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June 15, 2016

Mr. Gary Miller, Remedial Project Manager
U.S. Environmental Protection Agency, Region 6
Superfund Division (6SF-RA)
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Re: San Jacinto River Waste Pits Superfund Site
Monthly Progress Report No. 79 May 2016/June 2016
U.S. EPA Region 6, CERCLA Docket No. 06-03-10 UAO for RI/FS

Project Number: 150557-01

Dear Mr. Miller:

Attached please find the Monthly Progress Report No. 79 for May 2016/June 2016. This report was prepared on behalf of the International Paper Company and McGinnes Industrial Maintenance Corporation for the San Jacinto River Waste Pits Superfund Site in Channelview, Texas. Should you have any questions, please contact me at (228) 818-9626 or email me at dkeith@anchorqea.com.

Sincerely,

David C. Keith

David C. Keith
Project Coordinator

9490530

cc: Steve Tzhone, USEPA
Anne Foster, USEPA

Monthly Progress Report No. 79 May 2016/June 2015
Submitted June 15, 2016
San Jacinto River Waste Pits Superfund Site
USEPA Region 6, CERCLA Docket No. 06-03-10 UAO for RI/FS
Channelview, Texas

The Unilateral Administrative Order (UAO) for the Remedial Investigation/Feasibility Study (RI/FS) at the San Jacinto River Waste Pits Superfund Site (Site) in Channelview, Texas, (USEPA Region 6, CERCLA Docket No. 06-03-10 UAO for RI/FS) was issued on November 20, 2009. The Respondents include International Paper Company (IP) and McGinnes Industrial Maintenance Corporation (MIMC).

A. Summary of Work Performed – May 2016/June 2016

The Respondents, Anchor QEA, and Integral Consulting completed work on the following tasks:

- Submitted Monthly Progress Report No. 78 to the United States Environmental Protection Agency (USEPA) on May 16, 2016.
- Continued to coordinate with USEPA on its review of alternatives presented in the Draft Final Interim Feasibility Study (FS).
- Deployed a surface water sampling team the week of May 16, 2016. Successfully collected surface water samples at four locations but ultimately withdrew the team due to river flows that exceeded limits established by the sampling and analysis plan (SAP).
- Prepared and submitted, on May 23, 2016, Sediment and Tissue Sample Collection, Request for Approval of Selected Sampling Modifications dated May 20, 2016.
- Prepared and submitted supplemental comments regarding remedial alternatives for the Site to the National Remedy Review Board (NRRB) on May 27, 2016, and a revised submittal on June 1, 2016, based on USEPA's request to limit the number of pages in the submittal.
- Submitted proposal for revised schedule for completion of field work for surface water, sediment and tissue sampling on June 6, 2016.
- Began process of retrieval of groundwater samplers on June 14, 2015, with samplers from wells other than Monitoring Well SJMW013 to be retrieved this week and the sampler for SJMW013 to be retrieved during the week of July 18, 2016, based on it having been installed later than other samplers.

B. Summary of Agency Communications

The written communications between Respondents and USEPA subsequent to the issuance of the UAO are summarized in the attached Table 1.

C. Summary of Sampling Results

Raw data for dioxins and furans, TOC, and grain size for sediments collected in May 2016 and the associated field blank data were received. Table 2 provides a listing of data files.

D. Problems, Delays, and Solutions

San Jacinto River Fleet Operations (SJRF)

As summarized in previous monthly reports for the RI/FS, the Respondents continue to be concerned about the potential impacts of the SJRF operations in the immediate vicinity of the Site. On January 2, 2013, Respondents submitted their comments on the Revised SJRF Draft Sampling and Analysis Plan via email to USEPA. The Respondents will continue to work with USEPA on this issue. Respondents will also continue to work with USEPA and SJRF, if necessary, should there be a need for access to the SJRF property for purposes of RI/FS activities. Those discussions would be based on prior communications in that regard, which are described in the monthly reports submitted under the Administrative Settlement Agreement and Order on Consent for Removal Action for the Site.

Field Sampling Schedule

On August 6, 2015, USEPA directed the Respondents to revise the Final RI/FS Work Plan, dated November 2010, or to prepare addenda to the Work Plan to address USEPA's request for additional sampling and analysis as part of the investigation of the Site. On September 30, 2015, the Respondents provided USEPA with a schedule for completing sampling and analysis plans (SAPs) and conducting associated field work, data analysis and reporting to fulfill USEPA's directive. The USEPA approved the schedule for submittal of Draft SAPs relating to the future sampling at the Site on October 8, 2015. Porewater and sediment SAPs were submitted on October 23, 2015, and groundwater and surface water SAPs were submitted on November 20, 2015. The Respondents subsequently revised the SAPs in response to USEPA comments, and the revised SAPs have been approved by USEPA. The completion of the work required by the SAPs was partially dependent upon the USEPA Dive Team installation of porewater samplers, which was completed the week of May 16, 2016. The surface water SAP also has specific flow conditions where surface water sampling can occur, and the rain events over the past month have resulted in river flows that exceed those specifications. In addition, some of the planned data collection for sediments and tissue were not completed because of site conditions during those sampling events. The Respondents are working with USEPA on a weekly basis to

coordinate completion of the surface water, sediment and tissue sampling as quickly as possible.

E. Projected Work for Next Two Reporting Periods – June 2016/August 2016

The Respondents, Anchor QEA, and Integral Consulting expect to conduct the following tasks during the remainder of June 2016 through August 2016:

- Continue to participate in and support USEPA on community awareness and outreach issues.
- Continue, in light of USEPA's decision to assume responsibility for the FS (as communicated by USEPA's Remedial Project Manager to Respondent's Project Coordinator in a phone call on April 5, 2016), to address any questions and comments of USEPA regarding the Draft Final Interim FS as they arise and to support USEPA as needed as it finalizes the FS.
- Continue with field work on groundwater, porewater, surface water, sediment, and tissue SAPs.
- Perform data validation and data management tasks with new data as it is received.

F. Schedule

The Draft Final Interim FS was submitted to USEPA on March 21, 2014, and reviews of the Draft Final Interim FS by USEPA and the USACE have been ongoing.

A schedule was provided to USEPA for review on May 12, 2016 and was attached to Monthly Progress Report No. 78 submitted on May 16, 2016. That schedule provided milestones related to the sampling and analysis plans implementation, data analysis and reporting, subject to changes related to rain and flow events in the San Jacinto River watershed and the need to adjust deadlines as a result of conditions encountered during field work, the timing of responses and approvals on the part of USEPA and other circumstances. For purposes of this report, that schedule has been updated based on sampling completed and other activities that have occurred during the last 30 days and is attached (Updated Schedule). Milestones and deadlines in the Updated Schedule are subject to changes related to rain and flow events in the San Jacinto River watershed and the need to adjust deadlines as a result of conditions encountered during field work, the timing of responses and approvals on the part of USEPA and other circumstances.

Monthly Progress Report No. 79 May 2016/June 2016
Submitted June 15, 2016
San Jacinto River Waste Pits Superfund Site
USEPA Region 6, CERCLA Docket No. 06-03-10 UAO for RI/FS
Channelview, Texas

On April 5, 2016, USEPA Remedial Project Manager notified Respondent's Project Coordinator that USEPA would be finalizing the FS for the Site. The final RI/FS schedule will depend on completion of the work associated with the SAPs, and USEPA's completion of the FS.

Prepared by:
David C. Keith
Project Coordinator

Table 2. Summary of Data Files Provided

Project	SDG	Lab Data Packages	Lab Electronic Data Deliverables
Cap Monitoring Data	E1600203	E1600203 - Final pdf	E1600203_EDD zip
		Rinse_Samples_ From E1600203 - Final pdf	

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
12/4/2009	Required Notifications pursuant to Paragraphs 51 and 75 of UAO	None	NA	Provided notice of intent to comply and "sufficient cause" defenses and identified Project Coordinator
12/7/2009	Copies of Letters to McGinnes Heirs Regarding Site Access	None	NA	
12/10/2009	Draft Scoping Meeting Minutes	None	NA	
12/14/2009	Copy of Response from Big Star Barge & Boat Company Regarding Site Access	None	NA	
12/15/2009	Monthly Progress Report No 1	None	NA	
12/18/2009	Status Report on Site Access	1/12/2010	Actions to date did not constitute "best efforts" to gain access	Respondents and EPA spoke regarding the matter in further detail on 1/8/10
12/21/2009	HASP	None	NA	
12/21/2009	Anchor QMP	None	NA	
12/21/2009	Integral QMP	None	NA	
1/7/2010	Request for comments regarding access agreement for Big Star Barge & Boat Company	None	NA	
1/11/2010	Proposed Draft AOC for time critical removal action	1/12/2010	Respondents' proposed AOC has been forwarded to headquarters and Philip Allen for comment Time critical removal action requires imminent and substantial endangerment finding	
1/12/2010	Copy of Consent Form for Site Access from Big Star Barge & Boat Company	None	NA	
1/12/2010	Notice of UAO Deficiency	None	Actions to date did not constitute "best efforts" to gain access	
1/13/2010	Draft Sediment Sampling and Analysis Plan Minutes	None	NA	
1/13/2010	Draft Database and Data Exchange Minutes	None	NA	
1/15/2010	Monthly Progress Report No 2	None	NA	
1/15/2010	Update Regarding Respondents' Efforts to Obtain Access Agreement, Response to Letter from Barbara Nann and Request for Extension	1/21/2010	Efforts to obtain Site access are "encouraging "	
1/20/2010	Correspondence from Port of Houston Authority regarding access	None	NA	
1/21/2010	Copies of Site Access Letter From Attorney for McGinnes Heirs	1/22/2010	EPA requested another copy of the letter	

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
1/21/2010	Correspondence with Port of Houston Authority Regarding revised fence alignment	None	NA	
1/22/2010	Copies of Site Access Letter From Attorney for McGinnes Heirs	None	NA	
1/25/2010	Copies of Letters Sent to Gary Gladfelter and Tanya Ammons Regarding Site Access	None	NA	
1/27/2010	Draft 1/20/10 Alignment Meeting Minutes	None	NA	
1/27/2010	Copy of Correspondence with Big Star Barge & Boat Company Regarding Site Access	None	NA	
1/27/2010	EPA's response to Respondents' proposed AOC regarding Time Critical Removal Action	None	EPA will give Respondents additional time to respond as to whether Group wants to enter into AOC for Site stabilization	
1/29/2010	Copy of Revised Consent Form for Site Access from Big Star Barge & Boat Company	None	NA	
2/2/2010	Copy of Correspondence with Big Star Barge & Boat Company Regarding Site Access	None	NA	
2/4/2010	Respondents' proposed changes/comments on proposed AOC for Time Critical Removal Action	3/5/2010	Awaiting finalization of action memo for site stabilization before making additional changes to the AOC for site stabilization	
2/10/2010	Draft Memorandum San Jacinto River Waste Pits Superfund Site Time Critical Removal Action	Non	NA	
2/11/2010	Copy of Revised Consent Form for Site Access from Big Star Barge & Boat Company	None	NA	
2/11/2010	Copy of executed Consent Form for Site Access from Big Star Barge & Boat Company	2/17/2010	EPA approved of the form and will await an access agreement allowing for the RI/FS to take place	
2/15/2010	Monthly Progress Report No 3	None	NA	
2/16/2010	Draft Sediment Sampling and Analysis Plan/QAPP	None	Comments received March 10, 2010	
2/16/2010	Correspondence to EPA regarding update to Respondents' efforts to obtain access to the site	None	NA	
2/17/2010	Submitted the Agency Review Draft of the Quality Assurance Project Plan and Field Sampling Plan for Sediment Sampling	Consolidated comments received on March 10, 2010	Follow up meeting conducted with EPA, TCEQ and Trustees on March 16 and comment/response table developed for submittal with Draft Final report	Draft Final document submitted on 4/9/2010

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
2/18/2010	Sampling Plan for sediment sampling on February 17, 2010	2/19/2010	EPA will forward for review to EPA's financial assurance expert	
2/18/2010	Correspondence from MIMC regarding financial assurance bond	2/19/2010	EPA will forward for review to EPA's financial assurance expert	
2/19/2010	Copy of presentation regarding Short-Term Communications Plan	None	NA	
2/22/2010	Letter to Barbara Nann regarding MIMC's responsibility to provide access to the V C McGinnes, Trustee tract	None	NA	
3/18/2010	Draft Sediment Sampling and Analysis Plan Comment Review Meeting Minutes March 16, 2010, TCEQ, Austin Texas	None	NA	
4/7/2010	Draft Field Sampling Plan and Job Safety Analyses for the TCRA sampling	None	NA	This sampling was requested by EPA in an email on March 26, 2010
4/9/2010	Submitted the Draft RI/FS Work Plan and SLERA	June 3, 1010	Comments received from EPA by email	
4/9/2010	Submitted the Draft Final of the Quality Assurance Project Plan and Field Sampling Plan for sediment sampling	None	NA	
4/15/2010	Submitted Monthly Progress Report No 5 on April 15, 2010	None	NA	
		4/26/2010	Approval letter from EPA for implementation of the RI/FS Sediment QAPP/SAP	Agency requested replacement pages for Final QAPP/SAP
4/30/2010	Submitted replacement pages to EPA, TCEQ and the trustees for the Final SAP/QAPP on April 30, 2010	None	NA	
5/11/2010	Submitted the Draft Chemical Fate and Transport Modeling Study design and sampling and analysis plan addendum on May 11	None	NA	
5/14/2010	Submitted a Soil Sampling and Analysis Plan for the TxDOT right-of-way to TxDOT and EPA	None	NA	Submitted to TxDOT as part of effort to obtain access into the TxDOT right-of-way for RI/FS and TCRA activities

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
5/17/2010	Submitted Monthly Progress Report No 6 on May 17, 2010	None		
5/21/2010	Submitted revised TxDOT right-of-way sampling and analysis plan	None		Comments received from TxDOT on May 25, 2010
5/25/2010	Submitted email outlining sediment sampling and analysis deviations	5/26/2010	EPA agreed to recommendations and asked that human health locations on west bank be reconsidered	Human health locations on west bank moved with EPA concurrence in email on May 28, 2010
5/27/2010	Submitted revised TxDOT right-of-way sampling and analysis plan	None		TxDOT approved the revised sampling and analysis plan on June 11, 2010
5/28/2010	Submitted email summary of VOC data from sediment sampling	5/28/2010	EPA concurred that no further VOC analyses were required	
6/7/2010	Response to 6/4/10 email from Barbara Nann regarding access for 3 soil samples in western impoundment	None		
6/11/2010	Submitted Draft Tissue Sampling and Analysis Plan and Draft Technical Memorandum on Bioaccumulation Modeling on June 11, 2010	None		
6/15/2010	Submitted Monthly Progress Report No 7 on June 15, 2010	None		
6/25/2010	Submitted comments and responses on Draft RI/FS Work Plan	None		
7/9/2010	Submitted Revised Draft RI/FS Work Plan	7/12/2010 8/26/2010	Email from B Nann forwarding edits to RI/FS work plan Email from Steve Tzhone with additional comments concerning Site History and soil sampling in the area of former impoundments south of I-10	
7/15/2010	Submitted Monthly Progress Report No 8 on July 15, 2010	None		

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
7/27/2010	Provided EPA a draft response to comments on the Draft Fate and Transport Memorandum Review	8/12/2010	Email from S Tzhone forwarding two additional comments on the Fate and Transport Modeling Memorandum	
8/16/2010	Submitted Monthly Progress Report No 9 on August 16, 2010	None		
8/17/2010	Submitted revised response to comments on the Fate and Transport Sampling and Analysis Plan	8/31/2010 9/7/2010	Email from S Tzhone approving the revised response to comments and authorizing submittal of the Final Draft document Email from S Tzhone providing comments from USGS on sampling and analysis plan and direction to incorporate comments as EPA comments by phone Comments need to be addressed prior to implementing field work	
8/18/2010	Submitted Draft Addendum to the Sampling and Analysis Plan (SAP) Sediment Study	8/23/2010	Email from S Tzhone approving the addendum SAP and authorizing sampling in Cedar Bayou	
8/18/2010	Submitted revised response to comments on the Bioaccumulation Modeling and Tissue Sampling and Analysis Plan	8/31/2010	Email from S Tzhone approving the revised response to comments and authorizing submittal of the Final Draft documents	
8/19/2010	Submitted Draft Meeting Minutes - Agency Comments on Tissue SAP and Technical Memorandum on Bioaccumulation Modeling	None		
9/3/2010	Submitted Draft Final RI/FS Work Plan	10/7/2010	Letter of deficiency from S Tzhone requiring Respondents to incorporate EPA's Comment Number 4 (sampling of south impoundment) provided to the respondents on August 26, 2010, as part of the RI/FS	Respondents have 14 days to comply from the date of the letter

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
9/9/2010	Submitted letter to Steve Tzhone regarding Site Warning and Protective Measures	9/1/2010	Email from S Tzhone approving the proposed scope of work for additional fencing and signs and requesting clarification and final design for impoundment signs and buoy placement	
9/10/2010	Submitted letter to Steve Tzhone and Barbara Nann concerning MIMC's participation in soil sampling in the area of former impoundment south of I-10	10/8/2010	Letter to MIMC counsel from B Nann expressing disagreement with MIMC's letter and reiterating position that south impoundment must be sampled	
9/10/2010	Submitted the Draft Soil Sampling and Analysis Plan for the RI/FS	None		
9/10/2010	Submitted Draft Final Tissue SAP, and Draft Final Technical Memorandum on Bioaccumulation Modeling			
9/15/2010	Submitted Monthly Progress Report No 10 on September 15, 2010	10/7/2010	Letter of deficiency from S Tzhone requiring Respondents to submit all raw data with monthly progress reports	Respondents have 14 days to comply from the date of the letter
9/16/2010	Submitted letter outlining proposed buoy and warning signs at impoundments	9/16/2010	Email from S Tzhone approving final design for signs and buoy system	

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
9/23/2010	Submitted an email with clarifications required for the final Sampling and Analysis Plan Tissue Study on the following topics Laboratory Certification, selection of tissue analytes, and a few editorial changes to the tables and text re lipid analysis methods	9/24/2010	Email from Steve Tzhone indicating that EPA agreed with the response to EPA's concerns about laboratory certification, and agreeing to the proposed edits EPA approved the final Tissue SAP and Technical Memorandum on Bioaccumulation Modeling on September 24, 2010	
9/28/2010	Submitted Final Sampling and Analysis Plan Tissue Study and Final Technical Memorandum on Bioaccumulation Modeling on September 28, 2010	9/29/2010	EPA approved of the Tissue SAP Addendum	
9/30/2010	Submitted Draft TxDOT Right-Of-Way Data Report on September 30, 2010	None		
10/1/2010	Submitted Draft Groundwater QAPP and FSP on October 1, 2010	None		
		10/7/2010	Email from B Nann regarding status of access efforts	
		10/11/2010	Email from B Nann encouraging diligent efforts on access	
10/13/2010	Email to B Nann regarding the status of access efforts and need for a conference call between TxDOT, EPA and respondents to discuss	10/14/2010	Email from B Nann agreeing to conference call	
10/15/2010	Submitted Monthly Progress Report No 11 on October 15, 2010			
10/18/2010	IP Letter responding to NOD regarding south area investigation			

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
10/20/2010	Submitted revised monthly reports for June, July, August, and September 2010 and accompanying raw data on discs			
10/21/2010	MIMC letter responding to NOD regarding south area investigation			
10/21/2010	Joint letter responding to NOD regarding raw data			
10/21/2010	Submitted Draft Final RI/FS Work Plan	11/2/2010	Draft Final RI/FS Work Plan approval letter from S Tzhone provided by email	
		10/25/2010	Email from B Nann approving use of TxDOT right-of-way for gravel road	
		10/29/2010	Received certified letter from B Nann regarding UAO deliverables	
11/1/2010	Certified letter to B Nann from IP counsel detailing Respondents' efforts to obtain Site Access Agreements with TxDOT and Big Star Barge and Boat			
		11/2/2010	Received certified letter from B Nann regarding best efforts for obtaining Site Access	
		11/3/2010	Email from S Tzhone to D Keith expressing concerns with field sampling procedures used during the week of October 25, 2010	

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
11/5/2010	Email from D Keith to S Tzhone regarding compliance with UAO deliverable procedures and proposed future deliverable procedures	11/5/2010	Email from S Tzhone to D Keith concurring with proposed procedures	
		11/8/2010	Email from B Nann concurring with proposed procedures	
11/8/2010	Email from D Keith to S Tzhone concerning revisions to field procedures to be used in the future			
11/8/2010	Re-submitted Revised Draft Groundwater Study SAP	11/22/2010	Email from S Tzhone with comments on Groundwater SAP	
11/8/2010	Re-submitted Draft Soil Sampling and Analysis Plan	11/22/2010	Email from S Tzhone with comments on Soil SAP	Additional comments received from S Tzhone on 11/30/2010
11/12/2010	Certified letter to B Nann from Al Axe reiterating and detailing Respondents' efforts to obtain Site Access Agreements with TxDOT and Big Star Barge and Boat			
11/15/2010	Submitted Monthly Progress Report No 12 on November 15, 2010			
11/30/2010	Submitted Draft Final Comment/Response Matrix of the Fate and Transport Modeling Memorandum	12/8/2010	Email from S Tzhone approving the Draft Final Comment/Response matrix	
11/30/2010	Transferred preliminary Big Star soils data to USEPA as a mix of excel and PDF files via email, and then submitted the complete preliminary invalidated data to USEPA via email December 1, 2010			
12/6/2010	Submitted Draft Comment/Response Matrix for Groundwater SAP	12/14/2010	Email from S Tzhone approving the Draft Final Comment/Response matrix	

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
12/9/2010	Submitted Draft Comment/Response Matrix for Soil SAP			
12/15/2010	Submitted Monthly Progress Report No 13 on December 15, 2010			
12/16/2010	Submitted the Draft Final Groundwater Study Sampling and Analysis Plan on December 16, 2010	12/23/2010	Email and letter from S Tzhone approving the Groundwater Study Sampling and Analysis Plan	Requested final copies be provided to remove "Draft" from "Draft Final" - implementation of field work approved
12/17/2010	Submitted the Draft Final Chemical Fate and Transport Modeling Memorandum December 17, 2010	1/10/2011	Email and letter from S Tzhone approving the Chemical Fate and Transport Modeling Memorandum	Requested final copies be provided to remove "Draft" from "Draft Final"
12/17/2010	Submitted an Addendum to the Soil SAP to describe a soil investigation in the area South of I-10 on December 17, 2010	1/18/2011 2/3/11	Emailed letter from S Tzhone providing comments to the Draft Addendum to the Soil SAP Additional comments from TCEQ on Draft Addendum to the Soil SAP received from S Tzhone by email	Conference calls to discuss comments with agencies on January 25 and February 7
12/22/2010	Submitted the Draft Final Sampling and Analysis Plan Soil Study on December 22, 2010	1/10/2011	Email and letter from S Tzhone approving the Sampling and Analysis Plan Soil Study	Requested final copies be provided to remove "Draft" from "Draft Final"
1/13/2011	Submitted Final Groundwater Study Sampling and Analysis Plan			
1/13/2011	Submitted Final Chemical Fate and Transport Modeling Memorandum			
1/14/2011	Submitted the Final Sampling and Analysis Plan Soil Study			
1/14/2011	Submitted Monthly Progress Report No 14			
1/24/2011	Email from D Keith to S Tzhone regarding schedule for soil sampling activities			
1/27/2011	Letter from IPs counsel submitted to USEPA regarding International Papers efforts to obtain access for the south area investigation			

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
1/27/2011	Provided USEPA a compilation of historical aerial photographs of the project area on the project web portal			
2/1/2011	Submitted a DVD containing all draft documents for the SJRWP RI/FS submitted to USEPA via the project portal through January 25, 2011			
2/11/2011	Submitted Draft Contaminants of Potential Concern Memorandum	3/10/2011	Received comments on Draft COPC Technical Memorandum	
2/14/2011	Submitted Draft Revised RI/FS Schedule	2/15/2011	Approval letter from EPA for revised RI/FS schedule	
2/15/2011	Submitted Monthly Progress Report No 15			
2/15/2011	Submitted the Draft Bed Property Study Field Sampling Plan	3/3/2011	Received emailed comments from S Tzhone on Draft Bed Property Study FSP	
2/15/2011	Submitted the Draft Bathymetry Survey Field Sampling Plan	3/3/2011	Received emailed comments from S Tzhone on Draft Bathymetry Survey FSP	
2/22/2011	Submitted Draft Final Sampling and Analysis Play, Soil Study Addendum 1	3/4/2011	Approval letter from USEPA for Draft Final Sampling and Analysis Play, Soil Study Addendum 1	
3/2/2011	Submitted Draft Current Velocity Study Field Sampling Plan			
3/8/2011	Submitted Draft Comment Response Matrices for the Draft Bed Property Study and Draft Bathymetry Survey FSPs	3/9/2011	Phone conversation with Steve Tzhone indicated that responses were approved	
3/9/2011	Submitted Final Sampling and Analysis Plan, Soil Study Addendum 1			
3/11/2011	Phone call from J Sampson (proxy for D Keith) to S Tzhone to report field observations of a petroleum odor and oily sheen on some subsurface soil samples from the south impoundment soil study area	3/11/2011	Received an email from S Tzhone acknowledging the phone report, and with direction to 1) proceed with sampling according to the approved Soil SAP Addendum 1, and 2) to provide a summary report of field observations when the sampling event is complete	
3/15/2011	Submitted Monthly Progress Report No 16			

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
3/15/2011	Submitted the Draft Final Bed Property Study and the Draft Final Bathymetric Survey Field Sampling Plans	3/21/2011	Approval letter from USEPA for Draft Final Bed Property Study and the Draft Final Bathymetric Study FSP	
3/16/2011	Submitted the Draft Sedflume Study FSP, the Draft Radioisotope Coring Study FSP, and the Draft Upstream Sediment Load Study FSP	4/8/2011	Received emailed comments from S Tzhone on the Draft Sedflume Study FSP, the Draft Radioisotope Coring Study FSP, and the Draft Upstream Sediment Load Study FSP	Conference call to discuss comments with agencies on April 15, 2011
3/16/2011	Submitted Field Report on south impoundment soil sampling			
3/18/2011	Submitted a letter to USEPA on behalf of International Paper regarding the completion of the south impoundment sampling			
3/25/2011	Submitted the Final Bed Property Study and the Final Bathymetric Survey Field Sampling Plans			
3/28/2011	Submitted the Draft Comment/Response Matrix for the Draft Current Velocity Study Field Sampling Plan	4/6/2011	Received emailed comments from S Tzhone with two additional comments on the Draft Current Velocity Study FSP	
		3/29/2011	Received emailed letter from S Tzhone requesting Respondents participate in Residential Soil Sampling as part of USEPA's Community Engagement Initiative	Respondents provided USEPA their response to this request on April 15, 2011
3/30/2011	Submitted the Draft Comment/Response matrix with responses to USEPA comments on the COPC Technical Memorandum	4/1/2011	Conference call with USEPA to discuss comments	
4/7/2011	Submitted an email request for assistance in obtaining Quality Assurance Project Plan and laboratory validation packages for the TCEQ Total Maximum Load programs These documents are necessary to meet all requirements of USEPA comments on the COPC Technical Memorandum			
4/8/2011	Submitted Revised Comment/Response Matrix for USEPA comments on the COPC Technical Memorandum	5/5/2011	Received approval letter from Carlos Sanchez for Gary Miller on the Draft COPC Technical Memorandum	

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
4/8/2011	Submitted the Draft Final Current Velocity Study FSP	5/3/2011	Received approval letter from Carlos Sanchez for Gary Miller on the Draft Final Current Velocity Study Field Sampling Plan	
4/14/2011	Submitted the Draft Comments/Responses matrices for the Draft Sedflume Study, Draft Radioisotope Coring Study, and the Draft Upstream Sediment Load Study Field Sampling Plans	4/15/2011	Conference call with USEPA to discuss comments	
4/15/2011	Submitted Monthly Progress Report No 17			
4/15/2011	Provided USEPA and TCEQ Site groundwater data maps and tables associated with implementation of the north impoundment Groundwater Field Sampling Plan			
		4/19/2011	Received letter from Carlos Sanchez notifying Respondent's that USEPA has changed the designated EPA Project Coordinator under the UAO to M Gary Miller effective April 19, 2011	
4/25/2011	Submitted Draft Final Upstream Sediment Load Field Sampling Plan	5/5/2011	Received phone request from Gary Miller to provide redline/strikeout version of Word document for EPA review	Provided redline strikeout version of document for review by email from Teri Freitas on behalf of David Keith
4/28/2011	Submitted Draft Final Radioisotope Coring Study Field Sampling Plan	5/5/2011	Received approval letter from Carlos Sanchez on behalf of Gary Miller for the Draft Final Radioisotope Coring Study Field Sampling Plan	
		4/29/2011	Received email from Gary Miller with three additional questions on the Draft Sedflume Study Field Sampling Plan	
5/5/2011	Submitted Draft Final Sedflume Field Sampling Plan	5/20/2011	Received approval letter from USEPA on the Draft Final Sedflume Study Field Sampling Plan	

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
5/9/2011	Submitted Final Current Velocity Study Field Sampling Plan			
5/9/2011	Submitted Final Radioisotope Coring Study Field Sampling Plan			
5/16/2011	Submitted Monthly Progress Report No 18			
		5/18/2011	Received approval letter from USEPA on the Draft Final Upstream Sediment Load Field Sampling Plan	
		5/23/2011	Received letter from Gary Miller directing Respondents sample residential soils in the area	Respondents provided USEPA their response to this request on May 31, 2011
5/24/2011	Submitted Final Upstream Sediment Load Study Field Sampling Plan			
5/24/2011	Submitted Final Sedflume Field Sampling Plan			
5/25/2011	Submitted email request to USEPA for approval to begin monitoring well decommissioning	6/2/2011	Received email approval from Gary Miller to proceed with this work in accordance with the work plan	
5/27/2011	Submitted all Working Documents from the SJRWP Site Portal on DVD			
6/10/2011	Submitted Draft Soil Sampling and Analysis Plan Addendum 2	7/19/2011	Received draft approval and comments on the Draft Addendum 2 Sampling and Analysis Plan for Residential Soil Sampling	This is the sampling and analysis plan for residential soil sampling The sampling and analysis plan was approved with modifications noted in the letter from USEPA
6/14/2011	Posted an updated Site database to the project web portal			
6/15/2011	Submitted Monthly Progress Report No 19			
7/15/2011	Submitted Monthly Progress Report No 20			
7/20/2011	Correspondence between MIMC counsel and USEPA regarding draft Preliminary Site Characterization Report and south impoundment issue			

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
7/20/2011	Correspondence between International Paper counsel and USEPA regarding draft Preliminary Site Characterization Report and south impoundment issue			
7/20/2011	Submitted the Draft Preliminary Site Characterization Report			
7/21/2011	Submitted Field Sampling Report 2010 Sediment Study			
7/21/2011	Submitted Field Sampling Report Tissue Study			
7/21/2011	Submitted Field Sampling Report 2010-2011 Soil Study			
7/21/2011	Submitted Field Sampling Report Groundwater Study			
7/22/2011	Submitted letter to USEPA regarding modeling schedule - due to drought in the Houston area	10/19/2011	Received letter from Gary Miller approving change in submittal date for the Chemical Fate and Transport Modeling Study to February 1, 2012	
7/25/2011	Submitted a Final Addendum 2 to the Soil Sampling and Analysis Plan for Residential Sampling			
7/25/2011	Provided USEPA draft language for an information sheet for residential sampling			
		7/29/2011	Received email from Steve Tzhone regarding potential CenterPoint Energy pipeline planned for construction within the project area	
8/1/2011	Email from Respondents' Project Coordinator to USEPA transmitting draft consent to access for residential sampling			
		8/2/2011	Received copy of email prepared by USEPA counsel regarding comments on draft consent to access for residential sampling	

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
		8/2/2011	Email from A Foster to Respondents' counsel transmitting draft letters designating Respondents as EPA's representatives for Big Star access	
		8/3/2011	Email from A Foster to Respondents' counsel transmitting copy of letter from EPA to San Jacinto River Fleet regarding its activities at the Site, expressing intent to pursue access from Big Star/San Jacinto River Fleet, and requesting summary of Respondents' problems in obtaining access from Big Star	
		8/3/2011	Email from A Foster to Respondents' counsel regarding fact sheet associated with residential sampling	
8/3/2011	Submitted email to Gary Miller requesting change to approved Addendum 2 to the Soil Sampling and Analysis Plan The requested revision involved a change from archiving deeper samples to including a second potential soil sampling mobilization and collection of deeper samples if required based on the results of the surface sampling The revision was requested on the basis of a meeting between USEPA and Respondents on August 3, 2011 during which it was decided to limit the underground utility locate effort prior to mobilization for sampling so that sampling could occur sooner	8/3/2011	Received email from Gary Miller approving proposed change to residential soil sampling and requesting a revised final soil sampling plan addendum	
8/3/2011	Email between MIMC counsel, on behalf of Respondents, and USEPA regarding revised version of consent to access for residential soil sampling			

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
8/3/2011	Email between MIMC counsel, on behalf of Respondents, and USEPA regarding revised version of consent to access for residential soil sampling and providing contact information for lessee of Big Star property and for Big Star counsel			
8/4/2011	Submitted Revised Addendum 2 to the Soil Sampling and Analysis Plan for Residential Sampling			
8/8/2011	Submitted Memorandum to Gary Miller outlining data gap issues identified in the Draft Preliminary Site Characterization Report			A meeting was held with USEPA and other agencies in Austin on August 30, 2011 to discuss these issues A revised memorandum was submitted on September 7, 2011 based on verbal comments received from USEPA following that meeting
		8/9/2011	Email from A Foster to Respondents' counsel regarding revised letter of designation	
		8/10/2011	Email from J Hernandez to Respondents' counsel regarding revised letter of designation	
		8/10/2011	Received a draft letter from USEPA describing additional study in the area of the impoundment south of I-10	
8/15/2011	Submitted Monthly Progress Report No 21			
8/26/2011	Submitted preliminary unvalidated residential soil sampling data to USEPA			Followed electronic data deliverables from the analytical laboratory with an Excel summary spreadsheet on August 29, 2011
9/2/2011	Submitted validated residential soil sampling data to USEPA			

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
9/2/2011	Submitted email to Gary Miller and Valmichael Leos requesting clarification on a potential chemical monitoring program for the TCRA armored cap			In order to start the development of a sampling plan for this program, respondents need to know the following from USEPA (1) Is the use of passive SPME acceptable to USEPA for the cap monitoring (2) Will this program be conducted as part of the TCRA AOC or RI/FS UAO program, and (3) Who will be the lead contact from USEPA for development and approval of the TCRA chemical monitoring program
9/7/2011	Submitted a revised memorandum outlining data gap issues identified in the Draft Preliminary Site Characterization Report to reflect changes requested by USEPA			
9/11/2011	Submitted a Draft Fact Sheet for the Site to USEPA for consideration			This fact sheet was requested by USEPA
9/15/2011	Submitted Monthly Report No 22			
9/19/2011	Submitted Draft Addendum 1 to the Sediment Sampling and Analysis (SAP) for additional sediment sampling	10/3/2011	Received letter from Gary Miller providing conditional approval of the SAP	
9/19/2011	Submitted Draft Addendum 1 to the Tissue Sampling and Analysis Plan (SAP) for additional background catfish and crab sampling	10/3/2011	Received letter from Gary Miller providing conditional approval of the SAP	
9/21/2011	Submitted letter to USEPA regarding ADCP servicing issue and San Jacinto River Fleet Operations	10/19/2011	Received letter from Gary Miller to continue deployment of the acoustic doppler profiler and the re-deployment of the suspended sediment sampler when water is again flowing over the Lake Houston dam	
9/22/2011	Submitted Attachment B2 (Toxicity of Dioxin-Like Compounds to Invertebrates, Fish, Reptiles, Birds and Mammals) in Appendix B of the Final RI/FS Work Plan			
10/4/2011	Submitted Addendum 1 to the Sediment Sampling and Analysis (SAP) for additional sediment sampling			Addressed conditions outlined in conditional approval letter received on 10/3/2011

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
10/5/2011	Submitted Addendum 1 to the Tissue Sampling and Analysis Plan (SAP) for additional background catfish and crab sampling			Addressed conditions outlined in conditional approval letter received on 10/3/2011
10/12/2011	Submitted Draft Dioxin Treatability Study Literature Review			
10/14/2011	Submitted letter to USEPA regarding Field Studies Issues	11/10/2011	Received an email from Gary Miller to David Keith stating that after discussions with partner agencies, the request to remove the ADCP and discontinue data collection for the current velocity and upstream sediment load studies is approved	If a high flow event occurs, or appears likely at any time within the next two months, then the ADCP shall be re-installed and data collection for the current velocity and upstream sediment load studies resumed Based on the timing of any such high flow event during this time, a request for extension of the submittal date for the Fate and Transport Model Study will be considered to allow sufficient time for inclusion and evaluation of any new velocity and sediment load data
10/17/2011	Submitted Monthly Report No 23			
		10/19/2011	Received letter from Gary Miller approving change in submittal date for the Chemical Fate and Transport Modeling Study to February 1, 2012	
10/28/2011	Email from Jennifer Sampson with Integral Consulting to Gary Miller requesting approval to include three additional samples with percent fines of 81 5, 82 3, and 83 2 be added to seven other samples from the Addendum 1 to the Sediment Sampling and Analysis (SAP) for analysis of dioxins and furans and organic carbon	11/1/2011	Email approval from Gary Miller to Jennifer Sampson for the analysis of additional samples as requested	
11/15/2011	Submitted Monthly Report No 24			
11/16/2011	Prepared and submitted a meeting summary for the proposed armored cap monitoring program to USEPA			

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
		11/16/2011	Received and reviewed draft comments from USEPA on the draft Preliminary Site Characterization Report (PSCR)	
		11/23/2011	Received and reviewed revised draft comments from USEPA on the draft PSCR	
		11/29/2011	Received and reviewed a draft letter from USEPA regarding comments and directives for additional sampling on the southern impoundment area on behalf of IP	
11/29/2011	Email from David Keith to Mr Miller forwarding technical literature on the use of sediment traps			
		12/1/2011	Received and reviewed a fingerprint analysis on the southern impoundment area from Mr Miller on behalf of IP The analysis was prepared by Dr Linda Broach with TCEQ	
12/5/2011	Provided copies of residential soil sampling consent forms to Mr Miller			
12/6/2011	Provided Mr Miller a table pairing residential soil sample identification numbers and physical street addresses			
		12/9/2011	Received a letter from Mr Miller providing conditional approval of the PSCR The letter further instructed the Respondents to provide a comment response matrix to USEPA for approval, followed by submittal of the Final PSCR	
		12/9/2011	Received a letter from Mr Miller providing final comments and directives for additional sampling in the southern impoundment area on behalf of IP	

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
12/13/2011	Prepared and submitted a meeting summary for the Fate and Transport Modeling Workshop #2 to USEPA			
12/15/2011	Submitted Monthly Report No 25			
12/29/2011	On behalf of International Paper, submitted Draft Soil SAP Addendum 3, Draft Sediment SAP Addendum 2, and Draft Groundwater SAP Addendum 1			
1/3/2012	Submitted a draft matrix summarizing the Respondents proposed revisions to the PSCR to address USEPA comments received on December 8, 2011	1/5/2012	Received email from Mr Miller approving the proposed revisions to the PSCR	Revisions will be incorporated into the Final PSCR
		1/5/2012	Received approval in a phone call from Mr Miller on the conceptual TCRA chemical monitoring approach and was directed to develop a SAP for that program	
1/10/2012	Provided email notification to Mr Miller that the project database had been updated and posted the project web portal			
1/17/2012	Submitted Monthly Report No 26			
1/19/2012	Submitted the Draft Alternatives Memorandum, Draft Toxicological and Epidemiological Studies Memorandum, and Draft Exposure Assessment Memorandum			
2/1/2012	Submitted Chemical Fate and Transport Modeling Report on February 1, 2012			

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
		2/9/2012	Email from J Hernandez to Respondents' counsel forwarding draft pre-construction baseline site assessment work plan for San Jacinto River Fleet project ("SJRF Draft SAP")	
2/14/2012	Submitted a letter to USEPA regarding revisions to the RI/FS schedule			
		2/14/2012	Email from J Hernandez to Respondents' counsel forwarding copy of USEPA letter to San Jacinto River Fleet dated 12/1/2012	
		2/15/2012	Email from J Hernandez to Respondents' counsel regarding deadline for comments on the SJRF Draft SAP	
2/15/2012	Submitted Monthly Report No 27			
2/28/2012	Submitted Final Preliminary Site Characterization Report on February 28, 2012			
		3/1/2012	Received comments from Mr Miller on 1) Draft Addendum 1 to the Groundwater Study Sampling and Analysis Plan for Additional Sampling South of Interstate Highway 10	
			2) Draft Addendum 2 to the Sediment Sampling and Analysis Plan for Additional Sampling South of Interstate Highway 10	
			3) Draft Addendum 3 to the Soil Sampling and Analysis Plan for Additional Sampling South of Interstate Highway 10	

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
3/8/2012	Submitted a letter to USEPA regarding the Respondents' concerns about the San Jacinto River Fleet operations, and provided comments on the Draft SAP			
3/15/2012	Submitted Draft Baseline Ecological Risk Assessment on March 15, 2012			
3/15/2012	Submitted Monthly Report No 28			
4/2/2012	Submitted Soil SAP Addendum 3, Sediment SAP Addendum 2, and Groundwater SAP Addendum 1 to USEPA	4/11/2012	Received approval on the Soil Sampling and Analysis Plan (SAP) Addendum 3, Sediment SAP Addendum 2, and Groundwater SAP Addendum 1 from USEPA by letter and email from Gary Miller	
4/5/2012	Submitted cover letter and Revised Schedule for RI/FS deliverables to USEPA	4/11/2012	Received approval on the Revised RI/FS Schedule from USEPA by email from Gary Miller	
4/16/2012	Submitted Monthly Report No 29			
4/16/2012	Submitted Draft Sampling and Analysis Plan (SAP) for the TCRA Cap Porewater Assessment	5/9/2012	Received approval with modifications on the Draft SAP Time Critical Removal Action (TCRA) Cap Porewater Assessment on May 9, 2012	
		4/24/2012	Received comments from Gary Miller on the Draft Exposure Assessment Memorandum (EA) and the Draft Toxicological and Epidemiological Studies (TES) Memorandum	Received clarification on comments regarding the EA and TES Memos from USEPA by email to the Respondents' Project Coordinator on May 10, 2012
		5/1/2012	Email from J Hernandez to Respondents' counsel regarding SJRF Draft SAP currently under USEPA review	
		5/8/2012	Received comments from USEPA on the Draft Chemical Fate and Transport Modeling Study	

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
5/15/2012	Submitted Monthly Report No 30			
		5/16/2012	Emails from J Hernandez to Respondents' counsel providing comments to the SJRF Draft SAP from NOAA, TCEQ, and the Harris County Pollution Control Services	
5/22/2012	Submitted Sampling and Analysis Plan (SAP) for the TCRA Cap Porewater Assessment			
5/22/2012	Submitted Final Exposure Assessment Memorandum and Final Toxilogical and Epidemiological Studies Memorandum to USEPA			
		6/6/2012	Received additional comments from USEPA on the Draft Chemical Fate and Transport Modeling Study	
		6/12/2012	Received copy of 6/12/2012 correspondence from USEPA to SJRF providing USEPA's comments to the SJRF Draft SAP	
6/13/2012	Provided USEPA a letter regarding the installation of two additional Performance Reference Compound samplers in the TCRA Cap Porewater Assessment implementation to provide an intermediate check on equilibrium conditions between the samplers and cap porewater on June 13, 2012			
6/15/2012	Provided USEPA a letter and updated RI/FS schedule on June 15, 2012			
6/15/2012	Submitted Monthly Report No 31			
		6/22/2012	Received comments from USEPA on the Draft Baseline Ecological Risk Assessment	

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
7/10/2012	Provided USEPA a letter outlining a process to resolve comments from USEPA on the draft BERA, and requested the draft final BERA be submitted on August 22, 2012	7/17/2012	Received approval letter from G Miller	
7/16/2012	Submitted Monthly Report No 32			
7/18/2012	Submitted Draft Final Chemical Fate and Transport Modeling Study	9/13/2012	Received approval of the Draft Final Chemical Fate & Transport on September 13, 2012, with requirements to address additional comments for the final report in the approval letter	Received clarification on modifications requested by USEPA on the Draft Final Chemical Fate and Transport Modeling Report by email from Gary Miller on September 25, 2012, conducted additional analyses, and prepared and submitted the final report to USEPA on October 11, 2012 Mr Miller agreed to extending the submittal due date on the Final Fate and Transport Modeling Report to allow time for the Respondents to conduct additional evaluations requested by EPA in the approval letter in a phone call with the Respondents Project Coordinator on October 3, 2012
		8/13/2012	Received comments from USEPA on the Draft Remedial Alternatives Memorandum	
8/15/2012	Provided email notification to Mr Miller that the project database had been updated and posted to the project web portal			
8/15/2012	Submitted Monthly Report No 33			
8/22/2012	Submitted Draft Final Baseline Ecological Risk Assessment	2/26/2013	Received conditional approval of Draft Final Baseline Ecological Risk Assessment	The approval letter provided by USEPA was date stamped February 7, 2013, however it was not transmitted to the Respondents until February 26, 2013 The approval letter included comments and directives from USEPA that require additional revisions be made in the final report

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
9/11/2012	Submitted Draft Final Remedial Alternative Memorandum	11/14/2012	Received approval of the Draft Final Remedial Alternatives Memorandum on November 14, 2012, with requirements to address additional comments for the report in the approval letter	
9/17/2012	Submitted Monthly Report No 34			
		10/4/2012	Received approval letter from G Miller for TES Memorandum	
		10/4/2012	Received approval letter from G Miller for the EA Memorandum	
10/4/2012	Provided email notification to Mr Miller that the project database had been updated and posted to the project web portal			Included validated Armored Cap Porewater Assessment Data
10/11/2012	Submitted the Final Chemical Fate and Transport Modeling Report to USEPA			
10/15/2012	Submitted Monthly Report No 35			
10/19/2012	On behalf of IP, provided USEPA with boring logs on the three South Impoundment monitoring wells, water table levels, and well construction information			
10/30/2012	Provided USEPA a draft summary presentation of the armored cap porewater monitoring evaluation and results to use in a planned community meeting			
11/14/2012	Provided USEPA a letter confirming that delivery of the draft RI Report and toxi on December 5, 2012 was approved, and providing an updated RI/FS schedule reflecting that change, and other associated changes in the Feasibility Study schedule that were made to maintain the overall project schedule	12/6/2012	Received email approval from Gary Miller that the November 2012 RI/FS schedule was approved as presented	

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
		11/14/2012	Received approval of the Draft Final Remedial Alternatives Memorandum on November 14, 2012, with requirements to address additional comments for the report in the approval letter	
11/15/2012	Submitted Monthly Report No 36			
12/3/2012	Submitted Final Remedial Alternatives Memorandum to USEPA			
12/5/2012	Submitted Draft Remedial Investigation Report and Draft Baseline Human Health Risk Assessment to USEPA Also submitted five field sampling reports including • Field Sampling Report 2011 – 2012 Sediment Study • Field Sampling Report 2011 Tissue Study • Field Sampling Report 2012 Soil Study • Field Sampling Report TCRA Cap Porewater Assessment • Field Sampling Report Addendum 1 Groundwater Study	3/25/2013	Received conditional approval of the Draft Baseline Human Health Risk Assessment	
12/17/2012	Submitted Monthly Report No 37			
1/2/2013	Respondents submitted their comments on the Revised San Jacinto River Fleet Draft Sampling and Analysis Plan, via email, to USEPA			
1/15/2013	Submitted Monthly Report No 38			
2/15/2013	Submitted Monthly Report No 39			
		2/26/2013	Received conditional approval of the Draft Final Baseline Ecological Risk Assessment	The approval letter provided by USEPA was date stamped February 7, 2013, however it was not transmitted to the Respondents until February 26, 2013 The approval letter included comments and directives from USEPA that require additional revisions be made in the final report
3/15/2013	Submitted Monthly Report No 40			

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
		3/25/2013	Received conditional approval of the Draft Baseline Human Health Risk Assessment (BHHRA) by email on March 25, 2013, followed by regular mail on March 28, 2013	
3/20/2013	Sent an email to USEPA to obtain clarification on USEPA comments number 4 and 8 on the Draft BERA Additional email correspondence between the Respondents and USEPA related to these comments occurred on April 10, 2013			USEPA is currently considering the Respondents latest findings related to these comments
4/1/2013	Respondents submitted a letter to USEPA explaining the nature of the possible delays regarding the November 2012 RI/FS Schedule			
		4/4/2013	Received conditional approval of the Draft Remedial Investigation (RI) Report by email on April 4, 2013, followed by regular mail on April 8, 2013	
4/4/2013	On behalf of IP, submitted the Draft Groundwater Sampling and Analysis Plan (SAP) Addendum 2 for additional groundwater investigations in the area south of I-10	4/23/2013	Received conditional approval of the Groundwater SAP Addendum 2	
4/8/2013	Respondents provided written notice required under Paragraph 92 with respect to possible delays in the performance of certain actions set forth in the approved November 2012 RI/FS Schedule			
4/10/2013	Sent an email to USEPA to follow up on correspondence related to USEPA comments number 4 and 8 on the Draft BERA			USEPA is currently considering the Respondents latest findings related to these comments
4/10/2013	Sent an email to USEPA to obtain clarification on the USEPA Guidance on the classification of Principal Threat Waste			USEPA is currently considering the Respondents inquiry

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
4/12/2013	Provided an email to USEPA requesting a meeting be conducted on April 24, 2013 to discuss USEPA comment 38 on the Draft RI Report			
4/15/2013	Submitted Monthly Report No 41			
4/26/2013	Submitted proposed revised RI/FS schedule to USEPA	5/14/2013	Received email approval of proposed revised RI/FS Schedule from USEPA	
4/29/2013	Submitted Final Groundwater SAP Addendum 2 to the USEPA			
5/6/2013	Submitted Final Baseline Ecological Risk Assessment to USEPA			
5/14/2013	Submitted letter to USEPA providing an evaluation of the potential classification of Principal Threat Waste at the Site			
5/15/2013	Submitted Monthly Report No 42			
5/21/2013	Submitted Final RI Report to USEPA			
5/22/2013	Submitted Final BHHRA Report to USEPA			
6/6/2013	Submitted corrected tables for the Final RI Report to USEPA			Included replacement pages for Tables 2-1, 6-1, 6-2, and 6-3
6/17/2013	Submitted Monthly Report No 43			
7/12/2013	Submitted proposed revised RI/FS schedule to USEPA	7/30/2013	Received approval of the July 2013 RI/FS schedule in an email from USEPA	
7/15/2013	Provided email notification to Mr Miller that the updated RI/FS database had been updated and posted to the project web portal			
7/15/2013	Submitted Monthly Report No 44			
8/15/2013	Submitted Monthly Report No 45			
8/27/2013	On behalf of International Paper, provided email summary to Mr Miller of validated dioxin and furan data in from groundwater samples collected south of I-10 in July 2013			
8/30/2013	Submitted Draft Feasibility Study Report to USEPA	12/18/2013	Email from A Foster forwarding comments from TCEQ, Port of Houston, and Harris County on the Draft FS	

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
9/16/2013	Provided email notification to Mr Miller that the updated RI/FS database had been updated and posted to the project web portal			
9/16/2013	Submitted Monthly Report No 46			
10/15/2013	Submitted Monthly Report No 47			
11/15/2013	Submitted Monthly Report No 48			
11/21/2013	Submitted Draft Remedial Investigation (RI) Report Addendum November 21, 2013			
12/16/2013	Submitted Monthly Report No 49			
1/14/2014	Submitted Field Sampling Report that summarizes the field work associated with the latest investigations conducted in the area south of I-10			
1/15/2014	Submitted Monthly Report No 50			
		1/16/2014	Respondents' Project Coordinator received comments on the Draft FS from USEPA by email on Thursday, January 16, 2014, and by certified mail on Monday, January 20, 2014	
1/30/2014	Respondents submitted a letter to G Miller requesting revision to Schedule for Submittal of the Final Interim Feasibility Study			
		1/31/2014	Email from G Miller to D Keith (Project Coordinator) responding to Anchor QEA's January 30, 2014 letter and granting extention of time for response to USEPA comments on Draft FS to March 6, 2014	
		2/4/2014	J Sampson of Integral received an email from Philip Turner of USEPA requesting additional information on the relative bioavailability adjustment factor used in the risk assessment for the Site	
		2/10/2014	Respondents' Project Coordinator received amended comments on the Draft FS from USEPA by email, and directing the Respondents to provide the Final Interim FS on or before March 21, 2014	

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
2/10/2014	Integral provided a letter to G Miller of USEPA providing detail on the technical foundation for the relative bioavailability adjustment factor on Monday, February 10, 2014			
2/17/2014	Submitted Monthly Report No 51			
3/11/2014	Provided USEPA input on a Draft Fact Sheet for the Site			
3/12/2014	Respondent's requested USEPA consider moving the April 28, 2014 NRRB presentation to the next available NRRB meeting in June 2014			
3/17/2014	Submitted Monthly Report No 52			
3/21/2014	Submitted Draft Final Interim Feasibility Study Report			
3/26/2014	Submitted a White Paper supplement to the Draft Final Interim Feasibility Study Report by email to Gary Miller			Submitted hard copies of White Paper with a transmittal letter on 4/7/2014
		4/1/2014	Received five questions from G Miller by email regarding alternatives in the Draft Final Interim Feasibility Study Report	
4/3/2014	Submitted a comment/response matrix to USEPA summarizing responses to comments on the Draft Feasibility Study Report			
4/15/2014	Submitted Monthly Report No 53			
4/29/2014	Provided an email response to questions received from Gary Miller by email on April 29, 2014, regarding shallow groundwater testing in the area south of Interstate 10			
5/2/2014	Provided an email response to questions received from Gary Miller by email on March 24, 2014, regarding shallow groundwater flow in the area south of Interstate 10			
5/5/2014	Conducted a conference call and WebEx meeting with Gary Miller, USEPA's Remedial Project Manager to review and discuss questions regarding the Draft Final Interim FS contained in an April 2, 2014, email from Mr Miller			
5/15/2014	Submitted Monthly Report No 54			

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
6/5/2014	Coordinated with Gary Miller, USEPA's Remedial Project Manager, on questions related to the Draft Final Interim FS in a phone call on June 5, 2014			
6/16/2014	Submitted Monthly Report No 55			
6/20/2014	Submitted National Remedy Review Board (NRRB) materials on behalf of the Respondents			
7/15/2014	Submitted Monthly Report No 56			
		7/30/2014	Email from G Miller to D Keith regarding proposed plan schedule announcement	
8/15/2014	Submitted Monthly Report No 57			
		9/3/2014	Email from G Miller to D Keith seeking clarification on residential soil sampling results	
9/9/2014	Provided email response to G Miller providing clarification on residential soil sampling results	9/9/2014	Email from G Miller confirming that clarification was helpful	
9/15/2014	Submitted Monthly Report No 58			
10/15/2014	Submitted Monthly Report No 59			
10/31/2014	Submitted hydrodynamic, sediment transport, and chemical fate and transport modeling files and documentation to Dr Earl Hayter with the U S Army Corps of Engineers (USACE)			
		11/14/2014	Received an email from Gary Miller suggesting a call to discuss the Site Relative Bioavailability Adjustment (RBA)	Participated in a call with Mr Gary Miller and Dr Phillip Turner to discuss the RBA on November 24, 2014 A call with additional technical staff from USEPA and the Respondents was scheduled for December 16, 2014
11/17/2014	Submitted Monthly Report No 60			
12/15/2014	Submitted Monthly Report No 61			

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
12/16/2014	Respondents hosted a meeting with Gary Miller and Phil Turner of USEPA Region 6, and several representatives of USEPA headquarters and their consultants on December 16, 2014 to discuss site-specific considerations relevant to the Relative Bioavailability Adjustment (RBA) factor used in the RI/FS for the site	12/17/2014		Provided USEPA with presentation materials on the Relative Bioavailability Adjustment issue
1/15/2015	Submitted Monthly Report No 62			
1/16/2015	Respondents provided follow up information requested from 12/16/2014 meeting regarding the RBA factor in a letter from D Keith to G Miller			
2/16/2015	Submitted Monthly Report No 63			
3/16/2015	Submitted Monthly Report No 64			
		4/9/2015	Respondents' project coordinator received an email from Gary Miller with request for clarifications for Paul Schroeder at USACE on modeling assumptions in the Draft Final Interim Feasibility Study	
4/15/2015	Submitted Monthly Report No 65			
4/22/2015	Respondents provided USEPA a summary of modeling assumptions for the Draft Final Interim Feasibility Study			
4/22/2015	Respondents provided USEPA analytical laboratory results and concentration data for dioxin and furan congeners from surface water sampling locations in the San Jacinto River	4/15/2015	Respondents' project coordinator received an email from Gary Miller with request for analytical laboratory results and concentration data for dioxin and furan congeners from surface water sampling locations in the San Jacinto River	
5/11/2015	Respondents provided USEPA a summary of laboratories utilized during the performance of the RI/FS	5/8/2015	Respondents' project coordinator received an email from Gary Miller with request for listing of laboratories used during the RI/FS	
5/15/2015	Submitted Monthly Report No 66			
6/15/2015	Submitted Monthly Report No 67			
7/15/2015	Submitted Monthly Report No 68			

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
		8/6/2015	Received an email from G Miller directing Respondents to revise the Final RI/FS Work Plan dated November 2010 or prepare an addendum and submit to the USEPA within 30 days of receipt of the email	
		8/10/2015	Received the *Evaluation of the San Jacinto Waste Pits Feasibility Study Remediation Alternatives* report prepared by the U S Army Corps of Engineers in an email from Carlos Sanchez	
8/17/2015	Submitted Monthly Report No 69			
9/4/2015	In accordance with Section XXII, Paragraph 92 of the UAO, the Respondents notified USEPA on September 4, 2015, that they will not be able to produce sampling and analysis plans (SAPs) for surface water, porewater, sediment, and groundwater within 30 days as directed in Gary Miller's email dated August 6, 2015			
9/15/2015	Submitted Monthly Report No 70			
9/17/2015	Provided comments on the *Evaluation of the San Jacinto Waste Pits Feasibility Study Remediation Alternatives* report prepared by the U S Army Corps of Engineers			
9/30/2015	Provided USEPA a schedule for completing SAPs for sediment, porewater, groundwater, and surface water	10/8/2015	The USEPA approved the schedule for submittal of draft plans relating to the future sampling at the San Jacinto River Waste Pits Superfund Site The porewater and the sediment sampling plans are due by October 23, 2015, and the ground water and surface water sampling plans are due by November 20, 2015 As directed by USEPA, the remaining schedule for the performance of the work will be considered during completion and approval of the work plans	
10/15/2015	Submitted Monthly Report No 71			

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
10/23/2015	Submitted Draft Addendum 3 to the Sediment Sampling and Analysis Plan	1/29/2016	Received comments from USEPA on Draft Addendum 3 to the Sediment Sampling and Analysis Plan	
10/23/2015	Submitted Draft Addendum 1 to the Sampling and Analysis Plan TCRA Cap Porewater Assessment	1/12/2016	Received comments from USEPA on the Draft Addendum 1 to the Sampling and Analysis Plan (SAP) TCRA Cap Porewater Assessment	
11/16/2015	Submitted Monthly Report No 72			
11/20/2015	Submitted Draft Addendum 3 to the Groundwater Sampling and Analysis Plan	2/26/2016	Received comments from USEPA and Agencies on the Draft Addendum 3 to the Groundwater Sampling and Analysis Plan	
11/20/2015	Submitted the Draft Surface Water Sampling and Analysis Plan	2/16/2016	Received comments from USEPA by regular mail on the Draft Surface Water Sampling and Analysis Plan	
12/1/2015	Submitted a Draft updated Fact Sheet for the Site			
12/15/2015	Submitted Monthly Report No 73			
12/21/2015	Submitted a Draft Work Plan for collecting sediment samples from the surface of the armored cap	12/22/2015	USEPA approved components of the work plan related to sediment sampling	Sampling was conducted on 12/23/15
1/15/2016	Submitted Monthly Report No 74			
2/12/2016	Submitted a revised SAP for porewater that resolves comments received from USEPA on January 12, 2016			
2/12/2016	Submitted a draft report summarizing the results of sediment samples associated with the TCRA armored cap			
2/16/2016	Submitted Monthly Report No 75			
2/16/2016	Submitted Final Sampling and Analysis Plan, Addendum 1 TCRA Cap Porewater Assessment	2/23/2016	Received approval for the Final Sampling and Analysis Plan, Addendum 1 TCRA Cap Porewater Assessment	

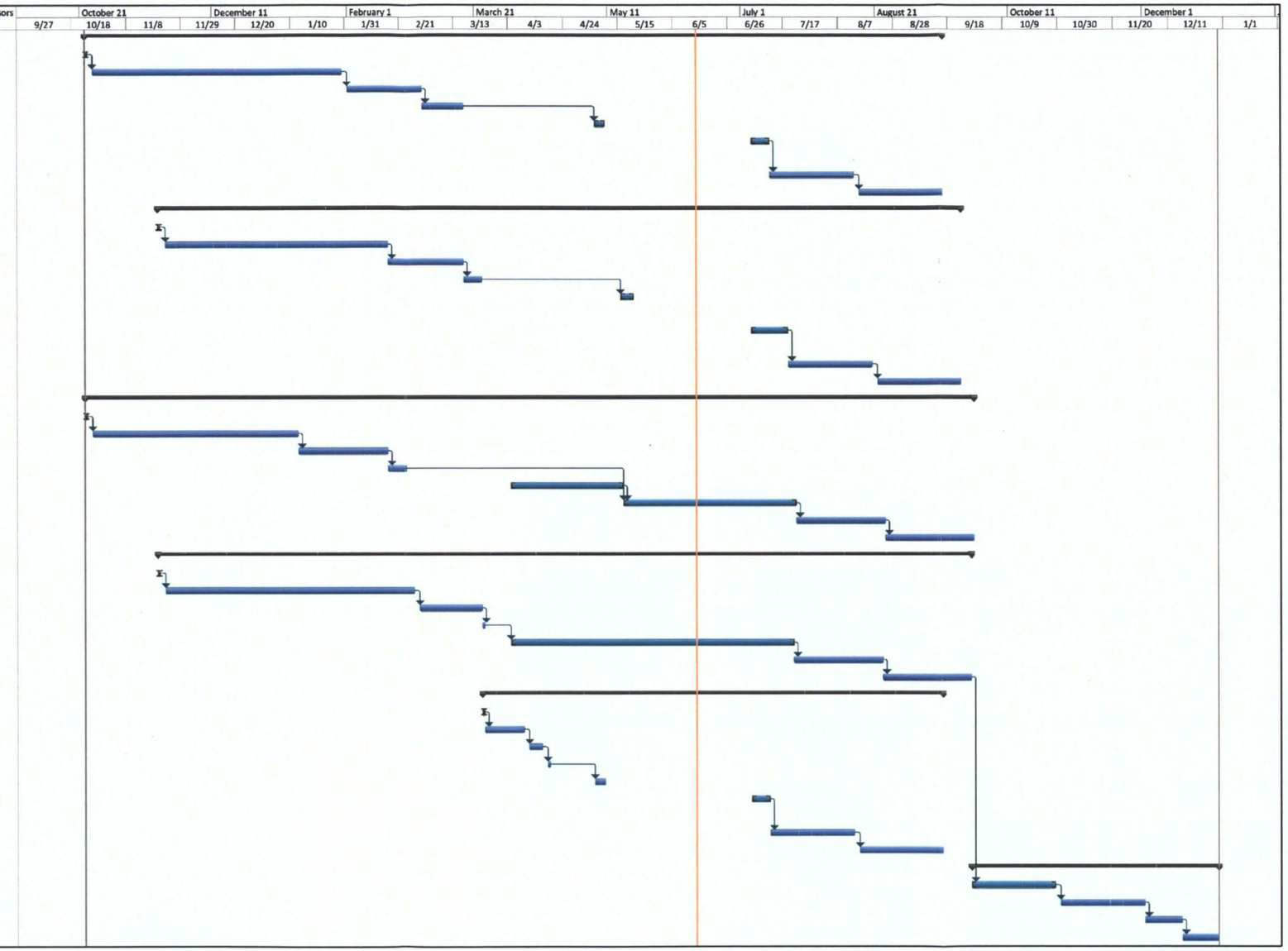
Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
2/29/2016	Submitted Final Sampling and Analysis Plan, Addendum 3 Sediment Study	3/16/2016	Received approval by email with required modifications for the Final Sampling and Analysis Plan Addendum 3 Sediment Study	
3/4/2016	Participated in a conference call with USEPA to discuss potential fish or shellfish tissue sampling at the Site			
3/15/2016	Submitted Monthly Report No 76			
3/17/2016	Prepared and submitted the Final Sampling and Analysis Plan Surface Water Study to USEPA	3/24/2016	Received approval by email for the Final Sampling and Analysis Plan Surface Water Study	
3/22/2016	Submitted Final Addendum 3 to the Groundwater Study Sampling and Analysis Plan	3/24/2016	Received approval by email for Draft Addendum 3 to the Groundwater Study Sampling and Analysis Plan	
3/23/2016	Submitted Text Replacement Final Sampling and Analysis Plan, Addendum 3 Sediment Study			
3/25/2016	Submitted Draft Addendum 2 to the Tissue Sampling and Analysis Plan for Additional Gulf Killifish Tissue Sampling	4/6/2016	Received approval by email for Draft Addendum 2 to the Tissue Sampling and Analysis Plan for Additional Gulf Killifish Tissue Sampling	
		4/5/2016	The Respondents' Project Coordinator was notified by USEPA's Remedial Project Manager that USEPA would be finalizing the FS for the Site via phone	
4/15/2016	Submitted Monthly Report No 77			
		5/9/2016	Received an email from Gary Miller requesting assistance in locating a table from Appendix E of the Baseline Human Health Risk Assessment (BHHRA)	Responded with the table location in the BHHRA on May 11, 2016
		5/10/2016	Received email from Gary Miller requesting support in preparation of USEPA community meeting scheduled for May 25, 2016	Respondent's Project Coordinator followed up with Mr Miller on May 10, 2016 and the Respondents are working on the requested materials

Table 1
Summary of Agency Communication
San Jacinto River Waste Pits Superfund Site

Respondents Submittal Date	Respondents Communication Summary	Response from USEPA Date	USEPA Communication Summary	Notes
		5/11/2016	Received email from Gary Miller notifying the Respondents the National Remedy Review Board (NRRB) meeting for the San Jacinto Site is June 15, 2016 Mr Miller also indicated any white paper submittals for the NRRB consideration should be provided to USEPA by May 20, 2016	
5/12/2016	Provided USEPA an updated draft schedule for sediment, tissue, groundwater, porewater and surface water sampling and analysis plan implementation			
5/12/2016	Submitted a memorandum of Performance Reference Compound analysis procedures for porewater and groundwater sampling and analysis plans for USEPA review and approval	5/13/2016	Received email approval of Performance Reference Compound Procedures from Gary Miller	
5/16/2016	Submitted Monthly Report No 78			
5/23/2016	Submitted Sediment and Tissue Collection Memorandum, dated May 20, 2016	5/24/2016	Received email approval of the modifications to the sediment and tissue sampling locations and procedures as presented in the Sediment and Tissue Sample Collection Memo dated May 20, 2016	
05/27/206	Submitted National Remedy Review Board paper			Prepared and submitted supplemental comments regarding remedial alternatives for the Site to the National Remedy Review Board (NRRB) on May 27, 2016, and a revised submittal on June 1, 2016, based on USEPA's request to limit the number of pages in the submittal
06/06/2016	Submitted proposal for revised schedule for completion of field work for surface water, sediment and tissue sampling	6/6/2016	Received email approval of proposed field schedule from USEPA	

ID	Task Name	Duration	Start	Finish	Predecessors
1	**Sediment SAP**	**235 days**	**Fri 10/23/15**	**Thu 9/15/16**	
2	Draft Sediment SAP Submittal	1 day	Fri 10/23/15	Fri 10/23/15	
3	EPA Review and Comment	70 days	Mon 10/26/15	Fri 1/29/16	2
4	Final Sediment SAP	21 days	Mon 2/1/16	Mon 2/29/16	3
5	EPA Review and Approval	12 days	Tue 3/1/16	Wed 3/16/16	4
6	Initial Sediment SAP Field Implementation	2 days	Fri 5/6/16	Mon 5/9/16	5
7	Sediment SAP Field Implementation Re-deployment	5 days	Tue 7/5/16	Mon 7/11/16	
8	Sediment Laboratory Analysis	24 days	Tue 7/12/16	Fri 8/12/16	7
9	Sediment Data Validation	24 days	Mon 8/15/16	Thu 9/15/16	8
10	**Surface Water SAP**	**220 days**	**Fri 11/20/15**	**Thu 9/22/16**	
11	Draft Surface Water SAP Submittal	1 day	Fri 11/20/15	Fri 11/20/15	
12	EPA Review and Comment	62 days	Mon 11/23/15	Tue 2/16/16	11
13	Final Surface Water SAP	21 days	Wed 2/17/16	Wed 3/16/16	12
14	EPA Review and Approval	5 days	Thu 3/17/16	Wed 3/23/16	13
15	Initial Surface Water SAP Field Implementation	5 days	Mon 5/16/16	Fri 5/20/16	14
16	Surface Water SAP Field Implementation Re-deployment	10 days	Tue 7/5/16	Mon 7/18/16	
17	Surface Water Laboratory Analysis	24 days	Tue 7/19/16	Fri 8/19/16	16
18	Surface Water Data Validation	24 days	Mon 8/22/16	Thu 9/22/16	17
19	**Porewater SAP**	**243 days**	**Fri 10/23/15**	**Tue 9/27/16**	
20	Draft Porewater SAP Submittal	1 day	Fri 10/23/15	Fri 10/23/15	
21	EPA Review and Comment	57 days	Mon 10/26/15	Tue 1/12/16	20
22	Final Porewater SAP	25 days	Wed 1/13/16	Tue 2/16/16	21
23	EPA Approval	5 days	Wed 2/17/16	Tue 2/23/16	22
24	EPA Dive Team Inspection	31 days	Mon 4/4/16	Mon 5/16/16	
25	Porewater SAP Field Implementation	48 days	Tue 5/17/16	Thu 7/21/16	23,24
26	Porewater Laboratory Analysis	24 days	Fri 7/22/16	Wed 8/24/16	25
27	Porewater Data Validation	24 days	Thu 8/25/16	Tue 9/27/16	26
28	**Groundwater SAP**	**222 days**	**Fri 11/20/15**	**Mon 9/26/16**	
29	Draft Groundwater SAP Submittal	1 day	Fri 11/20/15	Fri 11/20/15	
30	EPA Review and Comment	70 days	Mon 11/23/15	Fri 2/26/16	29
31	Final Groundwater SAP	18 days	Mon 2/29/16	Wed 3/23/16	30
32	EPA Approval	1 day	Thu 3/24/16	Thu 3/24/16	31
33	Groundwater SAP Field Implementation	78 days	Mon 4/4/16	Wed 7/20/16	32
34	Groundwater Laboratory Analysis	24 days	Thu 7/21/16	Tue 8/23/16	33
35	Groundwater Data Validation	24 days	Wed 8/24/16	Mon 9/26/16	34
36	**Tissue SAP**	**126 days**	**Thu 3/24/16**	**Thu 9/15/16**	
37	Draft Tissue SAP Submittal	1 day	Thu 3/24/16	Thu 3/24/16	
38	EPA Review and Comment	11 days	Fri 3/25/16	Fri 4/8/16	37
39	Final Tissue SAP	5 days	Mon 4/11/16	Fri 4/15/16	38
40	EPA Approval	1 day	Mon 4/18/16	Mon 4/18/16	39
41	Initial Tissue SAP Field Implementation	2 days	Fri 5/6/16	Mon 5/9/16	40
42	Tissue SAP Field Implementation Re-deployment	5 days	Tue 7/5/16	Mon 7/11/16	
43	Tissue Laboratory Analysis	24 days	Tue 7/12/16	Fri 8/12/16	42
44	Tissue Data Validation	24 days	Mon 8/15/16	Thu 9/15/16	43
45	**RI Addendum 2 Report**	**68 days**	**Tue 9/27/16**	**Thu 12/29/16**	
46	Draft RI Addendum 2 Report	24 days	Tue 9/27/16	Fri 10/28/16	35
47	EPA Review and Comment	24 days	Mon 10/31/16	Thu 12/1/16	46
48	Final RI Addendum 2 Report	10 days	Fri 12/2/16	Thu 12/15/16	47
49	EPA Approval	10 days	Fri 12/16/16	Thu 12/29/16	48



Notes:

14 Surface Water SAP Field Implementation: May 13. Call Gary Miller to evaluate expected flow conditions in the subsequent three weeks to discuss whether surface water sampling should commence the following Monday. If not, do this each Friday until conditions seem favorable, with deployment to take place as soon as possible.

22 EPA Dive Team Inspection: Final dive team inspection on northwestern area to be conducted by probing from boat at previously identified areas following porewater sampler installation the week of 5/16.

23 Porewater SAP Field Implementation: Field schedule driven by storm events and EPA dive team.

31 Groundwater SAP Field Implementation: Original well installation and sampler deployment occurred from April 03 - April 12, 2016. Final Well on Southeastern Berm of Northern Impoundment to be installed week of 5/9/16 after building access into the well location across right-of-way ditch. Added additional time for well samplers to stay deployed to account for final well installation date and equilibration following storm events.

C:\Users\zhubbard\Documents\DRAFT San Jac Spring_Summer 2016REV 6_13_16.docx

ANCHOR QEA

Draft 2016 Field Spring and Summer Schedule
San Jacinto River Waste Pits Superfund Site

March 25, 2016 Service Request No:E1600203

Craig Hutchings
Integral Consulting, Inc.
1205 West Bay Drive NW
Olympia, WA 98502-4670

Laboratory Results for: San Jacinto River

Dear Craig,

Enclosed are the results of the sample(s) submitted to our laboratory March 15, 2016
For your reference, these analyses have been assigned our service request number **E1600203.**

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.

Please contact me if you have any questions. My extension is 2279. You may also contact me via email at Arthi.Kodur@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Arthi Kodur
Project Manager

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 713 266 1599 | FAX +1 713 266 0130
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:	Integral Consulting, Incorporated	**Service Request No.:**	E1600203
Project:	San Jacinto River / 1150557-01.01	**Date Received:**	03/15/16
Sample Matrix:	Misc. Liquid		

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

Six misc. liquid samples were received for analysis at ALS Environmental in Houston on 03/15/16. Three samples were placed on hold by the client including: E0600203-002, -003 and -004.

The samples were received at 15.1 °C in good condition and are consistent with the accompanying chain of custody form. Dioxin/furan compounds are stable at room temperature. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

MS/MSD

EQ1600203: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of an MS/MSD for this extraction batch.

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 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.

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E1600203-001	03092016 SJ1	3/9/2016	1500
E1600203-002	03102016 SJ1	3/10/2016	1500
E1600203-003	03102016 SJ2	3/10/2016	1500
E1600203-004	03102016 SJ3	3/10/2016	1500
E1600203-005	03102016 SJ4	3/10/2016	1600
E1600203-006	03102016 SJ5	3/10/2016	1600

Service Request Summary

Folder #: **E1600203**
Client Name: Integral Consulting, Incorporated
Project Name: San Jacinto River
Project Number: 1150557-01.01

Report To: Craig Hutchings
Integral Consulting, Inc.
1205 West Bay Drive NW
Olympia, WA 98502-4670
USA
Phone Number: 360-705-3534
Cell Number:
Fax Number:
E-mail: chutchings@integral-corp.com

Project Chemist: Arthi Kodur
Originating Lab: HOUSTON
Logged By: TWOODS
Date Received: 03/15/16
Internal Due Date: 4/5/2016
QAP: LAB QAP
Qualifier Set: HRMS Qualifier Set
Formset: Lab Standard
Merged?: N
Report to MDL?: Y
P.O. Number:
EDD: No EDD Specified

6 40 mL-Glass Vial VOA AMBER Tef/Silicone Septa Unpreserved
Location: E-Disposed, EHRMS-WIC 1E
Pressure Gas:

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON Dioxins Furans/1613B
E1600203-001	03092016 SJ1	Misc. Liquid	03/09/16 1500	II
E1600203-002	03102016 SJ1	Misc. Liquid	03/10/16 1500	II
E1600203-003	03102016 SJ2	Misc. Liquid	03/10/16 1500	II
E1600203-004	03102016 SJ3	Misc. Liquid	03/10/16 1500	II
E1600203-005	03102016 SJ4	Misc. Liquid	03/10/16 1600	II
E1600203-006	03102016 SJ5	Misc. Liquid	03/10/16 1600	II

Service Request Summary

Folder #:	**E1600203**	Project Chemist:	Arthi Kodur
Client Name:	Integral Consulting, Incorporated	Originating Lab:	HOUSTON
Project Name:	San Jacinto River	Logged By:	TWOODS
Project Number:	1150557-01.01	Date Received:	03/15/16
		Internal Due Date:	4/5/2016
Report To:	Craig Hutchings	QAP:	LAB QAP
	Integral Consulting, Inc.	Qualifier Set:	HRMS Qualifier Set
	1205 West Bay Drive NW	Formset:	Lab Standard
	Olympia, WA 98502-4670 USA	Merged?:	N
Phone Number:	360-705-3534	Report to MDL?:	Y
Cell Number:		P.O. Number:	
Fax Number:		EDD:	No EDD Specified
E-mail:	chutchings@integral-corp.com		

6 40 mL-Glass Vial VOA AMBER Tef/Silicone Septa Unpreserved

Location: E-Disposed, EHRMS-WIC 1E

Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
Semivoa GCMS	Dioxins Furans/1613B	5	Samples 002-004 on hold till June. Samples 001, 005 and 006 are in hexane (ak 3/15/16)
Semivoa GCMS	Dioxins Furans/1613B	1	Samples 002-004 on hold till June. Samples 001,005 and 006 are in hexane (ak 3/15/16)

Superset Summary

Service Request: E1600203 **SuperSet Reference:** 16-0000369695 rev 00

Analytical Method: **1613B**

Calibrations: 06/30/15

Data Files:

Raw Data	Begin CCAL	Method Blank	Lab ID
P503417	P503406	P503397	E1600203-001
P503418	P503406	P503397	E1600203-005
P503419	P503406	P503397	E1600203-006
P503397	P503392	P503397	EQ1600129-01
P503401	P503392	P503397	EQ1600129-02
P503402	P503392	P503397	EQ1600129-03

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. Reported concentration is a conservative estimate, however EMPC correction was not applied.

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-nois ratios are greater than 10:1, making the recoveries acceptable.

i The MDL/MRL have been elevated due to a matrix interference.

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

ALS Environmental

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
American Association for Laboratory Accreditation	2897.01	11/30/2017
Arizona Department of Health Services	AZ0793	5/27/2016
Arkansas Department of Environmental Quality	14-038-0	6/16/2016
California Department of Health Services	2452	2/28/2017
Florida Department of Health	E87611	6/30/2016
Hawaii Department of Health	TX02694	6/30/2016
Illinois Environmental Protection Agency	200057	10/6/2016
Kansas Department of Health and Environment	E-10406	5/31/2016
Louisiana Department of Environmental Quality	03048	6/30/2016
Louisiana Department of Health and Hospitals	LA150026	12/31/2016
Maine Center for Disease Control and Prevention	2014019	6/5/2016
Maryland Department of the Environment	343	6/30/2016
Michigan Depratment of Environmental Quality	9971	6/30/2016
Minnesota Department of Health	840911	12/31/2016
Nebraska Department of Health and Human Services	NE-OS-25-13	6/30/2016
Nevada Department of Concervation and Natural Resources	TX014112013-2	7/31/2016
New Jersey Department of Environmental Protection	NLC140001	6/30/2016
New Mexico Environment Department	TX02694	6/30/2016
New York Department of Health	11707	4/1/2016
Oklahoma Department of Environmental Quality	2014 124	8/31/2016
Pennsylvania Department of Environmental Protection	68-03441	6/30/2016
Tennessee Department of Environment and Concervation	04016	6/30/2016
Texas Commision on Environmental Quality	TX104704216-14-5	6/30/2016
United States Department of Agriculture	P330-14-00067	2/21/2017
Utah Department of Health Environmental Laboratory Certification	TX02694	7/31/2016
Washington Department of Health	c819	11/14/2016
West Virginia Department of Environmental Protection	347	6/30/2016

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID E1600203 DB-5MSUI SPB-Octyl

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

Date:	Analyst:	Samples:
03/24/16	JC	-001, -005, -006

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

Date:	Analyst:	Samples:
03/24/16	LKL	001, 005, 006

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

Chain of Custody Record & Laboratory Request Form

COC#

Date: 3/14/2016
Lab Name & Phone #: Anchor QEA 503-972-5001
Laboratory Address: 421 SW 6th Ave Suite 750 Portland OR
Project Name: San Jacinto River
Project Number: 110557-01.01
Project Manager: David Keith
Phone Number:
Shipment Method: Overnight with ice

ANCHOR QEA
421 SW 6th Ave Suite 750
Portland, OR 97204

Test Parameters

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	2,3,7,8-TCDD	2,3,7,8-TCDF	2,3,4,7,8-PeCDF	Comments
1	03092016 SJ 1	3/9/2016 15:00	Hexane	1	↓	↓	↓	Hexane rinsate all fibers (40 mL)
2	03102016 SJ 1	3/10/2016 15:00	fiber	1				PDMS SPME fiber (50, 60 mm)
3	03102016 SJ 2	3/10/2016 15:00	fiber	1				" (50, 80 mm)
4	03102016 SJ 3	3/10/2016 15:00	fiber	1				" (50, 98 mm)
5	03102016 SJ 4	3/10/2016 16:00	Hexane	1				Hexane rinsate sampler (40 mL)
6	03102016 SJ 5	3/10/2016 16:00	Hexane	1				" (40 mL)
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								

E1600203 5
Anchor QEA, LLC
Estuary Water by Method 1613B

Note: 03092016 SJ 1 : Hexane rinsate of all SPME fibers (40mL), 03102016 SJ 1~3 : Fibers for lab QC
03102016 SJ 4~5 : Hexane extract from a sampler assembly (40mL)

Relinquished By:	Company:	Received By:	Company:
Masakazu Kanematsu	Anchor QEA LLC.	Jen Woods	
Signature/Printed Name	Date/Time 3/14/2016	Signature/Printed Name	Date/Time 3-15-16 7:53

Relinquished By:	Company:	Received By:	Company:
Signature/Printed Name	Date/Time	Signature/Printed Name	Date/Time

Distribution: A copy will be made for the laboratory and client. The Project file will retain the original.

Cooler Receipt Form

ALS Environmental

Project Chemist _____

Client/Project: Anchor QEA

Thermometer ID: SMO 04

Date/Time Received: 3-15-16 7:53 Initials: JW Date/Time Logged in: 3-15-16 Initials JW

1. Method of delivery: ○ US Mail ● Fed Ex ○ UPS ○ DHL ○ Courier ○ Client
2. Samples received in: ○ Cooler ○ Box ○ Envelope ○ Other _____
3. Were custody seals on coolers? ○ Yes ● No
   Were they intact? ○ Yes ○ No ○ N/A
   Were they signed and dated? ○ Yes ○ No ○ N/A
   If yes, how many and where? No seal
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?
7758 6879 2061		3-15-16	9:32	JW	13.1/15.1	☑
						☐
						☐
						☐

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:

Samples out of temp

Service request Label:

E1600203 5
Anchor QEA, LLC
Estuary Water by Method 1613B

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Houston, TX 77099
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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 sampleThe 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 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ 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#: 257568 **Prep WorkFlow:** OrgExtAq(365) **Status:** Prepped
Team: Semivoa GCMS/JPHAN **Prep Method:** Method Sep Funnel/Jar **Prep Date/Time:** 3/16/16 10:00 AM

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E1600203-001	03092016 SJ1	.01	1613B/Dioxins Furans	5	x	Misc. Liquid	26mL	Clear Colorless Liquid
2	E1600203-005	03102016 SJ4	.01	1613B/Dioxins Furans	5	x	Misc. Liquid	26mL	Clear Colorless Liquid
3	E1600203-006	03102016 SJ5	.01	1613B/Dioxins Furans	5	x	Misc. Liquid	25mL	Clear Colorless Liquid
4	EQ1600129-01	MB		1613B/Dioxins Furans	5	x	Liquid	60mL	
5	EQ1600129-02	LCS		1613B/Dioxins Furans	5	x	Liquid	60mL	
6	EQ1600129-03	DLCS		1613B/Dioxins Furans	5	x	Liquid	60mL	

Spiking Solutions

Name: 8290/1613B Cleanup Working Standard Inventory ID 88489 Logbook Ref: 88489 03/03/2016 CID Expires On: 08/30/2016

E1600203-001	100.00µL	E1600203-005	100.00µL	E1600203-006	100.00µL	EQ1600129-01	100.00µL	EQ1600129-02	100.00µL	EQ1600129-03	100.00µL

Name: 1613B Matrix Working Standard Inventory ID 88600 Logbook Ref: 88600 AL 03/7/16 2-20 ng/mL Expires On: 09/03/2016

EQ1600129-02	100.00µL	EQ1600129-03	100.00µL

Name: 1613B Labeled Working Standard Inventory ID 88755 Logbook Ref: 88755 TW 3/15/16 Expires On: 09/10/2016

E1600203-001	1,000.00µL	E1600203-005	1,000.00µL	E1600203-006	1,000.00µL	EQ1600129-01	1,000.00µL	EQ1600129-02	1,000.00µL	EQ1600129-03	1,000.00µL

Preparation Materials

Sensafe Free Chlorine WTR CHK	LM 3/19/15 (79756)	Carbon, High Purity	CID 03/09/2016 (88644)	Ethyl Acetate 99.9% Minimum EtOAc	LM 10/8/15 (84814)
Glass Wool	AL 12/4/15 (86383)	Hexanes 95%	CID 03/03/2015 (88495)	Dichloromethane (Methylene Chloride) 99.9% MeCl2	JP 2/11/16 (88015)
Sodium Hydroxide Reagent Grade NaOH	LM 09/02/14 (74232)	Sodium Sulfate Anhydrous Reagent Grade Na2SO4	AL 1/4/16 (87086)	ColorpHast pH-Indicator Strips	DE 11/11/15 (85766)
Silica Gel	AL 02/08/16 (87941)	sulfuric acid	CID 11/06/15 (85764)	Toluene 99.9% Minimum	AL 02/19/16 (88165)

Preparation Steps

Step:	Extraction	Step:	Acid Clean	Step:	Silica Gel Clean	Step:	Final Volume
Started:	3/16/16 10:00	Started:	3/17/16 00:00	Started:	3/17/16 11:00	Started:	3/18/16 12:25
Finished:	3/16/16 10:30	Finished:	3/17/16 00:00	Finished:	3/17/16 12:50	Finished:	3/18/16 12:35
By:	JPHAN	By:	CDIAZ	By:	CDIAZ	By:	CDIAZ
Comments		Comments		Comments		Comments	

Preparation Information Benchsheet

Prep Run#: 257568 **Prep WorkFlow:** OrgExtAq(365) **Status:** Prepped
Team: Semivoa GCMS/JPHAN **Prep Method:** Method Sep Funnel/Jar **Prep Date/Time:** 3/16/16 10:00 AM

Comments:

Reviewed By: TW Date: 03/21/2016

Chain of Custody

Relinquished By: Date:

Received By: Date:

Extracts Examined

Yes No

Analytical Results

ALS Environmental - Houston HRMS
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www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	03/09/16 15:00
Sample Matrix:	Misc. Liquid	**Date Received:**	03/15/16 07:53
Sample Name:	03092016 SJ1	**Units:**	pg/L
Lab Code:	E1600203-001	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/19/16 06:59
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	26mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503417	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503406

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	33.4	192			1
2,3,7,8-TCDF	ND	U	36.7	192			1
2,3,4,7,8-PeCDF	ND	U	26.5	962			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	03/09/16 15:00
Sample Matrix:	Misc. Liquid	**Date Received:**	03/15/16 07:53
Sample Name:	03092016 SJ1	**Units:**	pg/L
Lab Code:	E1600203-001	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/19/16 06:59
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	26mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503417	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503406

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	33.4	192			1
Total Penta-Dioxins	ND	U	29.8	962			1
Total Tetra-Furans	ND	U	36.7	192			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	03/09/16 15:00
Sample Matrix:	Misc. Liquid	**Date Received:**	03/15/16 07:53
Sample Name:	03092016 SJ1	**Units:**	Percent
Lab Code:	E1600203-001	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/19/16 06:59
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	26mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503417	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503406

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	1471.214	74		25-164	0.78	1.019
13C-2,3,7,8-TCDF	2000	1385.591	69		24-169	0.80	0.993
13C-2,3,4,7,8-PeCDF	2000	1731.209	87		21-178	1.59	1.169
37Cl-2,3,7,8-TCDD	800	728.135	91		35-197	NA	1.020

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	03/10/16 16:00
Sample Matrix:	Misc. Liquid	**Date Received:**	03/15/16 07:53
Sample Name:	03102016 SJ4	**Units:**	pg/L
Lab Code:	E1600203-005	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/19/16 07:48
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	26mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503418	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503406

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	37.9	192			1
2,3,7,8-TCDF	ND	U	33.1	192			1
2,3,4,7,8-PeCDF	ND	U	16.4	962			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	03/10/16 16:00
Sample Matrix:	Misc. Liquid	**Date Received:**	03/15/16 07:53
Sample Name:	03102016 SJ4	**Units:**	pg/L
Lab Code:	E1600203-005	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/19/16 07:48
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	26mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503418	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503406

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	37.9	192			1
Total Penta-Dioxins	ND	U	22.0	962			1
Total Tetra-Furans	ND	U	33.1	192			1

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	03/10/16 16:00
Sample Matrix:	Misc. Liquid	**Date Received:**	03/15/16 07:53
Sample Name:	03102016 SJ4	**Units:**	Percent
Lab Code:	E1600203-005	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/19/16 07:48
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	26mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503418	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503406

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	1539.581	77		25-164	0.78	1.019
13C-2,3,7,8-TCDF	2000	1488.401	74		24-169	0.79	0.992
13C-2,3,4,7,8-PeCDF	2000	1724.394	86		21-178	1.58	1.169
37Cl-2,3,7,8-TCDD	800	757.282	95		35-197	NA	1.020

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	03/10/16 16:00
Sample Matrix:	Misc. Liquid	**Date Received:**	03/15/16 07:53
Sample Name:	03102016 SJ5	**Units:**	pg/L
Lab Code:	E1600203-006	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/19/16 08:37
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	25mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503419	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503406

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	27.8	200			1
2,3,7,8-TCDF	ND	U	36.5	200			1
2,3,4,7,8-PeCDF	ND	U	21.1	1000			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	03/10/16 16:00
Sample Matrix:	Misc. Liquid	**Date Received:**	03/15/16 07:53
Sample Name:	03102016 SJ5	**Units:**	pg/L
Lab Code:	E1600203-006	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/19/16 08:37
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	25mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503419	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503406

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	27.8	200			1
Total Penta-Dioxins	ND	U	26.0	1000			1
Total Tetra-Furans	ND	U	36.5	200			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	03/10/16 16:00
Sample Matrix:	Misc. Liquid	**Date Received:**	03/15/16 07:53
Sample Name:	03102016 SJ5	**Units:**	Percent
Lab Code:	E1600203-006	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/19/16 08:37
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	25mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503419	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503406

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	1604.095	80		25-164	0.79	1.019
13C-2,3,7,8-TCDF	2000	1570.693	79		24-169	0.79	0.993
13C-2,3,4,7,8-PeCDF	2000	1783.042	89		21-178	1.58	1.169
37Cl-2,3,7,8-TCDD	800	791.639	99		35-197	NA	1.020

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	NA
Sample Matrix:	Misc. Liquid	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	pg/L
Lab Code:	EQ1600129-01	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/18/16 14:25
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	60mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503397	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503392

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	38.9	83.3			1
2,3,7,8-TCDF	ND	U	37.9	83.3			1
2,3,4,7,8-PeCDF	ND	U	13.8	417			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	NA
Sample Matrix:	Misc. Liquid	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	pg/L
Lab Code:	EQ1600129-01	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/18/16 14:25
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	60mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503397	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503392

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	38.9	83.3			1
Total Penta-Dioxins	ND	U	14.5	417			1
Total Tetra-Furans	ND	U	37.9	83.3			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	NA
Sample Matrix:	Misc. Liquid	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	Percent
Lab Code:	EQ1600129-01	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/18/16 14:25
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	60mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503397	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503392

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	895.349	45		25-164	0.80	1.019
13C-2,3,7,8-TCDF	2000	786.294	39		24-169	0.79	0.992
13C-2,3,4,7,8-PeCDF	2000	1503.932	75		21-178	1.57	1.168
37Cl-2,3,7,8-TCDD	800	458.470	57		35-197	NA	1.020

Accuracy & Precision

ALS Environmental - Houston HRMS
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Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Analyzed:**	03/18/16
Sample Matrix:	Misc. Liquid	**Date Extracted:**	03/16/16

Duplicate Lab Control Sample Summary
Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Units:**	pg/L
Prep Method:	Method Sep Funnel/Jar	**Basis:**	NA
		Analysis Lot:	489134

	Lab Control Sample EQ1600129-02			Duplicate Lab Control Sample EQ1600129-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
2,3,7,8-TCDD	3220	3330	97	3290	3330	99	67-158	2	50
2,3,4,7,8-PeCDF	16100	16700	97	16000	16700	96	68-160	<1	50
2,3,7,8-TCDF	3230	3330	97	3110	3330	93	75-158	4	50

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	NA
Sample Matrix:	Misc. Liquid	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	pg/L
Lab Code:	EQ1600129-02	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/18/16 17:48
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	60mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503401	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503392

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	3220		19.6	83.3	0.76	1.001	1
2,3,7,8-TCDF	3230		25.1	83.3	0.75	1.001	1
2,3,4,7,8-PeCDF	16100		16.5	417	1.50	1.000	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	NA
Sample Matrix:	Misc. Liquid	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	pg/L
Lab Code:	EQ1600129-02	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/18/16 17:48
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	60mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503401	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503392

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	3220		19.6	83.3	0.76		1
Total Penta-Dioxins	17200		11.3	417	1.55		1
Total Tetra-Furans	3230		25.1	83.3	0.75		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	NA
Sample Matrix:	Misc. Liquid	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1600129-02	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/18/16 17:48
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	60mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503401	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503392

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	1210.150	61		25-164	0.79	1.019
13C-2,3,7,8-TCDF	2000	1141.890	57		24-169	0.80	0.992
13C-2,3,4,7,8-PeCDF	2000	1607.573	80		21-178	1.57	1.169
37Cl-2,3,7,8-TCDD	800	581.804	73		35-197	NA	1.020

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	NA
Sample Matrix:	Misc. Liquid	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	pg/L
Lab Code:	EQ1600129-03	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/18/16 18:37
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	60mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503402	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503392

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	3290		19.6	83.3	0.77	1.001	1
2,3,7,8-TCDF	3110		24.4	83.3	0.76	1.001	1
2,3,4,7,8-PeCDF	16000		6.69	417	1.49	1.000	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	NA
Sample Matrix:	Misc. Liquid	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	pg/L
Lab Code:	EQ1600129-03	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/18/16 18:37
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	60mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503402	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503392

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	3290		19.6	83.3	0.77		1
Total Penta-Dioxins	17000		13.3	417	1.54		1
Total Tetra-Furans	3110		24.4	83.3	0.76		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	NA
Sample Matrix:	Misc. Liquid	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1600129-03	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/18/16 18:37
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	60mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503402	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503392

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	1237.068	62		25-164	0.78	1.019
13C-2,3,7,8-TCDF	2000	1136.248	57		24-169	0.78	0.992
13C-2,3,4,7,8-PeCDF	2000	1592.402	80		21-178	1.57	1.169
37Cl-2,3,7,8-TCDD	800	600.695	75		35-197	NA	1.020

Chromatograms and Selected Ion Monitoring

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 320, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
03092016 SJ1

Run #17 Filename P503417 Samp: 1 Inj: 1 Acquired: 19-MAR-16 06:59:58
Processed: 23-MAR-16 18:30:31 Sample ID: E1600203-001

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	NotFnd	*	*	*	no	no	0.886
2	Unk	1,2,3,7,8-PeCDF	NotFnd	*	*	*	no	no	0.983
3	Unk	2,3,4,7,8-PeCDF	NotFnd	*	*	*	no	yes	0.952
4	Unk	1,2,3,4,7,8-HxCDF	NotFnd	*	*	*	no	yes	1.190
5	Unk	1,2,3,6,7,8-HxCDF	NotFnd	*	*	*	no	yes	1.114
6	Unk	2,3,4,6,7,8-HxCDF	NotFnd	*	*	*	no	yes	1.109
7	Unk	1,2,3,7,8,9-HxCDF	NotFnd	*	*	*	no	yes	1.153
8	Unk	1,2,3,4,6,7,8-HpCDF	38:38	2.884e+01	3.596e+01	0.80	no	no	1.376
9	Unk	1,2,3,4,7,8,9-HpCDF	NotFnd	*	*	*	no	yes	1.306
10	Unk	OCDF	NotFnd	*	*	*	no	yes	1.263
11	Unk	2,3,7,8-TCDD	NotFnd	*	*	*	no	no	0.997
12	Unk	1,2,3,7,8-PeCDD	NotFnd	*	*	*	no	yes	0.935
13	Unk	1,2,3,4,7,8-HxCDD	NotFnd	*	*	*	no	no	1.039
14	Unk	1,2,3,6,7,8-HxCDD	NotFnd	*	*	*	no	yes	0.996
15	Unk	1,2,3,7,8,9-HxCDD	NotFnd	*	*	*	no	no	1.108
16	Unk	1,2,3,4,6,7,8-HpCDD	39:33	3.739e+01	1.659e+01	2.25	no	no	1.010
17	Unk	OCDD	42:19	7.345e+01	9.578e+01	0.77	yes	no	1.090
18	IS	13C-2,3,7,8-TCDF	28:23	4.198e+04	5.260e+04	0.80	yes	no	1.447
19	IS	13C-1,2,3,7,8-PeCDF	32:31	7.427e+04	4.705e+04	1.58	yes	no	1.500
20	IS	13C-2,3,4,7,8-PeCDF	33:25	7.298e+04	4.592e+04	1.59	yes	no	1.456
21	IS	13C-1,2,3,4,7,8-HxCDF	36:03	3.140e+04	6.130e+04	0.51	yes	no	1.207
22	IS	13C-1,2,3,6,7,8-HxCDF	36:10	3.656e+04	7.097e+04	0.52	yes	no	1.263
23	IS	13C-2,3,4,6,7,8-HxCDF	36:39	3.423e+04	6.606e+04	0.52	yes	no	1.153
24	IS	13C-1,2,3,7,8,9-HxCDF	37:24	3.004e+04	5.829e+04	0.52	yes	no	1.085
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:38	1.992e+04	4.494e+04	0.44	yes	no	0.876
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:01	1.931e+04	4.414e+04	0.44	yes	no	0.883
27	IS	13C-2,3,7,8-TCDD	29:08	3.116e+04	4.016e+04	0.78	yes	no	1.027
28	IS	13C-1,2,3,7,8-PeCDD	33:41	5.504e+04	3.490e+04	1.58	yes	no	1.064
29	IS	13C-1,2,3,4,7,8-HxCDD	36:47	4.583e+04	3.572e+04	1.28	yes	no	0.908
30	IS	13C-1,2,3,6,7,8-HxCDD	36:52	4.898e+04	3.916e+04	1.25	yes	no	0.899
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:32	3.490e+04	3.302e+04	1.06	yes	no	0.910
32	IS	13C-OCDD	42:18	3.753e+04	4.170e+04	0.90	yes	no	0.633
33	RS/RT	13C-1,2,3,4-TCDD	28:35	4.203e+04	5.234e+04	0.80	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:06	6.097e+04	4.815e+04	1.27	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:10	3.664e+04				no	1.066

$$\text{OCDD} = \frac{(7.345e{+}01 + 9.578e{+}01)\ \text{x}\ 4000\ \text{pg}\ \text{x}\ 1}{(3.753e{+}04 + 4.170e{+}04)\ \text{x}\ \ \text{g}\ \ \text{x}\ \ /\ 100\ \text{x}\ 1.090} =$$

ALS ENVIRONMENTAL -- HOUSTON HRMS
10450 Stancliff Rd., Suite 115
Houston, TX 77099
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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
03092016 SJ1

Run #17 Filename P503417 Samp: 1 Inj: 1 Acquired: 19-MAR-16 06:59:58
Processed: 23-MAR-16 18:30:31 LAB. ID: E1600203-001

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	*	6.00e+02	*	*	2.43e+03	*
2	1,2,3,7,8-PeCDF	*	8.08e+02	*	*	2.28e+03	*
3	2,3,4,7,8-PeCDF	*	8.08e+02	*	*	2.28e+03	*
4	1,2,3,4,7,8-HxCDF	*	9.16e+02	*	*	2.84e+02	*
5	1,2,3,6,7,8-HxCDF	*	9.16e+02	*	*	2.84e+02	*
6	2,3,4,6,7,8-HxCDF	*	9.16e+02	*	*	2.84e+02	*
7	1,2,3,7,8,9-HxCDF	*	9.16e+02	*	*	2.84e+02	*
8	1,2,3,4,6,7,8-HpCDF	6.37e+03	7.56e+02	8.4e+00	6.26e+03	2.20e+02	2.8e+01
9	1,2,3,4,7,8,9-HpCDF	*	7.56e+02	*	*	2.20e+02	*
10	OCDF	*	1.45e+03	*	*	2.55e+03	*
11	2,3,7,8-TCDD	*	1.54e+03	*	*	9.32e+02	*
12	1,2,3,7,8-PeCDD	*	2.06e+03	*	*	5.68e+02	*
13	1,2,3,4,7,8-HxCDD	*	7.68e+02	*	*	1.42e+03	*
14	1,2,3,6,7,8-HxCDD	*	7.68e+02	*	*	1.42e+03	*
15	1,2,3,7,8,9-HxCDD	*	7.68e+02	*	*	1.42e+03	*
16	1,2,3,4,6,7,8-HpCDD	7.20e+03	1.15e+03	6.3e+00	4.28e+03	6.76e+02	6.3e+00
17	OCDD	1.29e+04	1.38e+03	9.4e+00	2.03e+04	2.76e+03	7.3e+00
18	13C-2,3,7,8-TCDF	7.97e+06	2.52e+03	3.2e+03	9.93e+06	2.30e+03	4.3e+03
19	13C-1,2,3,7,8-PeCDF	1.39e+07	2.24e+02	6.2e+04	8.86e+06	7.92e+02	1.1e+04
20	13C-2,3,4,7,8-PeCDF	1.44e+07	2.24e+02	6.4e+04	9.07e+06	7.92e+02	1.1e+04
21	13C-1,2,3,4,7,8-HxCDF	6.91e+06	8.84e+02	7.8e+03	1.34e+07	2.16e+03	6.2e+03
22	13C-1,2,3,6,7,8-HxCDF	7.91e+06	8.84e+02	8.9e+03	1.50e+07	2.16e+03	6.9e+03
23	13C-2,3,4,6,7,8-HxCDF	7.47e+06	8.84e+02	8.5e+03	1.45e+07	2.16e+03	6.7e+03
24	13C-1,2,3,7,8,9-HxCDF	6.43e+06	8.84e+02	7.3e+03	1.25e+07	2.16e+03	5.8e+03
25	13C-1,2,3,4,6,7,8-HpCDF	4.30e+06	2.10e+03	2.0e+03	9.57e+06	4.72e+03	2.0e+03
26	13C-1,2,3,4,7,8,9-HpCDF	3.86e+06	2.10e+03	1.8e+03	8.75e+06	4.72e+03	1.9e+03
27	13C-2,3,7,8-TCDD	6.21e+06	6.28e+03	9.9e+02	8.00e+06	3.72e+03	2.1e+03
28	13C-1,2,3,7,8-PeCDD	1.11e+07	1.73e+03	6.4e+03	7.00e+06	1.36e+03	5.1e+03
29	13C-1,2,3,4,7,8-HxCDD	1.04e+07	2.32e+03	4.5e+03	7.95e+06	1.34e+03	5.9e+03
30	13C-1,2,3,6,7,8-HxCDD	1.03e+07	2.32e+03	4.4e+03	8.28e+06	1.34e+03	6.2e+03
31	13C-1,2,3,4,6,7,8-HpCDD	7.08e+06	1.63e+03	4.3e+03	6.78e+06	1.14e+03	6.0e+03
32	13C-OCDD	6.70e+06	8.92e+02	7.5e+03	7.44e+06	2.02e+03	3.7e+03
33	13C-1,2,3,4-TCDD	8.13e+06	6.28e+03	1.3e+03	1.00e+07	3.72e+03	2.7e+03
34	13C-1,2,3,7,8,9-HxCDD	1.30e+07	2.32e+03	5.6e+03	1.04e+07	1.34e+03	7.8e+03
35	37Cl-2,3,7,8-TCDD	7.25e+06	1.93e+03	3.8e+03			

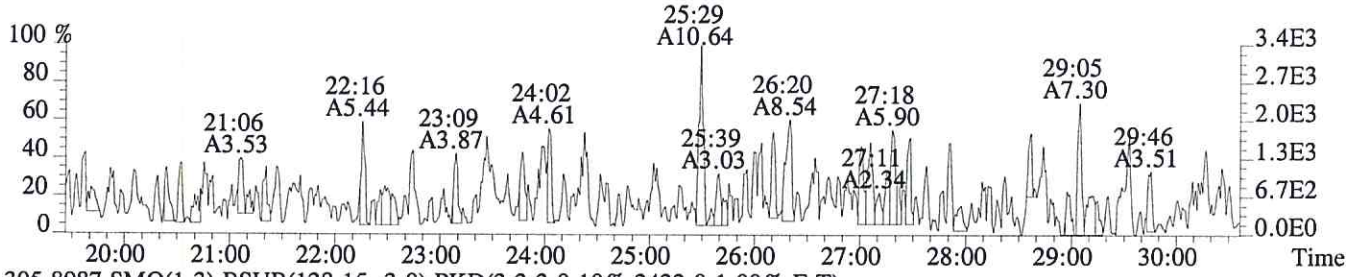
---Sample Calculation---

$$\text{D/L TCDD} = \frac{2.5 \times (1.536e+03 + 9.320e+02) \times 2000}{(6.206e+06 + 8.000e+06) \times (26\,ml \times 100) \times 0.997} = 33.5\,pg/l$$

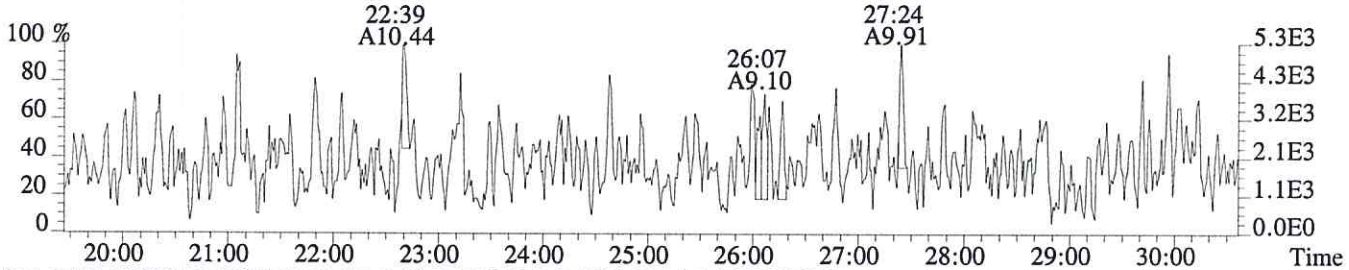
MM 3/24/16

ALS ENVIRONMENTAL
10450 Stancliff Rd., Suite 115
Houston, TX 77099
Office:(281)530-5656. Fax:(281)530-5887

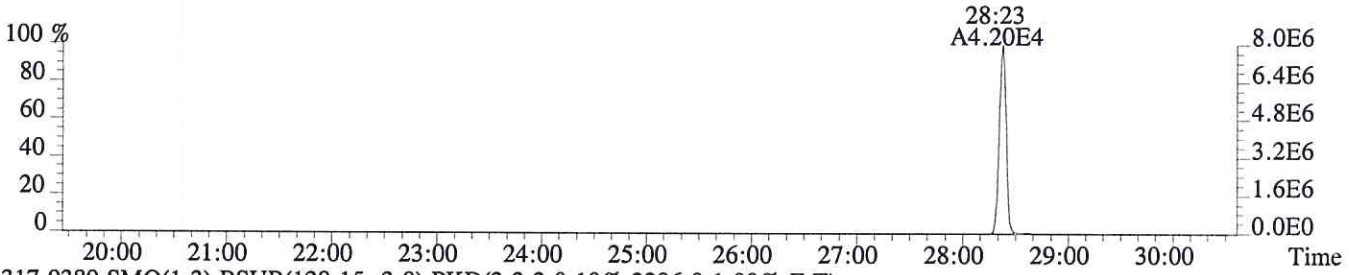
File:P503417 #1-793 Acq:19-MAR-2016 06:59:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-001
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,600.0,1.00%,F,T)



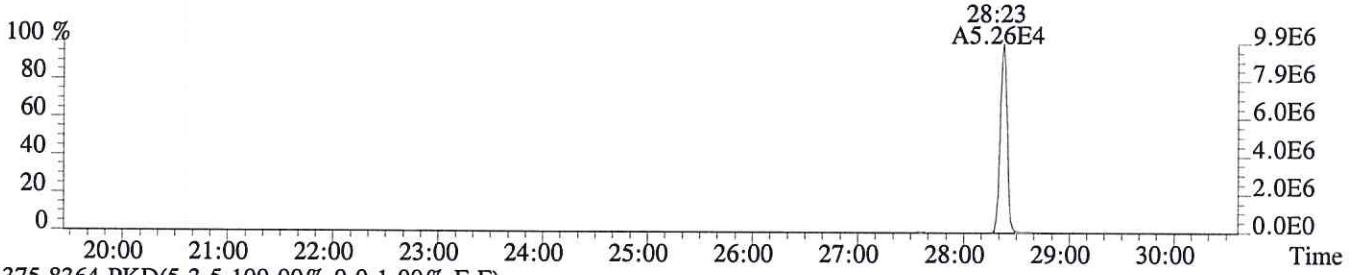
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2432.0,1.00%,F,T)



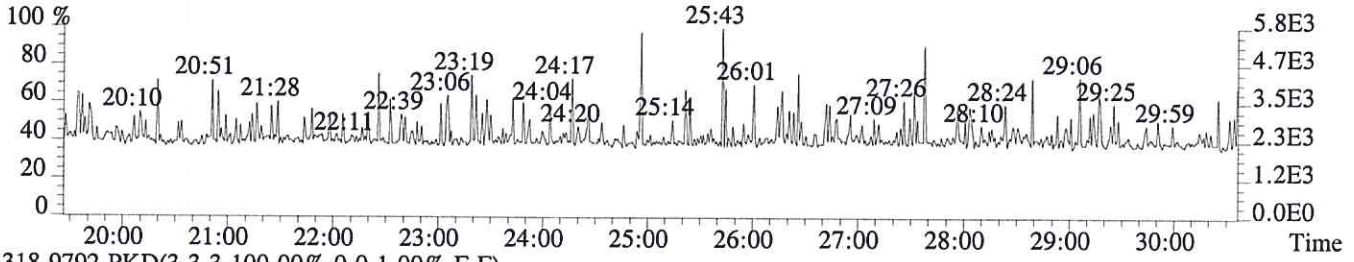
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2516.0,1.00%,F,T)



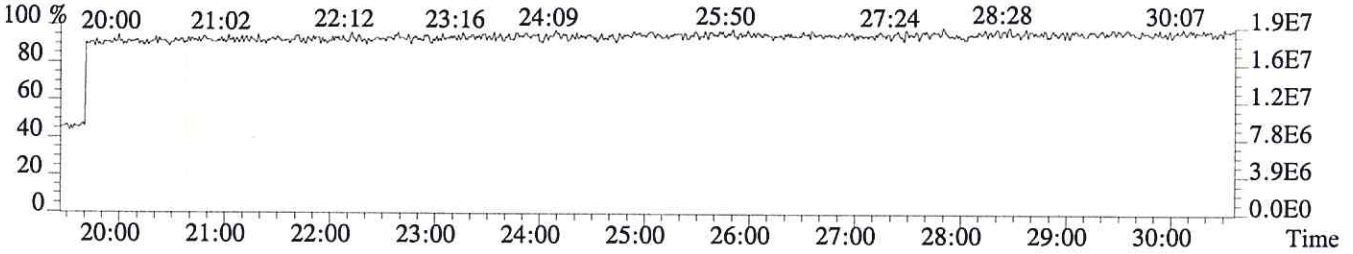
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2296.0,1.00%,F,T)



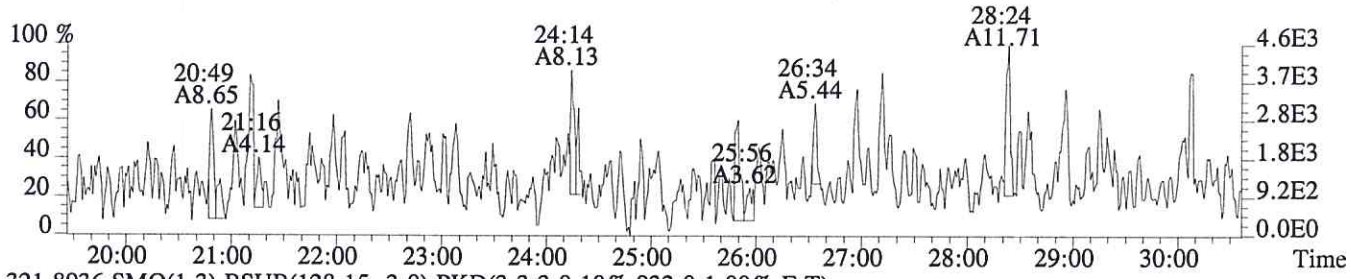
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



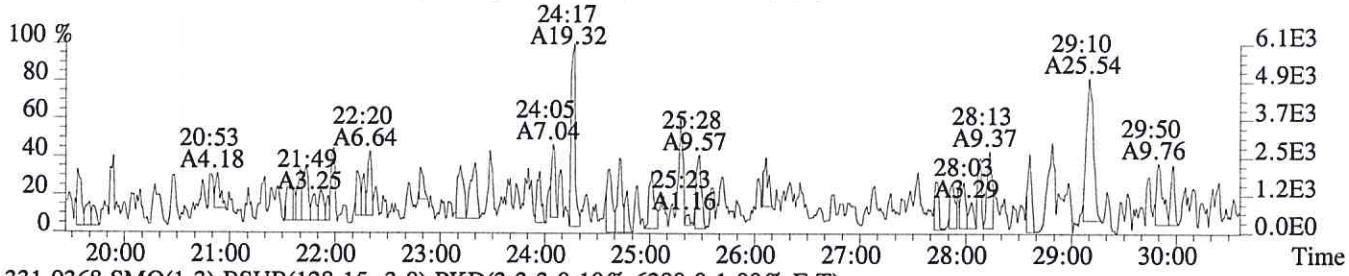
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



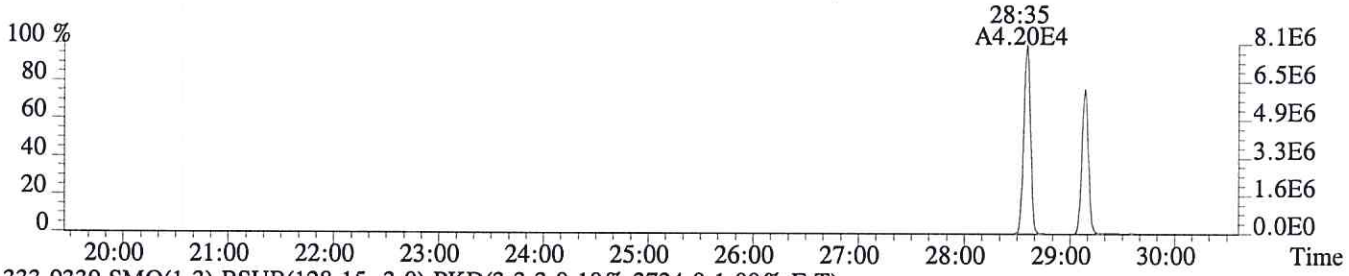
File:P503417 #1-793 Acq:19-MAR-2016 06:59:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-001
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1536.0,1.00%,F,T)



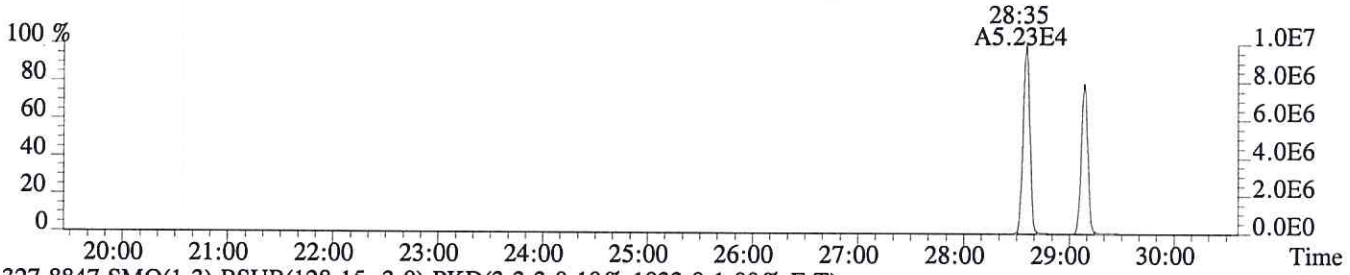
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,932.0,1.00%,F,T)



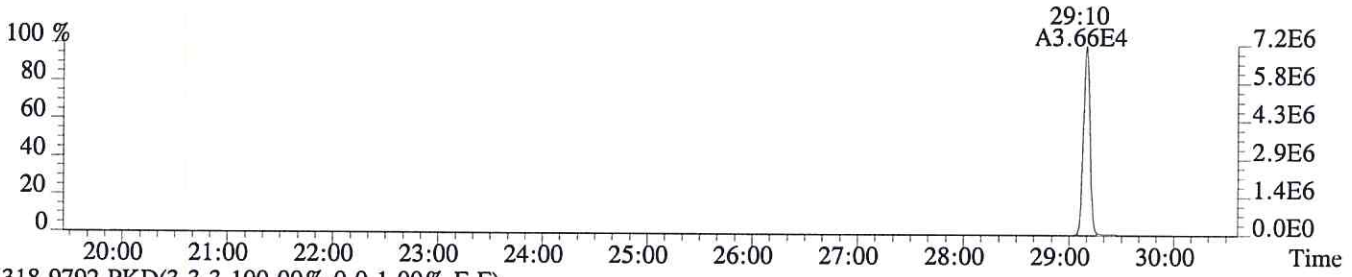
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6280.0,1.00%,F,T)



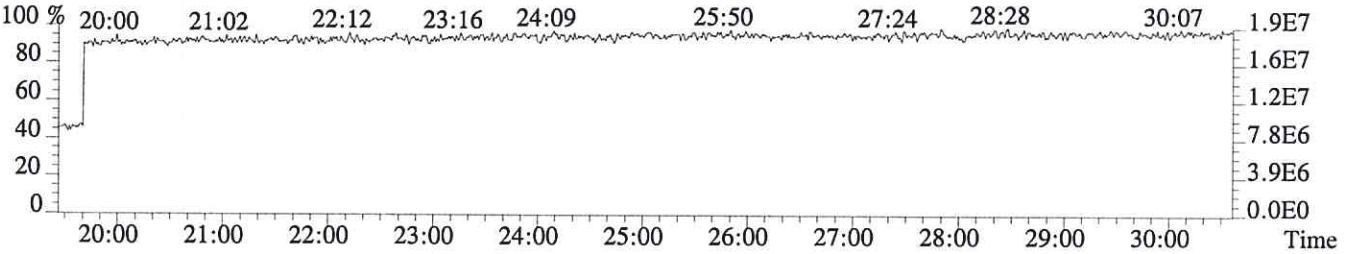
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3724.0,1.00%,F,T)



327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1932.0,1.00%,F,T)

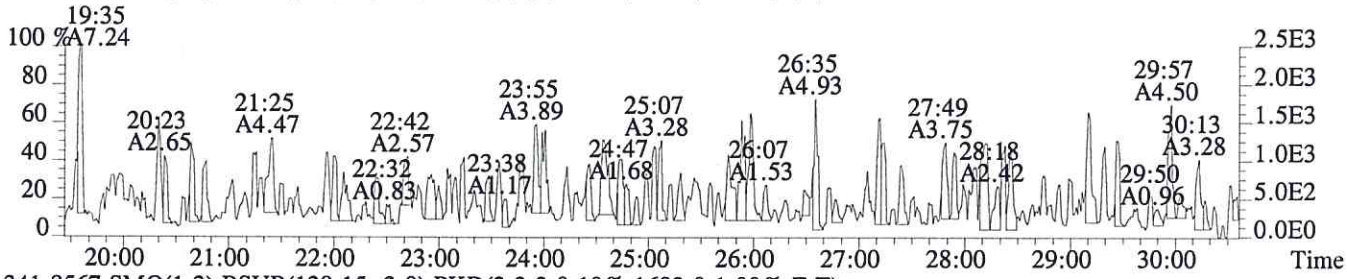


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

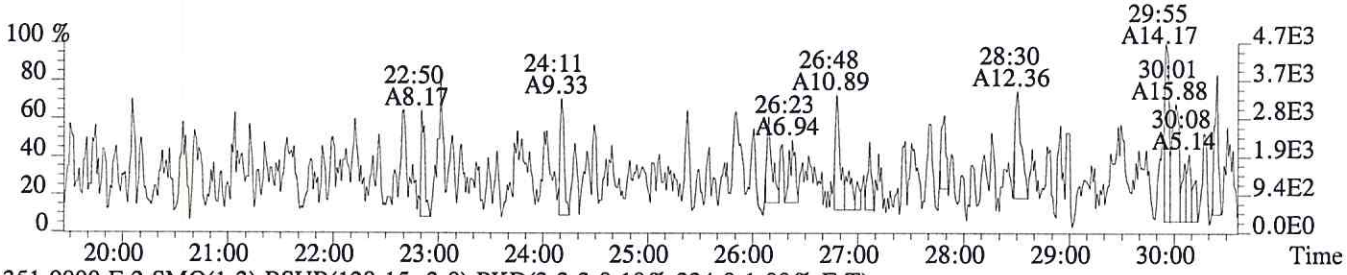


File:P503417 #1-793 Acq:19-MAR-2016 06:59:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-001

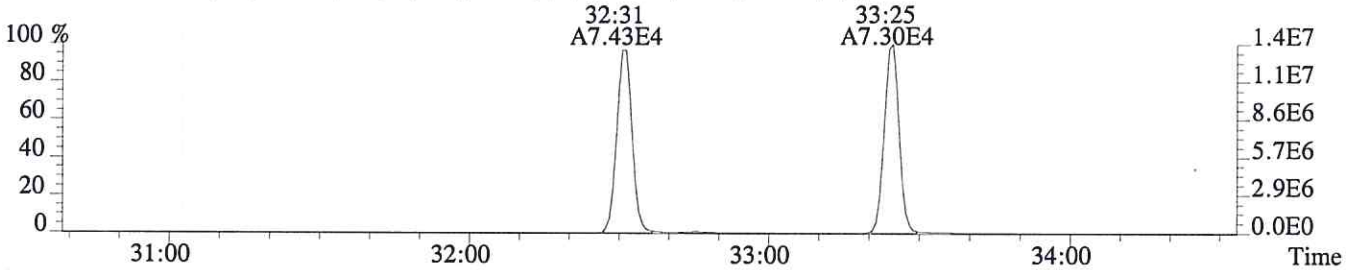
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,392.0,1.00%,F,T)



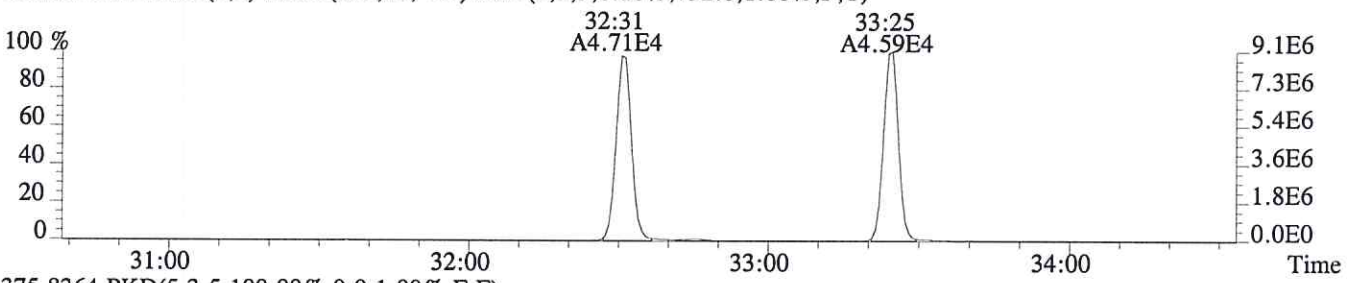
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1692.0,1.00%,F,T)



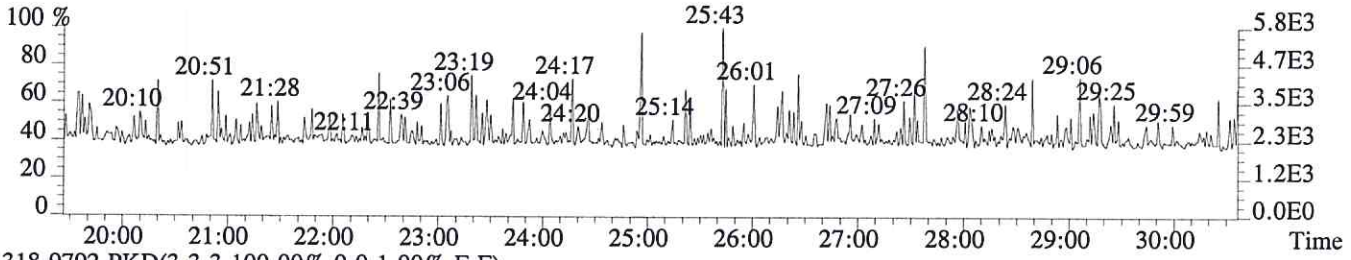
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,224.0,1.00%,F,T)



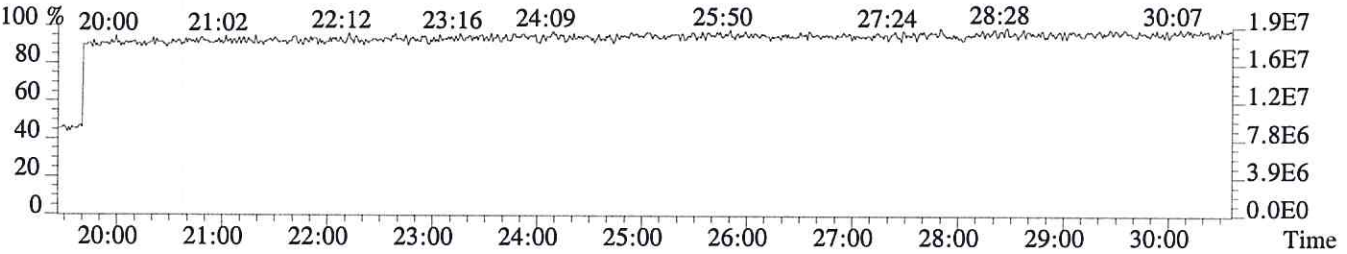
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,792.0,1.00%,F,T)



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

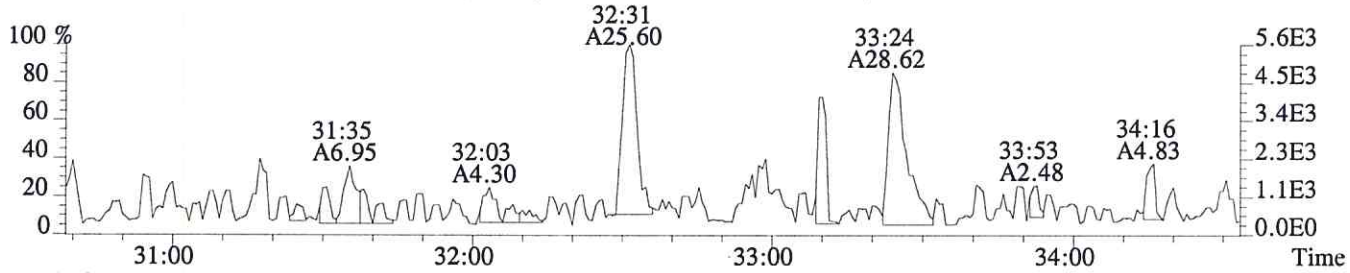


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

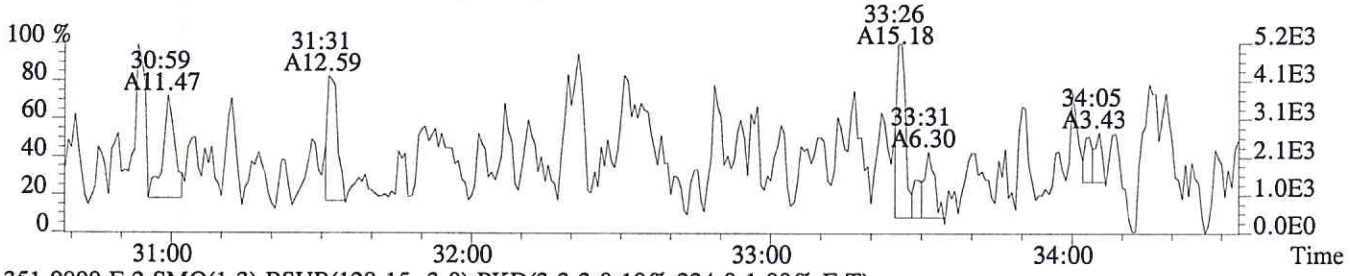


File:P503417 #1-353 Acq:19-MAR-2016 06:59:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-001

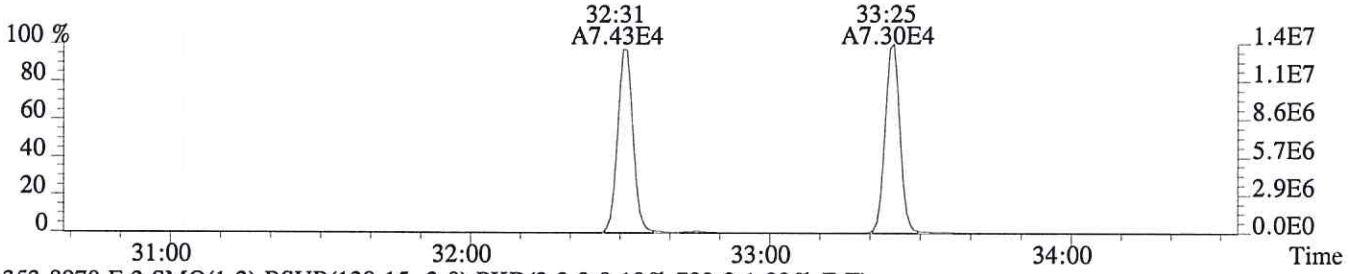
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,808.0,1.00%,F,T)



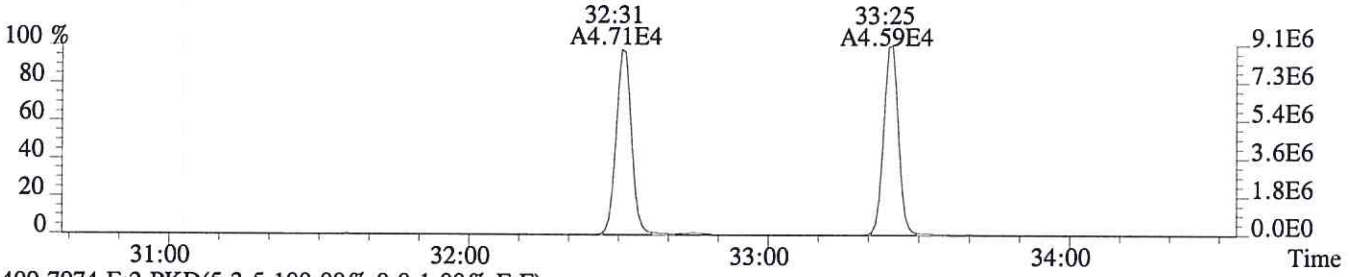
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2276.0,1.00%,F,T)



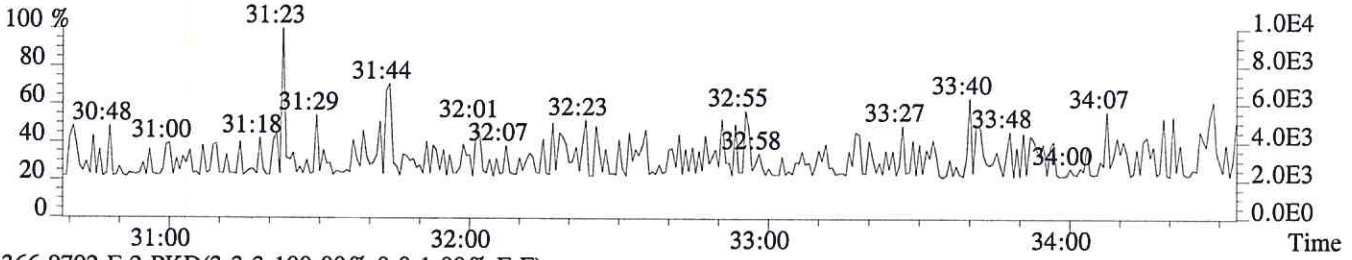
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,224.0,1.00%,F,T)



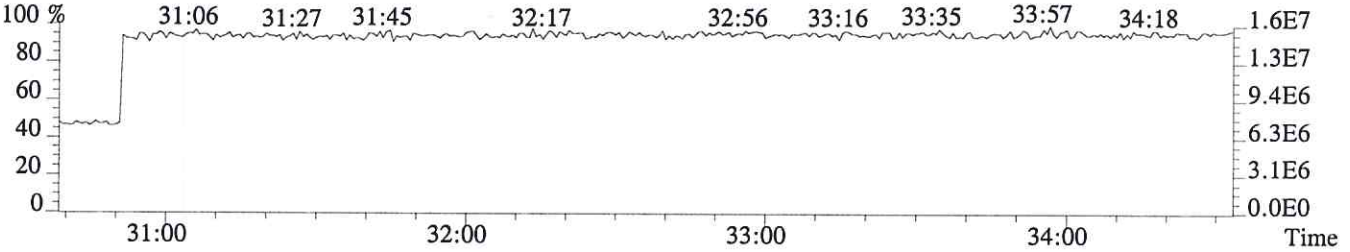
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,792.0,1.00%,F,T)



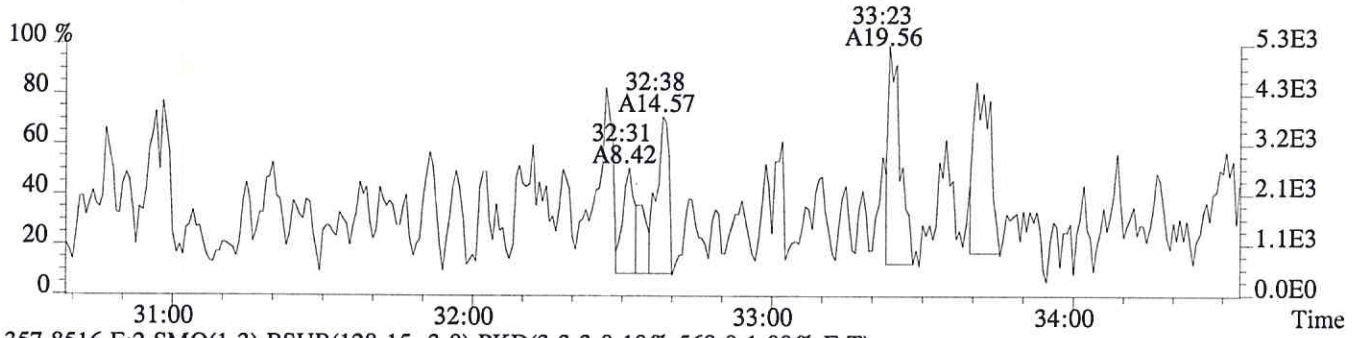
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



