7,8,9-HxCDD	M+2/M+4	1.23	1.05-1.43	51	41 - 61	1.4
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.05	0.88-1.20	52	43 - 58	3.6
OCDD	M+2/M+4	0.89	0.76-1.02	105	79 - 126	5.0
2,3,7,8-TCDF	M/M+2	0.74	0.65-0.89	8.9	8.4 - 12.0	-10.9
1,2,3,7,8-PeCDF	M+2/M+4	1.49	1.32-1.78	49	41 - 60	-1.7
2,3,4,7,8-PeCDF	M+2/M+4	1.50	1.32-1.78	49	41 - 61	-2.1
1,2,3,4,7,8-HxCDF	M+2/M+4	1.19	1.05-1.43	49	45 - 56	-2.1
1,2,3,6,7,8-HxCDF	M+2/M+4	1.23	1.05-1.43	49	44 - 57	-1.8
1,2,3,7,8,9-HxCDF	M+2/M+4	1.24	1.05-1.43	49	45 - 56	-2.9
2,3,4,6,7,8-HxCDF	M+2/M+4	1.23	1.05-1.43	48	44 - 57	-3.3
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.01	0.88-1.20	51	45 - 55	2.8
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.00	0.88-1.20	52	43 - 58	3.9
OCDF	M+2/M+4	0.90	0.76-1.02	102	63 - 159	1.7

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range as specified in Table 6, Method 1613B, under VER.

(4) 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, Method 8290

12/2012
1613F4A.FRM

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 04/25/19

Instrument ID: E-HRMS-07

GC Column ID: DB-5MSUI

VER Data Filename: P523646

Analysis Date: 16-AUG-19 Time: 19:50:16

LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (5)
13C-2,3,7,8-TCDD	M/M+2	0.80	0.65-0.89	90	82 - 121	-10.2
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.59	1.32-1.78	90	62 - 160	-9.9
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	94	85 - 117	-5.7
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	103	85 - 118	3.2
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.07	0.88-1.20	108	72 - 138	8.5
13C-OCDD	M+2/M+4	0.90	0.76-1.02	216	96 - 415	7.9
13C-2,3,7,8-TCDF	M/M+2	0.80	0.65-0.89	94	71 - 140	-5.9
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.58	1.32-1.78	91	76 - 130	-8.6
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.56	1.32-1.78	91	77 - 130	-8.6
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.51	0.43-0.59	95	76 - 131	-5.4
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.52	0.43-0.59	98	70 - 143	-2.2
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.52	0.43-0.59	94	74 - 135	-5.6
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.51	0.43-0.59	97	73 - 137	-2.9
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.45	0.37-0.51	105	78 - 129	5.3
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.44	0.37-0.51	108	77 - 129	8.4
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD				8.7	7.8 - 12.7	-13.0

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range, as specified in Table 6, Method 1613B, under VER.

(4) No ion abundance ratio; report concentration found.

(5) The beginning CCAL %RSD for the labeled standard must not exceed +/- 30% Section 7.7.4.2. The ending CCAL must not exceed +/- 35%, Sec 8.3.2.4 (8290)

12/2012
1613F4B.FRM

ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
201833

Run #18 Filename P523646
Processed: 21-AUG-19 15:35:04

Samp: 1 Inj: 1
Sample ID: CS3

Acquired: 16-AUG-19 19:50:16

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	28:11	5.057e+03	6.880e+03	0.74	yes	no	0.962
2 Unk	1,2,3,7,8-PeCDF	32:22	4.235e+04	2.841e+04	1.49	yes	no	0.968
3 Unk	2,3,4,7,8-PeCDF	33:16	3.901e+04	2.602e+04	1.50	yes	no	0.919
4 Unk	1,2,3,4,7,8-HxCDF	35:55	3.570e+04	3.008e+04	1.19	yes	no	1.161
5 Unk	1,2,3,6,7,8-HxCDF	36:02	3.887e+04	3.161e+04	1.23	yes	no	1.073
6 Unk	2,3,4,6,7,8-HxCDF	36:32	3.481e+04	2.839e+04	1.23	yes	no	1.069
7 Unk	1,2,3,7,8,9-HxCDF	37:17	3.016e+04	2.423e+04	1.24	yes	no	1.096
8 Unk	1,2,3,4,6,7,8-HpCDF	38:31	3.494e+04	3.473e+04	1.01	yes	no	1.281
9 Unk	1,2,3,4,7,8,9-HpCDF	39:54	2.753e+04	2.749e+04	1.00	yes	no	1.192
10 Unk	OCDF	42:23	4.560e+04	5.053e+04	0.90	yes	no	1.204
11 Unk	2,3,7,8-TCDD	28:58	4.372e+03	5.673e+03	0.77	yes	no	1.077
12 Unk	1,2,3,7,8-PeCDD	33:33	3.018e+04	1.950e+04	1.55	yes	no	0.971
13 Unk	1,2,3,4,7,8-HxCDD	36:39	2.808e+04	2.226e+04	1.26	yes	no	1.024
14 Unk	1,2,3,6,7,8-HxCDD	36:45	3.043e+04	2.401e+04	1.27	yes	no	1.038
15 Unk	1,2,3,7,8,9-HxCDD	36:59	2.993e+04	2.427e+04	1.23	yes	no	1.055
16 Unk	1,2,3,4,6,7,8-HpCDD	39:26	2.733e+04	2.613e+04	1.05	yes	no	0.989
17 Unk	OCDD	42:11	4.256e+04	4.760e+04	0.89	yes	no	1.094
18 IS	13C-2,3,7,8-TCDF	28:10	6.166e+04	7.753e+04	0.80	yes	no	1.287
19 IS	13C-1,2,3,7,8-PeCDF	32:21	9.108e+04	5.776e+04	1.58	yes	no	1.416
20 IS	13C-2,3,4,7,8-PeCDF	33:15	8.799e+04	5.647e+04	1.56	yes	no	1.374
21 IS	13C-1,2,3,4,7,8-HxCDF	35:55	3.923e+04	7.655e+04	0.51	yes	no	1.114
22 IS	13C-1,2,3,6,7,8-HxCDF	36:01	4.573e+04	8.797e+04	0.52	yes	no	1.245
23 IS	13C-2,3,4,6,7,8-HxCDF	36:31	4.153e+04	8.072e+04	0.51	yes	no	1.146
24 IS	13C-1,2,3,7,8,9-HxCDF	37:16	3.518e+04	6.705e+04	0.52	yes	no	0.986
25 IS	13C-1,2,3,4,6,7,8-HpCDF	38:30	3.269e+04	7.316e+04	0.45	yes	no	0.915
26 IS	13C-1,2,3,4,7,8,9-HpCDF	39:54	2.733e+04	6.152e+04	0.44	yes	no	0.746
27 IS	13C-2,3,7,8-TCDD	28:57	4.263e+04	5.328e+04	0.80	yes	no	0.929
28 IS	13C-1,2,3,7,8-PeCDD	33:32	6.461e+04	4.074e+04	1.59	yes	no	1.017
29 IS	13C-1,2,3,4,7,8-HxCDD	36:39	5.479e+04	4.311e+04	1.27	yes	no	0.945
30 IS	13C-1,2,3,6,7,8-HxCDD	36:44	5.870e+04	4.606e+04	1.27	yes	no	0.924
31 IS	13C-1,2,3,4,6,7,8-HpCDD	39:25	5.385e+04	5.053e+04	1.07	yes	no	0.876
32 IS	13C-OCDD	42:11	7.419e+04	8.276e+04	0.90	yes	no	0.662
33 RS/RT	13C-1,2,3,4-TCDD	28:22	5.121e+04	6.380e+04	0.80	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	36:58	6.170e+04	4.816e+04	1.28	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	28:58	1.011e+04				no	1.010

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Signal/Noise Height Ratio Summary

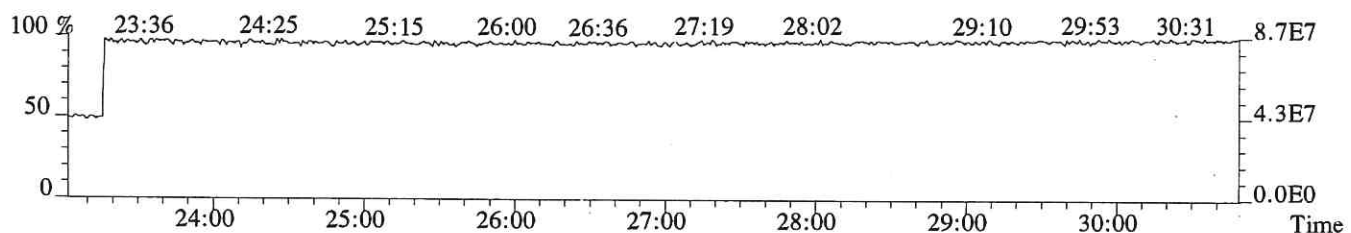
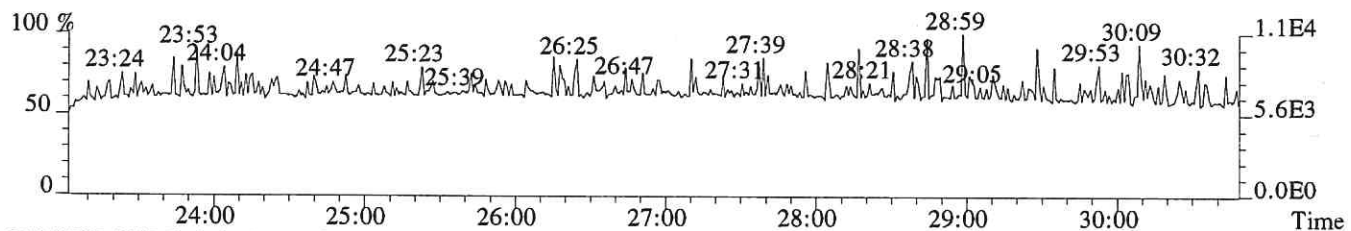
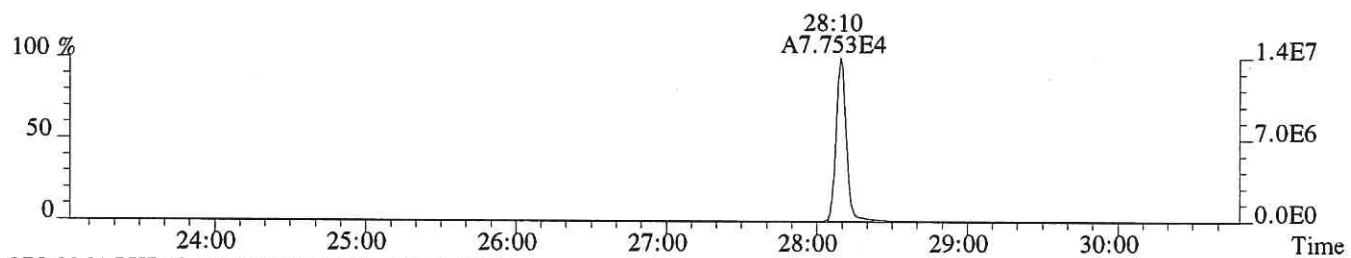
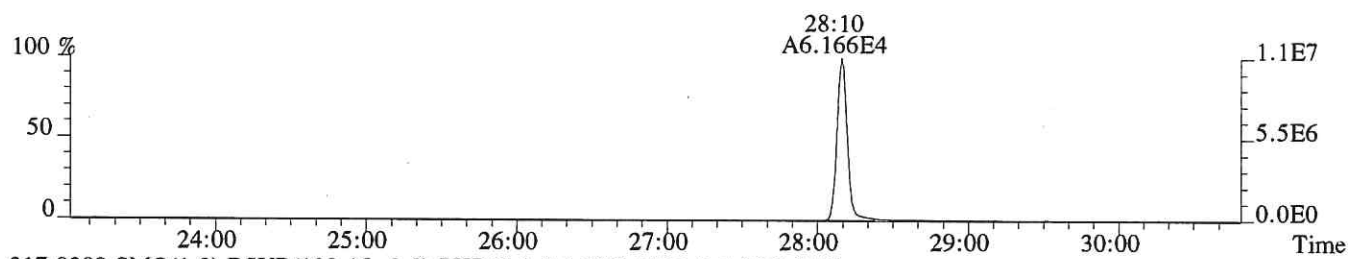
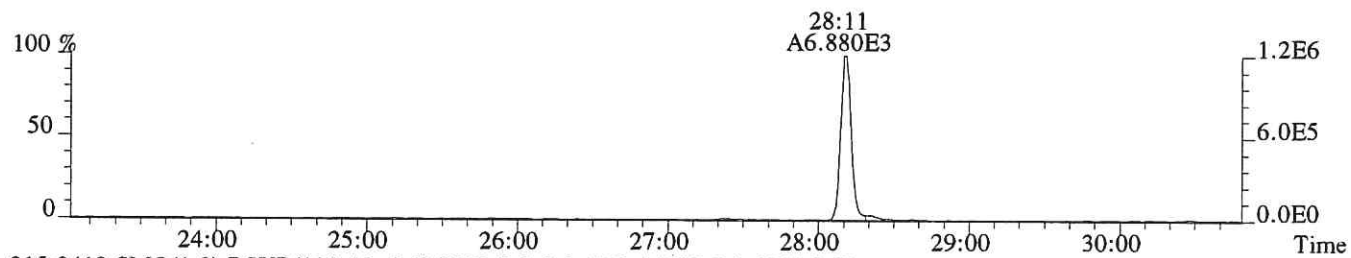
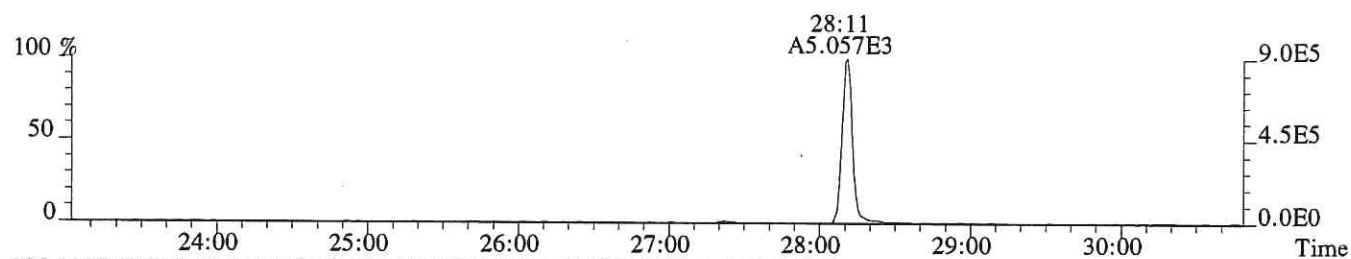
CLIENT ID.
201833

Run #18 Filename P523646 Samp: 1 Inj: 1 Acquired: 16-AUG-19 19:50:16
Processed: 21-AUG-19 15:35:04 LAB. ID: CS3

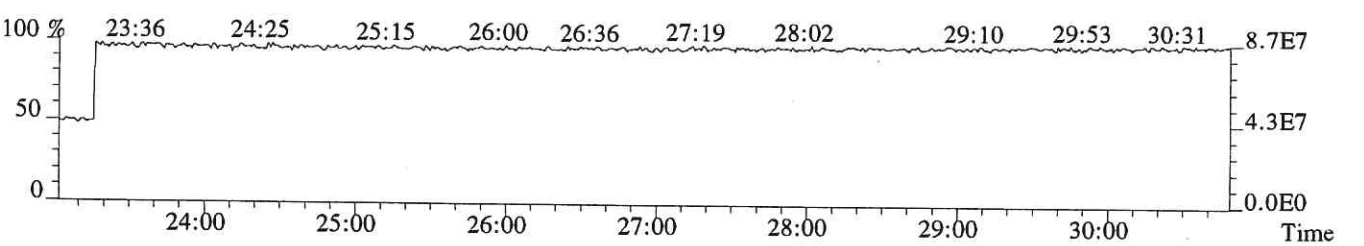
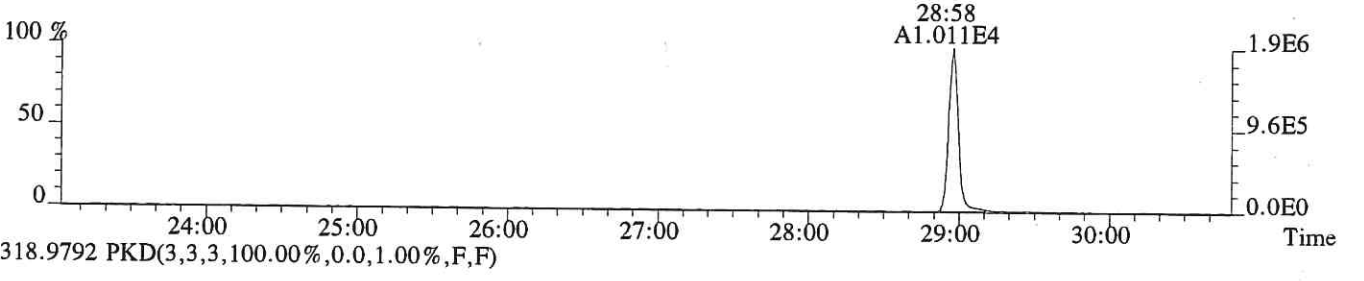
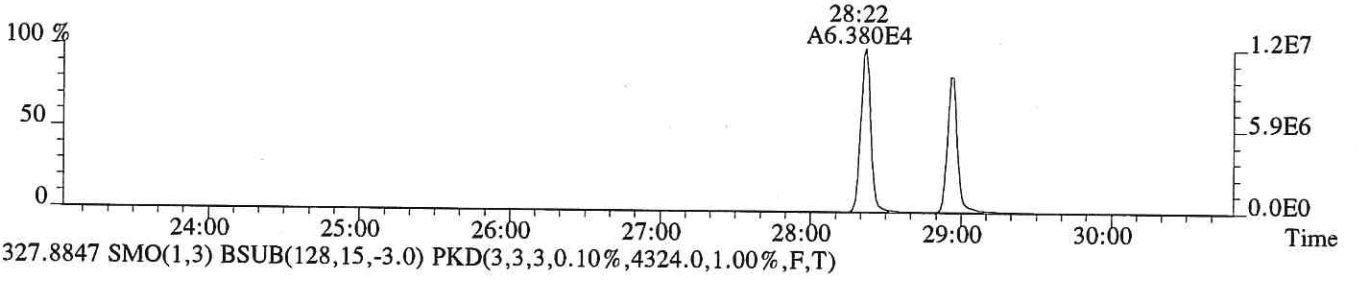
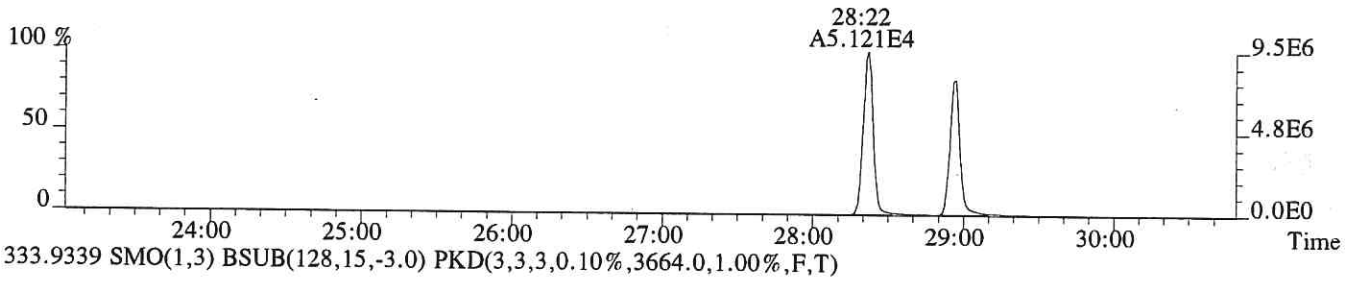
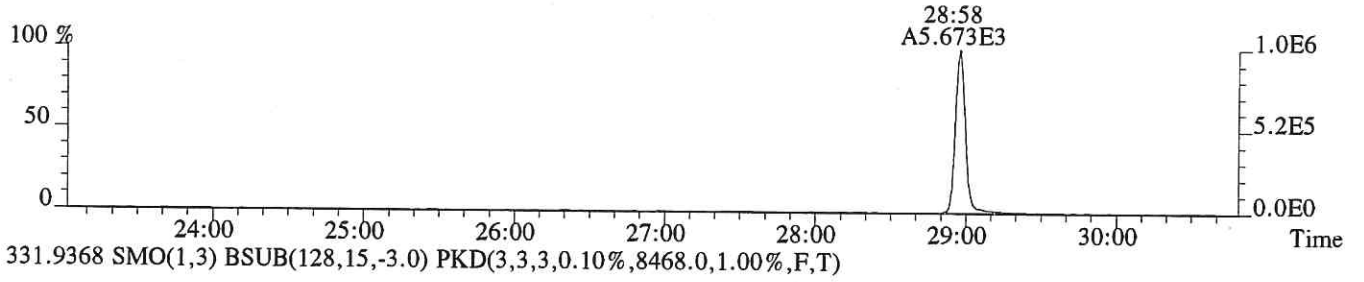
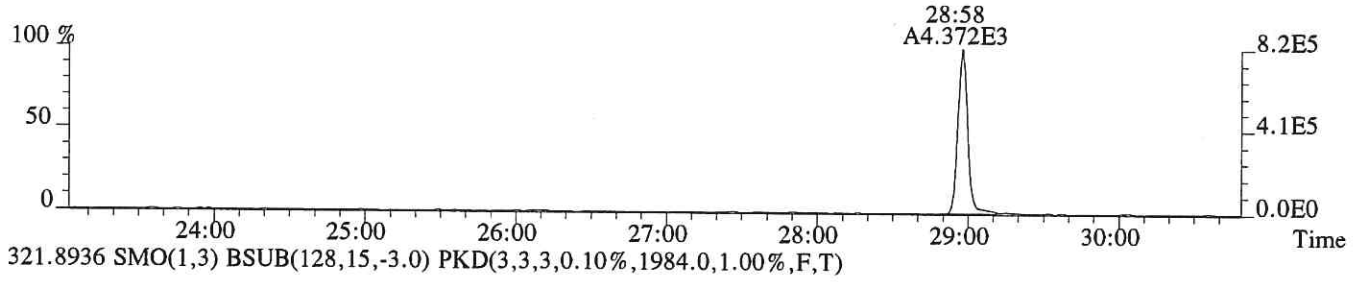
	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	8.97e+05	1.53e+03	5.9e+02	1.20e+06	3.63e+03	3.3e+02
2	1,2,3,7,8-PeCDF	7.54e+06	2.39e+03	3.2e+03	5.00e+06	4.97e+03	1.0e+03
3	2,3,4,7,8-PeCDF	7.20e+06	2.39e+03	3.0e+03	4.79e+06	4.97e+03	9.6e+02
4	1,2,3,4,7,8-HxCDF	7.57e+06	1.04e+04	7.3e+02	6.28e+06	6.10e+04	1.0e+02
5	1,2,3,6,7,8-HxCDF	7.53e+06	1.04e+04	7.3e+02	6.35e+06	6.10e+04	1.0e+02
6	2,3,4,6,7,8-HxCDF	7.05e+06	1.04e+04	6.8e+02	5.75e+06	6.10e+04	9.4e+01
7	1,2,3,7,8,9-HxCDF	6.00e+06	1.04e+04	5.8e+02	4.98e+06	6.10e+04	8.2e+01
8	1,2,3,4,6,7,8-HpCDF	7.65e+06	1.26e+04	6.1e+02	7.53e+06	1.51e+04	5.0e+02
9	1,2,3,4,7,8,9-HpCDF	5.58e+06	1.26e+04	4.4e+02	5.62e+06	1.51e+04	3.7e+02
10	OCDF	7.76e+06	3.05e+03	2.5e+03	8.76e+06	4.22e+03	2.1e+03
11	2,3,7,8-TCDD	8.15e+05	3.16e+03	2.6e+02	1.05e+06	1.98e+03	5.3e+02
12	1,2,3,7,8-PeCDD	5.50e+06	2.66e+03	2.1e+03	3.55e+06	2.04e+03	1.7e+03
13	1,2,3,4,7,8-HxCDD	6.15e+06	5.05e+03	1.2e+03	4.85e+06	5.04e+03	9.6e+02
14	1,2,3,6,7,8-HxCDD	6.07e+06	5.05e+03	1.2e+03	4.81e+06	5.04e+03	9.6e+02
15	1,2,3,7,8,9-HxCDD	5.91e+06	5.05e+03	1.2e+03	4.81e+06	5.04e+03	9.6e+02
16	1,2,3,4,6,7,8-HpCDD	5.57e+06	7.69e+03	7.3e+02	5.43e+06	6.67e+03	8.1e+02
17	OCDD	7.47e+06	2.62e+03	2.9e+03	8.42e+06	2.72e+03	3.1e+03
18	13C-2,3,7,8-TCDF	1.11e+07	1.50e+04	7.4e+02	1.40e+07	7.31e+03	1.9e+03
19	13C-1,2,3,7,8-PeCDF	1.59e+07	1.40e+03	1.1e+04	1.01e+07	1.94e+03	5.2e+03
20	13C-2,3,4,7,8-PeCDF	1.61e+07	1.40e+03	1.1e+04	1.04e+07	1.94e+03	5.4e+03
21	13C-1,2,3,4,7,8-HxCDF	8.11e+06	2.10e+03	3.9e+03	1.58e+07	4.05e+03	3.9e+03
22	13C-1,2,3,6,7,8-HxCDF	8.99e+06	2.10e+03	4.3e+03	1.75e+07	4.05e+03	4.3e+03
23	13C-2,3,4,6,7,8-HxCDF	8.32e+06	2.10e+03	4.0e+03	1.63e+07	4.05e+03	4.0e+03
24	13C-1,2,3,7,8,9-HxCDF	6.92e+06	2.10e+03	3.3e+03	1.34e+07	4.05e+03	3.3e+03
25	13C-1,2,3,4,6,7,8-HpCDF	7.21e+06	4.31e+03	1.7e+03	1.60e+07	7.39e+03	2.2e+03
26	13C-1,2,3,4,7,8,9-HpCDF	5.40e+06	4.31e+03	1.3e+03	1.23e+07	7.39e+03	1.7e+03
27	13C-2,3,7,8-TCDD	7.84e+06	8.47e+03	9.3e+02	9.77e+06	3.66e+03	2.7e+03
28	13C-1,2,3,7,8-PeCDD	1.16e+07	2.66e+03	4.4e+03	7.41e+06	2.52e+03	2.9e+03
29	13C-1,2,3,4,7,8-HxCDD	1.21e+07	3.66e+03	3.3e+03	9.52e+06	3.28e+03	2.9e+03
30	13C-1,2,3,6,7,8-HxCDD	1.17e+07	3.66e+03	3.2e+03	9.28e+06	3.28e+03	2.8e+03
31	13C-1,2,3,4,6,7,8-HpCDD	1.13e+07	3.89e+03	2.9e+03	1.05e+07	3.87e+03	2.7e+03
32	13C-OCDD	1.31e+07	2.46e+03	5.3e+03	1.46e+07	2.74e+03	5.3e+03
33	13C-1,2,3,4-TCDD	9.51e+06	8.47e+03	1.1e+03	1.18e+07	3.66e+03	3.2e+03
34	13C-1,2,3,7,8,9-HxCDD	1.19e+07	3.66e+03	3.3e+03	9.57e+06	3.28e+03	2.9e+03
35	37Cl-2,3,7,8-TCDD	1.92e+06	4.32e+03	4.4e+02			

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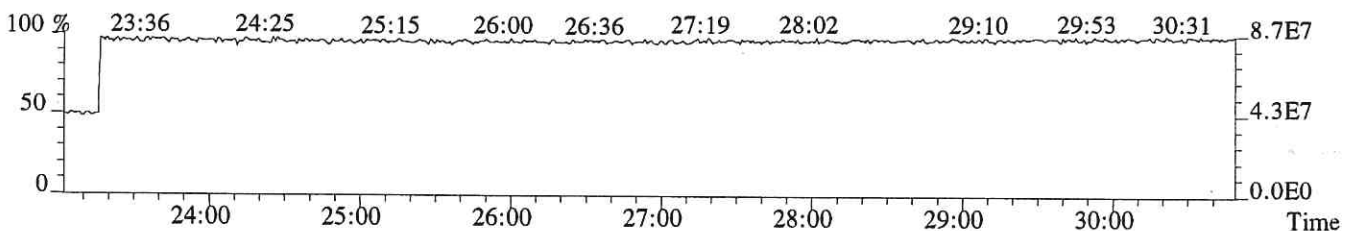
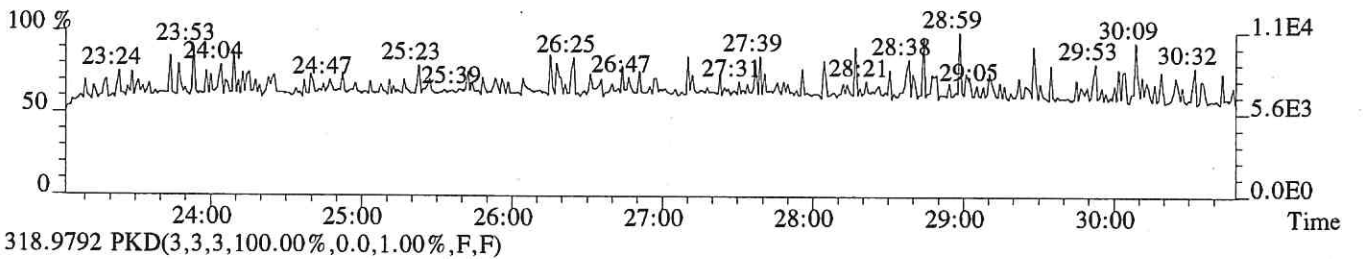
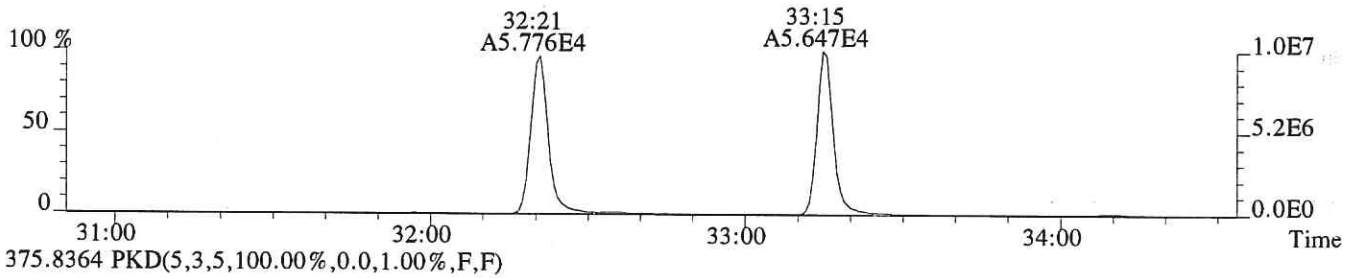
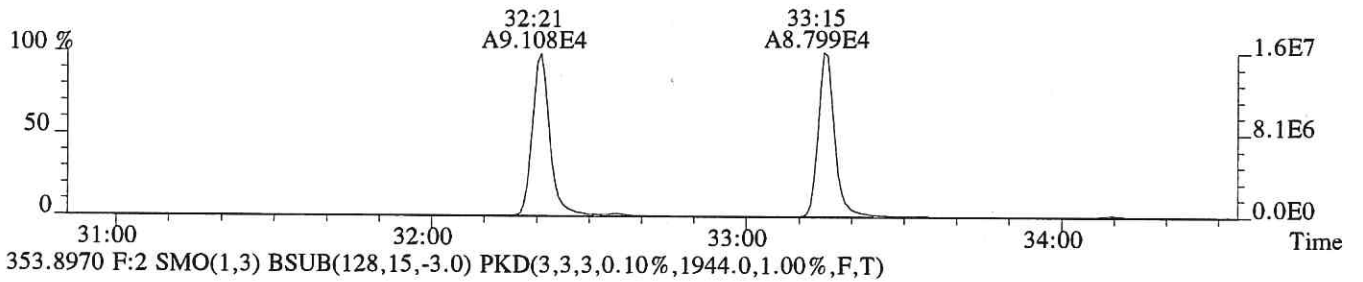
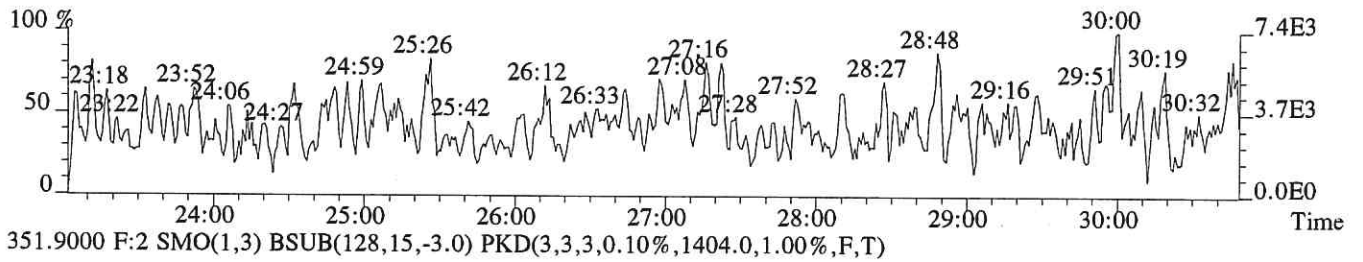
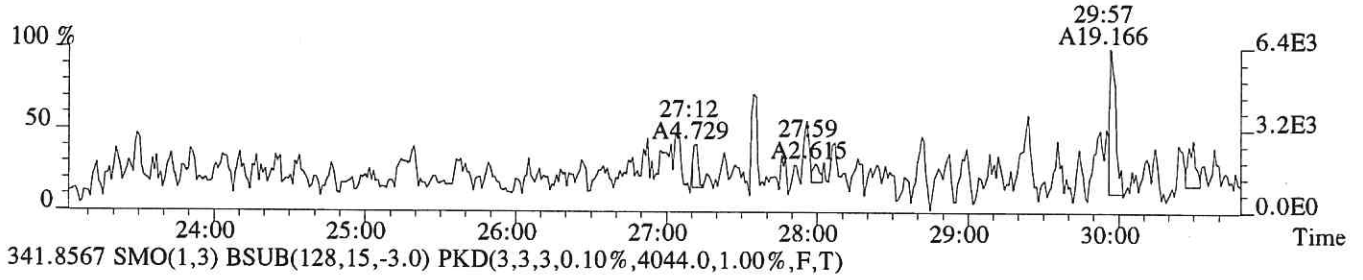
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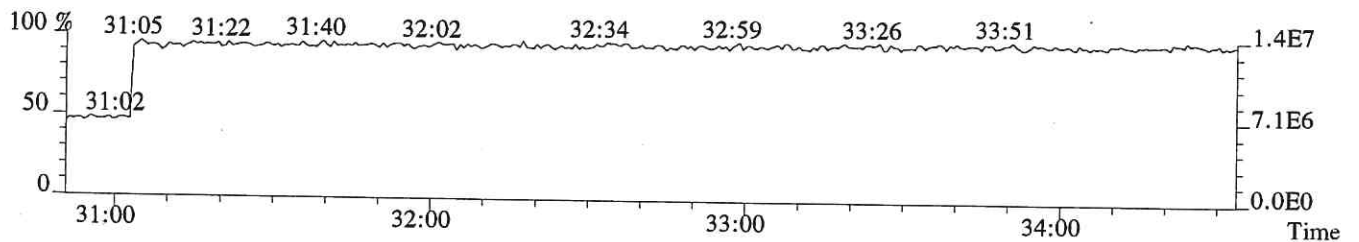
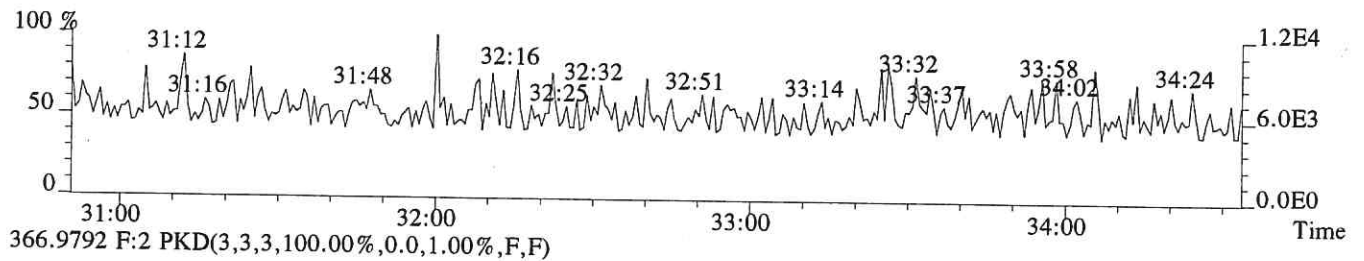
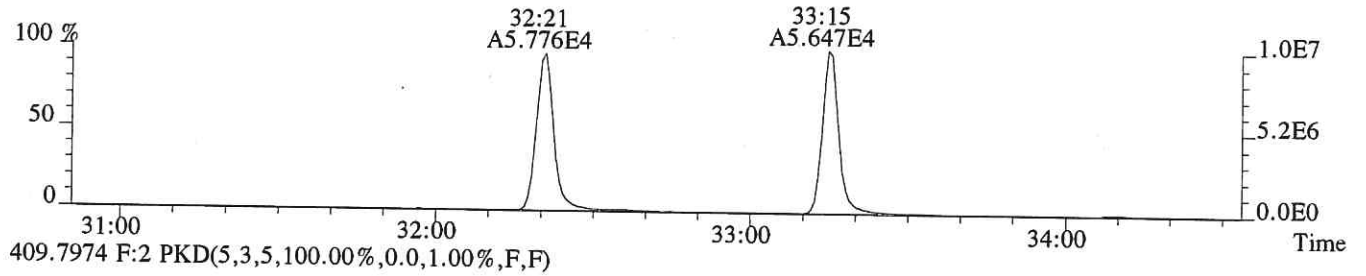
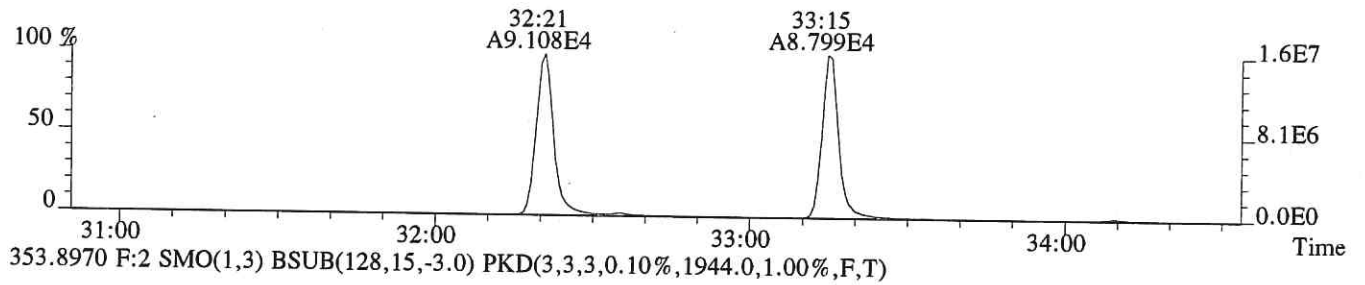
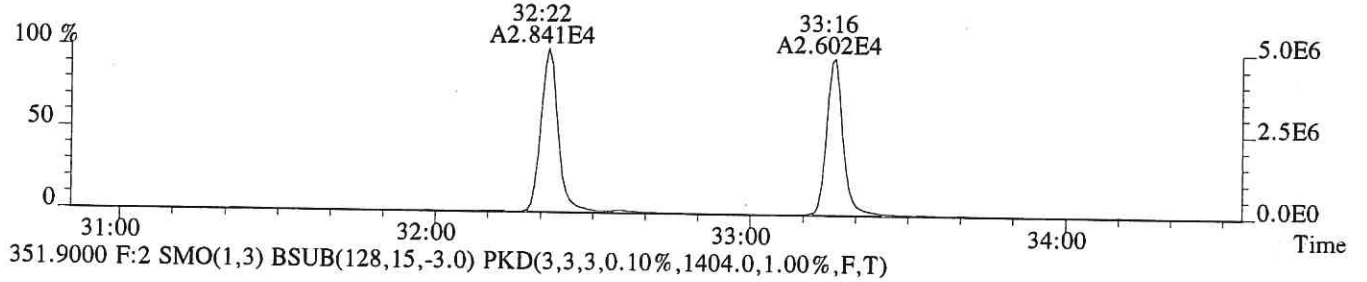
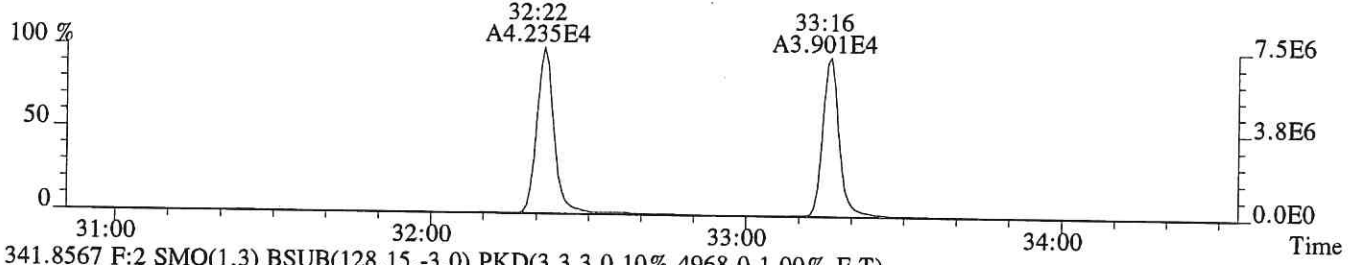
File:P523646 #1-552 Acq:16-AUG-2019 19:50:16 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:201833
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3160.0,1.00%,F,T)



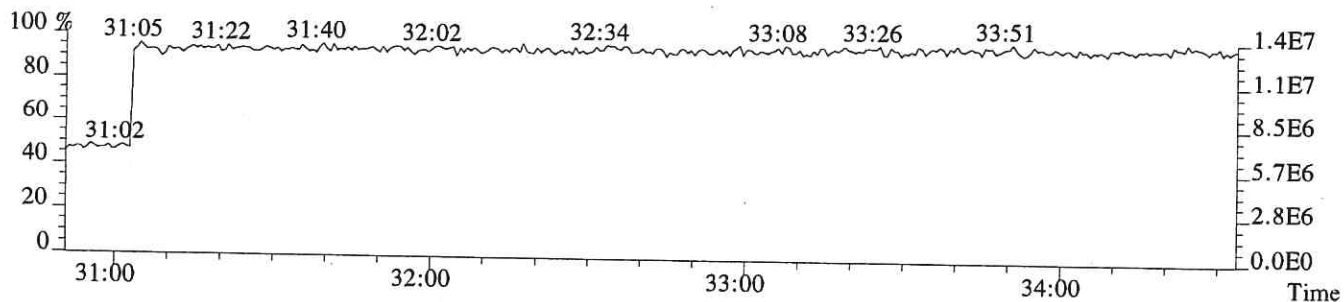
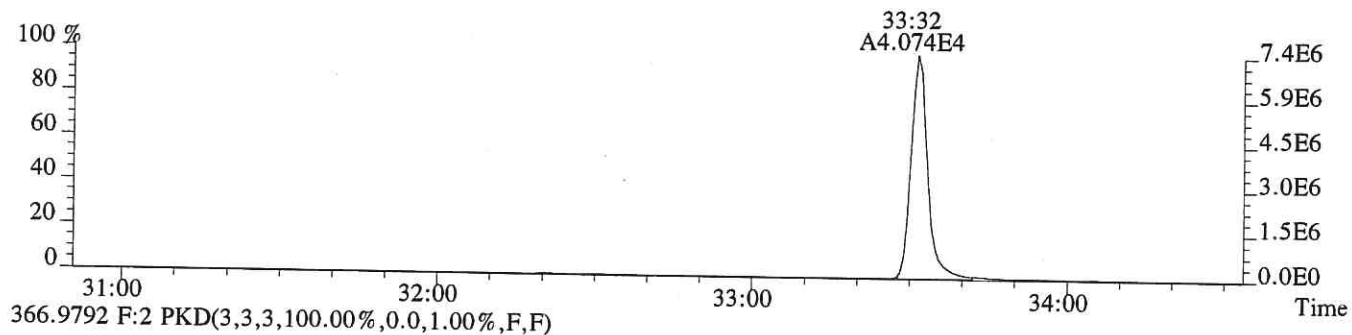
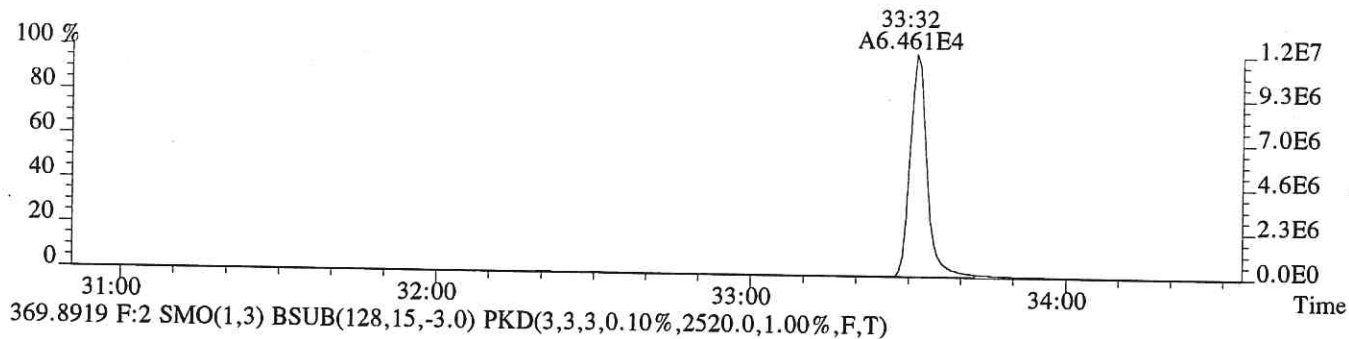
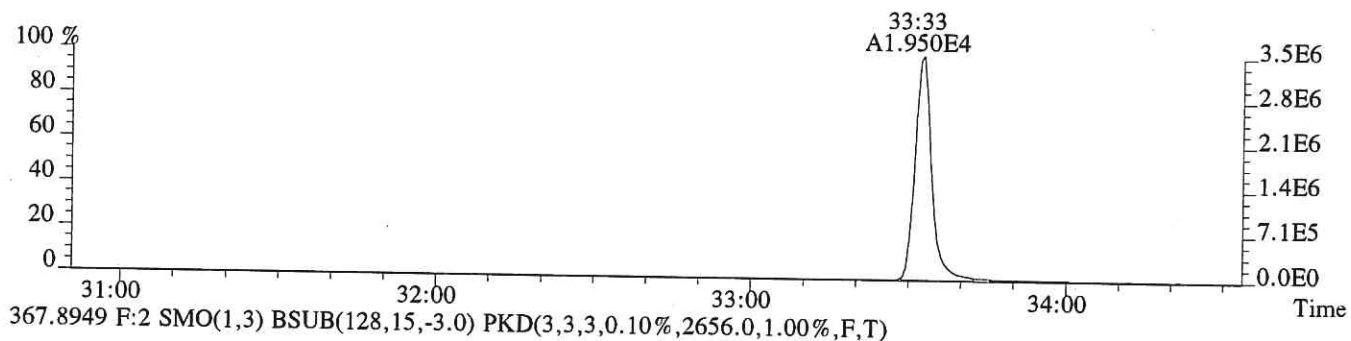
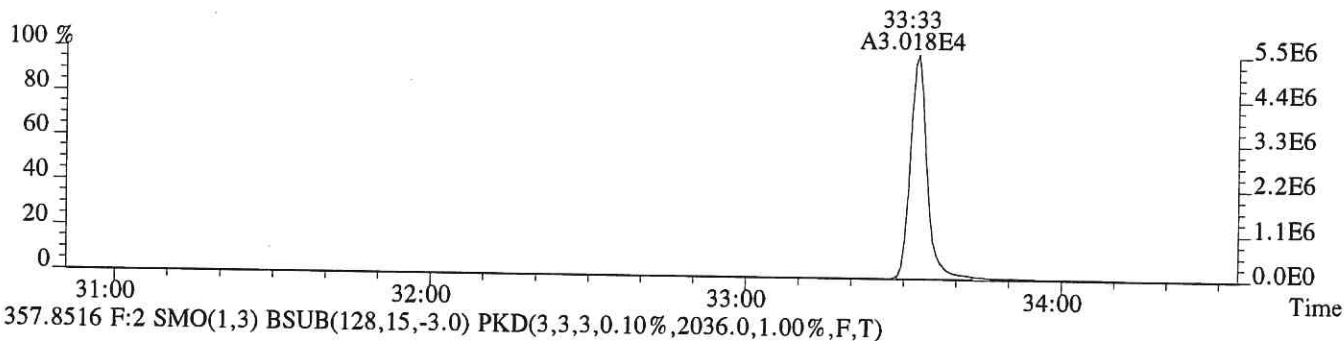
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Sample#1 Exp:201833
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1836.0,1.00%,F,T)



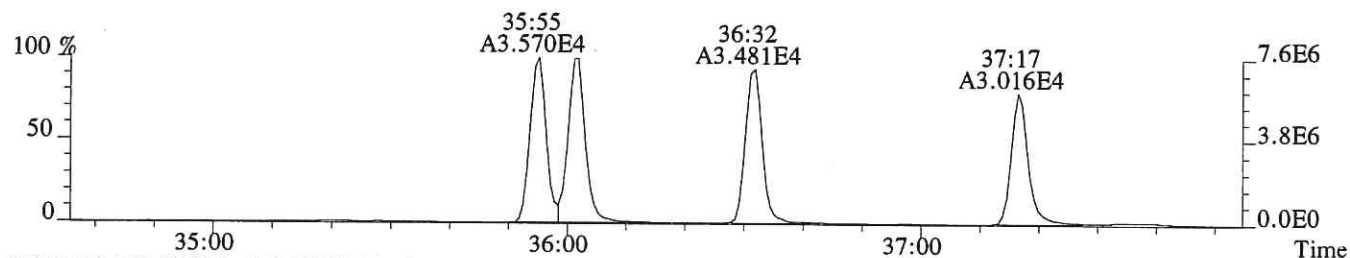
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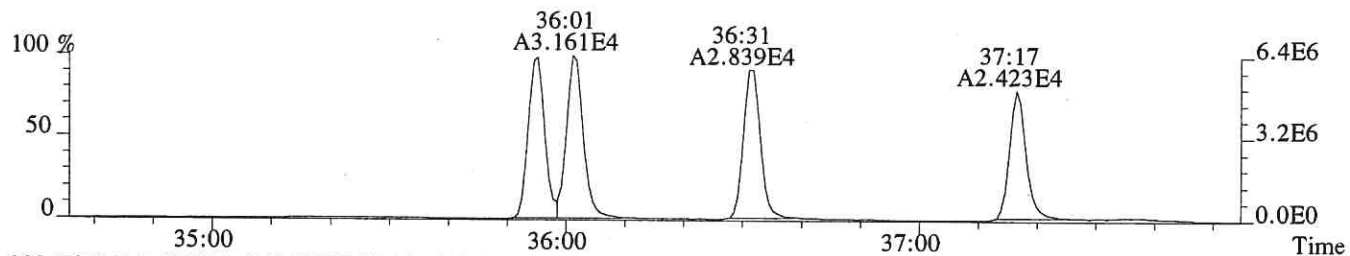
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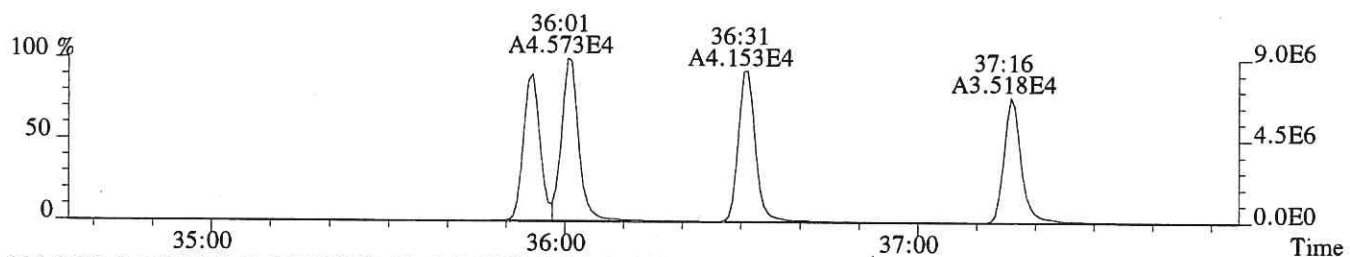
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Sample#1 Exp:201833
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,10384.0,0.40%,F,T)



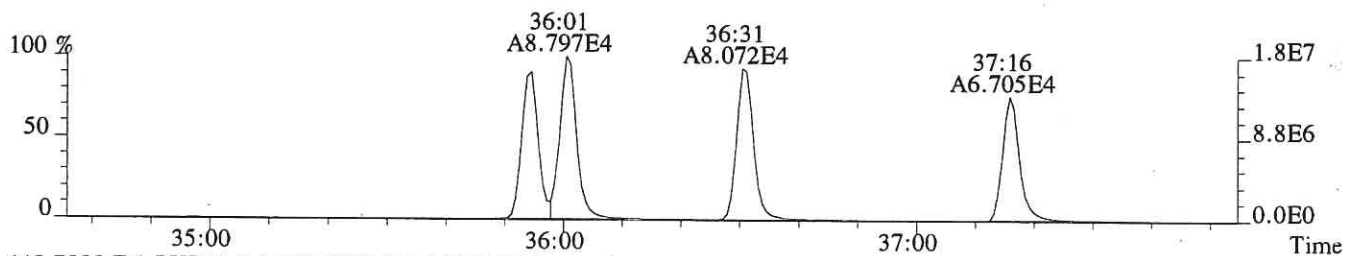
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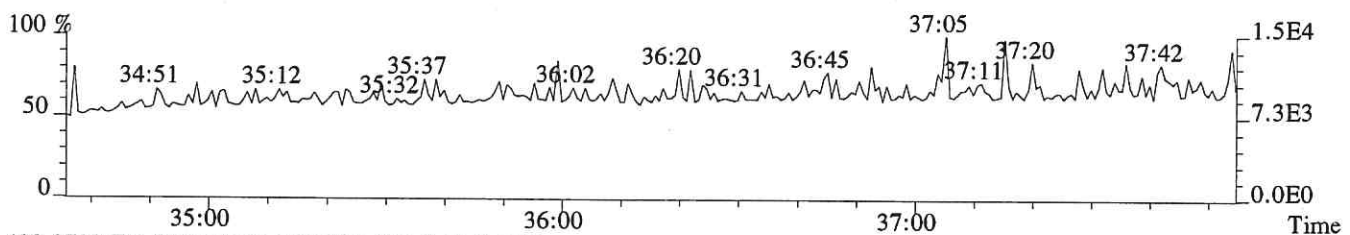
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2104.0,0.40%,F,T)



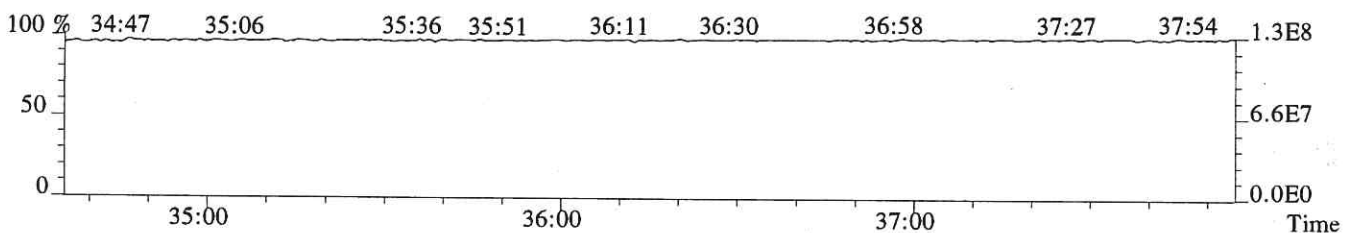
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4052.0,0.40%,F,T)



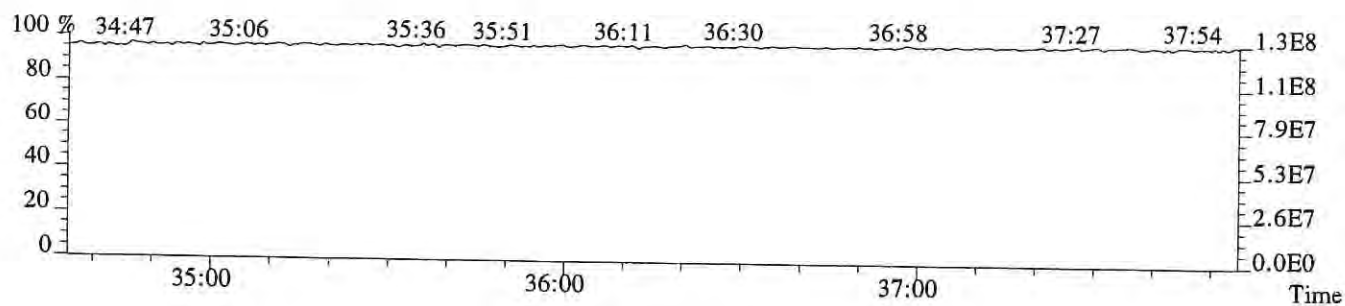
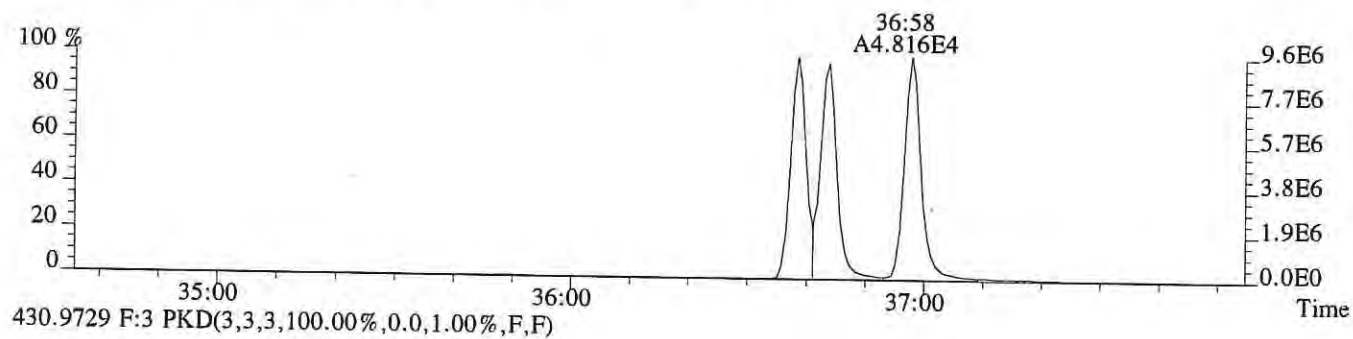
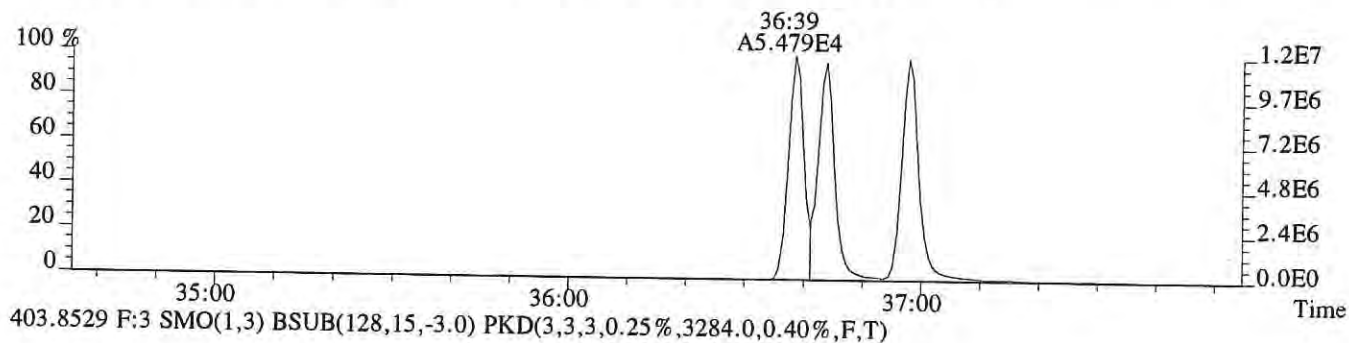
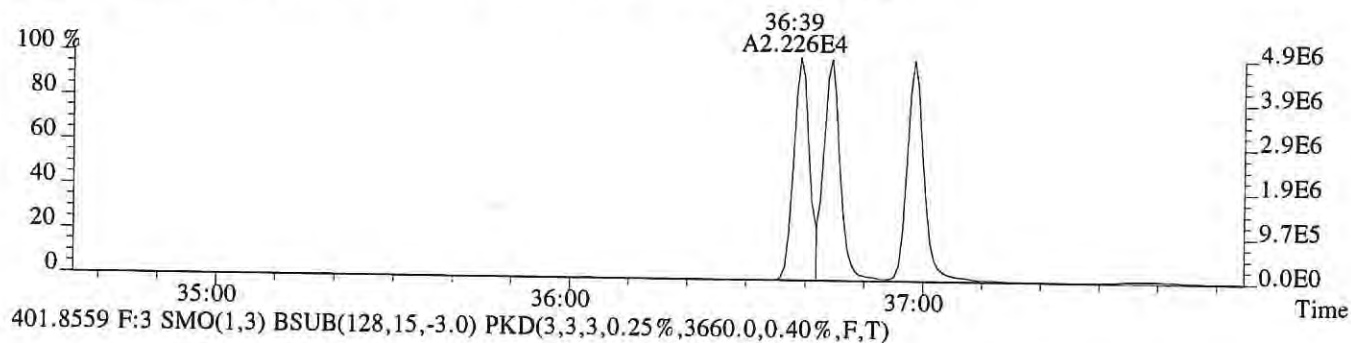
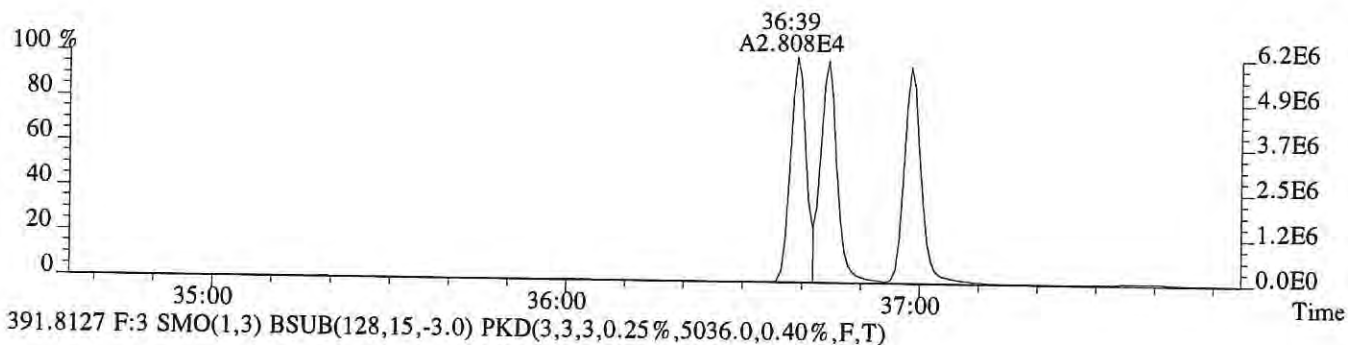
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



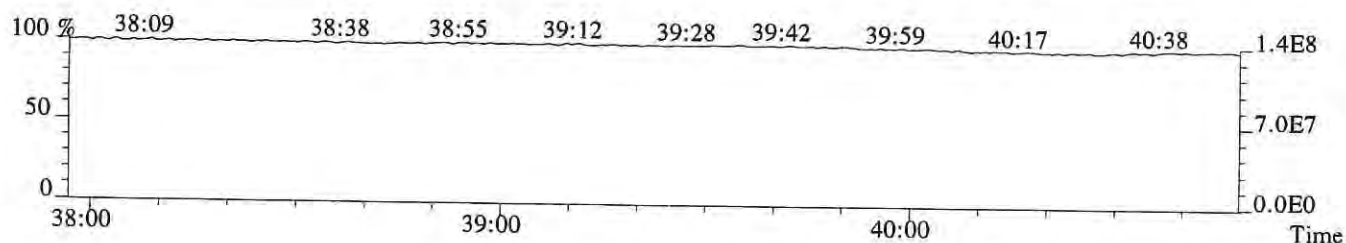
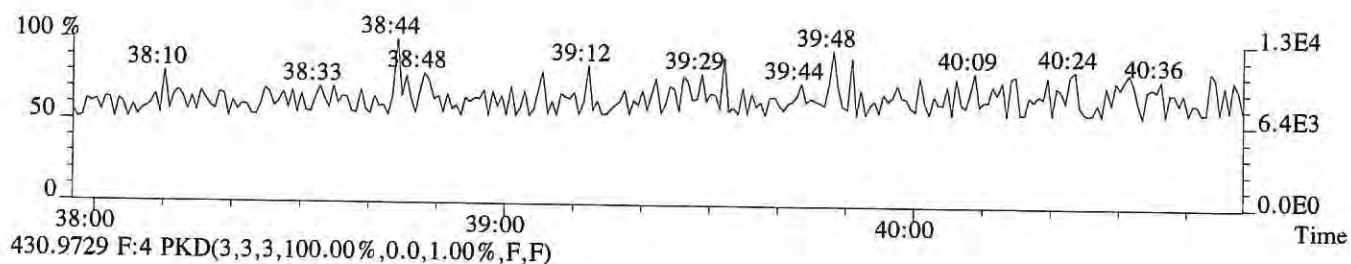
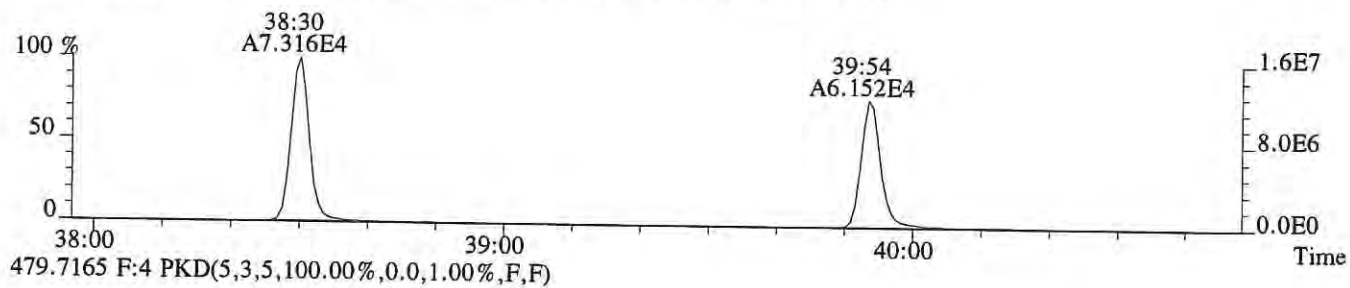
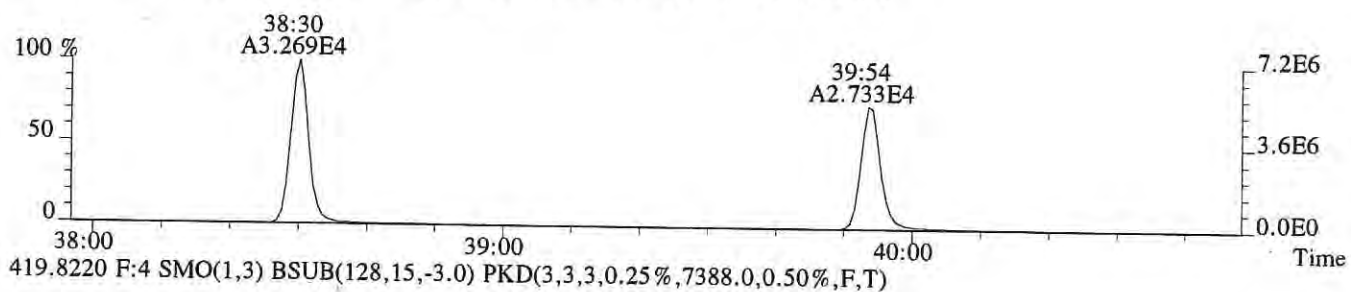
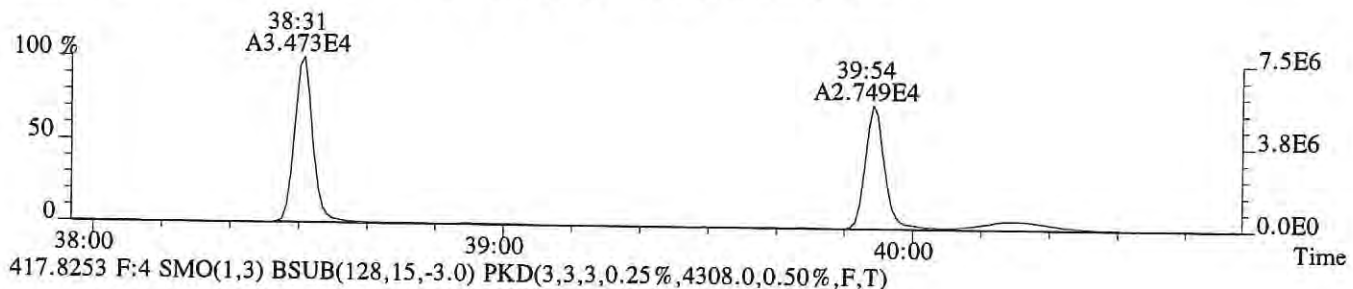
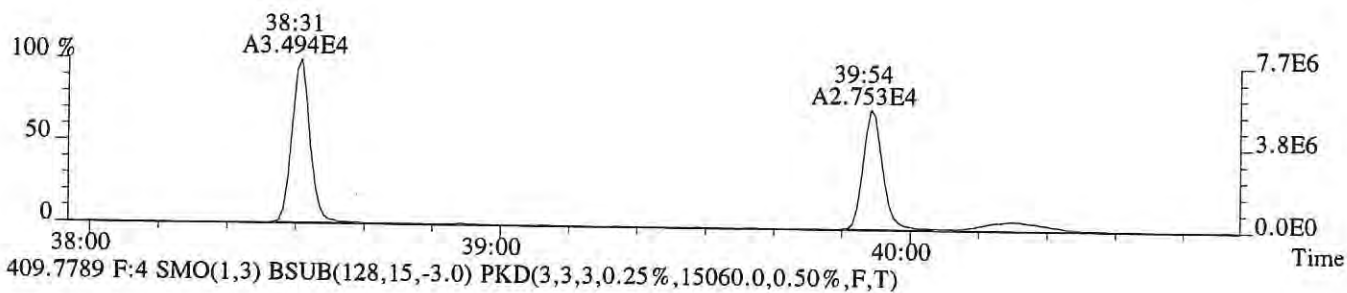
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



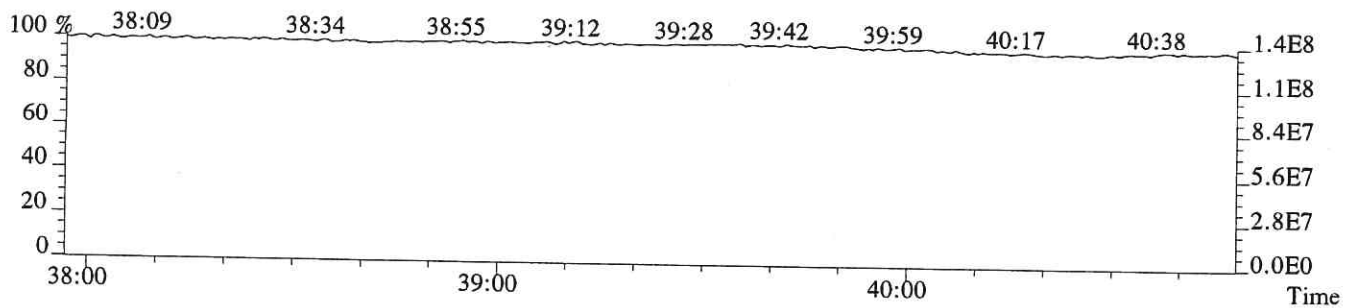
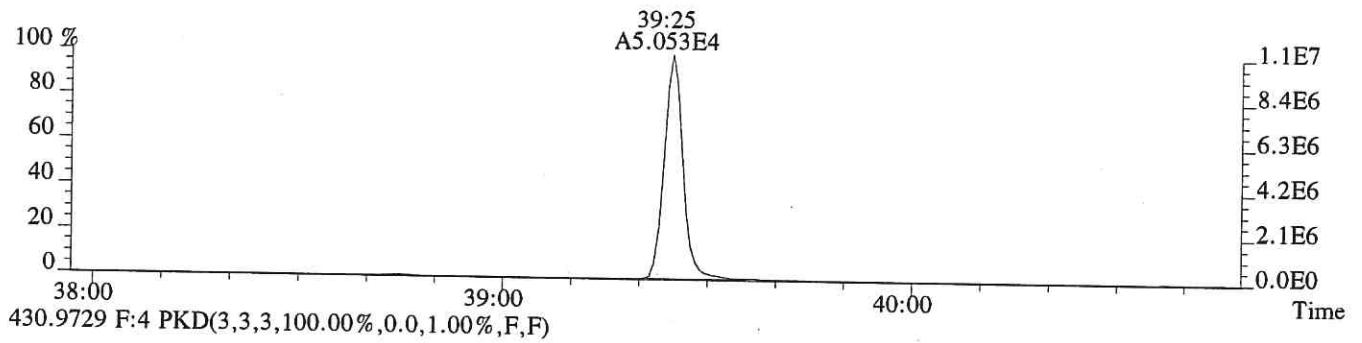
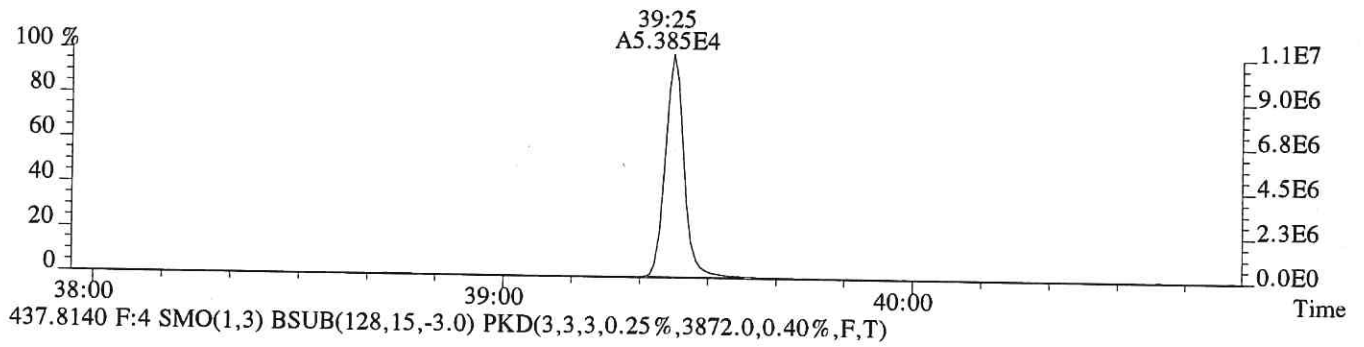
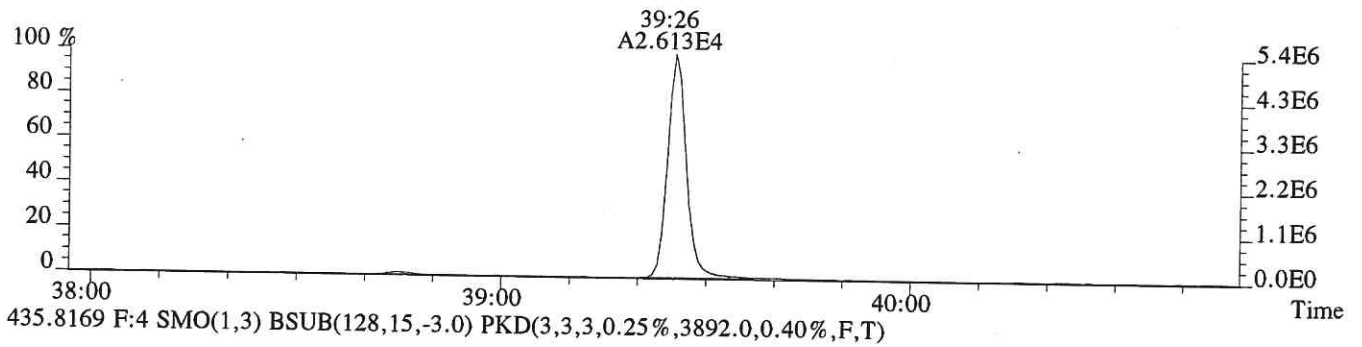
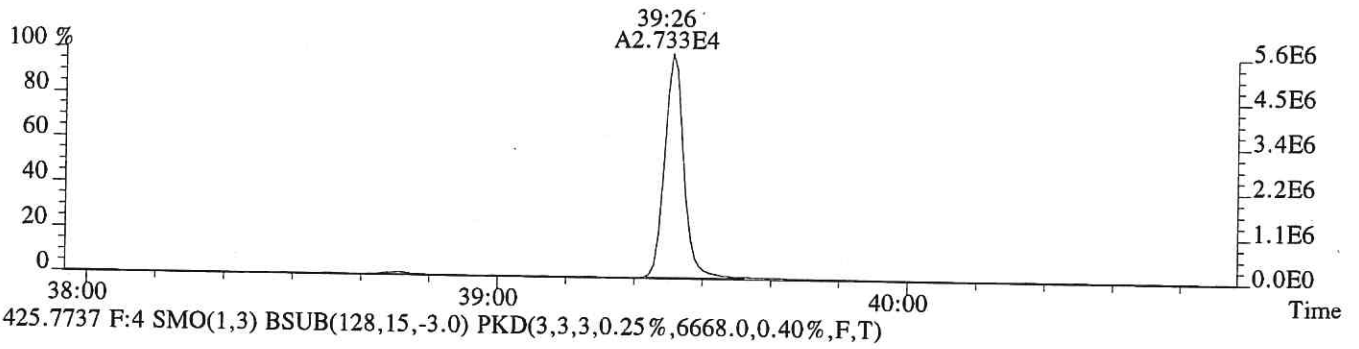
File:P523646 #1-299 Acq:16-AUG-2019 19:50:16 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:201833
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5052.0,0.40%,F,T)



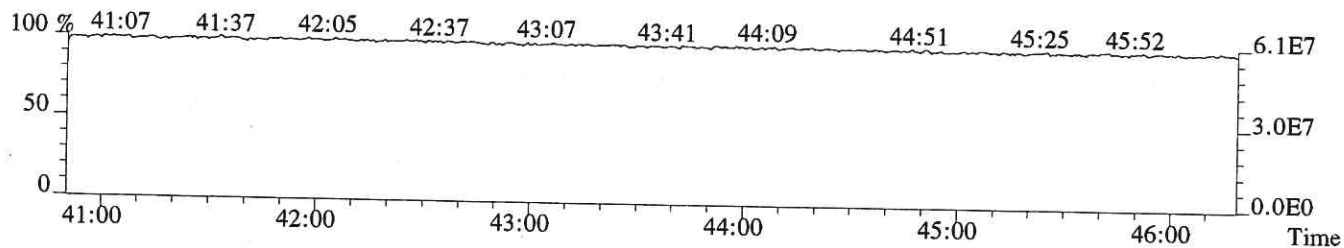
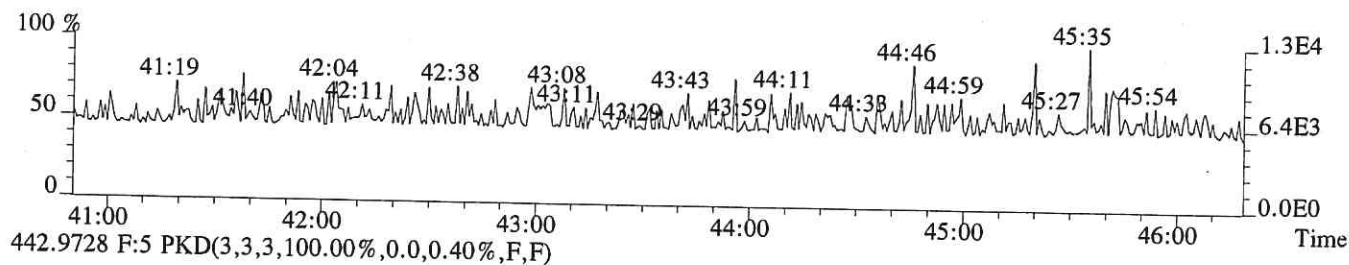
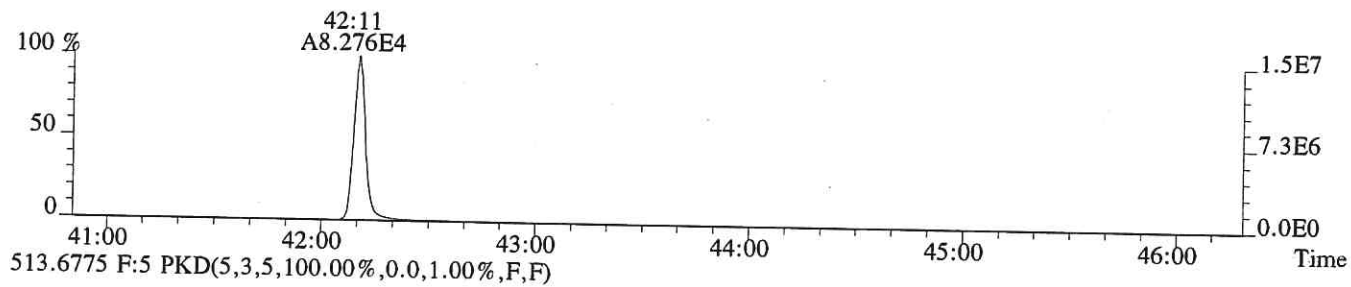
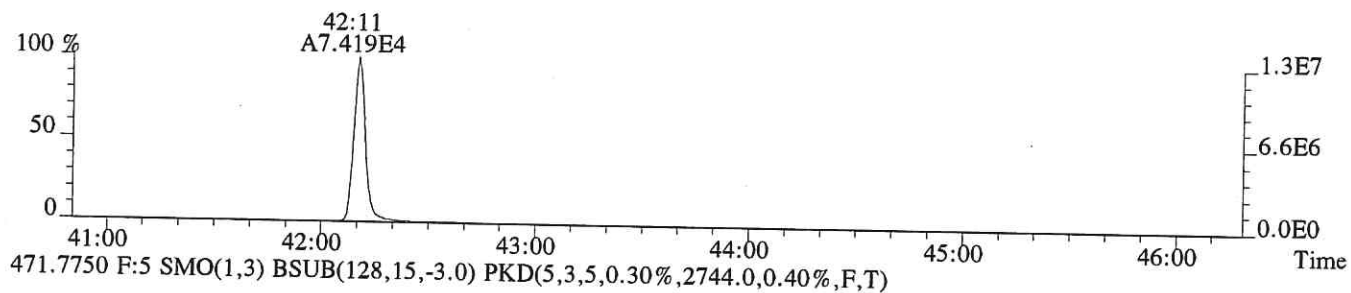
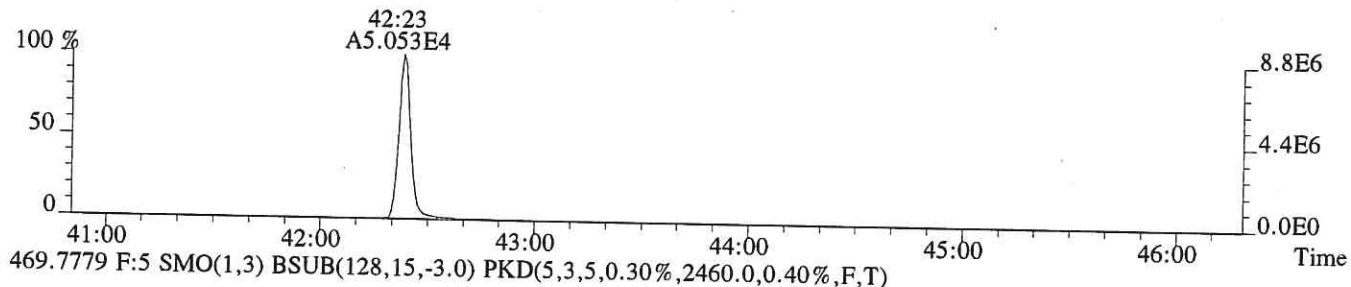
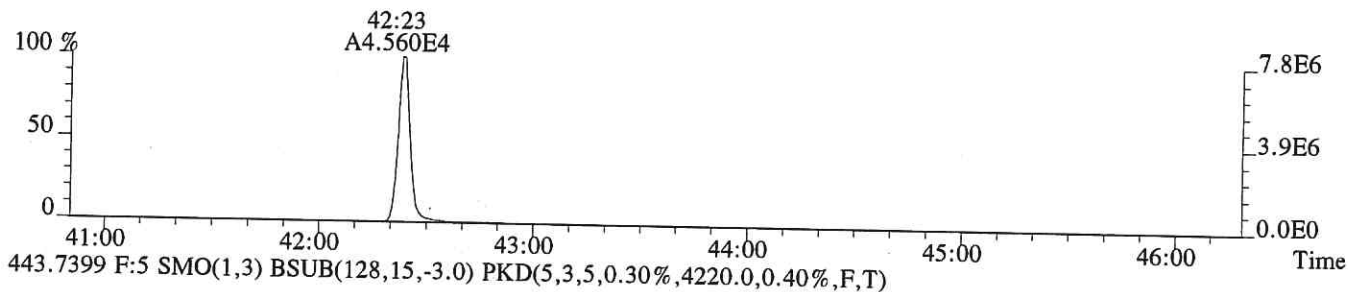
File:P523646 #1-258 Acq:16-AUG-2019 19:50:16 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:201833
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,12632.0,0.50%,F,T)



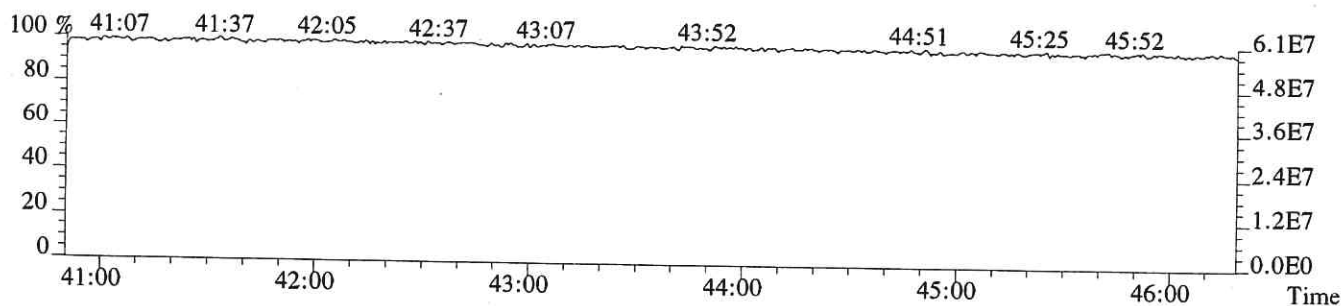
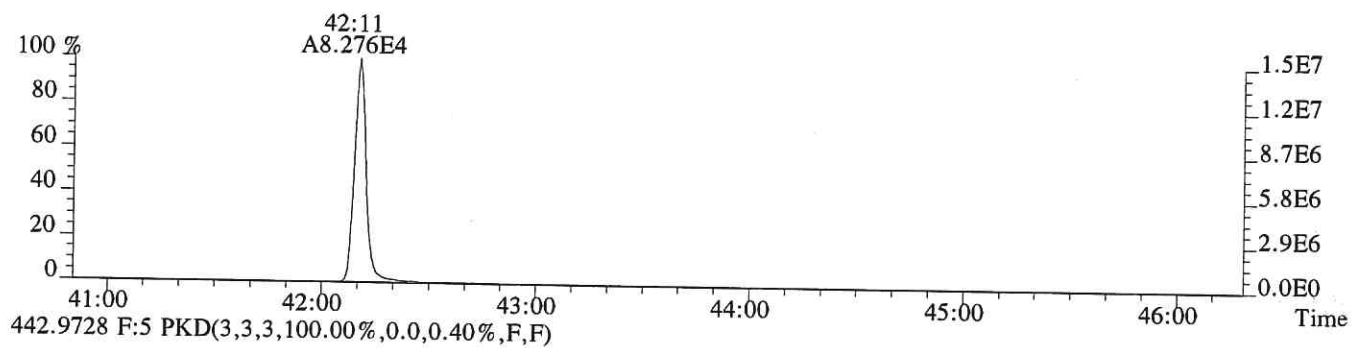
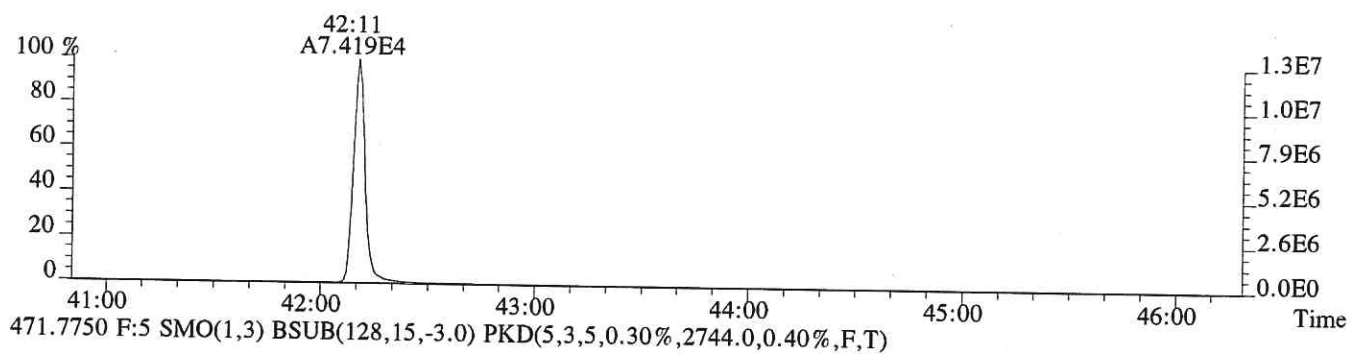
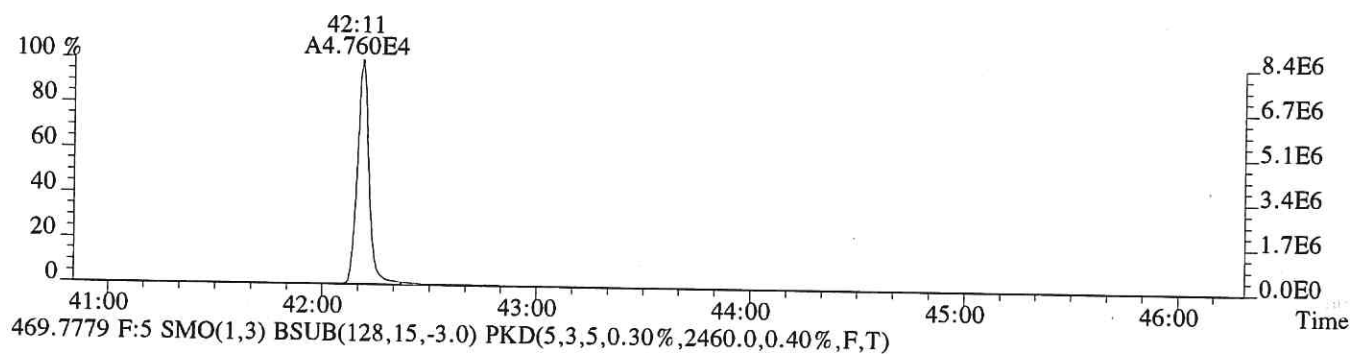
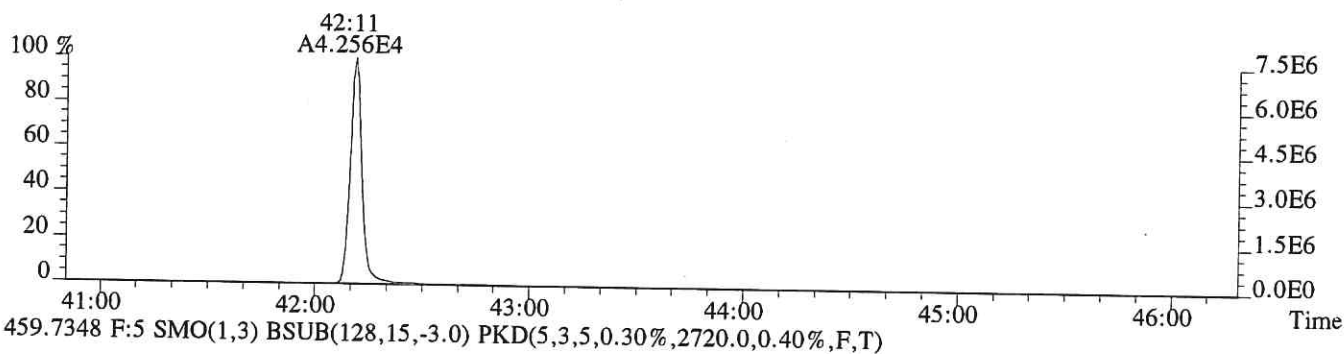
File:P523646 #1-258 Acq:16-AUG-2019 19:50:16 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:201833
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,7688.0,0.40%,F,T)



File:P523646 #1-493 Acq:16-AUG-2019 19:50:16 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:201833
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3048.0,0.40%,F,T)



File:P523646 #1-493 Acq:16-AUG-2019 19:50:16 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:201833
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2620.0,0.40%,F,T)



CCAL HRCC3/CS3 Daily Calibration QC Checklist

Calibration File Name: PG1863L PG18642

Date: 08/20/19

Circle one: Beginning / Ending

Method: 1613 / 1613E / 8290 VCP / Tetra / TCDD Only / TCDF Conf / VCP Conf / 8280 / M23 / TO-9A

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 its closest eluters	✓	✓
No QC ion deflections affect column specific 2378 isomer or its closest eluters (HRMS Only)	✓	✓

CS3 Continuing Calibration Analyst Second Check

Percent RSD within method criteria	✓	✓
All relative abundance ratios meet method criteria	✓	✓
No QC ion deflections of greater than 20% (HRMS Only)	✓	✓
Mass spectrometer resolution greater than or equal to 10,000 and documented (HRMS Only)	✓	✓
2378-TCDD elutes at 25 minutes or later on the DB-5 column / DB-5MSUI column	✓	✓
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% (LRMS Only)	N/A	N/A
Ending Calibration injected prior to end of 12 hour clock	✓	✓

Analyst: LKL

Second QC: WJ

5DFC
PCDD/PCDF ANALYTICAL SEQUENCE SUMMARY

Lab Name: ALS ENVIRONMENTAL

Contract:

Lab Code:

Case No.:

Client No.:

SDG No.:

GC Column: DB-5MSUI

ID: 0.25 (mm)

Init. Calib. Date: 08/01/19

Init. Calib. Times: 13:37

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
192977	WINDOW DEFINE	P618632	20-AUG-19	13:00:52
201833	CS3	P618631	20-AUG-19	12:12:34
201833	CS3	P618642	20-AUG-19	22:09:31
METHOD BLANK	EQ1900283-01	P618633	20-AUG-19	14:39:08
SS006EB001-080819	E1900591-005	P618634	20-AUG-19	15:28:17
BS-1-190813	E1900593-001	P618635	20-AUG-19	16:17:23
BS-2-190813	E1900593-002	P618636	20-AUG-19	17:06:34
BS-3-190813	E1900593-003	P618637	20-AUG-19	17:55:41
BS-4-190813	E1900593-004	P618638	20-AUG-19	18:44:47
BS-5-190813	E1900593-005	P618639	20-AUG-19	19:33:56
BS-6-190813	E1900593-006	P618640	20-AUG-19	20:23:04
BS-7-190813	E1900593-007	P618641	20-AUG-19	21:12:13

Sample List Report

MassLynx 4.1 SCN815 SCN795

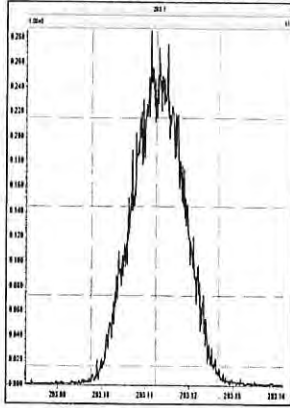
Sample List: C:\MassLynx\EHRMS08.PRO\SampleDB\20190820B.SPL
 Last Modified: Wednesday, August 21, 2019 08:12:09 Central Daylight Time
 Printed: Wednesday, August 21, 2019 08:12:13 Central Daylight Time

OPUS 5 NET: P618631 RES

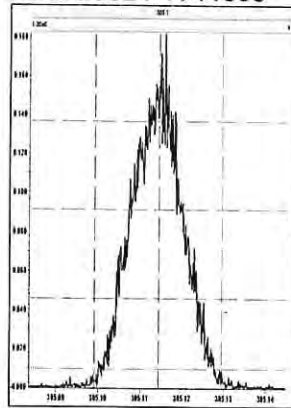
Date	Time	File Name	Sample ID	File Text	MS File	Inlet File	Bottle	Analyst	Comments
08/20/19	12:12	P618631	201833	CS3	EPA1613_ALS	Dioxin_ALS	Tray1:2	JC	HRMS CHECK 12:12
	13:00	P618632	192977	WINDOW DEFINE	EPA1613_ALS	Dioxin_ALS	Tray1:1		
	14:39	P618633	EQ1900283-01	MB	EPA1613_ALS	Dioxin_ALS	Tray1:3		
	15:28	P618634	E1900591-005	E1900591-005	EPA1613_ALS	Dioxin_ALS	Tray1:4		
	16:17	P618635	E1900593-001	E1900593-001	EPA1613_ALS	Dioxin_ALS	Tray1:5		Needs Re-injection
	17:06	P618636	E1900593-002	E1900593-002	EPA1613_ALS	Dioxin_ALS	Tray1:6		
	17:55	P618637	E1900593-003	E1900593-003	EPA1613_ALS	Dioxin_ALS	Tray1:7		
	18:44	P618638	E1900593-004	E1900593-004	EPA1613_ALS	Dioxin_ALS	Tray1:8		
	19:33	P618639	E1900593-005	E1900593-005	EPA1613_ALS	Dioxin_ALS	Tray1:9		Needs Re-injection
	20:23	P618640	E1900593-006	E1900593-006	EPA1613_ALS	Dioxin_ALS	Tray1:10		
	21:12	P618641	E1900593-007	E1900593-007	EPA1613_ALS	Dioxin_ALS	Tray1:11		
	22:09	P618642	201833	CS3	EPA1613_ALS	Dioxin_ALS	Tray1:2		HRMS CHECK 22:09

LKL 08/22/19

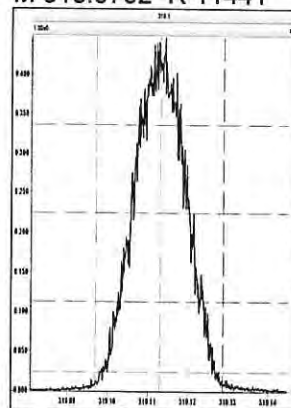
M 292.9824 R 11344



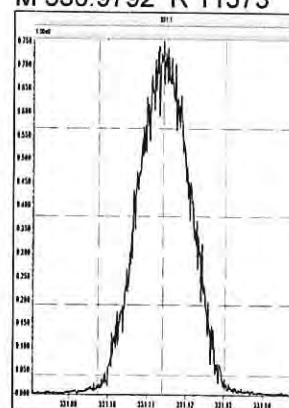
M 304.9824 R 11808



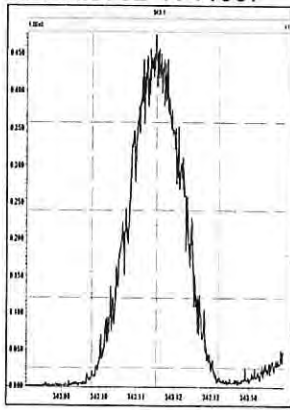
M 318.9792 R 11441



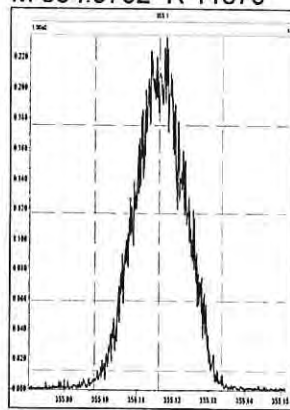
M 330.9792 R 11573



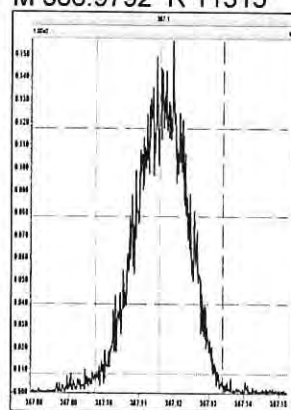
M 342.9792 R 11337



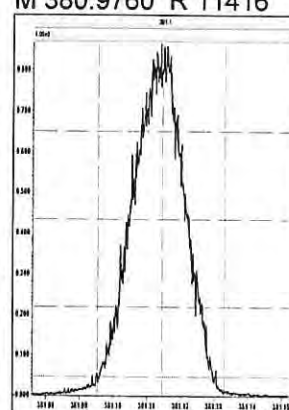
M 354.9792 R 11879



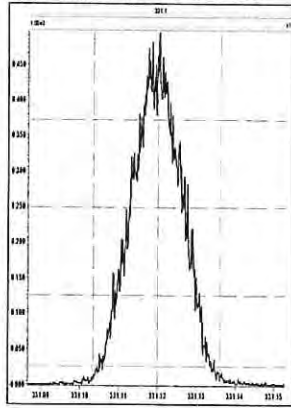
M 366.9792 R 11315



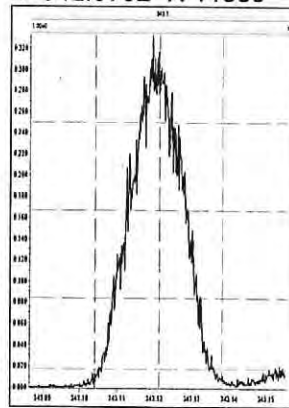
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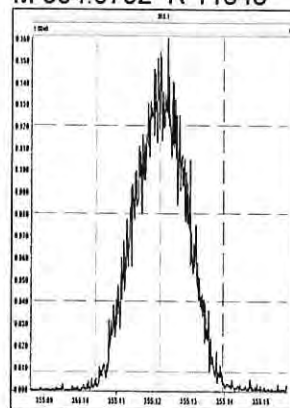
M 330.9792 R 11236



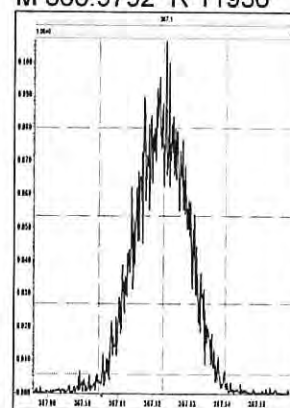
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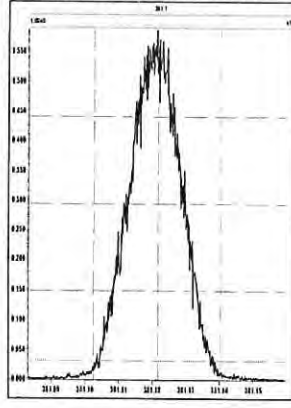
M 354.9792 R 11848



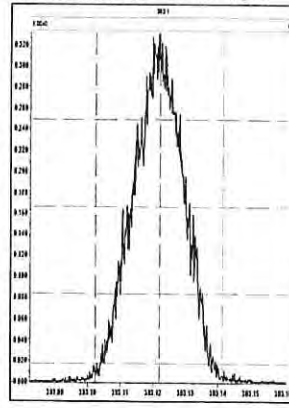
M 366.9792 R 11936



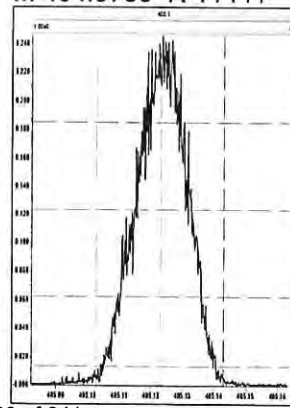
M 380.9760 R 11418



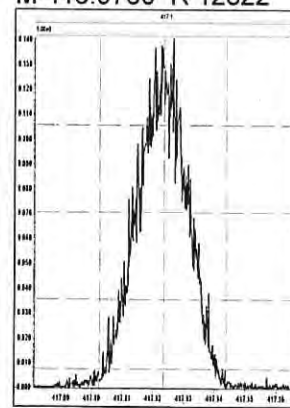
M 392.9760 R 11494



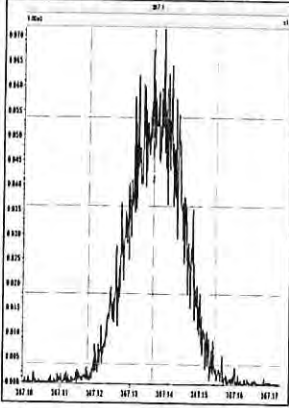
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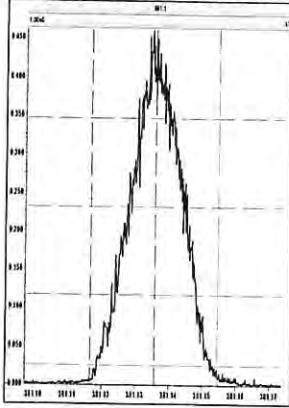
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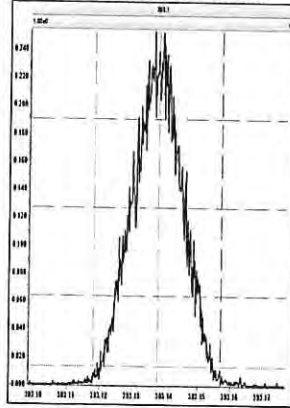
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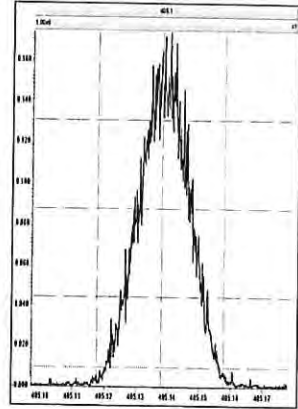
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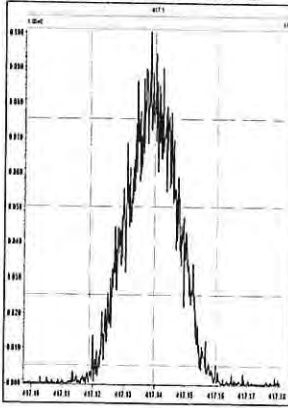
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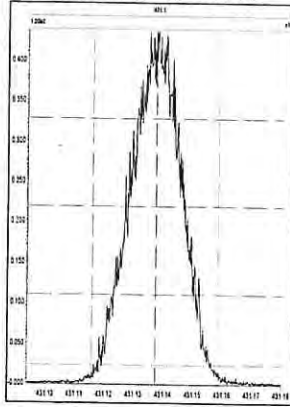
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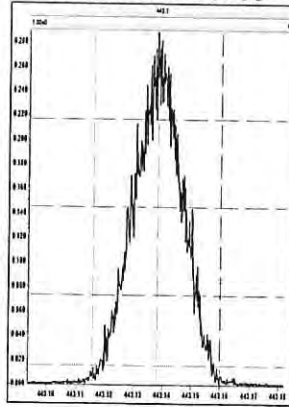
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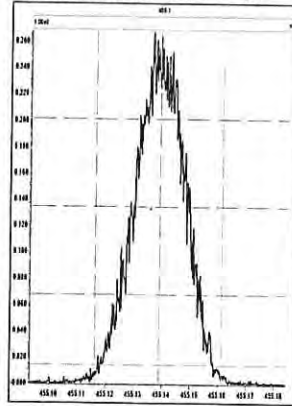
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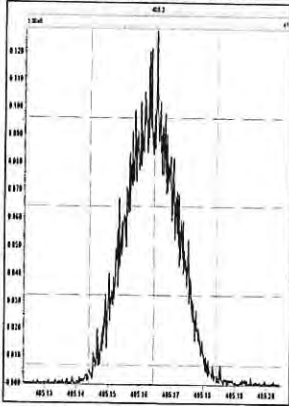
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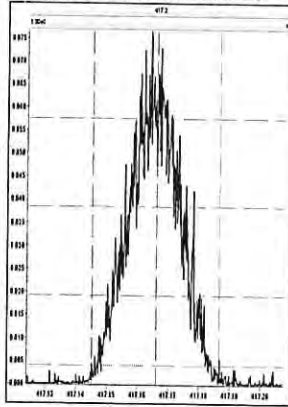
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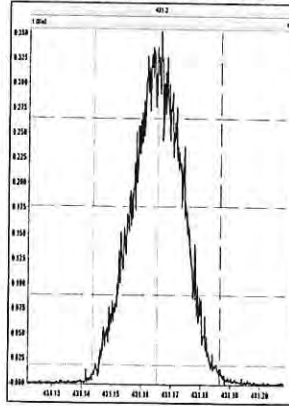
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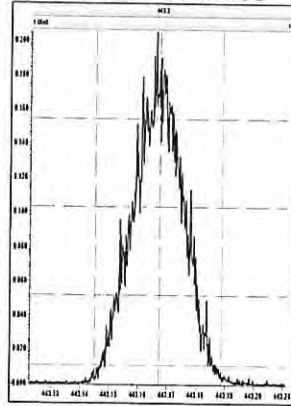
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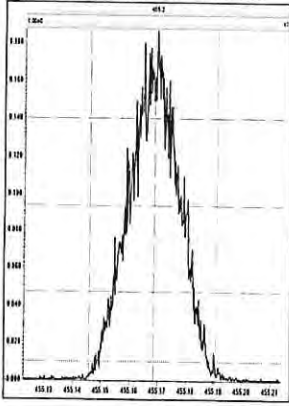
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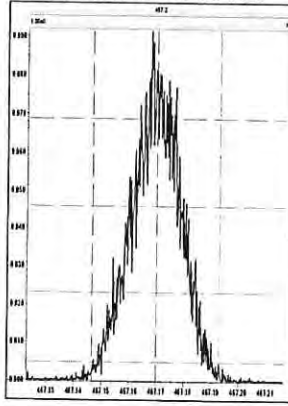
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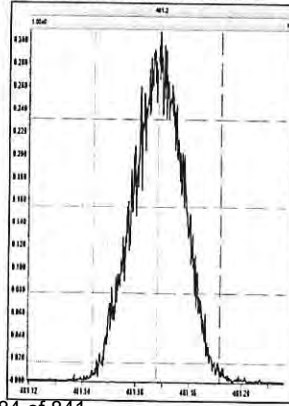
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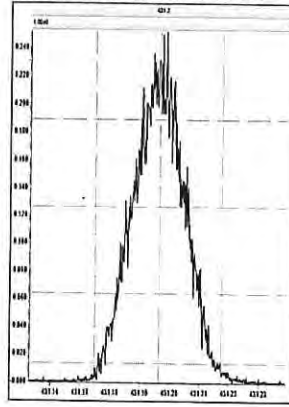
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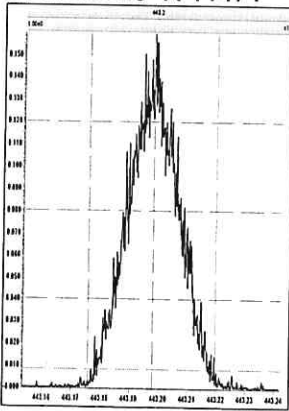
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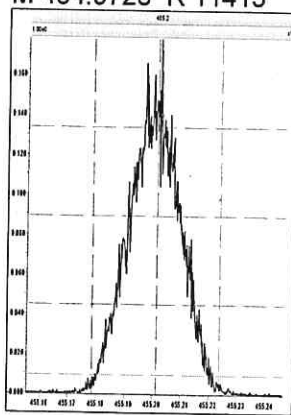
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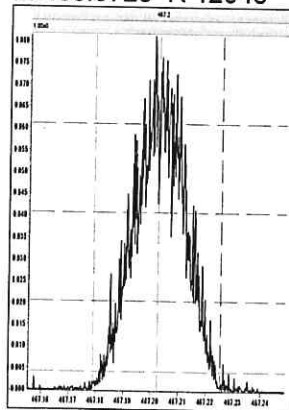
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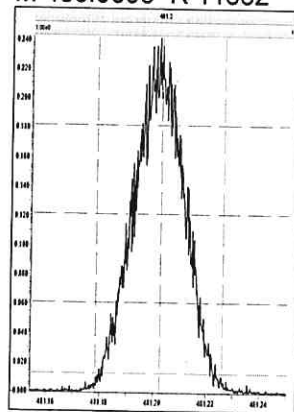
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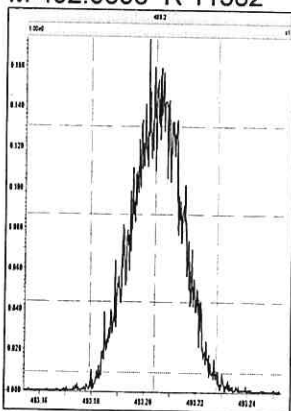
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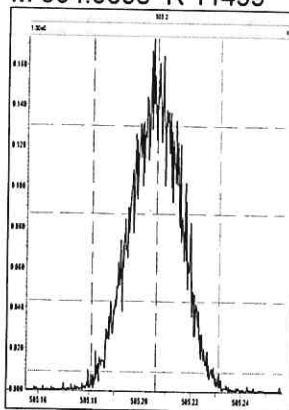
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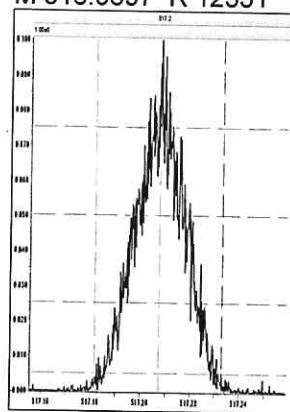
M 492.9696 R 11582



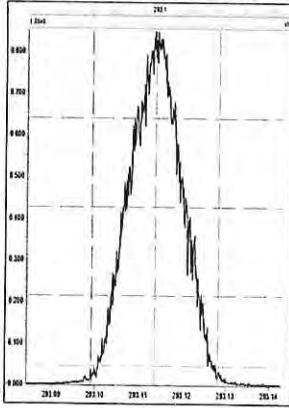
M 504.9696 R 11499



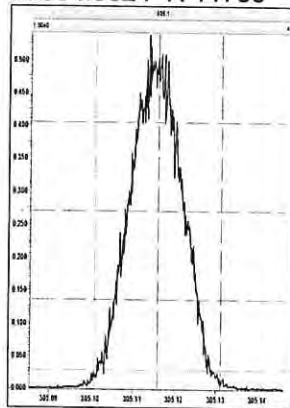
M 516.9697 R 12351



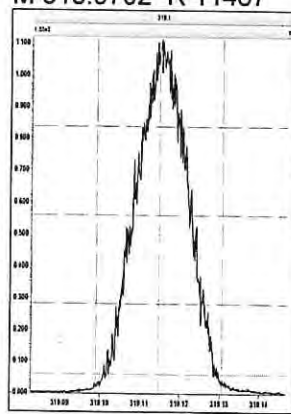
M 292.9824 R 11188



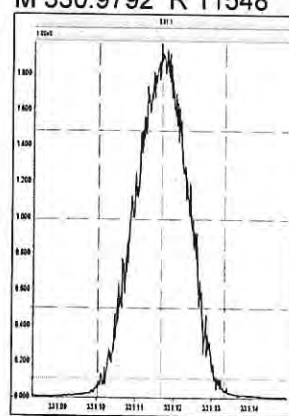
M 304.9824 R 11788



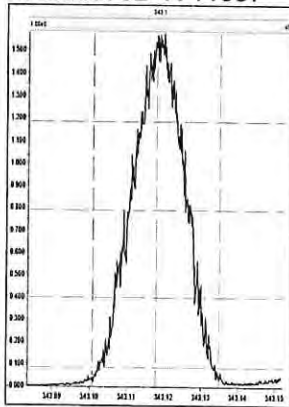
M 318.9792 R 11467



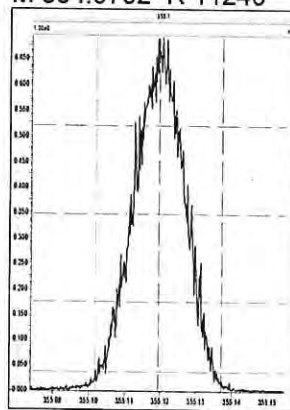
M 330.9792 R 11548



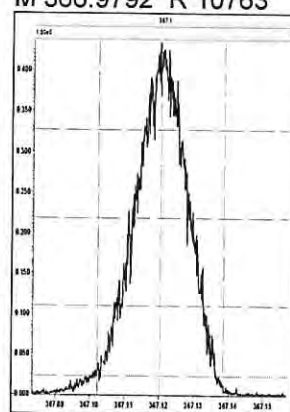
M 342.9792 R 11037



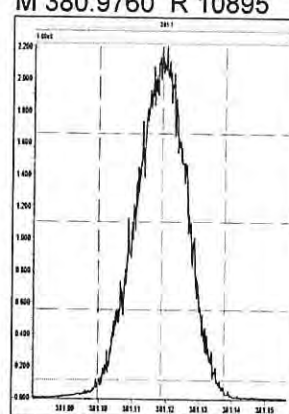
M 354.9792 R 11240



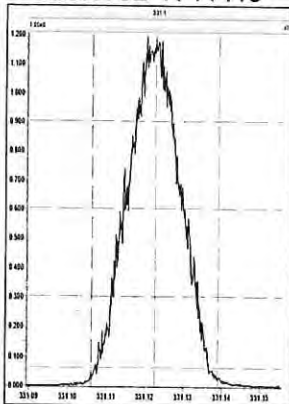
M 366.9792 R 10763



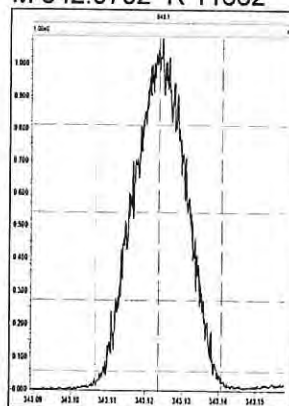
M 380.9760 R 10895



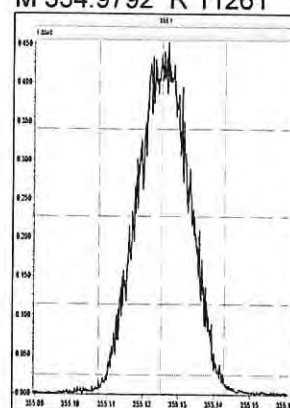
M 330.9792 R 11415



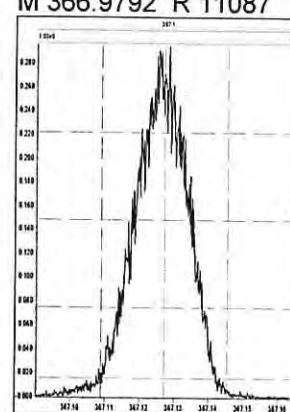
M 342.9792 R 11662



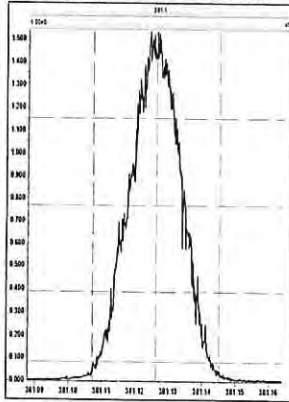
M 354.9792 R 11261



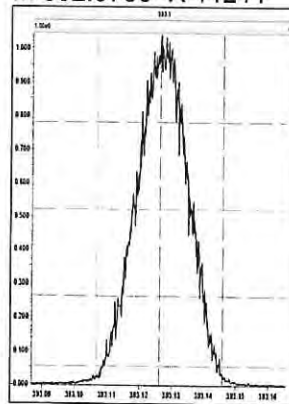
M 366.9792 R 11087



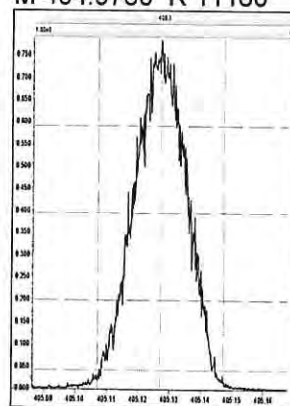
M 380.9760 R 11338



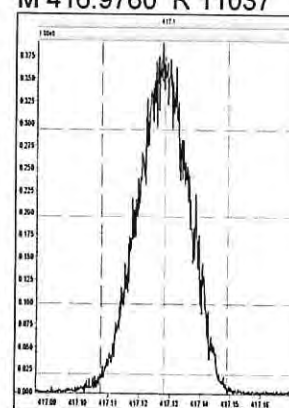
M 392.9760 R 11211



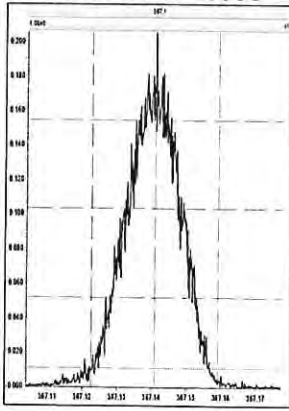
M 404.9760 R 11160



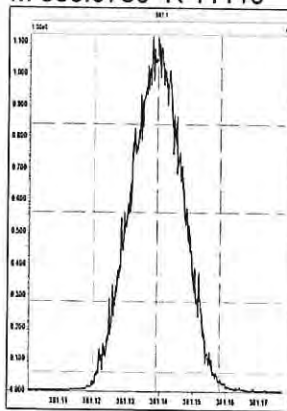
M 416.9760 R 11037



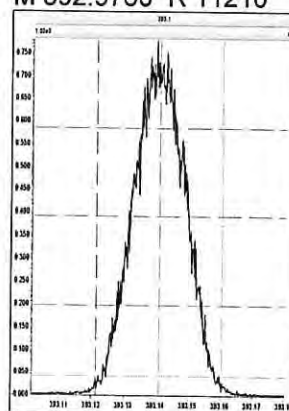
M 366.9792 R 10990



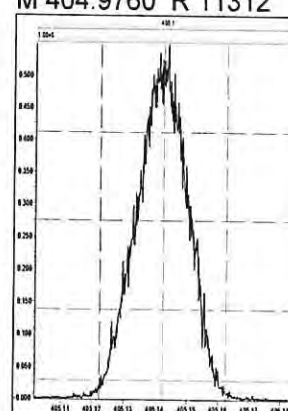
M 380.9760 R 11110



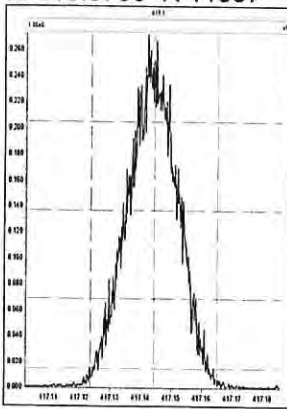
M 392.9760 R 11210



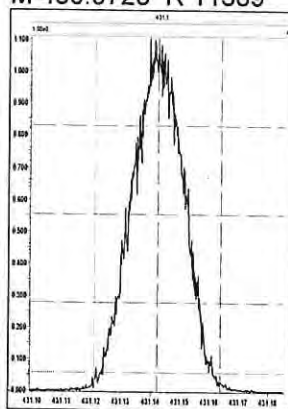
M 404.9760 R 11312



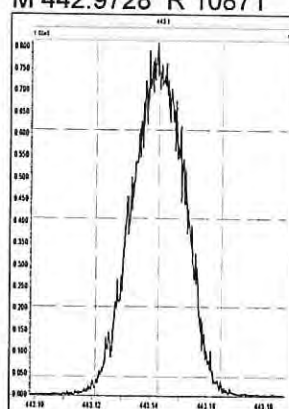
M 416.9760 R 11337



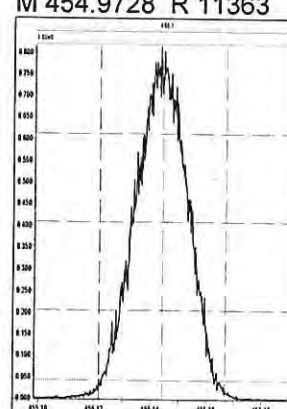
M 430.9728 R 11389



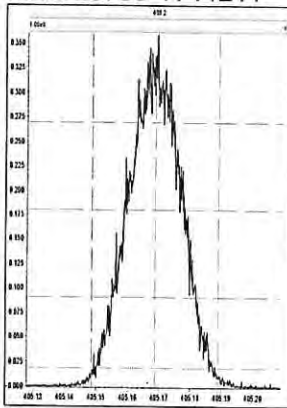
M 442.9728 R 10871



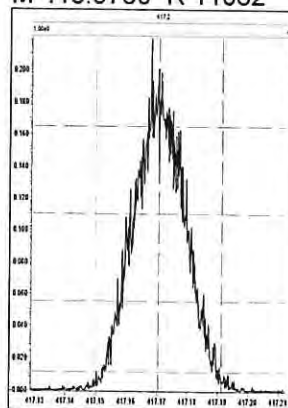
M 454.9728 R 11363



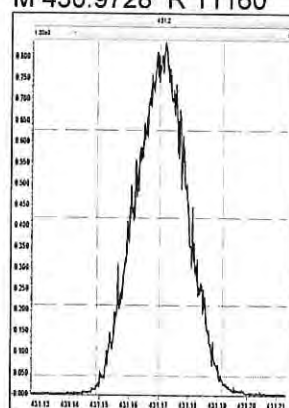
M 404.9760 R 11211



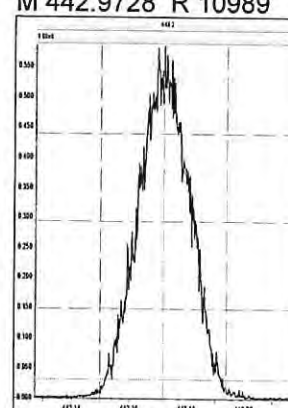
M 416.9760 R 11062



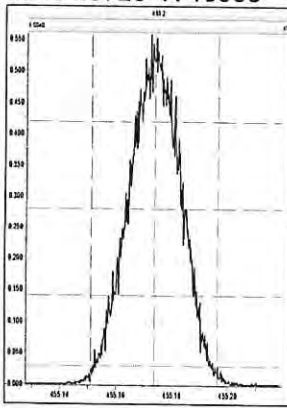
M 430.9728 R 11160



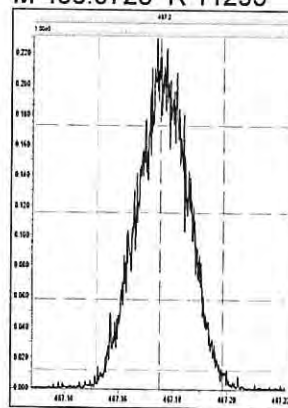
M 442.9728 R 10989



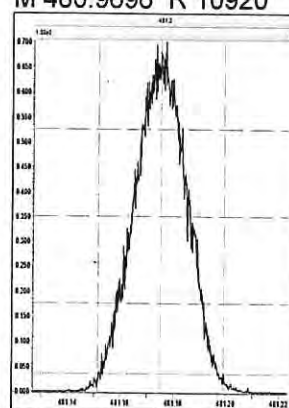
M 454.9728 R 10965



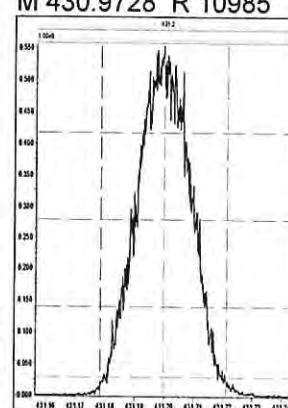
M 466.9728 R 11295



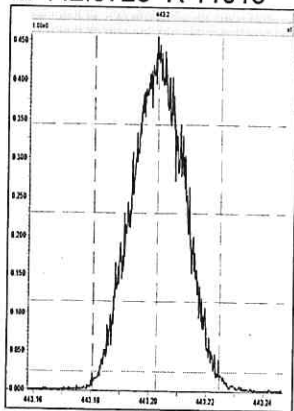
M 480.9696 R 10920



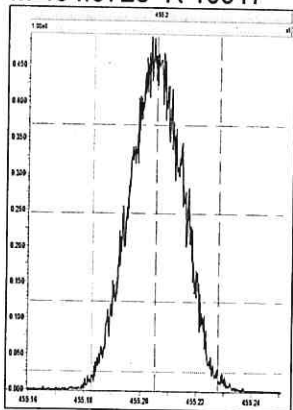
M 430.9728 R 10985



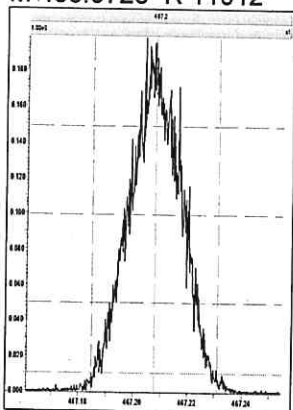
M 442.9728 R 11013



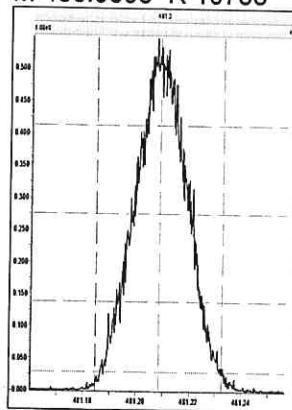
M 454.9728 R 10917



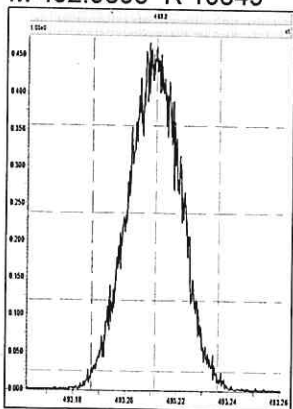
M 466.9728 R 11012



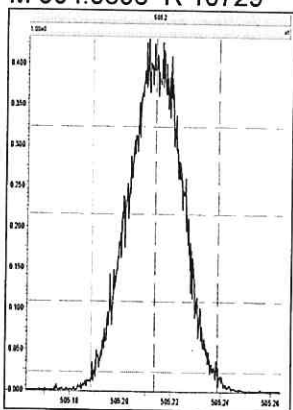
M 480.9696 R 10753



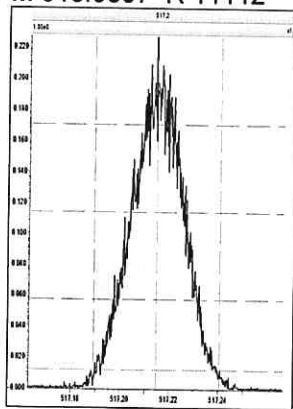
M 492.9696 R 10849



M 504.9696 R 10729



M 516.9697 R 11112



5DFA

WINDOW DEFINING MIX SUMMARY

CLIENT ID:

WDM

Lab Name: ALS Environmental
Lab Code: ALSTX
GC Column: DB-5MSUI

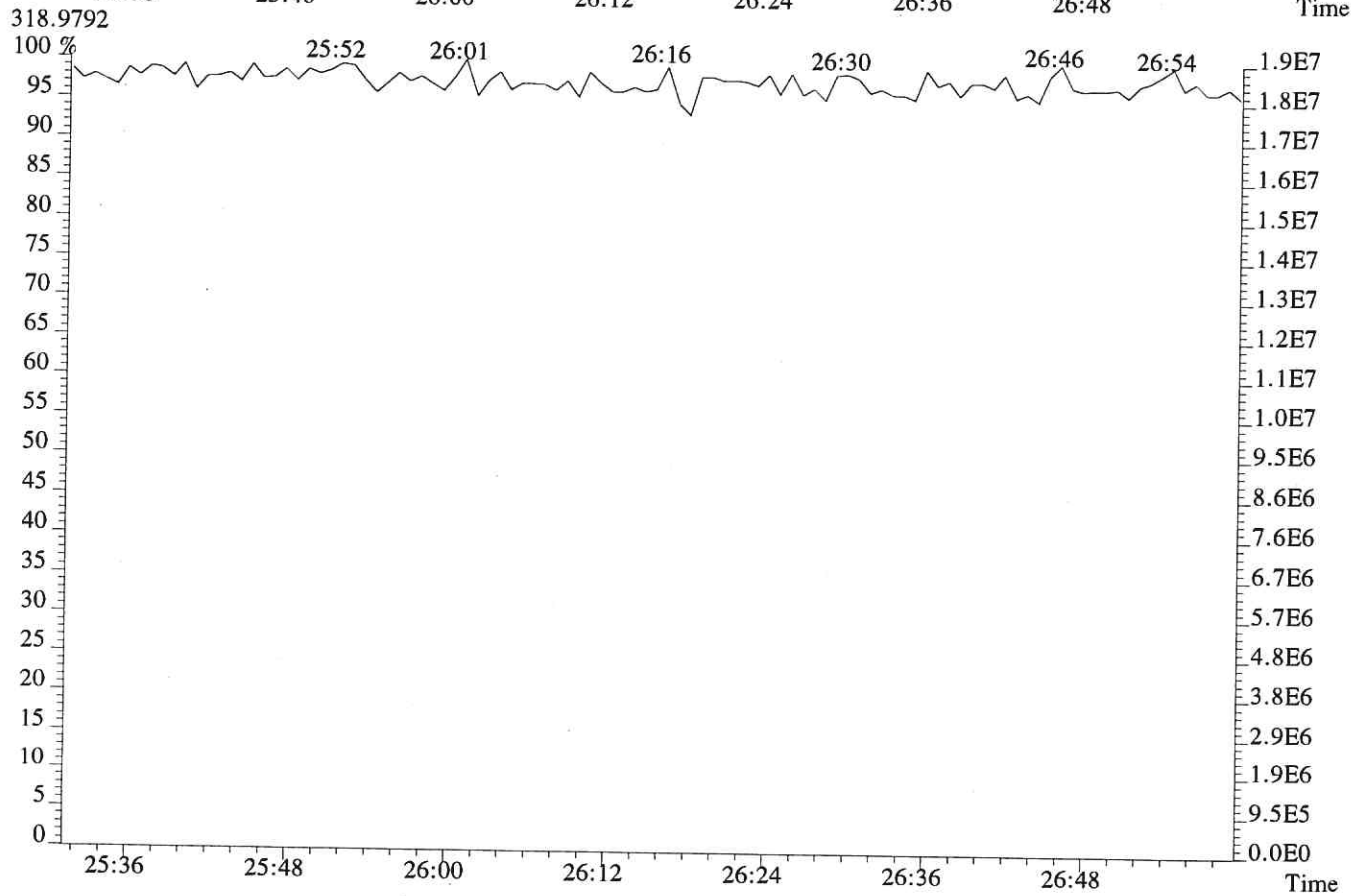
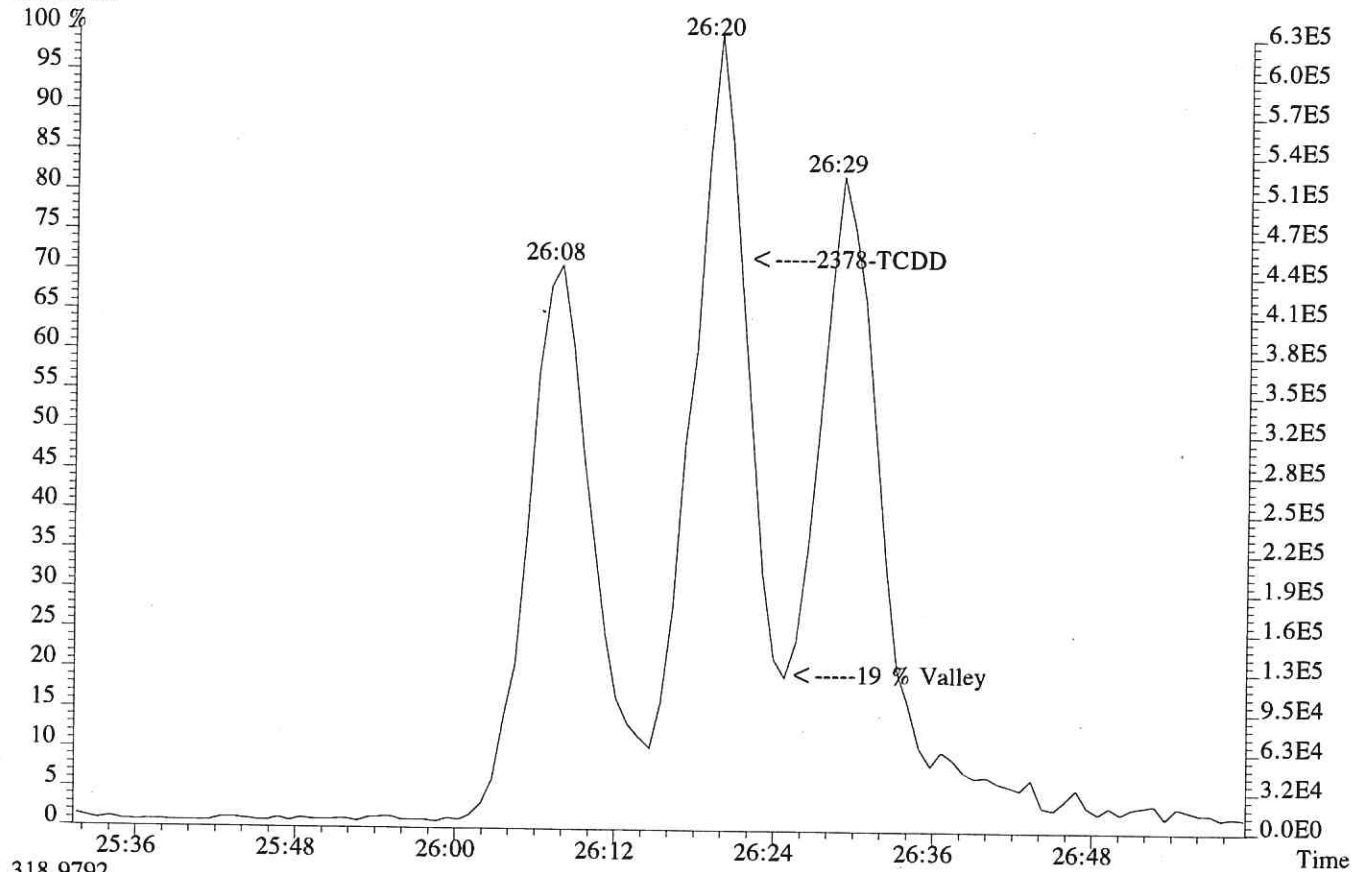
Case No.: _____ SDG No.: _____
ID: 0.25 (mm) Lab File ID: P618632
Date Analyzed: 20-AUG-19
Time Analyzed: 13:00:52

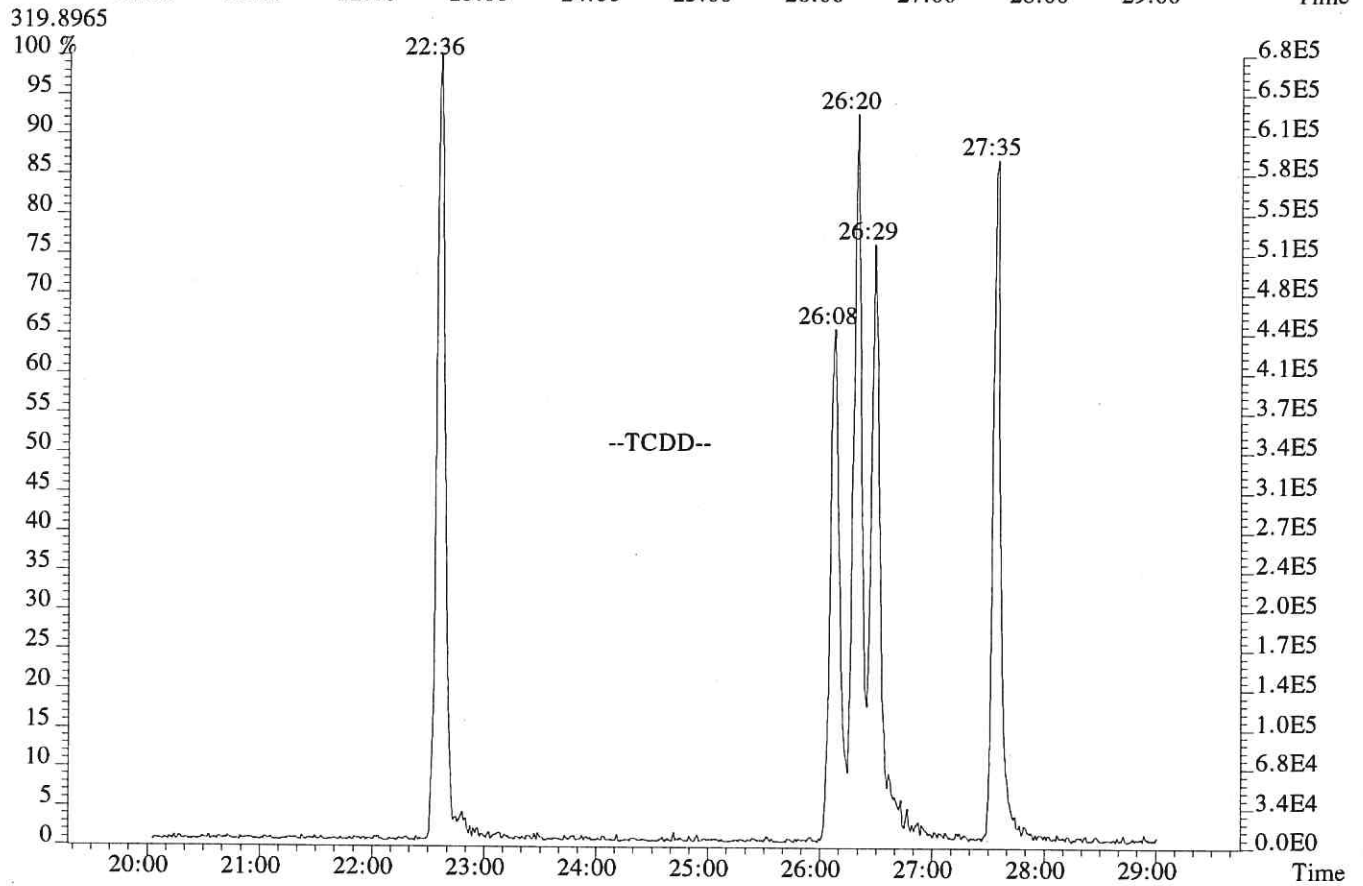
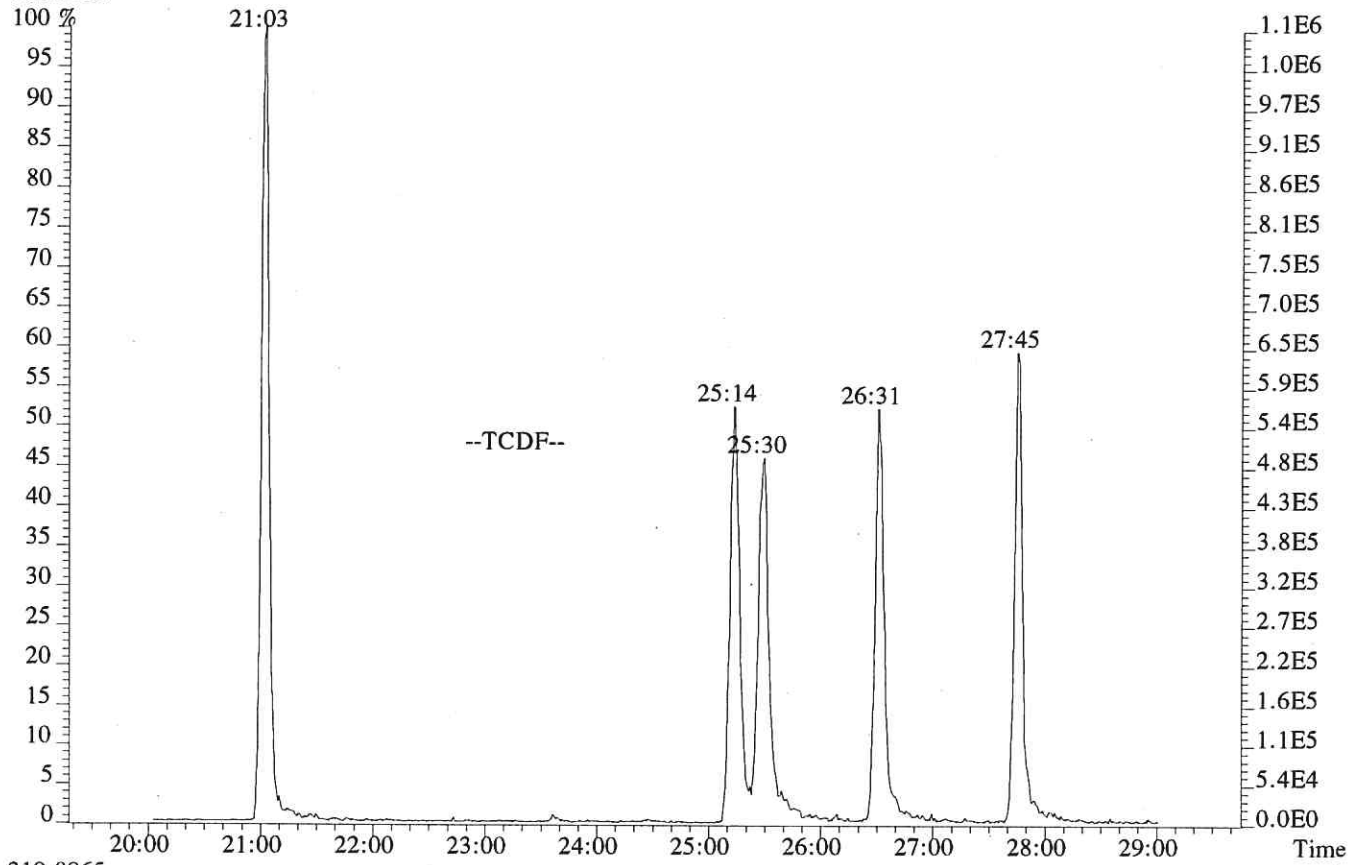
Congener	Retention Time First Eluting	Retention Time Last Eluting
TCDF	21:03	27:45
TCDD	22:36	27:35
PeCDF	27:42	32:31
PeCDD	29:31	32:15
HxCDF	33:14	35:52
HxCDD	33:48	35:28
HpCDF	37:08	38:27
HpCDD	37:23	38:02

% Valley 2378-TCDD:

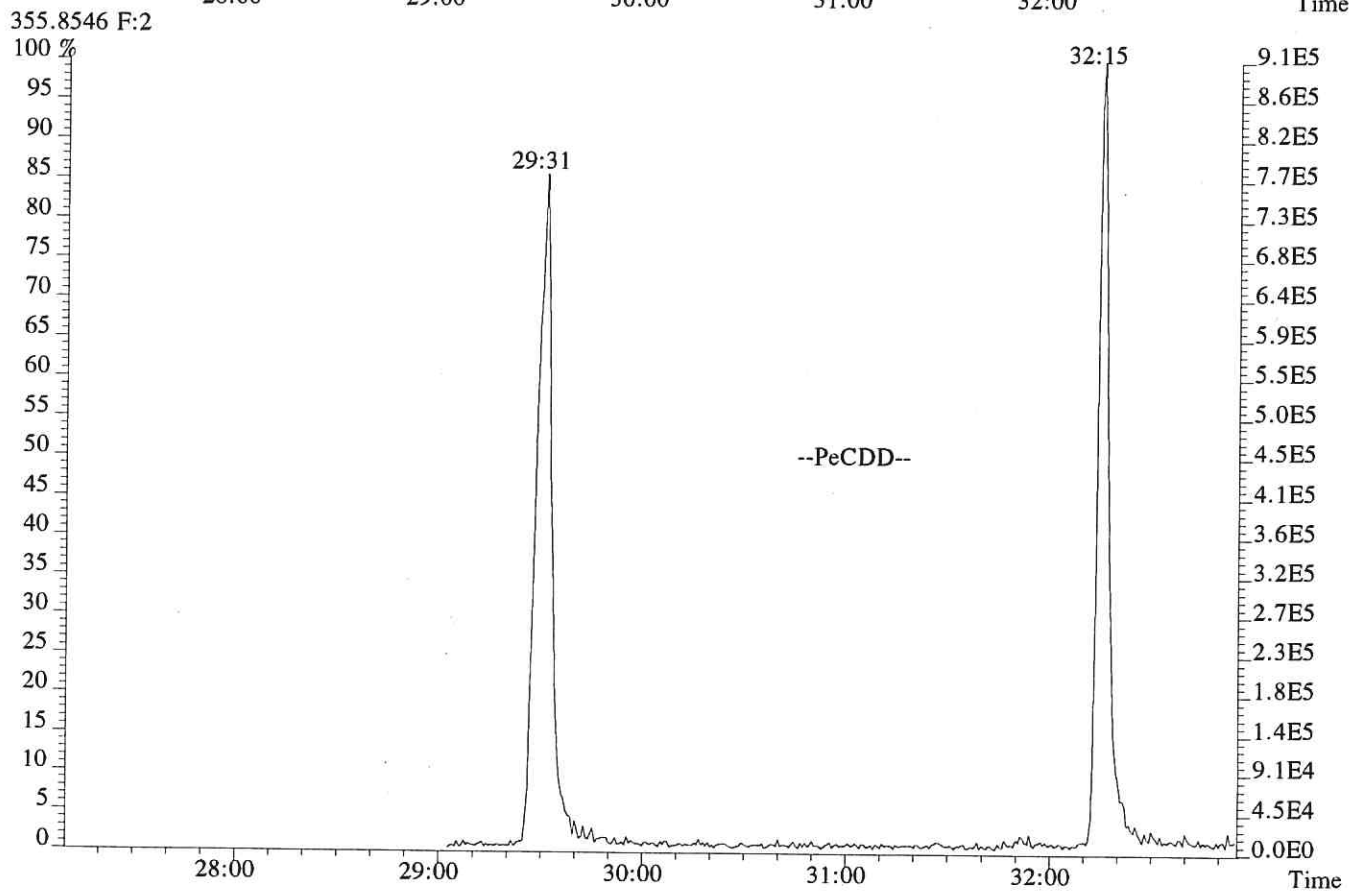
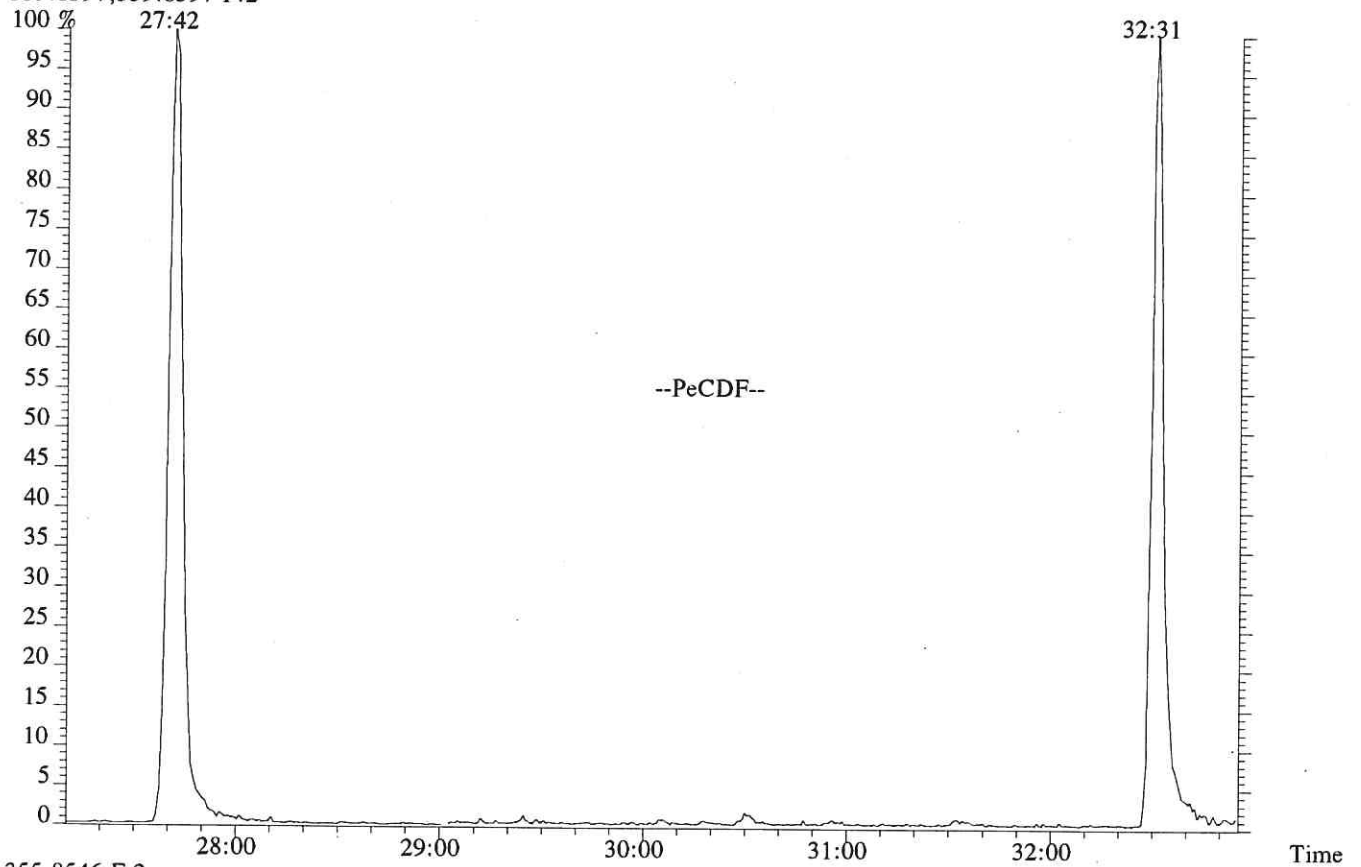
19 %

File: P618632 #1-637 Acq: 20-AUG-2019 13:00:52 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: WINDOW DEFINE
319.8965

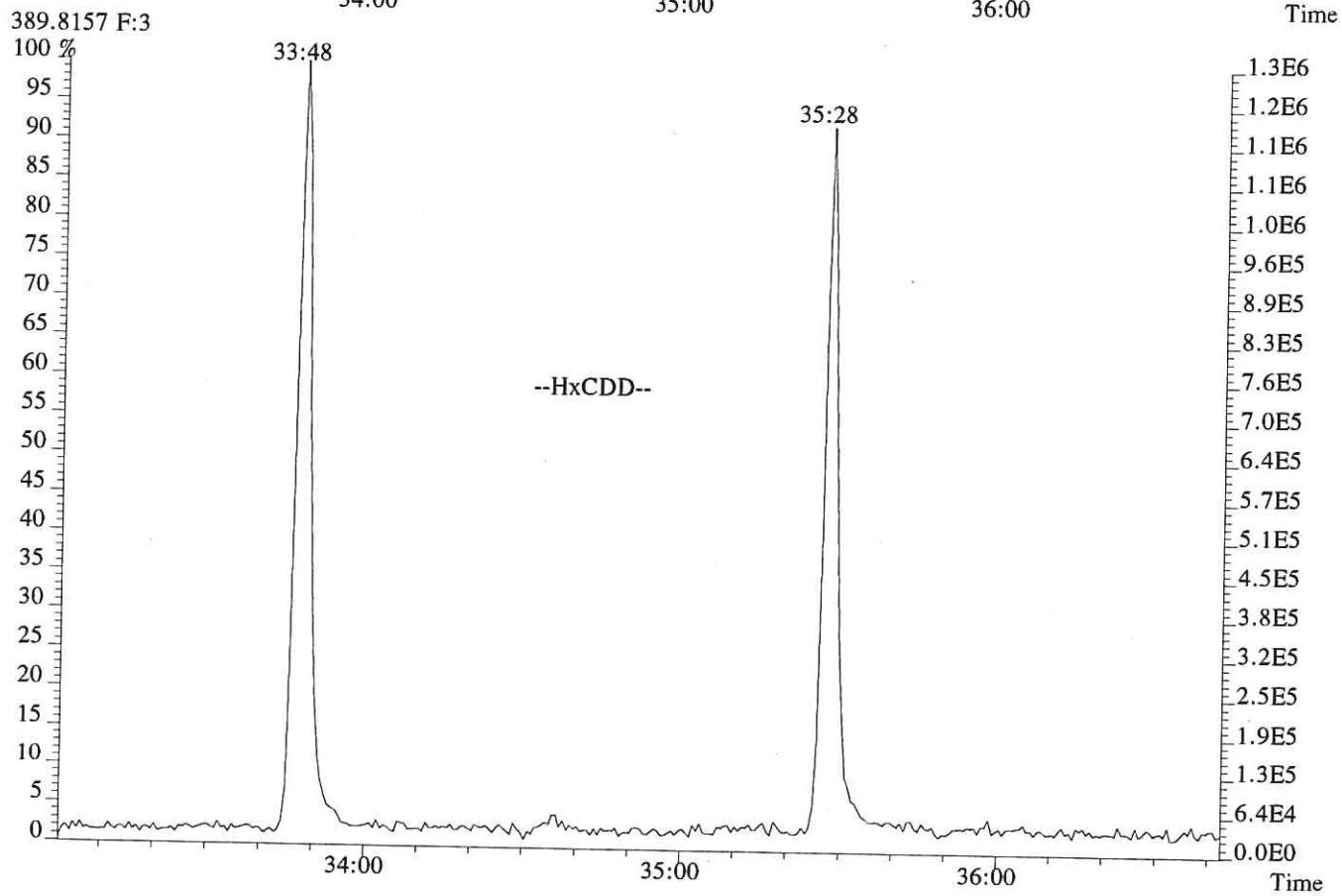
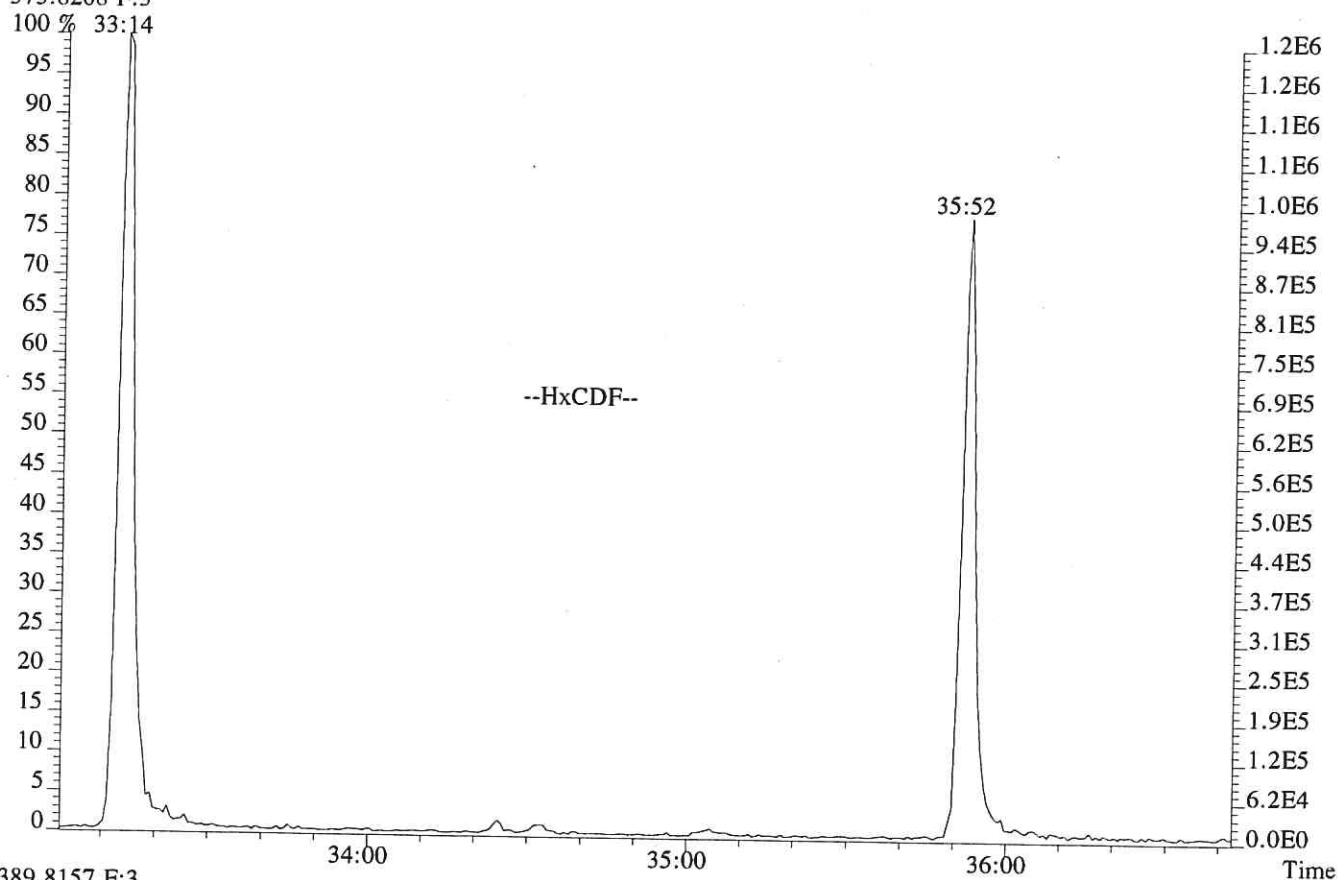




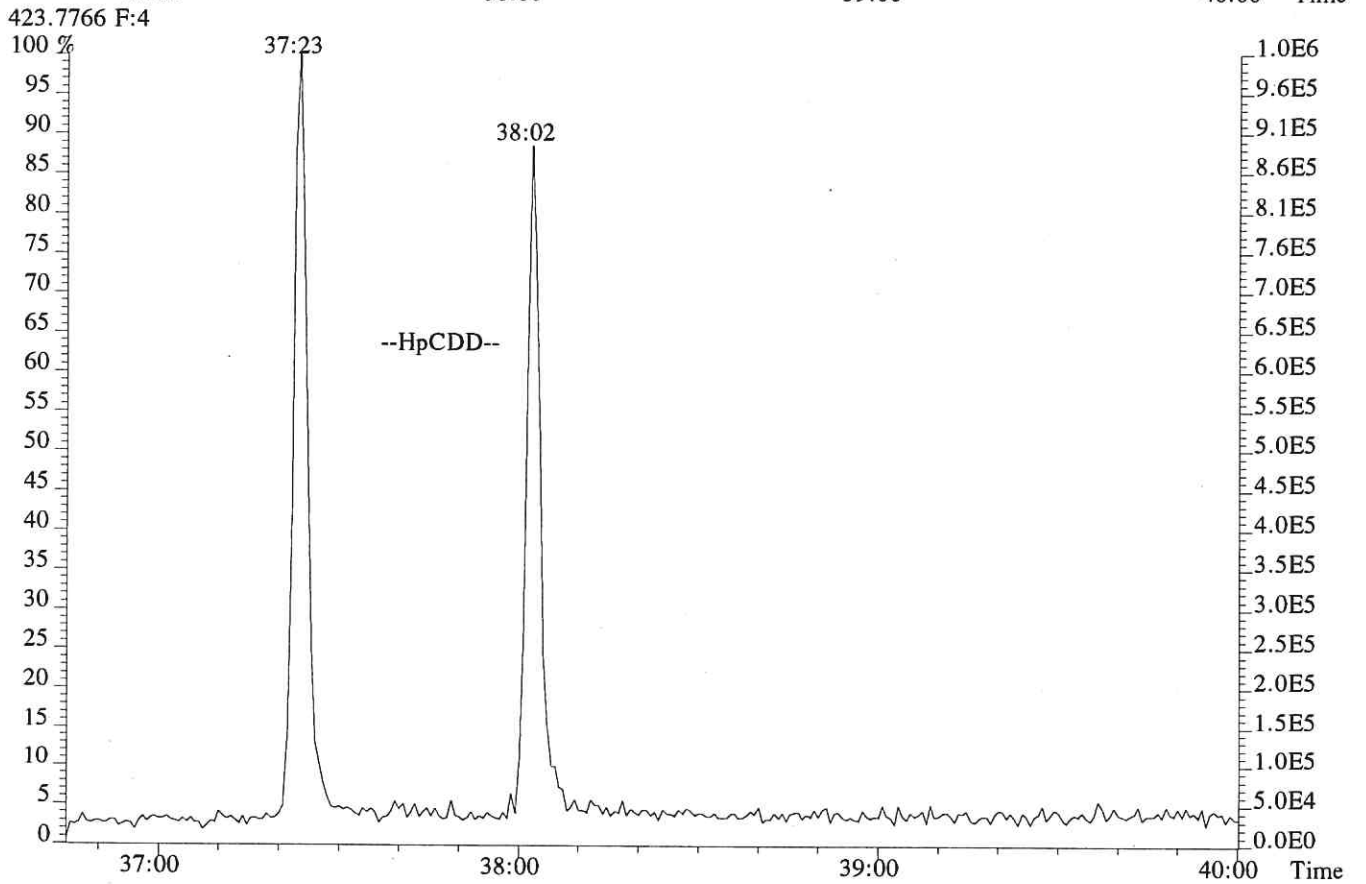
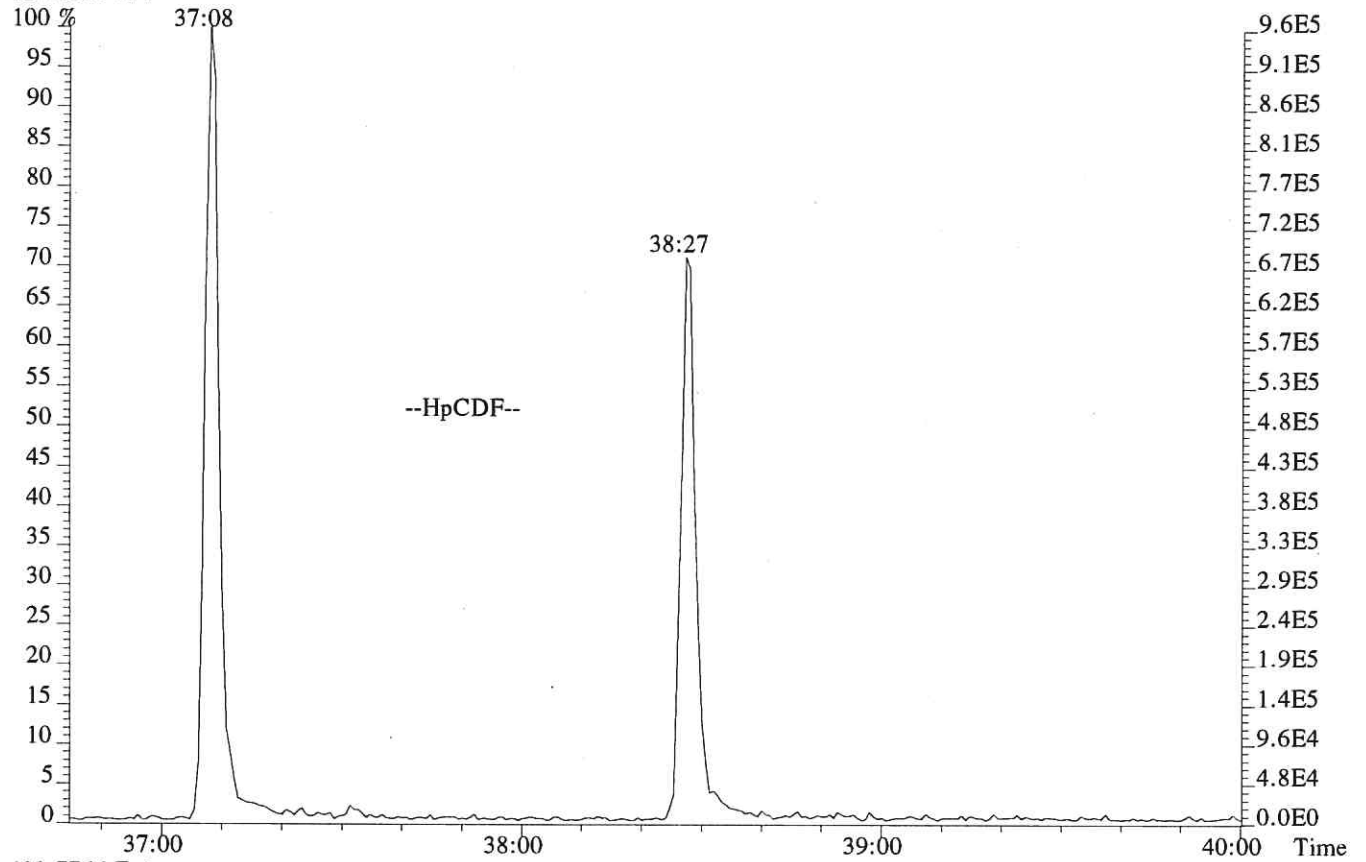
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Sample#1 Exp: WINDOW DEFINE
339.8597, 339.8597 F: 2



File:P618632 #1-637 Acq:20-AUG-2019 13:00:52 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:WINDOW DEFINE
373.8208 F:3



File:P618632 #1-637 Acq:20-AUG-2019 13:00:52 Probe EI+ Magnet SIR VG BioTech Mass spectE
Sample#1 Exp:WINDOW DEFINE
407.7818 F:4



USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 08/01/19

Instrument ID: E-HRMS-08

GC Column ID: DB-5MSUI

VER Data Filename: P618631

Analysis Date: 20-AUG-19 Time: 12:12:34

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (4)
2,3,7,8-TCDD	M/M+2	0.78	0.65-0.89	8.9	7.8 - 12.9	-10.5
1,2,3,7,8-PeCDD	M+2/M+4	1.59	1.32-1.78	49	39 - 65	-2.7
1,2,3,4,7,8-HxCDD	M+2/M+4	1.23	1.05-1.43	48	39 - 64	-3.8
1,2,3,6,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	48	39 - 64	-3.9
1,2,3,7,8,9-HxCDD	M+2/M+4	1.35	1.05-1.43	49	41 - 61	-3.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.06	0.88-1.20	45	43 - 58	-9.6
OCDD	M+2/M+4	0.87	0.76-1.02	99	79 - 126	-0.7
2,3,7,8-TCDF	M/M+2	0.77	0.65-0.89	8.7	8.4 - 12.0	-12.8
1,2,3,7,8-PeCDF	M+2/M+4	1.52	1.32-1.78	51	41 - 60	1.7
2,3,4,7,8-PeCDF	M+2/M+4	1.52	1.32-1.78	50	41 - 61	0.9
1,2,3,4,7,8-HxCDF	M+2/M+4	1.19	1.05-1.43	49	45 - 56	-2.1
1,2,3,6,7,8-HxCDF	M+2/M+4	1.21	1.05-1.43	50	44 - 57	-0.8
1,2,3,7,8,9-HxCDF	M+2/M+4	1.22	1.05-1.43	48	45 - 56	-3.4
2,3,4,6,7,8-HxCDF	M+2/M+4	1.18	1.05-1.43	49	44 - 57	-2.0
1,2,3,4,6,7,8-HpCDF	M+2/M+4	0.99	0.88-1.20	49	45 - 55	-2.3
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.02	0.88-1.20	45	43 - 58	-9.1
OCDF	M+2/M+4	0.88	0.76-1.02	101	63 - 159	1.1

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range as specified in Table 6, Method 1613B, under VER.

(4) 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, Method 8290

12/2012
1613F4A.FRM

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 08/01/19

Instrument ID: E-HRMS-08

GC Column ID: DB-5MSUI

VER Data Filename: P618631

Analysis Date: 20-AUG-19 Time: 12:12:34

LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (5)
13C-2,3,7,8-TCDD	M/M+2	0.78	0.65-0.89	99	82 - 121	-0.8
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.61	1.32-1.78	123	62 - 160	23.5
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	99	85 - 117	-1.0
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	101	85 - 118	1.4
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.05	0.88-1.20	111	72 - 138	11.3
13C-OCDD	M+2/M+4	0.90	0.76-1.02	214	96 - 415	6.9
13C-2,3,7,8-TCDF	M/M+2	0.77	0.65-0.89	98	71 - 140	-1.6
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.55	1.32-1.78	118	76 - 130	17.8
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.57	1.32-1.78	121	77 - 130	20.7
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.51	0.43-0.59	97	76 - 131	-3.2
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.51	0.43-0.59	97	70 - 143	-3.2
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.51	0.43-0.59	101	74 - 135	1.5
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.50	0.43-0.59	102	73 - 137	2.3
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.45	0.37-0.51	105	78 - 129	4.9
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.44	0.37-0.51	104	77 - 129	4.2
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	M+2/M+4			9.0	7.8 - 12.7	-10.0

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range, as specified in Table 6, Method 1613B, under VER.

(4) No ion abundance ratio; report concentration found.

(5) The beginning CCAL %RSD for the labeled standard must not exceed +/- 30% Section 7.7.4.2. The ending CCAL must not exceed +/- 35%, Sec 8.3.2.4 (8290)

12/2012
1613F4B.FRM

ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
201833

Run #7 Filename P618631 Samp: 1 Inj: 1 Acquired: 20-AUG-19 12:12:34
Processed: 22-AUG-19 08:49:07 Sample ID: CS3

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	25:29	1.604e+03	2.082e+03	0.77	yes	no	0.873
2 Unk	1,2,3,7,8-PeCDF	30:31	1.496e+04	9.870e+03	1.52	yes	no	0.864
3 Unk	2,3,4,7,8-PeCDF	31:33	1.360e+04	8.971e+03	1.52	yes	no	0.825
4 Unk	1,2,3,4,7,8-HxCDF	34:25	1.230e+04	1.031e+04	1.19	yes	no	1.084
5 Unk	1,2,3,6,7,8-HxCDF	34:32	1.376e+04	1.133e+04	1.21	yes	no	0.994
6 Unk	2,3,4,6,7,8-HxCDF	35:04	1.185e+04	1.004e+04	1.18	yes	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	35:50	9.287e+03	7.623e+03	1.22	yes	no	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	37:08	9.693e+03	9.770e+03	0.99	yes	no	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	38:27	6.459e+03	6.359e+03	1.02	yes	no	1.104
10 Unk	OCDF	40:40	1.361e+04	1.551e+04	0.88	yes	no	0.993
11 Unk	2,3,7,8-TCDD	26:30	1.442e+03	1.845e+03	0.78	yes	no	0.989
12 Unk	1,2,3,7,8-PeCDD	31:51	1.169e+04	7.355e+03	1.59	yes	no	0.954
13 Unk	1,2,3,4,7,8-HxCDD	35:12	1.011e+04	8.189e+03	1.23	yes	no	1.020
14 Unk	1,2,3,6,7,8-HxCDD	35:18	1.133e+04	9.071e+03	1.25	yes	no	1.030
15 Unk	1,2,3,7,8,9-HxCDD	35:32	1.102e+04	8.168e+03	1.35	yes	no	1.007
16 Unk	1,2,3,4,6,7,8-HpCDD	38:02	8.061e+03	7.624e+03	1.06	yes	no	0.922
17 Unk	OCDD	40:30	1.422e+04	1.636e+04	0.87	yes	no	1.062
18 IS	13C-2,3,7,8-TCDF	25:28	2.111e+04	2.732e+04	0.77	yes	no	1.102
19 IS	13C-1,2,3,7,8-PeCDF	30:30	3.435e+04	2.218e+04	1.55	yes	no	1.074
20 IS	13C-2,3,4,7,8-PeCDF	31:32	3.315e+04	2.107e+04	1.57	yes	no	1.005
21 IS	13C-1,2,3,4,7,8-HxCDF	34:24	1.439e+04	2.824e+04	0.51	yes	no	1.059
22 IS	13C-1,2,3,6,7,8-HxCDF	34:31	1.722e+04	3.362e+04	0.51	yes	no	1.264
23 IS	13C-2,3,4,6,7,8-HxCDF	35:04	1.508e+04	3.023e+04	0.50	yes	no	1.066
24 IS	13C-1,2,3,7,8,9-HxCDF	35:50	1.135e+04	2.242e+04	0.51	yes	no	0.801
25 IS	13C-1,2,3,4,6,7,8-HpCDF	37:07	1.069e+04	2.371e+04	0.45	yes	no	0.789
26 IS	13C-1,2,3,4,7,8,9-HpCDF	38:27	7.826e+03	1.774e+04	0.44	yes	no	0.590
27 IS	13C-2,3,7,8-TCDD	26:28	1.628e+04	2.089e+04	0.78	yes	no	0.839
28 IS	13C-1,2,3,7,8-PeCDD	31:50	2.529e+04	1.574e+04	1.61	yes	no	0.744
29 IS	13C-1,2,3,4,7,8-HxCDD	35:12	2.089e+04	1.644e+04	1.27	yes	no	0.907
30 IS	13C-1,2,3,6,7,8-HxCDD	35:17	2.292e+04	1.830e+04	1.25	yes	no	0.978
31 IS	13C-1,2,3,4,6,7,8-HpCDD	38:01	1.925e+04	1.841e+04	1.05	yes	no	0.814
32 IS	13C-OCDD	40:29	2.747e+04	3.051e+04	0.90	yes	no	0.653
33 RS/RT	13C-1,2,3,4-TCDD	25:43	1.951e+04	2.516e+04	0.78	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	35:32	2.315e+04	1.840e+04	1.26	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	26:30	3.593e+03				no	0.894

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Signal/Noise Height Ratio Summary

CLIENT ID.
201833

Run #7 Filename P618631 Samp: 1 Inj: 1 Acquired: 20-AUG-19 12:12:34
Processed: 22-AUG-19 08:49:07 LAB. ID: CS3

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	1.98e+05	5.32e+02	3.7e+02	2.69e+05	1.07e+03	2.5e+02
2	1,2,3,7,8-PeCDF	2.28e+06	7.00e+02	3.3e+03	1.48e+06	1.91e+03	7.8e+02
3	2,3,4,7,8-PeCDF	2.23e+06	7.00e+02	3.2e+03	1.49e+06	1.91e+03	7.8e+02
4	1,2,3,4,7,8-HxCDF	2.38e+06	3.47e+03	6.9e+02	1.98e+06	4.31e+03	4.6e+02
5	1,2,3,6,7,8-HxCDF	2.60e+06	3.47e+03	7.5e+02	2.11e+06	4.31e+03	4.9e+02
6	2,3,4,6,7,8-HxCDF	2.35e+06	3.47e+03	6.8e+02	1.98e+06	4.31e+03	4.6e+02
7	1,2,3,7,8,9-HxCDF	1.80e+06	3.47e+03	5.2e+02	1.49e+06	4.31e+03	3.5e+02
8	1,2,3,4,6,7,8-HpCDF	2.17e+06	1.15e+05	1.9e+01	2.19e+06	2.15e+05	1.0e+01
9	1,2,3,4,7,8,9-HpCDF	1.44e+06	1.15e+05	1.3e+01	1.43e+06	2.15e+05	6.7e+00
10	OCDF	2.55e+06	4.62e+03	5.5e+02	2.86e+06	7.00e+03	4.1e+02
11	2,3,7,8-TCDD	2.07e+05	1.50e+03	1.4e+02	2.49e+05	1.74e+03	1.4e+02
12	1,2,3,7,8-PeCDD	1.90e+06	4.18e+03	4.5e+02	1.21e+06	3.32e+03	3.6e+02
13	1,2,3,4,7,8-HxCDD	2.18e+06	1.13e+04	1.9e+02	1.79e+06	1.10e+04	1.6e+02
14	1,2,3,6,7,8-HxCDD	2.21e+06	1.13e+04	2.0e+02	1.76e+06	1.10e+04	1.6e+02
15	1,2,3,7,8,9-HxCDD	2.12e+06	1.13e+04	1.9e+02	1.69e+06	1.10e+04	1.5e+02
16	1,2,3,4,6,7,8-HpCDD	1.86e+06	1.33e+05	1.4e+01	1.76e+06	1.80e+05	9.8e+00
17	OCDD	2.70e+06	9.49e+03	2.8e+02	3.12e+06	1.81e+04	1.7e+02
18	13C-2,3,7,8-TCDF	2.58e+06	5.84e+03	4.4e+02	3.31e+06	2.81e+03	1.2e+03
19	13C-1,2,3,7,8-PeCDF	5.24e+06	3.92e+02	1.3e+04	3.45e+06	9.60e+02	3.6e+03
20	13C-2,3,4,7,8-PeCDF	5.43e+06	3.92e+02	1.4e+04	3.45e+06	9.60e+02	3.6e+03
21	13C-1,2,3,4,7,8-HxCDF	2.81e+06	9.56e+02	2.9e+03	5.50e+06	2.54e+03	2.2e+03
22	13C-1,2,3,6,7,8-HxCDF	3.24e+06	9.56e+02	3.4e+03	6.27e+06	2.54e+03	2.5e+03
23	13C-2,3,4,6,7,8-HxCDF	2.96e+06	9.56e+02	3.1e+03	5.83e+06	2.54e+03	2.3e+03
24	13C-1,2,3,7,8,9-HxCDF	2.16e+06	9.56e+02	2.3e+03	4.19e+06	2.54e+03	1.7e+03
25	13C-1,2,3,4,6,7,8-HpCDF	2.27e+06	7.94e+03	2.9e+02	5.15e+06	4.07e+04	1.3e+02
26	13C-1,2,3,4,7,8,9-HpCDF	1.59e+06	7.94e+03	2.0e+02	3.70e+06	4.07e+04	9.1e+01
27	13C-2,3,7,8-TCDD	2.22e+06	3.73e+03	5.9e+02	2.83e+06	2.26e+03	1.3e+03
28	13C-1,2,3,7,8-PeCDD	4.18e+06	5.68e+02	7.4e+03	2.64e+06	8.12e+02	3.2e+03
29	13C-1,2,3,4,7,8-HxCDD	4.54e+06	2.88e+03	1.6e+03	3.51e+06	1.16e+03	3.0e+03
30	13C-1,2,3,6,7,8-HxCDD	4.40e+06	2.88e+03	1.5e+03	3.53e+06	1.16e+03	3.0e+03
31	13C-1,2,3,4,6,7,8-HpCDD	4.05e+06	4.17e+03	9.7e+02	3.85e+06	2.10e+03	1.8e+03
32	13C-OCDD	5.16e+06	6.40e+03	8.1e+02	5.68e+06	7.57e+03	7.5e+02
33	13C-1,2,3,4-TCDD	2.58e+06	3.73e+03	6.9e+02	3.36e+06	2.26e+03	1.5e+03
34	13C-1,2,3,7,8,9-HxCDD	4.35e+06	2.88e+03	1.5e+03	3.49e+06	1.16e+03	3.0e+03
35	37Cl-2,3,7,8-TCDD	4.86e+05	2.68e+03	1.8e+02			

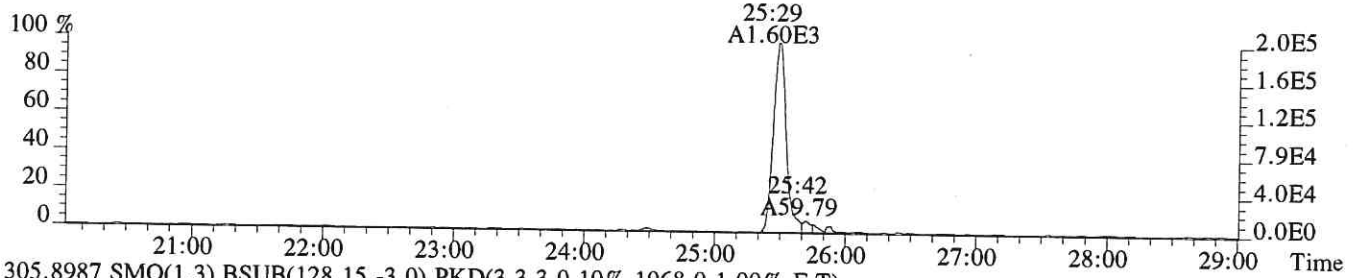
---Sample Calculation---

$$D/L \text{ TCDD} = \frac{2.5 \times (1.496e+03 + 1.740e+03) \times 100}{(2.215e+06 + 2.830e+06) \times (\quad) \times 0.989}$$

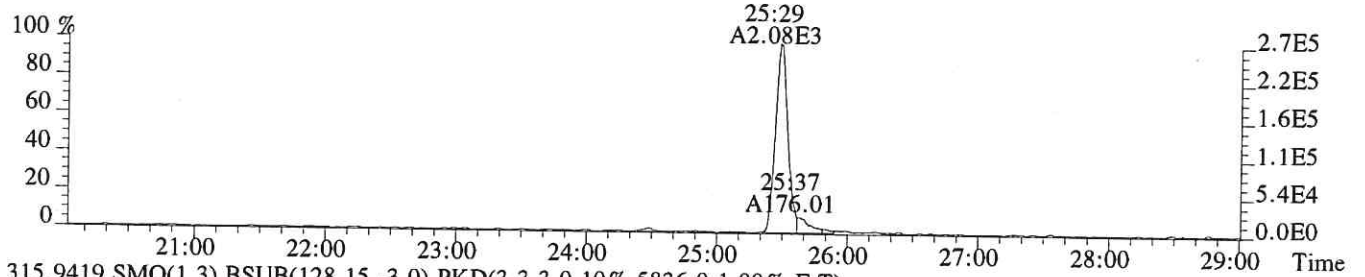
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File:P618631 #1-637 Acq:20-AUG-2019 12:12:34 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3

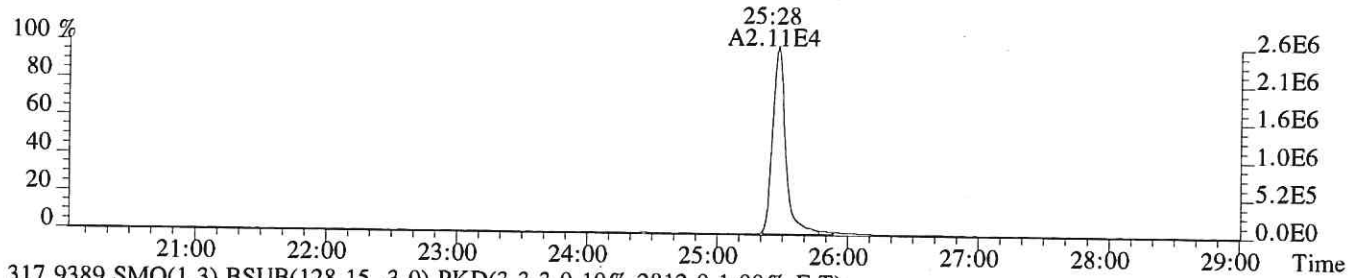
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,532.0,1.00%,F,T)



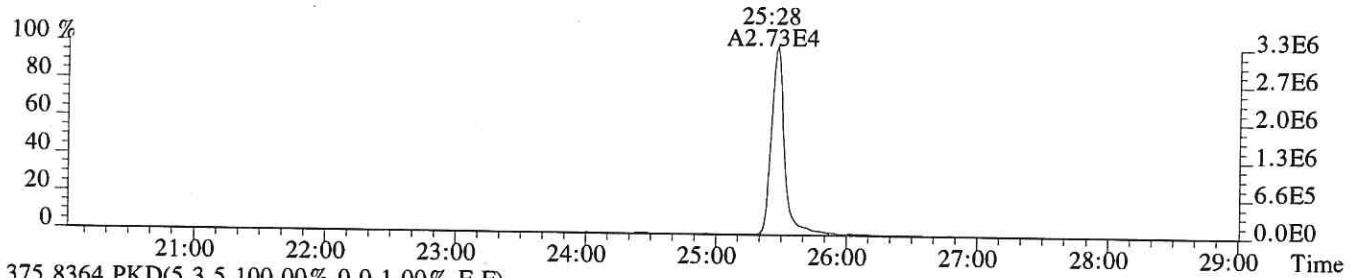
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1068.0,1.00%,F,T)



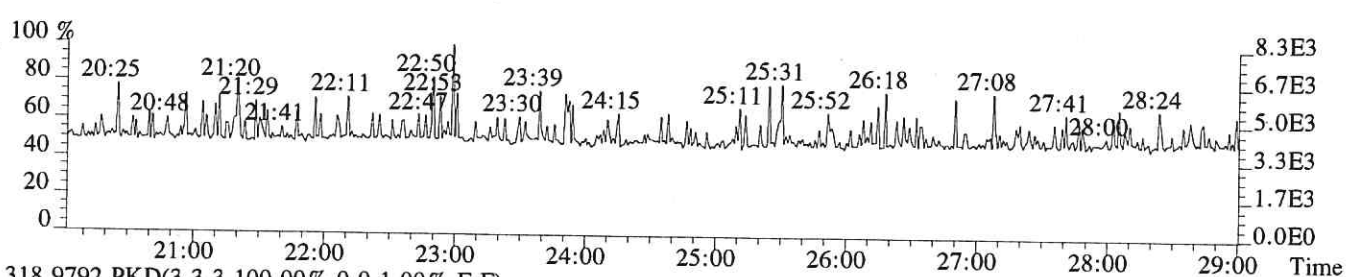
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5836.0,1.00%,F,T)



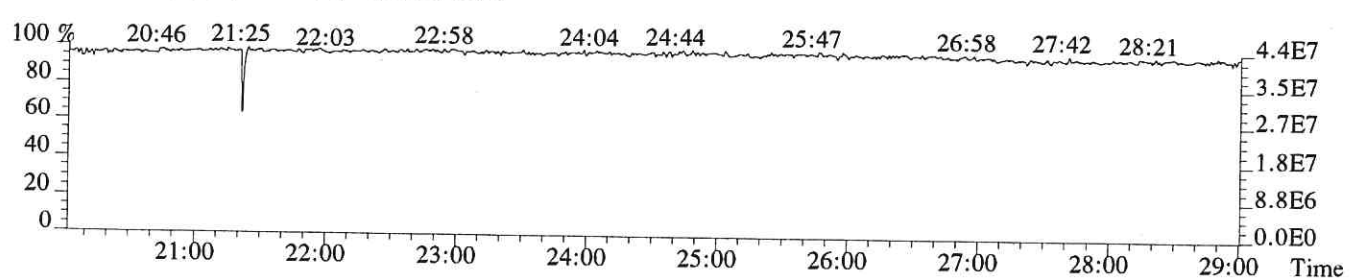
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2812.0,1.00%,F,T)



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

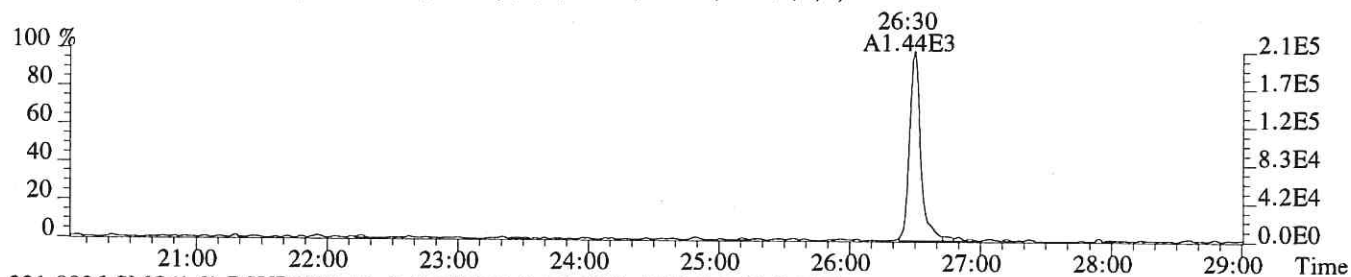


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

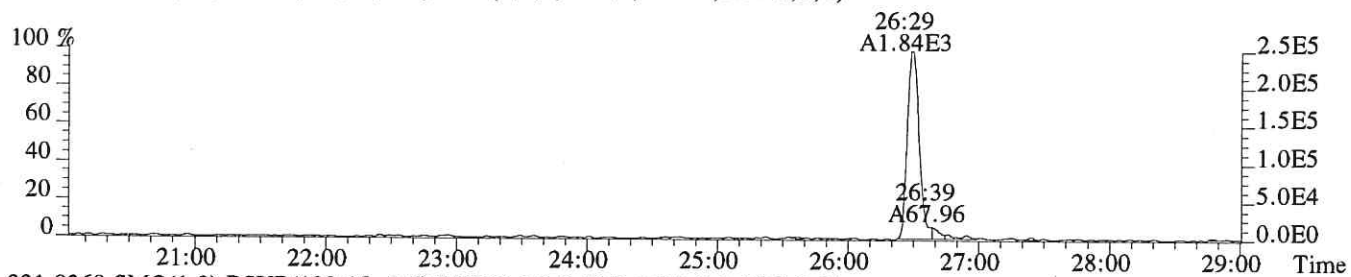


Sample#1 Exp:CS3

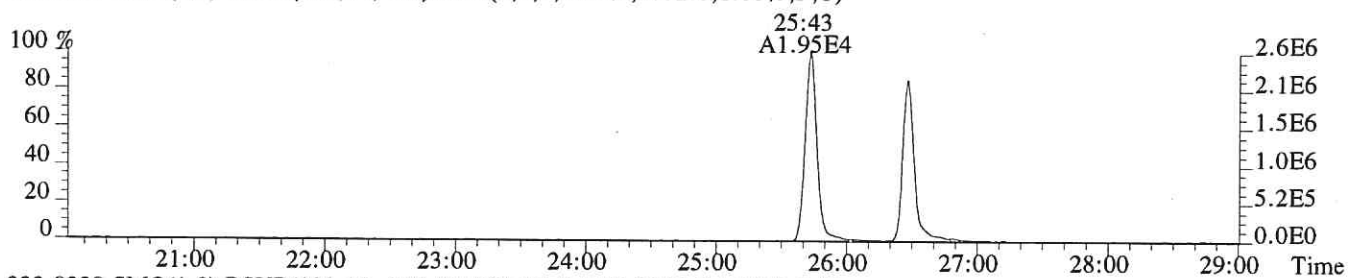
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1496.0,1.00%,F,T)



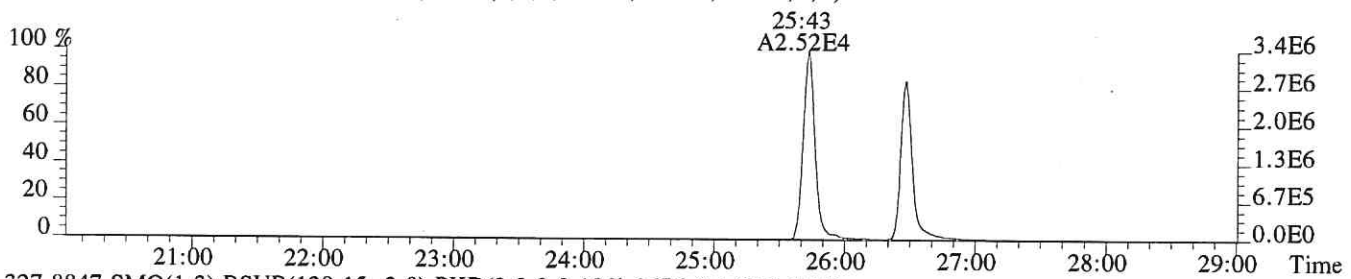
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1740.0,1.00%,F,T)



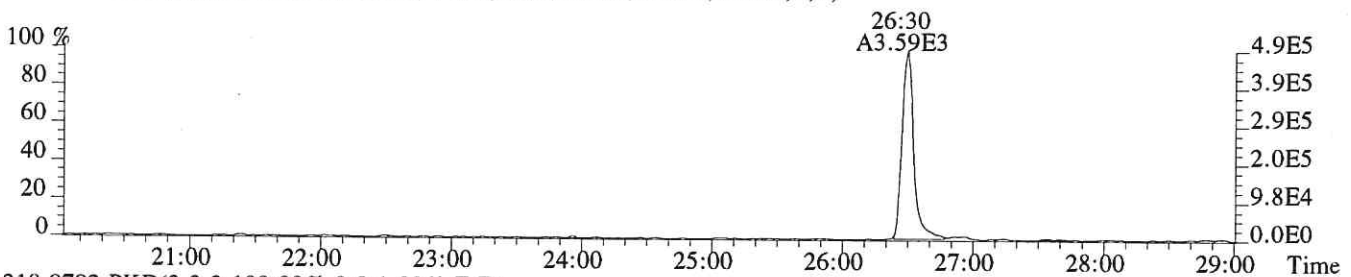
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3732.0,1.00%,F,T)



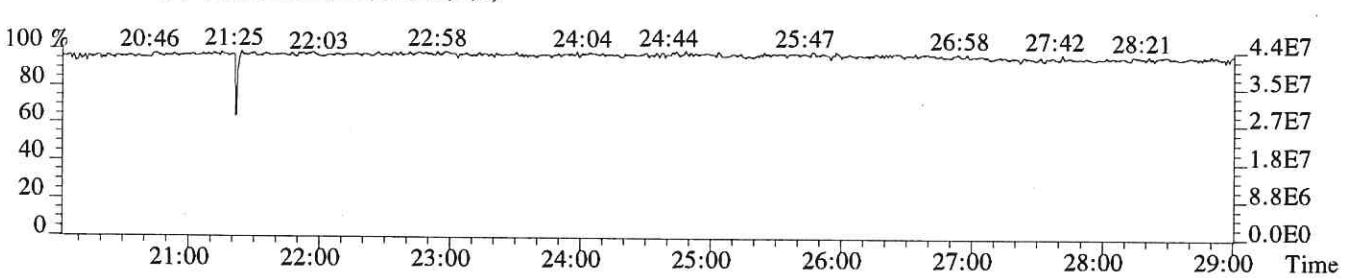
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2256.0,1.00%,F,T)



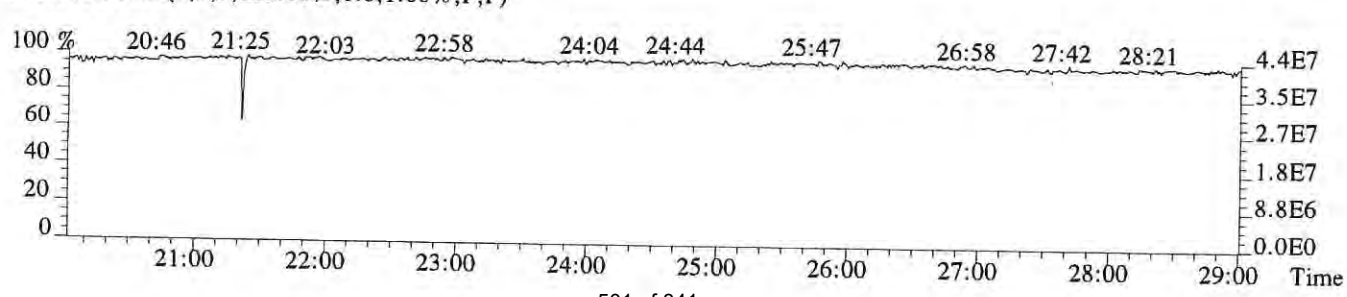
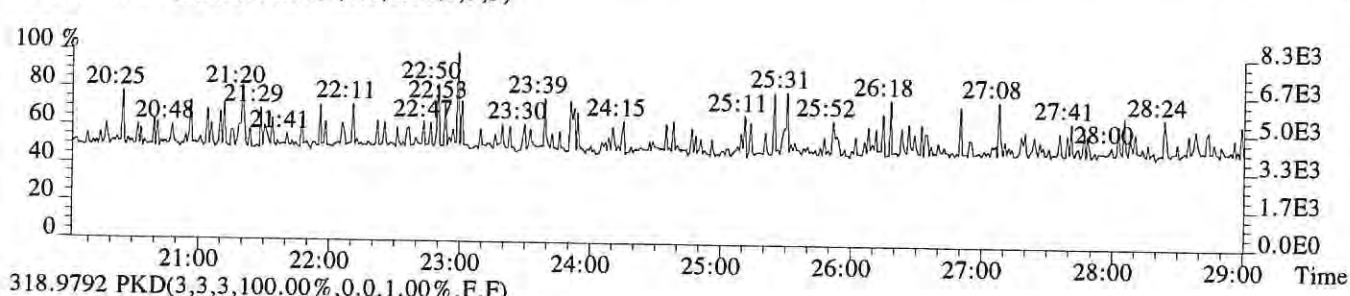
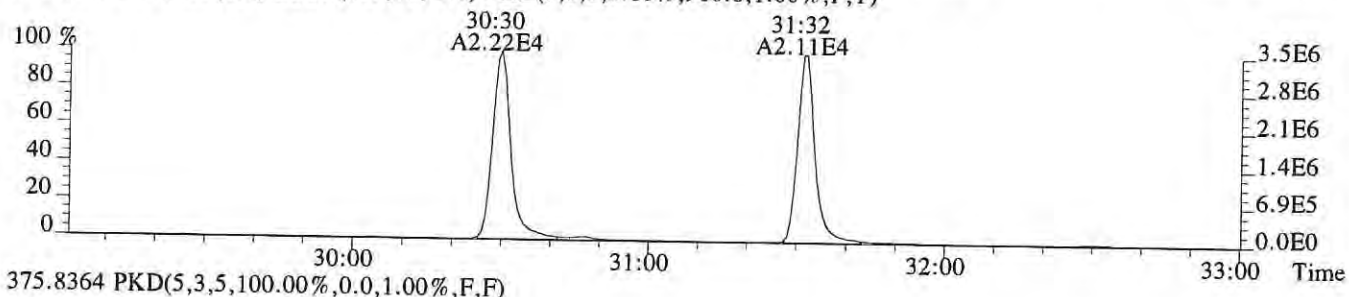
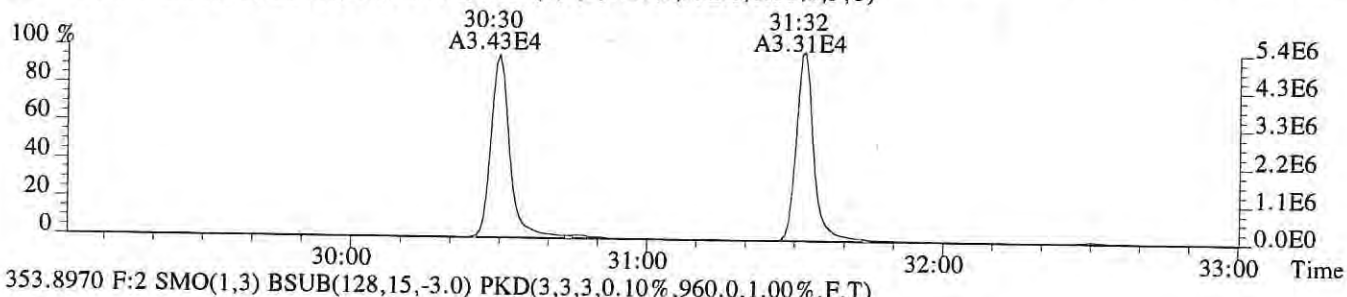
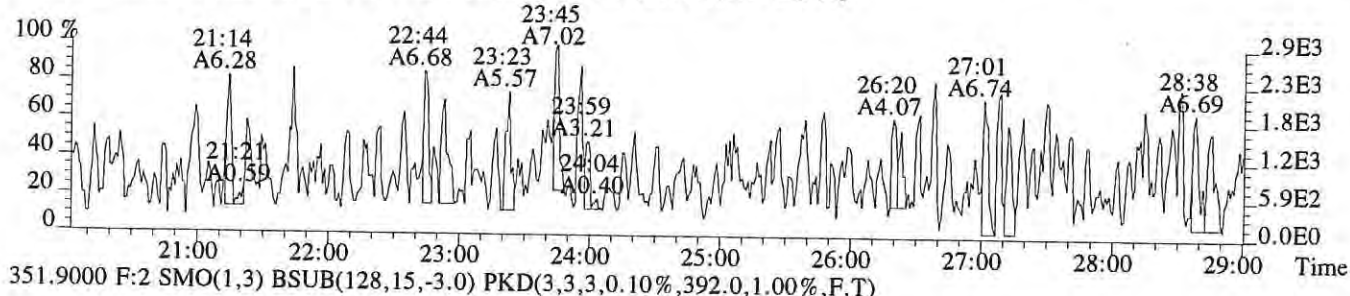
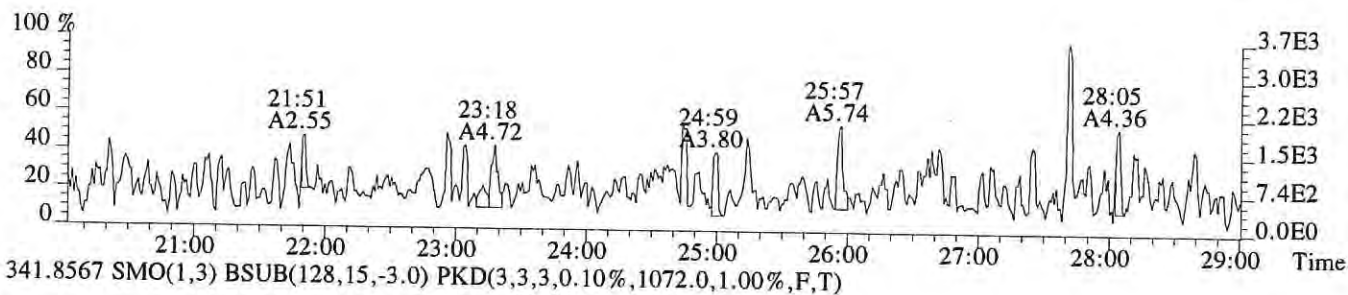
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2676.0,1.00%,F,T)



318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



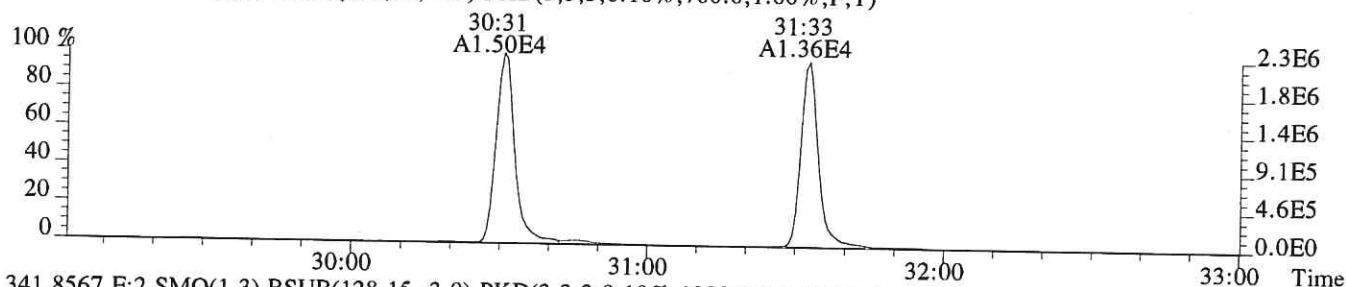
File:P618631 #1-637 Acq:20-AUG-2019 12:12:34 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:CS3
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,936.0,1.00%,F,T)



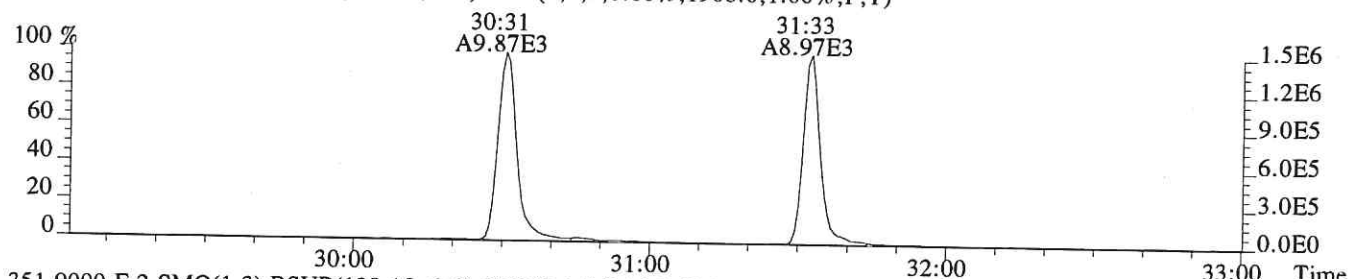
File: P618631 #1-357 Acq: 20-AUG-2019 12:12:34 Probe EI+ Magnet SIR VG BioTech Mass spectr

Sample#1 Exp: CS3

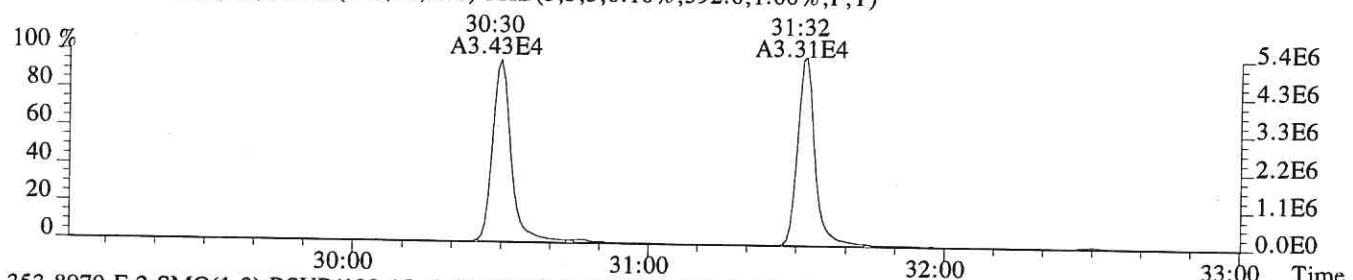
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,700.0,1.00%,F,T)



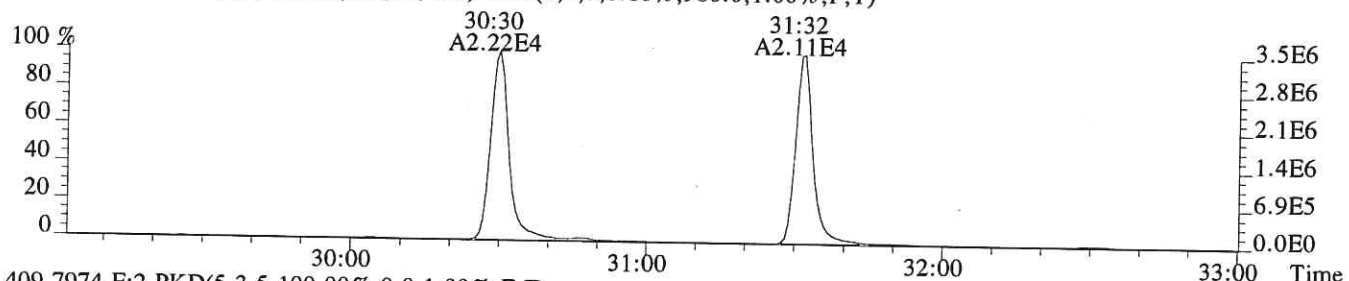
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1908.0,1.00%,F,T)



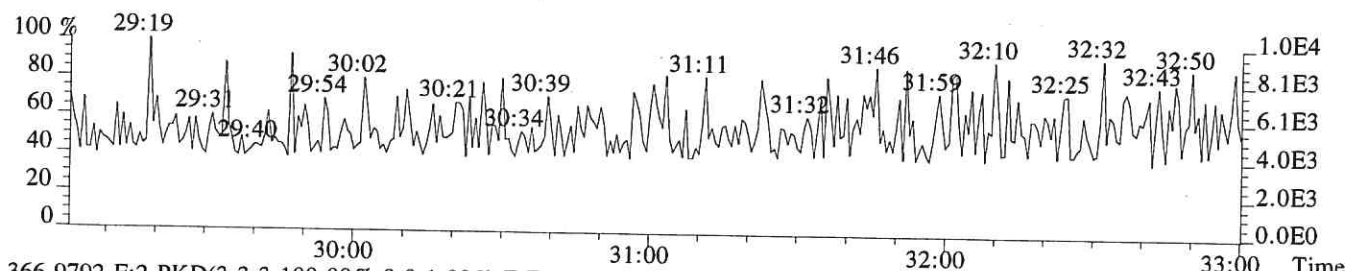
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,392.0,1.00%,F,T)



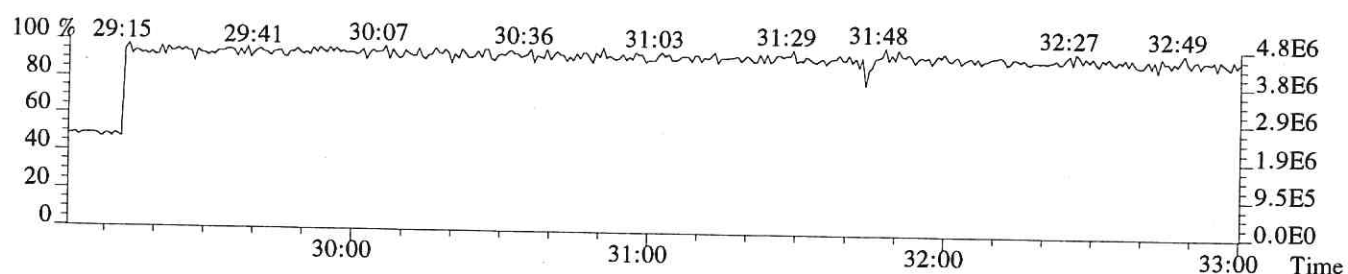
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,960.0,1.00%,F,T)



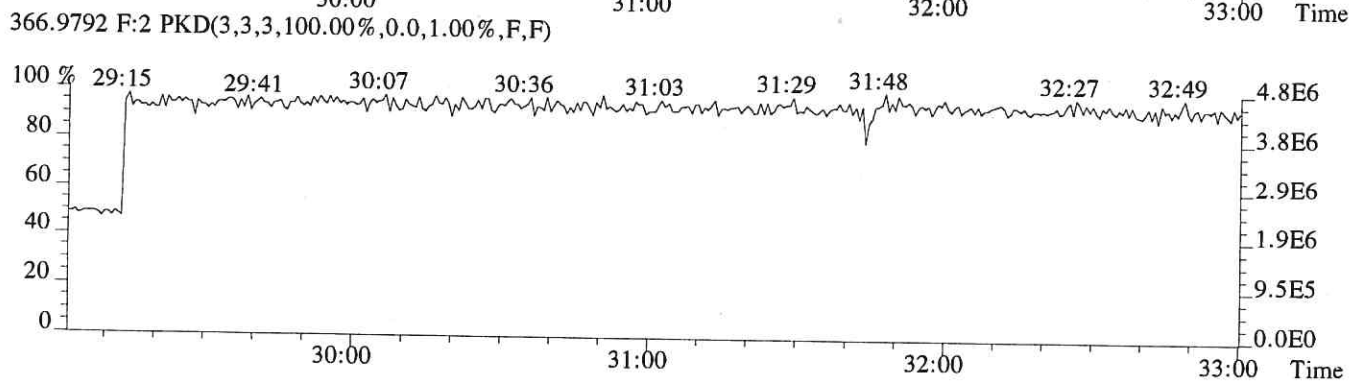
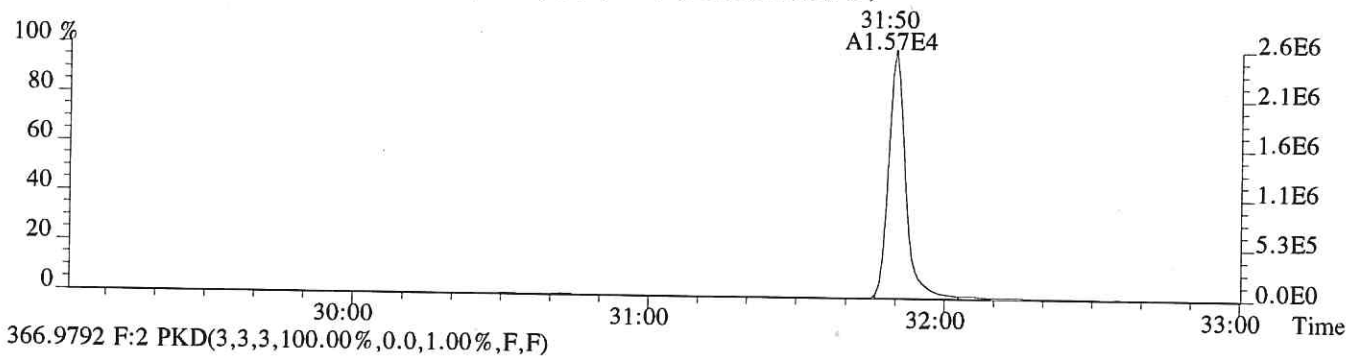
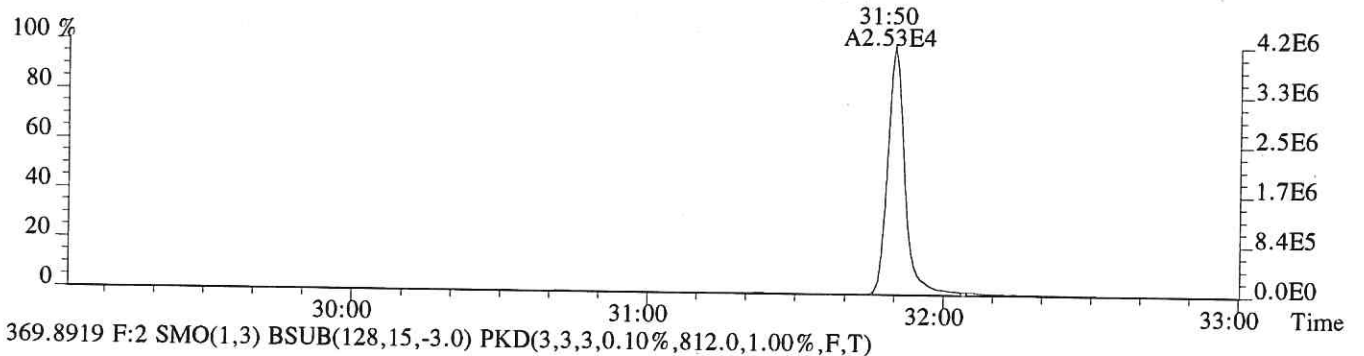
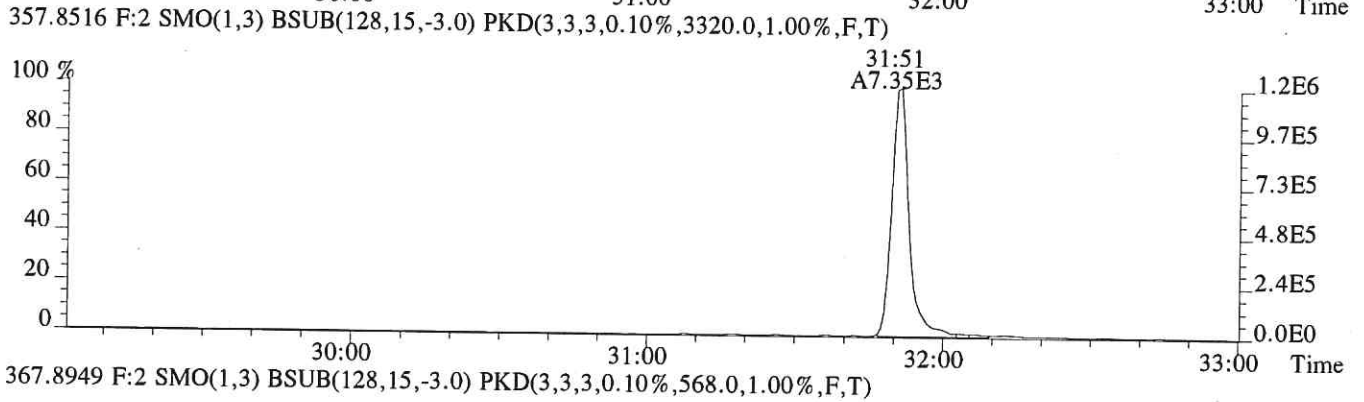
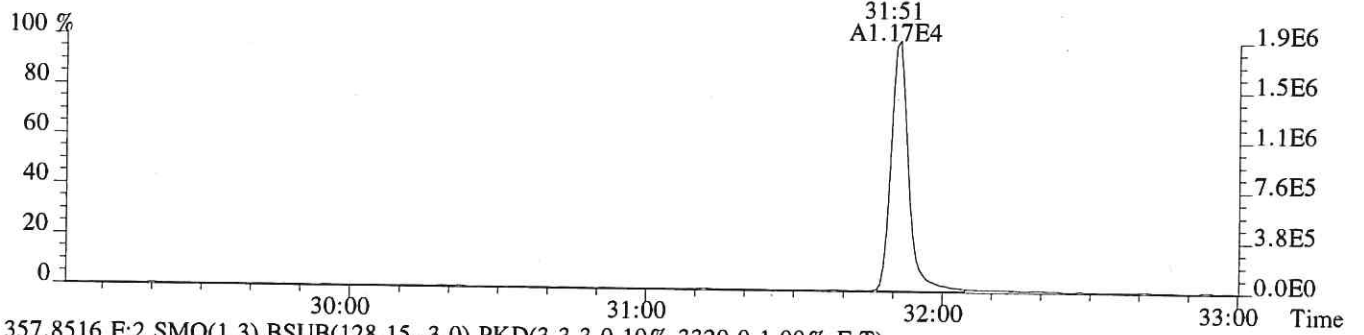
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

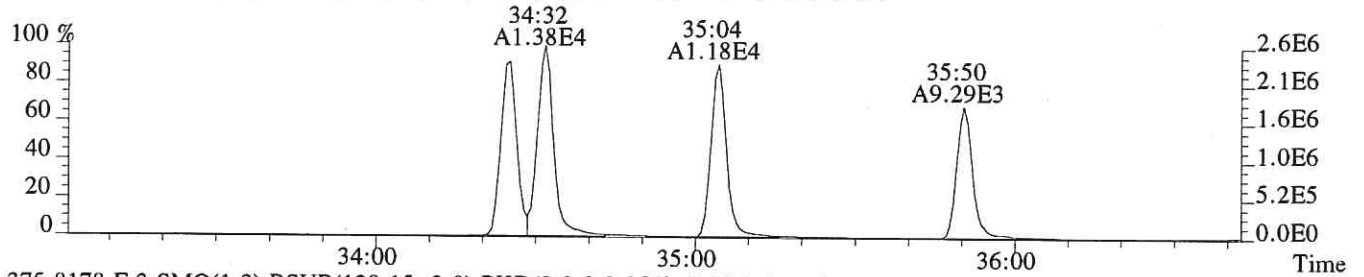


File:P618631 #1-357 Acq:20-AUG-2019 12:12:34 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4176.0,1.00%,F,T)

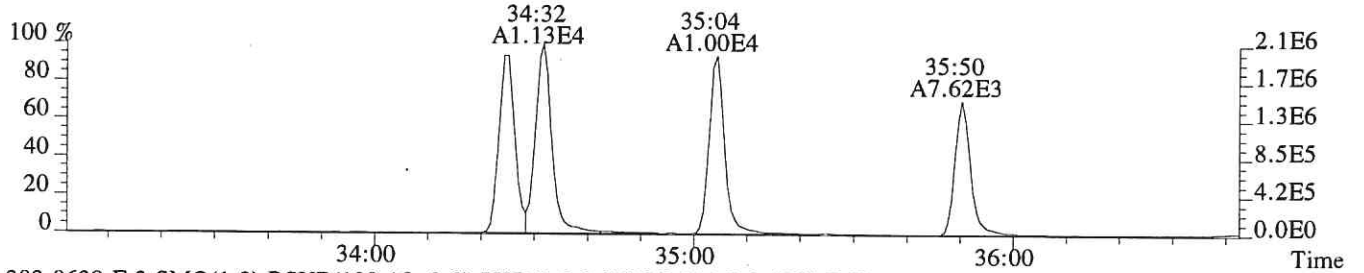


Sample#1 Exp:CS3

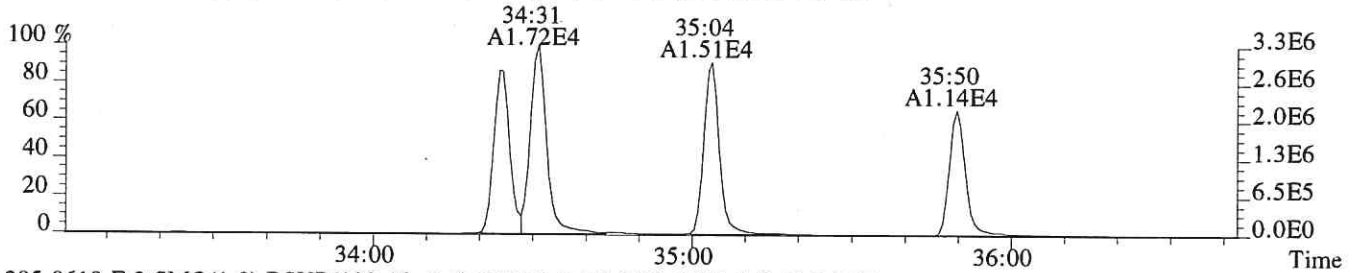
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3472.0,0.40%,F,T)



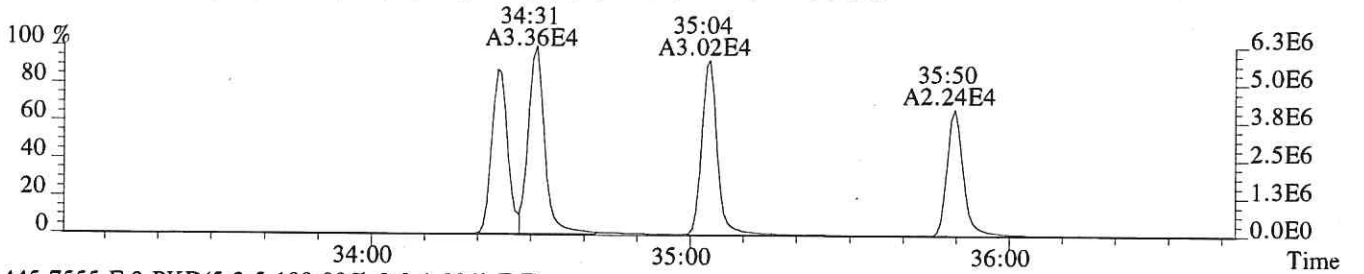
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4308.0,0.40%,F,T)



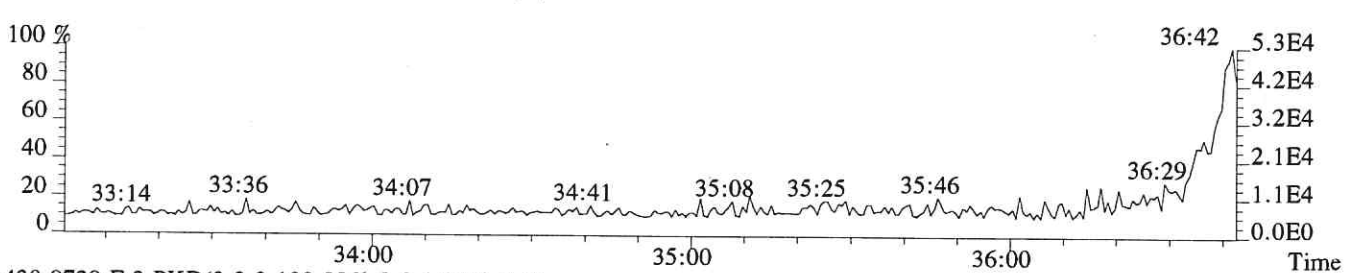
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,956.0,0.40%,F,T)



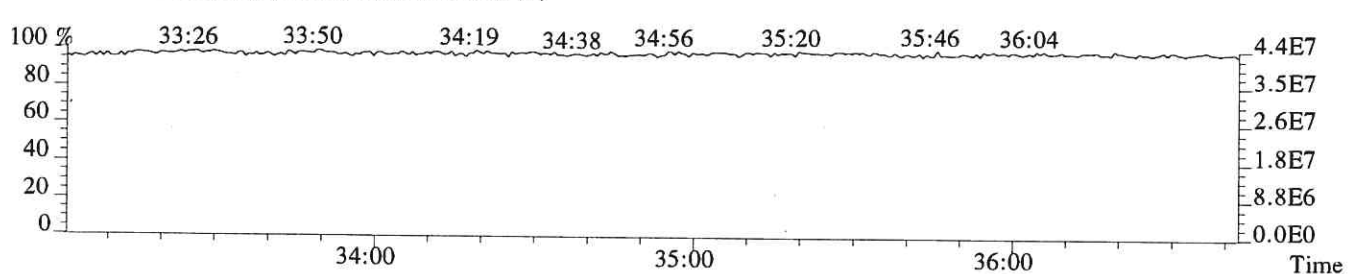
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2540.0,0.40%,F,T)



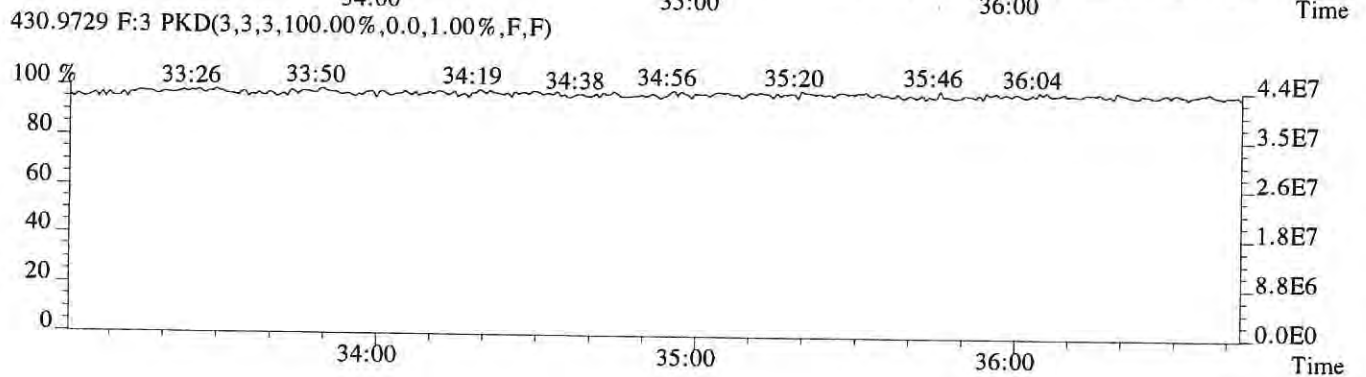
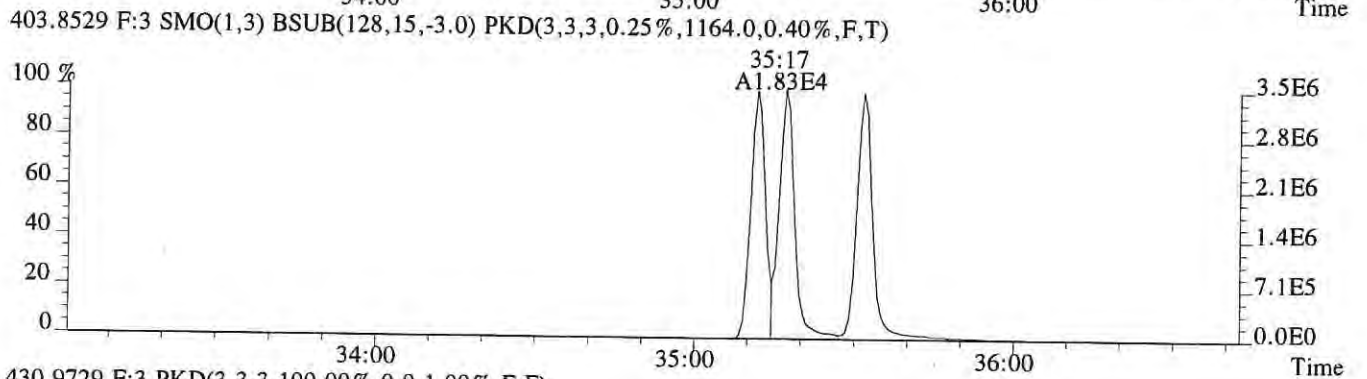
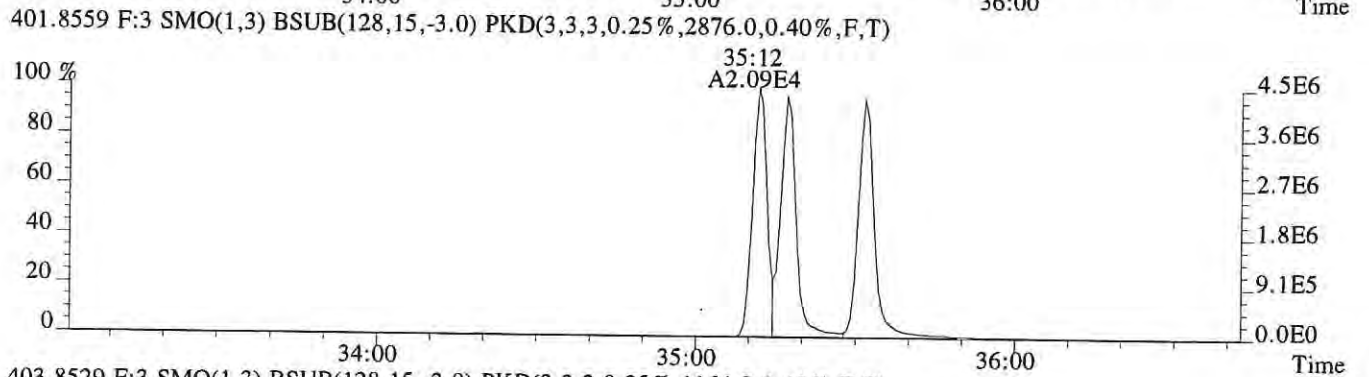
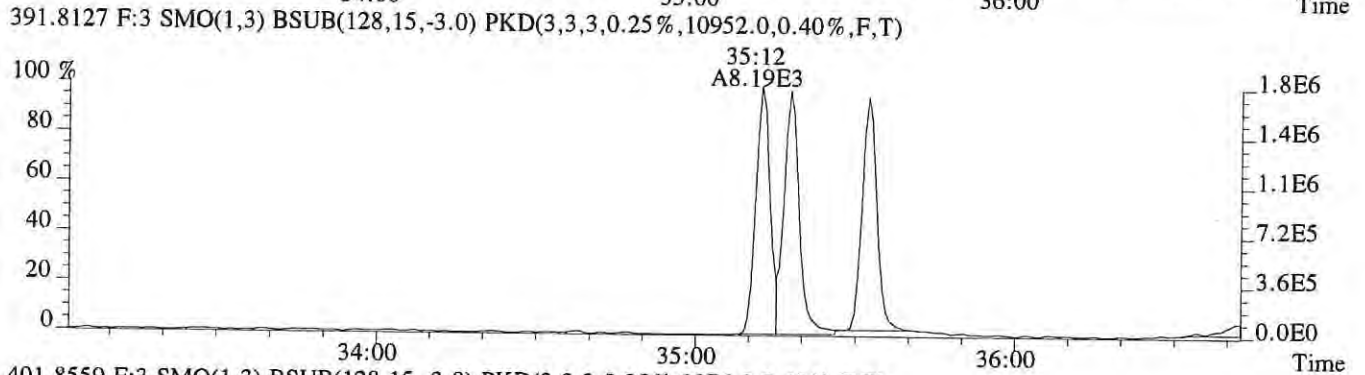
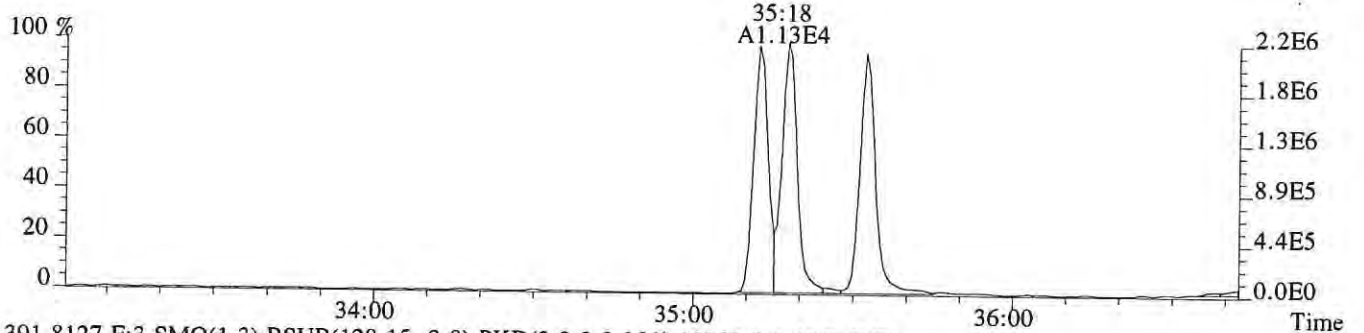
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



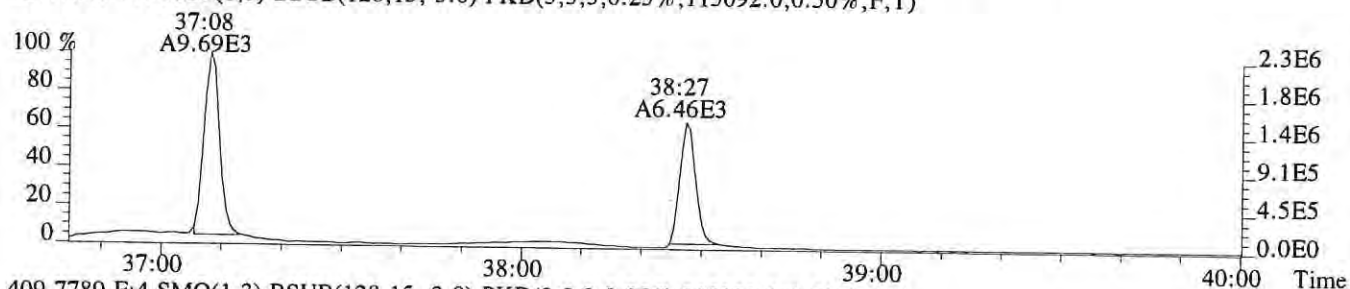
File:P618631 #1-331 Acq:20-AUG-2019 12:12:34 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,11252.0,0.40%,F,T)



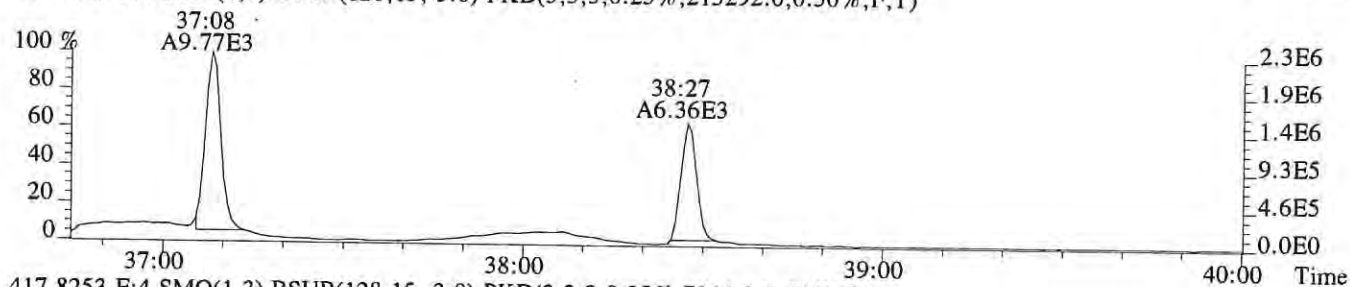
File:P618631 #1-294 Acq:20-AUG-2019 12:12:34 Probe EI+ Magnet SIR VG BioTech Mass spectr

Sample#1 Exp:CS3

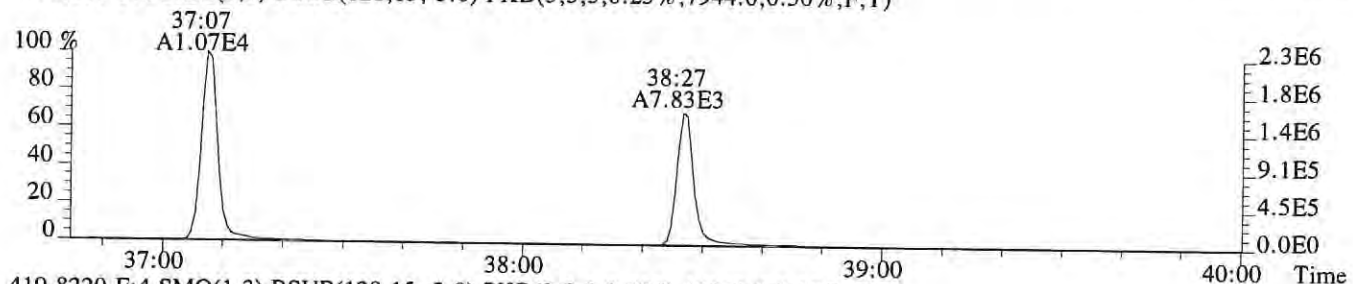
407.7818 F:4 BSUB(128,15,-3.0) PKD(3,3,3,0.25%,115092.0,0.50%,F,T)



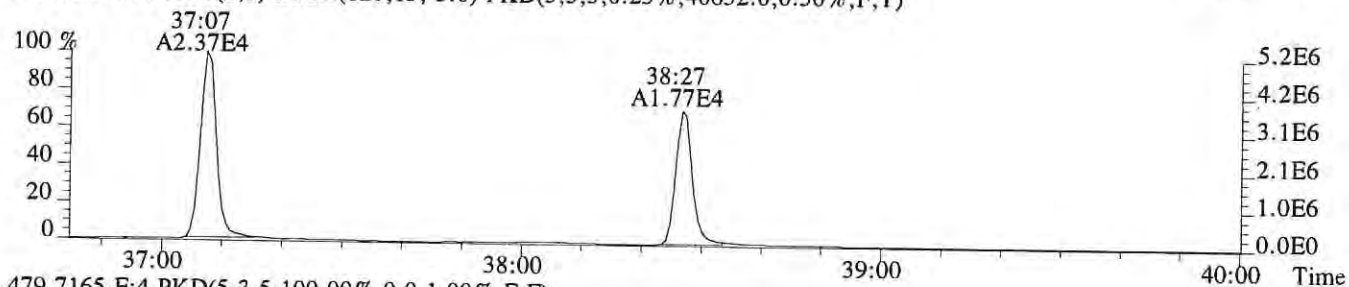
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,215292.0,0.50%,F,T)



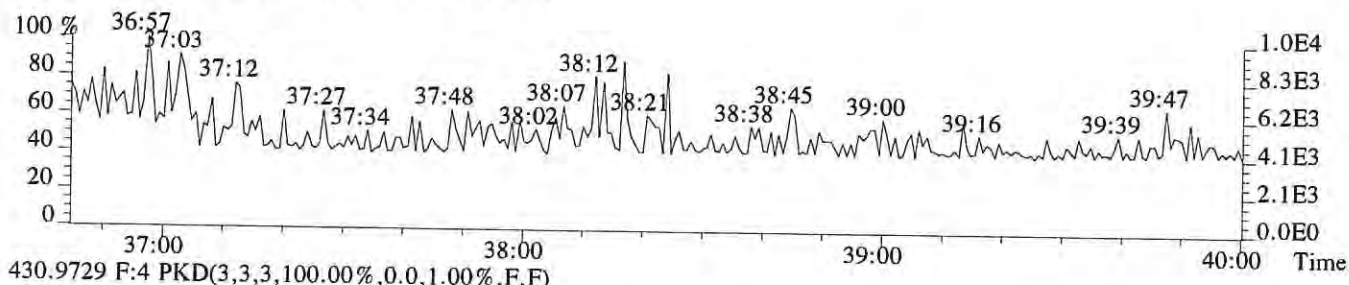
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,7944.0,0.50%,F,T)



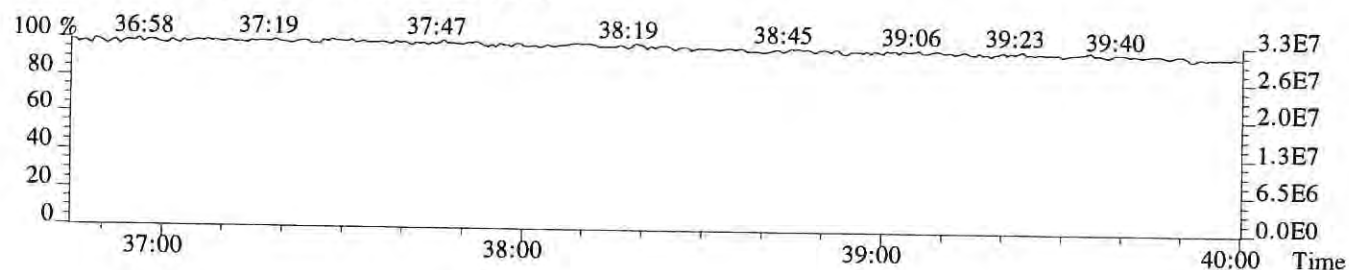
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,40652.0,0.50%,F,T)



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



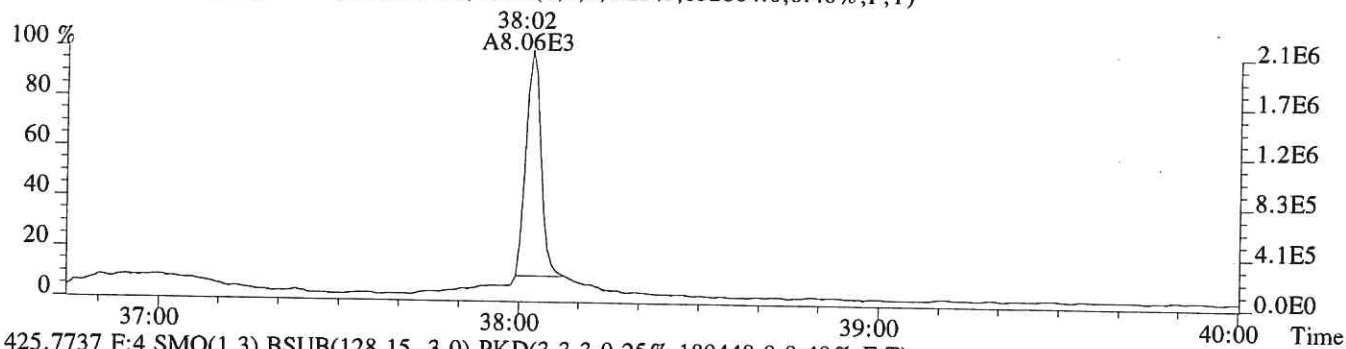
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



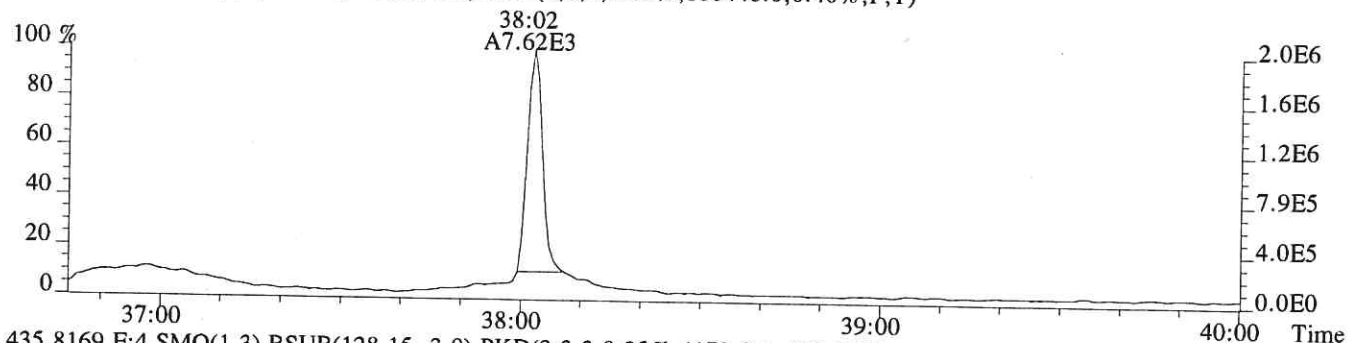
File:P618631 #1-294 Acq:20-AUG-2019 12:12:34 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:CS3

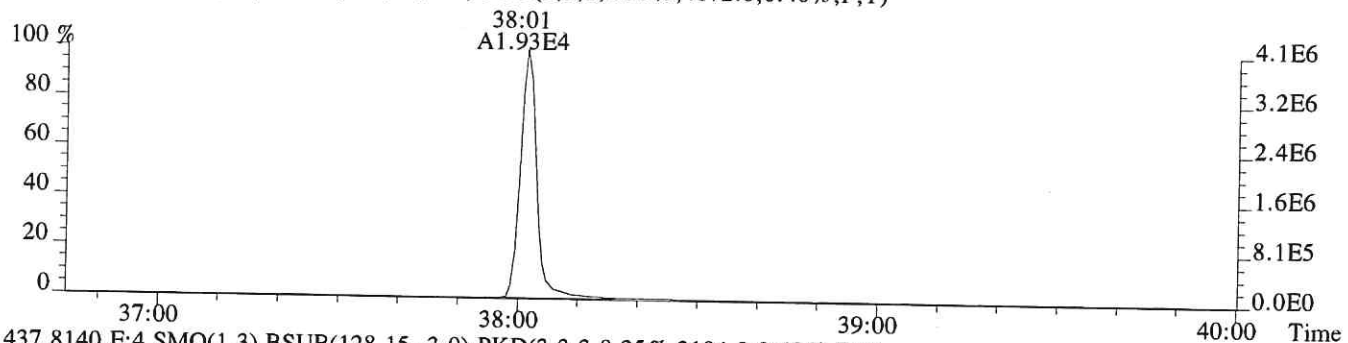
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,132864.0,0.40%,F,T)



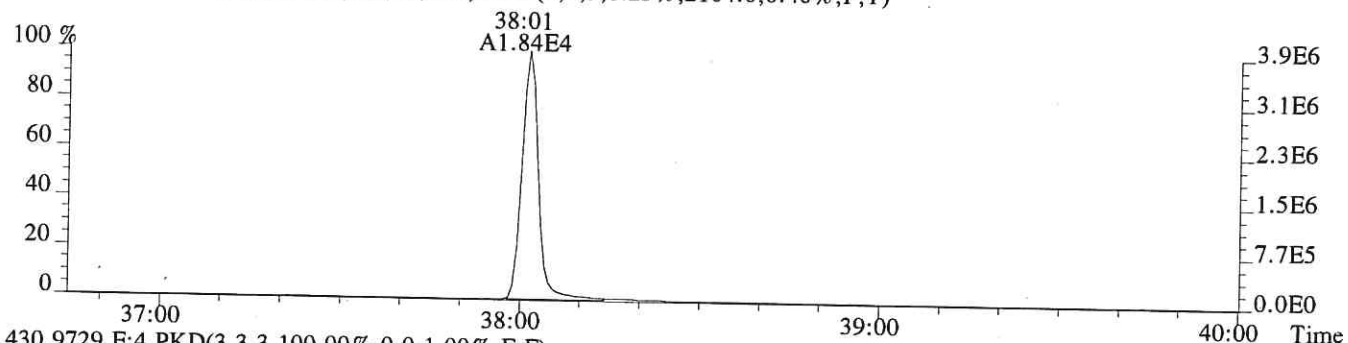
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,180448.0,0.40%,F,T)



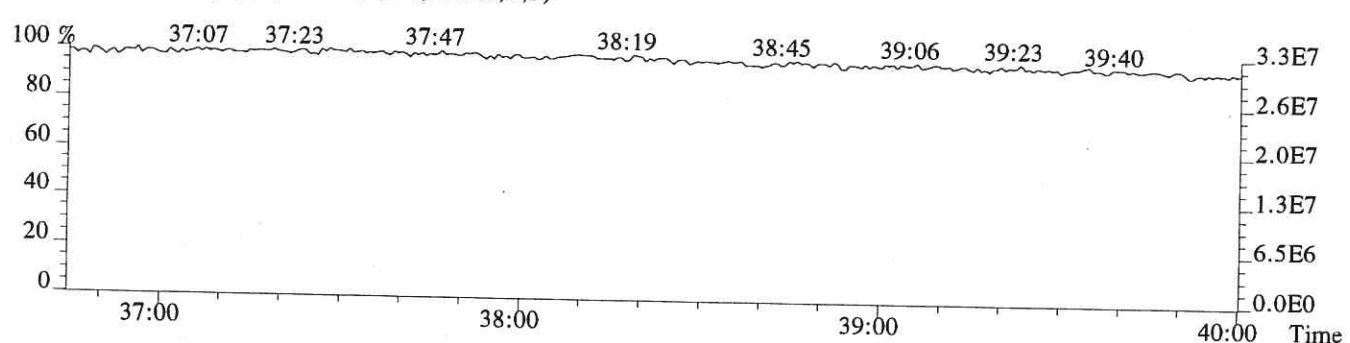
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4172.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2104.0,0.40%,F,T)



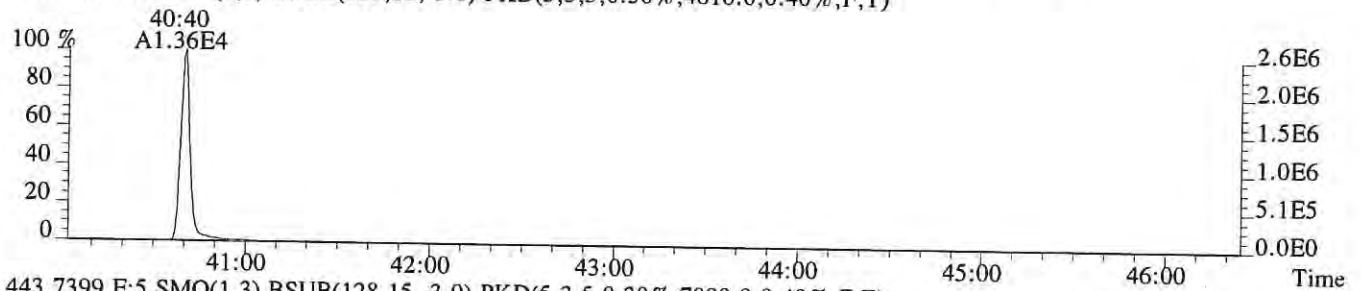
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



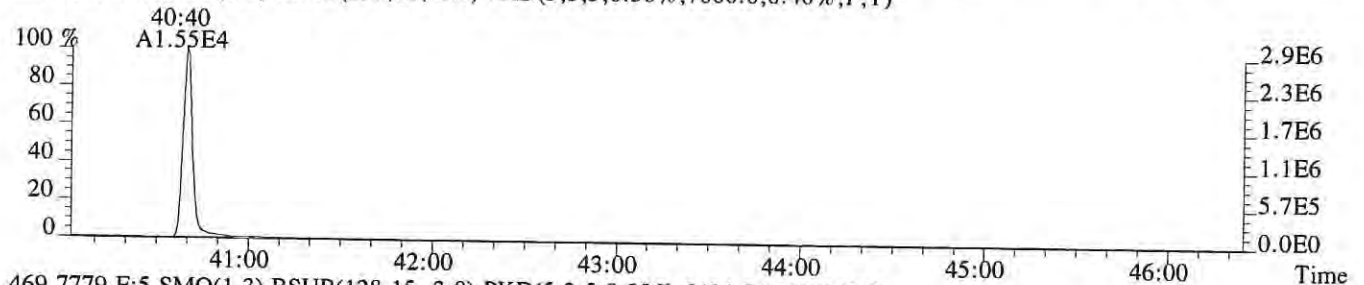
File: P618631 #1-574 Acq: 20-AUG-2019 12:12:34 Probe EI+ Magnet SIR VG BioTech Mass spectr

Sample#1 Exp: CS3

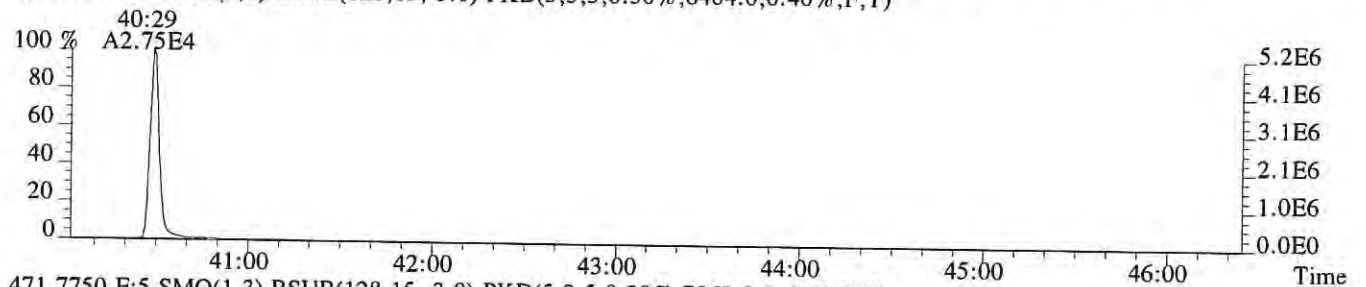
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4616.0,0.40%,F,T)



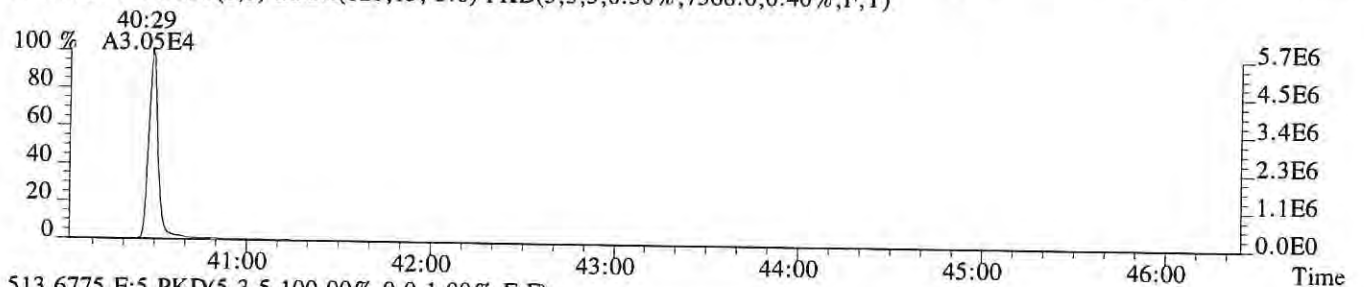
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,7000.0,0.40%,F,T)



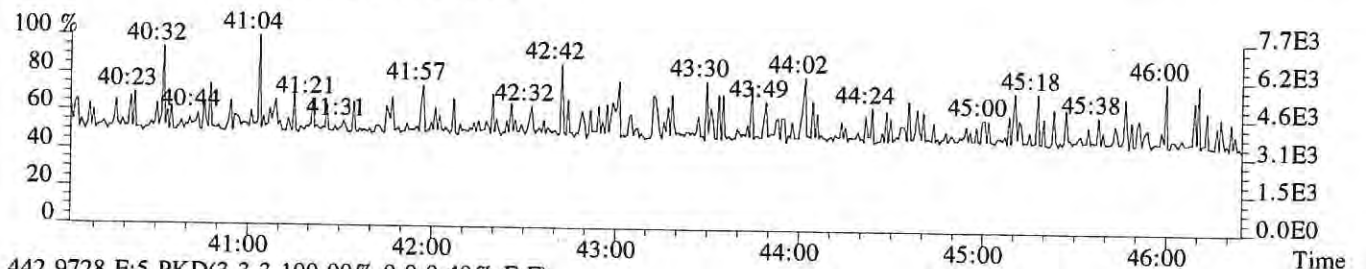
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6404.0,0.40%,F,T)



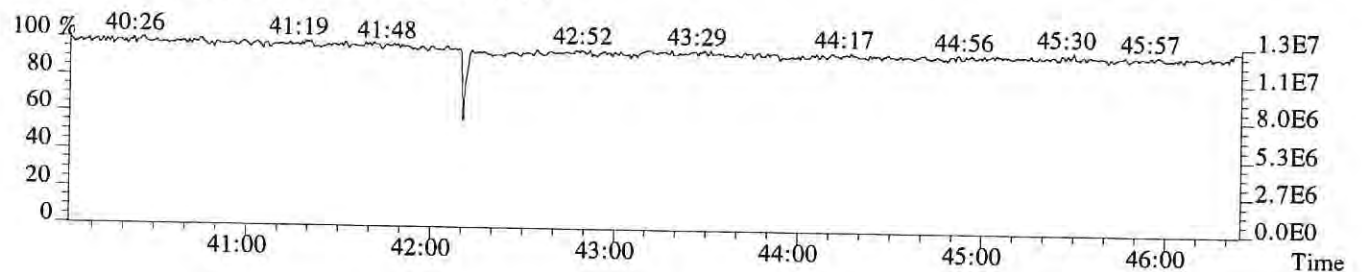
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,7568.0,0.40%,F,T)



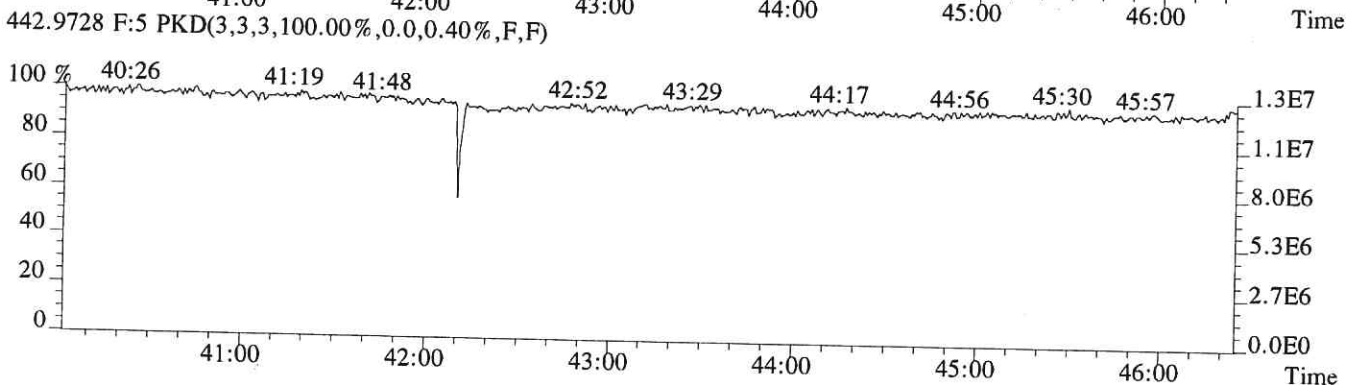
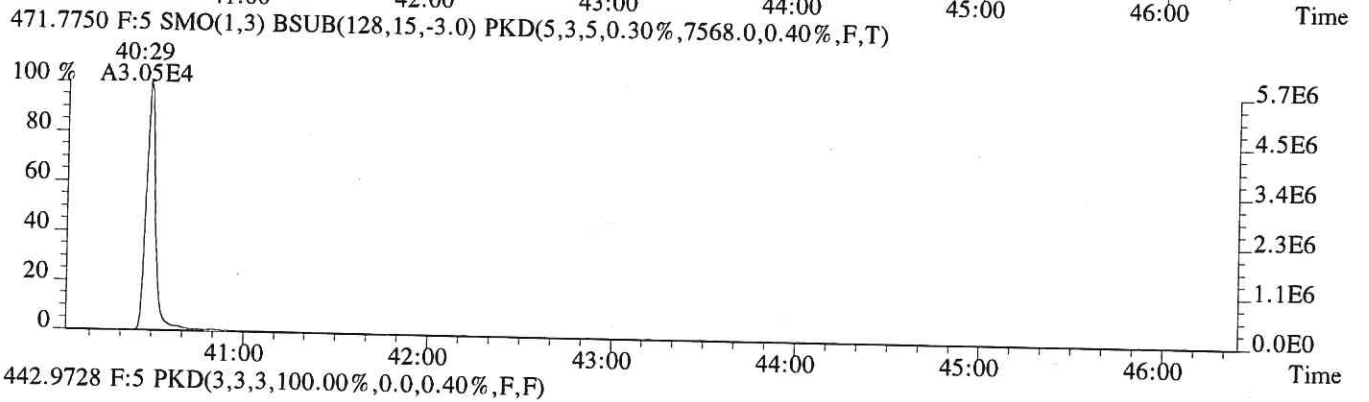
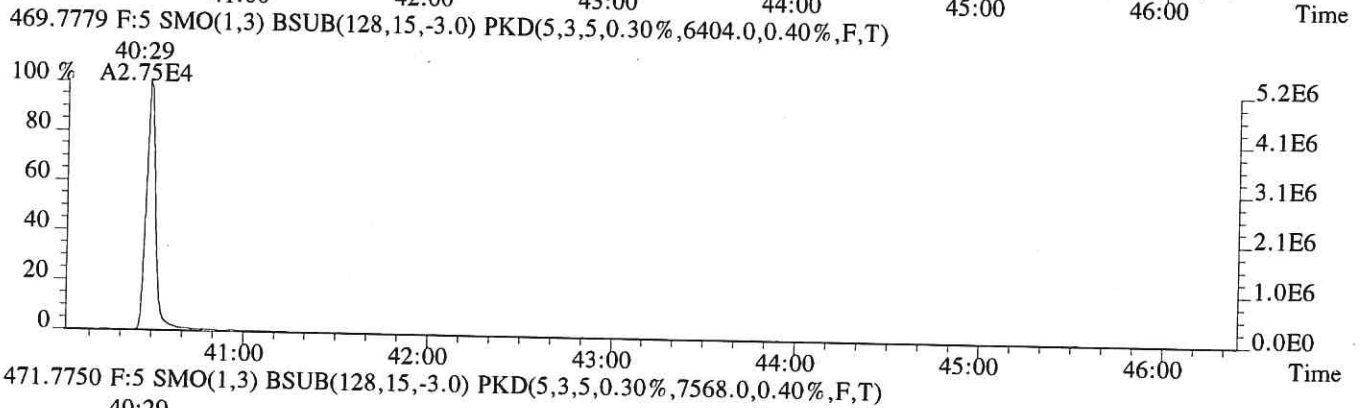
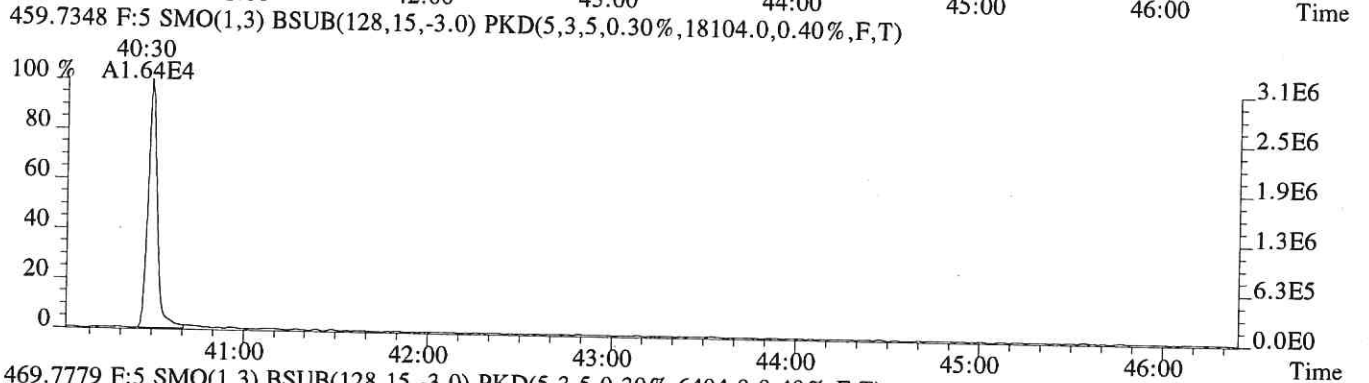
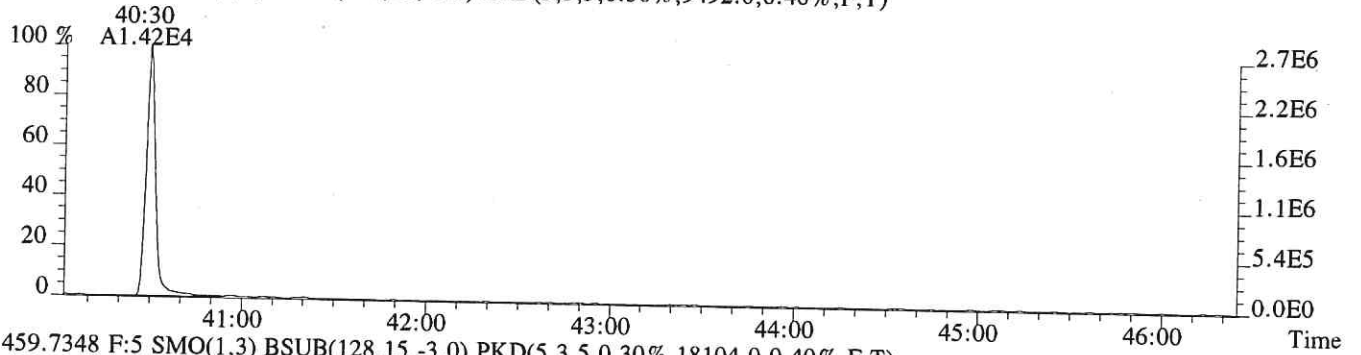
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



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



File:P618631 #1-574 Acq:20-AUG-2019 12:12:34 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,9492.0,0.40%,F,T)



USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 08/01/19

Instrument ID: E-HRMS-08

GC Column ID: DB-5MSUI

VER Data Filename: P618642

Analysis Date: 20-AUG-19 Time: 22:09:31

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (4)
2,3,7,8-TCDD	M/M+2	0.74	0.65-0.89	9.4	7.8 - 12.9	-5.6
1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.32-1.78	48	39 - 65	-3.9
1,2,3,4,7,8-HxCDD	M+2/M+4	1.23	1.05-1.43	48	39 - 64	-3.2
1,2,3,6,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	48	39 - 64	-4.5
1,2,3,7,8,9-HxCDD	M+2/M+4	1.24	1.05-1.43	51	41 - 61	2.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.03	0.88-1.20	50	43 - 58	0.0
OCDD	M+2/M+4	0.89	0.76-1.02	101	79 - 126	0.7
2,3,7,8-TCDF	M/M+2	0.75	0.65-0.89	9.1	8.4 - 12.0	-8.7
1,2,3,7,8-PeCDF	M+2/M+4	1.57	1.32-1.78	52	41 - 60	4.6
2,3,4,7,8-PeCDF	M+2/M+4	1.50	1.32-1.78	50	41 - 61	0.2
1,2,3,4,7,8-HxCDF	M+2/M+4	1.20	1.05-1.43	49	45 - 56	-1.3
1,2,3,6,7,8-HxCDF	M+2/M+4	1.19	1.05-1.43	51	44 - 57	2.7
1,2,3,7,8,9-HxCDF	M+2/M+4	1.22	1.05-1.43	50	45 - 56	-0.4
2,3,4,6,7,8-HxCDF	M+2/M+4	1.25	1.05-1.43	50	44 - 57	-0.3
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.01	0.88-1.20	52	45 - 55	3.3
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.00	0.88-1.20	50	43 - 58	0.9
OCDF	M+2/M+4	0.86	0.76-1.02	99	63 - 159	-0.5

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range as specified in Table 6, Method 1613B, under VER.

(4) 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, Method 8290

12/2012
1613F4A.FRM

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 08/01/19

Instrument ID: E-HRMS-08

GC Column ID: DB-5MSUI

VER Data Filename: P618642

Analysis Date: 20-AUG-19 Time: 22:09:31

LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (5)
13C-2,3,7,8-TCDD	M/M+2	0.78	0.65-0.89	106	82 - 121	5.9
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.32-1.78	122	62 - 160	21.9
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	94	85 - 117	-5.9
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	99	85 - 118	-1.0
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.06	0.88-1.20	103	72 - 138	2.5
13C-OCDD	M+2/M+4	0.88	0.76-1.02	202	96 - 415	1.2
13C-2,3,7,8-TCDF	M/M+2	0.76	0.65-0.89	102	71 - 140	2.5
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.55	1.32-1.78	107	76 - 130	6.8
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.54	1.32-1.78	118	77 - 130	18.1
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.51	0.43-0.59	90	76 - 131	-9.6
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.52	0.43-0.59	91	70 - 143	-9.3
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.51	0.43-0.59	102	74 - 135	2.1
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.51	0.43-0.59	96	73 - 137	-4.1
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.44	0.37-0.51	97	78 - 129	-3.3
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.44	0.37-0.51	102	77 - 129	2.5
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	M+2/M+4			10.0	7.8 - 12.7	0.1

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range, as specified in Table 6, Method 1613B, under VER.

(4) No ion abundance ratio; report concentration found.