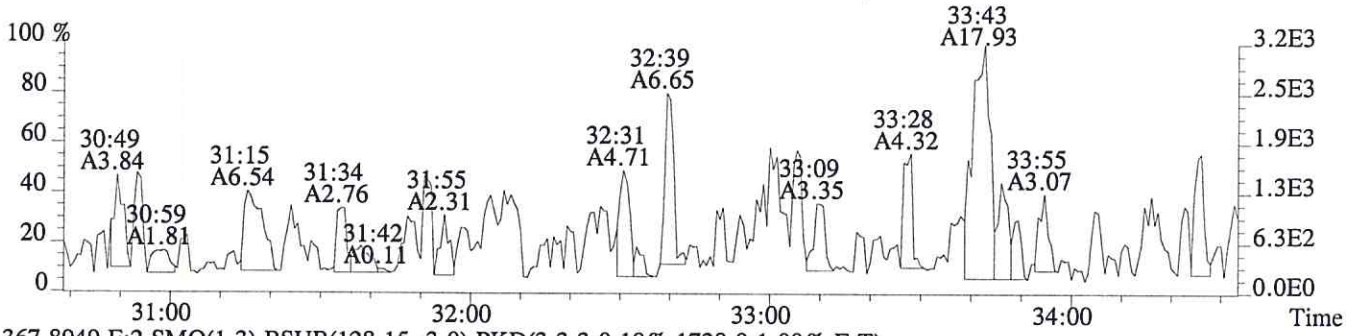
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



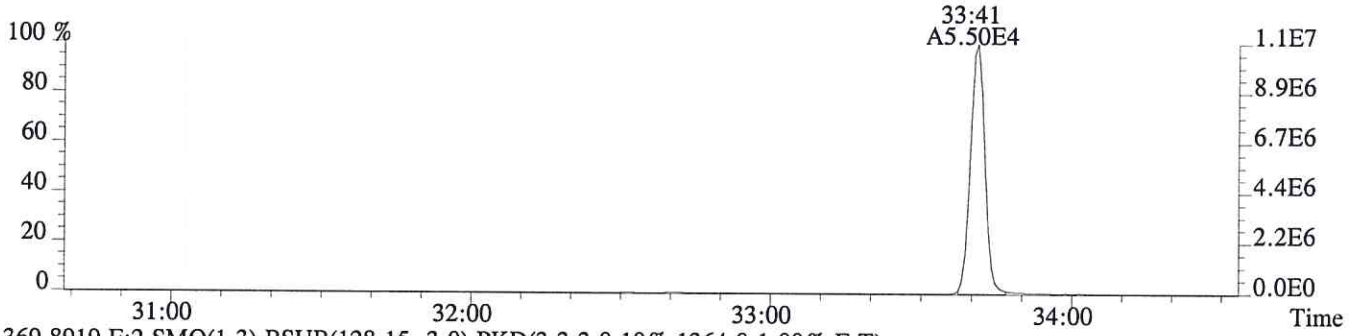
File:P503417 #1-353 Acq:19-MAR-2016 06:59:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-001
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2060.0,1.00%,F,T)



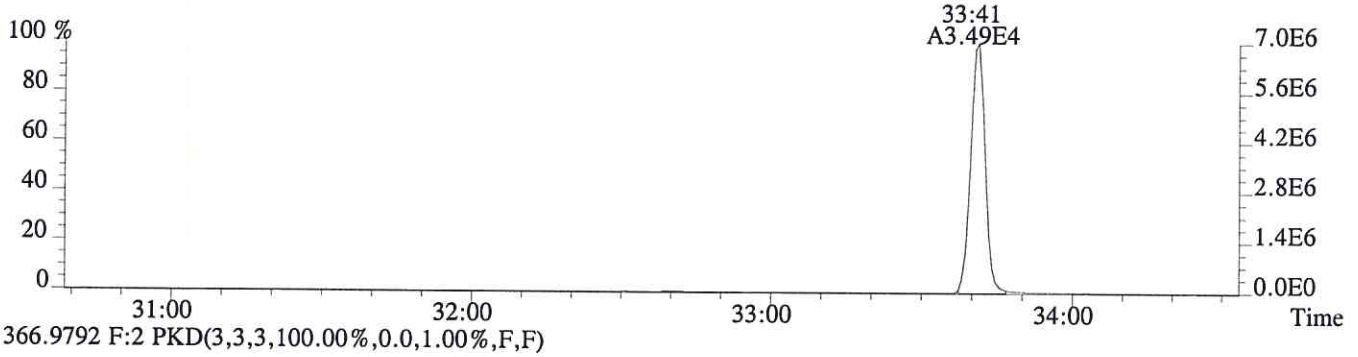
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,568.0,1.00%,F,T)



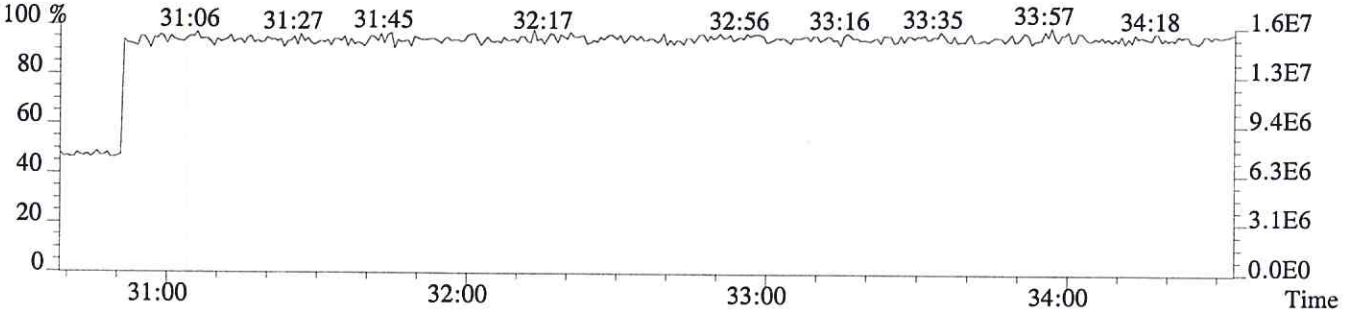
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1728.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1364.0,1.00%,F,T)

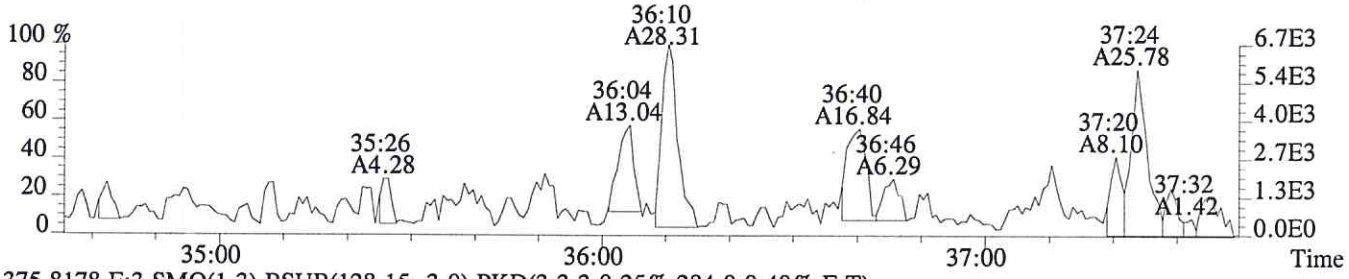


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

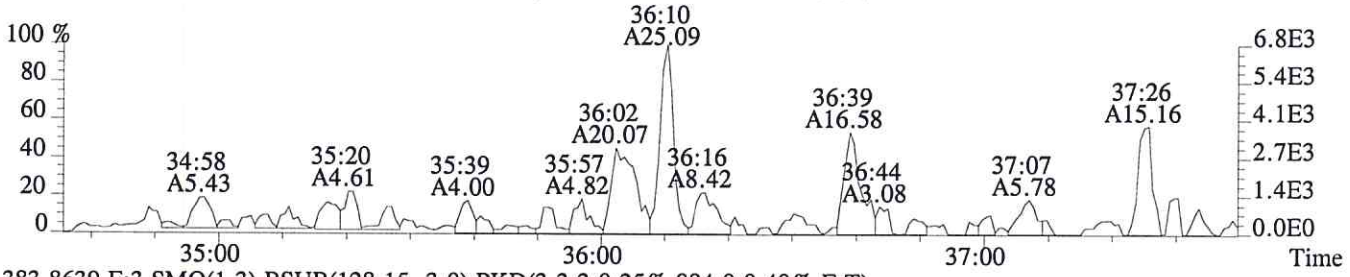


File:P503417 #1-277 Acq:19-MAR-2016 06:59:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-001

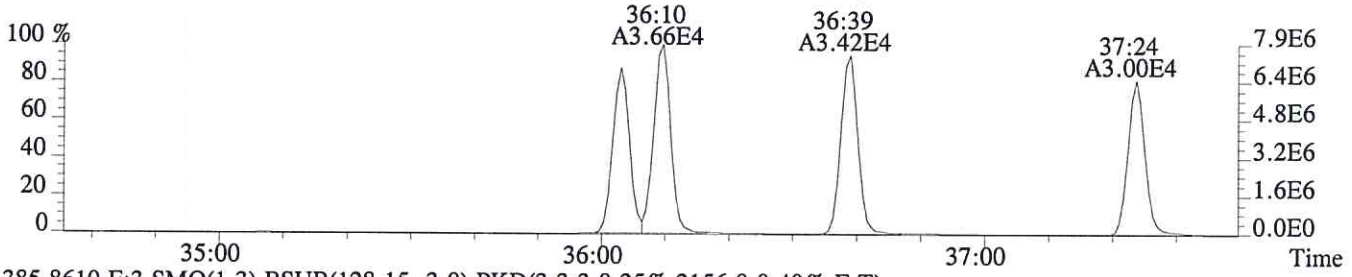
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,916.0,0.40%,F,T)



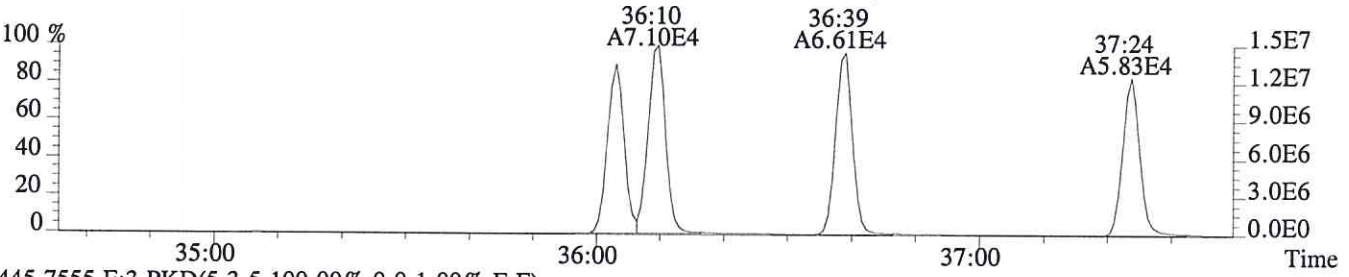
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,284.0,0.40%,F,T)



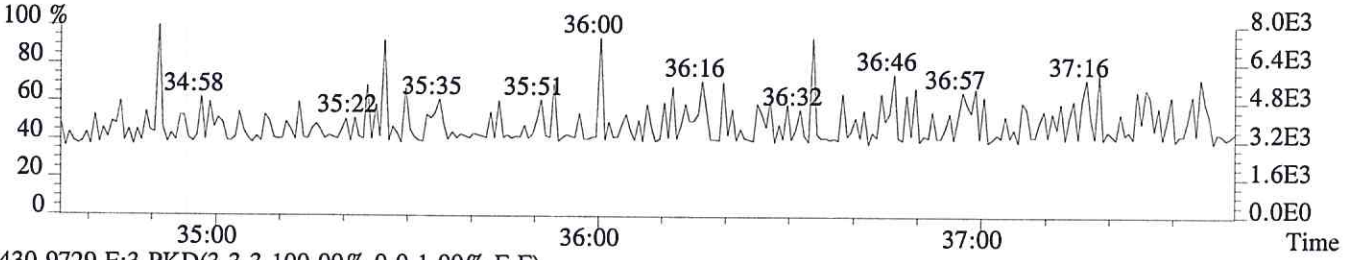
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,884.0,0.40%,F,T)



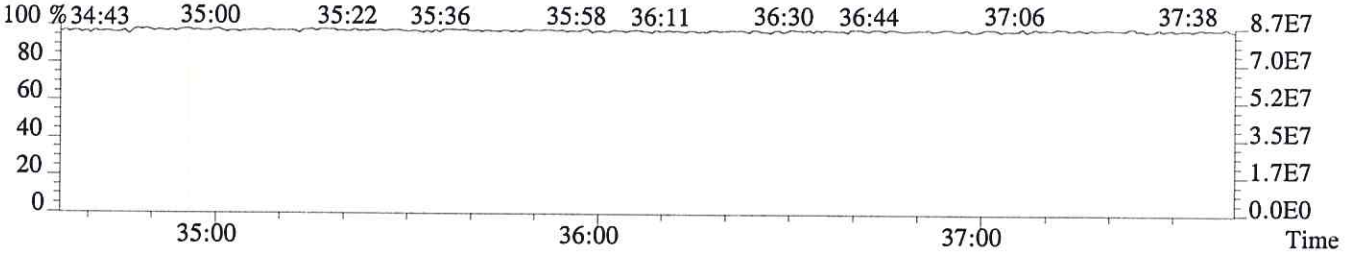
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2156.0,0.40%,F,T)



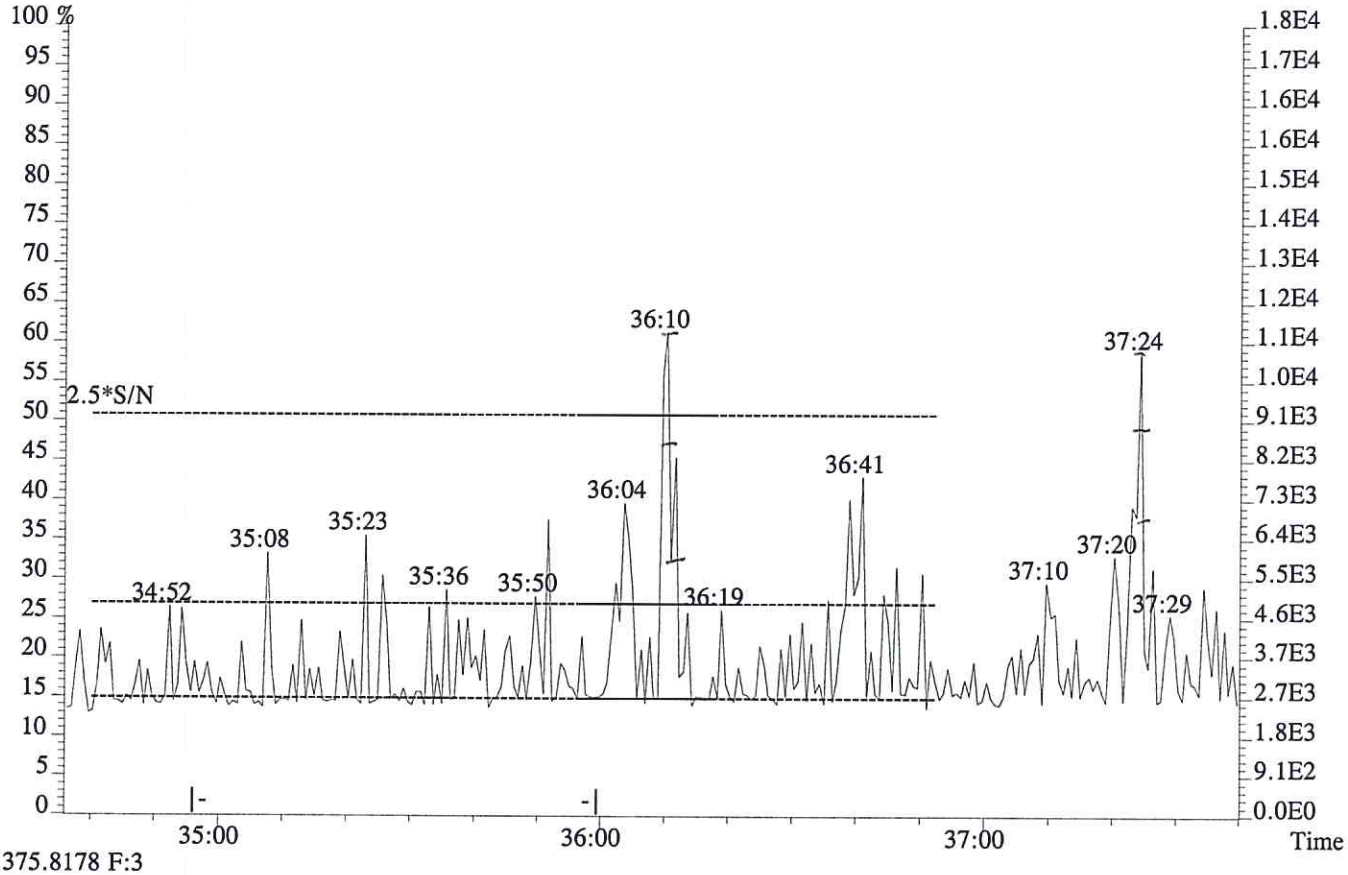
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



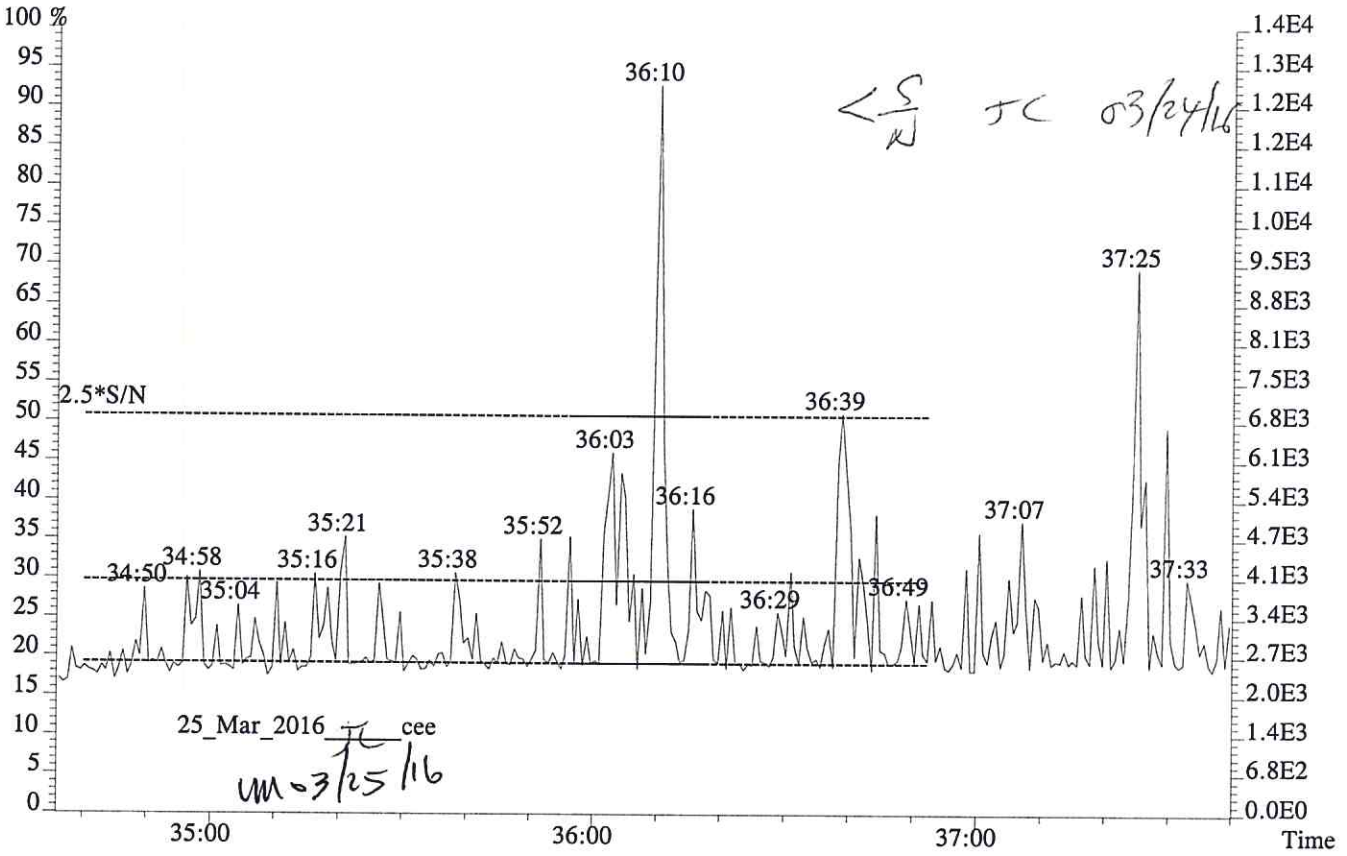
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



File:P503417 #1-277 Acq:19-MAR-2016 06:59:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-001
373.8208 F:3

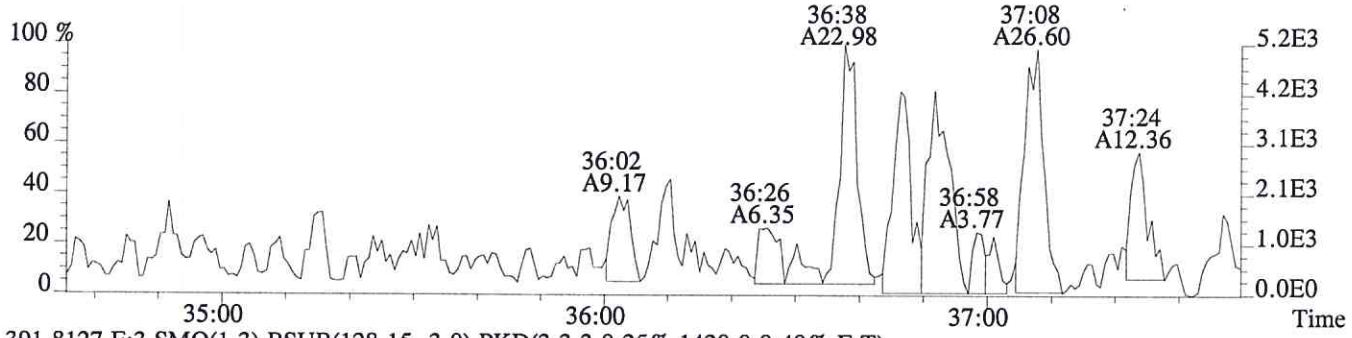


375.8178 F:3

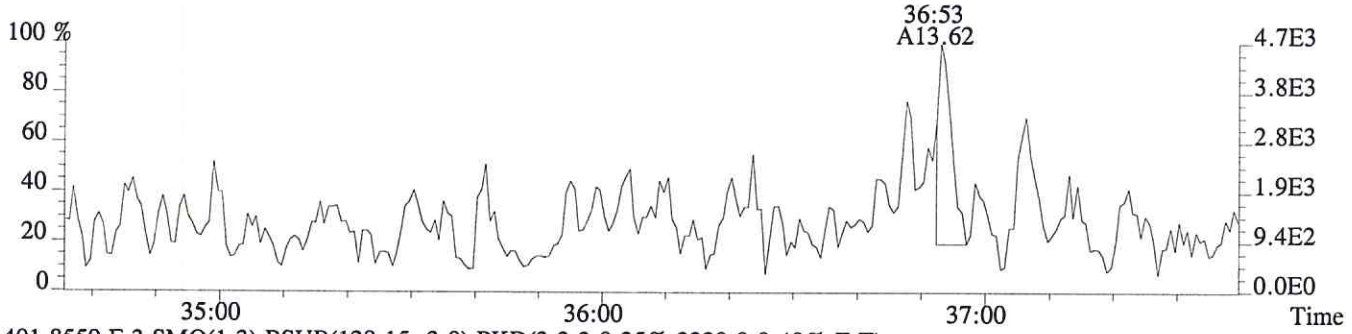


File:P503417 #1-277 Acq:19-MAR-2016 06:59:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-001

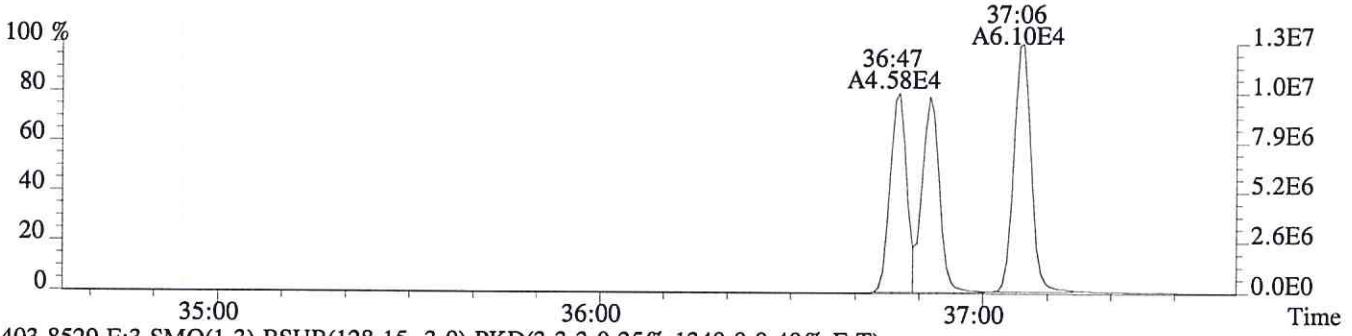
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,768.0,0.40%,F,T)



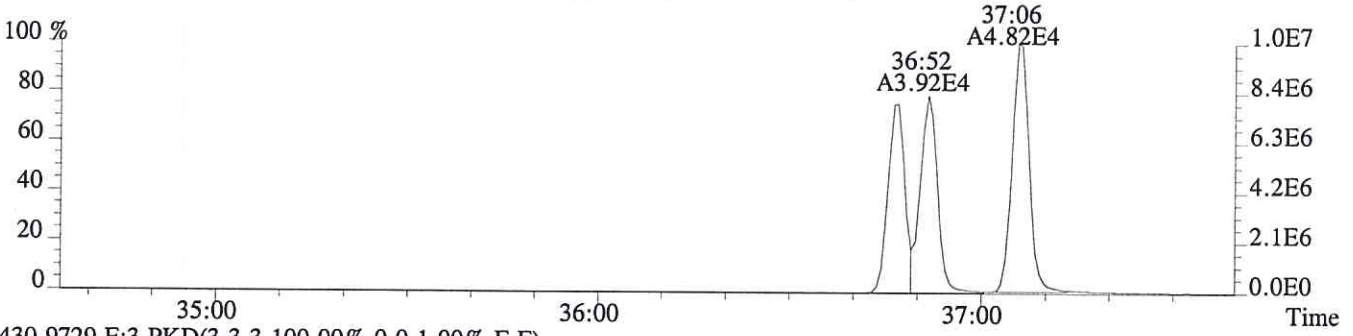
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1420.0,0.40%,F,T)



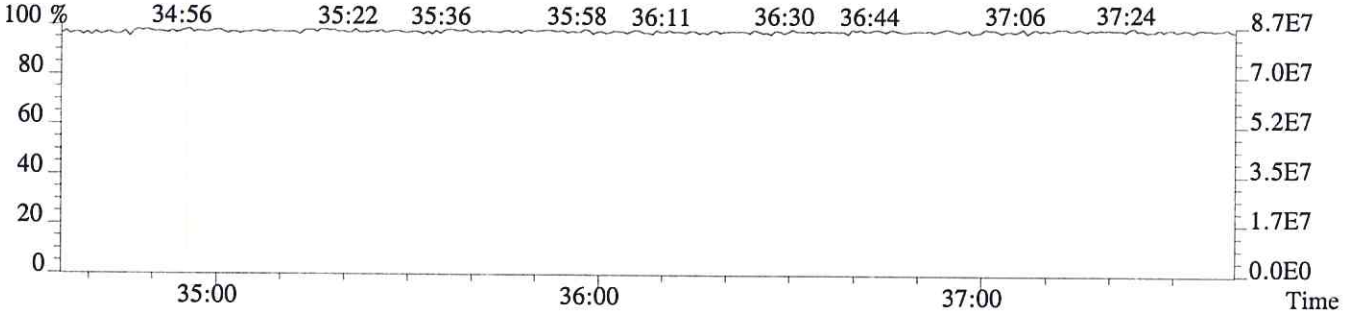
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2320.0,0.40%,F,T)



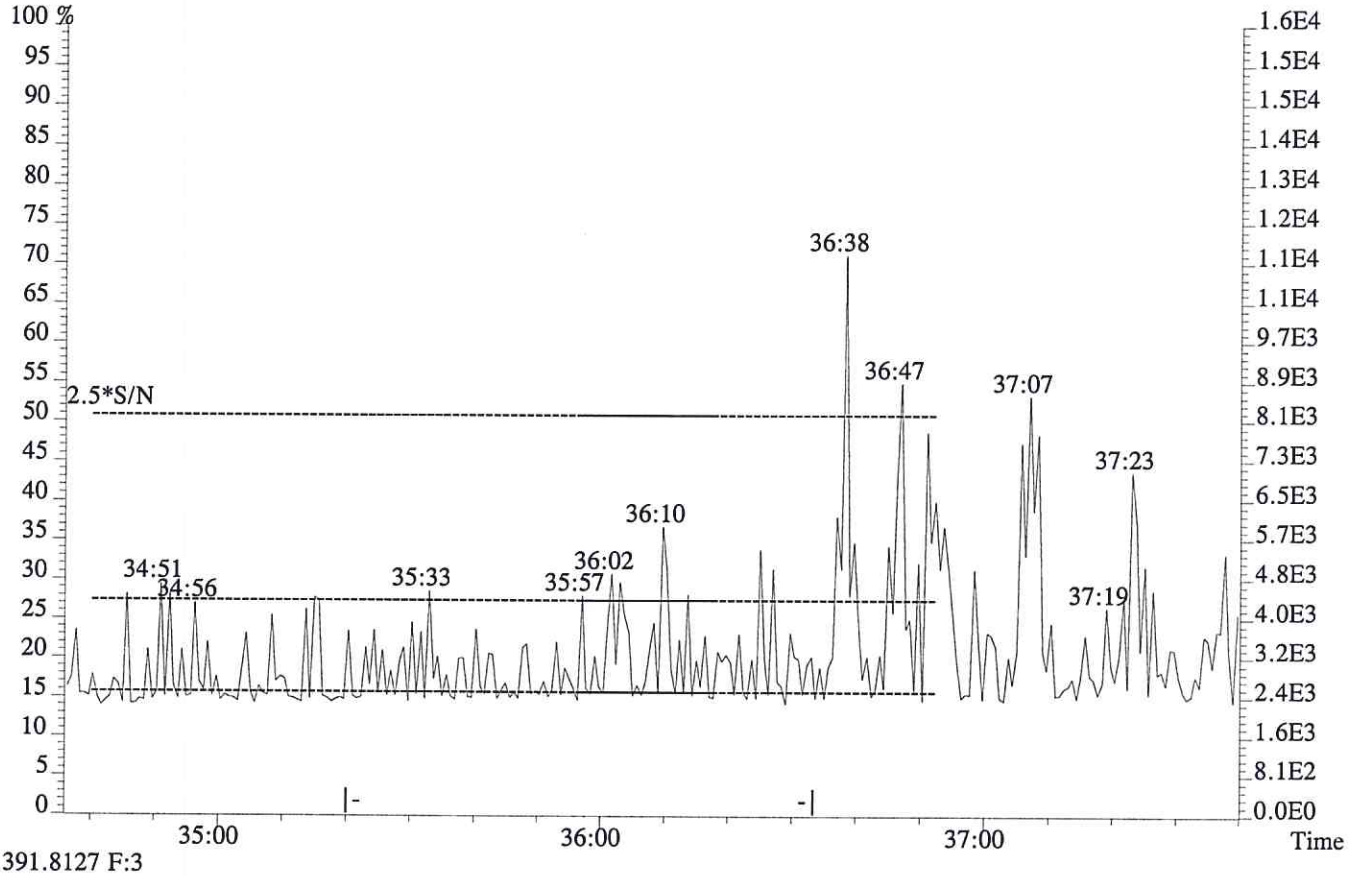
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1340.0,0.40%,F,T)



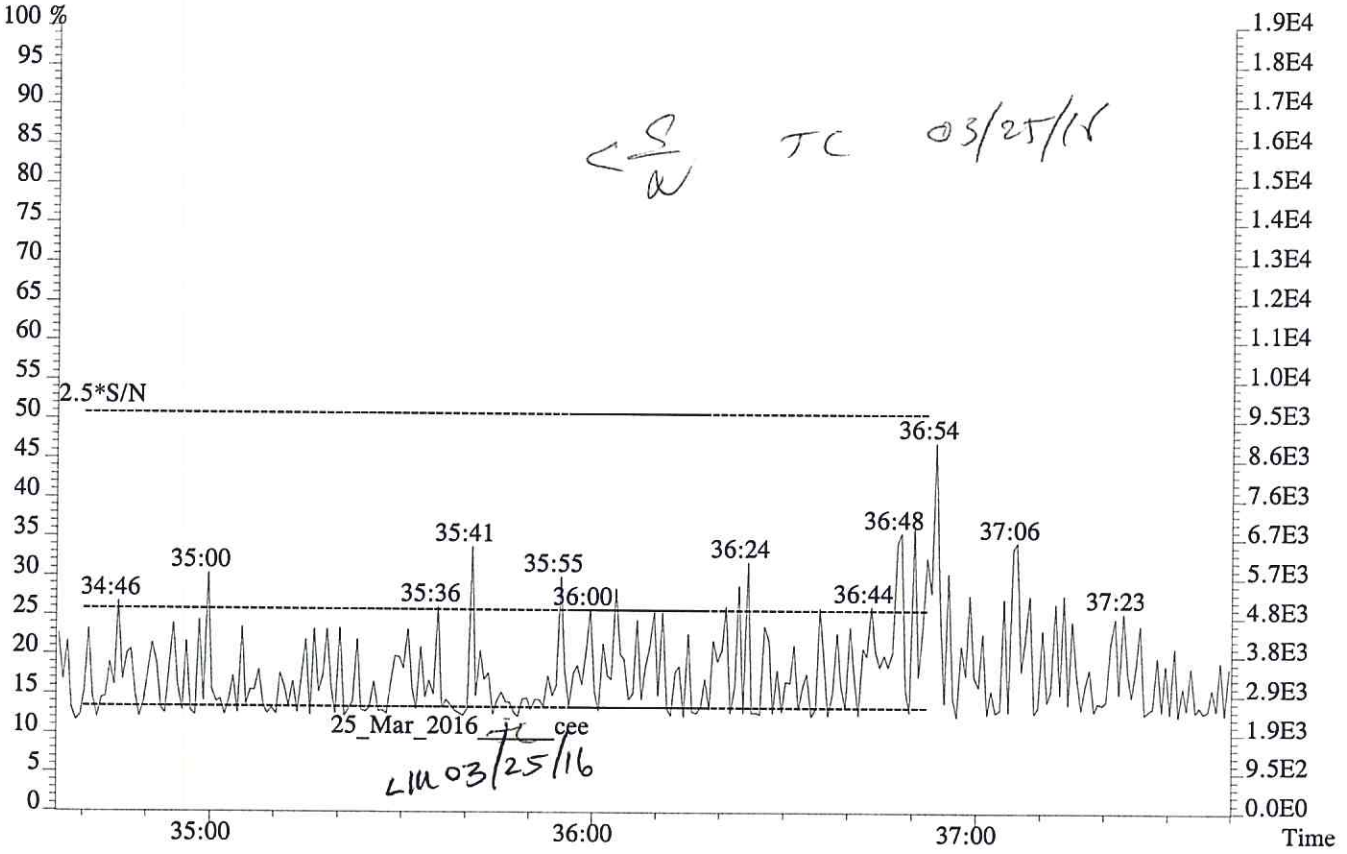
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



File:P503417 #1-277 Acq:19-MAR-2016 06:59:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-001
389.8157 F:3



391.8127 F:3

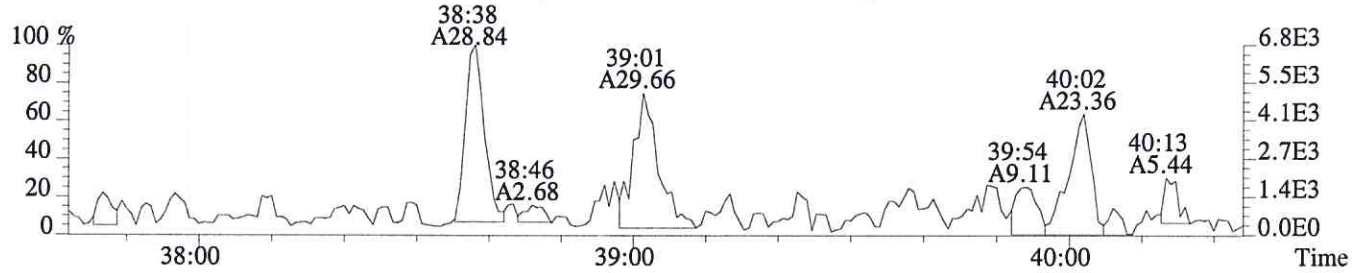


<S/N TC 03/25/16

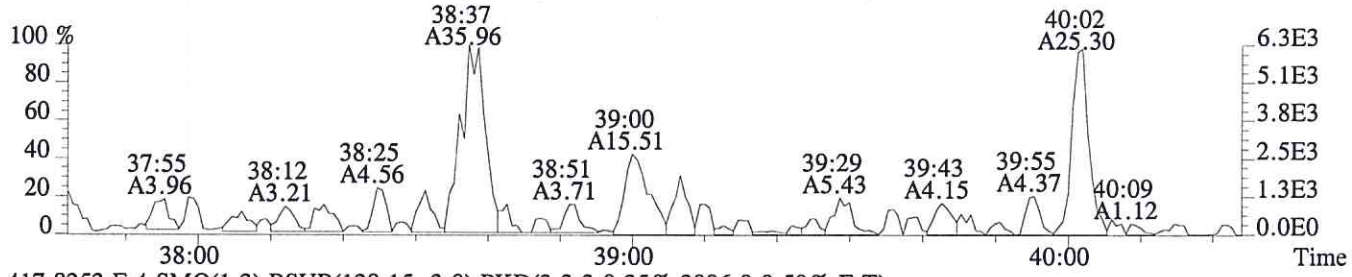
LM 03/25/16

File:P503417 #1-244 Acq:19-MAR-2016 06:59:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-001

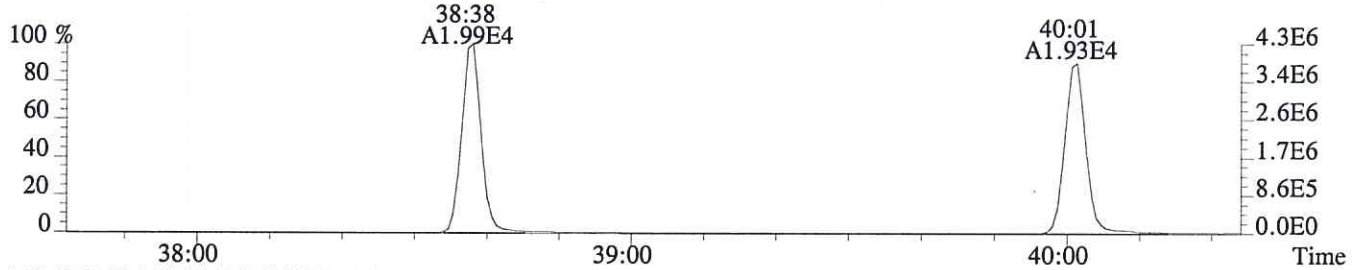
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,756.0,0.50%,F,T)



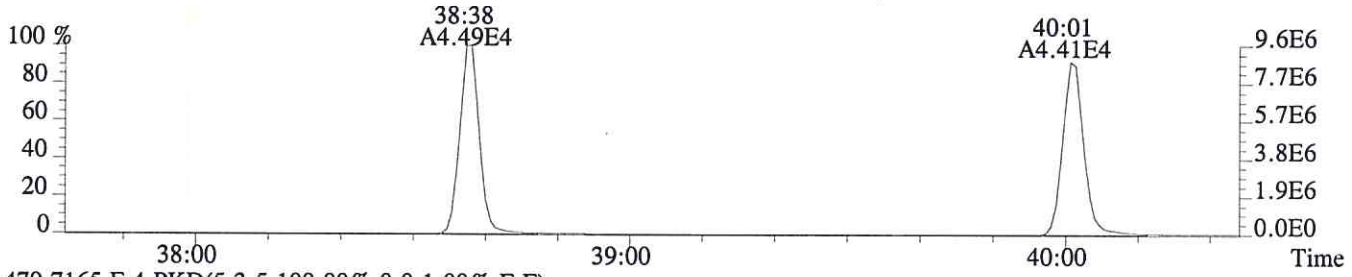
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,220.0,0.50%,F,T)



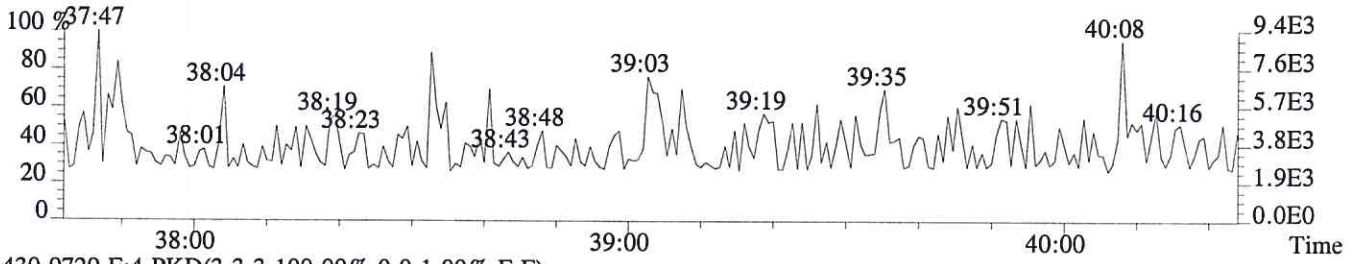
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2096.0,0.50%,F,T)



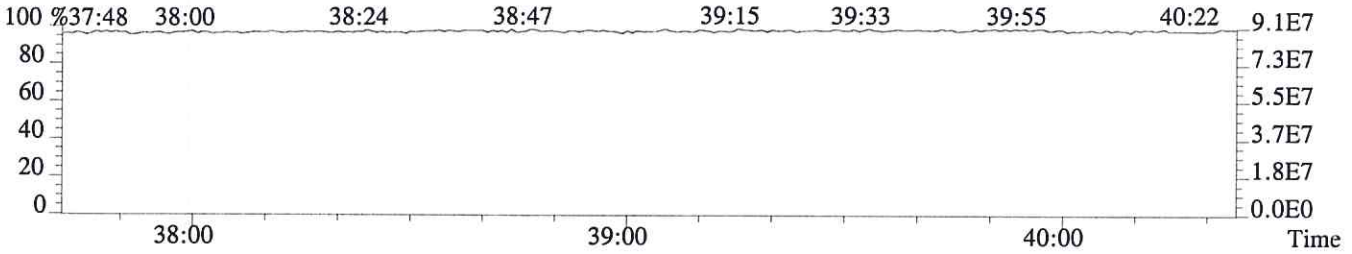
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4720.0,0.50%,F,T)



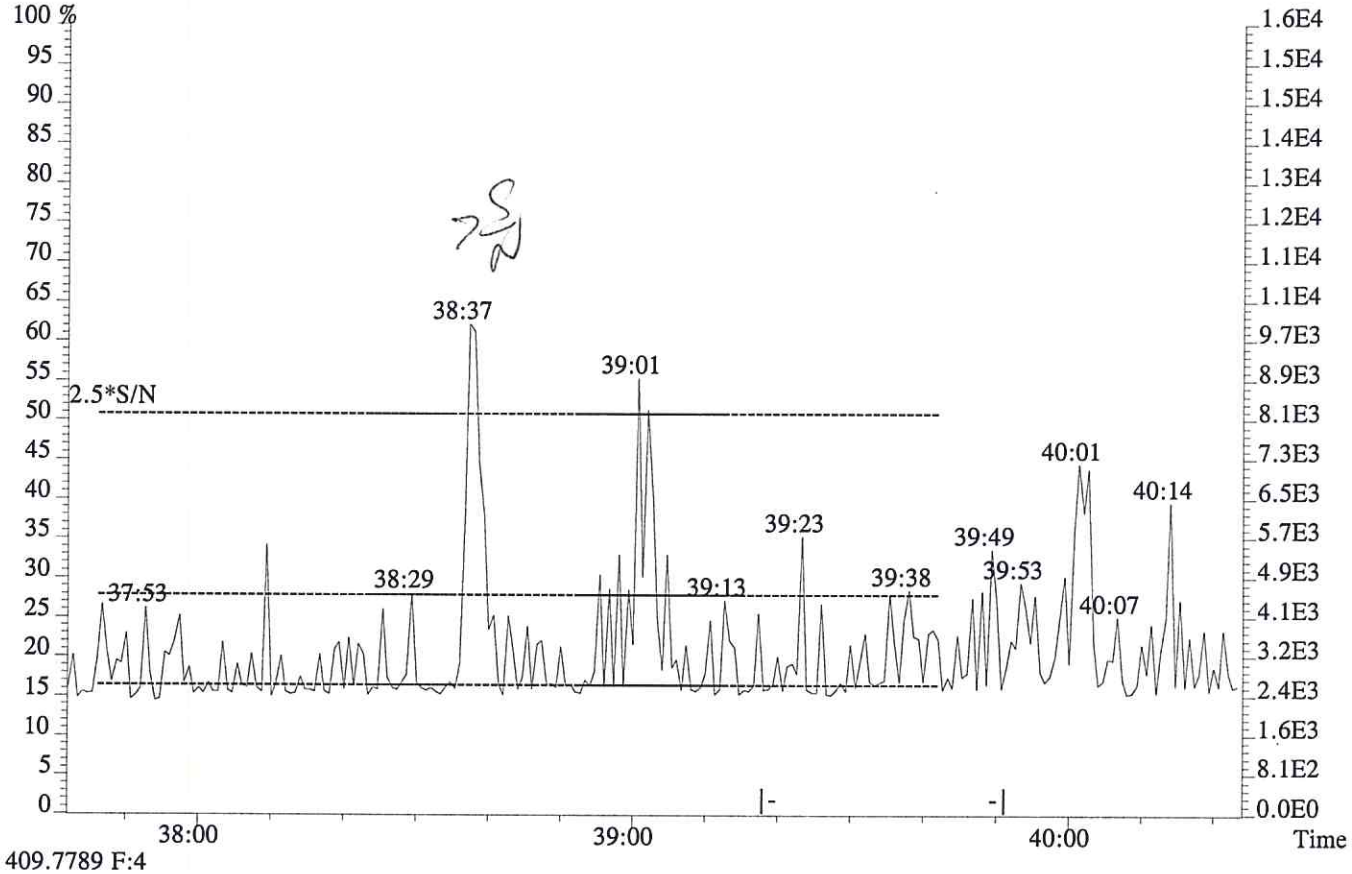
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



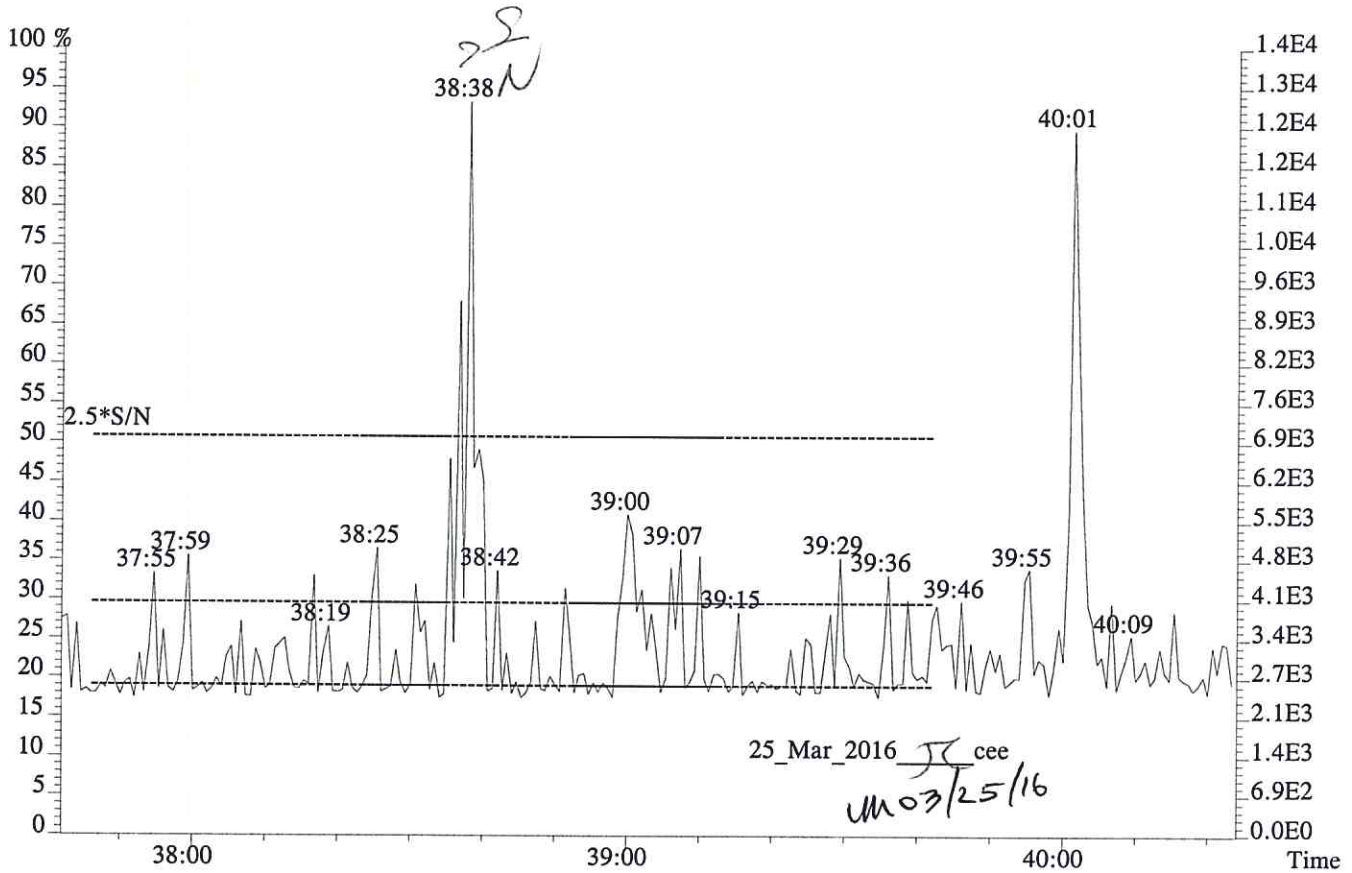
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



File:P503417 #1-244 Acq:19-MAR-2016 06:59:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-001
407.7818 F:4

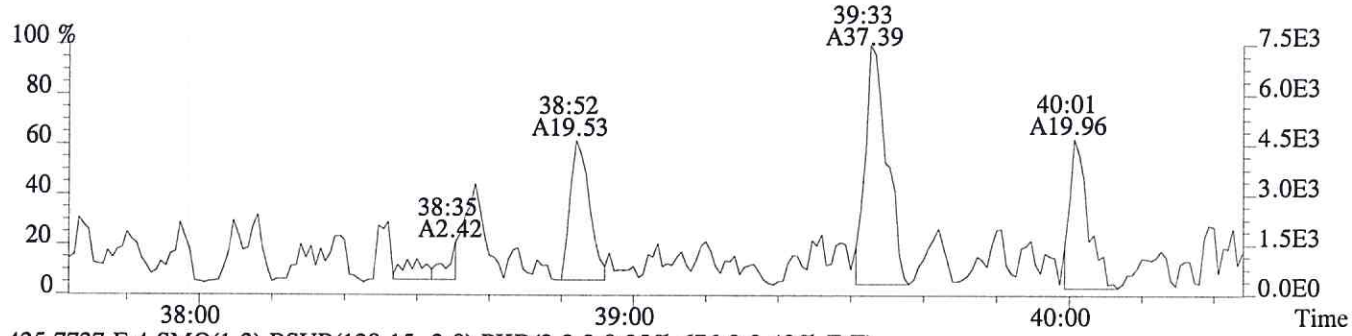


409.7789 F:4

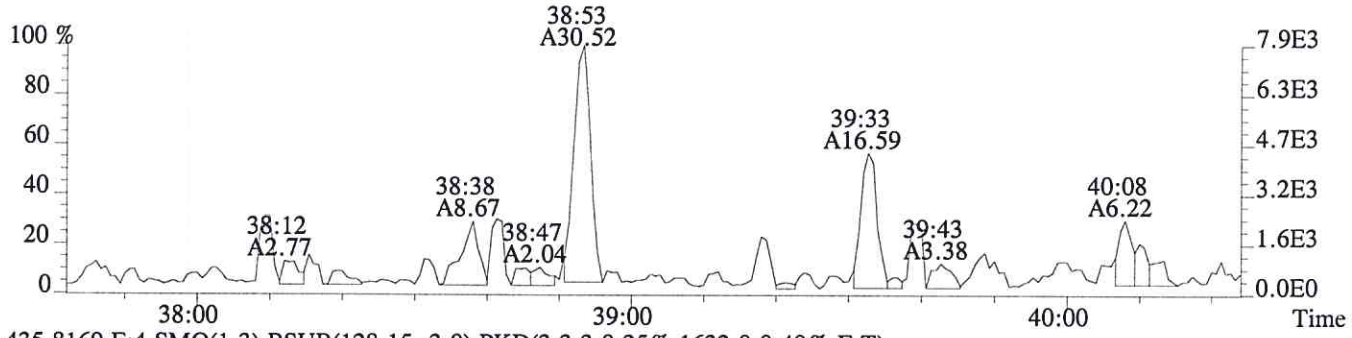


File:P503417 #1-244 Acq:19-MAR-2016 06:59:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-001

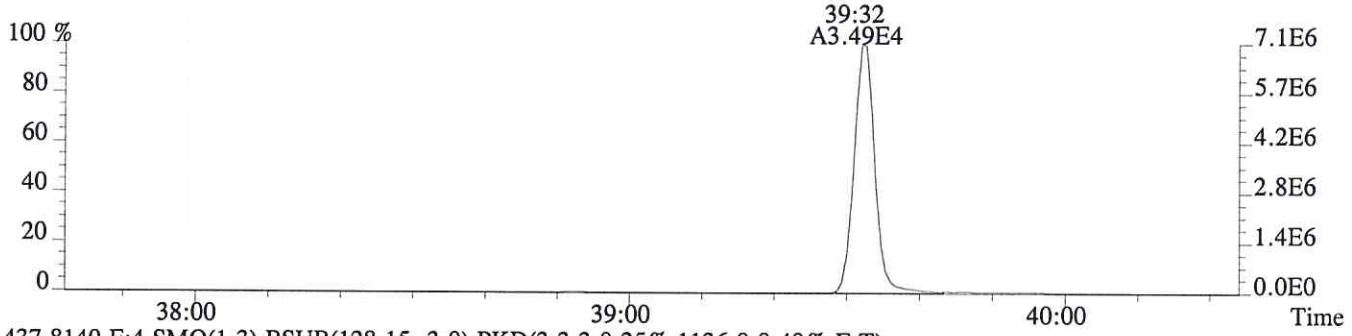
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1148.0,0.40%,F,T)



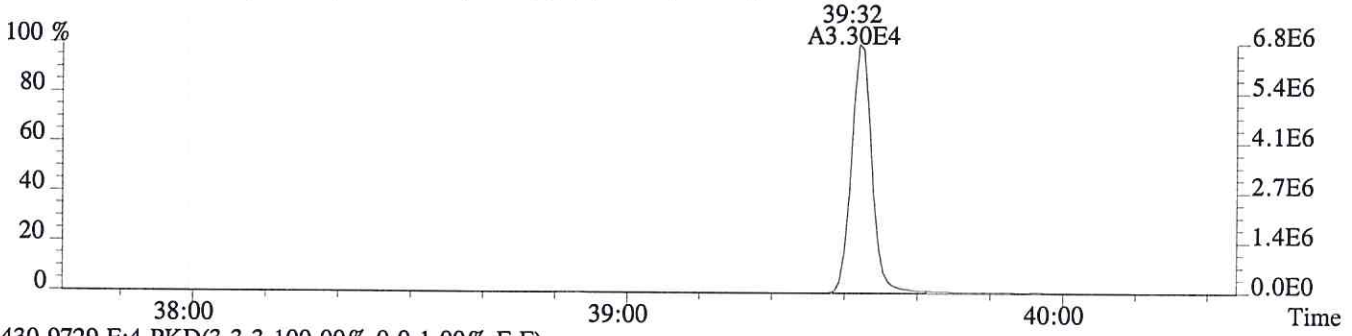
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,676.0,0.40%,F,T)



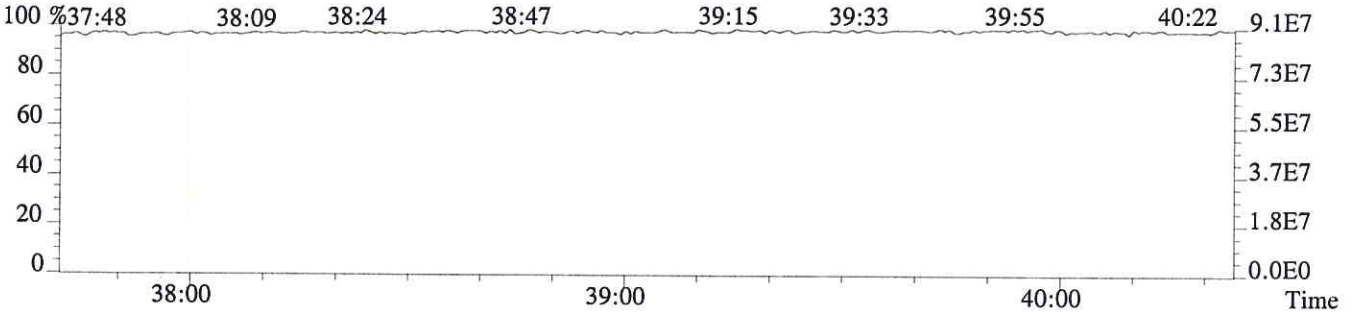
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1632.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1136.0,0.40%,F,T)

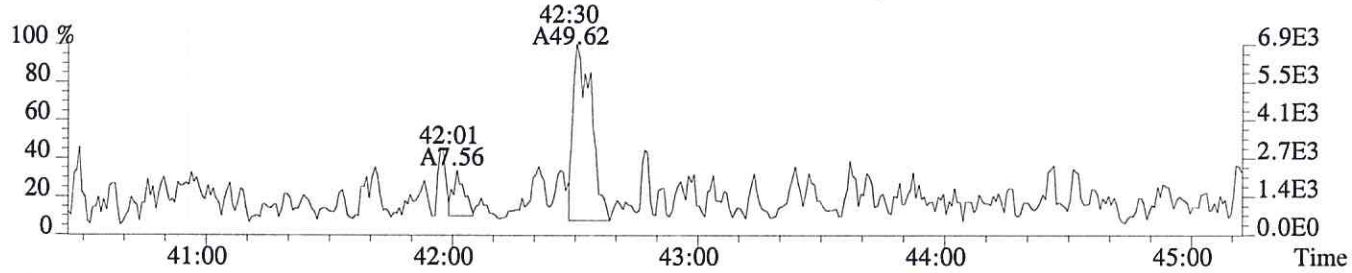


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

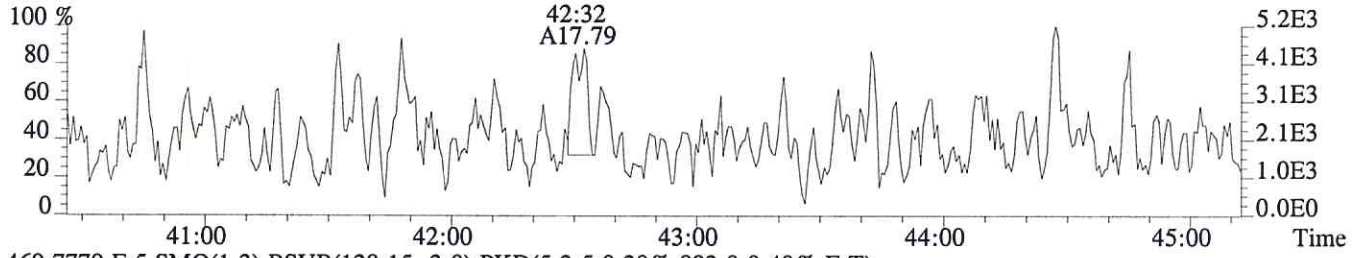


File:P503417 #1-430 Acq:19-MAR-2016 06:59:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-001

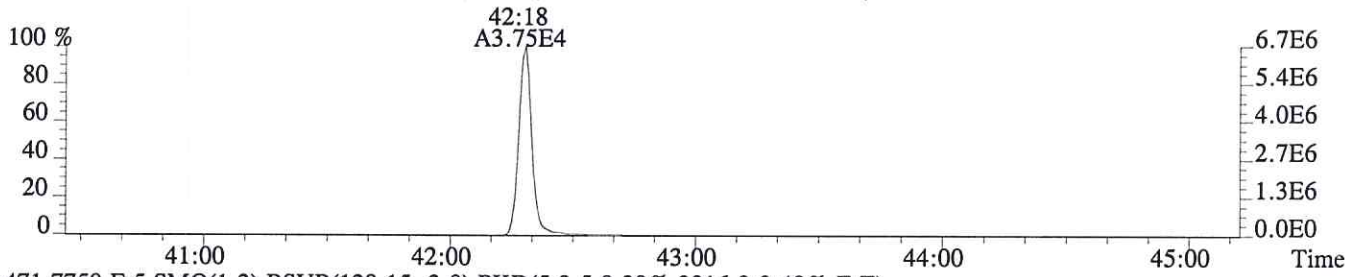
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1452.0,0.40%,F,T)



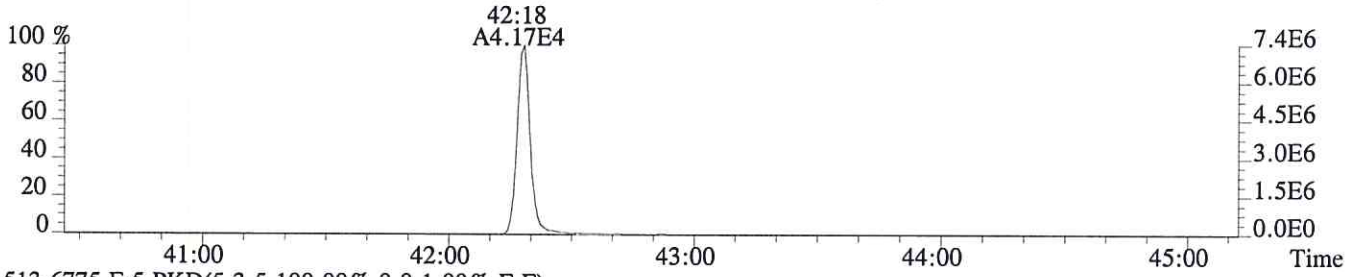
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2552.0,0.40%,F,T)



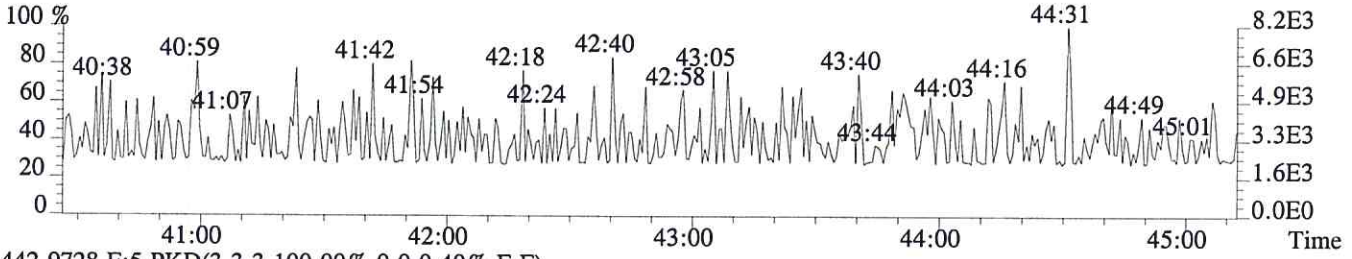
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,892.0,0.40%,F,T)



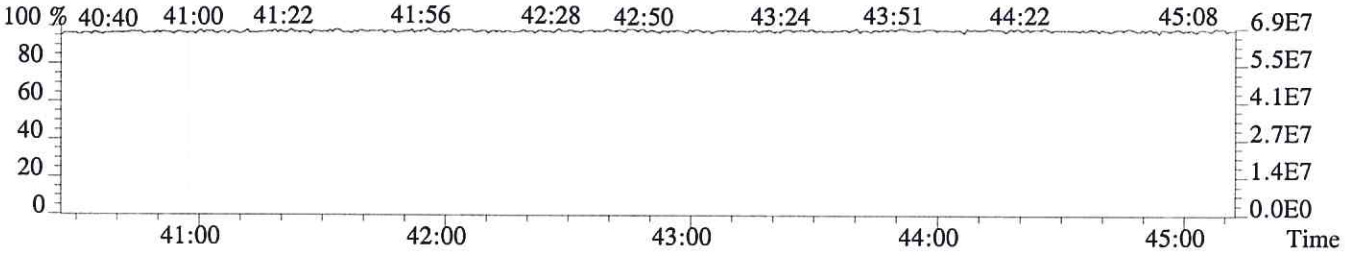
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2016.0,0.40%,F,T)



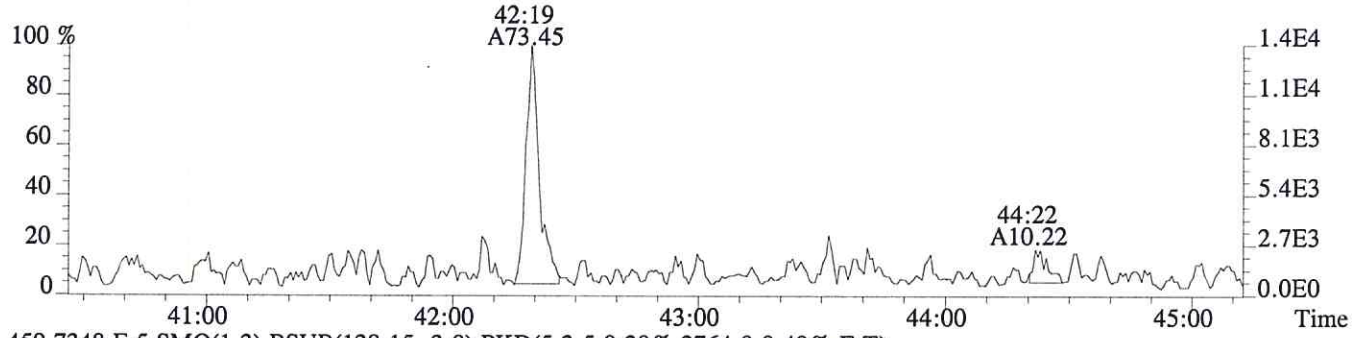
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



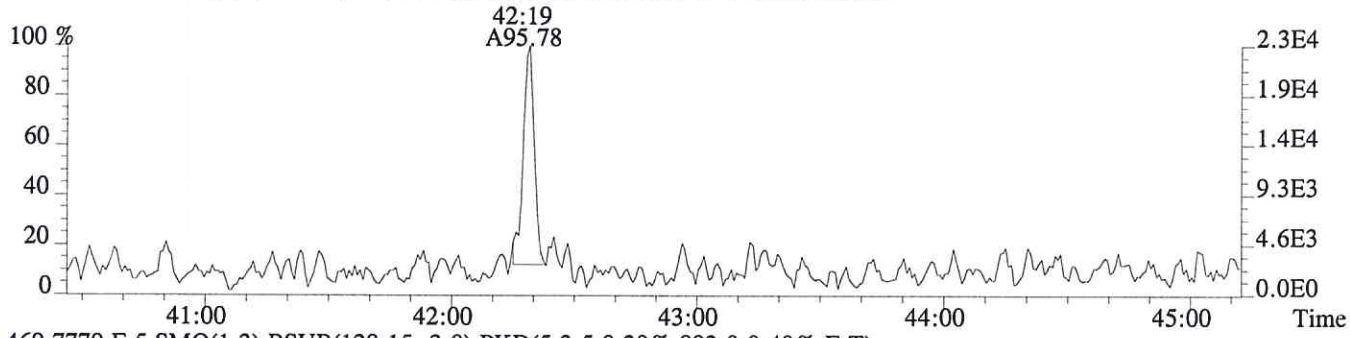
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



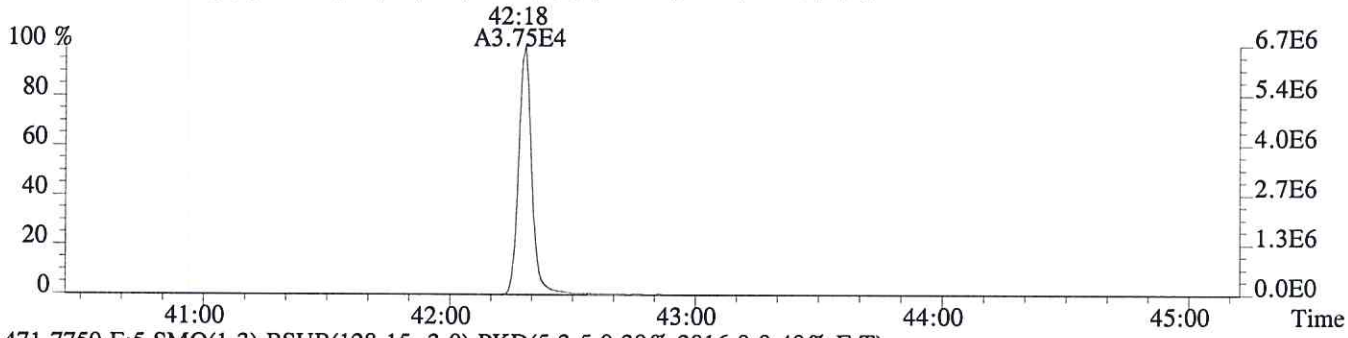
File:P503417 #1-430 Acq:19-MAR-2016 06:59:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-001
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1384.0,0.40%,F,T)



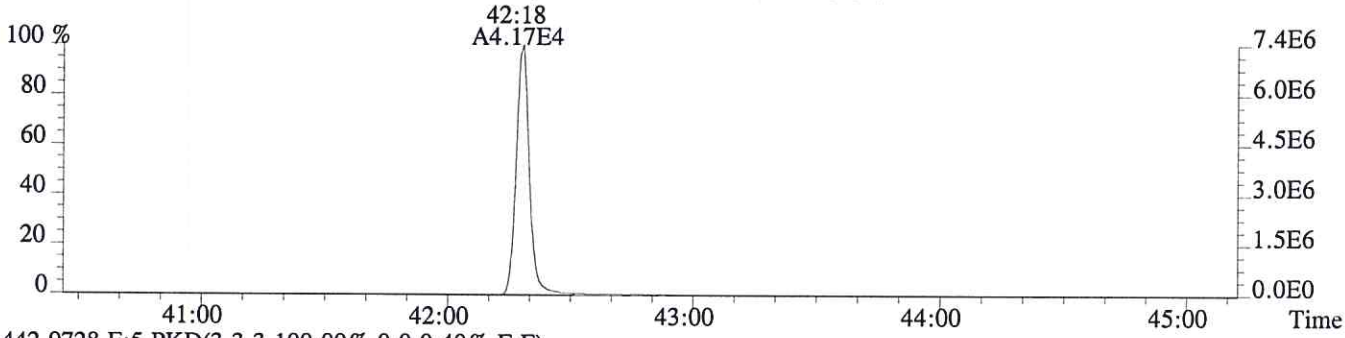
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2764.0,0.40%,F,T)



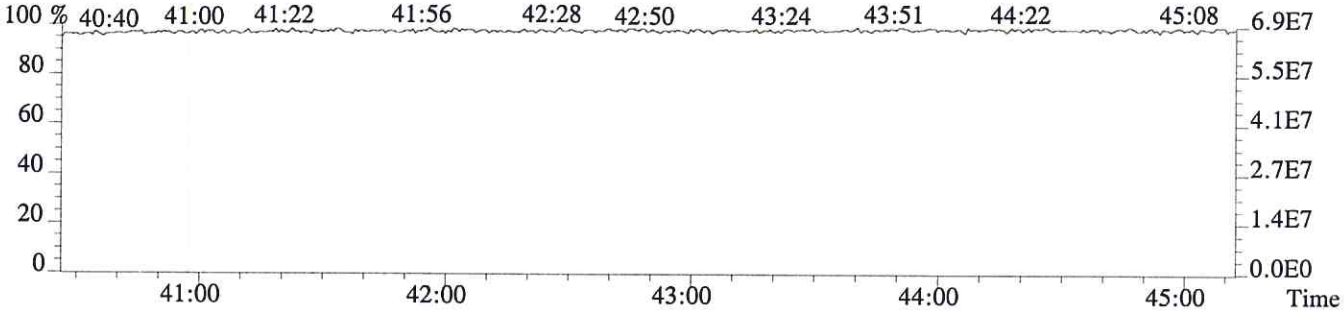
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,892.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2016.0,0.40%,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.
03102016 SJ4

Run #18 Filename P503418 Samp: 1 Inj: 1 Acquired: 19-MAR-16 07:48:36
Processed: 23-MAR-16 18:35:18 Sample ID: E1600203-005

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	NotFnd	*	*	*	no	no	0.886
2	Unk	1,2,3,7,8-PeCDF	NotFnd	*	*	*	no	no	0.983
3	Unk	2,3,4,7,8-PeCDF	NotFnd	*	*	*	no	no	0.952
4	Unk	1,2,3,4,7,8-HxCDF	NotFnd	*	*	*	no	yes	1.190
5	Unk	1,2,3,6,7,8-HxCDF	NotFnd	*	*	*	no	yes	1.114
6	Unk	2,3,4,6,7,8-HxCDF	NotFnd	*	*	*	no	yes	1.109
7	Unk	1,2,3,7,8,9-HxCDF	NotFnd	*	*	*	no	yes	1.153
8	Unk	1,2,3,4,6,7,8-HpCDF	38:37	1.901e+01	2.803e+01	0.68	no	no	1.376
9	Unk	1,2,3,4,7,8,9-HpCDF	NotFnd	*	*	*	no	no	1.306
10	Unk	OCDF	NotFnd	*	*	*	no	yes	1.263
11	Unk	2,3,7,8-TCDD	NotFnd	*	*	*	no	no	0.997
12	Unk	1,2,3,7,8-PeCDD	NotFnd	*	*	*	no	yes	0.935
13	Unk	1,2,3,4,7,8-HxCDD	NotFnd	*	*	*	no	no	1.039
14	Unk	1,2,3,6,7,8-HxCDD	NotFnd	*	*	*	no	yes	0.996
15	Unk	1,2,3,7,8,9-HxCDD	NotFnd	*	*	*	no	yes	1.108
16	Unk	1,2,3,4,6,7,8-HpCDD	39:33	4.132e+01	2.834e+01	1.46	no	no	1.010
17	Unk	OCDD	42:19	7.450e+01	9.584e+01	0.78	yes	no	1.090
18	IS	13C-2,3,7,8-TCDF	28:22	4.396e+04	5.592e+04	0.79	yes	no	1.447
19	IS	13C-1,2,3,7,8-PeCDF	32:31	7.338e+04	4.621e+04	1.59	yes	no	1.500
20	IS	13C-2,3,4,7,8-PeCDF	33:24	7.130e+04	4.512e+04	1.58	yes	no	1.456
21	IS	13C-1,2,3,4,7,8-HxCDF	36:02	3.163e+04	6.114e+04	0.52	yes	no	1.207
22	IS	13C-1,2,3,6,7,8-HxCDF	36:09	3.705e+04	6.976e+04	0.53	yes	no	1.263
23	IS	13C-2,3,4,6,7,8-HxCDF	36:38	3.393e+04	6.568e+04	0.52	yes	no	1.153
24	IS	13C-1,2,3,7,8,9-HxCDF	37:23	3.130e+04	6.030e+04	0.52	yes	no	1.085
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:37	2.063e+04	4.599e+04	0.45	yes	no	0.876
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:01	2.032e+04	4.464e+04	0.46	yes	no	0.883
27	IS	13C-2,3,7,8-TCDD	29:08	3.226e+04	4.111e+04	0.78	yes	no	1.027
28	IS	13C-1,2,3,7,8-PeCDD	33:41	5.404e+04	3.428e+04	1.58	yes	no	1.064
29	IS	13C-1,2,3,4,7,8-HxCDD	36:46	4.750e+04	3.542e+04	1.34	yes	no	0.908
30	IS	13C-1,2,3,6,7,8-HxCDD	36:51	4.741e+04	3.860e+04	1.23	yes	no	0.899
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:32	3.569e+04	3.372e+04	1.06	yes	no	0.910
32	IS	13C-OCDD	42:18	3.998e+04	4.428e+04	0.90	yes	no	0.633
33	RS/RT	13C-1,2,3,4-TCDD	28:35	4.126e+04	5.151e+04	0.80	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:06	5.848e+04	4.660e+04	1.26	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:09	3.746e+04				no	1.066

$$\text{OCDD} = \frac{(7.450e{+}01 + 9.584e{+}01)\ \times\ 4000\ \text{pg}\ \times\ 1}{(3.998e{+}04 + 4.428e{+}04)\ \times\ \text{g}\ \times\ /\ 100\ \times\ 1.090} =$$

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
03102016 SJ4

Run #18 Filename P503418 Samp: 1 Inj: 1 Acquired: 19-MAR-16 07:48:36
Processed: 23-MAR-16 18:35:18 LAB. ID: E1600203-005

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	*	7.68e+02	*	*	2.14e+03	*
2	1,2,3,7,8-PeCDF	*	2.60e+02	*	*	1.62e+03	*
3	2,3,4,7,8-PeCDF	*	2.60e+02	*	*	1.62e+03	*
4	1,2,3,4,7,8-HxCDF	*	1.12e+03	*	*	7.92e+02	*
5	1,2,3,6,7,8-HxCDF	*	1.12e+03	*	*	7.92e+02	*
6	2,3,4,6,7,8-HxCDF	*	1.12e+03	*	*	7.92e+02	*
7	1,2,3,7,8,9-HxCDF	*	1.12e+03	*	*	7.92e+02	*
8	1,2,3,4,6,7,8-HpCDF	4.22e+03	7.52e+02	5.6e+00	5.67e+03	6.16e+02	9.2e+00
9	1,2,3,4,7,8,9-HpCDF	*	7.52e+02	*	*	6.16e+02	*
10	OCDF	*	1.19e+03	*	*	2.53e+03	*
11	2,3,7,8-TCDD	*	1.40e+03	*	*	1.41e+03	*
12	1,2,3,7,8-PeCDD	*	1.70e+03	*	*	1.80e+02	*
13	1,2,3,4,7,8-HxCDD	*	7.08e+02	*	*	9.24e+02	*
14	1,2,3,6,7,8-HxCDD	*	7.08e+02	*	*	9.24e+02	*
15	1,2,3,7,8,9-HxCDD	*	7.08e+02	*	*	9.24e+02	*
16	1,2,3,4,6,7,8-HpCDD	8.83e+03	1.18e+03	7.5e+00	7.61e+03	3.28e+02	2.3e+01
17	OCDD	1.29e+04	1.45e+03	8.9e+00	1.79e+04	2.38e+03	7.5e+00
18	13C-2,3,7,8-TCDF	8.37e+06	1.70e+03	4.9e+03	1.06e+07	2.50e+03	4.2e+03
19	13C-1,2,3,7,8-PeCDF	1.39e+07	5.72e+02	2.4e+04	8.60e+06	9.60e+02	9.0e+03
20	13C-2,3,4,7,8-PeCDF	1.42e+07	5.72e+02	2.5e+04	8.91e+06	9.60e+02	9.3e+03
21	13C-1,2,3,4,7,8-HxCDF	6.95e+06	1.43e+03	4.9e+03	1.36e+07	2.54e+03	5.4e+03
22	13C-1,2,3,6,7,8-HxCDF	8.05e+06	1.43e+03	5.6e+03	1.50e+07	2.54e+03	5.9e+03
23	13C-2,3,4,6,7,8-HxCDF	7.58e+06	1.43e+03	5.3e+03	1.48e+07	2.54e+03	5.8e+03
24	13C-1,2,3,7,8,9-HxCDF	6.63e+06	1.43e+03	4.6e+03	1.29e+07	2.54e+03	5.1e+03
25	13C-1,2,3,4,6,7,8-HpCDF	4.54e+06	2.18e+03	2.1e+03	1.02e+07	1.08e+03	9.4e+03
26	13C-1,2,3,4,7,8,9-HpCDF	4.13e+06	2.18e+03	1.9e+03	9.12e+06	1.08e+03	8.4e+03
27	13C-2,3,7,8-TCDD	6.26e+06	5.54e+03	1.1e+03	7.95e+06	2.27e+03	3.5e+03
28	13C-1,2,3,7,8-PeCDD	1.07e+07	1.55e+03	6.9e+03	6.84e+06	1.22e+03	5.6e+03
29	13C-1,2,3,4,7,8-HxCDD	1.07e+07	2.19e+03	4.9e+03	8.33e+06	1.42e+03	5.9e+03
30	13C-1,2,3,6,7,8-HxCDD	1.05e+07	2.19e+03	4.8e+03	8.30e+06	1.42e+03	5.9e+03
31	13C-1,2,3,4,6,7,8-HpCDD	7.32e+06	1.81e+03	4.0e+03	6.85e+06	5.28e+02	1.3e+04
32	13C-OCDD	7.21e+06	1.19e+03	6.1e+03	8.05e+06	1.68e+03	4.8e+03
33	13C-1,2,3,4-TCDD	7.83e+06	5.54e+03	1.4e+03	9.65e+06	2.27e+03	4.3e+03
34	13C-1,2,3,7,8,9-HxCDD	1.26e+07	2.19e+03	5.8e+03	9.83e+06	1.42e+03	6.9e+03
35	37Cl-2,3,7,8-TCDD	7.47e+06	1.85e+03	4.0e+03			

---Sample Calculation---

$$D/L\ TCDD = \frac{2.5 \times (1.396e+03 + 1.408e+03) \times 2000}{(6.256e+06 + 7.954e+06) \times (26\ ml \times 100) \times 0.997} = 38.0\ pg/L$$

ALS ENVIRONMENTAL
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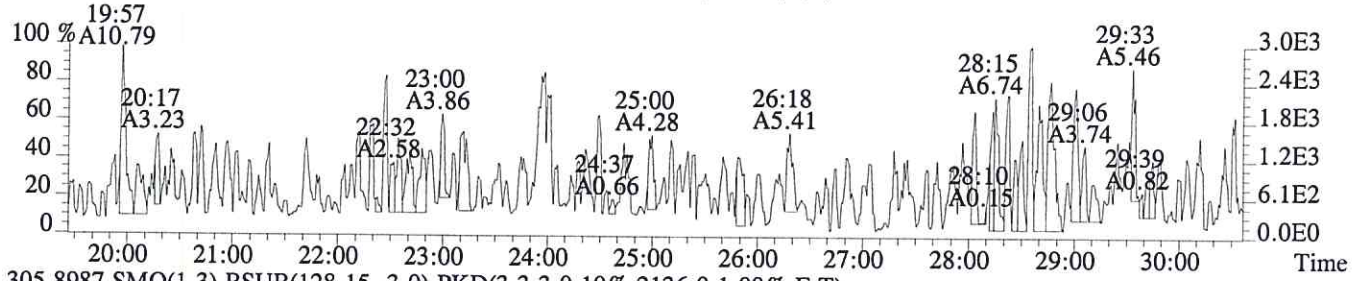
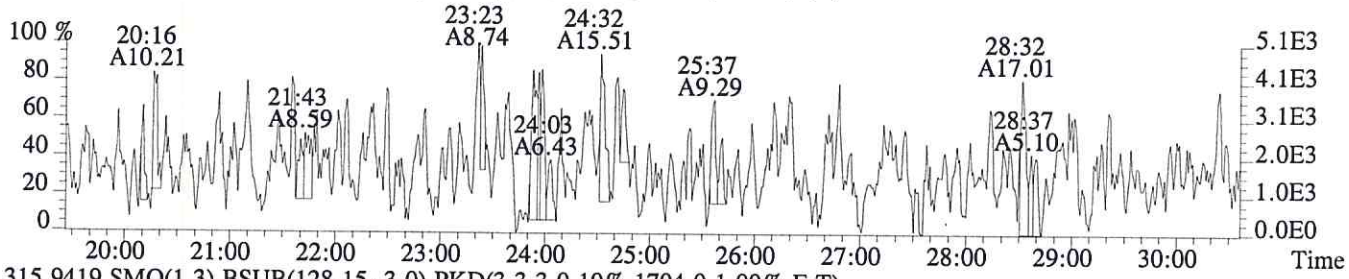
Office:(281)530-5656. Fax:(281)530-5887

File:P503418 #1-793 Acq:19-MAR-2016 07:48:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-005

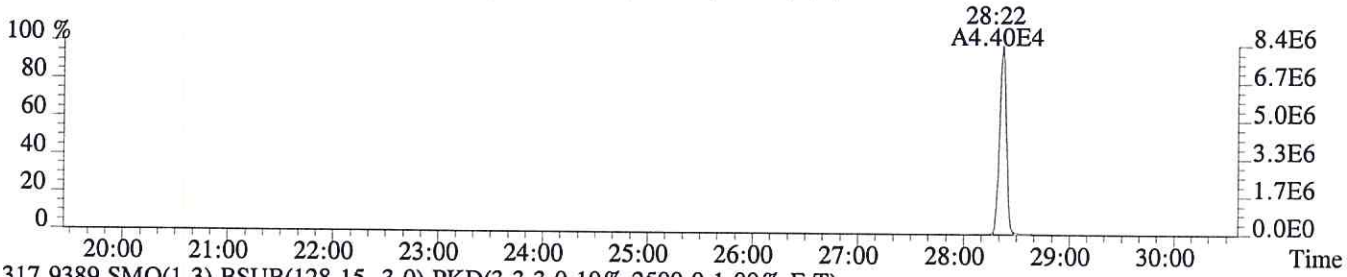
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,768.0,1.00%,F,T)



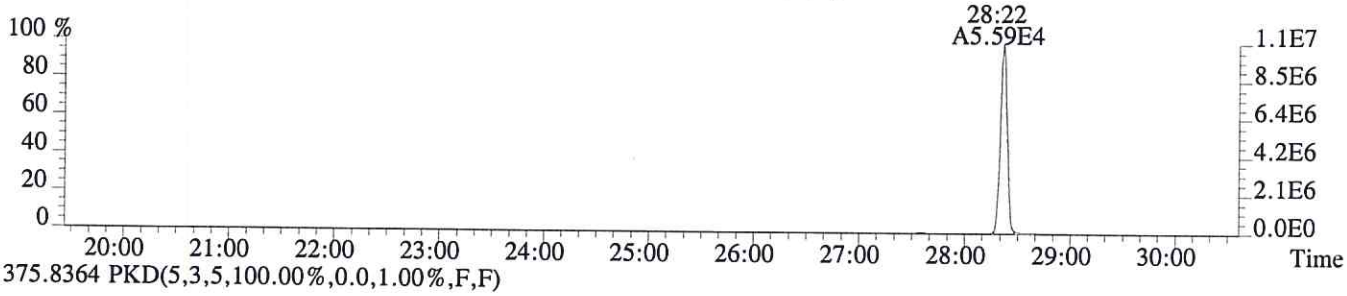
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2136.0,1.00%,F,T)



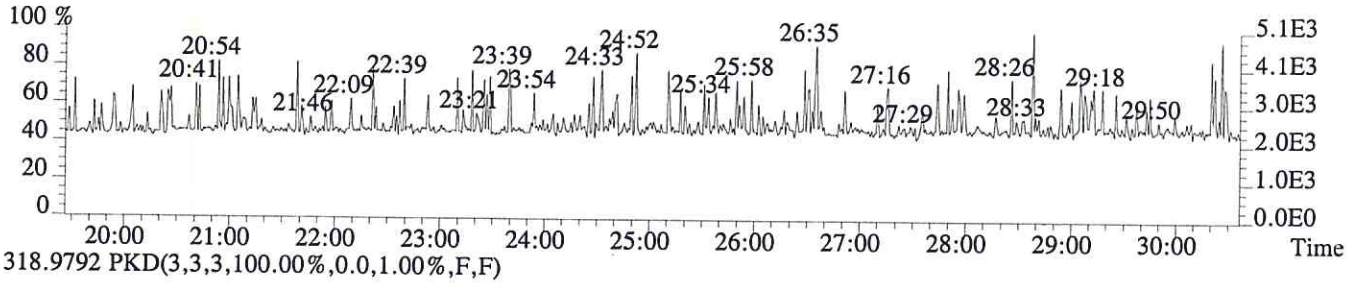
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1704.0,1.00%,F,T)



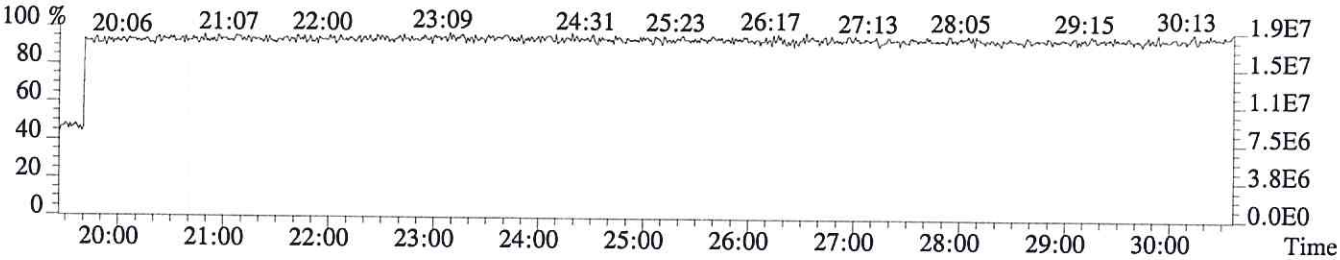
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2500.0,1.00%,F,T)



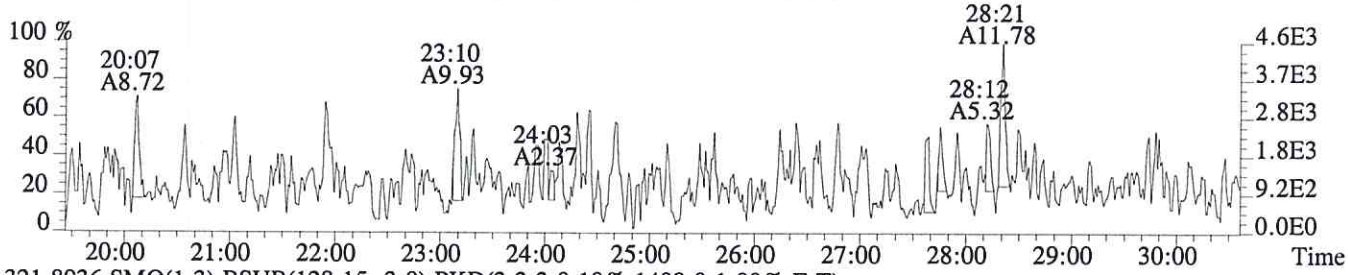
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



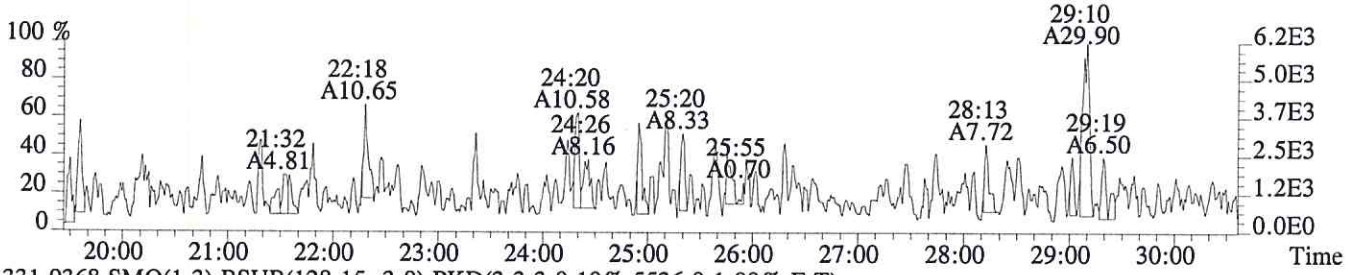
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



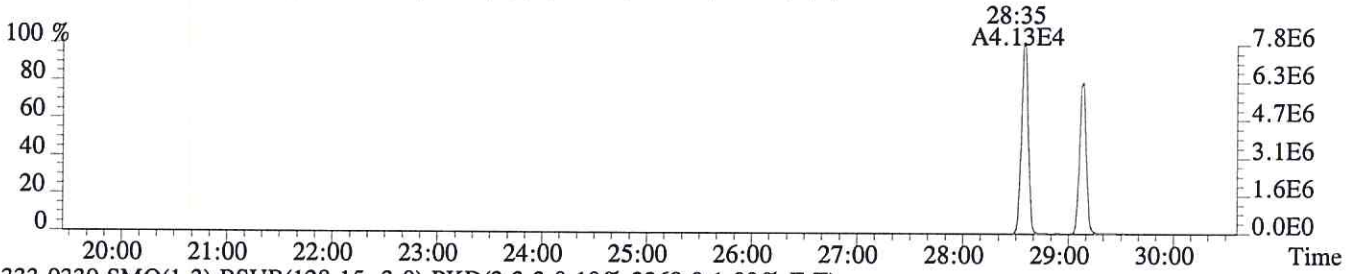
File:P503418 #1-793 Acq:19-MAR-2016 07:48:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-005
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1396.0,1.00%,F,T)



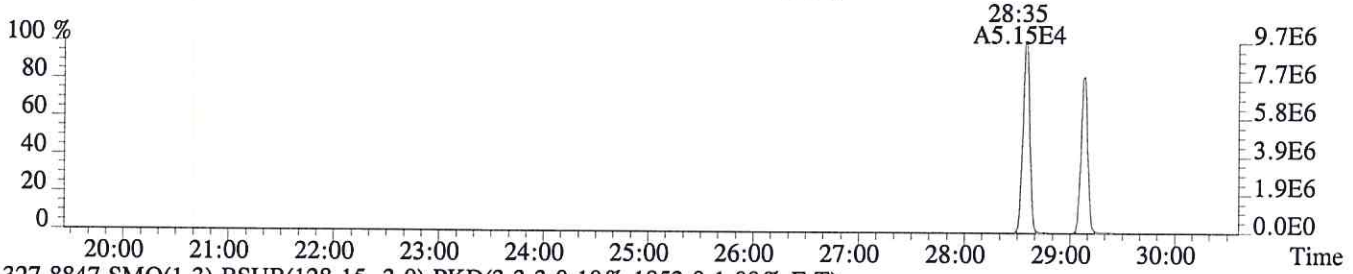
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1408.0,1.00%,F,T)



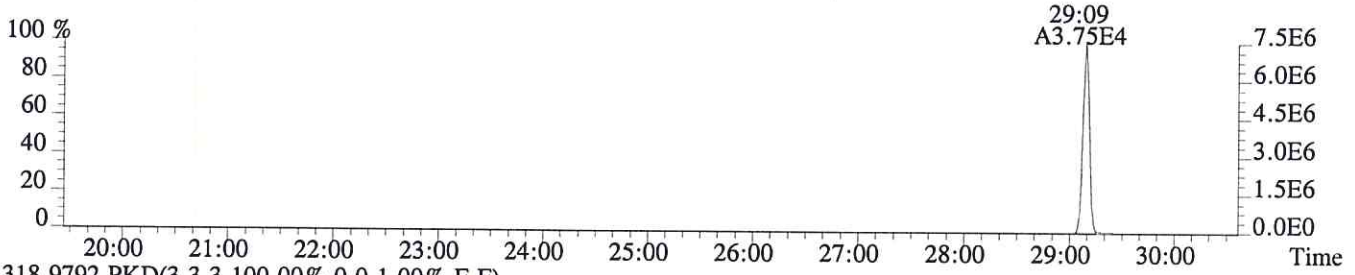
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5536.0,1.00%,F,T)



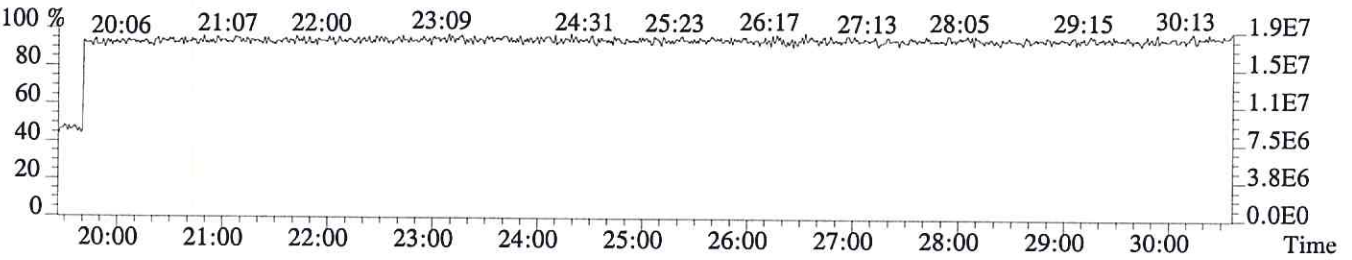
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2268.0,1.00%,F,T)



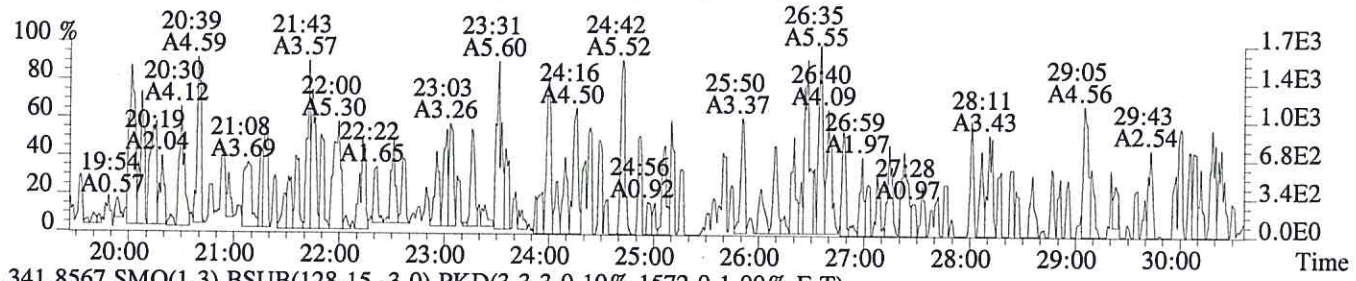
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1852.0,1.00%,F,T)



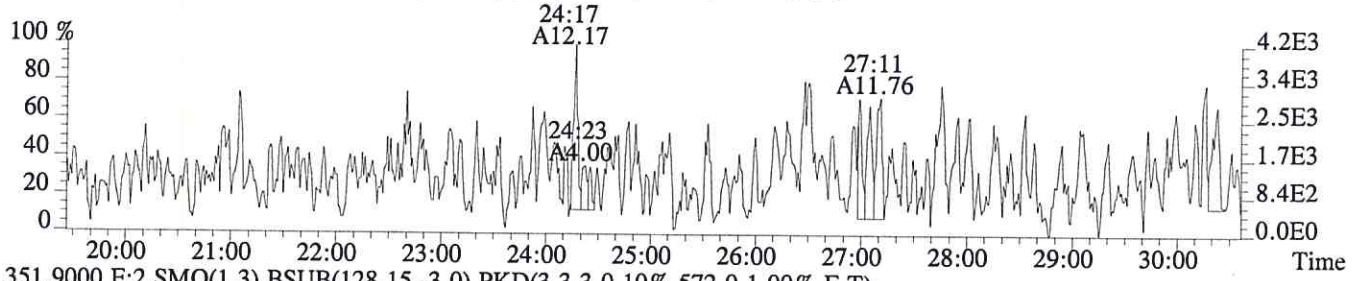
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



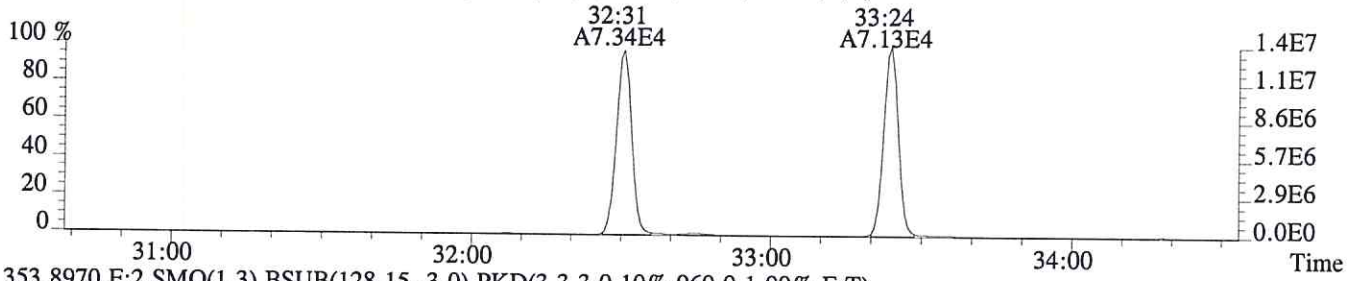
File:P503418 #1-793 Acq:19-MAR-2016 07:48:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-005
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,164.0,1.00%,F,T)



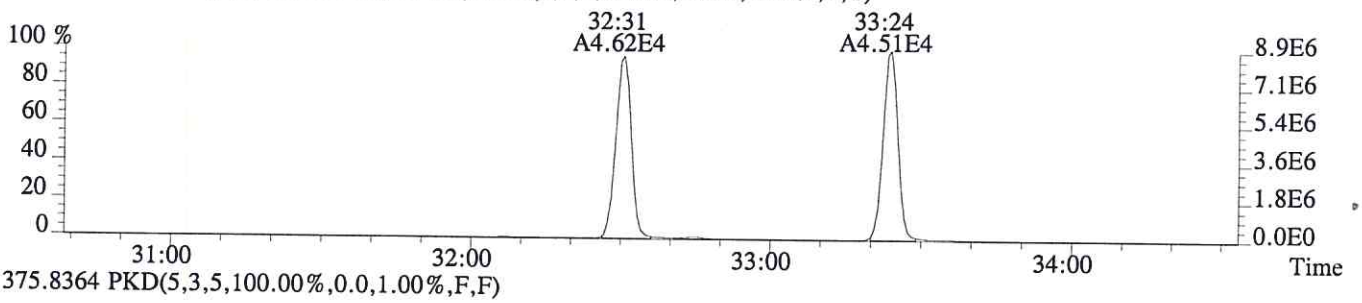
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1572.0,1.00%,F,T)



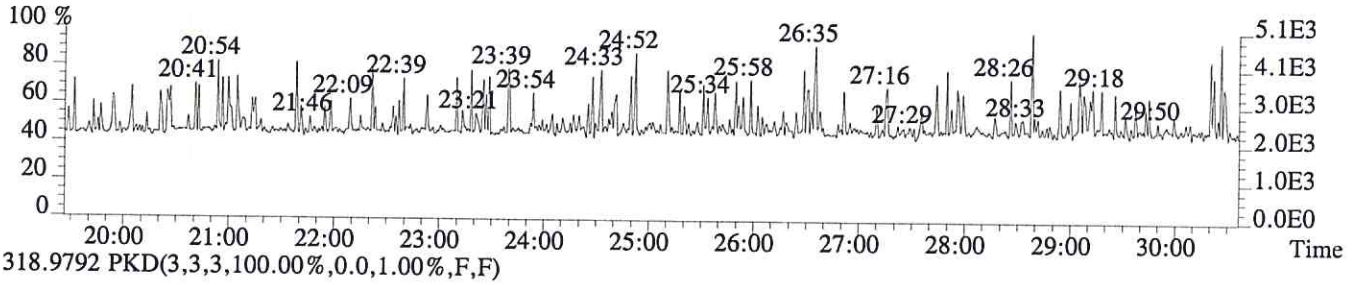
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,572.0,1.00%,F,T)



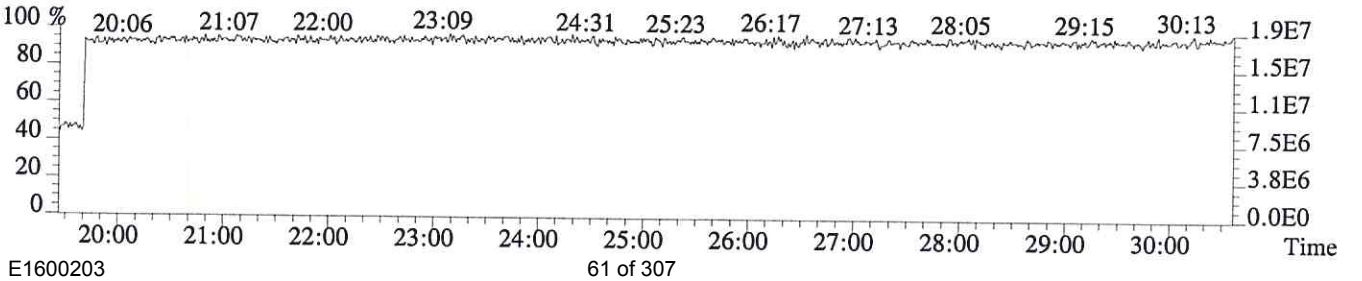
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,960.0,1.00%,F,T)



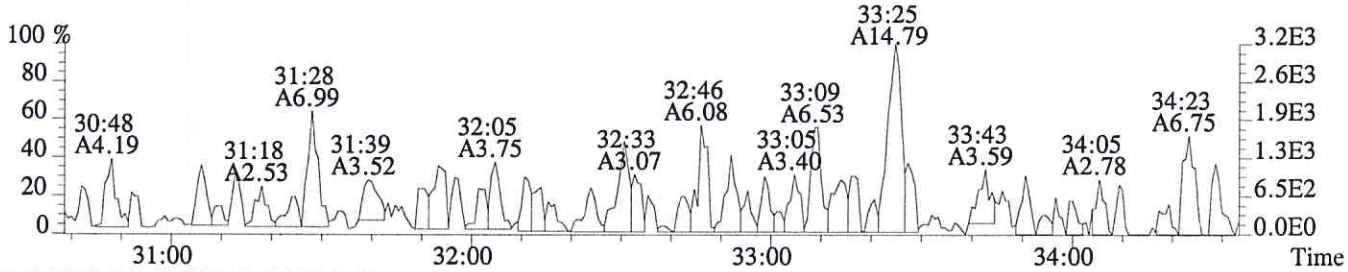
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



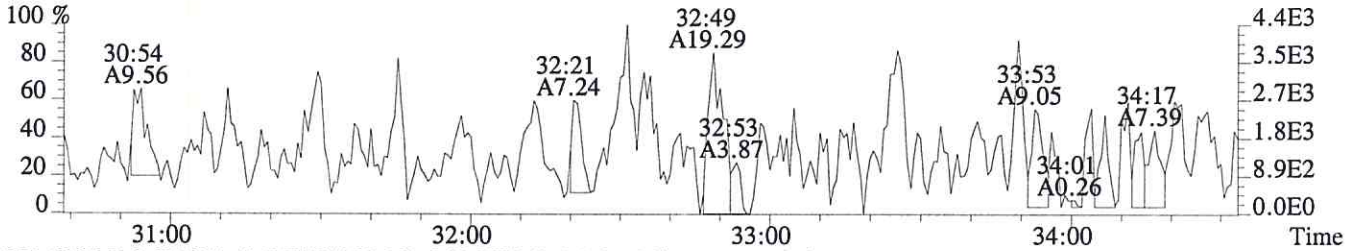
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



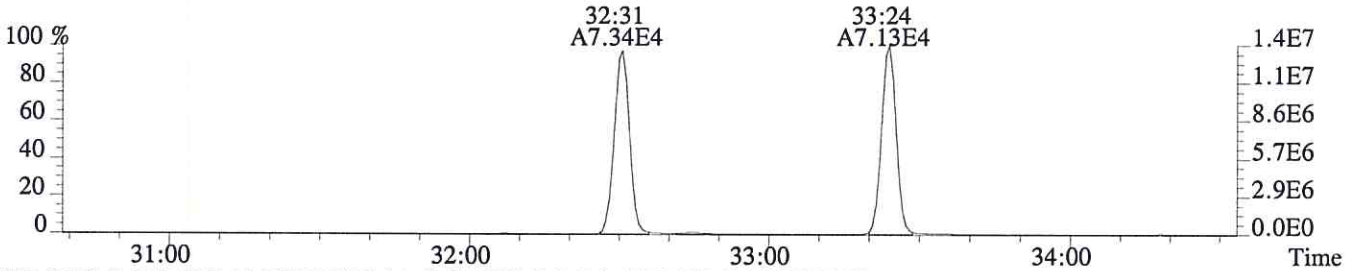
File:P503418 #1-353 Acq:19-MAR-2016 07:48:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-005
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,260.0,1.00%,F,T)



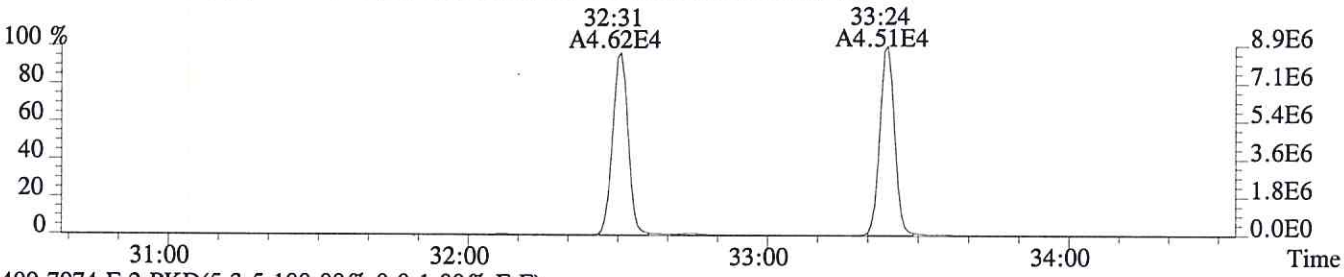
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1624.0,1.00%,F,T)



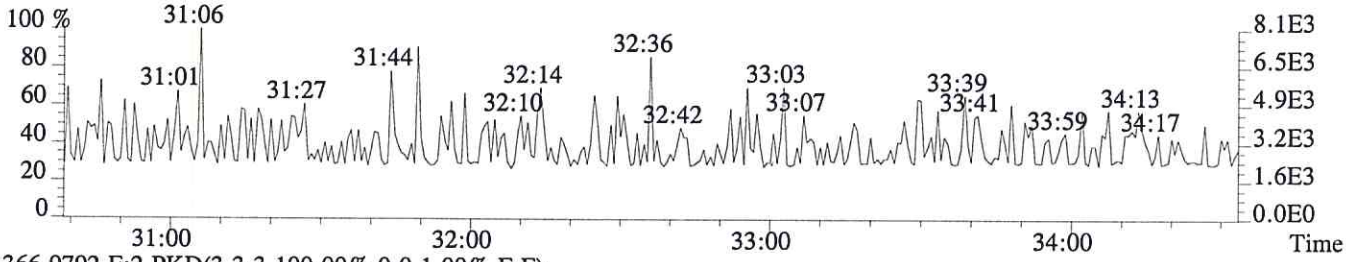
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,572.0,1.00%,F,T)



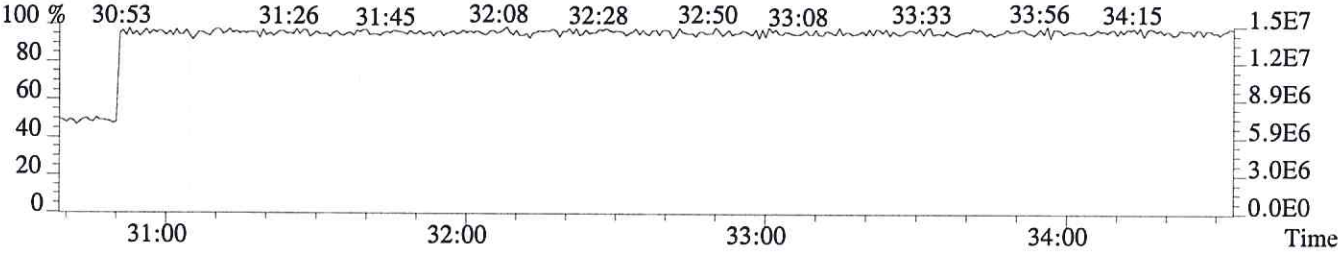
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,960.0,1.00%,F,T)



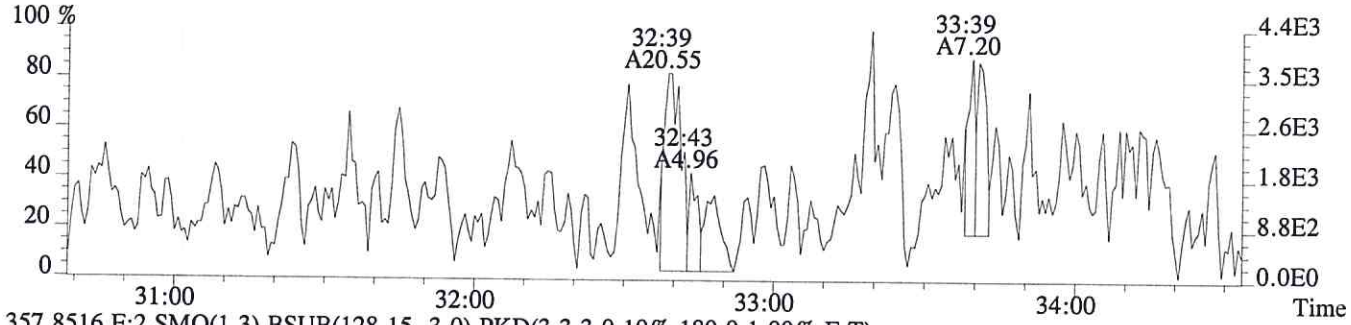
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



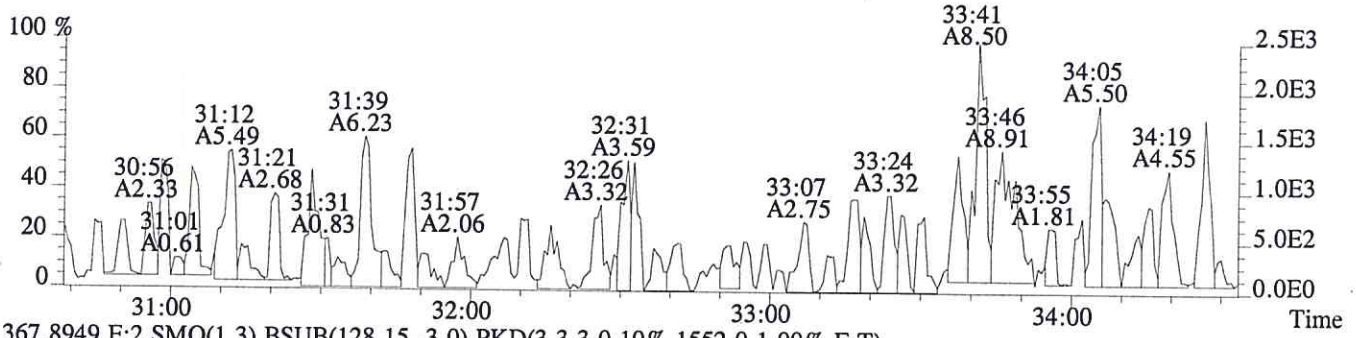
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



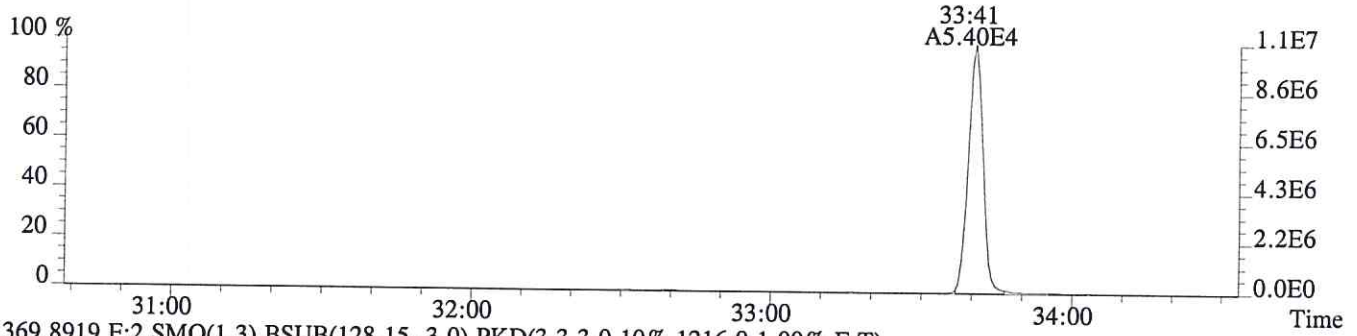
File:P503418 #1-353 Acq:19-MAR-2016 07:48:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-005
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1704.0,1.00%,F,T)



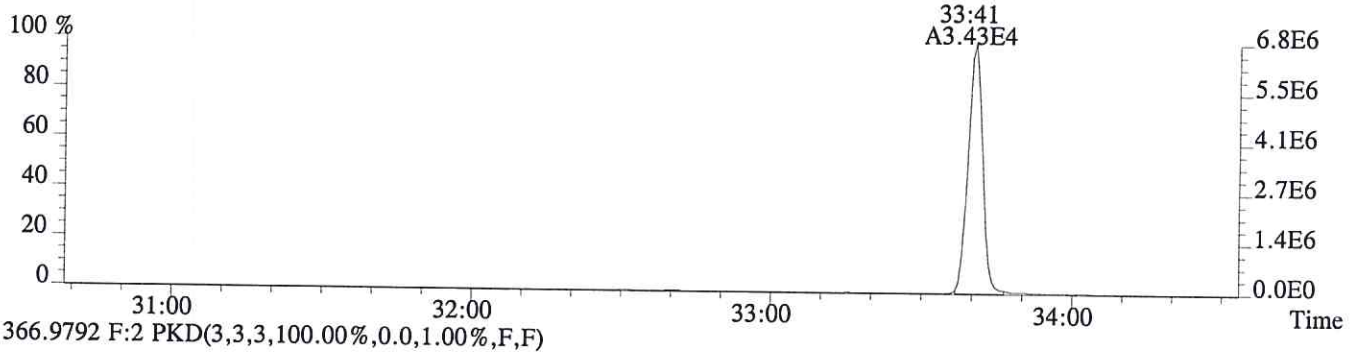
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,180.0,1.00%,F,T)



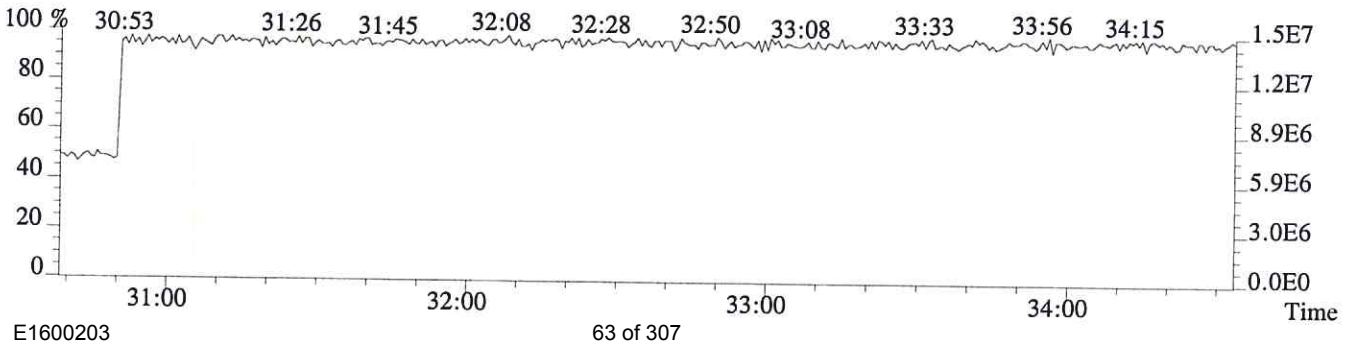
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1552.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1216.0,1.00%,F,T)

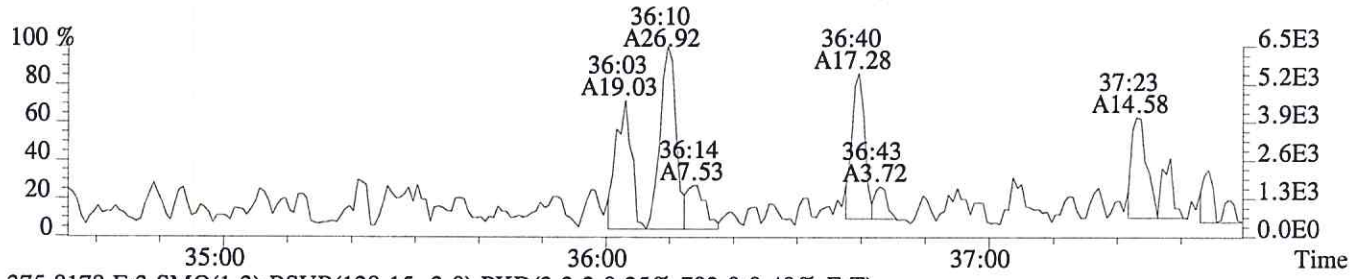


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

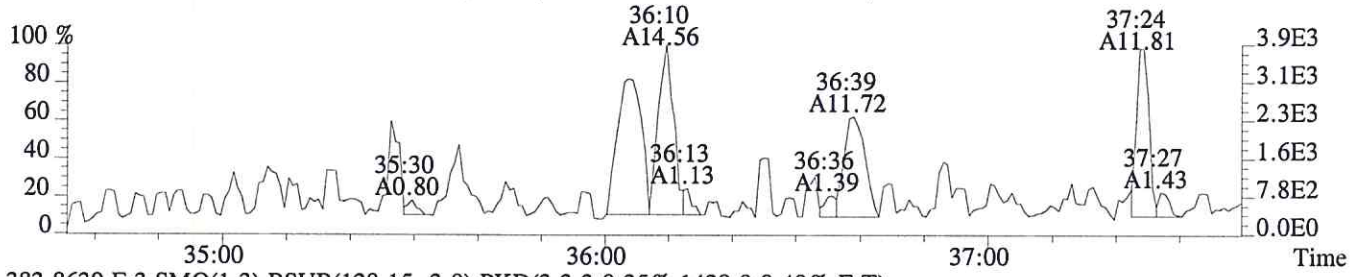


File:P503418 #1-277 Acq:19-MAR-2016 07:48:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-005

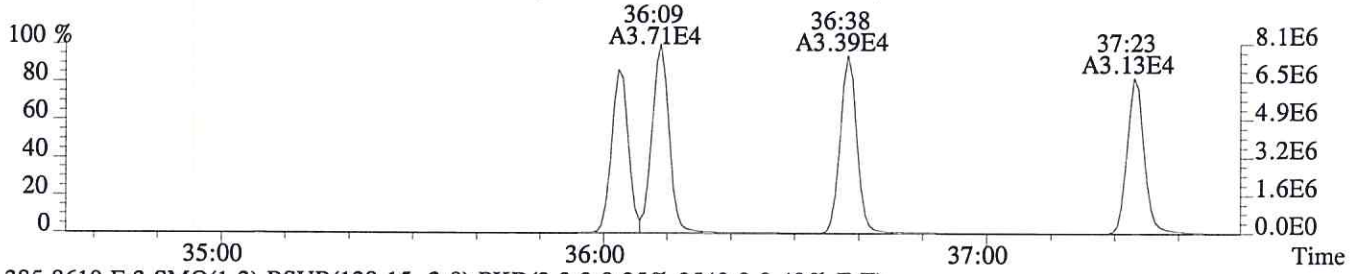
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1124.0,0.40%,F,T)



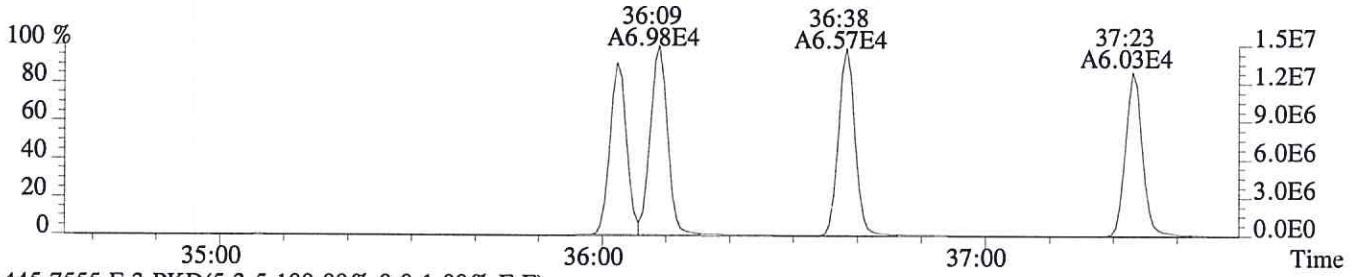
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,792.0,0.40%,F,T)



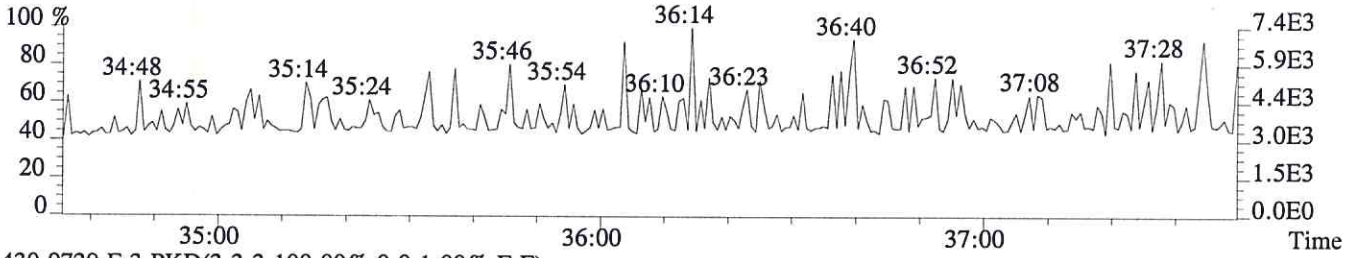
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1428.0,0.40%,F,T)



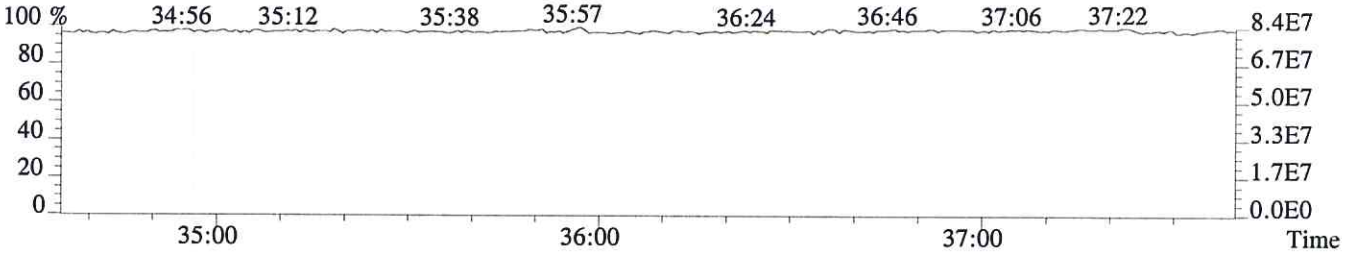
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2540.0,0.40%,F,T)



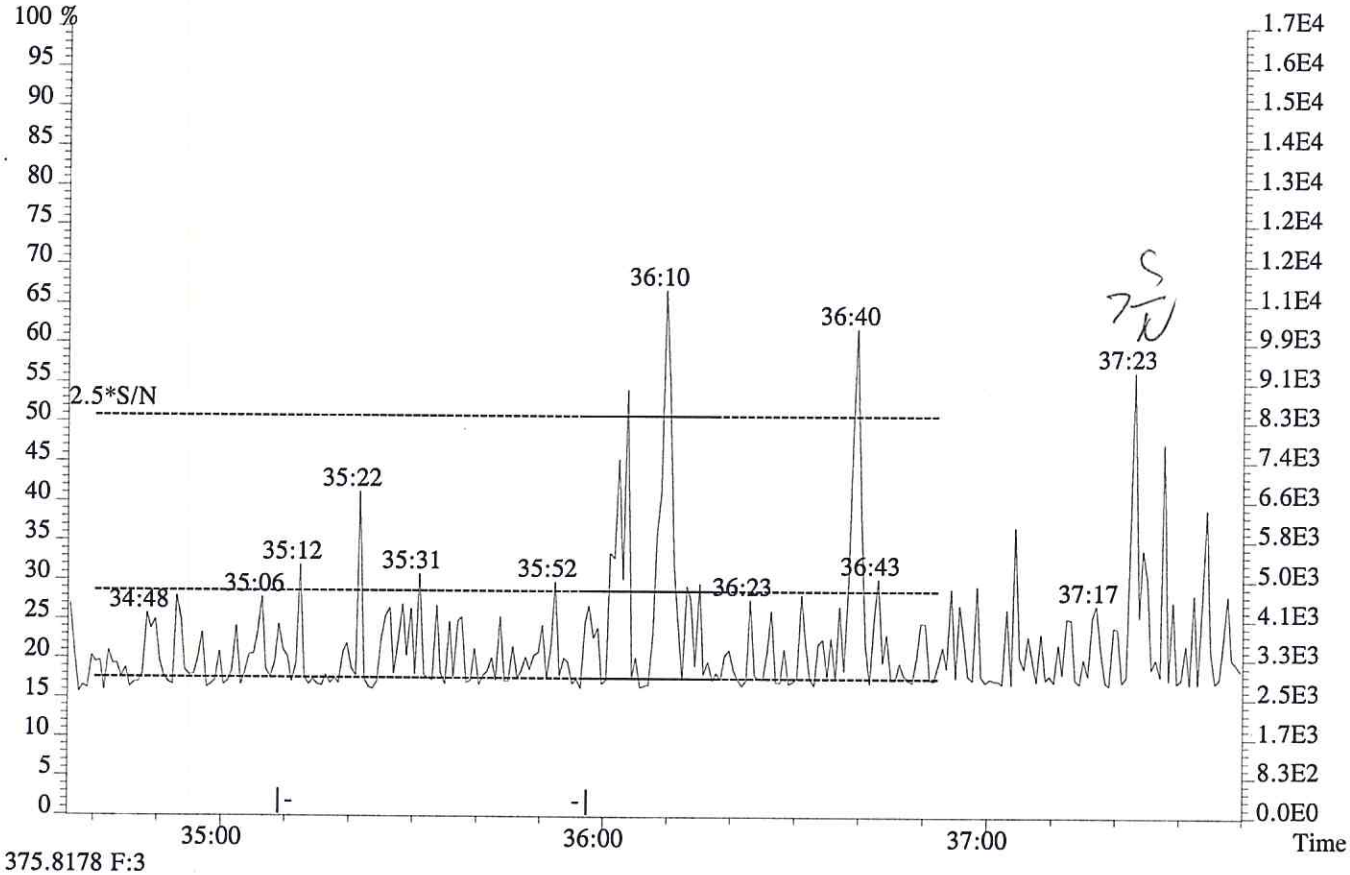
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



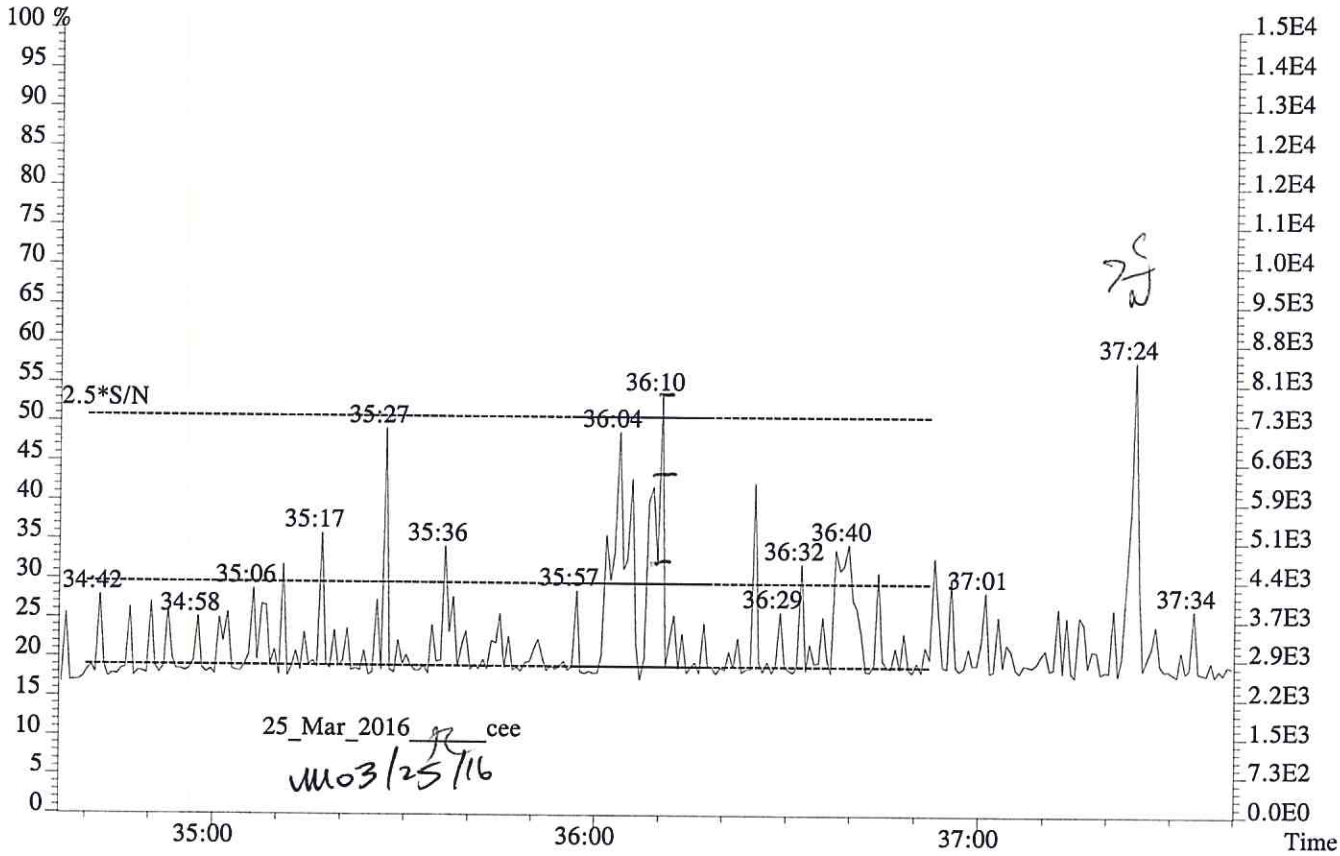
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



File:P503418 #1-277 Acq:19-MAR-2016 07:48:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-005
373.8208 F:3

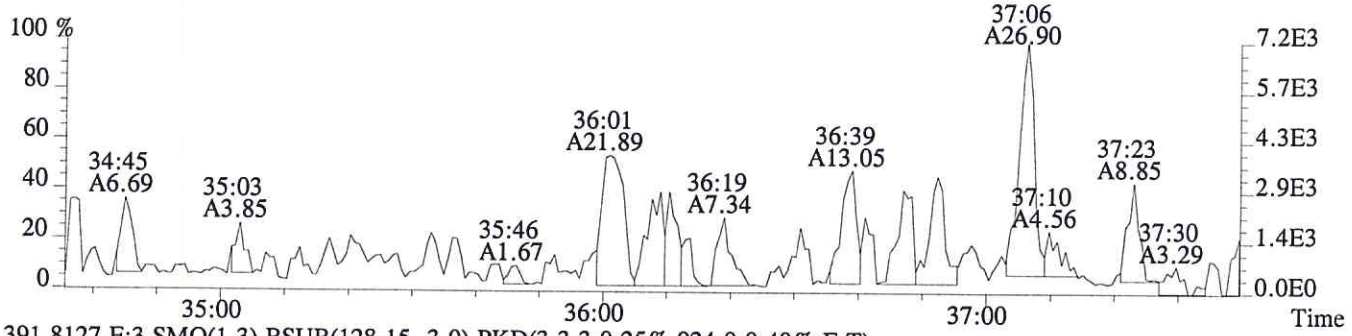


375.8178 F:3

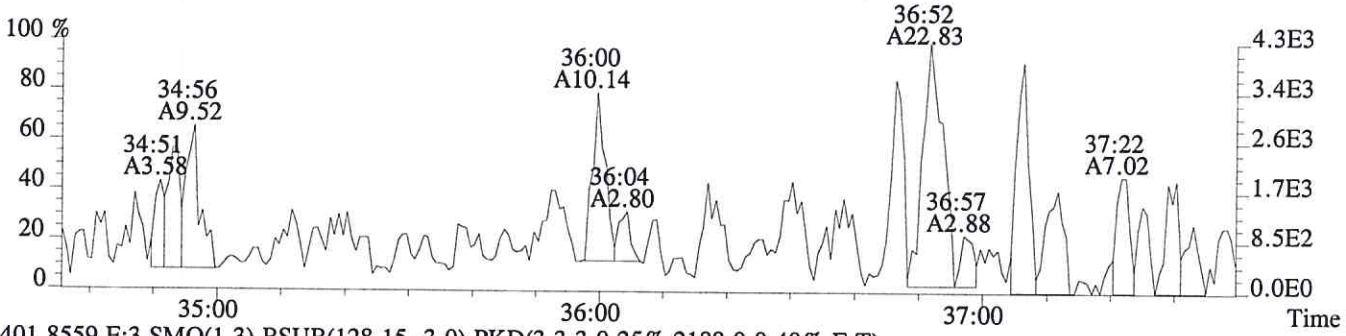


File:P503418 #1-277 Acq:19-MAR-2016 07:48:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-005

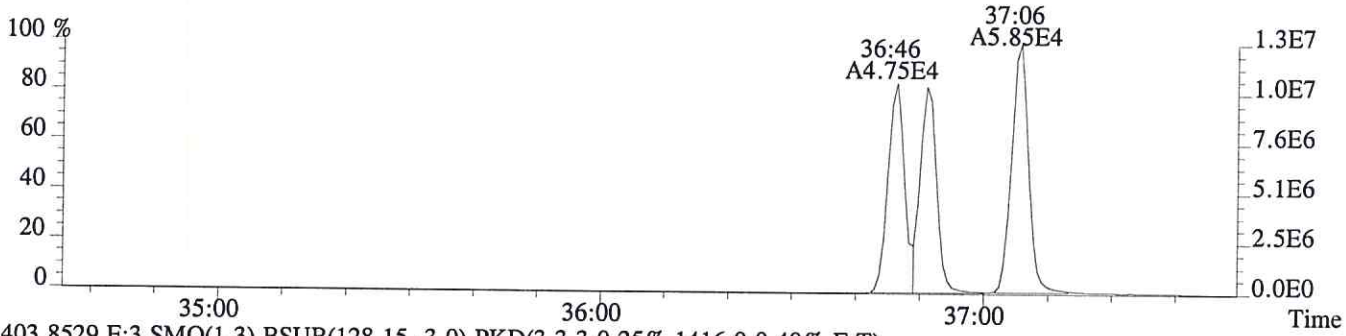
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,708.0,0.40%,F,T)



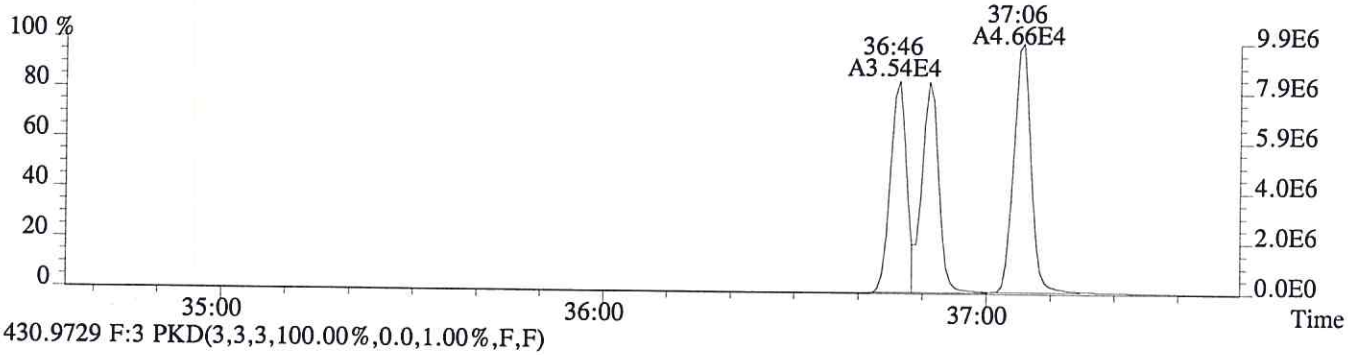
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,924.0,0.40%,F,T)



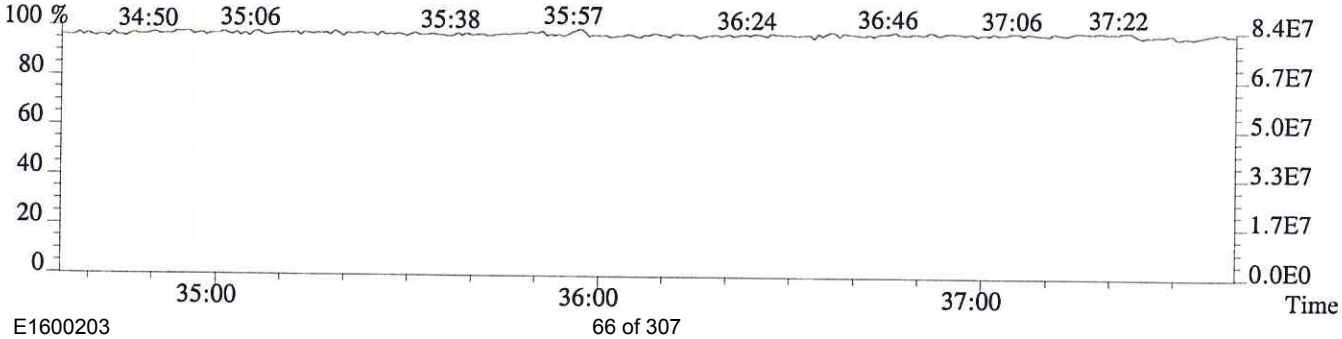
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2188.0,0.40%,F,T)



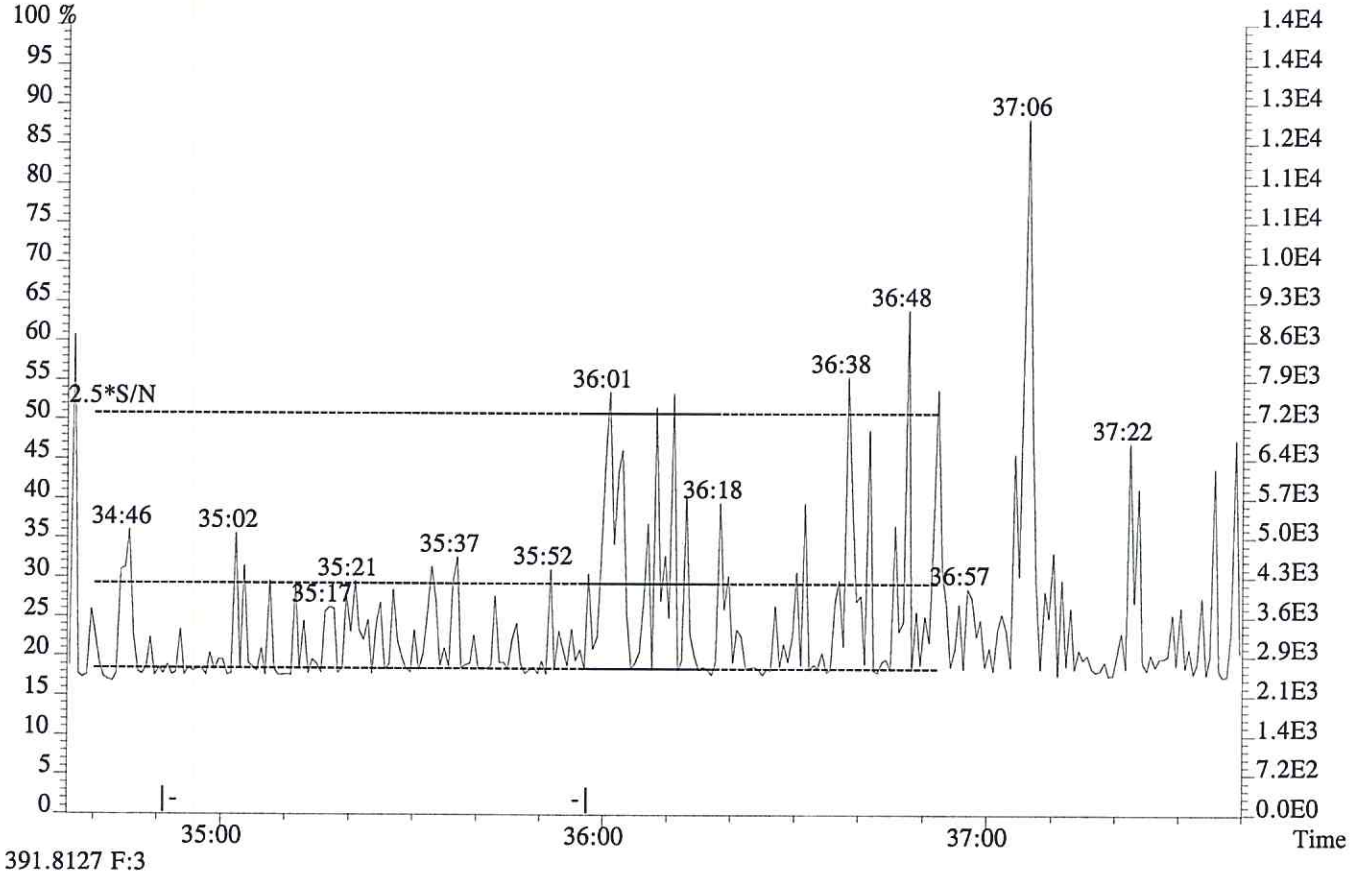
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1416.0,0.40%,F,T)



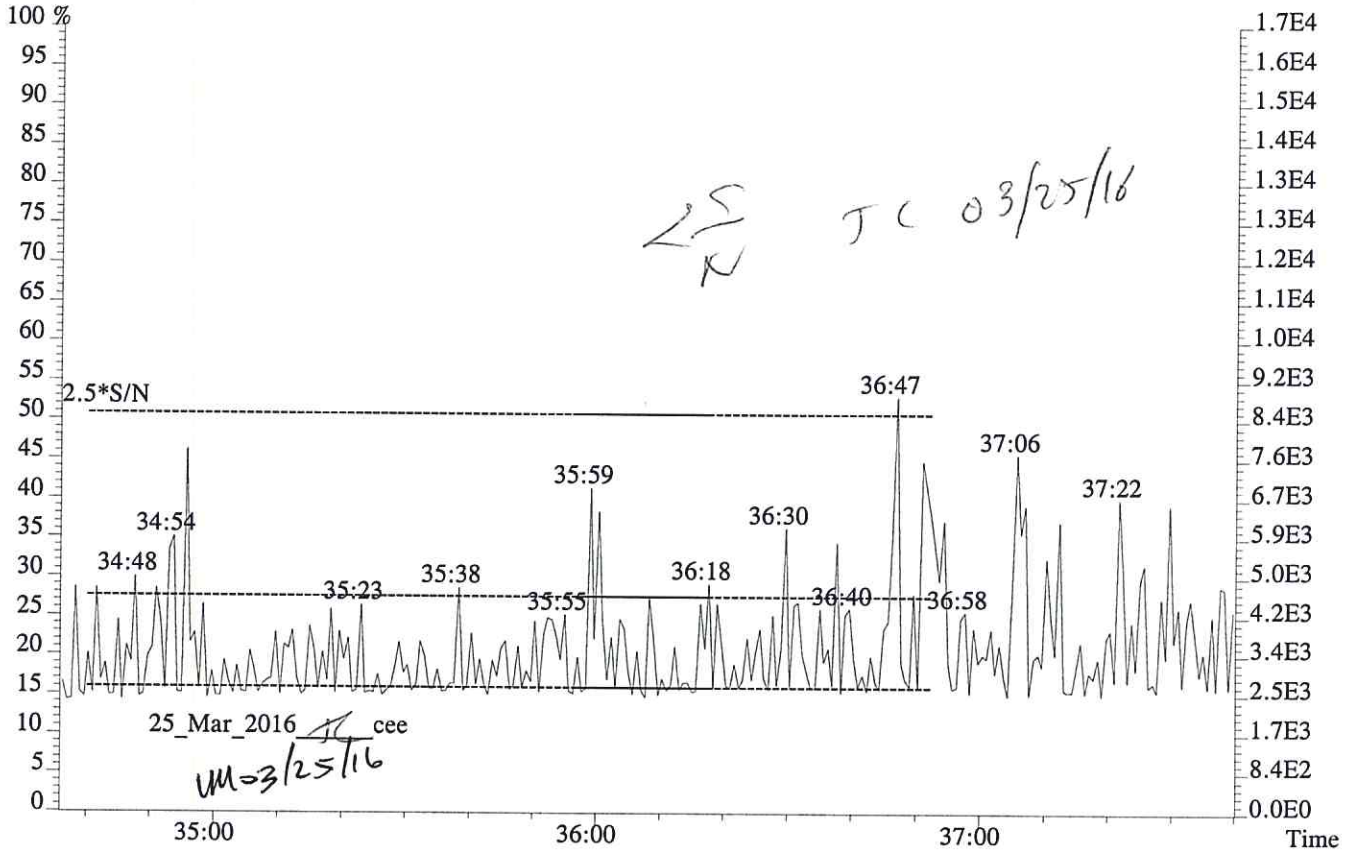
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



File:P503418 #1-277 Acq:19-MAR-2016 07:48:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-005
389.8157 F:3



391.8127 F:3

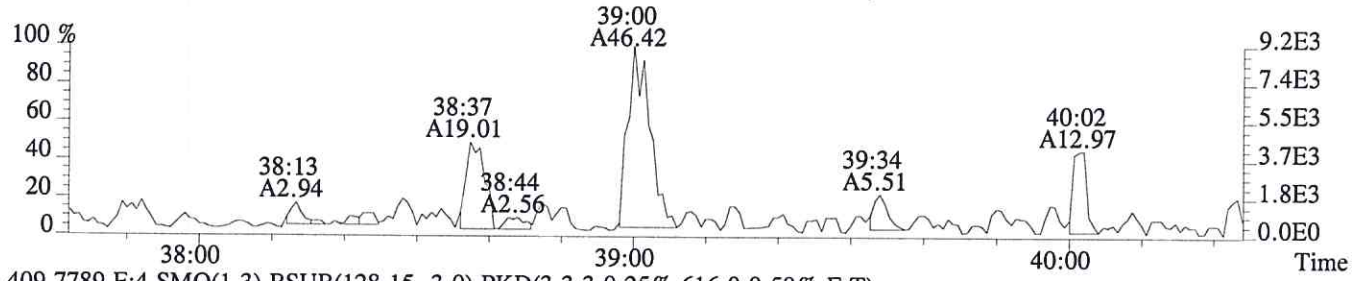


25 JC 03/25/16

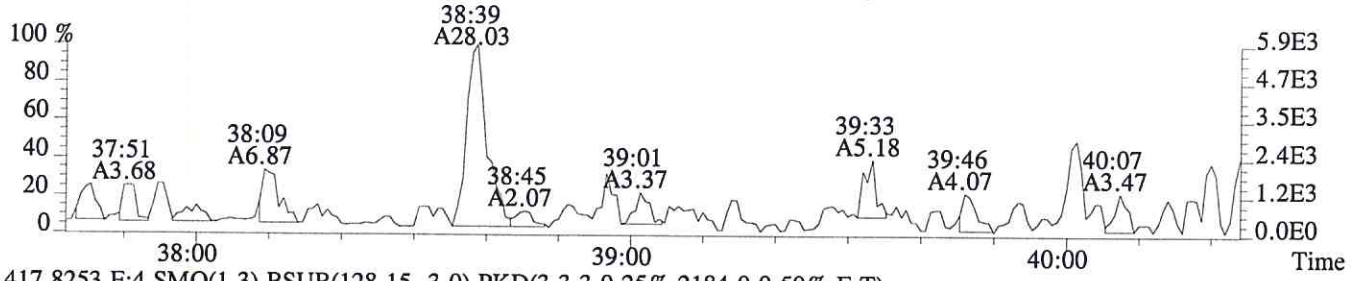
UM 3/25/16

File:P503418 #1-244 Acq:19-MAR-2016 07:48:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-005

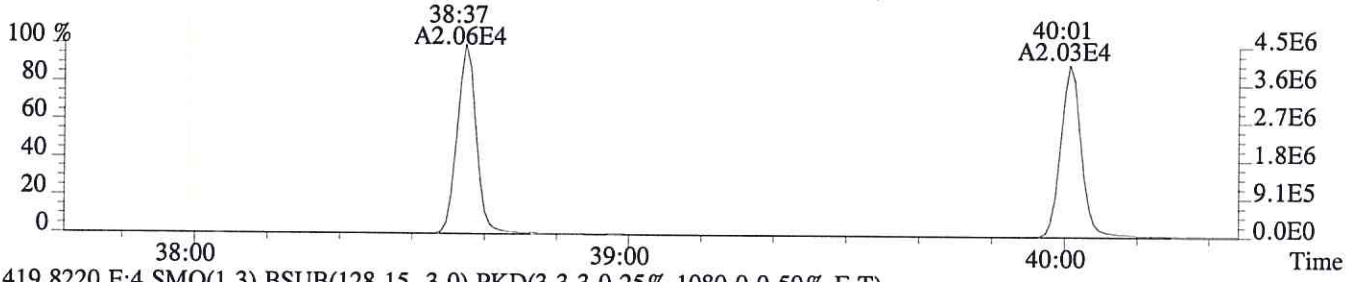
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,752.0,0.50%,F,T)



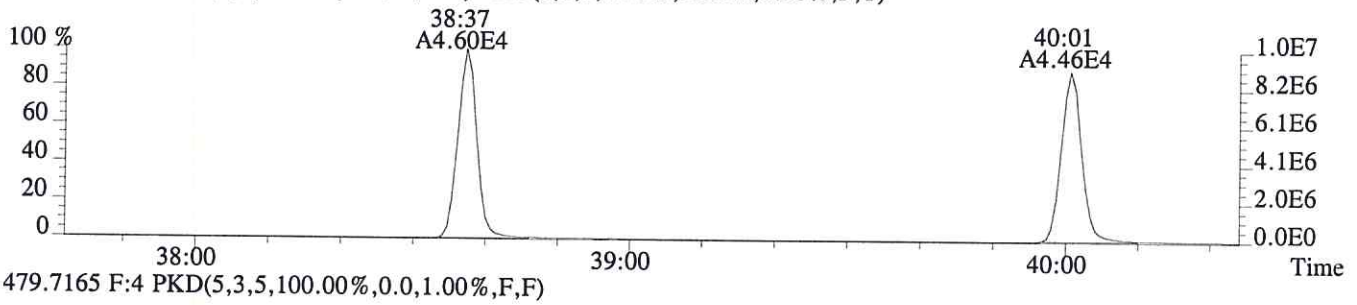
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,616.0,0.50%,F,T)



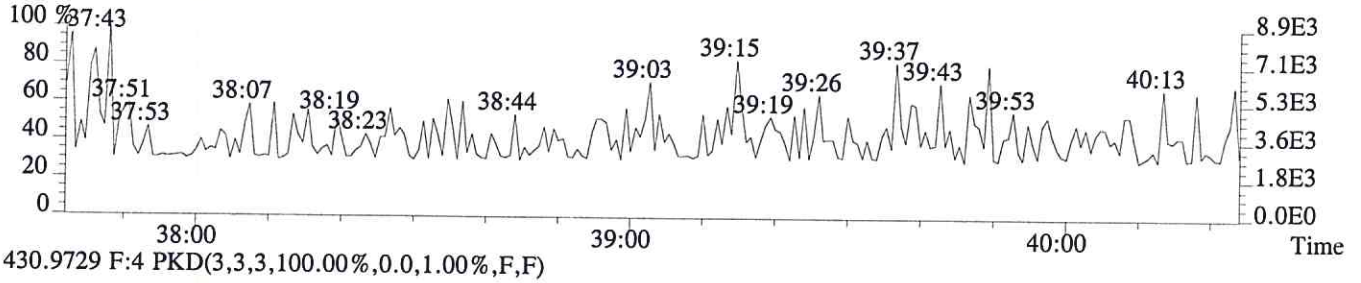
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2184.0,0.50%,F,T)



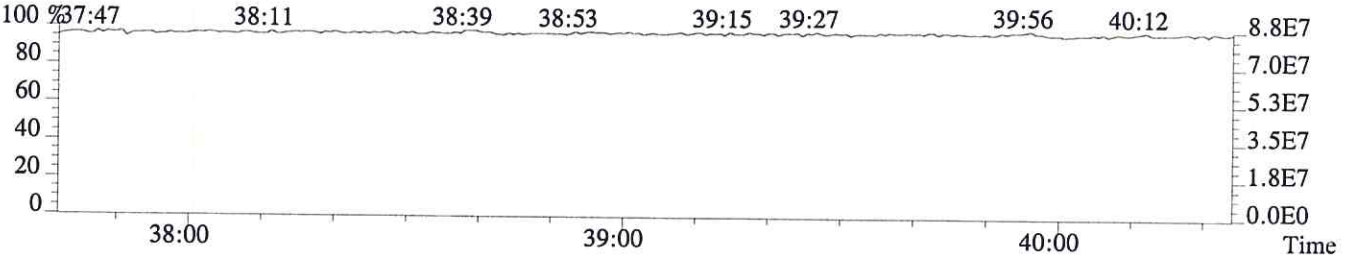
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1080.0,0.50%,F,T)



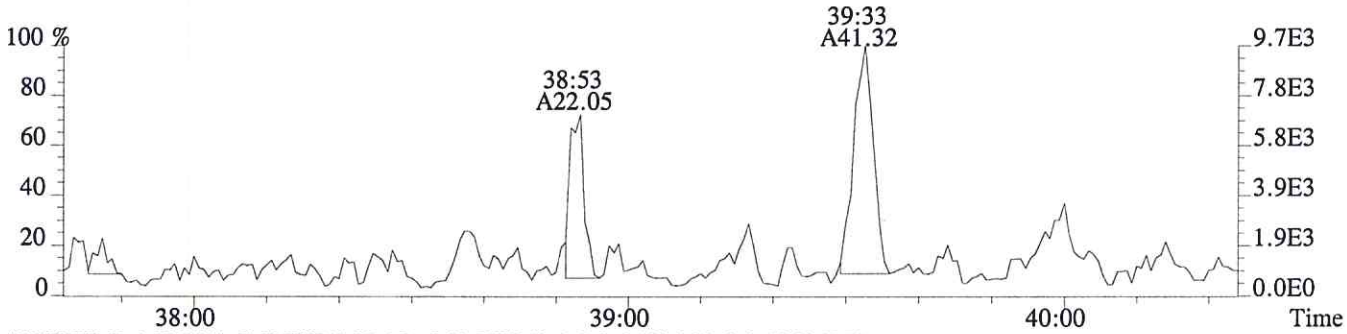
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



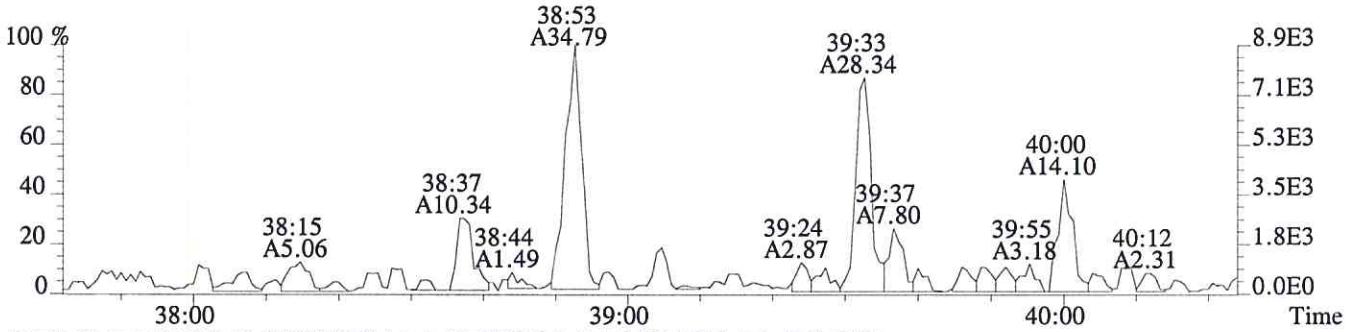
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



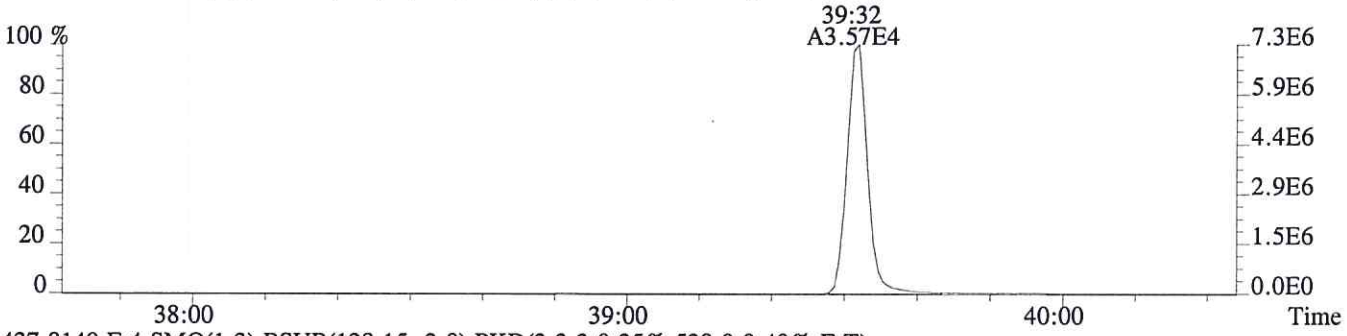
File:P503418 #1-244 Acq:19-MAR-2016 07:48:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-005
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1180.0,0.40%,F,T)



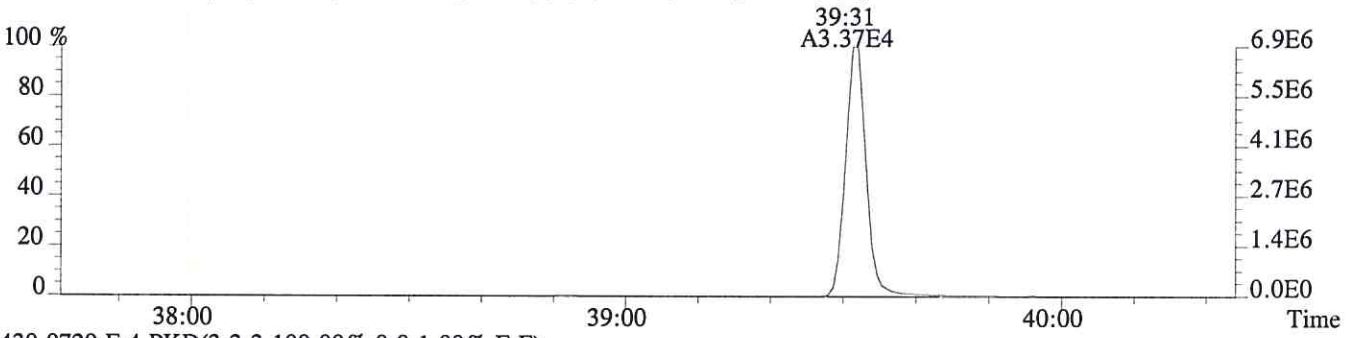
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,328.0,0.40%,F,T)



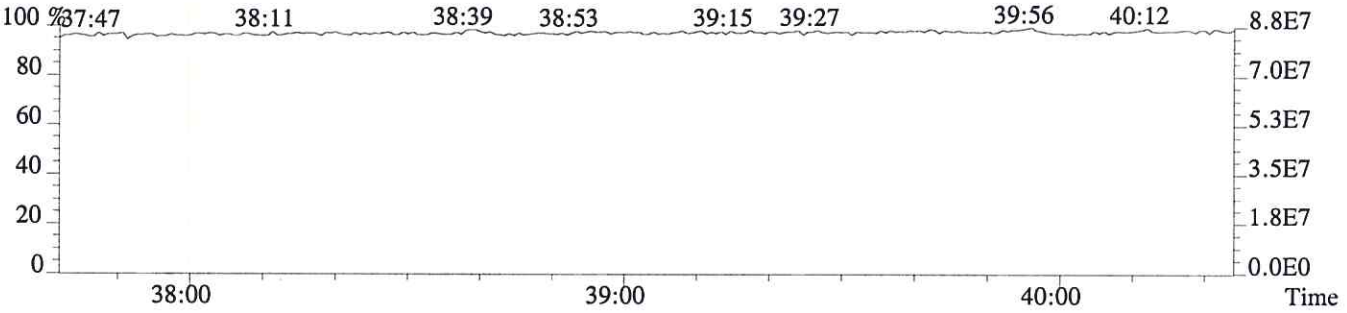
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1808.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,528.0,0.40%,F,T)

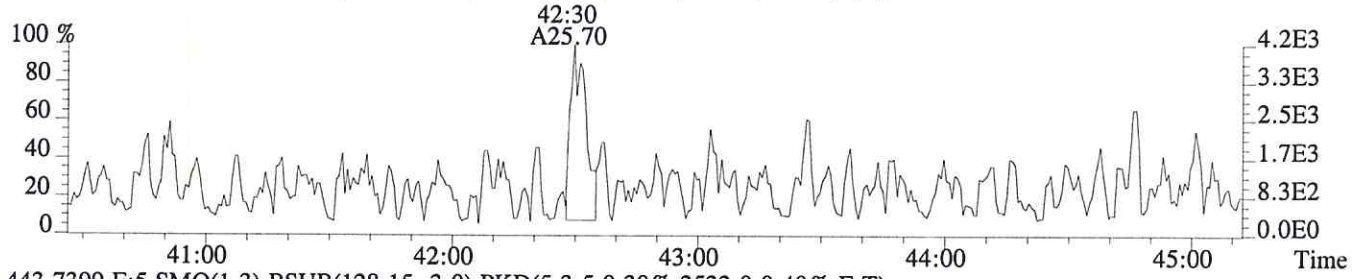


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

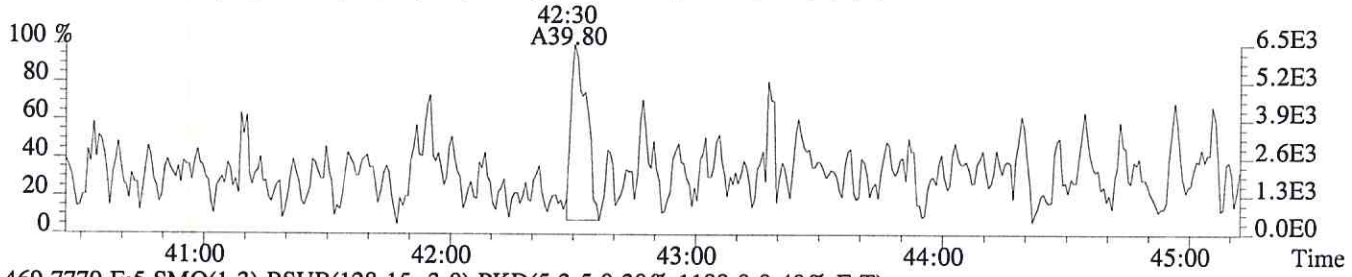


File:P503418 #1-430 Acq:19-MAR-2016 07:48:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-005

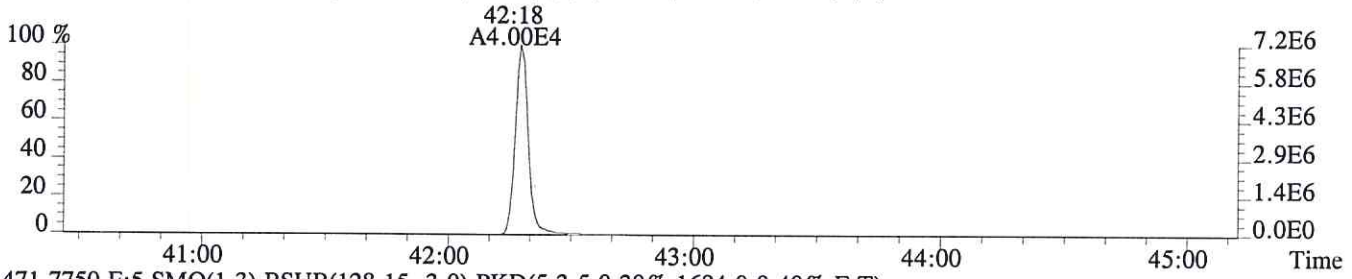
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1192.0,0.40%,F,T)



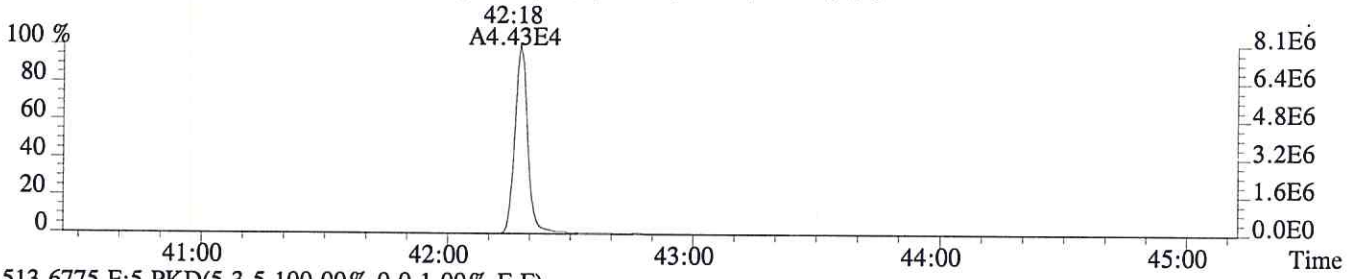
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2532.0,0.40%,F,T)



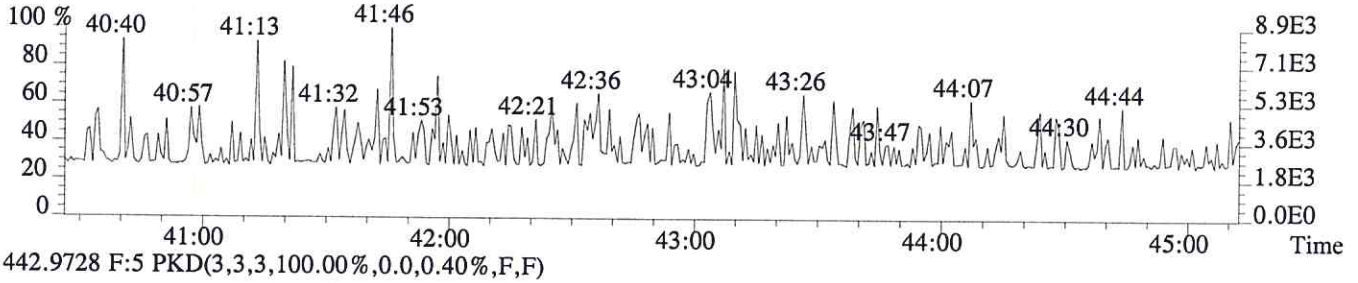
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1188.0,0.40%,F,T)



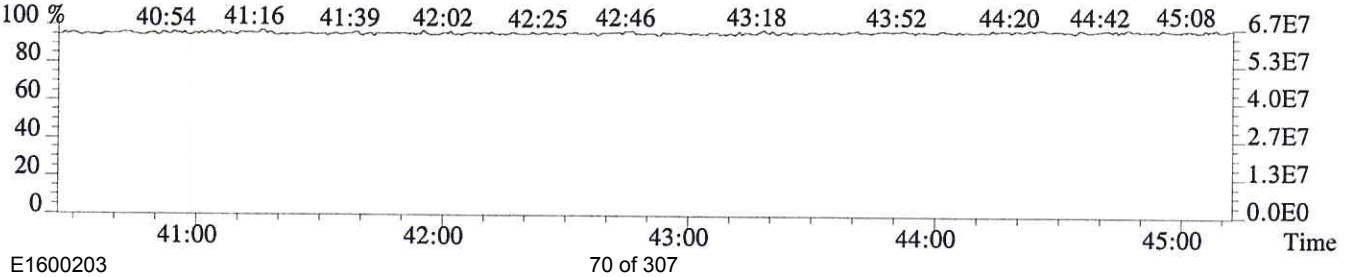
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1684.0,0.40%,F,T)



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

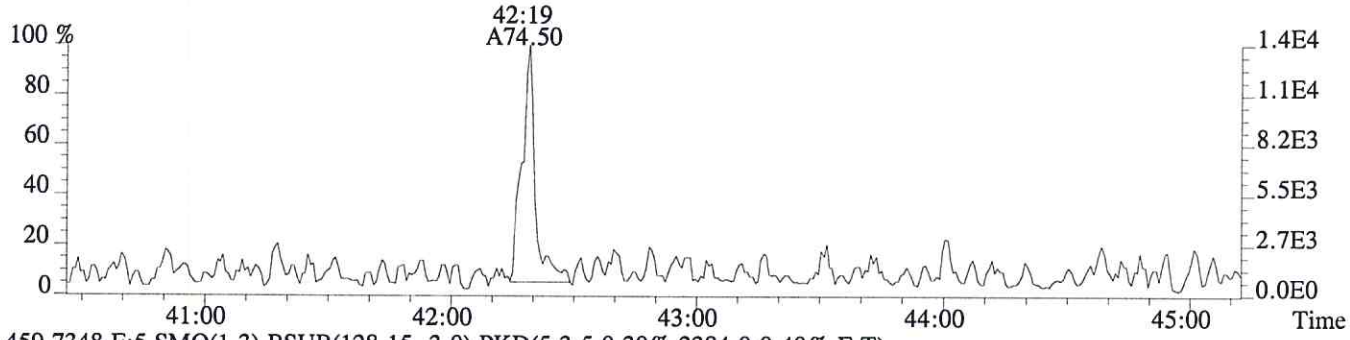


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

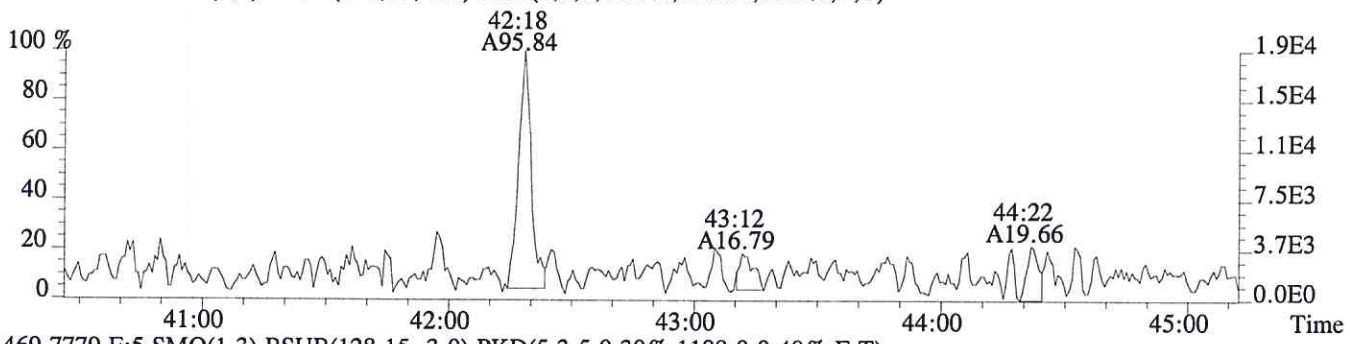


File:P503418 #1-430 Acq:19-MAR-2016 07:48:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-005

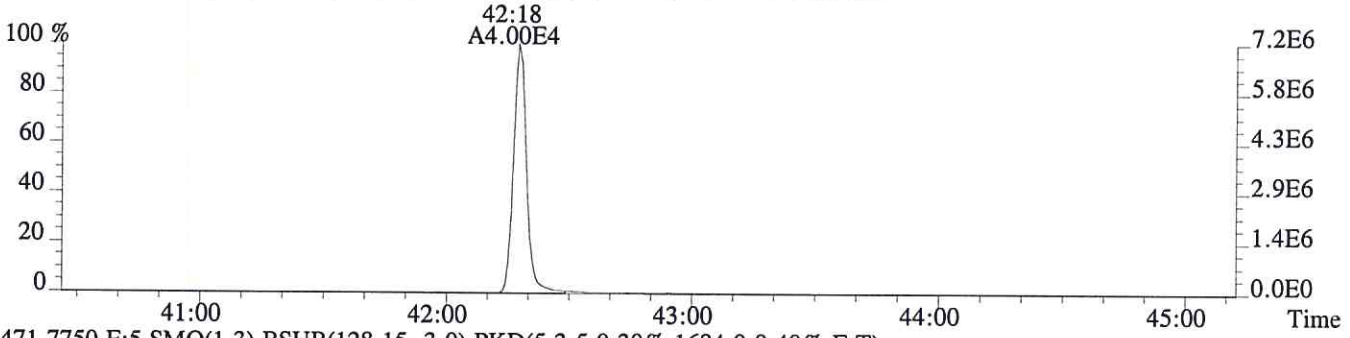
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1452.0,0.40%,F,T)



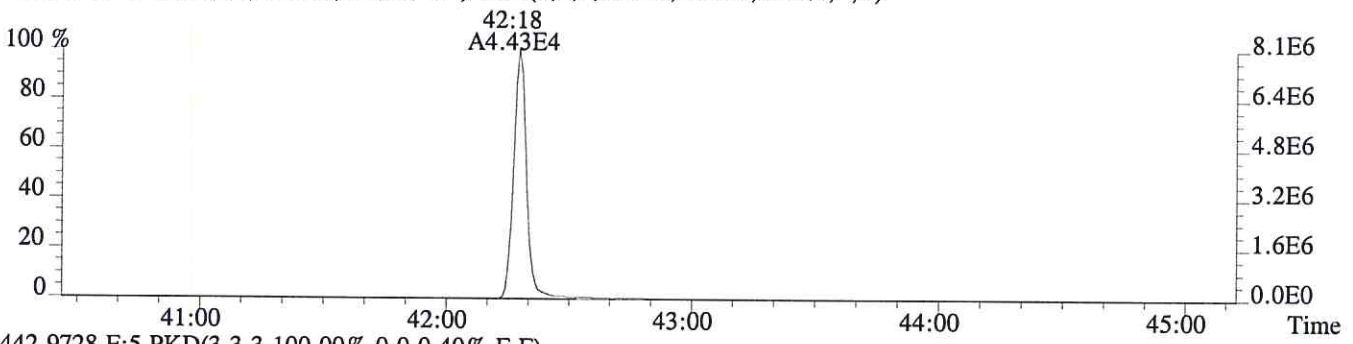
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2384.0,0.40%,F,T)



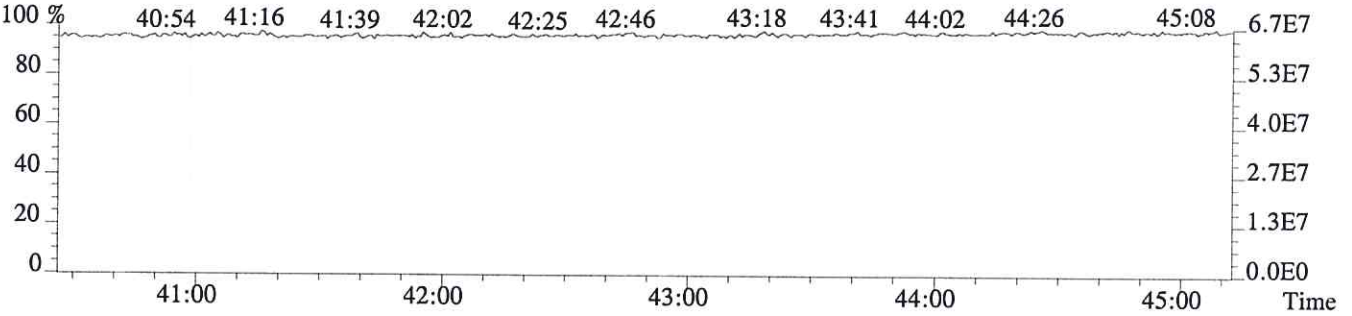
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1188.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1684.0,0.40%,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.
03102016 SJ5

Run #19 Filename P503419 Samp: 1 Inj: 1 Acquired: 19-MAR-16 08:37:15
Processed: 23-MAR-16 18:38:14 Sample ID: E1600203-006

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	NotFnd	*	*	*	no	no	0.886
2	Unk	1,2,3,7,8-PeCDF	NotFnd	*	*	*	no	no	0.983
3	Unk	2,3,4,7,8-PeCDF	NotFnd	*	*	*	no	yes	0.952
4	Unk	1,2,3,4,7,8-HxCDF	NotFnd	*	*	*	no	yes	1.190
5	Unk	1,2,3,6,7,8-HxCDF	NotFnd	*	*	*	no	no	1.114
6	Unk	2,3,4,6,7,8-HxCDF	NotFnd	*	*	*	no	yes	1.109
7	Unk	1,2,3,7,8,9-HxCDF	NotFnd	*	*	*	no	yes	1.153
8	Unk	1,2,3,4,6,7,8-HpCDF	NotFnd	*	*	*	no	yes	1.376
9	Unk	1,2,3,4,7,8,9-HpCDF	NotFnd	*	*	*	no	no	1.306
10	Unk	OCDF	42:31	3.357e+01	4.932e+01	0.68	no	no	1.263
11	Unk	2,3,7,8-TCDD	NotFnd	*	*	*	no	no	0.997
12	Unk	1,2,3,7,8-PeCDD	NotFnd	*	*	*	no	yes	0.935
13	Unk	1,2,3,4,7,8-HxCDD	NotFnd	*	*	*	no	yes	1.039
14	Unk	1,2,3,6,7,8-HxCDD	NotFnd	*	*	*	no	yes	0.996
15	Unk	1,2,3,7,8,9-HxCDD	NotFnd	*	*	*	no	no	1.108
16	Unk	1,2,3,4,6,7,8-HpCDD	39:33	2.988e+01	3.499e+01	0.85	no	no	1.010
17	Unk	OCDD	42:19	7.592e+01	1.102e+02	0.69	no	no	1.090
18	IS	13C-2,3,7,8-TCDF	28:23	4.726e+04	5.985e+04	0.79	yes	no	1.447
19	IS	13C-1,2,3,7,8-PeCDF	32:31	7.618e+04	4.843e+04	1.57	yes	no	1.500
20	IS	13C-2,3,4,7,8-PeCDF	33:25	7.498e+04	4.736e+04	1.58	yes	no	1.456
21	IS	13C-1,2,3,4,7,8-HxCDF	36:03	3.283e+04	6.325e+04	0.52	yes	no	1.207
22	IS	13C-1,2,3,6,7,8-HxCDF	36:10	3.872e+04	7.343e+04	0.53	yes	no	1.263
23	IS	13C-2,3,4,6,7,8-HxCDF	36:39	3.536e+04	6.792e+04	0.52	yes	no	1.153
24	IS	13C-1,2,3,7,8,9-HxCDF	37:24	3.171e+04	6.164e+04	0.51	yes	no	1.085
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:38	2.149e+04	4.925e+04	0.44	yes	no	0.876
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:01	2.126e+04	4.654e+04	0.46	yes	no	0.883
27	IS	13C-2,3,7,8-TCDD	29:08	3.420e+04	4.348e+04	0.79	yes	no	1.027
28	IS	13C-1,2,3,7,8-PeCDD	33:41	5.606e+04	3.565e+04	1.57	yes	no	1.064
29	IS	13C-1,2,3,4,7,8-HxCDD	36:47	4.785e+04	3.842e+04	1.25	yes	no	0.908
30	IS	13C-1,2,3,6,7,8-HxCDD	36:52	4.986e+04	3.905e+04	1.28	yes	no	0.899
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:33	3.798e+04	3.588e+04	1.06	yes	no	0.910
32	IS	13C-OCDD	42:18	4.356e+04	4.826e+04	0.90	yes	no	0.633
33	RS/RT	13C-1,2,3,4-TCDD	28:35	4.204e+04	5.224e+04	0.80	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:06	5.790e+04	4.587e+04	1.26	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:10	3.980e+04				no	1.066

$$\text{OCDD} = \frac{(7.592e{+}01 + 1.102e{+}02)\ \times\ 4000\ \text{pg}\ \times\ 1}{(4.356e{+}04 + 4.826e{+}04)\ \times\ \text{g}\ \times\ /\ 100\ \times\ 1.090} =$$

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
03102016 SJ5

Run #19 Filename P503419 Samp: 1 Inj: 1 Acquired: 19-MAR-16 08:37:15
Processed: 23-MAR-16 18:38:14 LAB. ID: E1600203-006

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	*	7.68e+02	*	*	2.52e+03	*
2	1,2,3,7,8-PeCDF	*	5.56e+02	*	*	1.94e+03	*
3	2,3,4,7,8-PeCDF	*	5.56e+02	*	*	1.94e+03	*
4	1,2,3,4,7,8-HxCDF	*	1.18e+03	*	*	2.72e+02	*
5	1,2,3,6,7,8-HxCDF	*	1.18e+03	*	*	2.72e+02	*
6	2,3,4,6,7,8-HxCDF	*	1.18e+03	*	*	2.72e+02	*
7	1,2,3,7,8,9-HxCDF	*	1.18e+03	*	*	2.72e+02	*
8	1,2,3,4,6,7,8-HpCDF	*	8.32e+02	*	*	8.64e+02	*
9	1,2,3,4,7,8,9-HpCDF	*	8.32e+02	*	*	8.64e+02	*
10	OCDF	5.65e+03	8.64e+02	6.5e+00	8.64e+03	2.75e+03	3.1e+00
11	2,3,7,8-TCDD	*	1.27e+03	*	*	8.52e+02	*
12	1,2,3,7,8-PeCDD	*	1.90e+03	*	*	3.92e+02	*
13	1,2,3,4,7,8-HxCDD	*	3.72e+02	*	*	1.12e+03	*
14	1,2,3,6,7,8-HxCDD	*	3.72e+02	*	*	1.12e+03	*
15	1,2,3,7,8,9-HxCDD	*	3.72e+02	*	*	1.12e+03	*
16	1,2,3,4,6,7,8-HpCDD	7.35e+03	1.28e+03	5.7e+00	9.11e+03	4.96e+02	1.8e+01
17	OCDD	1.38e+04	7.16e+02	1.9e+01	2.03e+04	2.04e+03	9.9e+00
18	13C-2,3,7,8-TCDF	8.93e+06	2.54e+03	3.5e+03	1.13e+07	2.30e+03	4.9e+03
19	13C-1,2,3,7,8-PeCDF	1.44e+07	5.52e+02	2.6e+04	9.24e+06	1.29e+03	7.2e+03
20	13C-2,3,4,7,8-PeCDF	1.52e+07	5.52e+02	2.7e+04	9.61e+06	1.29e+03	7.4e+03
21	13C-1,2,3,4,7,8-HxCDF	7.02e+06	8.92e+02	7.9e+03	1.37e+07	1.90e+03	7.2e+03
22	13C-1,2,3,6,7,8-HxCDF	8.30e+06	8.92e+02	9.3e+03	1.59e+07	1.90e+03	8.3e+03
23	13C-2,3,4,6,7,8-HxCDF	7.82e+06	8.92e+02	8.8e+03	1.51e+07	1.90e+03	8.0e+03
24	13C-1,2,3,7,8,9-HxCDF	6.53e+06	8.92e+02	7.3e+03	1.28e+07	1.90e+03	6.7e+03
25	13C-1,2,3,4,6,7,8-HpCDF	4.79e+06	5.00e+03	9.6e+02	1.09e+07	7.48e+02	1.5e+04
26	13C-1,2,3,4,7,8,9-HpCDF	4.35e+06	5.00e+03	8.7e+02	9.67e+06	7.48e+02	1.3e+04
27	13C-2,3,7,8-TCDD	6.68e+06	5.48e+03	1.2e+03	8.56e+06	3.33e+03	2.6e+03
28	13C-1,2,3,7,8-PeCDD	1.15e+07	1.46e+03	7.9e+03	7.32e+06	9.44e+02	7.8e+03
29	13C-1,2,3,4,7,8-HxCDD	1.09e+07	1.43e+03	7.6e+03	8.78e+06	1.37e+03	6.4e+03
30	13C-1,2,3,6,7,8-HxCDD	1.06e+07	1.43e+03	7.5e+03	8.31e+06	1.37e+03	6.1e+03
31	13C-1,2,3,4,6,7,8-HpCDD	7.99e+06	1.72e+03	4.7e+03	7.49e+06	2.00e+02	3.7e+04
32	13C-OCDD	7.89e+06	1.00e+03	7.9e+03	8.70e+06	1.41e+03	6.2e+03
33	13C-1,2,3,4-TCDD	8.10e+06	5.48e+03	1.5e+03	1.01e+07	3.33e+03	3.0e+03
34	13C-1,2,3,7,8,9-HxCDD	1.26e+07	1.43e+03	8.8e+03	1.00e+07	1.37e+03	7.3e+03
35	37Cl-2,3,7,8-TCDD	7.91e+06	1.90e+03	4.2e+03			

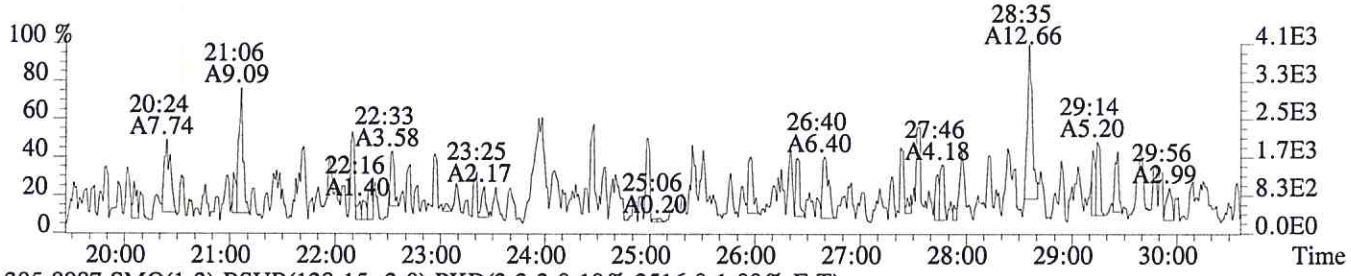
---Sample Calculation---

$$D/L\ TCDD = \frac{2.5 \times (1.268e+03 + 8.520e+02\ ) \times 2000}{(6.677e+06 + 8.565e+06\ ) \times (\ 25\ ml \times 100\ ) \times 0.997} = 27.9\ pg/L$$

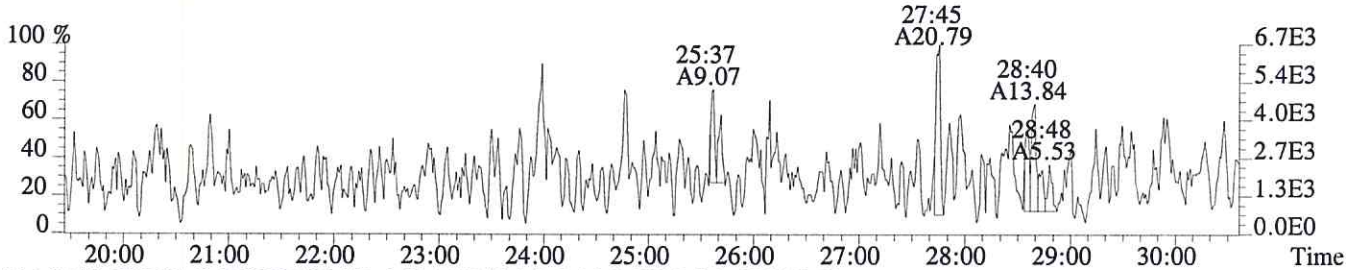
MMS 3/24/16

ALS ENVIRONMENTAL
10450 Stancliff Rd., Suite 115
Houston, TX 77099
Office:(281)530-5656. Fax:(281)530-5887

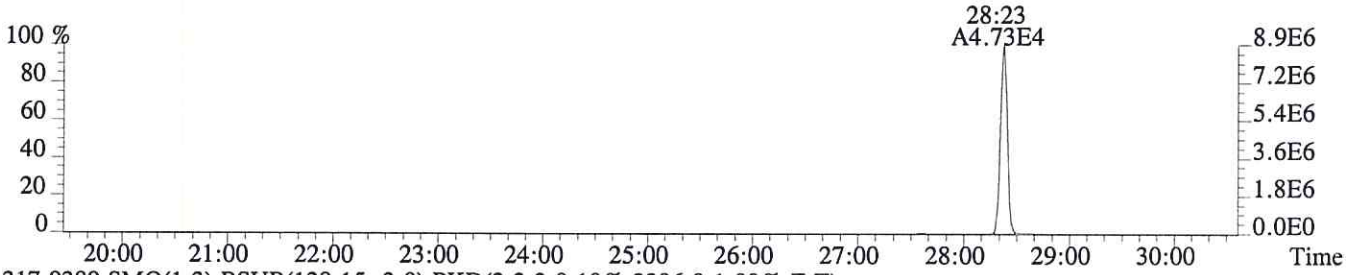
File:P503419 #1-793 Acq:19-MAR-2016 08:37:15 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-006
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,768.0,1.00%,F,T)



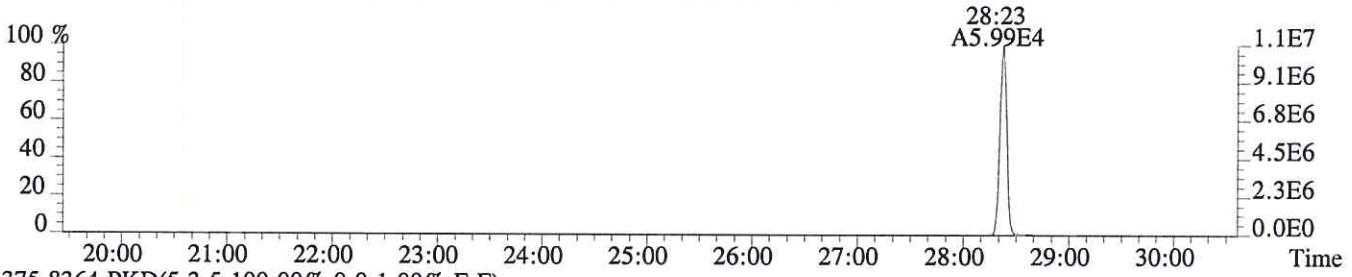
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2516.0,1.00%,F,T)



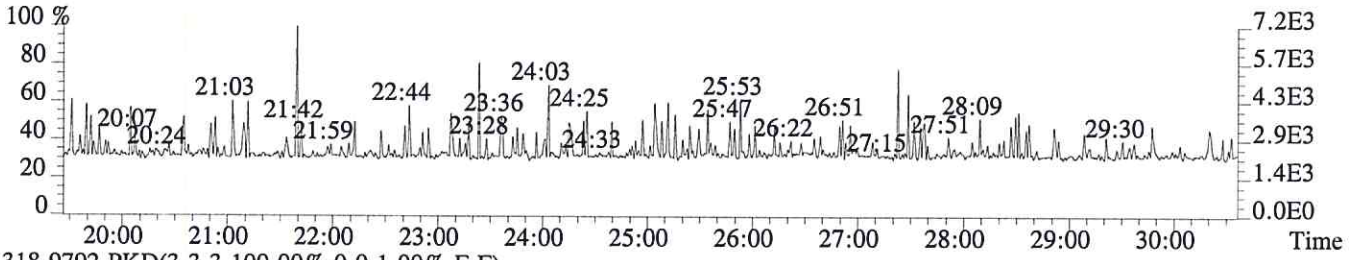
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2540.0,1.00%,F,T)



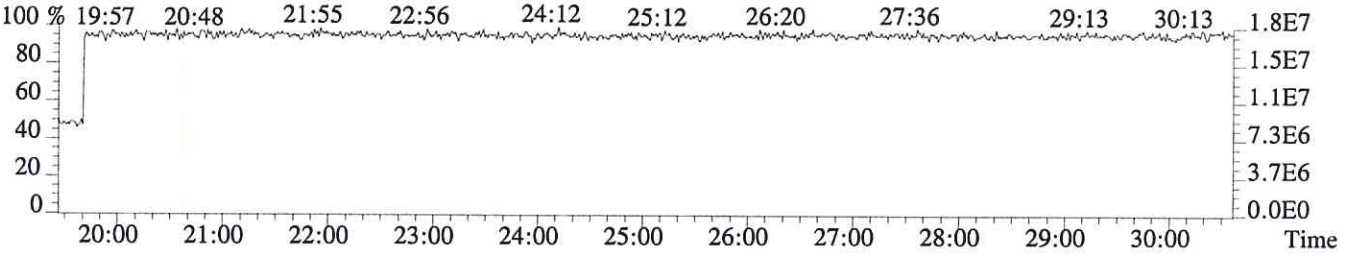
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2296.0,1.00%,F,T)



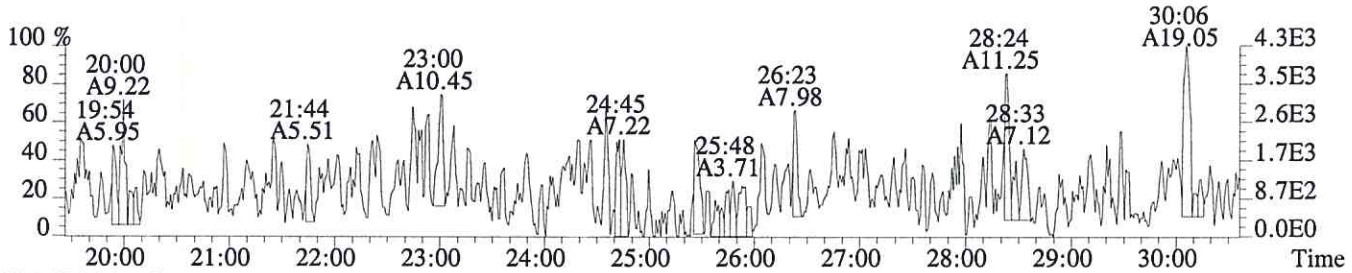
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



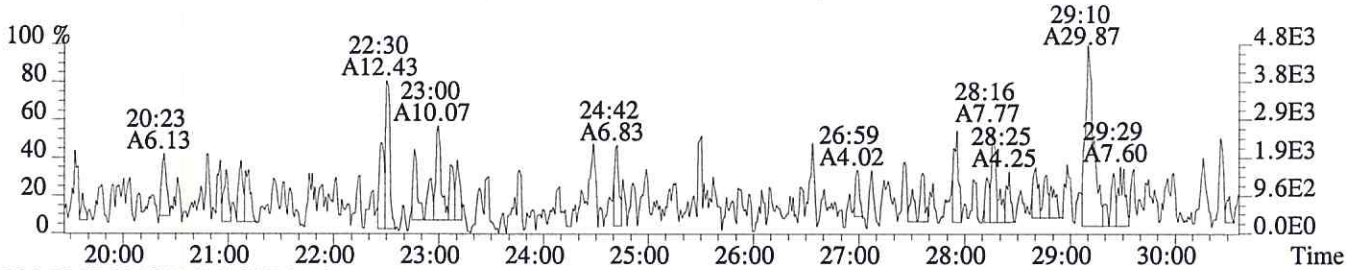
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



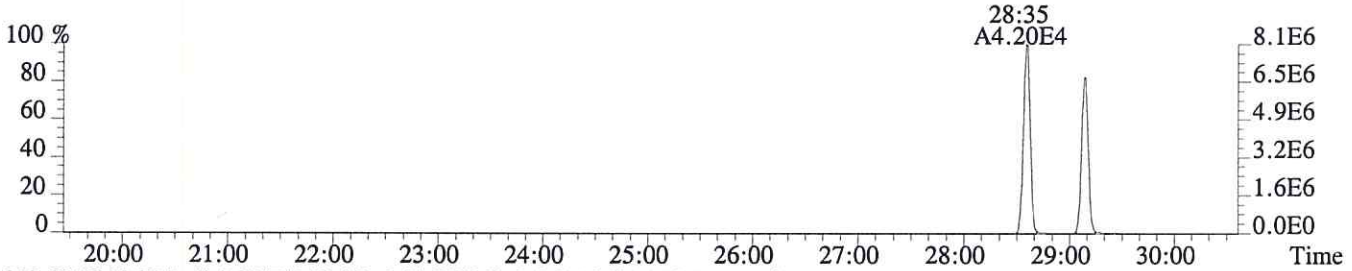
File:P503419 #1-793 Acq:19-MAR-2016 08:37:15 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-006
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1268.0,1.00%,F,T)



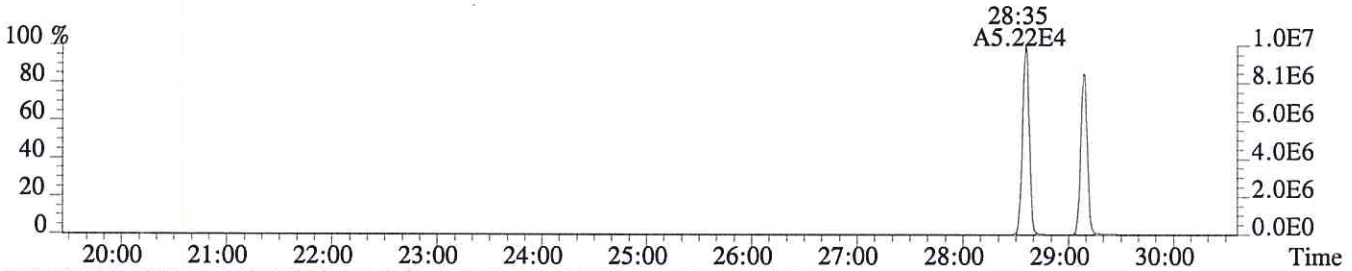
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,852.0,1.00%,F,T)



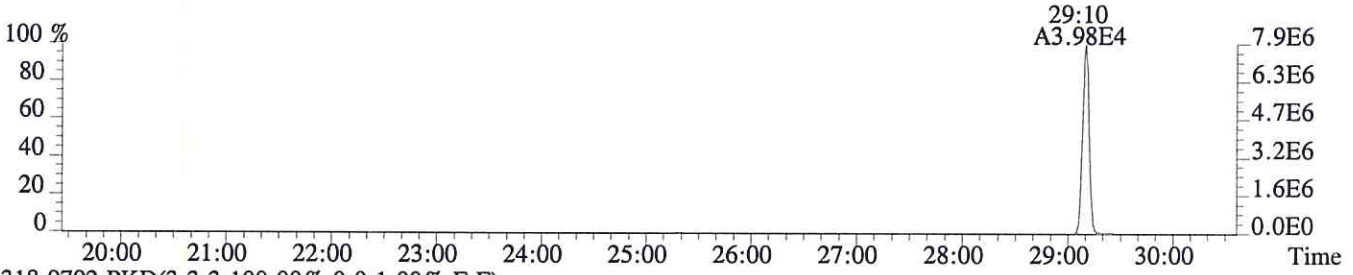
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5484.0,1.00%,F,T)



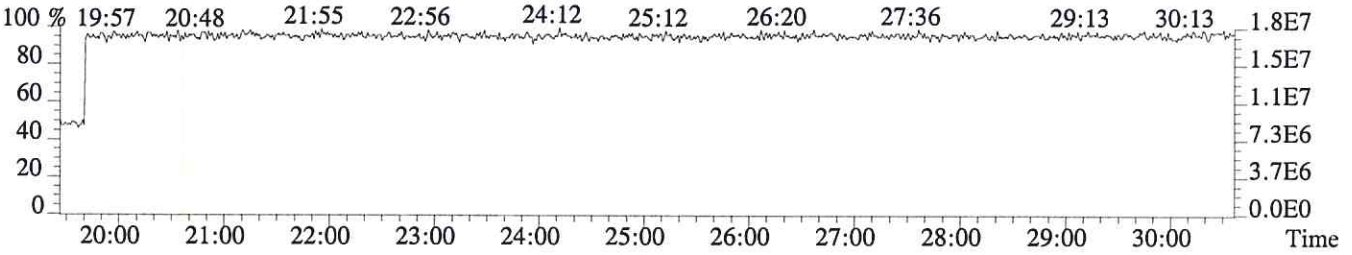
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3328.0,1.00%,F,T)



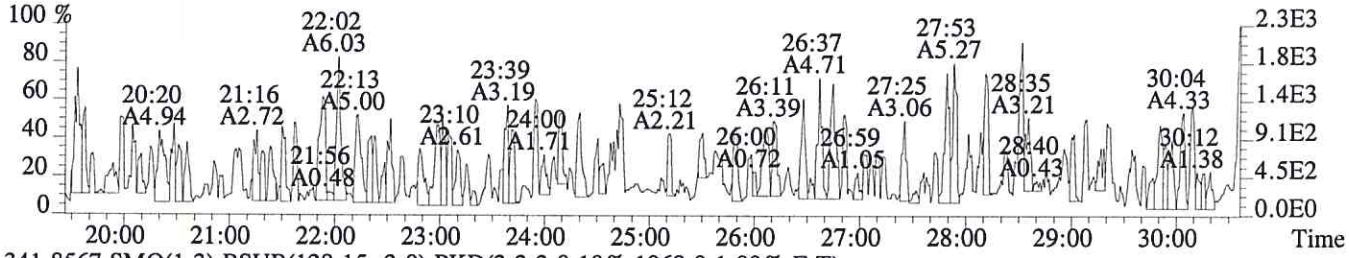
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1904.0,1.00%,F,T)



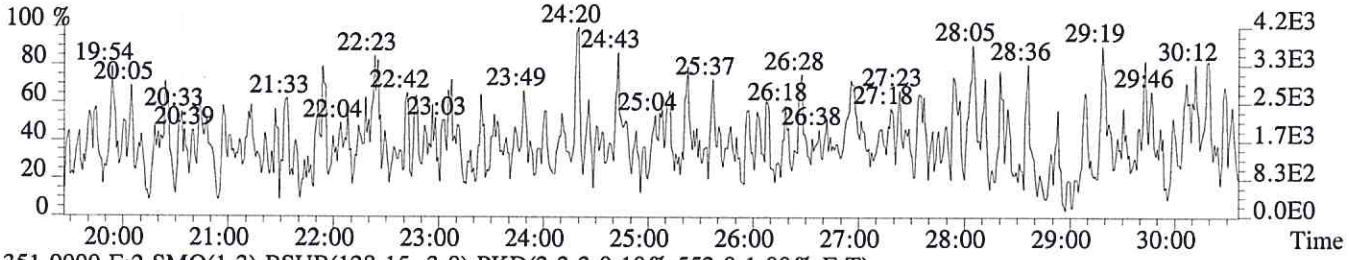
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



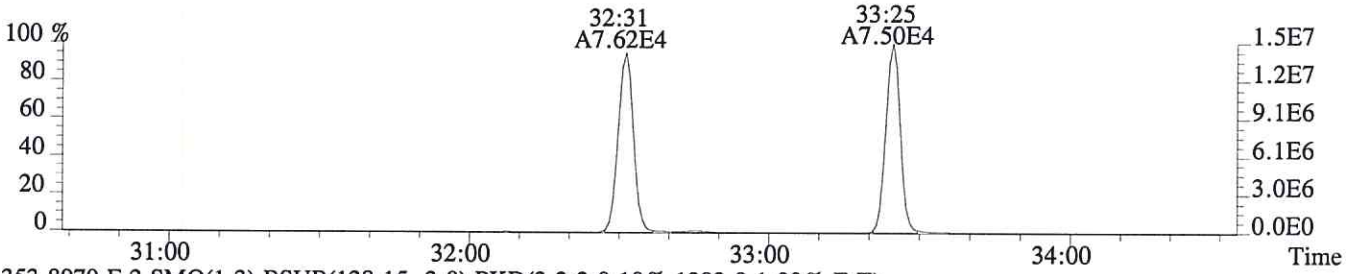
File:P503419 #1-793 Acq:19-MAR-2016 08:37:15 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-006
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,392.0,1.00%,F,T)



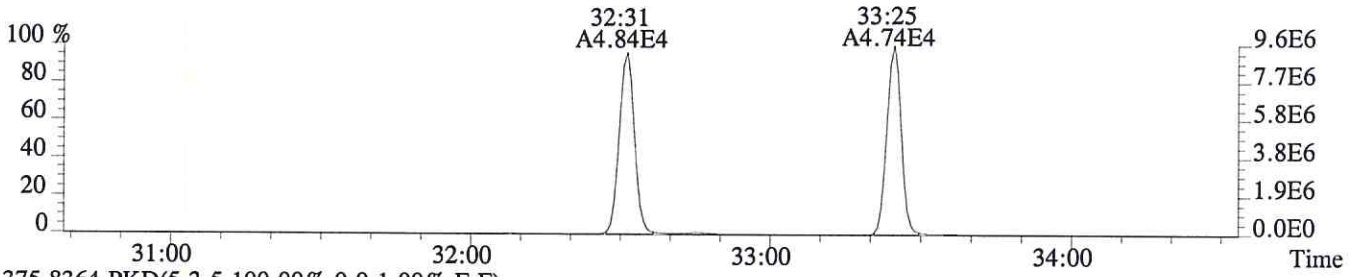
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1968.0,1.00%,F,T)



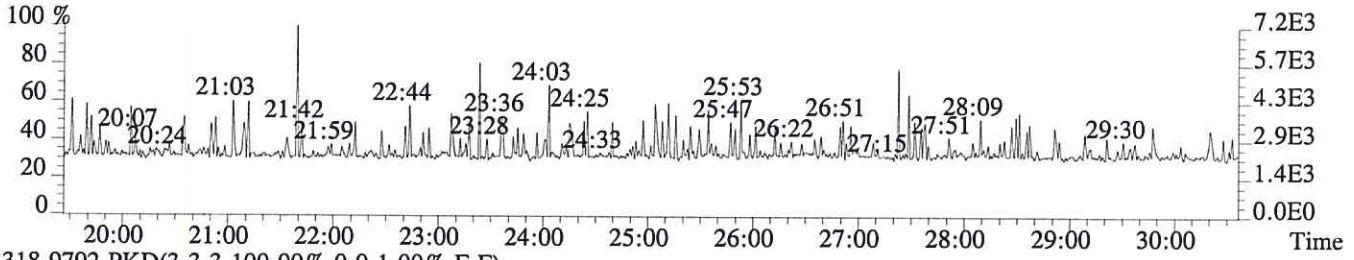
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,552.0,1.00%,F,T)



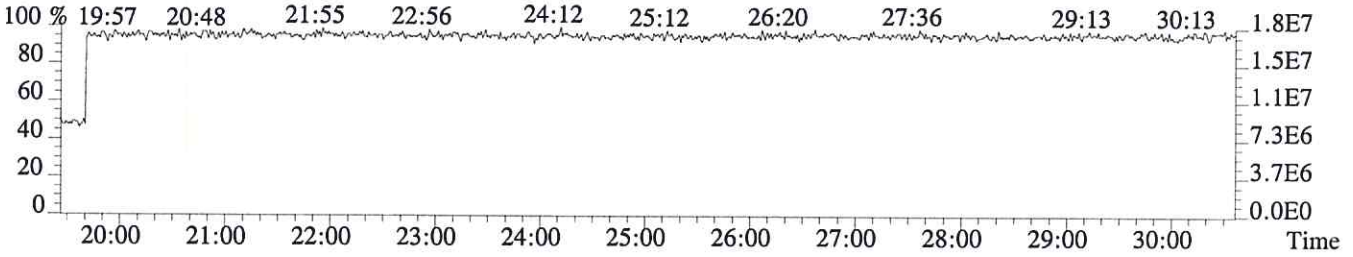
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1292.0,1.00%,F,T)



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

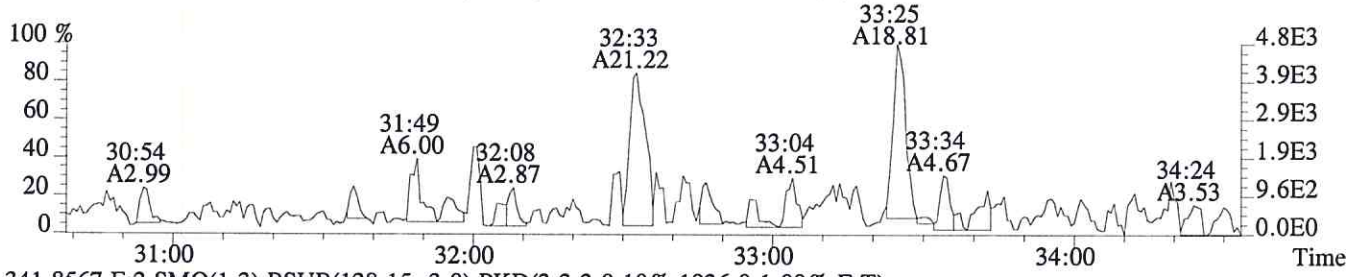


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

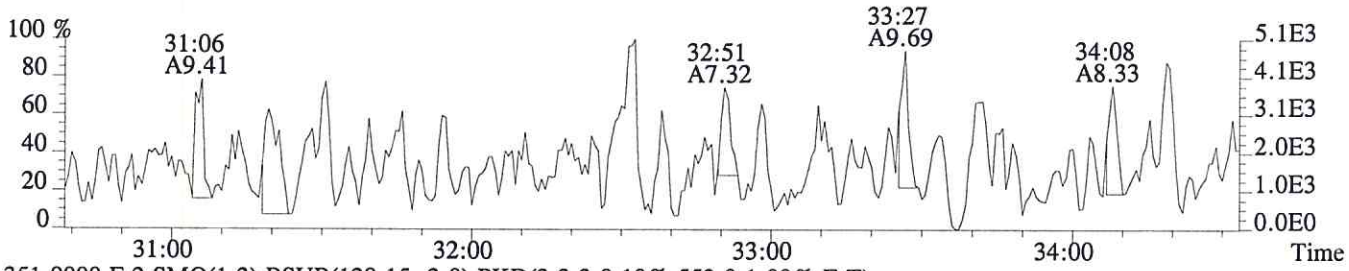


File:P503419 #1-353 Acq:19-MAR-2016 08:37:15 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-006

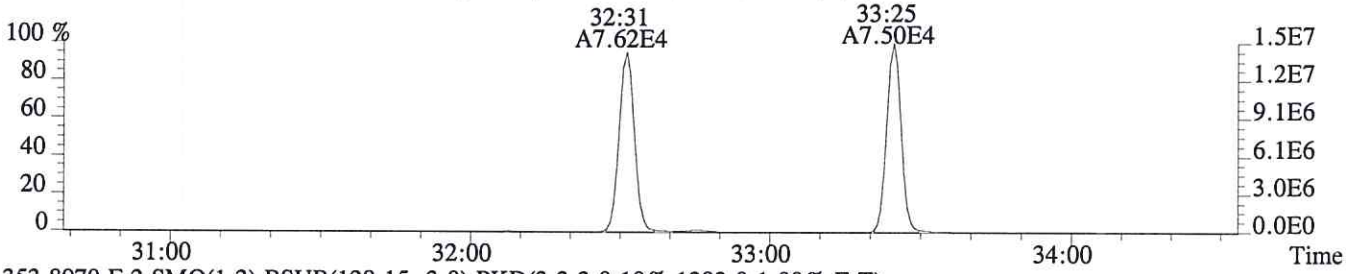
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,556.0,1.00%,F,T)



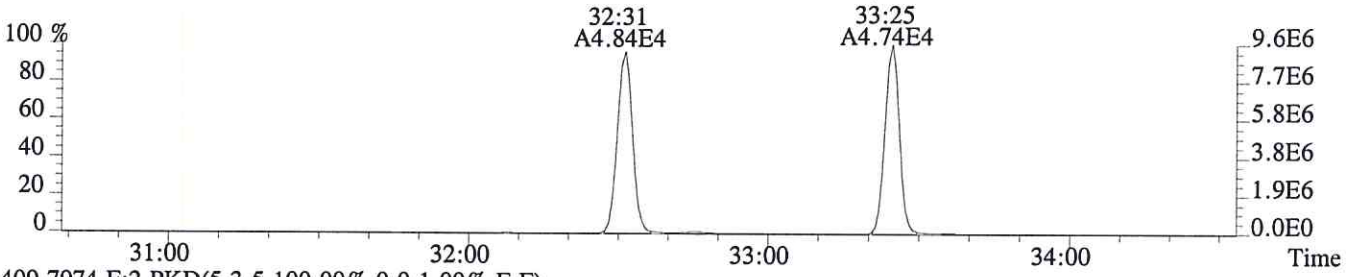
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1936.0,1.00%,F,T)



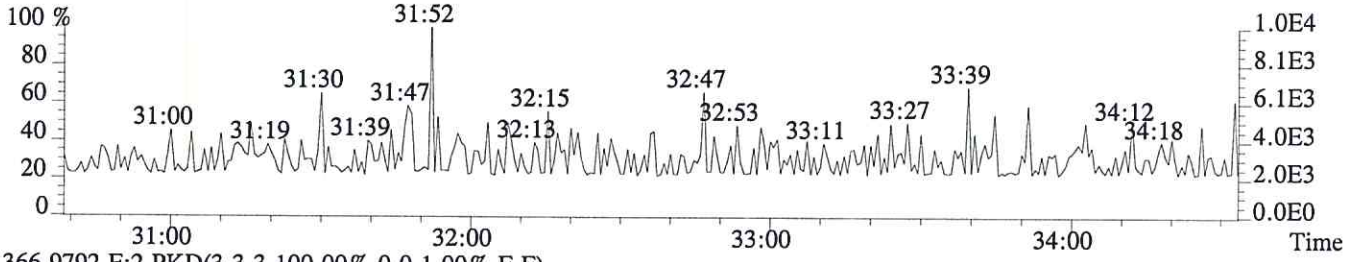
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,552.0,1.00%,F,T)



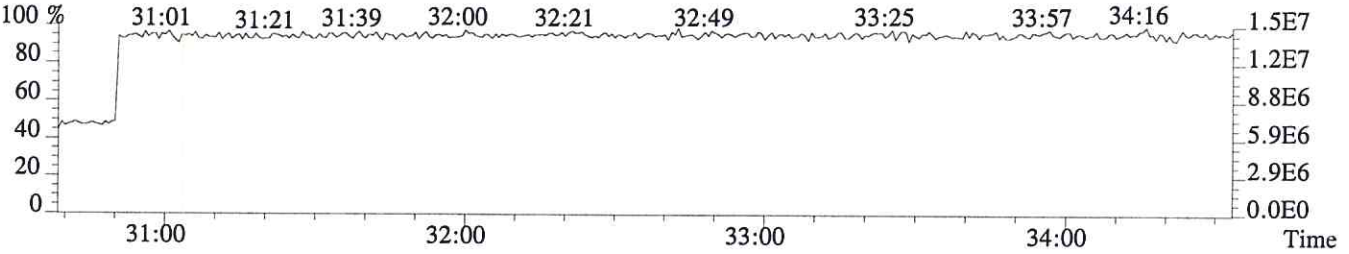
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1292.0,1.00%,F,T)



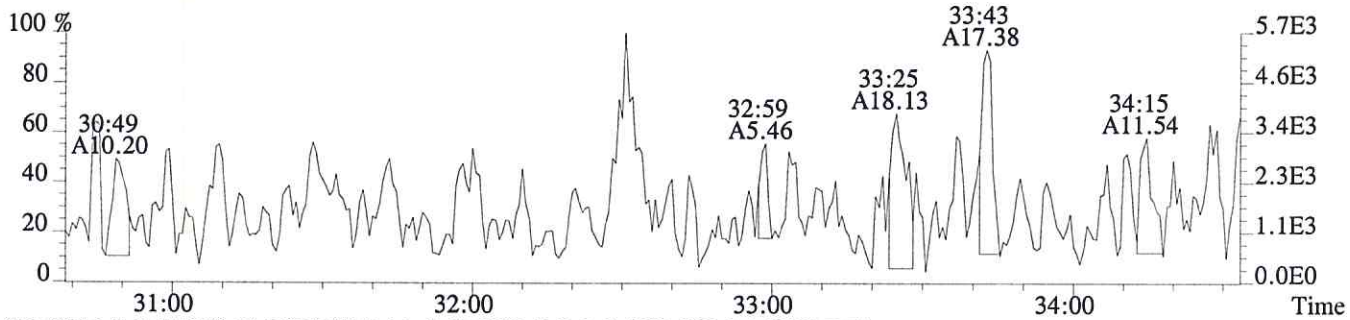
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



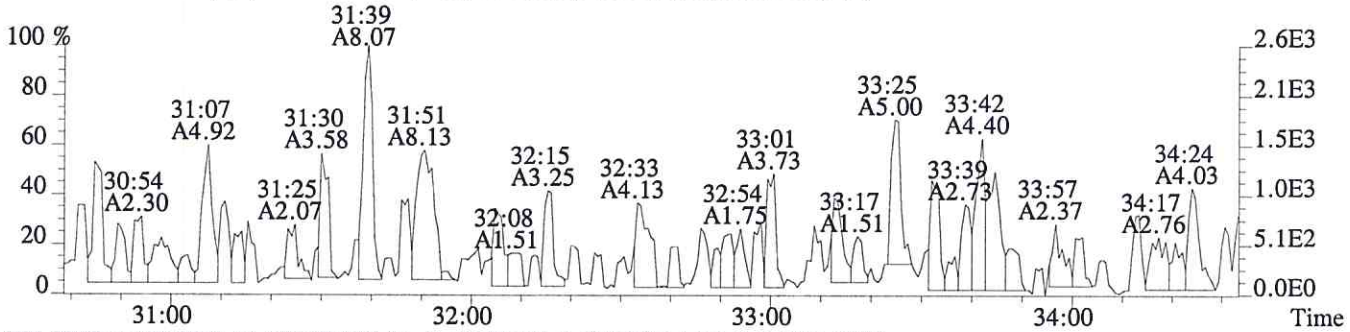
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



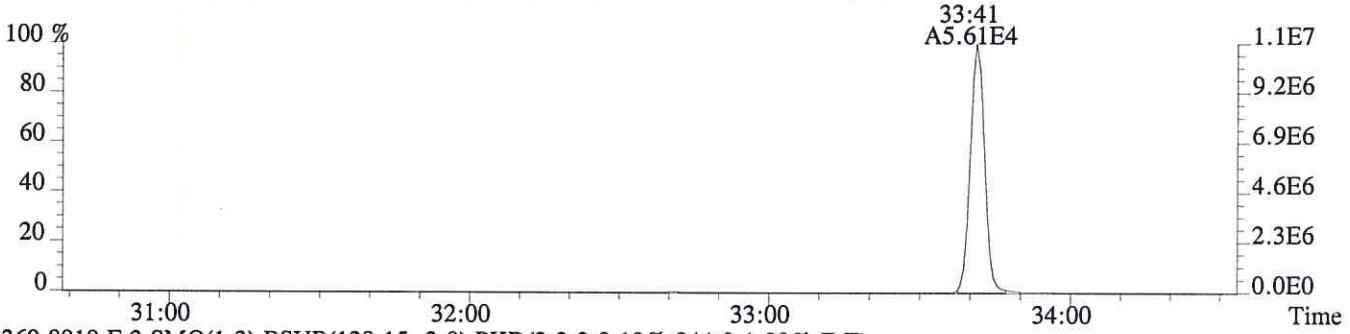
File:P503419 #1-353 Acq:19-MAR-2016 08:37:15 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-006
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1896.0,1.00%,F,T)



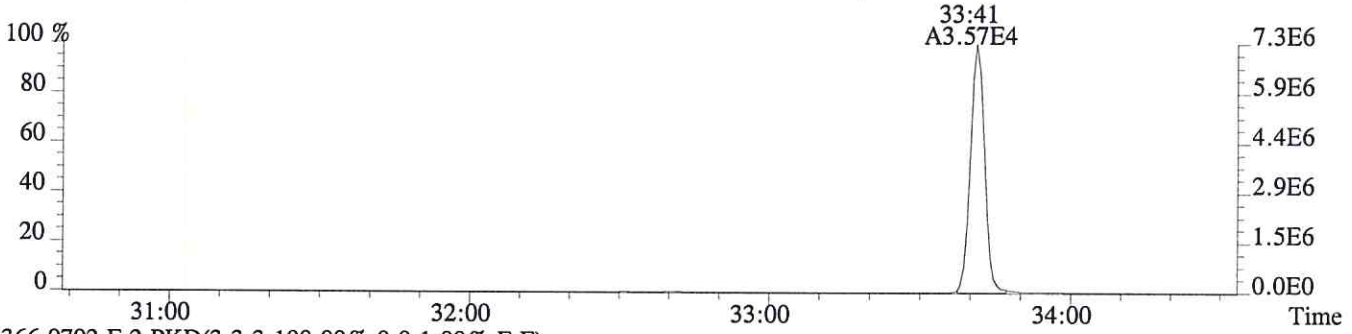
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,392.0,1.00%,F,T)



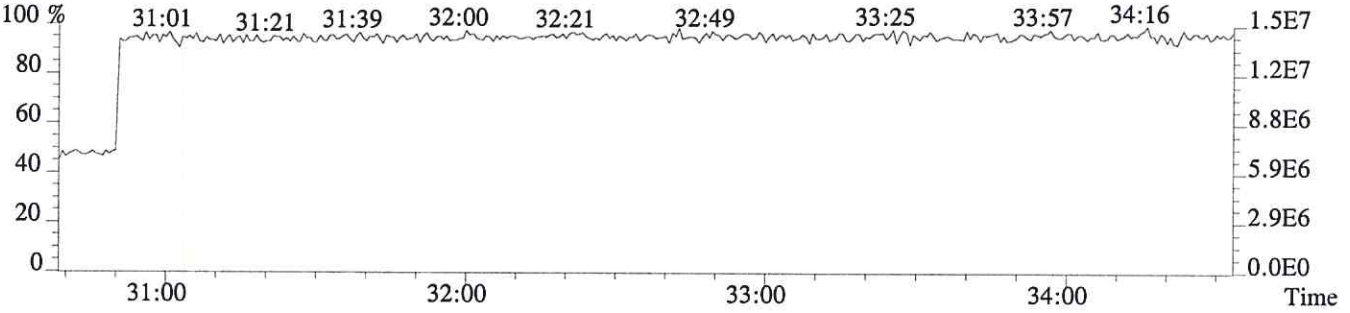
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1460.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,944.0,1.00%,F,T)

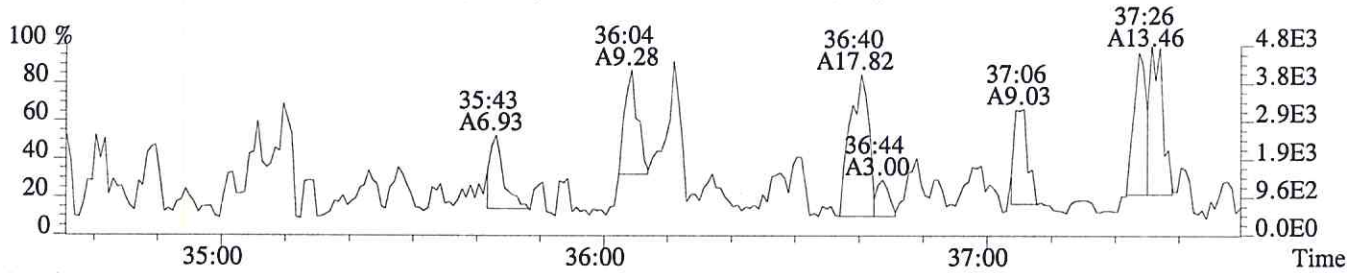


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

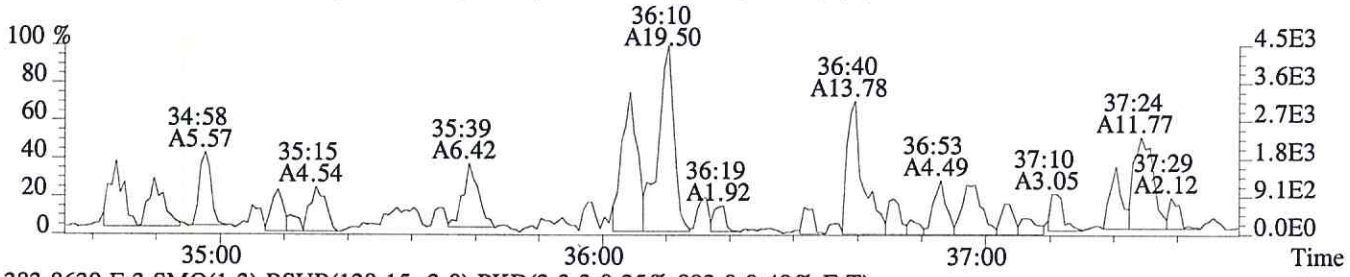


File:P503419 #1-277 Acq:19-MAR-2016 08:37:15 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-006

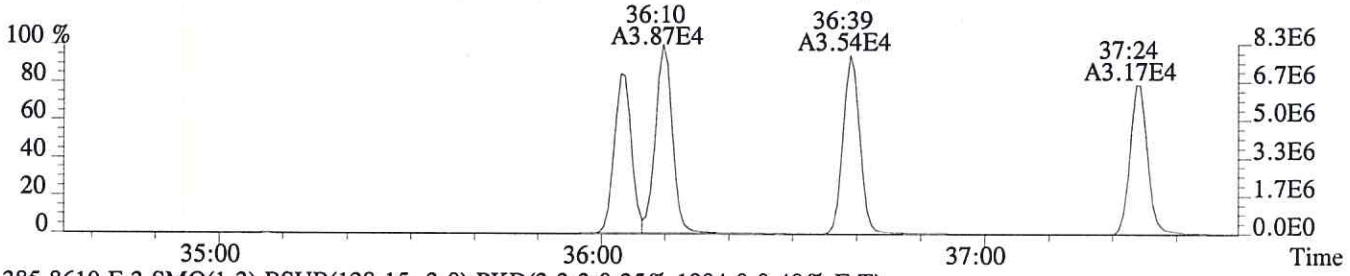
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1180.0,0.40%,F,T)



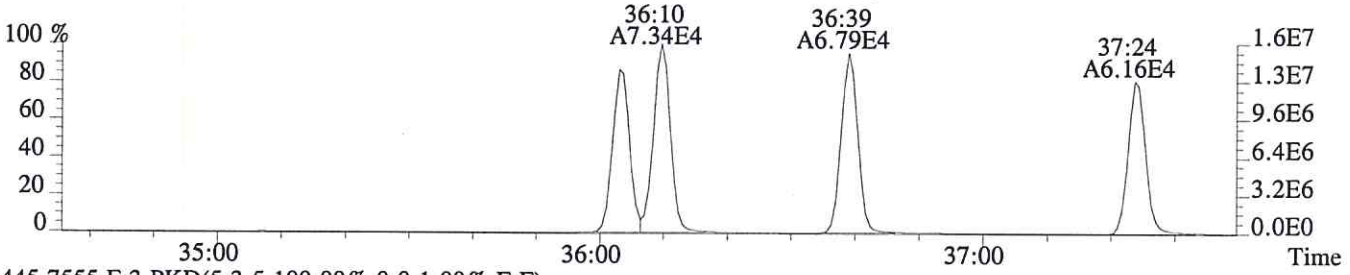
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,272.0,0.40%,F,T)



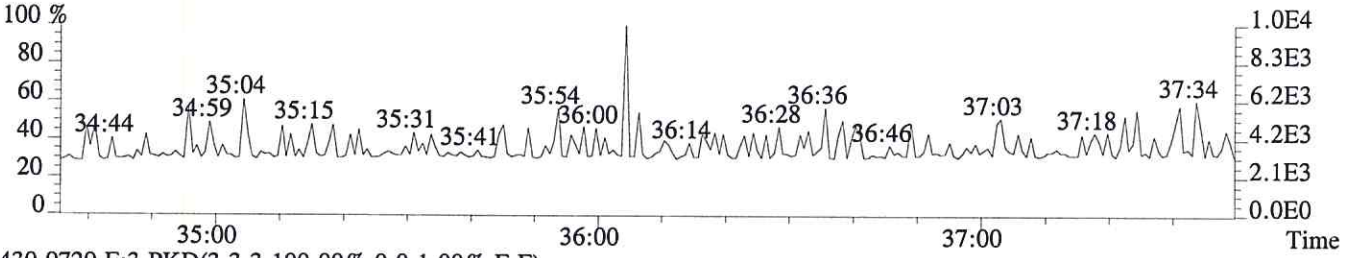
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,892.0,0.40%,F,T)



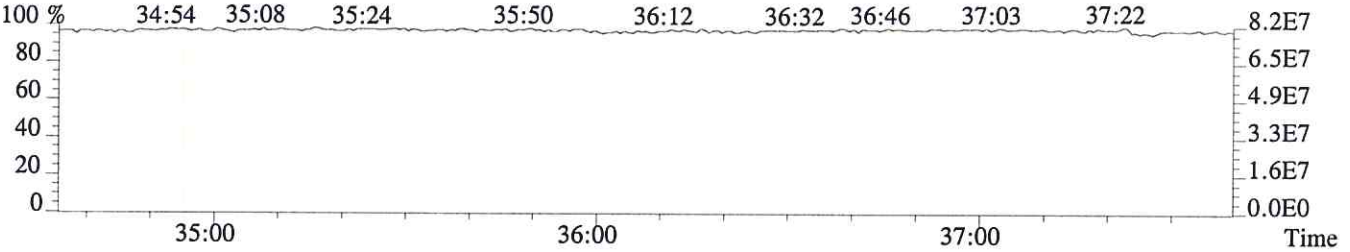
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1904.0,0.40%,F,T)



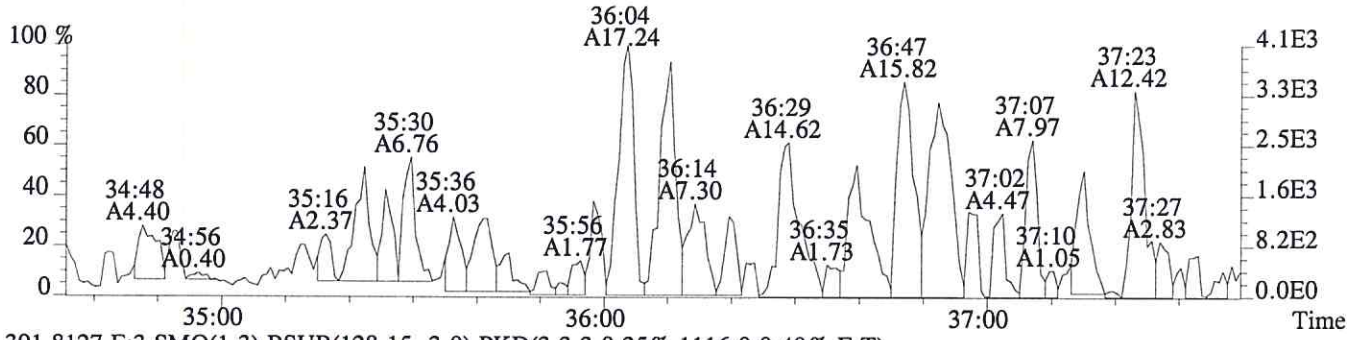
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



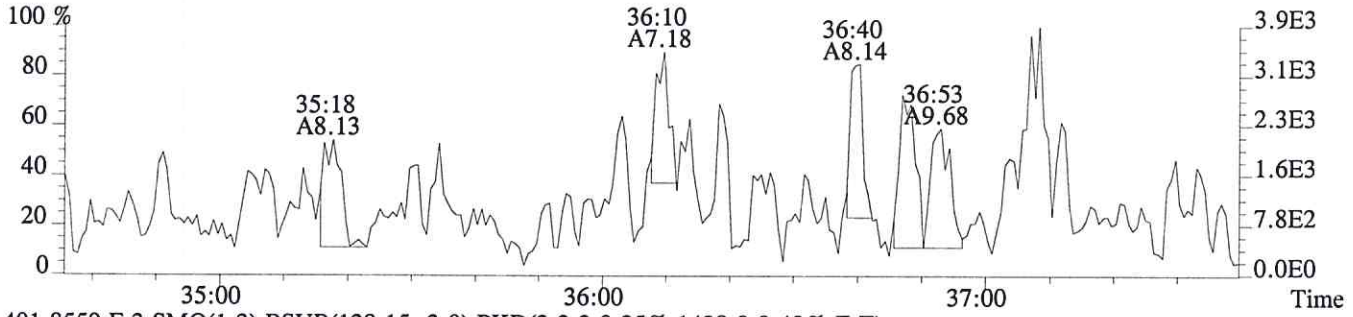
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



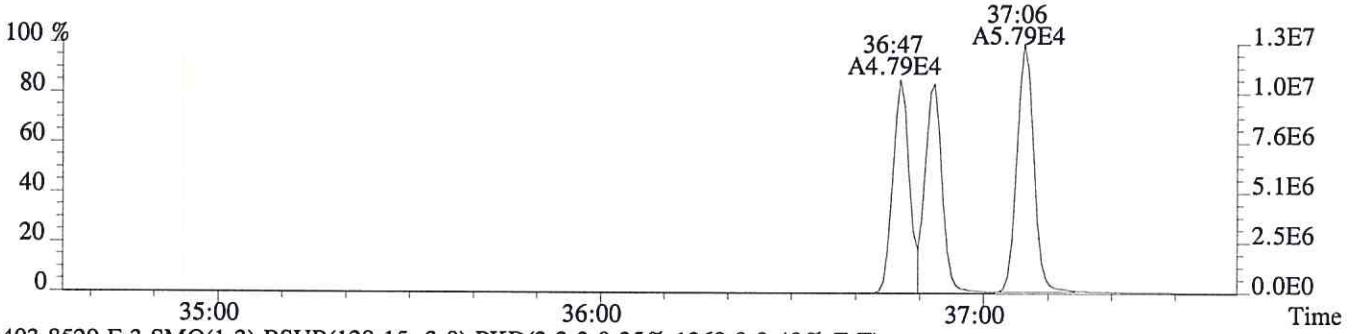
File:P503419 #1-277 Acq:19-MAR-2016 08:37:15 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-006
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,372.0,0.40%,F,T)



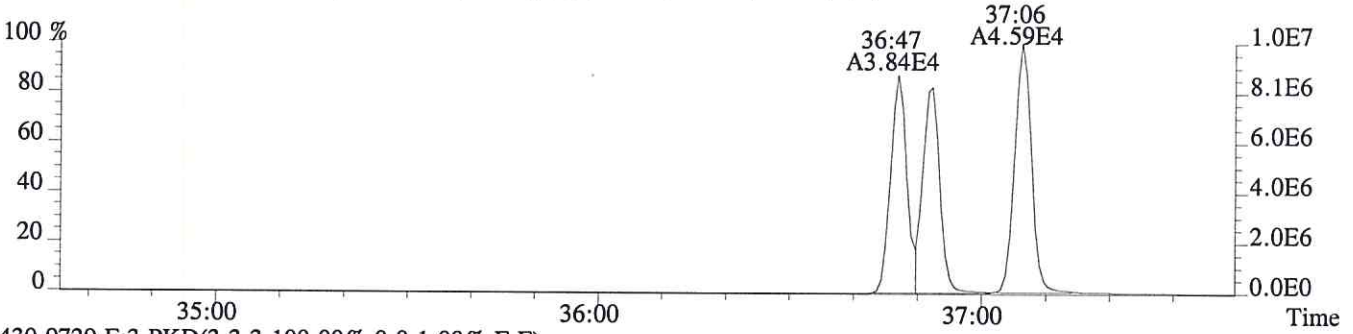
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1116.0,0.40%,F,T)



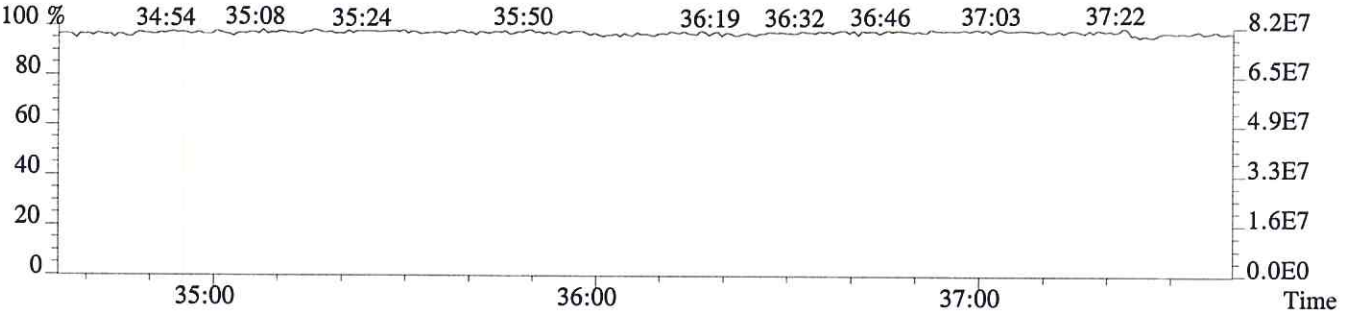
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1428.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1368.0,0.40%,F,T)

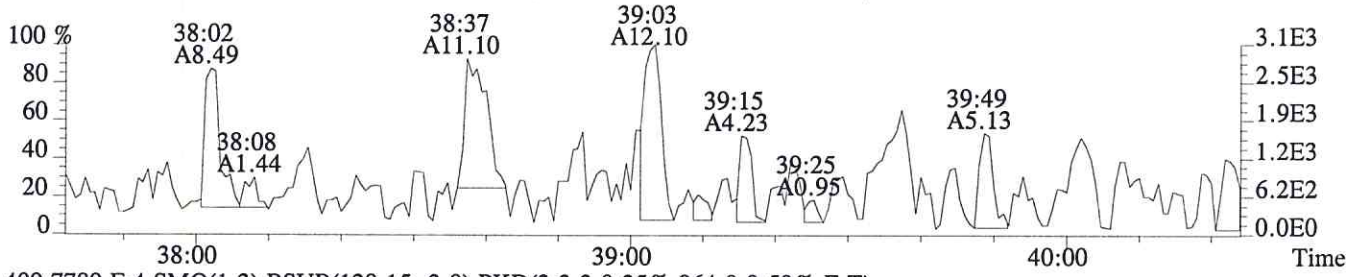


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

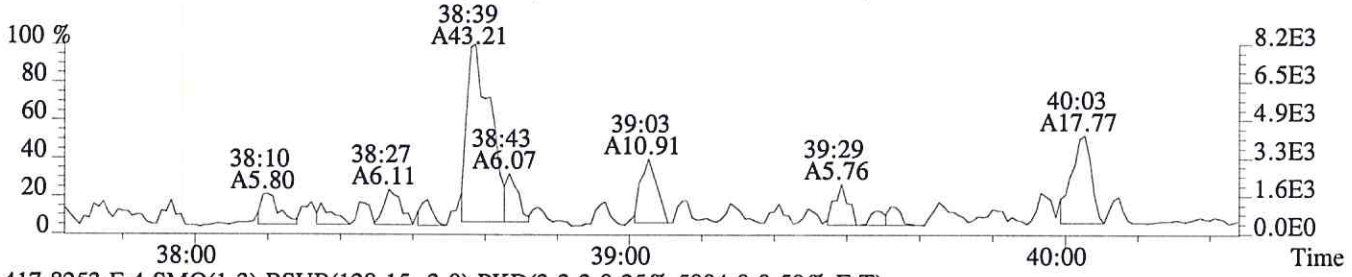


File:P503419 #1-244 Acq:19-MAR-2016 08:37:15 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-006

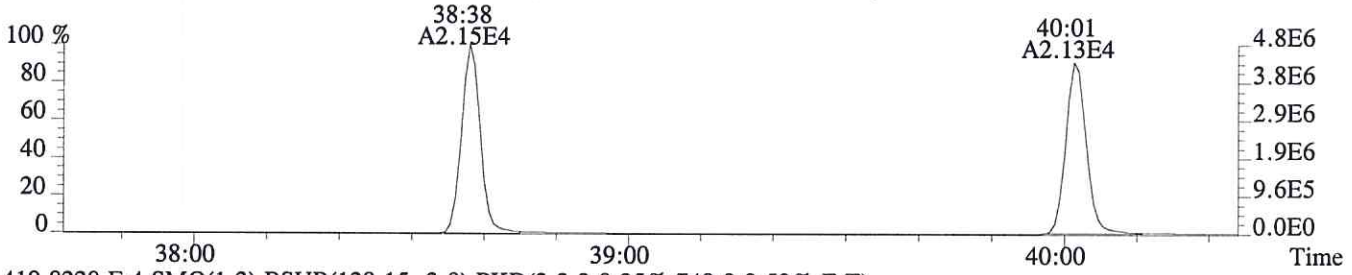
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,832.0,0.50%,F,T)



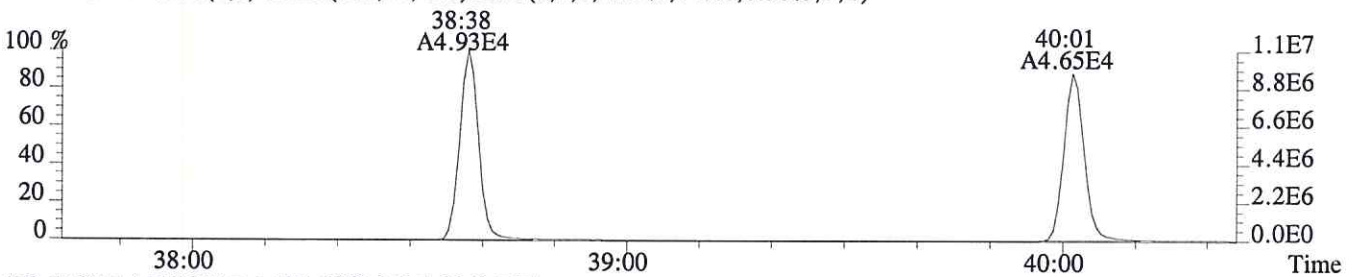
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,864.0,0.50%,F,T)



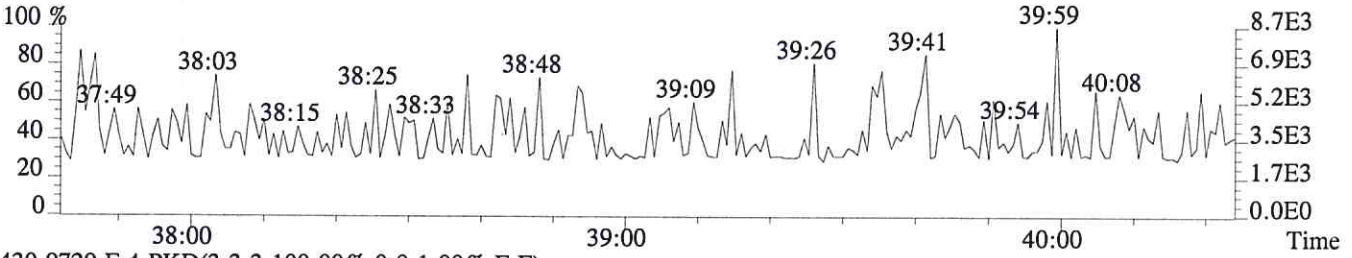
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5004.0,0.50%,F,T)



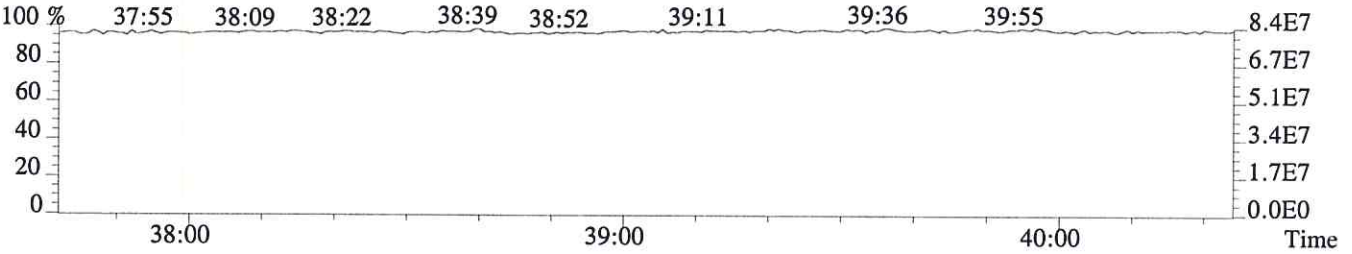
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,748.0,0.50%,F,T)



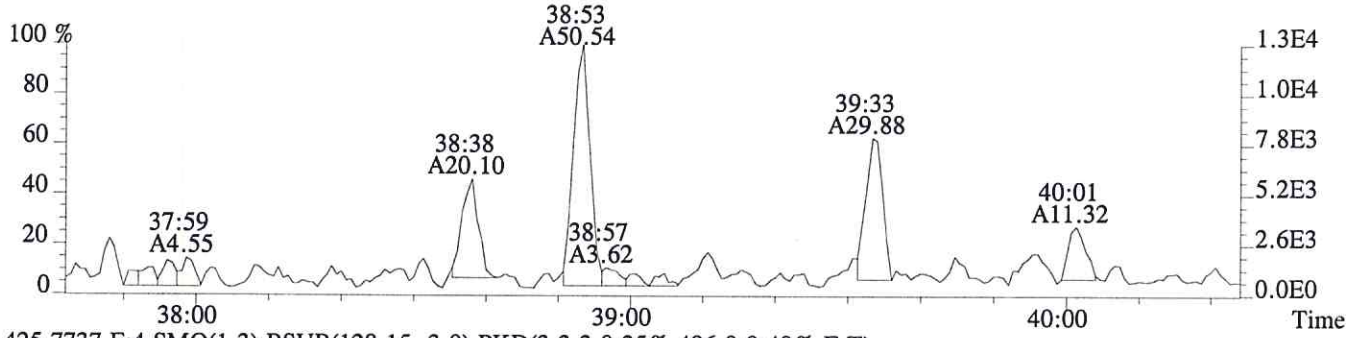
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



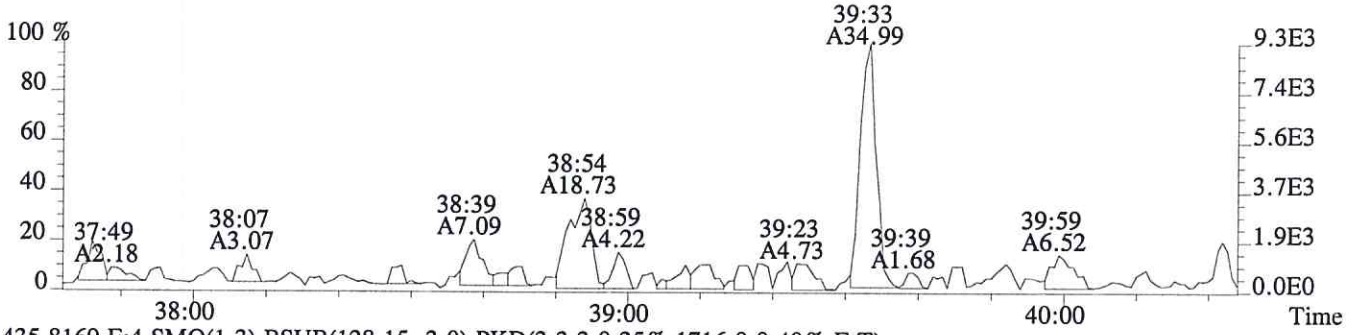
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



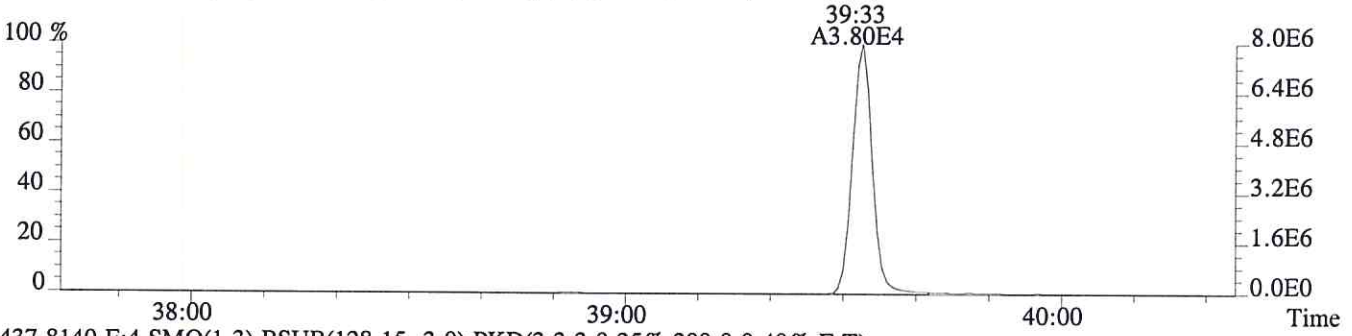
File:P503419 #1-244 Acq:19-MAR-2016 08:37:15 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-006
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1284.0,0.40%,F,T)



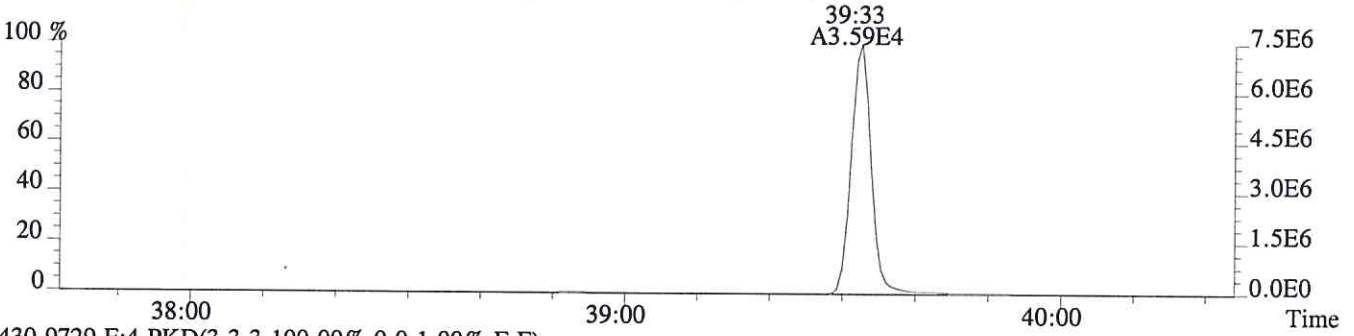
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,496.0,0.40%,F,T)



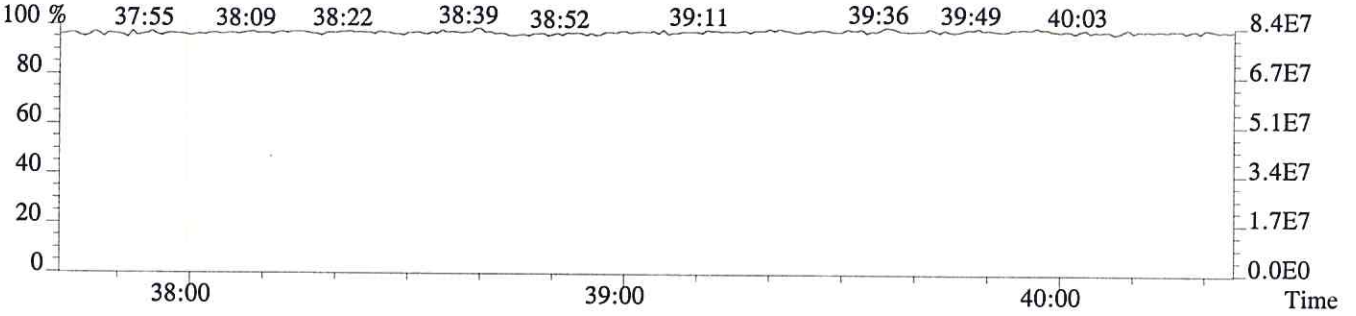
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1716.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,200.0,0.40%,F,T)

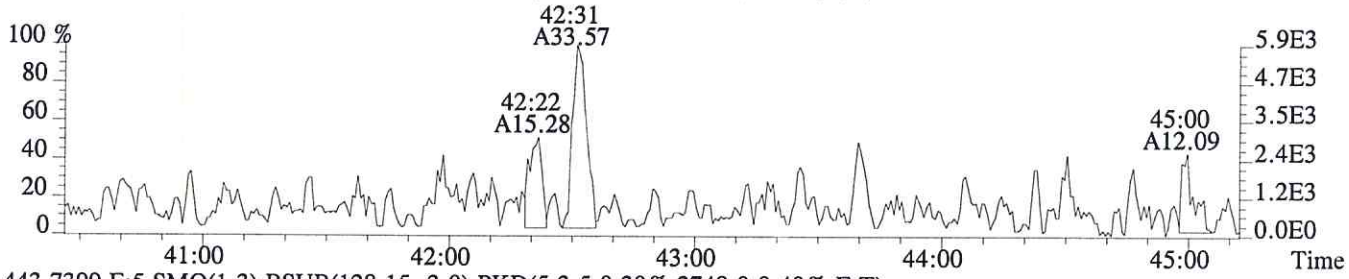


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

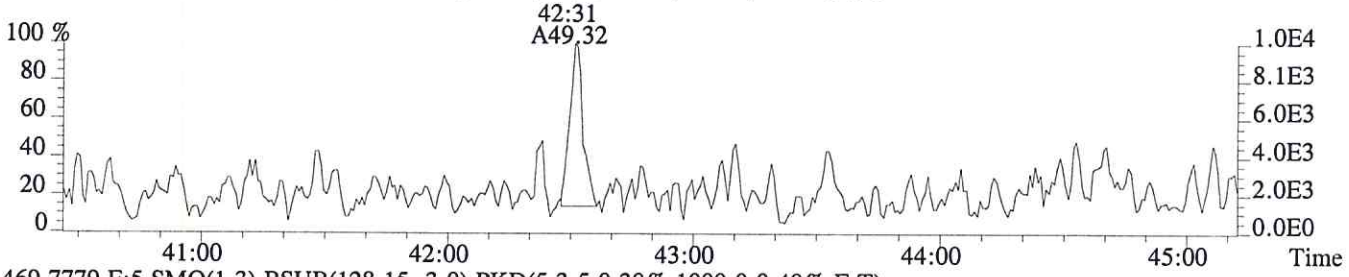


File:P503419 #1-430 Acq:19-MAR-2016 08:37:15 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-006

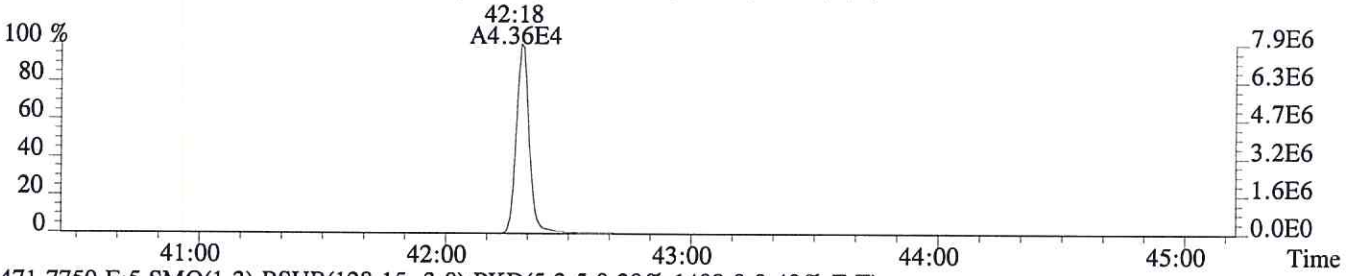
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,864.0,0.40%,F,T)



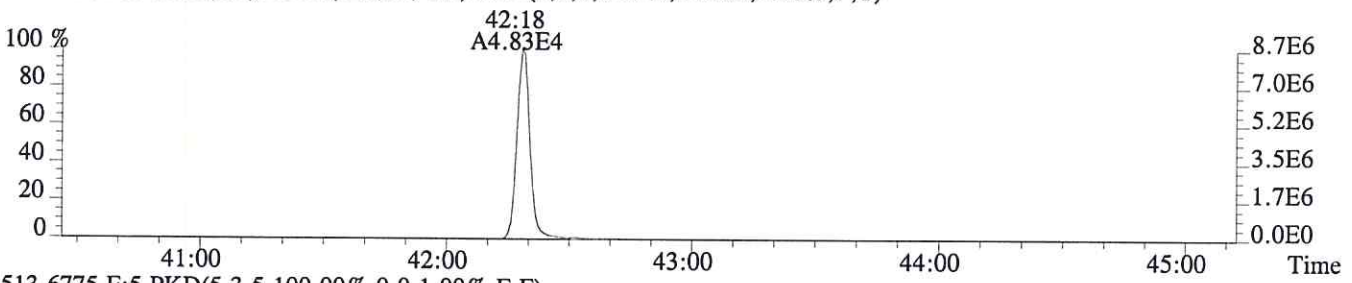
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2748.0,0.40%,F,T)



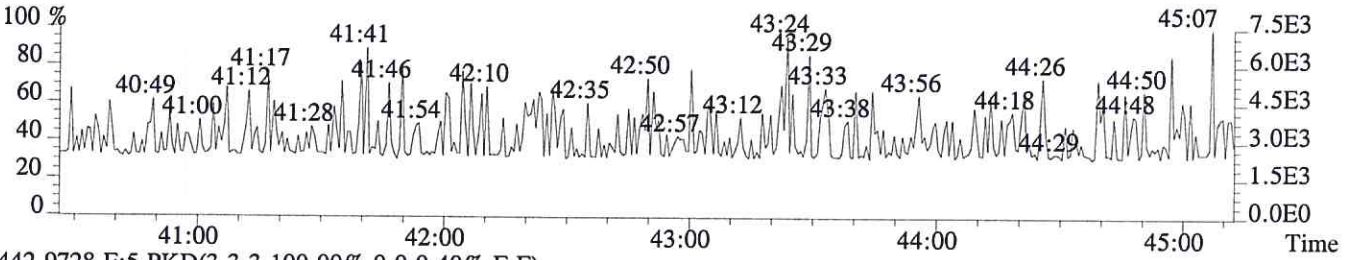
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1000.0,0.40%,F,T)



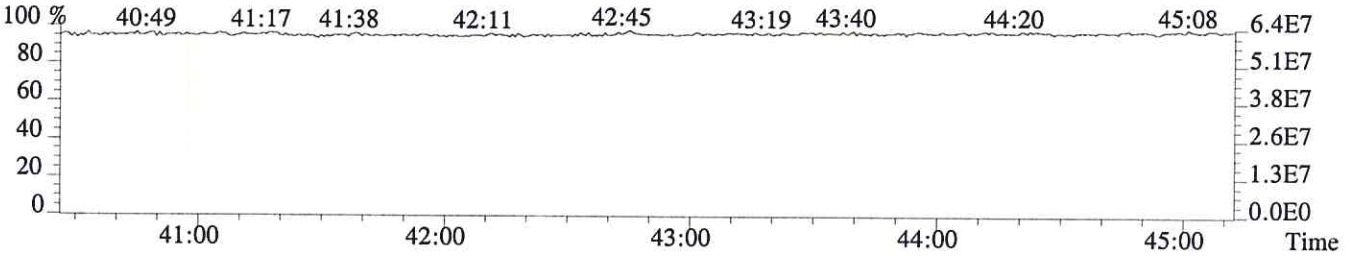
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1408.0,0.40%,F,T)



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

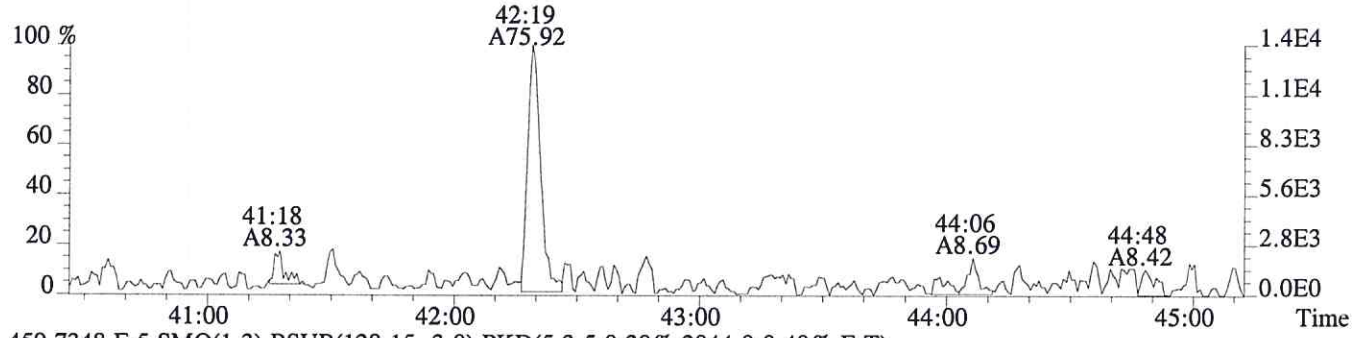


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

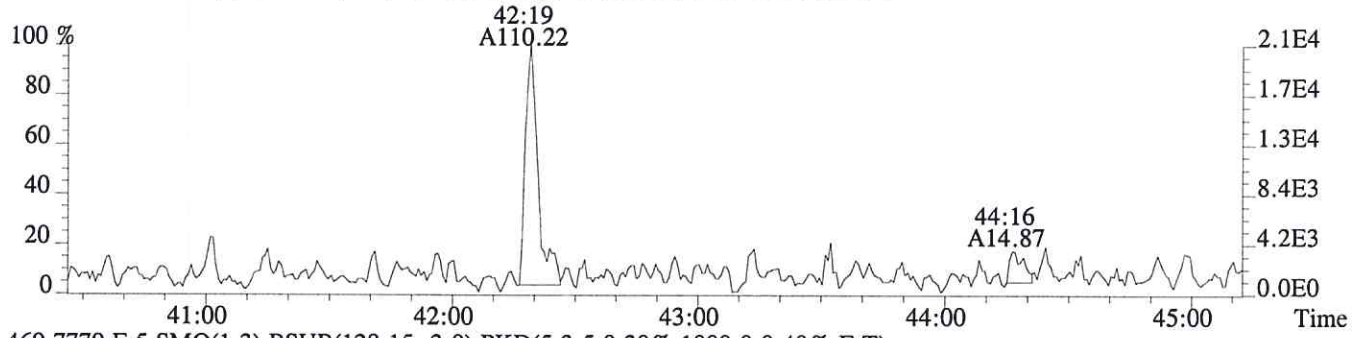


File:P503419 #1-430 Acq:19-MAR-2016 08:37:15 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1600203-006

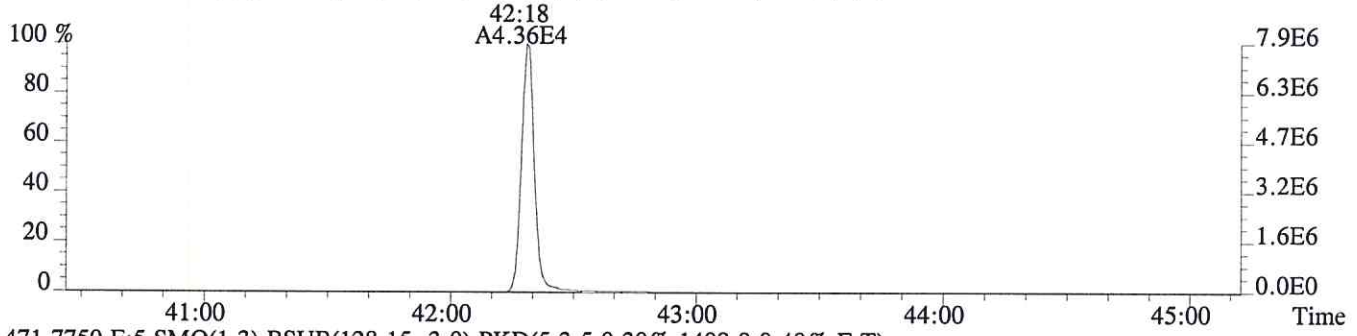
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,716.0,0.40%,F,T)



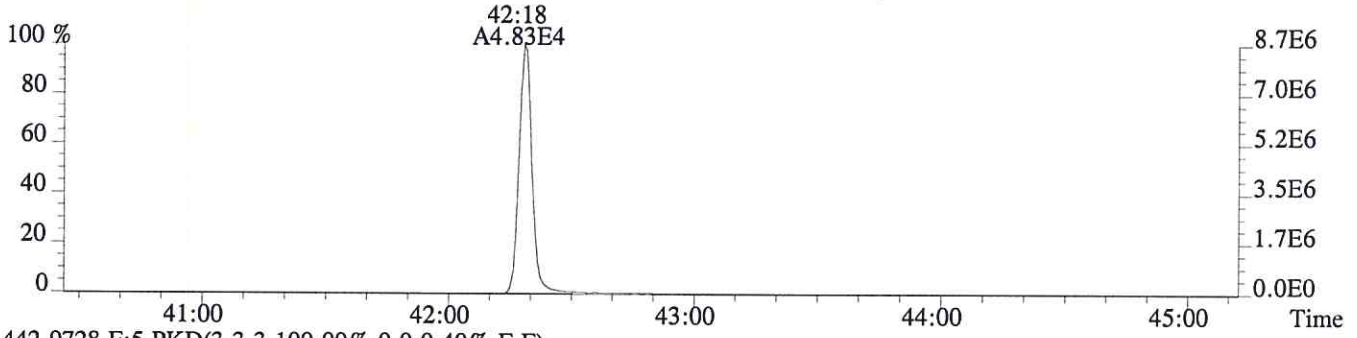
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2044.0,0.40%,F,T)



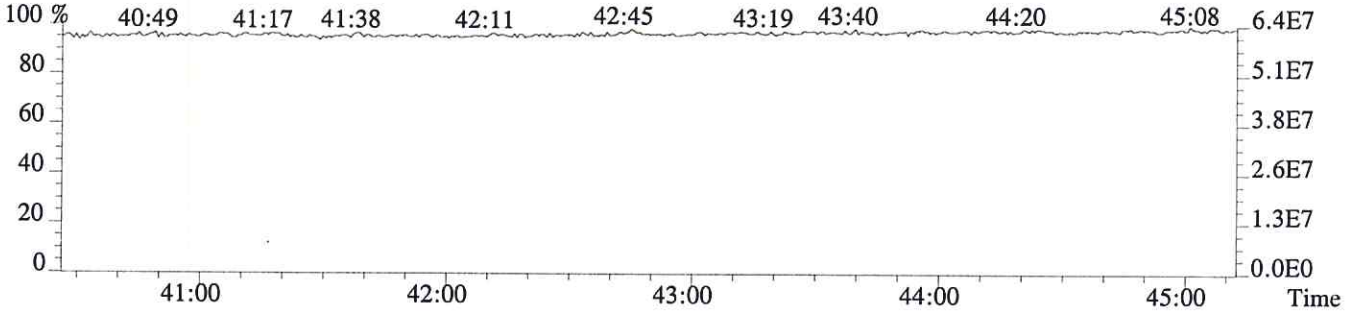
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1000.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1408.0,0.40%,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.
METHOD BLANK

Run #11 Filename P503397 Samp: 1 Inj: 1 Acquired: 18-MAR-16 14:25:00
Processed: 24-MAR-16 11:11:54 Sample ID: EQ1600129-01