(5) The beginning CCAL %RSD for the labeled standard must not exceed +/- 30% Section 7.7.4.2. The ending CCAL must not exceed +/- 35%, Sec 8.3.2.4 (8290)

12/2012
1613F4B.FRM

ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
201833

Run #8 Filename P618642
Processed: 22-AUG-19 08:51:17

Samp: 1 Inj: 1
Sample ID: CS3

Acquired: 20-AUG-19 22:09:31

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	25:26	3.030e+03	4.061e+03	0.75	yes	no	0.873
2 Unk	1,2,3,7,8-PeCDF	30:29	2.501e+04	1.588e+04	1.57	yes	no	0.864
3 Unk	2,3,4,7,8-PeCDF	31:31	2.325e+04	1.546e+04	1.50	yes	no	0.825
4 Unk	1,2,3,4,7,8-HxCDF	34:24	1.977e+04	1.644e+04	1.20	yes	no	1.084
5 Unk	1,2,3,6,7,8-HxCDF	34:30	2.248e+04	1.889e+04	1.19	yes	no	0.994
6 Unk	2,3,4,6,7,8-HxCDF	35:03	1.971e+04	1.582e+04	1.25	yes	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	35:49	1.637e+04	1.346e+04	1.22	yes	no	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	37:07	1.621e+04	1.608e+04	1.01	yes	no	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	38:27	1.188e+04	1.193e+04	1.00	yes	no	1.104
10 Unk	OCDF	40:39	2.128e+04	2.487e+04	0.86	yes	no	0.993
11 Unk	2,3,7,8-TCDD	26:27	2.772e+03	3.766e+03	0.74	yes	no	0.989
12 Unk	1,2,3,7,8-PeCDD	31:49	1.998e+04	1.277e+04	1.57	yes	no	0.954
13 Unk	1,2,3,4,7,8-HxCDD	35:11	1.641e+04	1.339e+04	1.23	yes	no	1.020
14 Unk	1,2,3,6,7,8-HxCDD	35:16	1.859e+04	1.505e+04	1.24	yes	no	1.030
15 Unk	1,2,3,7,8,9-HxCDD	35:31	1.827e+04	1.479e+04	1.24	yes	no	1.007
16 Unk	1,2,3,4,6,7,8-HpCDD	38:01	1.377e+04	1.342e+04	1.03	yes	no	0.922
17 Unk	OCDD	40:28	2.346e+04	2.648e+04	0.89	yes	no	1.062
18 IS	13C-2,3,7,8-TCDF	25:26	3.833e+04	5.070e+04	0.76	yes	no	1.102
19 IS	13C-1,2,3,7,8-PeCDF	30:28	5.493e+04	3.554e+04	1.55	yes	no	1.074
20 IS	13C-2,3,4,7,8-PeCDF	31:30	5.684e+04	3.680e+04	1.54	yes	no	1.005
21 IS	13C-1,2,3,4,7,8-HxCDF	34:23	2.296e+04	4.477e+04	0.51	yes	no	1.059
22 IS	13C-1,2,3,6,7,8-HxCDF	34:30	2.760e+04	5.338e+04	0.52	yes	no	1.264
23 IS	13C-2,3,4,6,7,8-HxCDF	35:02	2.451e+04	4.775e+04	0.51	yes	no	1.066
24 IS	13C-1,2,3,7,8,9-HxCDF	35:48	1.948e+04	3.829e+04	0.51	yes	no	0.801
25 IS	13C-1,2,3,4,6,7,8-HpCDF	37:07	1.642e+04	3.756e+04	0.44	yes	no	0.789
26 IS	13C-1,2,3,4,7,8,9-HpCDF	38:26	1.297e+04	2.979e+04	0.44	yes	no	0.590
27 IS	13C-2,3,7,8-TCDD	26:26	3.071e+04	3.934e+04	0.78	yes	no	0.839
28 IS	13C-1,2,3,7,8-PeCDD	31:49	4.363e+04	2.786e+04	1.57	yes	no	0.744
29 IS	13C-1,2,3,4,7,8-HxCDD	35:10	3.368e+04	2.669e+04	1.26	yes	no	0.907
30 IS	13C-1,2,3,6,7,8-HxCDD	35:16	3.817e+04	3.024e+04	1.26	yes	no	0.978
31 IS	13C-1,2,3,4,6,7,8-HpCDD	38:00	3.032e+04	2.868e+04	1.06	yes	no	0.814
32 IS	13C-OCDD	40:28	4.364e+04	4.975e+04	0.88	yes	no	0.653
33 RS/RT	13C-1,2,3,4-TCDD	25:41	3.442e+04	4.447e+04	0.77	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	35:30	3.913e+04	3.155e+04	1.24	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	26:27	7.057e+03				no	0.894

ALS ENVIRONMENTAL
10450 Stancliff Rd., Suite 115
Houston, TX 77099
Office (281) 530-5656. Fax (281) 530-5887

ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
201833

Run #8 Filename P618642 Samp: 1 Inj: 1 Acquired: 20-AUG-19 22:09:31
Processed: 22-AUG-19 08:51:17 LAB. ID: CS3

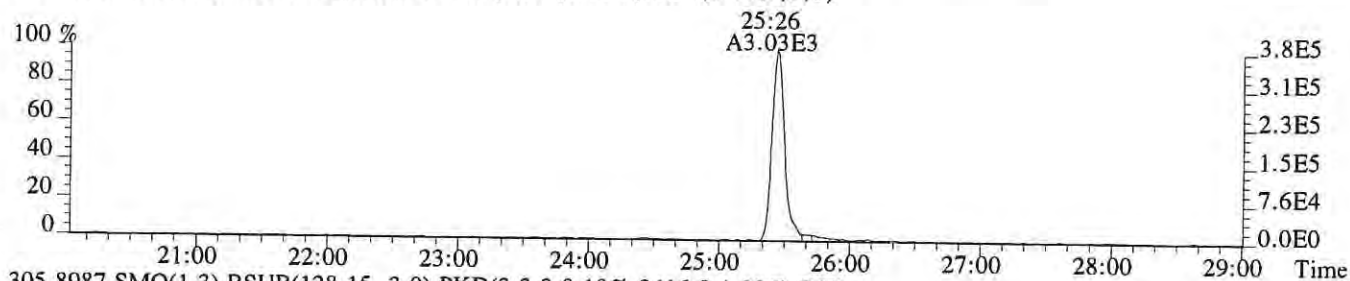
	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	3.81e+05	7.92e+02	4.8e+02	5.09e+05	3.42e+03	1.5e+02
2	1,2,3,7,8-PeCDF	3.80e+06	7.04e+02	5.4e+03	2.30e+06	1.24e+03	1.8e+03
3	2,3,4,7,8-PeCDF	3.80e+06	7.04e+02	5.4e+03	2.52e+06	1.24e+03	2.0e+03
4	1,2,3,4,7,8-HxCDF	3.99e+06	1.05e+03	3.8e+03	3.28e+06	1.67e+03	2.0e+03
5	1,2,3,6,7,8-HxCDF	4.22e+06	1.05e+03	4.0e+03	3.48e+06	1.67e+03	2.1e+03
6	2,3,4,6,7,8-HxCDF	3.89e+06	1.05e+03	3.7e+03	3.15e+06	1.67e+03	1.9e+03
7	1,2,3,7,8,9-HxCDF	3.13e+06	1.05e+03	3.0e+03	2.56e+06	1.67e+03	1.5e+03
8	1,2,3,4,6,7,8-HpCDF	3.34e+06	1.74e+03	1.9e+03	3.37e+06	4.64e+03	7.2e+02
9	1,2,3,4,7,8,9-HpCDF	2.36e+06	1.74e+03	1.4e+03	2.38e+06	4.64e+03	5.1e+02
10	OCDF	3.90e+06	6.38e+03	6.1e+02	4.47e+06	3.71e+03	1.2e+03
11	2,3,7,8-TCDD	3.99e+05	3.86e+03	1.0e+02	5.07e+05	2.22e+03	2.3e+02
12	1,2,3,7,8-PeCDD	3.31e+06	2.98e+03	1.1e+03	2.08e+06	2.48e+03	8.4e+02
13	1,2,3,4,7,8-HxCDD	3.59e+06	4.51e+03	7.9e+02	2.94e+06	5.56e+03	5.3e+02
14	1,2,3,6,7,8-HxCDD	3.46e+06	4.51e+03	7.7e+02	2.83e+06	5.56e+03	5.1e+02
15	1,2,3,7,8,9-HxCDD	3.43e+06	4.51e+03	7.6e+02	2.79e+06	5.56e+03	5.0e+02
16	1,2,3,4,6,7,8-HpCDD	2.84e+06	4.67e+03	6.1e+02	2.77e+06	5.31e+03	5.2e+02
17	OCDD	4.37e+06	6.86e+03	6.4e+02	4.97e+06	6.50e+03	7.6e+02
18	13C-2,3,7,8-TCDF	4.74e+06	3.16e+04	1.5e+02	6.16e+06	7.64e+03	8.1e+02
19	13C-1,2,3,7,8-PeCDF	8.87e+06	1.08e+03	8.2e+03	5.73e+06	1.54e+03	3.7e+03
20	13C-2,3,4,7,8-PeCDF	9.34e+06	1.08e+03	8.6e+03	6.01e+06	1.54e+03	3.9e+03
21	13C-1,2,3,4,7,8-HxCDF	4.59e+06	1.08e+03	4.2e+03	8.86e+06	2.52e+03	3.5e+03
22	13C-1,2,3,6,7,8-HxCDF	5.20e+06	1.08e+03	4.8e+03	1.00e+07	2.52e+03	4.0e+03
23	13C-2,3,4,6,7,8-HxCDF	4.85e+06	1.08e+03	4.5e+03	9.36e+06	2.52e+03	3.7e+03
24	13C-1,2,3,7,8,9-HxCDF	3.66e+06	1.08e+03	3.4e+03	7.23e+06	2.52e+03	2.9e+03
25	13C-1,2,3,4,6,7,8-HpCDF	3.39e+06	2.36e+03	1.4e+03	7.75e+06	1.50e+03	5.2e+03
26	13C-1,2,3,4,7,8,9-HpCDF	2.63e+06	2.36e+03	1.1e+03	6.04e+06	1.50e+03	4.0e+03
27	13C-2,3,7,8-TCDD	4.23e+06	9.64e+03	4.4e+02	5.35e+06	4.08e+03	1.3e+03
28	13C-1,2,3,7,8-PeCDD	7.13e+06	1.44e+03	4.9e+03	4.59e+06	1.26e+03	3.6e+03
29	13C-1,2,3,4,7,8-HxCDD	7.26e+06	2.06e+03	3.5e+03	5.81e+06	2.08e+03	2.8e+03
30	13C-1,2,3,6,7,8-HxCDD	7.08e+06	2.06e+03	3.4e+03	5.66e+06	2.08e+03	2.7e+03
31	13C-1,2,3,4,6,7,8-HpCDD	6.29e+06	1.37e+03	4.6e+03	6.02e+06	7.84e+02	7.7e+03
32	13C-OCDD	8.09e+06	6.32e+03	1.3e+03	9.21e+06	5.65e+03	1.6e+03
33	13C-1,2,3,4-TCDD	4.51e+06	9.64e+03	4.7e+02	5.90e+06	4.08e+03	1.4e+03
34	13C-1,2,3,7,8,9-HxCDD	7.30e+06	2.06e+03	3.5e+03	6.01e+06	2.08e+03	2.9e+03
35	37Cl-2,3,7,8-TCDD	9.75e+05	3.34e+03	2.9e+02			

---Sample Calculation---

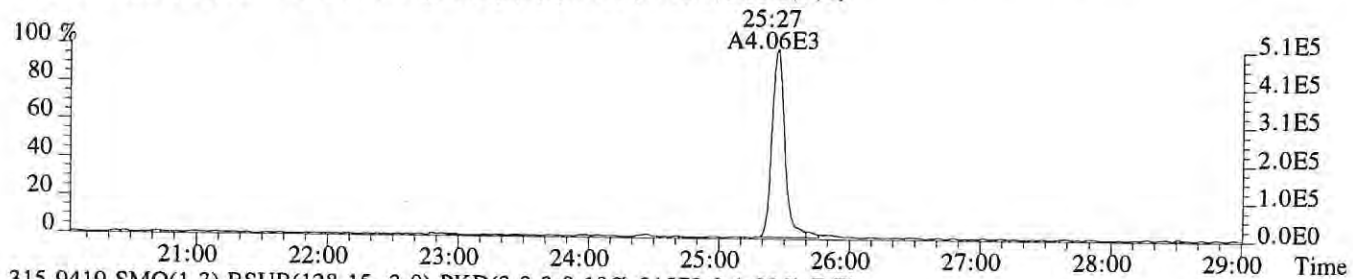
$$D/L \text{ TCDD} = \frac{2.5 \times (3.860e+03 + 2.220e+03) \times 100}{(4.228e+06 + 5.353e+06) \times (\quad) \times 0.989} =$$

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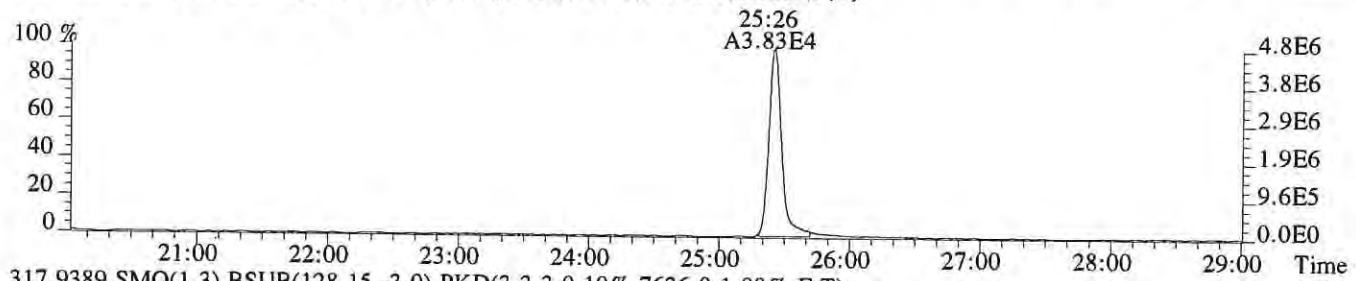
File: P618642 #1-637 Acq: 20-AUG-2019 22:09:31 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: CS3
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,792.0,1.00%,F,T)



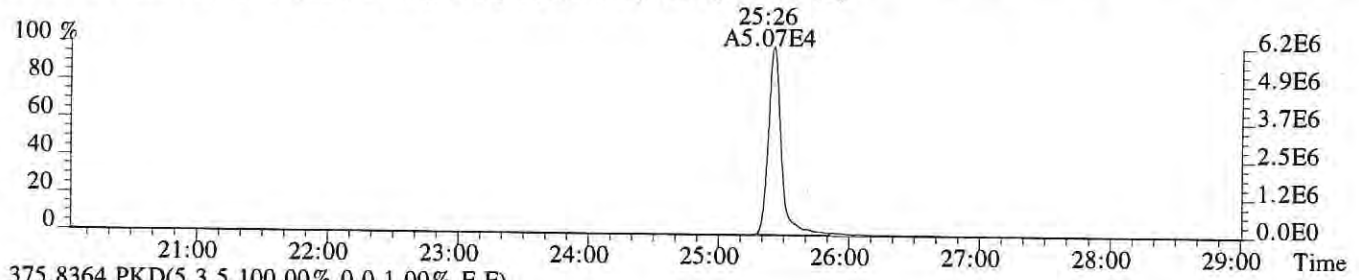
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3416.0,1.00%,F,T)



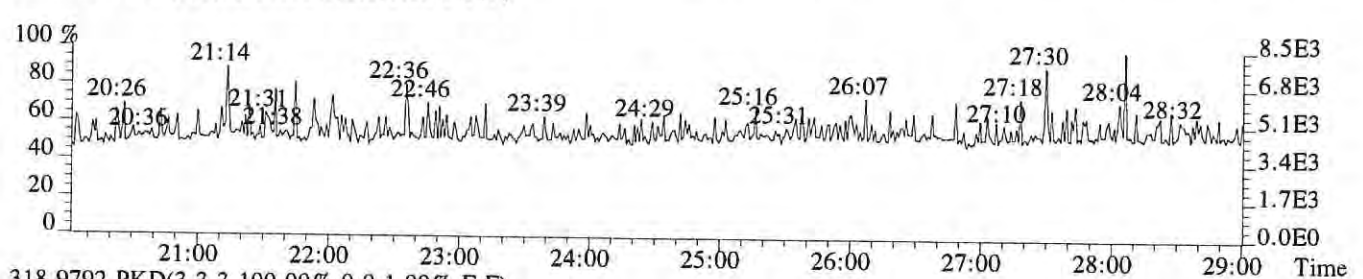
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,31572.0,1.00%,F,T)



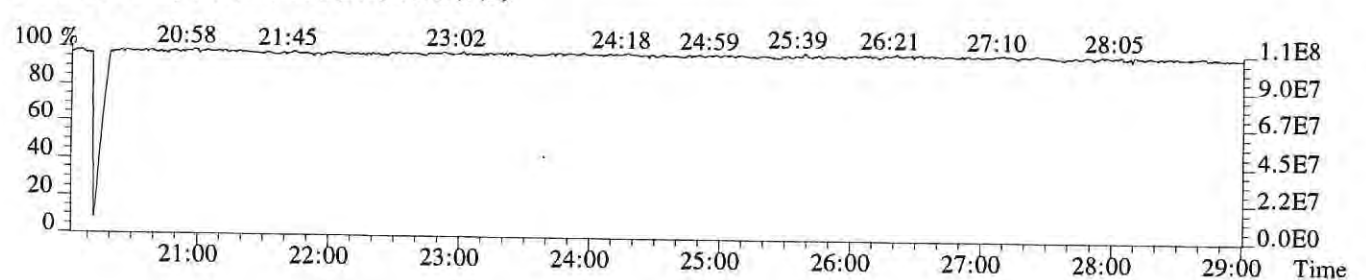
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,7636.0,1.00%,F,T)



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



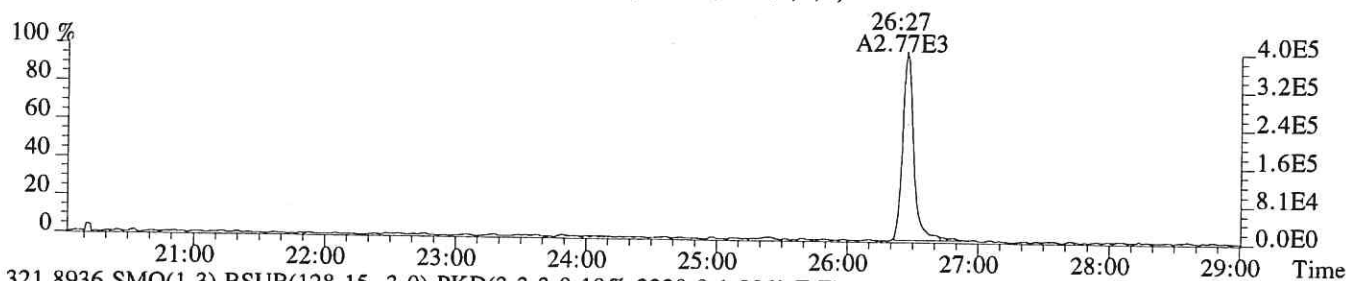
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



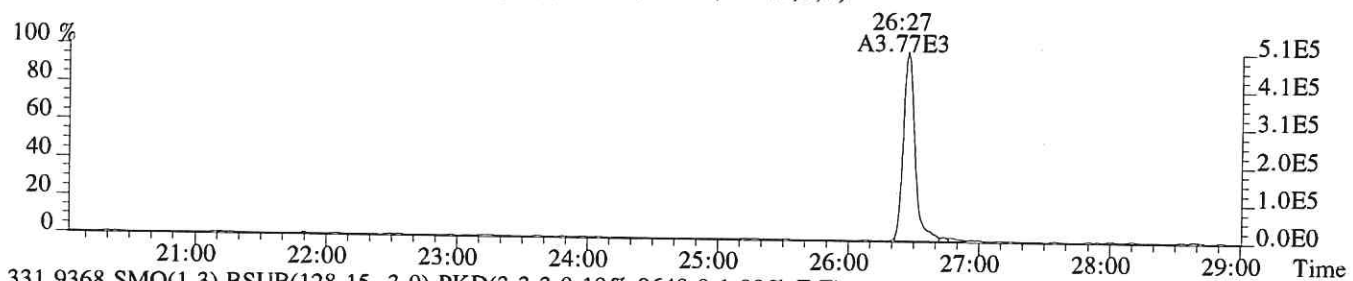
File: P618642 #1-637 Acq: 20-AUG-2019 22:09:31 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp: CS3

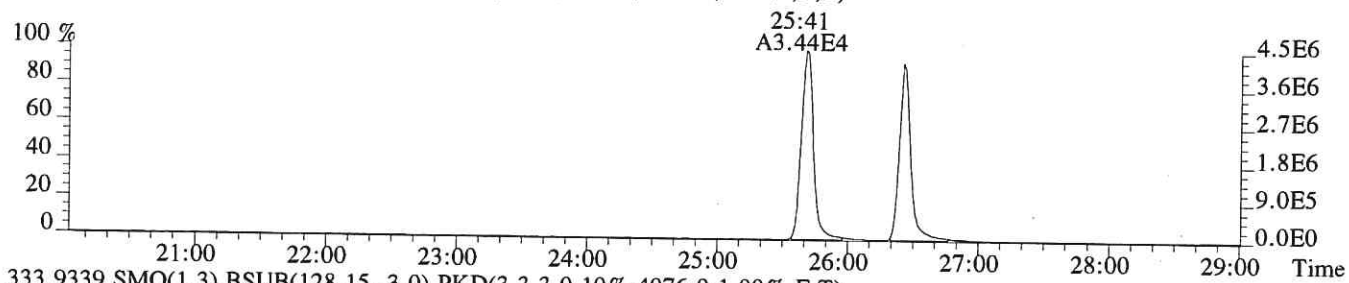
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3860.0,1.00%,F,T)



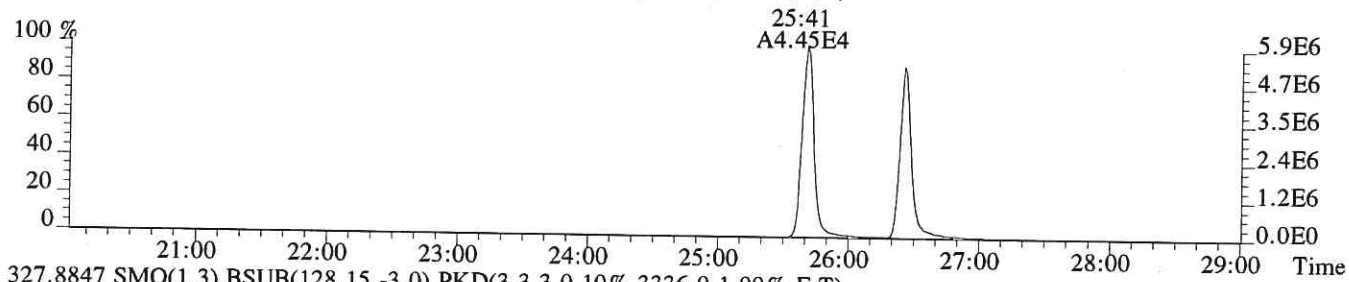
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2220.0,1.00%,F,T)



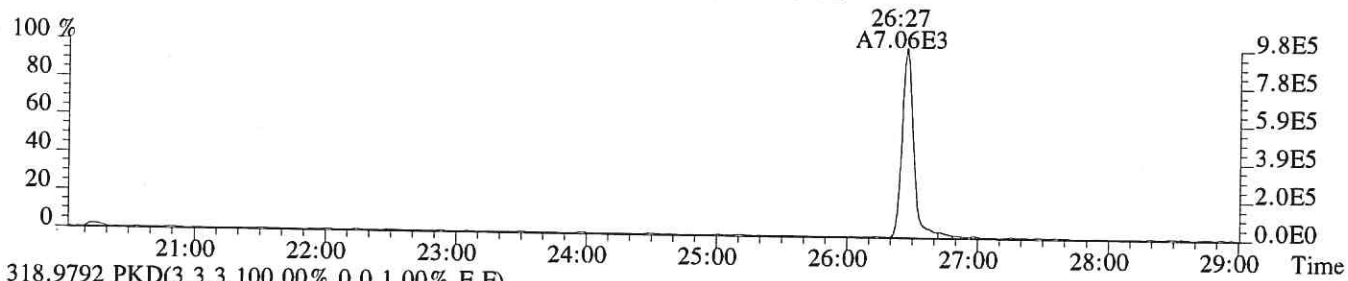
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,9640.0,1.00%,F,T)



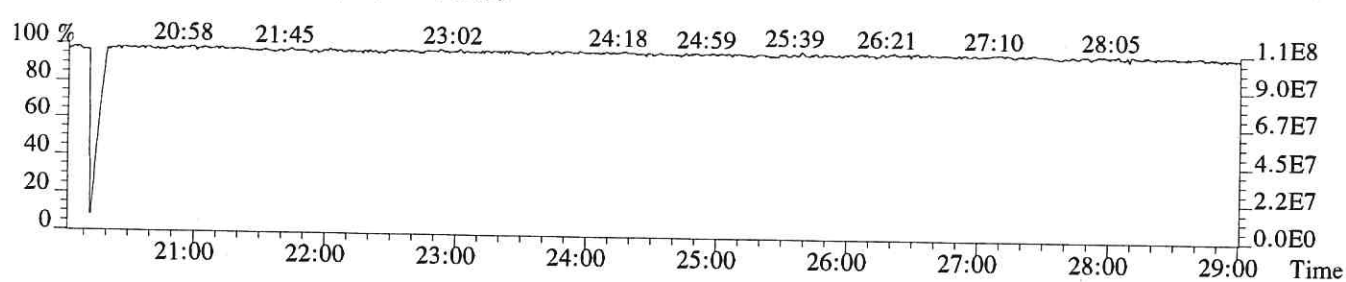
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4076.0,1.00%,F,T)



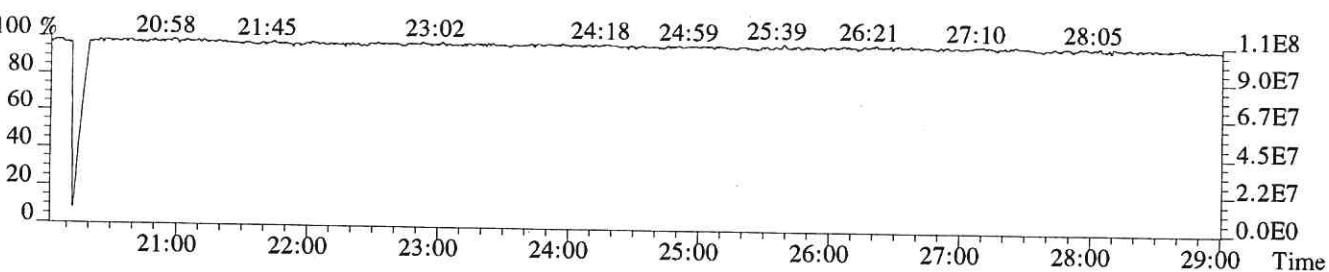
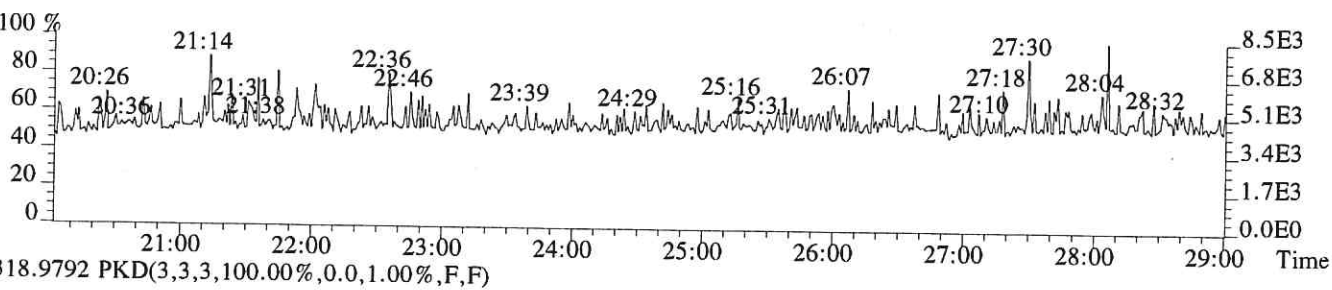
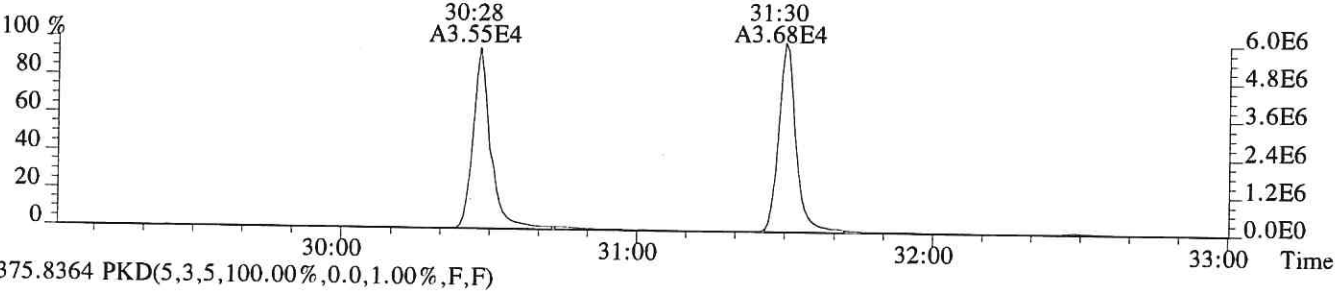
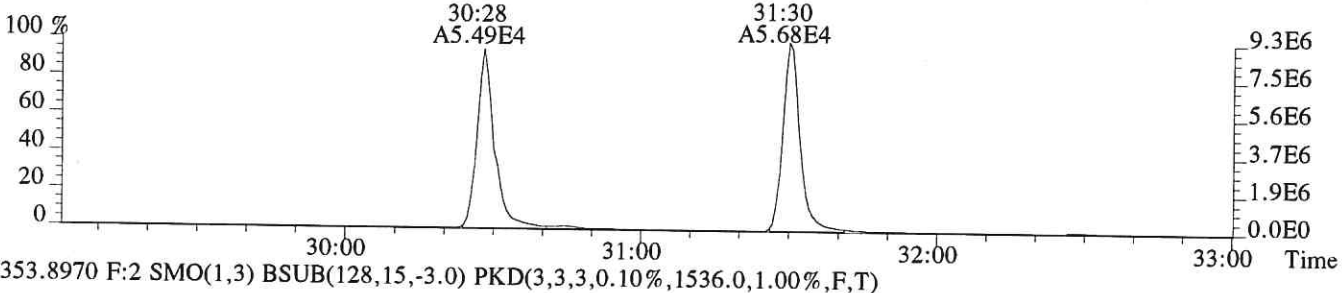
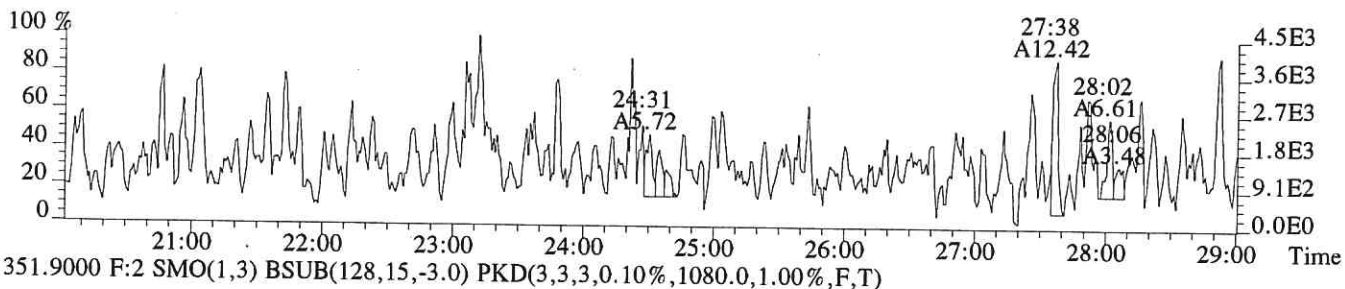
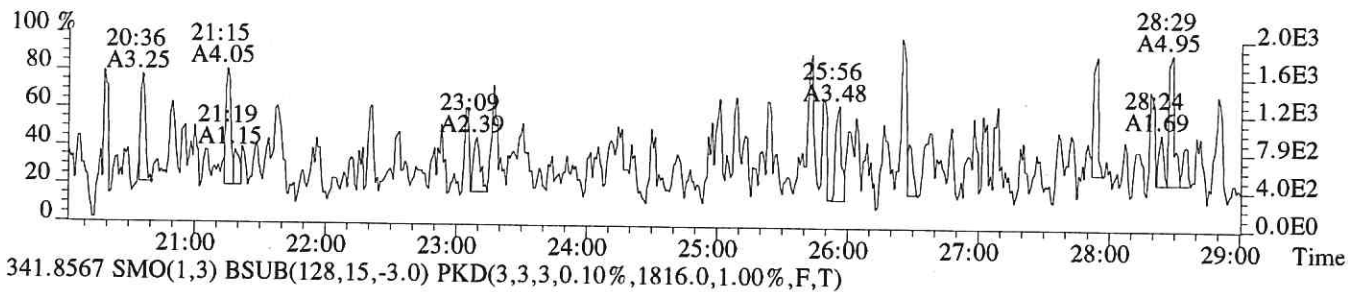
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3336.0,1.00%,F,T)



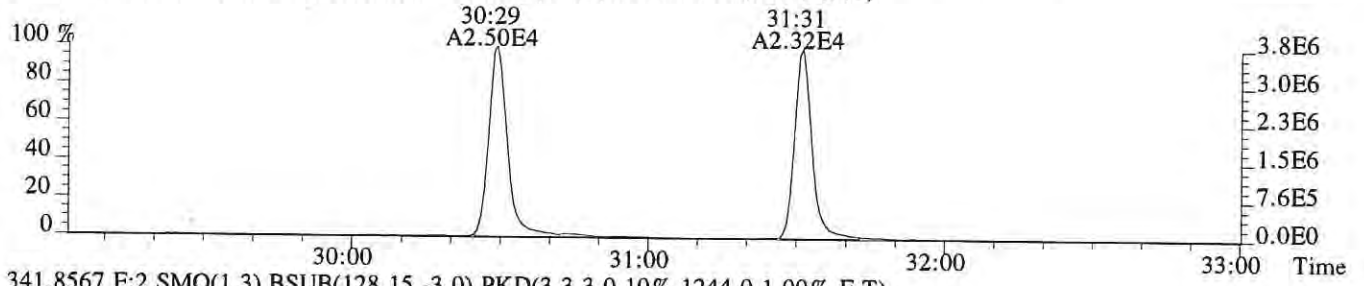
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



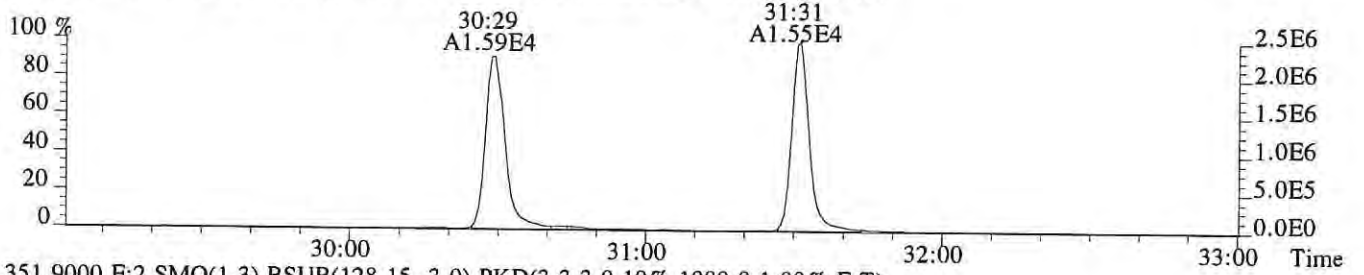
File: P618642 #1-637 Acq: 20-AUG-2019 22:09:31 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp: CS3
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,724.0,1.00%,F,T)



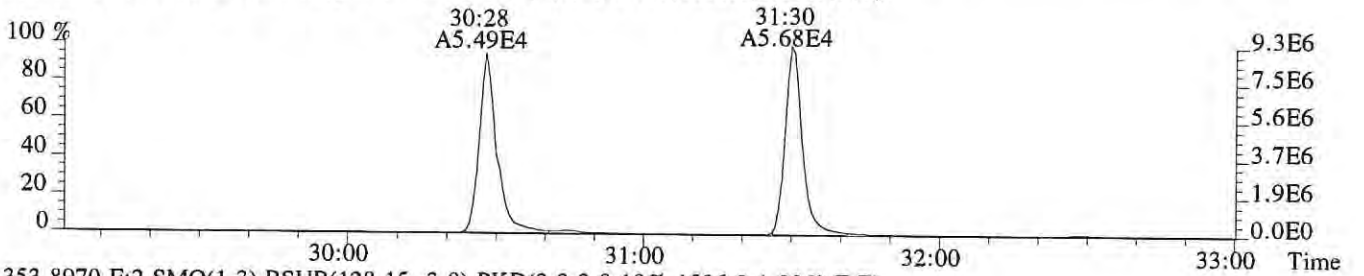
File:P618642 #1-357 Acq:20-AUG-2019 22:09:31 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:CS3
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,704.0,1.00%,F,T)



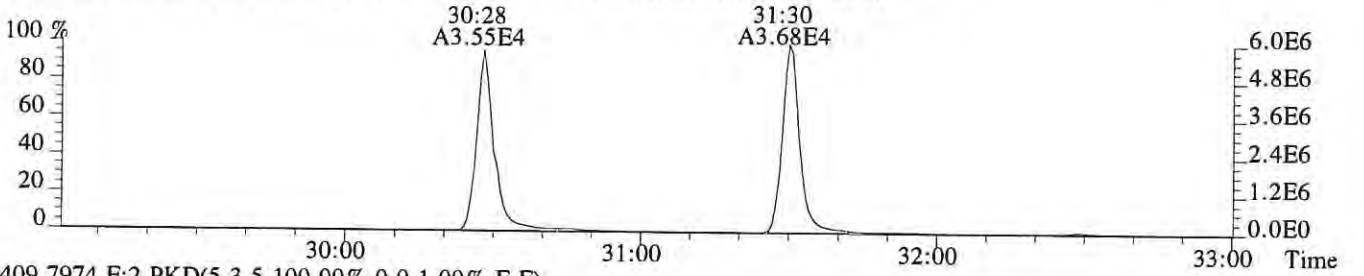
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1244.0,1.00%,F,T)



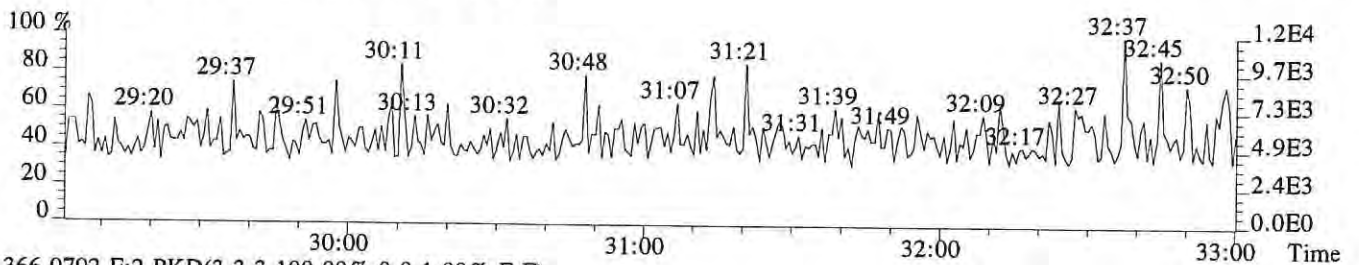
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1080.0,1.00%,F,T)



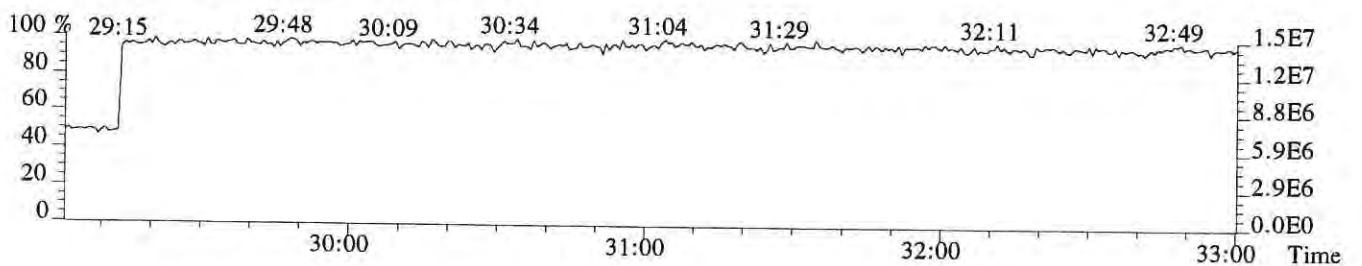
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1536.0,1.00%,F,T)



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



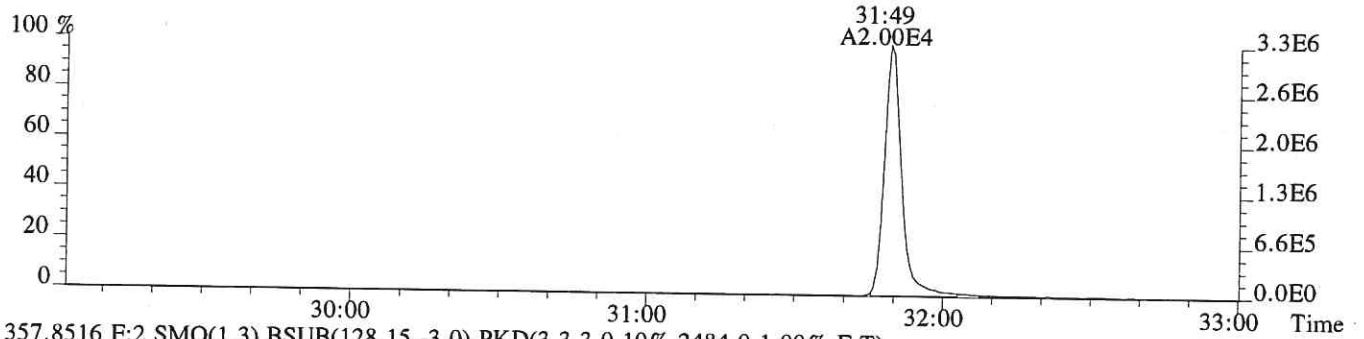
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



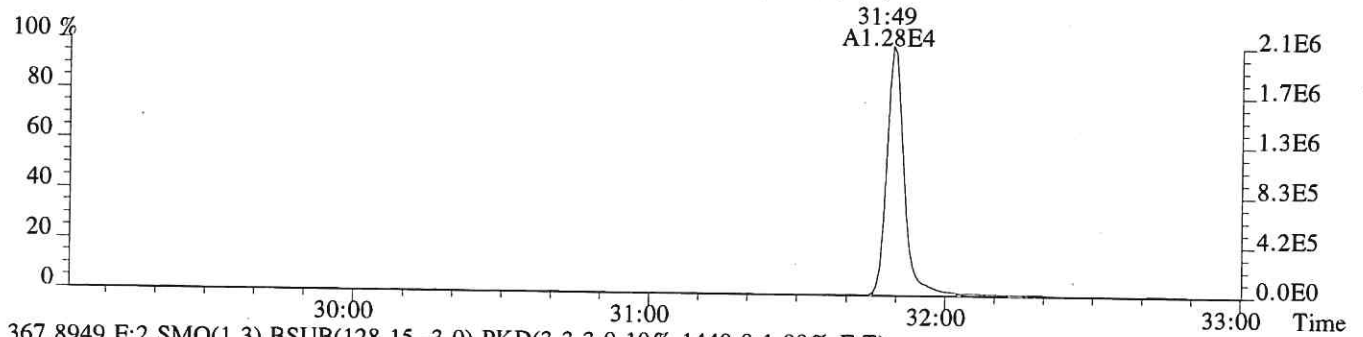
File: P618642 #1-357 Acq: 20-AUG-2019 22:09:31 Probe EI+ Magnet SIR VG BioTech Mass spectr

Sample#1 Exp: CS3

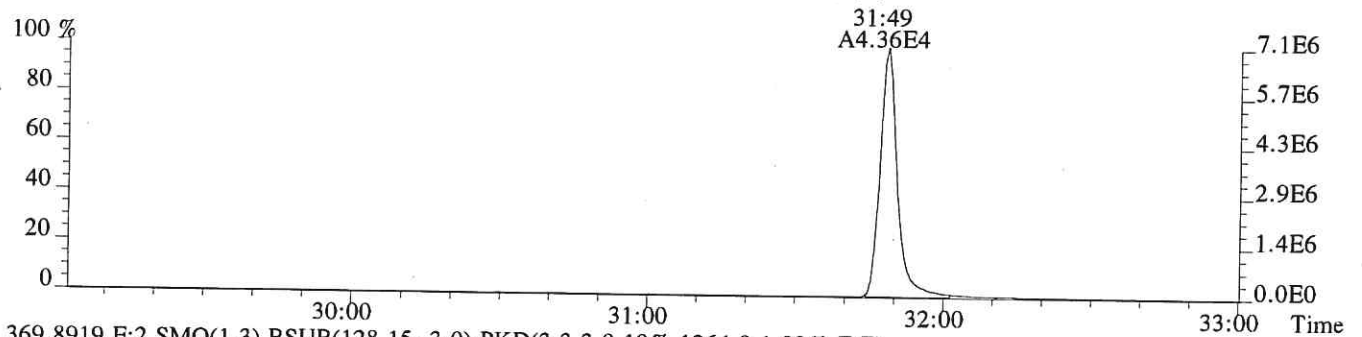
355.8546 F: 2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2976.0,1.00%,F,T)



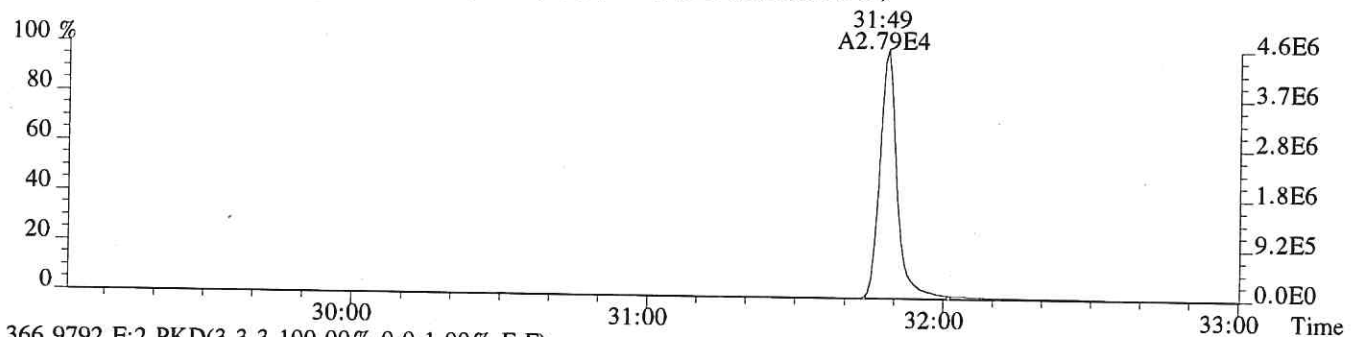
357.8516 F: 2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2484.0,1.00%,F,T)



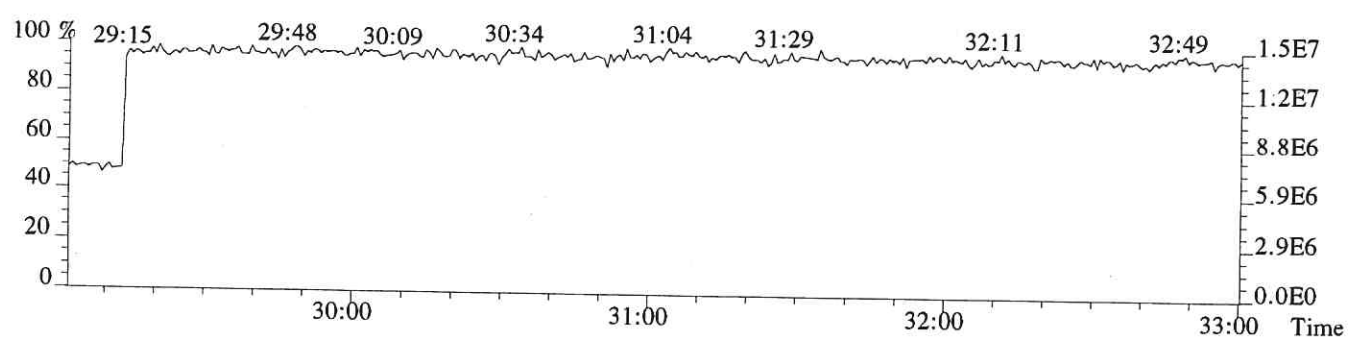
367.8949 F: 2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1440.0,1.00%,F,T)



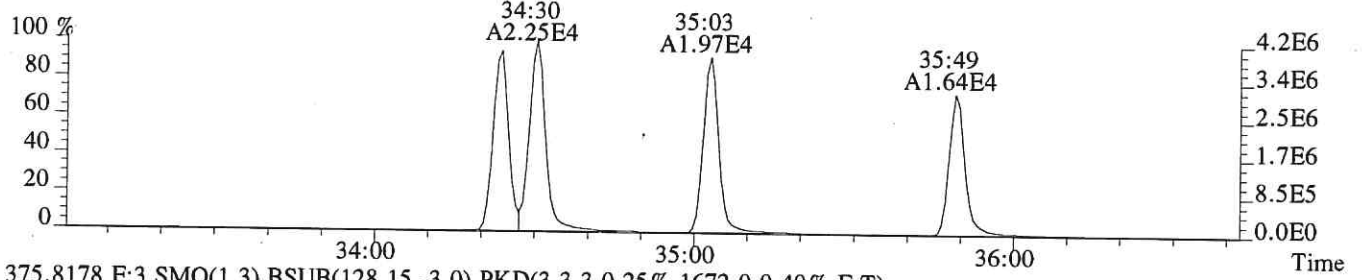
369.8919 F: 2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1264.0,1.00%,F,T)



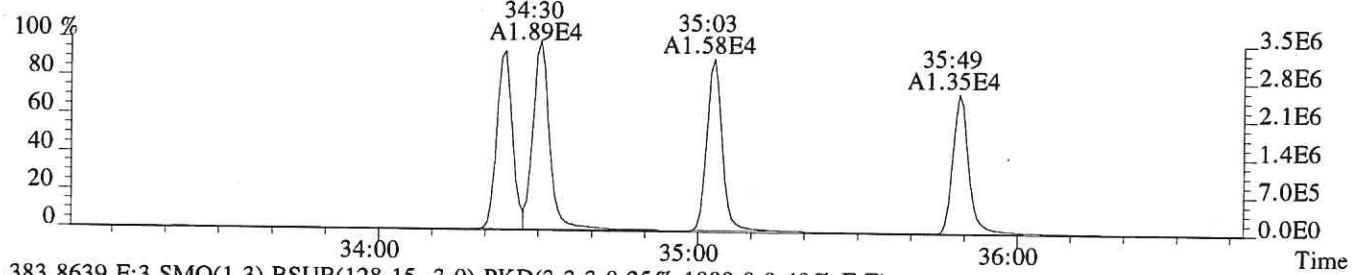
366.9792 F: 2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



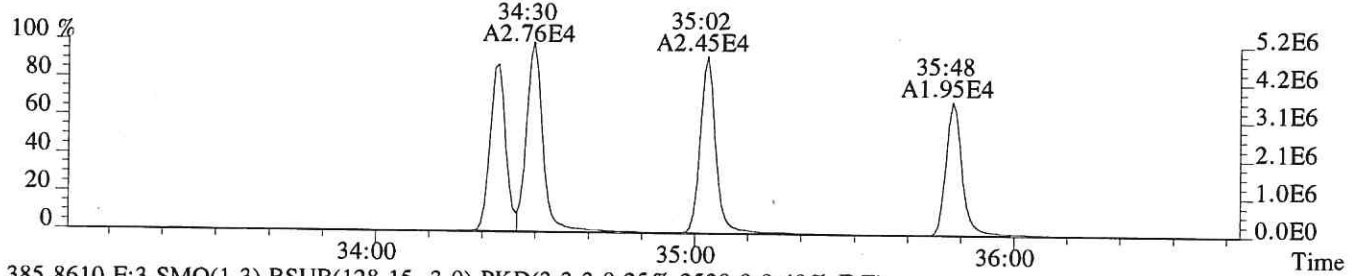
File:P618642 #1-331 Acq:20-AUG-2019 22:09:31 Probe EI+ Magnet SIR VG BioTech Mass spectrE
Sample#1 Exp:CS3
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1052.0,0.40%,F,T)



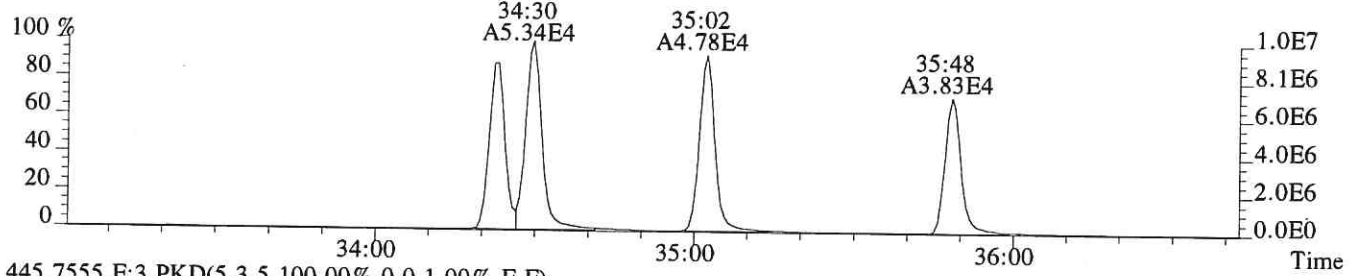
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1672.0,0.40%,F,T)



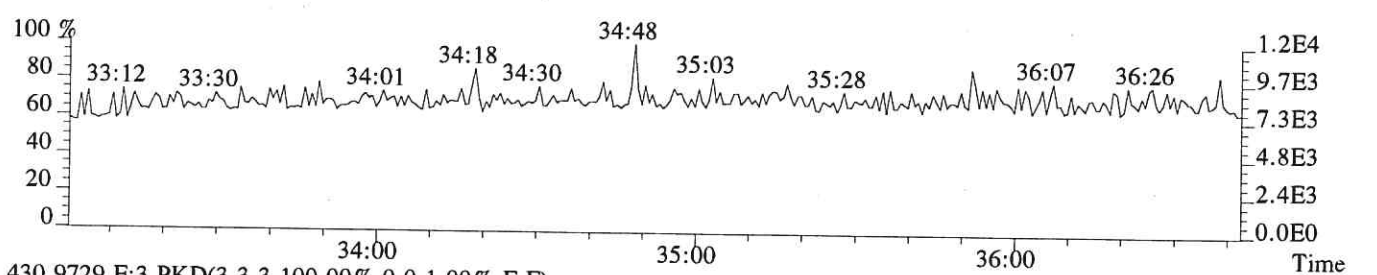
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1080.0,0.40%,F,T)



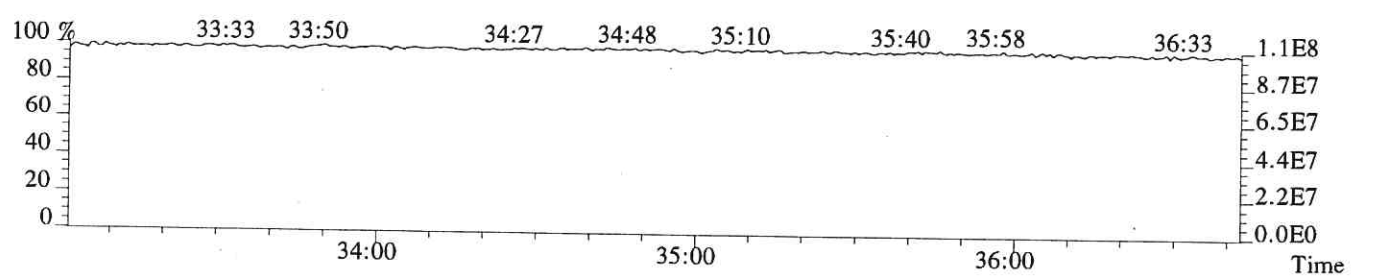
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2520.0,0.40%,F,T)



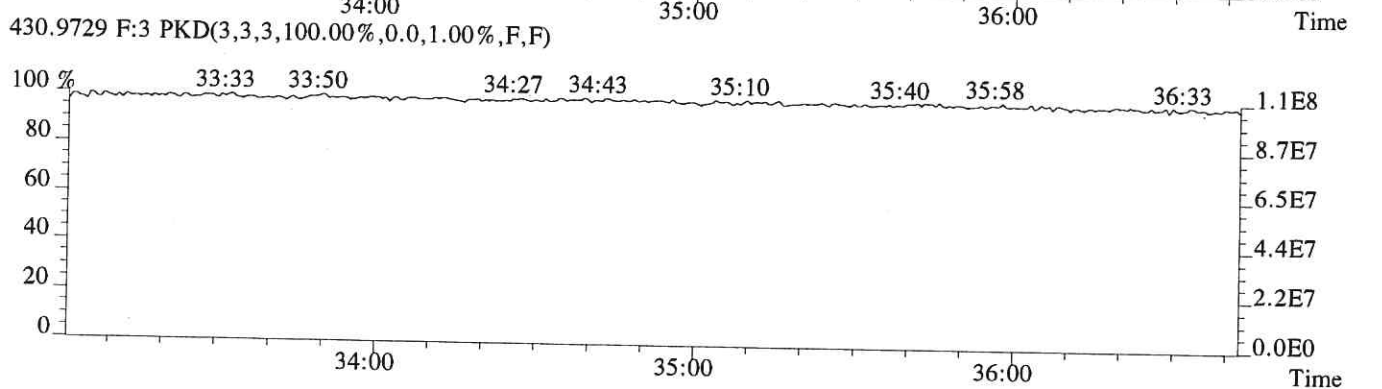
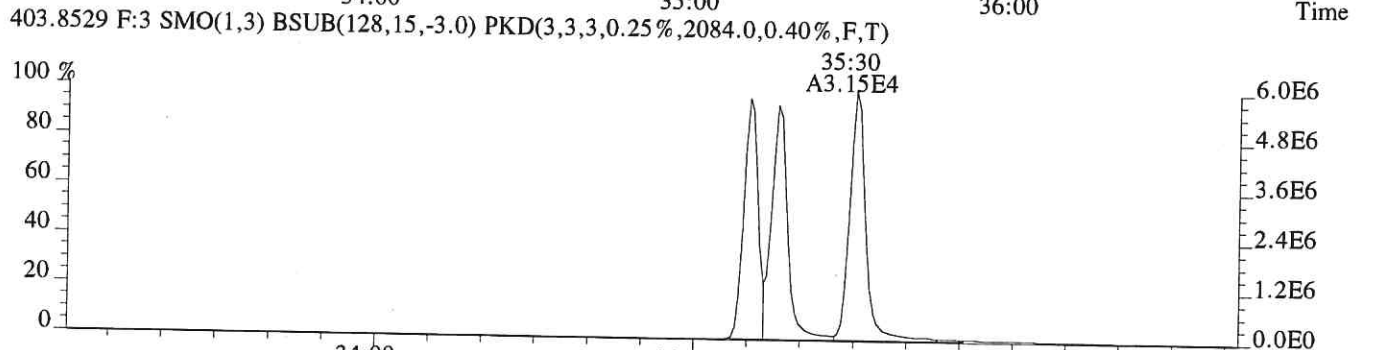
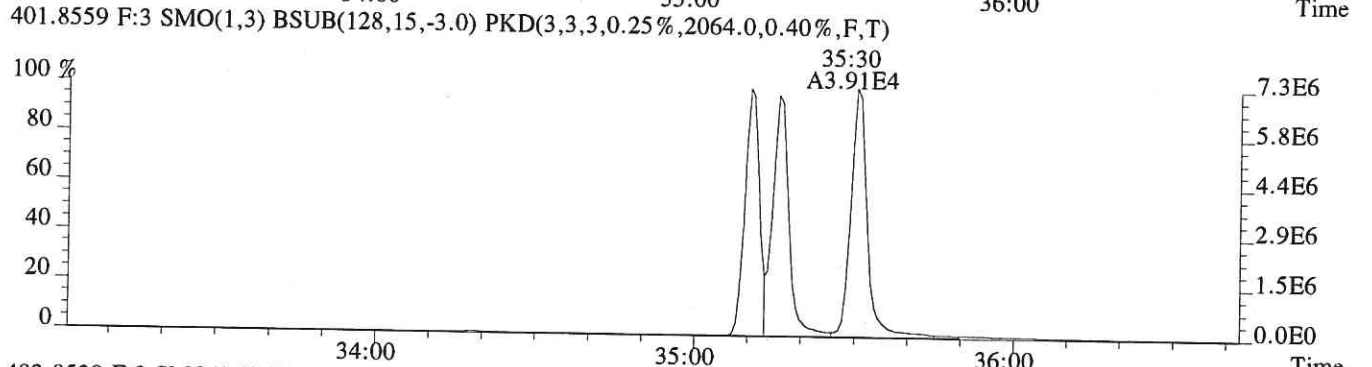
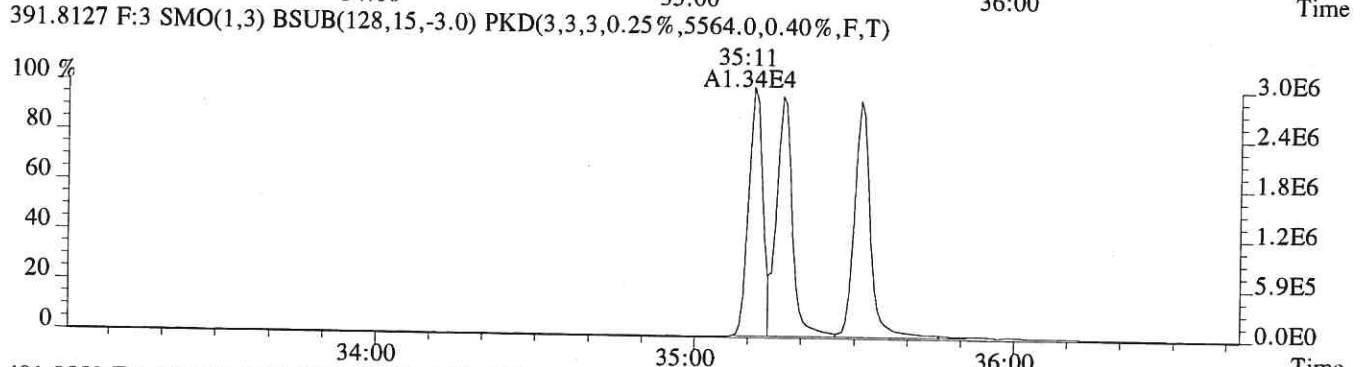
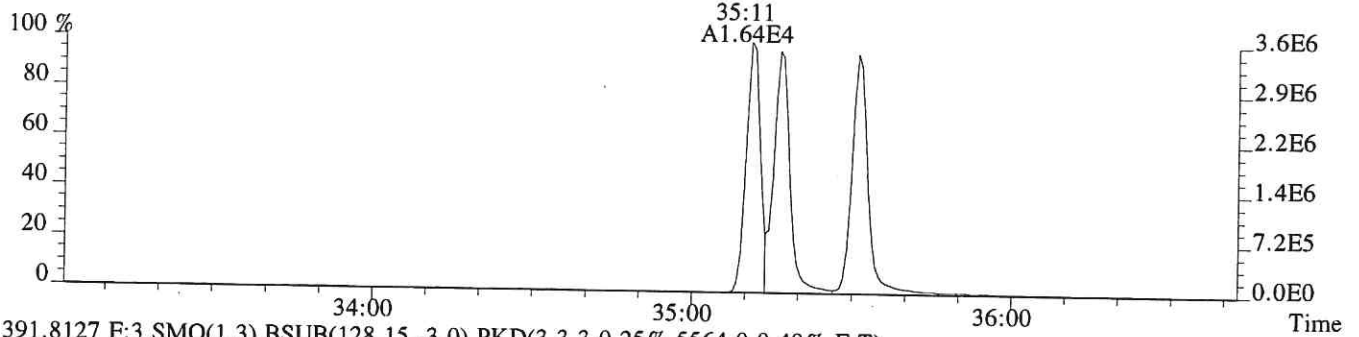
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



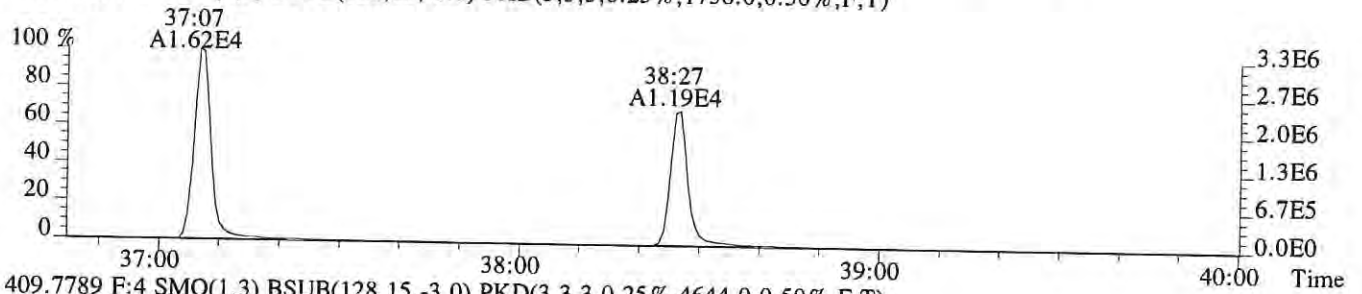
File:P618642 #1-331 Acq:20-AUG-2019 22:09:31 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4512.0,0.40%,F,T)



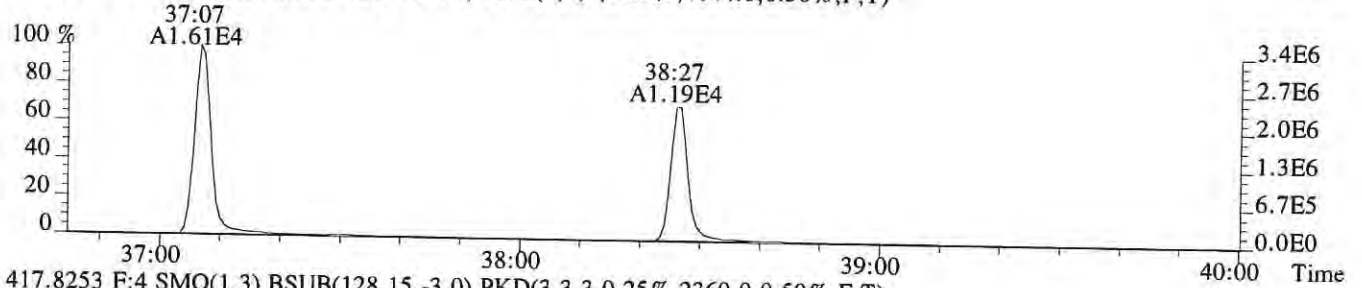
File:P618642 #1-294 Acq:20-AUG-2019 22:09:31 Probe EI+ Magnet SIR VG BioTech Mass spectr

Sample#1 Exp:CS3

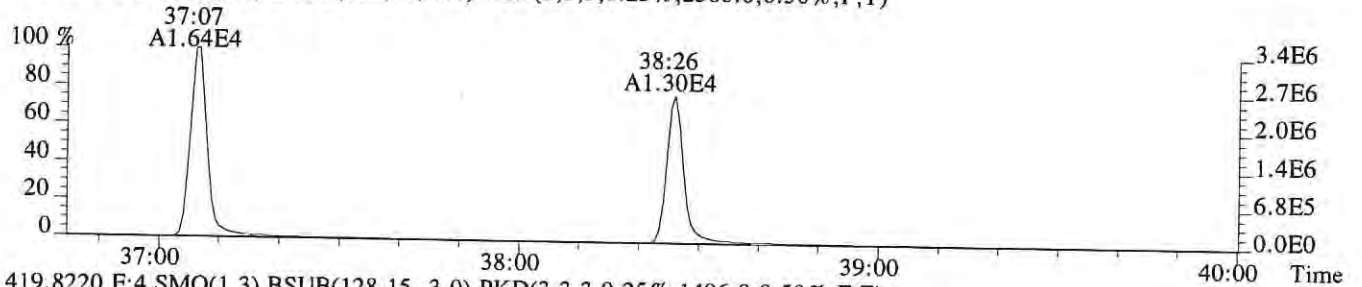
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1736.0,0.50%,F,T)



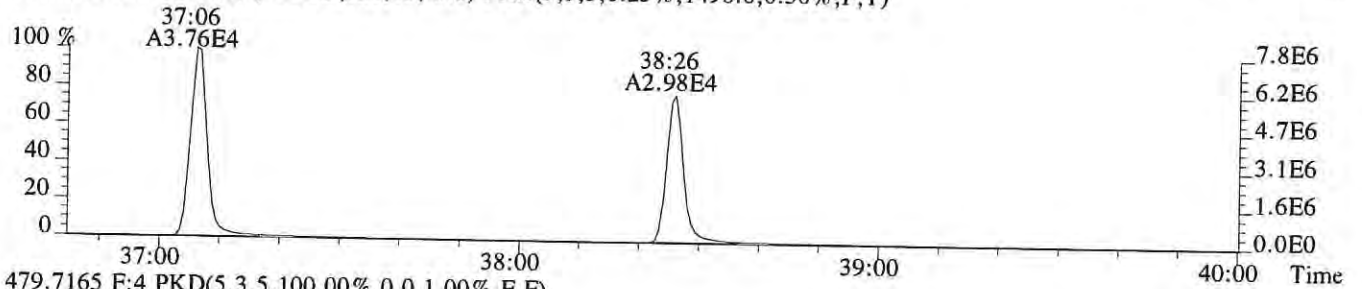
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4644.0,0.50%,F,T)



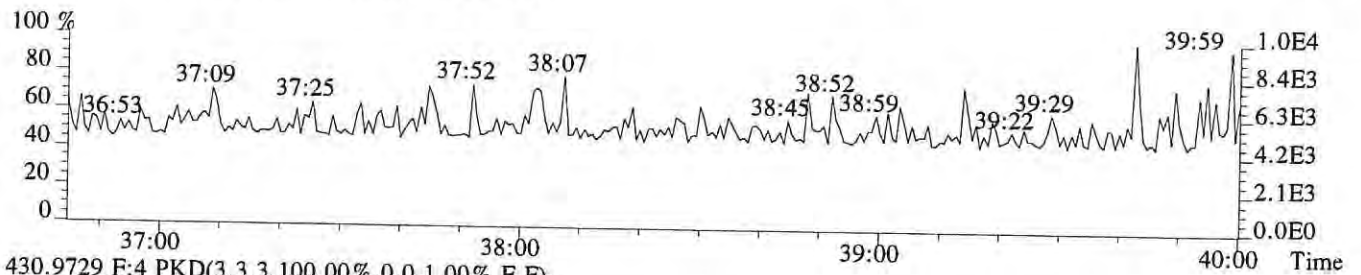
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2360.0,0.50%,F,T)



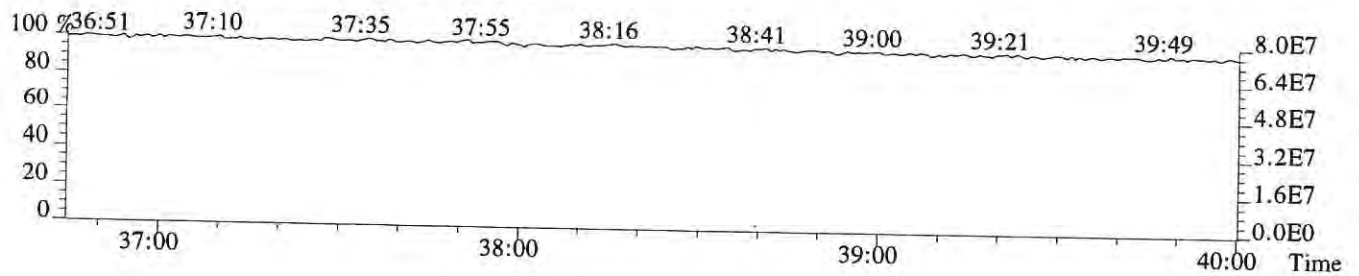
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1496.0,0.50%,F,T)



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

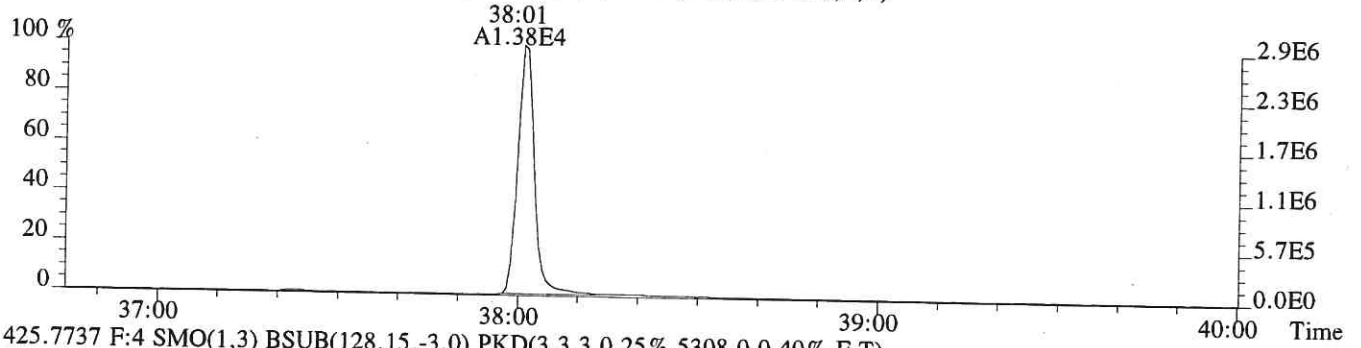


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

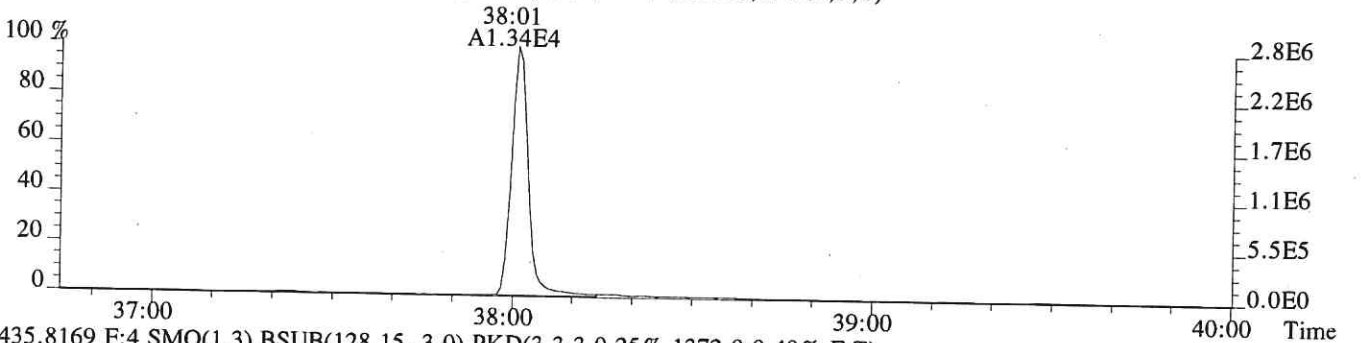


File:P618642 #1-294 Acq:20-AUG-2019 22:09:31 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3

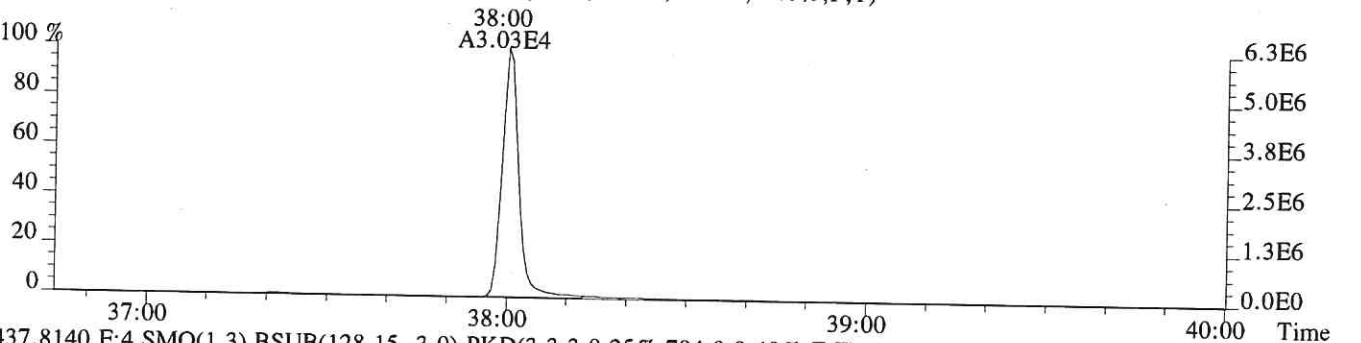
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4668.0,0.40%,F,T)



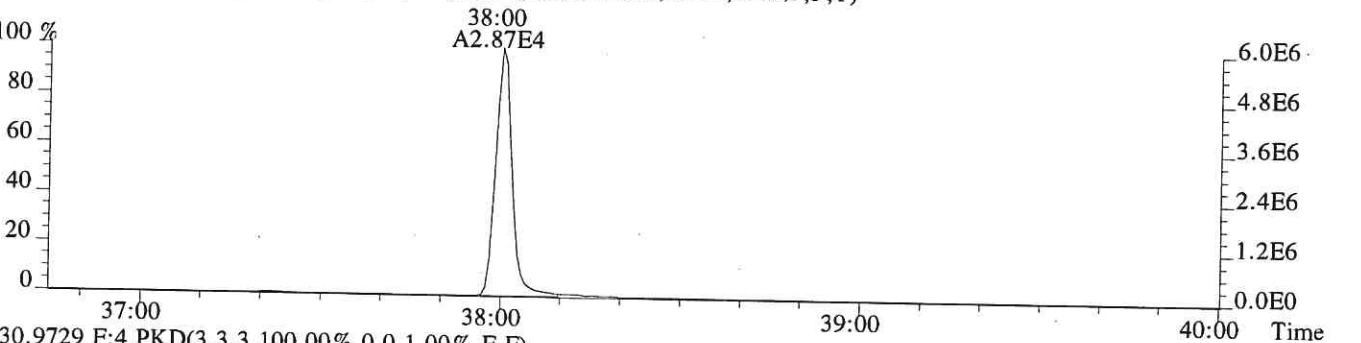
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5308.0,0.40%,F,T)



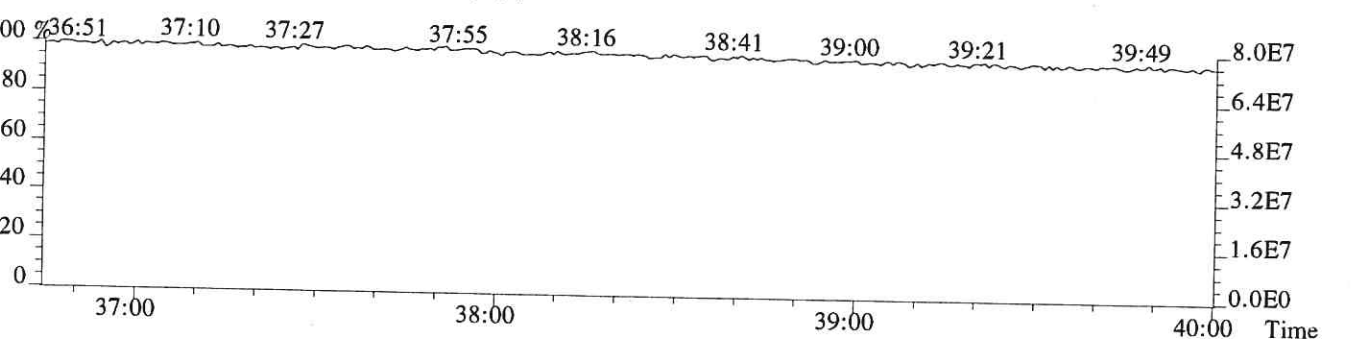
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1372.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,784.0,0.40%,F,T)

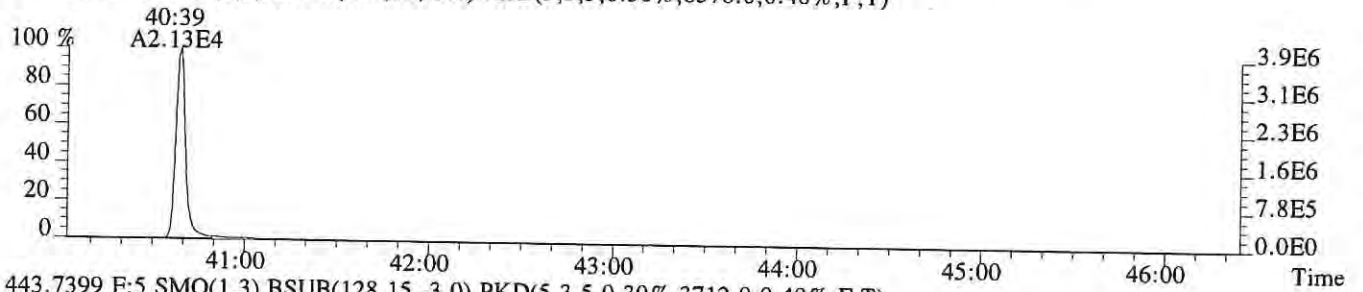


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

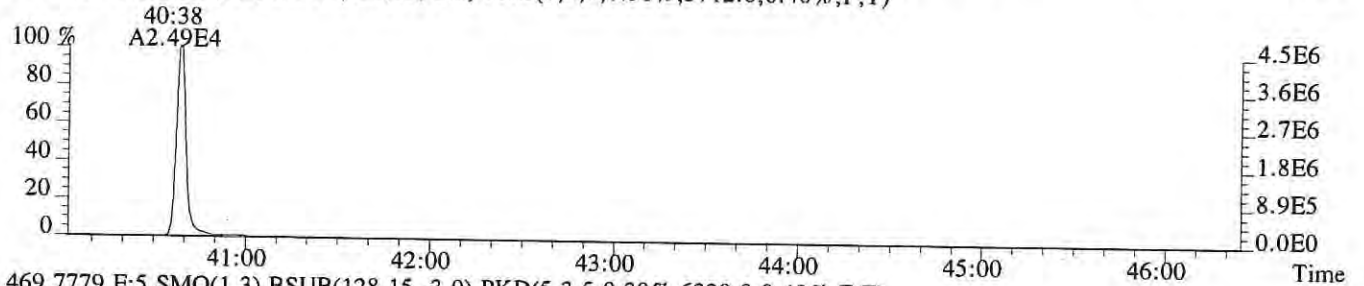


File:P618642 #1-574 Acq:20-AUG-2019 22:09:31 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3

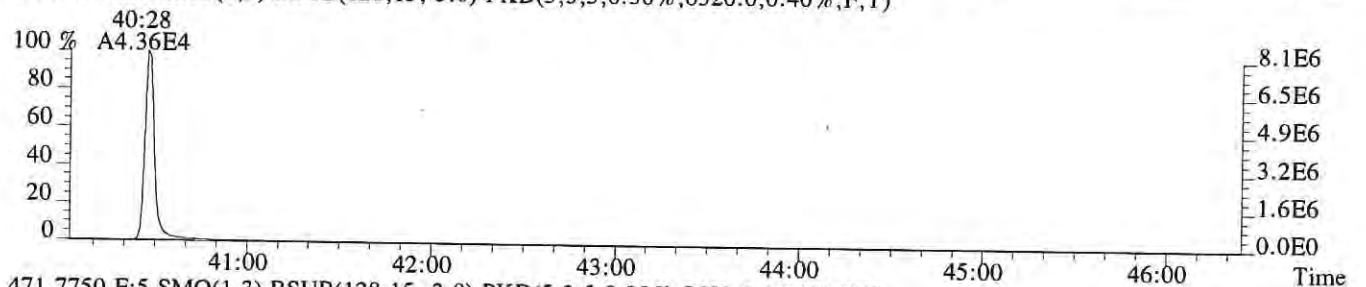
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6376.0,0.40%,F,T)



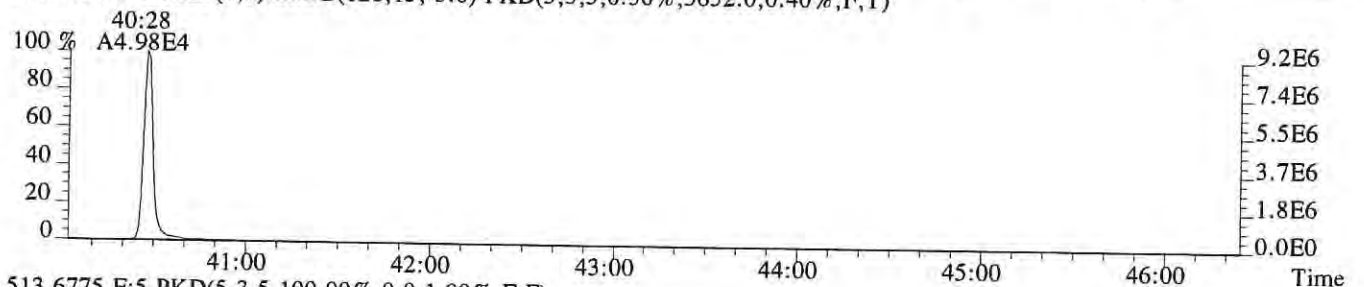
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3712.0,0.40%,F,T)



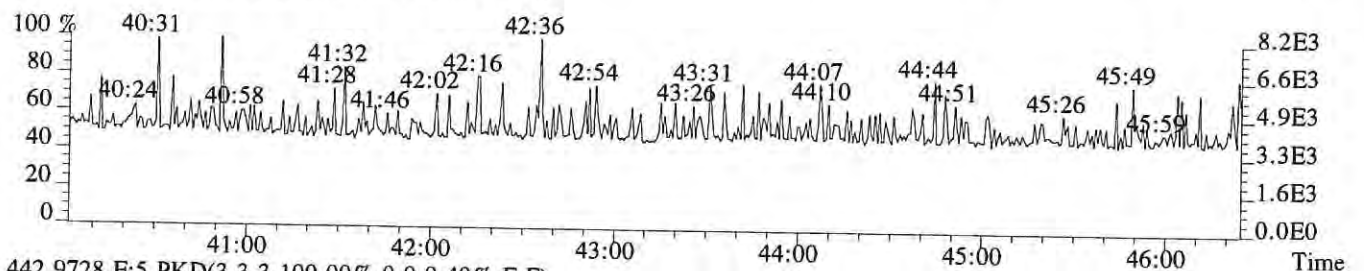
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6320.0,0.40%,F,T)



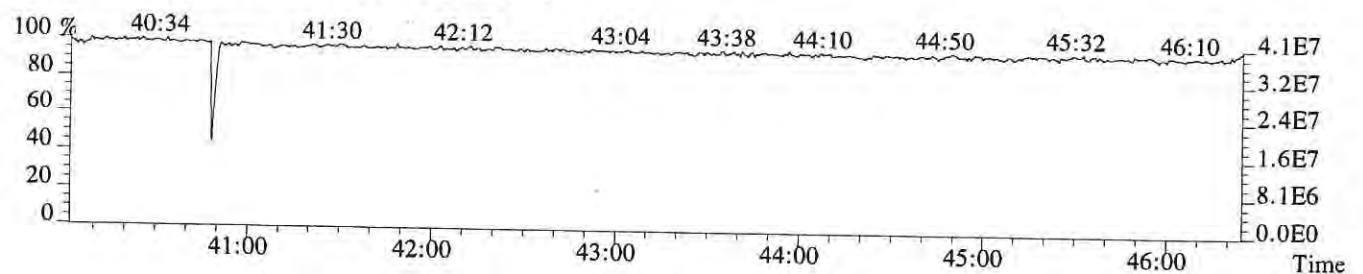
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,5652.0,0.40%,F,T)



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

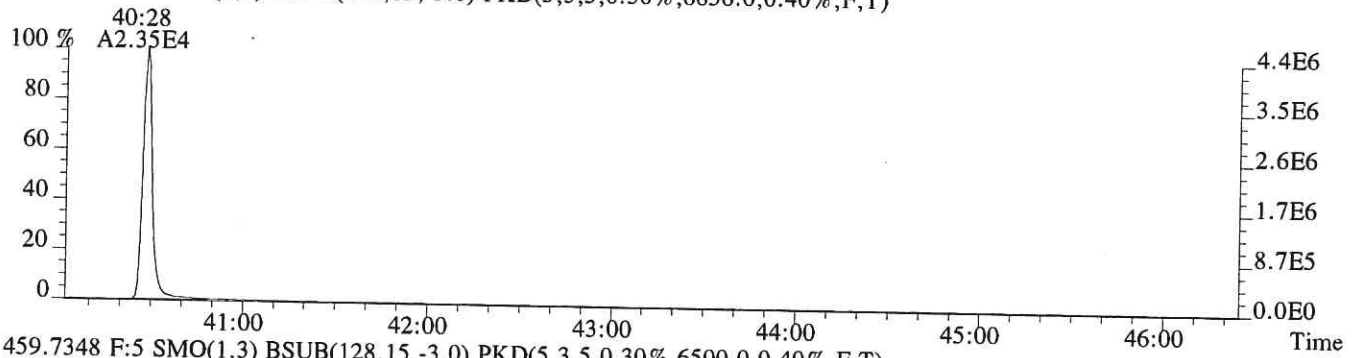


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

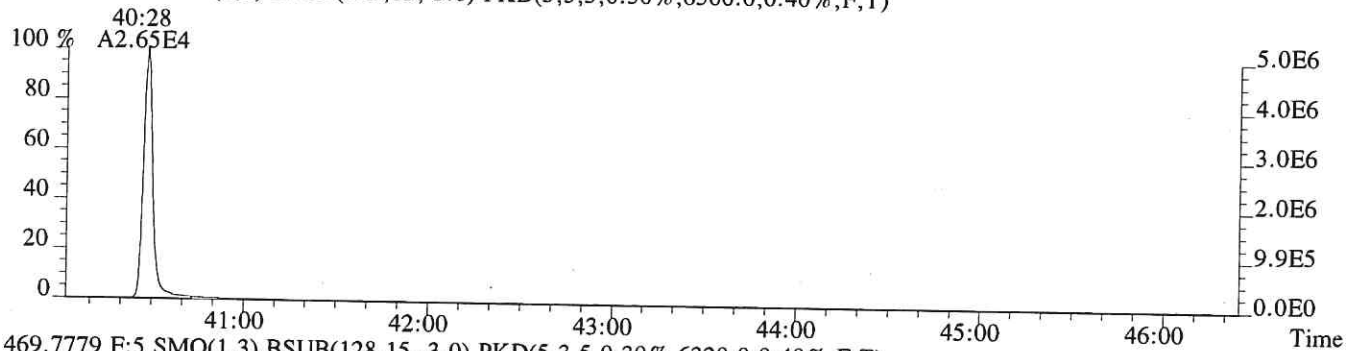


File: P618642 #1-574 Acq: 20-AUG-2019 22:09:31 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: CS3

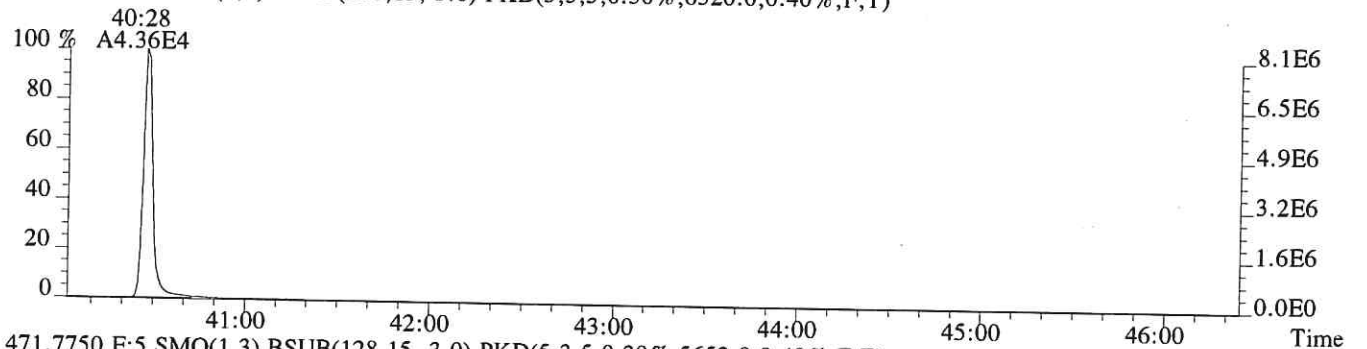
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6856.0,0.40%,F,T)



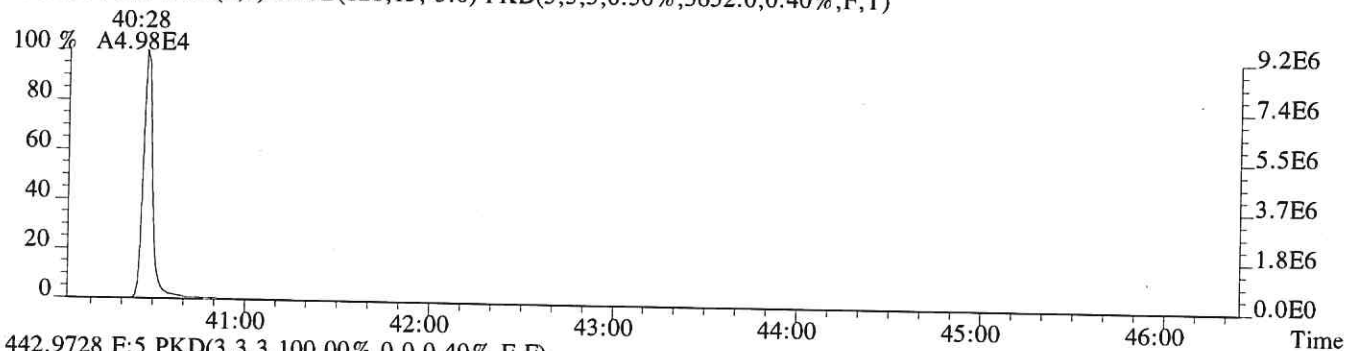
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6500.0,0.40%,F,T)



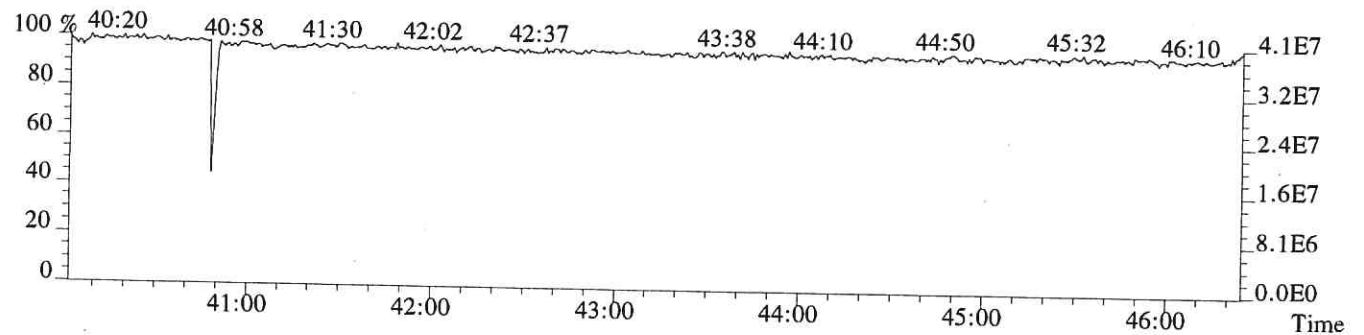
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6320.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,5652.0,0.40%,F,T)



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



CCAL HRCC3/CS3 Daily Calibration QC Checklist

Calibration File Name: P618643 - P618656

Date: 08/20 - 08/21/19

Circle one: Beginning / Ending

Method: 1613 / 1613E (8290) VCP / Tetra / TCDD Only / TCDF Conf / VCP Conf / 8280 / M23 / TO-9A

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 its closest eluters	✓	✓
No QC ion deflections affect column specific 2378 isomer or its closest eluters (HRMS Only)	✓	✓

CS3 Continuing Calibration Analyst Second Check

Percent RSD within method criteria	✓	✓
All relative abundance ratios meet method criteria	✓	✓
No QC ion deflections of greater than 20% (HRMS Only)	✓	✓
Mass spectrometer resolution greater than or equal to 10,000 and documented (HRMS Only)	✓	✓
2378-TCDD elutes at 25 minutes or later on the DB-5 column / DB-5MSUI column	✓	✓
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% (LRMS Only)	N/A	N/A
Ending Calibration injected prior to end of 12 hour clock	✓	✓

Analyst: LKL

Second QC: WJ

ccalqc.xls 07/17/12

5DFC
PCDD/PCDF ANALYTICAL SEQUENCE SUMMARY

Lab Name: ALS ENVIRONMENTAL

Contract:

Lab Code:

Case No.:

Client No.:

SDG No.:

GC Column: DB-5MSUI

ID: 0.25 (mm)

Init. Calib. Date: 08/01/19

Init. Calib. Times: 13:37

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
192977	WINDOW DEFINE	P618644	20-AUG-19	23:54:18
201833	CS3	P618643	20-AUG-19	23:06:00
201833	CS3	P618656	21-AUG-19	09:56:39
METHOD BLANK	EQ1900278-01	P618645	21-AUG-19	00:43:25
BS-8-190813	E1900593-008	P618646	21-AUG-19	01:32:33
19-08-0245-ASH BOX ₇	E1900594-001	P618647	21-AUG-19	02:21:40
3050197-001	E1900595-001	P618648	21-AUG-19	03:10:49
3050197-002	E1900595-002	P618649	21-AUG-19	03:59:55
3050197-003	E1900595-003	P618650	21-AUG-19	04:49:05
WSTPT-14-WP-LCT-08 ₇	R1907281-007RE	P618651	21-AUG-19	05:38:12
INFLUENT	R1906978-002RE	P618652	21-AUG-19	06:27:20
LCS	EQ1900283-02	P618653	21-AUG-19	07:16:27
DLCS	EQ1900283-03	P618654	21-AUG-19	08:05:34

Sample List Report

Masslynx 4.1 SCN815 SCN795

Sample List: C:\Masslynx\EHRRMS08.PRO\SampleDB\20190820C.SPL
 Last Modified: Thursday, August 22, 2019 09:02:23 Central Daylight Time
 Printed: Thursday, August 22, 2019 09:05:24 Central Daylight Time

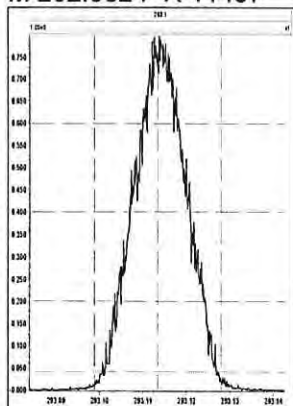
OPUS 5 NET: P 618643 RES

Date	Time	File Name	Sample ID	File Text	MS File	Inlet File	Bottle	Analyst	Comments
08/20/19	23:06	P618643	201833	CS3	EPA1613_ALS	Dioxin_ALS	Tray1:2	JC	
08/21/19	03:54	P618644	192977	WINDOW DEFINE	EPA1613_ALS	Dioxin_ALS	Tray1:1		HRMS CHECK 23:05
	02:42	P618645	EQ1900278-01	MB	EPA1613_ALS	Dioxin_ALS	Tray1:3		
	01:37	P618646	E1900593-008	E1900593-008	EPA1613_ALS	Dioxin_ALS	Tray1:12		
	02:27	P618647	E1900594-001	E1900594-001	EPA1613_ALS	Dioxin_ALS	Tray1:13		
	03:10	P618648	E1900595-001	E1900595-001	EPA1613_ALS	Dioxin_ALS	Tray1:14		
	03:59	P618649	E1900595-002	E1900595-002	EPA1613_ALS	Dioxin_ALS	Tray1:15		
	04:49	P618650	E1900595-003	E1900595-003	EPA1613_ALS	Dioxin_ALS	Tray1:16		
	05:38	P618651	E1907281-007RE	E1907281-007RE	EPA1613_ALS	Dioxin_ALS	Tray1:17		R1907281-007RE
	06:27	P618652	R1906978-002RE	R1906978-002RE	EPA1613_ALS	Dioxin_ALS	Tray1:18		LKL 08/22
	07:16	P618653	EQ1900283-02	LCS	EPA1613_ALS	Dioxin_ALS	Tray1:19		
	08:05	P618654	EQ1900283-03	DLCS	EPA1613_ALS	Dioxin_ALS	Tray1:20		
	08:54	P618655	201833	CS3	EPA1613_ALS	Dioxin_ALS	Tray1:2		
	09:56	P618656	201833	CS3	EPA1613_ALS	Dioxin_ALS	Tray1:2		HRMS CHECK 09:51

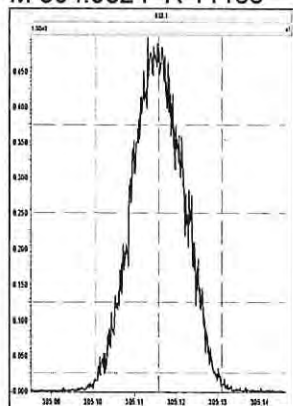
LKL 08/22/19

Printed: Tuesday, August 20, 2019 23:05:58 Central Daylight Time

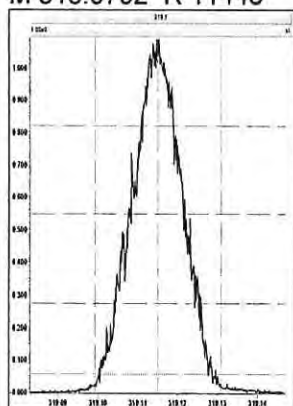
M 292.9824 R 11467



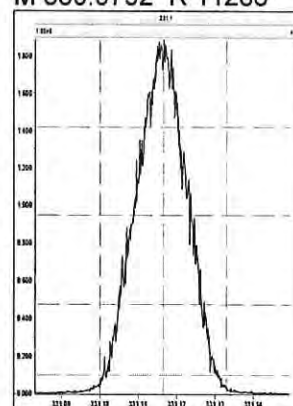
M 304.9824 R 11186



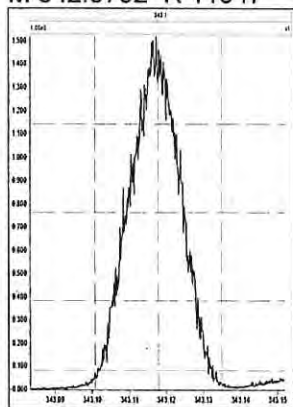
M 318.9792 R 11443



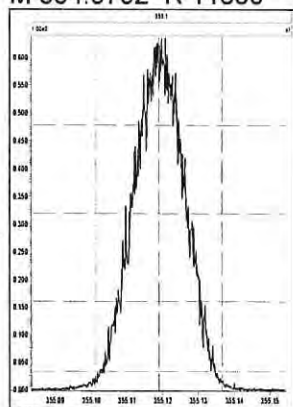
M 330.9792 R 11286



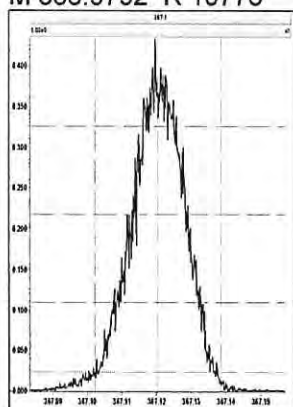
M 342.9792 R 11547



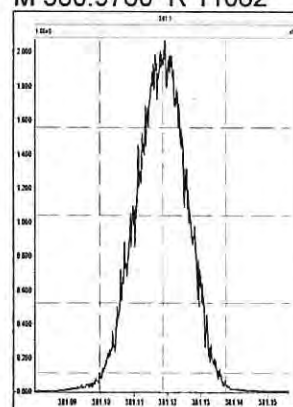
M 354.9792 R 11350



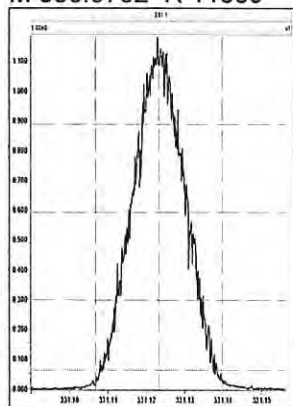
M 366.9792 R 10776



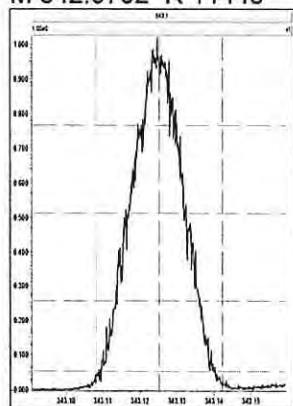
M 380.9760 R 11062



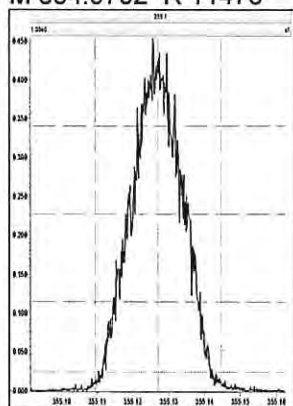
M 330.9792 R 11389



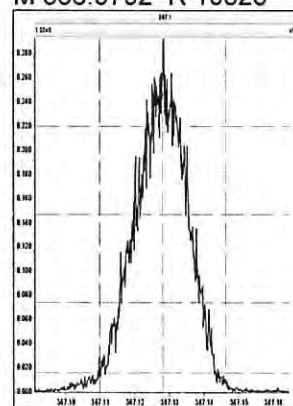
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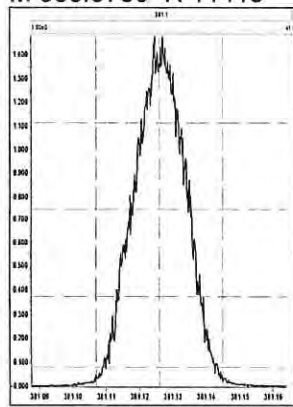
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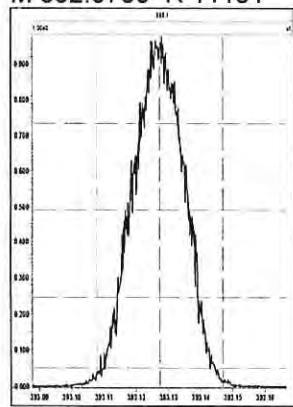
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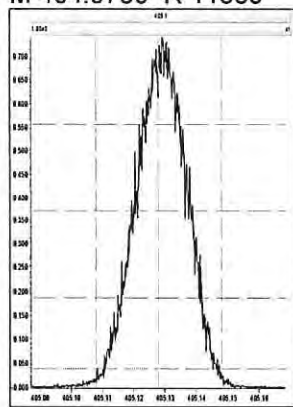
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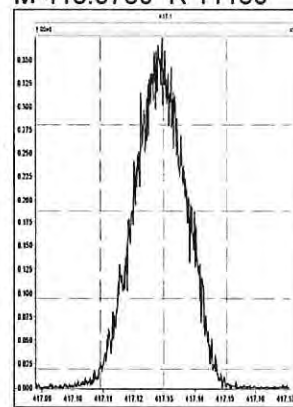
M 392.9760 R 11161



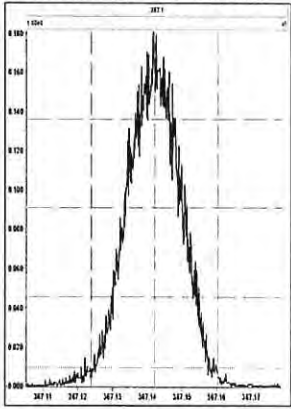
M 404.9760 R 11389



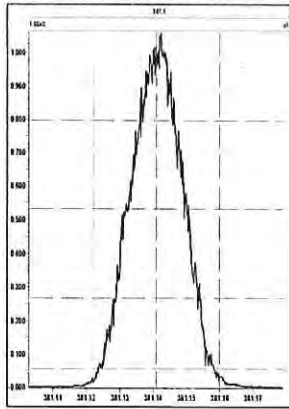
M 416.9760 R 11160



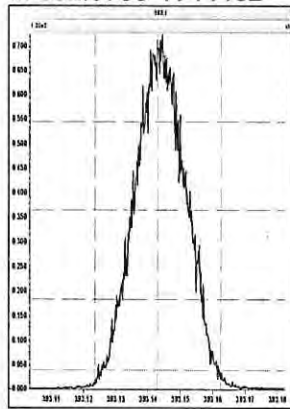
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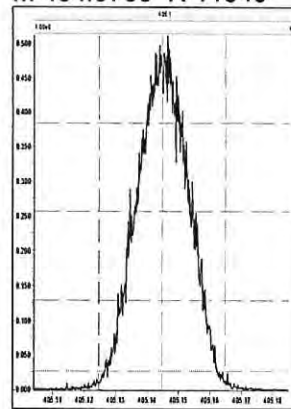
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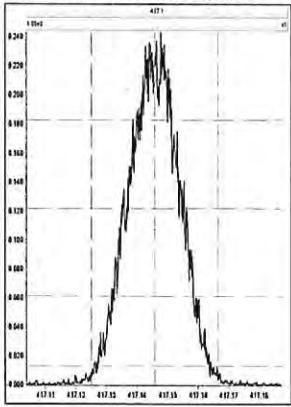
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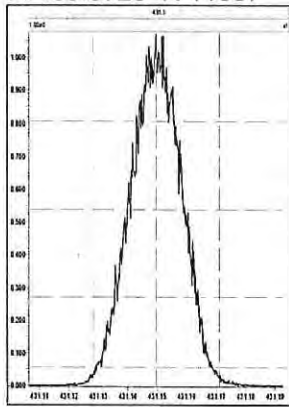
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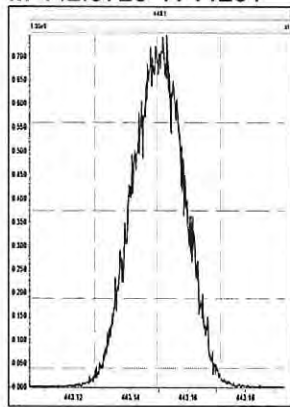
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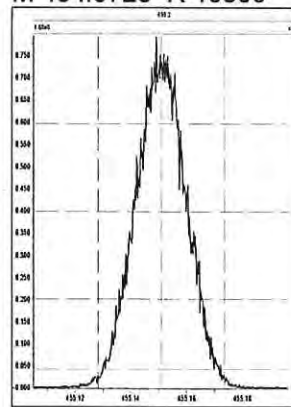
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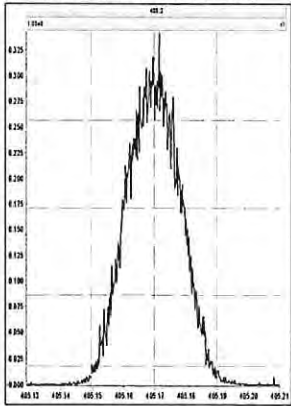
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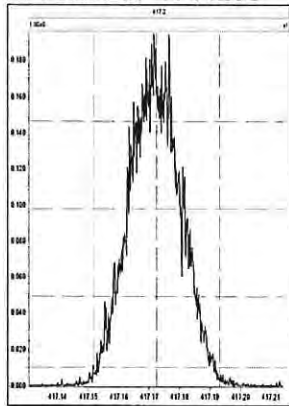
M 454.9728 R 10800



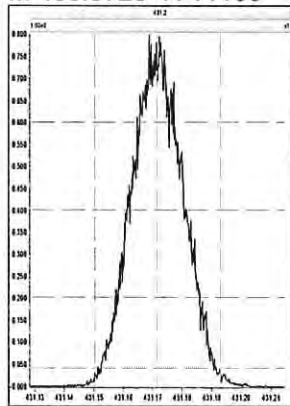
M 404.9760 R 10893



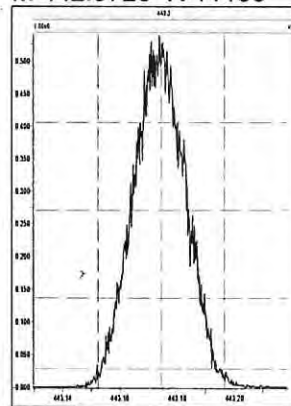
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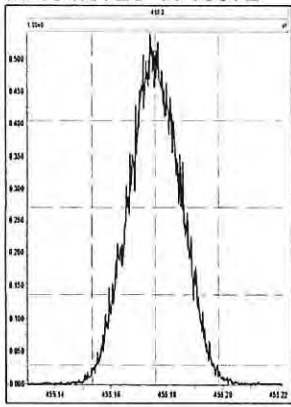
M 430.9728 R 11186



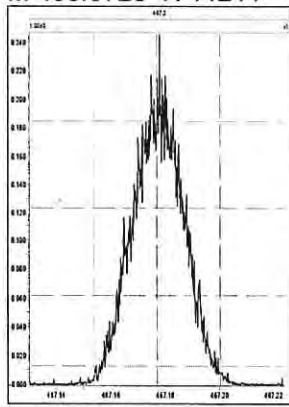
M 442.9728 R 11186



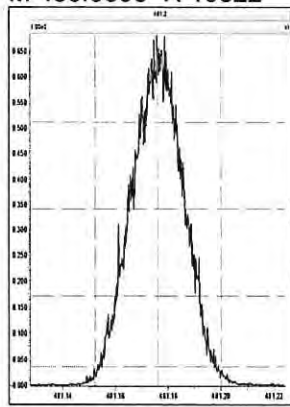
M 454.9728 R 10972



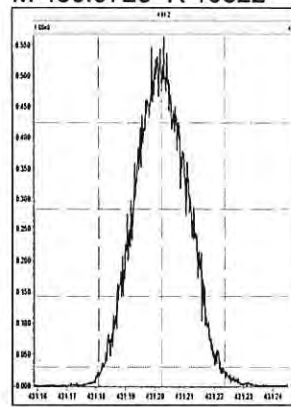
M 466.9728 R 11211



M 480.9696 R 10822

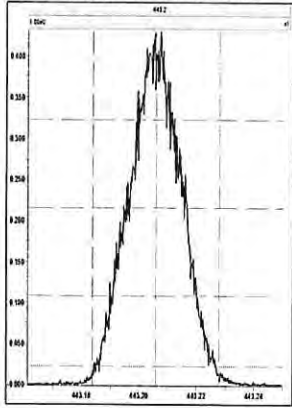


M 430.9728 R 10822

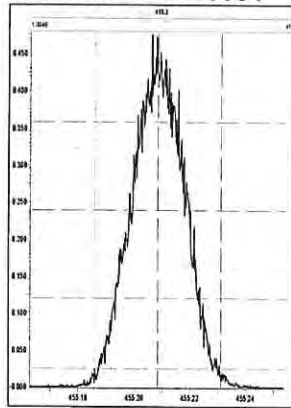


Printed: Tuesday, August 20, 2019 23:05:58 Central Daylight Time

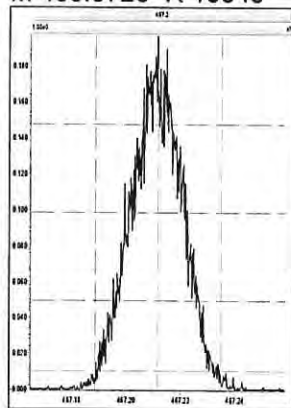
M 442.9728 R 10822



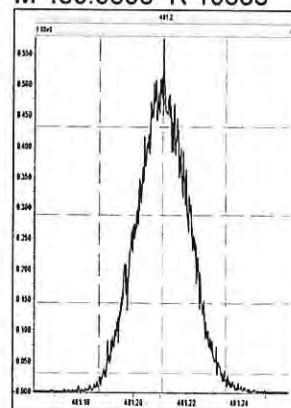
M 454.9728 R 10661



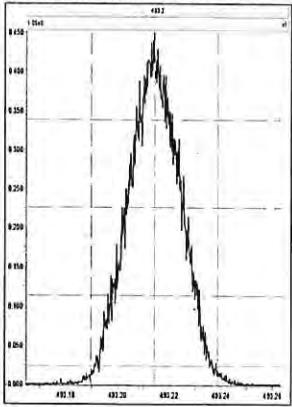
M 466.9728 R 10846



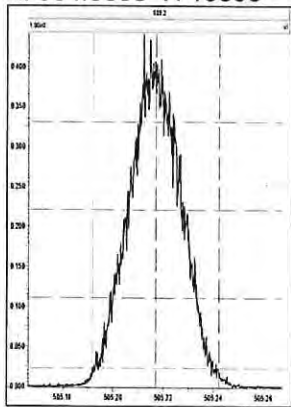
M 480.9696 R 10638



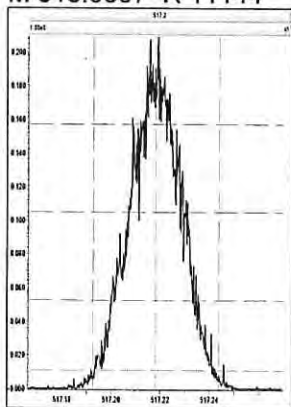
M 492.9696 R 10946



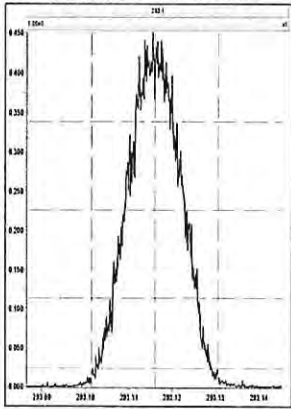
M 504.9696 R 10893



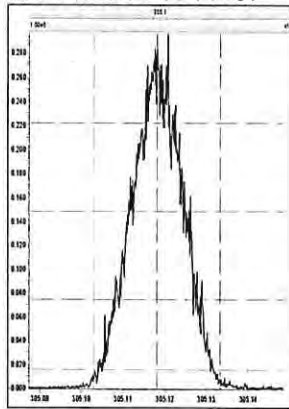
M 516.9697 R 11144



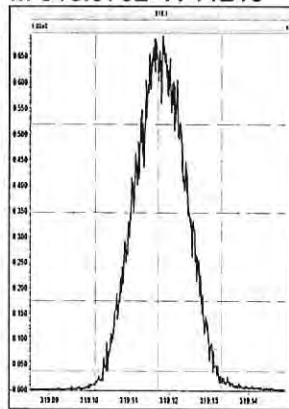
M 292.9824 R 11215



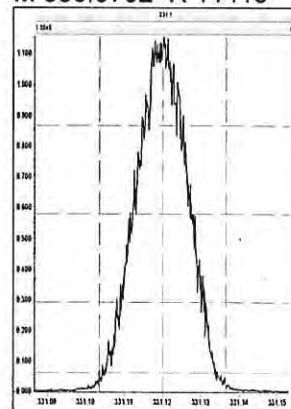
M 304.9824 R 11137



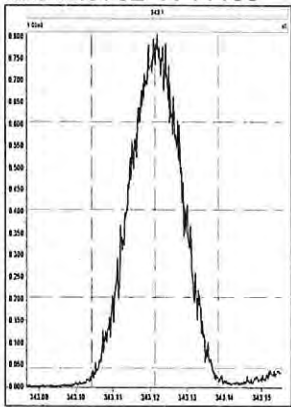
M 318.9792 R 11210



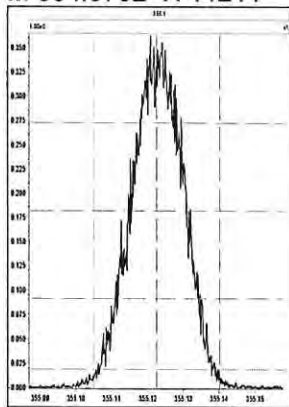
M 330.9792 R 11415



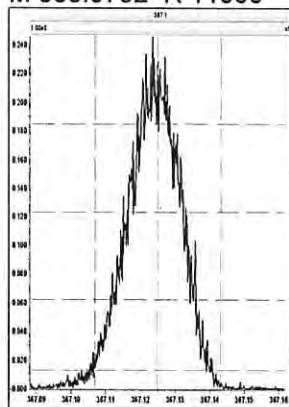
M 342.9792 R 11135



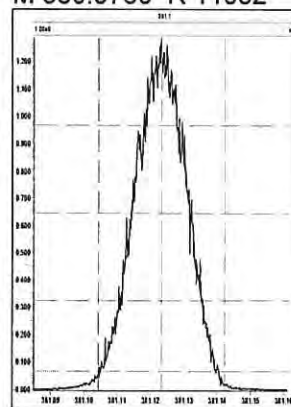
M 354.9792 R 11211



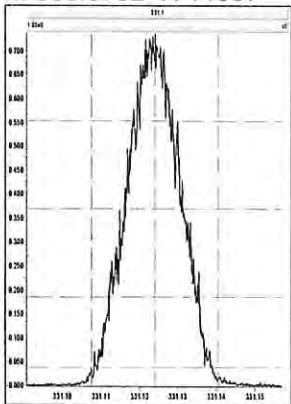
M 366.9792 R 11000



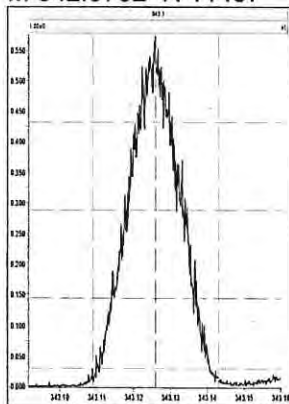
M 380.9760 R 11052



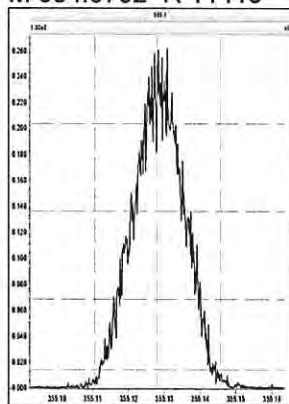
M 330.9792 R 11037



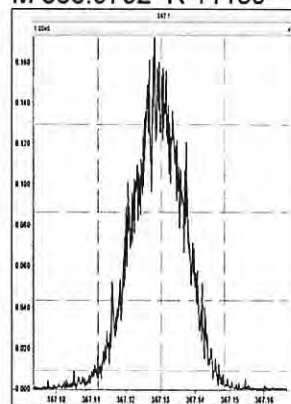
M 342.9792 R 11467



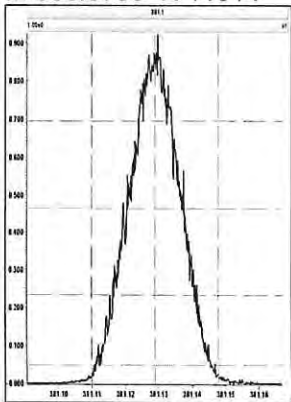
M 354.9792 R 11415



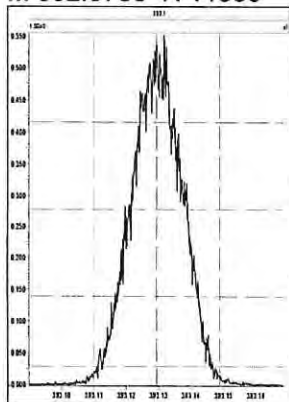
M 366.9792 R 11189



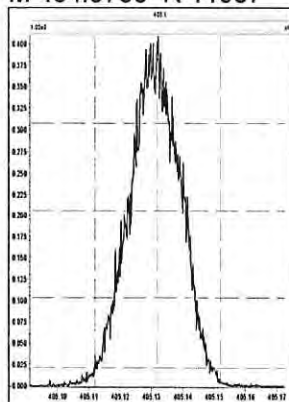
M 380.9760 R 11014



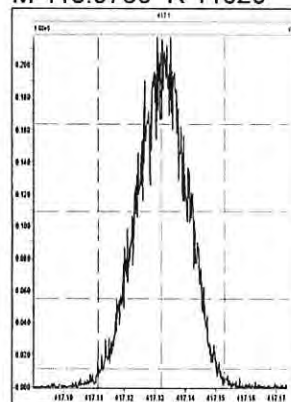
M 392.9760 R 11330



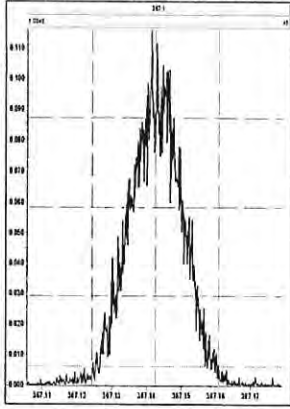
M 404.9760 R 11037



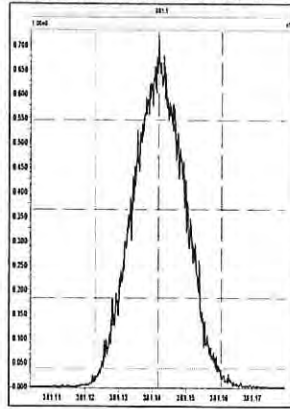
M 416.9760 R 11020



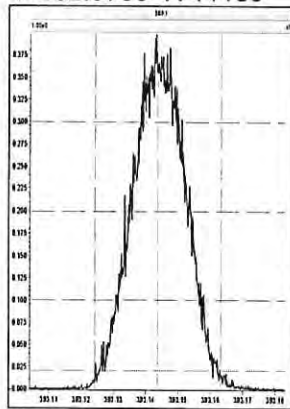
M 366.9792 R 11137



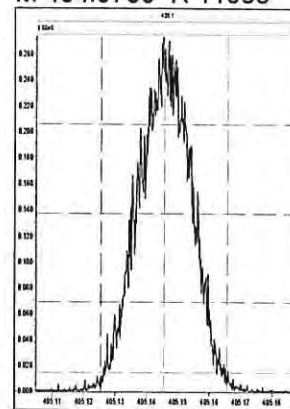
M 380.9760 R 10871



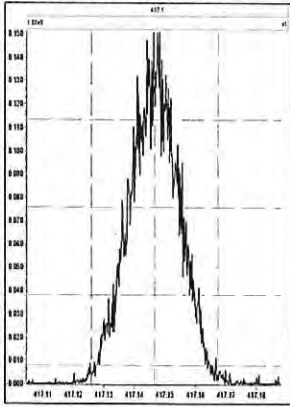
M 392.9760 R 11185



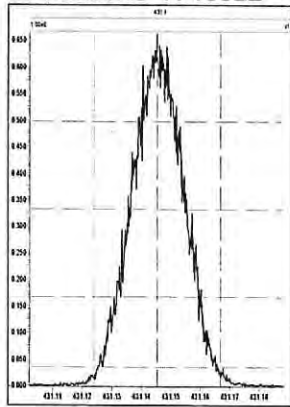
M 404.9760 R 11038



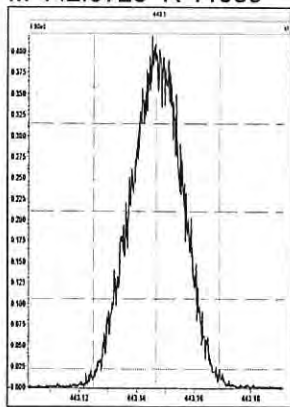
M 416.9760 R 11023



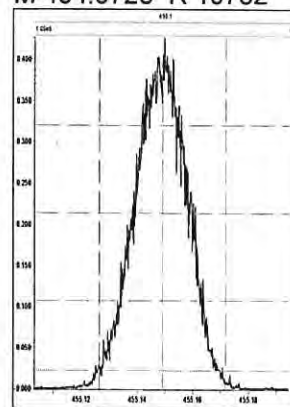
M 430.9728 R 10822



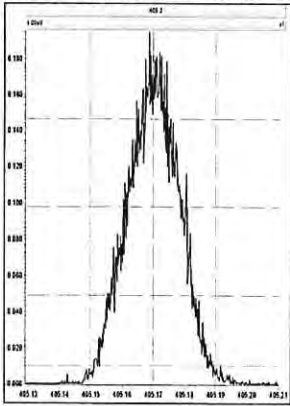
M 442.9728 R 11030



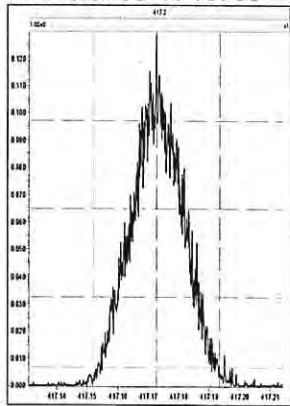
M 454.9728 R 10752



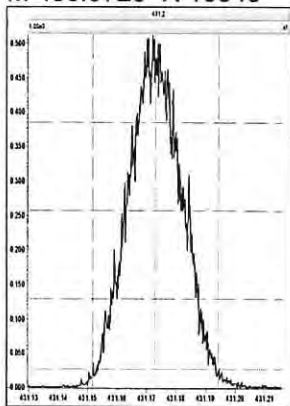
M 404.9760 R 10683



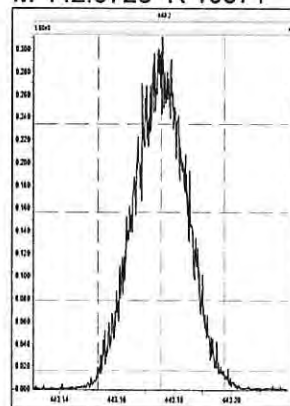
M 416.9760 R 10706



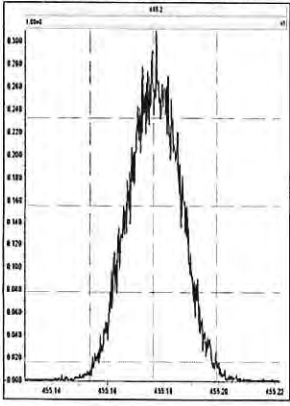
M 430.9728 R 10846



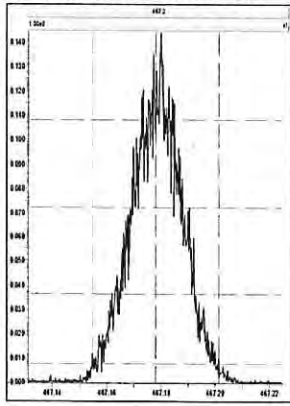
M 442.9728 R 10571



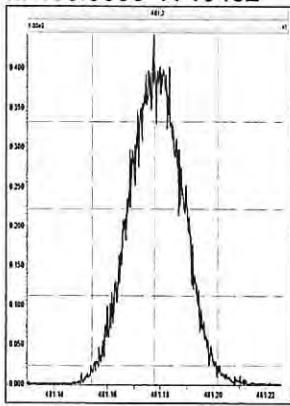
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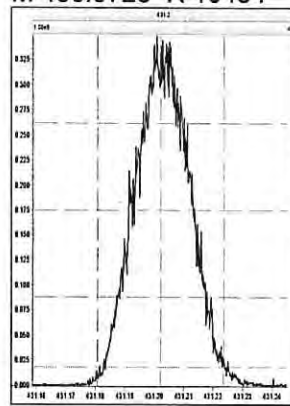
M 466.9728 R 11135



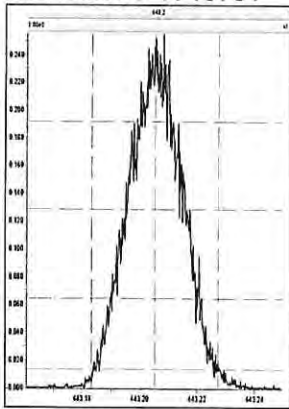
M 480.9696 R 10482



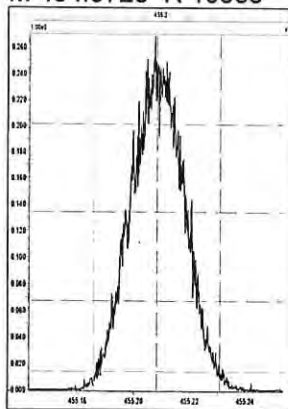
M 430.9728 R 10484



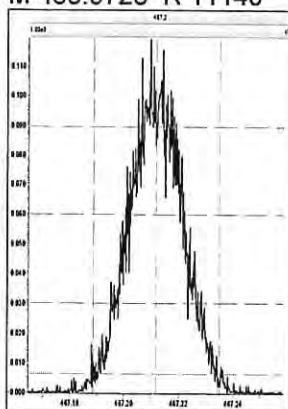
M 442.9728 R 10731



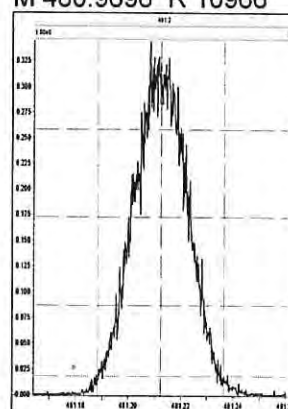
M 454.9728 R 10683



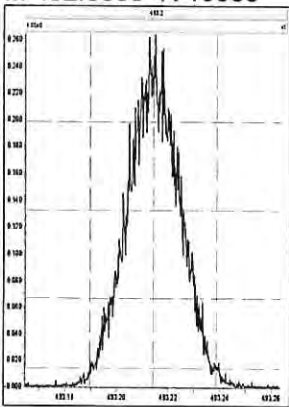
M 466.9728 R 11140



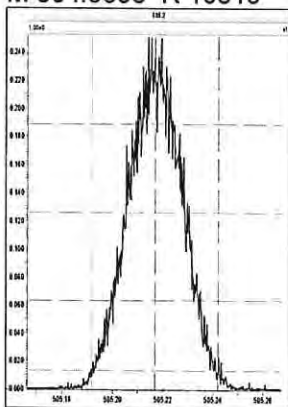
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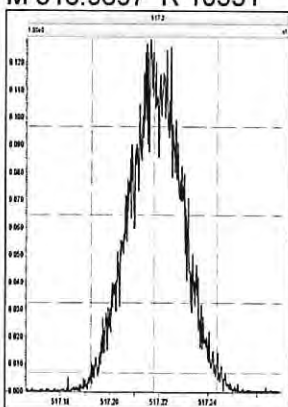
M 492.9696 R 10688



M 504.9696 R 10619



M 516.9697 R 10531



5DFA

WINDOW DEFINING MIX SUMMARY

CLIENT ID:

WDM

Lab Name: ALS Environmental
Lab Code: ALSTX
GC Column: DB-5MSUI

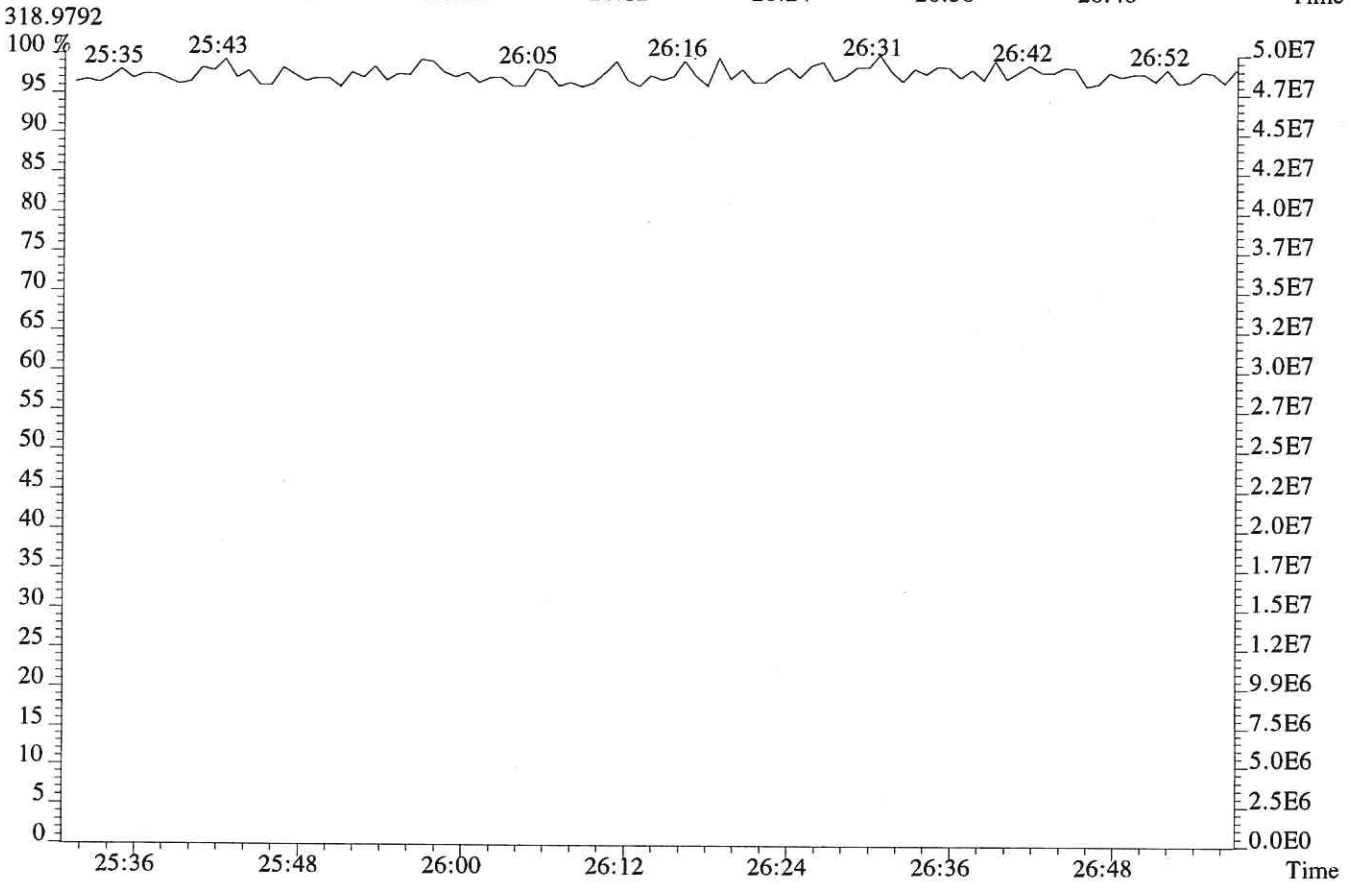
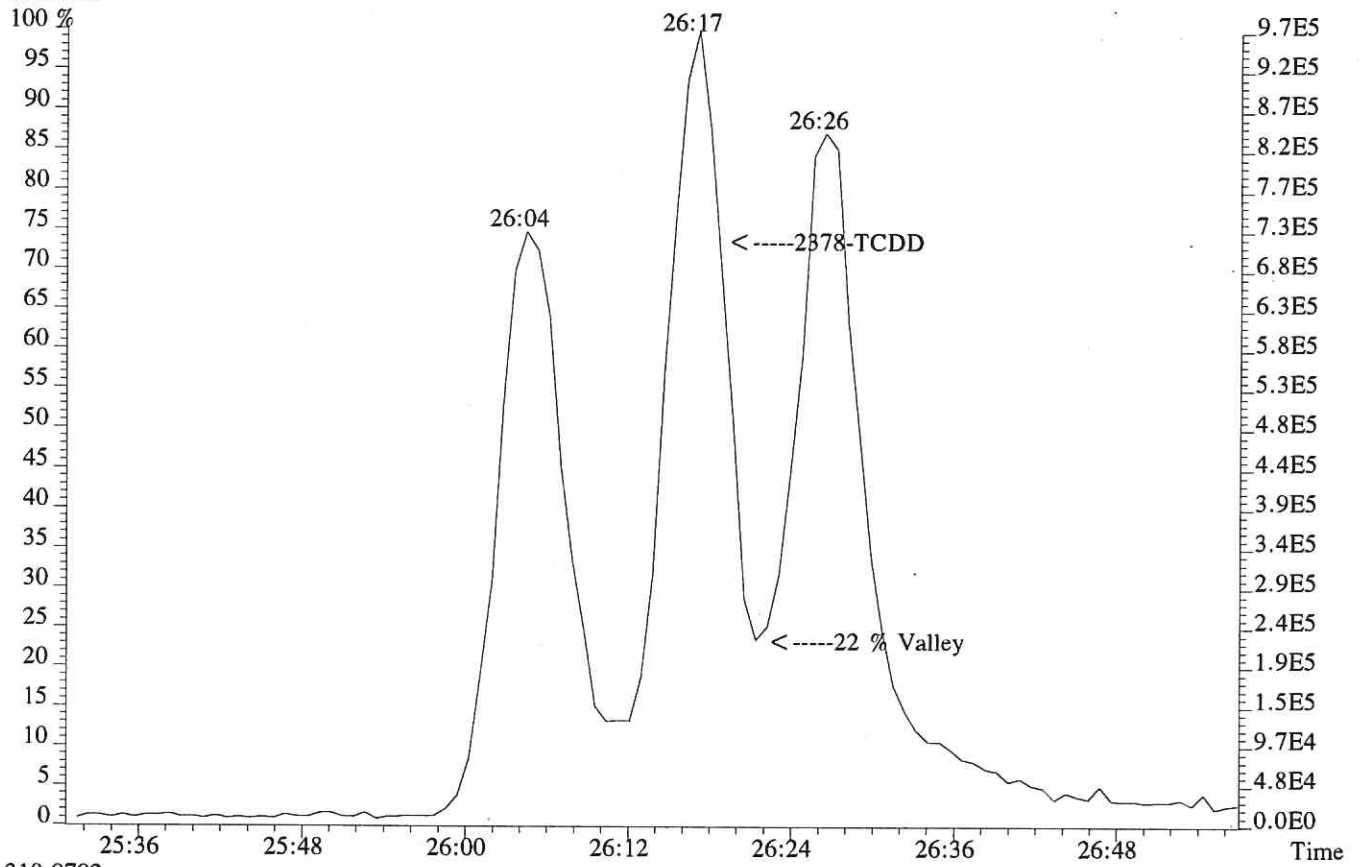
Case No.: _____ SDG No.: _____
ID: 0.25 (mm) Lab File ID: P618644
Date Analyzed: 20-AUG-19
Time Analyzed: 23:54:18

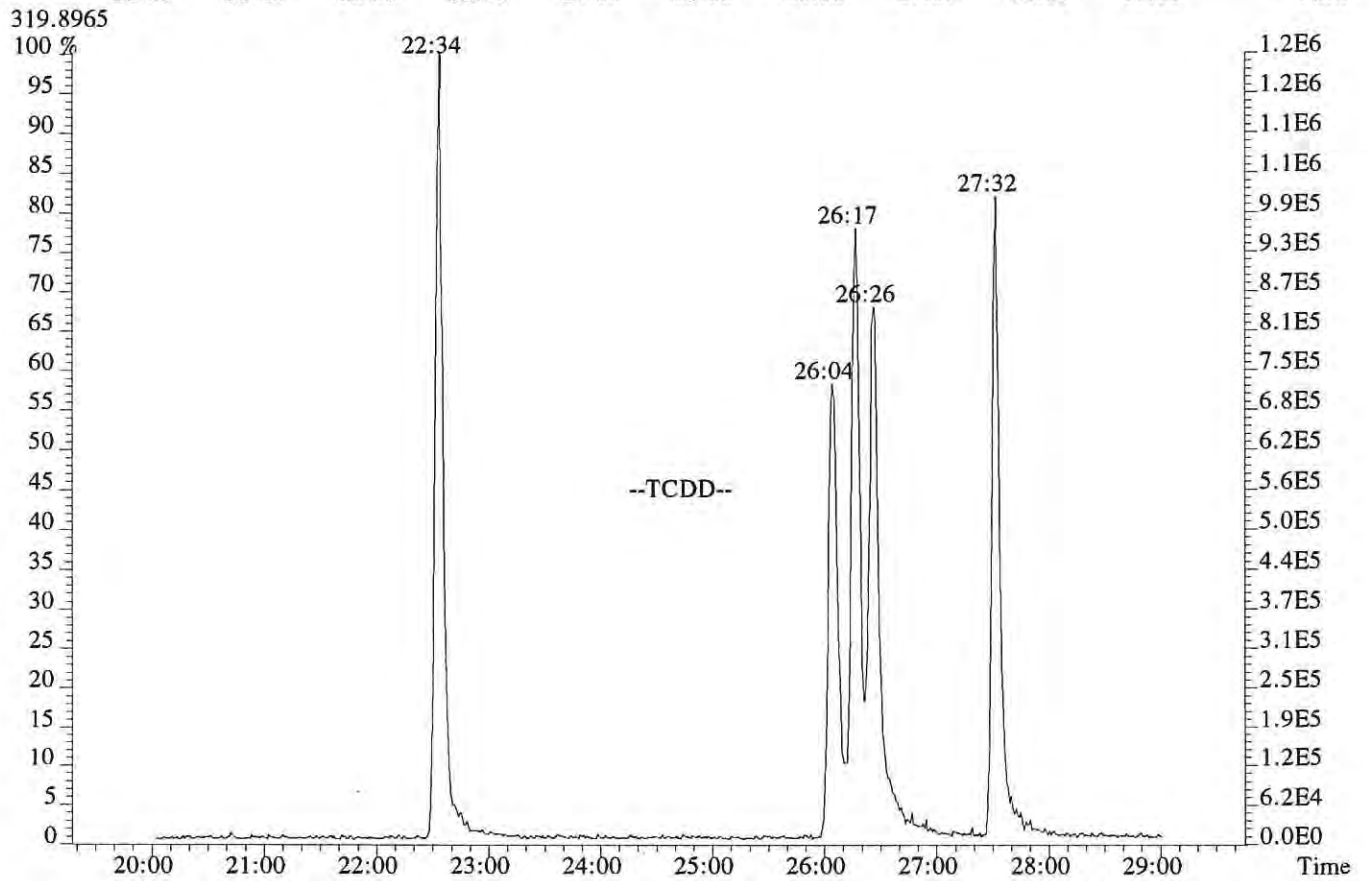
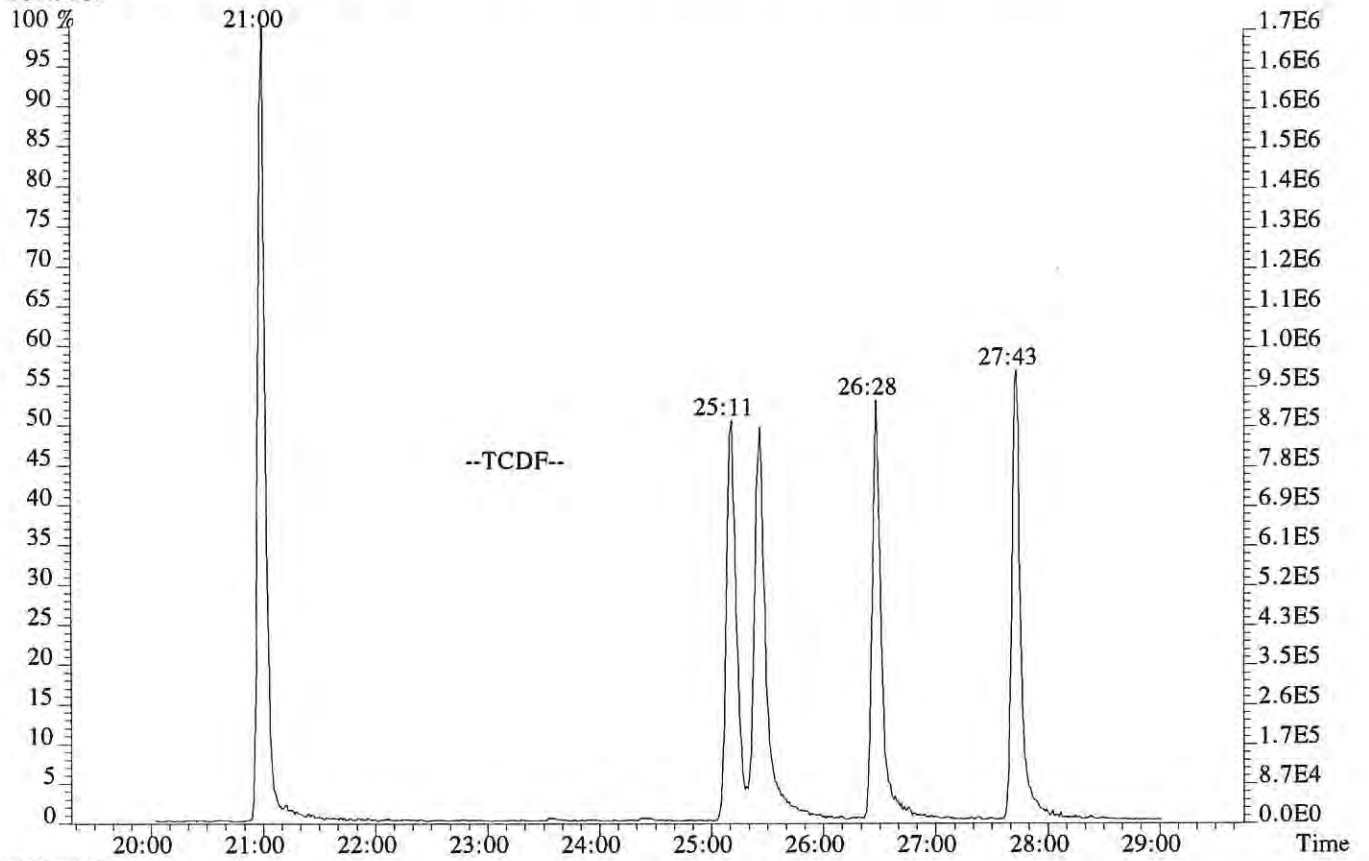
Congener	Retention Time First Eluting	Retention Time Last Eluting
TCDF	21:00	27:43
TCDD	22:34	27:32
PeCDF	27:39	32:29
PeCDD	29:28	32:13
HxCDF	33:12	35:50
HxCDD	33:46	35:26
HpCDF	37:07	38:26
HpCDD	37:22	38:01

% Valley 2378-TCDD:

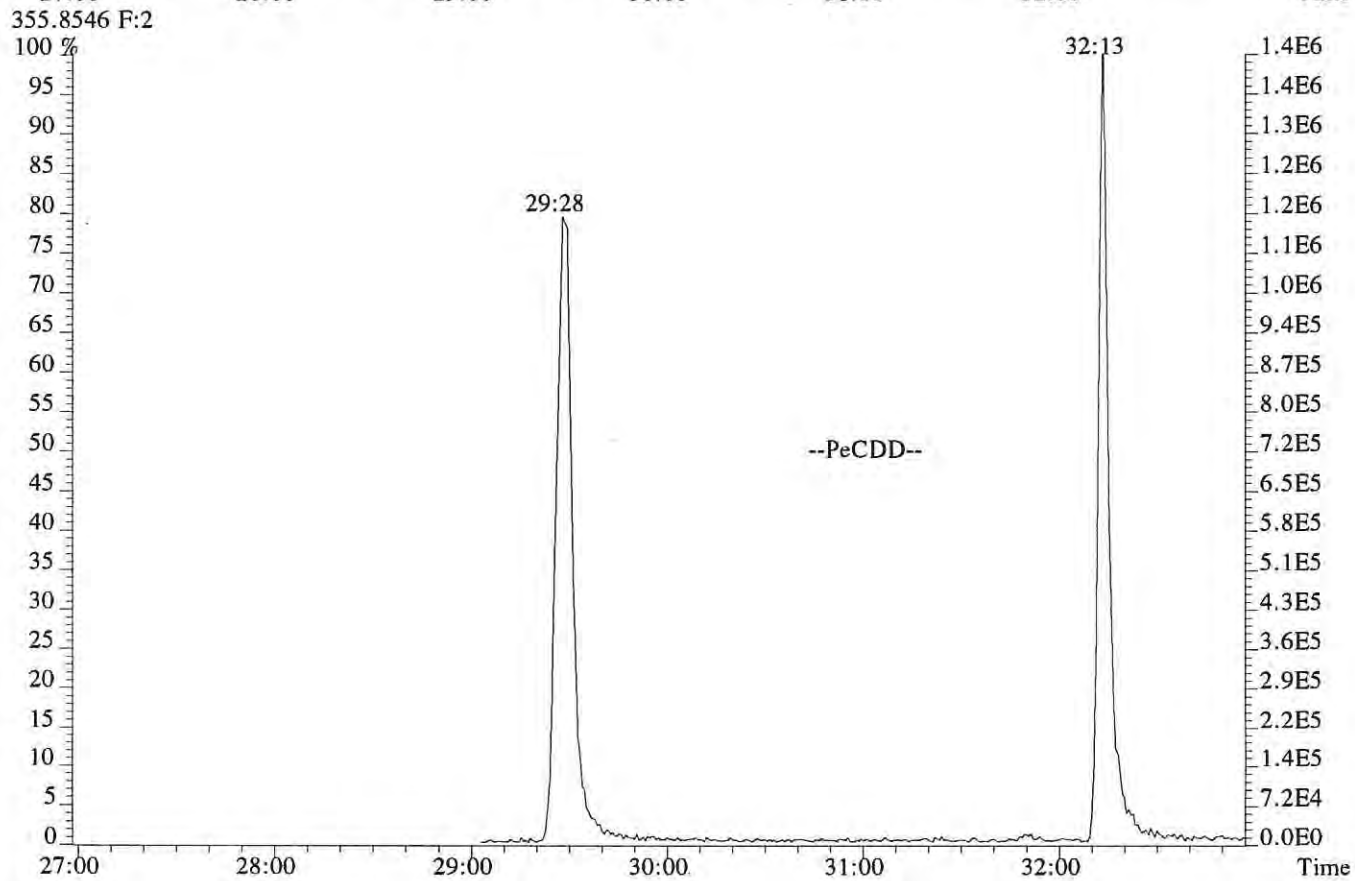
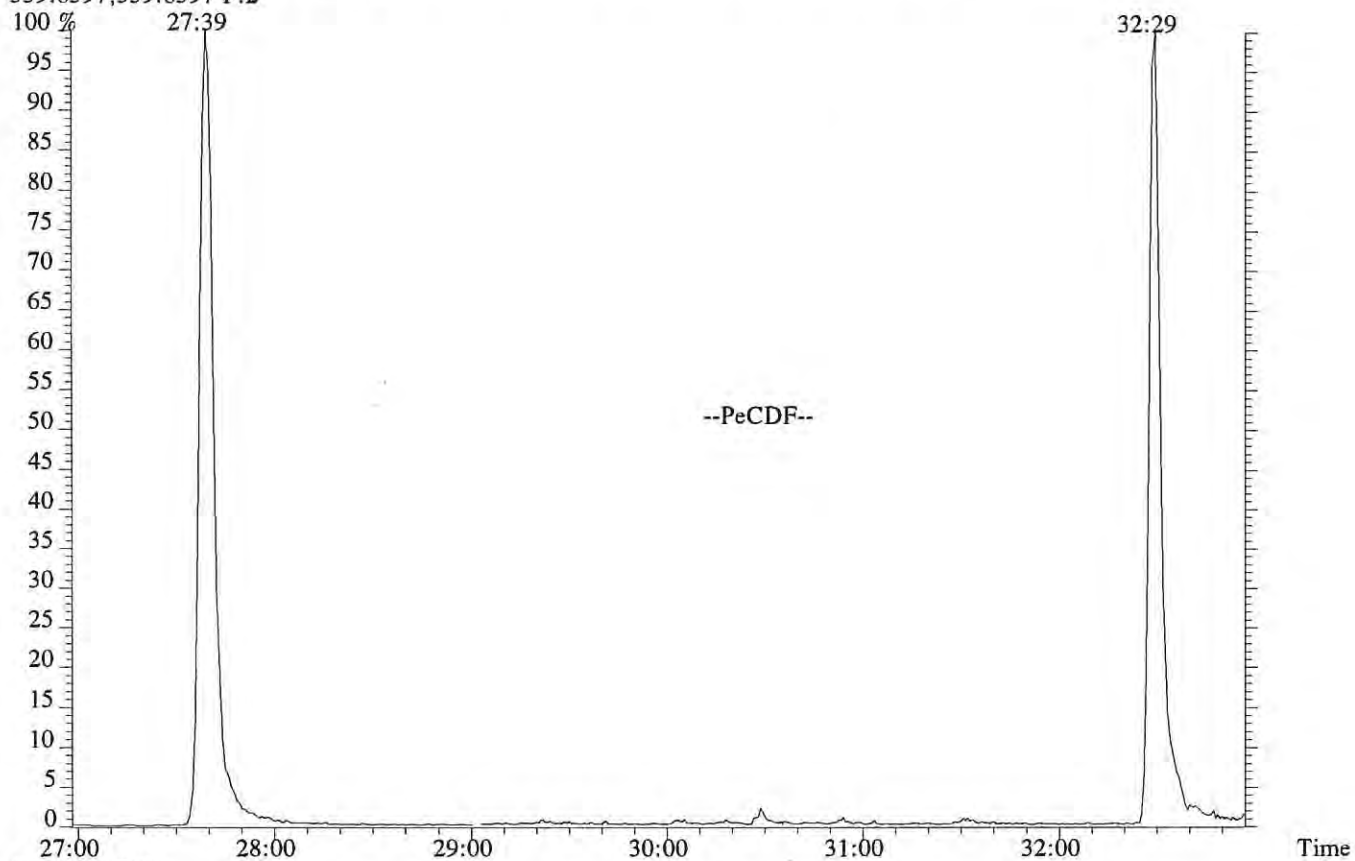
22 %

File:P618644 #1-637 Acq:20-AUG-2019 23:54:18 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:WINDOW DEFINE
319.8965

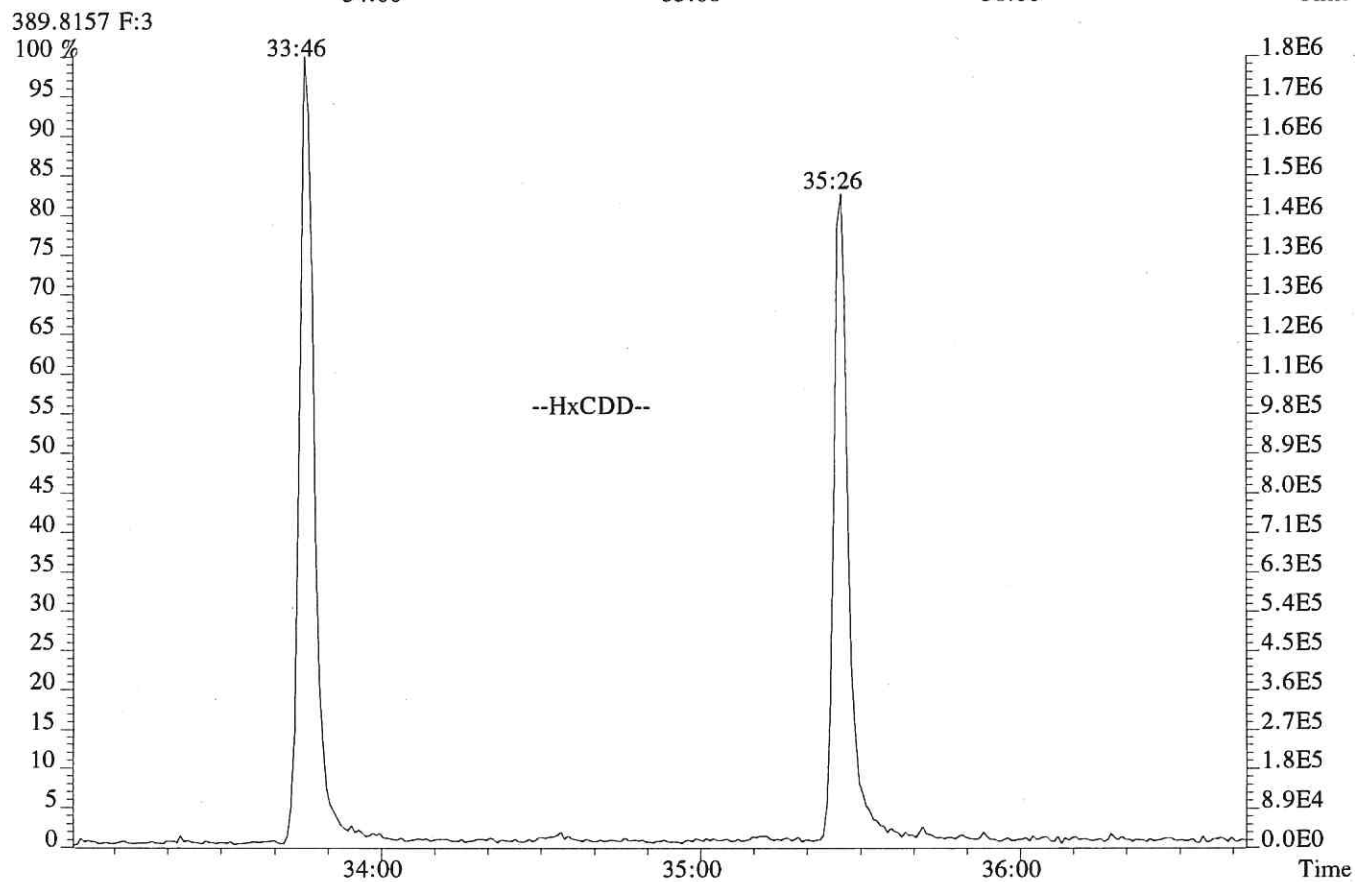
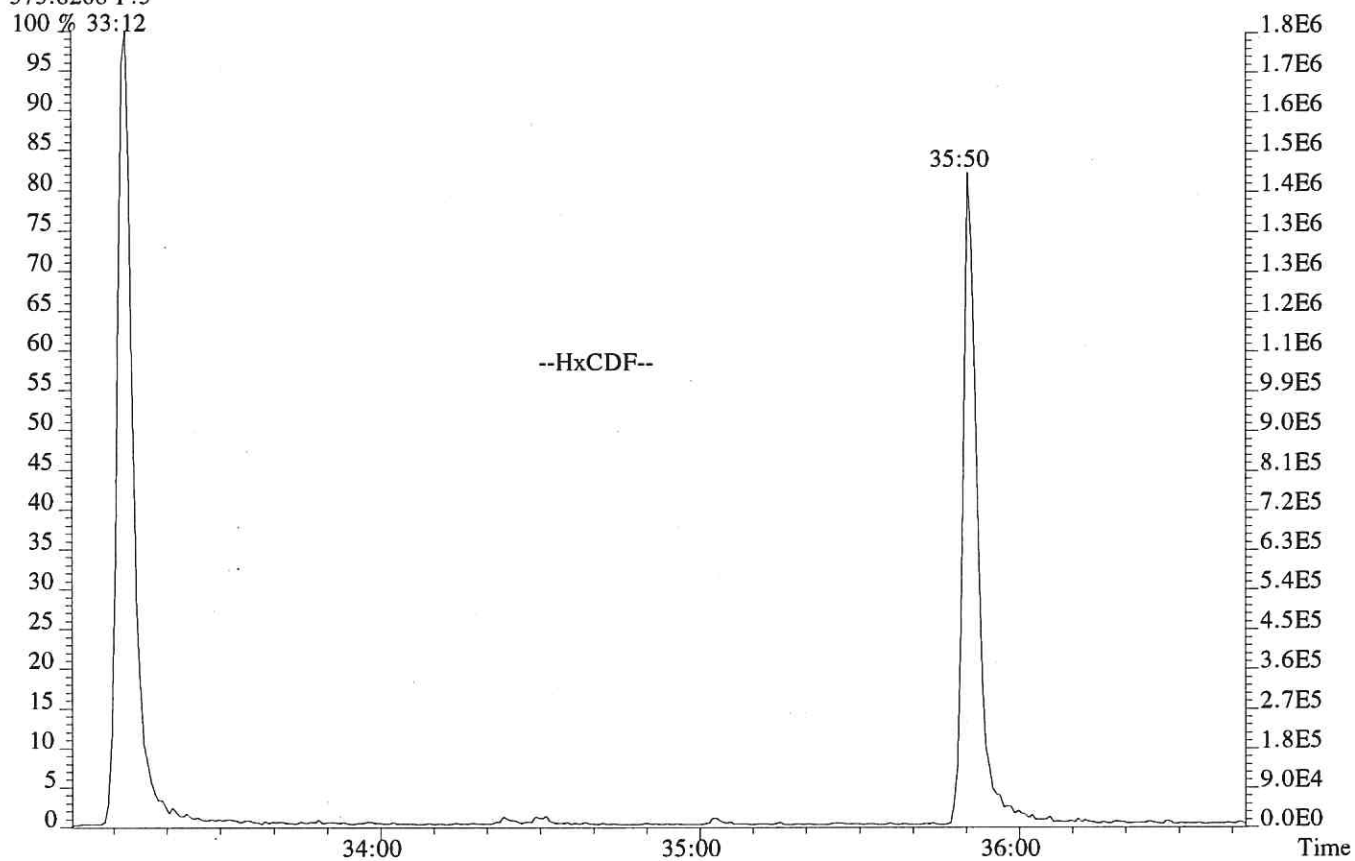




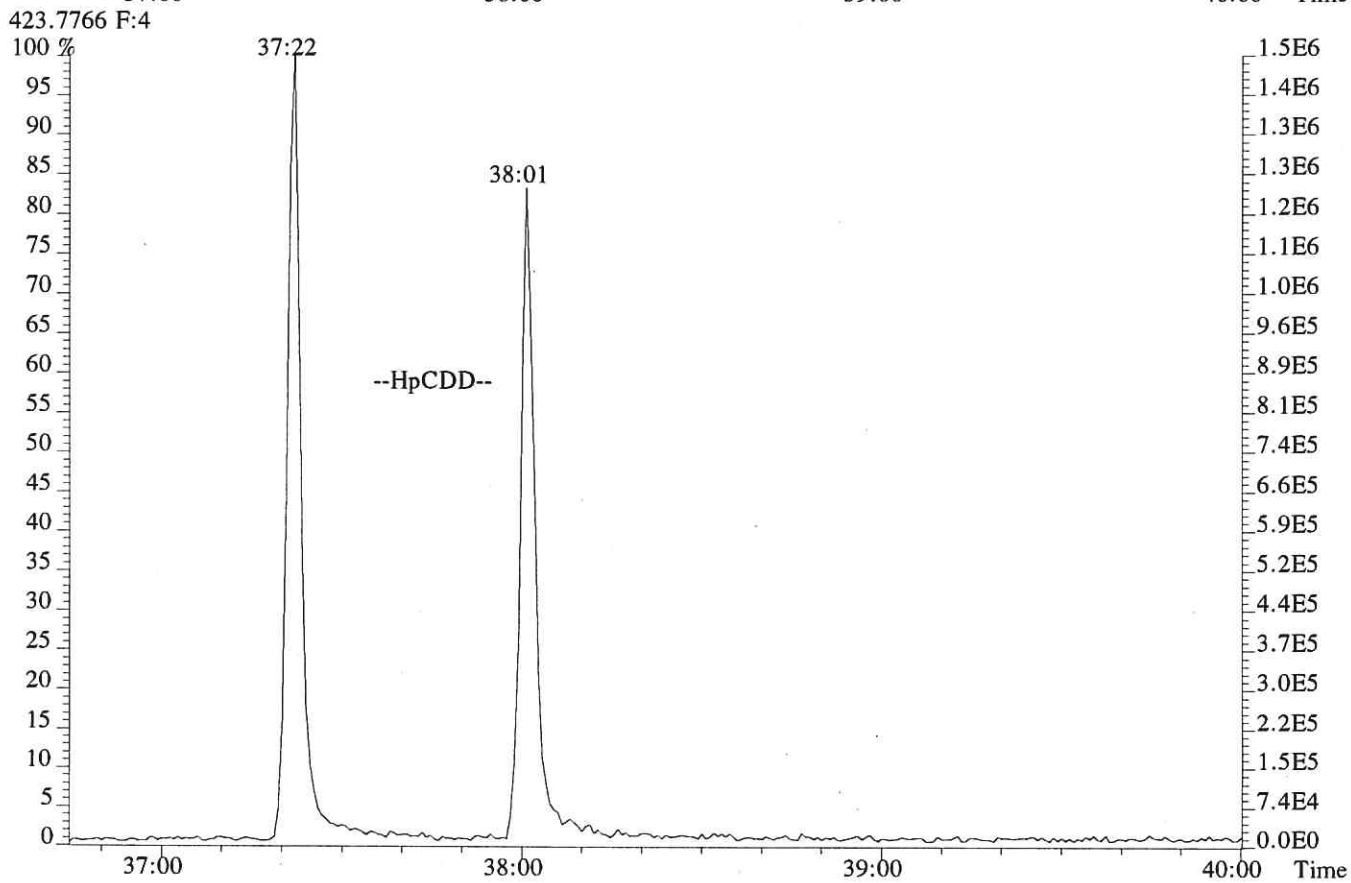
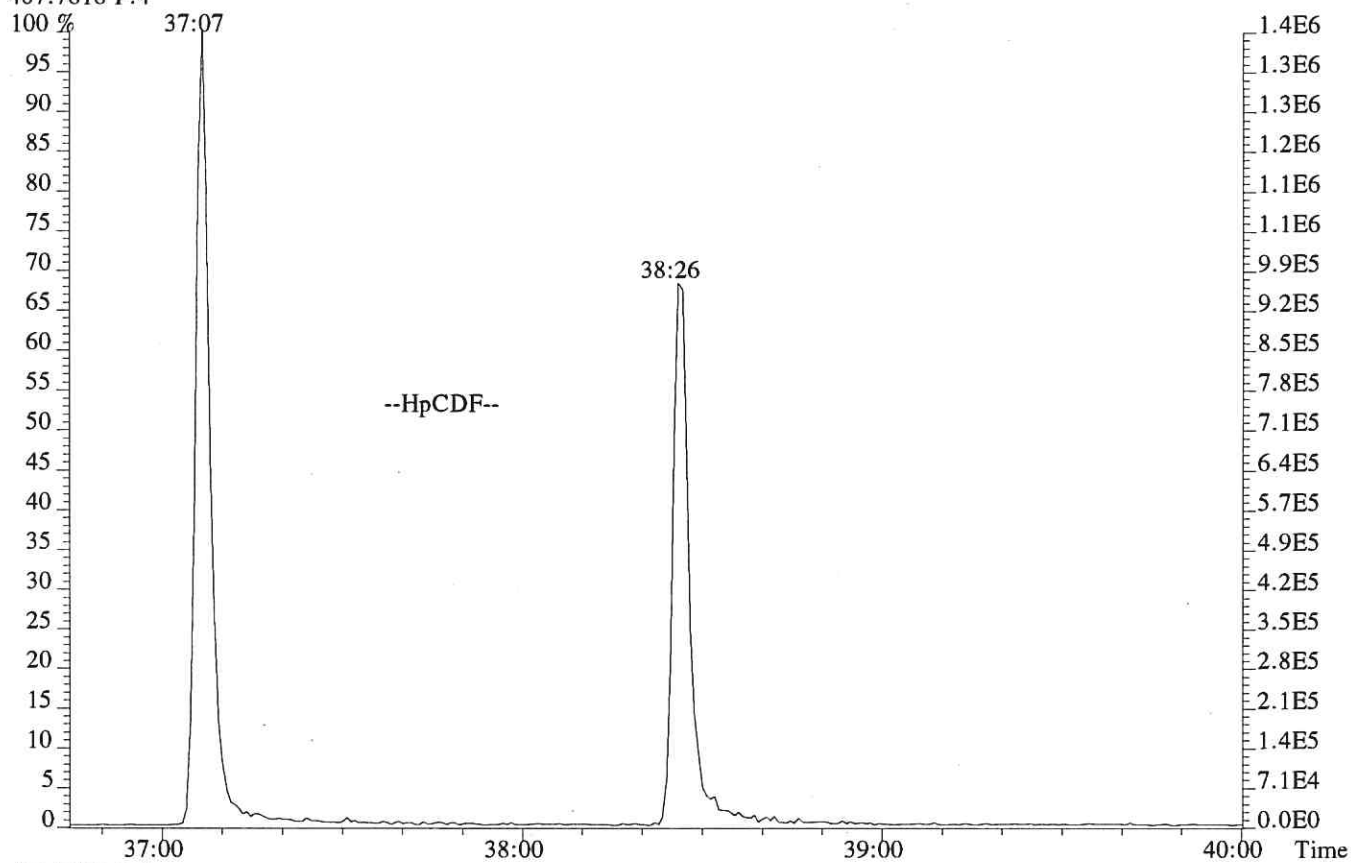
File:P618644 #1-637 Acq:20-AUG-2019 23:54:18 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:WINDOW DEFINE
339.8597,339.8597 F:2



File:P618644 #1-637 Acq:20-AUG-2019 23:54:18 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:WINDOW DEFINE
373.8208 F:3



File:P618644 #1-637 Acq:20-AUG-2019 23:54:18 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:WINDOW DEFINE
407.7818 F:4



USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 08/01/19

Instrument ID: E-HRMS-08

GC Column ID: DB-5MSUI

VER Data Filename: P618643

Analysis Date: 20-AUG-19 Time: 23:06:00

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (4)
2,3,7,8-TCDD	M/M+2	0.80	0.65-0.89	9.7	7.8 - 12.9	-2.8
1,2,3,7,8-PeCDD	M+2/M+4	1.55	1.32-1.78	48	39 - 65	-4.3
1,2,3,4,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	48	39 - 64	-3.9
1,2,3,6,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	48	39 - 64	-4.4
1,2,3,7,8,9-HxCDD	M+2/M+4	1.26	1.05-1.43	51	41 - 61	2.4
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.00	0.88-1.20	50	43 - 58	-0.3
OCDD	M+2/M+4	0.88	0.76-1.02	99	79 - 126	-1.1
2,3,7,8-TCDF	M/M+2	0.72	0.65-0.89	9.4	8.4 - 12.0	-6.3
1,2,3,7,8-PeCDF	M+2/M+4	1.47	1.32-1.78	51	41 - 60	1.6
2,3,4,7,8-PeCDF	M+2/M+4	1.52	1.32-1.78	49	41 - 61	-1.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.21	1.05-1.43	49	45 - 56	-1.1
1,2,3,6,7,8-HxCDF	M+2/M+4	1.22	1.05-1.43	51	44 - 57	1.7
1,2,3,7,8,9-HxCDF	M+2/M+4	1.20	1.05-1.43	48	45 - 56	-3.3
2,3,4,6,7,8-HxCDF	M+2/M+4	1.20	1.05-1.43	52	44 - 57	3.1
1,2,3,4,6,7,8-HpCDF	M+2/M+4	0.99	0.88-1.20	51	45 - 55	1.7
1,2,3,4,7,8,9-HpCDF	M+2/M+4	0.98	0.88-1.20	50	43 - 58	-0.4
OCDF	M+2/M+4	0.86	0.76-1.02	101	63 - 159	1.0

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range as specified in Table 6, Method 1613B, under VER.

(4) 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, Method 8290

12/2012
1613F4A.FRM

USEPA - ITD

FORM 4B

PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 08/01/19

Instrument ID: E-HRMS-08

GC Column ID: DB-5MSUI

VER Data Filename: P618643

Analysis Date: 20-AUG-19 Time: 23:06:00

LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (5)
13C-2,3,7,8-TCDD	M/M+2	0.79	0.65-0.89	105	82 - 121	4.8
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.55	1.32-1.78	120	62 - 160	20.4
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	97	85 - 117	-2.6
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	98	85 - 118	-2.4
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.04	0.88-1.20	105	72 - 138	5.2
13C-OCDD	M+2/M+4	0.90	0.76-1.02	210	96 - 415	5.0
13C-2,3,7,8-TCDF	M/M+2	0.78	0.65-0.89	97	71 - 140	-3.1
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.56	1.32-1.78	115	76 - 130	14.8
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.55	1.32-1.78	118	77 - 130	17.6
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.51	0.43-0.59	90	76 - 131	-9.6
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.52	0.43-0.59	92	70 - 143	-8.3
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.50	0.43-0.59	103	74 - 135	3.4
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.51	0.43-0.59	94	73 - 137	-6.0
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.44	0.37-0.51	100	78 - 129	0.2
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.42	0.37-0.51	110	77 - 129	9.7
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	M+2/M+4			9.9	7.8 - 12.7	-1.2

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range, as specified in Table 6, Method 1613B, under VER.

(4) No ion abundance ratio; report concentration found.

(5) The beginning CCAL %RSD for the labeled standard must not exceed +/- 30% Section 7.7.4.2. The ending CCAL must not exceed +/- 35%, Sec 8.3.2.4 (8290)

12/2012
1613F4B.FRM

ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
201833

Run #7 Filename P618643 Samp: 1 Inj: 1 Acquired: 20-AUG-19 23:06:00
Processed: 22-AUG-19 09:45:49 Sample ID: CS3

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	25:26	2.748e+03	3.794e+03	0.72	yes	no	0.873
2 Unk	1,2,3,7,8-PeCDF	30:29	2.417e+04	1.643e+04	1.47	yes	no	0.864
3 Unk	2,3,4,7,8-PeCDF	31:31	2.180e+04	1.438e+04	1.52	yes	no	0.825
4 Unk	1,2,3,4,7,8-HxCDF	34:23	1.906e+04	1.579e+04	1.21	yes	no	1.084
5 Unk	1,2,3,6,7,8-HxCDF	34:30	2.186e+04	1.797e+04	1.22	yes	no	0.994
6 Unk	2,3,4,6,7,8-HxCDF	35:02	1.889e+04	1.574e+04	1.20	yes	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	35:49	1.537e+04	1.285e+04	1.20	yes	no	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	37:07	1.572e+04	1.592e+04	0.99	yes	no	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	38:26	1.198e+04	1.221e+04	0.98	yes	no	1.104
10 Unk	OCDF	40:38	2.154e+04	2.520e+04	0.86	yes	no	0.993
11 Unk	2,3,7,8-TCDD	26:27	2.804e+03	3.524e+03	0.80	yes	no	0.989
12 Unk	1,2,3,7,8-PeCDD	31:49	1.864e+04	1.199e+04	1.55	yes	no	0.954
13 Unk	1,2,3,4,7,8-HxCDD	35:11	1.633e+04	1.312e+04	1.24	yes	no	1.020
14 Unk	1,2,3,6,7,8-HxCDD	35:16	1.768e+04	1.425e+04	1.24	yes	no	1.030
15 Unk	1,2,3,7,8,9-HxCDD	35:31	1.793e+04	1.428e+04	1.26	yes	no	1.007
16 Unk	1,2,3,4,6,7,8-HpCDD	38:01	1.339e+04	1.336e+04	1.00	yes	no	0.922
17 Unk	OCDD	40:28	2.290e+04	2.604e+04	0.88	yes	no	1.062
18 IS	13C-2,3,7,8-TCDF	25:25	3.499e+04	4.504e+04	0.78	yes	no	1.102
19 IS	13C-1,2,3,7,8-PeCDF	30:28	5.634e+04	3.612e+04	1.56	yes	no	1.074
20 IS	13C-2,3,4,7,8-PeCDF	31:30	5.386e+04	3.473e+04	1.55	yes	no	1.005
21 IS	13C-1,2,3,4,7,8-HxCDF	34:22	2.200e+04	4.305e+04	0.51	yes	no	1.059
22 IS	13C-1,2,3,6,7,8-HxCDF	34:29	2.697e+04	5.177e+04	0.52	yes	no	1.264
23 IS	13C-2,3,4,6,7,8-HxCDF	35:02	2.306e+04	4.505e+04	0.51	yes	no	1.066
24 IS	13C-1,2,3,7,8,9-HxCDF	35:48	1.887e+04	3.738e+04	0.50	yes	no	0.801
25 IS	13C-1,2,3,4,6,7,8-HpCDF	37:06	1.634e+04	3.743e+04	0.44	yes	no	0.789
26 IS	13C-1,2,3,4,7,8,9-HpCDF	38:25	1.307e+04	3.096e+04	0.42	yes	no	0.590
27 IS	13C-2,3,7,8-TCDD	26:26	2.897e+04	3.689e+04	0.79	yes	no	0.839
28 IS	13C-1,2,3,7,8-PeCDD	31:48	4.079e+04	2.633e+04	1.55	yes	no	0.744
29 IS	13C-1,2,3,4,7,8-HxCDD	35:10	3.333e+04	2.674e+04	1.25	yes	no	0.907
30 IS	13C-1,2,3,6,7,8-HxCDD	35:16	3.609e+04	2.879e+04	1.25	yes	no	0.978
31 IS	13C-1,2,3,4,6,7,8-HpCDD	38:00	2.964e+04	2.858e+04	1.04	yes	no	0.814
32 IS	13C-OCDD	40:28	4.399e+04	4.914e+04	0.90	yes	no	0.653
33 RS/RT	13C-1,2,3,4-TCDD	25:41	3.278e+04	4.220e+04	0.78	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	35:30	3.775e+04	3.020e+04	1.25	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	26:27	6.624e+03				no	0.894

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Signal/Noise Height Ratio Summary

CLIENT ID.
201833

Run #7 Filename P618643 Samp: 1 Inj: 1 Acquired: 20-AUG-19 23:06:00
Processed: 22-AUG-19 09:45:49 LAB. ID: CS3

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	3.71e+05	8.96e+02	4.1e+02	5.15e+05	3.60e+03	1.4e+02
2	1,2,3,7,8-PeCDF	3.74e+06	4.96e+02	7.5e+03	2.54e+06	1.53e+03	1.7e+03
3	2,3,4,7,8-PeCDF	3.62e+06	4.96e+02	7.3e+03	2.34e+06	1.53e+03	1.5e+03
4	1,2,3,4,7,8-HxCDF	3.96e+06	1.13e+03	3.5e+03	3.23e+06	1.27e+03	2.5e+03
5	1,2,3,6,7,8-HxCDF	4.06e+06	1.13e+03	3.6e+03	3.37e+06	1.27e+03	2.7e+03
5	2,3,4,6,7,8-HxCDF	3.71e+06	1.13e+03	3.3e+03	3.06e+06	1.27e+03	2.4e+03
7	1,2,3,7,8,9-HxCDF	2.93e+06	1.13e+03	2.6e+03	2.48e+06	1.27e+03	2.0e+03
3	1,2,3,4,6,7,8-HpCDF	3.40e+06	3.38e+03	1.0e+03	3.43e+06	4.50e+03	7.6e+02
3	1,2,3,4,7,8,9-HpCDF	2.40e+06	3.38e+03	7.1e+02	2.48e+06	4.50e+03	5.5e+02
10	OCDF	3.95e+06	2.24e+03	1.8e+03	4.56e+06	3.97e+03	1.1e+03
11	2,3,7,8-TCDD	3.95e+05	3.02e+03	1.3e+02	4.74e+05	2.05e+03	2.3e+02
12	1,2,3,7,8-PeCDD	3.08e+06	4.02e+03	7.7e+02	2.01e+06	2.94e+03	6.9e+02
13	1,2,3,4,7,8-HxCDD	3.42e+06	5.29e+03	6.5e+02	2.75e+06	7.02e+03	3.9e+02
14	1,2,3,6,7,8-HxCDD	3.38e+06	5.29e+03	6.4e+02	2.79e+06	7.02e+03	4.0e+02
15	1,2,3,7,8,9-HxCDD	3.35e+06	5.29e+03	6.3e+02	2.67e+06	7.02e+03	3.8e+02
16	1,2,3,4,6,7,8-HpCDD	2.90e+06	6.01e+03	4.8e+02	2.83e+06	5.00e+03	5.7e+02
17	OCDD	4.25e+06	6.26e+03	6.8e+02	4.82e+06	6.32e+03	7.6e+02
18	13C-2,3,7,8-TCDF	4.60e+06	1.25e+04	3.7e+02	5.92e+06	5.58e+03	1.1e+03
19	13C-1,2,3,7,8-PeCDF	8.51e+06	5.04e+02	1.7e+04	5.50e+06	8.56e+02	6.4e+03
20	13C-2,3,4,7,8-PeCDF	8.77e+06	5.04e+02	1.7e+04	5.65e+06	8.56e+02	6.6e+03
21	13C-1,2,3,4,7,8-HxCDF	4.46e+06	1.30e+03	3.4e+03	8.78e+06	2.22e+03	4.0e+03
22	13C-1,2,3,6,7,8-HxCDF	4.94e+06	1.30e+03	3.8e+03	9.54e+06	2.22e+03	4.3e+03
23	13C-2,3,4,6,7,8-HxCDF	4.56e+06	1.30e+03	3.5e+03	8.90e+06	2.22e+03	4.0e+03
24	13C-1,2,3,7,8,9-HxCDF	3.62e+06	1.30e+03	2.8e+03	6.99e+06	2.22e+03	3.2e+03
25	13C-1,2,3,4,6,7,8-HpCDF	3.48e+06	4.73e+03	7.4e+02	8.05e+06	1.29e+04	6.2e+02
26	13C-1,2,3,4,7,8,9-HpCDF	2.61e+06	4.73e+03	5.5e+02	6.23e+06	1.29e+04	4.8e+02
27	13C-2,3,7,8-TCDD	3.95e+06	6.68e+03	5.9e+02	5.06e+06	4.38e+03	1.2e+03
28	13C-1,2,3,7,8-PeCDD	6.77e+06	1.63e+03	4.1e+03	4.35e+06	1.66e+03	2.6e+03
29	13C-1,2,3,4,7,8-HxCDD	6.97e+06	2.44e+03	2.9e+03	5.59e+06	2.00e+03	2.8e+03
30	13C-1,2,3,6,7,8-HxCDD	6.98e+06	2.44e+03	2.9e+03	5.56e+06	2.00e+03	2.8e+03
31	13C-1,2,3,4,6,7,8-HpCDD	6.35e+06	1.13e+03	5.6e+03	6.13e+06	9.16e+02	6.7e+03
32	13C-OCDD	8.35e+06	6.66e+03	1.3e+03	9.19e+06	4.40e+03	2.1e+03
33	13C-1,2,3,4-TCDD	4.33e+06	6.68e+03	6.5e+02	5.62e+06	4.38e+03	1.3e+03
34	13C-1,2,3,7,8,9-HxCDD	7.17e+06	2.44e+03	2.9e+03	5.64e+06	2.00e+03	2.8e+03
35	37Cl-2,3,7,8-TCDD	9.27e+05	4.56e+03	2.0e+02			

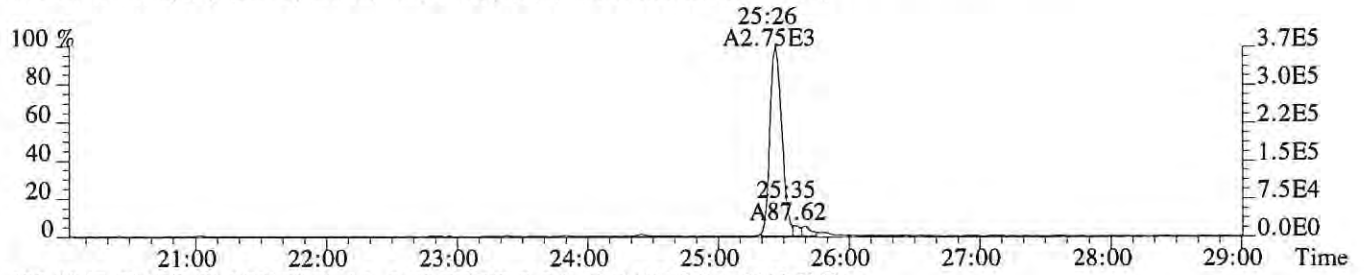
---Sample Calculation---

$$\text{)/L TCDD} = \frac{2.5 \times (3.016e+03 + 2.052e+03) \times 100}{(3.949e+06 + 5.057e+06) \times (\quad) \times 0.989} =$$

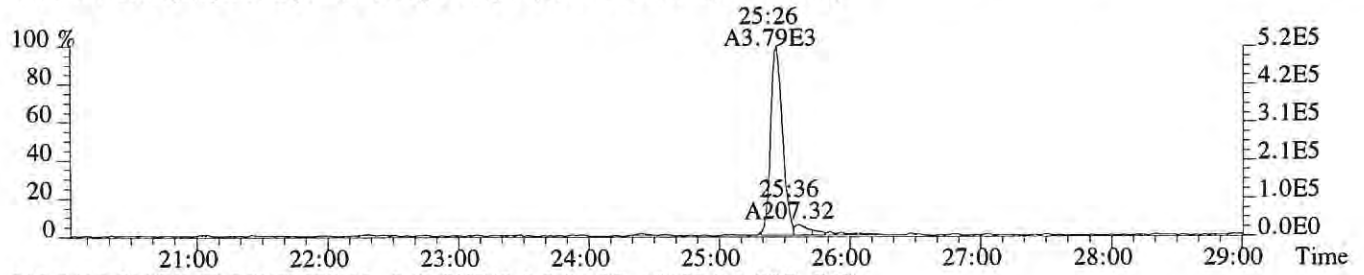
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Sample#1 Exp: CS3

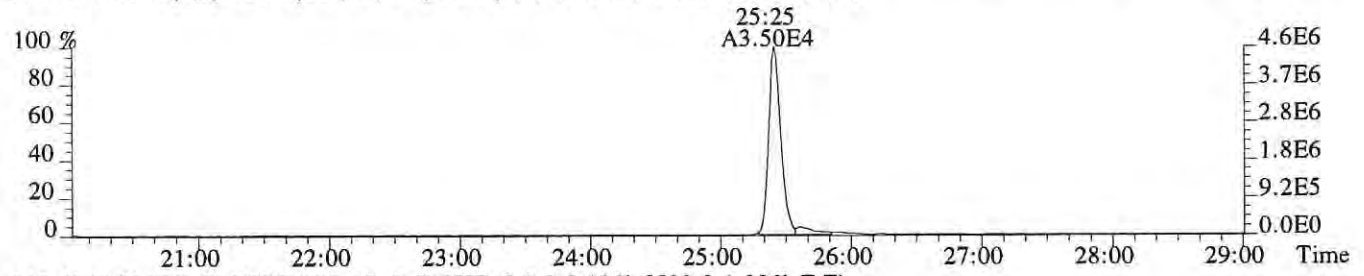
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,896.0,1.00%,F,T)



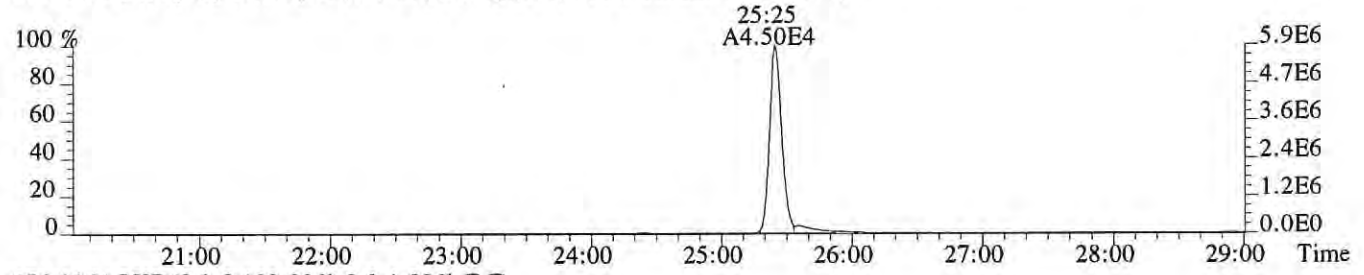
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3596.0,1.00%,F,T)



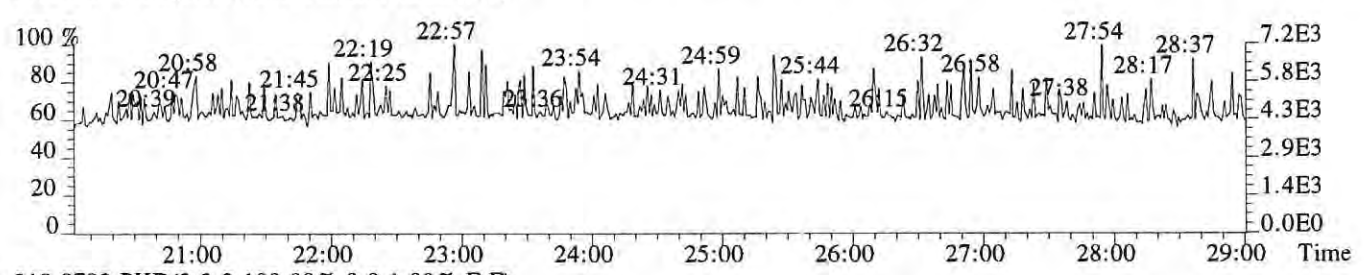
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,12460.0,1.00%,F,T)



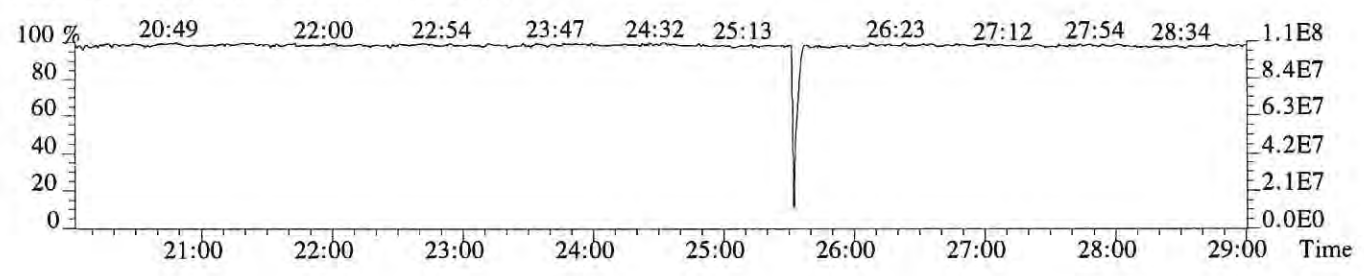
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5580.0,1.00%,F,T)



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

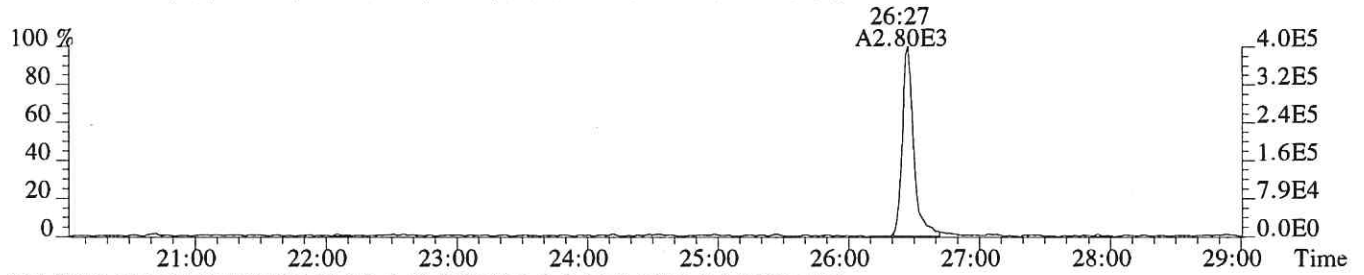


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

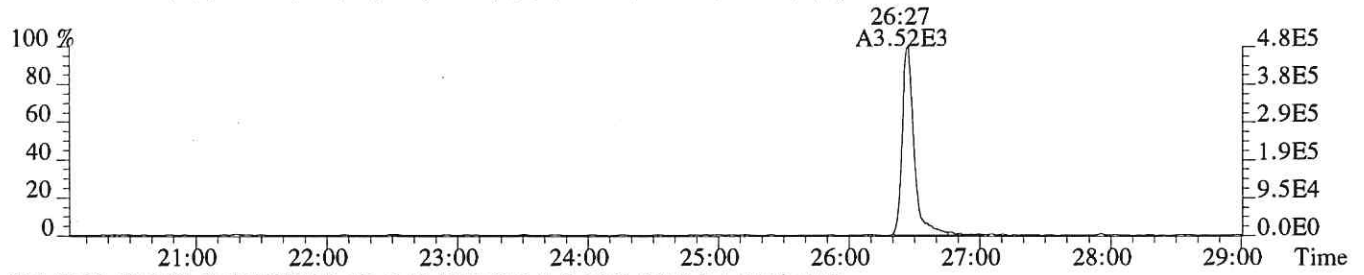


Sample#1 Exp:CS3

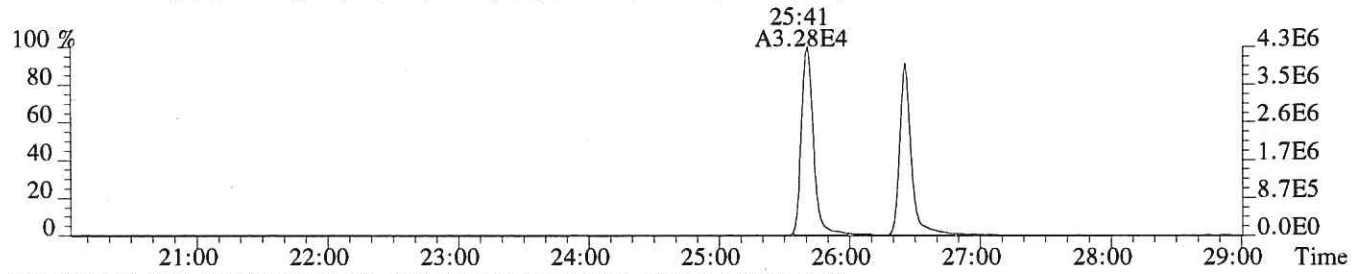
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3016.0,1.00%,F,T)



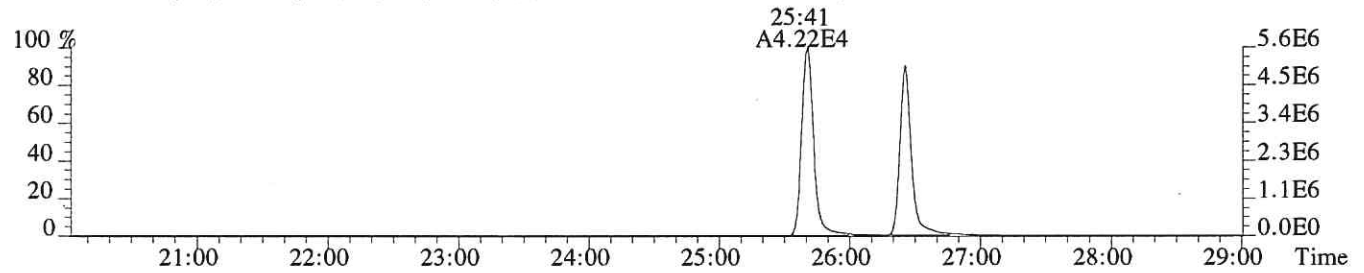
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2052.0,1.00%,F,T)



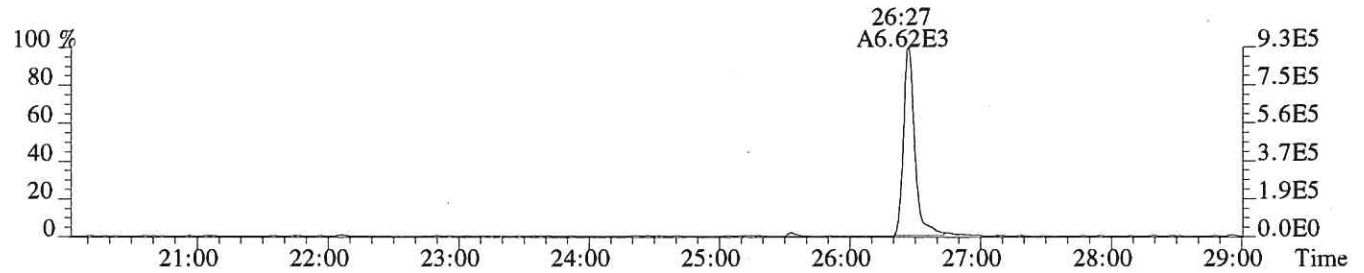
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6676.0,1.00%,F,T)



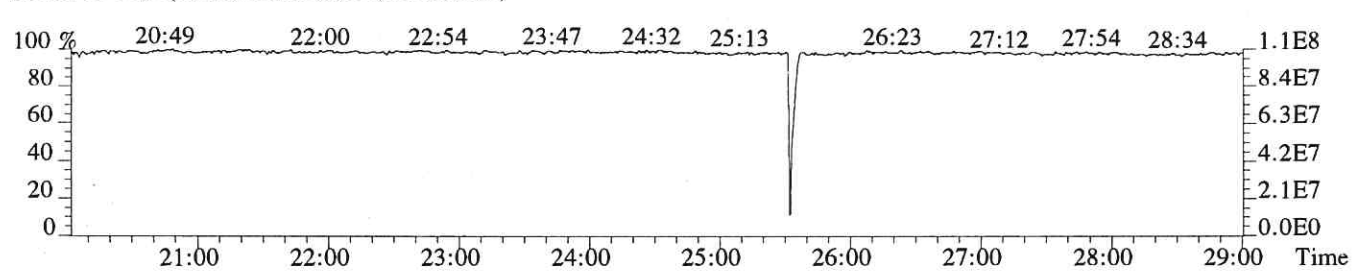
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4376.0,1.00%,F,T)



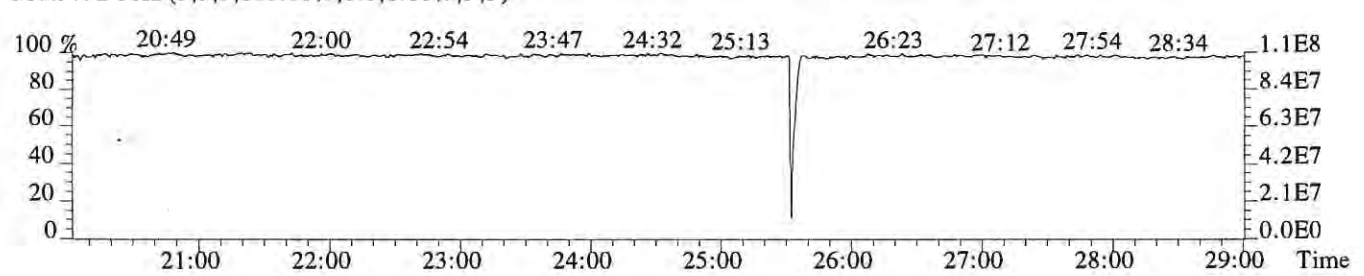
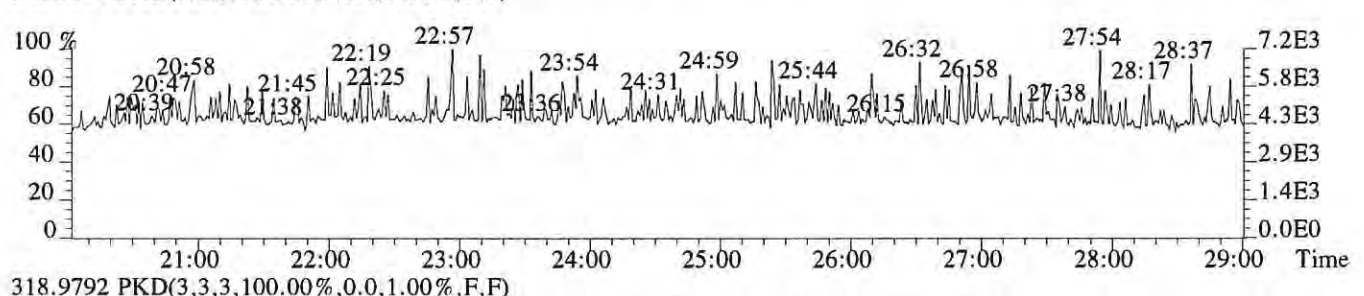
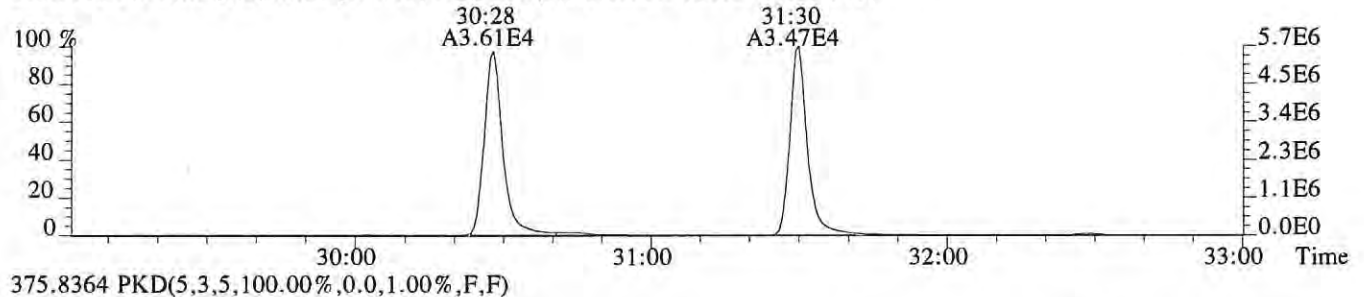
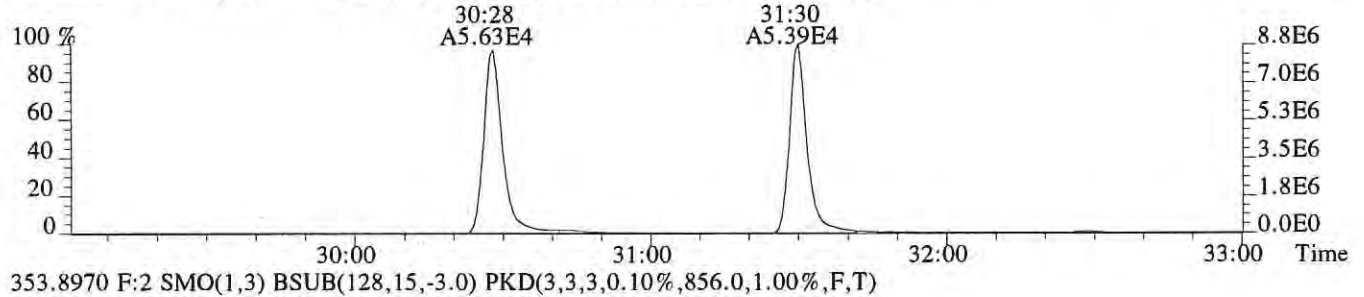
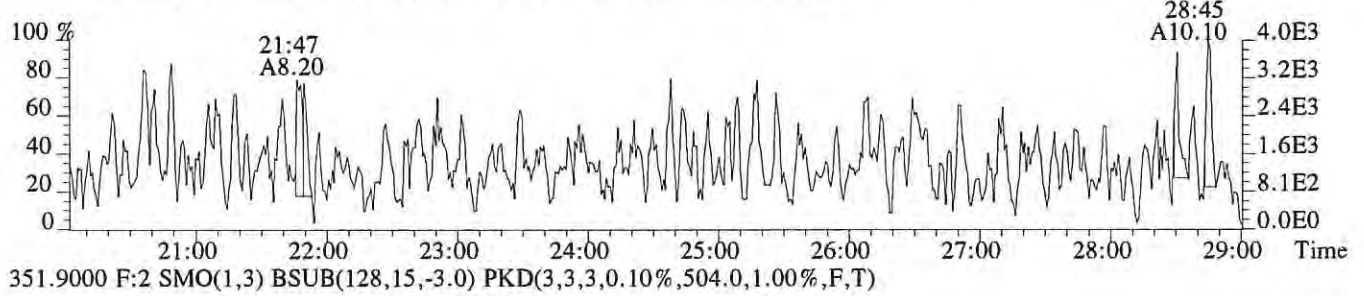
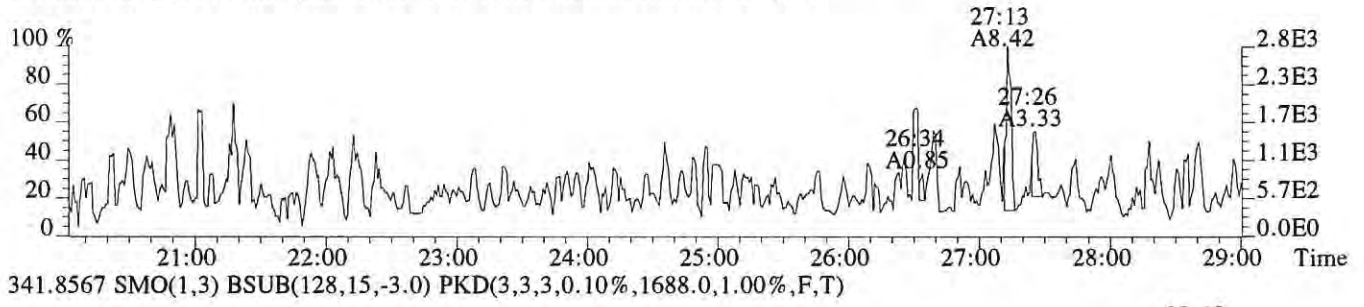
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4560.0,1.00%,F,T)



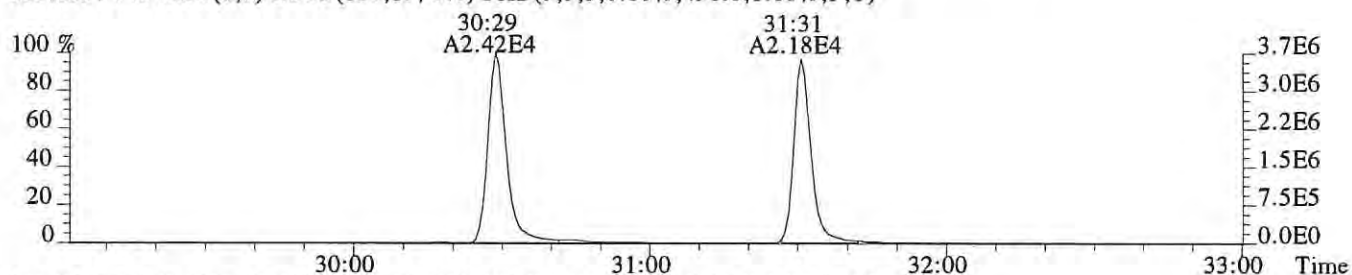
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



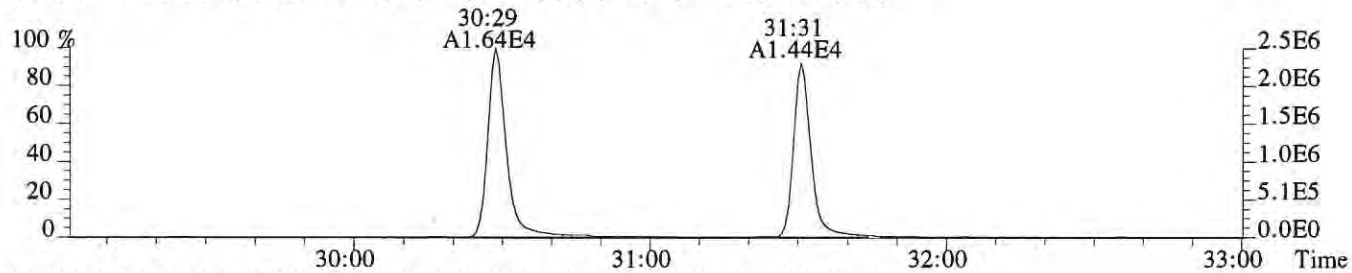
File:P618643 #1-637 Acq:20-AUG-2019 23:06:00 Probe EI+ Magnet SIR VG BioTech Mass spectf
 Sample#1 Exp:CS3
 339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,780.0,1.00%,F,T)



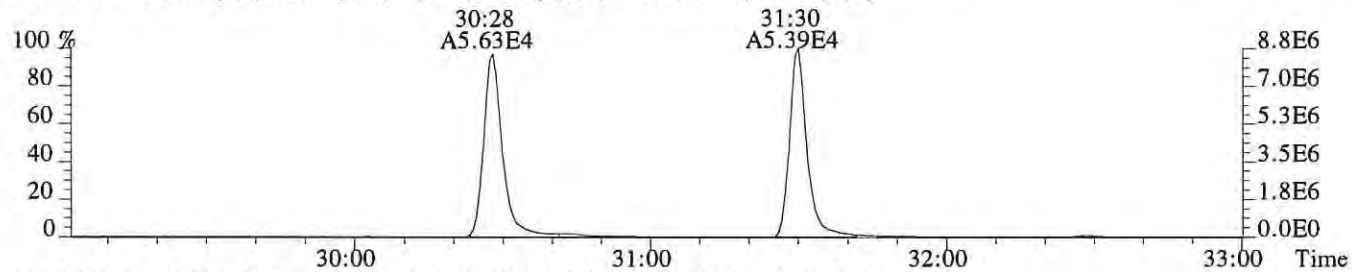
File:P618643 #1-357 Acq:20-AUG-2019 23:06:00 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,496.0,1.00%,F,T)



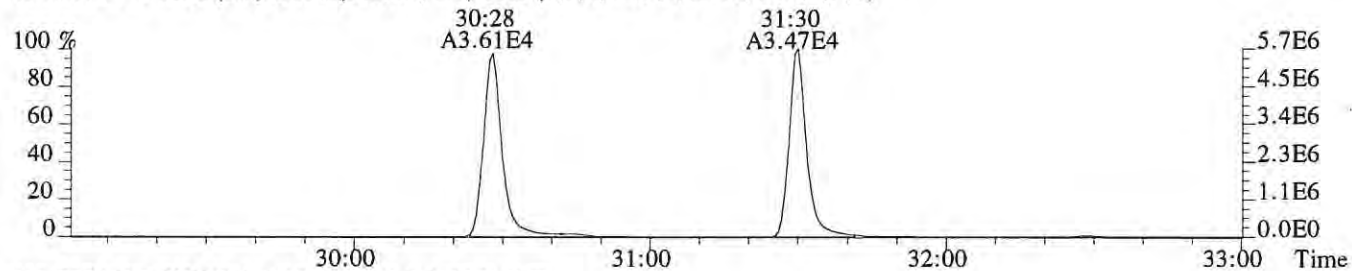
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1528.0,1.00%,F,T)



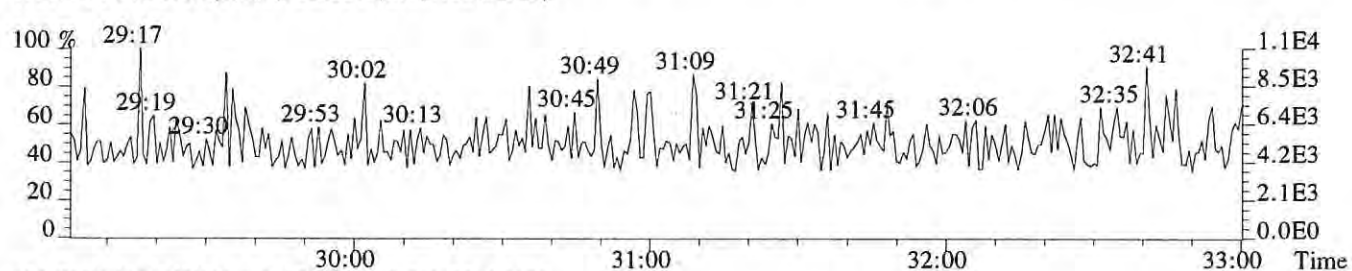
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,504.0,1.00%,F,T)



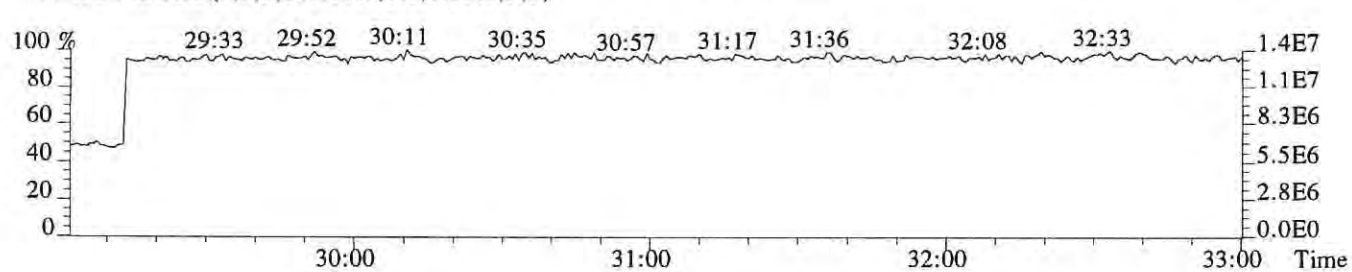
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,856.0,1.00%,F,T)



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

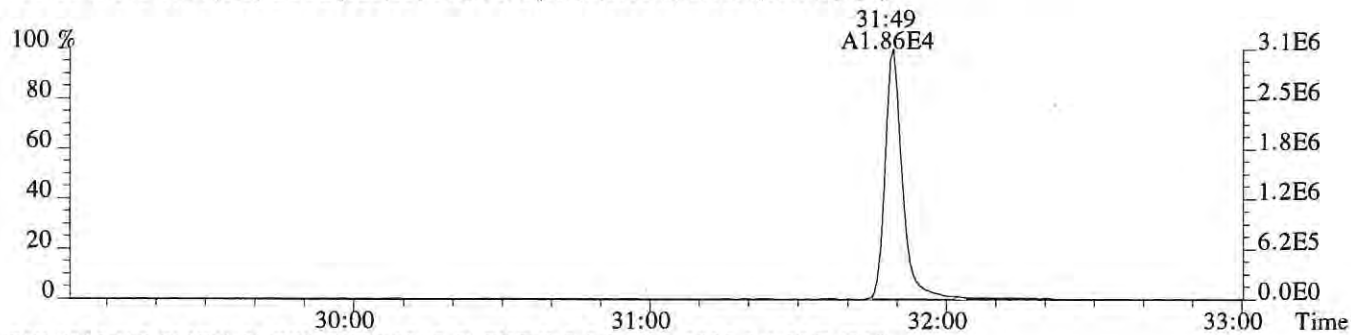


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

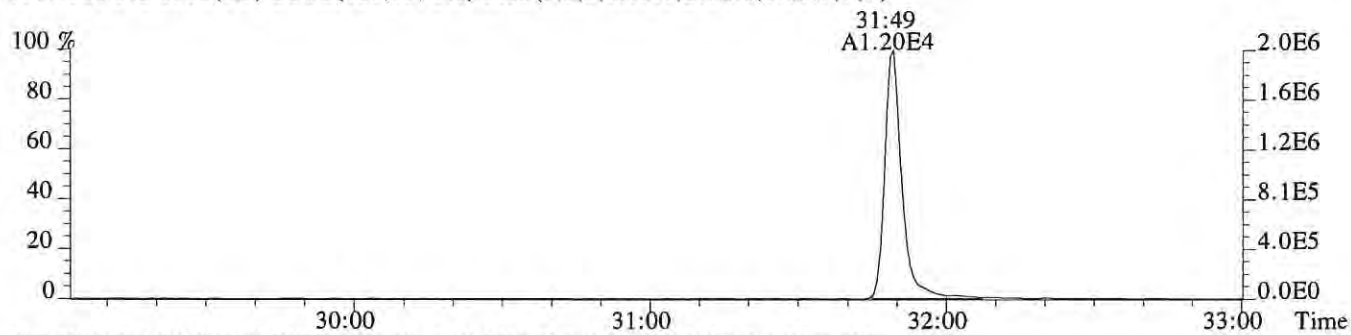


Sample#1 Exp:CS3

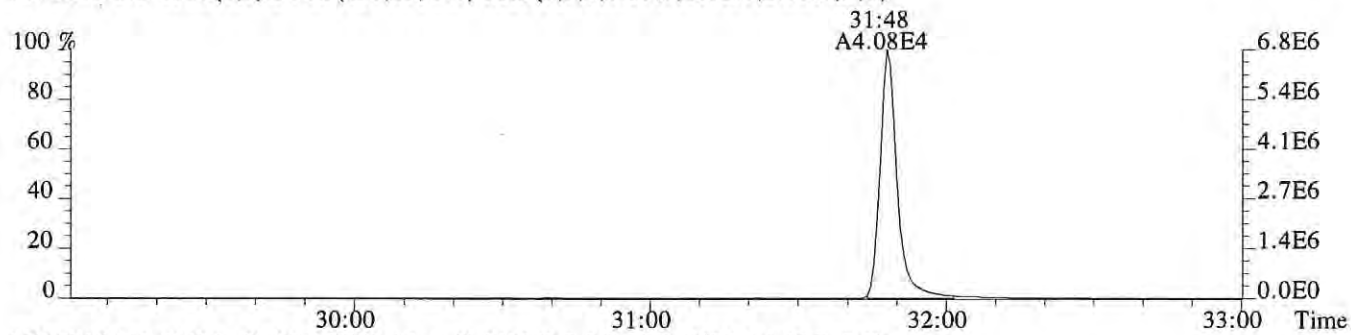
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4016.0,1.00%,F,T)



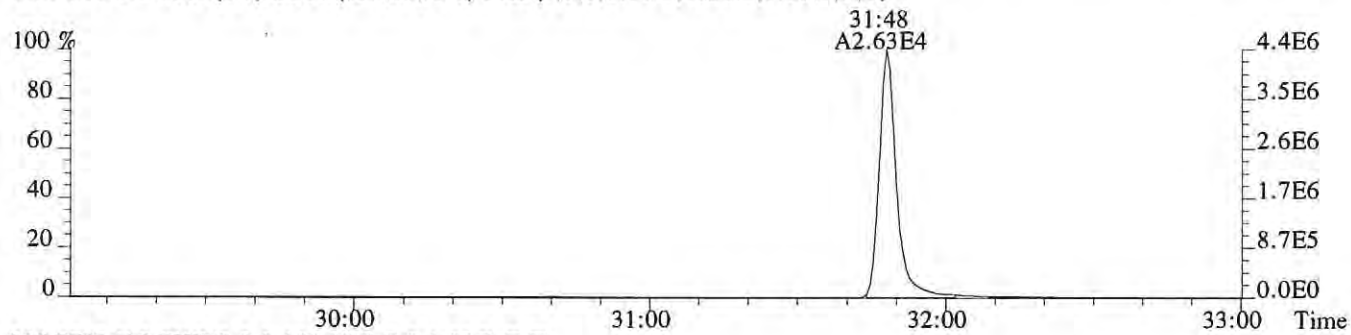
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2936.0,1.00%,F,T)



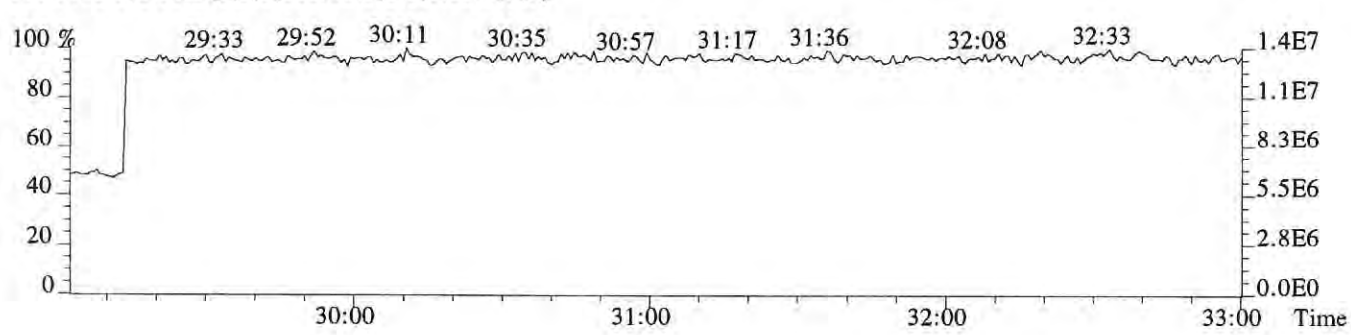
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1632.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1656.0,1.00%,F,T)

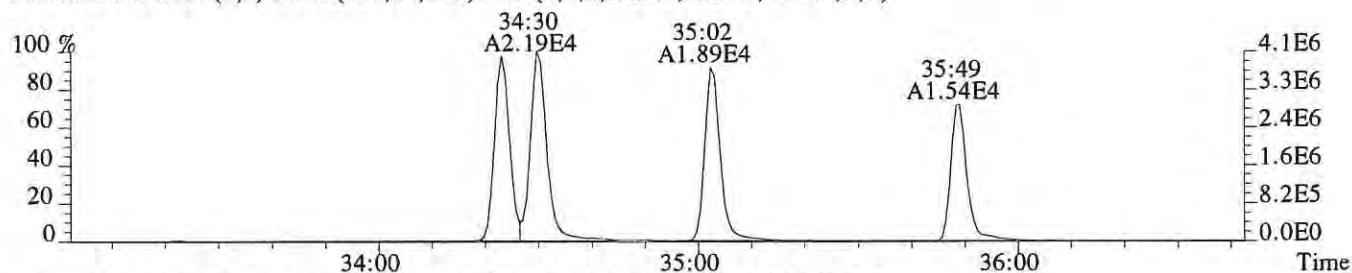


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

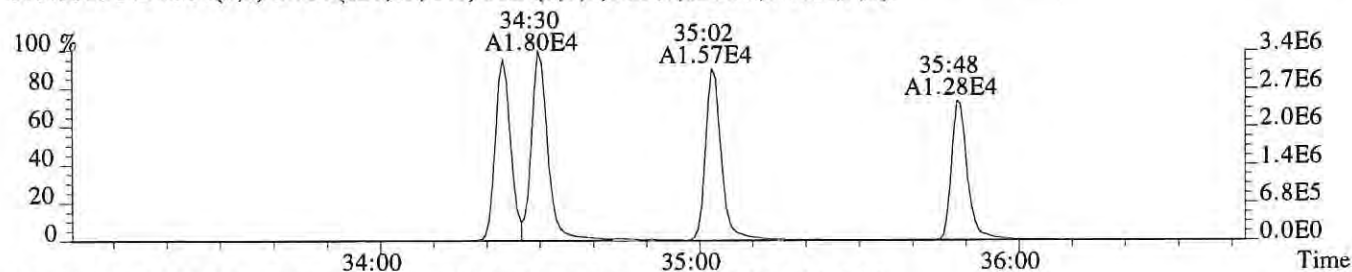


Sample#1 Exp:CS3

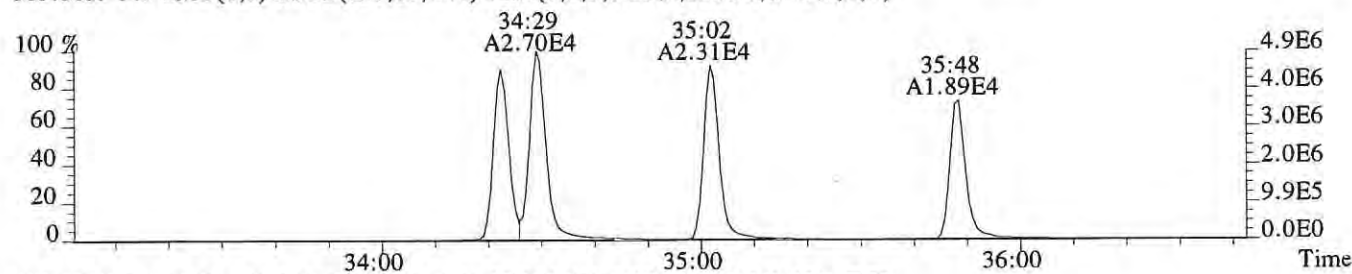
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1128.0,0.40%,F,T)



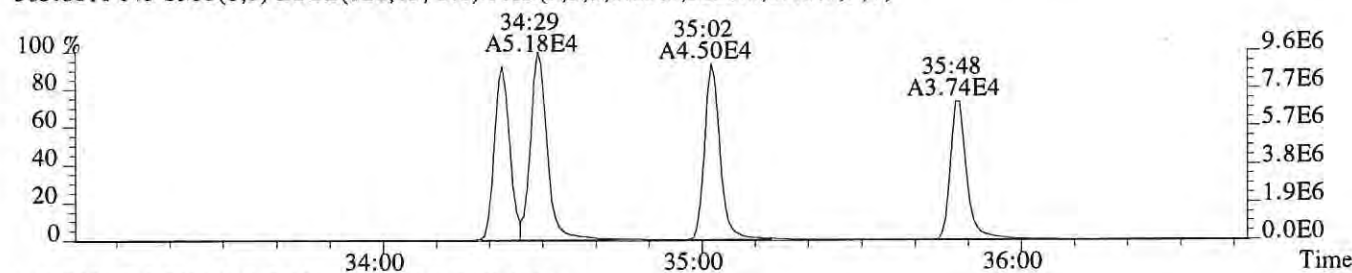
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1268.0,0.40%,F,T)



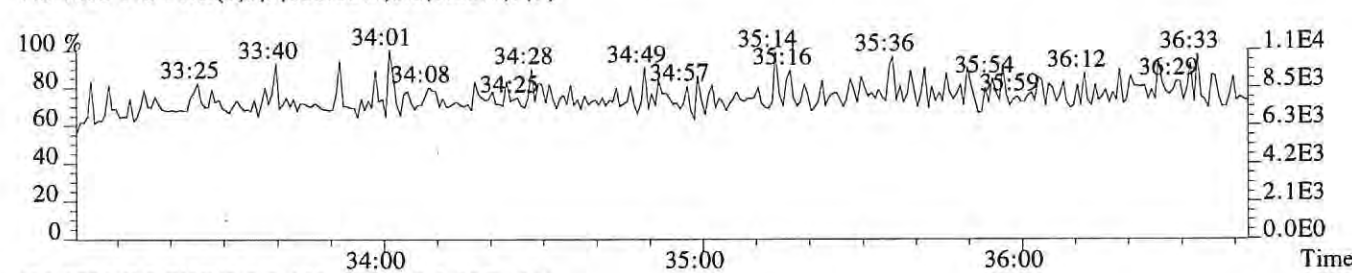
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1296.0,0.40%,F,T)



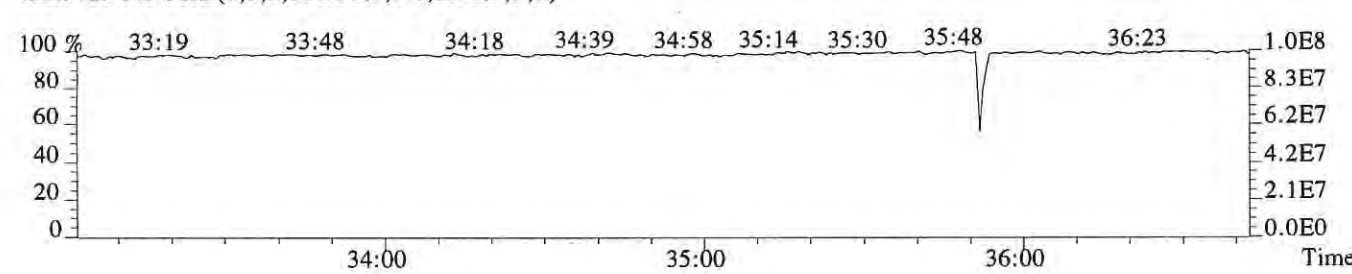
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2220.0,0.40%,F,T)



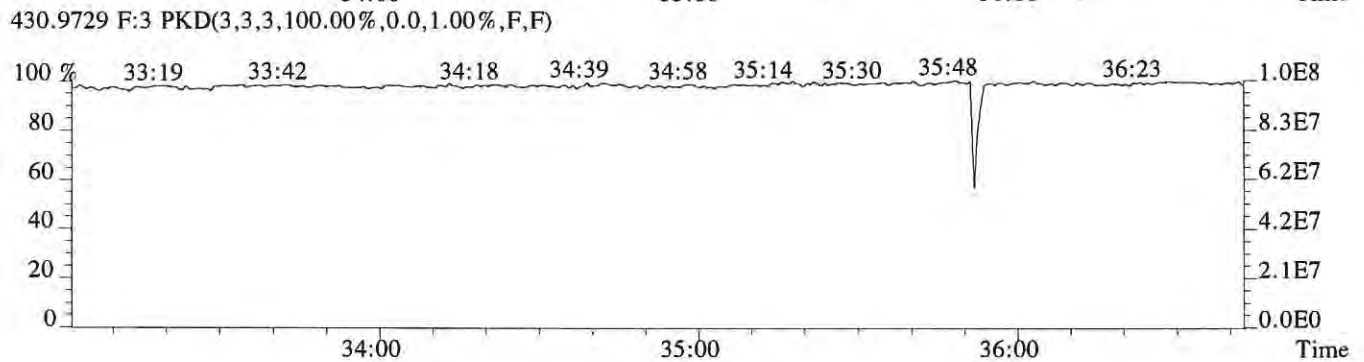
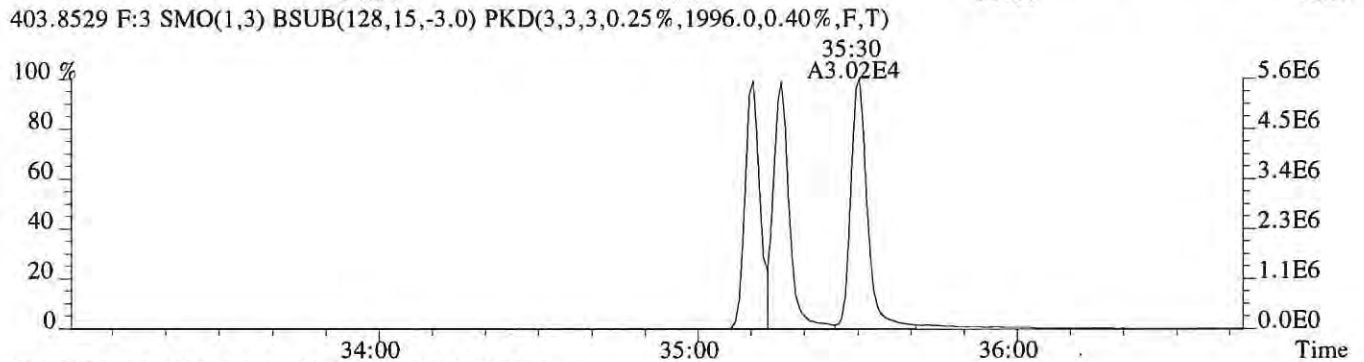
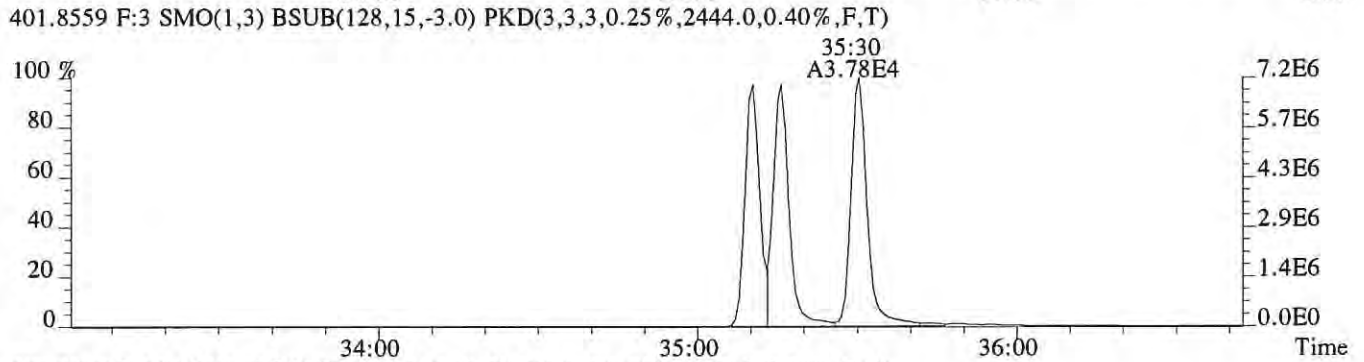
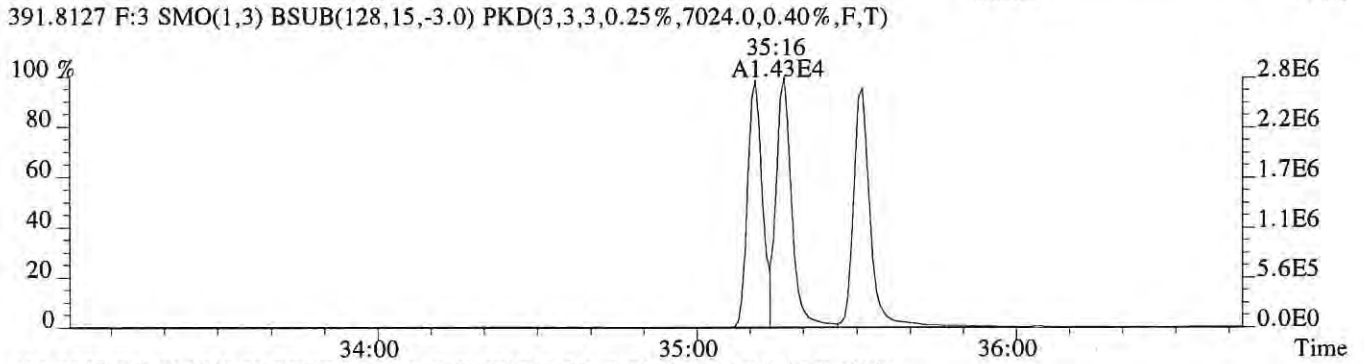
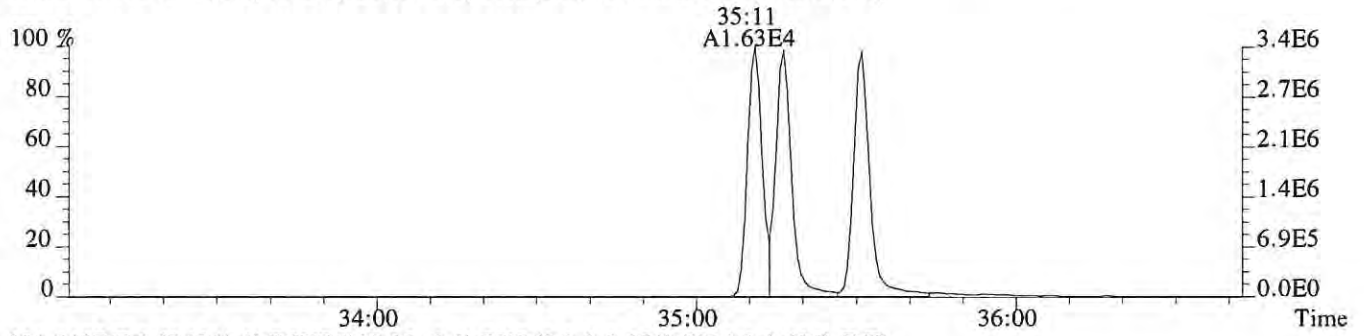
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

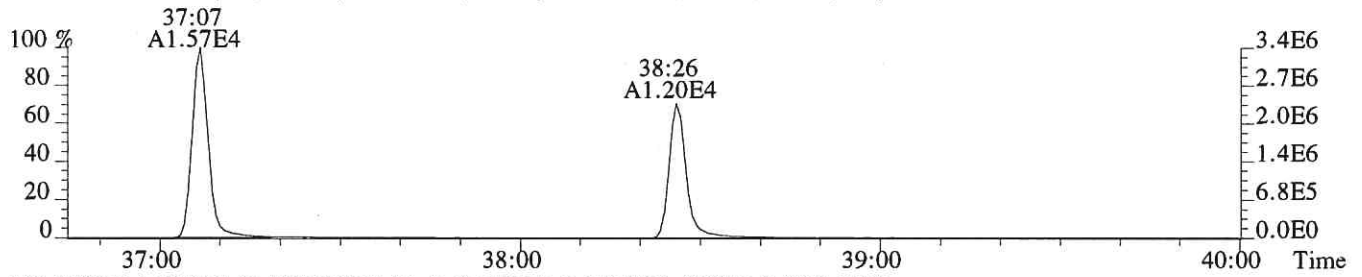


File: P618643 #1-331 Acq: 20-AUG-2019 23:06:00 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: CS3
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5292.0,0.40%,F,T)

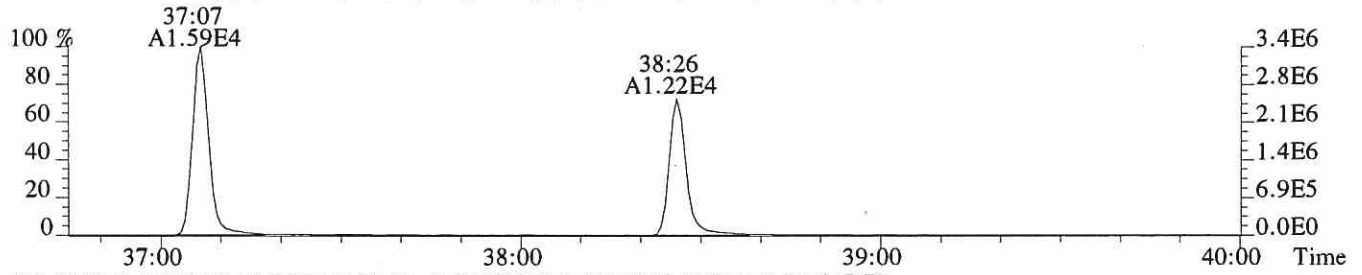


Sample#1 Exp:CS3

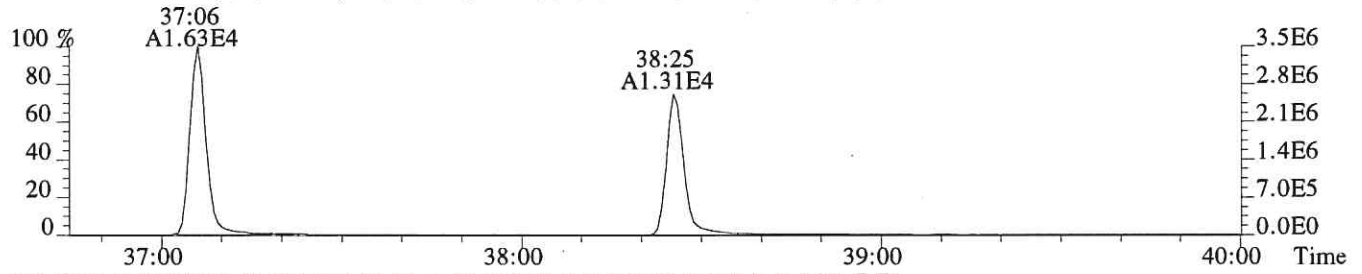
407.7818 F:4 BSMO(1,3) BSMO(128,15,-3.0) PKD(3,3,3,0.25%,3376.0,0.50%,F,T)



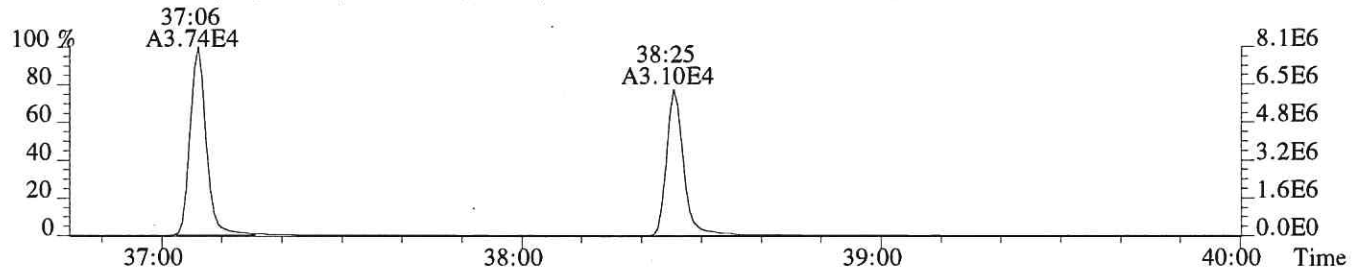
409.7789 F:4 SMO(1,3) BSMO(128,15,-3.0) PKD(3,3,3,0.25%,4500.0,0.50%,F,T)



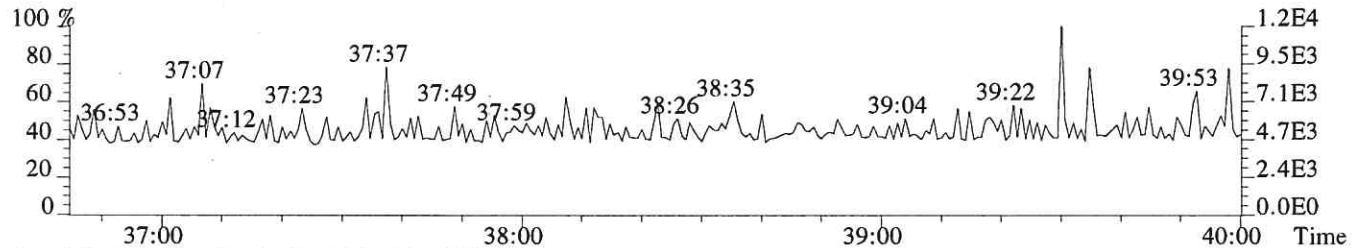
417.8253 F:4 SMO(1,3) BSMO(128,15,-3.0) PKD(3,3,3,0.25%,4732.0,0.50%,F,T)



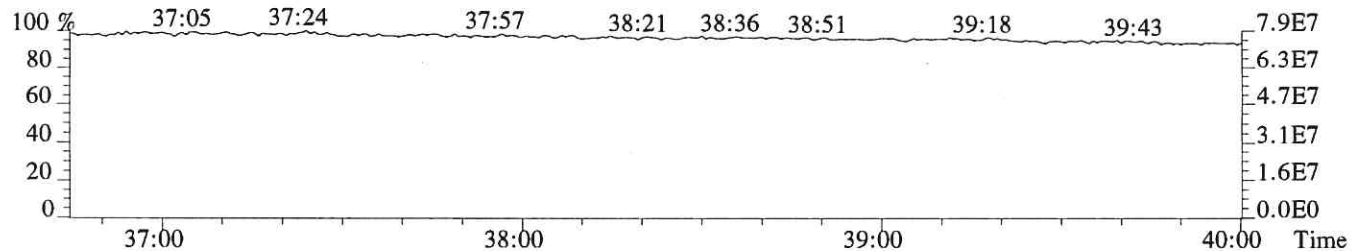
419.8220 F:4 SMO(1,3) BSMO(128,15,-3.0) PKD(3,3,3,0.25%,12948.0,0.50%,F,T)



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

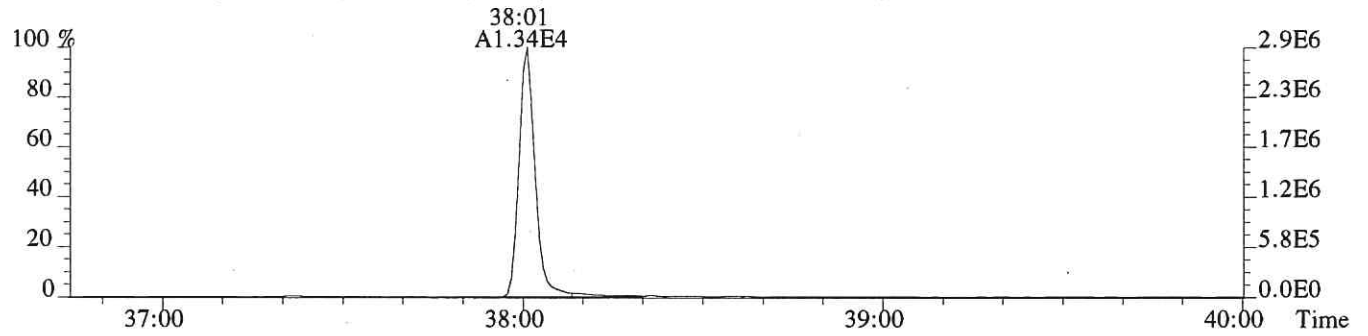


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

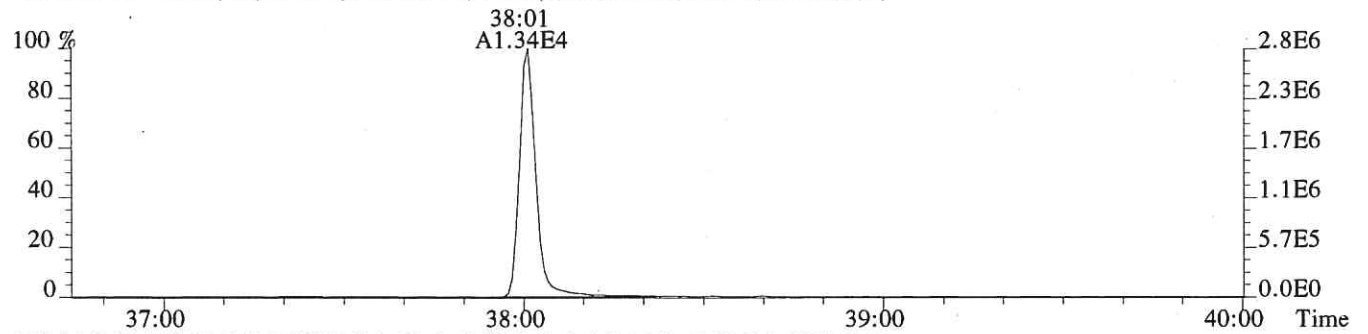


Sample#1 Exp:CS3

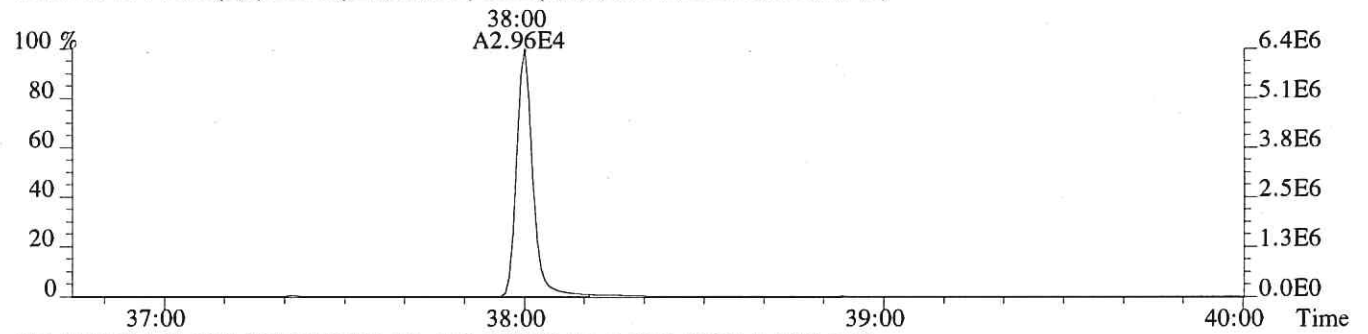
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,6008.0,0.40%,F,T)



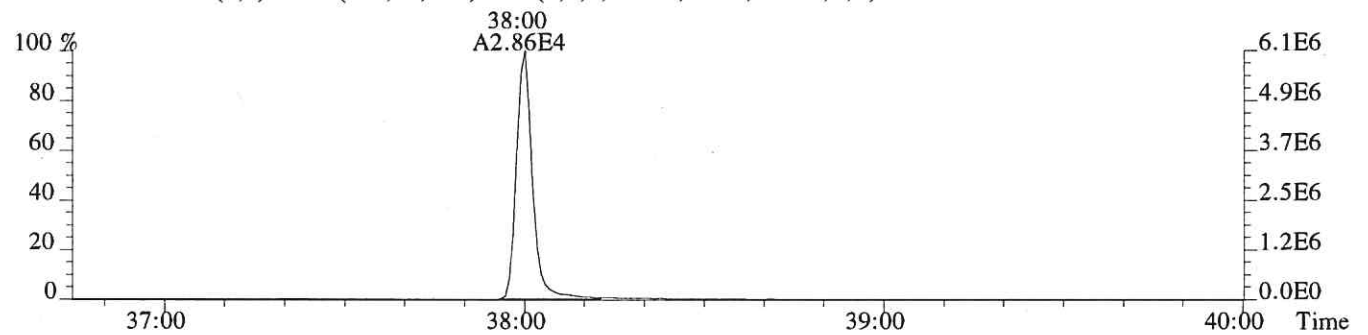
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5000.0,0.40%,F,T)



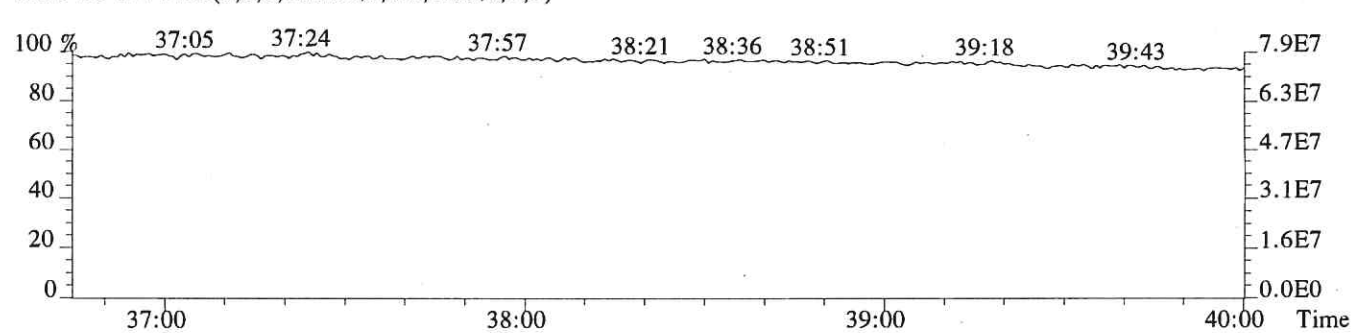
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1128.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,916.0,0.40%,F,T)

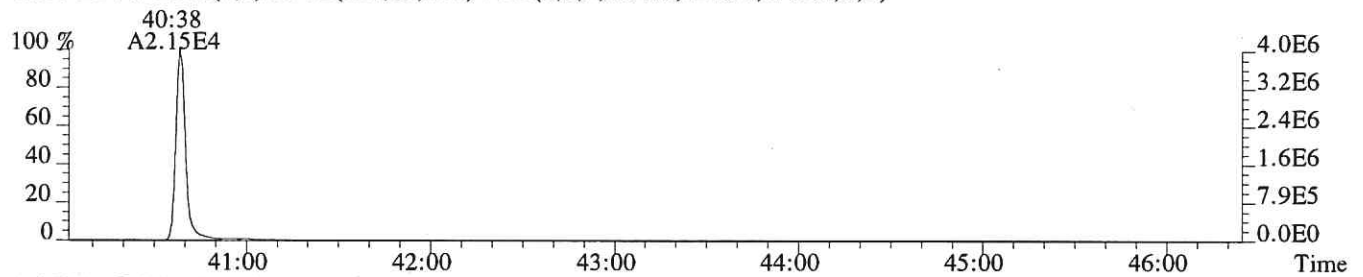


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

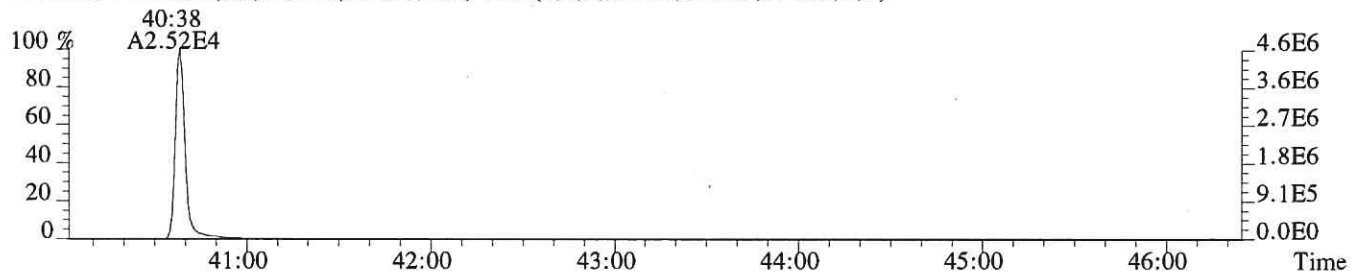


Sample#1 Exp: CS3

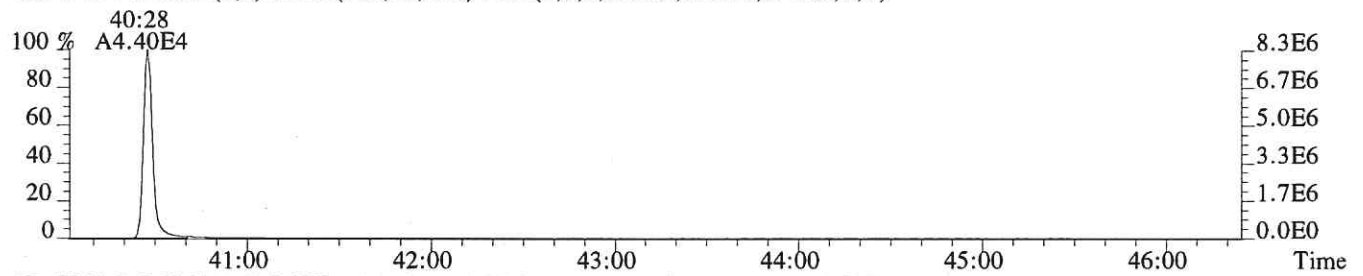
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2240.0,0.40%,F,T)



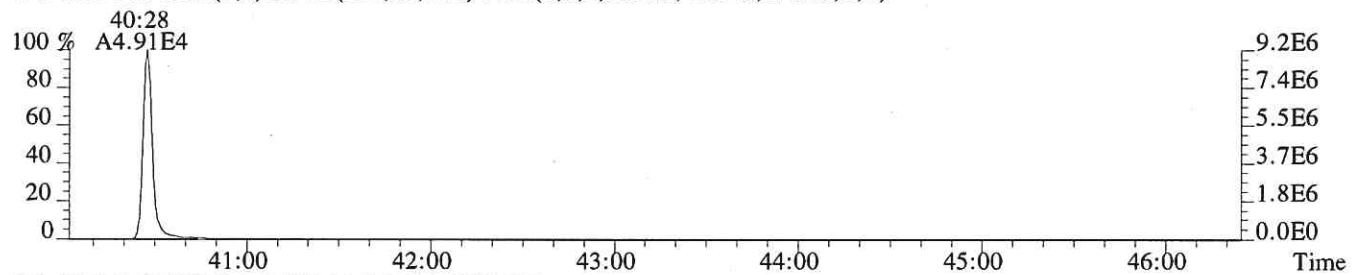
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3968.0,0.40%,F,T)



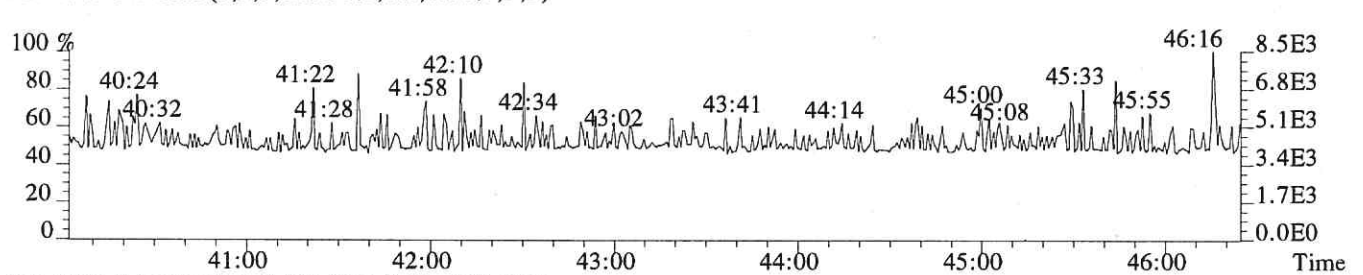
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6660.0,0.40%,F,T)



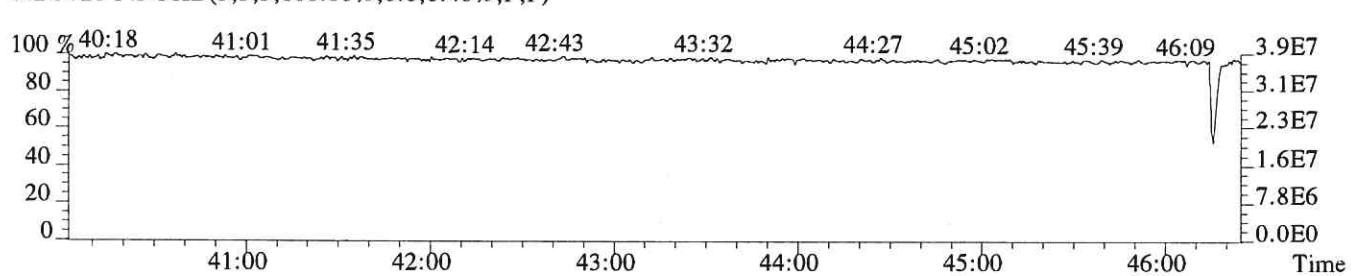
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4400.0,0.40%,F,T)



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

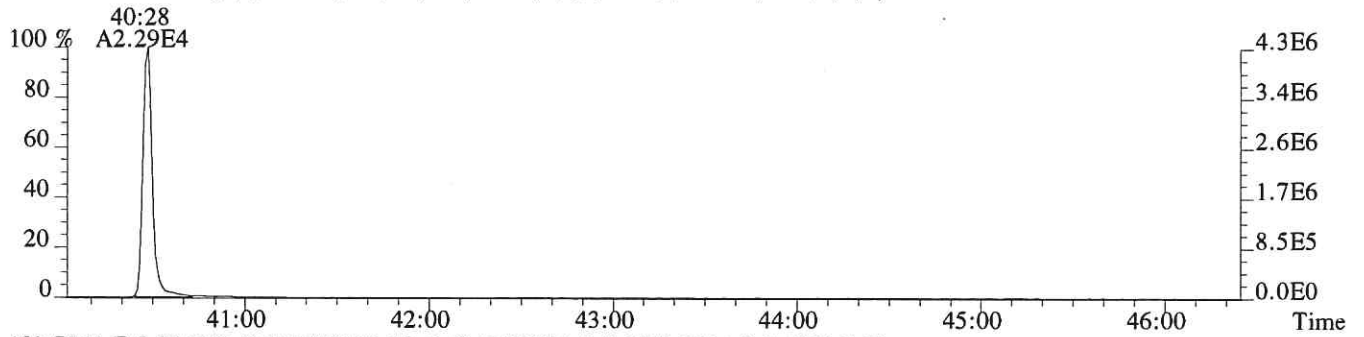


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

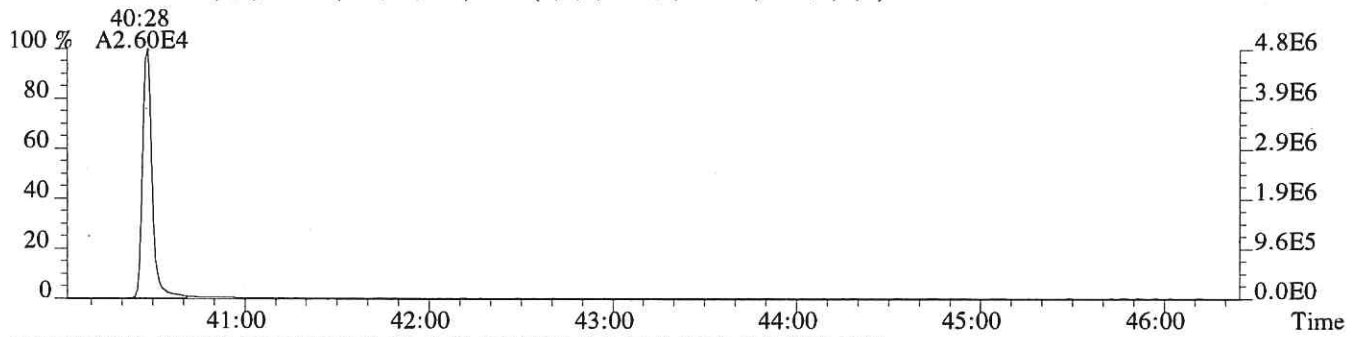


Sample#1 Exp:CS3

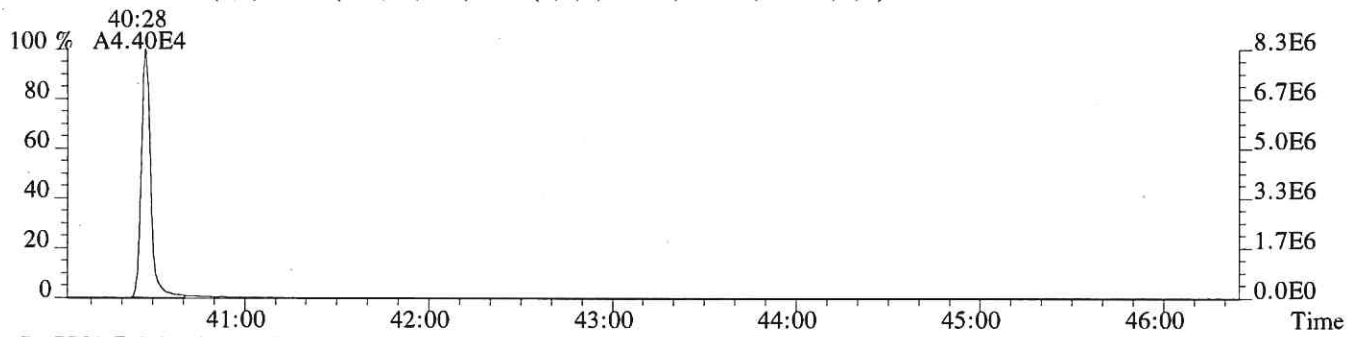
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6260.0,0.40%,F,T)



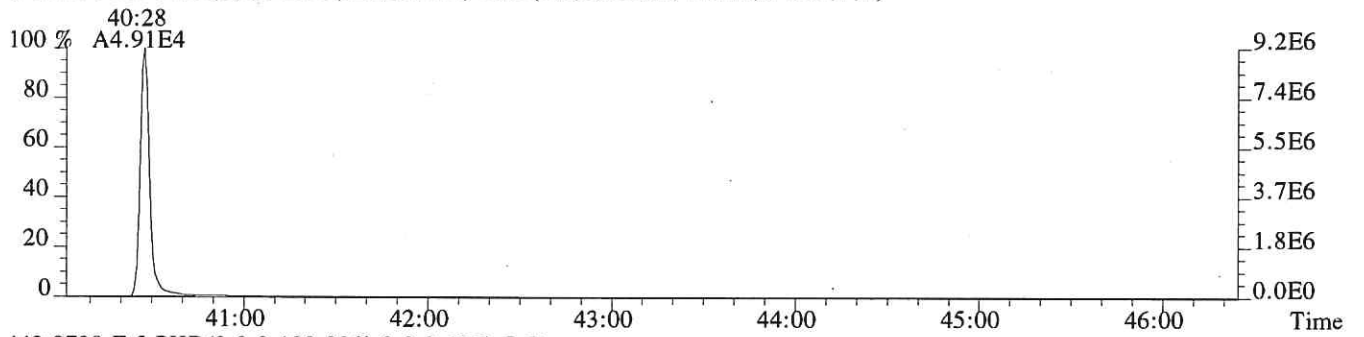
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6324.0,0.40%,F,T)



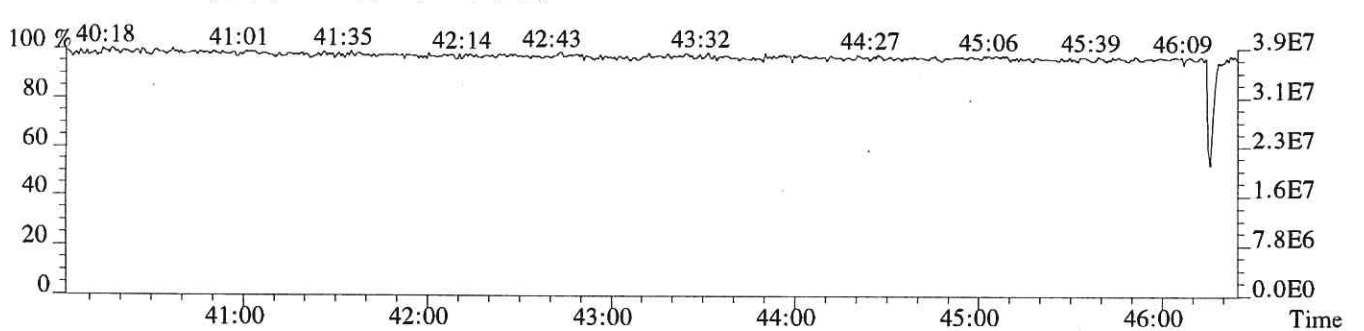
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6660.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4400.0,0.40%,F,T)



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



USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 08/01/19

Instrument ID: E-HRMS-08

GC Column ID: DB-5MSUI

VER Data Filename: P618656

Analysis Date: 21-AUG-19 Time: 09:56:39

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (4)
2,3,7,8-TCDD	M/M+2	0.77	0.65-0.89	9.6	7.8 - 12.9	-3.6
1,2,3,7,8-PeCDD	M+2/M+4	1.55	1.32-1.78	49	39 - 65	-2.6
1,2,3,4,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	48	39 - 64	-3.7
1,2,3,6,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	48	39 - 64	-3.2
1,2,3,7,8,9-HxCDD	M+2/M+4	1.24	1.05-1.43	51	41 - 61	3.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.04	0.88-1.20	51	43 - 58	2.4
OCDD	M+2/M+4	0.88	0.76-1.02	100	79 - 126	-0.2
2,3,7,8-TCDF	M/M+2	0.77	0.65-0.89	9.6	8.4 - 12.0	-4.0
1,2,3,7,8-PeCDF	M+2/M+4	1.51	1.32-1.78	51	41 - 60	2.0
2,3,4,7,8-PeCDF	M+2/M+4	1.51	1.32-1.78	50	41 - 61	0.9
1,2,3,4,7,8-HxCDF	M+2/M+4	1.18	1.05-1.43	50	45 - 56	-0.4
1,2,3,6,7,8-HxCDF	M+2/M+4	1.22	1.05-1.43	51	44 - 57	2.7
1,2,3,7,8,9-HxCDF	M+2/M+4	1.21	1.05-1.43	48	45 - 56	-3.3
2,3,4,6,7,8-HxCDF	M+2/M+4	1.20	1.05-1.43	51	44 - 57	1.7
1,2,3,4,6,7,8-HpCDF	M+2/M+4	0.98	0.88-1.20	51	45 - 55	2.1
1,2,3,4,7,8,9-HpCDF	M+2/M+4	0.98	0.88-1.20	49	43 - 58	-1.3
OCDF	M+2/M+4	0.90	0.76-1.02	100	63 - 159	-0.3

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range as specified in Table 6, Method 1613B, under VER.

(4) 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, Method 8290

12/2012
1613F4A.FRM

USEPA - ITD

FORM 4B

PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 08/01/19

Instrument ID: E-HRMS-08

GC Column ID: DB-5MSUI

VER Data Filename: P618656

Analysis Date: 21-AUG-19 Time: 09:56:39

LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (5)
13C-2,3,7,8-TCDD	M/M+2	0.78	0.65-0.89	106	82 - 121	5.5
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.58	1.32-1.78	118	62 - 160	18.0
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	102	85 - 117	1.8
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	100	85 - 118	-0.4
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.05	0.88-1.20	100	72 - 138	0.4
13C-OCDD	M+2/M+4	0.89	0.76-1.02	189	96 - 415	-5.6
13C-2,3,7,8-TCDF	M/M+2	0.79	0.65-0.89	106	71 - 140	5.5
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.57	1.32-1.78	114	76 - 130	14.3
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.55	1.32-1.78	116	77 - 130	15.9
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.51	0.43-0.59	96	76 - 131	-4.2
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.52	0.43-0.59	96	70 - 143	-4.0
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.51	0.43-0.59	109	74 - 135	8.6
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.51	0.43-0.59	100	73 - 137	0.1
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.43	0.37-0.51	100	78 - 129	0.2
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.44	0.37-0.51	100	77 - 129	0.3
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	M+2/M+4			10.1	7.8 - 12.7	1.1

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range, as specified in Table 6, Method 1613B, under VER.

(4) No ion abundance ratio; report concentration found.

(5) The beginning CCAL %RSD for the labeled standard must not exceed +/- 30% Section 7.7.4.2. The ending CCAL must not exceed +/- 35%, Sec 8.3.2.4 (8290)

12/2012
1613F4B.FRM

ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
201833

Run #8 Filename P618656 Samp: 1 Inj: 1 Acquired: 21-AUG-19 09:56:39
Processed: 22-AUG-19 09:47:48 Sample ID: CS3

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	25:25	3.546e+03	4.597e+03	0.77	yes	no	0.873
2 Unk	1,2,3,7,8-PeCDF	30:28	2.719e+04	1.800e+04	1.51	yes	no	0.864
3 Unk	2,3,4,7,8-PeCDF	31:30	2.441e+04	1.612e+04	1.51	yes	no	0.825
4 Unk	1,2,3,4,7,8-HxCDF	34:22	1.961e+04	1.666e+04	1.18	yes	no	1.084
5 Unk	1,2,3,6,7,8-HxCDF	34:29	2.252e+04	1.848e+04	1.22	yes	no	0.994
6 Unk	2,3,4,6,7,8-HxCDF	35:02	1.935e+04	1.608e+04	1.20	yes	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	35:48	1.579e+04	1.307e+04	1.21	yes	no	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	37:06	1.531e+04	1.564e+04	0.98	yes	no	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	38:26	1.059e+04	1.077e+04	0.98	yes	no	1.104
0 Unk	OCDF	40:38	1.910e+04	2.128e+04	0.90	yes	no	0.993
1 Unk	2,3,7,8-TCDD	26:26	3.076e+03	3.971e+03	0.77	yes	no	0.989
2 Unk	1,2,3,7,8-PeCDD	31:49	2.072e+04	1.336e+04	1.55	yes	no	0.954
3 Unk	1,2,3,4,7,8-HxCDD	35:10	1.672e+04	1.330e+04	1.26	yes	no	1.020
4 Unk	1,2,3,6,7,8-HxCDD	35:16	1.787e+04	1.426e+04	1.25	yes	no	1.030
5 Unk	1,2,3,7,8,9-HxCDD	35:30	1.802e+04	1.455e+04	1.24	yes	no	1.007
6 Unk	1,2,3,4,6,7,8-HpCDD	38:00	1.304e+04	1.250e+04	1.04	yes	no	0.922
7 Unk	OCDD	40:28	2.022e+04	2.300e+04	0.88	yes	no	1.062
8 IS	13C-2,3,7,8-TCDF	25:24	4.286e+04	5.432e+04	0.79	yes	no	1.102
9 IS	13C-1,2,3,7,8-PeCDF	30:27	6.258e+04	3.998e+04	1.57	yes	no	1.074
0 IS	13C-2,3,4,7,8-PeCDF	31:29	5.918e+04	3.822e+04	1.55	yes	no	1.005
1 IS	13C-1,2,3,4,7,8-HxCDF	34:22	2.263e+04	4.459e+04	0.51	yes	no	1.059
2 IS	13C-1,2,3,6,7,8-HxCDF	34:28	2.734e+04	5.298e+04	0.52	yes	no	1.264
3 IS	13C-2,3,4,6,7,8-HxCDF	35:01	2.392e+04	4.671e+04	0.51	yes	no	1.066
4 IS	13C-1,2,3,7,8,9-HxCDF	35:48	1.957e+04	3.801e+04	0.51	yes	no	0.801
5 IS	13C-1,2,3,4,6,7,8-HpCDF	37:05	1.578e+04	3.657e+04	0.43	yes	no	0.789
6 IS	13C-1,2,3,4,7,8,9-HpCDF	38:25	1.190e+04	2.730e+04	0.44	yes	no	0.590
7 IS	13C-2,3,7,8-TCDD	26:24	3.250e+04	4.148e+04	0.78	yes	no	0.839
8 IS	13C-1,2,3,7,8-PeCDD	31:47	4.497e+04	2.839e+04	1.58	yes	no	0.744
9 IS	13C-1,2,3,4,7,8-HxCDD	35:10	3.423e+04	2.689e+04	1.27	yes	no	0.907
0 IS	13C-1,2,3,6,7,8-HxCDD	35:15	3.608e+04	2.841e+04	1.27	yes	no	0.978
1 IS	13C-1,2,3,4,6,7,8-HpCDD	37:59	2.777e+04	2.638e+04	1.05	yes	no	0.814
2 IS	13C-OCDD	40:27	3.842e+04	4.312e+04	0.89	yes	no	0.653
3 RS/RT	13C-1,2,3,4-TCDD	25:39	3.655e+04	4.704e+04	0.78	yes	no	-
4 RS/RT	13C-1,2,3,7,8,9-HxCDD	35:30	3.618e+04	3.002e+04	1.21	yes	no	-
5 C/Up	37C1-2,3,7,8-TCDD	26:26	7.552e+03				no	0.894

ALS ENVIRONMENTAL
10450 Stancliff Rd., Suite 115
Houston, TX 77099
Office (281) 530-5656. Fax (281) 530-5887

ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
201833

run #8 Filename P618656 Samp: 1 Inj: 1 Acquired: 21-AUG-19 09:56:39
Processed: 22-AUG-19 09:47:48 LAB. ID: CS3

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
	2,3,7,8-TCDF	4.28e+05	6.68e+02	6.4e+02	5.90e+05	1.05e+03	5.6e+02
	1,2,3,7,8-PeCDF	4.23e+06	3.72e+02	1.1e+04	2.79e+06	9.88e+02	2.8e+03
	2,3,4,7,8-PeCDF	4.12e+06	3.72e+02	1.1e+04	2.75e+06	9.88e+02	2.8e+03
	1,2,3,4,7,8-HxCDF	4.09e+06	9.20e+02	4.4e+03	3.46e+06	9.80e+02	3.5e+03
	1,2,3,6,7,8-HxCDF	4.22e+06	9.20e+02	4.6e+03	3.51e+06	9.80e+02	3.6e+03
	2,3,4,6,7,8-HxCDF	3.79e+06	9.20e+02	4.1e+03	3.18e+06	9.80e+02	3.2e+03
	1,2,3,7,8,9-HxCDF	3.07e+06	9.20e+02	3.3e+03	2.52e+06	9.80e+02	2.6e+03
	1,2,3,4,6,7,8-HpCDF	3.27e+06	3.26e+03	1.0e+03	3.31e+06	3.24e+03	1.0e+03
	1,2,3,4,7,8,9-HpCDF	2.09e+06	3.26e+03	6.4e+02	2.14e+06	3.24e+03	6.6e+02
0	OCDF	3.31e+06	6.34e+03	5.2e+02	3.77e+06	4.61e+03	8.2e+02
1	2,3,7,8-TCDD	4.34e+05	1.47e+03	2.9e+02	5.54e+05	1.43e+03	3.9e+02
2	1,2,3,7,8-PeCDD	3.51e+06	2.74e+03	1.3e+03	2.28e+06	1.98e+03	1.2e+03
3	1,2,3,4,7,8-HxCDD	3.64e+06	4.10e+03	8.9e+02	2.87e+06	3.09e+03	9.3e+02
4	1,2,3,6,7,8-HxCDD	3.54e+06	4.10e+03	8.6e+02	2.87e+06	3.09e+03	9.3e+02
5	1,2,3,7,8,9-HxCDD	3.51e+06	4.10e+03	8.6e+02	2.90e+06	3.09e+03	9.4e+02
6	1,2,3,4,6,7,8-HpCDD	2.69e+06	3.96e+03	6.8e+02	2.59e+06	2.78e+03	9.3e+02
7	OCDD	3.70e+06	2.71e+03	1.4e+03	4.18e+06	5.50e+03	7.6e+02
8	13C-2,3,7,8-TCDF	5.26e+06	9.10e+03	5.8e+02	6.67e+06	3.66e+03	1.8e+03
9	13C-1,2,3,7,8-PeCDF	9.52e+06	6.88e+02	1.4e+04	6.15e+06	5.48e+02	1.1e+04
0	13C-2,3,4,7,8-PeCDF	9.94e+06	6.88e+02	1.4e+04	6.37e+06	5.48e+02	1.2e+04
1	13C-1,2,3,4,7,8-HxCDF	4.69e+06	7.92e+02	5.9e+03	9.31e+06	1.31e+03	7.1e+03
2	13C-1,2,3,6,7,8-HxCDF	5.17e+06	7.92e+02	6.5e+03	1.00e+07	1.31e+03	7.7e+03
3	13C-2,3,4,6,7,8-HxCDF	4.65e+06	7.92e+02	5.9e+03	9.18e+06	1.31e+03	7.0e+03
4	13C-1,2,3,7,8,9-HxCDF	3.76e+06	7.92e+02	4.8e+03	7.31e+06	1.31e+03	5.6e+03
5	13C-1,2,3,4,6,7,8-HpCDF	3.32e+06	3.77e+03	8.8e+02	7.74e+06	9.07e+03	8.5e+02
6	13C-1,2,3,4,7,8,9-HpCDF	2.38e+06	3.77e+03	6.3e+02	5.42e+06	9.07e+03	6.0e+02
7	13C-2,3,7,8-TCDD	4.45e+06	5.36e+03	8.3e+02	5.72e+06	3.34e+03	1.7e+03
8	13C-1,2,3,7,8-PeCDD	7.62e+06	8.00e+02	9.5e+03	4.81e+06	7.52e+02	6.4e+03
9	13C-1,2,3,4,7,8-HxCDD	7.42e+06	1.69e+03	4.4e+03	5.83e+06	1.25e+03	4.7e+03
0	13C-1,2,3,6,7,8-HxCDD	7.17e+06	1.69e+03	4.2e+03	5.69e+06	1.25e+03	4.5e+03
1	13C-1,2,3,4,6,7,8-HpCDD	5.74e+06	1.30e+03	4.4e+03	5.49e+06	6.44e+02	8.5e+03
2	13C-OCDD	6.94e+06	5.35e+03	1.3e+03	7.77e+06	1.06e+04	7.3e+02
3	13C-1,2,3,4-TCDD	4.89e+06	5.36e+03	9.1e+02	6.27e+06	3.34e+03	1.9e+03
4	13C-1,2,3,7,8,9-HxCDD	7.35e+06	1.69e+03	4.3e+03	5.98e+06	1.25e+03	4.8e+03
5	37Cl-2,3,7,8-TCDD	1.06e+06	2.56e+03	4.1e+02			

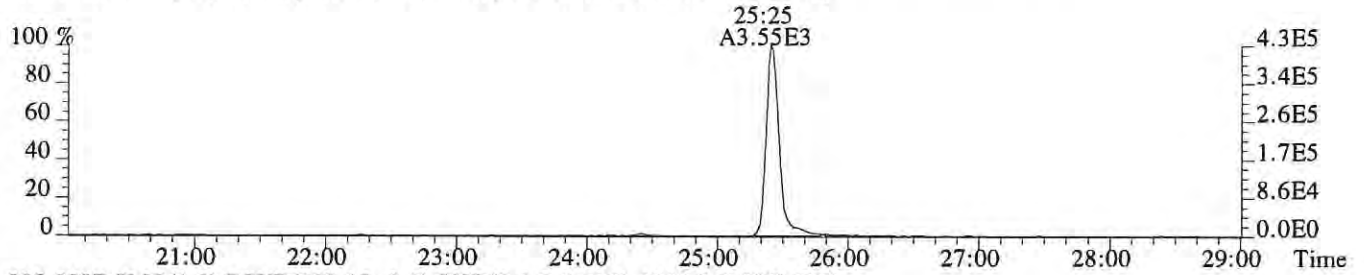
---Sample Calculation---

$$\%L \text{ TCDD} = \frac{2.5 \times (1.472e+03 + 1.428e+03) \times 100}{(4.453e+06 + 5.716e+06) \times (\quad) \times 0.989} =$$

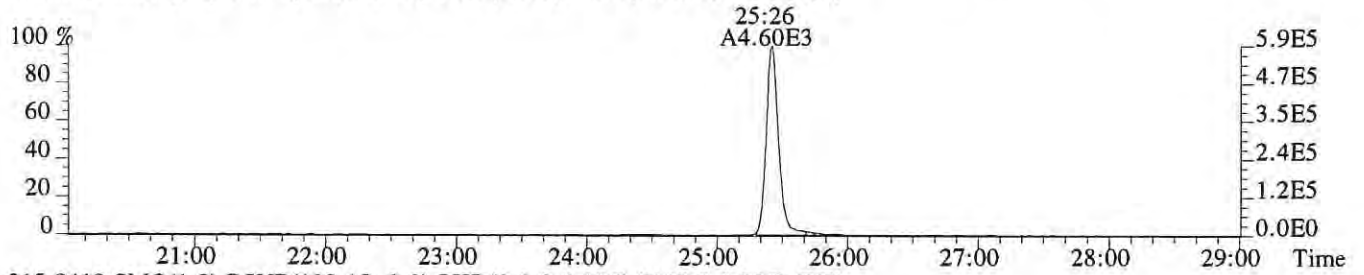
ALS ENVIRONMENTAL
0450 Stancliff Rd., Suite 115
Houston, TX 77099
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Sample#1 Exp: CS3

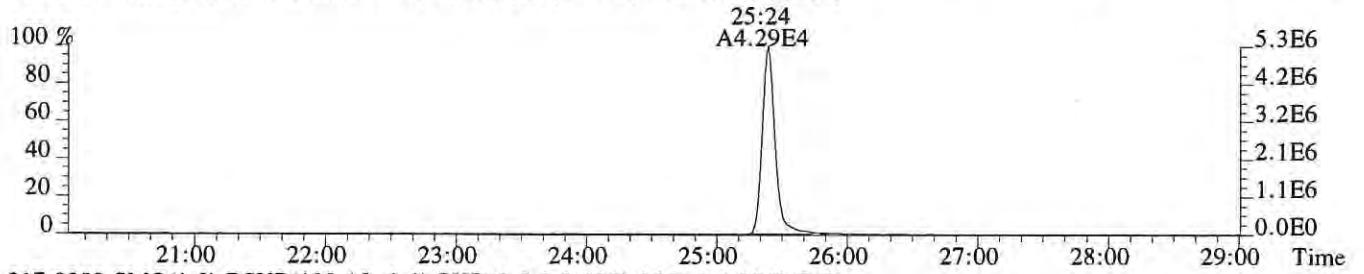
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,668.0,1.00%,F,T)



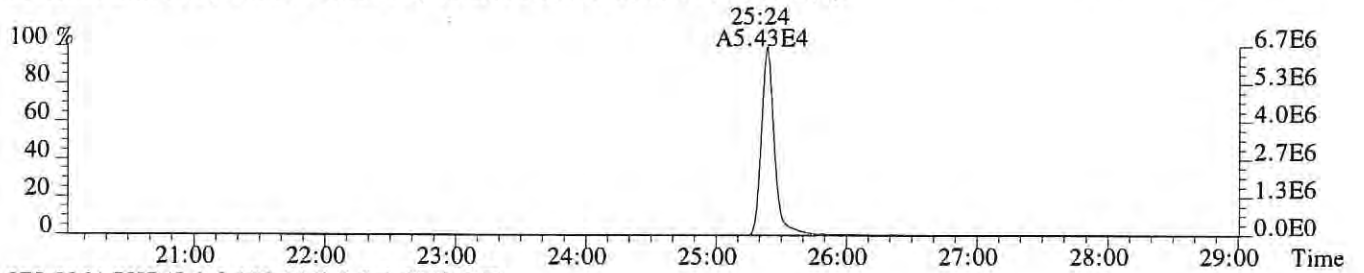
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1048.0,1.00%,F,T)



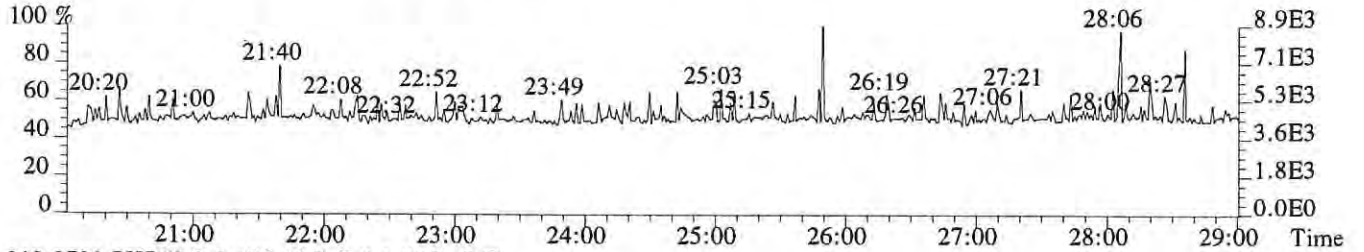
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,9100.0,1.00%,F,T)



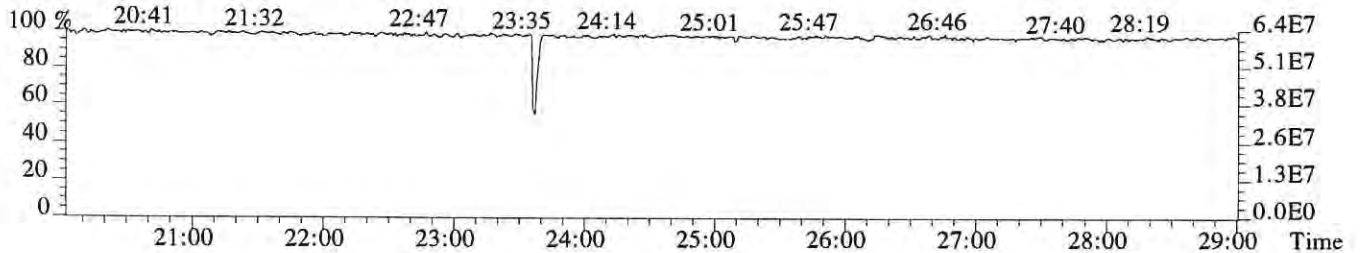
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3664.0,1.00%,F,T)



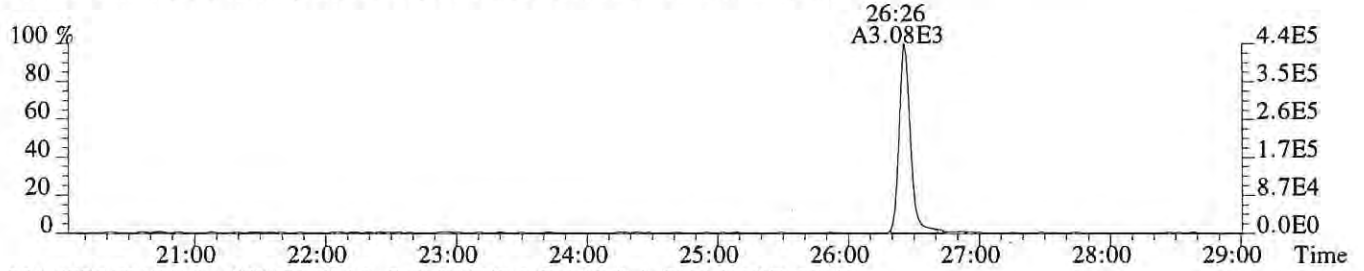
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



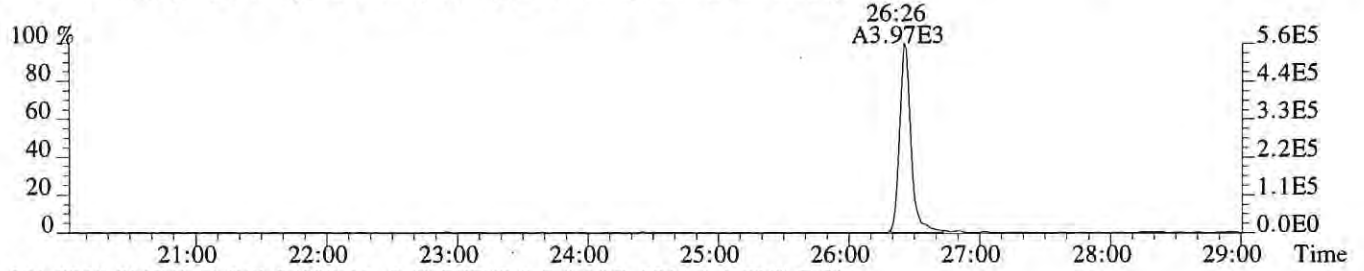
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



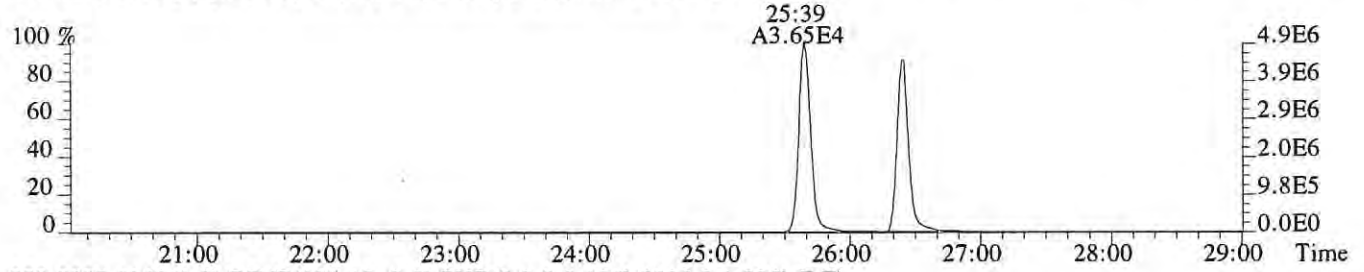
File:P618656 #1-637 Acq:21-AUG-2019 09:56:39 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1472.0,1.00%,F,T)



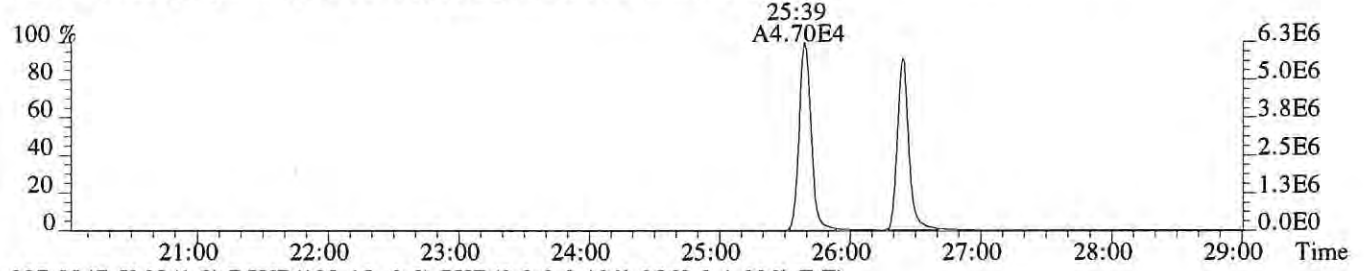
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1428.0,1.00%,F,T)



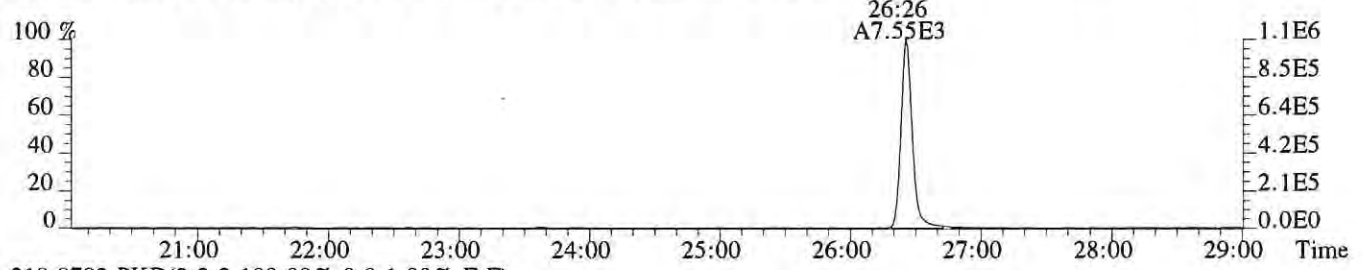
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5364.0,1.00%,F,T)



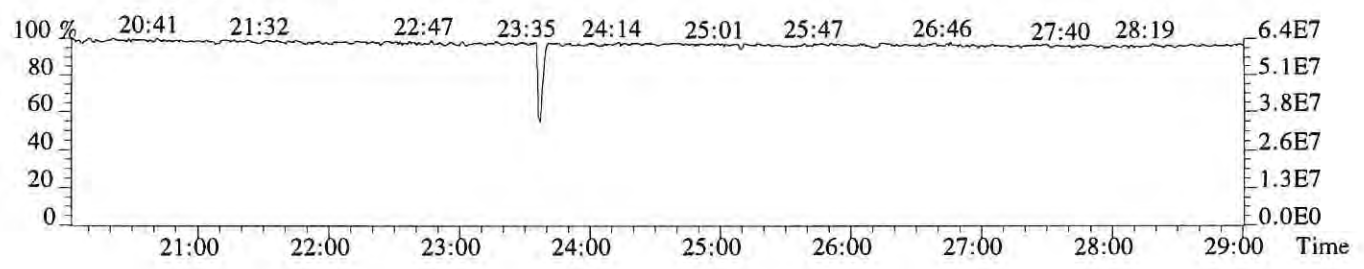
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3336.0,1.00%,F,T)



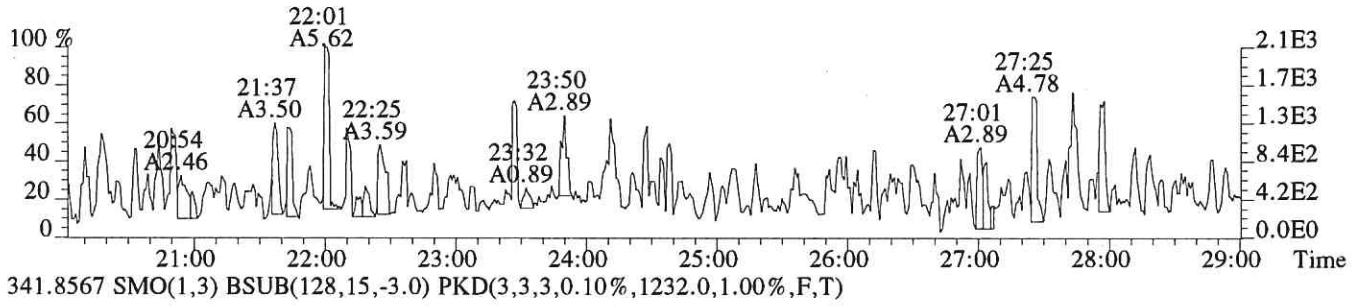
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2560.0,1.00%,F,T)



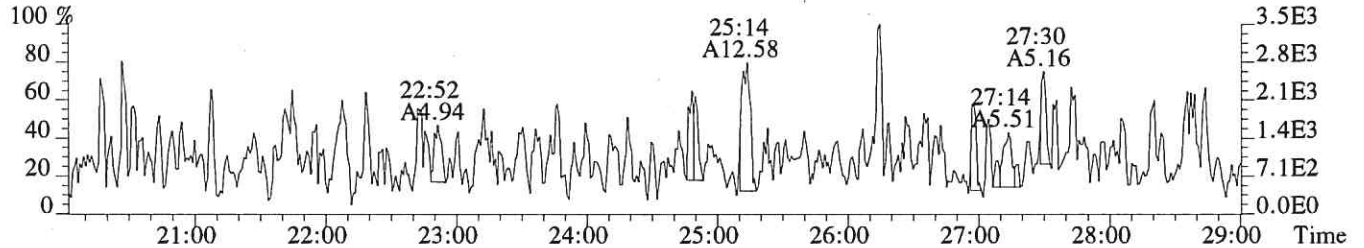
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



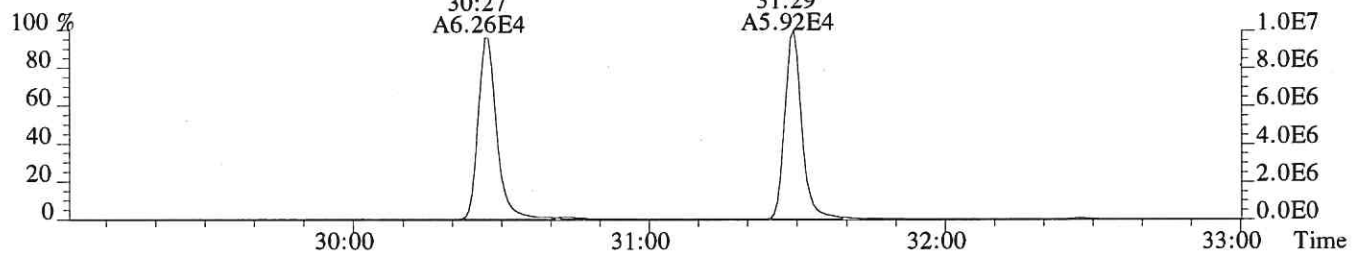
File:P618656 #1-637 Acq:21-AUG-2019 09:56:39 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,592.0,1.00%,F,T)



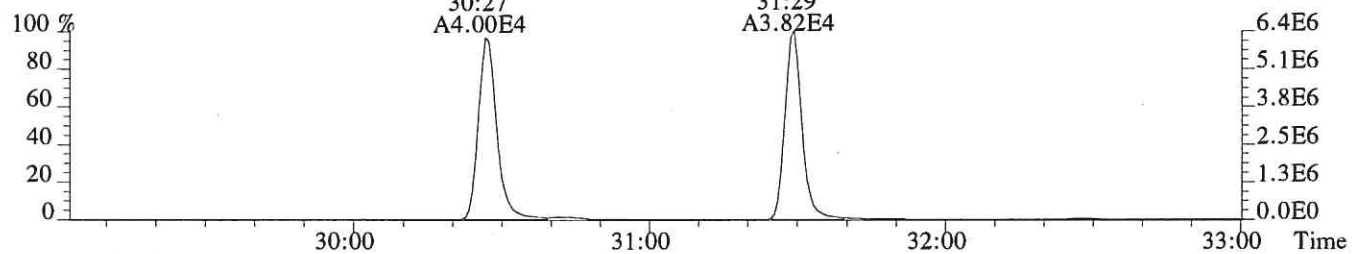
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1232.0,1.00%,F,T)



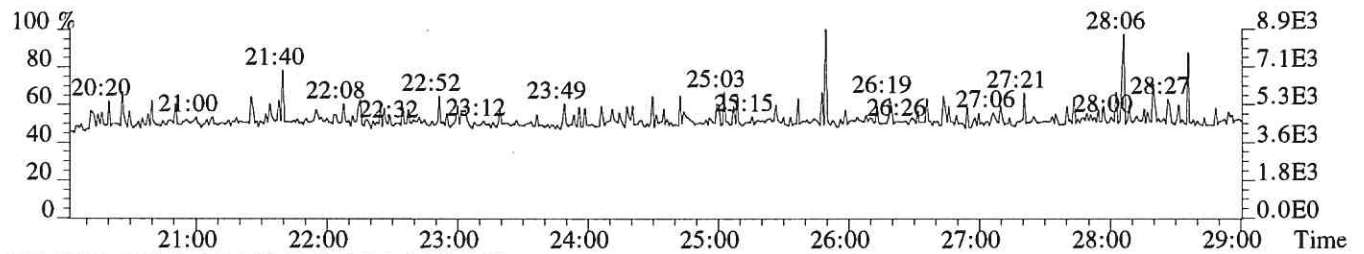
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,688.0,1.00%,F,T)



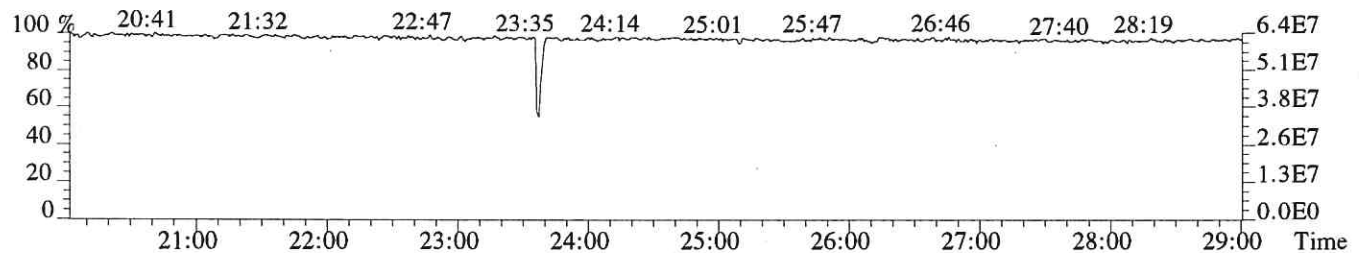
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,548.0,1.00%,F,T)



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

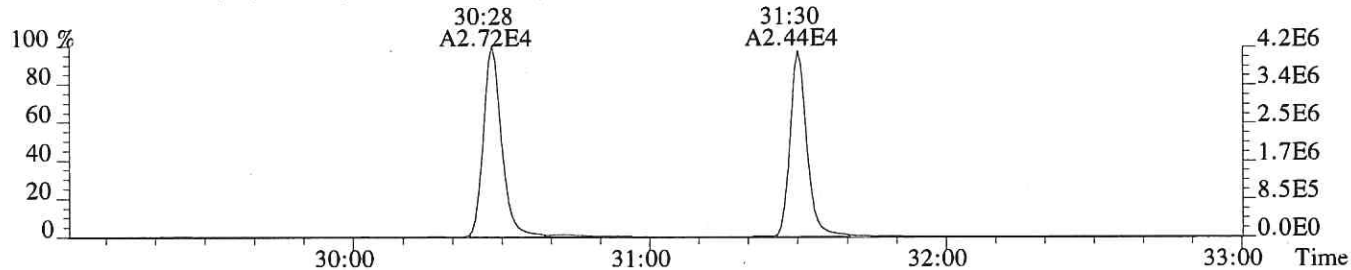


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

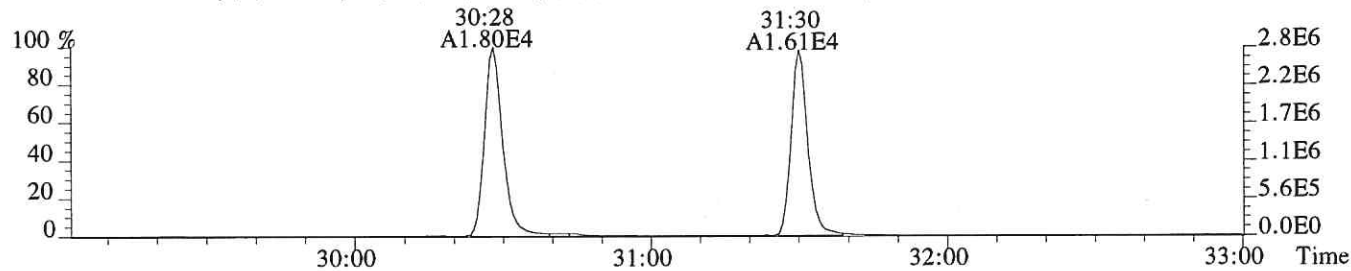


Sample#1 Exp:CS3

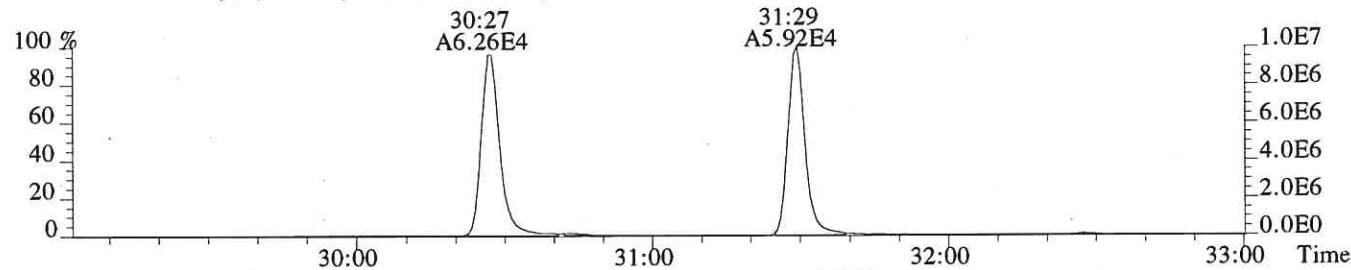
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,372.0,1.00%,F,T)



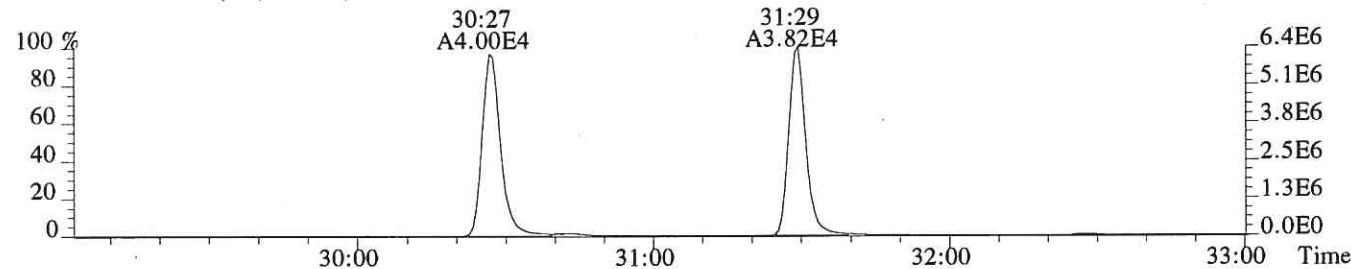
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,988.0,1.00%,F,T)



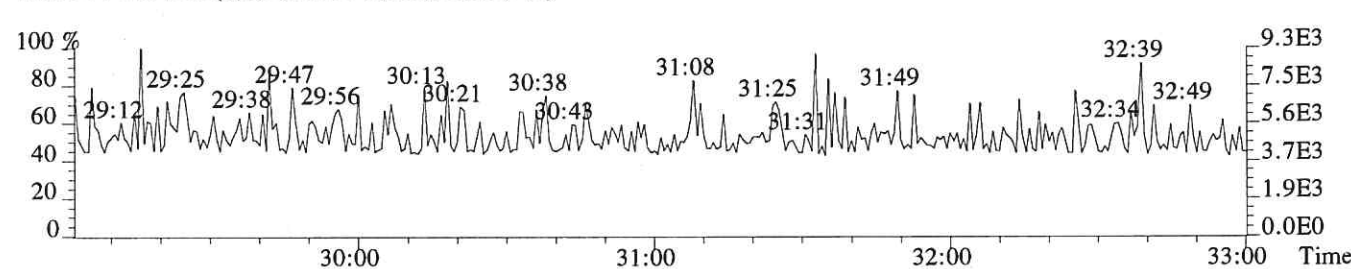
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,688.0,1.00%,F,T)



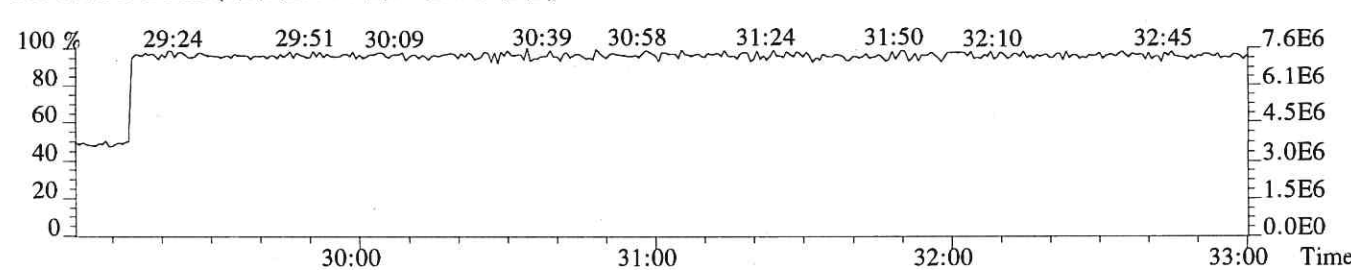
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,548.0,1.00%,F,T)



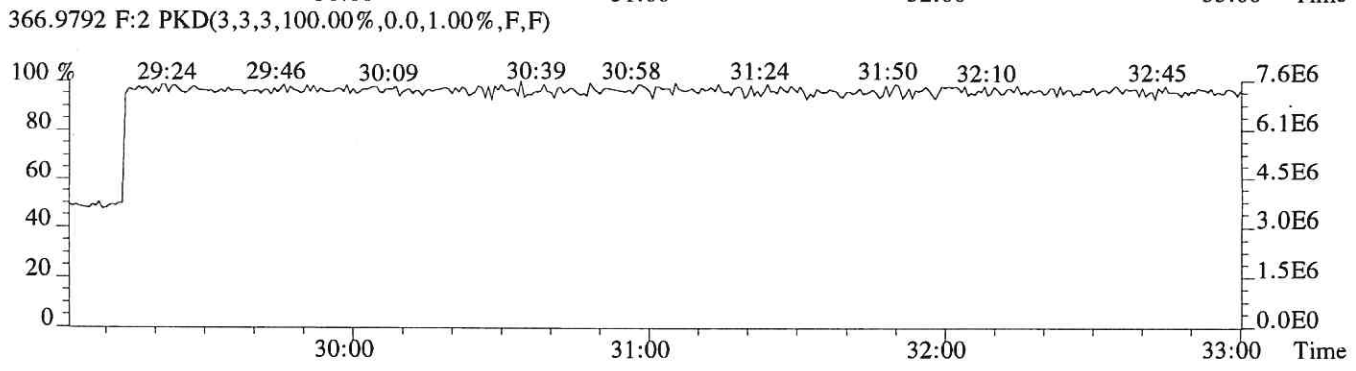
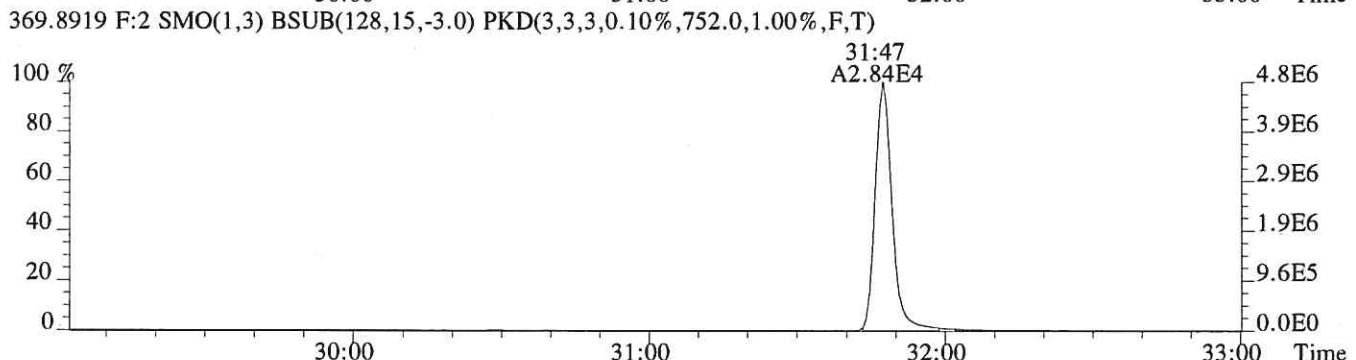
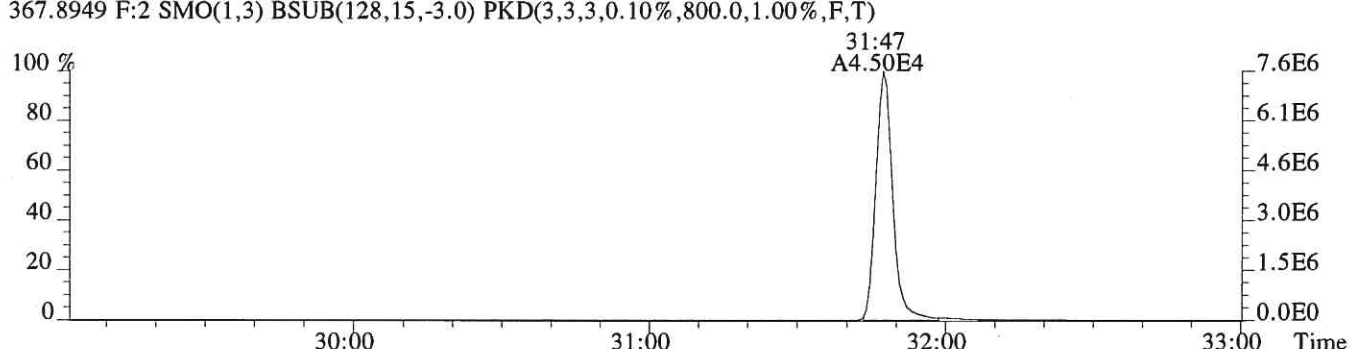
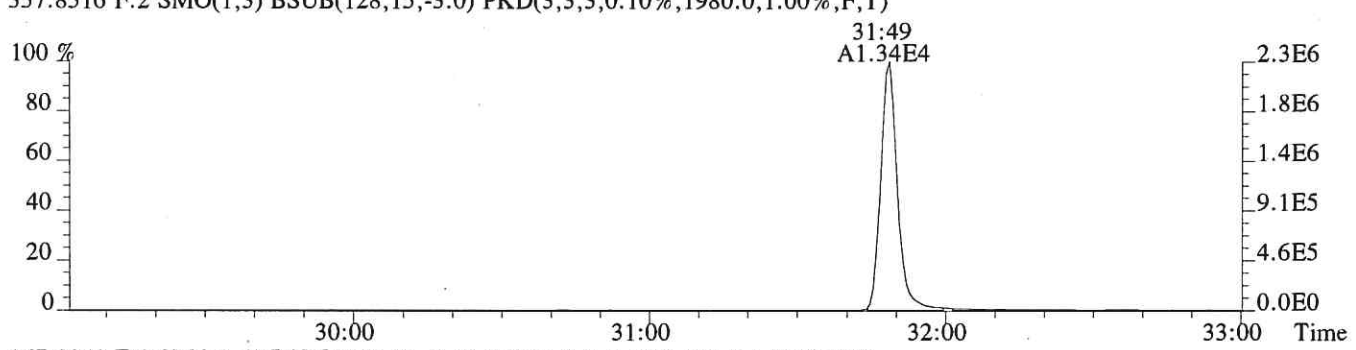
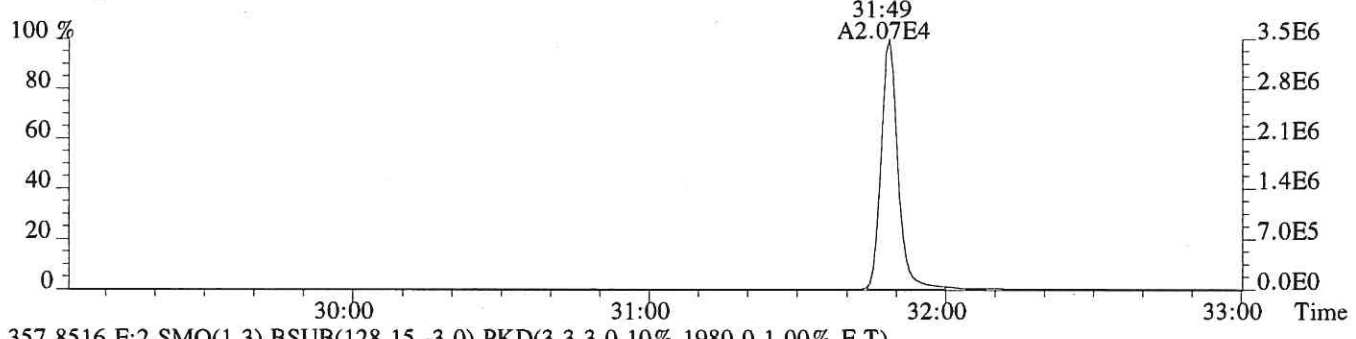
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

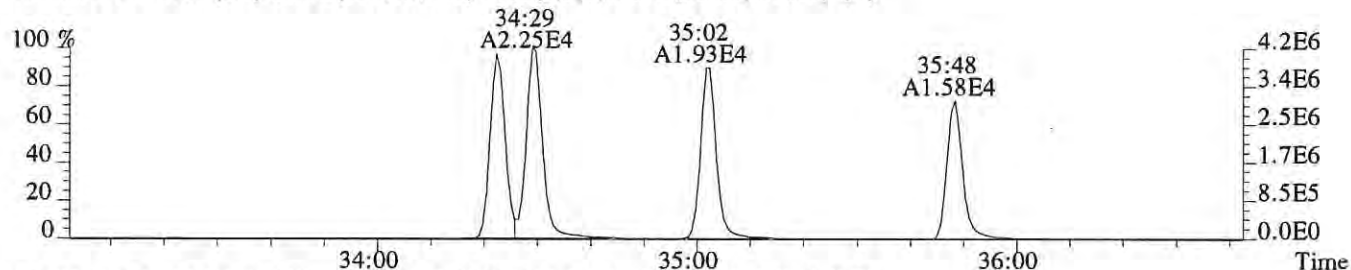


File: P618656 #1-357 Acq: 21-AUG-2019 09:56:39 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp: CS3
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2736.0,1.00%,F,T)

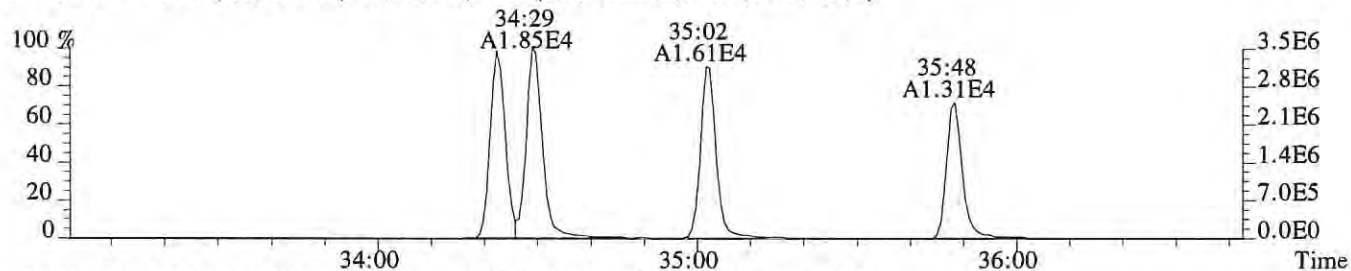


Sample#1 Exp:CS3

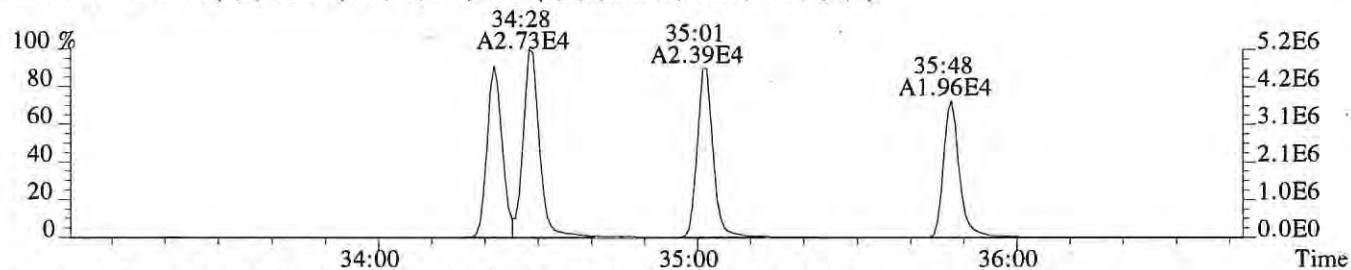
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,920.0,0.40%,F,T)



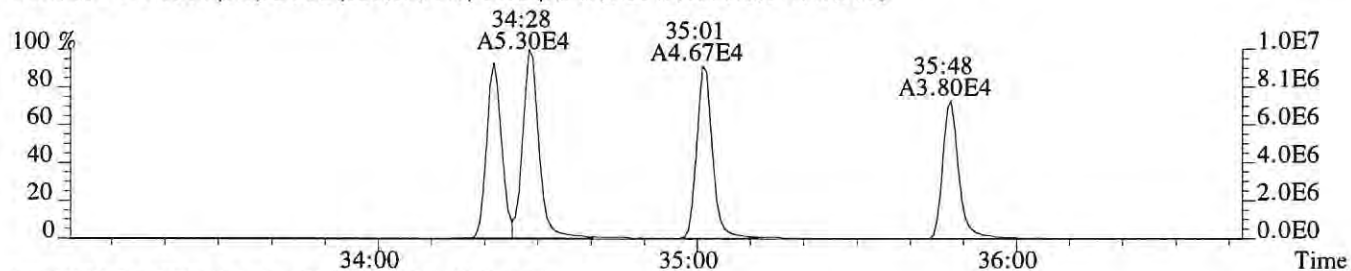
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,980.0,0.40%,F,T)



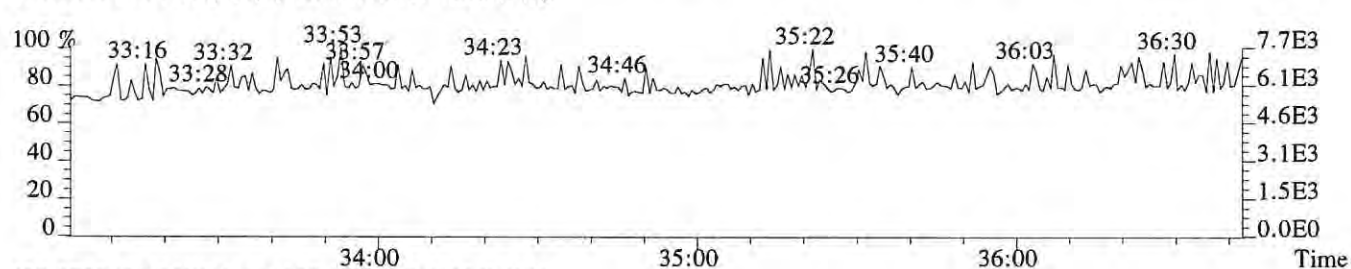
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,792.0,0.40%,F,T)



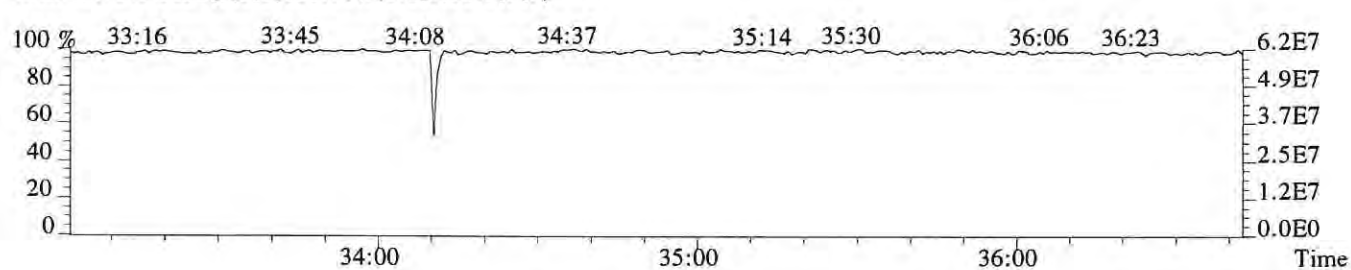
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1308.0,0.40%,F,T)

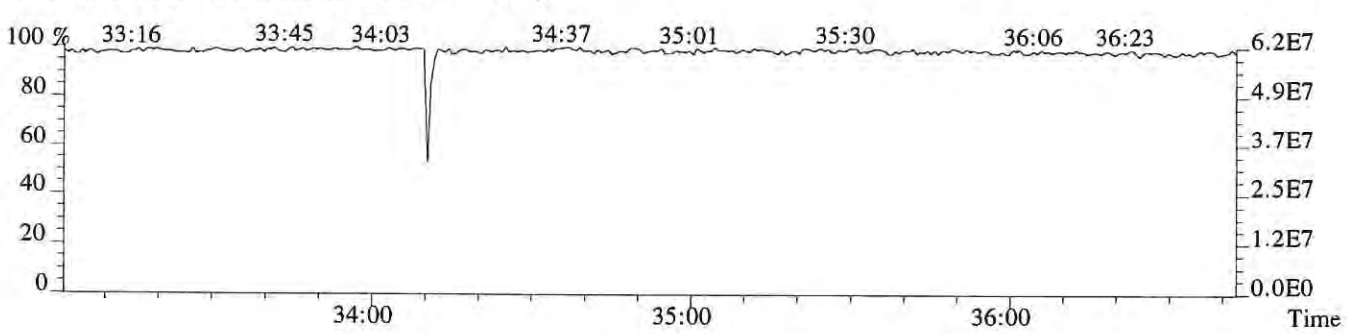
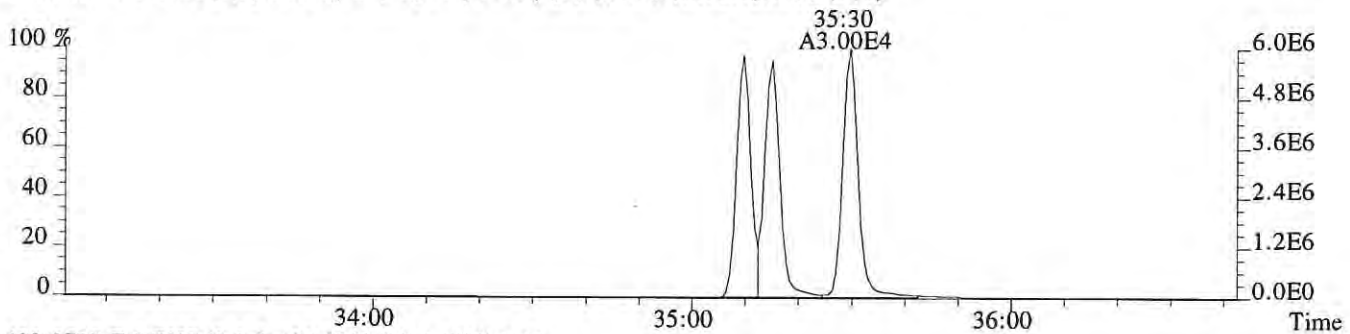
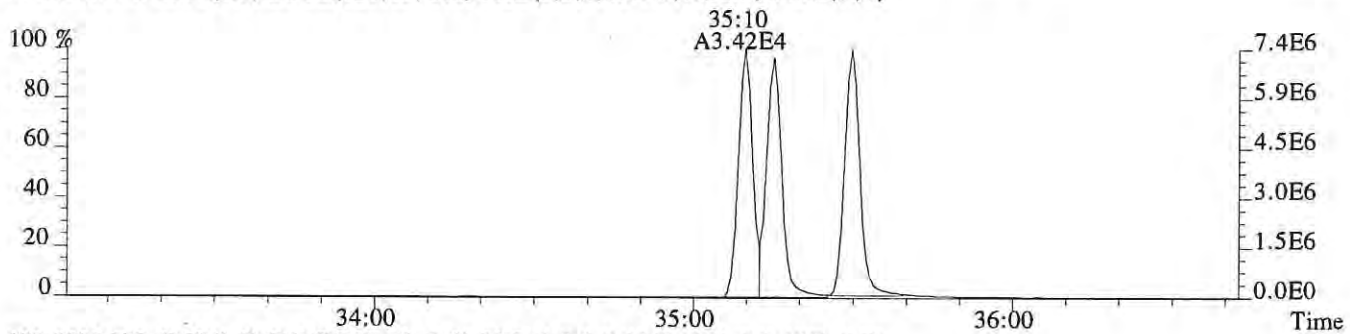
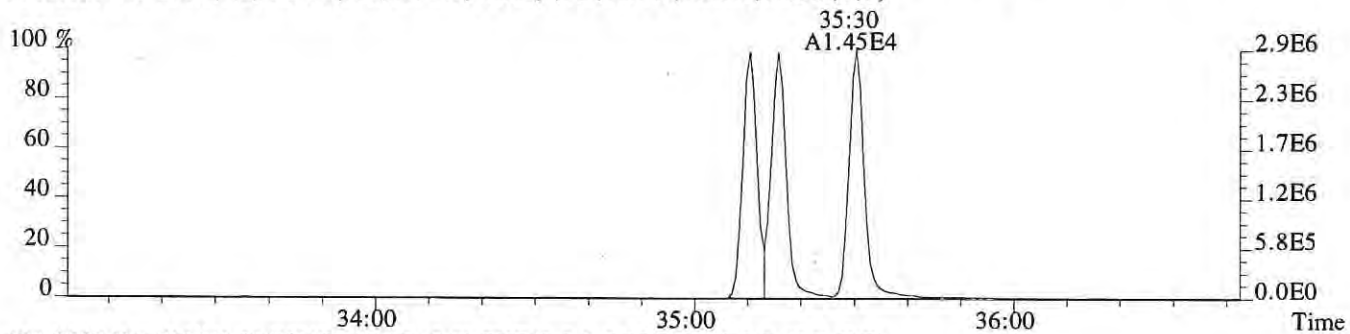
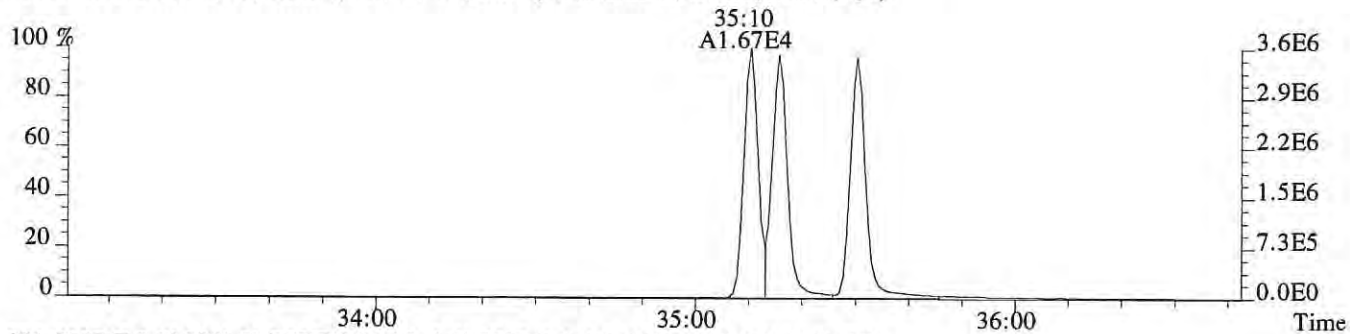


445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

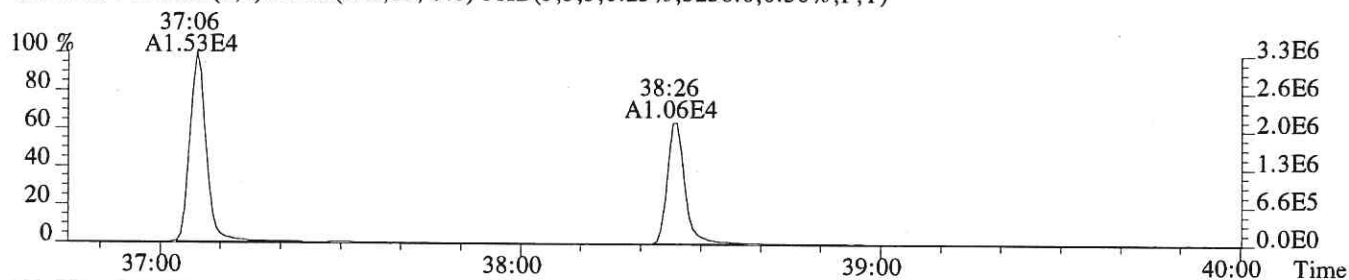


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

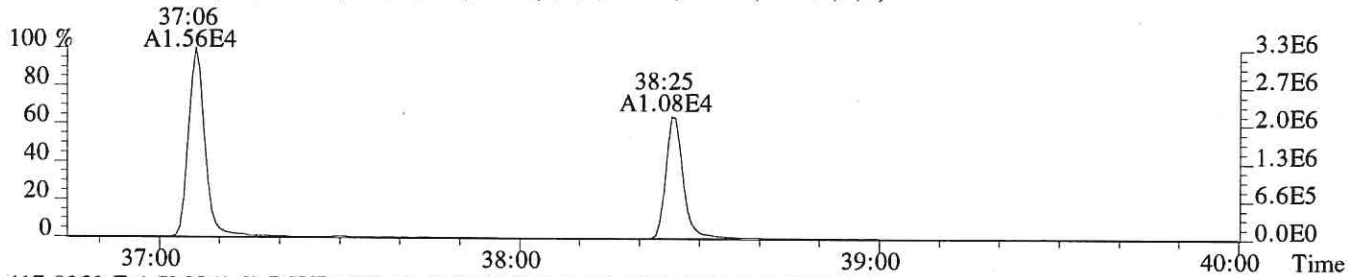




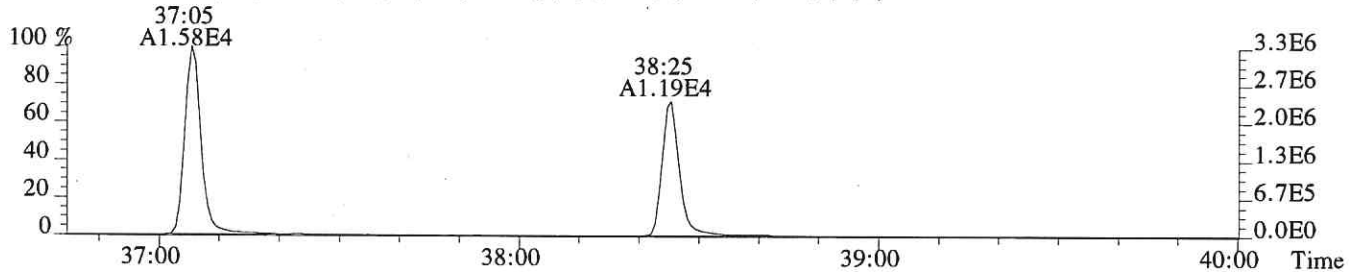
File:P618656 #1-294 Acq:21-AUG-2019 09:56:39 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3256.0,0.50%,F,T)



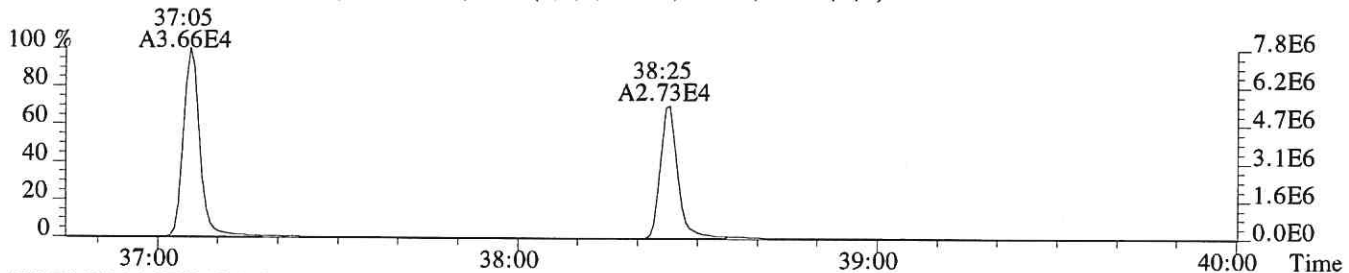
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3240.0,0.50%,F,T)



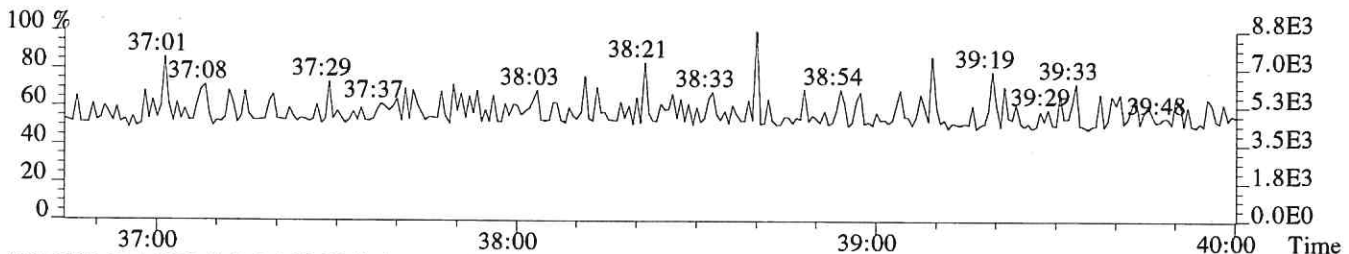
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3768.0,0.50%,F,T)



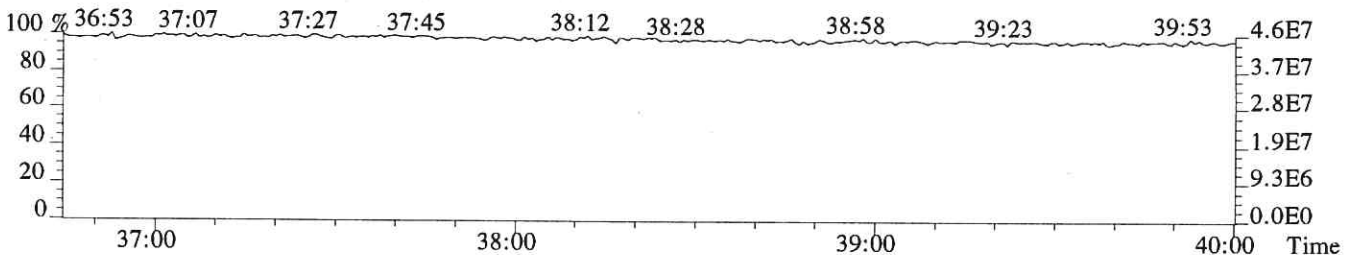
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,9072.0,0.50%,F,T)



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



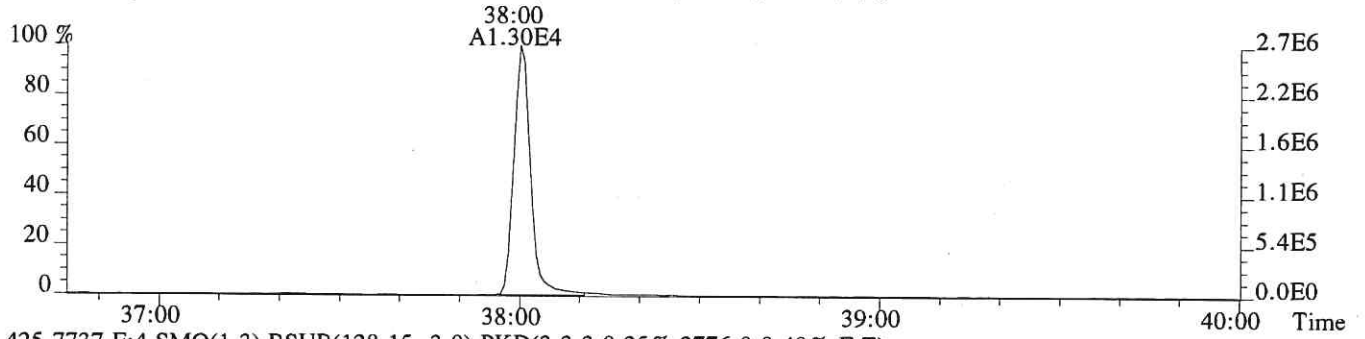
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