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	NotFnd	*	*	*	no	no	0.886
2	Unk	1,2,3,7,8-PeCDF	NotFnd	*	*	*	no	no	0.983
3	Unk	2,3,4,7,8-PeCDF	NotFnd	*	*	*	no	yes	0.952
4	Unk	1,2,3,4,7,8-HxCDF	NotFnd	*	*	*	no	yes	1.190
5	Unk	1,2,3,6,7,8-HxCDF	NotFnd	*	*	*	no	yes	1.114
6	Unk	2,3,4,6,7,8-HxCDF	NotFnd	*	*	*	no	yes	1.109
7	Unk	1,2,3,7,8,9-HxCDF	37:24	1.862e+01	2.252e+01	0.83	no	yes	1.153
8	Unk	1,2,3,4,6,7,8-HpCDF	NotFnd	*	*	*	no	no	1.376
9	Unk	1,2,3,4,7,8,9-HpCDF	NotFnd	*	*	*	no	yes	1.306
10	Unk	OCDF	NotFnd	*	*	*	no	no	1.263
11	Unk	2,3,7,8-TCDD	NotFnd	*	*	*	no	no	0.997
12	Unk	1,2,3,7,8-PeCDD	NotFnd	*	*	*	no	no	0.935
13	Unk	1,2,3,4,7,8-HxCDD	NotFnd	*	*	*	no	no	1.039
14	Unk	1,2,3,6,7,8-HxCDD	NotFnd	*	*	*	no	yes	0.996
15	Unk	1,2,3,7,8,9-HxCDD	NotFnd	*	*	*	no	no	1.108
16	Unk	1,2,3,4,6,7,8-HpCDD	NotFnd	*	*	*	no	yes	1.010
17	Unk	OCDD	NotFnd	*	*	*	no	no	1.090
18	IS	13C-2,3,7,8-TCDF	28:22	2.484e+04	3.140e+04	0.79	yes	no	1.447
19	IS	13C-1,2,3,7,8-PeCDF	32:30	6.254e+04	3.939e+04	1.59	yes	no	1.500
20	IS	13C-2,3,4,7,8-PeCDF	33:23	6.620e+04	4.204e+04	1.57	yes	no	1.456
21	IS	13C-1,2,3,4,7,8-HxCDF	36:02	3.167e+04	6.066e+04	0.52	yes	no	1.207
22	IS	13C-1,2,3,6,7,8-HxCDF	36:09	3.693e+04	7.201e+04	0.51	yes	no	1.263
23	IS	13C-2,3,4,6,7,8-HxCDF	36:38	3.574e+04	6.931e+04	0.52	yes	no	1.153
24	IS	13C-1,2,3,7,8,9-HxCDF	37:23	3.121e+04	6.064e+04	0.51	yes	no	1.085
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:37	2.157e+04	4.913e+04	0.44	yes	no	0.876
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:01	2.283e+04	5.185e+04	0.44	yes	no	0.883
27	IS	13C-2,3,7,8-TCDD	29:08	2.014e+04	2.534e+04	0.80	yes	no	1.027
28	IS	13C-1,2,3,7,8-PeCDD	33:41	5.135e+04	3.168e+04	1.62	yes	no	1.064
29	IS	13C-1,2,3,4,7,8-HxCDD	36:46	4.825e+04	3.758e+04	1.28	yes	no	0.908
30	IS	13C-1,2,3,6,7,8-HxCDD	36:51	5.085e+04	4.023e+04	1.26	yes	no	0.899
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:31	3.830e+04	3.591e+04	1.07	yes	no	0.910
32	IS	13C-OCDD	42:17	4.131e+04	4.595e+04	0.90	yes	no	0.633
33	RS/RT	13C-1,2,3,4-TCDD	28:35	4.383e+04	5.505e+04	0.80	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:05	6.639e+04	5.181e+04	1.28	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:09	2.417e+04				no	1.066

$$\text{OCDD} = \frac{(* \quad + * \quad) \times 4000 \text{ pg} \times 1}{(4.131\text{e}{+04} + 4.595\text{e}{+04}) \times \quad \text{g} \quad \times \quad / 100 \times 1.090} =$$

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
METHOD BLANK

Run #11 Filename P503397 Samp: 1 Inj: 1 Acquired: 18-MAR-16 14:25:00
Processed: 24-MAR-16 11:11:54 LAB. ID: EQ1600129-01

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	*	1.28e+03	*	*	3.01e+03	*
2	1,2,3,7,8-PeCDF	*	1.02e+03	*	*	2.36e+03	*
3	2,3,4,7,8-PeCDF	*	1.02e+03	*	*	2.36e+03	*
4	1,2,3,4,7,8-HxCDF	*	1.15e+03	*	*	6.04e+02	*
5	1,2,3,6,7,8-HxCDF	*	1.15e+03	*	*	6.04e+02	*
6	2,3,4,6,7,8-HxCDF	*	1.15e+03	*	*	6.04e+02	*
7	1,2,3,7,8,9-HxCDF	5.17e+03	1.15e+03	4.5e+00	4.68e+03	6.04e+02	7.8e+00
8	1,2,3,4,6,7,8-HpCDF	*	5.88e+02	*	*	7.04e+02	*
9	1,2,3,4,7,8,9-HpCDF	*	5.88e+02	*	*	7.04e+02	*
10	OCDF	*	9.44e+02	*	*	2.89e+03	*
11	2,3,7,8-TCDD	*	2.00e+03	*	*	2.18e+03	*
12	1,2,3,7,8-PeCDD	*	2.24e+03	*	*	4.16e+02	*
13	1,2,3,4,7,8-HxCDD	*	8.20e+02	*	*	1.02e+03	*
14	1,2,3,6,7,8-HxCDD	*	8.20e+02	*	*	1.02e+03	*
15	1,2,3,7,8,9-HxCDD	*	8.20e+02	*	*	1.02e+03	*
16	1,2,3,4,6,7,8-HpCDD	*	1.68e+03	*	*	5.04e+02	*
17	OCDD	*	1.20e+03	*	*	1.09e+03	*
18	13C-2,3,7,8-TCDF	4.67e+06	3.00e+03	1.6e+03	5.93e+06	2.34e+03	2.5e+03
19	13C-1,2,3,7,8-PeCDF	1.19e+07	1.06e+03	1.1e+04	7.52e+06	1.48e+03	5.1e+03
20	13C-2,3,4,7,8-PeCDF	1.30e+07	1.06e+03	1.2e+04	8.35e+06	1.48e+03	5.6e+03
21	13C-1,2,3,4,7,8-HxCDF	6.95e+06	1.32e+03	5.3e+03	1.33e+07	2.91e+03	4.6e+03
22	13C-1,2,3,6,7,8-HxCDF	7.87e+06	1.32e+03	6.0e+03	1.52e+07	2.91e+03	5.2e+03
23	13C-2,3,4,6,7,8-HxCDF	7.74e+06	1.32e+03	5.9e+03	1.48e+07	2.91e+03	5.1e+03
24	13C-1,2,3,7,8,9-HxCDF	6.66e+06	1.32e+03	5.0e+03	1.29e+07	2.91e+03	4.4e+03
25	13C-1,2,3,4,6,7,8-HpCDF	4.62e+06	3.43e+03	1.3e+03	1.05e+07	1.21e+03	8.7e+03
26	13C-1,2,3,4,7,8,9-HpCDF	4.62e+06	3.43e+03	1.3e+03	1.04e+07	1.21e+03	8.6e+03
27	13C-2,3,7,8-TCDD	3.94e+06	7.94e+03	5.0e+02	5.00e+06	4.61e+03	1.1e+03
28	13C-1,2,3,7,8-PeCDD	1.01e+07	2.23e+03	4.5e+03	6.22e+06	1.15e+03	5.4e+03
29	13C-1,2,3,4,7,8-HxCDD	1.08e+07	2.80e+03	3.8e+03	8.47e+06	2.76e+03	3.1e+03
30	13C-1,2,3,6,7,8-HxCDD	1.08e+07	2.80e+03	3.9e+03	8.58e+06	2.76e+03	3.1e+03
31	13C-1,2,3,4,6,7,8-HpCDD	7.92e+06	1.60e+03	4.9e+03	7.50e+06	1.14e+03	6.6e+03
32	13C-OCDD	7.17e+06	1.03e+03	6.9e+03	8.03e+06	1.77e+03	4.5e+03
33	13C-1,2,3,4-TCDD	8.30e+06	7.94e+03	1.0e+03	1.05e+07	4.61e+03	2.3e+03
34	13C-1,2,3,7,8,9-HxCDD	1.37e+07	2.80e+03	4.9e+03	1.10e+07	2.76e+03	4.0e+03
35	37Cl-2,3,7,8-TCDD	4.83e+06	3.07e+03	1.6e+03			

---Sample Calculation---

$$\text{D/L TCDD} = \frac{2.5 \times (2.000e+03 + 2.176e+03) \times 2000}{(3.945e+06 + 5.004e+06) \times (\qquad) \times 0.997} =$$

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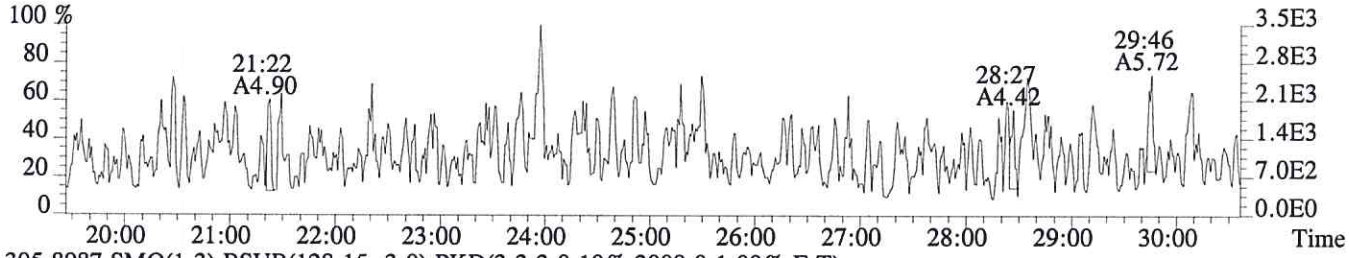
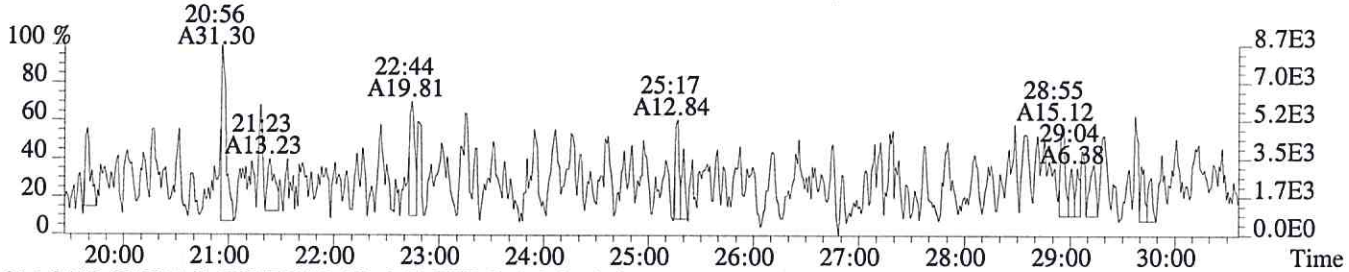
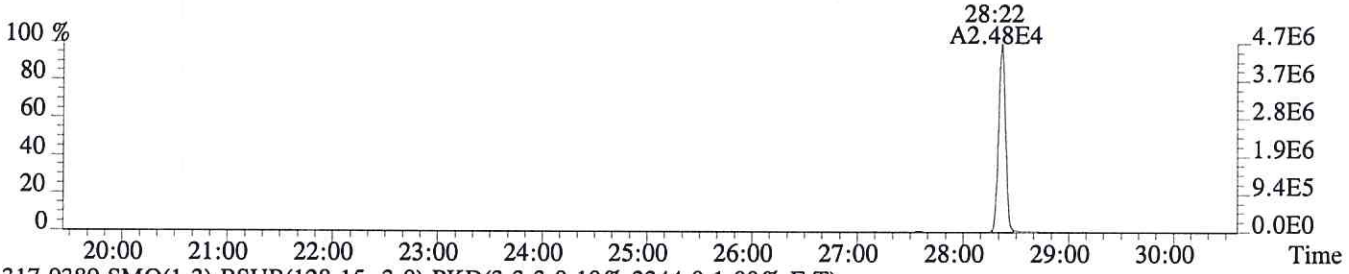
File:P503397 #1-793 Acq:18-MAR-2016 14:25:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-01
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1280.0,1.00%,F,T)



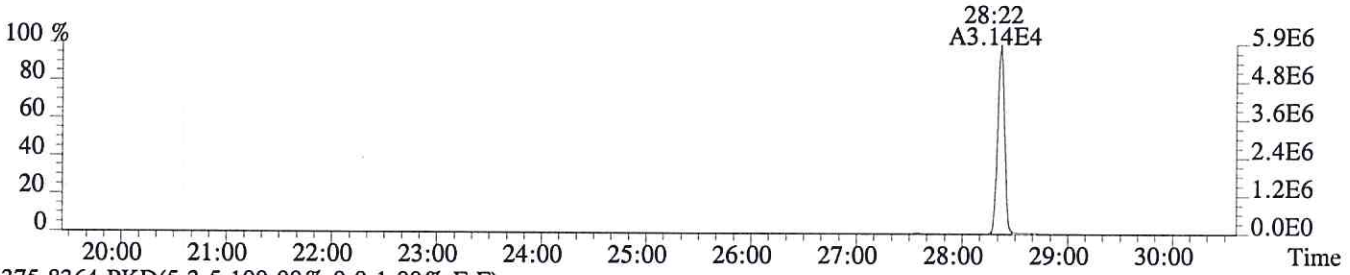
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3008.0,1.00%,F,T)



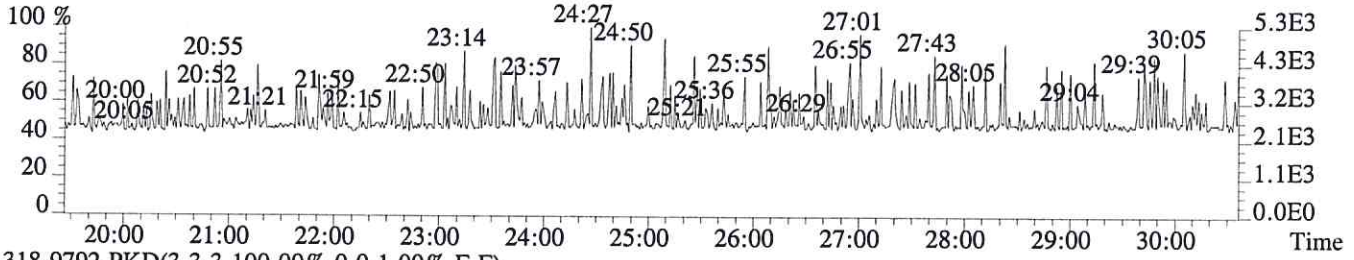
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2996.0,1.00%,F,T)



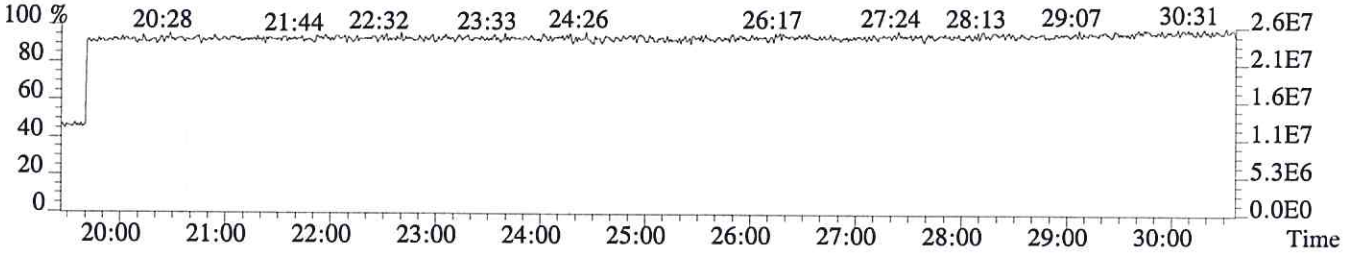
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2344.0,1.00%,F,T)



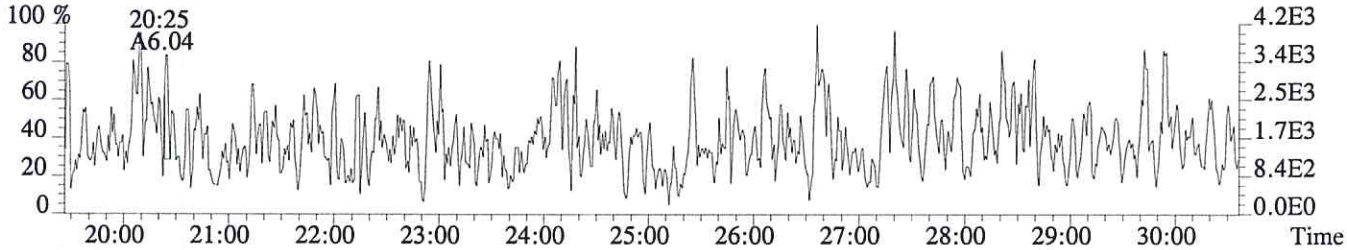
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



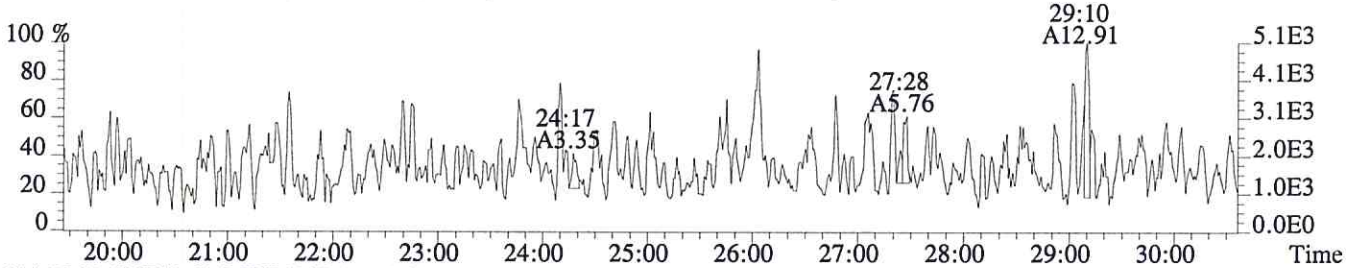
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



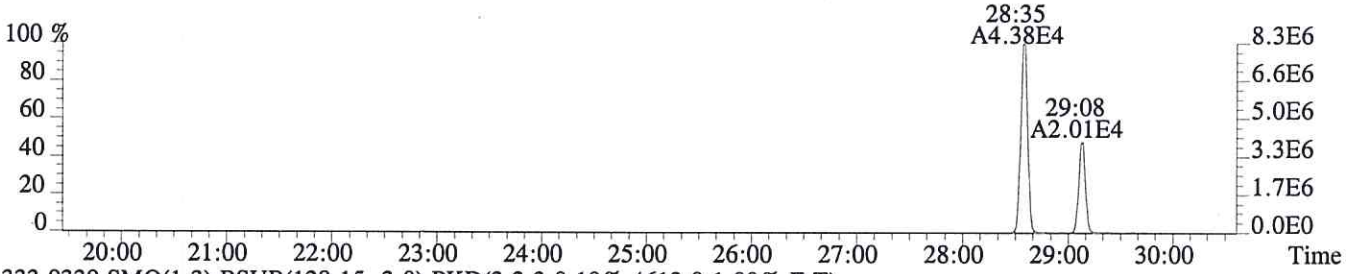
File:P503397 #1-793 Acq:18-MAR-2016 14:25:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-01
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2000.0,1.00%,F,T)



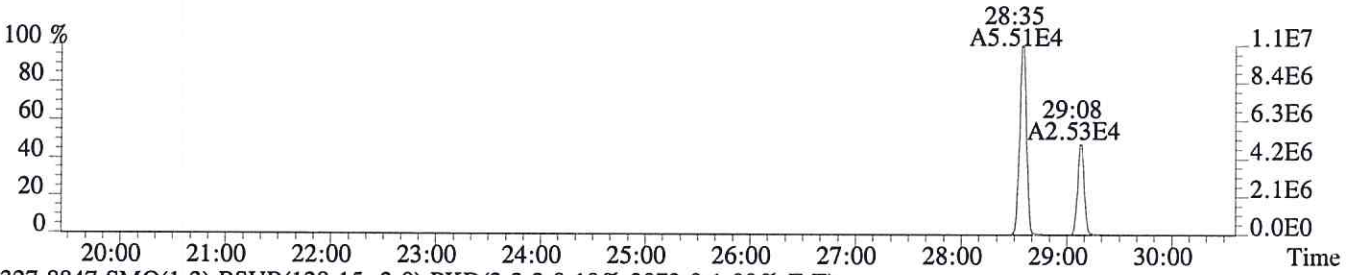
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2176.0,1.00%,F,T)



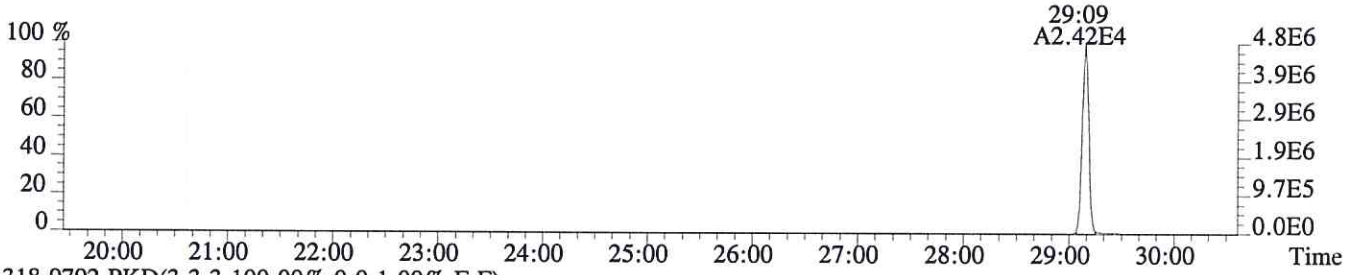
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,7944.0,1.00%,F,T)



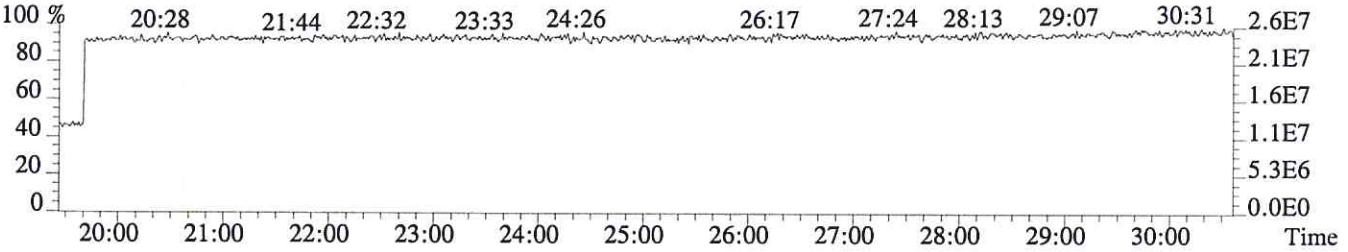
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4612.0,1.00%,F,T)



327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3072.0,1.00%,F,T)

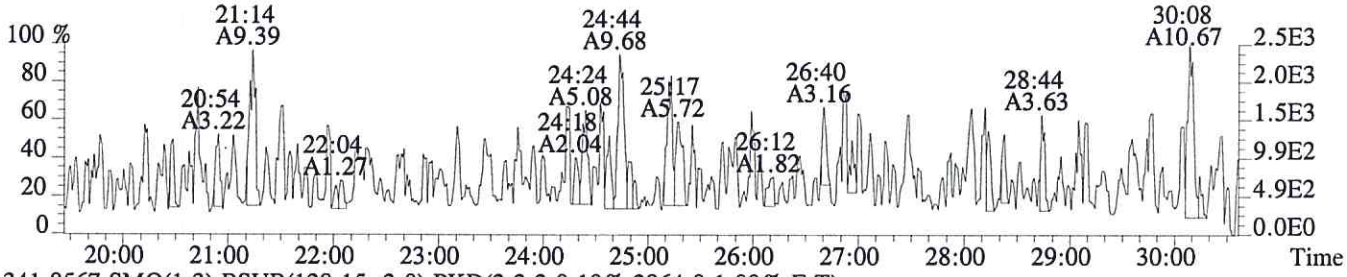


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

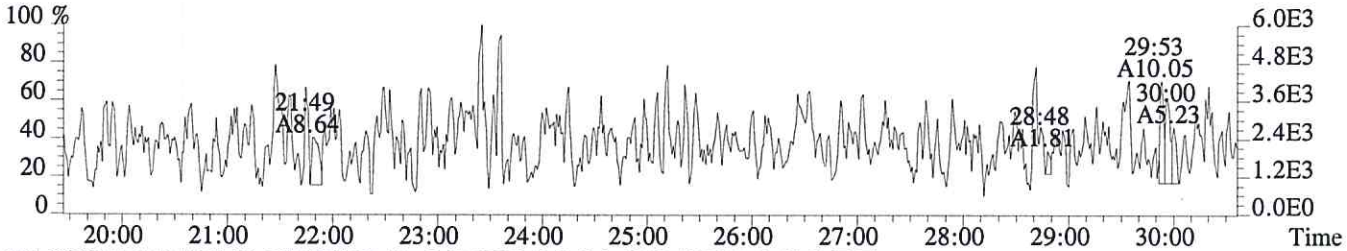


File:P503397 #1-793 Acq:18-MAR-2016 14:25:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-01

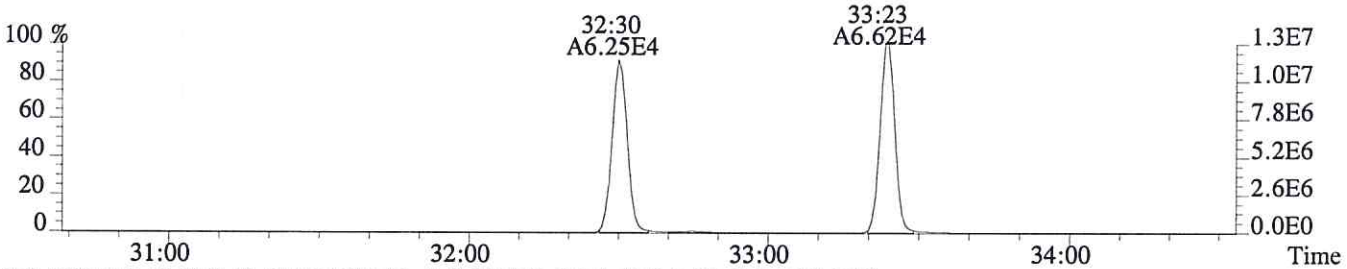
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,728.0,1.00%,F,T)



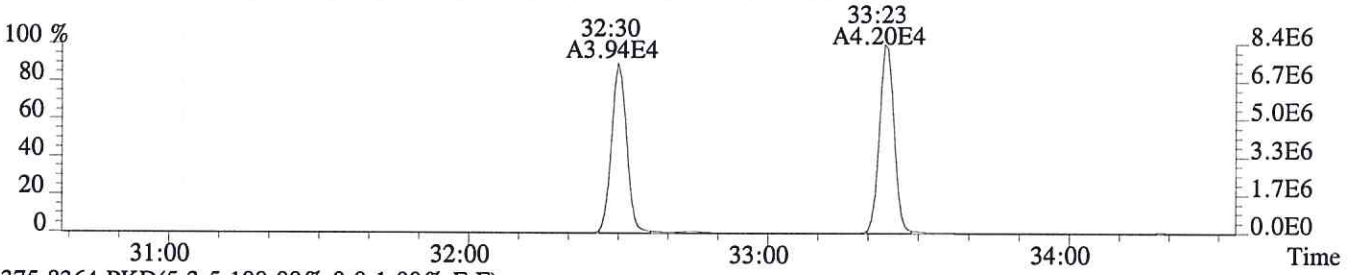
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2864.0,1.00%,F,T)



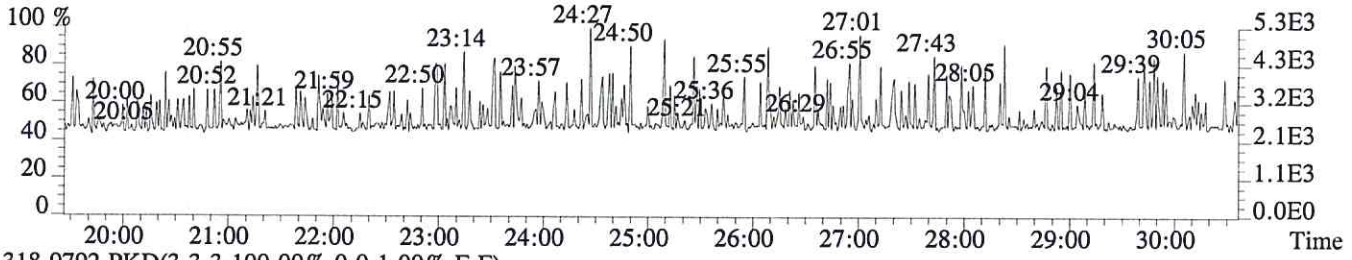
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1056.0,1.00%,F,T)



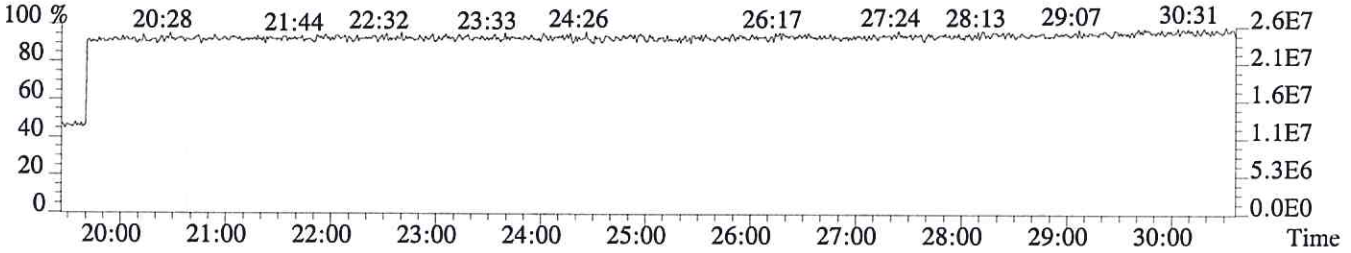
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1480.0,1.00%,F,T)



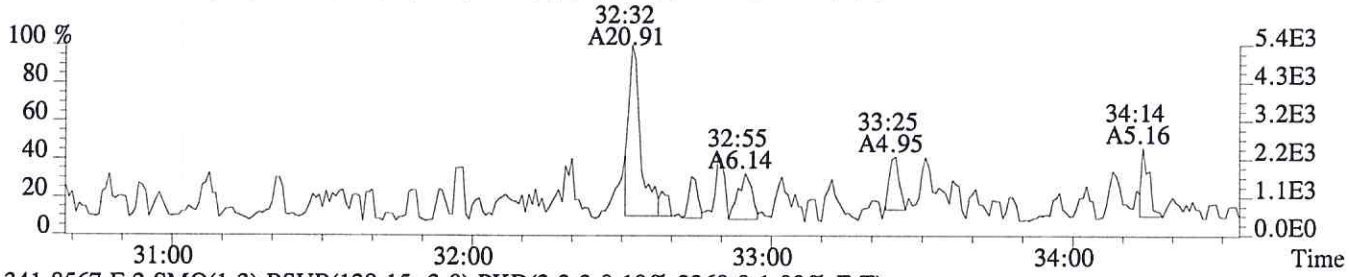
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



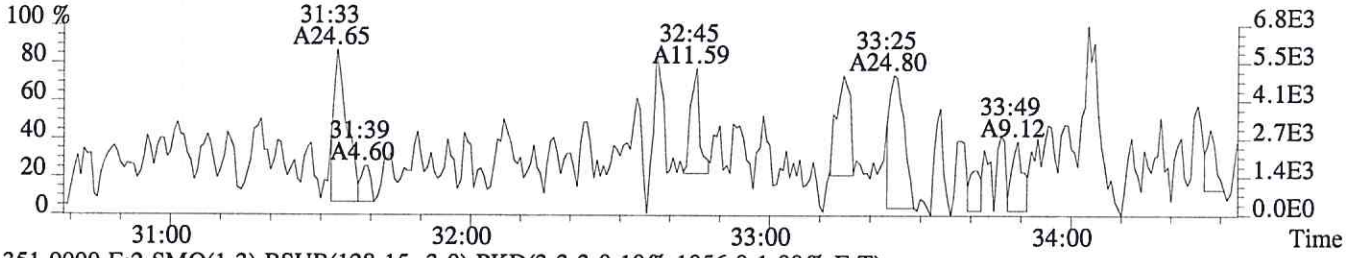
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



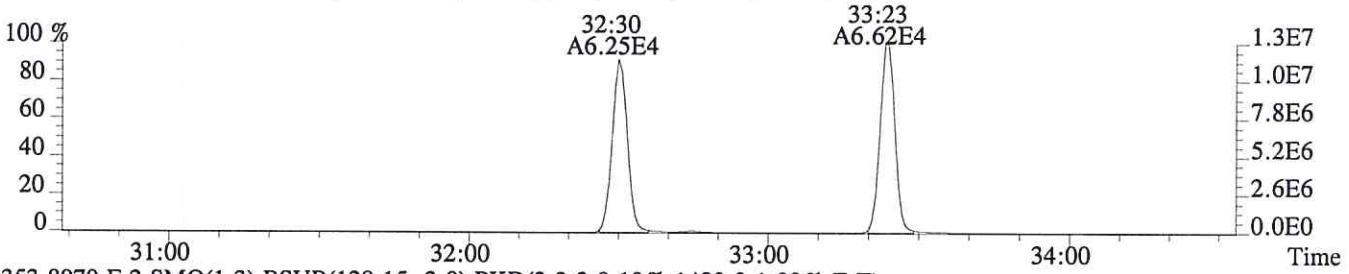
File:P503397 #1-353 Acq:18-MAR-2016 14:25:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-01
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1016.0,1.00%,F,T)



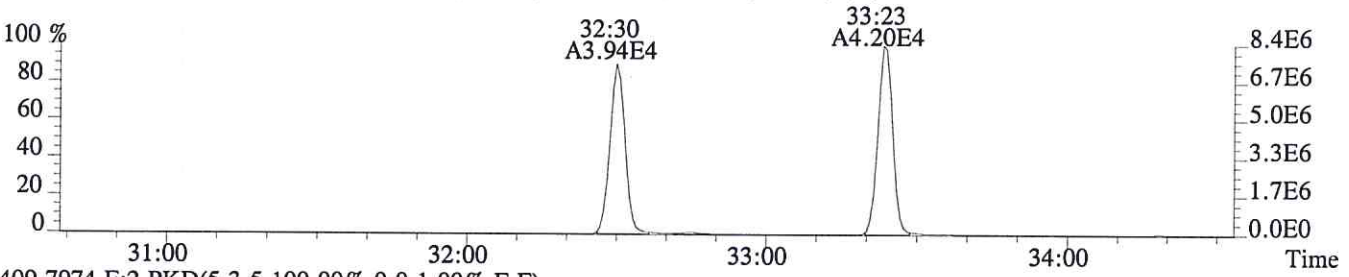
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2360.0,1.00%,F,T)



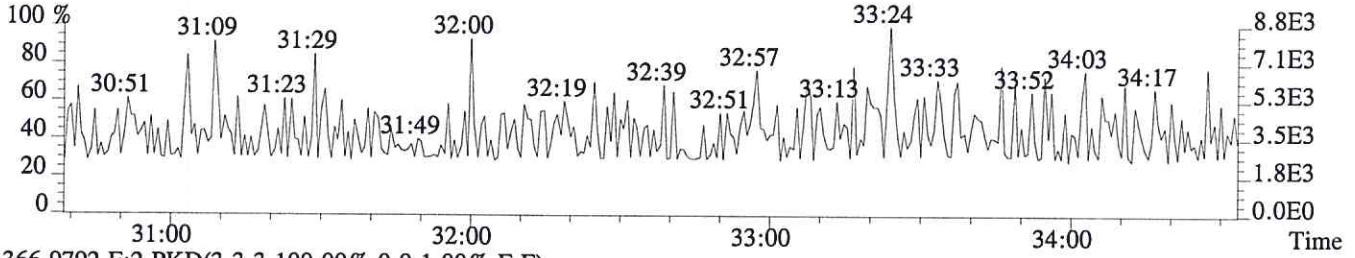
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1056.0,1.00%,F,T)



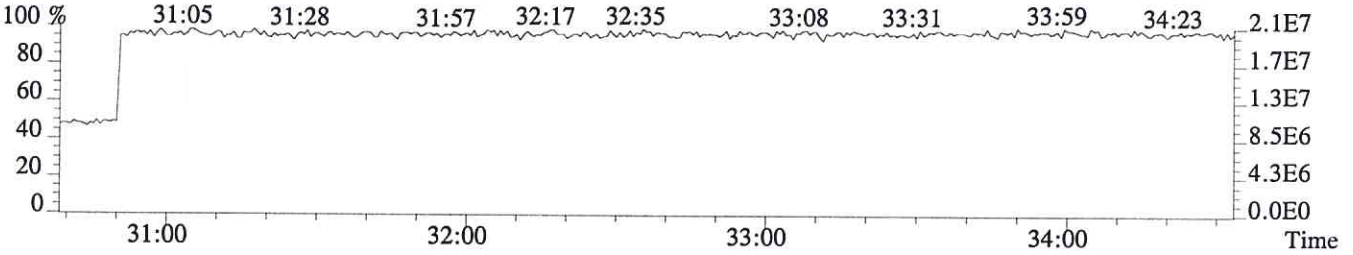
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1480.0,1.00%,F,T)



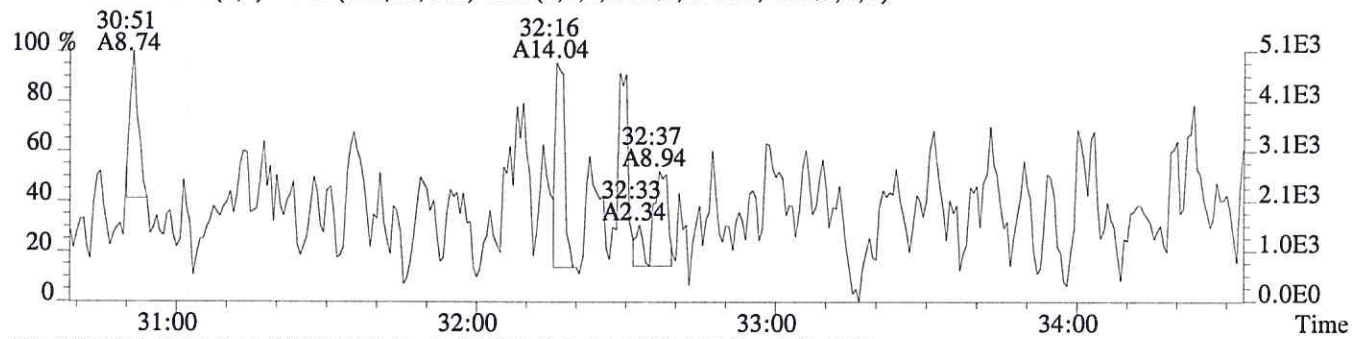
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



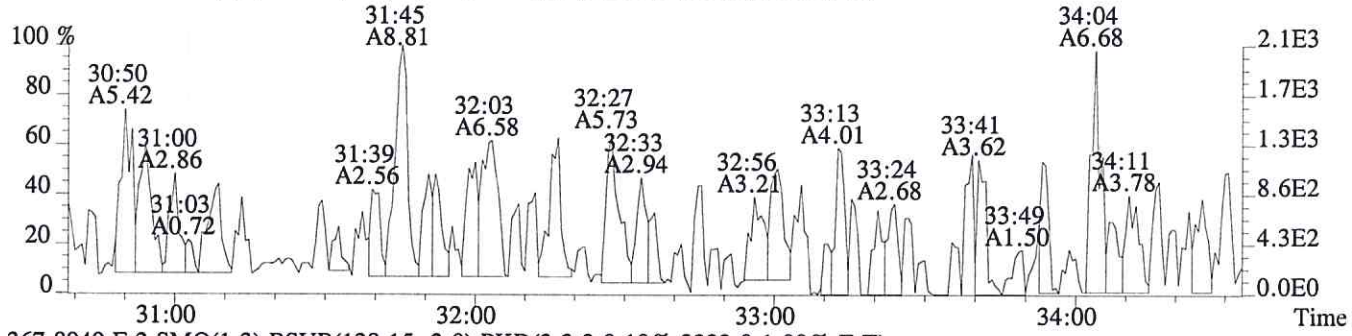
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



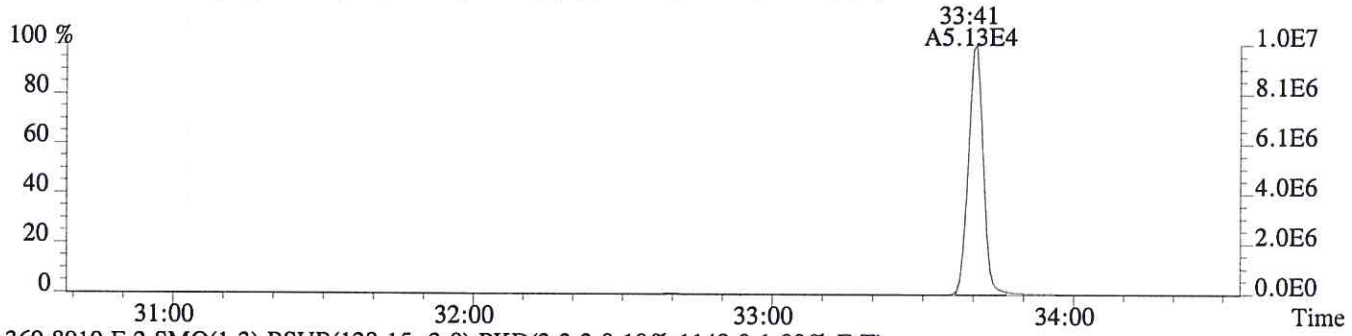
File:P503397 #1-353 Acq:18-MAR-2016 14:25:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-01
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2240.0,1.00%,F,T)



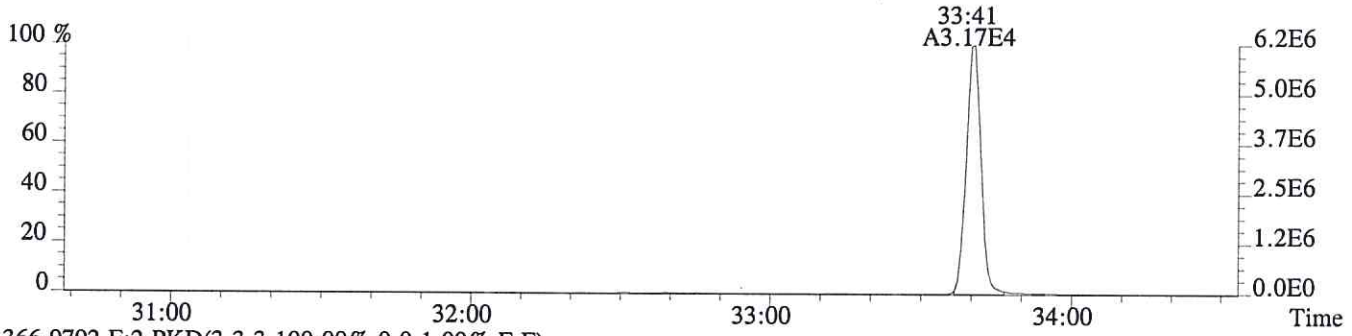
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,416.0,1.00%,F,T)



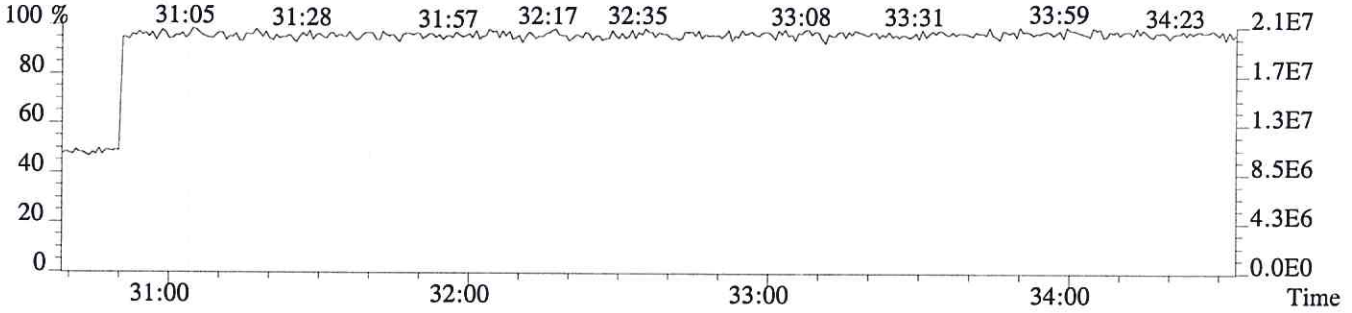
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2232.0,1.00%,F,T)



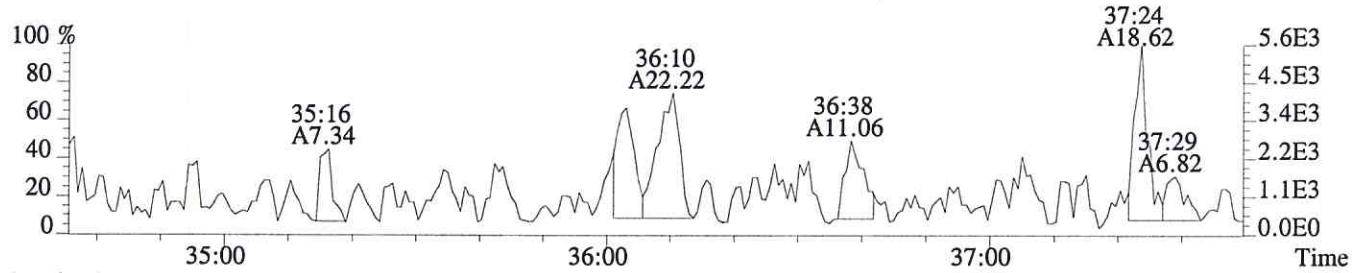
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1148.0,1.00%,F,T)



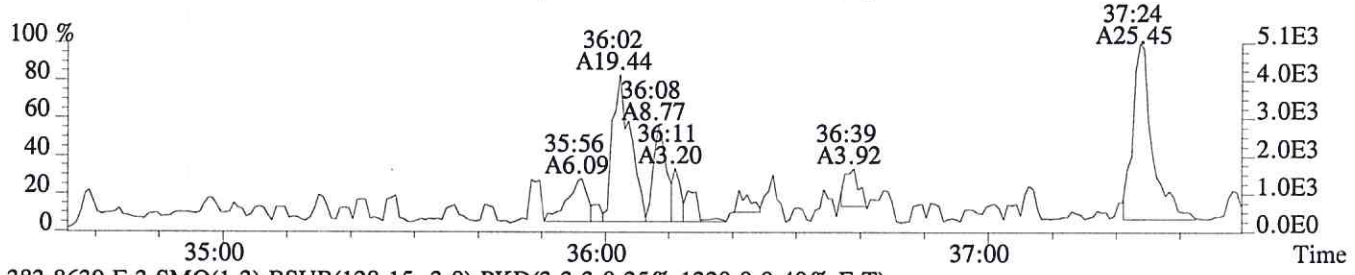
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



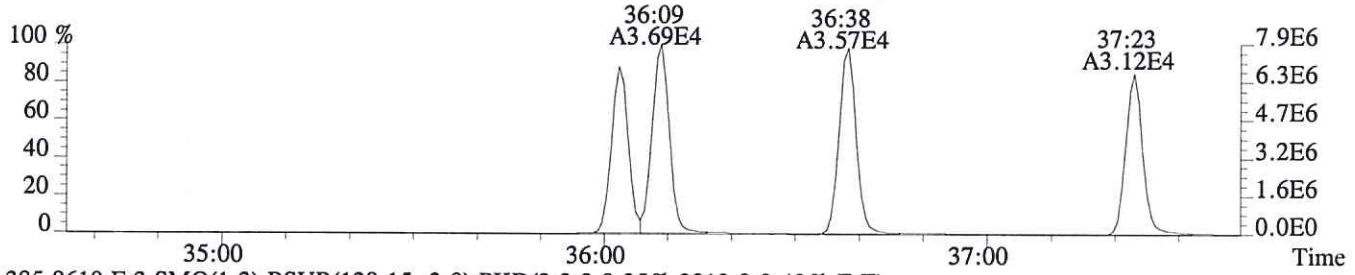
File:P503397 #1-277 Acq:18-MAR-2016 14:25:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-01
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1148.0,0.40%,F,T)



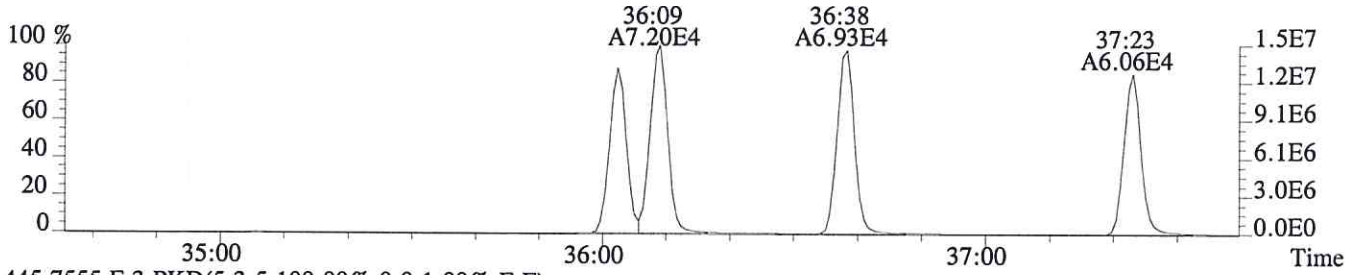
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,604.0,0.40%,F,T)



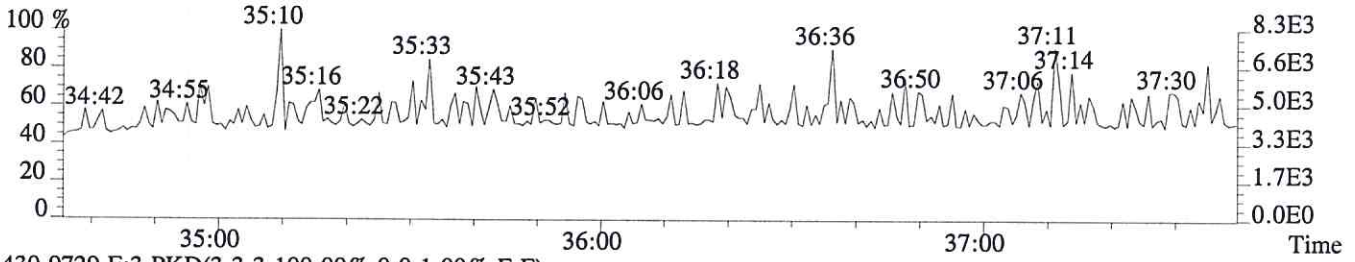
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1320.0,0.40%,F,T)



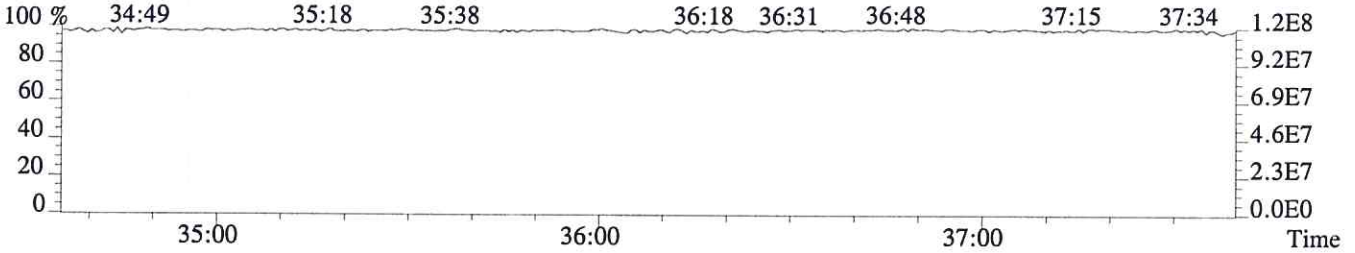
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2912.0,0.40%,F,T)



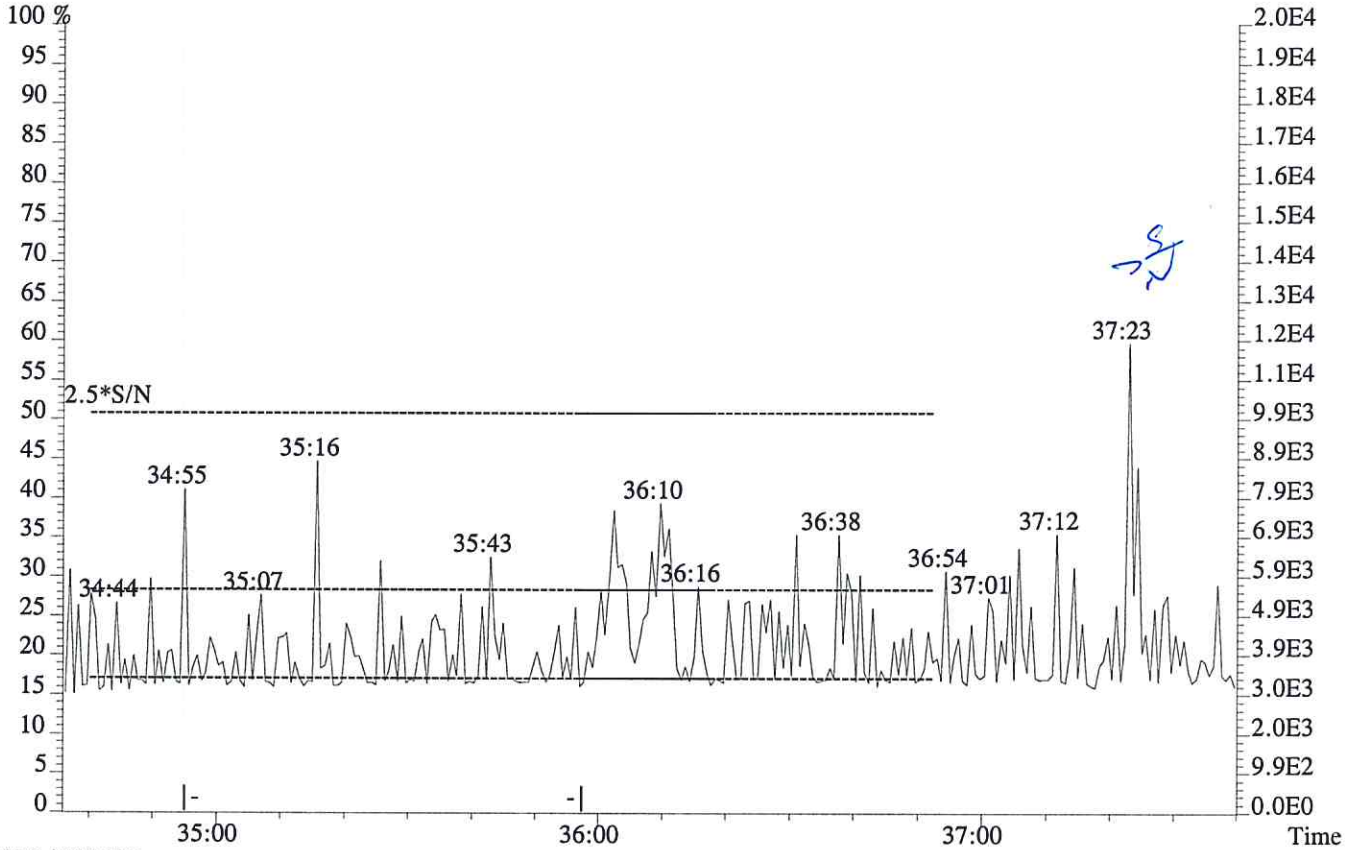
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



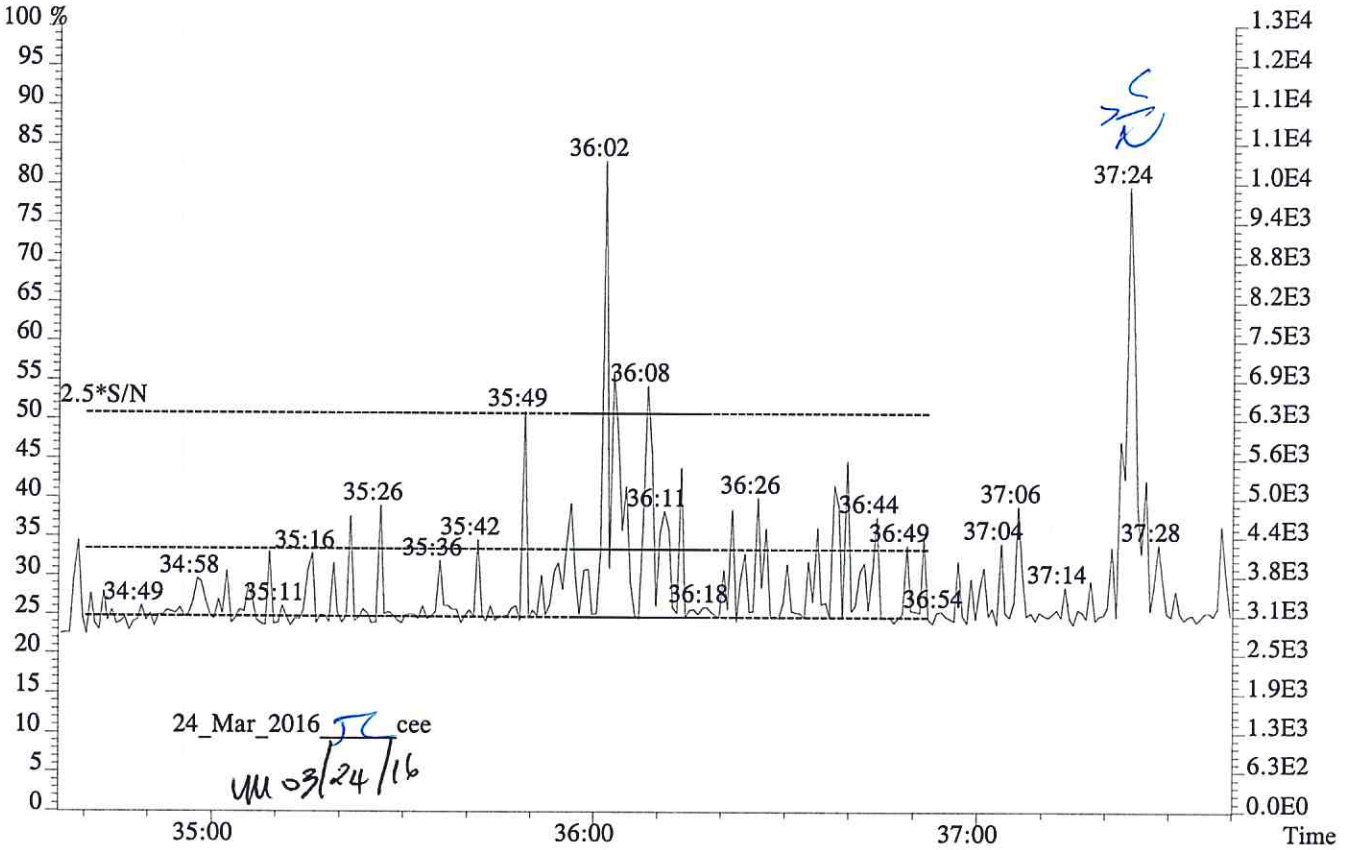
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



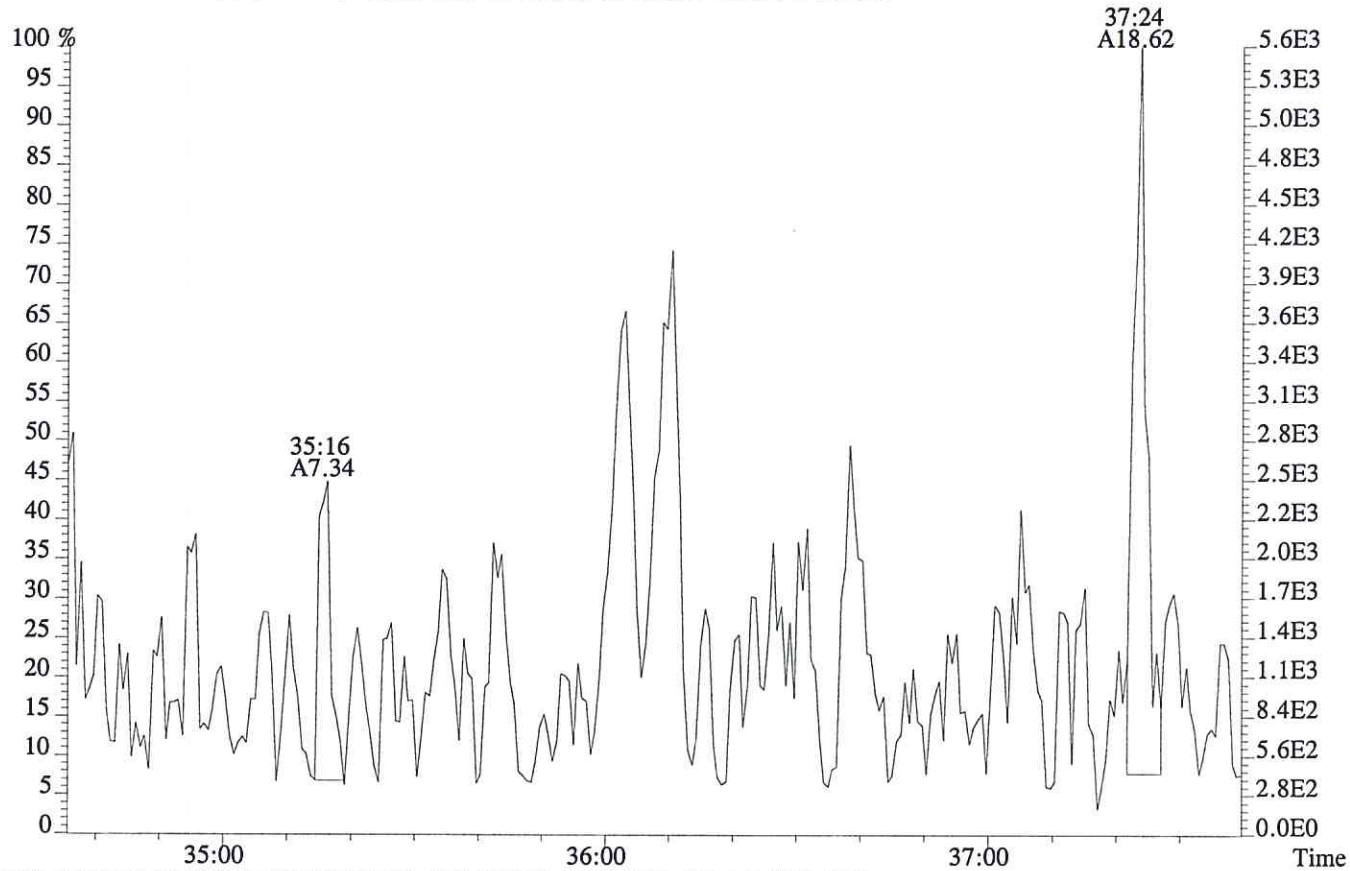
File:P503397 #1-277 Acq:18-MAR-2016 14:25:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-01
373.8208 F:3



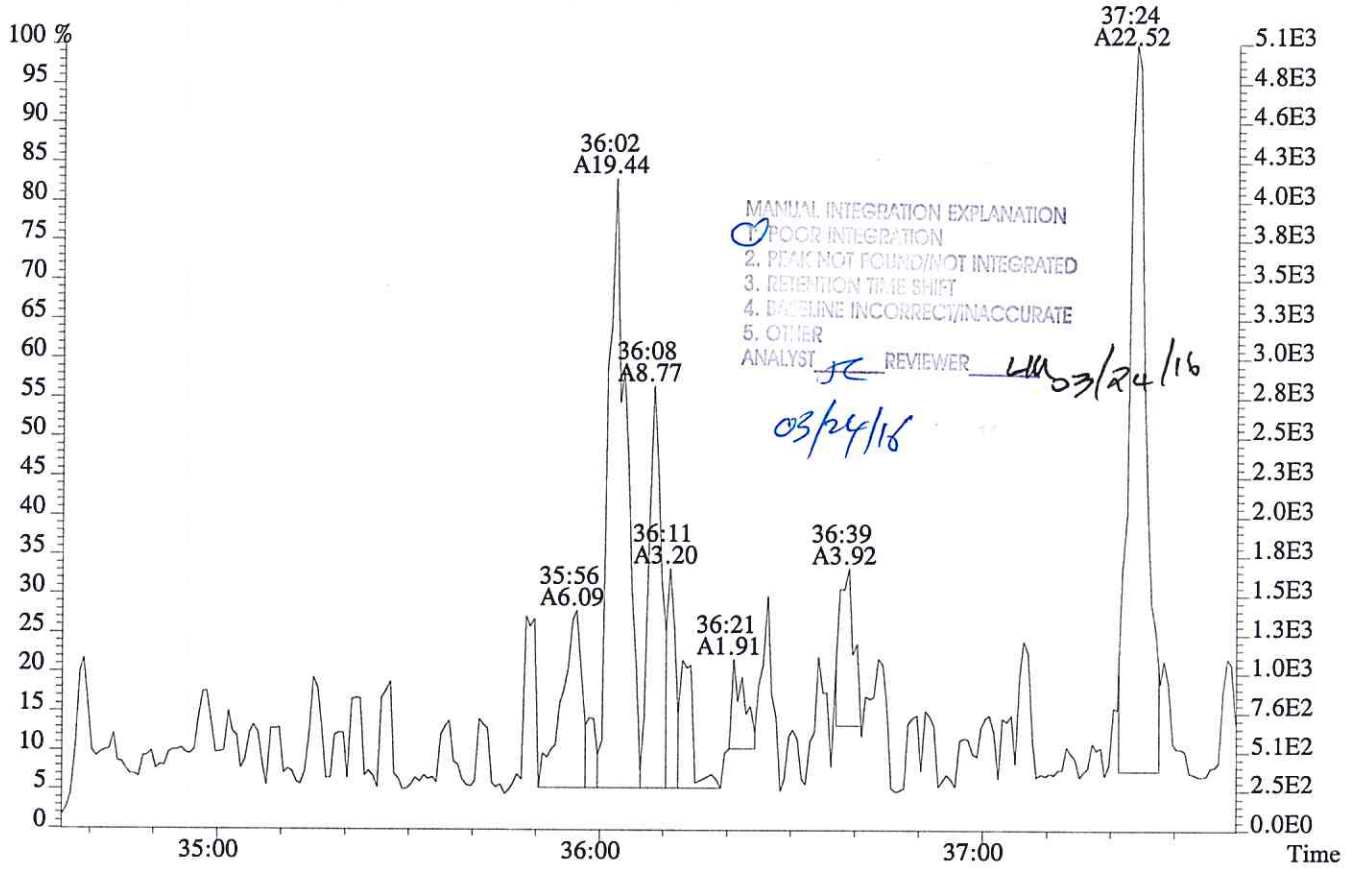
375.8178 F:3



File:P503397 #1-277 Acq:18-MAR-2016 14:25:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-01
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1148.0,0.40%,F,T)

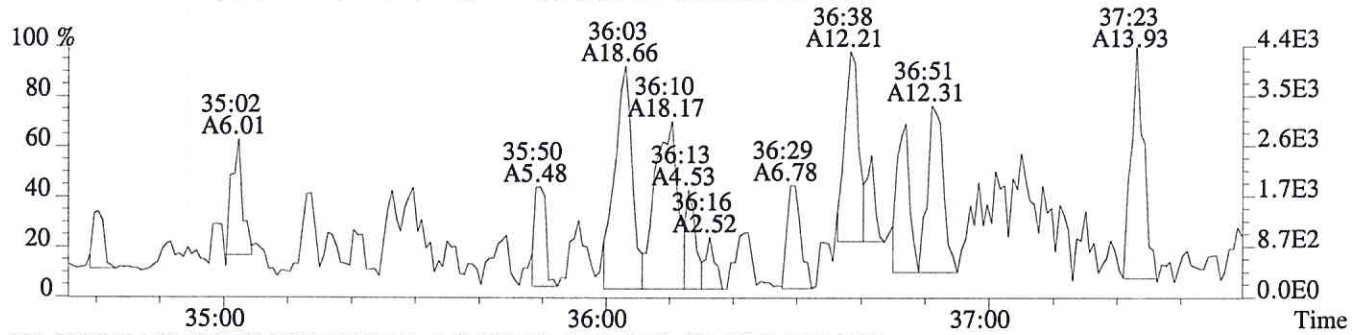


375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,604.0,0.40%,F,T)

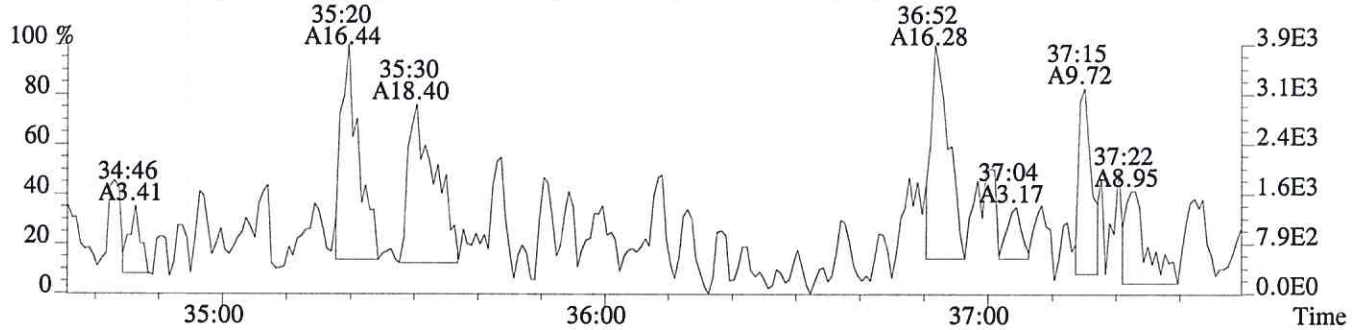


MANUAL INTEGRATION EXPLANATION
1. POOR INTEGRATION
2. PEAK NOT FOUND/NOT INTEGRATED
3. RETENTION TIME SHIFT
4. BASELINE INCORRECT/INACCURATE
5. OTHER
ANALYST JE REVIEWER LM 03/24/16
03/24/16

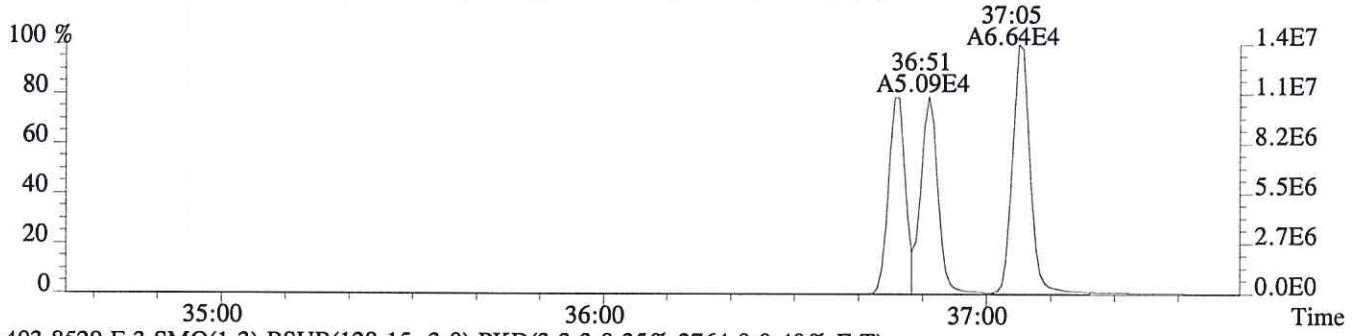
File:P503397 #1-277 Acq:18-MAR-2016 14:25:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-01
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,820.0,0.40%,F,T)



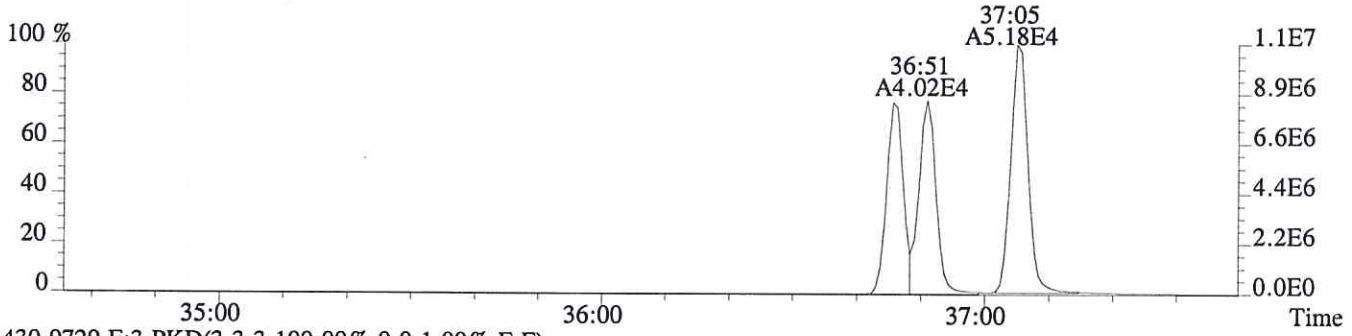
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1016.0,0.40%,F,T)



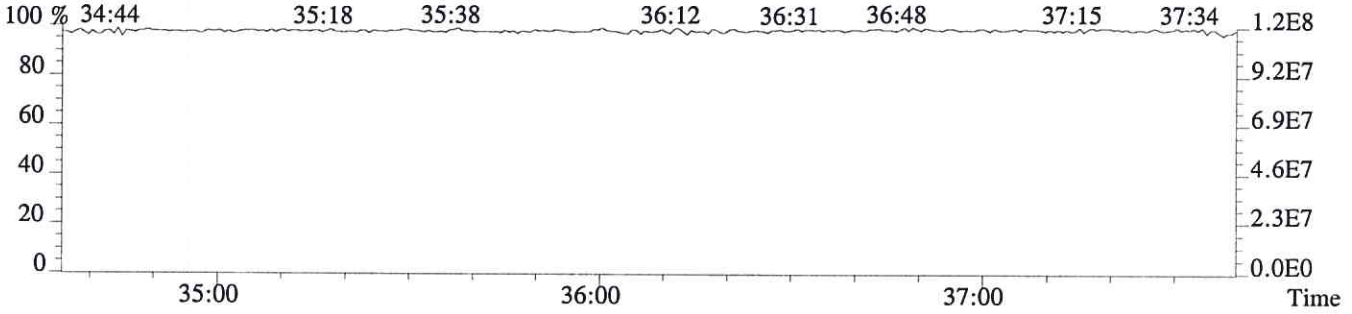
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2804.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2764.0,0.40%,F,T)

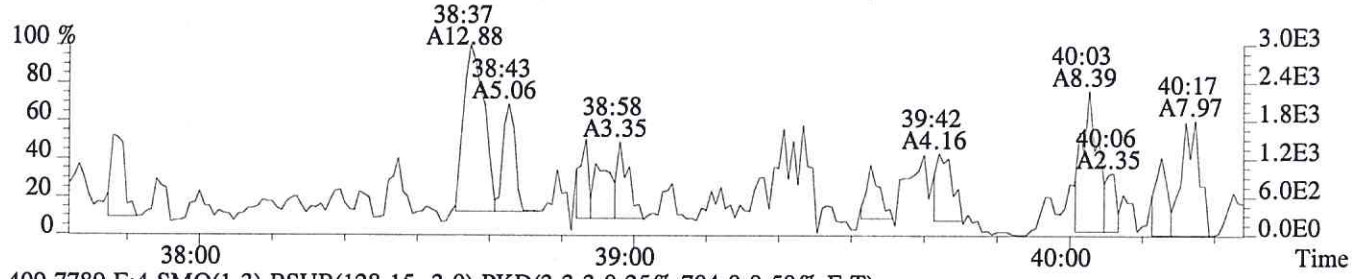


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

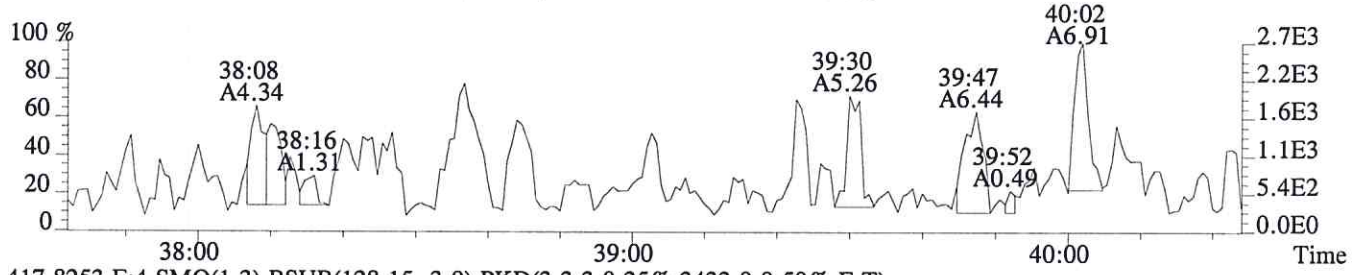


File:P503397 #1-244 Acq:18-MAR-2016 14:25:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-01

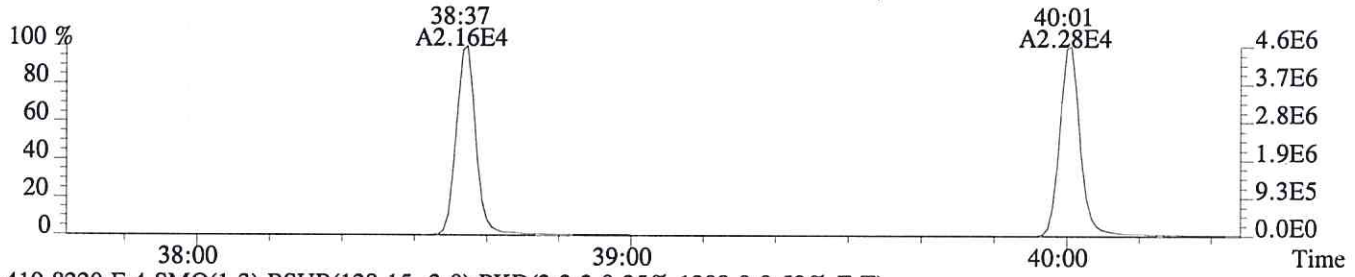
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,588.0,0.50%,F,T)



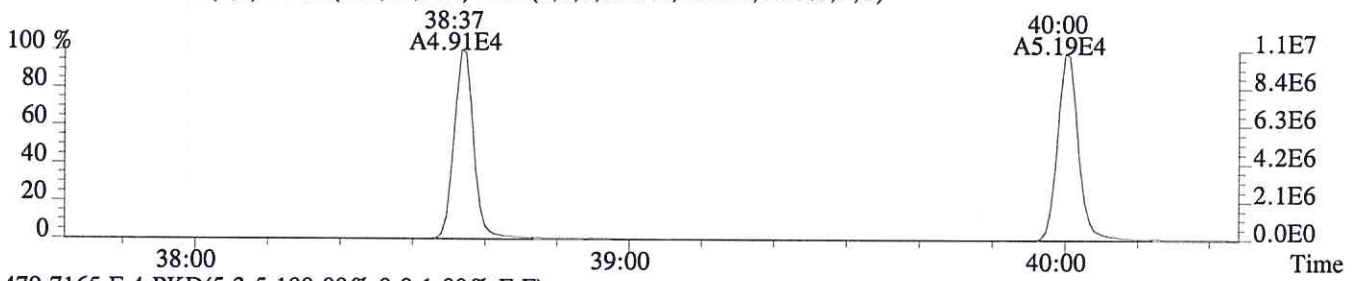
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,704.0,0.50%,F,T)



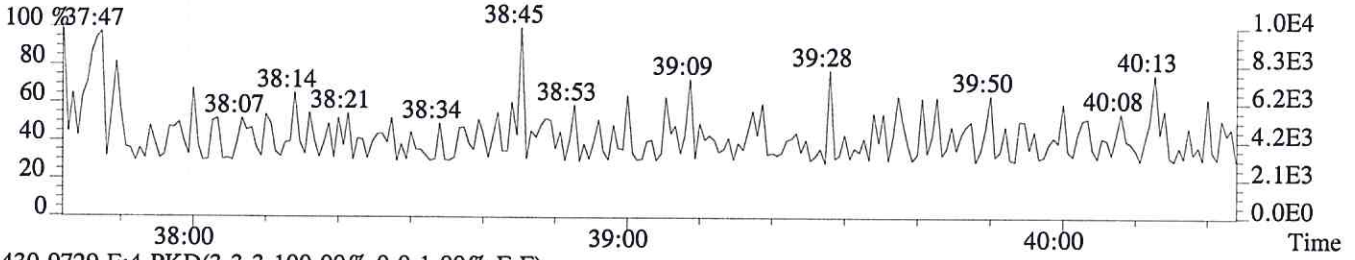
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3432.0,0.50%,F,T)



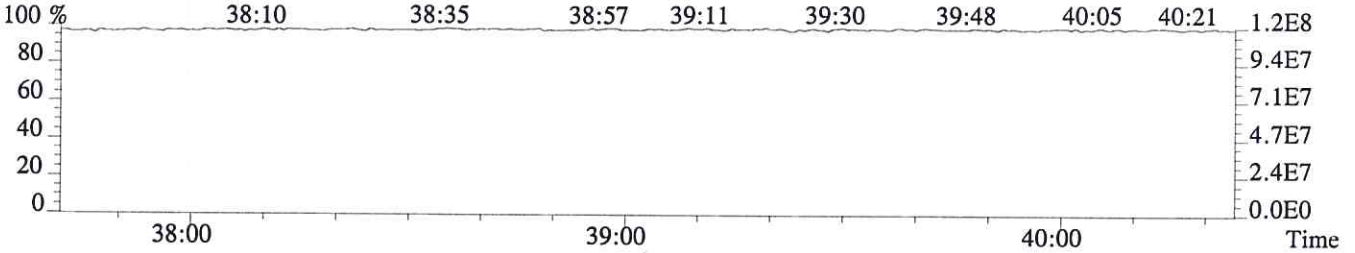
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1208.0,0.50%,F,T)



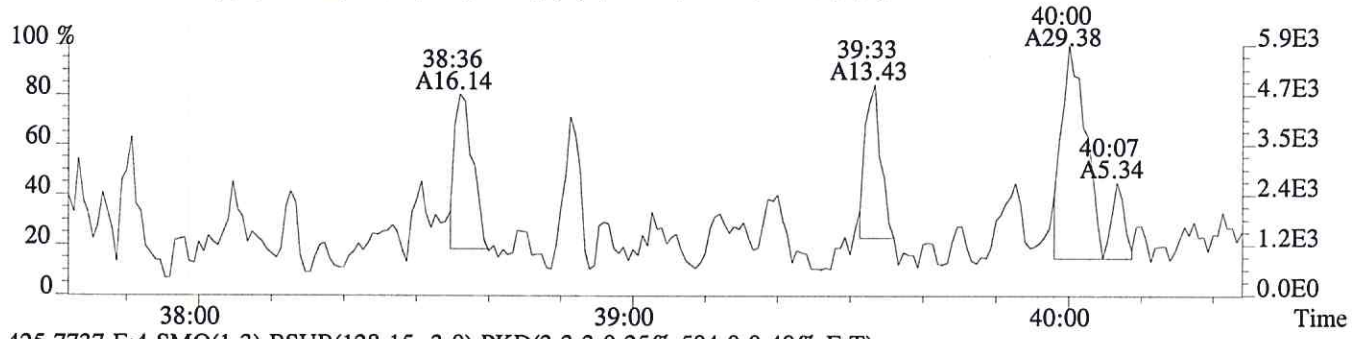
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



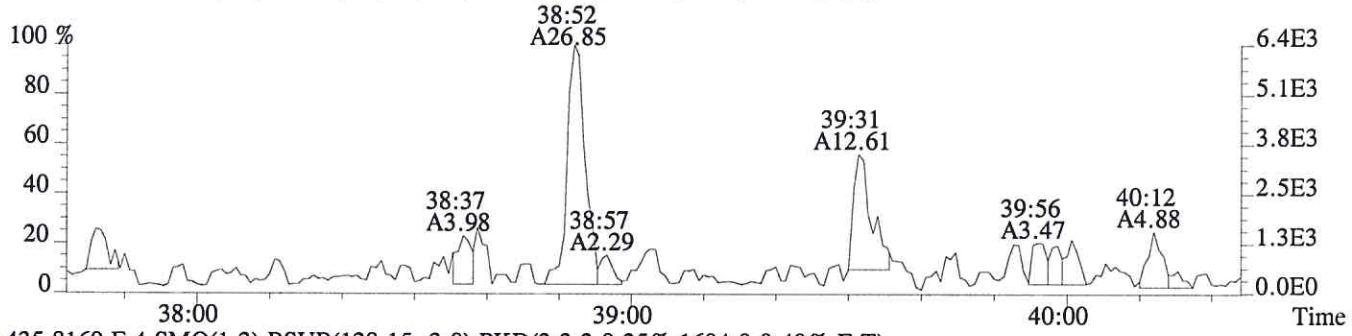
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



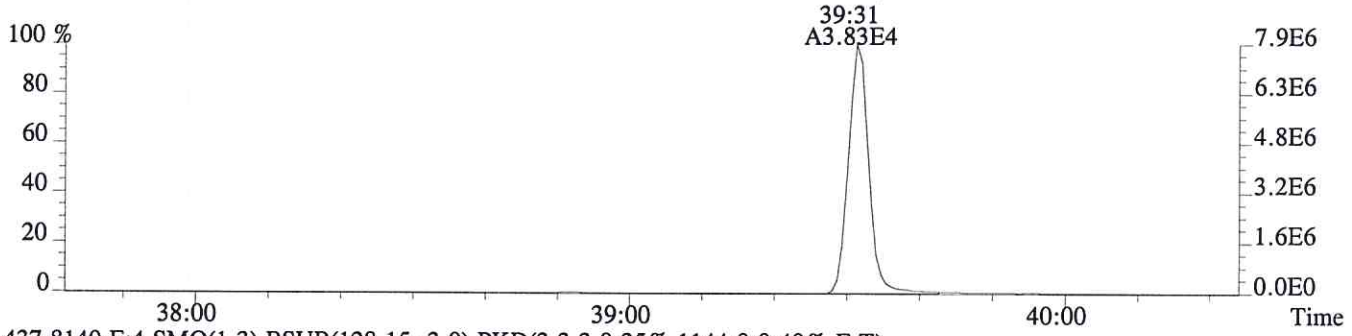
File:P503397 #1-244 Acq:18-MAR-2016 14:25:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-01
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1680.0,0.40%,F,T)



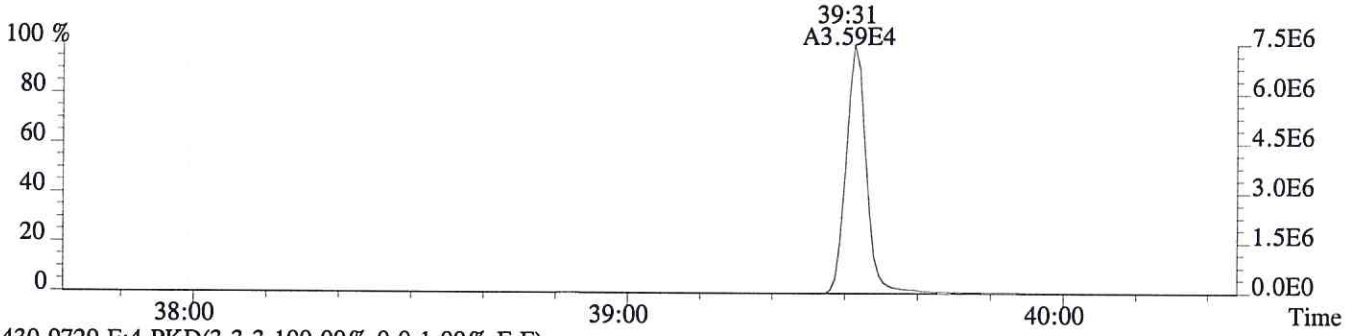
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,504.0,0.40%,F,T)



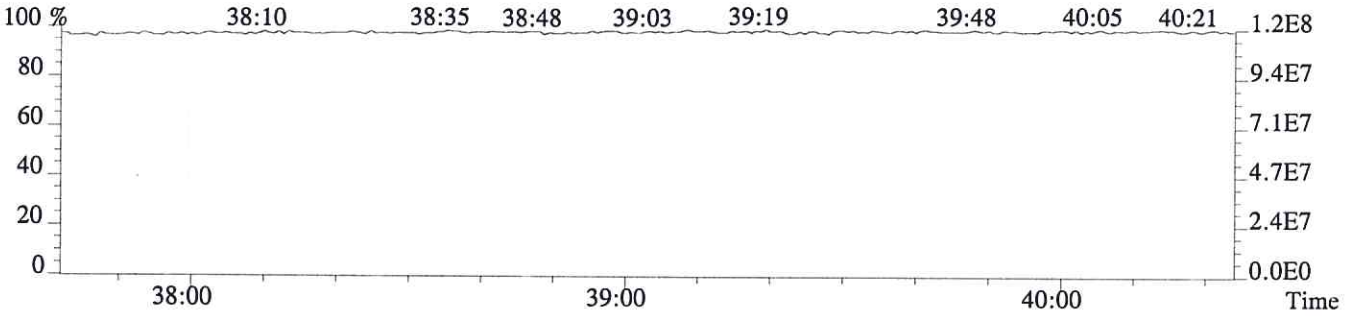
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1604.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1144.0,0.40%,F,T)

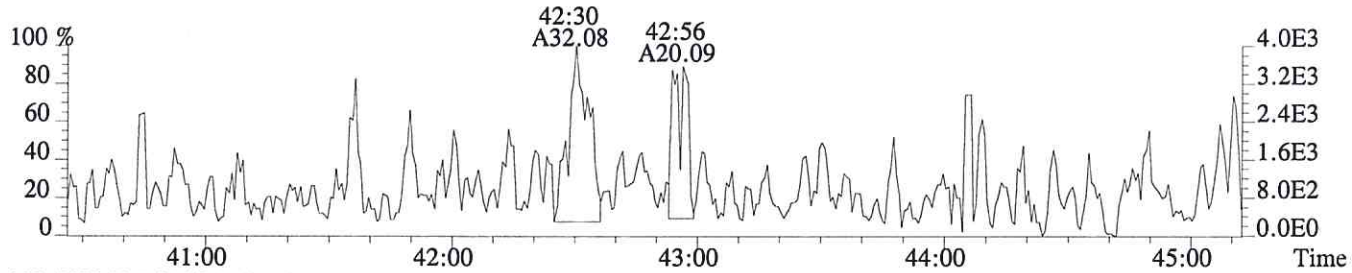


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

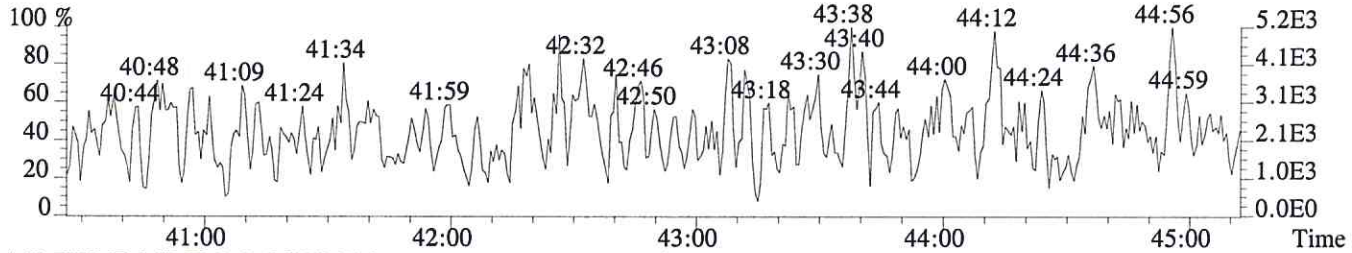


File:P503397 #1-430 Acq:18-MAR-2016 14:25:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-01

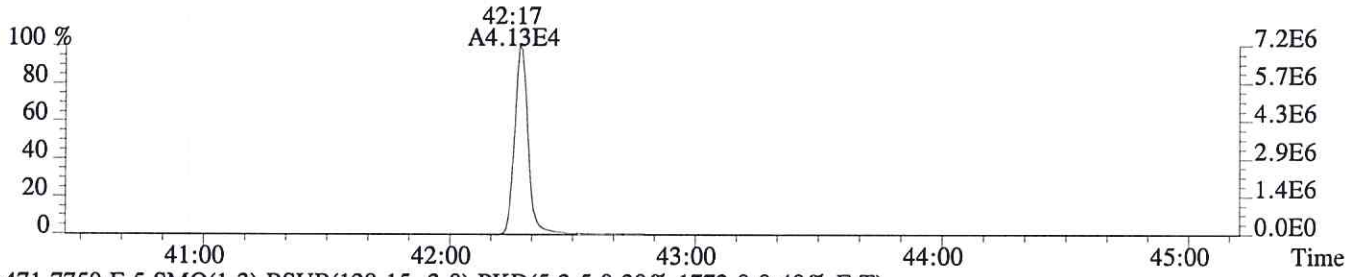
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,944.0,0.40%,F,T)



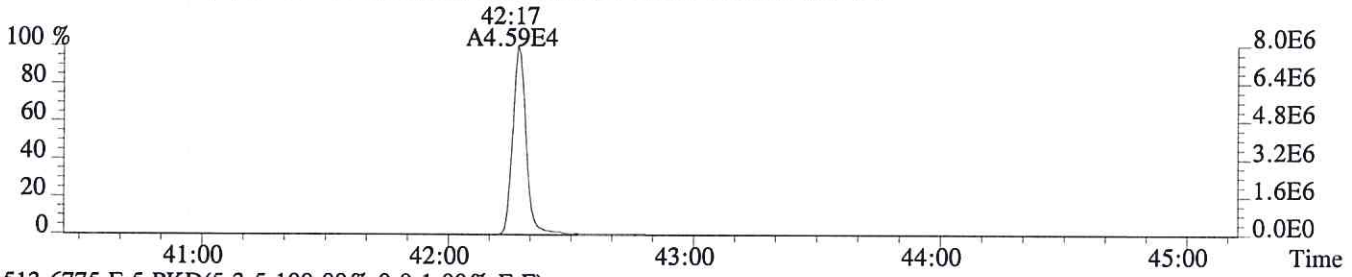
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2892.0,0.40%,F,T)



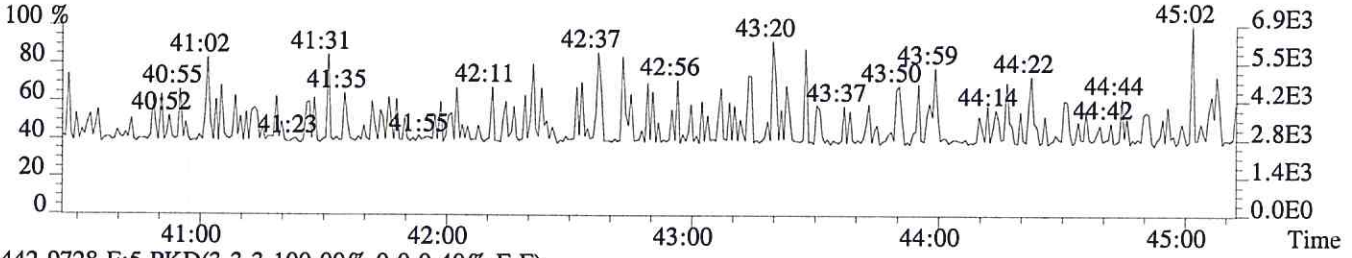
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1032.0,0.40%,F,T)



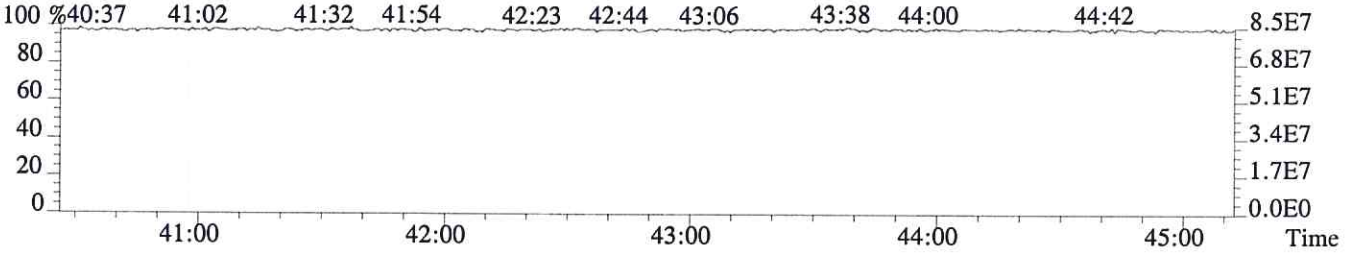
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1772.0,0.40%,F,T)



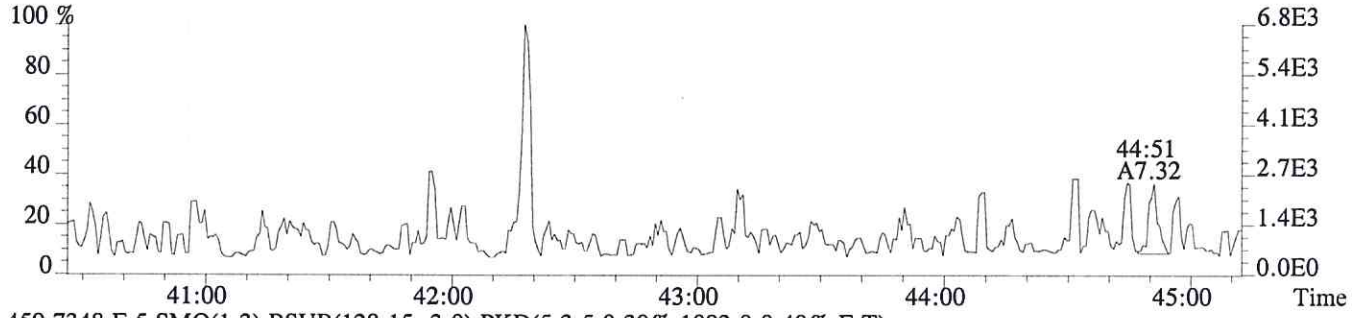
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



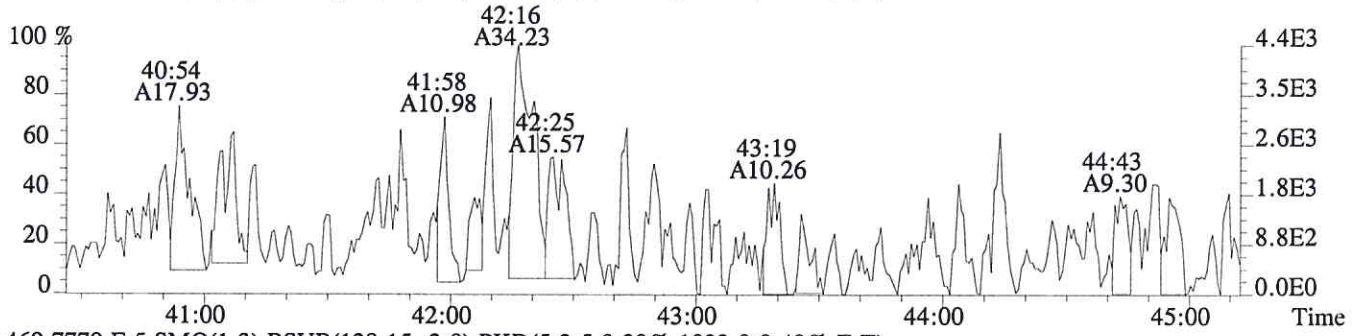
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



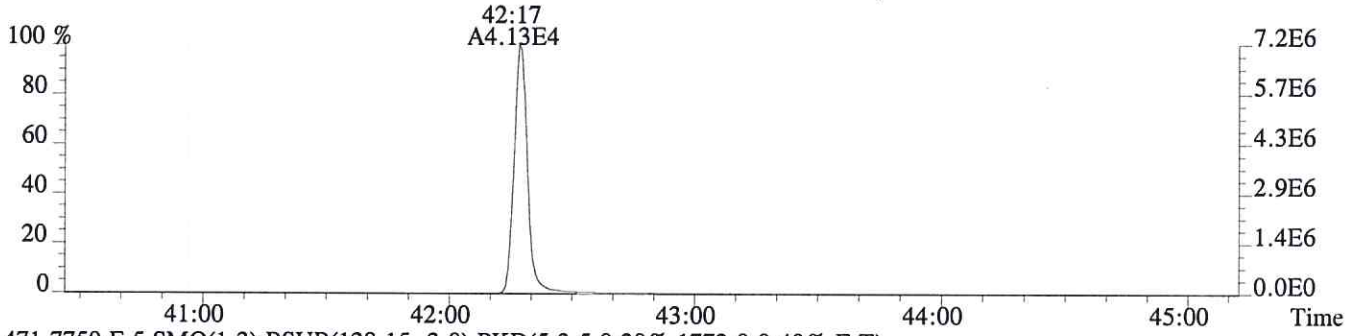
File:P503397 #1-430 Acq:18-MAR-2016 14:25:00 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-01
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1204.0,0.40%,F,T)



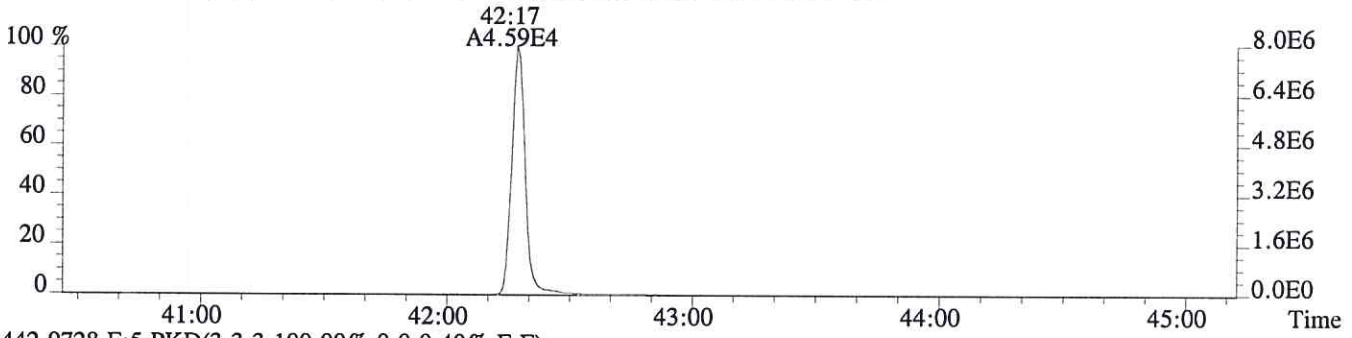
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1092.0,0.40%,F,T)



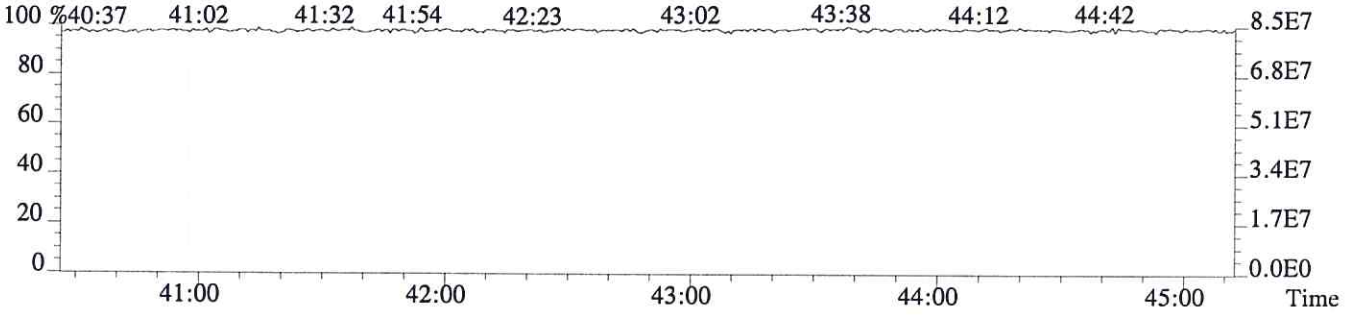
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1032.0,0.40%,F,T)



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.
LCS

Run #15 Filename P503401 Samp: 1 Inj: 1 Acquired: 18-MAR-16 17:48:41
Processed: 24-MAR-16 11:27:10 Sample ID: EQ1600129-02

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	28:23	3.033e+03	4.041e+03	0.75	yes	no	0.886
2	Unk	1,2,3,7,8-PeCDF	32:31	3.161e+04	2.092e+04	1.51	yes	no	0.983
3	Unk	2,3,4,7,8-PeCDF	33:25	3.232e+04	2.152e+04	1.50	yes	no	0.952
4	Unk	1,2,3,4,7,8-HxCDF	36:03	3.086e+04	2.552e+04	1.21	yes	no	1.190
5	Unk	1,2,3,6,7,8-HxCDF	36:10	3.163e+04	2.684e+04	1.18	yes	no	1.114
6	Unk	2,3,4,6,7,8-HxCDF	36:39	3.111e+04	2.505e+04	1.24	yes	no	1.109
7	Unk	1,2,3,7,8,9-HxCDF	37:24	2.913e+04	2.346e+04	1.24	yes	no	1.153
8	Unk	1,2,3,4,6,7,8-HpCDF	38:38	2.436e+04	2.399e+04	1.02	yes	no	1.376
9	Unk	1,2,3,4,7,8,9-HpCDF	40:01	2.378e+04	2.315e+04	1.03	yes	no	1.306
10	Unk	OCDF	42:30	3.040e+04	3.395e+04	0.90	yes	no	1.263
11	Unk	2,3,7,8-TCDD	29:09	2.590e+03	3.399e+03	0.76	yes	no	0.997
12	Unk	1,2,3,7,8-PeCDD	33:41	2.577e+04	1.663e+04	1.55	yes	no	0.935
13	Unk	1,2,3,4,7,8-HxCDD	36:47	2.509e+04	1.897e+04	1.32	yes	no	1.039
14	Unk	1,2,3,6,7,8-HxCDD	36:52	2.370e+04	1.999e+04	1.19	yes	no	0.996
15	Unk	1,2,3,7,8,9-HxCDD	37:06	2.612e+04	2.094e+04	1.25	yes	no	1.108
16	Unk	1,2,3,4,6,7,8-HpCDD	39:33	1.915e+04	1.825e+04	1.05	yes	no	1.010
17	Unk	OCDD	42:18	2.424e+04	2.675e+04	0.91	yes	no	1.090
18	IS	13C-2,3,7,8-TCDF	28:22	3.672e+04	4.579e+04	0.80	yes	no	1.447
19	IS	13C-1,2,3,7,8-PeCDF	32:30	7.168e+04	4.535e+04	1.58	yes	no	1.500
20	IS	13C-2,3,4,7,8-PeCDF	33:24	7.139e+04	4.548e+04	1.57	yes	no	1.456
21	IS	13C-1,2,3,4,7,8-HxCDF	36:02	3.299e+04	6.356e+04	0.52	yes	no	1.207
22	IS	13C-1,2,3,6,7,8-HxCDF	36:09	3.850e+04	7.413e+04	0.52	yes	no	1.263
23	IS	13C-2,3,4,6,7,8-HxCDF	36:38	3.589e+04	6.961e+04	0.52	yes	no	1.153
24	IS	13C-1,2,3,7,8,9-HxCDF	37:23	3.295e+04	6.357e+04	0.52	yes	no	1.085
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:37	2.171e+04	5.005e+04	0.43	yes	no	0.876
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:01	2.373e+04	5.223e+04	0.45	yes	no	0.883
27	IS	13C-2,3,7,8-TCDD	29:08	2.735e+04	3.474e+04	0.79	yes	no	1.027
28	IS	13C-1,2,3,7,8-PeCDD	33:41	5.405e+04	3.381e+04	1.60	yes	no	1.064
29	IS	13C-1,2,3,4,7,8-HxCDD	36:46	5.044e+04	3.743e+04	1.35	yes	no	0.908
30	IS	13C-1,2,3,6,7,8-HxCDD	36:51	4.987e+04	4.094e+04	1.22	yes	no	0.899
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:32	3.890e+04	3.669e+04	1.06	yes	no	0.910
32	IS	13C-OCDD	42:18	4.430e+04	4.936e+04	0.90	yes	no	0.633
33	RS/RT	13C-1,2,3,4-TCDD	28:35	4.420e+04	5.569e+04	0.79	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:06	6.427e+04	5.145e+04	1.25	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:09	3.099e+04				no	1.066

$$\text{OCDD} = \frac{(2.424e+04 + 2.675e+04) \times 4000 \text{ pg} \times 1}{(4.430e+04 + 4.936e+04) \times \quad g \times \quad / 100 \times 1.090} =$$

ALS ENVIRONMENTAL -- HOUSTON HRMS
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Houston, TX 77099
Office(281)530-5656. Fax(281)530-5887

ALS ENVIRONMENTAL

Signal/Noise Height Ratio Summary

CLIENT ID.
LCS

Run #15 Filename P503401 Samp: 1 Inj: 1 Acquired: 18-MAR-16 17:48:41
Processed: 24-MAR-16 11:27:10 LAB. ID: EQ1600129-02

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	5.62e+05	1.15e+03	4.9e+02	7.42e+05	3.01e+03	2.5e+02
2	1,2,3,7,8-PeCDF	5.95e+06	1.10e+03	5.4e+03	3.91e+06	3.28e+03	1.2e+03
3	2,3,4,7,8-PeCDF	6.48e+06	1.10e+03	5.9e+03	4.26e+06	3.28e+03	1.3e+03
4	1,2,3,4,7,8-HxCDF	6.84e+06	1.64e+03	4.2e+03	5.70e+06	4.04e+02	1.4e+04
5	1,2,3,6,7,8-HxCDF	6.63e+06	1.64e+03	4.1e+03	5.66e+06	4.04e+02	1.4e+04
6	2,3,4,6,7,8-HxCDF	6.85e+06	1.64e+03	4.2e+03	5.56e+06	4.04e+02	1.4e+04
7	1,2,3,7,8,9-HxCDF	6.27e+06	1.64e+03	3.8e+03	5.04e+06	4.04e+02	1.2e+04
8	1,2,3,4,6,7,8-HpCDF	5.25e+06	2.20e+02	2.4e+04	5.02e+06	3.10e+03	1.6e+03
9	1,2,3,4,7,8,9-HpCDF	4.73e+06	2.20e+02	2.1e+04	4.57e+06	3.10e+03	1.5e+03
10	OCDF	5.31e+06	1.15e+03	4.6e+03	5.89e+06	2.17e+03	2.7e+03
11	2,3,7,8-TCDD	5.19e+05	1.24e+03	4.2e+02	6.69e+05	1.61e+03	4.2e+02
12	1,2,3,7,8-PeCDD	5.23e+06	1.86e+03	2.8e+03	3.37e+06	3.68e+02	9.1e+03
13	1,2,3,4,7,8-HxCDD	5.56e+06	7.00e+02	7.9e+03	4.41e+06	1.40e+03	3.1e+03
14	1,2,3,6,7,8-HxCDD	5.17e+06	7.00e+02	7.4e+03	4.11e+06	1.40e+03	2.9e+03
15	1,2,3,7,8,9-HxCDD	5.56e+06	7.00e+02	7.9e+03	4.37e+06	1.40e+03	3.1e+03
16	1,2,3,4,6,7,8-HpCDD	3.89e+06	1.18e+03	3.3e+03	3.77e+06	3.84e+02	9.8e+03
17	OCDD	4.26e+06	5.96e+02	7.1e+03	4.71e+06	1.59e+03	3.0e+03
18	13C-2,3,7,8-TCDF	6.95e+06	2.60e+03	2.7e+03	8.59e+06	2.49e+03	3.4e+03
19	13C-1,2,3,7,8-PeCDF	1.34e+07	2.08e+02	6.5e+04	8.56e+06	1.13e+03	7.6e+03
20	13C-2,3,4,7,8-PeCDF	1.42e+07	2.08e+02	6.8e+04	8.93e+06	1.13e+03	7.9e+03
21	13C-1,2,3,4,7,8-HxCDF	7.26e+06	6.88e+02	1.1e+04	1.40e+07	1.86e+03	7.5e+03
22	13C-1,2,3,6,7,8-HxCDF	8.17e+06	6.88e+02	1.2e+04	1.56e+07	1.86e+03	8.4e+03
23	13C-2,3,4,6,7,8-HxCDF	8.06e+06	6.88e+02	1.2e+04	1.54e+07	1.86e+03	8.3e+03
24	13C-1,2,3,7,8,9-HxCDF	7.02e+06	6.88e+02	1.0e+04	1.36e+07	1.86e+03	7.3e+03
25	13C-1,2,3,4,6,7,8-HpCDF	4.69e+06	3.67e+03	1.3e+03	1.06e+07	5.67e+03	1.9e+03
26	13C-1,2,3,4,7,8,9-HpCDF	4.81e+06	3.67e+03	1.3e+03	1.03e+07	5.67e+03	1.8e+03
27	13C-2,3,7,8-TCDD	5.36e+06	6.46e+03	8.3e+02	6.77e+06	3.09e+03	2.2e+03
28	13C-1,2,3,7,8-PeCDD	1.09e+07	2.06e+03	5.3e+03	6.74e+06	1.22e+03	5.5e+03
29	13C-1,2,3,4,7,8-HxCDD	1.10e+07	2.41e+03	4.6e+03	8.56e+06	2.23e+03	3.8e+03
30	13C-1,2,3,6,7,8-HxCDD	1.08e+07	2.41e+03	4.5e+03	8.51e+06	2.23e+03	3.8e+03
31	13C-1,2,3,4,6,7,8-HpCDD	7.72e+06	1.78e+03	4.3e+03	7.32e+06	1.60e+02	4.6e+04
32	13C-OCDD	7.95e+06	1.64e+03	4.8e+03	8.75e+06	1.49e+03	5.9e+03
33	13C-1,2,3,4-TCDD	8.34e+06	6.46e+03	1.3e+03	1.06e+07	3.09e+03	3.4e+03
34	13C-1,2,3,7,8,9-HxCDD	1.40e+07	2.41e+03	5.8e+03	1.10e+07	2.23e+03	4.9e+03
35	37Cl-2,3,7,8-TCDD	6.21e+06	2.47e+03	2.5e+03			

---Sample Calculation---

```
          2.5 x (1.240e+03 + 1.608e+03  ) x 2000
D/L TCDD = ------------------------------------------------------------------ =
           (5.358e+06 + 6.765e+06 ) x (                              ) x 0.997
```

ALS ENVIRONMENTAL
10450 Stancliff Rd., Suite 115
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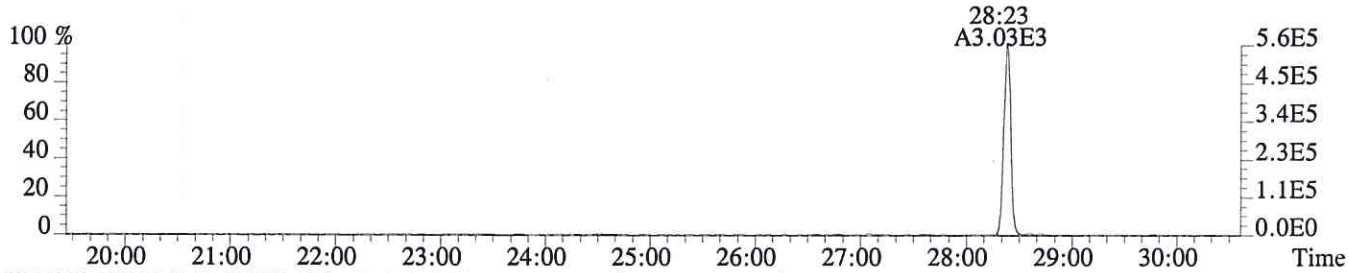
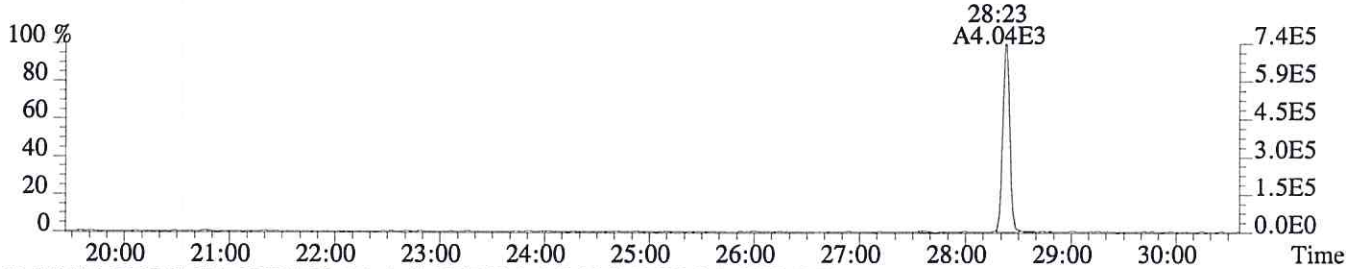
Office:(281)530-5656. Fax:(281)530-5887

File:P503401 #1-793 Acq:18-MAR-2016 17:48:41 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-02

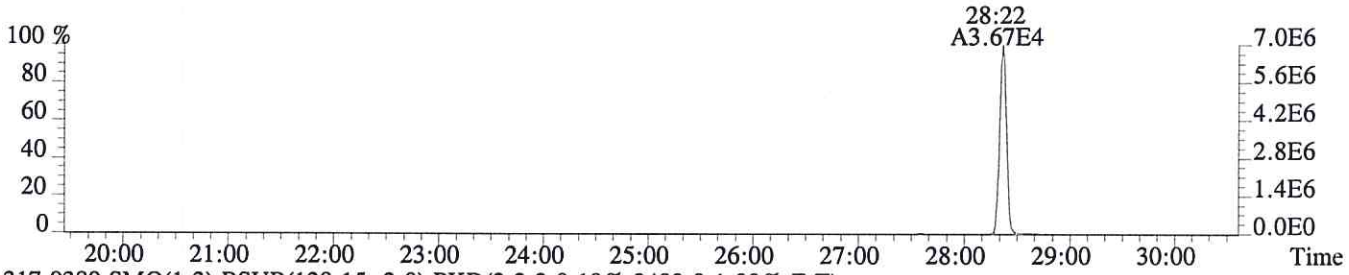
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1148.0,1.00%,F,T)



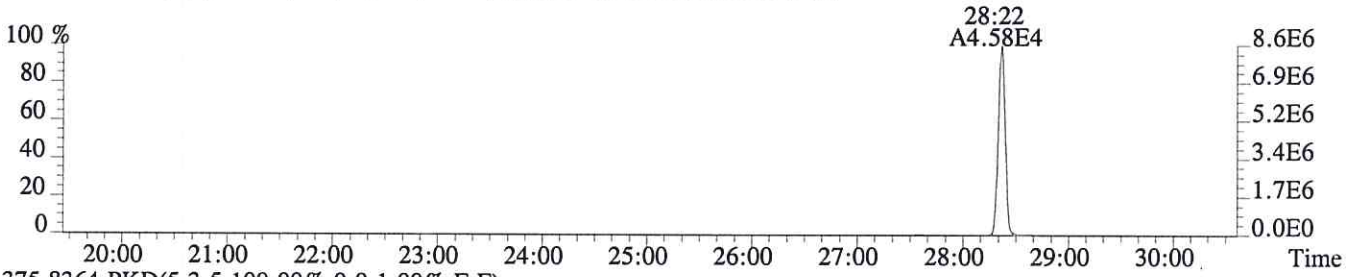
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3012.0,1.00%,F,T)



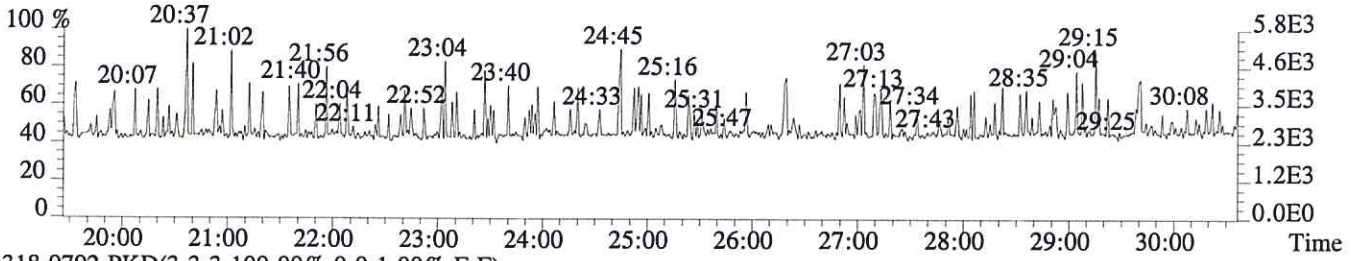
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2600.0,1.00%,F,T)



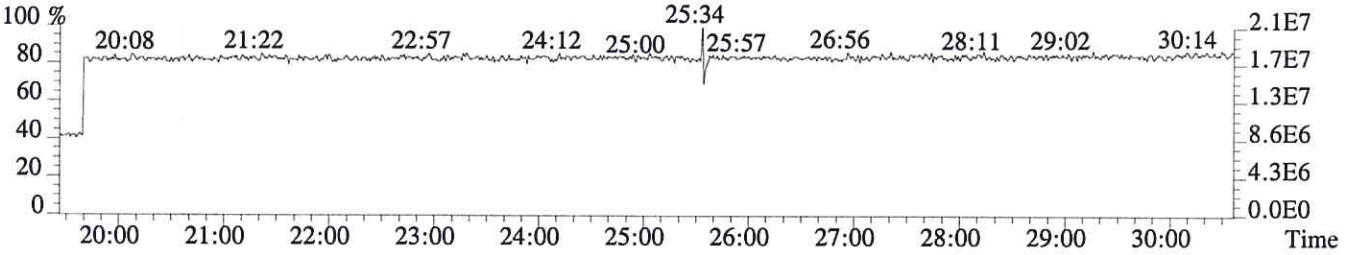
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2492.0,1.00%,F,T)



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

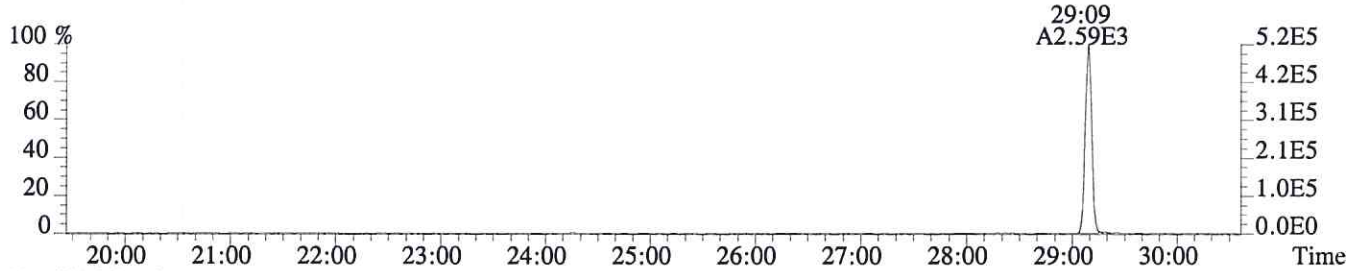


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

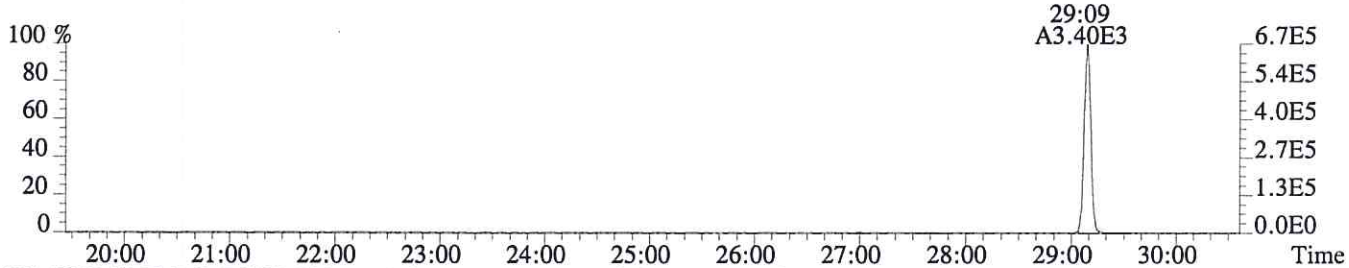


File:P503401 #1-793 Acq:18-MAR-2016 17:48:41 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-02

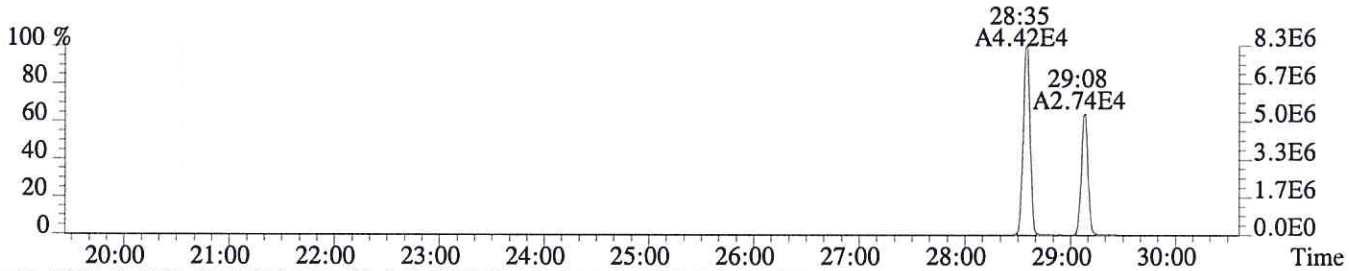
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1240.0,1.00%,F,T)



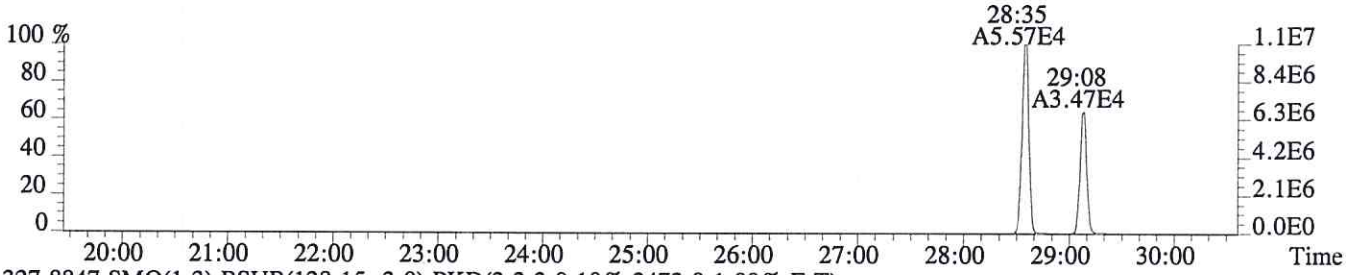
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1608.0,1.00%,F,T)



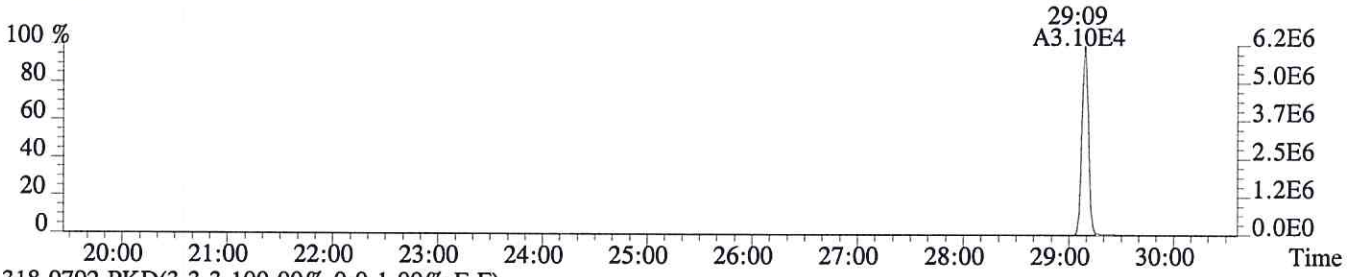
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6456.0,1.00%,F,T)



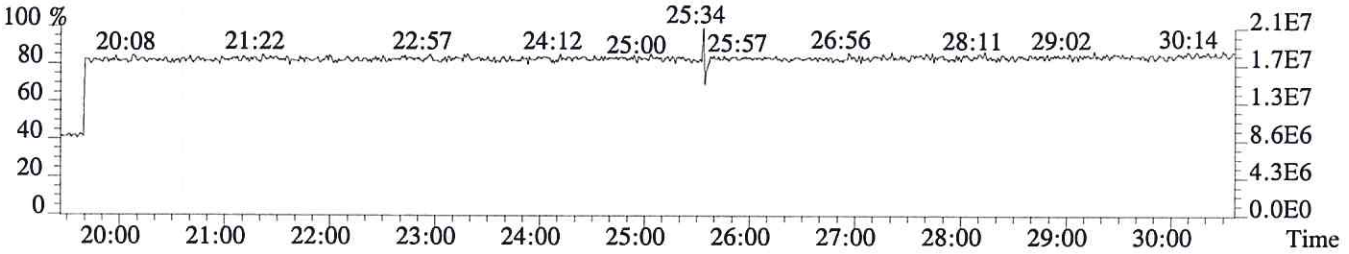
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3092.0,1.00%,F,T)



327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2472.0,1.00%,F,T)

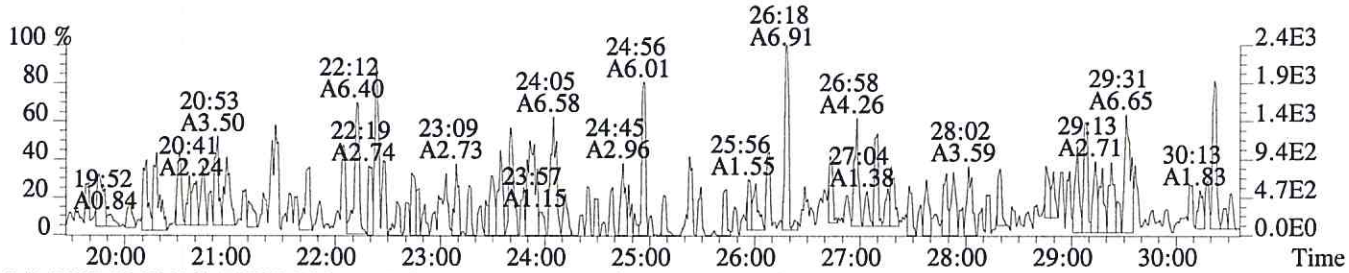


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

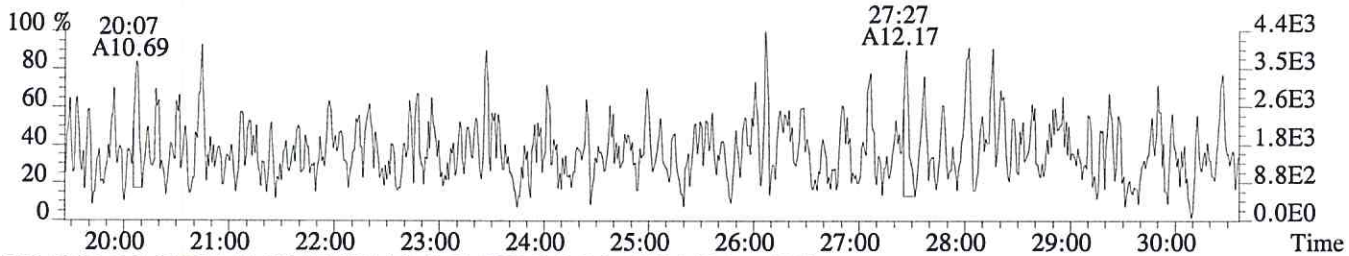


File:P503401 #1-793 Acq:18-MAR-2016 17:48:41 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-02

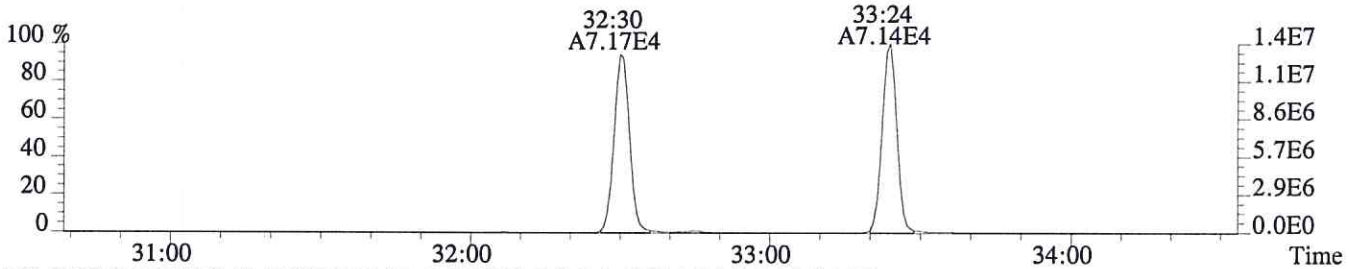
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,268.0,1.00%,F,T)



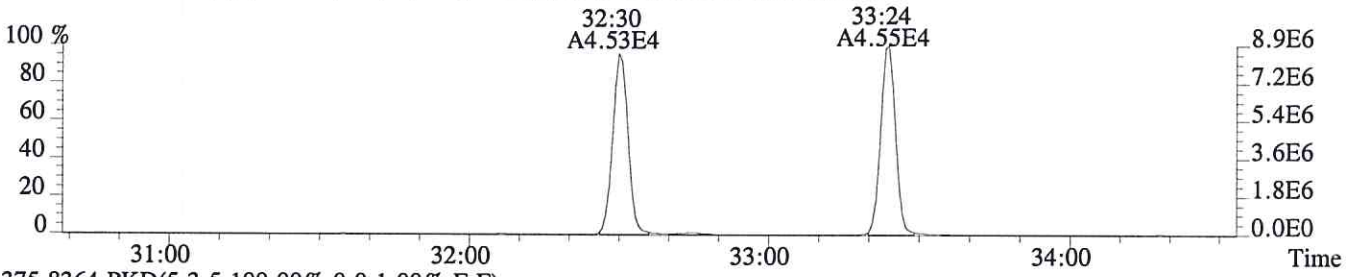
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1852.0,1.00%,F,T)



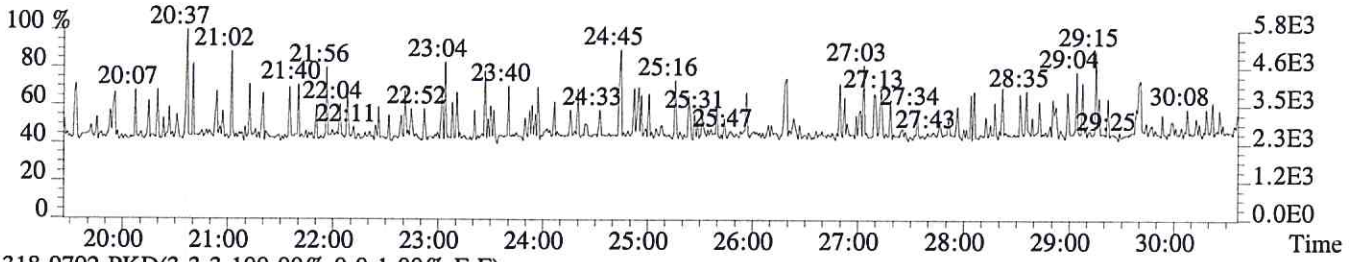
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,208.0,1.00%,F,T)



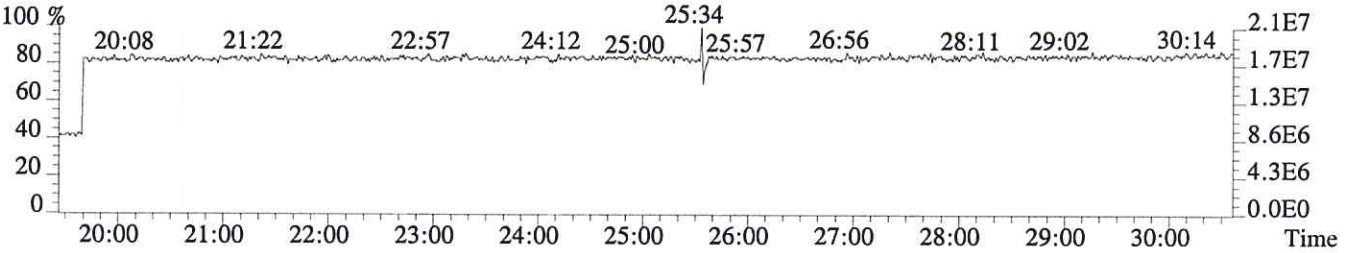
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1132.0,1.00%,F,T)