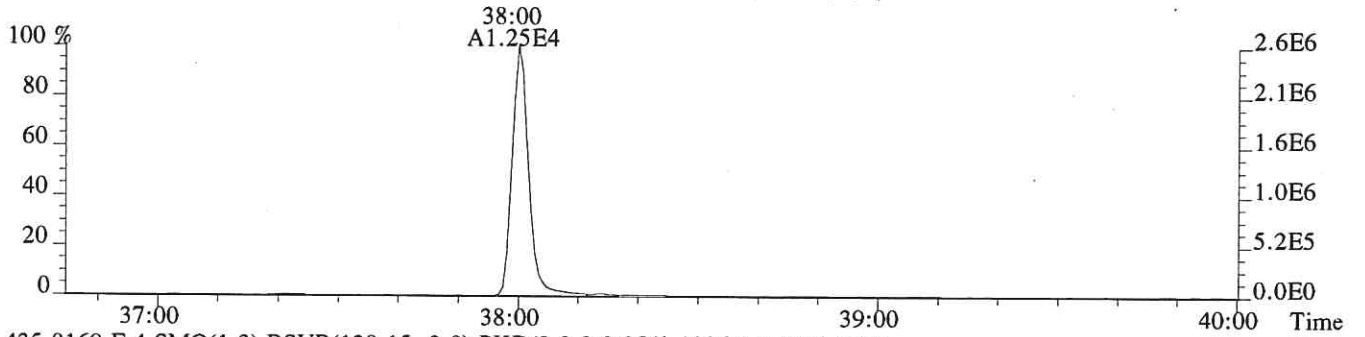
File: P618656 #1-294 Acq: 21-AUG-2019 09:56:39 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp: CS3

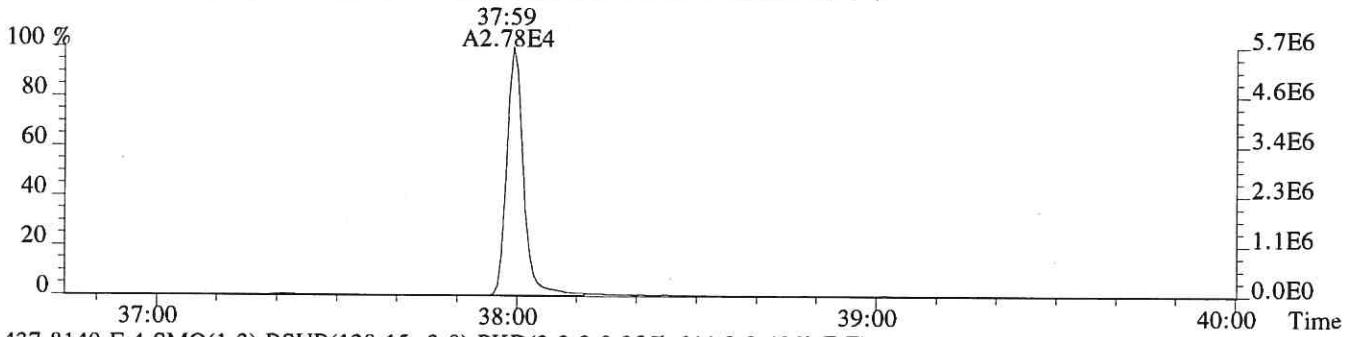
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3960.0,0.40%,F,T)



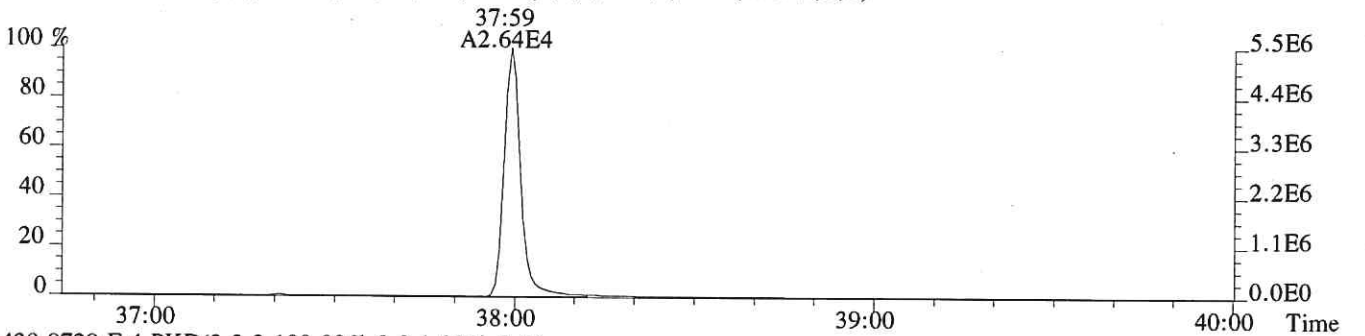
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2776.0,0.40%,F,T)



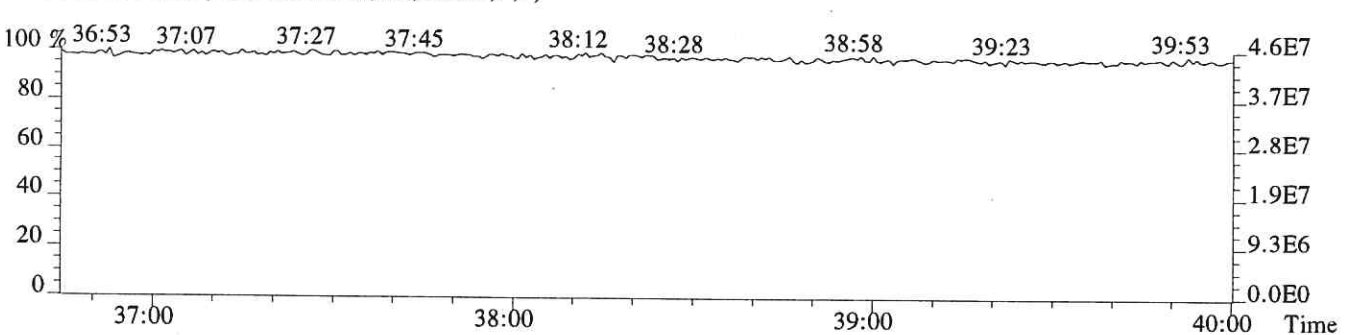
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1296.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,644.0,0.40%,F,T)

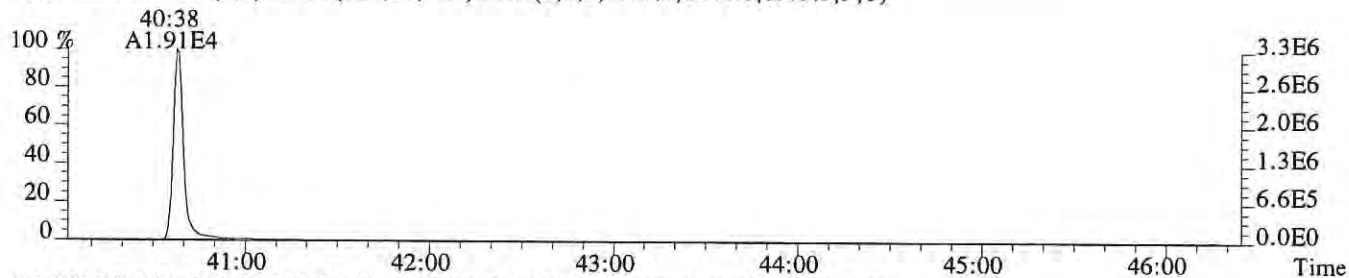


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

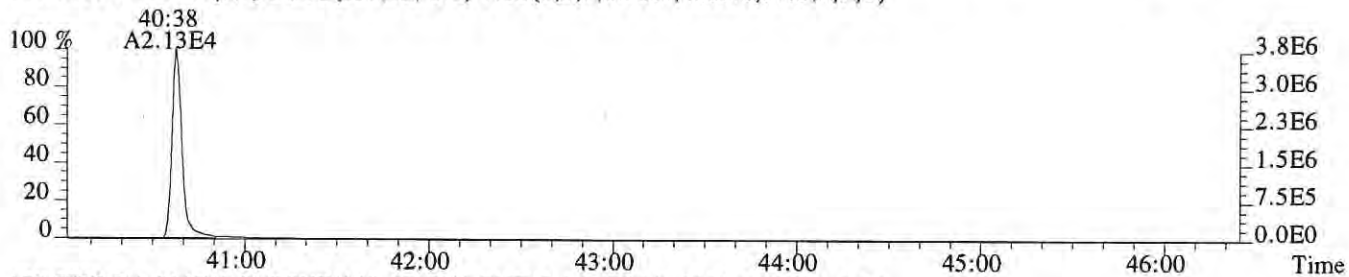


Sample#1 Exp:CS3

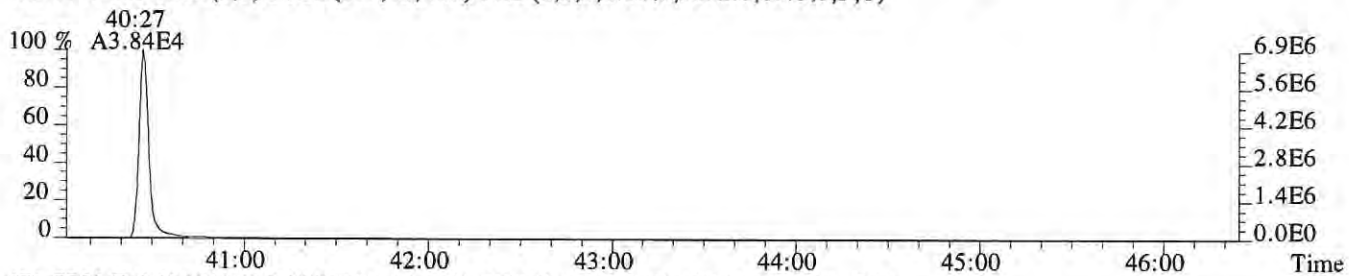
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6340.0,0.40%,F,T)



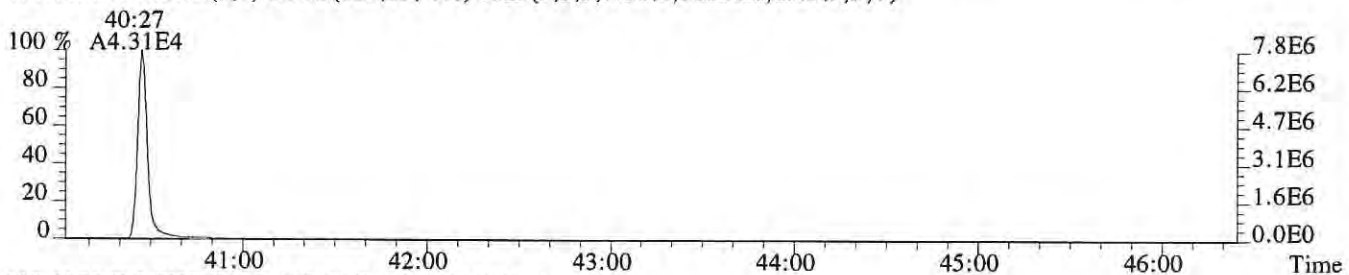
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4608.0,0.40%,F,T)



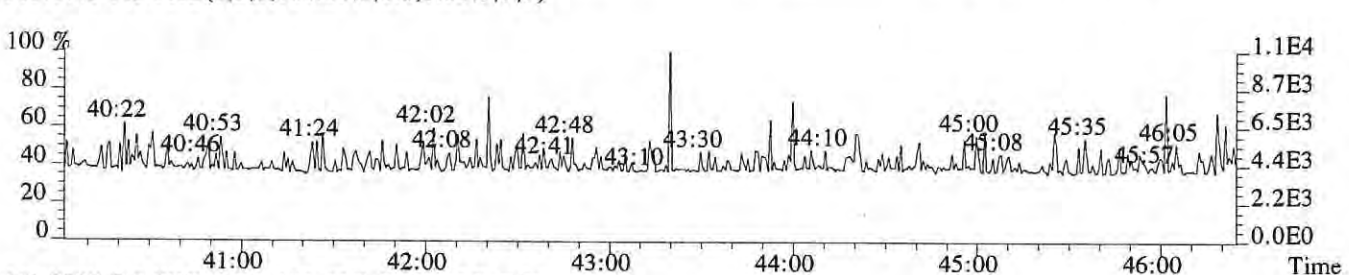
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,5352.0,0.40%,F,T)



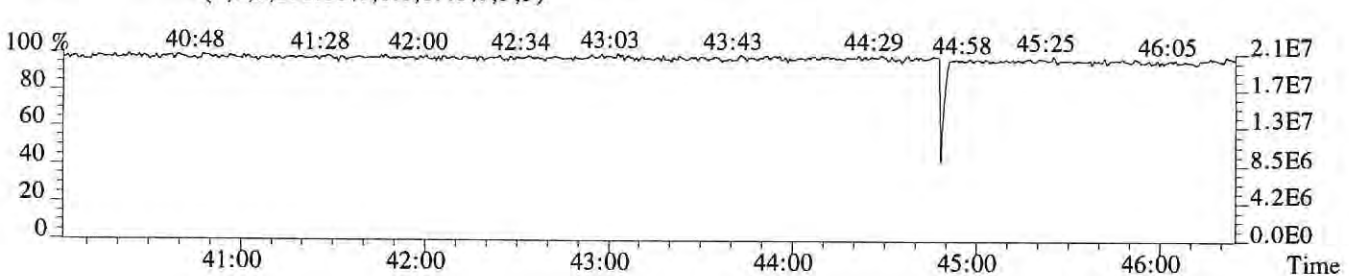
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,10644.0,0.40%,F,T)



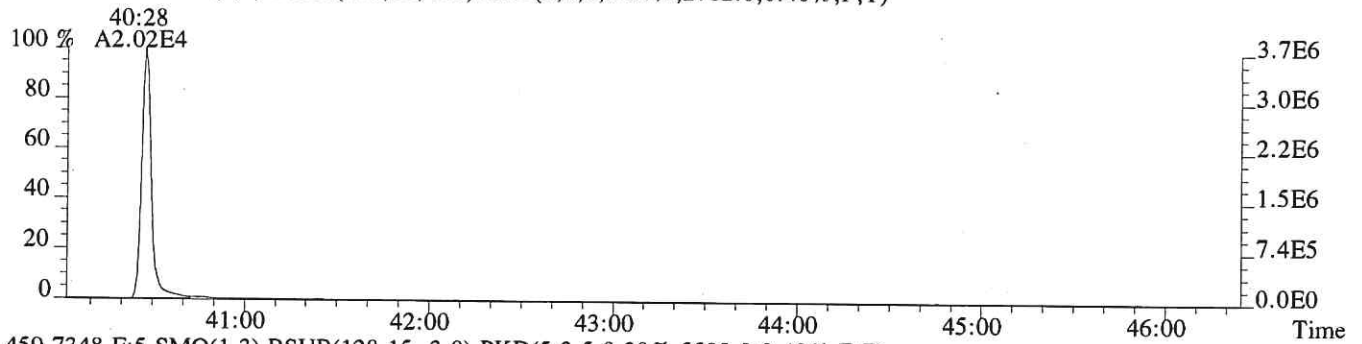
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



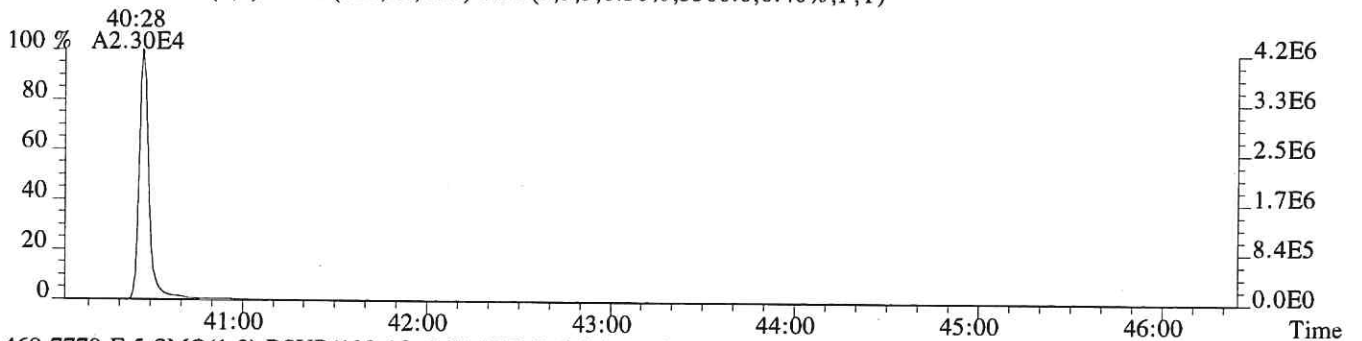
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



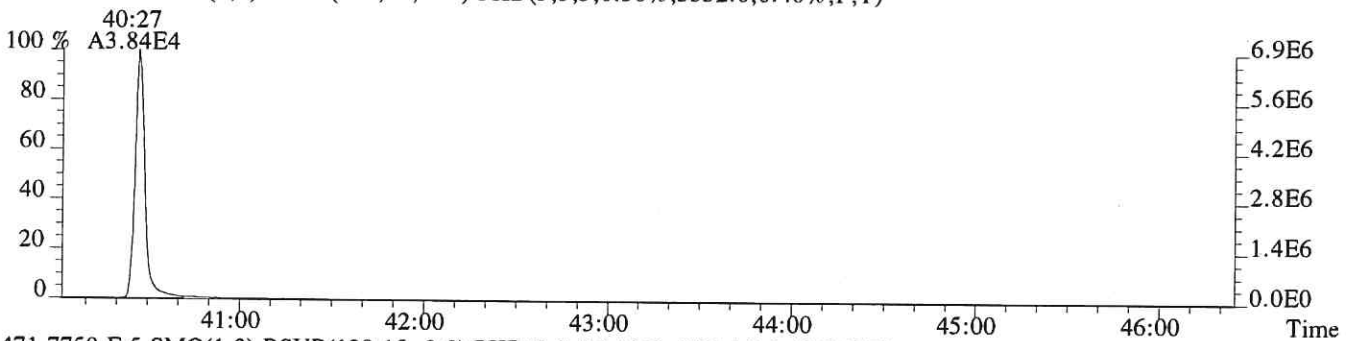
File:P618656 #1-574 Acq:21-AUG-2019 09:56:39 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2712.0,0.40%,F,T)



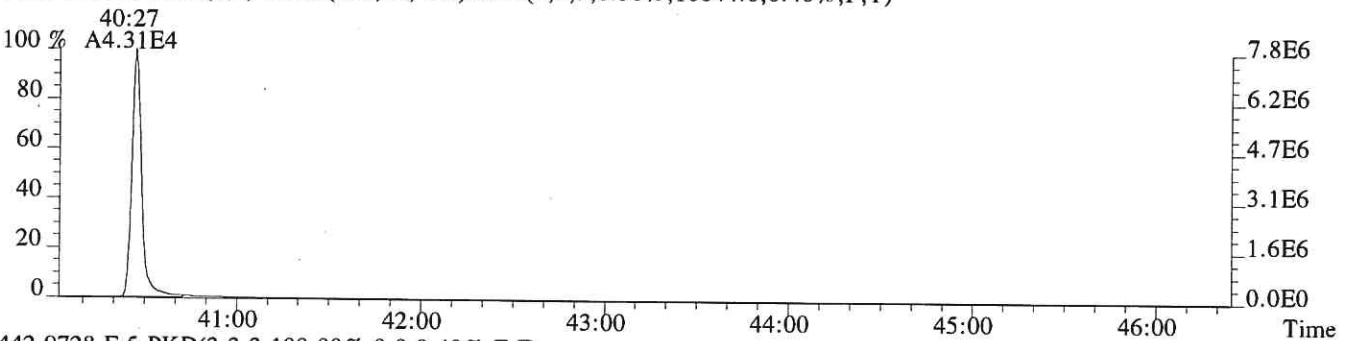
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,5500.0,0.40%,F,T)



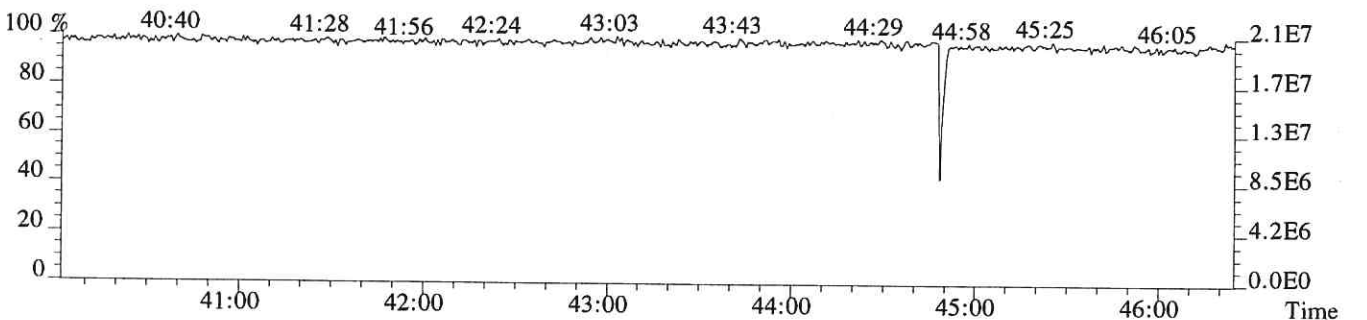
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,5352.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,10644.0,0.40%,F,T)



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



CCAL HRCC3/CS3 Daily Calibration QC Checklist

Calibration File Name: P618686- P618698

Date: 08/22 - 08/23/19

Circle one: Beginning / Ending

Method: (1613) 1613E / (8290) VCP / Tetra / TCDD Only / TCDF Conf / VCP Conf / 8280 / M23 / TO-9A

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 its closest eluters	✓	✓
No QC ion deflections affect column specific 2378 isomer or its closest eluters (HRMS Only)	✓	✓

CS3 Continuing Calibration Analyst Second Check

Percent RSD within method criteria	✓	✓
All relative abundance ratios meet method criteria	✓	✓
No QC ion deflections of greater than 20% (HRMS Only)	✓	✓
Mass spectrometer resolution greater than or equal to 10,000 and documented (HRMS Only)	✓	✓
2378-TCDD elutes at 25 minutes or later on the DB-5 column / DB-5MSUI column	✓	✓
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% (LRMS Only)	N/A	N/A
Ending Calibration injected prior to end of 12 hour clock	✓	✓

Analyst: LKL

Second QC: VW

5DFC
PCDD/PCDF ANALYTICAL SEQUENCE SUMMARY

Lab Name: ALS ENVIRONMENTAL

Contract:

Lab Code:

Case No.:

Client No.:

SDG No.:

GC Column: DB-5MSUI

ID: 0.25 (mm)

Init. Calib. Date: 08/01/19

Init. Calib. Times: 13:37

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
192977	WINDOW DEFINE	P618687	22-AUG-19	15:30:37
201833	CS3	P618686	22-AUG-19	14:31:43
201833	CS3	P618698	23-AUG-19	01:27:36
METHOD BLANK	EQ1900285-01	P618688	22-AUG-19	17:08:06
METHOD BLANK	EQ1900287-01	P618689	22-AUG-19	17:57:13
SS006_SUPER_SACK-S ₇	E1900591-001DL	P618690	22-AUG-19	18:46:19
SS006_SUPER_SACK-S ₇	E1900591-002DL	P618691	22-AUG-19	19:35:29
SS006_SUPER_SACK-S ₇	E1900591-003DL	P618692	22-AUG-19	20:24:38
SS006_SUPER_SACK-S ₇	E1900591-004DL	P618693	22-AUG-19	21:13:48
BS-1-190813	E1900593-001	P618694	22-AUG-19	22:02:58
BS-5-190813	E1900593-005	P618695	22-AUG-19	22:52:06
3050197-001	E1900595-001	P618696	22-AUG-19	23:41:11
3050197-002	E1900595-002	P618697	23-AUG-19	00:30:19

Sample List Report

MassLynx 4.1 SCN815 SCN795

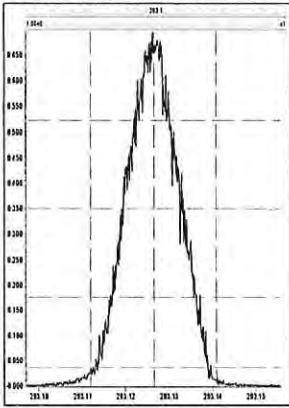
Sample List: C:\MassLynx\EHRMS08.PRO\SampleDB\20190822B.SPL
 Last Modified: Friday, August 23, 2019 09:11:01 Central Daylight Time
 Printed: Friday, August 23, 2019 09:11:06 Central Daylight Time

OPUS5NET: P618686 RES

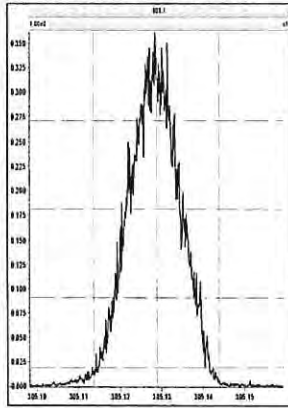
Date	Time	File Name	Sample ID	File Text	MS File	Inlet File	Bottle	Analyst	Comments
08/22/19	14:31	P618686	201833	CS3	EPA1613_ALS	Dioxin_ALS	Tray1:2	JC	HRMS CHECK 14:04
	15:30	P618687	192977	WINDOW DEFINE	EPA1613_ALS	Dioxin_ALS	Tray1:1		
	07:08	P618688	EQ1900285-01	MB	EPA1613_ALS	Dioxin_ALS	Tray1:3		
	17:57	P618689	EQ1900287-01	MB	EPA1613_ALS	Dioxin_ALS	Tray1:4		
	18:46	P618690	E1900591-001DL	E1900591-001DL	EPA1613_ALS	Dioxin_ALS	Tray1:35		
	19:35	P618691	E1900591-002DL	E1900591-002DL	EPA1613_ALS	Dioxin_ALS	Tray1:36		
	20:24	P618692	E1900591-003DL	E1900591-003DL	EPA1613_ALS	Dioxin_ALS	Tray1:37		
	21:13	P618693	E1900591-004DL	E1900591-004DL	EPA1613_ALS	Dioxin_ALS	Tray1:38		
	22:02	P618694	E1900593-001	E1900593-001	EPA1613_ALS	Dioxin_ALS	Tray1:39		
	22:52	P618695	E1900593-005	E1900593-005	EPA1613_ALS	Dioxin_ALS	Tray1:40		
	23:41	P618696	E1900595-001	E1900595-001	EPA1613_ALS	Dioxin_ALS	Tray1:41		
08/23/19	00:50	P618697	E1900595-002	E1900595-002	EPA1613_ALS	Dioxin_ALS	Tray1:42		
	01:27	P618698	201833	CS3	EPA1613_ALS	Dioxin_ALS	Tray1:2		HRMS CHECK 01:27

LKL 08/23/19

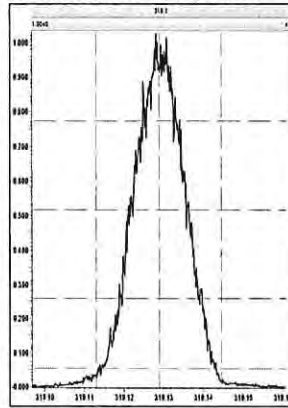
M 292.9824 R 11441



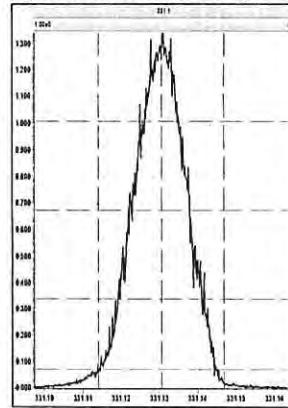
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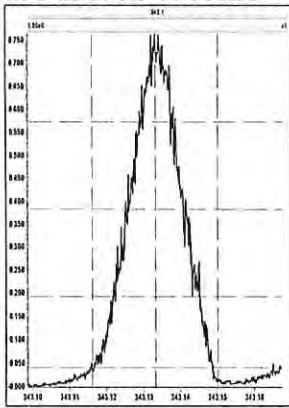
M 318.9792 R 11138



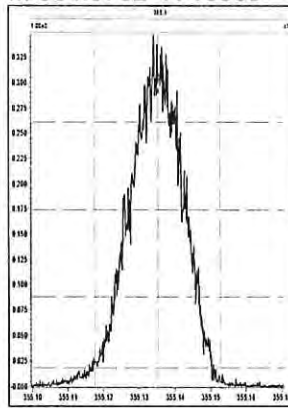
M 330.9792 R 11236



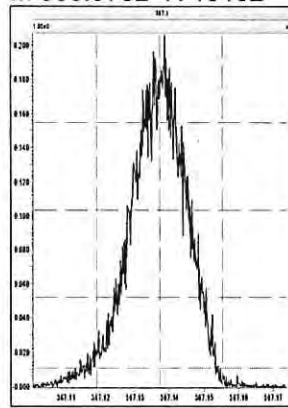
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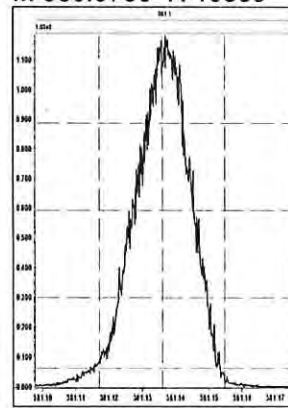
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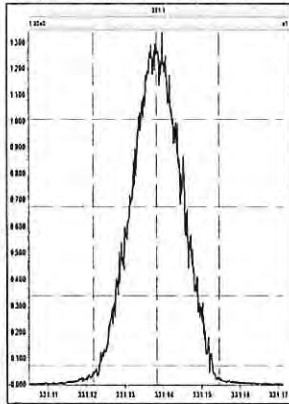
M 366.9792 R 10162



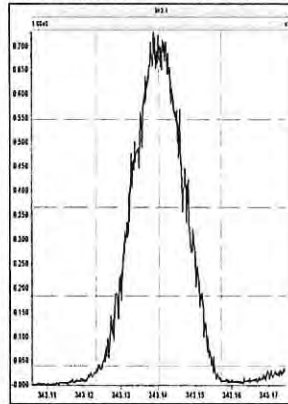
M 380.9760 R 10339



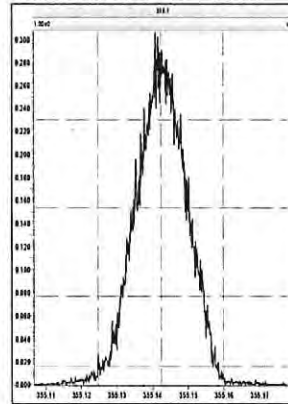
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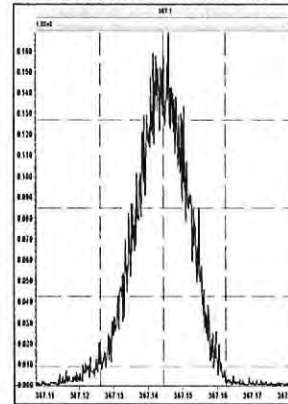
M 342.9792 R 11497



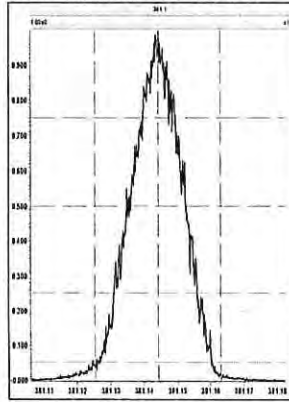
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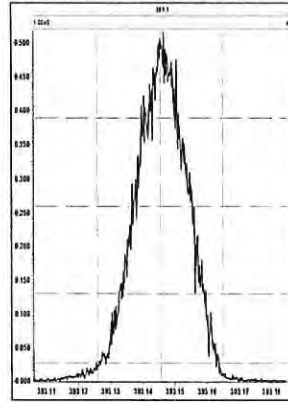
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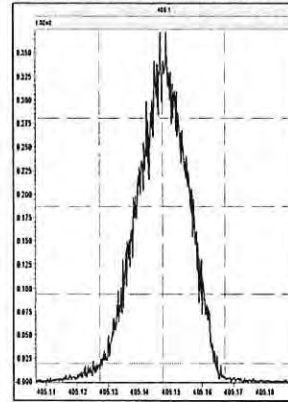
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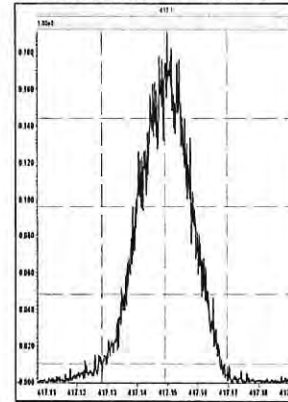
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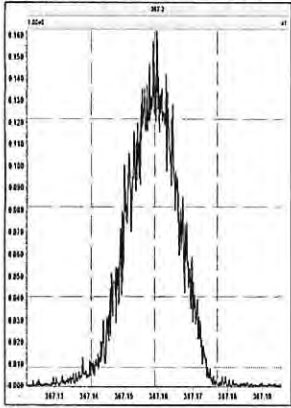
M 404.9760 R 11062



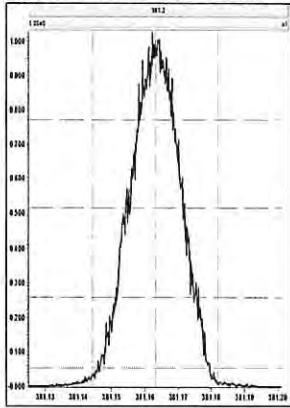
M 416.9760 R 10944



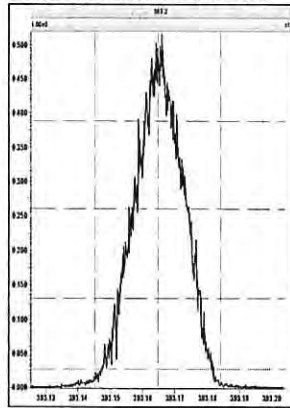
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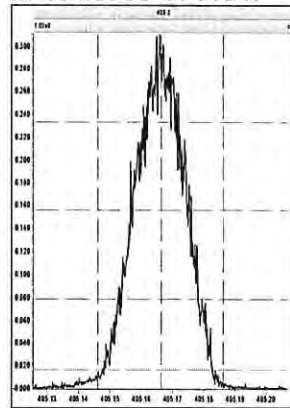
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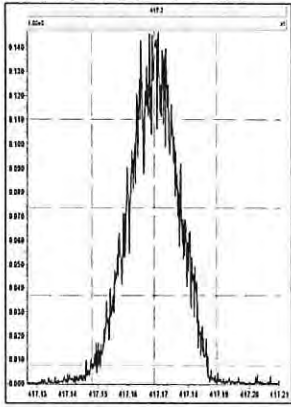
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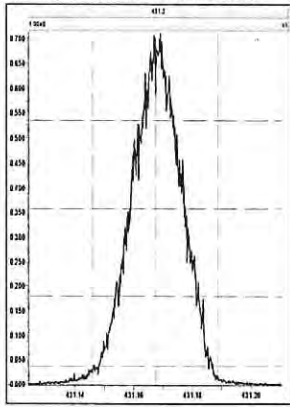
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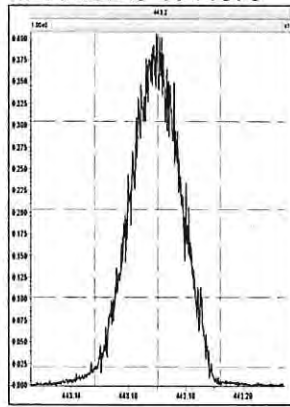
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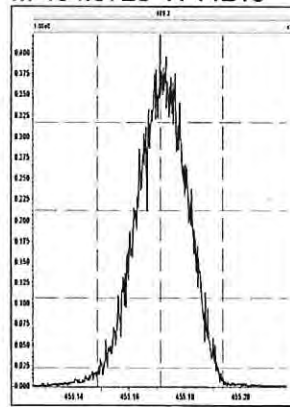
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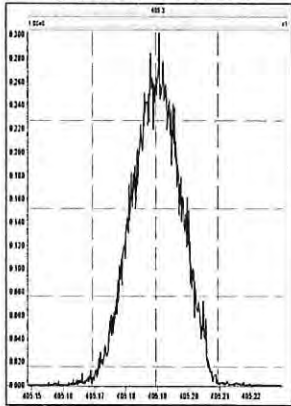
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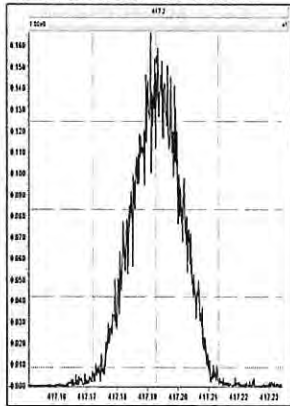
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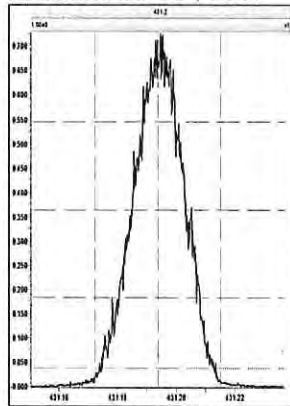
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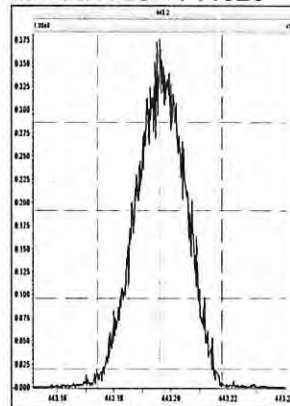
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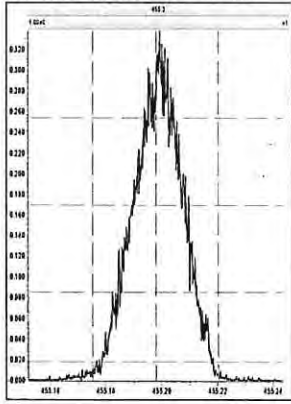
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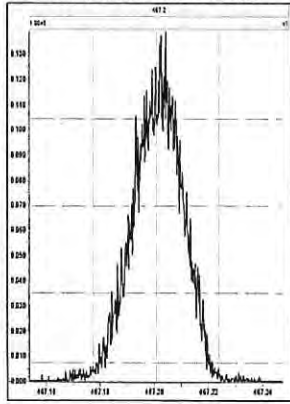
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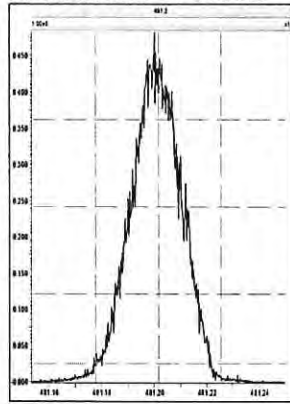
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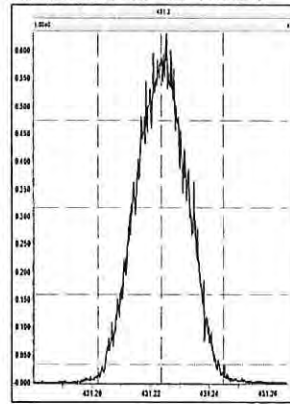
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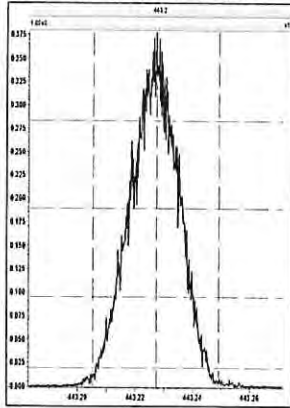
M 480.9696 R 11012



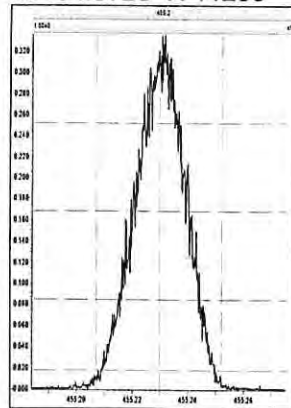
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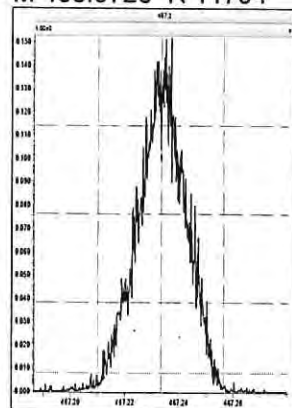
M 442.9728 R 11560



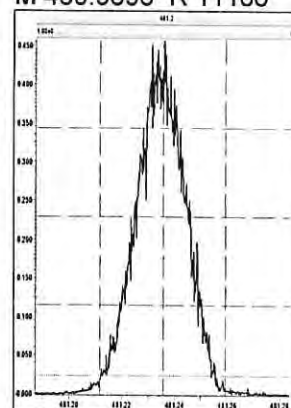
M 454.9728 R 11263



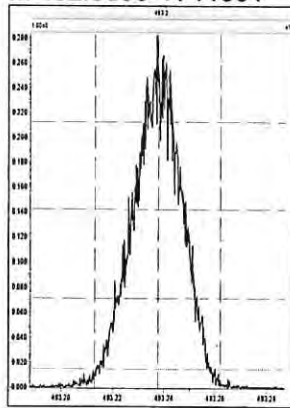
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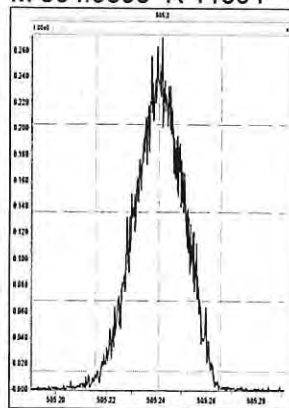
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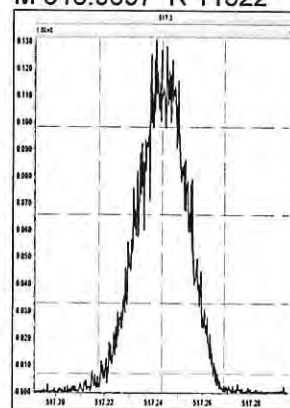
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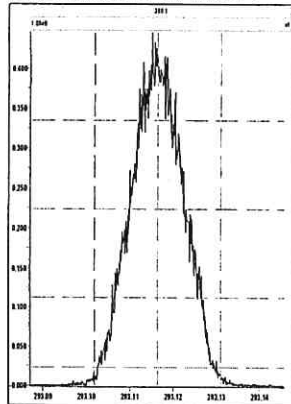
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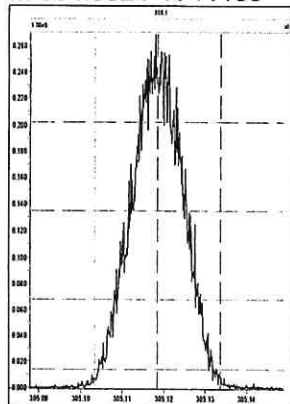
M 516.9697 R 11522



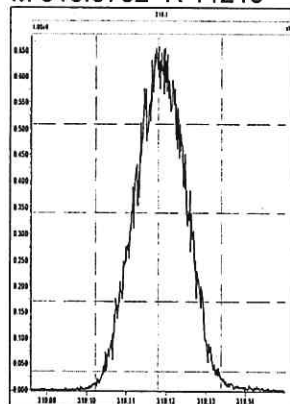
M 292.9824 R 10917



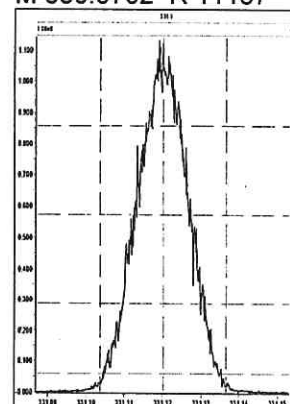
M 304.9824 R 11186



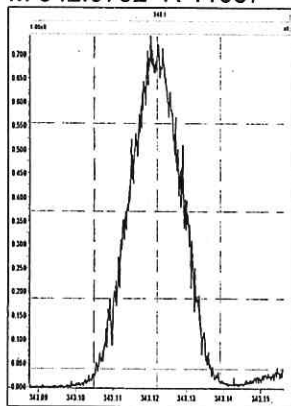
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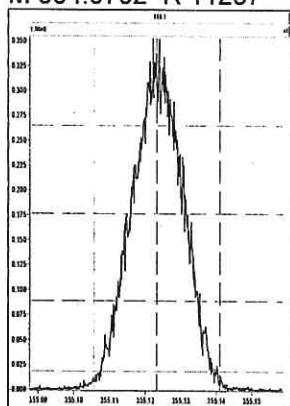
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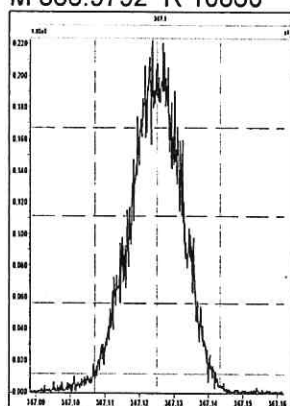
M 342.9792 R 11087



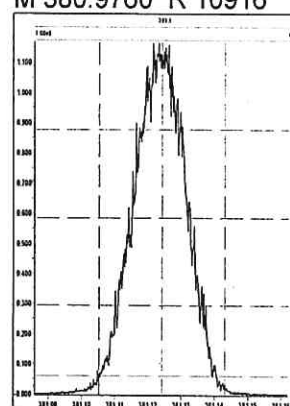
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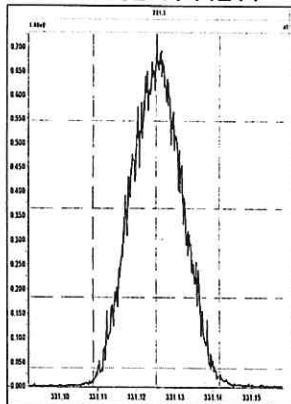
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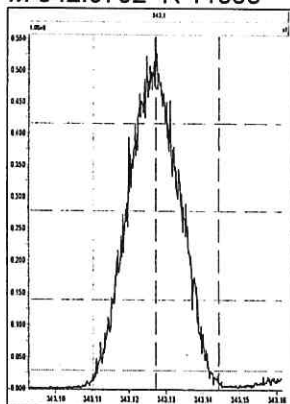
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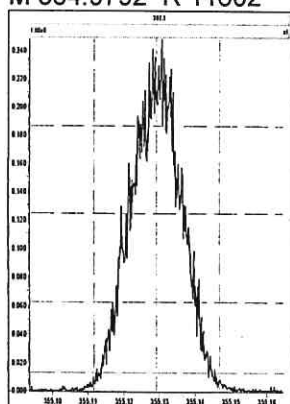
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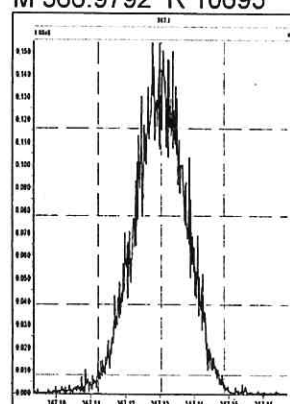
M 342.9792 R 11363



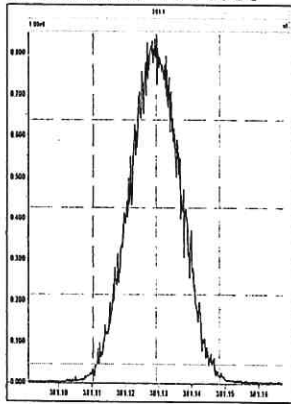
M 354.9792 R 11602



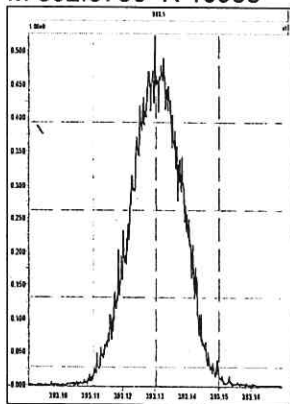
M 366.9792 R 10695



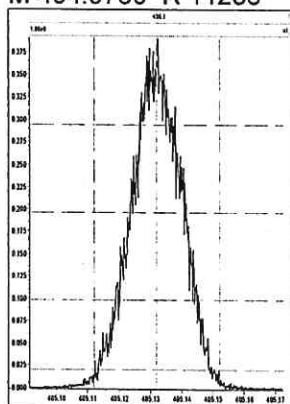
M 380.9760 R 11390



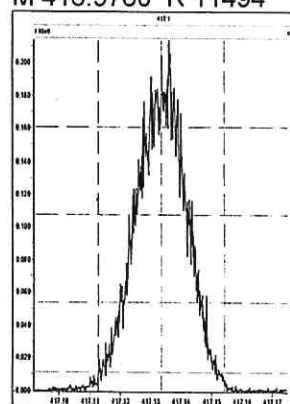
M 392.9760 R 10988



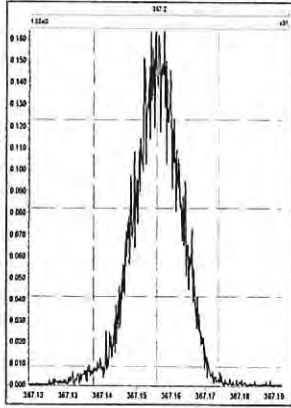
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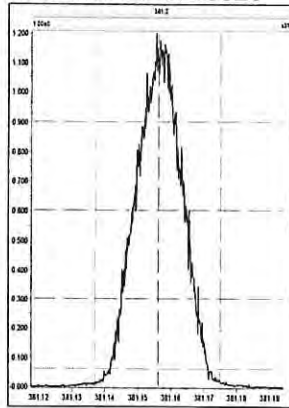
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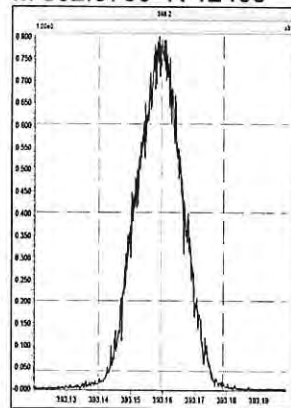
M 366.9792 R 12376



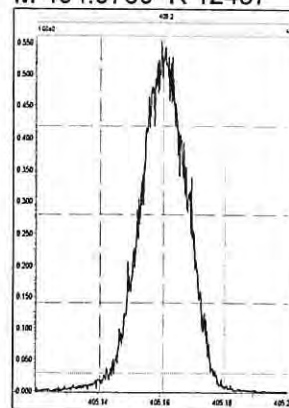
M 380.9760 R 13026



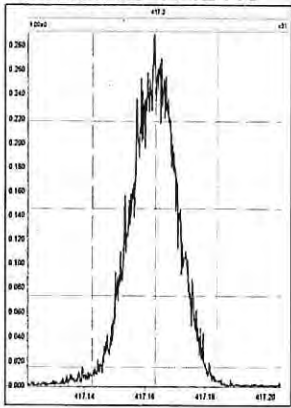
M 392.9760 R 12406



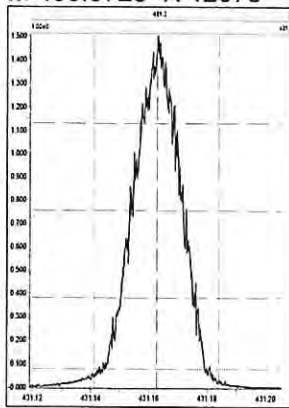
M 404.9760 R 12437



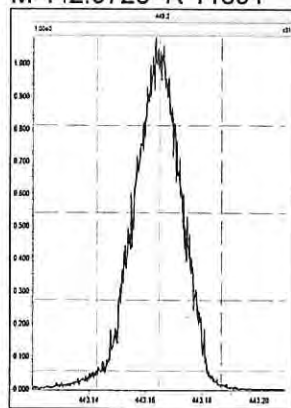
M 416.9760 R 12419



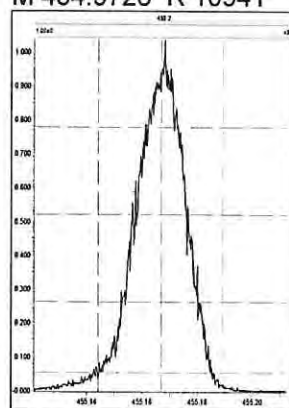
M 430.9728 R 12078



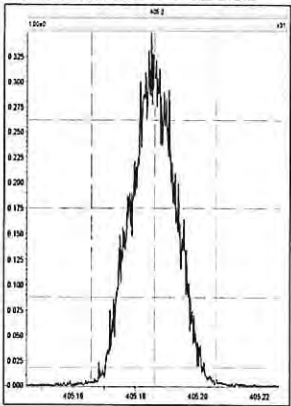
M 442.9728 R 11891



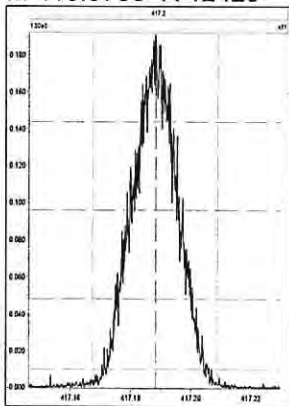
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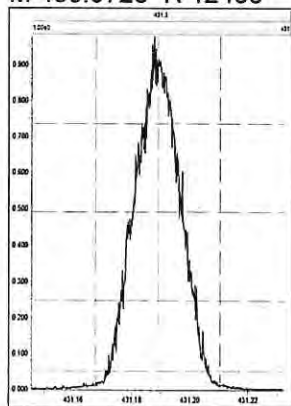
M 404.9760 R 12886



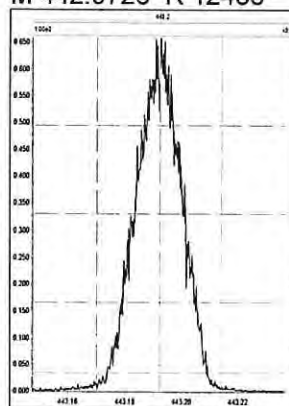
M 416.9760 R 12423



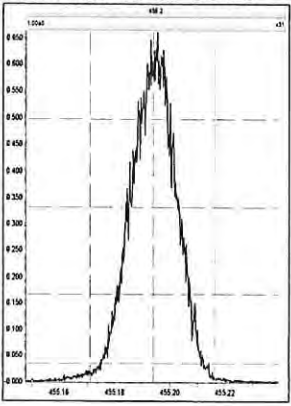
M 430.9728 R 12438



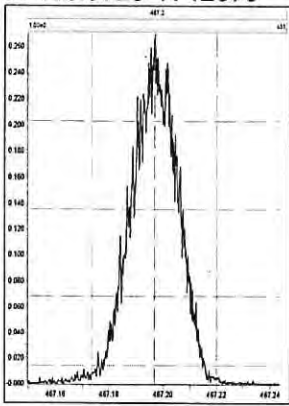
M 442.9728 R 12438



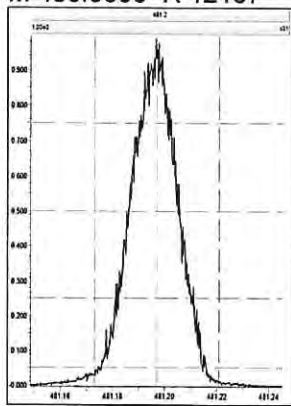
M 454.9728 R 12225



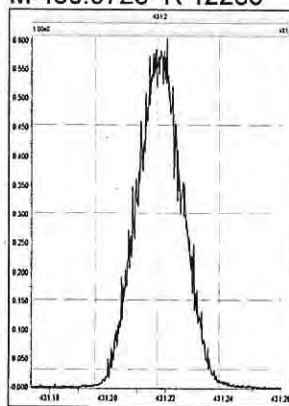
M 466.9728 R 12079



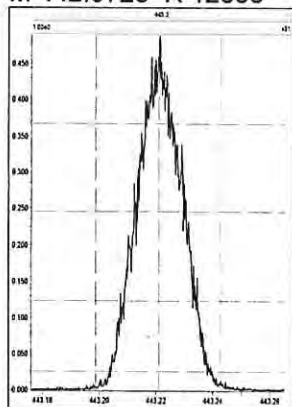
M 480.9696 R 12167



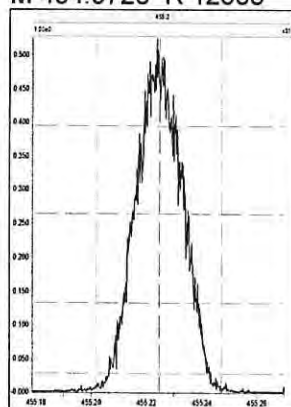
M 430.9728 R 12285



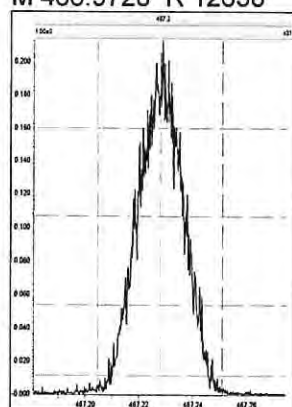
M 442.9728 R 12853



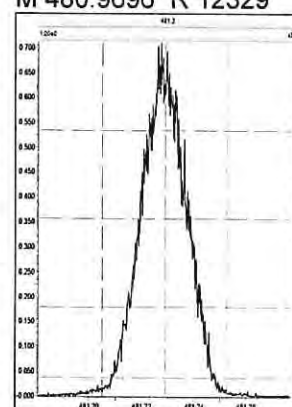
M 454.9728 R 12533



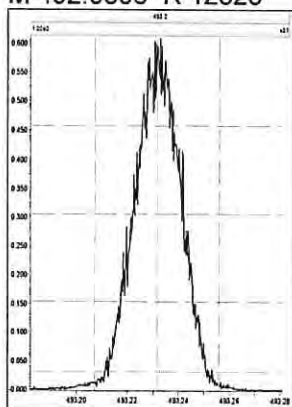
M 466.9728 R 12658



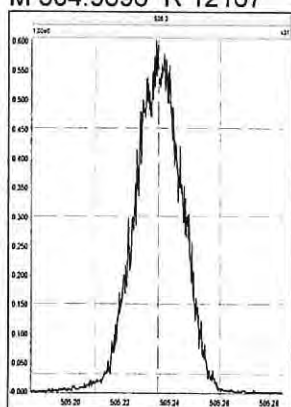
M 480.9696 R 12329



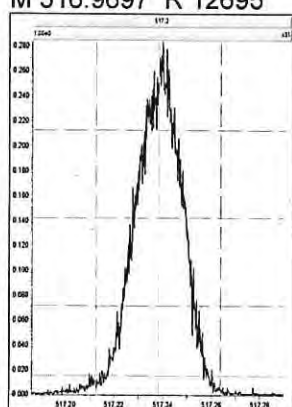
M 492.9696 R 12325



M 504.9696 R 12167



M 516.9697 R 12695



5DFA

WINDOW DEFINING MIX SUMMARY

CLIENT ID:

WDM

Lab Name: ALS Environmental

Lab Code: ALSTX

GC Column: DB-5MSUI

Case No.: _____ SDG No.:

ID: 0.25 (mm)

Lab File ID: P618687

Date Analyzed: 22-AUG-19

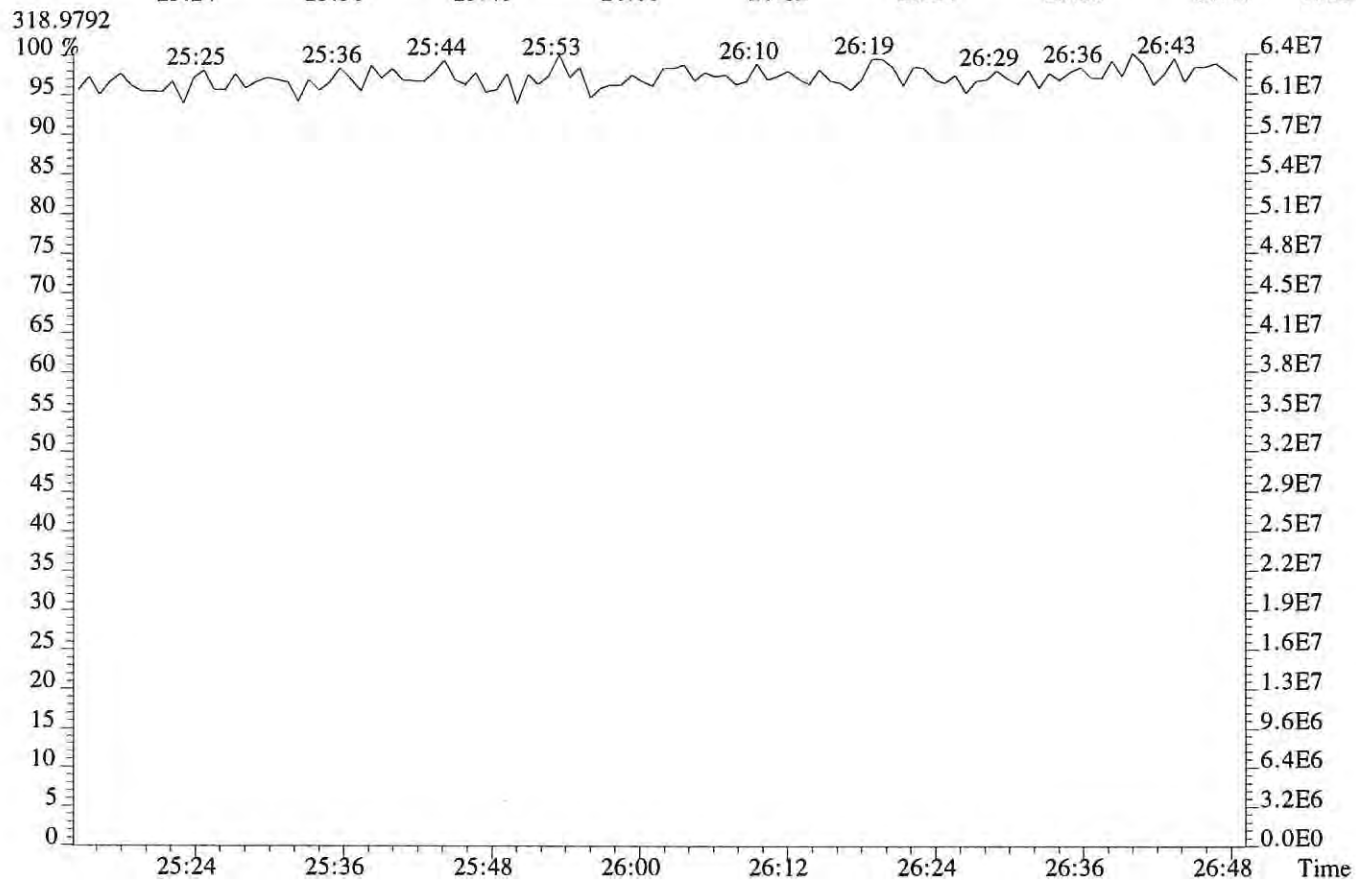
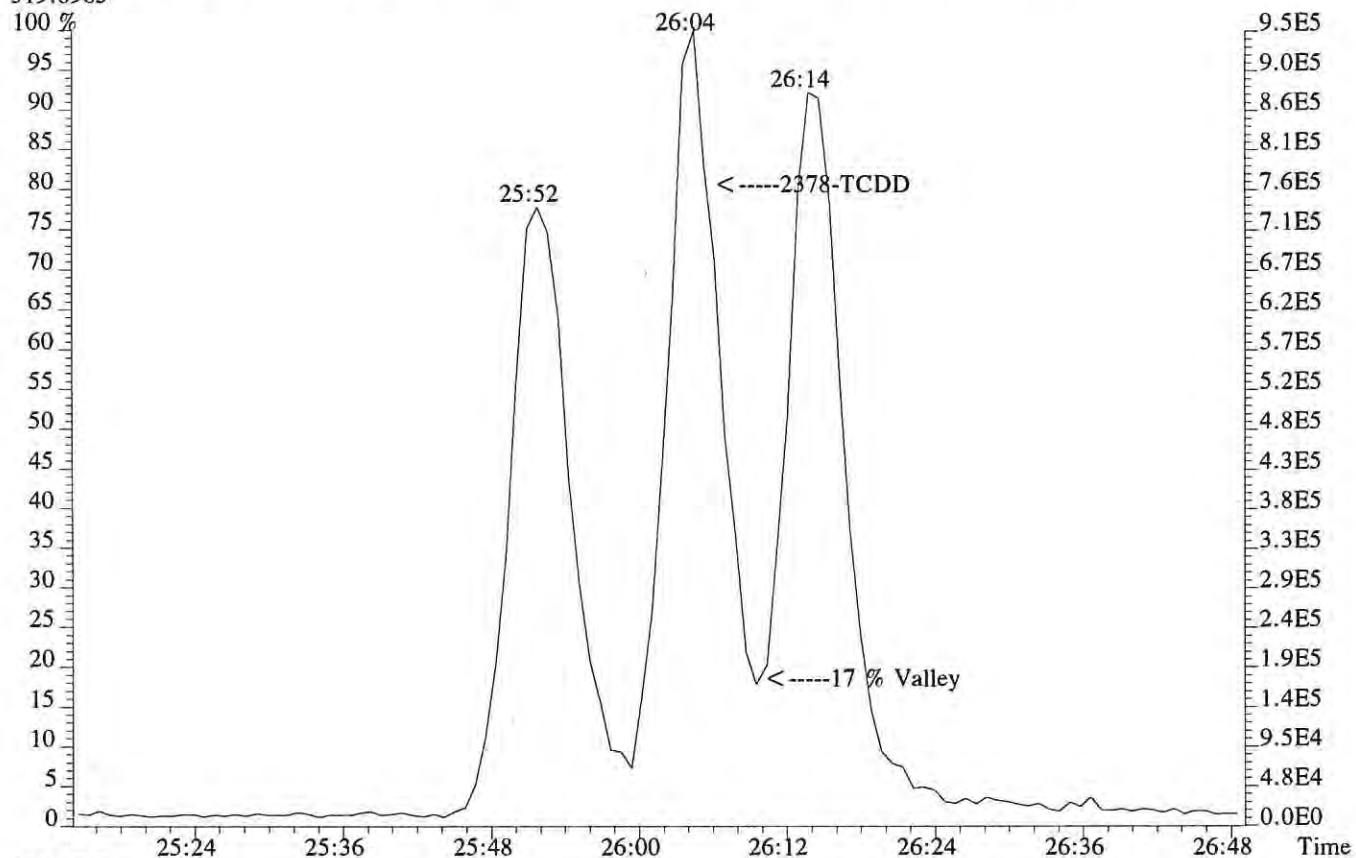
Time Analyzed: 15:30:37

Congener	Retention Time First Eluting	Retention Time Last Eluting
TCDF	20:50	27:32
TCDD	22:22	27:21
PeCDF	27:28	32:21
PeCDD	29:19	32:05
HxCDF	33:05	35:44
HxCDD	33:39	35:20
HpCDF	37:01	38:20
HpCDD	37:16	37:55

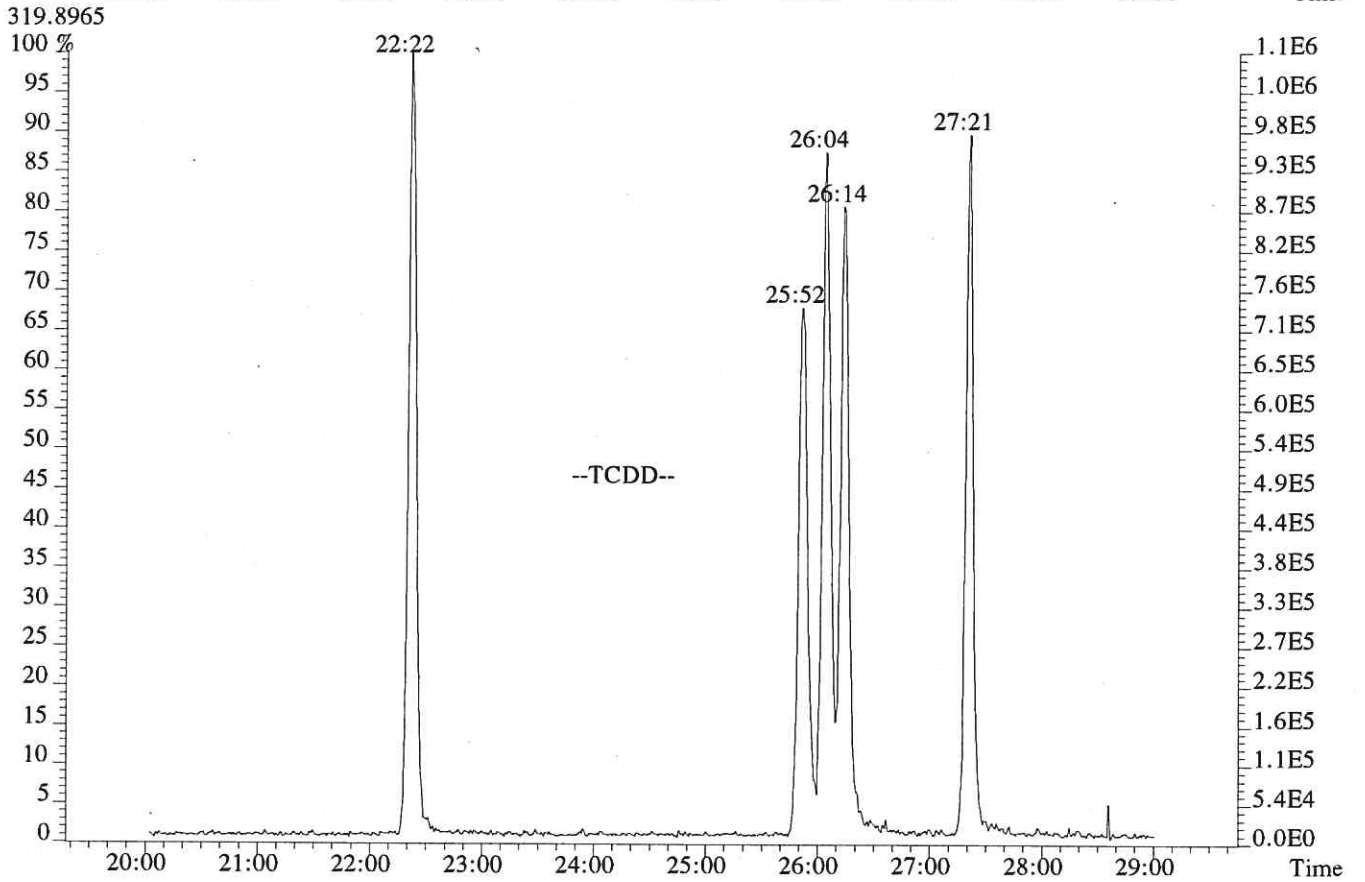
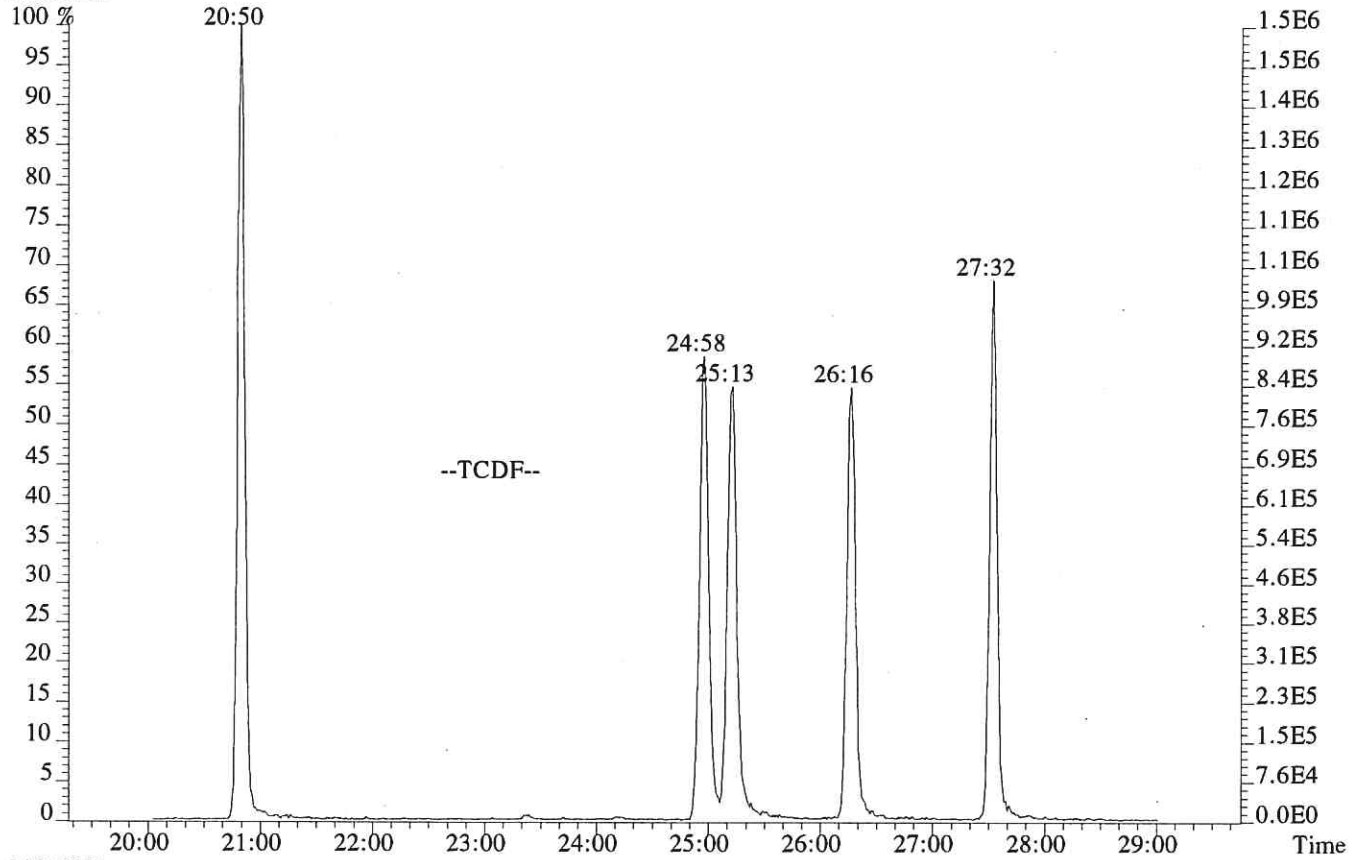
% Valley 2378-TCDD:

17 %

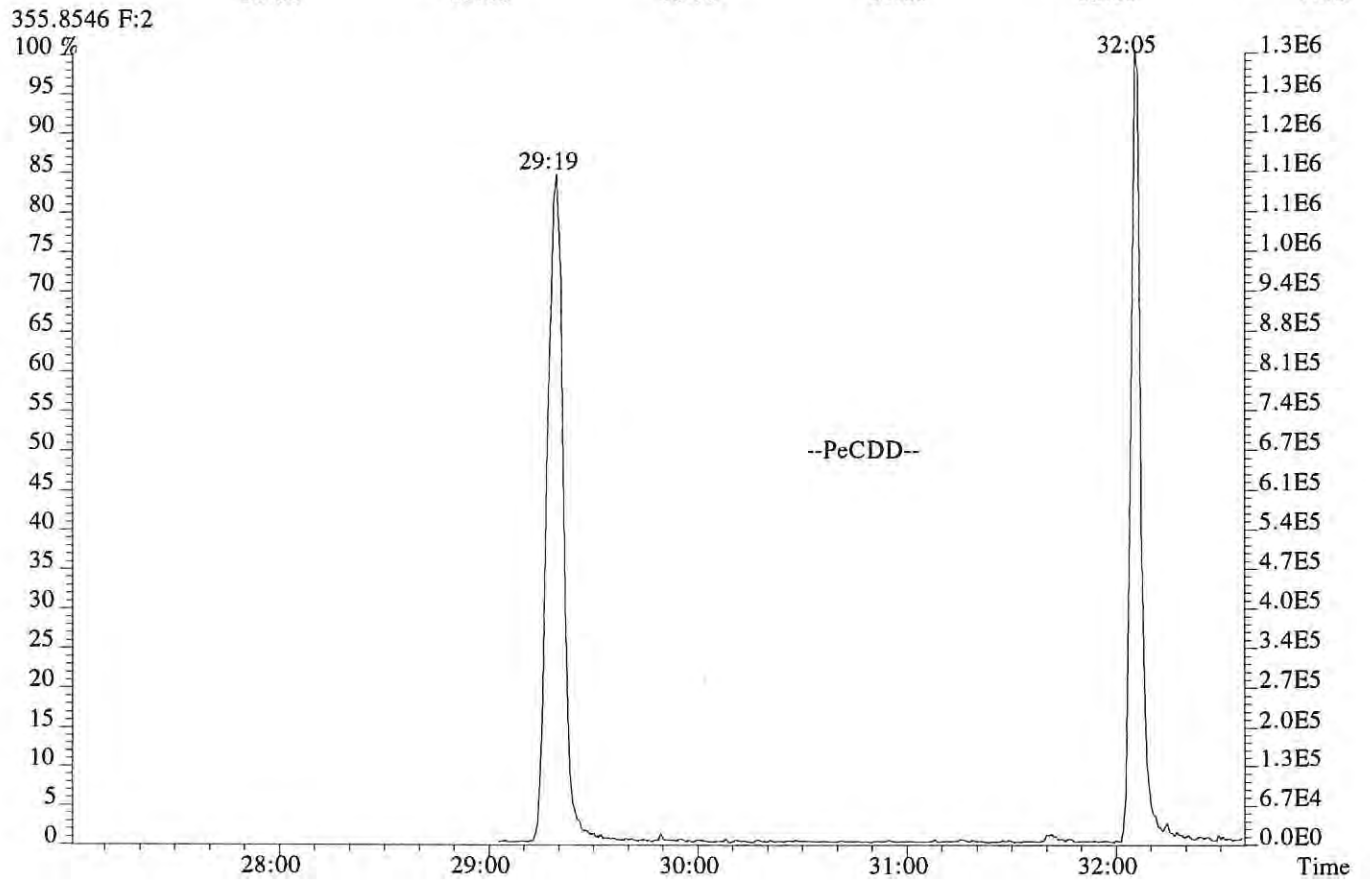
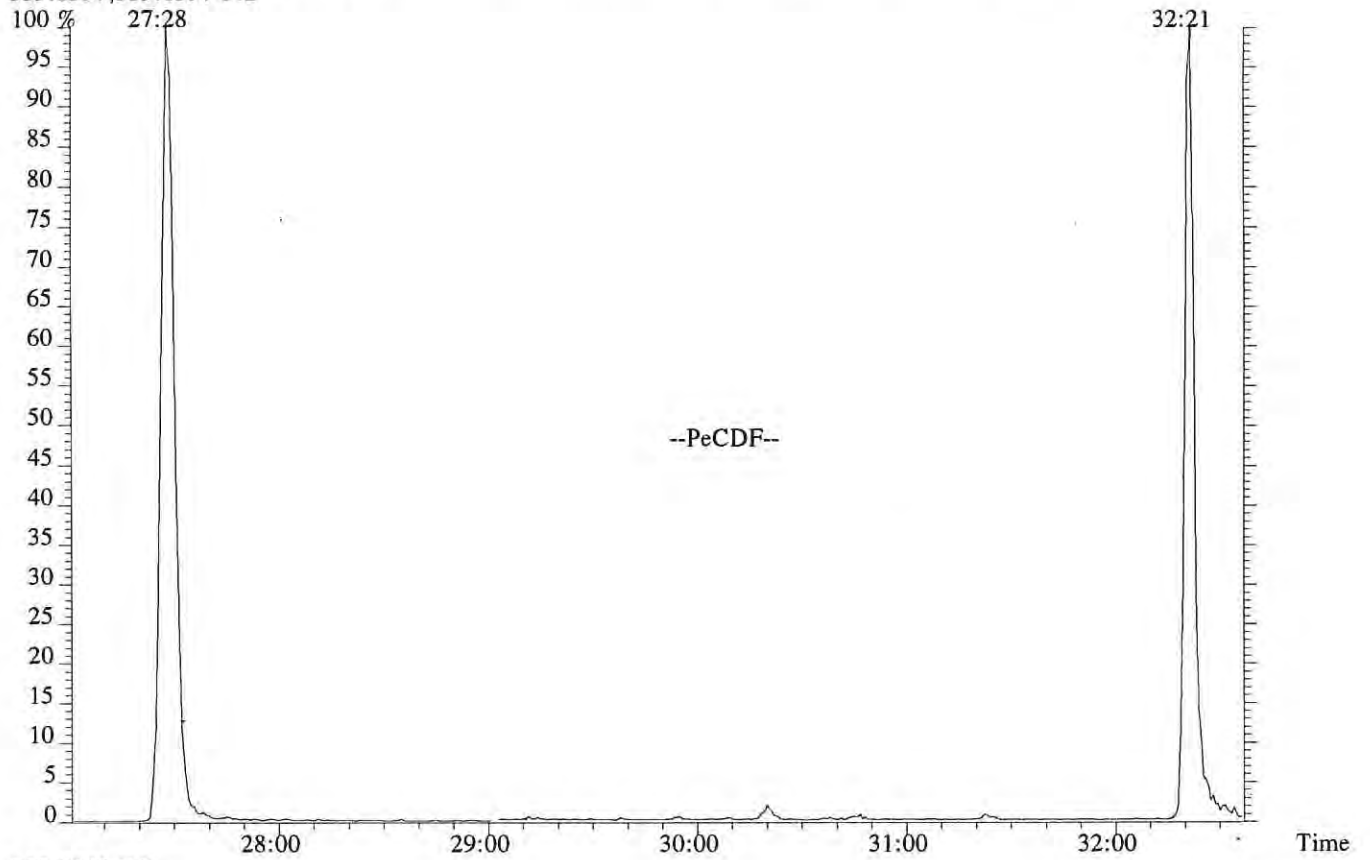
File:P618687 #1-637 Acq:22-AUG-2019 15:30:37 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:WINDOW DEFINE
319.8965



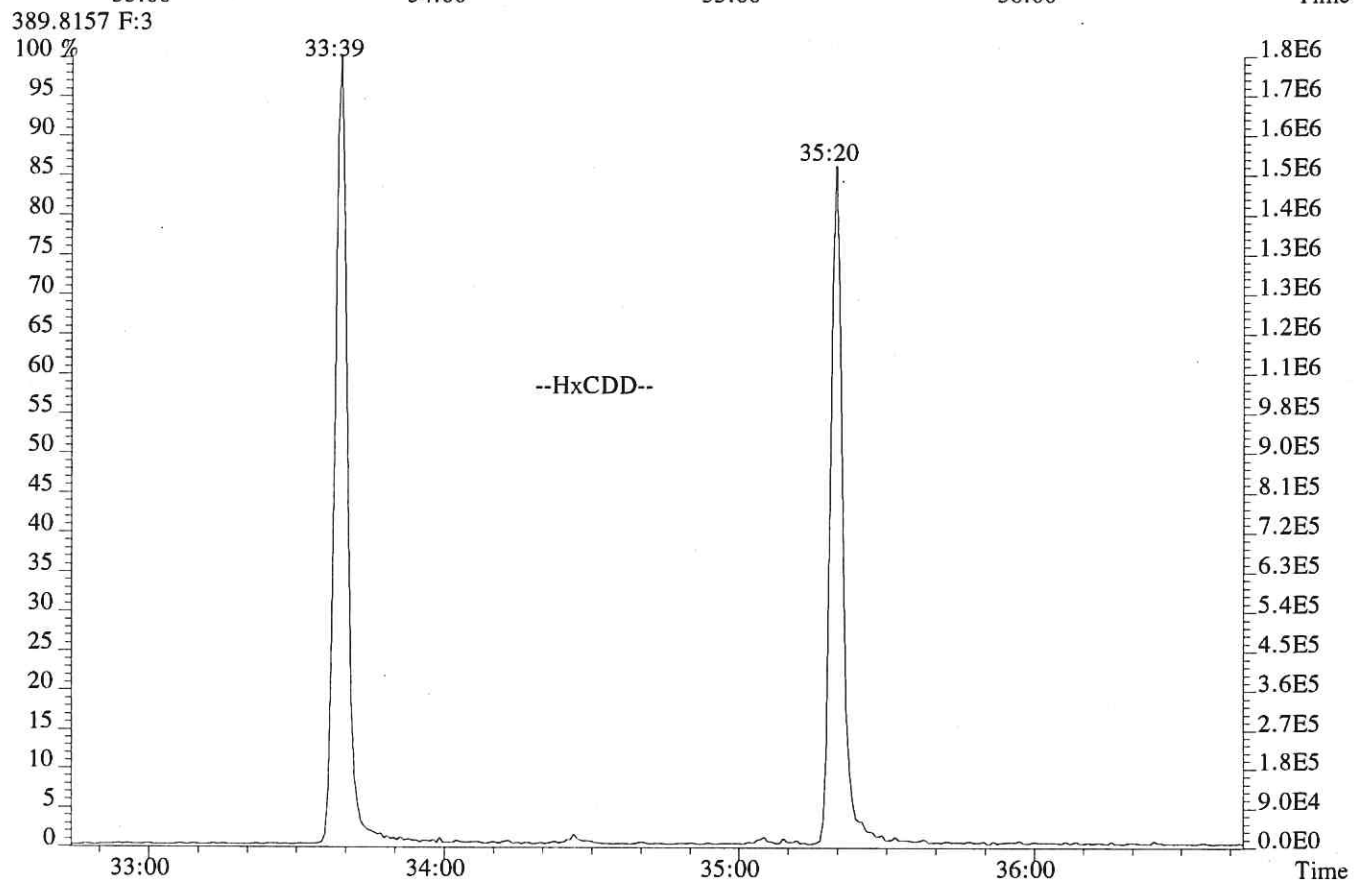
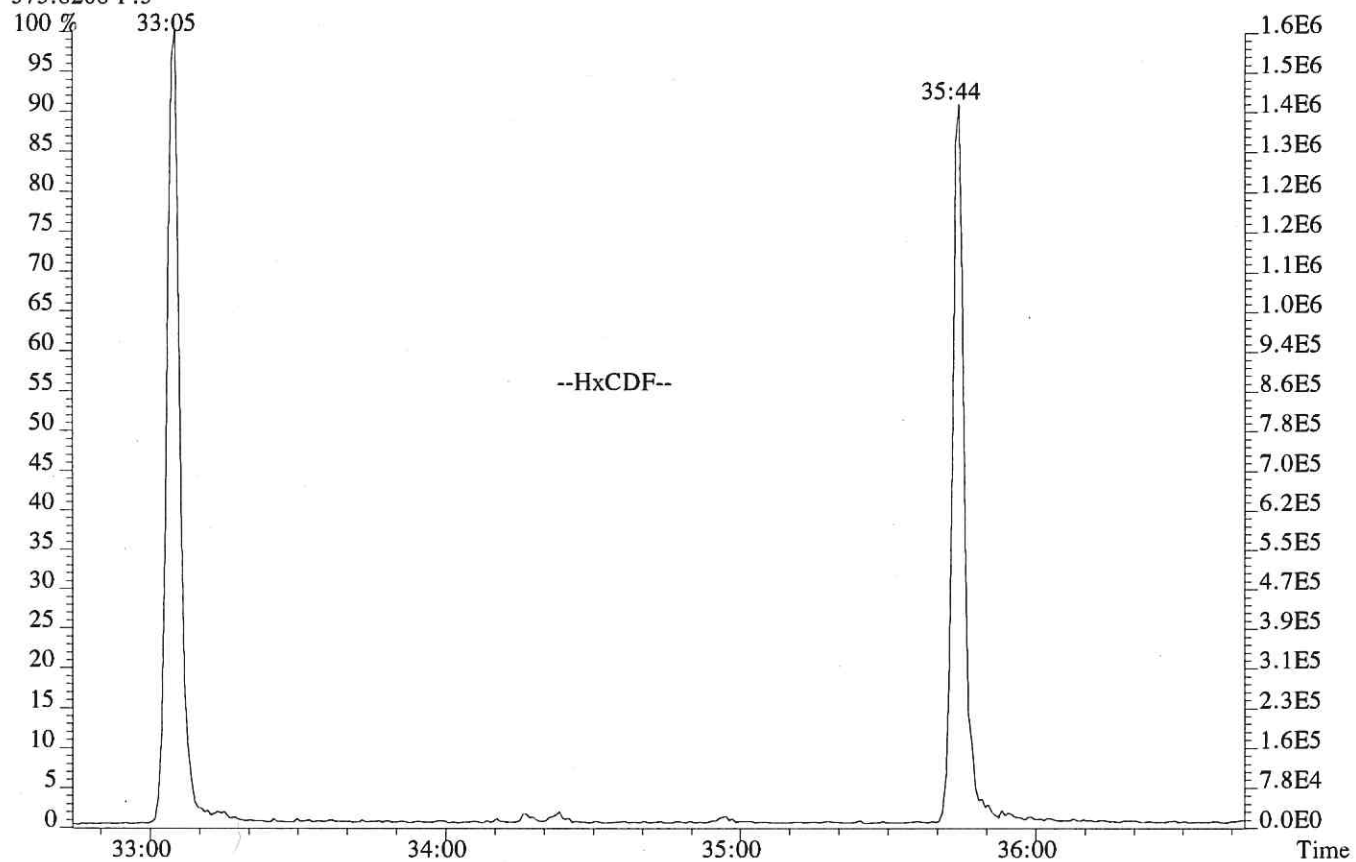
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Sample#1 Exp: WINDOW DEFINE
303.9016



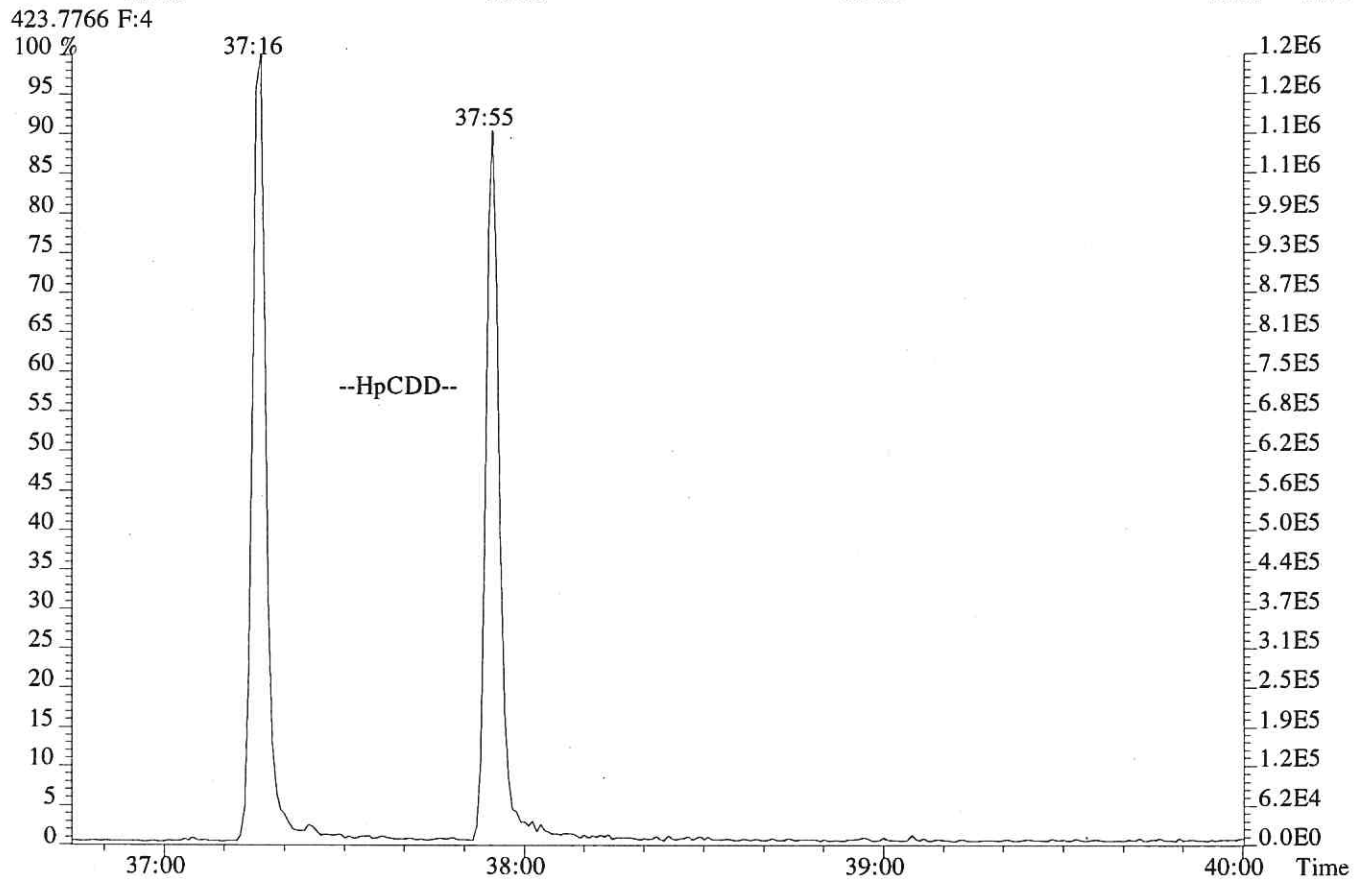
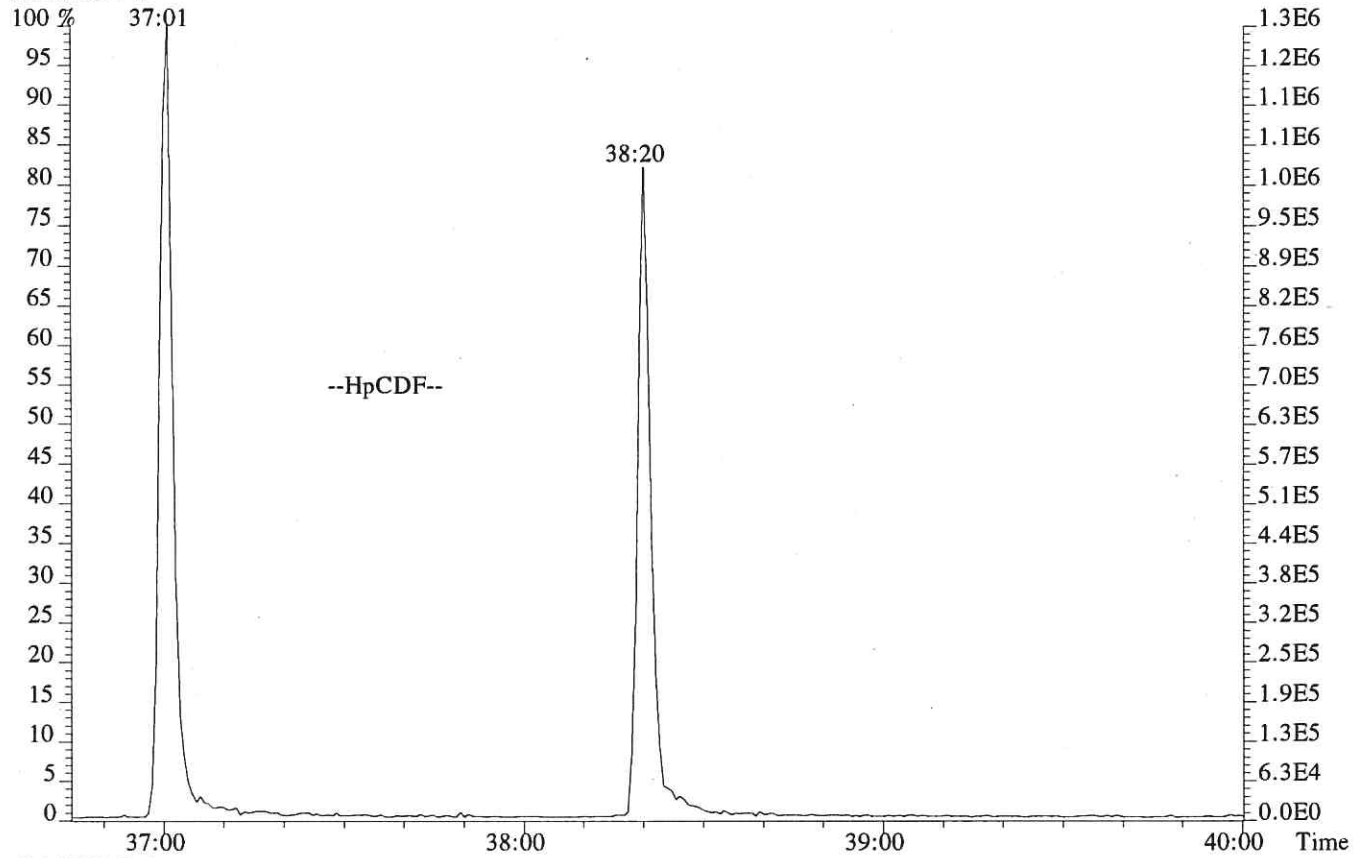
File:P618687 #1-637 Acq:22-AUG-2019 15:30:37 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:WINDOW DEFINE
339.8597,339.8597 F:2



File:P618687 #1-637 Acq:22-AUG-2019 15:30:37 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:WINDOW DEFINE
373.8208 F:3



File:P618687 #1-637 Acq:22-AUG-2019 15:30:37 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:WINDOW DEFINE
407.7818 F:4



USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 08/01/19

Instrument ID: E-HRMS-08

GC Column ID: DB-5MSUI

VER Data Filename: P618686

Analysis Date: 22-AUG-19 Time: 14:31:43

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (4)
2,3,7,8-TCDD	M/M+2	0.78	0.65-0.89	9.1	7.8 - 12.9	-8.9
1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.32-1.78	48	39 - 65	-4.8
1,2,3,4,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	48	39 - 64	-4.3
1,2,3,6,7,8-HxCDD	M+2/M+4	1.22	1.05-1.43	48	39 - 64	-3.7
1,2,3,7,8,9-HxCDD	M+2/M+4	1.26	1.05-1.43	51	41 - 61	1.8
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.02	0.88-1.20	53	43 - 58	5.0
OCDD	M+2/M+4	0.87	0.76-1.02	100	79 - 126	0.1
2,3,7,8-TCDF	M/M+2	0.72	0.65-0.89	9.3	8.4 - 12.0	-6.5
1,2,3,7,8-PeCDF	M+2/M+4	1.49	1.32-1.78	51	41 - 60	2.6
2,3,4,7,8-PeCDF	M+2/M+4	1.53	1.32-1.78	51	41 - 61	2.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.18	1.05-1.43	51	45 - 56	1.9
1,2,3,6,7,8-HxCDF	M+2/M+4	1.21	1.05-1.43	52	44 - 57	3.5
1,2,3,7,8,9-HxCDF	M+2/M+4	1.23	1.05-1.43	49	45 - 56	-1.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.21	1.05-1.43	51	44 - 57	2.5
1,2,3,4,6,7,8-HpCDF	M+2/M+4	0.98	0.88-1.20	53	45 - 55	5.6
1,2,3,4,7,8,9-HpCDF	M+2/M+4	0.99	0.88-1.20	51	43 - 58	2.6
OCDF	M+2/M+4	0.89	0.76-1.02	104	63 - 159	4.1

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range as specified in Table 6, Method 1613B, under VER.

(4) 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, Method 8290

12/2012
1613F4A.FRM

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 08/01/19

Instrument ID: E-HRMS-08

GC Column ID: DB-5MSUI

VER Data Filename: P618686

Analysis Date: 22-AUG-19 Time: 14:31:43

LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (5)
13C-2,3,7,8-TCDD	M/M+2	0.76	0.65-0.89	107	82 - 121	7.1
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.58	1.32-1.78	119	62 - 160	19.3
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	100	85 - 117	0.4
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	98	85 - 118	-2.4
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.08	0.88-1.20	105	72 - 138	4.8
13C-OCDD	M+2/M+4	0.90	0.76-1.02	214	96 - 415	6.8
13C-2,3,7,8-TCDF	M/M+2	0.80	0.65-0.89	95	71 - 140	-5.4
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.56	1.32-1.78	107	76 - 130	7.2
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.58	1.32-1.78	110	77 - 130	10.2
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.51	0.43-0.59	93	76 - 131	-7.5
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.51	0.43-0.59	90	70 - 143	-10.4
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.51	0.43-0.59	106	74 - 135	6.3
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.51	0.43-0.59	95	73 - 137	-4.9
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.43	0.37-0.51	99	78 - 129	-1.3
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.43	0.37-0.51	112	77 - 129	11.9
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	M+2/M+4			9.6	7.8 - 12.7	-4.1

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range, as specified in Table 6, Method 1613B, under VER.

(4) No ion abundance ratio; report concentration found.

(5) The beginning CCAL %RSD for the labeled standard must not exceed +/- 30% Section 7.7.4.2. The ending CCAL must not exceed +/- 35%, Sec 8.3.2.4 (8290)

12/2012
1613F4B.FRM

ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
201833

Run #7 Filename P618686 Samp: 1 Inj: 1 Acquired: 22-AUG-19 14:31:43
Processed: 23-AUG-19 08:49:30 Sample ID: CS3

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	25:13	2.825e+03	3.917e+03	0.72	yes	no	0.873
2 Unk	1,2,3,7,8-PeCDF	30:20	2.424e+04	1.623e+04	1.49	yes	no	0.864
3 Unk	2,3,4,7,8-PeCDF	31:23	2.236e+04	1.461e+04	1.53	yes	no	0.825
4 Unk	1,2,3,4,7,8-HxCDF	34:16	1.950e+04	1.646e+04	1.18	yes	no	1.084
5 Unk	1,2,3,6,7,8-HxCDF	34:23	2.121e+04	1.753e+04	1.21	yes	no	0.994
6 Unk	2,3,4,6,7,8-HxCDF	34:56	1.866e+04	1.540e+04	1.21	yes	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	35:42	1.600e+04	1.302e+04	1.23	yes	no	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	37:01	1.568e+04	1.597e+04	0.98	yes	no	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	38:20	1.236e+04	1.249e+04	0.99	yes	no	1.104
10 Unk	OCDF	40:32	2.254e+04	2.535e+04	0.89	yes	no	0.993
11 Unk	2,3,7,8-TCDD	26:15	2.802e+03	3.610e+03	0.78	yes	no	0.989
12 Unk	1,2,3,7,8-PeCDD	31:41	1.949e+04	1.245e+04	1.57	yes	no	0.954
13 Unk	1,2,3,4,7,8-HxCDD	35:04	1.636e+04	1.319e+04	1.24	yes	no	1.020
14 Unk	1,2,3,6,7,8-HxCDD	35:10	1.730e+04	1.414e+04	1.22	yes	no	1.030
15 Unk	1,2,3,7,8,9-HxCDD	35:24	1.767e+04	1.408e+04	1.26	yes	no	1.007
16 Unk	1,2,3,4,6,7,8-HpCDD	37:55	1.388e+04	1.358e+04	1.02	yes	no	0.922
17 Unk	OCDD	40:22	2.296e+04	2.629e+04	0.87	yes	no	1.062
18 IS	13C-2,3,7,8-TCDF	25:11	3.672e+04	4.597e+04	0.80	yes	no	1.102
19 IS	13C-1,2,3,7,8-PeCDF	30:19	5.557e+04	3.571e+04	1.56	yes	no	1.074
20 IS	13C-2,3,4,7,8-PeCDF	31:22	5.382e+04	3.399e+04	1.58	yes	no	1.005
21 IS	13C-1,2,3,4,7,8-HxCDF	34:16	2.200e+04	4.315e+04	0.51	yes	no	1.059
22 IS	13C-1,2,3,6,7,8-HxCDF	34:22	2.558e+04	4.968e+04	0.51	yes	no	1.264
23 IS	13C-2,3,4,6,7,8-HxCDF	34:56	2.287e+04	4.451e+04	0.51	yes	no	1.066
24 IS	13C-1,2,3,7,8,9-HxCDF	35:42	1.906e+04	3.749e+04	0.51	yes	no	0.801
25 IS	13C-1,2,3,4,6,7,8-HpCDF	37:00	1.566e+04	3.611e+04	0.43	yes	no	0.789
26 IS	13C-1,2,3,4,7,8,9-HpCDF	38:19	1.326e+04	3.063e+04	0.43	yes	no	0.590
27 IS	13C-2,3,7,8-TCDD	26:13	3.082e+04	4.038e+04	0.76	yes	no	0.839
28 IS	13C-1,2,3,7,8-PeCDD	31:40	4.305e+04	2.731e+04	1.58	yes	no	0.744
29 IS	13C-1,2,3,4,7,8-HxCDD	35:04	3.385e+04	2.669e+04	1.27	yes	no	0.907
30 IS	13C-1,2,3,6,7,8-HxCDD	35:09	3.529e+04	2.812e+04	1.25	yes	no	0.978
31 IS	13C-1,2,3,4,6,7,8-HpCDD	37:54	2.942e+04	2.731e+04	1.08	yes	no	0.814
32 IS	13C-OCDD	40:21	4.379e+04	4.881e+04	0.90	yes	no	0.653
33 RS/RT	13C-1,2,3,4-TCDD	25:27	3.456e+04	4.475e+04	0.77	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	35:24	3.681e+04	2.964e+04	1.24	yes	no	-
35 C/Up	37C1-2,3,7,8-TCDD	26:15	6.800e+03				no	0.894

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
201833

Run #7 Filename P618686 Samp: 1 Inj: 1 Acquired: 22-AUG-19 14:31:43
Processed: 23-AUG-19 08:49:30 LAB. ID: CS3

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	3.88e+05	7.40e+02	5.2e+02	5.55e+05	1.08e+03	5.1e+02
2	1,2,3,7,8-PeCDF	4.09e+06	1.27e+03	3.2e+03	2.74e+06	8.56e+02	3.2e+03
3	2,3,4,7,8-PeCDF	4.10e+06	1.27e+03	3.2e+03	2.68e+06	8.56e+02	3.1e+03
4	1,2,3,4,7,8-HxCDF	4.19e+06	1.33e+03	3.2e+03	3.53e+06	9.08e+02	3.9e+03
5	1,2,3,6,7,8-HxCDF	4.21e+06	1.33e+03	3.2e+03	3.49e+06	9.08e+02	3.8e+03
6	2,3,4,6,7,8-HxCDF	3.87e+06	1.33e+03	2.9e+03	3.18e+06	9.08e+02	3.5e+03
7	1,2,3,7,8,9-HxCDF	3.31e+06	1.33e+03	2.5e+03	2.73e+06	9.08e+02	3.0e+03
8	1,2,3,4,6,7,8-HpCDF	3.49e+06	2.32e+03	1.5e+03	3.50e+06	2.84e+03	1.2e+03
9	1,2,3,4,7,8,9-HpCDF	2.71e+06	2.32e+03	1.2e+03	2.80e+06	2.84e+03	9.8e+02
10	OCDF	4.50e+06	2.92e+03	1.5e+03	4.96e+06	3.79e+03	1.3e+03
11	2,3,7,8-TCDD	3.99e+05	3.28e+03	1.2e+02	5.44e+05	2.32e+03	2.3e+02
12	1,2,3,7,8-PeCDD	3.60e+06	1.22e+03	2.9e+03	2.34e+06	3.88e+02	6.0e+03
13	1,2,3,4,7,8-HxCDD	3.65e+06	9.16e+02	4.0e+03	2.96e+06	1.16e+03	2.6e+03
14	1,2,3,6,7,8-HxCDD	3.55e+06	9.16e+02	3.9e+03	2.90e+06	1.16e+03	2.5e+03
15	1,2,3,7,8,9-HxCDD	3.65e+06	9.16e+02	4.0e+03	2.96e+06	1.16e+03	2.6e+03
16	1,2,3,4,6,7,8-HpCDD	3.11e+06	1.19e+03	2.6e+03	3.00e+06	1.19e+03	2.5e+03
17	OCDD	4.59e+06	6.06e+03	7.6e+02	5.25e+06	4.03e+03	1.3e+03
18	13C-2,3,7,8-TCDF	5.14e+06	1.27e+04	4.1e+02	6.39e+06	6.24e+03	1.0e+03
19	13C-1,2,3,7,8-PeCDF	9.40e+06	1.42e+03	6.6e+03	6.09e+06	6.72e+02	9.1e+03
20	13C-2,3,4,7,8-PeCDF	9.75e+06	1.42e+03	6.9e+03	6.17e+06	6.72e+02	9.2e+03
21	13C-1,2,3,4,7,8-HxCDF	4.76e+06	8.04e+02	5.9e+03	9.14e+06	1.62e+03	5.7e+03
22	13C-1,2,3,6,7,8-HxCDF	5.15e+06	8.04e+02	6.4e+03	9.94e+06	1.62e+03	6.1e+03
23	13C-2,3,4,6,7,8-HxCDF	4.64e+06	8.04e+02	5.8e+03	9.18e+06	1.62e+03	5.7e+03
24	13C-1,2,3,7,8,9-HxCDF	3.99e+06	8.04e+02	5.0e+03	7.79e+06	1.62e+03	4.8e+03
25	13C-1,2,3,4,6,7,8-HpCDF	3.51e+06	3.59e+03	9.8e+02	8.08e+06	9.00e+03	9.0e+02
26	13C-1,2,3,4,7,8,9-HpCDF	2.87e+06	3.59e+03	8.0e+02	6.66e+06	9.00e+03	7.4e+02
27	13C-2,3,7,8-TCDD	4.55e+06	7.76e+03	5.9e+02	6.06e+06	3.05e+03	2.0e+03
28	13C-1,2,3,7,8-PeCDD	7.80e+06	1.18e+03	6.6e+03	4.97e+06	1.71e+03	2.9e+03
29	13C-1,2,3,4,7,8-HxCDD	7.56e+06	1.08e+03	7.0e+03	5.94e+06	8.80e+02	6.8e+03
30	13C-1,2,3,6,7,8-HxCDD	7.22e+06	1.08e+03	6.7e+03	5.77e+06	8.80e+02	6.6e+03
31	13C-1,2,3,4,6,7,8-HpCDD	6.57e+06	8.40e+02	7.8e+03	6.12e+06	9.52e+02	6.4e+03
32	13C-OCDD	8.85e+06	4.26e+03	2.1e+03	9.82e+06	5.88e+03	1.7e+03
33	13C-1,2,3,4-TCDD	4.87e+06	7.76e+03	6.3e+02	6.31e+06	3.05e+03	2.1e+03
34	13C-1,2,3,7,8,9-HxCDD	7.58e+06	1.08e+03	7.0e+03	6.10e+06	8.80e+02	6.9e+03
35	37Cl-2,3,7,8-TCDD	1.00e+06	1.15e+03	8.7e+02			

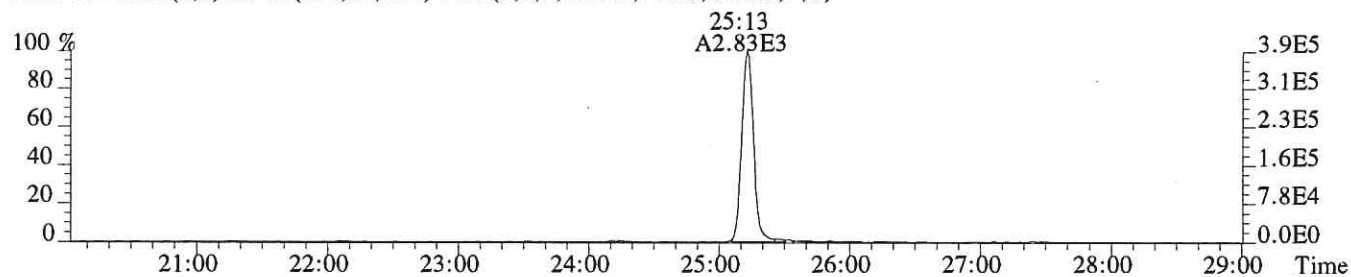
---Sample Calculation---

$$D/L \text{ TCDD} = \frac{2.5 \times (3.280e+03 + 2.316e+03) \times 100}{(4.551e+06 + 6.057e+06) \times () \times 0.989} =$$

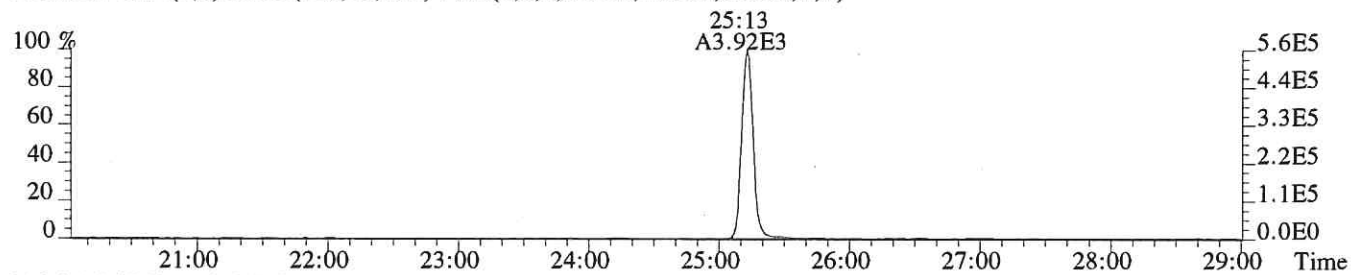
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Sample#1 Exp:CS3

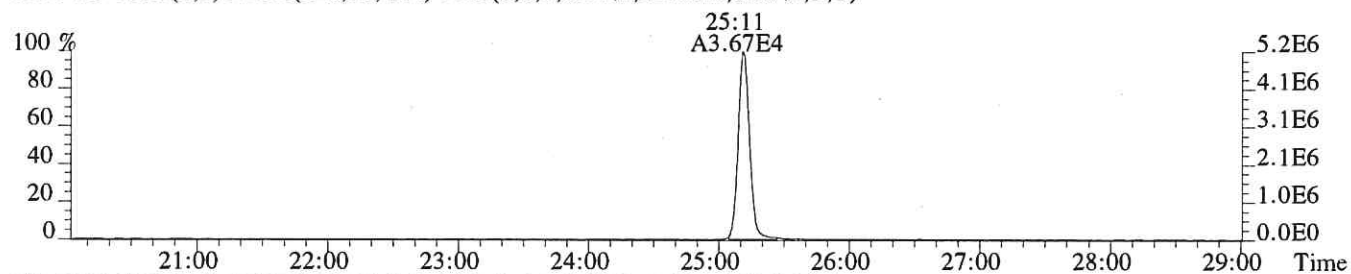
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,740.0,1.00%,F,T)



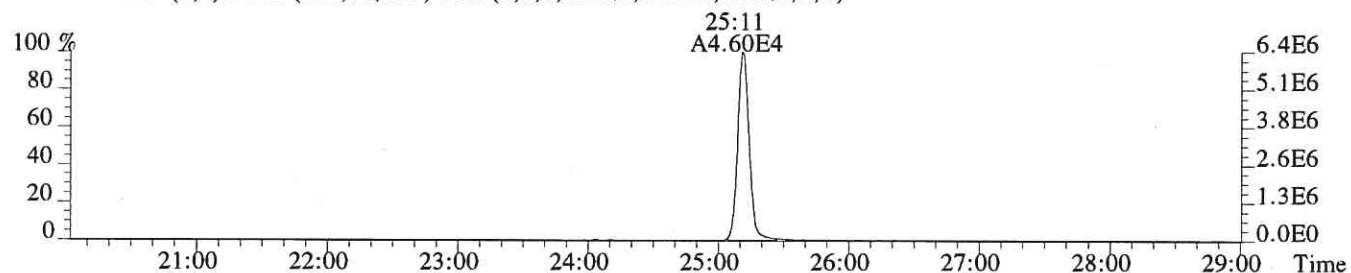
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1080.0,1.00%,F,T)



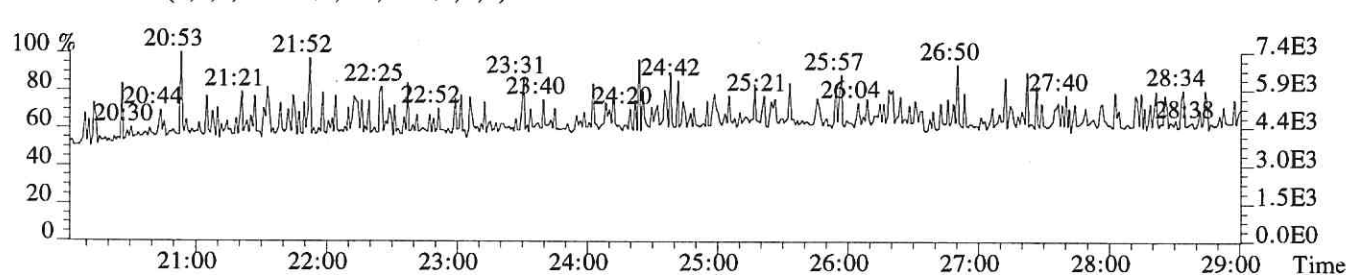
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,12700.0,1.00%,F,T)



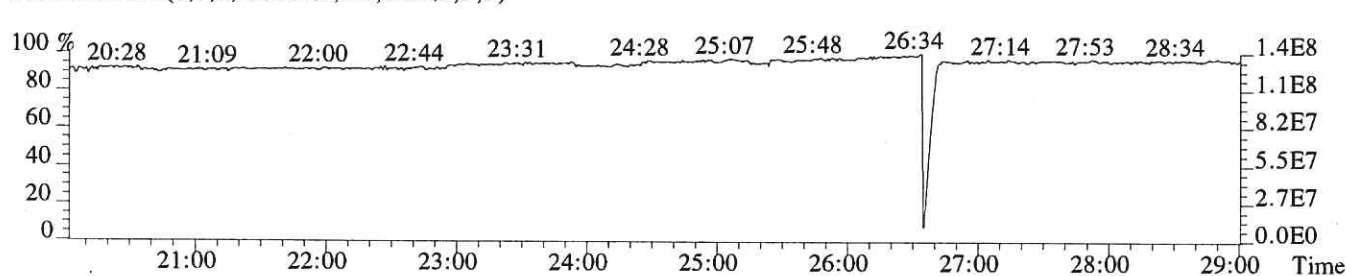
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6240.0,1.00%,F,T)



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



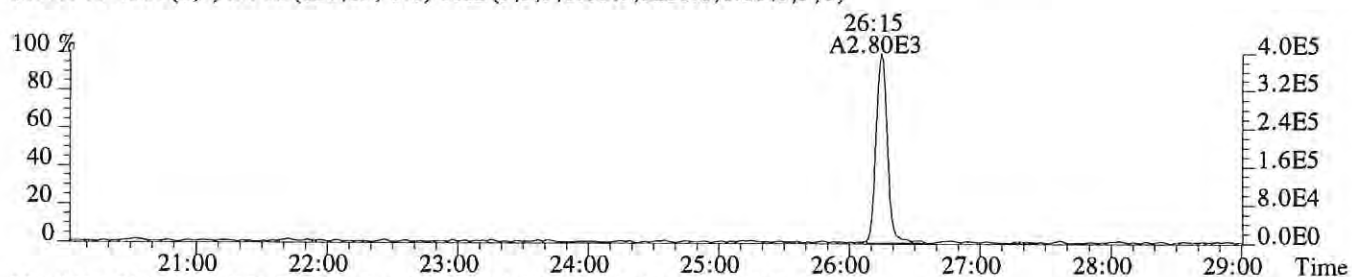
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



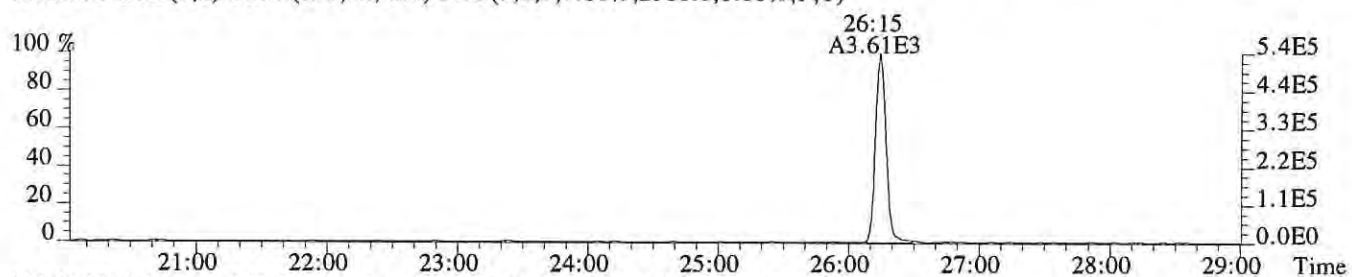
File:P618686 #1-637 Acq:22-AUG-2019 14:31:43 Probe EI+ Magnet SIR VG BioTech Mass spectr

Sample#1 Exp:CS3

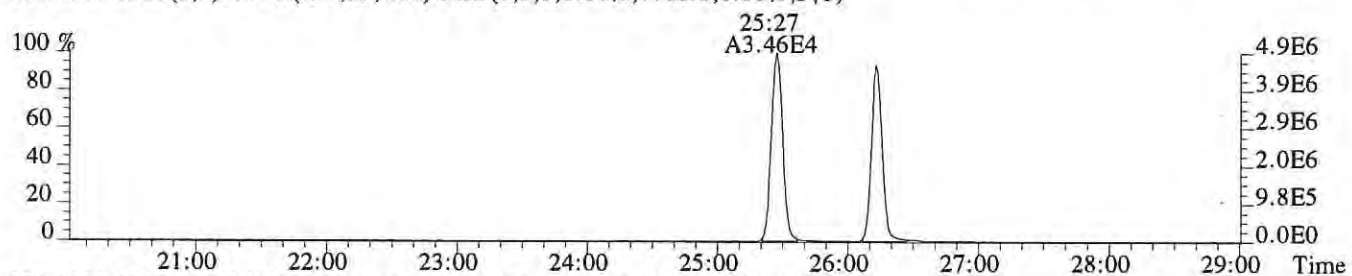
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3280.0,1.00%,F,T)



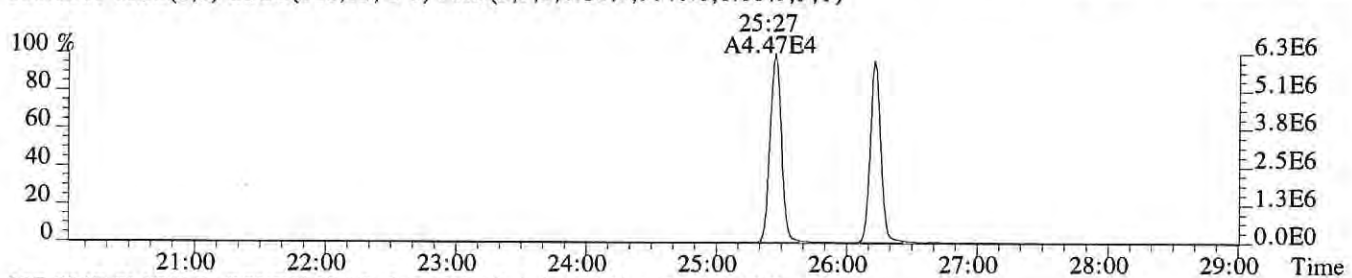
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2316.0,1.00%,F,T)



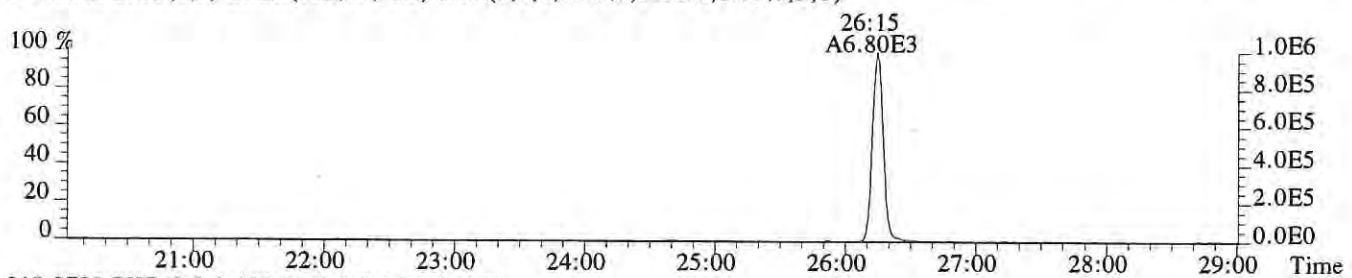
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,7760.0,1.00%,F,T)



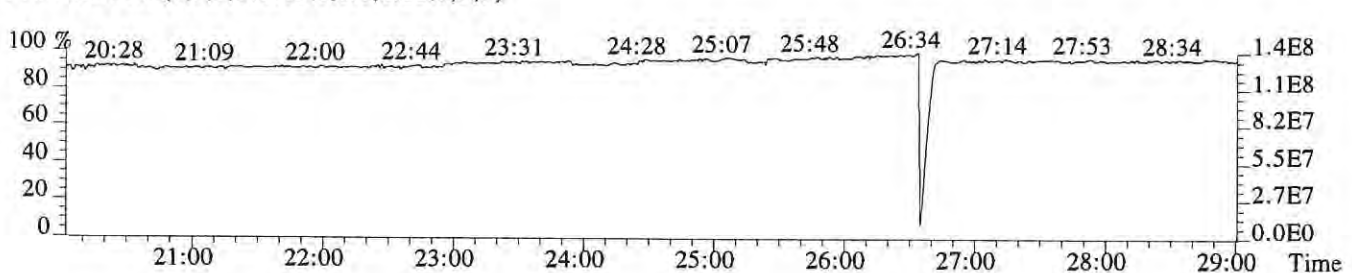
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3048.0,1.00%,F,T)



327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1152.0,1.00%,F,T)

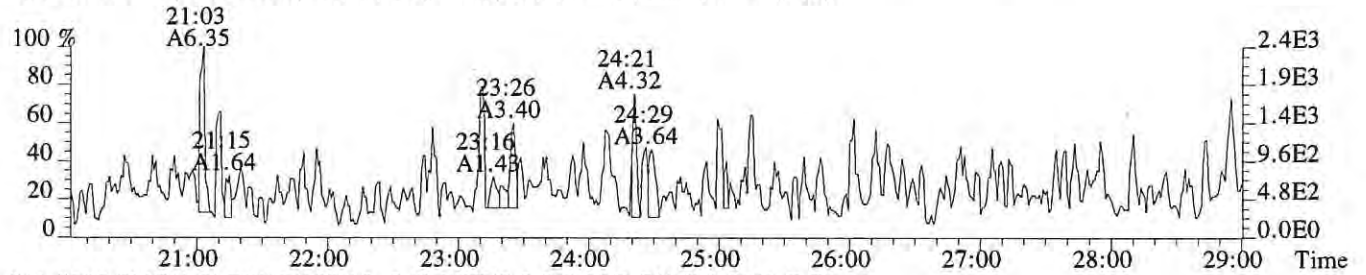


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

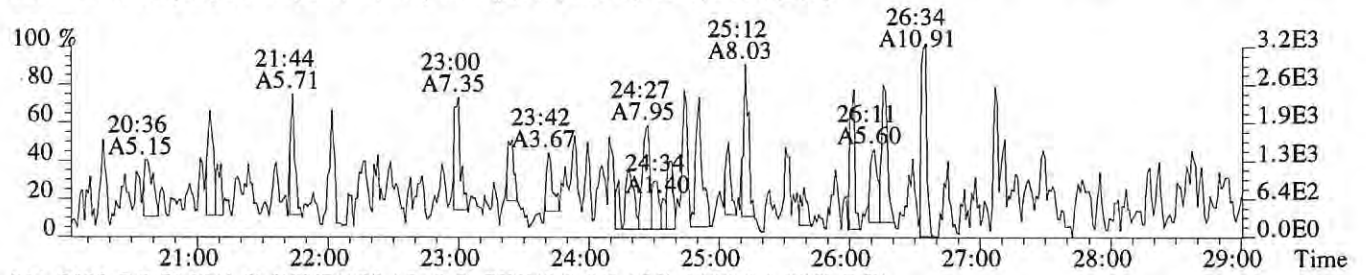


Sample#1 Exp:CS3

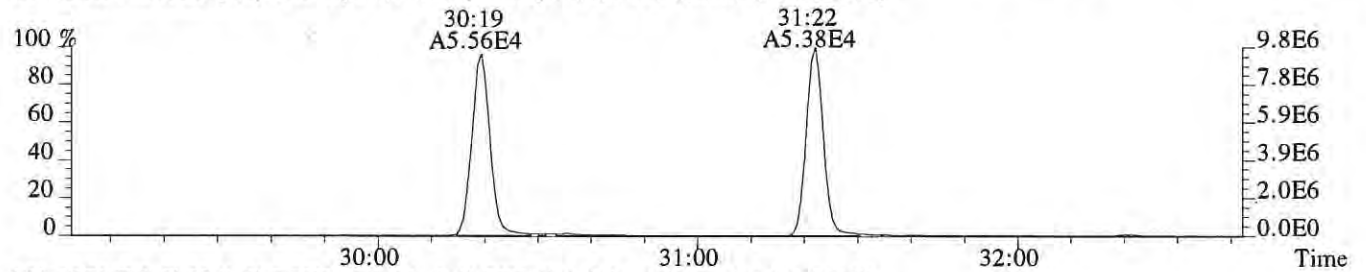
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,736.0,1.00%,F,T)



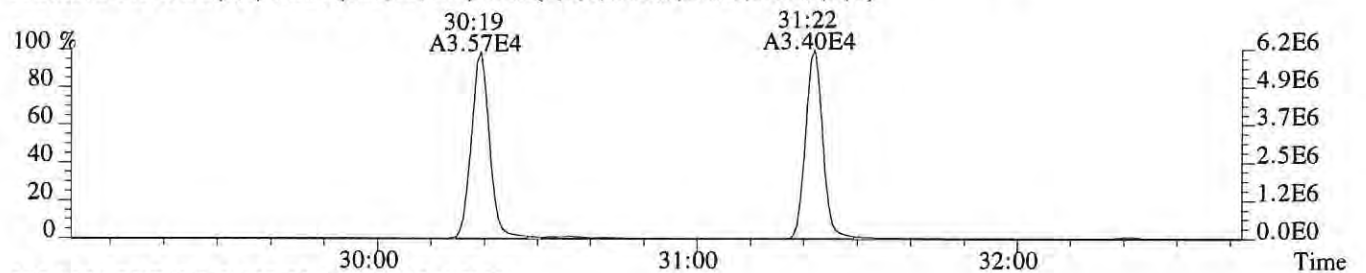
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,708.0,1.00%,F,T)



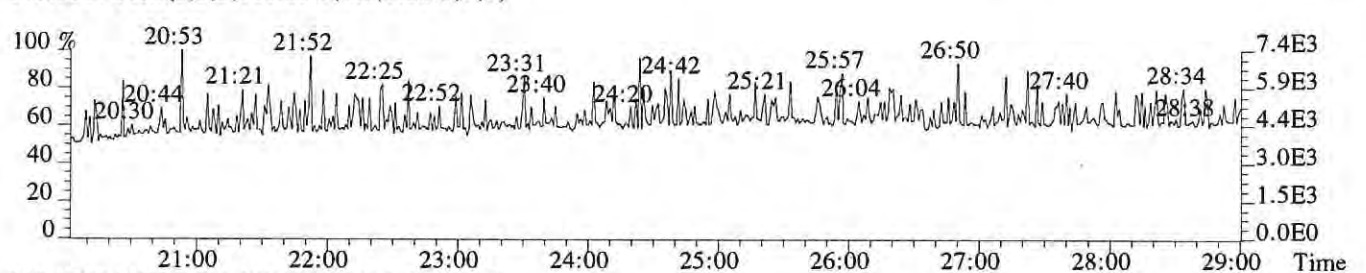
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1420.0,1.00%,F,T)



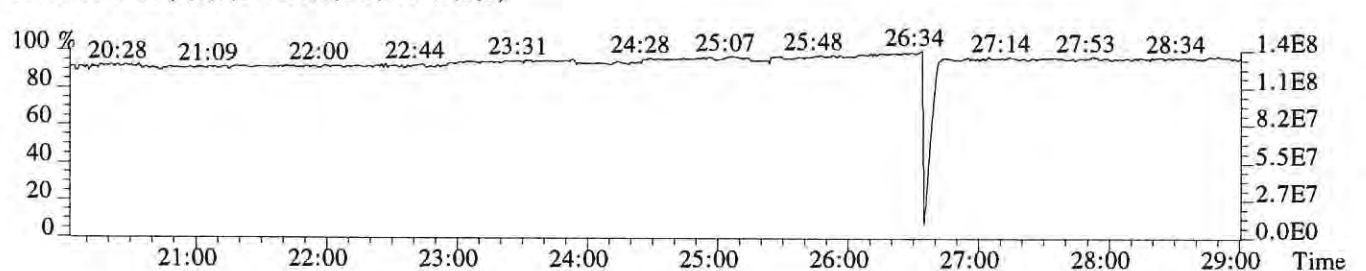
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,672.0,1.00%,F,T)



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

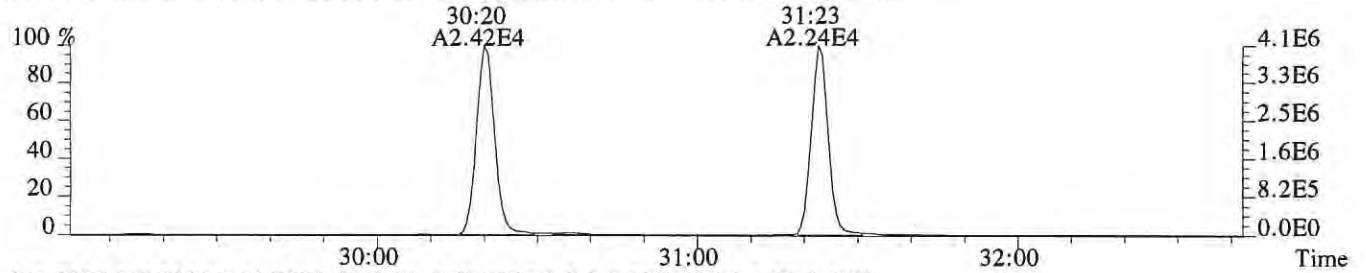


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

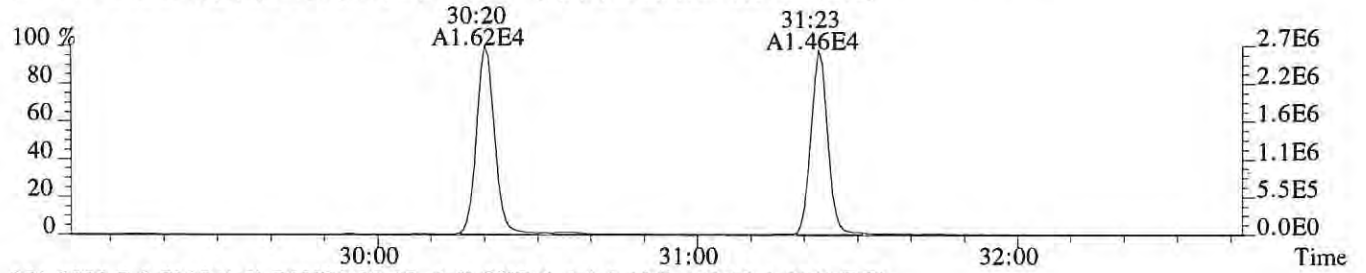


Sample#1 Exp:CS3

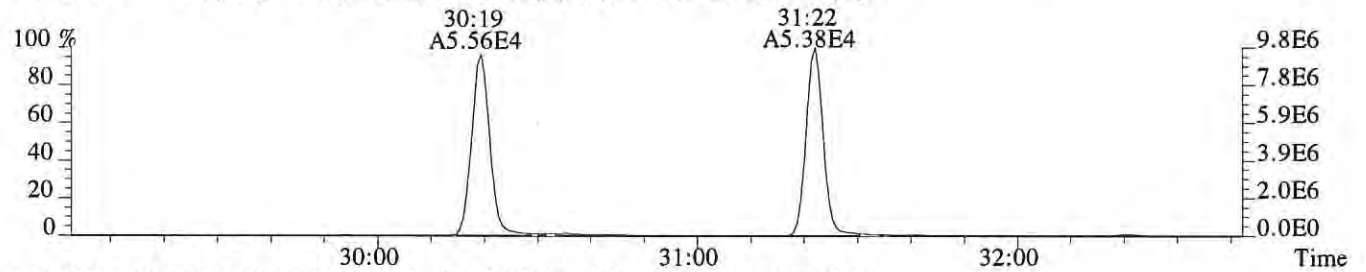
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1272.0,1.00%,F,T)



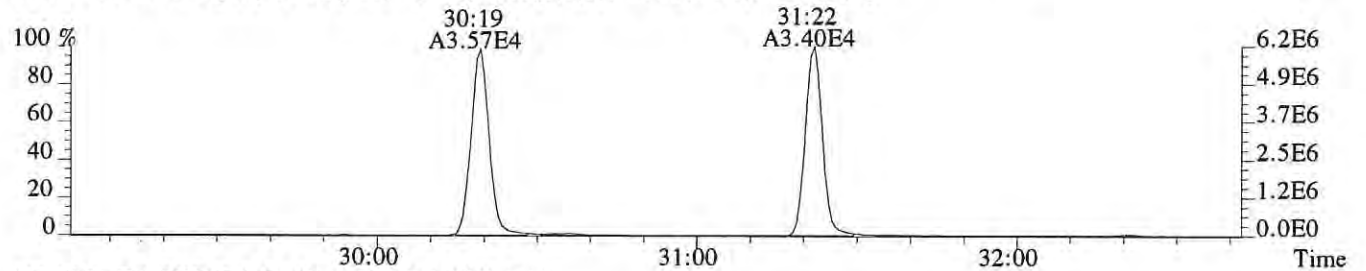
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,856.0,1.00%,F,T)



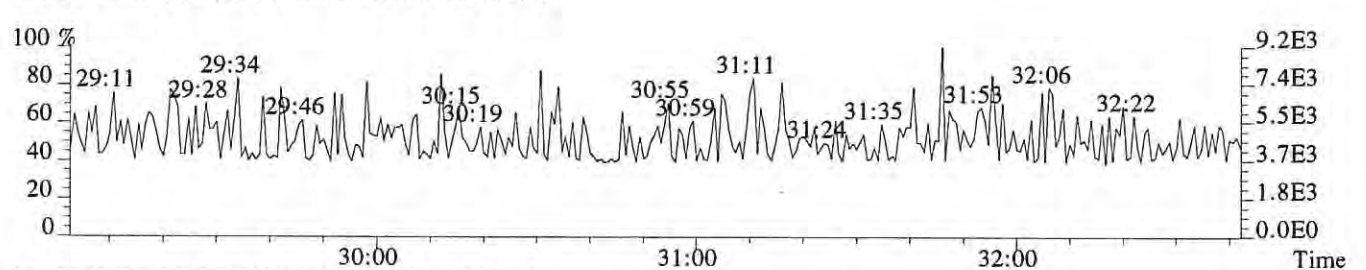
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1420.0,1.00%,F,T)



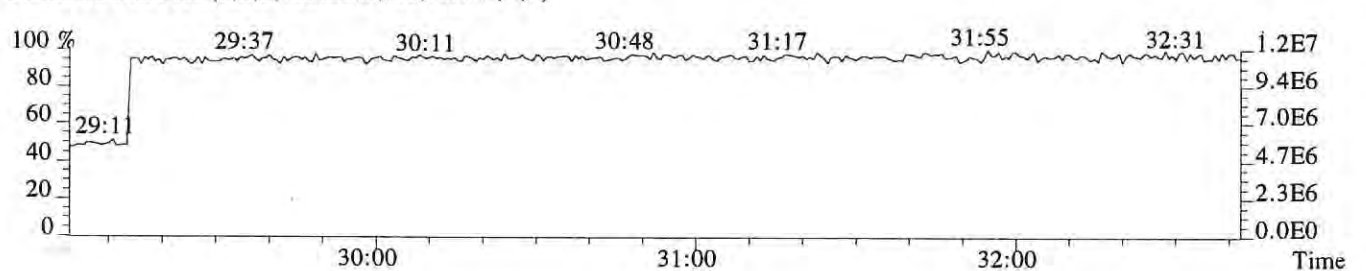
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,672.0,1.00%,F,T)



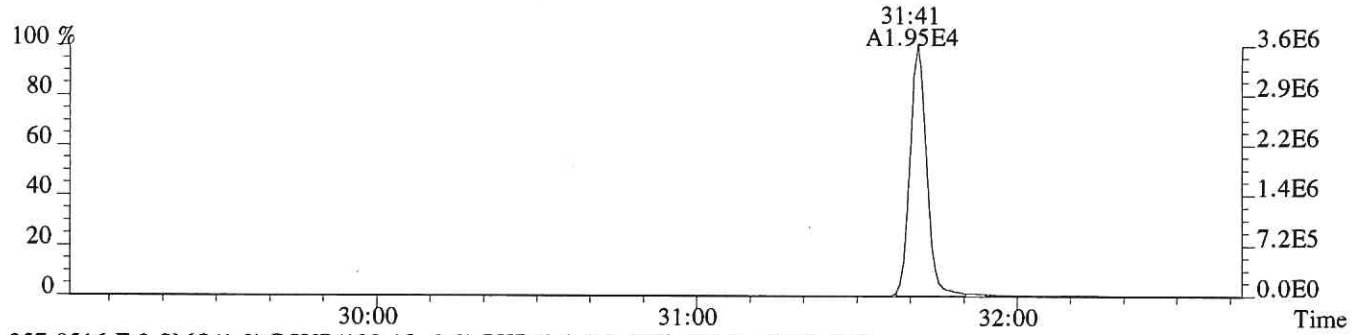
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



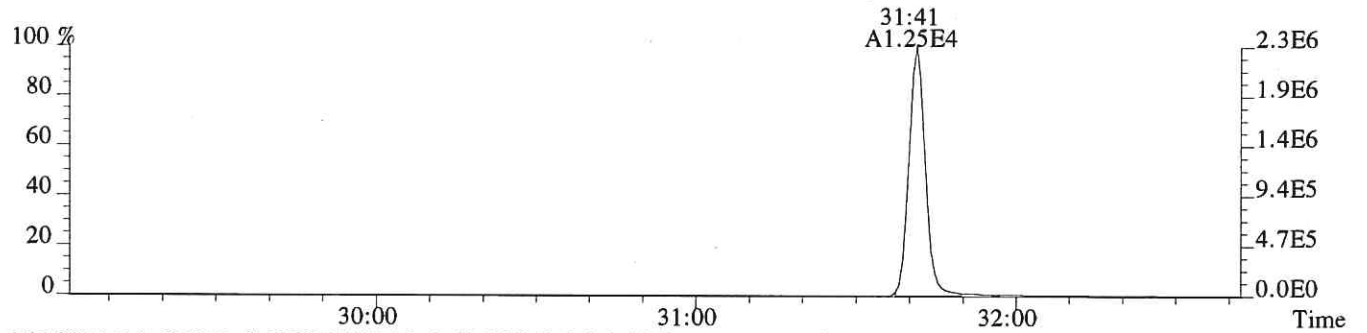
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



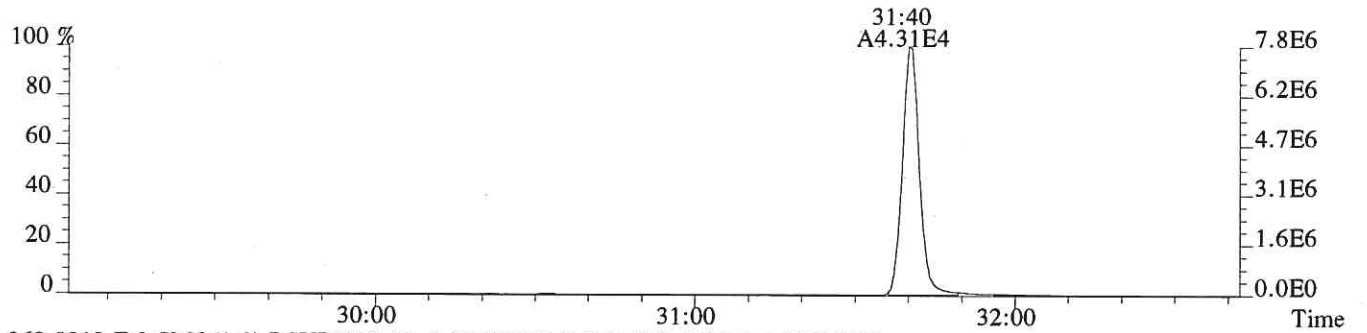
File:P618686 #1-330 Acq:22-AUG-2019 14:31:43 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1224.0,1.00%,F,T)



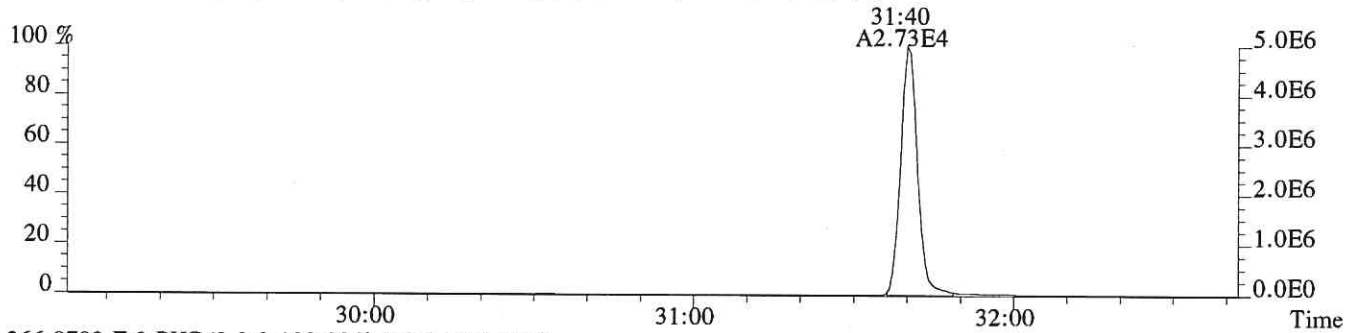
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,388.0,1.00%,F,T)



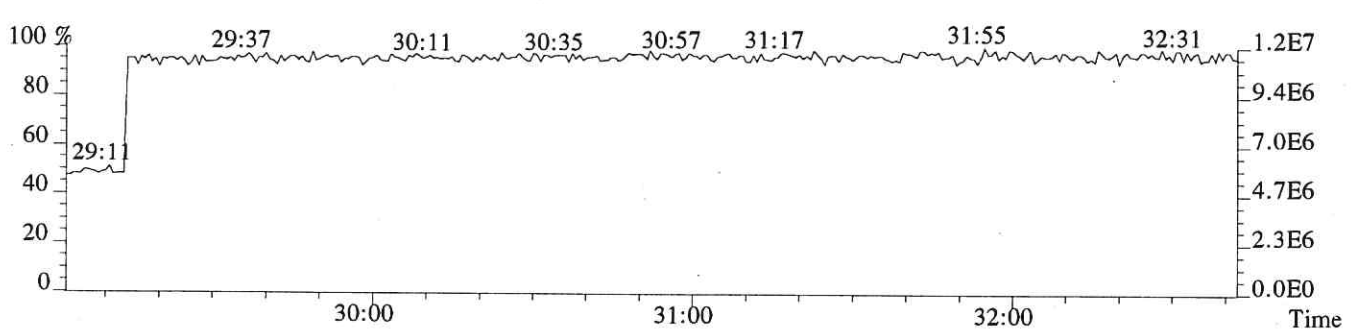
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1180.0,1.00%,F,T)



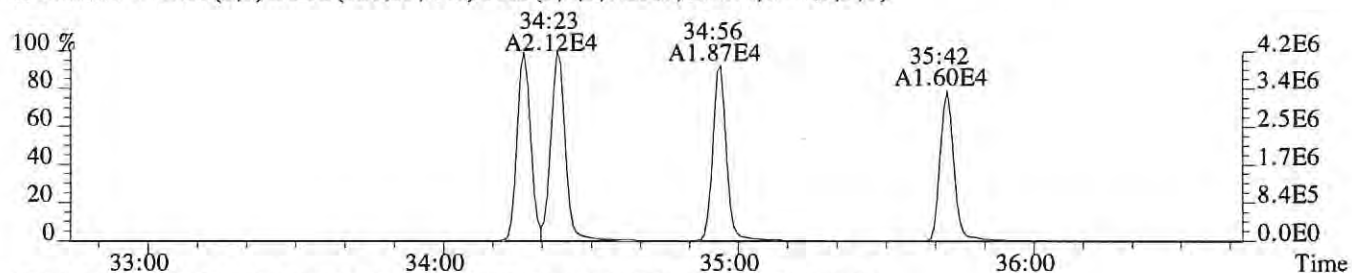
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1708.0,1.00%,F,T)



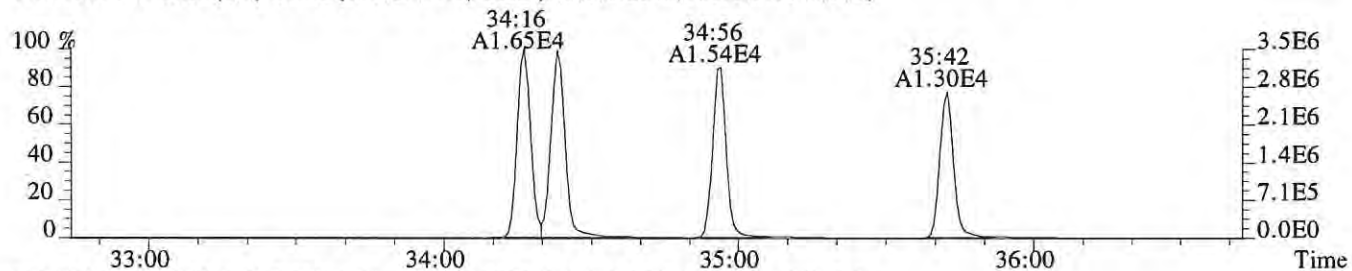
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



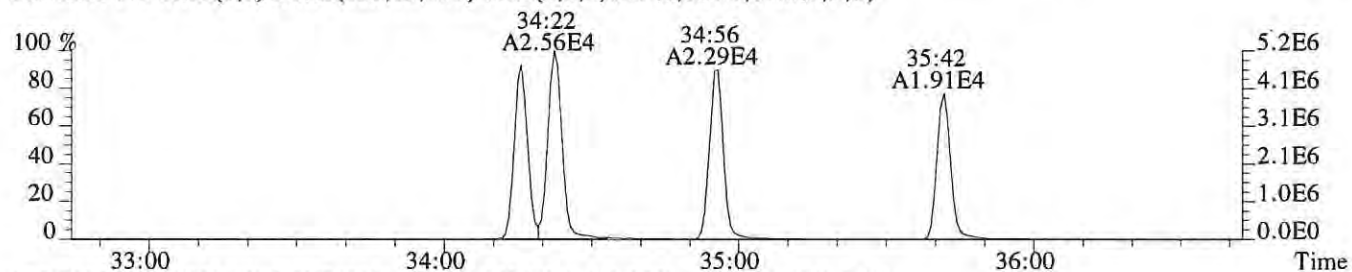
File:P618686 #1-358 Acq:22-AUG-2019 14:31:43 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1328.0,0.40%,F,T)



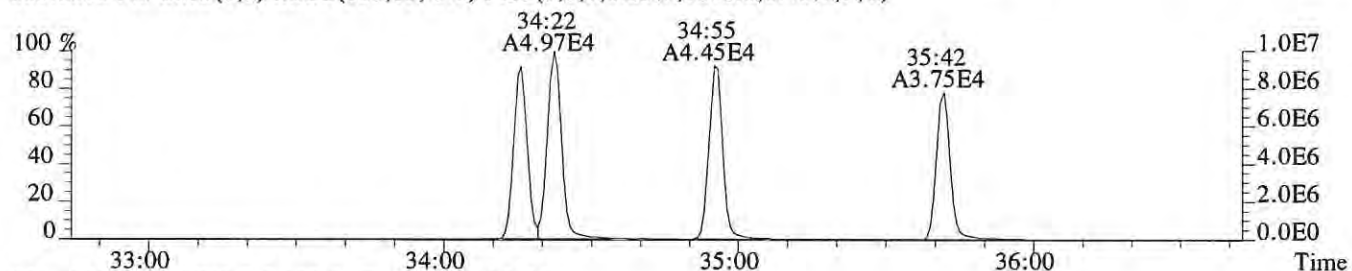
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,908.0,0.40%,F,T)



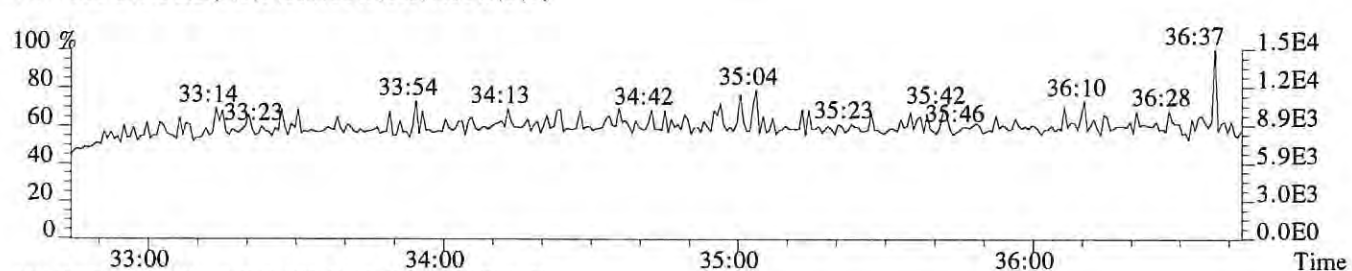
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,804.0,0.40%,F,T)



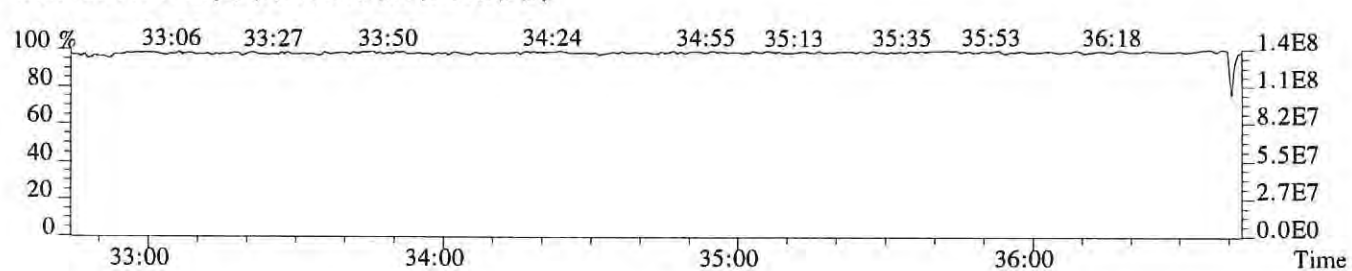
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1616.0,0.40%,F,T)



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

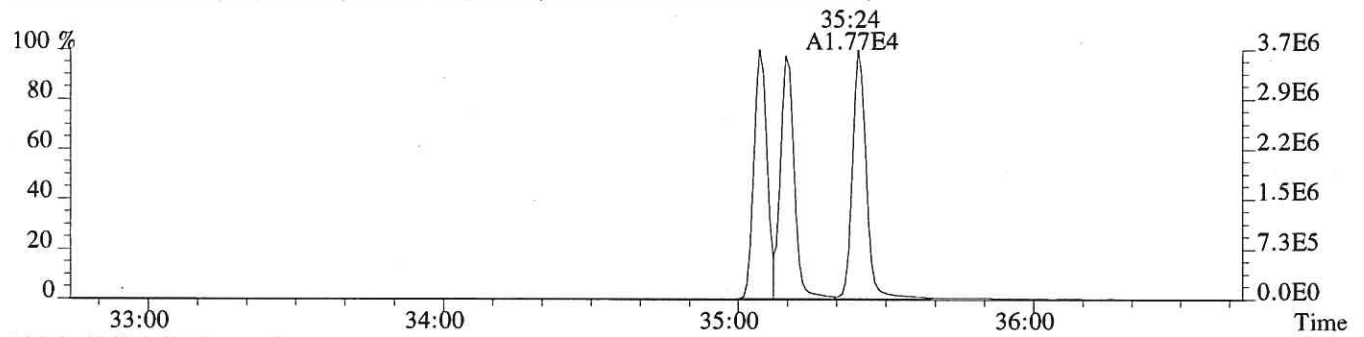


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

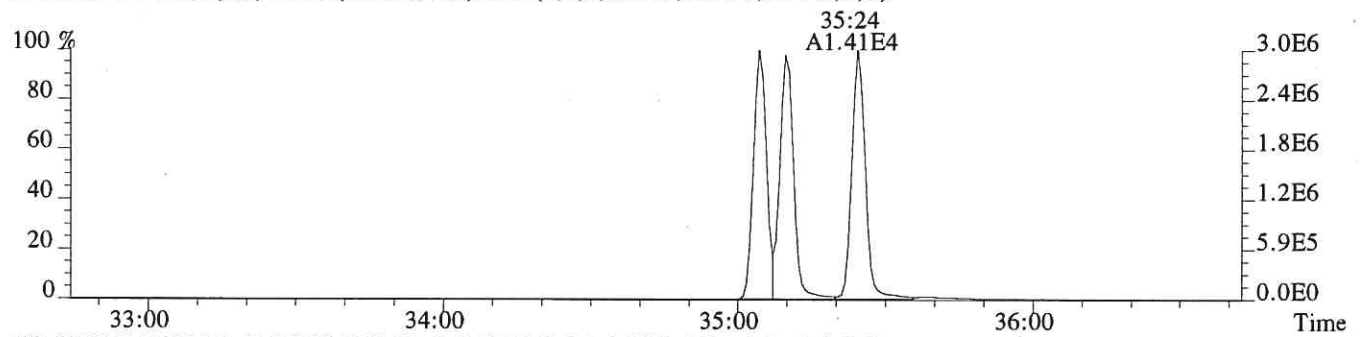


Sample#1 Exp:CS3

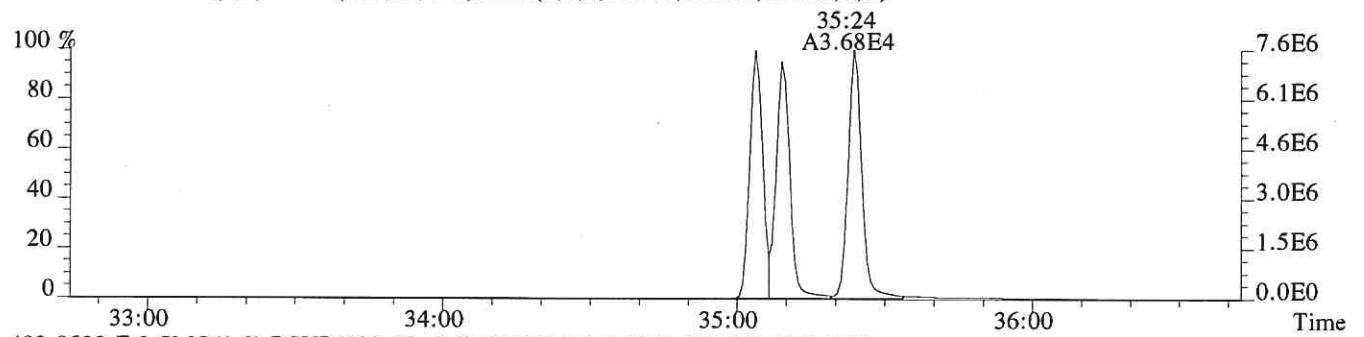
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,916.0,0.40%,F,T)



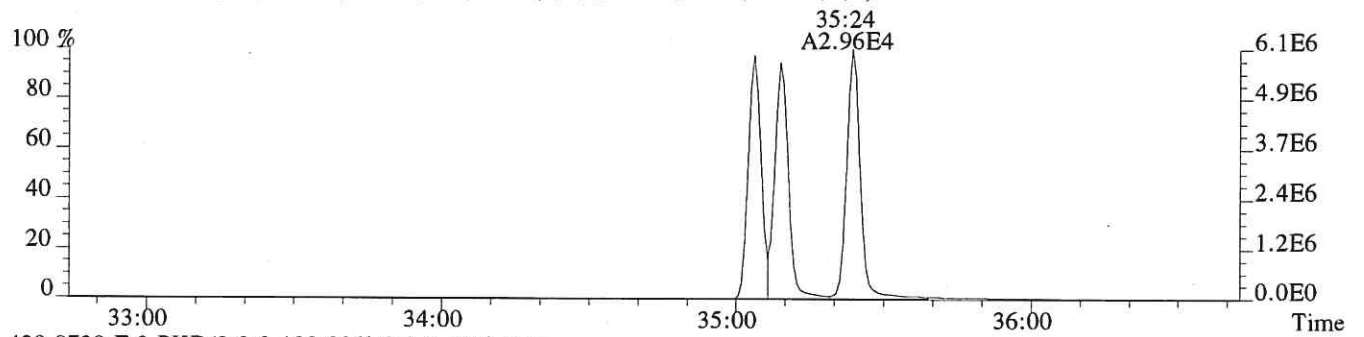
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1160.0,0.40%,F,T)



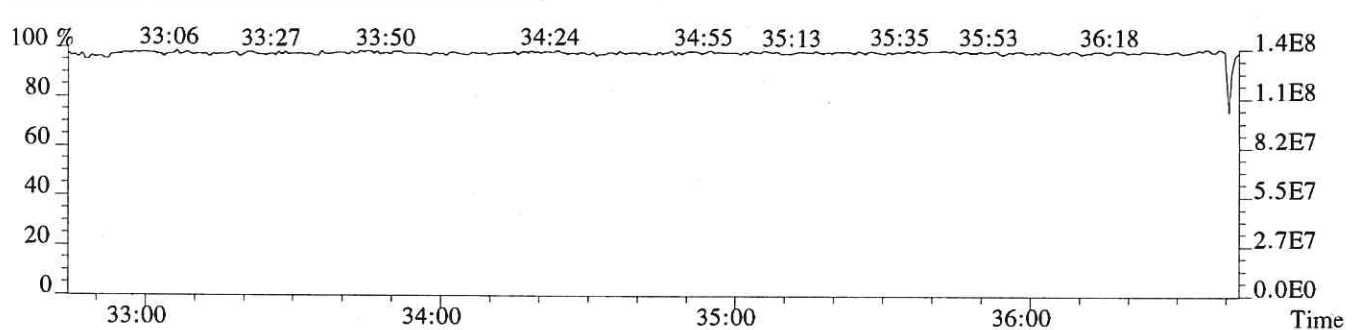
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1084.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,880.0,0.40%,F,T)



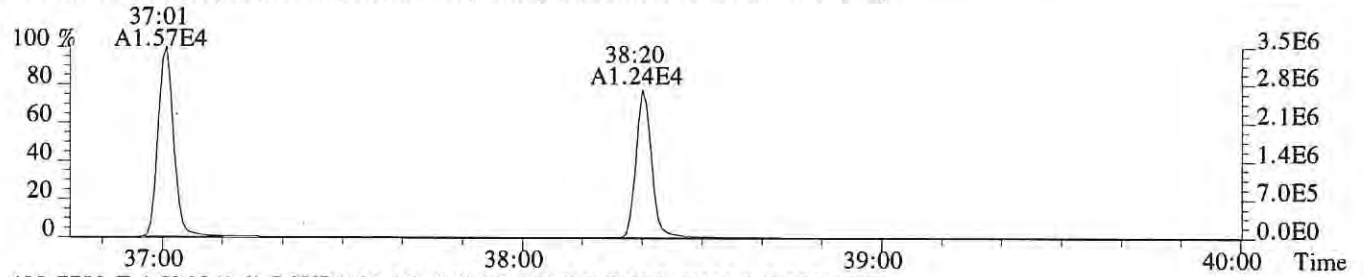
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



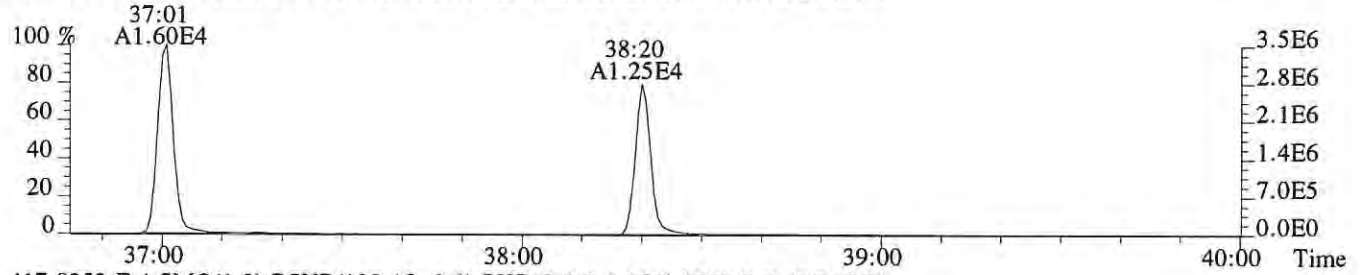
File:P618686 #1-294 Acq:22-AUG-2019 14:31:43 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:CS3

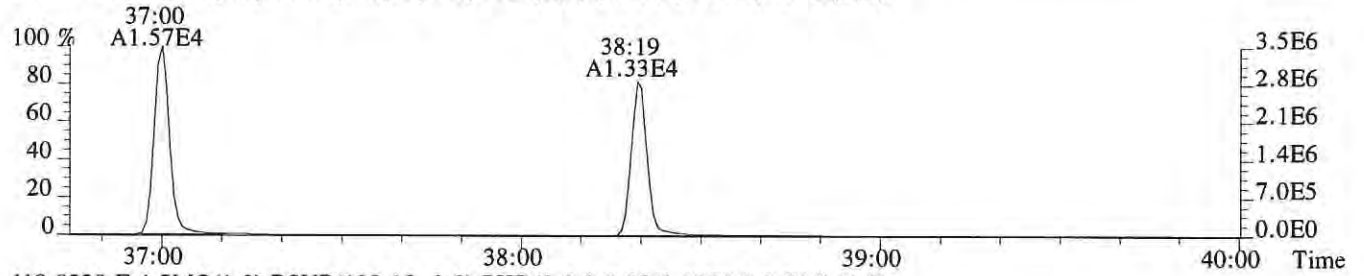
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2320.0,0.50%,F,T)



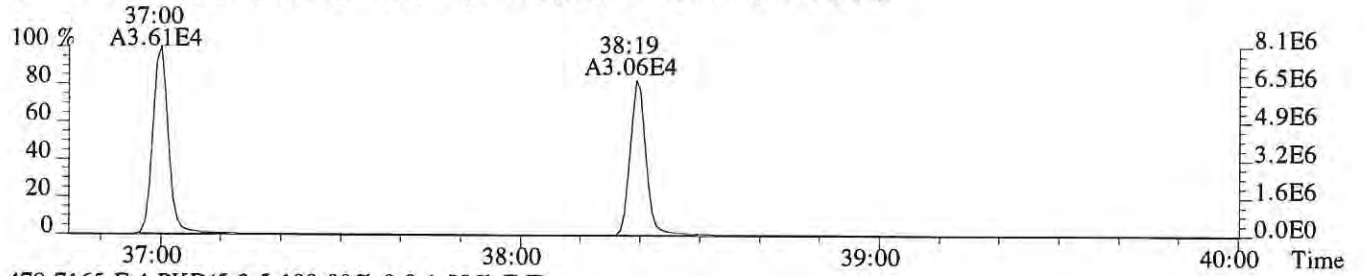
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2844.0,0.50%,F,T)



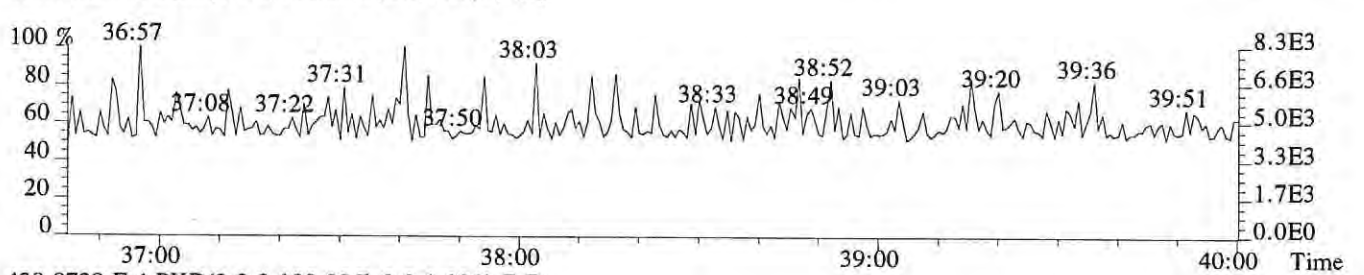
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3588.0,0.50%,F,T)



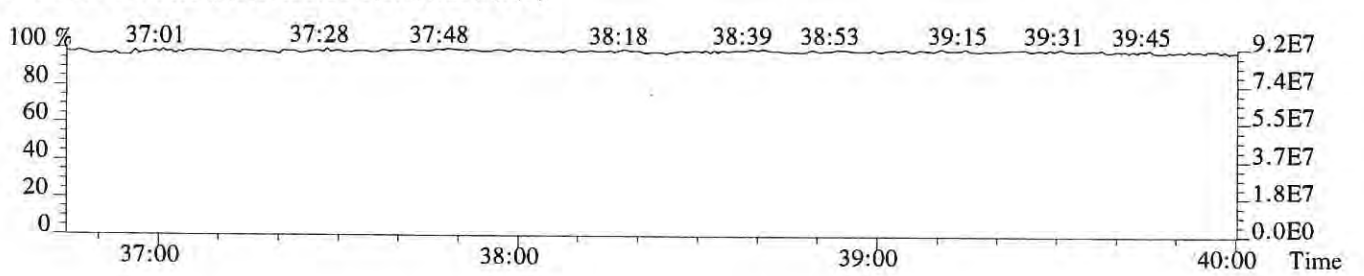
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,9000.0,0.50%,F,T)



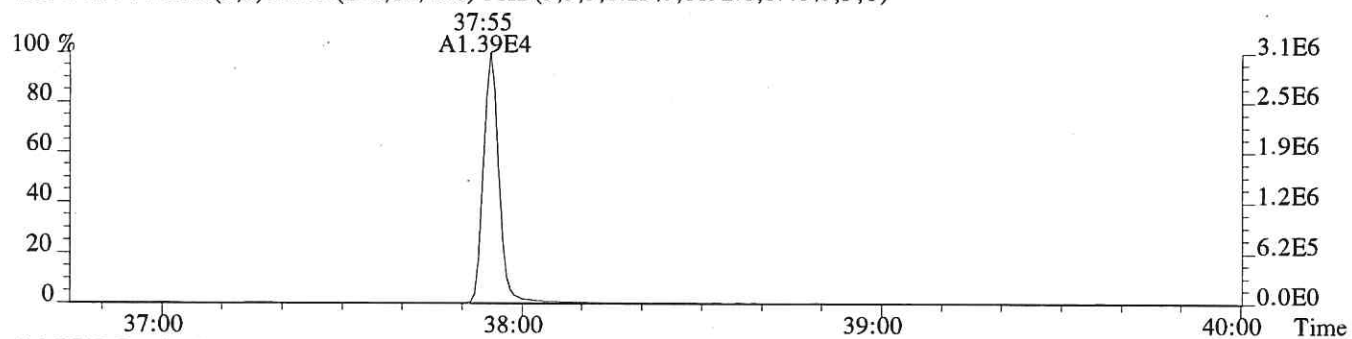
479.7165 F:4 PKD(5,3,5,100.0%,0.0,1.00%,F,F)



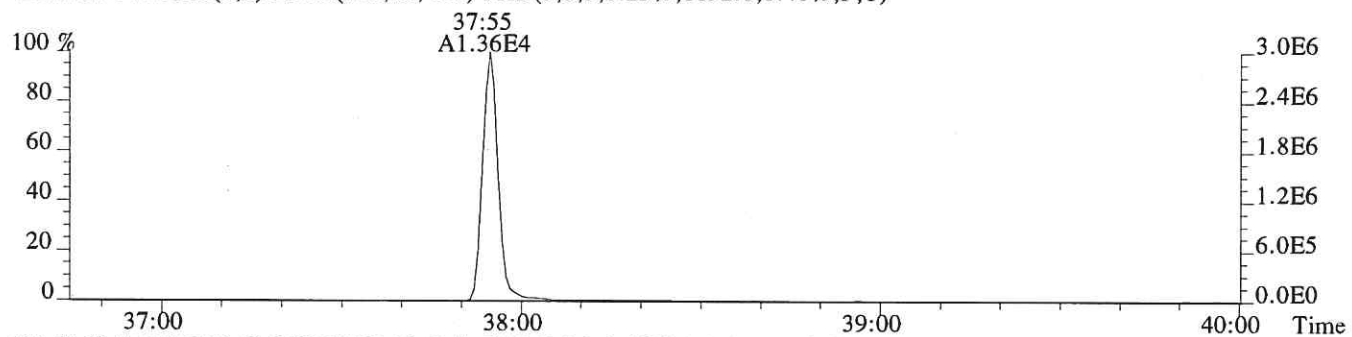
430.9729 F:4 PKD(3,3,3,100.0%,0.0,1.00%,F,F)



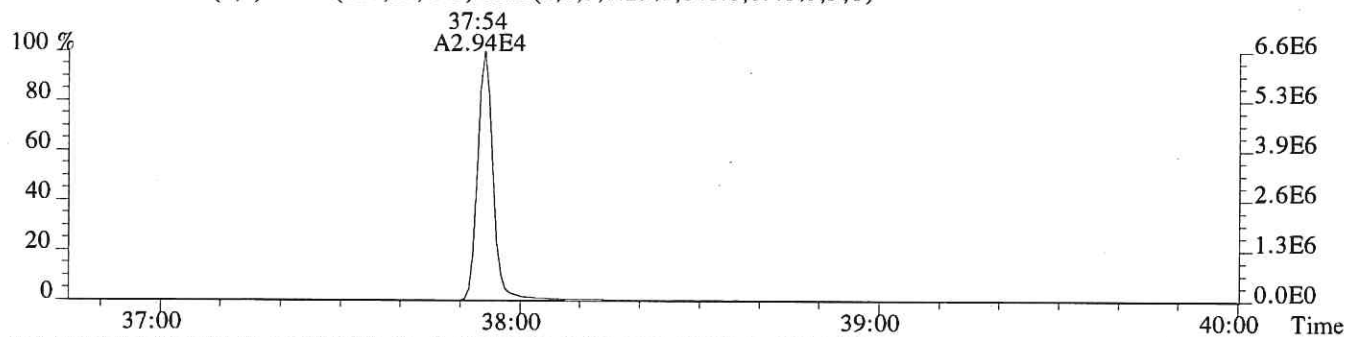
File:P618686 #1-294 Acq:22-AUG-2019 14:31:43 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1192.0,0.40%,F,T)



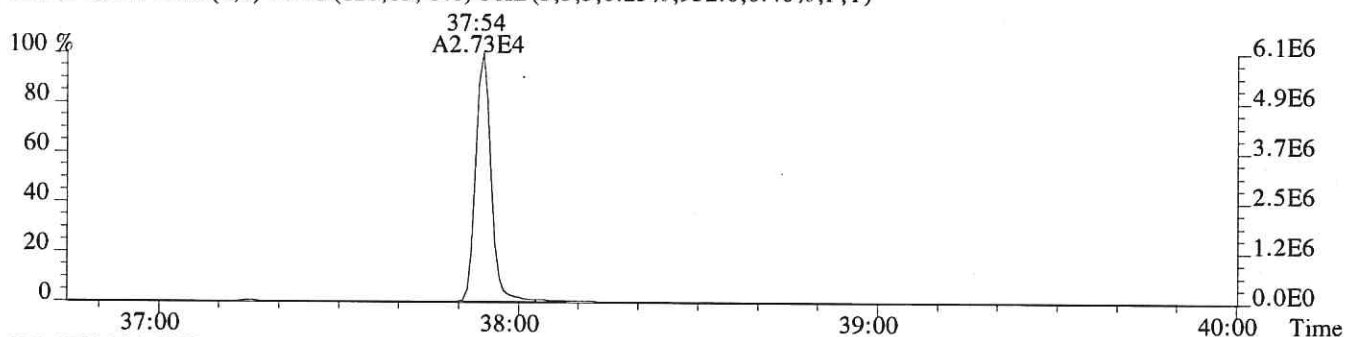
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1192.0,0.40%,F,T)



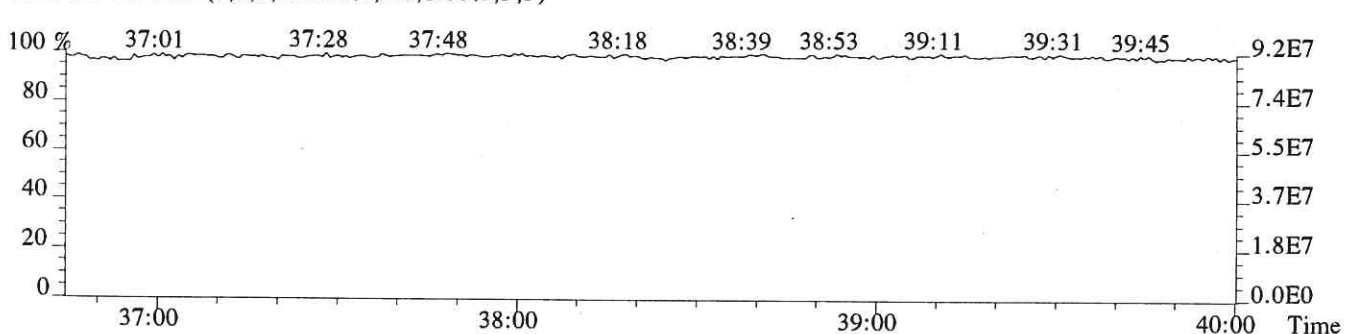
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,840.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,952.0,0.40%,F,T)

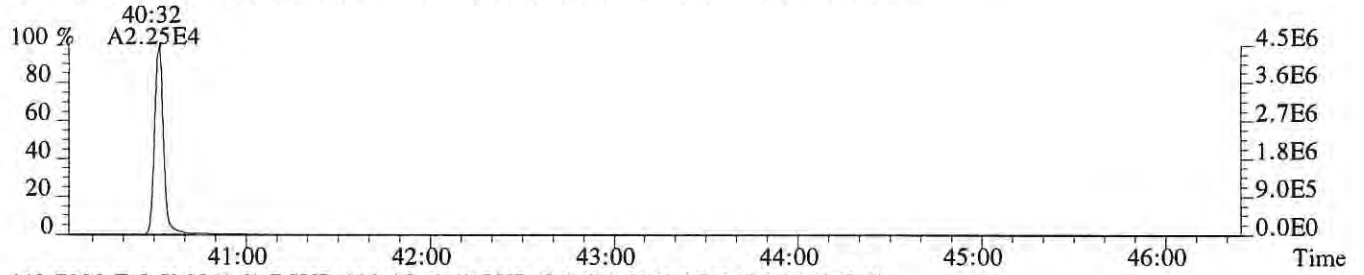


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

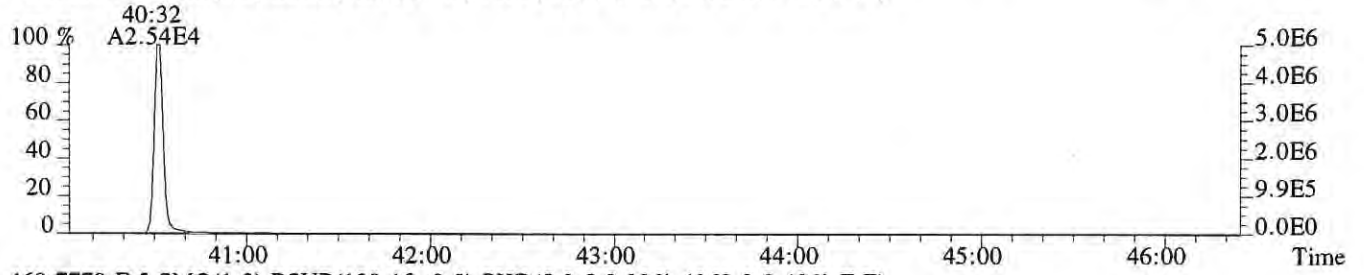


Sample#1 Exp:CS3

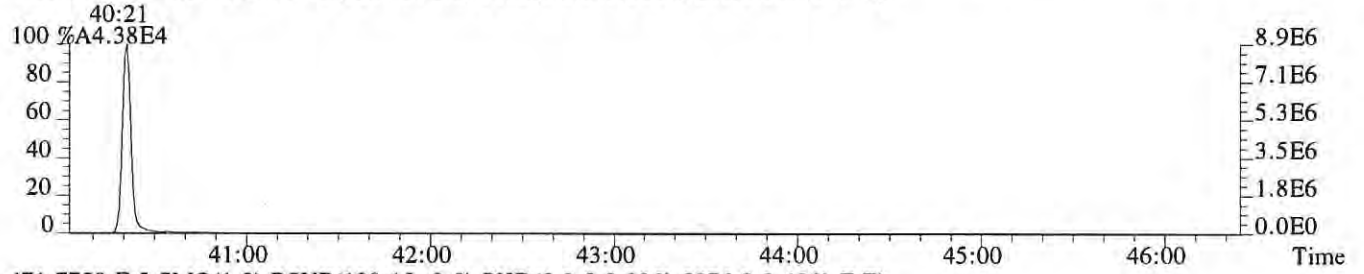
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2916.0,0.40%,F,T)



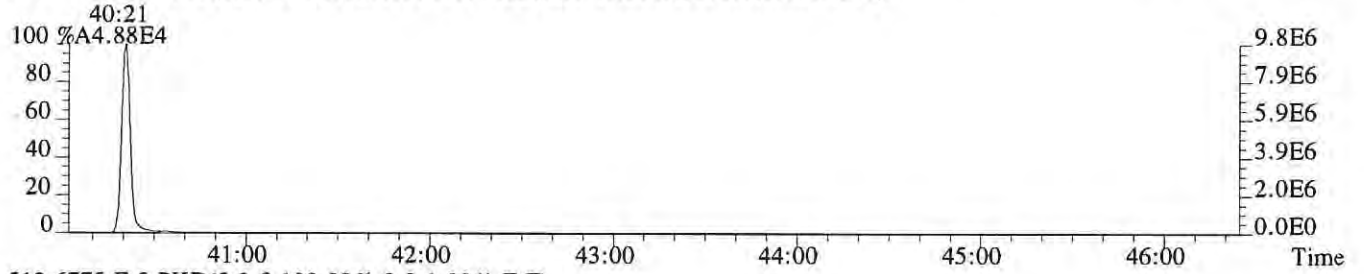
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3792.0,0.40%,F,T)



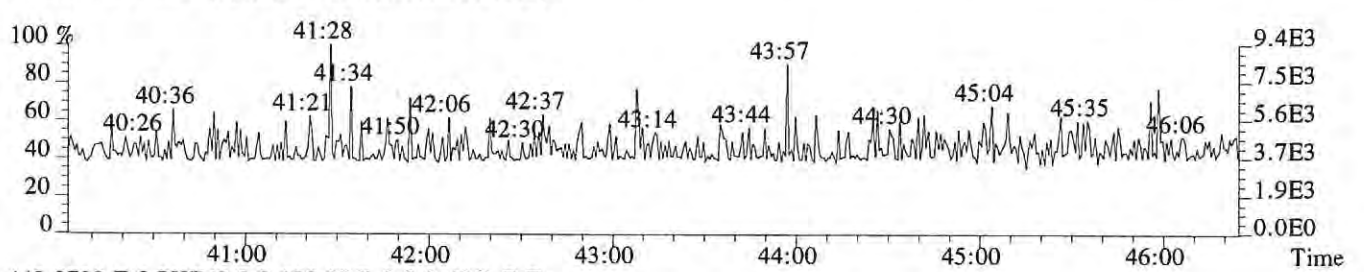
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4260.0,0.40%,F,T)



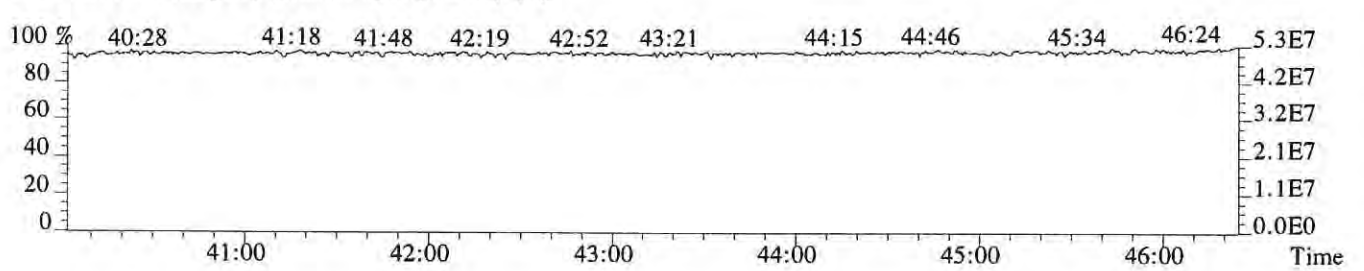
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,5876.0,0.40%,F,T)



513.6775 F:5 PKD(5,3,5,100.0%,0.0,1.00%,F,F)

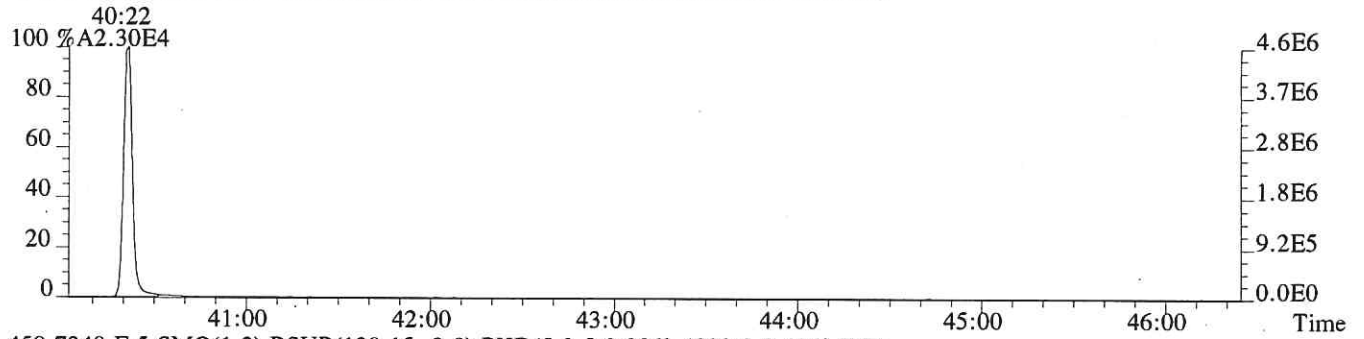


442.9728 F:5 PKD(3,3,3,100.0%,0.0,0.40%,F,F)

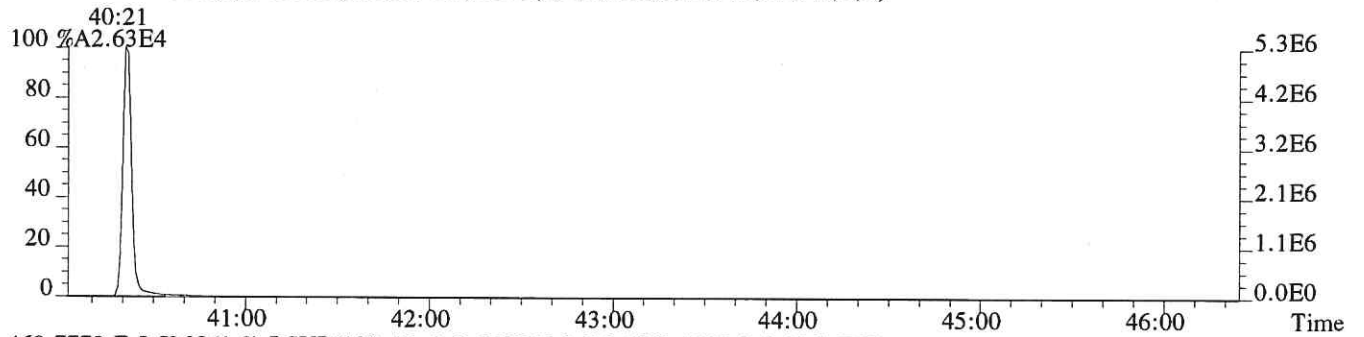


Sample#1 Exp:CS3

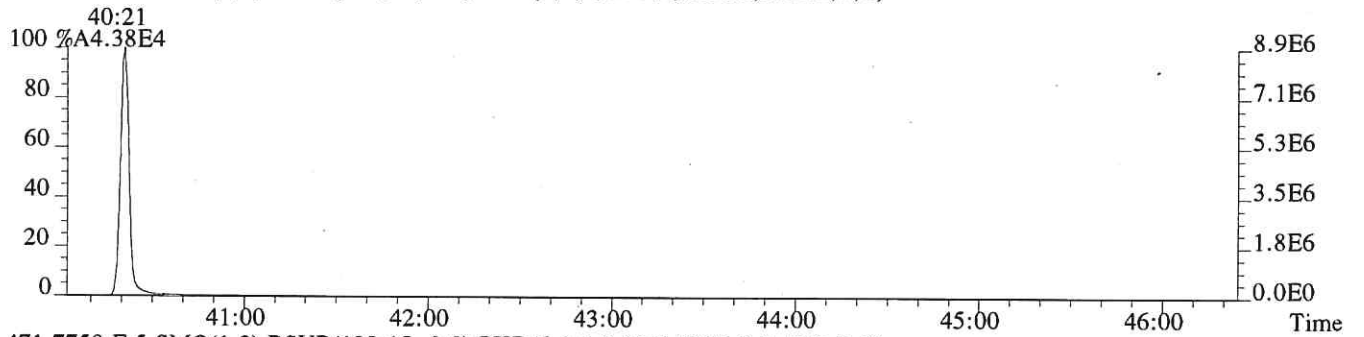
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6064.0,0.40%,F,T)



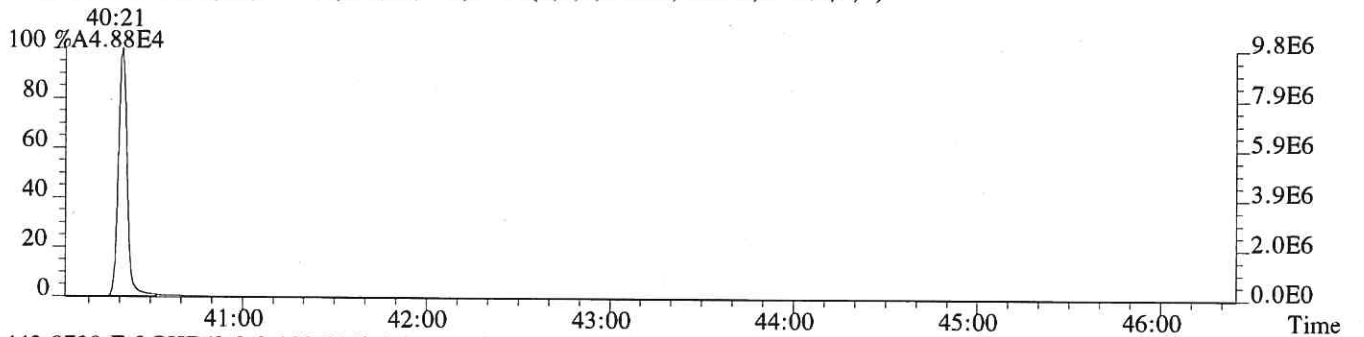
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4032.0,0.40%,F,T)



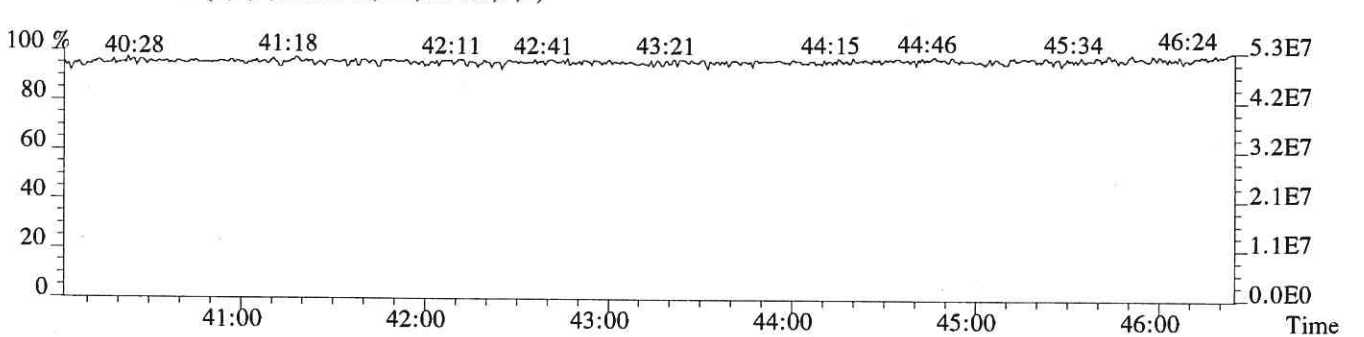
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4260.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,5876.0,0.40%,F,T)



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



USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 08/01/19

Instrument ID: E-HRMS-08

GC Column ID: DB-5MSUI

VER Data Filename: P618698

Analysis Date: 23-AUG-19 Time: 01:27:36

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (4)
2,3,7,8-TCDD	M/M+2	0.75	0.65-0.89	8.5	7.8 - 12.9	-15.1
1,2,3,7,8-PeCDD	M+2/M+4	1.56	1.32-1.78	45	39 - 65	-9.6
1,2,3,4,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	46	39 - 64	-7.8
1,2,3,6,7,8-HxCDD	M+2/M+4	1.22	1.05-1.43	46	39 - 64	-8.3
1,2,3,7,8,9-HxCDD	M+2/M+4	1.24	1.05-1.43	48	41 - 61	-3.2
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.00	0.88-1.20	49	43 - 58	-1.4
OCDD	M+2/M+4	0.86	0.76-1.02	97	79 - 126	-2.8
2,3,7,8-TCDF	M/M+2	0.74	0.65-0.89	9.1	8.4 - 12.0	-8.7
1,2,3,7,8-PeCDF	M+2/M+4	1.50	1.32-1.78	48	41 - 60	-3.7
2,3,4,7,8-PeCDF	M+2/M+4	1.50	1.32-1.78	47	41 - 61	-5.9
1,2,3,4,7,8-HxCDF	M+2/M+4	1.17	1.05-1.43	48	45 - 56	-4.9
1,2,3,6,7,8-HxCDF	M+2/M+4	1.19	1.05-1.43	46	44 - 57	-8.2
1,2,3,7,8,9-HxCDF	M+2/M+4	1.19	1.05-1.43	45	45 - 56	-9.4
2,3,4,6,7,8-HxCDF	M+2/M+4	1.19	1.05-1.43	48	44 - 57	-4.8
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.00	0.88-1.20	49	45 - 55	-2.3
1,2,3,4,7,8,9-HpCDF	M+2/M+4	0.97	0.88-1.20	47	43 - 58	-5.5
OCDF	M+2/M+4	0.89	0.76-1.02	92	63 - 159	-7.6

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range as specified in Table 6, Method 1613B, under VER.

(4) 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, Method 8290

12/2012
1613F4A.FRM

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 08/01/19

Instrument ID: E-HRMS-08

GC Column ID: DB-5MSUI

VER Data Filename: P618698

Analysis Date: 23-AUG-19 Time: 01:27:36

LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (5)
13C-2,3,7,8-TCDD	M/M+2	0.75	0.65-0.89	104	82 - 121	4.2
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.54	1.32-1.78	116	62 - 160	16.0
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	100	85 - 117	0.0
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	96	85 - 118	-3.6
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.05	0.88-1.20	107	72 - 138	7.1
13C-OCDD	M+2/M+4	0.89	0.76-1.02	228	96 - 415	14.0
13C-2,3,7,8-TCDF	M/M+2	0.78	0.65-0.89	88	71 - 140	-11.7
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.57	1.32-1.78	100	76 - 130	0.3
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.58	1.32-1.78	103	77 - 130	2.6
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.52	0.43-0.59	84	76 - 131	-16.1
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.51	0.43-0.59	85	70 - 143	-15.2
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.51	0.43-0.59	97	74 - 135	-2.9
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.50	0.43-0.59	88	73 - 137	-12.2
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.44	0.37-0.51	94	78 - 129	-6.4
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.43	0.37-0.51	102	77 - 129	1.7
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	M+2/M+4			9.5	7.8 - 12.7	-5.3

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range, as specified in Table 6, Method 1613B, under VER.

(4) No ion abundance ratio; report concentration found.

(5) The beginning CCAL %RSD for the labeled standard must not exceed +/- 30% Section 7.7.4.2. The ending CCAL must not exceed +/- 35%, Sec 8.3.2.4 (8290)

12/2012
1613F4B.FRM

ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
201833

Run #8 Filename P618698 Samp: 1 Inj: 1 Acquired: 23-AUG-19 01:27:36
Processed: 23-AUG-19 08:51:27 Sample ID: CS3

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	25:11	3.130e+03	4.205e+03	0.74	yes	no	0.873
2 Unk	1,2,3,7,8-PeCDF	30:19	2.542e+04	1.698e+04	1.50	yes	no	0.864
3 Unk	2,3,4,7,8-PeCDF	31:22	2.271e+04	1.518e+04	1.50	yes	no	0.825
4 Unk	1,2,3,4,7,8-HxCDF	34:15	1.953e+04	1.663e+04	1.17	yes	no	1.084
5 Unk	1,2,3,6,7,8-HxCDF	34:23	2.100e+04	1.765e+04	1.19	yes	no	0.994
6 Unk	2,3,4,6,7,8-HxCDF	34:55	1.890e+04	1.582e+04	1.19	yes	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	35:42	1.570e+04	1.317e+04	1.19	yes	no	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	36:60	1.653e+04	1.646e+04	1.00	yes	no	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	38:20	1.216e+04	1.258e+04	0.97	yes	no	1.104
10 Unk	OCDF	40:31	2.546e+04	2.848e+04	0.89	yes	no	0.993
11 Unk	2,3,7,8-TCDD	26:13	2.968e+03	3.970e+03	0.75	yes	no	0.989
12 Unk	1,2,3,7,8-PeCDD	31:40	2.142e+04	1.376e+04	1.56	yes	no	0.954
13 Unk	1,2,3,4,7,8-HxCDD	35:04	1.865e+04	1.506e+04	1.24	yes	no	1.020
14 Unk	1,2,3,6,7,8-HxCDD	35:09	1.935e+04	1.582e+04	1.22	yes	no	1.030
15 Unk	1,2,3,7,8,9-HxCDD	35:24	1.972e+04	1.591e+04	1.24	yes	no	1.007
16 Unk	1,2,3,4,6,7,8-HpCDD	37:54	1.565e+04	1.569e+04	1.00	yes	no	0.922
17 Unk	OCDD	40:21	2.808e+04	3.259e+04	0.86	yes	no	1.062
18 IS	13C-2,3,7,8-TCDF	25:10	4.037e+04	5.168e+04	0.78	yes	no	1.102
19 IS	13C-1,2,3,7,8-PeCDF	30:18	6.226e+04	3.964e+04	1.57	yes	no	1.074
20 IS	13C-2,3,4,7,8-PeCDF	31:21	5.970e+04	3.787e+04	1.58	yes	no	1.005
21 IS	13C-1,2,3,4,7,8-HxCDF	34:15	2.405e+04	4.615e+04	0.52	yes	no	1.059
22 IS	13C-1,2,3,6,7,8-HxCDF	34:22	2.856e+04	5.611e+04	0.51	yes	no	1.264
23 IS	13C-2,3,4,6,7,8-HxCDF	34:55	2.469e+04	4.925e+04	0.50	yes	no	1.066
24 IS	13C-1,2,3,7,8,9-HxCDF	35:41	2.070e+04	4.074e+04	0.51	yes	no	0.801
25 IS	13C-1,2,3,4,6,7,8-HpCDF	36:59	1.772e+04	4.063e+04	0.44	yes	no	0.789
26 IS	13C-1,2,3,4,7,8,9-HpCDF	38:19	1.429e+04	3.315e+04	0.43	yes	no	0.590
27 IS	13C-2,3,7,8-TCDD	26:11	3.554e+04	4.710e+04	0.75	yes	no	0.839
28 IS	13C-1,2,3,7,8-PeCDD	31:40	4.949e+04	3.211e+04	1.54	yes	no	0.744
29 IS	13C-1,2,3,4,7,8-HxCDD	35:03	3.976e+04	3.191e+04	1.25	yes	no	0.907
30 IS	13C-1,2,3,6,7,8-HxCDD	35:09	4.137e+04	3.313e+04	1.25	yes	no	0.978
31 IS	13C-1,2,3,4,6,7,8-HpCDD	37:54	3.530e+04	3.363e+04	1.05	yes	no	0.814
32 IS	13C-OCDD	40:20	5.538e+04	6.211e+04	0.89	yes	no	0.653
33 RS/RT	13C-1,2,3,4-TCDD	25:26	4.096e+04	5.364e+04	0.76	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	35:23	4.356e+04	3.543e+04	1.23	yes	no	-
35 C/Up	37C1-2,3,7,8-TCDD	26:13	8.010e+03				no	0.894

ALS ENVIRONMENTAL
10450 Stancliff Rd., Suite 115
Houston, TX 77099
Office (281) 530-5656. Fax (281) 530-5887

ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
201833

Run #8 Filename P618698 Samp: 1 Inj: 1 Acquired: 23-AUG-19 01:27:36
Processed: 23-AUG-19 08:51:27 LAB. ID: CS3

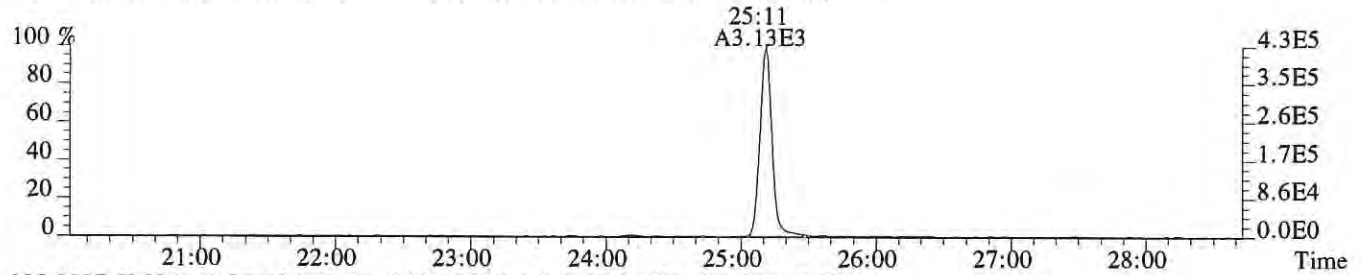
	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	4.32e+05	5.76e+02	7.5e+02	5.90e+05	2.25e+03	2.6e+02
2	1,2,3,7,8-PeCDF	4.26e+06	4.28e+02	1.0e+04	2.90e+06	1.03e+03	2.8e+03
3	2,3,4,7,8-PeCDF	4.07e+06	4.28e+02	9.5e+03	2.75e+06	1.03e+03	2.7e+03
4	1,2,3,4,7,8-HxCDF	4.04e+06	1.34e+03	3.0e+03	3.44e+06	1.44e+03	2.4e+03
5	1,2,3,6,7,8-HxCDF	4.09e+06	1.34e+03	3.0e+03	3.45e+06	1.44e+03	2.4e+03
6	2,3,4,6,7,8-HxCDF	3.93e+06	1.34e+03	2.9e+03	3.27e+06	1.44e+03	2.3e+03
7	1,2,3,7,8,9-HxCDF	3.07e+06	1.34e+03	2.3e+03	2.57e+06	1.44e+03	1.8e+03
8	1,2,3,4,6,7,8-HpCDF	3.47e+06	2.41e+03	1.4e+03	3.51e+06	4.95e+03	7.1e+02
9	1,2,3,4,7,8,9-HpCDF	2.68e+06	2.41e+03	1.1e+03	2.75e+06	4.95e+03	5.6e+02
10	OCDF	5.03e+06	2.98e+03	1.7e+03	5.55e+06	8.12e+03	6.8e+02
11	2,3,7,8-TCDD	4.30e+05	2.85e+03	1.5e+02	5.63e+05	1.50e+03	3.7e+02
12	1,2,3,7,8-PeCDD	3.78e+06	9.60e+02	3.9e+03	2.44e+06	4.60e+02	5.3e+03
13	1,2,3,4,7,8-HxCDD	4.13e+06	1.22e+03	3.4e+03	3.30e+06	1.02e+03	3.3e+03
14	1,2,3,6,7,8-HxCDD	3.91e+06	1.22e+03	3.2e+03	3.20e+06	1.02e+03	3.1e+03
15	1,2,3,7,8,9-HxCDD	3.93e+06	1.22e+03	3.2e+03	3.11e+06	1.02e+03	3.1e+03
16	1,2,3,4,6,7,8-HpCDD	3.37e+06	1.15e+03	2.9e+03	3.32e+06	6.32e+02	5.3e+03
17	OCDD	5.50e+06	2.29e+03	2.4e+03	6.38e+06	7.46e+03	8.6e+02
18	13C-2,3,7,8-TCDF	5.52e+06	1.84e+04	3.0e+02	6.99e+06	7.07e+03	9.9e+02
19	13C-1,2,3,7,8-PeCDF	1.01e+07	6.40e+02	1.6e+04	6.41e+06	5.80e+02	1.1e+04
20	13C-2,3,4,7,8-PeCDF	1.06e+07	6.40e+02	1.7e+04	6.78e+06	5.80e+02	1.2e+04
21	13C-1,2,3,4,7,8-HxCDF	5.03e+06	8.20e+02	6.1e+03	9.72e+06	2.00e+03	4.8e+03
22	13C-1,2,3,6,7,8-HxCDF	5.39e+06	8.20e+02	6.6e+03	1.04e+07	2.00e+03	5.2e+03
23	13C-2,3,4,6,7,8-HxCDF	5.15e+06	8.20e+02	6.3e+03	1.03e+07	2.00e+03	5.1e+03
24	13C-1,2,3,7,8,9-HxCDF	4.04e+06	8.20e+02	4.9e+03	7.89e+06	2.00e+03	3.9e+03
25	13C-1,2,3,4,6,7,8-HpCDF	3.67e+06	5.63e+03	6.5e+02	8.47e+06	6.40e+03	1.3e+03
26	13C-1,2,3,4,7,8,9-HpCDF	3.11e+06	5.63e+03	5.5e+02	7.13e+06	6.40e+03	1.1e+03
27	13C-2,3,7,8-TCDD	5.13e+06	9.25e+03	5.5e+02	6.88e+06	3.47e+03	2.0e+03
28	13C-1,2,3,7,8-PeCDD	8.69e+06	1.37e+03	6.3e+03	5.63e+06	1.56e+03	3.6e+03
29	13C-1,2,3,4,7,8-HxCDD	8.57e+06	1.67e+03	5.1e+03	6.85e+06	1.09e+03	6.3e+03
30	13C-1,2,3,6,7,8-HxCDD	8.31e+06	1.67e+03	5.0e+03	6.71e+06	1.09e+03	6.1e+03
31	13C-1,2,3,4,6,7,8-HpCDD	7.53e+06	1.07e+03	7.0e+03	7.19e+06	3.36e+02	2.1e+04
32	13C-OCDD	1.08e+07	1.01e+04	1.1e+03	1.21e+07	8.72e+03	1.4e+03
33	13C-1,2,3,4-TCDD	5.61e+06	9.25e+03	6.1e+02	7.39e+06	3.47e+03	2.1e+03
34	13C-1,2,3,7,8,9-HxCDD	8.61e+06	1.67e+03	5.2e+03	6.94e+06	1.09e+03	6.4e+03
35	37Cl-2,3,7,8-TCDD	1.18e+06	3.41e+03	3.5e+02			

---Sample Calculation---

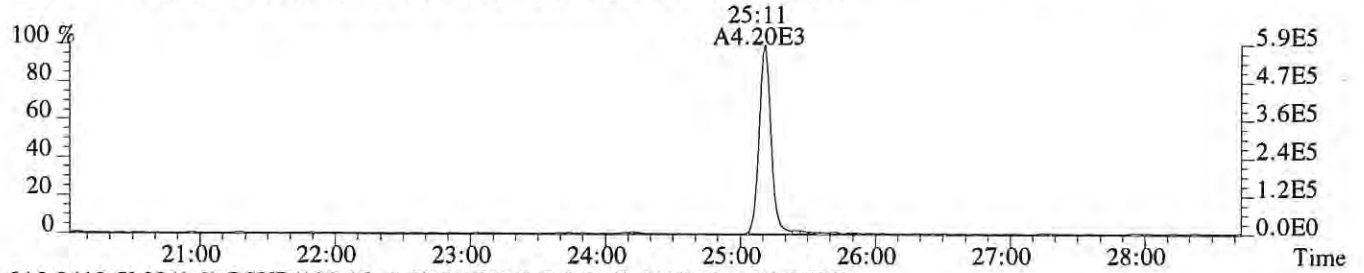
$$D/L \text{ TCDD} = \frac{2.5 \times (2.848e+03 + 1.504e+03) \times 100}{(5.134e+06 + 6.884e+06) \times () \times 0.989} =$$

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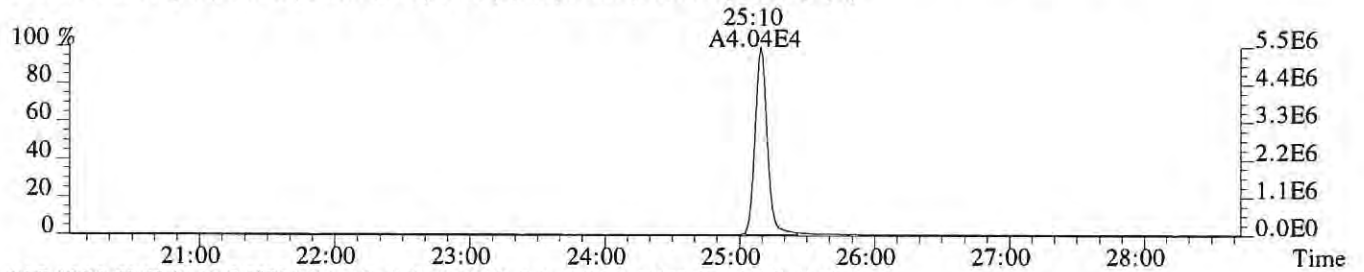
File:P618698 #1-616 Acq:23-AUG-2019 01:27:36 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:CS3
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,576.0,1.00%,F,T)



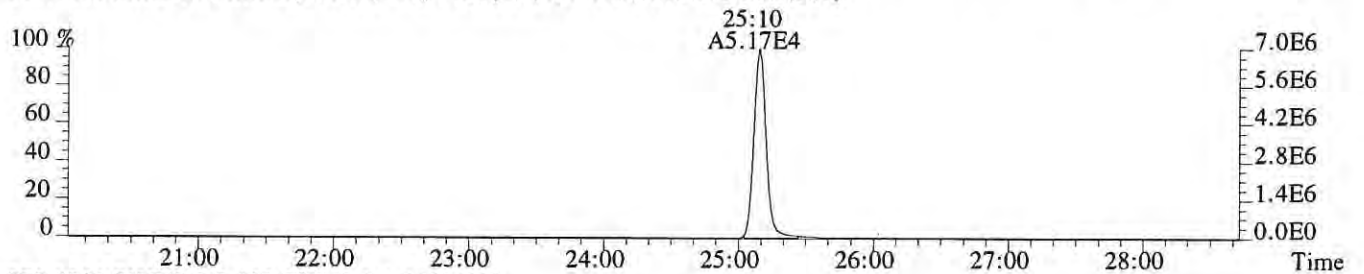
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2252.0,1.00%,F,T)



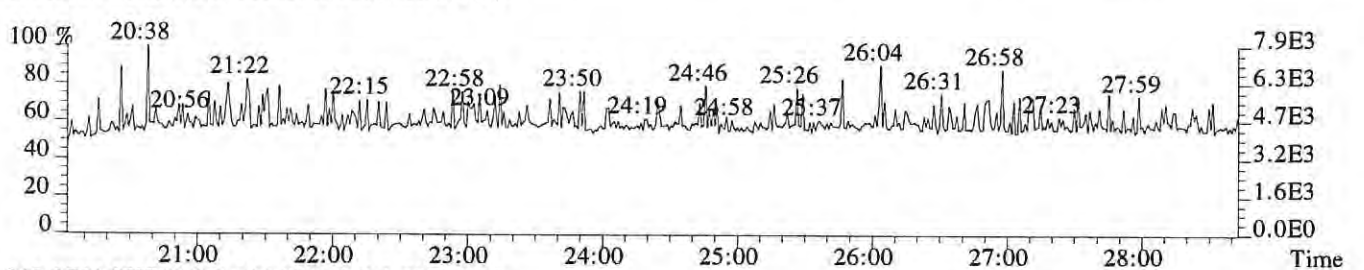
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,18388.0,1.00%,F,T)



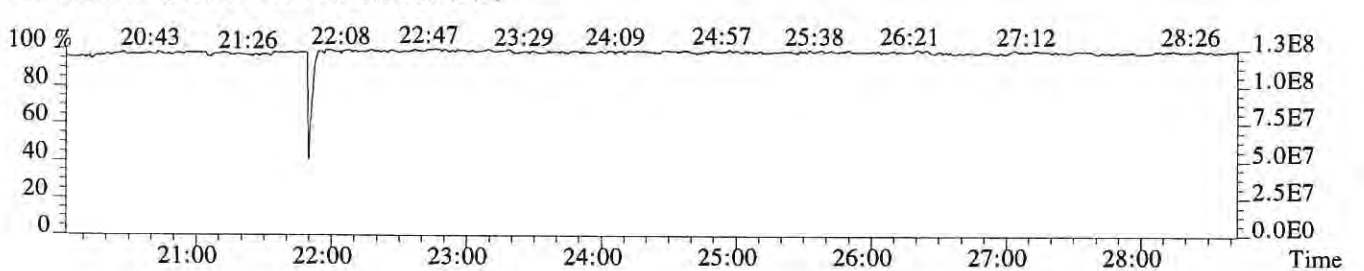
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,7072.0,1.00%,F,T)



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

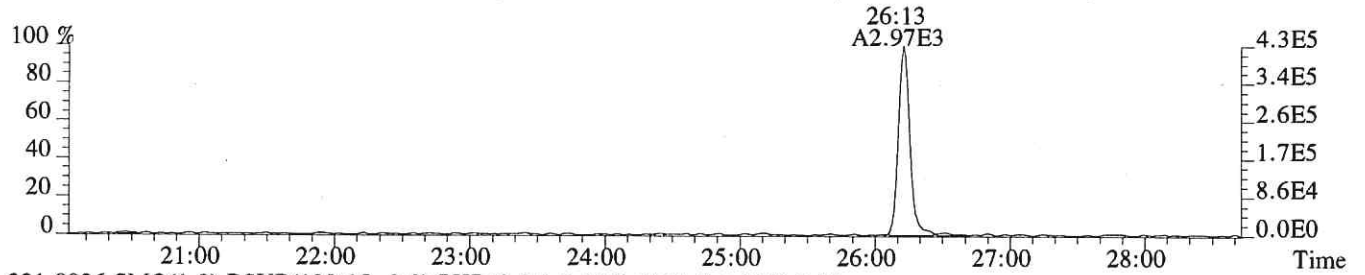


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

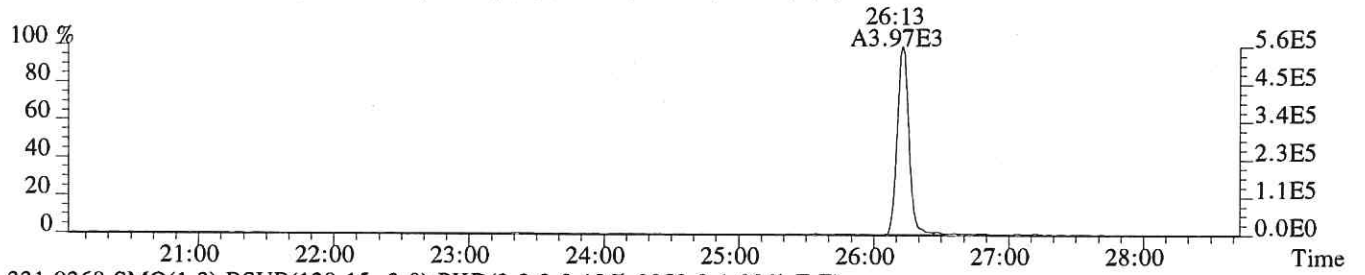


Sample#1 Exp:CS3

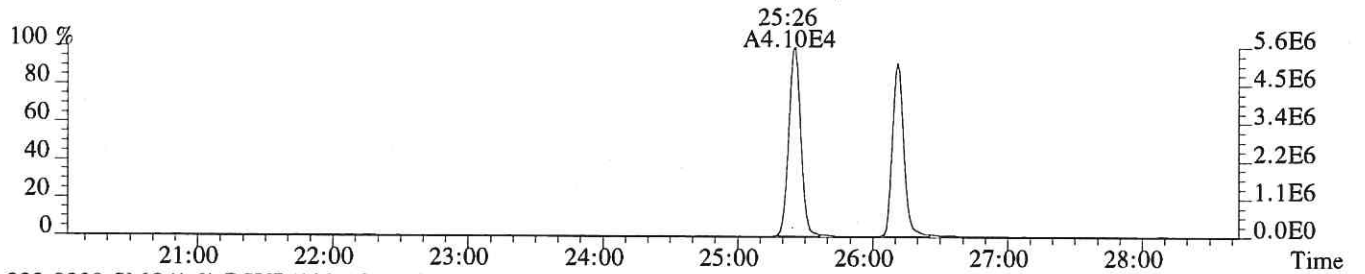
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2848.0,1.00%,F,T)



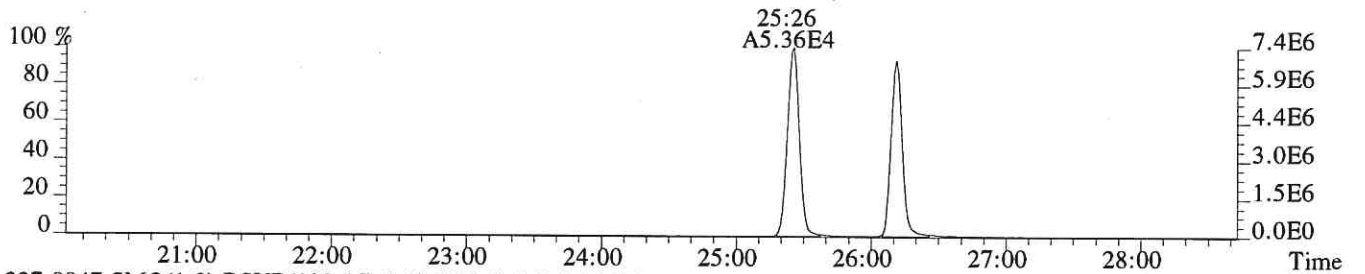
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1504.0,1.00%,F,T)



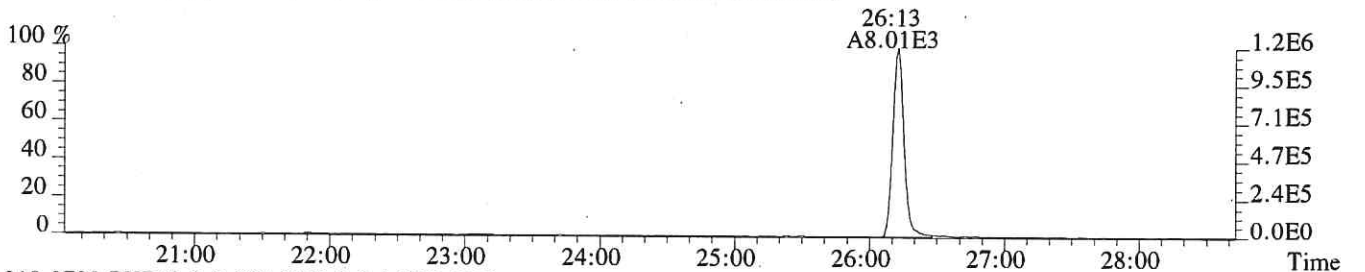
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,9252.0,1.00%,F,T)



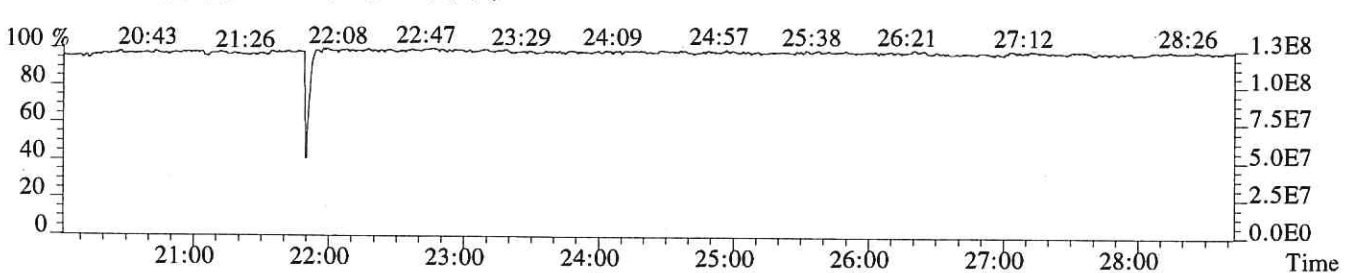
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3468.0,1.00%,F,T)



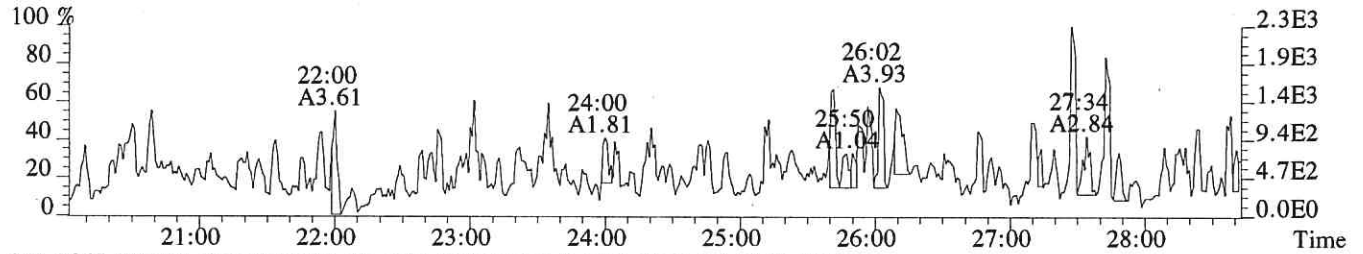
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3408.0,1.00%,F,T)



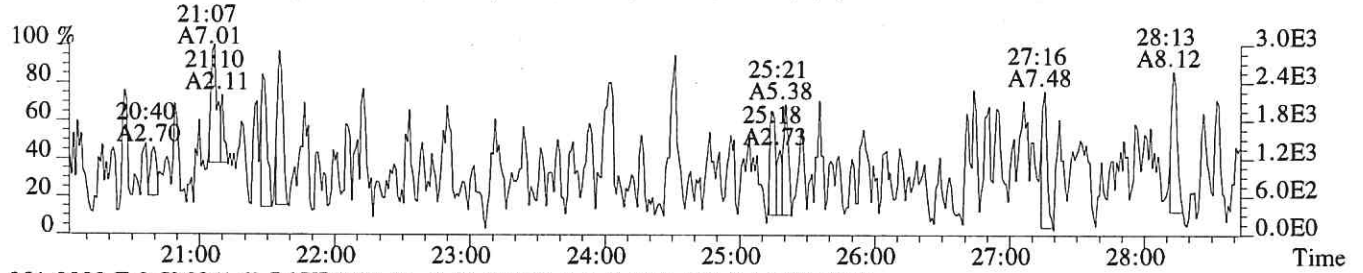
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



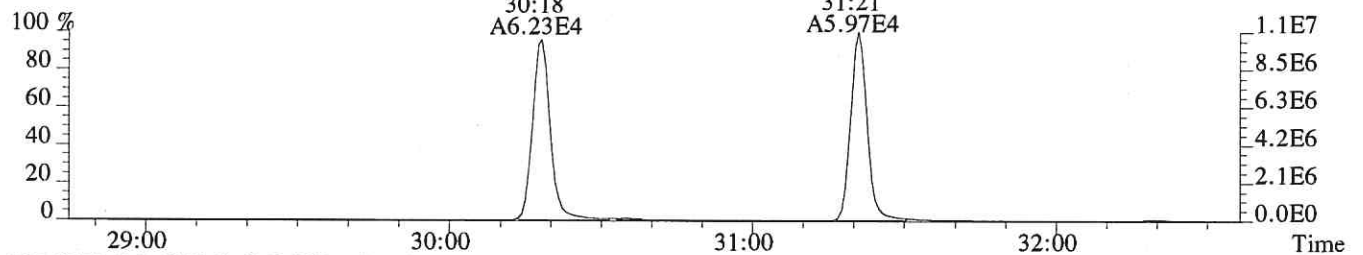
File:P618698 #1-616 Acq:23-AUG-2019 01:27:36 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,632.0,1.00%,F,T)



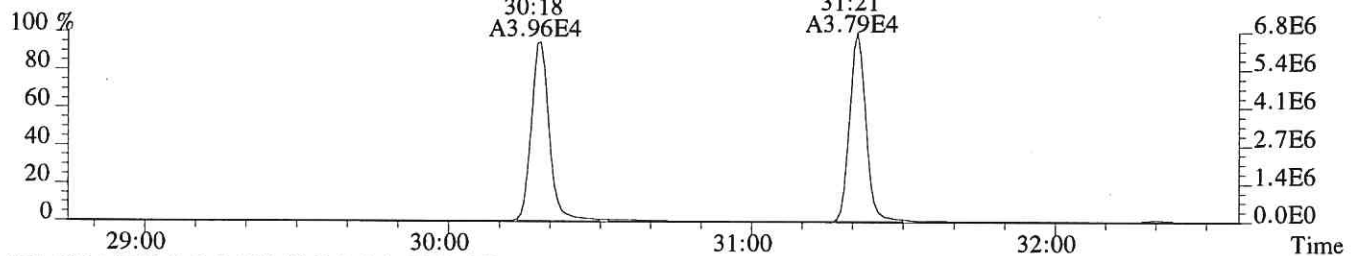
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1168.0,1.00%,F,T)



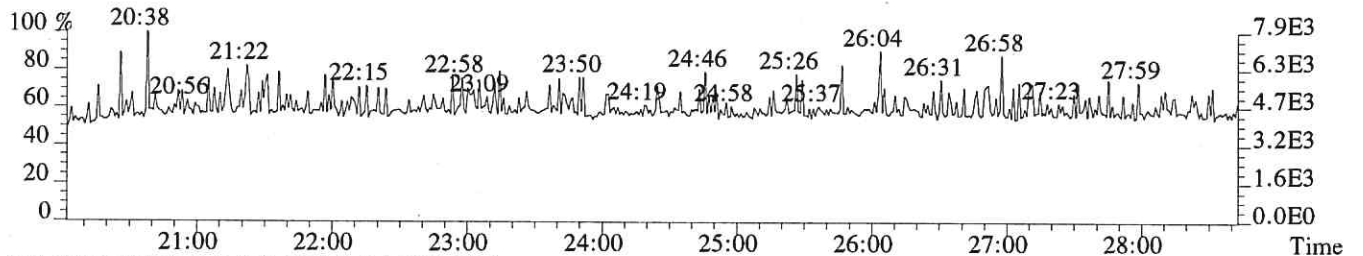
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,640.0,1.00%,F,T)



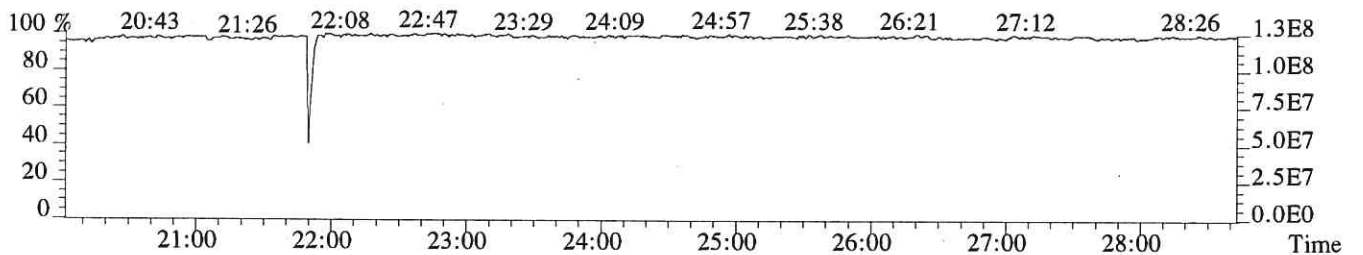
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,580.0,1.00%,F,T)



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

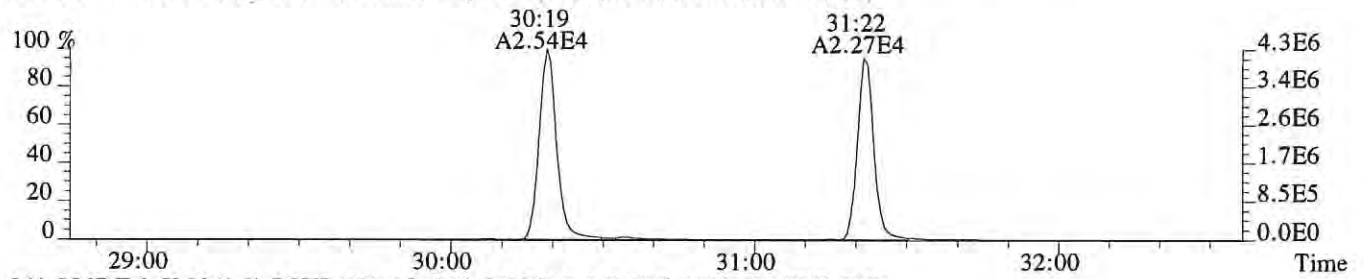


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

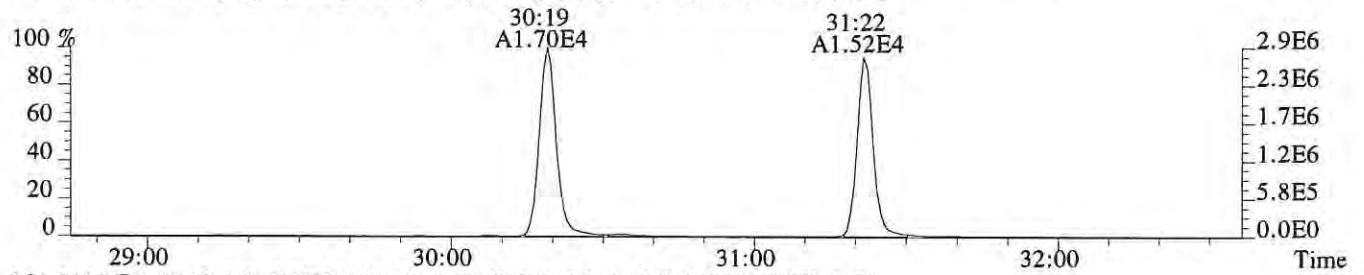


Sample#1 Exp:CS3

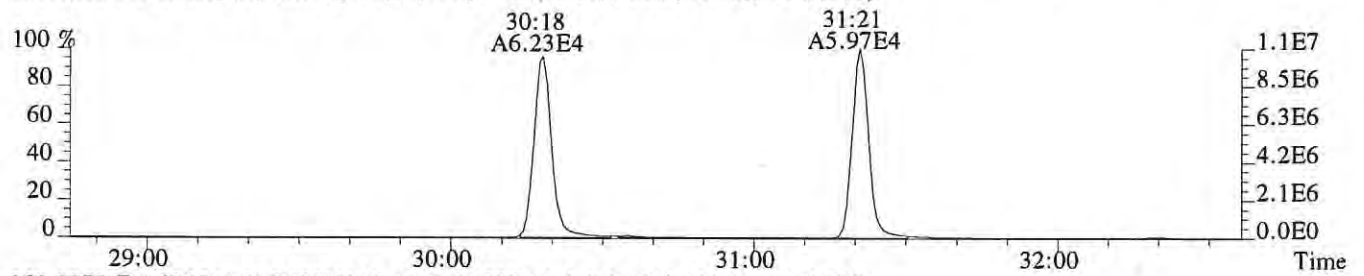
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,428.0,1.00%,F,T)



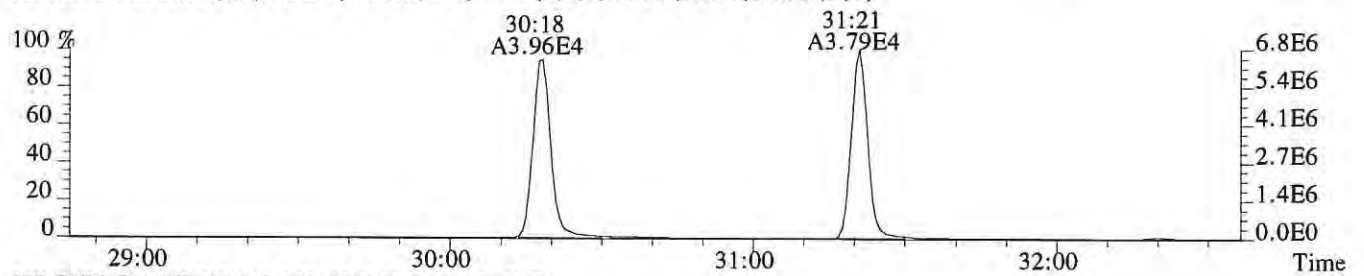
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1032.0,1.00%,F,T)



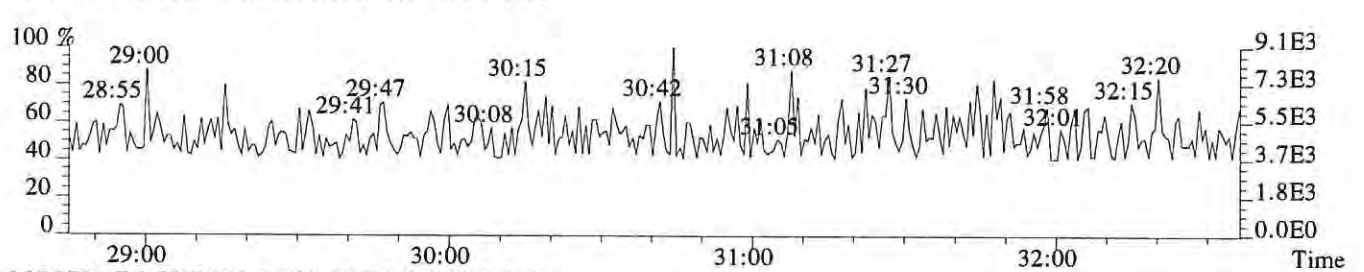
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,640.0,1.00%,F,T)



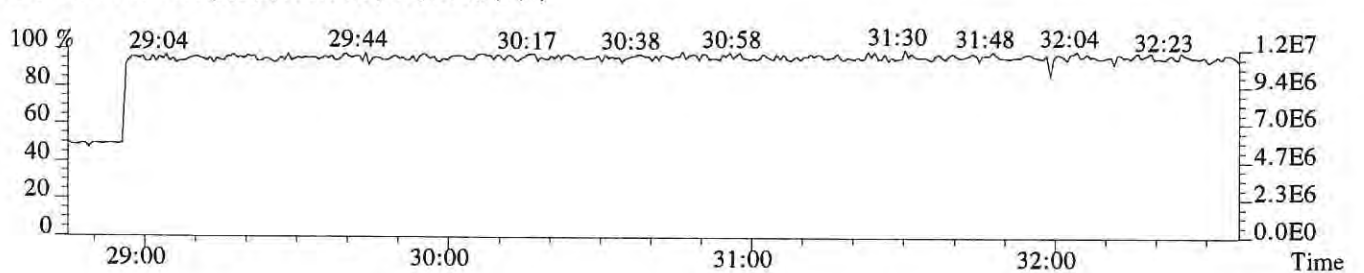
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,580.0,1.00%,F,T)



409.7974 F:2 PKD(5,3,5,100.0%,0.0,1.00%,F,F)

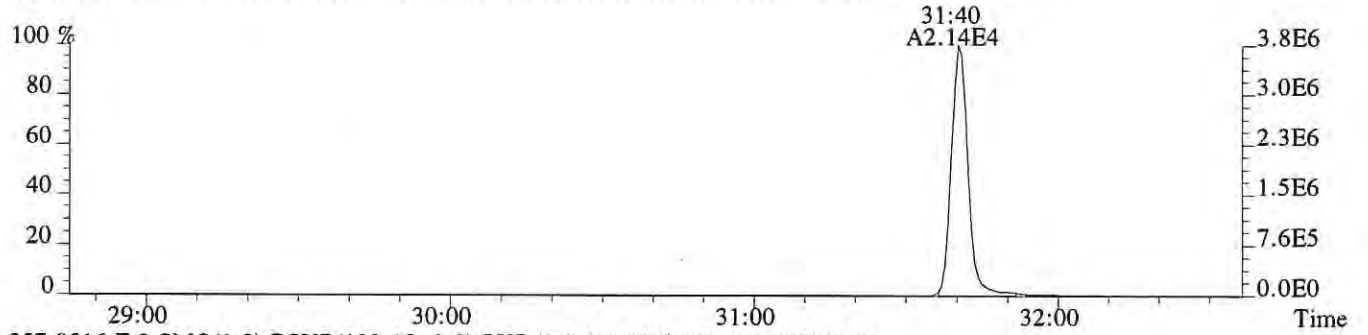


366.9792 F:2 PKD(3,3,3,100.0%,0.0,1.00%,F,F)

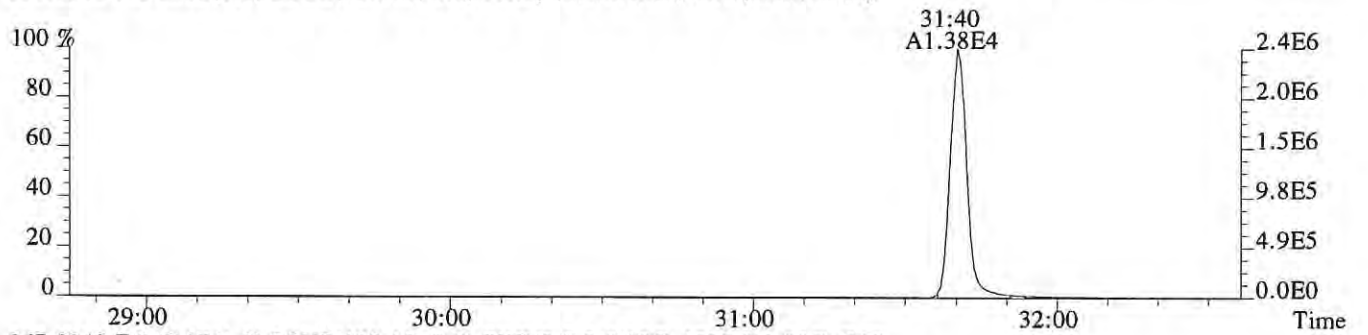


Sample#1 Exp:CS3

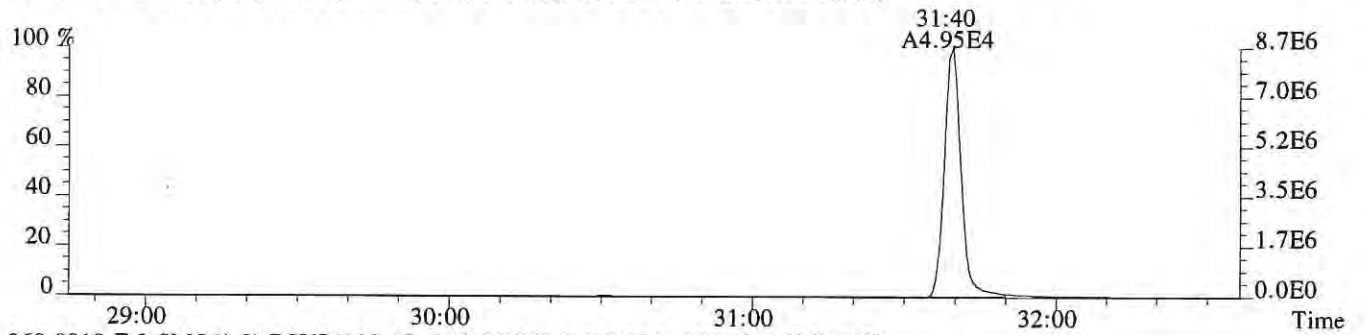
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,960.0,1.00%,F,T)



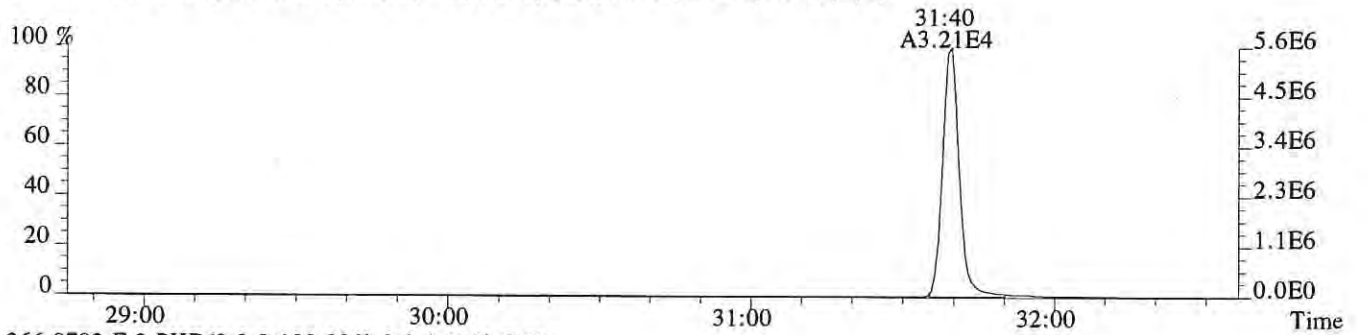
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,460.0,1.00%,F,T)



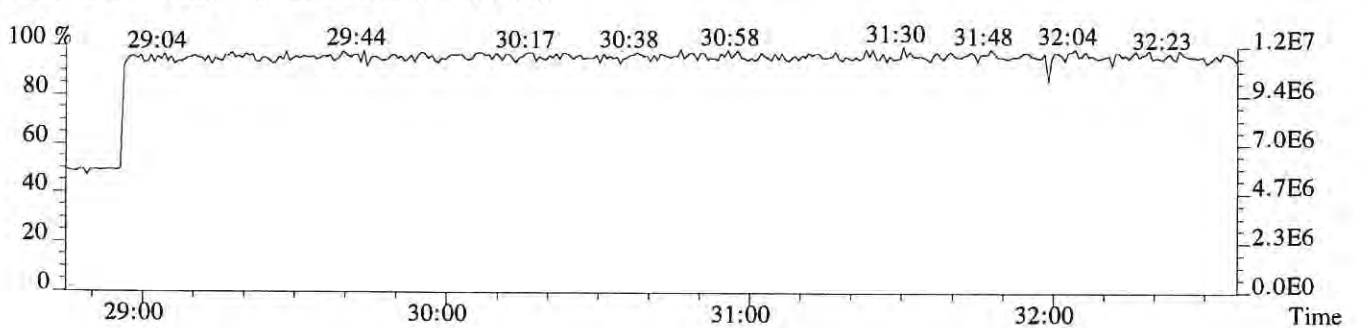
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1372.0,1.00%,F,T)



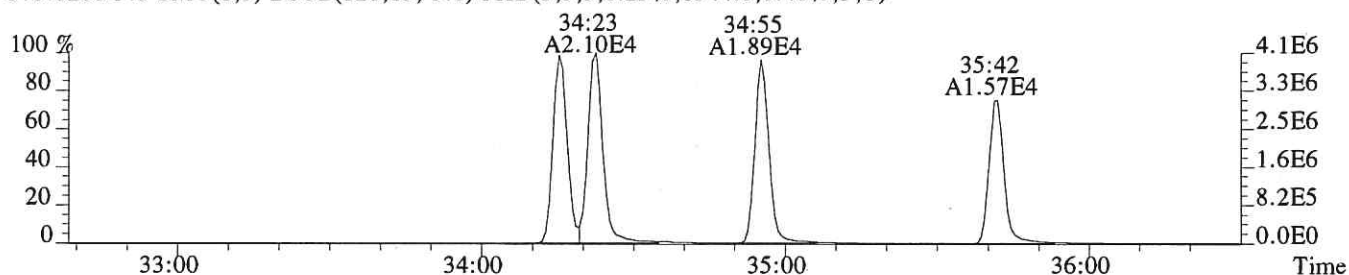
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1564.0,1.00%,F,T)



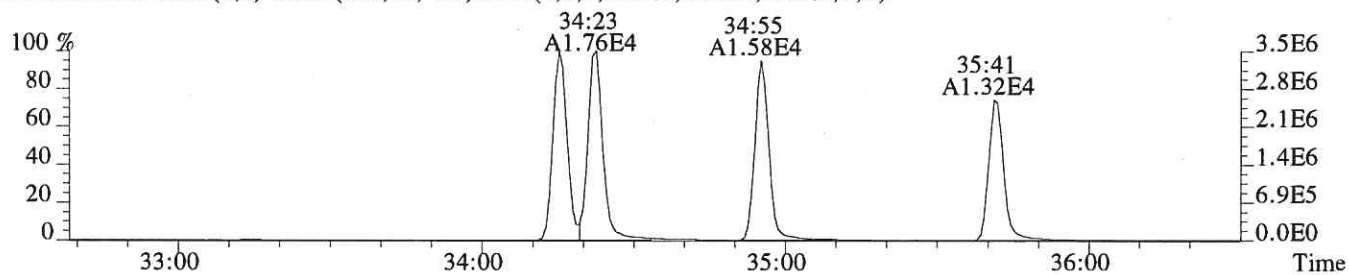
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



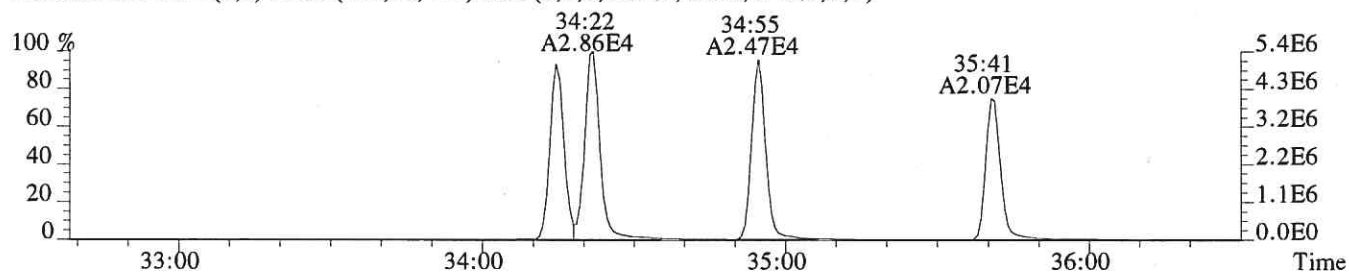
File:P618698 #1-348 Acq:23-AUG-2019 01:27:36 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1344.0,0.40%,F,T)



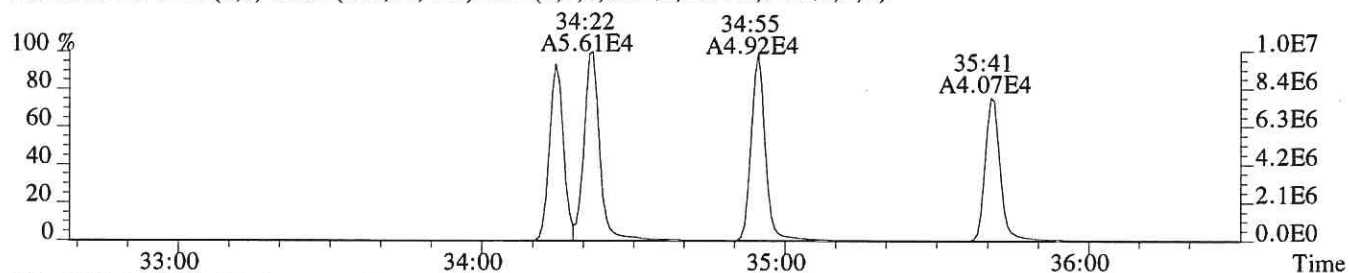
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1444.0,0.40%,F,T)



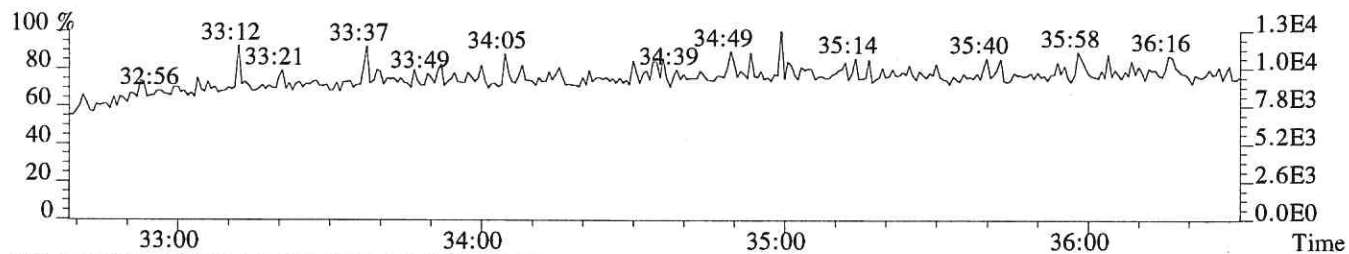
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,820.0,0.40%,F,T)



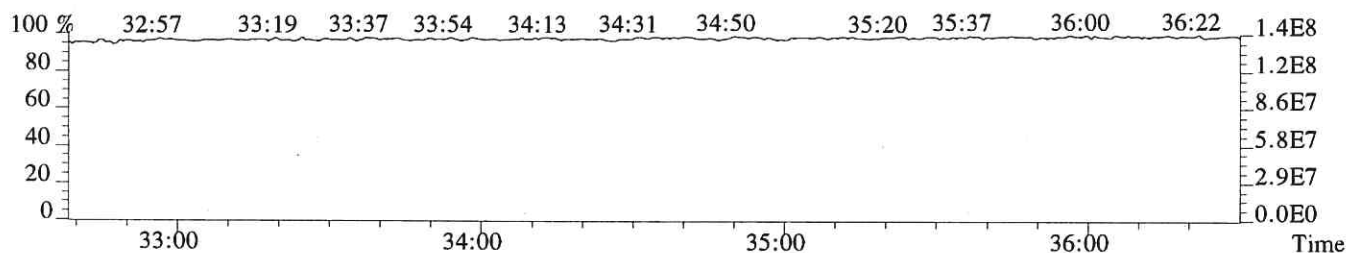
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2004.0,0.40%,F,T)



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

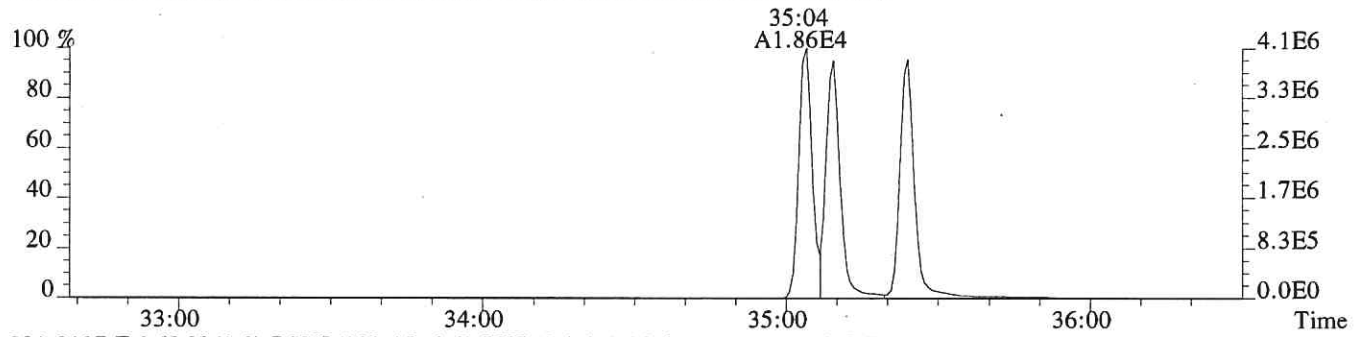


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

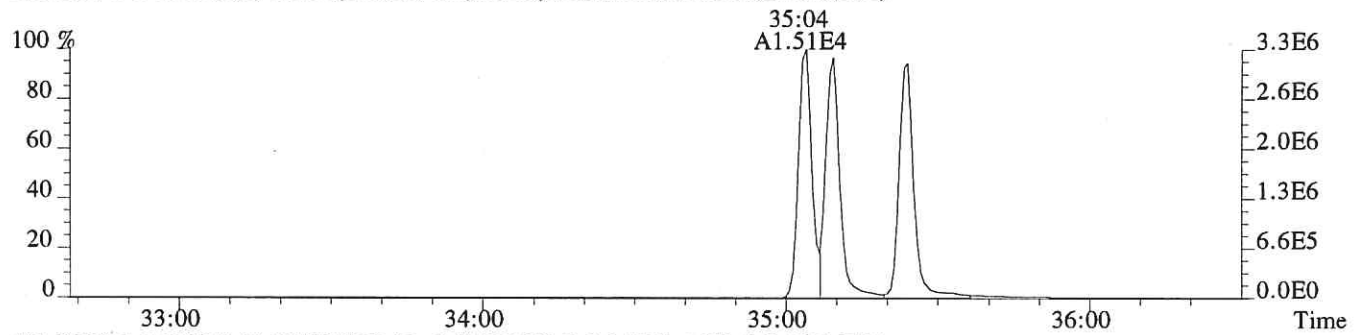


Sample#1 Exp:CS3

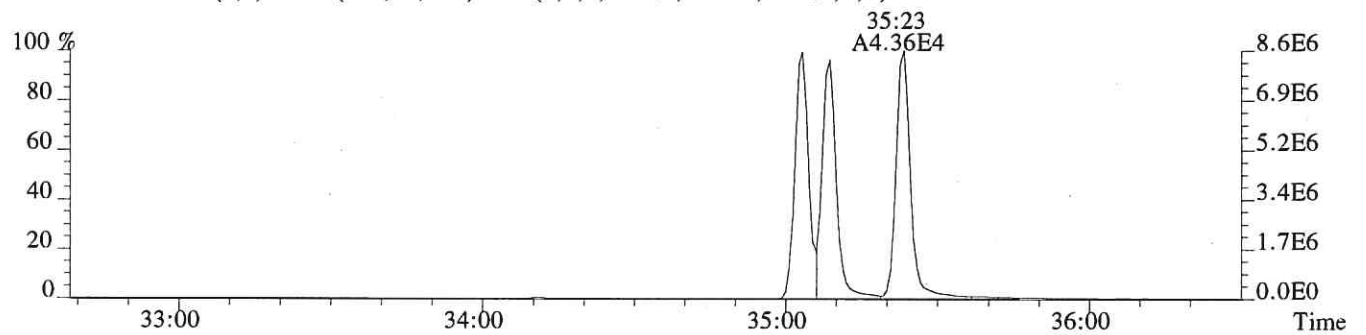
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1216.0,0.40%,F,T)



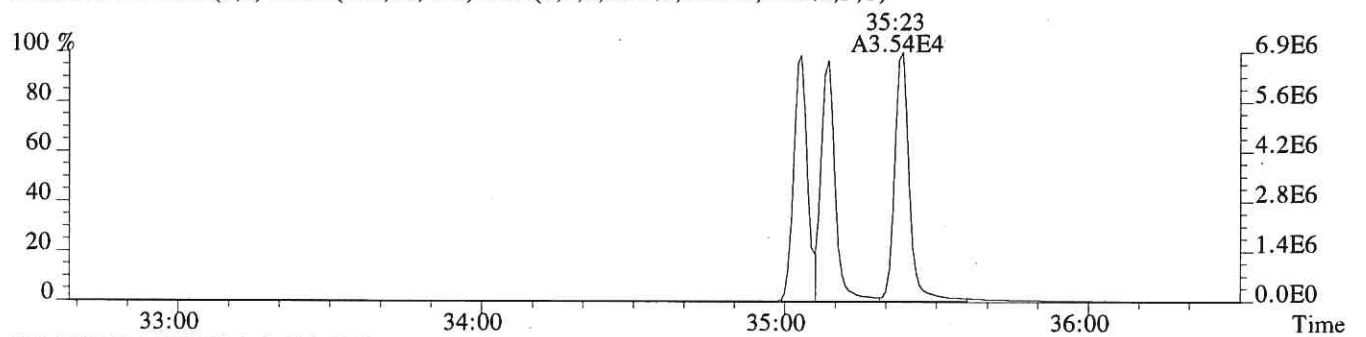
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1016.0,0.40%,F,T)



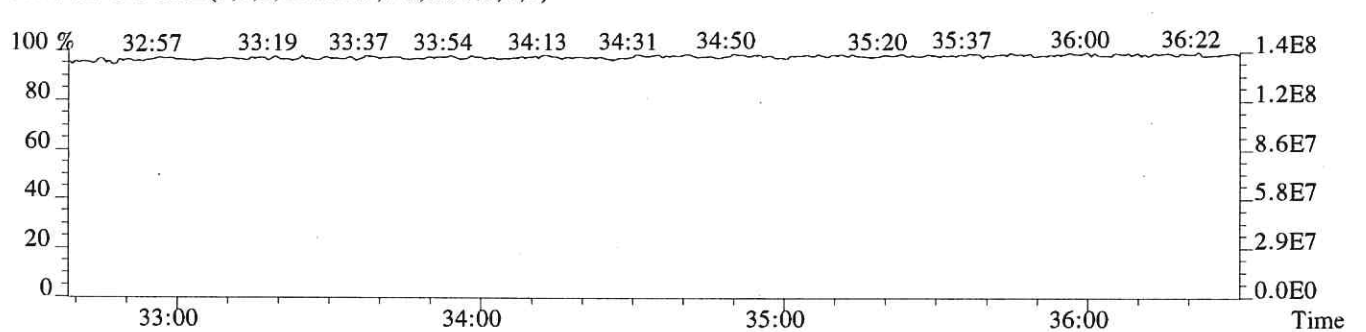
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1672.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1092.0,0.40%,F,T)



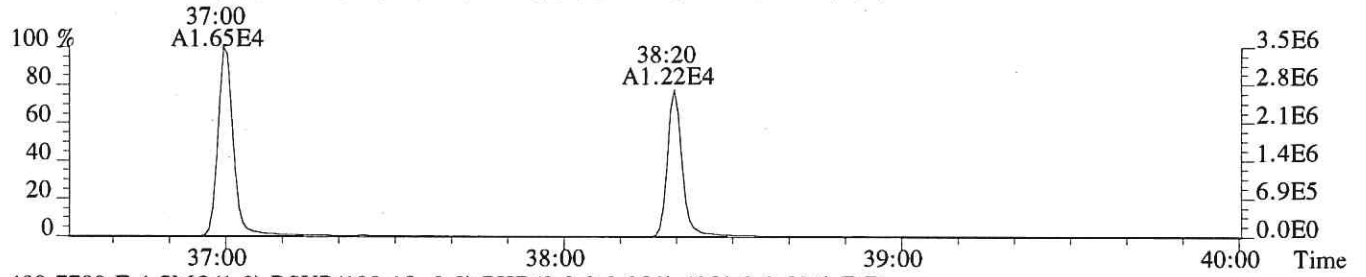
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



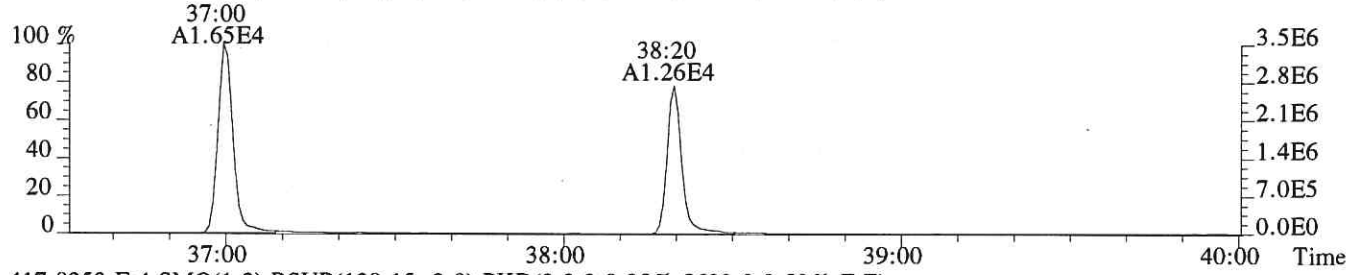
File:P618698 #1-313 Acq:23-AUG-2019 01:27:36 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:CS3

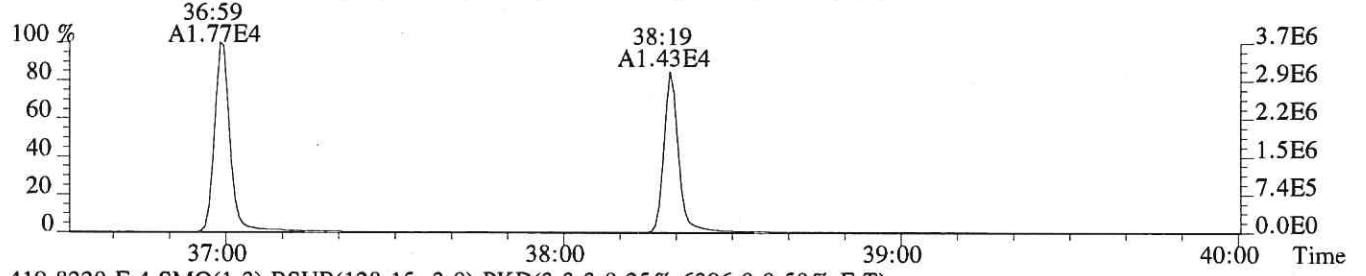
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2412.0,0.50%,F,T)



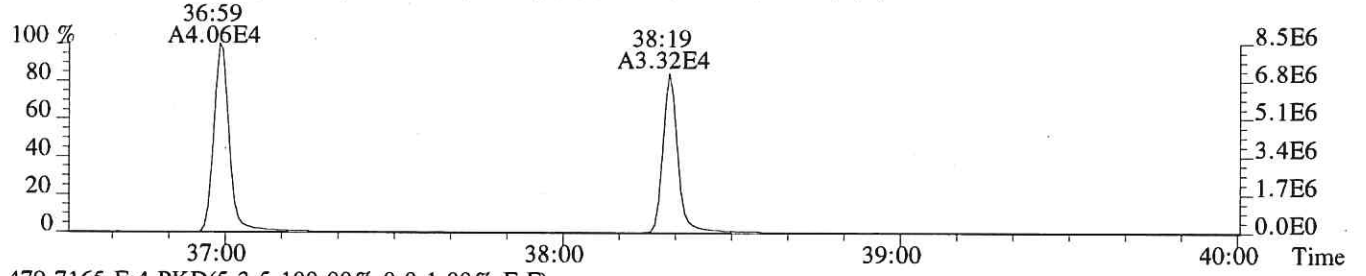
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4952.0,0.50%,F,T)



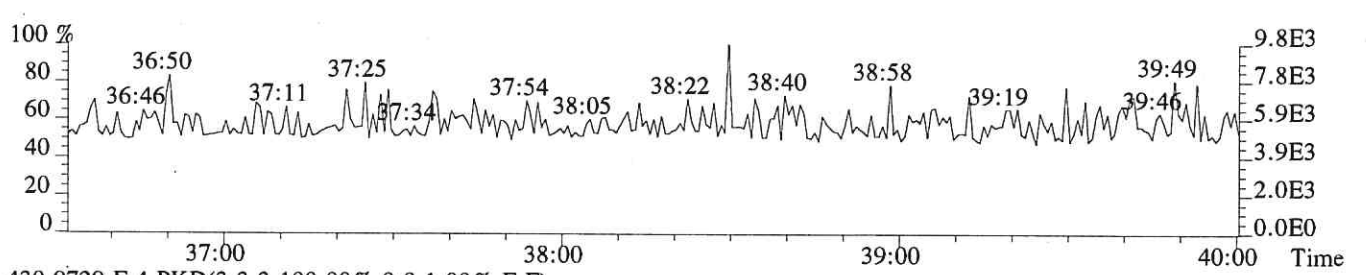
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5632.0,0.50%,F,T)



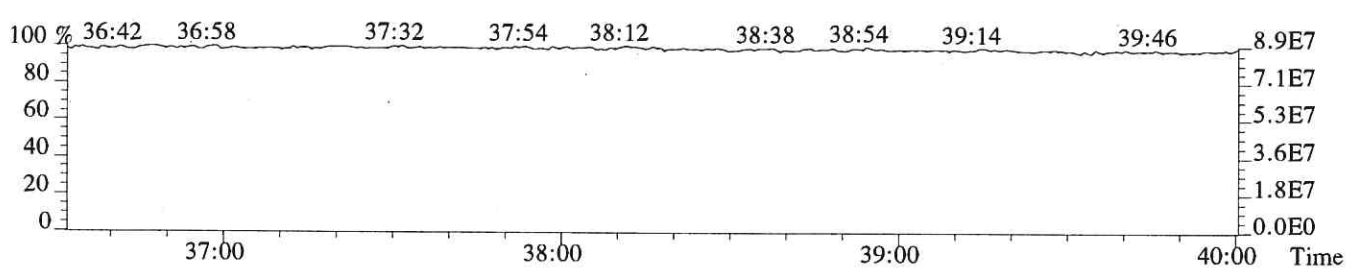
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,6396.0,0.50%,F,T)



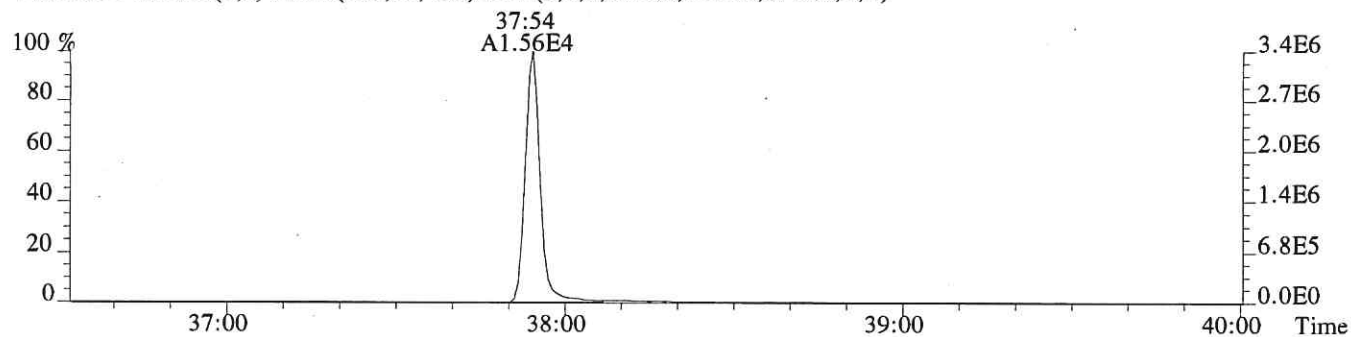
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



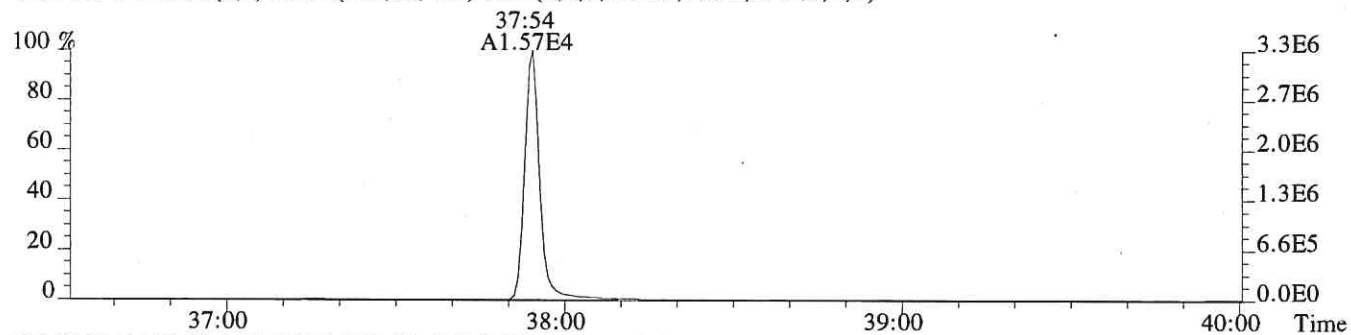
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



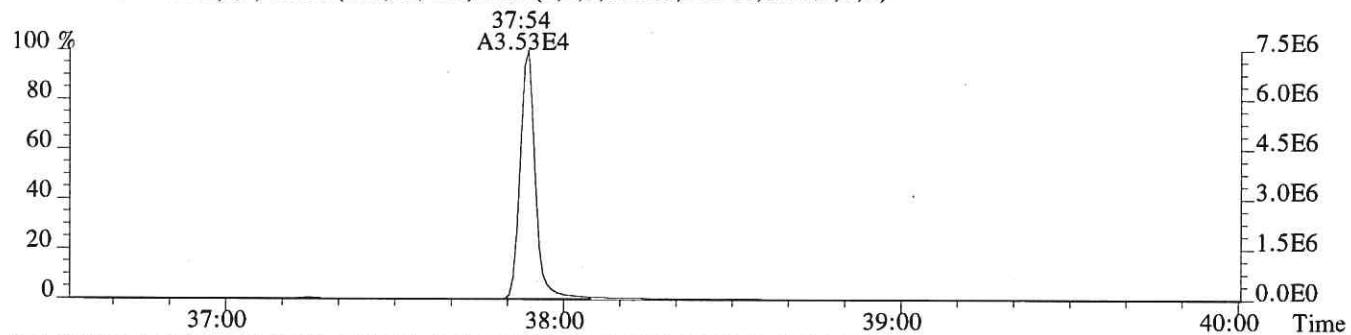
File:P618698 #1-313 Acq:23-AUG-2019 01:27:36 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1152.0,0.40%,F,T)



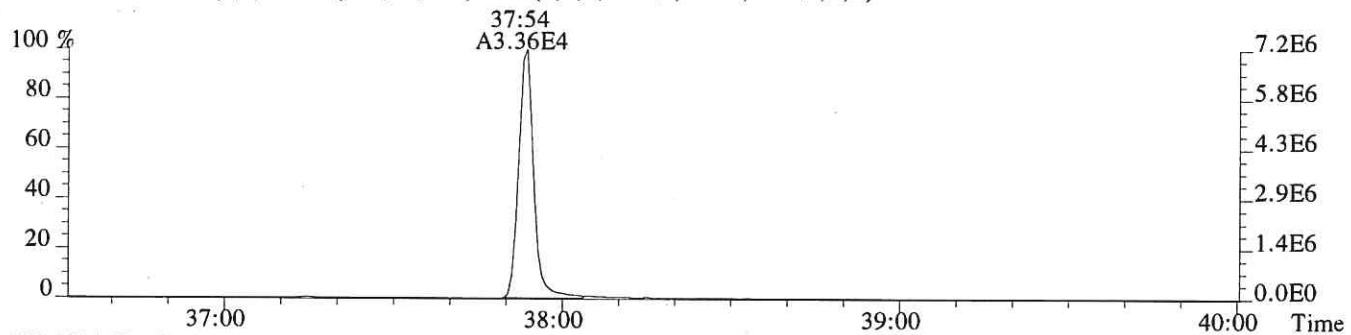
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,632.0,0.40%,F,T)



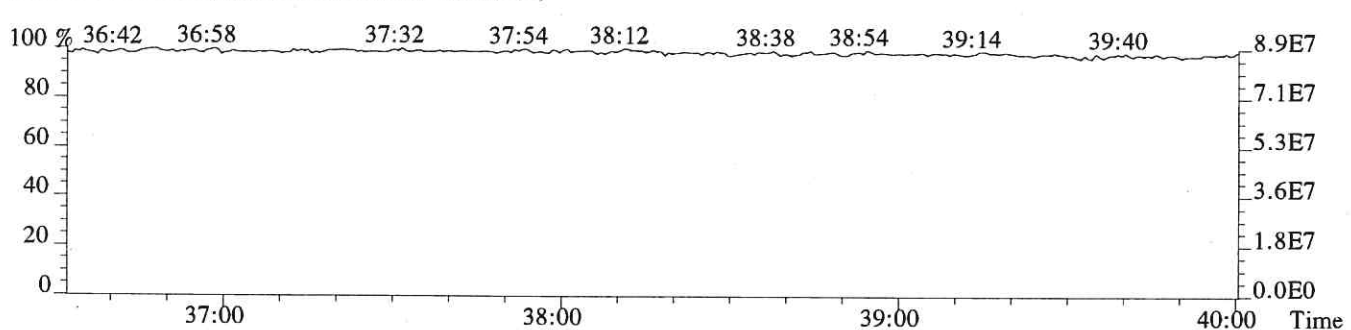
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1072.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,336.0,0.40%,F,T)

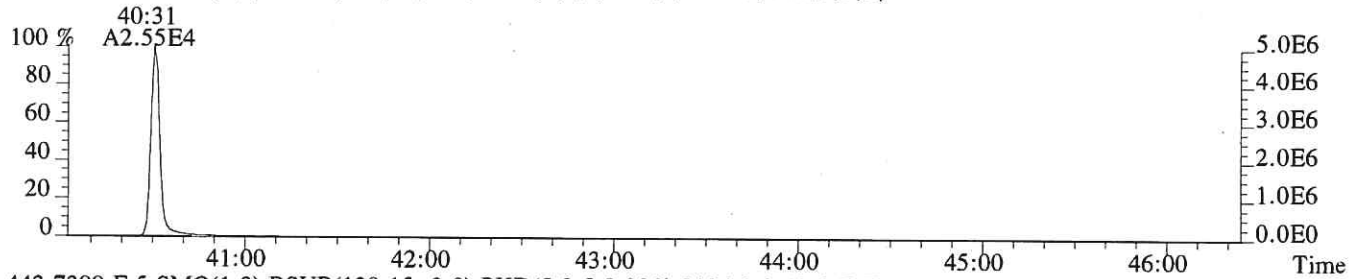


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

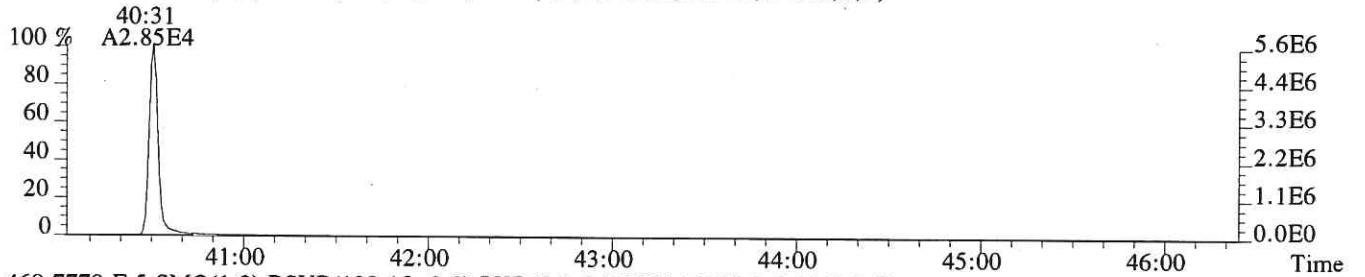


File:P618698 #1-573 Acq:23-AUG-2019 01:27:36 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3

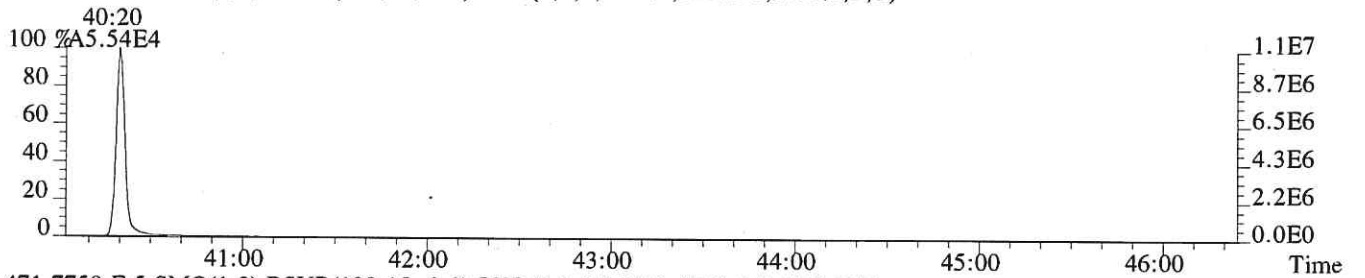
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2980.0,0.40%,F,T)



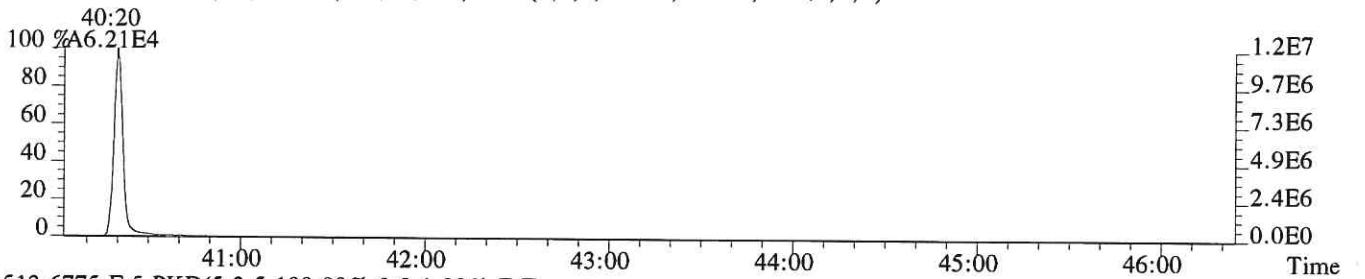
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,8124.0,0.40%,F,T)



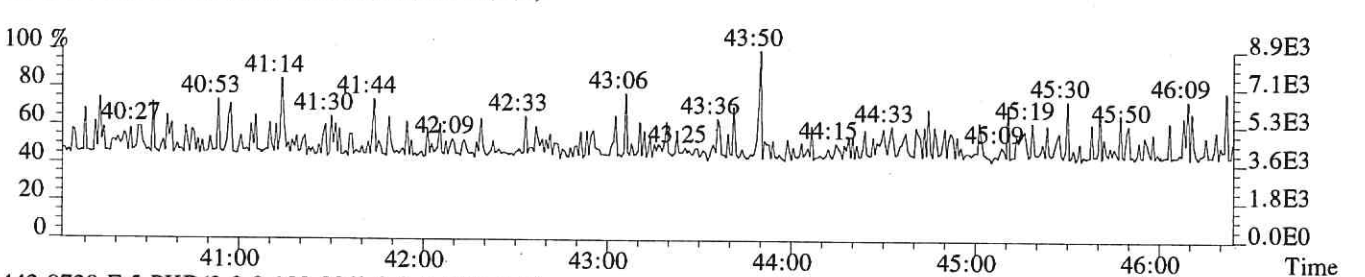
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,10072.0,0.40%,F,T)



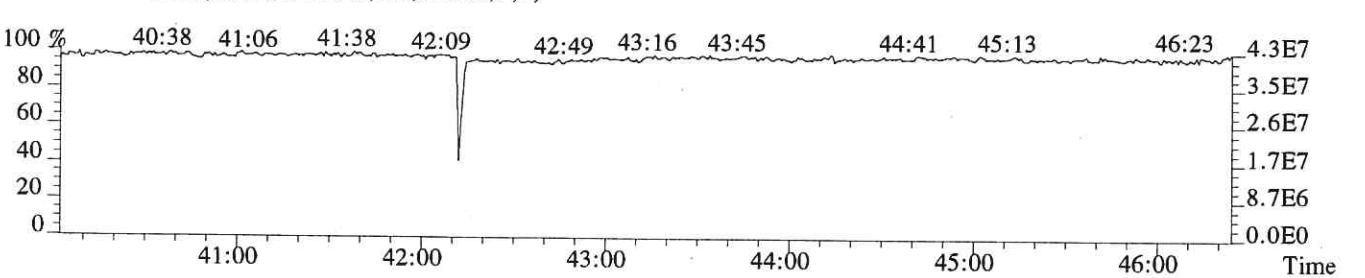
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,8720.0,0.40%,F,T)



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



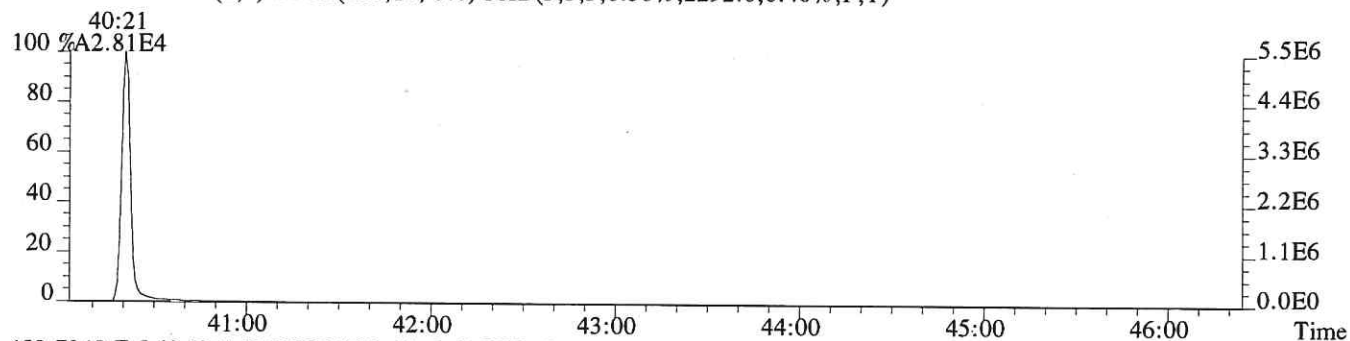
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



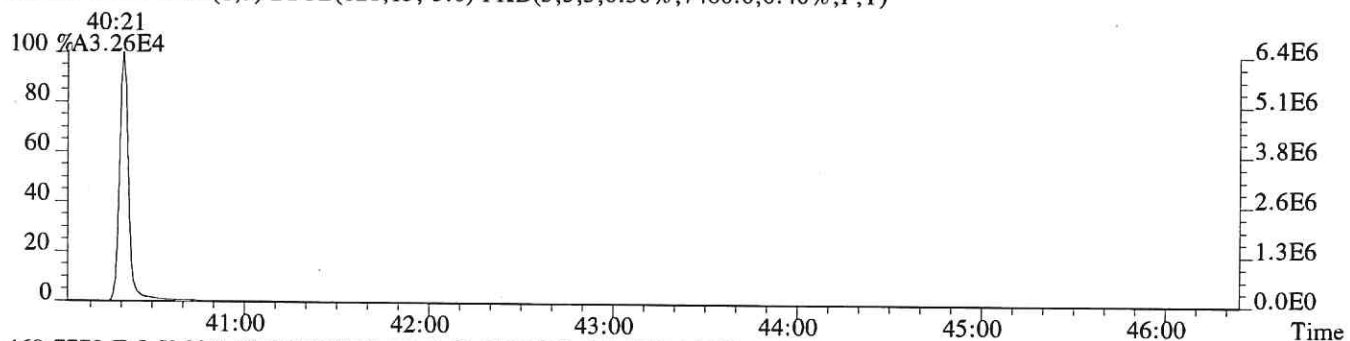
File: P618698 #1-573 Acq: 23-AUG-2019 01:27:36 Probe EI+ Magnet SIR VG BioTech Mass spectr

Sample#1 Exp: CS3

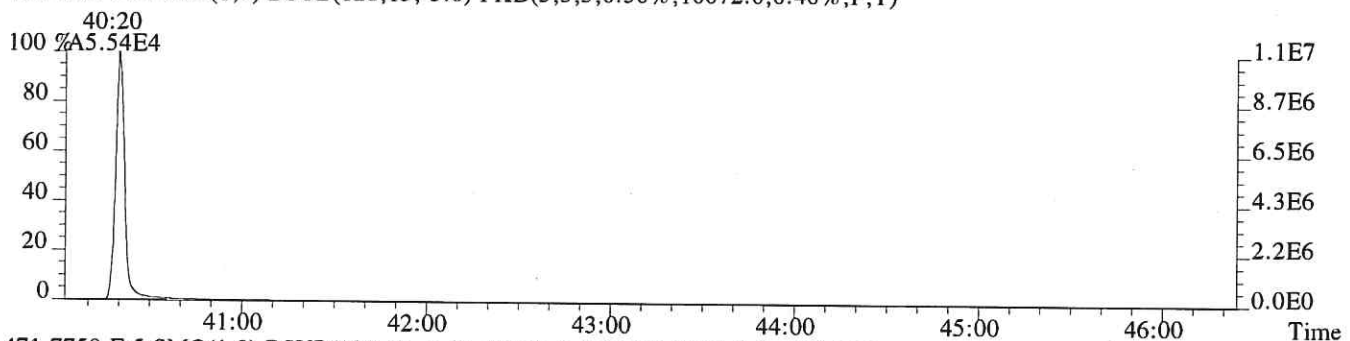
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2292.0,0.40%,F,T)



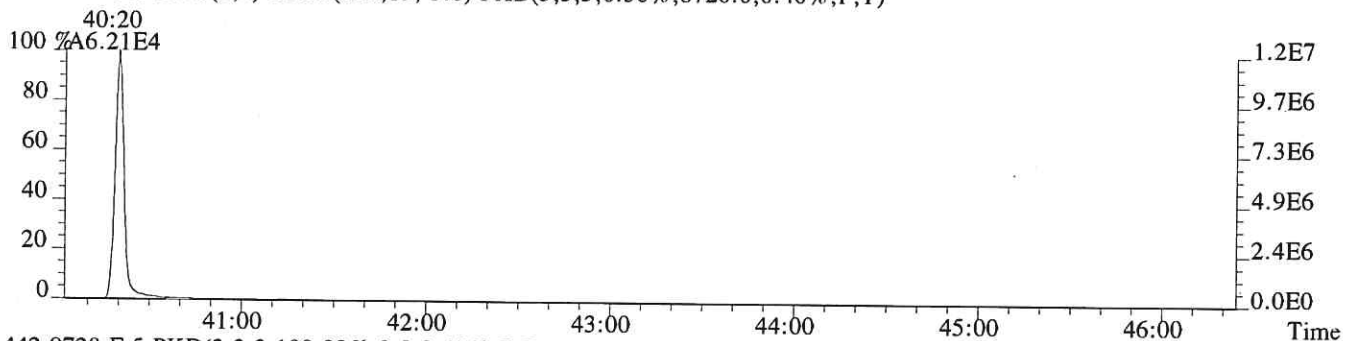
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,7460.0,0.40%,F,T)



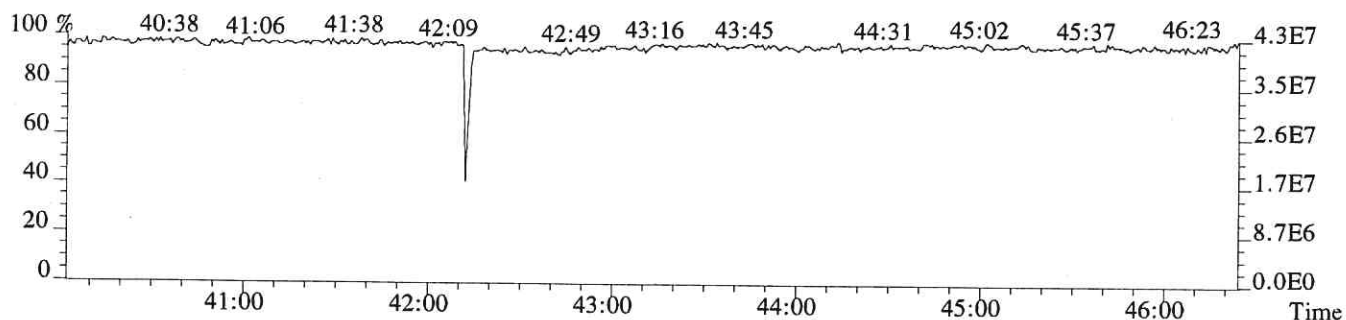
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,10072.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,8720.0,0.40%,F,T)



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





Initial Calibration

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Laboratory Review Checklist: HRMS Initial Calibration

Method: 1613/8290	Process Date: 04/26/2019				
Instrument Name: E-HRMS-07	Calibration File Name: P5-19042516131				
Processor Name:	Reviewer Name: <i>Loan Luong</i>				
Supervisor Signature: <i>Kristin New</i>					
	Yes	No	NA	NR	ER#
Description					
Analytical Sequence					
Does the analytical sequence summary accurately reflect the instrument run log, including ICV?	✓				
Was a Mass Resolution Check performed at the beginning and end of the 12-hour sequence?	✓				
Were all calibration standards and the ICV analyzed within the same 12-hour sequence?	✓				
Were all calibration standards analyzed only once?	✓				
Was the ICV analyzed after the ICAL, before analyzing samples?	✓				
Mass Resolution Check					
Are beginning and ending resolution checks provided and legible?	✓				
Were all target masses >10,000 resolving power at the beginning of the sequence?	✓				
Were all target masses >10,000 resolving power at the end of the sequence?	✓				
For PCB analysis, were masses at the low and high end of each function mass range >8,000?			✓		
Where automatic printout of the mass resolution were not >10,000, was the resolution inspected by a trained analyst, including manual calculation of the resolution, if warranted?			✓		
Window Define/209					
Is the window defining mix summary present, and accompanied by SICPs/Chromatograms for the WDM?	✓				
Was the WDM/Column Performance/209 solution analyzed prior to the analysis of the calibration standards?	✓				
Was 2,3,7,8-TCDD peak valley <25% to any other TCDD?	✓				
Were all first and last eluters adequately resolved in each function?	✓				
If first and last eluters were not resolved, was corrective action performed and documented, followed by a reanalysis of the WDM?			✓		
Was the retention time of PCB 209 >55 min?			✓		
Were the following congeners uniquely resolved (valley height <40% of the shortest peak)? PCB-34 and PCB-23 PCB-187 and PCB-182			✓		
Did PCB 156/157 co-elute within 2 seconds at peak maximum?			✓		
Calibration Standards					
Were there at least 5 calibration standards analyzed?	✓				
If not all calibration standards were used, were the omitted standards either the lowest or highest calibration standard?			✓		
Are all sample response summaries, S/N height summaries, and SICPs included (and legible) for the entire sequence?	✓				

Laboratory Review Checklist: HRMS Initial Calibration

Method: 1613/8290		Process Date: 04/26/2019				
Instrument Name: E-HRMS-07		Calibration File Name: P5-1904251613I				
Processor Name: <i>Kristin Neir</i>		Reviewer Name: <i>Loan Luong</i>				
Supervisor Signature: <i>Kristin Neir</i>		Yes	No	NA	NR	ER#
Description						
Did each calibration point meet method criteria for Ion Abundance Ratio for all analytes and labeled standards?		✓				
Did each calibration point meet method criteria for signal-to-noise ratios (S/N)?		✓				
Were area counts for the highest calibration standard below levels of saturation?		✓				
Were manual integrations technically justified to correct for poor software integration?				✓		
Response Factors						
Is the ICAL Response Factor Summary present, including RR/RF values for each native/labeled analyte at each level of calibration?		✓				
Were all calibration standards used in determining response factors?		✓				
Were relative response factors (RR) for each native analyte calculated at each calibration point?		✓				
Did the RSD for RRFs for each native analyte meet method criteria?		✓				
Were response factors (RF) for each native analyte not having a corresponding labeled compound calculated at each calibration point?		✓				
Were RFs for each labeled compound calculated for each calibration point?		✓				
Did the RSD for RF for each labeled compound meet method criteria?		✓				
Initial Calibration Verification						
Is the calibration verification present, including form 4A/B reflecting results for the ICV (Conc. or %D)		✓				
Did all analytes meet method criteria for the ICV.		✓				

Laboratory Review Checklist: Initial Calibration						
Method: 1613/8290		Process Date: 04/26/2019				
Instrument Name: E-HRMS-07		Calibration File Name: P6-1904251613I				
Processor Name: <i>Kristin Neir</i>		Reviewer Name: <i>Loan Luong</i>				
ER# ⁵	Description	Yes	No	NA	NR	ER#
NA = Not Applicable; NR = Not Reviewed; R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).						