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

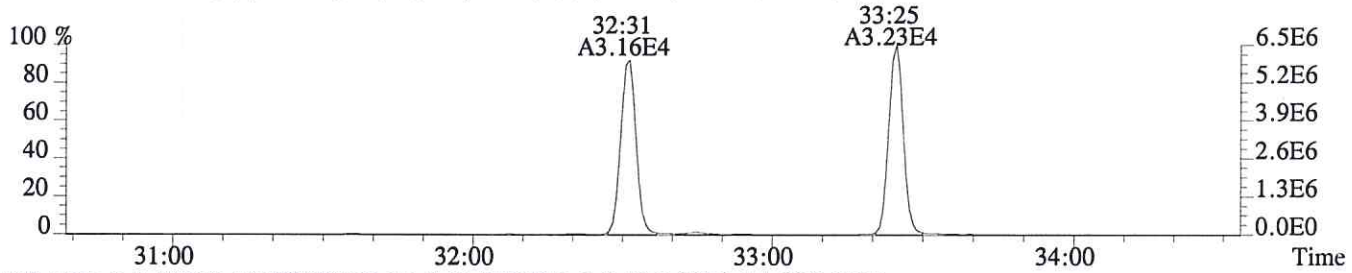


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

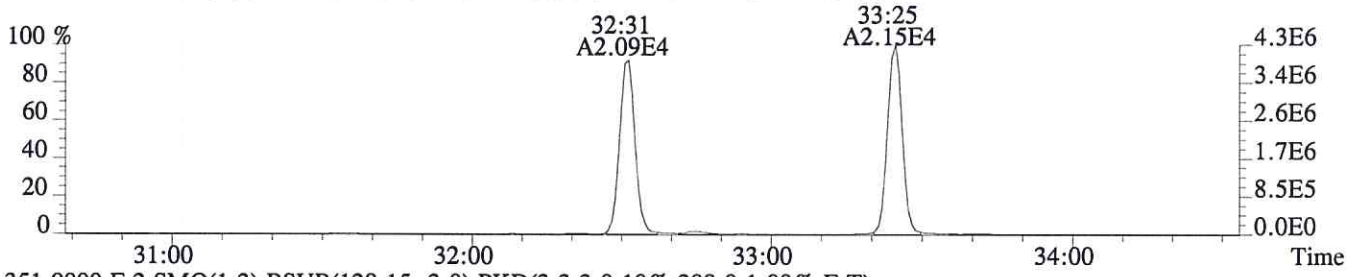


File:P503401 #1-353 Acq:18-MAR-2016 17:48:41 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-02

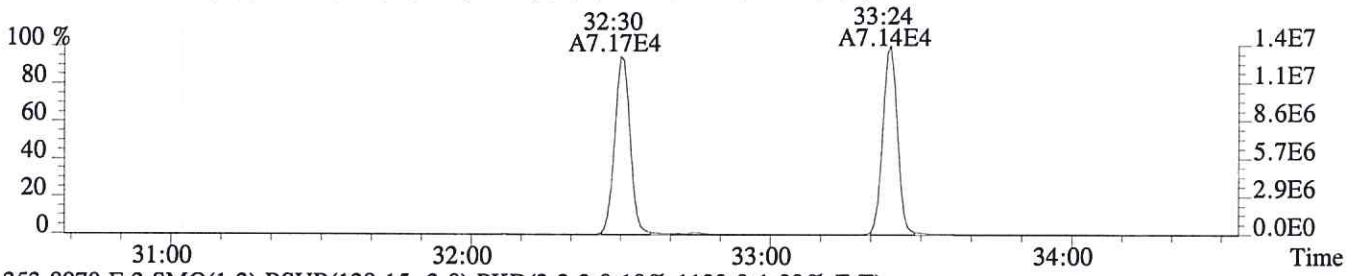
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1100.0,1.00%,F,T)



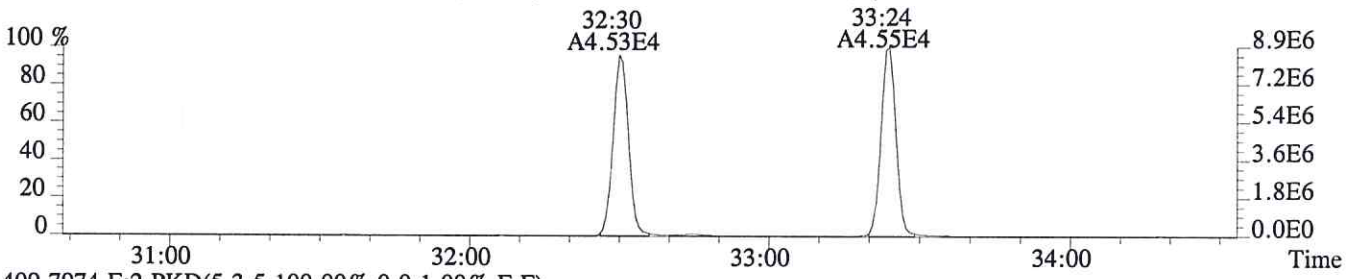
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3276.0,1.00%,F,T)



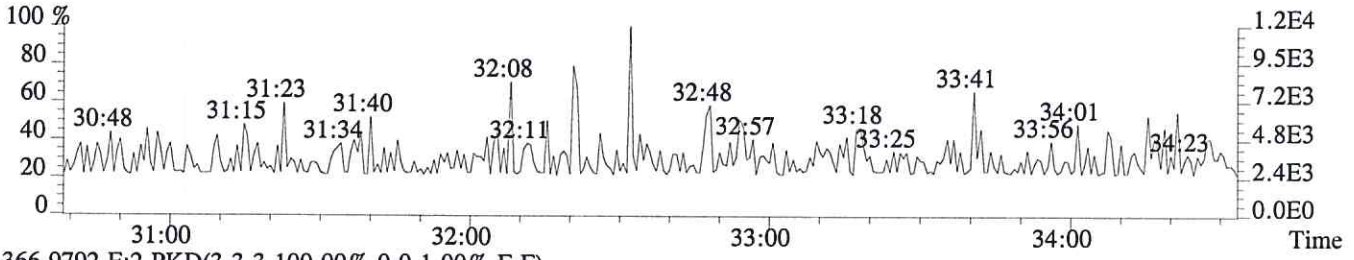
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,208.0,1.00%,F,T)



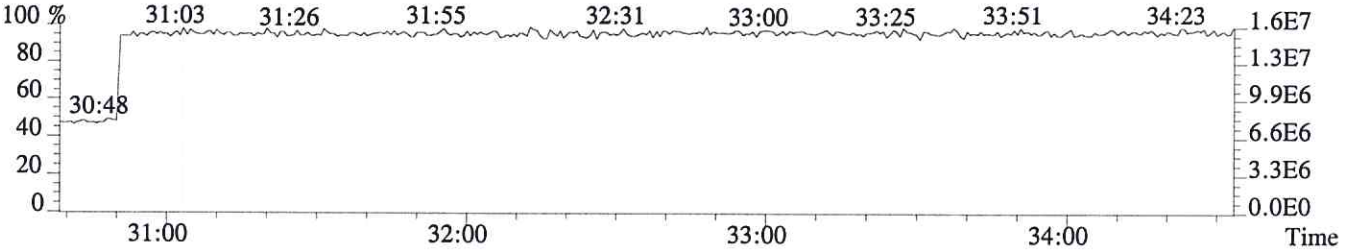
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1132.0,1.00%,F,T)



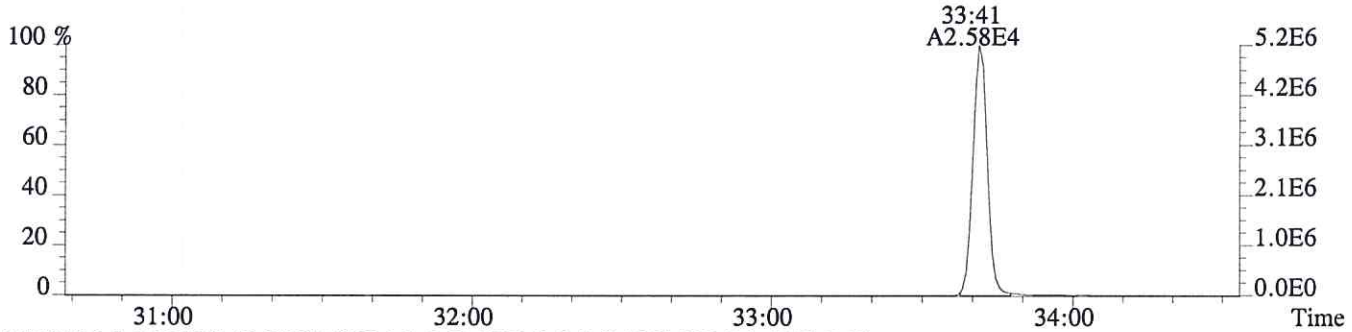
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



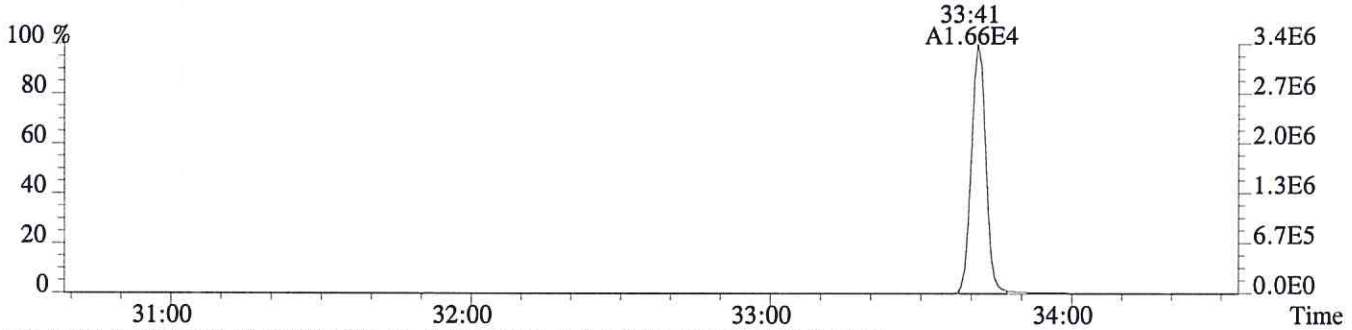
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



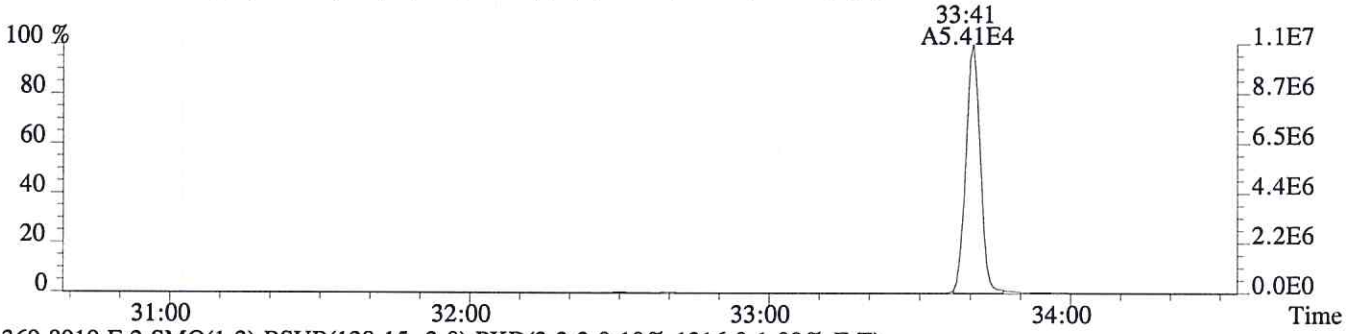
File:P503401 #1-353 Acq:18-MAR-2016 17:48:41 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-02
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1860.0,1.00%,F,T)



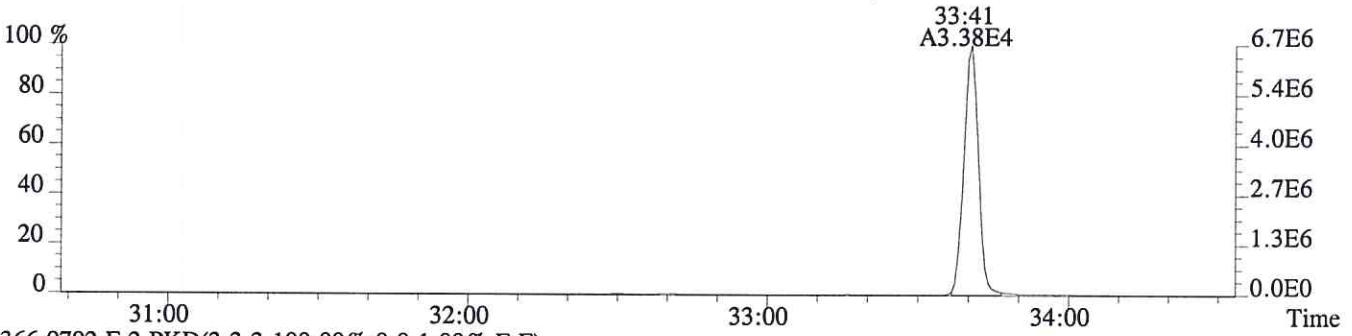
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,368.0,1.00%,F,T)



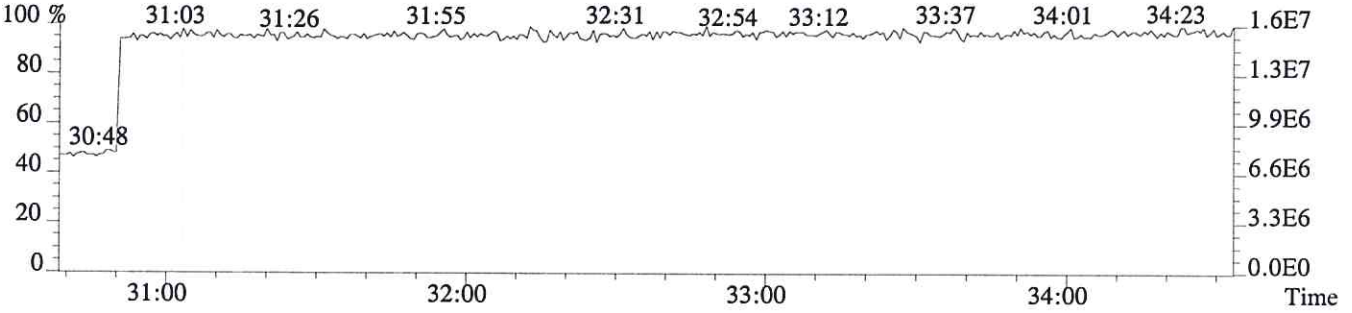
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2064.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1216.0,1.00%,F,T)

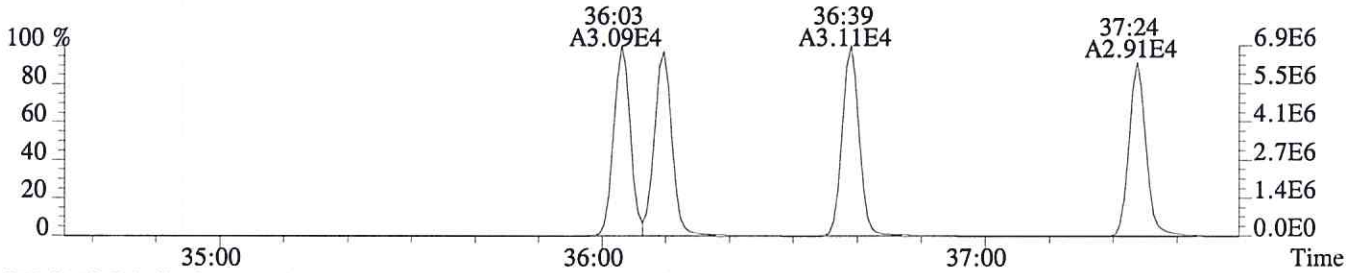


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

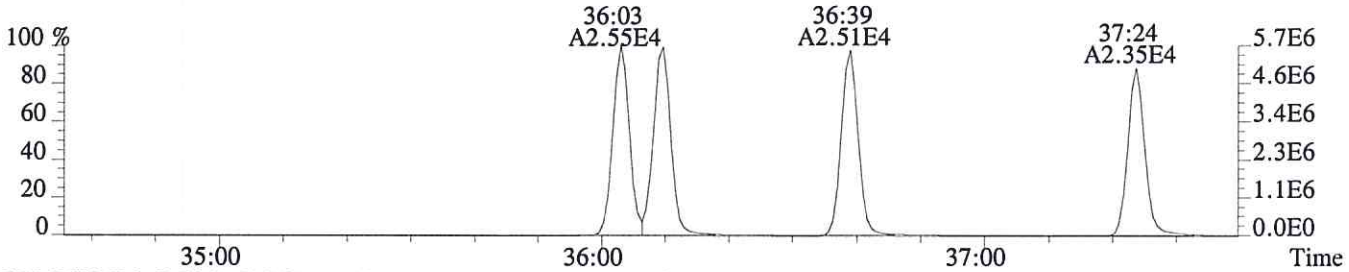


File:P503401 #1-277 Acq:18-MAR-2016 17:48:41 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-02

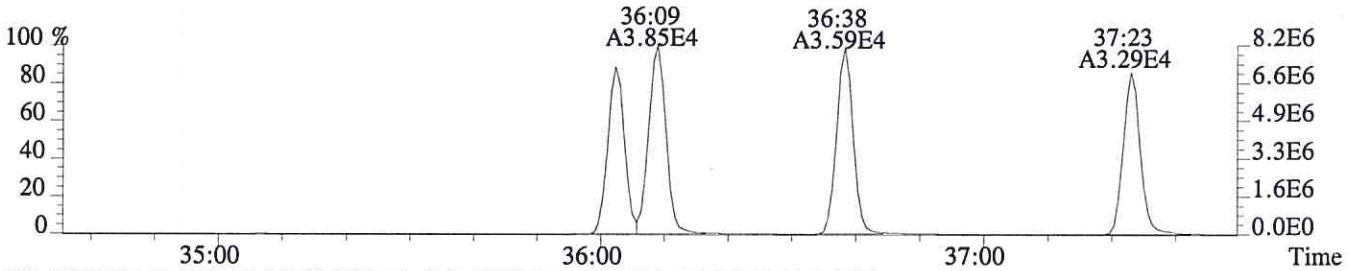
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1636.0,0.40%,F,T)



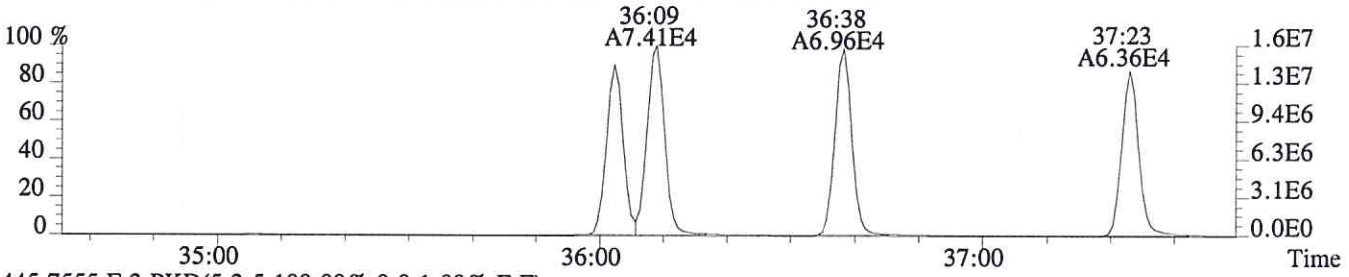
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,404.0,0.40%,F,T)



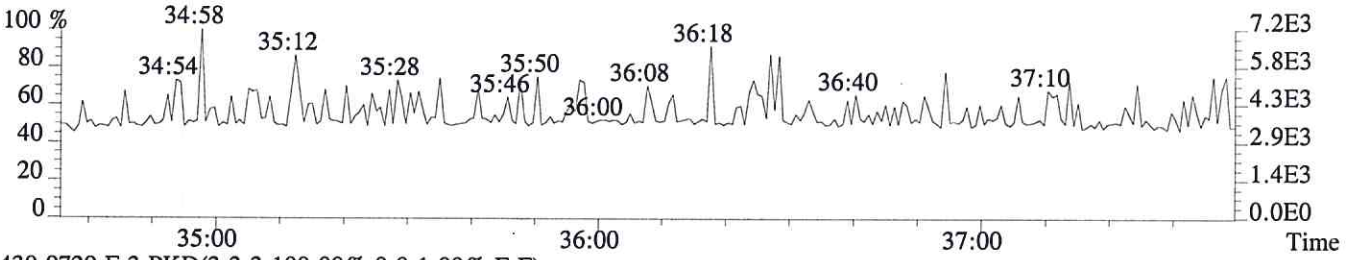
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,688.0,0.40%,F,T)



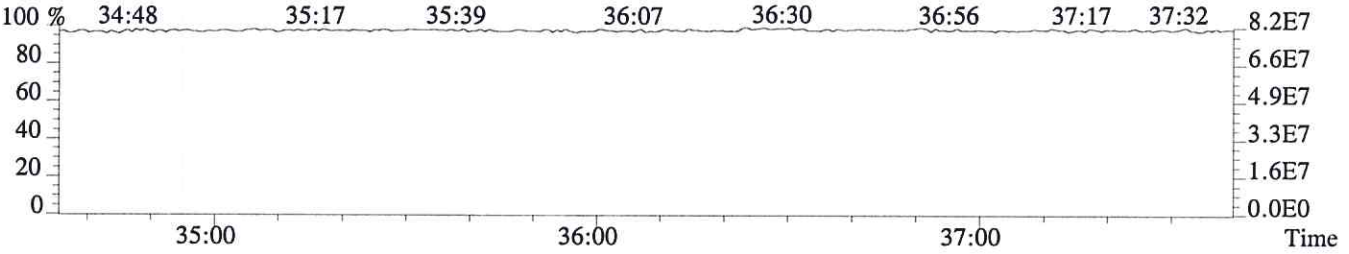
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1860.0,0.40%,F,T)



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

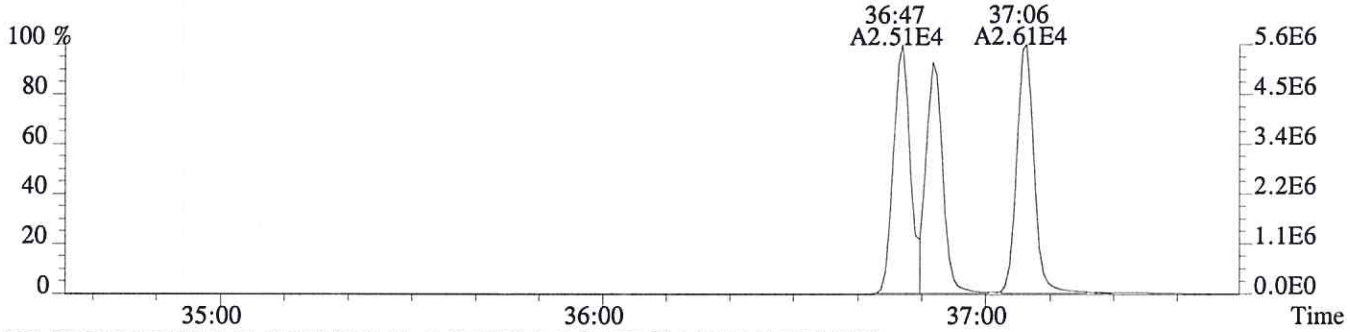


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

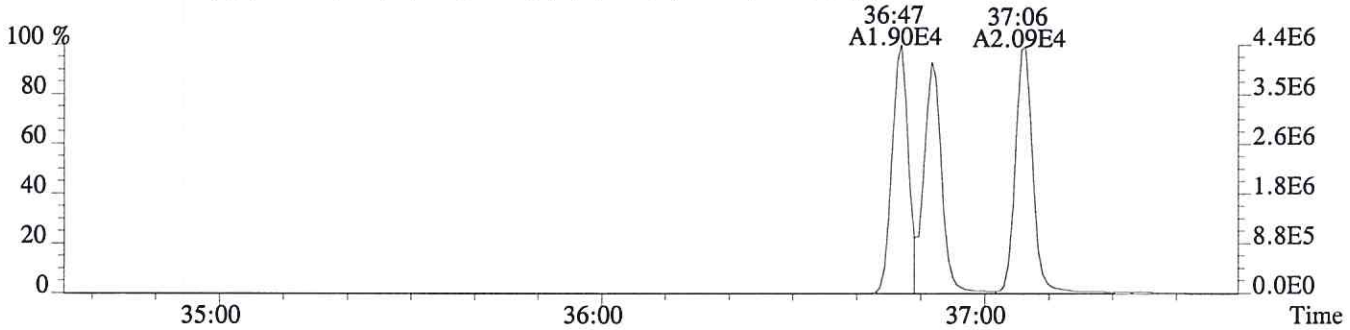


File:P503401 #1-277 Acq:18-MAR-2016 17:48:41 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-02

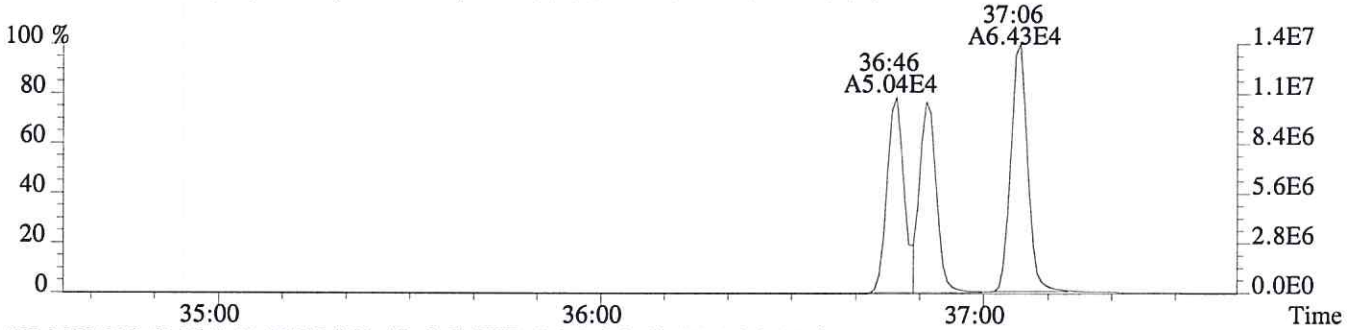
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,700.0,0.40%,F,T)



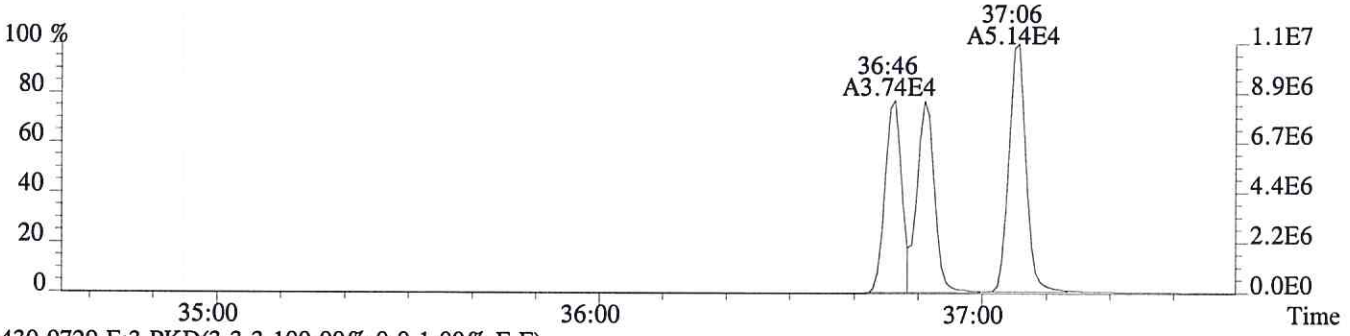
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1400.0,0.40%,F,T)



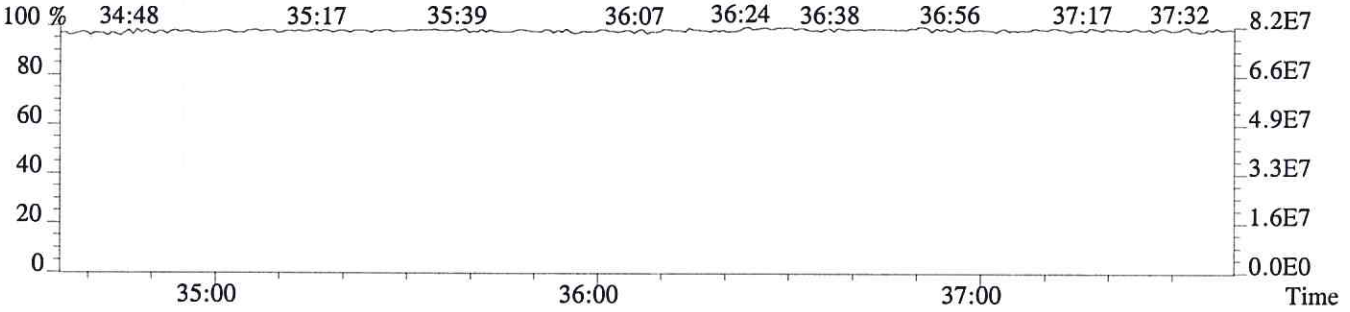
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2412.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2232.0,0.40%,F,T)

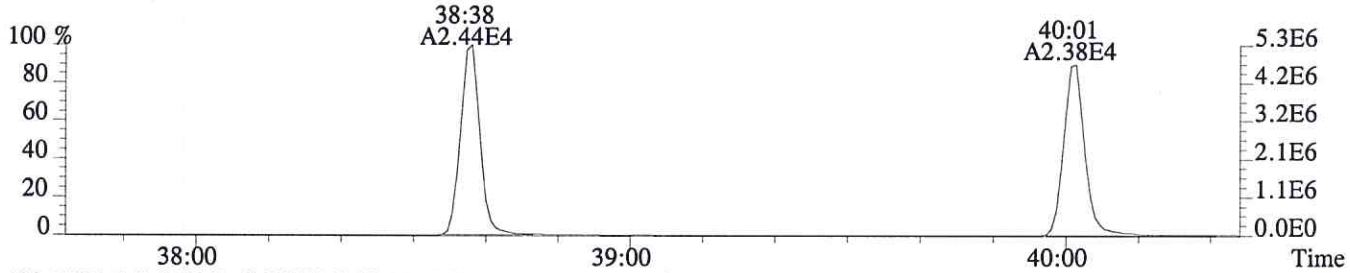


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

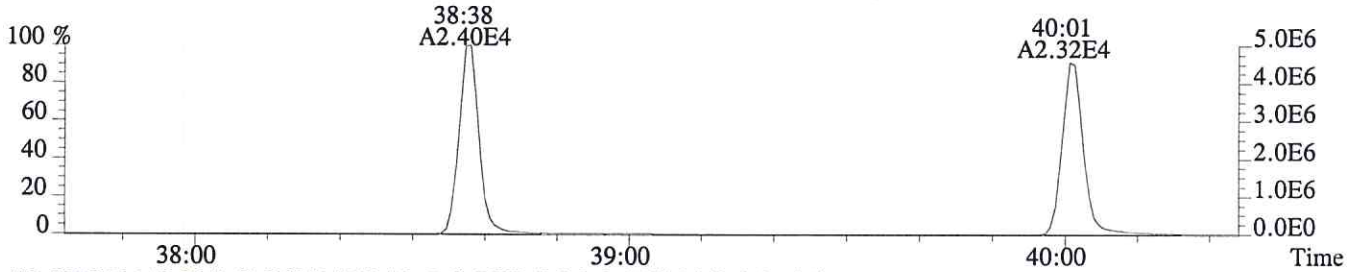


File:P503401 #1-244 Acq:18-MAR-2016 17:48:41 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-02

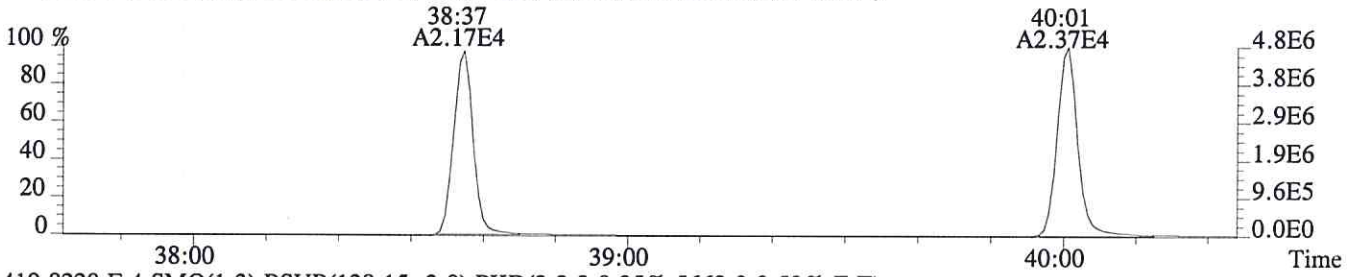
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,220.0,0.50%,F,T)



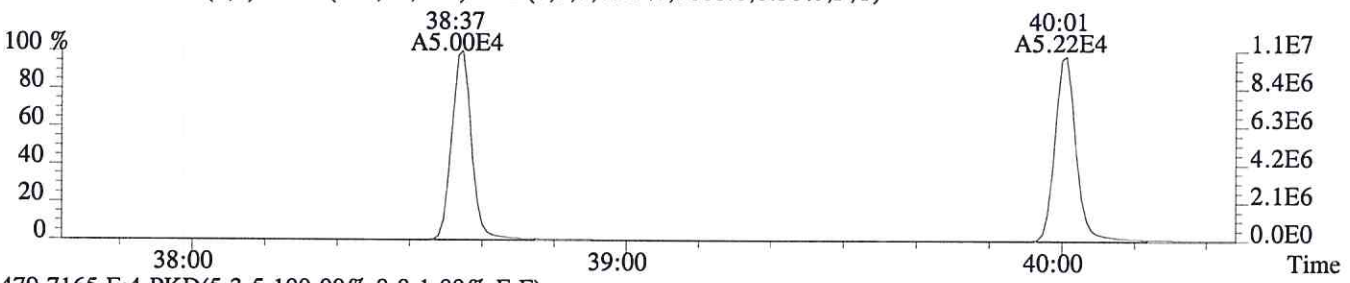
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3104.0,0.50%,F,T)



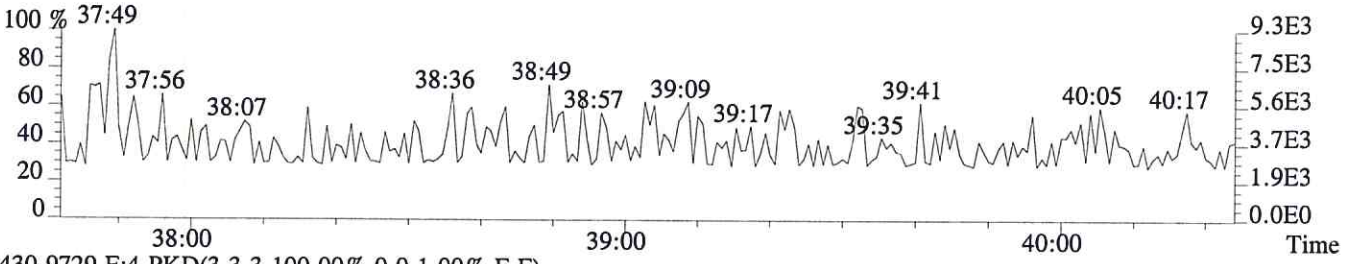
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3668.0,0.50%,F,T)



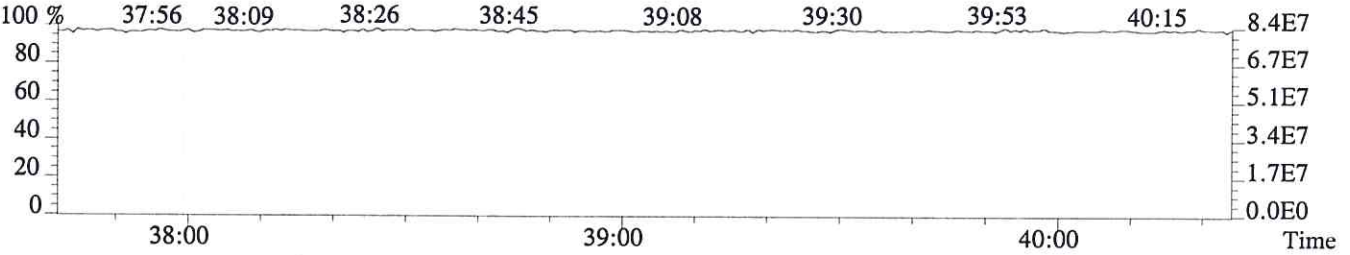
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5668.0,0.50%,F,T)



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

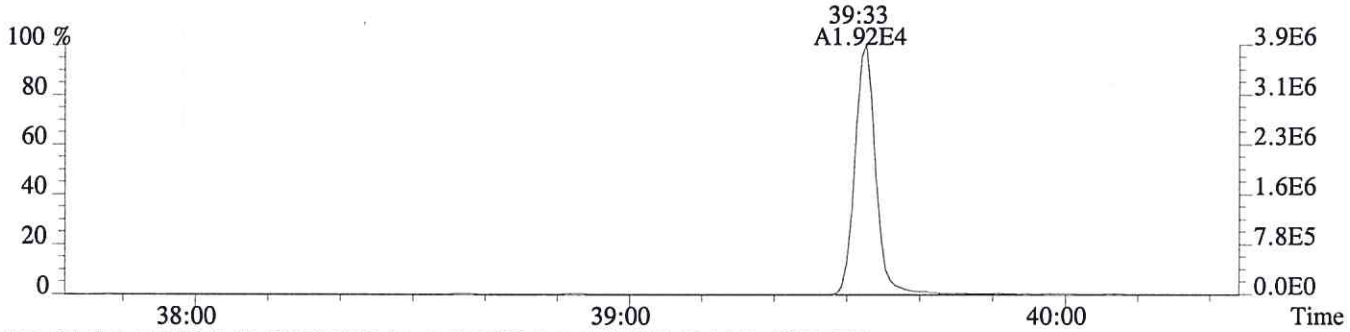


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

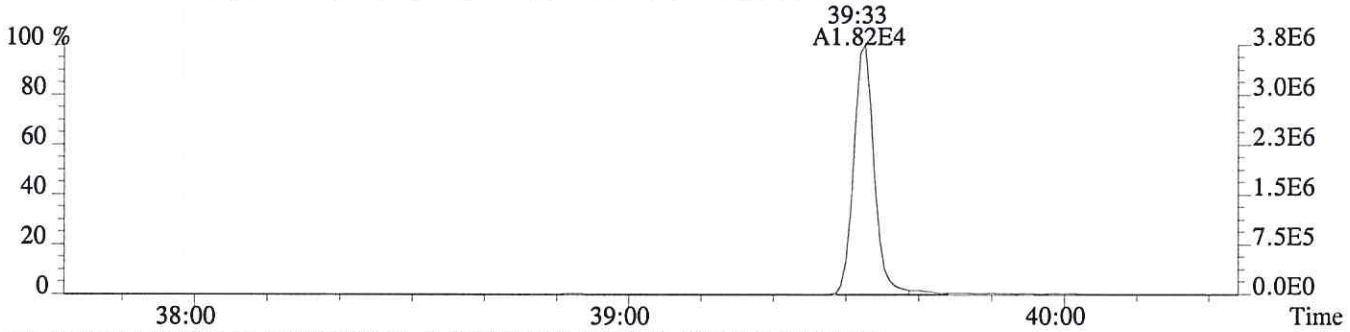


File:P503401 #1-244 Acq:18-MAR-2016 17:48:41 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-02

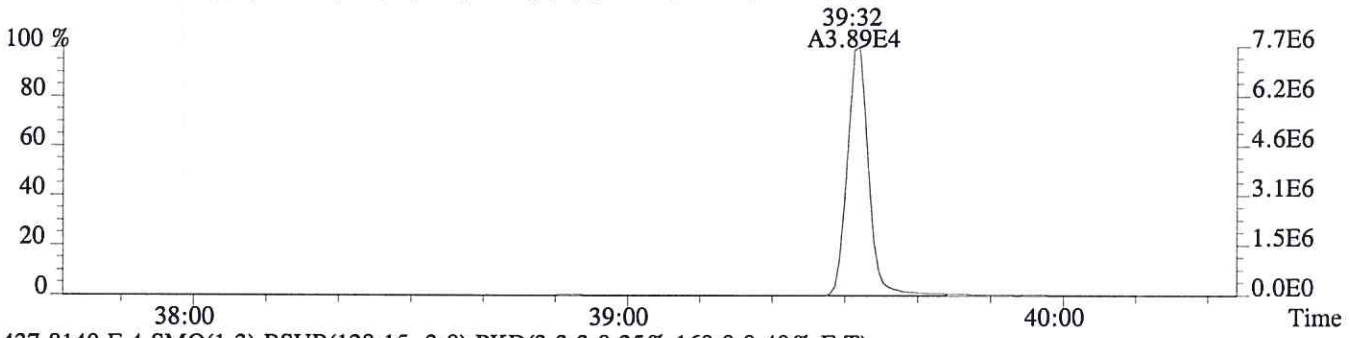
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1176.0,0.40%,F,T)



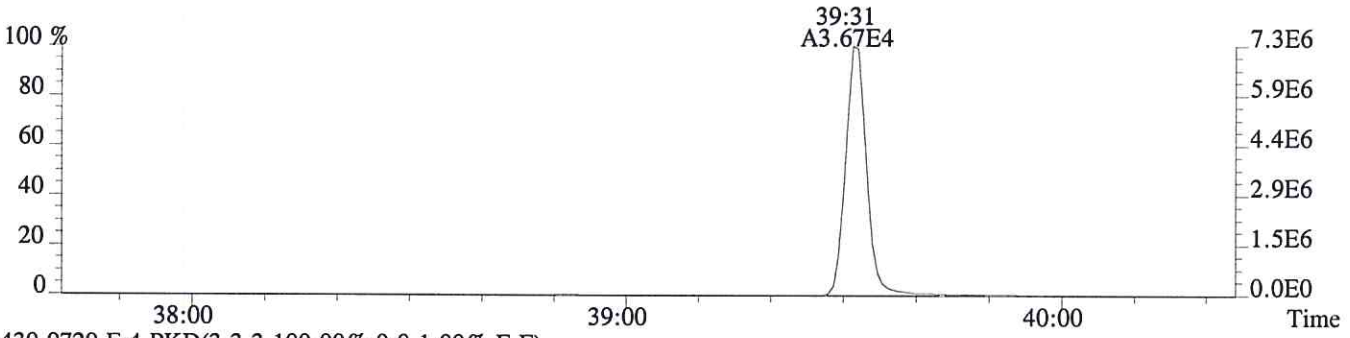
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,384.0,0.40%,F,T)



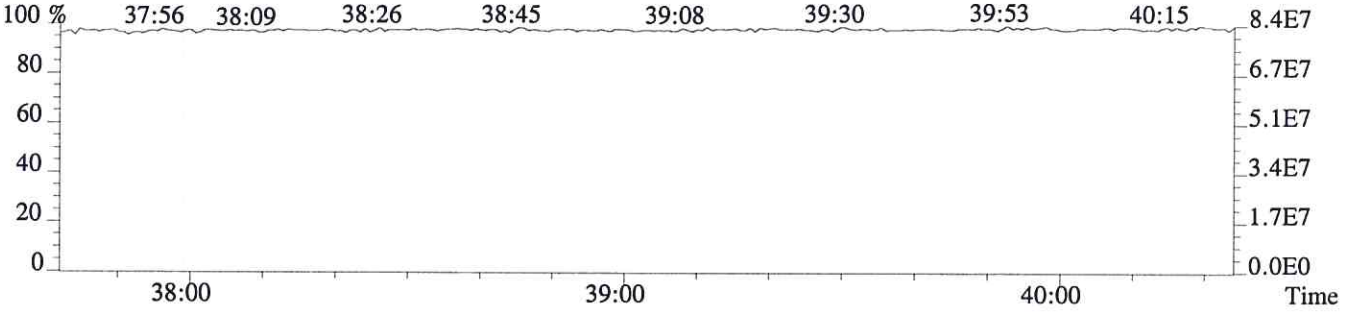
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1784.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,160.0,0.40%,F,T)

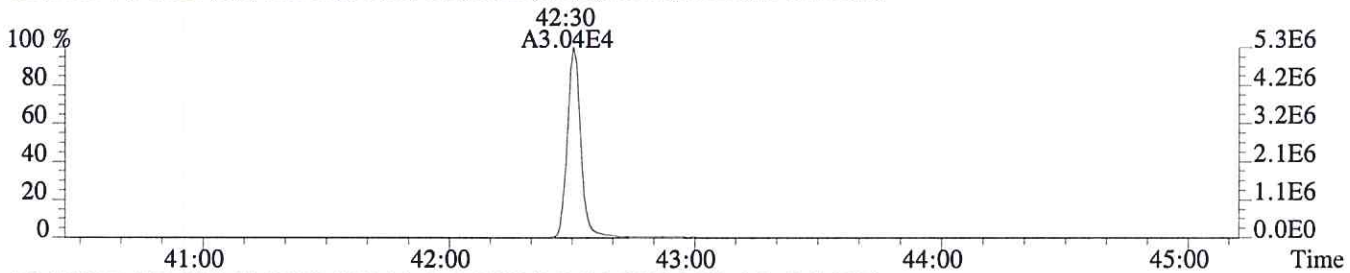


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

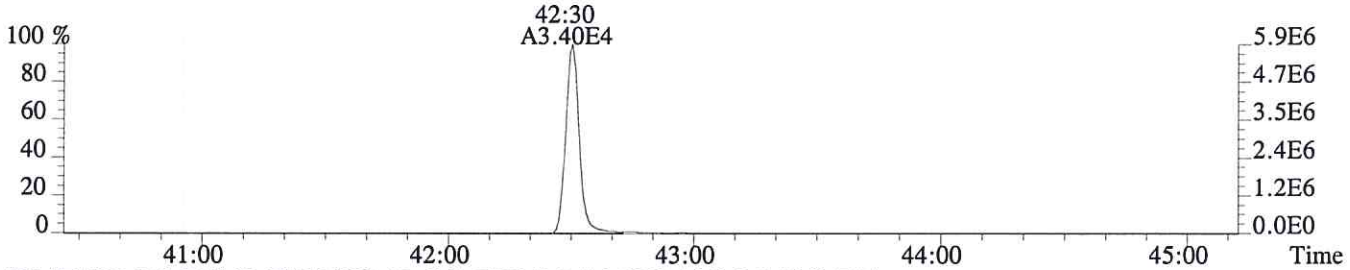


File:P503401 #1-430 Acq:18-MAR-2016 17:48:41 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-02

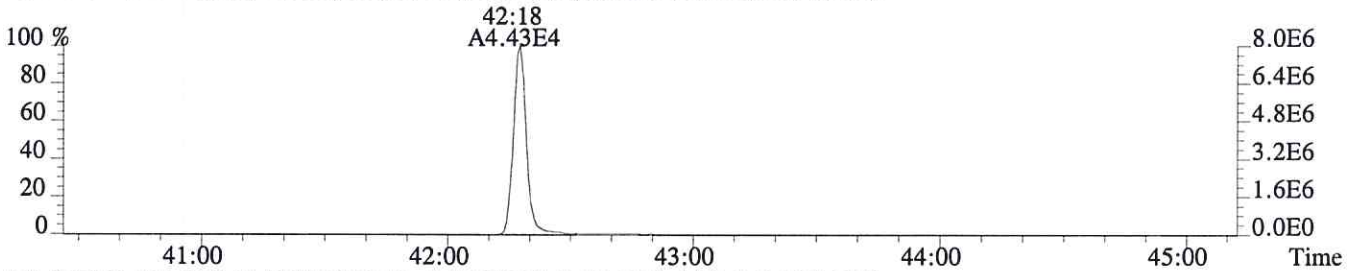
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1152.0,0.40%,F,T)



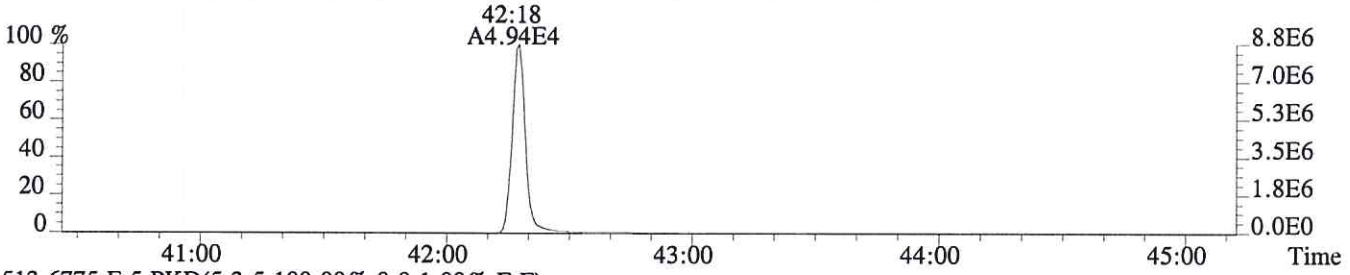
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2172.0,0.40%,F,T)



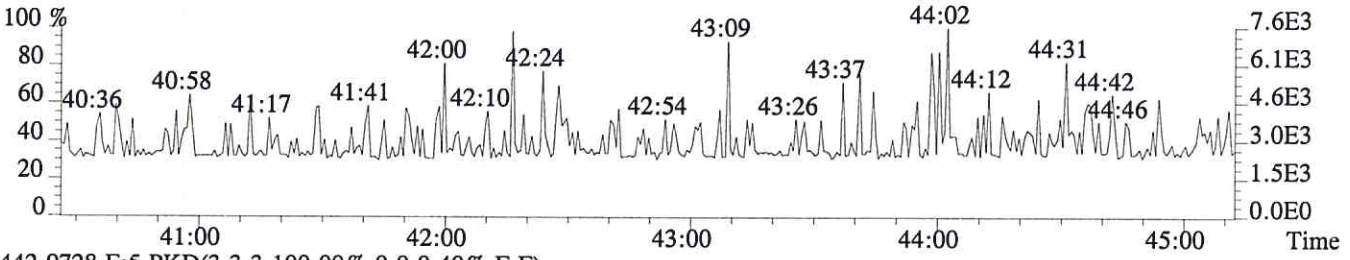
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1640.0,0.40%,F,T)



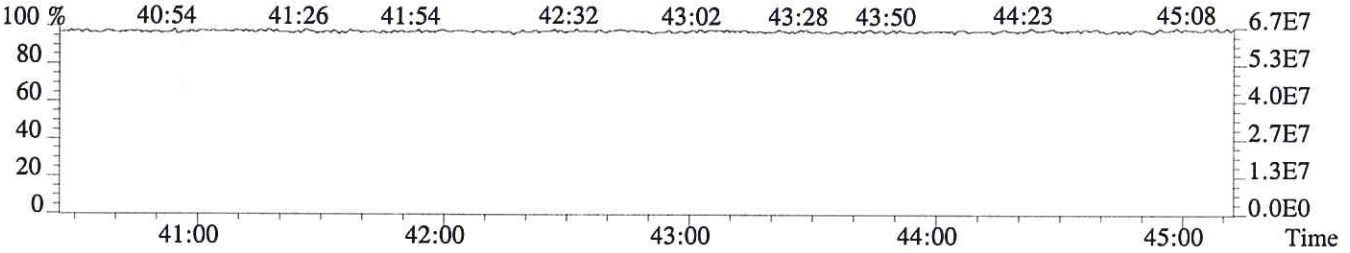
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1488.0,0.40%,F,T)



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

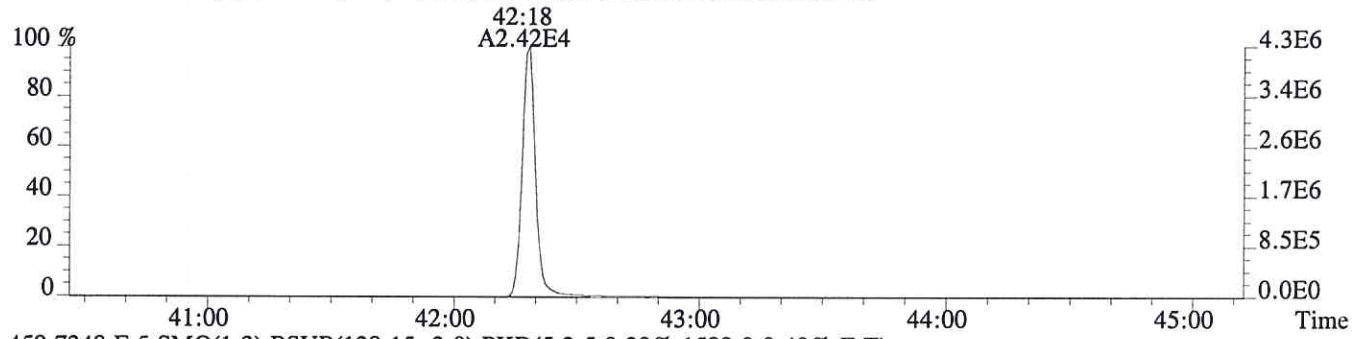


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

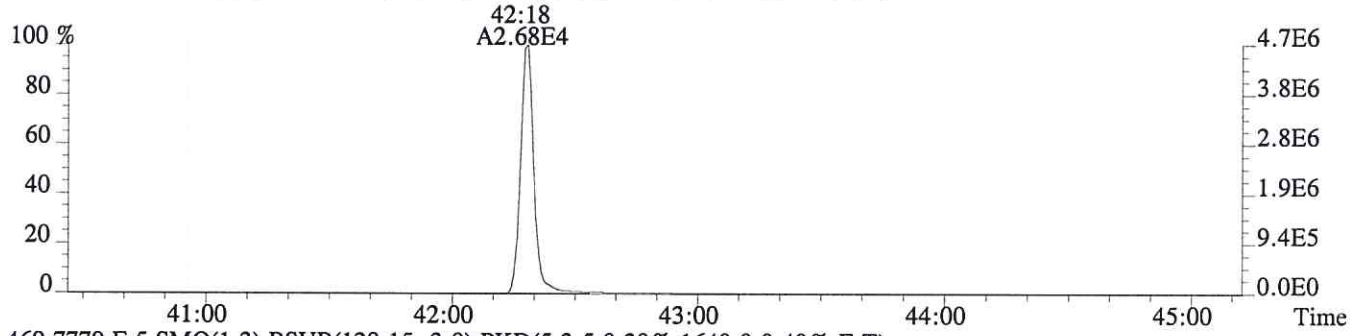


File:P503401 #1-430 Acq:18-MAR-2016 17:48:41 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-02

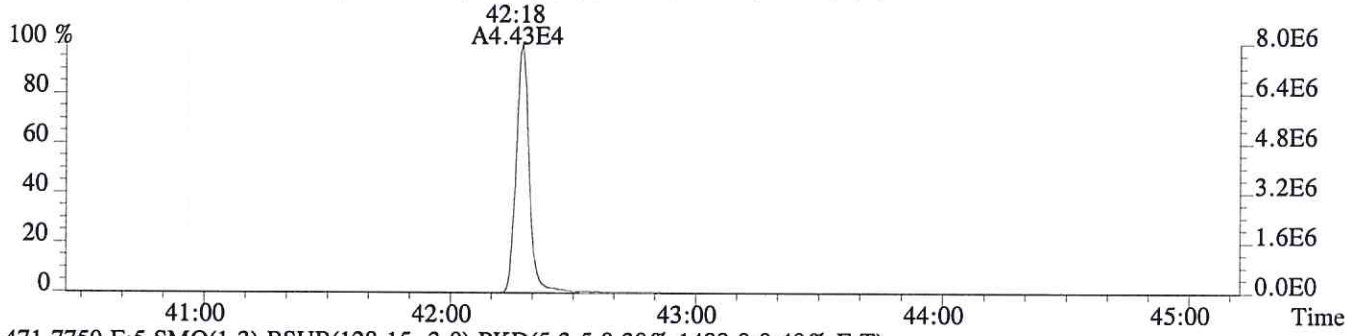
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,596.0,0.40%,F,T)



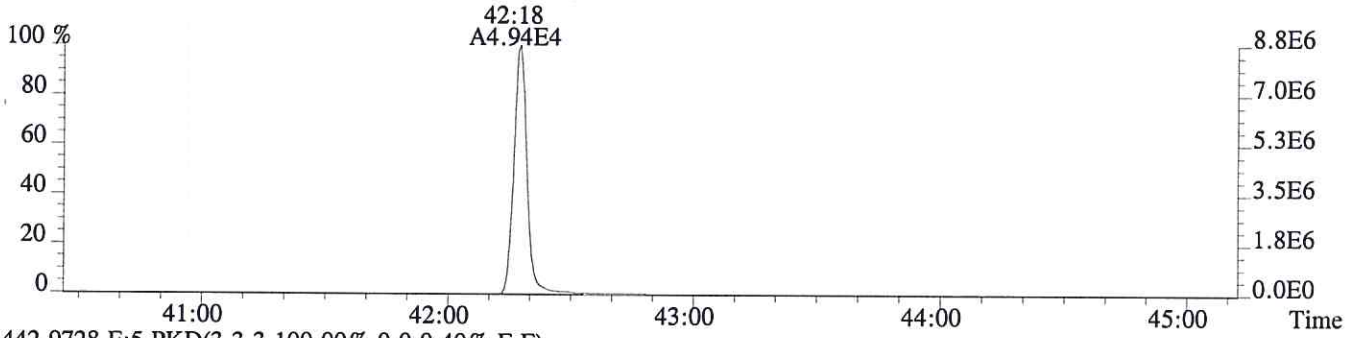
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1588.0,0.40%,F,T)



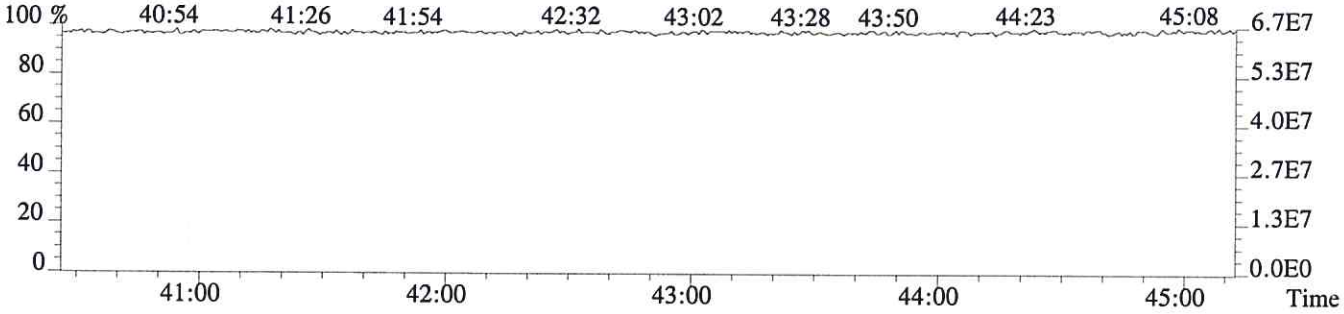
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1640.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1488.0,0.40%,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.
DLCS

Run #16 Filename P503402 Samp: 1 Inj: 1 Acquired: 18-MAR-16 18:37:26
Processed: 24-MAR-16 11:28:43 Sample ID: EQ1600129-03

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	28:23	2.478e+03	3.252e+03	0.76	yes	no	0.886
2	Unk	1,2,3,7,8-PeCDF	32:31	2.668e+04	1.722e+04	1.55	yes	no	0.983
3	Unk	2,3,4,7,8-PeCDF	33:25	2.677e+04	1.792e+04	1.49	yes	no	0.952
4	Unk	1,2,3,4,7,8-HxCDF	36:03	2.481e+04	2.030e+04	1.22	yes	no	1.190
5	Unk	1,2,3,6,7,8-HxCDF	36:10	2.644e+04	2.161e+04	1.22	yes	no	1.114
6	Unk	2,3,4,6,7,8-HxCDF	36:39	2.415e+04	2.037e+04	1.19	yes	no	1.109
7	Unk	1,2,3,7,8,9-HxCDF	37:24	2.319e+04	1.882e+04	1.23	yes	no	1.153
8	Unk	1,2,3,4,6,7,8-HpCDF	38:38	1.984e+04	1.951e+04	1.02	yes	no	1.376
9	Unk	1,2,3,4,7,8,9-HpCDF	40:01	1.884e+04	1.847e+04	1.02	yes	no	1.306
10	Unk	OCDF	42:31	2.557e+04	2.928e+04	0.87	yes	no	1.263
11	Unk	2,3,7,8-TCDD	29:09	2.290e+03	2.977e+03	0.77	yes	no	0.997
12	Unk	1,2,3,7,8-PeCDD	33:41	2.160e+04	1.402e+04	1.54	yes	no	0.935
13	Unk	1,2,3,4,7,8-HxCDD	36:47	2.015e+04	1.615e+04	1.25	yes	no	1.039
14	Unk	1,2,3,6,7,8-HxCDD	36:52	1.981e+04	1.575e+04	1.26	yes	no	0.996
15	Unk	1,2,3,7,8,9-HxCDD	37:06	2.166e+04	1.741e+04	1.24	yes	no	1.108
16	Unk	1,2,3,4,6,7,8-HpCDD	39:33	1.627e+04	1.583e+04	1.03	yes	no	1.010
17	Unk	OCDD	42:18	2.356e+04	2.671e+04	0.88	yes	no	1.090
18	IS	13C-2,3,7,8-TCDF	28:22	3.039e+04	3.885e+04	0.78	yes	no	1.447
19	IS	13C-1,2,3,7,8-PeCDF	32:30	5.897e+04	3.787e+04	1.56	yes	no	1.500
20	IS	13C-2,3,4,7,8-PeCDF	33:24	5.963e+04	3.801e+04	1.57	yes	no	1.456
21	IS	13C-1,2,3,4,7,8-HxCDF	36:02	2.580e+04	5.037e+04	0.51	yes	no	1.207
22	IS	13C-1,2,3,6,7,8-HxCDF	36:09	3.064e+04	5.919e+04	0.52	yes	no	1.263
23	IS	13C-2,3,4,6,7,8-HxCDF	36:38	2.891e+04	5.524e+04	0.52	yes	no	1.153
24	IS	13C-1,2,3,7,8,9-HxCDF	37:23	2.650e+04	5.172e+04	0.51	yes	no	1.085
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:37	1.817e+04	4.071e+04	0.45	yes	no	0.876
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:01	1.884e+04	4.245e+04	0.44	yes	no	0.883
27	IS	13C-2,3,7,8-TCDD	29:08	2.349e+04	3.005e+04	0.78	yes	no	1.027
28	IS	13C-1,2,3,7,8-PeCDD	33:41	4.531e+04	2.921e+04	1.55	yes	no	1.064
29	IS	13C-1,2,3,4,7,8-HxCDD	36:46	4.142e+04	3.290e+04	1.26	yes	no	0.908
30	IS	13C-1,2,3,6,7,8-HxCDD	36:51	4.094e+04	3.177e+04	1.29	yes	no	0.899
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:32	3.279e+04	3.105e+04	1.06	yes	no	0.910
32	IS	13C-OCDD	42:18	4.253e+04	4.802e+04	0.89	yes	no	0.633
33	RS/RT	13C-1,2,3,4-TCDD	28:35	3.741e+04	4.684e+04	0.80	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:06	5.271e+04	4.238e+04	1.24	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:09	2.699e+04				no	1.066

$$\text{OCDD} = \frac{(2.356e{+}04 + 2.671e{+}04)\ \times\ 4000\ \text{pg}\ \times\ 1}{(4.253e{+}04 + 4.802e{+}04)\ \times\ \text{g}\ \times\ /\ 100\ \times\ 1.090} =$$

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
DLCS

Run #16 Filename P503402 Samp: 1 Inj: 1 Acquired: 18-MAR-16 18:37:26
Processed: 24-MAR-16 11:28:43 LAB. ID: EQ1600129-03

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	4.57e+05	7.44e+02	6.1e+02	6.09e+05	2.68e+03	2.3e+02
2	1,2,3,7,8-PeCDF	5.05e+06	4.12e+02	1.2e+04	3.22e+06	1.10e+03	2.9e+03
3	2,3,4,7,8-PeCDF	5.42e+06	4.12e+02	1.3e+04	3.64e+06	1.10e+03	3.3e+03
4	1,2,3,4,7,8-HxCDF	5.37e+06	1.15e+03	4.7e+03	4.41e+06	5.40e+02	8.2e+03
5	1,2,3,6,7,8-HxCDF	5.60e+06	1.15e+03	4.9e+03	4.61e+06	5.40e+02	8.5e+03
6	2,3,4,6,7,8-HxCDF	5.36e+06	1.15e+03	4.7e+03	4.50e+06	5.40e+02	8.3e+03
7	1,2,3,7,8,9-HxCDF	4.99e+06	1.15e+03	4.3e+03	4.06e+06	5.40e+02	7.5e+03
8	1,2,3,4,6,7,8-HpCDF	4.24e+06	3.40e+02	1.2e+04	4.17e+06	7.68e+02	5.4e+03
9	1,2,3,4,7,8,9-HpCDF	3.73e+06	3.40e+02	1.1e+04	3.62e+06	7.68e+02	4.7e+03
10	OCDF	4.51e+06	1.52e+03	3.0e+03	5.19e+06	2.06e+03	2.5e+03
11	2,3,7,8-TCDD	4.71e+05	1.43e+03	3.3e+02	5.77e+05	1.01e+03	5.7e+02
12	1,2,3,7,8-PeCDD	4.37e+06	1.56e+03	2.8e+03	2.85e+06	6.88e+02	4.1e+03
13	1,2,3,4,7,8-HxCDD	4.57e+06	7.48e+02	6.1e+03	3.62e+06	9.72e+02	3.7e+03
14	1,2,3,6,7,8-HxCDD	4.28e+06	7.48e+02	5.7e+03	3.46e+06	9.72e+02	3.6e+03
15	1,2,3,7,8,9-HxCDD	4.68e+06	7.48e+02	6.3e+03	3.72e+06	9.72e+02	3.8e+03
16	1,2,3,4,6,7,8-HpCDD	3.43e+06	9.32e+02	3.7e+03	3.27e+06	9.88e+02	3.3e+03
17	OCDD	4.14e+06	1.92e+02	2.2e+04	4.67e+06	9.12e+02	5.1e+03
18	13C-2,3,7,8-TCDF	5.76e+06	2.42e+03	2.4e+03	7.41e+06	2.22e+03	3.3e+03
19	13C-1,2,3,7,8-PeCDF	1.11e+07	4.16e+02	2.7e+04	7.22e+06	1.05e+03	6.9e+03
20	13C-2,3,4,7,8-PeCDF	1.20e+07	4.16e+02	2.9e+04	7.65e+06	1.05e+03	7.3e+03
21	13C-1,2,3,4,7,8-HxCDF	5.59e+06	1.24e+03	4.5e+03	1.09e+07	1.80e+03	6.1e+03
22	13C-1,2,3,6,7,8-HxCDF	6.52e+06	1.24e+03	5.3e+03	1.25e+07	1.80e+03	6.9e+03
23	13C-2,3,4,6,7,8-HxCDF	6.46e+06	1.24e+03	5.2e+03	1.23e+07	1.80e+03	6.8e+03
24	13C-1,2,3,7,8,9-HxCDF	5.69e+06	1.24e+03	4.6e+03	1.11e+07	1.80e+03	6.2e+03
25	13C-1,2,3,4,6,7,8-HpCDF	3.99e+06	4.29e+03	9.3e+02	8.75e+06	6.76e+02	1.3e+04
26	13C-1,2,3,4,7,8,9-HpCDF	3.76e+06	4.29e+03	8.8e+02	8.38e+06	6.76e+02	1.2e+04
27	13C-2,3,7,8-TCDD	4.55e+06	6.43e+03	7.1e+02	5.81e+06	4.16e+03	1.4e+03
28	13C-1,2,3,7,8-PeCDD	9.11e+06	1.54e+03	5.9e+03	5.87e+06	6.48e+02	9.1e+03
29	13C-1,2,3,4,7,8-HxCDD	9.24e+06	2.12e+03	4.4e+03	7.33e+06	1.62e+03	4.5e+03
30	13C-1,2,3,6,7,8-HxCDD	8.82e+06	2.12e+03	4.2e+03	7.01e+06	1.62e+03	4.3e+03
31	13C-1,2,3,4,6,7,8-HpCDD	6.61e+06	1.66e+03	4.0e+03	6.17e+06	7.28e+02	8.5e+03
32	13C-OCDD	7.56e+06	7.92e+02	9.5e+03	8.38e+06	1.22e+03	6.9e+03
33	13C-1,2,3,4-TCDD	7.15e+06	6.43e+03	1.1e+03	9.01e+06	4.16e+03	2.2e+03
34	13C-1,2,3,7,8,9-HxCDD	1.15e+07	2.12e+03	5.4e+03	9.00e+06	1.62e+03	5.5e+03
35	37Cl-2,3,7,8-TCDD	5.33e+06	2.10e+03	2.5e+03			

---Sample Calculation---

$$\text{D/L TCDD} = \frac{2.5 \times (1.428e{+}03 + 1.008e{+}03\ ) \times 2000}{(4.551e{+}06 + 5.813e{+}06\ ) \times (\qquad\qquad\qquad\qquad) \times 0.997} =$$

ALS ENVIRONMENTAL
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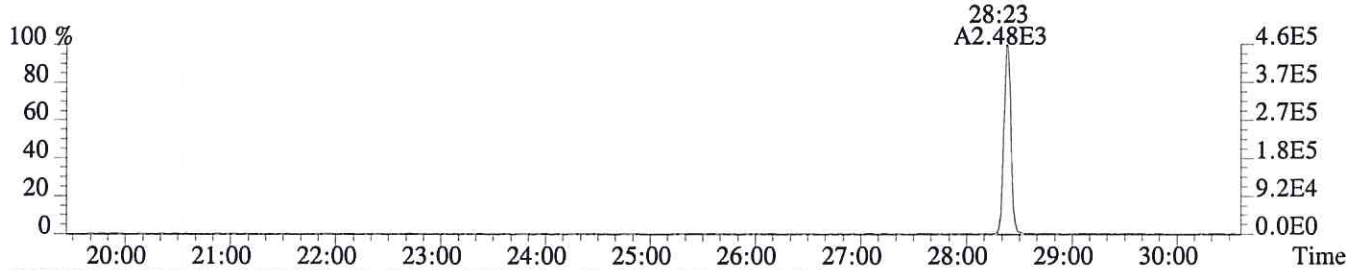
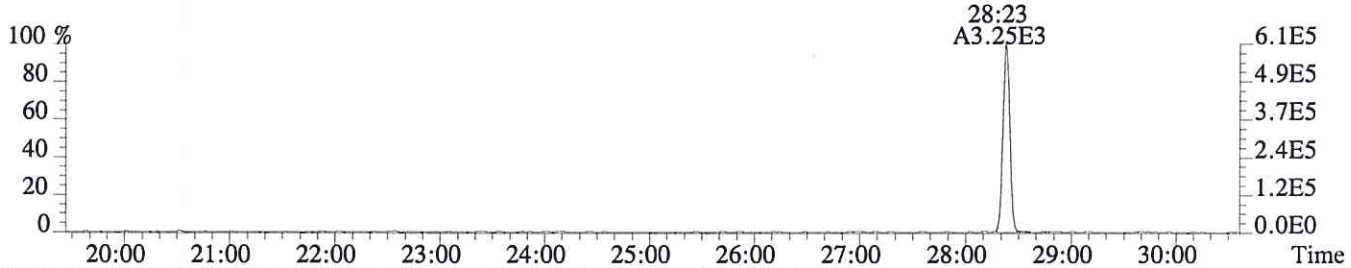
File:P503402 #1-793 Acq:18-MAR-2016 18:37:26 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-03

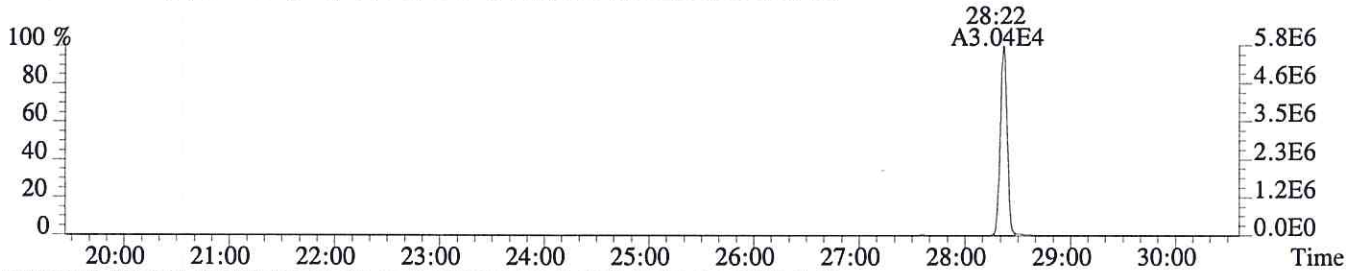
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,744.0,1.00%,F,T)



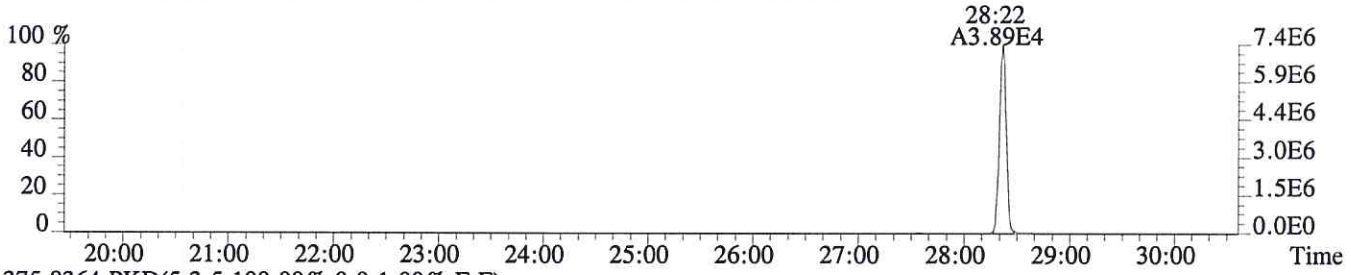
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2684.0,1.00%,F,T)



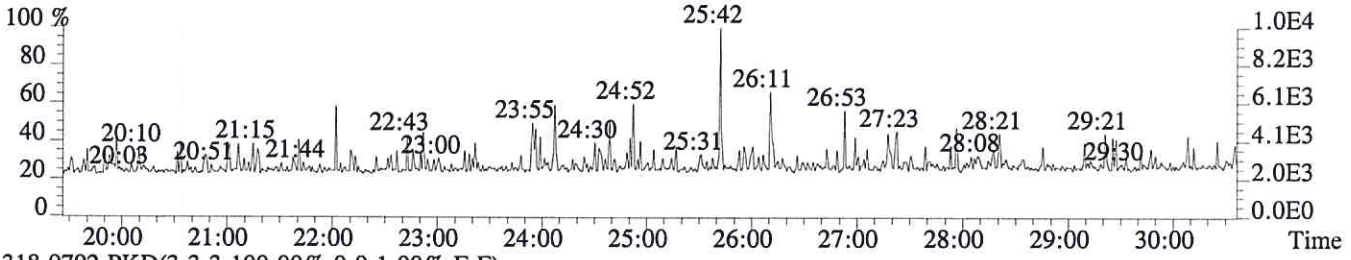
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2420.0,1.00%,F,T)



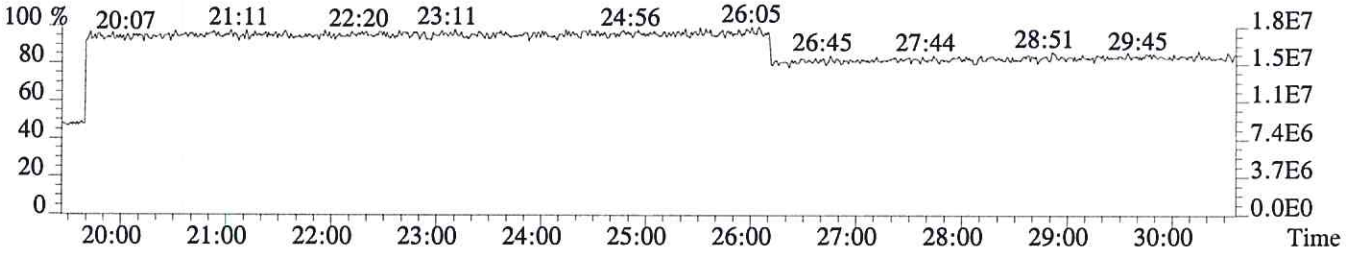
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2216.0,1.00%,F,T)



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

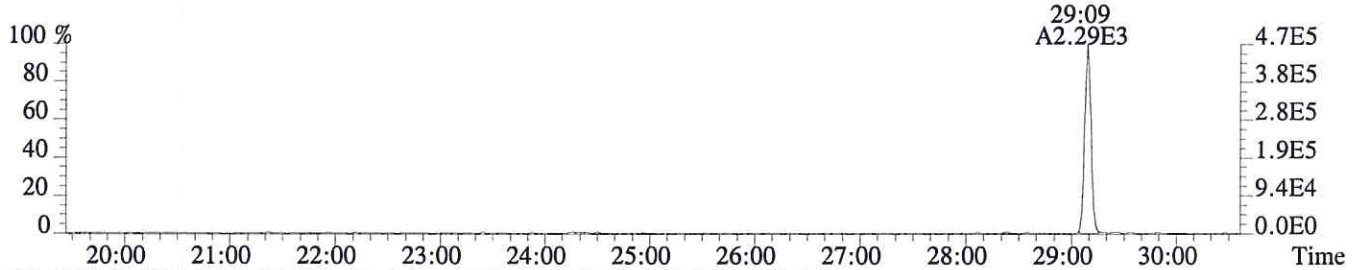


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

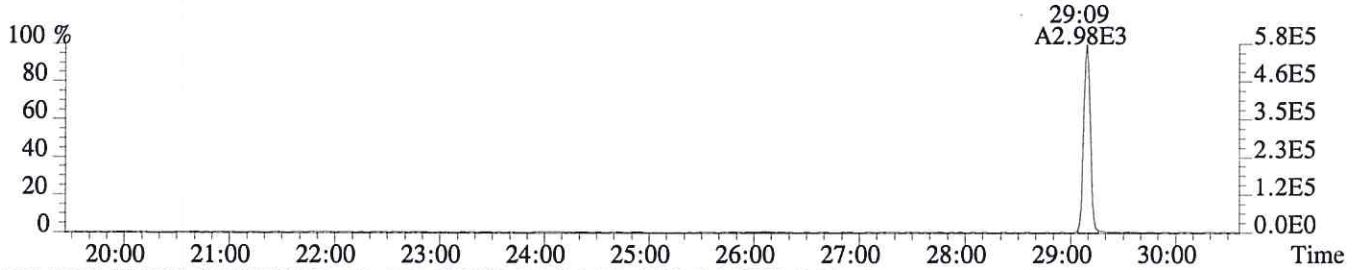


File:P503402 #1-793 Acq:18-MAR-2016 18:37:26 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-03

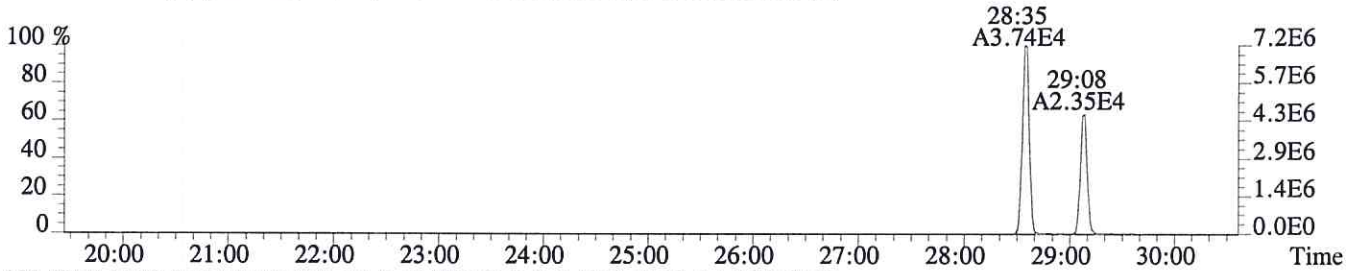
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1428.0,1.00%,F,T)



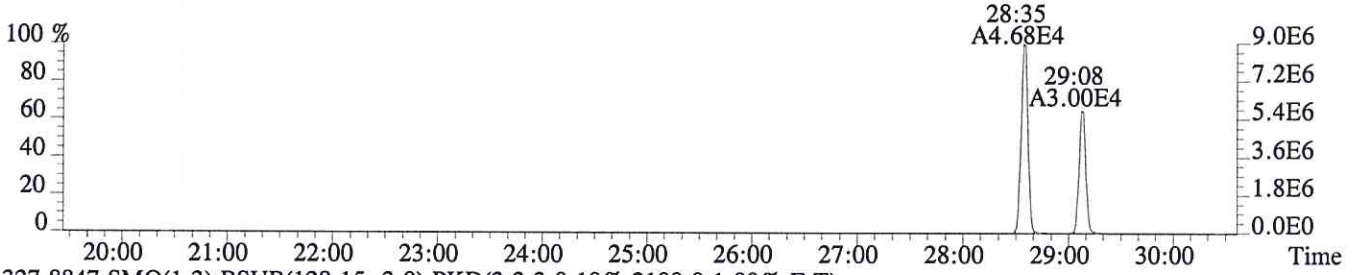
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1008.0,1.00%,F,T)



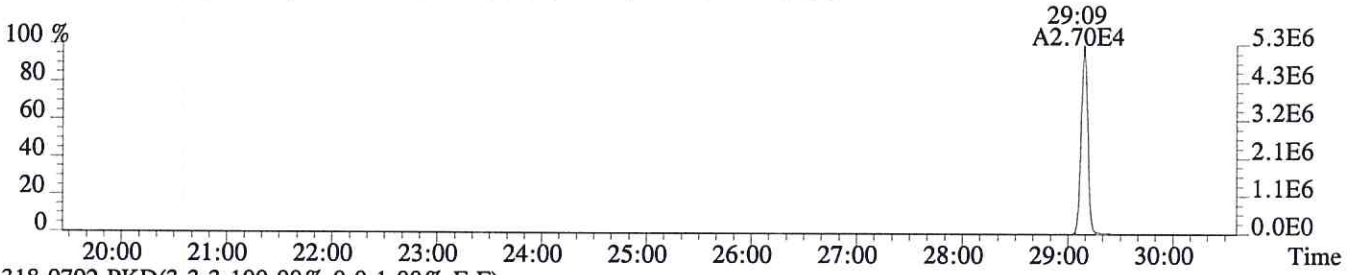
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6432.0,1.00%,F,T)



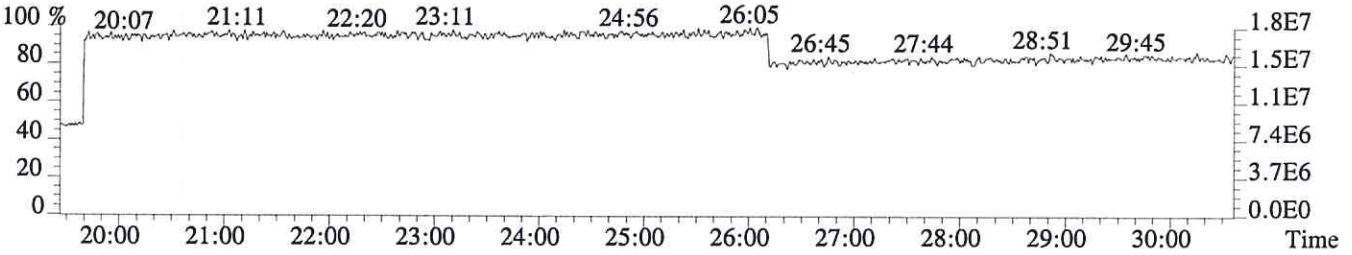
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4160.0,1.00%,F,T)



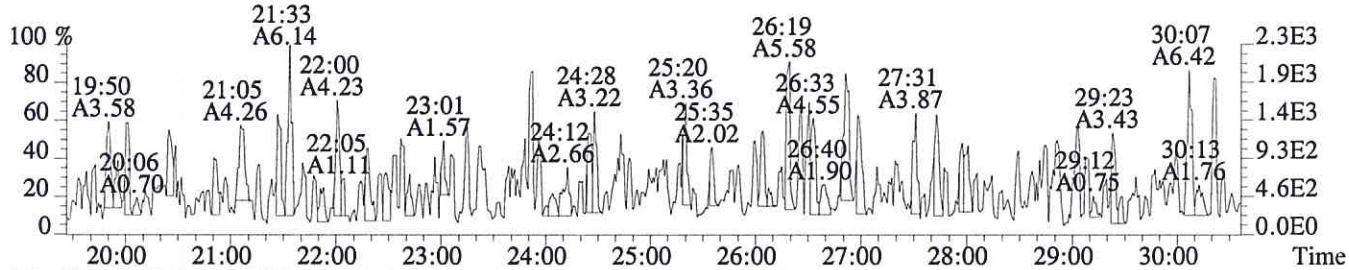
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2100.0,1.00%,F,T)



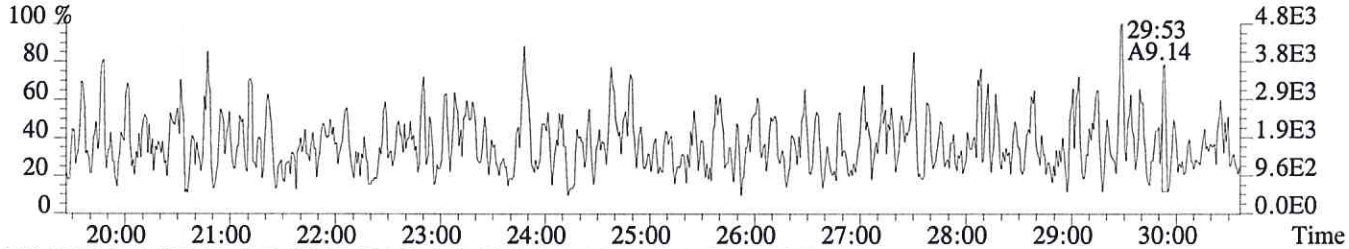
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



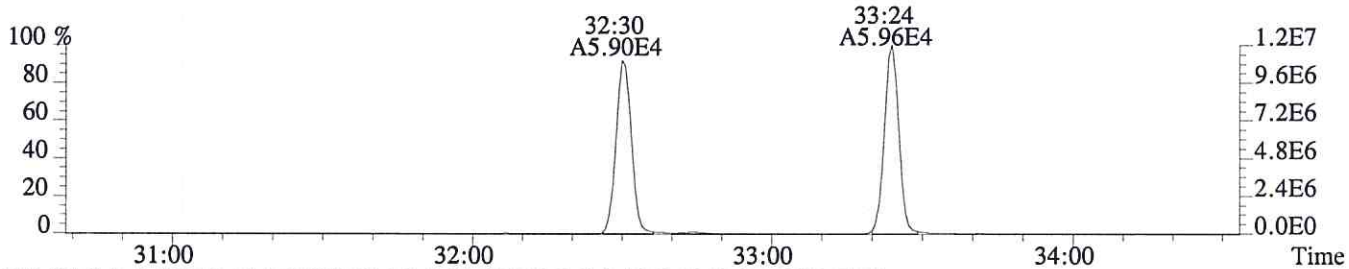
File:P503402 #1-793 Acq:18-MAR-2016 18:37:26 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-03
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,524.0,1.00%,F,T)



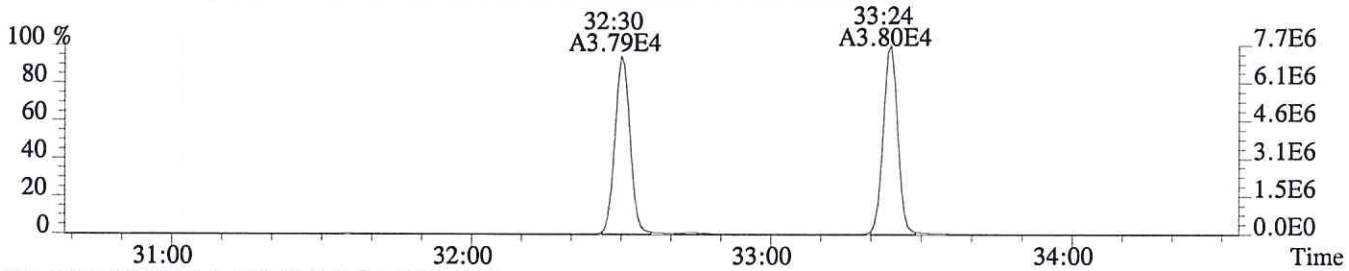
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2152.0,1.00%,F,T)



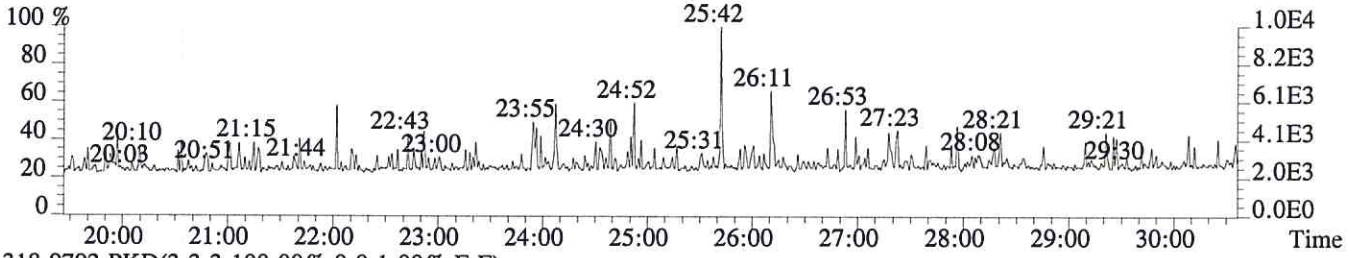
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,416.0,1.00%,F,T)



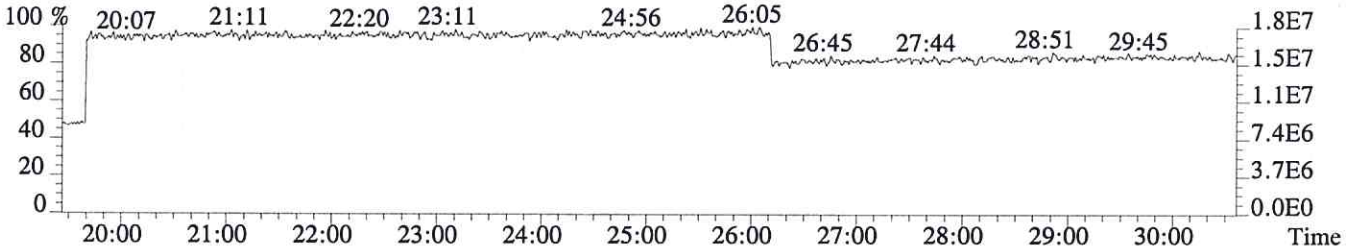
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1048.0,1.00%,F,T)



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

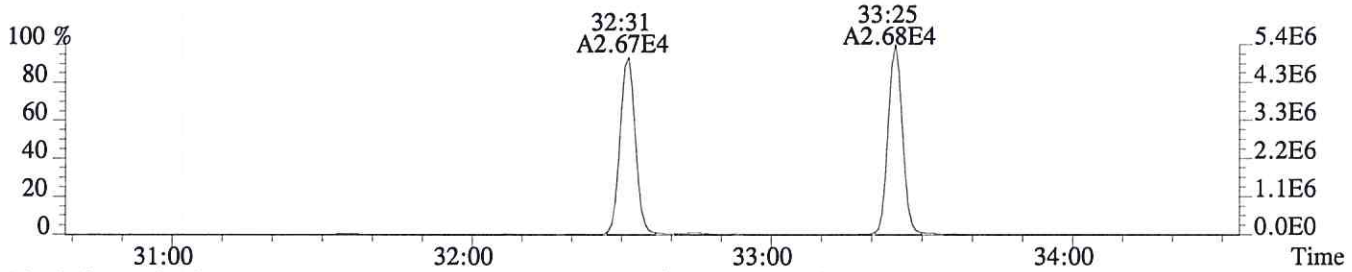


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

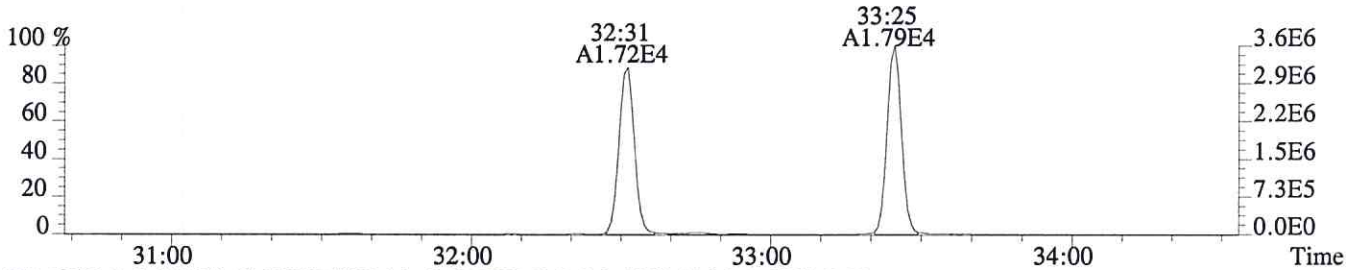


File:P503402 #1-353 Acq:18-MAR-2016 18:37:26 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-03

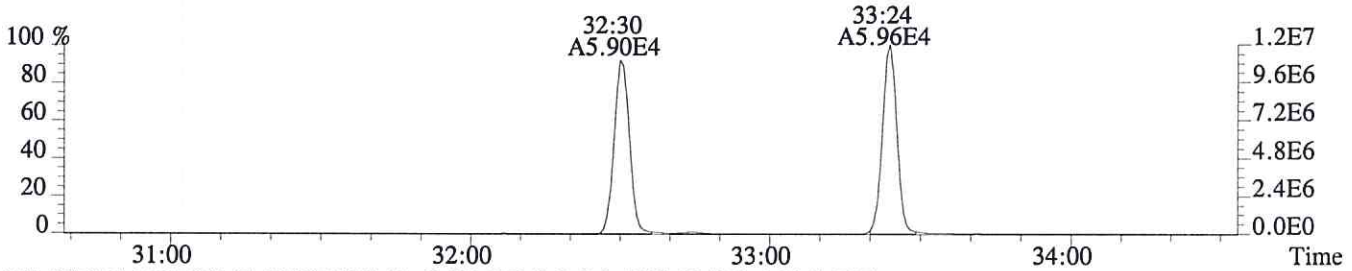
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,412.0,1.00%,F,T)



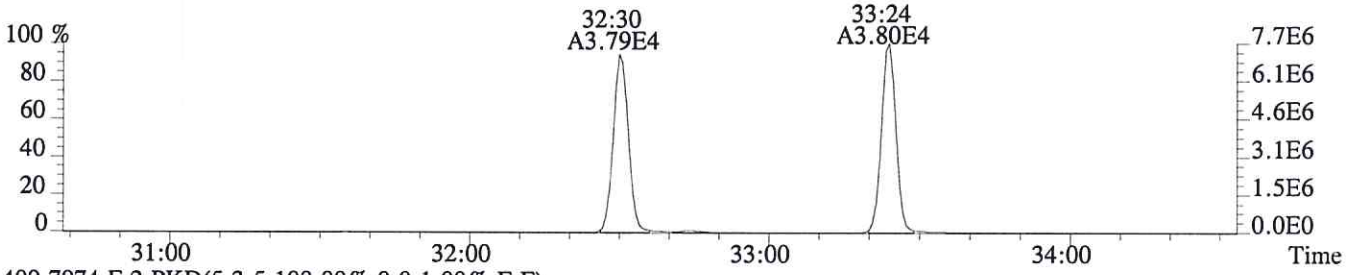
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1096.0,1.00%,F,T)



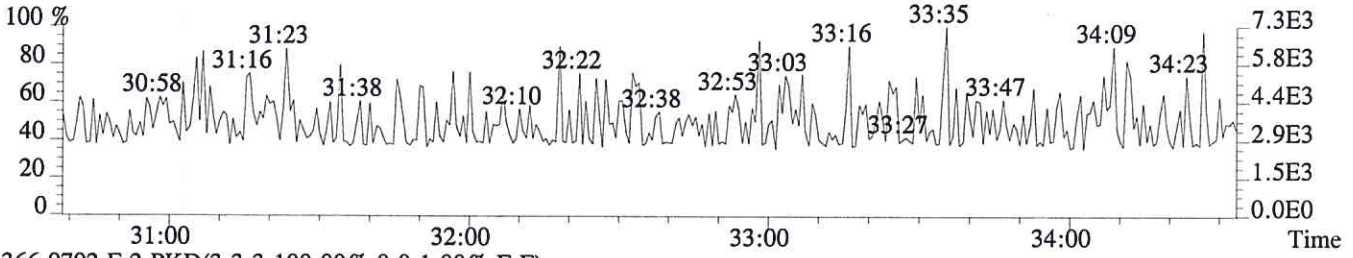
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,416.0,1.00%,F,T)



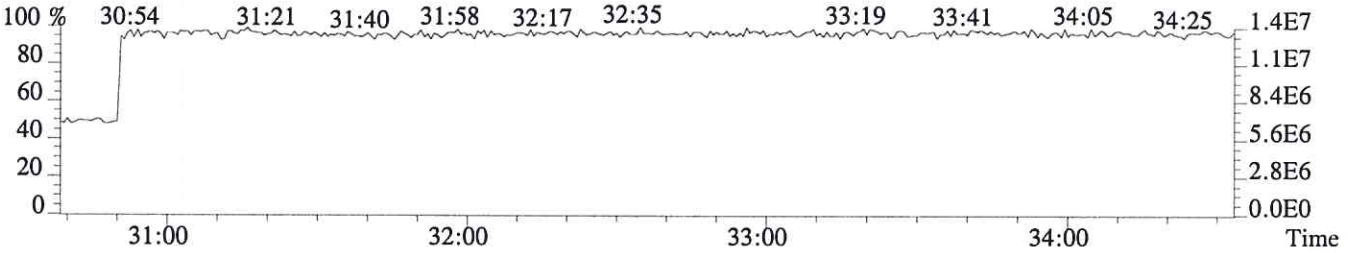
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1048.0,1.00%,F,T)



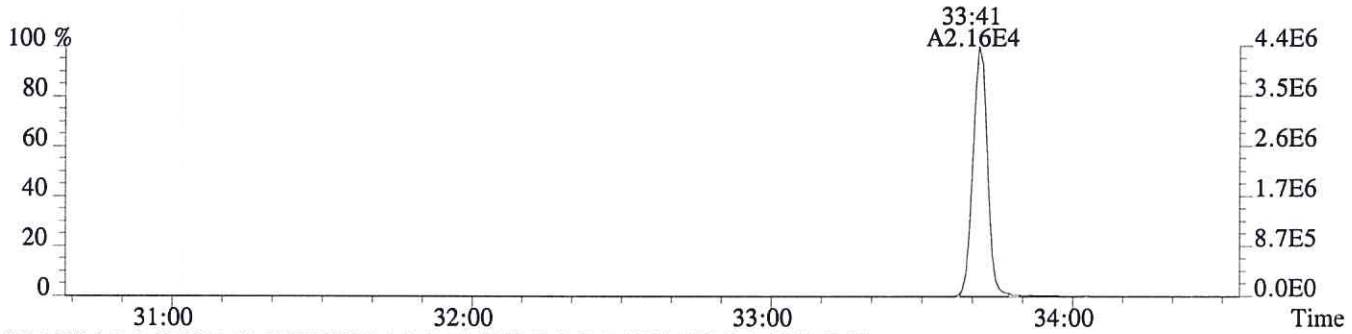
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



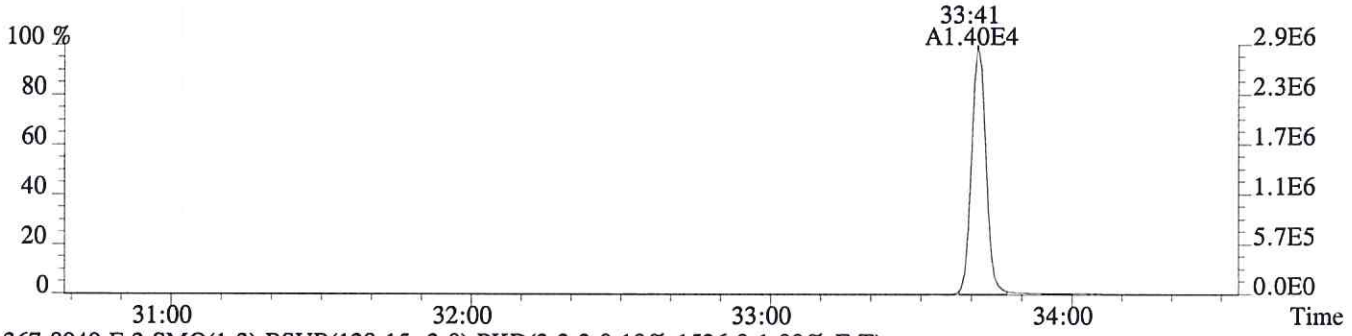
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



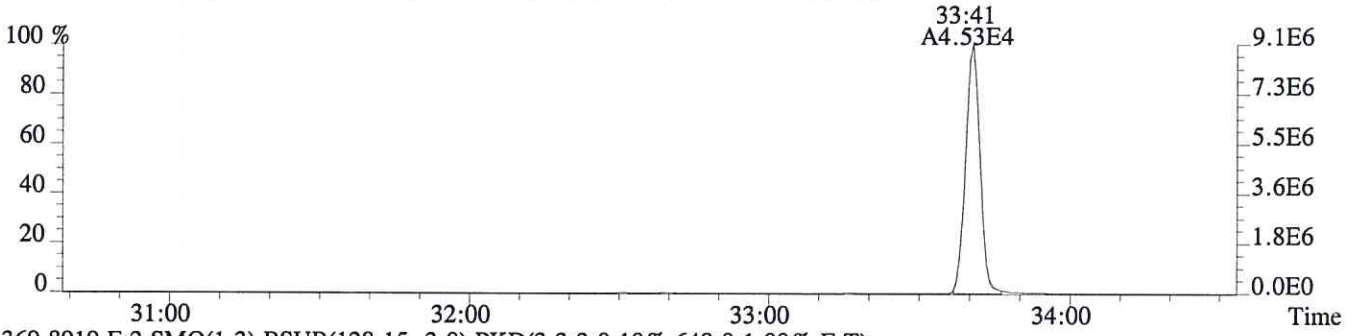
File:P503402 #1-353 Acq:18-MAR-2016 18:37:26 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-03
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1556.0,1.00%,F,T)



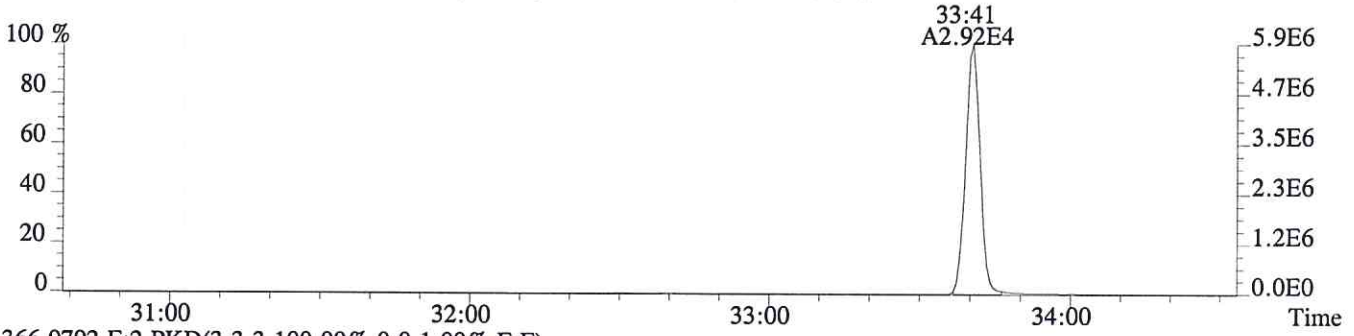
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,688.0,1.00%,F,T)



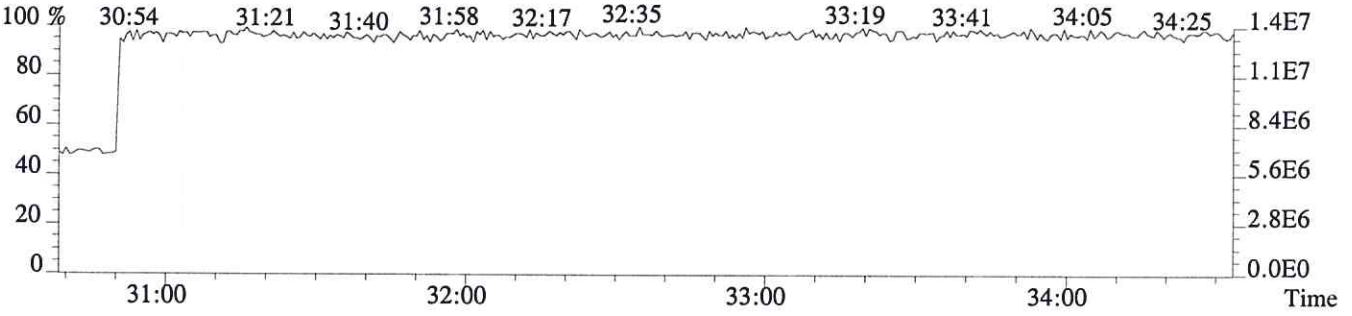
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1536.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,648.0,1.00%,F,T)

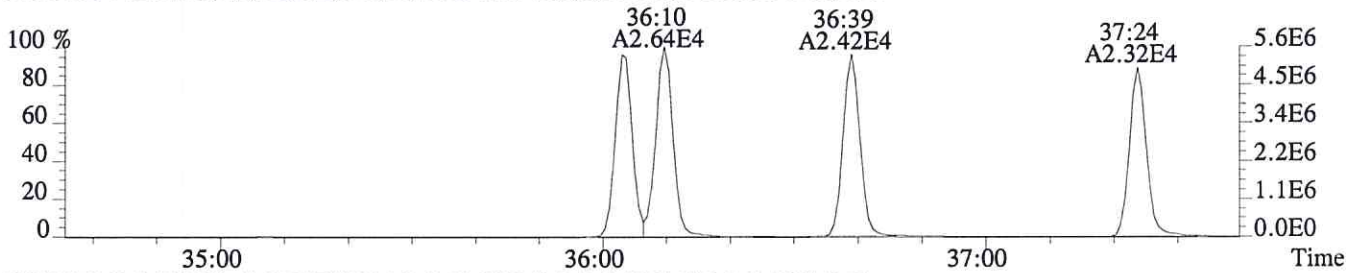


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

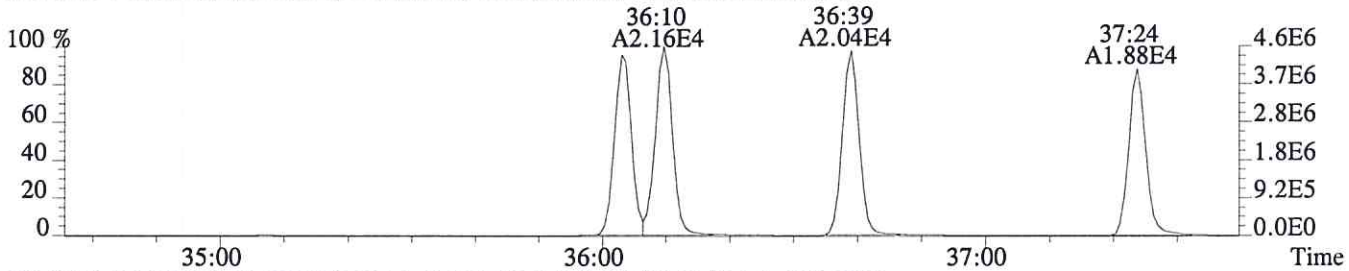


File:P503402 #1-277 Acq:18-MAR-2016 18:37:26 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-03

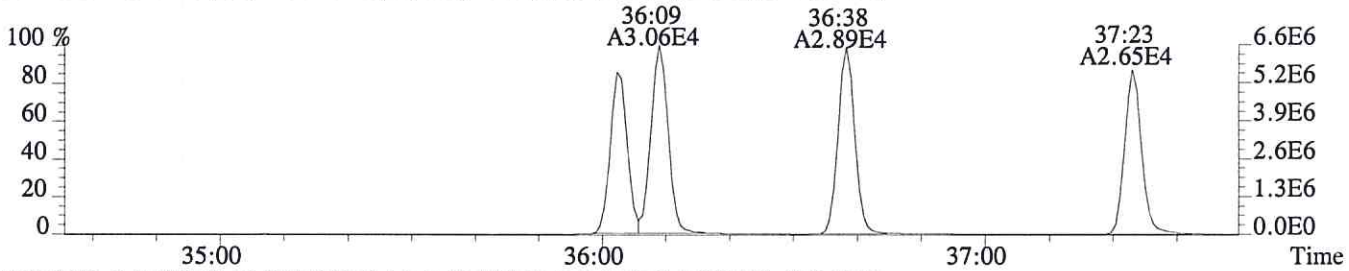
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1152.0,0.40%,F,T)



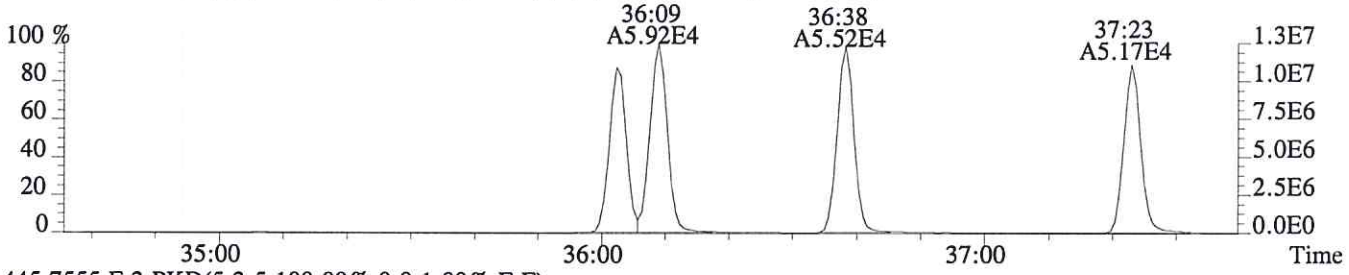
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,540.0,0.40%,F,T)



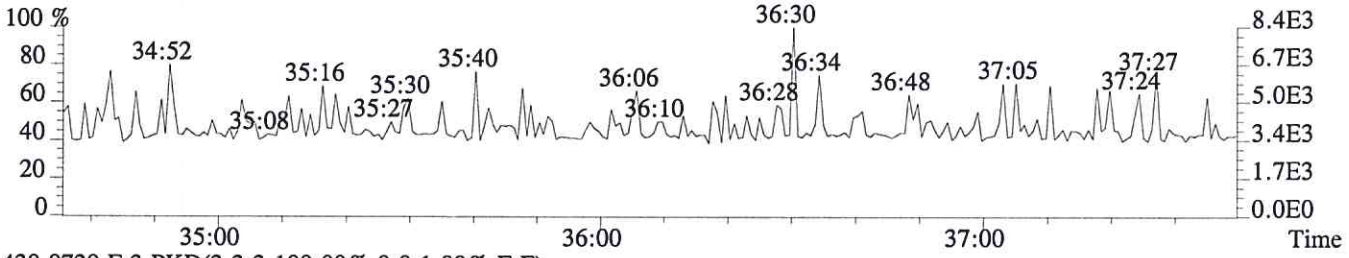
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1240.0,0.40%,F,T)



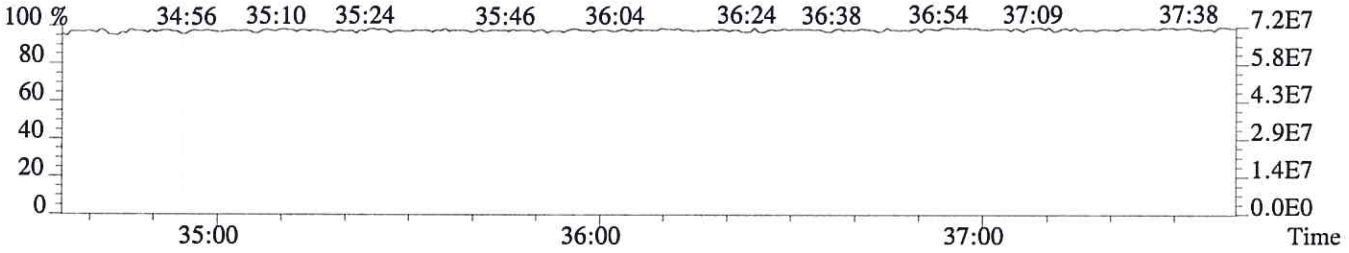
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1800.0,0.40%,F,T)



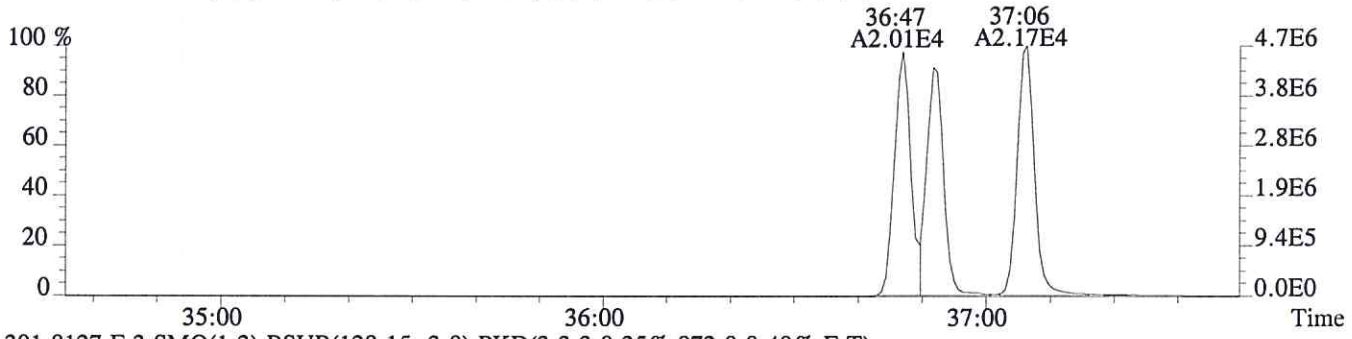
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



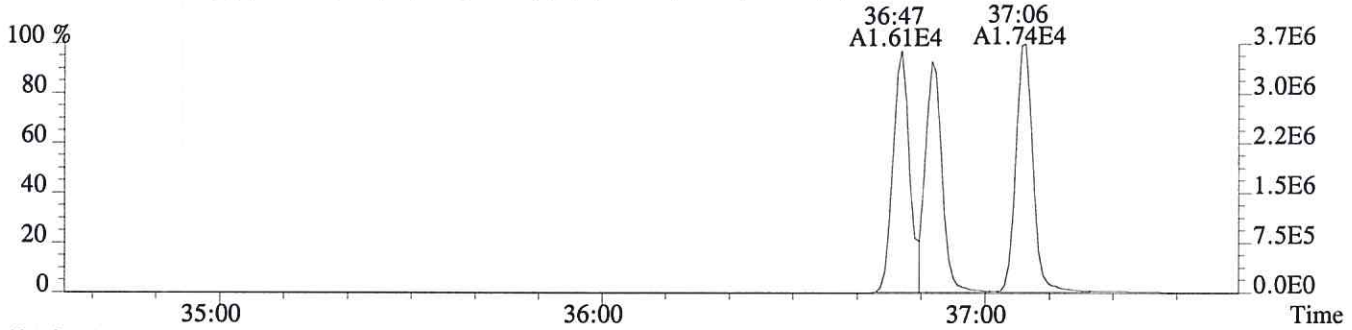
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



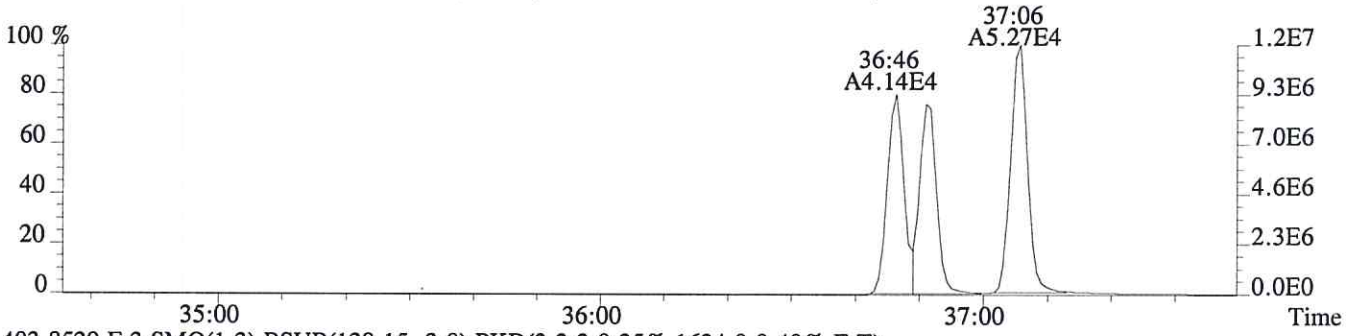
File:P503402 #1-277 Acq:18-MAR-2016 18:37:26 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-03
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,748.0,0.40%,F,T)



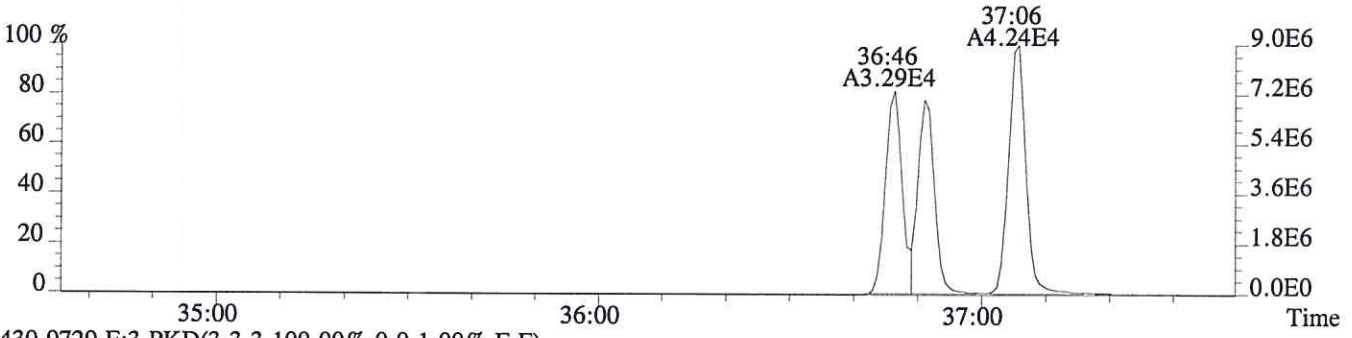
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,972.0,0.40%,F,T)



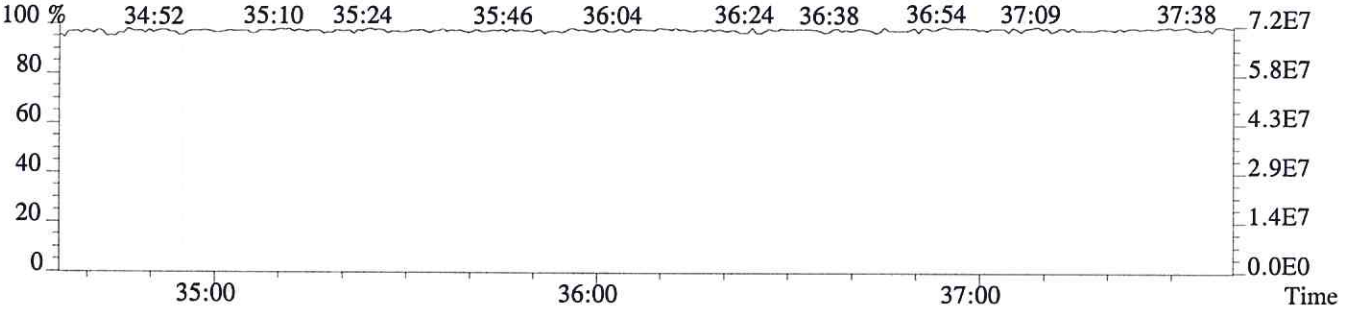
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2124.0,0.40%,F,T)



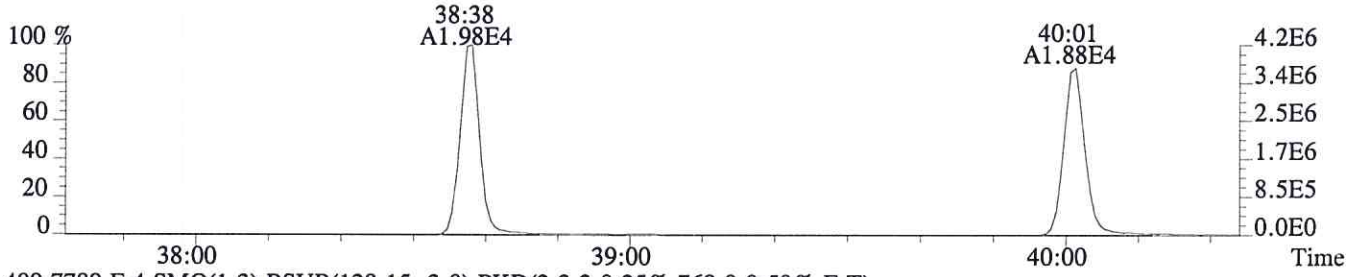
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1624.0,0.40%,F,T)



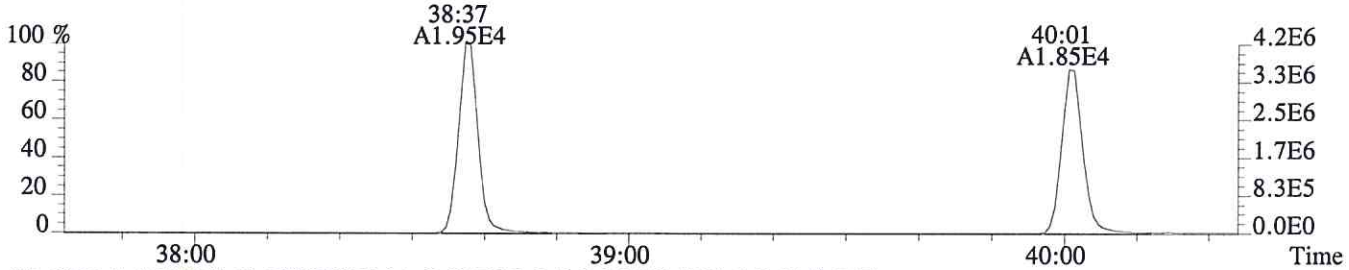
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



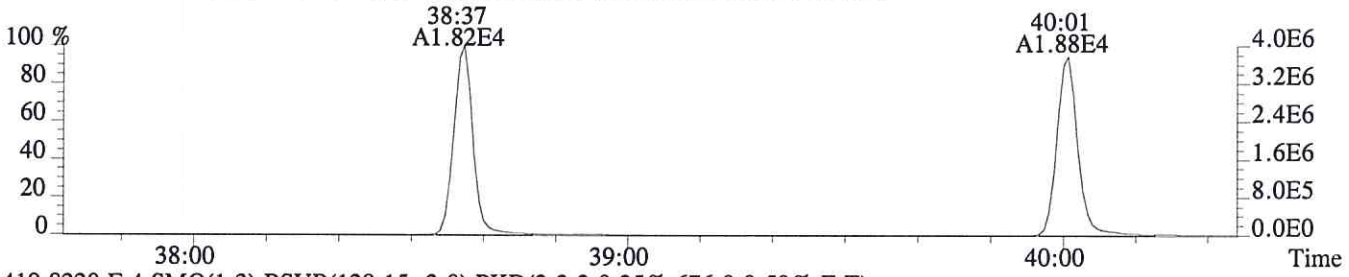
File:P503402 #1-244 Acq:18-MAR-2016 18:37:26 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-03
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,340.0,0.50%,F,T)



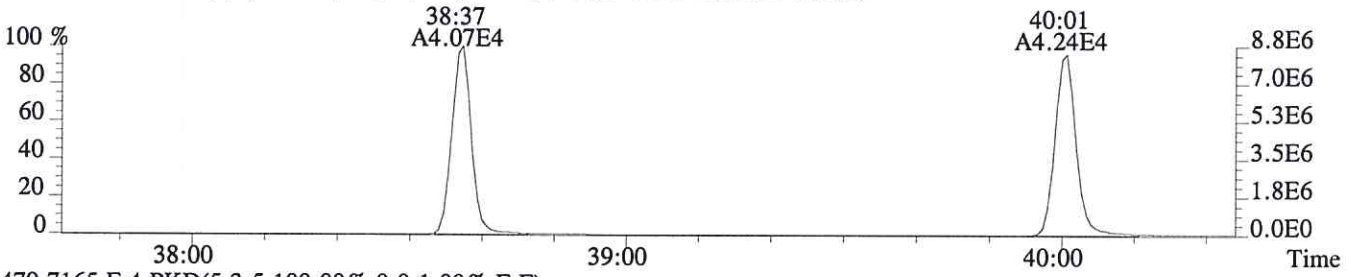
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,768.0,0.50%,F,T)



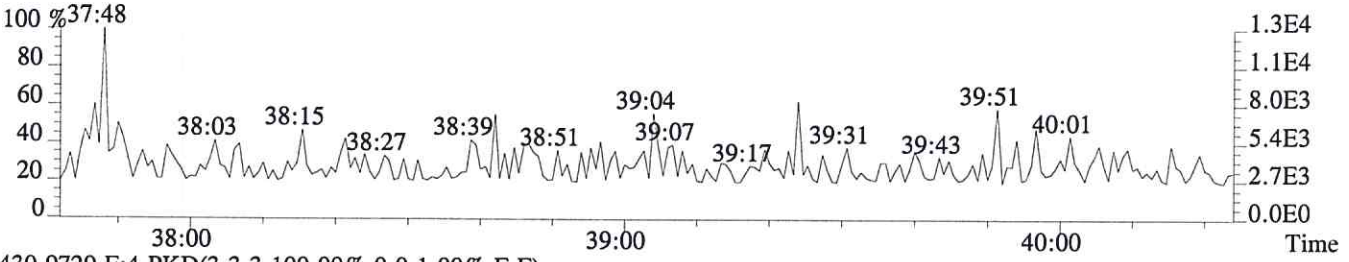
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4292.0,0.50%,F,T)



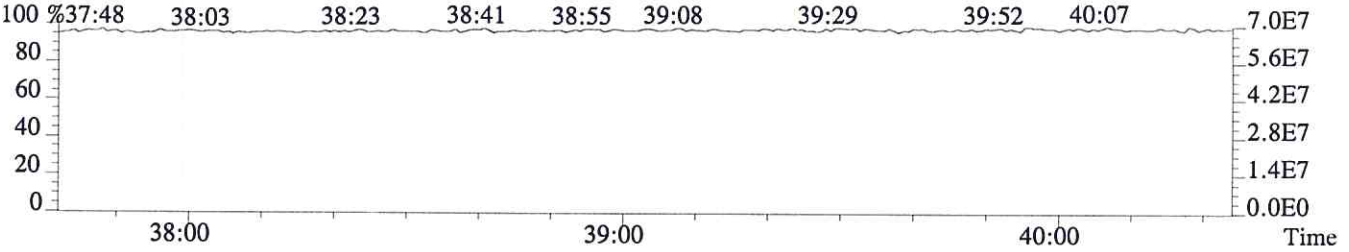
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,676.0,0.50%,F,T)



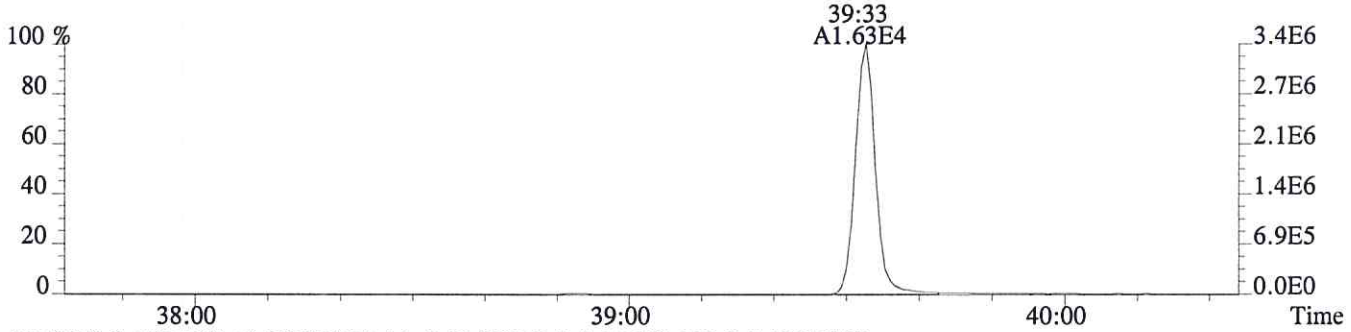
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



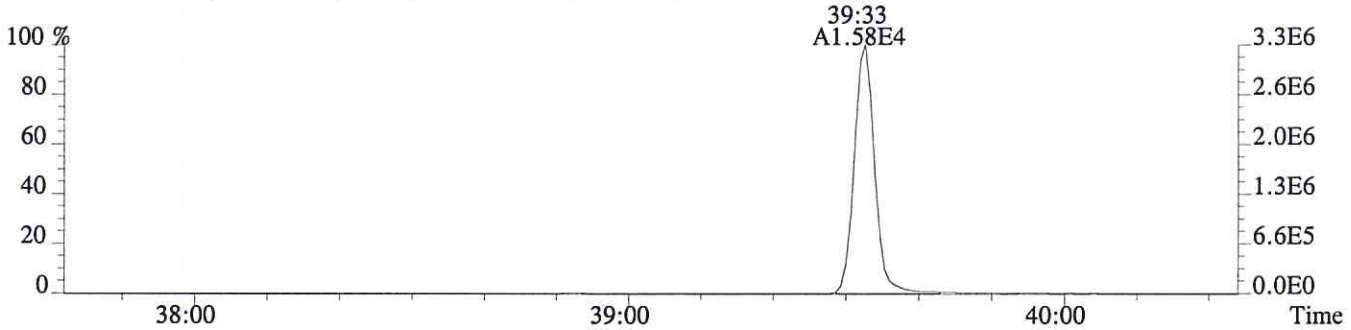
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



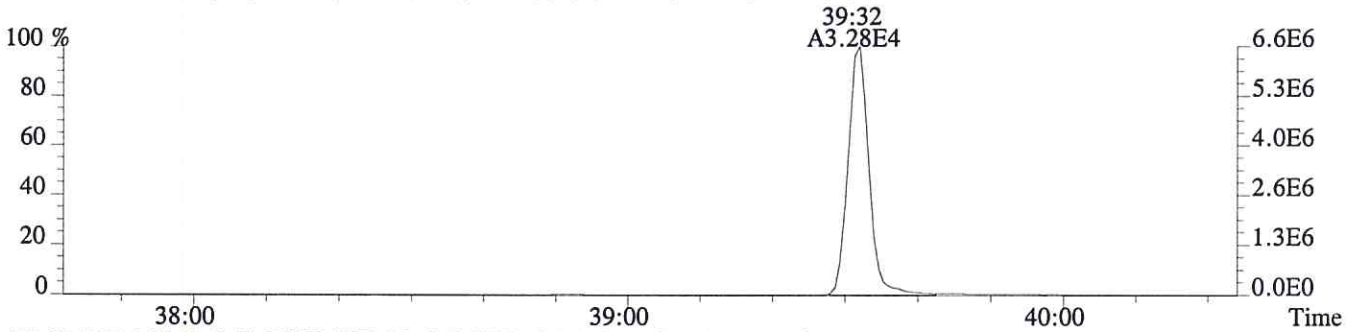
File:P503402 #1-244 Acq:18-MAR-2016 18:37:26 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-03
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,932.0,0.40%,F,T)



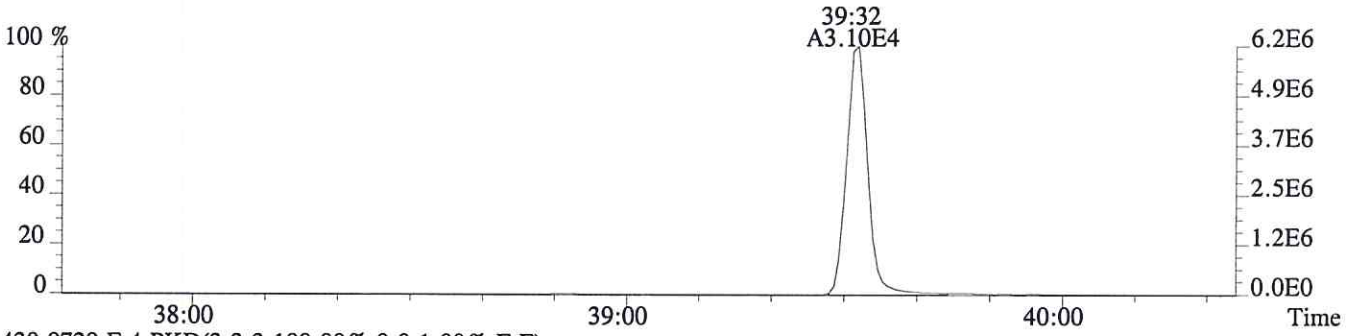
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,988.0,0.40%,F,T)



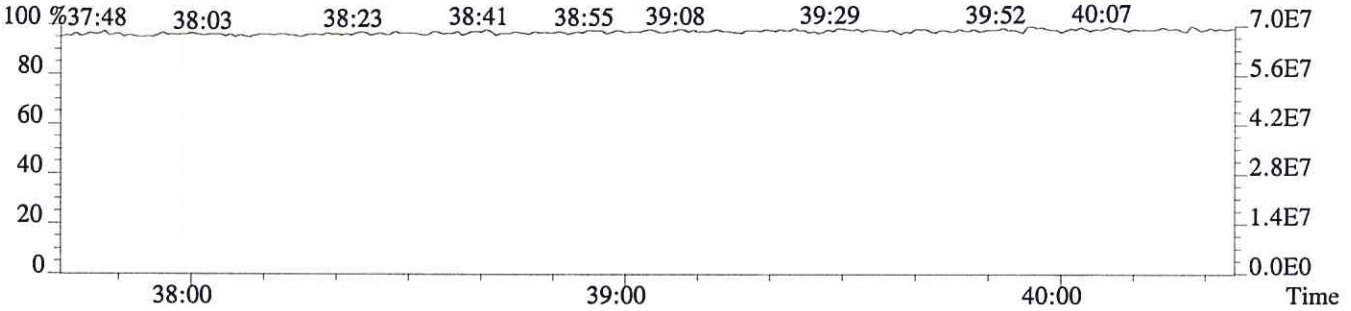
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1656.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,728.0,0.40%,F,T)

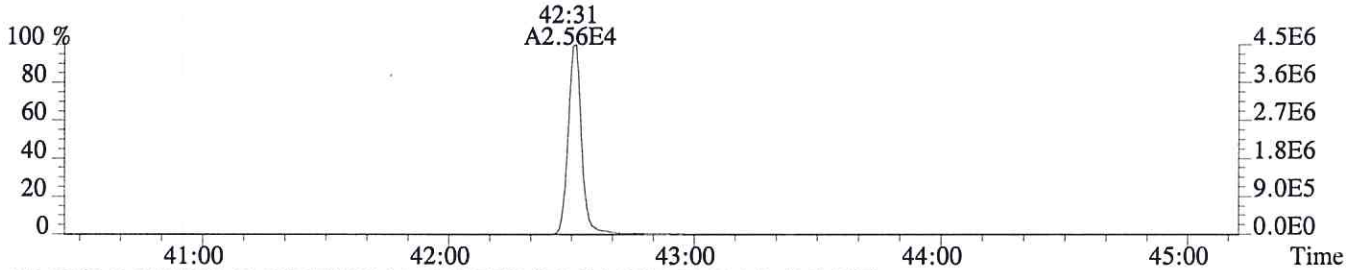


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

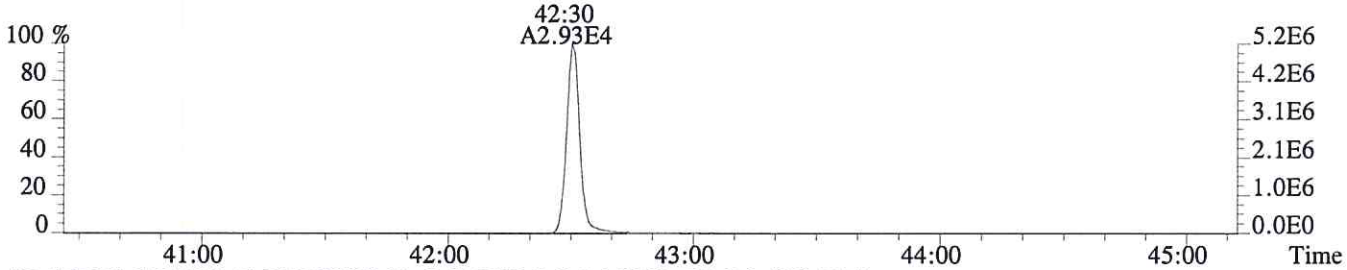


File:P503402 #1-430 Acq:18-MAR-2016 18:37:26 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-03