5DFC
PCDD/PCDF ANALYTICAL SEQUENCE SUMMARY

Lab Name: ALS ENVIRONMENTAL

Contract:

Lab Code: TX01411 Episode No.:

SDG No.:

GC Column: DB-5MSUI ID: 0.25 (mm) Instrument ID: E-HRMS-07

Init. Calib. Date: 04/25/19

Init. Calib. Times: 21:22

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
192977	WINDOW DEFINE	P521507	25-APR-19	21:22:33
193431	CS0.5	P521510	25-APR-19	23:48:29
193432	CS1	P521511	26-APR-19	00:37:08
193434	CS2	P521512	26-APR-19	01:25:47
193435	CS3	P521513	26-APR-19	02:14:26
82167	CS4	P521514	26-APR-19	03:03:05
185657	CS5	P521515	26-APR-19	03:51:44
NONANE	NONANE	P521516	26-APR-19	04:40:23
188969	DO NOT USE	P521517	26-APR-19	05:29:04
188969	2ND SOURCE	P521518	26-APR-19	06:25:55

Sample List Report

MassLynx 4.1 SCN815 SCN795

Sample List:

C:\MassLynx\EHRRMS07.PRO\Samples\B20190425A.SPL

Last Modified:

Friday, April 26, 2019 09:30:41 Central Daylight Time

Printed:

Friday, April 26, 2019 09:31:27 Central Daylight Time

opus 4: P5-1904251613I
P521518res

opus 4: P5-1904251613I
P521518resm23

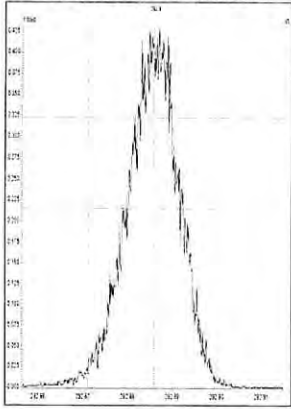
Date	Time	File Name	Sample ID	File Text	MS File	Inlet File	Bottle	Analyst	Comments
04/25/19	21:22	P521507	WINDOWDEFINE	192977	EPA1613_ALS	Dioxin_ALS	Tray1:1	LKL	HRMS check 20:34
	22:11	P521508	CS3	197303	EPA1613_ALS	Dioxin_ALS	Tray1:2		Not use
	23:59	P521509	CS0.5	193431	EPA1613_ALS	Dioxin_ALS	Tray1:3		Not use
	23:48	P521510	CS0.5	193431	EPA1613_ALS	Dioxin_ALS	Tray1:3		
04/26/19	00:37	P521511	CS1	193432	EPA1613_ALS	Dioxin_ALS	Tray1:5		
	01:25	P521512	CS2	193434	EPA1613_ALS	Dioxin_ALS	Tray1:6		
	02:14	P521513	CS3	193435	EPA1613_ALS	Dioxin_ALS	Tray1:7		
	03:03	P521514	CS4	82167	EPA1613_ALS	Dioxin_ALS	Tray1:8		
	03:51	P521515	CS5	185657	EPA1613_ALS	Dioxin_ALS	Tray1:9		
	04:40	P521516	NONANE	NONANE	EPA1613_ALS	Dioxin_ALS	Tray1:10		
	05:29	P521517	2ND SOURCE	188969	EPA1613_ALS	Dioxin_ALS	Tray1:11		Not use
	06:25	P521518	2ND SOURCE	188969	EPA1613_ALS	Dioxin_ALS	Tray1:11		HRMS check 06:25
					EPA1613_ALS	Dioxin_ALS	Tray1:12		
					EPA1613_ALS	Dioxin_ALS	Tray1:1		
					EPA1613_ALS	Dioxin_ALS	Tray1:1		
					EPA1613_ALS	Dioxin_ALS	Tray1:1		
					EPA1613_ALS	Dioxin_ALS	Tray1:2		
					EPA1613_ALS	Dioxin_ALS	Tray1:3		
					EPA1613_ALS	Dioxin_ALS	Tray1:3		
					EPA1613_ALS	Dioxin_ALS	Tray1:4		
					EPA1613_ALS	Dioxin_ALS	Tray1:5		
					EPA1613_ALS	Dioxin_ALS	Tray1:6		
					EPA1613_ALS	Dioxin_ALS	Tray1:7		
					EPA1613_ALS	Dioxin_ALS	Tray1:8		
					EPA1613_ALS	Dioxin_ALS	Tray1:12		
					EPA1613_ALS	Dioxin_ALS	Tray1:12		
					EPA1613_ALS	Dioxin_ALS	Tray1:2		

jc 04/26/19

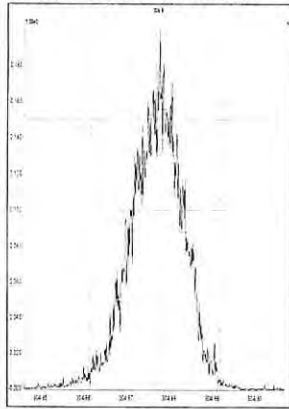
093

Printed: Thursday, April 25, 2019 20:34:44 Central Daylight Time

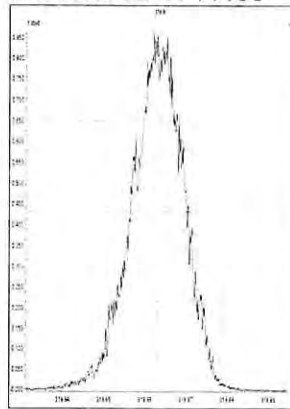
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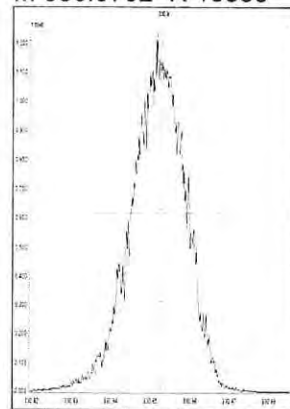
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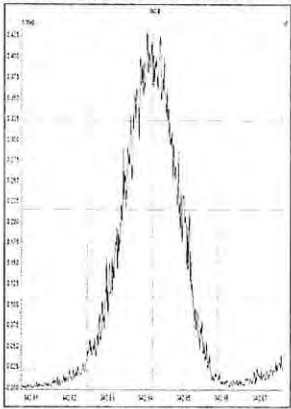
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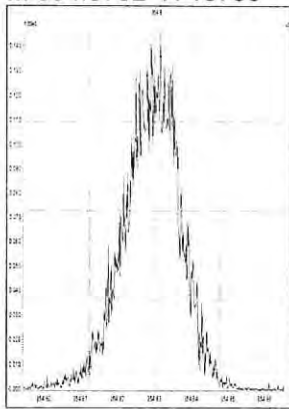
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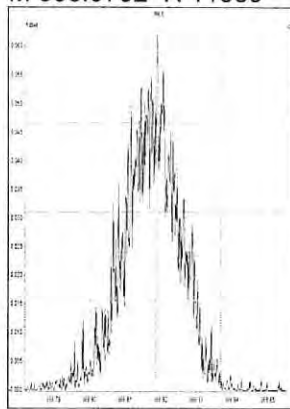
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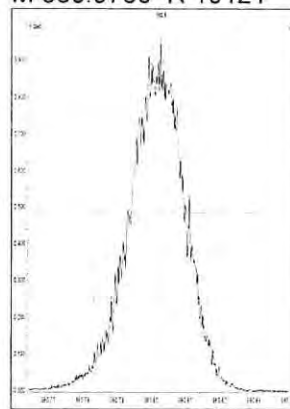
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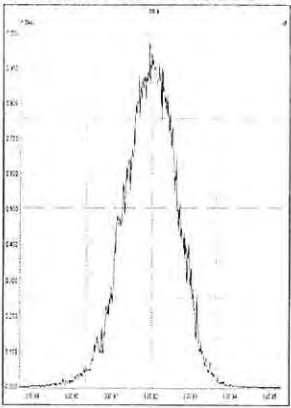
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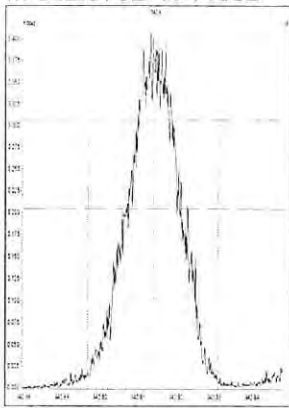
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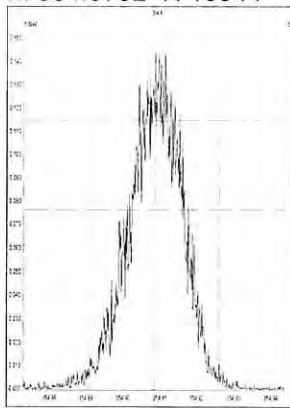
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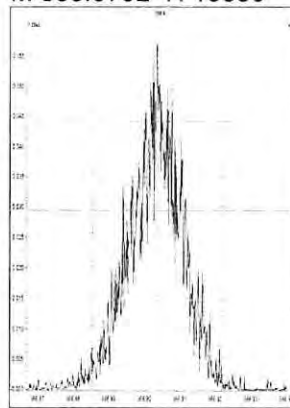
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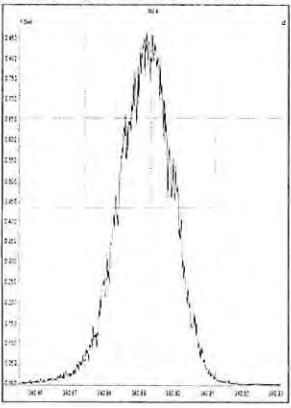
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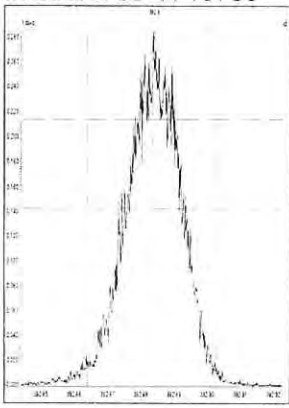
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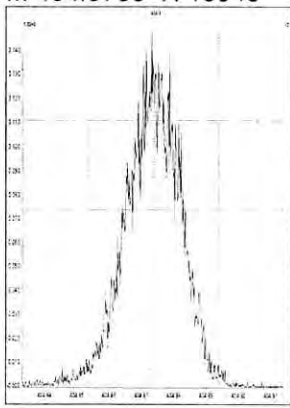
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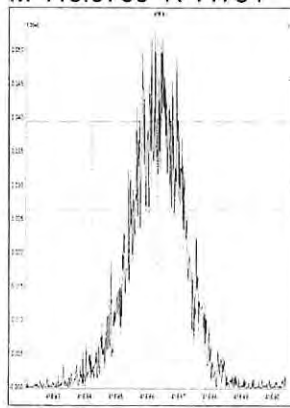
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M 404.9760 R 10946

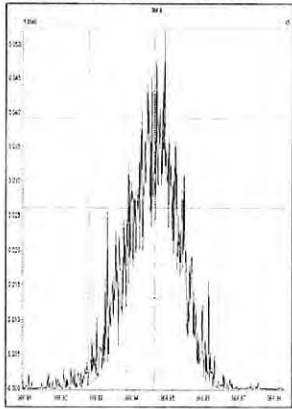


M 416.9760 R 11764

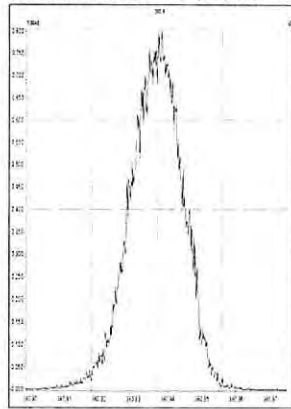


Printed: Thursday, April 25, 2019 20:34:44 Central Daylight Time

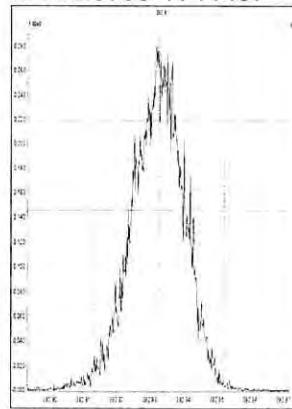
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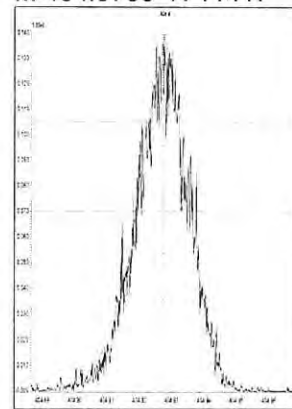
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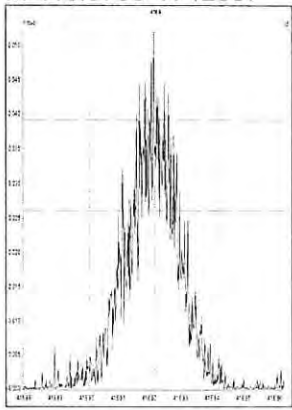
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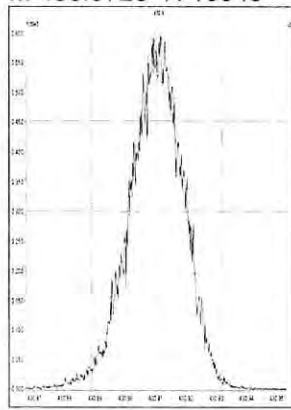
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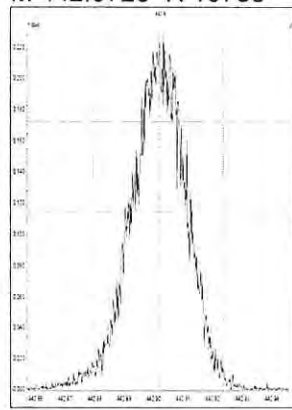
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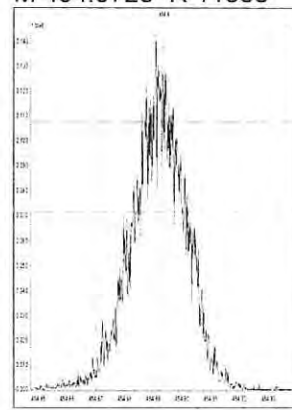
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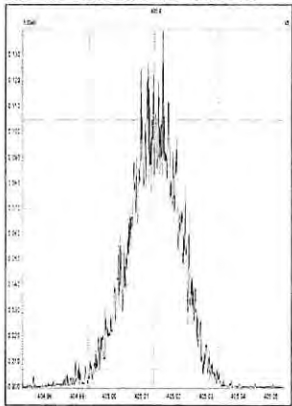
M 442.9728 R 10788



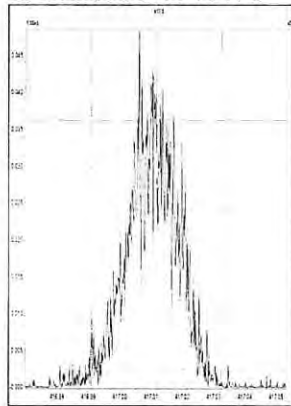
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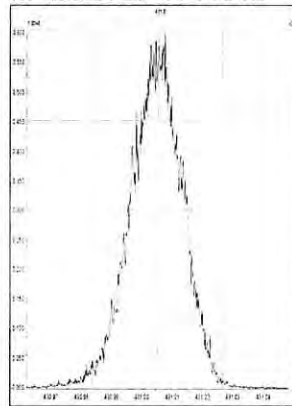
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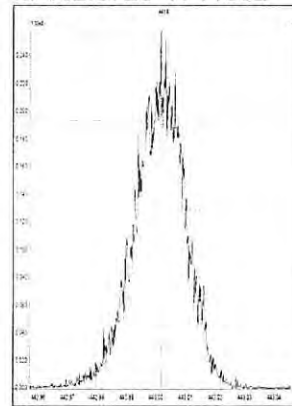
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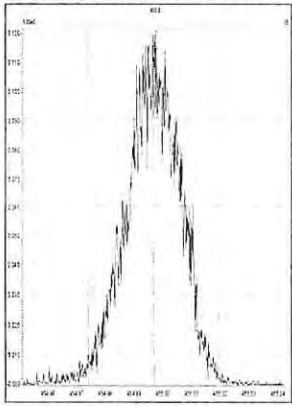
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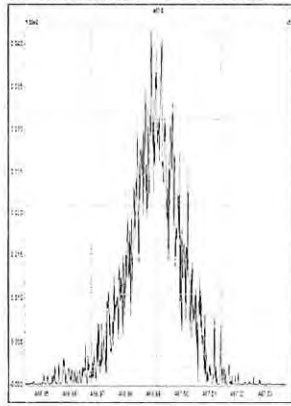
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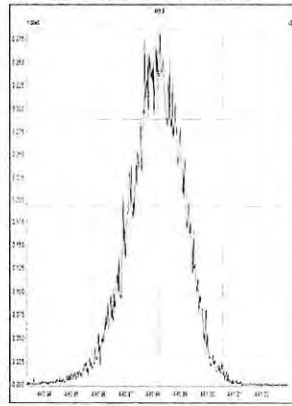
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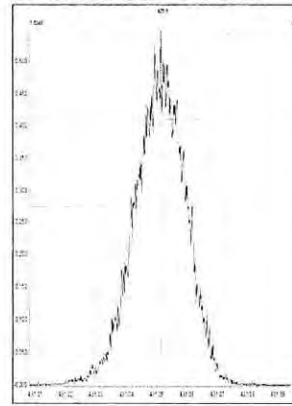
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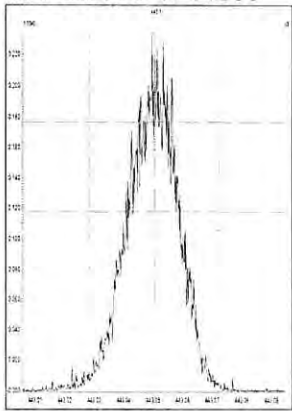
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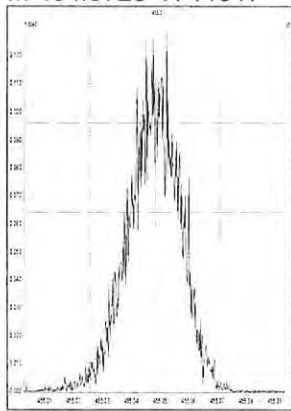
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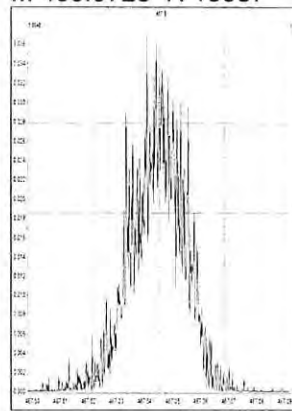
M 442.9728 R 11685



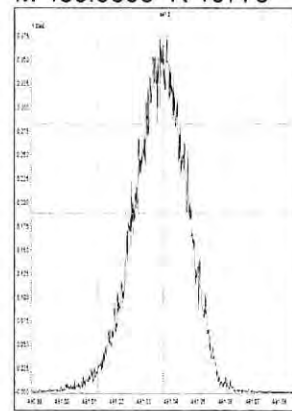
M 454.9728 R 11917



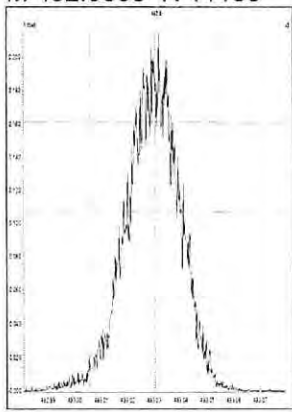
M 466.9728 R 13587



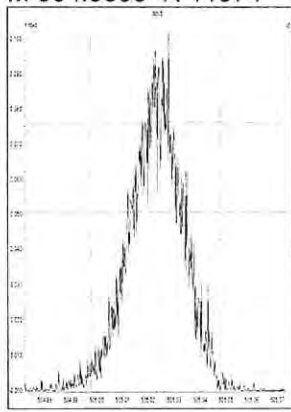
M 480.9696 R 10776



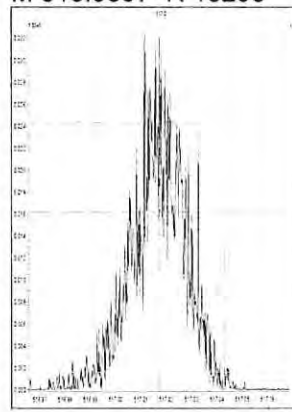
M 492.9696 R 11160



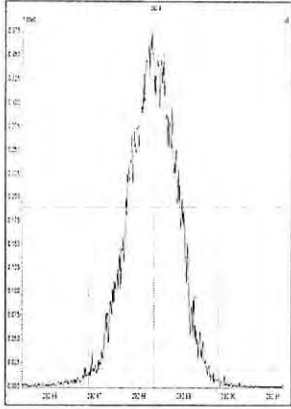
M 504.9696 R 11574



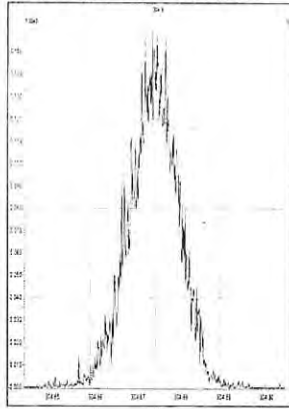
M 516.9697 R 13296



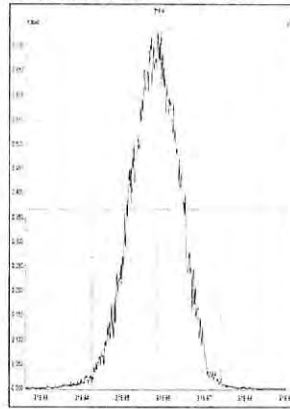
M 292.9824 R 11852



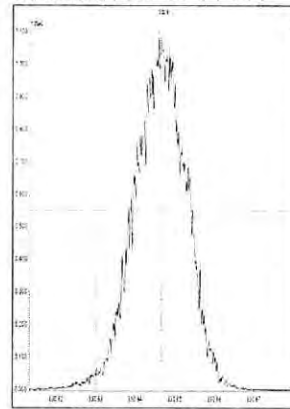
M 304.9824 R 12023



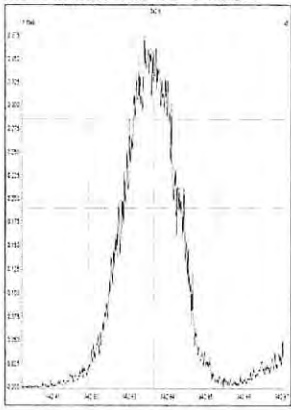
M 318.9792 R 11852



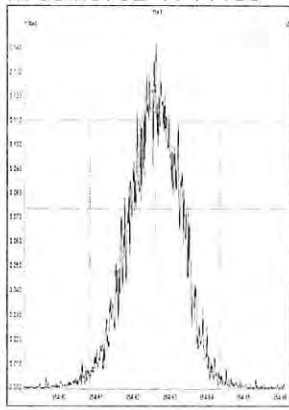
M 330.9792 R 11441



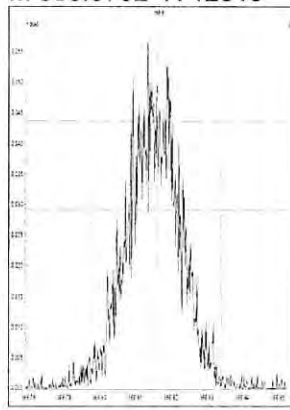
M 342.9792 R 11034



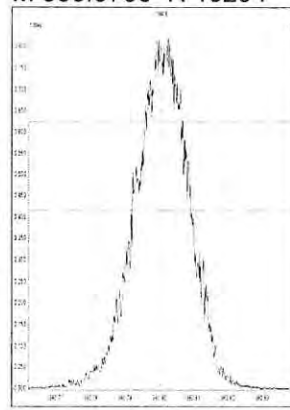
M 354.9792 R 11186



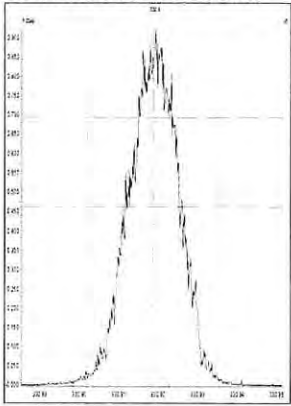
M 366.9792 R 12519



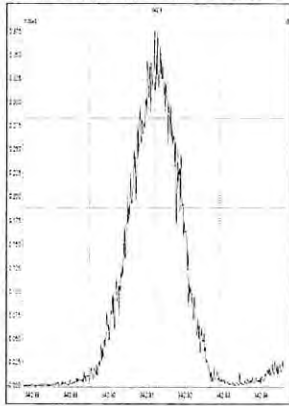
M 380.9760 R 10294



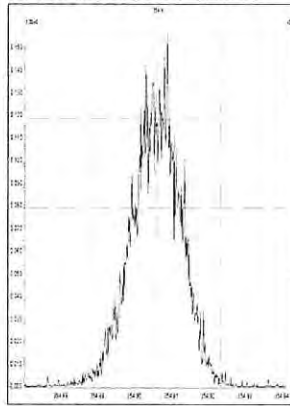
M 330.9792 R 11848



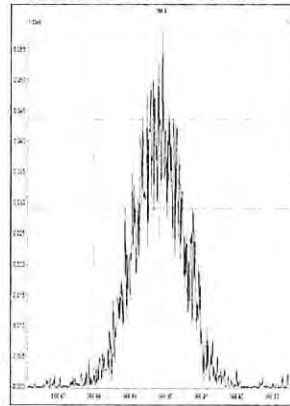
M 342.9792 R 11709



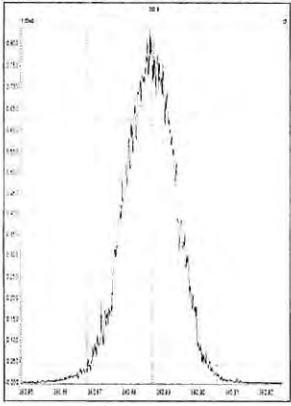
M 354.9792 R 12049



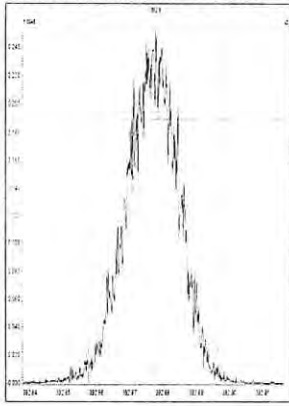
M 366.9792 R 13786



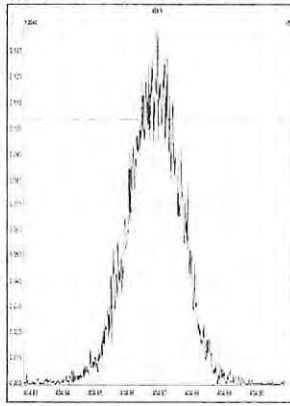
M 380.9760 R 11340



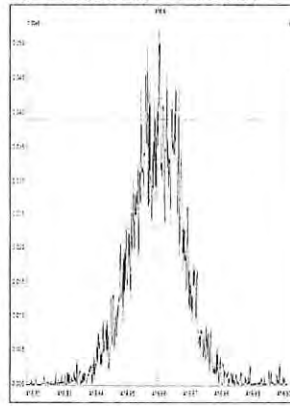
M 392.9760 R 11580



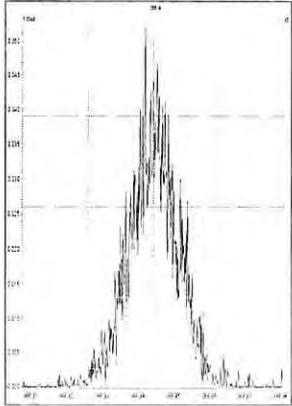
M 404.9760 R 11467



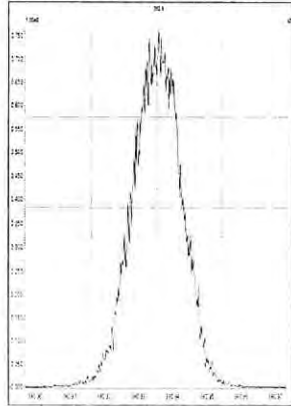
M 416.9760 R 12607



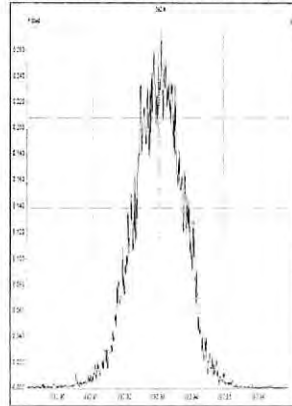
M 366.9792 R 13519



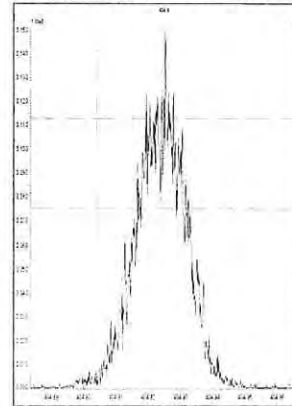
M 380.9760 R 11990



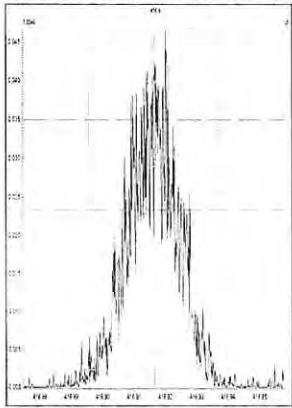
M 392.9760 R 11966



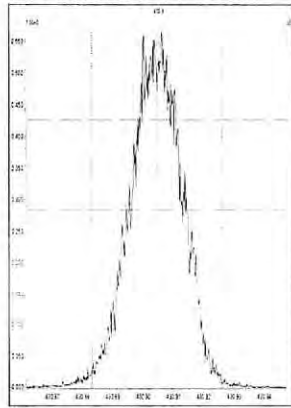
M 404.9760 R 12293



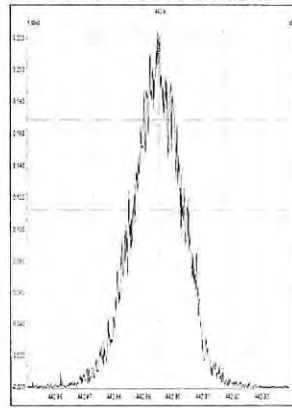
M 416.9760 R 13158



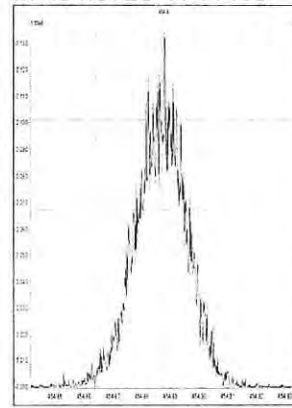
M 430.9728 R 11261



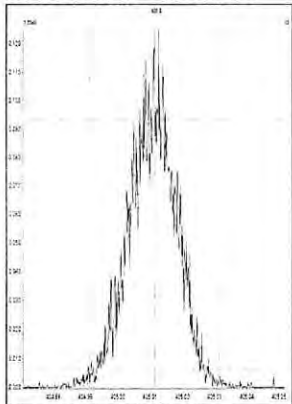
M 442.9728 R 11194



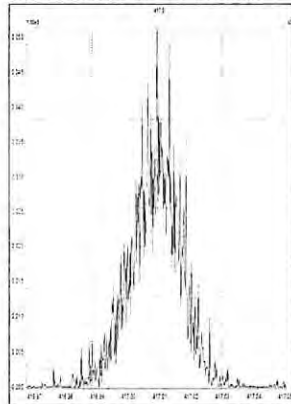
M 454.9728 R 11415



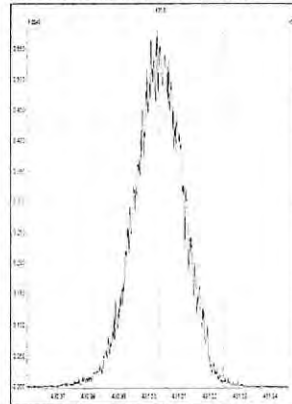
M 404.9760 R 12257



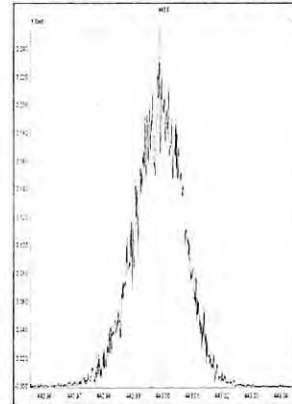
M 416.9760 R 13786



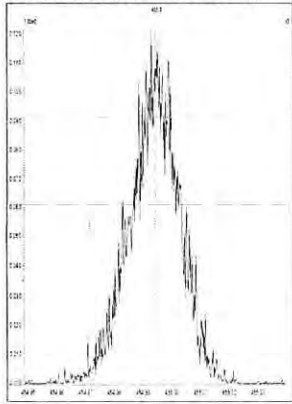
M 430.9728 R 11932



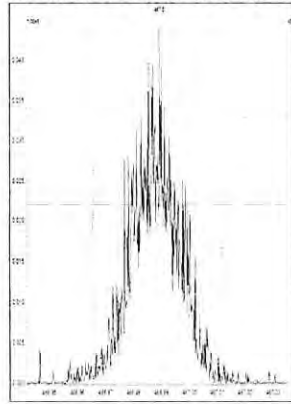
M 442.9728 R 11655



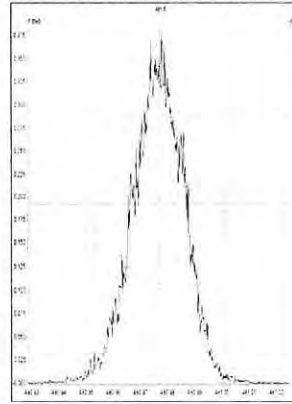
M 454.9728 R 11798



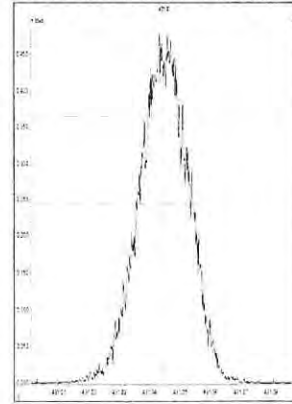
M 466.9728 R 13170



M 480.9696 R 11315

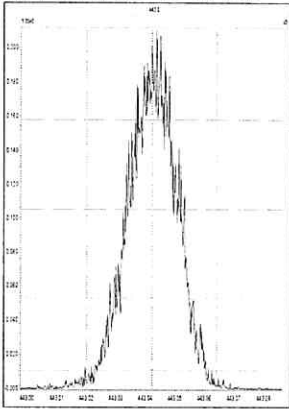


M 430.9728 R 11765

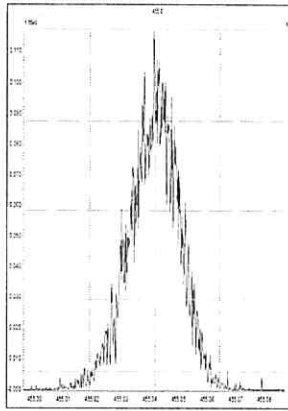


Printed: Friday, April 26, 2019 06:25:53 Central Daylight Time

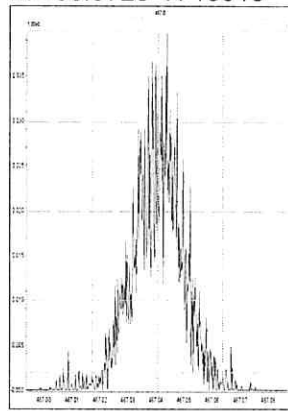
M 442.9728 R 12122



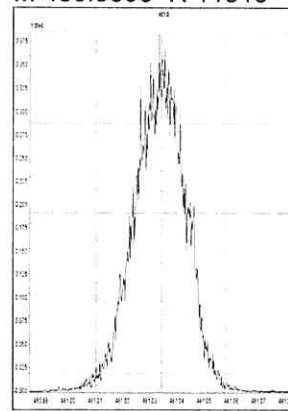
M 454.9728 R 11827



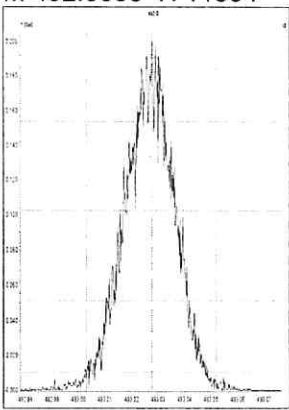
M 466.9728 R 13018



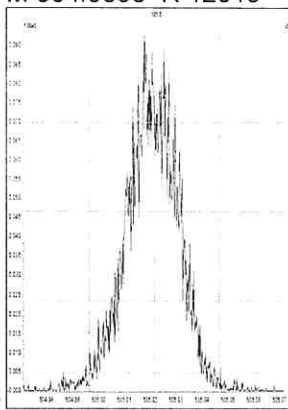
M 480.9696 R 11315



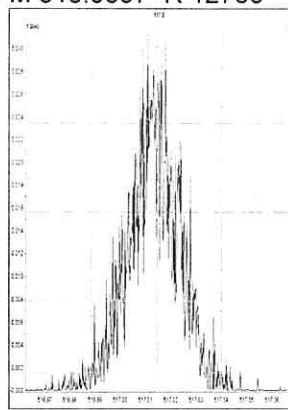
M 492.9696 R 11554



M 504.9696 R 12019



M 516.9697 R 12755



5DFA

WINDOW DEFINING MIX SUMMARY

CLIENT ID:

WDM

Lab Name: ALS Environmental

Lab Code: ALSTX

GC Column: DB-5MSUI

Case No.:

ID: 0.25 (mm)

SDG No.:

Lab File ID: P521507

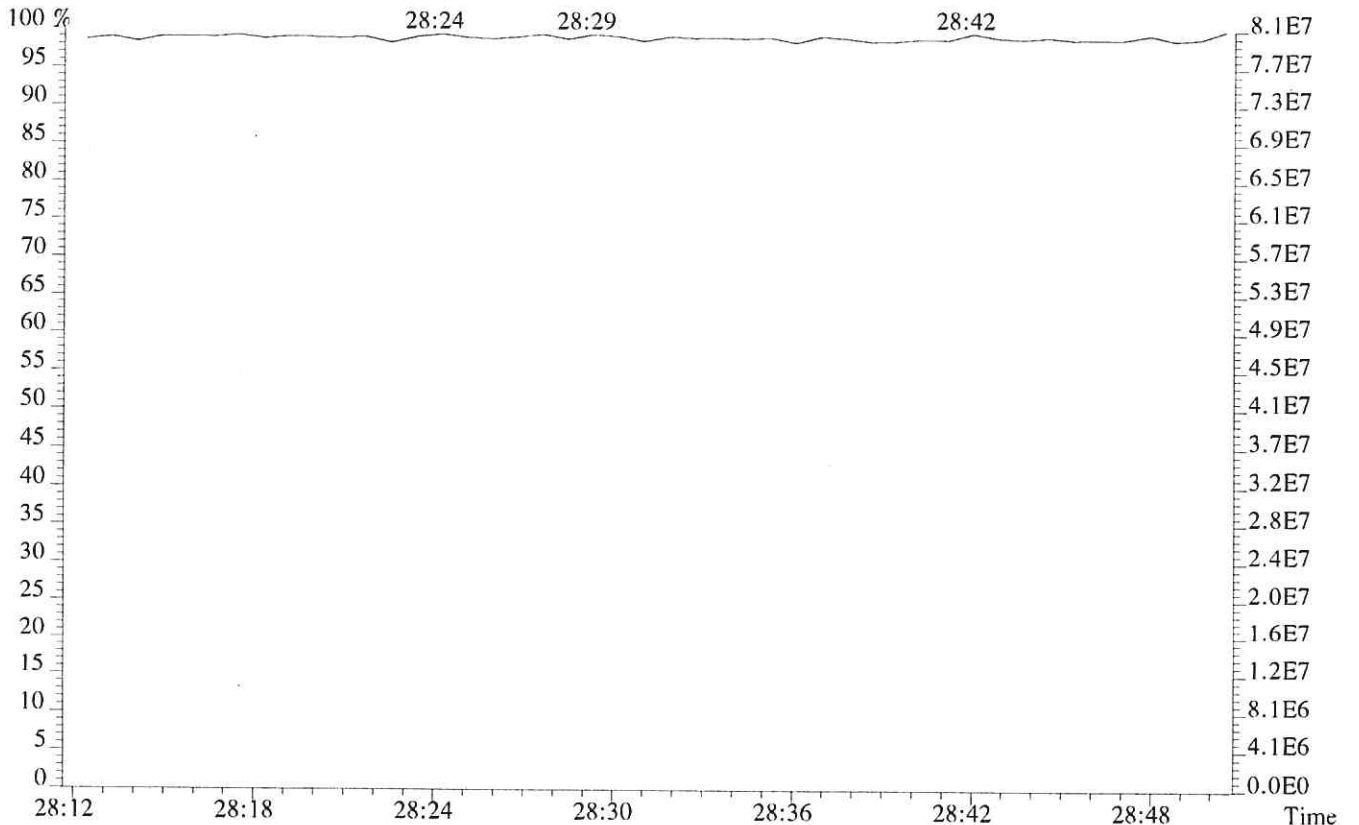
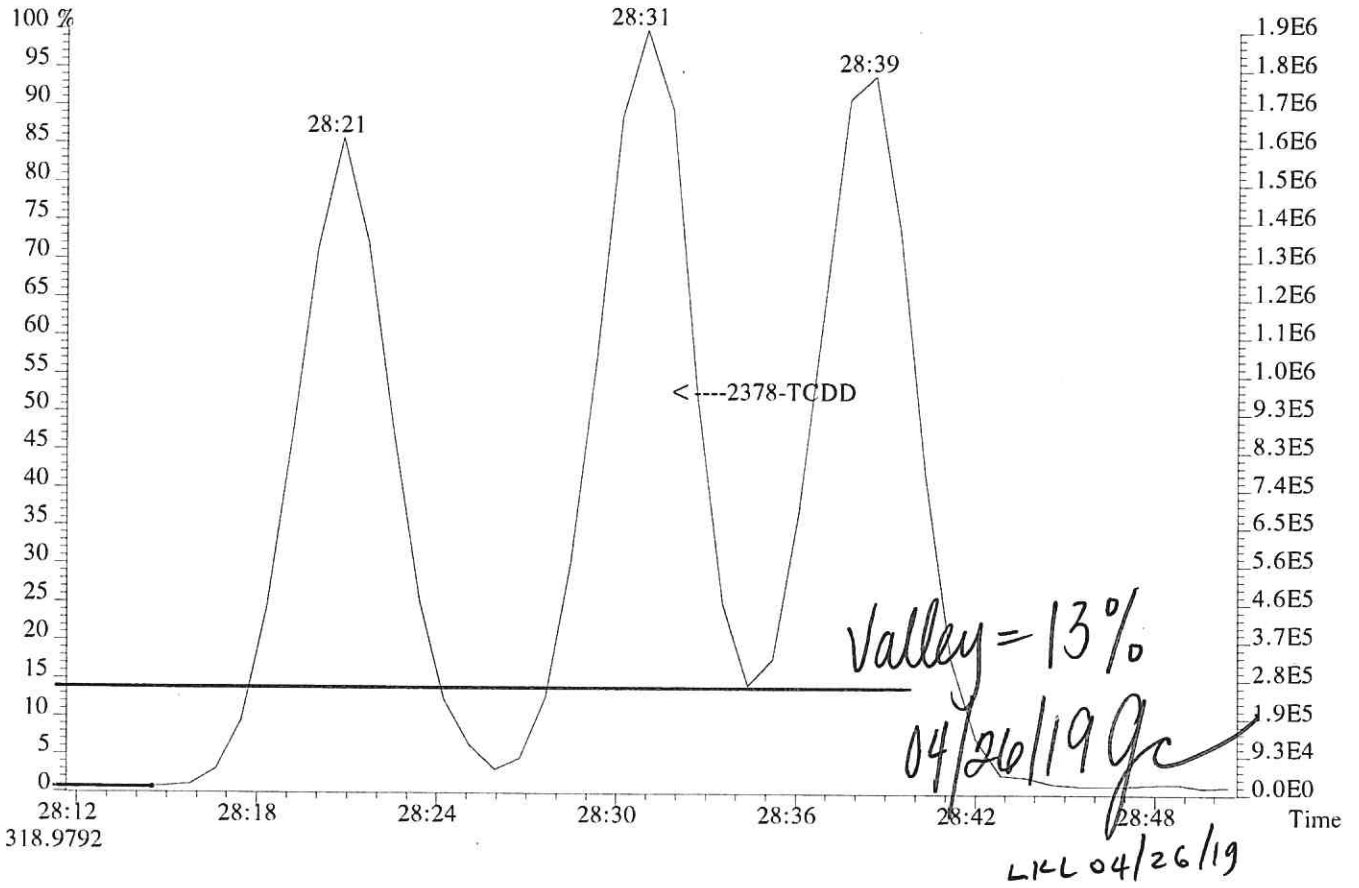
Date Analyzed: 25-APR-2019

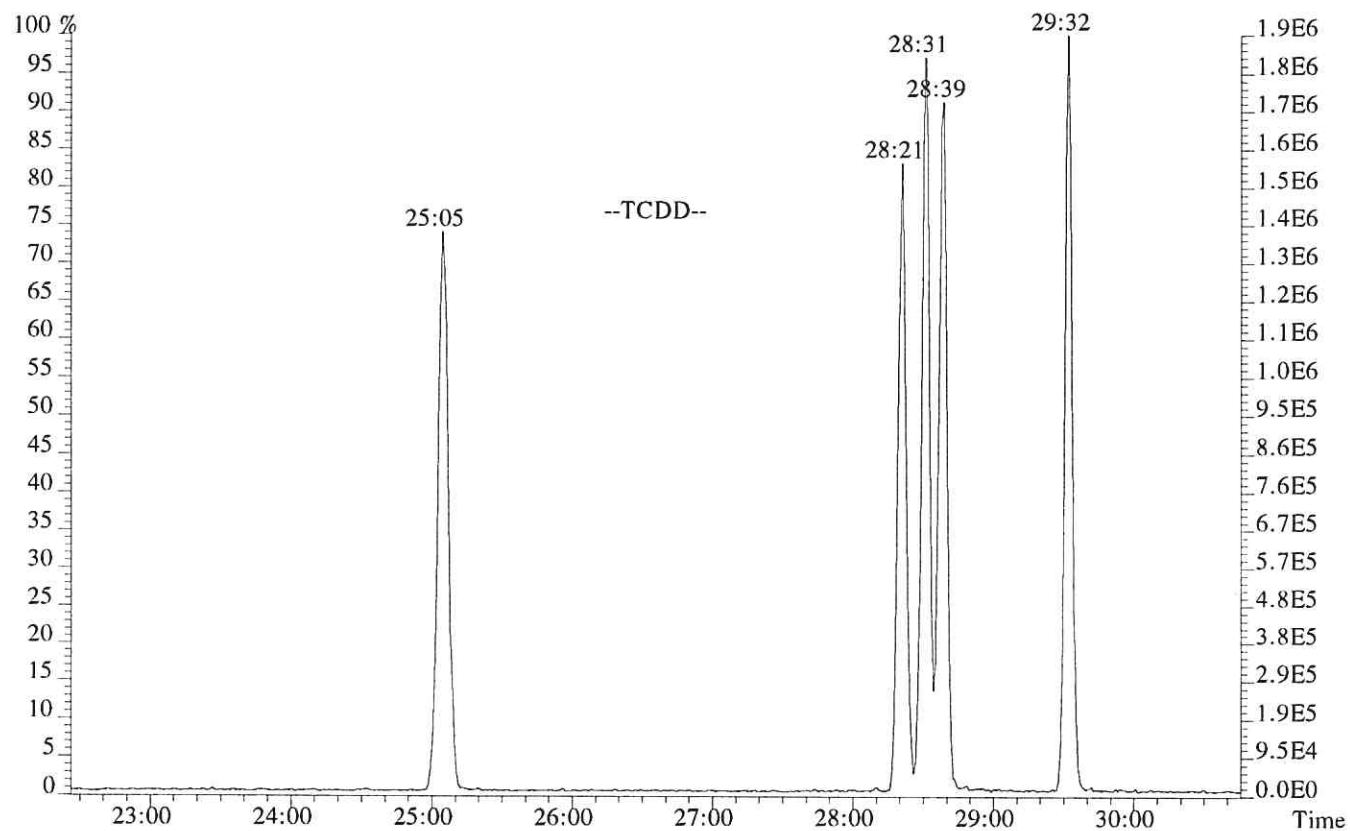
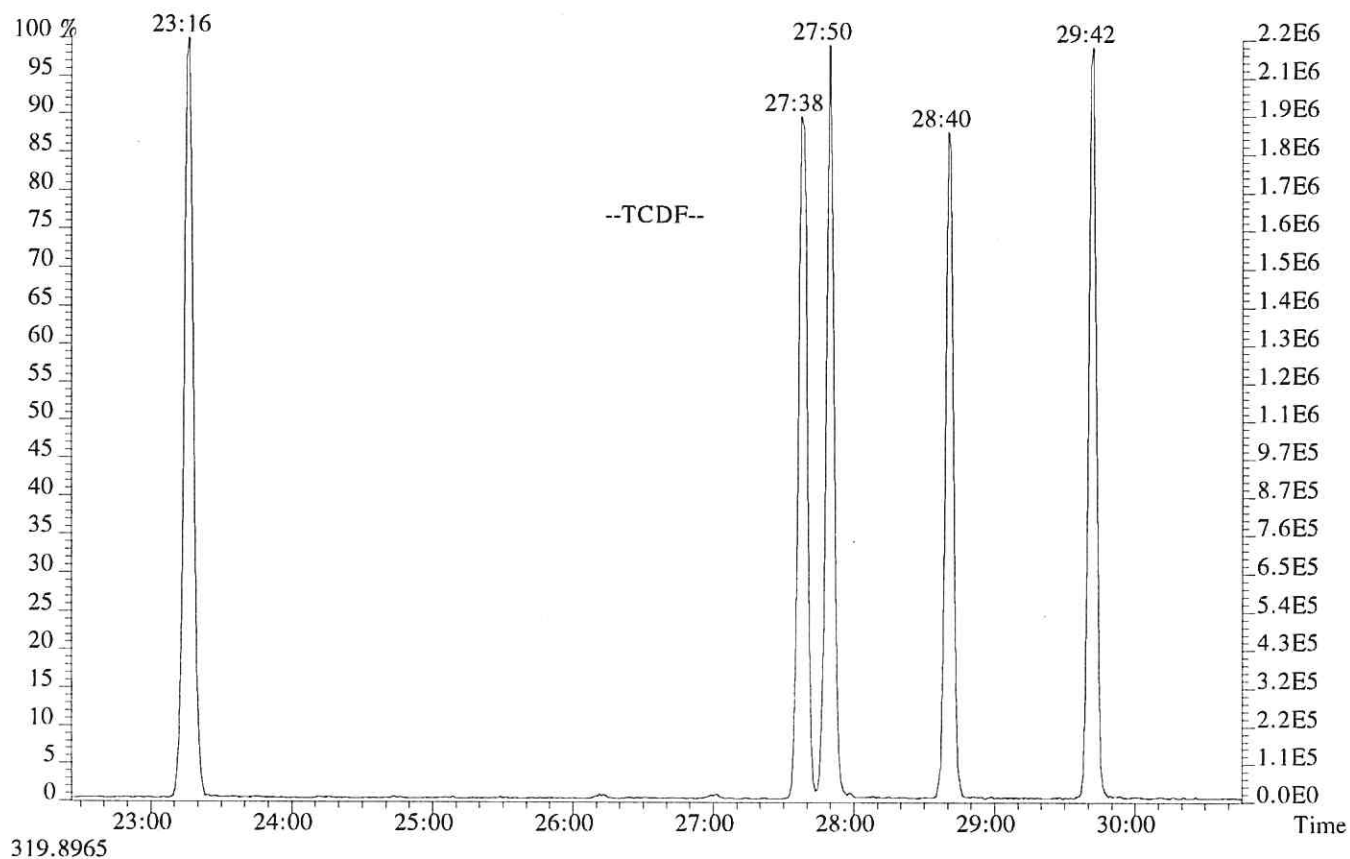
Time Analyzed: 21:22:33

Congener	Retention Time First Eluting	Retention Time Last Eluting
TCDF	23:16	29:42
TCDD	25:05	29:32
PeCDF	29:39	33:56
PeCDD	31:12	33:40
HxCDF	34:35	37:05
HxCDD	35:06	36:41
HpCDF	38:17	39:39
HpCDD	38:32	39:11

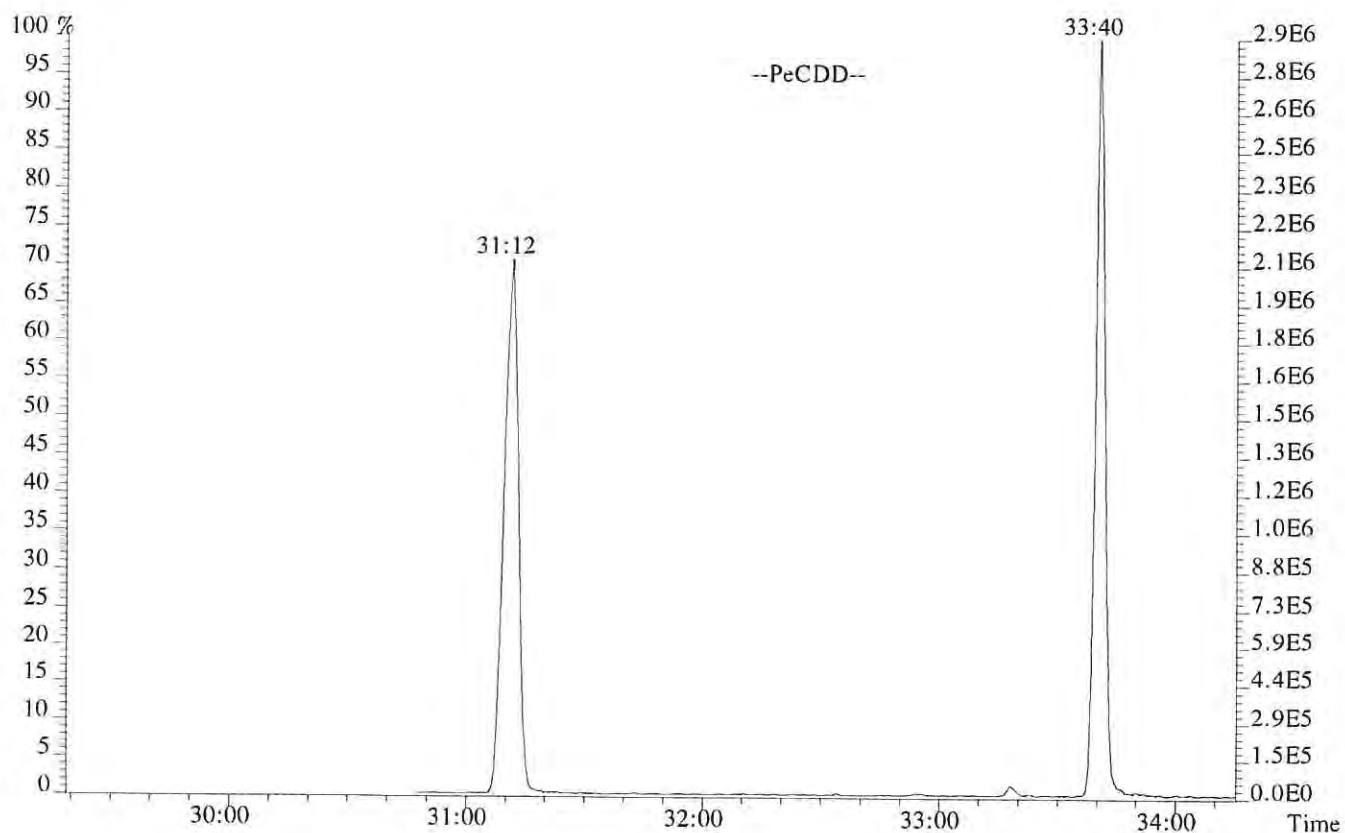
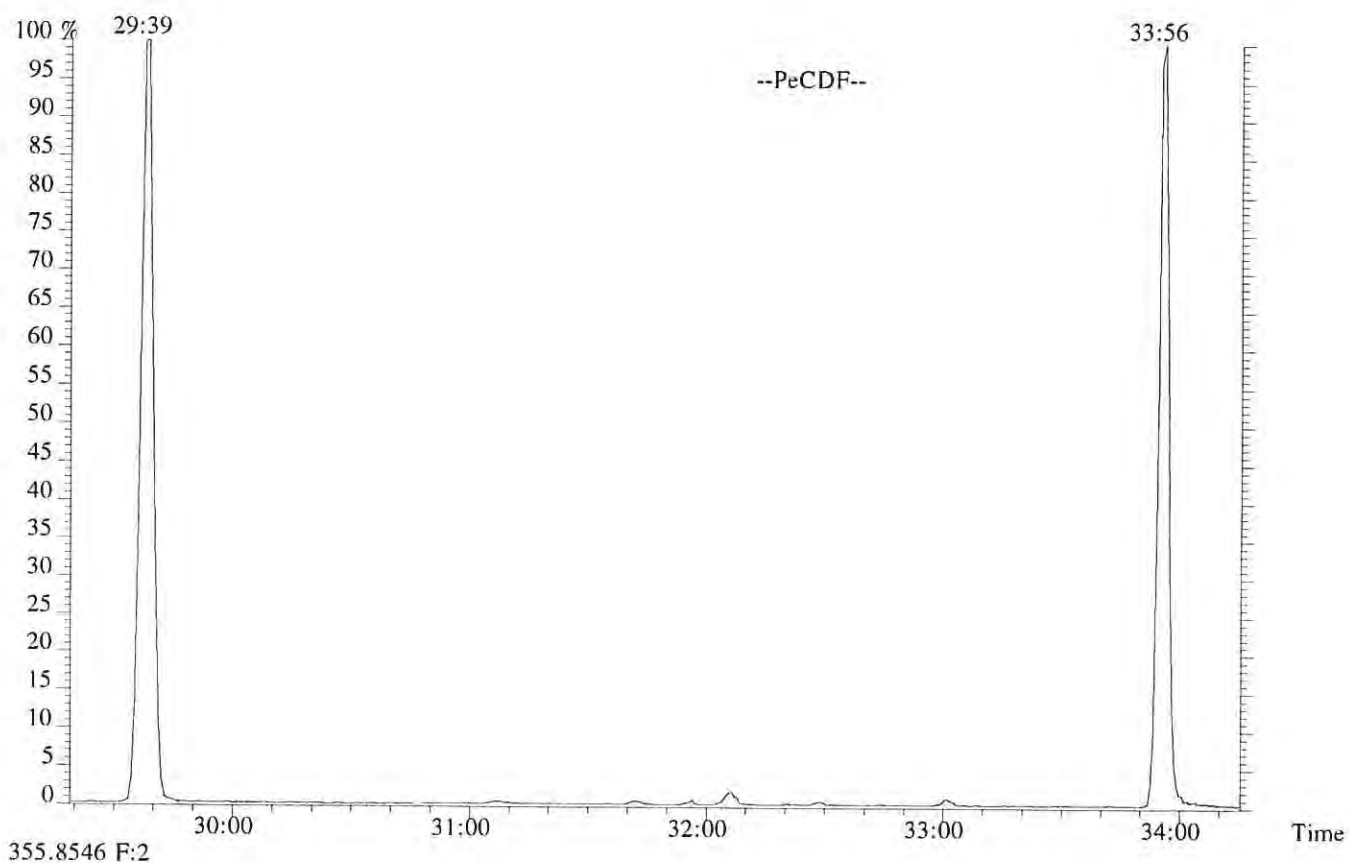
% Valley 2378-TCDD:

13 %

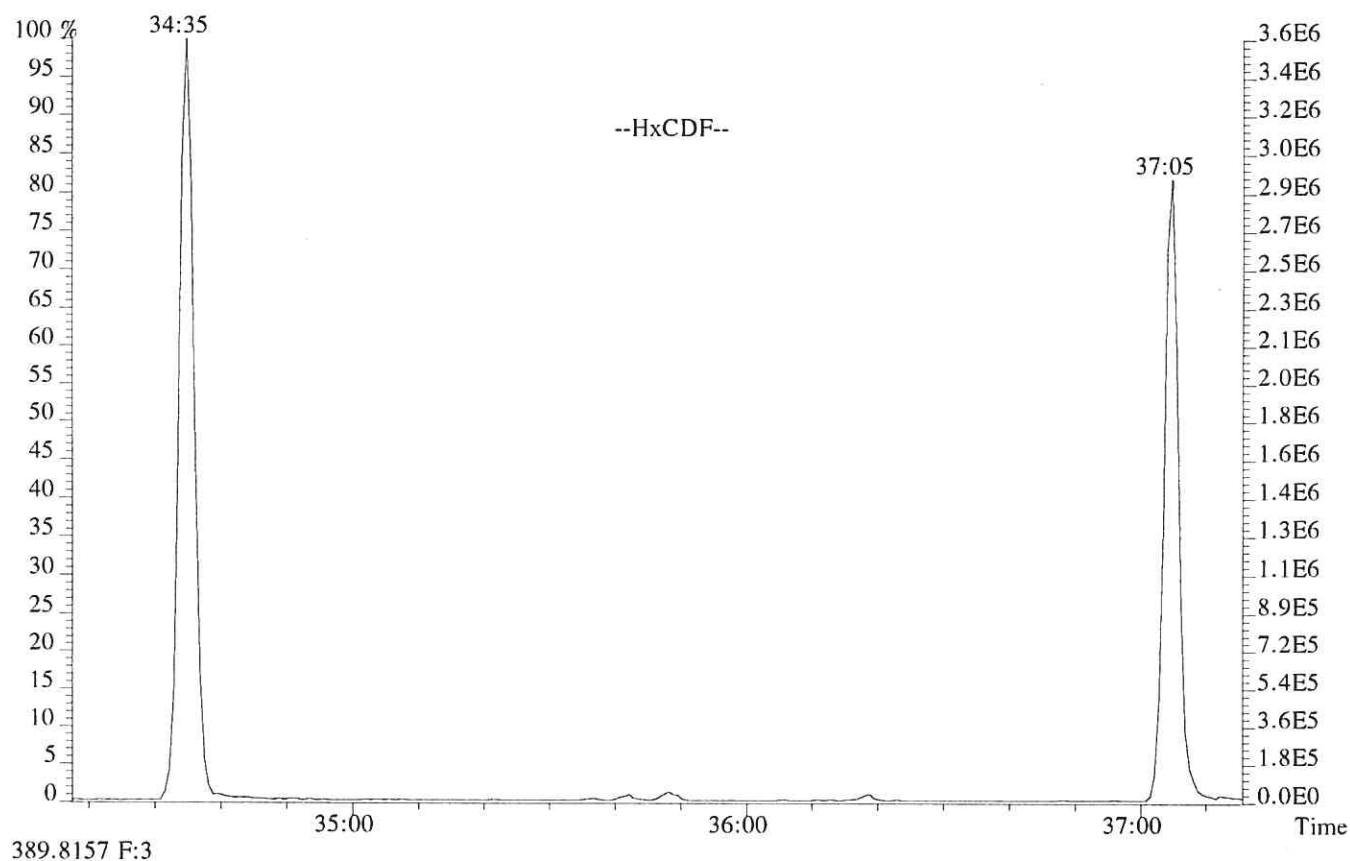




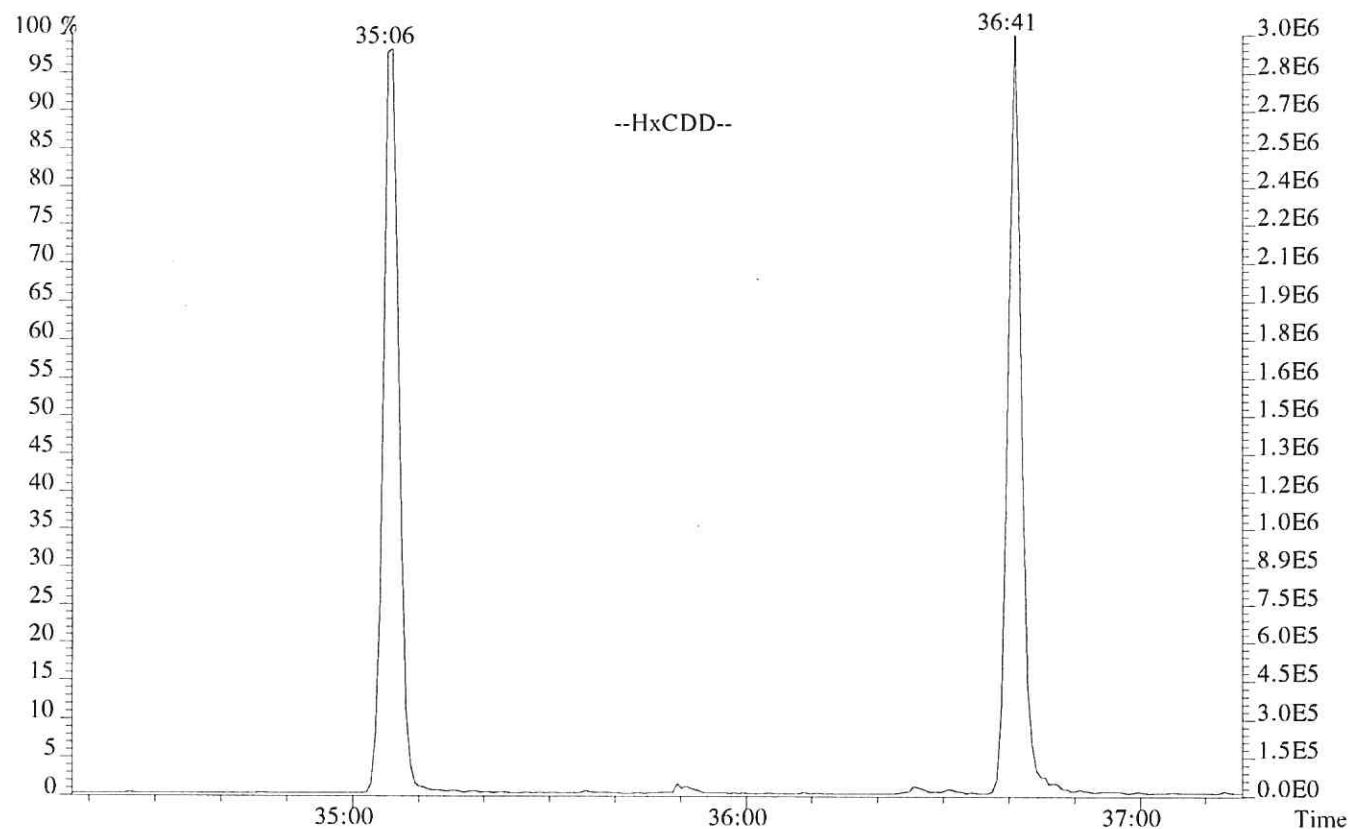
File: P521507 #1-591 Acq: 25-APR-2019 21:22:33 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: 192977
339.8597, 339.8597 F: 2

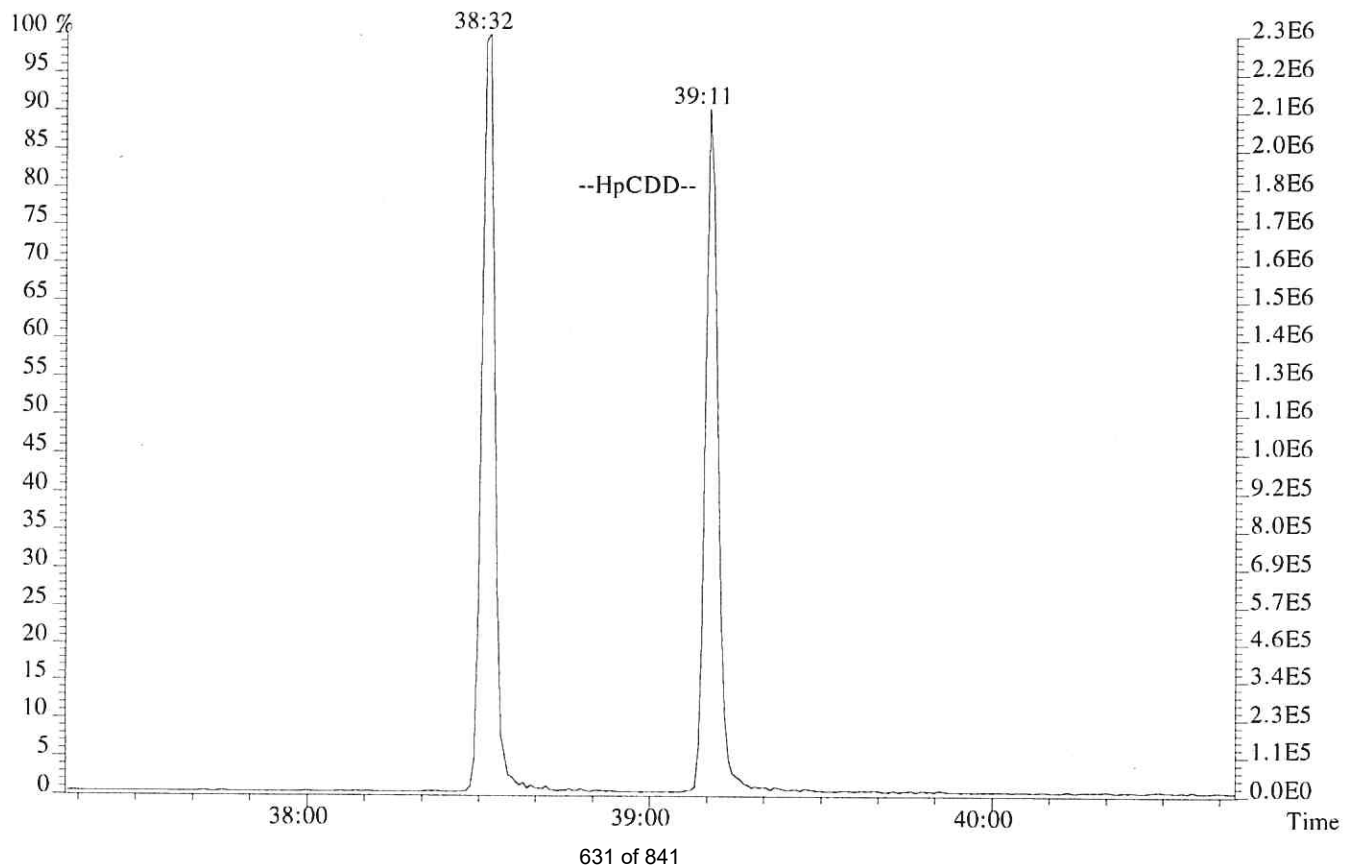
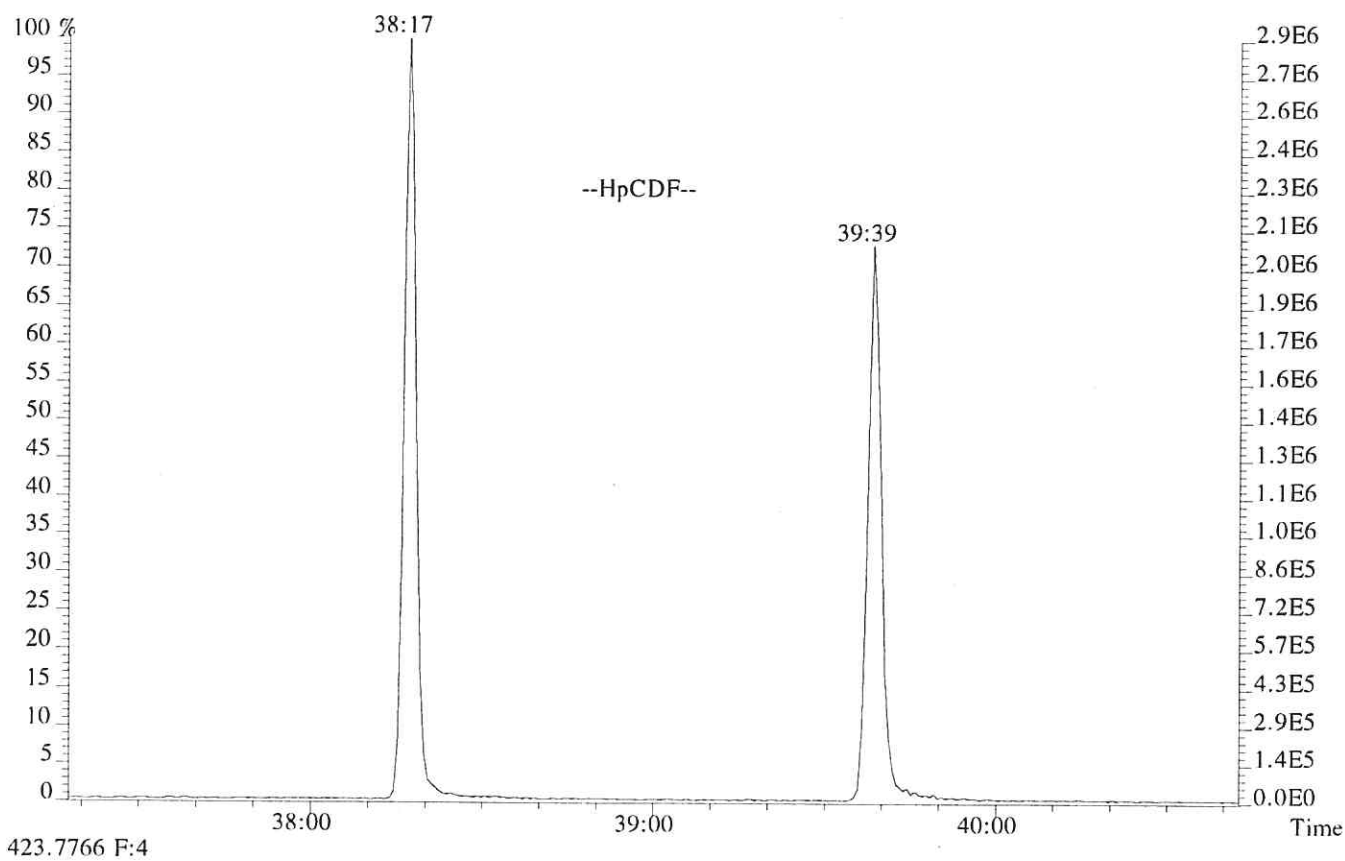


File: P521507 #1-268 Acq: 25-APR-2019 21:22:33 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: 192977
373.8208 F:3



389.8157 F:3





USEPA - CLP
6DFA6
CDD/CDF INITIAL CALIBRATION RESPONSE FACTOR SUMMARY
HIGH RESOLUTION

Lab Name: ALS Environmental

Contract No.:

Lab Code: ALSTX

Case No.:

TO No.:

SDG No.:

GC Column: DB-5MSUI ID: 0.25 (mm)

Instrument ID: E-HRMS-07

Init. Calib. Date(s): 04/25/19

Method 1613/8290

Init. Calib. Time.: 21:22

RR/RRF

Target Analytes								RR/RRF	MEAN	QC LIMITS
	CS0.5	CS1	CS2	CS3	CS4	CS5		%RSD		
2,3,7,8-TCDD	1.26	1.08	1.04	1.00	1.03	1.04	1.08	8.79	+/-20%	
2,3,7,8-TCDF	1.09	1.00	0.92	0.90	0.93	0.94	0.96	7.57	+/-20%	
1,2,3,7,8-PeCDF	1.03	0.91	0.93	0.97	0.98	0.99	0.97	4.47	+/-20%	
1,2,3,7,8-PeCDD	1.04	0.96	0.96	0.95	0.96	0.95	0.97	3.30	+/-20%	
2,3,4,7,8-PeCDF	0.94	0.90	0.91	0.91	0.93	0.93	0.92	1.63	+/-20%	
1,2,3,4,7,8-HxCDF	1.14	1.13	1.16	1.16	1.19	1.19	1.16	2.31	+/-20%	
1,2,3,6,7,8-HxCDF	1.04	1.05	1.06	1.08	1.10	1.11	1.07	2.66	+/-20%	
1,2,3,4,7,8-HxCDD	1.05	0.97	1.02	1.03	1.04	1.05	1.02	3.03	+/-20%	
1,2,3,6,7,8-HxCDD	1.07	0.99	1.04	1.03	1.05	1.05	1.04	2.57	+/-20%	
1,2,3,7,8,9-HxCDD	1.06	1.01	1.03	1.07	1.08	1.09	1.06	2.94	+/-20%	
2,3,4,6,7,8-HxCDF	1.10	1.00	1.04	1.09	1.10	1.09	1.07	3.73	+/-20%	
1,2,3,7,8,9-HxCDF	1.11	1.07	1.07	1.09	1.11	1.12	1.10	2.29	+/-20%	
1,2,3,4,6,7,8-HpCDF	1.29	1.22	1.26	1.29	1.32	1.31	1.28	2.92	+/-20%	
1,2,3,4,6,7,8-HpCDD	1.06	0.92	0.96	0.98	1.01	1.00	0.99	4.74	+/-20%	
1,2,3,4,7,8,9-HpCDF	1.18	1.16	1.18	1.20	1.23	1.21	1.19	1.95	+/-20%	
OCDD	1.19	1.04	1.03	1.10	1.11	1.10	1.09	5.17	+/-20%	
OCDF	1.20	1.13	1.14	1.23	1.26	1.26	1.20	4.61	+/-20%	
Labeled Compounds										
13C-2,3,7,8-TCDD	0.93	0.93	0.92	0.91	0.93	0.95	0.93	1.35	+/-35%	
13C-1,2,3,7,8-PeCDD	1.00	1.02	1.00	1.00	1.02	1.07	1.02	2.53	+/-35%	
13C-1,2,3,4,7,8-HxCDD	0.95	0.93	0.94	0.95	0.95	0.94	0.94	0.80	+/-35%	
13C-1,2,3,6,7,8-HxCDD	0.94	0.91	0.93	0.92	0.93	0.90	0.92	1.55	+/-35%	
13C-1,2,3,4,6,7,8-HpCDD	0.89	0.87	0.87	0.87	0.89	0.87	0.88	1.10	+/-35%	
13C-OCDD	0.67	0.68	0.66	0.65	0.68	0.64	0.66	2.36	+/-35%	
13C-2,3,7,8-TCDF	1.29	1.30	1.30	1.26	1.28	1.30	1.29	1.21	+/-35%	
13C-1,2,3,7,8-PeCDF	1.38	1.42	1.40	1.39	1.42	1.49	1.42	2.81	+/-35%	
13C-2,3,4,7,8-PeCDF	1.36	1.38	1.33	1.35	1.38	1.45	1.37	3.10	+/-35%	
13C-1,2,3,4,7,8-HxCDF	1.11	1.09	1.11	1.13	1.13	1.11	1.11	1.48	+/-35%	
13C-1,2,3,6,7,8-HxCDF	1.25	1.22	1.26	1.26	1.26	1.22	1.24	1.58	+/-35%	
13C-2,3,4,6,7,8-HxCDF	1.15	1.15	1.15	1.14	1.15	1.13	1.15	0.64	+/-35%	
13C-1,2,3,7,8,9-HxCDF	0.99	0.98	0.98	0.99	1.00	0.98	0.99	1.00	+/-35%	
13C-1,2,3,4,6,7,8-HpCDF	0.92	0.90	0.91	0.93	0.94	0.90	0.91	1.48	+/-35%	
13C-1,2,3,4,7,8,9-HpCDF	0.77	0.75	0.73	0.74	0.76	0.72	0.75	2.67	+/-35%	
37Cl-2,3,7,8-TCDD	1.09	1.01	0.99	0.96	0.99	1.02	1.01	4.53	+/-35%	

1. 123789-HxCDD Relative Response (RR) is calculated based on the labeled analog of the other two HxCDDs.

2. OCDF RR is calculated based on the labeled analog of OCDD

ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
193431

Run #1 Filename P521510 Samp: 1 Inj: 1 Acquired: 25-APR-19 23:48:29
Processed: 26-APR-19 07:12:43 Sample ID: CS0.5

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	27:50	1.626e+02	2.418e+02	0.67	yes	no	0.962
2 Unk	1,2,3,7,8-PeCDF	32:06	1.270e+03	7.771e+02	1.63	yes	no	0.968
3 Unk	2,3,4,7,8-PeCDF	33:00	1.108e+03	7.131e+02	1.55	yes	no	0.919
4 Unk	1,2,3,4,7,8-HxCDF	35:41	9.048e+02	7.794e+02	1.16	yes	no	1.161
5 Unk	1,2,3,6,7,8-HxCDF	35:48	8.931e+02	8.381e+02	1.07	yes	no	1.073
6 Unk	2,3,4,6,7,8-HxCDF	36:18	8.927e+02	7.787e+02	1.15	yes	no	1.069
7 Unk	1,2,3,7,8,9-HxCDF	37:03	7.994e+02	6.614e+02	1.21	yes	no	1.096
8 Unk	1,2,3,4,6,7,8-HpCDF	38:17	7.898e+02	7.829e+02	1.01	yes	no	1.281
9 Unk	1,2,3,4,7,8,9-HpCDF	39:39	6.194e+02	5.875e+02	1.05	yes	no	1.192
10 Unk	OCDF	42:04	1.039e+03	1.083e+03	0.96	yes	no	1.204
11 Unk	2,3,7,8-TCDD	28:39	1.507e+02	1.865e+02	0.81	yes	no	1.077
12 Unk	1,2,3,7,8-PeCDD	33:18	8.989e+02	5.854e+02	1.54	yes	no	0.971
13 Unk	1,2,3,4,7,8-HxCDD	36:26	7.448e+02	5.739e+02	1.30	yes	no	1.024
14 Unk	1,2,3,6,7,8-HxCDD	36:31	7.270e+02	6.080e+02	1.20	yes	no	1.038
15 Unk	1,2,3,7,8,9-HxCDD	36:45	7.278e+02	5.970e+02	1.22	yes	no	1.055
16 Unk	1,2,3,4,6,7,8-HpCDD	39:11	6.298e+02	6.218e+02	1.01	yes	no	0.989
17 Unk	OCDD	41:52	1.007e+03	1.095e+03	0.92	yes	no	1.094
18 IS	13C-2,3,7,8-TCDF	27:48	6.549e+04	8.228e+04	0.80	yes	no	1.287
19 IS	13C-1,2,3,7,8-PeCDF	32:05	9.694e+04	6.177e+04	1.57	yes	no	1.416
20 IS	13C-2,3,4,7,8-PeCDF	33:00	9.513e+04	6.061e+04	1.57	yes	no	1.374
21 IS	13C-1,2,3,4,7,8-HxCDF	35:40	4.064e+04	7.804e+04	0.52	yes	no	1.114
22 IS	13C-1,2,3,6,7,8-HxCDF	35:47	4.547e+04	8.738e+04	0.52	yes	no	1.245
23 IS	13C-2,3,4,6,7,8-HxCDF	36:17	4.130e+04	8.073e+04	0.51	yes	no	1.146
24 IS	13C-1,2,3,7,8,9-HxCDF	37:02	3.541e+04	6.949e+04	0.51	yes	no	0.986
25 IS	13C-1,2,3,4,6,7,8-HpCDF	38:17	2.984e+04	6.758e+04	0.44	yes	no	0.915
26 IS	13C-1,2,3,4,7,8,9-HpCDF	39:38	2.499e+04	5.709e+04	0.44	yes	no	0.746
27 IS	13C-2,3,7,8-TCDD	28:37	4.678e+04	6.001e+04	0.78	yes	no	0.929
28 IS	13C-1,2,3,7,8-PeCDD	33:16	7.034e+04	4.431e+04	1.59	yes	no	1.017
29 IS	13C-1,2,3,4,7,8-HxCDD	36:25	5.676e+04	4.417e+04	1.28	yes	no	0.945
30 IS	13C-1,2,3,6,7,8-HxCDD	36:30	5.643e+04	4.356e+04	1.30	yes	no	0.924
31 IS	13C-1,2,3,4,6,7,8-HpCDD	39:10	4.864e+04	4.588e+04	1.06	yes	no	0.876
32 IS	13C-OCDD	41:51	6.746e+04	7.435e+04	0.91	yes	no	0.662
33 RS/RT	13C-1,2,3,4-TCDD	28:01	5.060e+04	6.403e+04	0.79	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	36:44	5.901e+04	4.746e+04	1.24	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	28:38	3.131e+02				no	1.010

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Signal/Noise Height Ratio Summary

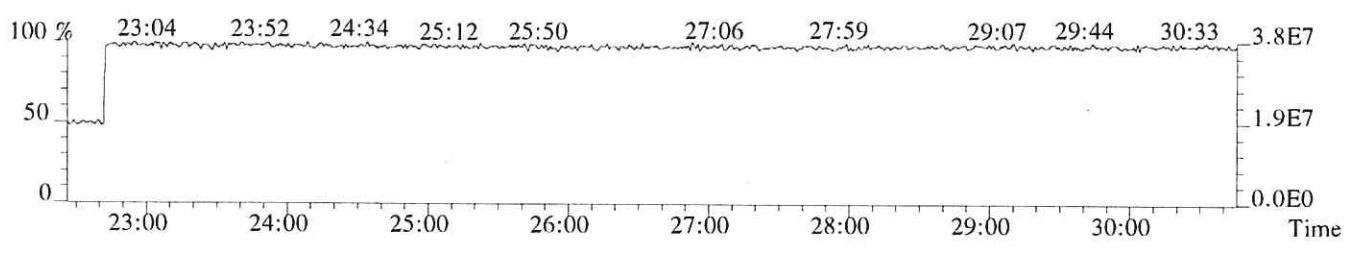
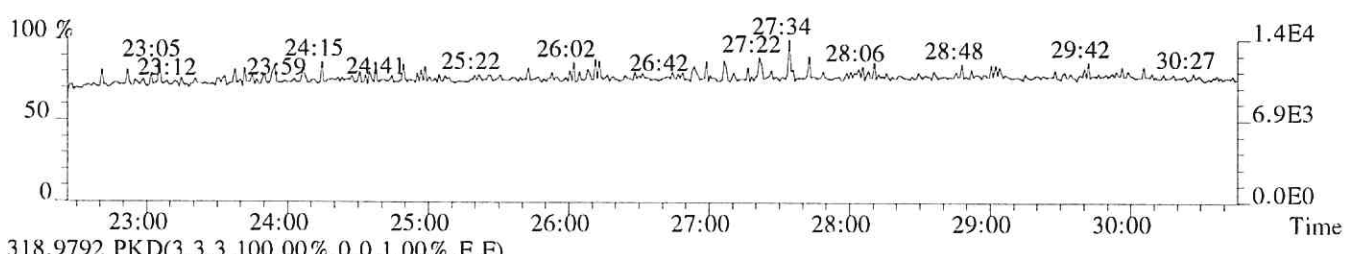
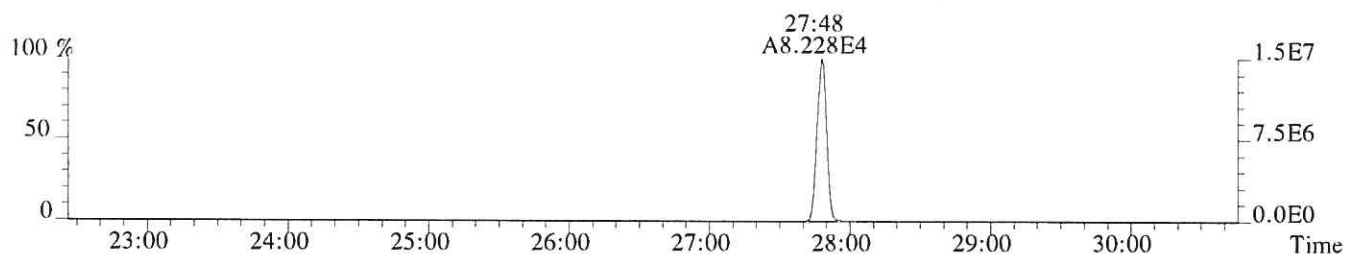
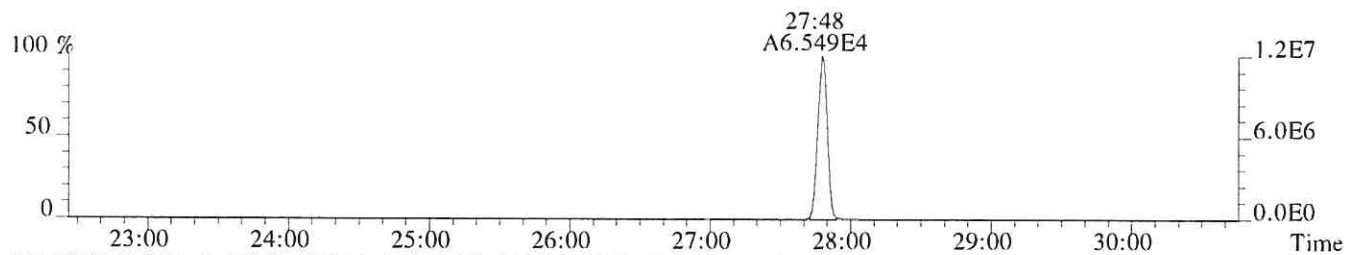
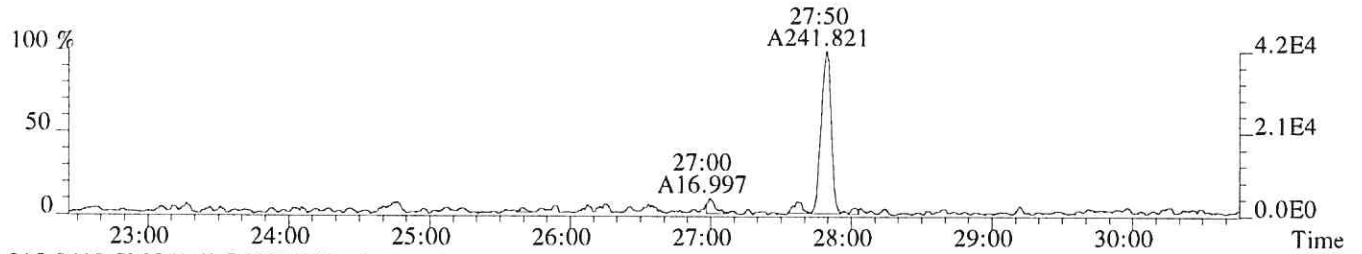
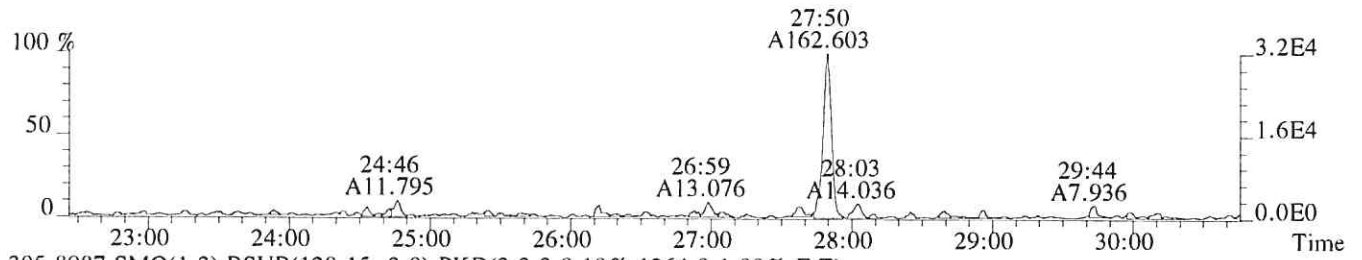
CLIENT ID.
193431

Run #1 Filename P521510 Samp: 1 Inj: 1 Acquired: 25-APR-19 23:48:29
Processed: 26-APR-19 07:12:43 LAB. ID: CS0.5

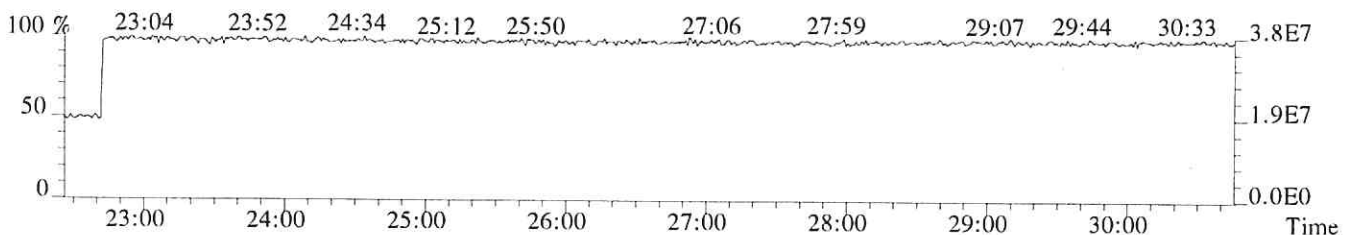
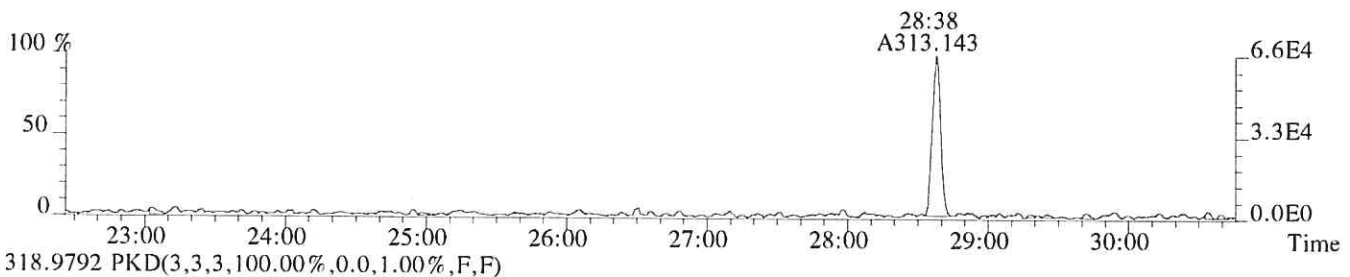
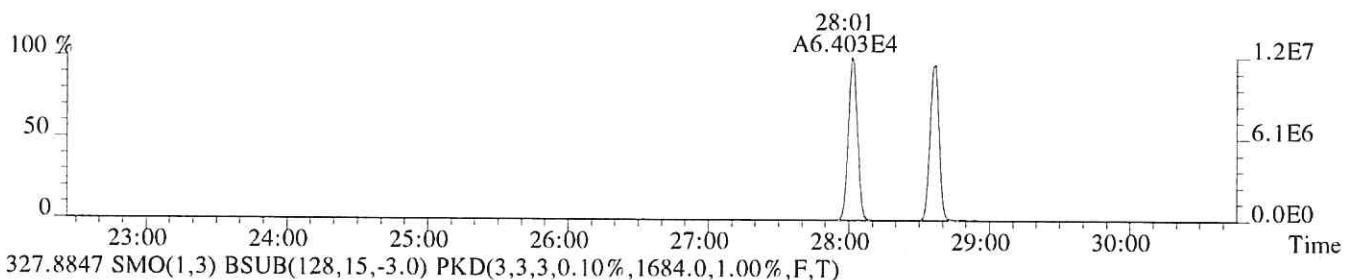
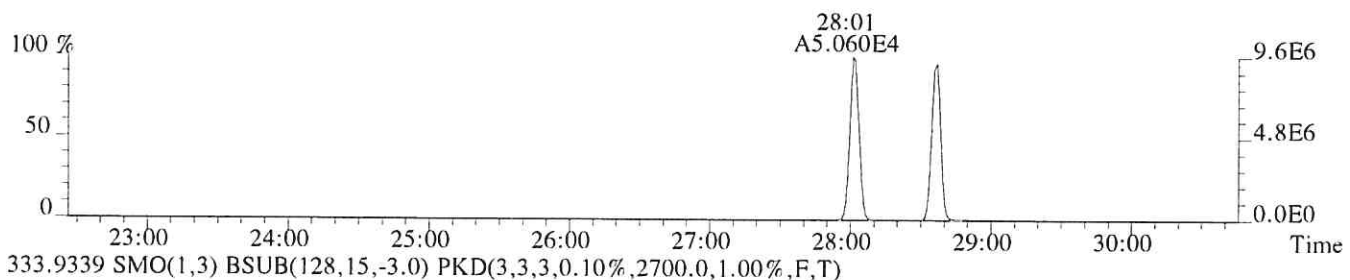
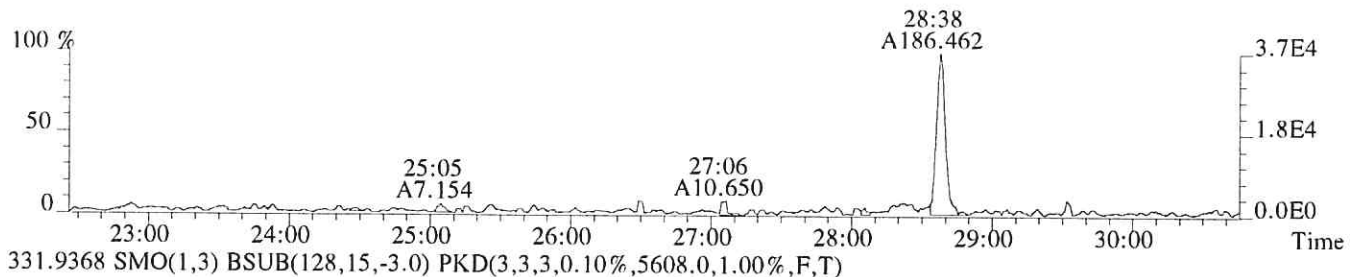
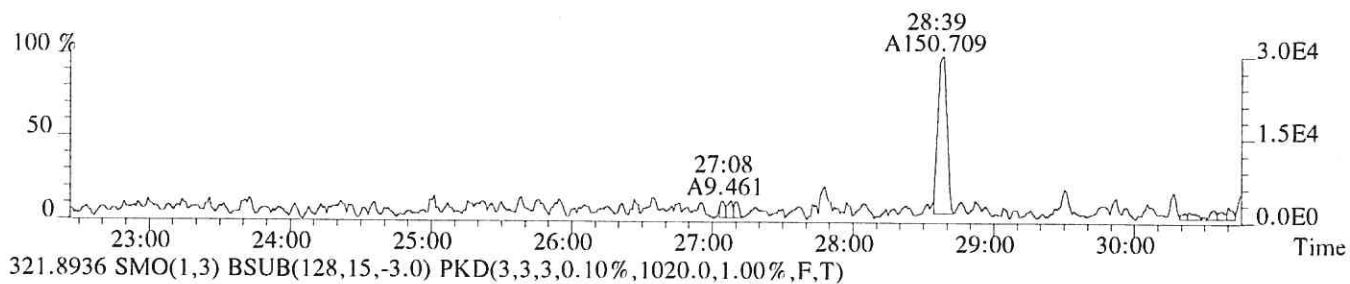
	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	3.22e+04	5.28e+02	6.1e+01	4.10e+04	1.26e+03	3.2e+01
2	1,2,3,7,8-PeCDF	2.54e+05	7.92e+02	3.2e+02	1.38e+05	1.65e+03	8.4e+01
3	2,3,4,7,8-PeCDF	2.21e+05	7.92e+02	2.8e+02	1.46e+05	1.65e+03	8.8e+01
4	1,2,3,4,7,8-HxCDF	2.00e+05	9.12e+02	2.2e+02	1.68e+05	7.56e+02	2.2e+02
5	1,2,3,6,7,8-HxCDF	2.04e+05	9.12e+02	2.2e+02	1.78e+05	7.56e+02	2.3e+02
6	2,3,4,6,7,8-HxCDF	2.03e+05	9.12e+02	2.2e+02	1.61e+05	7.56e+02	2.1e+02
7	1,2,3,7,8,9-HxCDF	1.75e+05	9.12e+02	1.9e+02	1.41e+05	7.56e+02	1.9e+02
8	1,2,3,4,6,7,8-HpCDF	1.80e+05	3.92e+02	4.6e+02	1.71e+05	7.60e+02	2.2e+02
9	1,2,3,4,7,8,9-HpCDF	1.24e+05	3.92e+02	3.2e+02	1.21e+05	7.60e+02	1.6e+02
10	OCDF	1.83e+05	6.40e+02	2.9e+02	1.91e+05	3.44e+02	5.6e+02
11	2,3,7,8-TCDD	2.86e+04	2.54e+03	1.1e+01	3.64e+04	1.02e+03	3.6e+01
12	1,2,3,7,8-PeCDD	1.93e+05	1.69e+03	1.1e+02	1.22e+05	9.32e+02	1.3e+02
13	1,2,3,4,7,8-HxCDD	1.73e+05	5.12e+02	3.4e+02	1.31e+05	3.84e+02	3.4e+02
14	1,2,3,6,7,8-HxCDD	1.65e+05	5.12e+02	3.2e+02	1.38e+05	3.84e+02	3.6e+02
15	1,2,3,7,8,9-HxCDD	1.58e+05	5.12e+02	3.1e+02	1.32e+05	3.84e+02	3.4e+02
16	1,2,3,4,6,7,8-HpCDD	1.48e+05	4.40e+02	3.4e+02	1.41e+05	4.00e+02	3.5e+02
17	OCDD	1.97e+05	6.56e+02	3.0e+02	2.11e+05	1.39e+03	1.5e+02
18	13C-2,3,7,8-TCDF	1.20e+07	6.28e+03	1.9e+03	1.50e+07	4.82e+03	3.1e+03
19	13C-1,2,3,7,8-PeCDF	1.85e+07	8.56e+02	2.2e+04	1.20e+07	9.44e+02	1.3e+04
20	13C-2,3,4,7,8-PeCDF	1.95e+07	8.56e+02	2.3e+04	1.23e+07	9.44e+02	1.3e+04
21	13C-1,2,3,4,7,8-HxCDF	8.92e+06	1.09e+03	8.2e+03	1.74e+07	8.60e+02	2.0e+04
22	13C-1,2,3,6,7,8-HxCDF	1.00e+07	1.09e+03	9.2e+03	1.93e+07	8.60e+02	2.2e+04
23	13C-2,3,4,6,7,8-HxCDF	9.22e+06	1.09e+03	8.4e+03	1.82e+07	8.60e+02	2.1e+04
24	13C-1,2,3,7,8,9-HxCDF	7.61e+06	1.09e+03	7.0e+03	1.49e+07	8.60e+02	1.7e+04
25	13C-1,2,3,4,6,7,8-HpCDF	6.85e+06	6.58e+03	1.0e+03	1.53e+07	7.60e+02	2.0e+04
26	13C-1,2,3,4,7,8,9-HpCDF	5.30e+06	6.58e+03	8.0e+02	1.18e+07	7.60e+02	1.5e+04
27	13C-2,3,7,8-TCDD	9.13e+06	5.61e+03	1.6e+03	1.16e+07	2.70e+03	4.3e+03
28	13C-1,2,3,7,8-PeCDD	1.42e+07	1.10e+03	1.3e+04	9.03e+06	1.18e+03	7.6e+03
29	13C-1,2,3,4,7,8-HxCDD	1.32e+07	1.27e+03	1.0e+04	1.02e+07	6.16e+02	1.7e+04
30	13C-1,2,3,6,7,8-HxCDD	1.26e+07	1.27e+03	1.0e+04	9.84e+06	6.16e+02	1.6e+04
31	13C-1,2,3,4,6,7,8-HpCDD	1.08e+07	8.16e+02	1.3e+04	1.00e+07	6.72e+02	1.5e+04
32	13C-OCDD	1.26e+07	4.92e+02	2.6e+04	1.39e+07	3.88e+02	3.6e+04
33	13C-1,2,3,4-TCDD	9.55e+06	5.61e+03	1.7e+03	1.22e+07	2.70e+03	4.5e+03
34	13C-1,2,3,7,8,9-HxCDD	1.34e+07	1.27e+03	1.1e+04	1.07e+07	6.16e+02	1.7e+04
35	37Cl-2,3,7,8-TCDD	6.50e+04	1.68e+03	3.9e+01			

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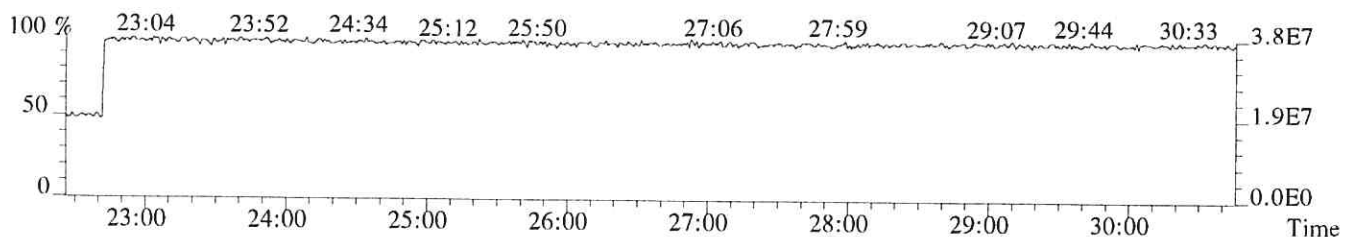
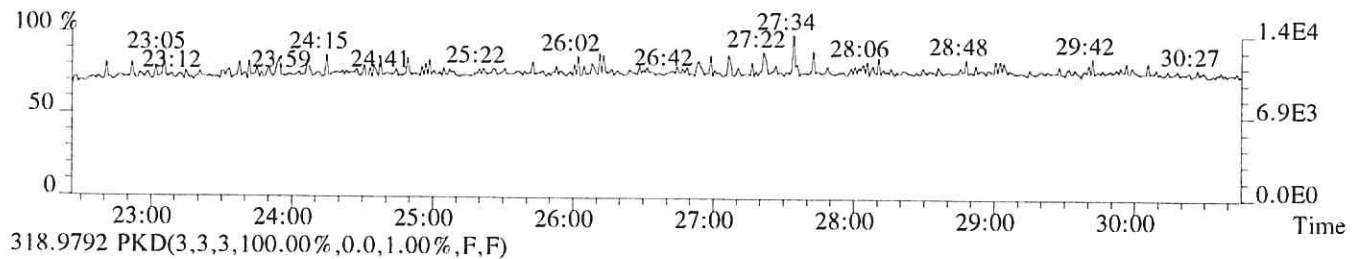
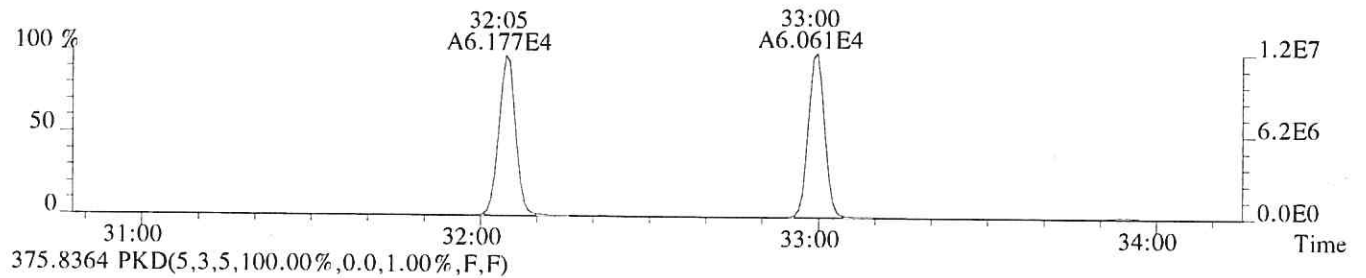
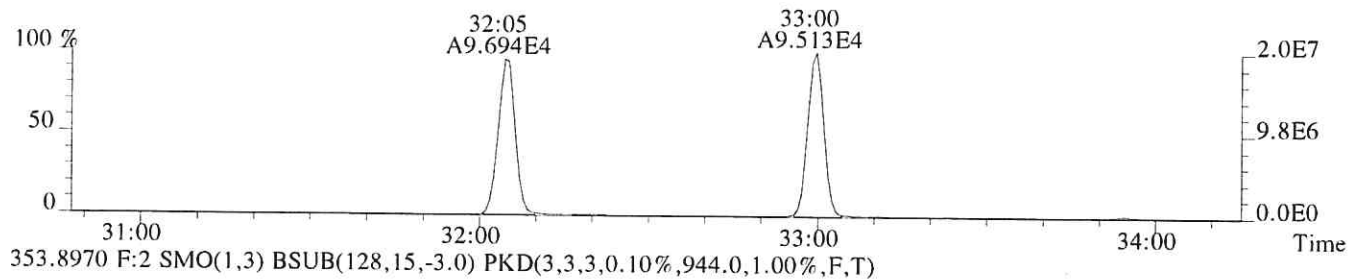
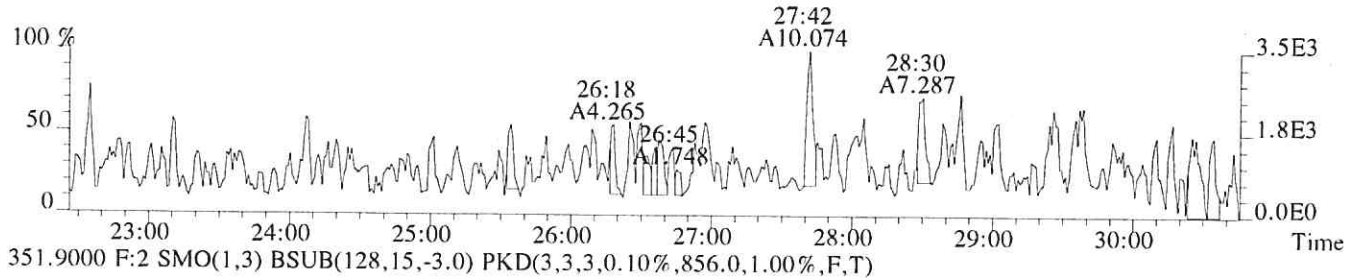
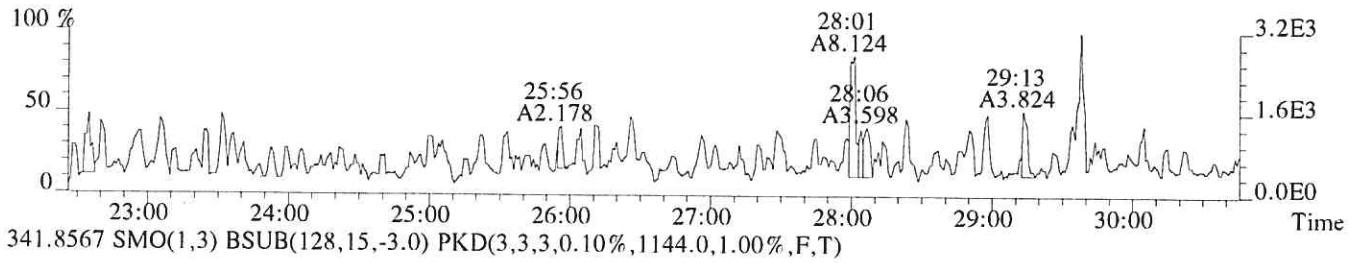
File: P521510 #1-591 Acq: 25-APR-2019 23:48:29 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: 193431
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,528.0,1.00%,F,T)



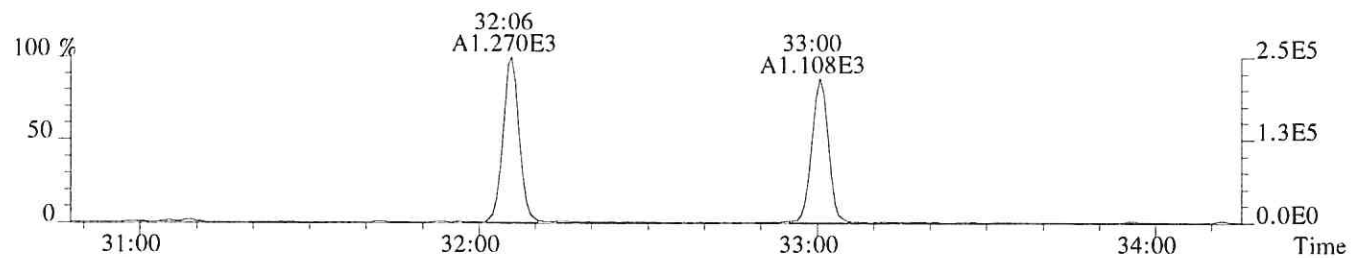
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Sample#1 Exp:193431
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2540.0,1.00%,F,T)



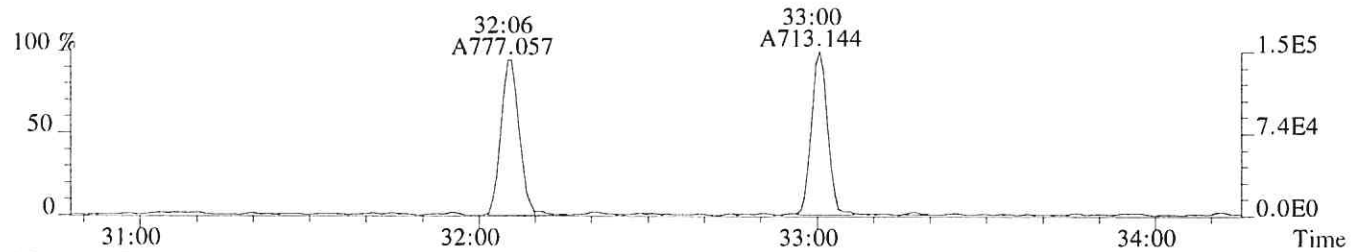
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Sample#1 Exp:193431
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,756.0,1.00%,F,T)



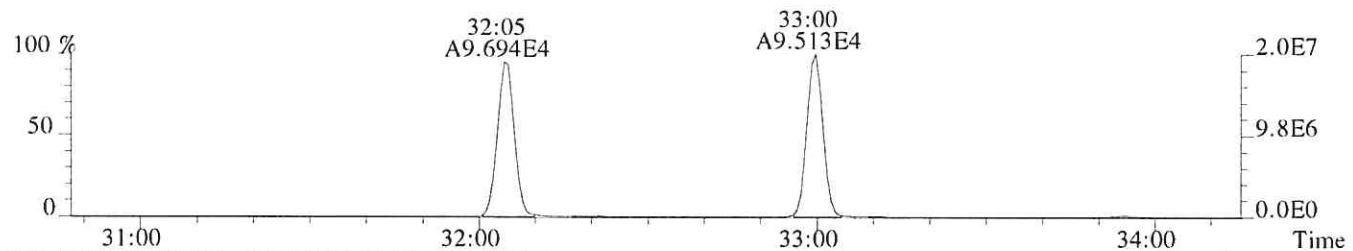
File:P521510 #1-312 Acq:25-APR-2019 23:48:29 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:193431
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,792.0,1.00%,F,T)



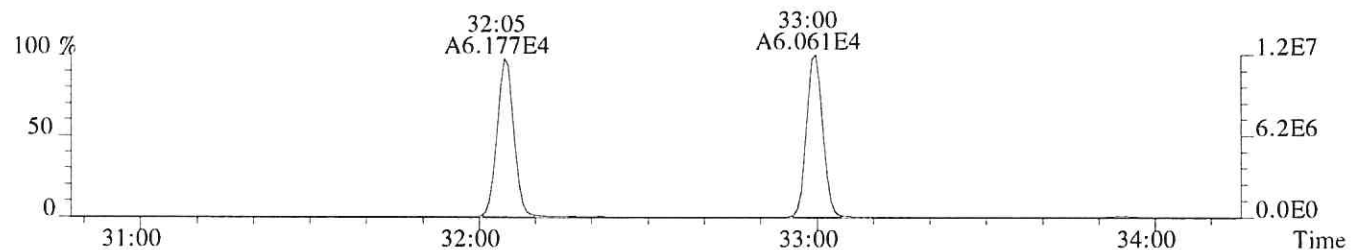
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1648.0,1.00%,F,T)



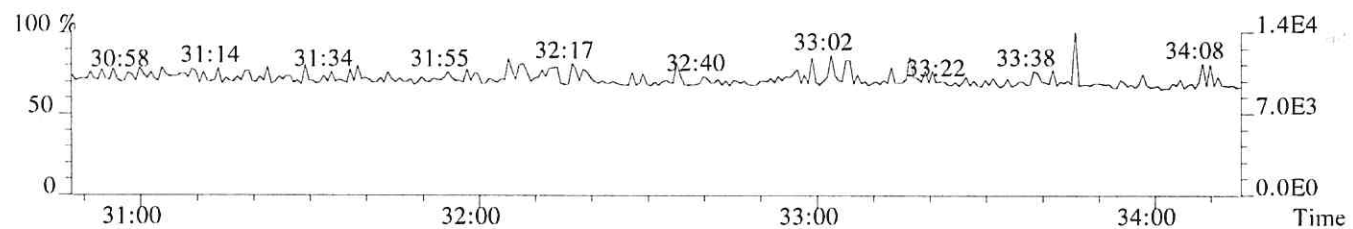
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,856.0,1.00%,F,T)



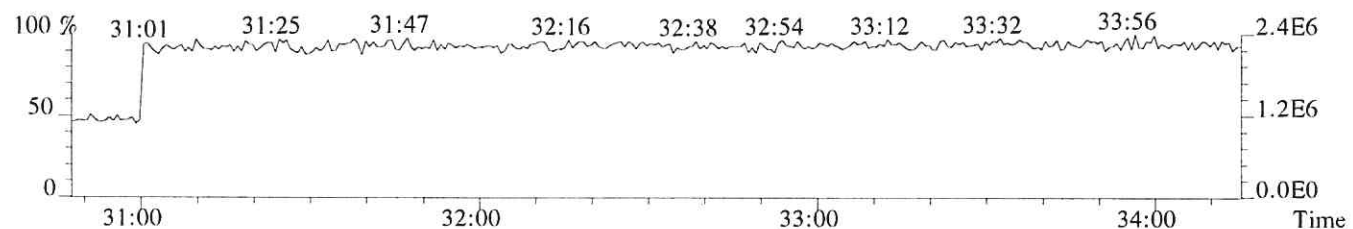
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,944.0,1.00%,F,T)



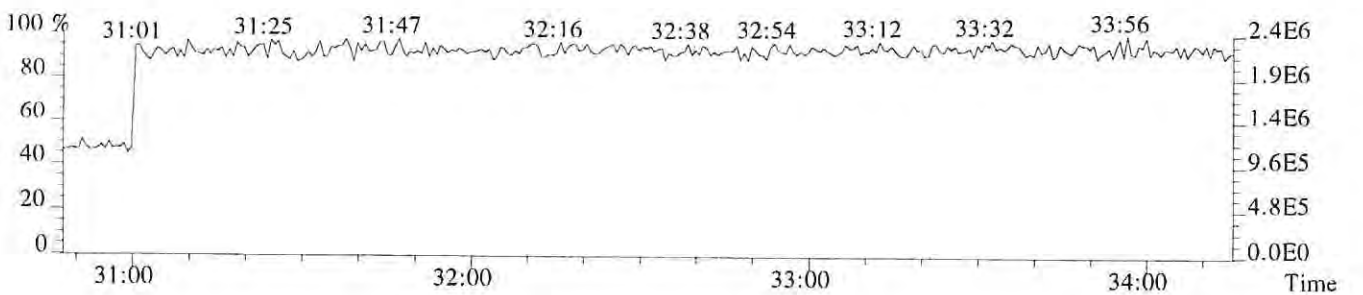
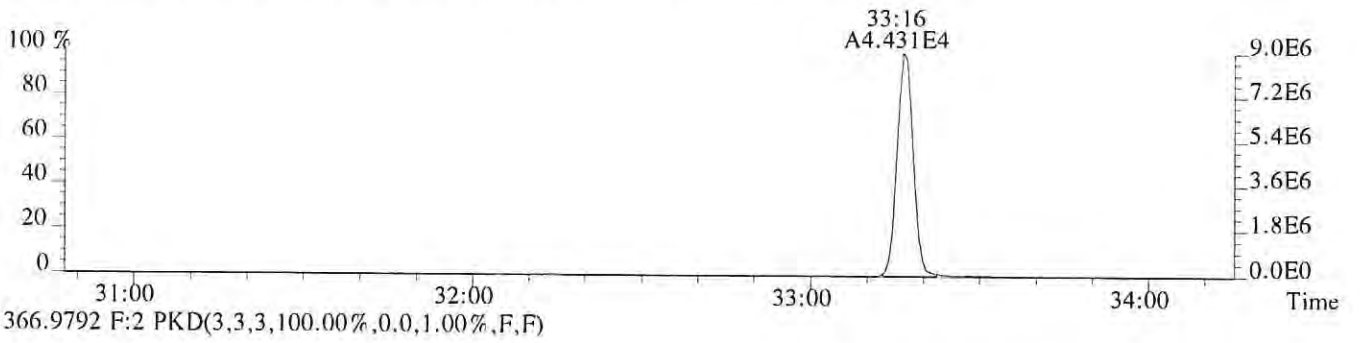
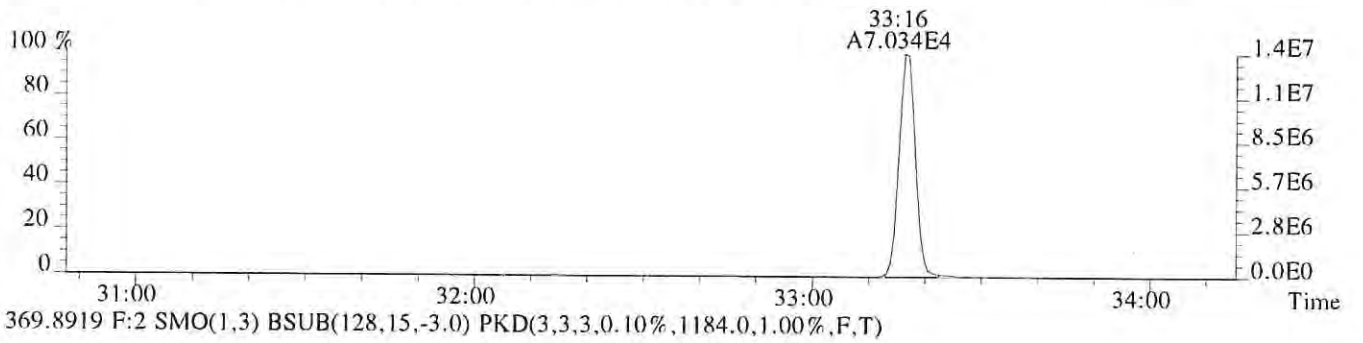
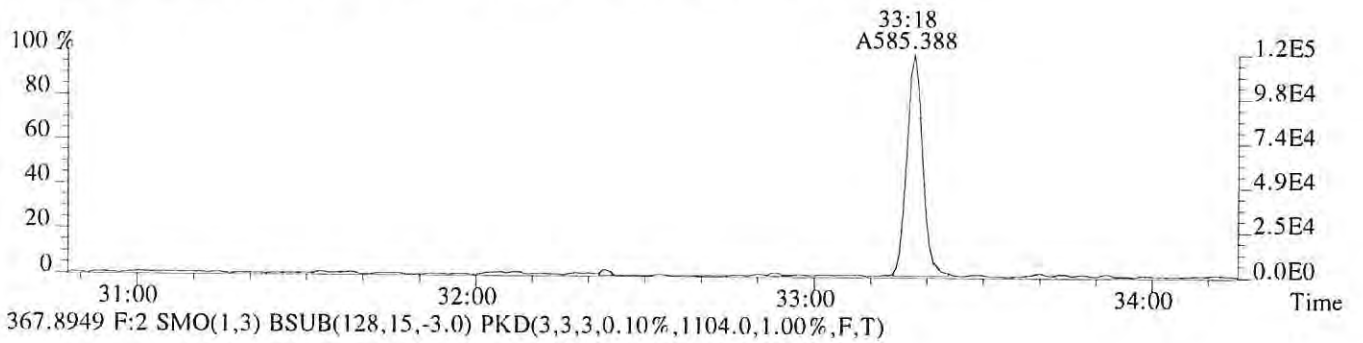
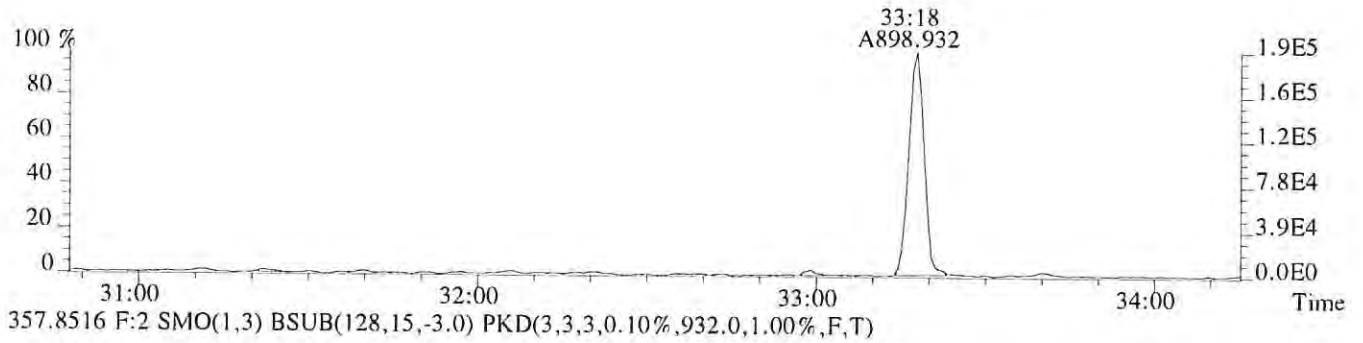
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



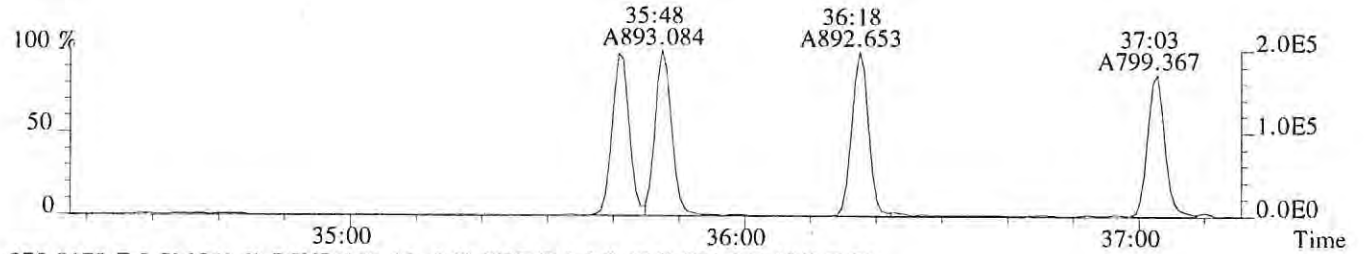
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



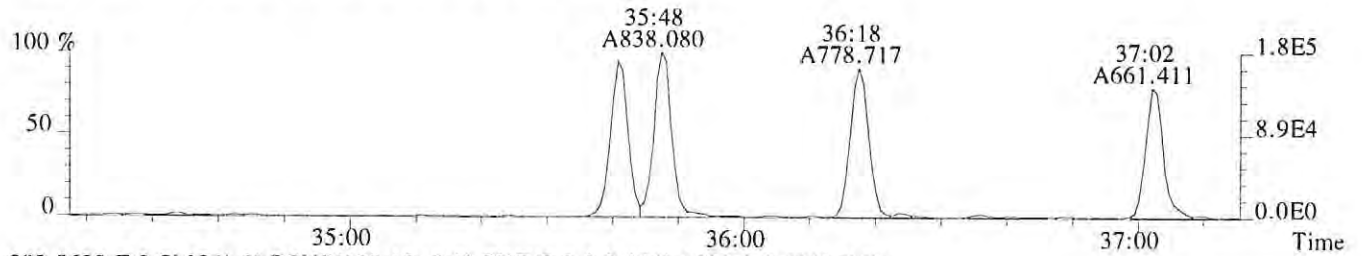
File:P521510 #1-312 Acq:25-APR-2019 23:48:29 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193431
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1692.0,1.00%,F,T)



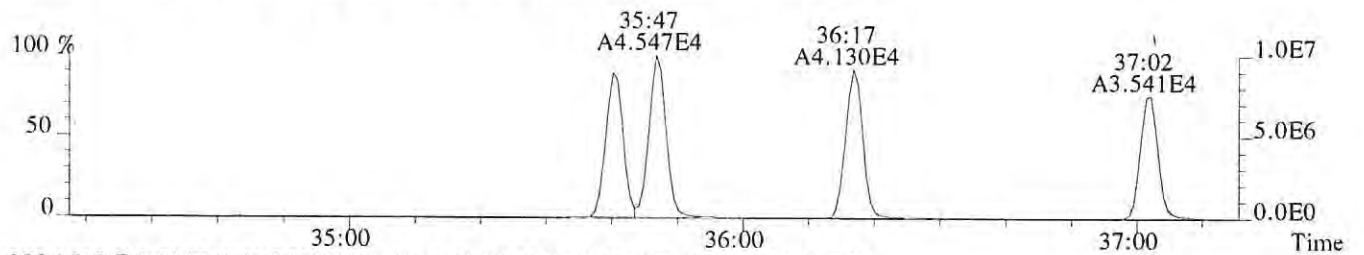
File:P521510 #1-268 Acq:25-APR-2019 23:48:29 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193431
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,912.0,0.40%,F,T)



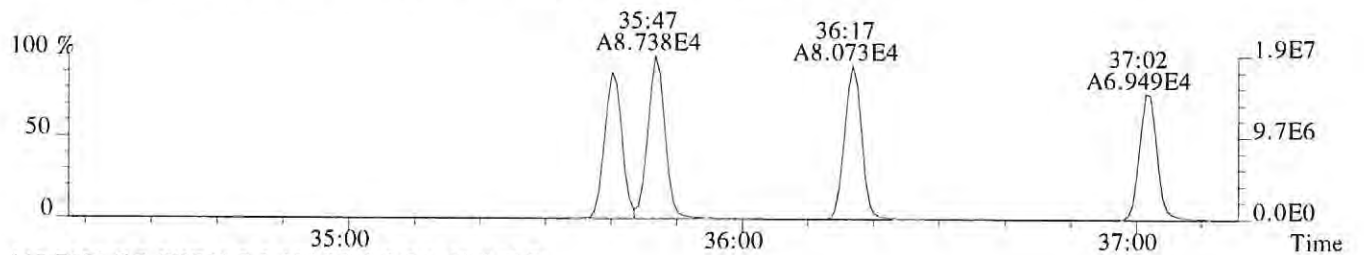
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,756.0,0.40%,F,T)



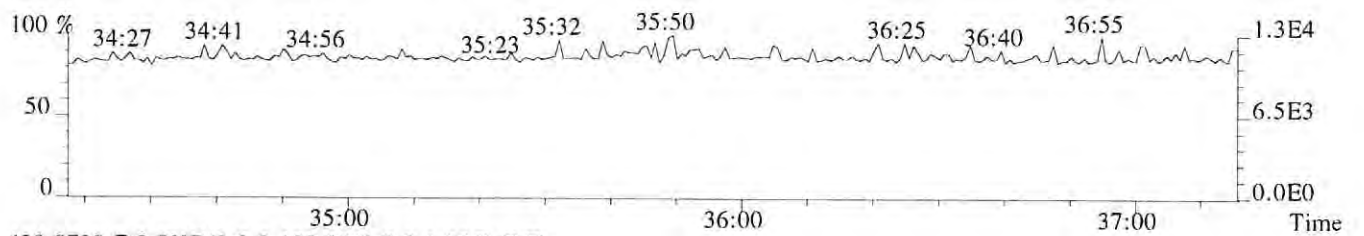
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1092.0,0.40%,F,T)



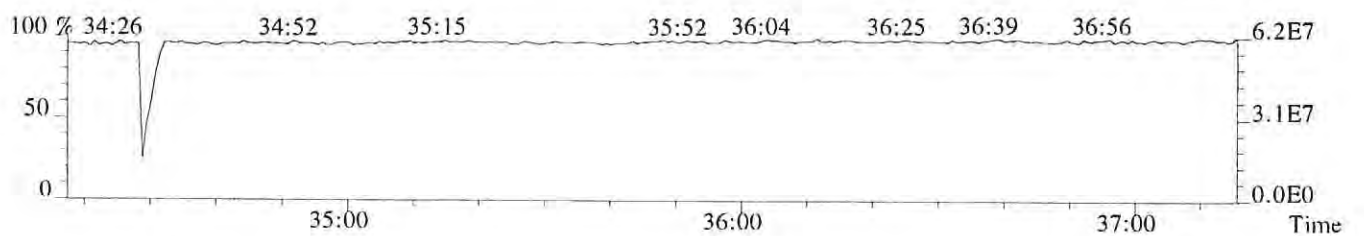
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,860.0,0.40%,F,T)



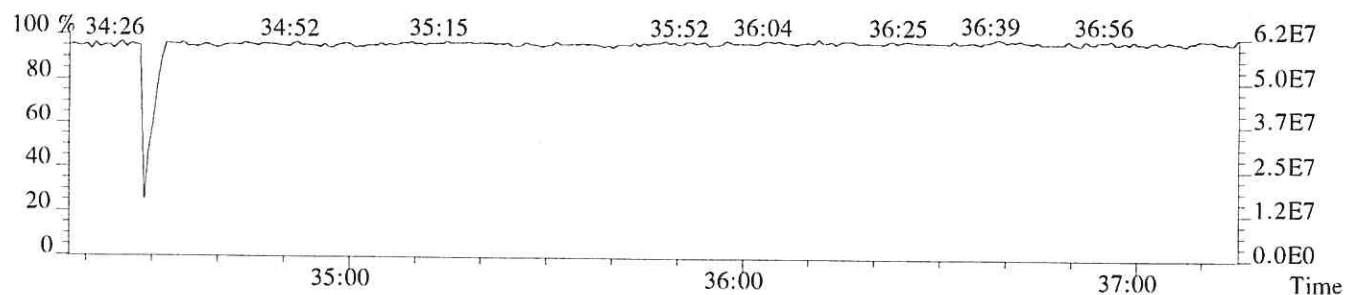
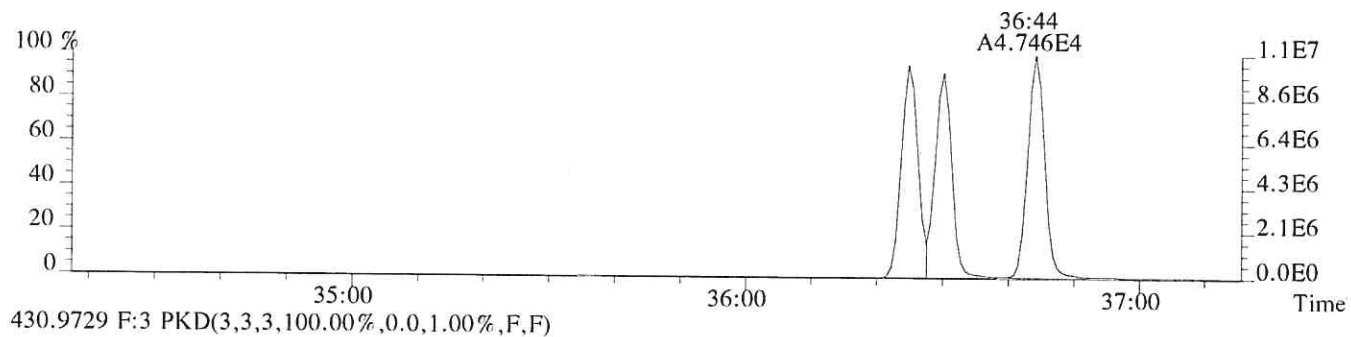
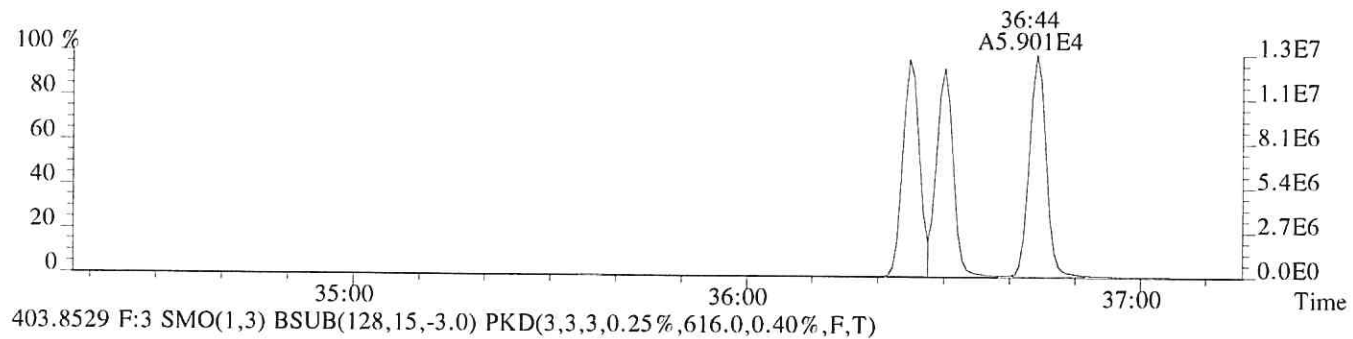
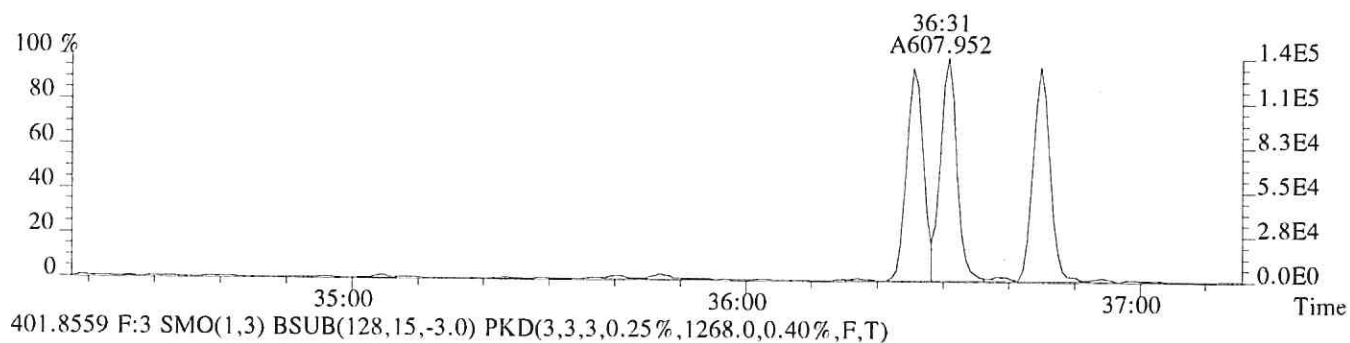
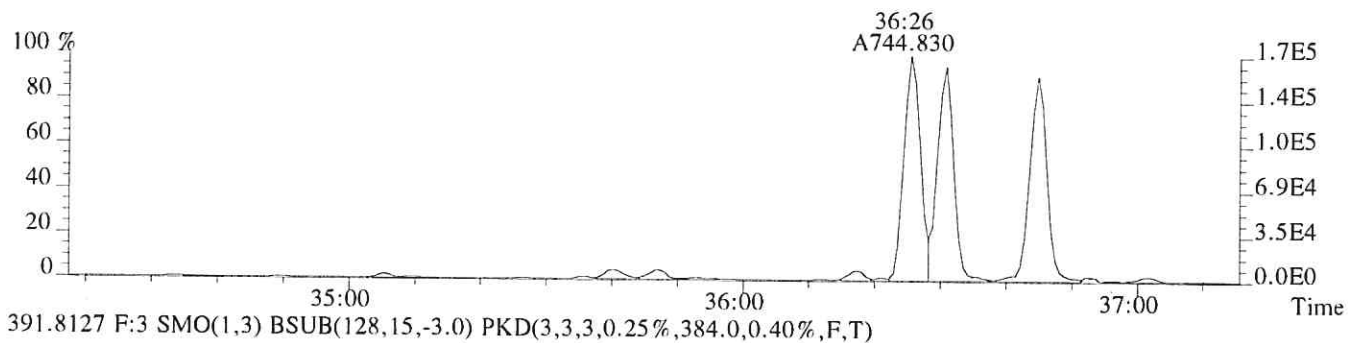
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



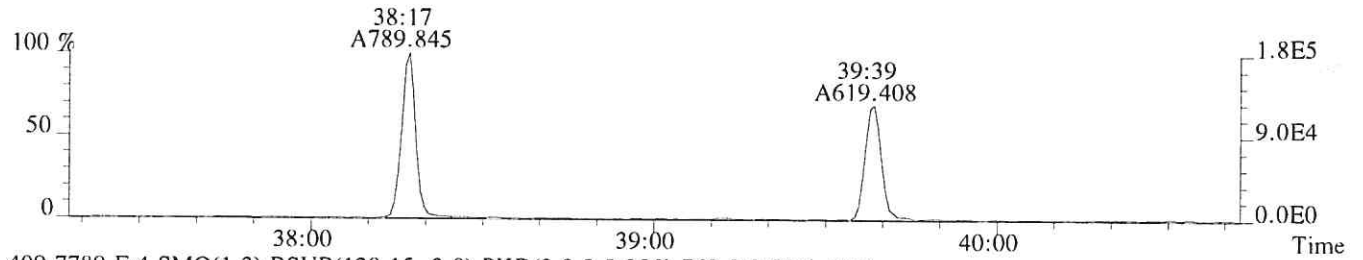
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



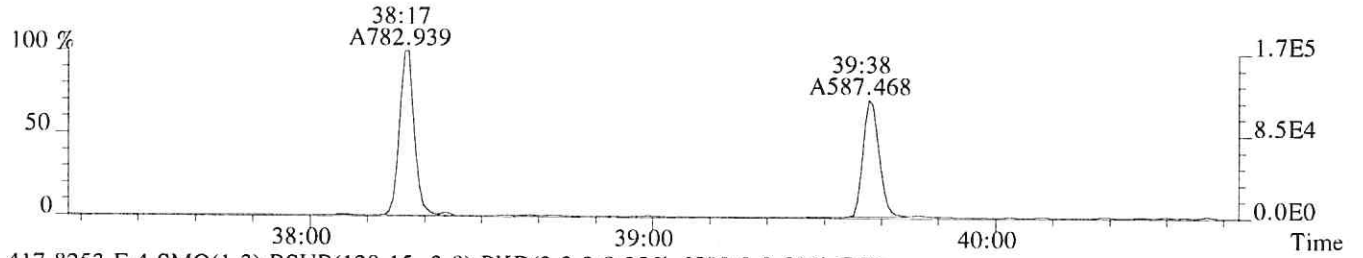
File:P521510 #1-268 Acq:25-APR-2019 23:48:29 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193431
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,512.0,0.40%,F,T)



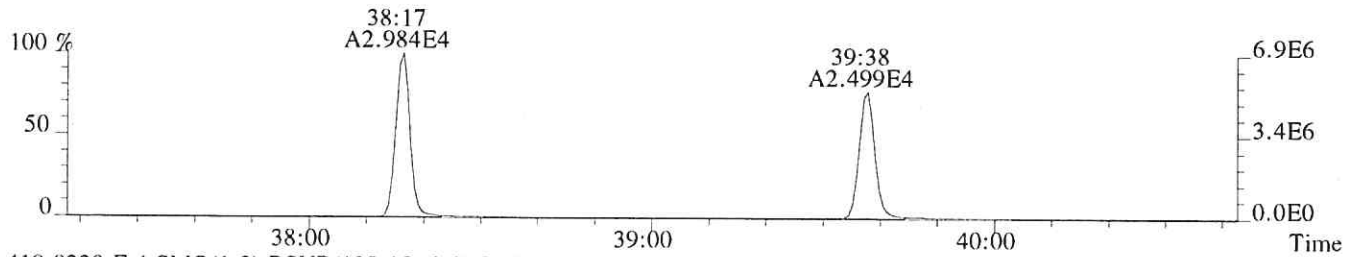
File:P521510 #1-308 Acq:25-APR-2019 23:48:29 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193431
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,392.0,0.50%,F,T)



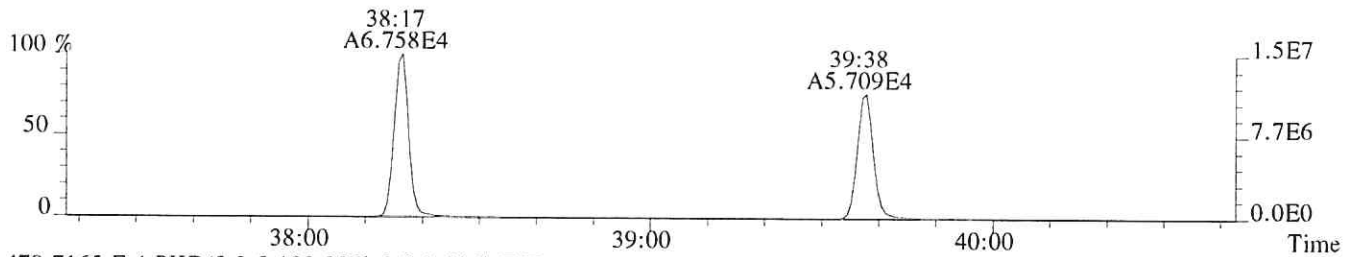
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,760.0,0.50%,F,T)



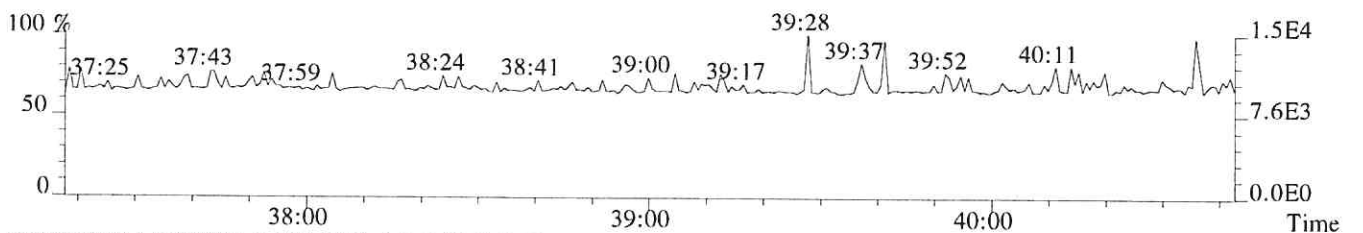
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,6580.0,0.50%,F,T)



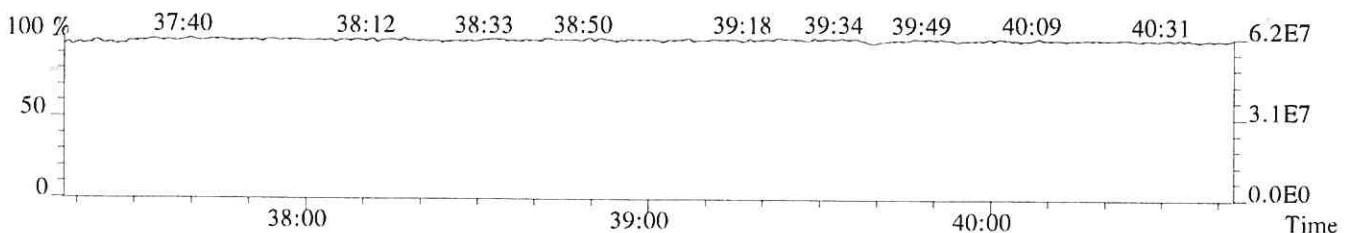
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,760.0,0.50%,F,T)



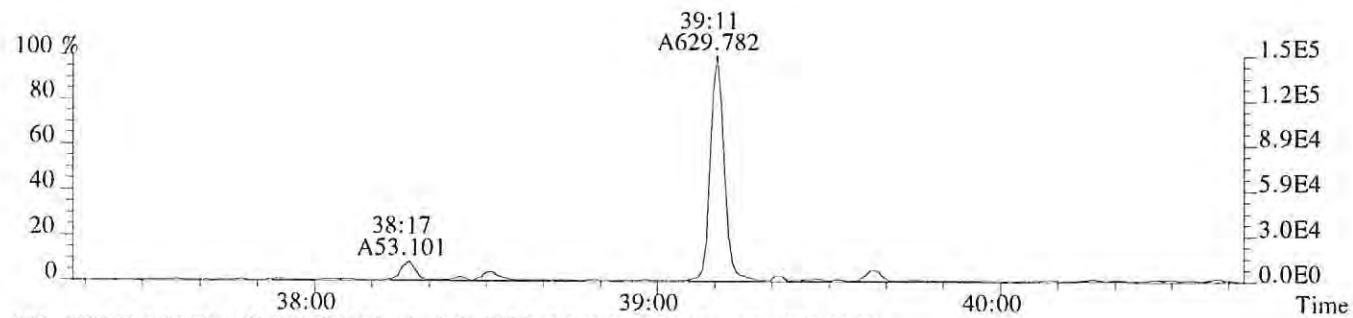
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



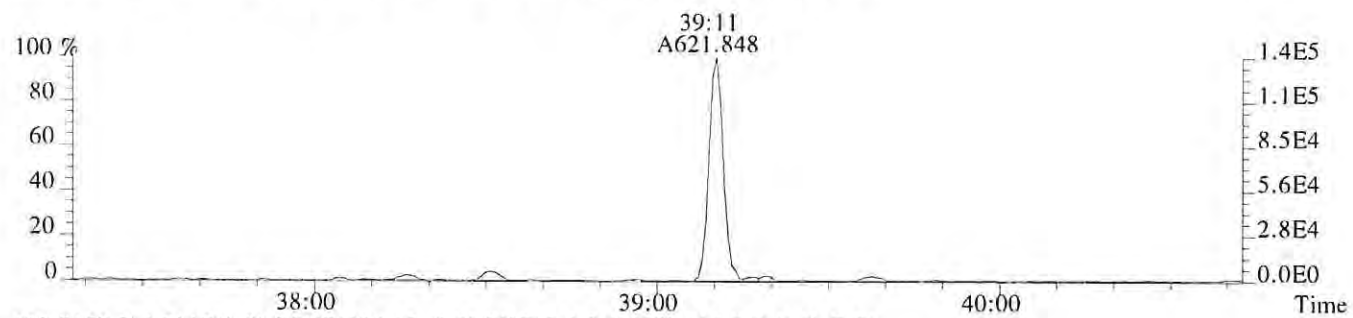
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



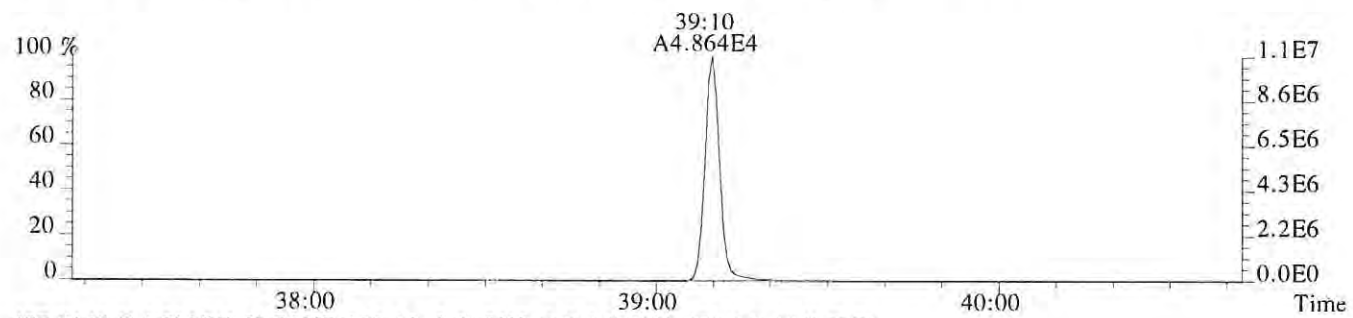
File: P521510 #1-308 Acq: 25-APR-2019 23:48:29 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: 193431
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,440.0,0.40%,F,T)



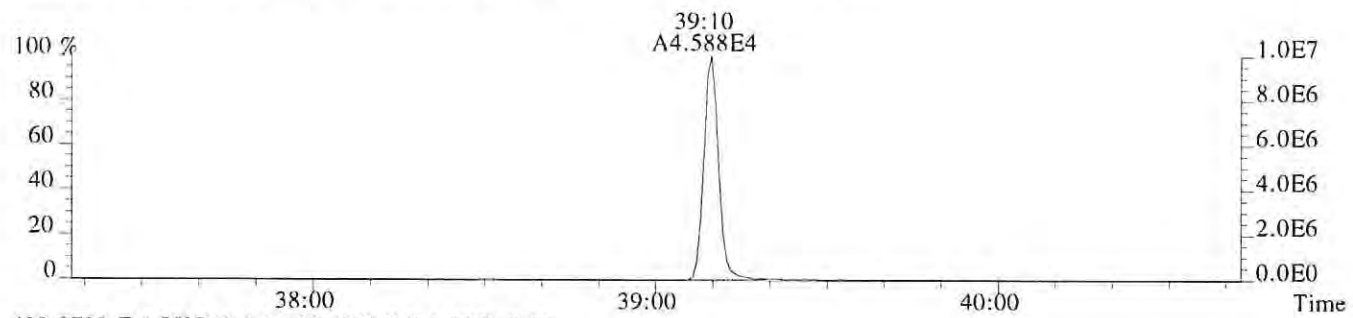
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,400.0,0.40%,F,T)



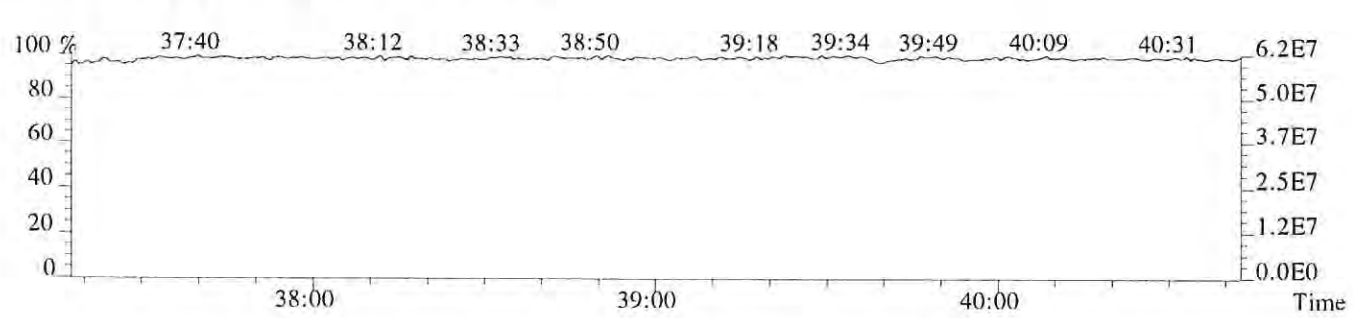
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,816.0,0.40%,F,T)



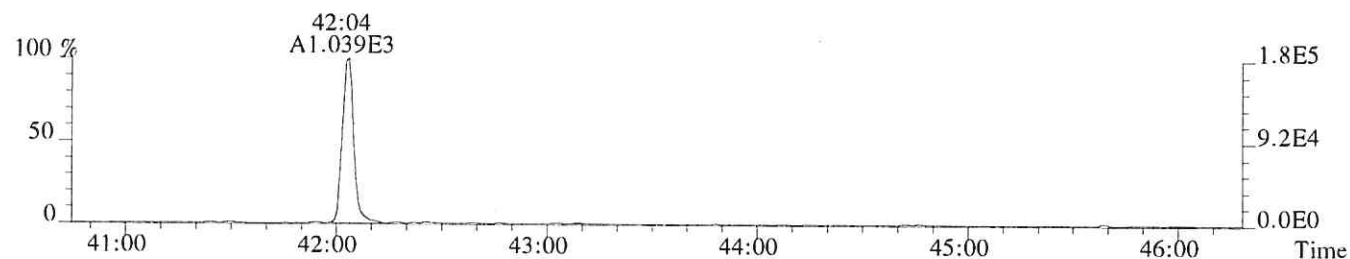
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,672.0,0.40%,F,T)



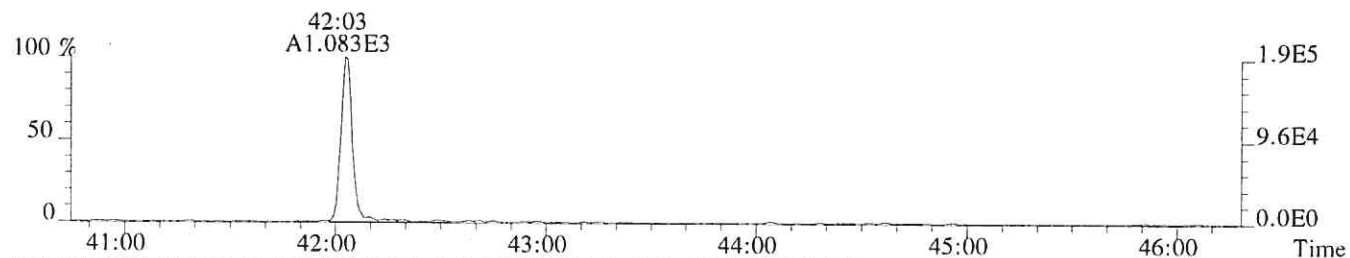
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



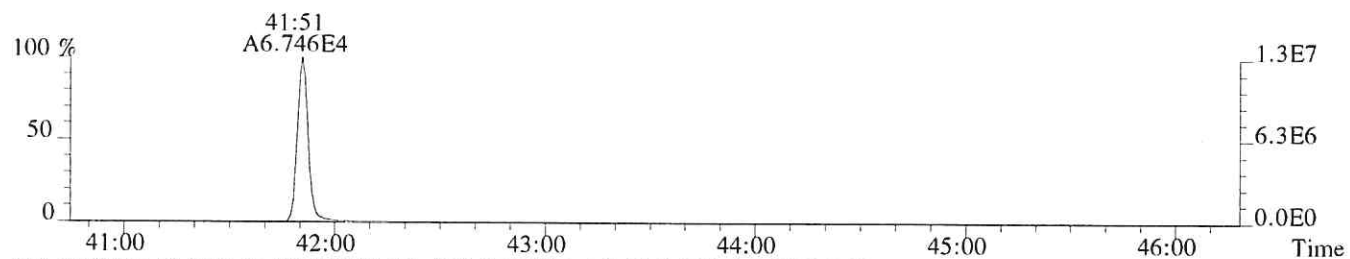
File: P521510 #1-501 Acq: 25-APR-2019 23:48:29 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp: 193431
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,640.0,0.40%,F,T)



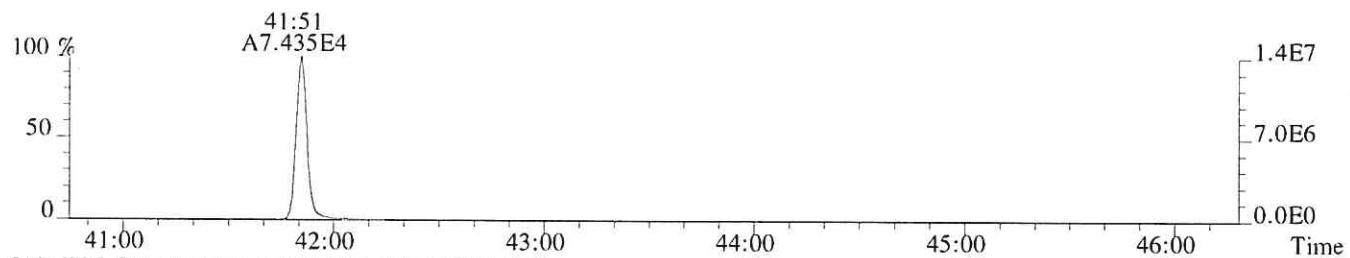
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,344.0,0.40%,F,T)



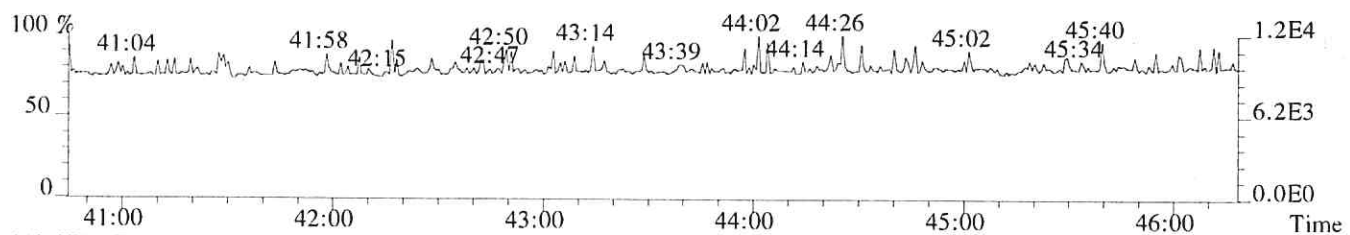
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,492.0,0.40%,F,T)



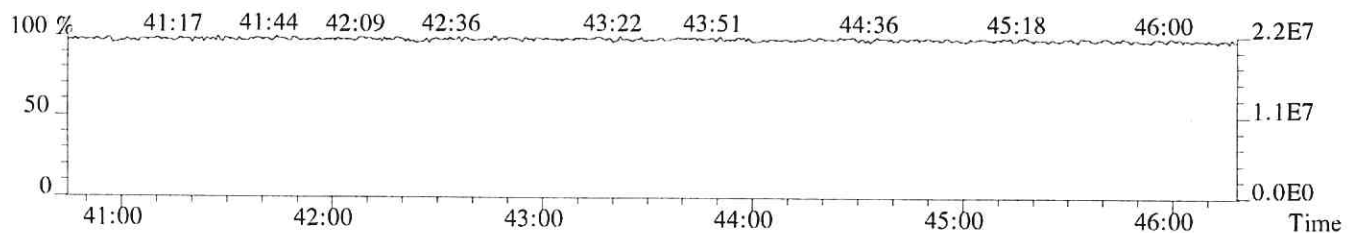
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,388.0,0.40%,F,T)



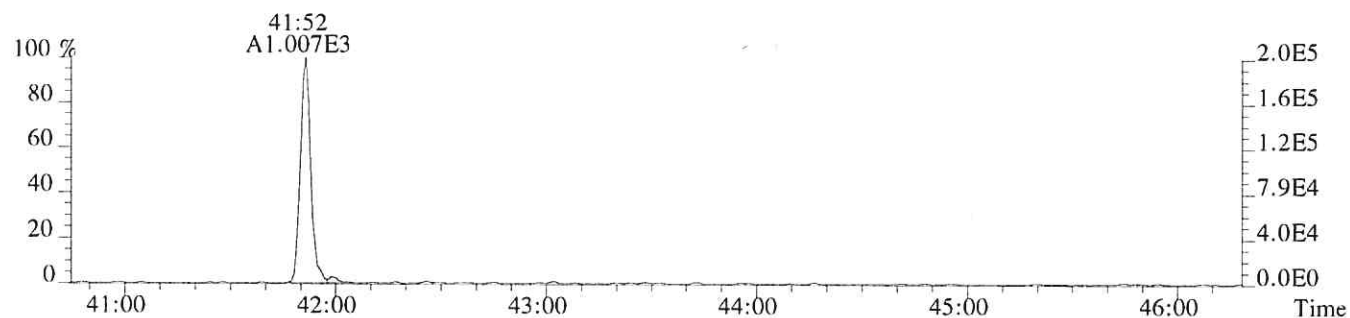
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



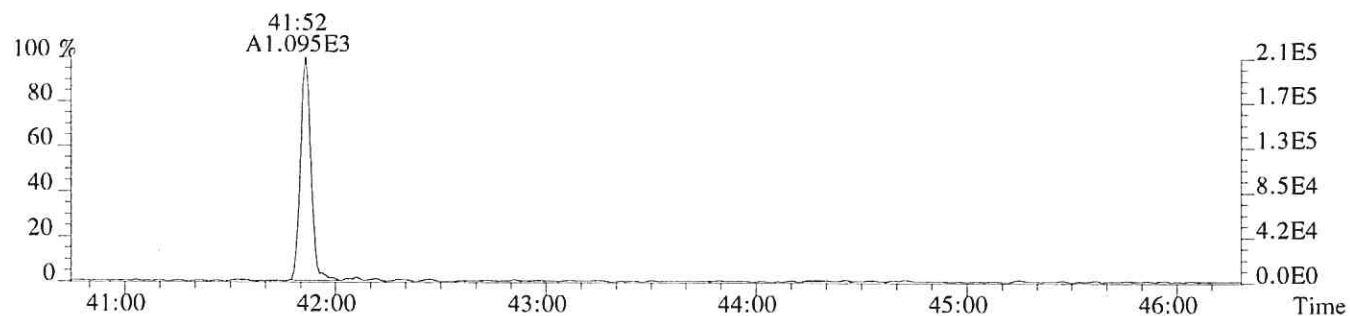
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



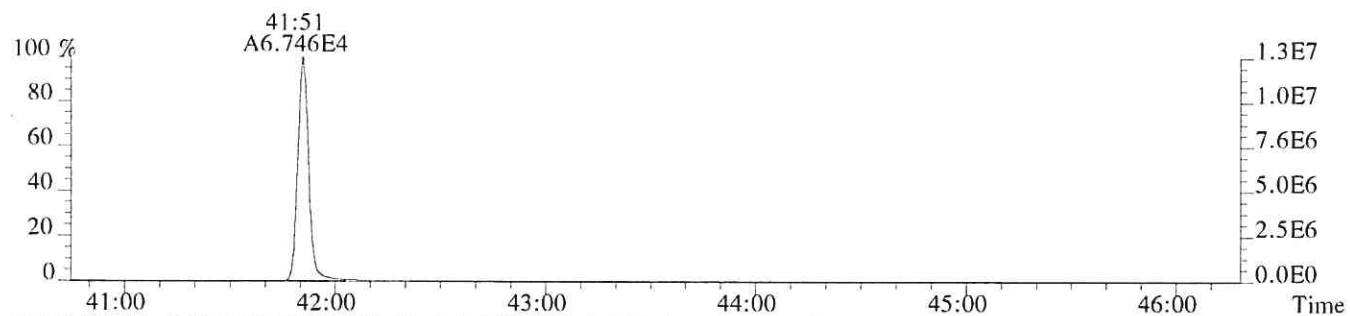
File:P521510 #1-501 Acq:25-APR-2019 23:48:29 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193431
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,656.0,0.40%,F,T)



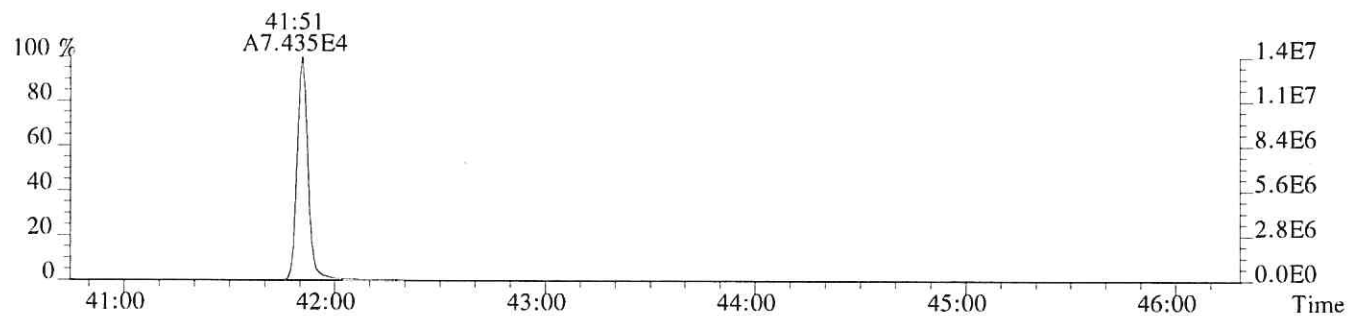
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1392.0,0.40%,F,T)



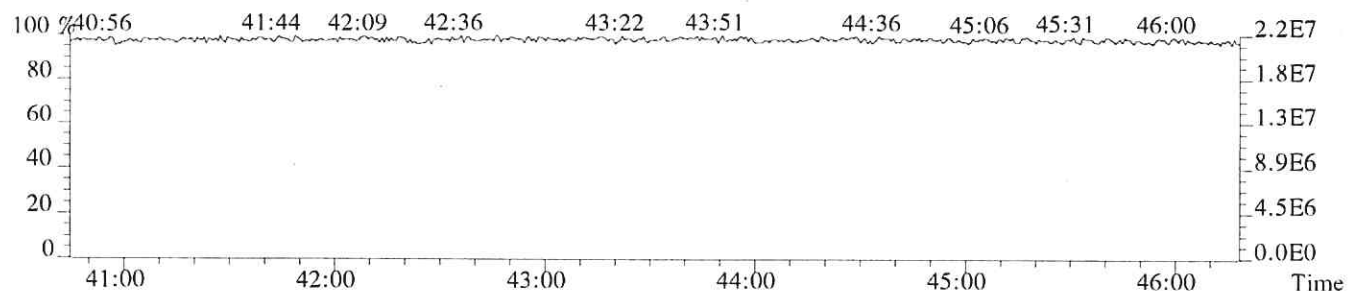
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,492.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,388.0,0.40%,F,T)



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



ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
193432

Run #2 Filename P521511 Samp: 1 Inj: 1 Acquired: 26-APR-19 00:37:08
Processed: 26-APR-19 07:12:43 Sample ID: CS1

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	27:49	3.636e+02	4.718e+02	0.77	yes	no	0.962
2 Unk	1,2,3,7,8-PeCDF	32:06	2.503e+03	1.673e+03	1.50	yes	no	0.968
3 Unk	2,3,4,7,8-PeCDF	33:00	2.424e+03	1.566e+03	1.55	yes	no	0.919
4 Unk	1,2,3,4,7,8-HxCDF	35:41	2.125e+03	1.717e+03	1.24	yes	no	1.161
5 Unk	1,2,3,6,7,8-HxCDF	35:48	2.220e+03	1.801e+03	1.23	yes	no	1.073
6 Unk	2,3,4,6,7,8-HxCDF	36:18	1.881e+03	1.722e+03	1.09	yes	no	1.069
7 Unk	1,2,3,7,8,9-HxCDF	37:02	1.724e+03	1.545e+03	1.12	yes	no	1.096
8 Unk	1,2,3,4,6,7,8-HpCDF	38:17	1.741e+03	1.711e+03	1.02	yes	no	1.281
9 Unk	1,2,3,4,7,8,9-HpCDF	39:38	1.362e+03	1.371e+03	0.99	yes	no	1.192
10 Unk	OCDF	42:03	2.348e+03	2.465e+03	0.95	yes	no	1.204
11 Unk	2,3,7,8-TCDD	28:38	2.910e+02	3.633e+02	0.80	yes	no	1.077
12 Unk	1,2,3,7,8-PeCDD	33:18	1.936e+03	1.239e+03	1.56	yes	no	0.971
13 Unk	1,2,3,4,7,8-HxCDD	36:26	1.569e+03	1.264e+03	1.24	yes	no	1.024
14 Unk	1,2,3,6,7,8-HxCDD	36:31	1.535e+03	1.309e+03	1.17	yes	no	1.038
15 Unk	1,2,3,7,8,9-HxCDD	36:45	1.580e+03	1.347e+03	1.17	yes	no	1.055
16 Unk	1,2,3,4,6,7,8-HpCDD	39:11	1.267e+03	1.255e+03	1.01	yes	no	0.989
17 Unk	OCDD	41:52	2.083e+03	2.312e+03	0.90	yes	no	1.094
18 IS	13C-2,3,7,8-TCDF	27:48	7.382e+04	9.389e+04	0.79	yes	no	1.287
19 IS	13C-1,2,3,7,8-PeCDF	32:05	1.121e+05	7.144e+04	1.57	yes	no	1.416
20 IS	13C-2,3,4,7,8-PeCDF	33:00	1.091e+05	6.916e+04	1.58	yes	no	1.374
21 IS	13C-1,2,3,4,7,8-HxCDF	35:40	4.650e+04	8.995e+04	0.52	yes	no	1.114
22 IS	13C-1,2,3,6,7,8-HxCDF	35:47	5.230e+04	1.010e+05	0.52	yes	no	1.245
23 IS	13C-2,3,4,6,7,8-HxCDF	36:17	4.915e+04	9.493e+04	0.52	yes	no	1.146
24 IS	13C-1,2,3,7,8,9-HxCDF	37:02	4.181e+04	8.091e+04	0.52	yes	no	0.986
25 IS	13C-1,2,3,4,6,7,8-HpCDF	38:17	3.485e+04	7.862e+04	0.44	yes	no	0.915
26 IS	13C-1,2,3,4,7,8,9-HpCDF	39:38	2.872e+04	6.538e+04	0.44	yes	no	0.746
27 IS	13C-2,3,7,8-TCDD	28:37	5.331e+04	6.750e+04	0.79	yes	no	0.929
28 IS	13C-1,2,3,7,8-PeCDD	33:16	8.072e+04	5.101e+04	1.58	yes	no	1.017
29 IS	13C-1,2,3,4,7,8-HxCDD	36:25	6.594e+04	5.139e+04	1.28	yes	no	0.945
30 IS	13C-1,2,3,6,7,8-HxCDD	36:30	6.418e+04	5.068e+04	1.27	yes	no	0.924
31 IS	13C-1,2,3,4,6,7,8-HpCDD	39:10	5.616e+04	5.316e+04	1.06	yes	no	0.876
32 IS	13C-OCDD	41:51	8.060e+04	8.919e+04	0.90	yes	no	0.662
33 RS/RT	13C-1,2,3,4-TCDD	28:01	5.720e+04	7.228e+04	0.79	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	36:44	7.090e+04	5.464e+04	1.30	yes	no	-
35 C/Up	37C1-2,3,7,8-TCDD	28:38	6.569e+02				no	1.010

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
193432

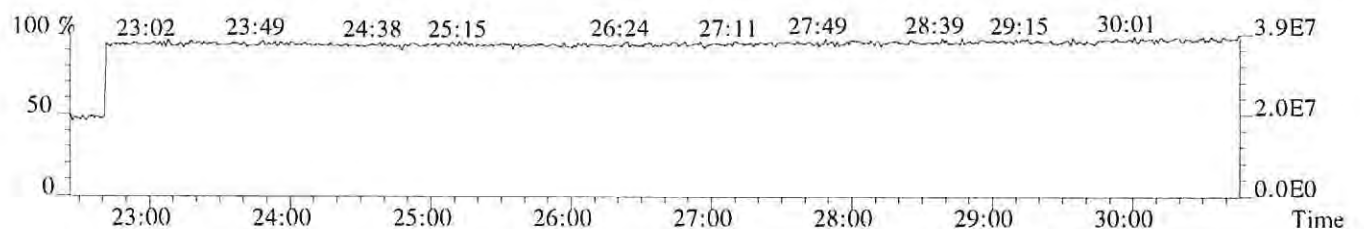
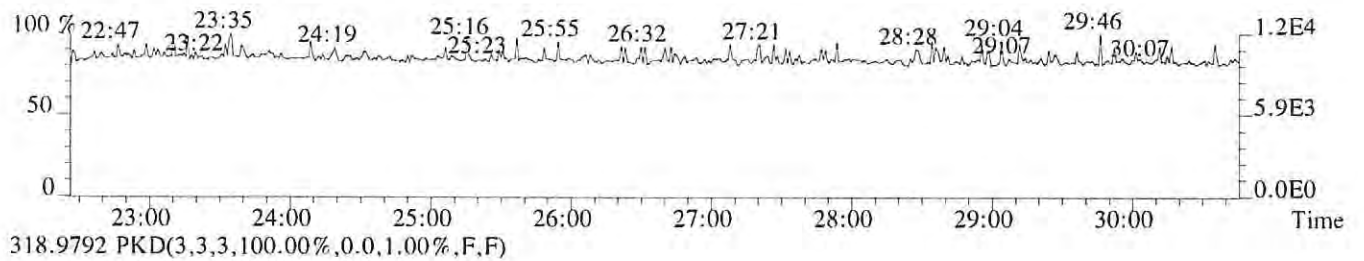
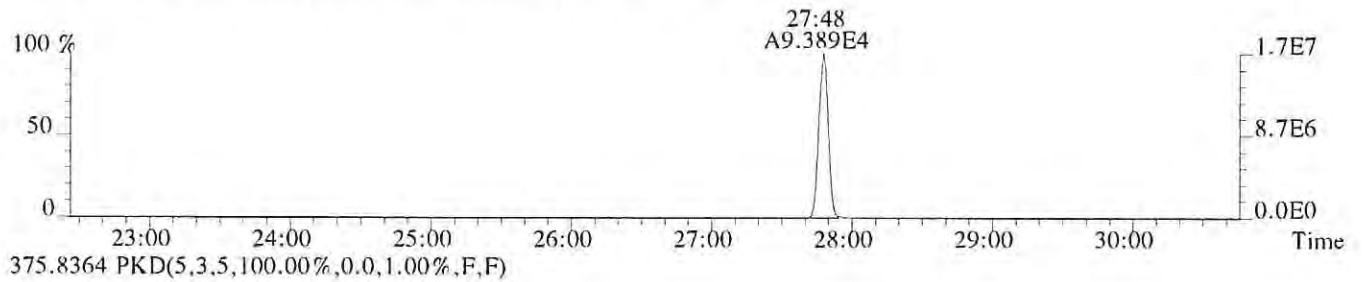
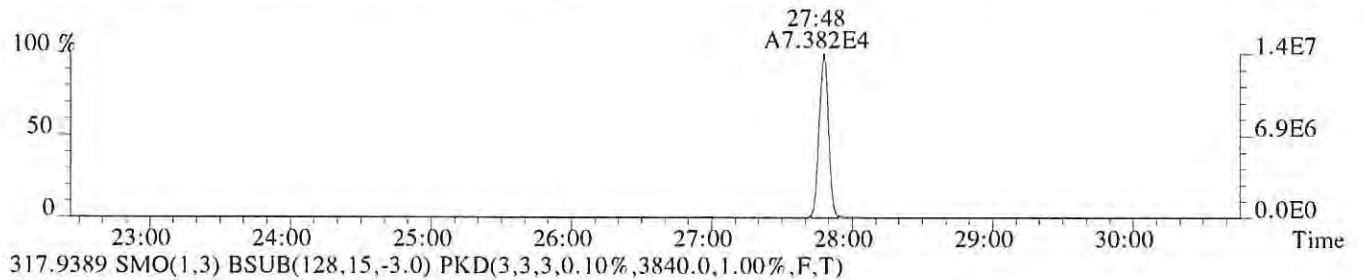
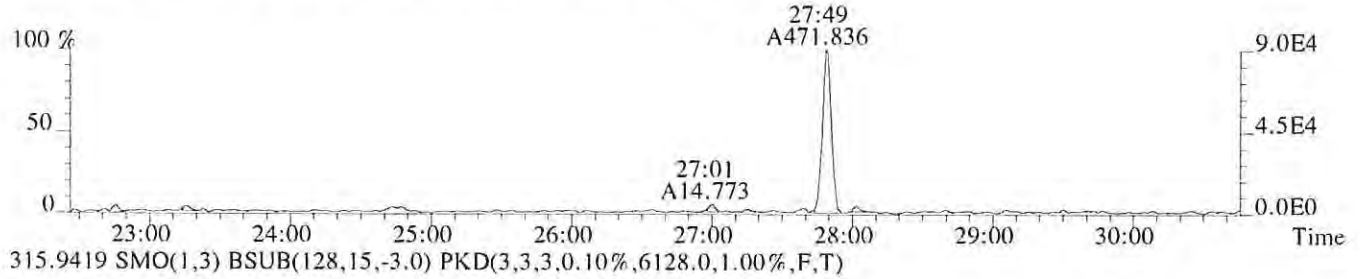
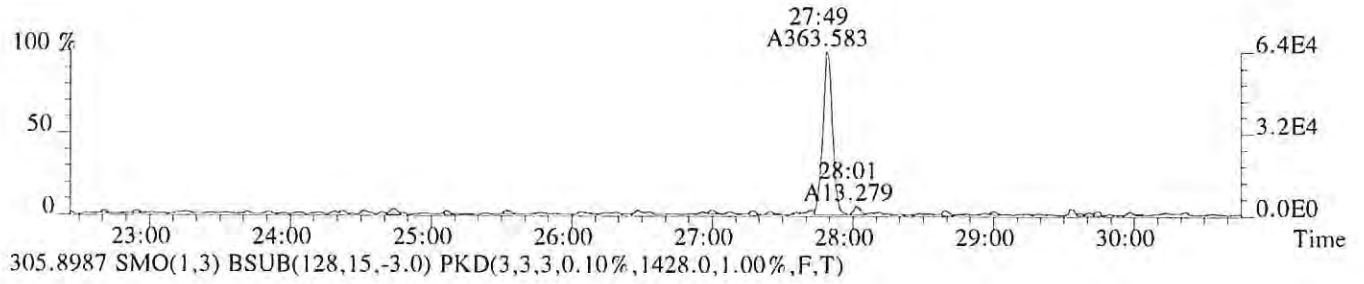
Run #2 Filename P521511 Samp: 1 Inj: 1 Acquired: 26-APR-19 00:37:08
Processed: 26-APR-19 07:12:43 LAB. ID: CS1

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	6.37e+04	8.12e+02	7.8e+01	8.92e+04	1.43e+03	6.2e+01
2	1,2,3,7,8-PeCDF	4.93e+05	1.11e+03	4.4e+02	3.28e+05	1.37e+03	2.4e+02
3	2,3,4,7,8-PeCDF	5.07e+05	1.11e+03	4.6e+02	3.29e+05	1.37e+03	2.4e+02
4	1,2,3,4,7,8-HxCDF	4.63e+05	8.28e+02	5.6e+02	3.81e+05	5.88e+02	6.5e+02
5	1,2,3,6,7,8-HxCDF	4.86e+05	8.28e+02	5.9e+02	3.91e+05	5.88e+02	6.6e+02
6	2,3,4,6,7,8-HxCDF	4.25e+05	8.28e+02	5.1e+02	3.72e+05	5.88e+02	6.3e+02
7	1,2,3,7,8,9-HxCDF	3.77e+05	8.28e+02	4.6e+02	3.39e+05	5.88e+02	5.8e+02
8	1,2,3,4,6,7,8-HpCDF	3.96e+05	3.64e+02	1.1e+03	3.85e+05	4.36e+02	8.8e+02
9	1,2,3,4,7,8,9-HpCDF	2.66e+05	3.64e+02	7.3e+02	2.75e+05	4.36e+02	6.3e+02
10	OCDF	4.29e+05	5.52e+02	7.8e+02	4.57e+05	9.68e+02	4.7e+02
11	2,3,7,8-TCDD	6.32e+04	2.57e+03	2.5e+01	6.90e+04	1.61e+03	4.3e+01
12	1,2,3,7,8-PeCDD	3.97e+05	1.46e+03	2.7e+02	2.54e+05	6.76e+02	3.8e+02
13	1,2,3,4,7,8-HxCDD	3.56e+05	6.32e+02	5.6e+02	2.91e+05	5.72e+02	5.1e+02
14	1,2,3,6,7,8-HxCDD	3.44e+05	6.32e+02	5.4e+02	2.95e+05	5.72e+02	5.2e+02
15	1,2,3,7,8,9-HxCDD	3.52e+05	6.32e+02	5.6e+02	2.92e+05	5.72e+02	5.1e+02
16	1,2,3,4,6,7,8-HpCDD	2.83e+05	4.92e+02	5.7e+02	2.82e+05	6.20e+02	4.6e+02
17	OCDD	3.96e+05	4.24e+02	9.3e+02	4.31e+05	9.68e+02	4.5e+02
18	13C-2,3,7,8-TCDF	1.38e+07	6.13e+03	2.3e+03	1.74e+07	3.84e+03	4.5e+03
19	13C-1,2,3,7,8-PeCDF	2.16e+07	7.40e+02	2.9e+04	1.38e+07	1.08e+03	1.3e+04
20	13C-2,3,4,7,8-PeCDF	2.18e+07	7.40e+02	3.0e+04	1.39e+07	1.08e+03	1.3e+04
21	13C-1,2,3,4,7,8-HxCDF	1.05e+07	1.06e+03	9.9e+03	2.03e+07	1.49e+03	1.4e+04
22	13C-1,2,3,6,7,8-HxCDF	1.13e+07	1.06e+03	1.1e+04	2.21e+07	1.49e+03	1.5e+04
23	13C-2,3,4,6,7,8-HxCDF	1.11e+07	1.06e+03	1.0e+04	2.15e+07	1.49e+03	1.4e+04
24	13C-1,2,3,7,8,9-HxCDF	9.14e+06	1.06e+03	8.6e+03	1.77e+07	1.49e+03	1.2e+04
25	13C-1,2,3,4,6,7,8-HpCDF	7.82e+06	6.80e+02	1.1e+04	1.76e+07	4.28e+02	4.1e+04
26	13C-1,2,3,4,7,8,9-HpCDF	5.84e+06	6.80e+02	8.6e+03	1.33e+07	4.28e+02	3.1e+04
27	13C-2,3,7,8-TCDD	1.03e+07	6.13e+03	1.7e+03	1.29e+07	2.30e+03	5.6e+03
28	13C-1,2,3,7,8-PeCDD	1.64e+07	1.12e+03	1.5e+04	1.05e+07	1.25e+03	8.4e+03
29	13C-1,2,3,4,7,8-HxCDD	1.51e+07	1.51e+03	1.0e+04	1.18e+07	7.84e+02	1.5e+04
30	13C-1,2,3,6,7,8-HxCDD	1.42e+07	1.51e+03	9.4e+03	1.12e+07	7.84e+02	1.4e+04
31	13C-1,2,3,4,6,7,8-HpCDD	1.22e+07	7.72e+02	1.6e+04	1.14e+07	4.96e+02	2.3e+04
32	13C-OCDD	1.49e+07	8.24e+02	1.8e+04	1.65e+07	5.20e+02	3.2e+04
33	13C-1,2,3,4-TCDD	1.08e+07	6.13e+03	1.8e+03	1.37e+07	2.30e+03	5.9e+03
34	13C-1,2,3,7,8,9-HxCDD	1.55e+07	1.51e+03	1.0e+04	1.24e+07	7.84e+02	1.6e+04
35	37Cl-2,3,7,8-TCDD	1.30e+05	1.71e+03	7.6e+01			

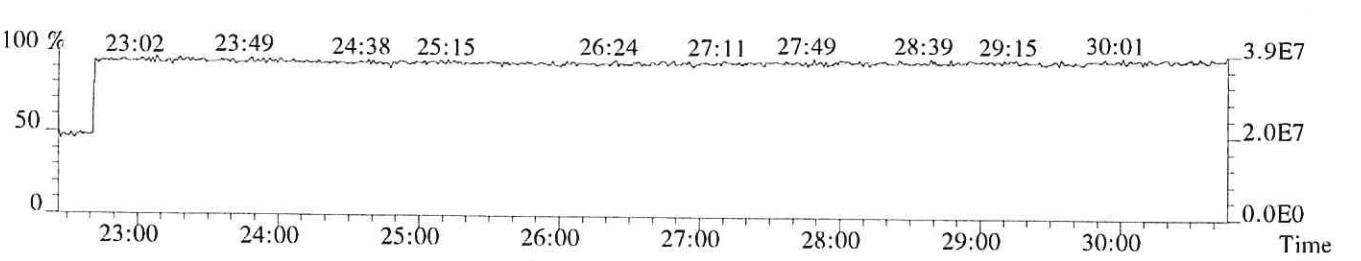
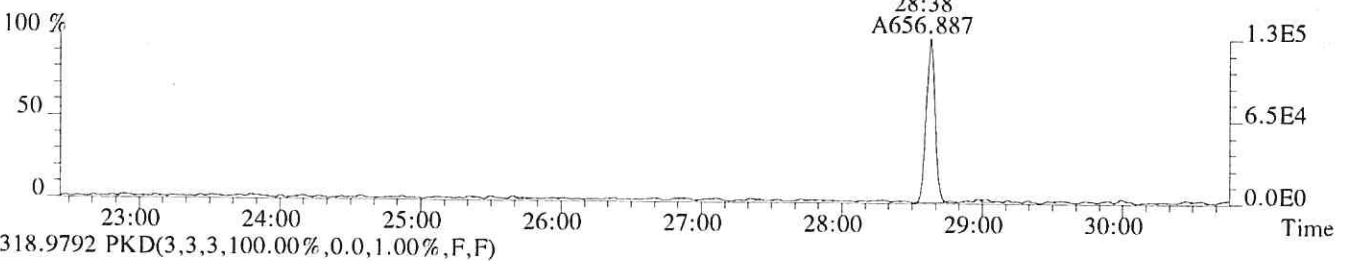
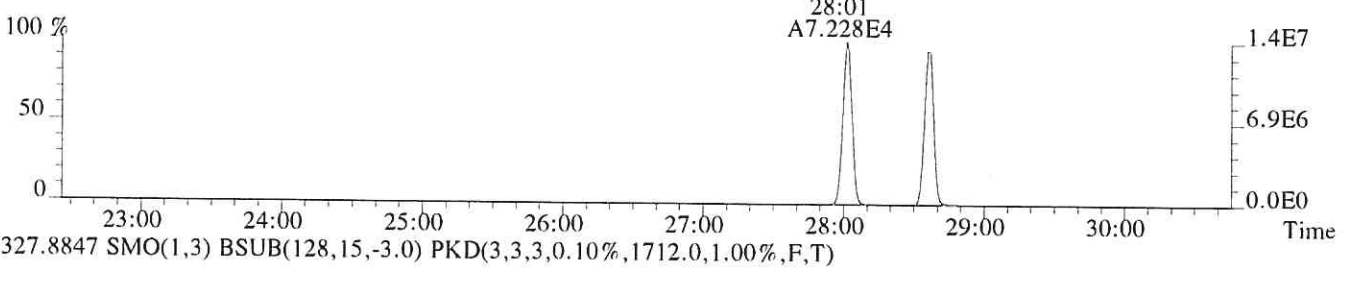
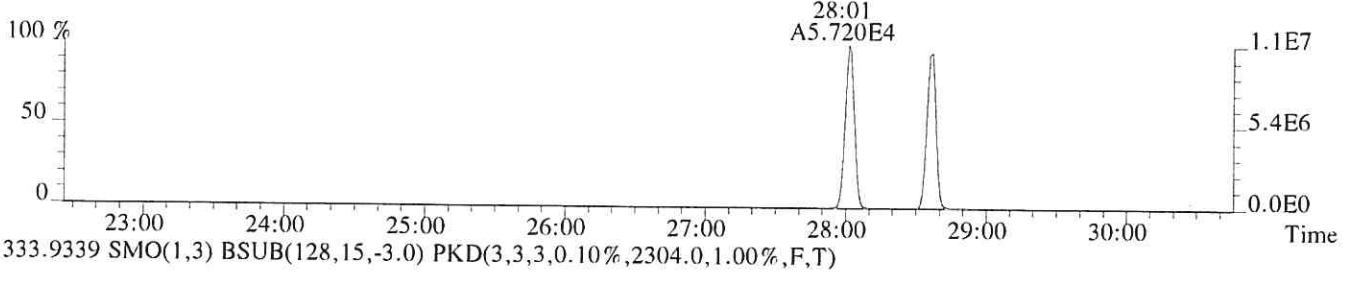
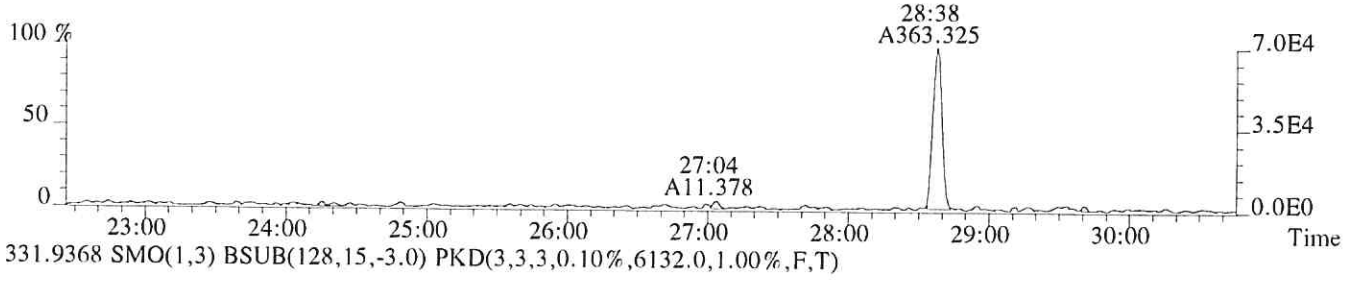
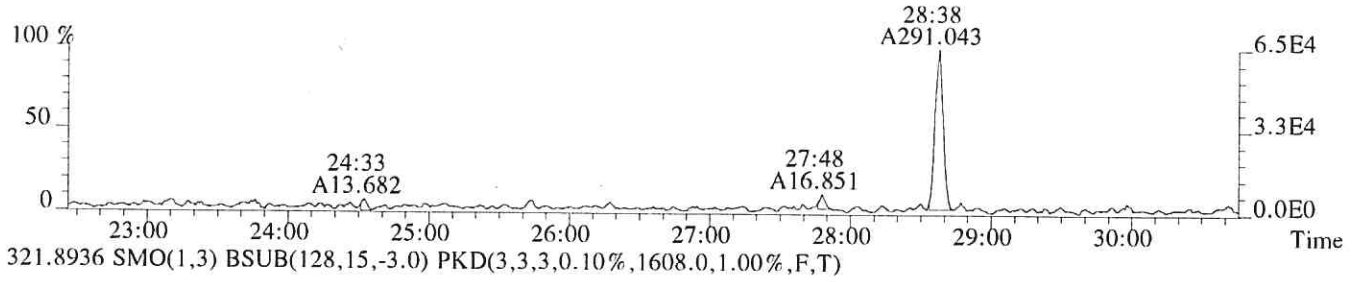
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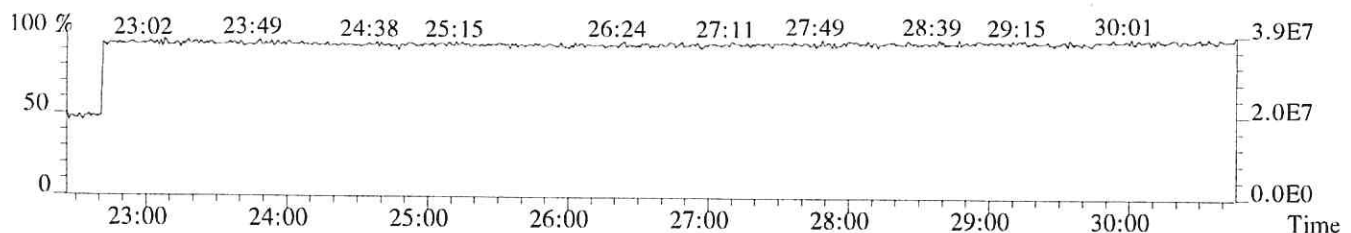
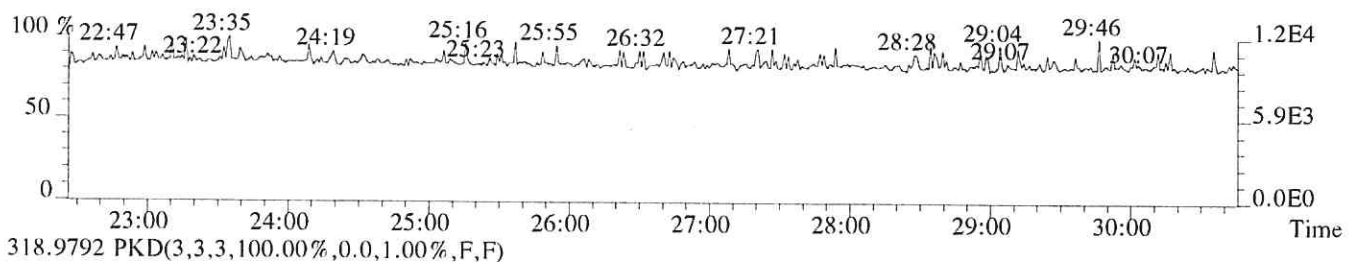
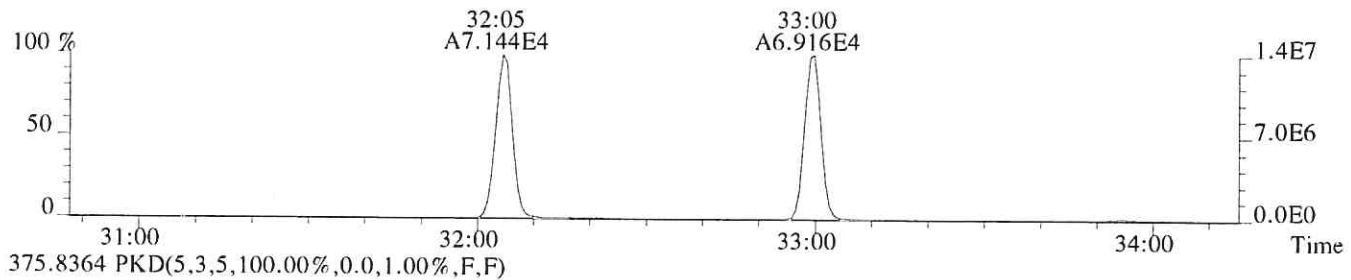
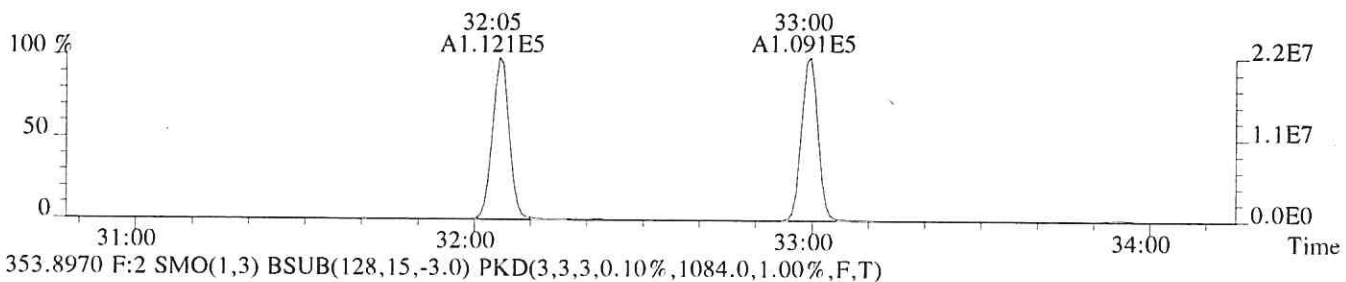
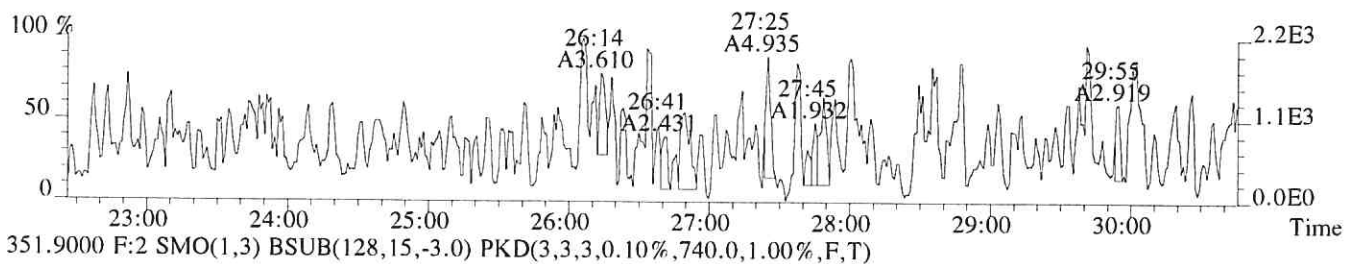
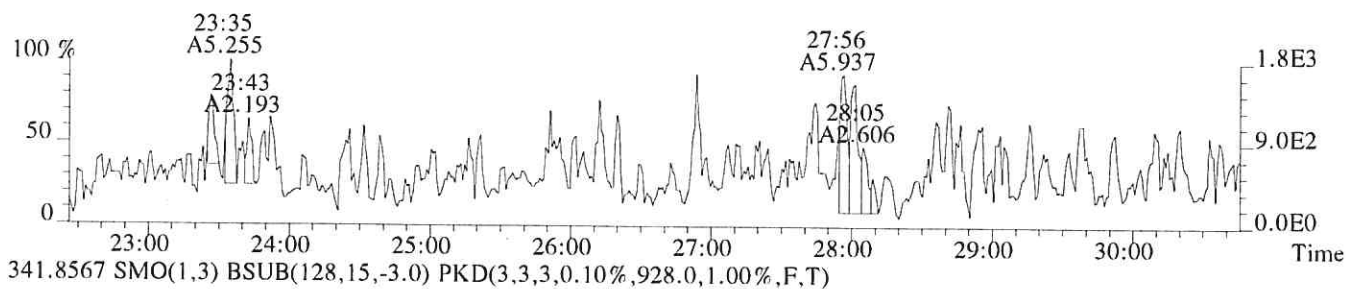
File:P521511 #1-591 Acq:26-APR-2019 00:37:08 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193432
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,812.0,1.00%,F,T)



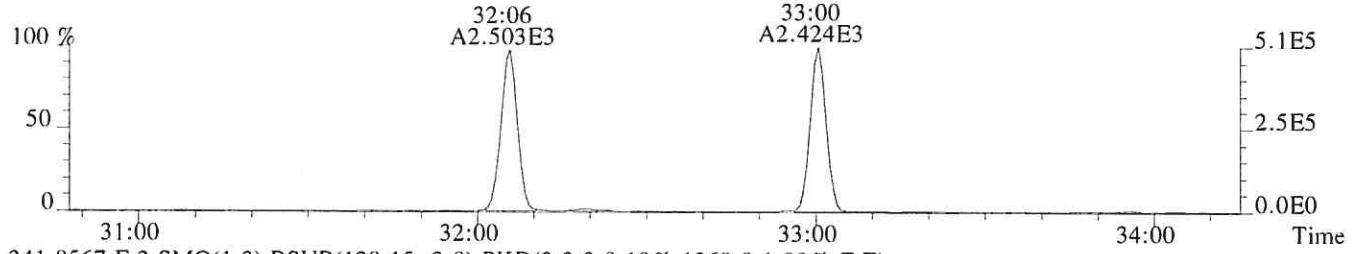
File:P521511 #1-591 Acq:26-APR-2019 00:37:08 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193432
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2568.0,1.00%,F,T)



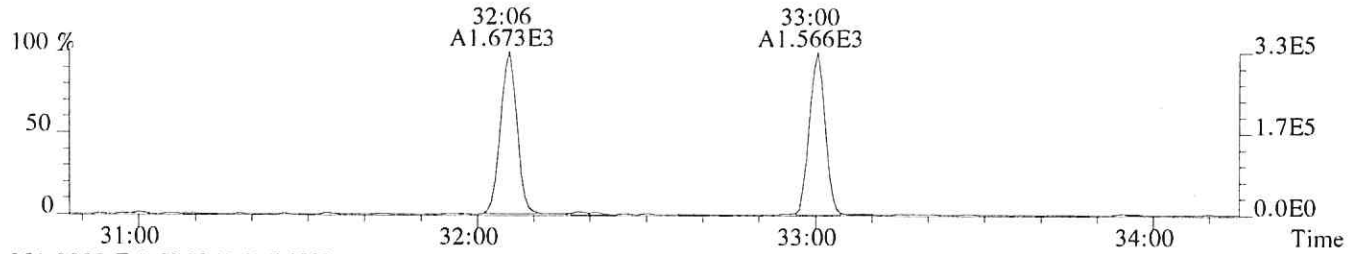
File:P521511 #1-591 Acq:26-APR-2019 00:37:08 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193432
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,716.0,1.00%,F,T)



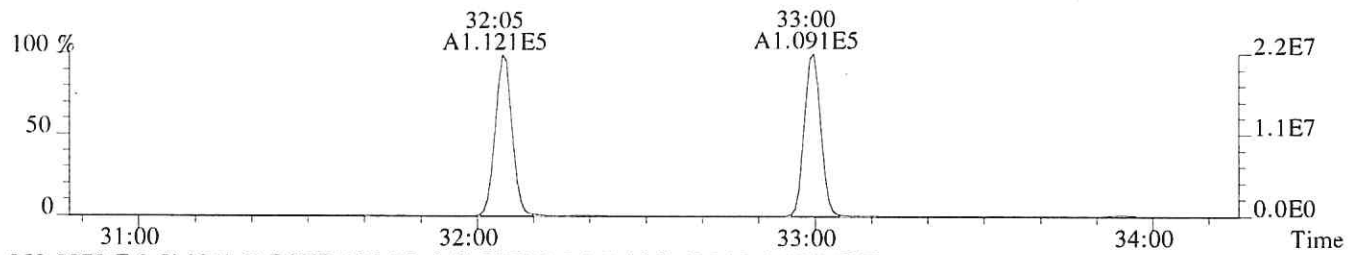
File:P521511 #1-312 Acq:26-APR-2019 00:37:08 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193432
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1108.0,1.00%,F,T)



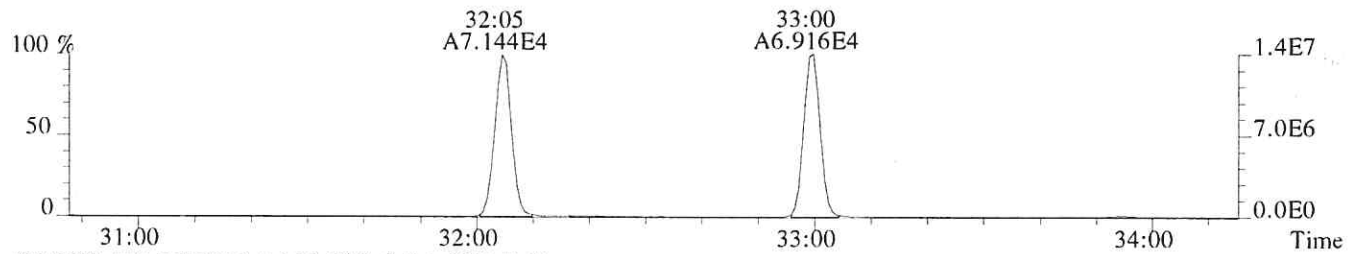
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1368.0,1.00%,F,T)



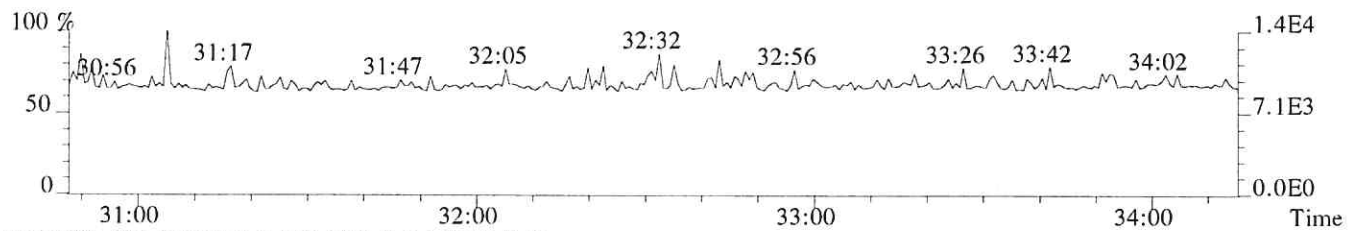
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,740.0,1.00%,F,T)



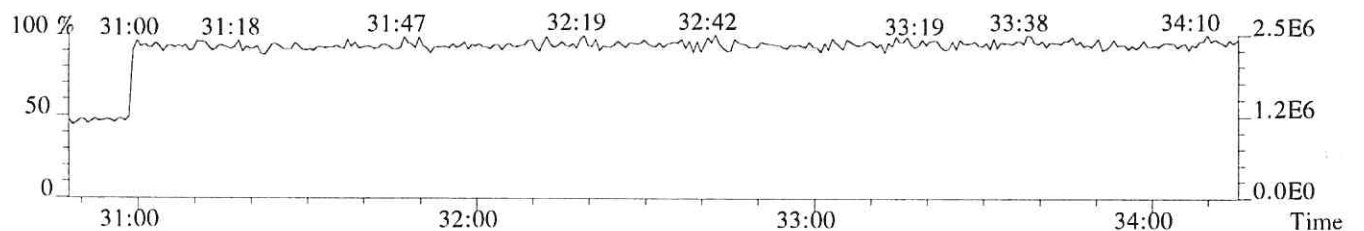
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1084.0,1.00%,F,T)



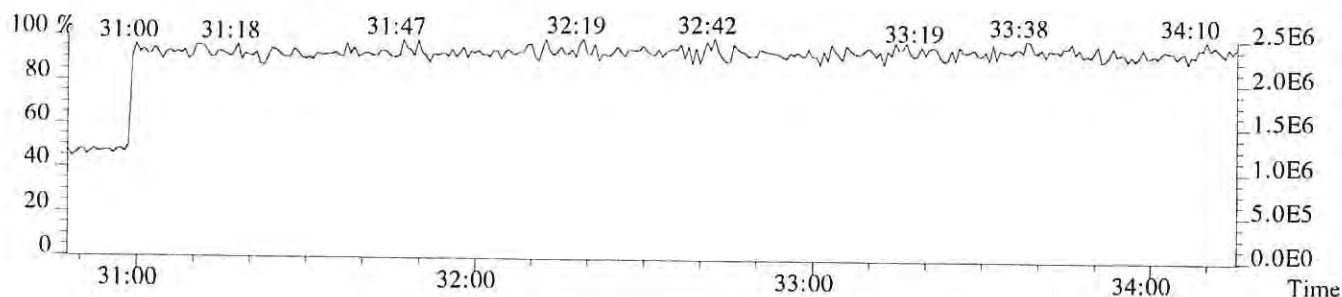
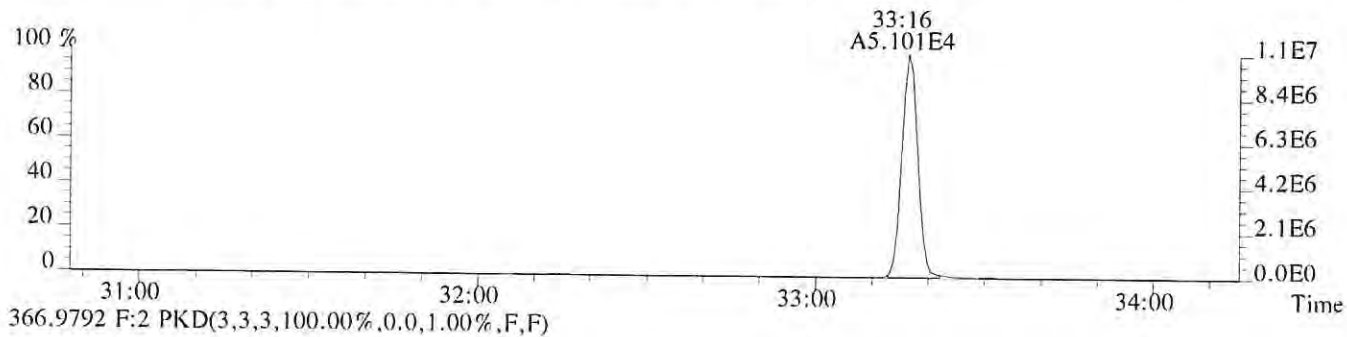
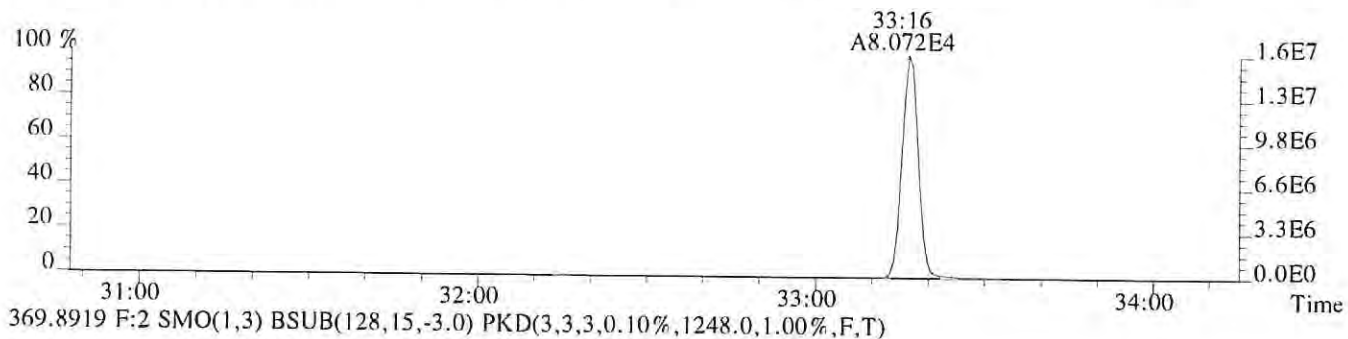
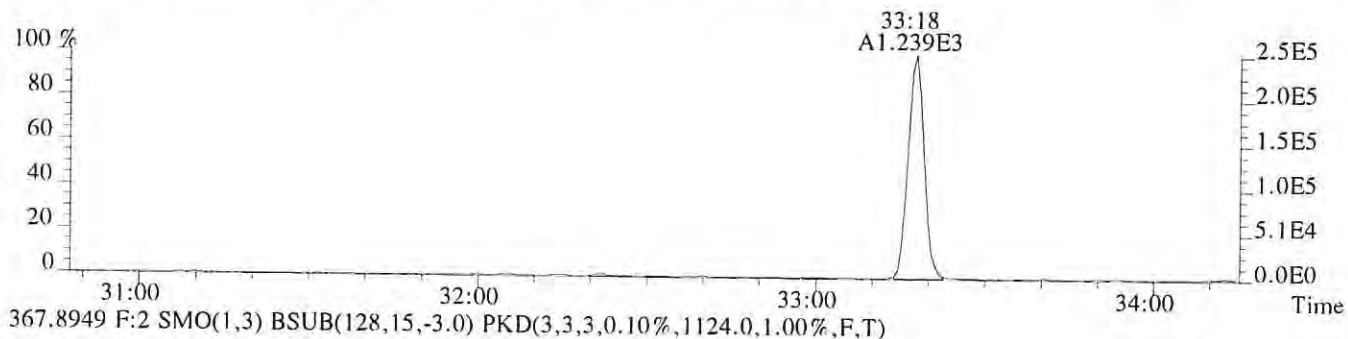
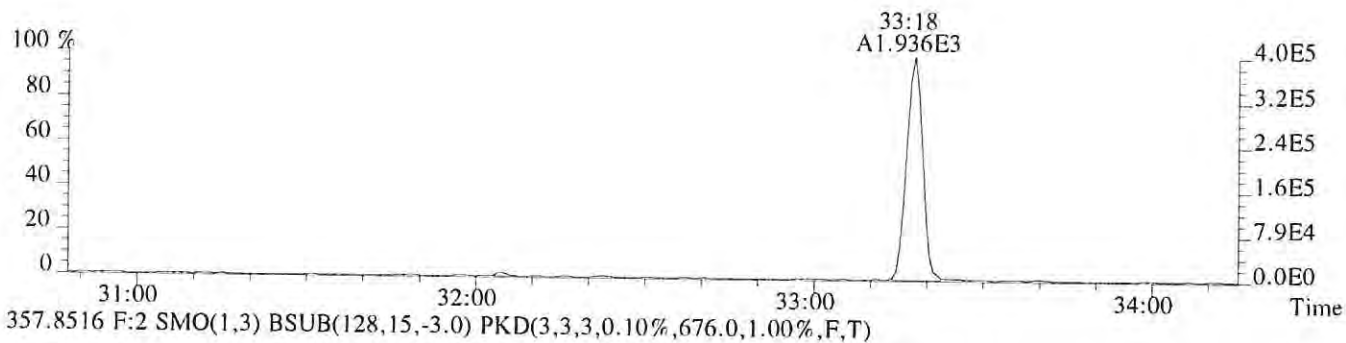
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



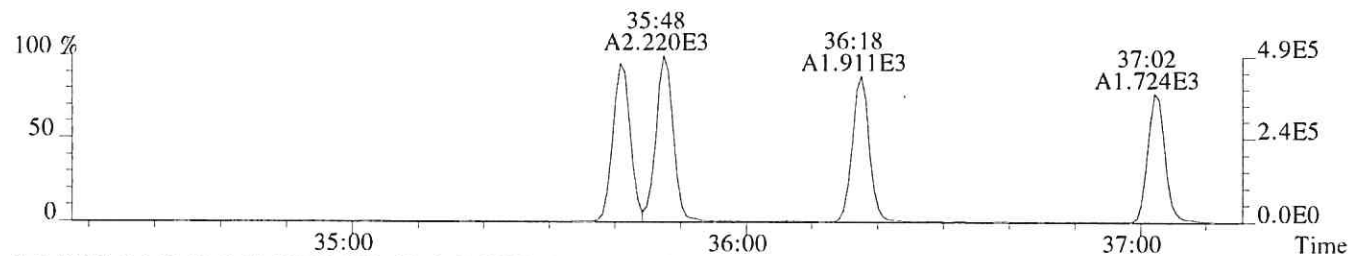
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



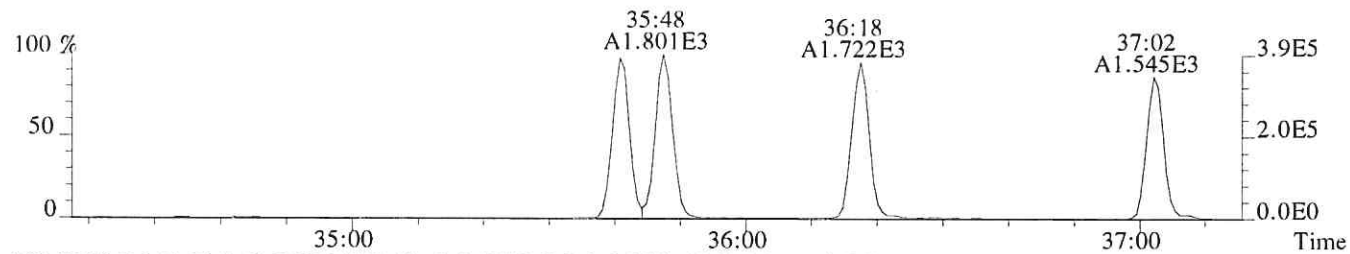
File:P521511 #1-312 Acq:26-APR-2019 00:37:08 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193432
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1456.0,1.00%,F,T)



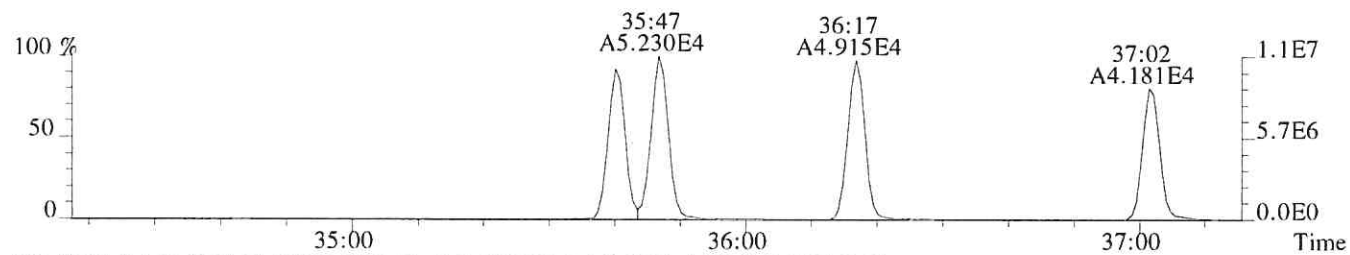
File:P521511 #1-268 Acq:26-APR-2019 00:37:08 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193432
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,828.0,0.40%,F,T)



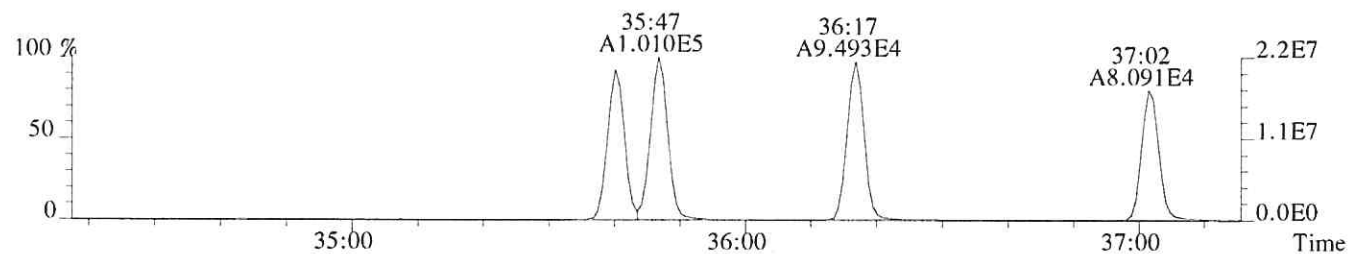
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,588.0,0.40%,F,T)



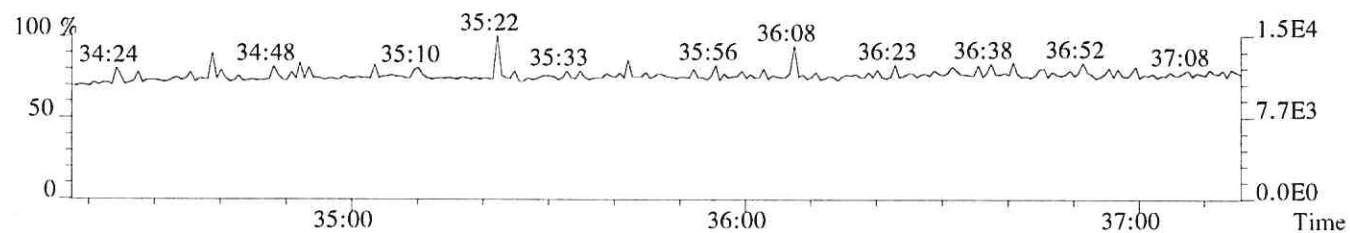
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1060.0,0.40%,F,T)



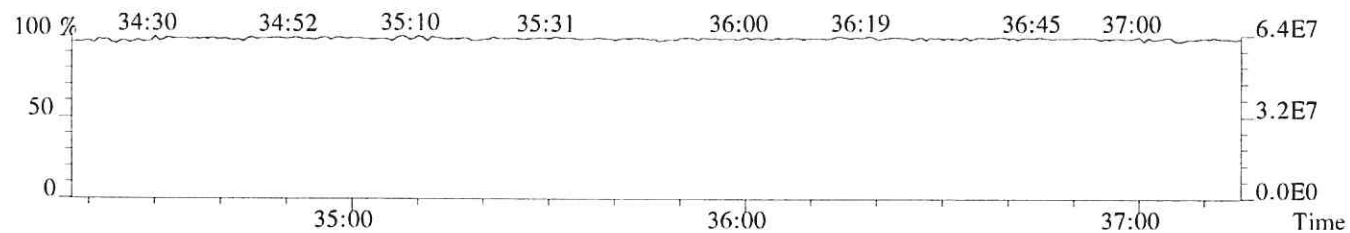
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1488.0,0.40%,F,T)



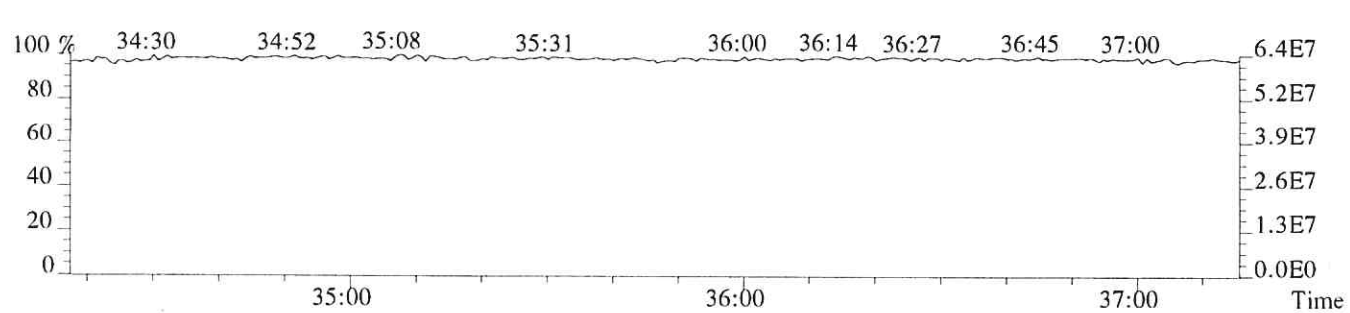
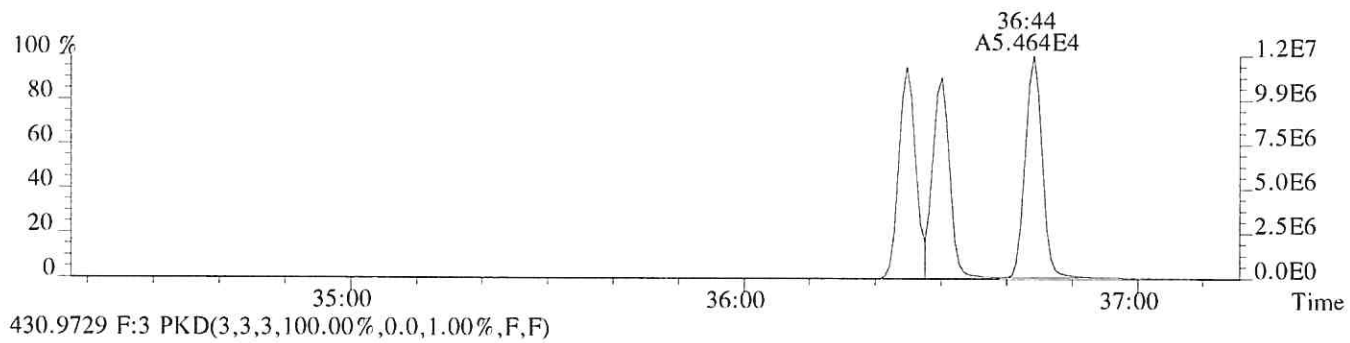
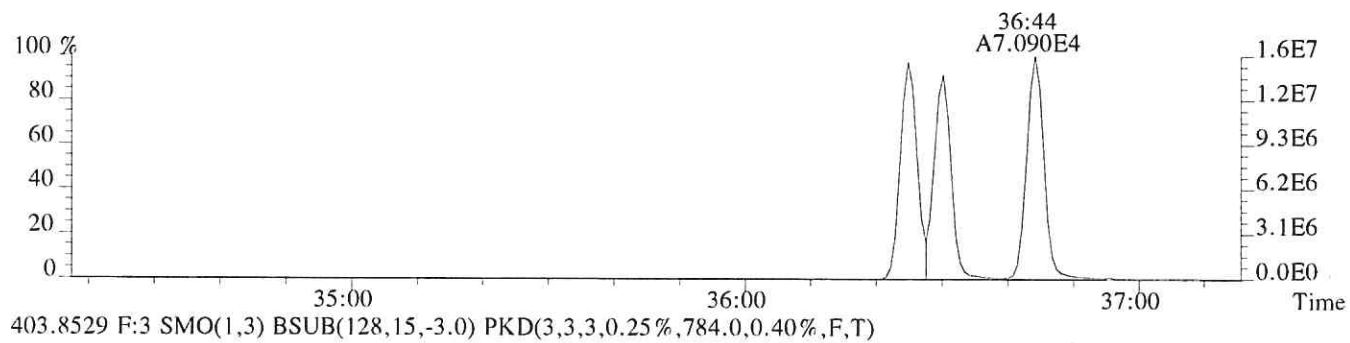
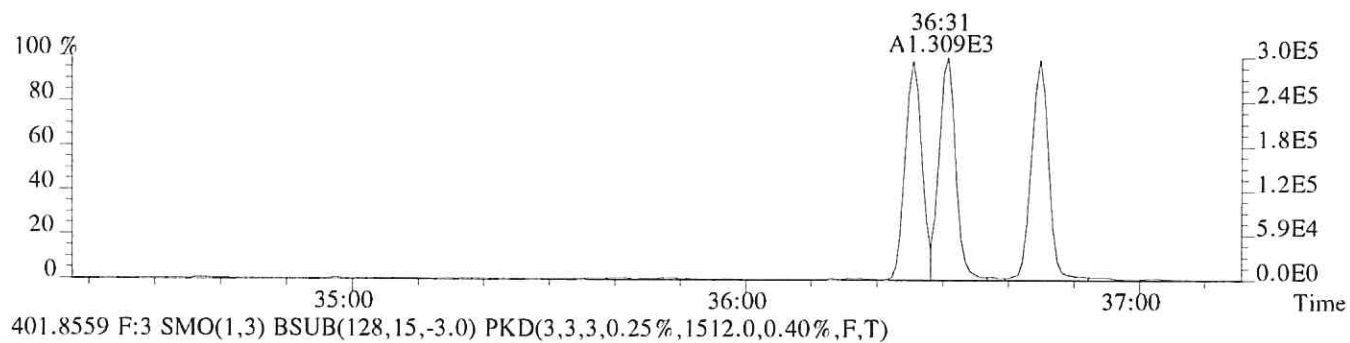
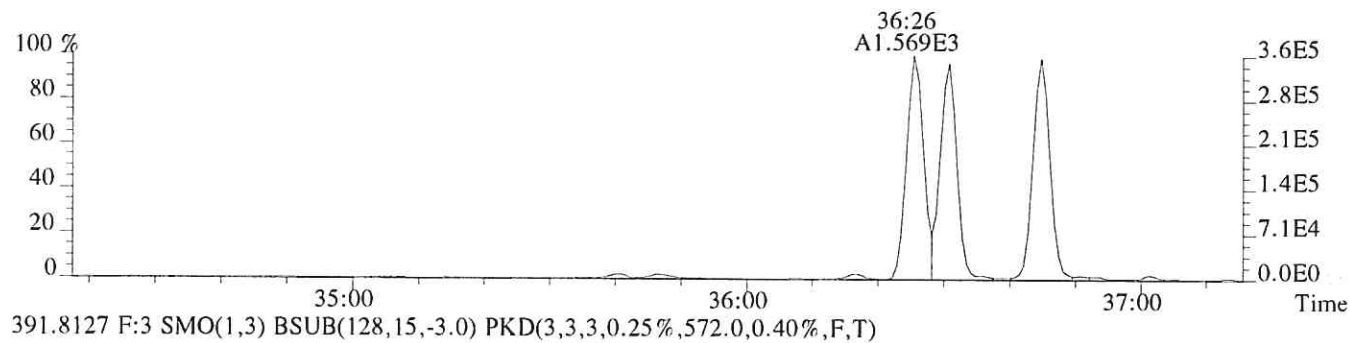
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



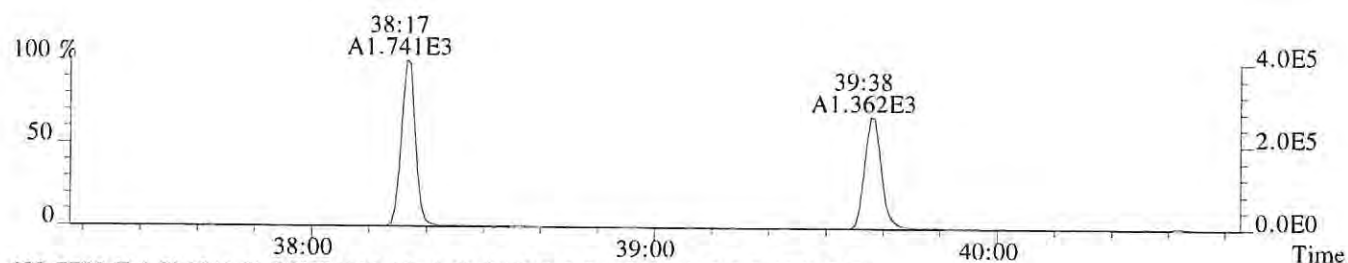
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



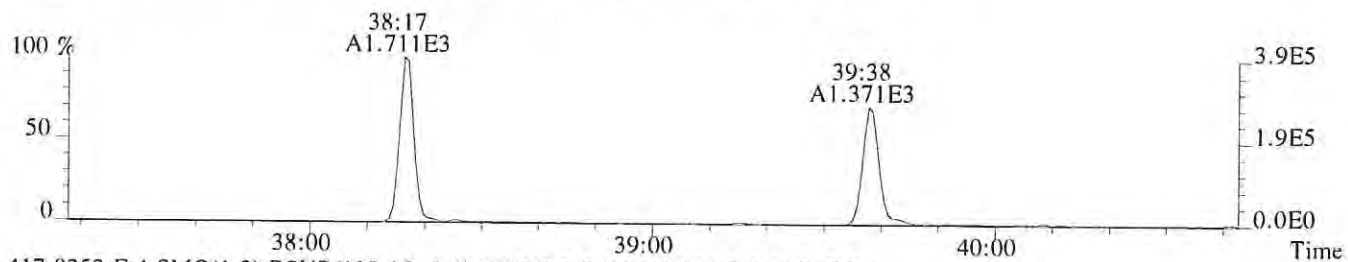
File:P521511 #1-268 Acq:26-APR-2019 00:37:08 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193432
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,632.0,0.40%,F,T)



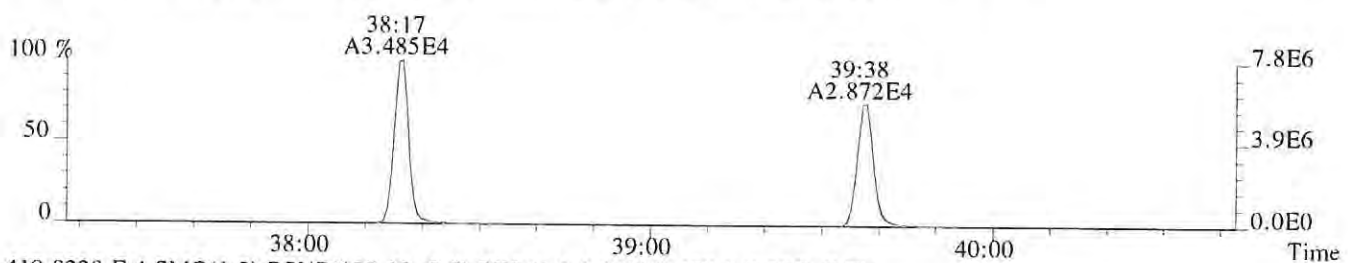
File: P521511 #1-308 Acq: 26-APR-2019 00:37:08 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: 193432
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,364.0,0.50%,F,T)



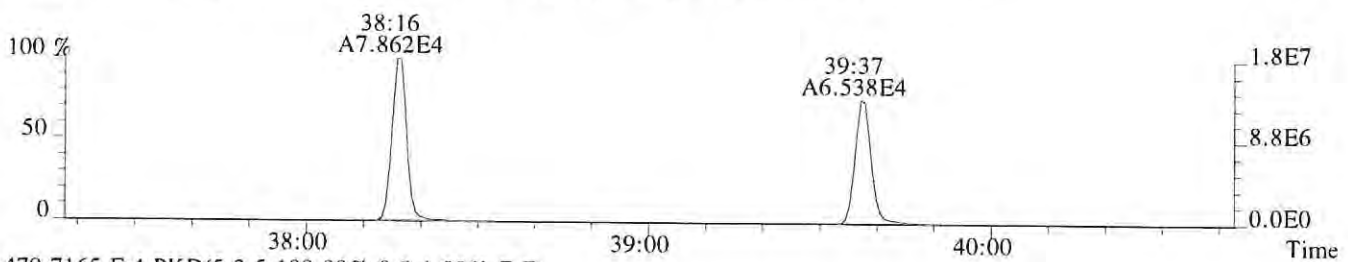
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,436.0,0.50%,F,T)



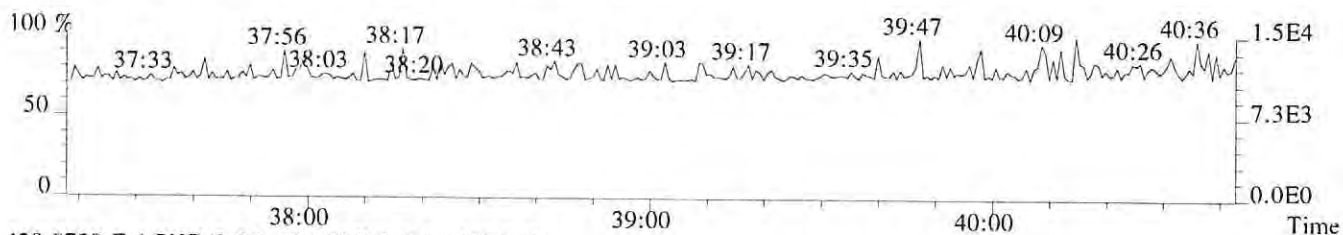
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,680.0,0.50%,F,T)



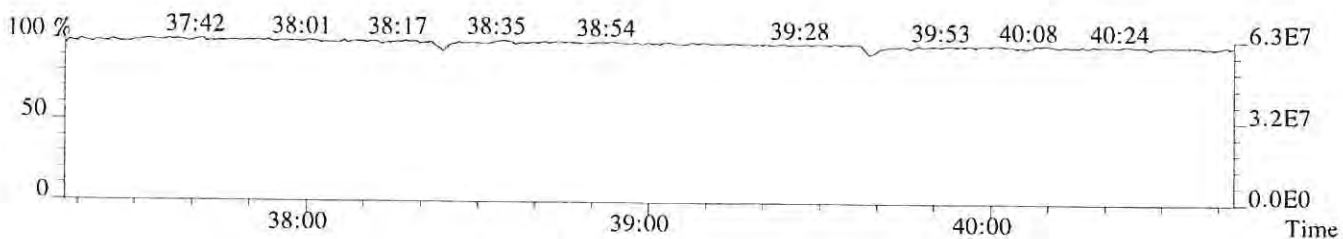
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,428.0,0.50%,F,T)



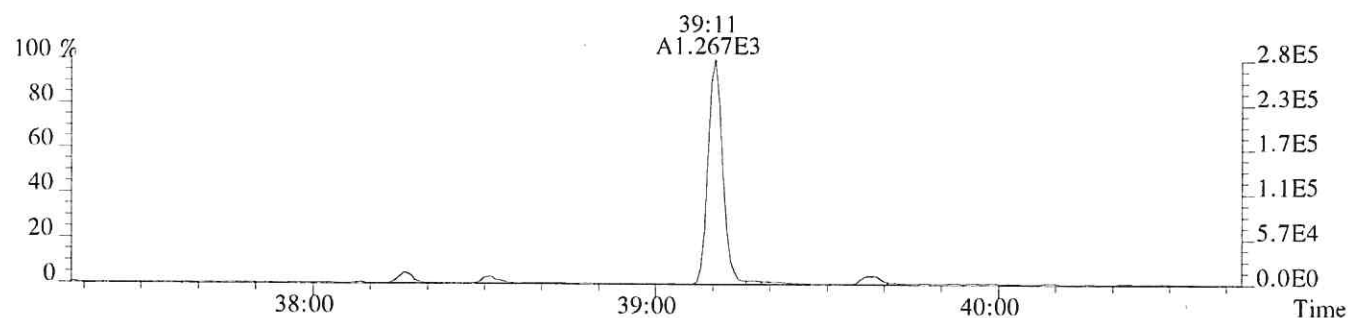
479.7165 F:4 PKD(5,3,5,100.0%,0.0,1.00%,F,F)



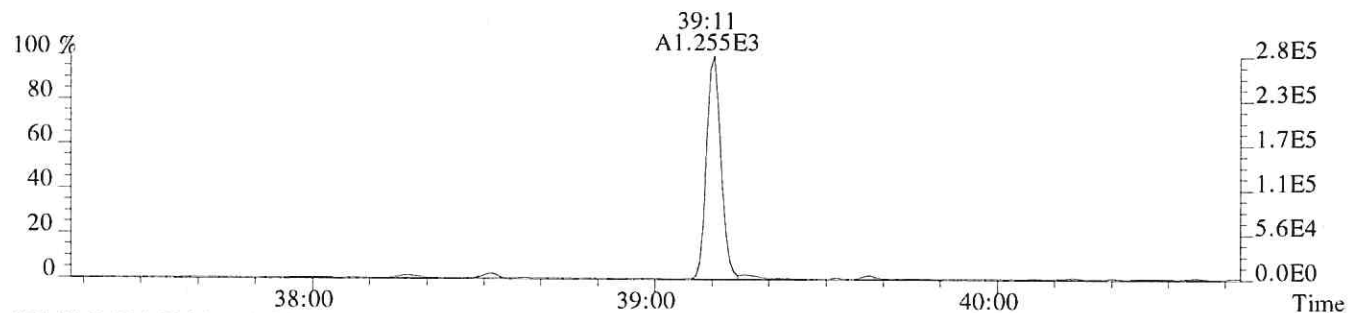
430.9729 F:4 PKD(3,3,3,100.0%,0.0,1.00%,F,F)



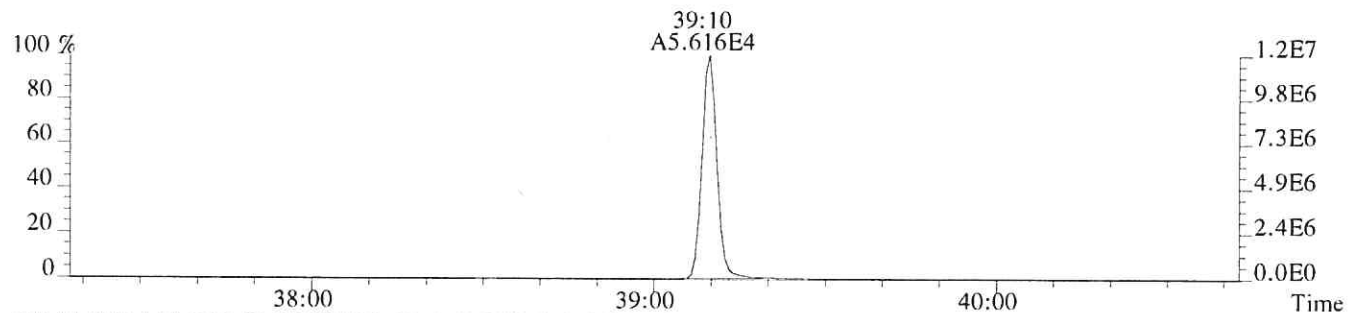
File:P521511 #1-308 Acq:26-APR-2019 00:37:08 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193432
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,492.0,0.40%,F,T)



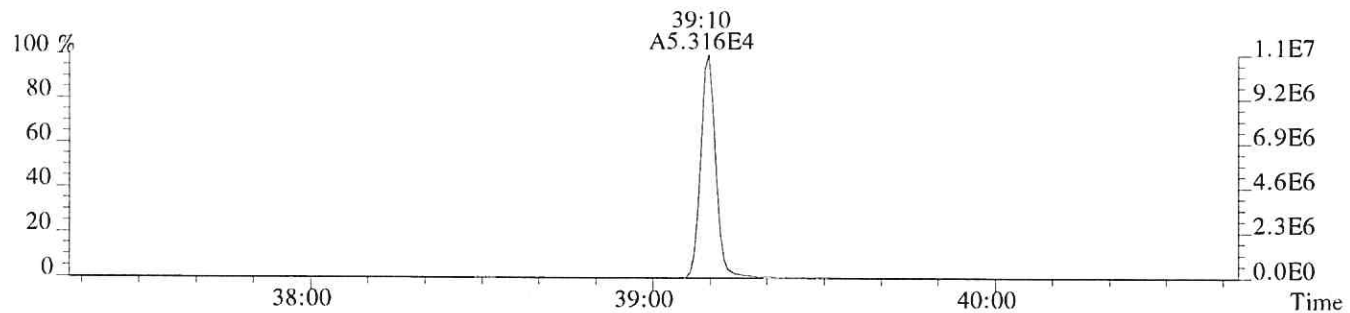
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,620.0,0.40%,F,T)



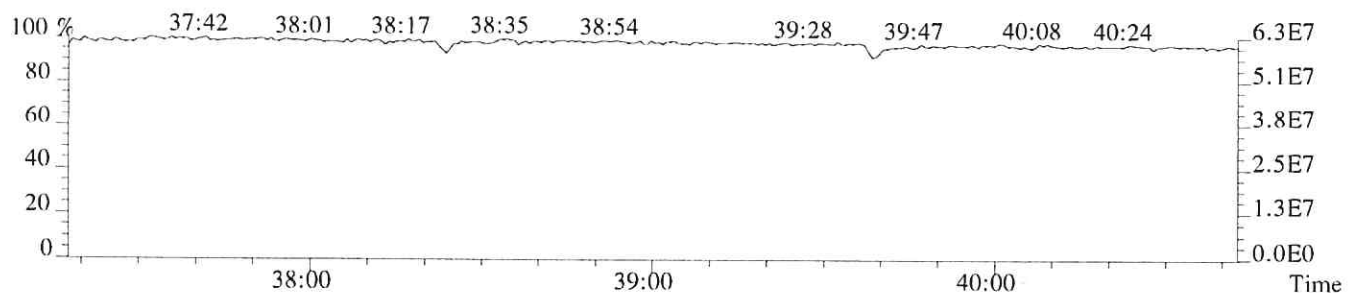
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,772.0,0.40%,F,T)



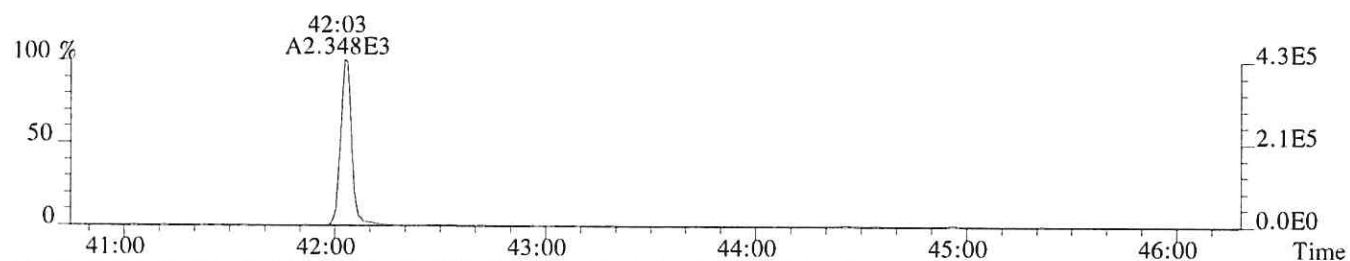
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,496.0,0.40%,F,T)



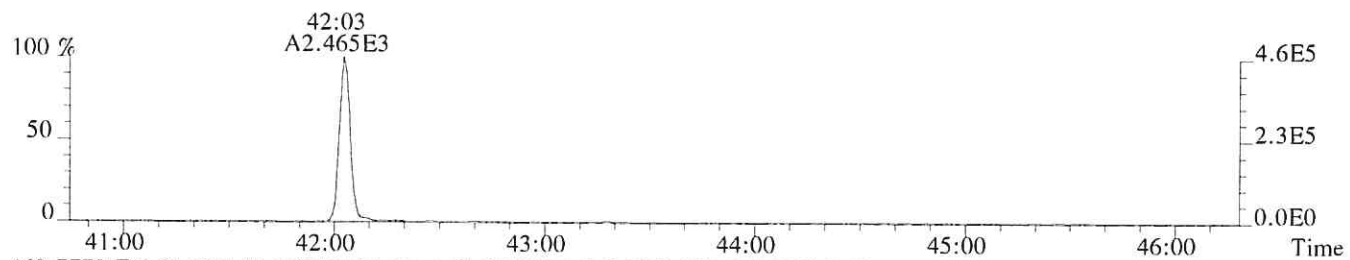
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



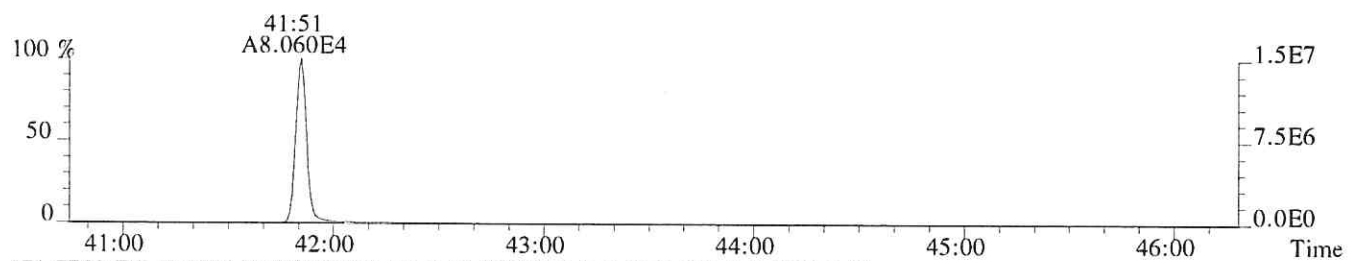
File:P521511 #1-501 Acq:26-APR-2019 00:37:08 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:193432
441.7428 F:5 SMO(1,3) BSub(128,15,-3.0) PKD(5,3,5,0.30%,552.0,0.40%,F,T)



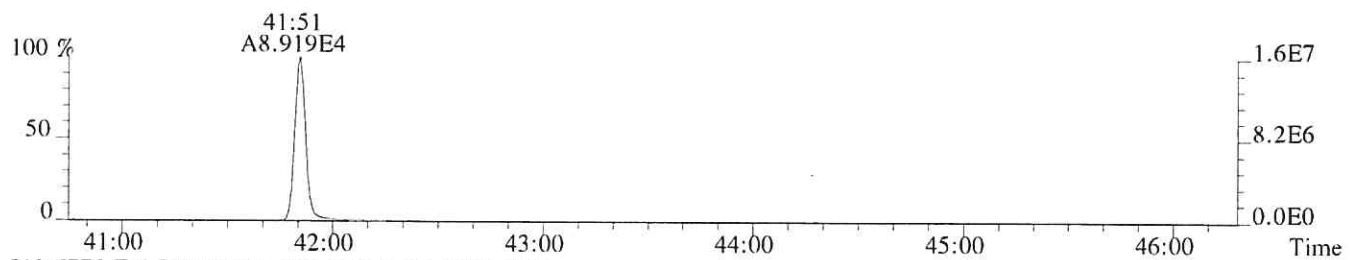
443.7399 F:5 SMO(1,3) BSub(128,15,-3.0) PKD(5,3,5,0.30%,968.0,0.40%,F,T)



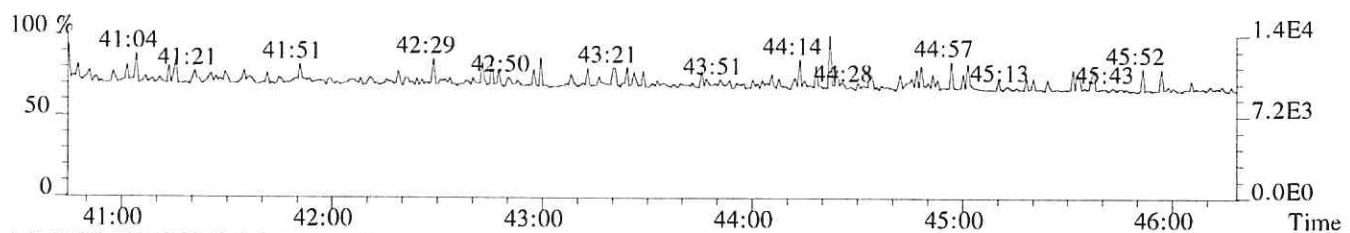
469.7779 F:5 SMO(1,3) BSub(128,15,-3.0) PKD(5,3,5,0.30%,824.0,0.40%,F,T)



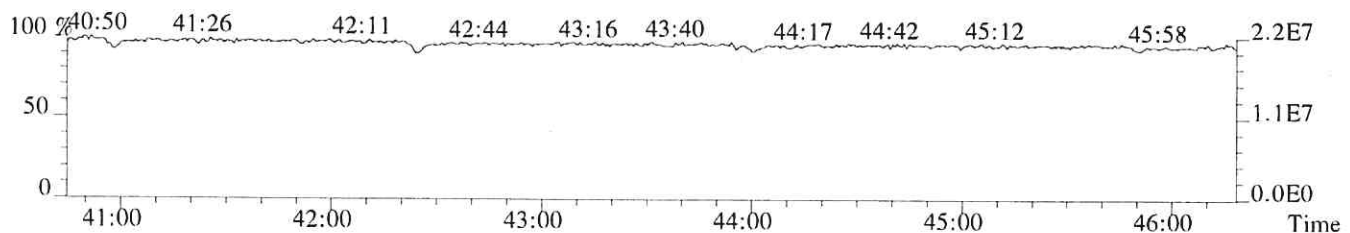
471.7750 F:5 SMO(1,3) BSub(128,15,-3.0) PKD(5,3,5,0.30%,520.0,0.40%,F,T)



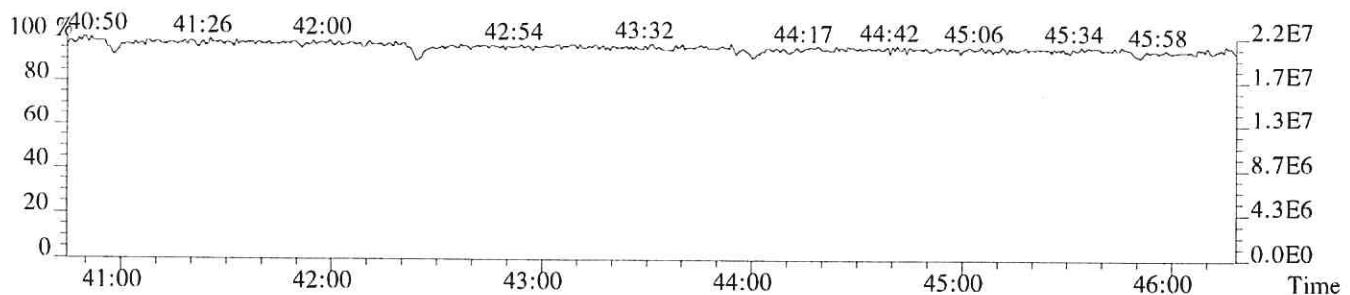
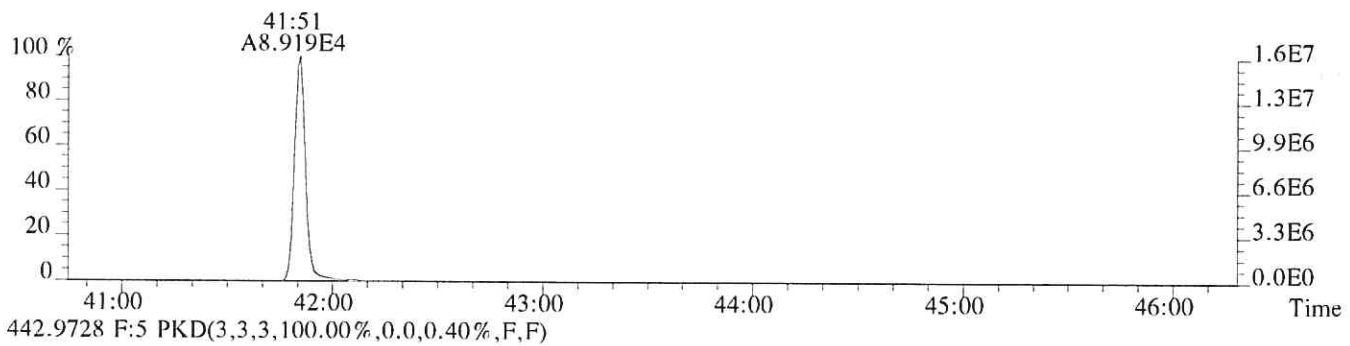
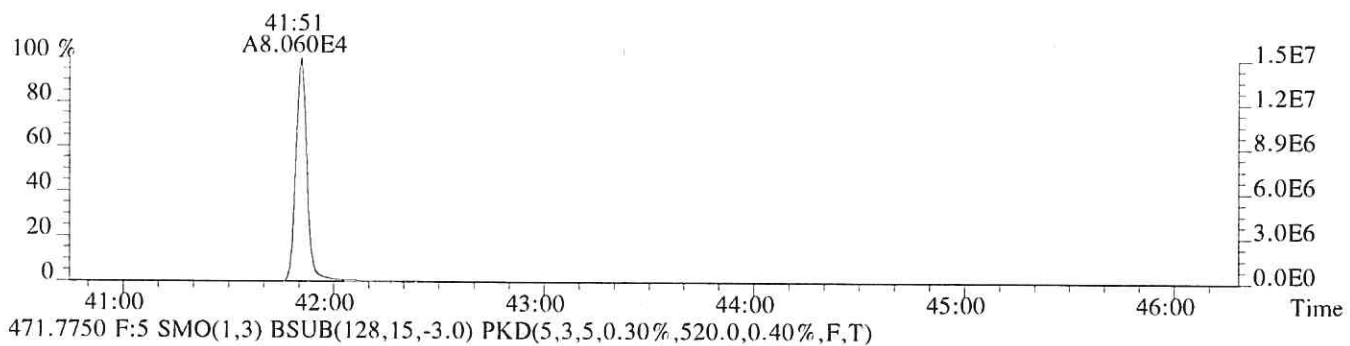
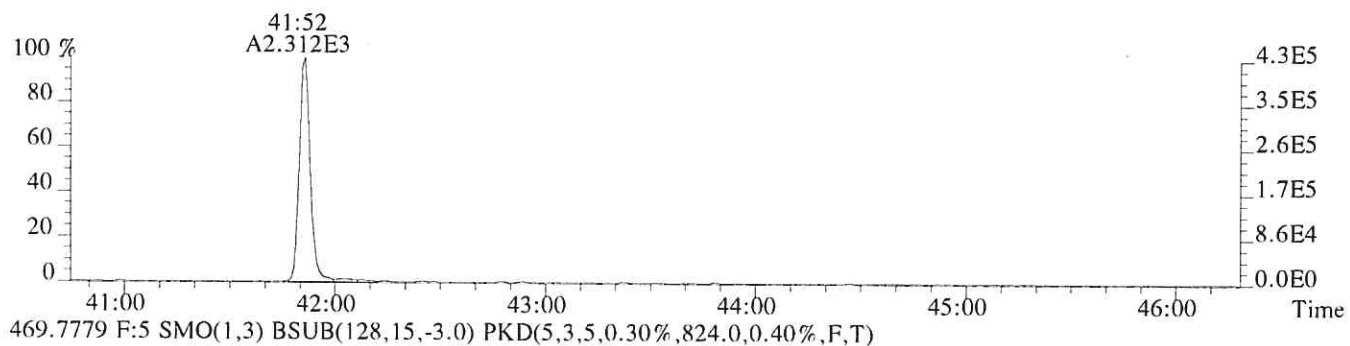
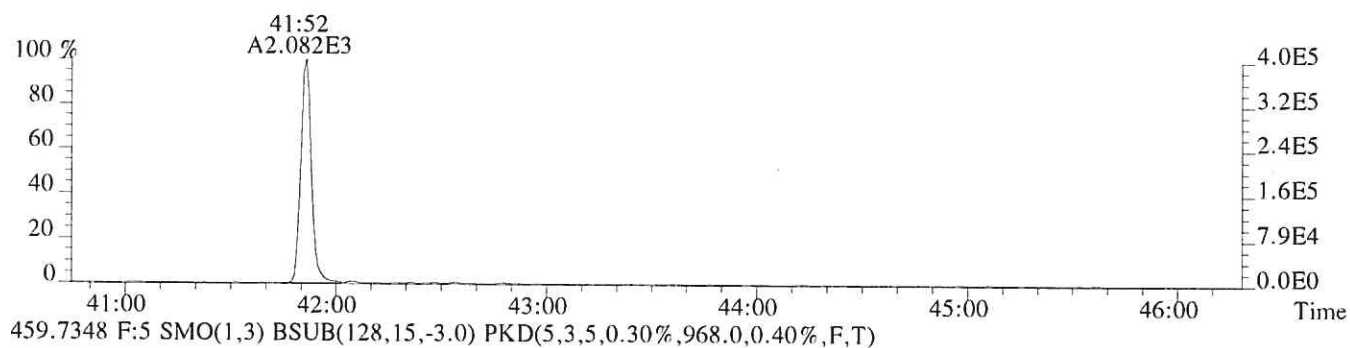
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



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



File: P521511 #1-501 Acq: 26-APR-2019 00:37:08 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp: 193432
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,424.0,0.40%,F,T)



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Sample Response Summary

CLIENT ID.
193434

Run #3 Filename P521512 Samp: 1 Inj: 1 Acquired: 26-APR-19 01:25:47
Processed: 26-APR-19 07:12:43 Sample ID: CS2

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	27:49	1.904e+03	2.573e+03	0.74	yes	no	0.962
2 Unk	1,2,3,7,8-PeCDF	32:06	1.466e+04	9.670e+03	1.52	yes	no	0.968
3 Unk	2,3,4,7,8-PeCDF	33:00	1.349e+04	9.150e+03	1.47	yes	no	0.919
4 Unk	1,2,3,4,7,8-HxCDF	35:41	1.234e+04	1.022e+04	1.21	yes	no	1.161
5 Unk	1,2,3,6,7,8-HxCDF	35:48	1.278e+04	1.062e+04	1.20	yes	no	1.073
6 Unk	2,3,4,6,7,8-HxCDF	36:18	1.155e+04	9.500e+03	1.22	yes	no	1.069
7 Unk	1,2,3,7,8,9-HxCDF	37:02	9.859e+03	8.407e+03	1.17	yes	no	1.096
8 Unk	1,2,3,4,6,7,8-HpCDF	38:17	9.919e+03	1.009e+04	0.98	yes	no	1.281
9 Unk	1,2,3,4,7,8,9-HpCDF	39:38	7.635e+03	7.477e+03	1.02	yes	no	1.192
10 Unk	OCDF	42:03	1.236e+04	1.405e+04	0.88	yes	no	1.204
11 Unk	2,3,7,8-TCDD	28:38	1.562e+03	2.040e+03	0.77	yes	no	1.077
12 Unk	1,2,3,7,8-PeCDD	33:18	1.096e+04	6.951e+03	1.58	yes	no	0.971
13 Unk	1,2,3,4,7,8-HxCDD	36:26	9.366e+03	7.406e+03	1.26	yes	no	1.024
14 Unk	1,2,3,6,7,8-HxCDD	36:31	9.597e+03	7.429e+03	1.29	yes	no	1.038
15 Unk	1,2,3,7,8,9-HxCDD	36:45	9.166e+03	7.753e+03	1.18	yes	no	1.055
16 Unk	1,2,3,4,6,7,8-HpCDD	39:11	7.350e+03	7.193e+03	1.02	yes	no	0.989
17 Unk	OCDD	41:52	1.113e+04	1.270e+04	0.88	yes	no	1.094
18 IS	13C-2,3,7,8-TCDF	27:48	1.080e+05	1.355e+05	0.80	yes	no	1.287
19 IS	13C-1,2,3,7,8-PeCDF	32:05	1.595e+05	1.022e+05	1.56	yes	no	1.416
20 IS	13C-2,3,4,7,8-PeCDF	33:00	1.510e+05	9.721e+04	1.55	yes	no	1.374
21 IS	13C-1,2,3,4,7,8-HxCDF	35:40	6.659e+04	1.282e+05	0.52	yes	no	1.114
22 IS	13C-1,2,3,6,7,8-HxCDF	35:47	7.616e+04	1.452e+05	0.52	yes	no	1.245
23 IS	13C-2,3,4,6,7,8-HxCDF	36:17	6.946e+04	1.327e+05	0.52	yes	no	1.146
24 IS	13C-1,2,3,7,8,9-HxCDF	37:02	5.816e+04	1.130e+05	0.51	yes	no	0.986
25 IS	13C-1,2,3,4,6,7,8-HpCDF	38:17	4.906e+04	1.098e+05	0.45	yes	no	0.915
26 IS	13C-1,2,3,4,7,8,9-HpCDF	39:38	3.945e+04	8.815e+04	0.45	yes	no	0.746
27 IS	13C-2,3,7,8-TCDD	28:36	7.572e+04	9.691e+04	0.78	yes	no	0.929
28 IS	13C-1,2,3,7,8-PeCDD	33:16	1.137e+05	7.276e+04	1.56	yes	no	1.017
29 IS	13C-1,2,3,4,7,8-HxCDD	36:25	9.269e+04	7.249e+04	1.28	yes	no	0.945
30 IS	13C-1,2,3,6,7,8-HxCDD	36:30	9.198e+04	7.164e+04	1.28	yes	no	0.924
31 IS	13C-1,2,3,4,6,7,8-HpCDD	39:10	7.884e+04	7.283e+04	1.08	yes	no	0.876
32 IS	13C-OCDD	41:51	1.094e+05	1.215e+05	0.90	yes	no	0.662
33 RS/RT	13C-1,2,3,4-TCDD	28:01	8.293e+04	1.043e+05	0.80	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	36:44	9.812e+04	7.695e+04	1.28	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	28:38	3.711e+03				no	1.010

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Signal/Noise Height Ratio Summary

CLIENT ID.
193434

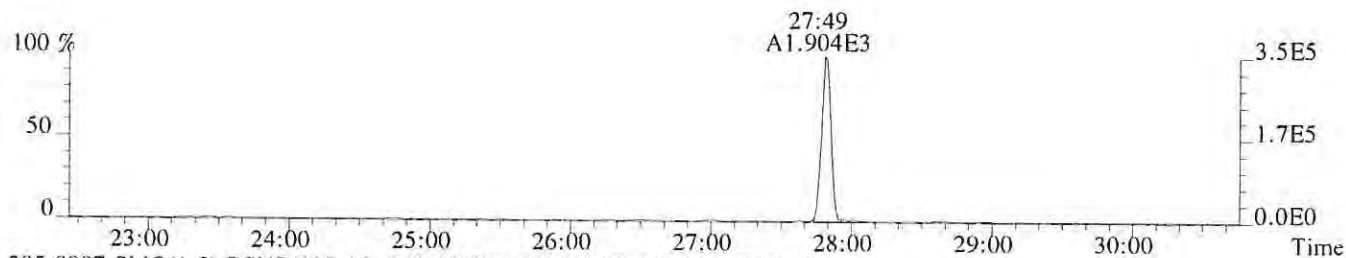
Run #3 Filename P521512 Samp: 1 Inj: 1 Acquired: 26-APR-19 01:25:47
Processed: 26-APR-19 07:12:43 LAB. ID: CS2

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	3.45e+05	1.11e+03	3.1e+02	4.70e+05	1.58e+03	3.0e+02
2	1,2,3,7,8-PeCDF	2.82e+06	3.24e+02	8.7e+03	1.86e+06	9.24e+02	2.0e+03
3	2,3,4,7,8-PeCDF	2.82e+06	3.24e+02	8.7e+03	1.87e+06	9.24e+02	2.0e+03
4	1,2,3,4,7,8-HxCDF	2.76e+06	1.08e+03	2.5e+03	2.29e+06	1.03e+03	2.2e+03
5	1,2,3,6,7,8-HxCDF	2.82e+06	1.08e+03	2.6e+03	2.36e+06	1.03e+03	2.3e+03
6	2,3,4,6,7,8-HxCDF	2.62e+06	1.08e+03	2.4e+03	2.14e+06	1.03e+03	2.1e+03
7	1,2,3,7,8,9-HxCDF	2.14e+06	1.08e+03	2.0e+03	1.83e+06	1.03e+03	1.8e+03
8	1,2,3,4,6,7,8-HpCDF	2.26e+06	6.28e+02	3.6e+03	2.27e+06	4.56e+02	5.0e+03
9	1,2,3,4,7,8,9-HpCDF	1.56e+06	6.28e+02	2.5e+03	1.52e+06	4.56e+02	3.3e+03
10	OCDF	2.27e+06	4.88e+02	4.7e+03	2.60e+06	8.80e+02	3.0e+03
11	2,3,7,8-TCDD	3.09e+05	2.38e+03	1.3e+02	4.17e+05	1.42e+03	2.9e+02
12	1,2,3,7,8-PeCDD	2.24e+06	1.27e+03	1.8e+03	1.39e+06	3.44e+02	4.1e+03
13	1,2,3,4,7,8-HxCDD	2.17e+06	8.12e+02	2.7e+03	1.75e+06	6.44e+02	2.7e+03
14	1,2,3,6,7,8-HxCDD	2.16e+06	8.12e+02	2.7e+03	1.67e+06	6.44e+02	2.6e+03
15	1,2,3,7,8,9-HxCDD	2.06e+06	8.12e+02	2.5e+03	1.69e+06	6.44e+02	2.6e+03
16	1,2,3,4,6,7,8-HpCDD	1.58e+06	5.60e+02	2.8e+03	1.56e+06	4.20e+02	3.7e+03
17	OCDD	2.06e+06	4.08e+02	5.0e+03	2.35e+06	5.40e+02	4.4e+03
18	13C-2,3,7,8-TCDF	2.02e+07	6.56e+03	3.1e+03	2.52e+07	3.64e+03	6.9e+03
19	13C-1,2,3,7,8-PeCDF	3.05e+07	1.66e+03	1.8e+04	1.96e+07	1.09e+03	1.8e+04
20	13C-2,3,4,7,8-PeCDF	3.07e+07	1.66e+03	1.8e+04	1.96e+07	1.09e+03	1.8e+04
21	13C-1,2,3,4,7,8-HxCDF	1.47e+07	1.05e+03	1.4e+04	2.86e+07	1.48e+03	1.9e+04
22	13C-1,2,3,6,7,8-HxCDF	1.68e+07	1.05e+03	1.6e+04	3.18e+07	1.48e+03	2.2e+04
23	13C-2,3,4,6,7,8-HxCDF	1.56e+07	1.05e+03	1.5e+04	2.98e+07	1.48e+03	2.0e+04
24	13C-1,2,3,7,8,9-HxCDF	1.24e+07	1.05e+03	1.2e+04	2.43e+07	1.48e+03	1.6e+04
25	13C-1,2,3,4,6,7,8-HpCDF	1.12e+07	8.84e+02	1.3e+04	2.46e+07	3.96e+02	6.2e+04
26	13C-1,2,3,4,7,8,9-HpCDF	8.03e+06	8.84e+02	9.1e+03	1.79e+07	3.96e+02	4.5e+04
27	13C-2,3,7,8-TCDD	1.47e+07	6.20e+03	2.4e+03	1.89e+07	2.23e+03	8.5e+03
28	13C-1,2,3,7,8-PeCDD	2.32e+07	2.88e+02	8.0e+04	1.49e+07	8.84e+02	1.7e+04
29	13C-1,2,3,4,7,8-HxCDD	2.14e+07	1.36e+03	1.6e+04	1.69e+07	7.64e+02	2.2e+04
30	13C-1,2,3,6,7,8-HxCDD	2.01e+07	1.36e+03	1.5e+04	1.56e+07	7.64e+02	2.0e+04
31	13C-1,2,3,4,6,7,8-HpCDD	1.70e+07	9.68e+02	1.8e+04	1.57e+07	1.21e+03	1.3e+04
32	13C-OCDD	2.01e+07	5.36e+02	3.7e+04	2.23e+07	4.24e+02	5.3e+04
33	13C-1,2,3,4-TCDD	1.56e+07	6.20e+03	2.5e+03	1.97e+07	2.23e+03	8.8e+03
34	13C-1,2,3,7,8,9-HxCDD	2.20e+07	1.36e+03	1.6e+04	1.72e+07	7.64e+02	2.3e+04
35	37Cl-2,3,7,8-TCDD	7.32e+05	1.99e+03	3.7e+02			

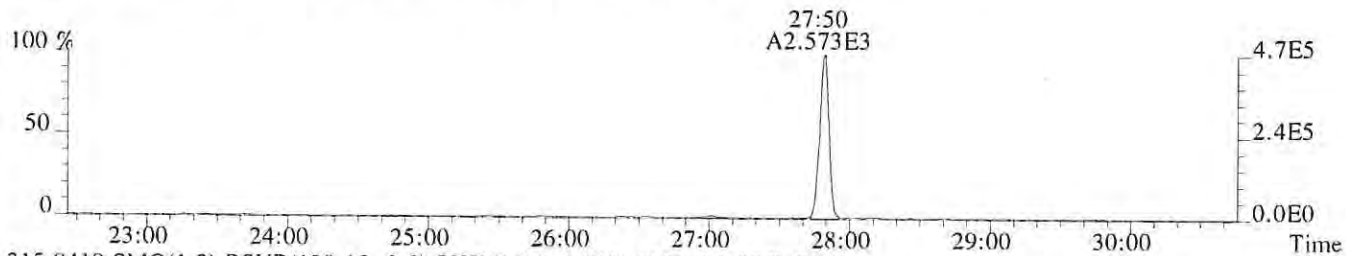
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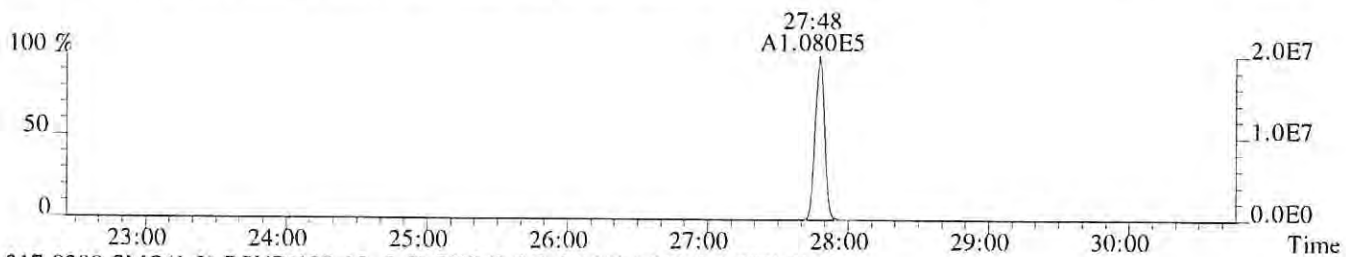
File:P521512 #1-591 Acq:26-APR-2019 01:25:47 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193434
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1108.0,1.00%,F,T)



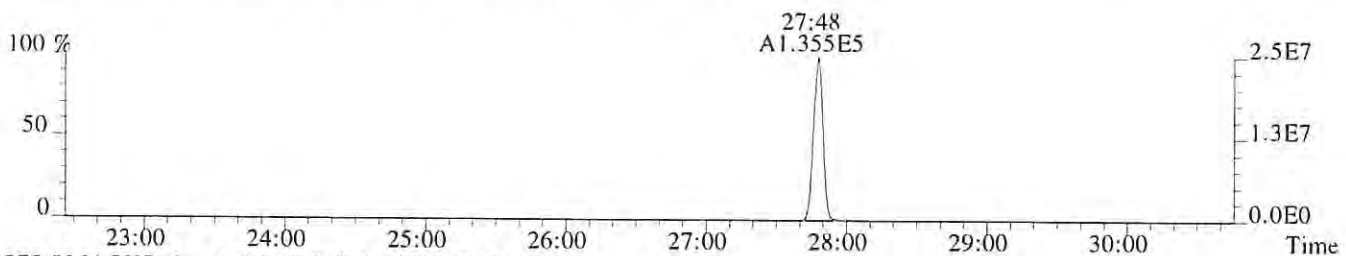
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1576.0,1.00%,F,T)



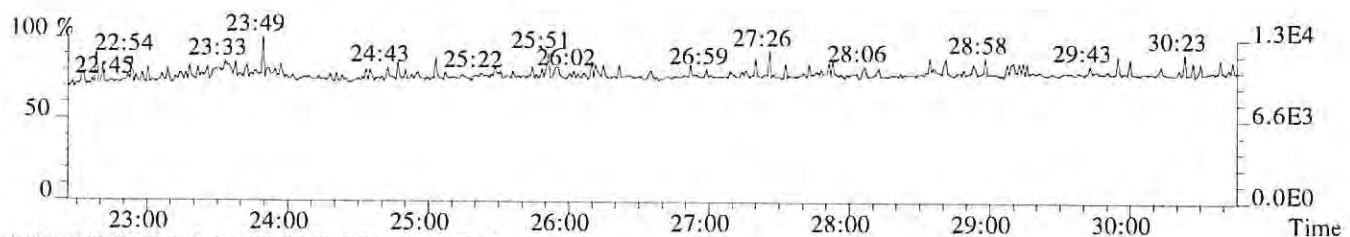
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6556.0,1.00%,F,T)



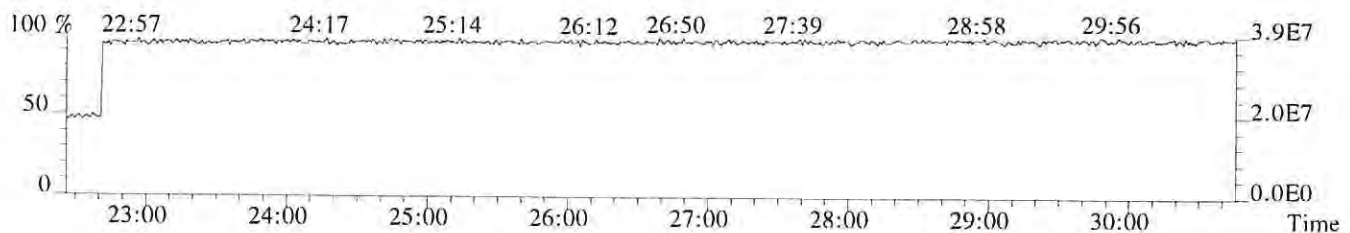
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3644.0,1.00%,F,T)



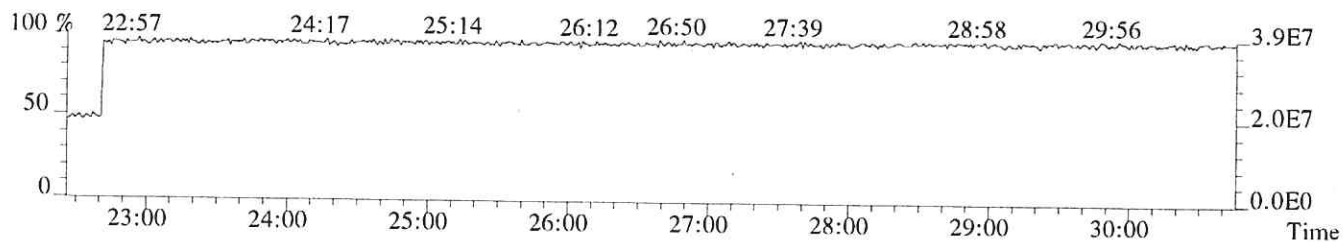
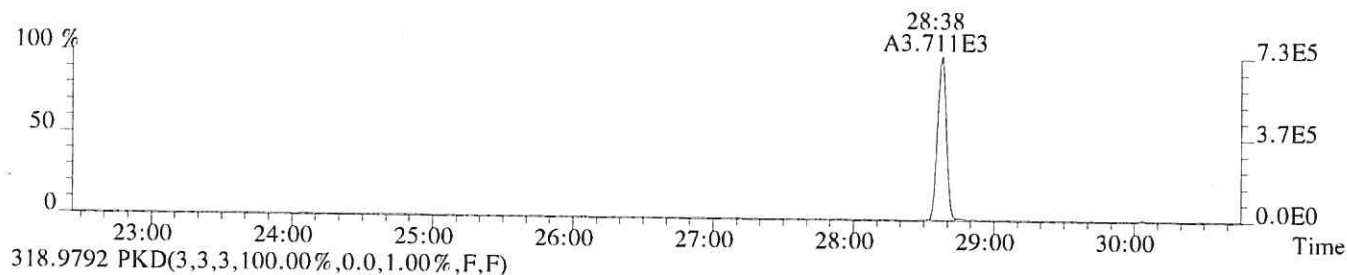
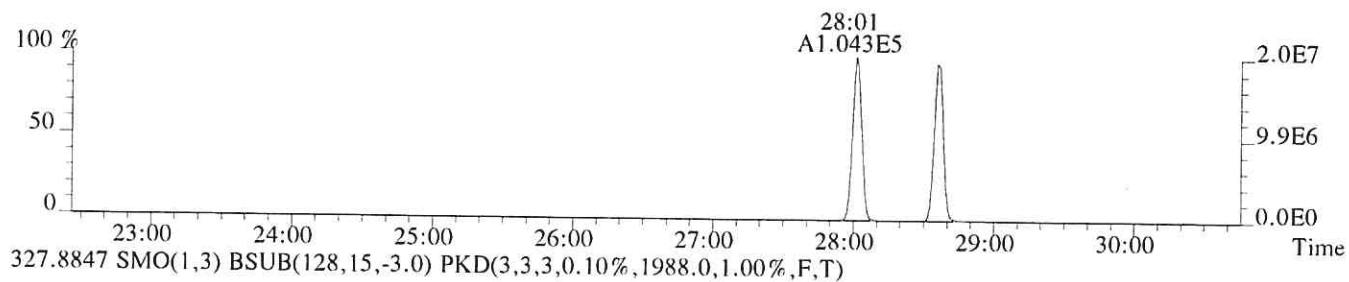
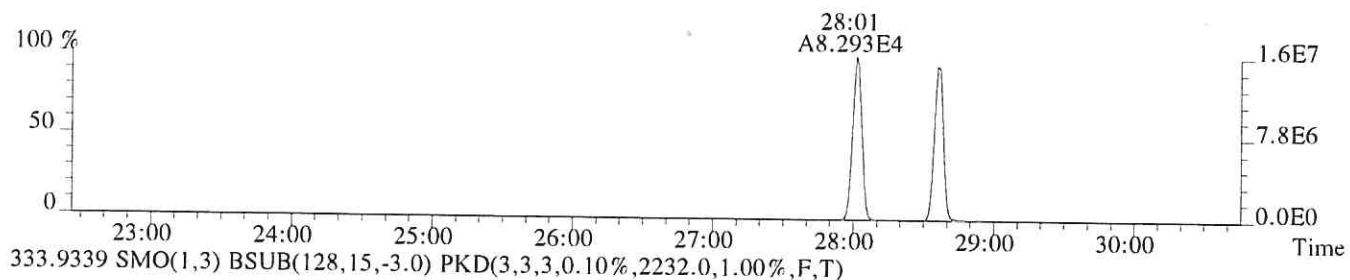
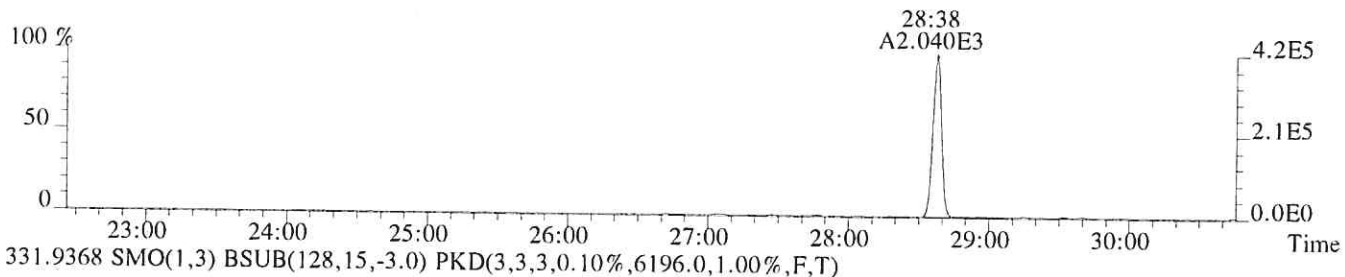
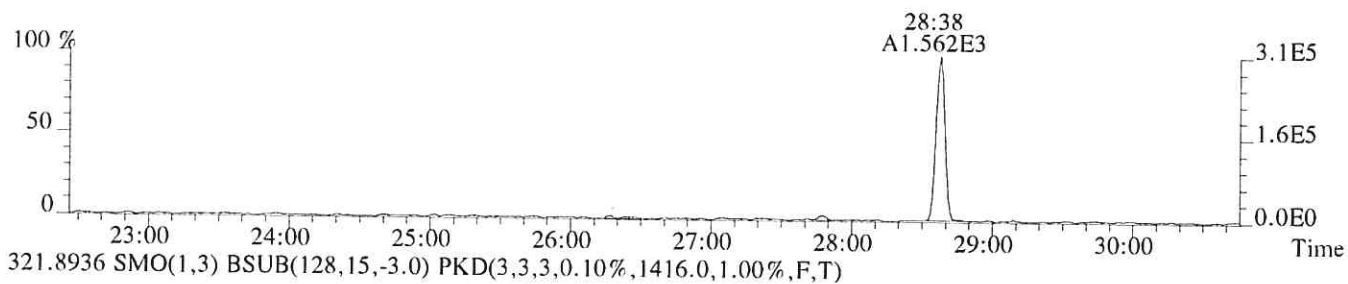
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



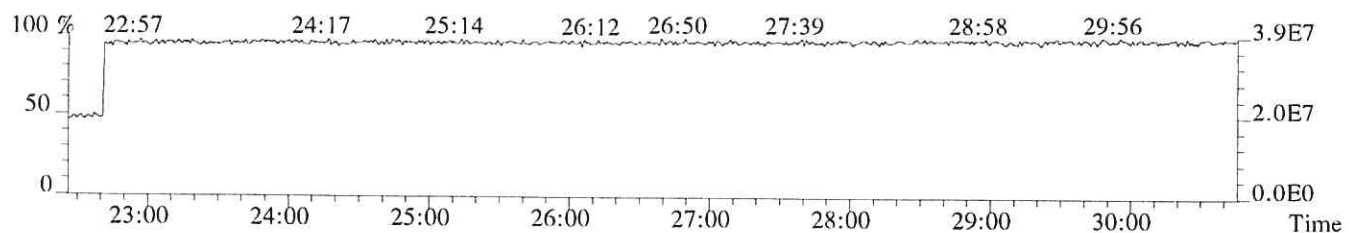
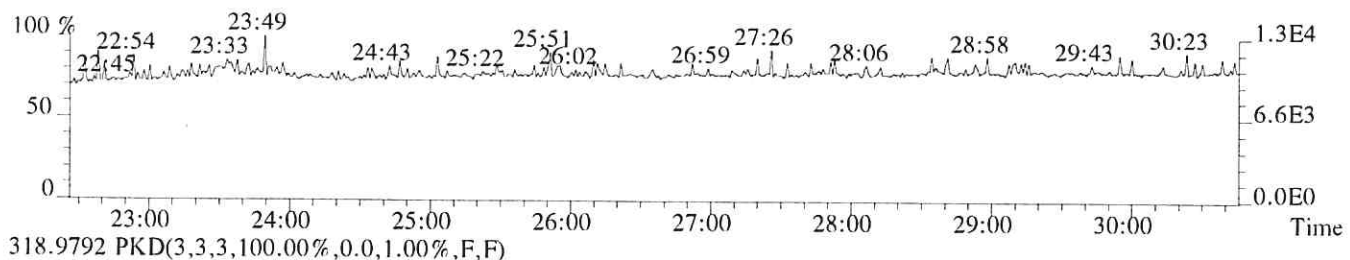
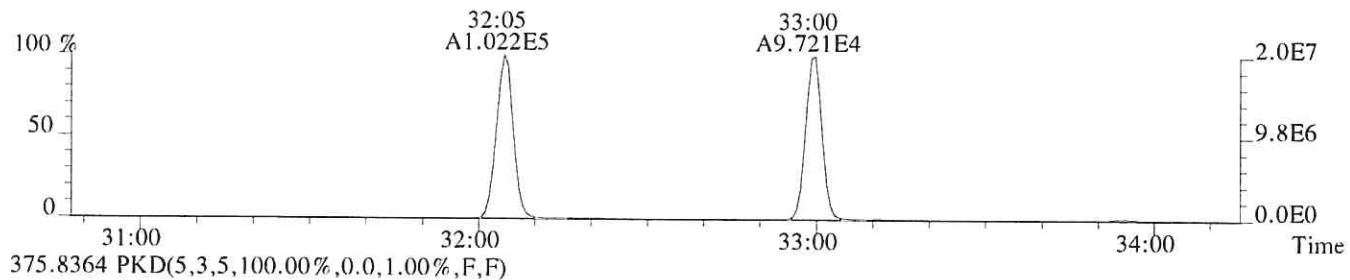
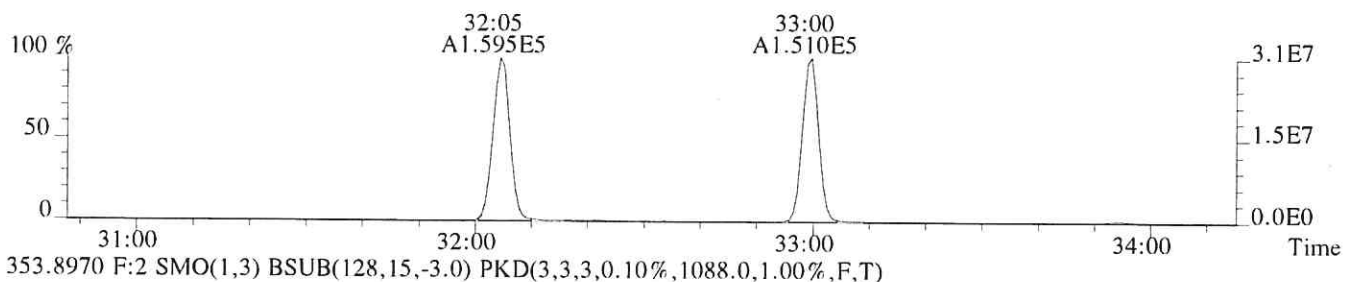
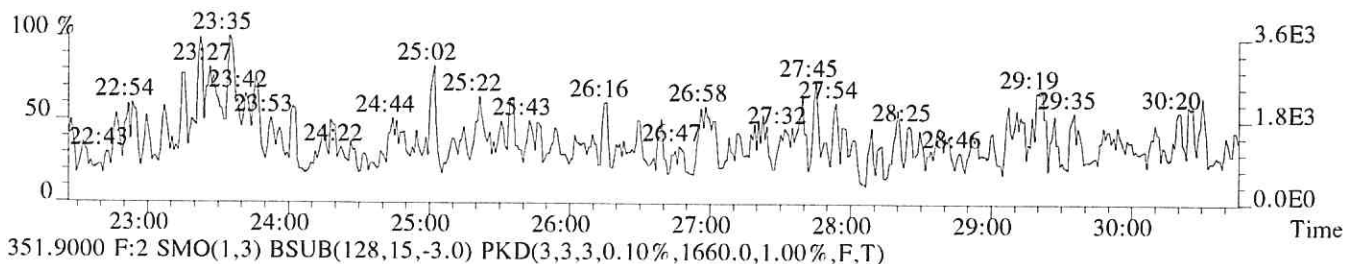
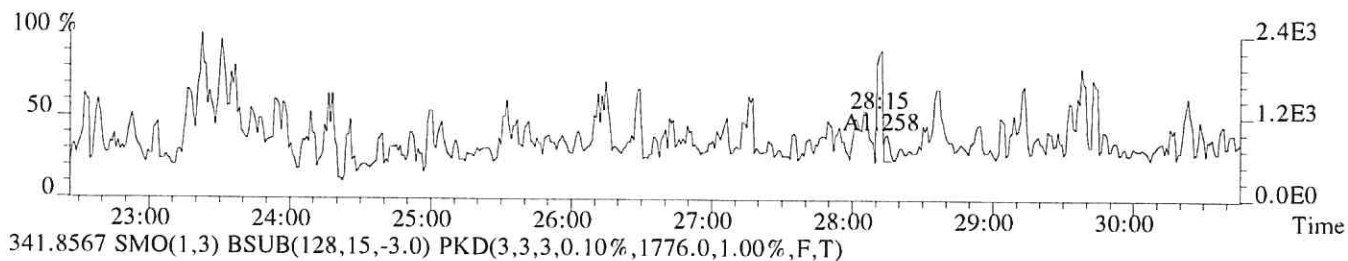
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



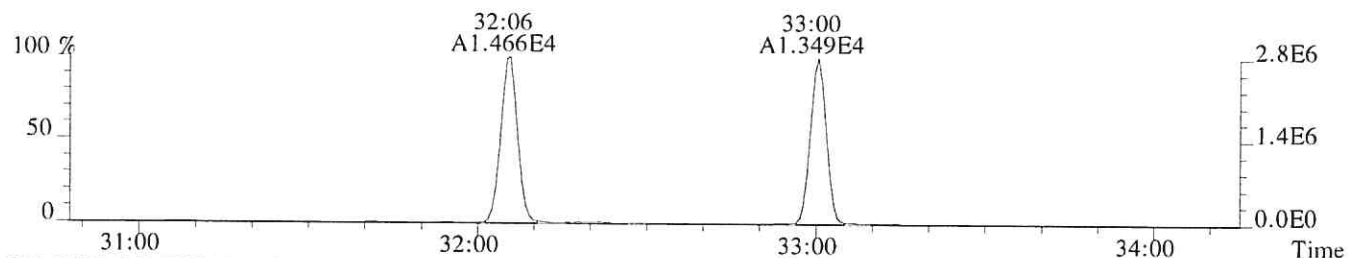
File:P521512 #1-591 Acq:26-APR-2019 01:25:47 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193434
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2380.0,1.00%,F,T)



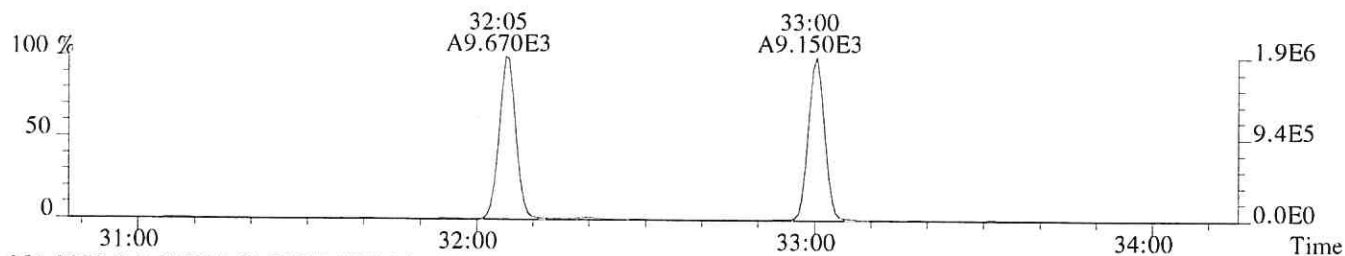
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Sample#1 Exp:193434
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1156.0,1.00%,F,T)



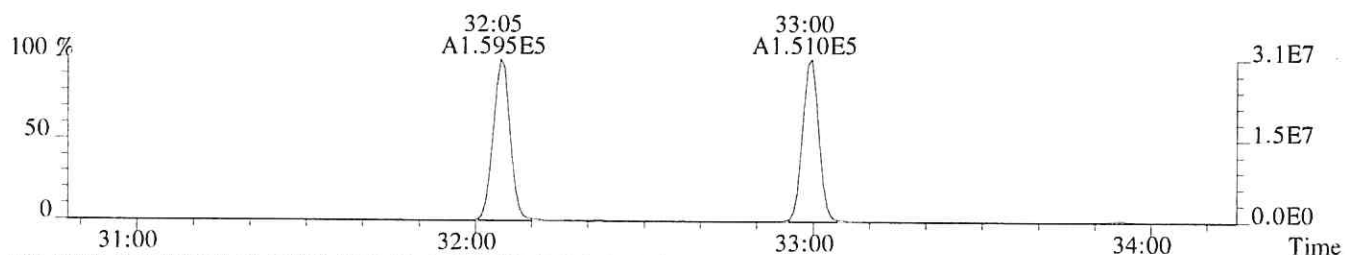
File:P521512 #1-312 Acq:26-APR-2019 01:25:47 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193434
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,324.0,1.00%,F,T)



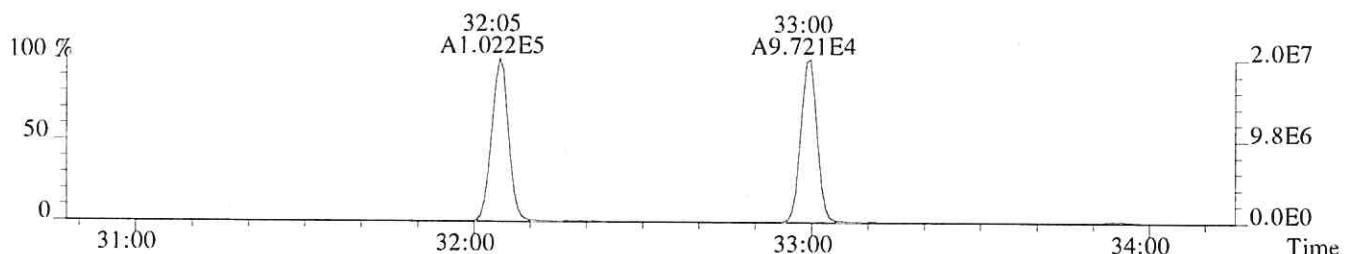
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,924.0,1.00%,F,T)



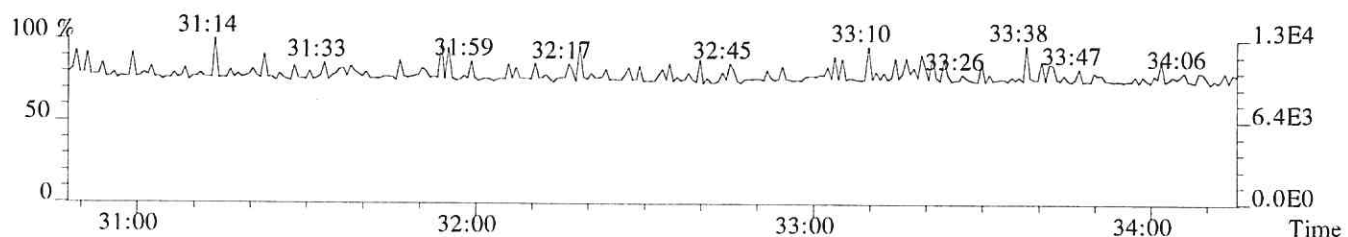
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1660.0,1.00%,F,T)



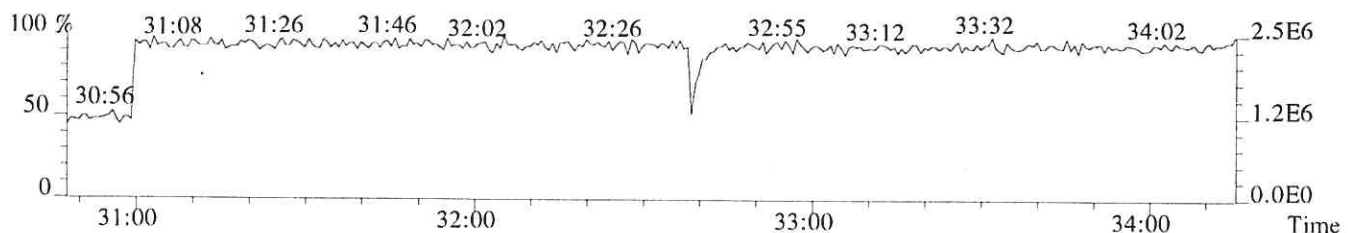
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1088.0,1.00%,F,T)



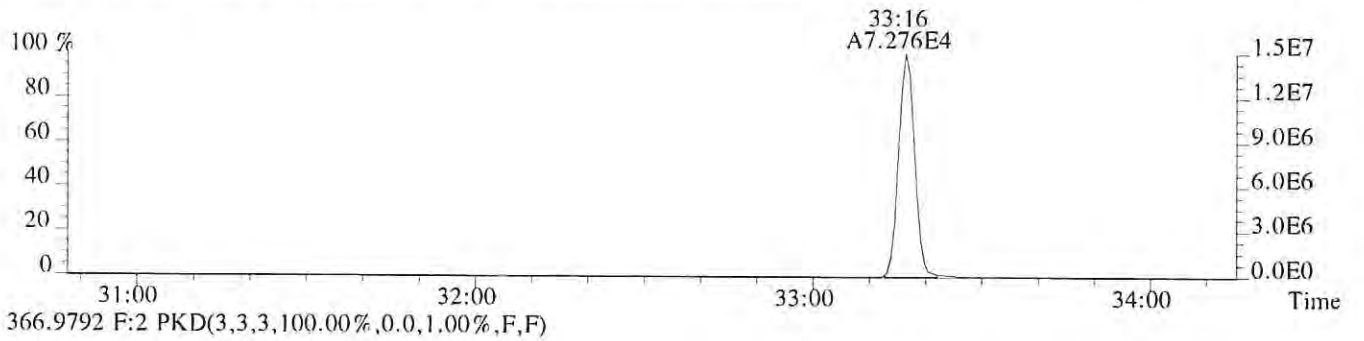
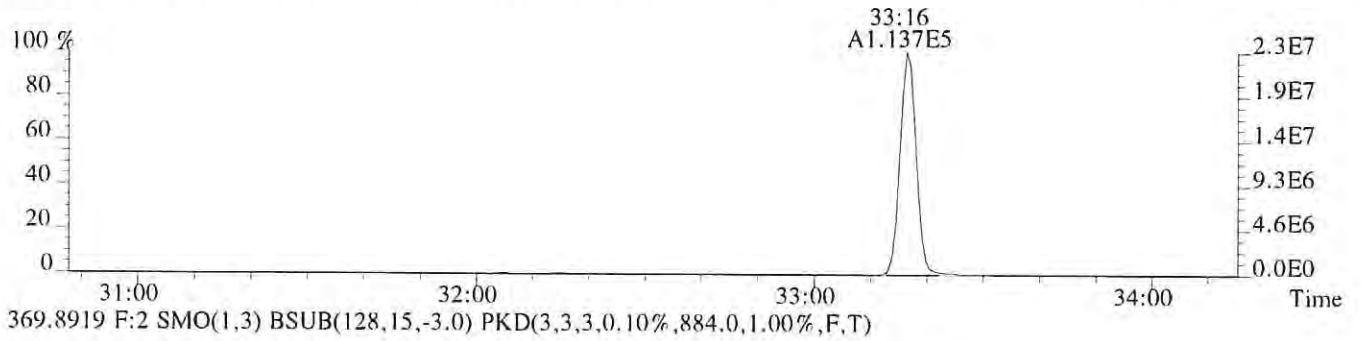
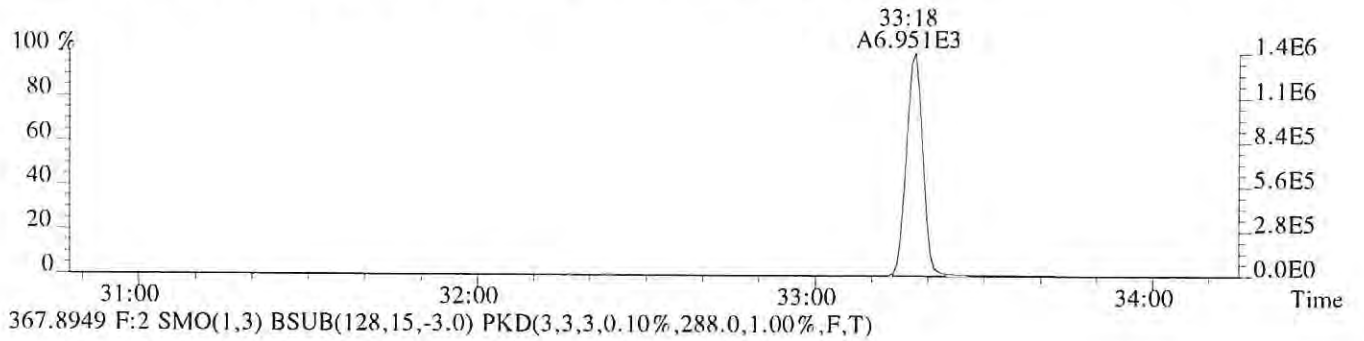
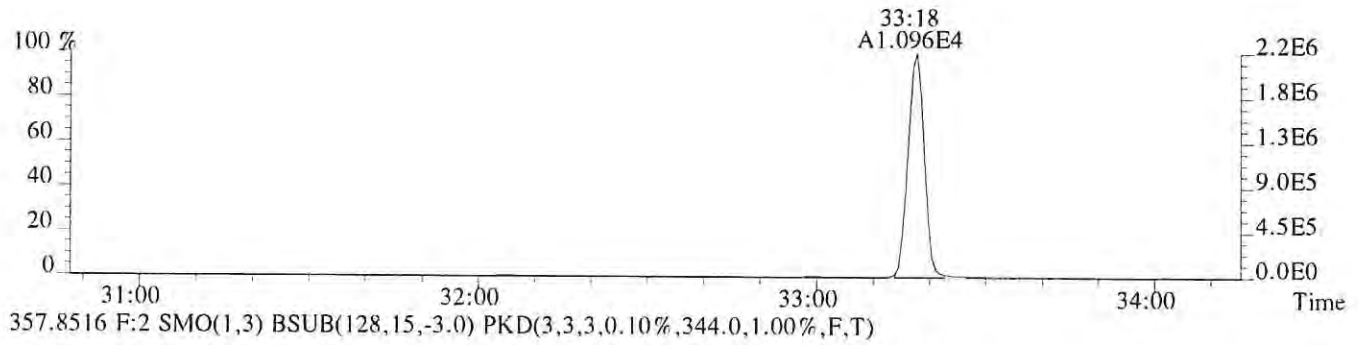
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



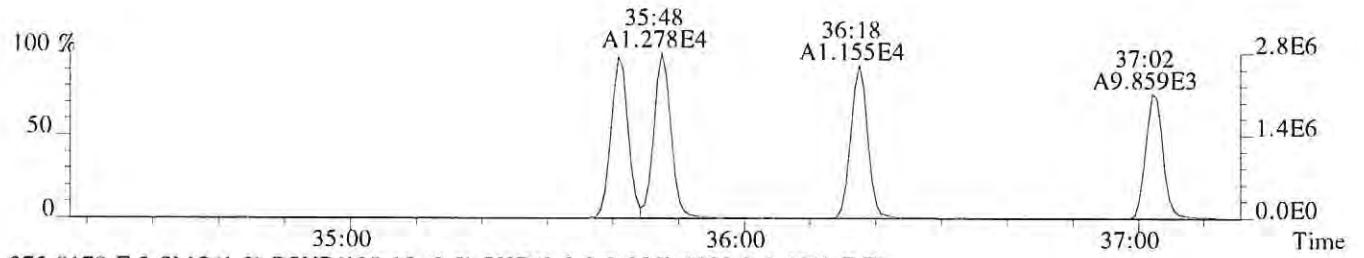
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



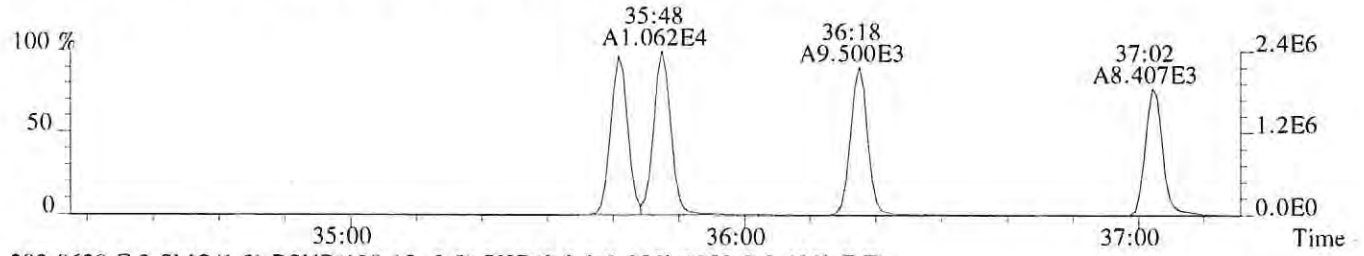
File: P521512 #1-312 Acq: 26-APR-2019 01:25:47 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp: 193434
355.8546 F: 2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1268.0,1.00%,F,T)



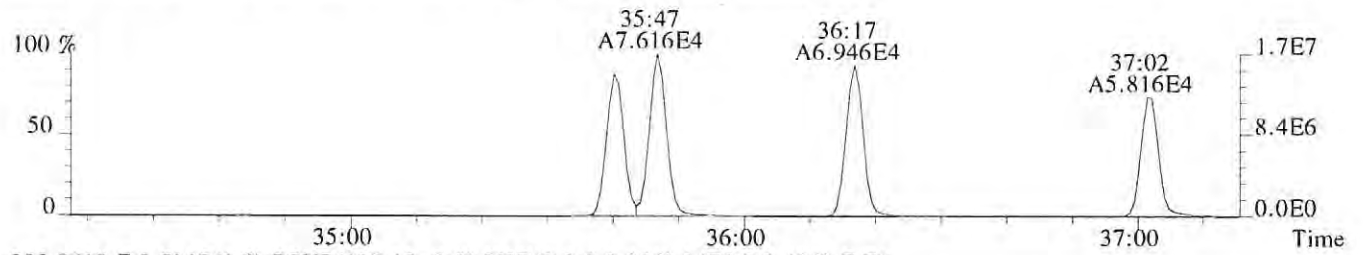
File:P521512 #1-268 Acq:26-APR-2019 01:25:47 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:193434
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1084.0,0.40%,F,T)



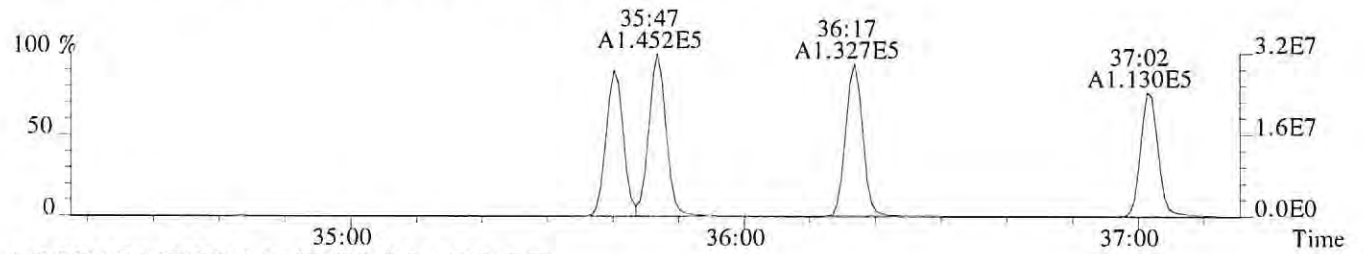
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1028.0,0.40%,F,T)



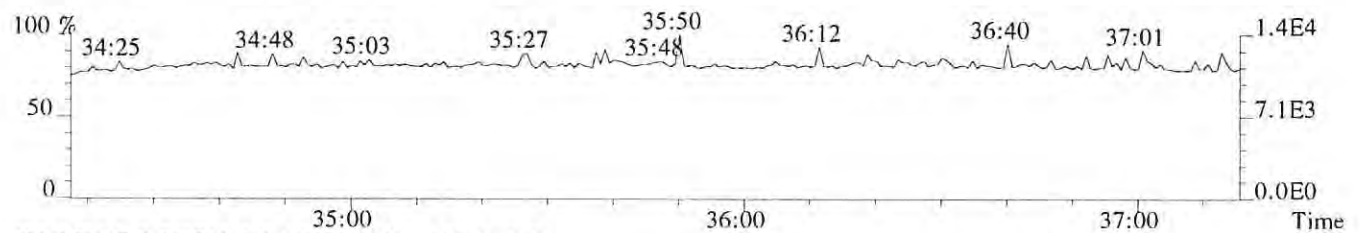
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1052.0,0.40%,F,T)



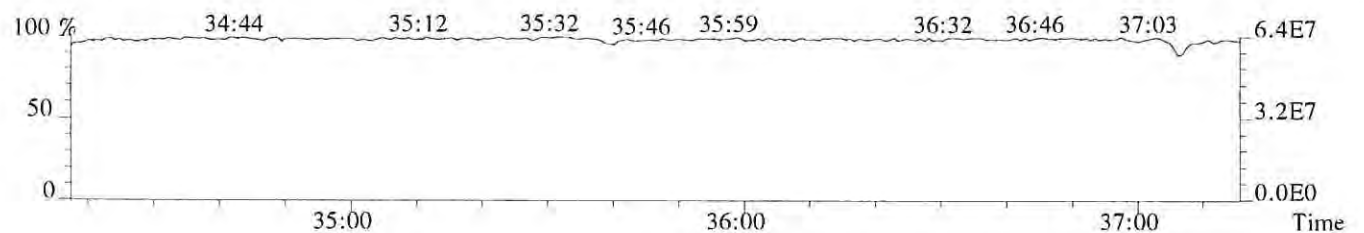
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1476.0,0.40%,F,T)



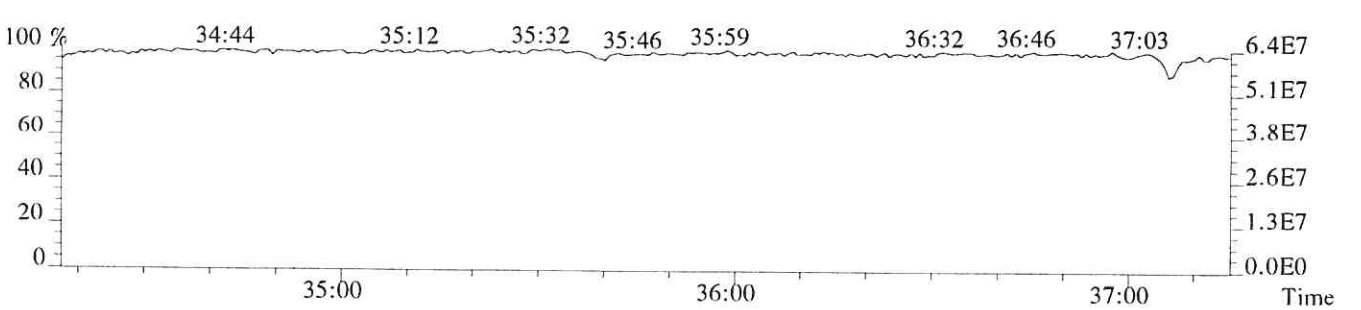
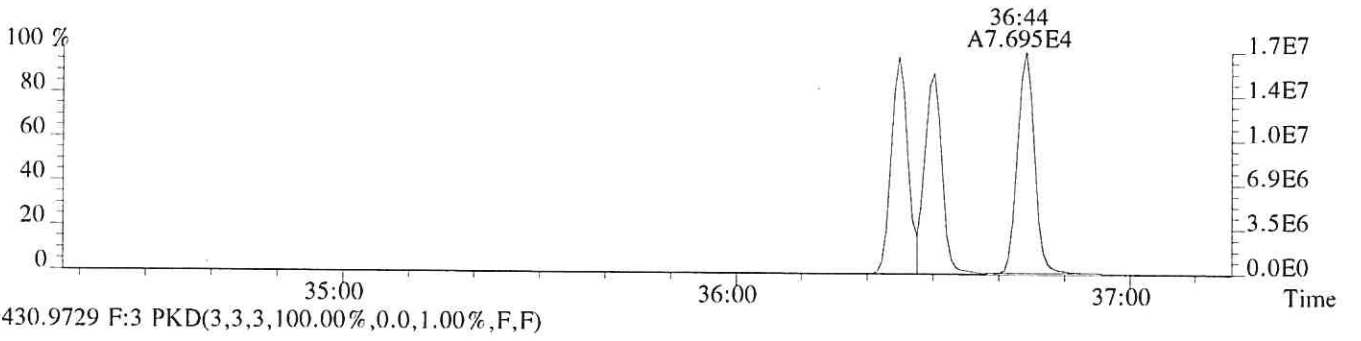
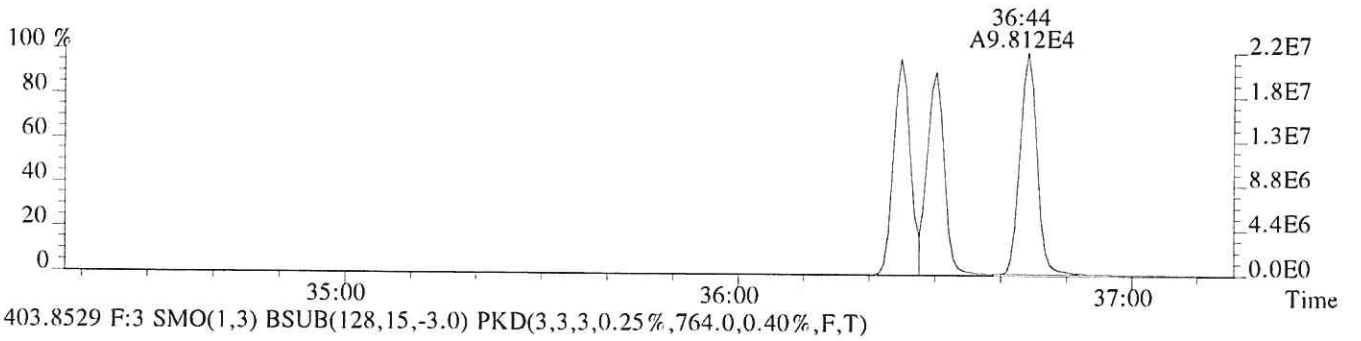
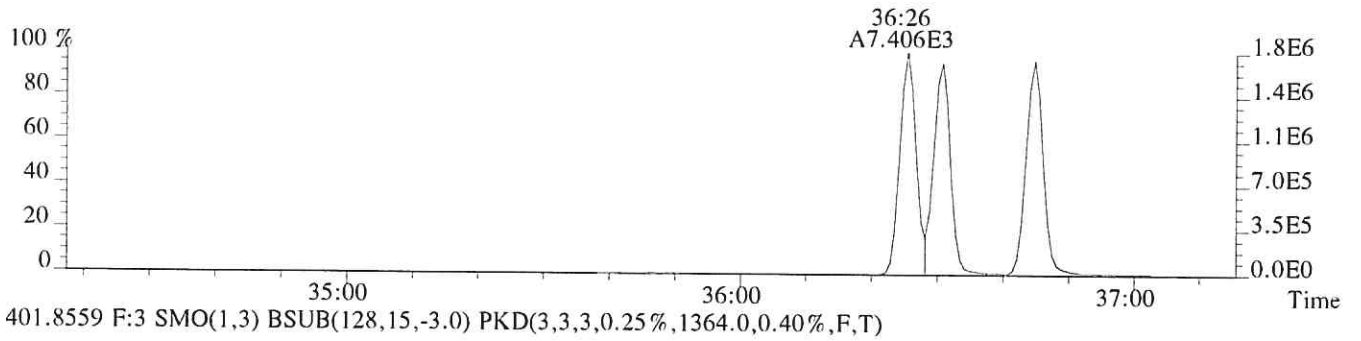
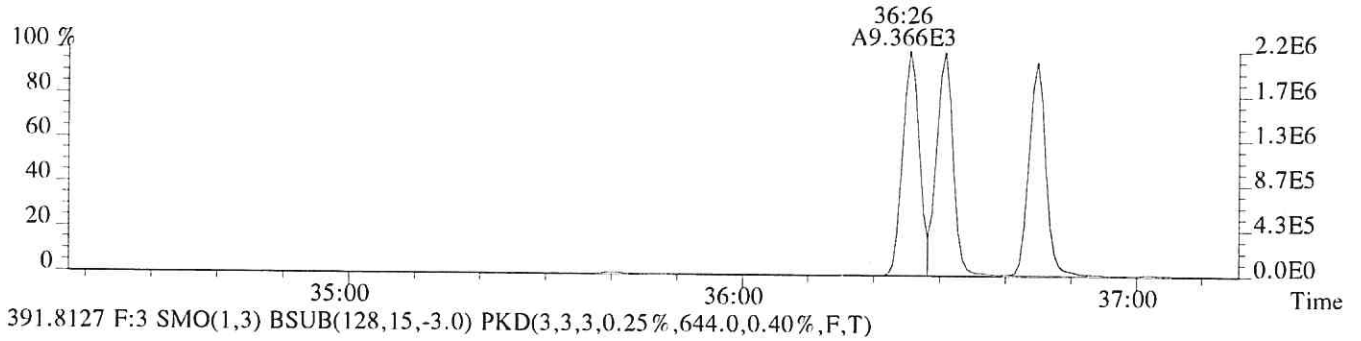
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



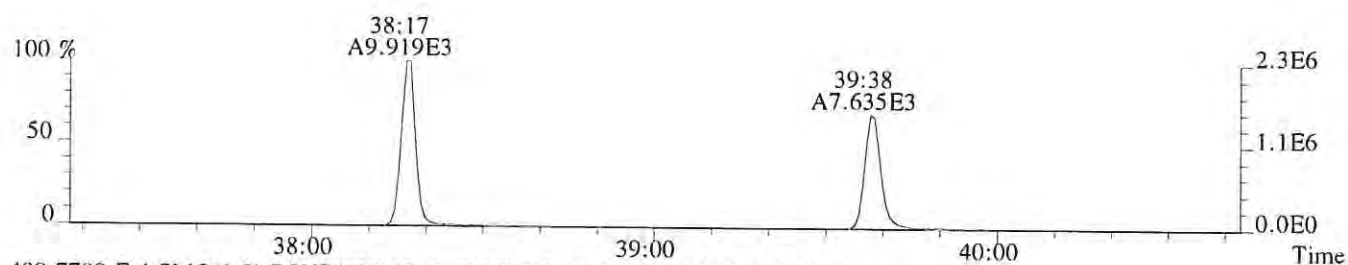
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



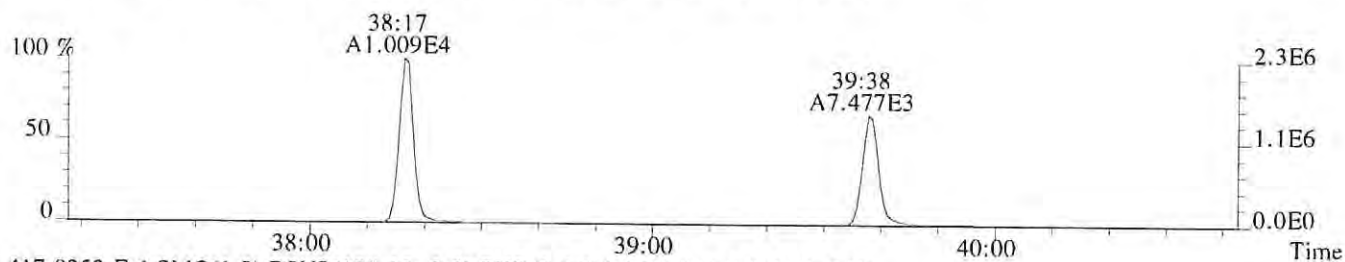
File:P521512 #1-268 Acq:26-APR-2019 01:25:47 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193434
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,812.0,0.40%,F,T)



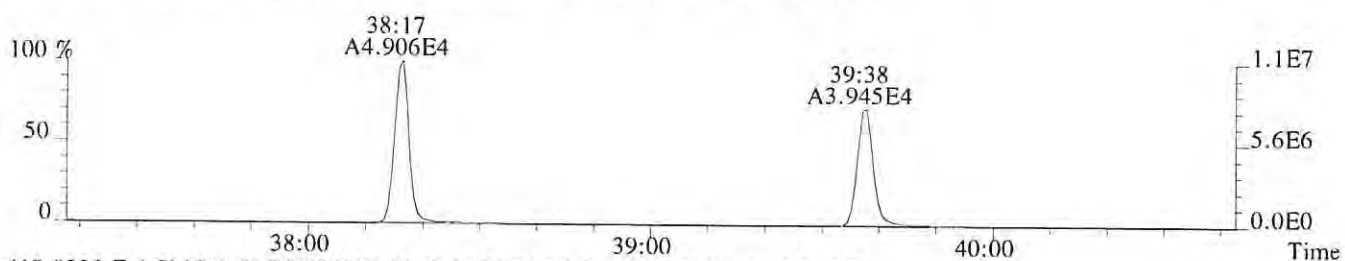
File:P521512 #1-308 Acq:26-APR-2019 01:25:47 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:193434
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,628.0,0.50%,F,T)



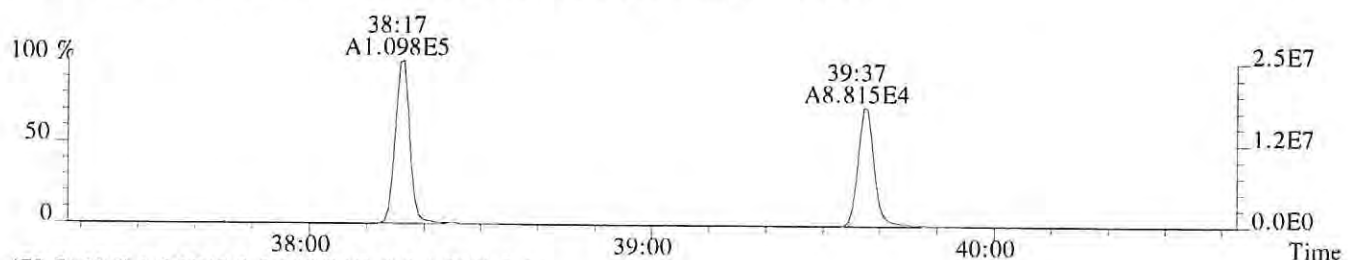
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,456.0,0.50%,F,T)



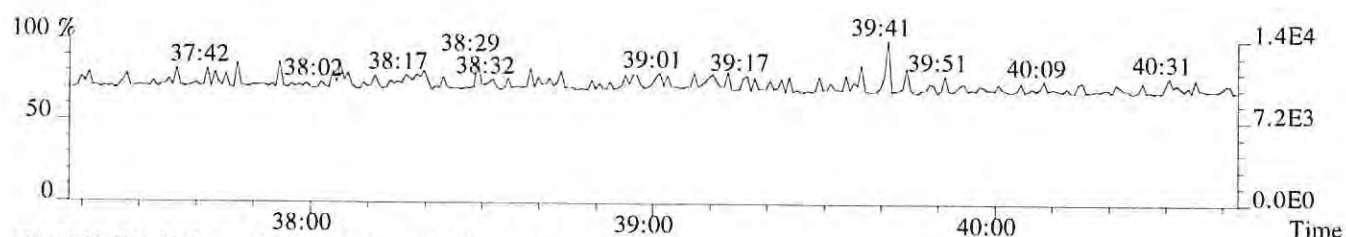
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,884.0,0.50%,F,T)



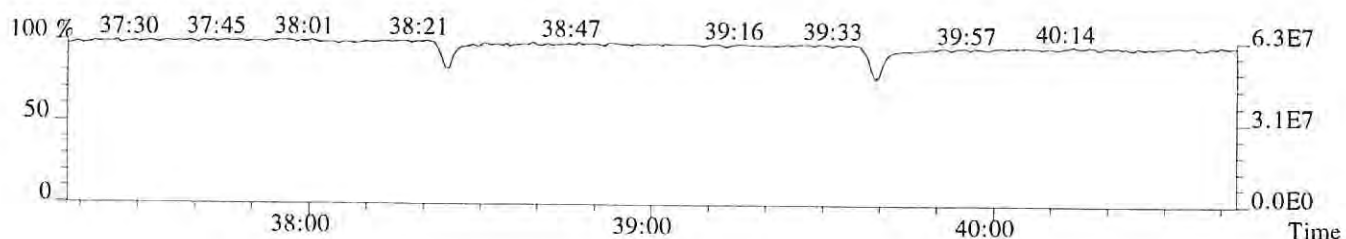
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,396.0,0.50%,F,T)



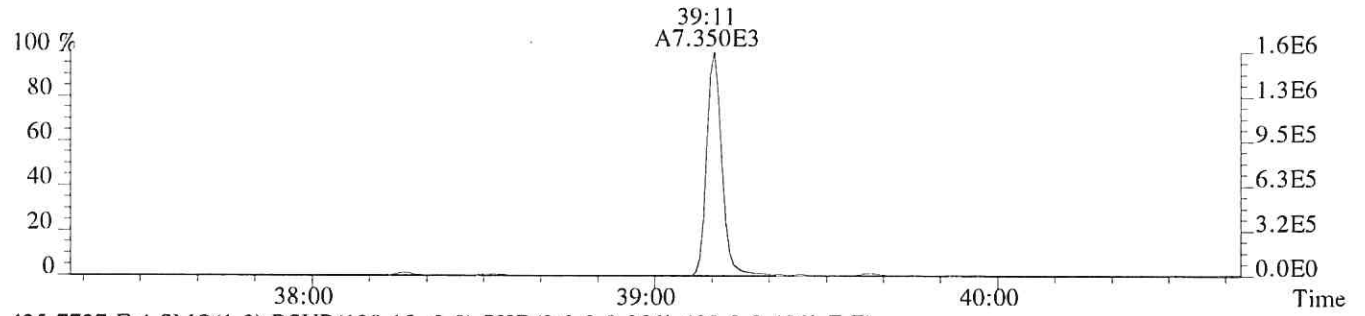
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



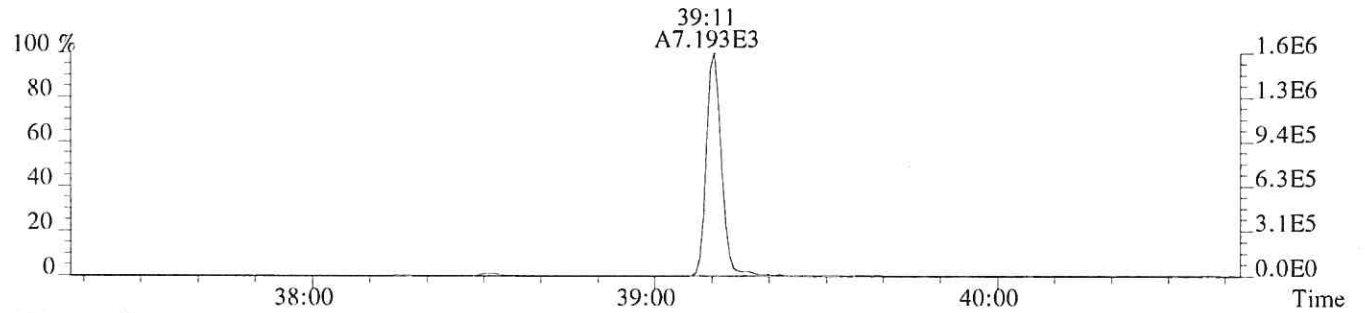
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



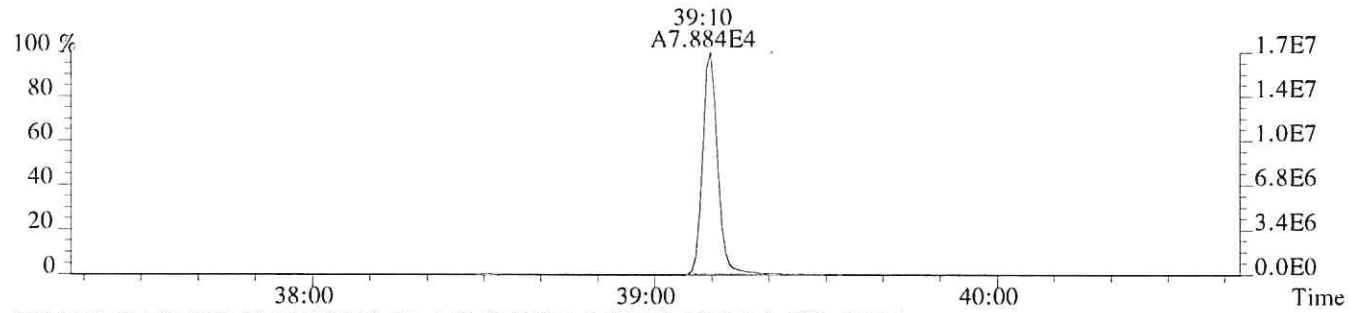
File:P521512 #1-308 Acq:26-APR-2019 01:25:47 Probe EI+ Magnet SIR VG BioTech Mass spectE
Sample#1 Exp:193434
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,560.0,0.40%,F,T)



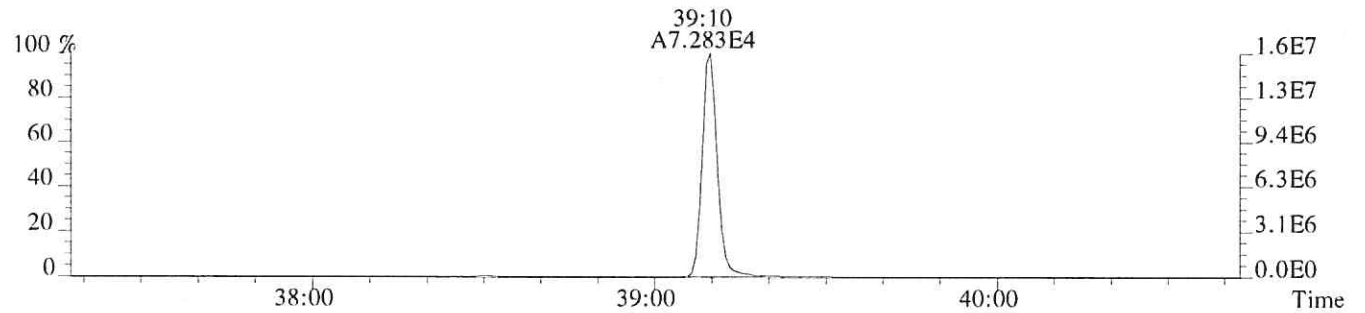
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,420.0,0.40%,F,T)



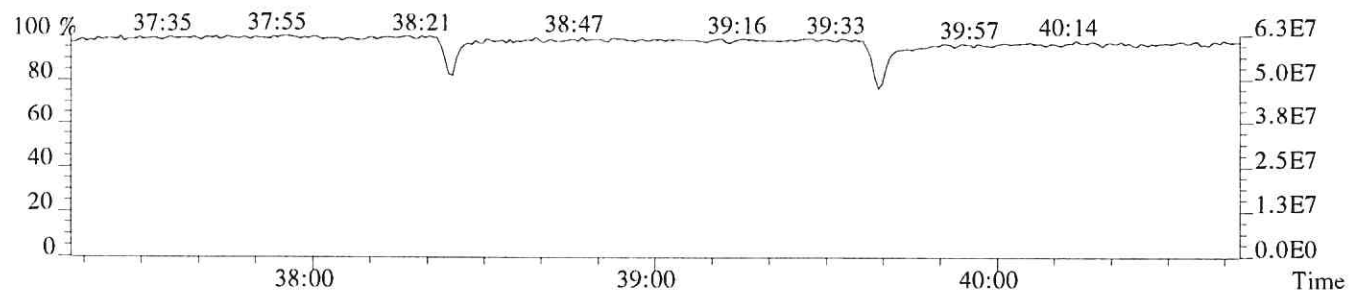
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,968.0,0.40%,F,T)



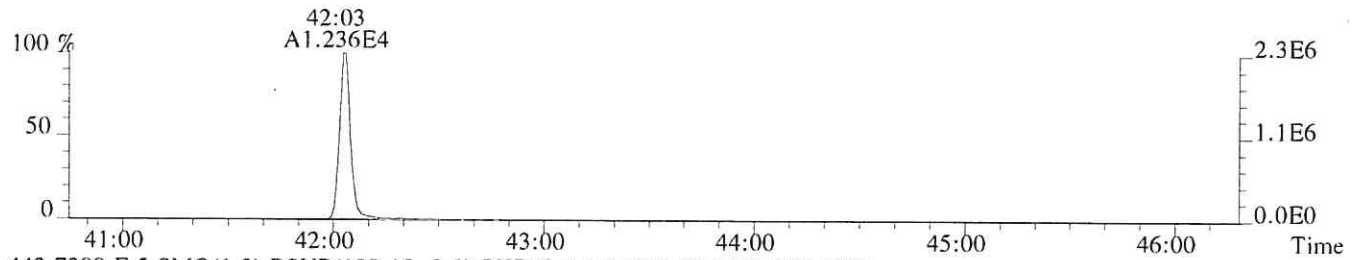
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1212.0,0.40%,F,T)



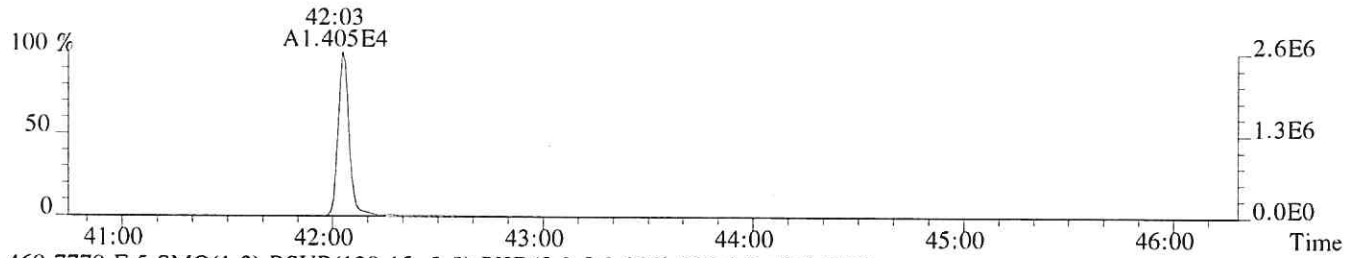
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



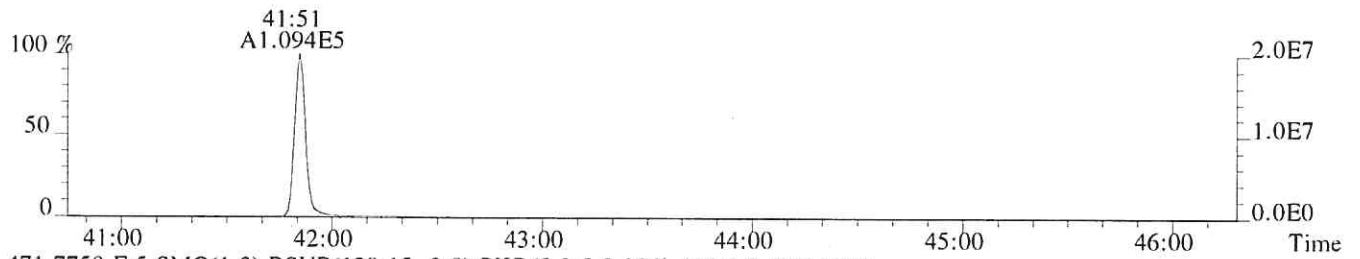
File:P521512 #1-501 Acq:26-APR-2019 01:25:47 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:193434
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,488.0,0.40%,F,T)



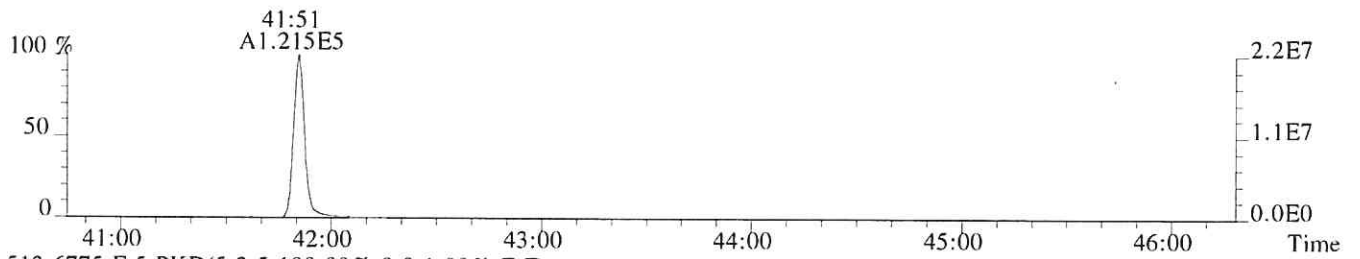
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,880.0,0.40%,F,T)



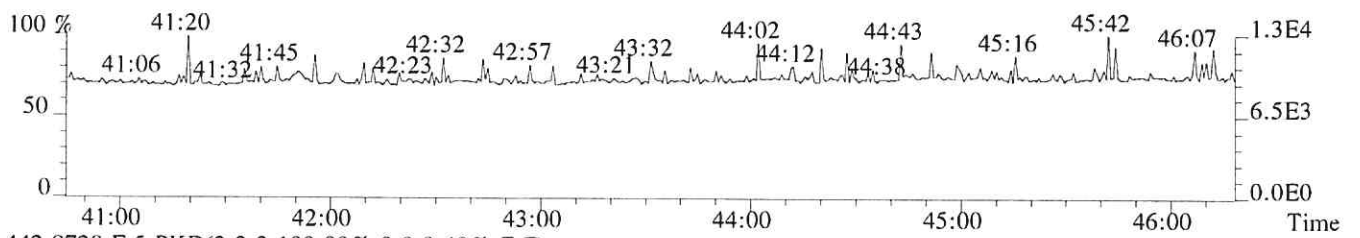
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,536.0,0.40%,F,T)



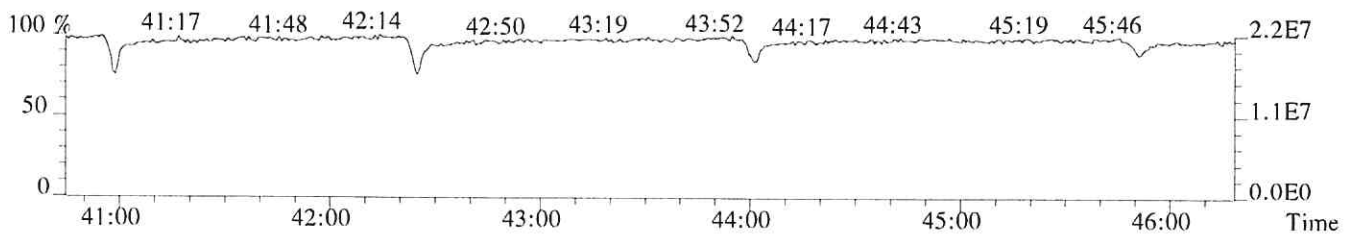
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,424.0,0.40%,F,T)



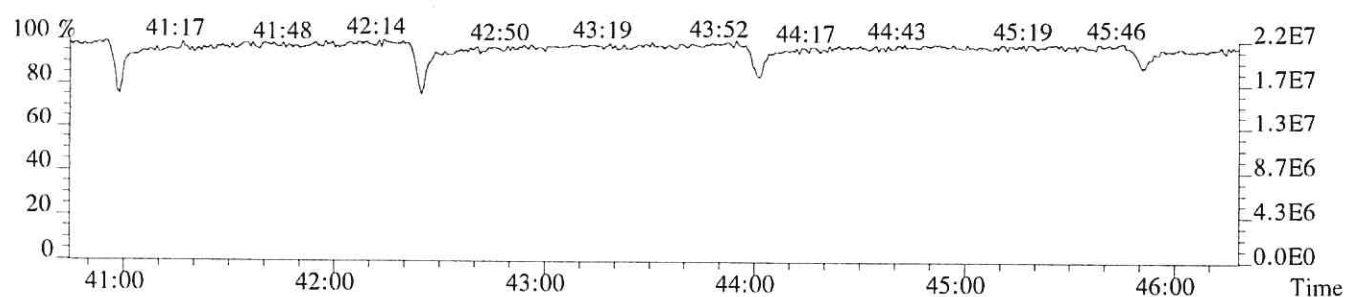
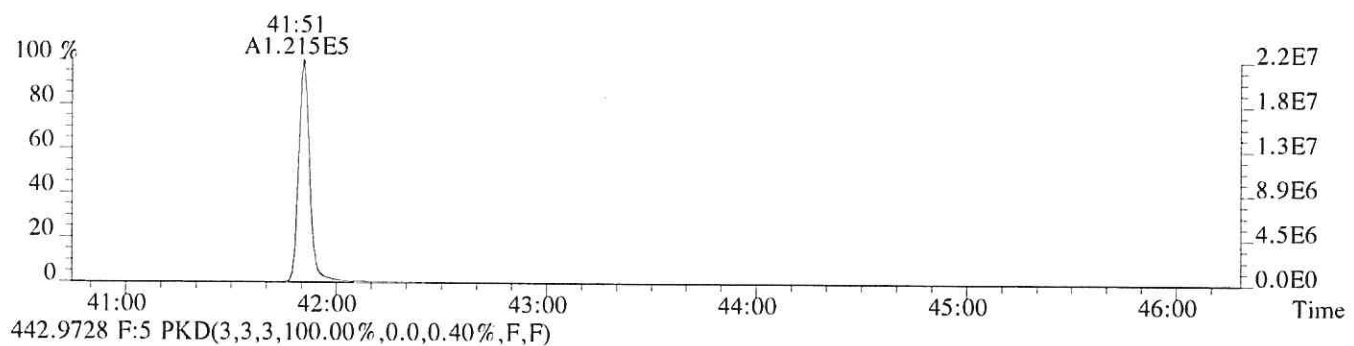
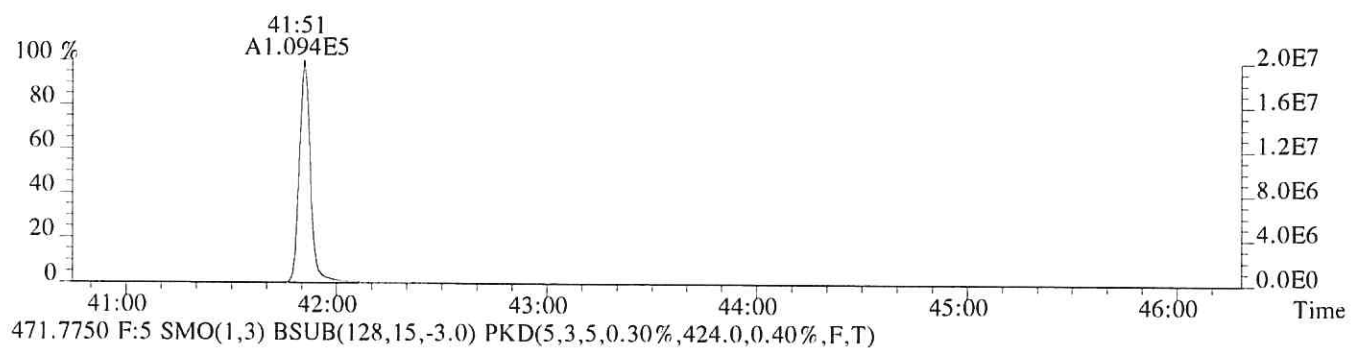
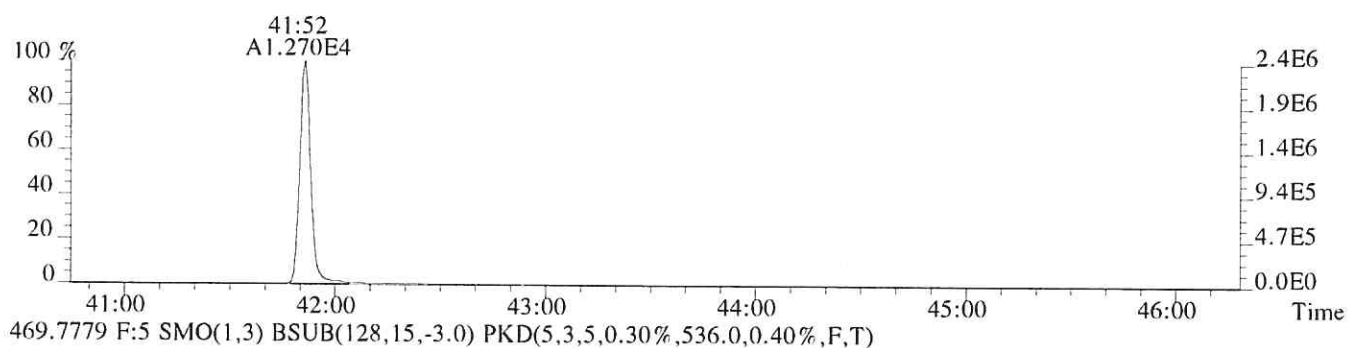
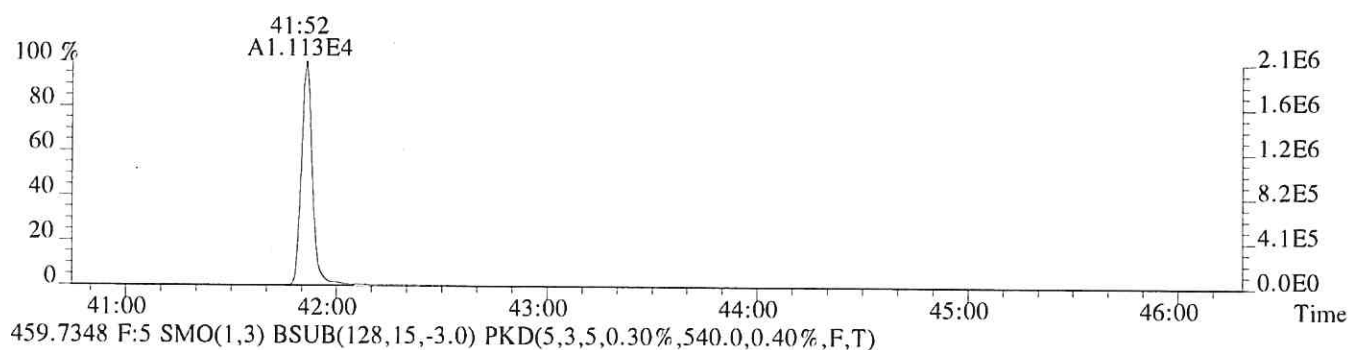
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



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



File:P521512 #1-501 Acq:26-APR-2019 01:25:47 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193434
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,408.0,0.40%,F,T)



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Sample Response Summary

CLIENT ID.
193435

Run #4 Filename P521513 Samp: 1 Inj: 1 Acquired: 26-APR-19 02:14:26
Processed: 26-APR-19 07:12:43 Sample ID: CS3

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	27:49	7.604e+03	1.018e+04	0.75	yes	no	0.962
2 Unk	1,2,3,7,8-PeCDF	32:05	6.342e+04	4.234e+04	1.50	yes	no	0.968
3 Unk	2,3,4,7,8-PeCDF	33:00	5.833e+04	3.892e+04	1.50	yes	no	0.919
4 Unk	1,2,3,4,7,8-HxCDF	35:41	5.390e+04	4.472e+04	1.21	yes	no	1.161
5 Unk	1,2,3,6,7,8-HxCDF	35:48	5.567e+04	4.587e+04	1.21	yes	no	1.073
6 Unk	2,3,4,6,7,8-HxCDF	36:18	5.063e+04	4.211e+04	1.20	yes	no	1.069
7 Unk	1,2,3,7,8,9-HxCDF	37:02	4.462e+04	3.627e+04	1.23	yes	no	1.096
8 Unk	1,2,3,4,6,7,8-HpCDF	38:17	4.475e+04	4.459e+04	1.00	yes	no	1.281
9 Unk	1,2,3,4,7,8,9-HpCDF	39:38	3.347e+04	3.310e+04	1.01	yes	no	1.192
10 Unk	OCDF	42:03	5.611e+04	6.309e+04	0.89	yes	no	1.204
11 Unk	2,3,7,8-TCDD	28:38	6.266e+03	8.098e+03	0.77	yes	no	1.077
12 Unk	1,2,3,7,8-PeCDD	33:18	4.594e+04	2.943e+04	1.56	yes	no	0.971
13 Unk	1,2,3,4,7,8-HxCDD	36:26	4.046e+04	3.247e+04	1.25	yes	no	1.024
14 Unk	1,2,3,6,7,8-HxCDD	36:31	3.971e+04	3.134e+04	1.27	yes	no	1.038
15 Unk	1,2,3,7,8,9-HxCDD	36:45	4.164e+04	3.361e+04	1.24	yes	no	1.055
16 Unk	1,2,3,4,6,7,8-HpCDD	39:11	3.245e+04	3.157e+04	1.03	yes	no	0.989
17 Unk	OCDD	41:52	4.975e+04	5.667e+04	0.88	yes	no	1.094
18 IS	13C-2,3,7,8-TCDF	27:48	8.764e+04	1.108e+05	0.79	yes	no	1.287
19 IS	13C-1,2,3,7,8-PeCDF	32:05	1.335e+05	8.461e+04	1.58	yes	no	1.416
20 IS	13C-2,3,4,7,8-PeCDF	32:59	1.300e+05	8.269e+04	1.57	yes	no	1.374
21 IS	13C-1,2,3,4,7,8-HxCDF	35:40	5.769e+04	1.119e+05	0.52	yes	no	1.114
22 IS	13C-1,2,3,6,7,8-HxCDF	35:47	6.488e+04	1.234e+05	0.53	yes	no	1.245
23 IS	13C-2,3,4,6,7,8-HxCDF	36:17	5.867e+04	1.119e+05	0.52	yes	no	1.146
24 IS	13C-1,2,3,7,8,9-HxCDF	37:02	5.056e+04	9.749e+04	0.52	yes	no	0.986
25 IS	13C-1,2,3,4,6,7,8-HpCDF	38:16	4.256e+04	9.593e+04	0.44	yes	no	0.915
26 IS	13C-1,2,3,4,7,8,9-HpCDF	39:37	3.400e+04	7.706e+04	0.44	yes	no	0.746
27 IS	13C-2,3,7,8-TCDD	28:36	6.339e+04	7.990e+04	0.79	yes	no	0.929
28 IS	13C-1,2,3,7,8-PeCDD	33:16	9.668e+04	6.122e+04	1.58	yes	no	1.017
29 IS	13C-1,2,3,4,7,8-HxCDD	36:25	7.983e+04	6.241e+04	1.28	yes	no	0.945
30 IS	13C-1,2,3,6,7,8-HxCDD	36:30	7.747e+04	6.054e+04	1.28	yes	no	0.924
31 IS	13C-1,2,3,4,6,7,8-HpCDD	39:10	6.758e+04	6.317e+04	1.07	yes	no	0.876
32 IS	13C-OCDD	41:51	9.183e+04	1.018e+05	0.90	yes	no	0.662
33 RS/RT	13C-1,2,3,4-TCDD	28:01	6.962e+04	8.783e+04	0.79	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	36:44	8.298e+04	6.651e+04	1.25	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	28:38	1.507e+04				no	1.010

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Signal/Noise Height Ratio Summary

CLIENT ID.
193435

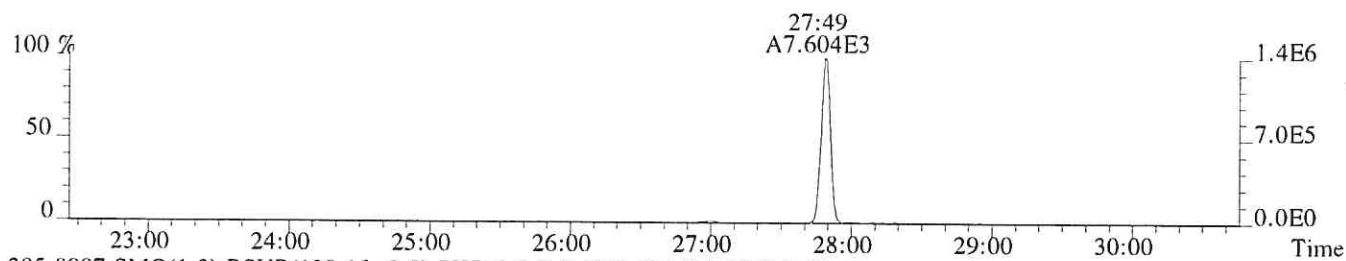
Run #4 Filename P521513 Samp: 1 Inj: 1 Acquired: 26-APR-19 02:14:26
Processed: 26-APR-19 07:12:43 LAB. ID: CS3

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	1.41e+06	5.04e+02	2.8e+03	1.86e+06	9.64e+02	1.9e+03
2	1,2,3,7,8-PeCDF	1.22e+07	1.01e+03	1.2e+04	8.15e+06	1.04e+03	7.8e+03
3	2,3,4,7,8-PeCDF	1.19e+07	1.01e+03	1.2e+04	7.87e+06	1.04e+03	7.6e+03
4	1,2,3,4,7,8-HxCDF	1.22e+07	9.68e+02	1.3e+04	1.01e+07	6.92e+02	1.5e+04
5	1,2,3,6,7,8-HxCDF	1.23e+07	9.68e+02	1.3e+04	1.00e+07	6.92e+02	1.4e+04
6	2,3,4,6,7,8-HxCDF	1.13e+07	9.68e+02	1.2e+04	9.37e+06	6.92e+02	1.4e+04
7	1,2,3,7,8,9-HxCDF	9.60e+06	9.68e+02	9.9e+03	7.89e+06	6.92e+02	1.1e+04
8	1,2,3,4,6,7,8-HpCDF	1.02e+07	5.48e+02	1.9e+04	1.02e+07	3.56e+02	2.9e+04
9	1,2,3,4,7,8,9-HpCDF	6.90e+06	5.48e+02	1.3e+04	6.86e+06	3.56e+02	1.9e+04
10	OCDF	1.03e+07	6.40e+02	1.6e+04	1.15e+07	6.92e+02	1.7e+04
11	2,3,7,8-TCDD	1.21e+06	2.09e+03	5.8e+02	1.63e+06	1.34e+03	1.2e+03
12	1,2,3,7,8-PeCDD	9.20e+06	9.52e+02	9.7e+03	5.91e+06	7.80e+02	7.6e+03
13	1,2,3,4,7,8-HxCDD	9.21e+06	5.52e+02	1.7e+04	7.42e+06	4.76e+02	1.6e+04
14	1,2,3,6,7,8-HxCDD	8.82e+06	5.52e+02	1.6e+04	6.88e+06	4.76e+02	1.4e+04
15	1,2,3,7,8,9-HxCDD	9.26e+06	5.52e+02	1.7e+04	7.43e+06	4.76e+02	1.6e+04
16	1,2,3,4,6,7,8-HpCDD	7.03e+06	3.40e+02	2.1e+04	6.78e+06	7.04e+02	9.6e+03
17	OCDD	9.04e+06	5.56e+02	1.6e+04	1.02e+07	7.84e+02	1.3e+04
18	13C-2,3,7,8-TCDF	1.62e+07	6.52e+03	2.5e+03	2.05e+07	3.47e+03	5.9e+03
19	13C-1,2,3,7,8-PeCDF	2.60e+07	6.60e+02	3.9e+04	1.65e+07	4.48e+02	3.7e+04
20	13C-2,3,4,7,8-PeCDF	2.61e+07	6.60e+02	4.0e+04	1.68e+07	4.48e+02	3.7e+04
21	13C-1,2,3,4,7,8-HxCDF	1.29e+07	1.44e+03	8.9e+03	2.50e+07	9.08e+02	2.7e+04
22	13C-1,2,3,6,7,8-HxCDF	1.43e+07	1.44e+03	9.9e+03	2.72e+07	9.08e+02	3.0e+04
23	13C-2,3,4,6,7,8-HxCDF	1.30e+07	1.44e+03	9.0e+03	2.47e+07	9.08e+02	2.7e+04
24	13C-1,2,3,7,8,9-HxCDF	1.09e+07	1.44e+03	7.5e+03	2.11e+07	9.08e+02	2.3e+04
25	13C-1,2,3,4,6,7,8-HpCDF	9.52e+06	1.38e+03	6.9e+03	2.16e+07	7.16e+02	3.0e+04
26	13C-1,2,3,4,7,8,9-HpCDF	6.99e+06	1.38e+03	5.1e+03	1.59e+07	7.16e+02	2.2e+04
27	13C-2,3,7,8-TCDD	1.23e+07	4.37e+03	2.8e+03	1.56e+07	2.86e+03	5.4e+03
28	13C-1,2,3,7,8-PeCDD	1.98e+07	9.92e+02	2.0e+04	1.26e+07	1.08e+03	1.2e+04
29	13C-1,2,3,4,7,8-HxCDD	1.81e+07	1.92e+03	9.5e+03	1.40e+07	9.24e+02	1.5e+04
30	13C-1,2,3,6,7,8-HxCDD	1.70e+07	1.92e+03	8.9e+03	1.32e+07	9.24e+02	1.4e+04
31	13C-1,2,3,4,6,7,8-HpCDD	1.44e+07	1.11e+03	1.3e+04	1.34e+07	6.84e+02	2.0e+04
32	13C-OCDD	1.64e+07	4.84e+02	3.4e+04	1.81e+07	6.16e+02	2.9e+04
33	13C-1,2,3,4-TCDD	1.31e+07	4.37e+03	3.0e+03	1.65e+07	2.86e+03	5.8e+03
34	13C-1,2,3,7,8,9-HxCDD	1.85e+07	1.92e+03	9.6e+03	1.46e+07	9.24e+02	1.6e+04
35	37Cl-2,3,7,8-TCDD	2.98e+06	1.66e+03	1.8e+03			

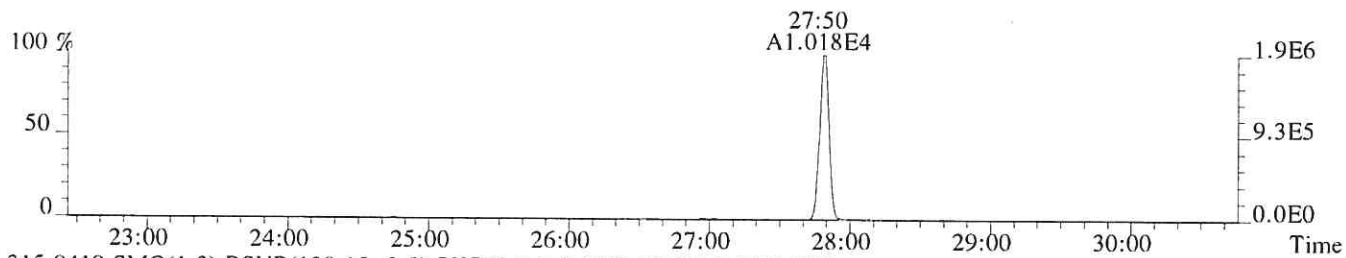
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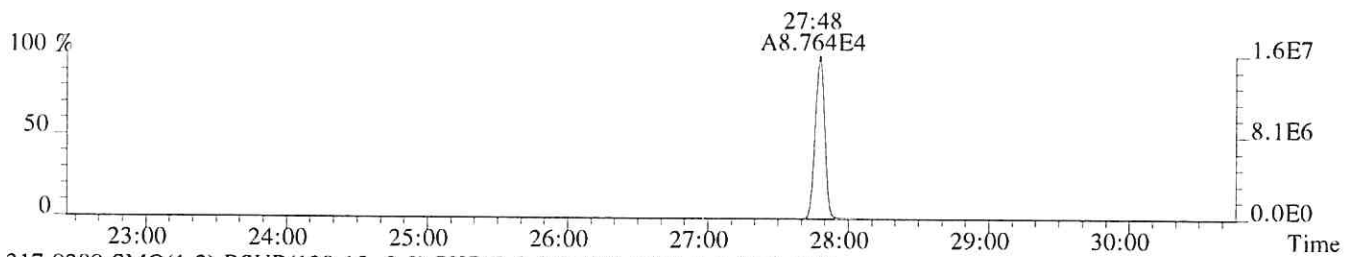
File:P521513 #1-591 Acq:26-APR-2019 02:14:26 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193435
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,504.0,1.00%,F,T)



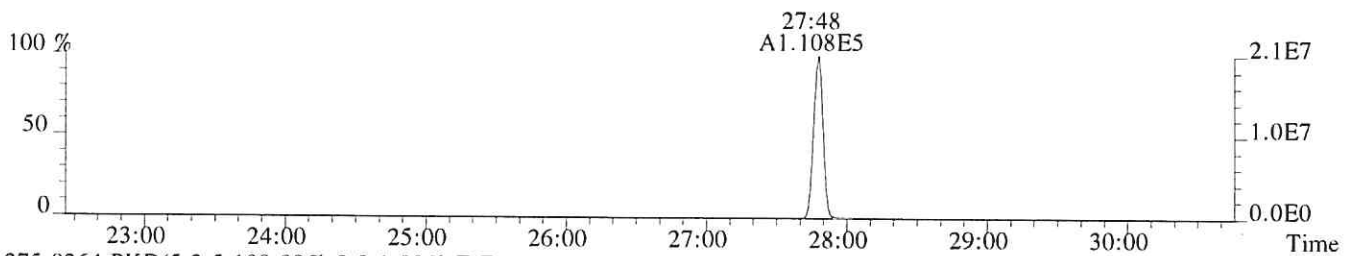
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,964.0,1.00%,F,T)



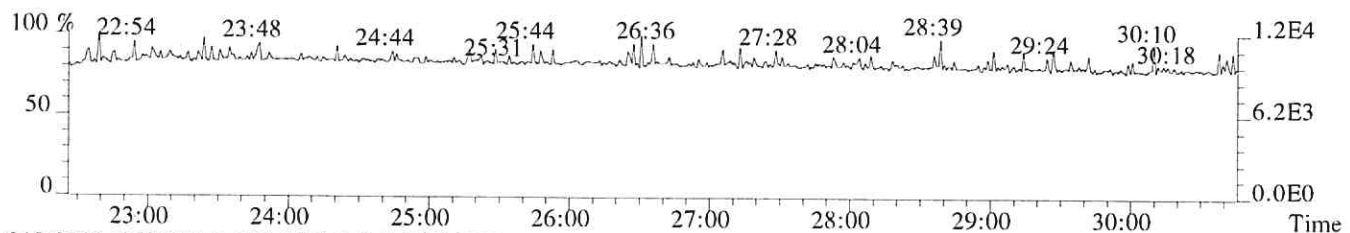
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6516.0,1.00%,F,T)



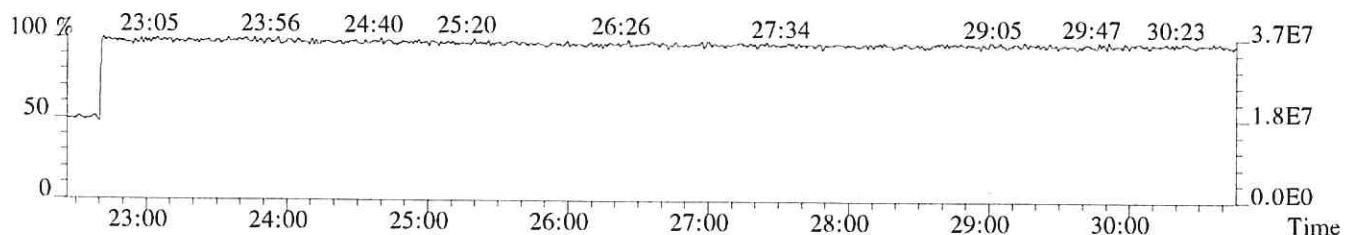
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3468.0,1.00%,F,T)



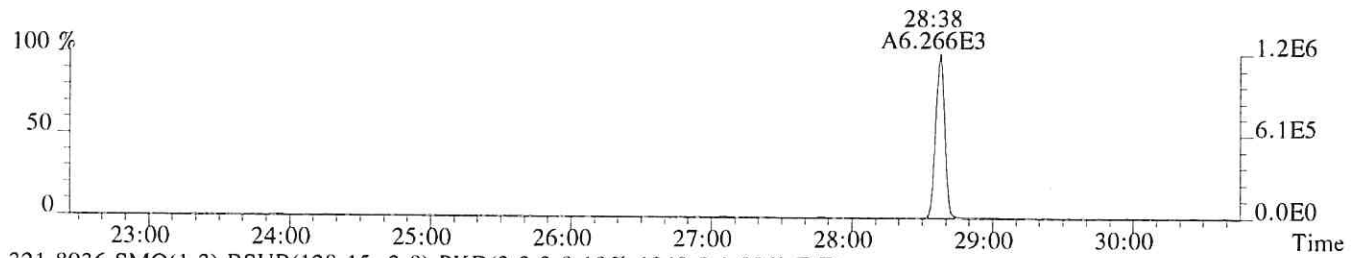
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



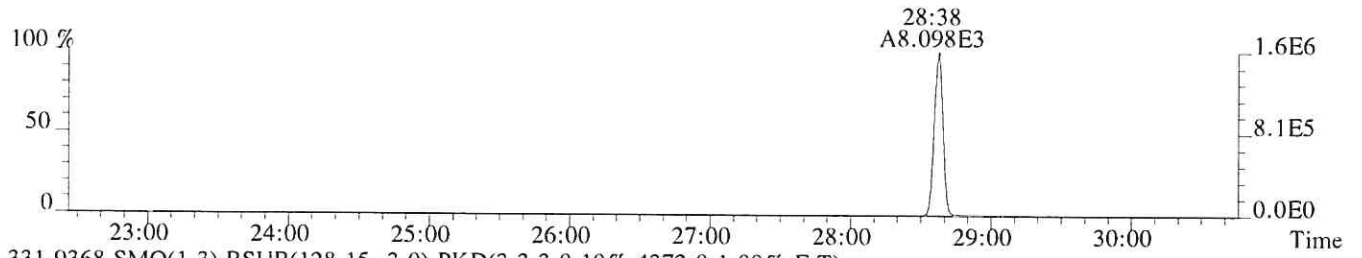
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



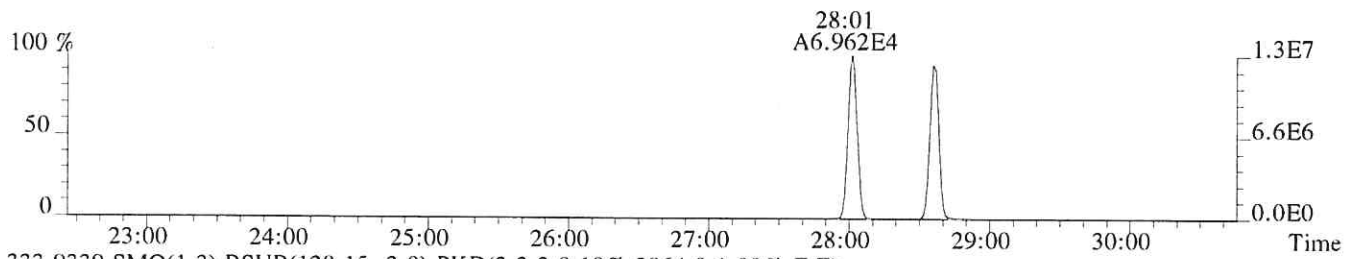
File:P521513 #1-591 Acq:26-APR-2019 02:14:26 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193435
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2088.0,1.00%,F,T)



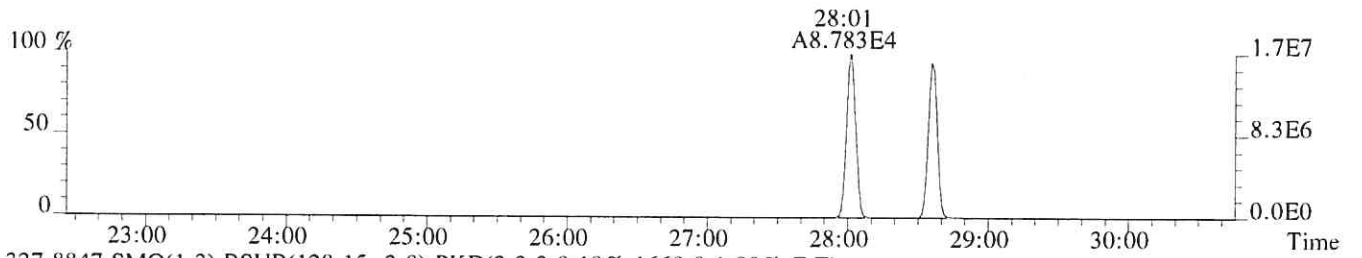
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1340.0,1.00%,F,T)



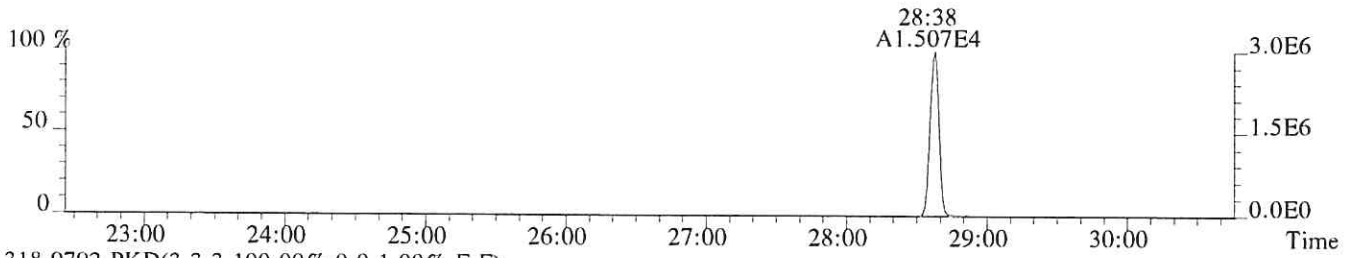
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4372.0,1.00%,F,T)



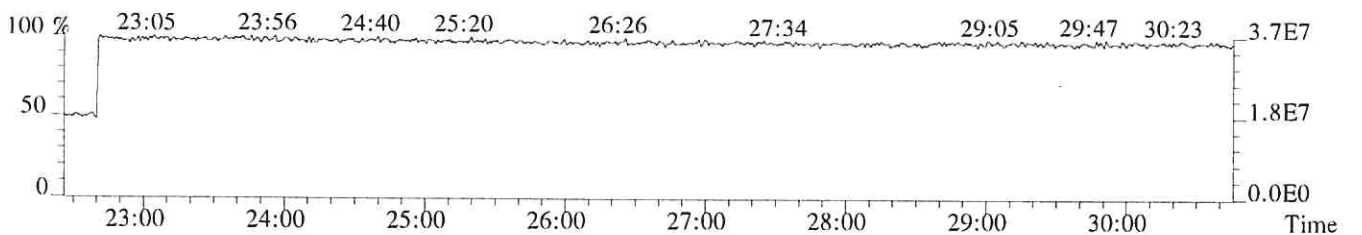
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2864.0,1.00%,F,T)



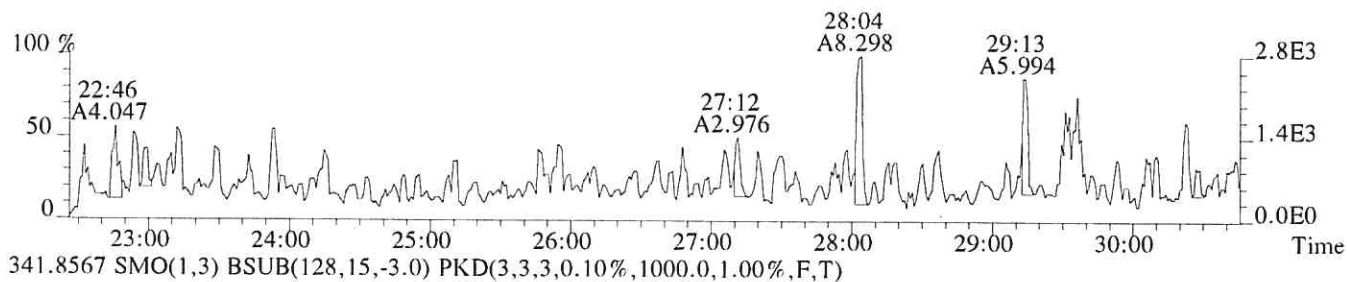
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1660.0,1.00%,F,T)



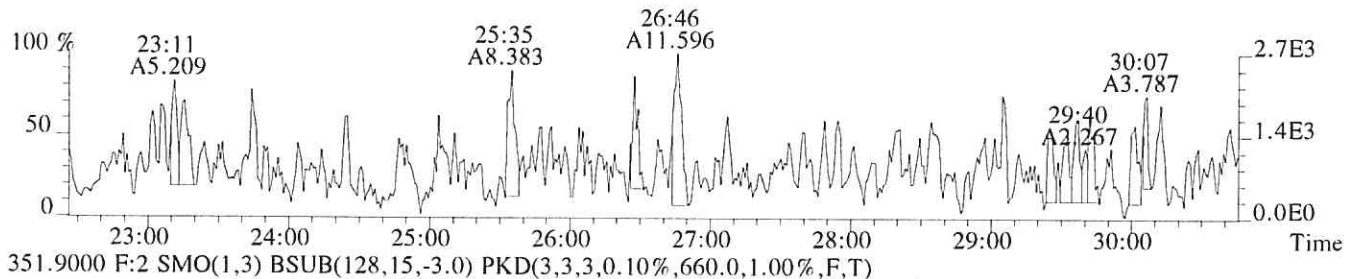
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



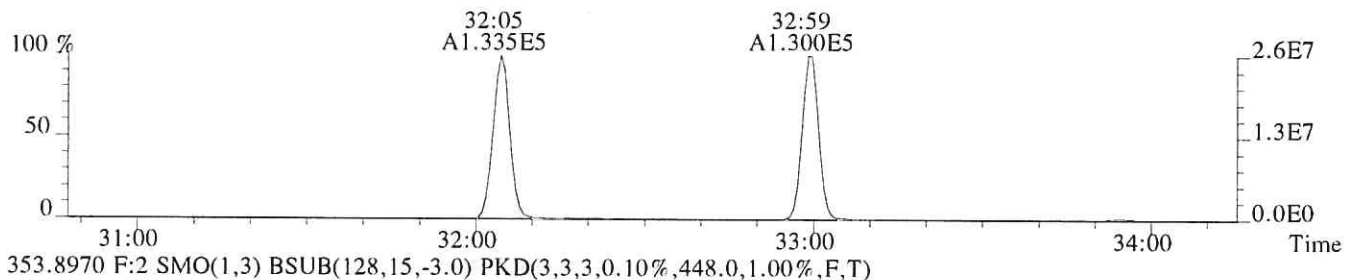
File: P521513 #1-591 Acq: 26-APR-2019 02:14:26 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: 193435
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,688.0,1.00%,F,T)



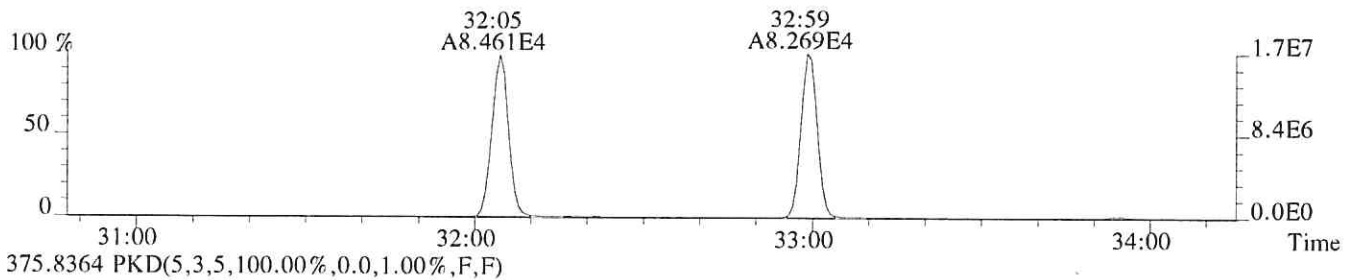
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1000.0,1.00%,F,T)



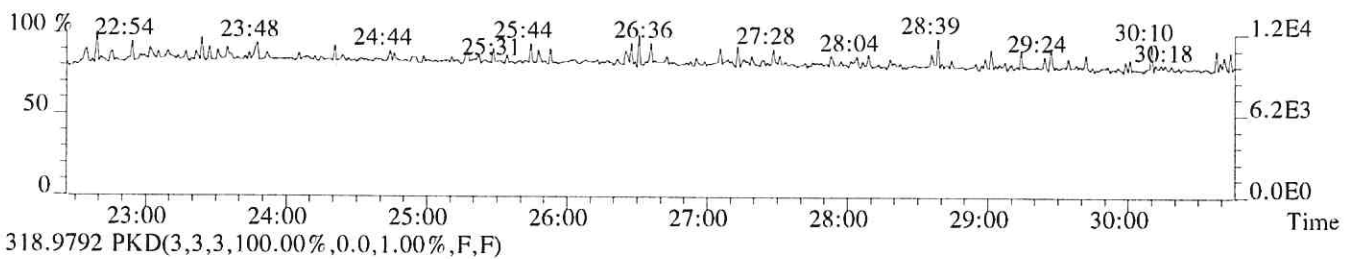
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,660.0,1.00%,F,T)



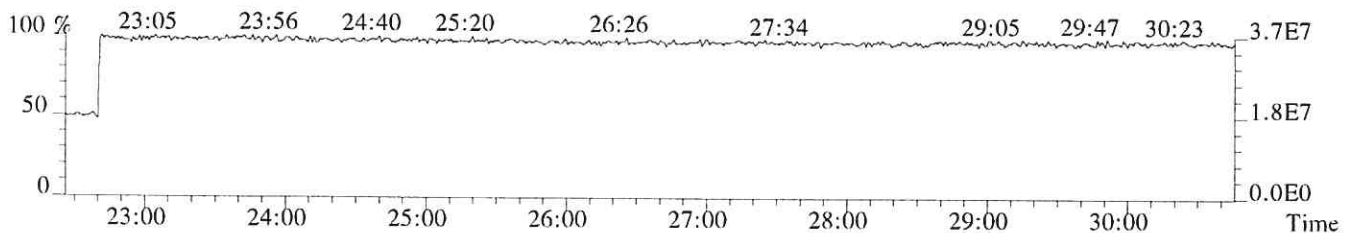
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,448.0,1.00%,F,T)



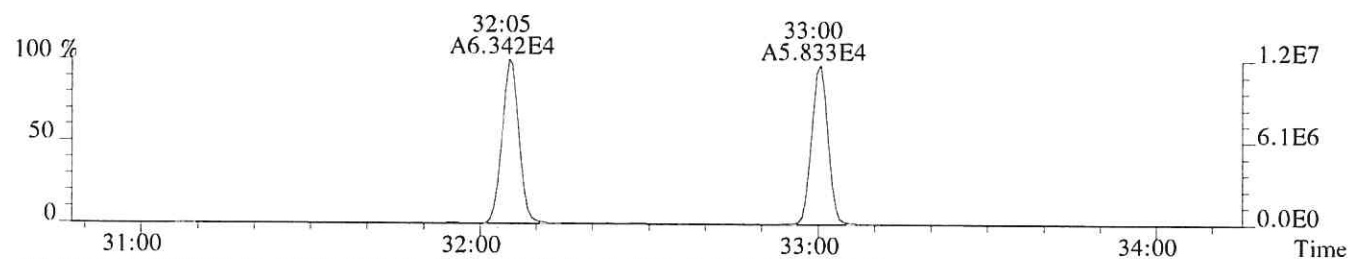
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



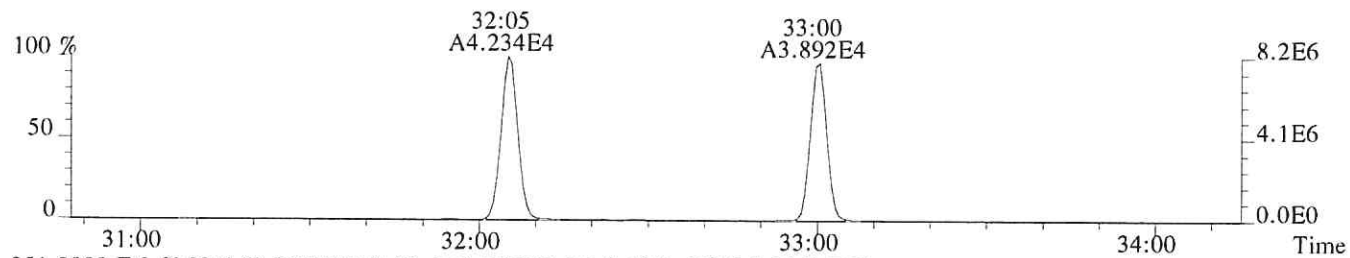
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



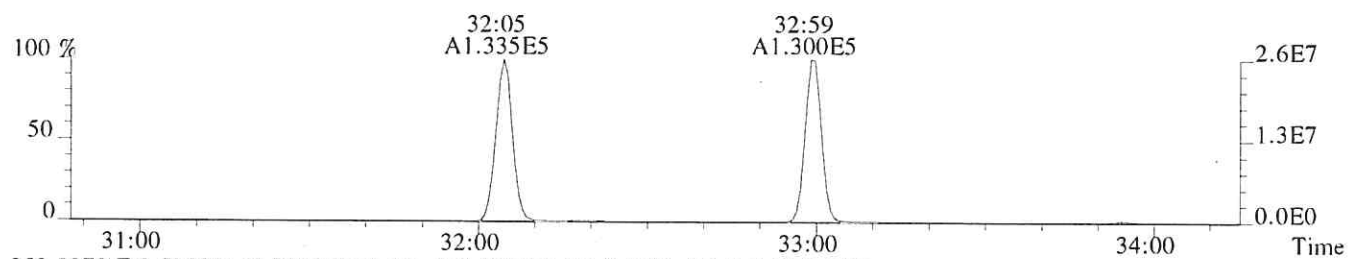
File:P521513 #1-312 Acq:26-APR-2019 02:14:26 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193435
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1008.0,1.00%,F,T)



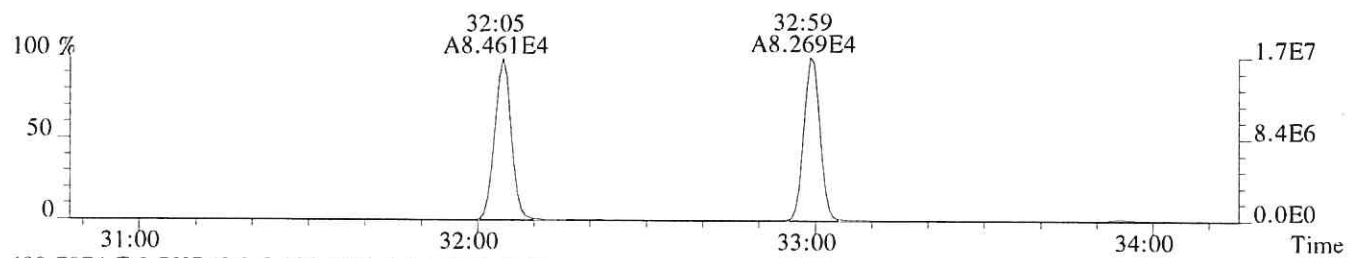
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1040.0,1.00%,F,T)



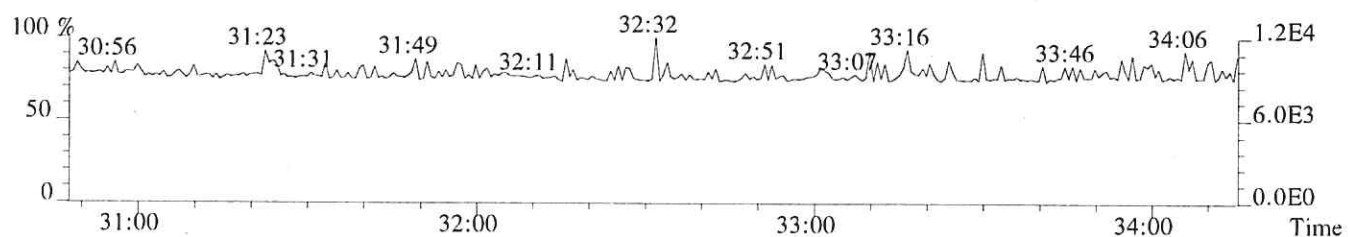
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,660.0,1.00%,F,T)



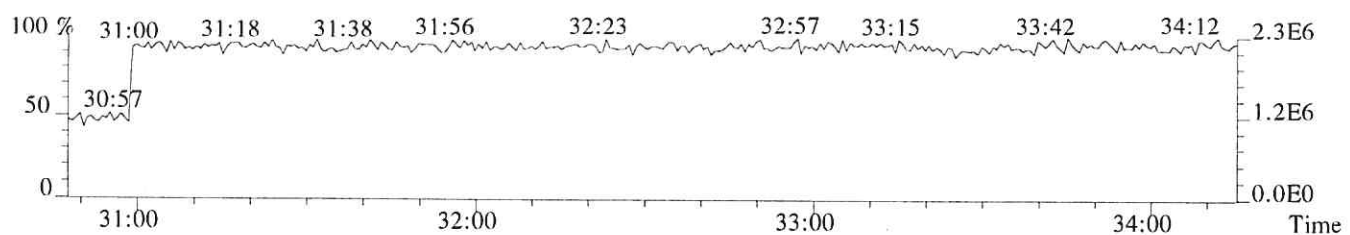
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,448.0,1.00%,F,T)



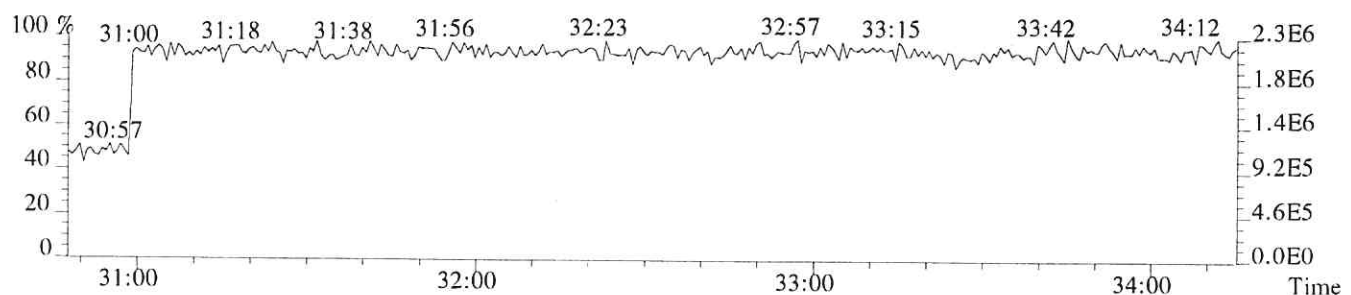
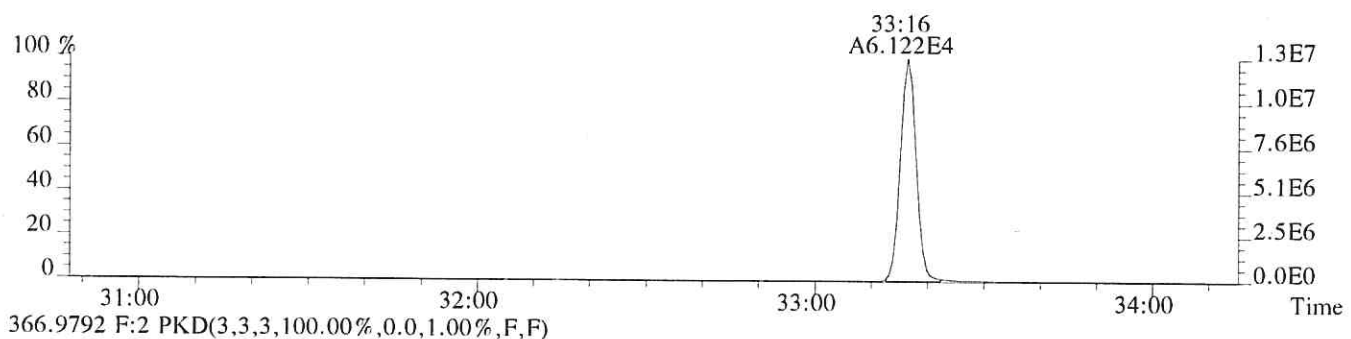
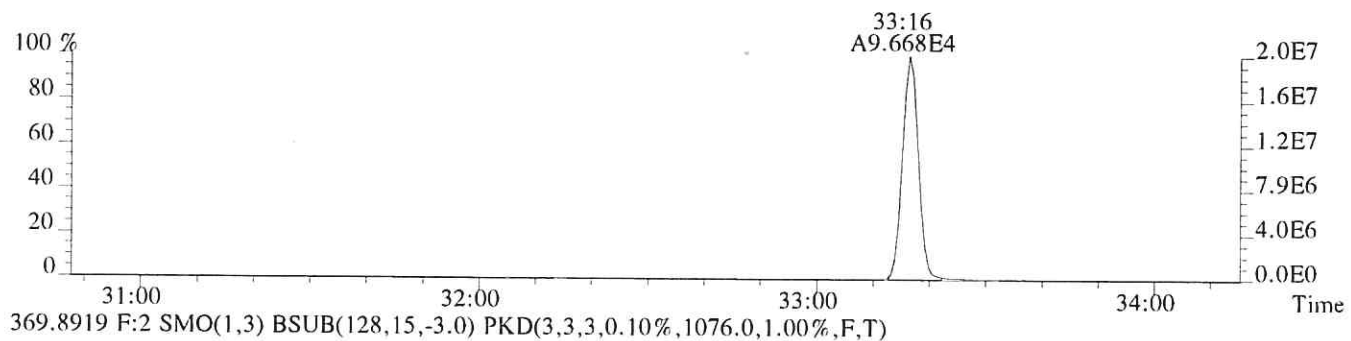
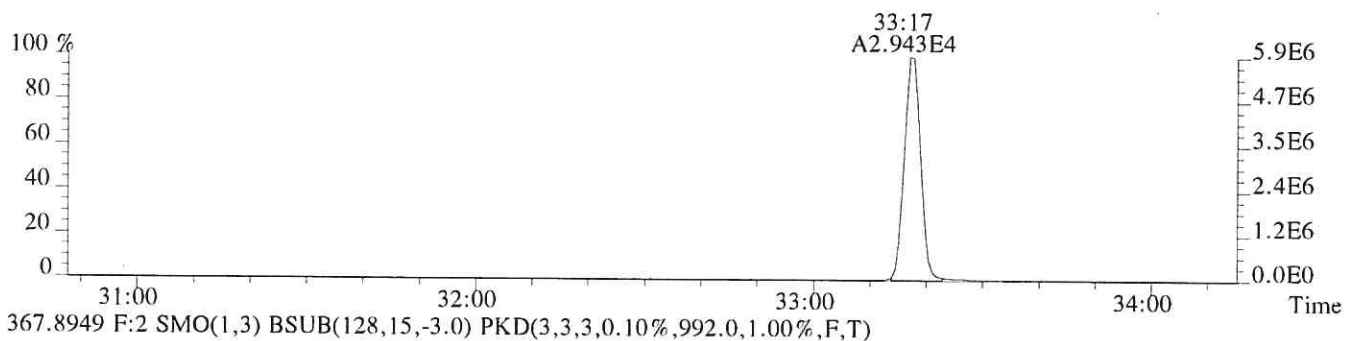
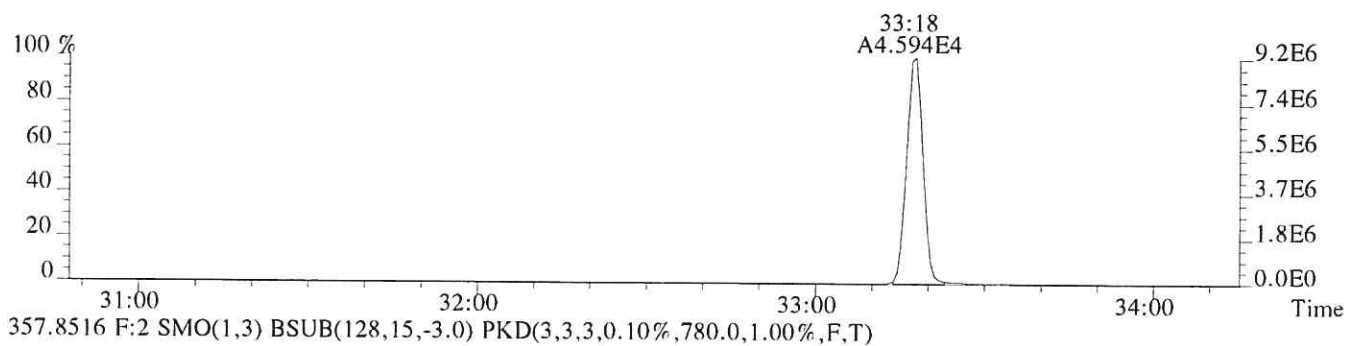
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



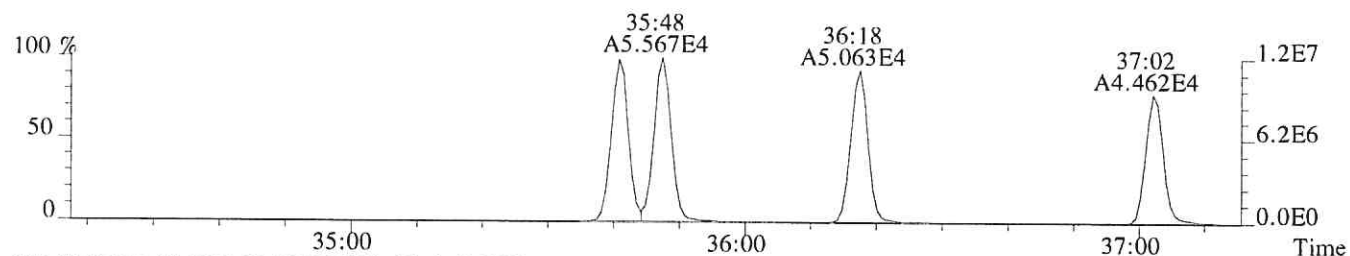
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



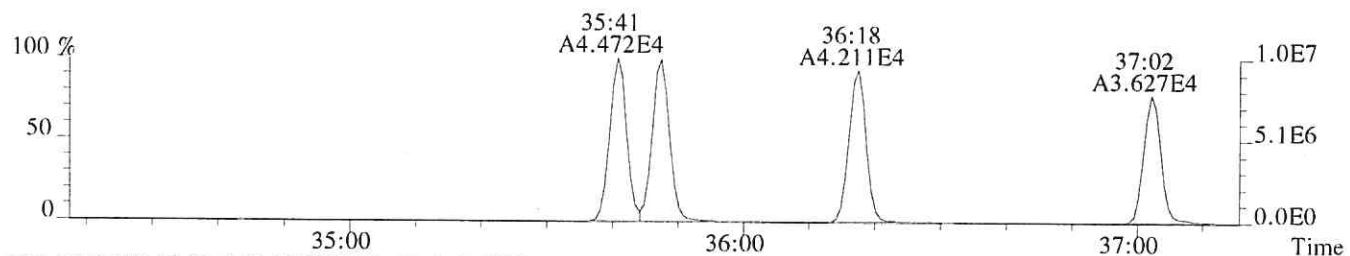
File: P521513 #1-312 Acq: 26-APR-2019 02:14:26 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: 193435
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,952.0,1.00%,F,T)



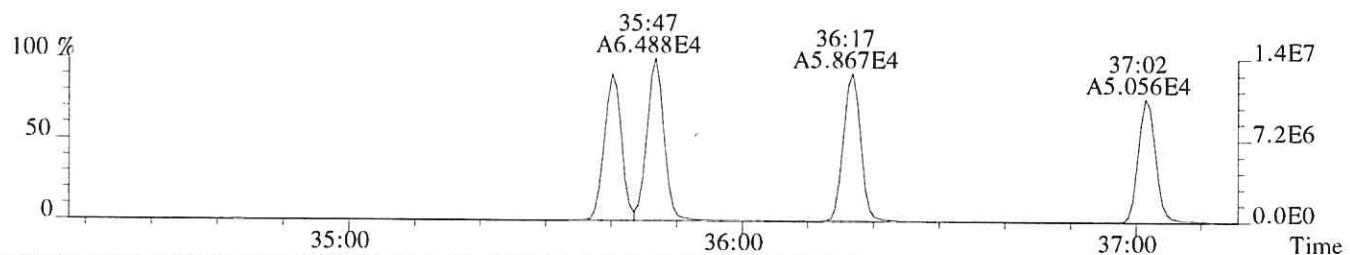
File:P521513 #1-268 Acq:26-APR-2019 02:14:26 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193435
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,968.0,0.40%,F,T)



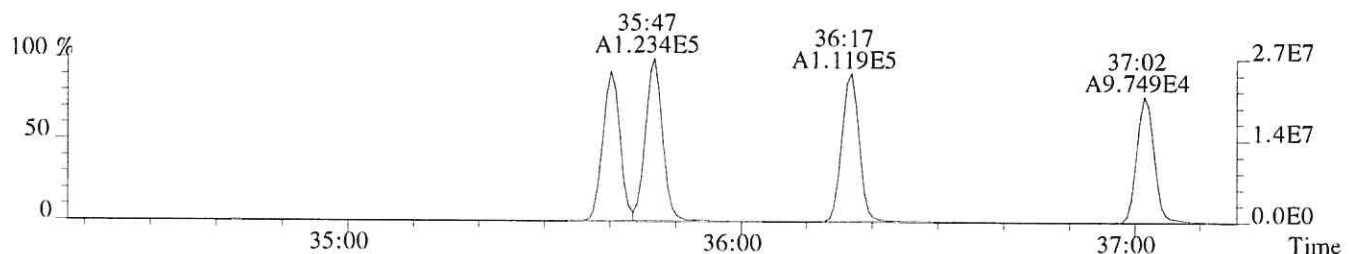
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,692.0,0.40%,F,T)



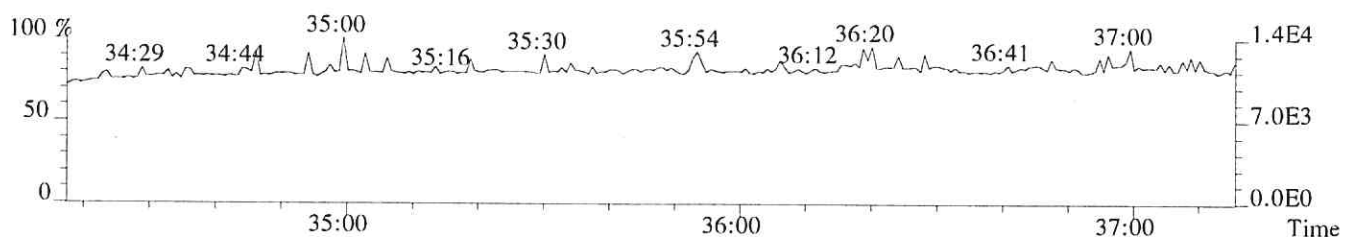
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1440.0,0.40%,F,T)



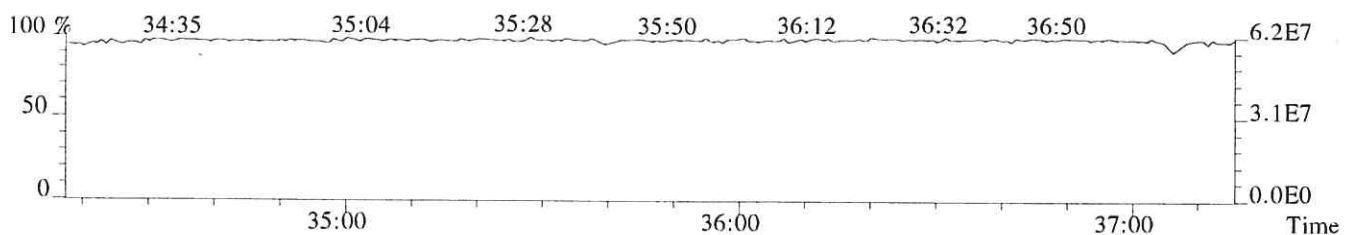
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,908.0,0.40%,F,T)



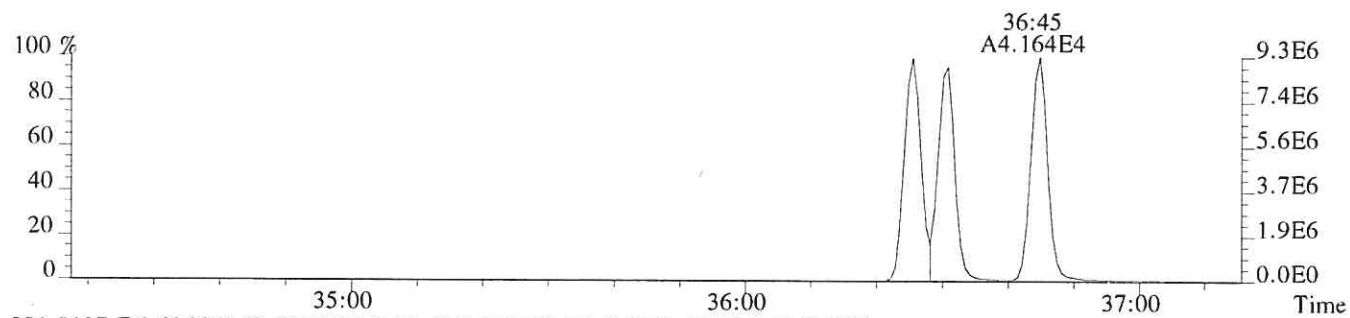
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



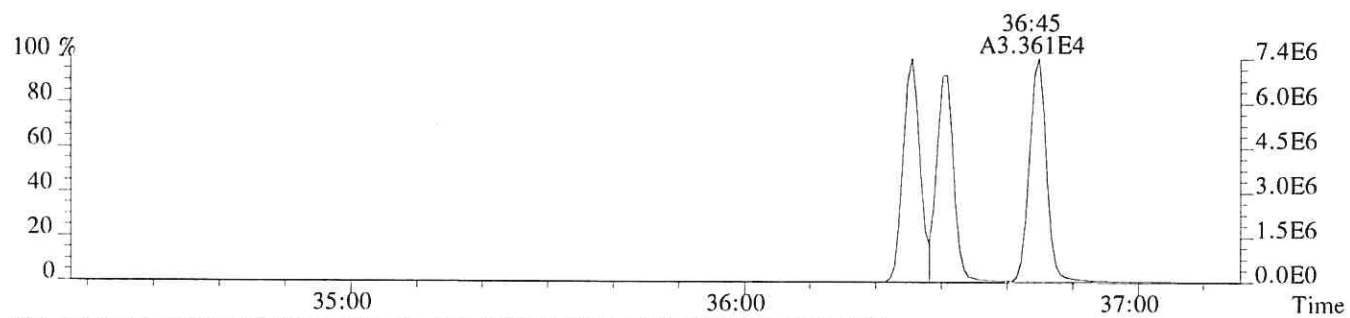
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



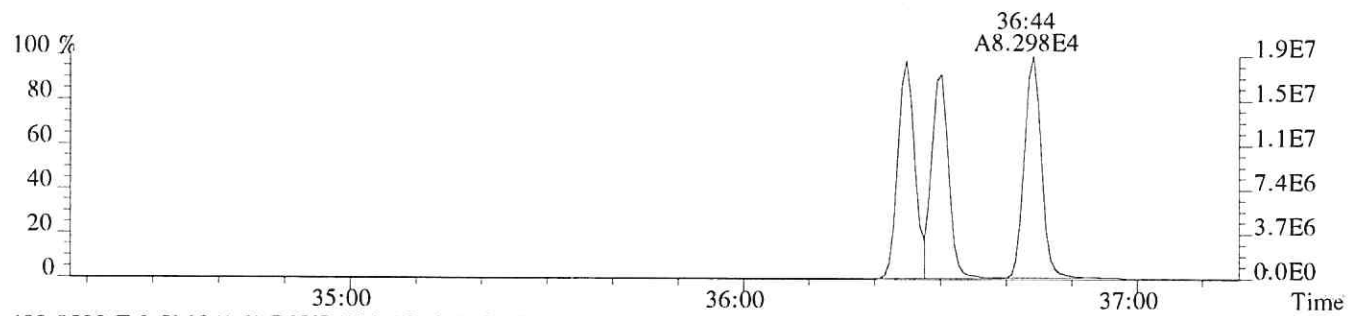
File:P521513 #1-268 Acq:26-APR-2019 02:14:26 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193435
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,552.0,0.40%,F,T)



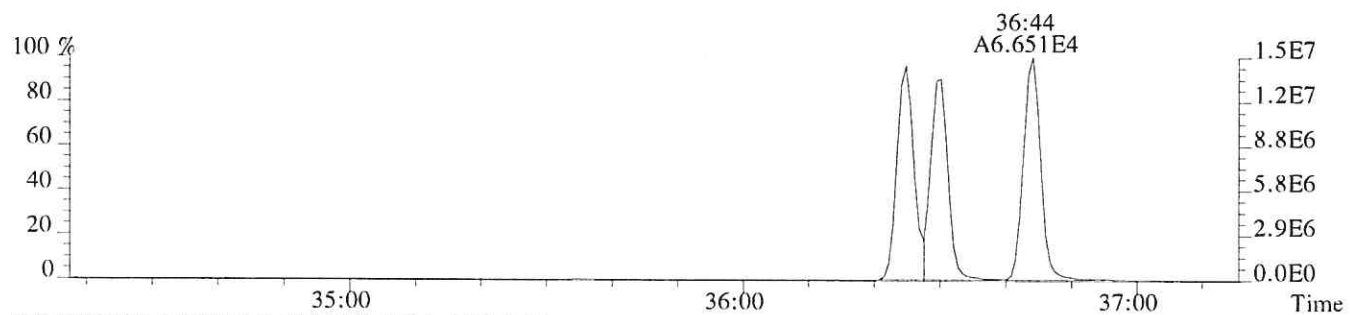
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,476.0,0.40%,F,T)



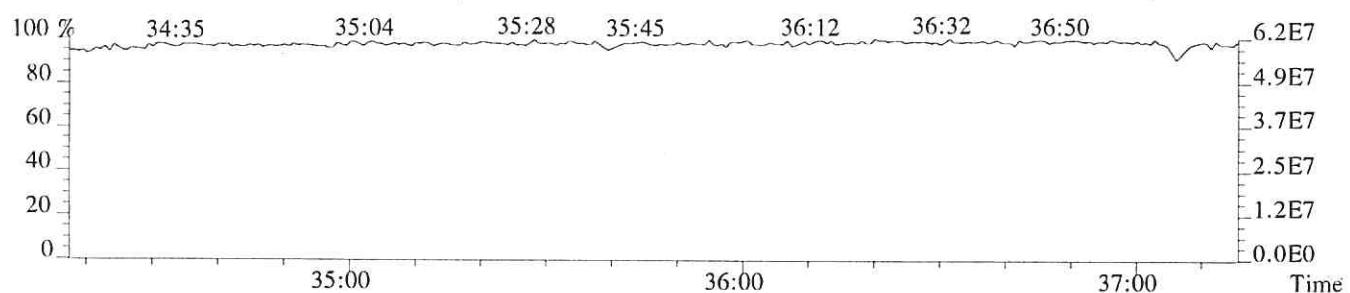
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1916.0,0.40%,F,T)



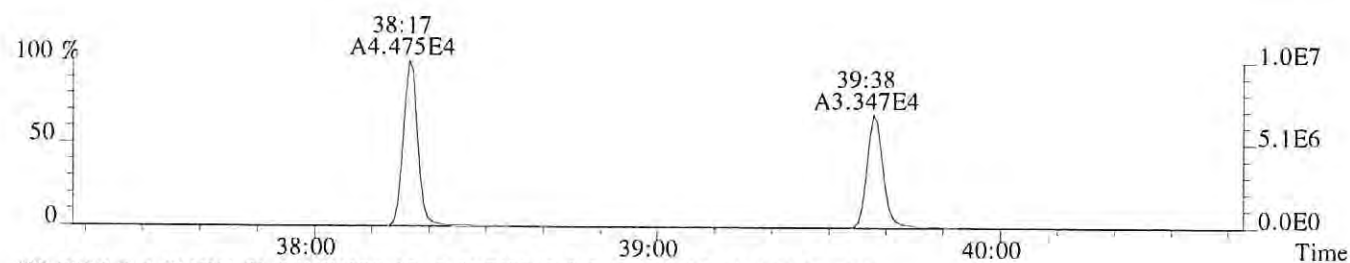
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,924.0,0.40%,F,T)



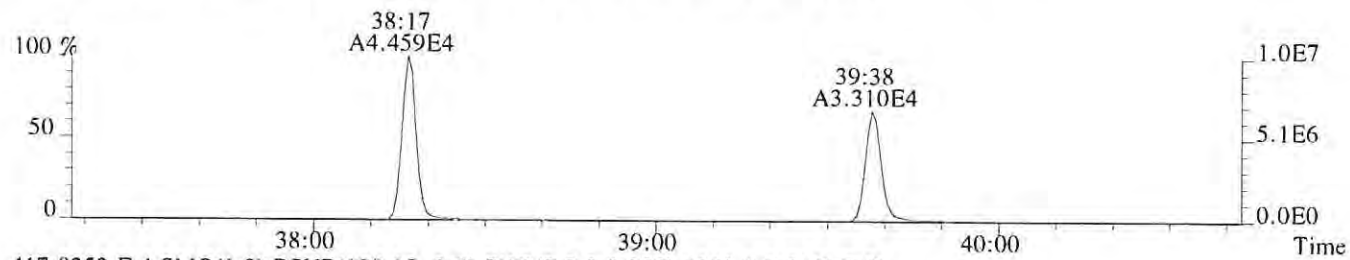
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



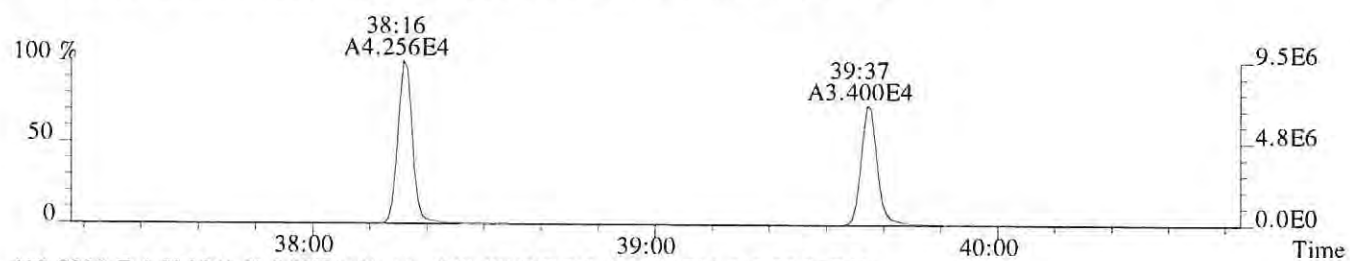
File: P521513 #1-308 Acq: 26-APR-2019 02:14:26 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: 193435
407.7818 F: 4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,548.0,0.50%,F,T)



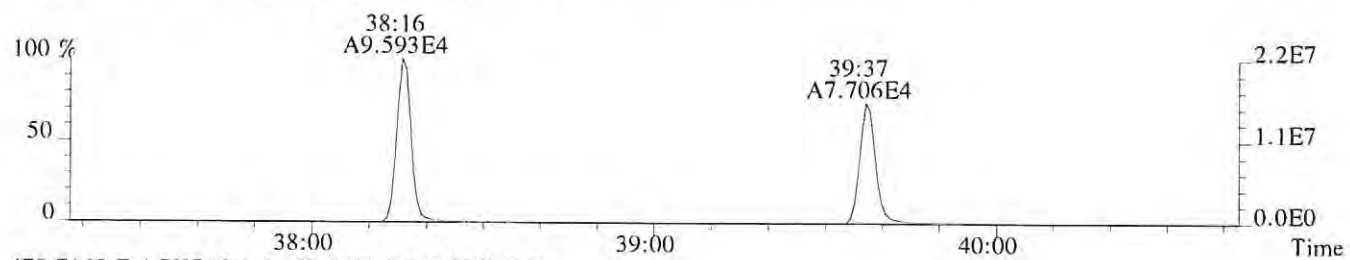
409.7789 F: 4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,356.0,0.50%,F,T)



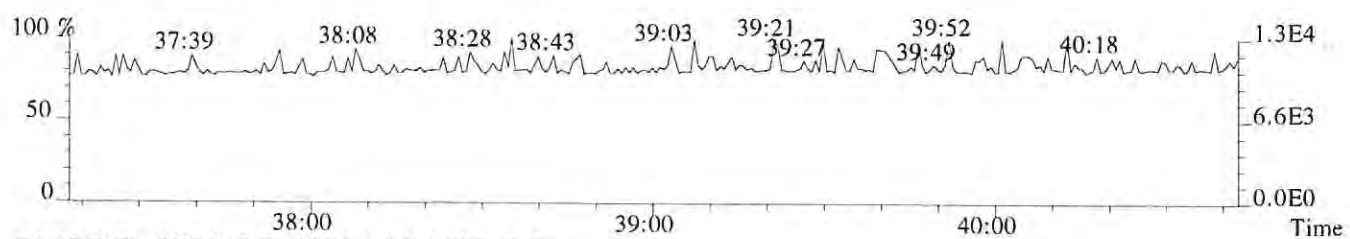
417.8253 F: 4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1380.0,0.50%,F,T)



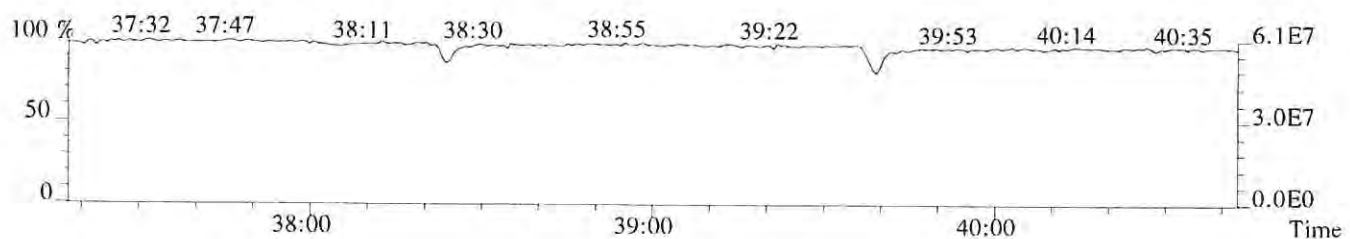
419.8220 F: 4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,716.0,0.50%,F,T)



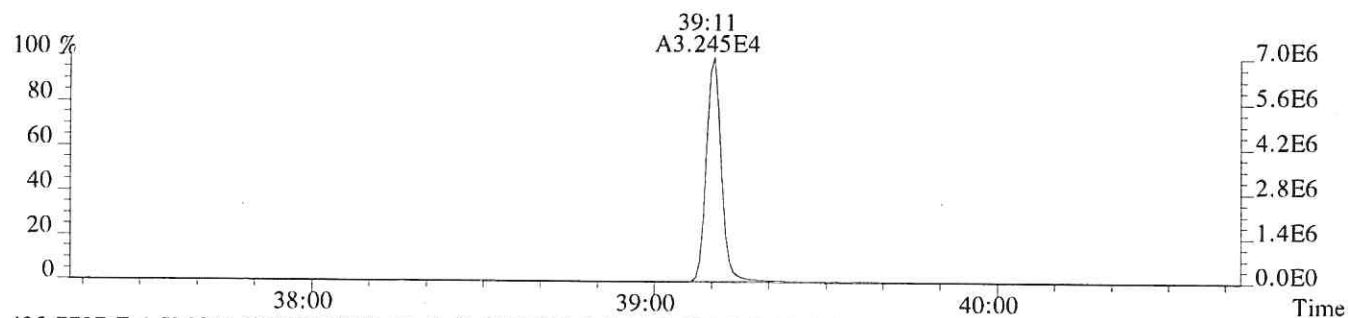
479.7165 F: 4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



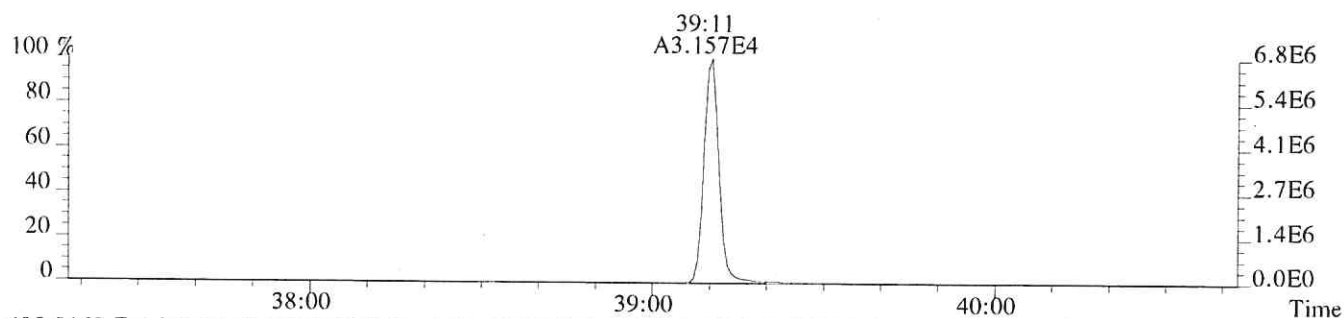
430.9729 F: 4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



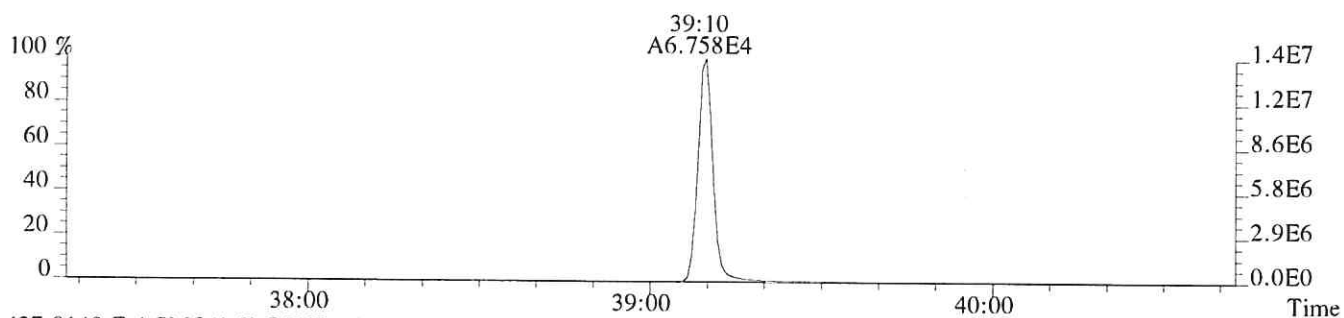
File:P521513 #1-308 Acq:26-APR-2019 02:14:26 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:193435
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,340.0,0.40%,F,T)



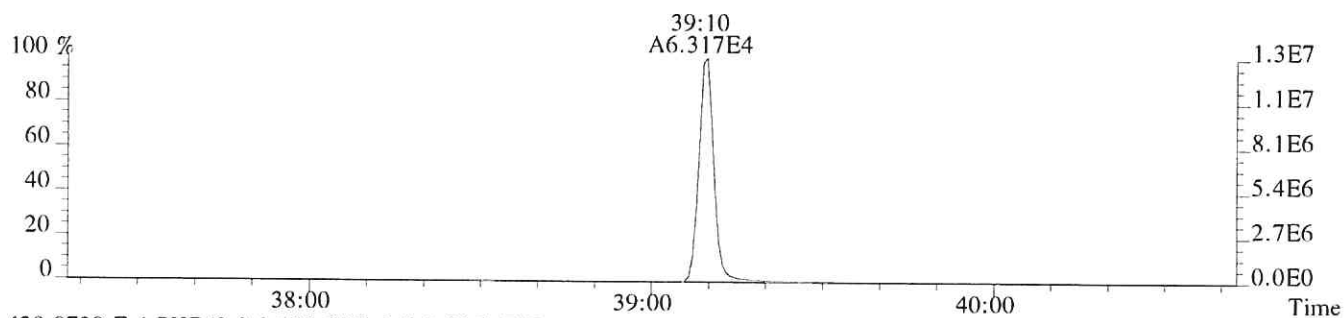
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,704.0,0.40%,F,T)



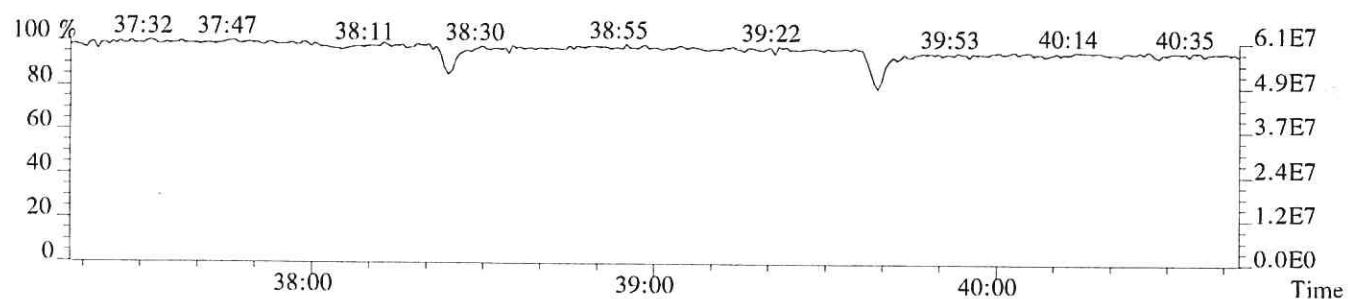
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1108.0,0.40%,F,T)



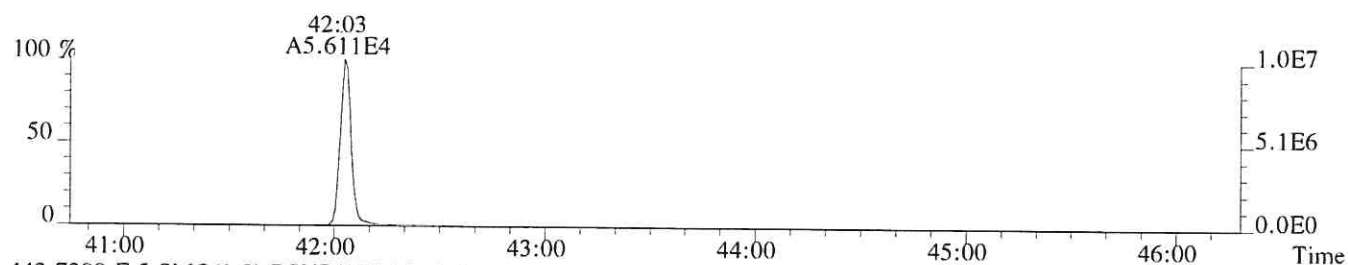
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,684.0,0.40%,F,T)



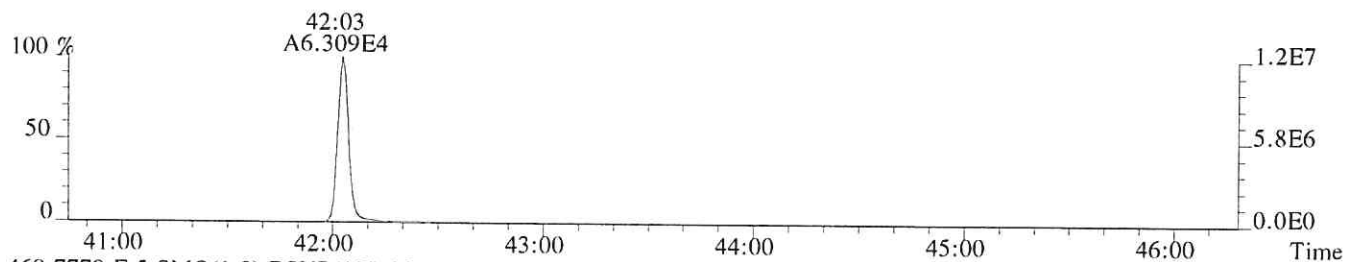
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



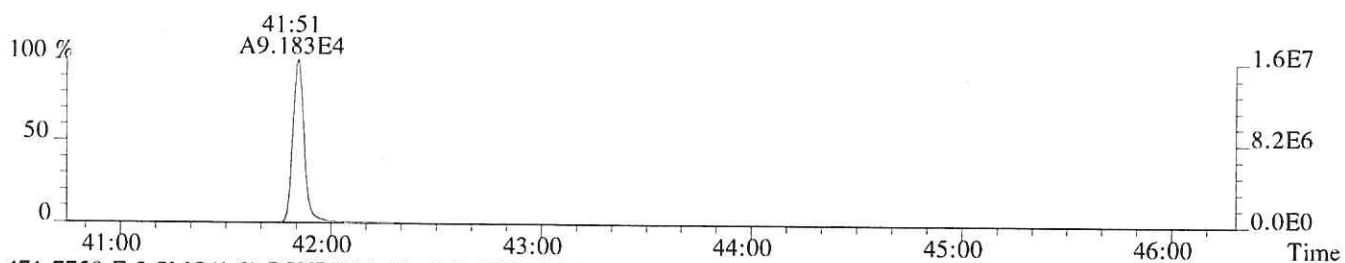
File:P521513 #1-501 Acq:26-APR-2019 02:14:26 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:193435
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,640.0,0.40%,F,T)



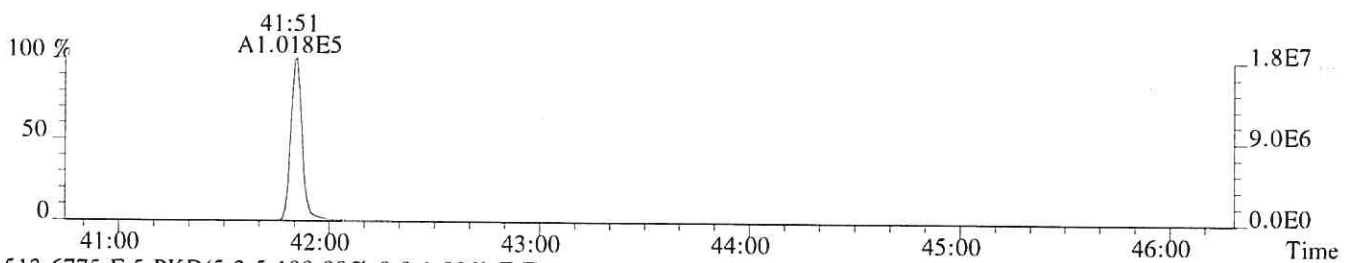
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,692.0,0.40%,F,T)



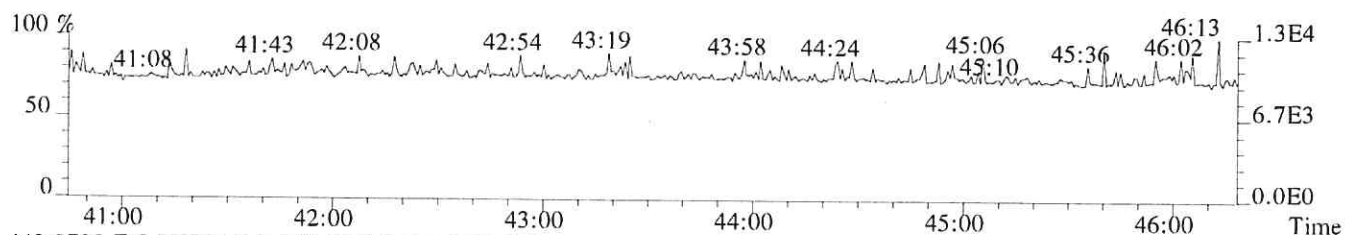
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,484.0,0.40%,F,T)



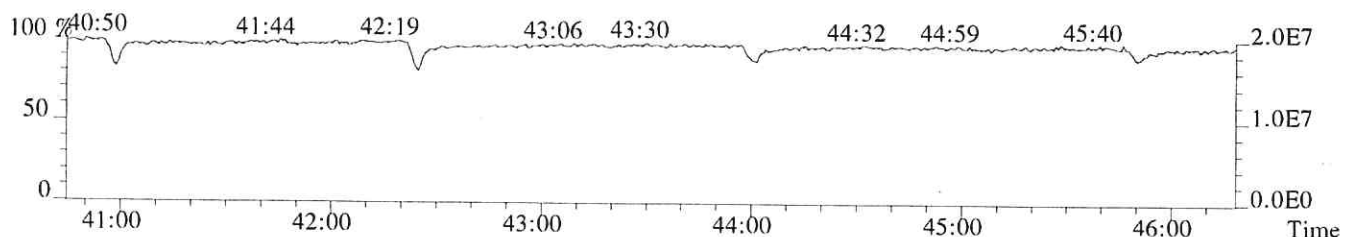
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,616.0,0.40%,F,T)



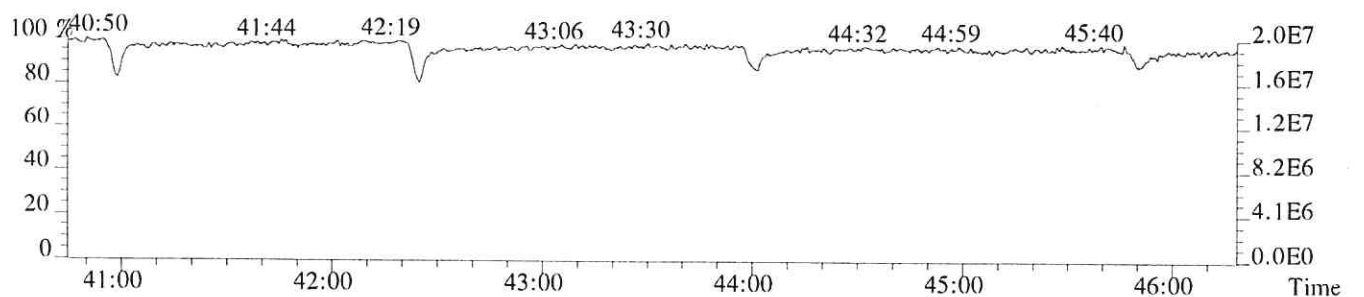
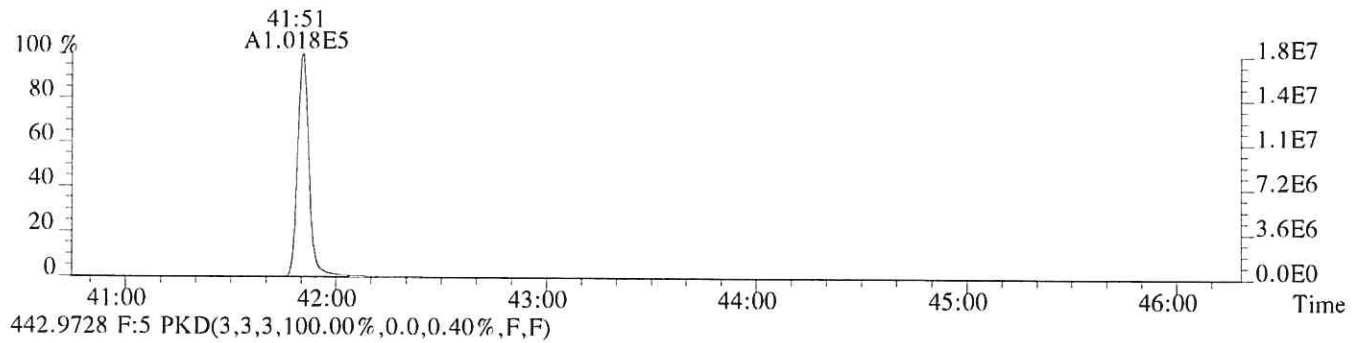
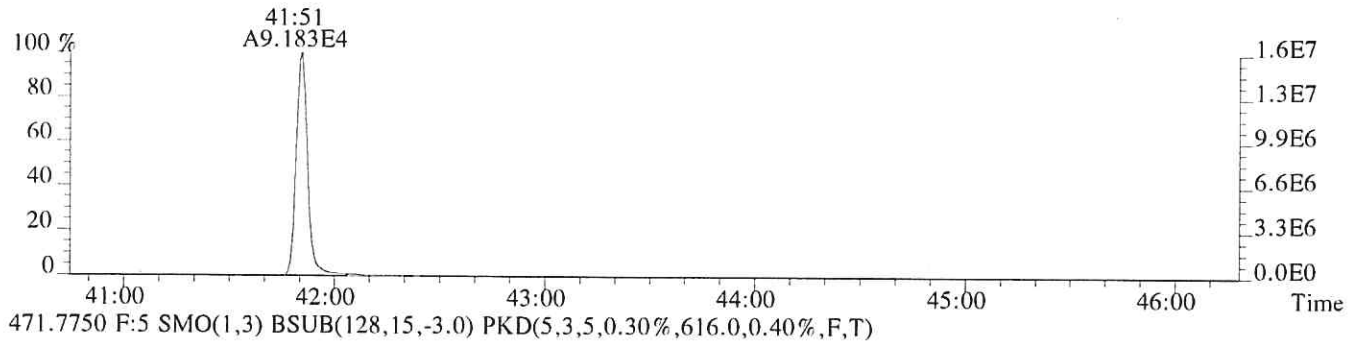
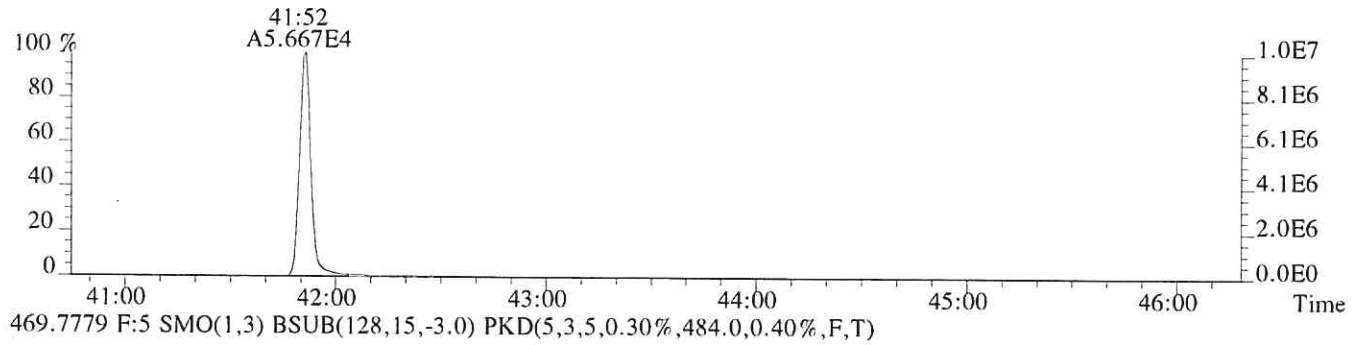
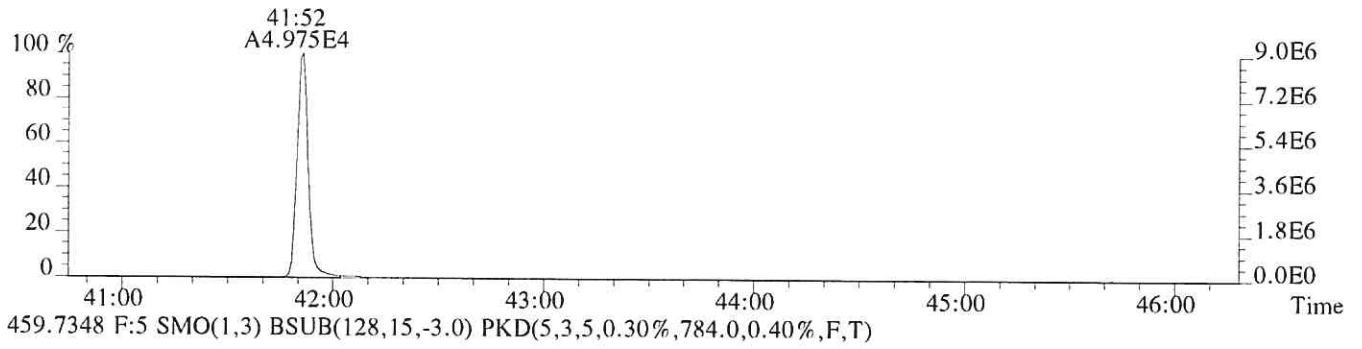
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



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



File: P521513 #1-501 Acq: 26-APR-2019 02:14:26 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: 193435
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,556.0,0.40%,F,T)



ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
82167

Run #5 Filename P521514 Samp: 1 Inj: 1 Acquired: 26-APR-19 03:03:05
Processed: 26-APR-19 07:12:44 Sample ID: CS4

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	27:49	5.785e+04	7.771e+04	0.74	yes	no	0.962
2 Unk	1,2,3,7,8-PeCDF	32:06	4.756e+05	3.145e+05	1.51	yes	no	0.968
3 Unk	2,3,4,7,8-PeCDF	33:00	4.411e+05	2.910e+05	1.52	yes	no	0.919
4 Unk	1,2,3,4,7,8-HxCDF	35:41	4.143e+05	3.401e+05	1.22	yes	no	1.161
5 Unk	1,2,3,6,7,8-HxCDF	35:48	4.269e+05	3.516e+05	1.21	yes	no	1.073
6 Unk	2,3,4,6,7,8-HxCDF	36:18	3.899e+05	3.219e+05	1.21	yes	no	1.069
7 Unk	1,2,3,7,8,9-HxCDF	37:02	3.464e+05	2.836e+05	1.22	yes	no	1.096
8 Unk	1,2,3,4,6,7,8-HpCDF	38:17	3.506e+05	3.423e+05	1.02	yes	no	1.281
9 Unk	1,2,3,4,7,8,9-HpCDF	39:38	2.662e+05	2.615e+05	1.02	yes	no	1.192
10 Unk	OCDF	42:03	4.555e+05	5.100e+05	0.89	yes	no	1.204
11 Unk	2,3,7,8-TCDD	28:38	4.774e+04	6.107e+04	0.78	yes	no	1.077
12 Unk	1,2,3,7,8-PeCDD	33:18	3.406e+05	2.173e+05	1.57	yes	no	0.971
13 Unk	1,2,3,4,7,8-HxCDD	36:26	3.096e+05	2.497e+05	1.24	yes	no	1.024
14 Unk	1,2,3,6,7,8-HxCDD	36:31	3.054e+05	2.449e+05	1.25	yes	no	1.038
15 Unk	1,2,3,7,8,9-HxCDD	36:45	3.164e+05	2.553e+05	1.24	yes	no	1.055
16 Unk	1,2,3,4,6,7,8-HpCDD	39:11	2.564e+05	2.479e+05	1.03	yes	no	0.989
17 Unk	OCDD	41:52	4.011e+05	4.499e+05	0.89	yes	no	1.094
18 IS	13C-2,3,7,8-TCDF	27:48	1.614e+05	2.027e+05	0.80	yes	no	1.287
19 IS	13C-1,2,3,7,8-PeCDF	32:05	2.473e+05	1.568e+05	1.58	yes	no	1.416
20 IS	13C-2,3,4,7,8-PeCDF	33:00	2.400e+05	1.539e+05	1.56	yes	no	1.374
21 IS	13C-1,2,3,4,7,8-HxCDF	35:40	1.088e+05	2.082e+05	0.52	yes	no	1.114
22 IS	13C-1,2,3,6,7,8-HxCDF	35:47	1.217e+05	2.320e+05	0.52	yes	no	1.245
23 IS	13C-2,3,4,6,7,8-HxCDF	36:17	1.118e+05	2.124e+05	0.53	yes	no	1.146
24 IS	13C-1,2,3,7,8,9-HxCDF	37:02	9.676e+04	1.858e+05	0.52	yes	no	0.986
25 IS	13C-1,2,3,4,6,7,8-HpCDF	38:17	8.170e+04	1.816e+05	0.45	yes	no	0.915
26 IS	13C-1,2,3,4,7,8,9-HpCDF	39:37	6.638e+04	1.486e+05	0.45	yes	no	0.746
27 IS	13C-2,3,7,8-TCDD	28:36	1.167e+05	1.475e+05	0.79	yes	no	0.929
28 IS	13C-1,2,3,7,8-PeCDD	33:16	1.777e+05	1.128e+05	1.58	yes	no	1.017
29 IS	13C-1,2,3,4,7,8-HxCDD	36:25	1.507e+05	1.177e+05	1.28	yes	no	0.945
30 IS	13C-1,2,3,6,7,8-HxCDD	36:30	1.462e+05	1.159e+05	1.26	yes	no	0.924
31 IS	13C-1,2,3,4,6,7,8-HpCDD	39:10	1.279e+05	1.222e+05	1.05	yes	no	0.876
32 IS	13C-OCDD	41:51	1.815e+05	2.019e+05	0.90	yes	no	0.662
33 RS/RT	13C-1,2,3,4-TCDD	28:01	1.267e+05	1.585e+05	0.80	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	36:44	1.572e+05	1.243e+05	1.27	yes	no	-
35 C/Up	37C1-2,3,7,8-TCDD	28:38	1.128e+05				no	1.010

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Signal/Noise Height Ratio Summary

CLIENT ID.
82167

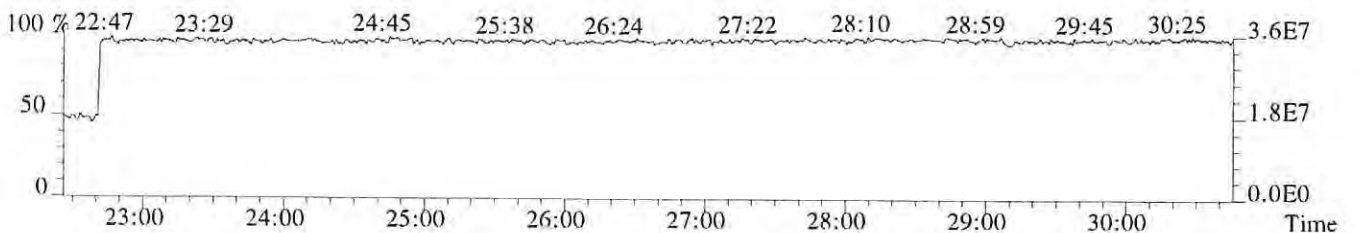
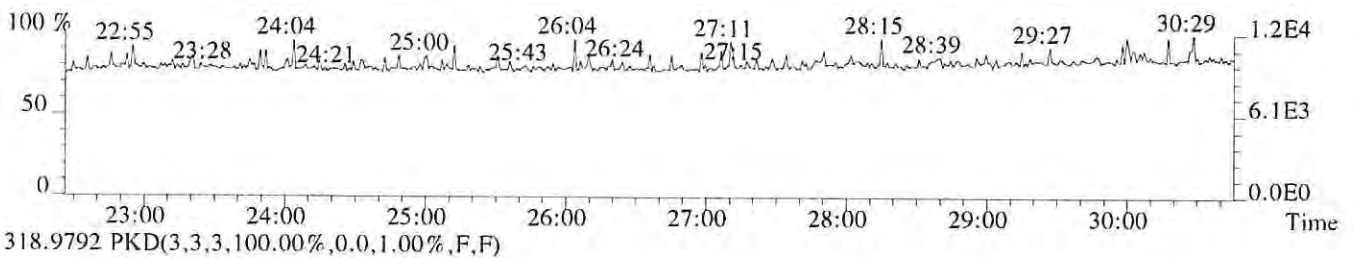
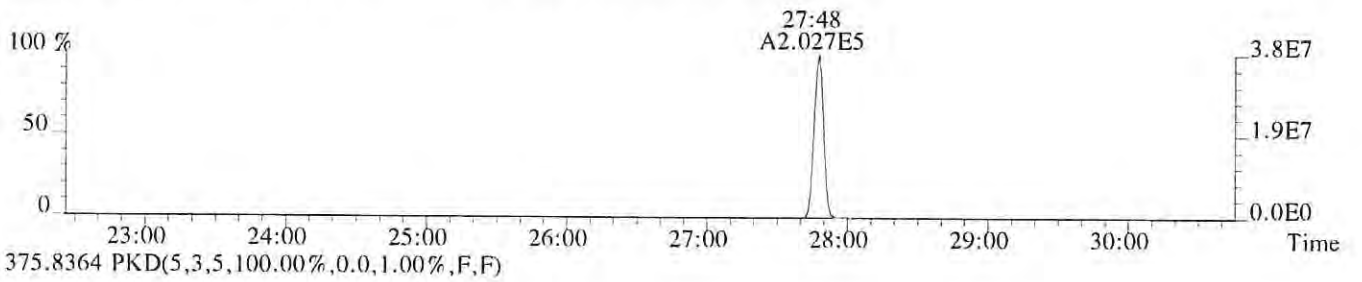
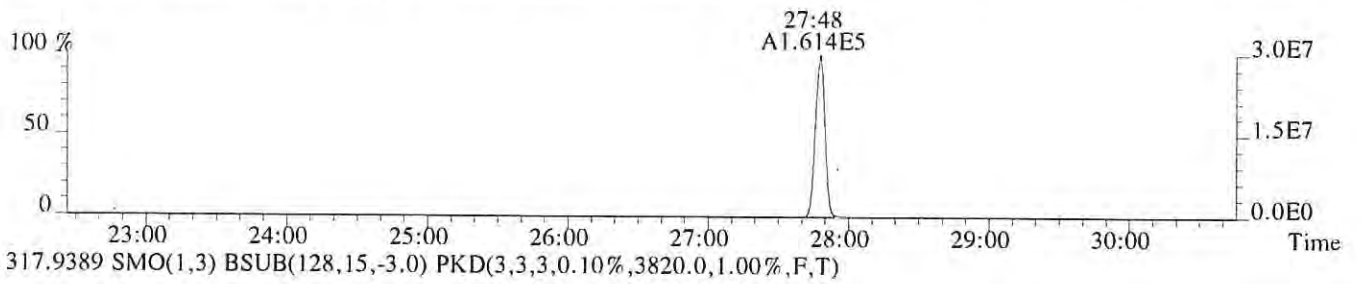
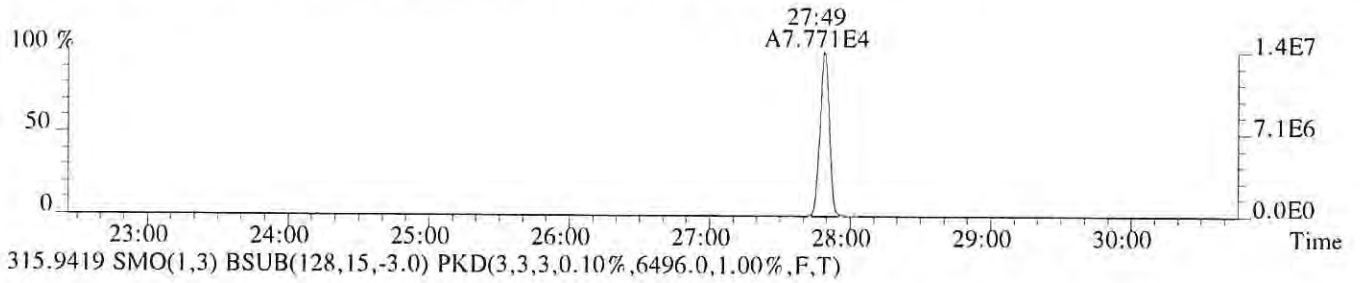
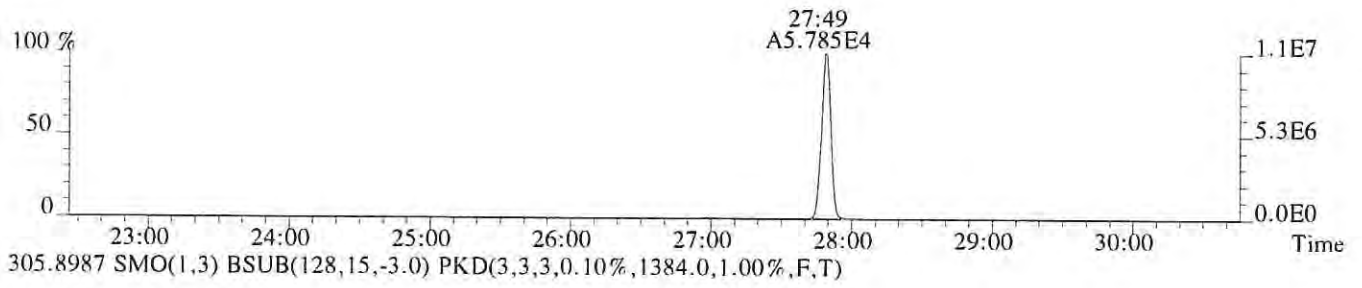
Run #5 Filename P521514 Samp: 1 Inj: 1 Acquired: 26-APR-19 03:03:05
Processed: 26-APR-19 07:12:44 LAB. ID: CS4

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	1.06e+07	6.00e+02	1.8e+04	1.42e+07	1.38e+03	1.0e+04
2	1,2,3,7,8-PeCDF	9.08e+07	2.72e+03	3.3e+04	6.01e+07	1.68e+03	3.6e+04
3	2,3,4,7,8-PeCDF	9.10e+07	2.72e+03	3.4e+04	5.93e+07	1.68e+03	3.5e+04
4	1,2,3,4,7,8-HxCDF	9.28e+07	1.46e+03	6.4e+04	7.63e+07	1.09e+03	7.0e+04
5	1,2,3,6,7,8-HxCDF	9.36e+07	1.46e+03	6.4e+04	7.68e+07	1.09e+03	7.0e+04
6	2,3,4,6,7,8-HxCDF	8.88e+07	1.46e+03	6.1e+04	7.30e+07	1.09e+03	6.7e+04
7	1,2,3,7,8,9-HxCDF	7.53e+07	1.46e+03	5.2e+04	6.16e+07	1.09e+03	5.6e+04
8	1,2,3,4,6,7,8-HpCDF	7.86e+07	5.36e+02	1.5e+05	7.73e+07	4.44e+02	1.7e+05
9	1,2,3,4,7,8,9-HpCDF	5.53e+07	5.36e+02	1.0e+05	5.45e+07	4.44e+02	1.2e+05
10	OCDF	8.30e+07	4.36e+02	1.9e+05	9.42e+07	1.08e+03	8.7e+04
11	2,3,7,8-TCDD	9.38e+06	2.60e+03	3.6e+03	1.20e+07	1.16e+03	1.0e+04
12	1,2,3,7,8-PeCDD	6.97e+07	7.12e+02	9.8e+04	4.42e+07	4.44e+02	9.9e+04
13	1,2,3,4,7,8-HxCDD	7.20e+07	5.12e+02	1.4e+05	5.77e+07	5.88e+02	9.8e+04
14	1,2,3,6,7,8-HxCDD	6.80e+07	5.12e+02	1.3e+05	5.42e+07	5.88e+02	9.2e+04
15	1,2,3,7,8,9-HxCDD	7.10e+07	5.12e+02	1.4e+05	5.69e+07	5.88e+02	9.7e+04
16	1,2,3,4,6,7,8-HpCDD	5.58e+07	1.12e+03	5.0e+04	5.37e+07	5.96e+02	9.0e+04
17	OCDD	7.61e+07	5.12e+02	1.5e+05	8.53e+07	7.64e+02	1.1e+05
18	13C-2,3,7,8-TCDF	2.98e+07	6.50e+03	4.6e+03	3.76e+07	3.82e+03	9.8e+03
19	13C-1,2,3,7,8-PeCDF	4.79e+07	9.20e+02	5.2e+04	3.06e+07	3.12e+02	9.8e+04
20	13C-2,3,4,7,8-PeCDF	4.86e+07	9.20e+02	5.3e+04	3.09e+07	3.12e+02	9.9e+04
21	13C-1,2,3,4,7,8-HxCDF	2.41e+07	9.40e+02	2.6e+04	4.64e+07	1.26e+03	3.7e+04
22	13C-1,2,3,6,7,8-HxCDF	2.66e+07	9.40e+02	2.8e+04	5.09e+07	1.26e+03	4.0e+04
23	13C-2,3,4,6,7,8-HxCDF	2.51e+07	9.40e+02	2.7e+04	4.76e+07	1.26e+03	3.8e+04
24	13C-1,2,3,7,8,9-HxCDF	2.07e+07	9.40e+02	2.2e+04	4.00e+07	1.26e+03	3.2e+04
25	13C-1,2,3,4,6,7,8-HpCDF	1.82e+07	1.16e+03	1.6e+04	4.05e+07	1.18e+03	3.4e+04
26	13C-1,2,3,4,7,8,9-HpCDF	1.35e+07	1.16e+03	1.2e+04	3.09e+07	1.18e+03	2.6e+04
27	13C-2,3,7,8-TCDD	2.25e+07	6.75e+03	3.3e+03	2.88e+07	2.44e+03	1.2e+04
28	13C-1,2,3,7,8-PeCDD	3.63e+07	6.52e+02	5.6e+04	2.32e+07	1.25e+03	1.9e+04
29	13C-1,2,3,4,7,8-HxCDD	3.49e+07	1.27e+03	2.8e+04	2.71e+07	9.04e+02	3.0e+04
30	13C-1,2,3,6,7,8-HxCDD	3.24e+07	1.27e+03	2.6e+04	2.56e+07	9.04e+02	2.8e+04
31	13C-1,2,3,4,6,7,8-HpCDD	2.78e+07	1.22e+03	2.3e+04	2.61e+07	5.64e+02	4.6e+04
32	13C-OCDD	3.42e+07	6.56e+02	5.2e+04	3.77e+07	4.68e+02	8.1e+04
33	13C-1,2,3,4-TCDD	2.44e+07	6.75e+03	3.6e+03	3.05e+07	2.44e+03	1.3e+04
34	13C-1,2,3,7,8,9-HxCDD	3.52e+07	1.27e+03	2.8e+04	2.78e+07	9.04e+02	3.1e+04
35	37C1-2,3,7,8-TCDD	2.23e+07	1.77e+03	1.3e+04			

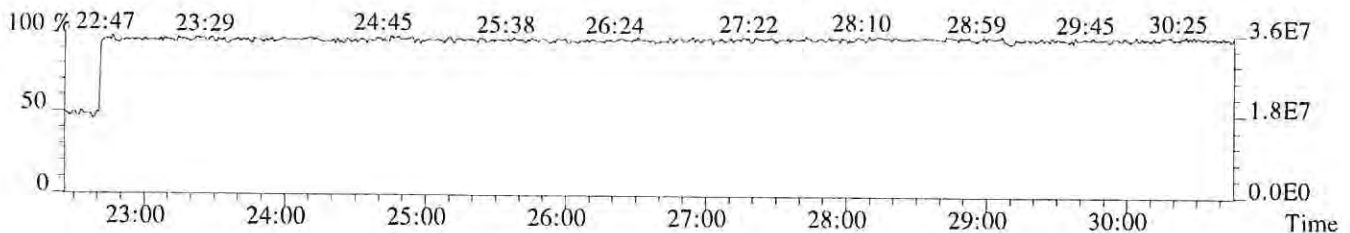
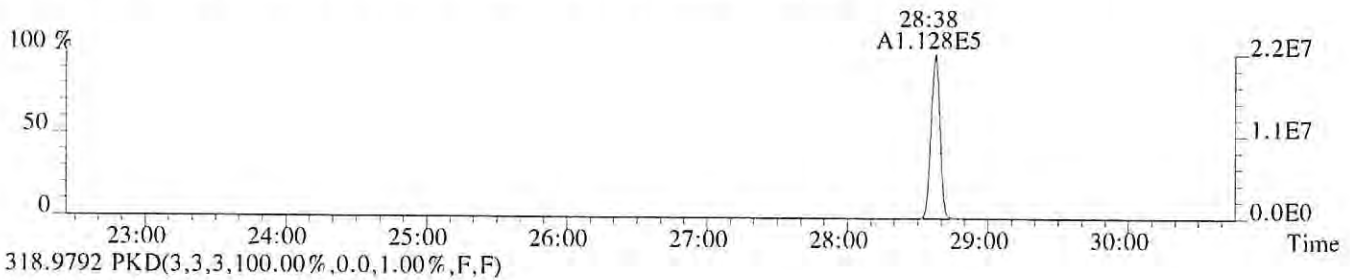
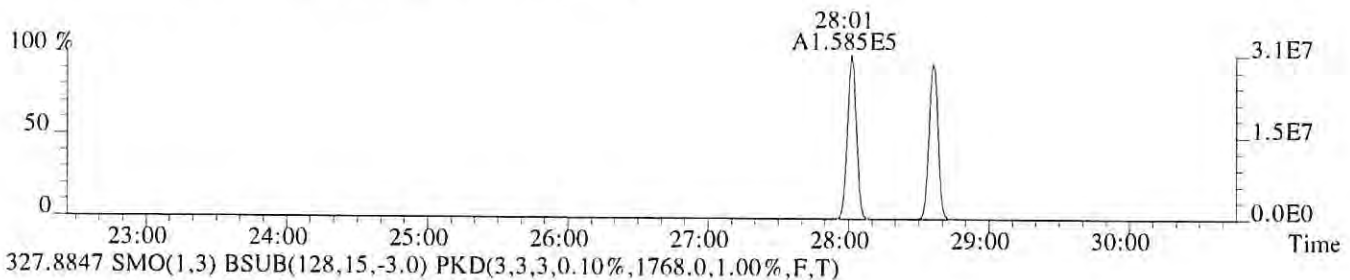
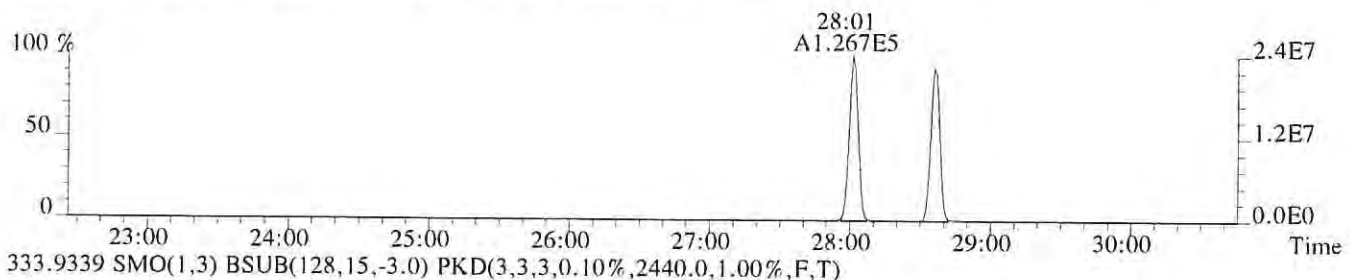
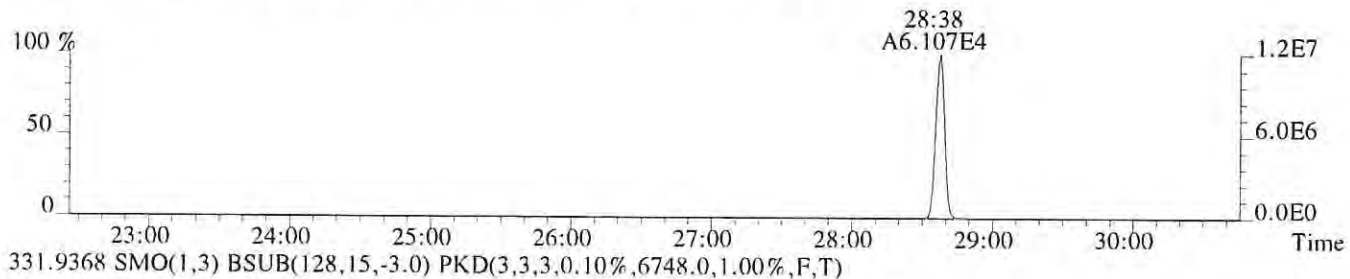
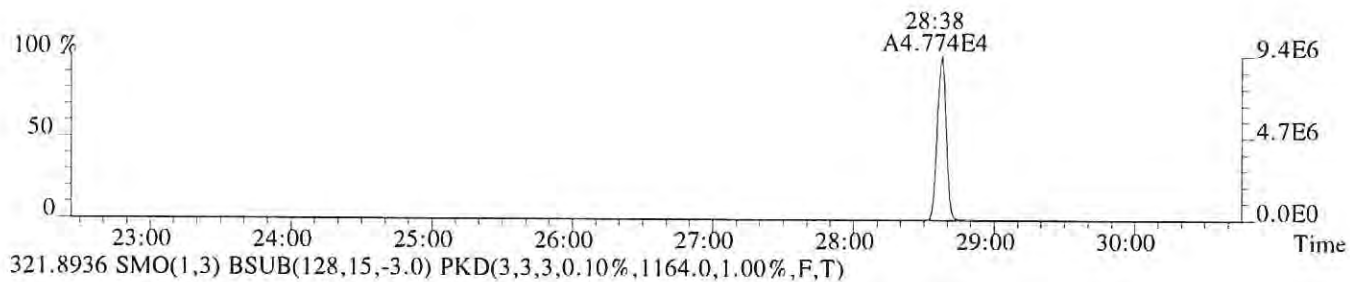
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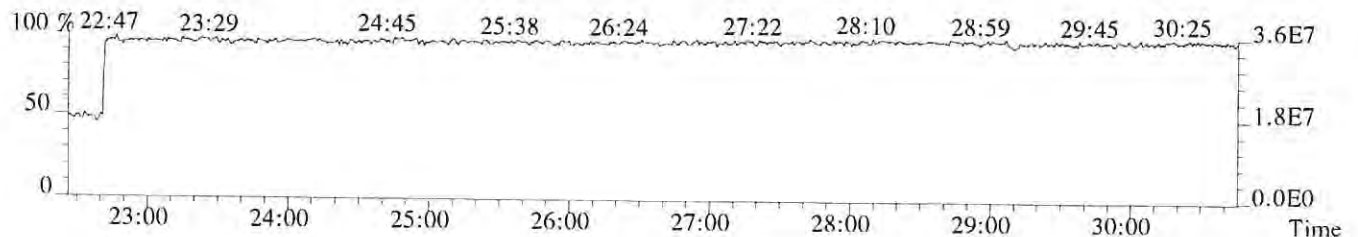
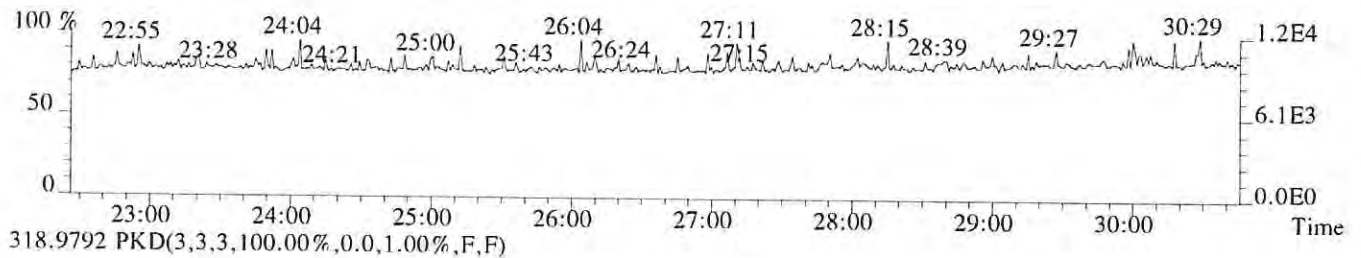
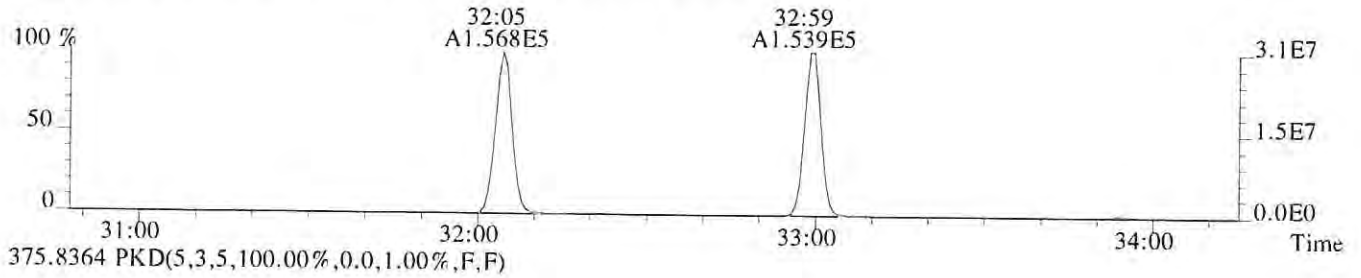
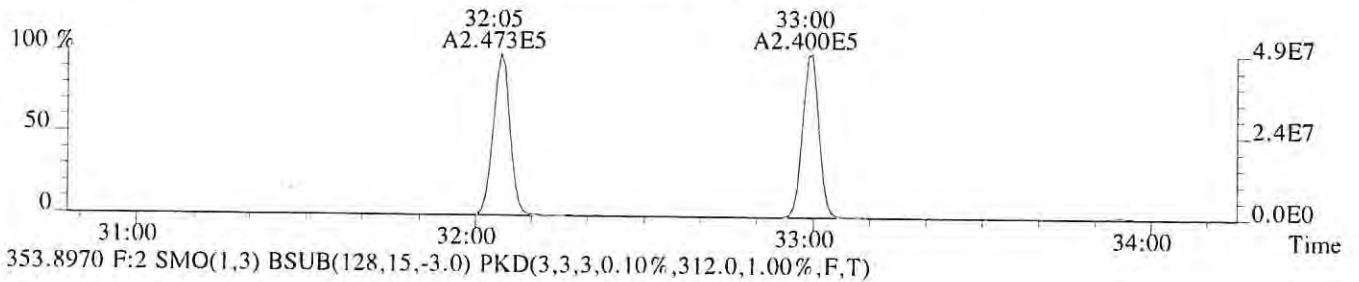
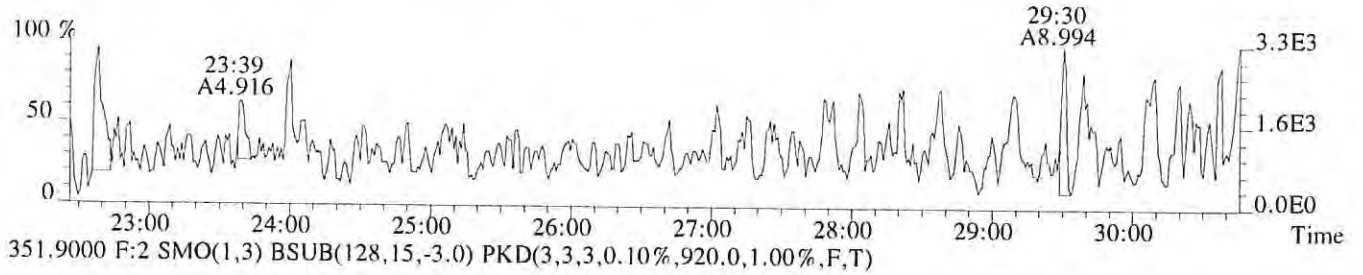
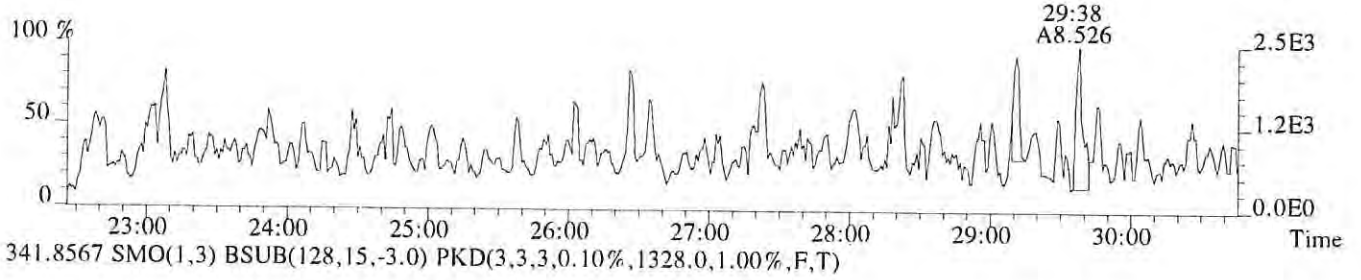
File: P521514 #1-591 Acq: 26-APR-2019 03:03:05 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: 82167
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,600.0,1.00%,F,T)



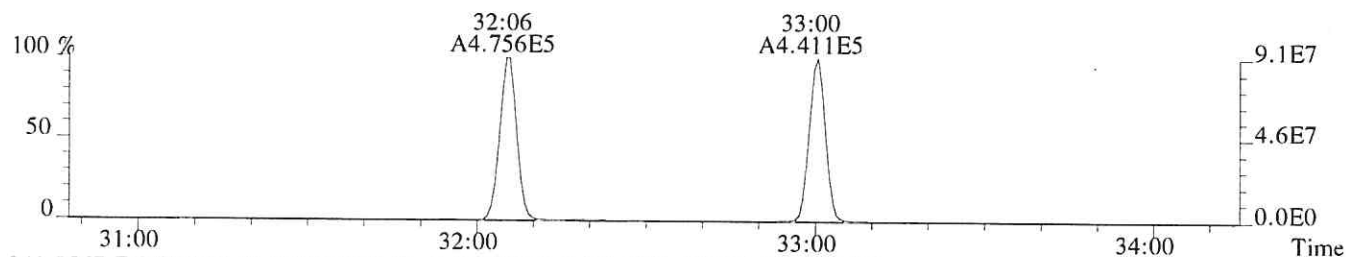
File:P521514 #1-591 Acq:26-APR-2019 03:03:05 Probe EI+ Magnet SIR VG BioTech Mass spectE
Sample#1 Exp:82167
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2596.0,1.00%,F,T)



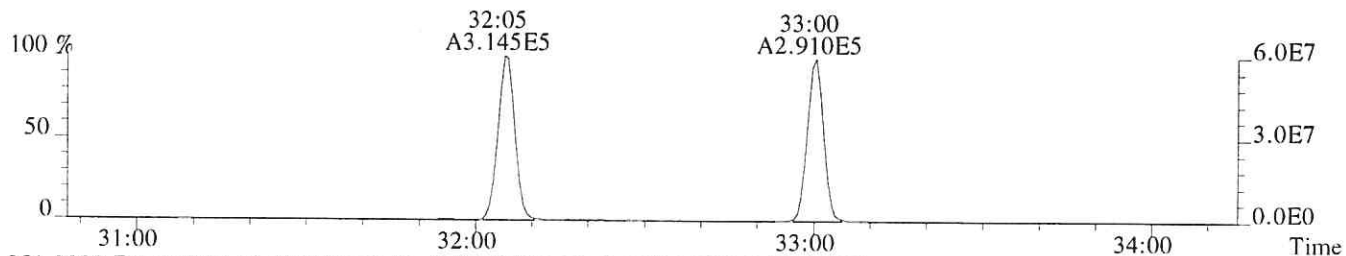
File:P521514 #1-591 Acq:26-APR-2019 03:03:05 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:82167
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1100.0,1.00%,F,T)



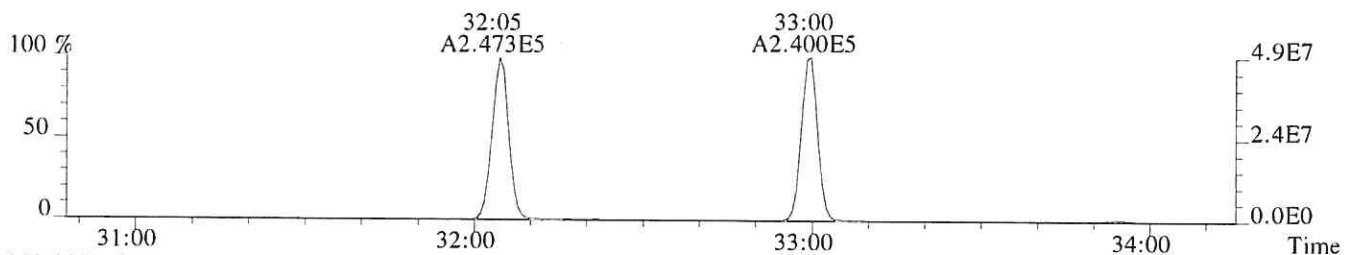
File:P521514 #1-312 Acq:26-APR-2019 03:03:05 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:82167
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2716.0,1.00%,F,T)



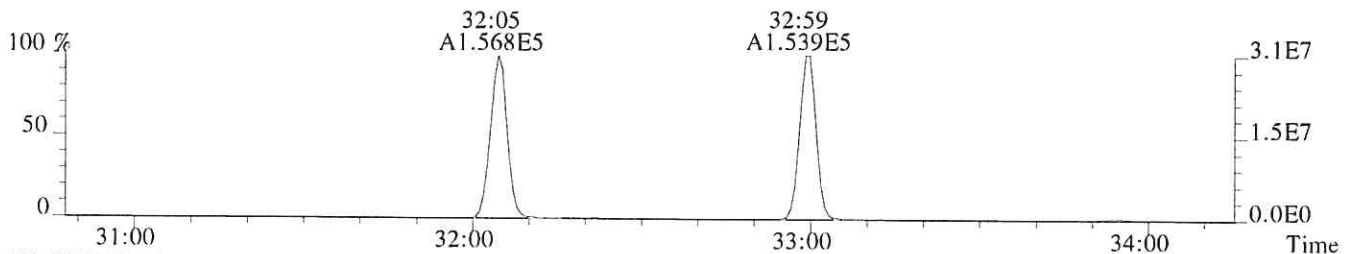
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1676.0,1.00%,F,T)



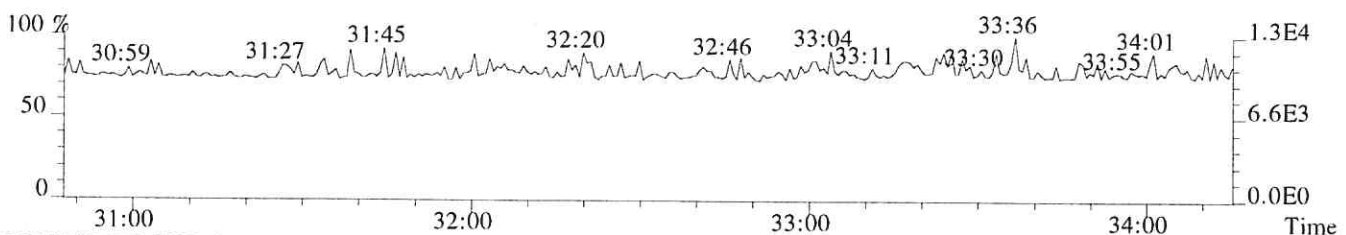
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,920.0,1.00%,F,T)



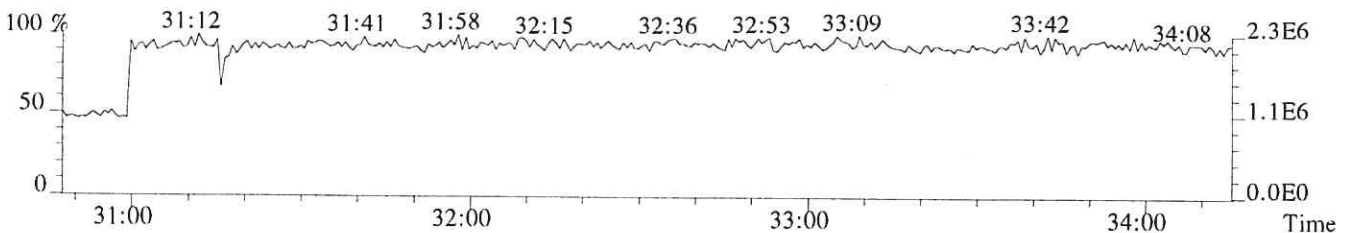
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,312.0,1.00%,F,T)



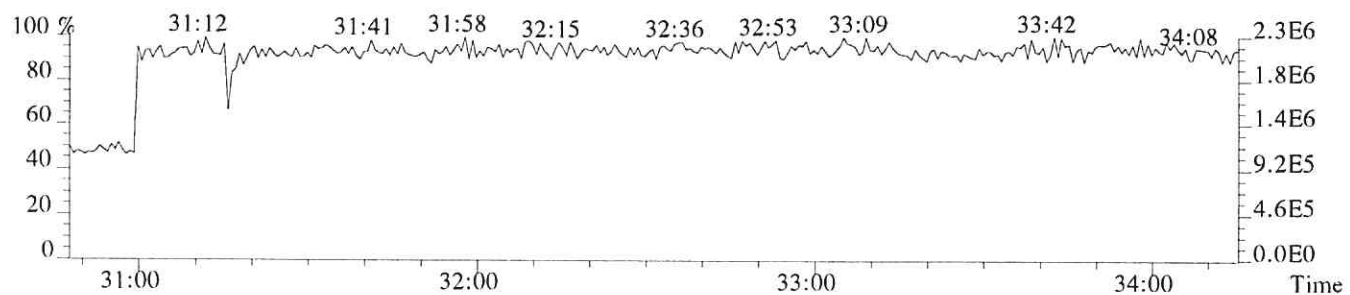
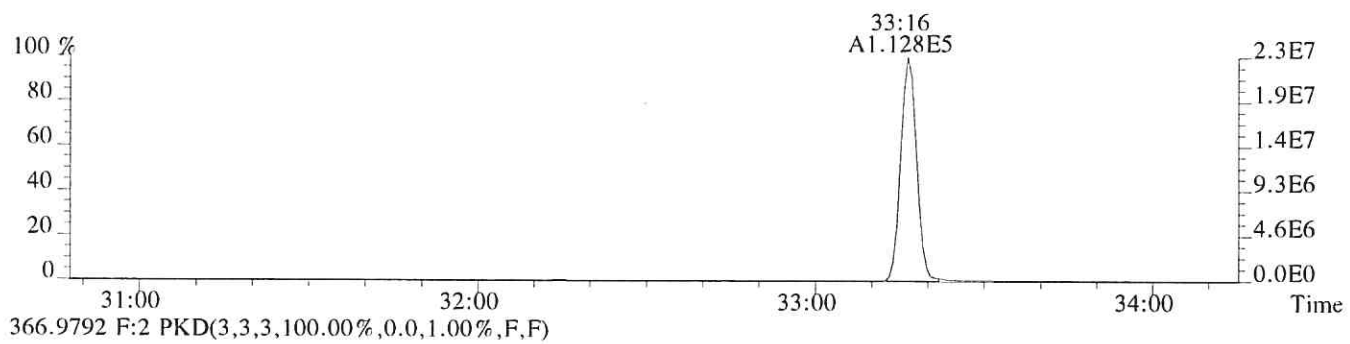
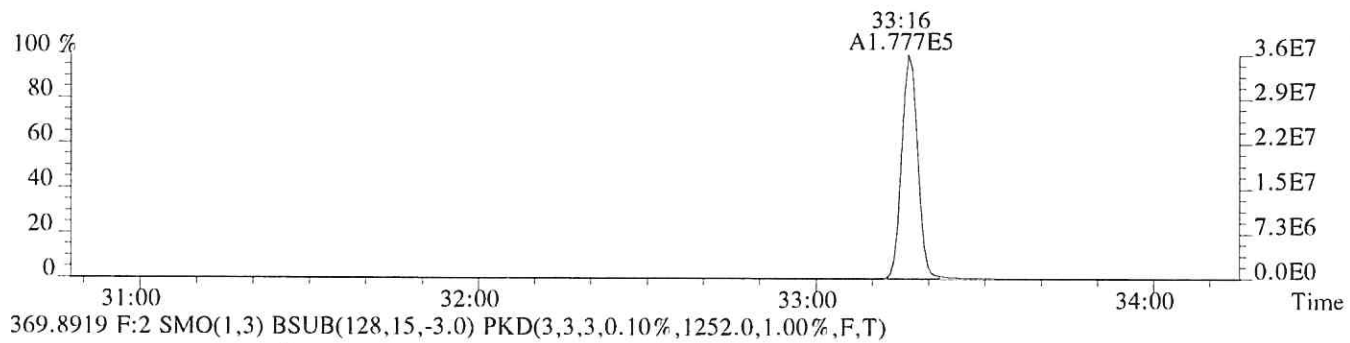
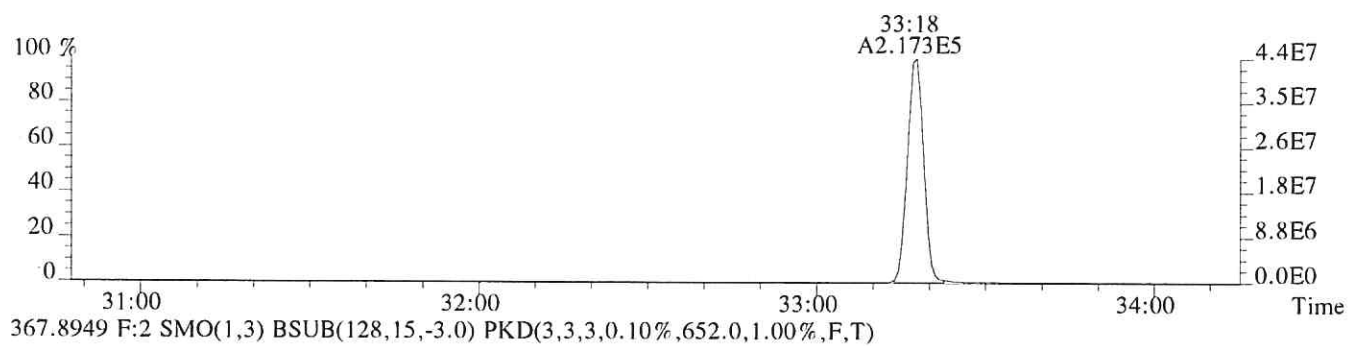
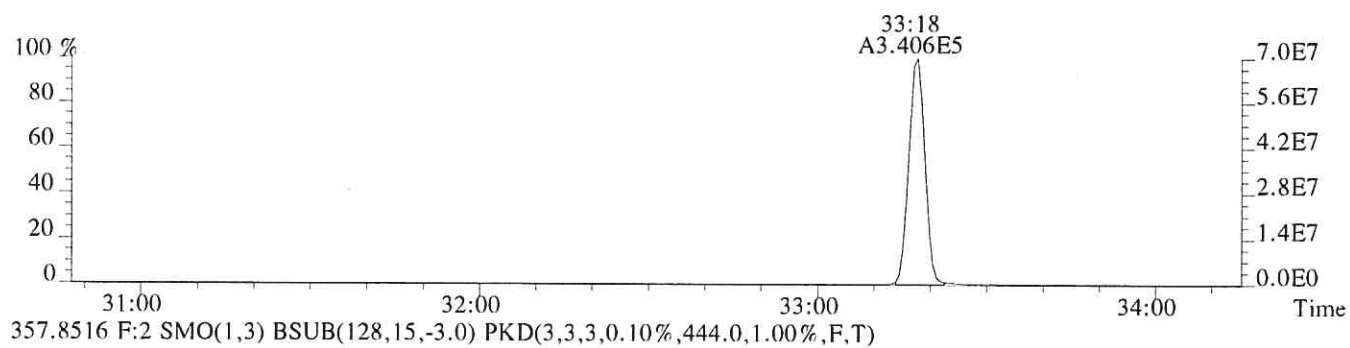
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



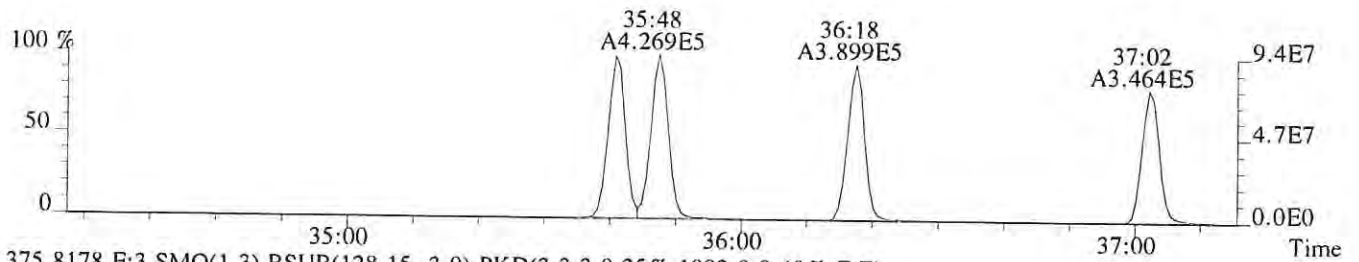
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



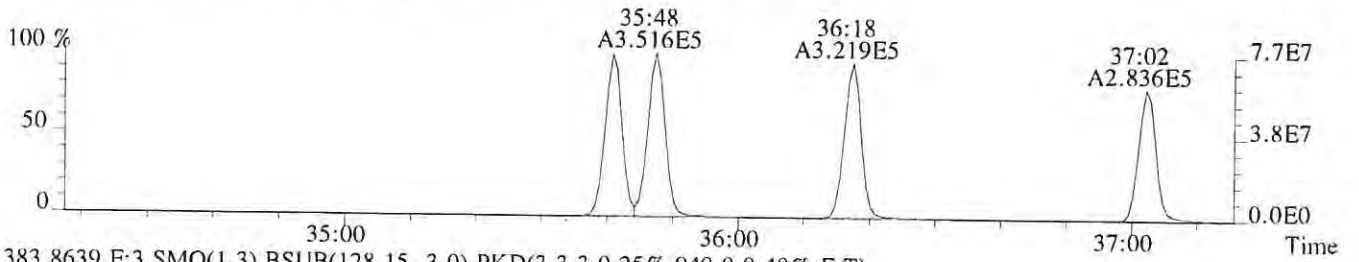
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Sample#1 Exp:82167
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,712.0,1.00%,F,T)



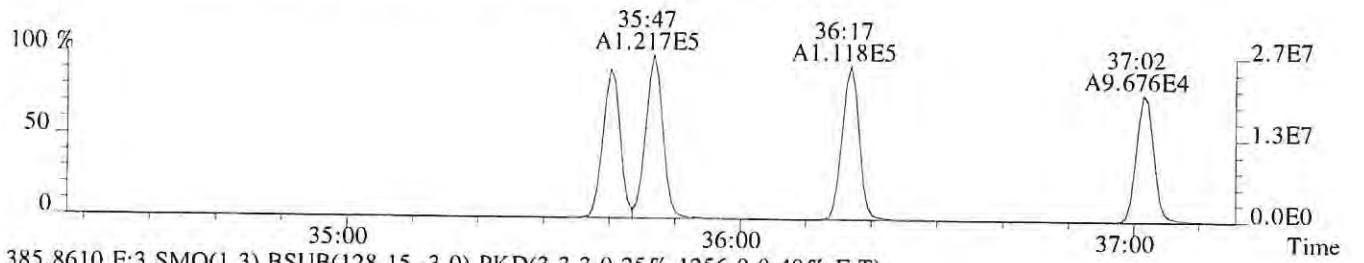
File:P521514 #1-268 Acq:26-APR-2019 03:03:05 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:82167
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1460.0,0.40%,F,T)



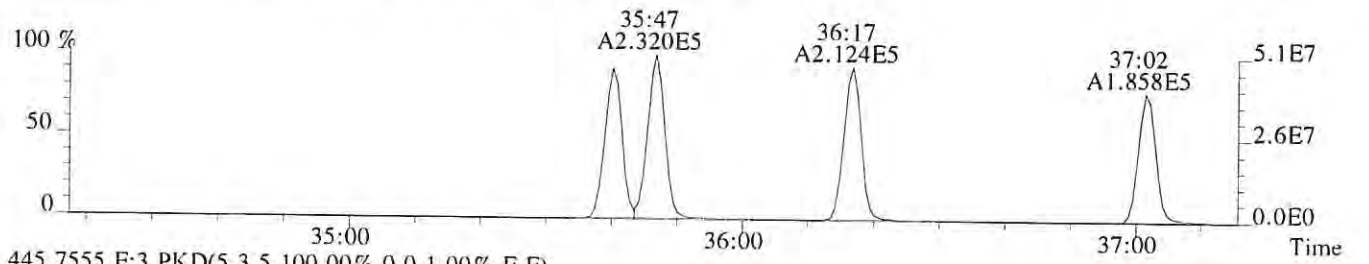
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1092.0,0.40%,F,T)



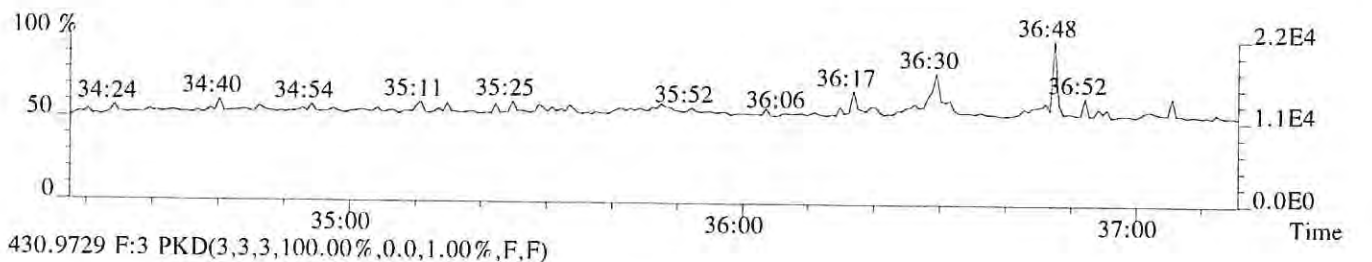
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,940.0,0.40%,F,T)



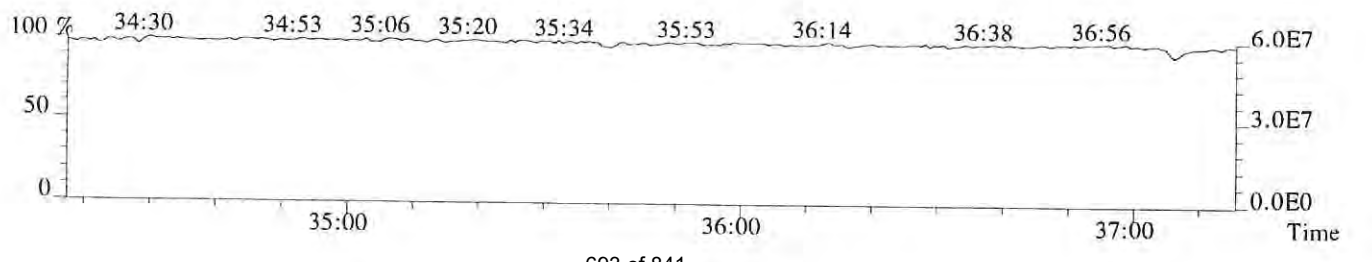
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1256.0,0.40%,F,T)



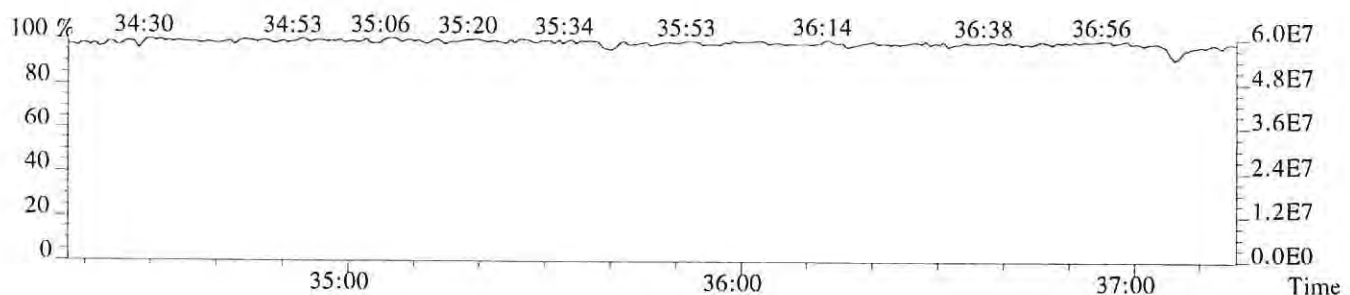
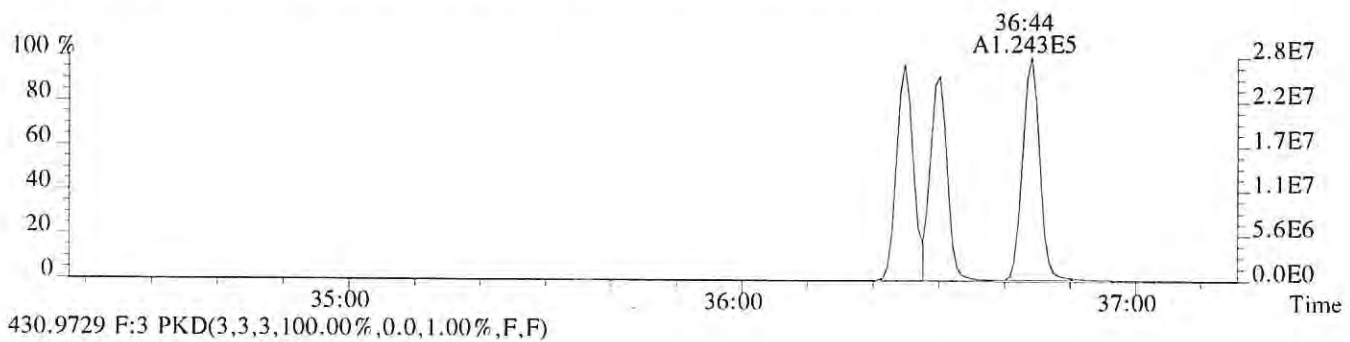
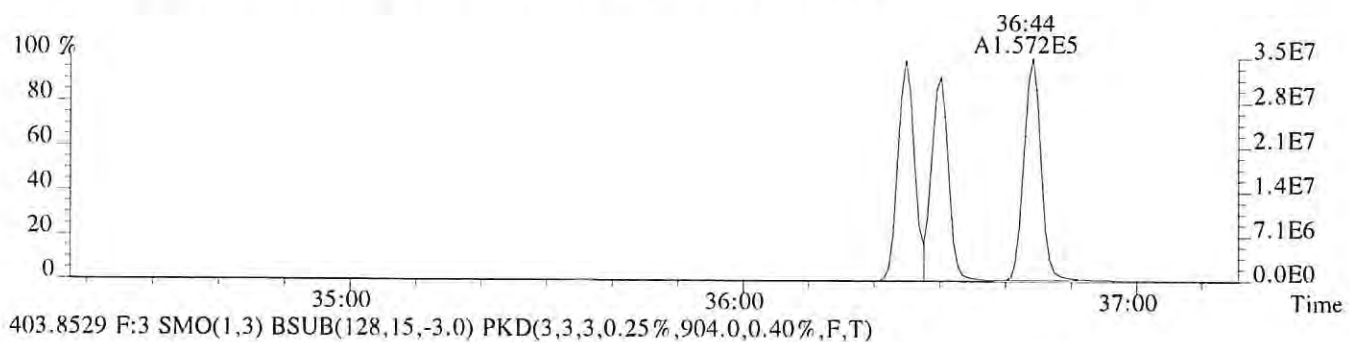
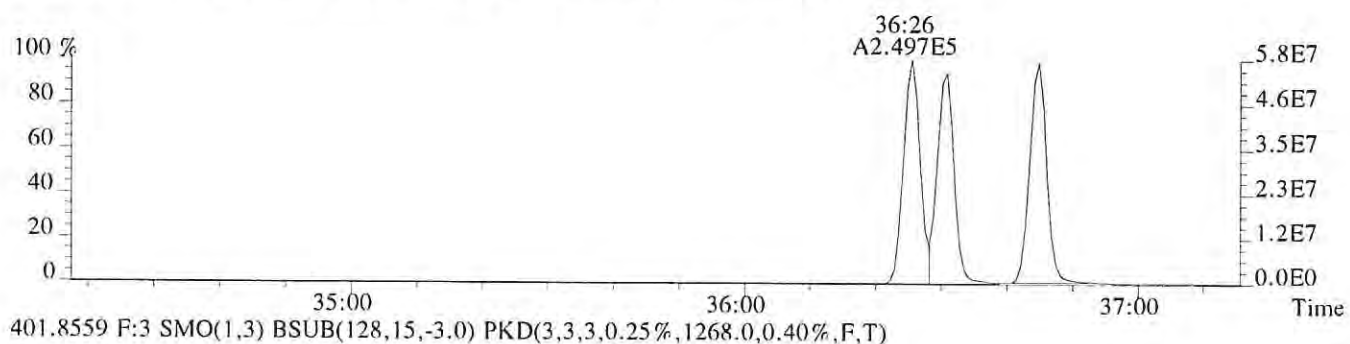
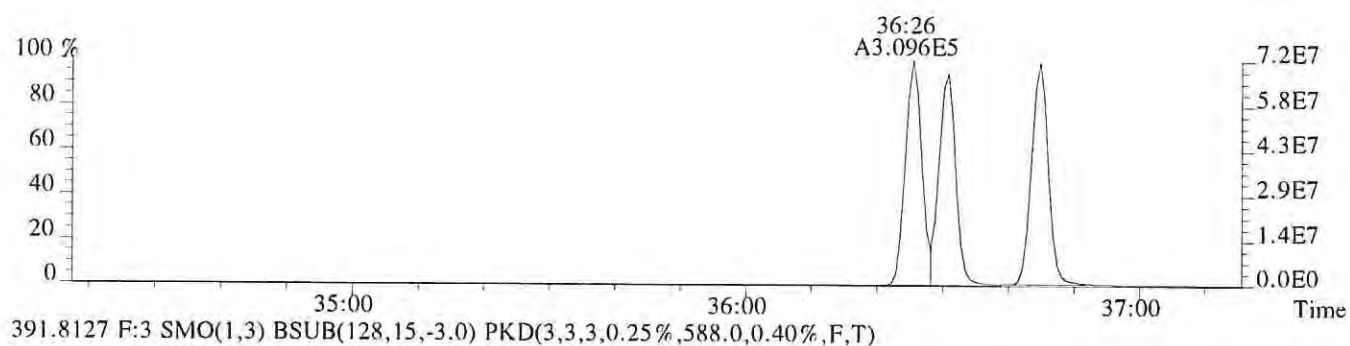
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



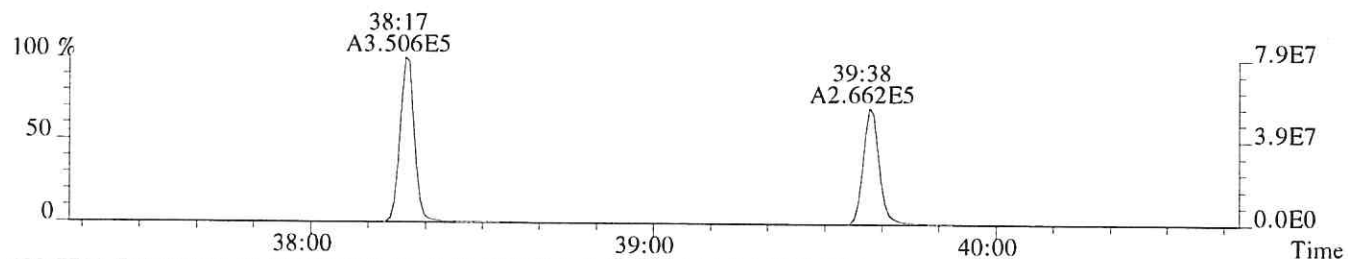
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



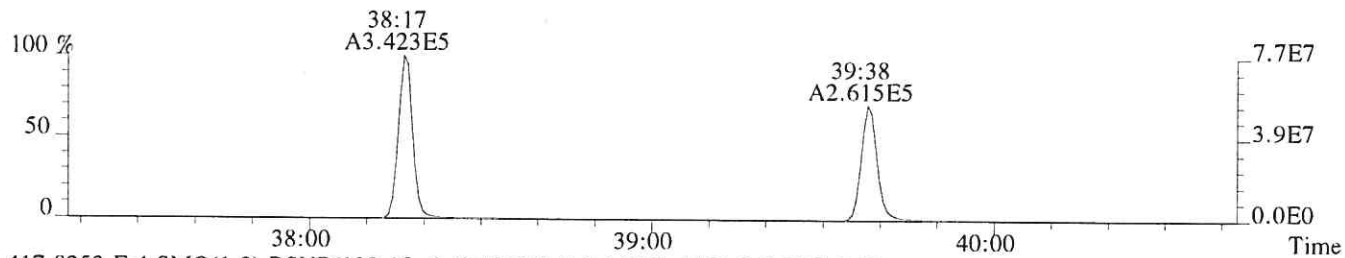
File: P521514 #1-268 Acq: 26-APR-2019 03:03:05 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: 82167
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,512.0,0.40%,F,T)



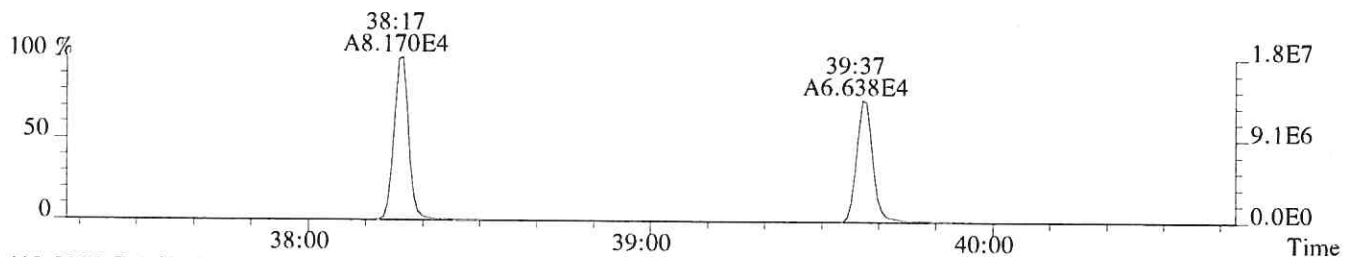
File:P521514 #1-308 Acq:26-APR-2019 03:03:05 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:82167
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,536.0,0.50%,F,T)



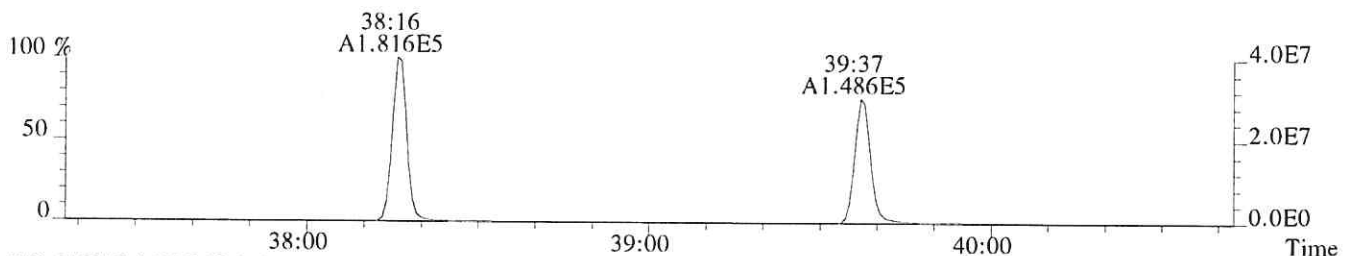
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,444.0,0.50%,F,T)



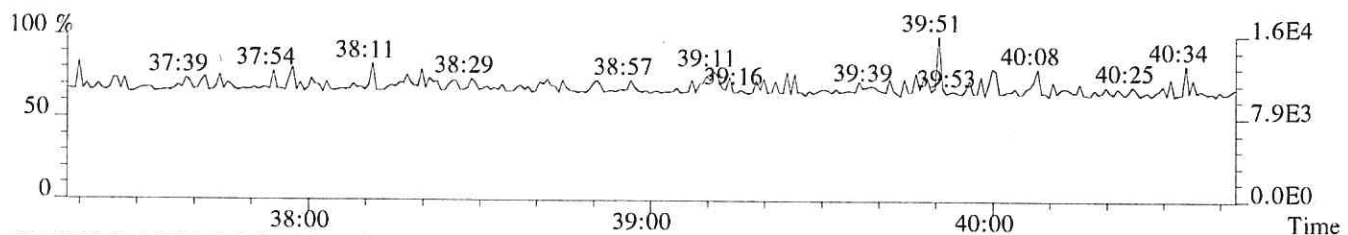
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1164.0,0.50%,F,T)



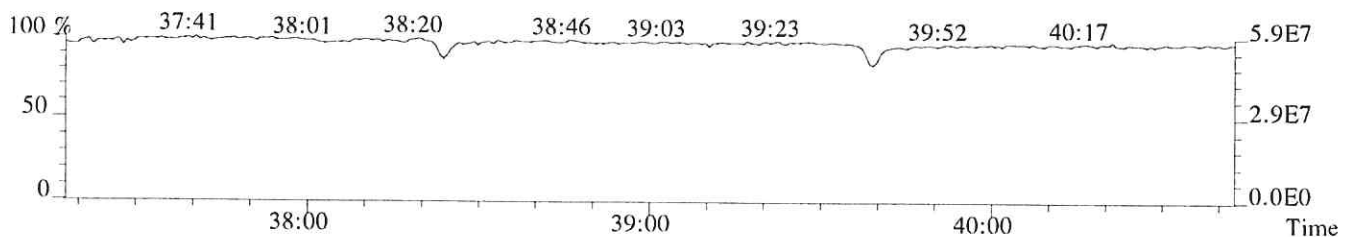
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1184.0,0.50%,F,T)



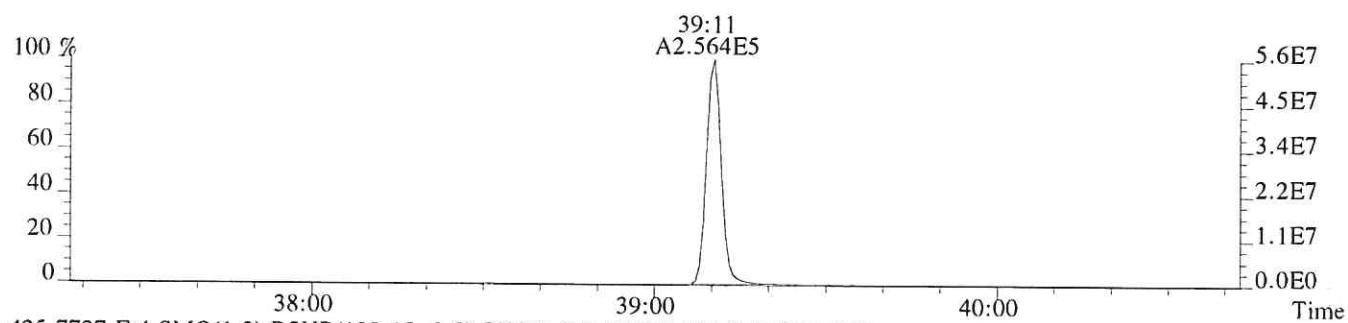
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



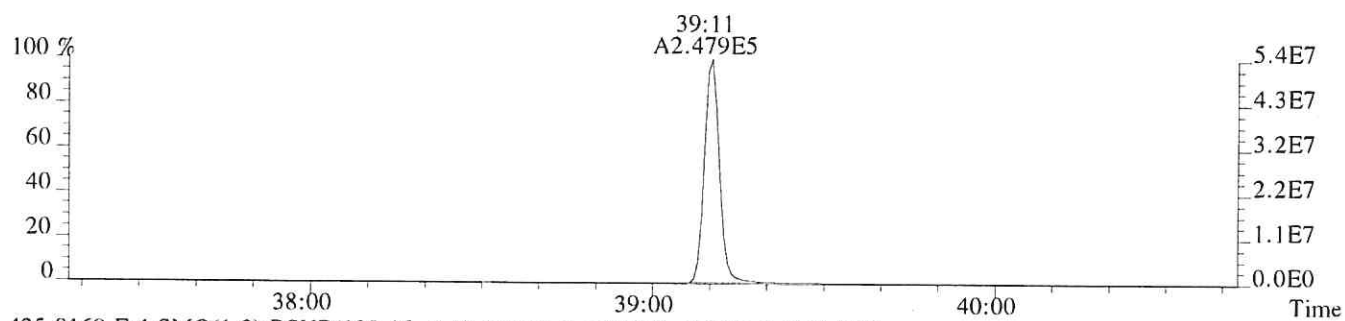
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



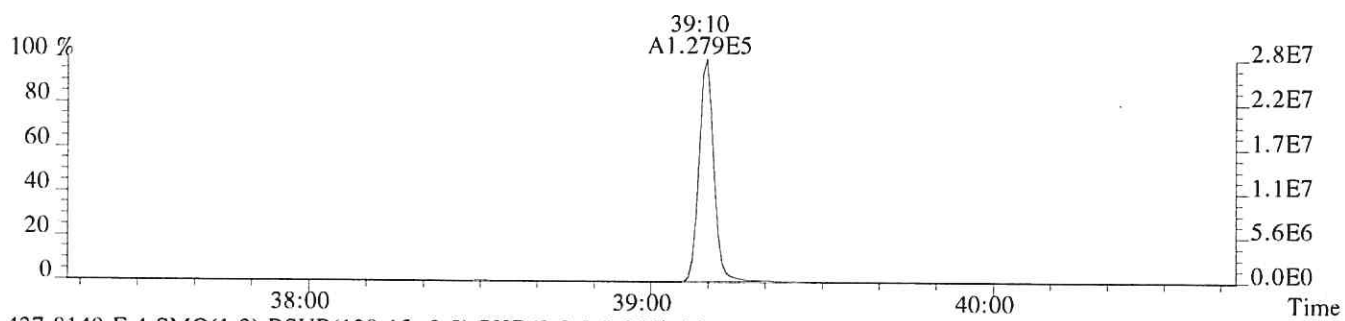
File:P521514 #1-308 Acq:26-APR-2019 03:03:05 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:82167
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1116.0,0.40%,F,T)



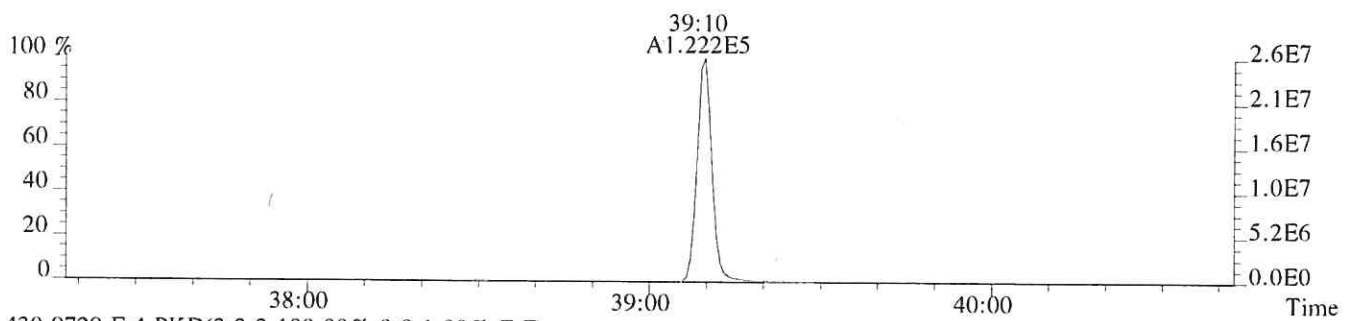
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,596.0,0.40%,F,T)



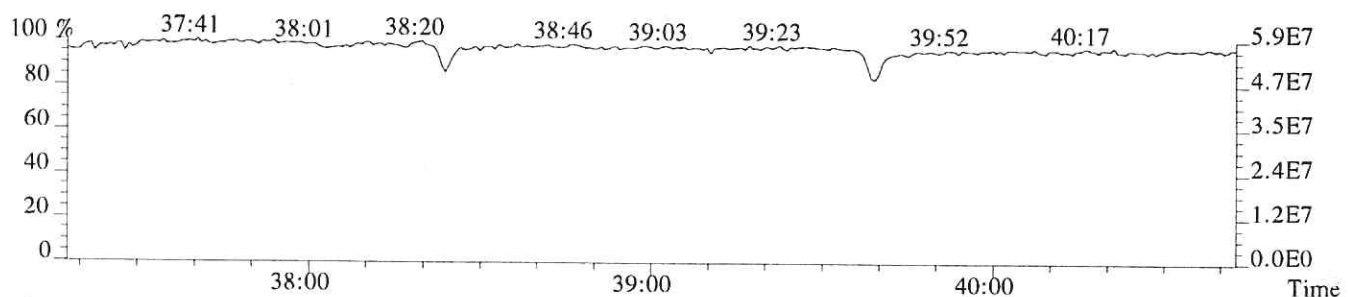
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1220.0,0.40%,F,T)



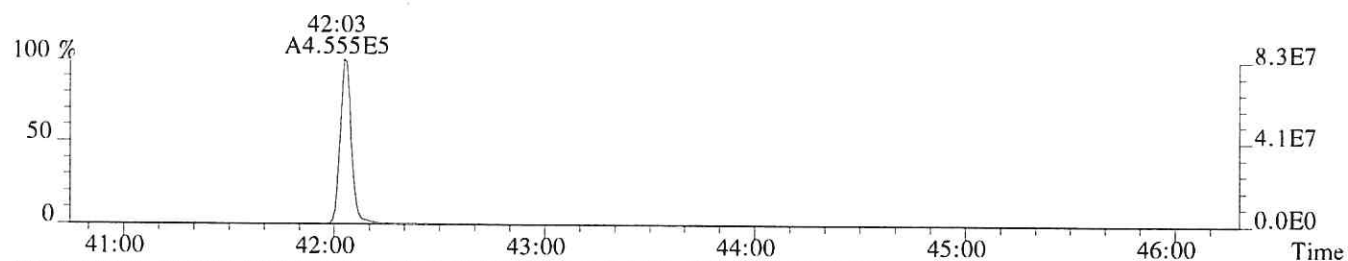
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,564.0,0.40%,F,T)



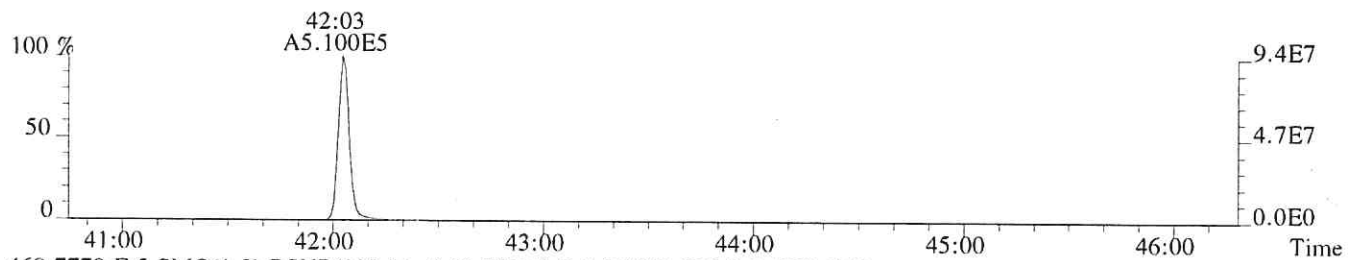
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



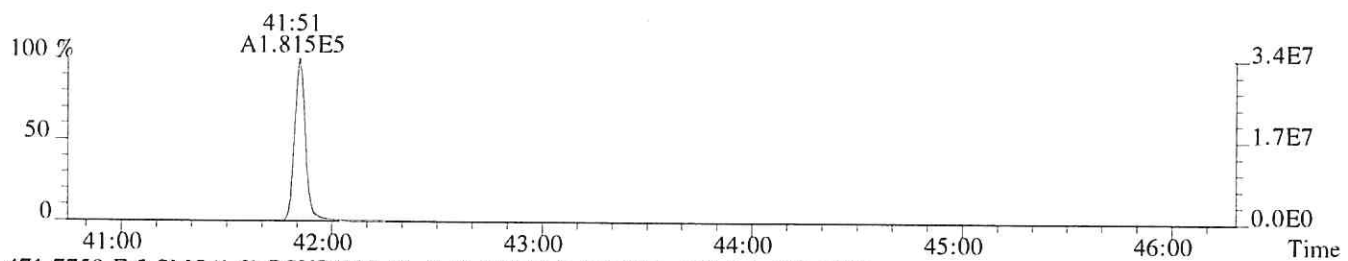
File:P521514 #1-501 Acq:26-APR-2019 03:03:05 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:82167
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,436.0,0.40%,F,T)



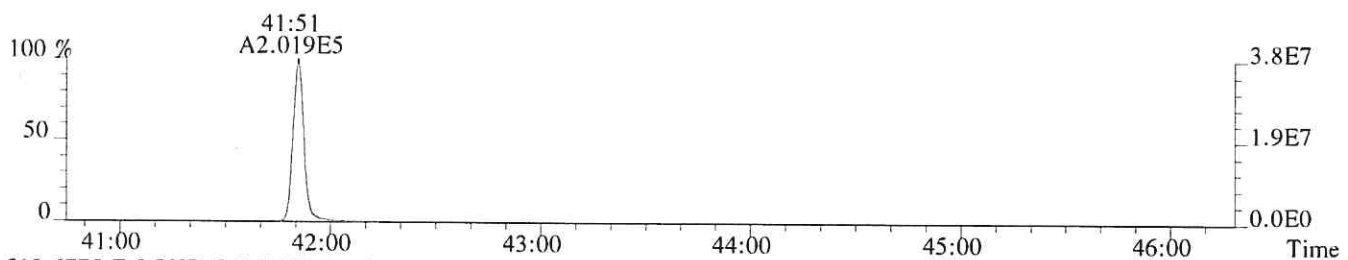
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1084.0,0.40%,F,T)



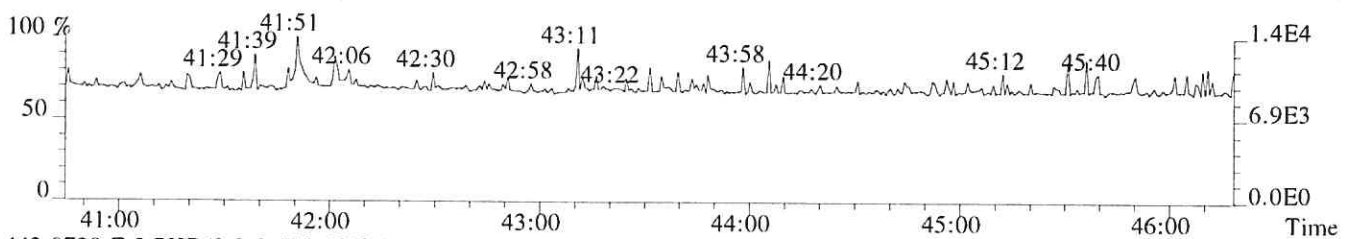
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,656.0,0.40%,F,T)



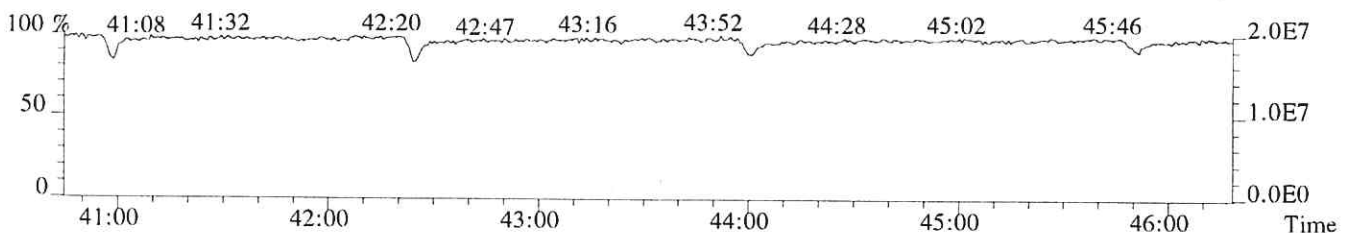
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,468.0,0.40%,F,T)



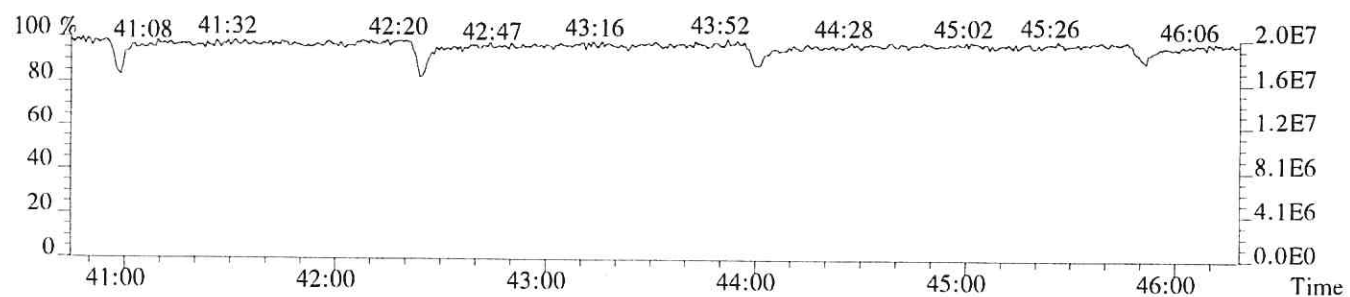
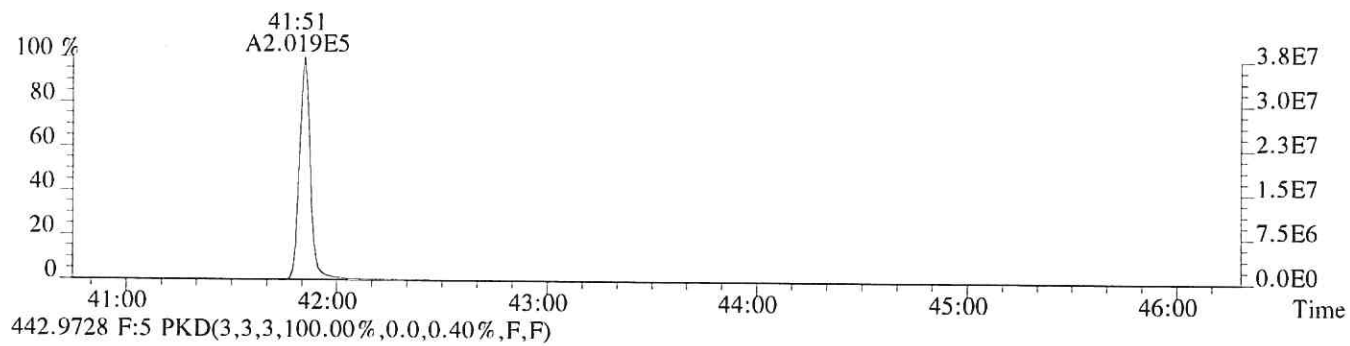
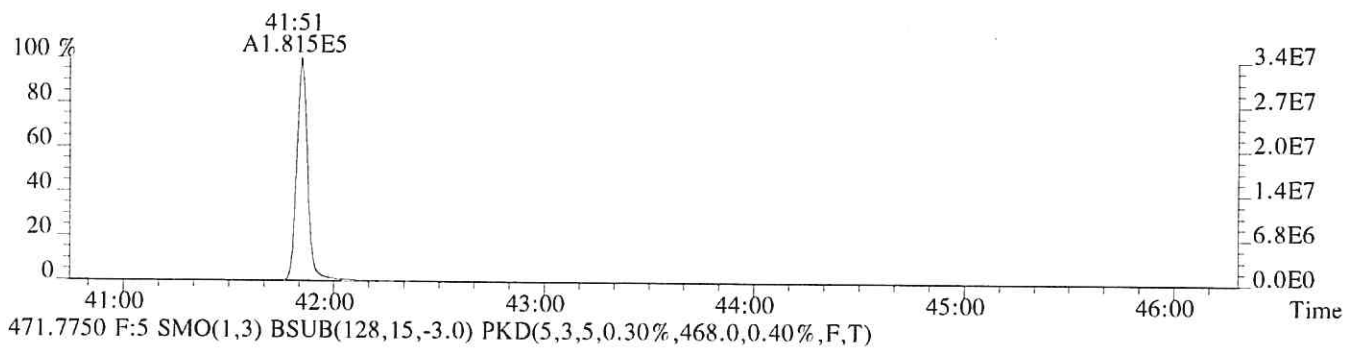
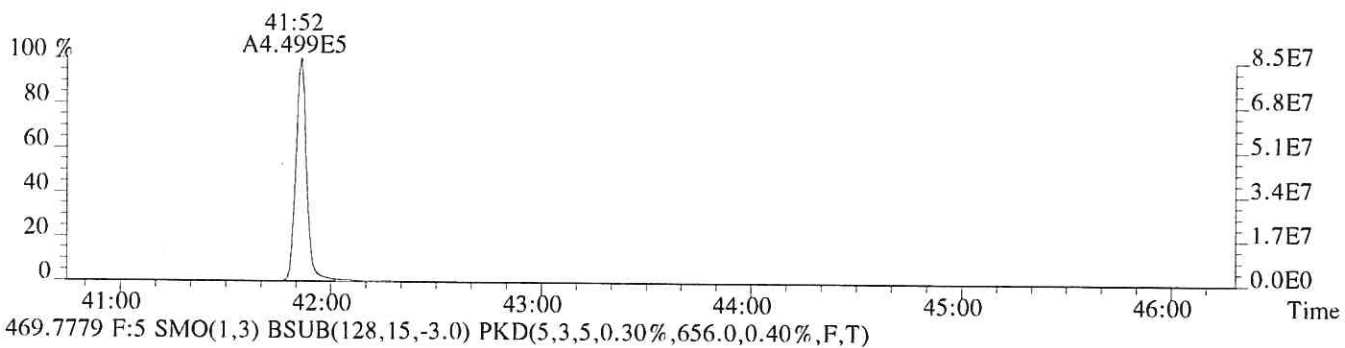
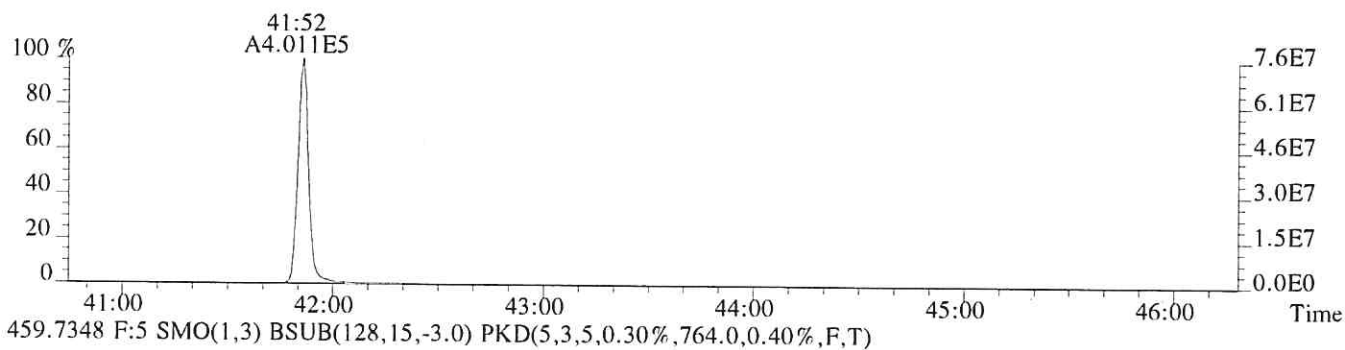
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



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



File:P521514 #1-501 Acq:26-APR-2019 03:03:05 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:82167
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,512.0,0.40%,F,T)



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Sample Response Summary

CLIENT ID.
185657

Run #6 Filename P521515 Samp: 1 Inj: 1 Acquired: 26-APR-19 03:51:44
Processed: 26-APR-19 07:12:44 Sample ID: CS5

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	27:50	2.406e+05	3.190e+05	0.75	yes	no	0.962
2 Unk	1,2,3,7,8-PeCDF	32:06	2.055e+06	1.333e+06	1.54	yes	no	0.968
3 Unk	2,3,4,7,8-PeCDF	33:01	1.876e+06	1.230e+06	1.53	yes	no	0.919
4 Unk	1,2,3,4,7,8-HxCDF	35:42	1.722e+06	1.414e+06	1.22	yes	no	1.161
5 Unk	1,2,3,6,7,8-HxCDF	35:48	1.779e+06	1.451e+06	1.23	yes	no	1.073
6 Unk	2,3,4,6,7,8-HxCDF	36:18	1.620e+06	1.330e+06	1.22	yes	no	1.069
7 Unk	1,2,3,7,8,9-HxCDF	37:03	1.446e+06	1.179e+06	1.23	yes	no	1.096
8 Unk	1,2,3,4,6,7,8-HpCDF	38:17	1.427e+06	1.388e+06	1.03	yes	no	1.281
9 Unk	1,2,3,4,7,8,9-HpCDF	39:39	1.044e+06	1.020e+06	1.02	yes	no	1.192
10 Unk	OCDF	42:04	1.817e+06	2.024e+06	0.90	yes	no	1.204
11 Unk	2,3,7,8-TCDD	28:38	1.994e+05	2.552e+05	0.78	yes	no	1.077
12 Unk	1,2,3,7,8-PeCDD	33:18	1.426e+06	9.061e+05	1.57	yes	no	0.971
13 Unk	1,2,3,4,7,8-HxCDD	36:26	1.294e+06	1.042e+06	1.24	yes	no	1.024
14 Unk	1,2,3,6,7,8-HxCDD	36:32	1.252e+06	9.978e+05	1.25	yes	no	1.038
15 Unk	1,2,3,7,8,9-HxCDD	36:46	1.316e+06	1.063e+06	1.24	yes	no	1.055
16 Unk	1,2,3,4,6,7,8-HpCDD	39:11	1.058e+06	1.016e+06	1.04	yes	no	0.989
17 Unk	OCDD	41:52	1.584e+06	1.786e+06	0.89	yes	no	1.094
18 IS	13C-2,3,7,8-TCDF	27:49	1.324e+05	1.665e+05	0.80	yes	no	1.287
19 IS	13C-1,2,3,7,8-PeCDF	32:05	2.102e+05	1.330e+05	1.58	yes	no	1.416
20 IS	13C-2,3,4,7,8-PeCDF	33:00	2.039e+05	1.301e+05	1.57	yes	no	1.374
21 IS	13C-1,2,3,4,7,8-HxCDF	35:41	9.022e+04	1.731e+05	0.52	yes	no	1.114
22 IS	13C-1,2,3,6,7,8-HxCDF	35:48	9.995e+04	1.903e+05	0.53	yes	no	1.245
23 IS	13C-2,3,4,6,7,8-HxCDF	36:18	9.262e+04	1.773e+05	0.52	yes	no	1.146
24 IS	13C-1,2,3,7,8,9-HxCDF	37:02	8.003e+04	1.537e+05	0.52	yes	no	0.986
25 IS	13C-1,2,3,4,6,7,8-HpCDF	38:17	6.642e+04	1.480e+05	0.45	yes	no	0.915
26 IS	13C-1,2,3,4,7,8,9-HpCDF	39:38	5.246e+04	1.186e+05	0.44	yes	no	0.746
27 IS	13C-2,3,7,8-TCDD	28:37	9.644e+04	1.217e+05	0.79	yes	no	0.929
28 IS	13C-1,2,3,7,8-PeCDD	33:17	1.505e+05	9.471e+04	1.59	yes	no	1.017
29 IS	13C-1,2,3,4,7,8-HxCDD	36:26	1.250e+05	9.791e+04	1.28	yes	no	0.945
30 IS	13C-1,2,3,6,7,8-HxCDD	36:31	1.197e+05	9.452e+04	1.27	yes	no	0.924
31 IS	13C-1,2,3,4,6,7,8-HpCDD	39:11	1.068e+05	9.988e+04	1.07	yes	no	0.876
32 IS	13C-OCDD	41:52	1.442e+05	1.609e+05	0.90	yes	no	0.662
33 RS/RT	13C-1,2,3,4-TCDD	28:02	1.019e+05	1.282e+05	0.80	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	36:45	1.325e+05	1.054e+05	1.26	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	28:38	4.674e+05				no	1.010

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Signal/Noise Height Ratio Summary

CLIENT ID.
185657

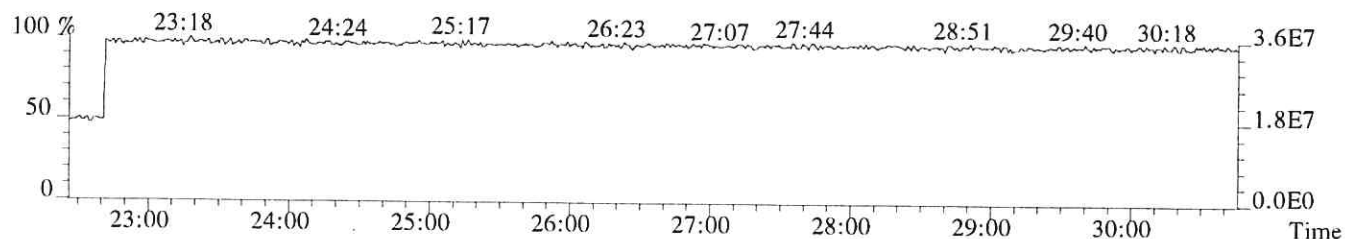
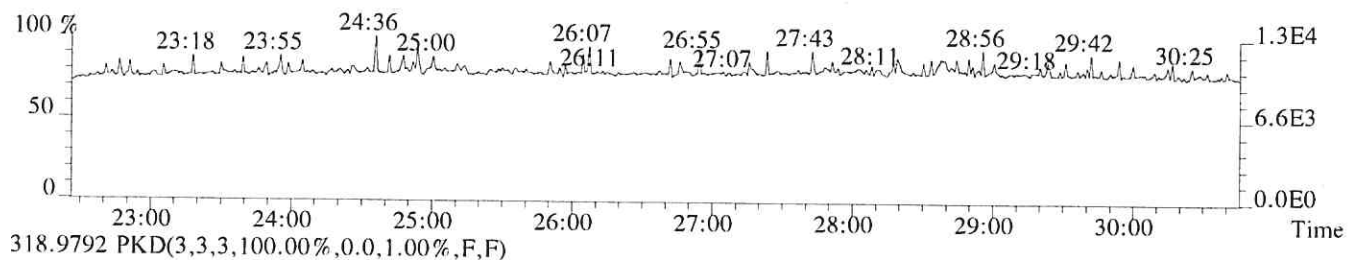
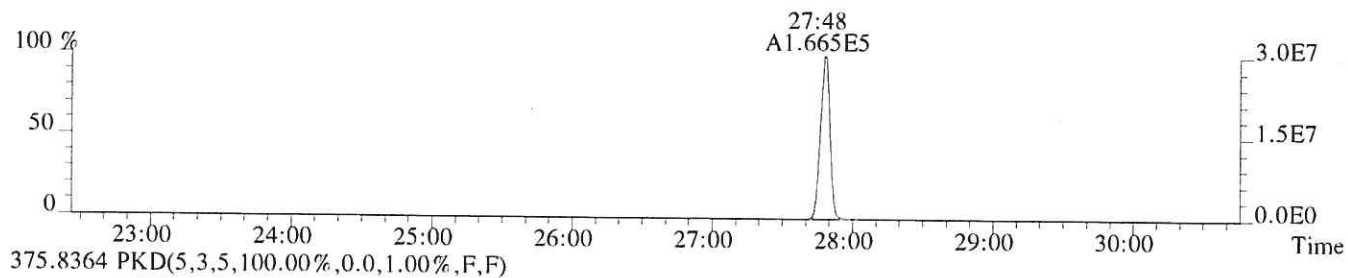
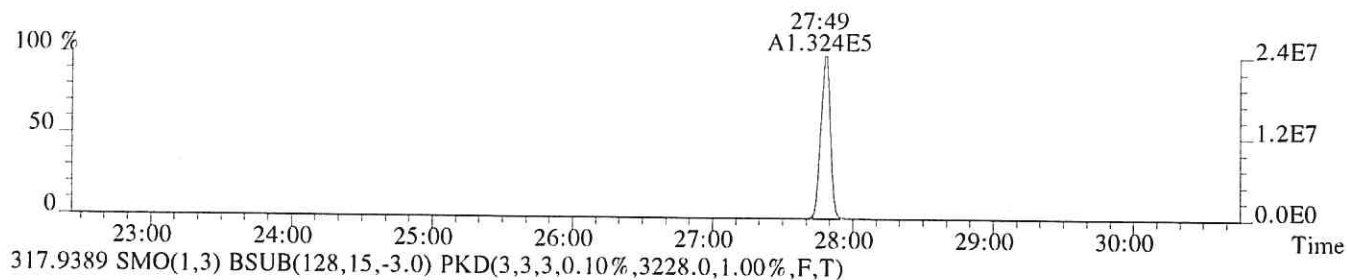
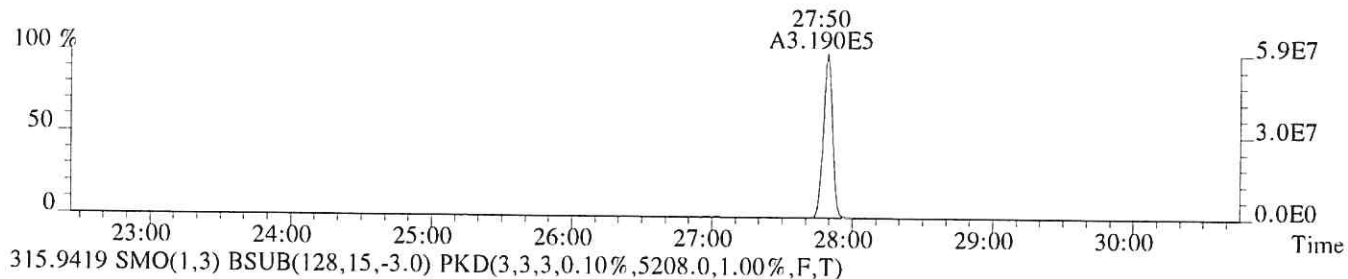
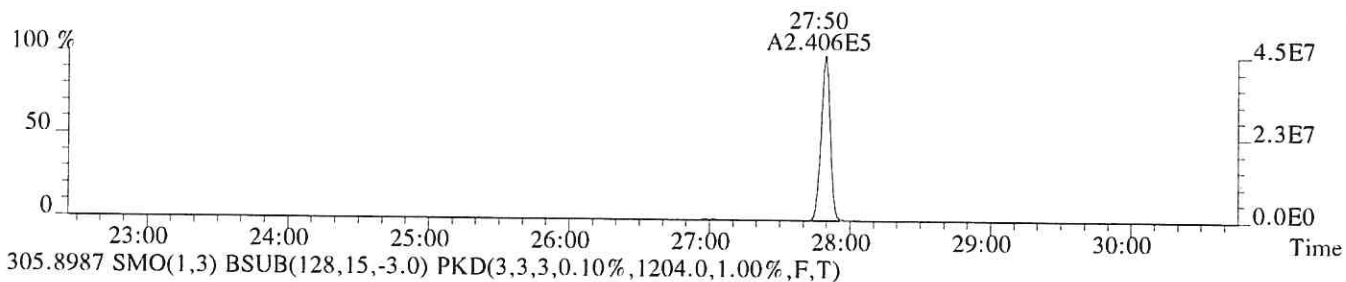
Run #6 Filename P521515 Samp: 1 Inj: 1 Acquired: 26-APR-19 03:51:44
Processed: 26-APR-19 07:12:44 LAB. ID: CS5

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	4.50e+07	8.88e+02	5.1e+04	5.93e+07	1.20e+03	4.9e+04
2	1,2,3,7,8-PeCDF	3.99e+08	5.44e+03	7.3e+04	2.58e+08	3.83e+03	6.8e+04
3	2,3,4,7,8-PeCDF	3.76e+08	5.44e+03	6.9e+04	2.47e+08	3.83e+03	6.5e+04
4	1,2,3,4,7,8-HxCDF	3.90e+08	6.62e+03	5.9e+04	3.18e+08	2.83e+03	1.1e+05
5	1,2,3,6,7,8-HxCDF	3.93e+08	6.62e+03	5.9e+04	3.19e+08	2.83e+03	1.1e+05
6	2,3,4,6,7,8-HxCDF	3.59e+08	6.62e+03	5.4e+04	2.92e+08	2.83e+03	1.0e+05
7	1,2,3,7,8,9-HxCDF	3.17e+08	6.62e+03	4.8e+04	2.58e+08	2.83e+03	9.1e+04
8	1,2,3,4,6,7,8-HpCDF	3.22e+08	8.04e+02	4.0e+05	3.14e+08	6.12e+02	5.1e+05
9	1,2,3,4,7,8,9-HpCDF	2.22e+08	8.04e+02	2.8e+05	2.17e+08	6.12e+02	3.5e+05
10	OCDF	3.38e+08	7.36e+02	4.6e+05	3.69e+08	1.25e+03	3.0e+05
11	2,3,7,8-TCDD	3.89e+07	2.81e+03	1.4e+04	5.02e+07	1.29e+03	3.9e+04
12	1,2,3,7,8-PeCDD	2.91e+08	9.24e+02	3.1e+05	1.86e+08	3.52e+02	5.3e+05
13	1,2,3,4,7,8-HxCDD	2.92e+08	6.52e+02	4.5e+05	2.34e+08	5.44e+02	4.3e+05
14	1,2,3,6,7,8-HxCDD	2.78e+08	6.52e+02	4.3e+05	2.22e+08	5.44e+02	4.1e+05
15	1,2,3,7,8,9-HxCDD	2.97e+08	6.52e+02	4.5e+05	2.36e+08	5.44e+02	4.3e+05
16	1,2,3,4,6,7,8-HpCDD	2.26e+08	6.28e+02	3.6e+05	2.15e+08	6.24e+02	3.5e+05
17	OCDD	2.88e+08	5.16e+02	5.6e+05	3.27e+08	7.84e+02	4.2e+05
18	13C-2,3,7,8-TCDF	2.40e+07	5.21e+03	4.6e+03	3.05e+07	3.23e+03	9.4e+03
19	13C-1,2,3,7,8-PeCDF	4.10e+07	7.52e+02	5.5e+04	2.59e+07	9.28e+02	2.8e+04
20	13C-2,3,4,7,8-PeCDF	4.13e+07	7.52e+02	5.5e+04	2.64e+07	9.28e+02	2.8e+04
21	13C-1,2,3,4,7,8-HxCDF	2.02e+07	1.36e+03	1.5e+04	3.85e+07	2.72e+03	1.4e+04
22	13C-1,2,3,6,7,8-HxCDF	2.19e+07	1.36e+03	1.6e+04	4.15e+07	2.72e+03	1.5e+04
23	13C-2,3,4,6,7,8-HxCDF	2.04e+07	1.36e+03	1.5e+04	3.85e+07	2.72e+03	1.4e+04
24	13C-1,2,3,7,8,9-HxCDF	1.74e+07	1.36e+03	1.3e+04	3.34e+07	2.72e+03	1.2e+04
25	13C-1,2,3,4,6,7,8-HpCDF	1.47e+07	5.88e+02	2.5e+04	3.28e+07	5.92e+02	5.5e+04
26	13C-1,2,3,4,7,8,9-HpCDF	1.12e+07	5.88e+02	1.9e+04	2.52e+07	5.92e+02	4.3e+04
27	13C-2,3,7,8-TCDD	1.89e+07	5.50e+03	3.4e+03	2.37e+07	2.34e+03	1.0e+04
28	13C-1,2,3,7,8-PeCDD	3.09e+07	8.40e+02	3.7e+04	1.95e+07	1.24e+03	1.6e+04
29	13C-1,2,3,4,7,8-HxCDD	2.81e+07	1.08e+03	2.6e+04	2.19e+07	1.16e+03	1.9e+04
30	13C-1,2,3,6,7,8-HxCDD	2.64e+07	1.08e+03	2.5e+04	2.09e+07	1.16e+03	1.8e+04
31	13C-1,2,3,4,6,7,8-HpCDD	2.26e+07	1.17e+03	1.9e+04	2.13e+07	1.24e+03	1.7e+04
32	13C-OCDD	2.58e+07	1.40e+03	1.8e+04	2.91e+07	7.20e+02	4.0e+04
33	13C-1,2,3,4-TCDD	1.89e+07	5.50e+03	3.4e+03	2.36e+07	2.34e+03	1.0e+04
34	13C-1,2,3,7,8,9-HxCDD	2.93e+07	1.08e+03	2.7e+04	2.32e+07	1.16e+03	2.0e+04
35	37Cl-2,3,7,8-TCDD	9.18e+07	1.41e+03	6.5e+04			

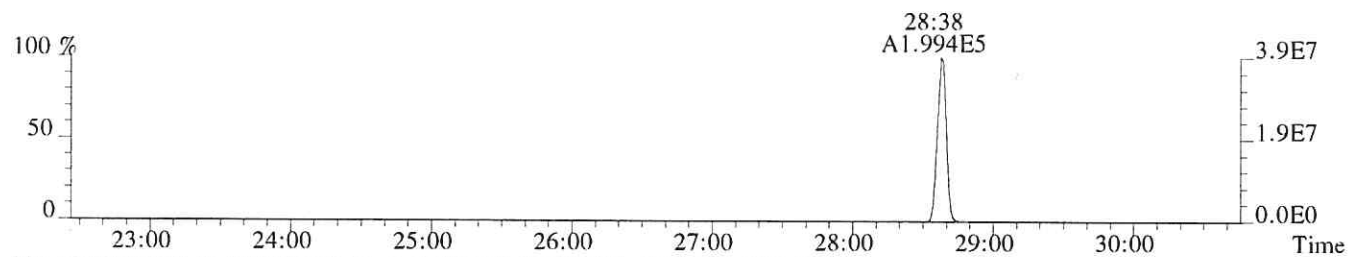
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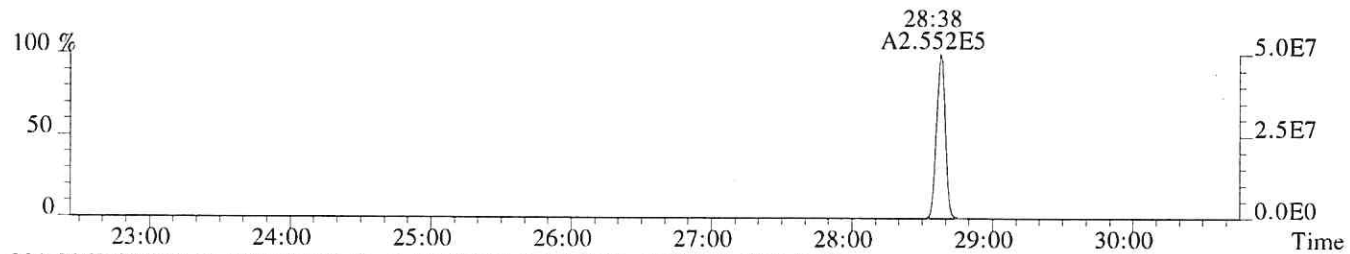
File:P521515 #1-591 Acq:26-APR-2019 03:51:44 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:185657
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,888.0,1.00%,F,T)



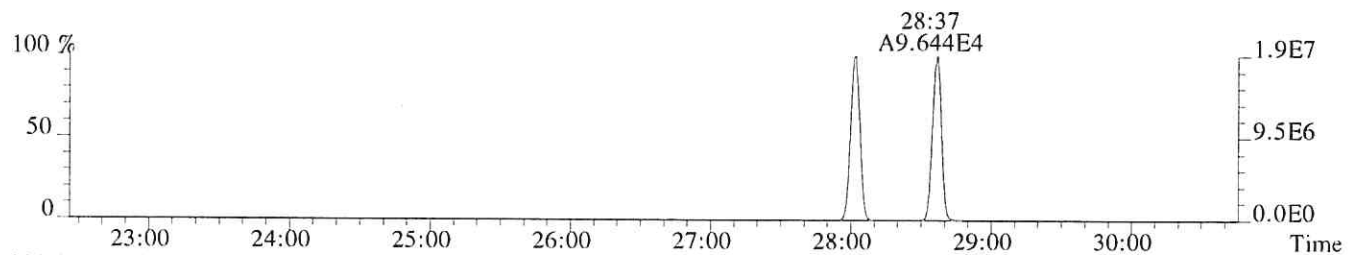
File:P521515 #1-591 Acq:26-APR-2019 03:51:44 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:185657
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2808.0,1.00%,F,T)



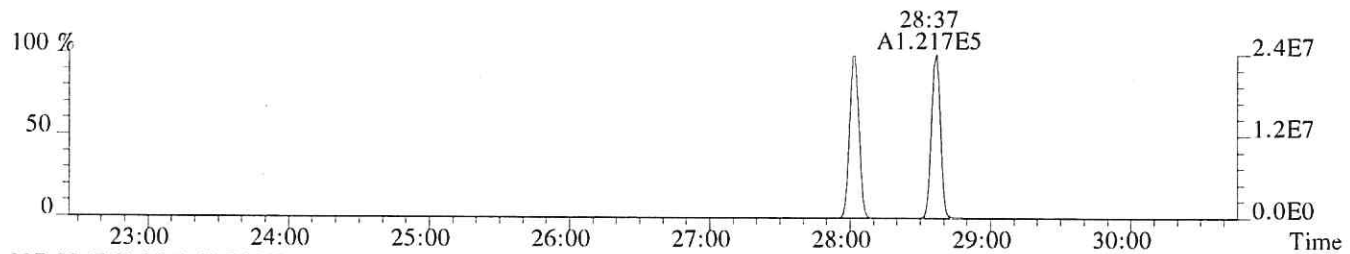
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1288.0,1.00%,F,T)



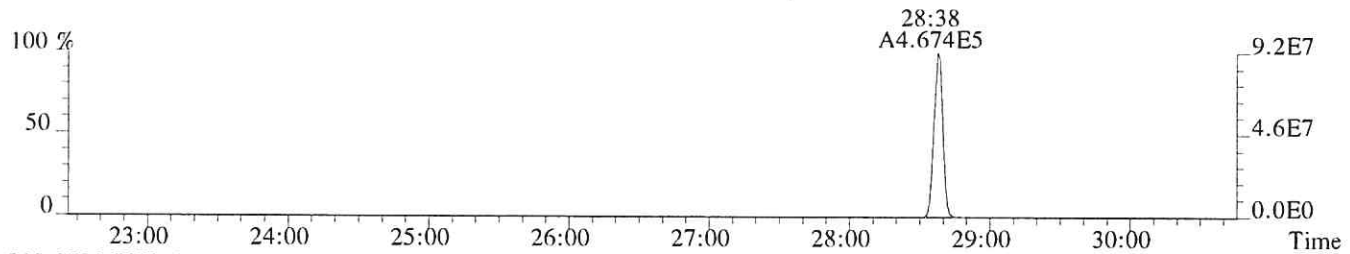
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5504.0,1.00%,F,T)



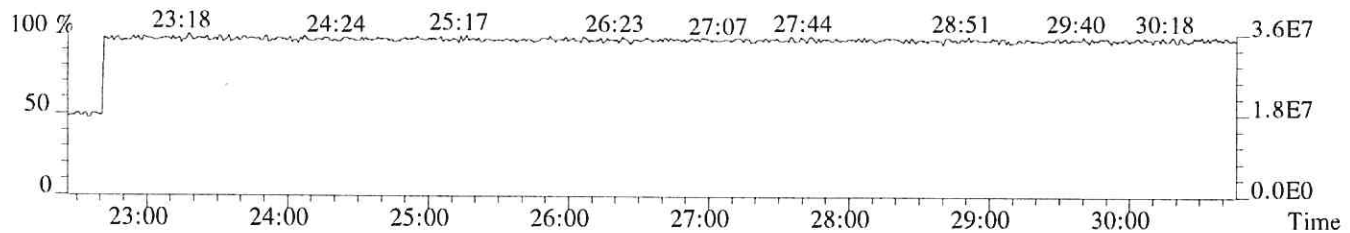
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2336.0,1.00%,F,T)



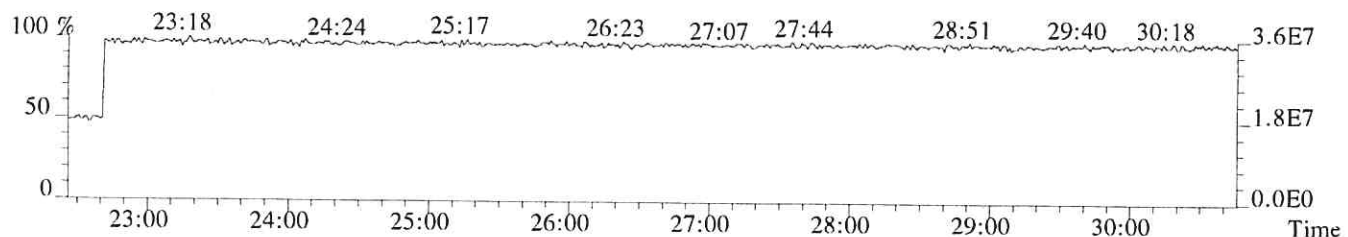
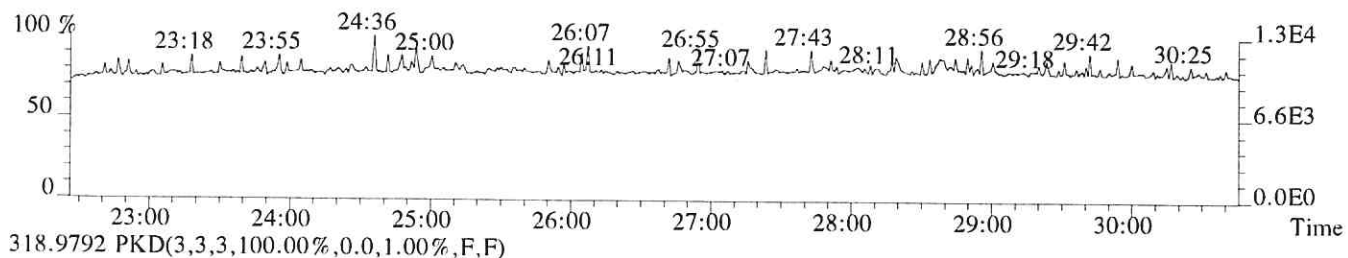
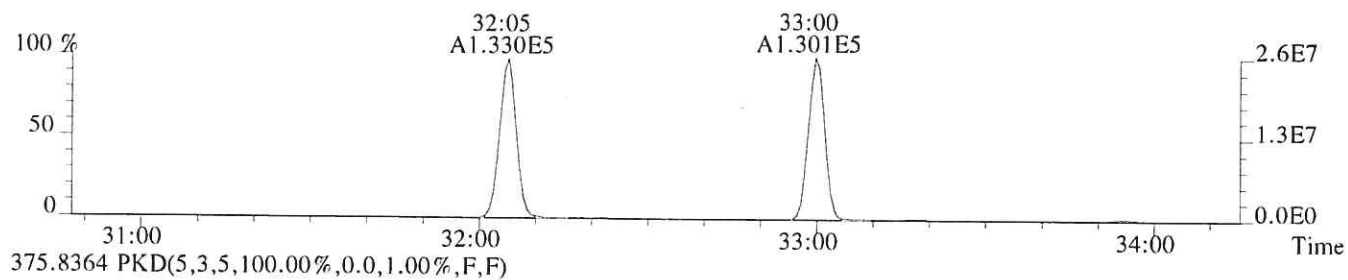
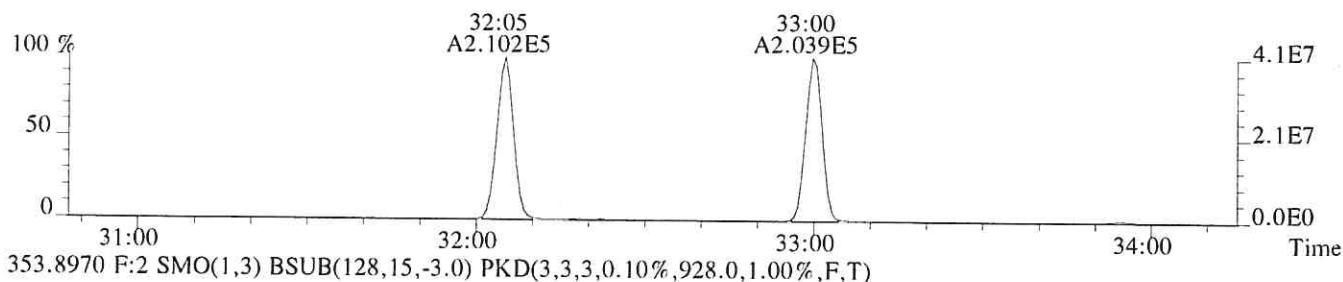
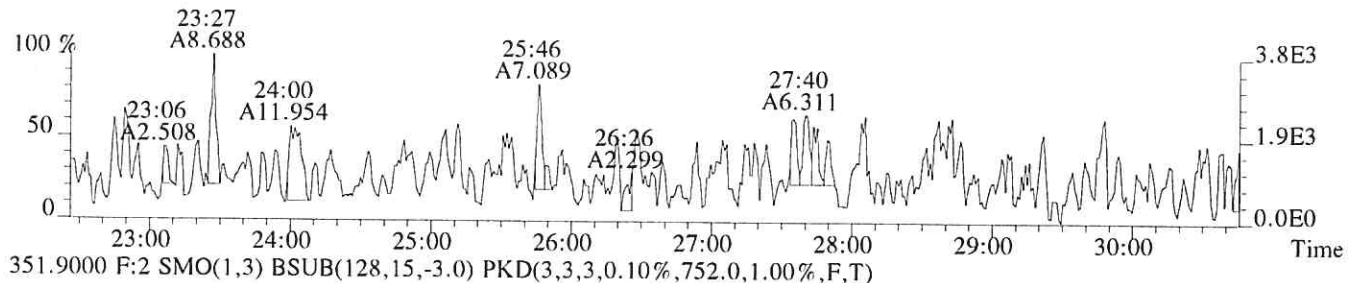
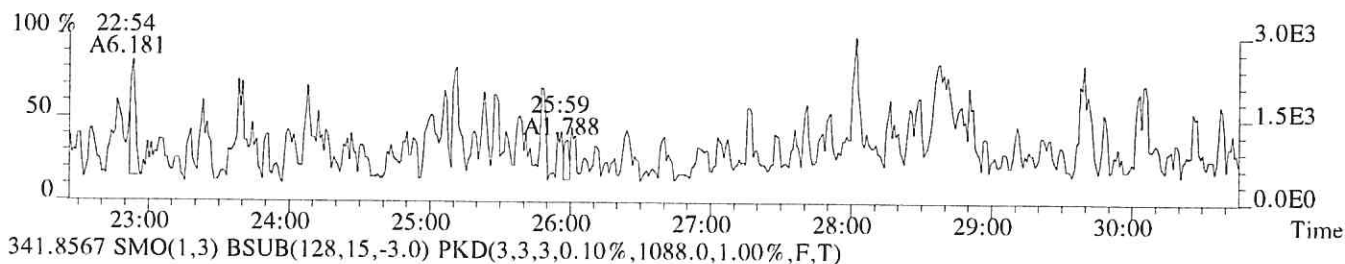
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1408.0,1.00%,F,T)



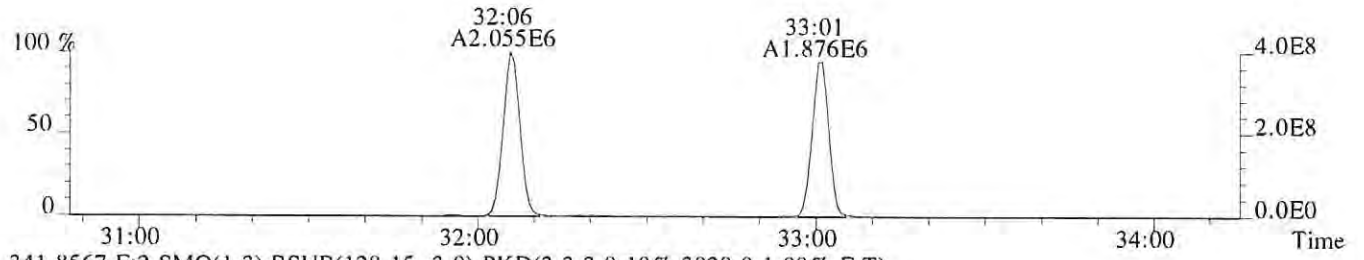
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



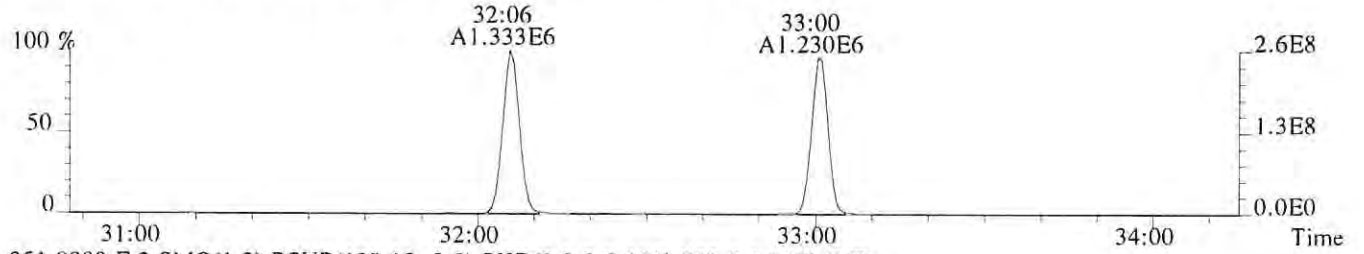
File:P521515 #1-591 Acq:26-APR-2019 03:51:44 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:185657
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1104.0,1.00%,F,T)



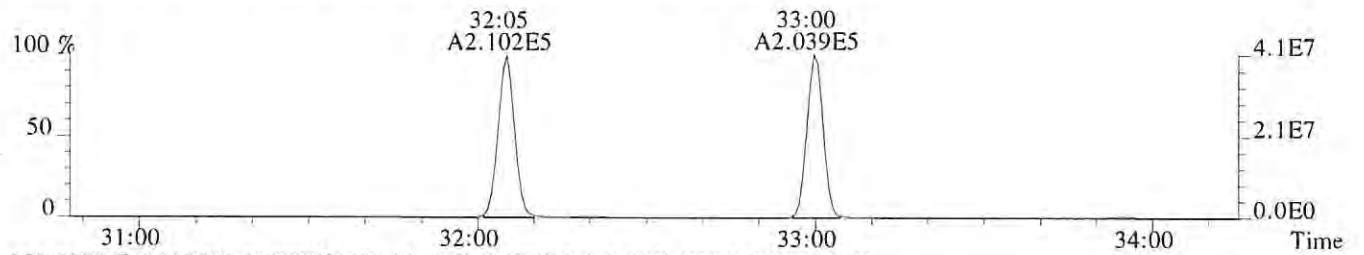
File:P521515 #1-312 Acq:26-APR-2019 03:51:44 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:185657
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5444.0,1.00%,F,T)



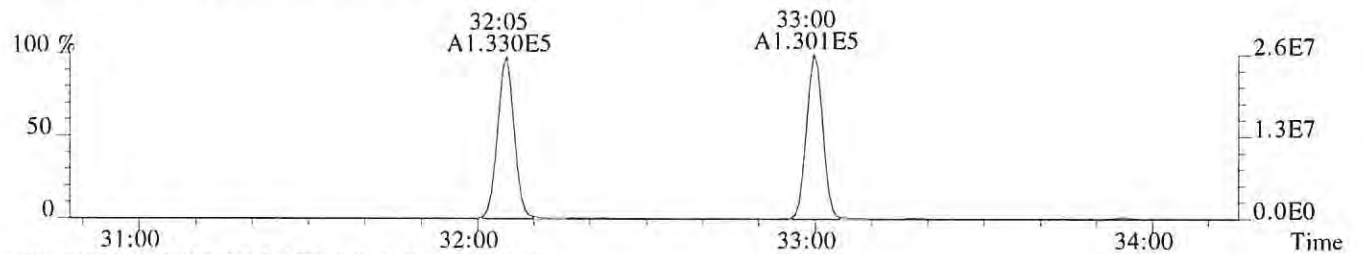
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3828.0,1.00%,F,T)



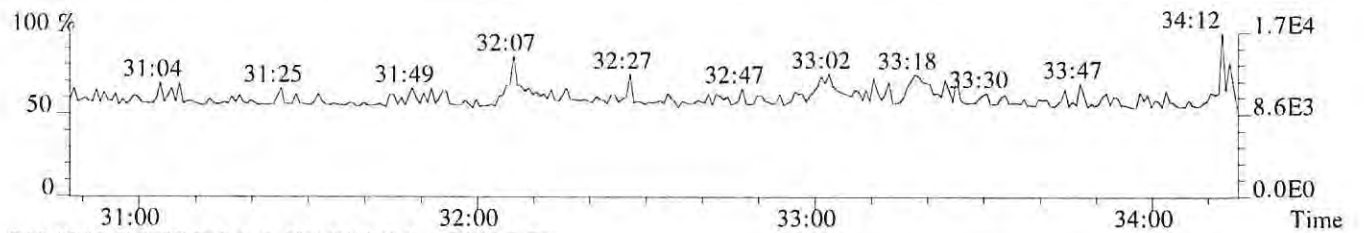
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,752.0,1.00%,F,T)



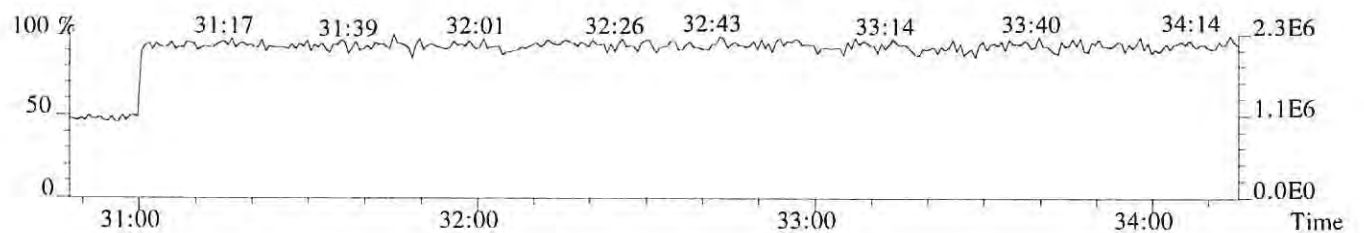
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,928.0,1.00%,F,T)



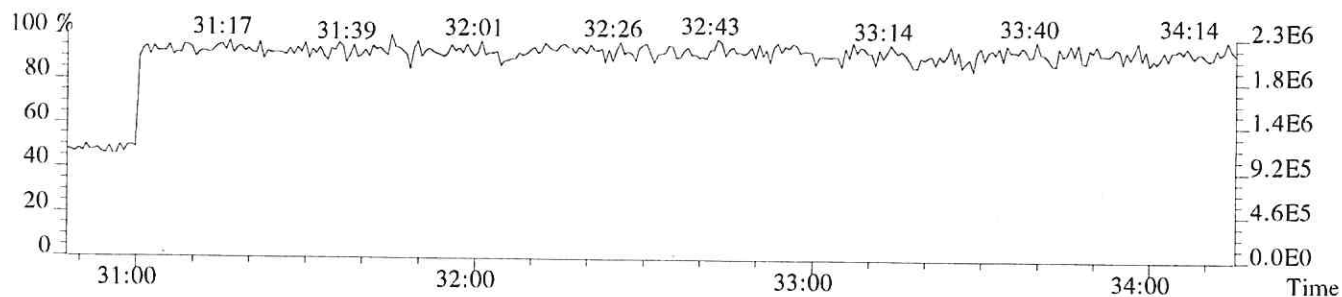
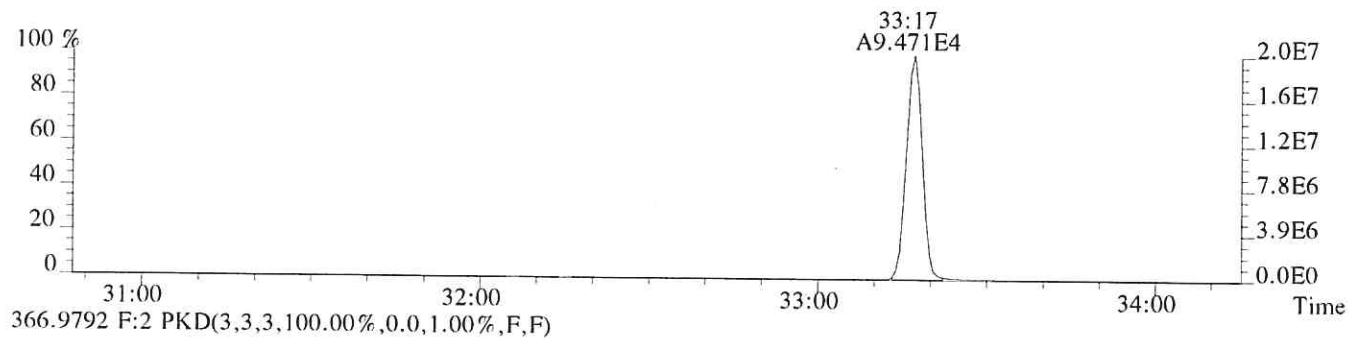
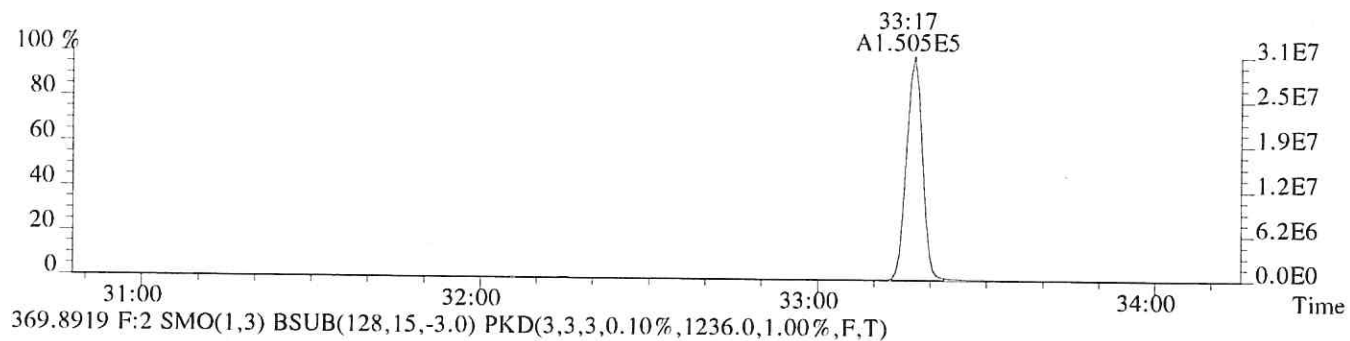
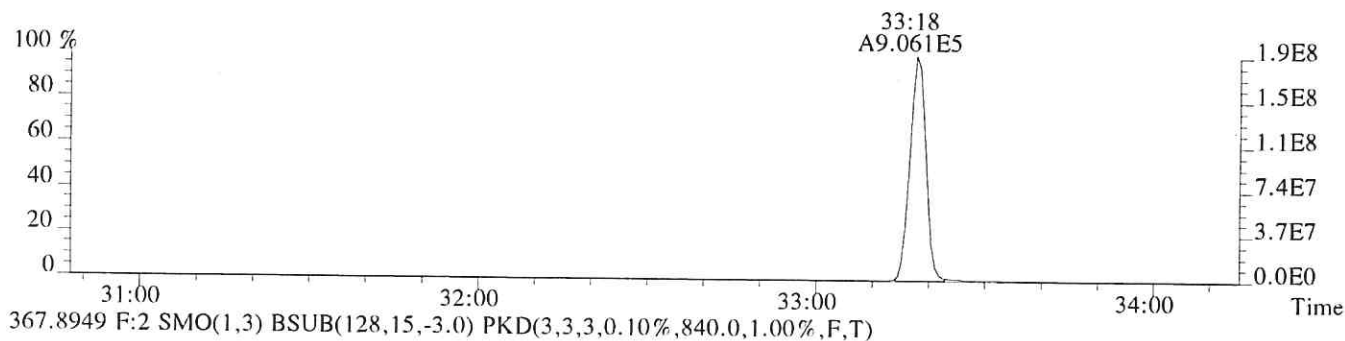
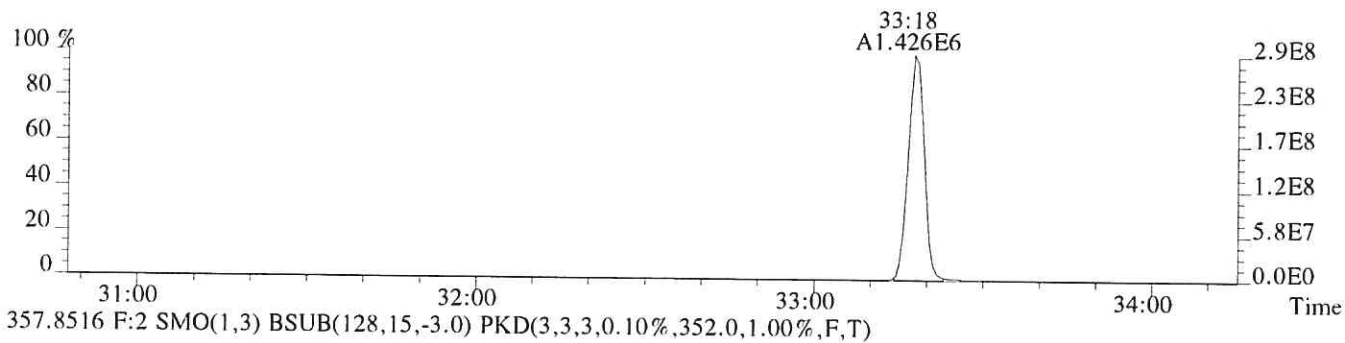
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



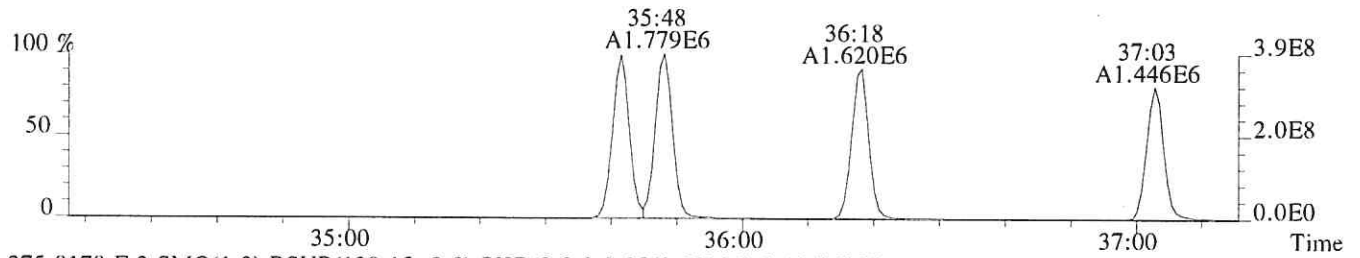
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



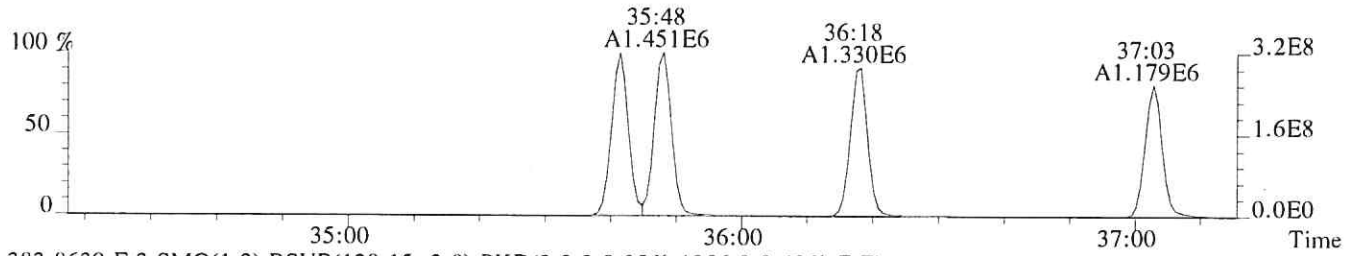
File: P521515 #1-312 Acq:26-APR-2019 03:51:44 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:185657
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,924.0,1.00%,F,T)



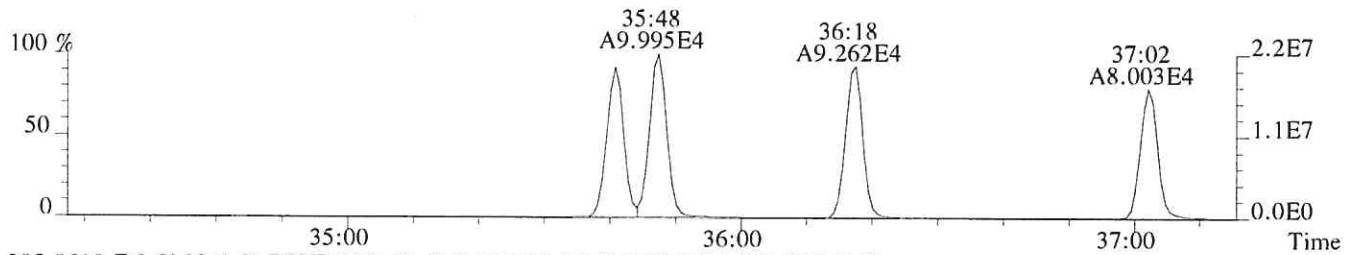
File:P521515 #1-268 Acq:26-APR-2019 03:51:44 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:185657
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,6616.0,0.40%,F,T)



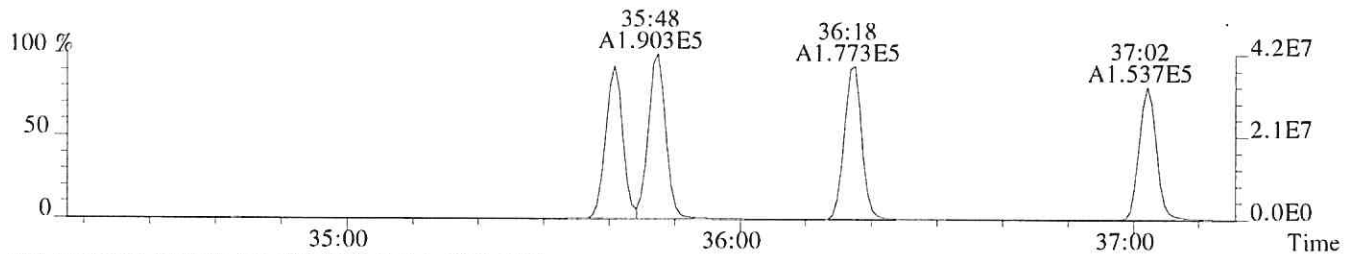
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2832.0,0.40%,F,T)



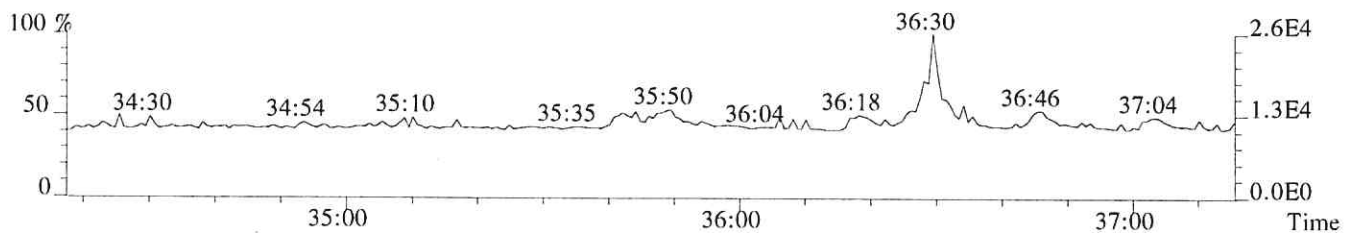
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1356.0,0.40%,F,T)



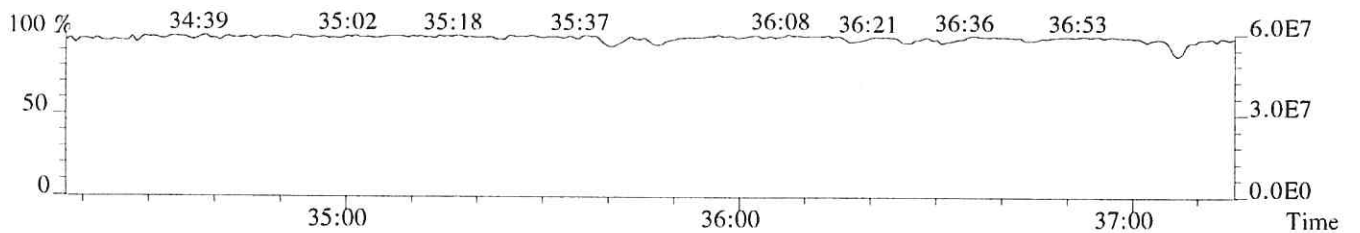
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2720.0,0.40%,F,T)



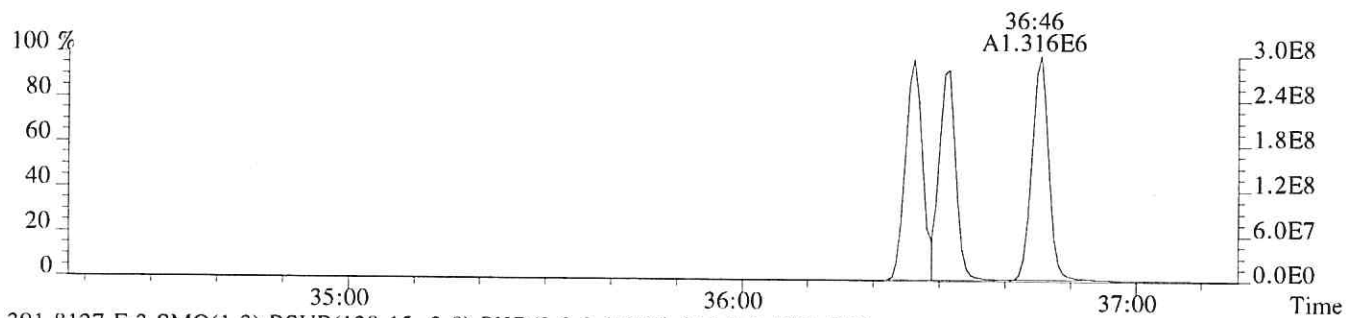
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



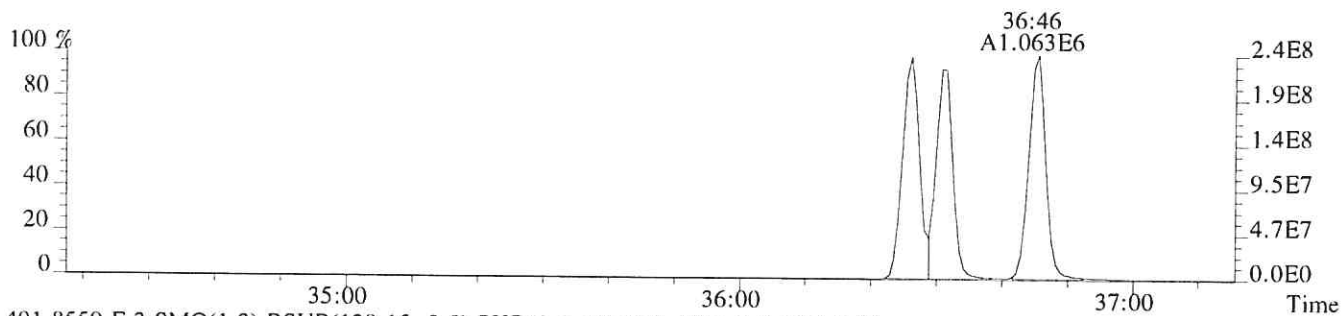
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



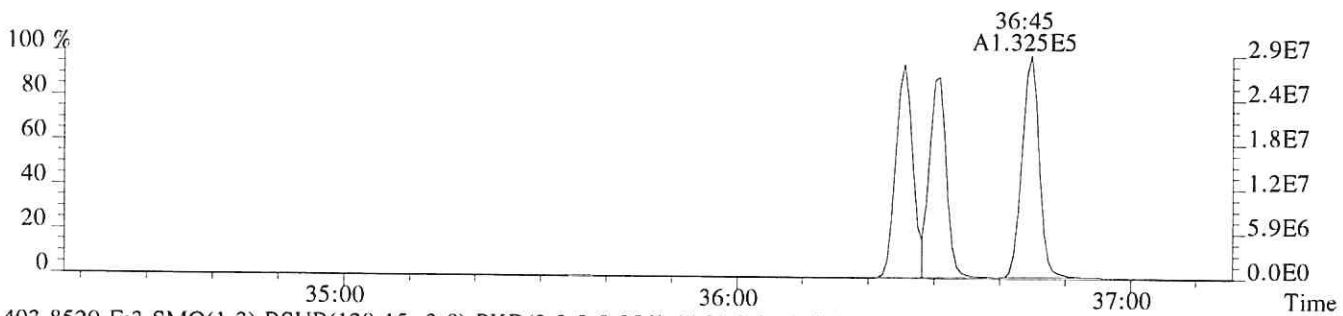
File:P521515 #1-268 Acq:26-APR-2019 03:51:44 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:185657
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,652.0,0.40%,F,T)



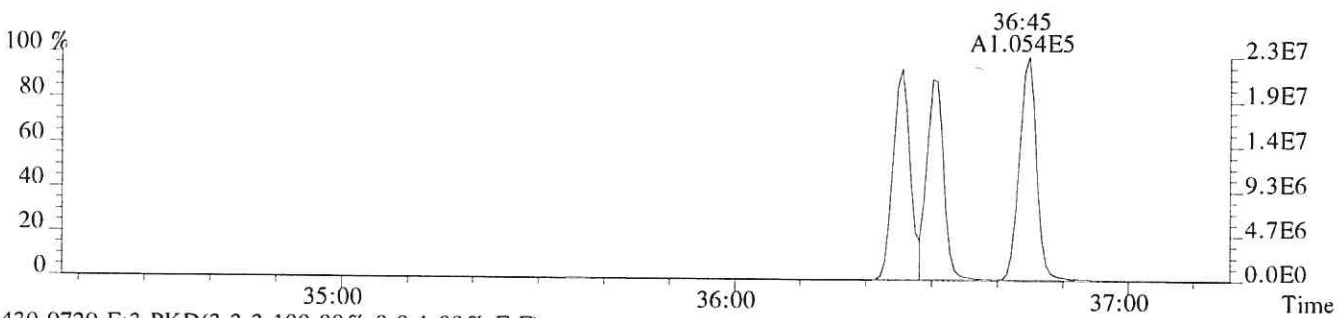
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,544.0,0.40%,F,T)



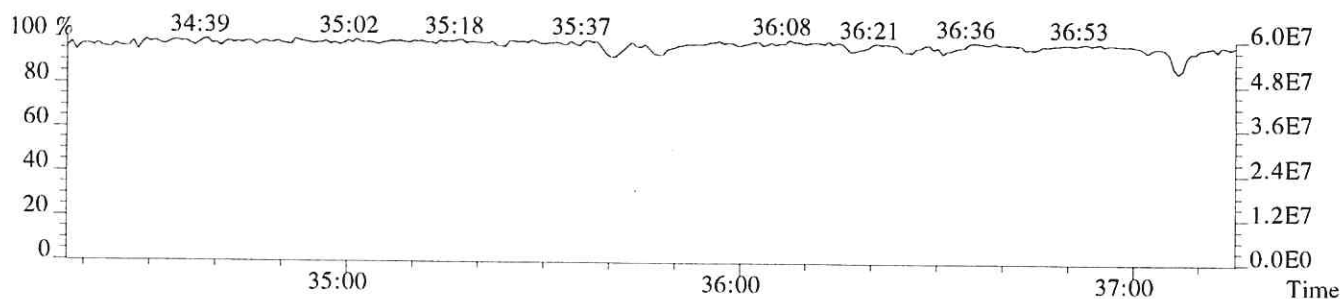
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1076.0,0.40%,F,T)



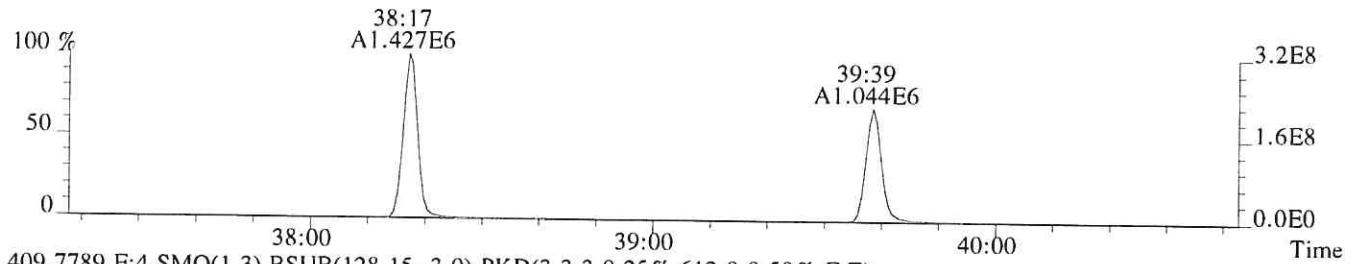
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1164.0,0.40%,F,T)



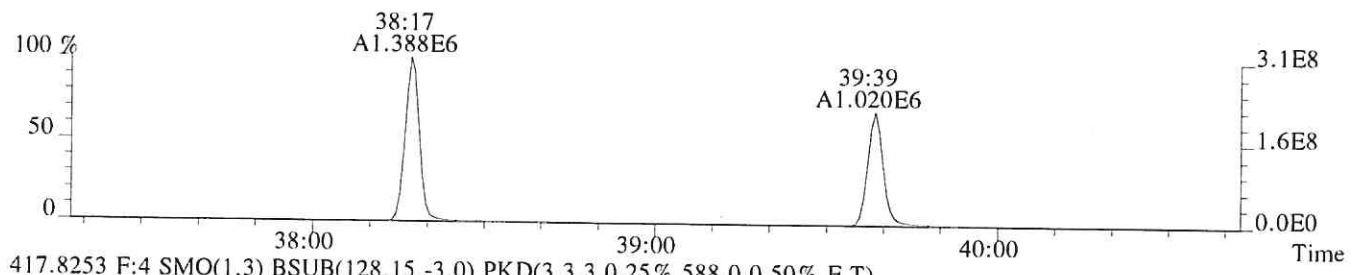
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



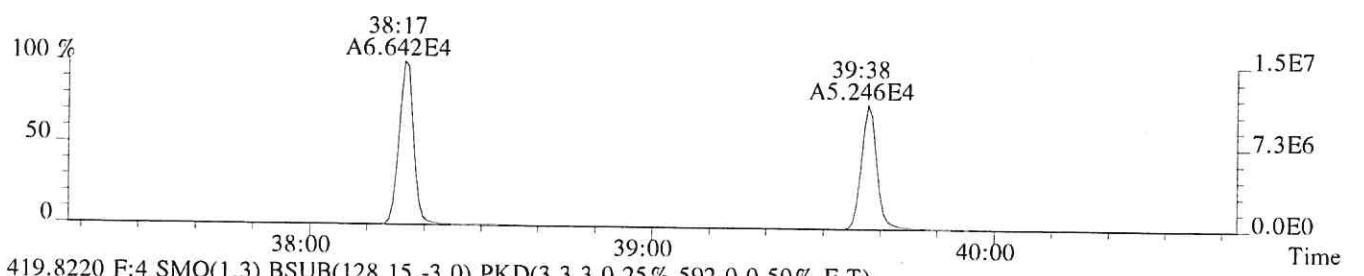
File:P521515 #1-308 Acq:26-APR-2019 03:51:44 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:185657
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,804.0,0.50%,F,T)



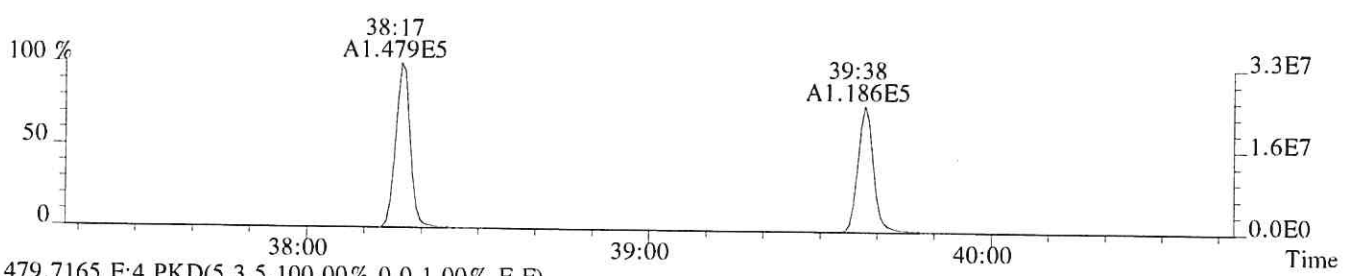
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,612.0,0.50%,F,T)



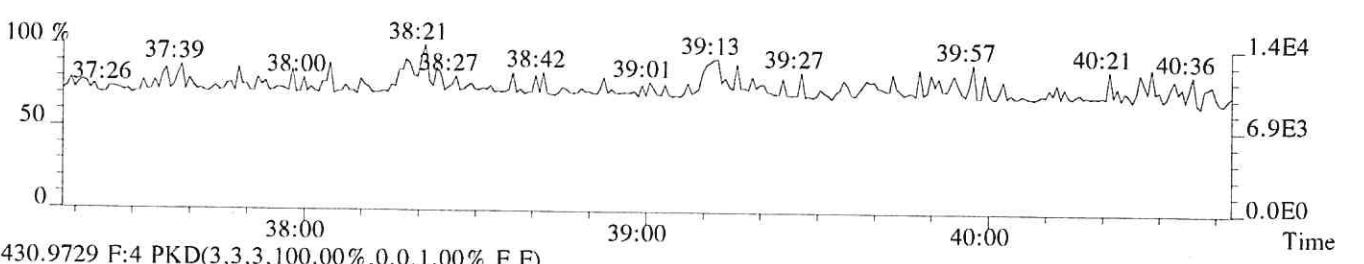
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,588.0,0.50%,F,T)



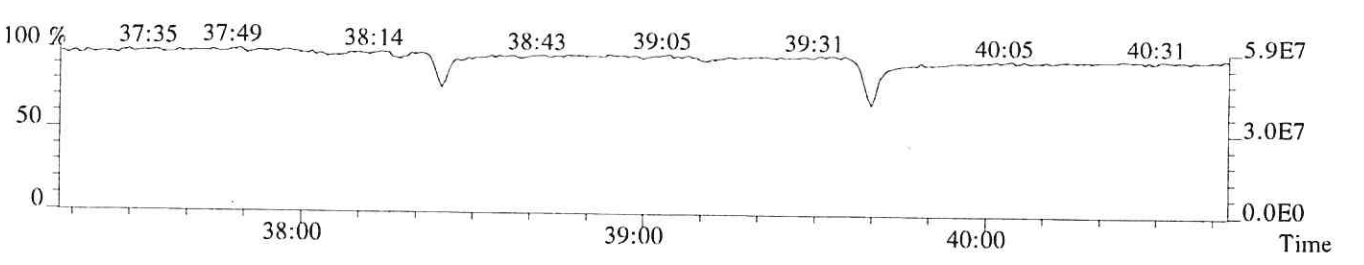
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,592.0,0.50%,F,T)



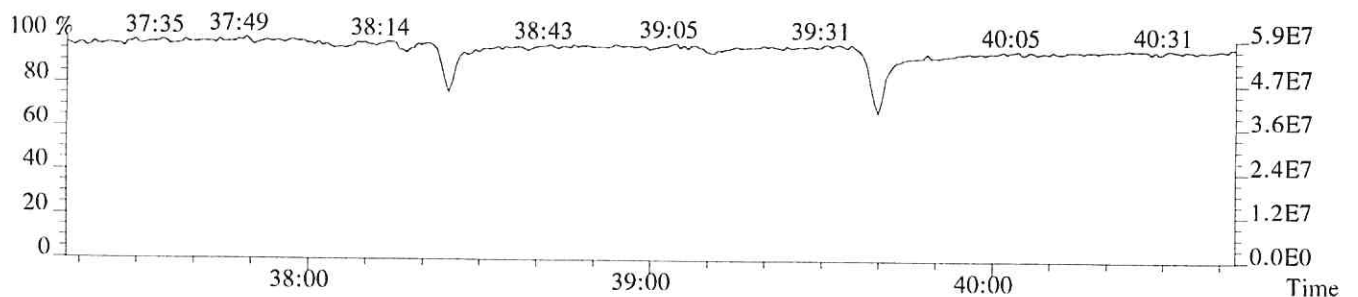
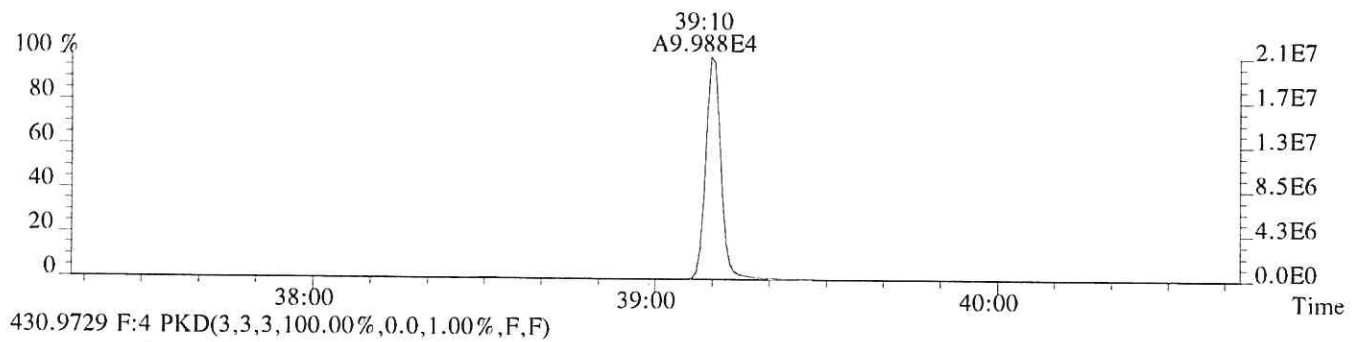
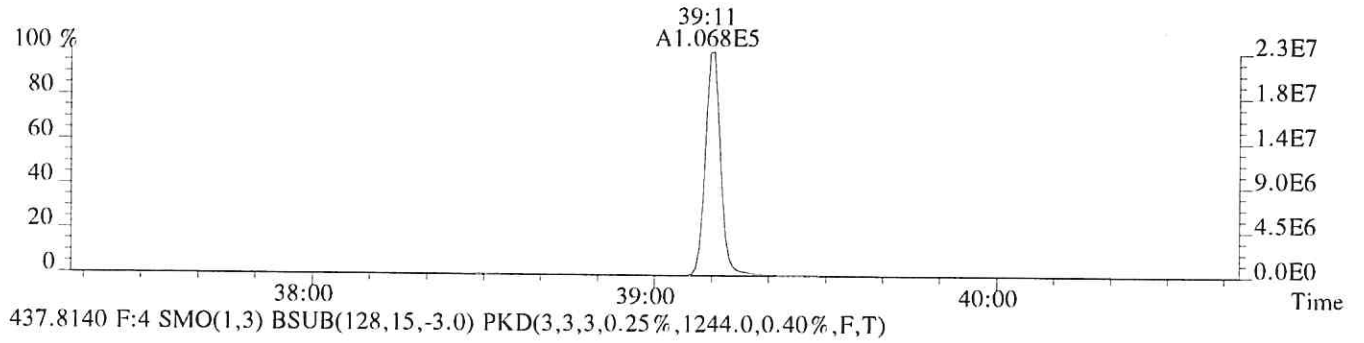
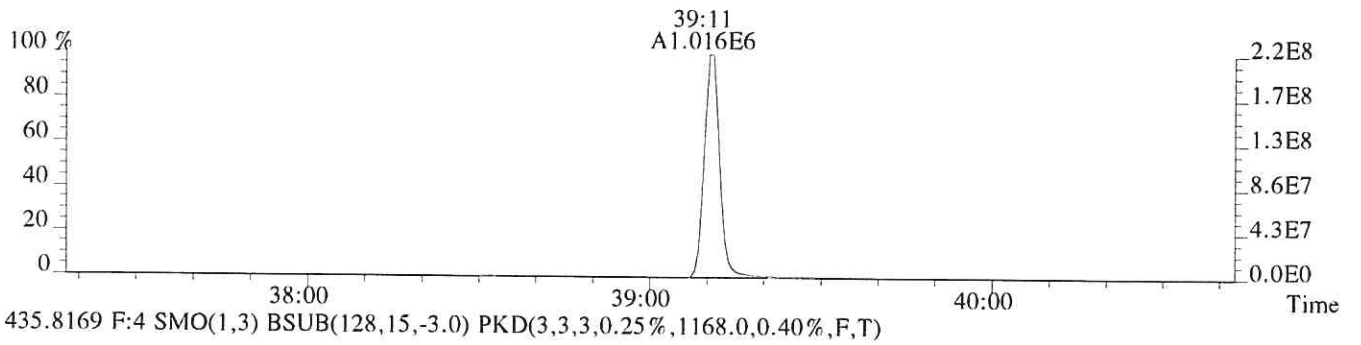
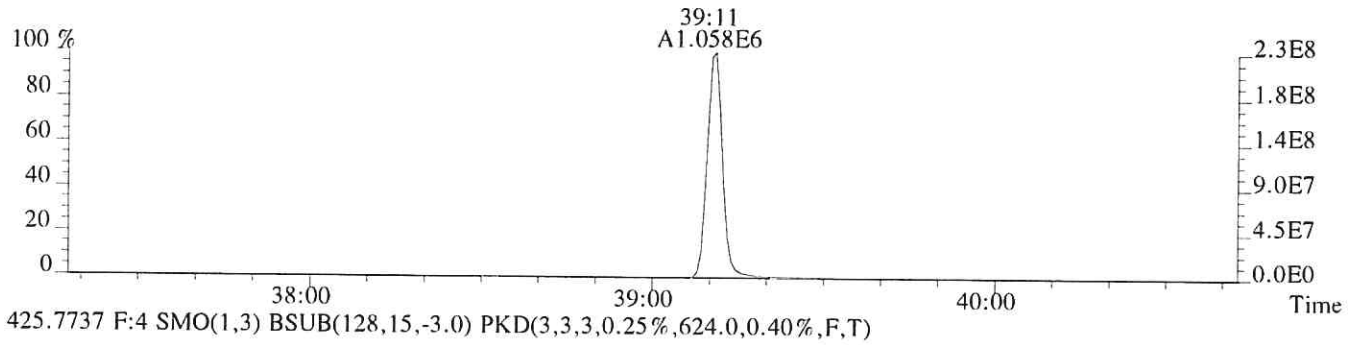
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



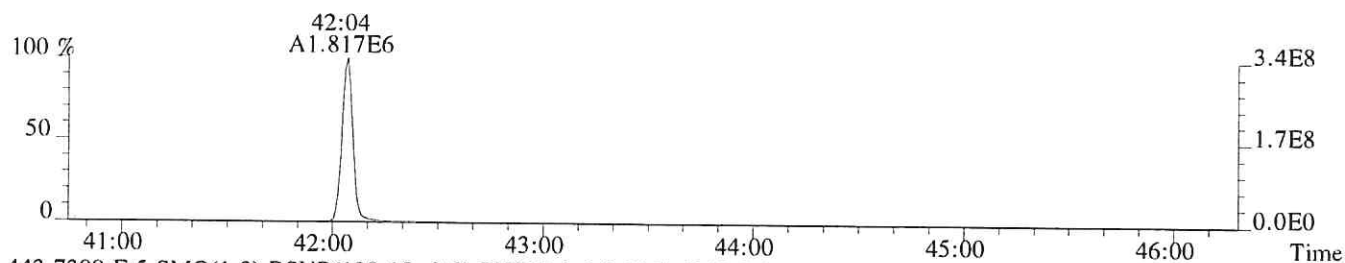
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



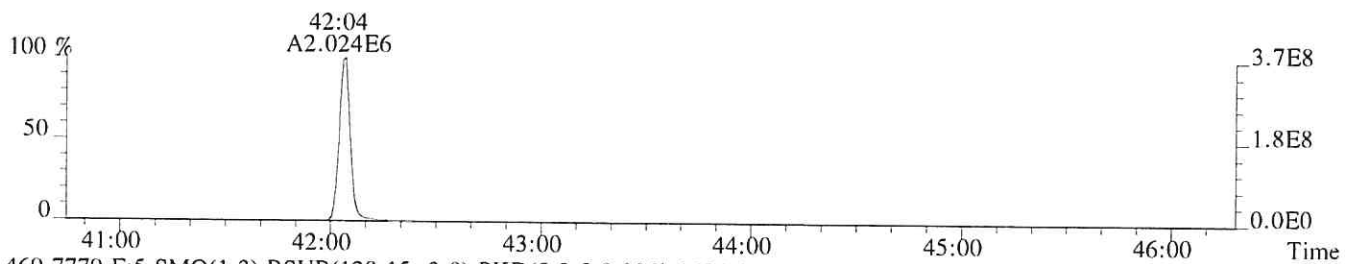
File:P521515 #1-308 Acq:26-APR-2019 03:51:44 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:185657
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,628.0,0.40%,F,T)



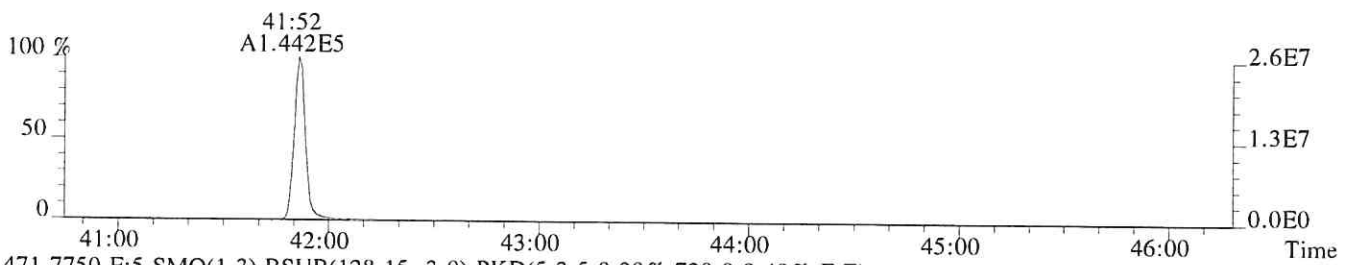
File:P521515 #1-501 Acq:26-APR-2019 03:51:44 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:185657
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,736.0,0.40%,F,T)



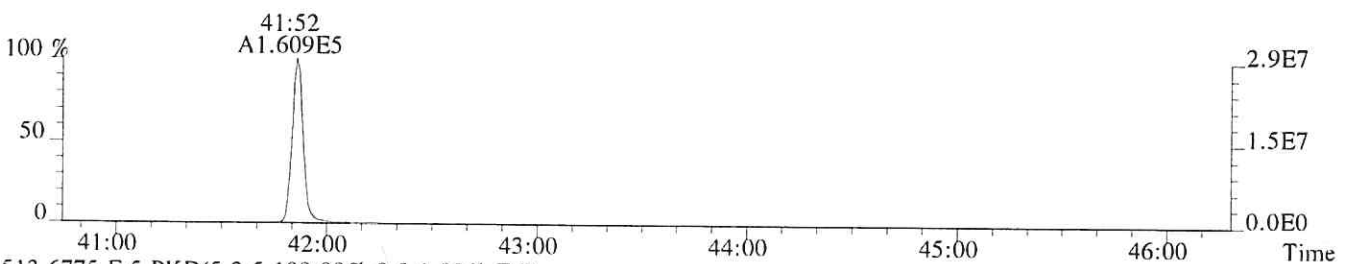
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1248.0,0.40%,F,T)



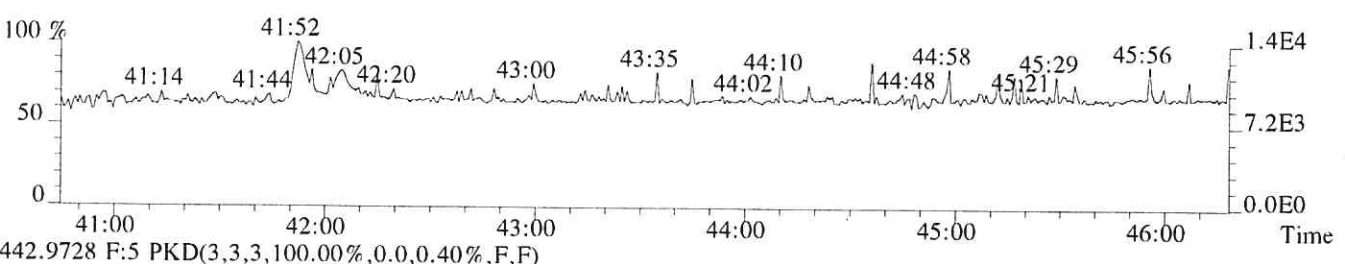
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1404.0,0.40%,F,T)



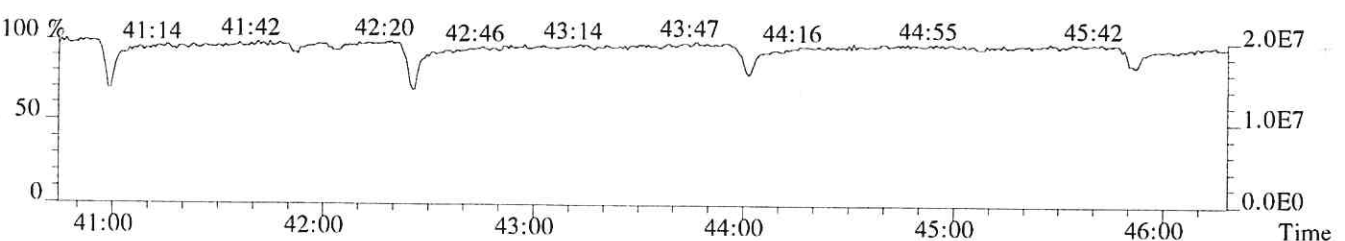
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,720.0,0.40%,F,T)



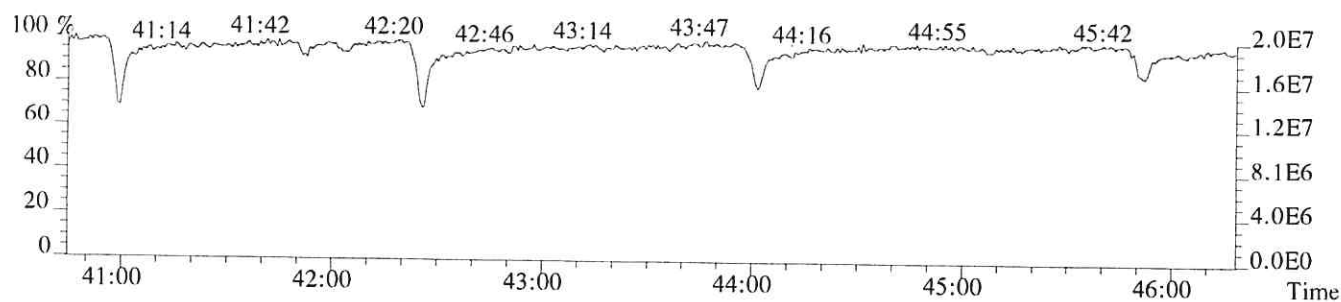
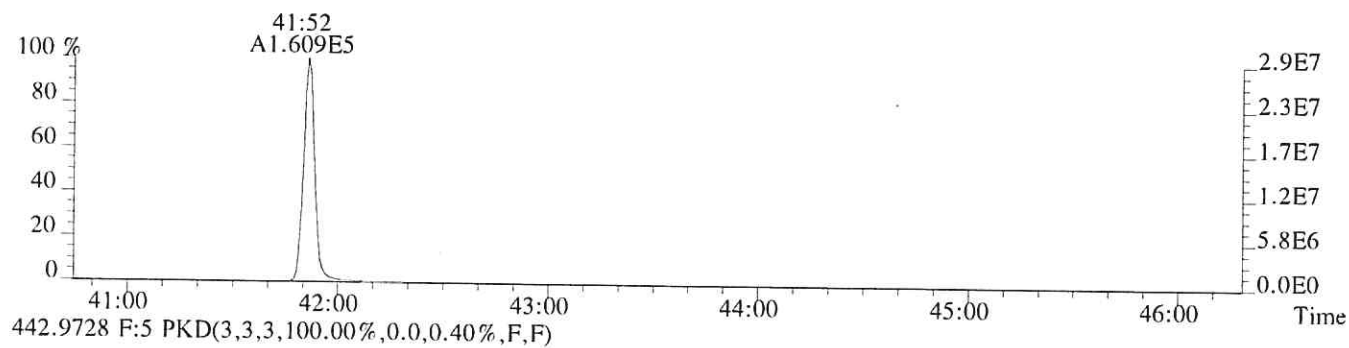
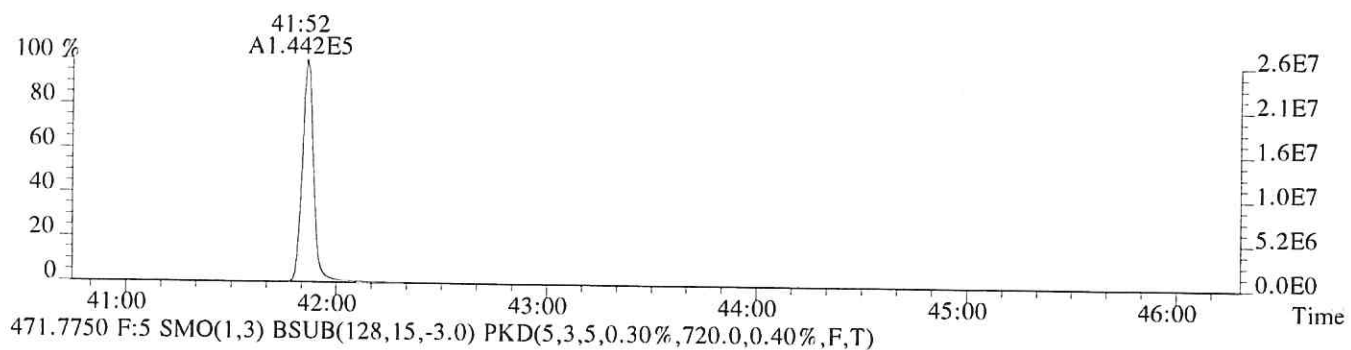
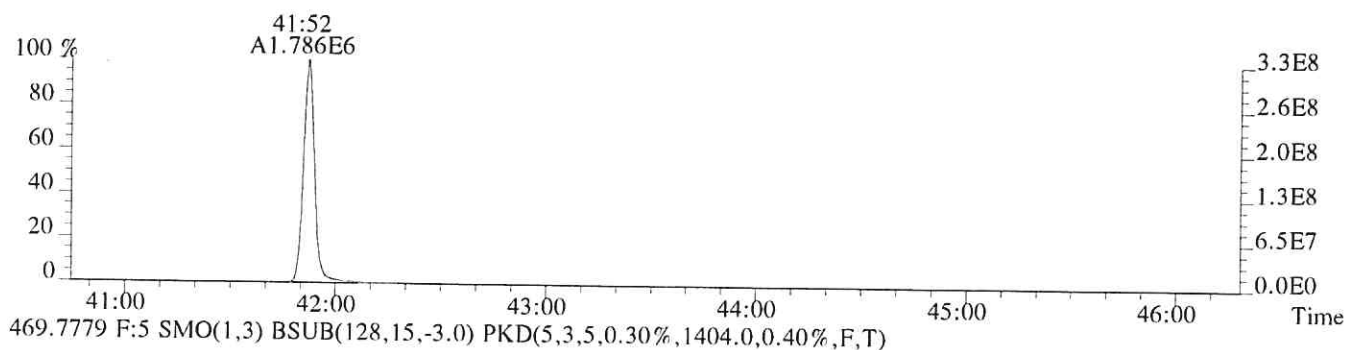
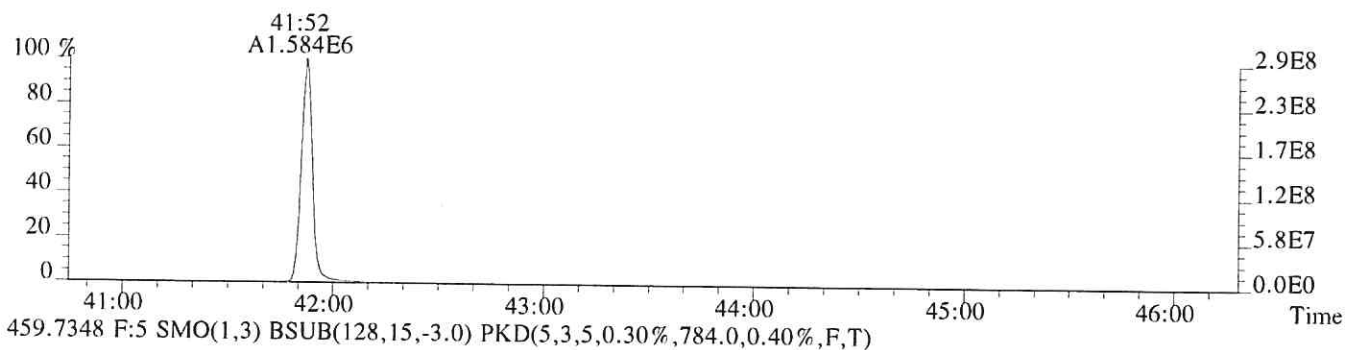
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



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



File:P521515 #1-501 Acq:26-APR-2019 03:51:44 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:185657
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,516.0,0.40%,F,T)



USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 04/25/17

Instrument ID: E-HRMS-07

GC Column ID: DB-5MSUI

VER Data Filename: P521518

Analysis Date: 26-APR-19 Time: 06:25:55

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (4)
2,3,7,8-TCDD	M/M+2	0.79	0.65-0.89	9.6	7.8 - 12.9	-4.4
1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.32-1.78	49	39 - 65	-1.5
1,2,3,4,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	51	39 - 64	1.8
1,2,3,6,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	50	39 - 64	-0.6
1,2,3,7,8,9-HxCDD	M+2/M+4	1.29	1.05-1.43	50	41 - 61	1.0
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.06	0.88-1.20	51	43 - 58	1.6
OCDD	M+2/M+4	0.89	0.76-1.02	102	79 - 126	1.8
2,3,7,8-TCDF	M/M+2	0.75	0.65-0.89	9.4	8.4 - 12.0	-5.6
1,2,3,7,8-PeCDF	M+2/M+4	1.53	1.32-1.78	50	41 - 60	0.7
2,3,4,7,8-PeCDF	M+2/M+4	1.53	1.32-1.78	50	41 - 61	0.6
1,2,3,4,7,8-HxCDF	M+2/M+4	1.22	1.05-1.43	51	45 - 56	2.1
1,2,3,6,7,8-HxCDF	M+2/M+4	1.21	1.05-1.43	51	44 - 57	1.3
1,2,3,7,8,9-HxCDF	M+2/M+4	1.22	1.05-1.43	51	45 - 56	2.0
2,3,4,6,7,8-HxCDF	M+2/M+4	1.21	1.05-1.43	51	44 - 57	2.2
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.01	0.88-1.20	51	45 - 55	2.4
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.00	0.88-1.20	51	43 - 58	1.4
OCDF	M+2/M+4	0.87	0.76-1.02	103	63 - 159	3.2

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range as specified in Table 6, Method 1613B, under VER.