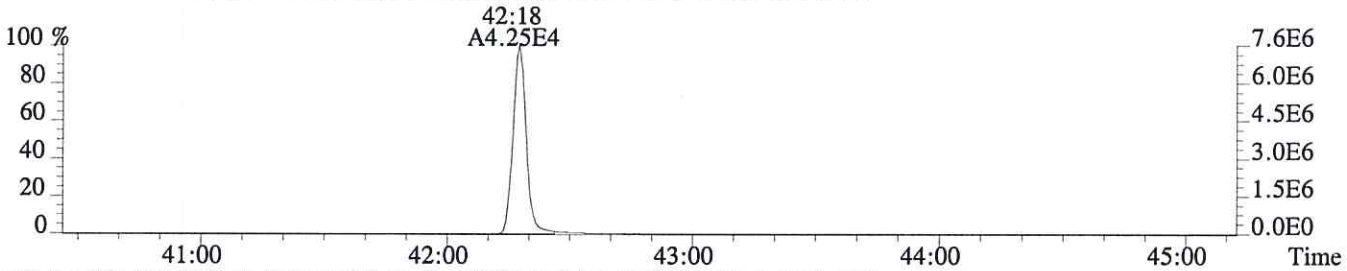
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1524.0,0.40%,F,T)



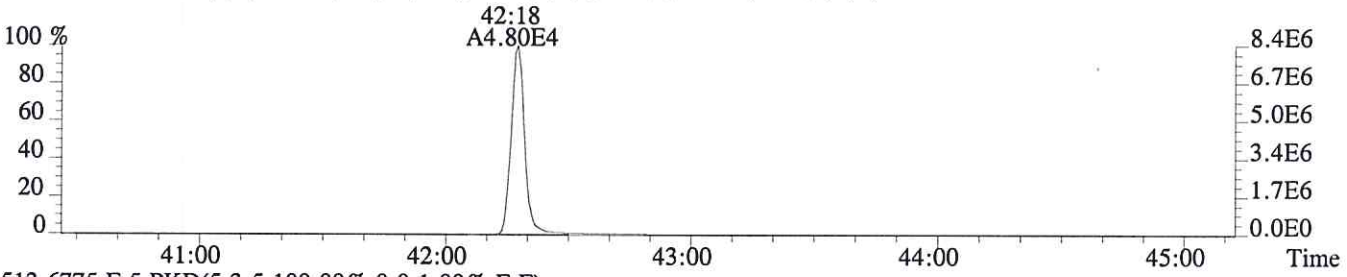
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2060.0,0.40%,F,T)



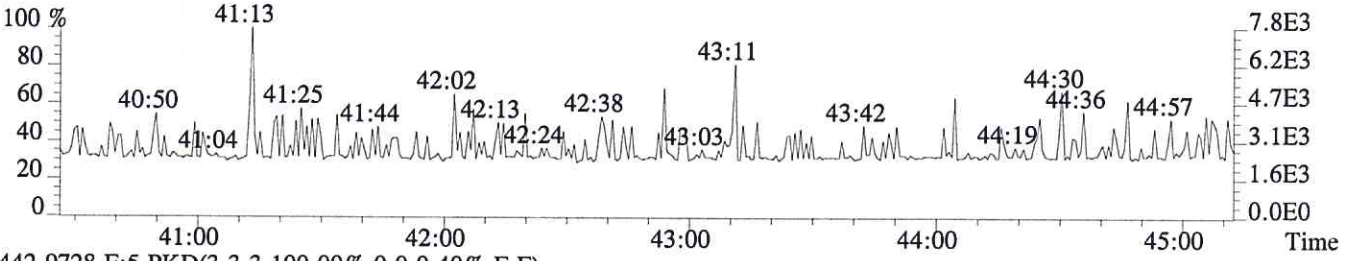
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,792.0,0.40%,F,T)



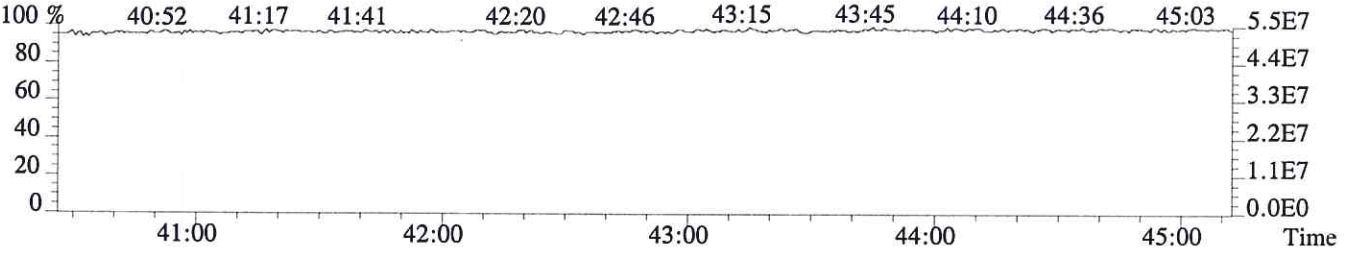
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1216.0,0.40%,F,T)



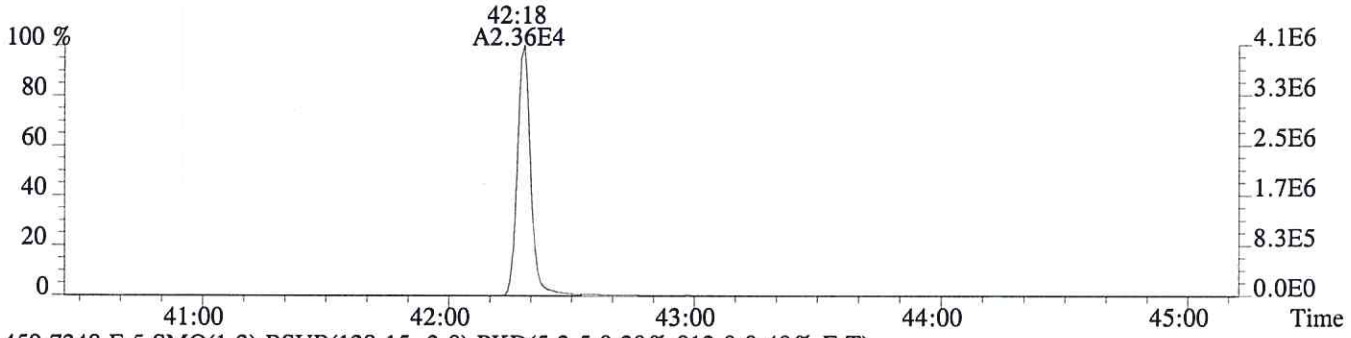
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



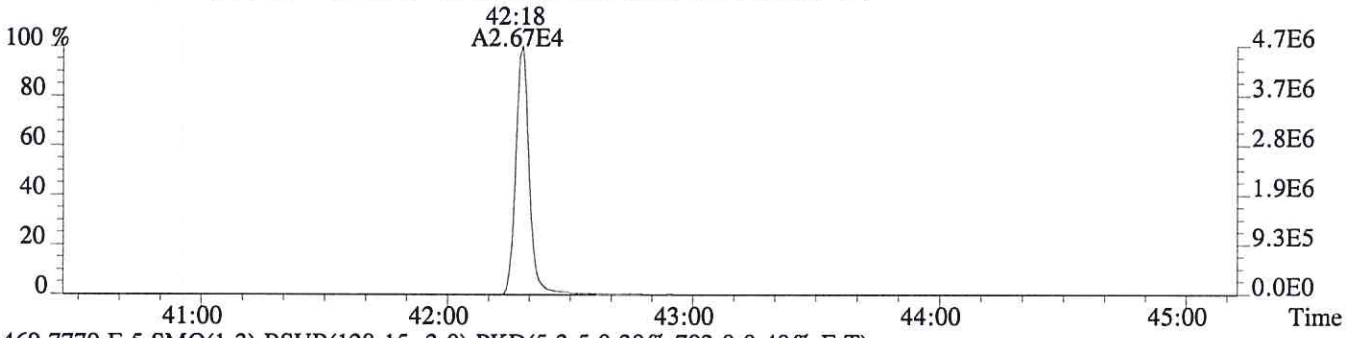
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



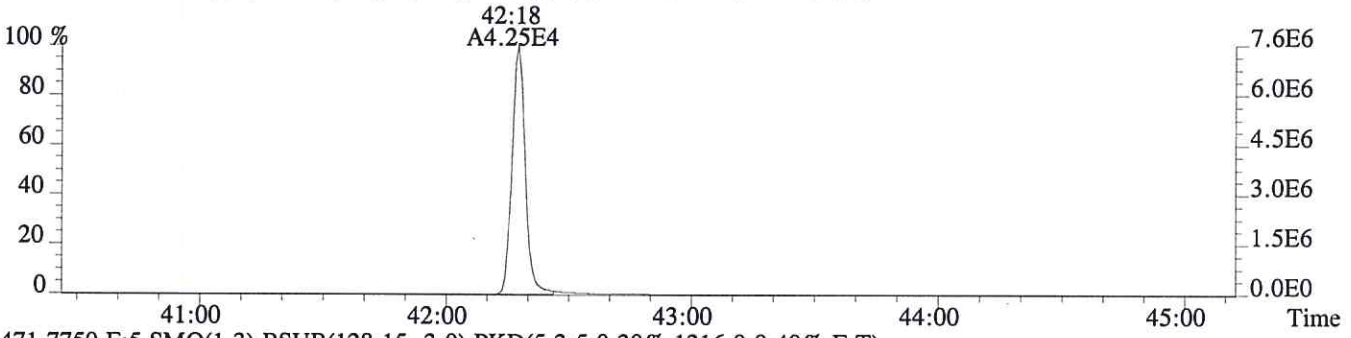
File:P503402 #1-430 Acq:18-MAR-2016 18:37:26 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:EQ1600129-03
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,192.0,0.40%,F,T)



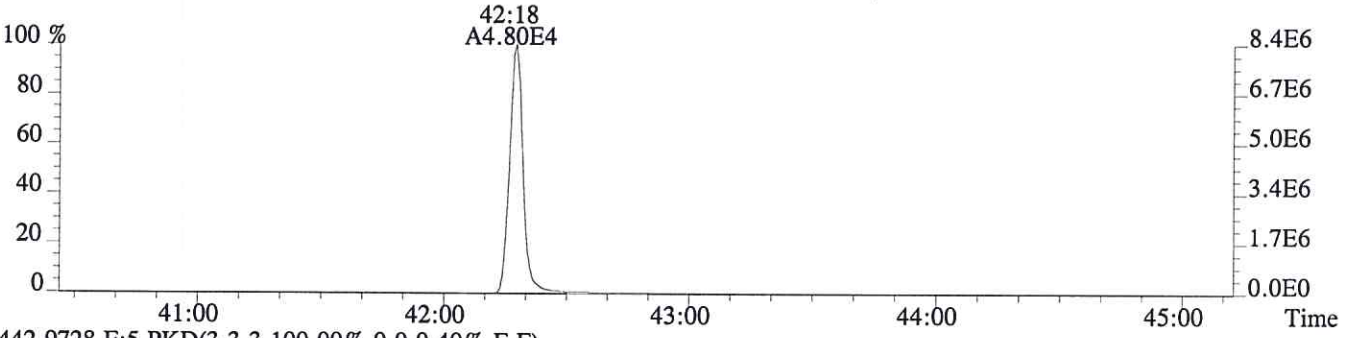
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,912.0,0.40%,F,T)



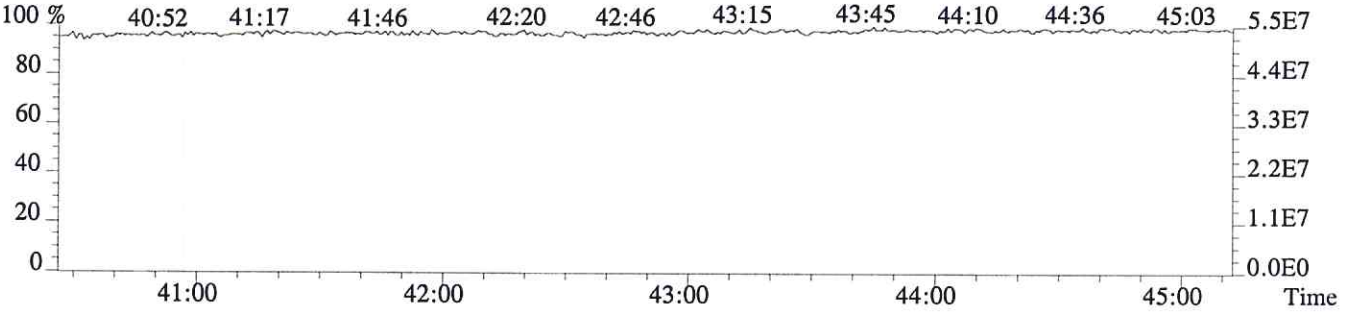
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,792.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1216.0,0.40%,F,T)



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



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: p503392

Circle one: Beginning / Ending

Date: 03/18/16

Method: 1613 / 1613E / 8290 / Tetra / TCDD Only / 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	N/A	N/A

Analyst: TC

Second QC: LKL

5DBC
PCDD/PCDF/PCB ANALYTICAL SEQUENCE SUMMARY

Lab Name: ALS Environmental Contract:

Lab Code: ALS-TX Case No.: SDG No.:

GC Column: DB-5MSUI ID: 0.25 (mm) Instrument ID: E-HRMS-07

Init. Calib. Date: 6/30/15

Init. Calib.Times: 15:41

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
87077	WINDOW DEFINE	P503393	18-MAR-16	10:20:36
86619	CS3	P503392	18-MAR-16	09:23:38
METHOD BLANK	EQ1600125-01	P503394	18-MAR-16	11:57:30
METHOD BLANK	EQ1600118-01	P503395	18-MAR-16	12:44:34
METHOD BLANK	EQ1600124-01	P503396	18-MAR-16	13:36:58
METHOD BLANK	EQ1600129-01	P503397	18-MAR-16	14:25:00
2128529 001	E1600194-001	P503398	18-MAR-16	15:12:18
10616041	E1600195-001	P503399	18-MAR-16	16:00:56
1603039-01	E1600199-001	P503400	18-MAR-16	17:02:02
LCS	EQ1600129-02	P503401	18-MAR-16	17:48:41
DLCS	EQ1600129-03	P503402	18-MAR-16	18:37:26
LCS	EQ1600124-02	P503403	18-MAR-16	19:26:04
DLCS	EQ1600124-03	P503404	18-MAR-16	20:14:50

Sample List Report — **MassLynx 4.1 SCN815 SCN795**

Sample List: C:\MassLynx\EHRMS07.PRO\SampleDB\20160318.SPL
Last Modified: Monday, March 21, 2016 10:34:20 Central Daylight Time
Printed: Monday, March 21, 2016 10:36:30 Central Daylight Time

Page Position (1, 1)

OPUS-5: P503392RES

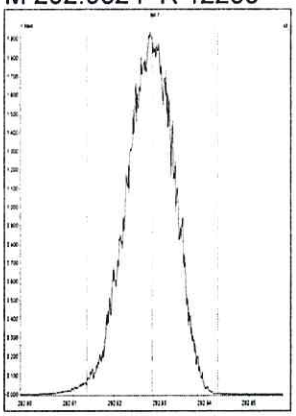
	Date	Time	File Name	Sample ID	File Text	MS File	Inlet File	Bottle	Analyst	Comments
1	03/18/2016	09:23	P503392	CS3	86619	EPA1613_ALS	Dioxin_ALS	Tray1:1	ACN	HRMS check. 09:17
2		10:20	P503393	WINDOW	87077	EPA1613_ALS	Dioxin_ALS	Tray1:2		
3		11:57	P503394	MB	EQ1600125-01	EPA1613_ALS	Dioxin_ALS	Tray1:3		
4		12:44	P503395	MB	EQ1600118-01	EPA1613_ALS	Dioxin_ALS	Tray1:4		
5		13:36	P503396	MB	EQ1600124-01	EPA1613_ALS	Dioxin_ALS	Tray1:5		
6		14:28	P503397	MB	EQ1600129-01	EPA1613_ALS	Dioxin_ALS	Tray1:6		
7		15:12	P503398	E1600194-001	E1600194-001	EPA1613_ALS	Dioxin_ALS	Tray1:7		
8		16:00	P503399	E1600195-001	E1600195-001	EPA1613_ALS	Dioxin_ALS	Tray1:8		
9		17:02	P503400	E1600199-001	E1600199-001	EPA1613_ALS	Dioxin_ALS	Tray1:9		HRMS Check 16:55
10		17:48	P503401	LCS	EQ1600129-02	EPA1613_ALS	Dioxin_ALS	Tray1:10		
11		18:37	P503402	DLCS	EQ1600129-03	EPA1613_ALS	Dioxin_ALS	Tray1:11		
12		19:26	P503403	LCS	EQ1600124-02	EPA1613_ALS	Dioxin_ALS	Tray1:12		
13		20:14	P503404	DLCS	EQ1600124-03	EPA1613_ALS	Dioxin_ALS	Tray1:13		
14		21:11	P503405	CS3	86619	EPA1613_ALS	Dioxin_ALS	Tray1:14		HRMS Check 21:11
15			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:15		
16			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:16		
17			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:17		
18			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:18		
19			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:19		
20			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:20		
21			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:21		
22			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:22		
23			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:23		
24			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:24		
25			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:25		
26			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:26		
27			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:27		
28			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:28		
29			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:29		
30			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:30		
31			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:31		
32			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:32		
33			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:33		
34			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:34		
35			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:35		
36			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:36		
37			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:37		
38			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:38		
39			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:39		

JC 03/24/16

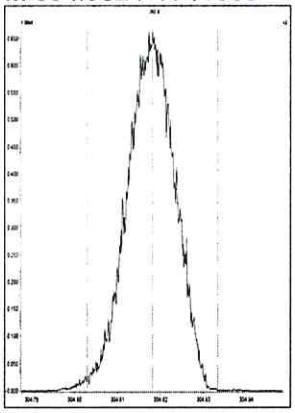
File: Experiment: EPA1613_ALS.exp Reference: pfk.ref Function: 1 @ 200 (ppm)

Printed: Friday, March 18, 2016 09:17:32 Central Daylight Time

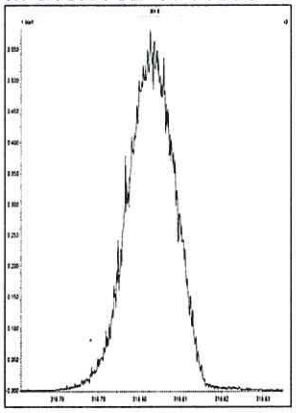
M 292.9824 R 12255



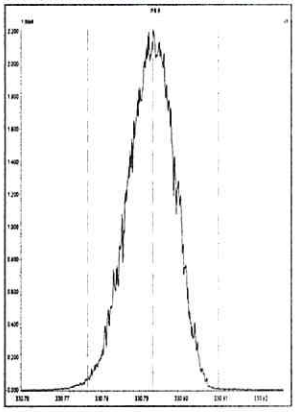
M 304.9824 R 11959



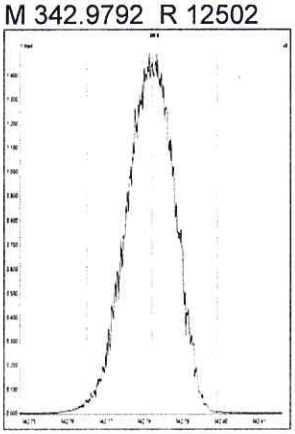
M 318.9792 R 11900



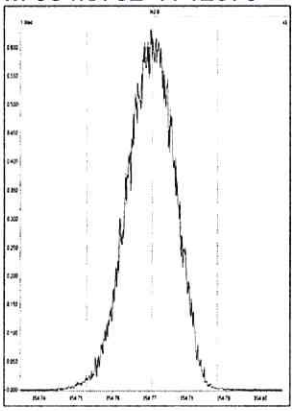
M 330.9792 R 11791



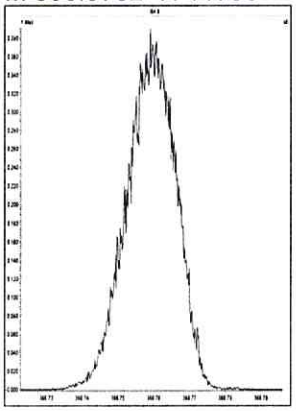
M 342.9792 R 12502



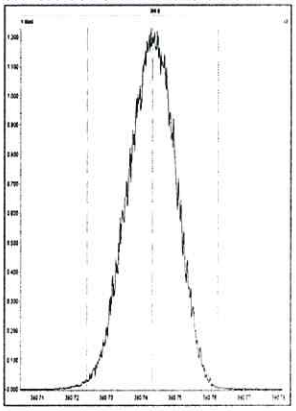
M 354.9792 R 12376



M 366.9792 R 11795



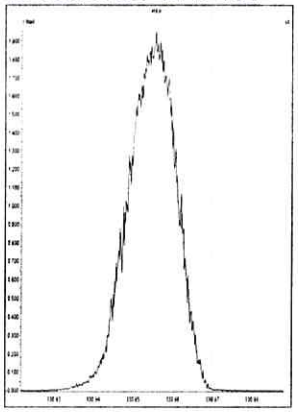
M 380.9760 R 11962



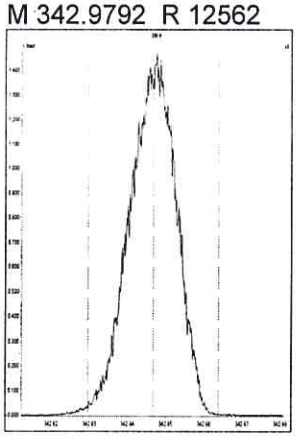
File: Experiment: EPA1613_ALS.exp Reference: pfk.ref Function: 2 @ 200 (ppm)

Printed: Friday, March 18, 2016 09:18:49 Central Daylight Time

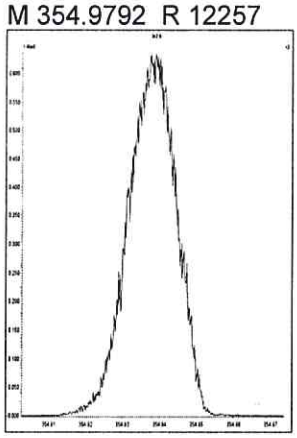
M 330.9792 R 12196



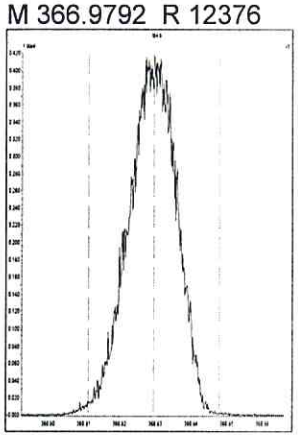
M 342.9792 R 12562



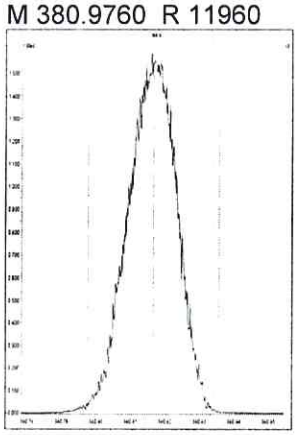
M 354.9792 R 12257



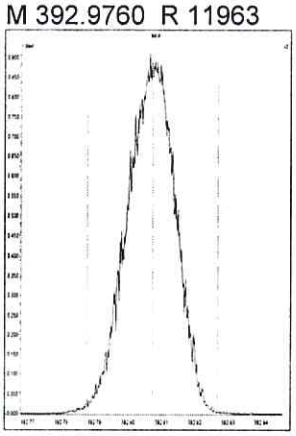
M 366.9792 R 12376



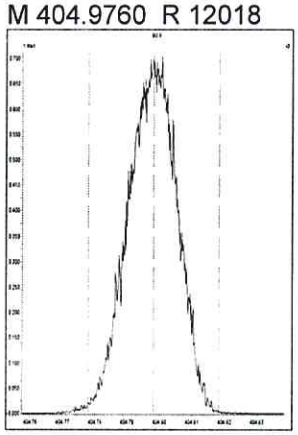
M 380.9760 R 11960



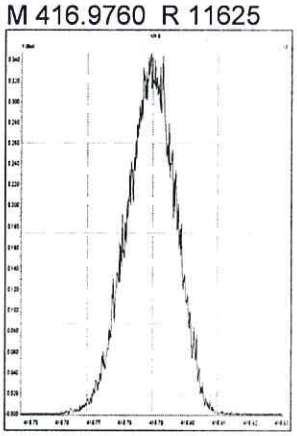
M 392.9760 R 11963



M 404.9760 R 12018



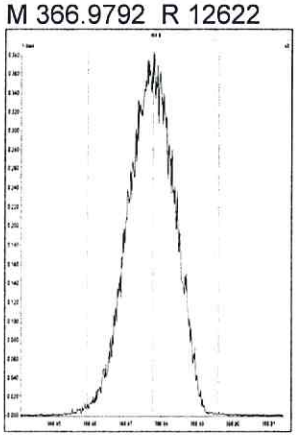
M 416.9760 R 11625



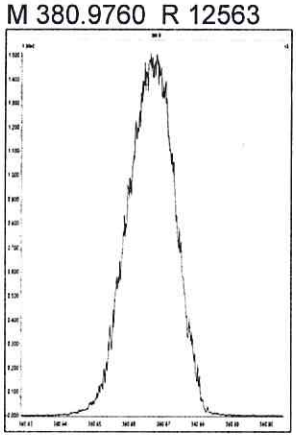
File: Experiment: EPA1613_ALS.exp Reference: pfk.ref Function: 3 @ 200 (ppm)

Printed: Friday, March 18, 2016 09:20:57 Central Daylight Time

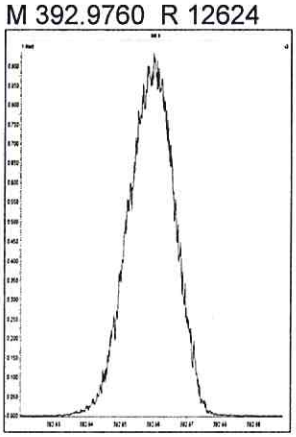
M 366.9792 R 12622



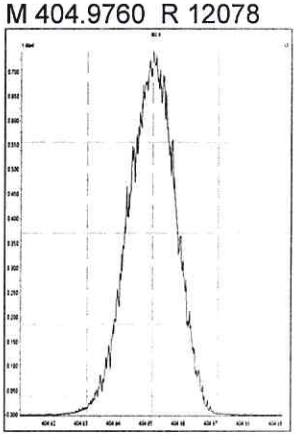
M 380.9760 R 12563



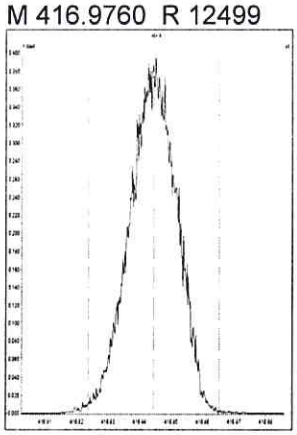
M 392.9760 R 12624



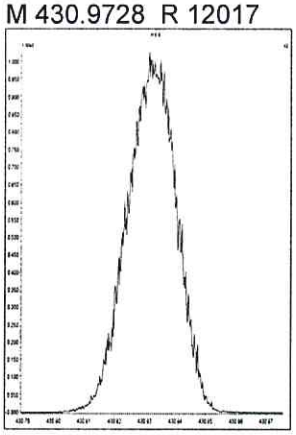
M 404.9760 R 12078



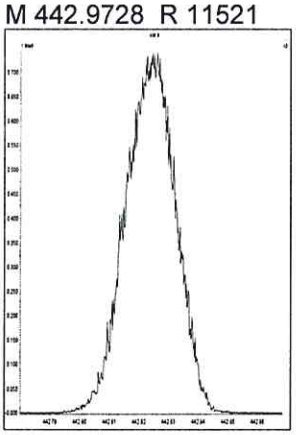
M 416.9760 R 12499



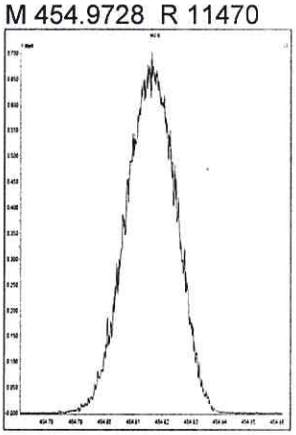
M 430.9728 R 12017



M 442.9728 R 11521



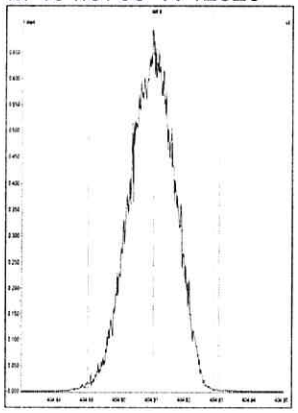
M 454.9728 R 11470



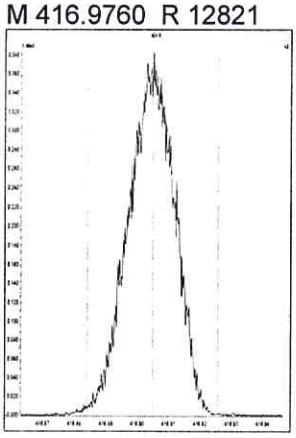
File: Experiment: EPA1613_ALS.exp Reference: pfk.ref Function: 4 @ 200 (ppm)

Printed: Friday, March 18, 2016 09:21:56 Central Daylight Time

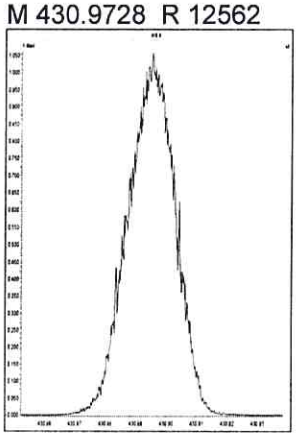
M 404.9760 R 12823



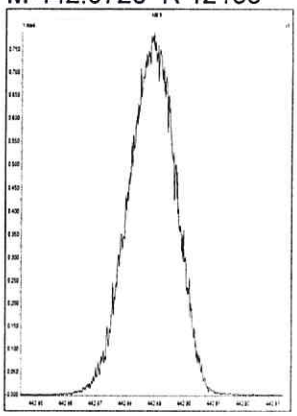
M 416.9760 R 12821



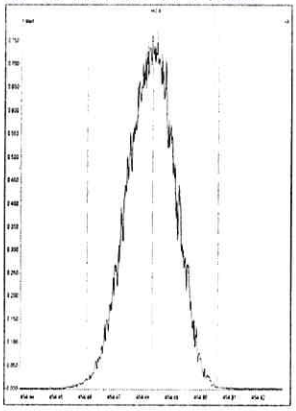
M 430.9728 R 12562



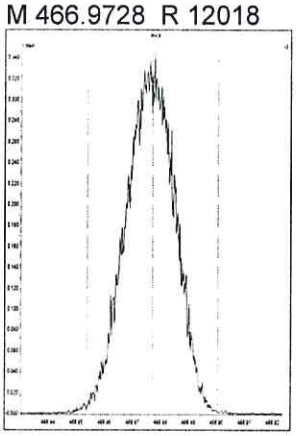
M 442.9728 R 12133



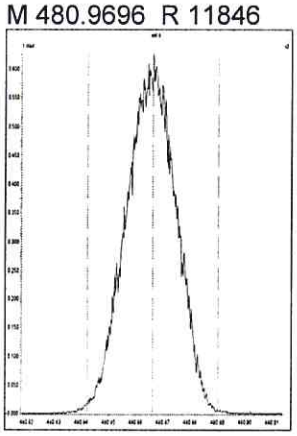
M 454.9728 R 11958



M 466.9728 R 12018



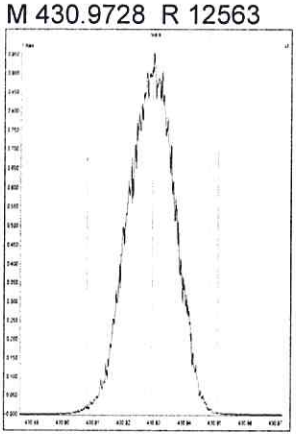
M 480.9696 R 11846



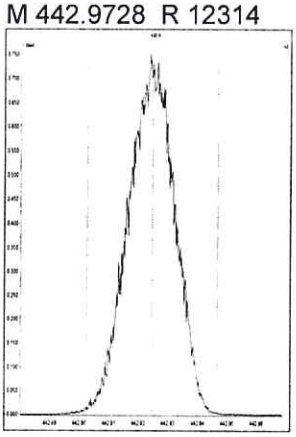
File: Experiment: EPA1613_ALS.exp Reference: pfk.ref Function: 5 @ 200 (ppm)

Printed: Friday, March 18, 2016 09:23:02 Central Daylight Time

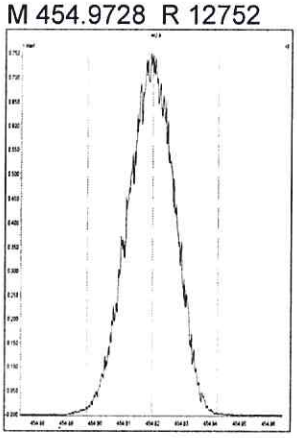
M 430.9728 R 12563



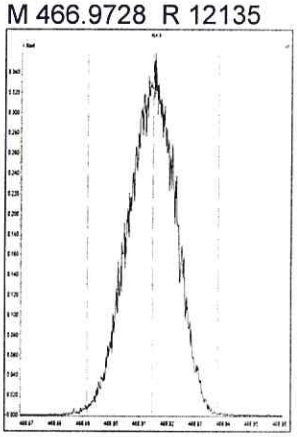
M 442.9728 R 12314



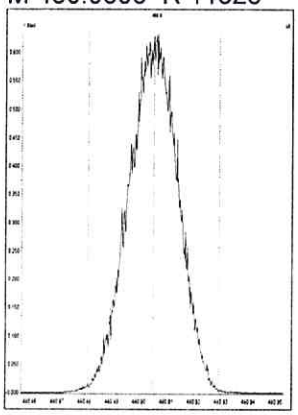
M 454.9728 R 12752



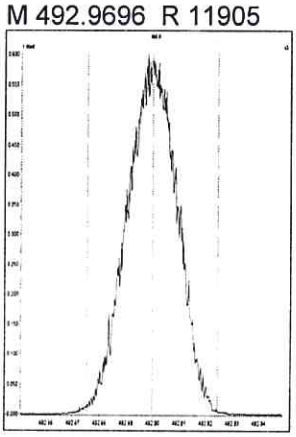
M 466.9728 R 12135



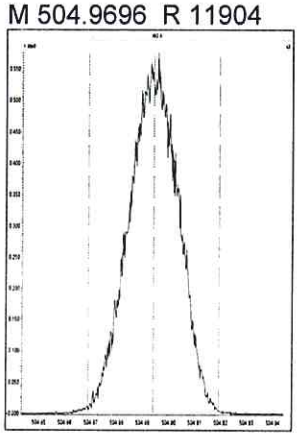
M 480.9696 R 11626



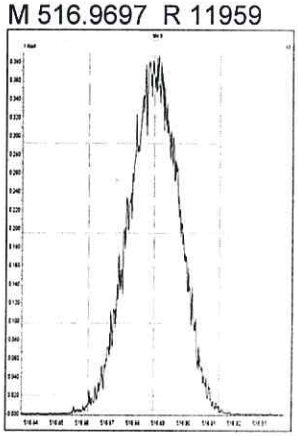
M 492.9696 R 11905



M 504.9696 R 11904



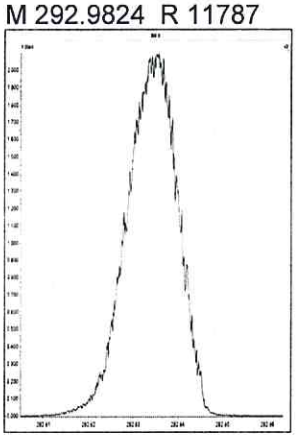
M 516.9697 R 11959



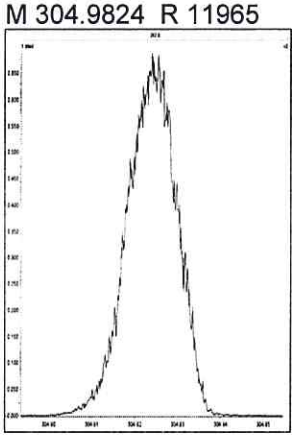
File: Experiment: EPA1613_ALS.exp Reference: pfk.ref Function: 1 @ 200 (ppm)

Printed: Friday, March 18, 2016 16:55:55 Central Daylight Time

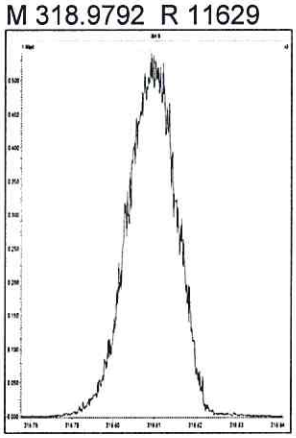
M 292.9824 R 11787



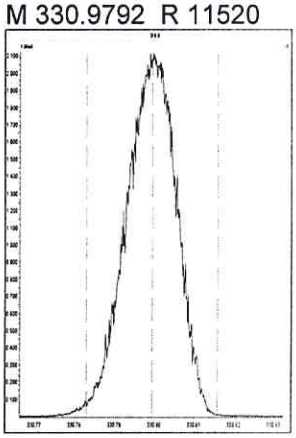
M 304.9824 R 11965



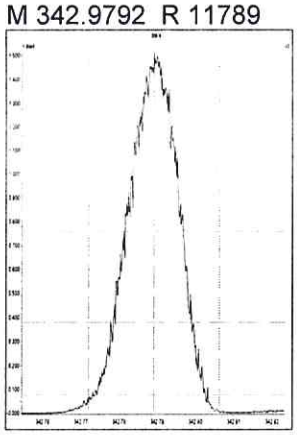
M 318.9792 R 11629



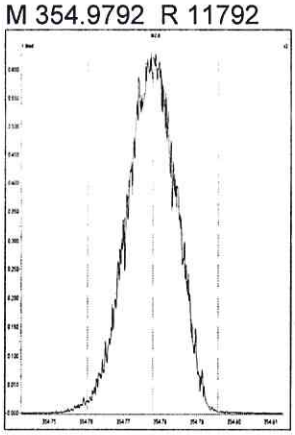
M 330.9792 R 11520



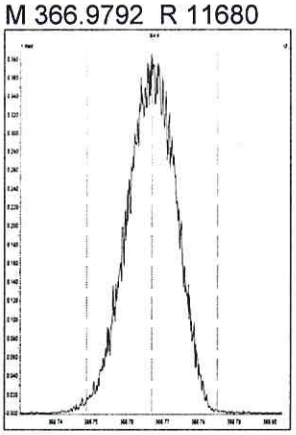
M 342.9792 R 11789



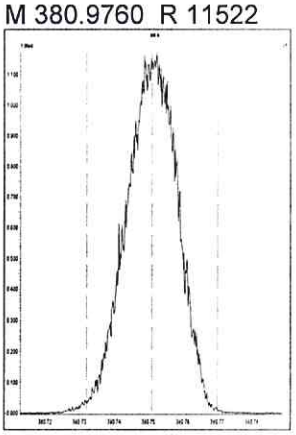
M 354.9792 R 11792



M 366.9792 R 11680



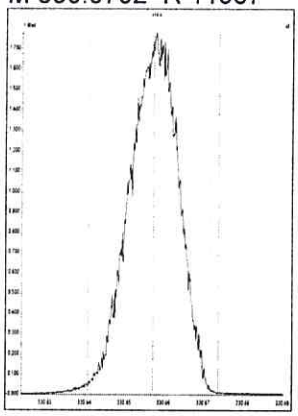
M 380.9760 R 11522



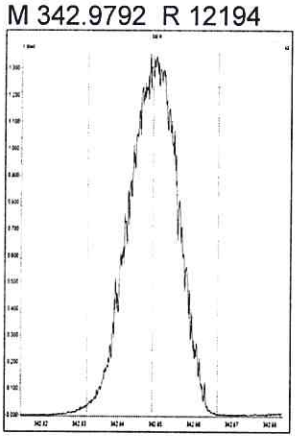
File: Experiment: EPA1613_ALS.exp Reference: pfk.ref Function: 2 @ 200 (ppm)

Printed: Friday, March 18, 2016 16:57:08 Central Daylight Time

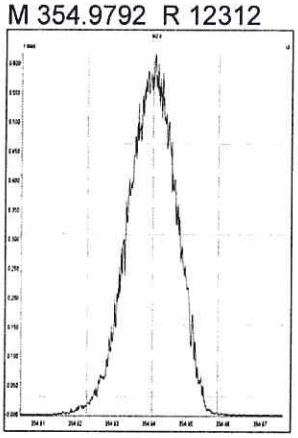
M 330.9792 R 11957



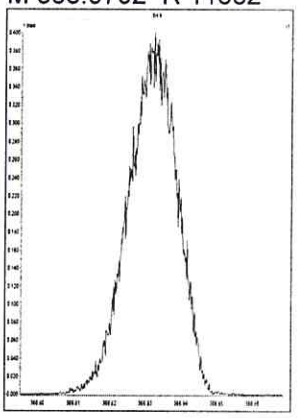
M 342.9792 R 12194



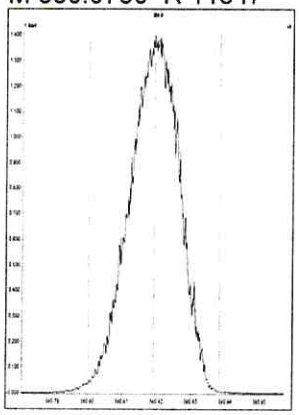
M 354.9792 R 12312



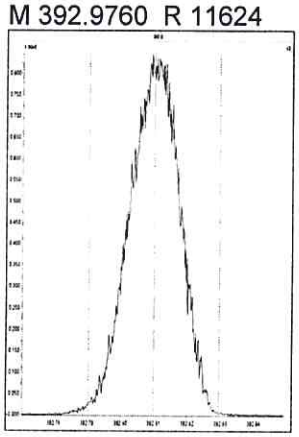
M 366.9792 R 11682



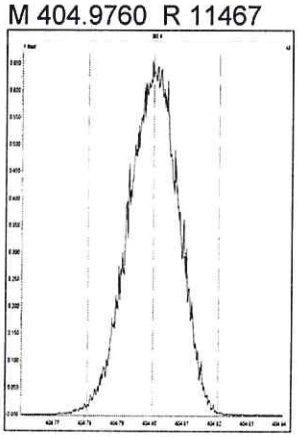
M 380.9760 R 11847



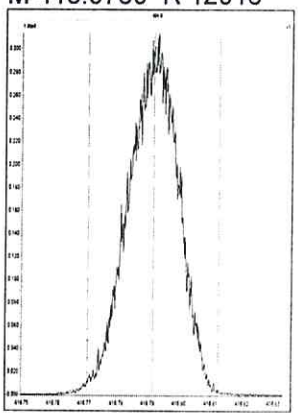
M 392.9760 R 11624



M 404.9760 R 11467



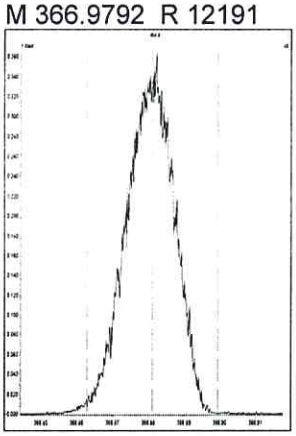
M 416.9760 R 12016



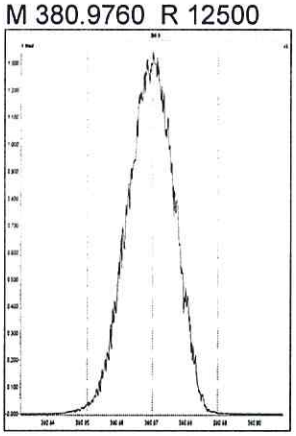
File: Experiment: EPA1613_ALS.exp Reference: pfk.ref Function: 3 @ 200 (ppm)

Printed: Friday, March 18, 2016 16:58:21 Central Daylight Time

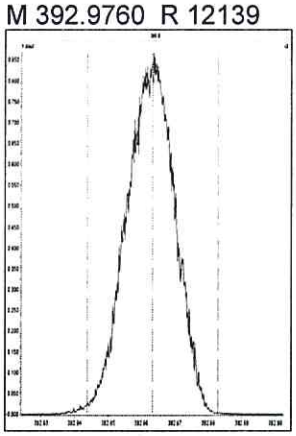
M 366.9792 R 12191



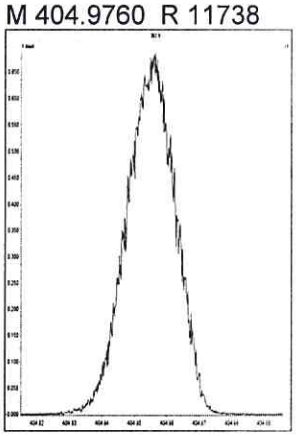
M 380.9760 R 12500



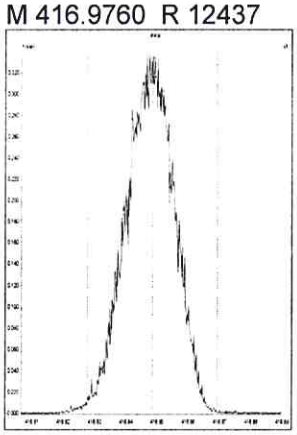
M 392.9760 R 12139



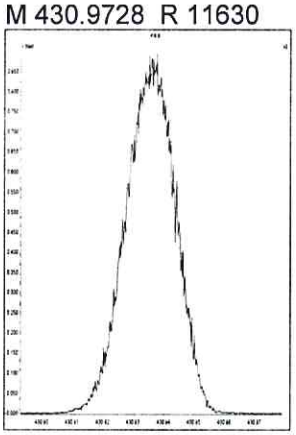
M 404.9760 R 11738



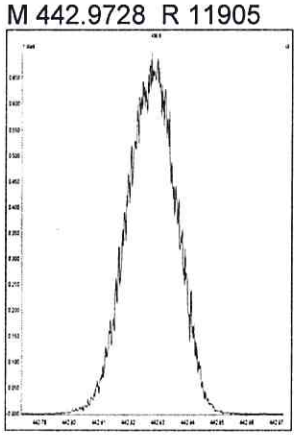
M 416.9760 R 12437



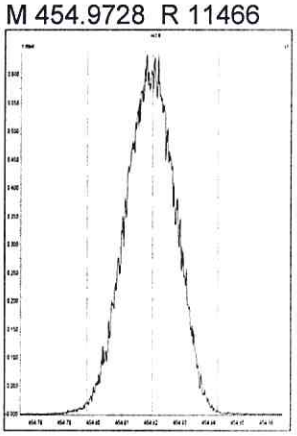
M 430.9728 R 11630



M 442.9728 R 11905



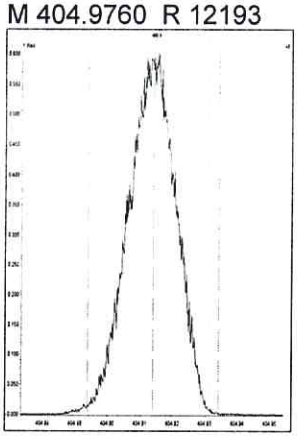
M 454.9728 R 11466



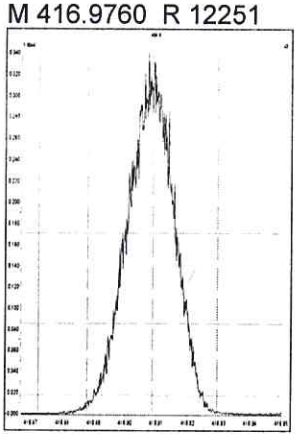
File: Experiment: EPA1613_ALS.exp Reference: pfk.ref Function: 4 @ 200 (ppm)

Printed: Friday, March 18, 2016 16:59:31 Central Daylight Time

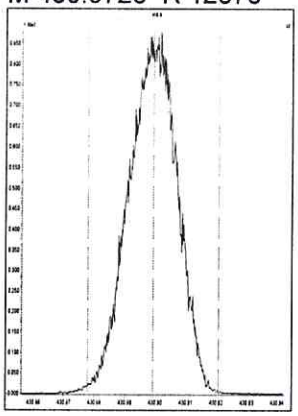
M 404.9760 R 12193



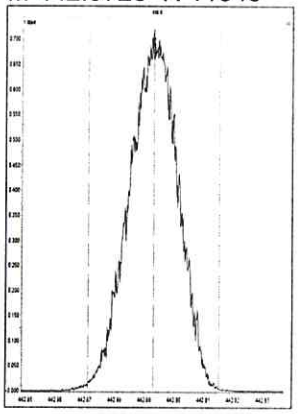
M 416.9760 R 12251



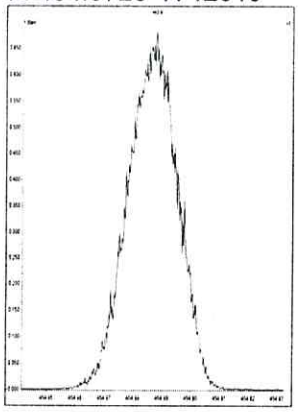
M 430.9728 R 12375



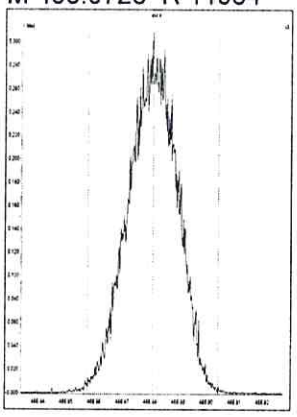
M 442.9728 R 11846



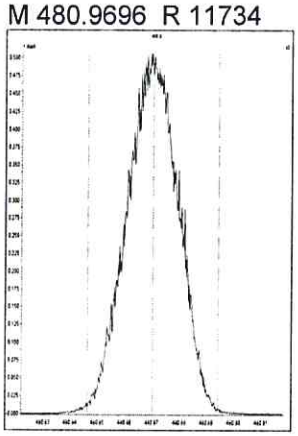
M 454.9728 R 12019



M 466.9728 R 11964



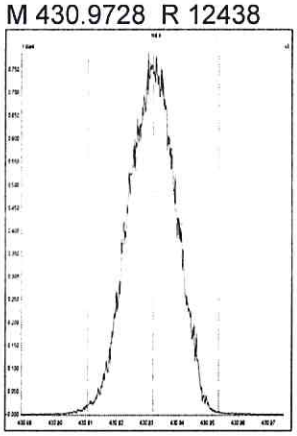
M 480.9696 R 11734



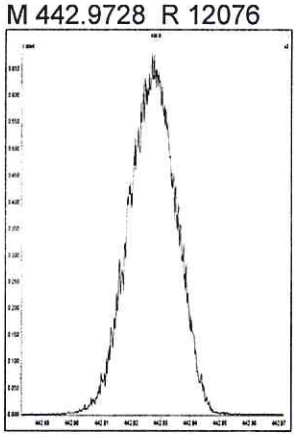
File: Experiment: EPA1613_ALS.exp Reference: pfk.ref Function: 5 @ 200 (ppm)

Printed: Friday, March 18, 2016 17:00:57 Central Daylight Time

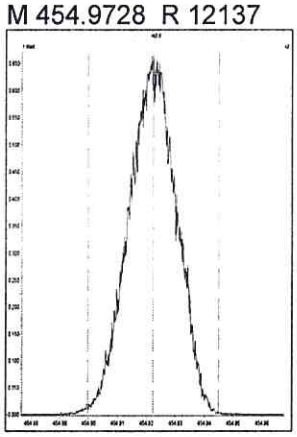
M 430.9728 R 12438



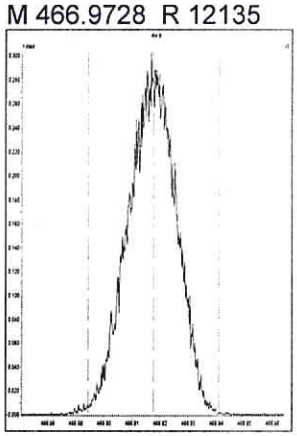
M 442.9728 R 12076



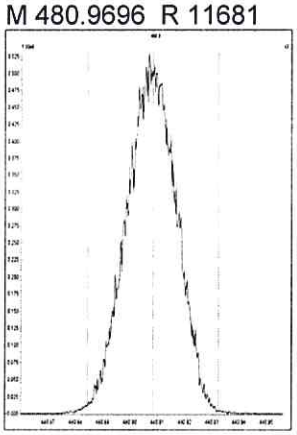
M 454.9728 R 12137



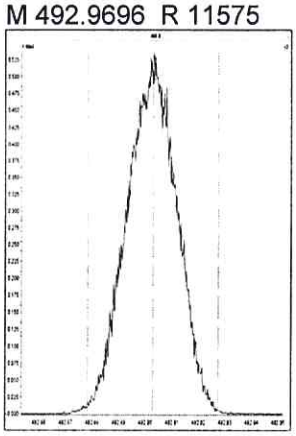
M 466.9728 R 12135



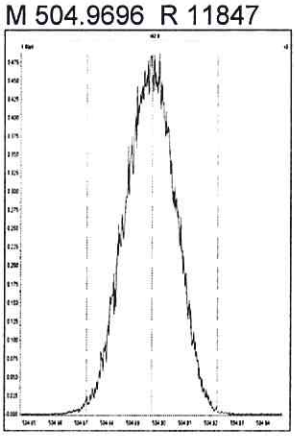
M 480.9696 R 11681



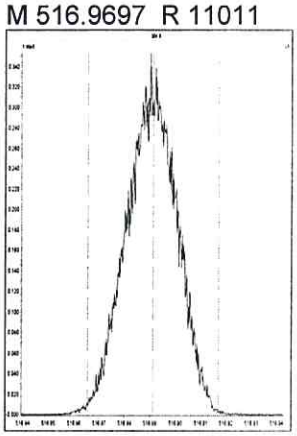
M 492.9696 R 11575



M 504.9696 R 11847



M 516.9697 R 11011



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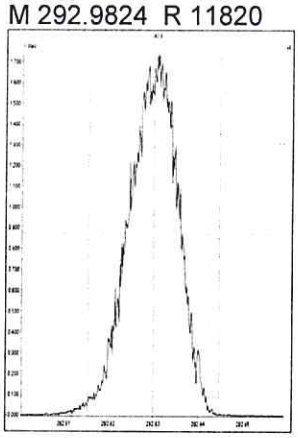
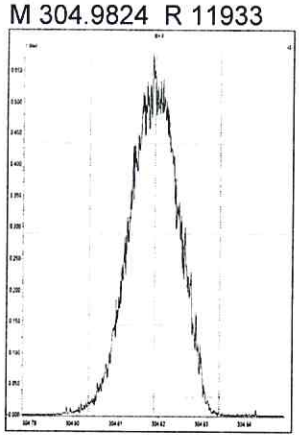
M 292.9824 R 11820



M 304.9824 R 11933



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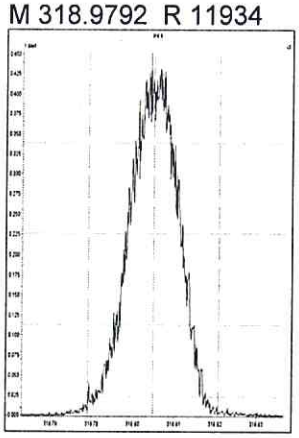

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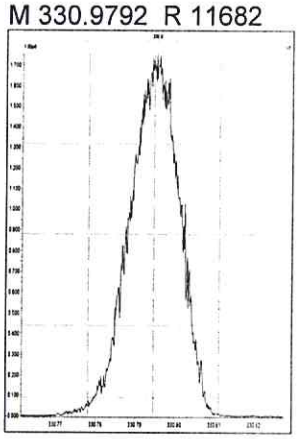

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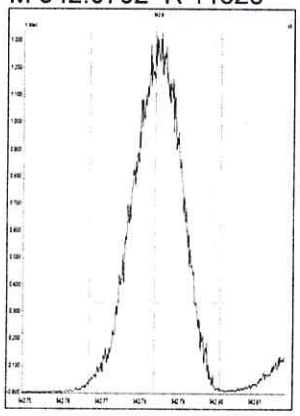

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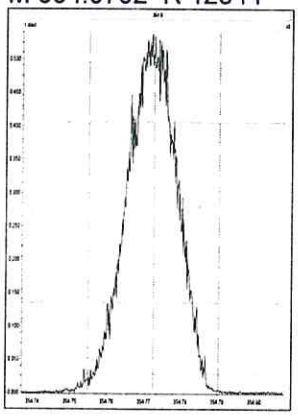
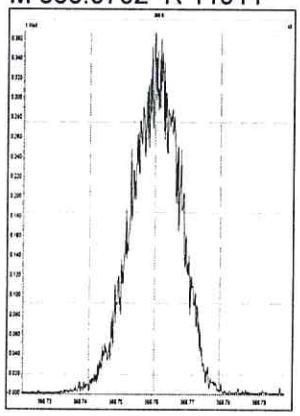


M 366.9792 R 11911



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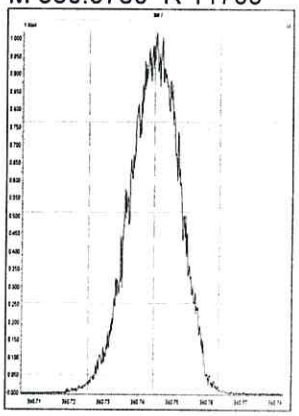

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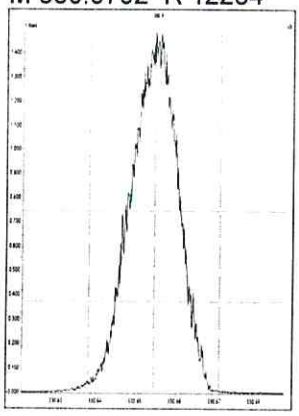

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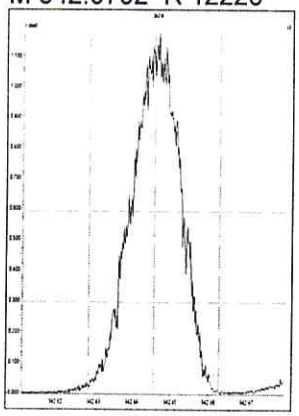

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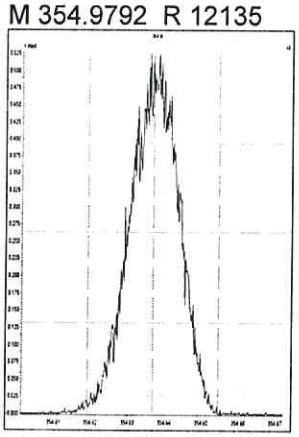
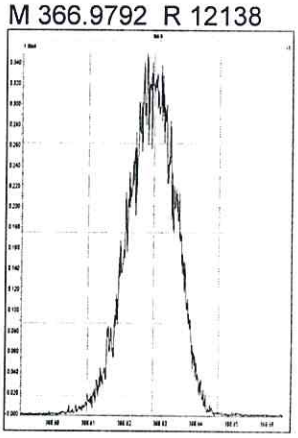
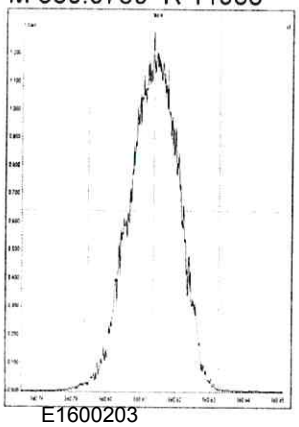


M 366.9792 R 12138



M 380.9760 R 11938



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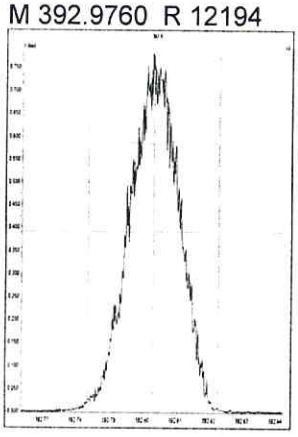

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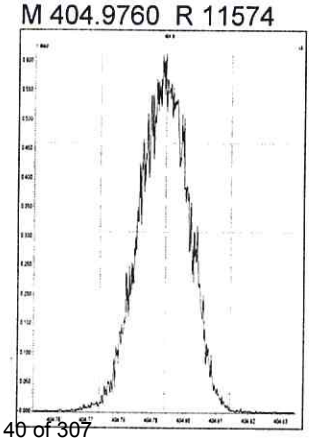

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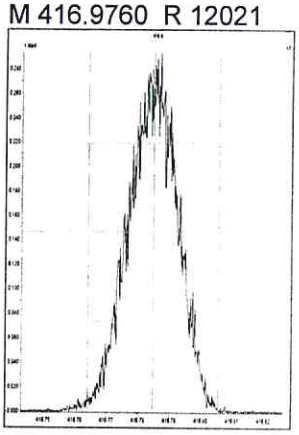

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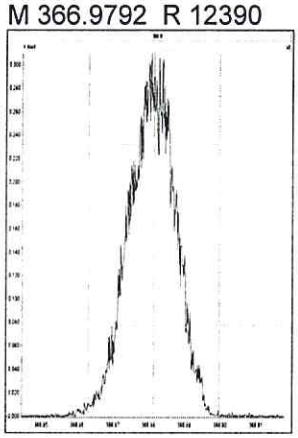
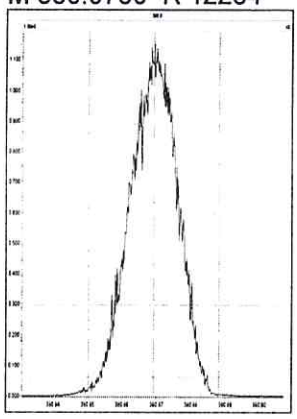
M 366.9792 R 12390



M 380.9760 R 12284



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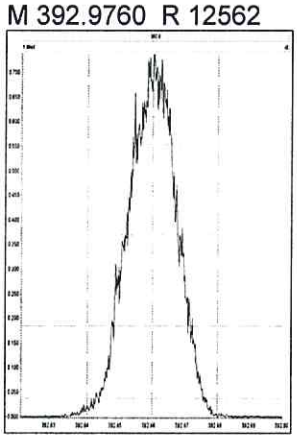
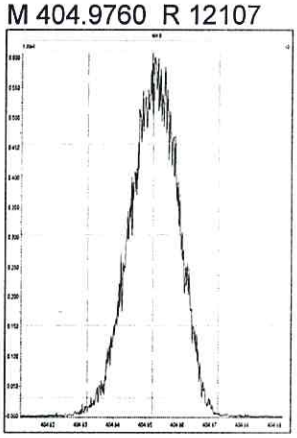


M 404.9760 R 12107



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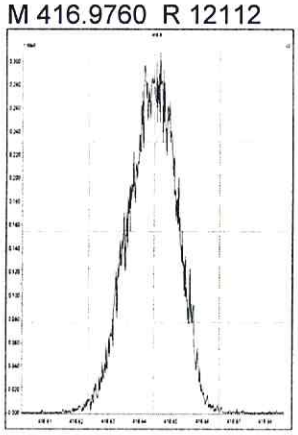

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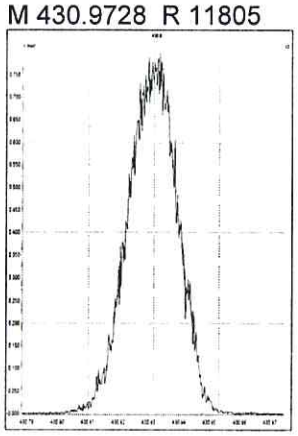
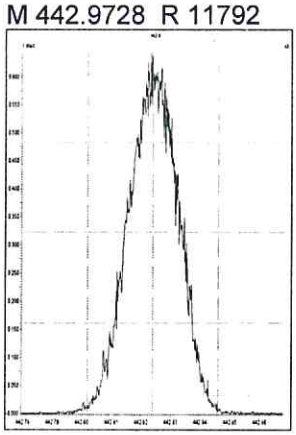


M 442.9728 R 11792



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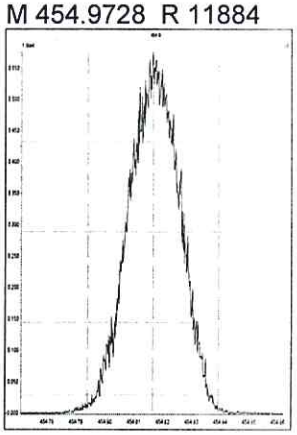

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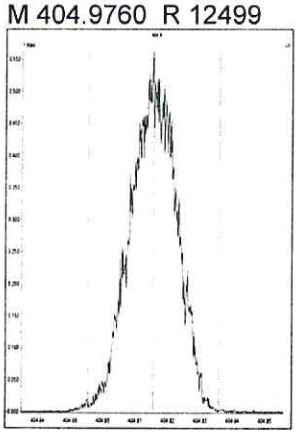

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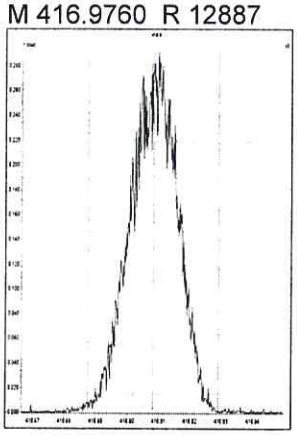

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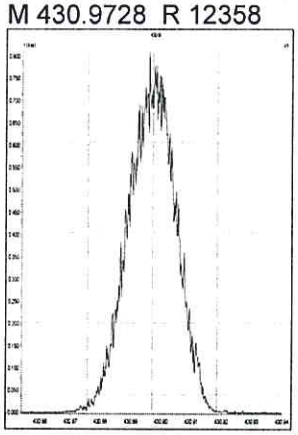
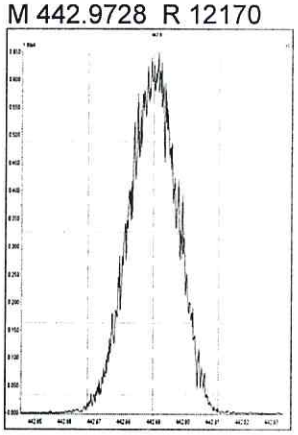
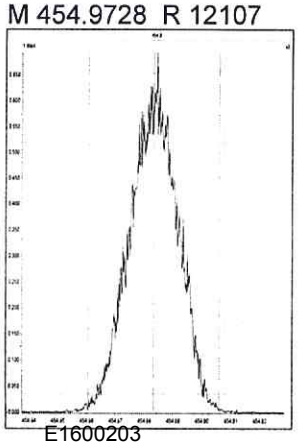


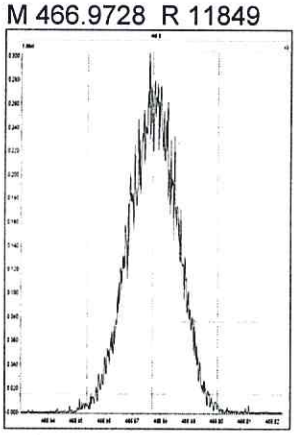
M 442.9728 R 12170



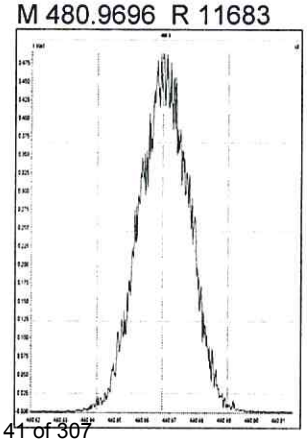
M 454.9728 R 12107



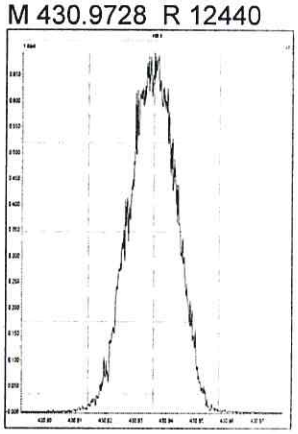
M 466.9728 R 11849



M 480.9696 R 11683



M 430.9728 R 12440



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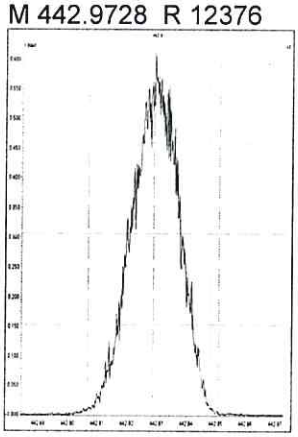
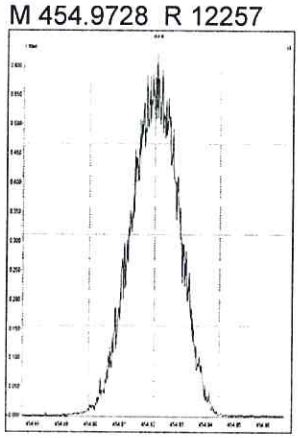
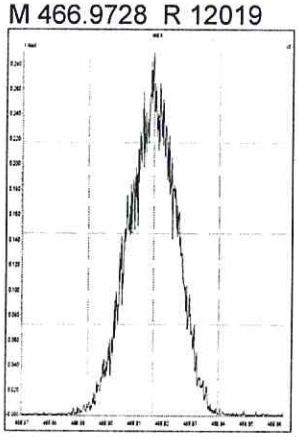


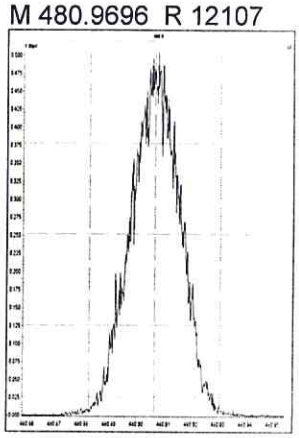
M 454.9728 R 12257



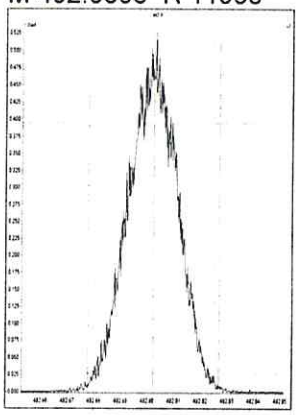
M 466.9728 R 12019



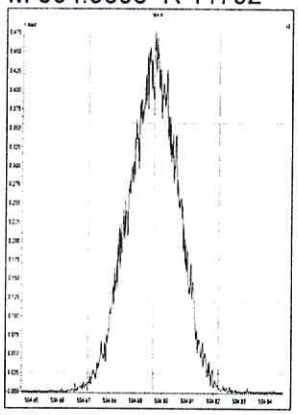
M 480.9696 R 12107



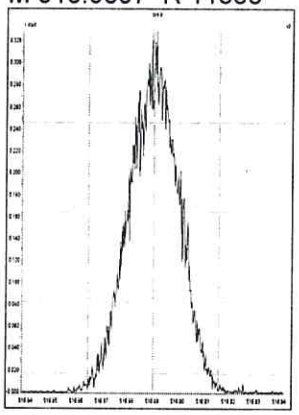
M 492.9696 R 11938



M 504.9696 R 11792



M 516.9697 R 11363



5DFA

WINDOW DEFINING MIX SUMMARY

CLIENT ID:

WDM

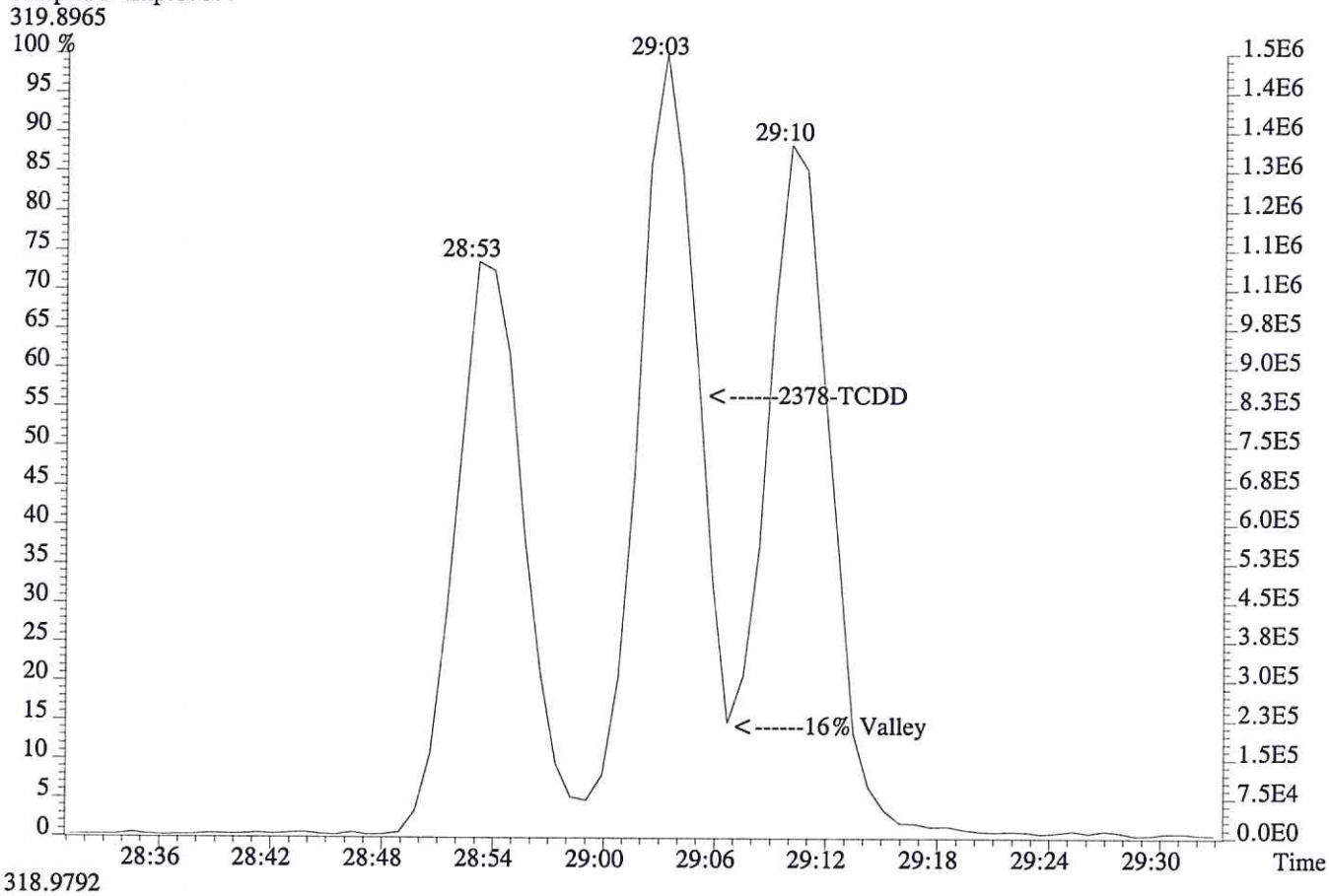
Lab Name: ALS Environmental
Lab Code: ALSTX
GC Column: DB-5MSUI

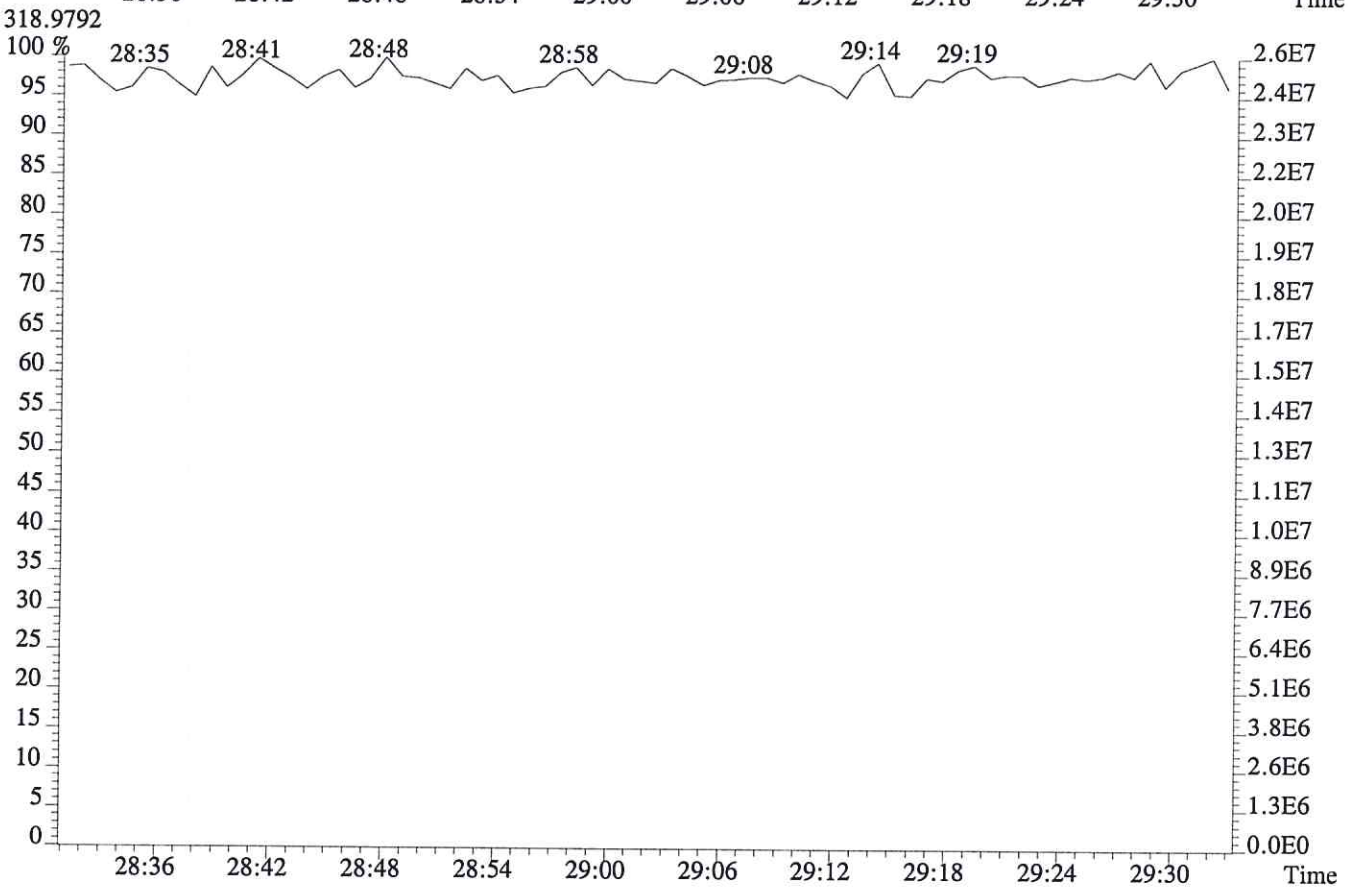
Case No.: _____ SDG No.:
ID: 0.25 (mm)
Lab File ID: P503393
Date Analyzed: 18-MAR-2016
Time Analyzed: 10:20:36

Congener	Retention Time First Eluting	Retention Time Last Eluting
TCDF	23:57	30:12
TCDD	25:50	30:02
PeCDF	30:08	34:19
PeCDD	31:39	34:05
HxCDF	34:58	37:26
HxCDD	35:29	37:02
HpCDF	38:39	40:02
HpCDD	38:53	39:33

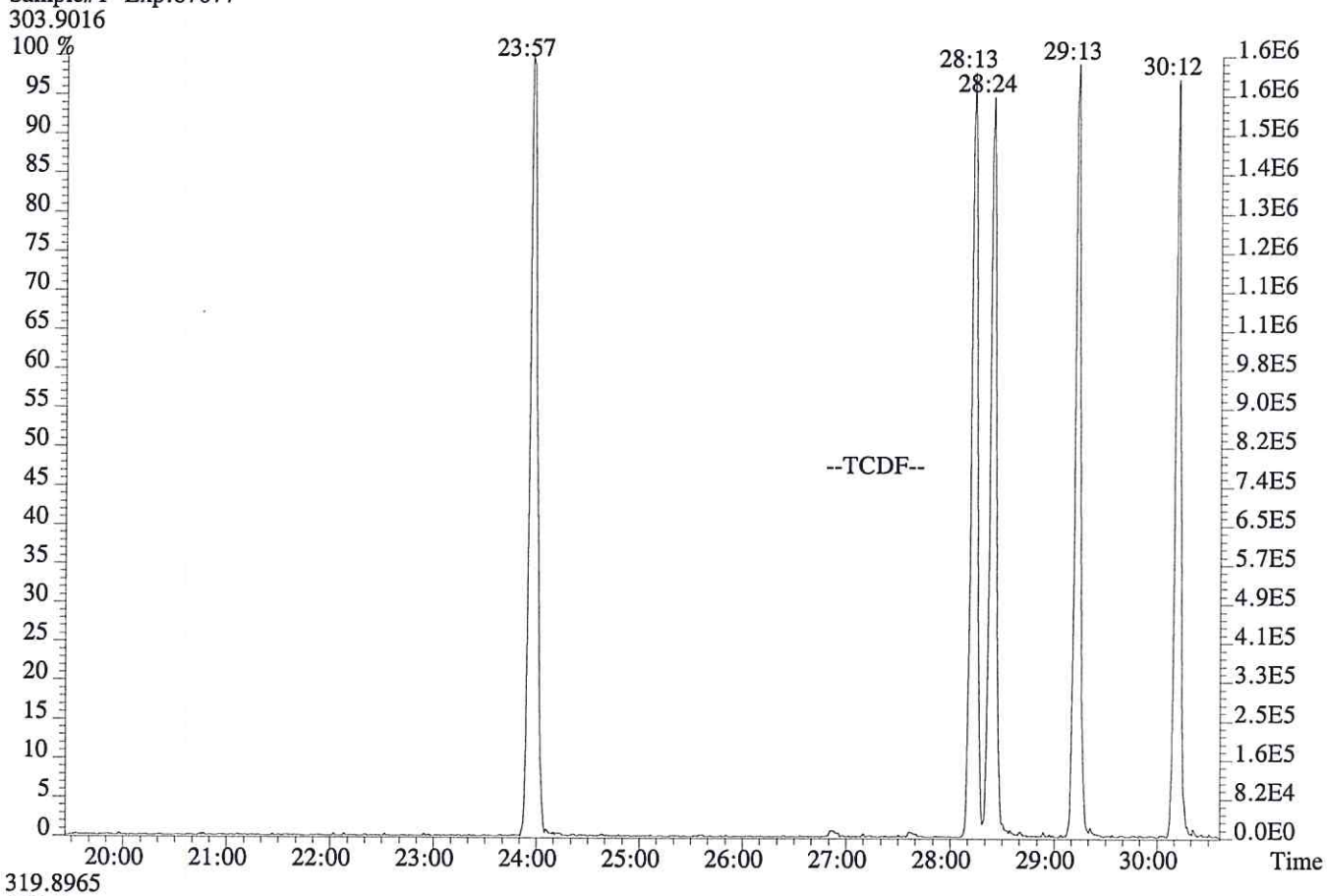
% Valley 2378-TCDD: 16 %

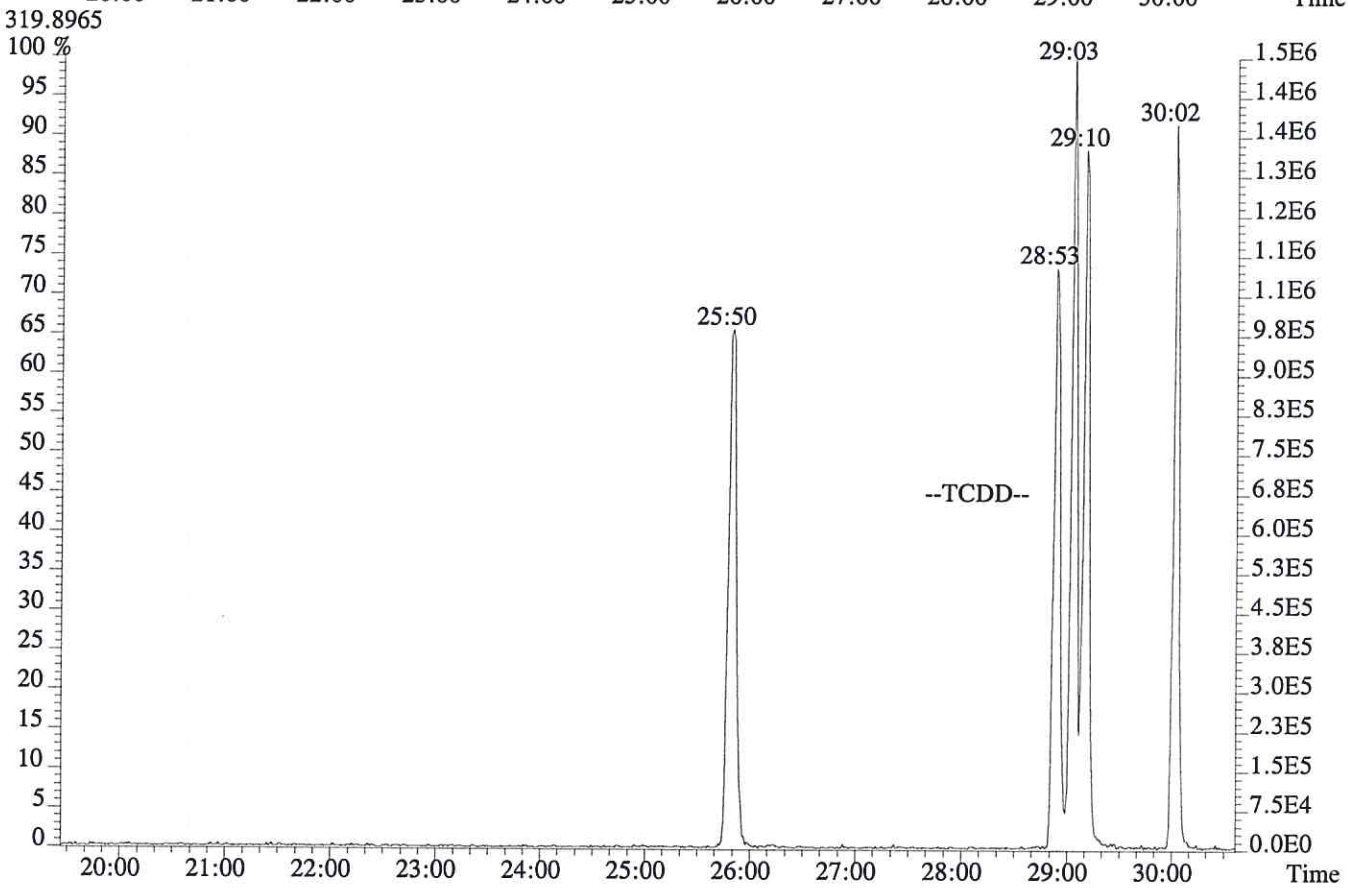
File:P503393 #1-793 Acq:18-MAR-2016 10:20:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:87077





File:P503393 #1-793 Acq:18-MAR-2016 10:20:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:87077





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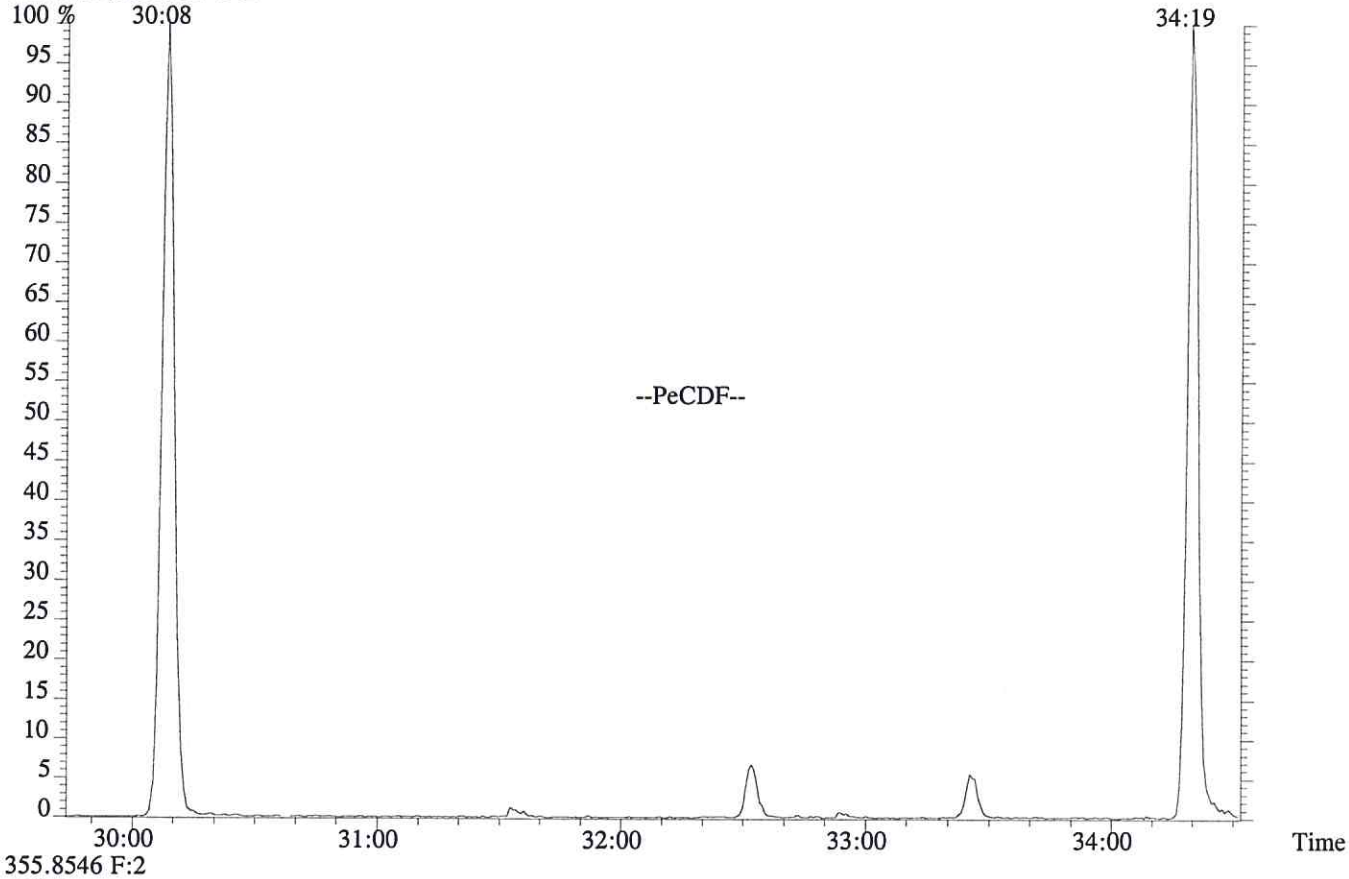
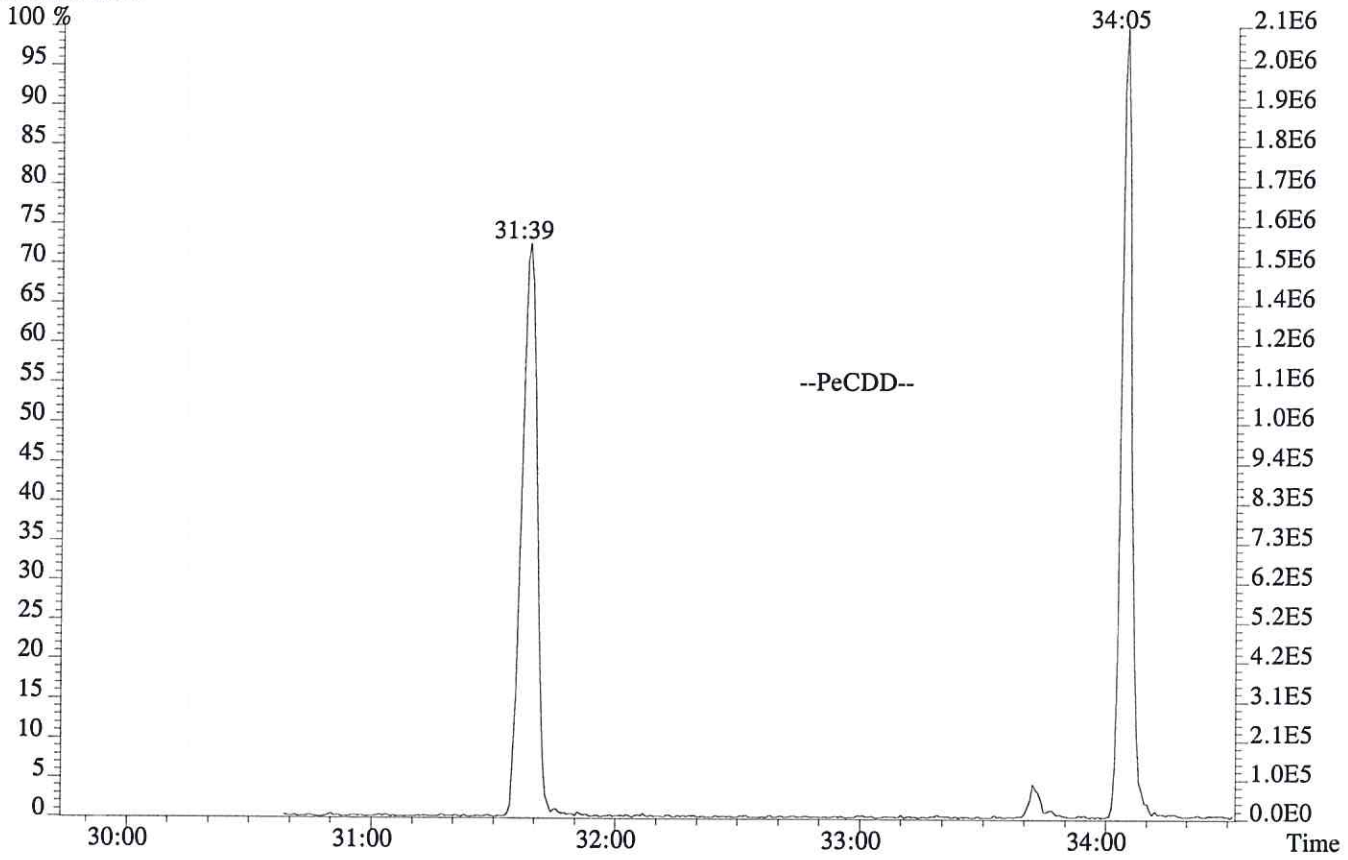
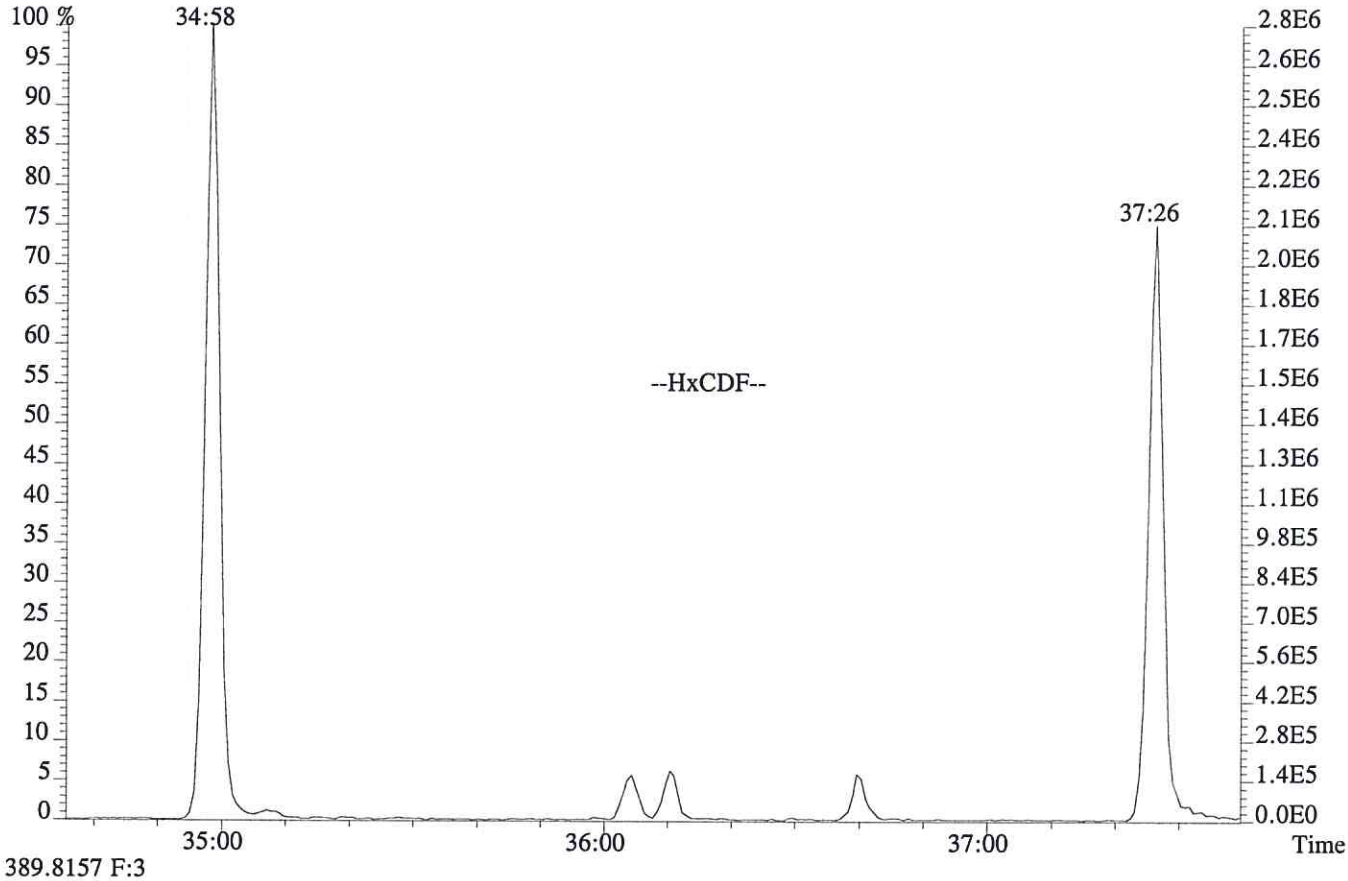
Sample#1 Exp:87077
339.8597,339.8597 F:2



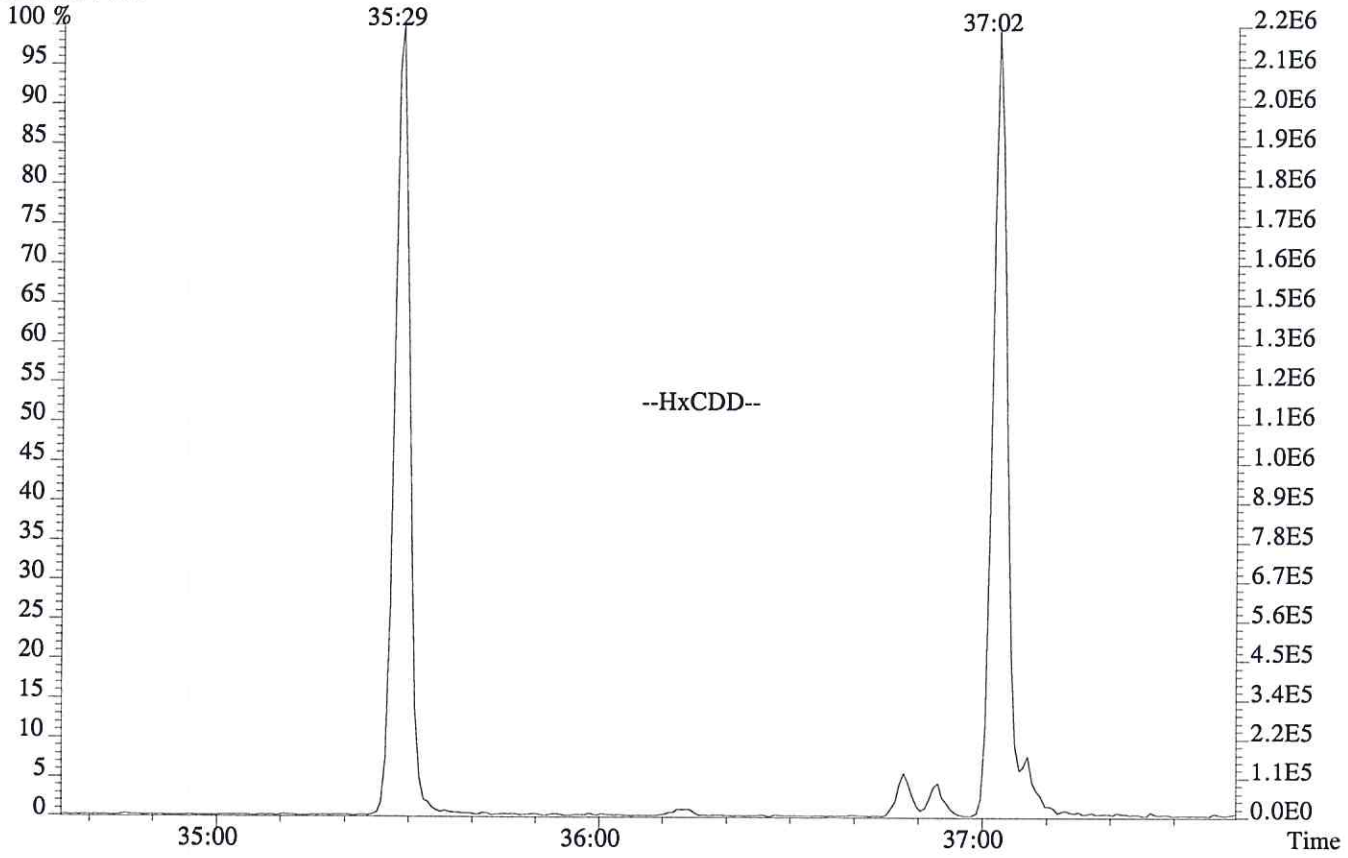
355.8546 F:2



File:P503393 #1-277 Acq:18-MAR-2016 10:20:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:87077
373.8208 F:3



389.8157 F:3



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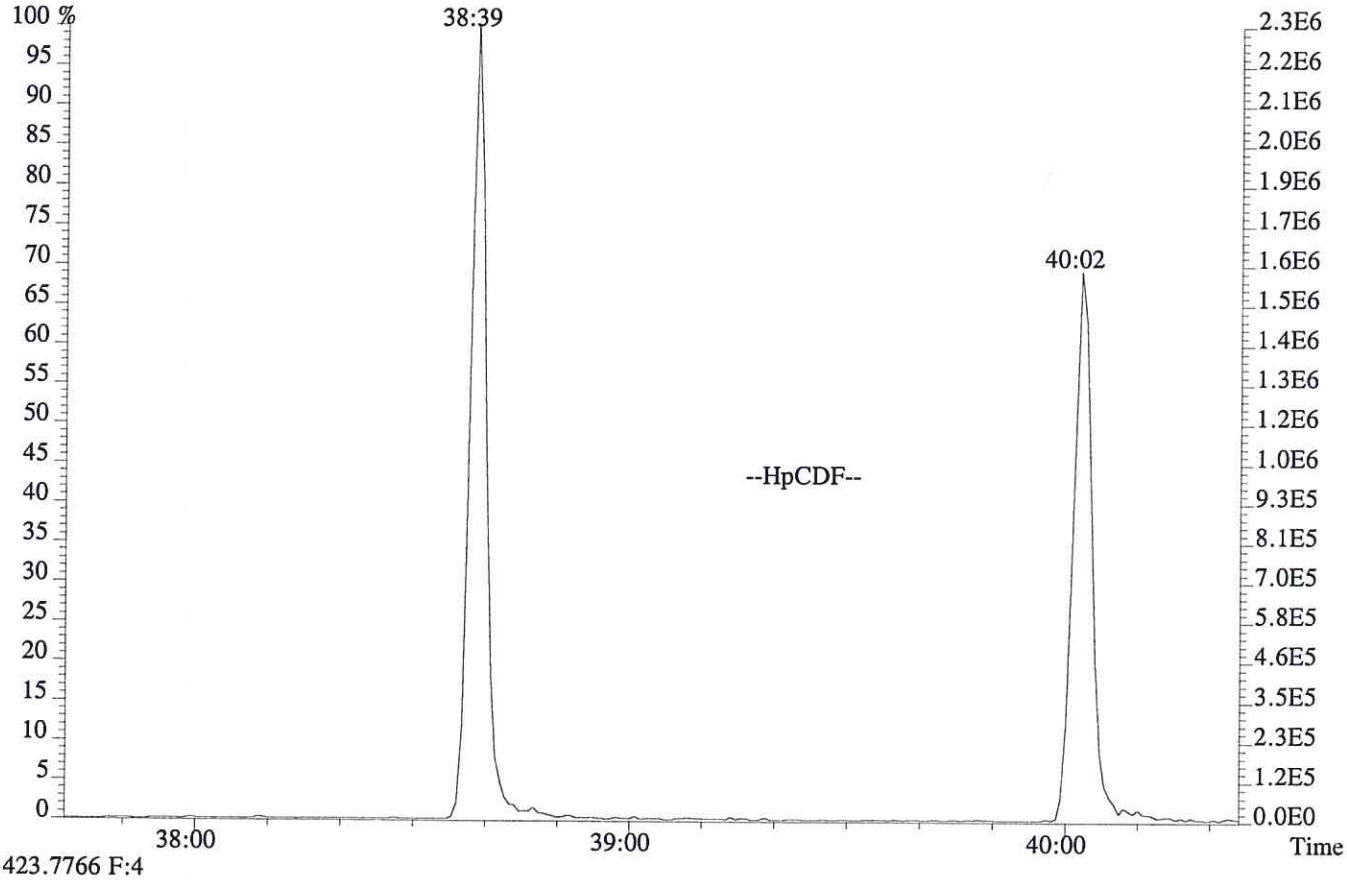
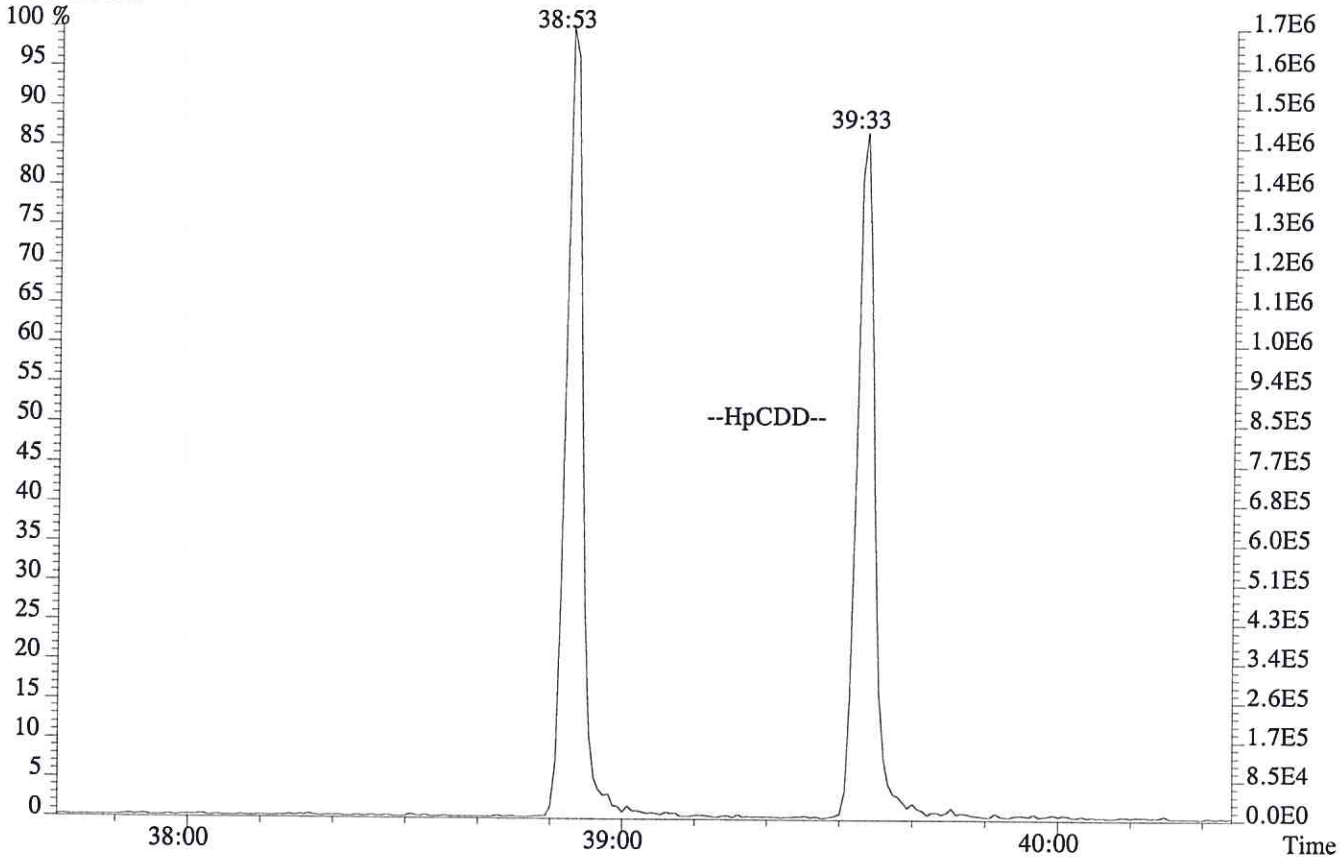
Sample#1 Exp:87077
407.7818 F:4



423.7766 F:4



USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 6/30/15

Instrument ID: E-HRMS-07 GC Column ID: DB-5MSUI

VER Data Filename: P503392 Analysis Date: 18-MAR-16 Time: 09:23:38

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	10.4	7.8 - 12.9	4.2
1,2,3,7,8-PeCDD	M+2/M+4	1.58	1.32-1.78	52	39 - 65	3.1
1,2,3,4,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	50	39 - 64	0.6
1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	52	39 - 64	3.7
1,2,3,7,8,9-HxCDD	M+2/M+4	1.30	1.05-1.43	50	41 - 61	-0.6
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.02	0.88-1.20	51	43 - 58	1.3
OCDD	M+2/M+4	0.87	0.76-1.02	103	79 - 126	2.8
2,3,7,8-TCDF	M/M+2	0.75	0.65-0.89	10.1	8.4 - 12.0	1.3
1,2,3,7,8-PeCDF	M+2/M+4	1.52	1.32-1.78	50	41 - 60	0.4
2,3,4,7,8-PeCDF	M+2/M+4	1.53	1.32-1.78	49	41 - 61	-2.8
1,2,3,4,7,8-HxCDF	M+2/M+4	1.22	1.05-1.43	50	45 - 56	0.1
1,2,3,6,7,8-HxCDF	M+2/M+4	1.23	1.05-1.43	50	44 - 57	0.8
1,2,3,7,8,9-HxCDF	M+2/M+4	1.20	1.05-1.43	48	45 - 56	-3.2
2,3,4,6,7,8-HxCDF	M+2/M+4	1.20	1.05-1.43	49	44 - 57	-1.1
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.01	0.88-1.20	49	45 - 55	-1.9
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.04	0.88-1.20	49	43 - 58	-1.8
OCDF	M+2/M+4	0.90	0.76-1.02	102	63 - 159	2.4

(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: 6/30/15

Instrument ID: E-HRMS-07 GC Column ID: DB-5MSUI

VER Data Filename: P503392 Analysis Date: 18-MAR-16 Time: 09:23:38

LABELED 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	95	82 - 121	-5.0
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.59	1.32-1.78	109	62 - 160	9.4
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.29	1.05-1.43	99	85 - 117	-0.9
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.28	1.05-1.43	108	85 - 118	8.2
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.05	0.88-1.20	100	72 - 138	0.2
13C-OCDD	M+2/M+4	0.91	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	-5.6
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.59	1.32-1.78	106	76 - 130	5.9
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.57	1.32-1.78	110	77 - 130	9.9
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.51	0.43-0.59	88	76 - 131	-11.6
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.52	0.43-0.59	97	70 - 143	-3.0
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.52	0.43-0.59	94	74 - 135	-6.3
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.53	0.43-0.59	100	73 - 137	0.5
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.45	0.37-0.51	107	78 - 129	6.9
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.45	0.37-0.51	92	77 - 129	-8.0
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	M+2/M+4			9.9	7.8 - 12.7	-0.8

(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) No ion abundance ratio; report concentration found.
(5) The beginnning 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.
86619

Run #7 Filename P503392 Samp: 1 Inj: 1 Acquired: 18-MAR-16 09:23:38
Processed: 24-MAR-16 10:34:46 Sample ID: CS3

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	28:24	6.211e+03	8.236e+03	0.75	yes	no	0.886
2	Unk	1,2,3,7,8-PeCDF	32:32	5.578e+04	3.659e+04	1.52	yes	no	0.983
3	Unk	2,3,4,7,8-PeCDF	33:26	5.273e+04	3.453e+04	1.53	yes	no	0.952
4	Unk	1,2,3,4,7,8-HxCDF	36:04	4.952e+04	4.055e+04	1.22	yes	no	1.190
5	Unk	1,2,3,6,7,8-HxCDF	36:11	5.376e+04	4.371e+04	1.23	yes	no	1.114
6	Unk	2,3,4,6,7,8-HxCDF	36:40	4.912e+04	4.079e+04	1.20	yes	no	1.109
7	Unk	1,2,3,7,8,9-HxCDF	37:25	4.375e+04	3.656e+04	1.20	yes	no	1.153
8	Unk	1,2,3,4,6,7,8-HpCDF	38:39	4.499e+04	4.453e+04	1.01	yes	no	1.376
9	Unk	1,2,3,4,7,8,9-HpCDF	40:02	3.764e+04	3.614e+04	1.04	yes	no	1.306
10	Unk	OCDF	42:32	5.919e+04	6.604e+04	0.90	yes	no	1.263
11	Unk	2,3,7,8-TCDD	29:11	5.236e+03	6.728e+03	0.78	yes	no	0.997
12	Unk	1,2,3,7,8-PeCDD	33:43	4.049e+04	2.562e+04	1.58	yes	no	0.935
13	Unk	1,2,3,4,7,8-HxCDD	36:48	3.695e+04	2.966e+04	1.25	yes	no	1.039
14	Unk	1,2,3,6,7,8-HxCDD	36:53	3.965e+04	3.151e+04	1.26	yes	no	0.996
15	Unk	1,2,3,7,8,9-HxCDD	37:07	4.126e+04	3.183e+04	1.30	yes	no	1.108
16	Unk	1,2,3,4,6,7,8-HpCDD	39:33	3.334e+04	3.275e+04	1.02	yes	no	1.010
17	Unk	OCDD	42:19	5.058e+04	5.789e+04	0.87	yes	no	1.090
18	IS	13C-2,3,7,8-TCDF	28:24	7.168e+04	8.940e+04	0.80	yes	no	1.447
19	IS	13C-1,2,3,7,8-PeCDF	32:31	1.149e+05	7.242e+04	1.59	yes	no	1.500
20	IS	13C-2,3,4,7,8-PeCDF	33:25	1.152e+05	7.334e+04	1.57	yes	no	1.456
21	IS	13C-1,2,3,4,7,8-HxCDF	36:04	5.132e+04	9.982e+04	0.51	yes	no	1.207
22	IS	13C-1,2,3,6,7,8-HxCDF	36:10	5.949e+04	1.141e+05	0.52	yes	no	1.263
23	IS	13C-2,3,4,6,7,8-HxCDF	36:40	5.661e+04	1.074e+05	0.53	yes	no	1.153
24	IS	13C-1,2,3,7,8,9-HxCDF	37:24	4.898e+04	9.505e+04	0.52	yes	no	1.085
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:38	4.097e+04	9.172e+04	0.45	yes	no	0.876
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:01	3.568e+04	7.937e+04	0.45	yes	no	0.883
27	IS	13C-2,3,7,8-TCDD	29:09	5.106e+04	6.406e+04	0.80	yes	no	1.027
28	IS	13C-1,2,3,7,8-PeCDD	33:41	8.427e+04	5.292e+04	1.59	yes	no	1.064
29	IS	13C-1,2,3,4,7,8-HxCDD	36:47	7.176e+04	5.570e+04	1.29	yes	no	0.908
30	IS	13C-1,2,3,6,7,8-HxCDD	36:52	7.730e+04	6.058e+04	1.28	yes	no	0.899
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:33	6.624e+04	6.296e+04	1.05	yes	no	0.910
32	IS	13C-OCDD	42:18	9.205e+04	1.016e+05	0.91	yes	no	0.633
33	RS/RT	13C-1,2,3,4-TCDD	28:36	5.236e+04	6.553e+04	0.80	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:06	7.919e+04	6.249e+04	1.27	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:11	1.247e+04				no	1.066

ALS ENVIRONMENTAL
10450 Stancliff Rd., Suite 115
Houston, TX 77099
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ALS ENVIRONMENTAL

Signal/Noise Height Ratio Summary

CLIENT ID. 86619

Run #7 Filename P503392 Samp: 1 Inj: 1 Acquired: 18-MAR-16 09:23:38
Processed: 24-MAR-16 10:34:46 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	1.14e+06	9.24e+02	1.2e+03	1.57e+06	2.22e+03	7.1e+02
2	1,2,3,7,8-PeCDF	1.03e+07	8.16e+02	1.3e+04	6.79e+06	4.27e+03	1.6e+03
3	2,3,4,7,8-PeCDF	1.04e+07	8.16e+02	1.3e+04	6.64e+06	4.27e+03	1.6e+03
4	1,2,3,4,7,8-HxCDF	1.08e+07	1.52e+03	7.1e+03	8.83e+06	3.68e+02	2.4e+04
5	1,2,3,6,7,8-HxCDF	1.10e+07	1.52e+03	7.2e+03	9.06e+06	3.68e+02	2.5e+04
6	2,3,4,6,7,8-HxCDF	1.05e+07	1.52e+03	6.9e+03	8.56e+06	3.68e+02	2.3e+04
7	1,2,3,7,8,9-HxCDF	8.87e+06	1.52e+03	5.8e+03	7.32e+06	3.68e+02	2.0e+04
8	1,2,3,4,6,7,8-HpCDF	9.76e+06	6.40e+02	1.5e+04	9.68e+06	4.34e+03	2.2e+03
9	1,2,3,4,7,8,9-HpCDF	7.58e+06	6.40e+02	1.2e+04	7.33e+06	4.34e+03	1.7e+03
10	OCDF	1.01e+07	1.18e+03	8.6e+03	1.10e+07	3.34e+03	3.3e+03
11	2,3,7,8-TCDD	1.02e+06	1.64e+03	6.2e+02	1.32e+06	1.72e+03	7.7e+02
12	1,2,3,7,8-PeCDD	8.00e+06	2.85e+03	2.8e+03	5.07e+06	6.52e+02	7.8e+03
13	1,2,3,4,7,8-HxCDD	8.17e+06	1.40e+03	5.9e+03	6.57e+06	1.58e+03	4.2e+03
14	1,2,3,6,7,8-HxCDD	8.27e+06	1.40e+03	5.9e+03	6.50e+06	1.58e+03	4.1e+03
15	1,2,3,7,8,9-HxCDD	8.63e+06	1.40e+03	6.2e+03	6.84e+06	1.58e+03	4.3e+03
16	1,2,3,4,6,7,8-HpCDD	6.84e+06	1.28e+03	5.3e+03	6.59e+06	1.12e+03	5.9e+03
17	OCDD	8.78e+06	5.60e+02	1.6e+04	1.00e+07	1.50e+03	6.7e+03
18	13C-2,3,7,8-TCDF	1.36e+07	2.76e+03	4.9e+03	1.68e+07	2.93e+03	5.7e+03
19	13C-1,2,3,7,8-PeCDF	2.15e+07	6.36e+02	3.4e+04	1.36e+07	7.84e+02	1.7e+04
20	13C-2,3,4,7,8-PeCDF	2.24e+07	6.36e+02	3.5e+04	1.45e+07	7.84e+02	1.8e+04
21	13C-1,2,3,4,7,8-HxCDF	1.11e+07	1.50e+03	7.4e+03	2.15e+07	2.32e+03	9.3e+03
22	13C-1,2,3,6,7,8-HxCDF	1.21e+07	1.50e+03	8.1e+03	2.34e+07	2.32e+03	1.0e+04
23	13C-2,3,4,6,7,8-HxCDF	1.21e+07	1.50e+03	8.1e+03	2.26e+07	2.32e+03	9.7e+03
24	13C-1,2,3,7,8,9-HxCDF	9.92e+06	1.50e+03	6.6e+03	1.92e+07	2.32e+03	8.3e+03
25	13C-1,2,3,4,6,7,8-HpCDF	8.88e+06	4.20e+03	2.1e+03	1.99e+07	2.11e+03	9.4e+03
26	13C-1,2,3,4,7,8,9-HpCDF	7.21e+06	4.20e+03	1.7e+03	1.61e+07	2.11e+03	7.6e+03
27	13C-2,3,7,8-TCDD	1.00e+07	7.16e+03	1.4e+03	1.26e+07	4.13e+03	3.0e+03
28	13C-1,2,3,7,8-PeCDD	1.64e+07	1.86e+03	8.8e+03	1.04e+07	1.35e+03	7.7e+03
29	13C-1,2,3,4,7,8-HxCDD	1.58e+07	2.88e+03	5.5e+03	1.23e+07	2.27e+03	5.4e+03
30	13C-1,2,3,6,7,8-HxCDD	1.60e+07	2.88e+03	5.5e+03	1.26e+07	2.27e+03	5.6e+03
31	13C-1,2,3,4,6,7,8-HpCDD	1.34e+07	2.07e+03	6.5e+03	1.27e+07	7.20e+02	1.8e+04
32	13C-OCDD	1.59e+07	2.00e+03	7.9e+03	1.76e+07	1.88e+03	9.3e+03
33	13C-1,2,3,4-TCDD	1.02e+07	7.16e+03	1.4e+03	1.28e+07	4.13e+03	3.1e+03
34	13C-1,2,3,7,8,9-HxCDD	1.72e+07	2.88e+03	5.9e+03	1.35e+07	2.27e+03	5.9e+03
35	37Cl-2,3,7,8-TCDD	2.45e+06	3.60e+03	6.8e+02			

---Sample Calculation---

$$D/L\ TCDD = \frac{2.5 \times (1.636e+03 + 1.720e+03\ ) \times 100}{(1.001e+07 + 1.257e+07\ ) \times (\qquad\qquad\qquad\qquad) \times 0.997} =$$

ALS ENVIRONMENTAL
10450 Stancliff Rd., Suite 115
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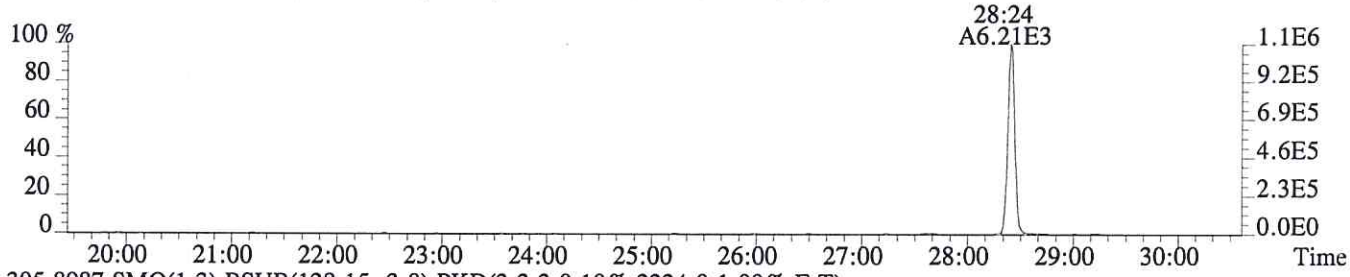
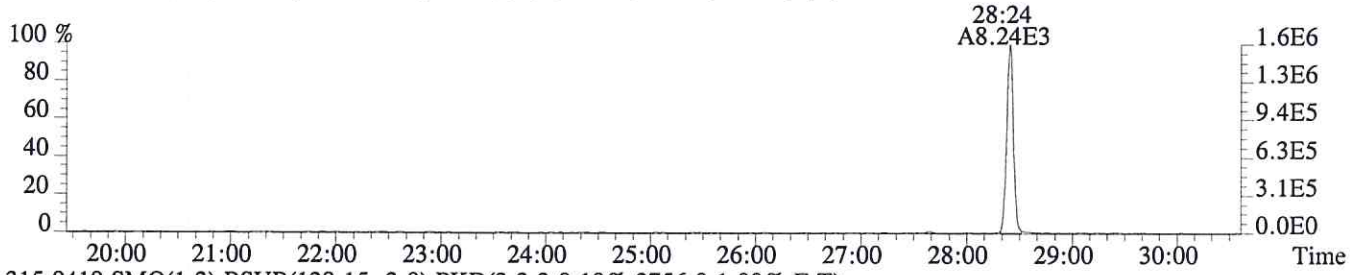
File:P503392 #1-793 Acq:18-MAR-2016 09:23:38 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619

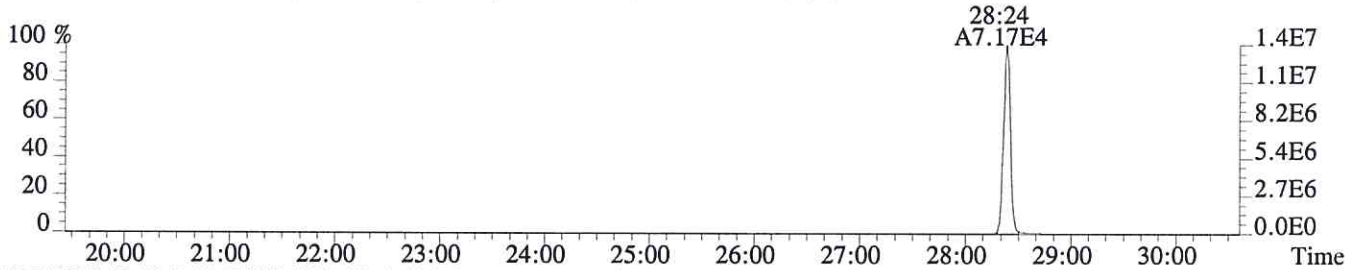
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,924.0,1.00%,F,T)



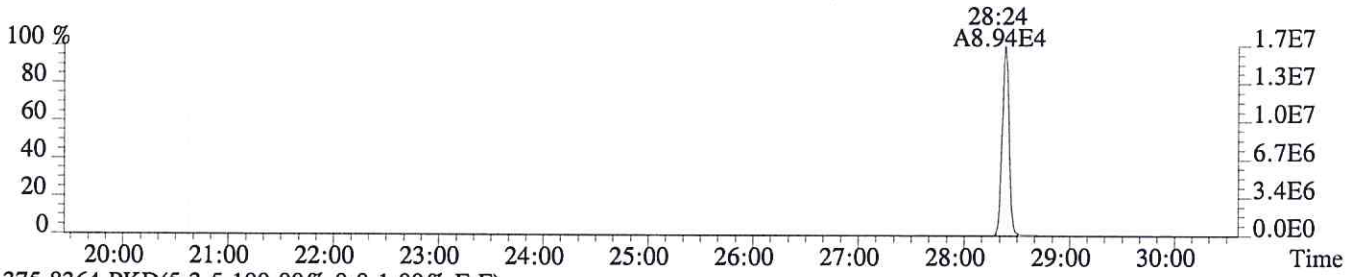
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2224.0,1.00%,F,T)



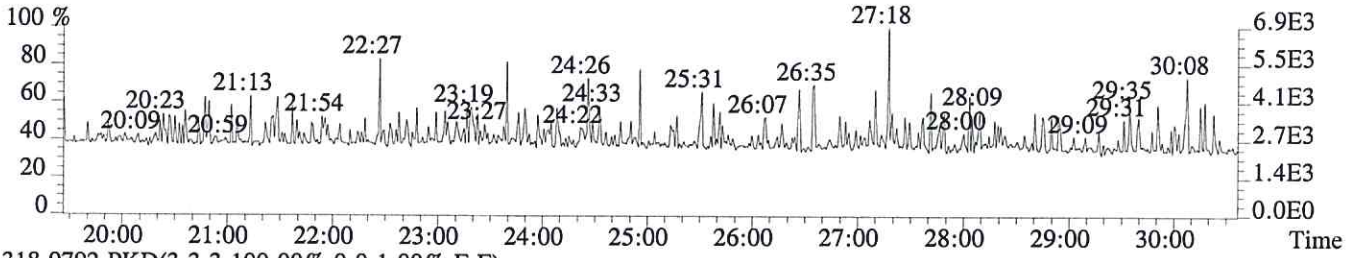
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2756.0,1.00%,F,T)



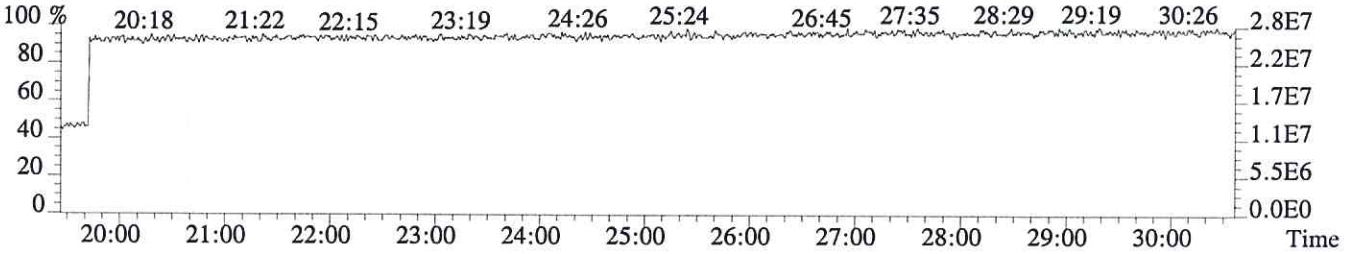
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2928.0,1.00%,F,T)



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

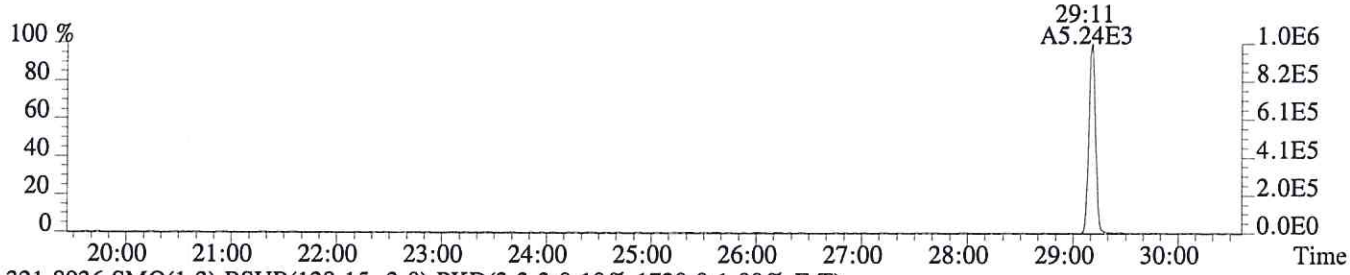


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

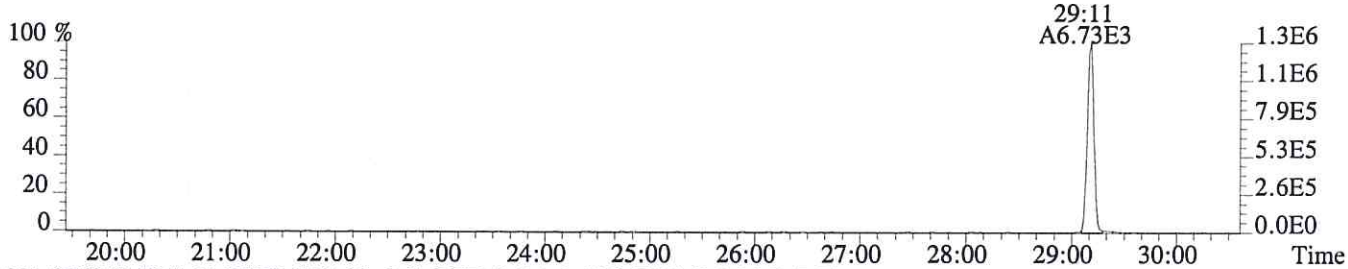


File:P503392 #1-793 Acq:18-MAR-2016 09:23:38 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619

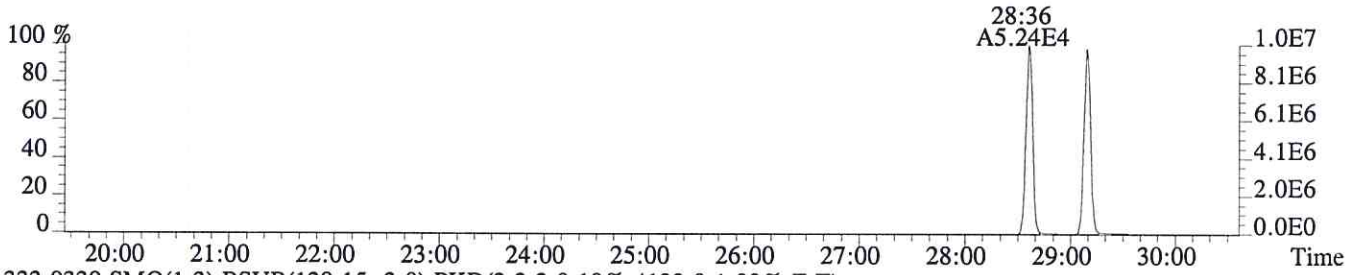
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1636.0,1.00%,F,T)



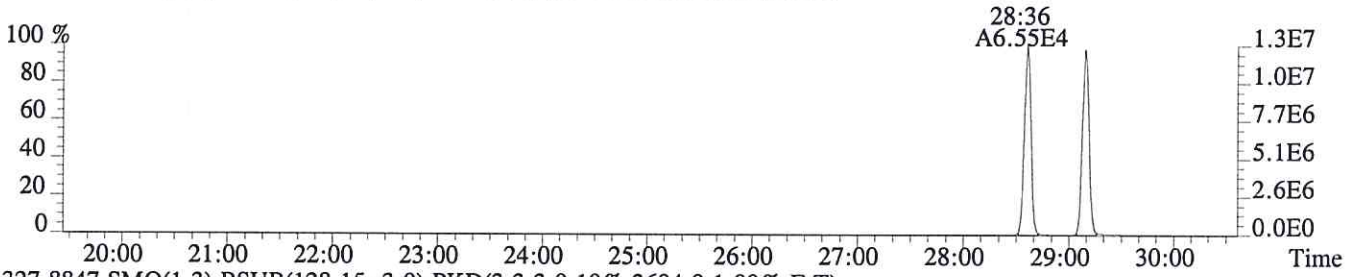
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1720.0,1.00%,F,T)



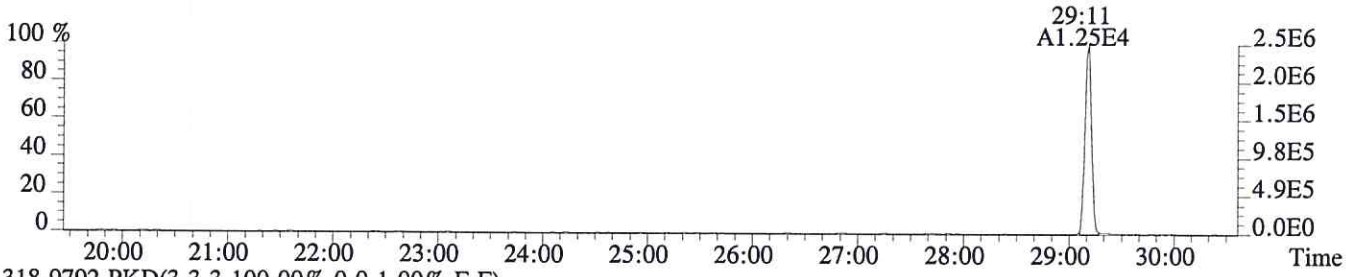
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,7164.0,1.00%,F,T)



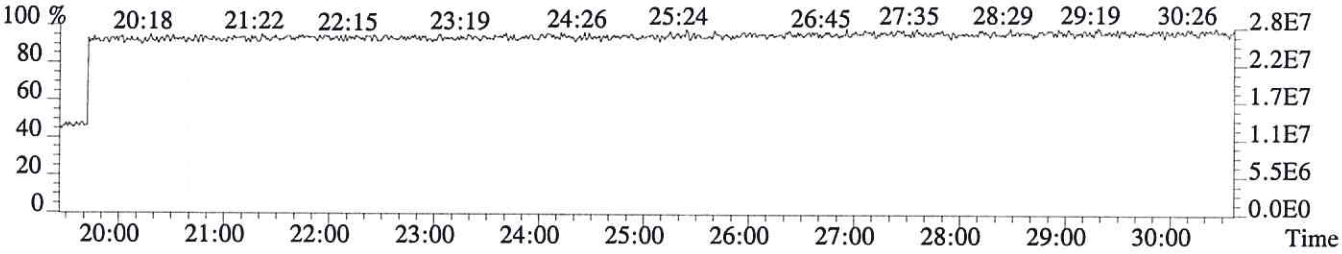
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4132.0,1.00%,F,T)



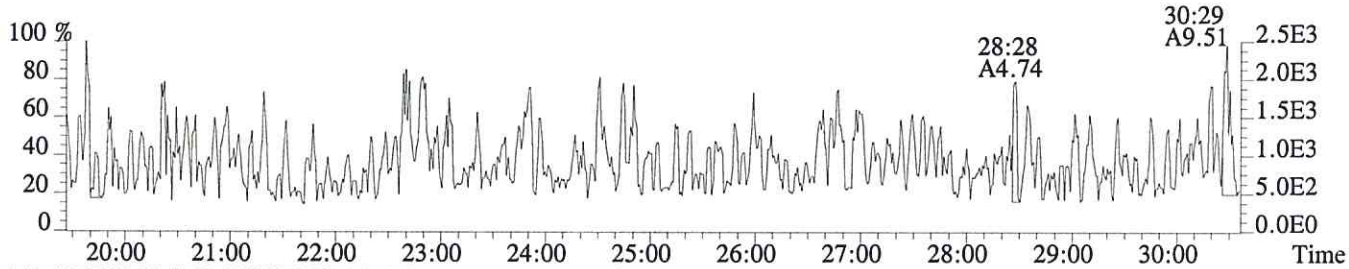
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3604.0,1.00%,F,T)



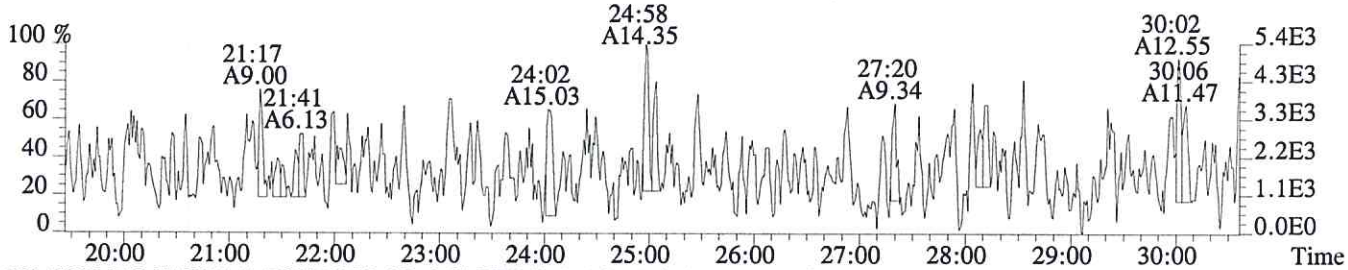
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



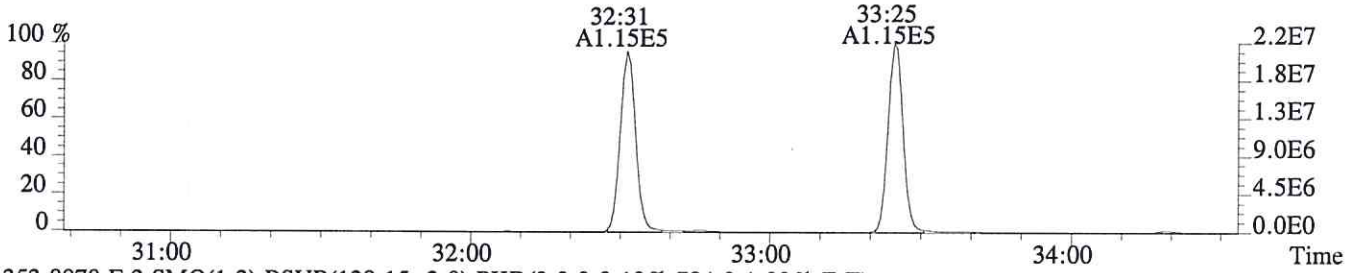
File:P503392 #1-793 Acq:18-MAR-2016 09:23:38 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1132.0,1.00%,F,T)



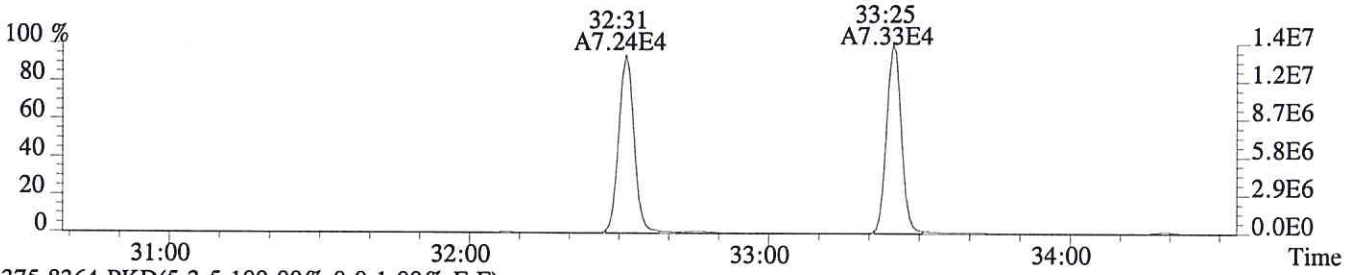
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2144.0,1.00%,F,T)



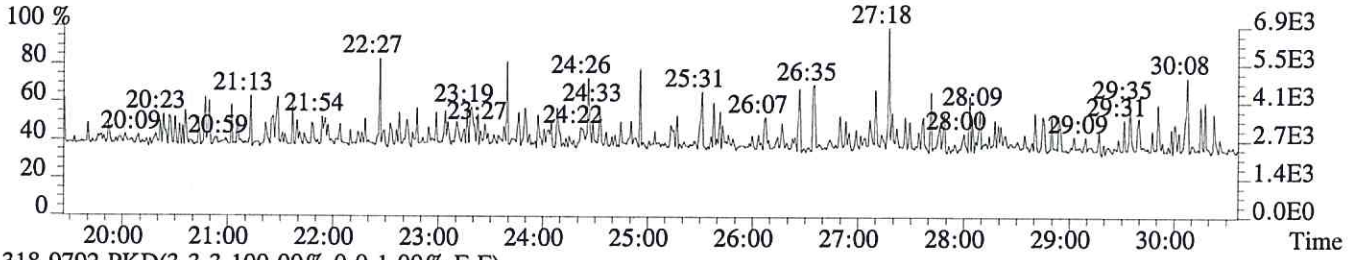
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,636.0,1.00%,F,T)



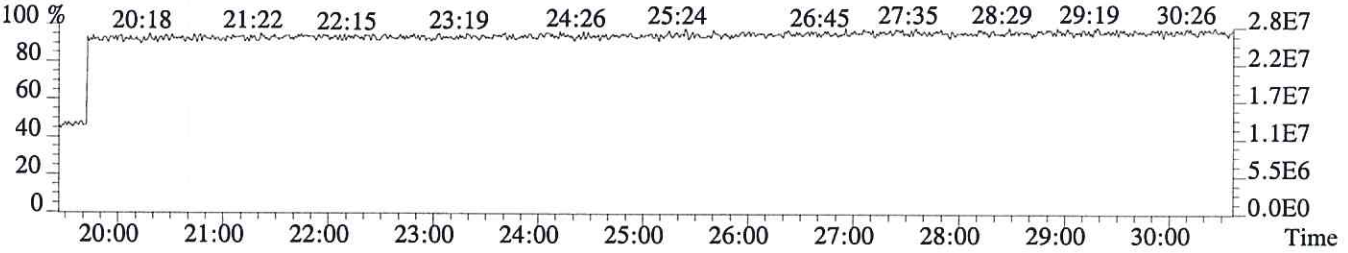
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,784.0,1.00%,F,T)



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

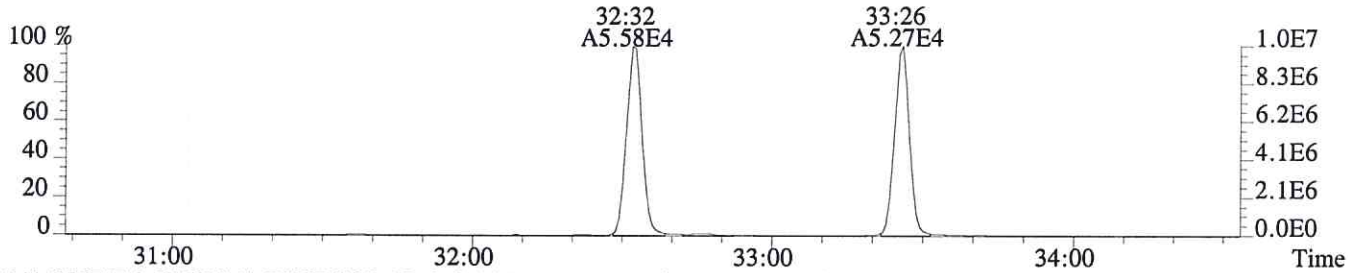


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

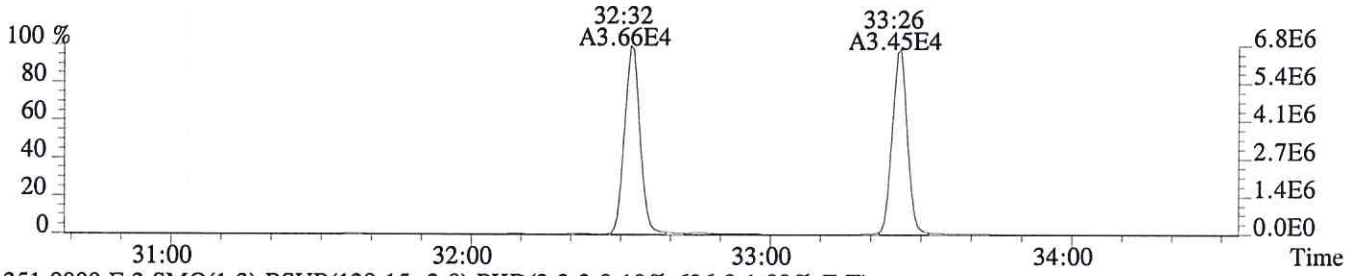


File:P503392 #1-353 Acq:18-MAR-2016 09:23:38 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619

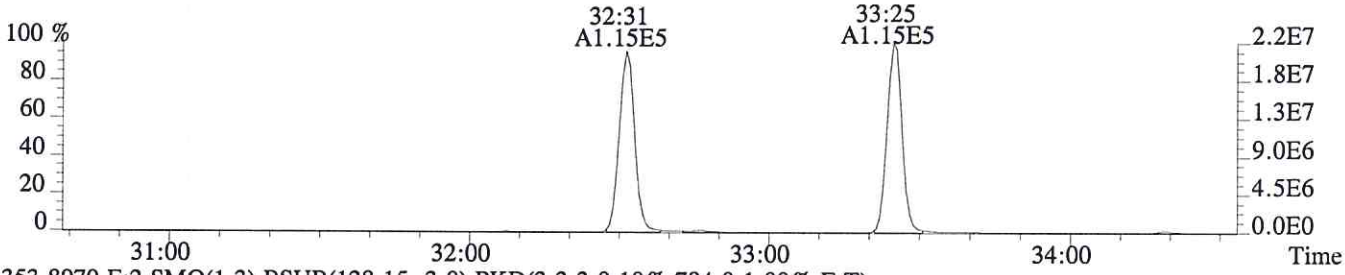
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,816.0,1.00%,F,T)



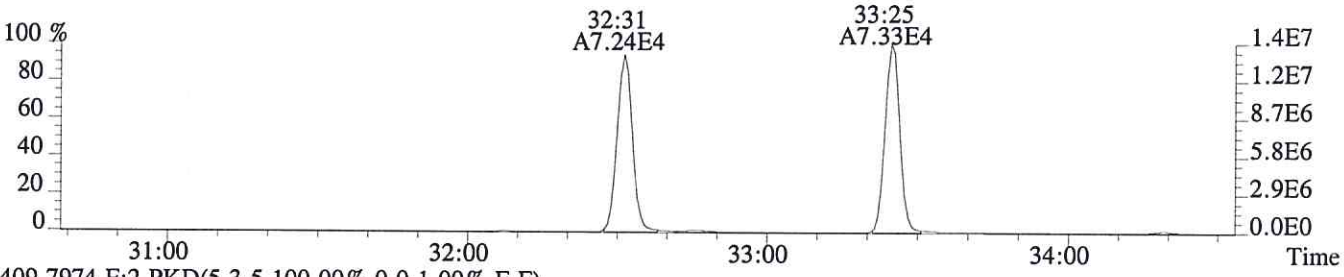
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4268.0,1.00%,F,T)



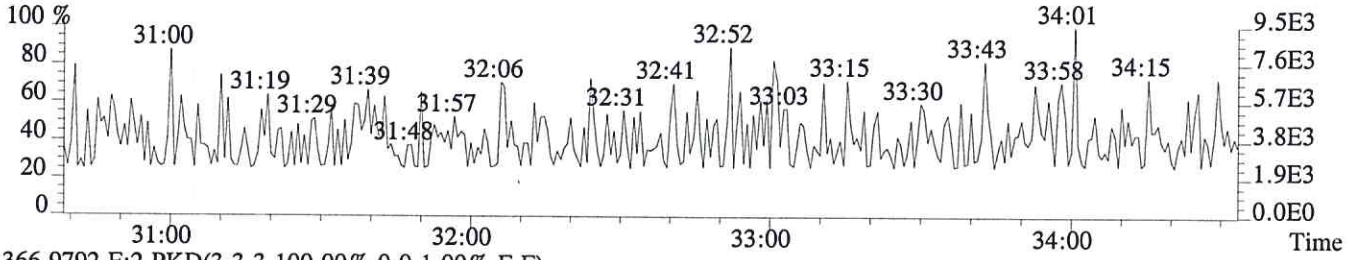
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,636.0,1.00%,F,T)



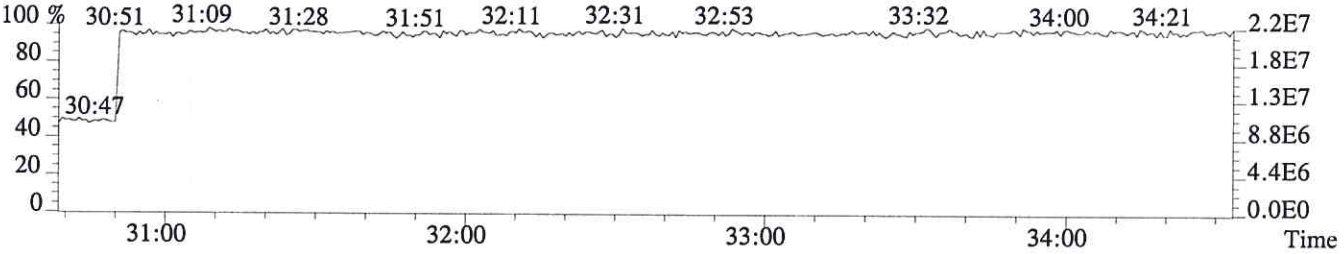
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,784.0,1.00%,F,T)



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

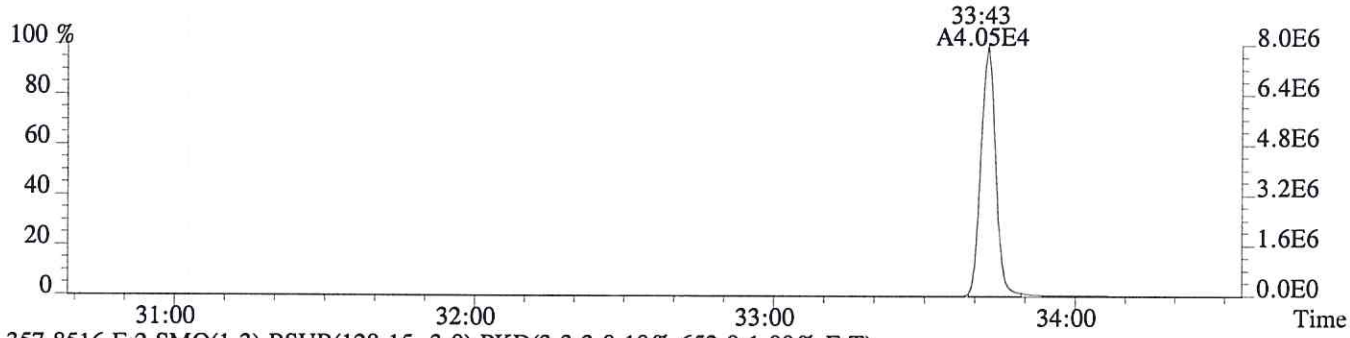


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

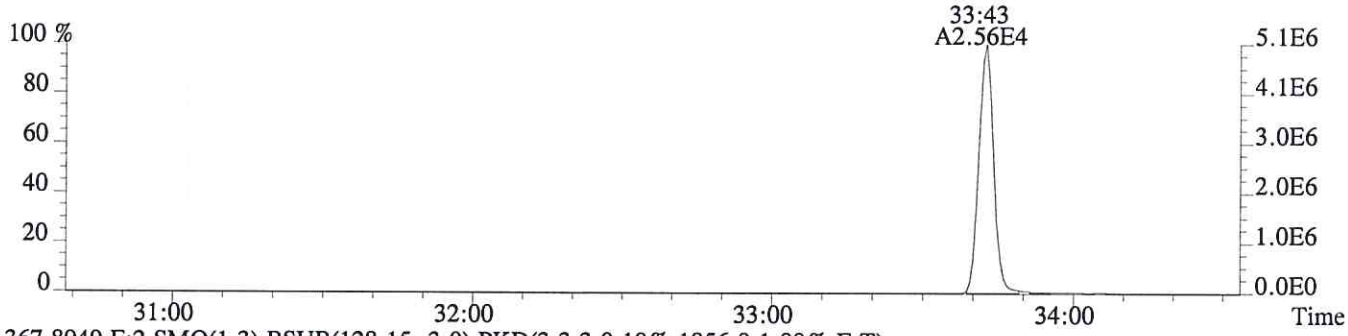


File:P503392 #1-353 Acq:18-MAR-2016 09:23:38 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619

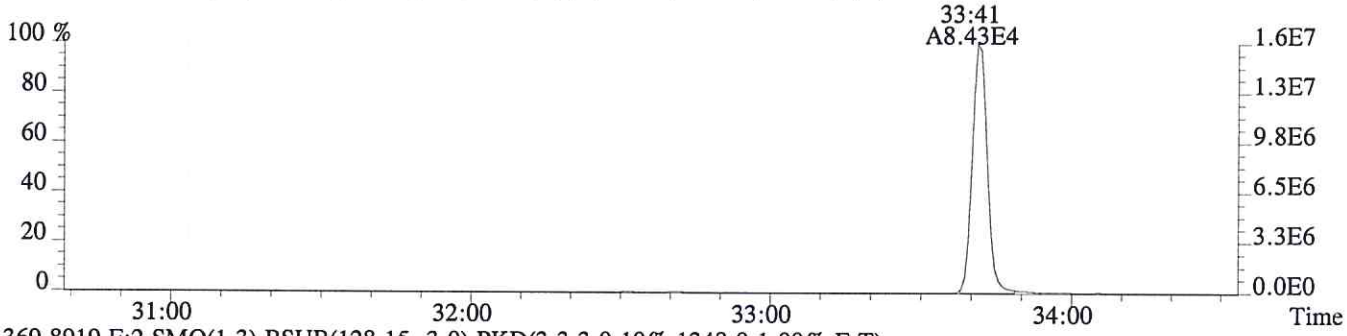
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2848.0,1.00%,F,T)



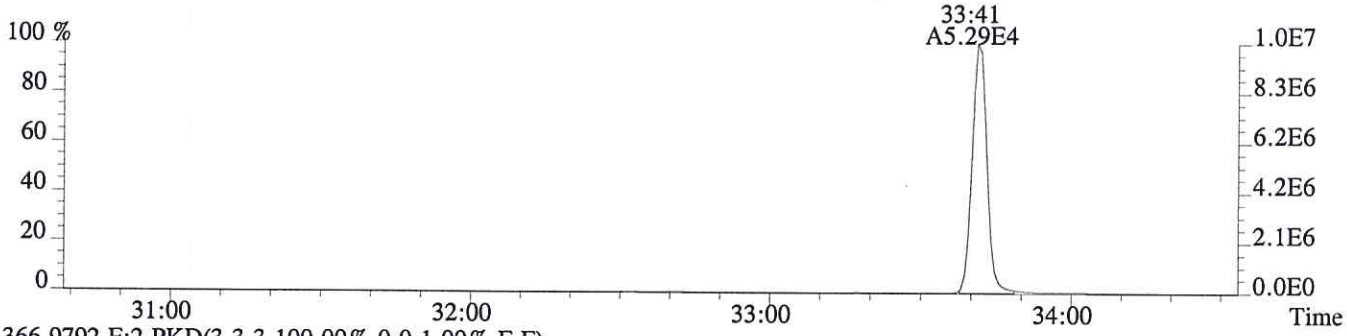
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,652.0,1.00%,F,T)



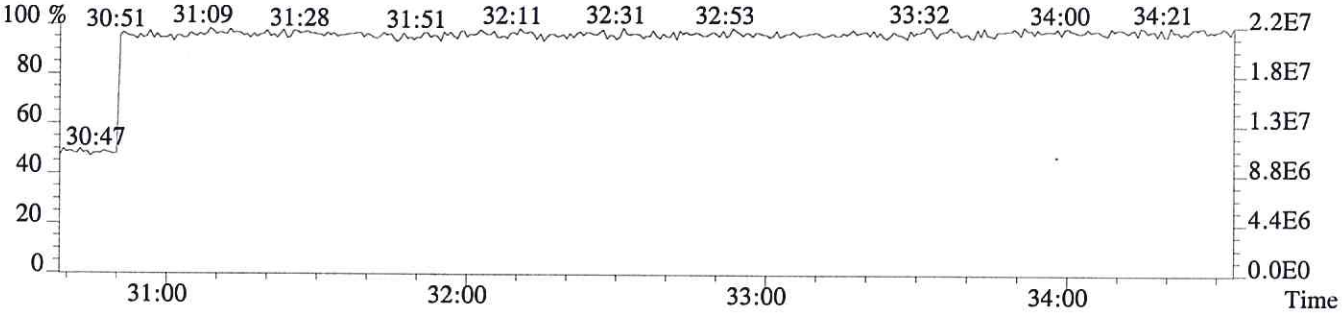
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1856.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1348.0,1.00%,F,T)

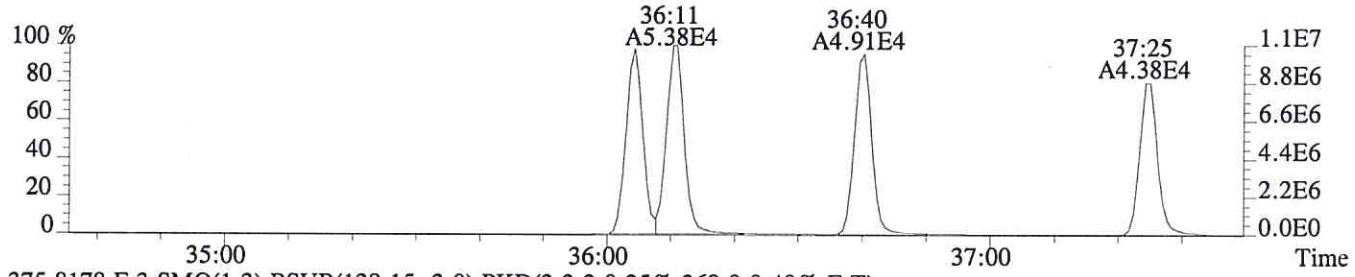


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

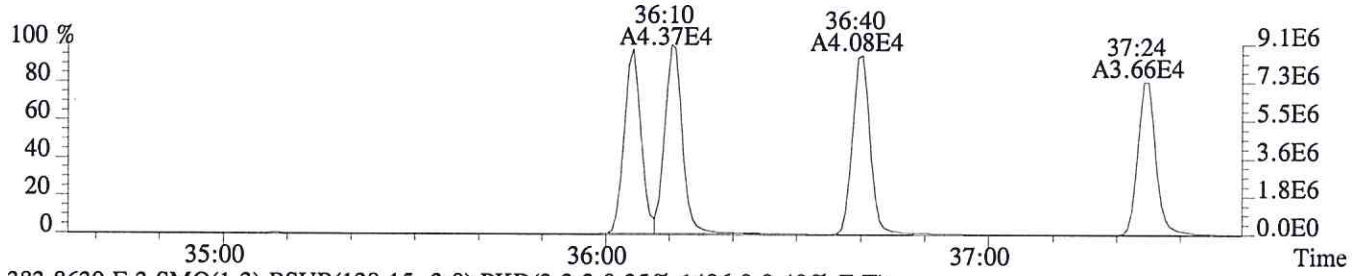


File:P503392 #1-277 Acq:18-MAR-2016 09:23:38 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619

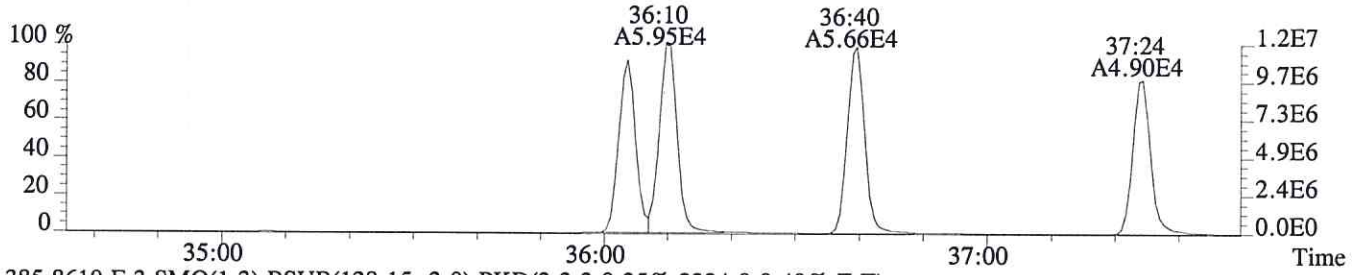
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1520.0,0.40%,F,T)



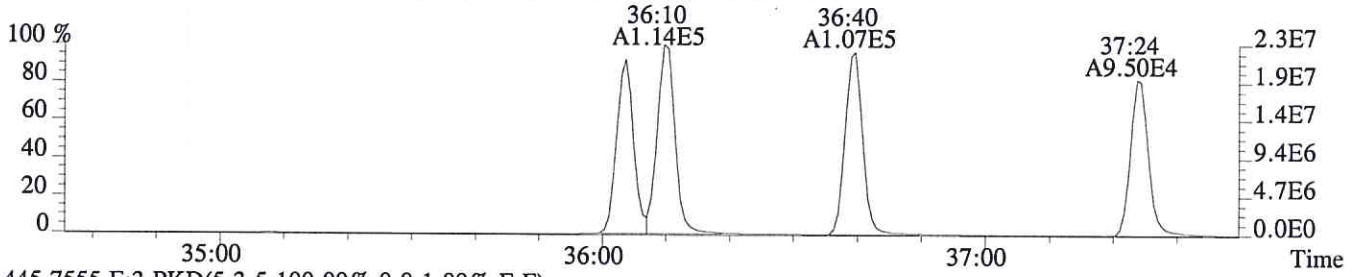
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,368.0,0.40%,F,T)



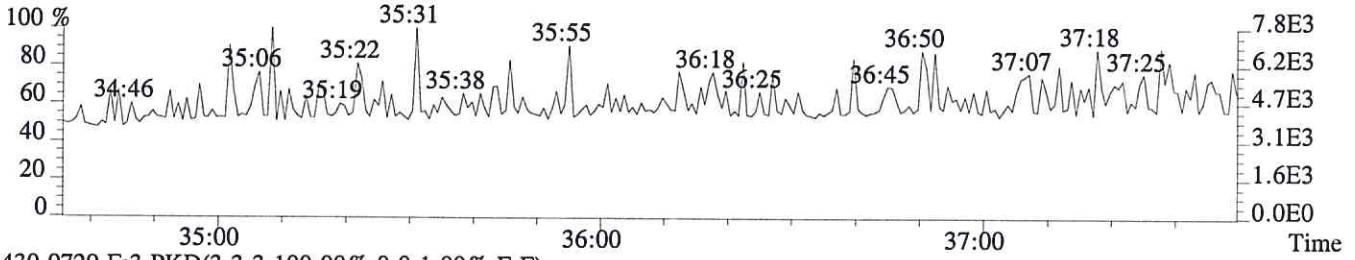
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1496.0,0.40%,F,T)



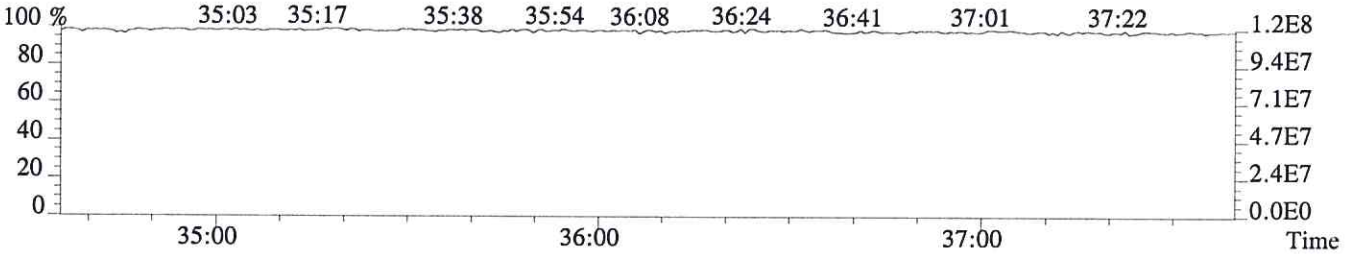
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2324.0,0.40%,F,T)



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

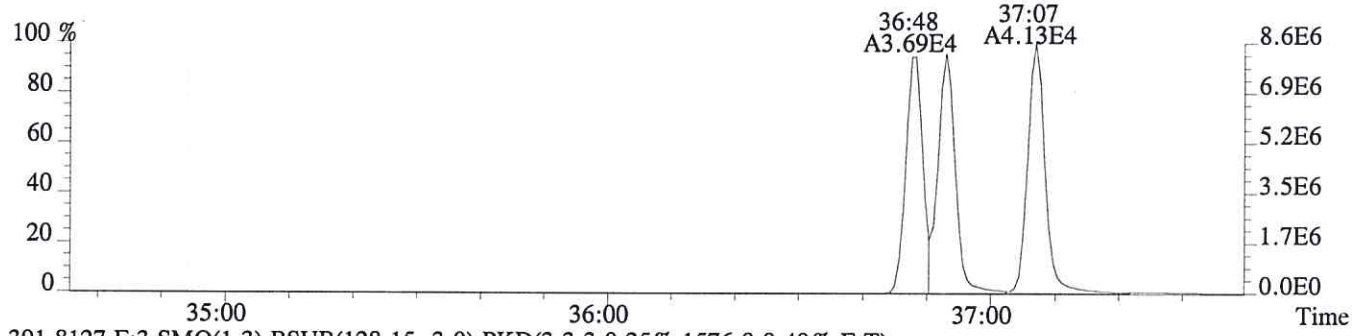


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

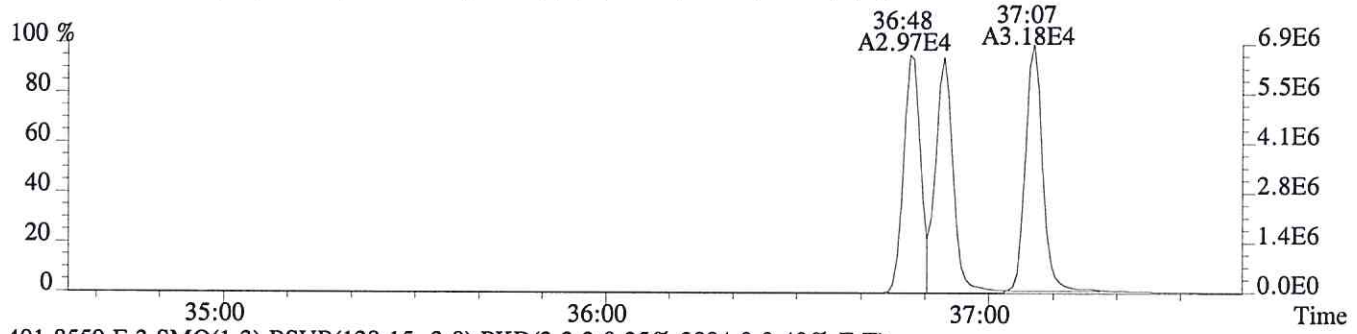


File:P503392 #1-277 Acq:18-MAR-2016 09:23:38 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619

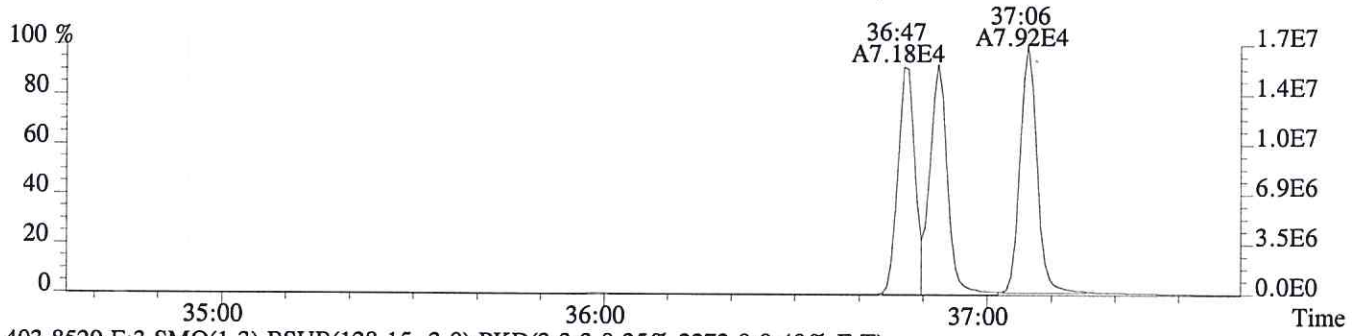
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1396.0,0.40%,F,T)



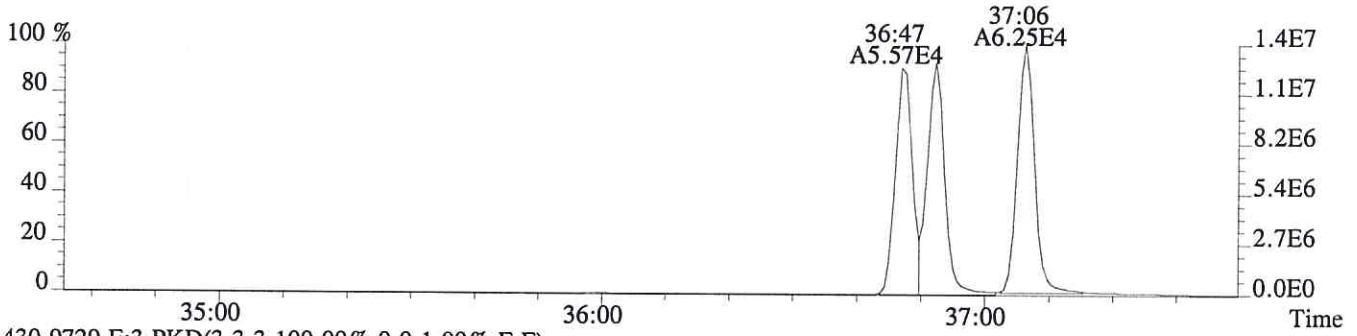
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1576.0,0.40%,F,T)



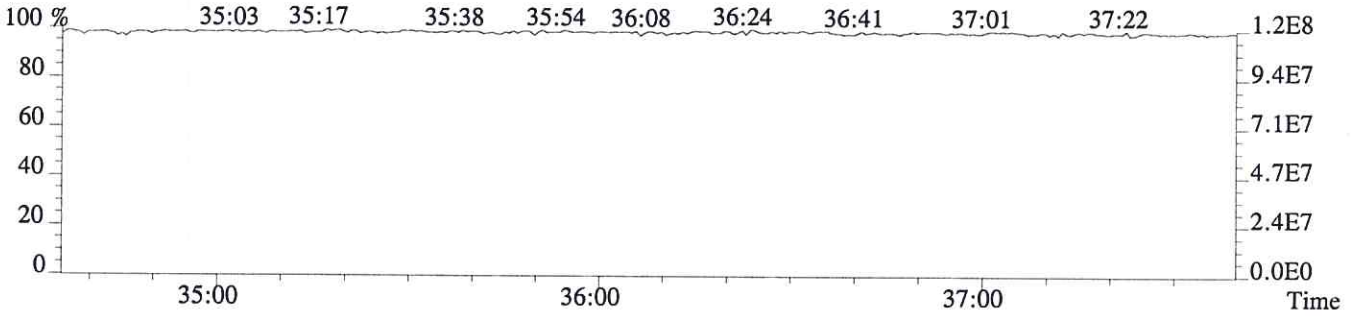
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2884.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2272.0,0.40%,F,T)

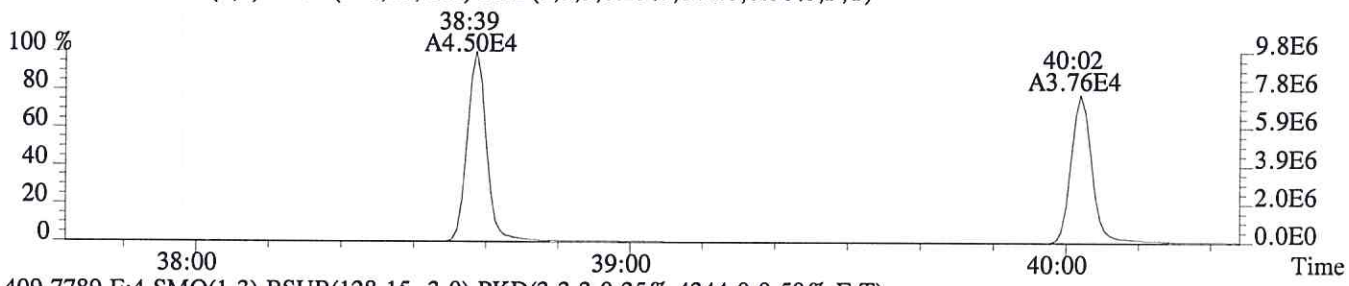


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

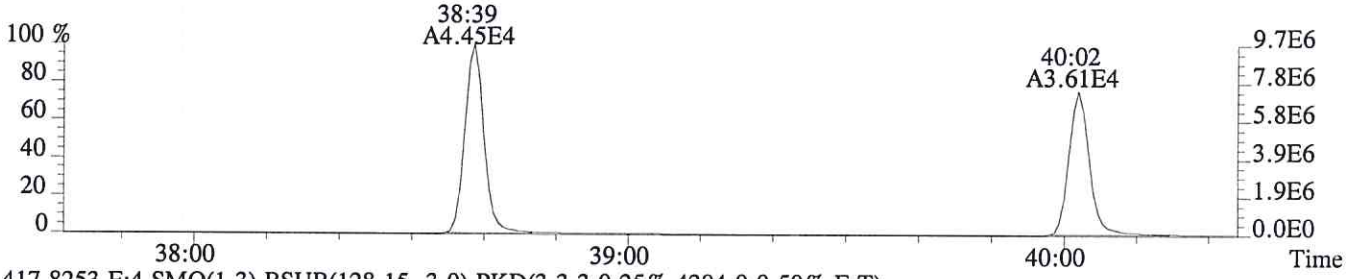


File:P503392 #1-244 Acq:18-MAR-2016 09:23:38 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619

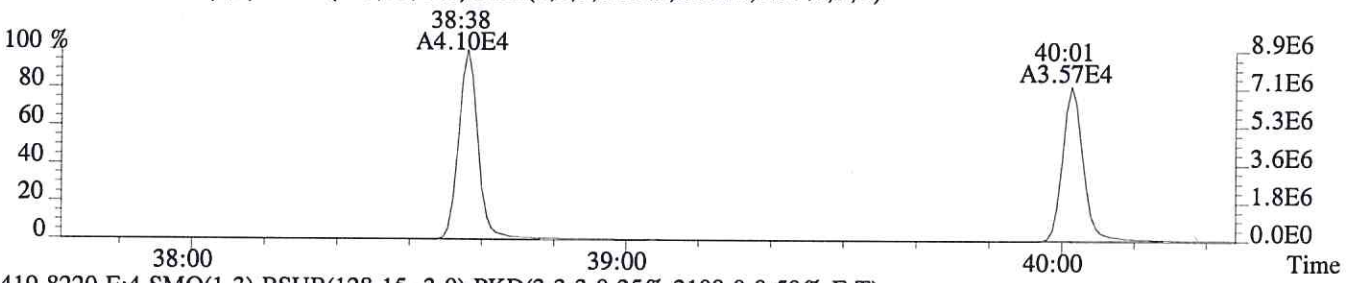
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,640.0,0.50%,F,T)



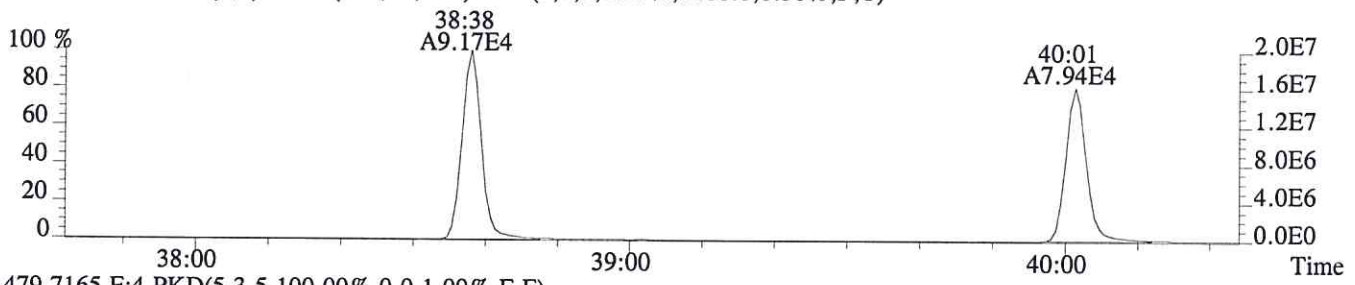
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4344.0,0.50%,F,T)



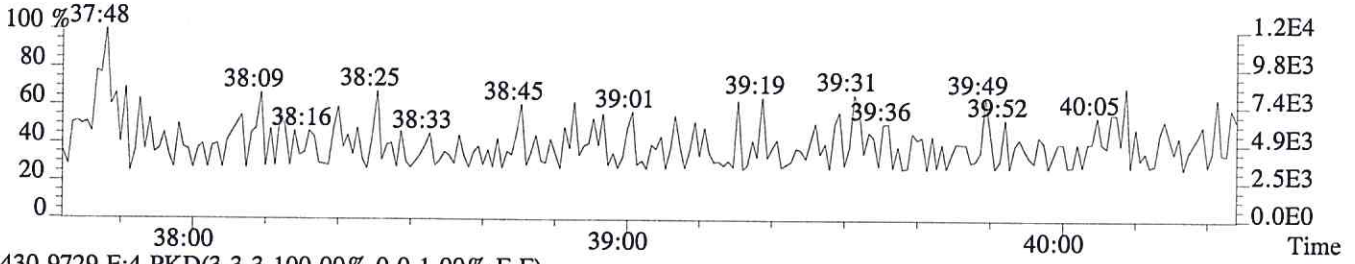
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4204.0,0.50%,F,T)



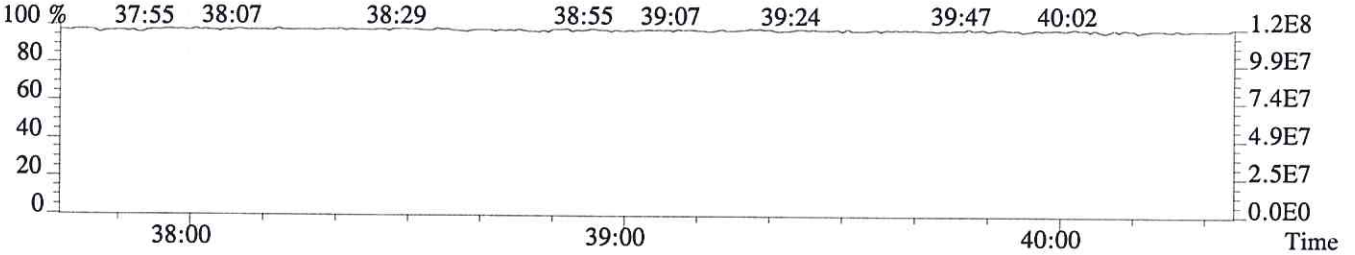
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2108.0,0.50%,F,T)



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

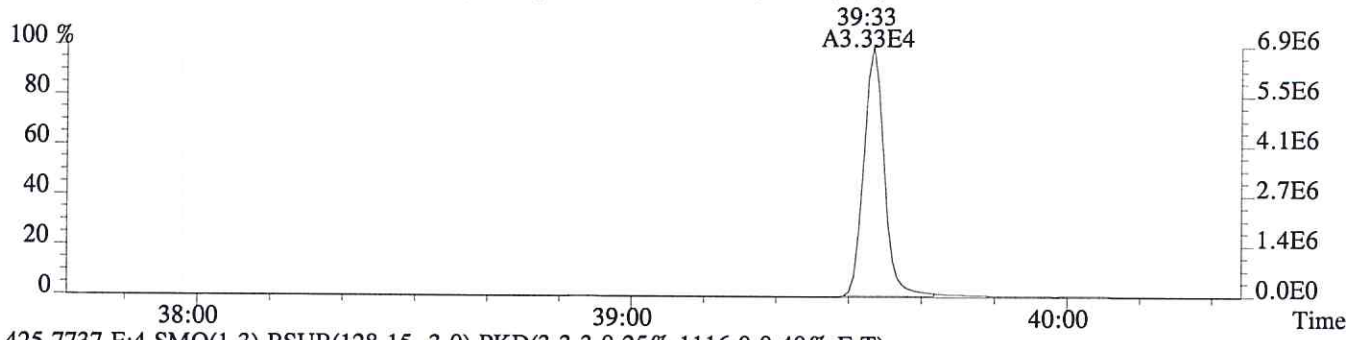


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

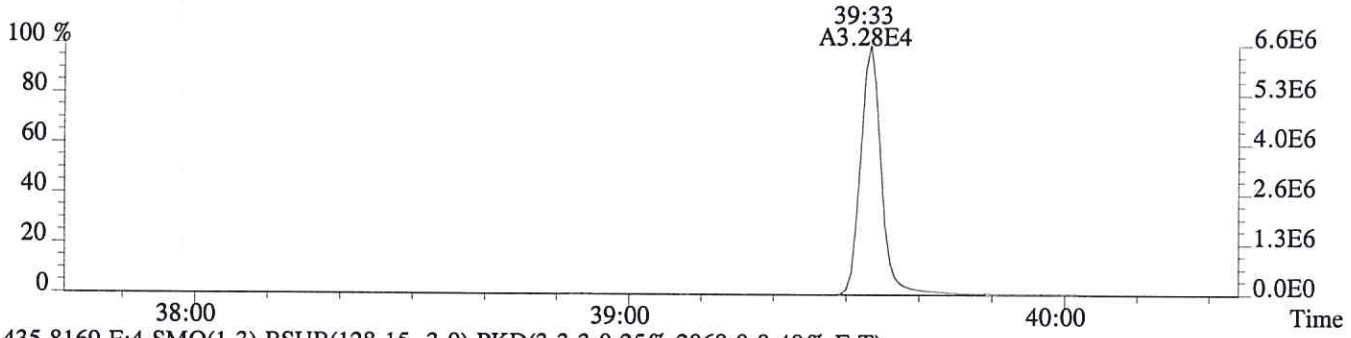


File:P503392 #1-244 Acq:18-MAR-2016 09:23:38 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619

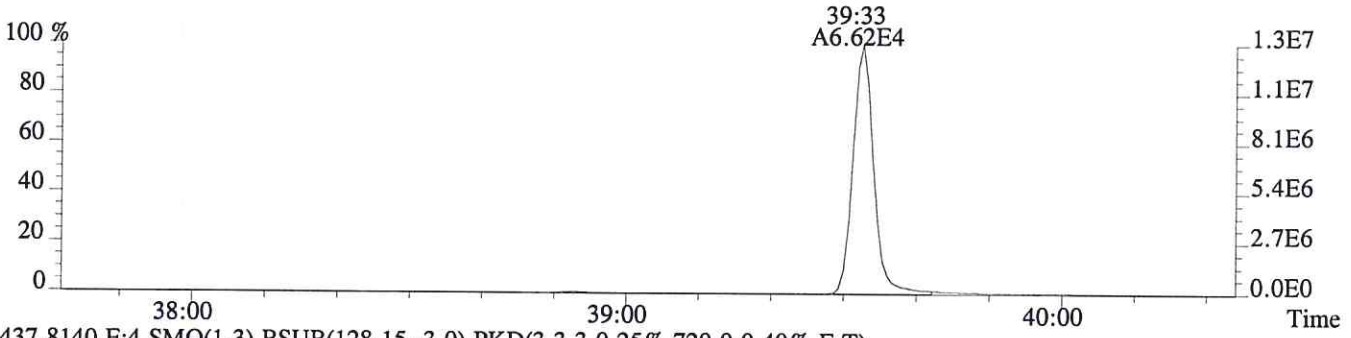
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1280.0,0.40%,F,T)



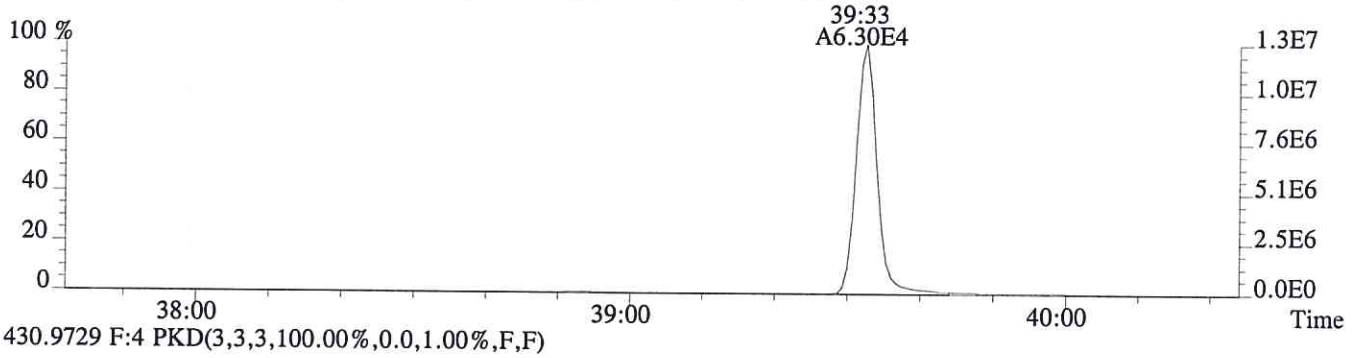
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1116.0,0.40%,F,T)



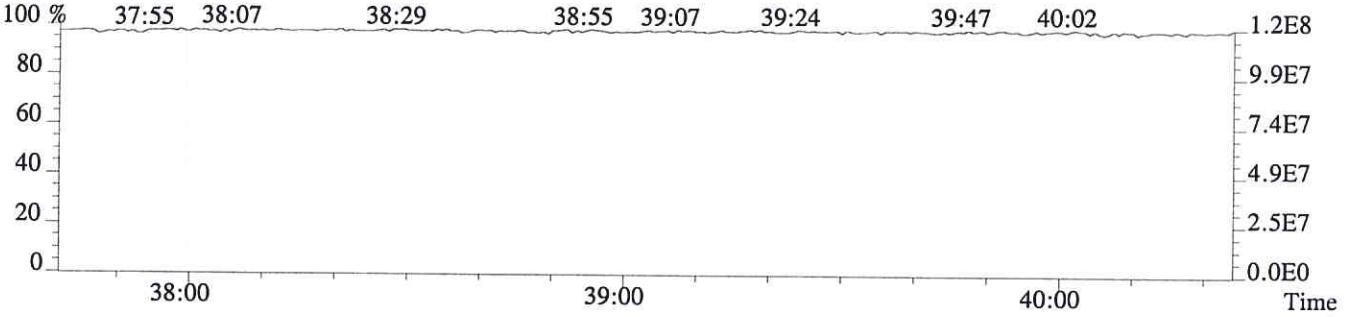
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2068.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,720.0,0.40%,F,T)

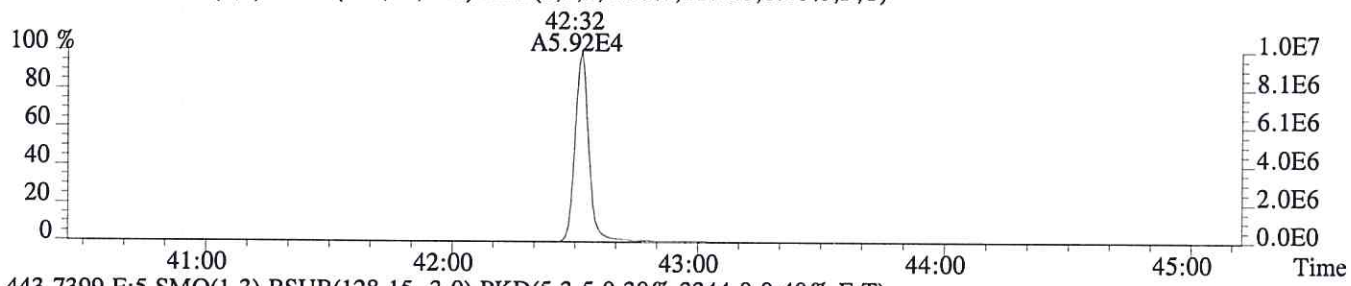


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

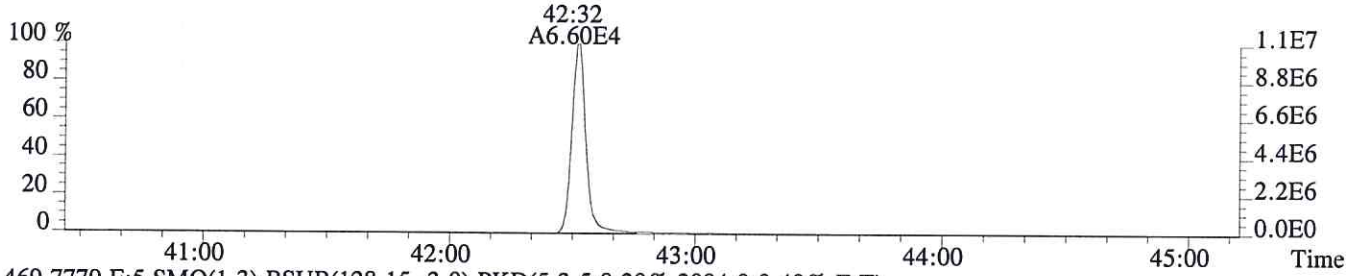


File:P503392 #1-430 Acq:18-MAR-2016 09:23:38 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619

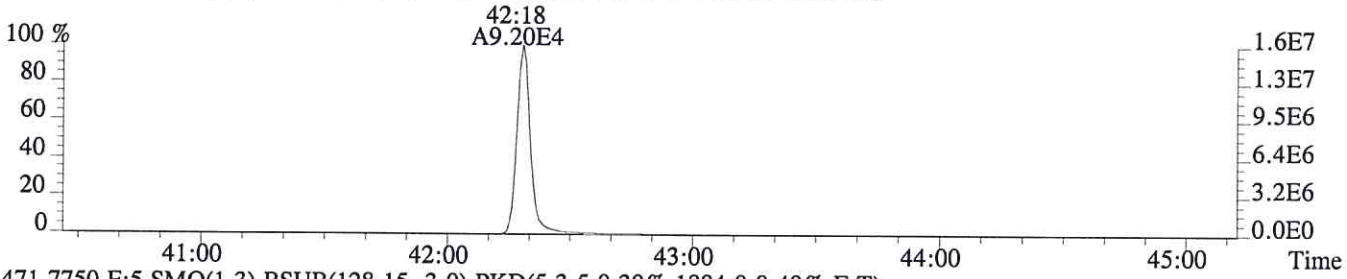
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1176.0,0.40%,F,T)



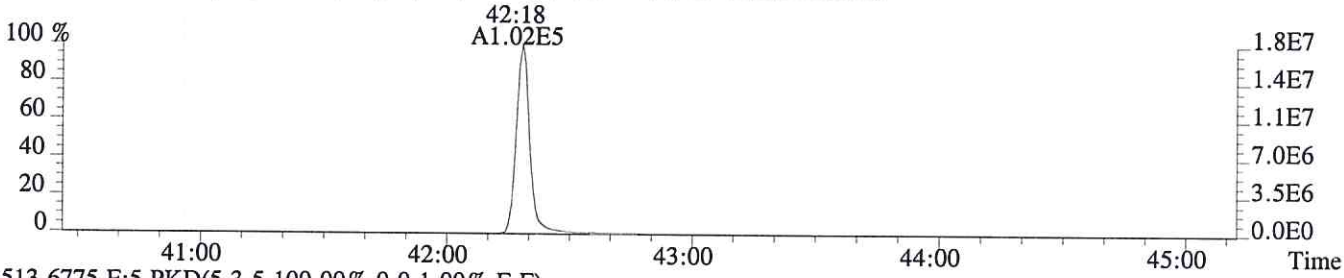
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3344.0,0.40%,F,T)



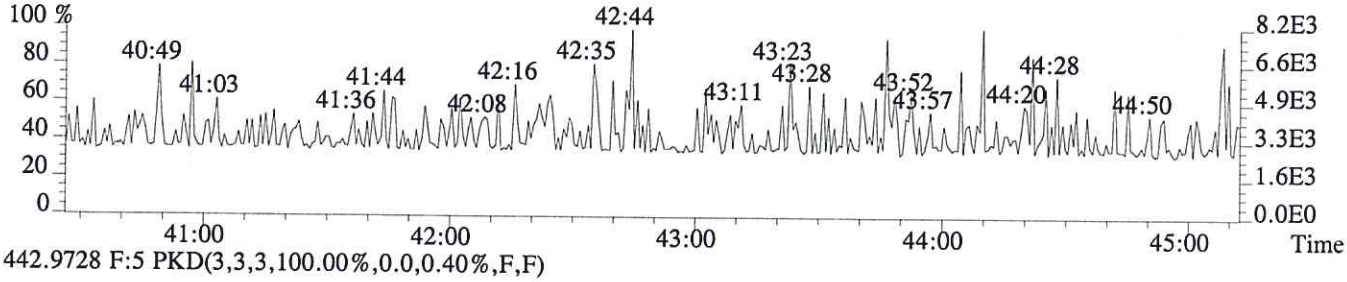
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2004.0,0.40%,F,T)



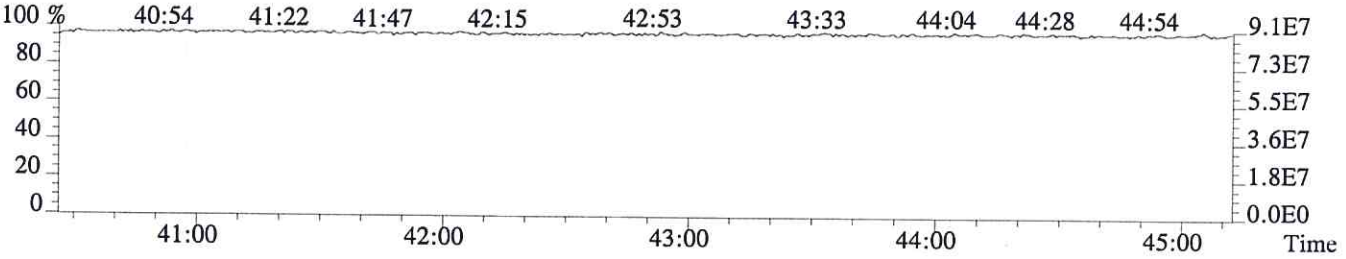
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1884.0,0.40%,F,T)



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

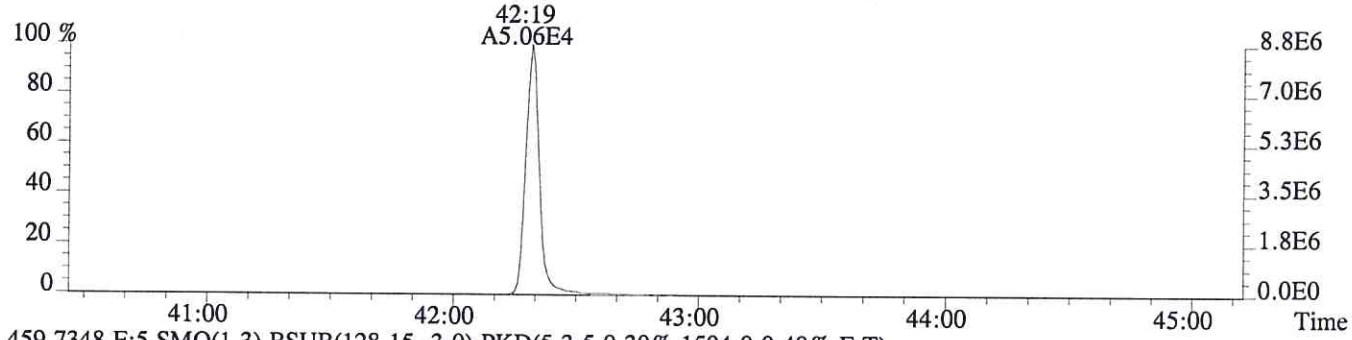


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

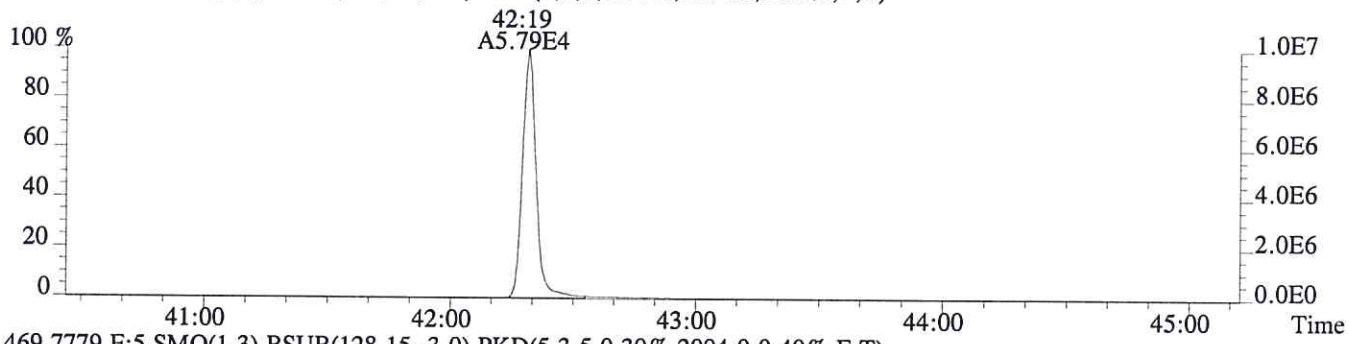


File:P503392 #1-430 Acq:18-MAR-2016 09:23:38 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619

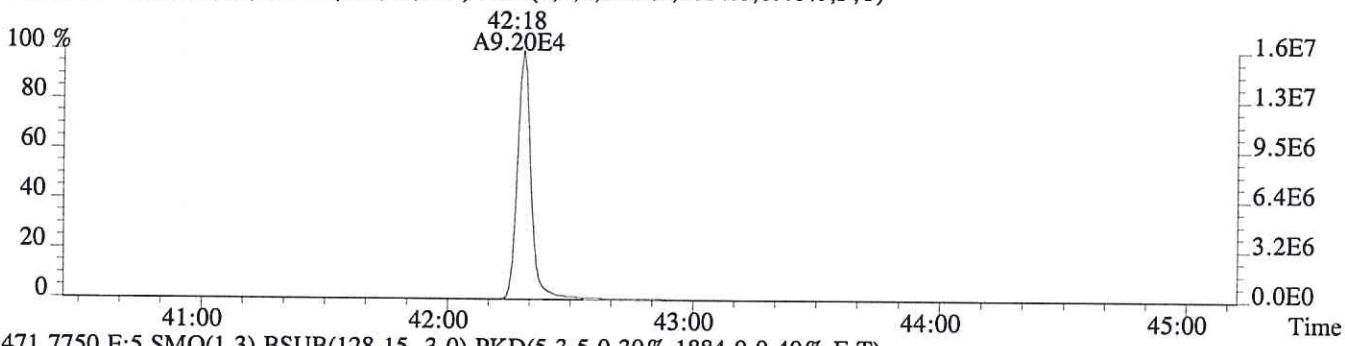
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,560.0,0.40%,F,T)



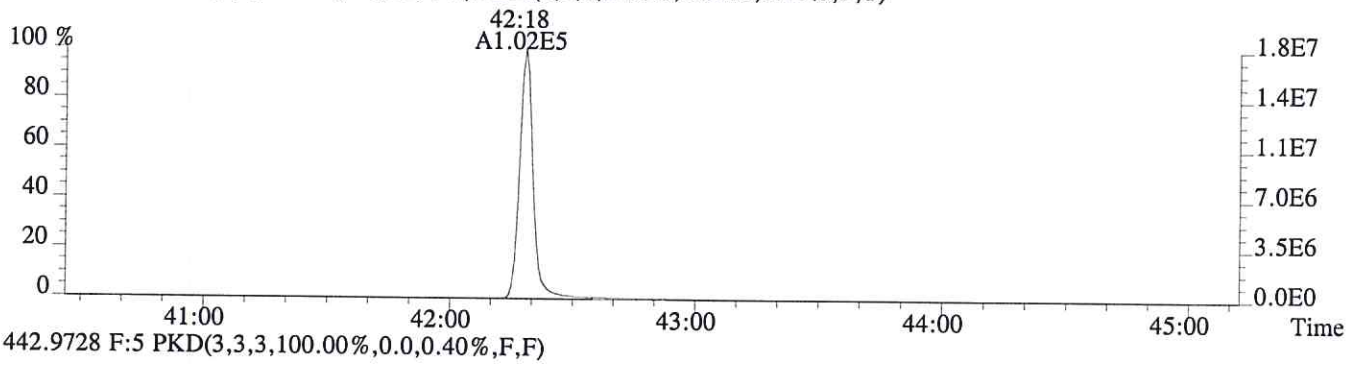
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1504.0,0.40%,F,T)



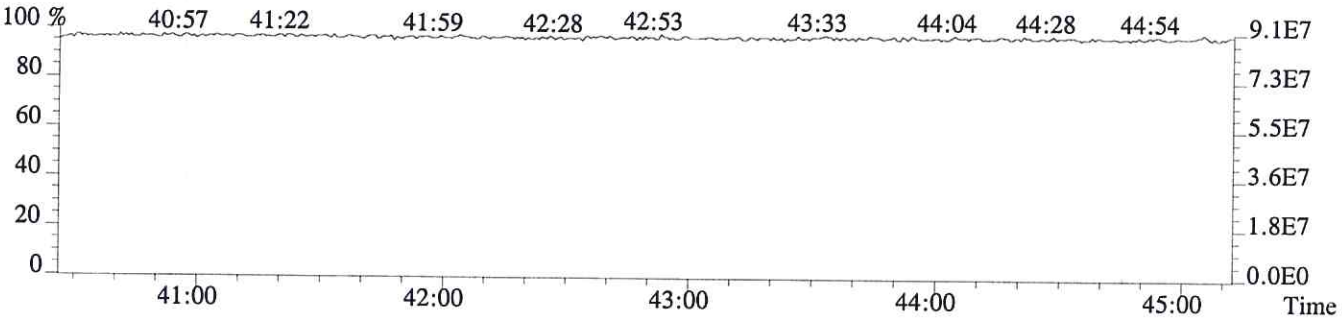
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2004.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1884.0,0.40%,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: PS034406

Circle one: Beginning / Ending

Date: 03/18/16

Method: 1613 / 1613E / 8290 / Tetra / TCDD Only / 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)	NA	N/A
Ending Calibration injected prior to end of 12 hour clock	NA	N/A

Analyst: JC

Second QC: LKL

5DBC
PCDD/PCDF/PCB ANALYTICAL SEQUENCE SUMMARY

Lab Name: ALS Environmental Contract:

Lab Code: ALS-TX Case No.: SDG No.:

GC Column: DB-5MSUI ID: 0.25 (mm) Instrument ID: E-HRMS-07

Init. Calib. Date: 06/30/15

Init. Calib.Times: 15:41

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
87077	WINDOW DEFINE	P503407	18-MAR-16	22:53:18
86619	CS3	P503406	18-MAR-16	22:06:36
METHOD BLANK	EQ1600106-01	P503408	18-MAR-16	23:42:04
METHOD BLANK	EQ1600119-01	P503409	19-MAR-16	00:30:41
BP-2440 ATHLON BS	E1600200-001	P503410	19-MAR-16	01:19:18
BP-2445 AM ACRYL BS	E1600200-002	P503411	19-MAR-16	02:07:56
BP-2450 INTERGULF	E1600200-003	P503412	19-MAR-16	02:56:32
BP-2460 DIXIE BS	E1600200-004	P503413	19-MAR-16	03:45:11
W16C049-03	K1602302-001	P503414	19-MAR-16	04:33:49
W16C081-01	K1602467-001	P503415	19-MAR-16	05:22:26
BLEACH PLANT SEWER	K1602509-001	P503416	19-MAR-16	06:11:11
03092016 SJ1	E1600203-001	P503417	19-MAR-16	06:59:58
03102016 SJ4	E1600203-005	P503418	19-MAR-16	07:48:36
03102016 SJ5	E1600203-006	P503419	19-MAR-16	08:37:15
COMPOSITE	K1602299-003	P503420	19-MAR-16	09:25:52

Sample List Report MassLynx 4.1 SCN815 SCN795

Sample List: C:\MassLynx\EHRMS07.PRO\SampleDB\20160318B.SPL
Last Modified: Monday, March 21, 2016 10:31:30 Central Daylight Time
Printed: Monday, March 21, 2016 10:34:40 Central Daylight Time

Page Position (1, 1)

OPUS-5 : P503406 REQ

	Date	Time	File Name	Sample ID	File Text	MS File	Inlet File	Bottle	Analyst	Comments
1	03/18/2016	22:06	P503406	CS3	86619	EPA1613_ALS	Dioxin_ALS	Tray1:1	ACN	HRMS Check 22:06
2		22:53	P503407	WINDOW	87077	EPA1613_ALS	Dioxin_ALS	Tray1:2		
3		23:42	P503408	MB	EQ1600106-01	EPA1613_ALS	Dioxin_ALS	Tray1:3		
4	3/19/2016	00:30	P503409	MB	EQ1600119-01	EPA1613_ALS	Dioxin_ALS	Tray1:4		
5		01:19	P503410	E1600200-001	E1600200-001	EPA1613_ALS	Dioxin_ALS	Tray1:5		
6		02:07	P503411	E1600200-002	E1600200-002	EPA1613_ALS	Dioxin_ALS	Tray1:6		
7		02:56	P503412	E1600200-003	E1600200-003	EPA1613_ALS	Dioxin_ALS	Tray1:7		
8		03:45	P503413	E1600200-004	E1600200-004	EPA1613_ALS	Dioxin_ALS	Tray1:8		
9		04:33	P503414	K1602302-001	K1602302-001	EPA1613_ALS	Dioxin_ALS	Tray1:9		
10		05:22	P503415	K1602467-001	K1602467-001	EPA1613_ALS	Dioxin_ALS	Tray1:10		
11		06:11	P503416	K1602509-001	K1602509-001	EPA1613_ALS	Dioxin_ALS	Tray1:11		
12		06:59	P503417	E1600203-001	E1600203-001	EPA1613_ALS	Dioxin_ALS	Tray1:12		
13		07:48	P503418	E1600203-005	E1600203-005	EPA1613_ALS	Dioxin_ALS	Tray1:13		
14		08:37	P503419	E1600203-006	E1600203-006	EPA1613_ALS	Dioxin_ALS	Tray1:14		
15		09:25	P503420	K1602299-003	K1602299-003	EPA1613_ALS	Dioxin_ALS	Tray1:15		
16		10:22	P503421	CS3	86619	EPA1613_ALS	Dioxin_ALS	Tray1:16		HRMS Check 10:22
17			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:17		
18			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:18		
19			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:19		
20			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:20		
21			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:21		
22			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:22		
23			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:23		
24			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:24		
25			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:25		
26			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:26		
27			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:27		
28			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:28		
29			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:29		
30			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:30		
31			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:31		
32			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:32		
33			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:33		
34			FC	03/24/16		EPA1613_ALS	Dioxin_ALS	Tray1:34		
35			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:35		
36			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:36		
37			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:37		
38			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:38		
39			---	---	---	EPA1613_ALS	Dioxin_ALS	Tray1:39		

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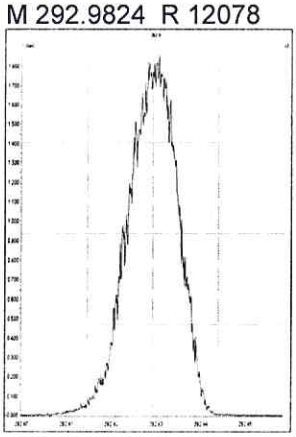

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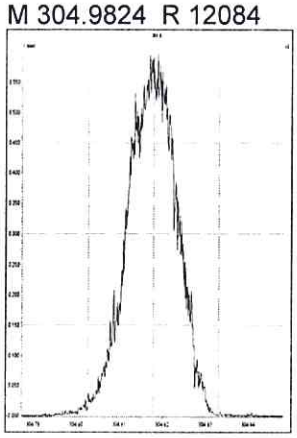

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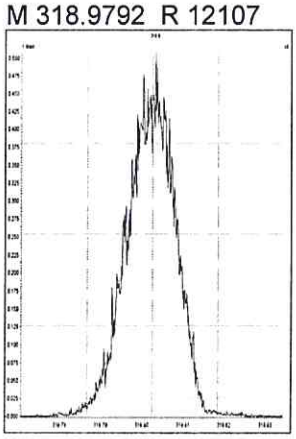
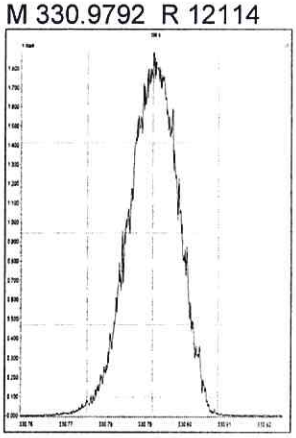


M 330.9792 R 12114



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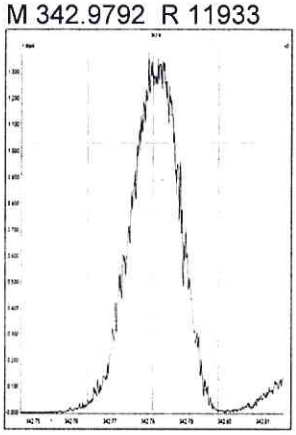
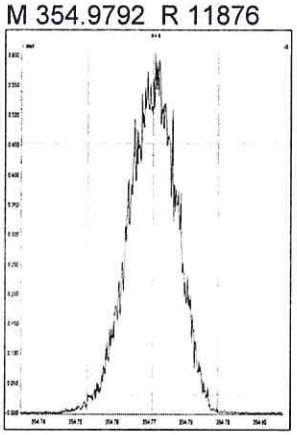
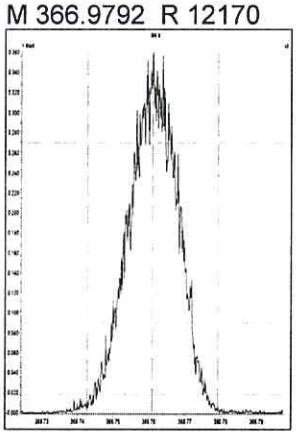


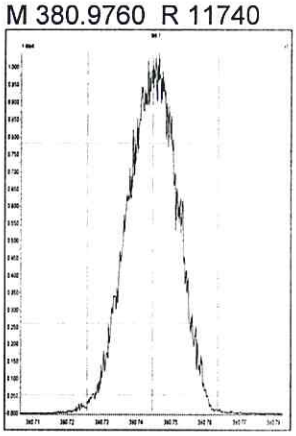
M 354.9792 R 11876



M 366.9792 R 12170



M 380.9760 R 11740



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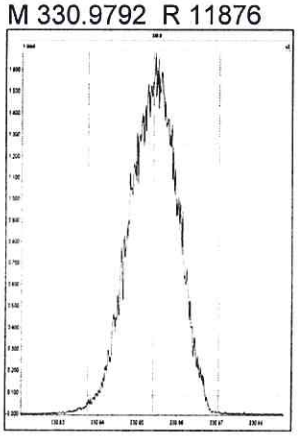
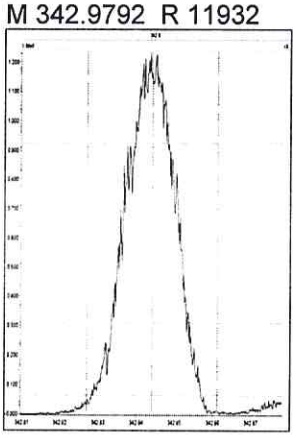
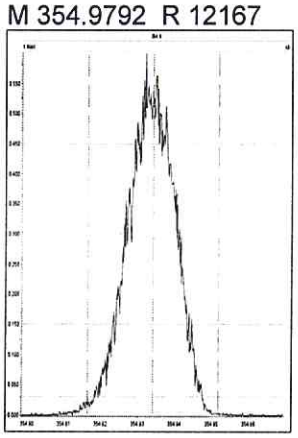


M 342.9792 R 11932



M 354.9792 R 12167



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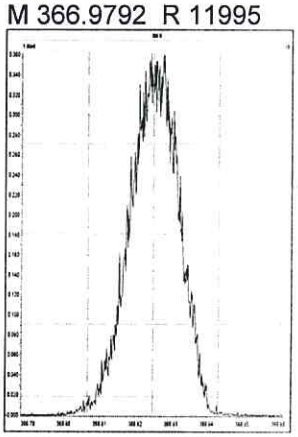

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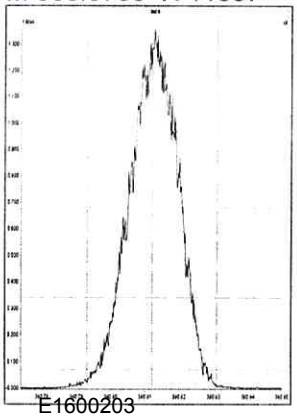
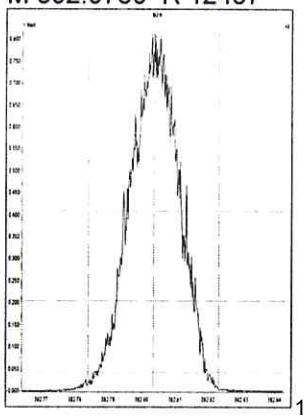
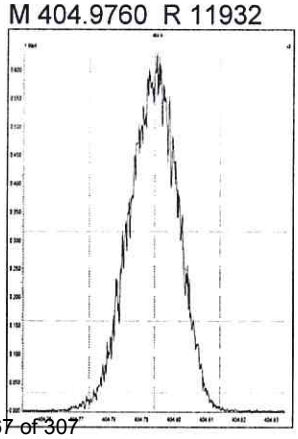


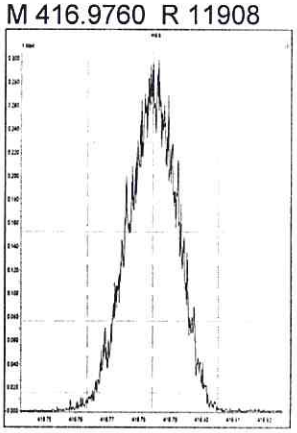
M 392.9760 R 12457



M 404.9760 R 11932



M 416.9760 R 11908



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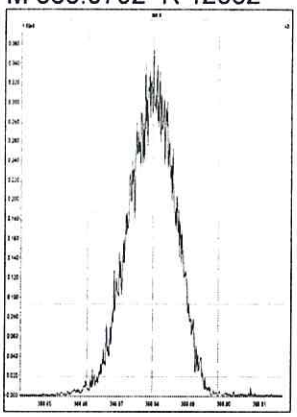
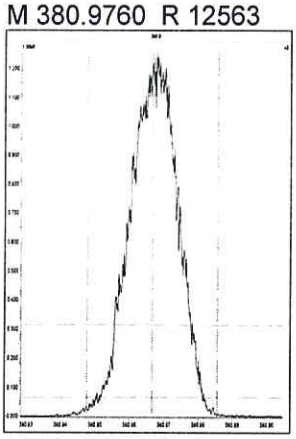
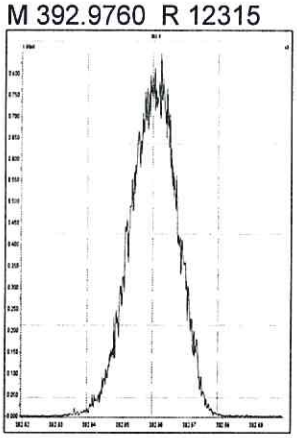
M 366.9792 R 12562



M 380.9760 R 12563



M 392.9760 R 12315



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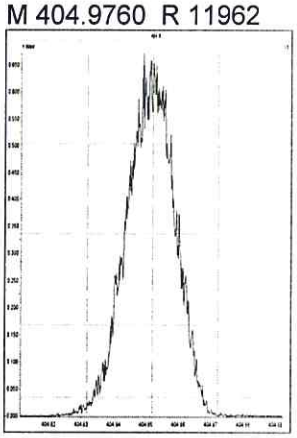
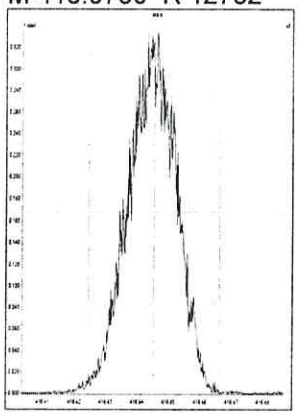
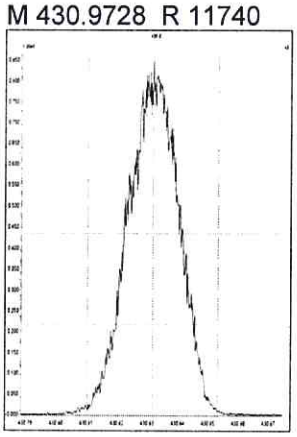


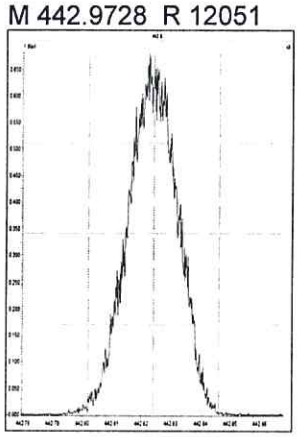
M 416.9760 R 12732



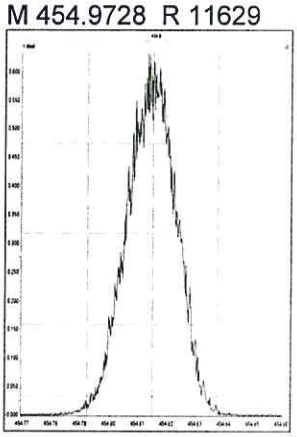
M 430.9728 R 11740



M 442.9728 R 12051



M 454.9728 R 11629



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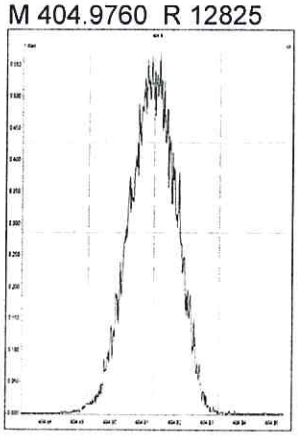

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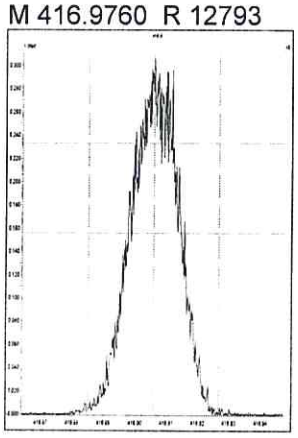
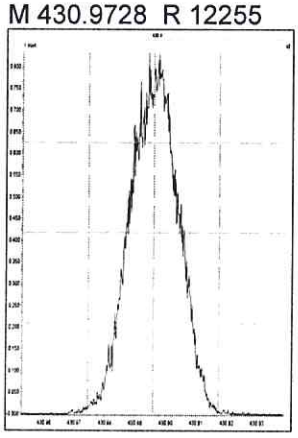


M 430.9728 R 12255



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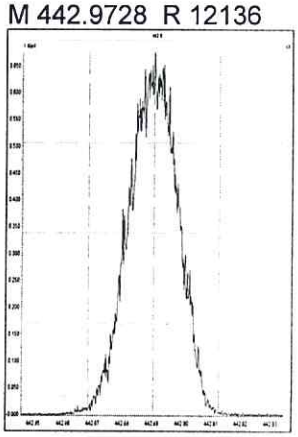

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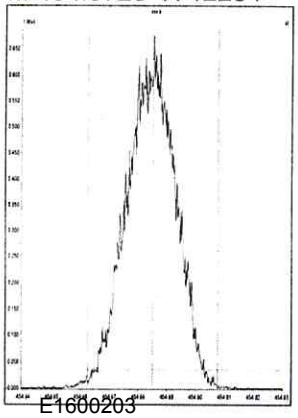

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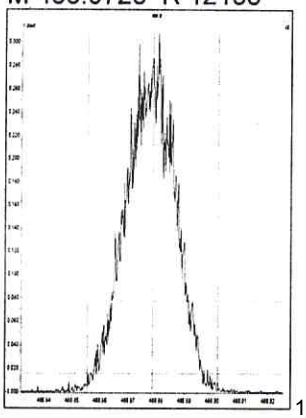

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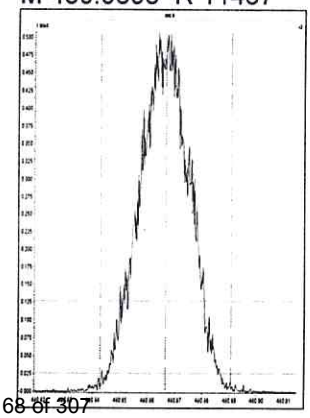

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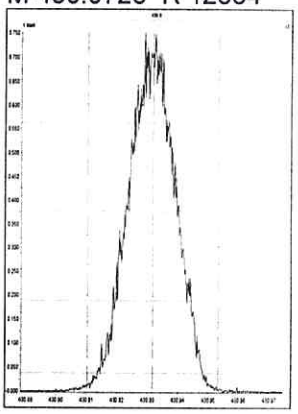

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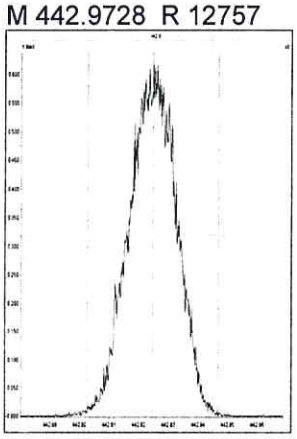

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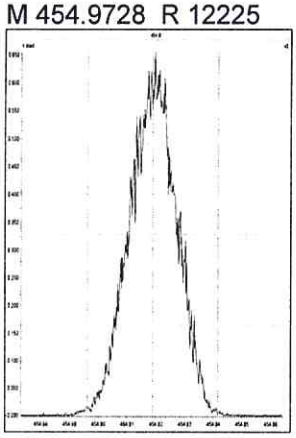

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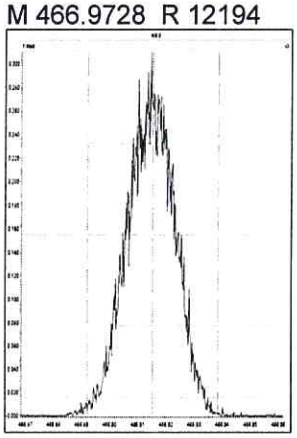

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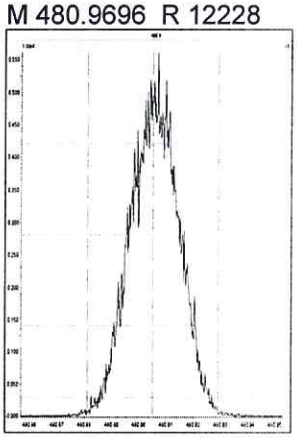

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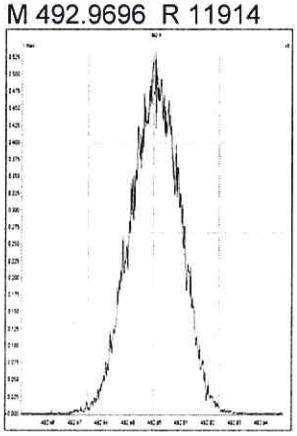

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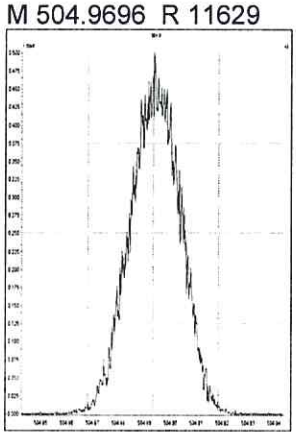

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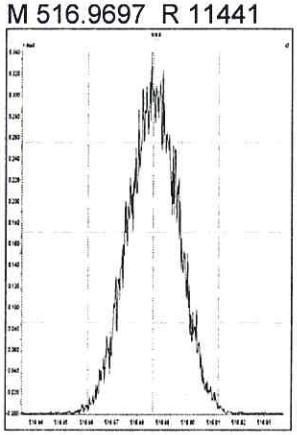

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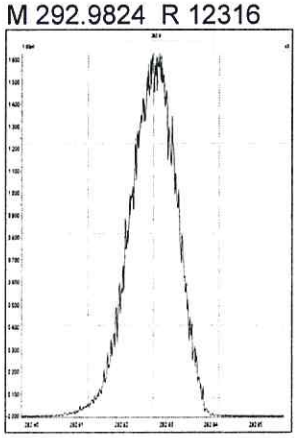

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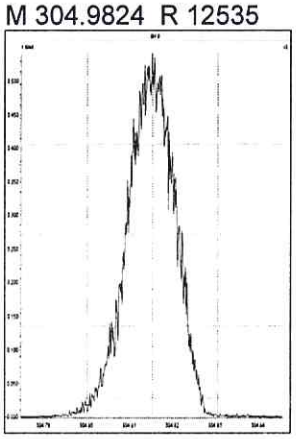

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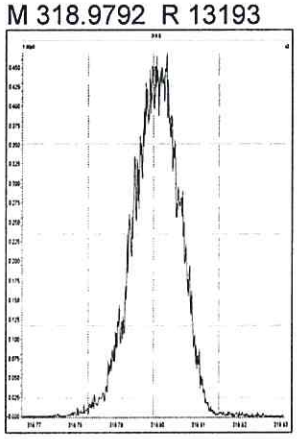

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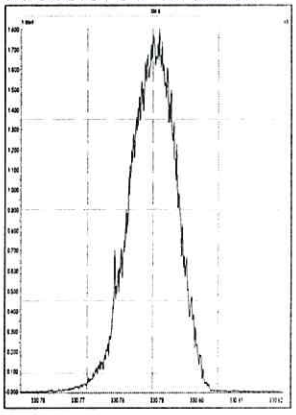

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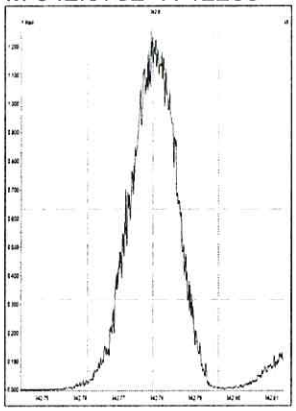

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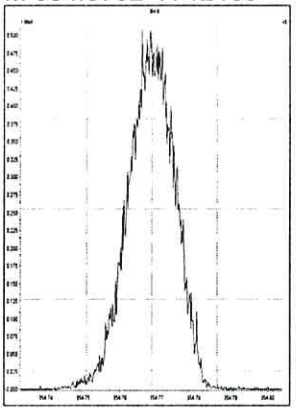

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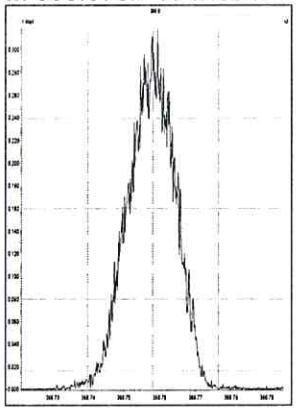

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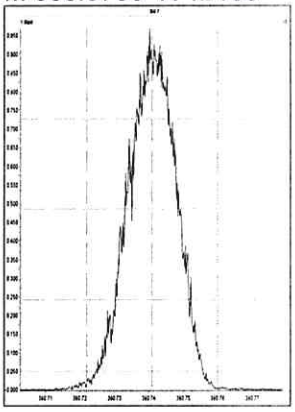

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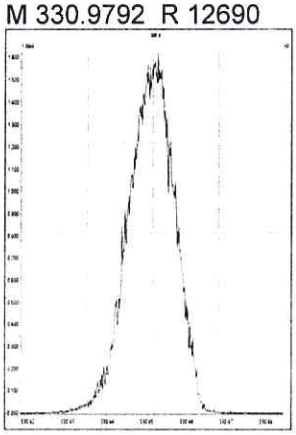

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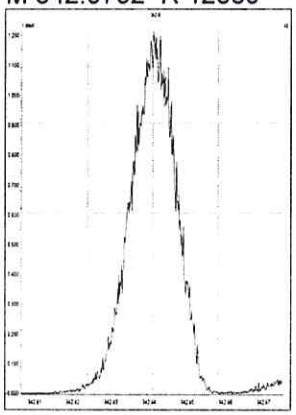

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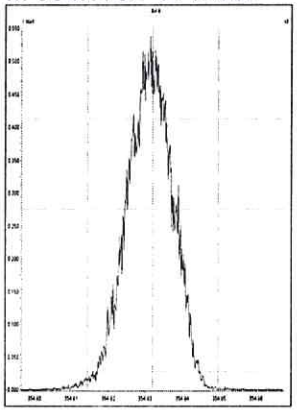

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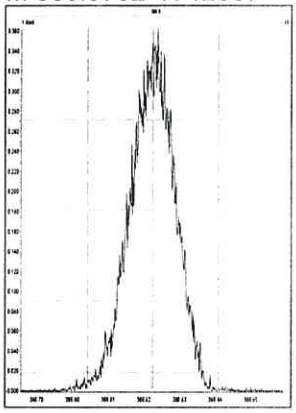

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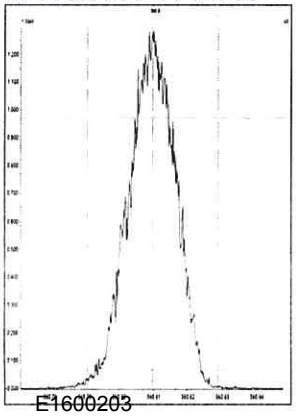

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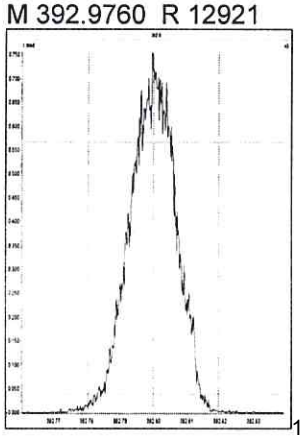

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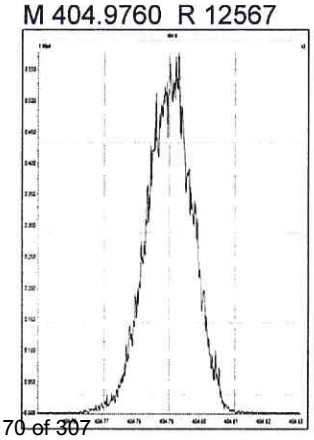

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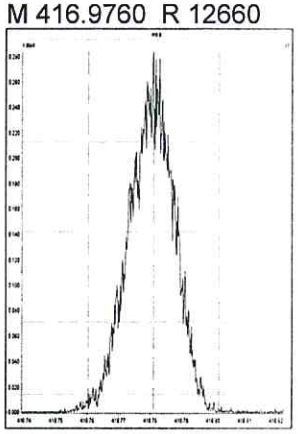

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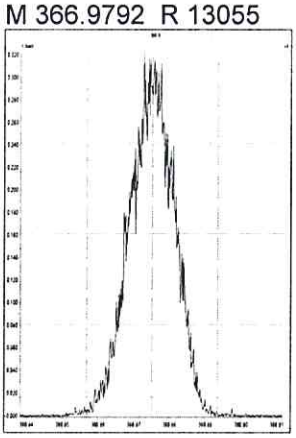

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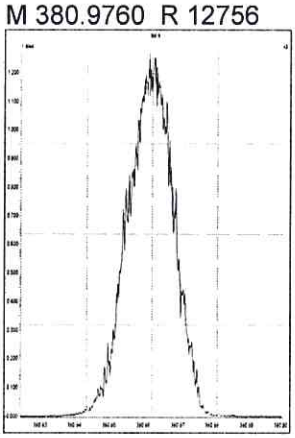

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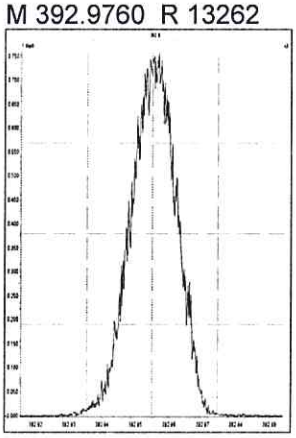

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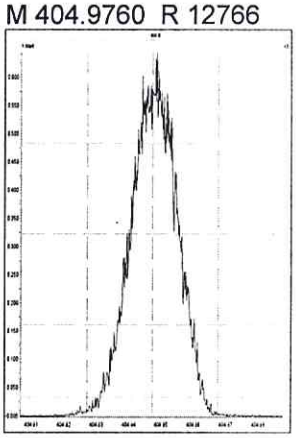

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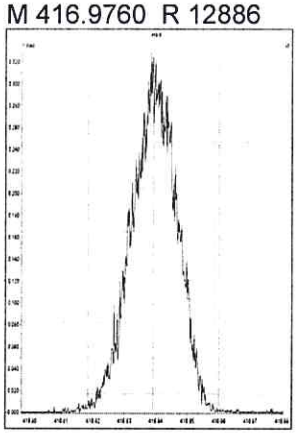

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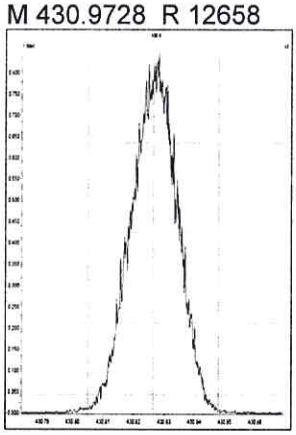
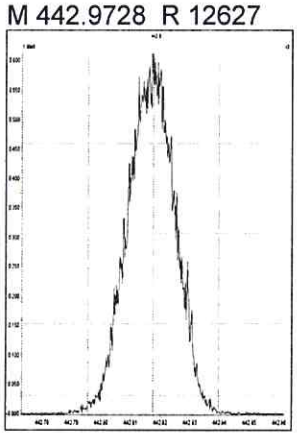


M 442.9728 R 12627



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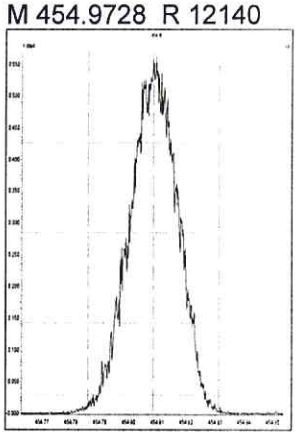

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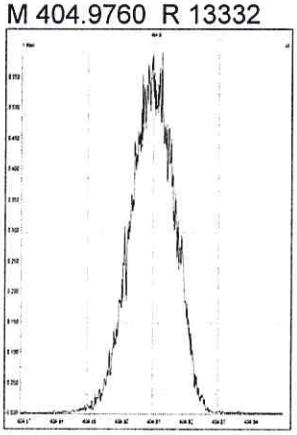

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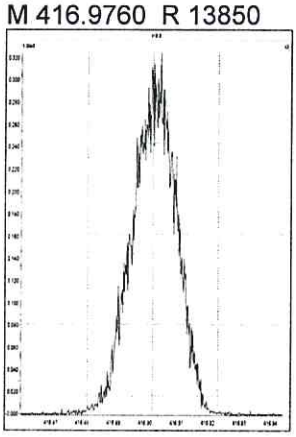

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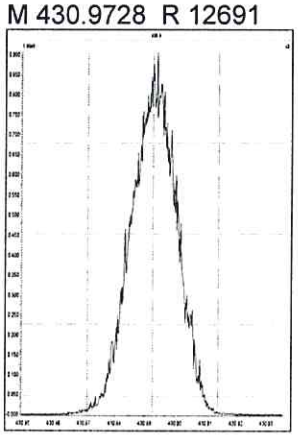

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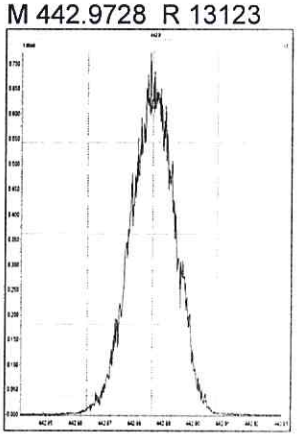

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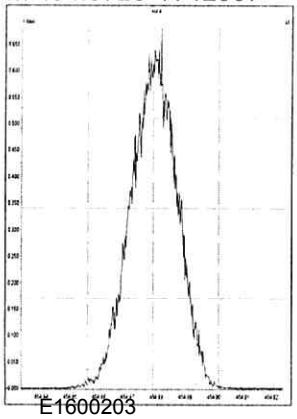

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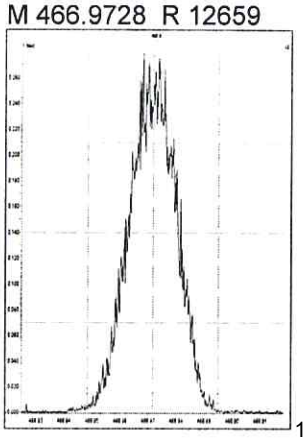

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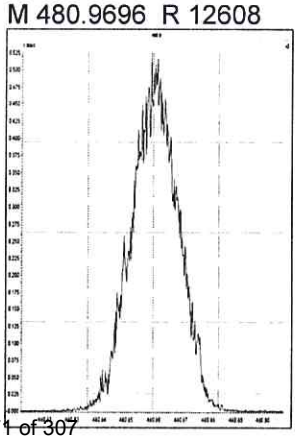

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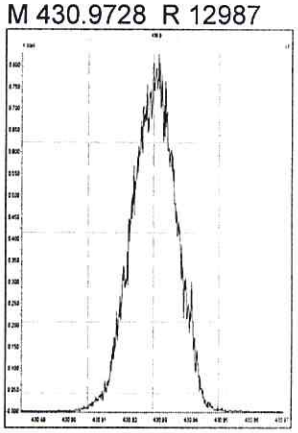

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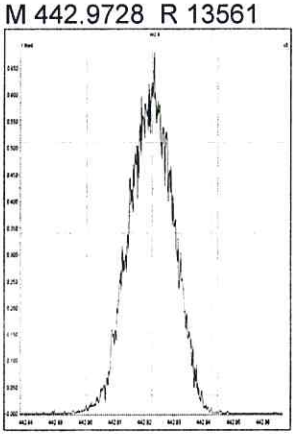

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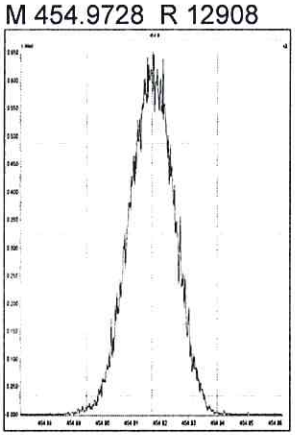

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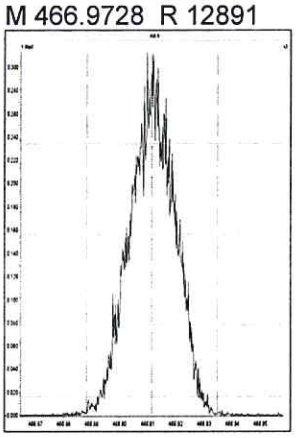

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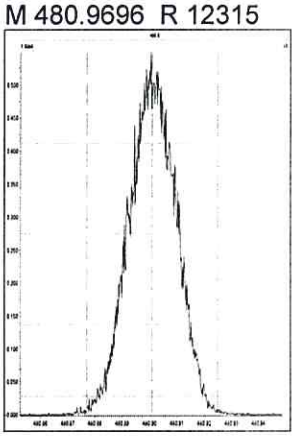

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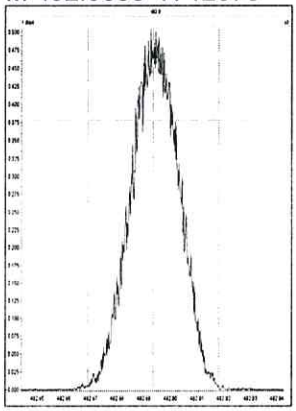

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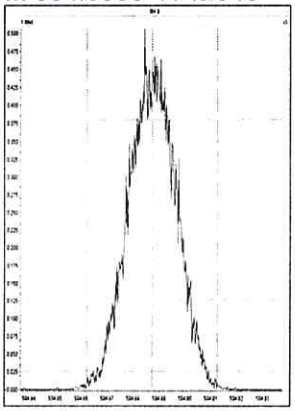

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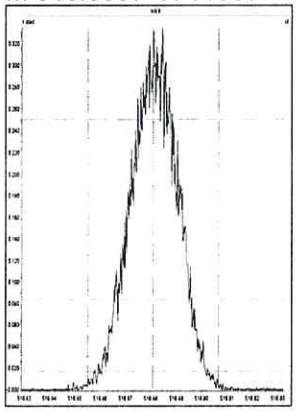


5DFA

WINDOW DEFINING MIX SUMMARY

CLIENT ID:

WDM

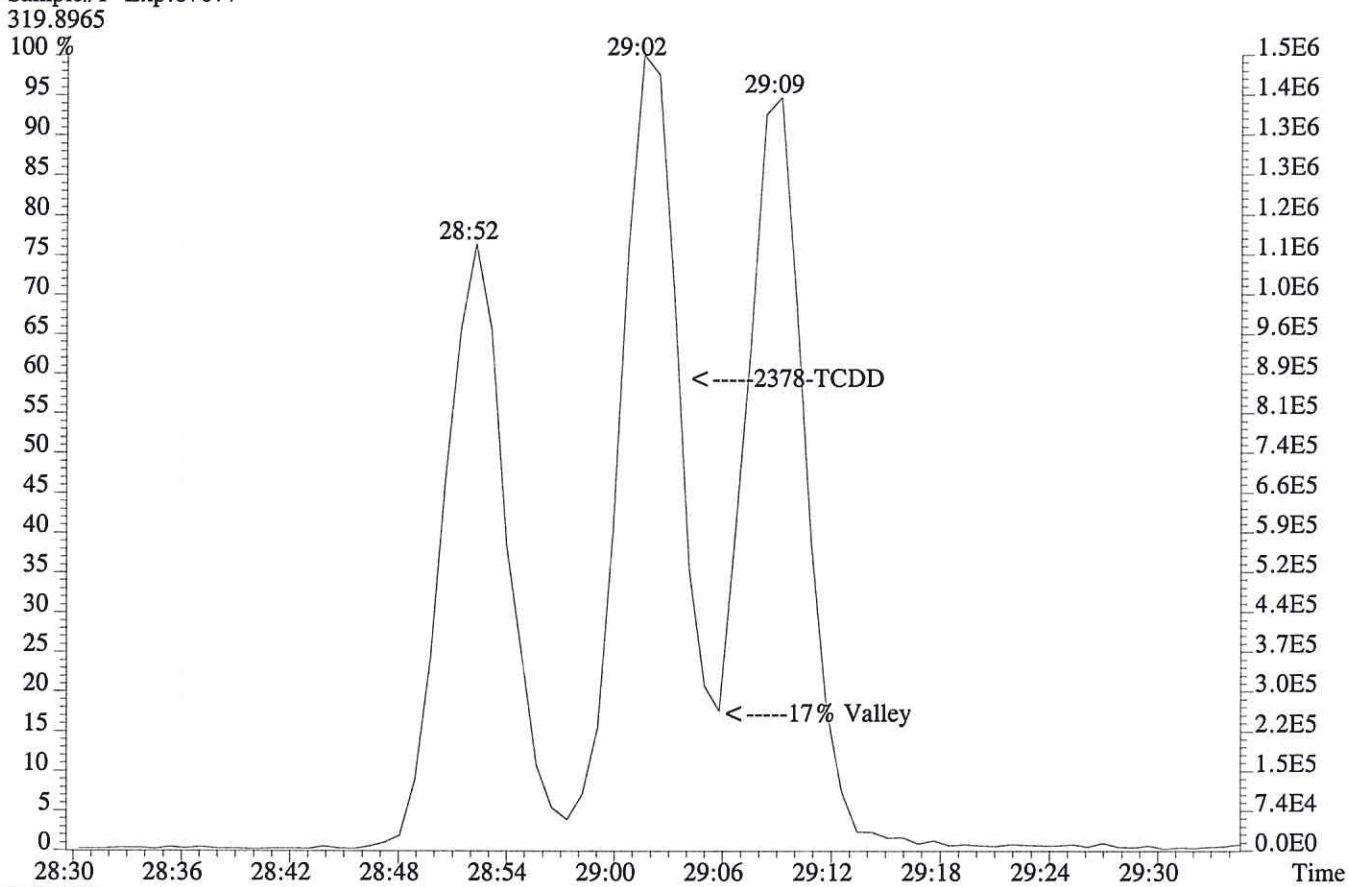
Lab Name: ALS Environmental
Lab Code: ALSTX
GC Column: DB-5MSUI

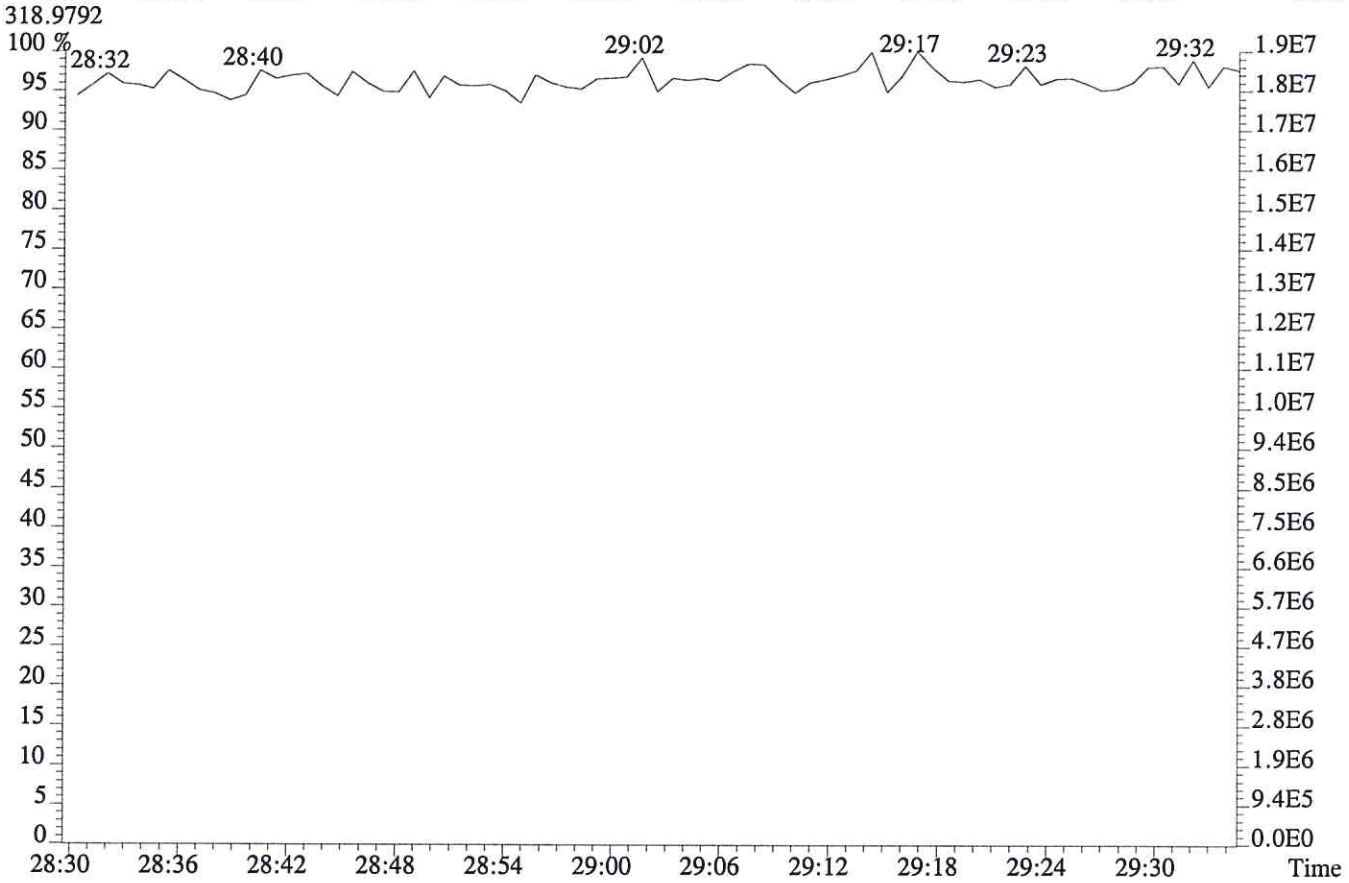
Case No.: _____ SDG No.:
ID: 0.25 (mm)
Lab File ID: P503407
Date Analyzed: 18-MAR-2016
Time Analyzed: 22:53:18

Congener	Retention Time First Eluting	Retention Time Last Eluting
TCDF	23:56	30:10
TCDD	25:47	30:01
PeCDF	30:08	34:18
PeCDD	31:37	34:03
HxCDF	34:57	37:25
HxCDD	35:28	37:02
HpCDF	38:37	40:01
HpCDD	38:52	39:32

% Valley 2378-TCDD: 17 %

File:P503407 #1-793 Acq:18-MAR-2016 22:53:18 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:87077





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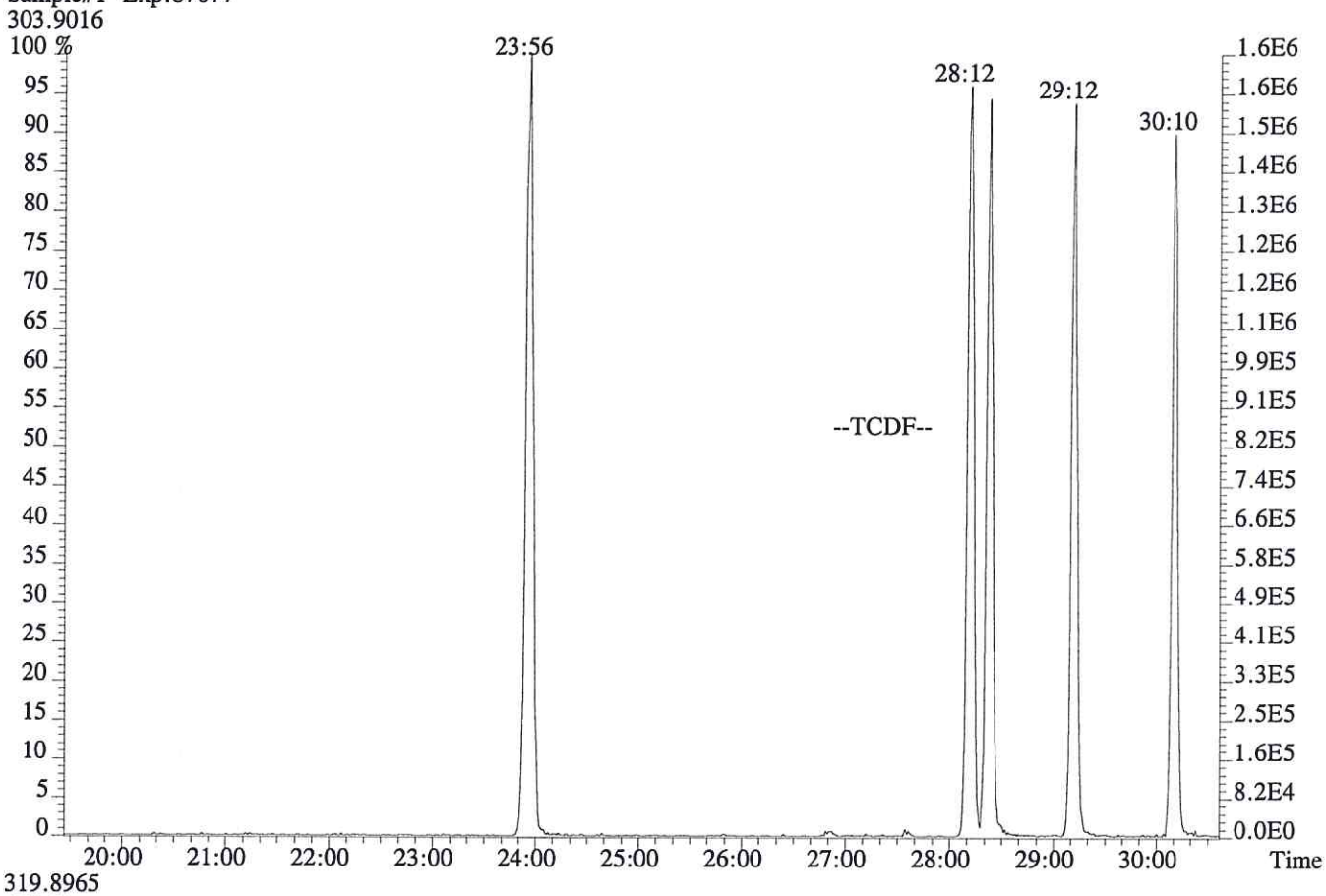
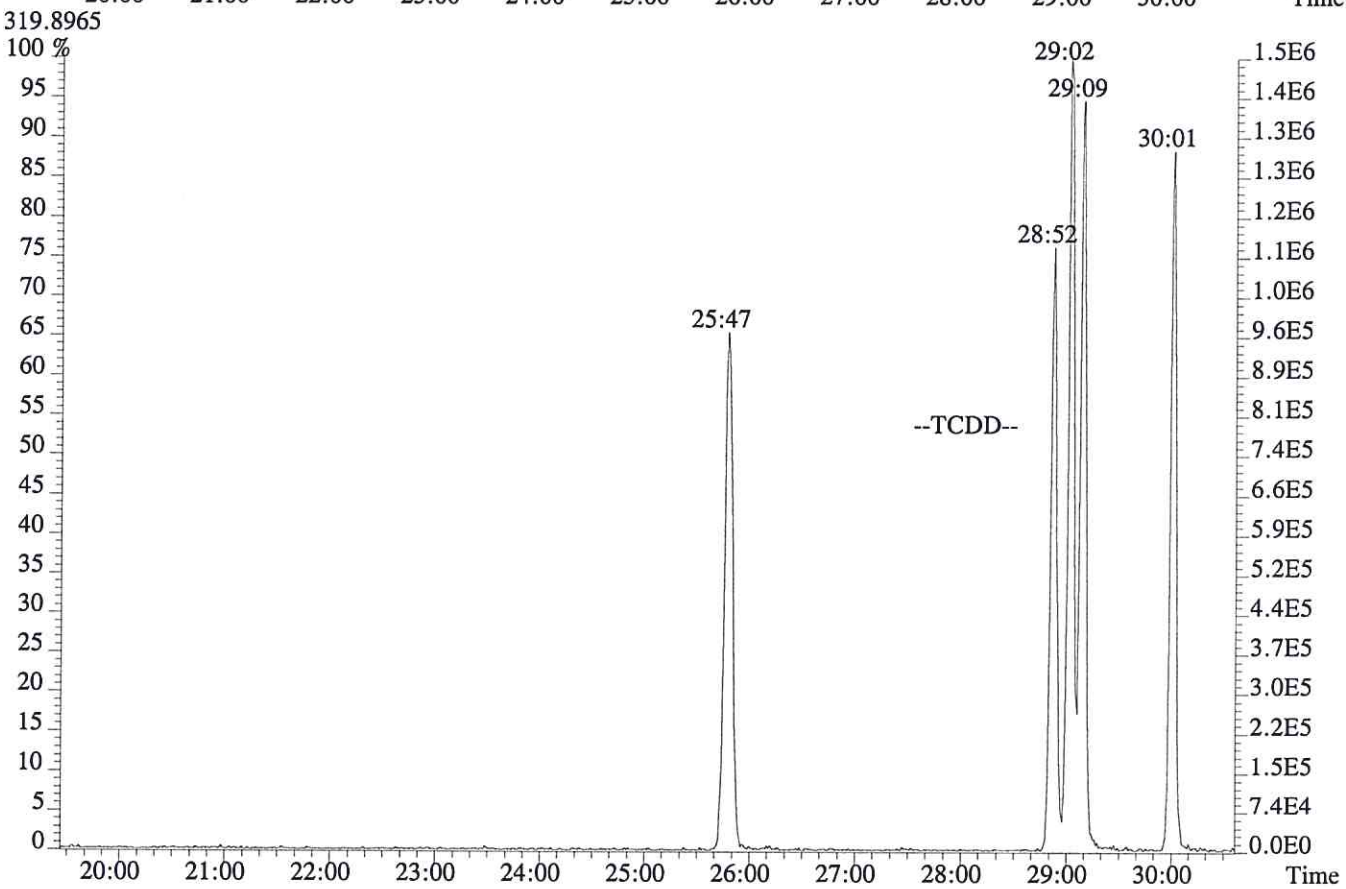
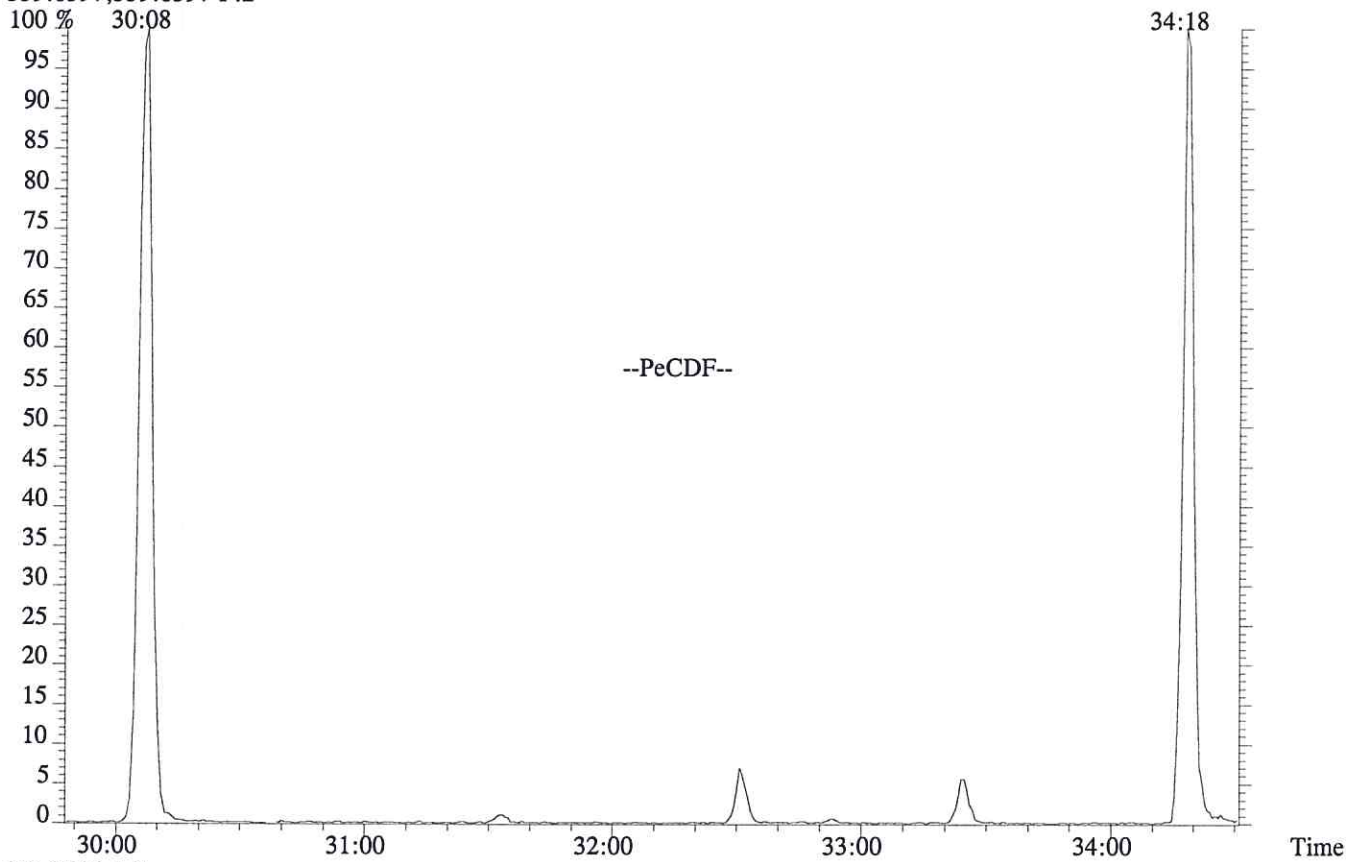
Sample#1 Exp:87077

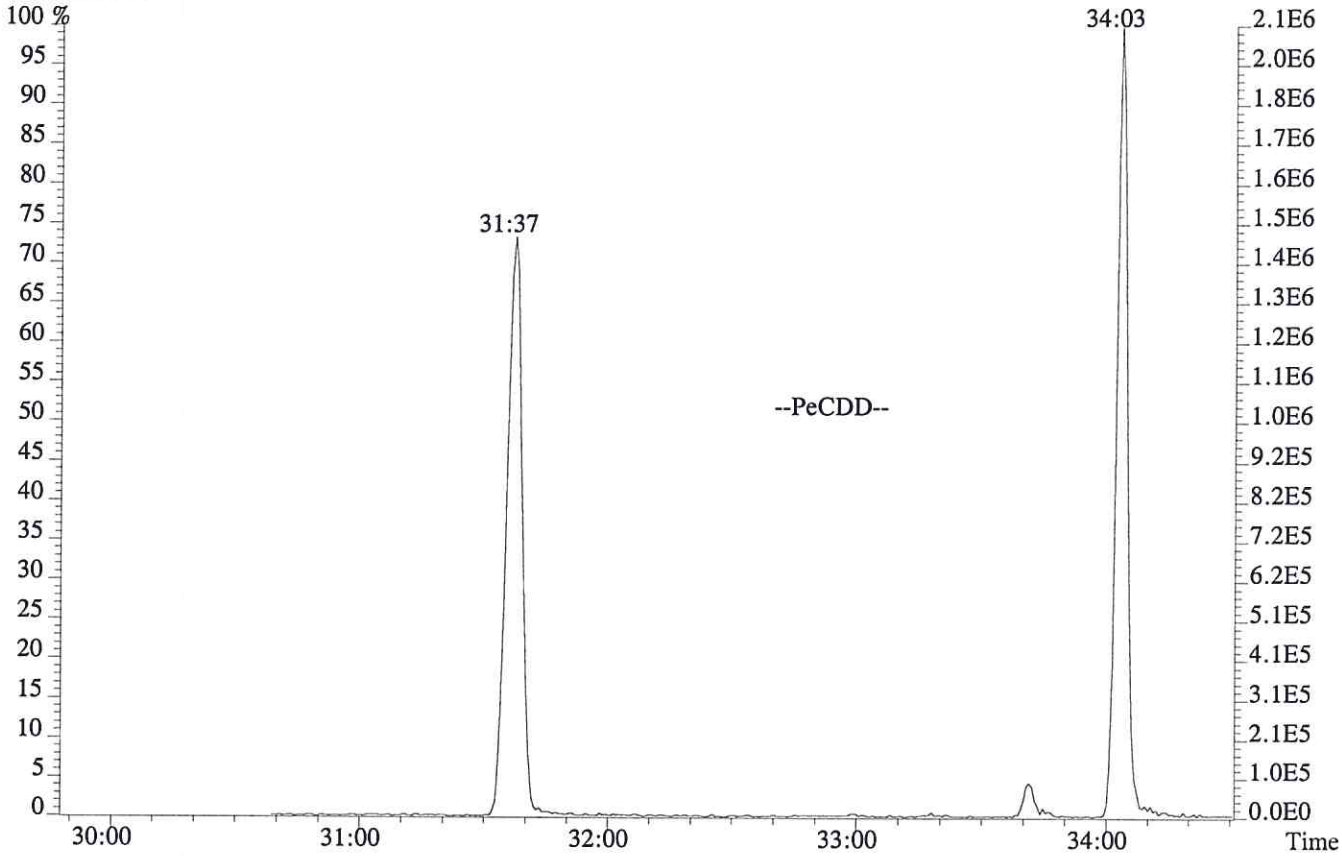




File:P503407 #1-793 Acq:18-MAR-2016 22:53:18 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:87077
339.8597,339.8597 F:2



355.8546 F:2



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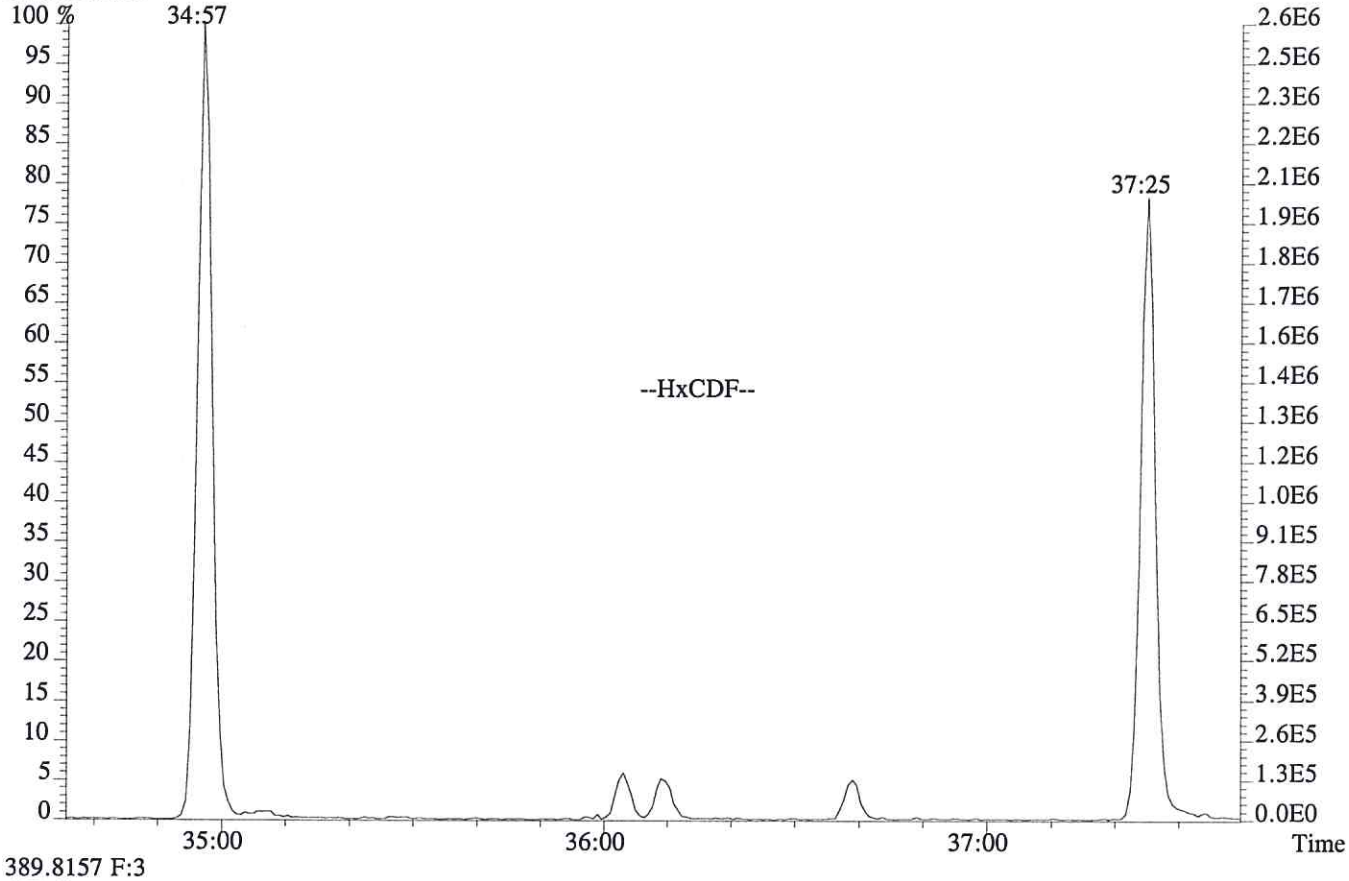
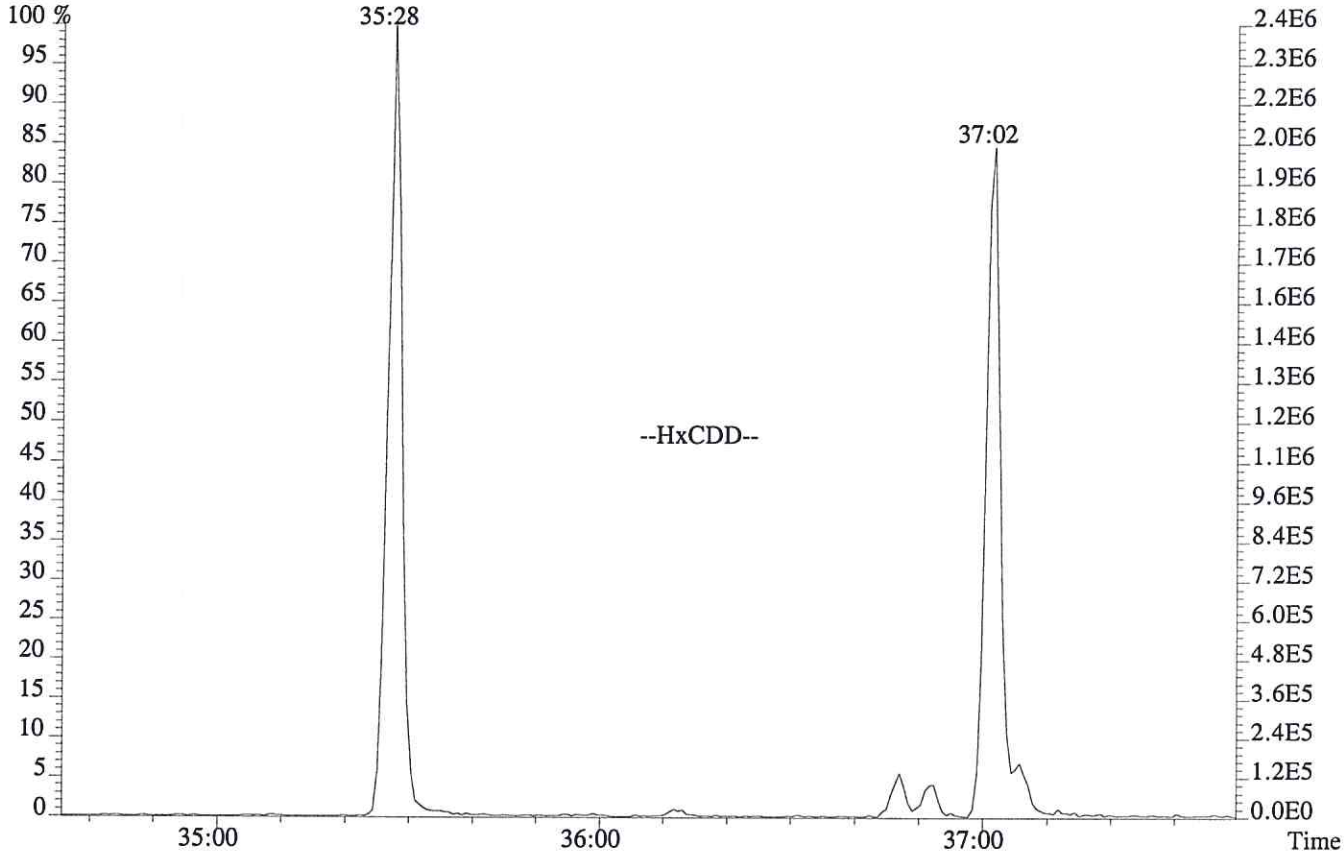
Sample#1 Exp:87077
373.8208 F:3