(4) 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, Method 8290

12/2012
1613F4A.FRM

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 04/25/17

Instrument ID: E-HRMS-07

GC Column ID: DB-5MSUI

VER Data Filename: P521518

Analysis Date: 26-APR-19 Time: 06:25:55

LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (5)
13C-2,3,7,8-TCDD	M/M+2	0.77	0.65-0.89	98	82 - 121	-2.4
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.59	1.32-1.78	98	62 - 160	-2.0
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	97	85 - 117	-3.1
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	105	85 - 118	5.3
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.06	0.88-1.20	100	72 - 138	0.3
13C-OCDD	M+2/M+4	0.90	0.76-1.02	203	96 - 415	1.6
13C-2,3,7,8-TCDF	M/M+2	0.79	0.65-0.89	99	71 - 140	-0.9
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.57	1.32-1.78	99	76 - 130	-1.0
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.56	1.32-1.78	98	77 - 130	-2.1
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.51	0.43-0.59	100	76 - 131	0.0
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.52	0.43-0.59	101	70 - 143	1.3
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.53	0.43-0.59	99	74 - 135	-0.6
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.52	0.43-0.59	100	73 - 137	-0.1
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.45	0.37-0.51	100	78 - 129	0.0
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.45	0.37-0.51	102	77 - 129	2.2
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD				9.5	7.8 - 12.7	-5.2

- (1) See Table 8, Method 1613B, for m/z specifications.
- (2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.
- (3) Contract-required concentration range, as specified in Table 6, Method 1613B, under VER.
- (4) No ion abundance ratio; report concentration found.
- (5) The beginning CCAL %RSD for the labeled standard must not exceed +/- 30% Section 7.7.4.2. The ending CCAL must not exceed +/- 35%, Sec 8.3.2.4 (8290)

12/2012
1613F4B.FRM

ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
188969

Run #9 Filename P521518 Samp: 1 Inj: 1 Acquired: 26-APR-19 06:25:55
Processed: 26-APR-19 08:47:44 Sample ID: 2ND SOURCE

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	27:50	5.936e+03	7.886e+03	0.75	yes	no	0.962
2 Unk	1,2,3,7,8-PeCDF	32:06	4.933e+04	3.223e+04	1.53	yes	no	0.968
3 Unk	2,3,4,7,8-PeCDF	33:00	4.496e+04	2.932e+04	1.53	yes	no	0.919
4 Unk	1,2,3,4,7,8-HxCDF	35:42	4.073e+04	3.344e+04	1.22	yes	no	1.161
5 Unk	1,2,3,6,7,8-HxCDF	35:48	4.222e+04	3.485e+04	1.21	yes	no	1.073
6 Unk	2,3,4,6,7,8-HxCDF	36:18	3.843e+04	3.186e+04	1.21	yes	no	1.069
7 Unk	1,2,3,7,8,9-HxCDF	37:03	3.380e+04	2.780e+04	1.22	yes	no	1.096
8 Unk	1,2,3,4,6,7,8-HpCDF	38:17	3.396e+04	3.348e+04	1.01	yes	no	1.281
9 Unk	1,2,3,4,7,8,9-HpCDF	39:39	2.594e+04	2.584e+04	1.00	yes	no	1.192
10 Unk	OCDF	42:04	4.383e+04	5.010e+04	0.87	yes	no	1.204
11 Unk	2,3,7,8-TCDD	28:38	4.910e+03	6.228e+03	0.79	yes	no	1.077
12 Unk	1,2,3,7,8-PeCDD	33:18	3.480e+04	2.212e+04	1.57	yes	no	0.971
13 Unk	1,2,3,4,7,8-HxCDD	36:26	2.977e+04	2.384e+04	1.25	yes	no	1.024
14 Unk	1,2,3,6,7,8-HxCDD	36:31	3.124e+04	2.513e+04	1.24	yes	no	1.038
15 Unk	1,2,3,7,8,9-HxCDD	36:45	3.182e+04	2.472e+04	1.29	yes	no	1.055
16 Unk	1,2,3,4,6,7,8-HpCDD	39:11	2.552e+04	2.409e+04	1.06	yes	no	0.989
17 Unk	OCDD	41:52	3.960e+04	4.460e+04	0.89	yes	no	1.094
18 IS	13C-2,3,7,8-TCDF	27:49	6.700e+04	8.523e+04	0.79	yes	no	1.287
19 IS	13C-1,2,3,7,8-PeCDF	32:05	1.023e+05	6.506e+04	1.57	yes	no	1.416
20 IS	13C-2,3,4,7,8-PeCDF	33:00	9.797e+04	6.263e+04	1.56	yes	no	1.374
21 IS	13C-1,2,3,4,7,8-HxCDF	35:41	4.224e+04	8.291e+04	0.51	yes	no	1.114
22 IS	13C-1,2,3,6,7,8-HxCDF	35:47	4.824e+04	9.346e+04	0.52	yes	no	1.245
23 IS	13C-2,3,4,6,7,8-HxCDF	36:18	4.407e+04	8.455e+04	0.52	yes	no	1.146
24 IS	13C-1,2,3,7,8,9-HxCDF	37:02	3.799e+04	7.222e+04	0.53	yes	no	0.986
25 IS	13C-1,2,3,4,6,7,8-HpCDF	38:17	3.172e+04	7.112e+04	0.45	yes	no	0.915
26 IS	13C-1,2,3,4,7,8,9-HpCDF	39:38	2.640e+04	5.925e+04	0.45	yes	no	0.746
27 IS	13C-2,3,7,8-TCDD	28:37	4.695e+04	6.121e+04	0.77	yes	no	0.929
28 IS	13C-1,2,3,7,8-PeCDD	33:17	7.297e+04	4.602e+04	1.59	yes	no	1.017
29 IS	13C-1,2,3,4,7,8-HxCDD	36:26	5.762e+04	4.528e+04	1.27	yes	no	0.945
30 IS	13C-1,2,3,6,7,8-HxCDD	36:30	6.102e+04	4.829e+04	1.26	yes	no	0.924
31 IS	13C-1,2,3,4,6,7,8-HpCDD	39:10	5.082e+04	4.795e+04	1.06	yes	no	0.876
32 IS	13C-OCDD	41:51	7.180e+04	7.938e+04	0.90	yes	no	0.662
33 RS/RT	13C-1,2,3,4-TCDD	28:02	5.303e+04	6.633e+04	0.80	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	36:44	6.345e+04	4.893e+04	1.30	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	28:38	1.143e+04				no	1.010

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
188969

Run #9 Filename P521518 Samp: 1 Inj: 1 Acquired: 26-APR-19 06:25:55
Processed: 26-APR-19 08:47:44 LAB. ID: 2ND SOURCE

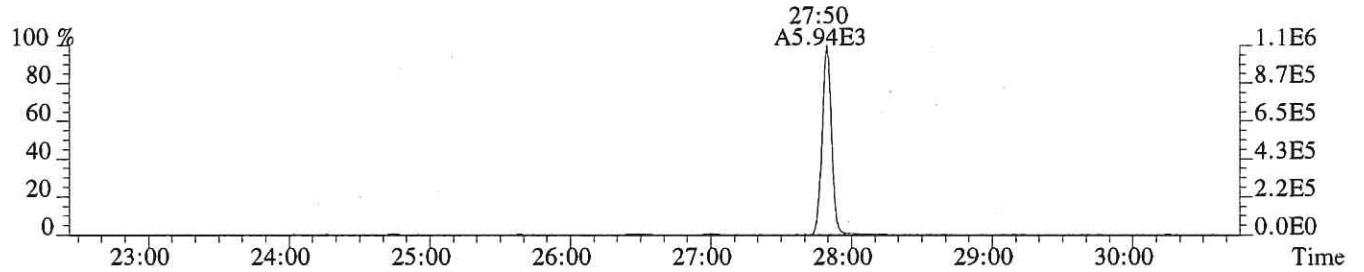
	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	1.08e+06	5.84e+02	1.9e+03	1.46e+06	1.12e+03	1.3e+03
2	1,2,3,7,8-PeCDF	9.36e+06	1.06e+03	8.8e+03	6.16e+06	2.21e+03	2.8e+03
3	2,3,4,7,8-PeCDF	8.94e+06	1.06e+03	8.4e+03	5.84e+06	2.21e+03	2.6e+03
4	1,2,3,4,7,8-HxCDF	8.74e+06	7.40e+02	1.2e+04	7.06e+06	1.12e+03	6.3e+03
5	1,2,3,6,7,8-HxCDF	8.69e+06	7.40e+02	1.2e+04	7.30e+06	1.12e+03	6.5e+03
6	2,3,4,6,7,8-HxCDF	8.08e+06	7.40e+02	1.1e+04	6.76e+06	1.12e+03	6.1e+03
7	1,2,3,7,8,9-HxCDF	7.16e+06	7.40e+02	9.7e+03	5.84e+06	1.12e+03	5.2e+03
8	1,2,3,4,6,7,8-HpCDF	7.67e+06	8.96e+02	8.6e+03	7.56e+06	5.68e+02	1.3e+04
9	1,2,3,4,7,8,9-HpCDF	5.26e+06	8.96e+02	5.9e+03	5.20e+06	5.68e+02	9.1e+03
10	OCDF	7.66e+06	6.64e+02	1.2e+04	8.71e+06	8.48e+02	1.0e+04
11	2,3,7,8-TCDD	9.25e+05	2.31e+03	4.0e+02	1.21e+06	1.17e+03	1.0e+03
12	1,2,3,7,8-PeCDD	6.89e+06	1.21e+03	5.7e+03	4.43e+06	6.04e+02	7.3e+03
13	1,2,3,4,7,8-HxCDD	6.67e+06	8.08e+02	8.3e+03	5.30e+06	8.68e+02	6.1e+03
14	1,2,3,6,7,8-HxCDD	6.56e+06	8.08e+02	8.1e+03	5.28e+06	8.68e+02	6.1e+03
15	1,2,3,7,8,9-HxCDD	6.43e+06	8.08e+02	8.0e+03	5.19e+06	8.68e+02	6.0e+03
16	1,2,3,4,6,7,8-HpCDD	5.35e+06	4.20e+02	1.3e+04	5.14e+06	4.24e+02	1.2e+04
17	OCDD	7.05e+06	5.92e+02	1.2e+04	7.95e+06	8.52e+02	9.3e+03
18	13C-2,3,7,8-TCDF	1.17e+07	6.62e+03	1.8e+03	1.49e+07	2.69e+03	5.5e+03
19	13C-1,2,3,7,8-PeCDF	1.94e+07	3.88e+02	5.0e+04	1.23e+07	1.00e+03	1.2e+04
20	13C-2,3,4,7,8-PeCDF	1.94e+07	3.88e+02	5.0e+04	1.24e+07	1.00e+03	1.2e+04
21	13C-1,2,3,4,7,8-HxCDF	8.87e+06	7.44e+02	1.2e+04	1.72e+07	1.24e+03	1.4e+04
22	13C-1,2,3,6,7,8-HxCDF	1.00e+07	7.44e+02	1.3e+04	1.96e+07	1.24e+03	1.6e+04
23	13C-2,3,4,6,7,8-HxCDF	9.23e+06	7.44e+02	1.2e+04	1.79e+07	1.24e+03	1.4e+04
24	13C-1,2,3,7,8,9-HxCDF	7.98e+06	7.44e+02	1.1e+04	1.52e+07	1.24e+03	1.2e+04
25	13C-1,2,3,4,6,7,8-HpCDF	7.11e+06	8.76e+02	8.1e+03	1.59e+07	6.24e+02	2.6e+04
26	13C-1,2,3,4,7,8,9-HpCDF	5.34e+06	8.76e+02	6.1e+03	1.20e+07	6.24e+02	1.9e+04
27	13C-2,3,7,8-TCDD	9.10e+06	5.09e+03	1.8e+03	1.18e+07	2.33e+03	5.1e+03
28	13C-1,2,3,7,8-PeCDD	1.41e+07	8.08e+02	1.7e+04	8.89e+06	1.12e+03	7.9e+03
29	13C-1,2,3,4,7,8-HxCDD	1.28e+07	1.74e+03	7.4e+03	9.98e+06	2.67e+03	3.7e+03
30	13C-1,2,3,6,7,8-HxCDD	1.27e+07	1.74e+03	7.3e+03	1.01e+07	2.67e+03	3.8e+03
31	13C-1,2,3,4,6,7,8-HpCDD	1.07e+07	5.48e+02	1.9e+04	1.02e+07	8.36e+02	1.2e+04
32	13C-OCDD	1.28e+07	2.16e+02	5.9e+04	1.42e+07	6.16e+02	2.3e+04
33	13C-1,2,3,4-TCDD	9.92e+06	5.09e+03	1.9e+03	1.23e+07	2.33e+03	5.3e+03
34	13C-1,2,3,7,8,9-HxCDD	1.28e+07	1.74e+03	7.4e+03	1.03e+07	2.67e+03	3.9e+03
35	37Cl-2,3,7,8-TCDD	2.23e+06	1.80e+03	1.2e+03			

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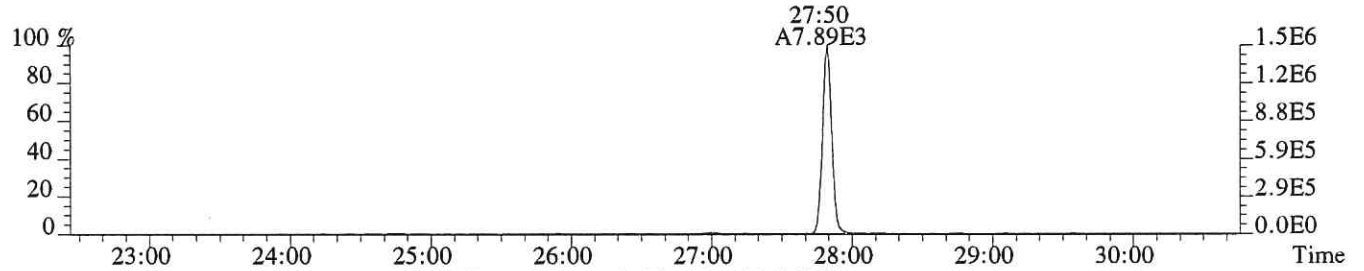
File:P521518 #1-591 Acq:26-APR-2019 06:25:55 Probe EI+ Magnet SIR VG BioTech Mass spectr

Sample#1 Exp:188969

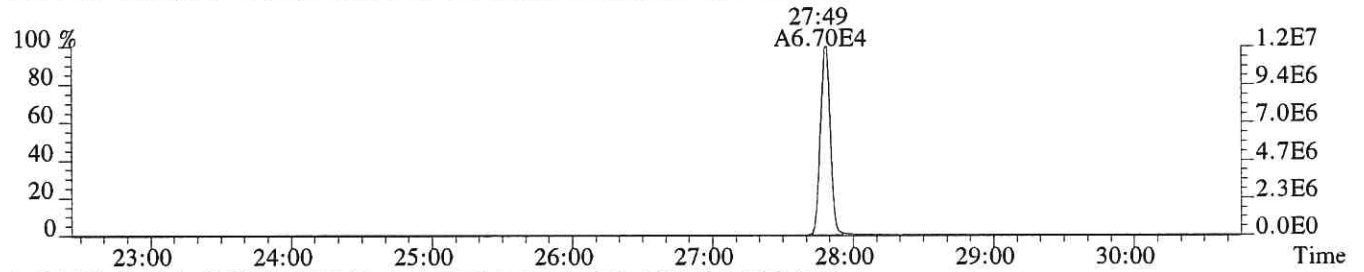
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,584.0,1.00%,F,T)



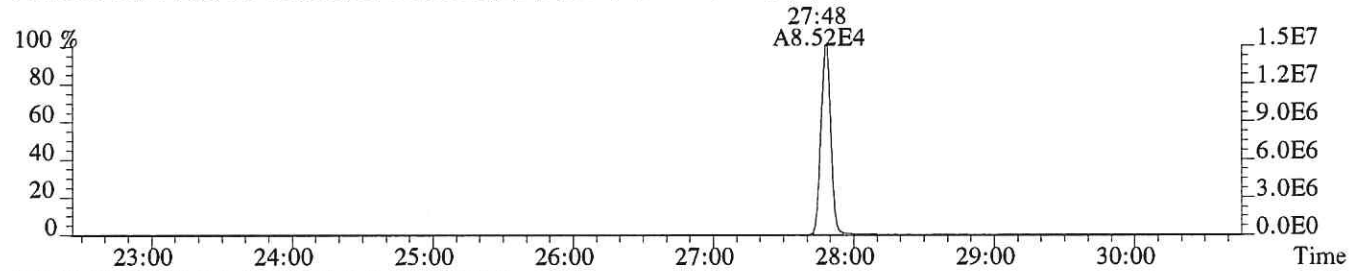
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1120.0,1.00%,F,T)



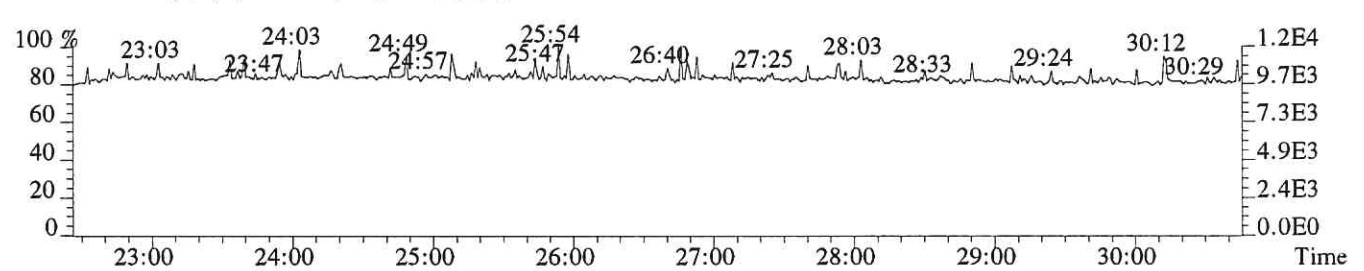
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6624.0,1.00%,F,T)



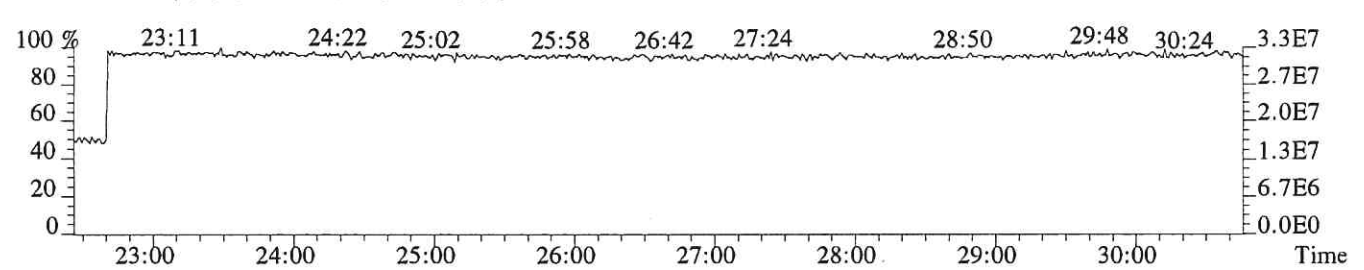
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2692.0,1.00%,F,T)

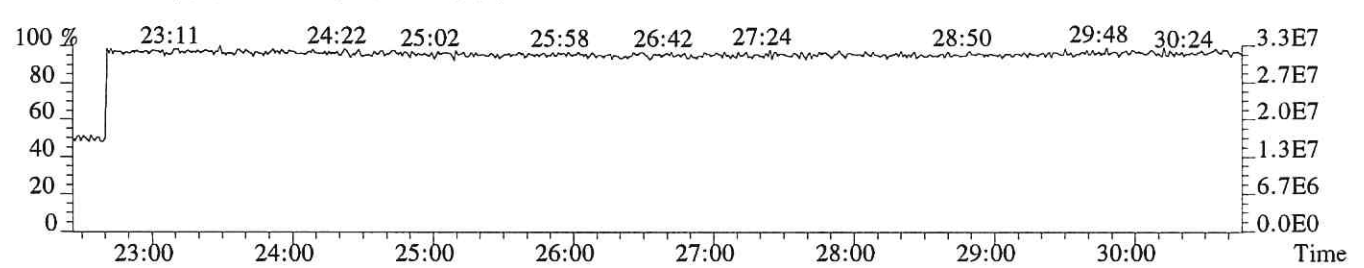
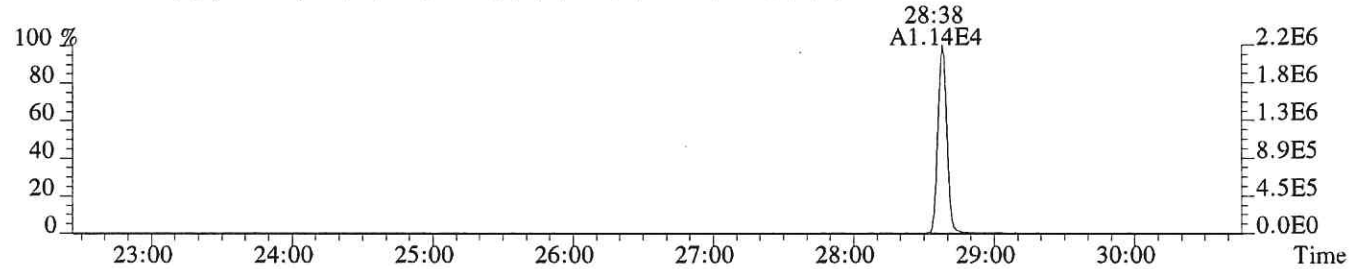
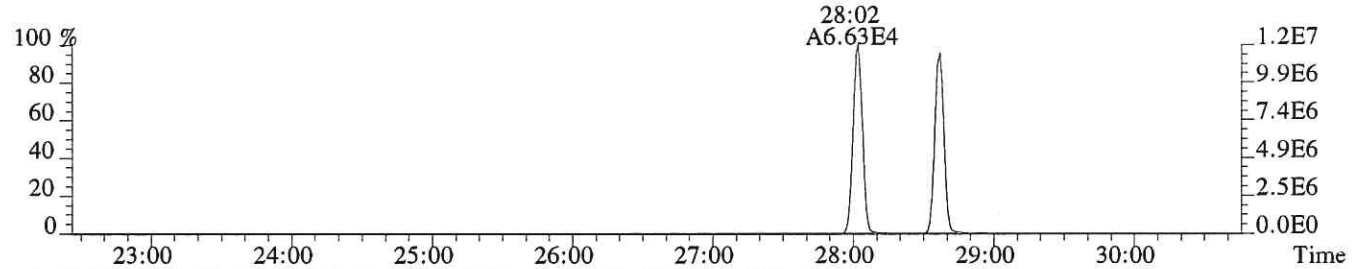
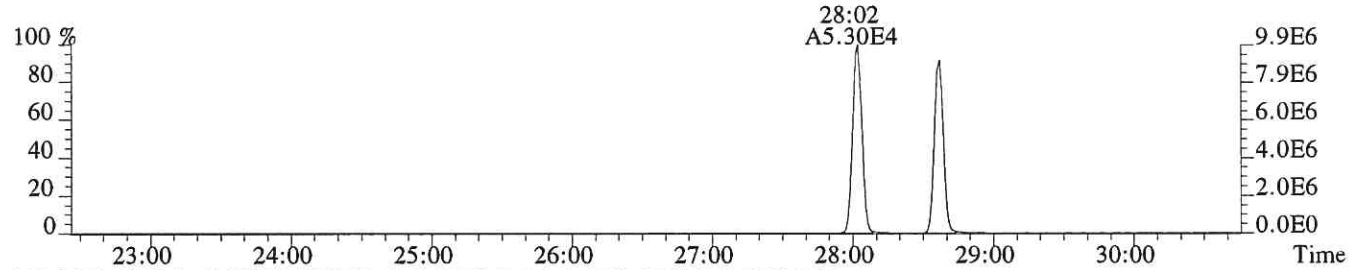
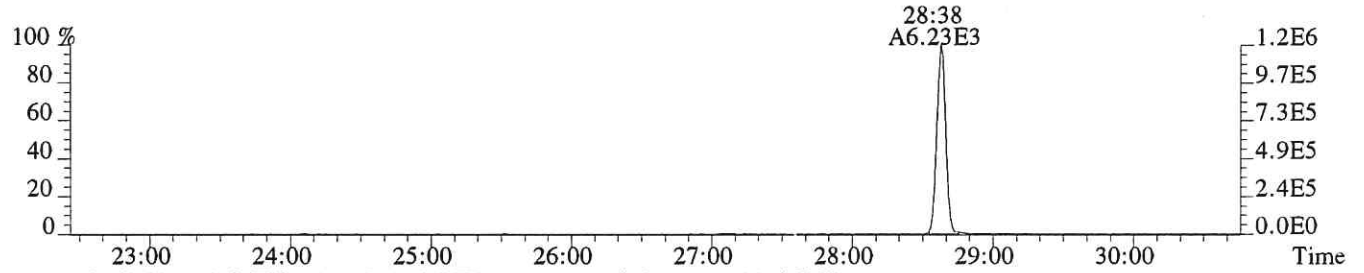
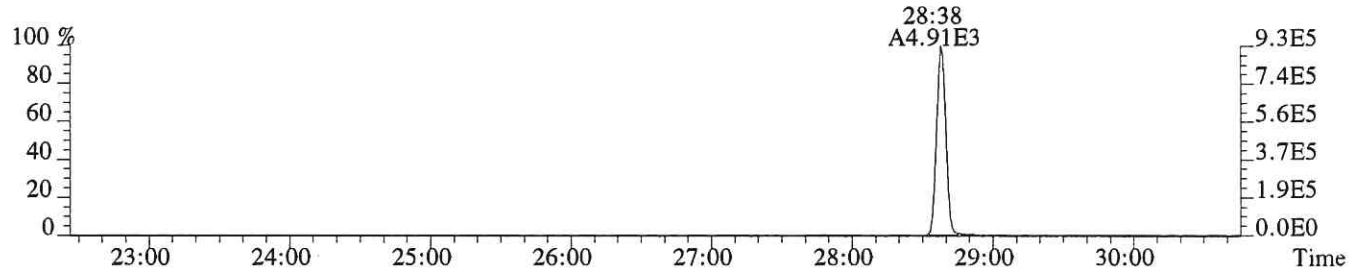


375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

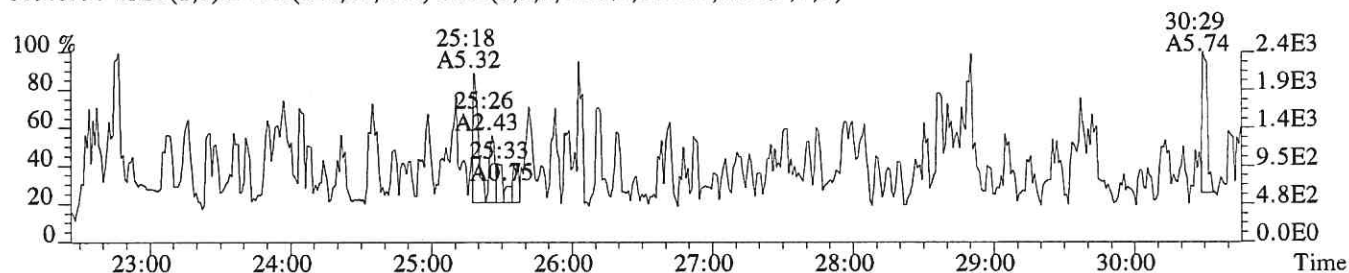


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

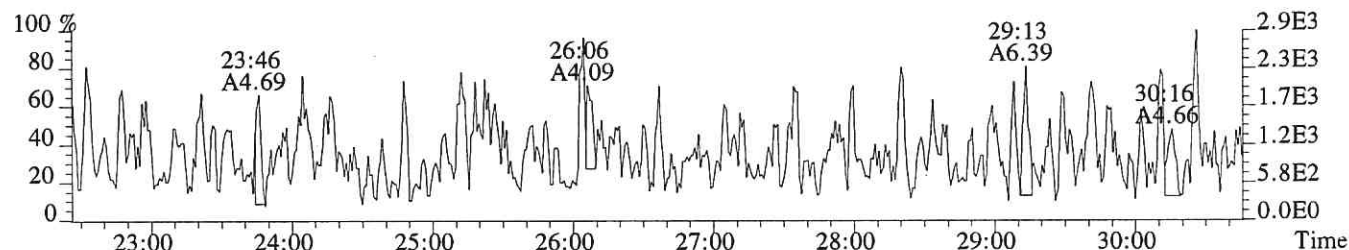




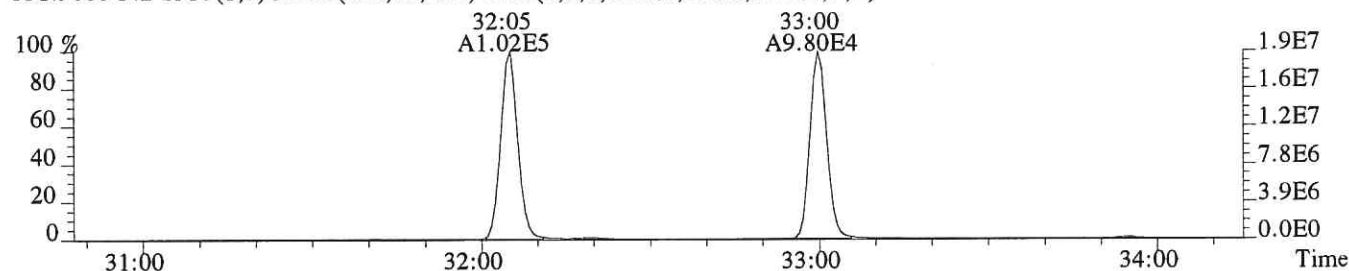
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1156.0,1.00%,F,T)



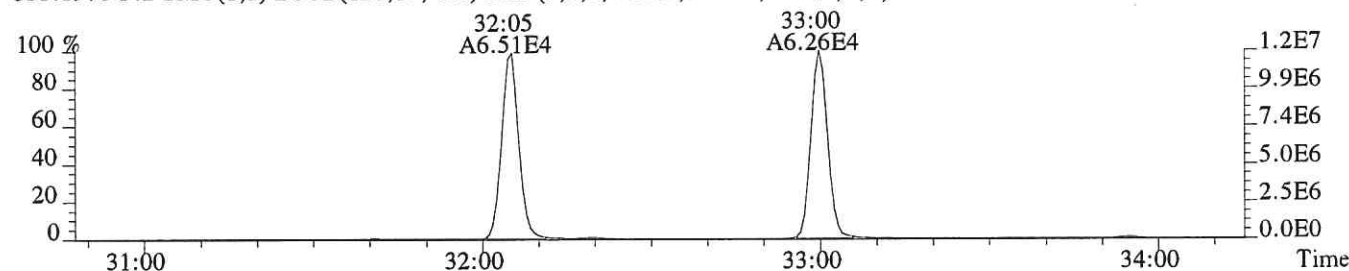
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1236.0,1.00%,F,T)



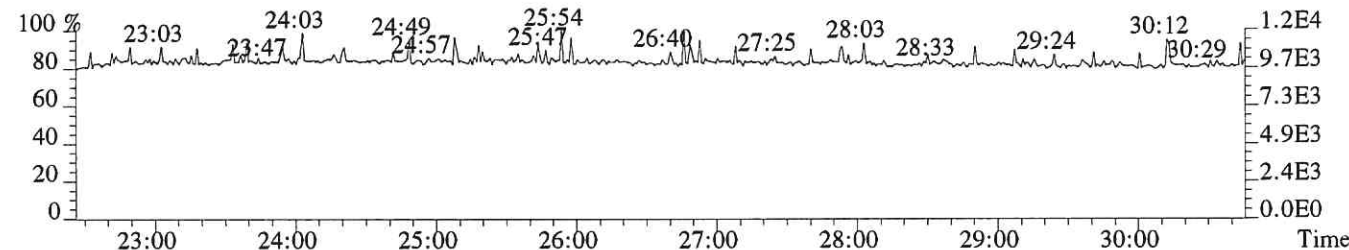
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,388.0,1.00%,F,T)



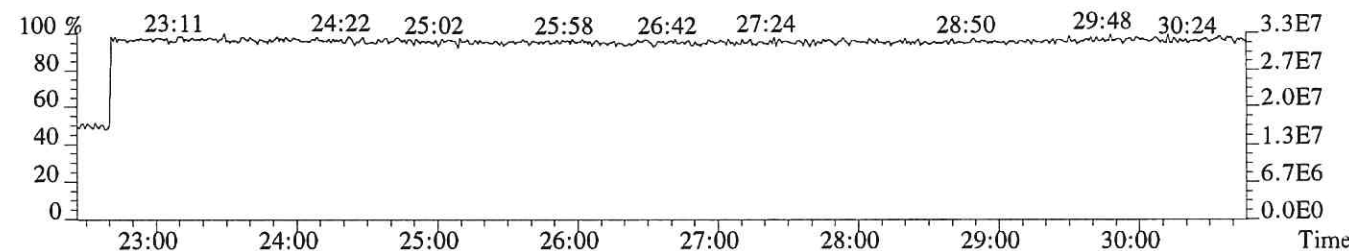
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1004.0,1.00%,F,T)

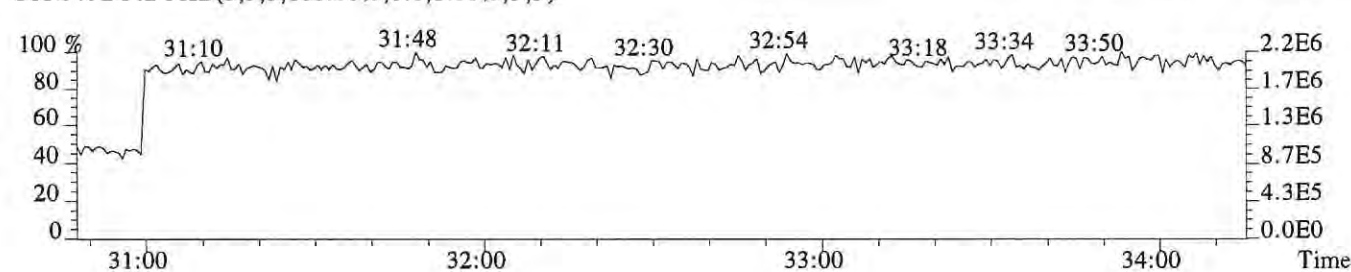
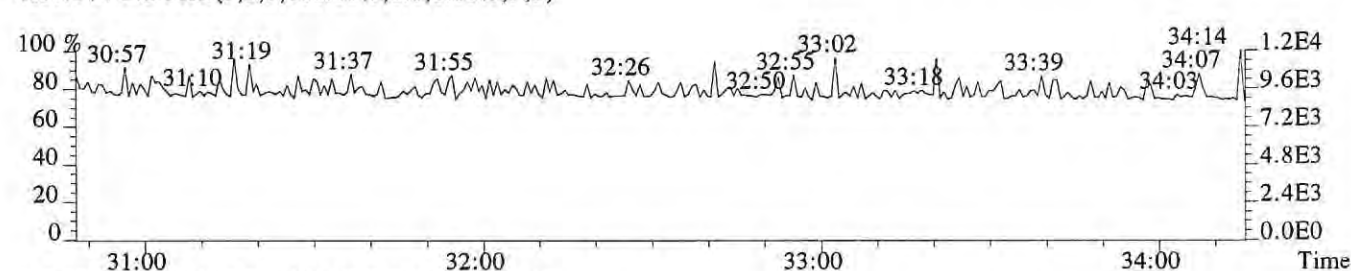
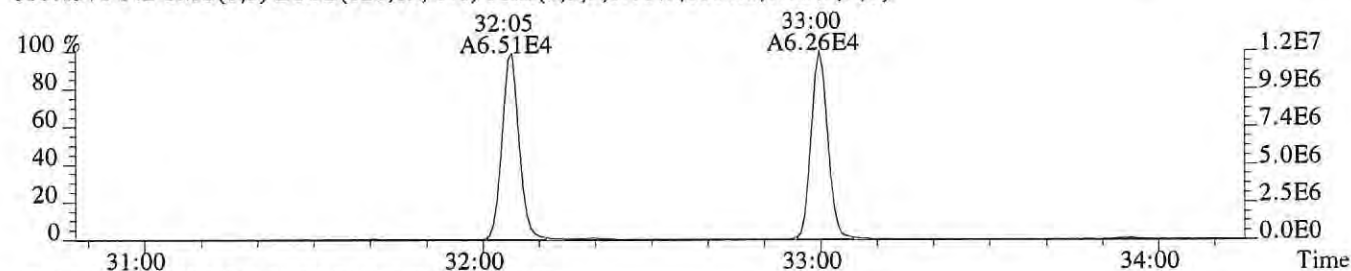
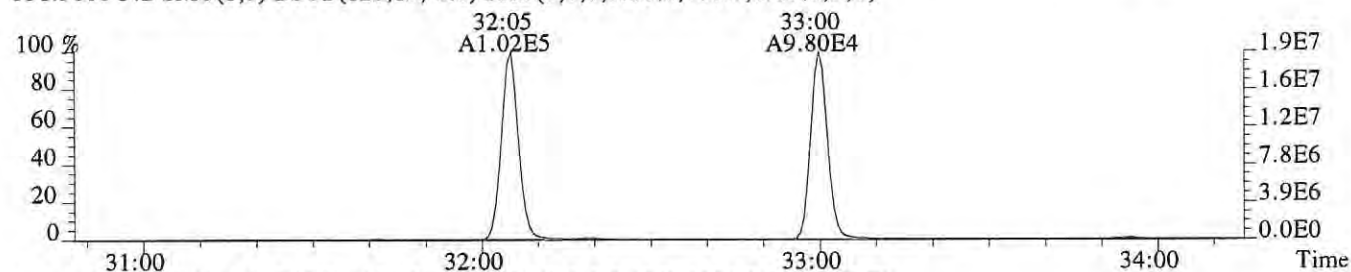
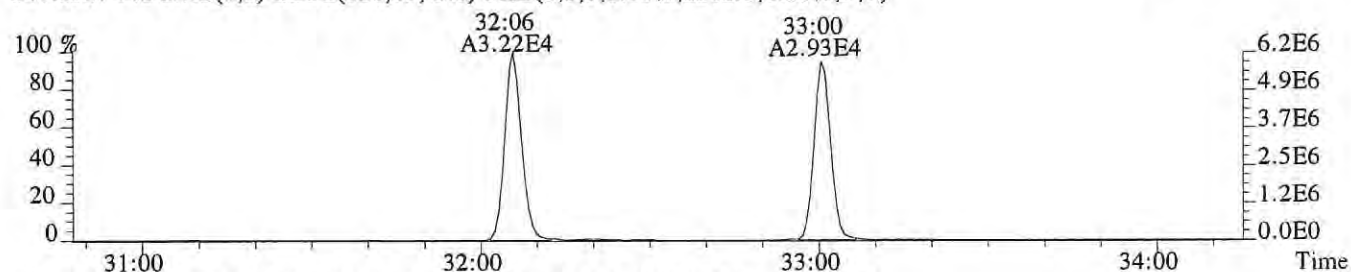
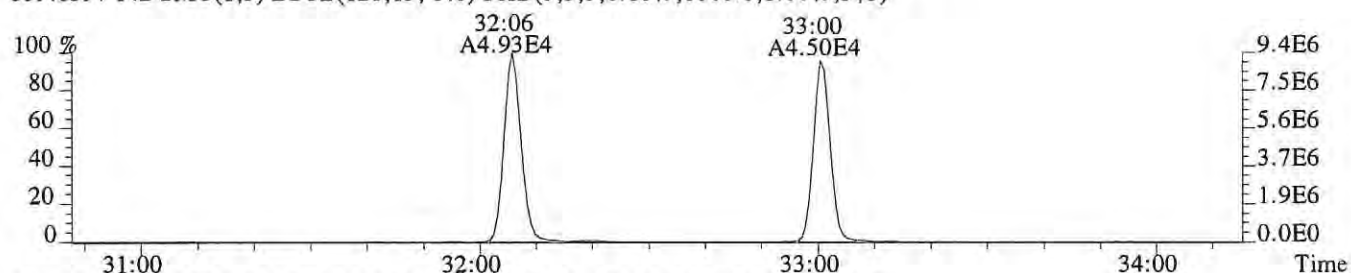


375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



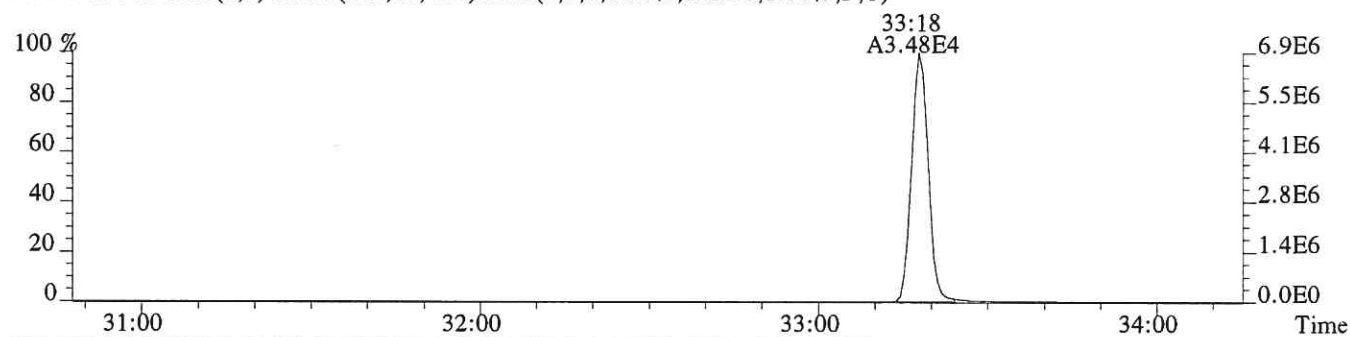
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



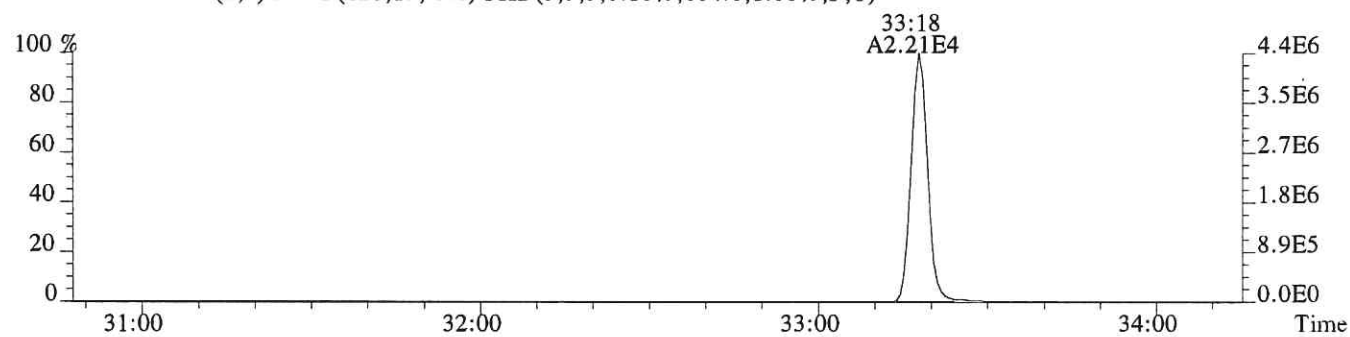


Sample#1 Exp:188969

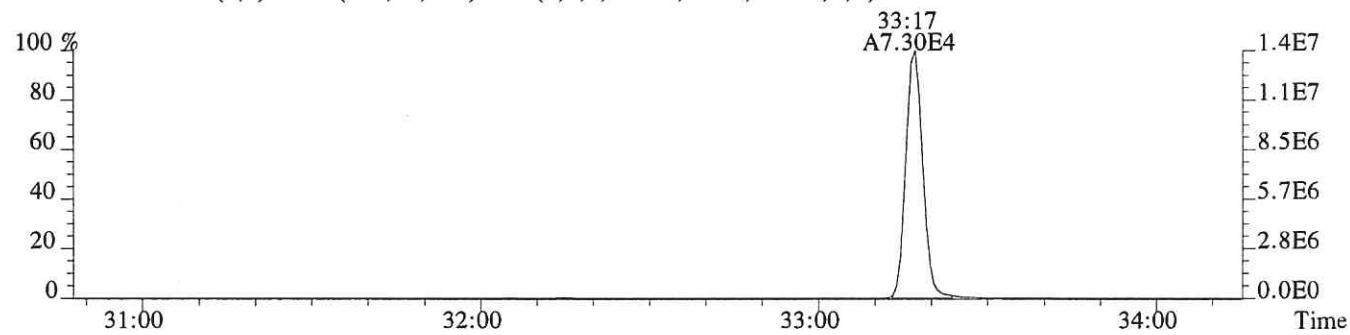
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1212.0,1.00%,F,T)



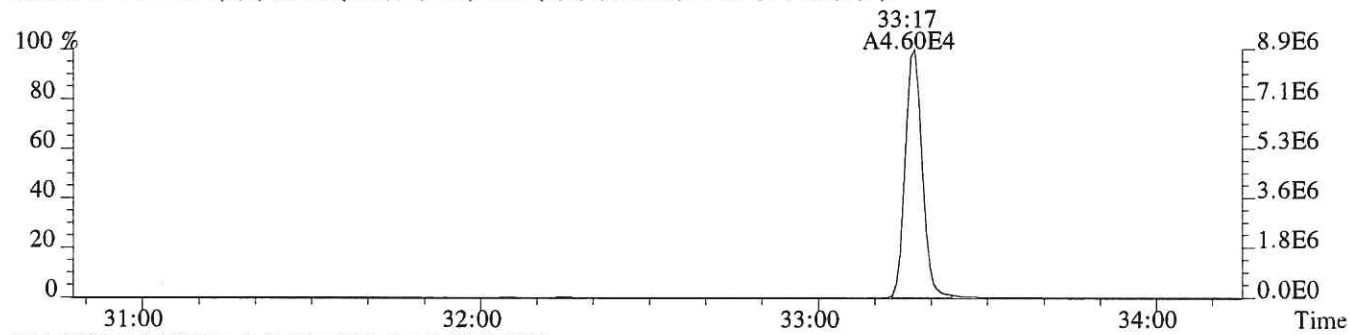
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,604.0,1.00%,F,T)



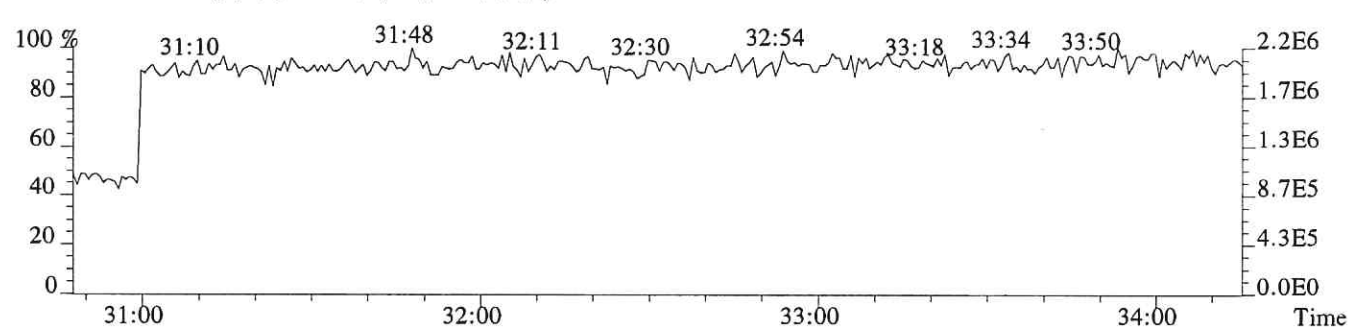
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,808.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1120.0,1.00%,F,T)

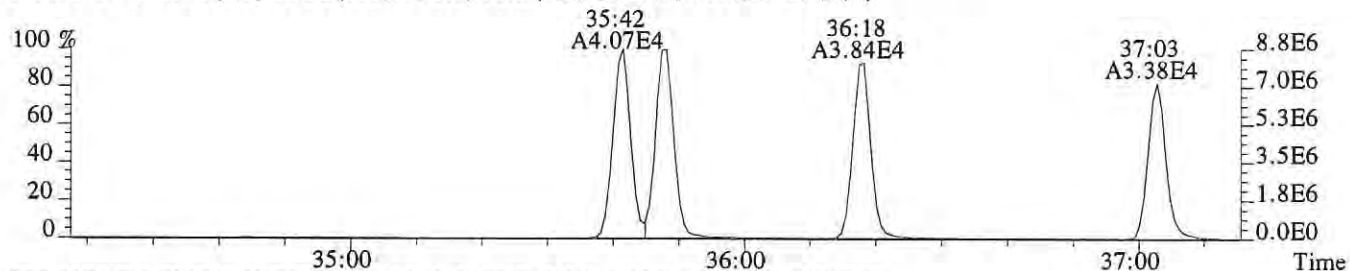


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

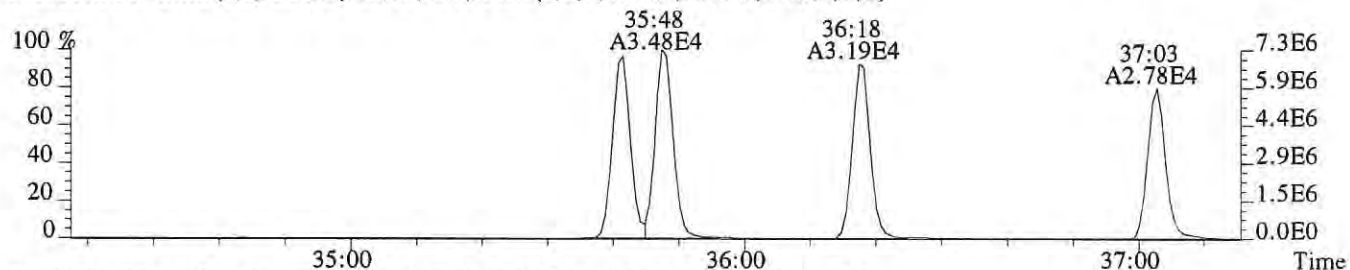


Sample#1 Exp:188969

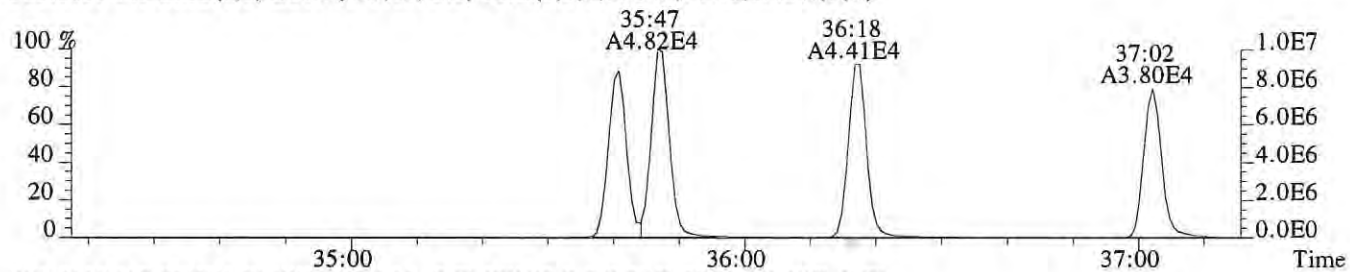
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,740.0,0.40%,F,T)



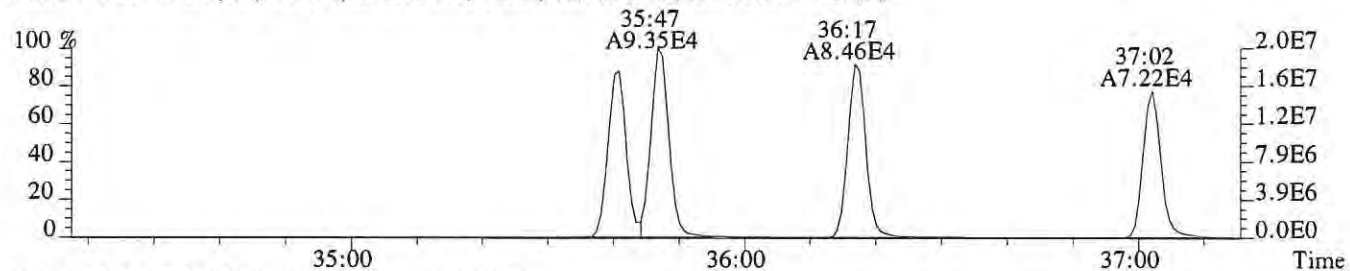
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1116.0,0.40%,F,T)



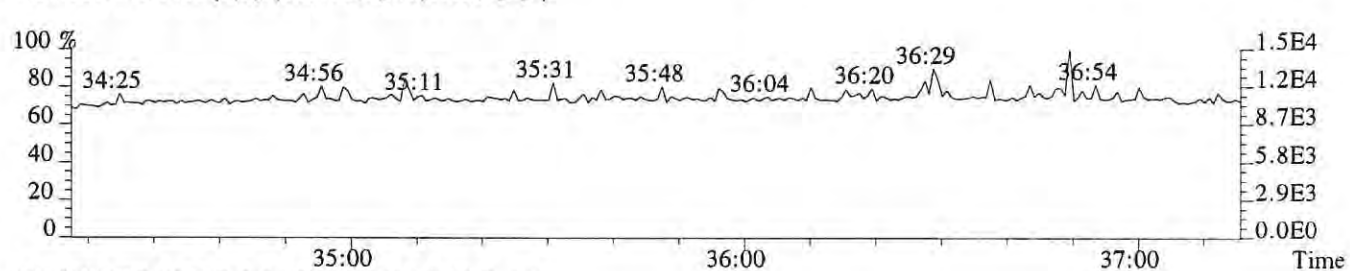
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,744.0,0.40%,F,T)



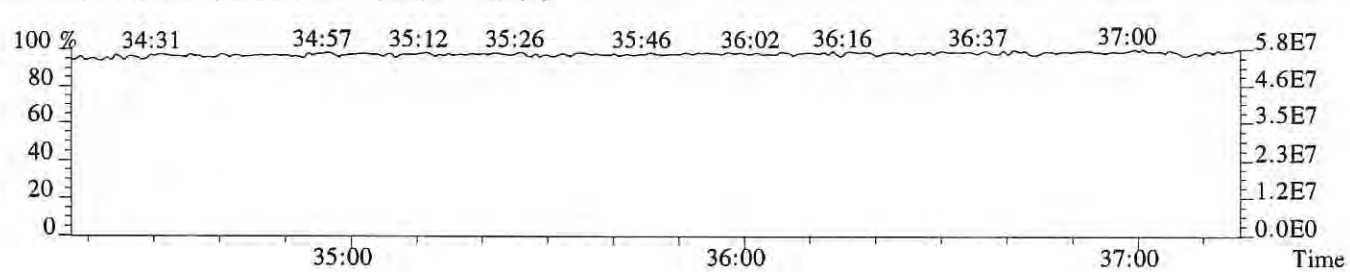
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1244.0,0.40%,F,T)



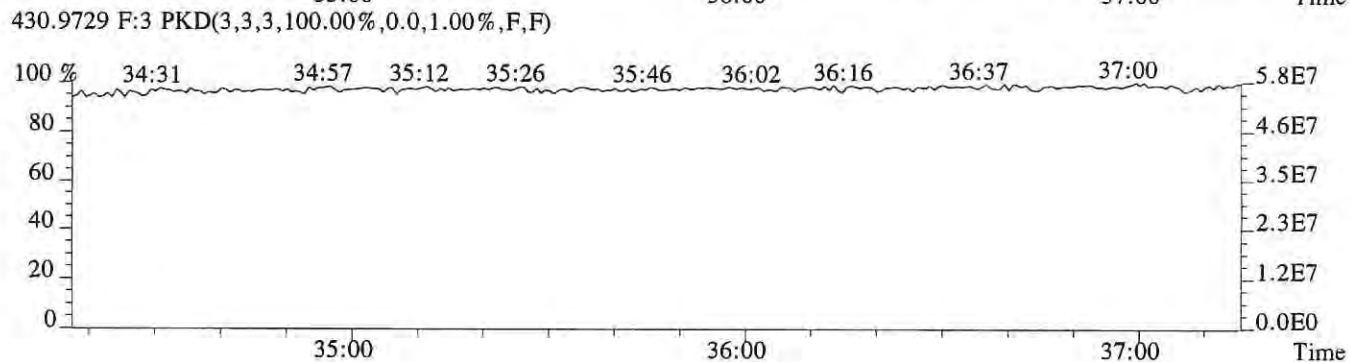
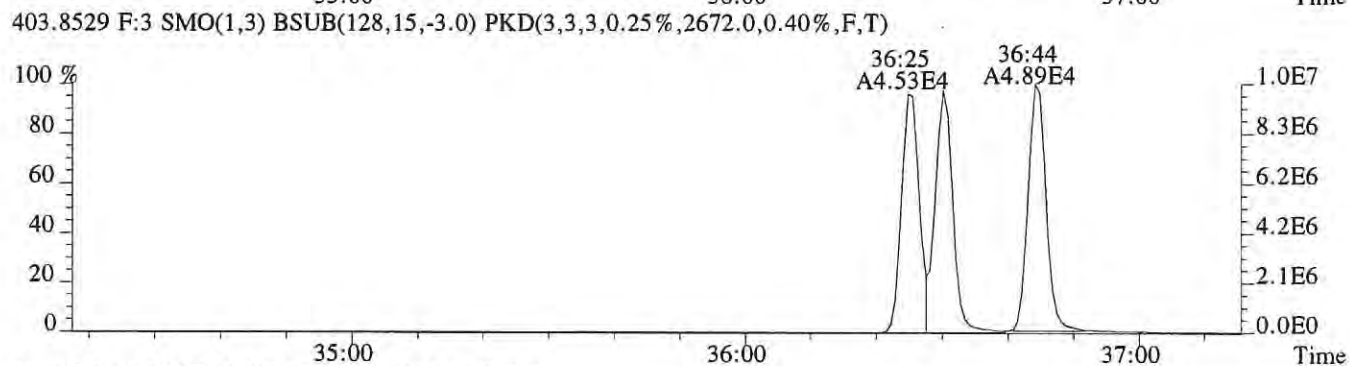
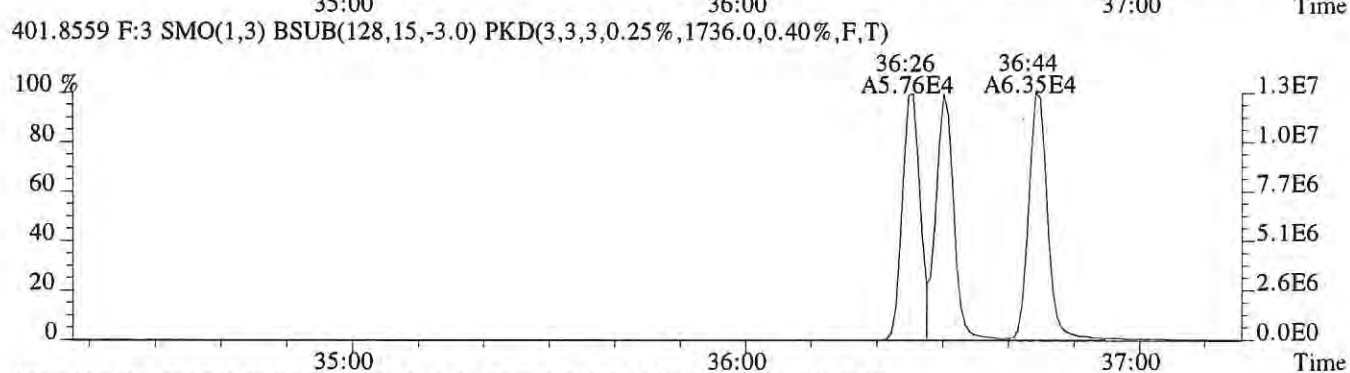
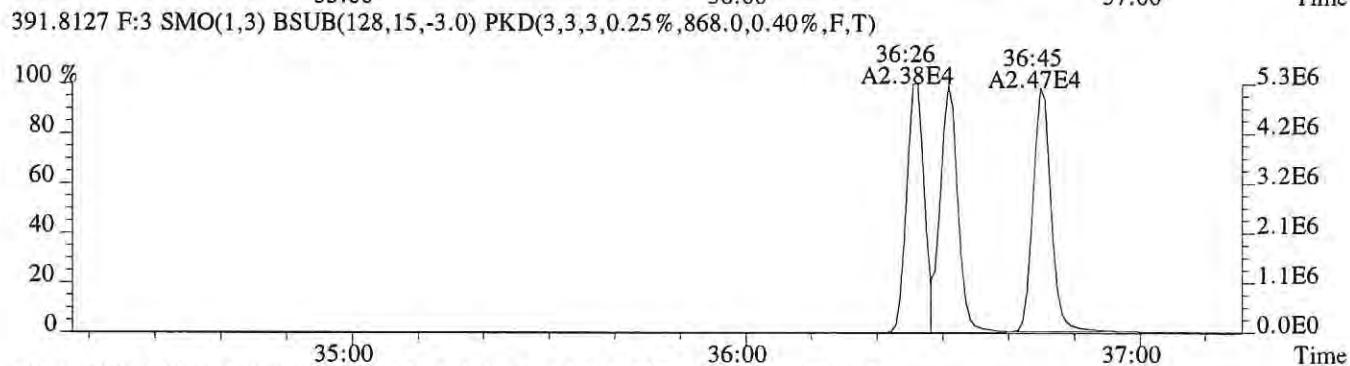
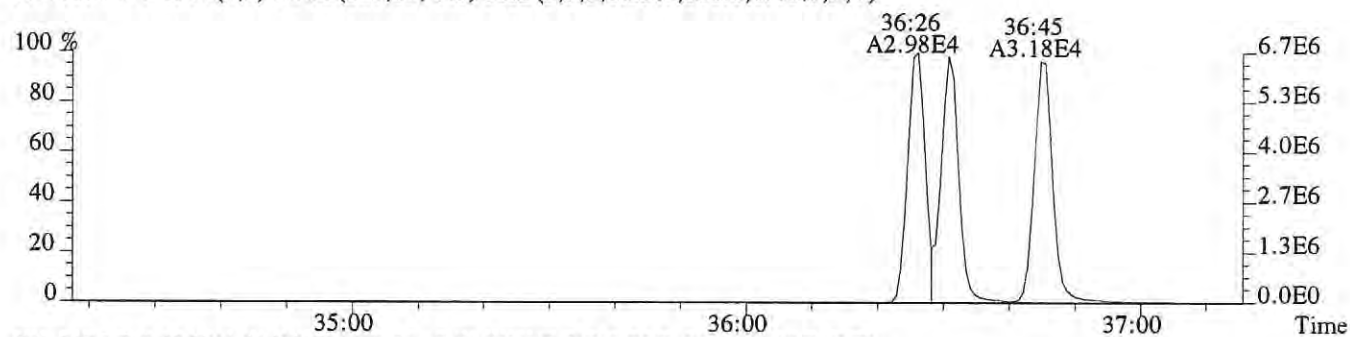
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



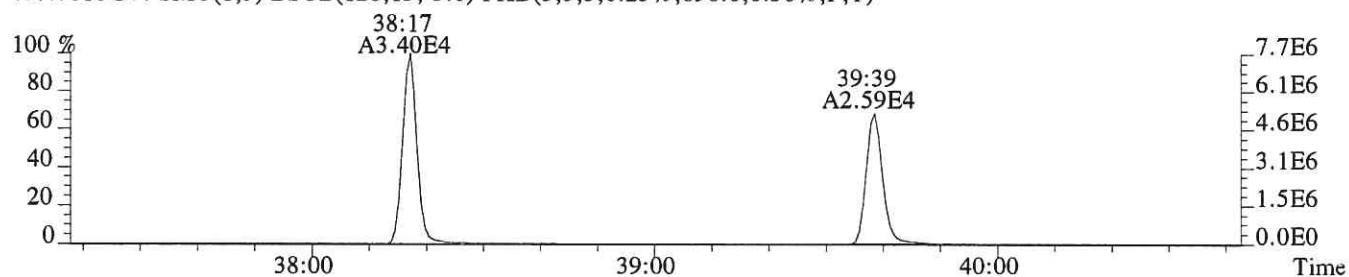
File:P521518 #1-268 Acq:26-APR-2019 06:25:55 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:188969
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,808.0,0.40%,F,T)



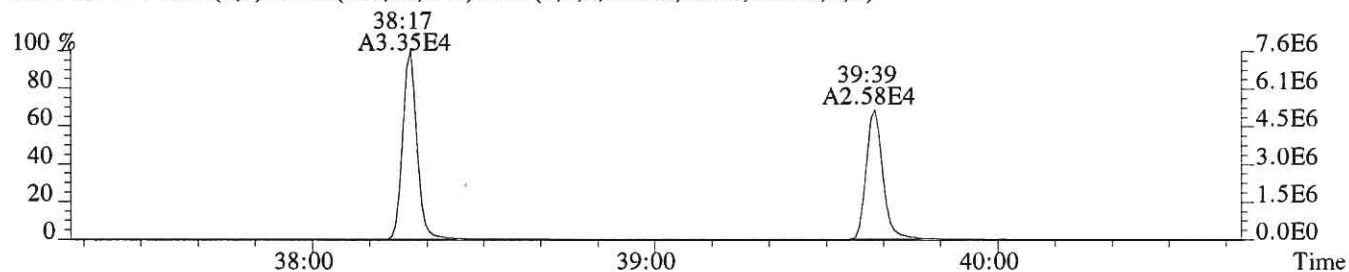
File:P521518 #1-308 Acq:26-APR-2019 06:25:55 Probe EI+ Magnet SIR VG BioTech Mass spectF

Sample#1 Exp:188969

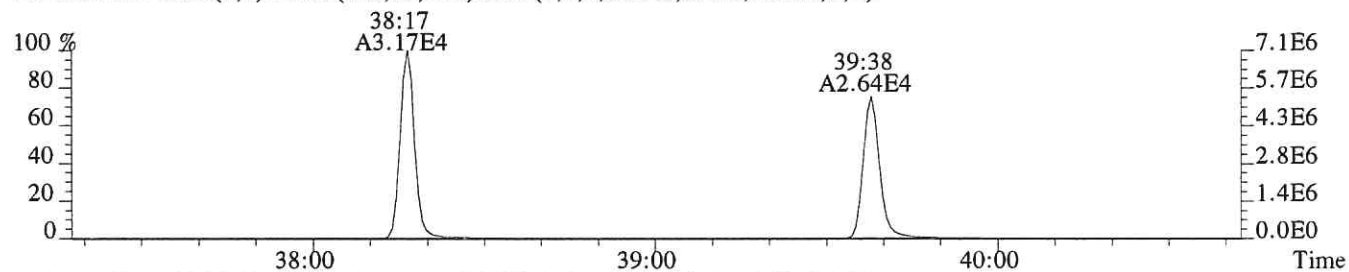
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,896.0,0.50%,F,T)



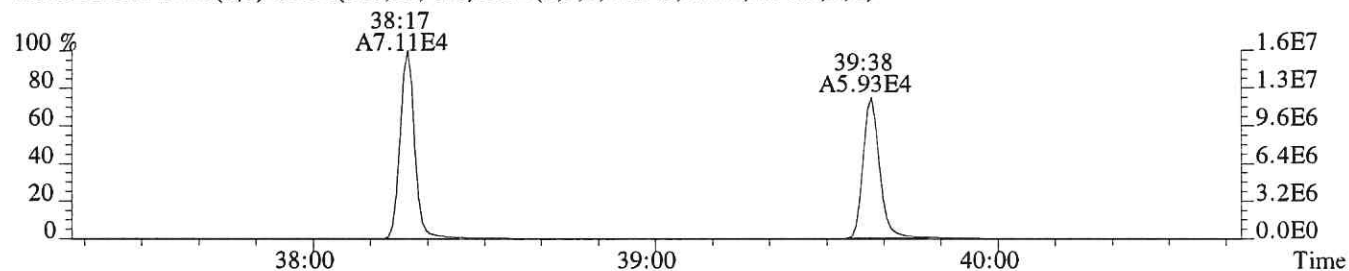
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,568.0,0.50%,F,T)



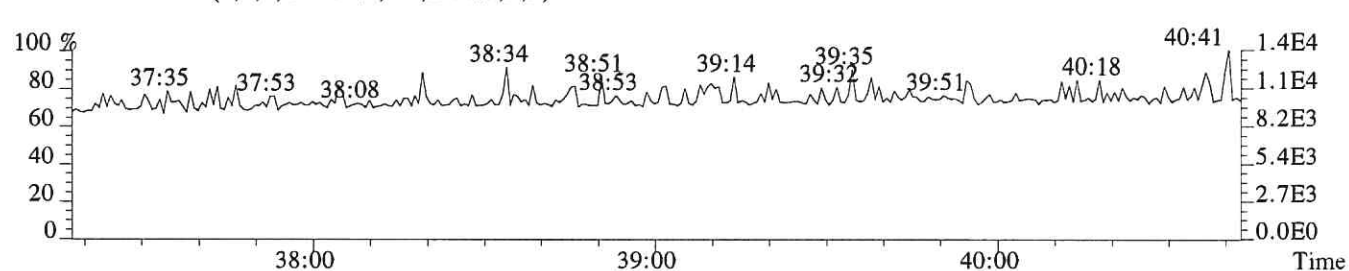
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,876.0,0.50%,F,T)



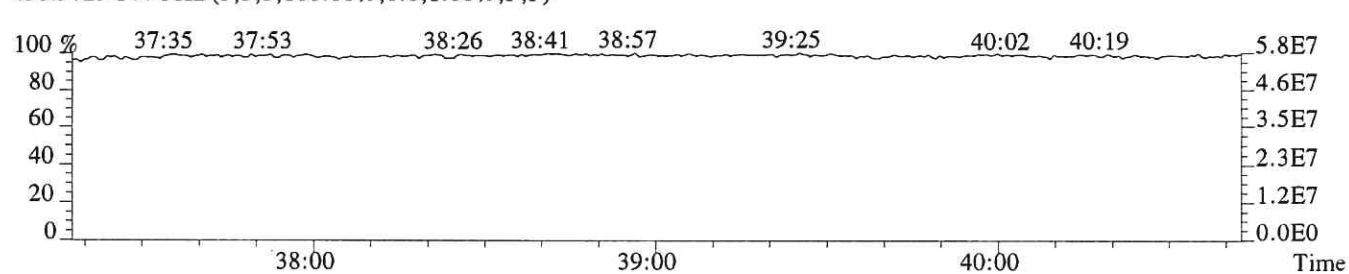
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,624.0,0.50%,F,T)



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



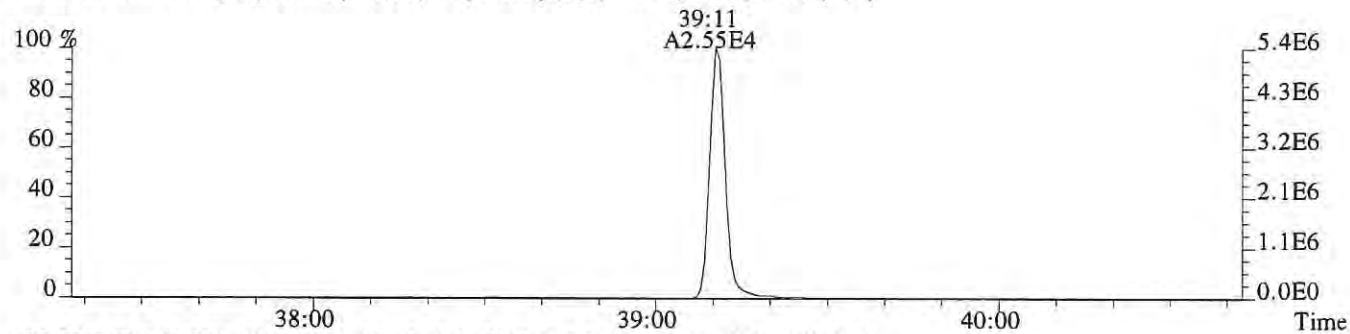
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



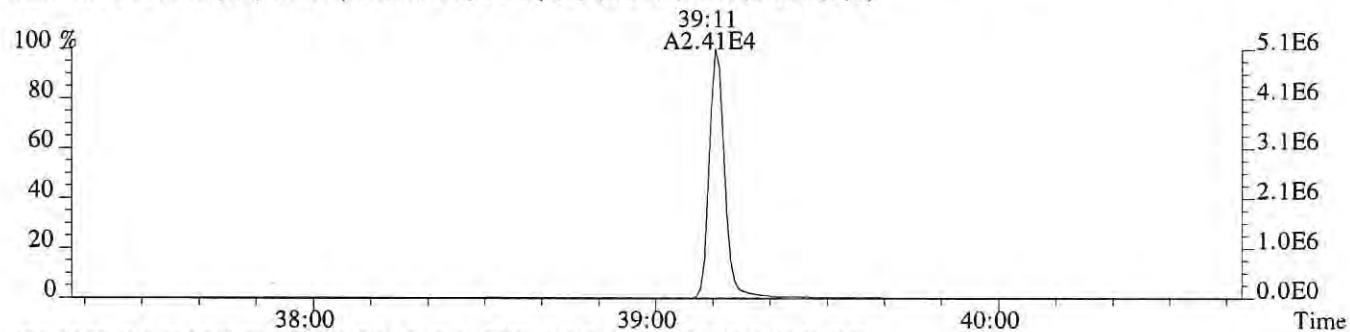
File:P521518 #1-308 Acq:26-APR-2019 06:25:55 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:188969

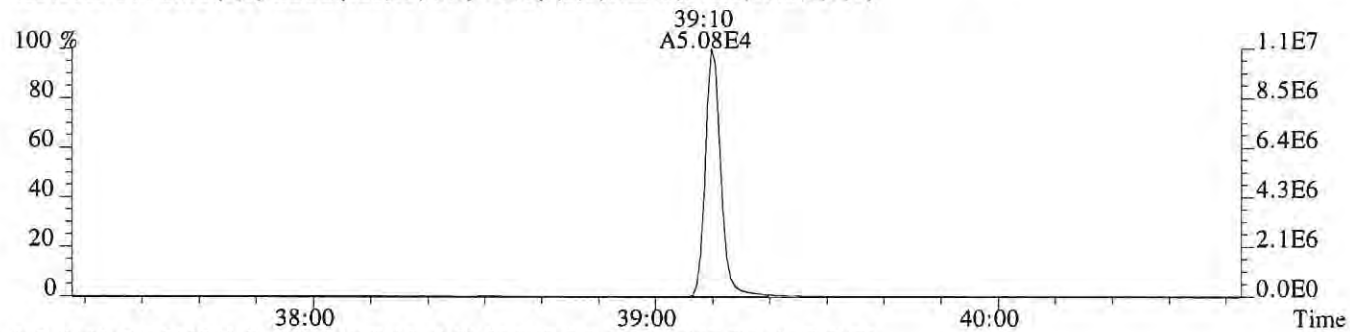
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,420.0,0.40%,F,T)



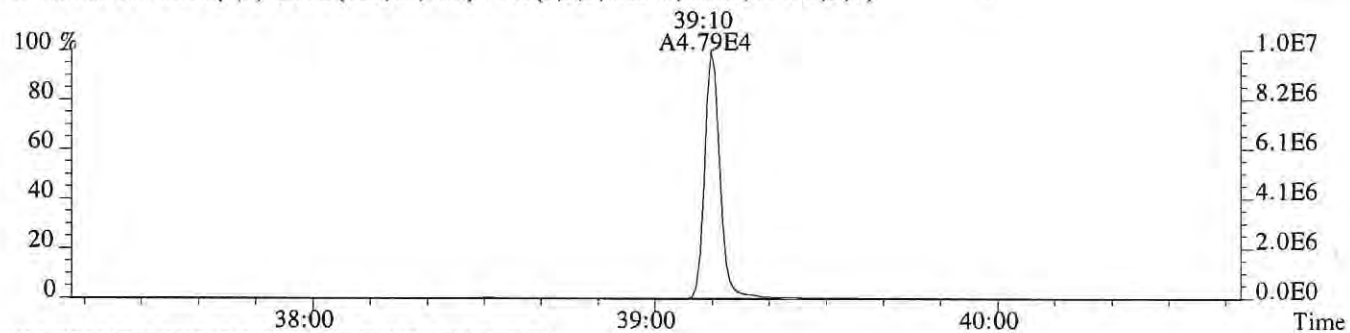
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,424.0,0.40%,F,T)



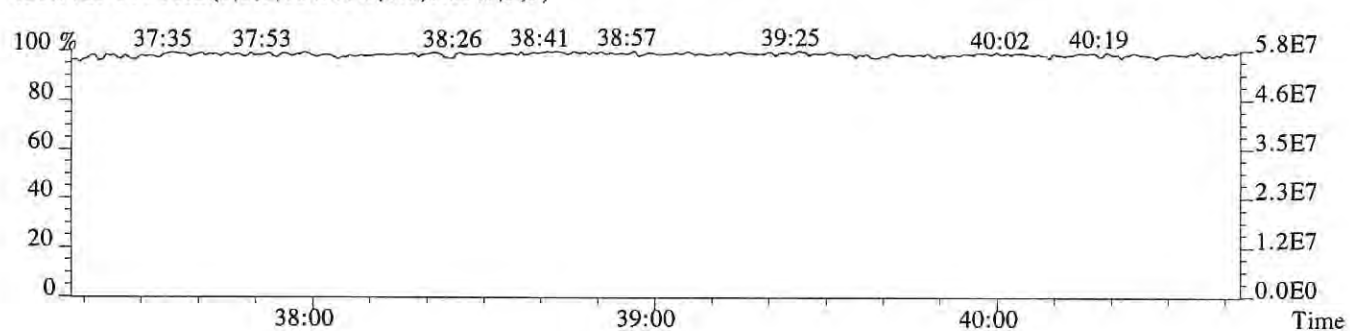
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,548.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,836.0,0.40%,F,T)

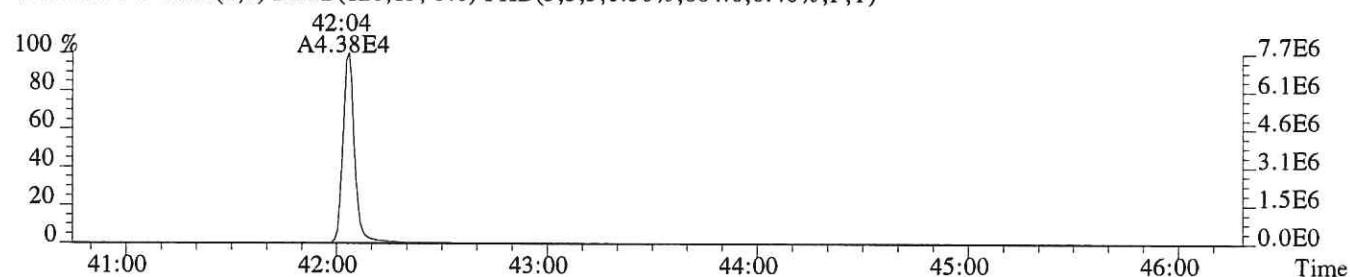


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

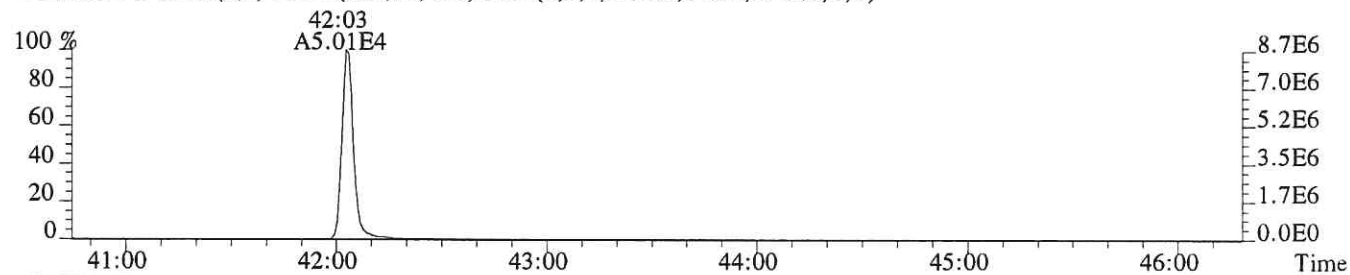


Sample#1 Exp:188969

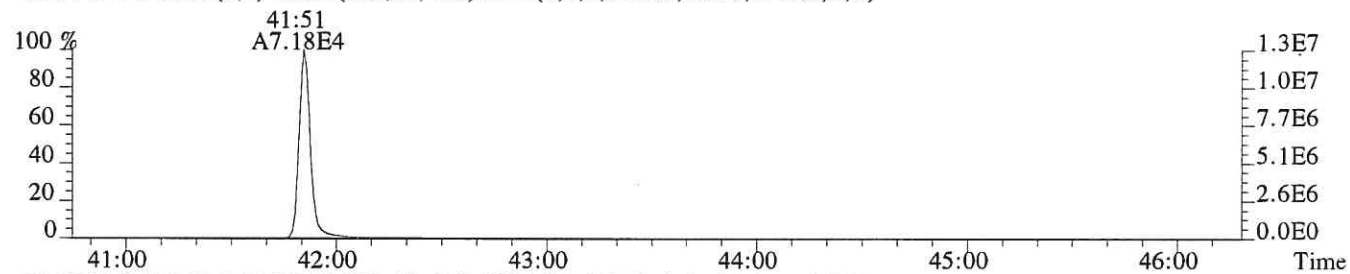
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,664.0,0.40%,F,T)



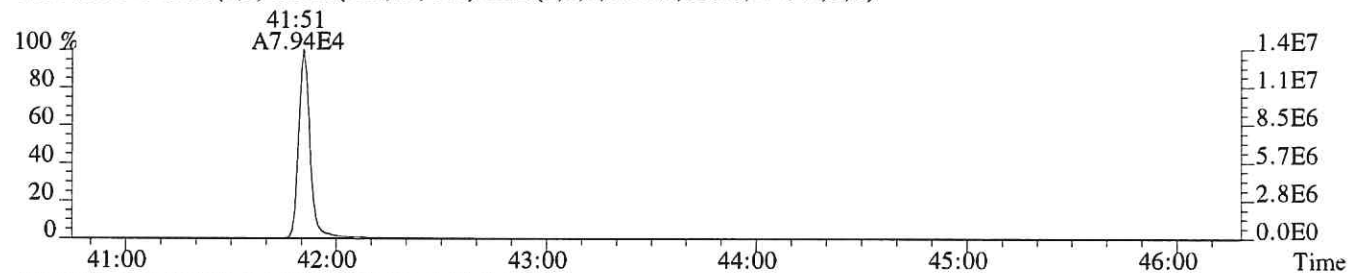
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,848.0,0.40%,F,T)



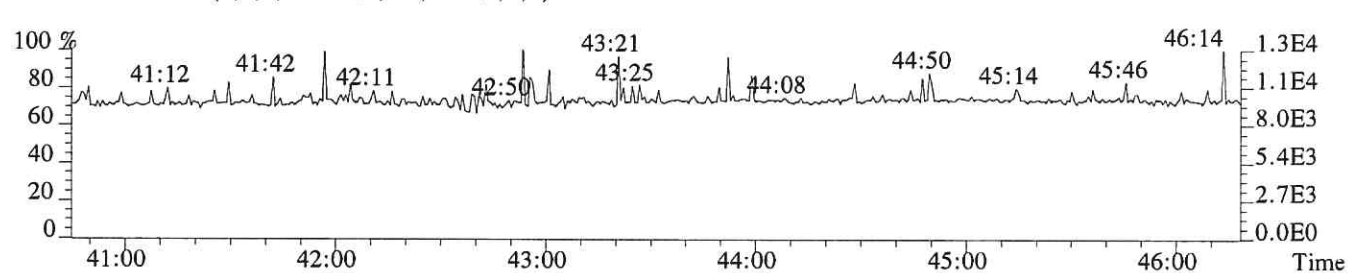
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,216.0,0.40%,F,T)



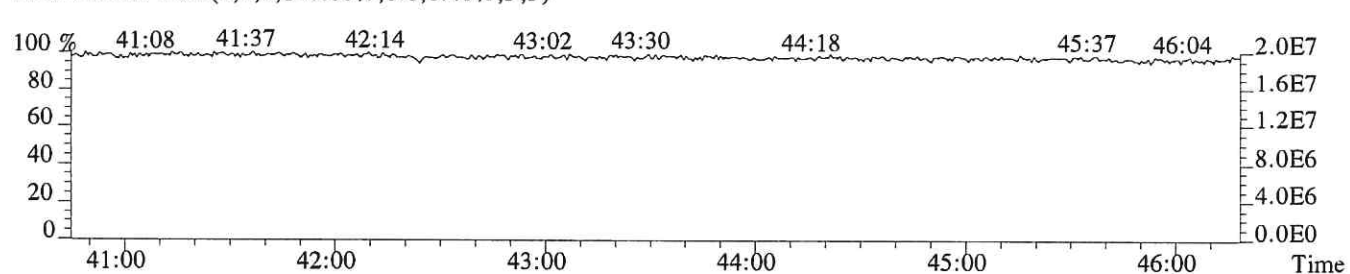
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,616.0,0.40%,F,T)



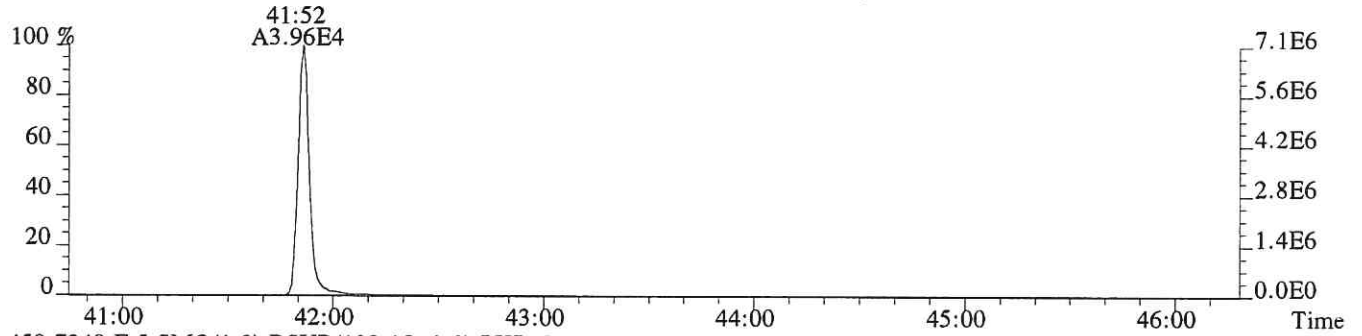
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



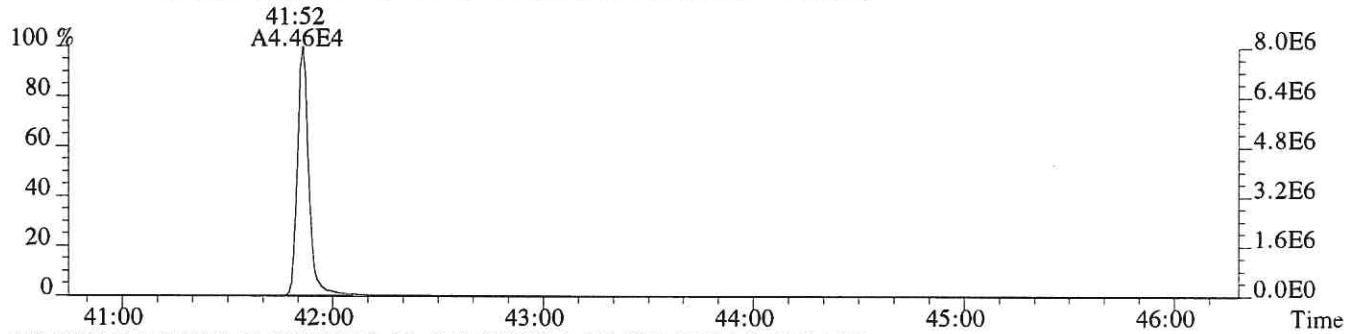
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



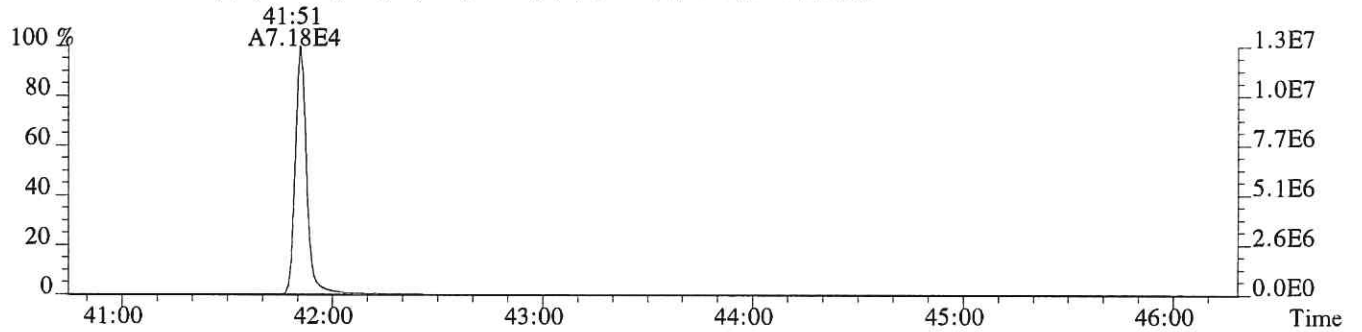
File:P521518 #1-501 Acq:26-APR-2019 06:25:55 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:188969
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,592.0,0.40%,F,T)



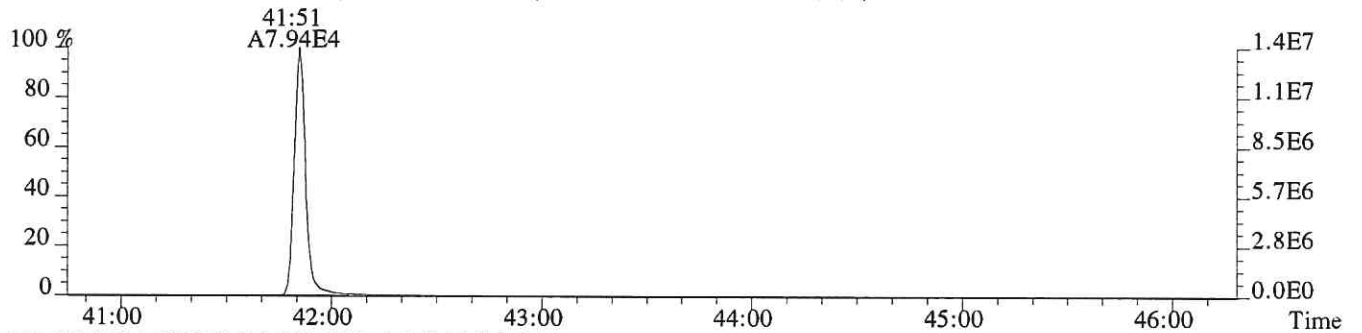
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,852.0,0.40%,F,T)



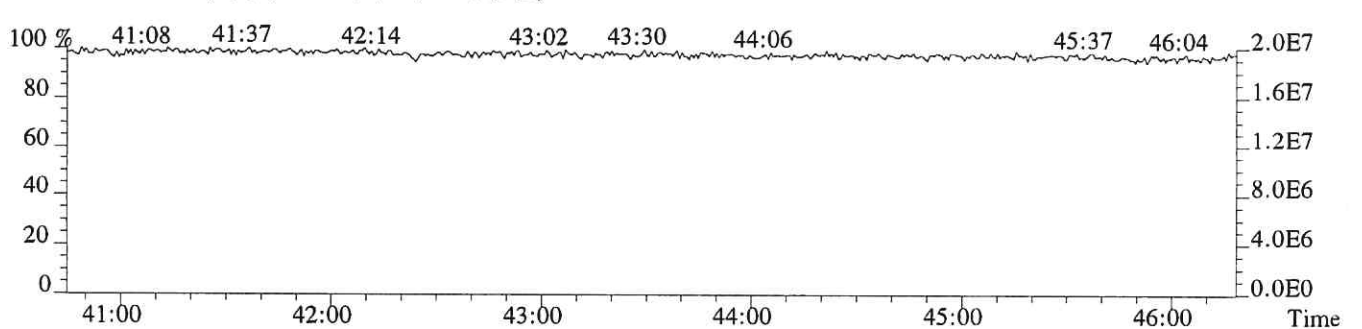
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,216.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,616.0,0.40%,F,T)



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



Laboratory Review Checklist: HRMS Initial Calibration

Method: 1613/8290	Process Date: 08/02/19				
Instrument Name: E-HRMS-08	Calibration File Name: P6-1908011613I				
Processor Name: <i>JIMMY CHAU</i>	Reviewer Name: <i>Loan Luong</i>				
Supervisor: <i>Kristin New</i>					
	Yes	No	NA	NR	ER#
Description					
Analytical Sequence					
Does the analytical sequence summary accurately reflect the instrument run log, including ICV?	✓				
Was a Mass Resolution Check performed at the beginning and end of the 12-hour sequence?	✓				
Were all calibration standards and the ICV analyzed within the same 12-hour sequence?	✓				
Were all calibration standards analyzed only once?	✓				
Was the ICV analyzed after the ICAL, before analyzing samples?	✓				
Mass Resolution Check					
Are beginning and ending resolution checks provided and legible?	✓				
Were all target masses >10,000 resolving power at the beginning of the sequence?	✓				
Were all target masses >10,000 resolving power at the end of the sequence?	✓				
For PCB analysis, were masses at the low and high end of each function mass range >8,000?			✓		
Where automatic printout of the mass resolution were not >10,000, was the resolution inspected by a trained analyst, including manual calculation of the resolution, if warranted?			✓		
Window Define/209					
Is the window defining mix summary present, and accompanied by SICPs/Chromatograms for the WDM?	✓				
Was the WDM/Column Performance/209 solution analyzed prior to the analysis of the calibration standards?	✓				
Was 2,3,7,8-TCDD peak valley <25% to any other TCDD?	✓				
Were all first and last eluters adequately resolved in each function?	✓				
If first and last eluters were not resolved, was corrective action performed and documented, followed by a reanalysis of the WDM?			✓		
Was the retention time of PCB 209 >55 min?			✓		
Were the following congeners uniquely resolved (valley height <40% of the shortest peak)? PCB-34 and PCB-23 PCB-187 and PCB-182			✓		
Did PCB 156/157 co-elute within 2 seconds at peak maximum?			✓		
Calibration Standards					
Were there at least 5 calibration standards analyzed?	✓				
If not all calibration standards were used, were the omitted standards either the lowest or highest calibration standard?			✓		
Are all sample response summaries, S/N height summaries, and SICPs included (and legible) for the entire sequence?	✓				

Laboratory Review Checklist: HRMS Initial Calibration

Method: 1613/8290		Process Date: 08/02/19				
Instrument Name: E-HRMS-08		Calibration File Name: P6-1908011613I				
Processor Name: <i>JIMMY CHAU</i>		Reviewer Name: <i>Loan Luong</i>				
Supervisor: <i>Kristin Neir</i>		Yes	No	NA	NR	ER#
Description						
Did each calibration point meet method criteria for Ion Abundance Ratio for all analytes and labeled standards?		✓				
Did each calibration point meet method criteria for signal-to-noise ratios (S/N)?		✓				
Were area counts for the highest calibration standard below levels of saturation?		✓				
Were manual integrations technically justified to correct for poor software integration?		✓				1
Response Factors						
Is the ICAL Response Factor Summary present, including RR/RF values for each native/labeled analyte at each level of calibration?		✓				
Were all calibration standards used in determining response factors?		✓				
Were relative response factors (RR) for each native analyte calculated at each calibration point?		✓				
Did the RSD for RRFs for each native analyte meet method criteria?		✓				
Were response factors (RF) for each native analyte not having a corresponding labeled compound calculated at each calibration point?		✓				
Were RFs for each labeled compound calculated for each calibration point?		✓				
Did the RSD for RF for each labeled compound meet method criteria?		✓				
Initial Calibration Verification						
Is the calibration verification present, including form 4A/B reflecting results for the ICV (Conc. or %D)		✓				
Did all analytes meet method criteria for the ICV.		✓				

Laboratory Review Checklist: Initial Calibration	
Method: 1613/8290	
Process Date: 08/02/19	
Instrument Name: E-HRMS-08	
Calibration File Name: P6-1908011613I	
Processor Name: <i>JIMMY CHAU</i>	
Reviewer Name: <i>Loan Luong</i>	
ER# ⁵	Description
1	Manual integration on CS0.5 and CS1 in order to correct inconsistent baseline determinations between primary and secondary ions. Before and after chromatograms provided. Where no 'After' is present, modification flag reflects an update to reconcile Response values between Sample Response Summary and chromatograph.
NA = Not Applicable; NR = Not Reviewed; R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).	

5DFC
PCDD/PCDF ANALYTICAL SEQUENCE SUMMARY

Lab Name: ALS ENVIRONMENTAL

Contract:

Lab Code:

Episode No.:

SDG No.:

GC column ID : DB-5MSUI ID: 0.25 (mm) Instrument ID: E-HRMS-08

Init. Calib. Date: 08/01/19

Init. Calib. Times: 13:37

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
192977	WINDOW DEFINE	P618231	1-AUG-19	11:49:42
193431	CS0.50	P618233	1-AUG-19	13:37:02
193432	CS1	P618235	1-AUG-19	15:15:19
193434	CS2	P618236	1-AUG-19	16:04:25
193435	CS3	P618237	1-AUG-19	16:53:34
82167	CS4	P618238	1-AUG-19	17:42:41
185657	CS5	P618239	1-AUG-19	18:31:50
188969	2ND SOURCE	P618240	1-AUG-19	19:21:00

Sample List Report

MassLynx 4.1 SCN815 SCN795

Sample List: C:\MassLynx\EHRMS08.PRO\SampleDB\20190801A.SPL
 Last Modified: Friday, August 02, 2019 12:58:50 Central Daylight Time
 Printed: Friday, August 02, 2019 12:59:15 Central Daylight Time

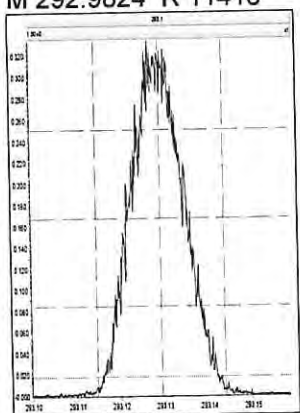
OPUS-5: P6-190801613I/RES

OPUS-5: P6-190801M23I/RESM

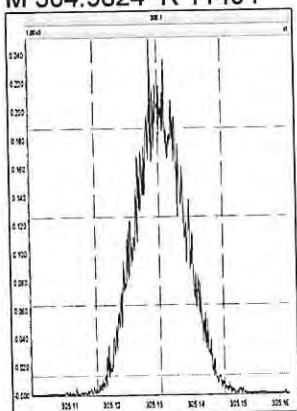
Date	Time	File Name	Sample ID	File Text	MS File	Inlet File	Bottle	Analyst	Comments
08/01/19	11:49	P618231	192977	WINDOW DEFINE	EPA1613_ALS	Dioxin_ALS	Tray1:1	JC	HPLMS CATEC 11:48
	12:47	P618232	199513	CS3	EPA1613_ALS	Dioxin_ALS	Tray1:2		NOT USED
	13:57	P618233	193431	CS0.5	EPA1613_ALS	Dioxin_ALS	Tray1:4		
	14:26	P618234	193431	CS0.5	EPA1613_ALS	Dioxin_ALS	Tray1:4		
	15:15	P618235	193432	CS1	EPA1613_ALS	Dioxin_ALS	Tray1:5		NOT USED
	16:06	P618236	193434	CS2	EPA1613_ALS	Dioxin_ALS	Tray1:6		
	16:53	P618237	193435	CS3	EPA1613_ALS	Dioxin_ALS	Tray1:7		
	17:42	P618238	82167	CS4	EPA1613_ALS	Dioxin_ALS	Tray1:8		
	18:31	P618239	185657	CS5	EPA1613_ALS	Dioxin_ALS	Tray1:9		
	19:21	P618240	188969	2ND SOURCE	EPA1613_ALS	Dioxin_ALS	Tray1:10		
	20:18	P618241	193431	CS3 *NOT USED	EPA1613_ALS	Dioxin_ALS	Tray1:2		HPLMS CATEC 20:18

JC 08/02/19

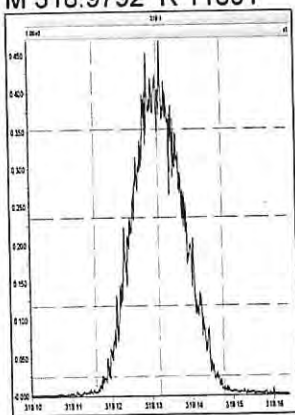
M 292.9824 R 11418



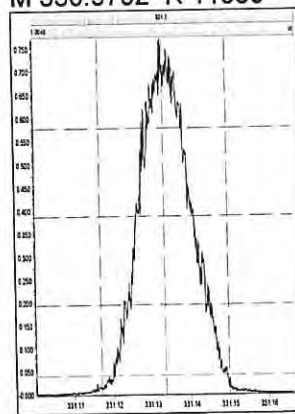
M 304.9824 R 11494



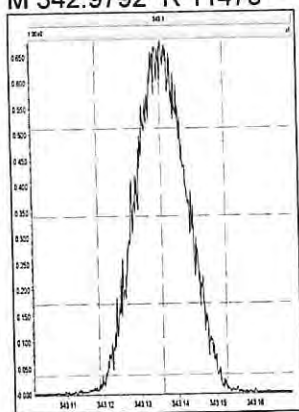
M 318.9792 R 11801



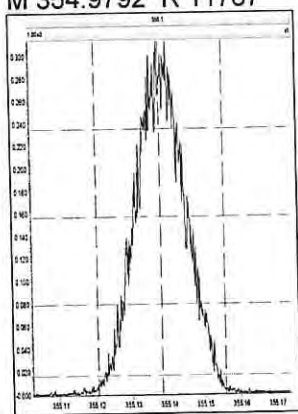
M 330.9792 R 11560



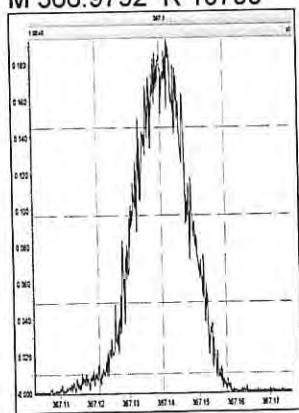
M 342.9792 R 11473



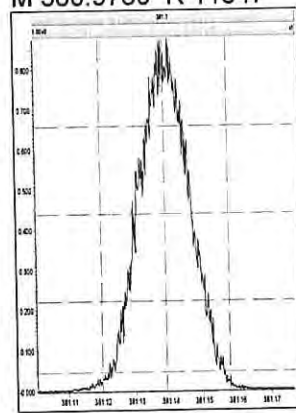
M 354.9792 R 11767



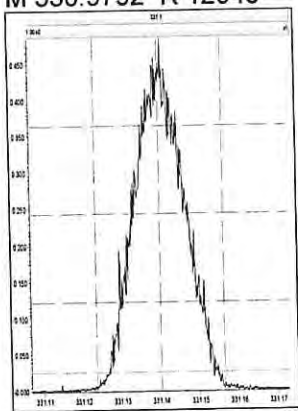
M 366.9792 R 10799



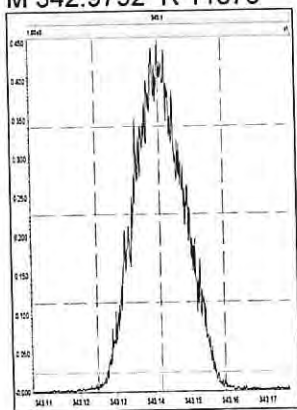
M 380.9760 R 11547



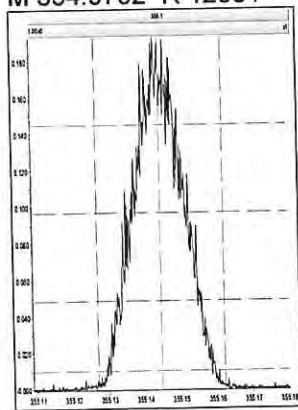
M 330.9792 R 12048



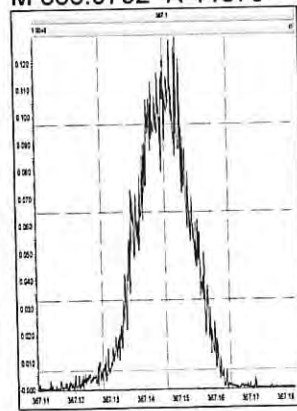
M 342.9792 R 11876



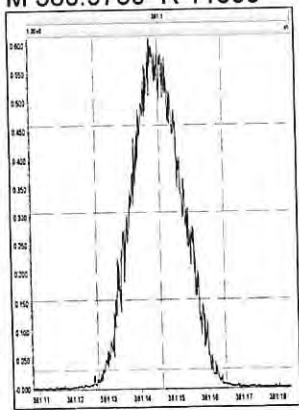
M 354.9792 R 12531



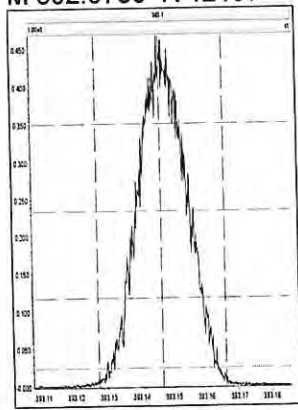
M 366.9792 R 11576



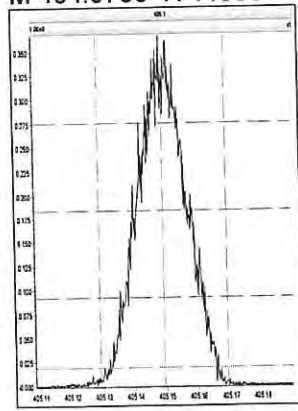
M 380.9760 R 11655



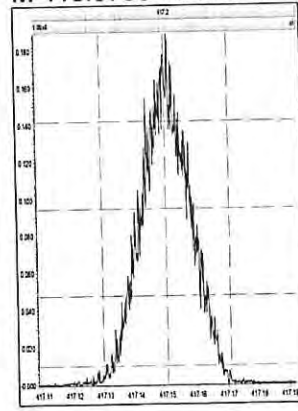
M 392.9760 R 12197



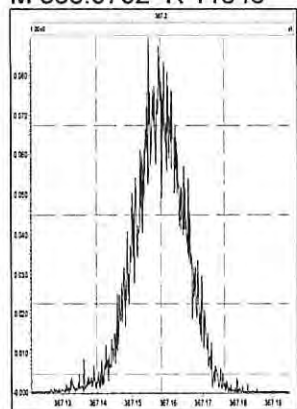
M 404.9760 R 11963



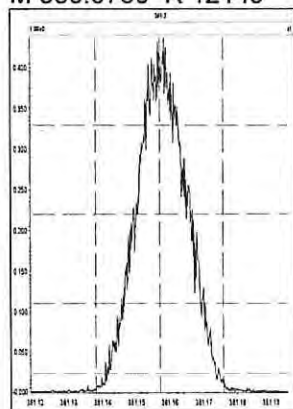
M 416.9760 R 12079



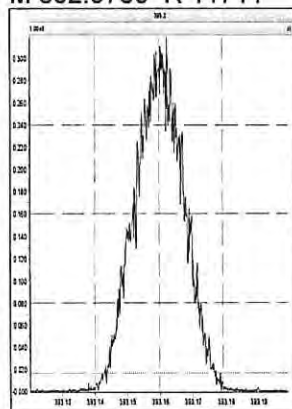
M 366.9792 R 11646



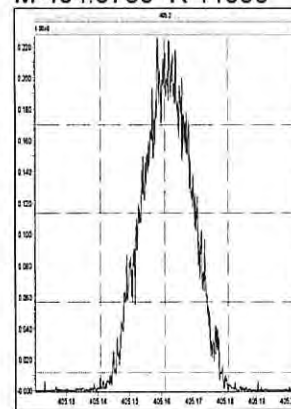
M 380.9760 R 12149



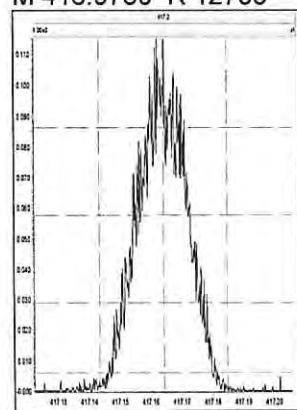
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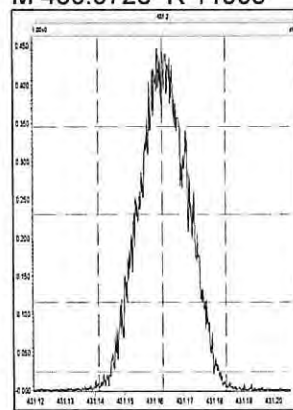
M 404.9760 R 11990



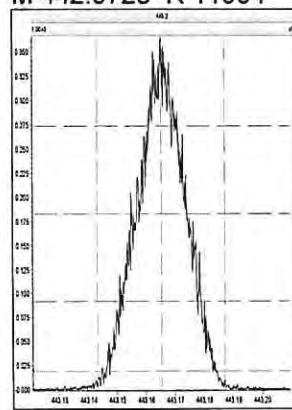
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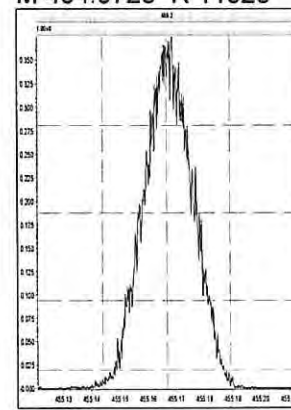
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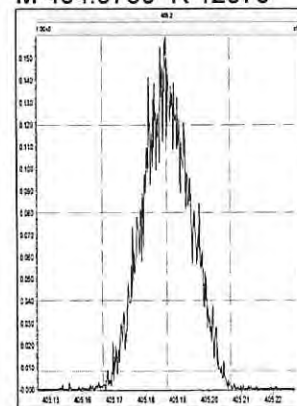
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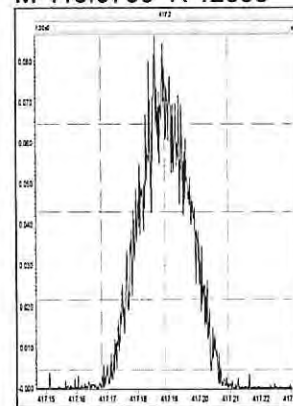
M 454.9728 R 11628



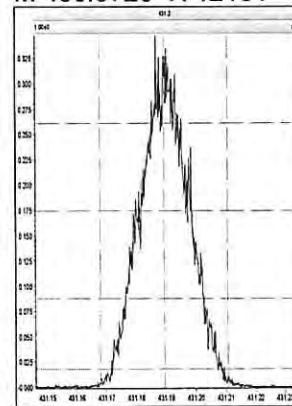
M 404.9760 R 12079



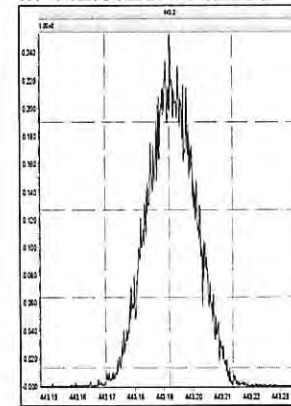
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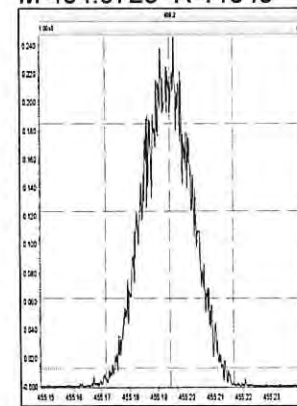
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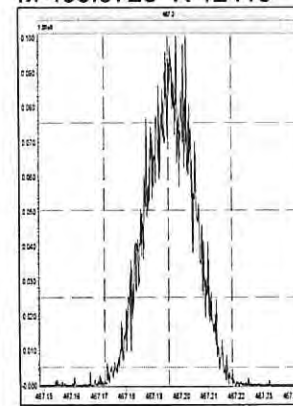
M 442.9728 R 12079



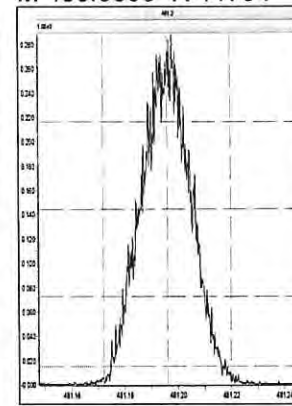
M 454.9728 R 11848



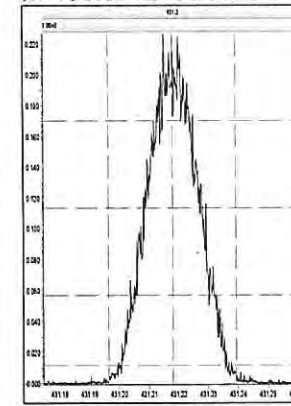
M 466.9728 R 12416



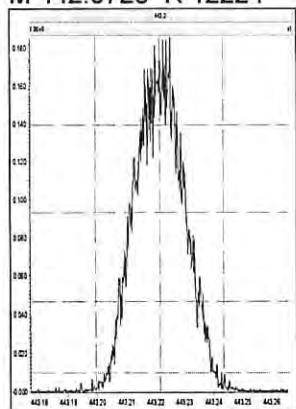
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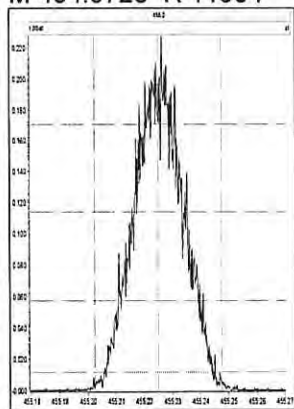
M 430.9728 R 12255



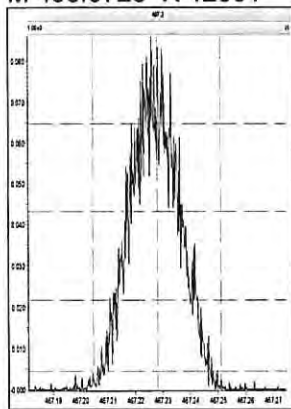
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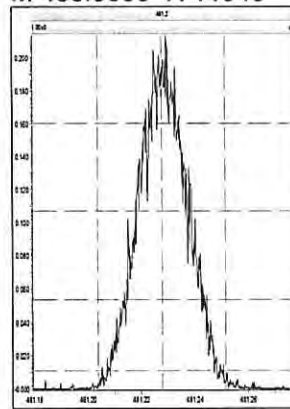
M 454.9728 R 11904



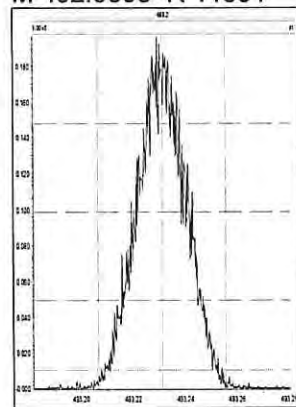
M 466.9728 R 12001



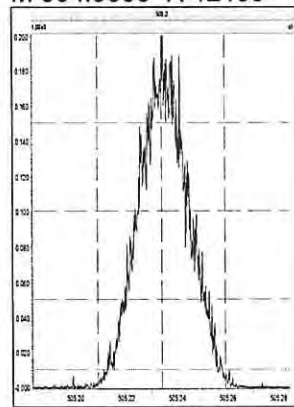
M 480.9696 R 11948



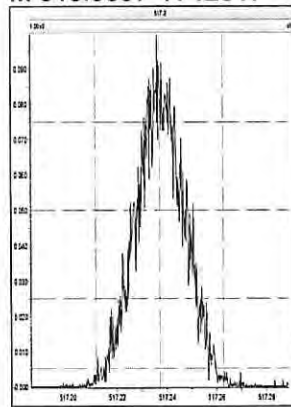
M 492.9696 R 11691



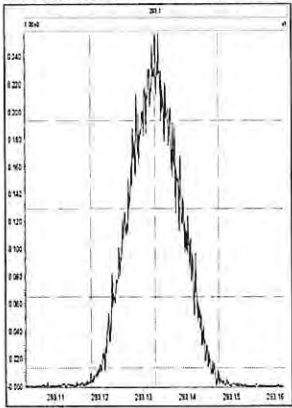
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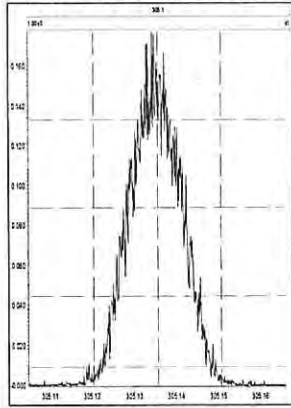
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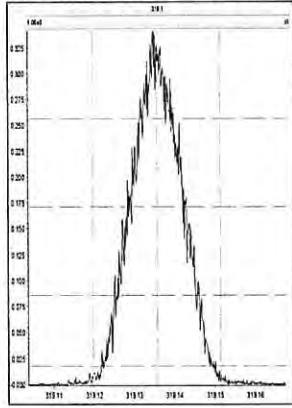
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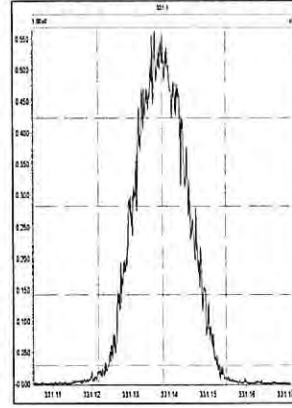
M 304.9824 R 11605



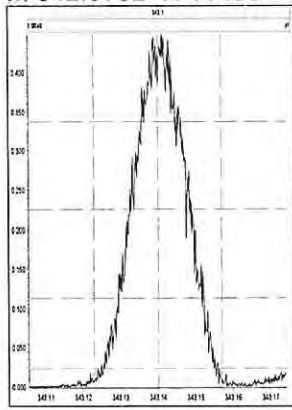
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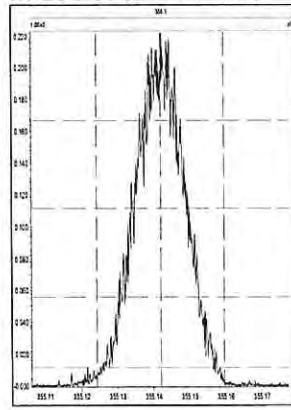
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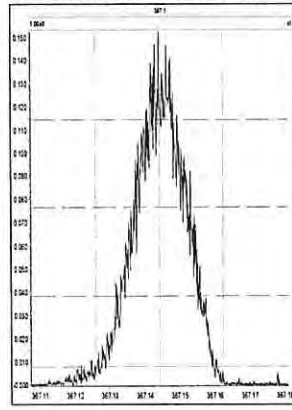
M 342.9792 R 11493



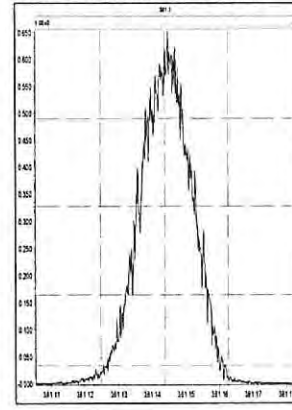
M 354.9792 R 11739



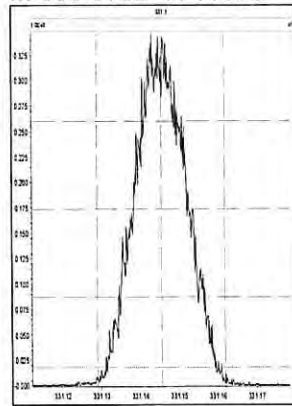
M 366.9792 R 11640



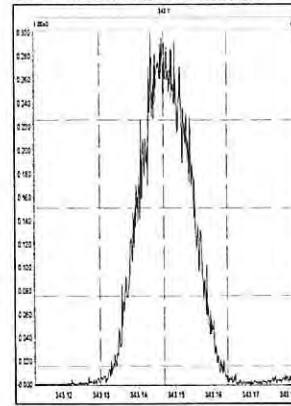
M 380.9760 R 11390



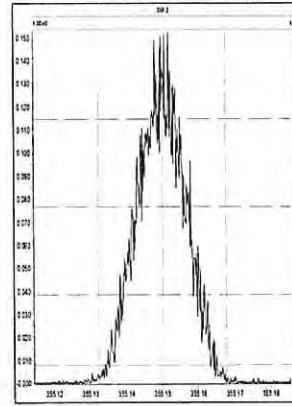
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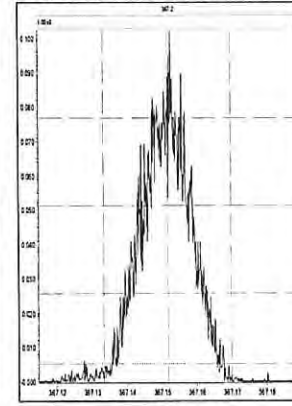
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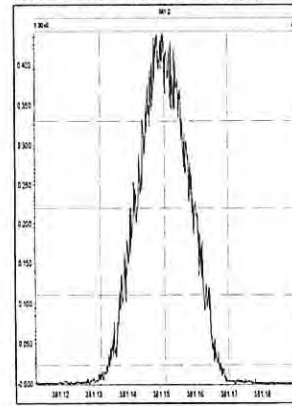
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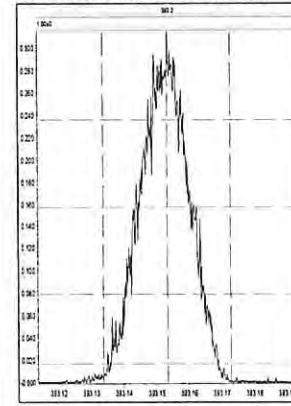
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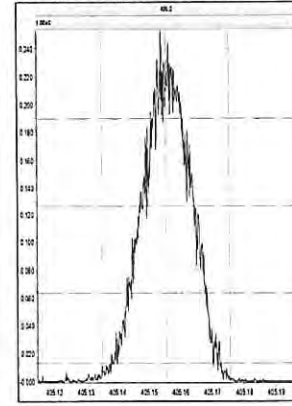
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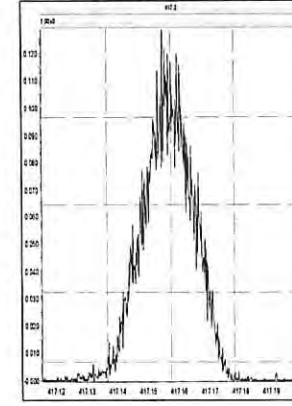
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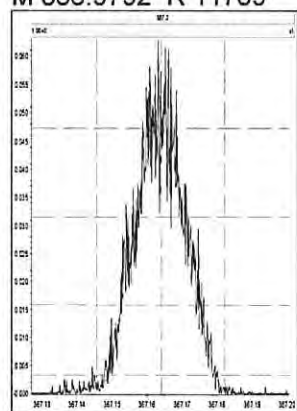
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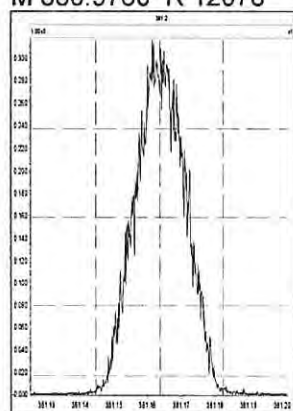
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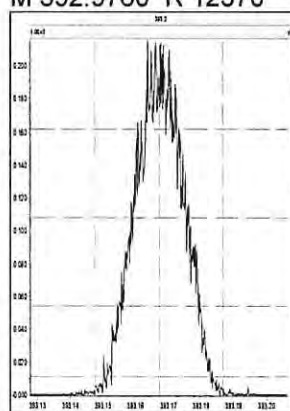
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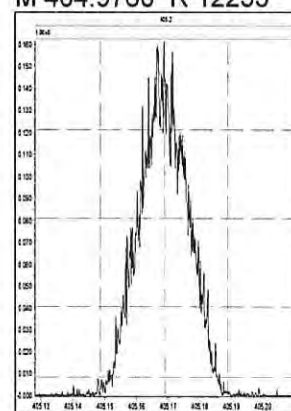
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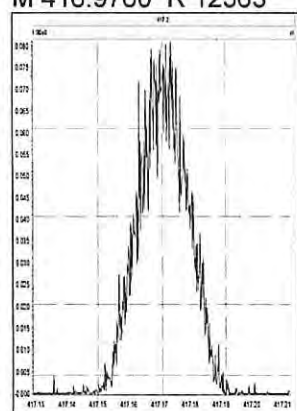
M 392.9760 R 12570



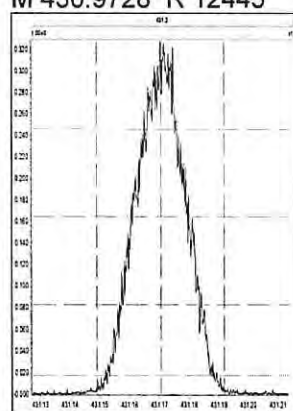
M 404.9760 R 12255



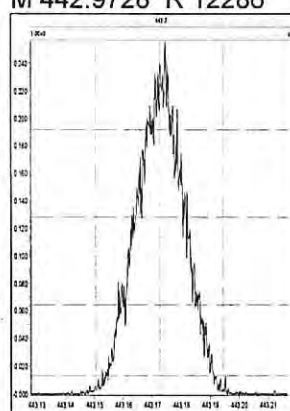
M 416.9760 R 12563



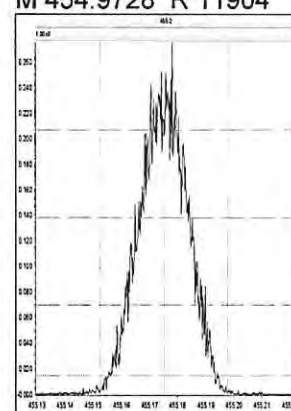
M 430.9728 R 12445



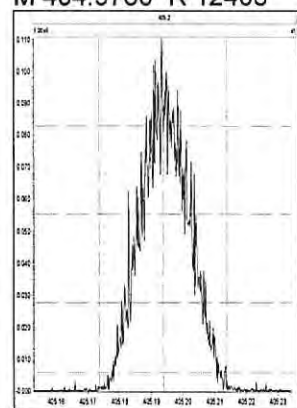
M 442.9728 R 12286



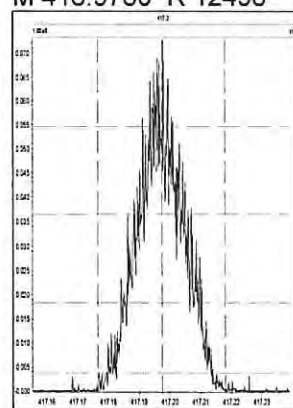
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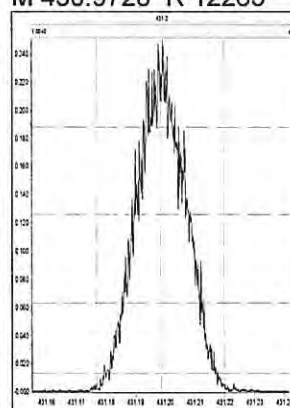
M 404.9760 R 12408



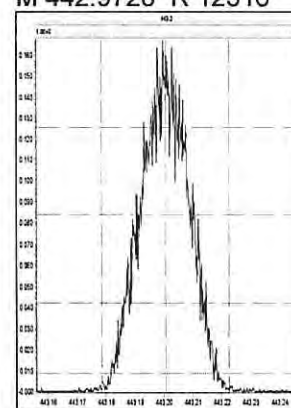
M 416.9760 R 12498



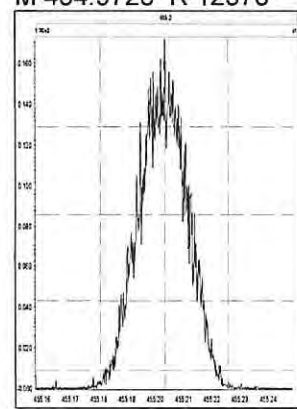
M 430.9728 R 12265



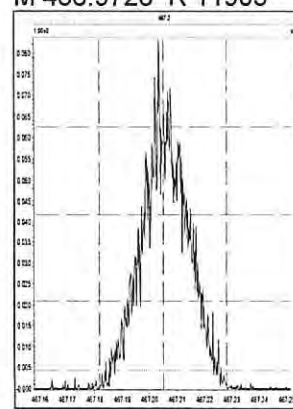
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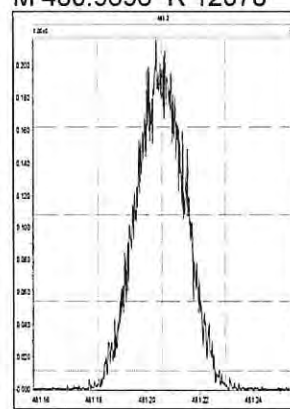
M 454.9728 R 12378



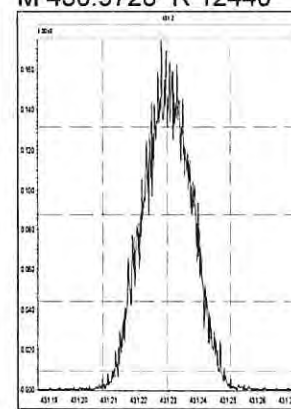
M 466.9728 R 11905



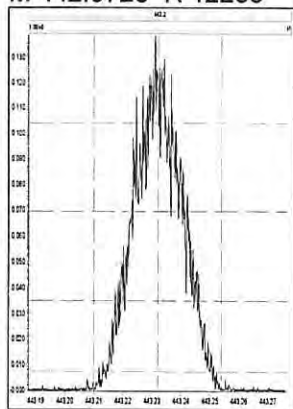
M 480.9696 R 12078



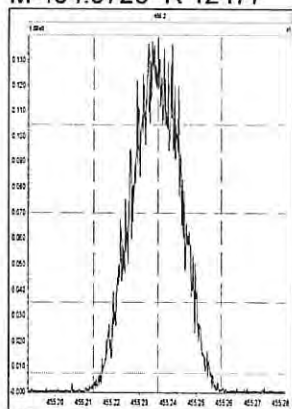
M 430.9728 R 12440



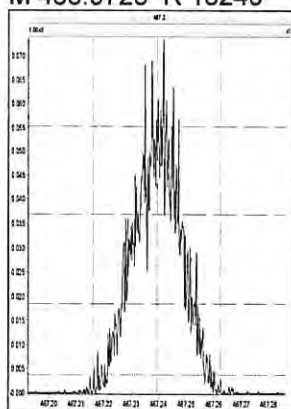
M 442.9728 R 12286



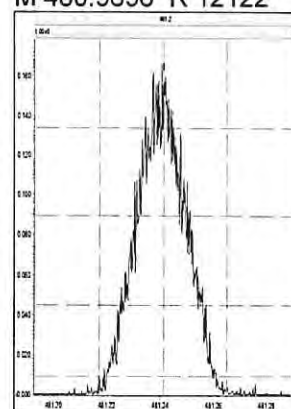
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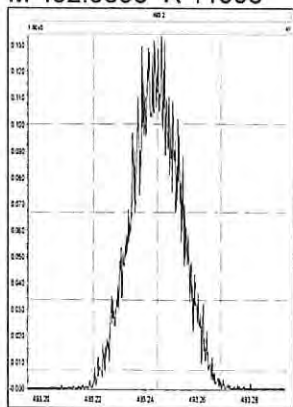
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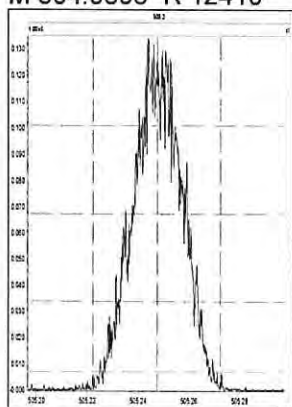
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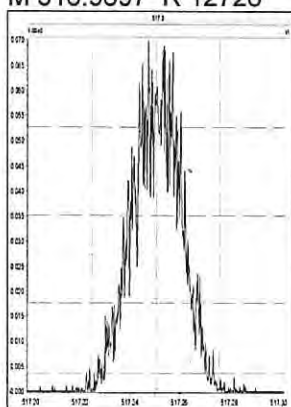
M 492.9696 R 11993



M 504.9696 R 12410



M 516.9697 R 12726



5DFA

WINDOW DEFINING MIX SUMMARY

CLIENT ID:

WDM

Lab Name: ALS Environmental
Lab Code: ALSTX
GC Column: DB-5MSUI

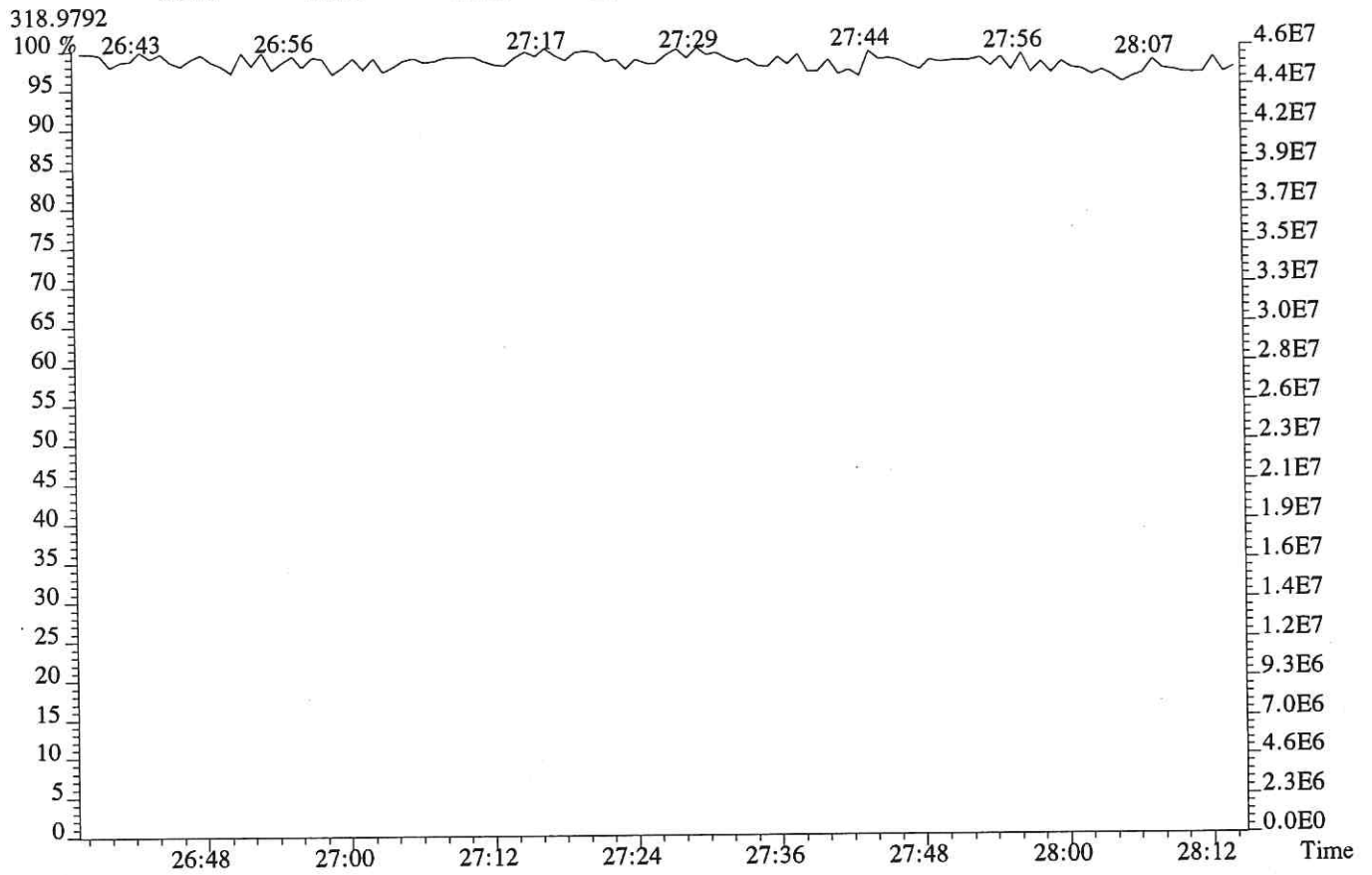
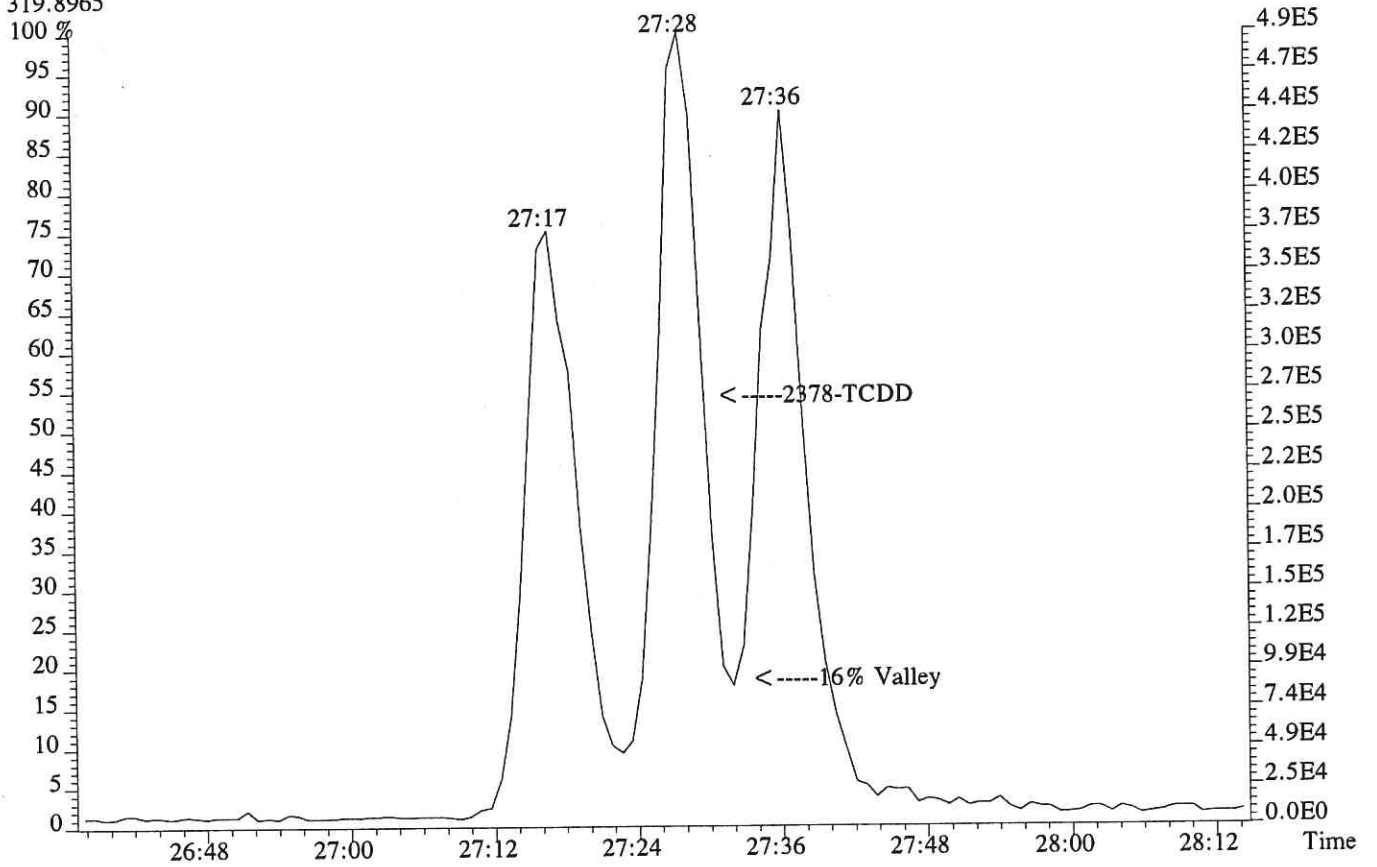
Case No.: _____ SDG No.: _____
ID: 0.25 (mm) Lab File ID: P618231
Date Analyzed: 1-AUG-19
Time Analyzed: 11:49:42

Congener	Retention Time First Eluting	Retention Time Last Eluting
TCDF	22:06	28:45
TCDD	23:47	28:35
PeCDF	28:41	33:12
PeCDD	30:22	32:57
HxCDF	33:53	36:27
HxCDD	34:25	36:03
HpCDF	37:41	39:01
HpCDD	37:56	38:34

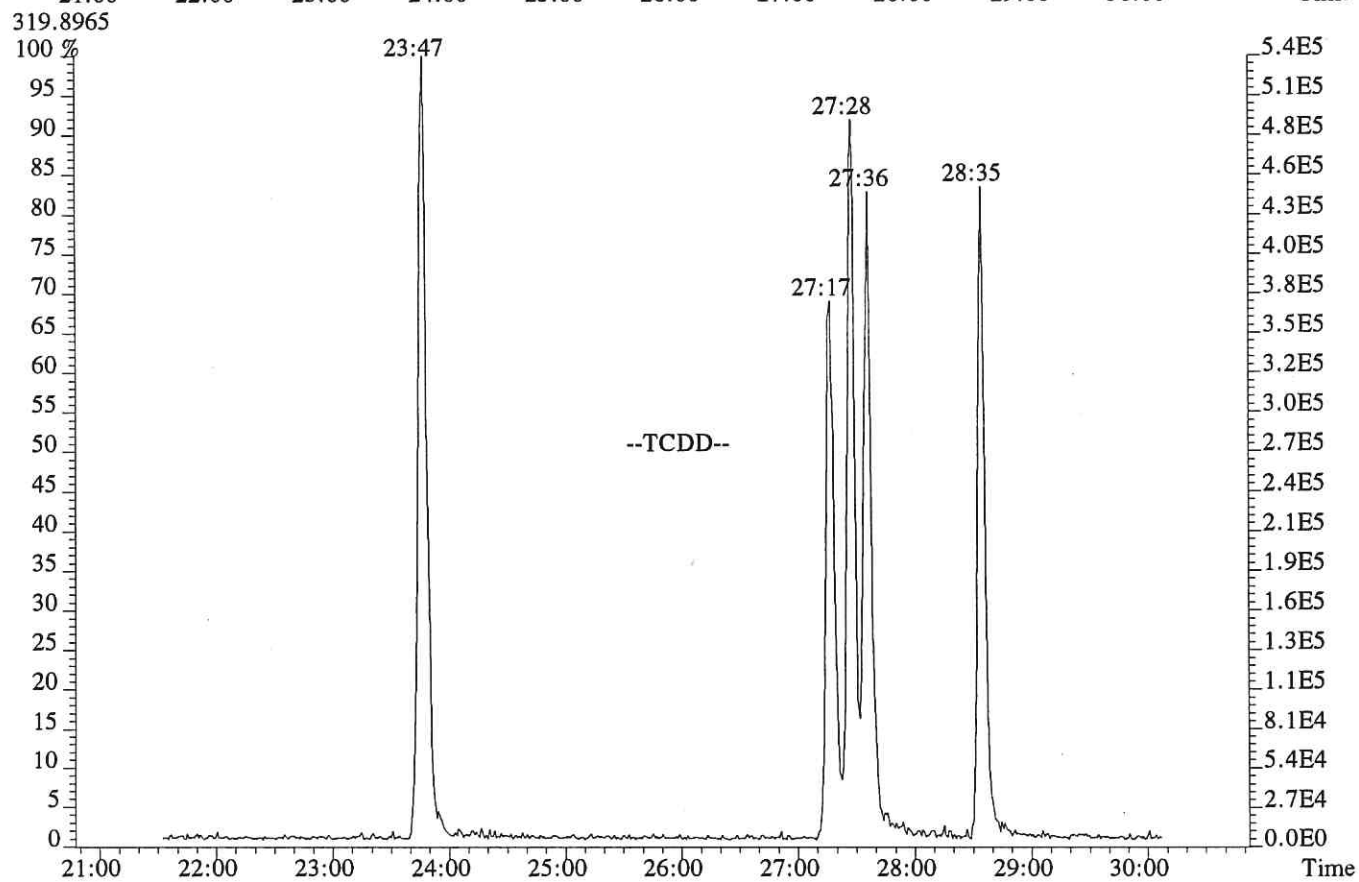
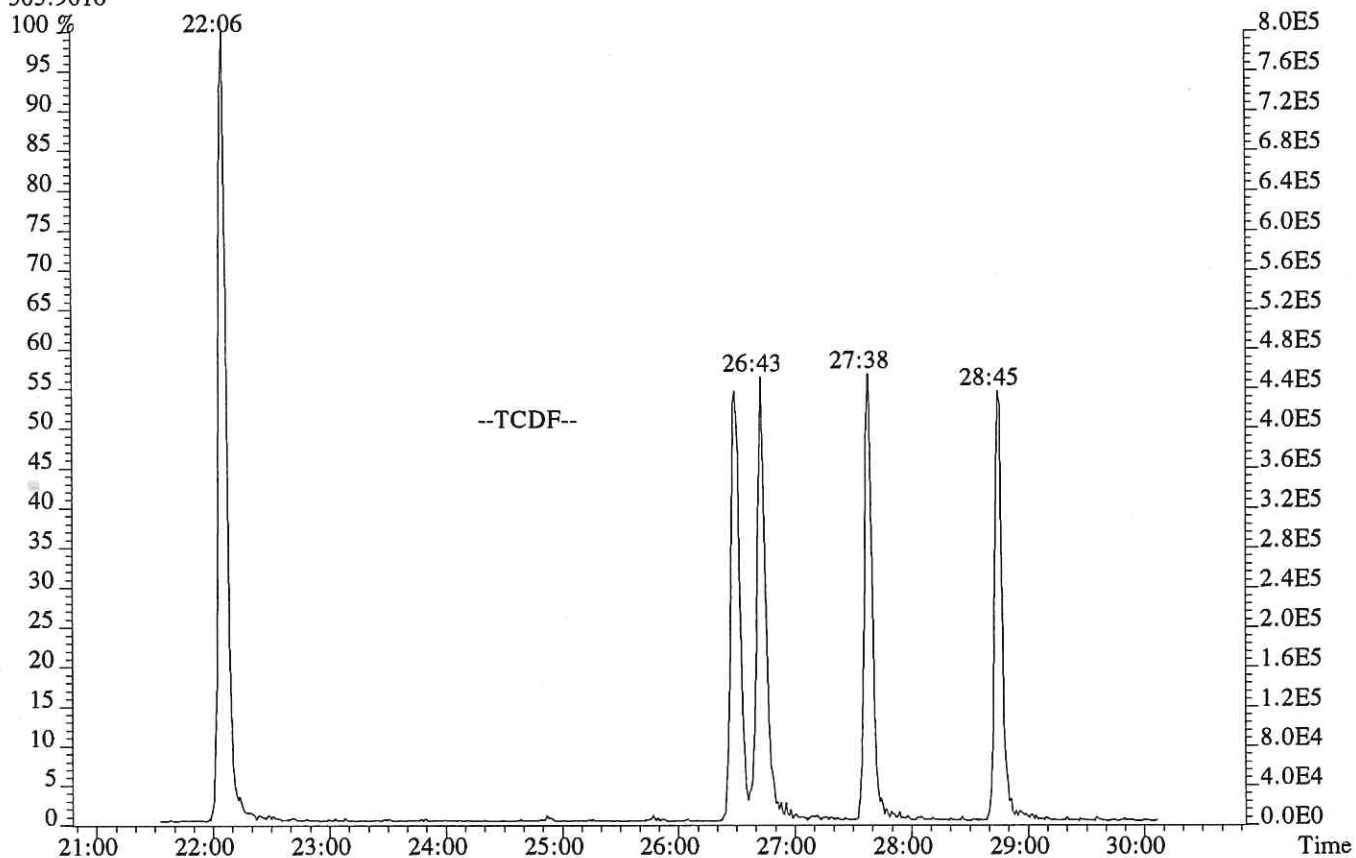
% Valley 2378-TCDD:

16 %

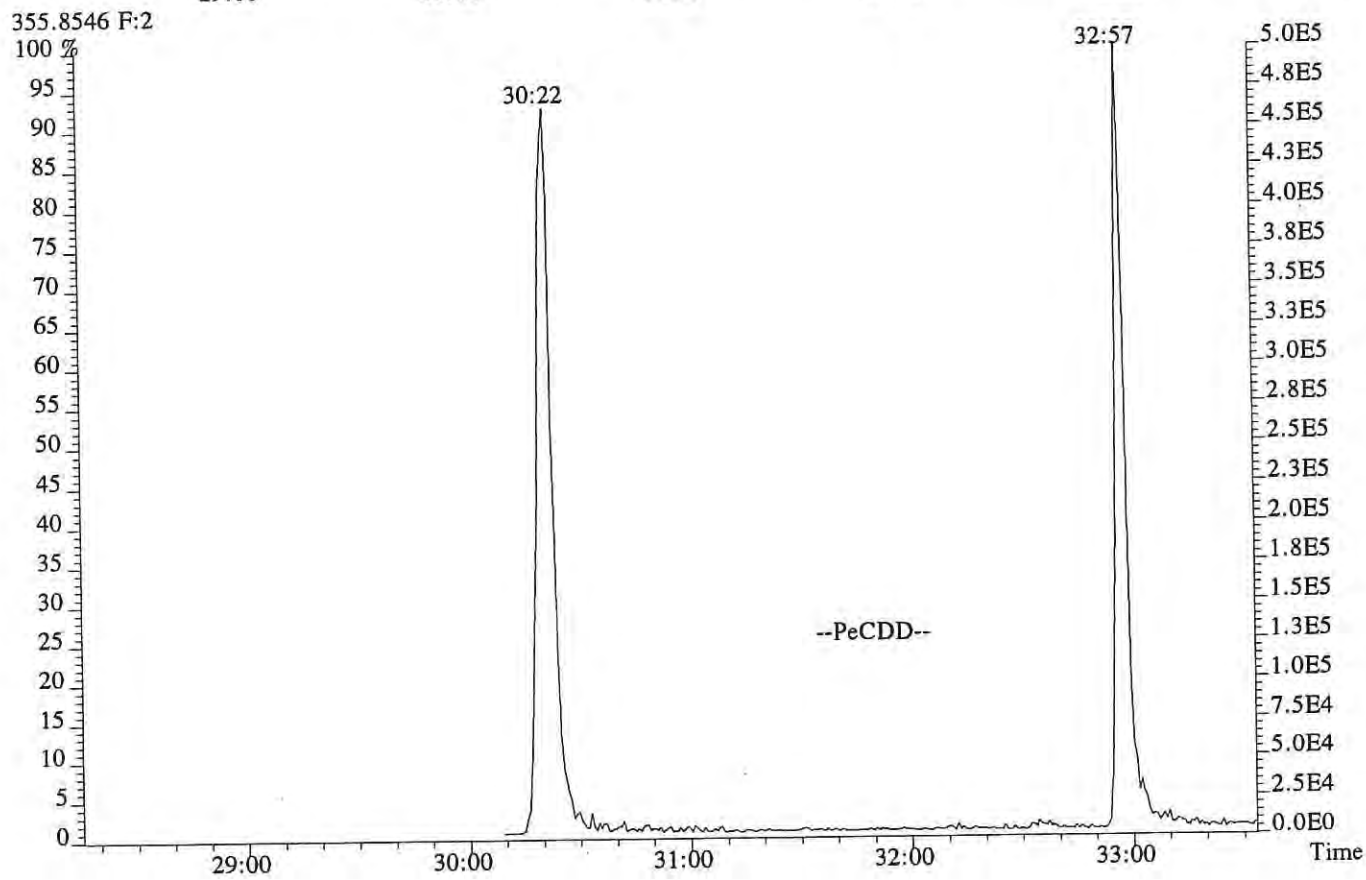
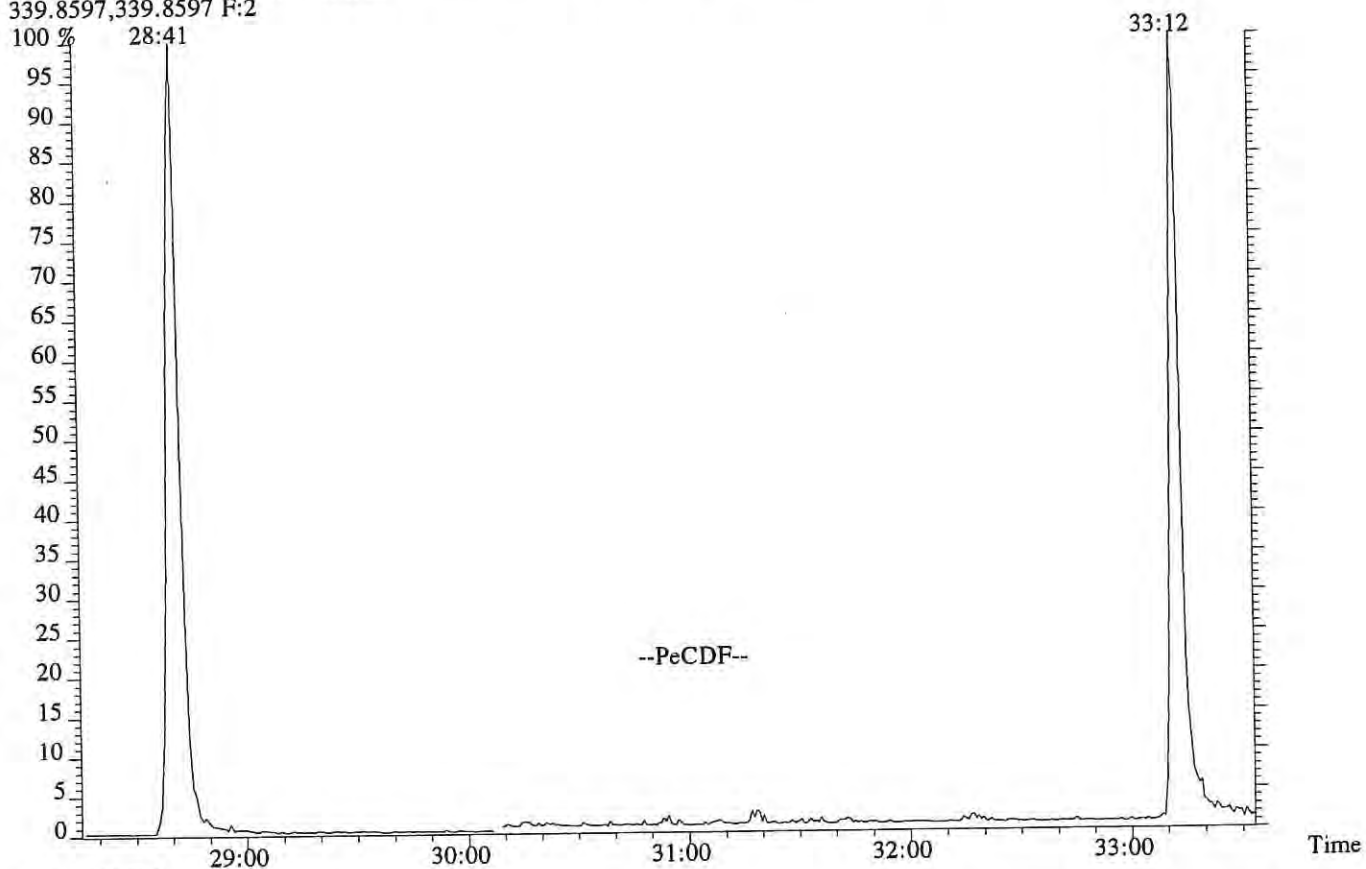
File:P618231 #1-609 Acq: 1-AUG-2019 11:49:42 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:WINDOW DEFINE
319.8965



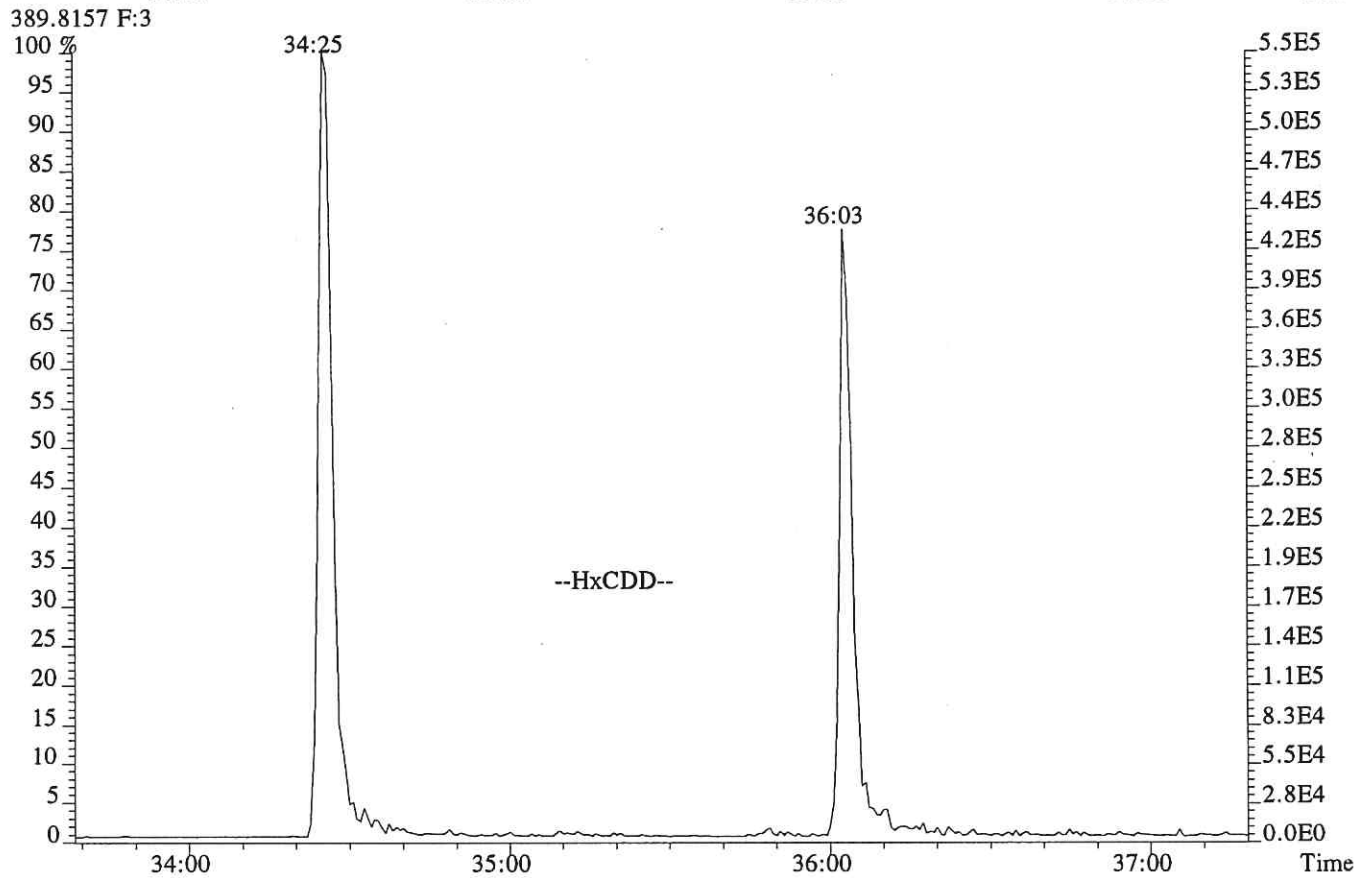
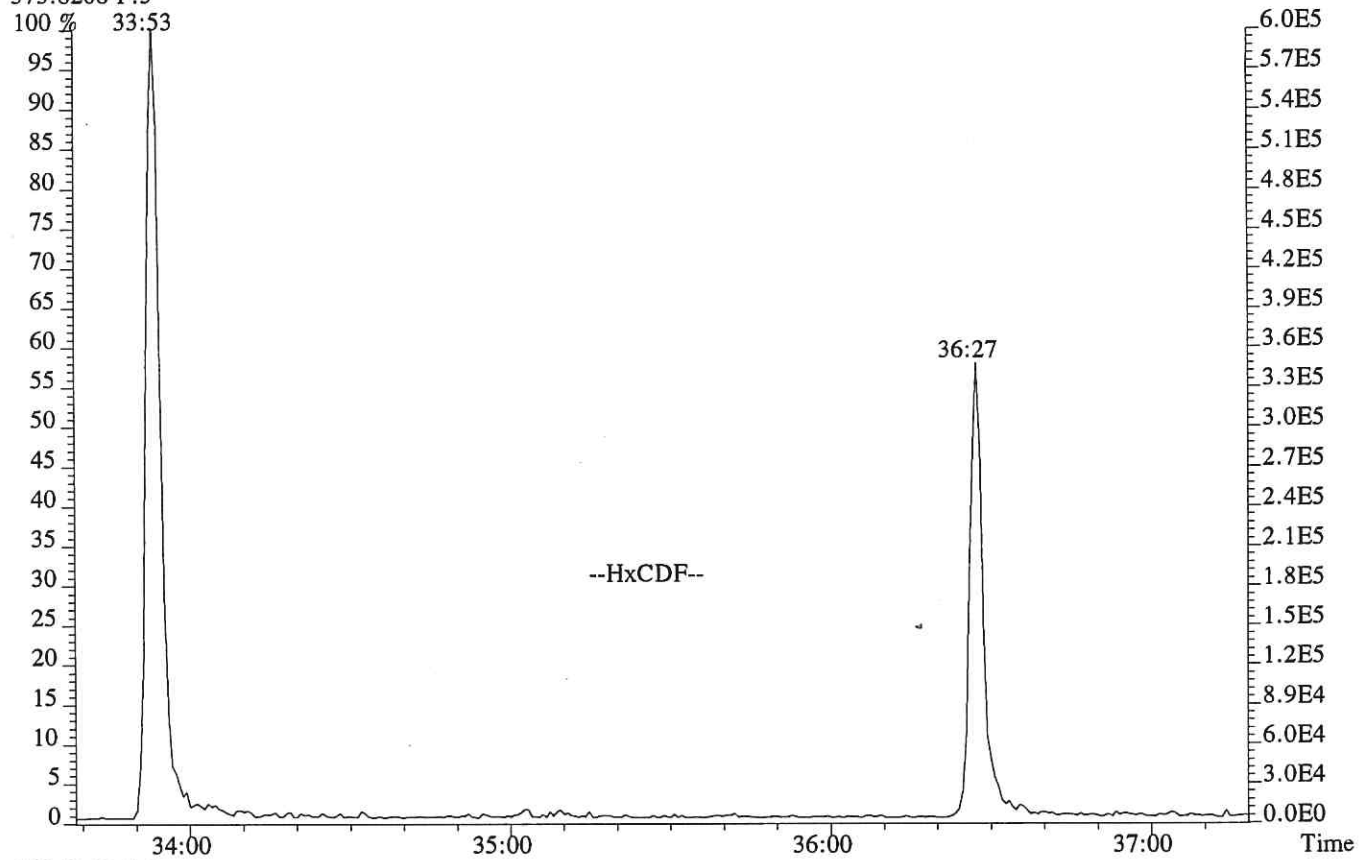
File:P618231 #1-609 Acq: 1-AUG-2019 11:49:42 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:WINDOW DEFINE
303.9016



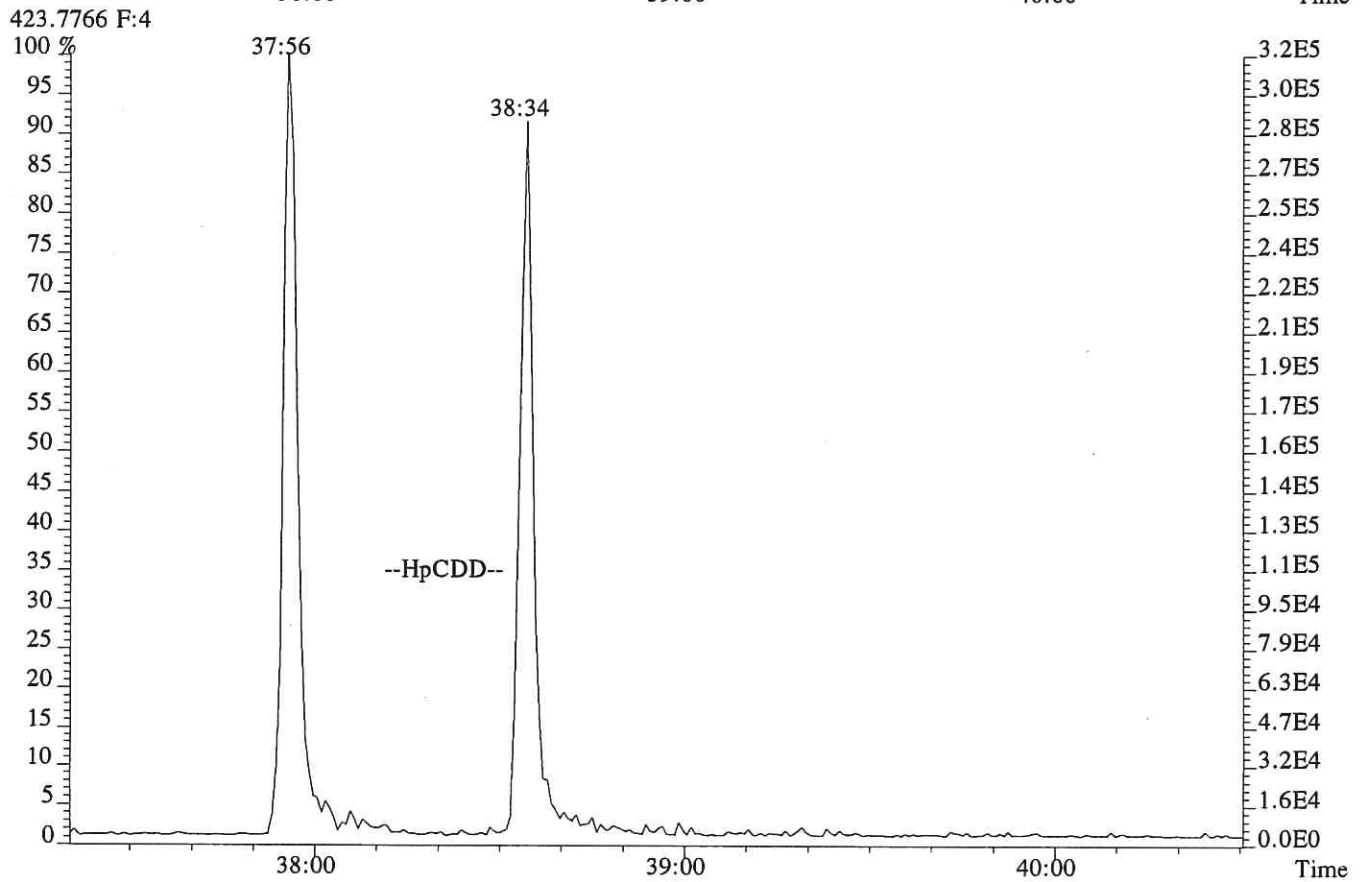
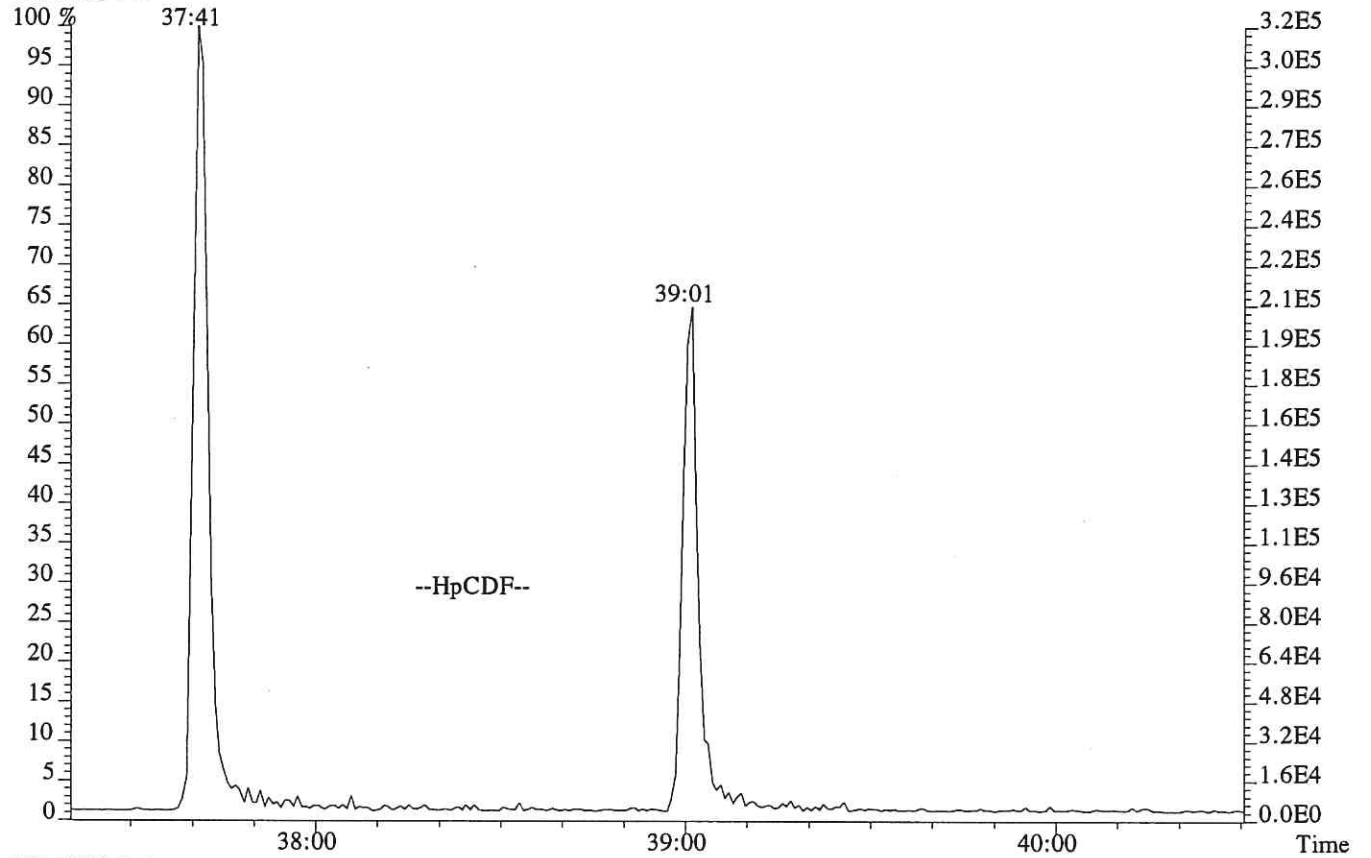
File: P618231 #1-609 Acq: 1-AUG-2019 11:49:42 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: WINDOW DEFINE
339.8597,339.8597 F:2



File:P618231 #1-330 Acq: 1-AUG-2019 11:49:42 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:WINDOW DEFINE
373.8208 F:3



File:P618231 #1-286 Acq: 1-AUG-2019 11:49:42 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:WINDOW DEFINE
407.7818 F:4



USEPA - CLP
6DFB6
CDD/CDF INITIAL CALIBRATION ION ABUNDANCE RATIO SUMMARY
HIGH RESOLUTION

Lab Name: ALS Environmental

Contract No.:

Lab Code: ALSTX Case No.:

TO No.: SDG No.:

GC Column: DB-5MSUI ID: 0.25 (mm)

Instrument ID: E-HRMS-08

Init. Calib. Date(s): 08/01/19

Method 8290/1613

Init. Calib. Time.: 13:37

ION ABUNDANCE RATIO

Target Analytes	SELECTED IONS	ION ABUNDANCE RATIO						FLAG	ION RATIO QC LIMITS
		CS0.5	CS1	CS2	CS3	CS4	CS5		
2,3,7,8-TCDF	304/306	0.69	0.65	0.74	0.70	0.74	0.75		0.65-0.89
2,3,7,8-TCDD	320/322	0.73	0.83	0.74	0.75	0.76	0.77		0.65-0.89
1,2,3,7,8-PeCDF	340/342	1.67	1.68	1.62	1.50	1.52	1.52		1.32-1.78
2,3,4,7,8-PeCDF	340/342	1.75	1.67	1.59	1.44	1.50	1.49		1.32-1.78
1,2,3,7,8-PeCDD	356/358	1.63	1.55	1.68	1.56	1.55	1.55		1.32-1.78
1,2,3,4,7,8-HxCDF	374/376	1.22	1.10	1.27	1.21	1.20	1.20		1.05-1.43
1,2,3,6,7,8-HxCDF	374/376	1.21	1.27	1.14	1.19	1.19	1.21		1.05-1.43
2,3,4,6,7,8-HxCDF	374/376	1.26	1.31	1.21	1.19	1.21	1.20		1.05-1.43
1,2,3,7,8,9-HxCDF	374/376	1.42	1.06	1.24	1.26	1.21	1.20		1.05-1.43
1,2,3,4,7,8-HxCDD	390/392	1.34	1.36	1.22	1.26	1.24	1.23		1.05-1.43
1,2,3,6,7,8-HxCDD	390/392	1.28	1.28	1.24	1.21	1.24	1.25		1.05-1.43
1,2,3,7,8,9-HxCDD	390/392	1.41	1.23	1.23	1.16	1.24	1.18		1.05-1.43
1,2,3,4,6,7,8-HpCDF	408/410	0.92	0.90	0.99	0.96	1.00	1.01		0.88-1.20
1,2,3,4,7,8,9-HpCDF	408/410	0.97	0.99	0.93	1.02	1.01	1.01		0.88-1.20
1,2,3,4,6,7,8-HpCDD	424/426	1.08	0.98	1.07	1.04	1.04	1.02		0.88-1.20
OCDF	442/444	0.95	0.84	0.90	0.87	0.88	0.88		0.76-1.02
OCDD	458/460	0.86	0.86	0.85	0.88	0.87	0.87		0.76-1.02
13C-2,3,7,8-TCDD	332/334	0.75	0.76	0.75	0.77	0.77	0.77		0.65-0.89
13C-1,2,3,7,8-PeCDD	368/370	1.58	1.57	1.57	1.55	1.58	1.56		1.32-1.78
13C-1,2,3,4,7,8-HxCDD	402/404	1.25	1.27	1.26	1.23	1.24	1.24		1.05-1.43
13C-1,2,3,6,7,8-HxCDD	402/404	1.24	1.24	1.27	1.26	1.25	1.27		1.05-1.43
13C-1,2,3,4,6,7,8-HpCDD	436/438	1.02	1.04	1.06	1.05	1.01	1.07		0.88-1.20
13C-OCDD	470/472	0.90	0.92	0.90	0.89	0.90	0.90		0.76-1.02
13C-2,3,7,8-TCDF	316/318	0.78	0.77	0.79	0.80	0.77	0.78		0.65-0.89
13C-1,2,3,7,8-PeCDF	352/354	1.55	1.58	1.56	1.58	1.59	1.57		1.32-1.78
13C-2,3,4,7,8-PeCDF	352/354	1.56	1.57	1.57	1.56	1.57	1.57		1.32-1.78
13C-1,2,3,4,7,8-HxCDF	384/386	0.52	0.51	0.51	0.50	0.50	0.52		0.43-0.59
13C-1,2,3,6,7,8-HxCDF	384/386	0.52	0.51	0.51	0.53	0.52	0.53		0.43-0.59
13C-2,3,4,6,7,8-HxCDF	384/386	0.51	0.51	0.51	0.52	0.51	0.51		0.43-0.59
13C-1,2,3,7,8,9-HxCDF	384/386	0.52	0.49	0.51	0.50	0.50	0.52		0.43-0.59
13C-1,2,3,4,6,7,8-HpCDF	418/420	0.42	0.43	0.44	0.44	0.43	0.43		0.37-0.51
13C-1,2,3,4,7,8,9-HpCDF	418/420	0.43	0.42	0.44	0.43	0.43	0.43		0.37-0.51
13C-1,2,3,4-TCDD	332/334	0.78	0.78	0.77	0.78	0.78	0.76		0.65-0.89
13C-1,2,3,7,8,9-HxCDD	402/404	1.24	1.25	1.19	1.26	1.28	1.24		1.05-1.43

Quality Control (QC) limits represent +/- 15% window around the theoretical ion abundance ratio. The laboratory must flag any analyte in any calibration solution which does not meet the ion abundance ratio QC limit by placing an asterisk in the flag column.

ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
193431

Run #1 Filename P618233 Samp: 1 Inj: 1 Acquired: 1-AUG-19 13:37:02
Processed: 2-AUG-19 09:23:20 Sample ID: CS0.50

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	26:41	4.741e+01	6.828e+01	0.69	yes	no	0.873
2 Unk	1,2,3,7,8-PeCDF	31:17	3.153e+02	1.884e+02	1.67	yes	no	0.864
3 Unk	2,3,4,7,8-PeCDF	32:16	2.583e+02	1.472e+02	1.75	yes	no	0.825
4 Unk	1,2,3,4,7,8-HxCDF	35:01	1.890e+02	1.552e+02	1.22	yes	yes	1.084
5 Unk	1,2,3,6,7,8-HxCDF	35:08	2.037e+02	1.688e+02	1.21	yes	yes	0.994
6 Unk	2,3,4,6,7,8-HxCDF	35:39	1.496e+02	1.190e+02	1.26	yes	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	36:25	1.506e+02	1.059e+02	1.42	yes	yes	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	37:41	1.075e+02	1.162e+02	0.92	yes	no	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	39:00	7.951e+01	8.186e+01	0.97	yes	no	1.104
10 Unk	OCDF	41:18	1.321e+02	1.397e+02	0.95	yes	no	0.993
11 Unk	2,3,7,8-TCDD	27:35	4.526e+01	6.197e+01	0.73	yes	no	0.989
12 Unk	1,2,3,7,8-PeCDD	32:34	2.417e+02	1.482e+02	1.63	yes	no	0.954
13 Unk	1,2,3,4,7,8-HxCDD	35:47	1.583e+02	1.185e+02	1.34	yes	yes	1.020
14 Unk	1,2,3,6,7,8-HxCDD	35:53	1.829e+02	1.426e+02	1.28	yes	yes	1.030
15 Unk	1,2,3,7,8,9-HxCDD	36:07	1.579e+02	1.119e+02	1.41	yes	yes	1.007
16 Unk	1,2,3,4,6,7,8-HpCDD	38:34	9.526e+01	8.831e+01	1.08	yes	no	0.922
17 Unk	OCDD	41:07	1.504e+02	1.749e+02	0.86	yes	no	1.062
18 IS	13C-2,3,7,8-TCDF	26:40	1.996e+04	2.560e+04	0.78	yes	no	1.102
19 IS	13C-1,2,3,7,8-PeCDF	31:16	2.559e+04	1.651e+04	1.55	yes	no	1.074
20 IS	13C-2,3,4,7,8-PeCDF	32:15	2.360e+04	1.508e+04	1.56	yes	no	1.005
21 IS	13C-1,2,3,4,7,8-HxCDF	35:01	7.996e+03	1.527e+04	0.52	yes	no	1.059
22 IS	13C-1,2,3,6,7,8-HxCDF	35:07	9.894e+03	1.915e+04	0.52	yes	no	1.264
23 IS	13C-2,3,4,6,7,8-HxCDF	35:39	7.733e+03	1.508e+04	0.51	yes	no	1.066
24 IS	13C-1,2,3,7,8,9-HxCDF	36:25	5.303e+03	1.025e+04	0.52	yes	no	0.801
25 IS	13C-1,2,3,4,6,7,8-HpCDF	37:40	4.585e+03	1.093e+04	0.42	yes	no	0.789
26 IS	13C-1,2,3,4,7,8,9-HpCDF	39:00	3.041e+03	7.037e+03	0.43	yes	no	0.590
27 IS	13C-2,3,7,8-TCDD	27:34	1.496e+04	1.995e+04	0.75	yes	no	0.839
28 IS	13C-1,2,3,7,8-PeCDD	32:32	1.763e+04	1.115e+04	1.58	yes	no	0.744
29 IS	13C-1,2,3,4,7,8-HxCDD	35:47	1.065e+04	8.491e+03	1.25	yes	no	0.907
30 IS	13C-1,2,3,6,7,8-HxCDD	35:52	1.199e+04	9.679e+03	1.24	yes	no	0.978
31 IS	13C-1,2,3,4,6,7,8-HpCDD	38:33	7.743e+03	7.615e+03	1.02	yes	no	0.814
32 IS	13C-OCDD	41:07	1.041e+04	1.158e+04	0.90	yes	no	0.653
33 RS/RT	13C-1,2,3,4-TCDD	26:54	1.955e+04	2.516e+04	0.78	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	36:07	1.114e+04	9.001e+03	1.24	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	27:35	1.215e+02				no	0.894

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
193431

Run #1 Filename P618233 Samp: 1 Inj: 1 Acquired: 1-AUG-19 13:37:02
Processed: 2-AUG-19 09:23:20 LAB. ID: CS0.50

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	8.26e+03	3.60e+02	2.3e+01	1.20e+04	8.08e+02	1.5e+01
2	1,2,3,7,8-PeCDF	5.41e+04	3.24e+02	1.7e+02	3.18e+04	5.52e+02	5.8e+01
3	2,3,4,7,8-PeCDF	4.62e+04	3.24e+02	1.4e+02	2.88e+04	5.52e+02	5.2e+01
4	1,2,3,4,7,8-HxCDF	4.04e+04	4.72e+02	8.6e+01	3.37e+04	3.96e+02	8.5e+01
5	1,2,3,6,7,8-HxCDF	4.07e+04	4.72e+02	8.6e+01	2.94e+04	3.96e+02	7.4e+01
6	2,3,4,6,7,8-HxCDF	3.14e+04	4.72e+02	6.6e+01	2.25e+04	3.96e+02	5.7e+01
7	1,2,3,7,8,9-HxCDF	2.72e+04	4.72e+02	5.8e+01	2.30e+04	3.96e+02	5.8e+01
8	1,2,3,4,6,7,8-HpCDF	2.37e+04	3.12e+02	7.6e+01	2.37e+04	2.52e+02	9.4e+01
9	1,2,3,4,7,8,9-HpCDF	1.70e+04	3.12e+02	5.5e+01	1.59e+04	2.52e+02	6.3e+01
10	OCDF	2.20e+04	2.60e+02	8.5e+01	2.58e+04	8.64e+02	3.0e+01
11	2,3,7,8-TCDD	9.06e+03	1.66e+02	5.5e+01	8.99e+03	8.72e+02	1.0e+01
12	1,2,3,7,8-PeCDD	3.91e+04	8.76e+02	4.5e+01	2.75e+04	2.44e+02	1.1e+02
13	1,2,3,4,7,8-HxCDD	3.45e+04	3.08e+02	1.1e+02	2.30e+04	3.24e+02	7.1e+01
14	1,2,3,6,7,8-HxCDD	4.04e+04	3.08e+02	1.3e+02	3.47e+04	3.24e+02	1.1e+02
15	1,2,3,7,8,9-HxCDD	3.48e+04	3.08e+02	1.1e+02	2.35e+04	3.24e+02	7.3e+01
16	1,2,3,4,6,7,8-HpCDD	2.15e+04	4.48e+02	4.8e+01	1.91e+04	2.60e+02	7.3e+01
17	OCDD	2.60e+04	2.92e+02	8.9e+01	3.46e+04	5.12e+02	6.8e+01
18	13C-2,3,7,8-TCDF	2.94e+06	8.29e+03	3.6e+02	3.74e+06	2.50e+03	1.5e+03
19	13C-1,2,3,7,8-PeCDF	4.14e+06	4.28e+02	9.7e+03	2.64e+06	9.80e+02	2.7e+03
20	13C-2,3,4,7,8-PeCDF	4.11e+06	4.28e+02	9.6e+03	2.67e+06	9.80e+02	2.7e+03
21	13C-1,2,3,4,7,8-HxCDF	1.69e+06	5.12e+02	3.3e+03	3.21e+06	5.00e+02	6.4e+03
22	13C-1,2,3,6,7,8-HxCDF	1.85e+06	5.12e+02	3.6e+03	3.60e+06	5.00e+02	7.2e+03
23	13C-2,3,4,6,7,8-HxCDF	1.55e+06	5.12e+02	3.0e+03	3.01e+06	5.00e+02	6.0e+03
24	13C-1,2,3,7,8,9-HxCDF	1.06e+06	5.12e+02	2.1e+03	1.99e+06	5.00e+02	4.0e+03
25	13C-1,2,3,4,6,7,8-HpCDF	9.81e+05	2.07e+03	4.7e+02	2.29e+06	2.14e+03	1.1e+03
26	13C-1,2,3,4,7,8,9-HpCDF	6.36e+05	2.07e+03	3.1e+02	1.48e+06	2.14e+03	6.9e+02
27	13C-2,3,7,8-TCDD	2.36e+06	4.49e+03	5.3e+02	3.10e+06	1.55e+03	2.0e+03
28	13C-1,2,3,7,8-PeCDD	3.11e+06	1.14e+03	2.7e+03	1.98e+06	8.40e+02	2.4e+03
29	13C-1,2,3,4,7,8-HxCDD	2.35e+06	1.22e+03	1.9e+03	1.88e+06	7.60e+02	2.5e+03
30	13C-1,2,3,6,7,8-HxCDD	2.33e+06	1.22e+03	1.9e+03	1.88e+06	7.60e+02	2.5e+03
31	13C-1,2,3,4,6,7,8-HpCDD	1.65e+06	6.40e+02	2.6e+03	1.64e+06	2.84e+02	5.8e+03
32	13C-OCDD	1.96e+06	7.64e+02	2.6e+03	2.22e+06	1.77e+03	1.3e+03
33	13C-1,2,3,4-TCDD	3.08e+06	4.49e+03	6.9e+02	4.00e+06	1.55e+03	2.6e+03
34	13C-1,2,3,7,8,9-HxCDD	2.25e+06	1.22e+03	1.8e+03	1.78e+06	7.60e+02	2.3e+03
35	37Cl-2,3,7,8-TCDD	1.85e+04	1.73e+03	1.1e+01			

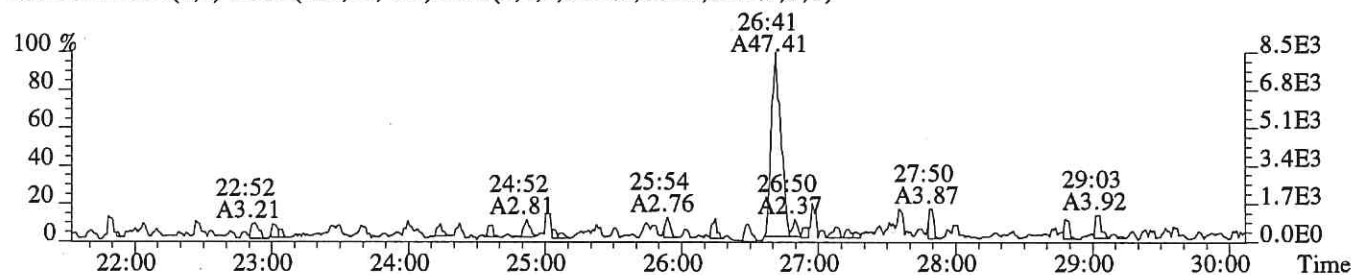
---Sample Calculation---

$$D/L \text{ TCDD} = \frac{2.5 \times (1.660e+02 + 8.720e+02) \times 100}{(2.357e+06 + 3.096e+06) \times (\quad) \times 0.989} =$$

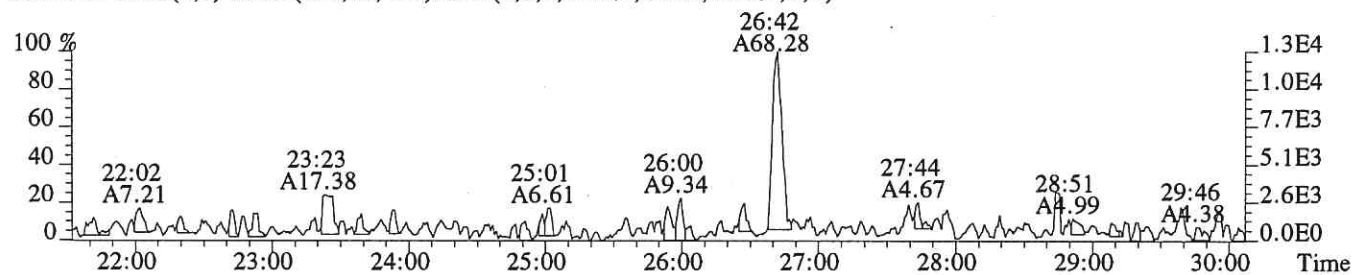
ALS ENVIRONMENTAL
10450 Stancliff Rd., Suite 115
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File:P618233 #1-609 Acq: 1-AUG-2019 13:37:02 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS0.5

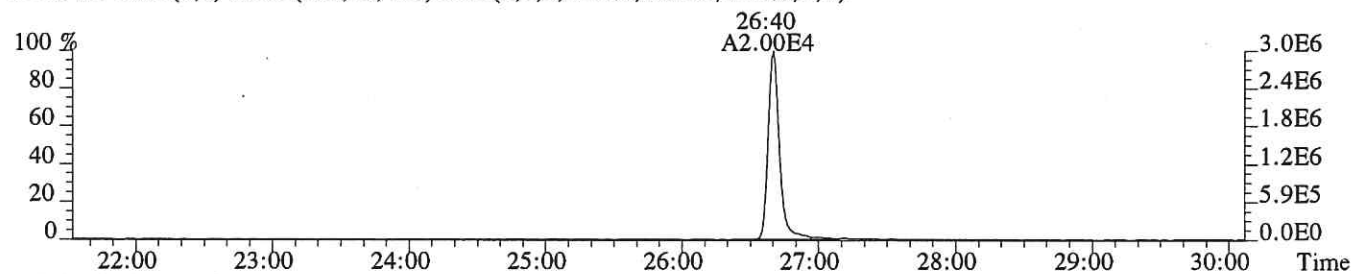
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,360.0,1.00%,F,T)



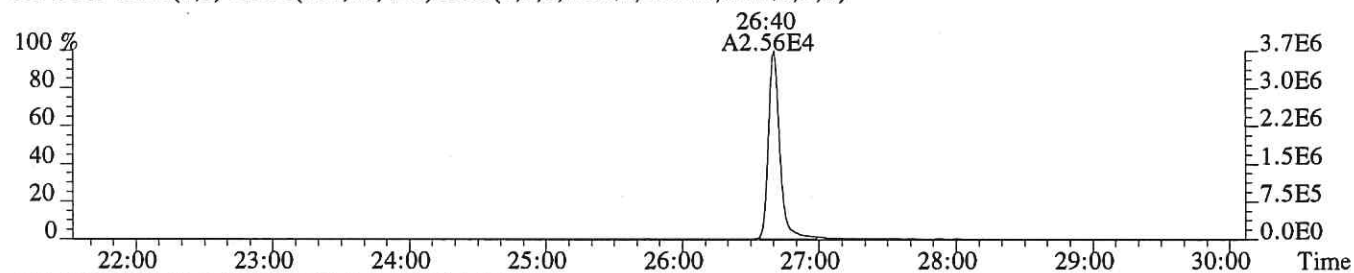
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,808.0,1.00%,F,T)



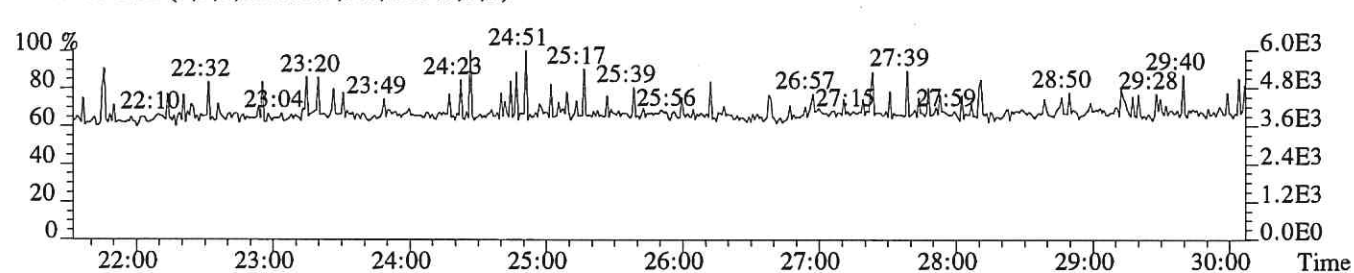
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,8292.0,1.00%,F,T)



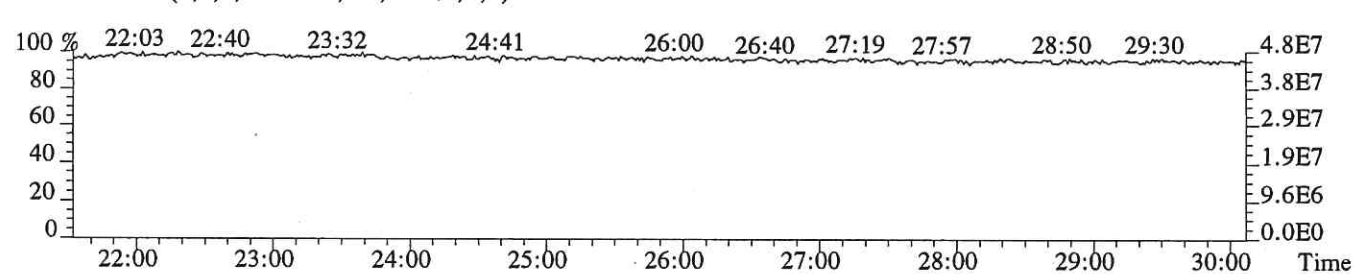
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2504.0,1.00%,F,T)



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

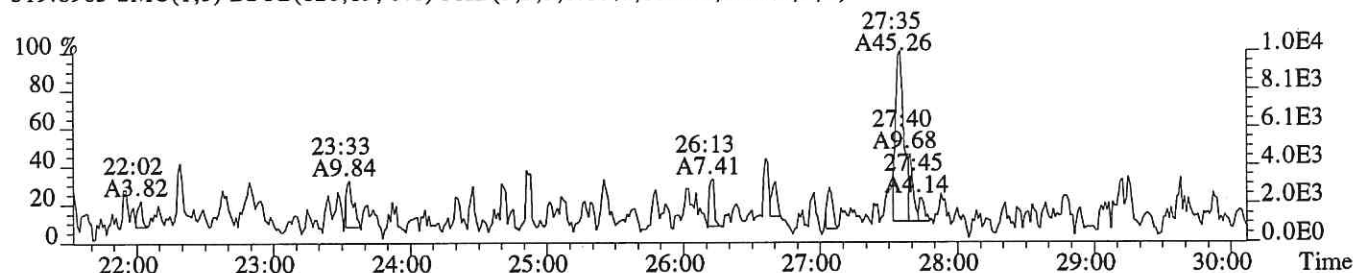


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

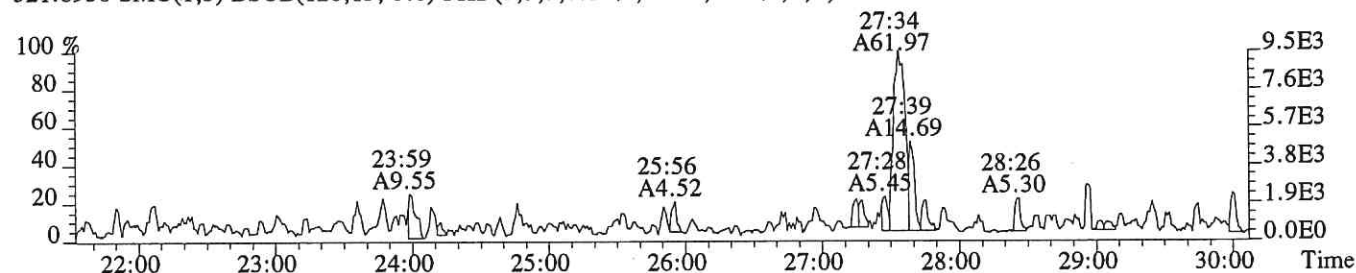


Sample#1 Exp:CS0.5

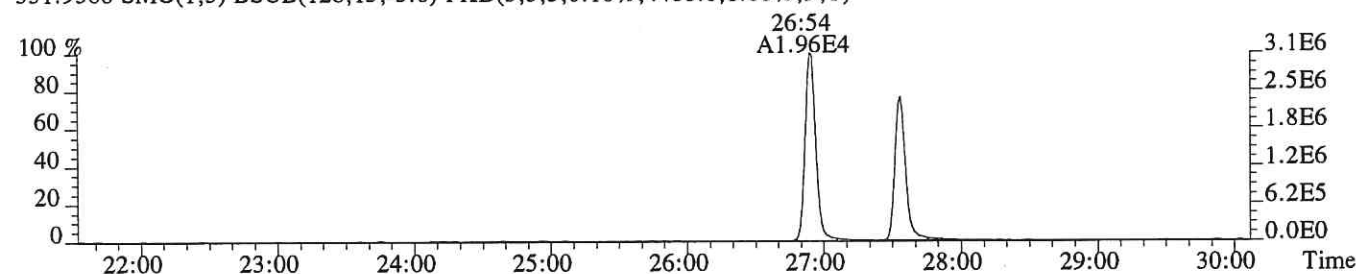
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1656.0,1.00%,F,T)



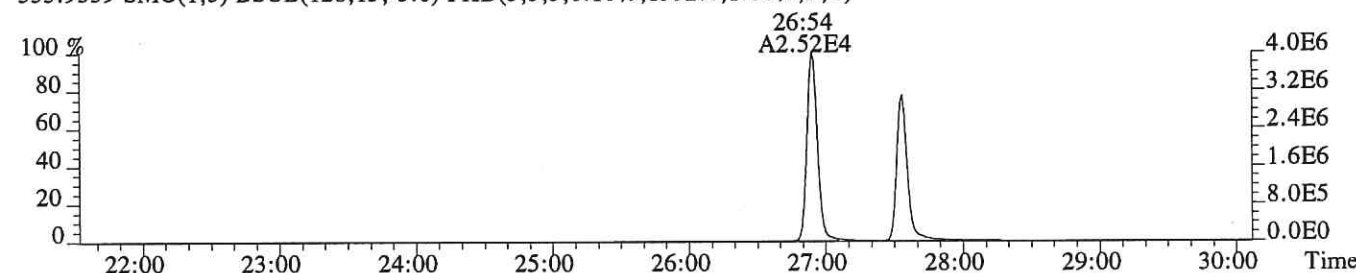
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,872.0,1.00%,F,T)



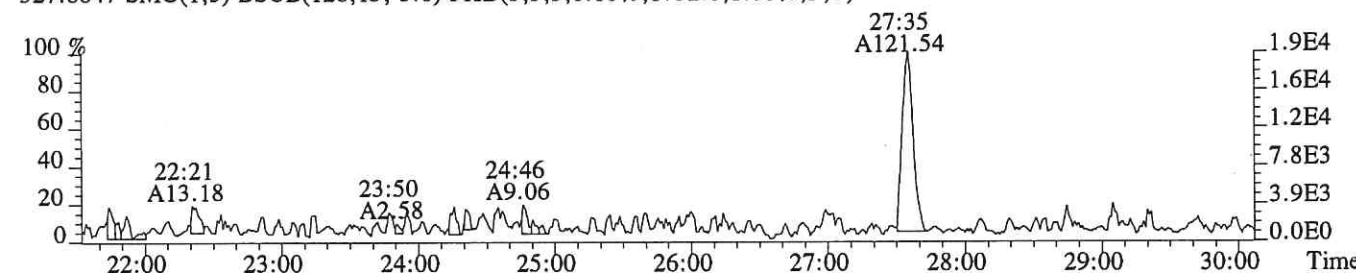
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4488.0,1.00%,F,T)



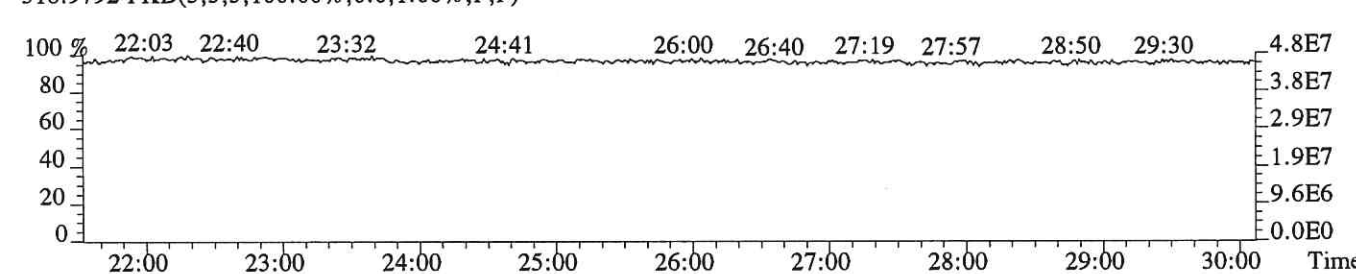
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1552.0,1.00%,F,T)



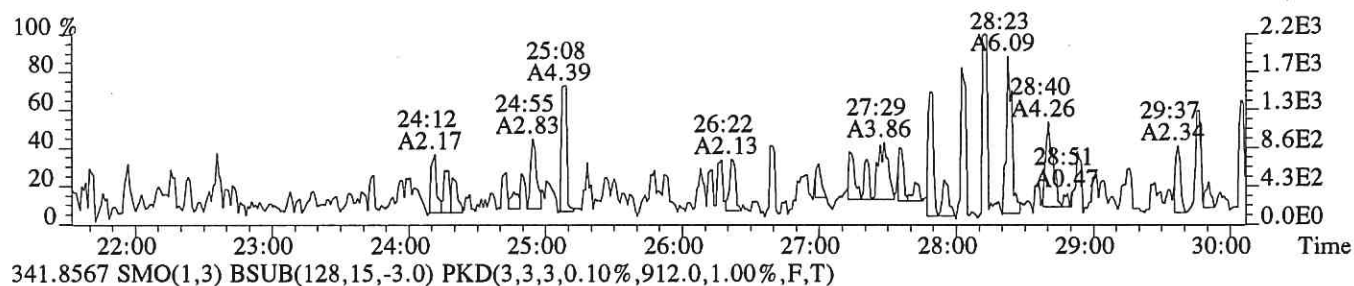
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1732.0,1.00%,F,T)



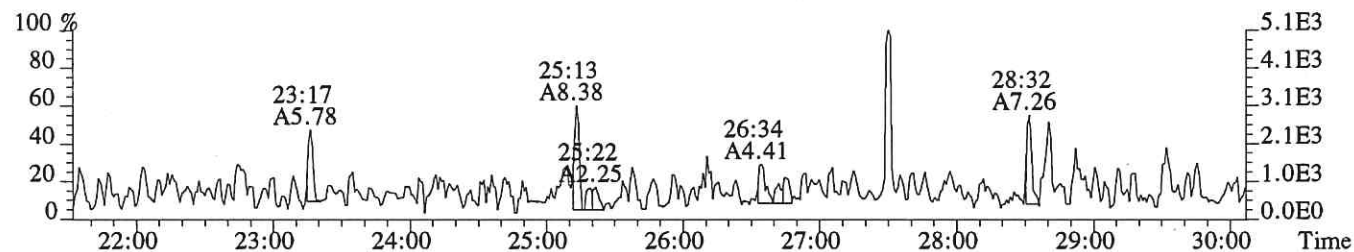
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



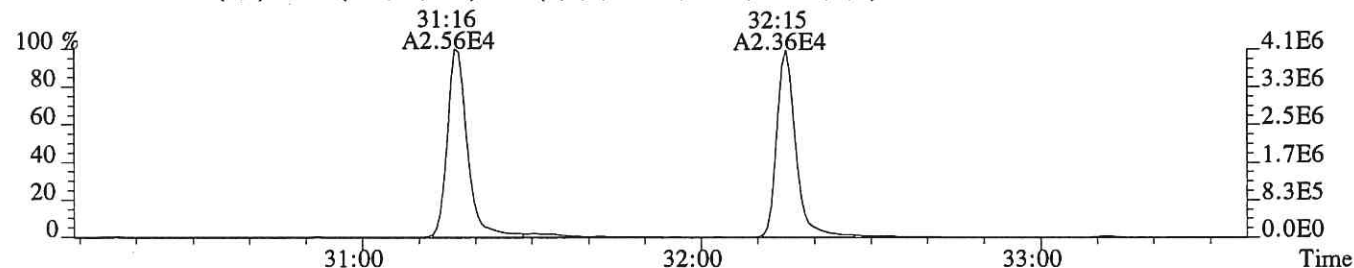
File:P618233 #1-609 Acq: 1-AUG-2019 13:37:02 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS0.5
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,304.0,1.00%,F,T)



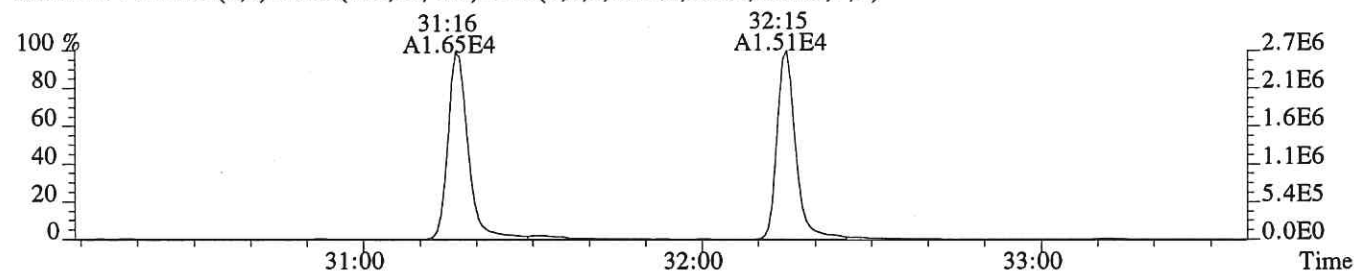
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,912.0,1.00%,F,T)



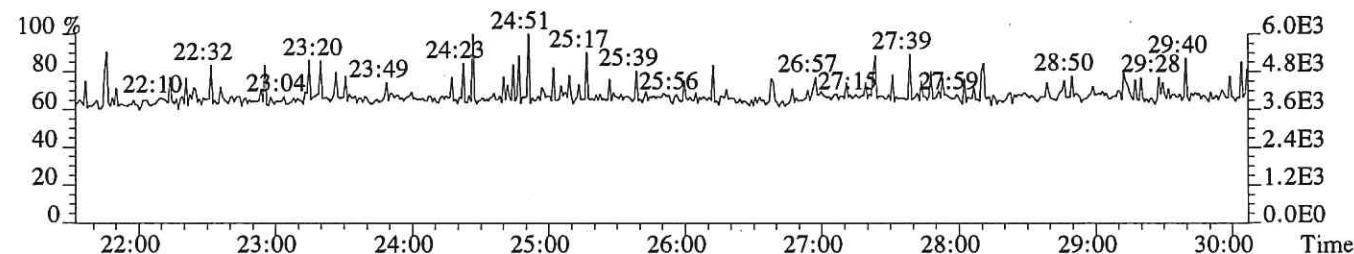
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,428.0,1.00%,F,T)



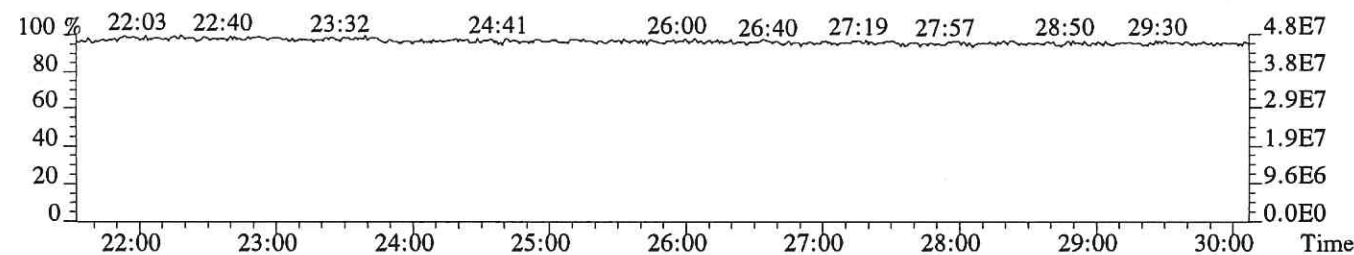
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,980.0,1.00%,F,T)



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

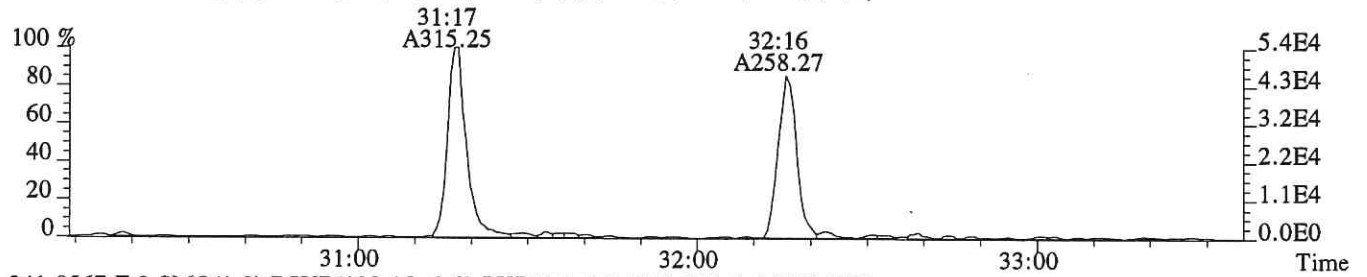


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

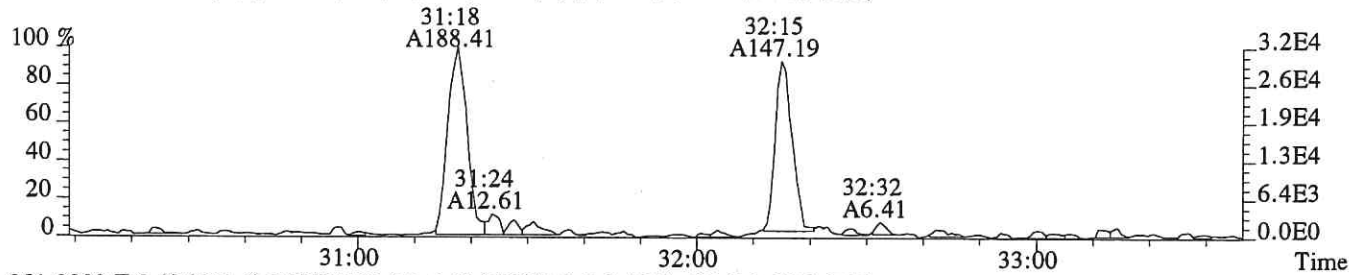


File:P618233 #1-312 Acq: 1-AUG-2019 13:37:02 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS0.5

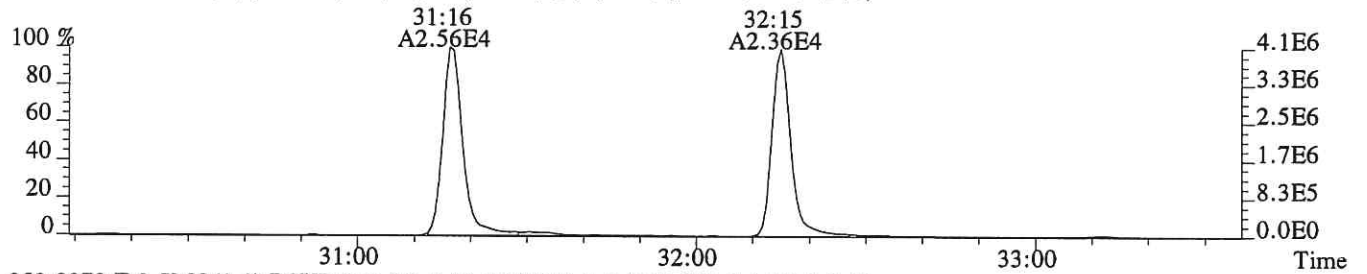
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,324.0,1.00%,F,T)



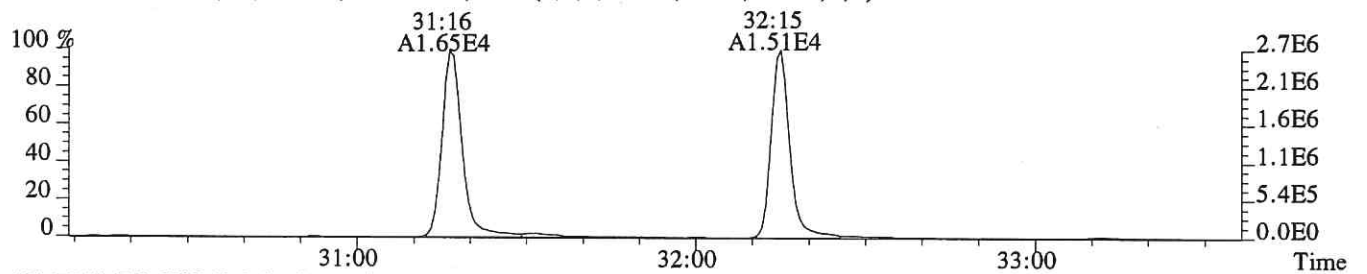
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,552.0,1.00%,F,T)



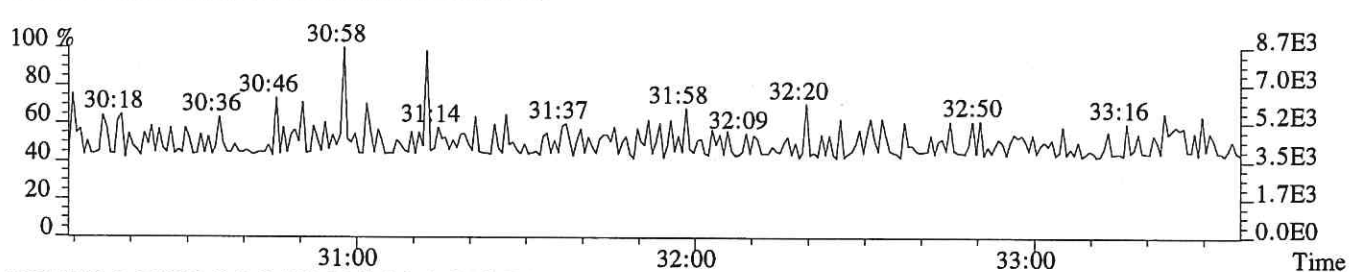
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,428.0,1.00%,F,T)



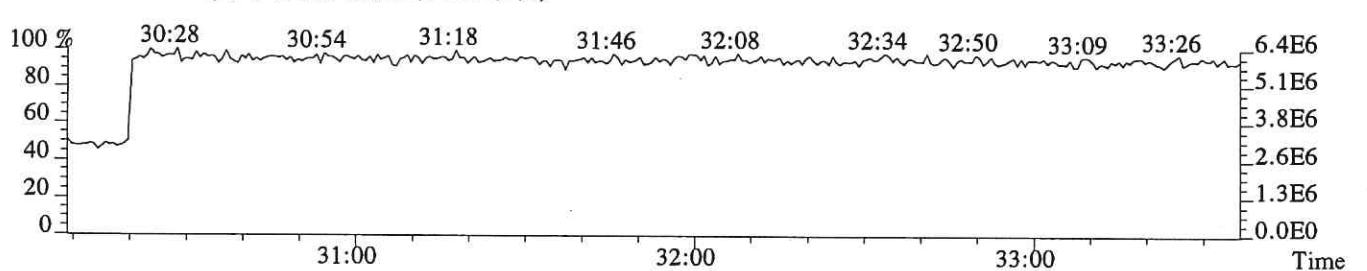
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,980.0,1.00%,F,T)



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

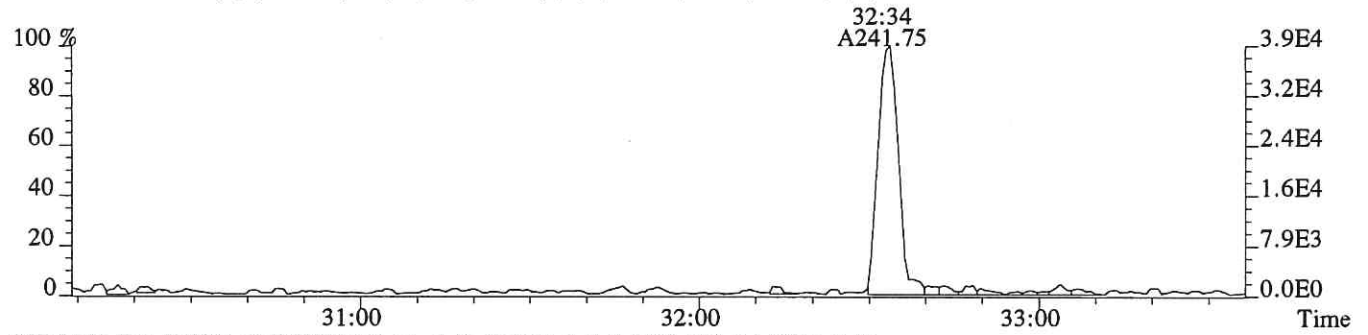


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

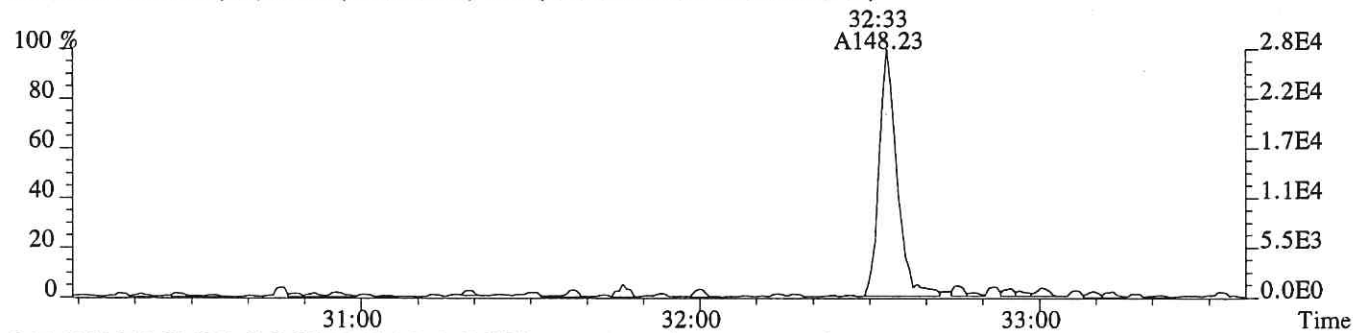


Sample#1 Exp:CS0.5

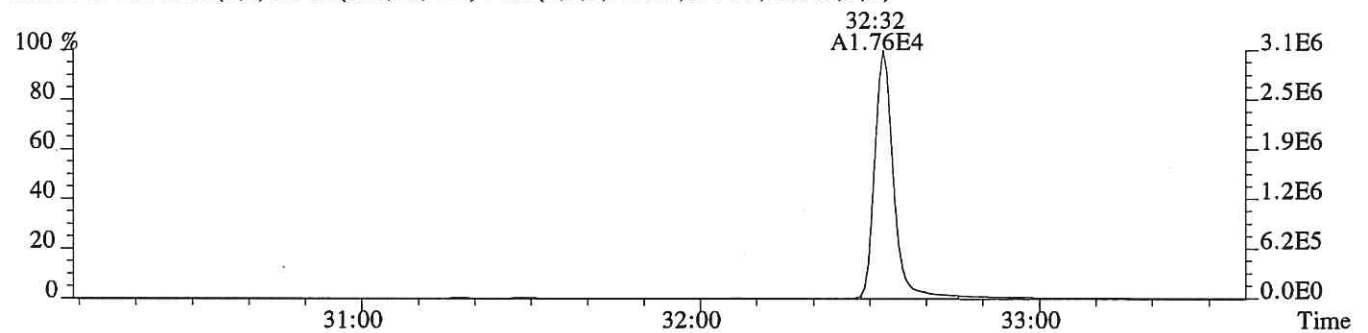
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,876.0,1.00%,F,T)



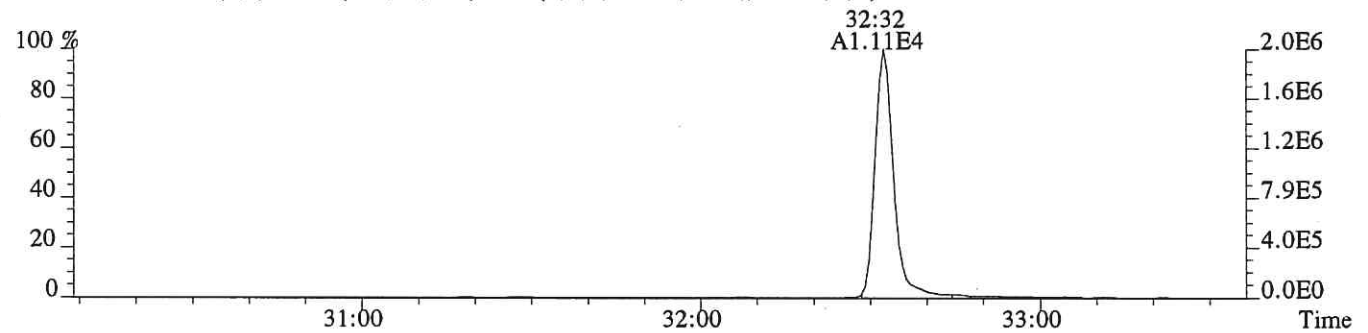
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,244.0,1.00%,F,T)



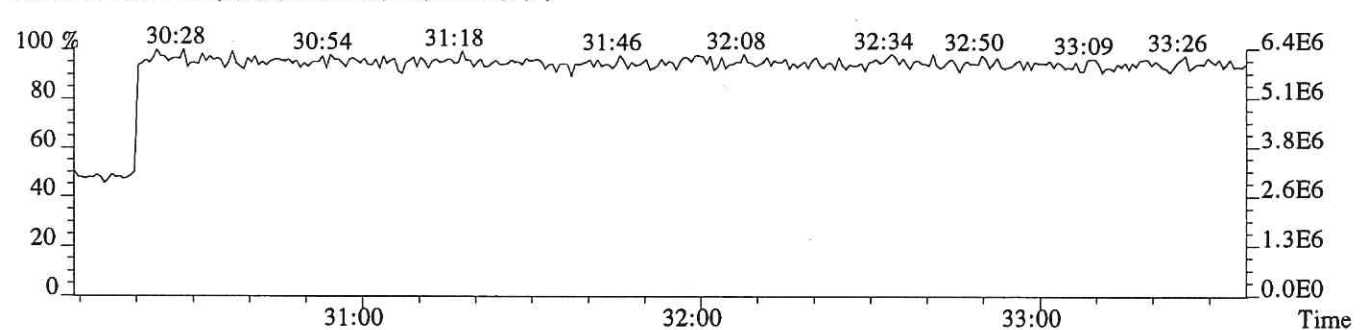
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1144.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,840.0,1.00%,F,T)

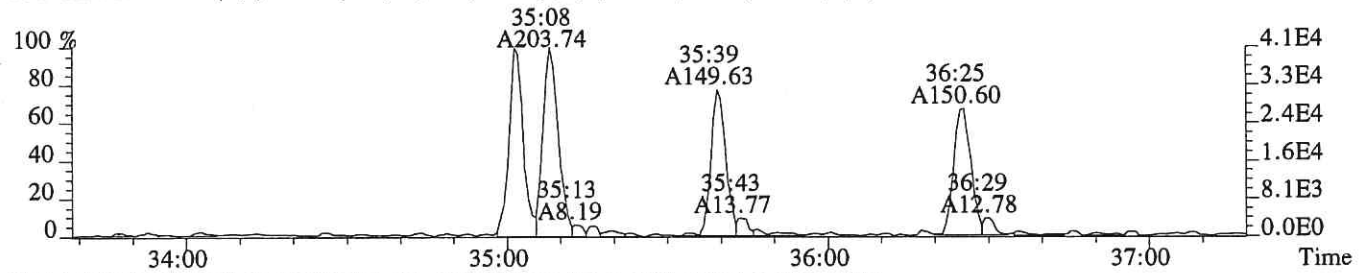


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

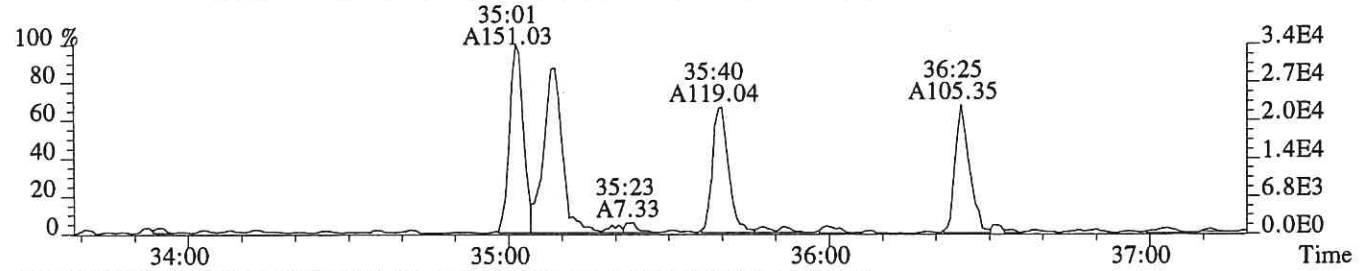


Sample#1 Exp:CS0.5

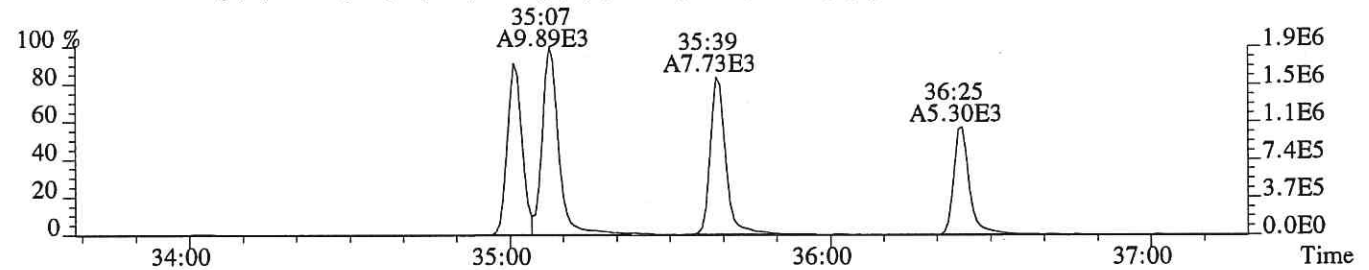
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,472.0,0.40%,F,T)



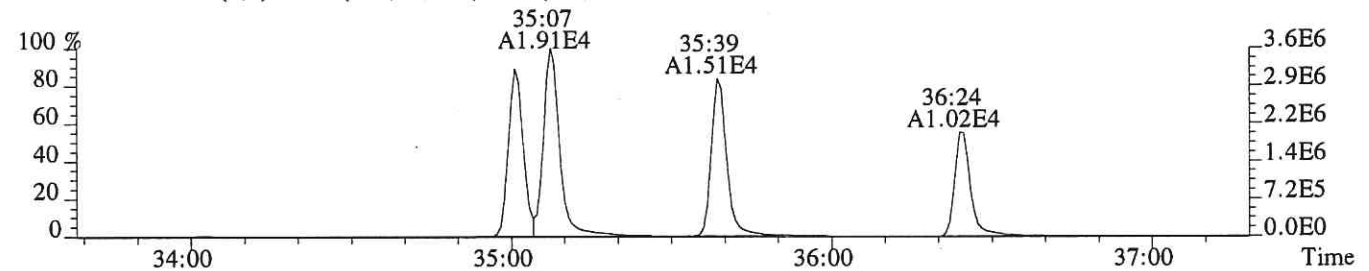
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,396.0,0.40%,F,T)



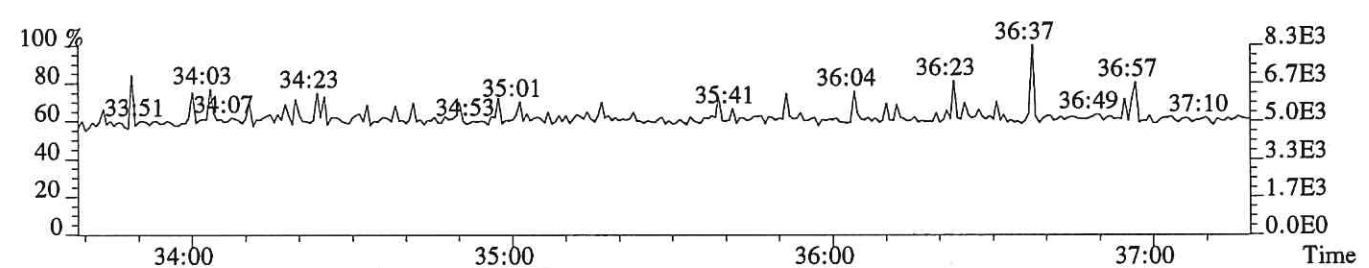
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,512.0,0.40%,F,T)



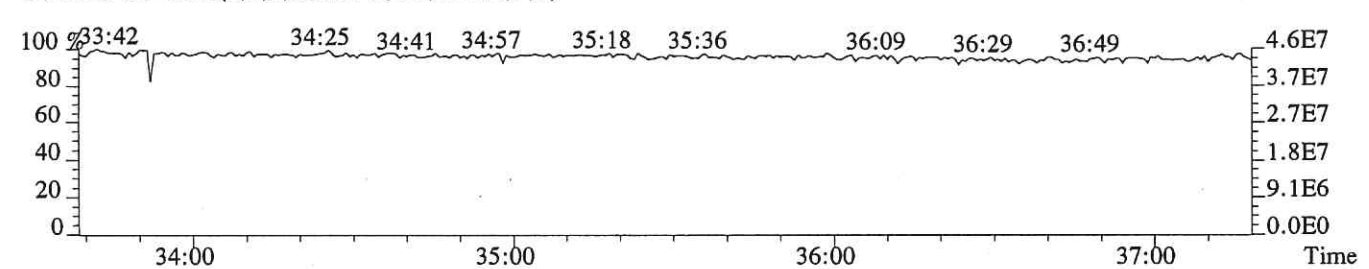
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,500.0,0.40%,F,T)



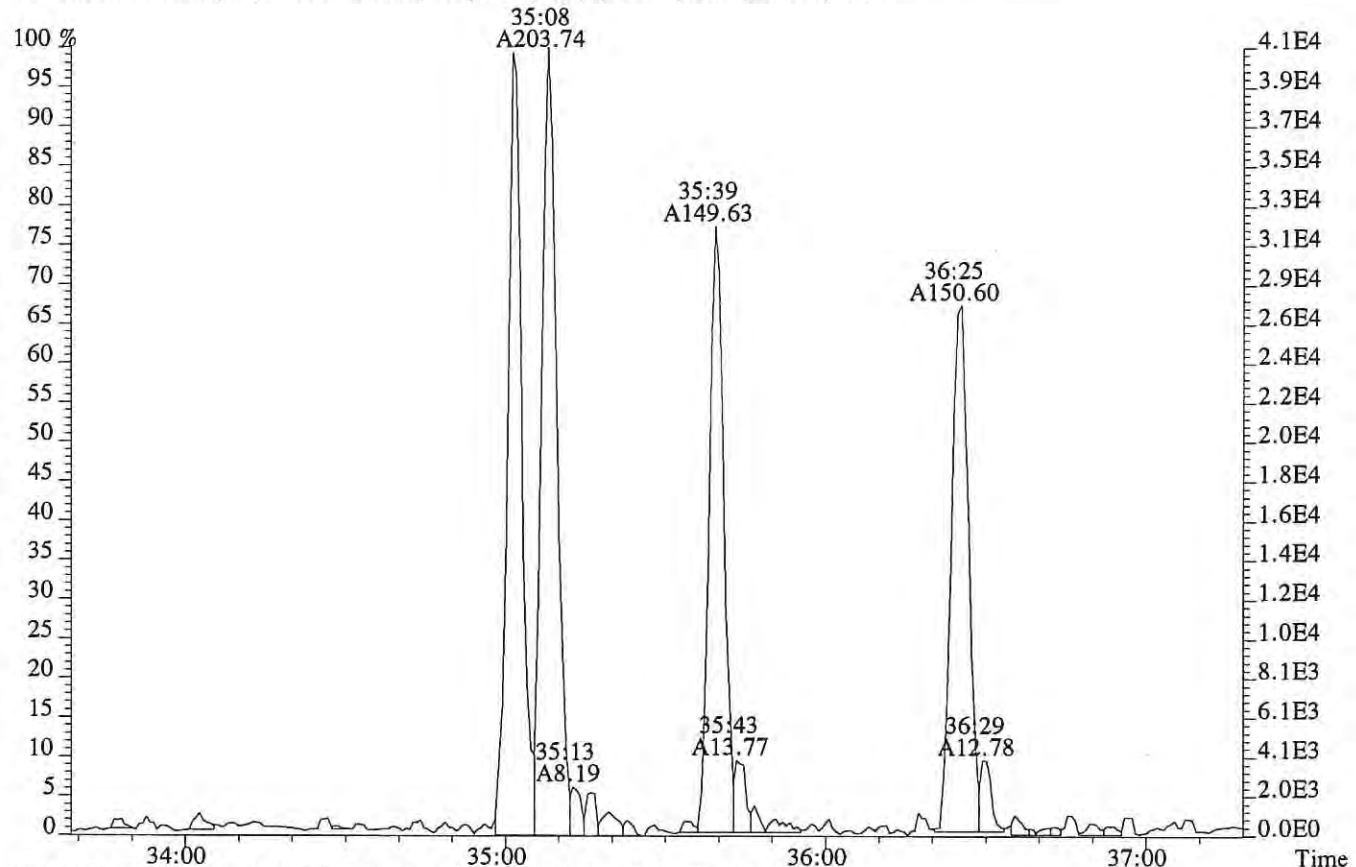
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



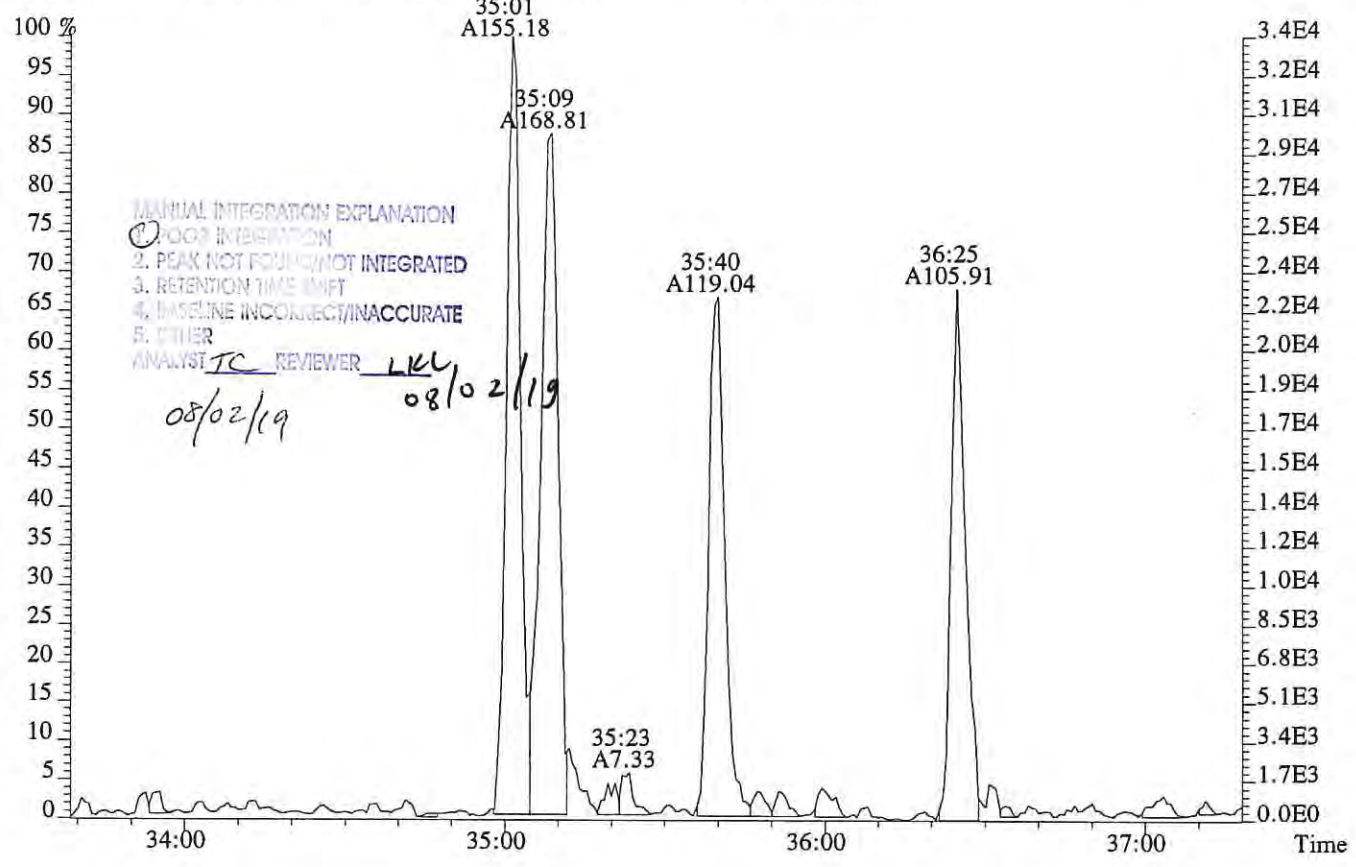
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



File: P618233 #1-330 Acq: 1-AUG-2019 13:37:02 Probe EI+ Magnet SIR VG BioTech Mass spectf
 Sample#1 Exp: CS0.5
 373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,472.0,0.40%,F,T)



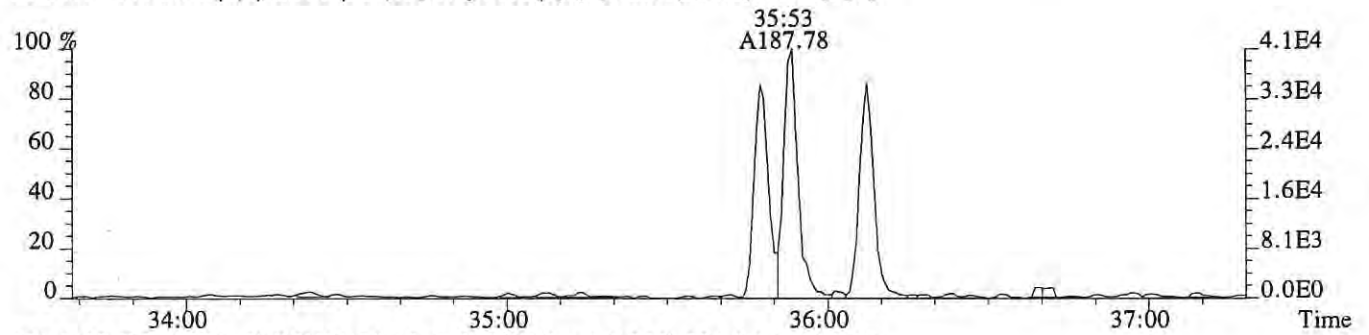
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,396.0,0.40%,F,T)



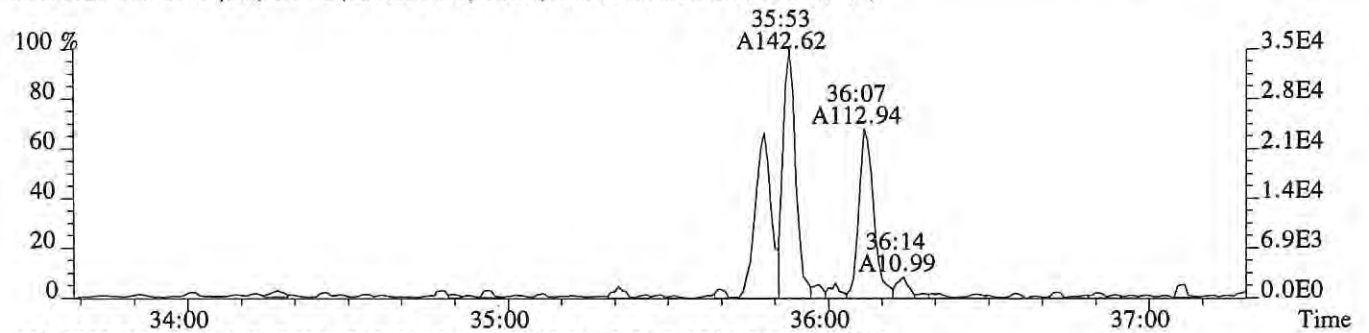
MANUAL INTEGRATION EXPLANATION
 1. POOR INTEGRATION
 2. PEAK NOT FOUND/NOT INTEGRATED
 3. RETENTION TIME SHIFT
 4. BASELINE INCORRECT/INACCURATE
 5. OTHER
 ANALYST TC REVIEWER LKL
 08/02/19 08/02/19

Sample#1 Exp:CS0.5

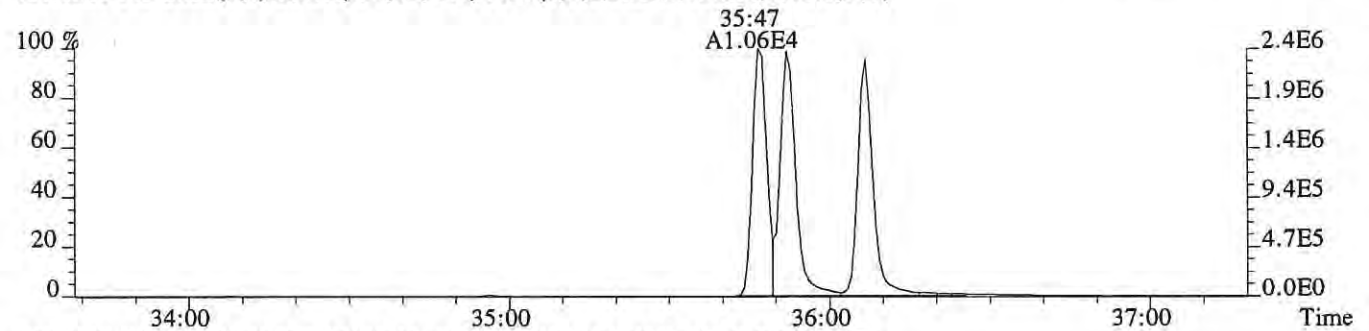
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,308.0,0.40%,F,T)



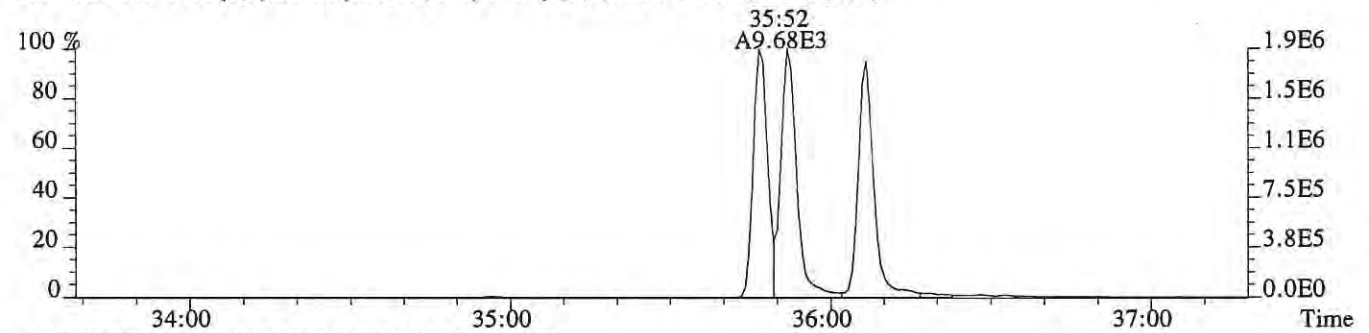
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,324.0,0.40%,F,T)



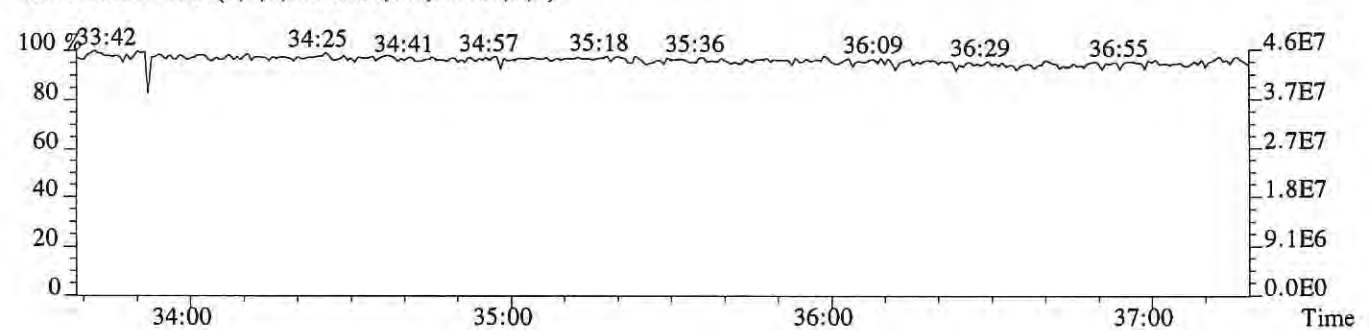
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1216.0,0.40%,F,T)



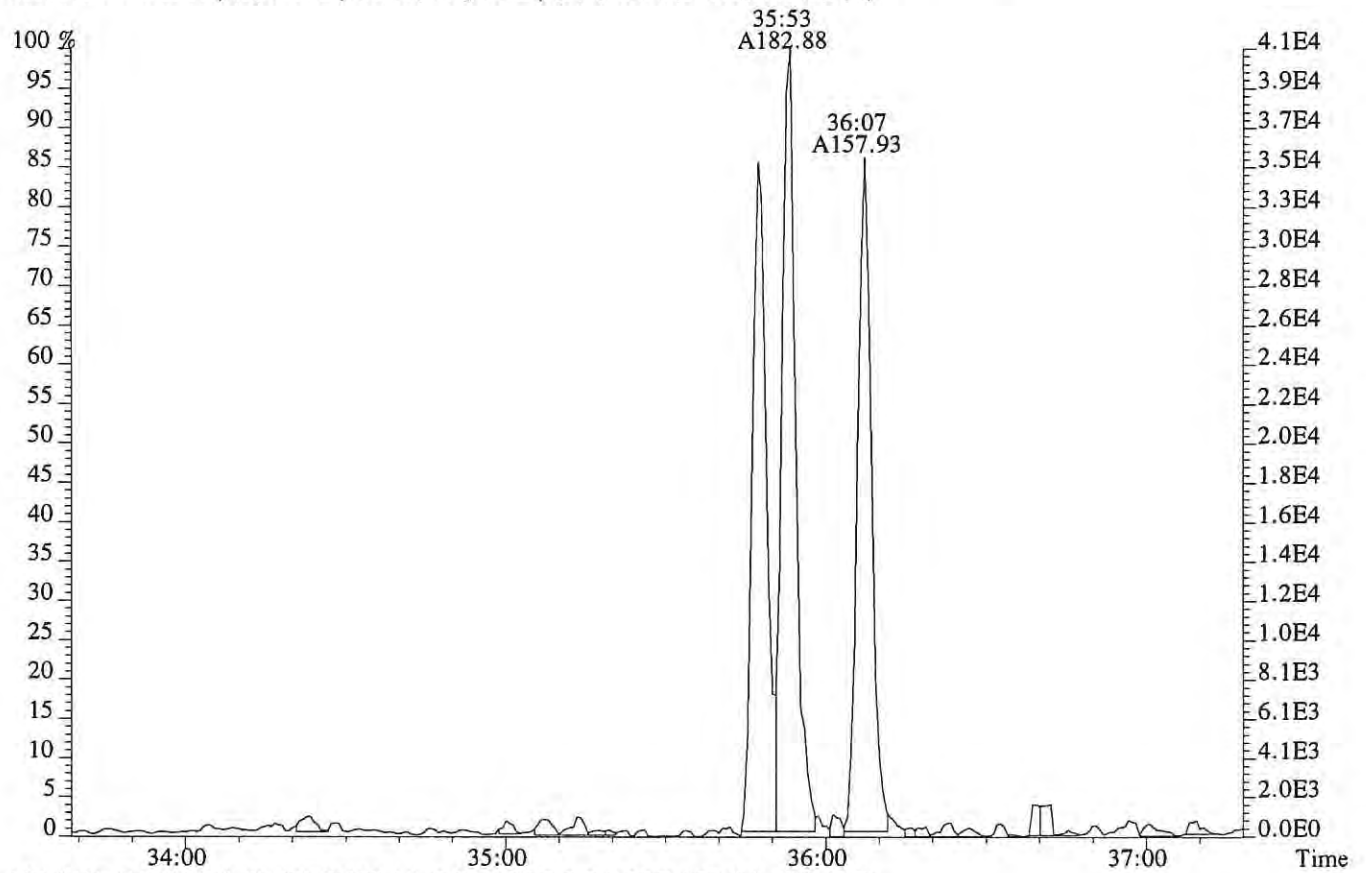
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,760.0,0.40%,F,T)



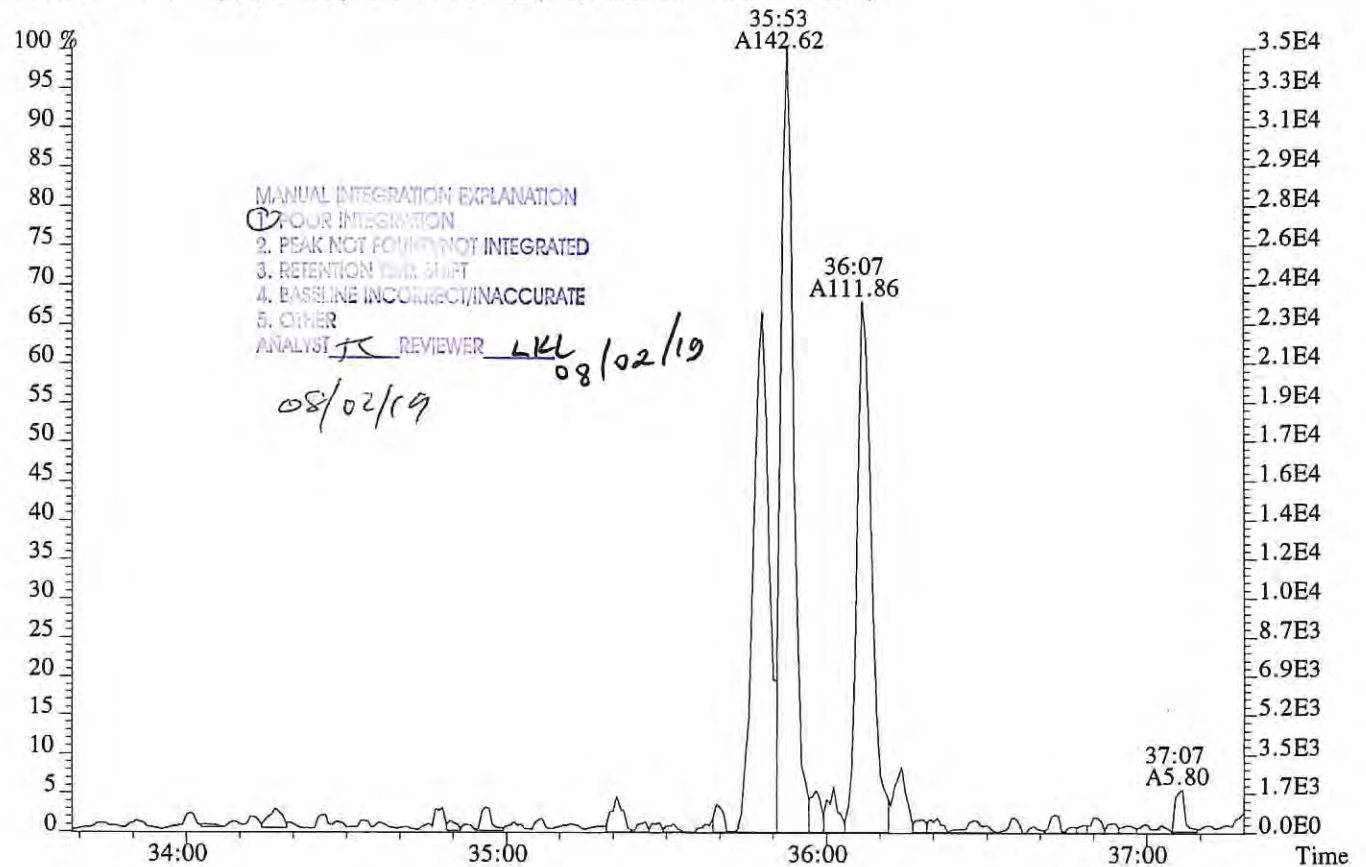
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



File:P618233 #1-330 Acq: 1-AUG-2019 13:37:02 Probe EI+ Magnet SIR VG BioTech Mass spectr
 Sample#1 Exp:CS0.5
 389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,308.0,0.40%,F,T)

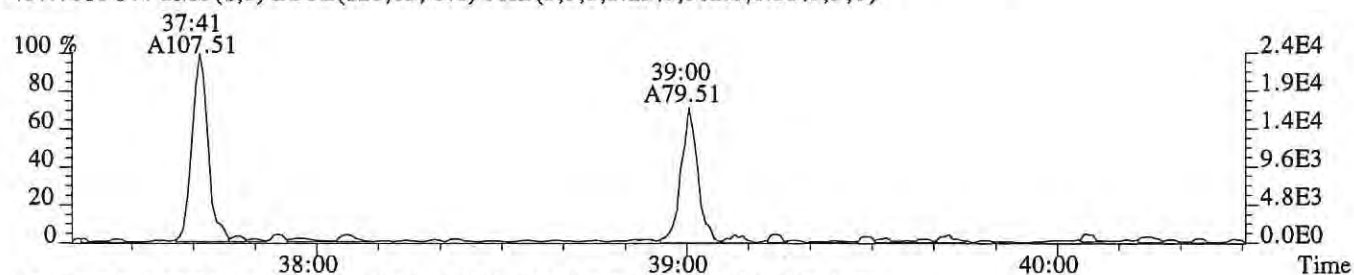


391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,324.0,0.40%,F,T)

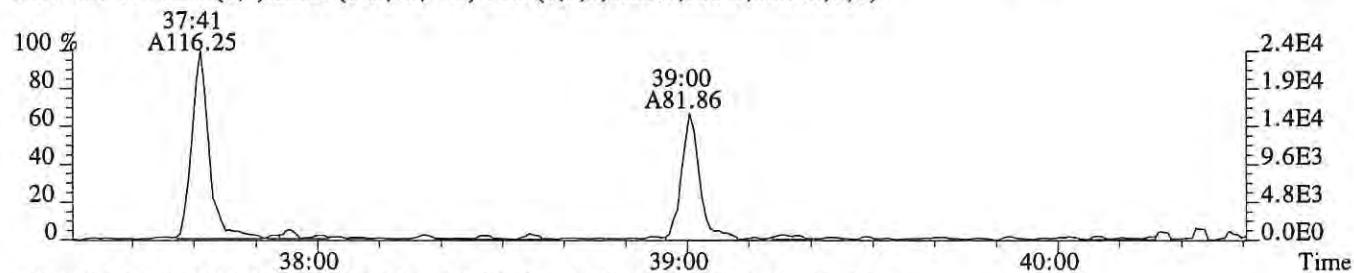


Sample#1 Exp:CS0.5

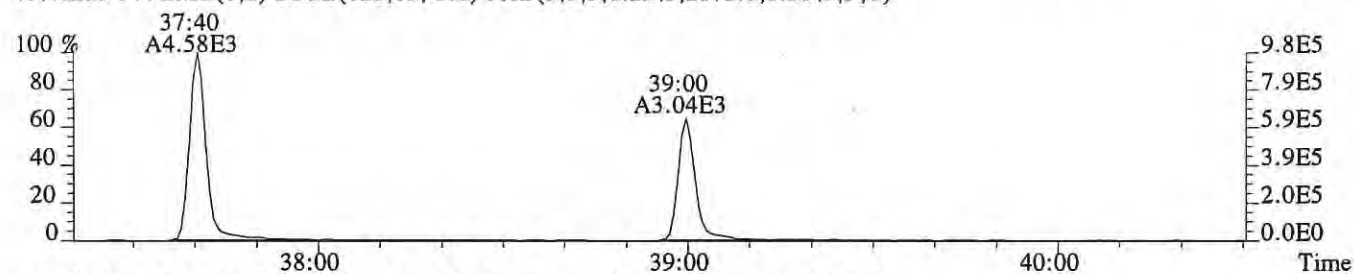
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,312.0,0.50%,F,T)



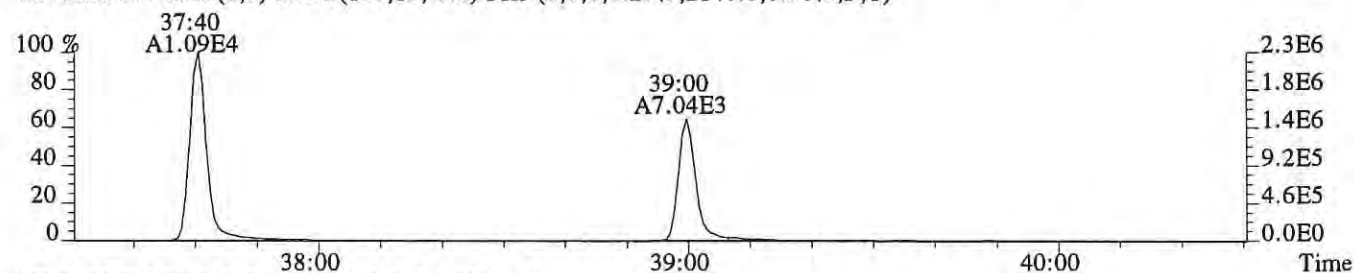
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,252.0,0.50%,F,T)



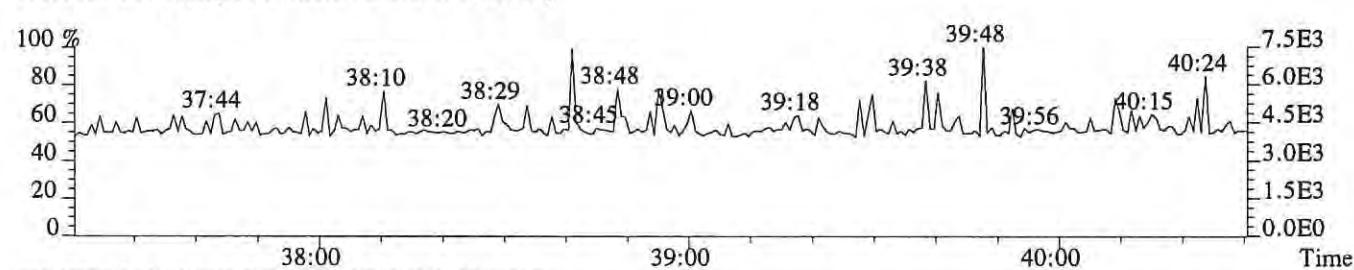
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2072.0,0.50%,F,T)



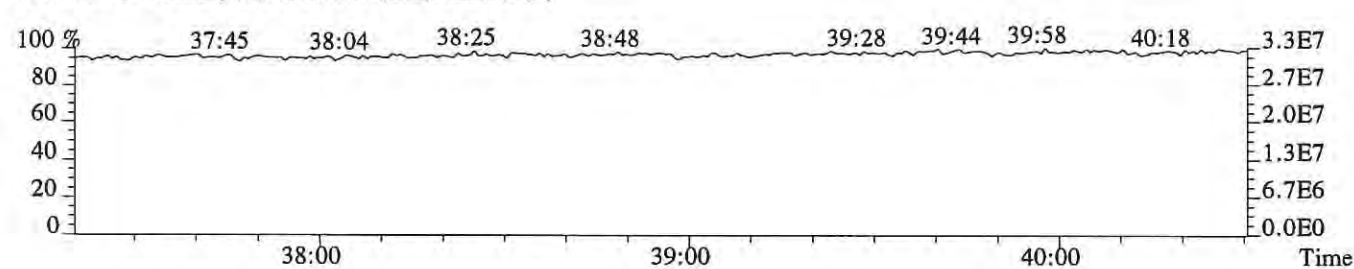
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2140.0,0.50%,F,T)



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



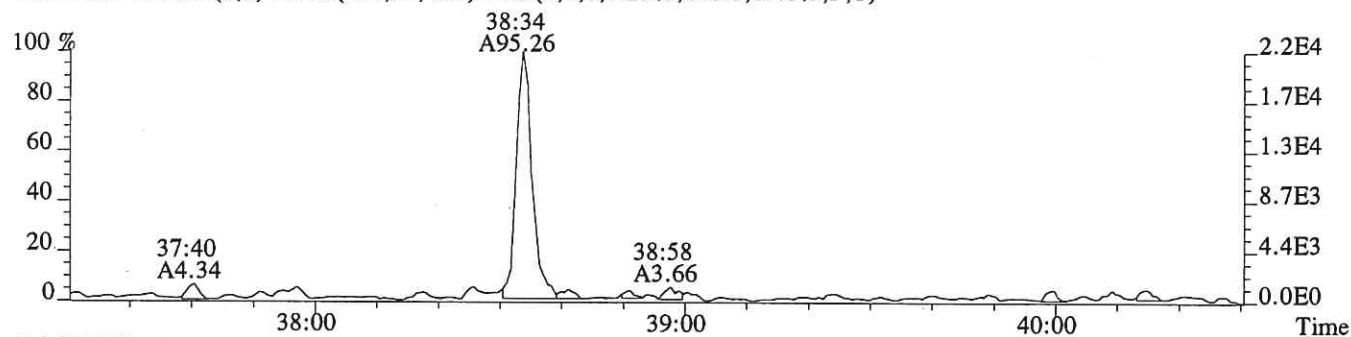
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



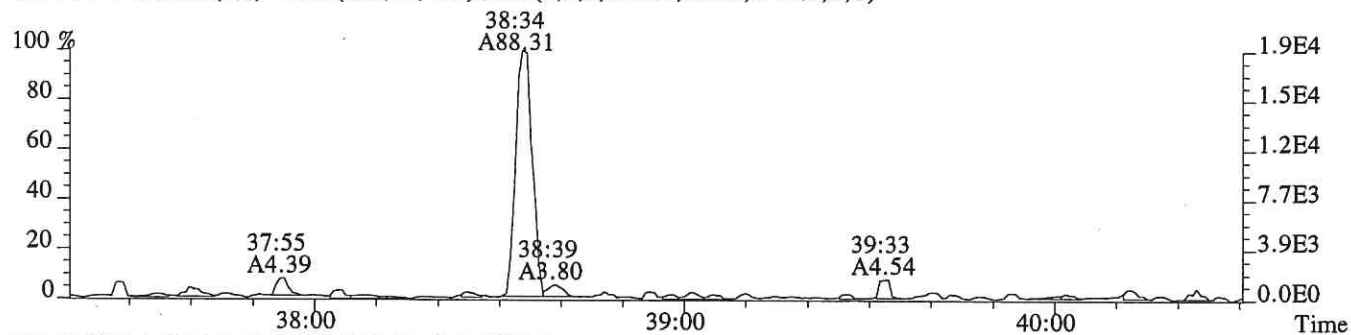
File:P618233 #1-286 Acq: 1-AUG-2019 13:37:02 Probe EI+ Magnet SIR VG BioTech Mass spectr

Sample#1 Exp:CS0.5

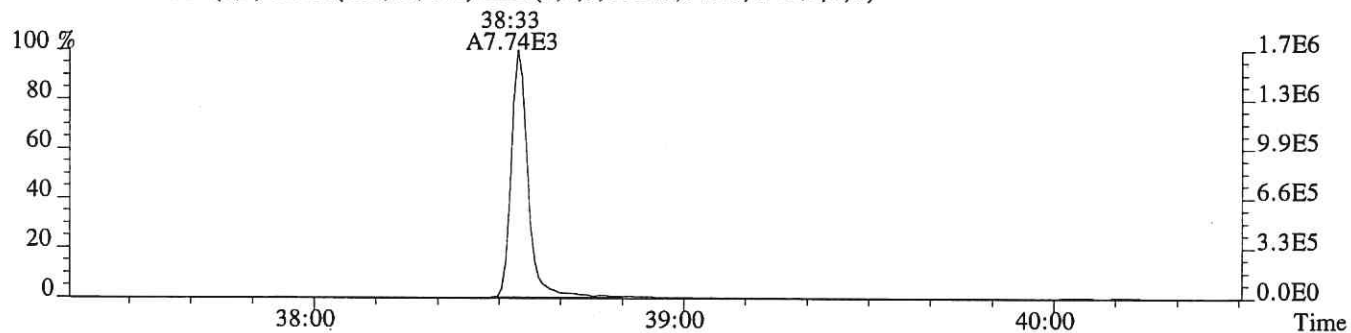
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,448.0,0.40%,F,T)



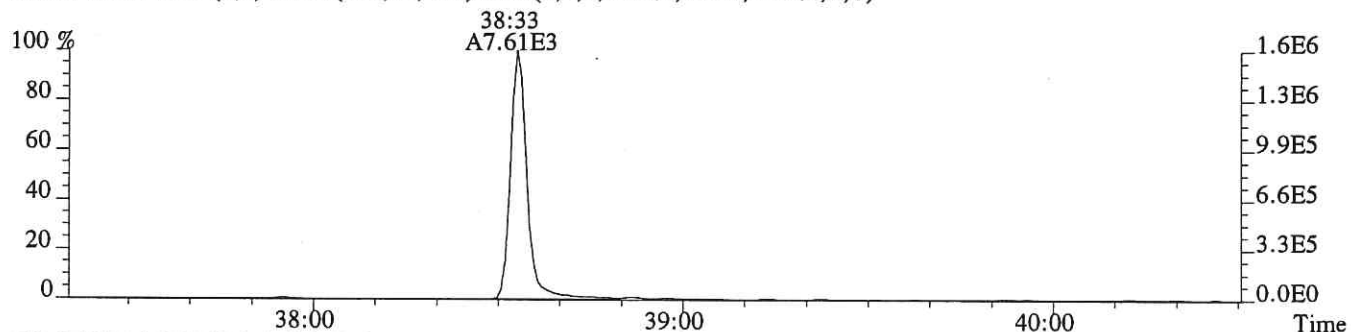
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,260.0,0.40%,F,T)



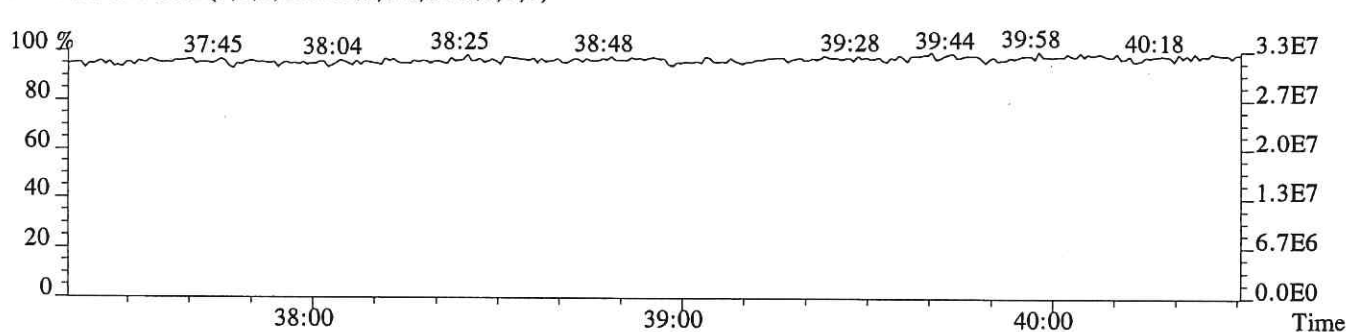
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,640.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,284.0,0.40%,F,T)



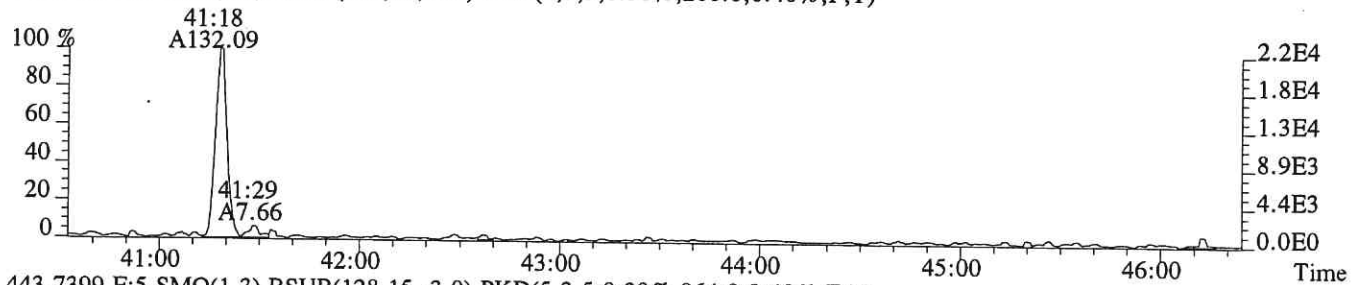
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



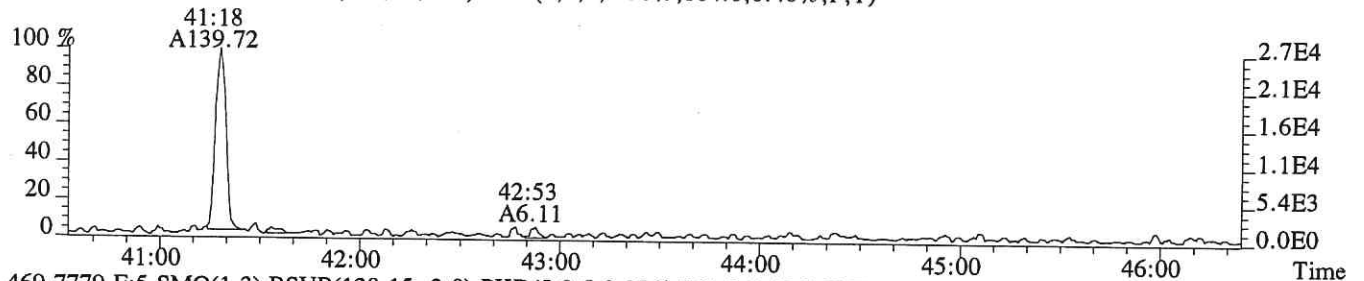
File:P618233 #1-528 Acq: 1-AUG-2019 13:37:02 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:CS0.5

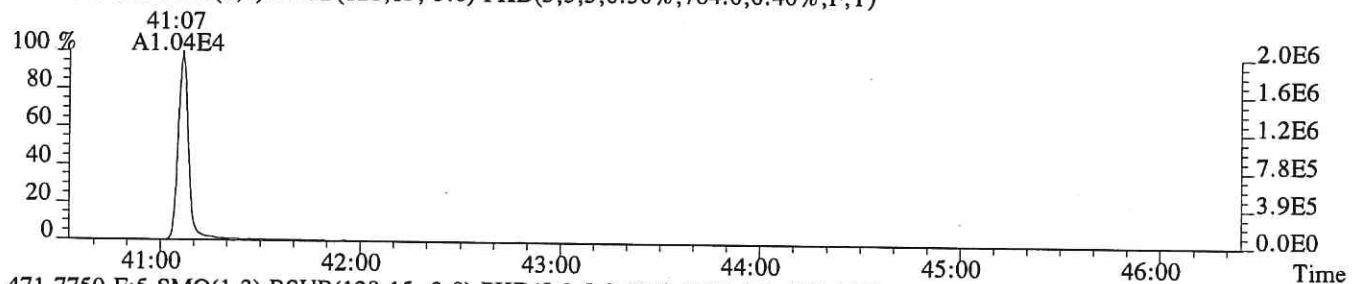
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,260.0,0.40%,F,T)



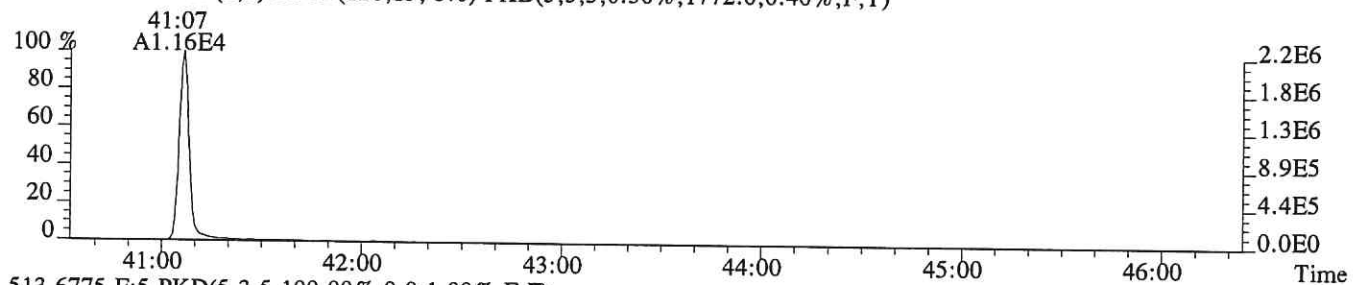
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,864.0,0.40%,F,T)



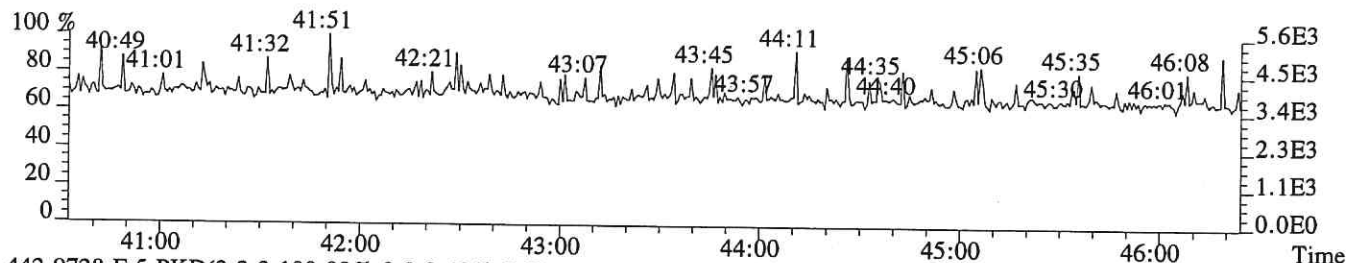
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,764.0,0.40%,F,T)



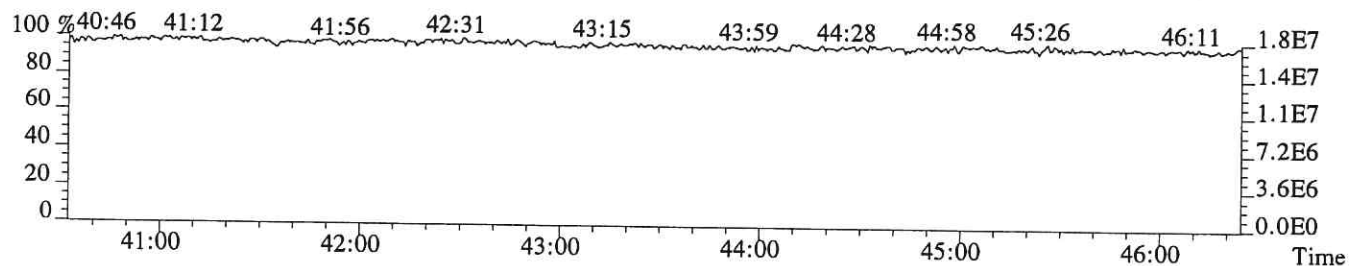
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1772.0,0.40%,F,T)



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



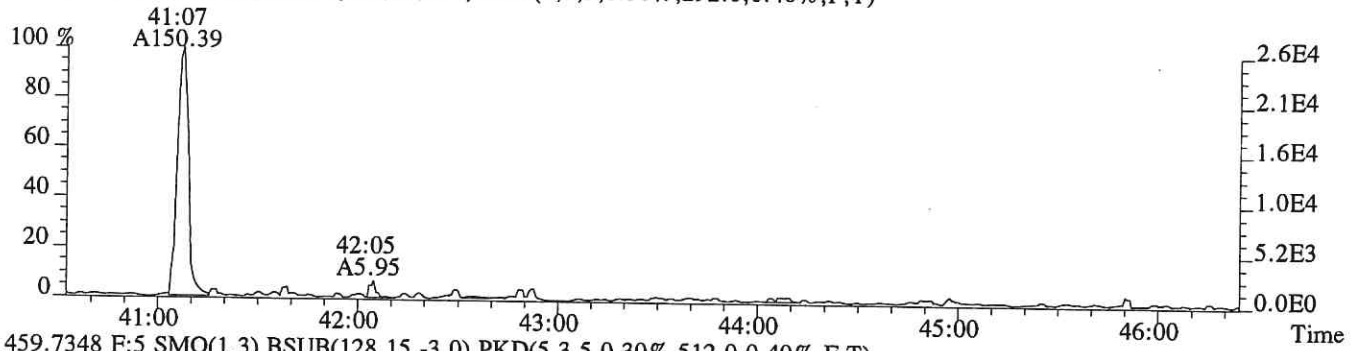
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



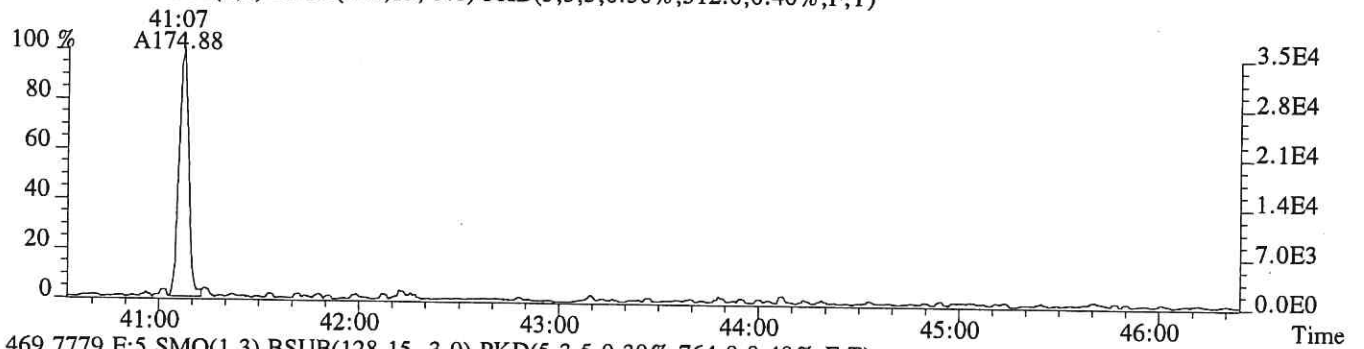
File:P618233 #1-528 Acq: 1-AUG-2019 13:37:02 Probe EI+ Magnet SIR VG BioTech Mass spectr

Sample#1 Exp:CS0.5

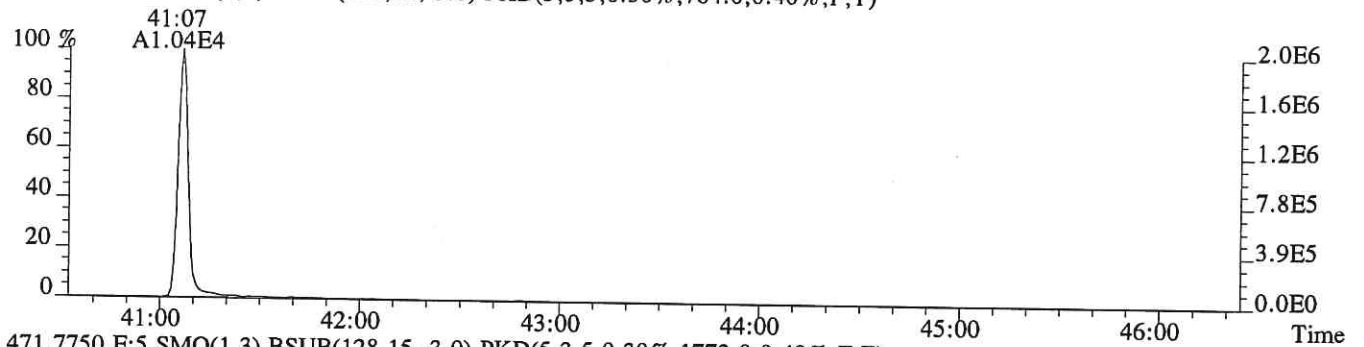
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,292.0,0.40%,F,T)



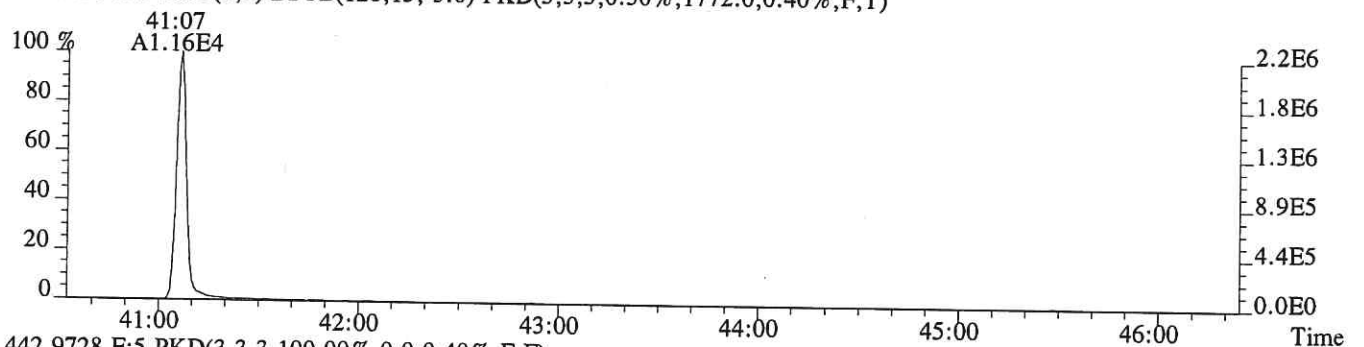
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,512.0,0.40%,F,T)



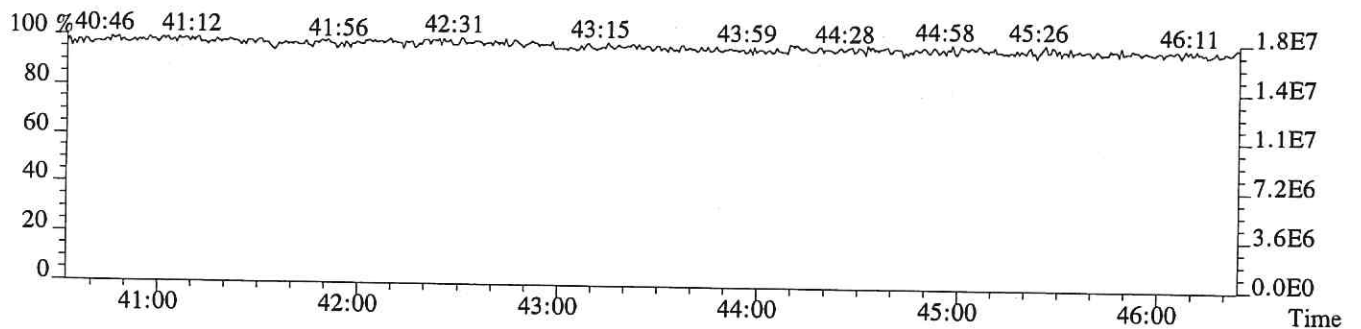
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,764.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1772.0,0.40%,F,T)



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



ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
193432

Run #2 Filename P618235 Samp: 1 Inj: 1 Acquired: 1-AUG-19 15:15:19
Processed: 2-AUG-19 09:23:22 Sample ID: CS1

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	26:41	1.015e+02	1.550e+02	0.65	yes	no	0.873
2 Unk	1,2,3,7,8-PeCDF	31:17	6.282e+02	3.743e+02	1.68	yes	no	0.864
3 Unk	2,3,4,7,8-PeCDF	32:16	6.270e+02	3.759e+02	1.67	yes	no	0.825
4 Unk	1,2,3,4,7,8-HxCDF	35:01	4.532e+02	4.130e+02	1.10	yes	no	1.084
5 Unk	1,2,3,6,7,8-HxCDF	35:08	5.723e+02	4.494e+02	1.27	yes	no	0.994
6 Unk	2,3,4,6,7,8-HxCDF	35:39	5.266e+02	4.033e+02	1.31	yes	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	36:25	3.216e+02	3.033e+02	1.06	yes	yes	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	37:41	3.573e+02	3.985e+02	0.90	yes	yes	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	39:00	2.602e+02	2.637e+02	0.99	yes	yes	1.104
10 Unk	OCDF	41:18	5.077e+02	6.030e+02	0.84	yes	no	0.993
11 Unk	2,3,7,8-TCDD	27:34	9.187e+01	1.105e+02	0.83	yes	no	0.989
12 Unk	1,2,3,7,8-PeCDD	32:33	5.172e+02	3.340e+02	1.55	yes	no	0.954
13 Unk	1,2,3,4,7,8-HxCDD	35:47	4.405e+02	3.231e+02	1.36	yes	no	1.020
14 Unk	1,2,3,6,7,8-HxCDD	35:53	4.426e+02	3.457e+02	1.28	yes	no	1.030
15 Unk	1,2,3,7,8,9-HxCDD	36:07	4.359e+02	3.533e+02	1.23	yes	no	1.007
16 Unk	1,2,3,4,6,7,8-HpCDD	38:34	3.207e+02	3.280e+02	0.98	yes	no	0.922
17 Unk	OCDD	41:07	5.525e+02	6.446e+02	0.86	yes	no	1.062
18 IS	13C-2,3,7,8-TCDF	26:40	2.434e+04	3.164e+04	0.77	yes	no	1.102
19 IS	13C-1,2,3,7,8-PeCDF	31:16	3.223e+04	2.044e+04	1.58	yes	no	1.074
20 IS	13C-2,3,4,7,8-PeCDF	32:14	2.970e+04	1.893e+04	1.57	yes	no	1.005
21 IS	13C-1,2,3,4,7,8-HxCDF	35:01	1.166e+04	2.304e+04	0.51	yes	no	1.059
22 IS	13C-1,2,3,6,7,8-HxCDF	35:07	1.409e+04	2.780e+04	0.51	yes	no	1.264
23 IS	13C-2,3,4,6,7,8-HxCDF	35:39	1.242e+04	2.426e+04	0.51	yes	no	1.066
24 IS	13C-1,2,3,7,8,9-HxCDF	36:24	9.308e+03	1.884e+04	0.49	yes	no	0.801
25 IS	13C-1,2,3,4,6,7,8-HpCDF	37:40	8.392e+03	1.958e+04	0.43	yes	no	0.789
26 IS	13C-1,2,3,4,7,8,9-HpCDF	38:59	6.536e+03	1.550e+04	0.42	yes	no	0.590
27 IS	13C-2,3,7,8-TCDD	27:33	1.793e+04	2.352e+04	0.76	yes	no	0.839
28 IS	13C-1,2,3,7,8-PeCDD	32:32	2.211e+04	1.407e+04	1.57	yes	no	0.744
29 IS	13C-1,2,3,4,7,8-HxCDD	35:47	1.766e+04	1.387e+04	1.27	yes	no	0.907
30 IS	13C-1,2,3,6,7,8-HxCDD	35:52	1.816e+04	1.470e+04	1.24	yes	no	0.978
31 IS	13C-1,2,3,4,6,7,8-HpCDD	38:33	1.492e+04	1.432e+04	1.04	yes	no	0.814
32 IS	13C-OCDD	41:07	2.354e+04	2.552e+04	0.92	yes	no	0.653
33 RS/RT	13C-1,2,3,4-TCDD	26:54	2.074e+04	2.671e+04	0.78	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	36:06	1.972e+04	1.581e+04	1.25	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	27:34	2.170e+02				no	0.894

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Signal/Noise Height Ratio Summary

CLIENT ID.
193432

Run #2 Filename P618235 Samp: 1 Inj: 1 Acquired: 1-AUG-19 15:15:19
Processed: 2-AUG-19 09:23:22 LAB. ID: CS1

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	1.76e+04	2.48e+02	7.1e+01	2.19e+04	9.64e+02	2.3e+01
2	1,2,3,7,8-PeCDF	1.01e+05	1.88e+02	5.4e+02	6.61e+04	7.20e+02	9.2e+01
3	2,3,4,7,8-PeCDF	1.15e+05	1.88e+02	6.1e+02	7.02e+04	7.20e+02	9.8e+01
4	1,2,3,4,7,8-HxCDF	9.90e+04	4.00e+02	2.5e+02	8.27e+04	2.44e+02	3.4e+02
5	1,2,3,6,7,8-HxCDF	1.11e+05	4.00e+02	2.8e+02	8.85e+04	2.44e+02	3.6e+02
6	2,3,4,6,7,8-HxCDF	1.00e+05	4.00e+02	2.5e+02	8.37e+04	2.44e+02	3.4e+02
7	1,2,3,7,8,9-HxCDF	6.98e+04	4.00e+02	1.7e+02	6.47e+04	2.44e+02	2.7e+02
8	1,2,3,4,6,7,8-HpCDF	7.38e+04	2.48e+02	3.0e+02	8.31e+04	2.64e+02	3.1e+02
9	1,2,3,4,7,8,9-HpCDF	5.42e+04	2.48e+02	2.2e+02	5.49e+04	2.64e+02	2.1e+02
10	OCDF	9.55e+04	2.64e+02	3.6e+02	1.11e+05	4.56e+02	2.4e+02
11	2,3,7,8-TCDD	1.70e+04	1.48e+03	1.2e+01	1.83e+04	4.76e+02	3.8e+01
12	1,2,3,7,8-PeCDD	9.65e+04	5.24e+02	1.8e+02	6.01e+04	2.84e+02	2.1e+02
13	1,2,3,4,7,8-HxCDD	9.66e+04	4.08e+02	2.4e+02	7.54e+04	4.28e+02	1.8e+02
14	1,2,3,6,7,8-HxCDD	8.85e+04	4.08e+02	2.2e+02	7.03e+04	4.28e+02	1.6e+02
15	1,2,3,7,8,9-HxCDD	9.70e+04	4.08e+02	2.4e+02	6.68e+04	4.28e+02	1.6e+02
16	1,2,3,4,6,7,8-HpCDD	7.05e+04	3.68e+02	1.9e+02	6.99e+04	2.80e+02	2.5e+02
17	OCDD	9.99e+04	3.80e+02	2.6e+02	1.19e+05	4.36e+02	2.7e+02
18	13C-2,3,7,8-TCDF	3.70e+06	9.33e+03	4.0e+02	4.79e+06	2.98e+03	1.6e+03
19	13C-1,2,3,7,8-PeCDF	5.34e+06	6.60e+02	8.1e+03	3.44e+06	5.36e+02	6.4e+03
20	13C-2,3,4,7,8-PeCDF	5.33e+06	6.60e+02	8.1e+03	3.41e+06	5.36e+02	6.4e+03
21	13C-1,2,3,4,7,8-HxCDF	2.45e+06	3.32e+02	7.4e+03	4.77e+06	5.12e+02	9.3e+03
22	13C-1,2,3,6,7,8-HxCDF	2.77e+06	3.32e+02	8.3e+03	5.42e+06	5.12e+02	1.1e+04
23	13C-2,3,4,6,7,8-HxCDF	2.54e+06	3.32e+02	7.7e+03	4.98e+06	5.12e+02	9.7e+03
24	13C-1,2,3,7,8,9-HxCDF	1.95e+06	3.32e+02	5.9e+03	3.94e+06	5.12e+02	7.7e+03
25	13C-1,2,3,4,6,7,8-HpCDF	1.77e+06	8.32e+02	2.1e+03	4.14e+06	4.11e+03	1.0e+03
26	13C-1,2,3,4,7,8,9-HpCDF	1.31e+06	8.32e+02	1.6e+03	3.11e+06	4.11e+03	7.6e+02
27	13C-2,3,7,8-TCDD	2.93e+06	3.42e+03	8.6e+02	3.90e+06	1.78e+03	2.2e+03
28	13C-1,2,3,7,8-PeCDD	3.92e+06	6.16e+02	6.4e+03	2.54e+06	7.04e+02	3.6e+03
29	13C-1,2,3,4,7,8-HxCDD	3.88e+06	9.96e+02	3.9e+03	3.05e+06	6.20e+02	4.9e+03
30	13C-1,2,3,6,7,8-HxCDD	3.70e+06	9.96e+02	3.7e+03	2.96e+06	6.20e+02	4.8e+03
31	13C-1,2,3,4,6,7,8-HpCDD	3.19e+06	3.32e+02	9.6e+03	3.00e+06	2.64e+02	1.1e+04
32	13C-OCDD	4.46e+06	3.00e+03	1.5e+03	4.84e+06	4.30e+03	1.1e+03
33	13C-1,2,3,4-TCDD	3.40e+06	3.42e+03	9.9e+02	4.33e+06	1.78e+03	2.4e+03
34	13C-1,2,3,7,8,9-HxCDD	3.88e+06	9.96e+02	3.9e+03	3.13e+06	6.20e+02	5.1e+03
35	37Cl-2,3,7,8-TCDD	3.78e+04	1.49e+03	2.5e+01			

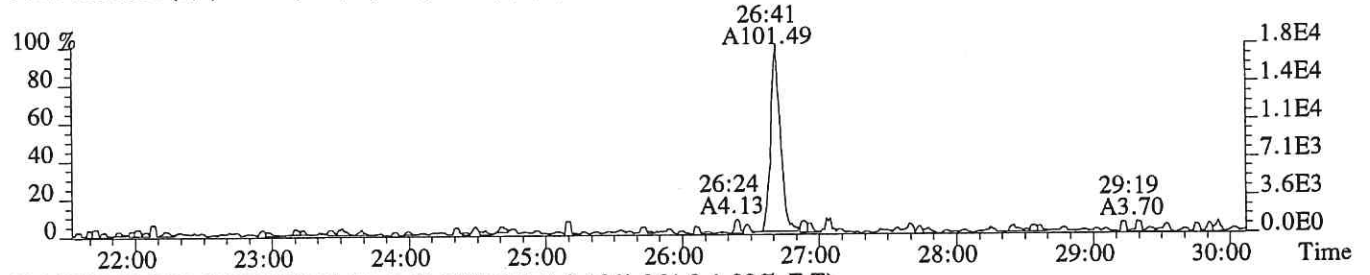
---Sample Calculation---

$$\text{D/L TCDD} = \frac{2.5 \times (1.476e+03 + 4.760e+02) \times 100}{(2.931e+06 + 3.902e+06) \times () \times 0.989}$$

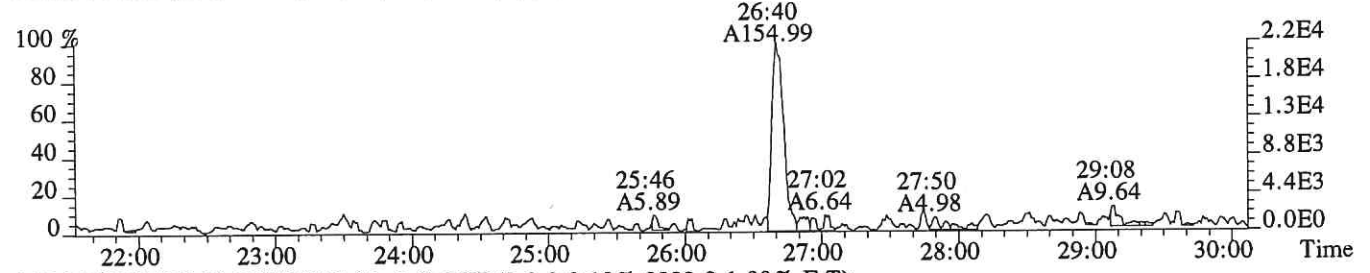
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Sample#1 Exp:CS1

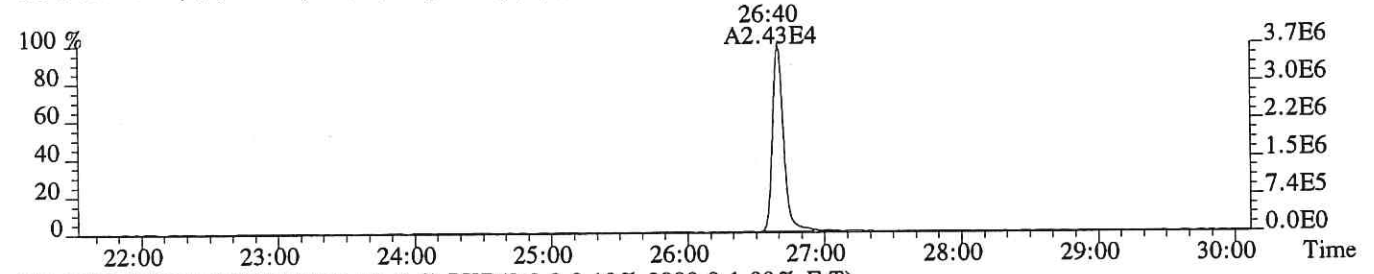
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,248.0,1.00%,F,T)



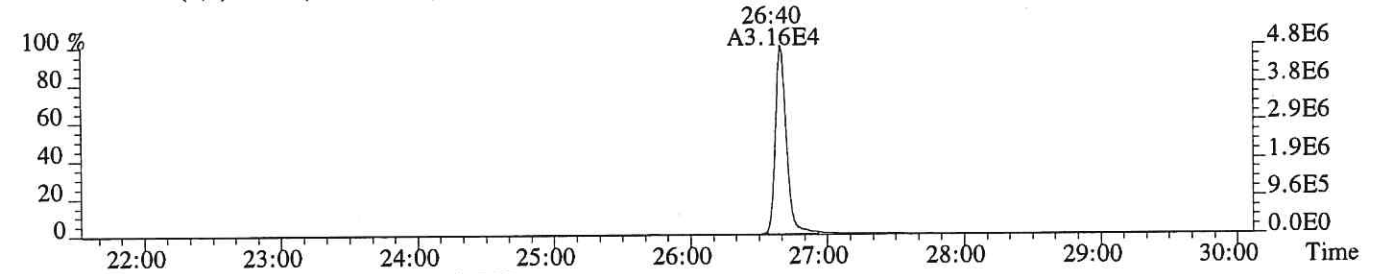
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,964.0,1.00%,F,T)



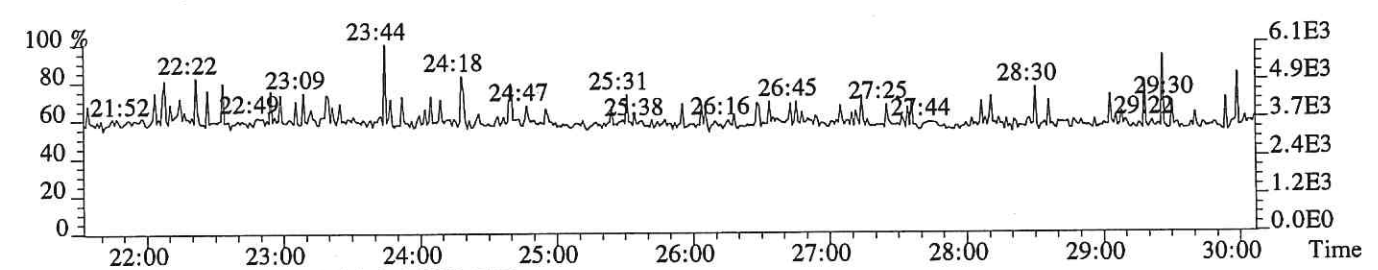
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,9332.0,1.00%,F,T)



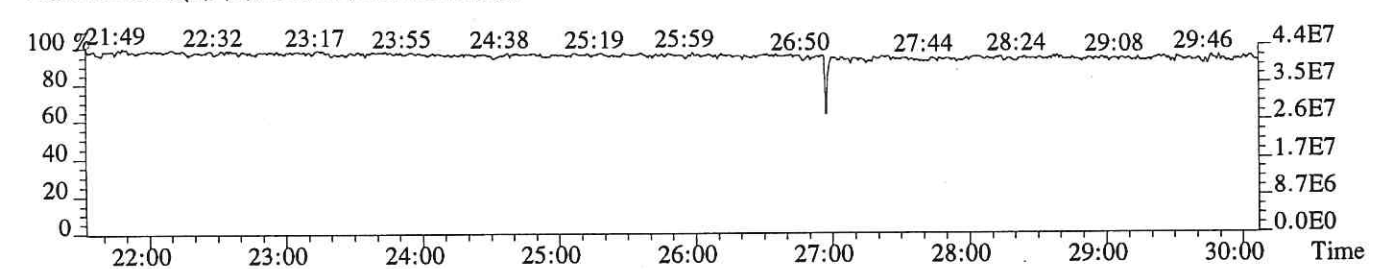
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2980.0,1.00%,F,T)



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

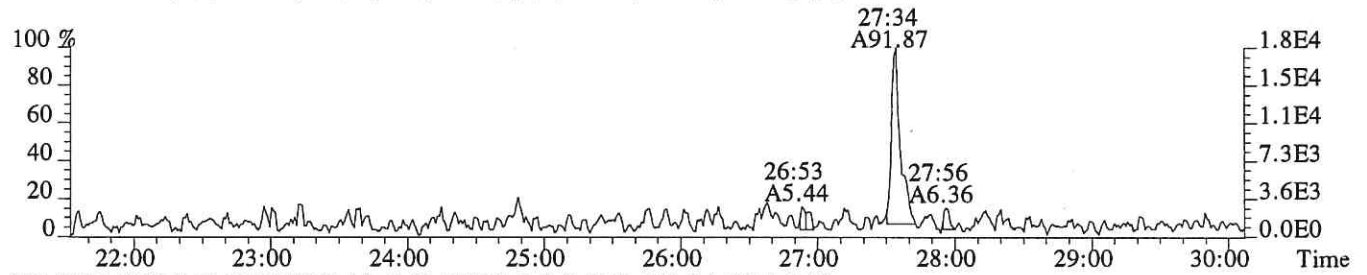


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

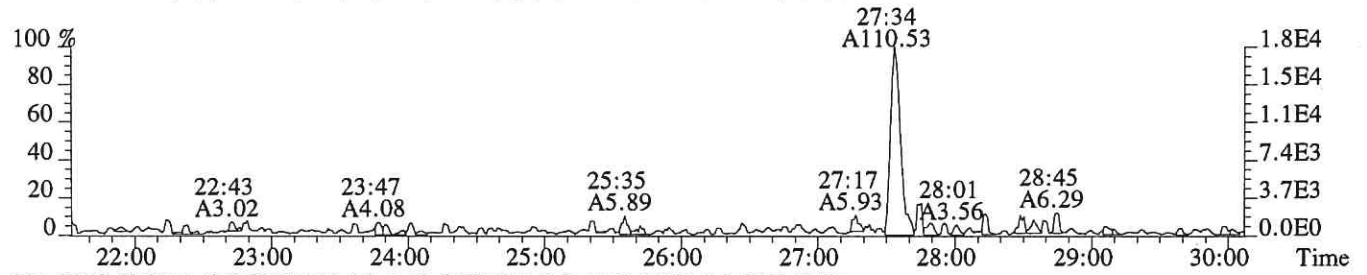


Sample#1 Exp:CS1

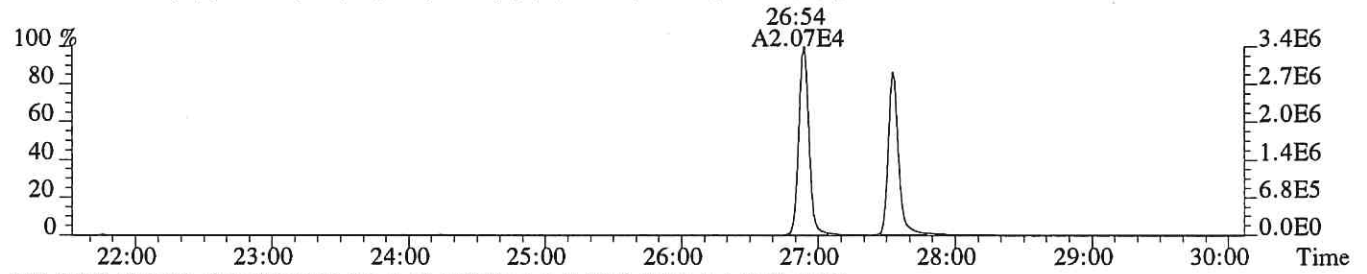
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1476.0,1.00%,F,T)



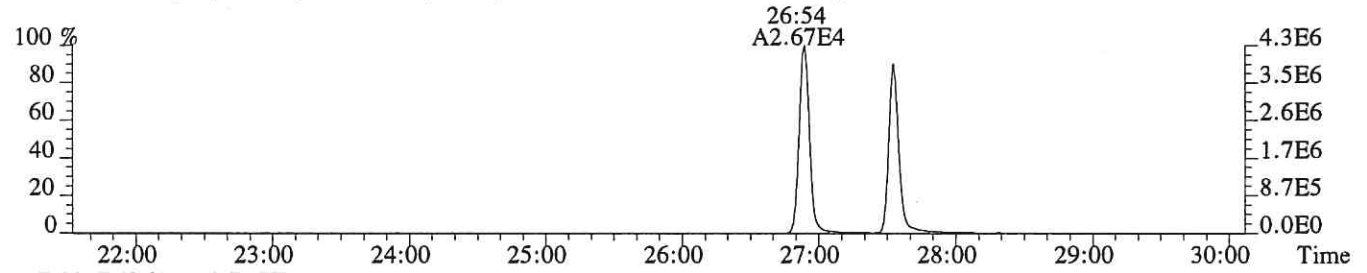
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,476.0,1.00%,F,T)



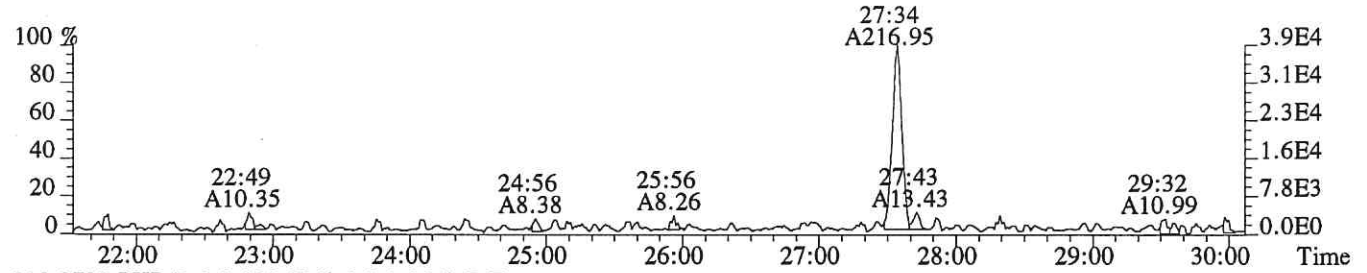
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3420.0,1.00%,F,T)



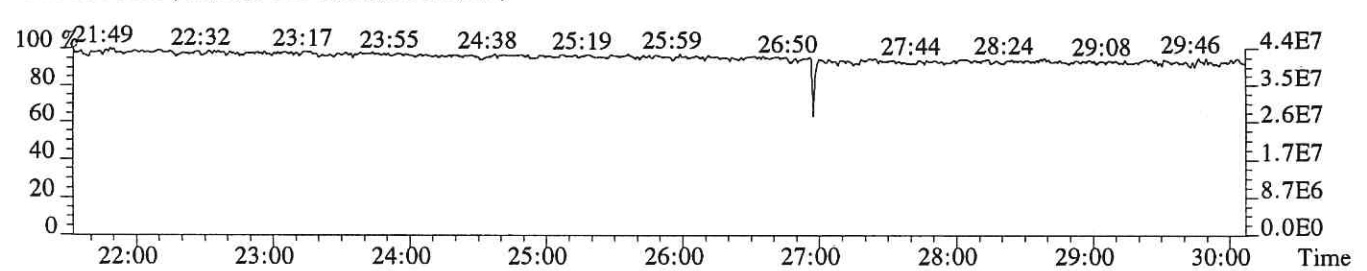
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1780.0,1.00%,F,T)



327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1488.0,1.00%,F,T)



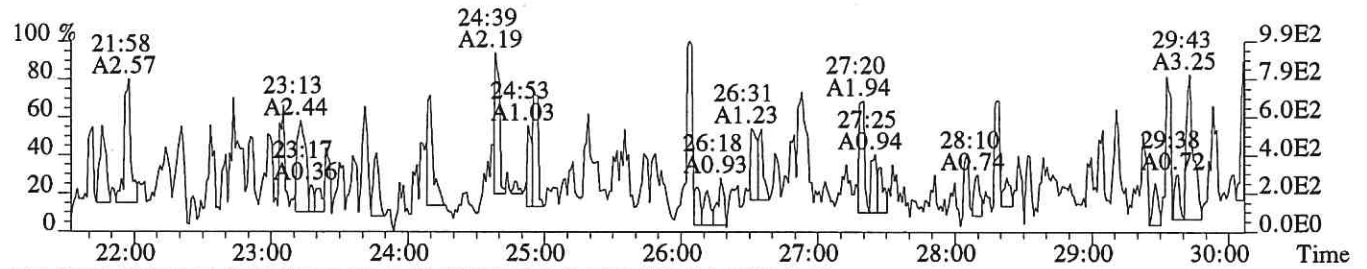
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



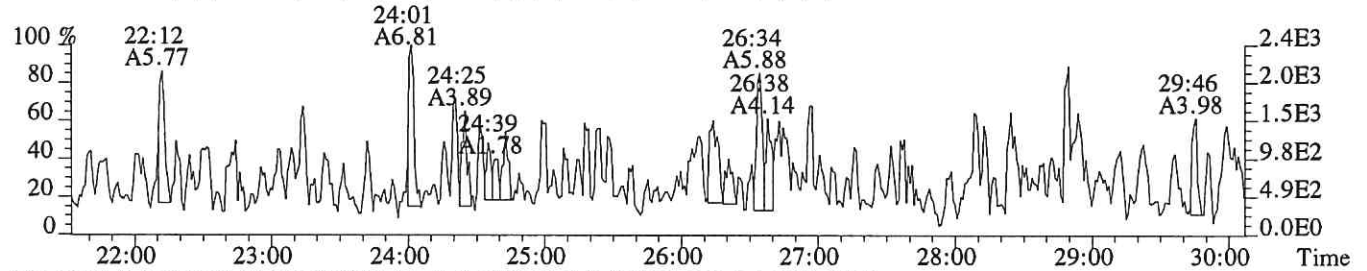
File:P618235 #1-609 Acq: 1-AUG-2019 15:15:19 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:CS1

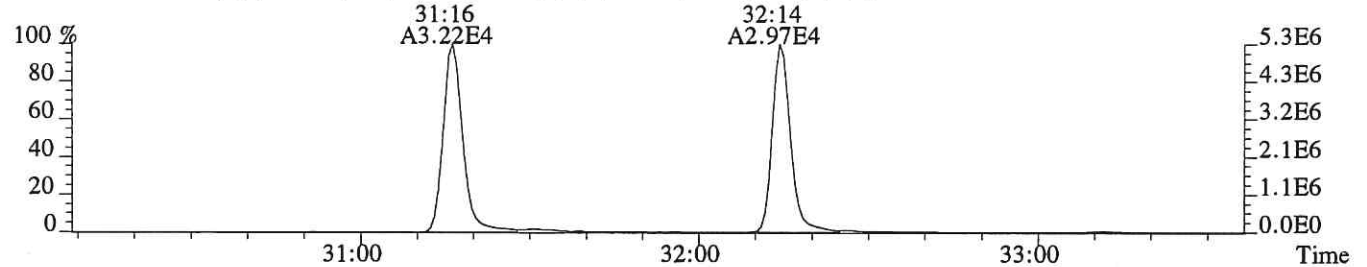
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,260.0,1.00%,F,T)



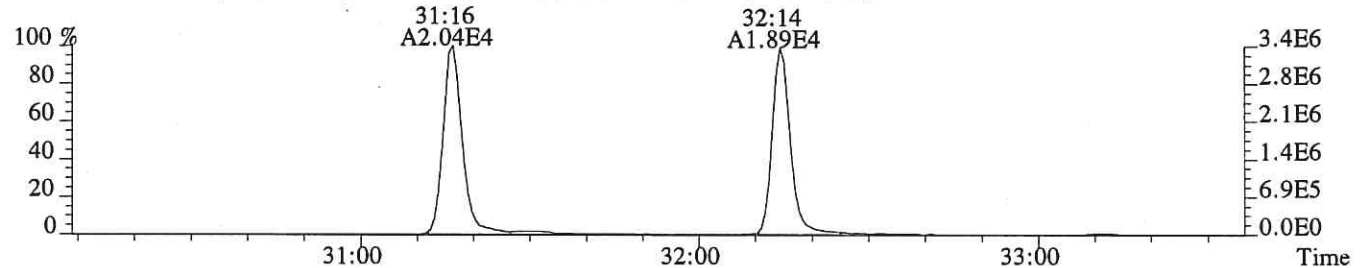
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,852.0,1.00%,F,T)



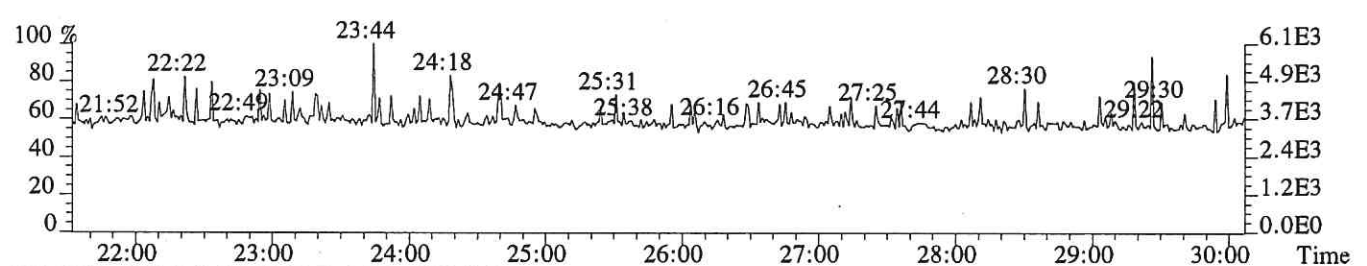
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,660.0,1.00%,F,T)



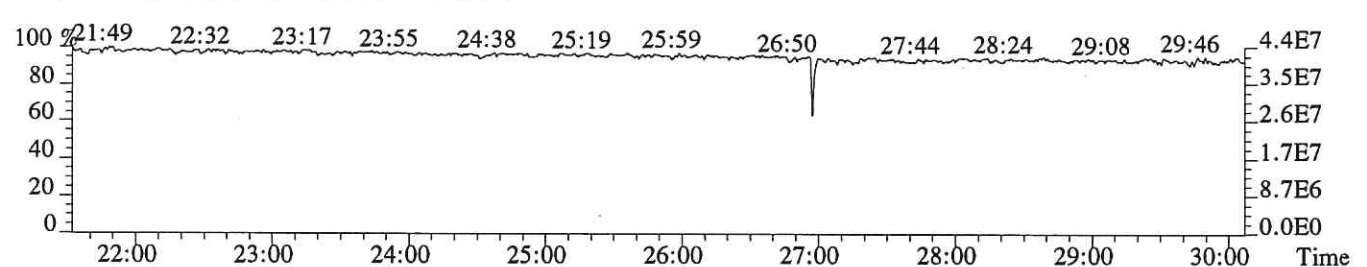
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,536.0,1.00%,F,T)



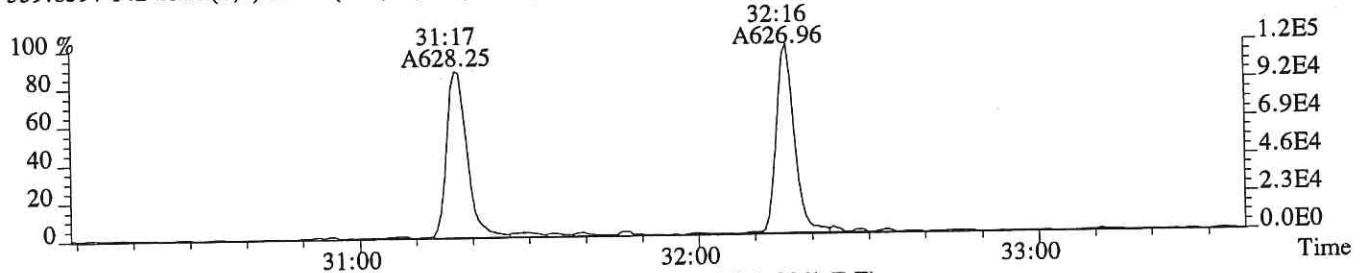
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



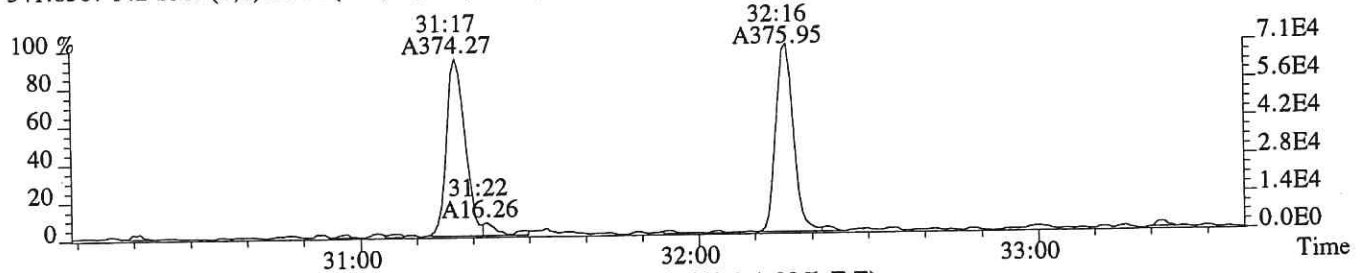
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



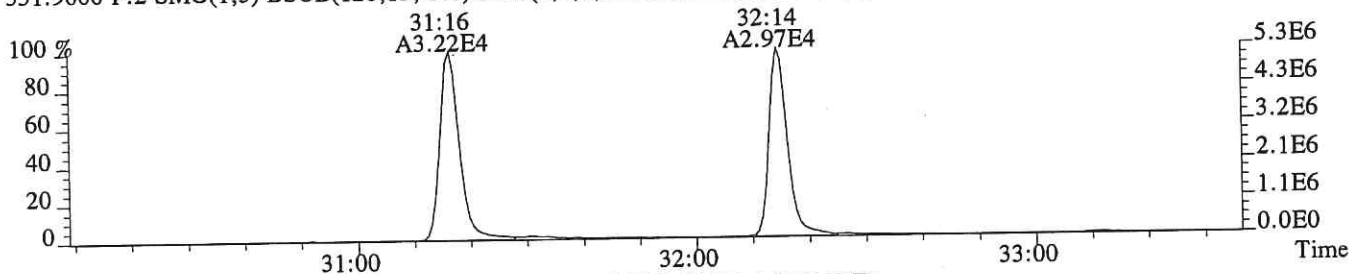
File: P618235 #1-312 Acq: 1-AUG-2019 15:15:19 Probe EI+ Magnet SIR VG BioTech Mass spectf
 Sample#1 Exp: CS1
 339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,188.0,1.00%,F,T)



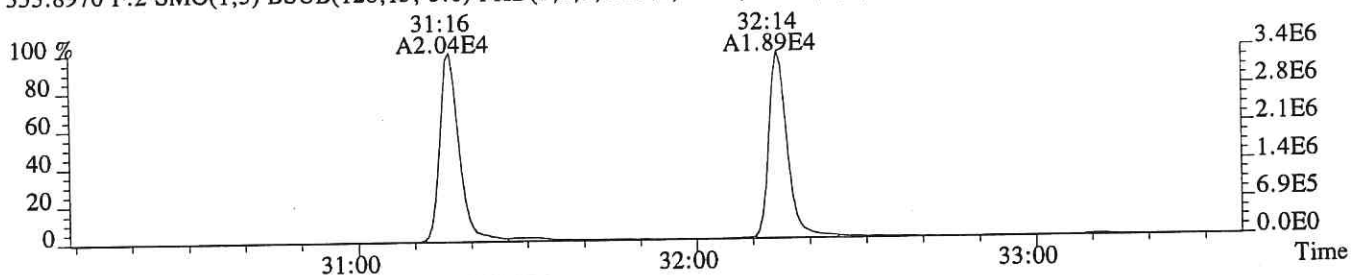
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,720.0,1.00%,F,T)



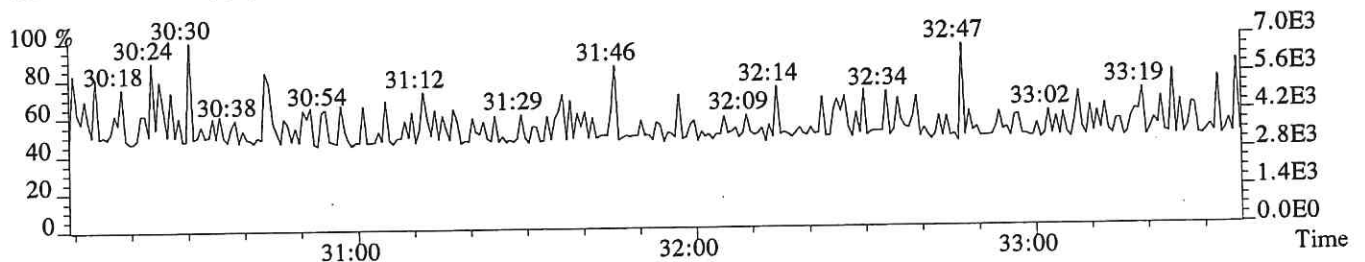
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,660.0,1.00%,F,T)



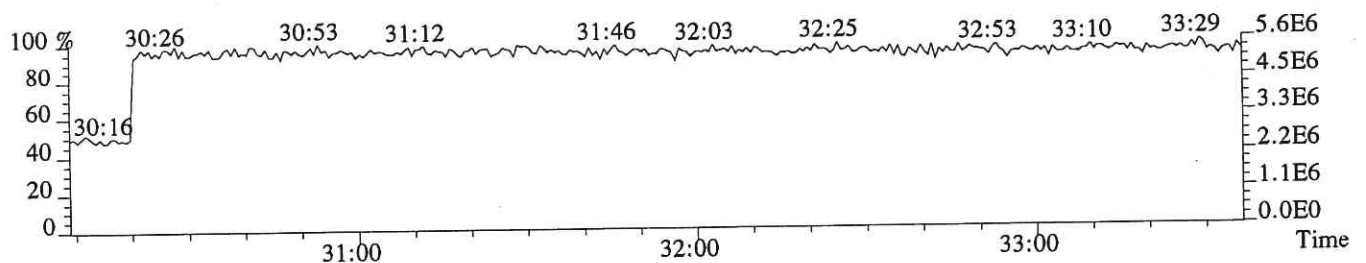
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,536.0,1.00%,F,T)



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

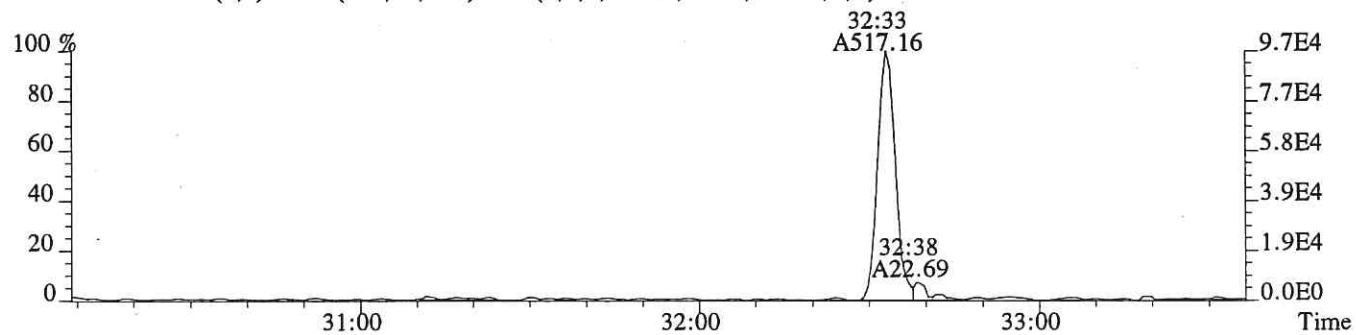


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

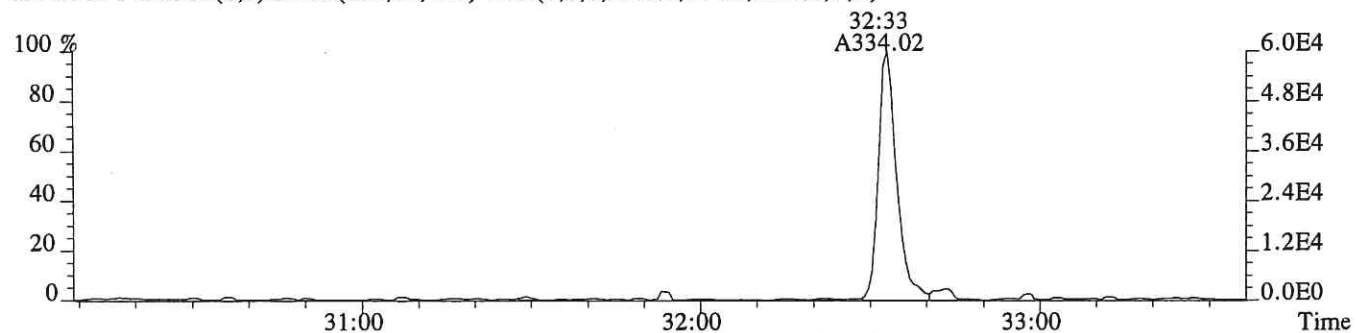


Sample#1 Exp:CS1

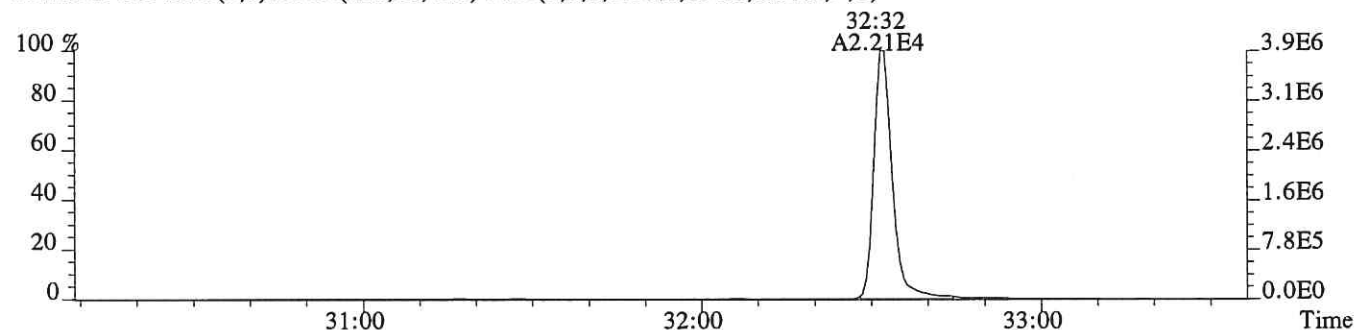
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,524.0,1.00%,F,T)



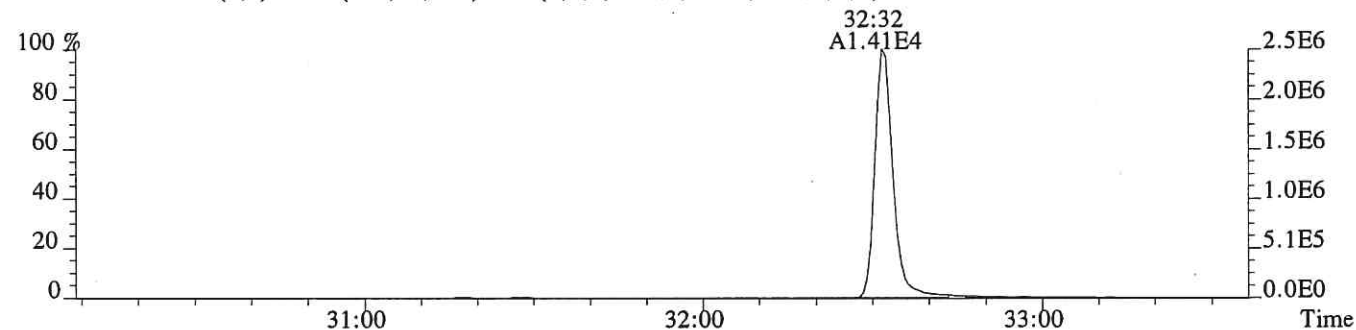
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,284.0,1.00%,F,T)



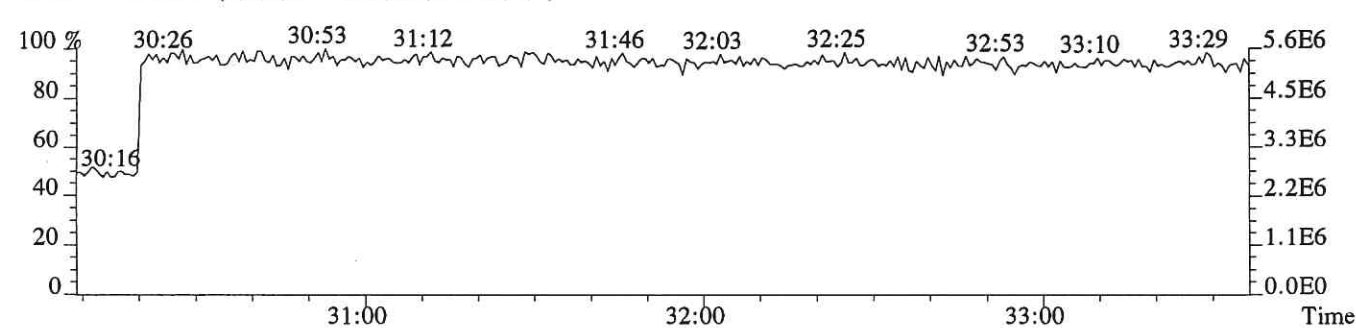
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,616.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,704.0,1.00%,F,T)



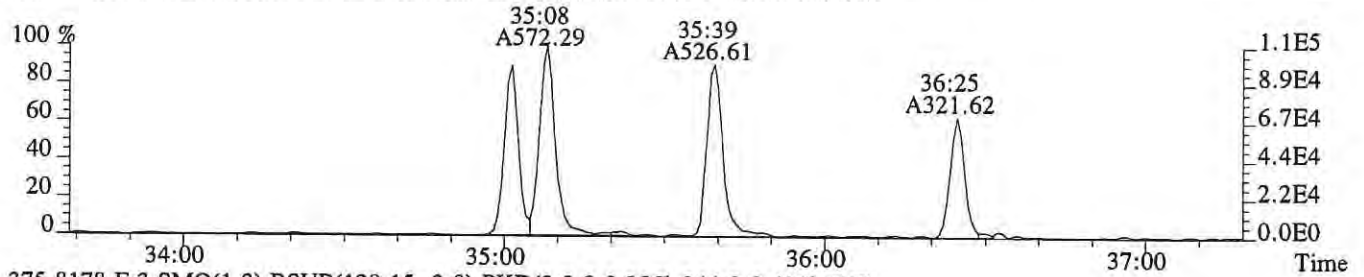
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



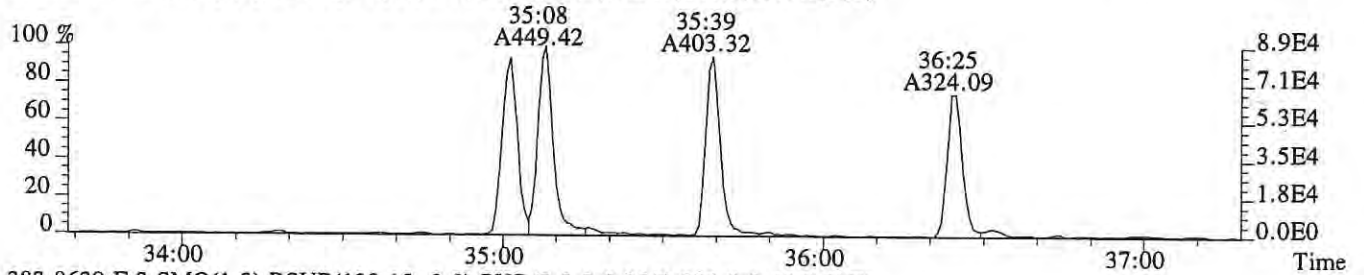
File:P618235 #1-330 Acq: 1-AUG-2019 15:15:19 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:CS1

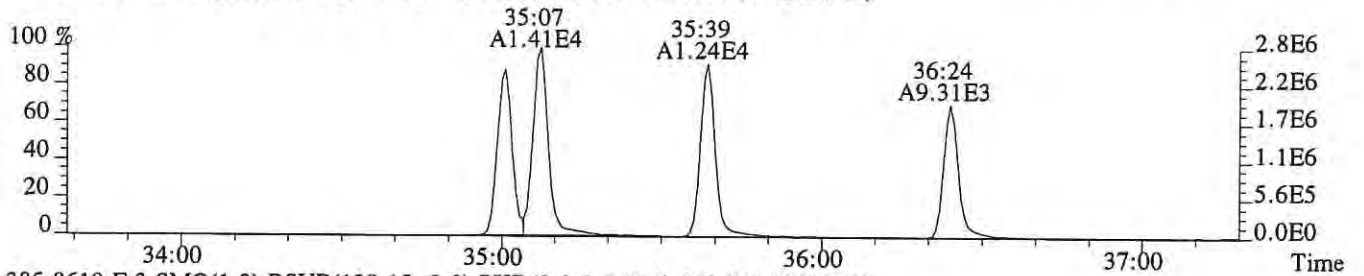
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,400.0,0.40%,F,T)



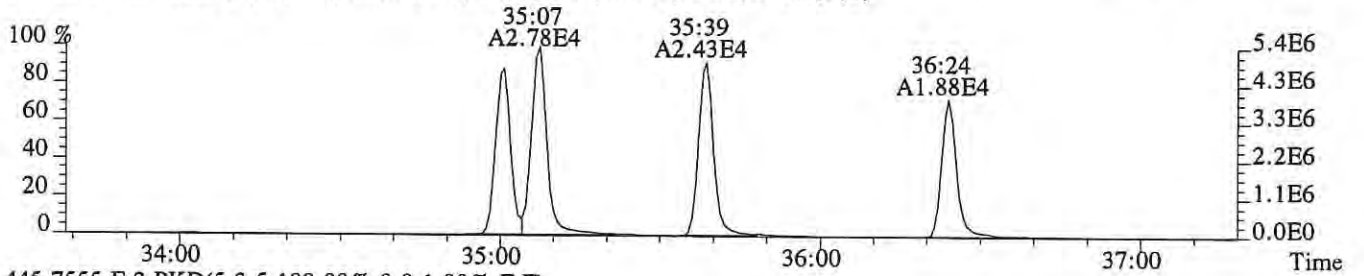
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,244.0,0.40%,F,T)



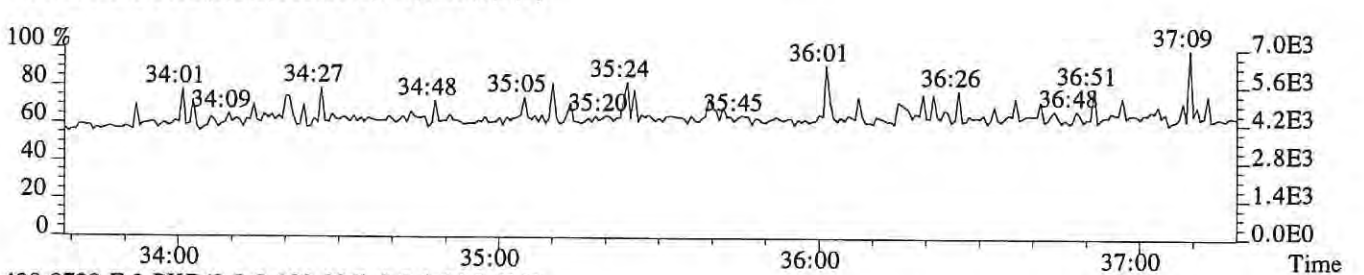
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,332.0,0.40%,F,T)



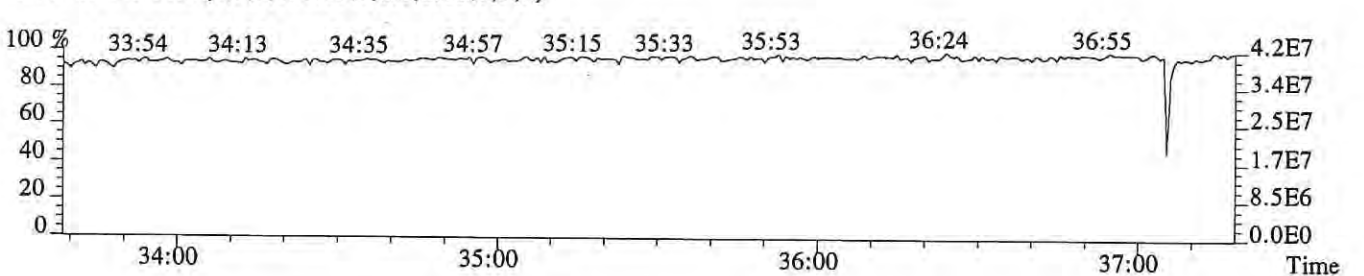
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,512.0,0.40%,F,T)



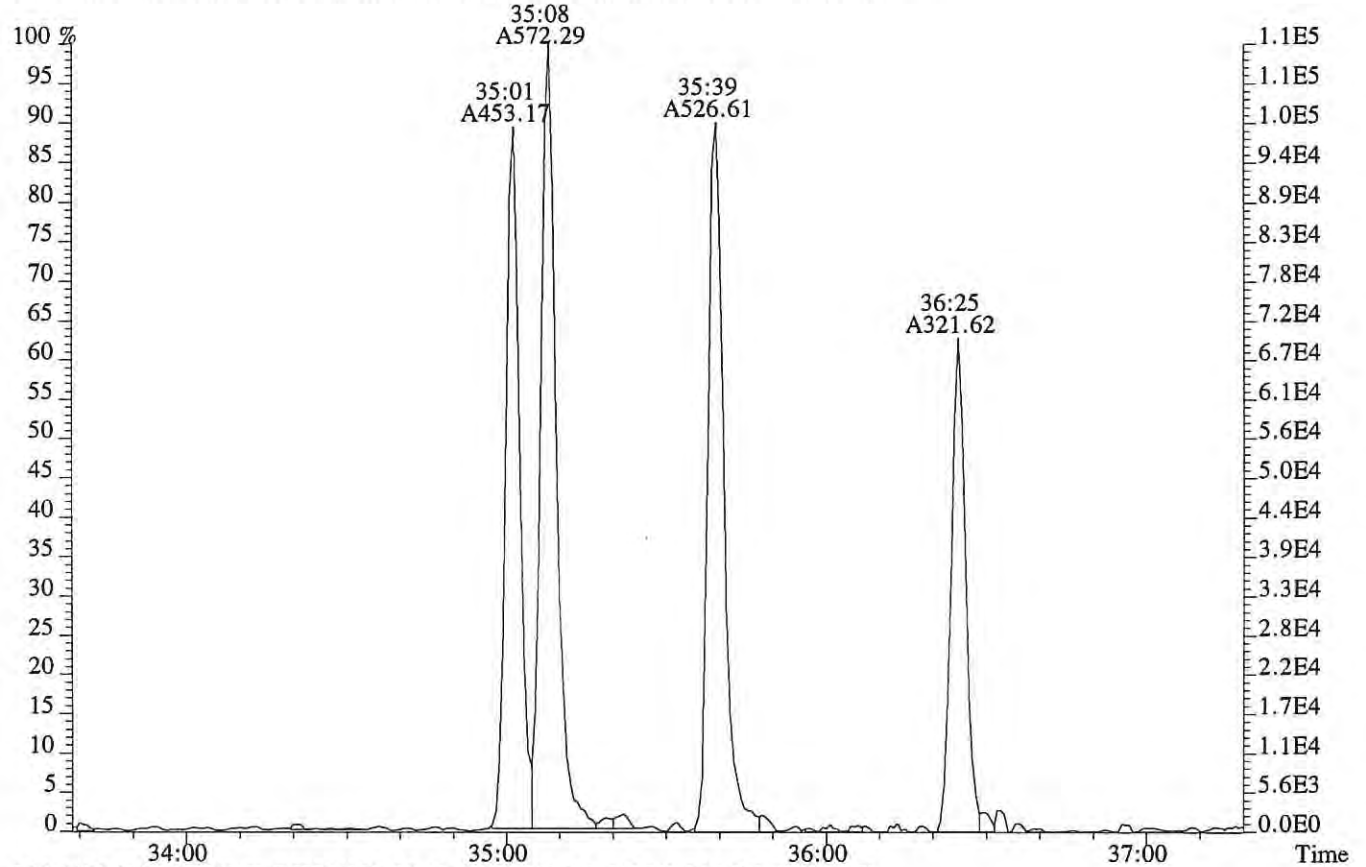
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



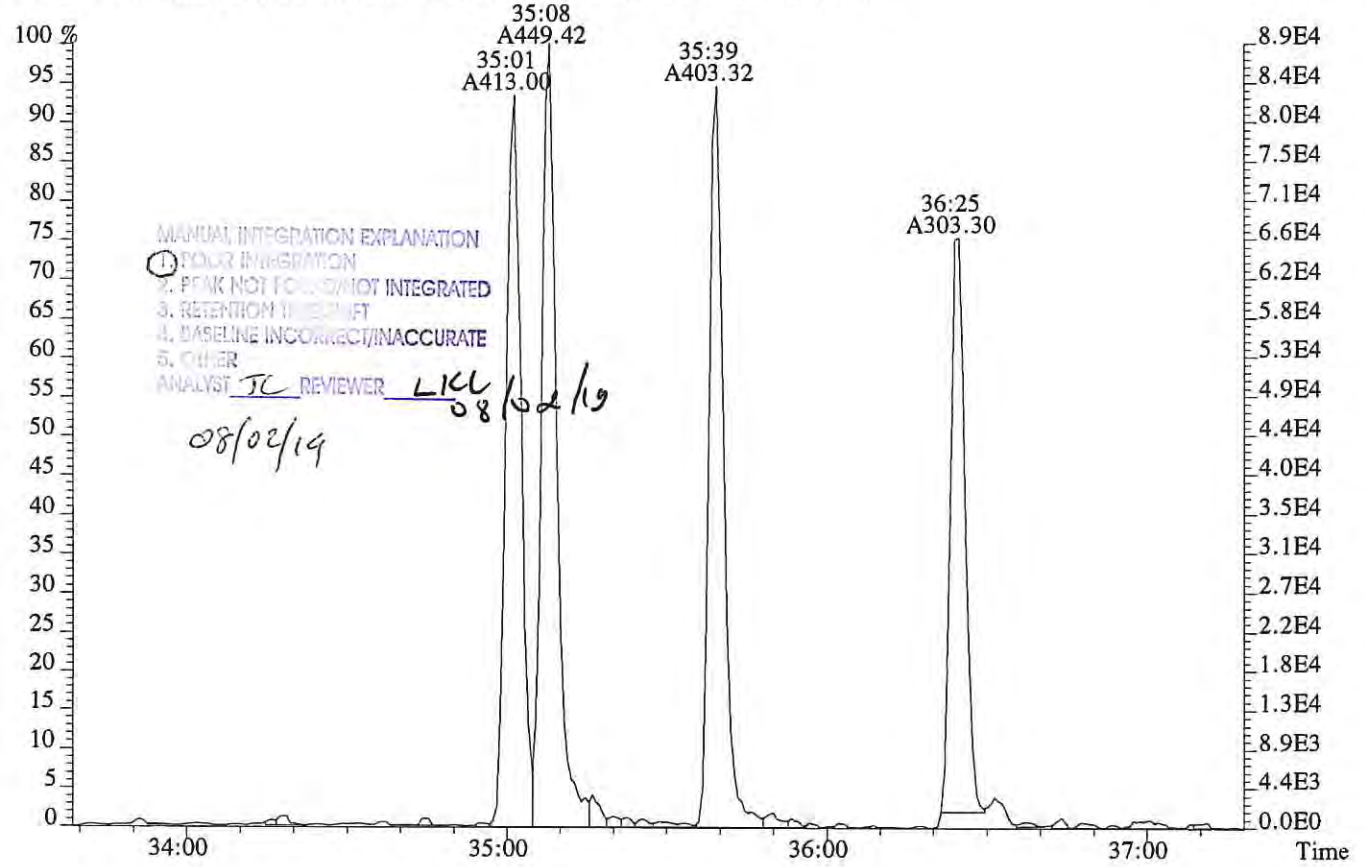
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



File:P618235 #1-330 Acq: 1-AUG-2019 15:15:19 Probe EI+ Magnet SIR VG BioTech Mass spectf
 Sample#1 Exp:CS1
 373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,400.0,0.40%,F,T)

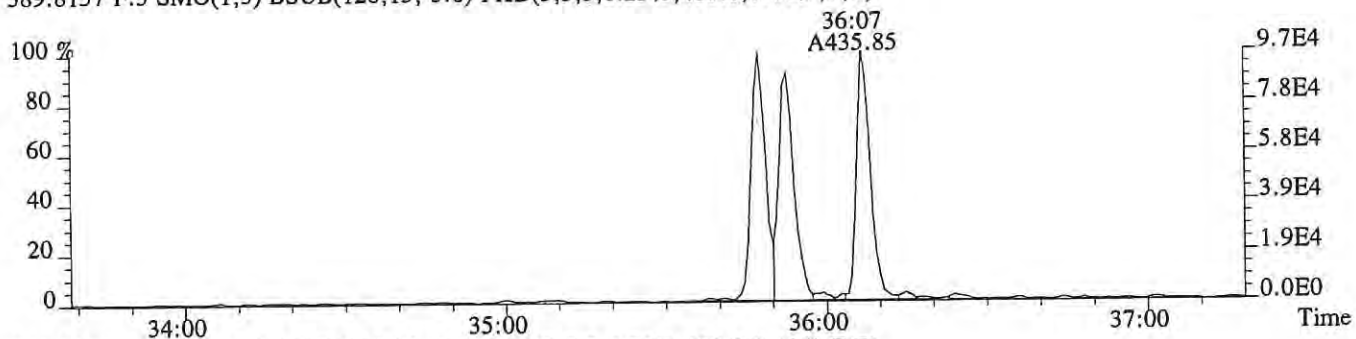


375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,244.0,0.40%,F,T)

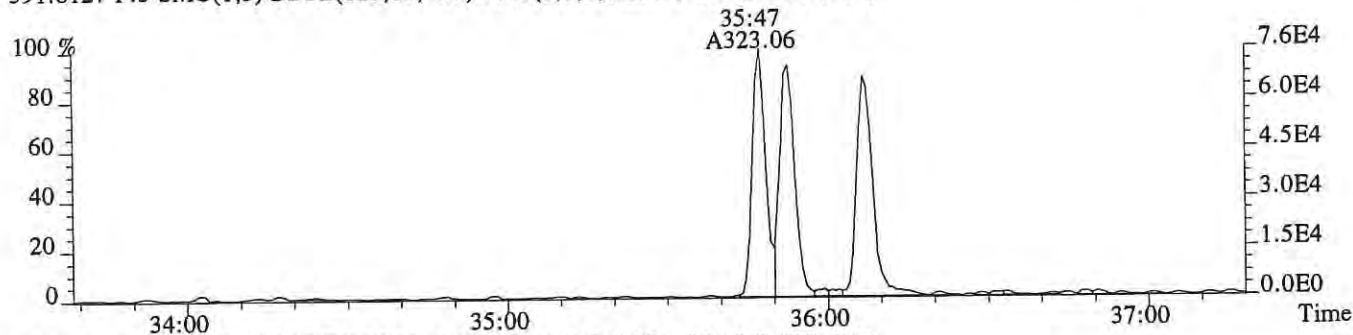


Sample#1 Exp:CS1

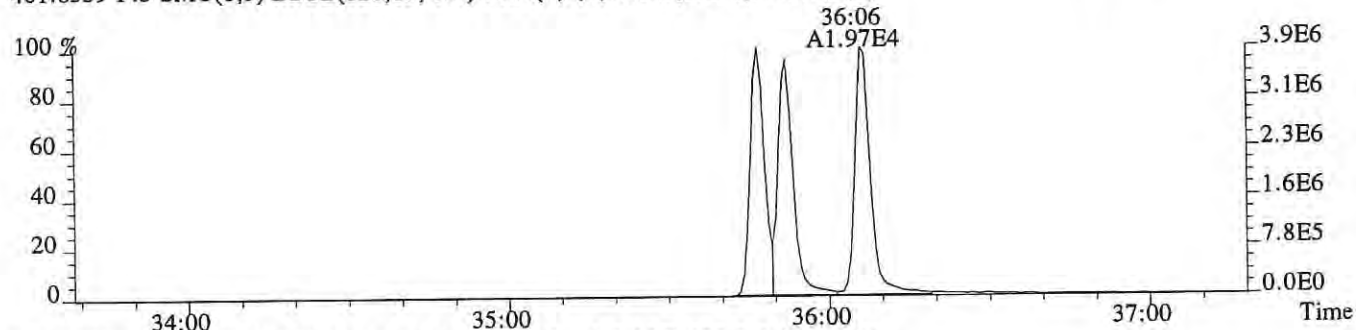
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,408.0,0.40%,F,T)



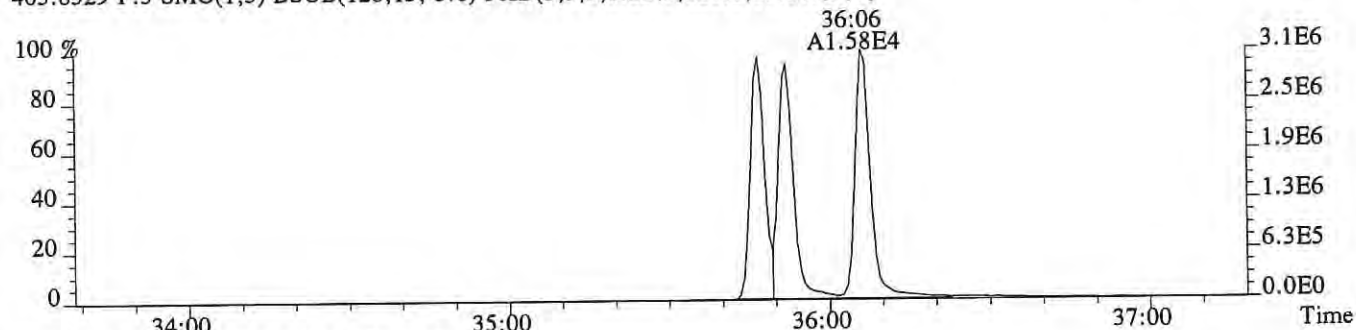
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,428.0,0.40%,F,T)



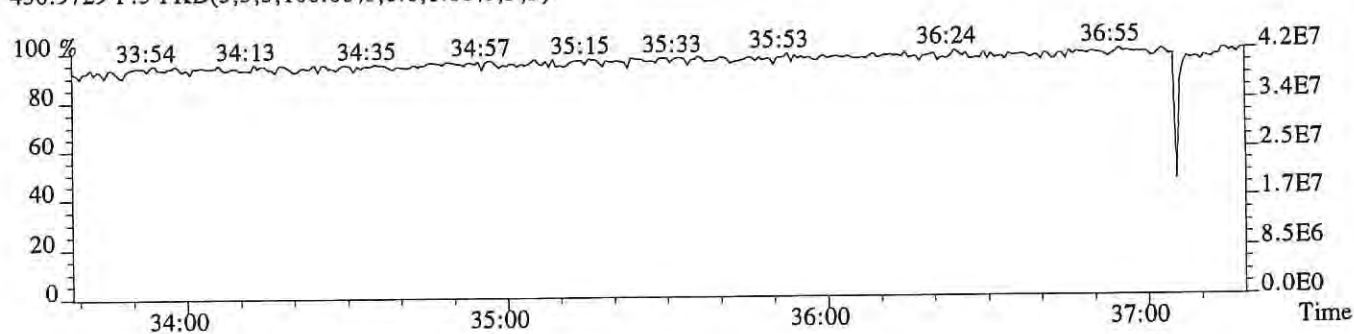
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,996.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,620.0,0.40%,F,T)



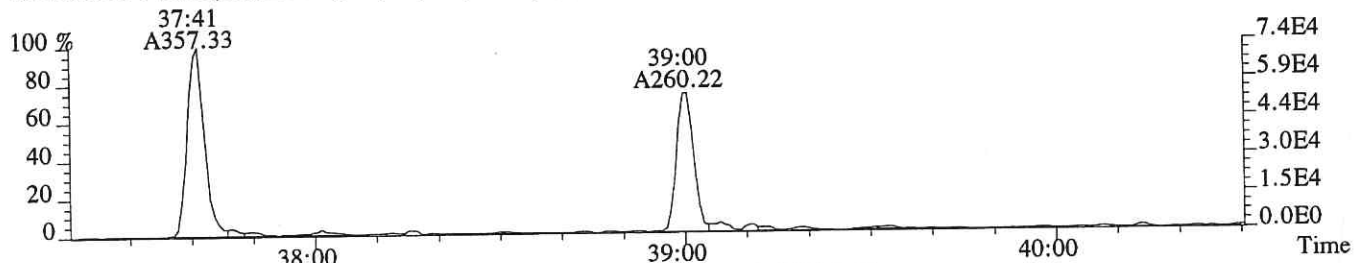
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



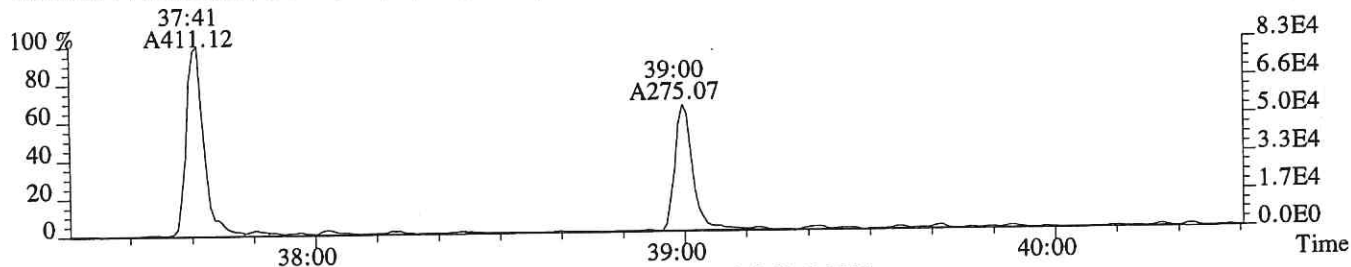
File:P618235 #1-286 Acq: 1-AUG-2019 15:15:19 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:CS1

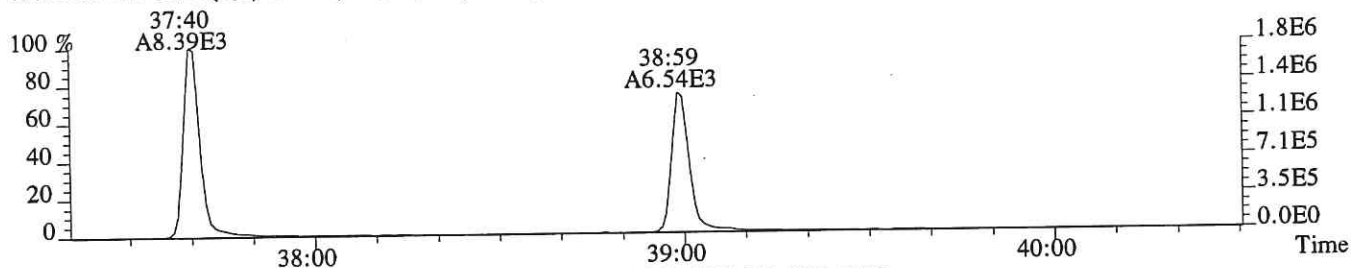
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,248.0,0.50%,F,T)



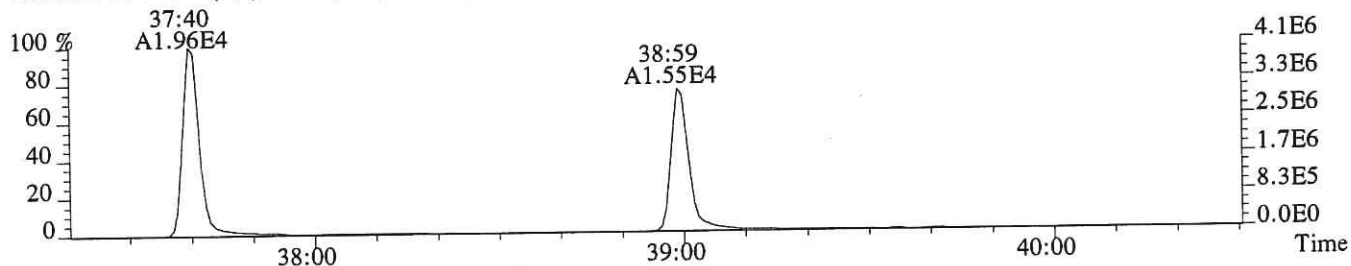
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,264.0,0.50%,F,T)



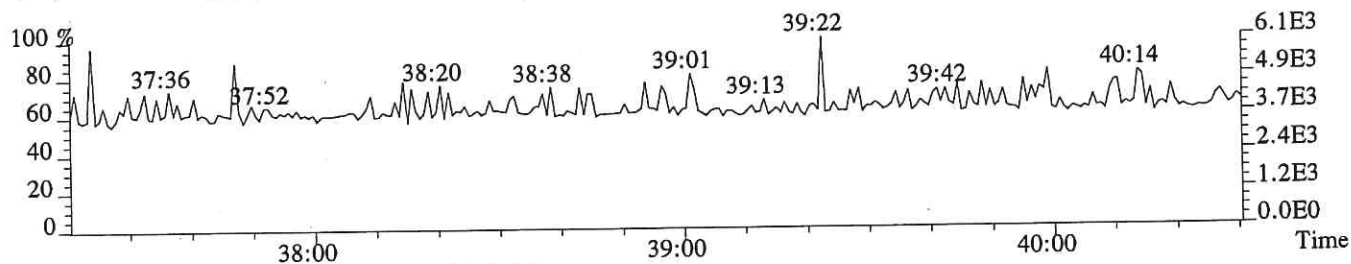
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,832.0,0.50%,F,T)



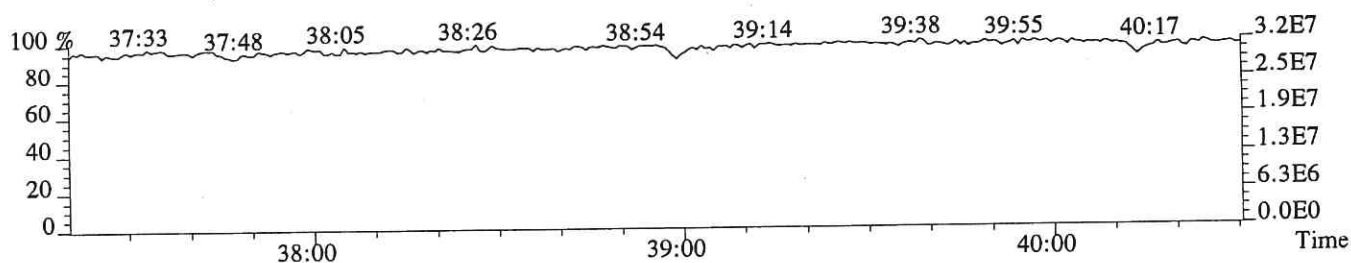
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4108.0,0.50%,F,T)



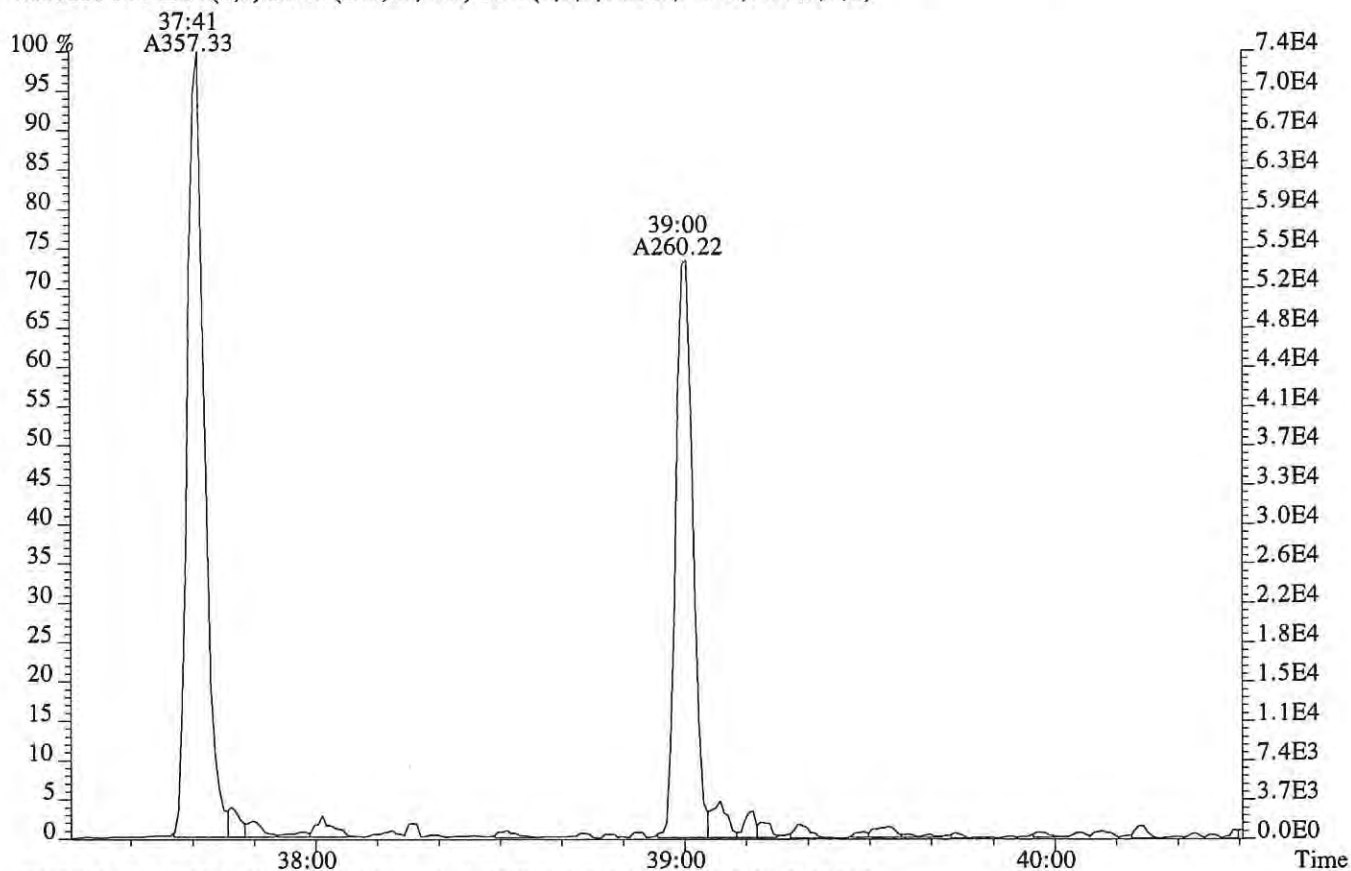
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



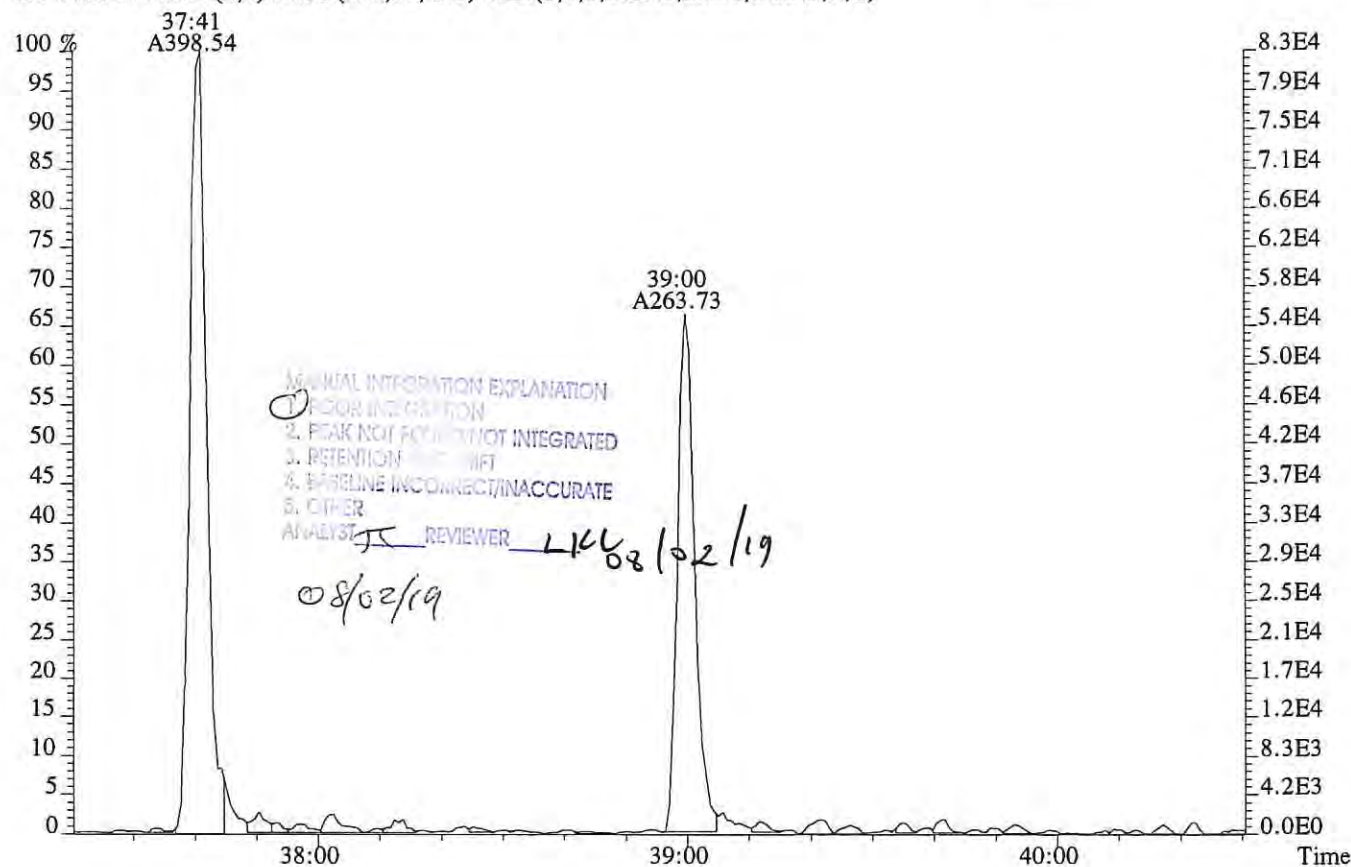
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



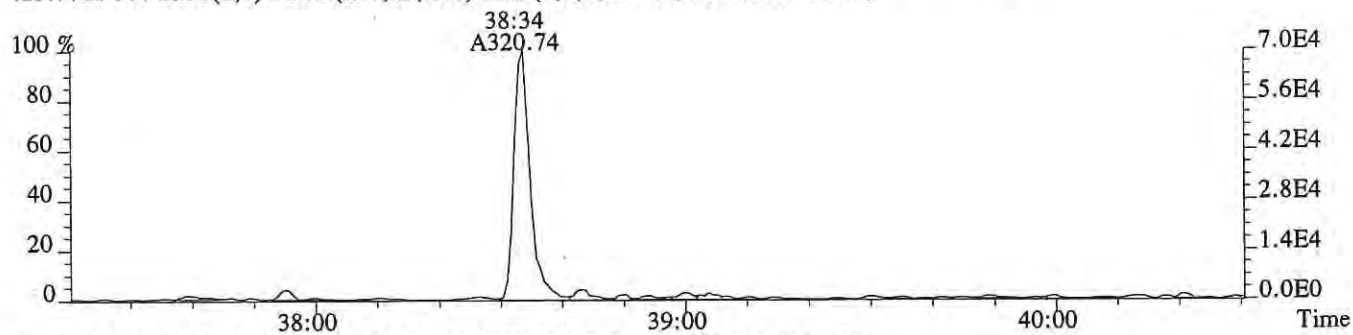
File: P618235 #1-286 Acq: 1-AUG-2019 15:15:19 Probe EI+ Magnet SIR VG BioTech Mass spectf
 Sample#1 Exp: CS1
 407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,248.0,0.50%,F,T)



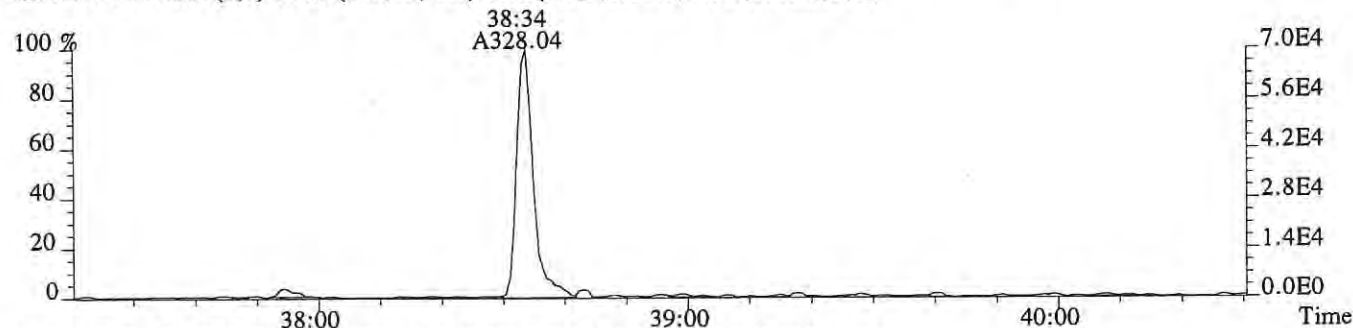
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,264.0,0.50%,F,T)



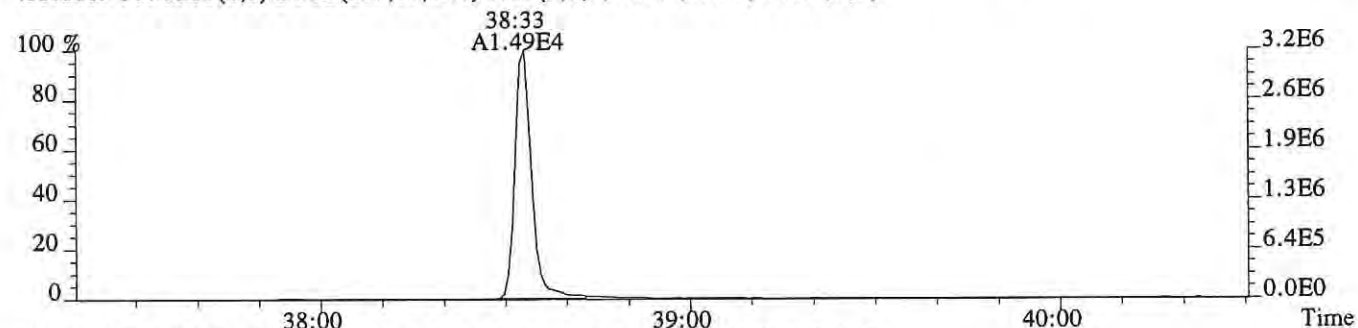
File:P618235 #1-286 Acq: 1-AUG-2019 15:15:19 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS1
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,368.0,0.40%,F,T)



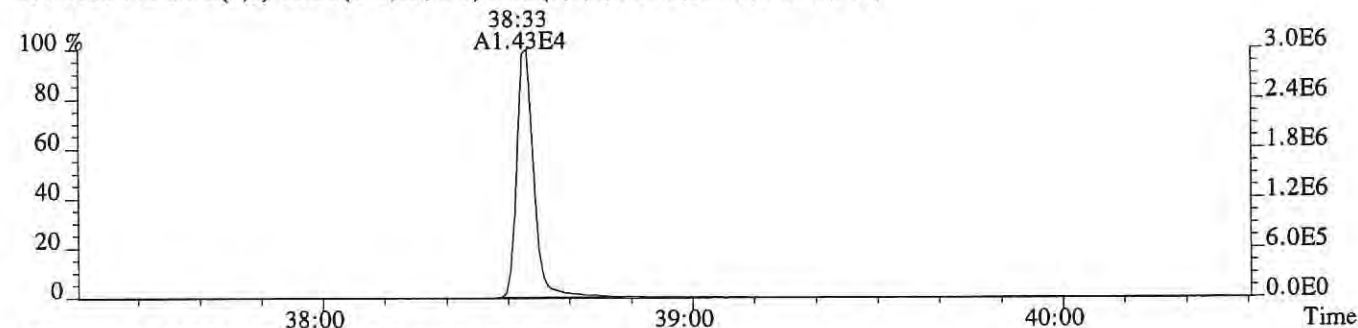
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,280.0,0.40%,F,T)



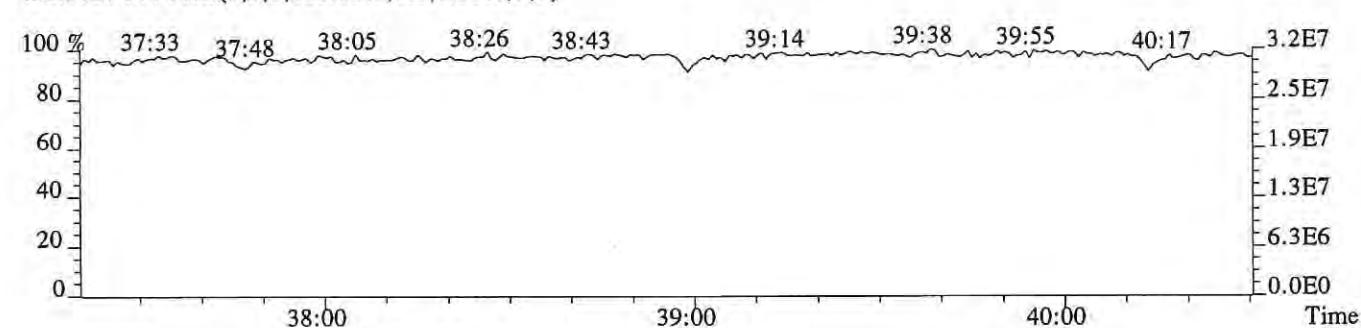
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,332.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,264.0,0.40%,F,T)



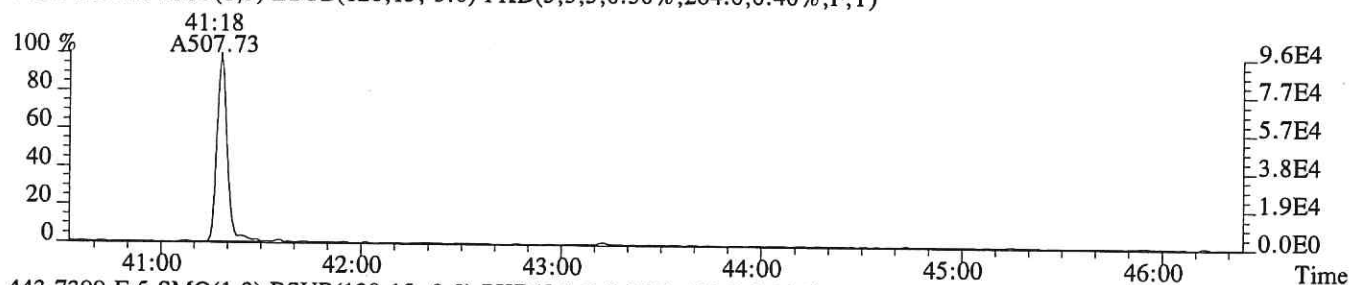
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



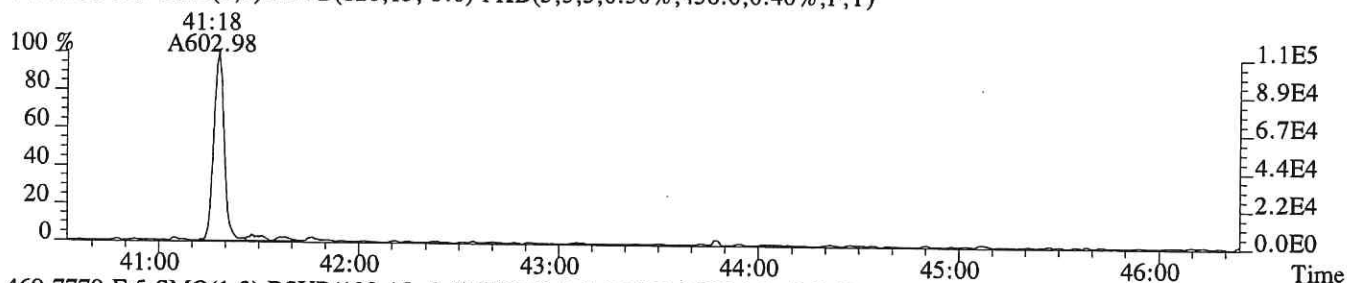
File:P618235 #1-528 Acq: 1-AUG-2019 15:15:19 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:CS1

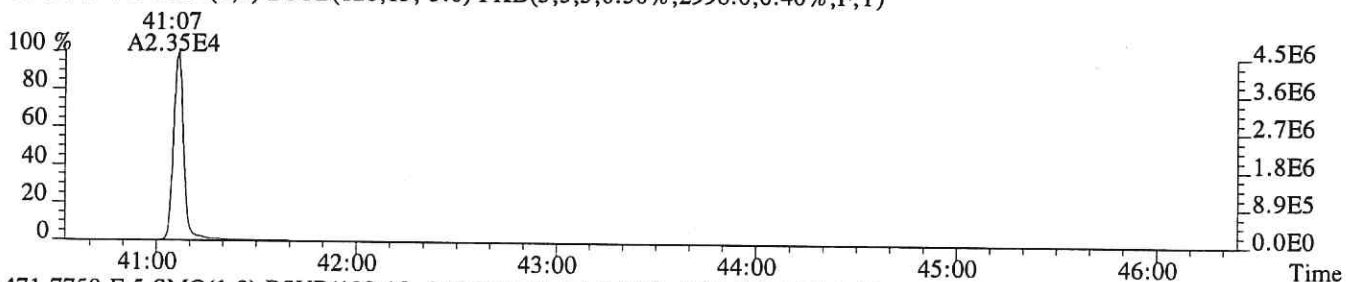
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,264.0,0.40%,F,T)



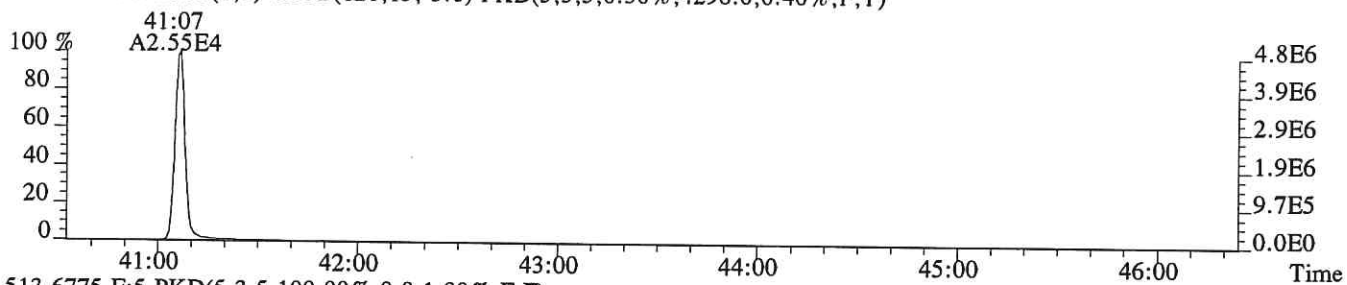
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,456.0,0.40%,F,T)



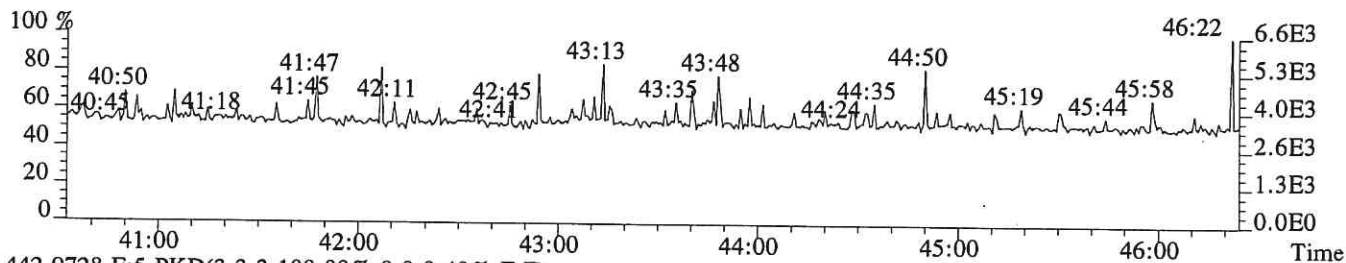
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2996.0,0.40%,F,T)



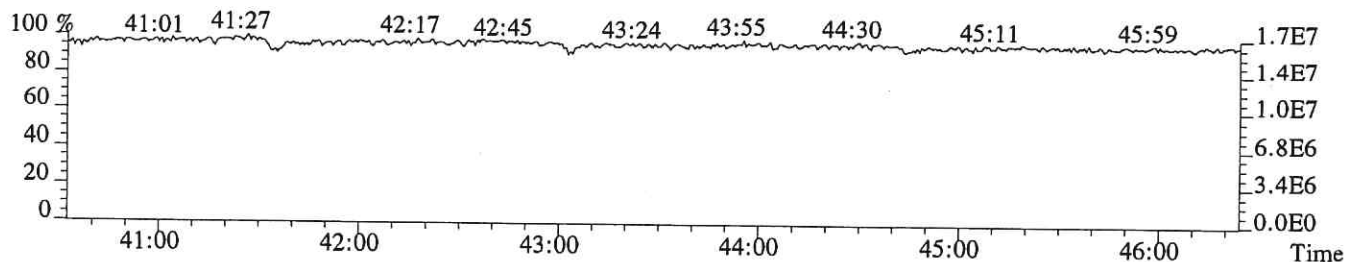
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4296.0,0.40%,F,T)



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



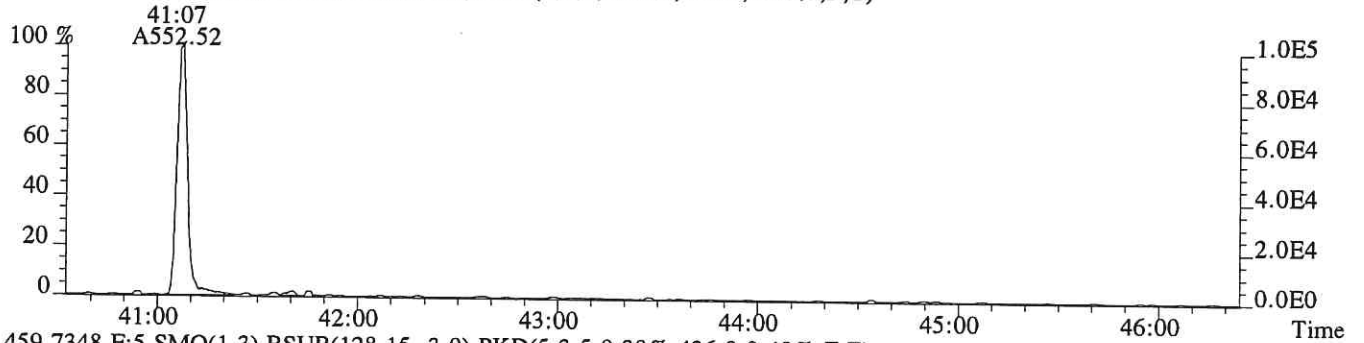
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



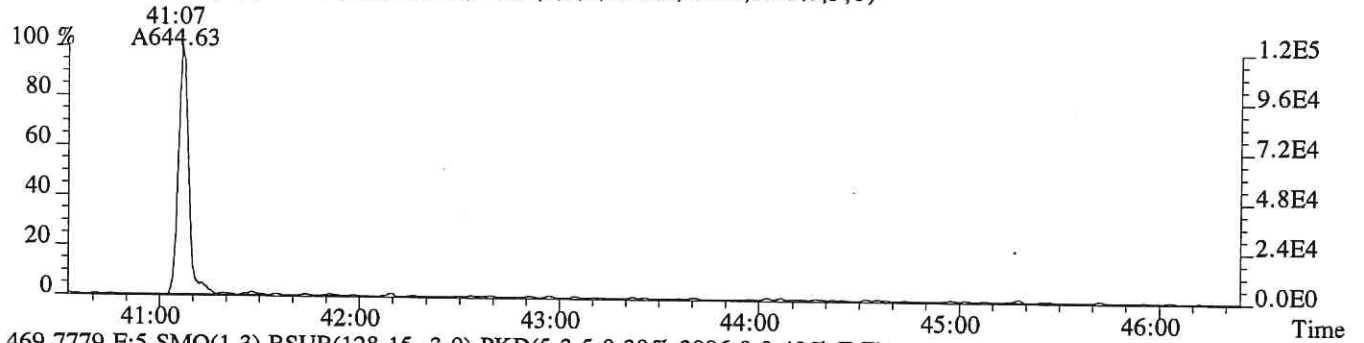
File:P618235 #1-528 Acq: 1-AUG-2019 15:15:19 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:CS1

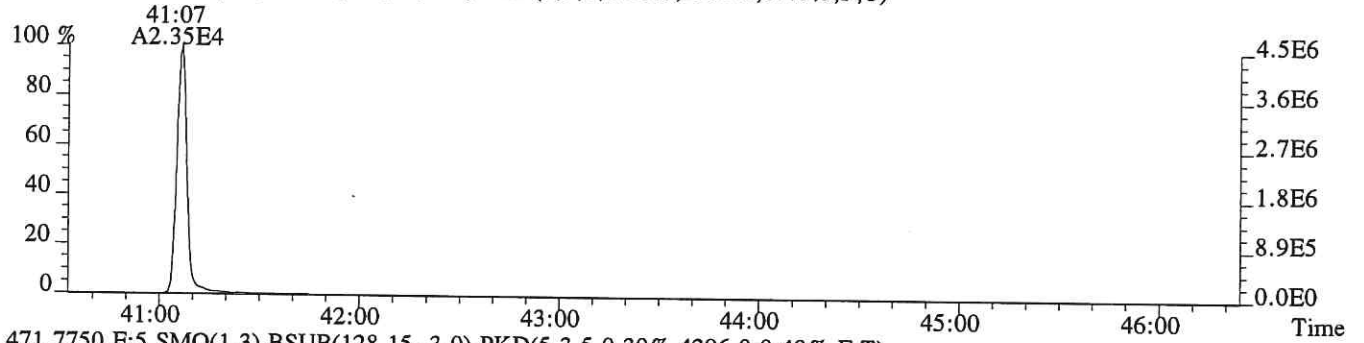
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,380.0,0.40%,F,T)



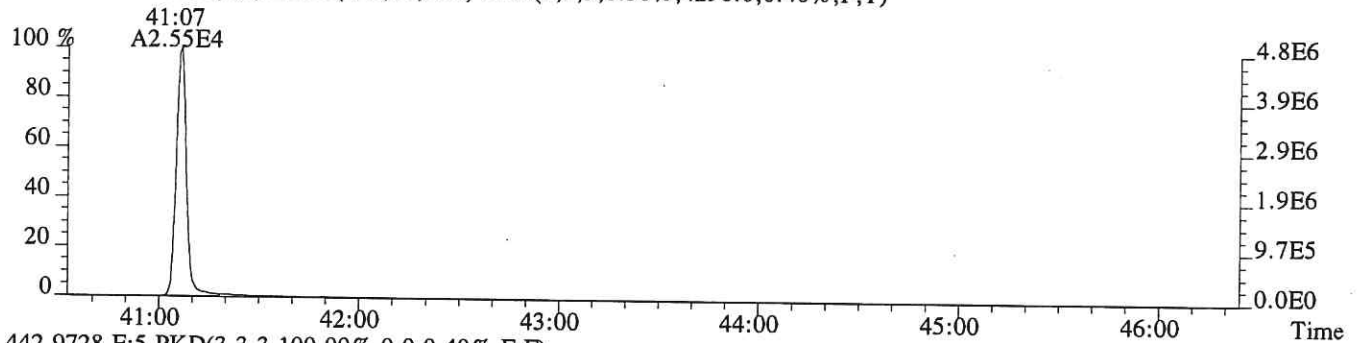
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,436.0,0.40%,F,T)



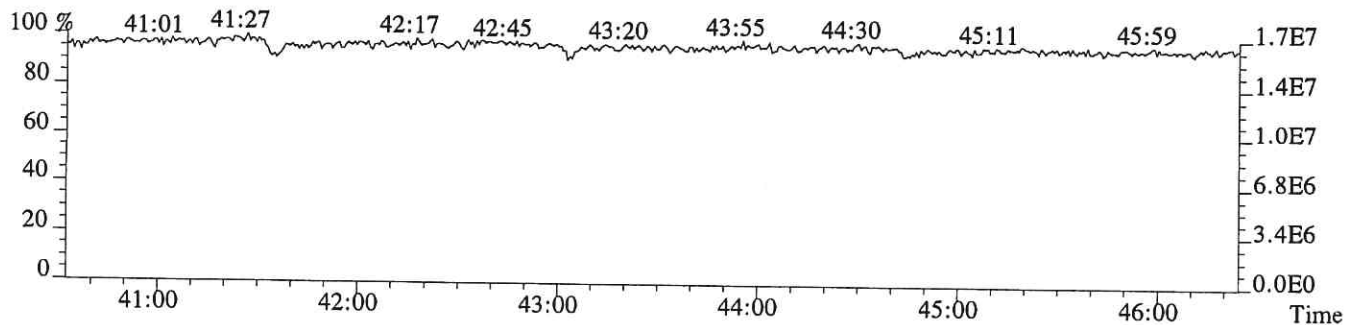
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2996.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4296.0,0.40%,F,T)



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



ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
193434

Run #3 Filename P618236 Samp: 1 Inj: 1 Acquired: 1-AUG-19 16:04:25
Processed: 2-AUG-19 09:23:24 Sample ID: CS2

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	26:41	4.320e+02	5.836e+02	0.74	yes	no	0.873
2 Unk	1,2,3,7,8-PeCDF	31:17	2.873e+03	1.776e+03	1.62	yes	no	0.864
3 Unk	2,3,4,7,8-PeCDF	32:15	2.746e+03	1.724e+03	1.59	yes	no	0.825
4 Unk	1,2,3,4,7,8-HxCDF	35:01	2.370e+03	1.863e+03	1.27	yes	no	1.084
5 Unk	1,2,3,6,7,8-HxCDF	35:08	2.374e+03	2.075e+03	1.14	yes	no	0.994
6 Unk	2,3,4,6,7,8-HxCDF	35:39	2.155e+03	1.785e+03	1.21	yes	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	36:25	1.606e+03	1.300e+03	1.24	yes	no	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	37:40	1.751e+03	1.762e+03	0.99	yes	no	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	39:00	1.153e+03	1.241e+03	0.93	yes	no	1.104
10 Unk	OCDF	41:18	2.346e+03	2.616e+03	0.90	yes	no	0.993
11 Unk	2,3,7,8-TCDD	27:34	3.636e+02	4.923e+02	0.74	yes	no	0.989
12 Unk	1,2,3,7,8-PeCDD	32:33	2.359e+03	1.401e+03	1.68	yes	no	0.954
13 Unk	1,2,3,4,7,8-HxCDD	35:47	1.835e+03	1.508e+03	1.22	yes	no	1.020
14 Unk	1,2,3,6,7,8-HxCDD	35:53	2.017e+03	1.631e+03	1.24	yes	no	1.030
15 Unk	1,2,3,7,8,9-HxCDD	36:07	1.889e+03	1.536e+03	1.23	yes	no	1.007
16 Unk	1,2,3,4,6,7,8-HpCDD	38:34	1.440e+03	1.343e+03	1.07	yes	no	0.922
17 Unk	OCDD	41:07	2.419e+03	2.848e+03	0.85	yes	no	1.062
18 IS	13C-2,3,7,8-TCDF	26:40	2.693e+04	3.404e+04	0.79	yes	no	1.102
19 IS	13C-1,2,3,7,8-PeCDF	31:16	3.530e+04	2.267e+04	1.56	yes	no	1.074
20 IS	13C-2,3,4,7,8-PeCDF	32:14	3.337e+04	2.128e+04	1.57	yes	no	1.005
21 IS	13C-1,2,3,4,7,8-HxCDF	35:01	1.330e+04	2.616e+04	0.51	yes	no	1.059
22 IS	13C-1,2,3,6,7,8-HxCDF	35:07	1.550e+04	3.028e+04	0.51	yes	no	1.264
23 IS	13C-2,3,4,6,7,8-HxCDF	35:39	1.364e+04	2.678e+04	0.51	yes	no	1.066
24 IS	13C-1,2,3,7,8,9-HxCDF	36:24	1.064e+04	2.069e+04	0.51	yes	no	0.801
25 IS	13C-1,2,3,4,6,7,8-HpCDF	37:40	9.260e+03	2.128e+04	0.44	yes	no	0.789
26 IS	13C-1,2,3,4,7,8,9-HpCDF	38:59	6.975e+03	1.580e+04	0.44	yes	no	0.590
27 IS	13C-2,3,7,8-TCDD	27:33	1.983e+04	2.632e+04	0.75	yes	no	0.839
28 IS	13C-1,2,3,7,8-PeCDD	32:32	2.481e+04	1.581e+04	1.57	yes	no	0.744
29 IS	13C-1,2,3,4,7,8-HxCDD	35:47	1.918e+04	1.527e+04	1.26	yes	no	0.907
30 IS	13C-1,2,3,6,7,8-HxCDD	35:52	2.021e+04	1.589e+04	1.27	yes	no	0.978
31 IS	13C-1,2,3,4,6,7,8-HpCDD	38:33	1.655e+04	1.562e+04	1.06	yes	no	0.814
32 IS	13C-OCDD	41:06	2.472e+04	2.756e+04	0.90	yes	no	0.653
33 RS/RT	13C-1,2,3,4-TCDD	26:54	2.329e+04	3.020e+04	0.77	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	36:06	2.053e+04	1.728e+04	1.19	yes	no	-
35 C/Up	37C1-2,3,7,8-TCDD	27:34	9.581e+02				no	0.894

ALS ENVIRONMENTAL
10450 Stancliff Rd., Suite 115
Houston, TX 77099
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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
193434

Run #3 Filename P618236 Samp: 1 Inj: 1 Acquired: 1-AUG-19 16:04:25
Processed: 2-AUG-19 09:23:24 LAB. ID: CS2

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	6.89e+04	3.04e+02	2.3e+02	8.34e+04	9.92e+02	8.4e+01
2	1,2,3,7,8-PeCDF	4.93e+05	3.92e+02	1.3e+03	3.11e+05	1.59e+03	2.0e+02
3	2,3,4,7,8-PeCDF	4.86e+05	3.92e+02	1.2e+03	3.14e+05	1.59e+03	2.0e+02
4	1,2,3,4,7,8-HxCDF	5.13e+05	3.20e+02	1.6e+03	3.89e+05	1.76e+02	2.2e+03
5	1,2,3,6,7,8-HxCDF	4.59e+05	3.20e+02	1.4e+03	4.12e+05	1.76e+02	2.3e+03
6	2,3,4,6,7,8-HxCDF	4.57e+05	3.20e+02	1.4e+03	3.73e+05	1.76e+02	2.1e+03
7	1,2,3,7,8,9-HxCDF	3.29e+05	3.20e+02	1.0e+03	2.73e+05	1.76e+02	1.6e+03
8	1,2,3,4,6,7,8-HpCDF	3.83e+05	5.44e+02	7.0e+02	4.08e+05	7.52e+02	5.4e+02
9	1,2,3,4,7,8,9-HpCDF	2.30e+05	5.44e+02	4.2e+02	2.41e+05	7.52e+02	3.2e+02
10	OCDF	4.43e+05	1.28e+03	3.4e+02	4.88e+05	1.47e+03	3.3e+02
11	2,3,7,8-TCDD	6.21e+04	1.41e+03	4.4e+01	8.28e+04	5.04e+02	1.6e+02
12	1,2,3,7,8-PeCDD	4.53e+05	3.40e+02	1.3e+03	2.54e+05	2.60e+02	9.8e+02
13	1,2,3,4,7,8-HxCDD	4.10e+05	4.08e+02	1.0e+03	3.35e+05	2.12e+02	1.6e+03
14	1,2,3,6,7,8-HxCDD	4.09e+05	4.08e+02	1.0e+03	3.26e+05	2.12e+02	1.5e+03
15	1,2,3,7,8,9-HxCDD	3.95e+05	4.08e+02	9.7e+02	3.14e+05	2.12e+02	1.5e+03
16	1,2,3,4,6,7,8-HpCDD	3.07e+05	3.64e+02	8.4e+02	2.93e+05	2.56e+02	1.1e+03
17	OCDD	4.70e+05	3.96e+02	1.2e+03	5.61e+05	9.20e+02	6.1e+02
18	13C-2,3,7,8-TCDF	4.10e+06	8.32e+03	4.9e+02	5.26e+06	2.82e+03	1.9e+03
19	13C-1,2,3,7,8-PeCDF	6.08e+06	5.44e+02	1.1e+04	3.89e+06	8.92e+02	4.4e+03
20	13C-2,3,4,7,8-PeCDF	6.16e+06	5.44e+02	1.1e+04	3.93e+06	8.92e+02	4.4e+03
21	13C-1,2,3,4,7,8-HxCDF	2.78e+06	2.40e+02	1.2e+04	5.37e+06	6.00e+02	8.9e+03
22	13C-1,2,3,6,7,8-HxCDF	3.05e+06	2.40e+02	1.3e+04	5.92e+06	6.00e+02	9.9e+03
23	13C-2,3,4,6,7,8-HxCDF	2.85e+06	2.40e+02	1.2e+04	5.52e+06	6.00e+02	9.2e+03
24	13C-1,2,3,7,8,9-HxCDF	2.22e+06	2.40e+02	9.3e+03	4.21e+06	6.00e+02	7.0e+03
25	13C-1,2,3,4,6,7,8-HpCDF	1.97e+06	1.29e+03	1.5e+03	4.61e+06	3.27e+03	1.4e+03
26	13C-1,2,3,4,7,8,9-HpCDF	1.40e+06	1.29e+03	1.1e+03	3.11e+06	3.27e+03	9.5e+02
27	13C-2,3,7,8-TCDD	3.31e+06	3.23e+03	1.0e+03	4.38e+06	1.65e+03	2.7e+03
28	13C-1,2,3,7,8-PeCDD	4.54e+06	4.20e+02	1.1e+04	2.93e+06	6.16e+02	4.8e+03
29	13C-1,2,3,4,7,8-HxCDD	4.24e+06	1.11e+03	3.8e+03	3.37e+06	5.68e+02	5.9e+03
30	13C-1,2,3,6,7,8-HxCDD	4.08e+06	1.11e+03	3.7e+03	3.21e+06	5.68e+02	5.7e+03
31	13C-1,2,3,4,6,7,8-HpCDD	3.56e+06	3.68e+02	9.7e+03	3.30e+06	3.04e+02	1.1e+04
32	13C-OCDD	4.82e+06	3.20e+03	1.5e+03	5.43e+06	2.22e+03	2.4e+03
33	13C-1,2,3,4-TCDD	3.70e+06	3.23e+03	1.1e+03	4.91e+06	1.65e+03	3.0e+03
34	13C-1,2,3,7,8,9-HxCDD	4.32e+06	1.11e+03	3.9e+03	3.51e+06	5.68e+02	6.2e+03
35	37Cl-2,3,7,8-TCDD	1.56e+05	1.33e+03	1.2e+02			

---Sample Calculation---

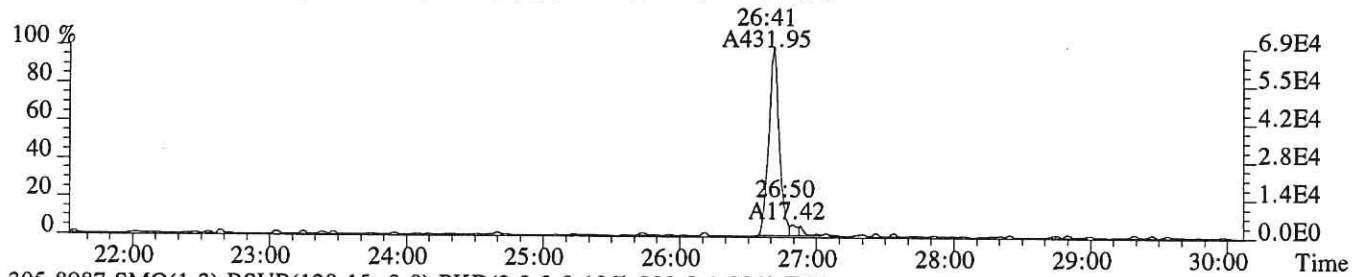
$$\text{D/L TCDD} = \frac{2.5 \times (1.412e+03 + 5.040e+02) \times 100}{(3.306e+06 + 4.380e+06) \times () \times 0.989} =$$

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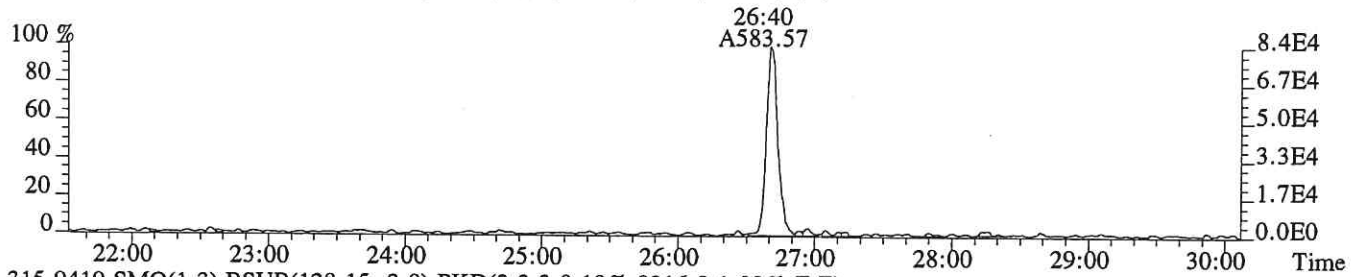
File:P618236 #1-609 Acq: 1-AUG-2019 16:04:25 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:CS2

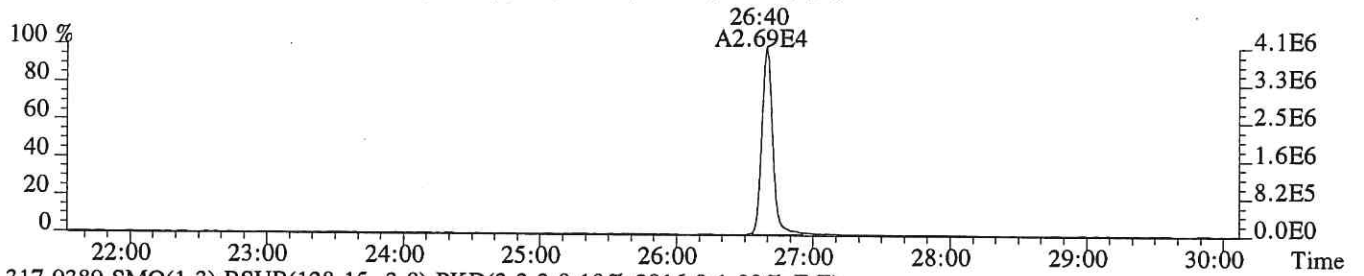
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,304.0,1.00%,F,T)



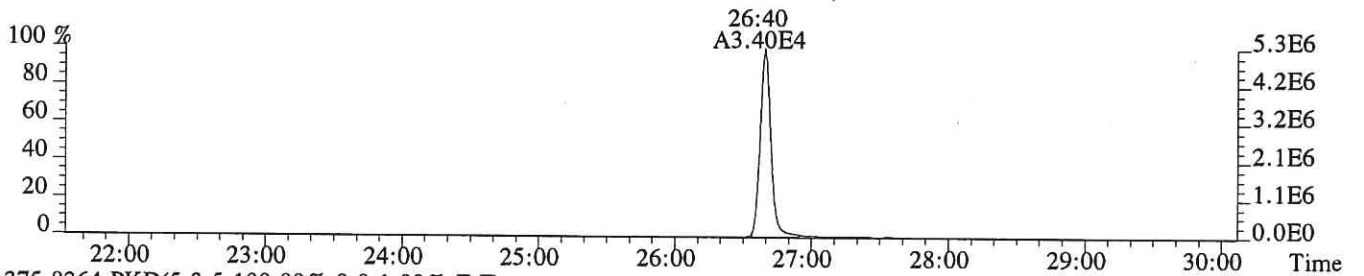
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,992.0,1.00%,F,T)



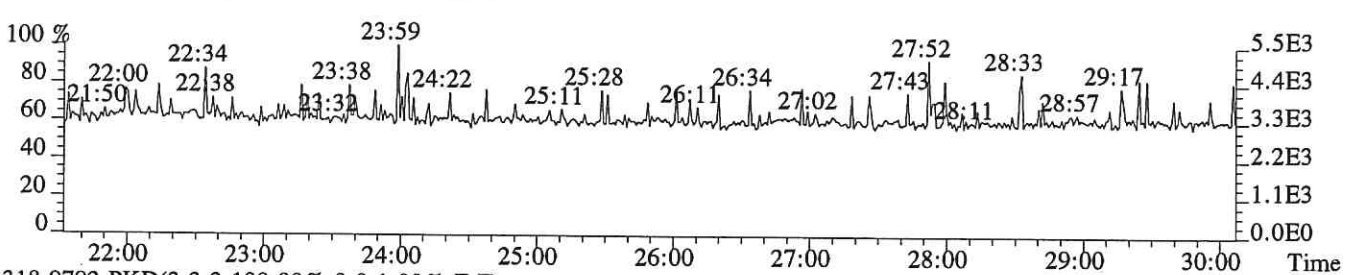
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,8316.0,1.00%,F,T)



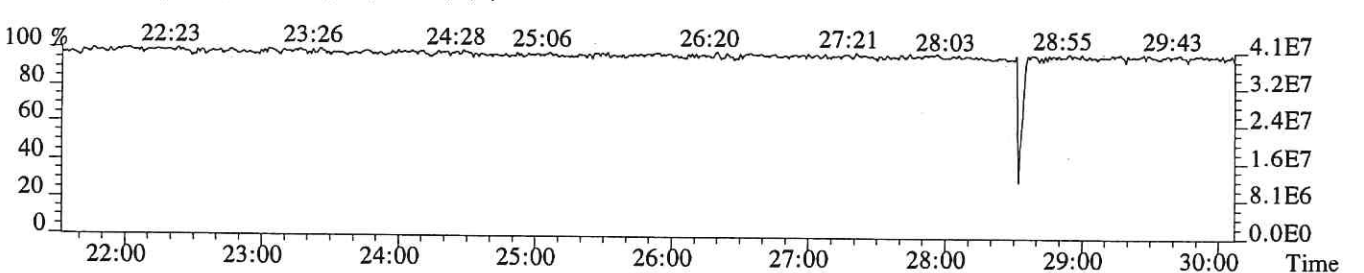
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2816.0,1.00%,F,T)



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

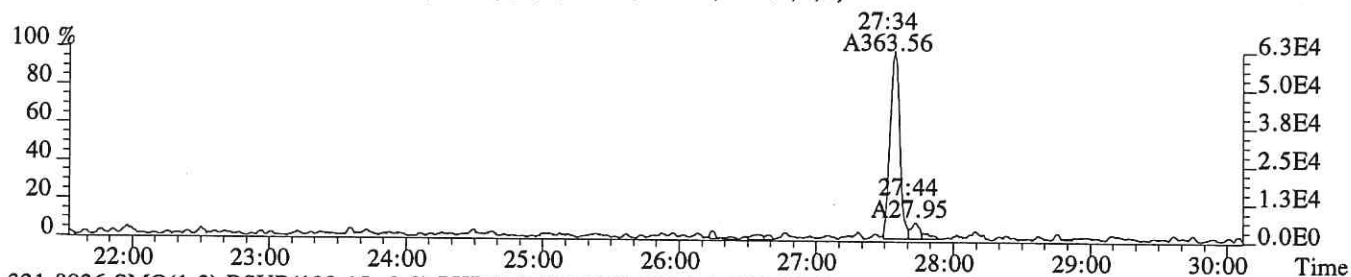


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

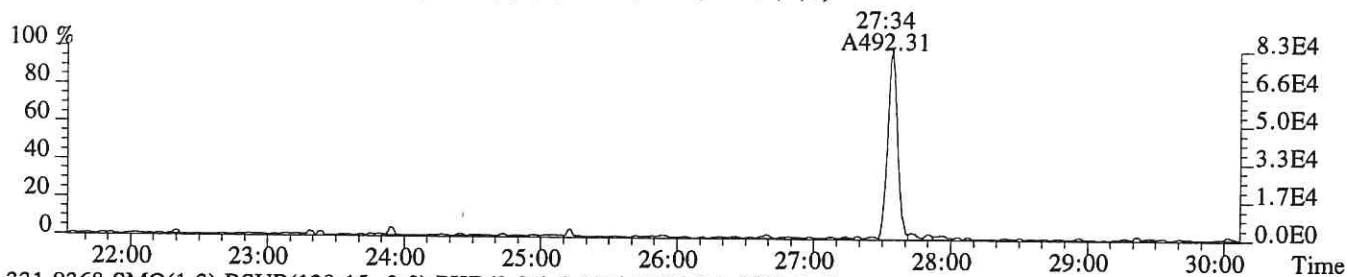


Sample#1 Exp:CS2

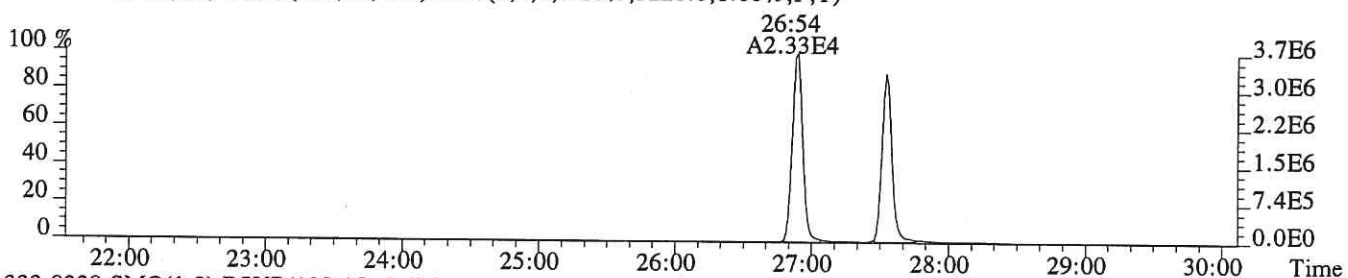
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1412.0,1.00%,F,T)



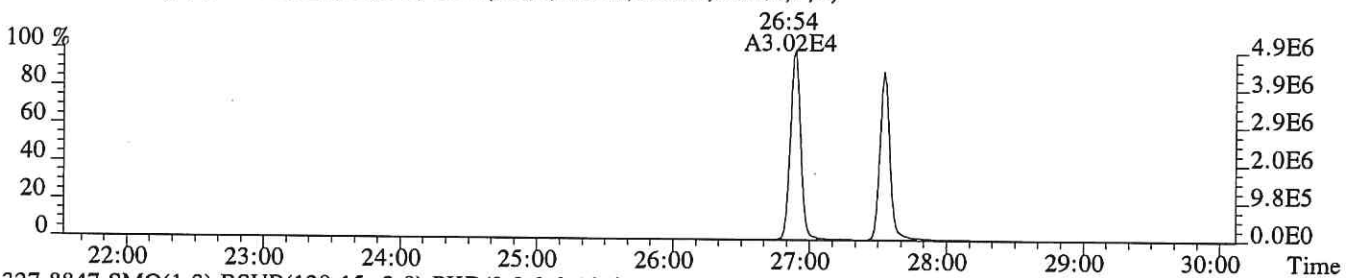
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,504.0,1.00%,F,T)



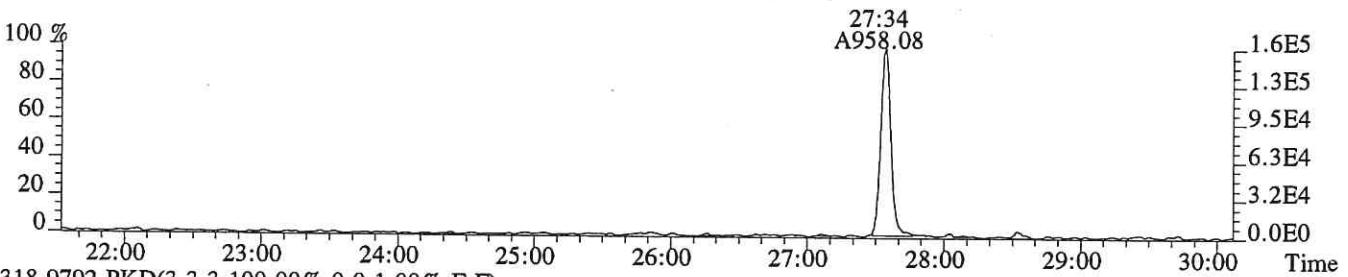
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3228.0,1.00%,F,T)



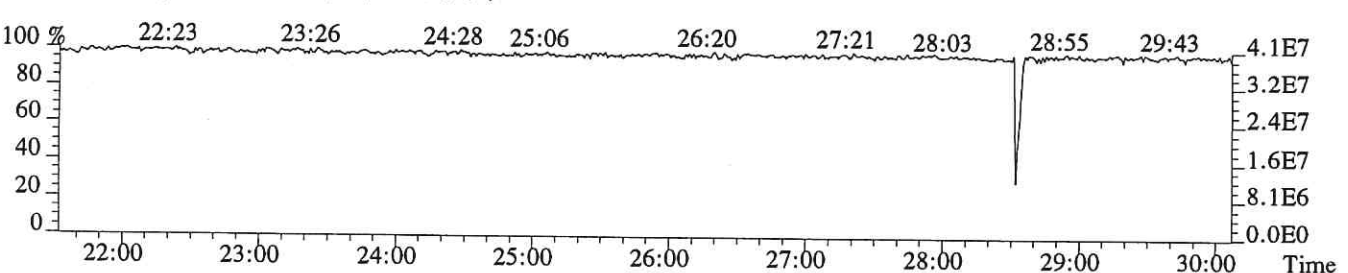
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1652.0,1.00%,F,T)



327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1332.0,1.00%,F,T)

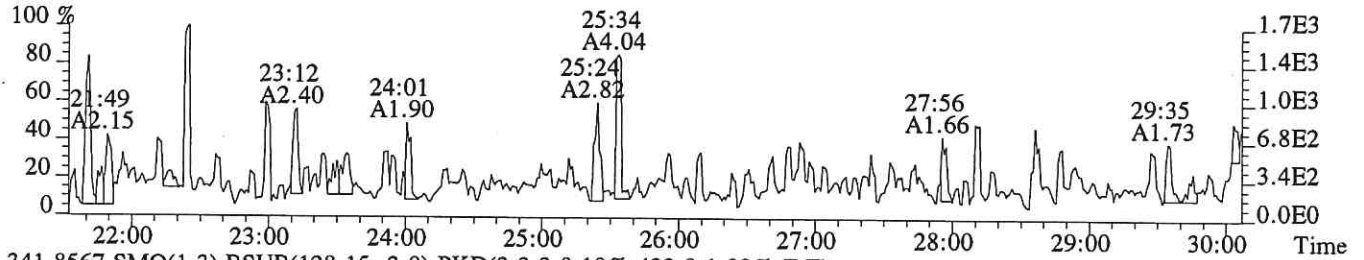


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

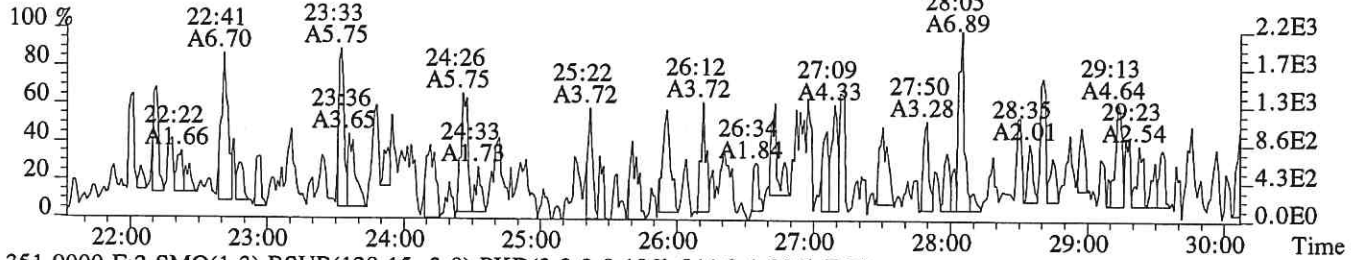


Sample#1 Exp:CS2

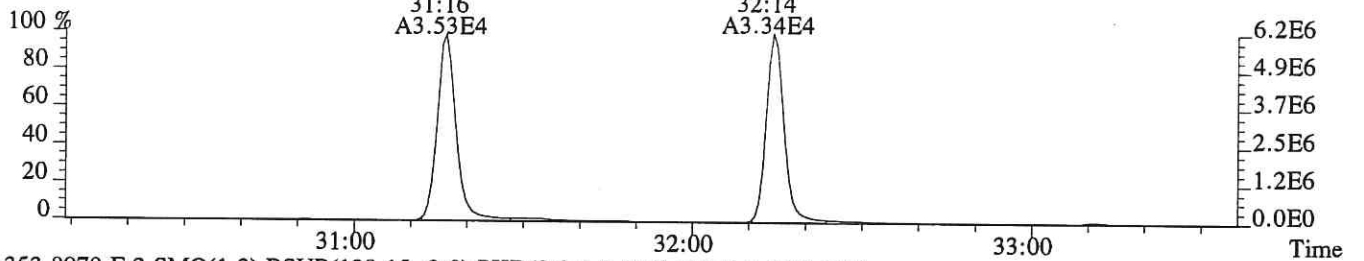
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,368.0,1.00%,F,T)



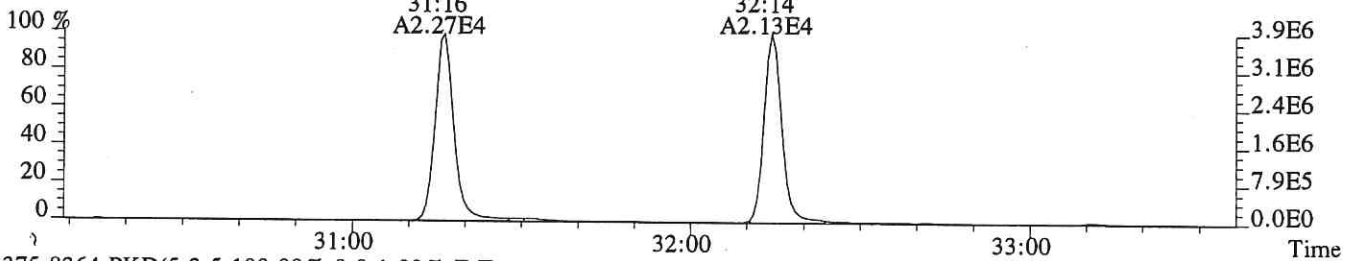
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,432.0,1.00%,F,T)



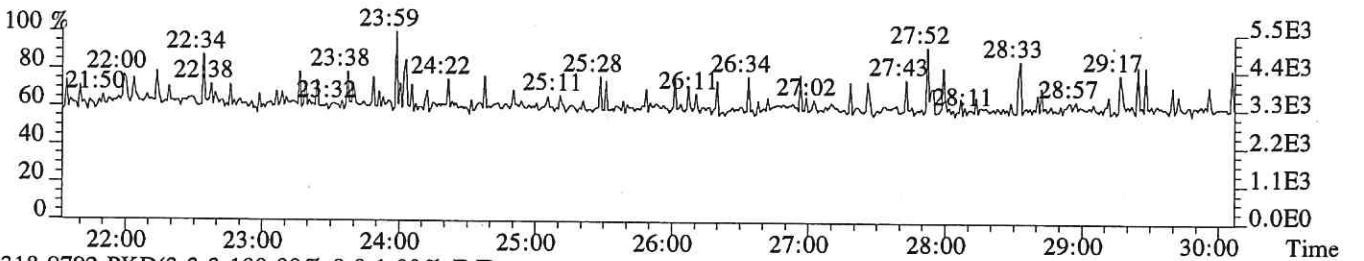
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,544.0,1.00%,F,T)



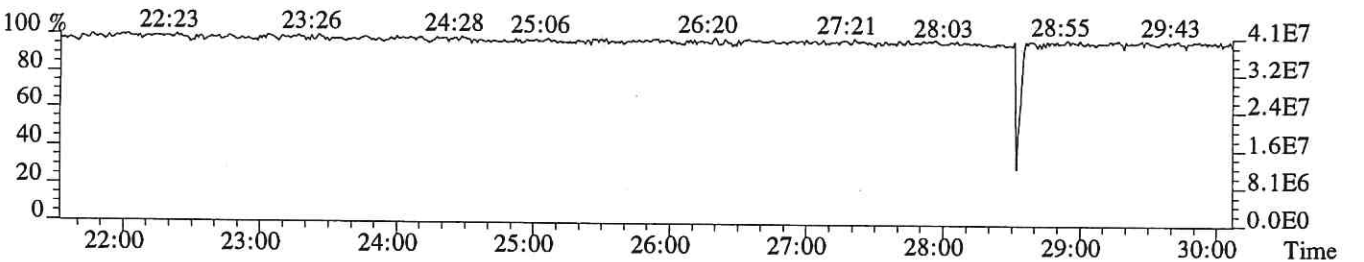
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,892.0,1.00%,F,T)



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

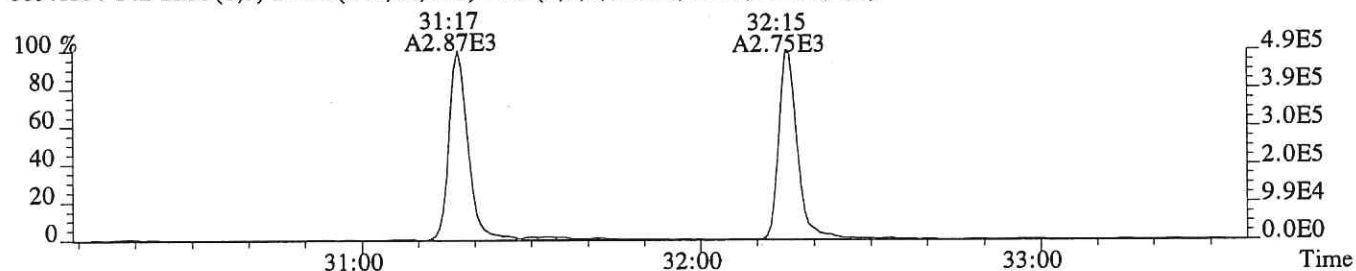


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

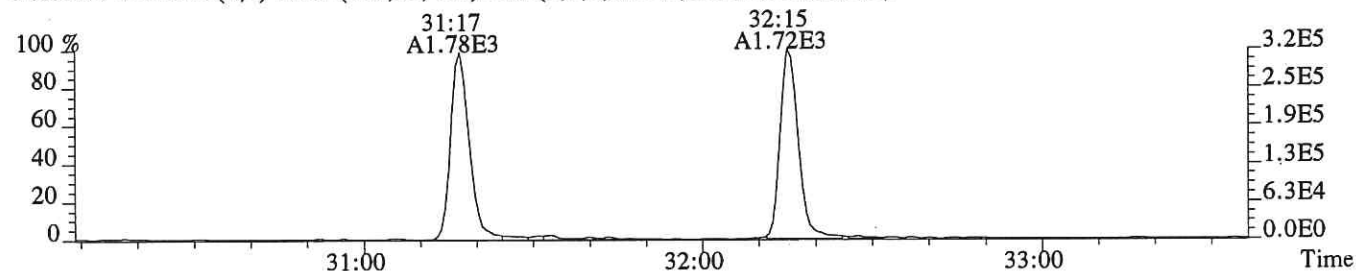


Sample#1 Exp:CS2

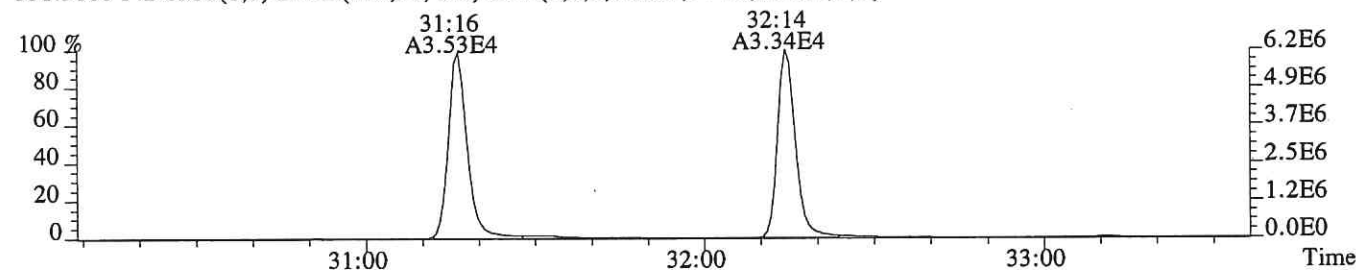
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,392.0,1.00%,F,T)



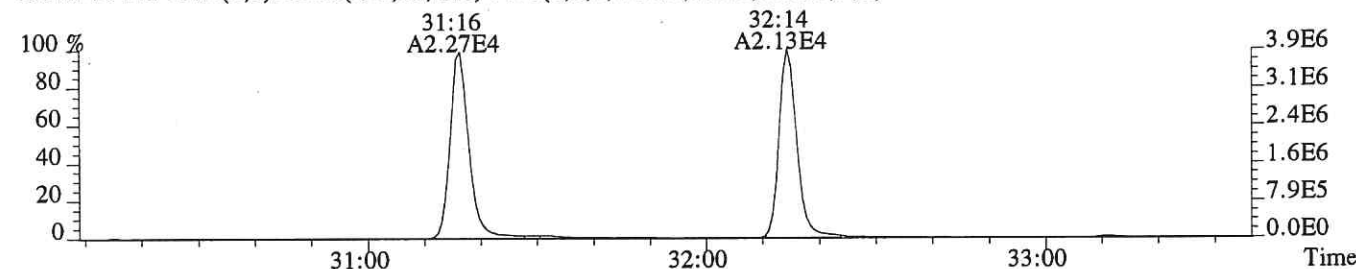
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1588.0,1.00%,F,T)



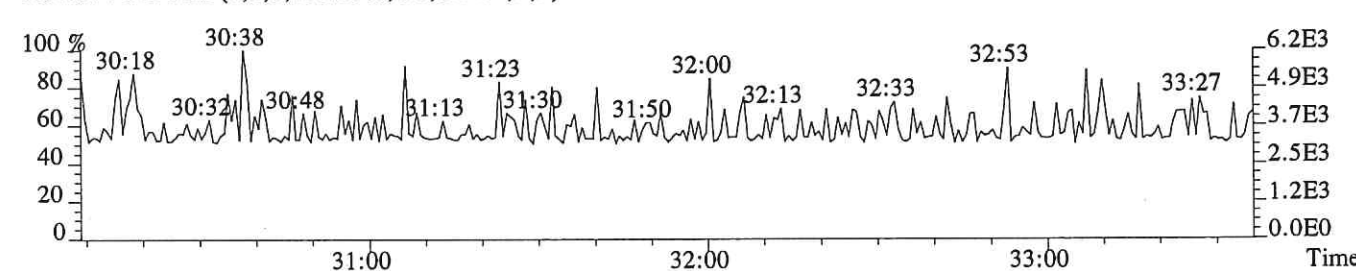
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,544.0,1.00%,F,T)



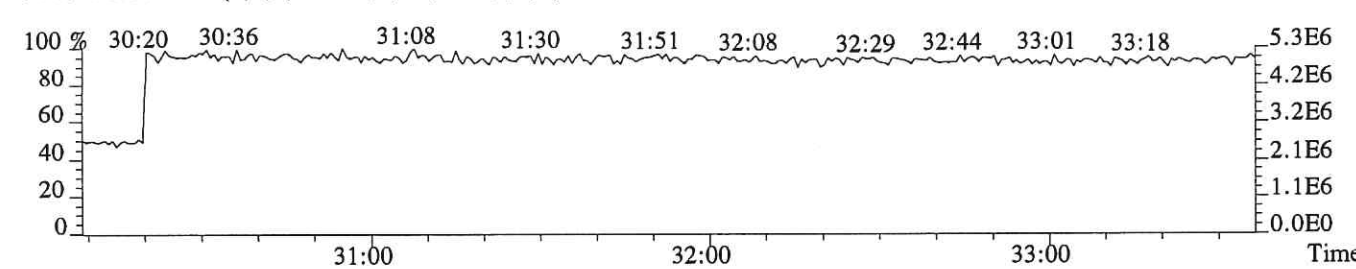
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,892.0,1.00%,F,T)



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

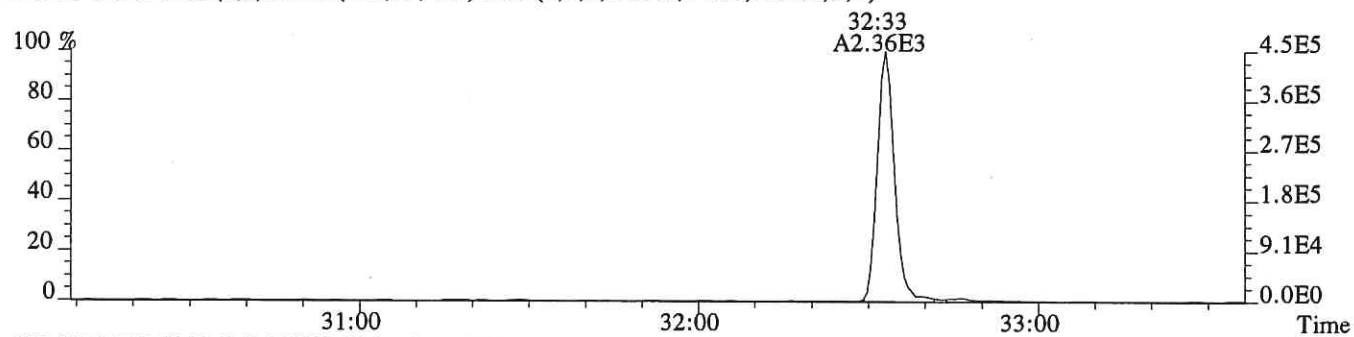


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

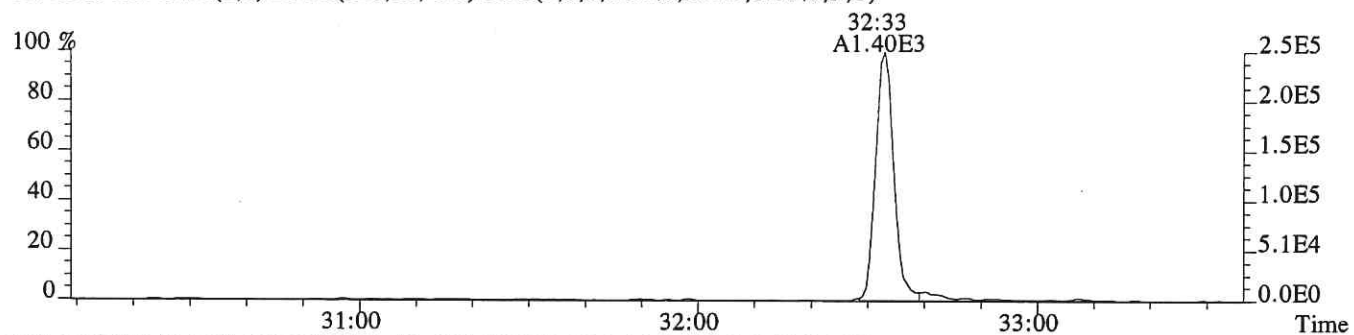


Sample#1 Exp:CS2

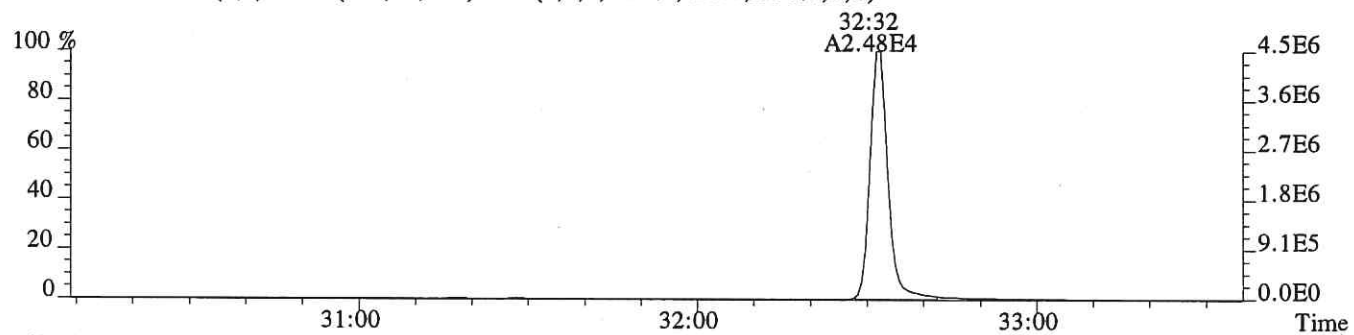
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,340.0,1.00%,F,T)



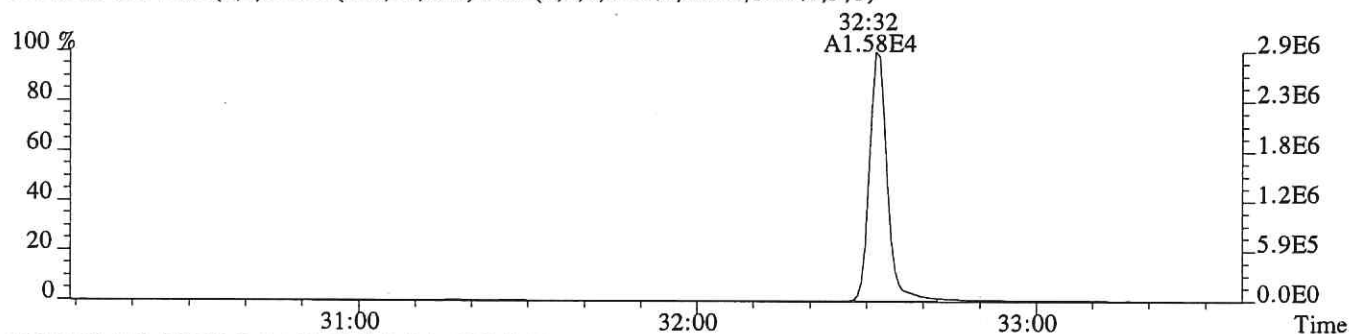
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,260.0,1.00%,F,T)



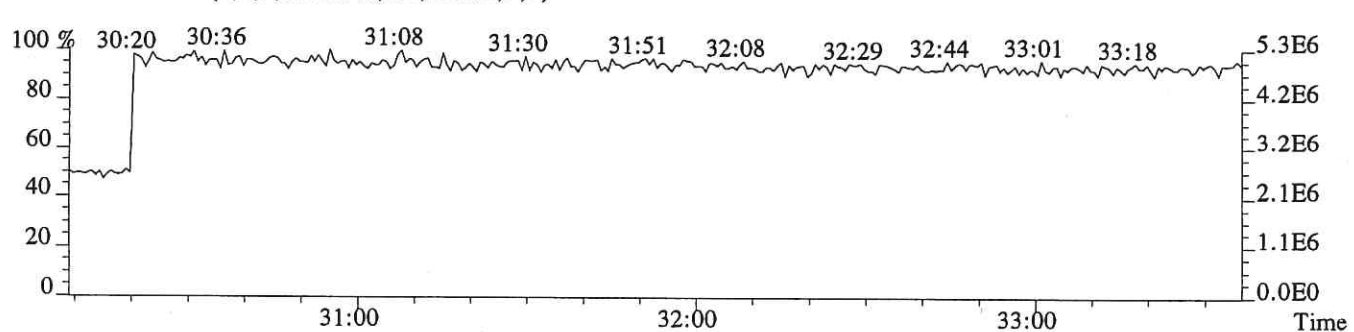
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,420.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,616.0,1.00%,F,T)

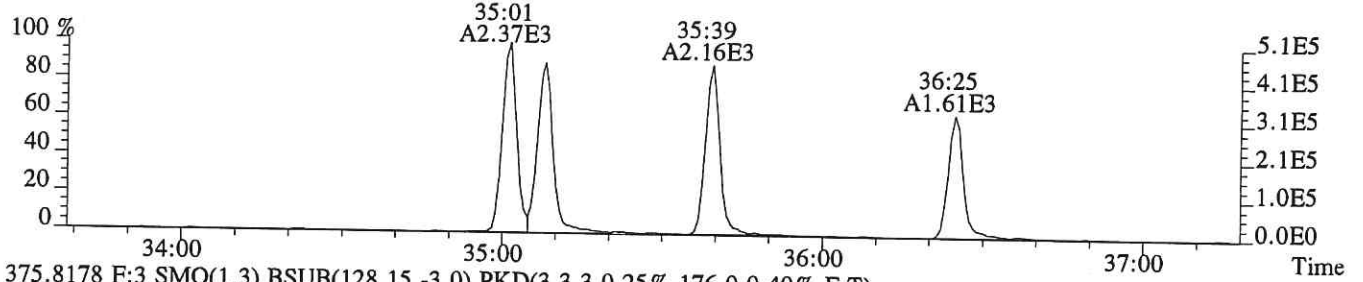


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

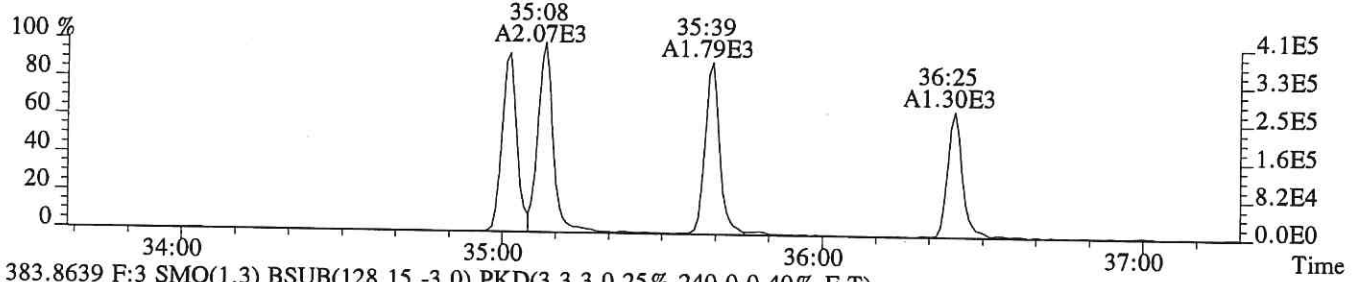


File:P618236 #1-330 Acq: 1-AUG-2019 16:04:25 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS2

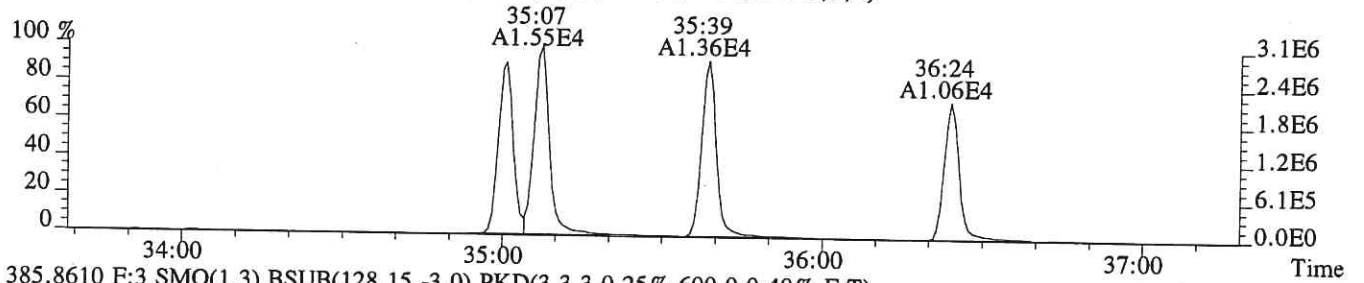
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,320.0,0.40%,F,T)



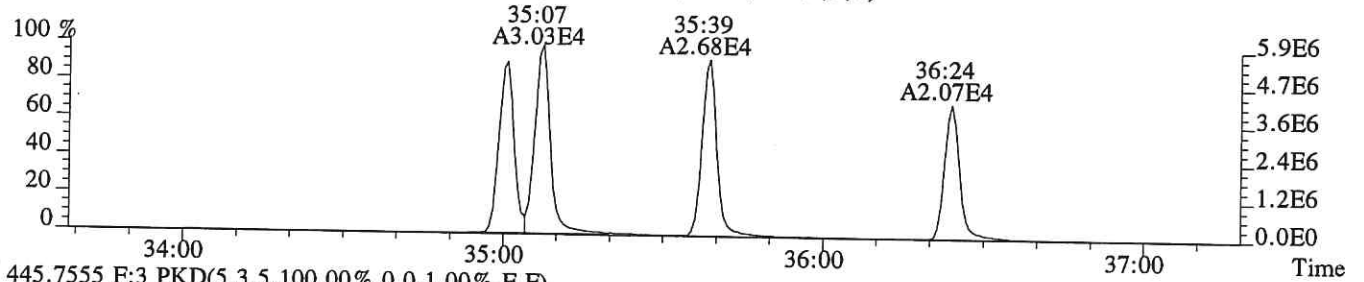
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,176.0,0.40%,F,T)



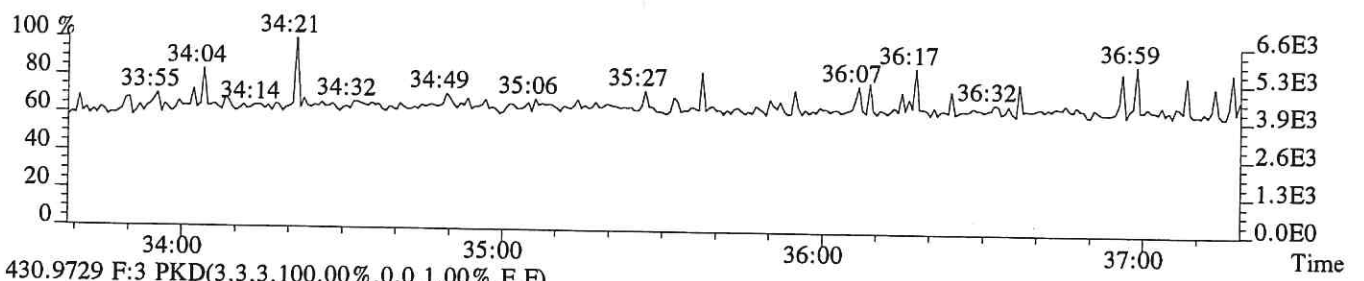
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,240.0,0.40%,F,T)



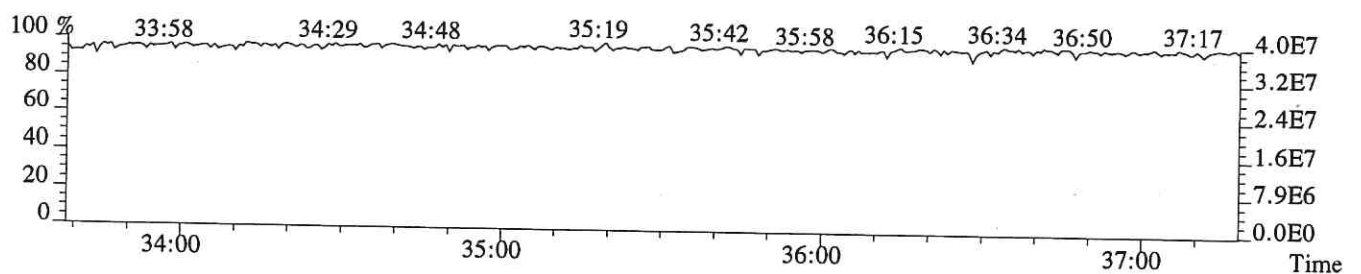
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,600.0,0.40%,F,T)



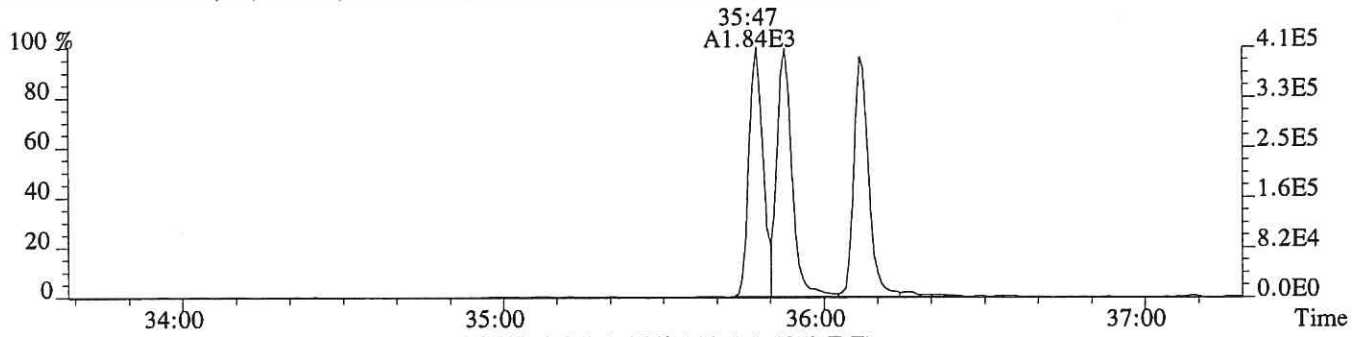
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



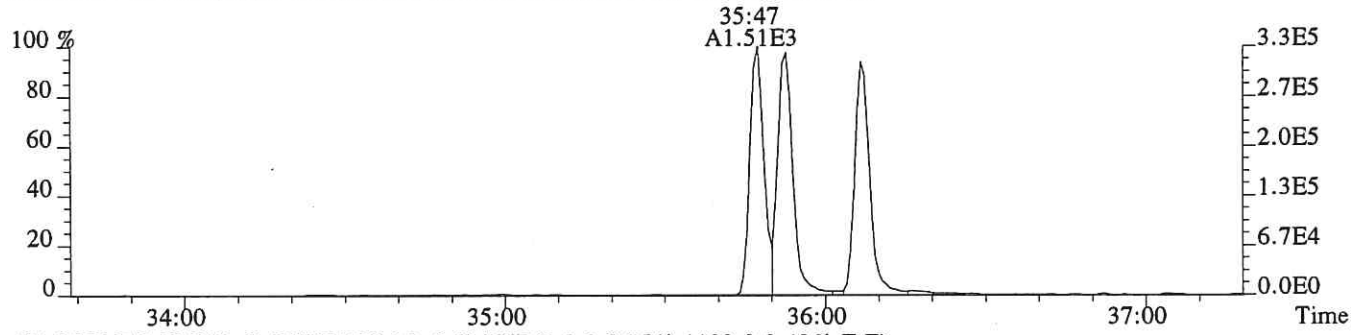
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



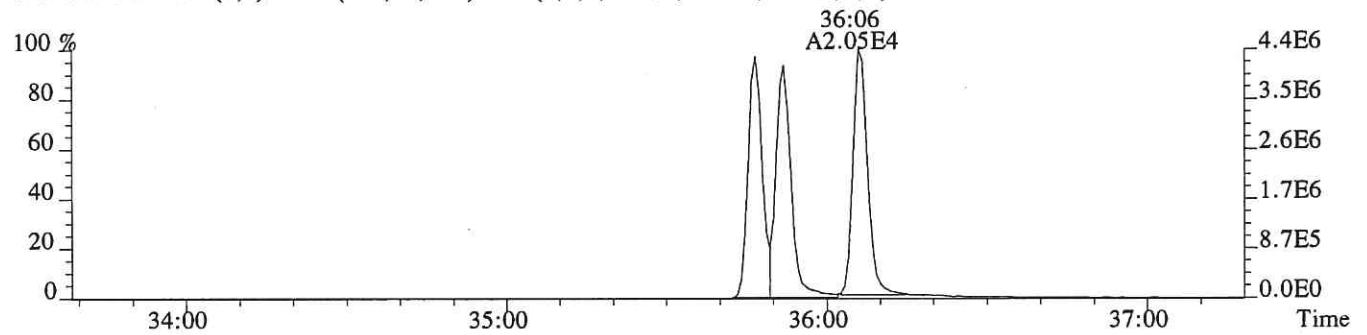
File:P618236 #1-330 Acq: 1-AUG-2019 16:04:25 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS2
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,408.0,0.40%,F,T)



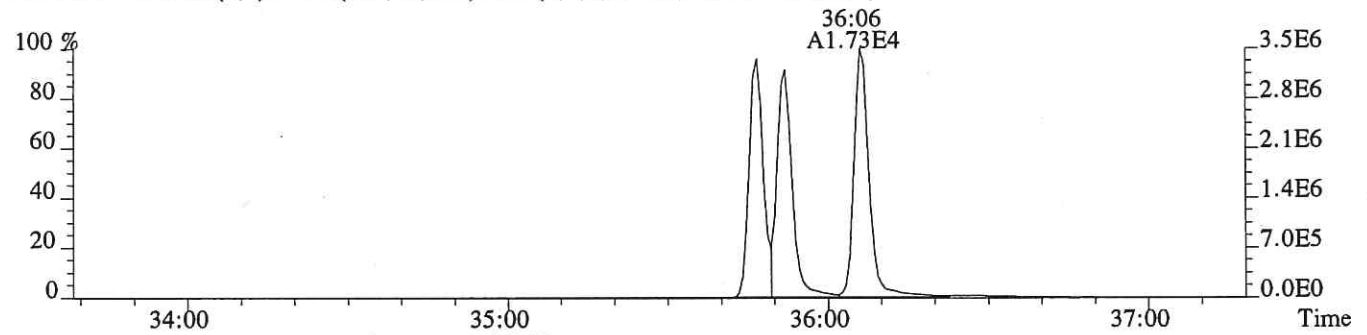
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,212.0,0.40%,F,T)



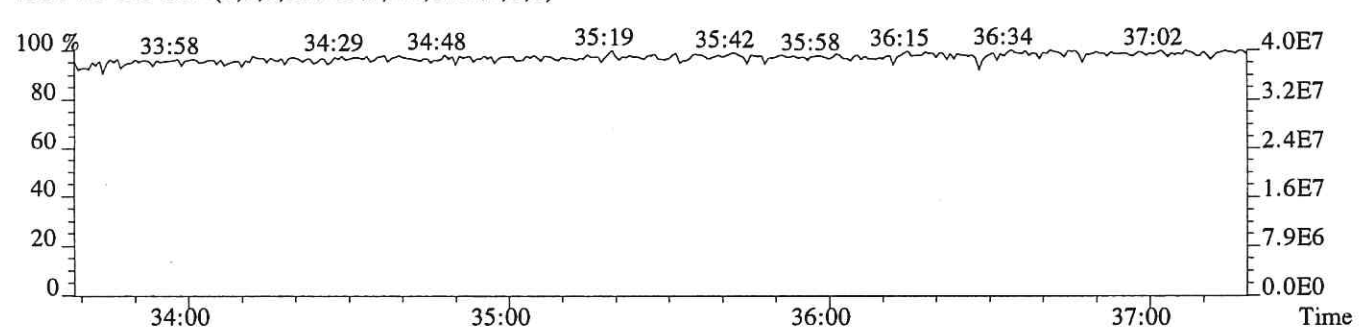
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1108.0,0.40%,F,T)



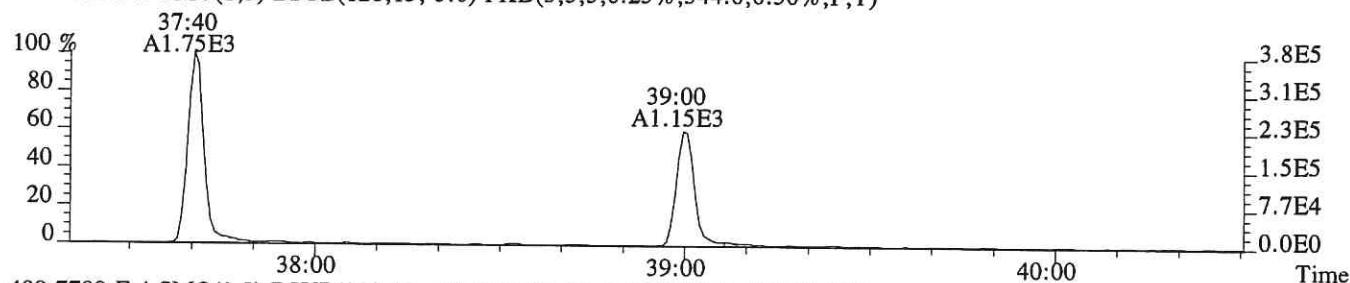
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,568.0,0.40%,F,T)



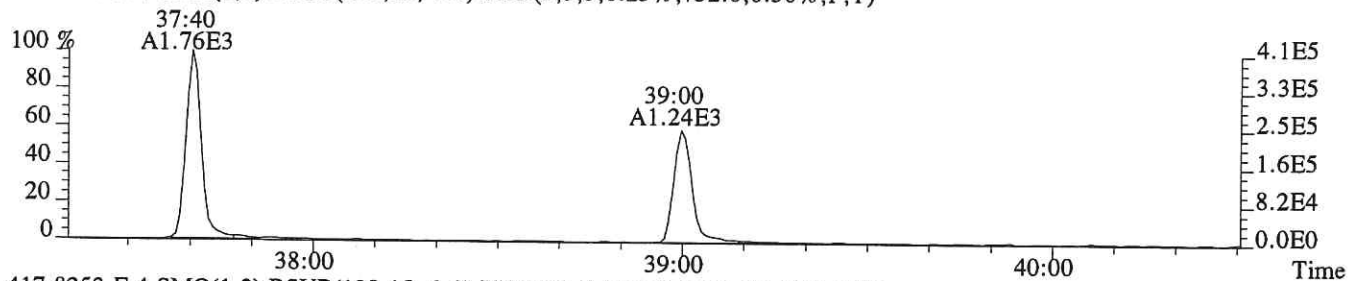
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



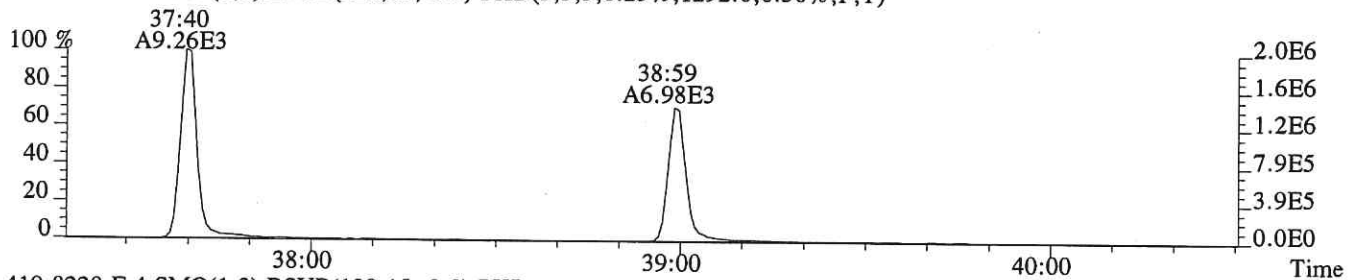
File:P618236 #1-286 Acq: 1-AUG-2019 16:04:25 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS2
407.7818 F:4 BSMO(1,3) BSMO(128,15,-3.0) PKD(3,3,3,0.25%,544.0,0.50%,F,T)



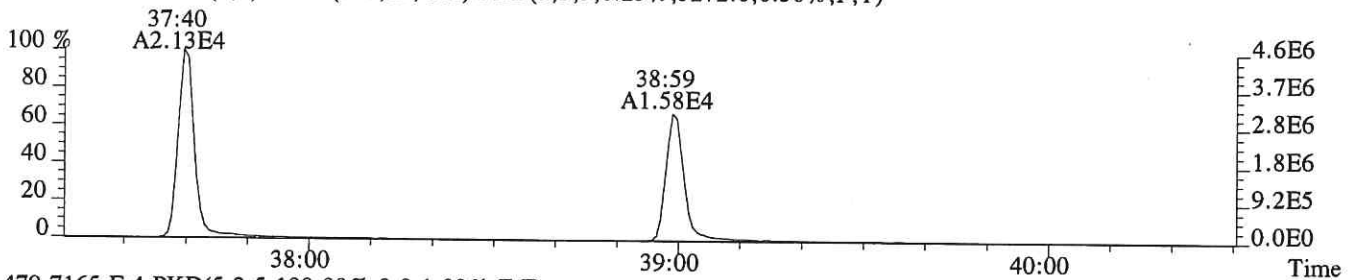
409.7789 F:4 SMO(1,3) BSMO(128,15,-3.0) PKD(3,3,3,0.25%,752.0,0.50%,F,T)



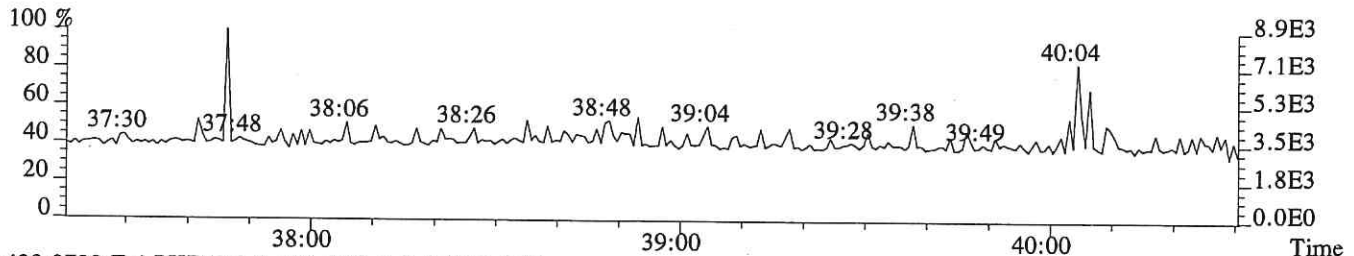
417.8253 F:4 SMO(1,3) BSMO(128,15,-3.0) PKD(3,3,3,0.25%,1292.0,0.50%,F,T)



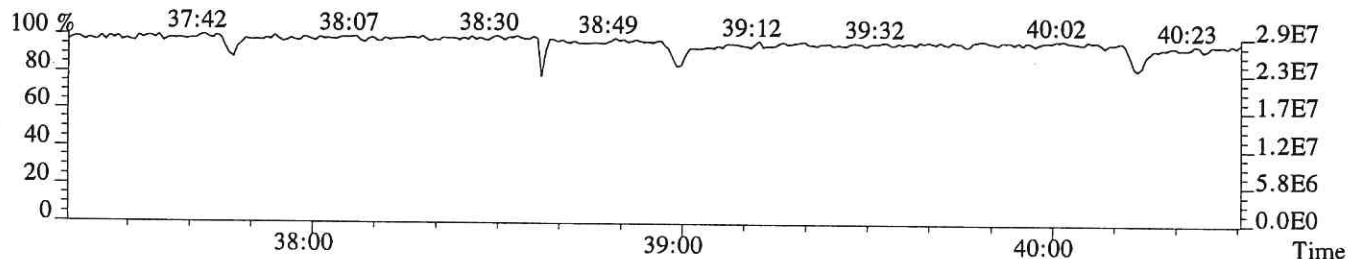
419.8220 F:4 SMO(1,3) BSMO(128,15,-3.0) PKD(3,3,3,0.25%,3272.0,0.50%,F,T)



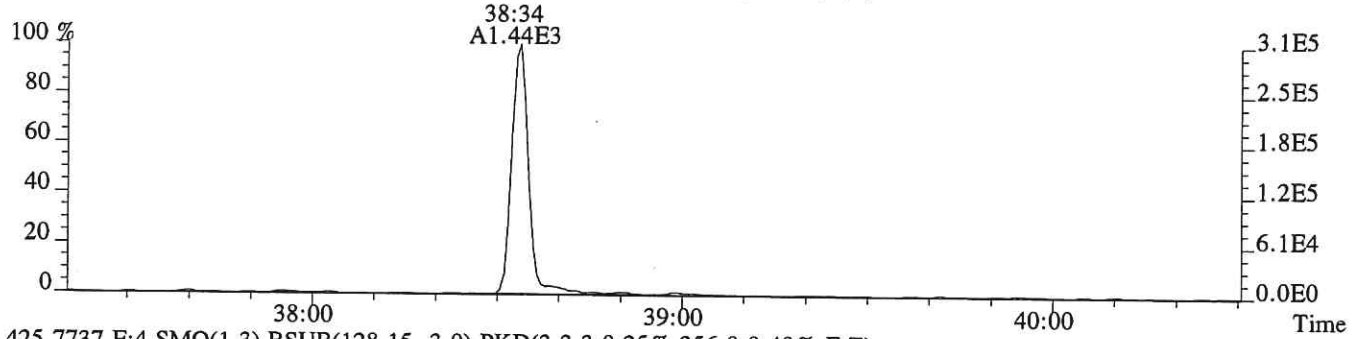
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



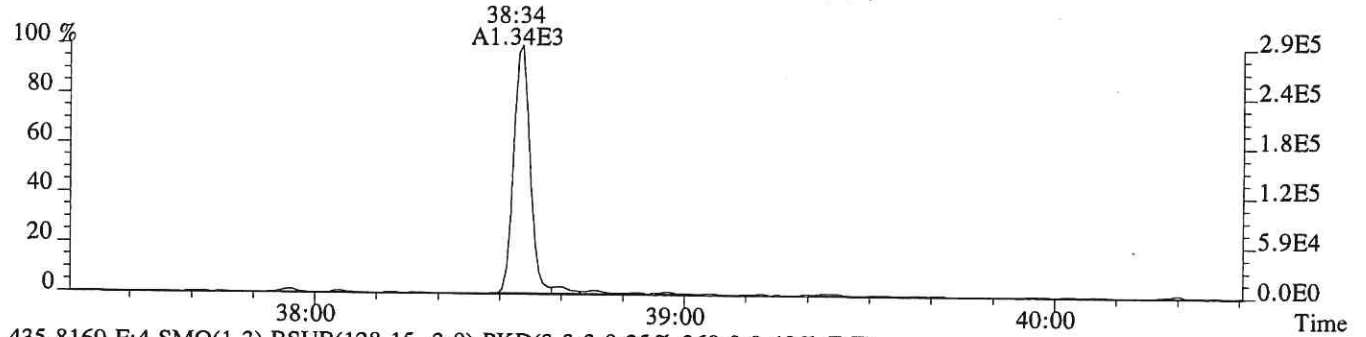
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



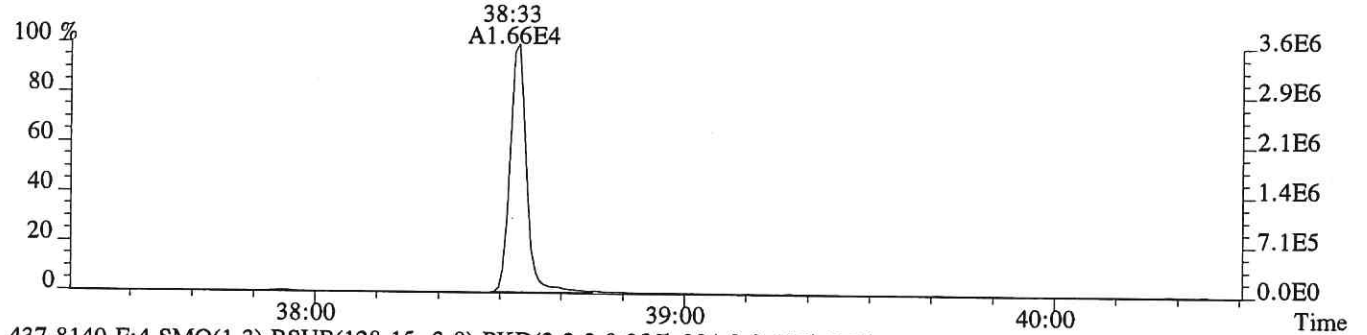
File: P618236 #1-286 Acq: 1-AUG-2019 16:04:25 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: CS2
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,364.0,0.40%,F,T)



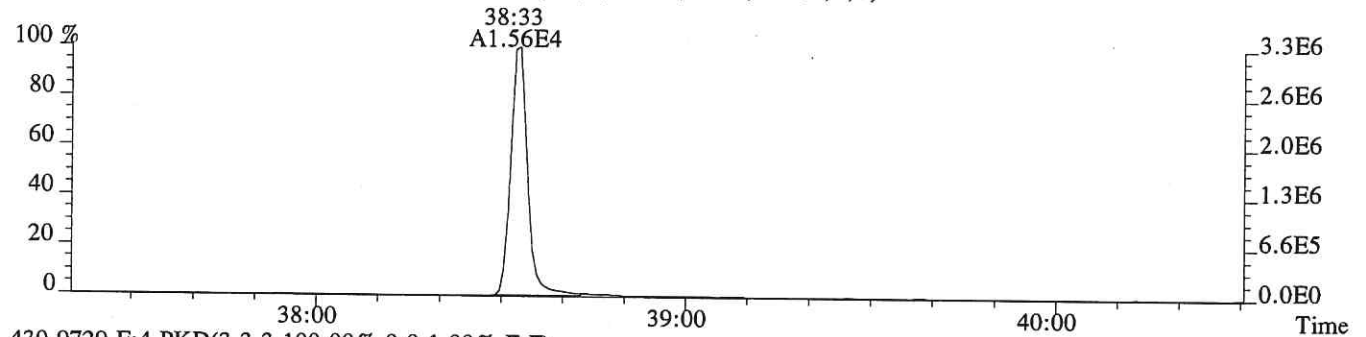
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,256.0,0.40%,F,T)



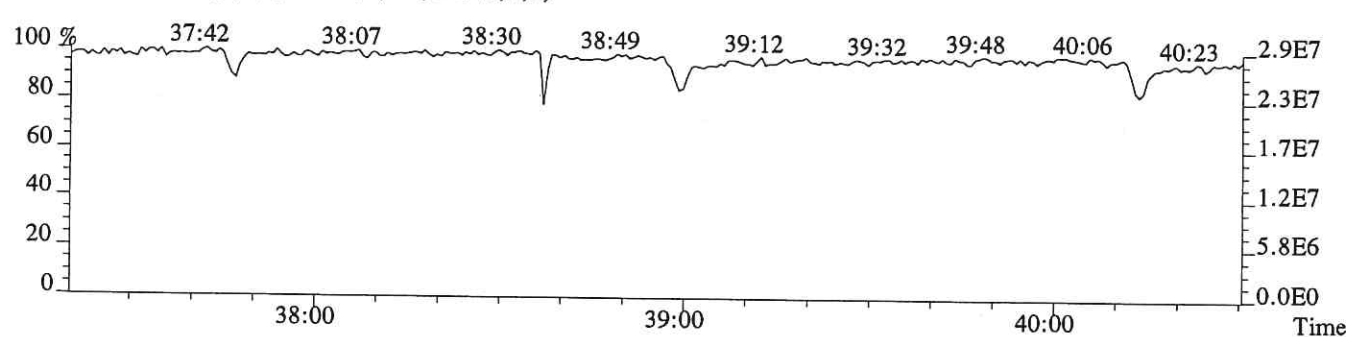
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,368.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,304.0,0.40%,F,T)

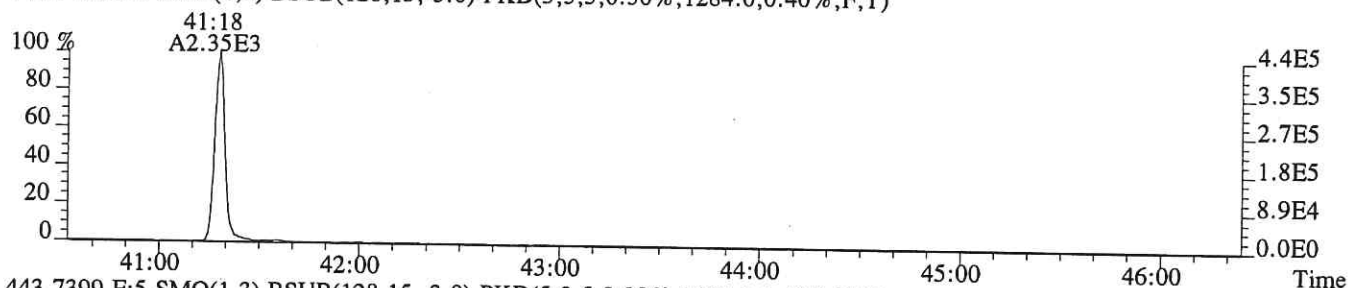


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

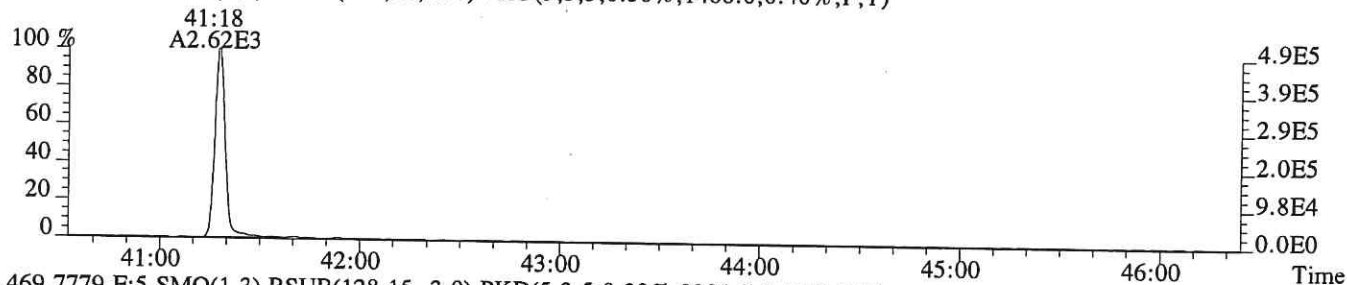


File:P618236 #1-528 Acq: 1-AUG-2019 16:04:25 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS2

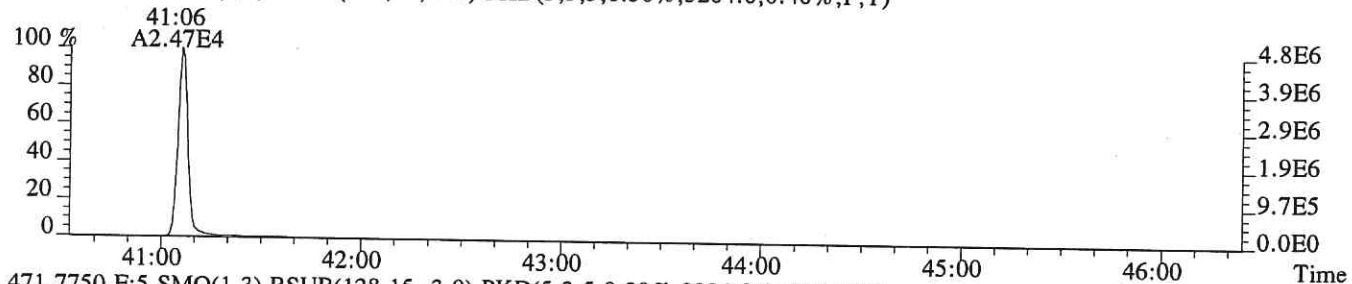
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1284.0,0.40%,F,T)



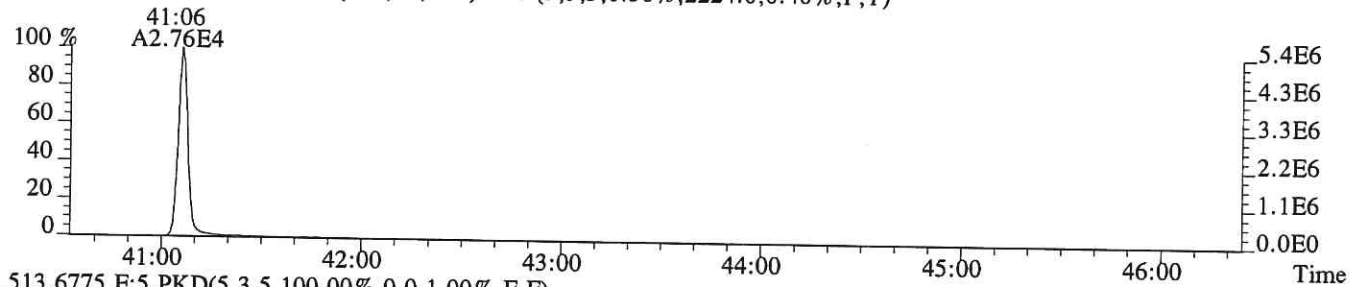
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1468.0,0.40%,F,T)



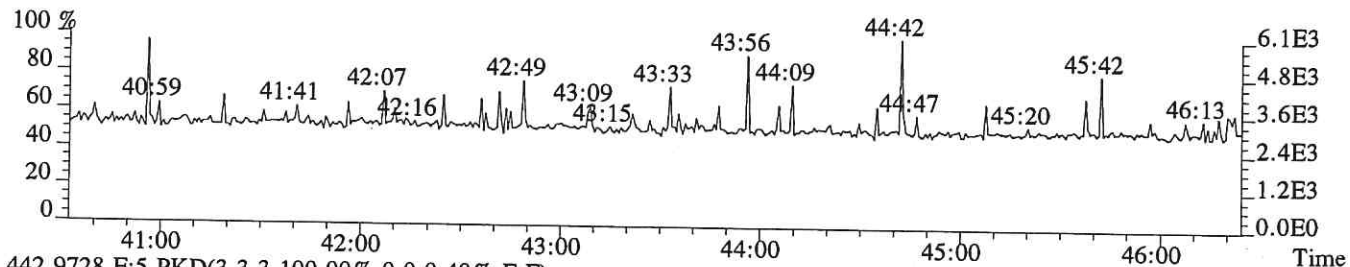
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3204.0,0.40%,F,T)



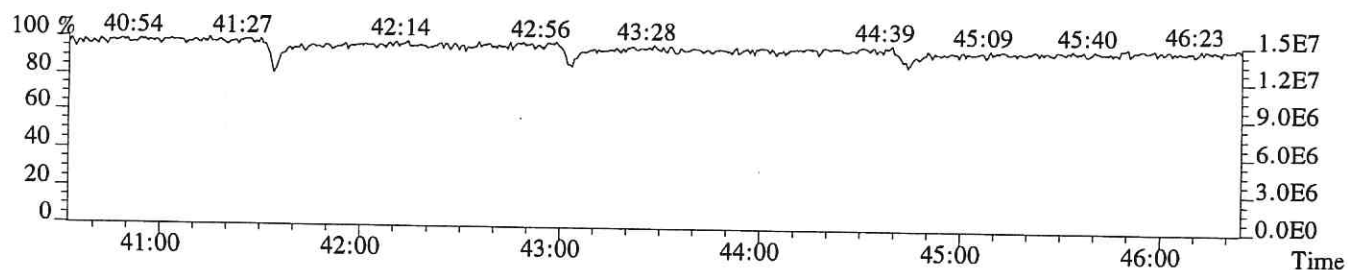
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2224.0,0.40%,F,T)



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

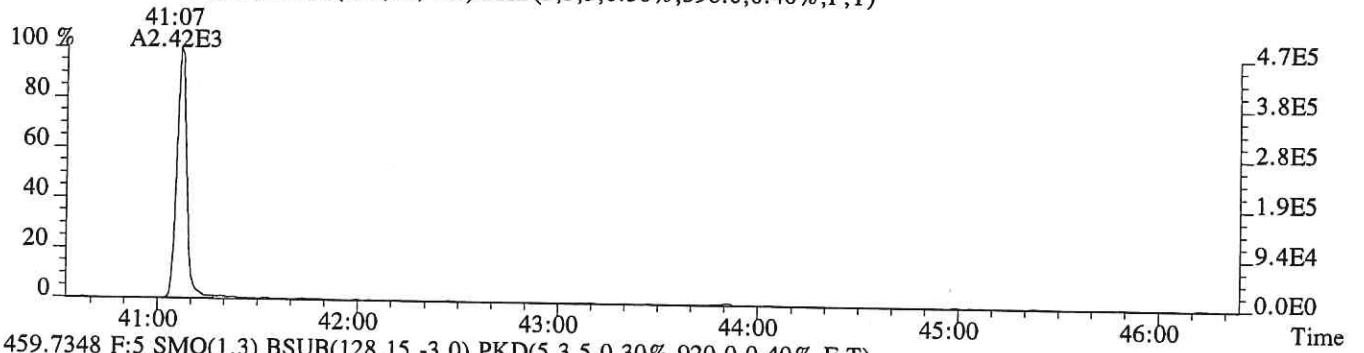


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

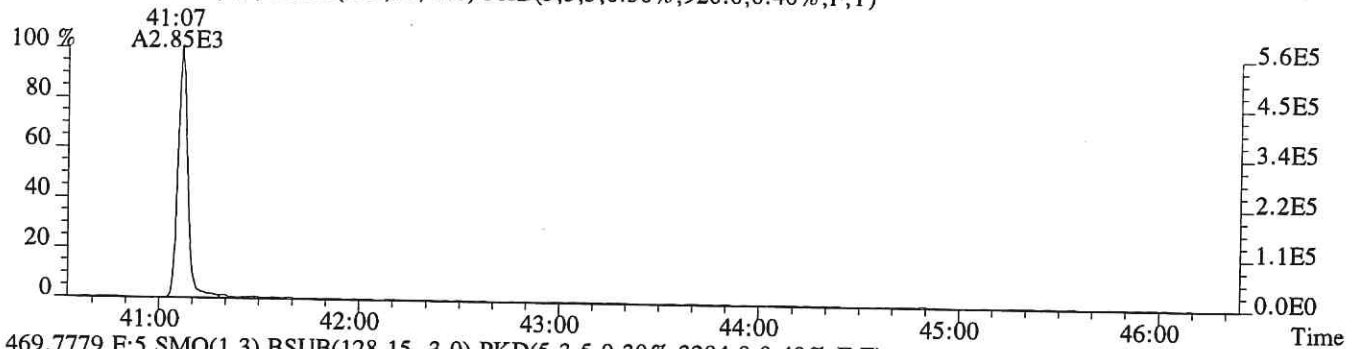


File:P618236 #1-528 Acq: 1-AUG-2019 16:04:25 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS2

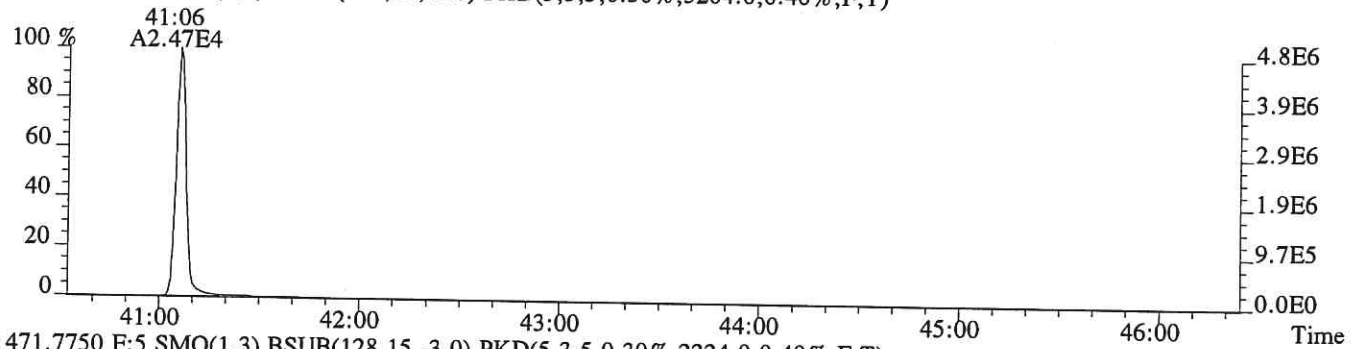
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,396.0,0.40%,F,T)



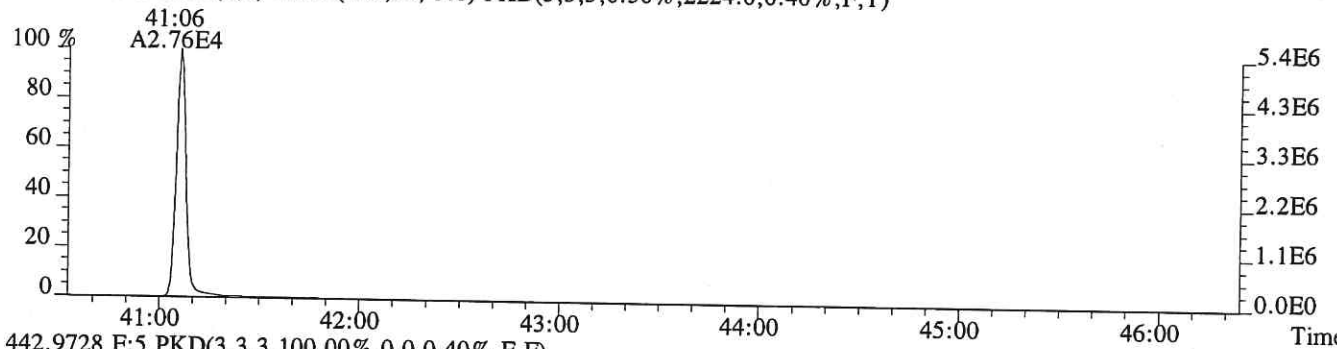
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,920.0,0.40%,F,T)



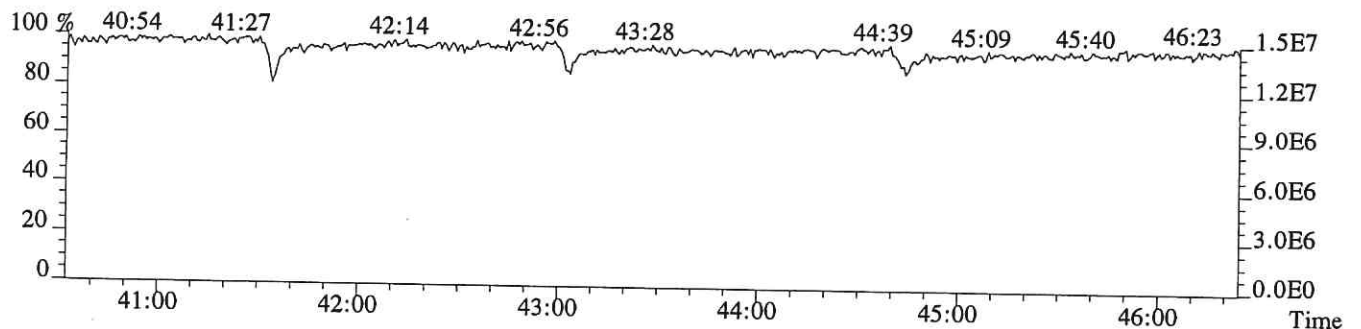
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3204.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2224.0,0.40%,F,T)



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



ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
193435

Run #4 Filename P618237 Samp: 1 Inj: 1 Acquired: 1-AUG-19 16:53:34
Processed: 2-AUG-19 09:23:26 Sample ID: CS3

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	26:40	1.551e+03	2.202e+03	0.70	yes	no	0.873
2 Unk	1,2,3,7,8-PeCDF	31:17	1.193e+04	7.952e+03	1.50	yes	no	0.864
3 Unk	2,3,4,7,8-PeCDF	32:15	1.019e+04	7.071e+03	1.44	yes	no	0.825
4 Unk	1,2,3,4,7,8-HxCDF	35:01	8.162e+03	6.720e+03	1.21	yes	no	1.084
5 Unk	1,2,3,6,7,8-HxCDF	35:07	8.800e+03	7.384e+03	1.19	yes	no	0.994
6 Unk	2,3,4,6,7,8-HxCDF	35:39	7.154e+03	6.000e+03	1.19	yes	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	36:24	5.650e+03	4.493e+03	1.26	yes	no	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	37:40	5.762e+03	6.027e+03	0.96	yes	no	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	39:00	4.121e+03	4.045e+03	1.02	yes	no	1.104
10 Unk	OCDF	41:17	7.652e+03	8.826e+03	0.87	yes	no	0.993
11 Unk	2,3,7,8-TCDD	27:34	1.351e+03	1.806e+03	0.75	yes	no	0.989
12 Unk	1,2,3,7,8-PeCDD	32:32	8.722e+03	5.600e+03	1.56	yes	no	0.954
13 Unk	1,2,3,4,7,8-HxCDD	35:47	6.413e+03	5.106e+03	1.26	yes	no	1.020
14 Unk	1,2,3,6,7,8-HxCDD	35:52	6.850e+03	5.651e+03	1.21	yes	no	1.030
15 Unk	1,2,3,7,8,9-HxCDD	36:07	6.521e+03	5.623e+03	1.16	yes	no	1.007
16 Unk	1,2,3,4,6,7,8-HpCDD	38:33	4.851e+03	4.682e+03	1.04	yes	no	0.922
17 Unk	OCDD	41:07	8.139e+03	9.286e+03	0.88	yes	no	1.062
18 IS	13C-2,3,7,8-TCDF	26:40	2.098e+04	2.632e+04	0.80	yes	no	1.102
19 IS	13C-1,2,3,7,8-PeCDF	31:16	2.807e+04	1.774e+04	1.58	yes	no	1.074
20 IS	13C-2,3,4,7,8-PeCDF	32:14	2.623e+04	1.679e+04	1.56	yes	no	1.005
21 IS	13C-1,2,3,4,7,8-HxCDF	35:00	9.268e+03	1.839e+04	0.50	yes	no	1.059
22 IS	13C-1,2,3,6,7,8-HxCDF	35:07	1.143e+04	2.167e+04	0.53	yes	no	1.264
23 IS	13C-2,3,4,6,7,8-HxCDF	35:38	9.284e+03	1.802e+04	0.52	yes	no	1.066
24 IS	13C-1,2,3,7,8,9-HxCDF	36:23	6.818e+03	1.361e+04	0.50	yes	no	0.801
25 IS	13C-1,2,3,4,6,7,8-HpCDF	37:40	6.205e+03	1.399e+04	0.44	yes	no	0.789
26 IS	13C-1,2,3,4,7,8,9-HpCDF	38:59	4.515e+03	1.042e+04	0.43	yes	no	0.590
27 IS	13C-2,3,7,8-TCDD	27:33	1.582e+04	2.052e+04	0.77	yes	no	0.839
28 IS	13C-1,2,3,7,8-PeCDD	32:32	1.912e+04	1.236e+04	1.55	yes	no	0.744
29 IS	13C-1,2,3,4,7,8-HxCDD	35:46	1.283e+04	1.043e+04	1.23	yes	no	0.907
30 IS	13C-1,2,3,6,7,8-HxCDD	35:51	1.440e+04	1.142e+04	1.26	yes	no	0.978
31 IS	13C-1,2,3,4,6,7,8-HpCDD	38:32	1.063e+04	1.015e+04	1.05	yes	no	0.814
32 IS	13C-OCDD	41:06	1.531e+04	1.727e+04	0.89	yes	no	0.653
33 RS/RT	13C-1,2,3,4-TCDD	26:53	1.967e+04	2.529e+04	0.78	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	36:06	1.453e+04	1.157e+04	1.26	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	27:34	3.336e+03				no	0.894

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
193435

Run #4 Filename P618237 Samp: 1 Inj: 1 Acquired: 1-AUG-19 16:53:34
Processed: 2-AUG-19 09:23:26 LAB. ID: CS3

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	2.30e+05	2.00e+02	1.1e+03	3.43e+05	8.80e+02	3.9e+02
2	1,2,3,7,8-PeCDF	1.98e+06	1.84e+02	1.1e+04	1.30e+06	1.02e+03	1.3e+03
3	2,3,4,7,8-PeCDF	1.84e+06	1.84e+02	1.0e+04	1.28e+06	1.02e+03	1.3e+03
4	1,2,3,4,7,8-HxCDF	1.74e+06	4.76e+02	3.6e+03	1.44e+06	2.12e+02	6.8e+03
5	1,2,3,6,7,8-HxCDF	1.71e+06	4.76e+02	3.6e+03	1.46e+06	2.12e+02	6.9e+03
6	2,3,4,6,7,8-HxCDF	1.45e+06	4.76e+02	3.1e+03	1.24e+06	2.12e+02	5.9e+03
7	1,2,3,7,8,9-HxCDF	1.15e+06	4.76e+02	2.4e+03	9.22e+05	2.12e+02	4.3e+03
8	1,2,3,4,6,7,8-HpCDF	1.27e+06	1.79e+03	7.1e+02	1.31e+06	1.68e+03	7.8e+02
9	1,2,3,4,7,8,9-HpCDF	8.49e+05	1.79e+03	4.7e+02	8.23e+05	1.68e+03	4.9e+02
10	OCDF	1.45e+06	1.85e+03	7.8e+02	1.69e+06	1.38e+03	1.2e+03
11	2,3,7,8-TCDD	2.20e+05	1.21e+03	1.8e+02	3.03e+05	6.88e+02	4.4e+02
12	1,2,3,7,8-PeCDD	1.55e+06	4.44e+02	3.5e+03	1.03e+06	2.56e+02	4.0e+03
13	1,2,3,4,7,8-HxCDD	1.43e+06	1.80e+02	7.9e+03	1.15e+06	3.36e+02	3.4e+03
14	1,2,3,6,7,8-HxCDD	1.36e+06	1.80e+02	7.6e+03	1.14e+06	3.36e+02	3.4e+03
15	1,2,3,7,8,9-HxCDD	1.36e+06	1.80e+02	7.6e+03	1.11e+06	3.36e+02	3.3e+03
16	1,2,3,4,6,7,8-HpCDD	1.06e+06	2.92e+02	3.6e+03	1.04e+06	1.28e+02	8.1e+03
17	OCDD	1.55e+06	1.25e+03	1.2e+03	1.79e+06	1.85e+03	9.7e+02
18	13C-2,3,7,8-TCDF	3.16e+06	7.69e+03	4.1e+02	3.98e+06	3.85e+03	1.0e+03
19	13C-1,2,3,7,8-PeCDF	4.71e+06	1.84e+02	2.6e+04	3.01e+06	5.28e+02	5.7e+03
20	13C-2,3,4,7,8-PeCDF	4.70e+06	1.84e+02	2.6e+04	2.95e+06	5.28e+02	5.6e+03
21	13C-1,2,3,4,7,8-HxCDF	1.95e+06	3.68e+02	5.3e+03	3.93e+06	9.92e+02	4.0e+03
22	13C-1,2,3,6,7,8-HxCDF	2.20e+06	3.68e+02	6.0e+03	4.24e+06	9.92e+02	4.3e+03
23	13C-2,3,4,6,7,8-HxCDF	1.95e+06	3.68e+02	5.3e+03	3.72e+06	9.92e+02	3.8e+03
24	13C-1,2,3,7,8,9-HxCDF	1.41e+06	3.68e+02	3.8e+03	2.77e+06	9.92e+02	2.8e+03
25	13C-1,2,3,4,6,7,8-HpCDF	1.36e+06	1.48e+03	9.2e+02	3.06e+06	2.29e+03	1.3e+03
26	13C-1,2,3,4,7,8,9-HpCDF	9.27e+05	1.48e+03	6.3e+02	2.15e+06	2.29e+03	9.4e+02
27	13C-2,3,7,8-TCDD	2.53e+06	3.18e+03	8.0e+02	3.25e+06	1.68e+03	1.9e+03
28	13C-1,2,3,7,8-PeCDD	3.58e+06	5.64e+02	6.3e+03	2.26e+06	8.60e+02	2.6e+03
29	13C-1,2,3,4,7,8-HxCDD	2.82e+06	5.40e+02	5.2e+03	2.32e+06	3.24e+02	7.2e+03
30	13C-1,2,3,6,7,8-HxCDD	2.87e+06	5.40e+02	5.3e+03	2.31e+06	3.24e+02	7.1e+03
31	13C-1,2,3,4,6,7,8-HpCDD	2.36e+06	3.44e+02	6.9e+03	2.23e+06	2.24e+02	1.0e+04
32	13C-OCDD	3.00e+06	1.34e+03	2.2e+03	3.36e+06	1.23e+03	2.7e+03
33	13C-1,2,3,4-TCDD	3.15e+06	3.18e+03	9.9e+02	4.06e+06	1.68e+03	2.4e+03
34	13C-1,2,3,7,8,9-HxCDD	2.93e+06	5.40e+02	5.4e+03	2.31e+06	3.24e+02	7.1e+03
35	37Cl-2,3,7,8-TCDD	5.36e+05	1.40e+03	3.8e+02			

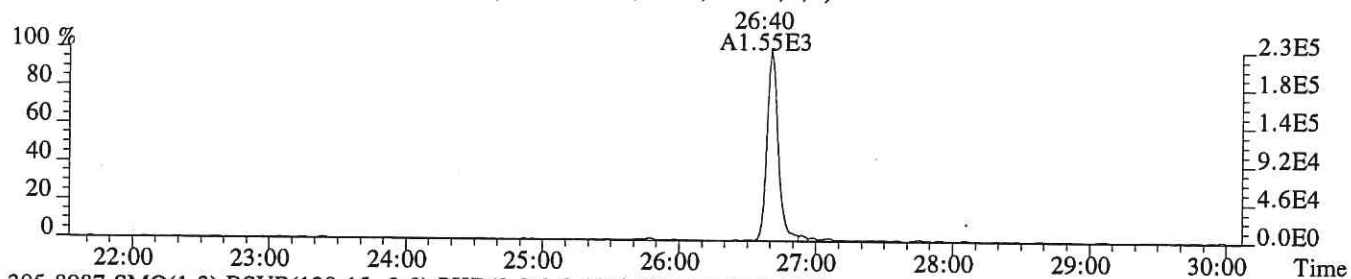
---Sample Calculation---

$$D/L \text{ TCDD} = \frac{2.5 \times (1.208e+03 + 6.880e+02) \times 100}{(2.532e+06 + 3.247e+06) \times () \times 0.989}$$

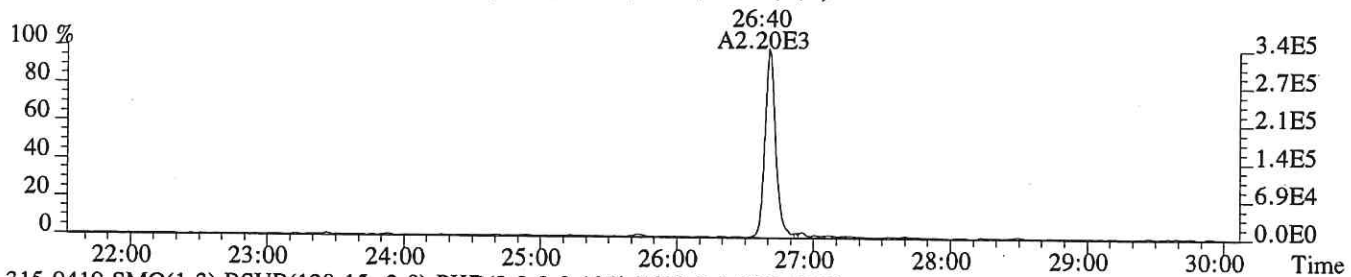
ALS ENVIRONMENTAL
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Sample#1 Exp:CS3

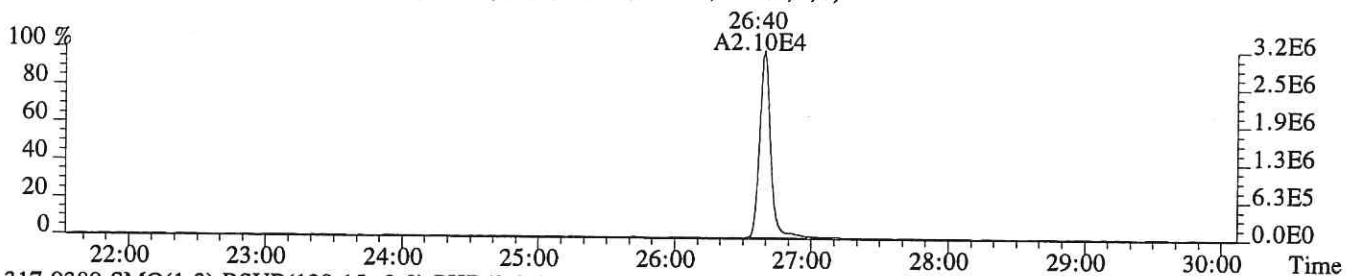
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,200.0,1.00%,F,T)



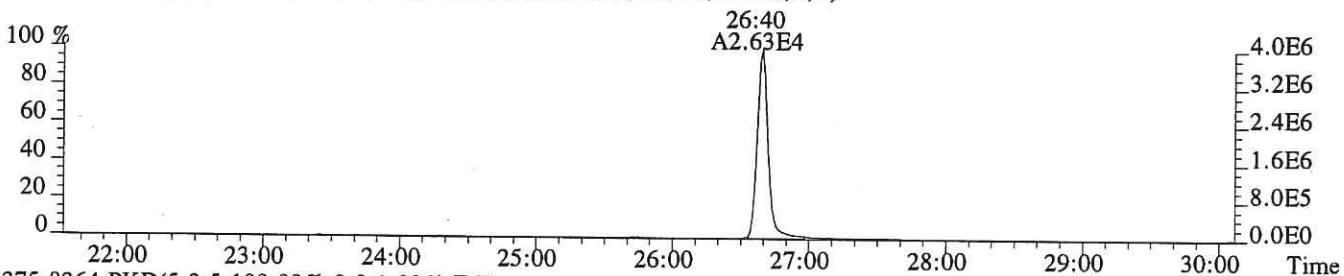
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,880.0,1.00%,F,T)



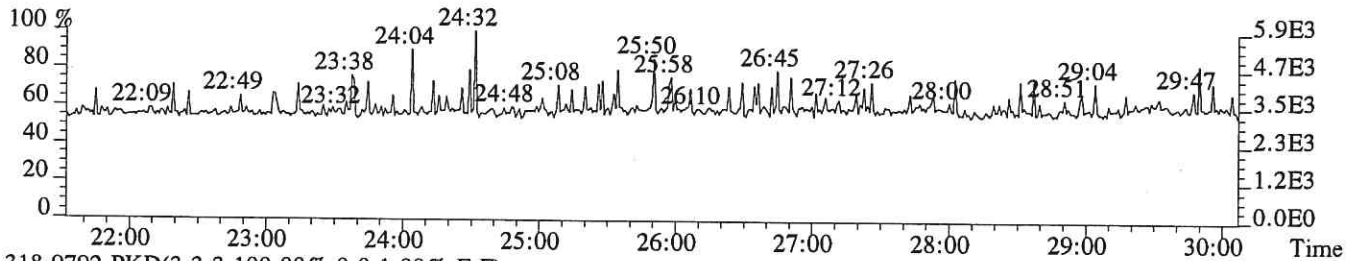
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,7688.0,1.00%,F,T)



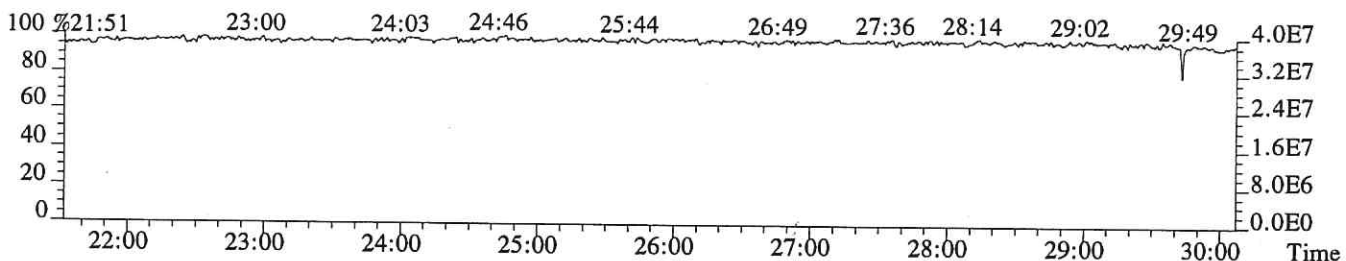
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3852.0,1.00%,F,T)



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

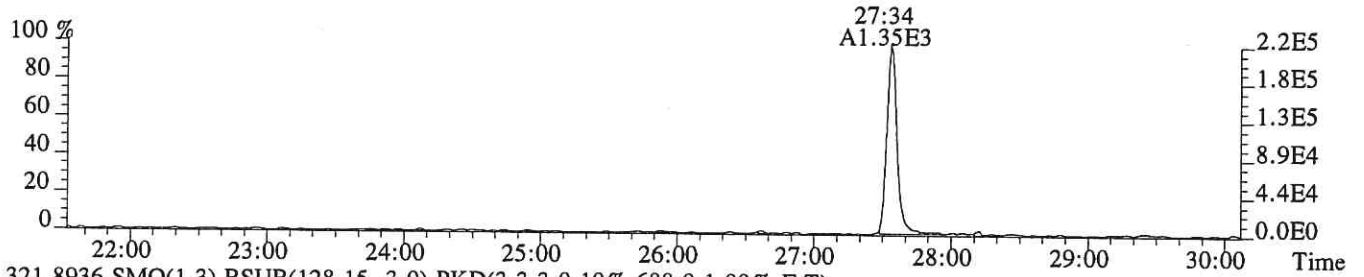


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

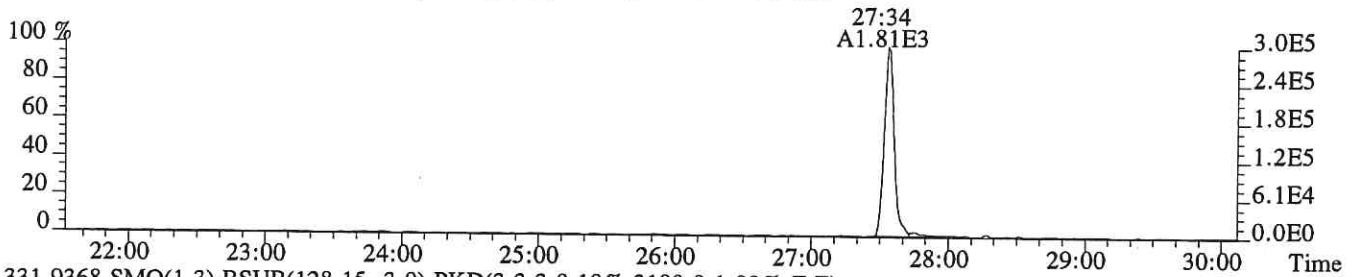


Sample#1 Exp:CS3

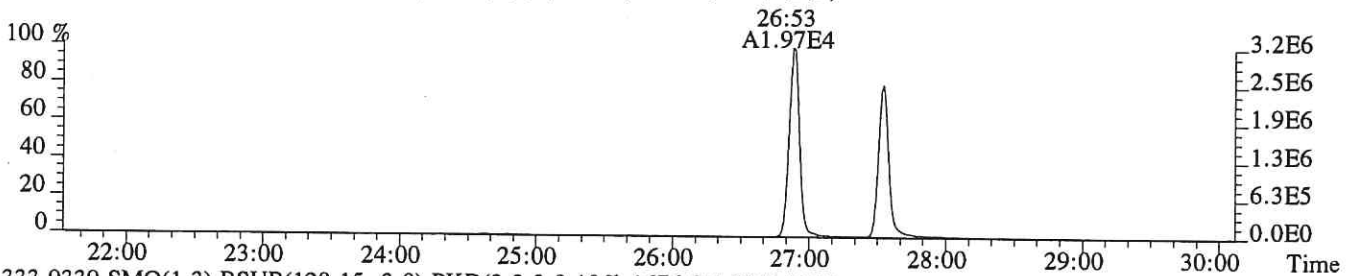
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1208.0,1.00%,F,T)



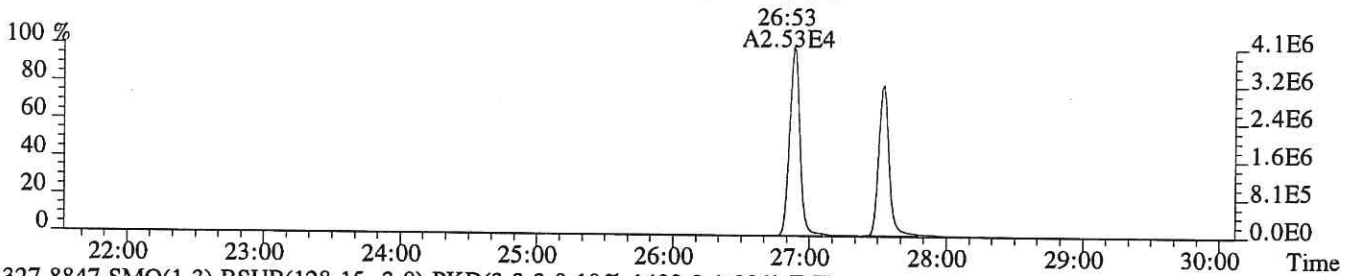
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,688.0,1.00%,F,T)



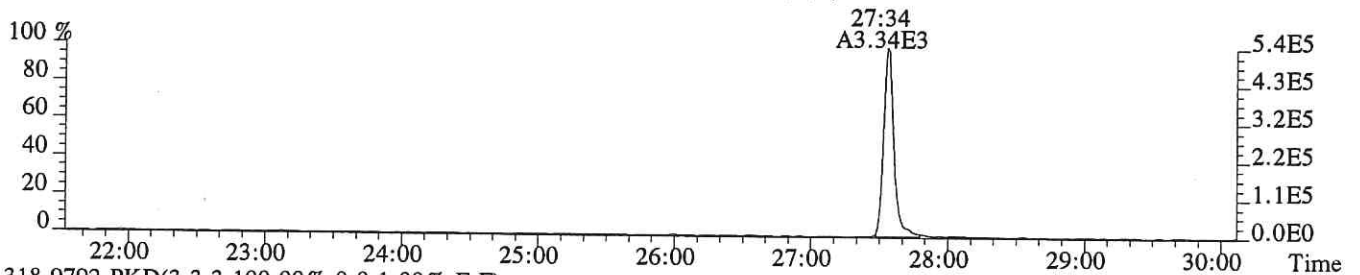
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3180.0,1.00%,F,T)



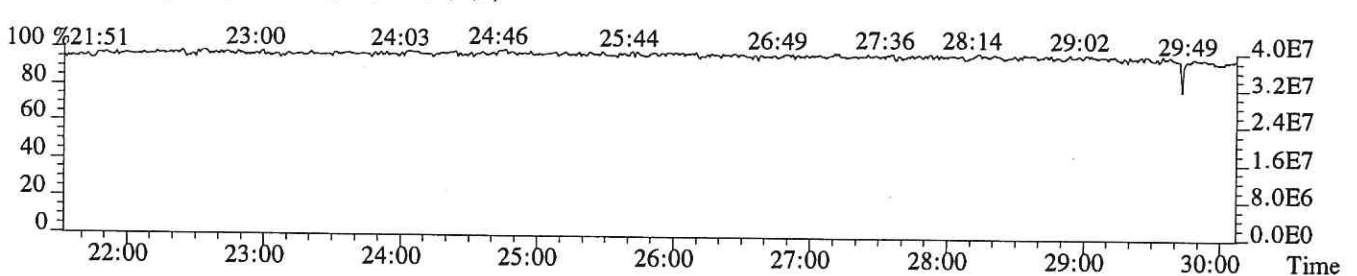
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1676.0,1.00%,F,T)



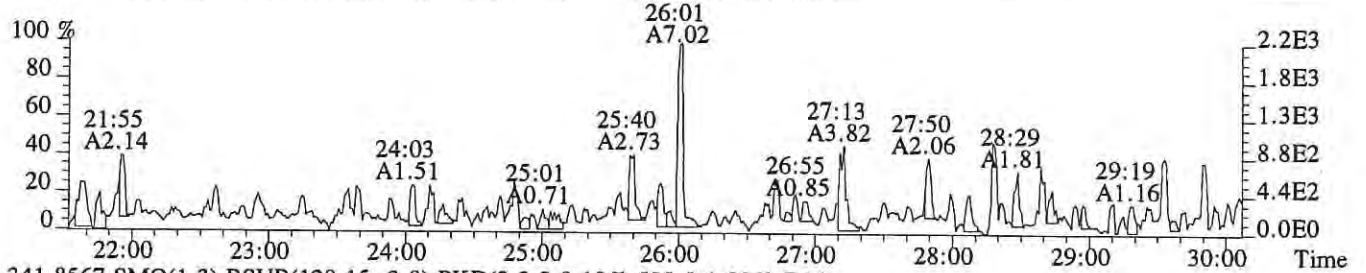
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1400.0,1.00%,F,T)



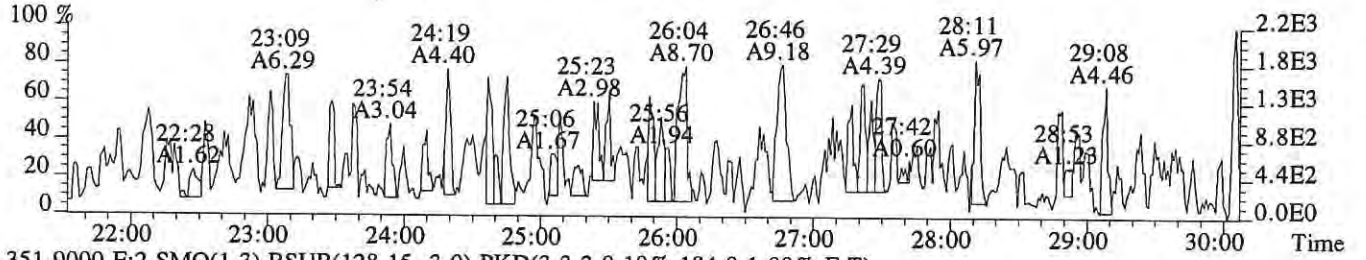
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



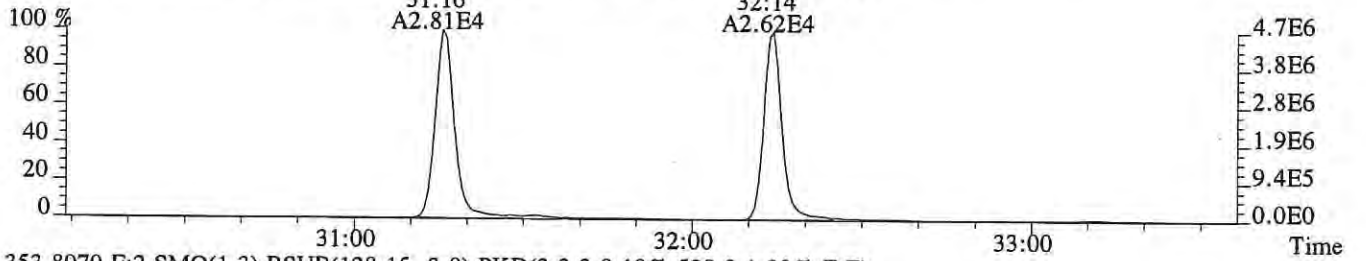
File:P618237 #1-609 Acq: 1-AUG-2019 16:53:34 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,228.0,1.00%,F,T)



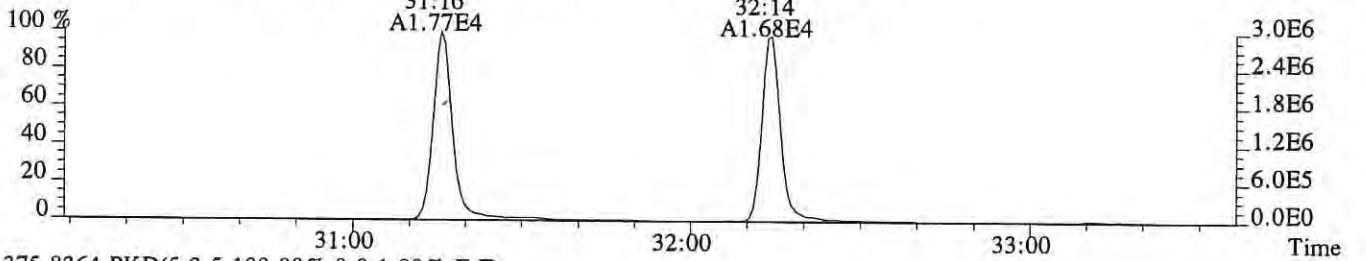
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,528.0,1.00%,F,T)



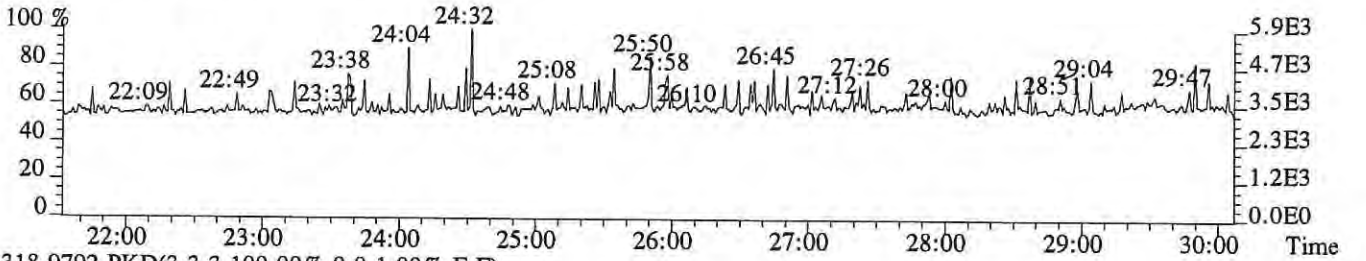
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,184.0,1.00%,F,T)



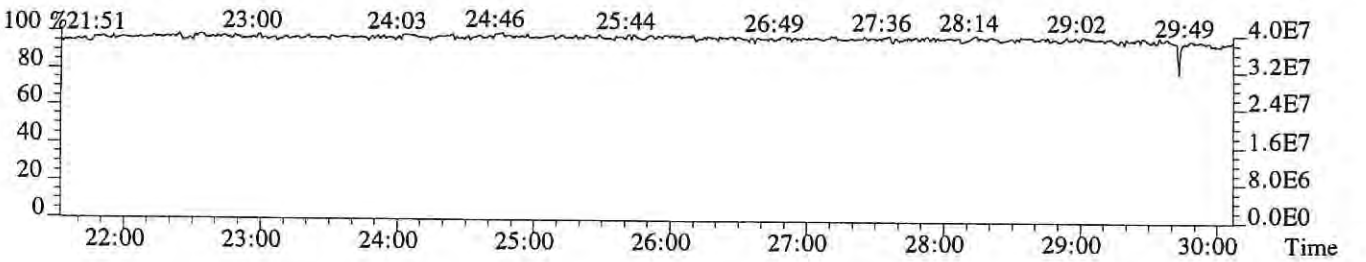
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,528.0,1.00%,F,T)



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



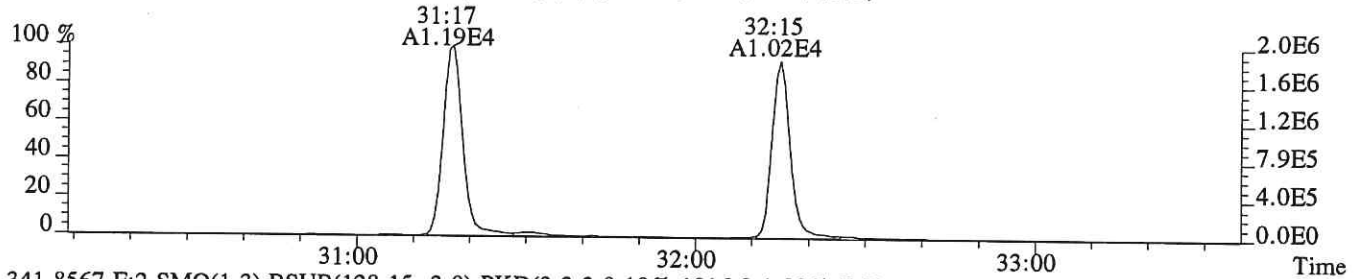
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



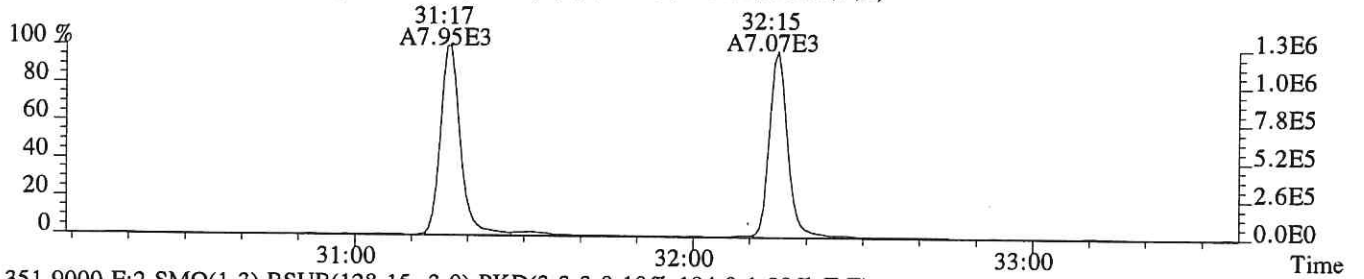
File:P618237 #1-312 Acq: 1-AUG-2019 16:53:34 Probe EI+ Magnet SIR VG BioTech Mass spectr

Sample#1 Exp:CS3

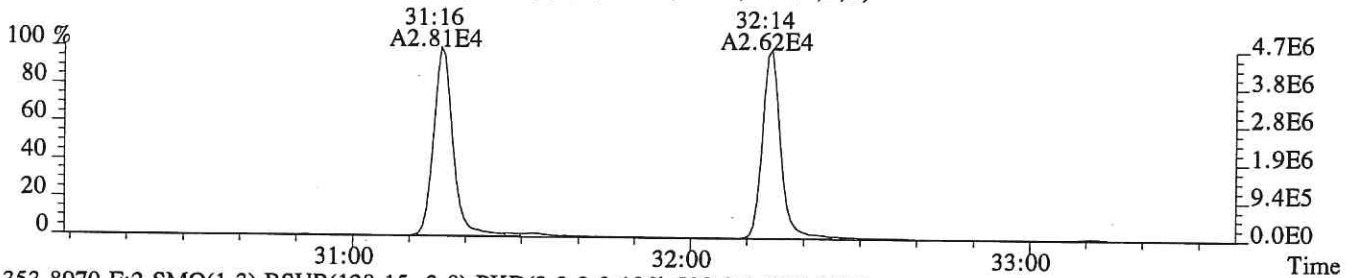
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,184.0,1.00%,F,T)



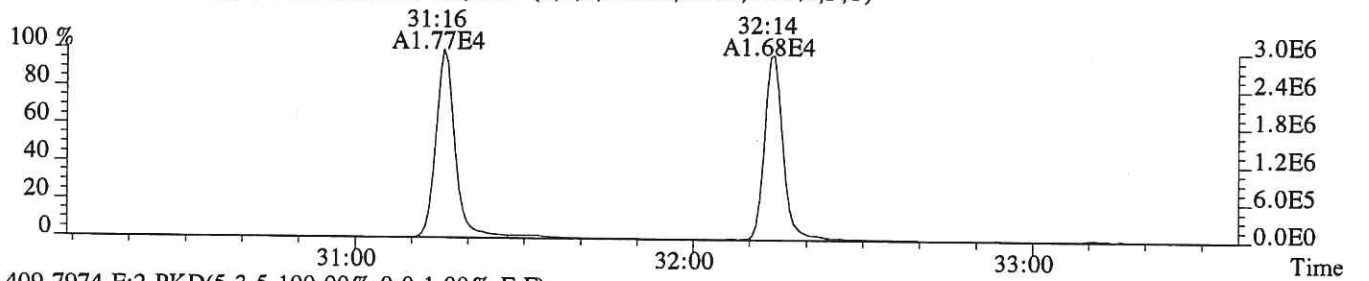
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1016.0,1.00%,F,T)



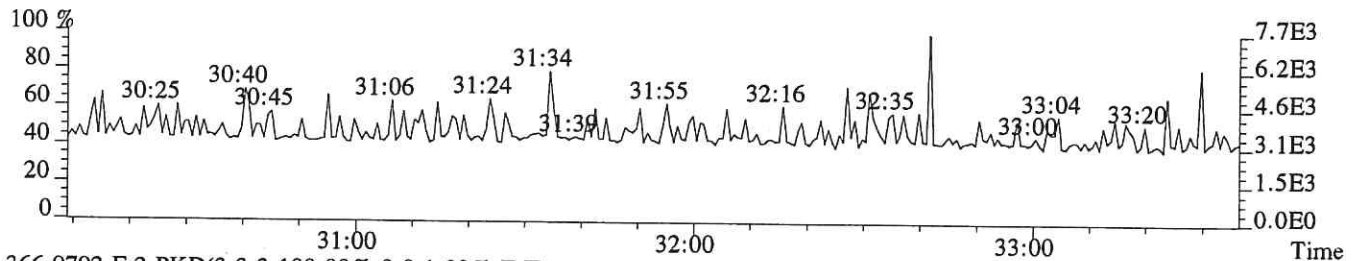
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,184.0,1.00%,F,T)



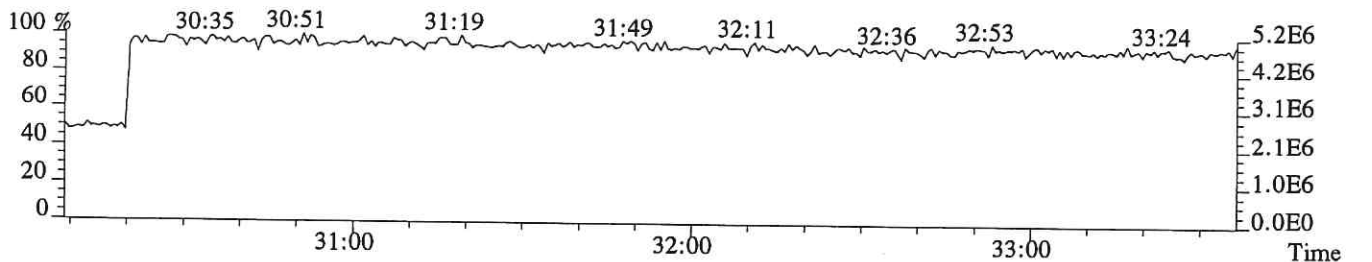
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,528.0,1.00%,F,T)



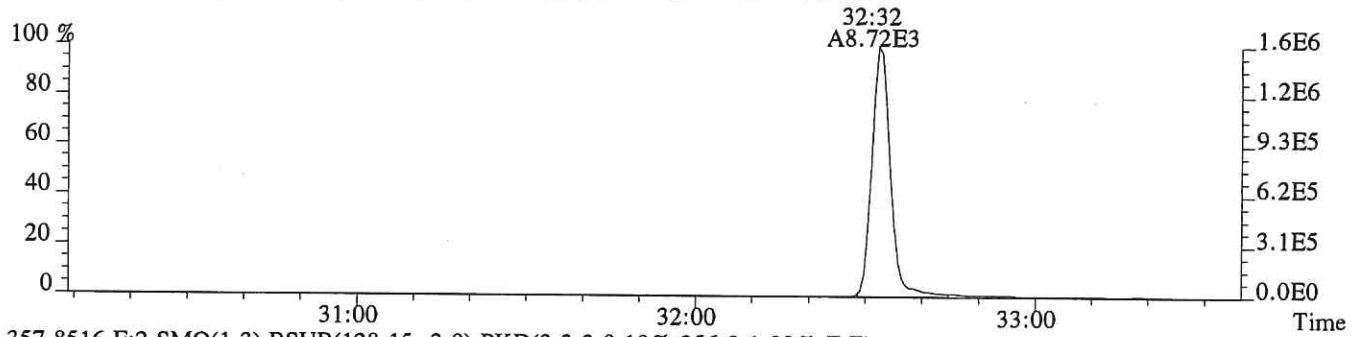
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



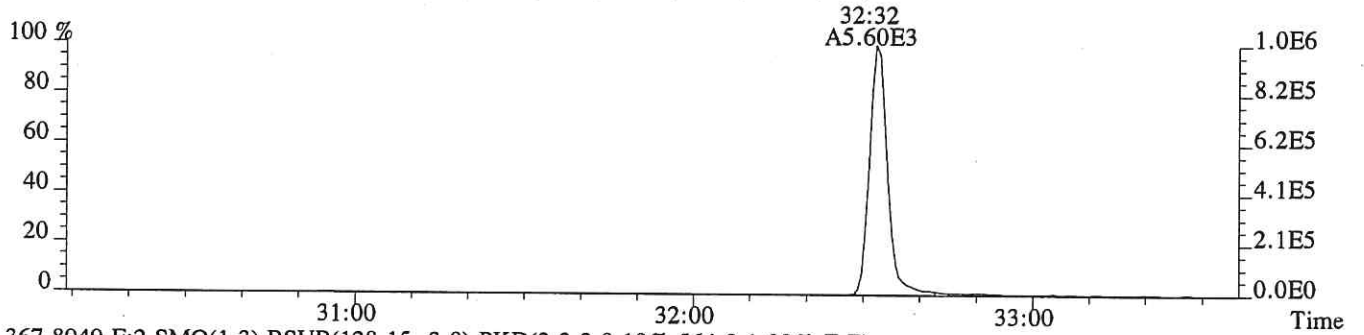
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



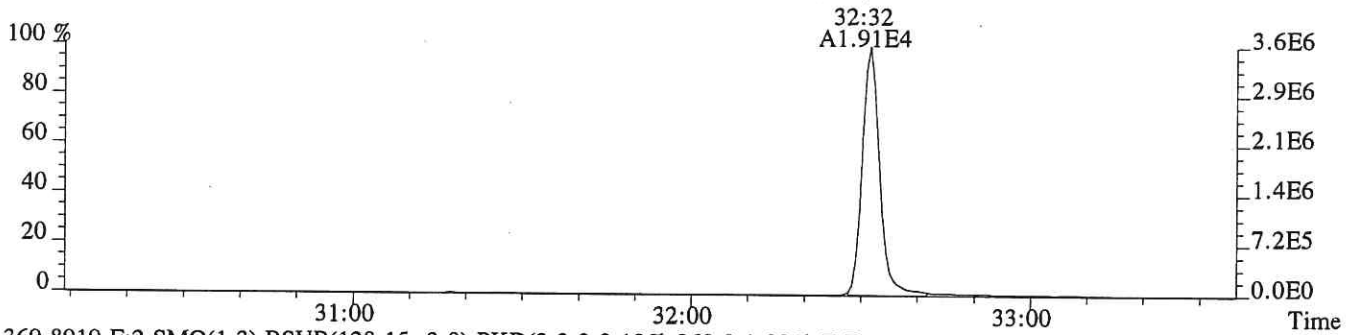
File:P618237 #1-312 Acq: 1-AUG-2019 16:53:34 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,444.0,1.00%,F,T)



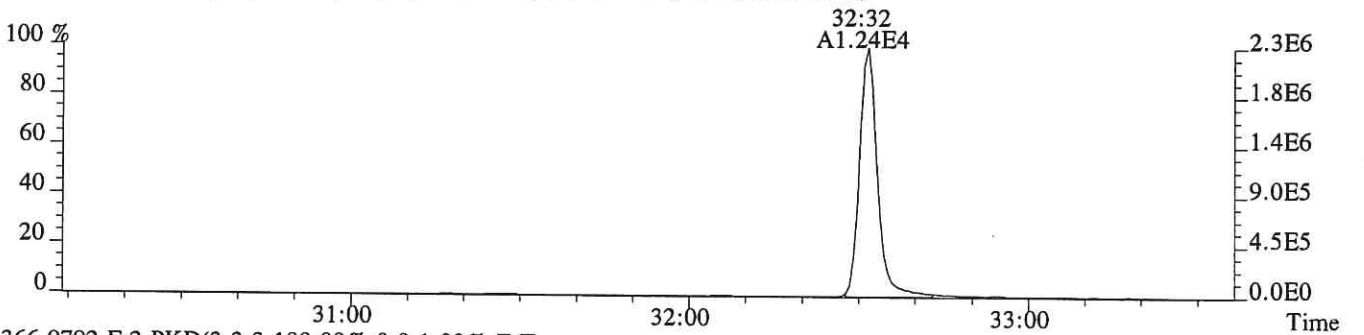
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,256.0,1.00%,F,T)



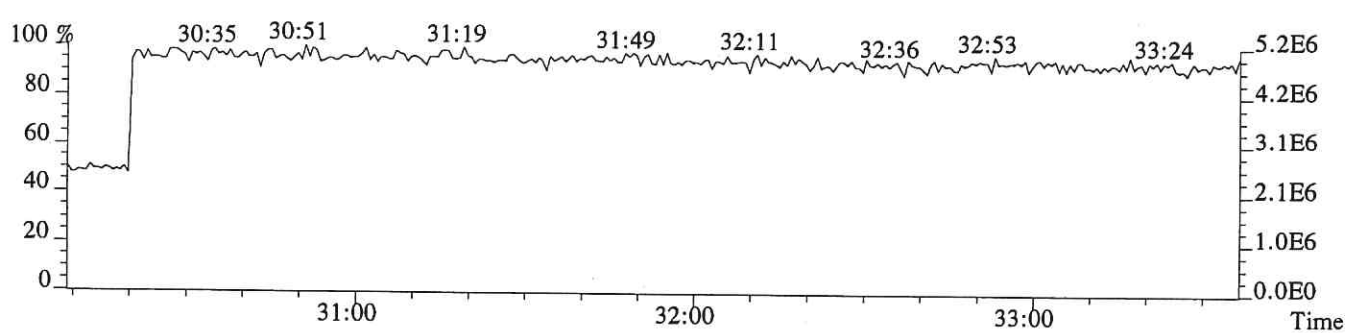
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,564.0,1.00%,F,T)



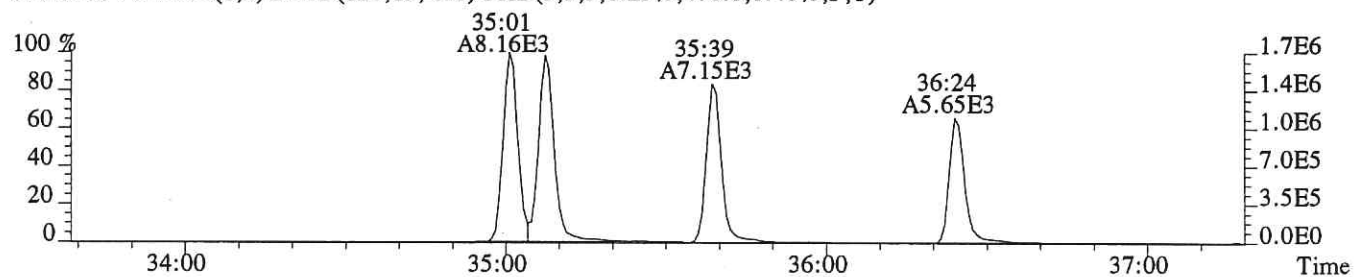
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,860.0,1.00%,F,T)



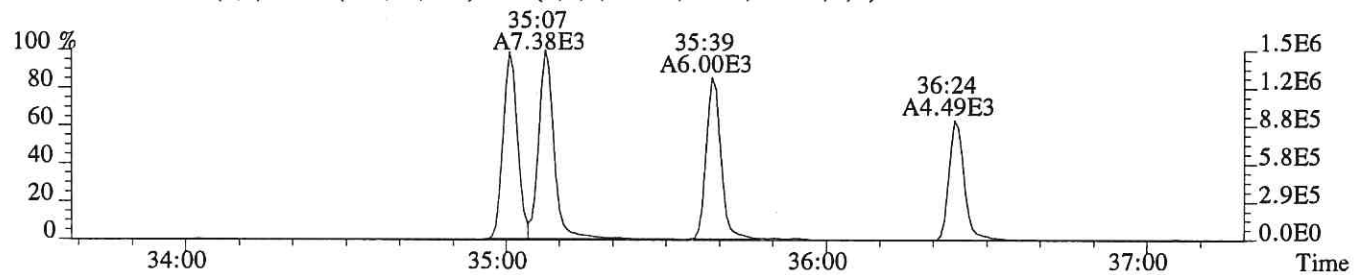
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



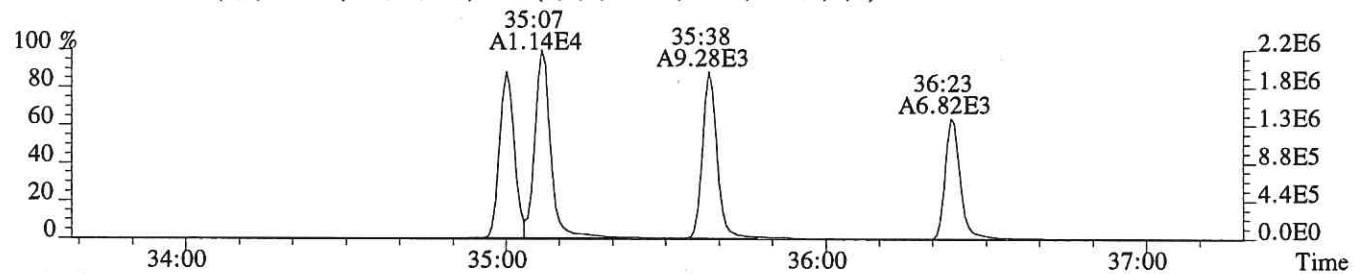
File:P618237 #1-330 Acq: 1-AUG-2019 16:53:34 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,476.0,0.40%,F,T)



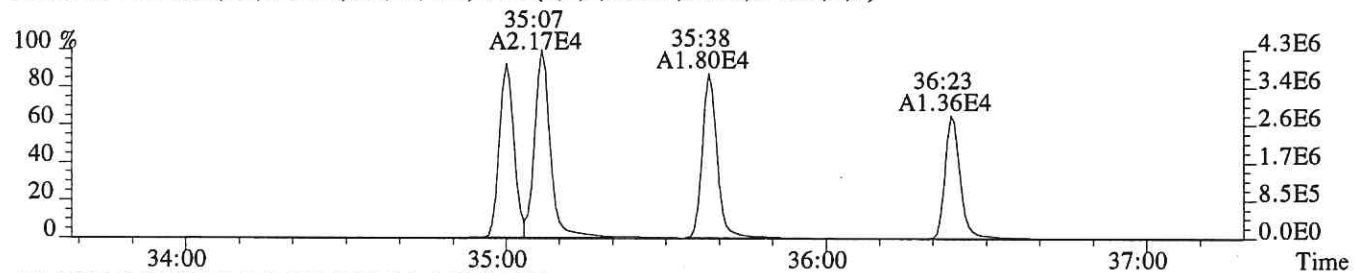
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,212.0,0.40%,F,T)



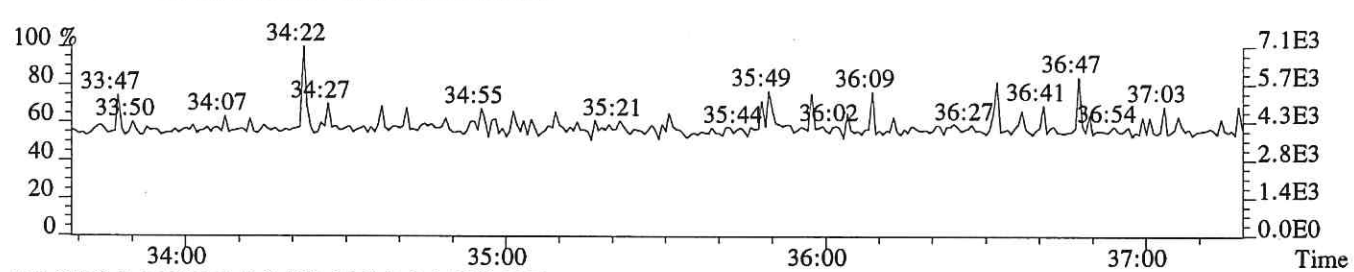
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,368.0,0.40%,F,T)



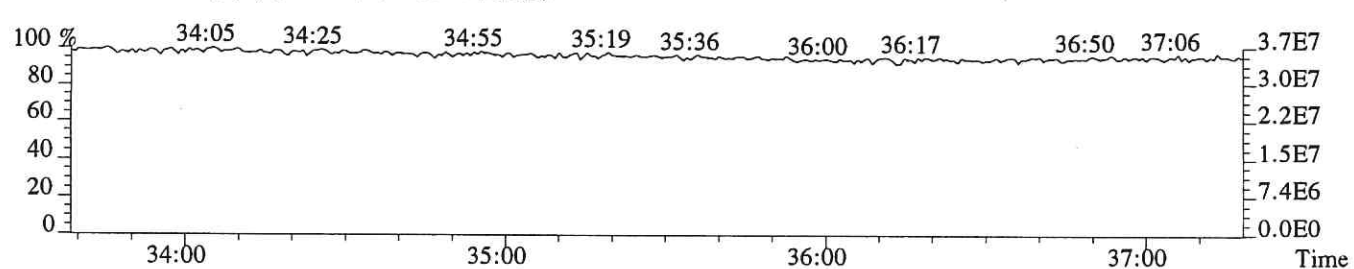
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,992.0,0.40%,F,T)



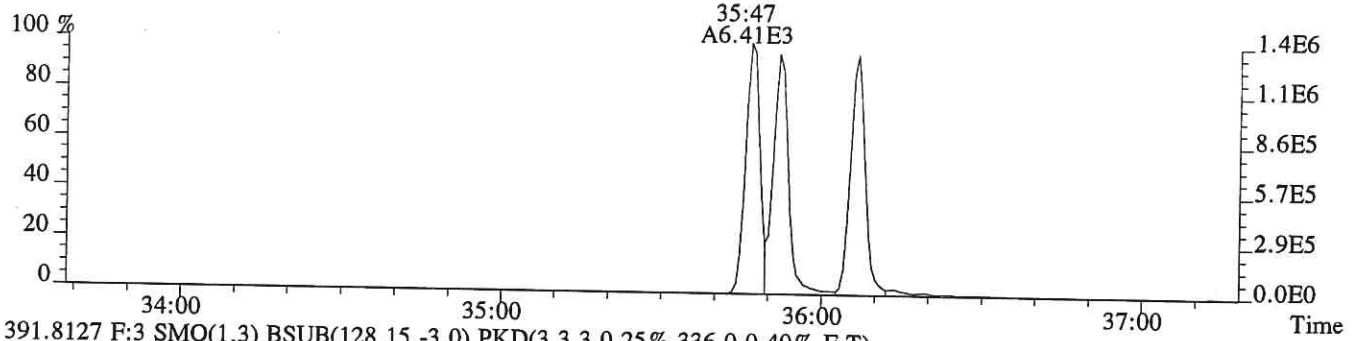
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



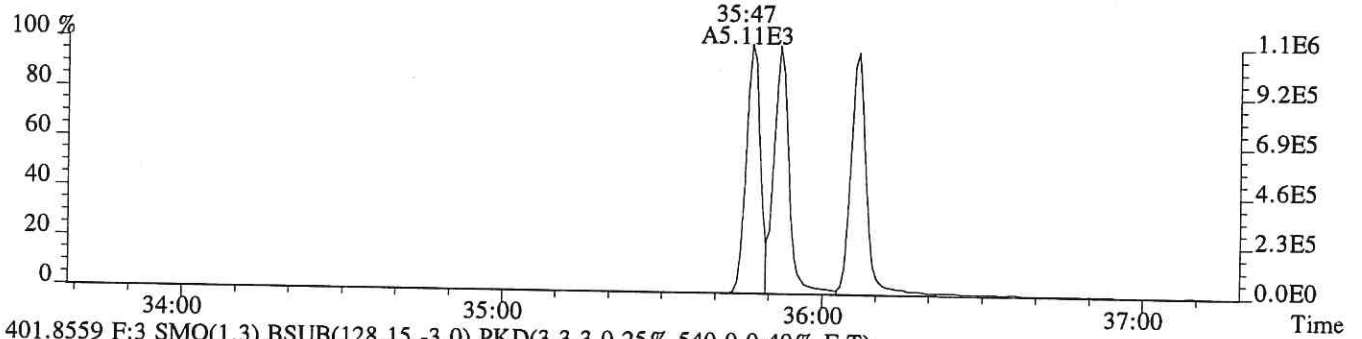
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



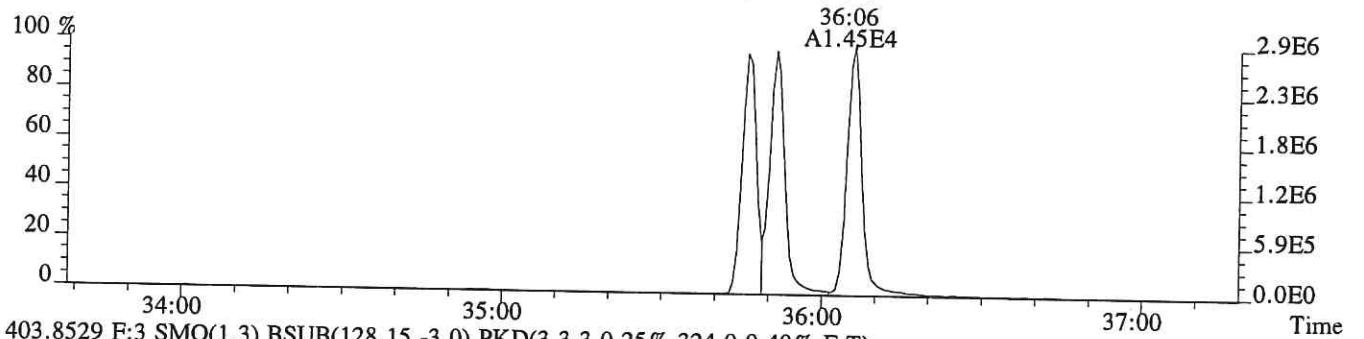
File:P618237 #1-330 Acq: 1-AUG-2019 16:53:34 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,180.0,0.40%,F,T)



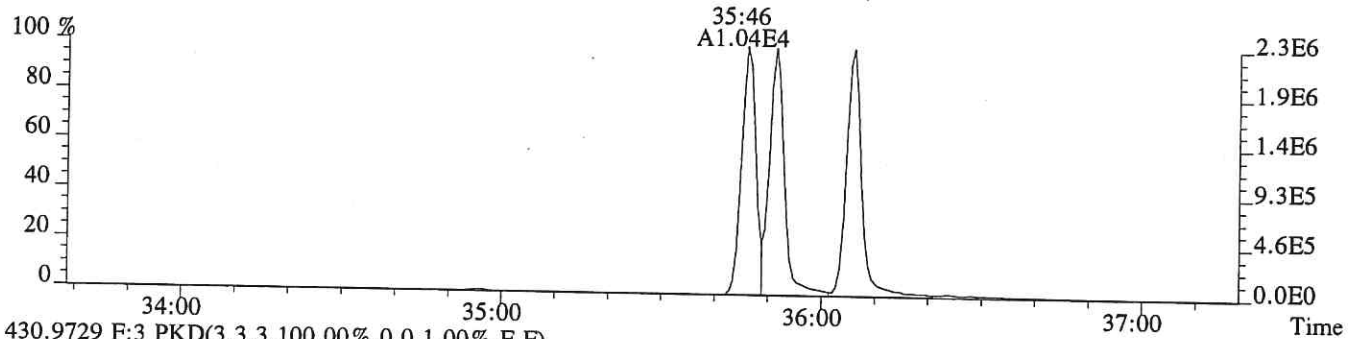
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,336.0,0.40%,F,T)



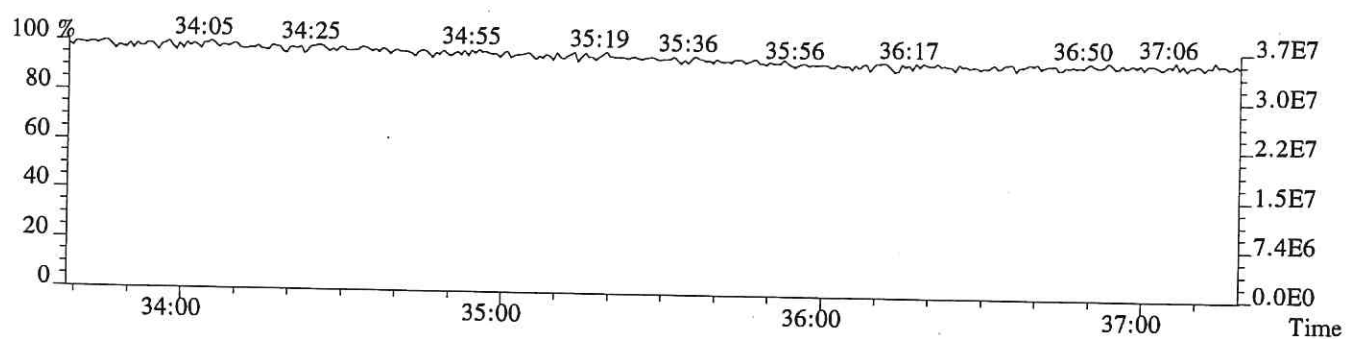
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,540.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,324.0,0.40%,F,T)

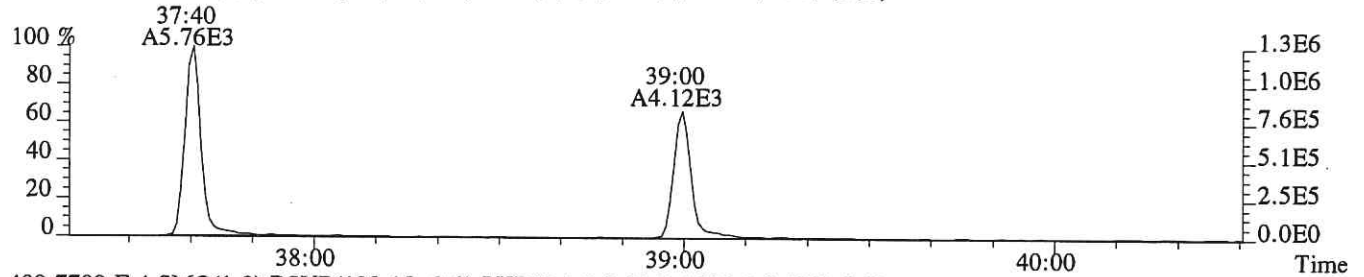


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

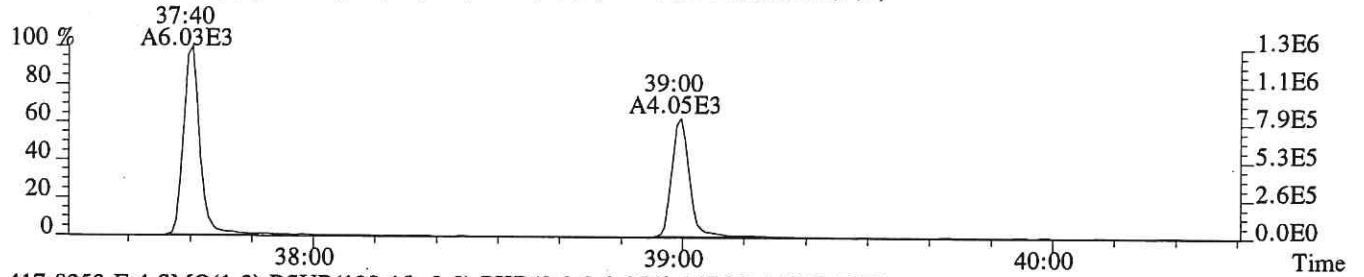


File: P618237 #1-286 Acq: 1-AUG-2019 16:53:34 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: CS3

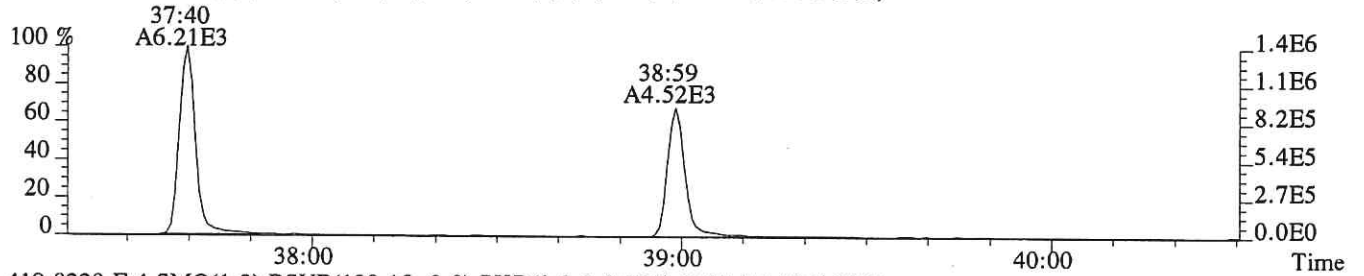
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1788.0,0.50%,F,T)



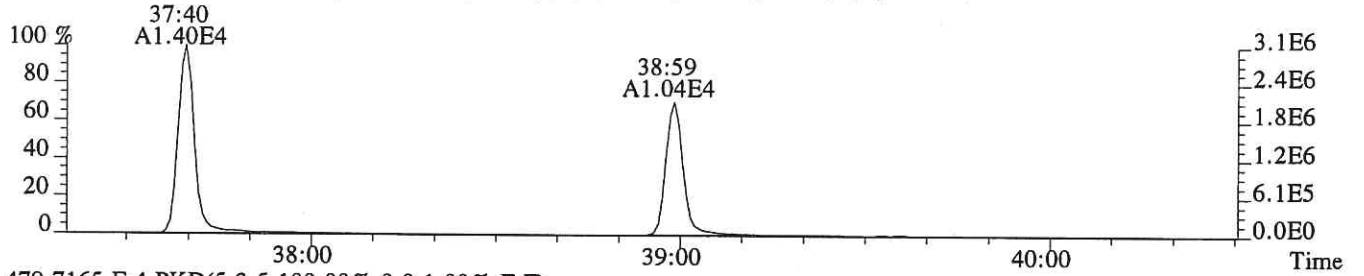
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1680.0,0.50%,F,T)



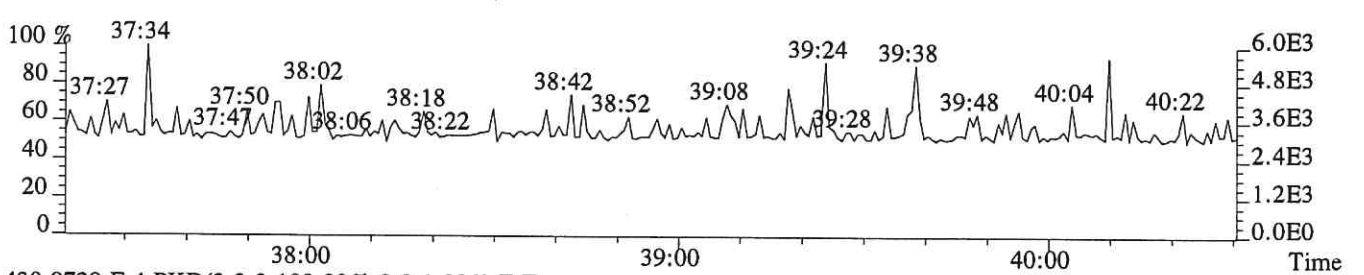
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1476.0,0.50%,F,T)



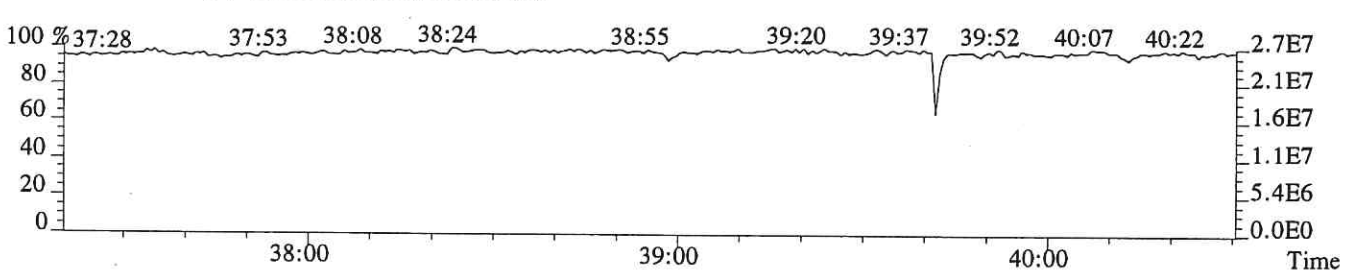
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2288.0,0.50%,F,T)



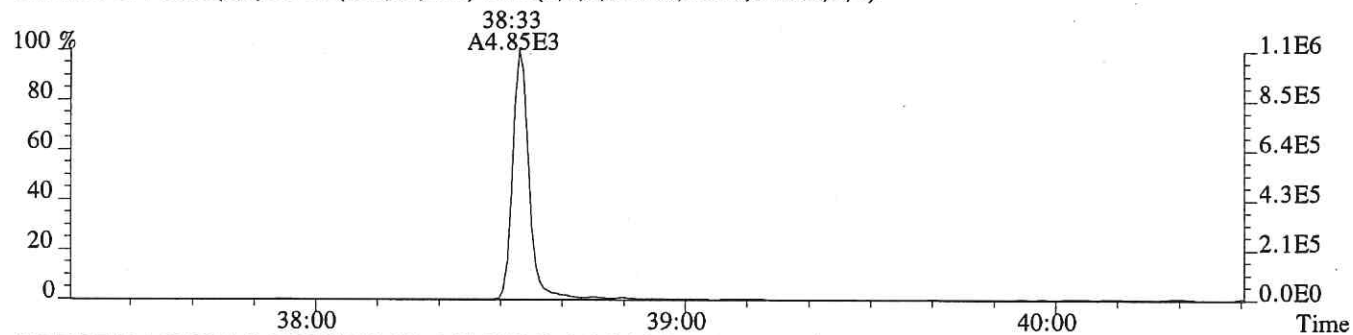
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



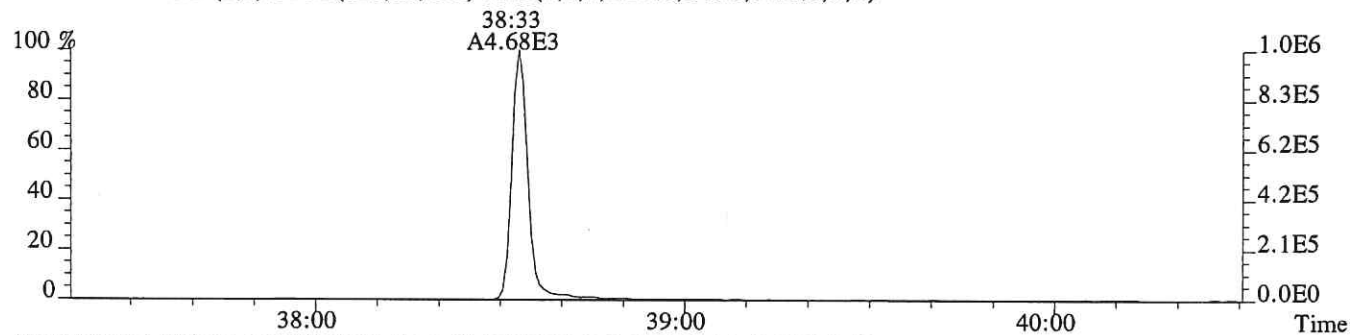
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



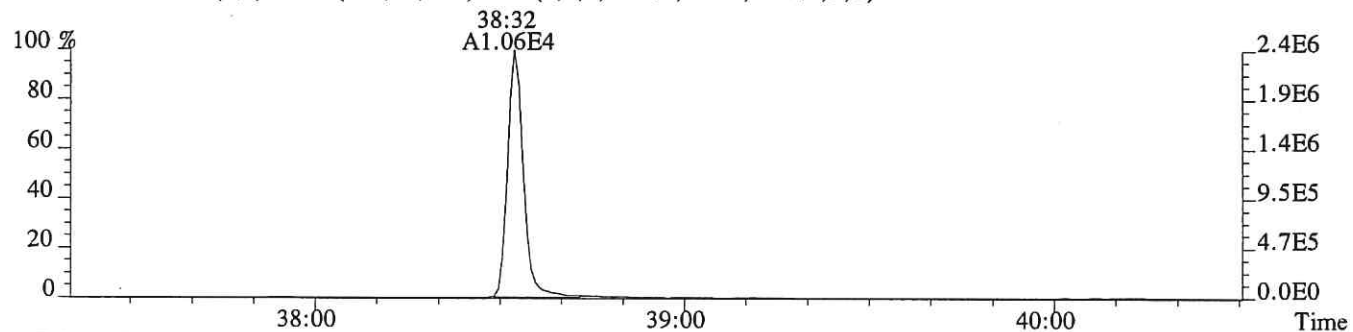
File: P618237 #1-286 Acq: 1-AUG-2019 16:53:34 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: CS3
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,292.0,0.40%,F,T)



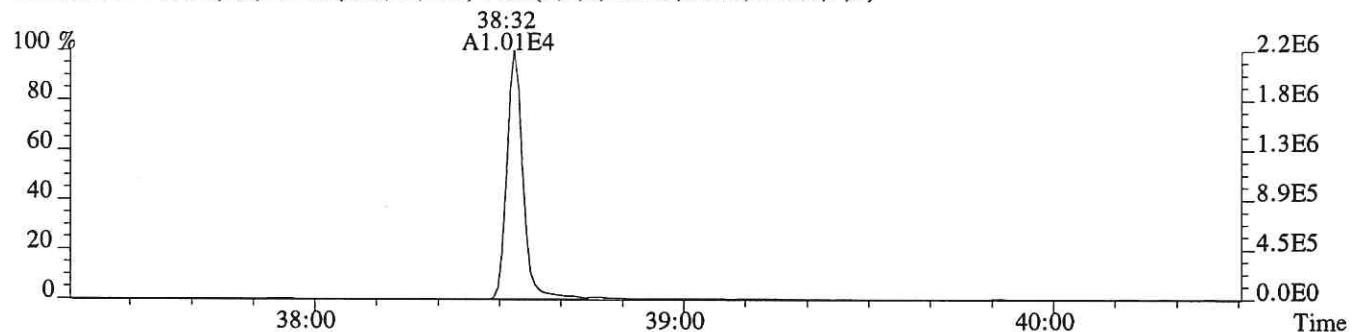
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,128.0,0.40%,F,T)



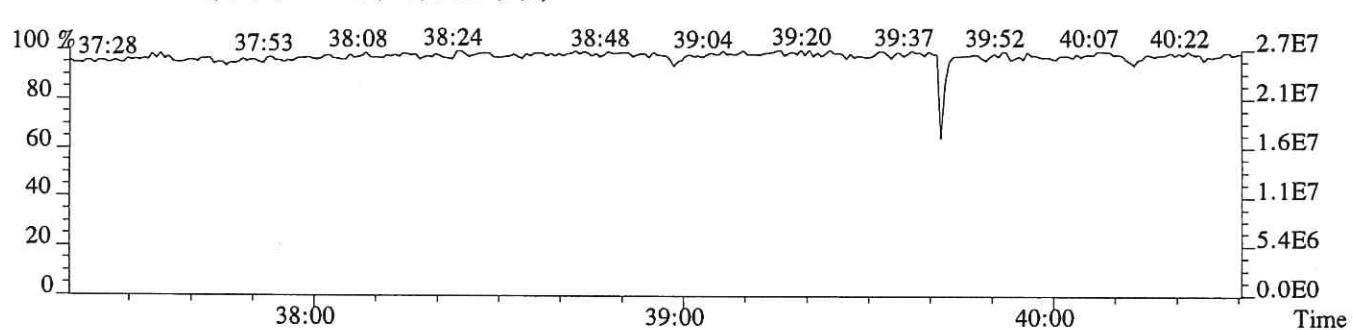
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,344.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,224.0,0.40%,F,T)

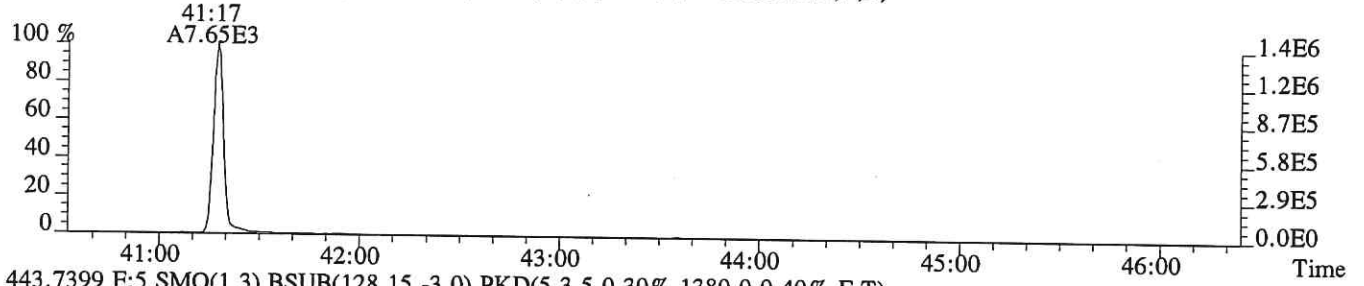


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

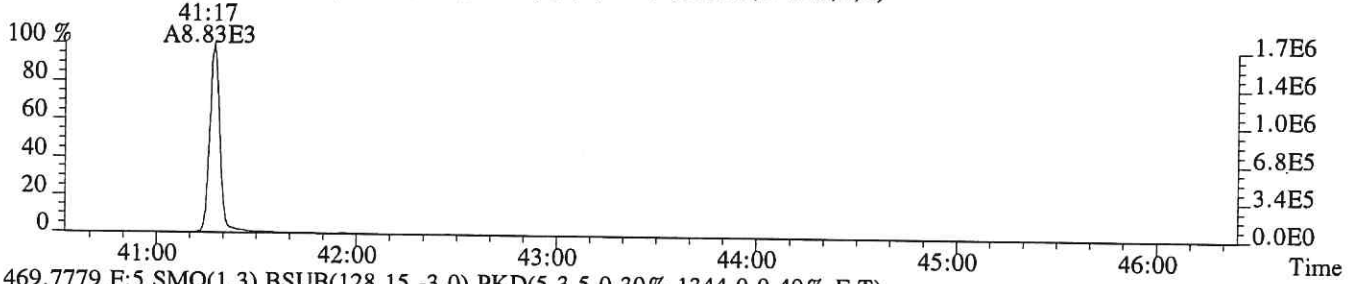


File: P618237 #1-528 Acq: 1-AUG-2019 16:53:34 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: CS3

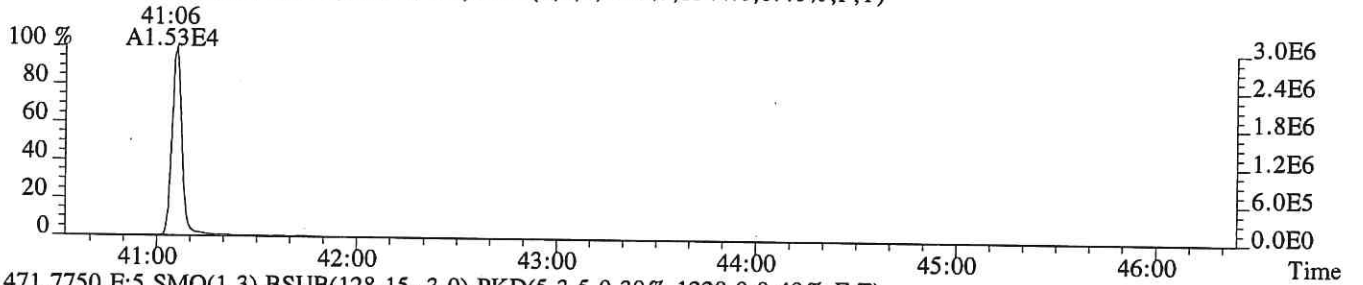
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1852.0,0.40%,F,T)



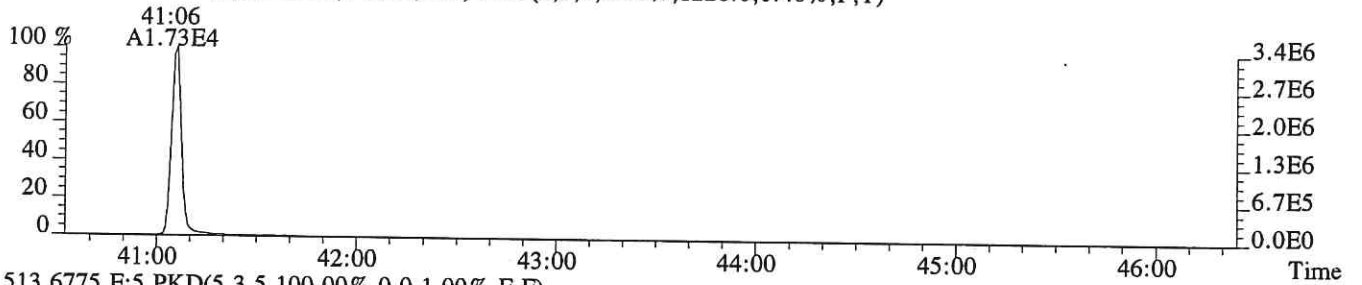
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1380.0,0.40%,F,T)



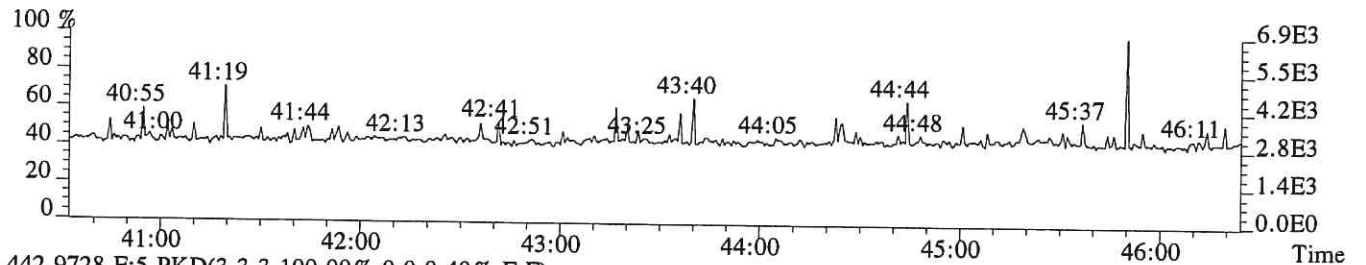
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1344.0,0.40%,F,T)



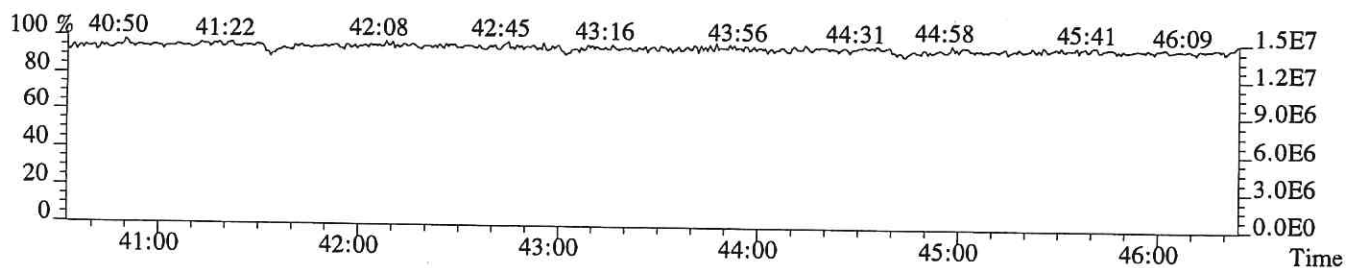
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1228.0,0.40%,F,T)



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



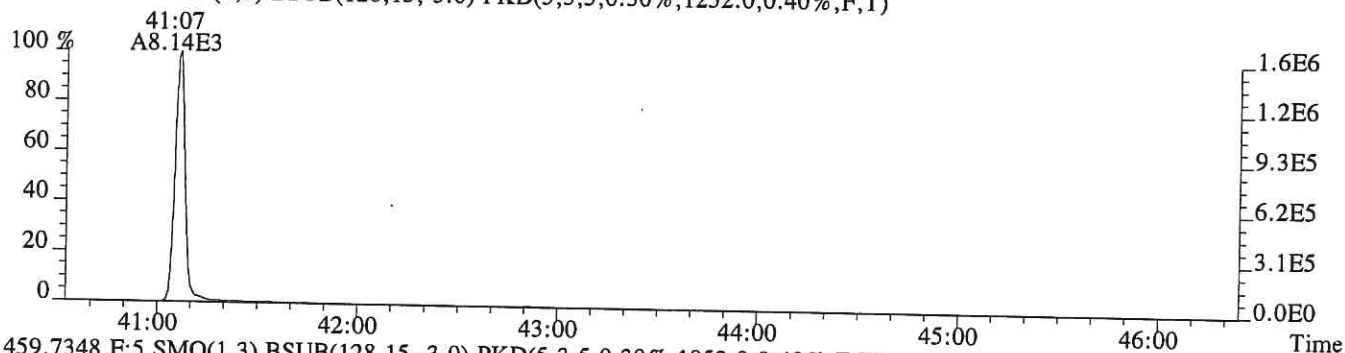
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



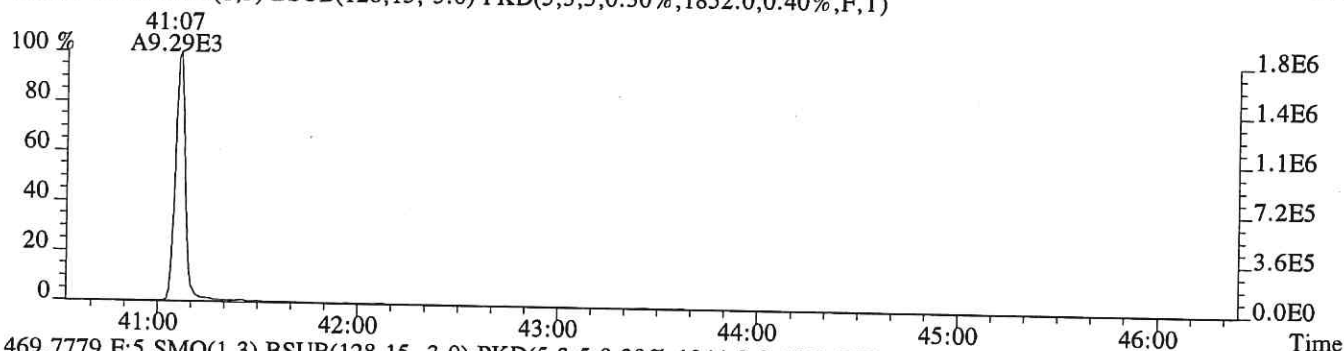
File:P618237 #1-528 Acq: 1-AUG-2019 16:53:34 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:CS3

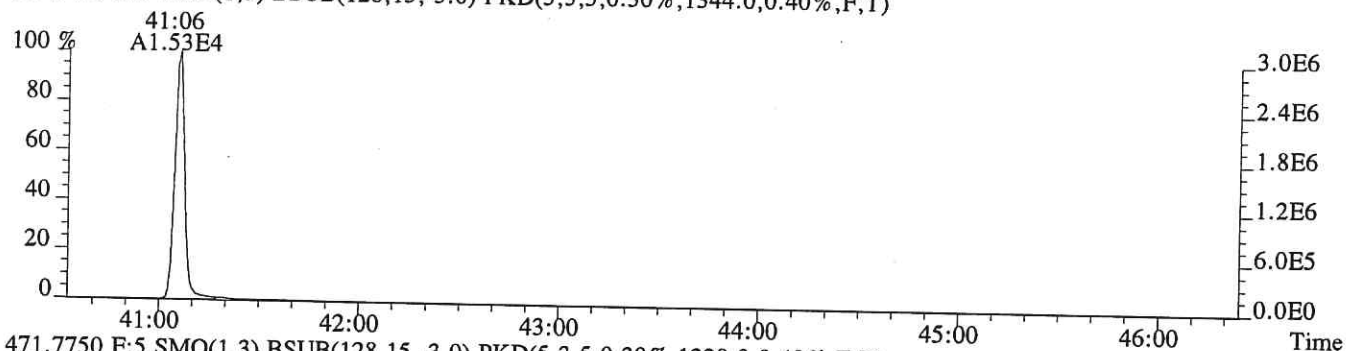
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1252.0,0.40%,F,T)



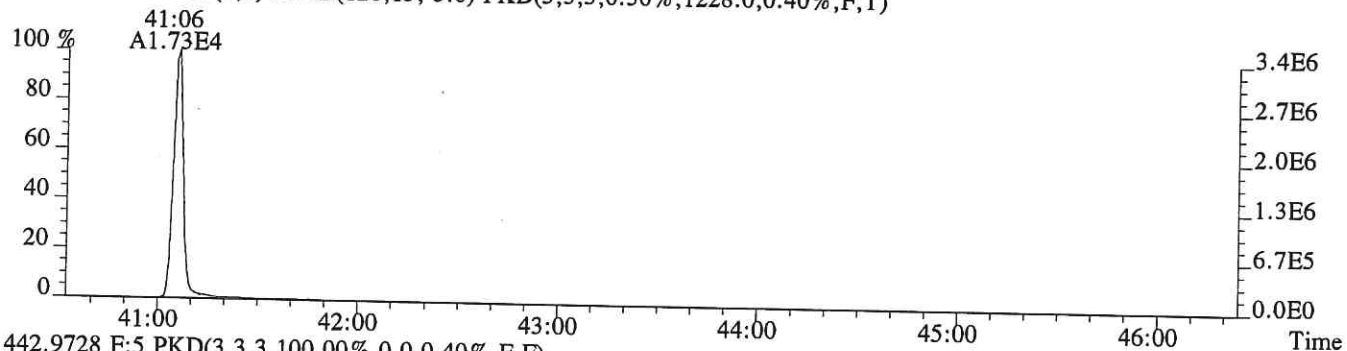
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1852.0,0.40%,F,T)



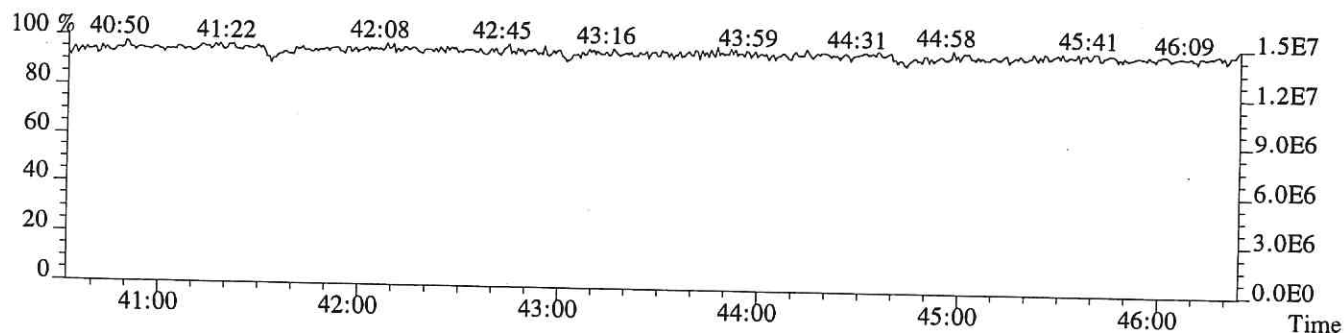
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1344.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1228.0,0.40%,F,T)



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



ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
82167

Run #5 Filename P618238 Samp: 1 Inj: 1 Acquired: 1-AUG-19 17:42:41
Processed: 2-AUG-19 09:23:27 Sample ID: CS4

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	26:41	8.025e+03	1.082e+04	0.74	yes	no	0.873
2 Unk	1,2,3,7,8-PeCDF	31:17	6.149e+04	4.048e+04	1.52	yes	no	0.864
3 Unk	2,3,4,7,8-PeCDF	32:16	5.420e+04	3.610e+04	1.50	yes	no	0.825
4 Unk	1,2,3,4,7,8-HxCDF	35:01	4.519e+04	3.764e+04	1.20	yes	no	1.084
5 Unk	1,2,3,6,7,8-HxCDF	35:08	4.938e+04	4.153e+04	1.19	yes	no	0.994
6 Unk	2,3,4,6,7,8-HxCDF	35:39	4.194e+04	3.470e+04	1.21	yes	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	36:25	3.347e+04	2.770e+04	1.21	yes	no	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	37:41	3.428e+04	3.430e+04	1.00	yes	no	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	39:00	2.565e+04	2.528e+04	1.01	yes	no	1.104
10 Unk	OCDF	41:18	4.893e+04	5.561e+04	0.88	yes	no	0.993
11 Unk	2,3,7,8-TCDD	27:34	7.077e+03	9.279e+03	0.76	yes	no	0.989
12 Unk	1,2,3,7,8-PeCDD	32:33	4.515e+04	2.920e+04	1.55	yes	no	0.954
13 Unk	1,2,3,4,7,8-HxCDD	35:47	3.614e+04	2.918e+04	1.24	yes	no	1.020
14 Unk	1,2,3,6,7,8-HxCDD	35:53	3.874e+04	3.135e+04	1.24	yes	no	1.030
15 Unk	1,2,3,7,8,9-HxCDD	36:07	3.713e+04	2.984e+04	1.24	yes	no	1.007
16 Unk	1,2,3,4,6,7,8-HpCDD	38:34	2.887e+04	2.788e+04	1.04	yes	no	0.922
17 Unk	OCDD	41:07	4.893e+04	5.636e+04	0.87	yes	no	1.062
18 IS	13C-2,3,7,8-TCDF	26:40	2.480e+04	3.228e+04	0.77	yes	no	1.102
19 IS	13C-1,2,3,7,8-PeCDF	31:16	3.499e+04	2.198e+04	1.59	yes	no	1.074
20 IS	13C-2,3,4,7,8-PeCDF	32:14	3.335e+04	2.126e+04	1.57	yes	no	1.005
21 IS	13C-1,2,3,4,7,8-HxCDF	35:01	1.288e+04	2.564e+04	0.50	yes	no	1.059
22 IS	13C-1,2,3,6,7,8-HxCDF	35:07	1.548e+04	2.971e+04	0.52	yes	no	1.264
23 IS	13C-2,3,4,6,7,8-HxCDF	35:39	1.291e+04	2.523e+04	0.51	yes	no	1.066
24 IS	13C-1,2,3,7,8,9-HxCDF	36:24	9.865e+03	1.959e+04	0.50	yes	no	0.801
25 IS	13C-1,2,3,4,6,7,8-HpCDF	37:40	8.562e+03	2.000e+04	0.43	yes	no	0.789
26 IS	13C-1,2,3,4,7,8,9-HpCDF	39:00	6.828e+03	1.597e+04	0.43	yes	no	0.590
27 IS	13C-2,3,7,8-TCDD	27:33	1.863e+04	2.424e+04	0.77	yes	no	0.839
28 IS	13C-1,2,3,7,8-PeCDD	32:32	2.443e+04	1.551e+04	1.58	yes	no	0.744
29 IS	13C-1,2,3,4,7,8-HxCDD	35:47	1.773e+04	1.428e+04	1.24	yes	no	0.907
30 IS	13C-1,2,3,6,7,8-HxCDD	35:52	1.922e+04	1.534e+04	1.25	yes	no	0.978
31 IS	13C-1,2,3,4,6,7,8-HpCDD	38:33	1.508e+04	1.489e+04	1.01	yes	no	0.814
32 IS	13C-OCDD	41:07	2.350e+04	2.625e+04	0.90	yes	no	0.653
33 RS/RT	13C-1,2,3,4-TCDD	26:54	2.335e+04	2.987e+04	0.78	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	36:07	1.974e+04	1.542e+04	1.28	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	27:34	1.731e+04				no	0.894

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Signal/Noise Height Ratio Summary

CLIENT ID.
82167

Run #5 Filename P618238 Samp: 1 Inj: 1 Acquired: 1-AUG-19 17:42:41
Processed: 2-AUG-19 09:23:27 LAB. ID: CS4

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	1.23e+06	4.12e+02	3.0e+03	1.62e+06	1.22e+03	1.3e+03
2	1,2,3,7,8-PeCDF	1.05e+07	1.23e+03	8.6e+03	6.95e+06	1.08e+03	6.5e+03
3	2,3,4,7,8-PeCDF	1.00e+07	1.23e+03	8.1e+03	6.66e+06	1.08e+03	6.2e+03
4	1,2,3,4,7,8-HxCDF	9.66e+06	3.72e+02	2.6e+04	8.03e+06	4.08e+02	2.0e+04
5	1,2,3,6,7,8-HxCDF	9.89e+06	3.72e+02	2.7e+04	8.21e+06	4.08e+02	2.0e+04
6	2,3,4,6,7,8-HxCDF	8.85e+06	3.72e+02	2.4e+04	7.36e+06	4.08e+02	1.8e+04
7	1,2,3,7,8,9-HxCDF	6.95e+06	3.72e+02	1.9e+04	5.71e+06	4.08e+02	1.4e+04
8	1,2,3,4,6,7,8-HpCDF	7.50e+06	4.41e+03	1.7e+03	7.48e+06	5.46e+03	1.4e+03
9	1,2,3,4,7,8,9-HpCDF	5.39e+06	4.41e+03	1.2e+03	5.28e+06	5.46e+03	9.7e+02
10	OCDF	9.58e+06	9.64e+02	9.9e+03	1.08e+07	2.92e+03	3.7e+03
11	2,3,7,8-TCDD	1.17e+06	1.53e+03	7.7e+02	1.54e+06	7.52e+02	2.0e+03
12	1,2,3,7,8-PeCDD	8.52e+06	4.16e+02	2.0e+04	5.53e+06	2.72e+02	2.0e+04
13	1,2,3,4,7,8-HxCDD	8.23e+06	3.28e+02	2.5e+04	6.61e+06	2.56e+02	2.6e+04
14	1,2,3,6,7,8-HxCDD	8.01e+06	3.28e+02	2.4e+04	6.47e+06	2.56e+02	2.5e+04
15	1,2,3,7,8,9-HxCDD	7.83e+06	3.28e+02	2.4e+04	6.27e+06	2.56e+02	2.5e+04
16	1,2,3,4,6,7,8-HpCDD	6.34e+06	7.16e+02	8.9e+03	6.13e+06	4.56e+02	1.3e+04
17	OCDD	9.56e+06	2.04e+03	4.7e+03	1.10e+07	1.00e+04	1.1e+03
18	13C-2,3,7,8-TCDF	3.77e+06	7.18e+03	5.2e+02	4.88e+06	2.74e+03	1.8e+03
19	13C-1,2,3,7,8-PeCDF	6.05e+06	6.48e+02	9.3e+03	3.85e+06	7.20e+01	5.3e+04
20	13C-2,3,4,7,8-PeCDF	5.97e+06	6.48e+02	9.2e+03	3.84e+06	7.20e+01	5.3e+04
21	13C-1,2,3,4,7,8-HxCDF	2.75e+06	1.92e+02	1.4e+04	5.44e+06	8.64e+02	6.3e+03
22	13C-1,2,3,6,7,8-HxCDF	3.17e+06	1.92e+02	1.7e+04	5.95e+06	8.64e+02	6.9e+03
23	13C-2,3,4,6,7,8-HxCDF	2.78e+06	1.92e+02	1.4e+04	5.36e+06	8.64e+02	6.2e+03
24	13C-1,2,3,7,8,9-HxCDF	2.10e+06	1.92e+02	1.1e+04	4.12e+06	8.64e+02	4.8e+03
25	13C-1,2,3,4,6,7,8-HpCDF	1.91e+06	1.58e+03	1.2e+03	4.41e+06	3.75e+03	1.2e+03
26	13C-1,2,3,4,7,8,9-HpCDF	1.45e+06	1.58e+03	9.2e+02	3.34e+06	3.75e+03	8.9e+02
27	13C-2,3,7,8-TCDD	3.05e+06	3.59e+03	8.5e+02	3.98e+06	1.34e+03	3.0e+03
28	13C-1,2,3,7,8-PeCDD	4.63e+06	3.20e+02	1.4e+04	2.93e+06	7.20e+02	4.1e+03
29	13C-1,2,3,4,7,8-HxCDD	4.05e+06	6.44e+02	6.3e+03	3.26e+06	5.44e+02	6.0e+03
30	13C-1,2,3,6,7,8-HxCDD	4.00e+06	6.44e+02	6.2e+03	3.17e+06	5.44e+02	5.8e+03
31	13C-1,2,3,4,6,7,8-HpCDD	3.36e+06	5.20e+02	6.5e+03	3.29e+06	3.68e+02	9.0e+03
32	13C-OCDD	4.53e+06	8.52e+02	5.3e+03	5.12e+06	2.20e+03	2.3e+03
33	13C-1,2,3,4-TCDD	3.83e+06	3.59e+03	1.1e+03	4.87e+06	1.34e+03	3.6e+03
34	13C-1,2,3,7,8,9-HxCDD	4.08e+06	6.44e+02	6.3e+03	3.19e+06	5.44e+02	5.9e+03
35	37Cl-2,3,7,8-TCDD	2.90e+06	1.68e+03	1.7e+03			

---Sample Calculation---

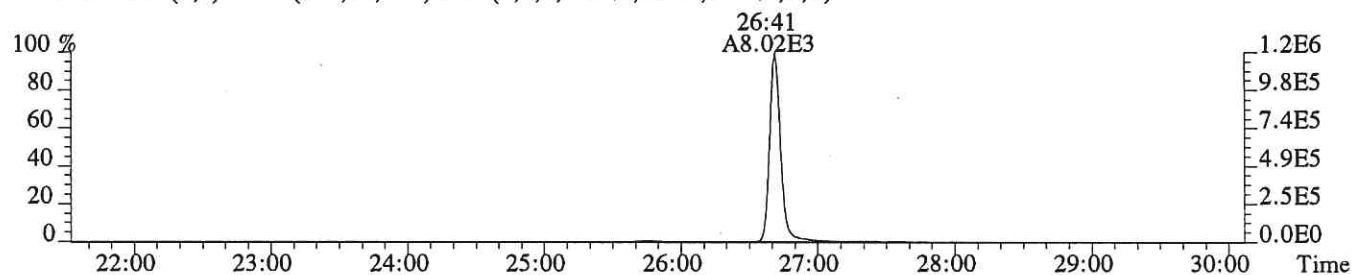
$$D/L \text{ TCDD} = \frac{2.5 \times (1.528e+03 + 7.520e+02) \times 100}{(3.047e+06 + 3.977e+06) \times (\quad) \times 0.989} =$$

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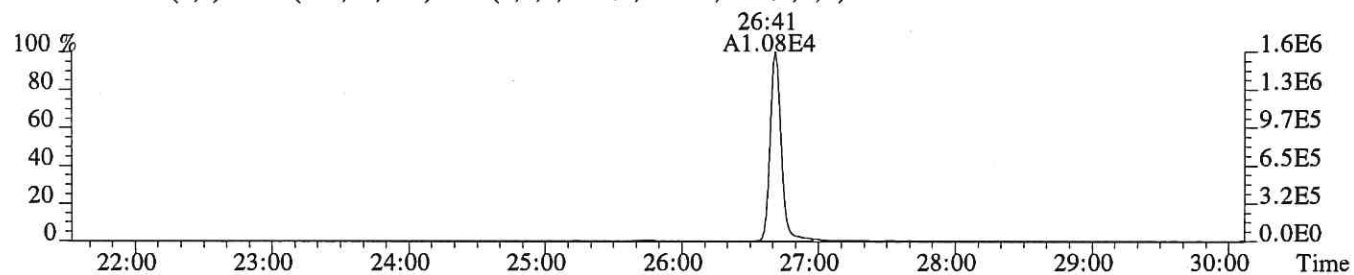
File:P618238 #1-609 Acq: 1-AUG-2019 17:42:41 Probe EI+ Magnet SIR VG BioTech Mass spectr

Sample#1 Exp:CS4

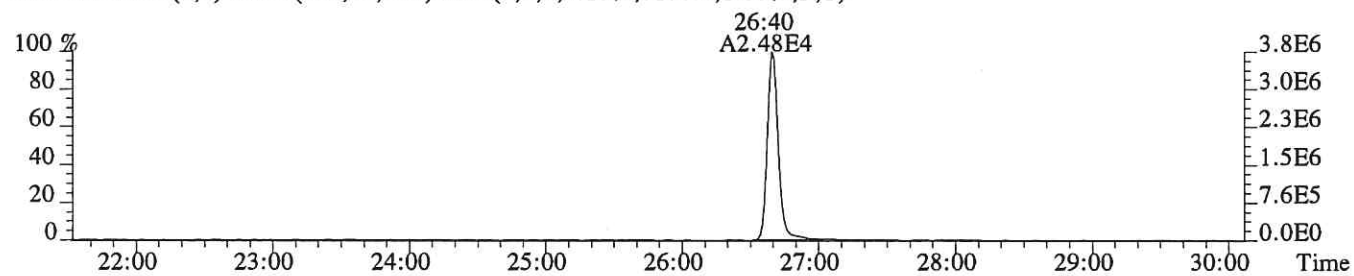
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,412.0,1.00%,F,T)



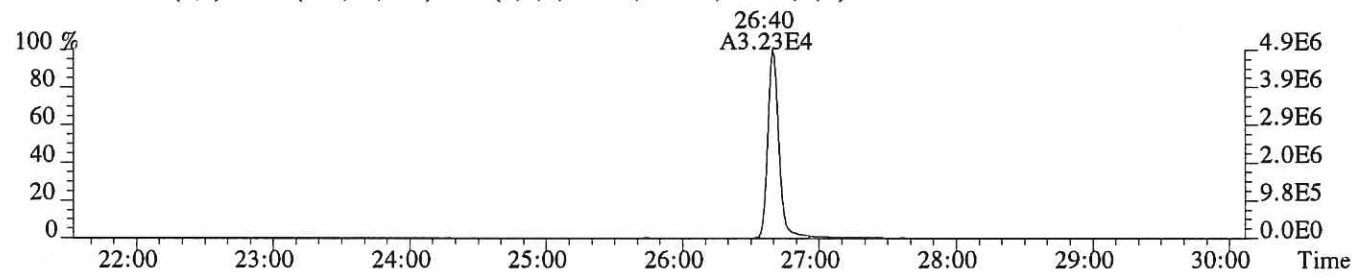
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1224.0,1.00%,F,T)



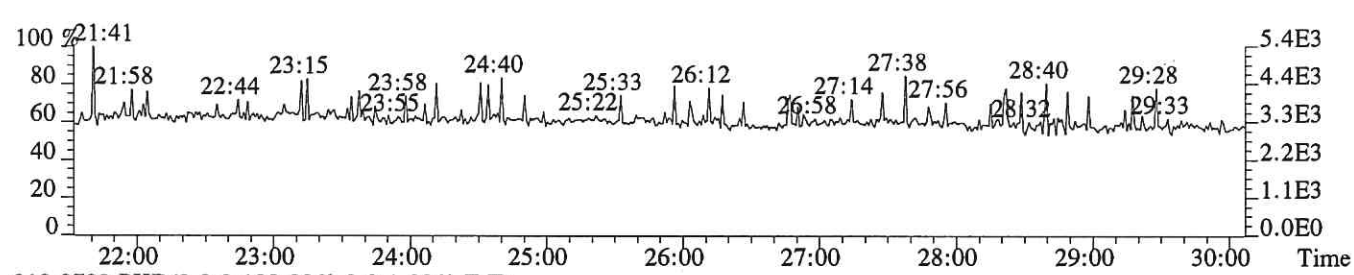
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,7176.0,1.00%,F,T)



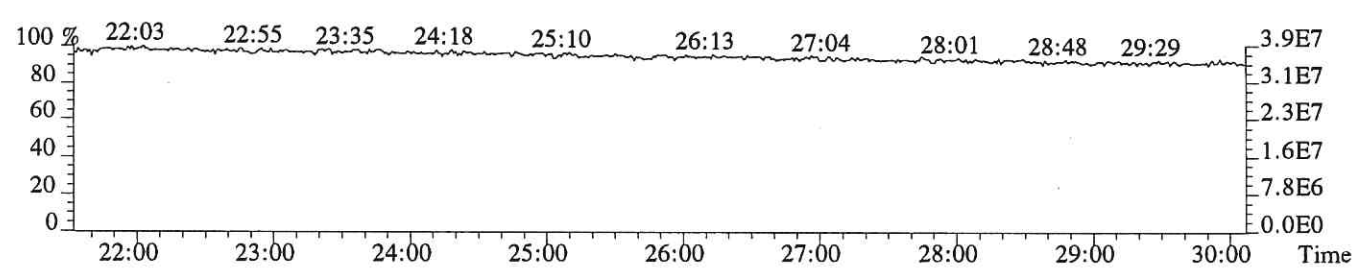
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2744.0,1.00%,F,T)



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

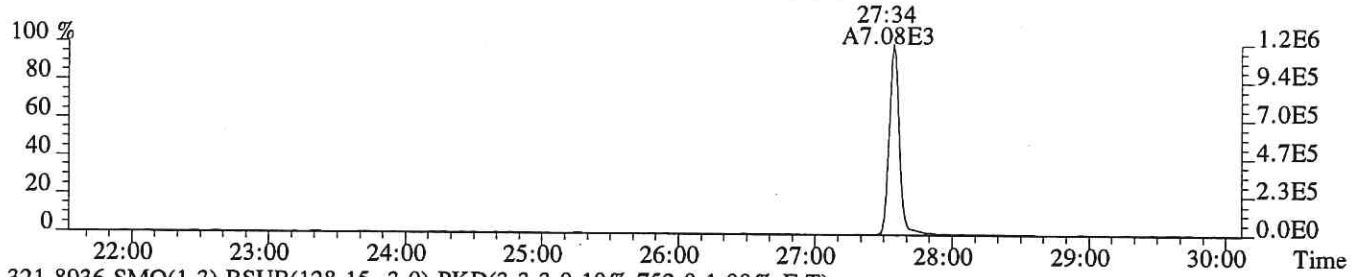


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

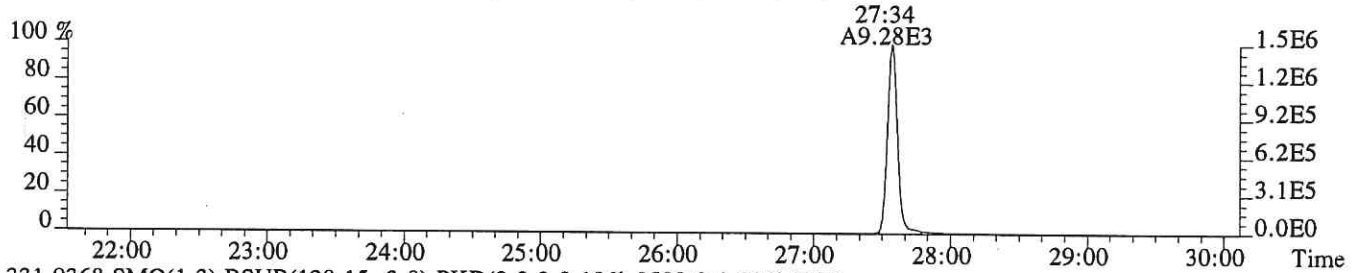


Sample#1 Exp:CS4

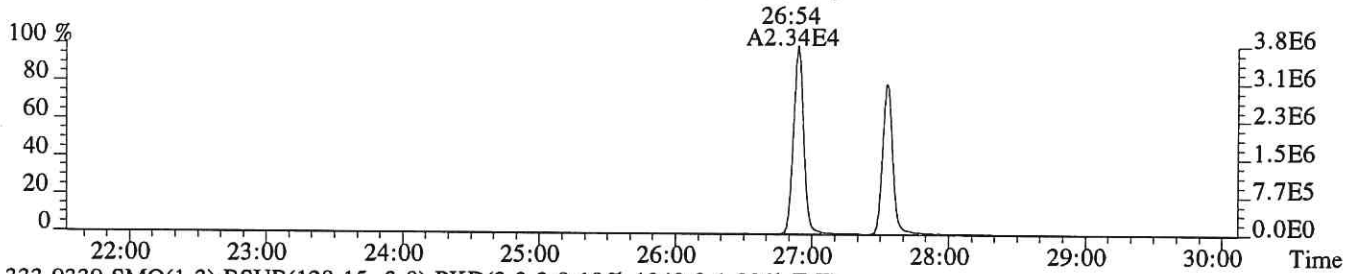
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1528.0,1.00%,F,T)



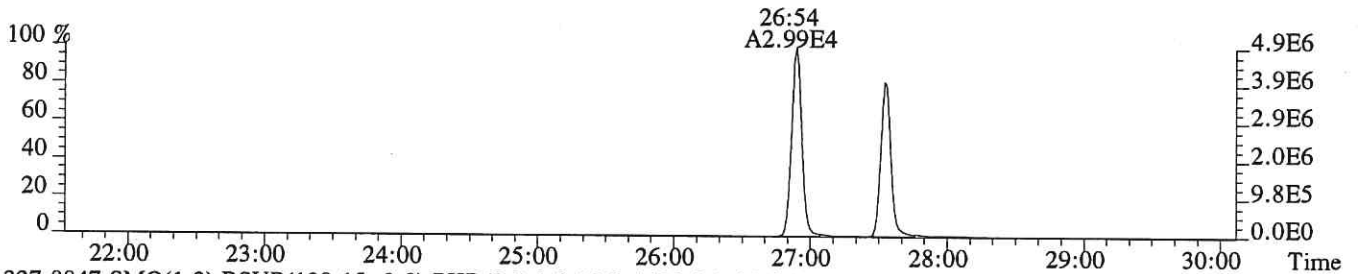
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,752.0,1.00%,F,T)



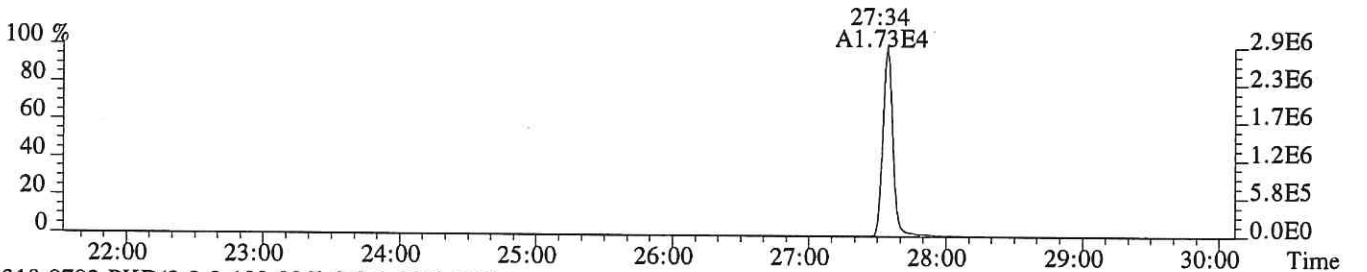
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3588.0,1.00%,F,T)



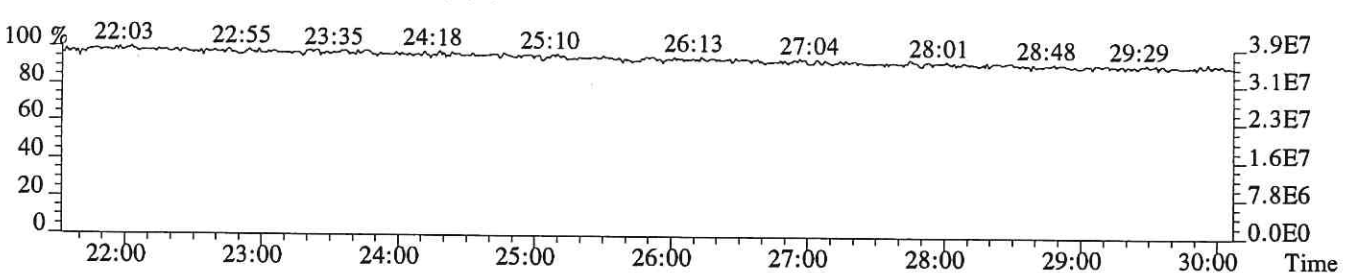
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1340.0,1.00%,F,T)



327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1680.0,1.00%,F,T)



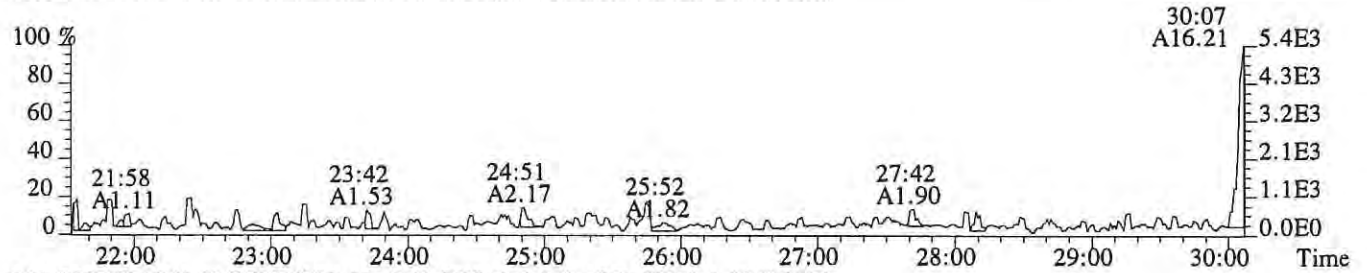
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



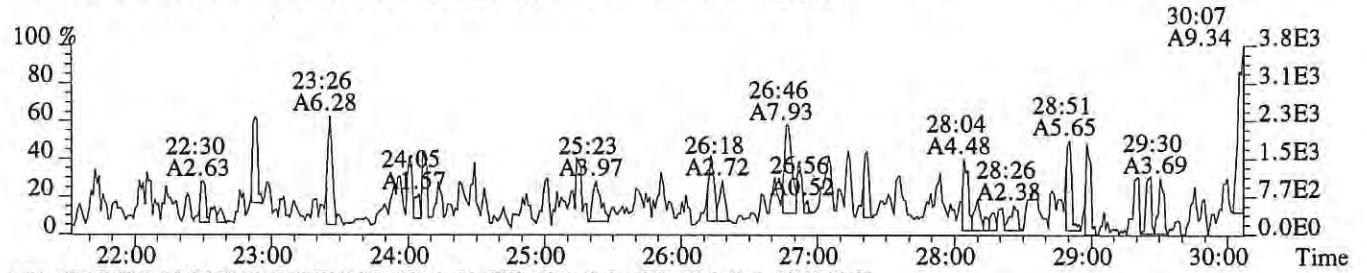
File:P618238 #1-609 Acq: 1-AUG-2019 17:42:41 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:CS4

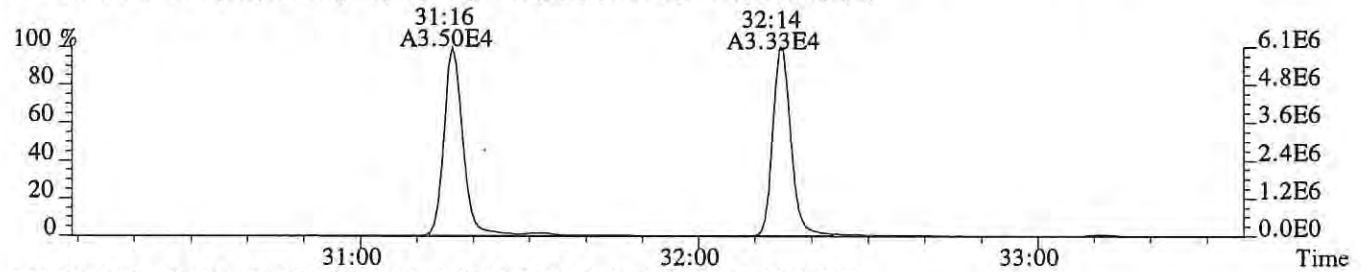
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,332.0,1.00%,F,T)



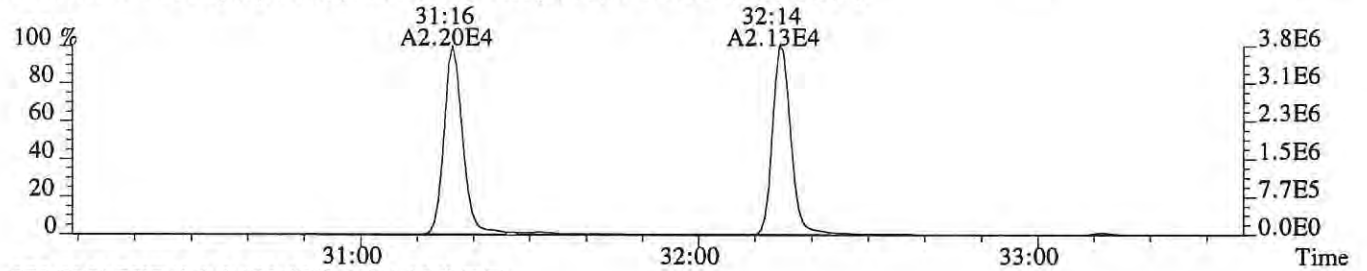
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,588.0,1.00%,F,T)



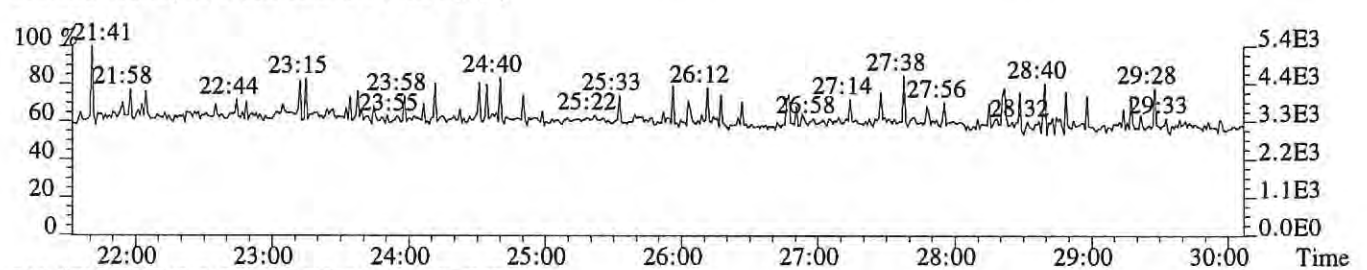
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,648.0,1.00%,F,T)



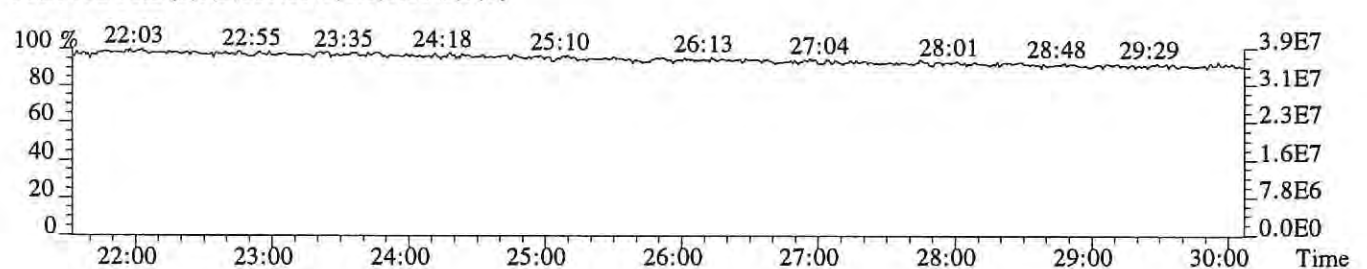
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,72.0,1.00%,F,T)



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

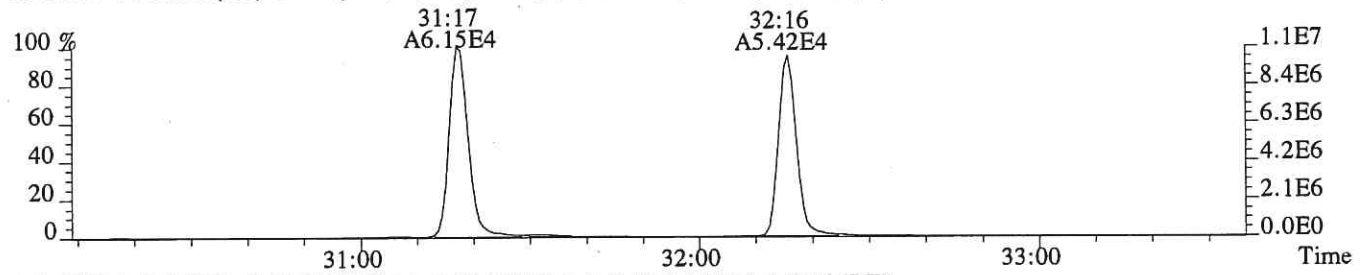


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

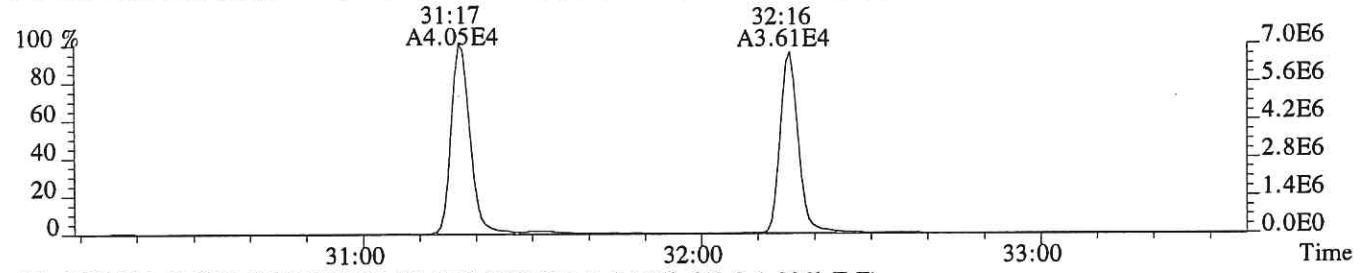


Sample#1 Exp:CS4

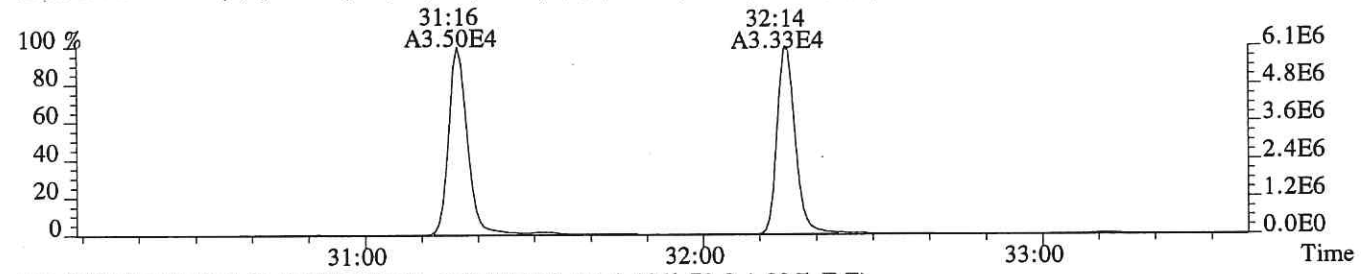
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1228.0,1.00%,F,T)



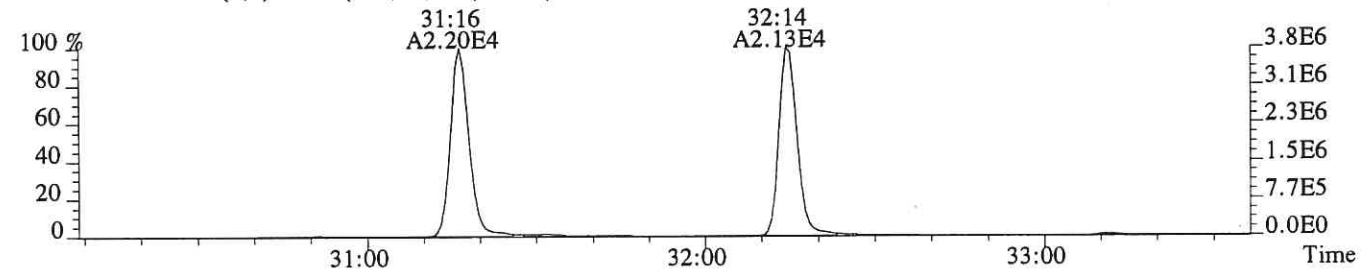
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1076.0,1.00%,F,T)



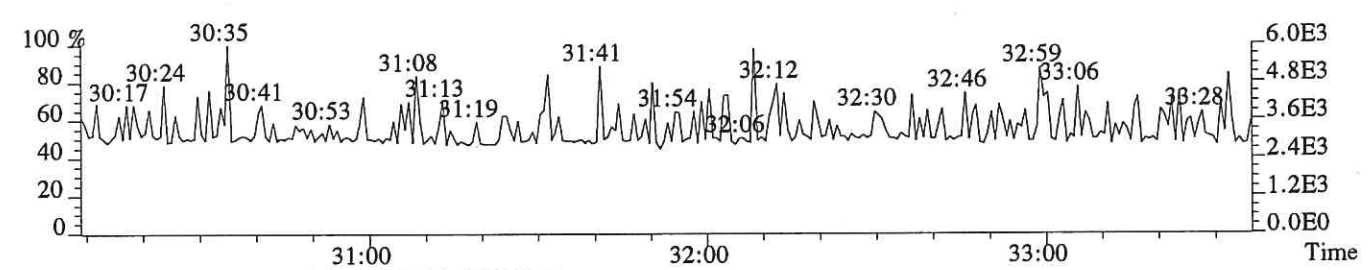
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,648.0,1.00%,F,T)



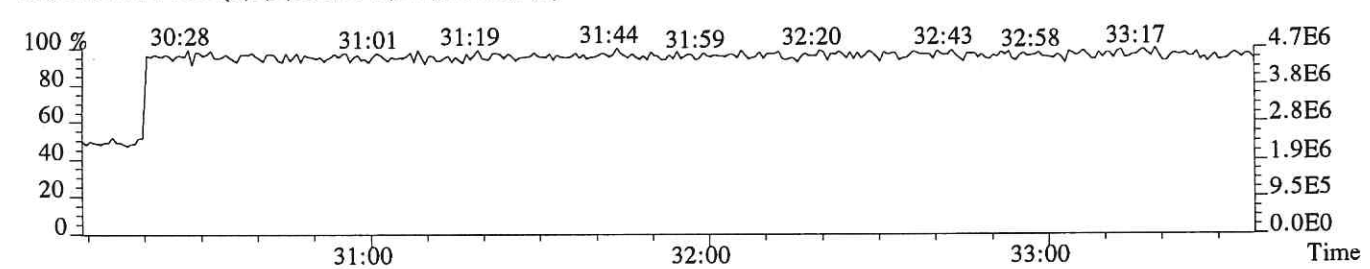
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,72.0,1.00%,F,T)



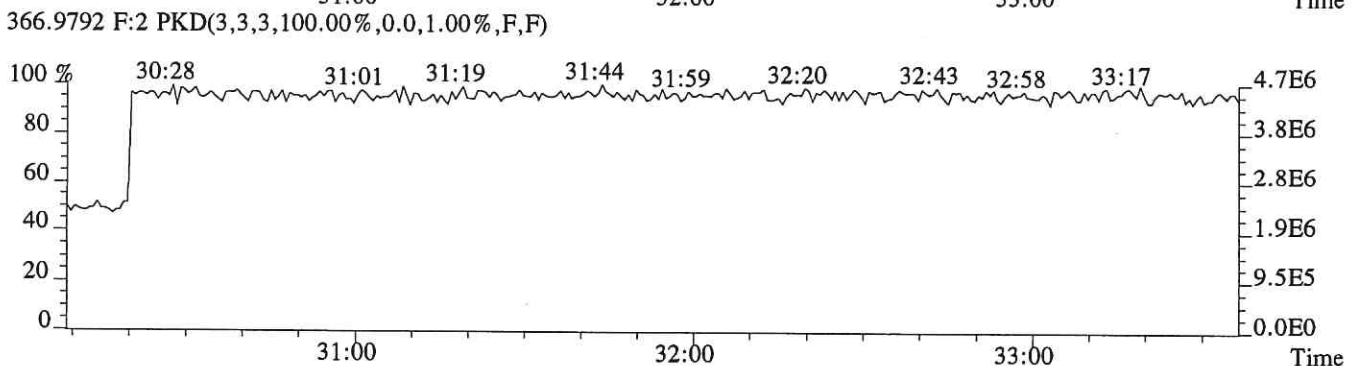
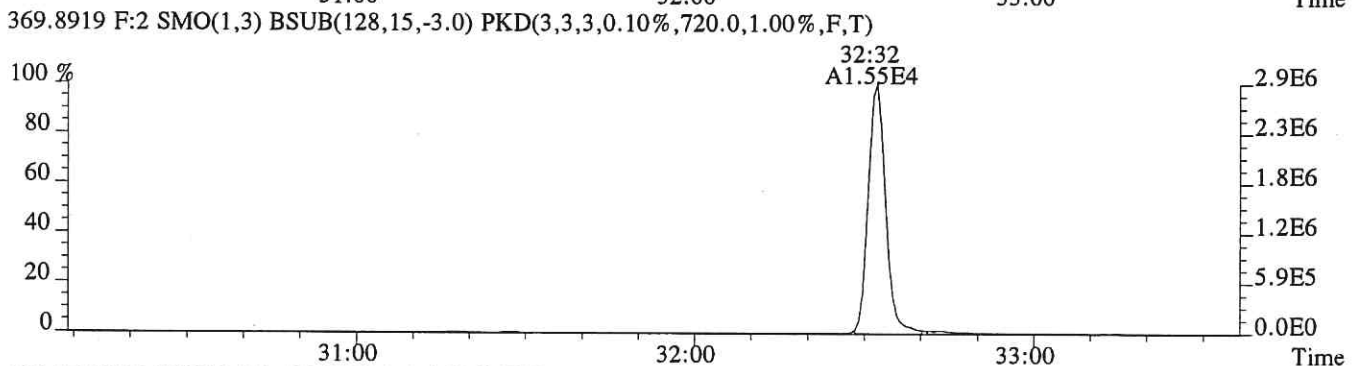
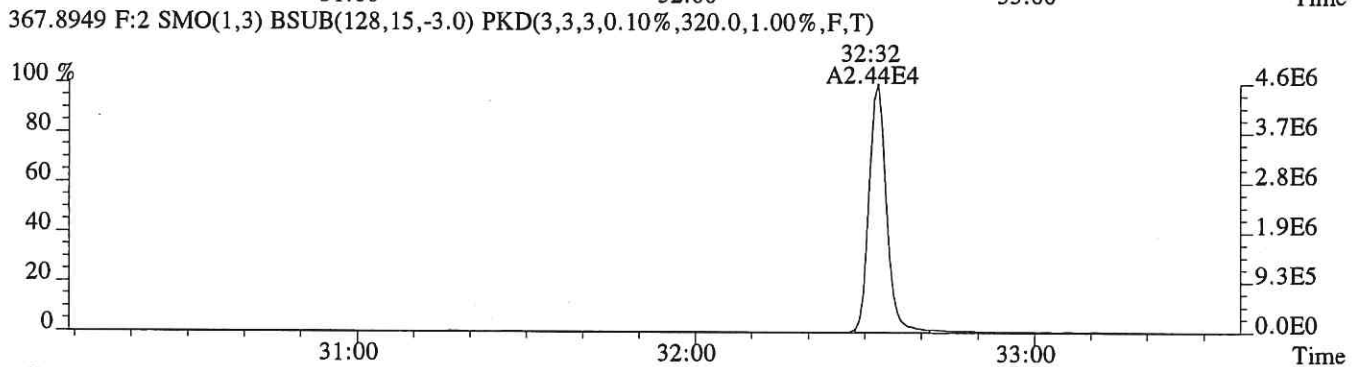
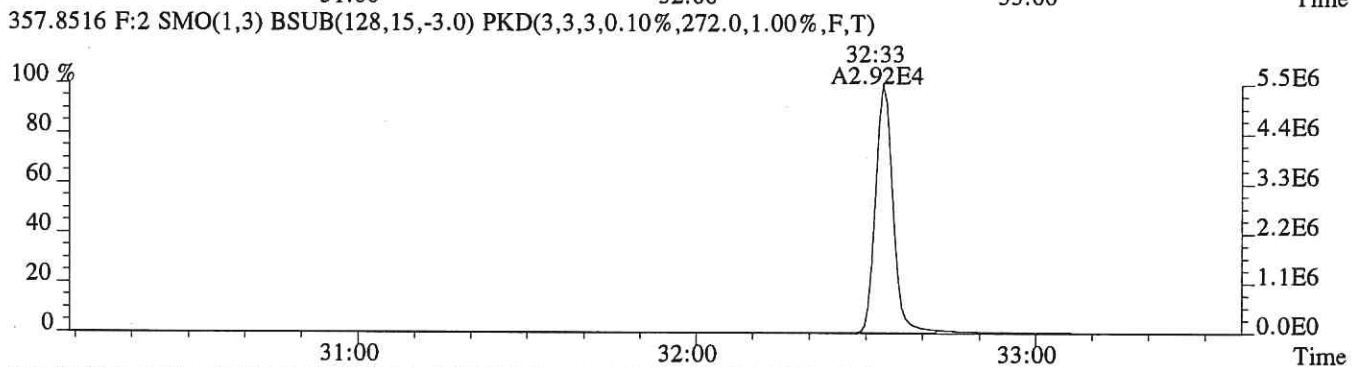
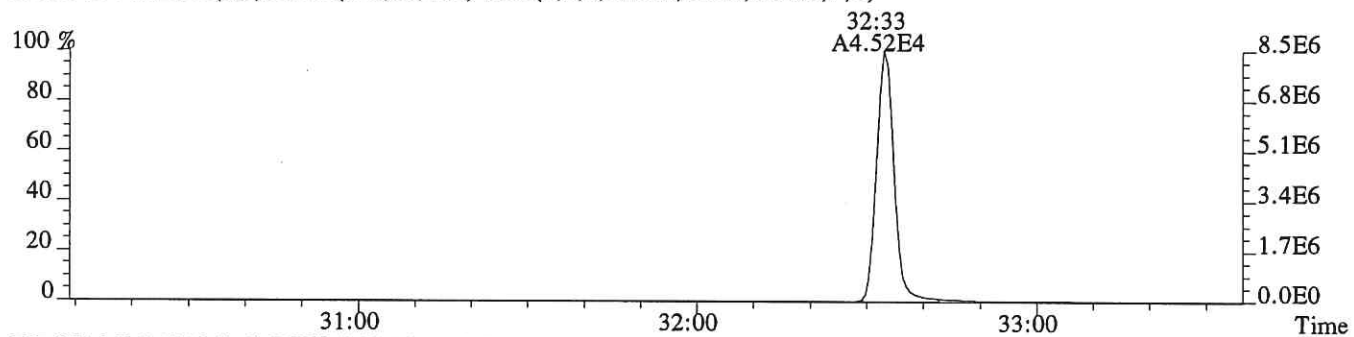
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



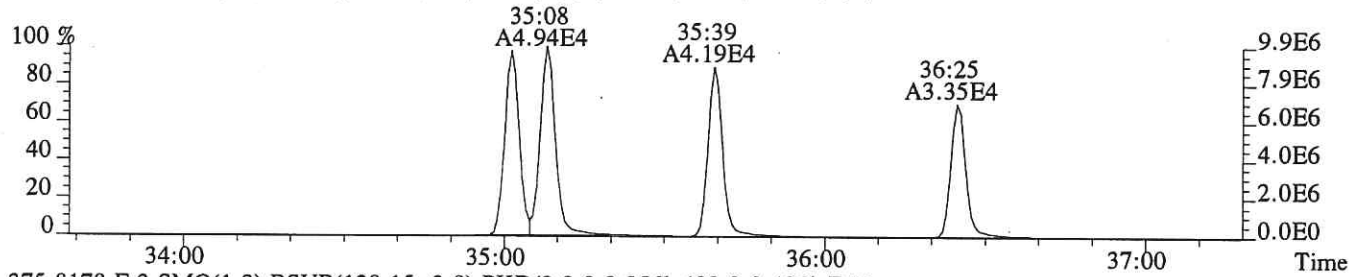
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



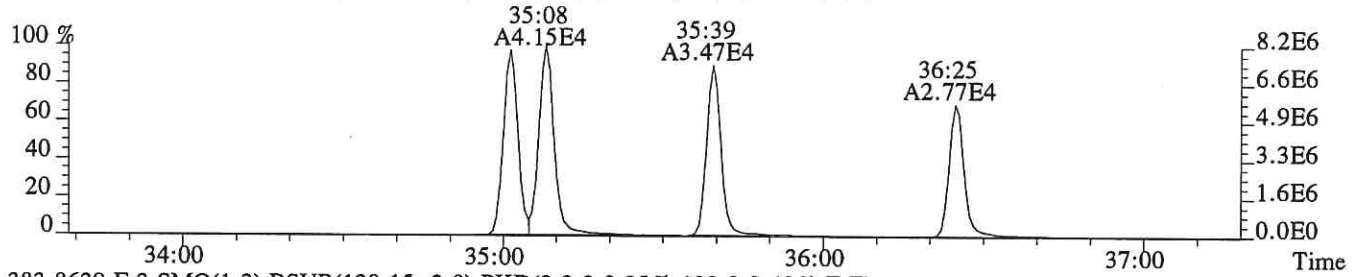
File:P618238 #1-312 Acq: 1-AUG-2019 17:42:41 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS4
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,416.0,1.00%,F,T)



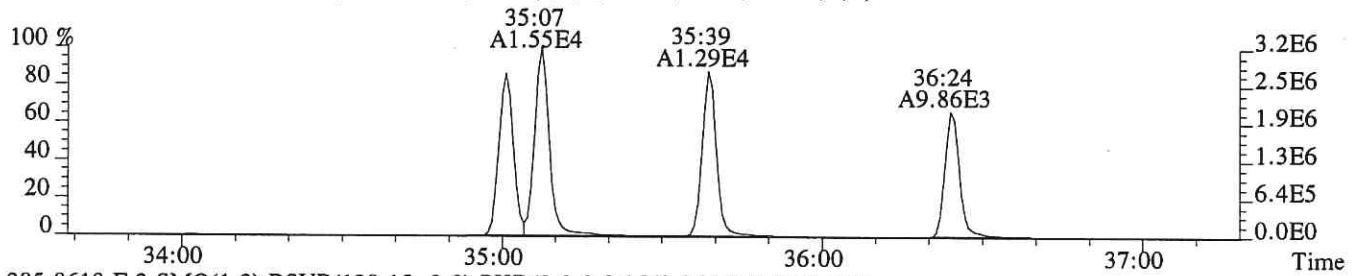
File:P618238 #1-330 Acq: 1-AUG-2019 17:42:41 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS4
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,372.0,0.40%,F,T)



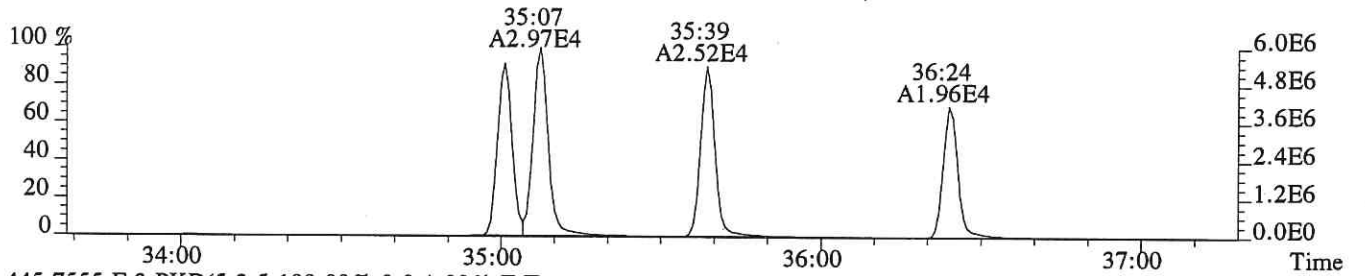
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,408.0,0.40%,F,T)



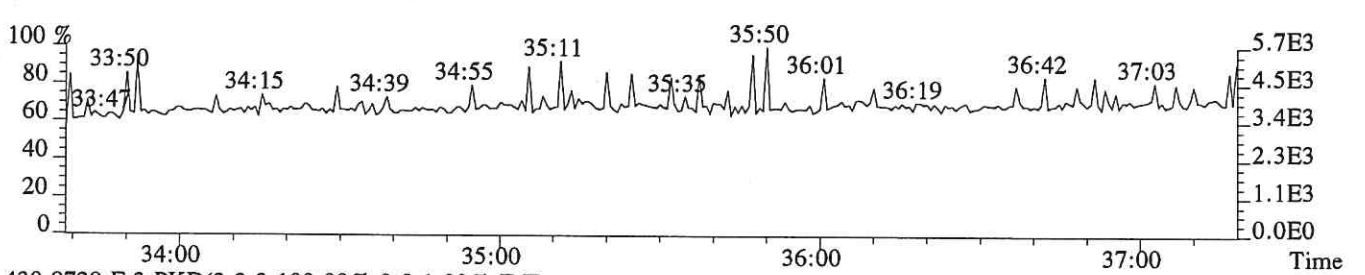
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,192.0,0.40%,F,T)



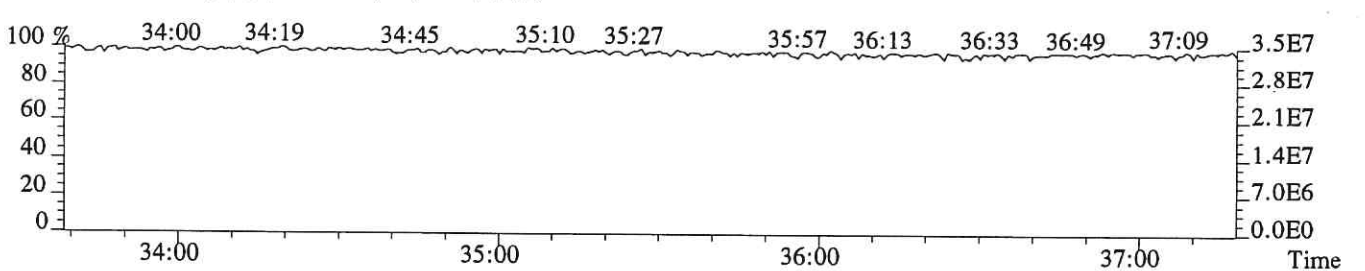
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,864.0,0.40%,F,T)



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



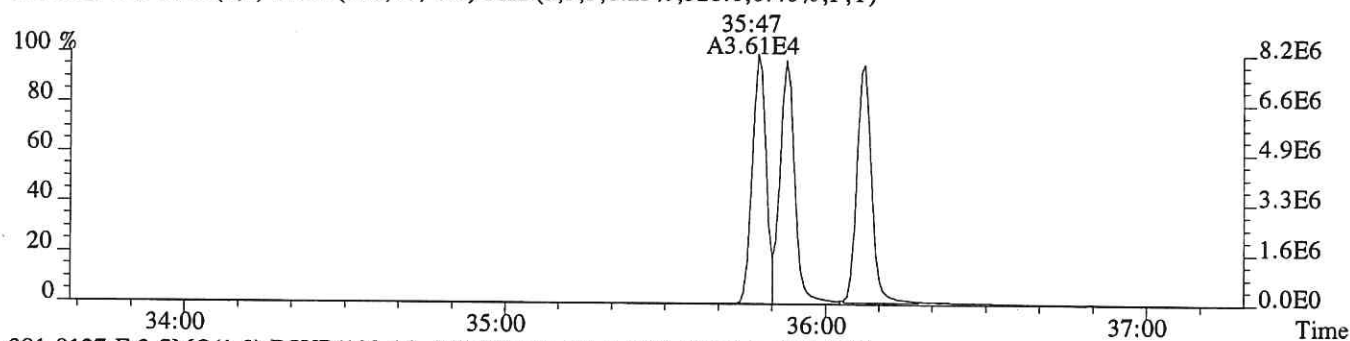
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



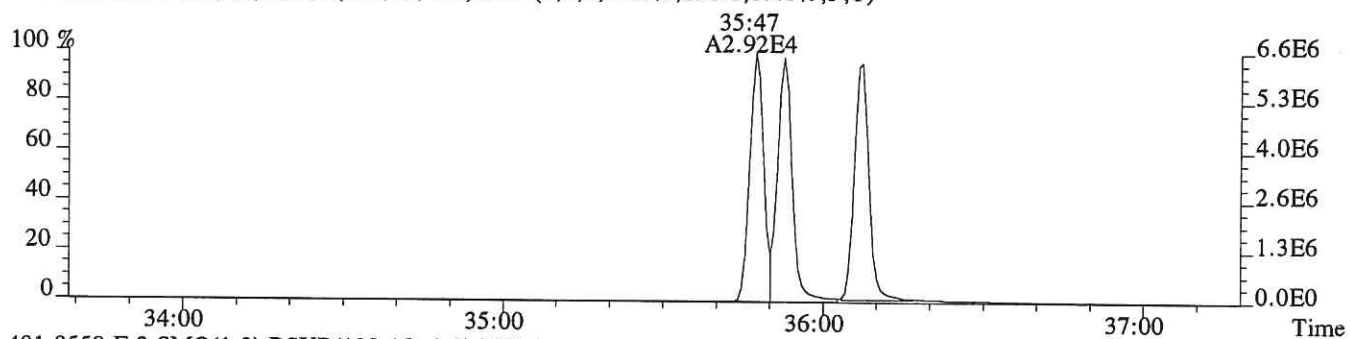
File:P618238 #1-330 Acq: 1-AUG-2019 17:42:41 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:CS4

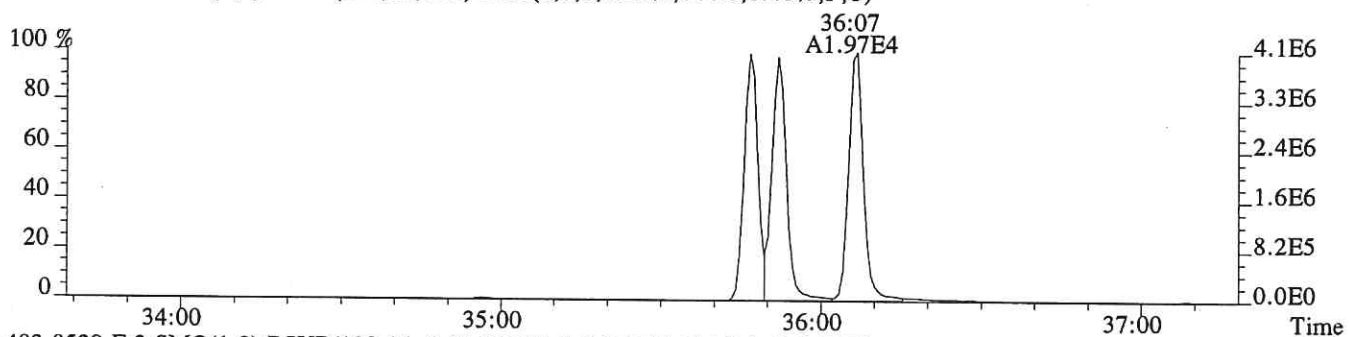
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,328.0,0.40%,F,T)



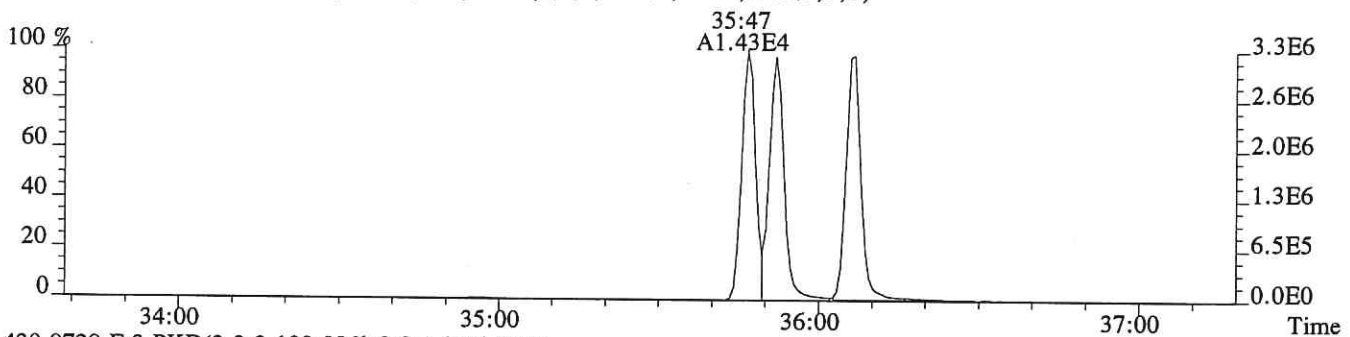
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,256.0,0.40%,F,T)



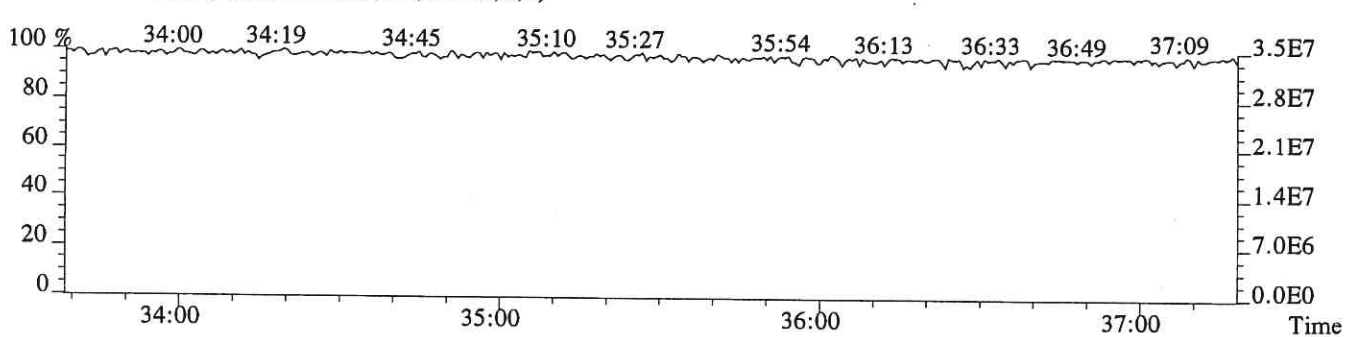
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,644.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,544.0,0.40%,F,T)



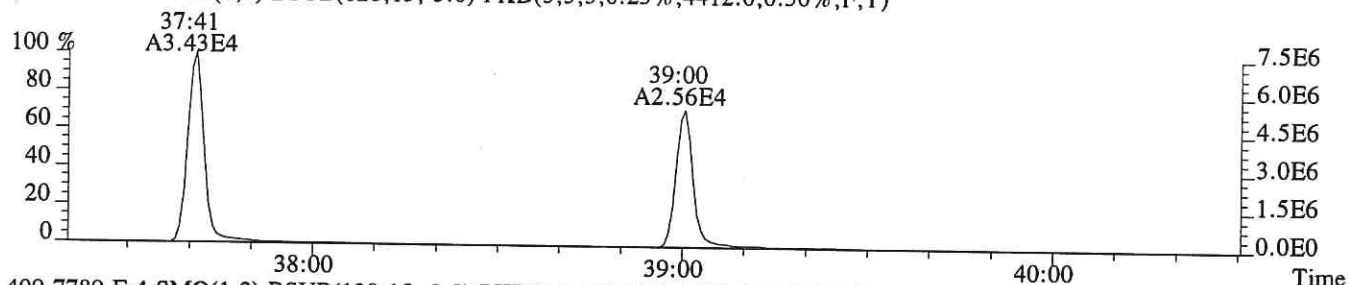
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



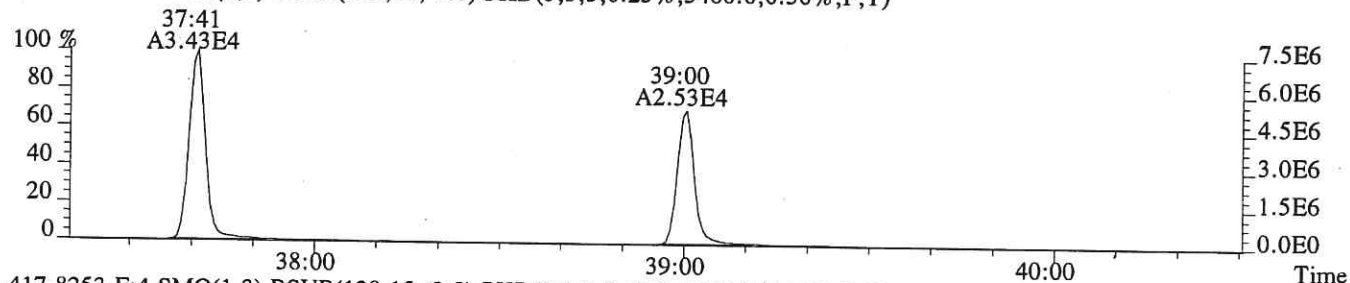
File:P618238 #1-286 Acq: 1-AUG-2019 17:42:41 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:CS4

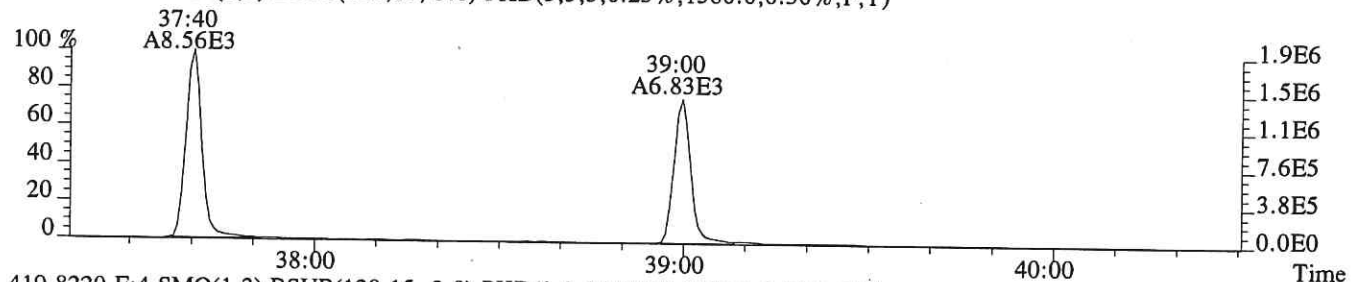
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4412.0,0.50%,F,T)



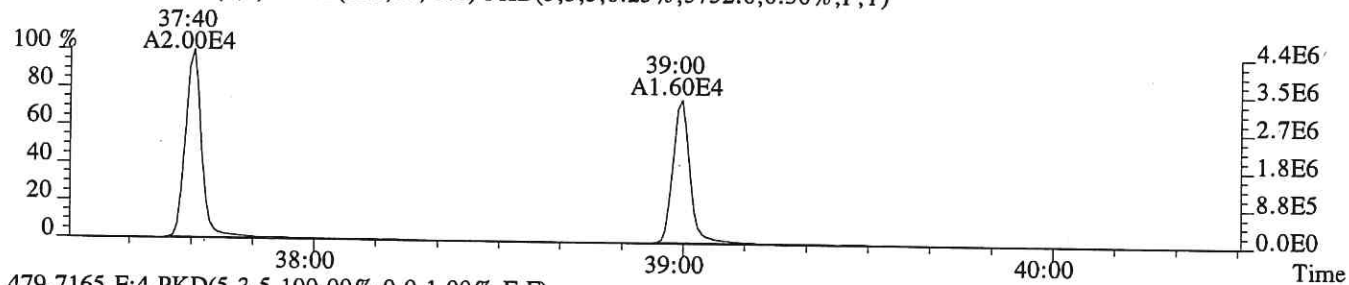
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5460.0,0.50%,F,T)



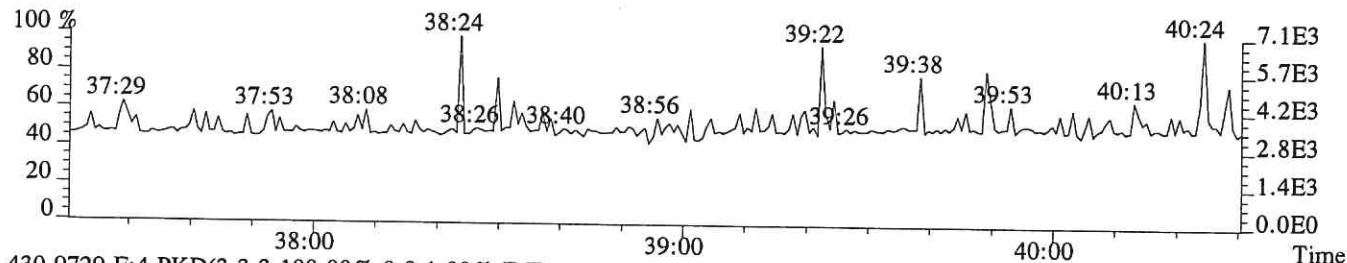
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1580.0,0.50%,F,T)



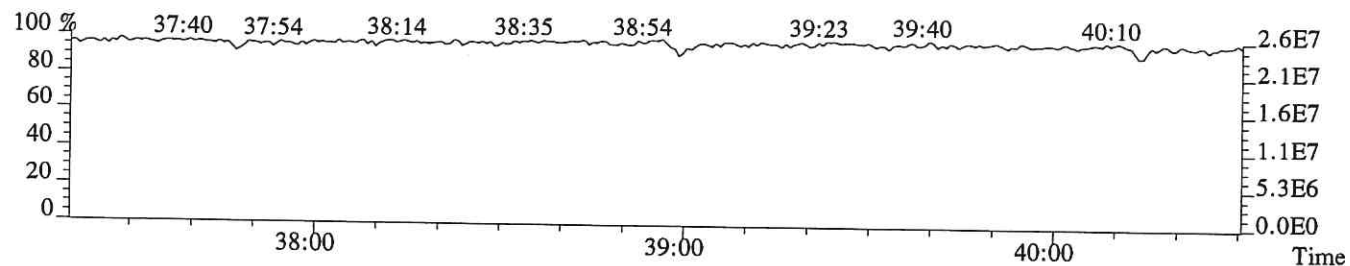
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3752.0,0.50%,F,T)



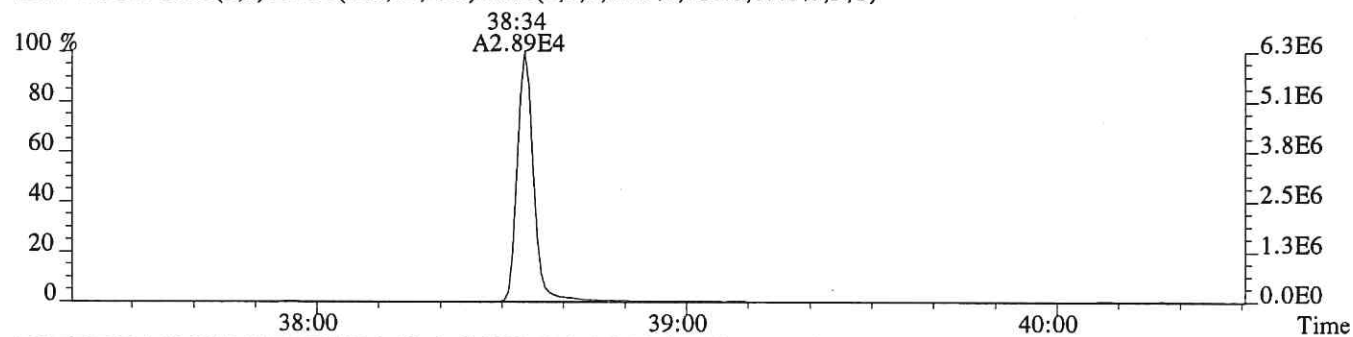
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



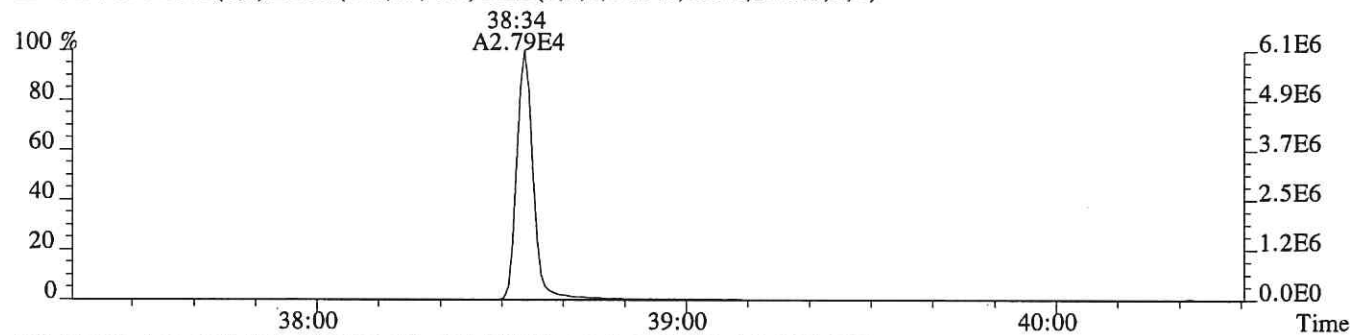
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



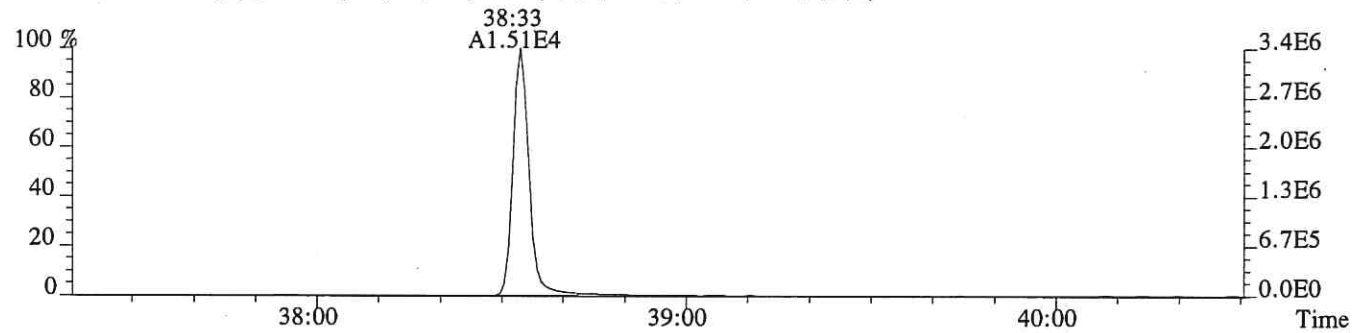
File:P618238 #1-286 Acq: 1-AUG-2019 17:42:41 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS4
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,716.0,0.40%,F,T)



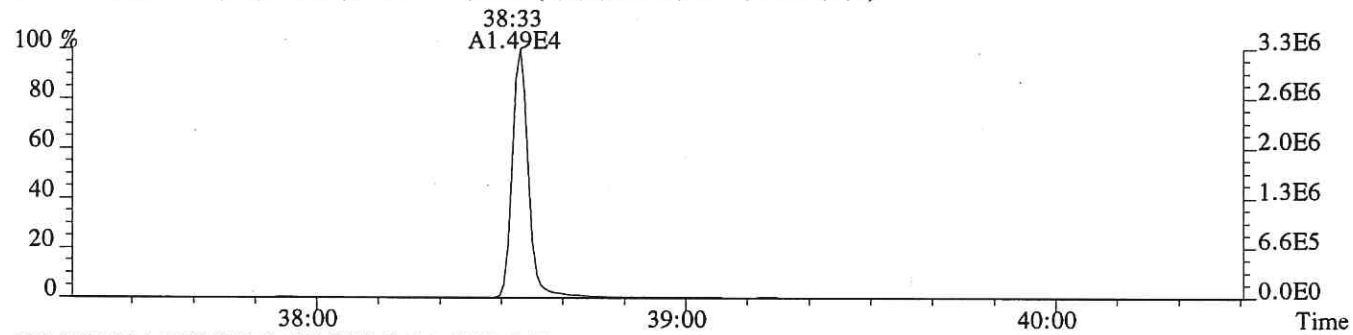
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,456.0,0.40%,F,T)



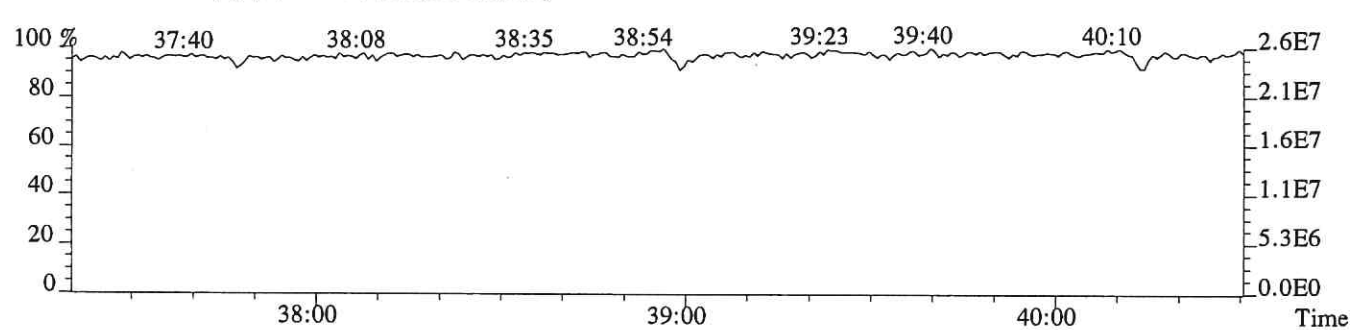
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,520.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,368.0,0.40%,F,T)

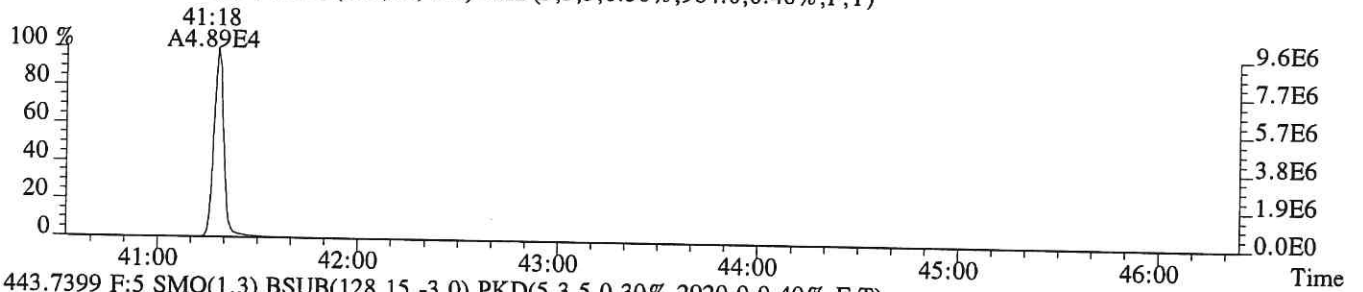


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

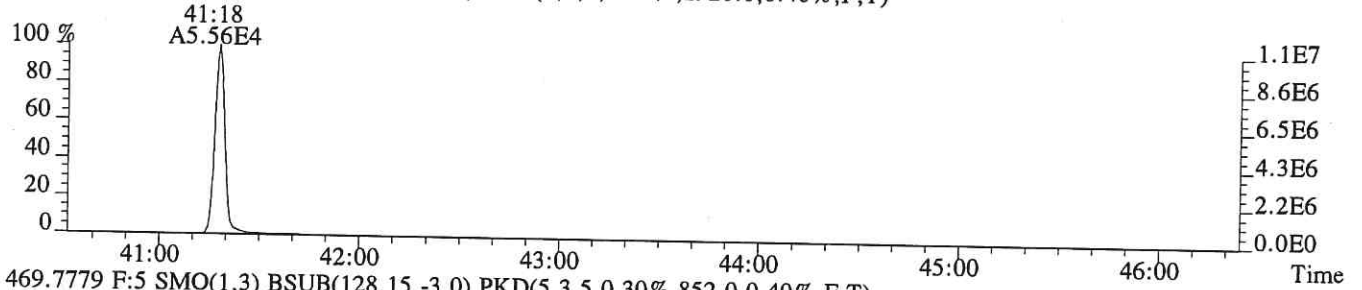


File:P618238 #1-528 Acq: 1-AUG-2019 17:42:41 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS4

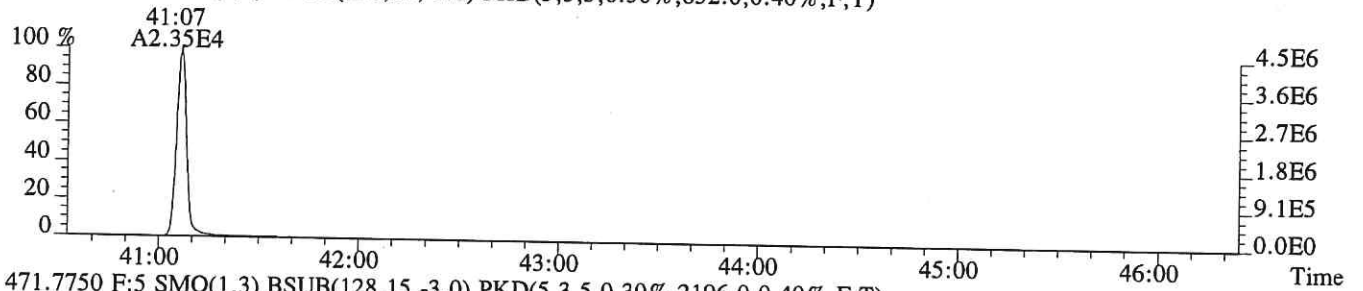
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,964.0,0.40%,F,T)



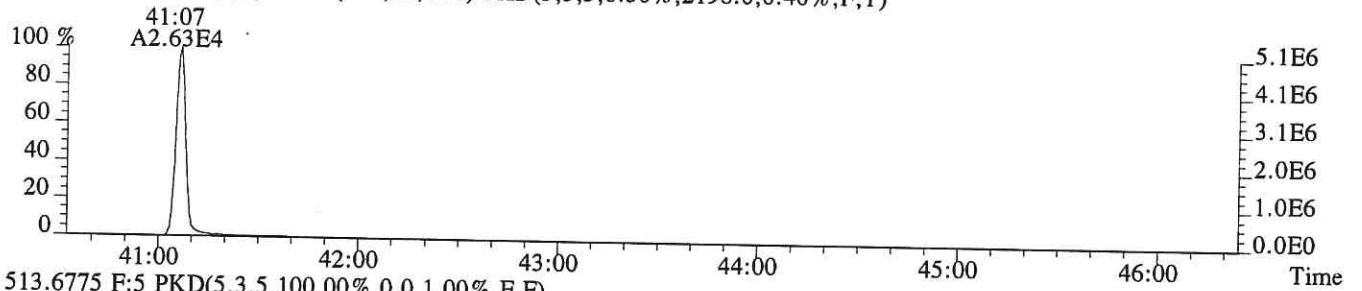
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2920.0,0.40%,F,T)



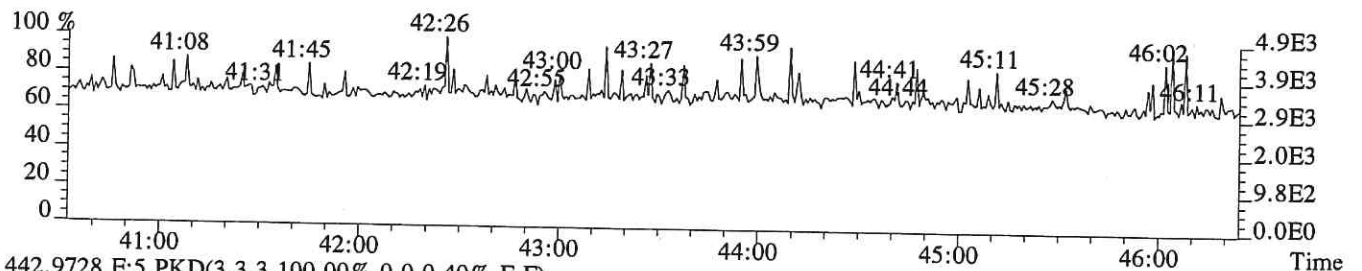
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,852.0,0.40%,F,T)



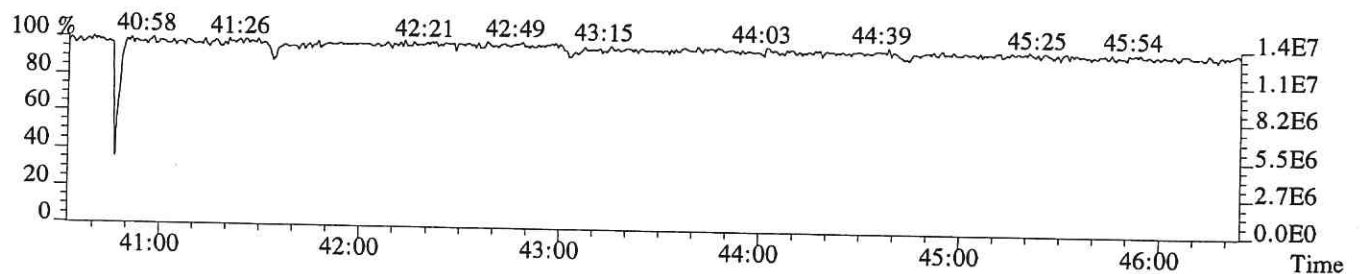
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2196.0,0.40%,F,T)



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



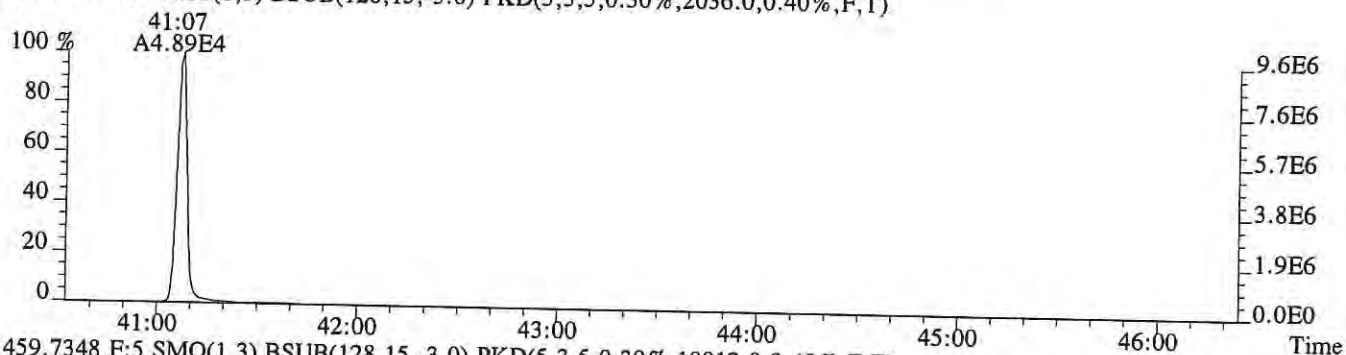
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



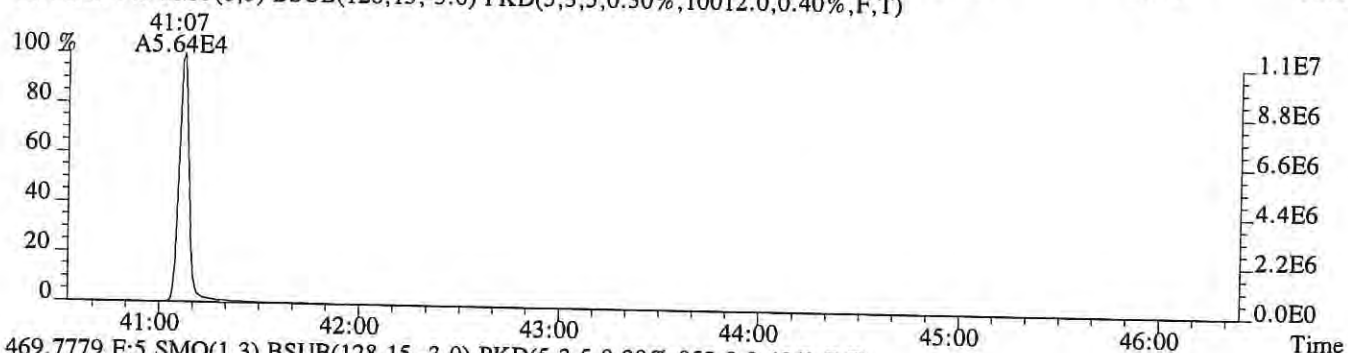
File:P618238 #1-528 Acq: 1-AUG-2019 17:42:41 Probe EI+ Magnet SIR VG BioTech Mass spectE

Sample#1 Exp:CS4

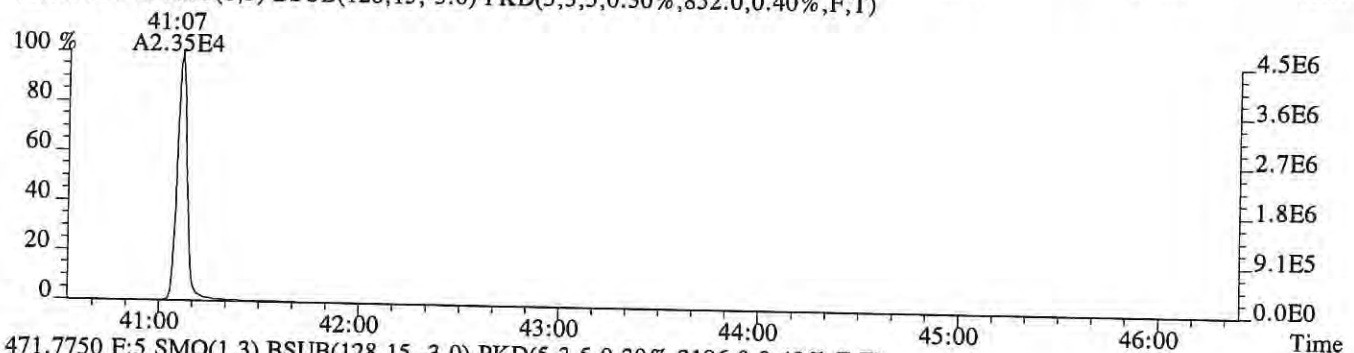
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2036.0,0.40%,F,T)



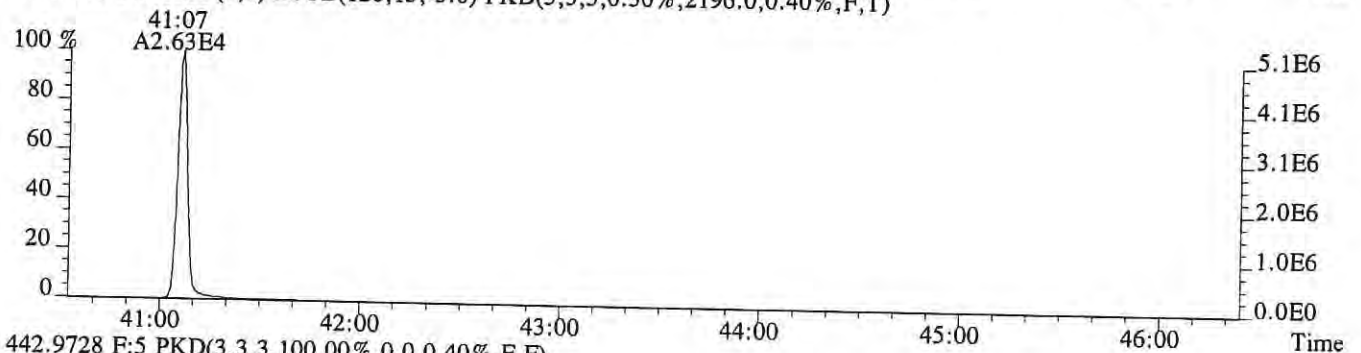
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,10012.0,0.40%,F,T)



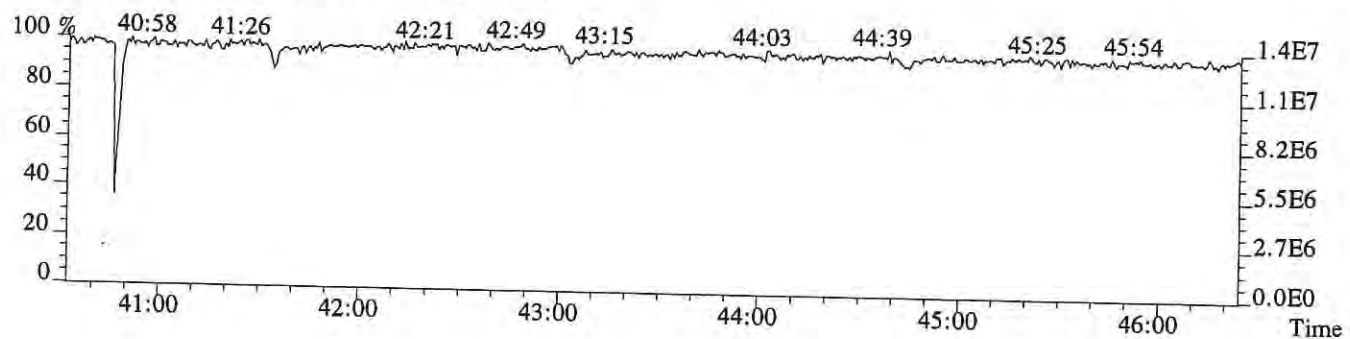
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,852.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2196.0,0.40%,F,T)



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



ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
185657

Run #6 Filename P618239 Samp: 1 Inj: 1 Acquired: 1-AUG-19 18:31:50
Processed: 2-AUG-19 09:23:29 Sample ID: CS5

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	26:40	4.865e+04	6.481e+04	0.75	yes	no	0.873
2 Unk	1,2,3,7,8-PeCDF	31:16	3.846e+05	2.525e+05	1.52	yes	no	0.864
3 Unk	2,3,4,7,8-PeCDF	32:15	3.319e+05	2.223e+05	1.49	yes	no	0.825
4 Unk	1,2,3,4,7,8-HxCDF	35:01	2.932e+05	2.438e+05	1.20	yes	no	1.084
5 Unk	1,2,3,6,7,8-HxCDF	35:07	3.160e+05	2.611e+05	1.21	yes	no	0.994
6 Unk	2,3,4,6,7,8-HxCDF	35:39	2.730e+05	2.281e+05	1.20	yes	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	36:24	2.180e+05	1.811e+05	1.20	yes	no	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	37:40	2.245e+05	2.231e+05	1.01	yes	no	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	39:00	1.624e+05	1.604e+05	1.01	yes	no	1.104
10 Unk	OCDF	41:18	3.096e+05	3.516e+05	0.88	yes	no	0.993
11 Unk	2,3,7,8-TCDD	27:34	4.458e+04	5.755e+04	0.77	yes	no	0.989
12 Unk	1,2,3,7,8-PeCDD	32:32	2.783e+05	1.790e+05	1.55	yes	no	0.954
13 Unk	1,2,3,4,7,8-HxCDD	35:47	2.382e+05	1.930e+05	1.23	yes	no	1.020
14 Unk	1,2,3,6,7,8-HxCDD	35:52	2.550e+05	2.048e+05	1.25	yes	no	1.030
15 Unk	1,2,3,7,8,9-HxCDD	36:07	2.458e+05	2.081e+05	1.18	yes	no	1.007
16 Unk	1,2,3,4,6,7,8-HpCDD	38:33	1.849e+05	1.819e+05	1.02	yes	no	0.922
17 Unk	OCDD	41:07	3.160e+05	3.612e+05	0.87	yes	no	1.062
18 IS	13C-2,3,7,8-TCDF	26:39	2.917e+04	3.744e+04	0.78	yes	no	1.102
19 IS	13C-1,2,3,7,8-PeCDF	31:16	4.321e+04	2.751e+04	1.57	yes	no	1.074
20 IS	13C-2,3,4,7,8-PeCDF	32:14	4.029e+04	2.566e+04	1.57	yes	no	1.005
21 IS	13C-1,2,3,4,7,8-HxCDF	35:00	1.677e+04	3.227e+04	0.52	yes	no	1.059
22 IS	13C-1,2,3,6,7,8-HxCDF	35:07	1.972e+04	3.743e+04	0.53	yes	no	1.264
23 IS	13C-2,3,4,6,7,8-HxCDF	35:38	1.670e+04	3.254e+04	0.51	yes	no	1.066
24 IS	13C-1,2,3,7,8,9-HxCDF	36:23	1.288e+04	2.491e+04	0.52	yes	no	0.801
25 IS	13C-1,2,3,4,6,7,8-HpCDF	37:40	1.134e+04	2.618e+04	0.43	yes	no	0.789
26 IS	13C-1,2,3,4,7,8,9-HpCDF	38:59	8.557e+03	2.005e+04	0.43	yes	no	0.590
27 IS	13C-2,3,7,8-TCDD	27:33	2.276e+04	2.953e+04	0.77	yes	no	0.839
28 IS	13C-1,2,3,7,8-PeCDD	32:32	2.989e+04	1.920e+04	1.56	yes	no	0.744
29 IS	13C-1,2,3,4,7,8-HxCDD	35:46	2.365e+04	1.903e+04	1.24	yes	no	0.907
30 IS	13C-1,2,3,6,7,8-HxCDD	35:51	2.517e+04	1.974e+04	1.27	yes	no	0.978
31 IS	13C-1,2,3,4,6,7,8-HpCDD	38:32	1.983e+04	1.846e+04	1.07	yes	no	0.814
32 IS	13C-OCDD	41:06	2.976e+04	3.293e+04	0.90	yes	no	0.653
33 RS/RT	13C-1,2,3,4-TCDD	26:53	2.507e+04	3.301e+04	0.76	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	36:06	2.650e+04	2.131e+04	1.24	yes	no	-
35 C/Up	37Cl-2,3,7,8-TCDD	27:34	1.059e+05				no	0.894

ALS ENVIRONMENTAL
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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
185657

Run #6 Filename P618239 Samp: 1 Inj: 1 Acquired: 1-AUG-19 18:31:50
Processed: 2-AUG-19 09:23:29 LAB. ID: CS5

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	7.60e+06	2.28e+02	3.3e+04	1.00e+07	8.12e+02	1.2e+04
2	1,2,3,7,8-PeCDF	6.75e+07	7.58e+04	8.9e+02	4.48e+07	8.24e+04	5.4e+02
3	2,3,4,7,8-PeCDF	6.27e+07	7.58e+04	8.3e+02	4.20e+07	8.24e+04	5.1e+02
4	1,2,3,4,7,8-HxCDF	6.39e+07	8.52e+02	7.5e+04	5.33e+07	8.52e+02	6.3e+04
5	1,2,3,6,7,8-HxCDF	6.46e+07	8.52e+02	7.6e+04	5.40e+07	8.52e+02	6.3e+04
6	2,3,4,6,7,8-HxCDF	5.83e+07	8.52e+02	6.8e+04	4.89e+07	8.52e+02	5.7e+04
7	1,2,3,7,8,9-HxCDF	4.53e+07	8.52e+02	5.3e+04	3.79e+07	8.52e+02	4.4e+04
8	1,2,3,4,6,7,8-HpCDF	5.06e+07	7.04e+03	7.2e+03	4.98e+07	1.37e+04	3.6e+03
9	1,2,3,4,7,8,9-HpCDF	3.45e+07	7.04e+03	4.9e+03	3.38e+07	1.37e+04	2.5e+03
10	OCDF	6.05e+07	1.06e+04	5.7e+03	6.94e+07	9.67e+03	7.2e+03
11	2,3,7,8-TCDD	7.62e+06	1.12e+03	6.8e+03	9.87e+06	7.00e+02	1.4e+04
12	1,2,3,7,8-PeCDD	5.30e+07	1.92e+02	2.8e+05	3.43e+07	2.92e+02	1.2e+05
13	1,2,3,4,7,8-HxCDD	5.35e+07	2.36e+02	2.3e+05	4.35e+07	2.72e+02	1.6e+05
14	1,2,3,6,7,8-HxCDD	5.25e+07	2.36e+02	2.2e+05	4.25e+07	2.72e+02	1.6e+05
15	1,2,3,7,8,9-HxCDD	5.33e+07	2.36e+02	2.3e+05	4.34e+07	2.72e+02	1.6e+05
16	1,2,3,4,6,7,8-HpCDD	4.15e+07	1.12e+03	3.7e+04	4.06e+07	5.80e+02	7.0e+04
17	OCDD	6.25e+07	6.84e+03	9.1e+03	7.15e+07	1.60e+04	4.5e+03
18	13C-2,3,7,8-TCDF	4.51e+06	7.63e+03	5.9e+02	5.85e+06	3.49e+03	1.7e+03
19	13C-1,2,3,7,8-PeCDF	7.61e+06	1.26e+03	6.0e+03	4.85e+06	1.03e+03	4.7e+03
20	13C-2,3,4,7,8-PeCDF	7.39e+06	1.26e+03	5.9e+03	4.71e+06	1.03e+03	4.6e+03
21	13C-1,2,3,4,7,8-HxCDF	3.62e+06	6.00e+02	6.0e+03	7.01e+06	1.08e+03	6.5e+03
22	13C-1,2,3,6,7,8-HxCDF	4.04e+06	6.00e+02	6.7e+03	7.71e+06	1.08e+03	7.1e+03
23	13C-2,3,4,6,7,8-HxCDF	3.58e+06	6.00e+02	6.0e+03	6.99e+06	1.08e+03	6.5e+03
24	13C-1,2,3,7,8,9-HxCDF	2.72e+06	6.00e+02	4.5e+03	5.34e+06	1.08e+03	4.9e+03
25	13C-1,2,3,4,6,7,8-HpCDF	2.53e+06	3.08e+03	8.2e+02	5.85e+06	2.65e+03	2.2e+03
26	13C-1,2,3,4,7,8,9-HpCDF	1.82e+06	3.08e+03	5.9e+02	4.23e+06	2.65e+03	1.6e+03
27	13C-2,3,7,8-TCDD	3.78e+06	4.10e+03	9.2e+02	5.00e+06	1.59e+03	3.1e+03
28	13C-1,2,3,7,8-PeCDD	5.73e+06	5.12e+02	1.1e+04	3.62e+06	3.56e+02	1.0e+04
29	13C-1,2,3,4,7,8-HxCDD	5.26e+06	1.31e+03	4.0e+03	4.28e+06	6.56e+02	6.5e+03
30	13C-1,2,3,6,7,8-HxCDD	5.18e+06	1.31e+03	4.0e+03	4.11e+06	6.56e+02	6.3e+03
31	13C-1,2,3,4,6,7,8-HpCDD	4.42e+06	5.04e+02	8.8e+03	4.16e+06	4.52e+02	9.2e+03
32	13C-OCDD	5.73e+06	2.56e+03	2.2e+03	6.40e+06	3.72e+03	1.7e+03
33	13C-1,2,3,4-TCDD	4.18e+06	4.10e+03	1.0e+03	5.44e+06	1.59e+03	3.4e+03
34	13C-1,2,3,7,8,9-HxCDD	5.68e+06	1.31e+03	4.3e+03	4.45e+06	6.56e+02	6.8e+03
35	37Cl-2,3,7,8-TCDD	1.83e+07	1.05e+03	1.7e+04			

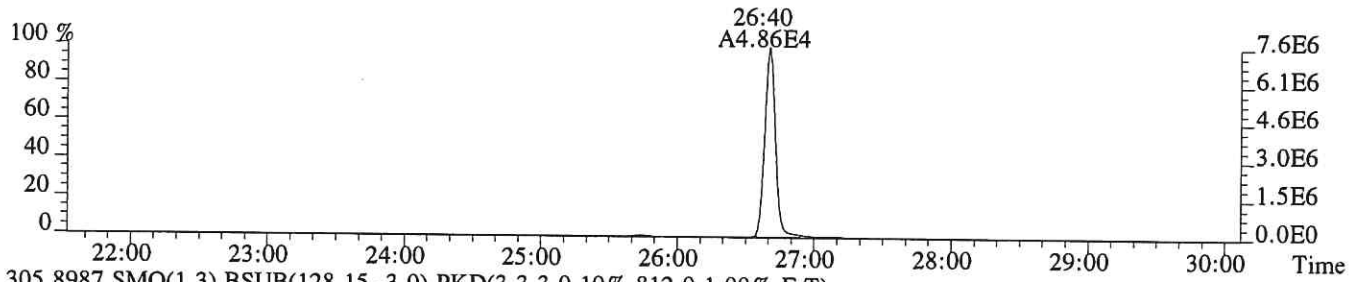
---Sample Calculation---

$$D/L \text{ TCDD} = \frac{2.5 \times (1.120e+03 + 7.000e+02) \times 100}{(3.783e+06 + 5.000e+06) \times (\quad) \times 0.989}$$

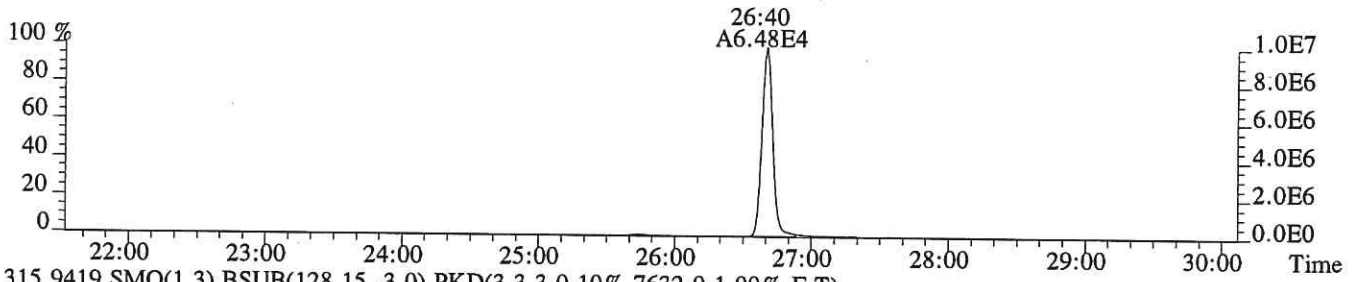
ALS ENVIRONMENTAL
10450 Stancliff Rd., Suite 115
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File:P618239 #1-609 Acq: 1-AUG-2019 18:31:50 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS5

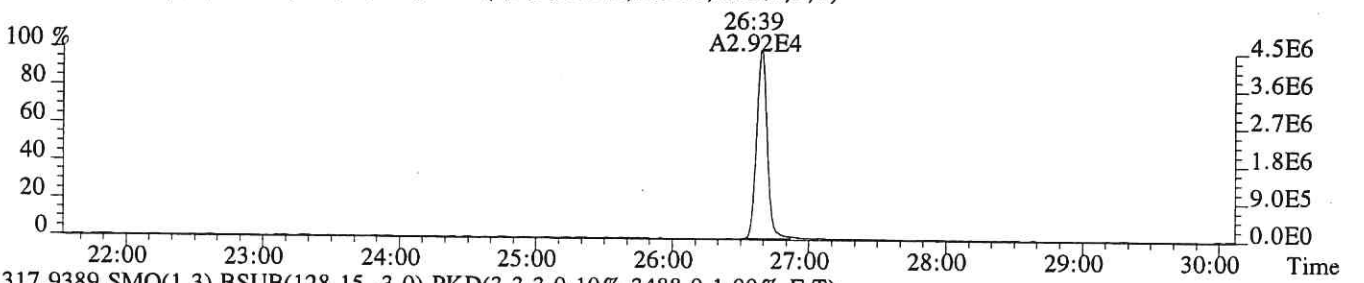
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,228.0,1.00%,F,T)



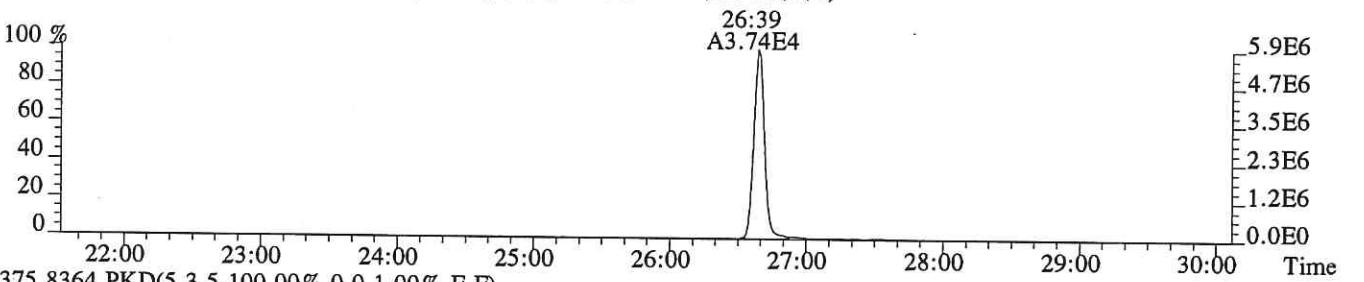
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,812.0,1.00%,F,T)



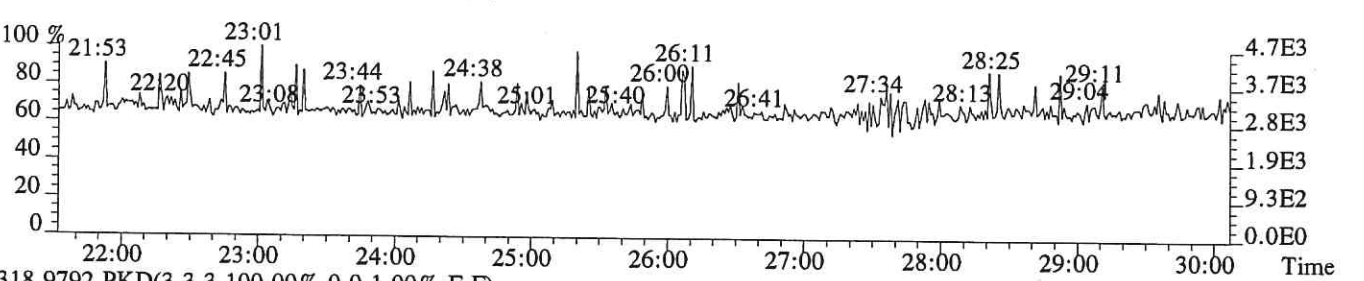
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,7632.0,1.00%,F,T)



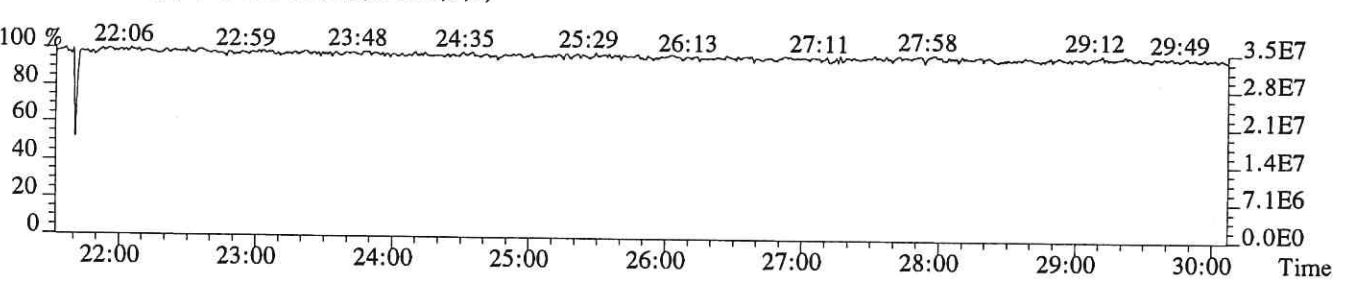
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3488.0,1.00%,F,T)



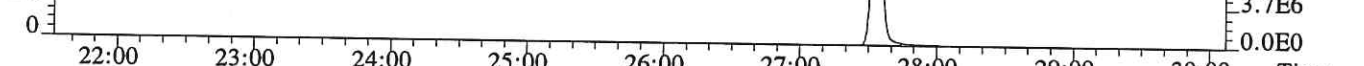
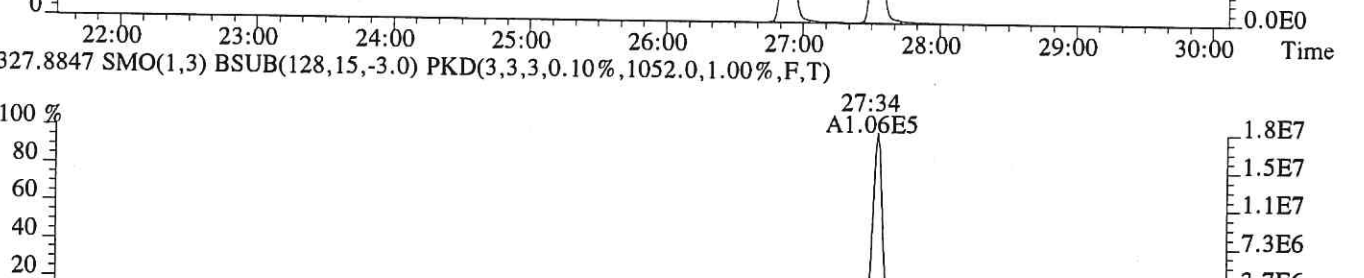
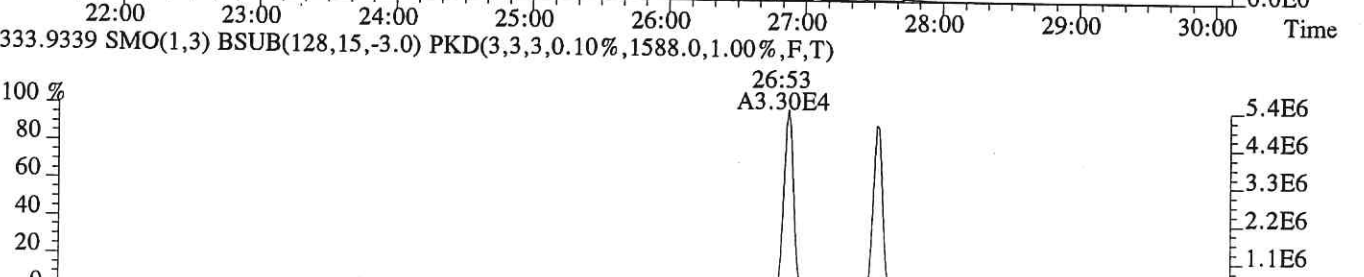
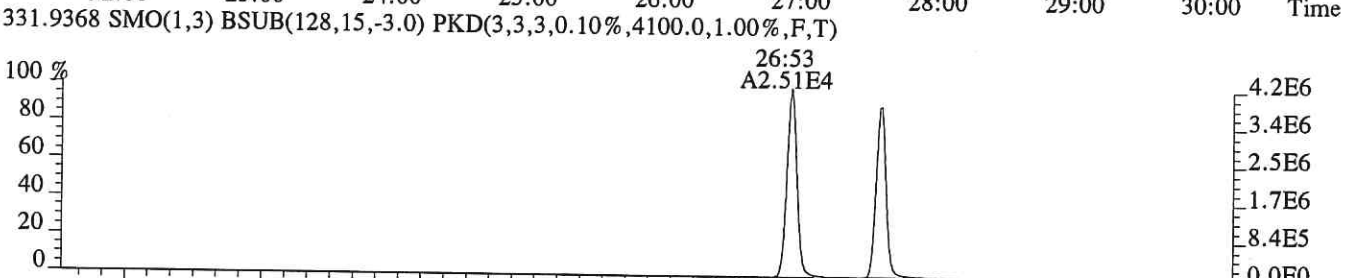
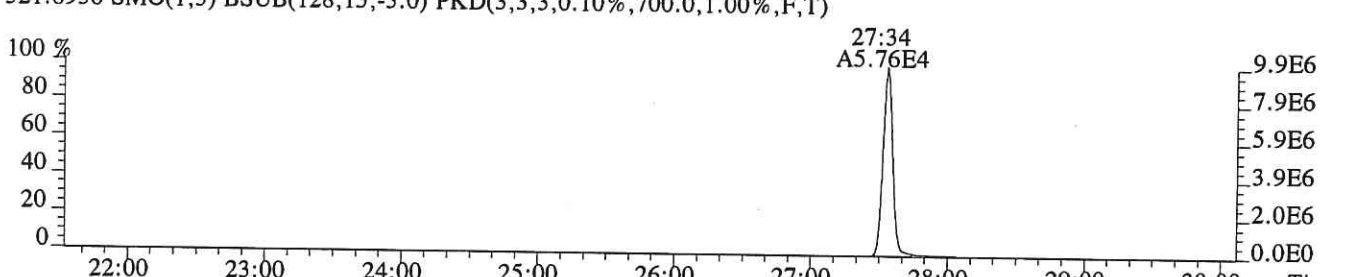
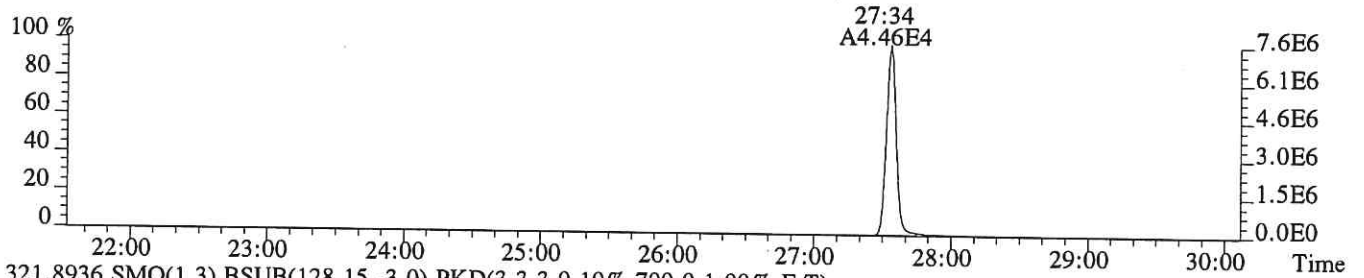
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



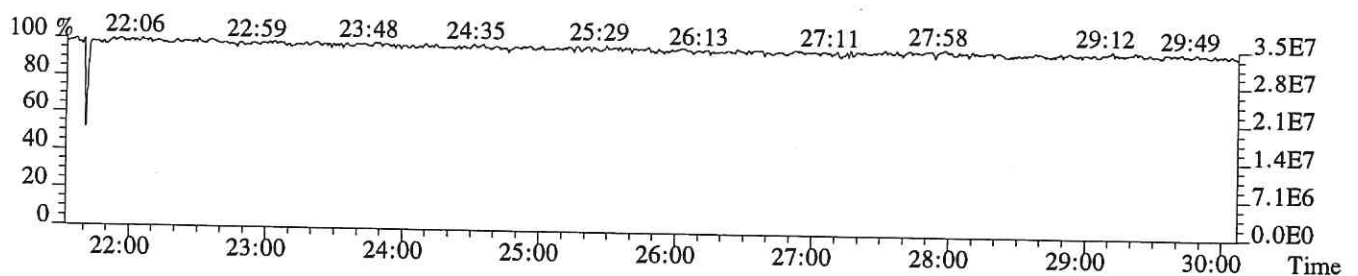
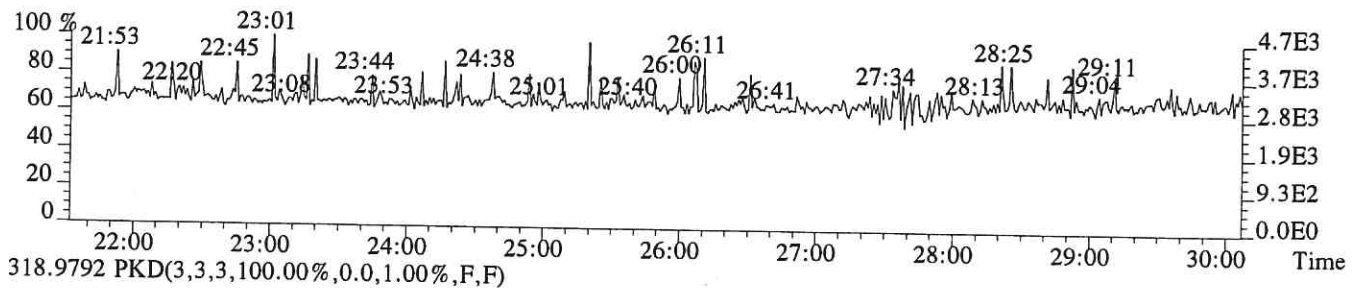
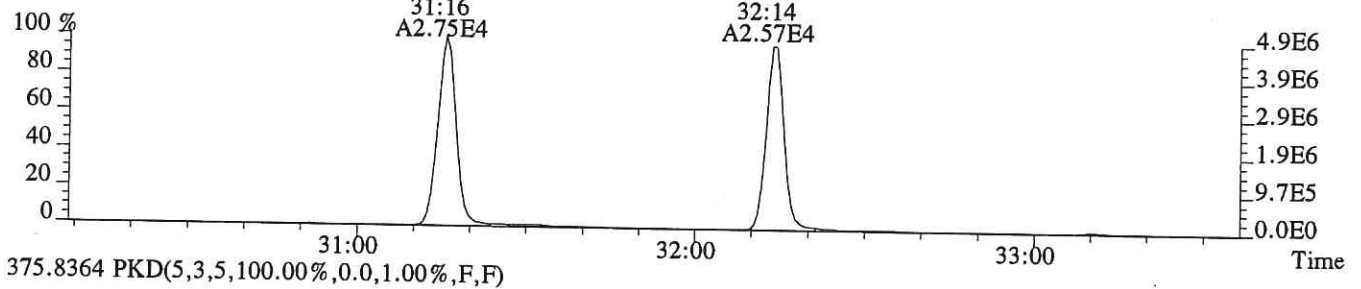
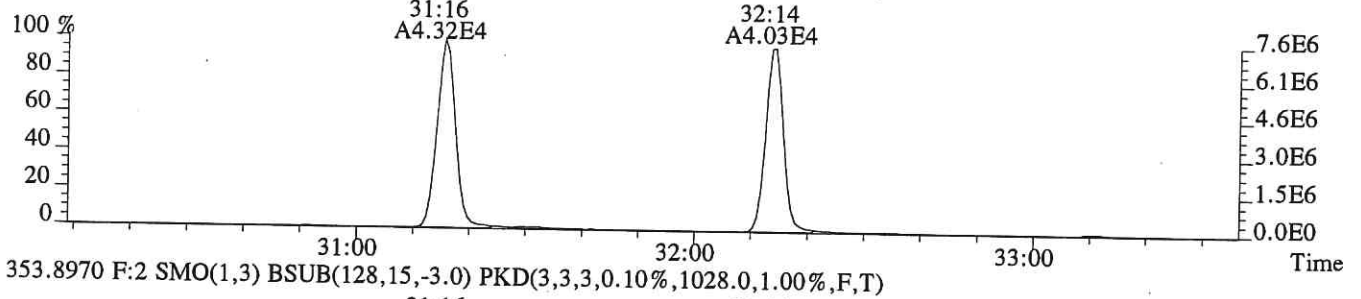
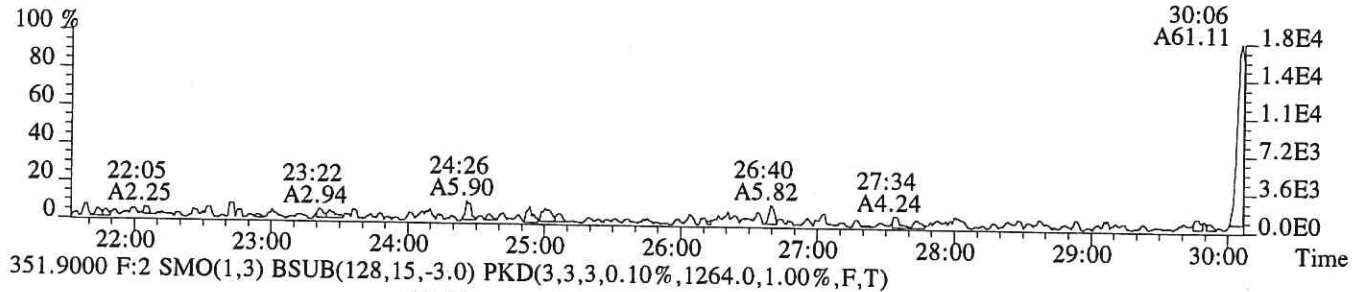
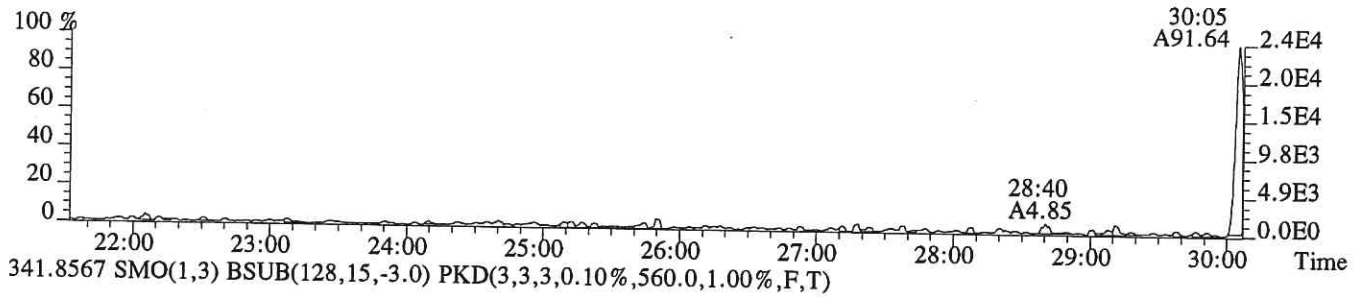
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



File:P618239 #1-609 Acq: 1-AUG-2019 18:31:50 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS5
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1120.0,1.00%,F,T)



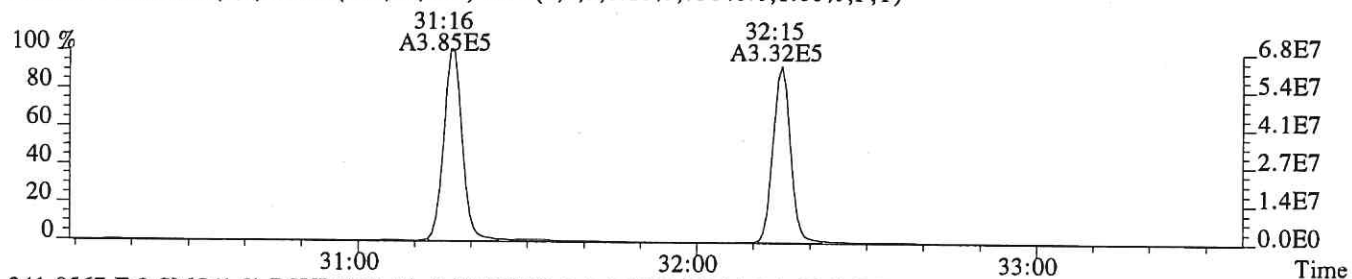
File: P618239 #1-609 Acq: 1-AUG-2019 18:31:50 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp: CS5
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,296.0,1.00%,F,T)



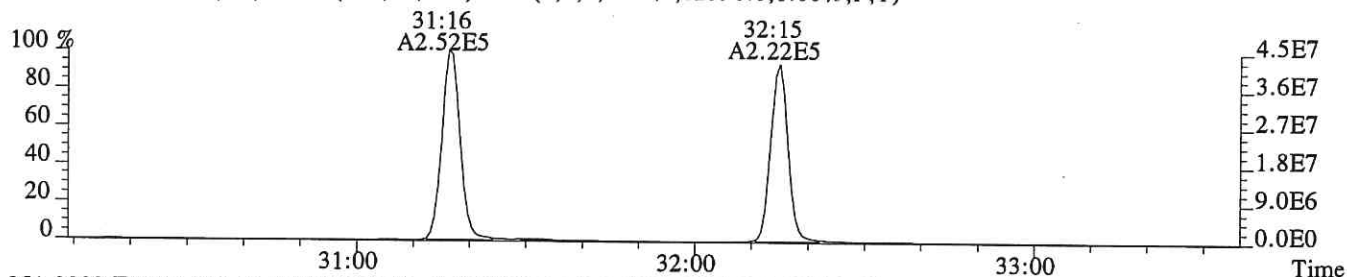
File:P618239 #1-312 Acq: 1-AUG-2019 18:31:50 Probe EI+ Magnet SIR VG BioTech Mass spectr

Sample#1 Exp:CS5

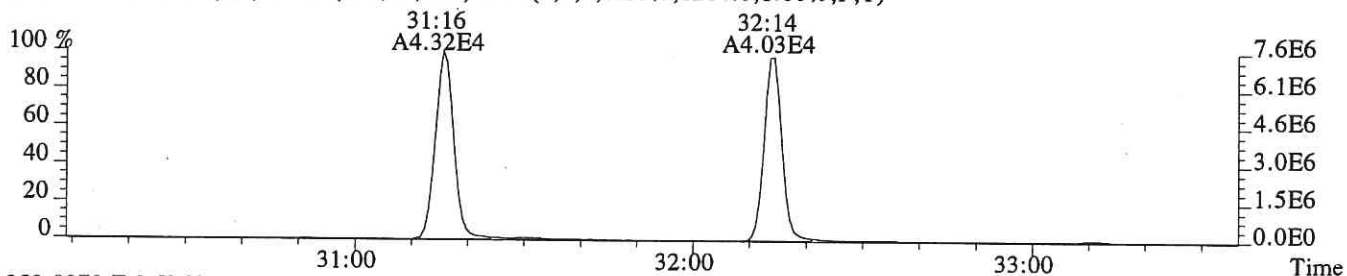
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,75840.0,1.00%,F,T)



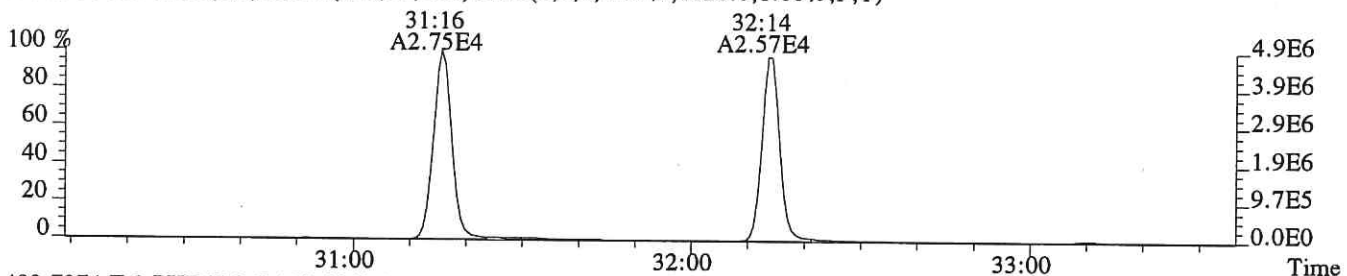
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,82396.0,1.00%,F,T)



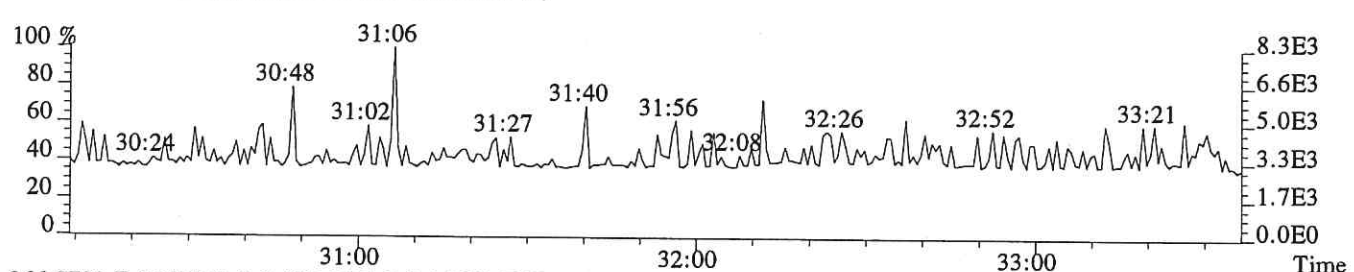
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1264.0,1.00%,F,T)



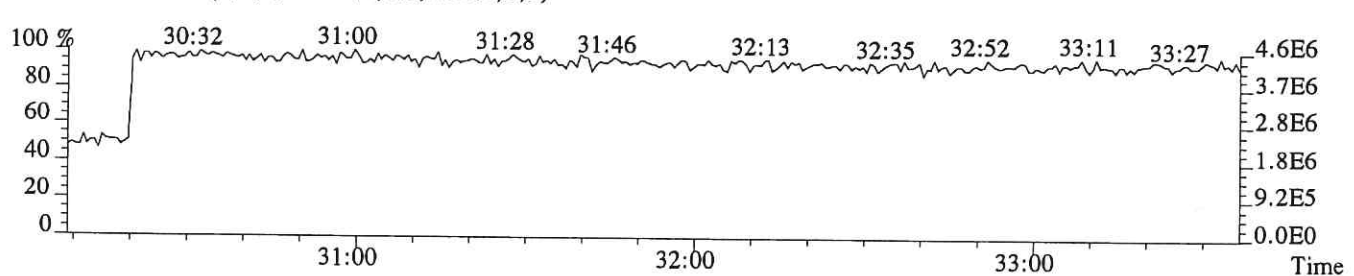
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1028.0,1.00%,F,T)



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



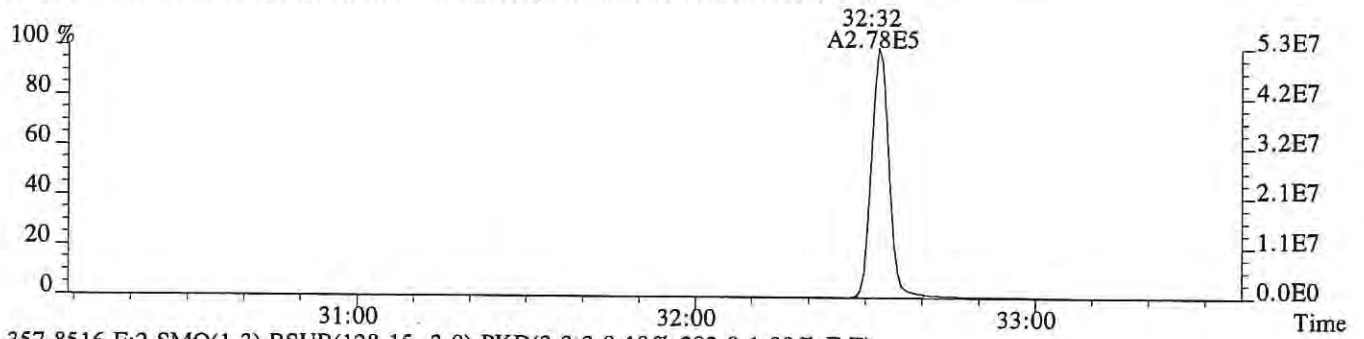
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



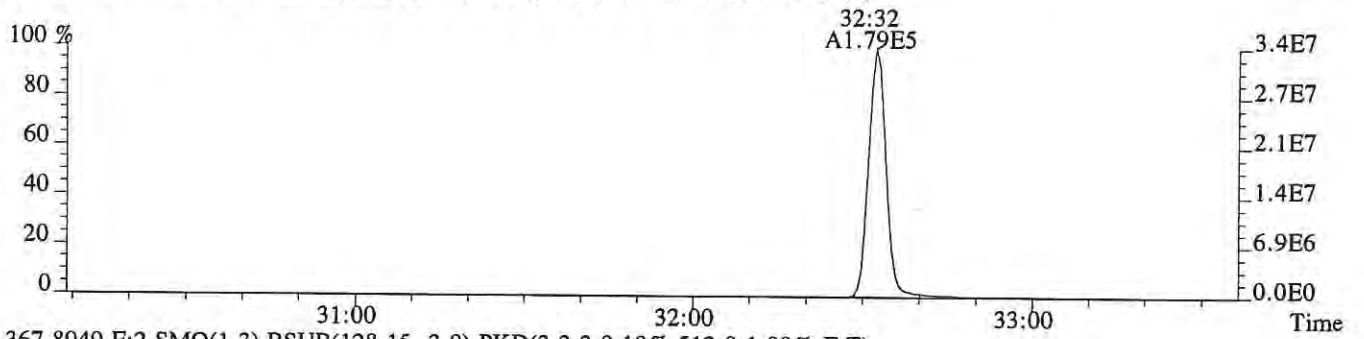
File:P618239 #1-312 Acq: 1-AUG-2019 18:31:50 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:CS5

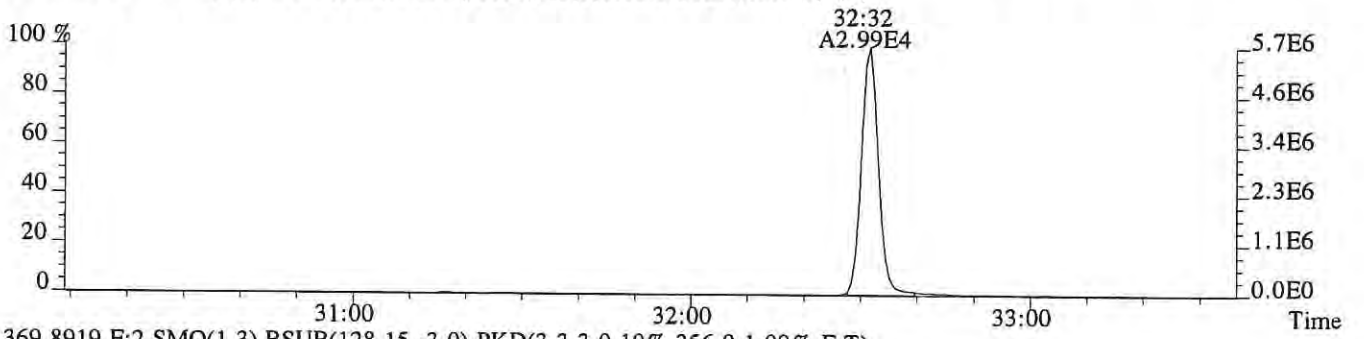
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,192.0,1.00%,F,T)



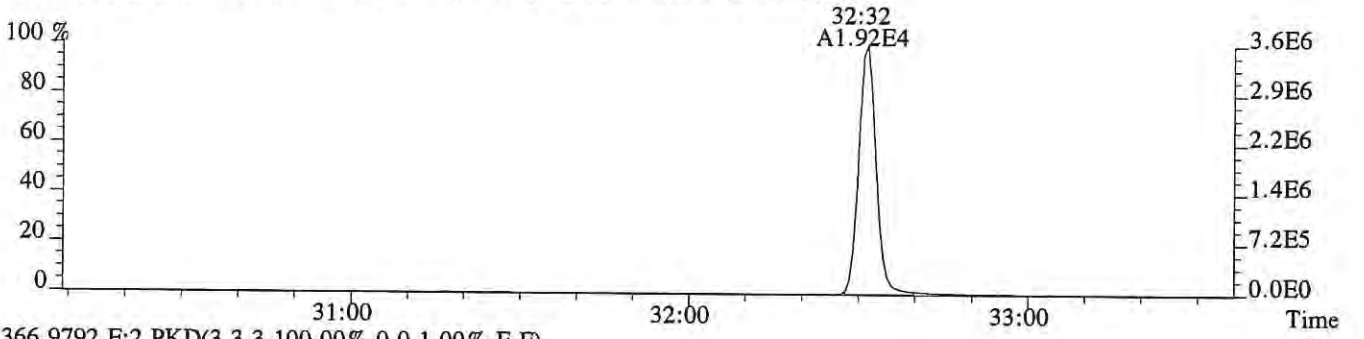
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,292.0,1.00%,F,T)



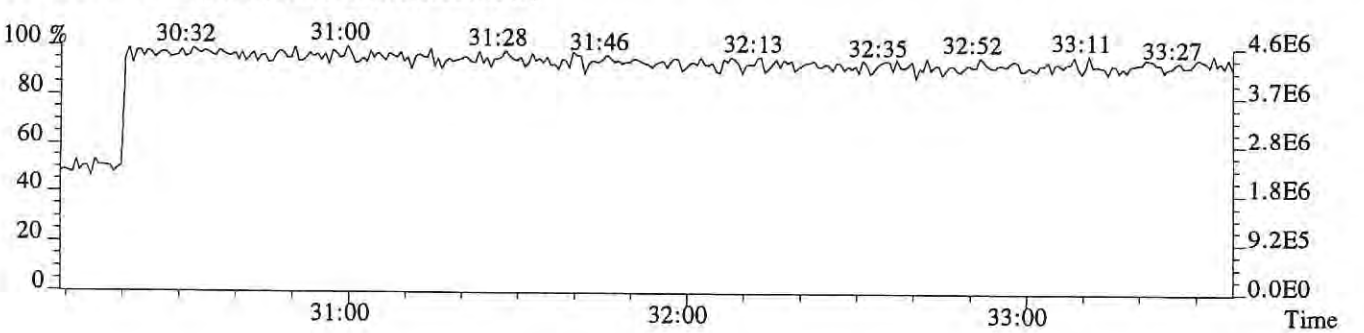
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,512.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,356.0,1.00%,F,T)



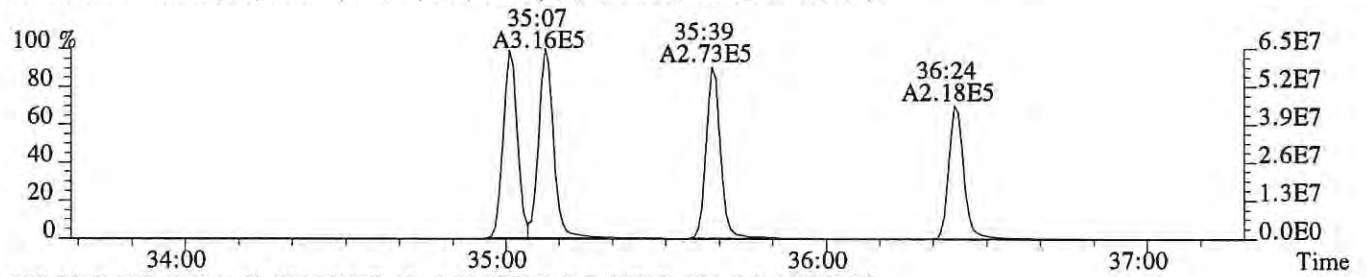
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



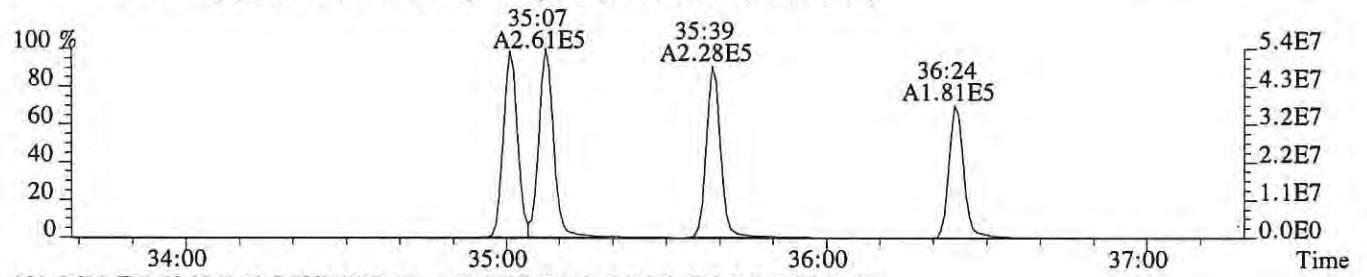
File:P618239 #1-330 Acq: 1-AUG-2019 18:31:50 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:CSS

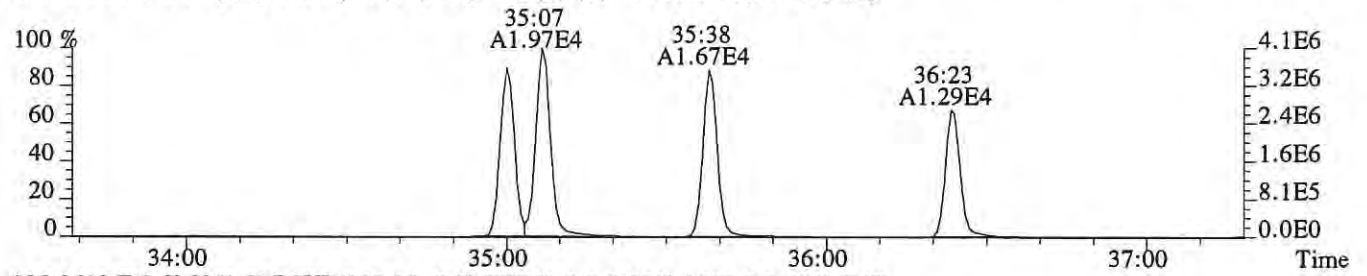
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,852.0,0.40%,F,T)



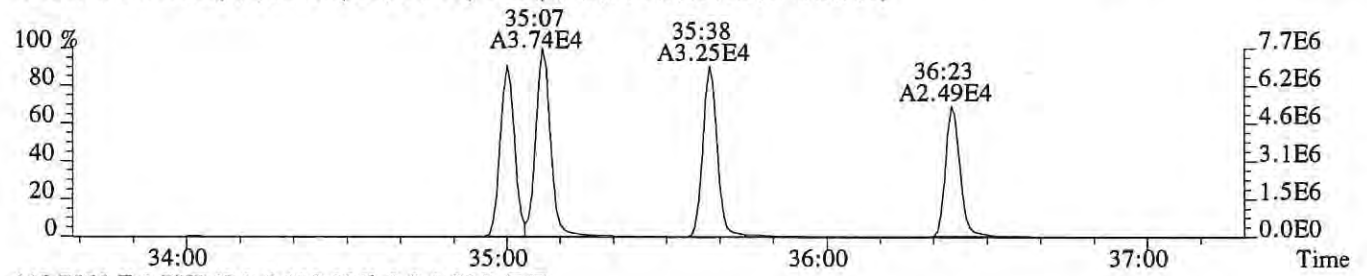
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,852.0,0.40%,F,T)



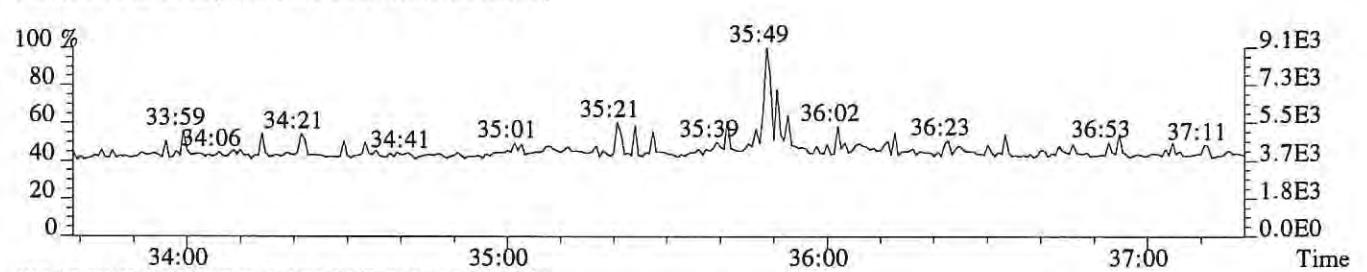
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,600.0,0.40%,F,T)



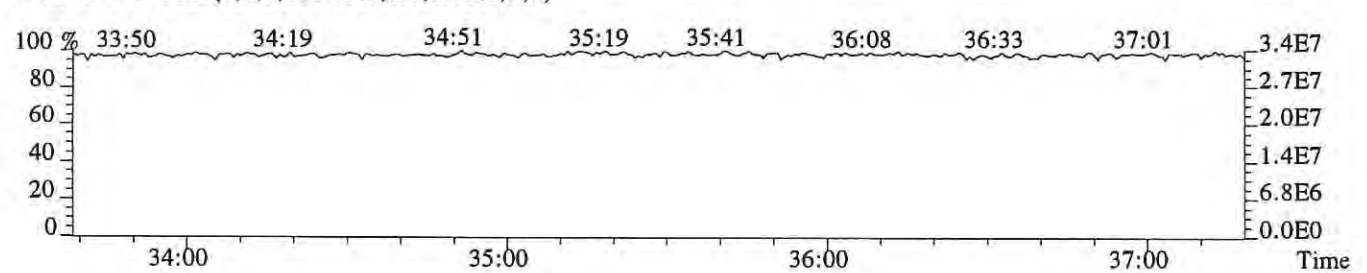
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1080.0,0.40%,F,T)



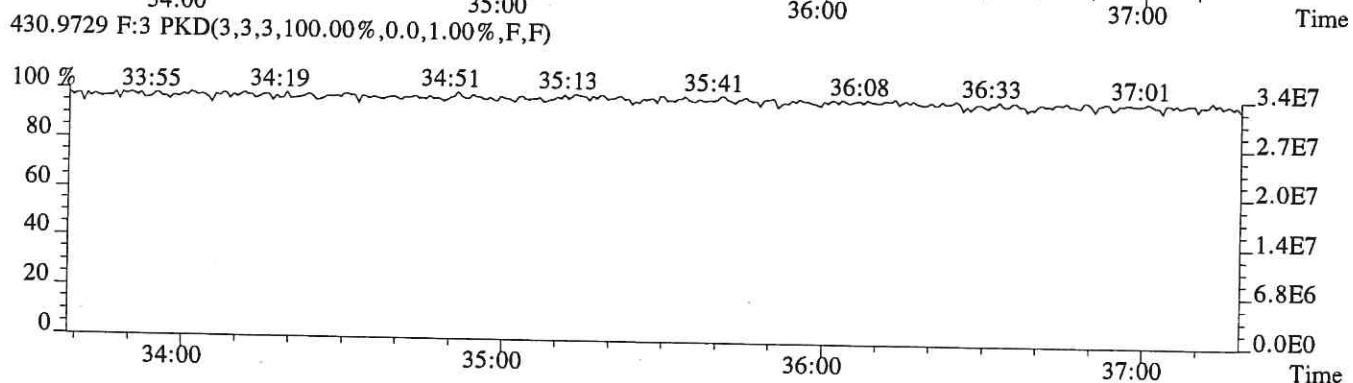
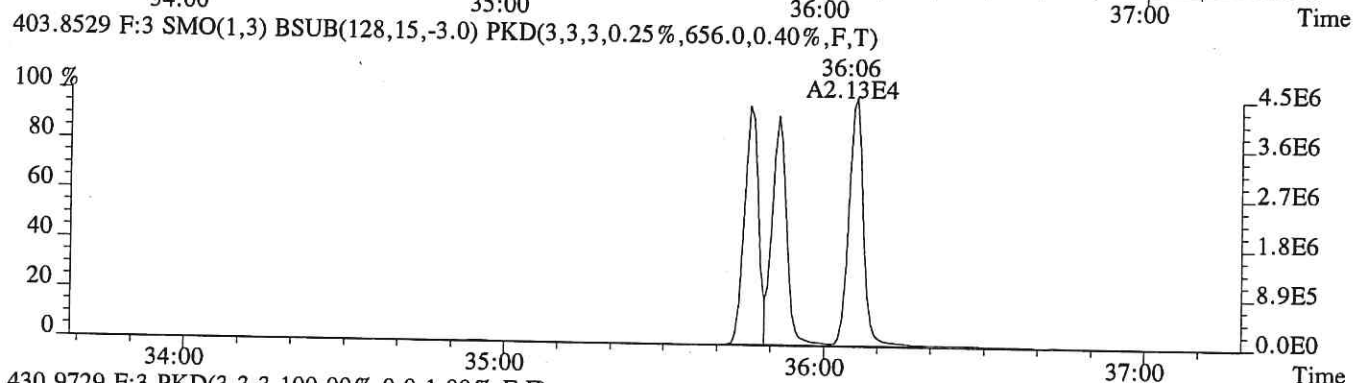
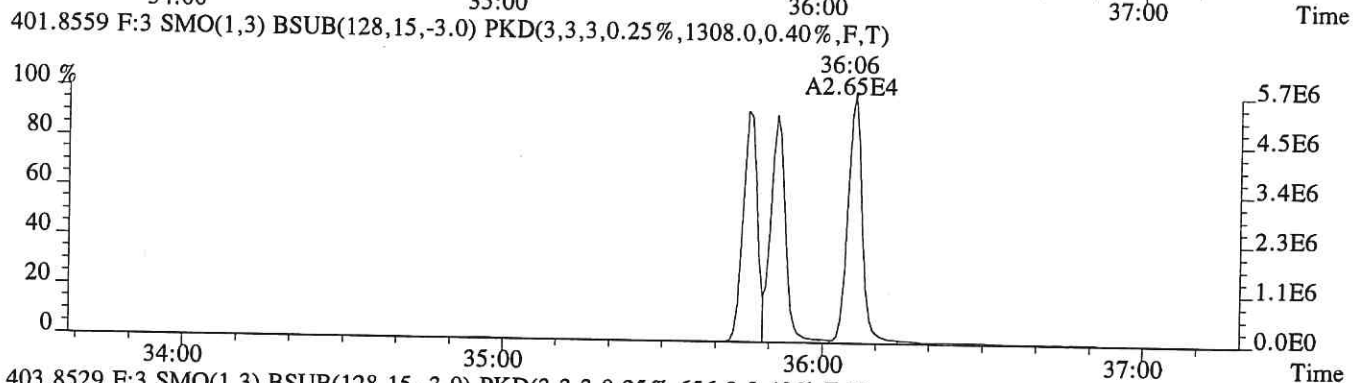
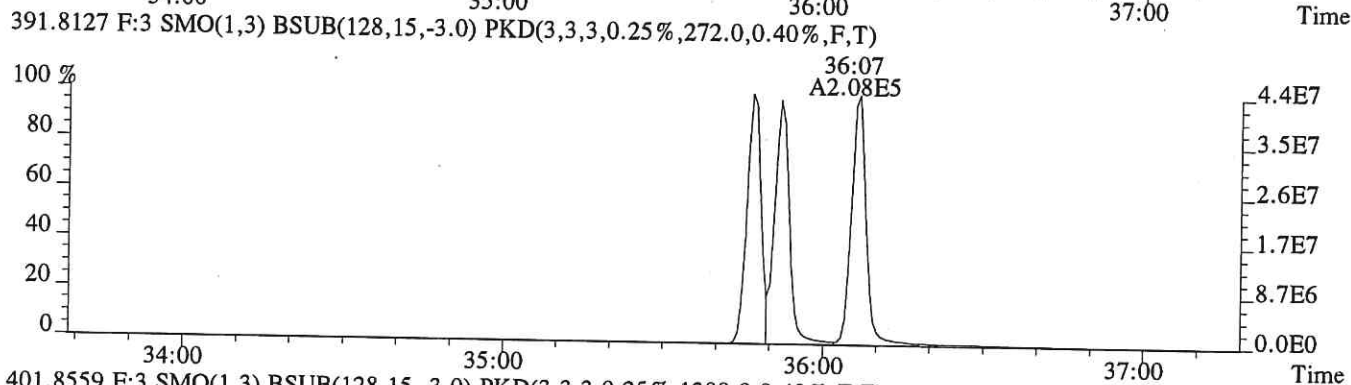
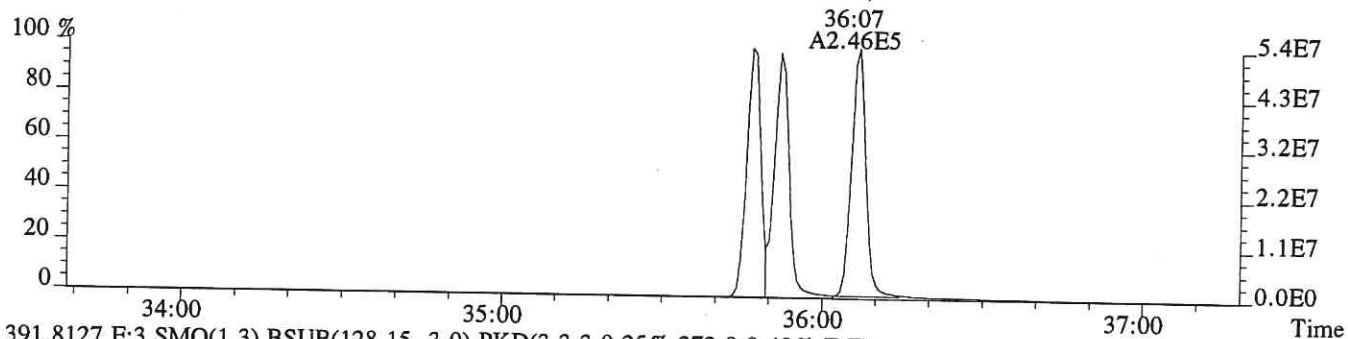
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

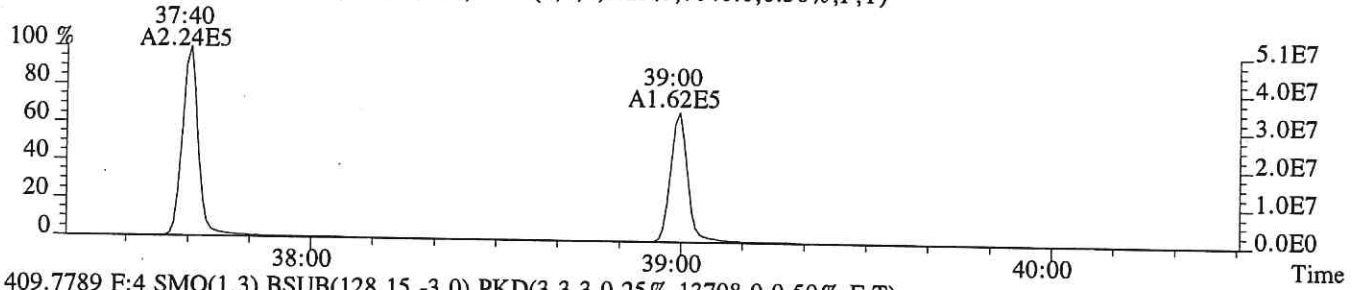


File:P618239 #1-330 Acq: 1-AUG-2019 18:31:50 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS5
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,236.0,0.40%,F,T)

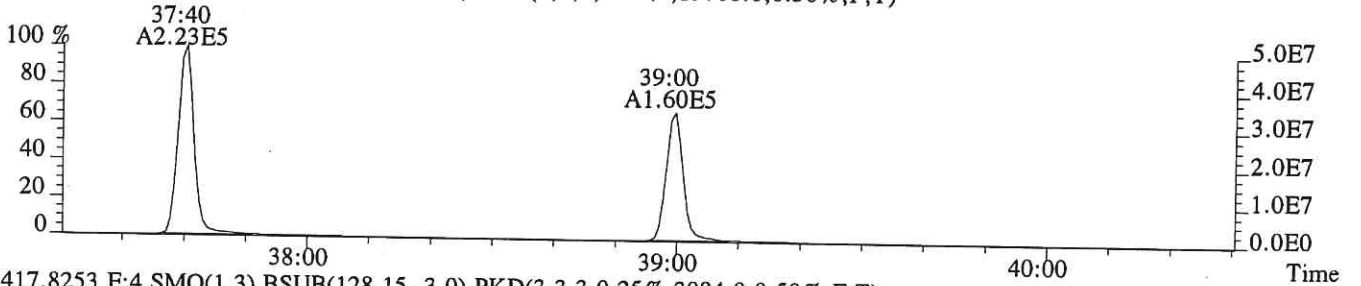


File:P618239 #1-286 Acq: 1-AUG-2019 18:31:50 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS5

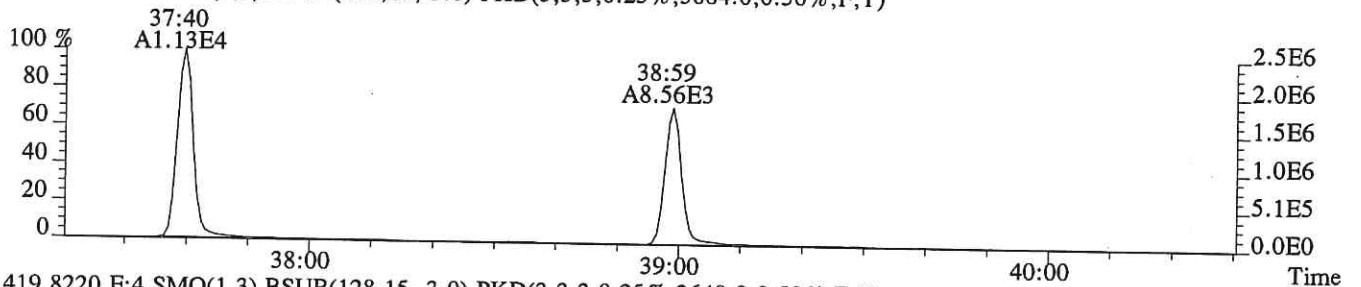
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,7040.0,0.50%,F,T)



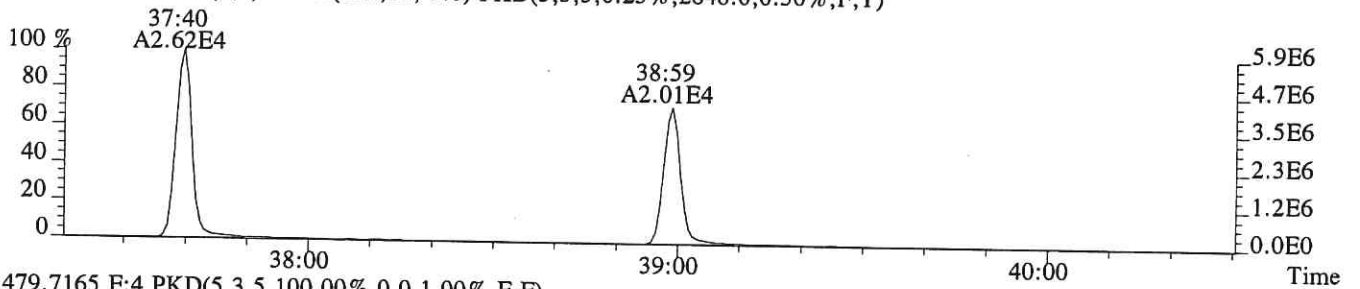
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,13708.0,0.50%,F,T)



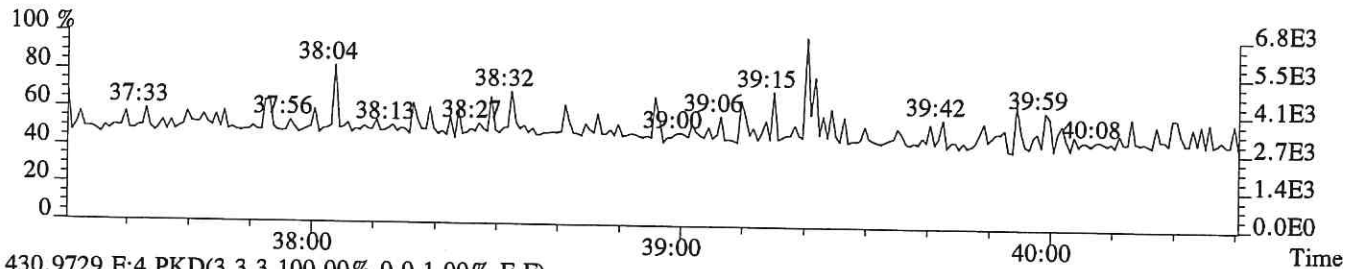
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3084.0,0.50%,F,T)



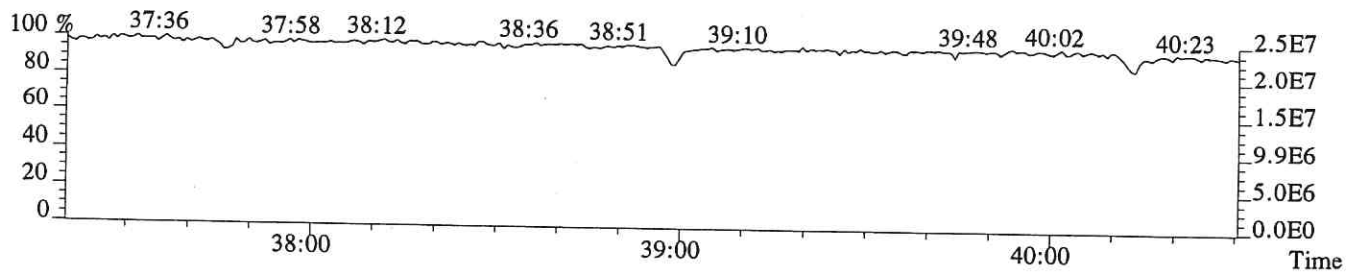
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2648.0,0.50%,F,T)



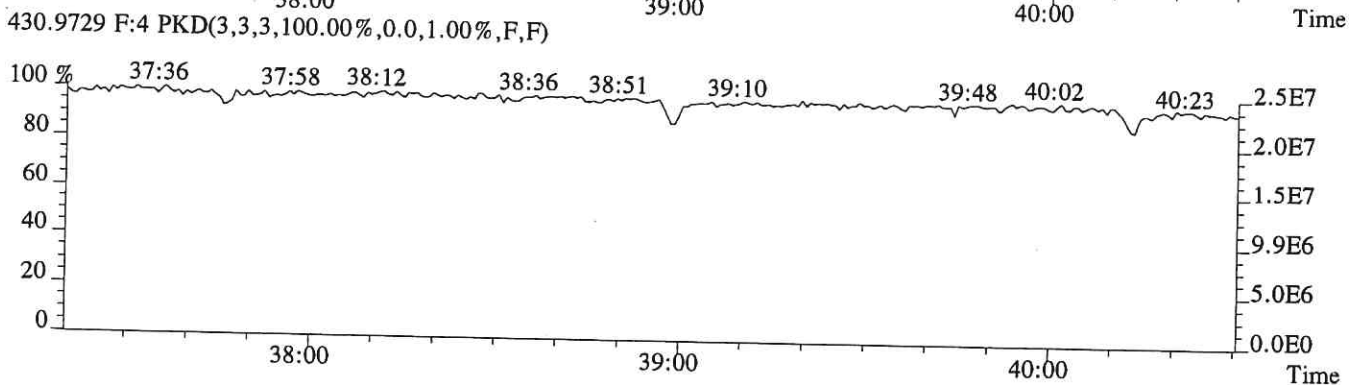
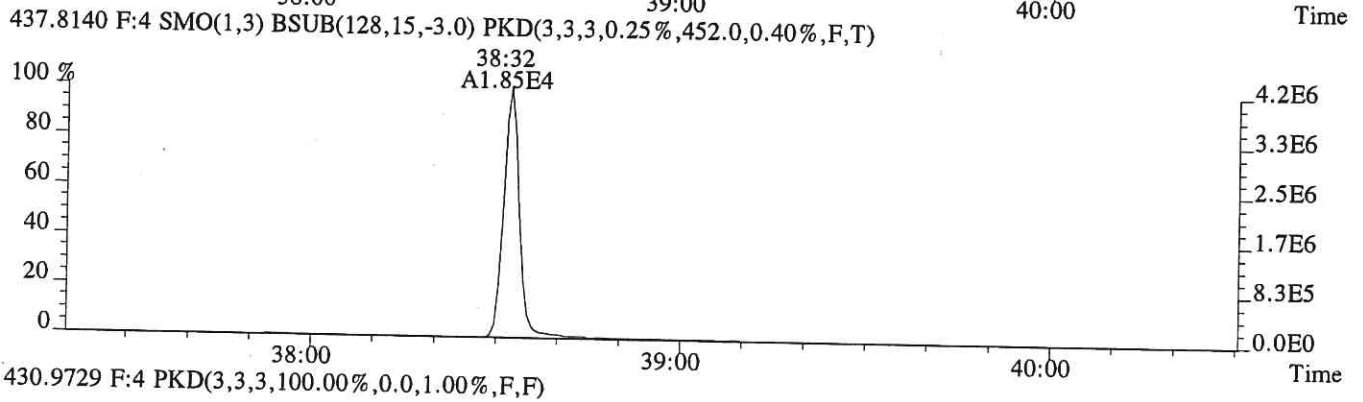
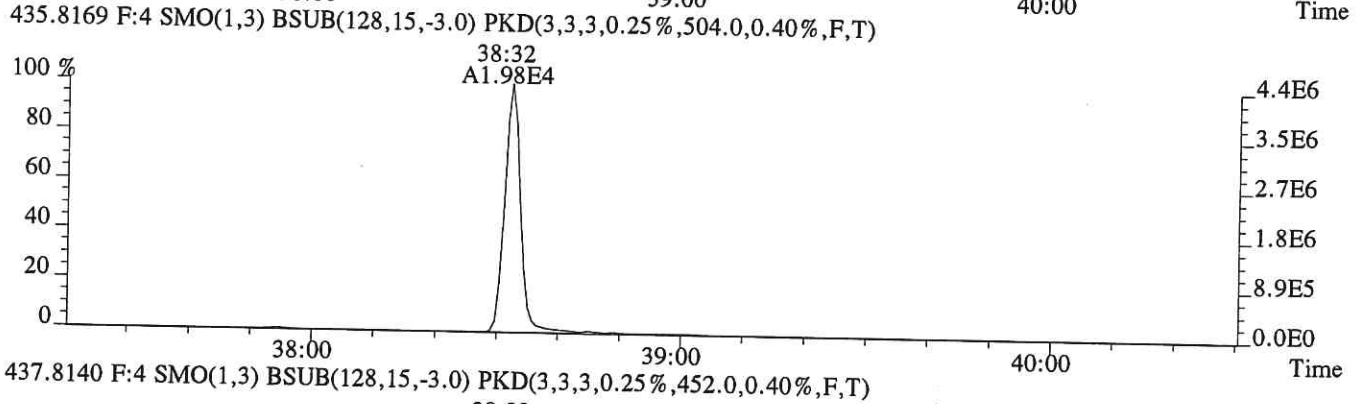
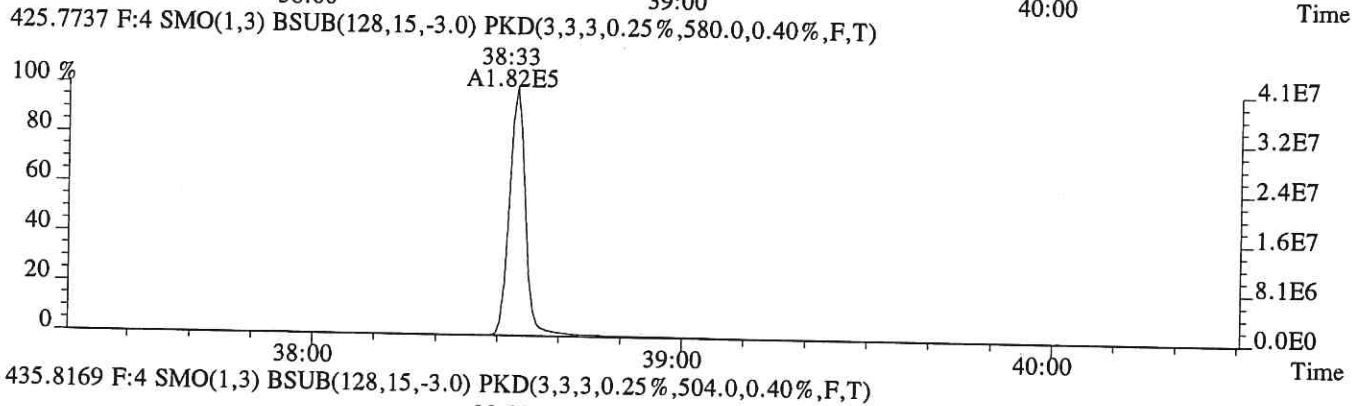
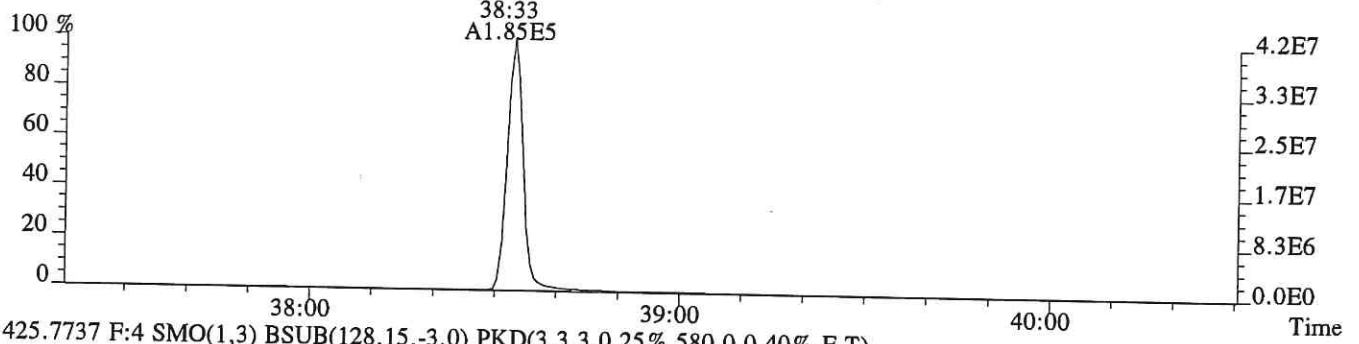
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

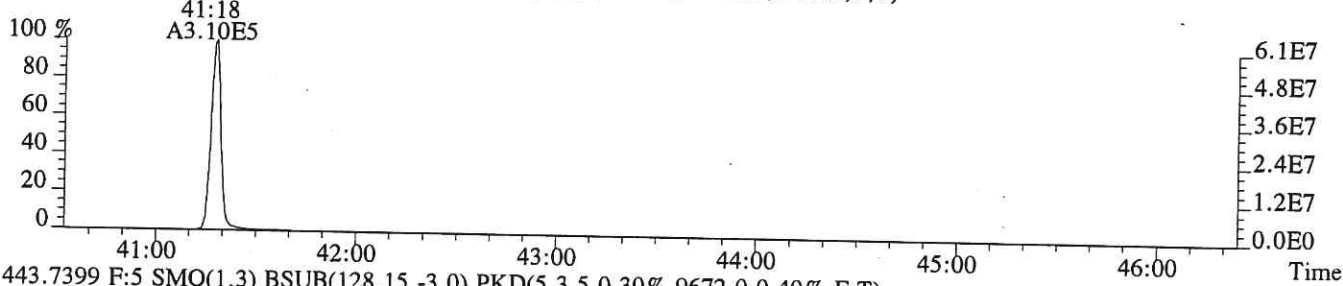


File: P618239 #1-286 Acq: 1-AUG-2019 18:31:50 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: CS5
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1124.0,0.40%,F,T)

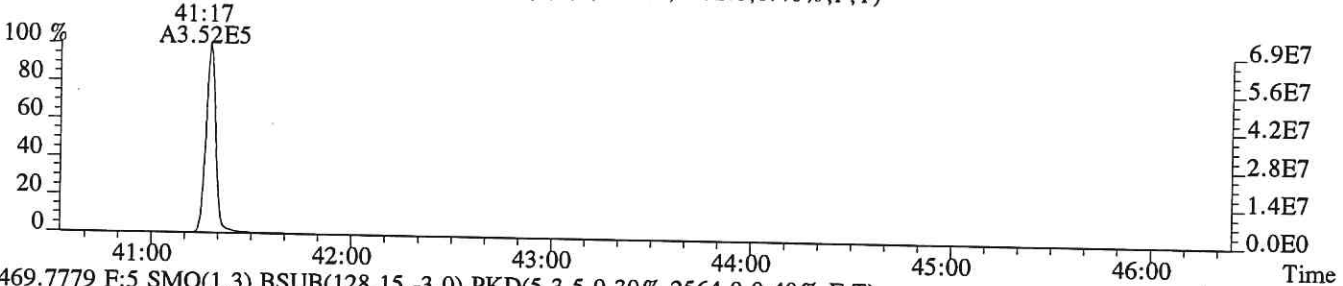


File:P618239 #1-528 Acq: 1-AUG-2019 18:31:50 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS5

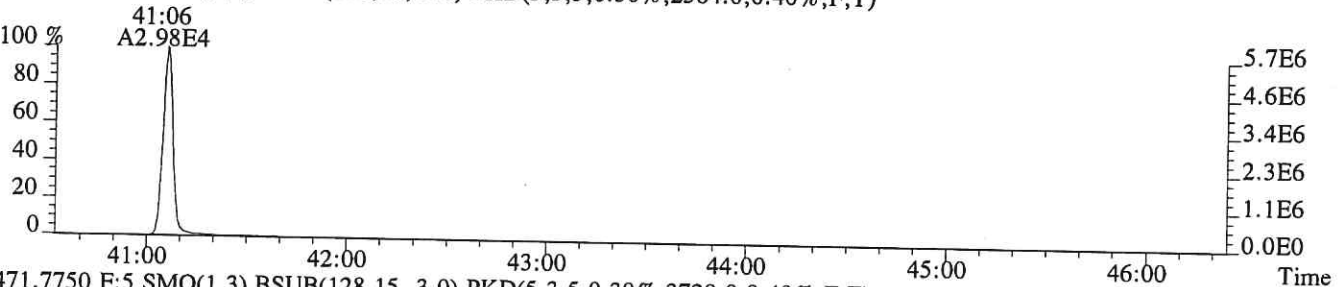
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,10608.0,0.40%,F,T)



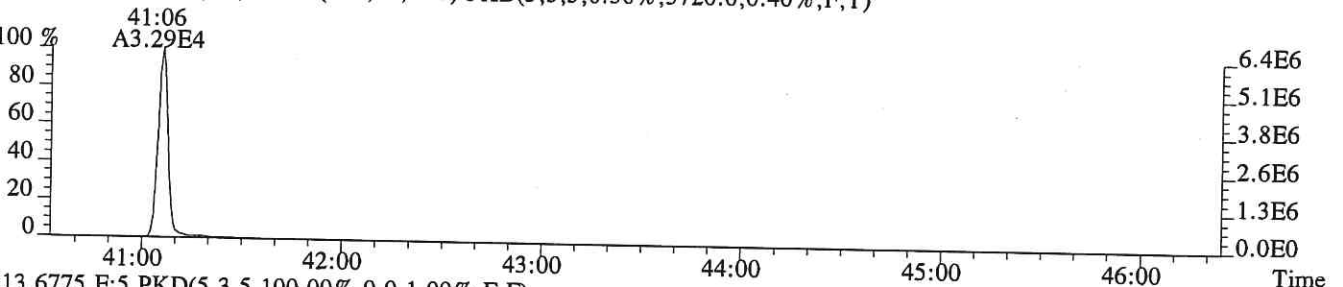
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,9672.0,0.40%,F,T)



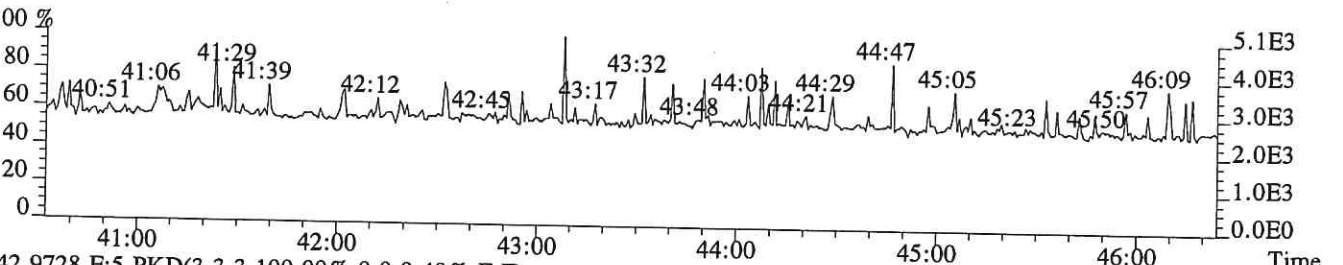
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2564.0,0.40%,F,T)



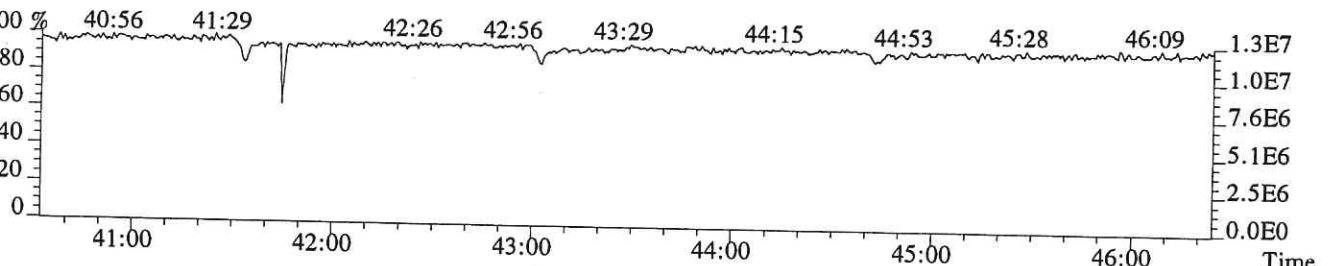
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3720.0,0.40%,F,T)



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



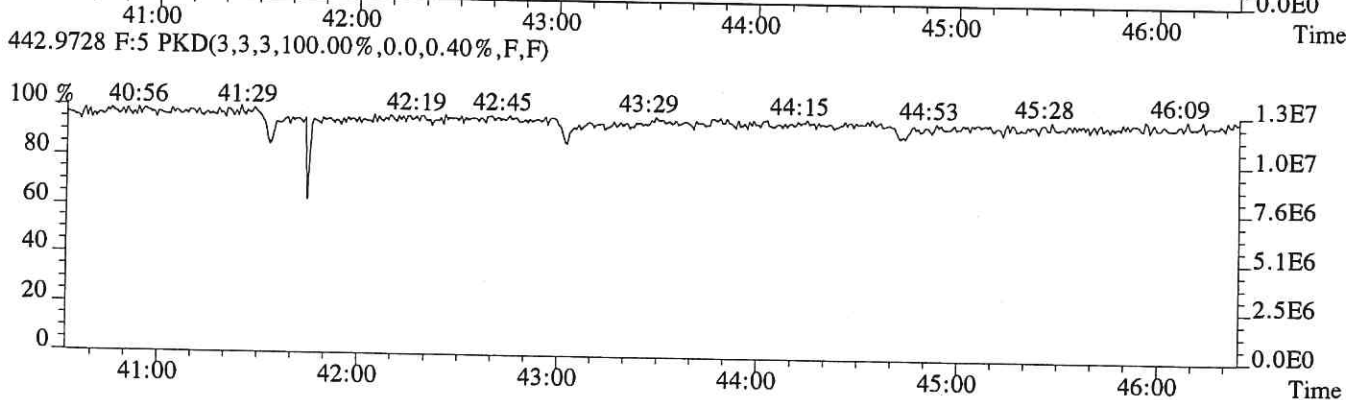
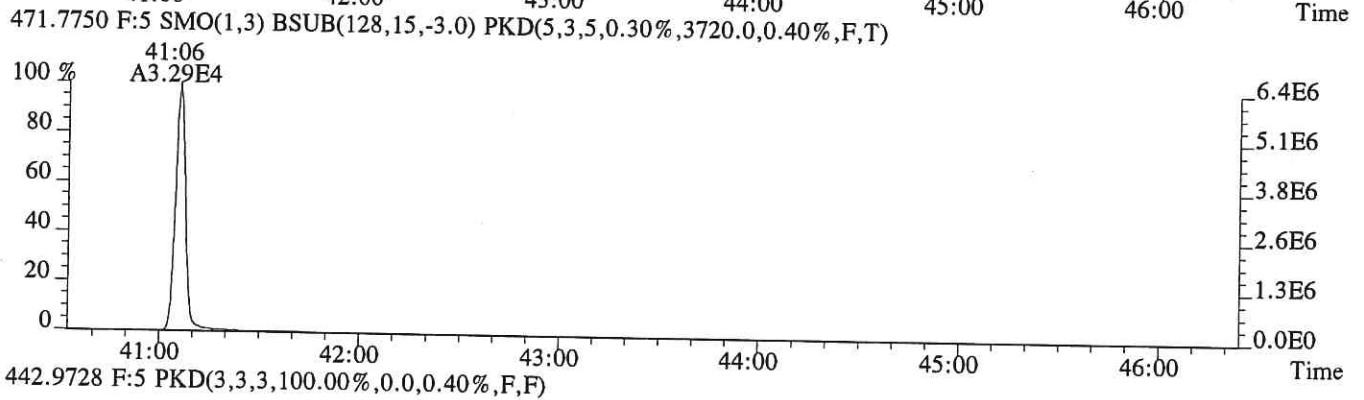
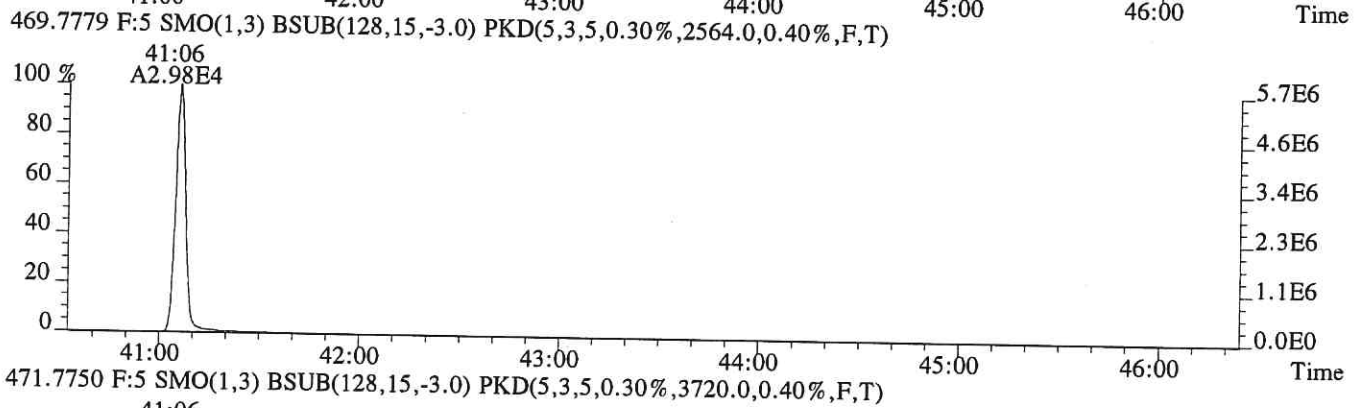
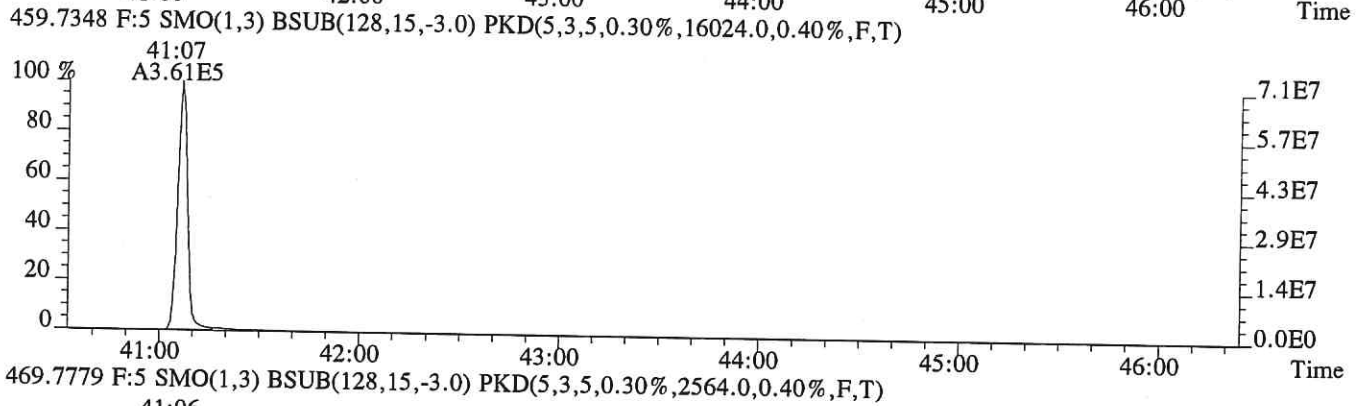
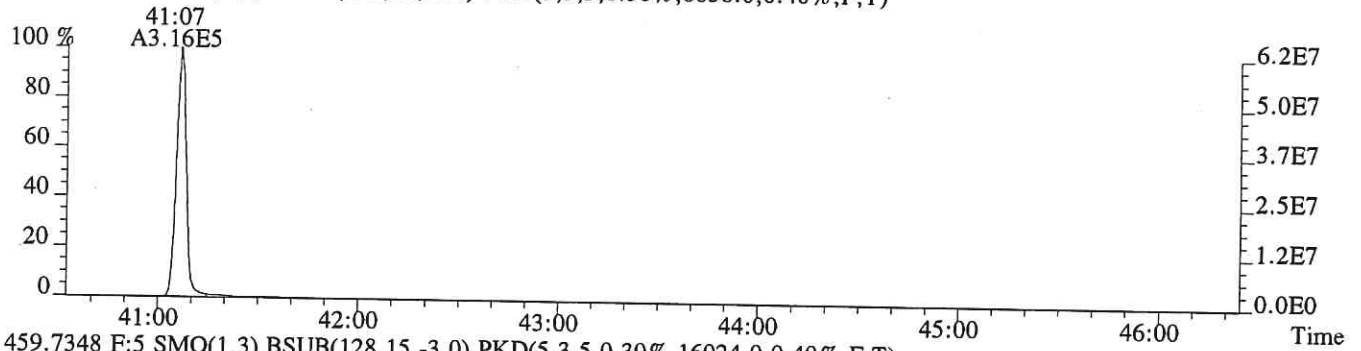
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



File:P618239 #1-528 Acq: 1-AUG-2019 18:31:50 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:CS5

457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6836.0,0.40%,F,T)



USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 08/01/19

Instrument ID: E-HRMS-08

GC Column ID : DB-5MSUI

VER Data Filename: P618240

Analysis Date: 1-AUG-19 Time: 19:21:00

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (4)
2,3,7,8-TCDD	M/M+2	0.77	0.65-0.89	8.8	7.8 - 12.9	-11.9
1,2,3,7,8-PeCDD	M+2/M+4	1.54	1.32-1.78	50	39 - 65	0.5
1,2,3,4,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	48	39 - 64	-4.8
1,2,3,6,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	47	39 - 64	-5.9
1,2,3,7,8,9-HxCDD	M+2/M+4	1.20	1.05-1.43	49	41 - 61	-1.5
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.03	0.88-1.20	51	43 - 58	1.3
OCDD	M+2/M+4	0.89	0.76-1.02	93	79 - 126	-6.8
2,3,7,8-TCDF	M/M+2	0.77	0.65-0.89	9.8	8.4 - 12.0	-2.2
1,2,3,7,8-PeCDF	M+2/M+4	1.49	1.32-1.78	46	41 - 60	-7.3
2,3,4,7,8-PeCDF	M+2/M+4	1.53	1.32-1.78	54	41 - 61	7.8
1,2,3,4,7,8-HxCDF	M+2/M+4	1.24	1.05-1.43	48	45 - 56	-4.7
1,2,3,6,7,8-HxCDF	M+2/M+4	1.20	1.05-1.43	49	44 - 57	-2.4
1,2,3,7,8,9-HxCDF	M+2/M+4	1.22	1.05-1.43	48	45 - 56	-4.7
2,3,4,6,7,8-HxCDF	M+2/M+4	1.21	1.05-1.43	53	44 - 57	6.5
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.01	0.88-1.20	47	45 - 55	-6.3
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.01	0.88-1.20	51	43 - 58	2.9
OCDF	M+2/M+4	0.89	0.76-1.02	95	63 - 159	-4.8

- (1) See Table 8, Method 1613B, for m/z specifications.
- (2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.
- (3) Contract-required concentration range as specified in Table 6, Method 1613B, under VER.
- (4) 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, Method 8290

12/2012
1613F4A.FRM

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL

Episode No.:

Contract No.:

SAS No.:

Initial Calibration Date: 08/01/19

Instrument ID: E-HRMS-08

GC Column ID : DB-5MSUI

VER Data Filename: P618240

Analysis Date: 1-AUG-19 Time: 19:21:00

LABELLED COMPOUNDS	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (5)
13C-2,3,7,8-TCDD	M/M+2	0.77	0.65-0.89	115	82 - 121	15.4
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.54	1.32-1.78	105	62 - 160	4.6
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	110	85 - 117	10.3
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	118	85 - 118	17.6
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.04	0.88-1.20	114	72 - 138	13.7
13C-OCDD	M+2/M+4	0.90	0.76-1.02	252	96 - 415	26.1
13C-2,3,7,8-TCDF	M/M+2	0.78	0.65-0.89	112	71 - 140	11.6
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.56	1.32-1.78	114	76 - 130	14.5
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.54	1.32-1.78	116	77 - 130	15.6
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.51	0.43-0.59	108	76 - 131	7.7
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.51	0.43-0.59	108	70 - 143	8.0
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.52	0.43-0.59	115	74 - 135	15.3
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.52	0.43-0.59	106	73 - 137	6.4
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.44	0.37-0.51	120	78 - 129	19.7
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.42	0.37-0.51	118	77 - 129	17.8
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	M+2/M+4			10.4	7.8 - 12.7	4.1

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range, as specified in Table 6, Method 1613B, under VER.

(4) No ion abundance ratio; report concentration found.

(5) The beginning CCAL %RSD for the labeled standard must not exceed +/- 30% Section 7.7.4.2. The ending CCAL must not exceed +/- 35%, Sec 8.3.2.4 (8290)

12/2012
1613F4B.FRM

ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
188969

Run #7 Filename P618240 Samp: 1 Inj: 1 Acquired: 1-AUG-19 19:21:00
Processed: 2-AUG-19 14:20:53 Sample ID: 2ND SOURCE

Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1 Unk	2,3,7,8-TCDF	26:41	2.134e+03	2.771e+03	0.77	yes	no	0.873
2 Unk	1,2,3,7,8-PeCDF	31:17	1.375e+04	9.250e+03	1.49	yes	no	0.864
3 Unk	2,3,4,7,8-PeCDF	32:16	1.462e+04	9.543e+03	1.53	yes	no	0.825
4 Unk	1,2,3,4,7,8-HxCDF	35:01	1.093e+04	8.819e+03	1.24	yes	no	1.084
5 Unk	1,2,3,6,7,8-HxCDF	35:08	1.212e+04	1.007e+04	1.20	yes	no	0.994
6 Unk	2,3,4,6,7,8-HxCDF	35:39	1.092e+04	9.033e+03	1.21	yes	no	0.986
7 Unk	1,2,3,7,8,9-HxCDF	36:25	8.415e+03	6.876e+03	1.22	yes	no	1.037
8 Unk	1,2,3,4,6,7,8-HpCDF	37:41	8.650e+03	8.523e+03	1.01	yes	no	1.158
9 Unk	1,2,3,4,7,8,9-HpCDF	39:00	6.655e+03	6.586e+03	1.01	yes	no	1.104
10 Unk	OCDF	41:18	1.224e+04	1.382e+04	0.89	yes	no	0.993
11 Unk	2,3,7,8-TCDD	27:34	1.719e+03	2.222e+03	0.77	yes	no	0.989
12 Unk	1,2,3,7,8-PeCDD	32:33	1.057e+04	6.856e+03	1.54	yes	no	0.954
13 Unk	1,2,3,4,7,8-HxCDD	35:47	9.063e+03	7.209e+03	1.26	yes	no	1.020
14 Unk	1,2,3,6,7,8-HxCDD	35:53	1.036e+04	8.317e+03	1.25	yes	no	1.030
15 Unk	1,2,3,7,8,9-HxCDD	36:07	9.745e+03	8.119e+03	1.20	yes	no	1.007
16 Unk	1,2,3,4,6,7,8-HpCDD	38:34	7.337e+03	7.145e+03	1.03	yes	no	0.922
17 Unk	OCDD	41:07	1.282e+04	1.448e+04	0.89	yes	no	1.062
18 IS	13C-2,3,7,8-TCDF	26:40	2.513e+04	3.238e+04	0.78	yes	no	1.102
19 IS	13C-1,2,3,7,8-PeCDF	31:16	3.501e+04	2.246e+04	1.56	yes	no	1.074
20 IS	13C-2,3,4,7,8-PeCDF	32:14	3.295e+04	2.137e+04	1.54	yes	no	1.005
21 IS	13C-1,2,3,4,7,8-HxCDF	35:01	1.296e+04	2.529e+04	0.51	yes	no	1.059
22 IS	13C-1,2,3,6,7,8-HxCDF	35:07	1.536e+04	3.037e+04	0.51	yes	no	1.264
23 IS	13C-2,3,4,6,7,8-HxCDF	35:39	1.305e+04	2.493e+04	0.52	yes	no	1.066
24 IS	13C-1,2,3,7,8,9-HxCDF	36:24	1.055e+04	2.040e+04	0.52	yes	no	0.801
25 IS	13C-1,2,3,4,6,7,8-HpCDF	37:40	9.621e+03	2.205e+04	0.44	yes	no	0.789
26 IS	13C-1,2,3,4,7,8,9-HpCDF	38:60	6.946e+03	1.636e+04	0.42	yes	no	0.590
27 IS	13C-2,3,7,8-TCDD	27:33	1.970e+04	2.554e+04	0.77	yes	no	0.839
28 IS	13C-1,2,3,7,8-PeCDD	32:32	2.204e+04	1.432e+04	1.54	yes	no	0.744
29 IS	13C-1,2,3,4,7,8-HxCDD	35:47	1.869e+04	1.485e+04	1.26	yes	no	0.907
30 IS	13C-1,2,3,6,7,8-HxCDD	35:52	2.144e+04	1.711e+04	1.25	yes	no	0.978
31 IS	13C-1,2,3,4,6,7,8-HpCDD	38:33	1.581e+04	1.521e+04	1.04	yes	no	0.814
32 IS	13C-OCDD	41:07	2.605e+04	2.909e+04	0.90	yes	no	0.653
33 RS/RT	13C-1,2,3,4-TCDD	26:54	2.031e+04	2.644e+04	0.77	yes	no	-
34 RS/RT	13C-1,2,3,7,8,9-HxCDD	36:07	1.852e+04	1.499e+04	1.24	yes	no	-
35 C/Up	37C1-2,3,7,8-TCDD	27:34	4.353e+03				no	0.894

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
188969

Run #7 Filename P618240 Samp: 1 Inj: 1 Acquired: 1-AUG-19 19:21:00
Processed: 2-AUG-19 14:20:53 LAB. ID: 2ND SOURCE

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	3.25e+05	3.68e+02	8.8e+02	4.16e+05	7.16e+02	5.8e+02
2	1,2,3,7,8-PeCDF	2.30e+06	9.52e+02	2.4e+03	1.57e+06	5.08e+02	3.1e+03
3	2,3,4,7,8-PeCDF	2.66e+06	9.52e+02	2.8e+03	1.75e+06	5.08e+02	3.4e+03
4	1,2,3,4,7,8-HxCDF	2.36e+06	1.04e+03	2.3e+03	1.91e+06	3.84e+02	5.0e+03
5	1,2,3,6,7,8-HxCDF	2.40e+06	1.04e+03	2.3e+03	1.98e+06	3.84e+02	5.2e+03
6	2,3,4,6,7,8-HxCDF	2.30e+06	1.04e+03	2.2e+03	1.91e+06	3.84e+02	5.0e+03
7	1,2,3,7,8,9-HxCDF	1.72e+06	1.04e+03	1.7e+03	1.42e+06	3.84e+02	3.7e+03
8	1,2,3,4,6,7,8-HpCDF	1.88e+06	9.32e+02	2.0e+03	1.86e+06	1.12e+03	1.7e+03
9	1,2,3,4,7,8,9-HpCDF	1.36e+06	9.32e+02	1.5e+03	1.37e+06	1.12e+03	1.2e+03
10	OCDF	2.34e+06	5.16e+02	4.5e+03	2.61e+06	1.06e+03	2.5e+03
11	2,3,7,8-TCDD	2.79e+05	1.28e+03	2.2e+02	3.54e+05	3.44e+02	1.0e+03
12	1,2,3,7,8-PeCDD	1.92e+06	6.76e+02	2.8e+03	1.25e+06	2.32e+02	5.4e+03
13	1,2,3,4,7,8-HxCDD	2.04e+06	4.28e+02	4.8e+03	1.64e+06	3.04e+02	5.4e+03
14	1,2,3,6,7,8-HxCDD	2.13e+06	4.28e+02	5.0e+03	1.73e+06	3.04e+02	5.7e+03
15	1,2,3,7,8,9-HxCDD	1.98e+06	4.28e+02	4.6e+03	1.64e+06	3.04e+02	5.4e+03
16	1,2,3,4,6,7,8-HpCDD	1.61e+06	8.68e+02	1.9e+03	1.57e+06	2.48e+02	6.3e+03
17	OCDD	2.47e+06	1.50e+03	1.7e+03	2.84e+06	1.08e+03	2.6e+03
18	13C-2,3,7,8-TCDF	3.81e+06	8.86e+03	4.3e+02	4.86e+06	2.30e+03	2.1e+03
19	13C-1,2,3,7,8-PeCDF	5.97e+06	3.04e+02	2.0e+04	3.82e+06	1.24e+03	3.1e+03
20	13C-2,3,4,7,8-PeCDF	5.85e+06	3.04e+02	1.9e+04	3.85e+06	1.24e+03	3.1e+03
21	13C-1,2,3,4,7,8-HxCDF	2.80e+06	3.72e+02	7.5e+03	5.36e+06	4.80e+02	1.1e+04
22	13C-1,2,3,6,7,8-HxCDF	3.00e+06	3.72e+02	8.1e+03	5.89e+06	4.80e+02	1.2e+04
23	13C-2,3,4,6,7,8-HxCDF	2.75e+06	3.72e+02	7.4e+03	5.29e+06	4.80e+02	1.1e+04
24	13C-1,2,3,7,8,9-HxCDF	2.20e+06	3.72e+02	5.9e+03	4.23e+06	4.80e+02	8.8e+03
25	13C-1,2,3,4,6,7,8-HpCDF	2.12e+06	1.71e+03	1.2e+03	4.78e+06	5.39e+03	8.9e+02
26	13C-1,2,3,4,7,8,9-HpCDF	1.47e+06	1.71e+03	8.6e+02	3.35e+06	5.39e+03	6.2e+02
27	13C-2,3,7,8-TCDD	3.25e+06	3.61e+03	9.0e+02	4.22e+06	2.26e+03	1.9e+03
28	13C-1,2,3,7,8-PeCDD	4.04e+06	7.44e+02	5.4e+03	2.58e+06	4.56e+02	5.7e+03
29	13C-1,2,3,4,7,8-HxCDD	4.21e+06	1.10e+03	3.8e+03	3.37e+06	4.48e+02	7.5e+03
30	13C-1,2,3,6,7,8-HxCDD	4.37e+06	1.10e+03	4.0e+03	3.50e+06	4.48e+02	7.8e+03
31	13C-1,2,3,4,6,7,8-HpCDD	3.54e+06	6.00e+02	5.9e+03	3.35e+06	2.92e+02	1.1e+04
32	13C-OCDD	5.06e+06	2.47e+03	2.0e+03	5.63e+06	3.49e+03	1.6e+03
33	13C-1,2,3,4-TCDD	3.28e+06	3.61e+03	9.1e+02	4.24e+06	2.26e+03	1.9e+03
34	13C-1,2,3,7,8,9-HxCDD	3.91e+06	1.10e+03	3.6e+03	3.12e+06	4.48e+02	7.0e+03
35	37Cl-2,3,7,8-TCDD	7.04e+05	1.34e+03	5.3e+02			

---Sample Calculation---

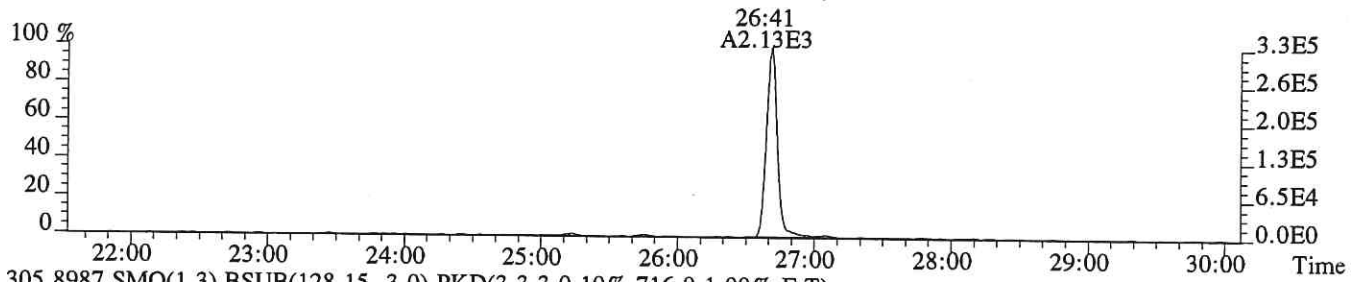
$$D/L \text{ TCDD} = \frac{2.5 \times (1.276e+03 + 3.440e+02) \times 100}{(3.245e+06 + 4.215e+06) \times () \times 0.989} =$$

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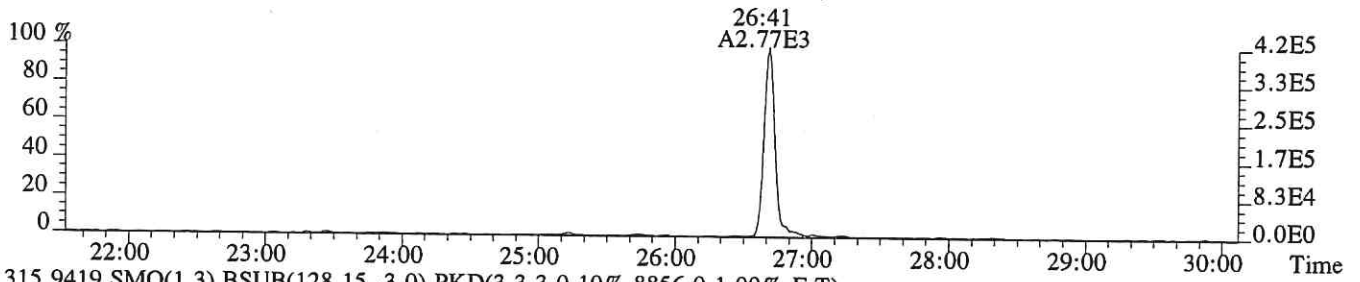
File:P618240 #1-609 Acq: 1-AUG-2019 19:21:00 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:2ND SOURCE

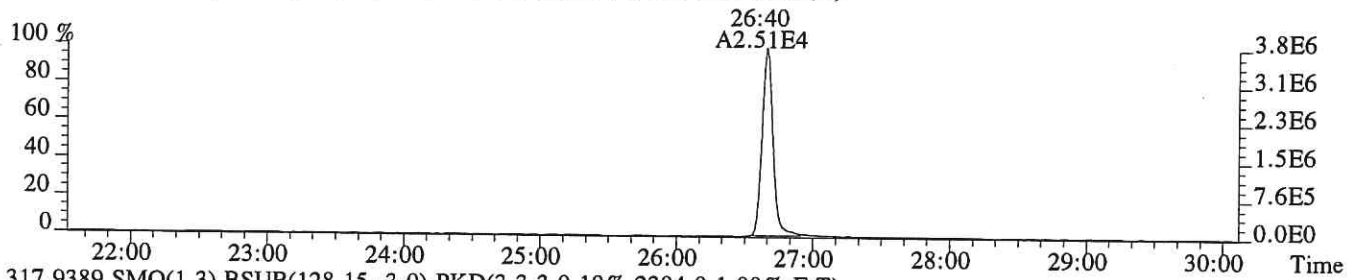
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,368.0,1.00%,F,T)



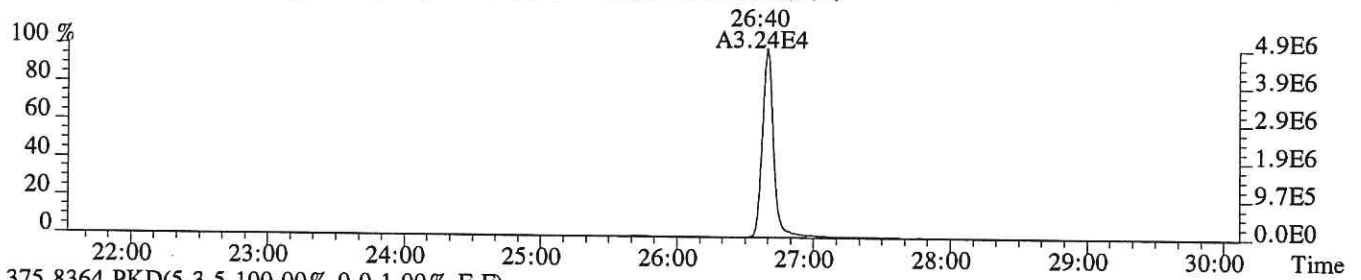
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,716.0,1.00%,F,T)



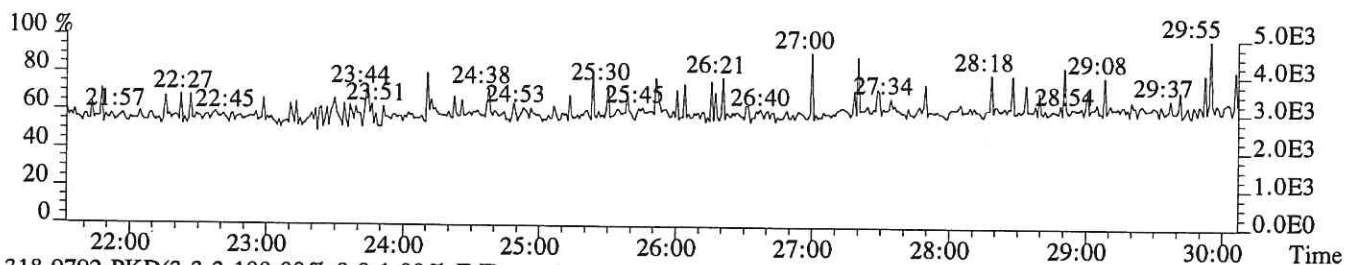
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,8856.0,1.00%,F,T)



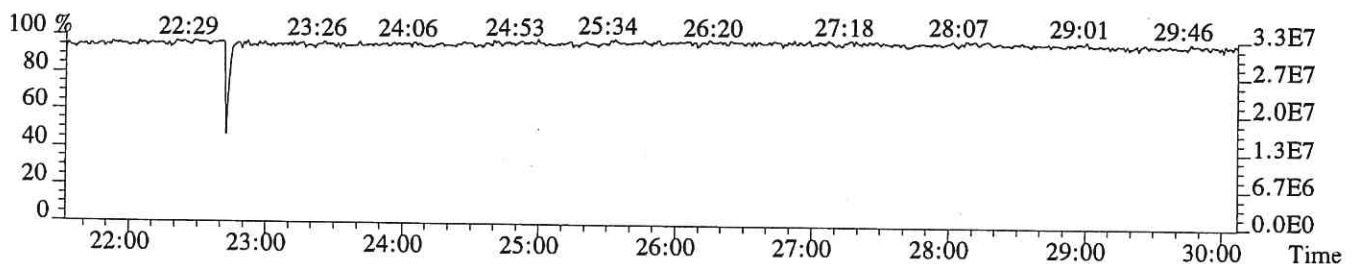
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2304.0,1.00%,F,T)



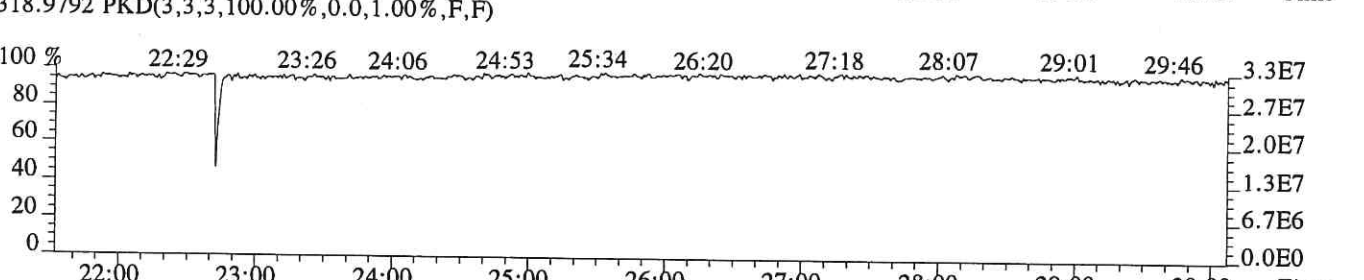
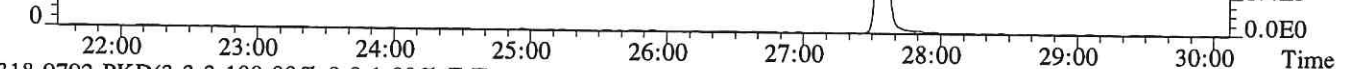
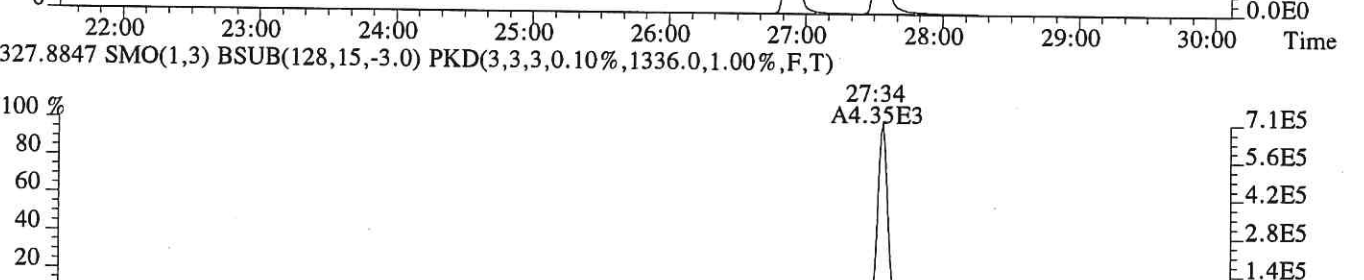
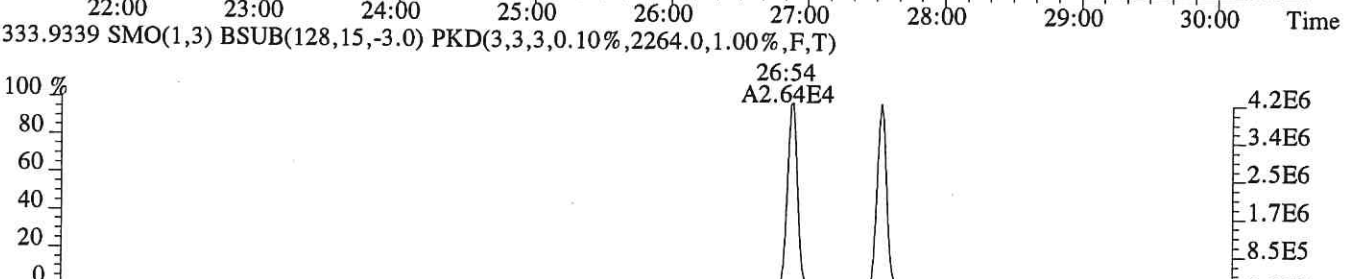
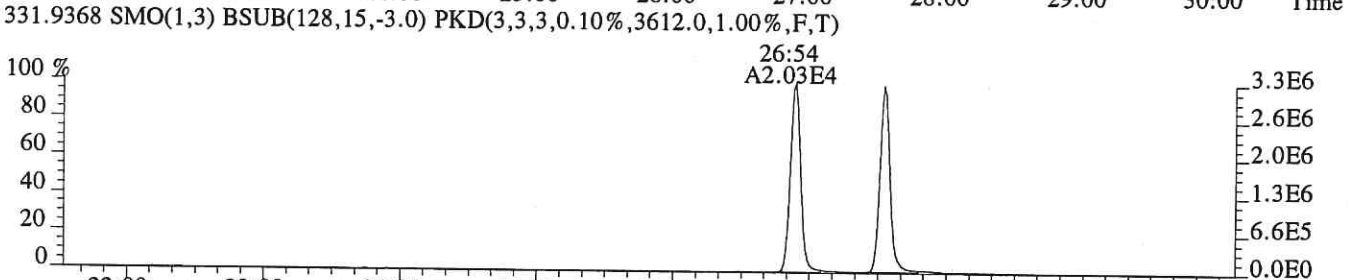
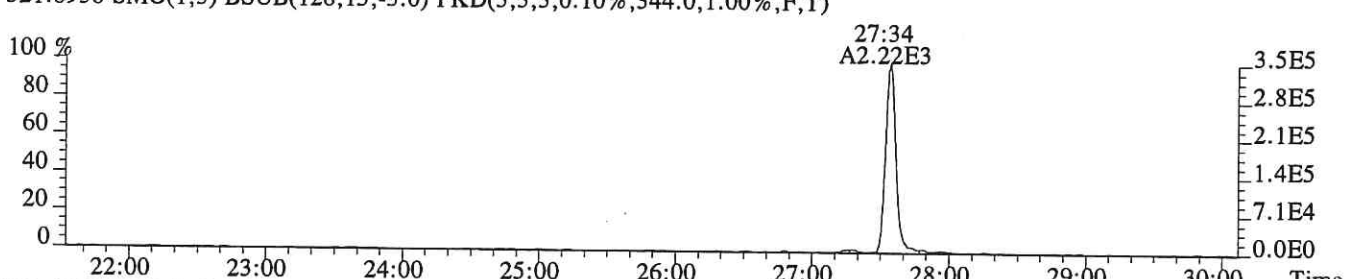
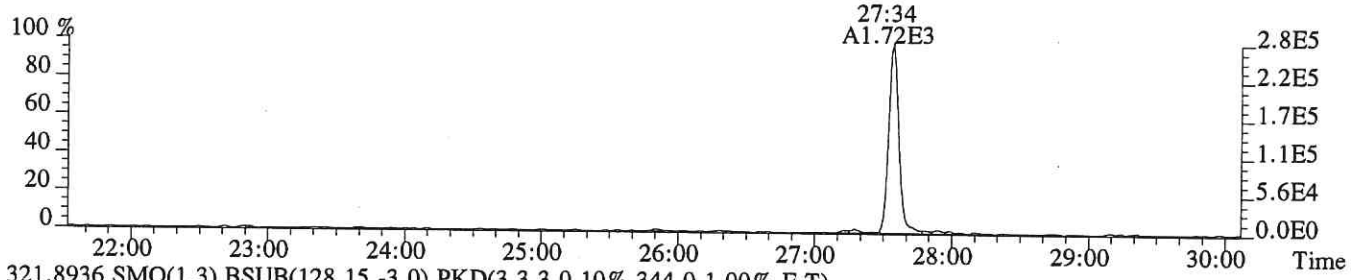
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



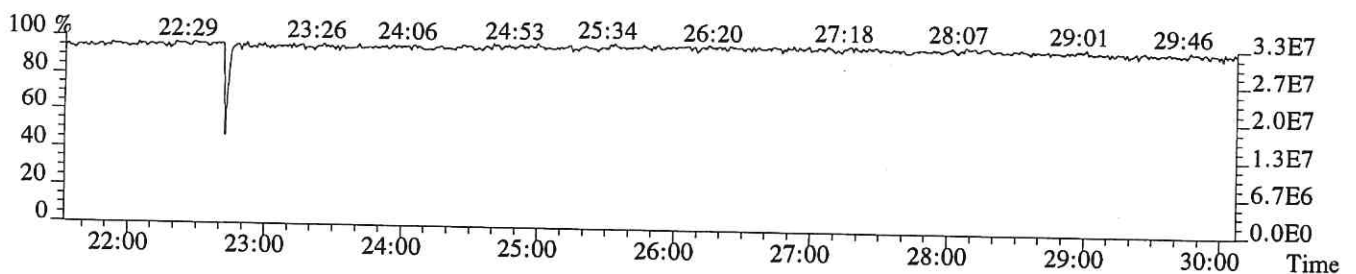
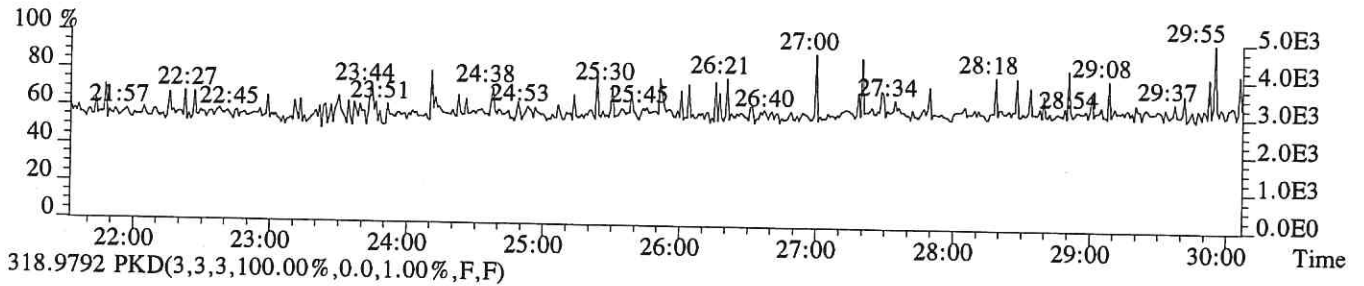
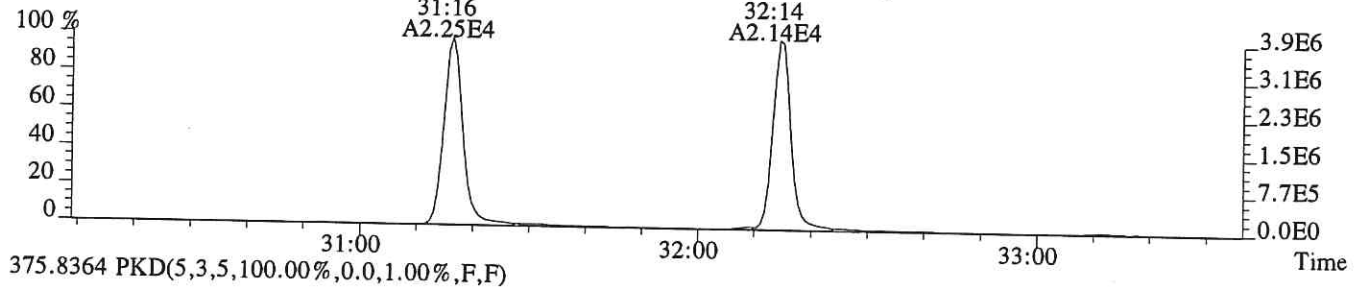
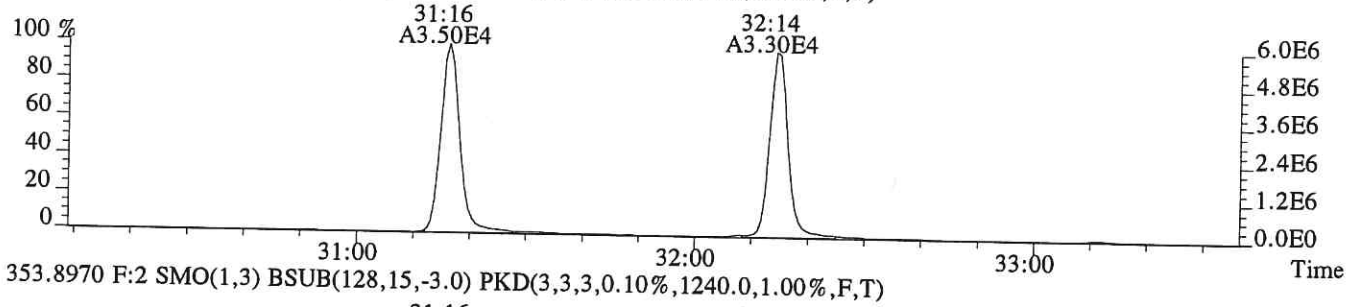
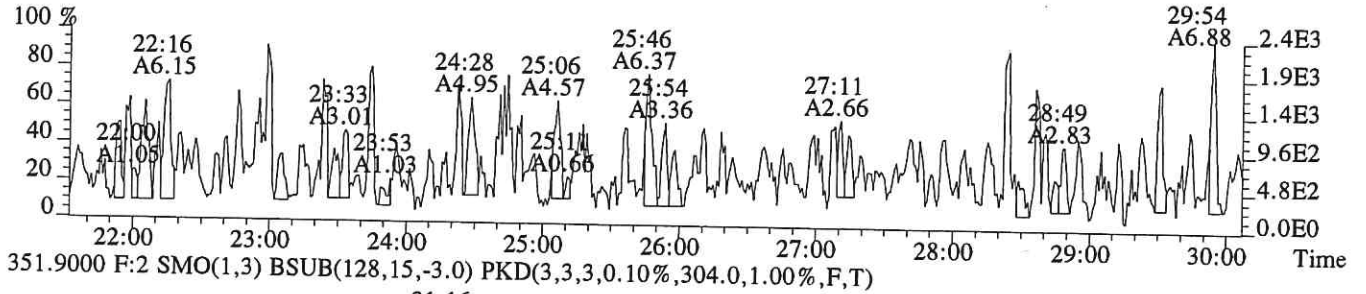
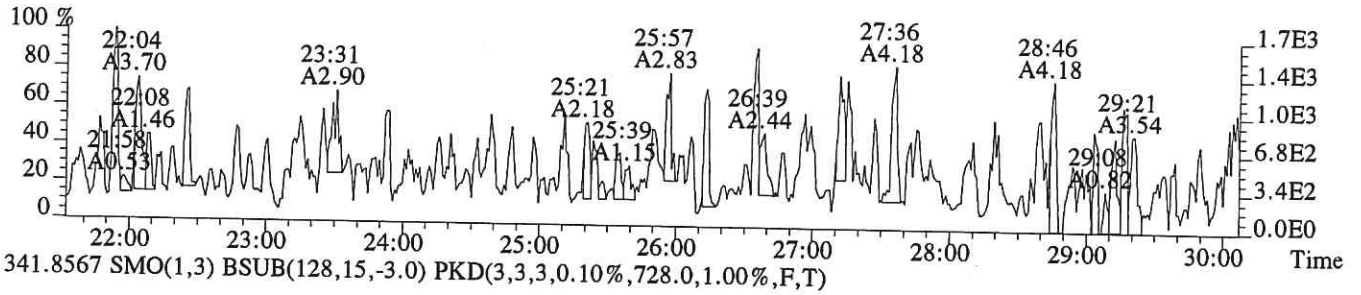
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



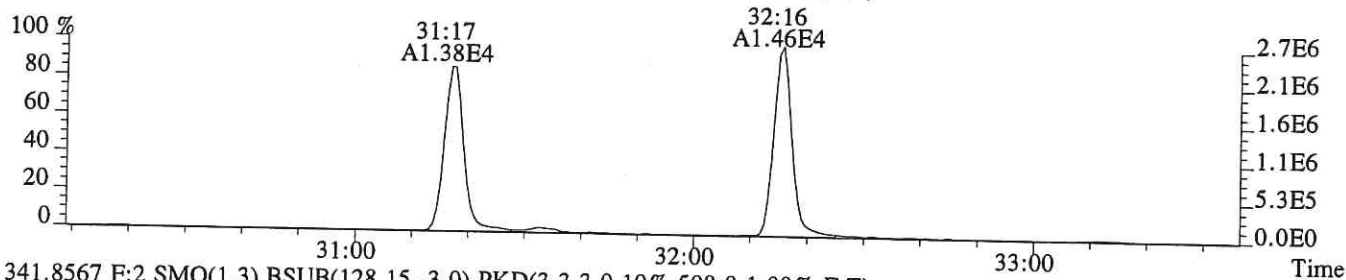
File:P618240 #1-609 Acq: 1-AUG-2019 19:21:00 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:2ND SOURCE
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1276.0,1.00%,F,T)



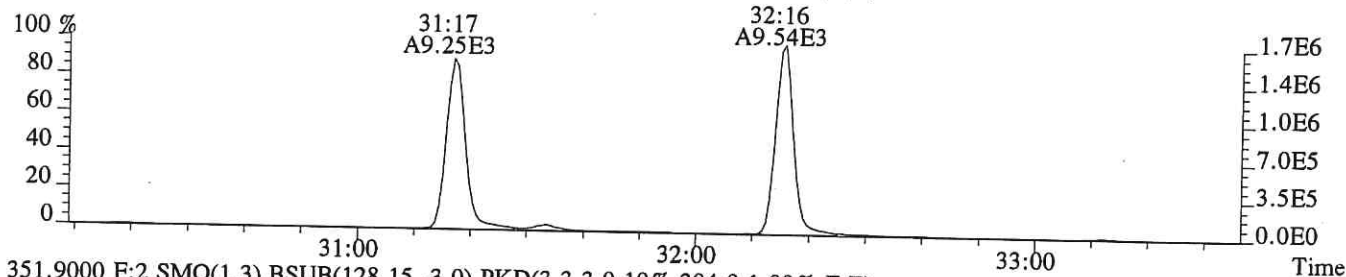
File:P618240 #1-609 Acq: 1-AUG-2019 19:21:00 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:2ND SOURCE
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,464.0,1.00%,F,T)



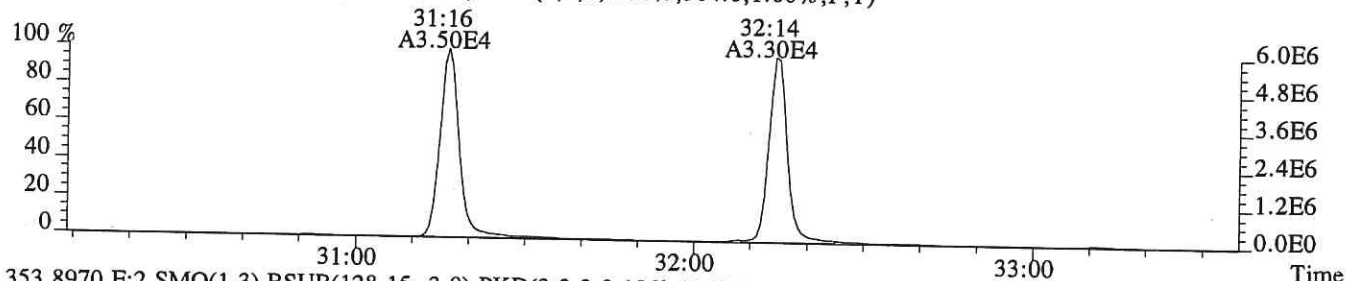
File:P618240 #1-312 Acq: 1-AUG-2019 19:21:00 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:2ND SOURCE
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,952.0,1.00%,F,T)



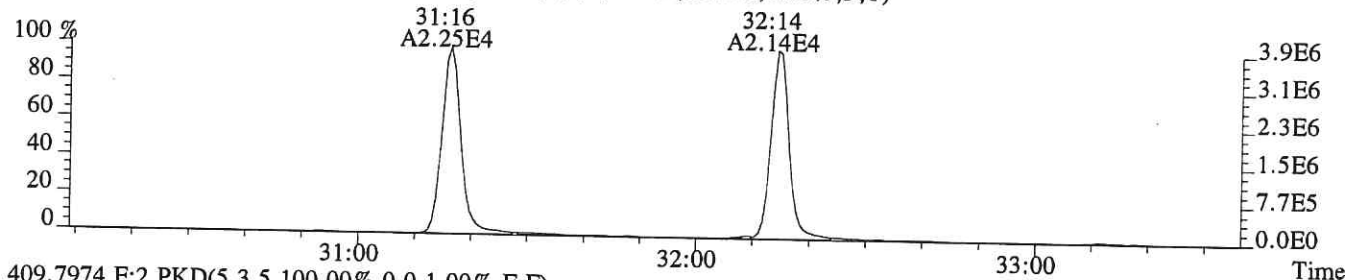
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,508.0,1.00%,F,T)



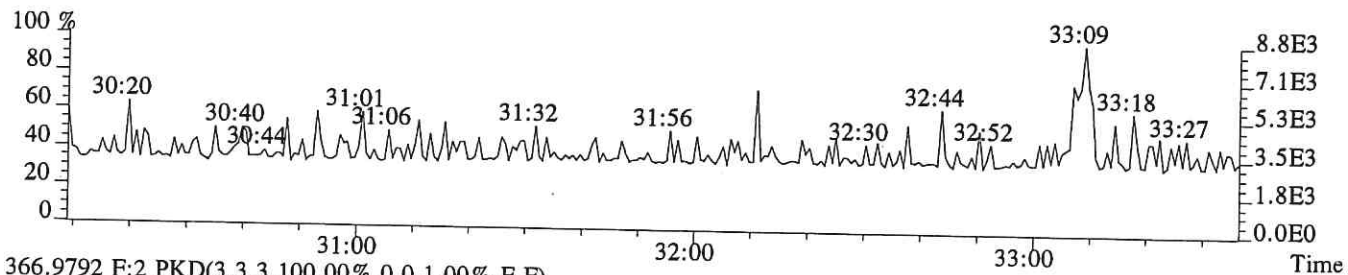
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,304.0,1.00%,F,T)



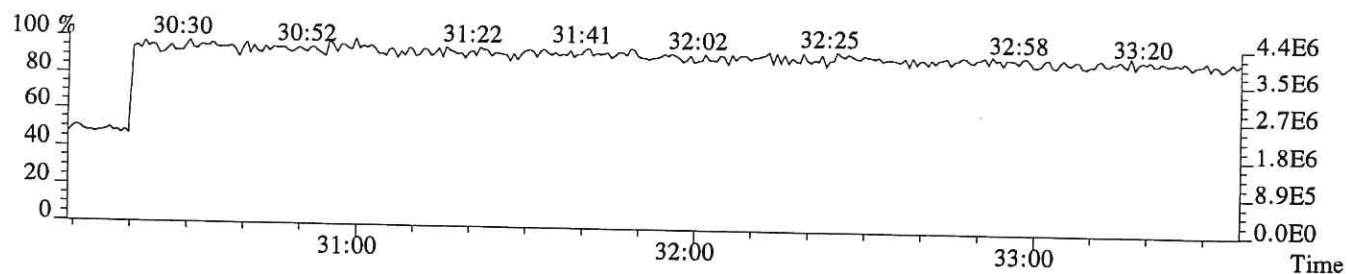
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1240.0,1.00%,F,T)



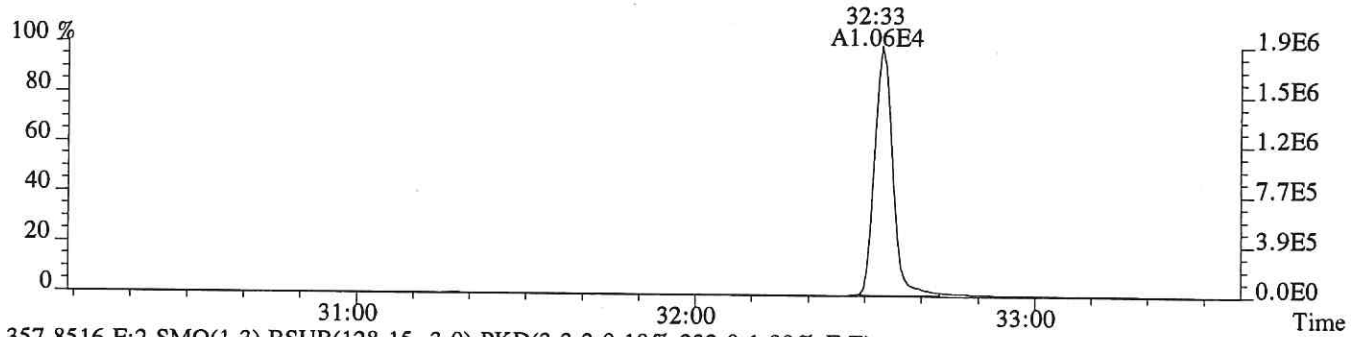
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



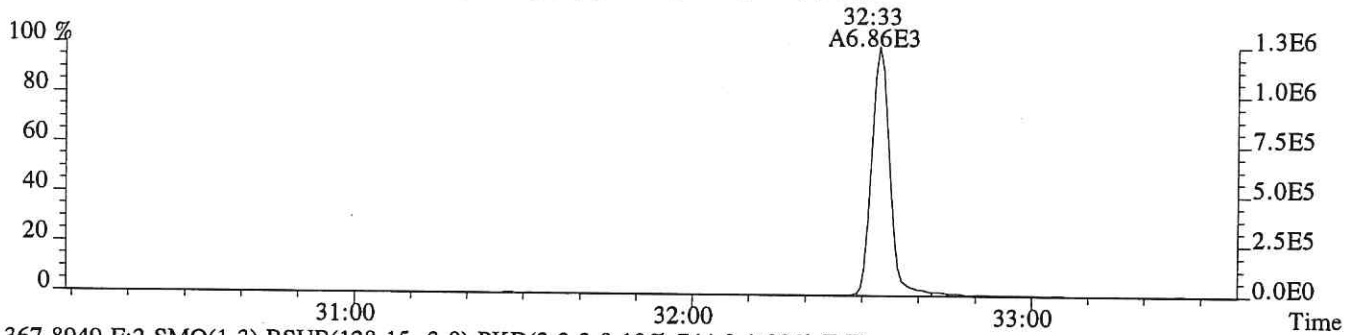
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



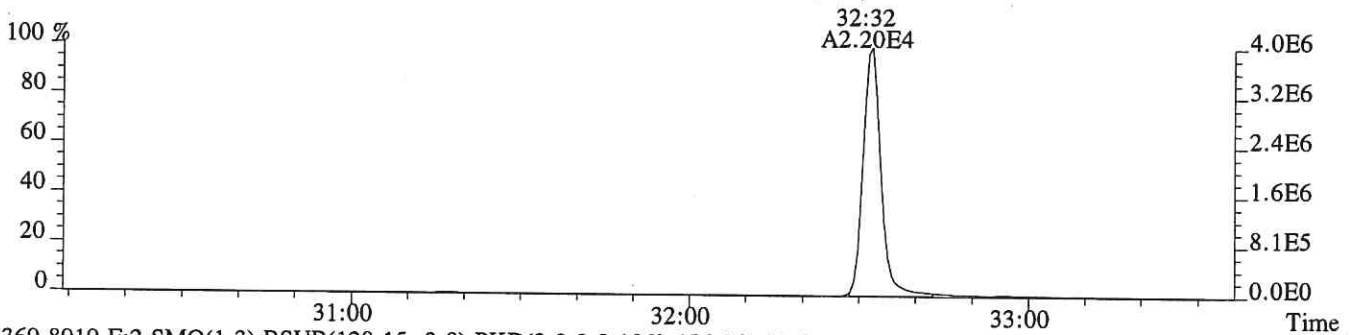
File:P618240 #1-312 Acq: 1-AUG-2019 19:21:00 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:2ND SOURCE
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,676.0,1.00%,F,T)



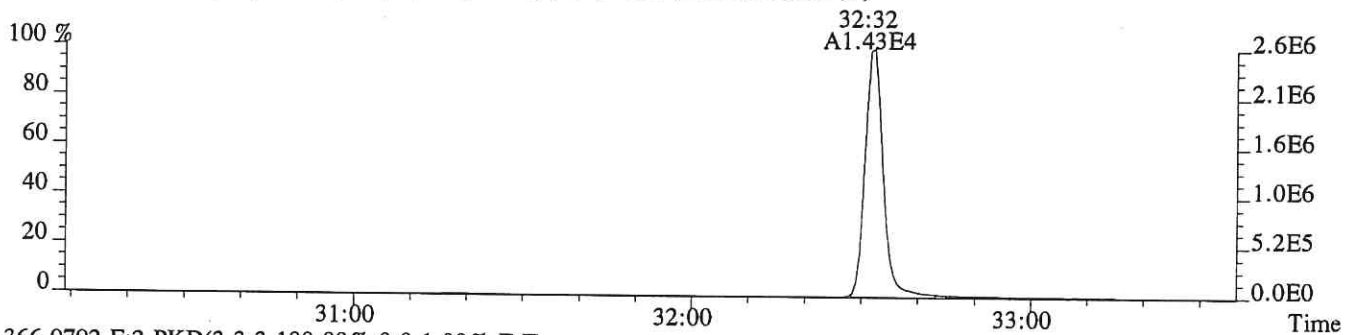
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,232.0,1.00%,F,T)



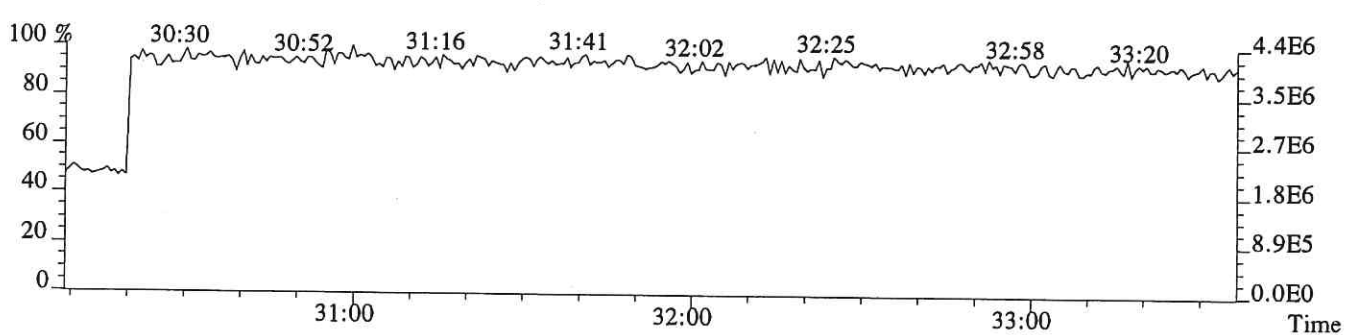
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,744.0,1.00%,F,T)



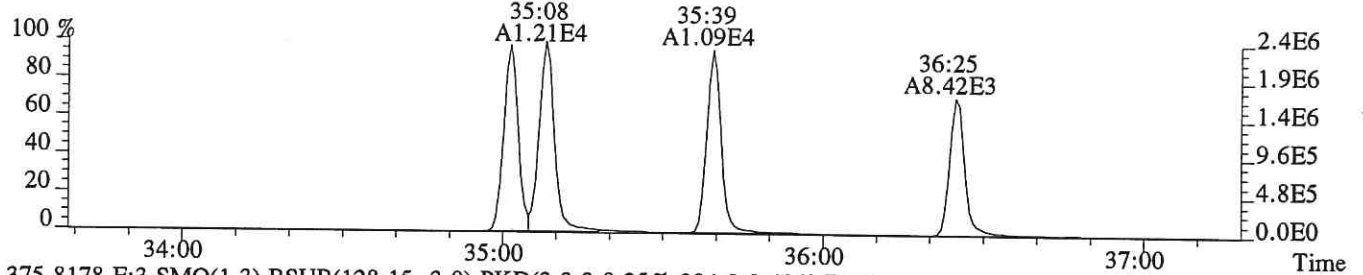
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,456.0,1.00%,F,T)



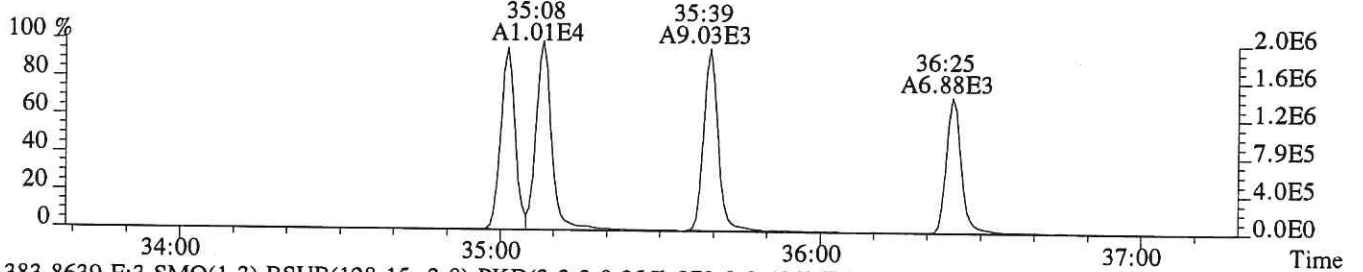
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



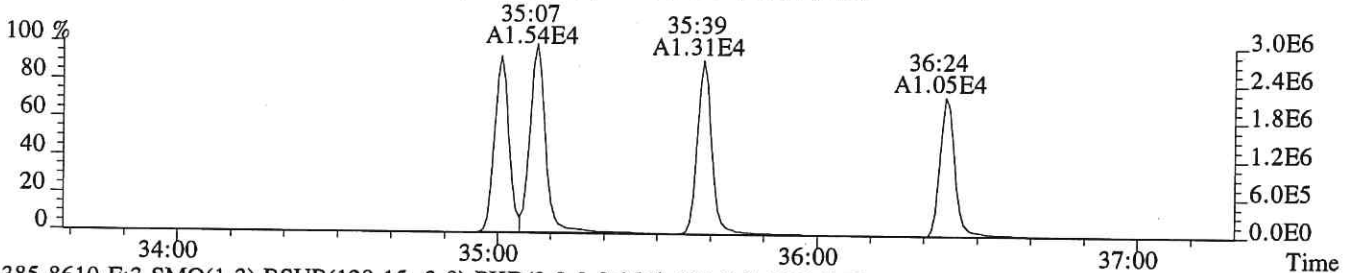
File:P618240 #1-330 Acq: 1-AUG-2019 19:21:00 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:2ND SOURCE
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1040.0,0.40%,F,T)



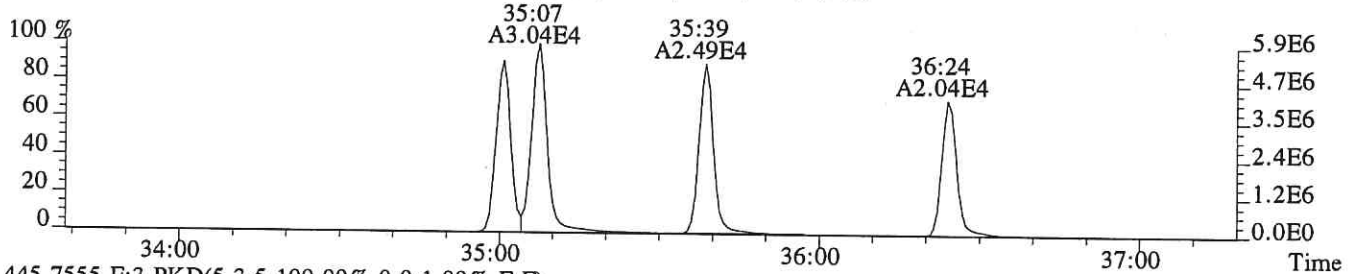
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,384.0,0.40%,F,T)



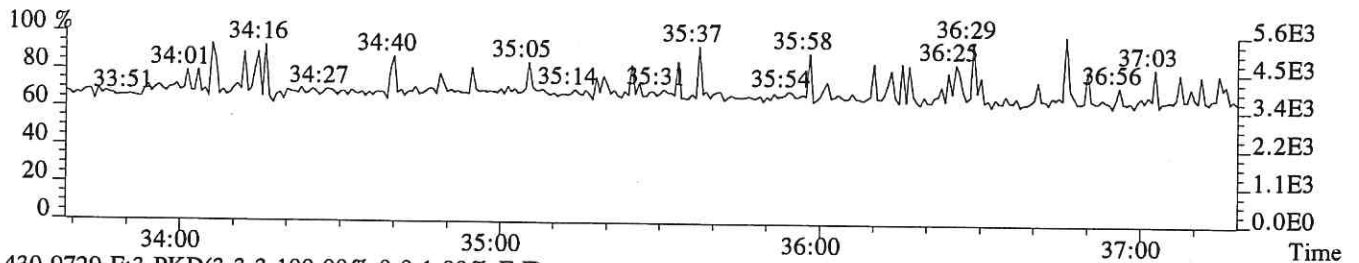
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,372.0,0.40%,F,T)



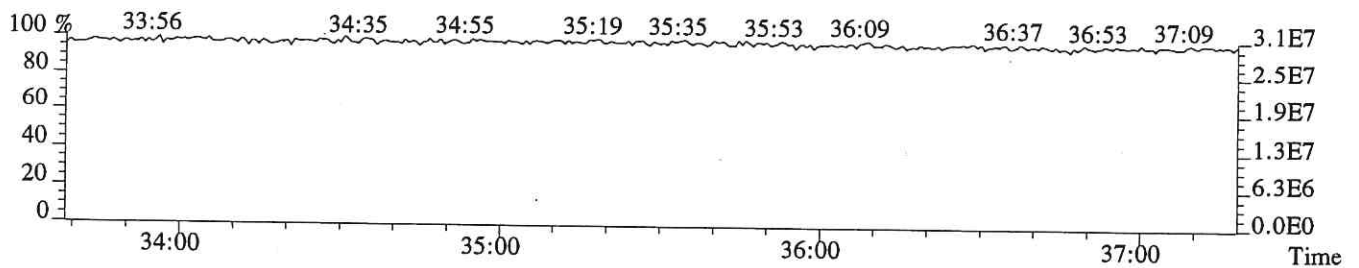
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,480.0,0.40%,F,T)



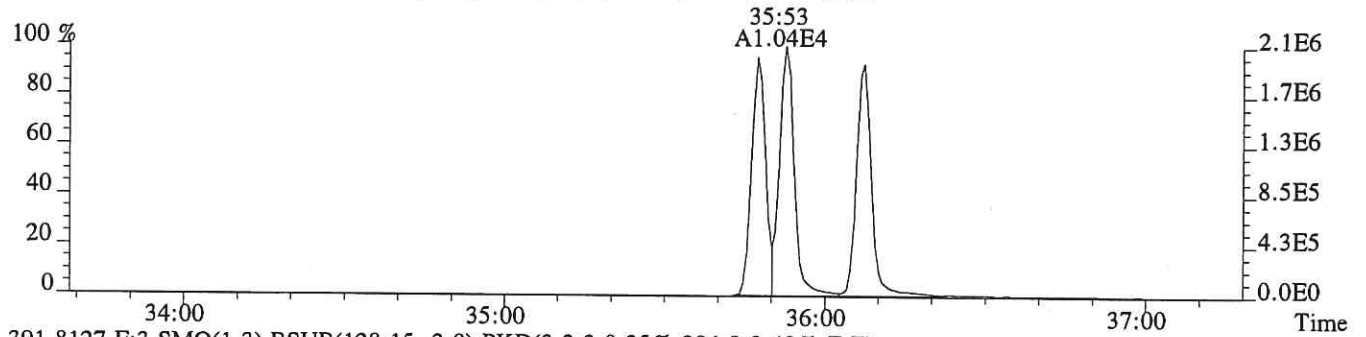
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



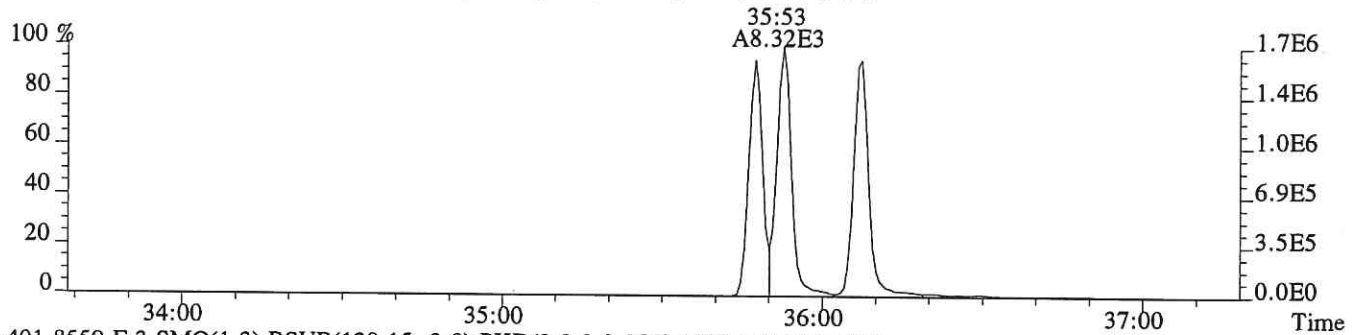
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



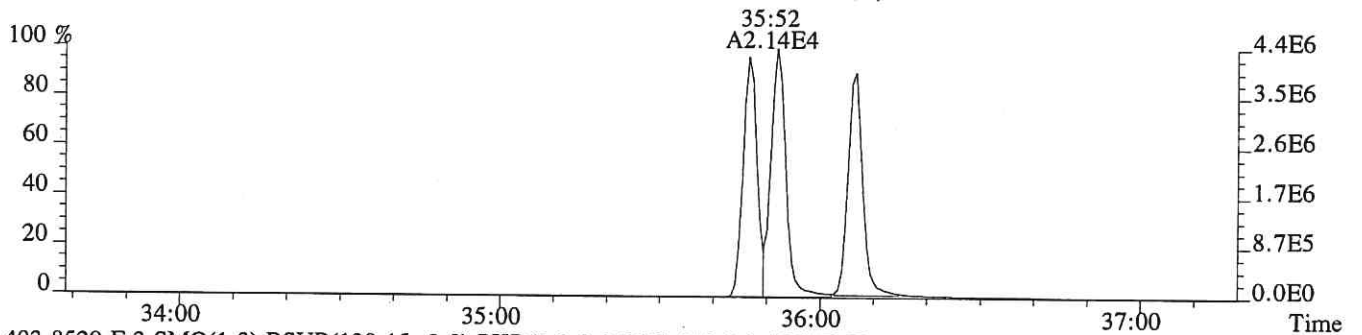
File:P618240 #1-330 Acq: 1-AUG-2019 19:21:00 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:2ND SOURCE
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,428.0,0.40%,F,T)



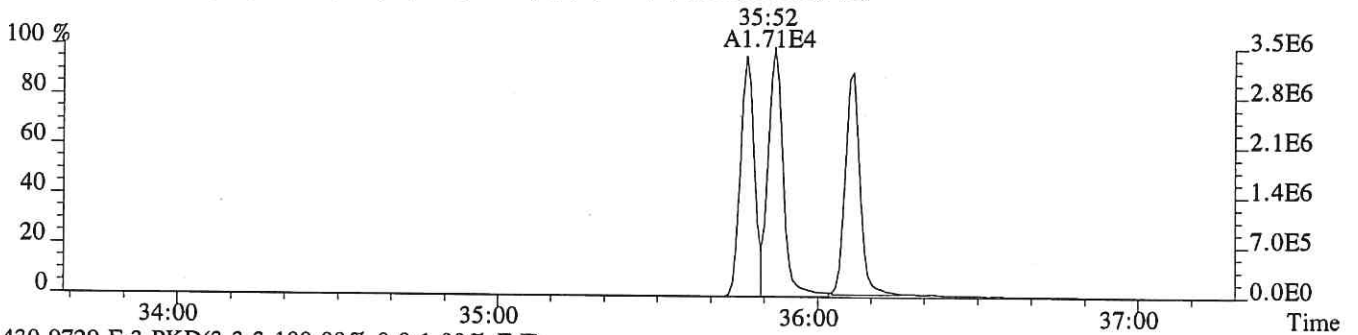
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,304.0,0.40%,F,T)



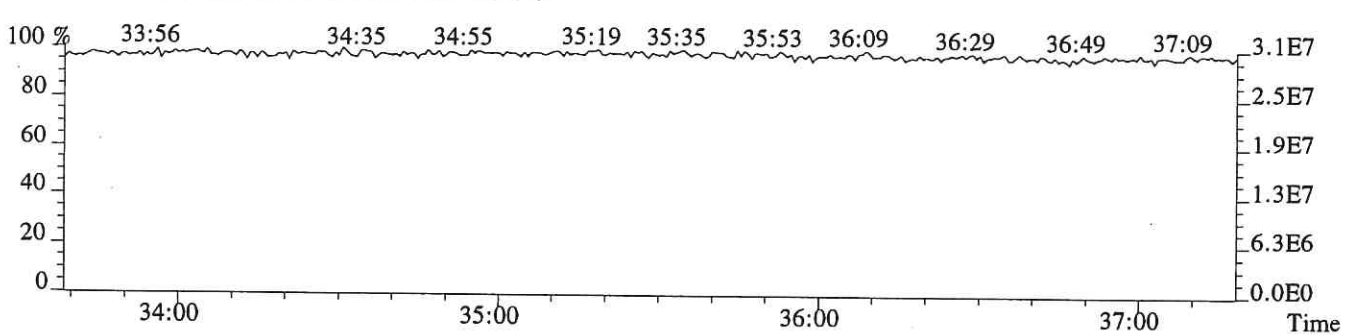
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1100.0,0.40%,F,T)



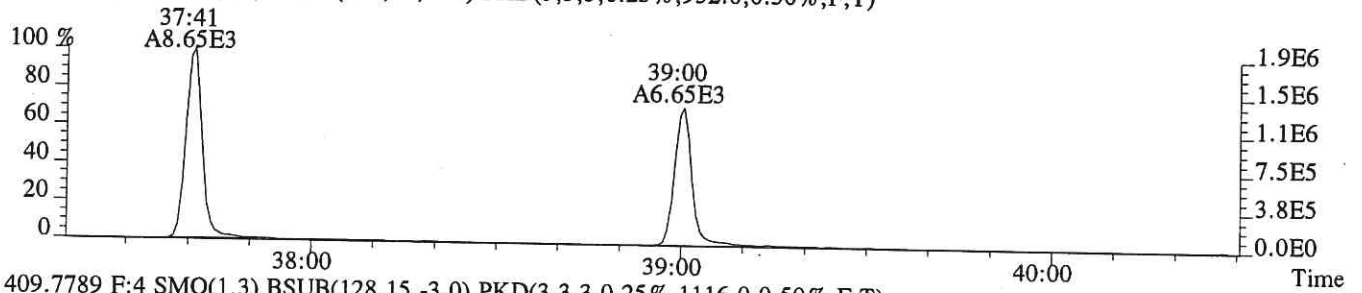
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,448.0,0.40%,F,T)



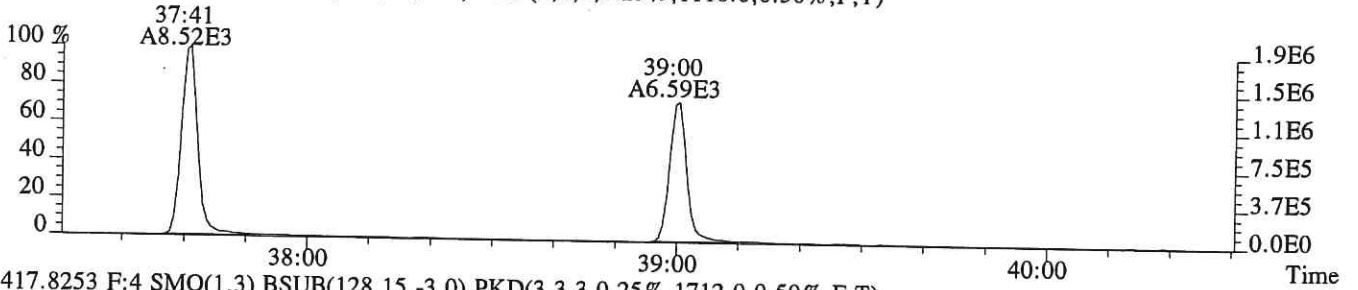
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



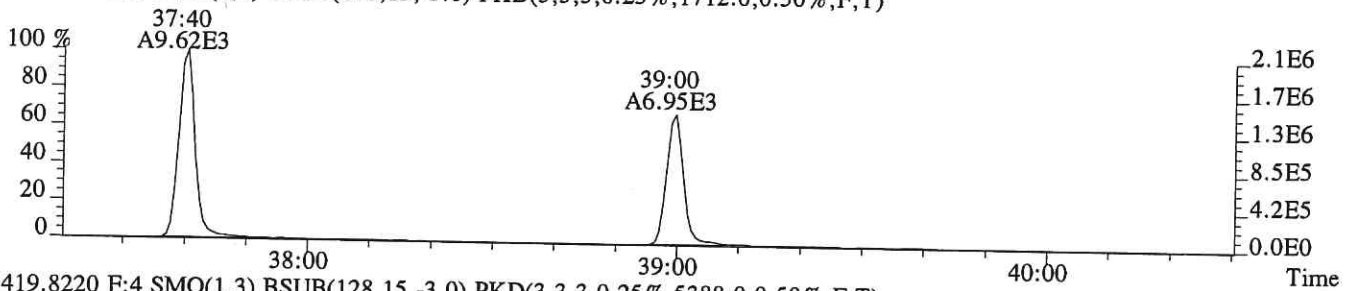
File: P618240 #1-286 Acq: 1-AUG-2019 19:21:00 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: 2ND SOURCE
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,932.0,0.50%,F,T)



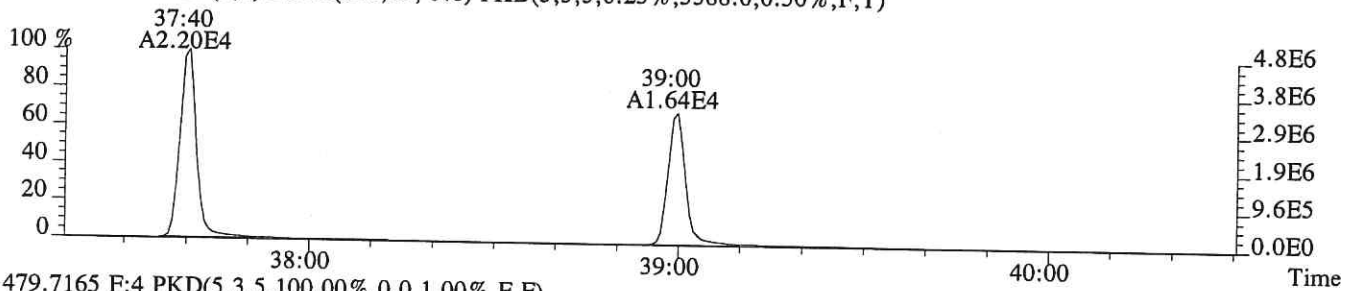
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1116.0,0.50%,F,T)



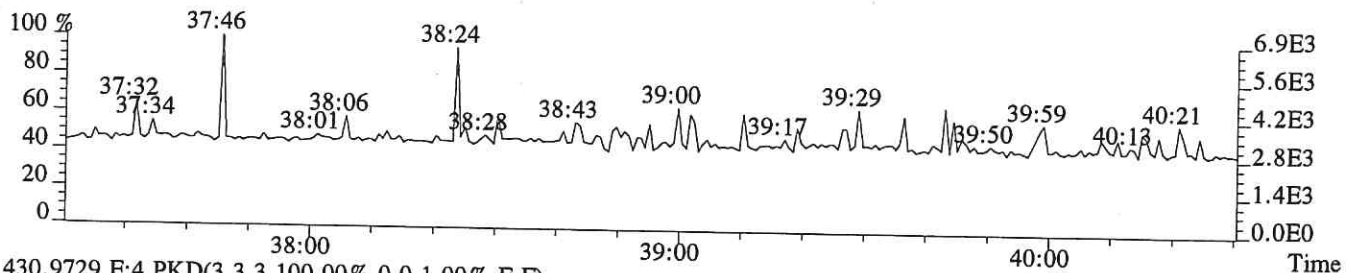
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1712.0,0.50%,F,T)



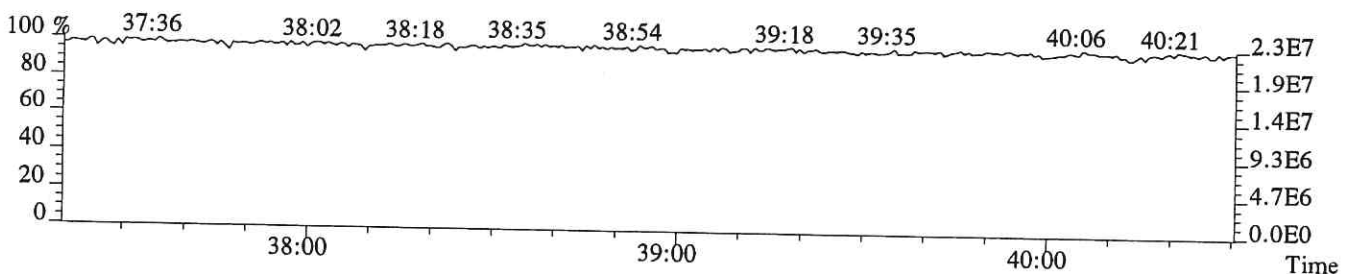
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5388.0,0.50%,F,T)



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

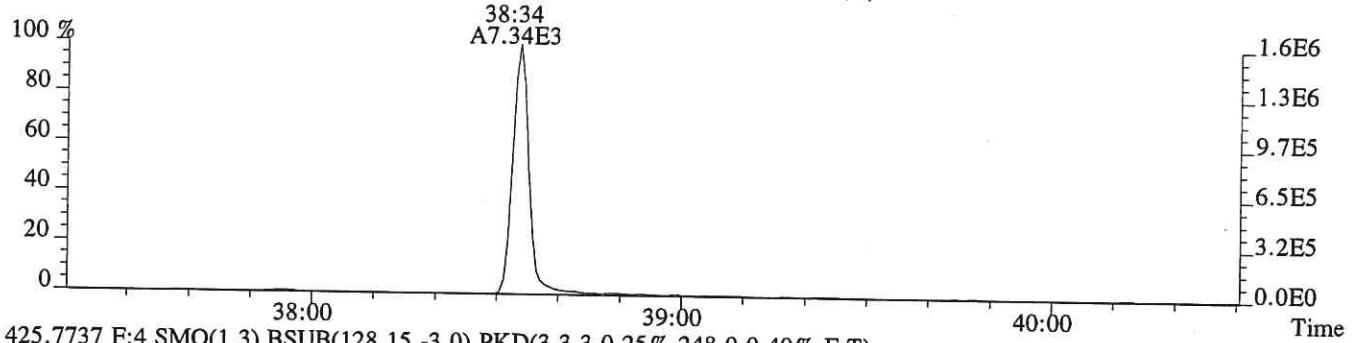


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

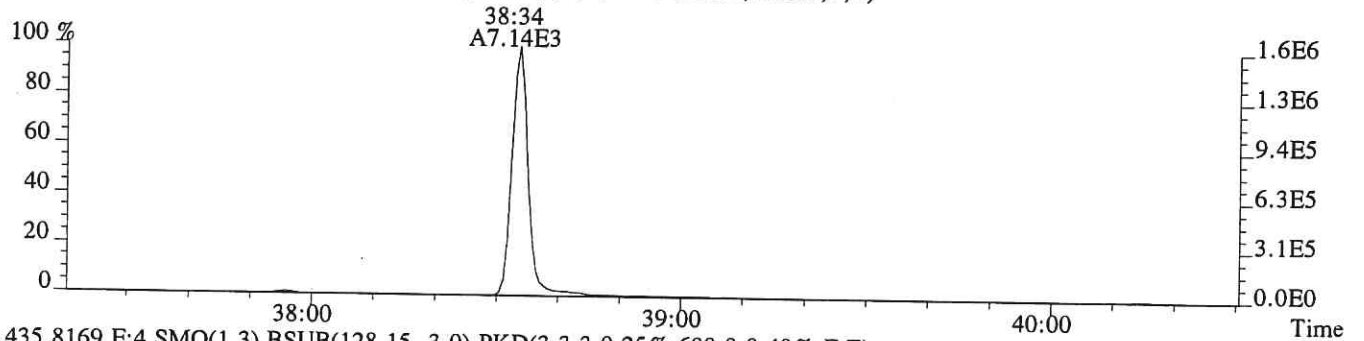


File: P618240 #1-286 Acq: 1-AUG-2019 19:21:00 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp: 2ND SOURCE

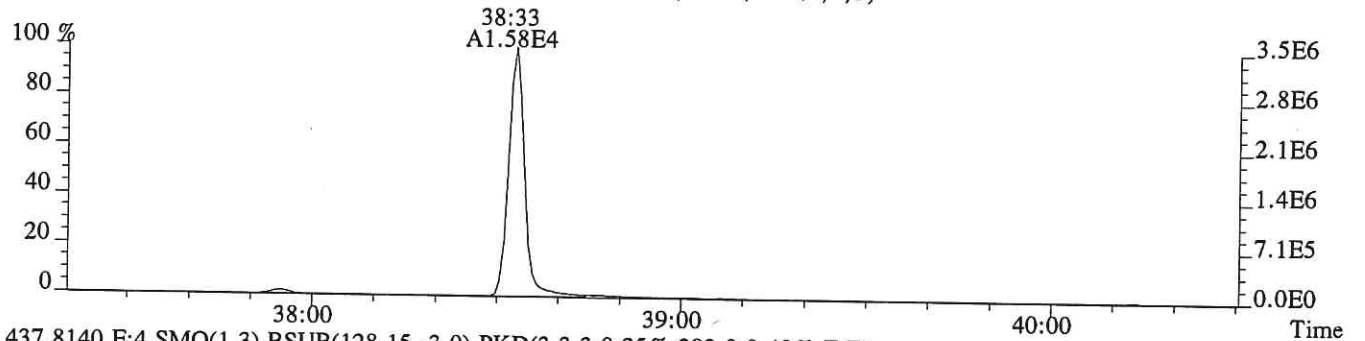
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,868.0,0.40%,F,T)



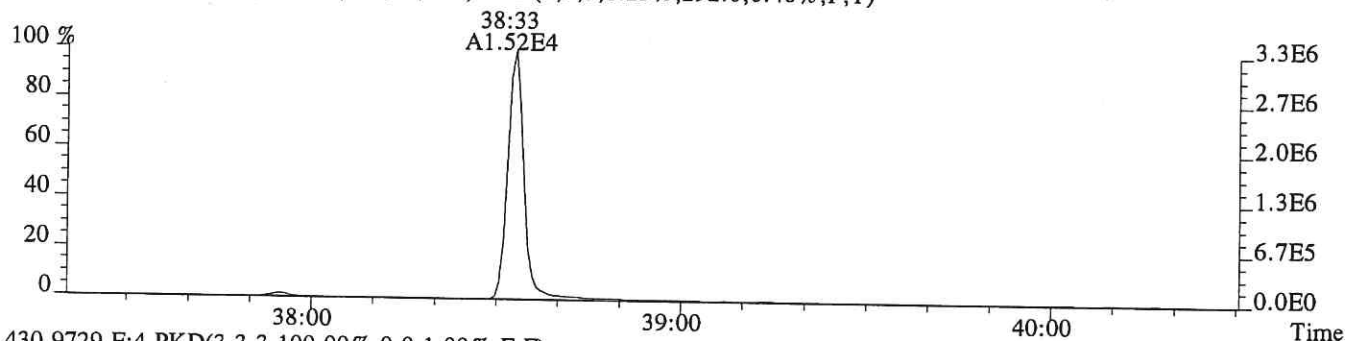
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,248.0,0.40%,F,T)



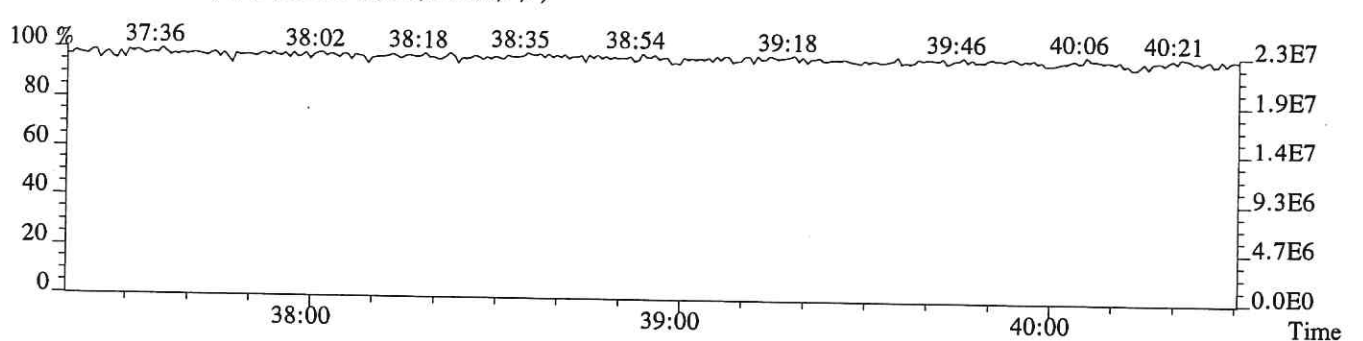
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,600.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,292.0,0.40%,F,T)

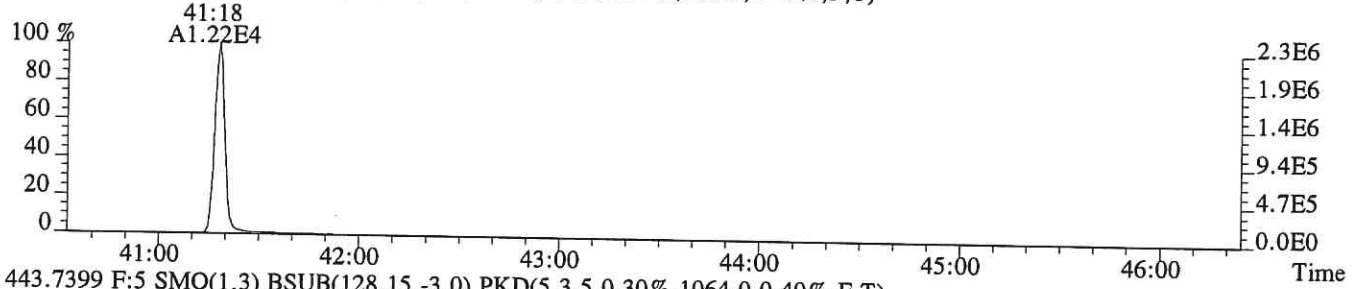


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

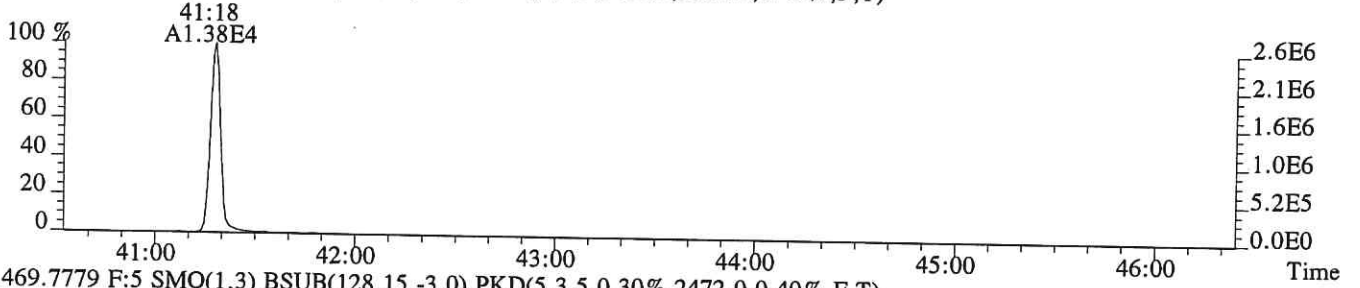


File:P618240 #1-528 Acq: 1-AUG-2019 19:21:00 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:2ND SOURCE

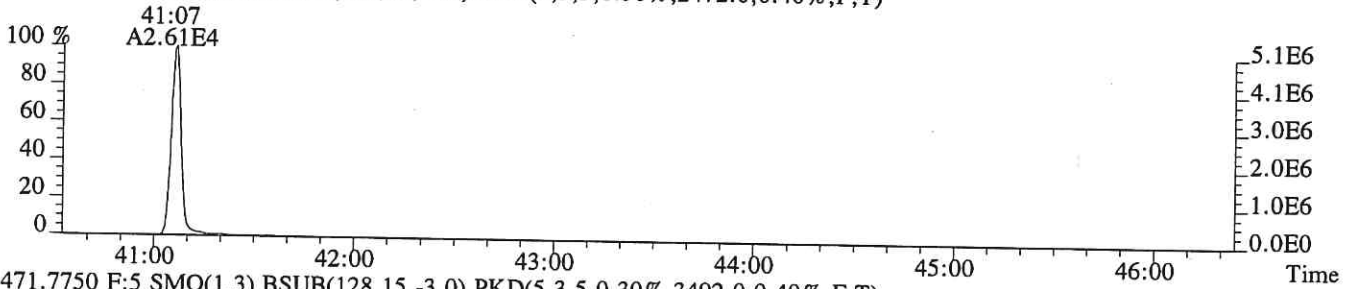
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,516.0,0.40%,F,T)



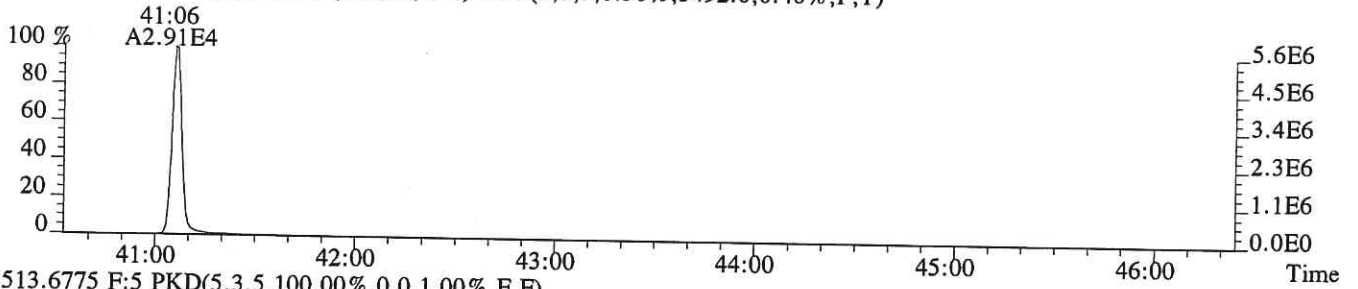
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1064.0,0.40%,F,T)



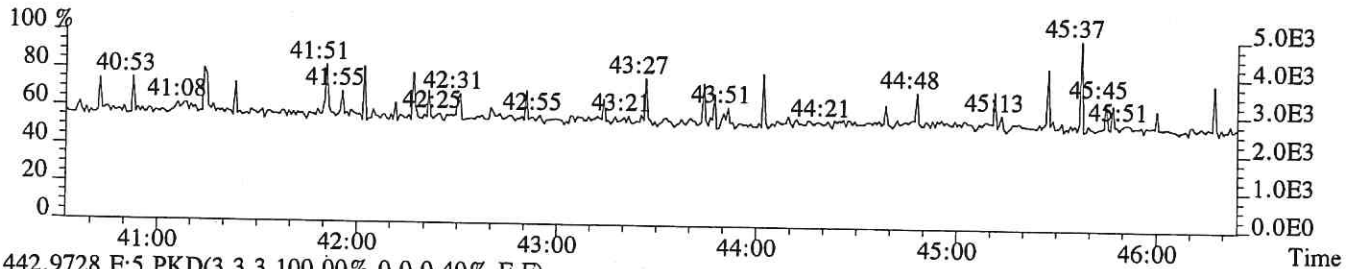
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2472.0,0.40%,F,T)



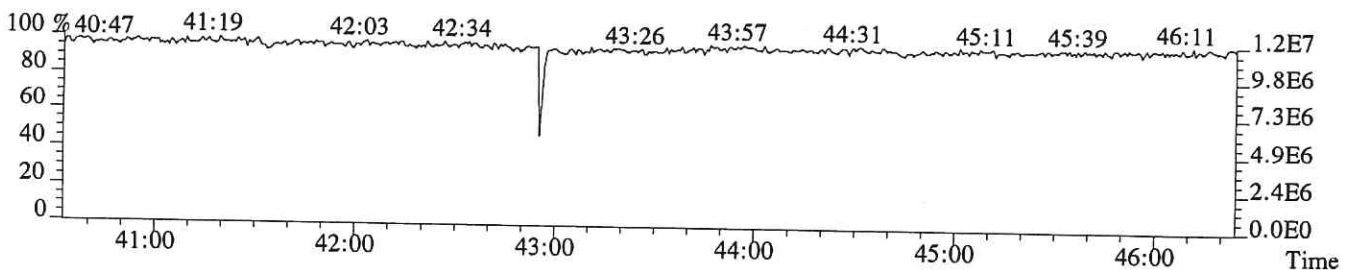
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3492.0,0.40%,F,T)



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



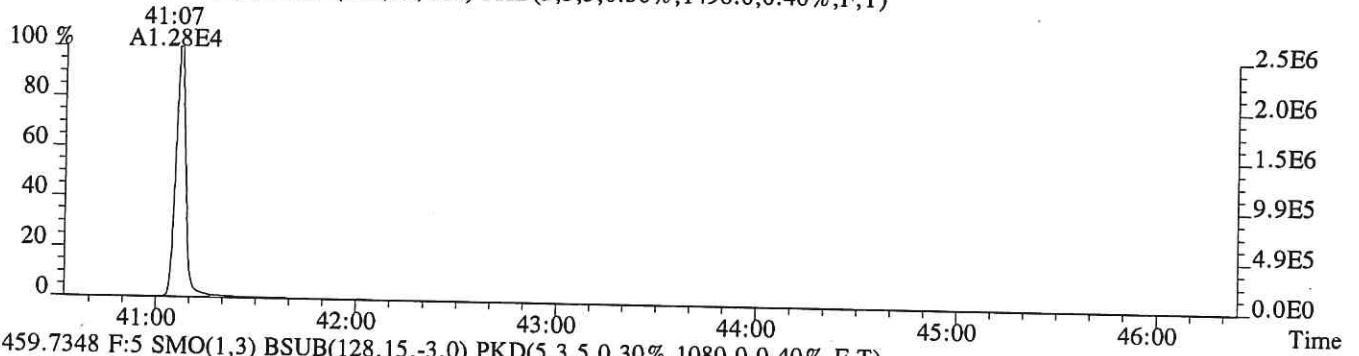
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



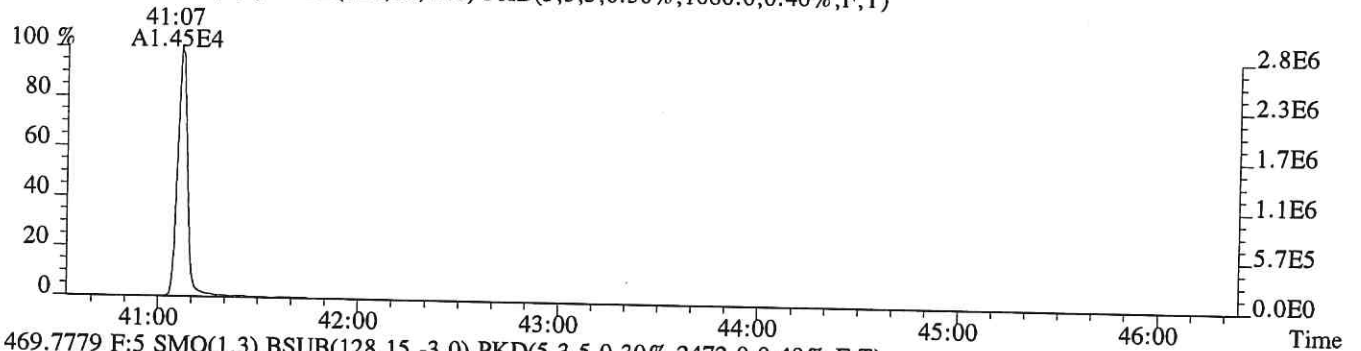
File:P618240 #1-528 Acq: 1-AUG-2019 19:21:00 Probe EI+ Magnet SIR VG BioTech Mass spectf

Sample#1 Exp:2ND SOURCE

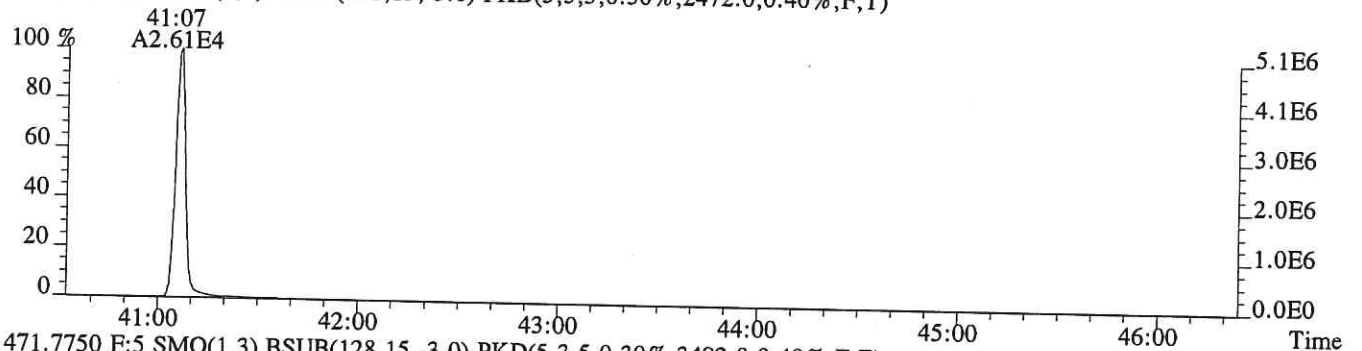
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1496.0,0.40%,F,T)



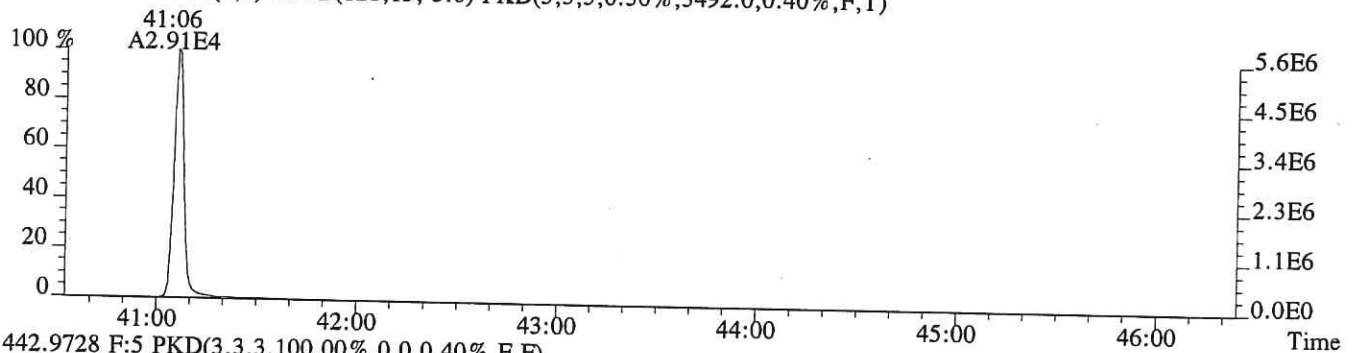
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1080.0,0.40%,F,T)



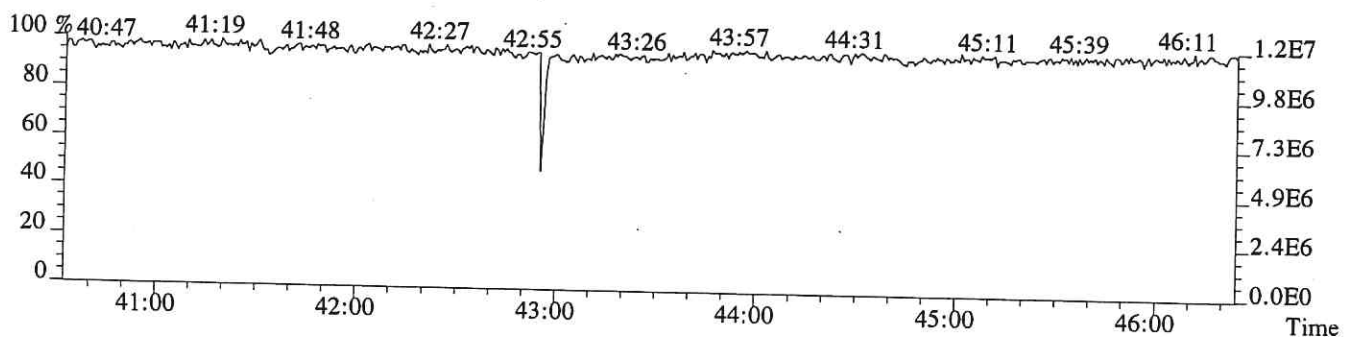
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2472.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3492.0,0.40%,F,T)



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





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October 09, 2019

Susan Huang
Aptim Environmental & Infrastructure, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS19100210**

Laboratory Results for: **LHAAP-03**

Dear Susan,

ALS Environmental received 8 sample(s) on Oct 03, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
Work Order: HS19100210

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19100210-01	03SB29-06-07-191002	Soil		02-Oct-2019 10:50	03-Oct-2019 08:33	<input type="checkbox"/>
HS19100210-02	03FL001-01-191002	Soil		02-Oct-2019 13:45	03-Oct-2019 08:33	<input type="checkbox"/>
HS19100210-03	03FL001-01-191002-FD	Soil		02-Oct-2019 13:45	03-Oct-2019 08:33	<input type="checkbox"/>
HS19100210-04	03WF001-01-191002	Soil		02-Oct-2019 14:05	03-Oct-2019 08:33	<input type="checkbox"/>
HS19100210-05	03FL003-08-191002	Soil		02-Oct-2019 14:25	03-Oct-2019 08:33	<input type="checkbox"/>
HS19100210-06	03WL001-06-07-191002	Soil		02-Oct-2019 14:40	03-Oct-2019 08:33	<input type="checkbox"/>
HS19100210-07	03FL002-08-191002	Soil		02-Oct-2019 16:00	03-Oct-2019 08:33	<input type="checkbox"/>
HS19100210-08	03SP001-191002	Soil		02-Oct-2019 16:30	03-Oct-2019 08:33	<input type="checkbox"/>

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
Work Order: HS19100210

CASE NARRATIVE

Metals by Method SW7470

Batch ID: 146197

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Metals by Method SW1311/6020

Batch ID: 146133

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Metals by Method SW6020

Batch ID: 146050

Sample ID: 03FL002-08-191002 (HS19100210-07MS)

- ,Lead failed for MS but passed for MSD and PDS.
-

WetChemistry by Method ASTM D2216

Batch ID: R347814

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP-03
 Sample ID: 03SB29-06-07-191002
 Collection Date: 02-Oct-2019 10:50

ANALYTICAL REPORT

WorkOrder:HS19100210
 Lab ID:HS19100210-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 07-Oct-2019		Analyst: JHD
Arsenic	1.78		0.0781	0.112	0.558	mg/Kg-dry	1	07-Oct-2019 22:06
Lead	7.97		0.0145	0.112	0.558	mg/Kg-dry	1	07-Oct-2019 22:06
MOISTURE - ASTM D2216	Method:ASTM D2216							Analyst: DFF
Percent Moisture	15.7		0.0100	0.0100	0.0100	wt%	1	07-Oct-2019 10:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP-03
 Sample ID: 03FL001-01-191002
 Collection Date: 02-Oct-2019 13:45

ANALYTICAL REPORT

WorkOrder:HS19100210
 Lab ID:HS19100210-02
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 07-Oct-2019		Analyst: JHD
Arsenic	2.34		0.0709	0.101	0.507	mg/Kg-dry	1	07-Oct-2019 22:08
Lead	13.4		0.0132	0.101	0.507	mg/Kg-dry	1	07-Oct-2019 22:08
MOISTURE - ASTM D2216	Method:ASTM D2216							Analyst: DFF
Percent Moisture	6.19		0.0100	0.0100	0.0100	wt%	1	07-Oct-2019 10:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
Sample ID: 03FL001-01-191002-FD
Collection Date: 02-Oct-2019 13:45

ANALYTICAL REPORT
WorkOrder:HS19100210
Lab ID:HS19100210-03
Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 07-Oct-2019		Analyst: JHD
Arsenic	1.91		0.0717	0.102	0.512	mg/Kg-dry	1	07-Oct-2019 22:10
Lead	13.6		0.0133	0.102	0.512	mg/Kg-dry	1	07-Oct-2019 22:10
MOISTURE - ASTM D2216	Method:ASTM D2216							Analyst: DFF
Percent Moisture	6.14		0.0100	0.0100	0.0100	wt%	1	07-Oct-2019 10:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP-03
 Sample ID: 03WF001-01-191002
 Collection Date: 02-Oct-2019 14:05

ANALYTICAL REPORT

WorkOrder:HS19100210
 Lab ID:HS19100210-04
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A		Method:SW6020				Prep:SW3050A / 07-Oct-2019		Analyst: JHD
Arsenic	3.38		0.0735	0.105	0.525	mg/Kg-dry	1	07-Oct-2019 22:12
Lead	75.5		0.0137	0.105	0.525	mg/Kg-dry	1	07-Oct-2019 22:12
MOISTURE - ASTM D2216		Method:ASTM D2216						Analyst: DFF
Percent Moisture	7.91		0.0100	0.0100	0.0100	wt%	1	07-Oct-2019 10:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP-03
 Sample ID: 03FL003-08-191002
 Collection Date: 02-Oct-2019 14:25

ANALYTICAL REPORT

WorkOrder:HS19100210
 Lab ID:HS19100210-05
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A		Method:SW6020				Prep:SW3050A / 07-Oct-2019		Analyst: JHD
Arsenic	2.77		0.0773	0.110	0.552	mg/Kg-dry	1	07-Oct-2019 22:15
Lead	9.43		0.0144	0.110	0.552	mg/Kg-dry	1	07-Oct-2019 22:15
MOISTURE - ASTM D2216		Method:ASTM D2216						Analyst: DFF
Percent Moisture	12.2		0.0100	0.0100	0.0100	wt%	1	07-Oct-2019 10:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP-03
 Sample ID: 03WL001-06-07-191002
 Collection Date: 02-Oct-2019 14:40

ANALYTICAL REPORT

WorkOrder:HS19100210
 Lab ID:HS19100210-06
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 07-Oct-2019		Analyst: JHD
Arsenic	6.33		0.0766	0.109	0.547	mg/Kg-dry	1	07-Oct-2019 22:17
Lead	8.96		0.0142	0.109	0.547	mg/Kg-dry	1	07-Oct-2019 22:17
MOISTURE - ASTM D2216	Method:ASTM D2216							Analyst: DFF
Percent Moisture	11.7		0.0100	0.0100	0.0100	wt%	1	07-Oct-2019 10:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP-03
 Sample ID: 03FL002-08-191002
 Collection Date: 02-Oct-2019 16:00

ANALYTICAL REPORT

WorkOrder:HS19100210
 Lab ID:HS19100210-07
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A		Method:SW6020				Prep:SW3050A / 07-Oct-2019		Analyst: JC
Arsenic	3.58		0.0737	0.105	0.526	mg/Kg-dry	1	08-Oct-2019 13:09
Lead	8.04		0.0137	0.105	0.526	mg/Kg-dry	1	08-Oct-2019 13:09
MOISTURE - ASTM D2216		Method:ASTM D2216						Analyst: DFF
Percent Moisture	11.8		0.0100	0.0100	0.0100	wt%	1	07-Oct-2019 10:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP-03
 Sample ID: 03SP001-191002
 Collection Date: 02-Oct-2019 16:30

ANALYTICAL REPORT
 WorkOrder:HS19100210
 Lab ID:HS19100210-08
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
TCLP METALS BY SW6020A	Method:SW1311/6020		Leache:SW1311 / 08-Oct-2019		Prep:SW3010A / 08-Oct-2019		Analyst: JHD	
Arsenic	0.00500	U	0.00400	0.00500	0.0500	mg/L	1	09-Oct-2019 14:13
Barium	1.46		0.0190	0.0250	0.200	mg/L	1	09-Oct-2019 14:13
Cadmium	0.00500	U	0.00200	0.00500	0.0500	mg/L	1	09-Oct-2019 14:13
Chromium	0.00443	J	0.00400	0.00500	0.0500	mg/L	1	09-Oct-2019 14:13
Lead	0.0267	J	0.00600	0.0100	0.0500	mg/L	1	09-Oct-2019 14:13
Selenium	0.0250	U	0.0110	0.0250	0.0500	mg/L	1	09-Oct-2019 14:13
Silver	0.00500	U	0.00200	0.00500	0.0500	mg/L	1	09-Oct-2019 14:13
TCLP MERCURY BY SW7470A	Method:SW7470		Leache:SW1311 / 08-Oct-2019		Prep:SW7470 / 09-Oct-2019		Analyst: FO	
Mercury	0.000100	U	0.0000300	0.000100	0.000200	mg/L	1	09-Oct-2019 14:40

Note: See Qualifiers Page for a list of qualifiers and their explanation.

WEIGHT LOG

Client: Aptim Environmental & Infrastructure, Inc.**Project:** LHAAP-03**WorkOrder:** HS19100210**Batch ID:** 146050 **Method:** METALS BY SW6020A **Prep:** 3050_I_LOW

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19100210-01	1	0.5319	50 (mL)	94
HS19100210-02	1	0.5259	50 (mL)	95.08
HS19100210-03	1	0.5201	50 (mL)	96.14
HS19100210-04	1	0.517	50 (mL)	96.71
HS19100210-05	1	0.5157	50 (mL)	96.96
HS19100210-06	1	0.5176	50 (mL)	96.6
HS19100210-07	1	0.5384	50 (mL)	92.87

Batch ID: 146133 **Method:** TCLP METALS BY SW6020A **Prep:** 3010A_TCLP

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19100210-08	1	1	10 (mL)	10

Batch ID: 146197 **Method:** TCLP MERCURY BY SW7470A **Prep:** 1311_HGPR

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19100210-08	1	10 (mL)	10 (mL)	1

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS19100210

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: 146050 (0)		Test Name : METALS BY SW6020A			Matrix: Soil	
HS19100210-01	03SB29-06-07-191002	02 Oct 2019 10:50		07 Oct 2019 07:30	07 Oct 2019 22:06	1
HS19100210-02	03FL001-01-191002	02 Oct 2019 13:45		07 Oct 2019 07:30	07 Oct 2019 22:08	1
HS19100210-03	03FL001-01-191002-FD	02 Oct 2019 13:45		07 Oct 2019 07:30	07 Oct 2019 22:10	1
HS19100210-04	03WF001-01-191002	02 Oct 2019 14:05		07 Oct 2019 07:30	07 Oct 2019 22:12	1
HS19100210-05	03FL003-08-191002	02 Oct 2019 14:25		07 Oct 2019 07:30	07 Oct 2019 22:15	1
HS19100210-06	03WL001-06-07-191002	02 Oct 2019 14:40		07 Oct 2019 07:30	07 Oct 2019 22:17	1
HS19100210-07	03FL002-08-191002	02 Oct 2019 16:00		07 Oct 2019 07:30	08 Oct 2019 13:09	1
Batch ID: 146133 (0)		Test Name : TCLP METALS BY SW6020A			Matrix: Soil	
HS19100210-08	03SP001-191002	02 Oct 2019 16:30	08 Oct 2019 08:00	08 Oct 2019 13:00	09 Oct 2019 14:13	1
Batch ID: 146197 (0)		Test Name : TCLP MERCURY BY SW7470A			Matrix: Soil	
HS19100210-08	03SP001-191002	02 Oct 2019 16:30	08 Oct 2019 08:00	09 Oct 2019 10:00	09 Oct 2019 14:40	1
Batch ID: R347814 (0)		Test Name : MOISTURE - ASTM D2216			Matrix: Soil	
HS19100210-01	03SB29-06-07-191002	02 Oct 2019 10:50			07 Oct 2019 10:51	1
HS19100210-02	03FL001-01-191002	02 Oct 2019 13:45			07 Oct 2019 10:51	1
HS19100210-03	03FL001-01-191002-FD	02 Oct 2019 13:45			07 Oct 2019 10:51	1
HS19100210-04	03WF001-01-191002	02 Oct 2019 14:05			07 Oct 2019 10:51	1
HS19100210-05	03FL003-08-191002	02 Oct 2019 14:25			07 Oct 2019 10:51	1
HS19100210-06	03WL001-06-07-191002	02 Oct 2019 14:40			07 Oct 2019 10:51	1
HS19100210-07	03FL002-08-191002	02 Oct 2019 16:00			07 Oct 2019 10:51	1

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS19100210

QC BATCH REPORT

Batch ID: 146050 (0)		Instrument: ICPMS04		Method: METALS BY SW6020A						
MBLK	Sample ID: MBLK-146050	Units: mg/Kg		Analysis Date: 07-Oct-2019 21:43						
Client ID:		Run ID: ICPMS04_347805	SeqNo: 5286533	PrepDate: 07-Oct-2019	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0926	0.463								U
Lead	0.0926	0.463								U
LCS	Sample ID: LCS-146050	Units: mg/Kg		Analysis Date: 07-Oct-2019 21:45						
Client ID:		Run ID: ICPMS04_347805	SeqNo: 5286534	PrepDate: 07-Oct-2019	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	8.495	0.458	9.164	0	92.7	82 - 118				
Lead	8.965	0.458	9.164	0	97.8	84 - 118				
MS	Sample ID: HS19100210-07MS	Units: mg/Kg		Analysis Date: 08-Oct-2019 13:13						
Client ID: 03FL002-08-191002		Run ID: ICPMS04_347830	SeqNo: 5287021	PrepDate: 07-Oct-2019	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.95	0.462	9.249	3.157	84.2	82 - 118				
Lead	14.74	0.462	9.249	7.091	82.7	84 - 118				S
MSD	Sample ID: HS19100210-07MSD	Units: mg/Kg		Analysis Date: 08-Oct-2019 13:16						
Client ID: 03FL002-08-191002		Run ID: ICPMS04_347830	SeqNo: 5287022	PrepDate: 07-Oct-2019	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	11.55	0.475	9.506	3.157	88.3	82 - 118	10.95	5.36	20	
Lead	15.71	0.475	9.506	7.091	90.7	84 - 118	14.74	6.42	20	
PDS	Sample ID: HS19100210-07PDS	Units: mg/Kg		Analysis Date: 07-Oct-2019 21:57						
Client ID: 03FL002-08-191002		Run ID: ICPMS04_347805	SeqNo: 5286563	PrepDate: 07-Oct-2019	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	12.29	0.464	9.287	3.084	99.1	80 - 120				
Lead	17.08	0.464	9.287	7.369	105	80 - 120				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS19100210

QC BATCH REPORT

Batch ID: 146050 (0) **Instrument:** ICPMS04 **Method:** METALS BY SW6020A

SD Sample ID: **HS19100210-07SD** Units: **mg/Kg** Analysis Date: **08-Oct-2019 13:11**
 Client ID: **03FL002-08-191002** Run ID: **ICPMS04_347830** SeqNo: **5287020** PrepDate: **07-Oct-2019** DF: **5**
 Analyte Result PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %D Limit Qual

Arsenic	3.257	2.32						3.157	3.17	10
Lead	7.485	2.32						7.091	5.55	10

The following samples were analyzed in this batch:

HS19100210-01	HS19100210-02	HS19100210-03	HS19100210-04
HS19100210-05	HS19100210-06	HS19100210-07	

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS19100210

QC BATCH REPORT

Batch ID: 146133 (0)	Instrument: ICPMS04	Method: TCLP METALS BY SW6020A
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MBLK	Sample ID: MBLKT1-146133	Units: mg/L	Analysis Date: 09-Oct-2019 14:09							
Client ID:	Run ID: ICPMS04_347919	SeqNo: 5289417	PrepDate: 08-Oct-2019 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.00500	0.0500								U
Barium	0.0250	0.200								U
Cadmium	0.00500	0.0500								U
Chromium	0.00500	0.0500								U
Lead	0.0100	0.0500								U
Selenium	0.0250	0.0500								U
Silver	0.00500	0.0500								U

MBLK	Sample ID: MBLK-146133	Units: mg/L	Analysis Date: 09-Oct-2019 14:06							
Client ID:	Run ID: ICPMS04_347919	SeqNo: 5289416	PrepDate: 08-Oct-2019 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.000500	0.00500								U
Barium	0.00250	0.0200								U
Cadmium	0.000500	0.00500								U
Chromium	0.000500	0.00500								U
Lead	0.00100	0.00500								U
Selenium	0.00250	0.00500								U
Silver	0.000500	0.00500								U

LCS	Sample ID: LCS-146133	Units: mg/L	Analysis Date: 09-Oct-2019 14:11							
Client ID:	Run ID: ICPMS04_347919	SeqNo: 5289418	PrepDate: 08-Oct-2019 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04934	0.00500	0.05	0	98.7	80 - 120				
Barium	0.04471	0.0200	0.05	0	89.4	80 - 120				
Cadmium	0.04765	0.00500	0.05	0	95.3	80 - 120				
Chromium	0.04782	0.00500	0.05	0	95.6	80 - 120				
Lead	0.04669	0.00500	0.05	0	93.4	80 - 120				
Selenium	0.04791	0.00500	0.05	0	95.8	80 - 120				
Silver	0.04856	0.00500	0.05	0	97.1	80 - 120				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS19100210

QC BATCH REPORT

Batch ID: 146133 (0) **Instrument:** ICPMS04 **Method:** TCLP METALS BY SW6020A

MS		Sample ID: HS19100210-08MS			Units: mg/L		Analysis Date: 09-Oct-2019 14:18			
Client ID: 03SP001-191002		Run ID: ICPMS04_347919			SeqNo: 5289421		PrepDate: 08-Oct-2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.4676	0.0500	0.5	0.00148	93.2	80 - 120				
Barium	1.88	0.200	0.5	1.461	83.8	80 - 120				
Cadmium	0.4369	0.0500	0.5	0.00074	87.2	80 - 120				
Chromium	0.4504	0.0500	0.5	0.00443	89.2	80 - 120				
Lead	0.4606	0.0500	0.5	0.02668	86.8	80 - 120				
Selenium	0.4491	0.0500	0.5	0.0034	89.1	80 - 120				
Silver	0.4444	0.0500	0.5	0.0001	88.9	80 - 120				

MSD		Sample ID: HS19100210-08MSD			Units: mg/L		Analysis Date: 09-Oct-2019 14:20			
Client ID: 03SP001-191002		Run ID: ICPMS04_347919			SeqNo: 5289422		PrepDate: 08-Oct-2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.4835	0.0500	0.5	0.00148	96.4	80 - 120	0.4676	3.35	20	
Barium	1.942	0.200	0.5	1.461	96.2	80 - 120	1.88	3.25	20	
Cadmium	0.4564	0.0500	0.5	0.00074	91.1	80 - 120	0.4369	4.36	20	
Chromium	0.4598	0.0500	0.5	0.00443	91.1	80 - 120	0.4504	2.07	20	
Lead	0.4798	0.0500	0.5	0.02668	90.6	80 - 120	0.4606	4.07	20	
Selenium	0.479	0.0500	0.5	0.0034	95.1	80 - 120	0.4491	6.45	20	
Silver	0.4514	0.0500	0.5	0.0001	90.3	80 - 120	0.4444	1.56	20	

PDS		Sample ID: HS19100210-08PDS			Units: mg/L		Analysis Date: 09-Oct-2019 14:22			
Client ID: 03SP001-191002		Run ID: ICPMS04_347919			SeqNo: 5289423		PrepDate: 08-Oct-2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	1.037	0.0500	1	0.00148	104	75 - 125				
Barium	2.441	0.200	1	1.461	98.0	75 - 125				
Cadmium	0.9856	0.0500	1	0.00074	98.5	75 - 125				
Chromium	0.981	0.0500	1	0.00443	97.7	75 - 125				
Lead	0.981	0.0500	1	0.02668	95.4	75 - 125				
Selenium	1	0.0500	1	0.0034	99.7	75 - 125				
Silver	0.8803	0.0500	1	0.0001	88.0	75 - 125				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS19100210

QC BATCH REPORT

Batch ID: 146133 (0)		Instrument: ICPMS04		Method: TCLP METALS BY SW6020A						
SD	Sample ID: HS19100210-08SD	Units: mg/L			Analysis Date: 09-Oct-2019 14:15					
Client ID: 03SP001-191002	Run ID: ICPMS04_347919	SeqNo: 5289420	PrepDate: 08-Oct-2019	DF: 5						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	Limit	Qual
Arsenic	0.0250	0.250					0.00148	0	10	U
Barium	1.438	1.00					1.461	1.54	10	
Cadmium	0.0250	0.250					0.00074	0	10	U
Chromium	0.0250	0.250					0.00443	0	10	U
Lead	0.0500	0.250					0.02668	0	10	U
Selenium	0.125	0.250					0.0034	0	10	U
Silver	0.0250	0.250					0.0001	0	10	U

The following samples were analyzed in this batch:

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS19100210

QC BATCH REPORT

Batch ID: 146197 (0)		Instrument: HG03		Method: TCLP MERCURY BY SW7470A						
MBLK	Sample ID: MBLKT1-146197	Units: mg/L			Analysis Date: 09-Oct-2019 14:46					
Client ID:	Run ID: HG03_347974	SeqNo: 5289298	PrepDate: 09-Oct-2019	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Mercury	0.000100	0.000200							U	
MBLK	Sample ID: MBLK-146197	Units: mg/L			Analysis Date: 09-Oct-2019 14:37					
Client ID:	Run ID: HG03_347974	SeqNo: 5289293	PrepDate: 09-Oct-2019	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Mercury	0.000100	0.000200							U	
LCS	Sample ID: LCS-146197	Units: mg/L			Analysis Date: 09-Oct-2019 14:39					
Client ID:	Run ID: HG03_347974	SeqNo: 5289294	PrepDate: 09-Oct-2019	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Mercury	0.00517	0.000200	0.005	0	103	80 - 120				
MS	Sample ID: HS19100210-08MS	Units: mg/L			Analysis Date: 09-Oct-2019 14:42					
Client ID: 03SP001-191002	Run ID: HG03_347974	SeqNo: 5289296	PrepDate: 09-Oct-2019	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Mercury	0.005	0.000200	0.005	-0.000001	100	75 - 125				
MSD	Sample ID: HS19100210-08MSD	Units: mg/L			Analysis Date: 09-Oct-2019 14:44					
Client ID: 03SP001-191002	Run ID: HG03_347974	SeqNo: 5289297	PrepDate: 09-Oct-2019	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Mercury	0.00525	0.000200	0.005	-0.000001	105	75 - 125	0.005	4.88	20	

The following samples were analyzed in this batch:

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS19100210

QC BATCH REPORT

Batch ID: R347814 (0) **Instrument:** Balance1 **Method:** MOISTURE - ASTM D2216

DUP Sample ID: **HS19100210-07DUP** Units: **wt%** Analysis Date: **07-Oct-2019 10:51**
Client ID: **03FL002-08-191002** Run ID: **Balance1_347814** SeqNo: **5286245** PrepDate: DF: **1**
Analyte Result PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Percent Moisture 11.9 0.0100 11.8 0.844 20

The following samples were analyzed in this batch: HS19100210-01 HS19100210-02 HS19100210-03 HS19100210-04
HS19100210-05 HS19100210-06 HS19100210-07

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS19100210

**QUALIFIERS,
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
Date	
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-141	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS19100210

Date/Time Received: 03-Oct-2019 08:33
Received by: JRM

Checklist completed by: Bernadette A. Fini
eSignature
Date: 3-Oct-2019

Reviewed by: RJ Modashia
eSignature
Date: 4-Oct-2019

Matrices: solid

Carrier name: FedEx Priority Overnight

- Shipping container/cooler in good condition? Yes [checked] No [] Not Present []
Custody seals intact on shipping container/cooler? Yes [checked] No [] Not Present []
Custody seals intact on sample bottles? Yes [] No [] Not Present [checked]
VOA/TX1005/TX1006 Solids in hermetically sealed vials? Yes [] No [] Not Present [checked]
Chain of custody present? Yes [checked] No []
Chain of custody signed when relinquished and received? Yes [checked] No []
Samplers name present on COC? Yes [checked] No []
Chain of custody agrees with sample labels? Yes [checked] No []
Samples in proper container/bottle? Yes [checked] No []
Sample containers intact? Yes [checked] No []
Sufficient sample volume for indicated test? Yes [checked] No []
All samples received within holding time? Yes [checked] No []
Container/Temp Blank temperature in compliance? Yes [checked] No []

1 Page(s)
COC IDs:LHAAP03-
OCT2019-ALSHT-191002

Temperature(s)/Thermometer(s): 4.0,4.0 UC,C IR25
Cooler(s)/Kit(s): 44293
Date/Time sample(s) sent to storage: 10-03-19 15:30
Water - VOA vials have zero headspace? Yes [] No [] No VOA vials submitted [checked]
Water - pH acceptable upon receipt? Yes [] No [] N/A [checked]
pH adjusted? Yes [] No [] N/A [checked]

Login Notes: Sample Label iD differ COC= 03WL001-06-07-191002 Label = 03WL 003-06-07-191002

Client Contacted: Date Contacted: Person Contacted:
Contacted By: Regarding:
Comments:
Corrective Action:

COC ID: LHAAP03-OCT2019-ALSHT-191002

TURNAROUND TIME: 5 Business Days

RUSH: 5 Business Days


PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories			Email Invoice To	Fedinvoices@aptim.com		
Project Number	501032			Lab Contact	RJ Modashia			Email Report To	Susan.Huang@aptim.com		
Address	LHAAP-03 1203-B East Grand Avenue PMB 202			Email	RJ.Modashia@alsglobal.com			Mail Reports To	Susan Huang		
City	Marshall	State	TX	City	Houston	State	TX	Address	4005 Port Chicago Highway, Suit 200		
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	94520	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2279 or 281.530.5656			Shipping Company			
Project Manager	Praveen Srivastav										


SAMPLE DETAILS									ANALYSIS REQUESTED																				
Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	Metals (As & Pb) by 6020	TCLP metals by SW1311/6010/7471																		
03SB29-06-07-191002	LHAAP03	6	7	FT	SO	10/2/2019	1050	1		1																			
03FL001-01-191002	LHAAP03 / Area A1	1	1	FT	SO	10/2/2019	1345	1		1																			
03FL001-01-191002-FD	LHAAP03 / Area A1	1	1	FT	SO	10/2/2019	1345	1		1																			
03WF001-01-191002	LHAAP03 / Area A2	1	1	FT	SO	10/2/2019	1405	1		1																			
03FL003-08-191002	LHAAP03 / Area C	8	8	FT	SO	10/2/2019	1425	1		1																			
03WL001-06-07-191002	LHAAP03 / Area C	6	7	FT	SO	10/2/2019	1440	1		1																			
03FL002-08-191002	LHAAP03 / Area B	8	8	FT	SO	10/2/2019	1680	1		1																			
03FL002-08-191002-MS	LHAAP03 / Area B	8	8	FT	SO	10/2/2019	1600	1		1																			
03FL002-08-191002-MSD	LHAAP03 / Area B	8	8	FT	SO	10/2/2019	1600	1		1																			
03SP001-191002	LHAAP03 / Stock Pile				SO	10/2/2019	1630	1		1																			

HS19100210
Aptim Environmental & Infrastructure, Inc.
Longhorn Army Ammunition Plant



ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Container 44293 Temp 111 Date 25 LFO-W	<i>[Signature]</i> APTIM	10-08-19/1915	J. MANNING	10/3/19 08:33

 ALS 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5887	CUSTODY SEAL		Seal Broken By: <i>SAM</i>
	Date: <i>10-02-78</i>	Time: <i>11:45</i>	Date: <i>10/03/19</i>
	Name: <i>[Handwritten]</i>		
	Company: <i>[Handwritten]</i>		

 ALS 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5887	CUSTODY SEAL		Seal Broken By: <i>SAM</i>
	Date: <i>10-02-78</i>	Time: <i>11:45</i>	Date: <i>10/03/19</i>
	Name: <i>[Handwritten]</i>		
	Company: <i>[Handwritten]</i>		



Must Deliver Next Business Day
Time and Temperature Sensitive!

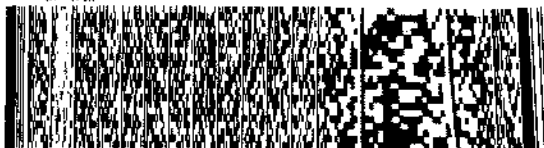
44-293

ORIGIN TO: SGRA (803) 930-8193
 SCOTT BRESNER
 APT 1M
 1203-B EAST GRAND AVE. PMB202
 MARSHALL, TX 75670
 UNITED STATES US

SHIP DATE: 11SEP78
 WEIGHT: 1.00 LB. 00N
 ORDER: 300130/CAFF3011
 DIMS: 19x18x13 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
 10450 STANCLIFF ROAD
 SUITE 210
 HOUSTON TX 77099
 (281) 530-5656
 REF: LAAP 16-BD 67526-RJ

RMA: 111-1811



FedEx
Express



FedEx
TRK# 4809 7817 8256

THU - 03 OCT 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US IAH





10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

October 17, 2019

Susan Huang
Aptim Environmental & Infrastructure, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS19100915**

Laboratory Results for: **LHAAP-03**

Dear Susan,

ALS Environmental received 1 sample(s) on Oct 16, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
Work Order: HS19100915

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19100915-01	03WL002-06-07-191012	Soil		12-Oct-2019 09:30	16-Oct-2019 09:58	<input type="checkbox"/>

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
Work Order: HS19100915

CASE NARRATIVE

Metals by Method SW6020

Batch ID: 146461

Sample ID: 03WL002-06-07-191012 (HS19100915-01MS)

- Arsenic and Lead failed on the MSMSD but passed on the PDS.

Sample ID: 03WL002-06-07-191012 (HS19100915-01MSD)

- Due to non-homogeneity of the soil sample matrix the MS/MSD RPD were outside the control limits for Arsenic.

WetChemistry by Method ASTM D2216

Batch ID: R348499

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP-03
 Sample ID: 03WL002-06-07-191012
 Collection Date: 12-Oct-2019 09:30

ANALYTICAL REPORT

WorkOrder:HS19100915
 Lab ID:HS19100915-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A		Method:SW6020				Prep:SW3050A / 16-Oct-2019		Analyst: JC
Arsenic	7.84		0.147	0.210	1.05	mg/Kg-dry	2	17-Oct-2019 12:51
Lead	12.3		0.0273	0.210	1.05	mg/Kg-dry	2	17-Oct-2019 12:51
MOISTURE - ASTM D2216		Method:ASTM D2216						Analyst: MWG
Percent Moisture	11.3		0.0100	0.0100	0.0100	wt%	1	16-Oct-2019 14:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

WEIGHT LOG

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS19100915

Batch ID: 146461 **Method:** METALS BY SW6020A **Prep:** 3050_I_LOW

SampleID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19100915-01	1	0.5378	50 (mL)	92.97

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS19100915

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: 146461 (0)		Test Name : METALS BY SW6020A			Matrix: Soil	
HS19100915-01	03WL002-06-07-191012	12 Oct 2019 09:30		16 Oct 2019 13:59	17 Oct 2019 12:51	2
Batch ID: R348499 (0)		Test Name : MOISTURE - ASTM D2216			Matrix: Soil	
HS19100915-01	03WL002-06-07-191012	12 Oct 2019 09:30			16 Oct 2019 14:45	1

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS19100915

QC BATCH REPORT

Batch ID: 146461 (0)		Instrument: ICPMS04		Method: METALS BY SW6020A						
MBLK	Sample ID: MBLK-146461	Units: mg/Kg		Analysis Date: 17-Oct-2019 12:46						
Client ID:	Run ID: ICPMS04_348513	SeqNo: 5300771	PrepDate: 16-Oct-2019	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0993	0.497								U
Lead	0.0993	0.497								U
LCS	Sample ID: LCS-146461	Units: mg/Kg		Analysis Date: 17-Oct-2019 12:49						
Client ID:	Run ID: ICPMS04_348513	SeqNo: 5300772	PrepDate: 16-Oct-2019	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	9.258	0.480	9.606	0	96.4	82 - 118				
Lead	9.451	0.480	9.606	0	98.4	84 - 118				
MS	Sample ID: HS19100915-01MS	Units: mg/Kg		Analysis Date: 17-Oct-2019 12:55						
Client ID: 03WL002-06-07-191012	Run ID: ICPMS04_348513	SeqNo: 5300775	PrepDate: 16-Oct-2019	DF: 2						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	19.23	0.925	9.251	6.95	133	82 - 118				S
Lead	22.6	0.925	9.251	10.95	126	84 - 118				S
MSD	Sample ID: HS19100915-01MSD	Units: mg/Kg		Analysis Date: 17-Oct-2019 12:58						
Client ID: 03WL002-06-07-191012	Run ID: ICPMS04_348513	SeqNo: 5300776	PrepDate: 16-Oct-2019	DF: 2						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	13.24	0.930	9.302	6.95	67.6	82 - 118	19.23	36.9	20	SR
Lead	18.72	0.930	9.302	10.95	83.6	84 - 118	22.6	18.8	20	S
PDS	Sample ID: HS19100915-01PDS	Units: mg/Kg		Analysis Date: 17-Oct-2019 13:00						
Client ID: 03WL002-06-07-191012	Run ID: ICPMS04_348513	SeqNo: 5300767	PrepDate: 16-Oct-2019	DF: 2						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	24.24	0.930	18.59	6.95	93.0	80 - 120				
Lead	30.06	0.930	18.59	10.95	103	80 - 120				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS19100915

QC BATCH REPORT

Batch ID: 146461 (0)		Instrument: ICPMS04		Method: METALS BY SW6020A					
SD	Sample ID: HS19100915-01SD		Units: mg/Kg		Analysis Date: 17-Oct-2019 12:53				
Client ID: 03WL002-06-07-191012	Run ID: ICPMS04_348513		SeqNo: 5300774		PrepDate: 16-Oct-2019		DF: 10		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	Limit Qual

Arsenic	7.269	4.65					6.95	4.6	10
Lead	11.19	4.65					10.95	2.19	10

The following samples were analyzed in this batch:

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS19100915

QC BATCH REPORT

Batch ID: R348499 (0) **Instrument:** Balance1 **Method:** MOISTURE - ASTM D2216

DUP	Sample ID: HS19100920-04DUP	Units: wt%	Analysis Date: 16-Oct-2019 14:45							
Client ID:	Run ID: Balance1_348499	SeqNo: 5300523	PrepDate: DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Percent Moisture 24.4 0.0100 24 1.65 20

The following samples were analyzed in this batch:

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS19100915

**QUALIFIERS,
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-141	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
Work Order: HS19100915

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19100915-01	03WL002-06-07-191012	Login	10/16/2019 1:22:34 PM	AC	SPA097

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS19100915

Date/Time Received: 16-Oct-2019 09:58
Received by: AC

Checklist completed by: Asad Chaudhry
eSignature | 16-Oct-2019
Date

Reviewed by: RJ Modashia
eSignature | 16-Oct-2019
Date

Matrices: Soil

Carrier name: FedEx Priority Overnight

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on shipping container/cooler? Yes No Not Present
- Custody seals intact on sample bottles? Yes No Not Present
- VOA/TX1005/TX1006 Solids in hermetically sealed vials? Yes No Not Present
- Chain of custody present? Yes No 1 Page(s)
- Chain of custody signed when relinquished and received? Yes No COC IDs:N/A
- Samplers name present on COC? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Container/Temp Blank temperature in compliance? Yes No

Temperature(s)/Thermometer(s): 3.6c/3.1c C/UC | IR 11

Cooler(s)/Kit(s): 45262

Date/Time sample(s) sent to storage: 10/16/2019 13:30

Water - VOA vials have zero headspace? Yes No No VOA vials submitted

Water - pH acceptable upon receipt? Yes No N/A

pH adjusted? Yes No N/A

pH adjusted by:


Login Notes:

Client Contacted: Date Contacted: Person Contacted:


Contacted By: Regarding:

Comments:

Corrective Action:

 ALS 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5887	45262	CUSTODY SEAL		Seal Broken By:
		Date: 10/15/19	Time: 10:30	SM
		Name: [Signature]	Company: [Signature]	Date: 10/16/19

45262 OCT 15 2019

 ALS 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5887	45262	CUSTODY SEAL		Seal Broken By:
		Date: 10/15/19	Time: 10:30	SM
		Name: [Signature]	Company: [Signature]	Date: 10/16/19



Must Deliver Next Business Day
 Time and Temperature sensitive

45262

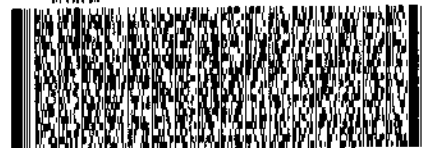
ORIGIN ID:SGRA (903) 930-6193
 ATT: SCOTT BEESINGER
 APTIM ENVIRONMENTAL & INFRASTR. INC
 1203-B EAST GRAND AVE PFB202
 MARSHALL, TX 75670
 UNITED STATES US

SHIP DATE: 13SEP19
 ACTWT: 1.00 LB MAN
 CAD: 300130/CAF9211
 DIMS: 14x11x10 IN

TO CLIENT SERVICES
 ALS LABORATORY GROUP
 10450 STANCLIFF ROAD
 SUITE 210
 HOUSTON TX 77099

(281) 530-5656
 REF: LHAAP-3-80 67567-RJ

RMA: ||| ||| |||



FedEx
 4809 7837 9127

WED - 16 OCT 10:30A
 PRIORITY OVERNIGHT

AB SGRA

77099
 TX-US
 IAH



0 12655 100CT16 066A 568C3/2ASC/05A2



10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

October 30, 2019

Susan Huang
Aptim Environmental & Infrastructure, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS19101604**

Laboratory Results for: **LHAAP-03**

Dear Susan,

ALS Environmental received 5 sample(s) on Oct 26, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
Work Order: HS19101604

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19101604-01	03WL-06-07-NW1-191024	Soil		24-Oct-2019 16:05	26-Oct-2019 10:35	<input type="checkbox"/>
HS19101604-02	03WL-06-07-NW1-191024-FD	Soil		24-Oct-2019 16:05	26-Oct-2019 10:35	<input type="checkbox"/>
HS19101604-03	03WL-06-07-EW1-191024	Soil		24-Oct-2019 16:23	26-Oct-2019 10:35	<input type="checkbox"/>
HS19101604-04	03WL-06-07-WW1-191024	Soil		24-Oct-2019 16:37	26-Oct-2019 10:35	<input type="checkbox"/>
HS19101604-05	03WL-06-07-SW1-191024	Soil		24-Oct-2019 16:51	26-Oct-2019 10:35	<input type="checkbox"/>

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
Work Order: HS19101604

CASE NARRATIVE

Metals by Method SW6020

Batch ID: 146854

Sample ID: 03WL-06-07-NW1-191024 (HS19101604-01MS)

- Arsenic and Lead failed for MS/MSD but passed for PDS.

WetChemistry by Method ASTM D2216

Batch ID: R349290

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP-03
 Sample ID: 03WL-06-07-NW1-191024
 Collection Date: 24-Oct-2019 16:05

ANALYTICAL REPORT

WorkOrder:HS19101604
 Lab ID:HS19101604-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 28-Oct-2019		Analyst: JHD
Arsenic	5.10		0.0733	0.105	0.523	mg/Kg-dry	1	30-Oct-2019 11:33
Lead	20.5		0.0136	0.105	0.523	mg/Kg-dry	1	30-Oct-2019 11:33
MOISTURE - ASTM D2216	Method:ASTM D2216							Analyst: DFF
Percent Moisture	10.8		0.0100	0.0100	0.0100	wt%	1	28-Oct-2019 12:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP-03
 Sample ID: 03WL-06-07-NW1-191024-FD
 Collection Date: 24-Oct-2019 16:05

ANALYTICAL REPORT

WorkOrder:HS19101604
 Lab ID:HS19101604-02
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 28-Oct-2019		Analyst: JHD
Arsenic	2.62		0.0713	0.102	0.509	mg/Kg-dry	1	30-Oct-2019 11:45
Lead	18.9		0.0132	0.102	0.509	mg/Kg-dry	1	30-Oct-2019 11:45
MOISTURE - ASTM D2216	Method:ASTM D2216							Analyst: DFF
Percent Moisture	10.3		0.0100	0.0100	0.0100	wt%	1	28-Oct-2019 12:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP-03
 Sample ID: 03WL-06-07-EW1-191024
 Collection Date: 24-Oct-2019 16:23

ANALYTICAL REPORT

WorkOrder:HS19101604
 Lab ID:HS19101604-03
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 28-Oct-2019		Analyst: JHD
Arsenic	4.90		0.0793	0.113	0.567	mg/Kg-dry	1	30-Oct-2019 11:47
Lead	9.95		0.0147	0.113	0.567	mg/Kg-dry	1	30-Oct-2019 11:47
MOISTURE - ASTM D2216	Method:ASTM D2216							Analyst: DFF
Percent Moisture	13.9		0.0100	0.0100	0.0100	wt%	1	28-Oct-2019 12:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP-03
 Sample ID: 03WL-06-07-WW1-191024
 Collection Date: 24-Oct-2019 16:37

ANALYTICAL REPORT

WorkOrder:HS19101604
 Lab ID:HS19101604-04
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 28-Oct-2019		Analyst: JHD
Arsenic	4.96		0.0743	0.106	0.530	mg/Kg-dry	1	30-Oct-2019 11:49
Lead	20.1		0.0138	0.106	0.530	mg/Kg-dry	1	30-Oct-2019 11:49
MOISTURE - ASTM D2216	Method:ASTM D2216							Analyst: DFF
Percent Moisture	11.0		0.0100	0.0100	0.0100	wt%	1	28-Oct-2019 12:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP-03
 Sample ID: 03WL-06-07-SW1-191024
 Collection Date: 24-Oct-2019 16:51

ANALYTICAL REPORT
 WorkOrder:HS19101604
 Lab ID:HS19101604-05
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A		Method:SW6020				Prep:SW3050A / 28-Oct-2019		Analyst: JHD
Arsenic	6.39		0.0738	0.105	0.527	mg/Kg-dry	1	30-Oct-2019 11:52
Lead	10.1		0.0137	0.105	0.527	mg/Kg-dry	1	30-Oct-2019 11:52
MOISTURE - ASTM D2216		Method:ASTM D2216						Analyst: DFF
Percent Moisture	10.6		0.0100	0.0100	0.0100	wt%	1	28-Oct-2019 12:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Aptim Environmental & Infrastructure, Inc.**Project:** LHAAP-03**WorkOrder:** HS19101604**Batch ID:** 146854**Start Date:** 28 Oct 2019 08:35**End Date:** 28 Oct 2019 14:30**Method:** METALS PREP - SOLIDS - SW3050B**Prep Code:** 3050_I_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19101604-01		0.5 (g)	50 (mL)	93.37
HS19101604-02		0.5 (g)	50 (mL)	91.31
HS19101604-03		0.5 (g)	50 (mL)	97.58
HS19101604-04		0.5 (g)	50 (mL)	94.43
HS19101604-05		0.5 (g)	50 (mL)	94.22

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS19101604

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 146854 (0)		Test Name : METALS BY SW6020A			Matrix: Soil	
HS19101604-01	03WL-06-07-NW1-191024	24 Oct 2019 16:05		28 Oct 2019 08:35	30 Oct 2019 11:33	1
HS19101604-02	03WL-06-07-NW1-191024-FD24	24 Oct 2019 16:05		28 Oct 2019 08:35	30 Oct 2019 11:45	1
HS19101604-03	03WL-06-07-EW1-191024	24 Oct 2019 16:23		28 Oct 2019 08:35	30 Oct 2019 11:47	1
HS19101604-04	03WL-06-07-WW1-191024	24 Oct 2019 16:37		28 Oct 2019 08:35	30 Oct 2019 11:49	1
HS19101604-05	03WL-06-07-SW1-191024	24 Oct 2019 16:51		28 Oct 2019 08:35	30 Oct 2019 11:52	1
Batch ID: R349290 (0)		Test Name : MOISTURE - ASTM D2216			Matrix: Soil	
HS19101604-01	03WL-06-07-NW1-191024	24 Oct 2019 16:05			28 Oct 2019 12:32	1
HS19101604-02	03WL-06-07-NW1-191024-FD24	24 Oct 2019 16:05			28 Oct 2019 12:32	1
HS19101604-03	03WL-06-07-EW1-191024	24 Oct 2019 16:23			28 Oct 2019 12:32	1
HS19101604-04	03WL-06-07-WW1-191024	24 Oct 2019 16:37			28 Oct 2019 12:32	1
HS19101604-05	03WL-06-07-SW1-191024	24 Oct 2019 16:51			28 Oct 2019 12:32	1

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS19101604

QC BATCH REPORT

Batch ID: 146854 (0)		Instrument: ICPMS05		Method: METALS BY SW6020A						
MBLK	Sample ID: MBLK-146854	Units: mg/Kg			Analysis Date: 30-Oct-2019 11:20					
Client ID:		Run ID: ICPMS05_349397	SeqNo: 5320652	PrepDate: 28-Oct-2019	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0960	0.480								U
Lead	0.0960	0.480								U
LCS	Sample ID: LCS-146854	Units: mg/Kg			Analysis Date: 30-Oct-2019 11:22					
Client ID:		Run ID: ICPMS05_349397	SeqNo: 5320653	PrepDate: 28-Oct-2019	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.31	0.495	9.905	0	104	82 - 118				
Lead	9.505	0.495	9.905	0	96.0	84 - 118				
MS	Sample ID: HS19101604-01MS	Units: mg/Kg			Analysis Date: 30-Oct-2019 11:38					
Client ID: 03WL-06-07-NW1-191024		Run ID: ICPMS05_349397	SeqNo: 5320656	PrepDate: 28-Oct-2019	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.16	0.458	9.158	4.548	61.2	82 - 118				S
Lead	20.93	0.458	9.158	18.29	28.8	84 - 118				S
MSD	Sample ID: HS19101604-01MSD	Units: mg/Kg			Analysis Date: 30-Oct-2019 11:40					
Client ID: 03WL-06-07-NW1-191024		Run ID: ICPMS05_349397	SeqNo: 5320657	PrepDate: 28-Oct-2019	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	11.87	0.481	9.612	4.548	76.2	82 - 118	10.16	15.6	20	S
Lead	21.3	0.481	9.612	18.29	31.3	84 - 118	20.93	1.74	20	S
PDS	Sample ID: HS19101604-01PDS	Units: mg/Kg			Analysis Date: 30-Oct-2019 11:42					
Client ID: 03WL-06-07-NW1-191024		Run ID: ICPMS05_349397	SeqNo: 5320658	PrepDate: 28-Oct-2019	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	13.78	0.467	9.337	4.548	98.9	80 - 120				
Lead	27.7	0.467	9.337	18.29	101	80 - 120				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS19101604

QC BATCH REPORT

Batch ID: 146854 (0)		Instrument: ICPMS05		Method: METALS BY SW6020A					
SD	Sample ID: HS19101604-01SD		Units: mg/Kg		Analysis Date: 30-Oct-2019 11:36				
Client ID: 03WL-06-07-NW1-191024	Run ID: ICPMS05_349397		SeqNo: 5320655		PrepDate: 28-Oct-2019		DF: 5		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	Limit Qual

Arsenic	4.726	2.33					4.548	3.92	10
Lead	18.66	2.33					18.29	1.99	10

The following samples were analyzed in this batch: HS19101604-01 HS19101604-02 HS19101604-03 HS19101604-04
 HS19101604-05

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS19101604

QC BATCH REPORT

Batch ID: R349290 (0)		Instrument: Balance1		Method: MOISTURE - ASTM D2216					
DUP	Sample ID: HS19101008-02DUP	Units: wt%		Analysis Date: 28-Oct-2019 12:32					
Client ID:	Run ID: Balance1_349290	SeqNo: 5318066		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Percent Moisture	12.6	0.0100					13	3.12	20
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The following samples were analyzed in this batch:

HS19101604-01	HS19101604-02	HS19101604-03	HS19101604-04
HS19101604-05			

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS19101604

**QUALIFIERS,
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
Work Order: HS19101604

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19101604-01	03WL-06-07-NW1-191024	Login	10/26/2019 1:02:43 PM	AC	SPA001

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS19101604

Date/Time Received: 26-Oct-2019 10:35
Received by: AC

Checklist completed by: Asad Chaudhry
eSignature
Date: 26-Oct-2019

Reviewed by: Corey Grandits
eSignature
Date: 28-Oct-2019

Matrices: Soil

Carrier name: FedEx Priority Overnight

- Shipping container/cooler in good condition? Yes [checked] No [] Not Present []
Custody seals intact on shipping container/cooler? Yes [checked] No [] Not Present []
Custody seals intact on sample bottles? Yes [] No [] Not Present [checked]
VOA/TX1005/TX1006 Solids in hermetically sealed vials? Yes [] No [] Not Present [checked]
Chain of custody present? Yes [checked] No []
Chain of custody signed when relinquished and received? Yes [checked] No []
Samplers name present on COC? Yes [checked] No []
Chain of custody agrees with sample labels? Yes [checked] No []
Samples in proper container/bottle? Yes [checked] No []
Sample containers intact? Yes [checked] No []
Sufficient sample volume for indicated test? Yes [checked] No []
All samples received within holding time? Yes [checked] No []
Container/Temp Blank temperature in compliance? Yes [checked] No []

Temperature(s)/Thermometer(s): 0.9c UC/C IR 25
Cooler(s)/Kit(s): 45141
Date/Time sample(s) sent to storage: 10/26/2019 13:15

- Water - VOA vials have zero headspace? Yes [] No [] No VOA vials submitted [checked]
Water - pH acceptable upon receipt? Yes [] No [] N/A [checked]
pH adjusted? Yes [] No [] N/A [checked]

pH adjusted by:

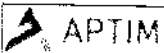
Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:



COC ID:

LHAAP03-OCT2019-ALSHT-191024

TURNAROUND TIME: 48 HR

RUSH: 48 HR Page 1 of 1

PROJECT/CLIENT INFO

LABORATORY

OTHER INFO

Facility Name: Longhorn AAP
 Project Number: 501032
 Address: LHAAP-03
 1203-B East Grand Avenue
 PMB 202
 City: Marshall State: TX
 Postal Code: 75670 Country: USA
 Phone Number: 713.243.7264
 Project Manager: Praveen Srivastav

Lab Name: ALS Laboratories
 Lab Contact: RJ Modashia
 Email: RJ.Modashia@alsglobal.com
 Address: 10450 Stancliff Rd., Suite 210
 City: Houston State: TX
 Postal Code: 77099 Country: USA
 Phone Number: 281.575.2279 or 281.530.5656

Email Invoice To: fedinvoices@aptim.com
 Email Report To: Susan.Huang@aptim.com
 Mail Reports To: Susan Huang
 Address: 4005 Port Chicago Highway, Suit 200
 City: Concord State: CA
 Postal Code: 94520 Country: USA
 Shipping Company:

SAMPLE DETAILS

ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS Metals (As & Pb) by 6020
03WL-06-07-NW1-191024	LHAAP03 / Area C	6	7	FT	SO	10/24/2019	1605	1	1
03WL-06-07-NW1-191024-FD	LHAAP03 / Area C	6	7	FT	SO	10/24/2019	1605	1	1
03WL-06-07-EW1-191024	LHAAP03 / Area C	6	7	FT	SO	10/24/2019	1623	1	1
03WL-06-07-WW1-191024	LHAAP03 / Area C	6	7	FT	SO	10/24/2019	1637	1	1
03WL-06-07-SW1-191024	LHAAP03 / Area C	6	7	FT	SO	10/24/2019	1651	1	1


HS19101604
 Aptim Environmental & Infrastructure, Inc.
 LHAAP-03



ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS
 48 HR TAT

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
<i>[Signature]</i> Aptim	10-25-19/1302	AC ALS	10/26/19 10:35

UIC 0.9 IR#25 CPO.0
 45141

 ALS 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5887	CUSTODY SEAL		Seal Broken By:
	Date: 10/25/19	Time: 13:14	AC
45141	Name: MRM	ADT	Date: 10/26/19

ALS 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5887	CUSTODY SEAL		Seal Broken By:
	Date: 10/25/19	Time: 13:14	AC
45141	Name: MRM	ADT	Date: 10/26/19

FedEx
 TRK# 0221 4809 7837 9138

SATURDAY 12:00P
 PRIORITY OVERNIGHT

XO SGRA

77099
 TX-US IAH



45213643 10/25 567/3/2430/0582



10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

August 06, 2020

Susan Huang
Aptim Environmental & Infrastructure, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS20080131**

Laboratory Results for: **LHAAP-03**

Dear Susan Huang,

ALS Environmental received 1 sample(s) on Aug 05, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
Work Order: HS20080131

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20080131-01	03WL-6-7-SW2-200804	Soil		04-Aug-2020 16:05	05-Aug-2020 09:30	<input type="checkbox"/>

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
Work Order: HS20080131

CASE NARRATIVE

Metals by Method SW6020

Batch ID: 156065

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

WetChemistry by Method ASTM D2216

Batch ID: R366304

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP-03
 Sample ID: 03WL-6-7-SW2-200804
 Collection Date: 04-Aug-2020 16:05

ANALYTICAL REPORT

WorkOrder:HS20080131
 Lab ID:HS20080131-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY SW6020A	Method:SW6020					Prep:SW3050A / 05-Aug-2020		Analyst: JHD
Arsenic	2.23		0.0785	0.112	0.560	mg/Kg-dry	1	06-Aug-2020 11:02
Lead	9.01		0.0146	0.112	0.560	mg/Kg-dry	1	06-Aug-2020 11:02
MOISTURE - ASTM D2216	Method:ASTM D2216							Analyst: JAC
Percent Moisture	16.3		0.0100	0.0100	0.0100	wt%	1	05-Aug-2020 14:53

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Aptim Environmental & Infrastructure, Inc.**Project:** LHAAP-03**WorkOrder:** HS20080131**Batch ID:** 156065**Start Date:** 05 Aug 2020 12:06**End Date:** 05 Aug 2020 17:00**Method:** METALS PREP - SOLIDS - SW3050B**Prep Code:** 3050_I_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20080131-01		0.5329 (g)	50 (mL)	93.83

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS20080131

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 156065 (0)		Test Name : METALS BY SW6020A			Matrix: Soil	
HS20080131-01	03WL-6-7-SW2-200804	04 Aug 2020 16:05		05 Aug 2020 17:00	06 Aug 2020 11:02	1
Batch ID: R366304 (0)		Test Name : MOISTURE - ASTM D2216			Matrix: Soil	
HS20080131-01	03WL-6-7-SW2-200804	04 Aug 2020 16:05			05 Aug 2020 14:53	1

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS20080131

QC BATCH REPORT

Batch ID: 156065 (0)		Instrument: ICPMS04		Method: METALS BY SW6020A						
MBLK	Sample ID: MBLK-156065	Units: mg/Kg		Analysis Date: 06-Aug-2020 10:58						
Client ID:		Run ID: ICPMS04_366271	SeqNo: 5687031	PrepDate: 05-Aug-2020	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.102	0.510								U
Lead	0.102	0.510								U
LCS	Sample ID: LCS-156065	Units: mg/Kg		Analysis Date: 06-Aug-2020 11:00						
Client ID:		Run ID: ICPMS04_366271	SeqNo: 5687032	PrepDate: 05-Aug-2020	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	8.769	0.483	9.669	0	90.7	82 - 118				
Lead	9.591	0.483	9.669	0	99.2	84 - 118				
MS	Sample ID: HS20080131-01MS	Units: mg/Kg		Analysis Date: 06-Aug-2020 11:06						
Client ID: 03WL-6-7-SW2-200804		Run ID: ICPMS04_366271	SeqNo: 5687035	PrepDate: 05-Aug-2020	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.16	0.467	9.334	1.87	88.8	82 - 118				
Lead	16.85	0.467	9.334	7.545	99.7	84 - 118				
MSD	Sample ID: HS20080131-01MSD	Units: mg/Kg		Analysis Date: 06-Aug-2020 12:13						
Client ID: 03WL-6-7-SW2-200804		Run ID: ICPMS04_366271	SeqNo: 5687156	PrepDate: 05-Aug-2020	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.29	0.477	9.544	1.87	88.2	82 - 118	10.16	1.28	20	
Lead	17.34	0.477	9.544	7.545	103	84 - 118	16.85	2.85	20	
PDS	Sample ID: HS20080131-01PDS	Units: mg/Kg		Analysis Date: 06-Aug-2020 11:10						
Client ID: 03WL-6-7-SW2-200804		Run ID: ICPMS04_366271	SeqNo: 5687037	PrepDate: 05-Aug-2020	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.17	0.469	9.383	1.87	88.4	80 - 120				
Lead	16.3	0.469	9.383	7.545	93.3	80 - 120				

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS20080131

QC BATCH REPORT

Batch ID: 156065 (0) Instrument: ICPMS04 Method: METALS BY SW6020A

SD Sample ID: HS20080131-01SD Units: mg/Kg Analysis Date: 06-Aug-2020 11:04
Client ID: 03WL-6-7-SW2-200804 Run ID: ICPMS04_366271 SeqNo: 5687034 PrepDate: 05-Aug-2020 DF: 5
Analyte Result PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %D %D Limit Qual

Arsenic	2.032	2.35						1.87	0	10	J
Lead	7.32	2.35						7.545	2.98	10	

The following samples were analyzed in this batch:

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS20080131

QC BATCH REPORT

Batch ID: R366304 (0) **Instrument:** Balance1 **Method:** MOISTURE - ASTM D2216

DUP	Sample ID: HS20080106-07DUP	Units: wt%	Analysis Date: 05-Aug-2020 14:53							
Client ID:	Run ID: Balance1_366304	SeqNo: 5687387	PrepDate: DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Percent Moisture 8.47 0.0100 8.55 0.94 20

The following samples were analyzed in this batch:

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS20080131

**QUALIFIERS,
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
Maryland	343, 2019-2020	30-Sep-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2020-2021	30-Apr-2021
Oklahoma	2019-141	31-Aug-2020
Texas	T104704231-20-26	30-Apr-2021

Sample Receipt Checklist

Work Order ID: HS20080131

Date/Time Received: 05-Aug-2020 09:30

Client Name: CBI-Houston

Received by: Jared R. Makan

Completed By: /S/ Jared R. Makan	05-Aug-2020 11:50	Reviewed by: /S/ RJ Modashia	05-Aug-2020 14:06
eSignature	Date/Time	eSignature	Date/Time

Matrices: Soil Carrier name: FedEx Priority Overnight

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on shipping container/cooler? Yes No Not Present
- Custody seals intact on sample bottles? Yes No Not Present
- VOA/TX1005/TX1006 Solids in hermetically sealed vials? Yes No Not Present
- Chain of custody present? Yes No 1 Page(s)
- Chain of custody signed when relinquished and received? Yes No
- Samplers name present on COC? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Container/Temp Blank temperature in compliance? Yes No

Temperature(s)/Thermometer(s):	1.8°C/1.8°C UC/C	IR31
Cooler(s)/Kit(s):	44060	
Date/Time sample(s) sent to storage:	08/05/2020 11:55	

- Water - VOA vials have zero headspace? Yes No No VOA vials submitted
- Water - pH acceptable upon receipt? Yes No N/A
- pH adjusted? Yes No N/A

pH adjusted by:


Login Notes:


Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

 ALS 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5887	44060 CUSTODY SEAL Date: 8/4/20 Time: 10:00 Name: William S. ... Company: APTUM	Seal Broken By: SM
		Date: 08/05/20

 ALS 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5887	44060 CUSTODY SEAL Date: 8/4/2020 Time: 10:00 Name: William S. ... Company: APTUM	Seal Broken By: SM
		Date: 08/05/20



Must Deliver Next Business Day
Time and Temperature Sensitive!

44060

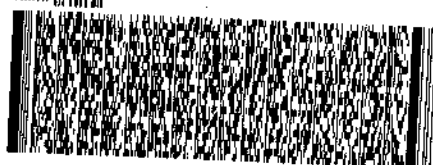
ORIGIN ID:SGRA (803) 930-6193
 MIKE MARTINEZ
 APTUM ENVIRONMENTAL & INFRASTRUCTURE
 1209-B EAST GRAND AVE
 PHB 202
 MARSHALL, TX 75670
 UNITED STATES US

SHIP DATE: 16SEP19
 ACTWGT: 1.00 LB MAN
 CRD: 300130/CAPE3211
 DIMS: 26x14x14 IN

TO
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099

(201) 530-5668
 REF: LHAAP-17 80 67599-RJ

RMA: 0110101



FedEx
 TRK# 4809 7837 9723
 0221

WED - 05 AUG 10:30A
 PRIORITY OVERNIGHT

AB SGRA

77099
 TX-US IAH





10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

August 10, 2020

Susan Huang
Aptim Environmental & Infrastructure, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS20080280**

Laboratory Results for: **LHAAP-03**

Dear Susan Huang,

ALS Environmental received 1 sample(s) on Aug 07, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
Work Order: HS20080280

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20080280-01	03SoilStockpile-200806	Soil		06-Aug-2020 17:45	07-Aug-2020 08:45	<input type="checkbox"/>

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
Work Order: HS20080280

CASE NARRATIVE

GC Semivolatiles by Method TX1005

Batch ID: 156181

Sample ID: LCS-156181

- Insufficient sample received to perform MS/MSD. An LCS/LCSD was performed as batch quality control.

WetChemistry by Method ASTM D2216

Batch ID: R366417

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Client: Aptim Environmental & Infrastructure, Inc.
 Project: LHAAP-03
 Sample ID: 03SoilStockpile-200806
 Collection Date: 06-Aug-2020 17:45

ANALYTICAL REPORT
 WorkOrder:HS20080280
 Lab ID:HS20080280-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005		Method:TX1005				Prep:TX1005PR / 10-Aug-2020		Analyst: MBG
nC6 to nC12	29	U	8.6	29	58	mg/Kg-dry	1	10-Aug-2020 14:19
>nC12 to nC28	29	U	11	29	58	mg/Kg-dry	1	10-Aug-2020 14:19
>nC28 to nC35	29	U	11	29	58	mg/Kg-dry	1	10-Aug-2020 14:19
Total Petroleum Hydrocarbon	29	U	8.6	29	58	mg/Kg-dry	1	10-Aug-2020 14:19
Surr: 2-Fluorobiphenyl	81.4			0	70-130	%REC	1	10-Aug-2020 14:19
Surr: Trifluoromethyl benzene	87.9			0	70-130	%REC	1	10-Aug-2020 14:19
MOISTURE - ASTM D2216		Method:ASTM D2216						Analyst: MZD
Percent Moisture	18.6		0.0100	0.0100	0.0100	wt%	1	07-Aug-2020 12:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Aptim Environmental & Infrastructure, Inc.**Project:** LHAAP-03**WorkOrder:** HS20080280

Batch ID: 156157	Start Date: 07 Aug 2020 11:21	End Date: 07 Aug 2020 12:46
Method: TX 1005 PREP		Prep Code: TX 1005_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20080280-01	1	10.11 (g)	10 (mL)	0.9891

Batch ID: 156181	Start Date: 10 Aug 2020 09:25	End Date: 10 Aug 2020 10:00
Method: TX 1005 PREP		Prep Code: TX 1005_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20080280-01	1	10.62 (g)	10 (mL)	0.9416

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS20080280

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 156181 (0)		Test Name : TEXAS TPH BY TX1005			Matrix: Soil	
HS20080280-01	03SoilStockpile-200806	06 Aug 2020 17:45		10 Aug 2020 09:25	10 Aug 2020 14:19	1
Batch ID: R366417 (0)		Test Name : MOISTURE - ASTM D2216			Matrix: Soil	
HS20080280-01	03SoilStockpile-200806	06 Aug 2020 17:45			07 Aug 2020 12:41	1

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS20080280

QC BATCH REPORT

Batch ID: 156181 (0)		Instrument: FID-11		Method: TEXAS TPH BY TX1005						
MBLK	Sample ID: MBLK-156181	Units: mg/Kg			Analysis Date: 10-Aug-2020 12:52					
Client ID:	Run ID: FID-11_366493	SeqNo: 5694937		PrepDate: 10-Aug-2020		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	25	50								U
>nC12 to nC28	25	50								U
>nC28 to nC35	25	50								U
Total Petroleum Hydrocarbon	25	50								U
<i>Surr: 2-Fluorobiphenyl</i>	23.15	0	25	0	92.6	70 - 130				
<i>Surr: Trifluoromethyl benzene</i>	24.48	0	25	0	97.9	70 - 130				
LCS	Sample ID: LCS-156181	Units: mg/Kg			Analysis Date: 10-Aug-2020 13:21					
Client ID:	Run ID: FID-11_366493	SeqNo: 5694938		PrepDate: 10-Aug-2020		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	242.9	50	250	0	97.2	75 - 125				
>nC12 to nC28	246.3	50	250	0	98.5	75 - 125				
<i>Surr: 2-Fluorobiphenyl</i>	25.13	0	25	0	101	70 - 130				
<i>Surr: Trifluoromethyl benzene</i>	22.86	0	25	0	91.4	70 - 130				
LCSD	Sample ID: LCSD-156181	Units: mg/Kg			Analysis Date: 10-Aug-2020 13:50					
Client ID:	Run ID: FID-11_366493	SeqNo: 5694939		PrepDate: 10-Aug-2020		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	247.3	50	250	0	98.9	75 - 125	242.9	1.81	20	
>nC12 to nC28	261	50	250	0	104	75 - 125	246.3	5.83	20	
<i>Surr: 2-Fluorobiphenyl</i>	24.76	0	25	0	99.0	70 - 130	25.13	1.51	20	
<i>Surr: Trifluoromethyl benzene</i>	23.42	0	25	0	93.7	70 - 130	22.86	2.42	20	

The following samples were analyzed in this batch: HS20080280-01

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS20080280

QC BATCH REPORT

Batch ID: R366417 (0) **Instrument:** Balance1 **Method:** MOISTURE - ASTM D2216

DUP	Sample ID: HS20080278-01DUP	Units: wt%	Analysis Date: 07-Aug-2020 12:41							
Client ID:	Run ID: Balance1_366417	SeqNo: 5689612	PrepDate: DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Percent Moisture	15.5	0.0100					15.4	0.647	20
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The following samples were analyzed in this batch:

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-03
WorkOrder: HS20080280

**QUALIFIERS,
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
Maryland	343, 2019-2020	30-Sep-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2020-2021	30-Apr-2021
Oklahoma	2019-141	31-Aug-2020
Texas	T104704231-20-26	30-Apr-2021

Sample Receipt Checklist

Work Order ID: HS20080280

Date/Time Received: 07-Aug-2020 08:45

Client Name: CBI-Houston

Received by: Jared R. Makan

Completed By: /S/ Jared R. Makan	07-Aug-2020 12:23	Reviewed by: /S/ RJ Modashia	07-Aug-2020 14:19
eSignature	Date/Time	eSignature	Date/Time

Matrices: soil

Carrier name: FedEx Priority Overnight

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on shipping container/cooler? Yes No Not Present
- Custody seals intact on sample bottles? Yes No Not Present
- VOA/TX1005/TX1006 Solids in hermetically sealed vials? Yes No Not Present
- Chain of custody present? Yes No 1 Page(s)
- Chain of custody signed when relinquished and received? Yes No COC IDs:200806
- Samplers name present on COC? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Container/Temp Blank temperature in compliance? Yes No

Temperature(s)/Thermometer(s):	1.2c uc/c	IR31
Cooler(s)/Kit(s):	43683	
Date/Time sample(s) sent to storage:	08/07/2020 12:30	
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/> No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/> No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/> No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:		


Login Notes: Sample container Count - COC = 2 Rec'd 3

Client Contacted: Date Contacted: Person Contacted:


Contacted By: Regarding:

Comments:

Corrective Action:

 ALS 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5856 Fax. +1 281 530 5887	43683	CUSTODY SEAL		Seal Broken By: SM	
		Date: 8/6/20	Time: 1935	Date: 08/07/20	
		Name: William Fall	Company: APTIM		

43683

 ALS 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5856 Fax. +1 281 530 5887	43683	CUSTODY SEAL		Seal Broken By: SM	
		Date: 8/6/20	Time: 1935	Date: 08/07/20	
		Name: William Fall	Company: APTIM		

**Must Deliver Next Business Day
Time and Temperature Sensitive!**



43683

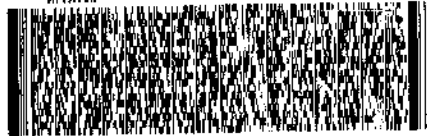
ORIGIN ID: SGRA (903) 830-6193
 SCOTT BEESINGER
 APTIM ENVIRONMENTAL & INFRASTRUCTURE
 1203-B EAST GRAND AVE
 PMB 202
 MARSHALL, TX 75670
 UNITED STATES US

SHIP DATE: 14AUG18
 ACTWGT: 3.00 LB MAX
 CAD: 30430/CAFE3111

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099

(281) 530-5868
 REF: LHAAP 46-RJ

RMA: 01111111



FedEx
Express



FedEx
 TRK# 4380 9531 7260
 (0221)

FRI - 07 AUG 10:30A
 PRIORITY OVERNIGHT

AB SGRA

77099
 TX-US IAH