389.8157 F:3



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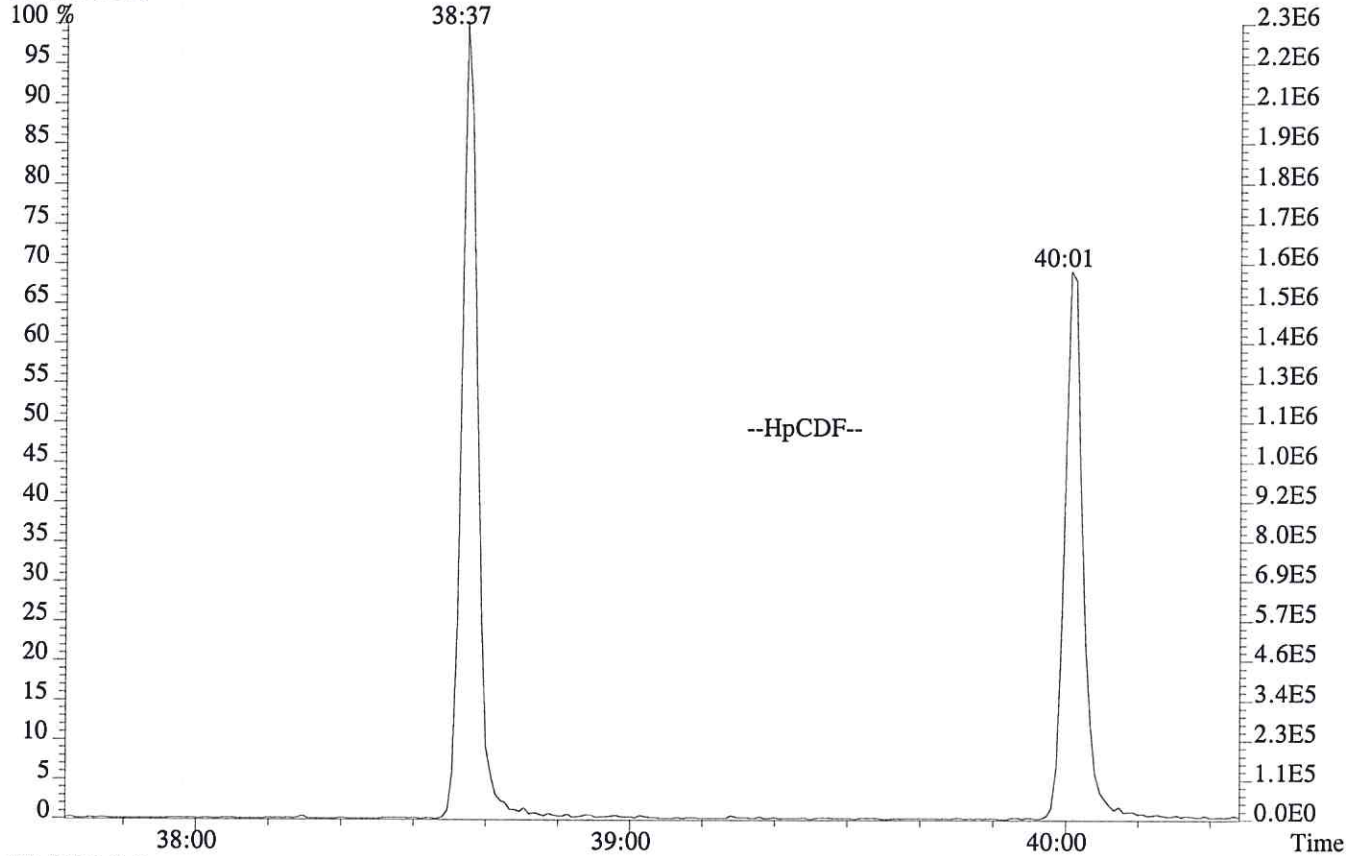
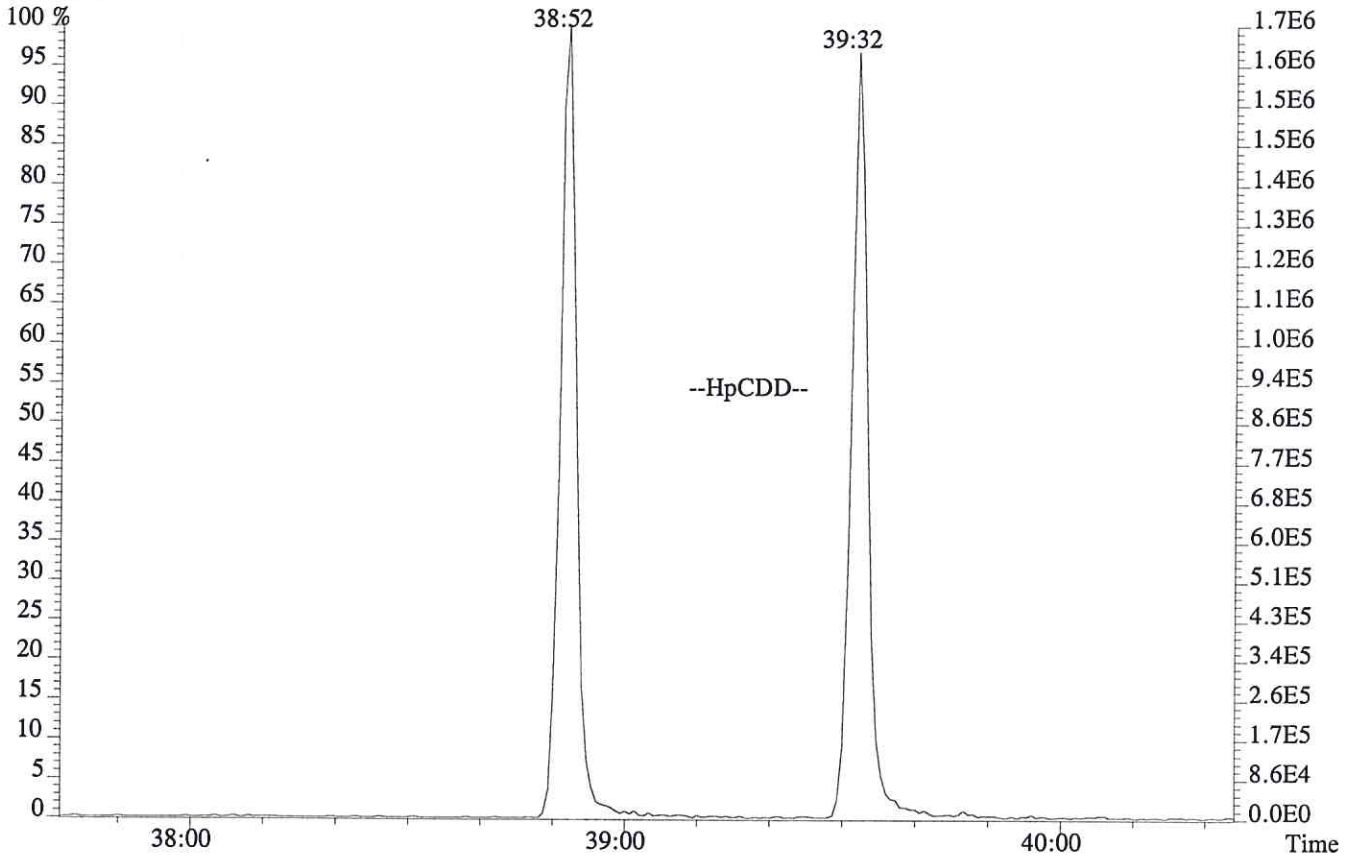
Sample#1 Exp:87077
407.7818 F:4



423.7766 F:4



USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 6/30/15

Instrument ID: E-HRMS-07 GC Column ID: DB-5MSUI

VER Data Filename: P503406 Analysis Date: 18-MAR-16 Time: 22:06:36

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	0.77	0.65-0.89	10.1	7.8 - 12.9	1.2
1,2,3,7,8-PeCDD	M+2/M+4	1.58	1.32-1.78	50	39 - 65	0.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	49	39 - 64	-1.7
1,2,3,6,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	51	39 - 64	2.1
1,2,3,7,8,9-HxCDD	M+2/M+4	1.27	1.05-1.43	47	41 - 61	-5.2
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.05	0.88-1.20	50	43 - 58	-0.6
OCDD	M+2/M+4	0.87	0.76-1.02	100	79 - 126	0.3
2,3,7,8-TCDF	M/M+2	0.71	0.65-0.89	10.0	8.4 - 12.0	-0.2
1,2,3,7,8-PeCDF	M+2/M+4	1.51	1.32-1.78	49	41 - 60	-2.2
2,3,4,7,8-PeCDF	M+2/M+4	1.51	1.32-1.78	48	41 - 61	-4.2
1,2,3,4,7,8-HxCDF	M+2/M+4	1.19	1.05-1.43	49	45 - 56	-1.0
1,2,3,6,7,8-HxCDF	M+2/M+4	1.18	1.05-1.43	49	44 - 57	-2.6
1,2,3,7,8,9-HxCDF	M+2/M+4	1.24	1.05-1.43	48	45 - 56	-3.7
2,3,4,6,7,8-HxCDF	M+2/M+4	1.18	1.05-1.43	49	44 - 57	-2.6
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.02	0.88-1.20	48	45 - 55	-3.4
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.00	0.88-1.20	48	43 - 58	-3.3
OCDF	M+2/M+4	0.88	0.76-1.02	96	63 - 159	-4.4

(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: 6/30/15

Instrument ID: E-HRMS-07 GC Column ID: DB-5MSUI

VER Data Filename: P503406 Analysis Date: 18-MAR-16 Time: 22:06:36

	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (5)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	M/M+2	0.79	0.65-0.89	92	82 - 121	-8.0
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.60	1.32-1.78	94	62 - 160	-5.6
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.28	1.05-1.43	106	85 - 117	6.1
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	103	85 - 118	2.8
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.07	0.88-1.20	99	72 - 138	-1.1
13C-OCDD	M+2/M+4	0.91	0.76-1.02	221	96 - 415	10.5
13C-2,3,7,8-TCDF	M/M+2	0.79	0.65-0.89	91	71 - 140	-8.9
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.59	1.32-1.78	91	76 - 130	-8.9
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.57	1.32-1.78	93	77 - 130	-7.3
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.52	0.43-0.59	89	76 - 131	-11.1
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	0.52	0.43-0.59	89	74 - 135	-10.5
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.52	0.43-0.59	97	73 - 137	-2.7
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.45	0.37-0.51	107	78 - 129	7.0
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.45	0.37-0.51	88	77 - 129	-12.0
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	M+2/M+4			9.5	7.8 - 12.7	-4.7

(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) No ion abundance ratio; report concentration found.
(5) The beginnning 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.
86619

Run #7 Filename P503406 Samp: 1 Inj: 1 Acquired: 18-MAR-16 22:06:36
Processed: 23-MAR-16 17:51:04 Sample ID: CS3

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	28:23	4.582e+03	6.469e+03	0.71	yes	no	0.886
2	Unk	1,2,3,7,8-PeCDF	32:31	3.744e+04	2.482e+04	1.51	yes	no	0.983
3	Unk	2,3,4,7,8-PeCDF	33:25	3.511e+04	2.327e+04	1.51	yes	no	0.952
4	Unk	1,2,3,4,7,8-HxCDF	36:03	3.079e+04	2.586e+04	1.19	yes	no	1.190
5	Unk	1,2,3,6,7,8-HxCDF	36:10	3.222e+04	2.720e+04	1.18	yes	no	1.114
6	Unk	2,3,4,6,7,8-HxCDF	36:39	2.936e+04	2.493e+04	1.18	yes	no	1.109
7	Unk	1,2,3,7,8,9-HxCDF	37:24	2.674e+04	2.156e+04	1.24	yes	no	1.153
8	Unk	1,2,3,4,6,7,8-HpCDF	38:38	2.822e+04	2.758e+04	1.02	yes	no	1.376
9	Unk	1,2,3,4,7,8,9-HpCDF	40:01	2.202e+04	2.193e+04	1.00	yes	no	1.306
10	Unk	OCDF	42:30	3.544e+04	4.028e+04	0.88	yes	no	1.263
11	Unk	2,3,7,8-TCDD	29:09	3.924e+03	5.122e+03	0.77	yes	no	0.997
12	Unk	1,2,3,7,8-PeCDD	33:41	2.721e+04	1.727e+04	1.58	yes	no	0.935
13	Unk	1,2,3,4,7,8-HxCDD	36:47	2.457e+04	1.950e+04	1.26	yes	no	1.039
14	Unk	1,2,3,6,7,8-HxCDD	36:52	2.332e+04	1.881e+04	1.24	yes	no	0.996
15	Unk	1,2,3,7,8,9-HxCDD	37:06	2.483e+04	1.961e+04	1.27	yes	no	1.108
16	Unk	1,2,3,4,6,7,8-HpCDD	39:33	2.076e+04	1.974e+04	1.05	yes	no	1.010
17	Unk	OCDD	42:18	3.200e+04	3.659e+04	0.87	yes	no	1.090
18	IS	13C-2,3,7,8-TCDF	28:22	5.516e+04	6.986e+04	0.79	yes	no	1.447
19	IS	13C-1,2,3,7,8-PeCDF	32:30	7.954e+04	5.002e+04	1.59	yes	no	1.500
20	IS	13C-2,3,4,7,8-PeCDF	33:23	7.813e+04	4.985e+04	1.57	yes	no	1.456
21	IS	13C-1,2,3,4,7,8-HxCDF	36:02	3.270e+04	6.349e+04	0.52	yes	no	1.207
22	IS	13C-1,2,3,6,7,8-HxCDF	36:09	3.716e+04	7.244e+04	0.51	yes	no	1.263
23	IS	13C-2,3,4,6,7,8-HxCDF	36:38	3.450e+04	6.601e+04	0.52	yes	no	1.153
24	IS	13C-1,2,3,7,8,9-HxCDF	37:23	2.989e+04	5.714e+04	0.52	yes	no	1.085
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:37	2.596e+04	5.802e+04	0.45	yes	no	0.876
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:00	2.158e+04	4.803e+04	0.45	yes	no	0.883
27	IS	13C-2,3,7,8-TCDD	29:08	3.946e+04	5.020e+04	0.79	yes	no	1.027
28	IS	13C-1,2,3,7,8-PeCDD	33:41	5.859e+04	3.657e+04	1.60	yes	no	1.064
29	IS	13C-1,2,3,4,7,8-HxCDD	36:46	4.850e+04	3.778e+04	1.28	yes	no	0.908
30	IS	13C-1,2,3,6,7,8-HxCDD	36:51	4.621e+04	3.670e+04	1.26	yes	no	0.899
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:32	4.171e+04	3.896e+04	1.07	yes	no	0.910
32	IS	13C-OCDD	42:18	5.981e+04	6.557e+04	0.91	yes	no	0.633
33	RS/RT	13C-1,2,3,4-TCDD	28:35	4.204e+04	5.278e+04	0.80	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:05	4.986e+04	3.977e+04	1.25	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:09	9.637e+03				no	1.066

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.
86619

Run #7 Filename P503406 Samp: 1 Inj: 1 Acquired: 18-MAR-16 22:06:36
Processed: 23-MAR-16 17:51:04 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	8.40e+05	4.88e+02	1.7e+03	1.20e+06	3.02e+03	4.0e+02
2	1,2,3,7,8-PeCDF	6.92e+06	1.05e+03	6.6e+03	4.66e+06	2.46e+03	1.9e+03
3	2,3,4,7,8-PeCDF	7.07e+06	1.05e+03	6.7e+03	4.62e+06	2.46e+03	1.9e+03
4	1,2,3,4,7,8-HxCDF	6.62e+06	1.14e+03	5.8e+03	5.65e+06	3.32e+02	1.7e+04
5	1,2,3,6,7,8-HxCDF	6.80e+06	1.14e+03	6.0e+03	5.63e+06	3.32e+02	1.7e+04
6	2,3,4,6,7,8-HxCDF	6.43e+06	1.14e+03	5.6e+03	5.51e+06	3.32e+02	1.7e+04
7	1,2,3,7,8,9-HxCDF	5.74e+06	1.14e+03	5.0e+03	4.61e+06	3.32e+02	1.4e+04
8	1,2,3,4,6,7,8-HpCDF	5.97e+06	2.35e+03	2.5e+03	5.78e+06	6.76e+02	8.6e+03
9	1,2,3,4,7,8,9-HpCDF	4.33e+06	2.35e+03	1.8e+03	4.38e+06	6.76e+02	6.5e+03
10	OCDF	6.29e+06	1.04e+03	6.0e+03	7.21e+06	1.91e+03	3.8e+03
11	2,3,7,8-TCDD	7.56e+05	1.38e+03	5.5e+02	1.02e+06	1.12e+03	9.1e+02
12	1,2,3,7,8-PeCDD	5.49e+06	1.70e+03	3.2e+03	3.49e+06	1.84e+02	1.9e+04
13	1,2,3,4,7,8-HxCDD	5.48e+06	3.28e+02	1.7e+04	4.31e+06	7.44e+02	5.8e+03
14	1,2,3,6,7,8-HxCDD	5.21e+06	3.28e+02	1.6e+04	4.24e+06	7.44e+02	5.7e+03
15	1,2,3,7,8,9-HxCDD	5.34e+06	3.28e+02	1.6e+04	4.27e+06	7.44e+02	5.7e+03
16	1,2,3,4,6,7,8-HpCDD	4.35e+06	6.92e+02	6.3e+03	4.04e+06	3.00e+02	1.3e+04
17	OCDD	5.53e+06	6.24e+02	8.9e+03	6.26e+06	8.12e+02	7.7e+03
18	13C-2,3,7,8-TCDF	1.03e+07	1.88e+03	5.5e+03	1.30e+07	2.21e+03	5.9e+03
19	13C-1,2,3,7,8-PeCDF	1.50e+07	4.12e+02	3.6e+04	9.56e+06	1.49e+03	6.4e+03
20	13C-2,3,4,7,8-PeCDF	1.53e+07	4.12e+02	3.7e+04	9.78e+06	1.49e+03	6.6e+03
21	13C-1,2,3,4,7,8-HxCDF	7.18e+06	9.56e+02	7.5e+03	1.39e+07	1.72e+03	8.1e+03
22	13C-1,2,3,6,7,8-HxCDF	7.93e+06	9.56e+02	8.3e+03	1.53e+07	1.72e+03	8.9e+03
23	13C-2,3,4,6,7,8-HxCDF	7.57e+06	9.56e+02	7.9e+03	1.45e+07	1.72e+03	8.4e+03
24	13C-1,2,3,7,8,9-HxCDF	6.36e+06	9.56e+02	6.6e+03	1.23e+07	1.72e+03	7.1e+03
25	13C-1,2,3,4,6,7,8-HpCDF	5.56e+06	3.12e+03	1.8e+03	1.23e+07	7.36e+02	1.7e+04
26	13C-1,2,3,4,7,8,9-HpCDF	4.25e+06	3.12e+03	1.4e+03	9.53e+06	7.36e+02	1.3e+04
27	13C-2,3,7,8-TCDD	7.65e+06	6.09e+03	1.3e+03	9.72e+06	3.24e+03	3.0e+03
28	13C-1,2,3,7,8-PeCDD	1.14e+07	1.84e+03	6.2e+03	7.13e+06	6.36e+02	1.1e+04
29	13C-1,2,3,4,7,8-HxCDD	1.07e+07	1.98e+03	5.4e+03	8.26e+06	1.38e+03	6.0e+03
30	13C-1,2,3,6,7,8-HxCDD	1.02e+07	1.98e+03	5.2e+03	8.23e+06	1.38e+03	5.9e+03
31	13C-1,2,3,4,6,7,8-HpCDD	8.52e+06	1.88e+03	4.5e+03	7.84e+06	6.20e+02	1.3e+04
32	13C-OCDD	1.02e+07	7.00e+02	1.5e+04	1.11e+07	1.23e+03	9.0e+03
33	13C-1,2,3,4-TCDD	8.16e+06	6.09e+03	1.3e+03	1.03e+07	3.24e+03	3.2e+03
34	13C-1,2,3,7,8,9-HxCDD	1.09e+07	1.98e+03	5.5e+03	8.63e+06	1.38e+03	6.2e+03
35	37Cl-2,3,7,8-TCDD	1.92e+06	2.30e+03	8.3e+02			

---Sample Calculation---

$$\text{D/L TCDD} = \frac{2.5 \times (1.384e{+}03 + 1.116e{+}03\ ) \times 100}{(7.648e{+}06 + 9.719e{+}06\ ) \times (\qquad\qquad\qquad\qquad) \times 0.997} =$$

ALS ENVIRONMENTAL
10450 Stancliff Rd., Suite 115
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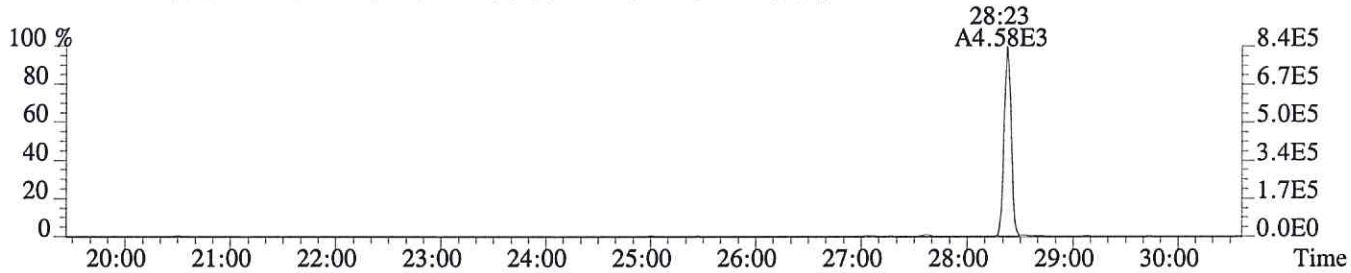
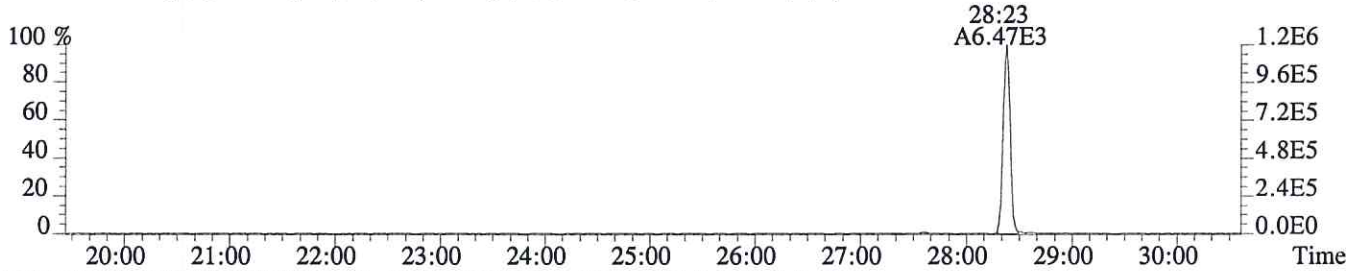
Office:(281)530-5656. Fax:(281)530-5887

File:P503406 #1-793 Acq:18-MAR-2016 22:06:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619

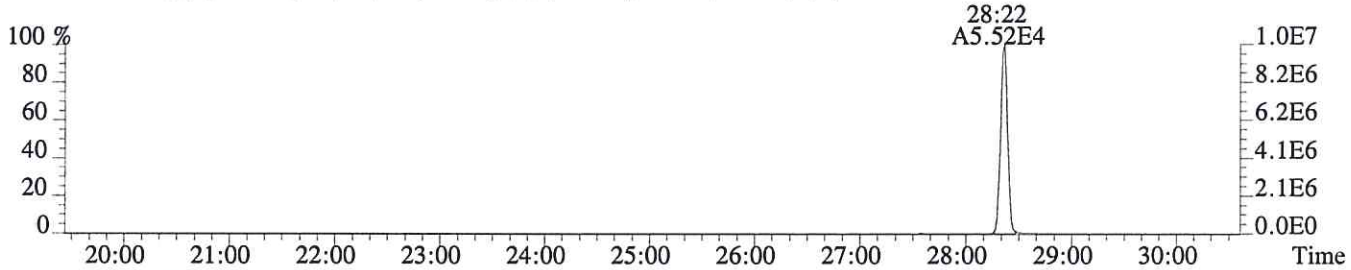
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,488.0,1.00%,F,T)



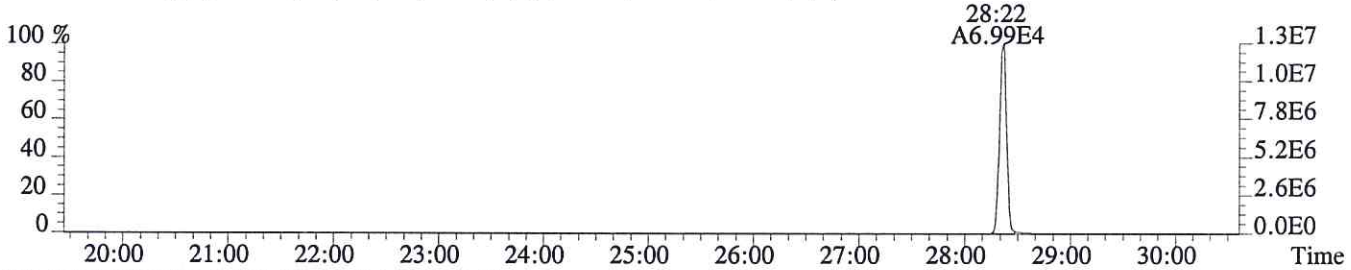
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3020.0,1.00%,F,T)



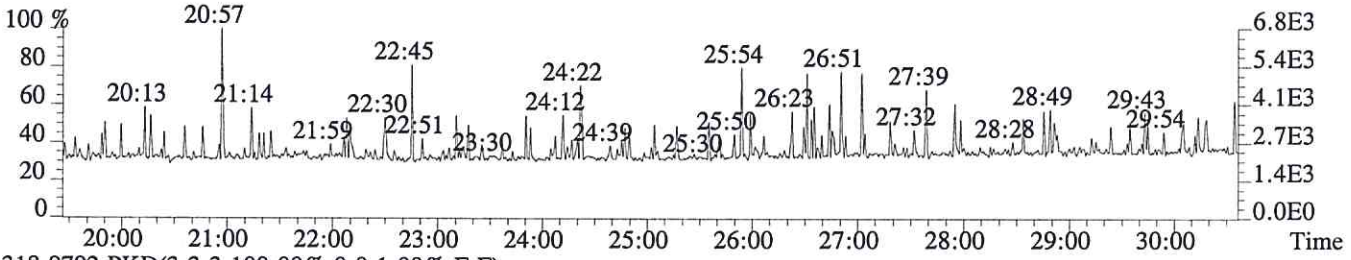
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1884.0,1.00%,F,T)



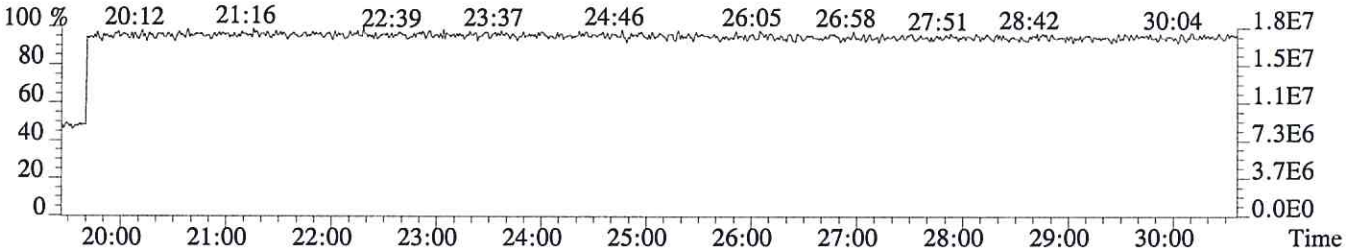
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2212.0,1.00%,F,T)



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

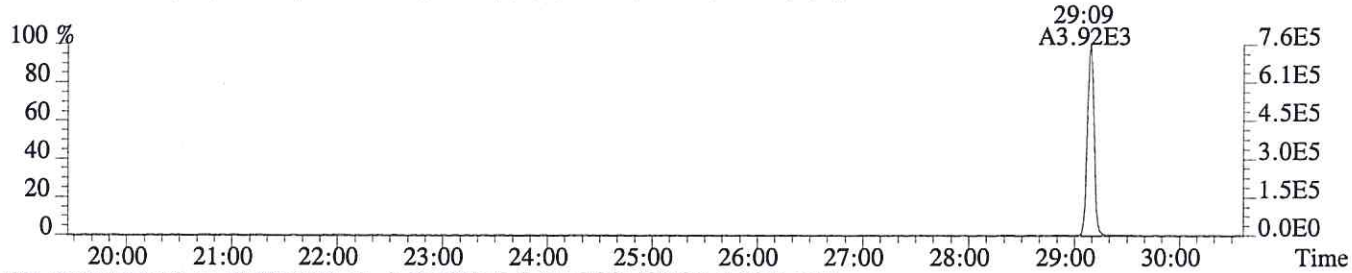


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

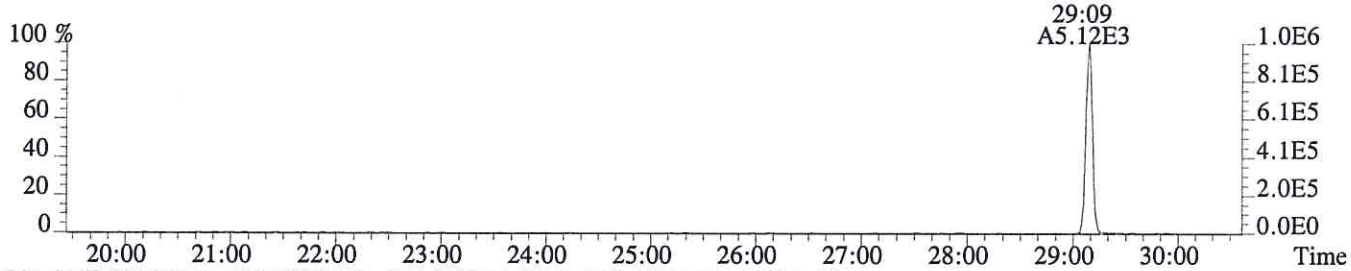


File:P503406 #1-793 Acq:18-MAR-2016 22:06:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619

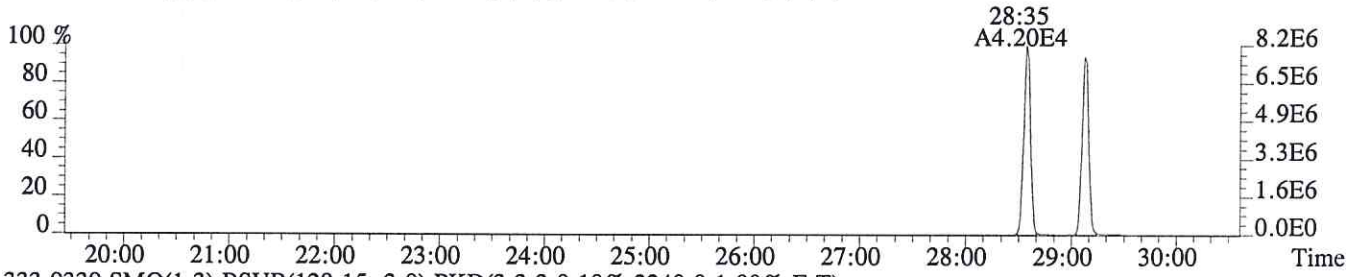
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1384.0,1.00%,F,T)



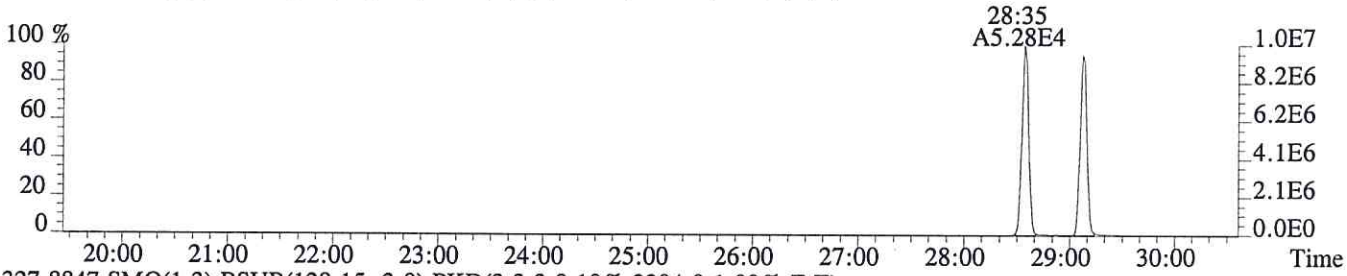
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1116.0,1.00%,F,T)



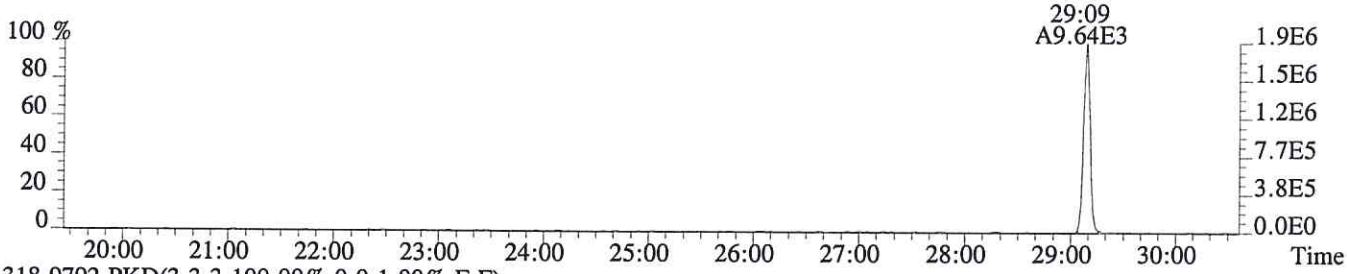
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6092.0,1.00%,F,T)



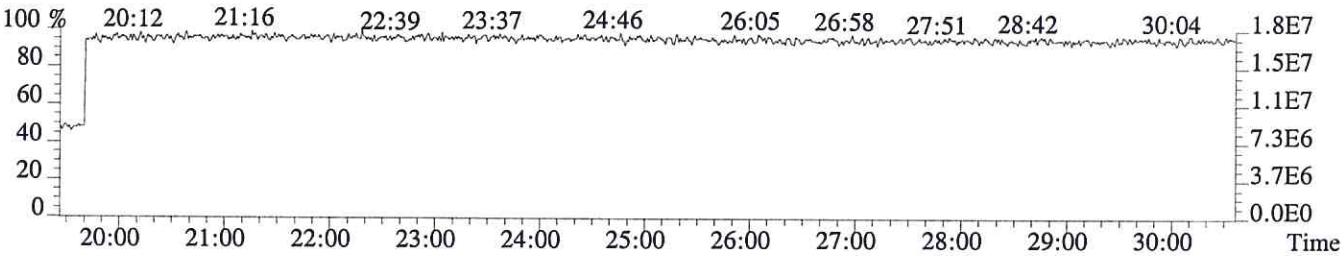
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3240.0,1.00%,F,T)



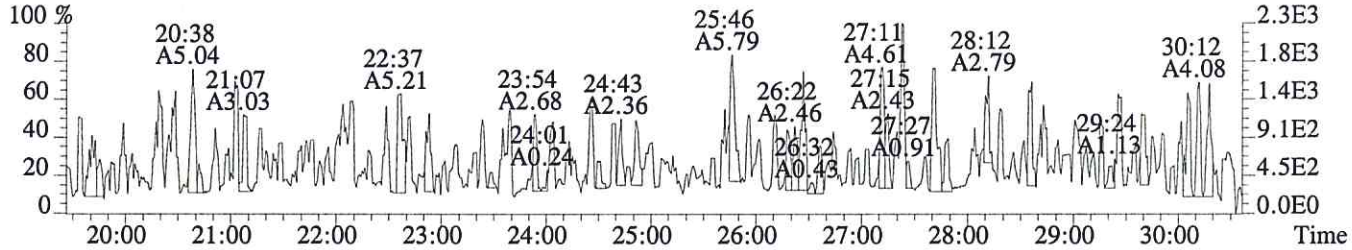
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2304.0,1.00%,F,T)



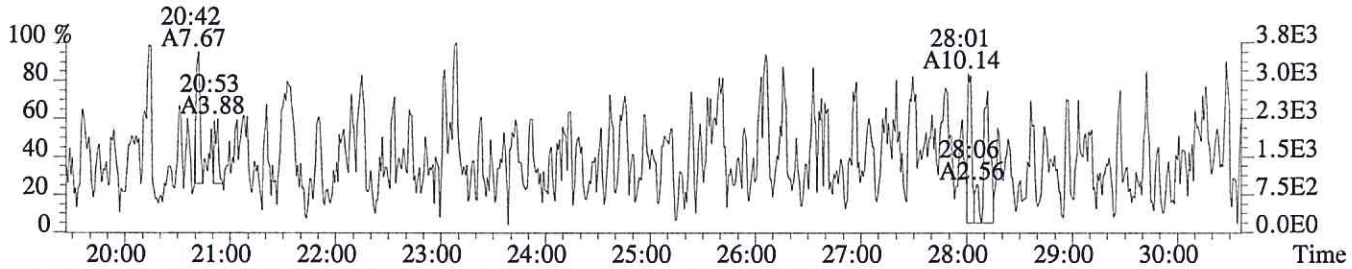
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



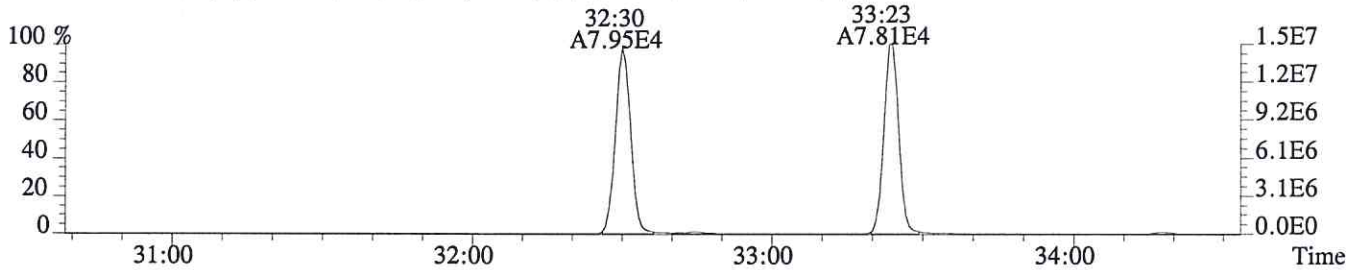
File:P503406 #1-793 Acq:18-MAR-2016 22:06:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,544.0,1.00%,F,T)



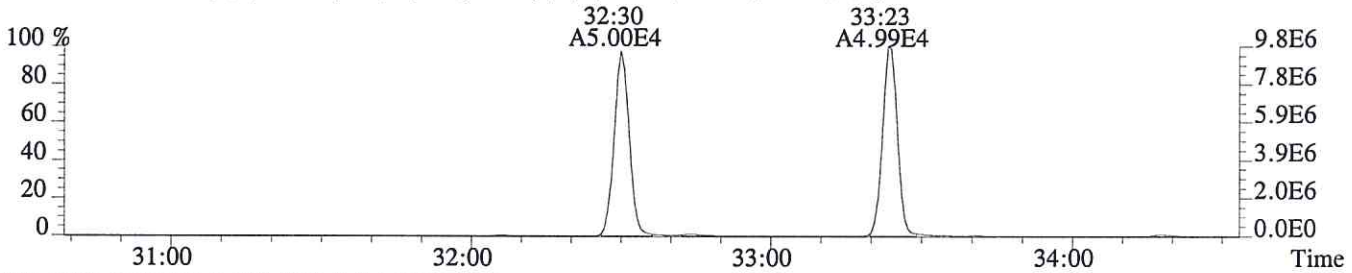
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1696.0,1.00%,F,T)



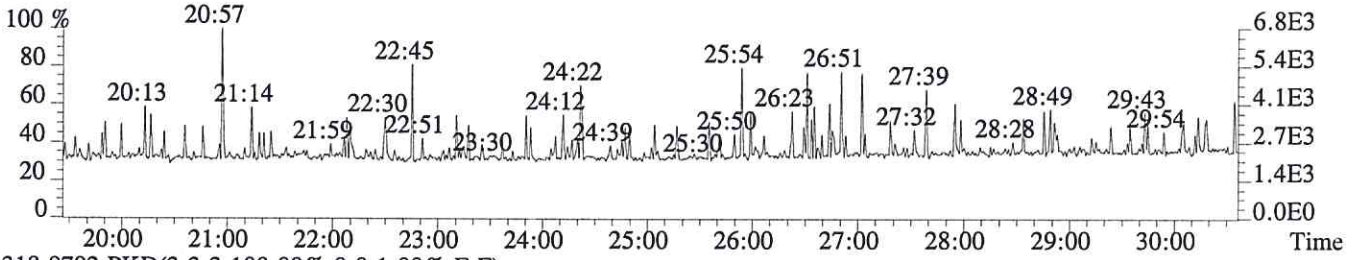
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,412.0,1.00%,F,T)



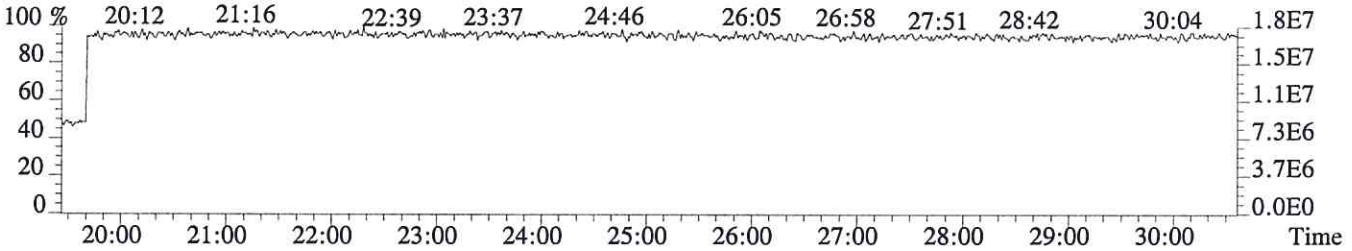
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1488.0,1.00%,F,T)



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

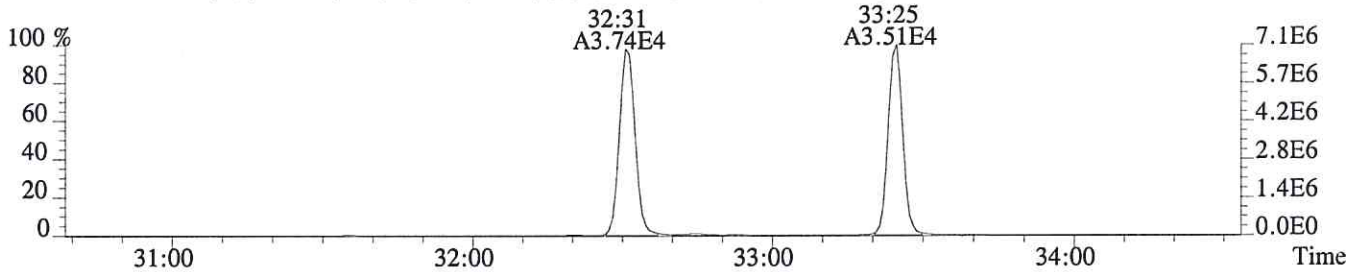


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

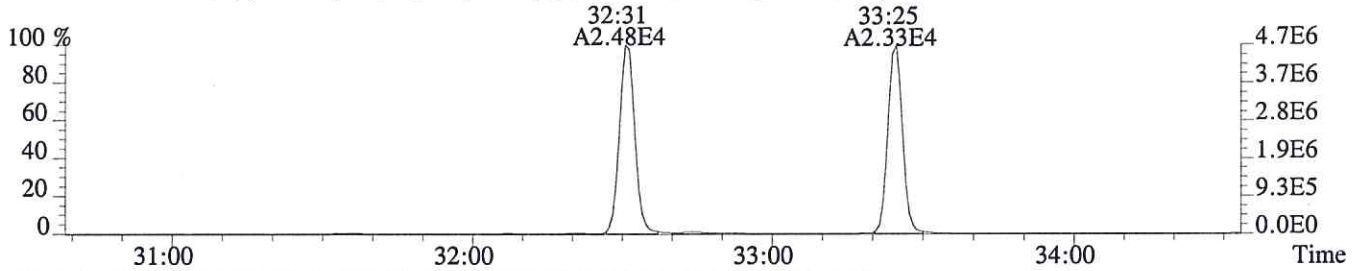


File:P503406 #1-353 Acq:18-MAR-2016 22:06:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619

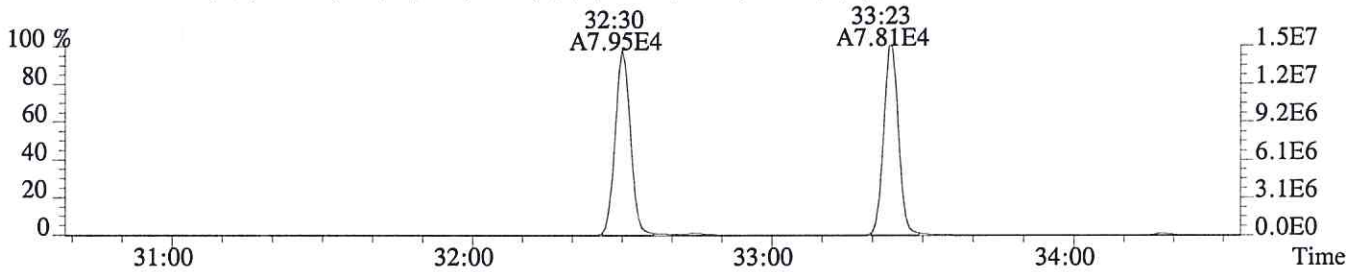
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1052.0,1.00%,F,T)



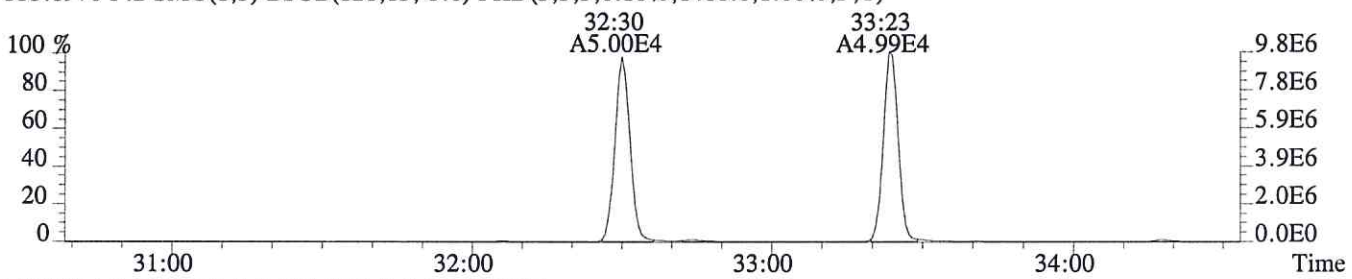
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2464.0,1.00%,F,T)



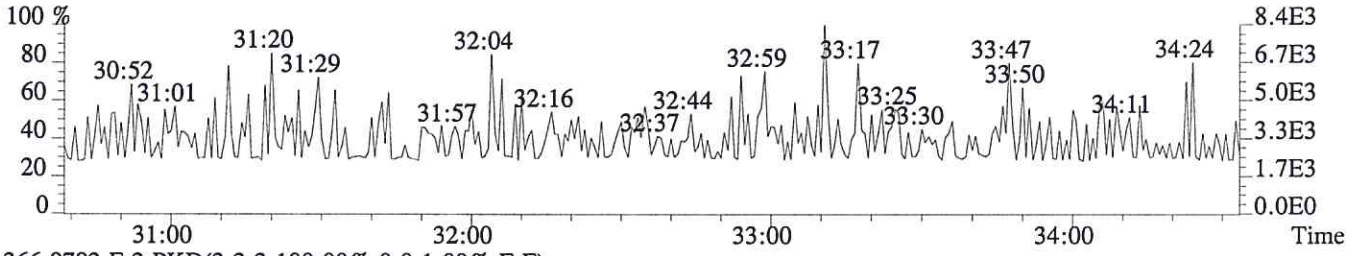
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,412.0,1.00%,F,T)



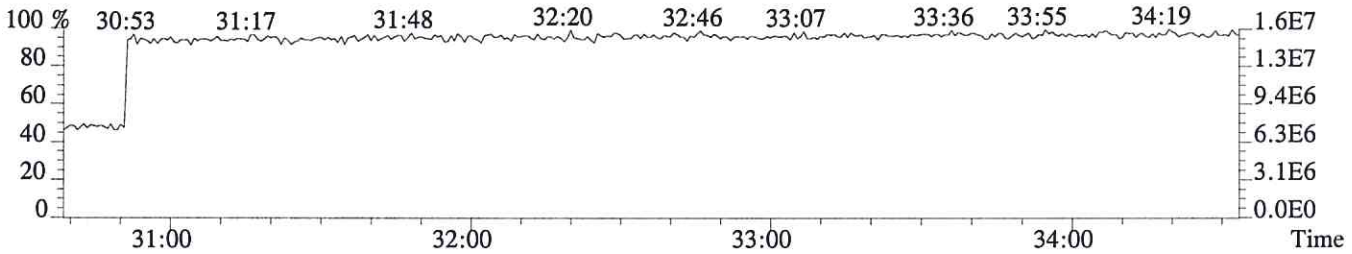
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1488.0,1.00%,F,T)



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

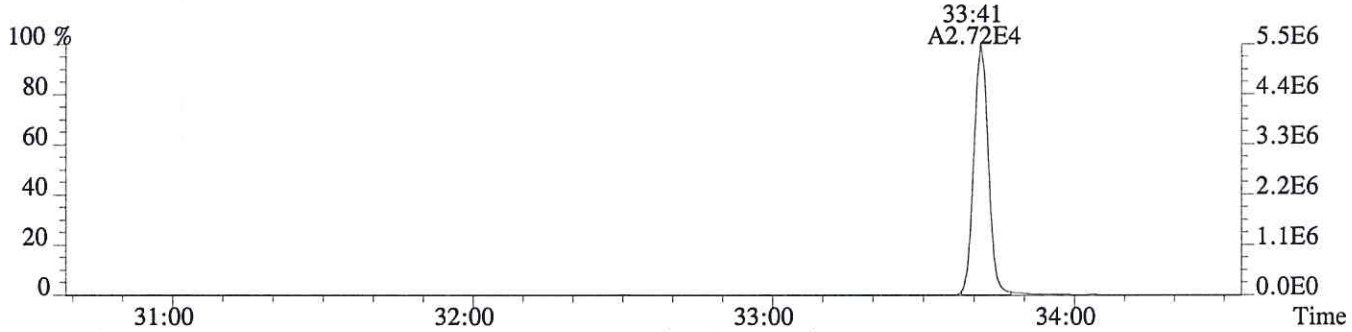


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

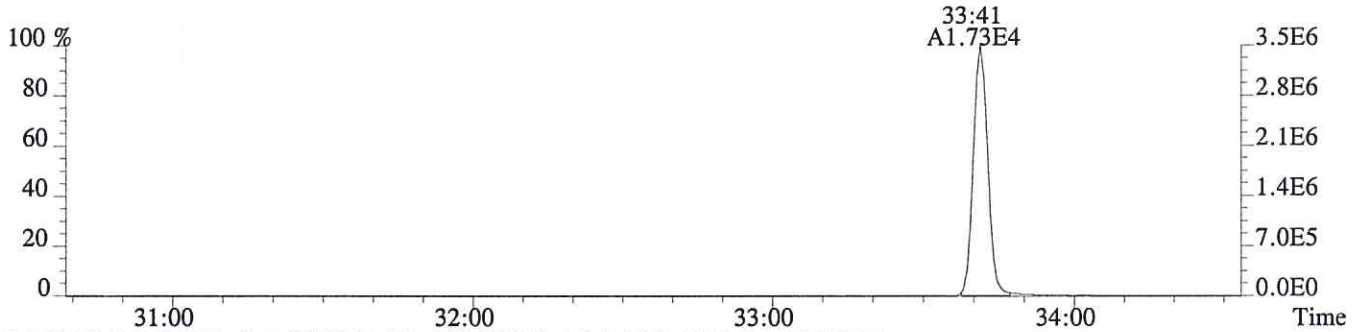


File:P503406 #1-353 Acq:18-MAR-2016 22:06:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619

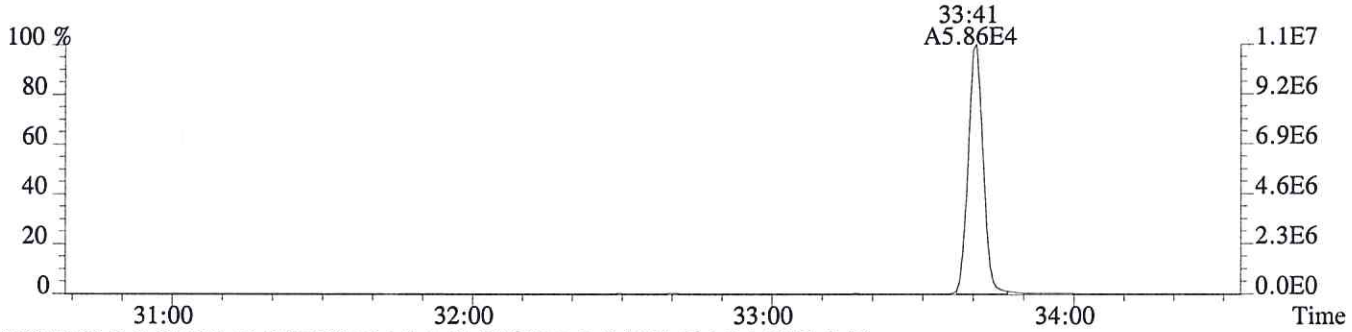
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1704.0,1.00%,F,T)



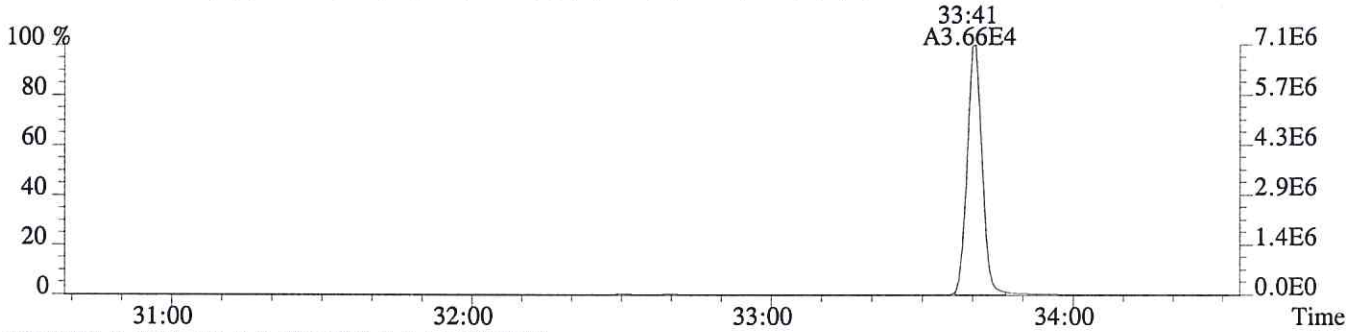
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,184.0,1.00%,F,T)



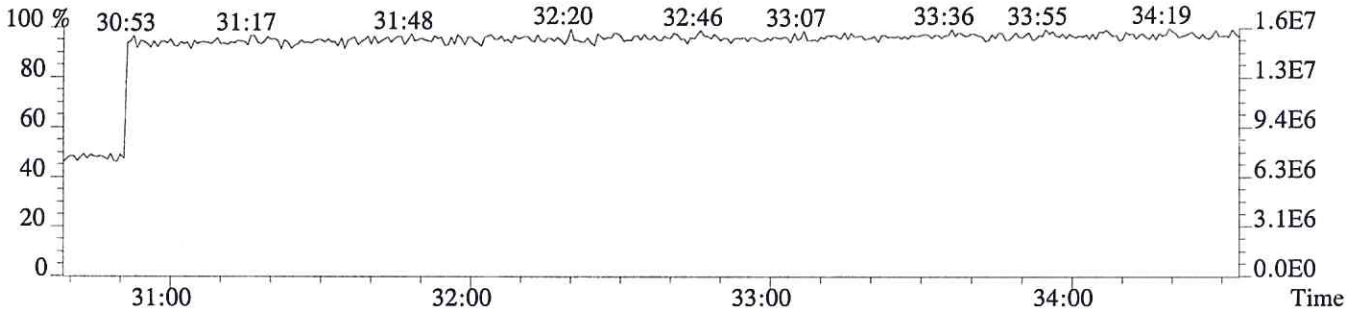
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1840.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,636.0,1.00%,F,T)

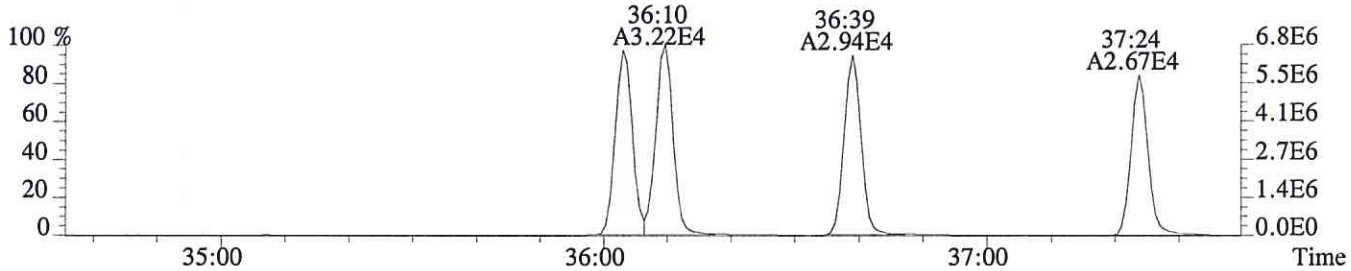


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

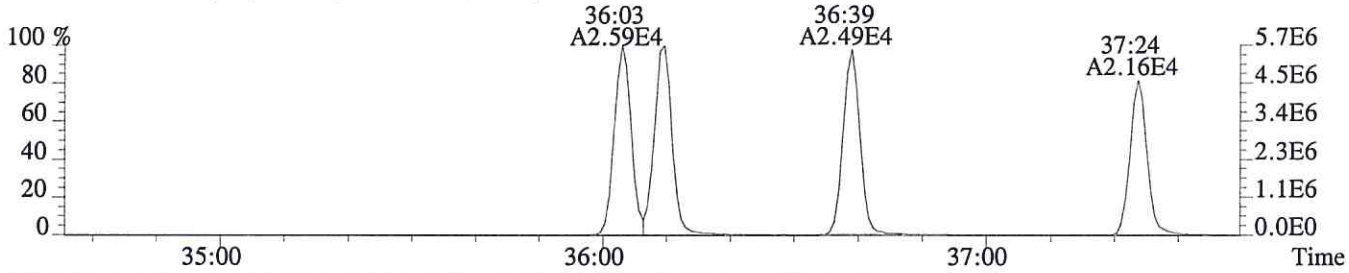


File:P503406 #1-277 Acq:18-MAR-2016 22:06:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619

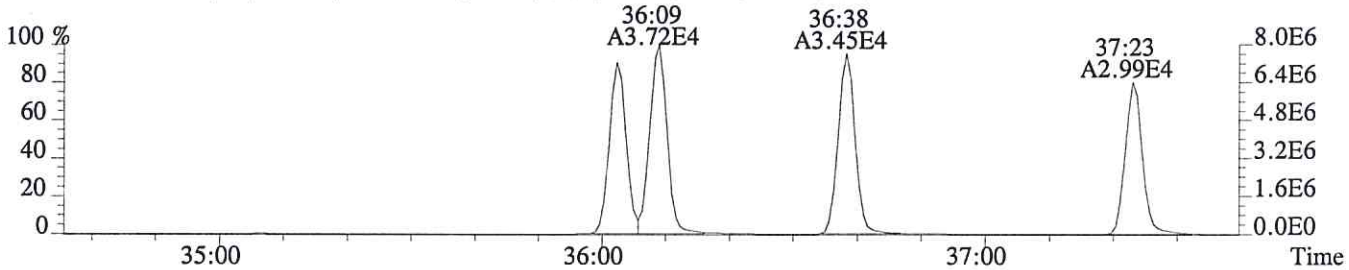
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1140.0,0.40%,F,T)



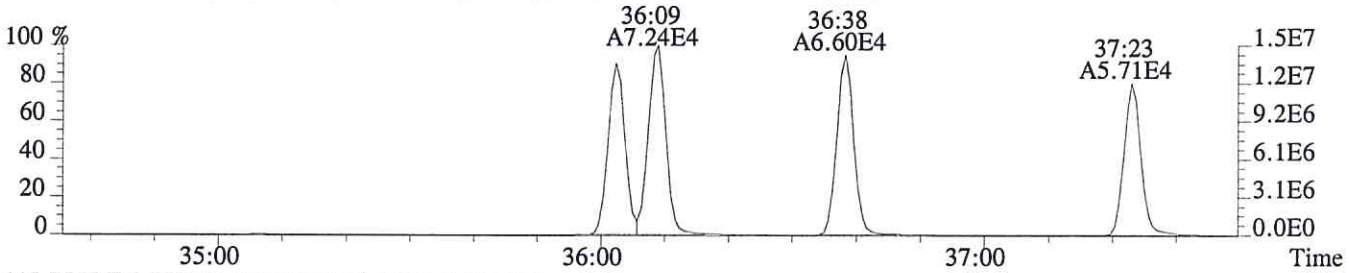
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,332.0,0.40%,F,T)



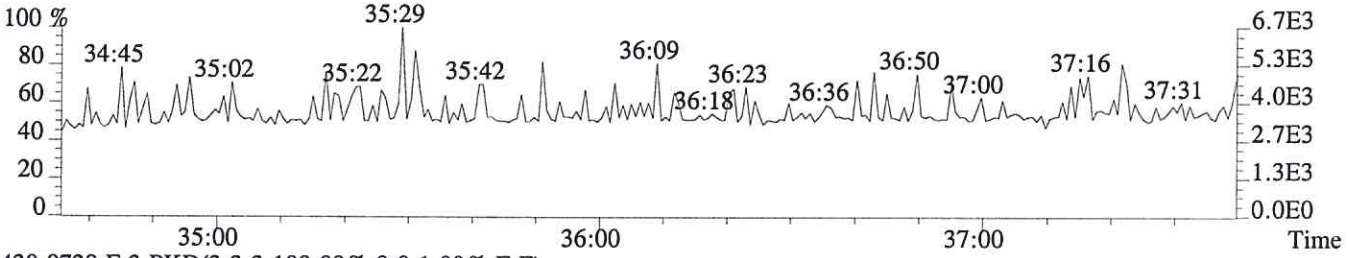
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,956.0,0.40%,F,T)



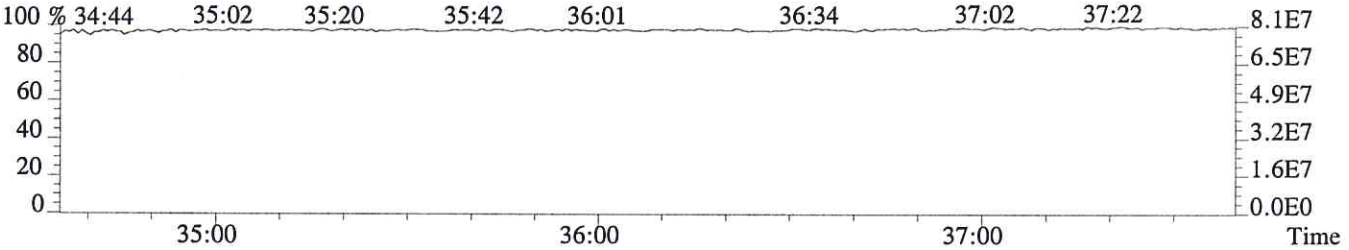
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1720.0,0.40%,F,T)



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

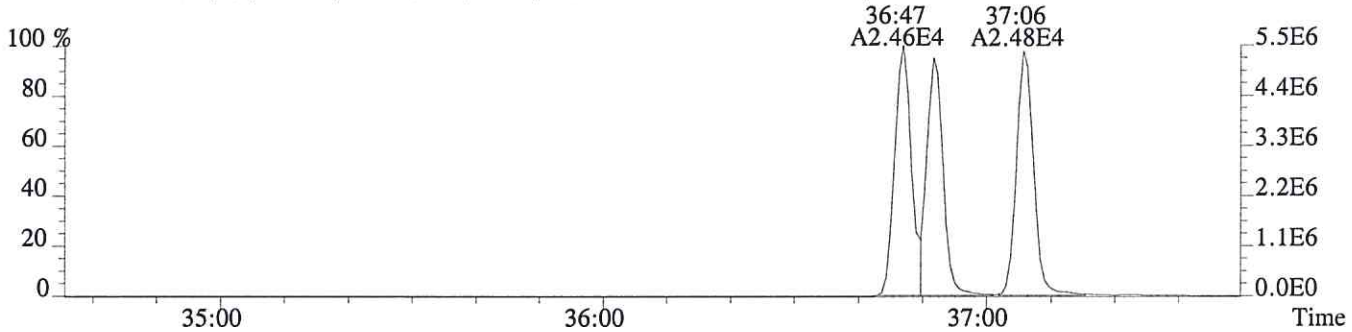


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

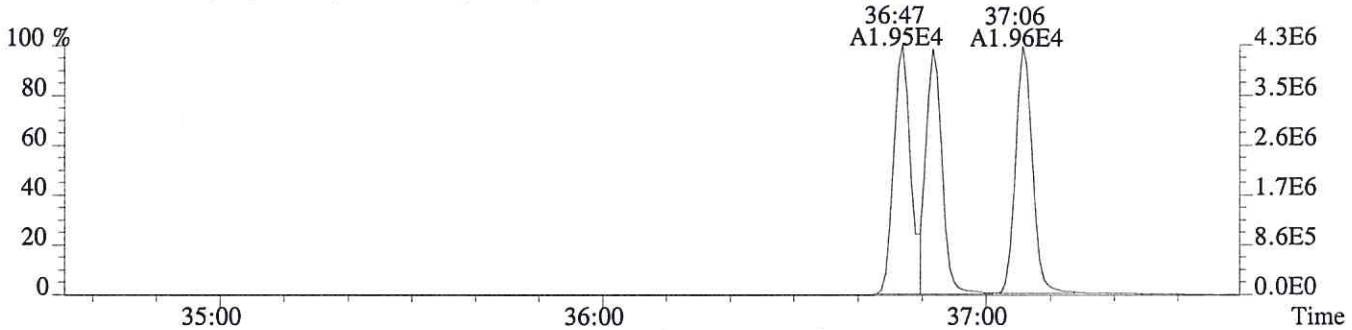


File:P503406 #1-277 Acq:18-MAR-2016 22:06:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619

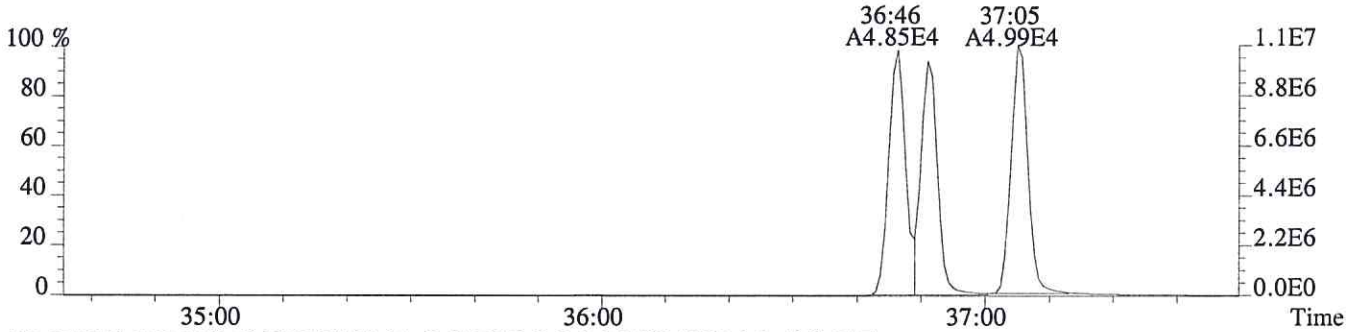
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,328.0,0.40%,F,T)



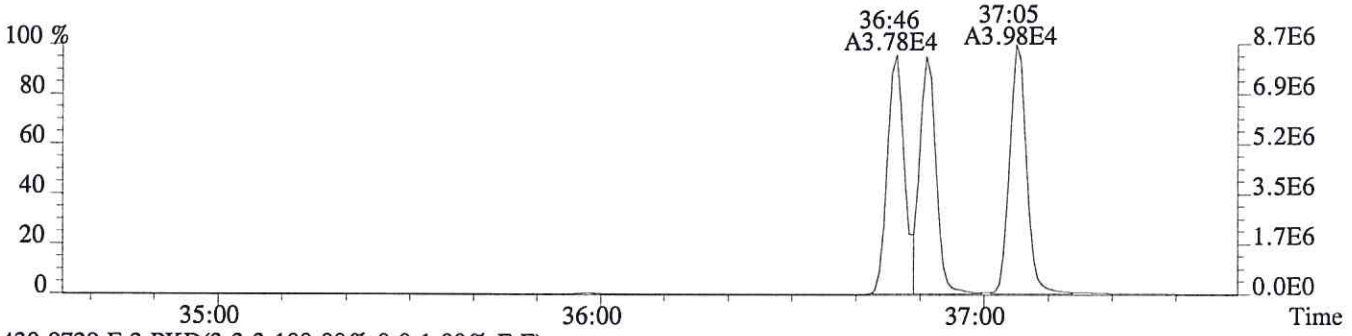
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,744.0,0.40%,F,T)



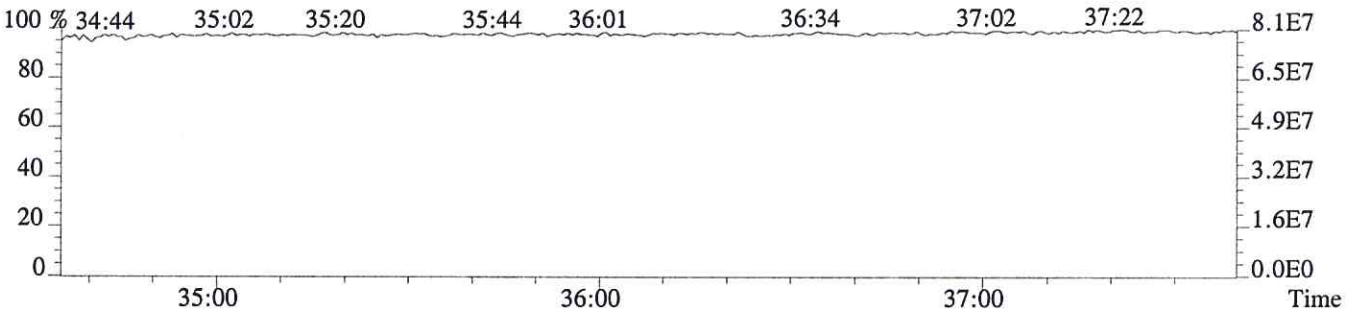
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1984.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1384.0,0.40%,F,T)

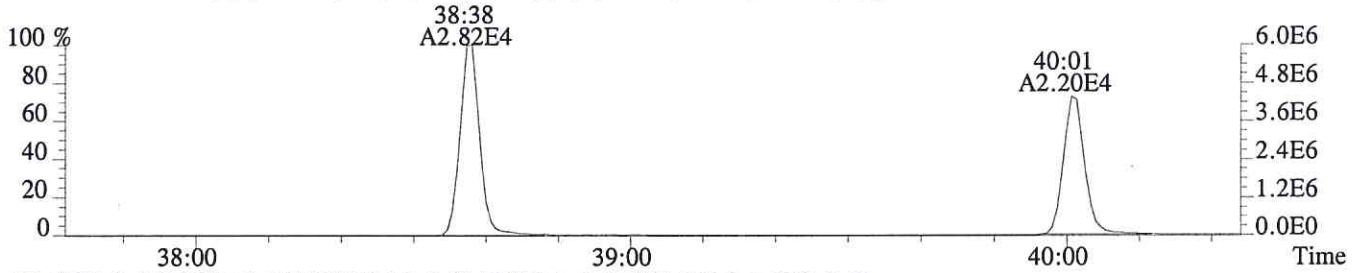


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

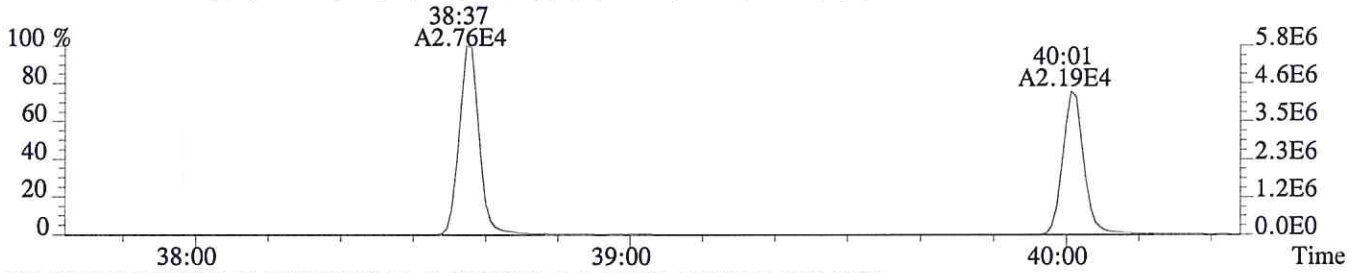


File:P503406 #1-244 Acq:18-MAR-2016 22:06:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619

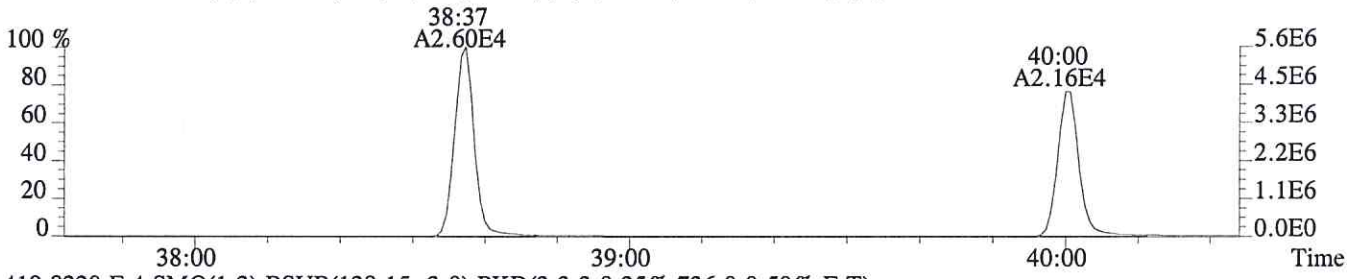
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2352.0,0.50%,F,T)



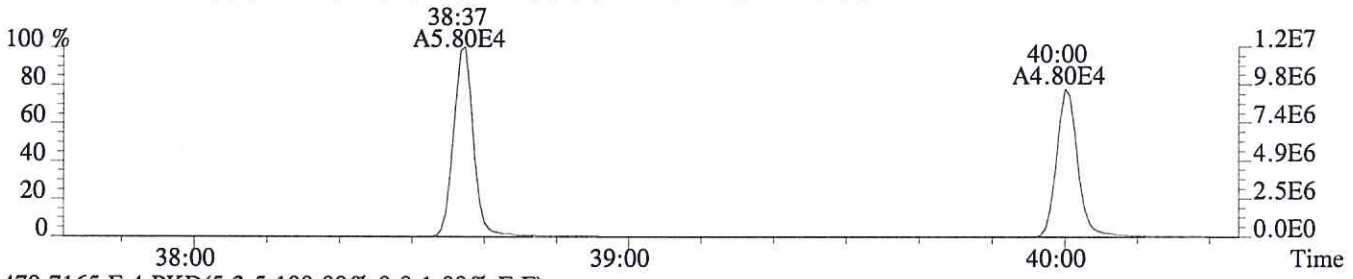
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,676.0,0.50%,F,T)



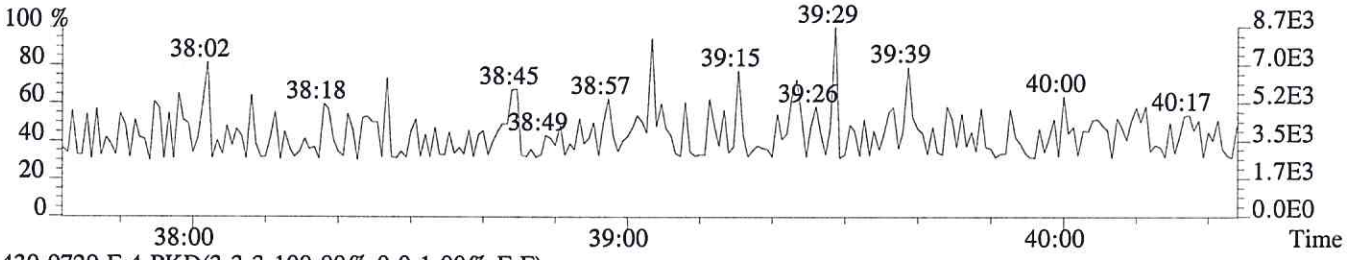
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3124.0,0.50%,F,T)



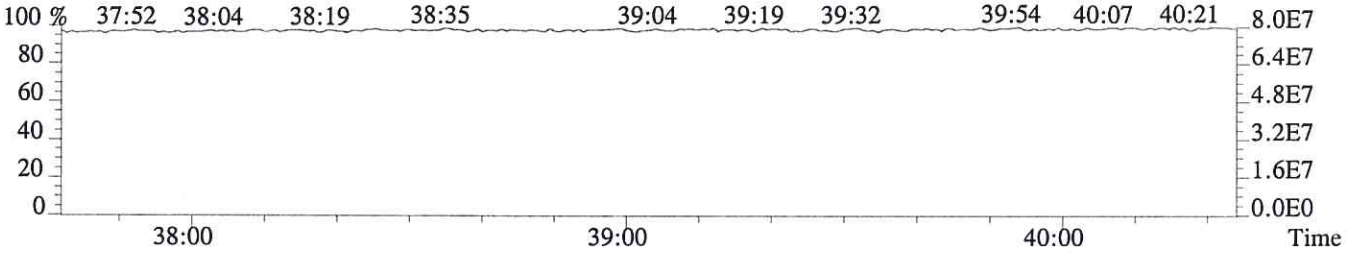
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,736.0,0.50%,F,T)



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

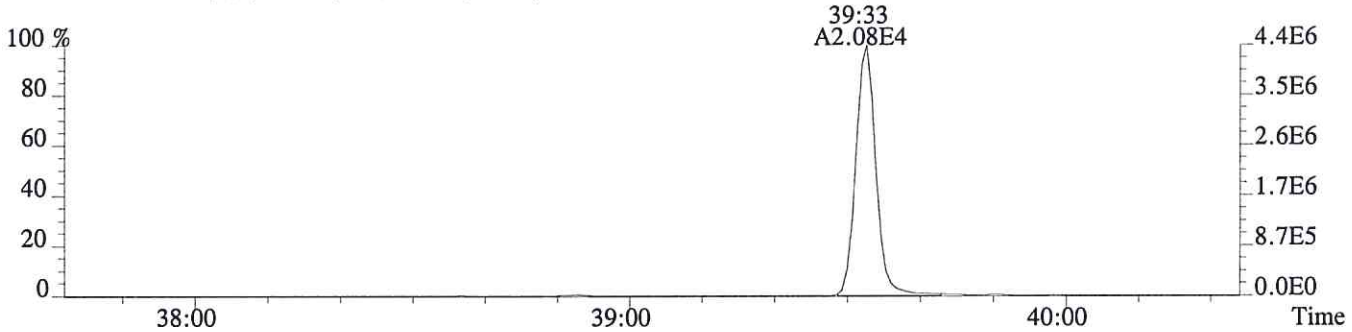


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

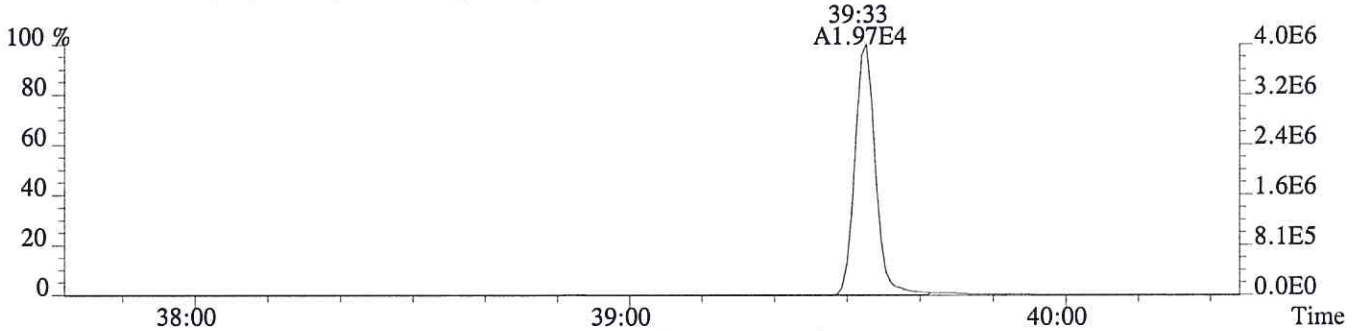


File:P503406 #1-244 Acq:18-MAR-2016 22:06:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619

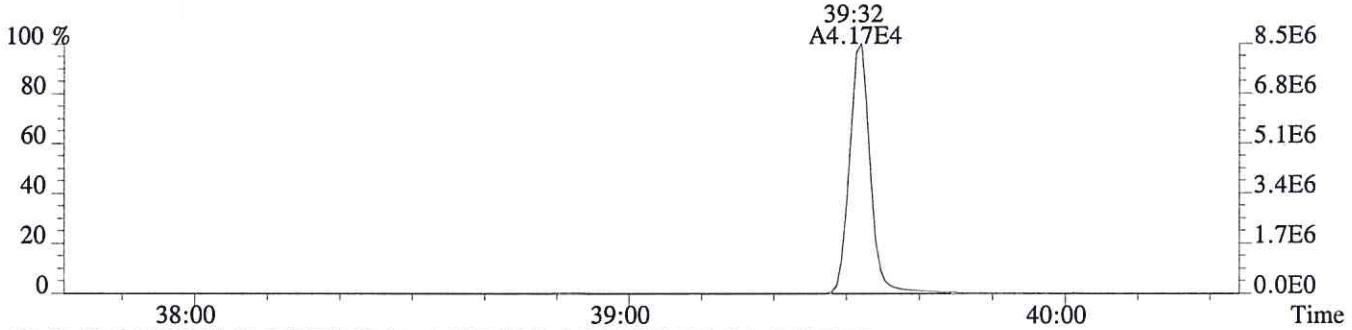
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,692.0,0.40%,F,T)



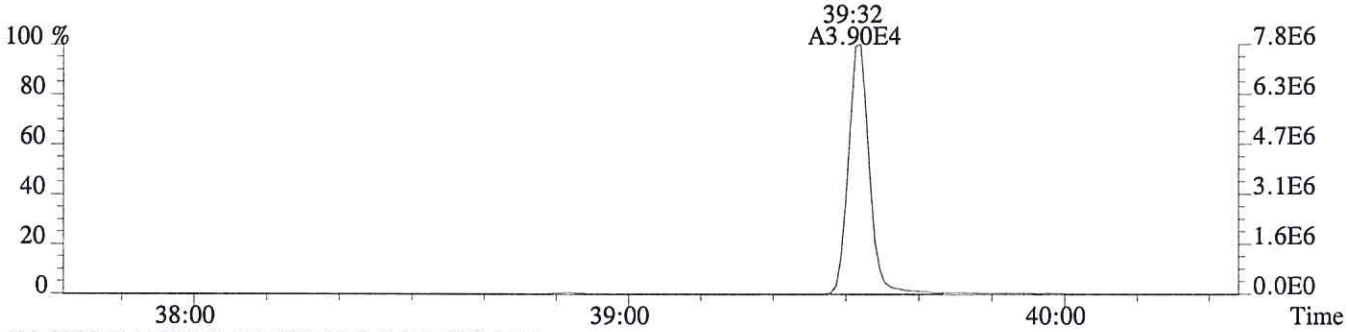
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,300.0,0.40%,F,T)



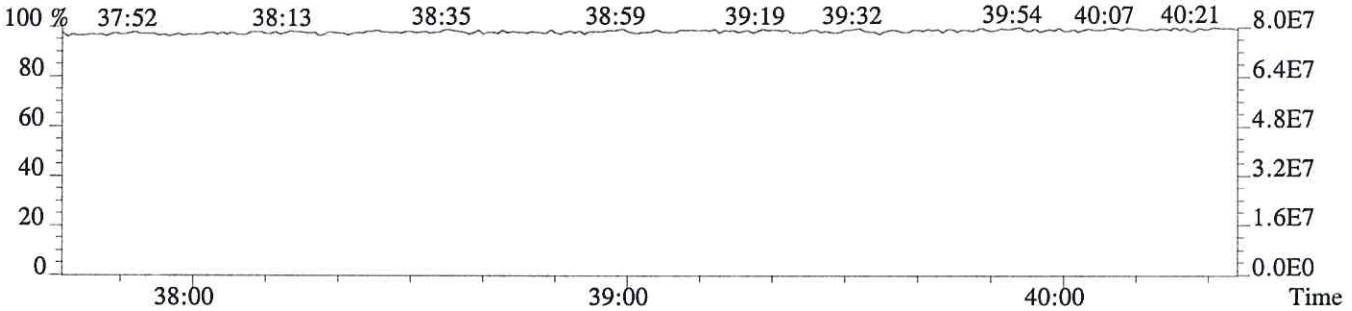
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1880.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,620.0,0.40%,F,T)

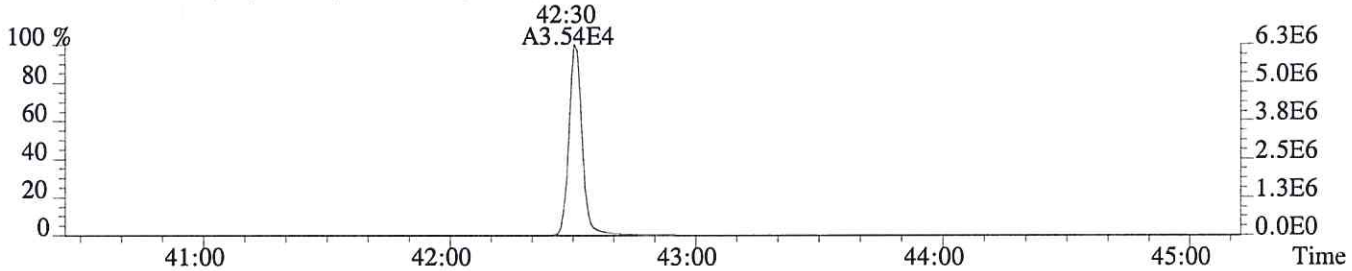


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

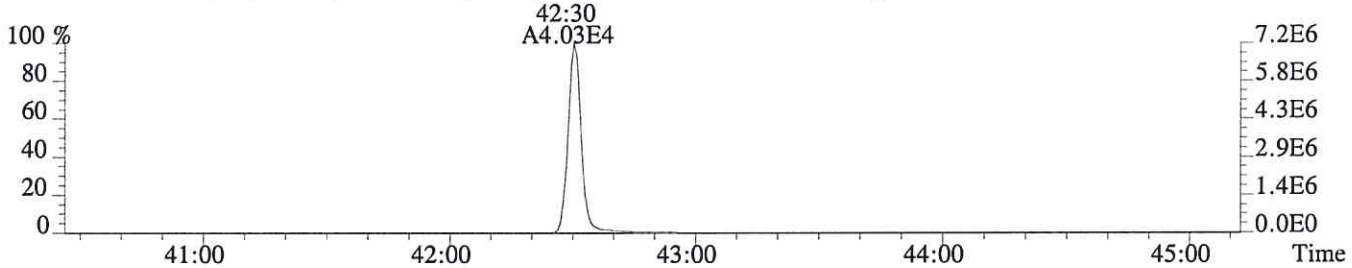


File:P503406 #1-430 Acq:18-MAR-2016 22:06:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619

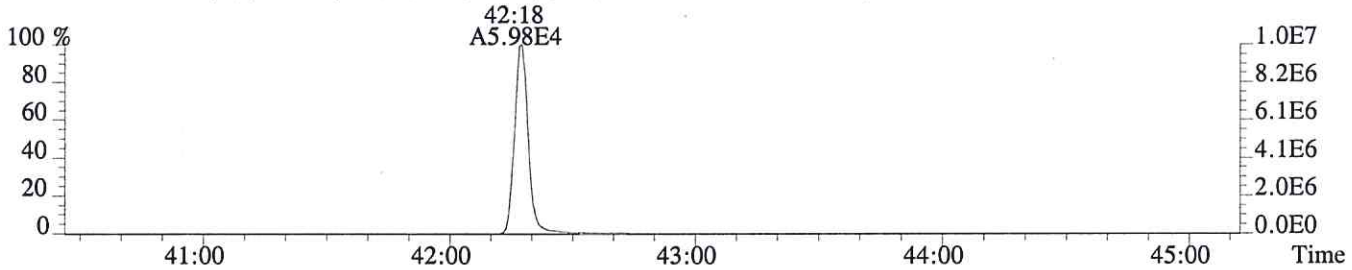
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1040.0,0.40%,F,T)



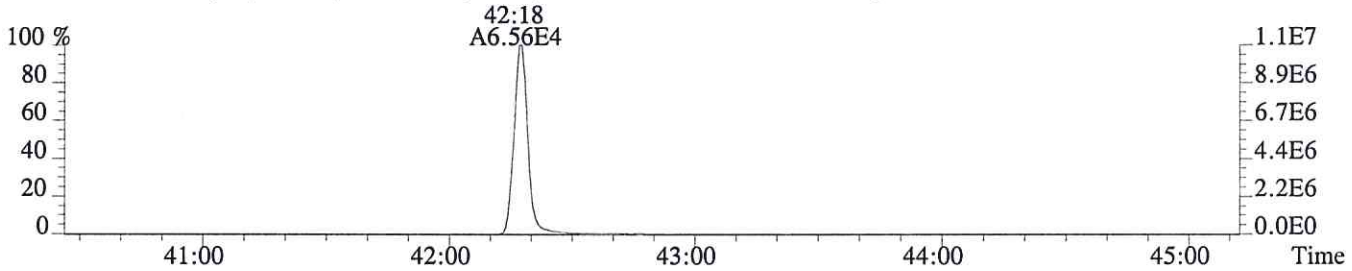
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1912.0,0.40%,F,T)



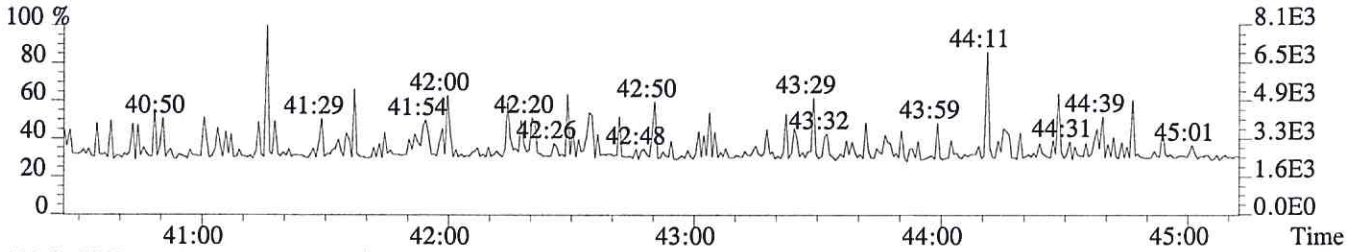
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,700.0,0.40%,F,T)



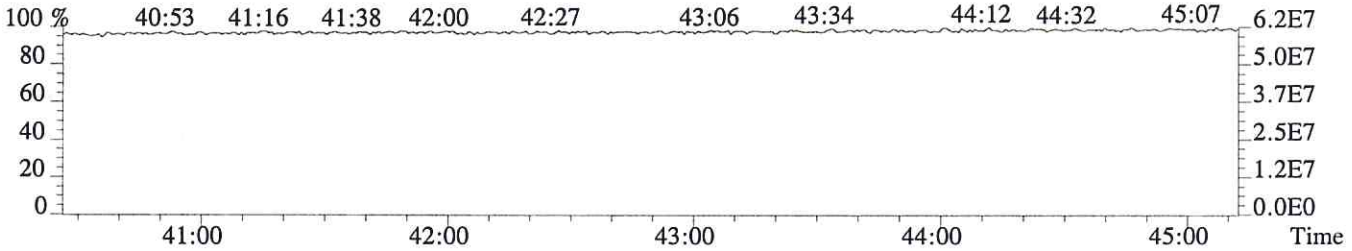
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1228.0,0.40%,F,T)



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

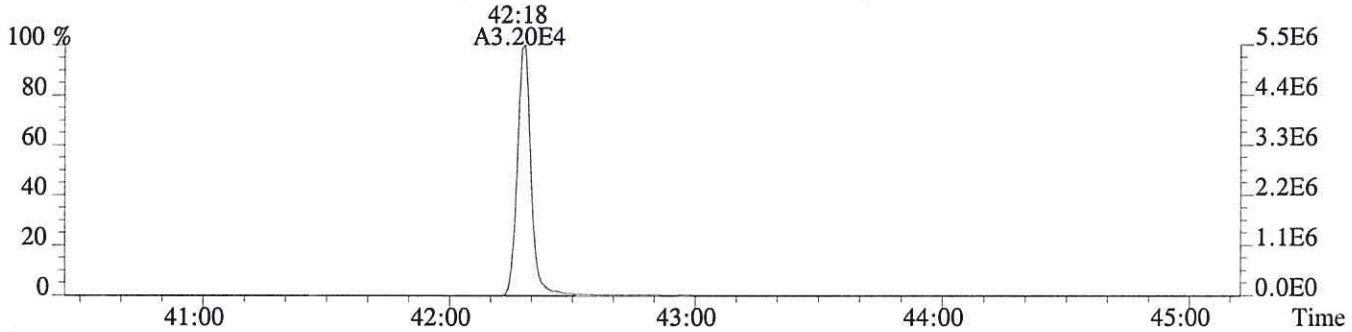


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

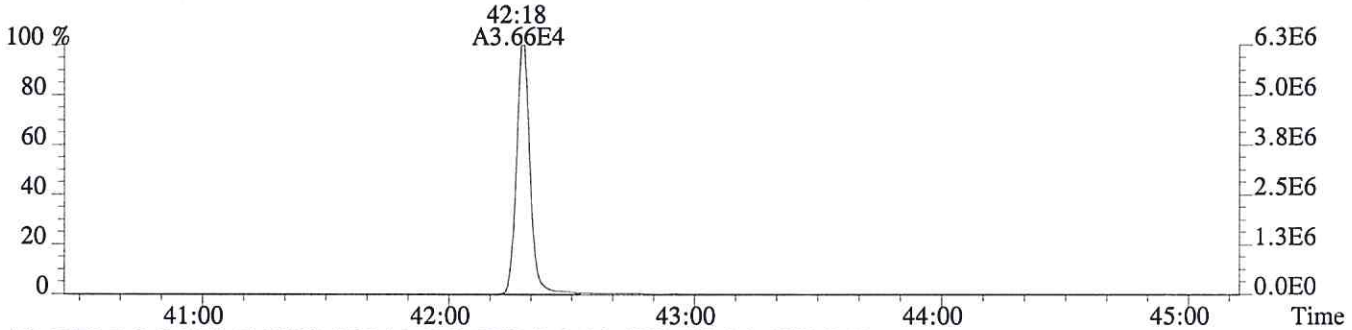


File:P503406 #1-430 Acq:18-MAR-2016 22:06:36 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:86619

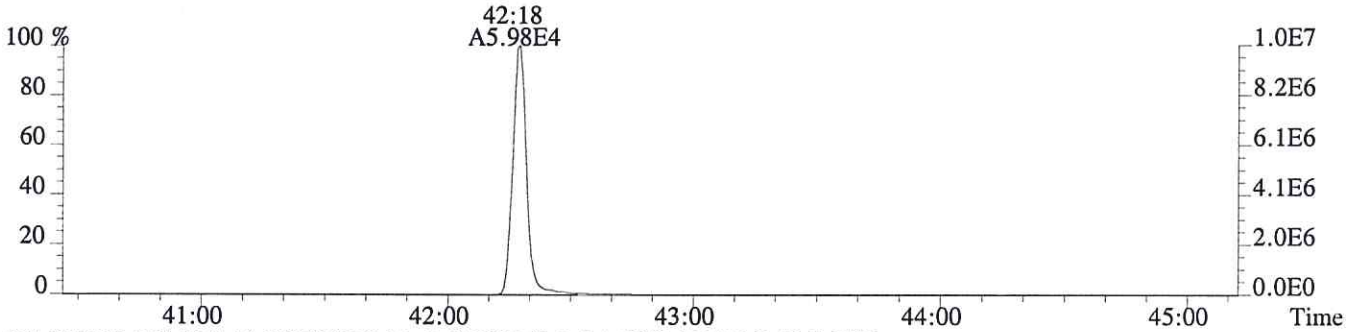
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,624.0,0.40%,F,T)



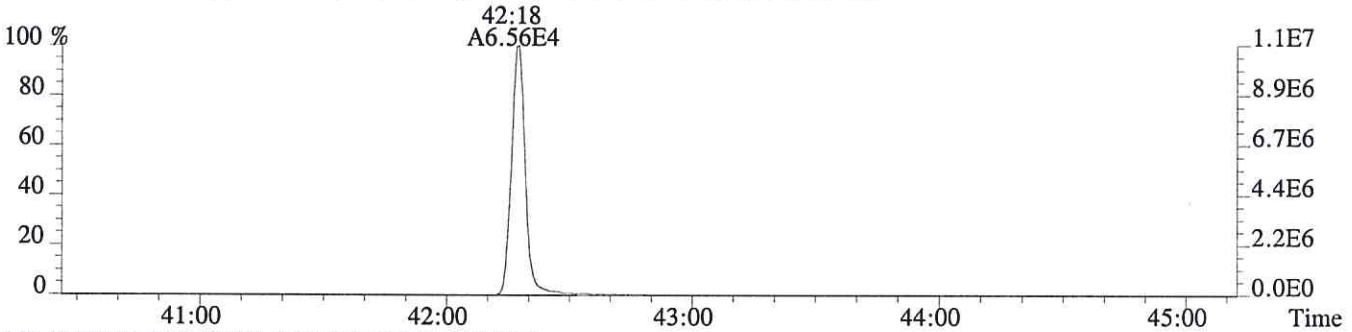
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,812.0,0.40%,F,T)



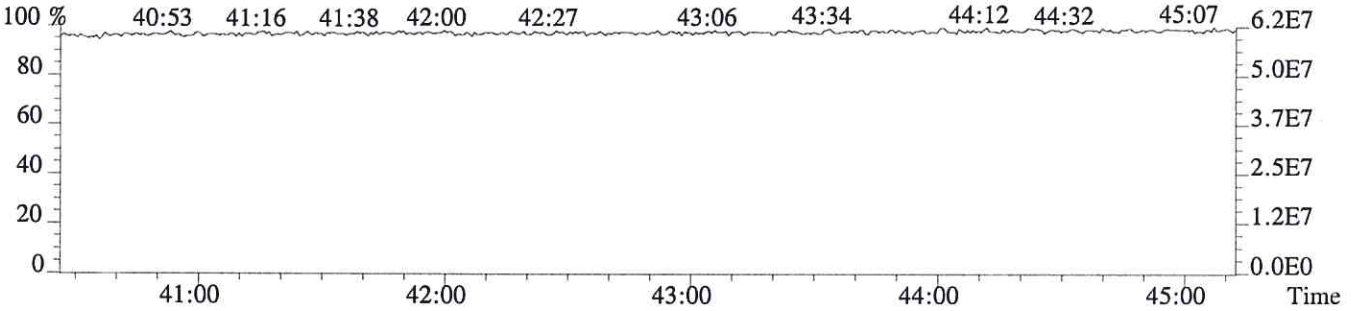
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,700.0,0.40%,F,T)



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)



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: 07/10/15
Instrument Name: E-HRMS-07	Calibration File Name: P5-1506301613I
Processor Name: Chris Elhardt	Reviewer Name: Sameh Attalla
Supervisor Signature: Lan Le	

Description	Yes	No	NA	NR	ER#
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?	√				
Did each calibration point meet method criteria for Ion Abundance Ratio for all analytes and labeled standards?	√				

Laboratory Review Checklist: HRMS Initial Calibration

Method: 1613/8290	Process Date: 07/10/15
Instrument Name: E-HRMS-07	Calibration File Name: P5-1506301613I
Processor Name: Chris Elhardt	Reviewer Name: Sameh Attalla
Supervisor Signature: Lan Le	

Description	Yes	No	NA	NR	ER#
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: 07/10/15
Instrument Name: E-HRMS-07	Calibration File Name: P5-1506301613I
Processor Name: Chris Elhardt	Reviewer Name: Sameh Attalla

ER#[5]	Description

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: DB-5MSUI ID: 0.25 (mm) Instrument ID: E-HRMS-07

Init. Calib. Date: 06/30/15

Init. Calib.Times: 15:41:52

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
74489	WINDOW DEFINE	P500014	30-JUN-15	14:05:09
CS0.5	CS0.5	P500016	30-JUN-15	15:41:52
CS1	CS1	P500017	30-JUN-15	16:30:29
CS2	CS2	P500018	30-JUN-15	17:19:02
CS3	CS3	P500019	30-JUN-15	18:07:39
CS4	CS4	P500020	30-JUN-15	18:56:17
CS5	CS5	P500021	30-JUN-15	19:44:53
CS3	CS3	P500023	30-JUN-15	21:22:08

Sample List Report MassLynx 4.1 SCN815 SCN795

Sample List: I:\EHRMS07.PRO\SampleDB\20150630a.SPL
Last Modified: Friday, July 10, 2015 11:07:39 Central Daylight Time
Printed: Friday, July 10, 2015 11:07:41 Central Daylight Time

Page Position (1, 1)

P5_30JUN15\613I
P5_30JUN15\M23I

for LL

	Date	Time	File Name	Sample ID	File Text	MS File	Inlet File	Bottle	Analyst	Comments
1	30Jun15	13:17	P500013	74489	WINDOW DEFINE	EPA1613_ALS	Dioxin_ALS	Tray1:1	LKL	HRMS check 13:11
2		14:05	P500014	74489	WINDOW DEFINE	EPA1613_ALS	Dioxin_ALS	Tray1:1		
3		14:53	P500015	Nonane	Nonane	EPA1613_ALS	Dioxin_ALS	Tray1:2		
4		15:41	P500016	76554	IC0.5	EPA1613_ALS	Dioxin_ALS	Tray1:3		
5		16:30	P500017	76555	IC1	EPA1613_ALS	Dioxin_ALS	Tray1:4		
6		17:19	P500018	76556	IC2	EPA1613_ALS	Dioxin_ALS	Tray1:5		
7		18:07	P500019	76557	IC3	EPA1613_ALS	Dioxin_ALS	Tray1:6		
8		18:56	P500020	76558	IC4	EPA1613_ALS	Dioxin_ALS	Tray1:7		
9		19:44	P500021	76956	IC5	EPA1613_ALS	Dioxin_ALS	Tray1:8		
10		20:33	P500022	Nonane	Nonane	EPA1613_ALS	Dioxin_ALS	Tray1:2		
11		21:22	P500023	54819	CS3 2nd SOURCE	EPA1613_ALS	Dioxin_ALS	Tray1:6		HRMS check 22:18
12	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---

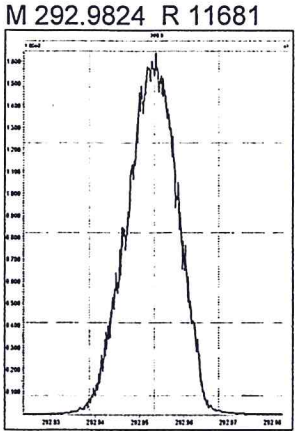
CDE
7/10/15

001

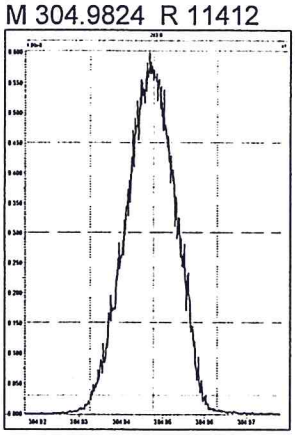
File: Experiment: EPA1613_ALS.exp Reference: pfk.ref Function: 1 @ 200 (ppm)

Printed: Tuesday, June 30, 2015 13:11:31 Central Daylight Time

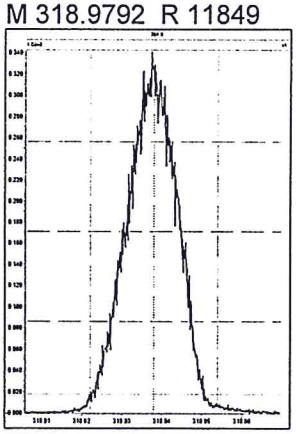
M 292.9824 R 11681



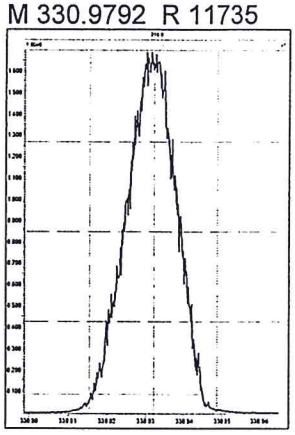
M 304.9824 R 11412



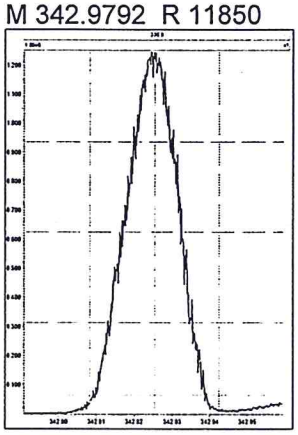
M 318.9792 R 11849



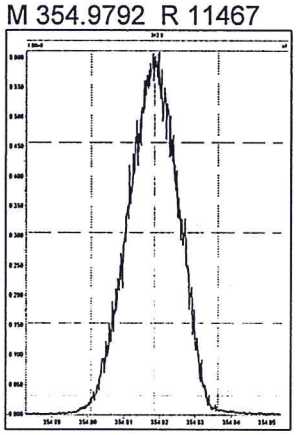
M 330.9792 R 11735



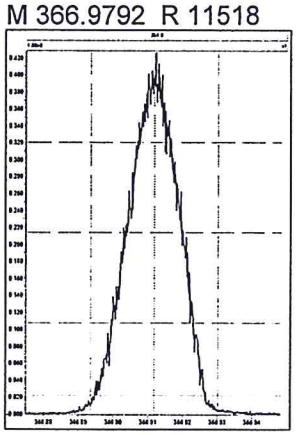
M 342.9792 R 11850



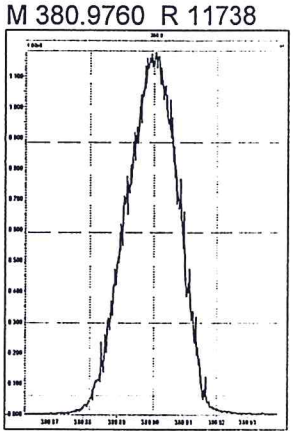
M 354.9792 R 11467



M 366.9792 R 11518



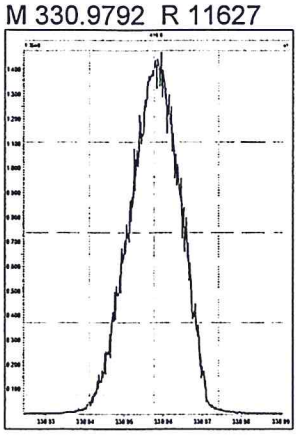
M 380.9760 R 11738



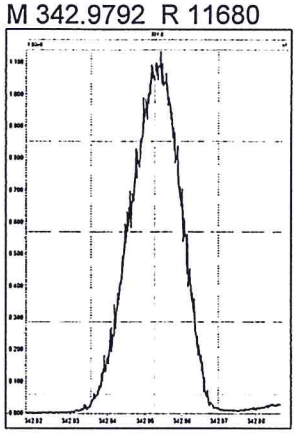
File: Experiment: EPA1613_ALS.exp Reference: pfk.ref Function: 2 @ 200 (ppm)

Printed: Tuesday, June 30, 2015 13:12:57 Central Daylight Time

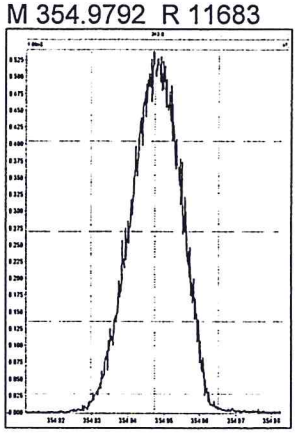
M 330.9792 R 11627



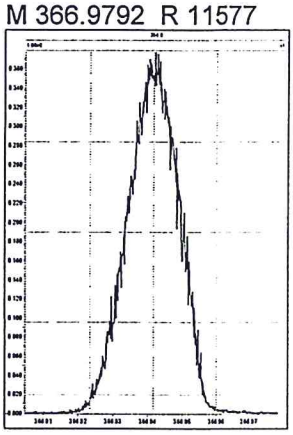
M 342.9792 R 11680



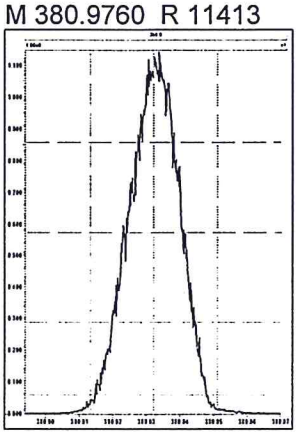
M 354.9792 R 11683



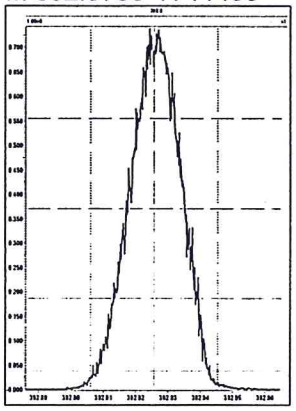
M 366.9792 R 11577



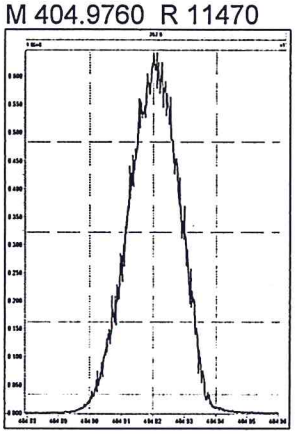
M 380.9760 R 11413



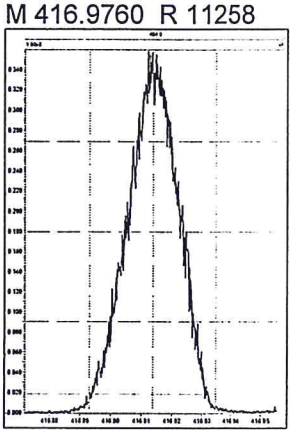
M 392.9760 R 11468



M 404.9760 R 11470



M 416.9760 R 11258



Experiment Calibration Report **MassLynx 4.1 SCN815 SCN795** Page 1 of 1

File: Experiment: EPA1613_ALS.exp Reference: pfk.ref Function: 3 @ 200 (ppm)

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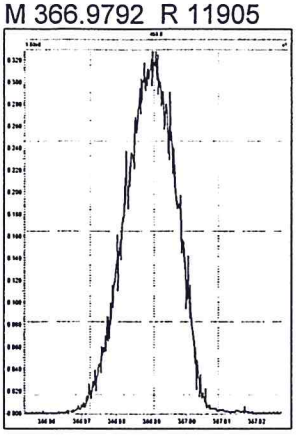
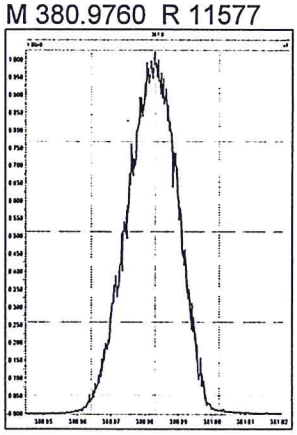
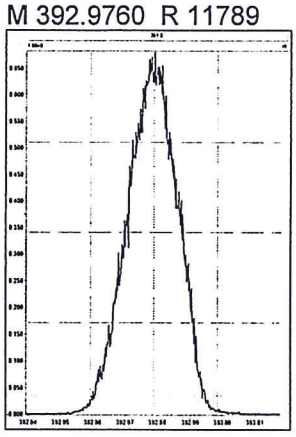
M 366.9792 R 11905



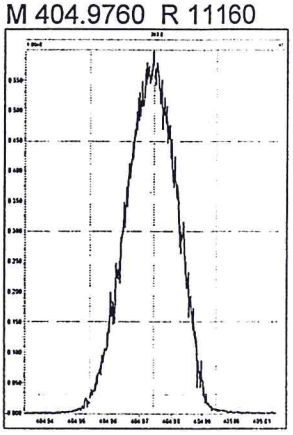
M 380.9760 R 11577



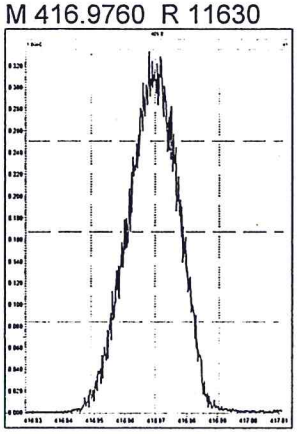
M 392.9760 R 11789



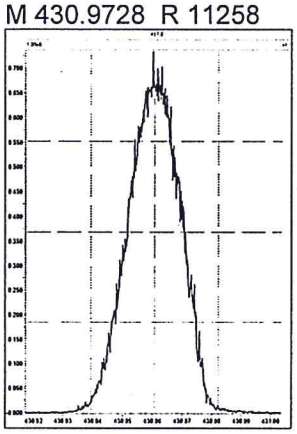
M 404.9760 R 11160



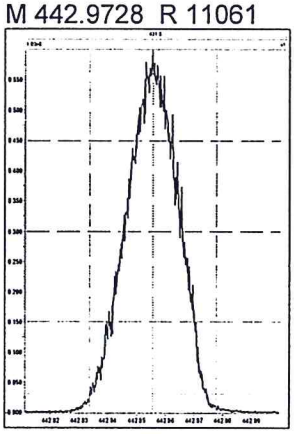
M 416.9760 R 11630



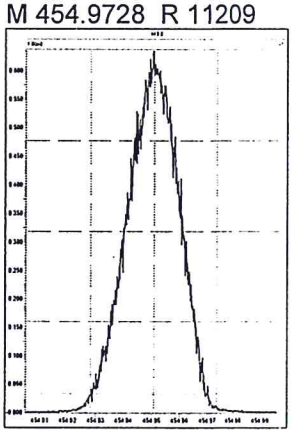
M 430.9728 R 11258



M 442.9728 R 11061



M 454.9728 R 11209



File: Experiment: EPA1613_ALS.exp Reference: pfk.ref Function: 4 @ 200 (ppm)

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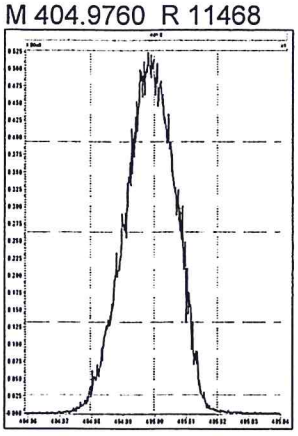
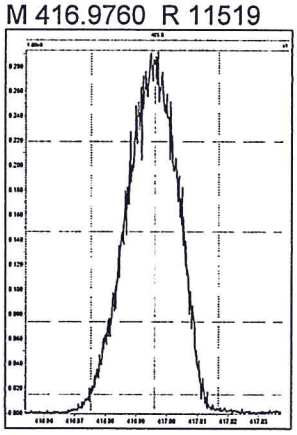
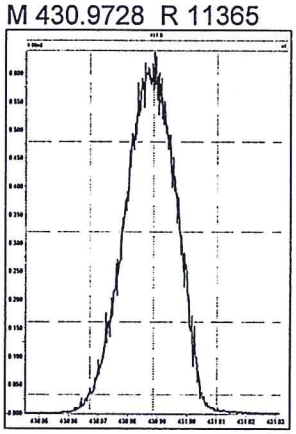
M 404.9760 R 11468



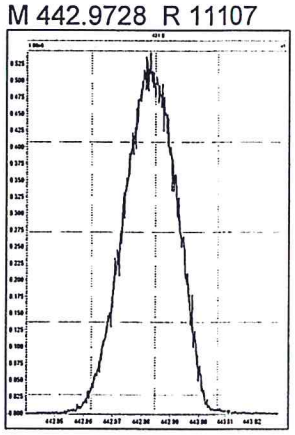
M 416.9760 R 11519



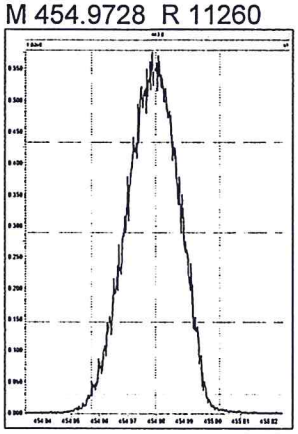
M 430.9728 R 11365



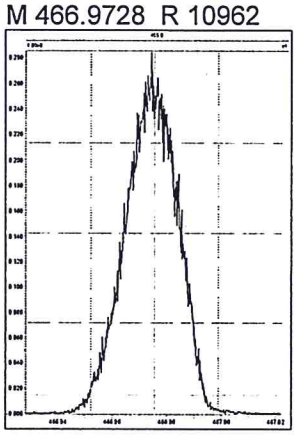
M 442.9728 R 11107



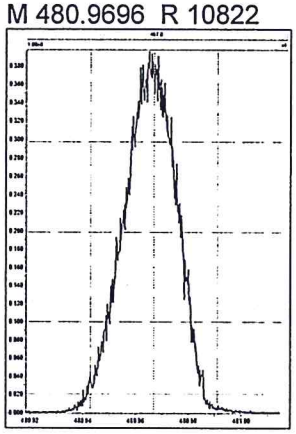
M 454.9728 R 11260



M 466.9728 R 10962



M 480.9696 R 10822



File: Experiment: EPA1613_ALS.exp Reference: pfk.ref Function: 5 @ 200 (ppm)

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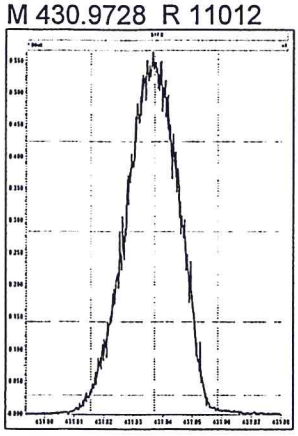
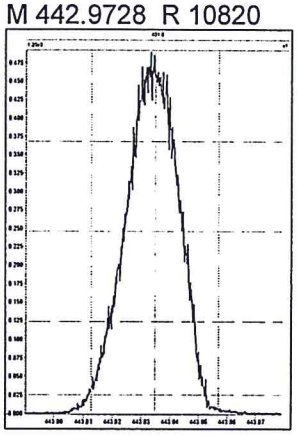
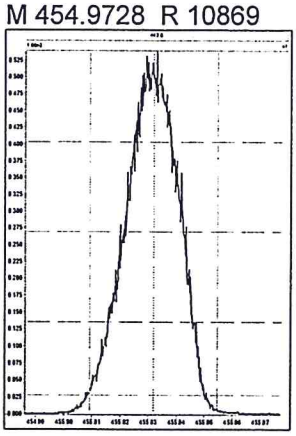
M 430.9728 R 11012



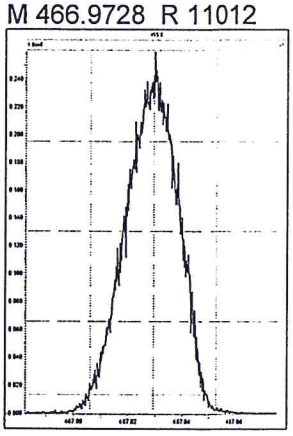
M 442.9728 R 10820



M 454.9728 R 10869



M 466.9728 R 11012



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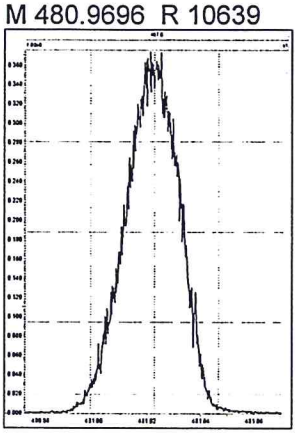

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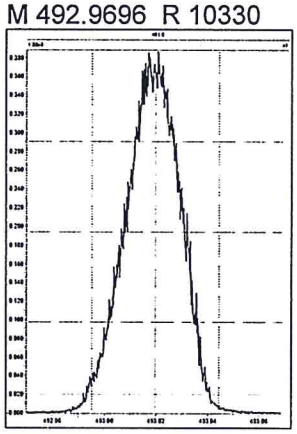

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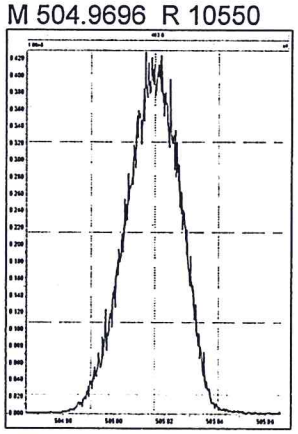

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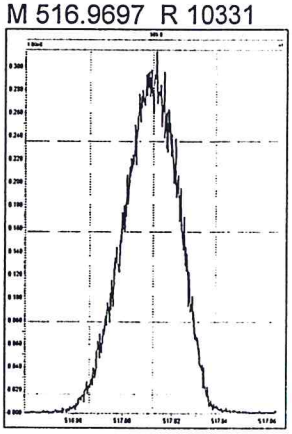

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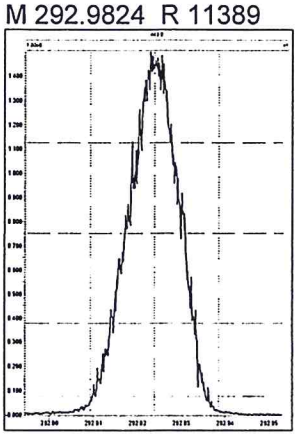
M 292.9824 R 11389



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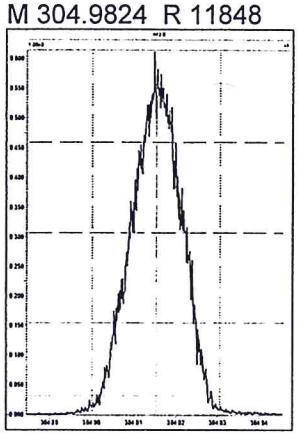

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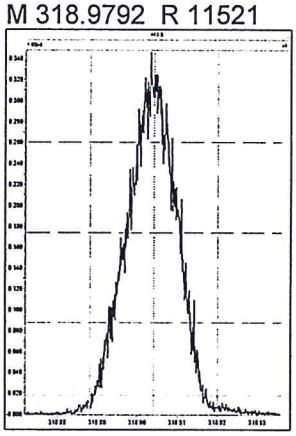
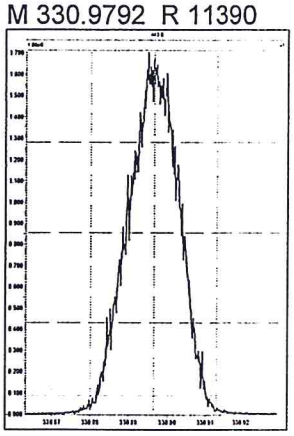


M 330.9792 R 11390



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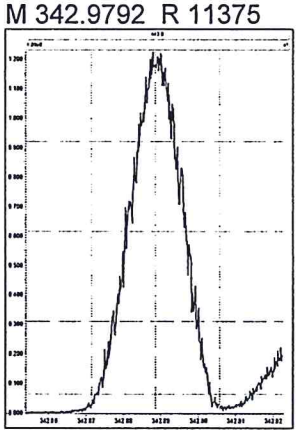

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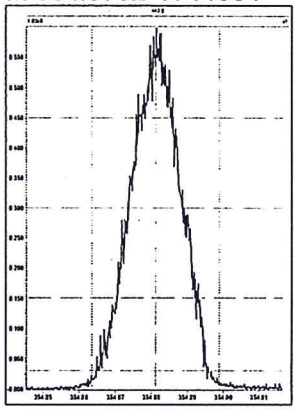

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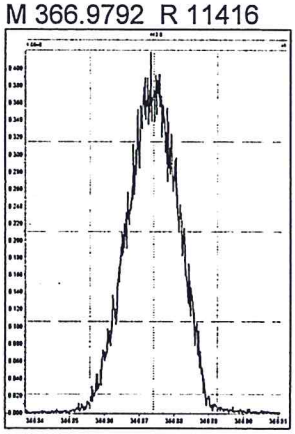
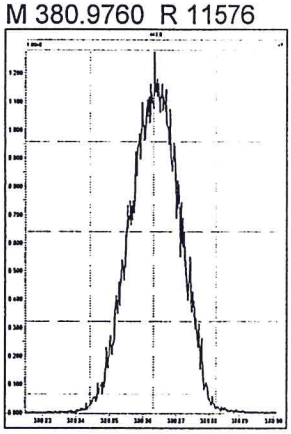
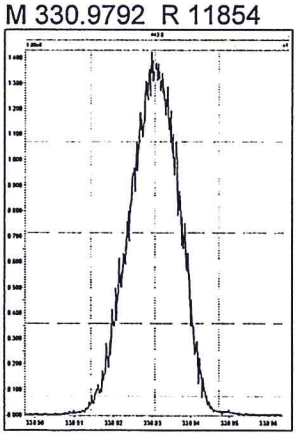


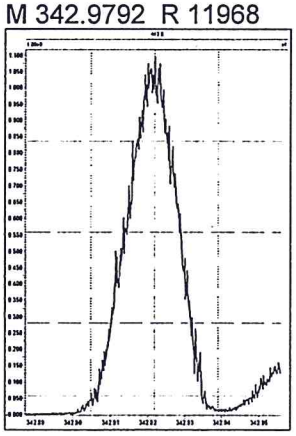
M 380.9760 R 11576



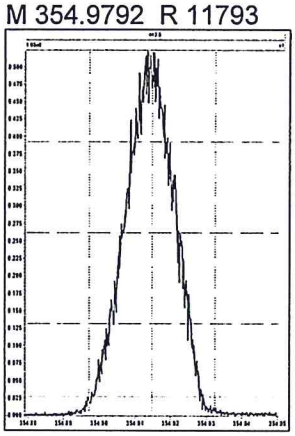
M 330.9792 R 11854



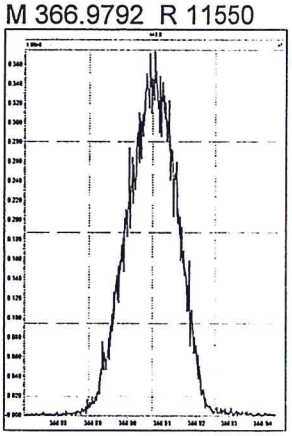
M 342.9792 R 11968



M 354.9792 R 11793



M 366.9792 R 11550



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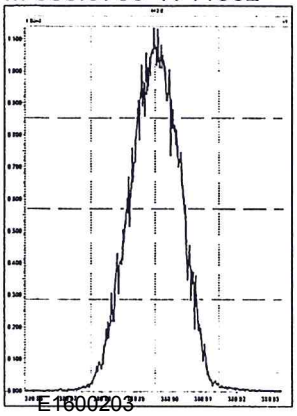

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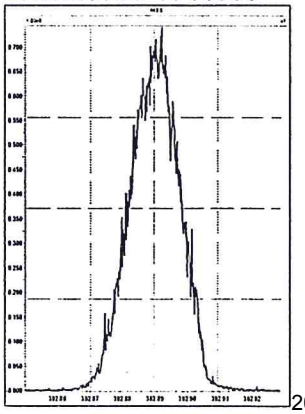

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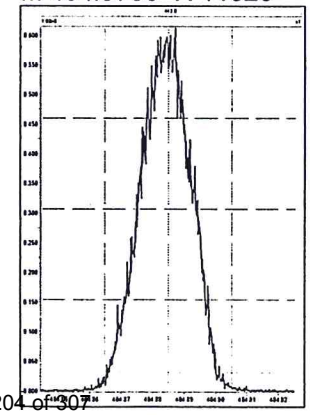
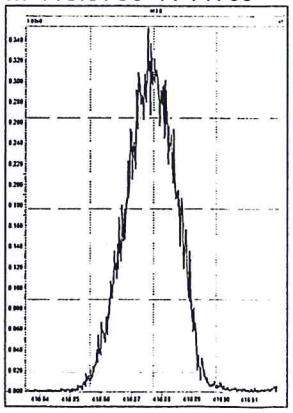


M 416.9760 R 11709



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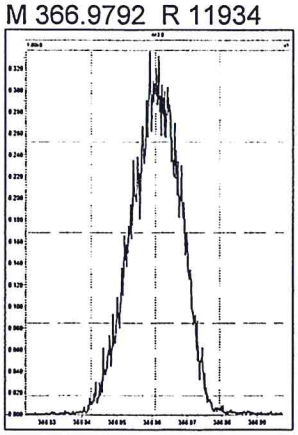

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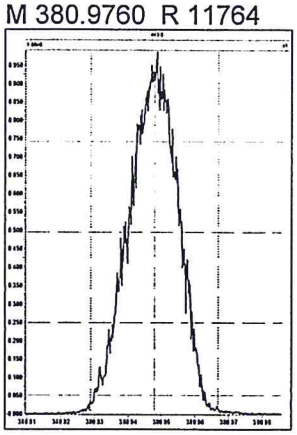

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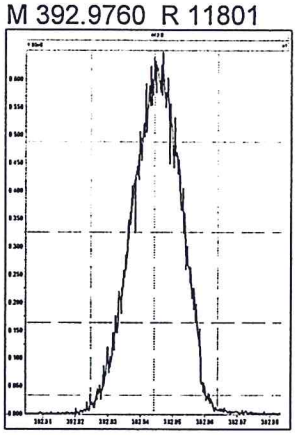

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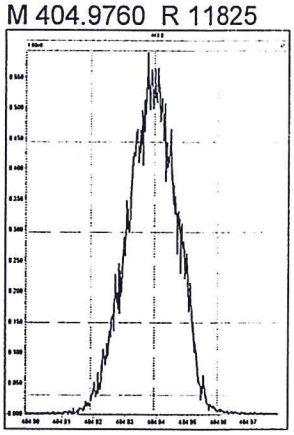

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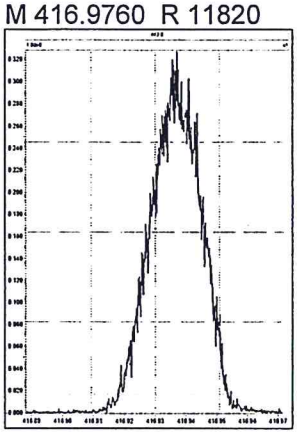
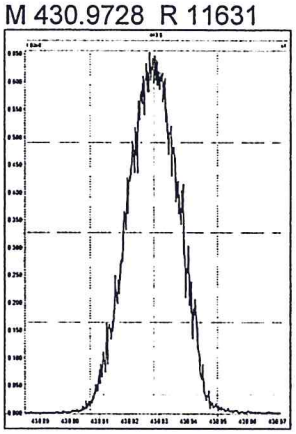
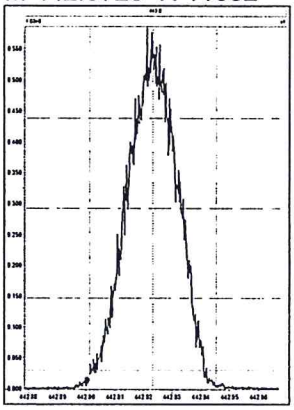


M 430.9728 R 11631



M 442.9728 R 11552



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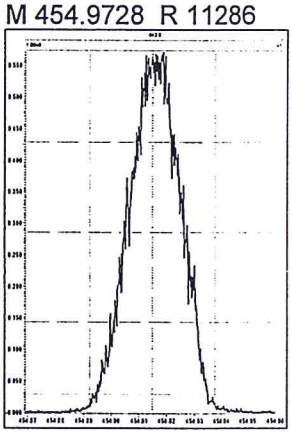

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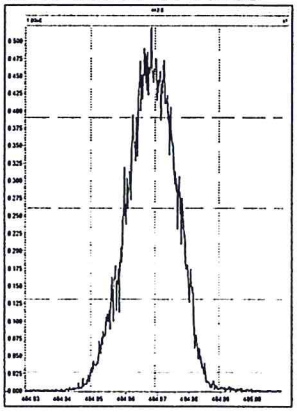

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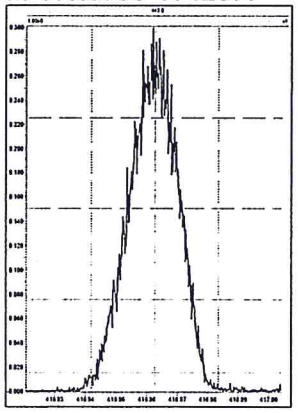

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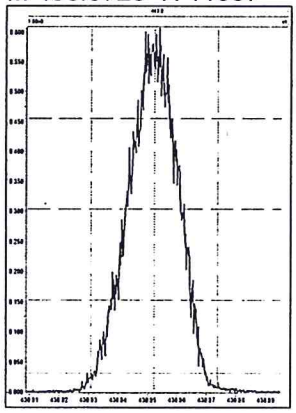
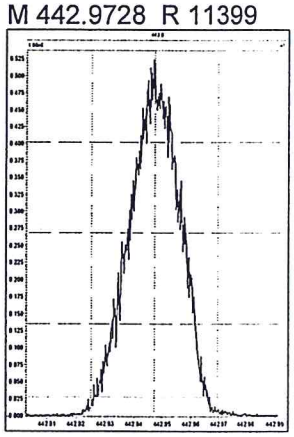


M 442.9728 R 11399



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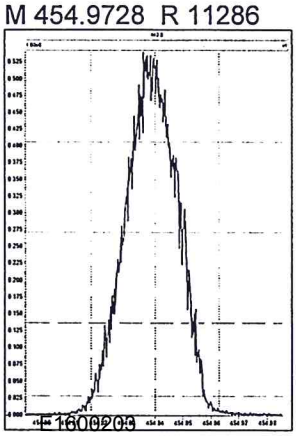

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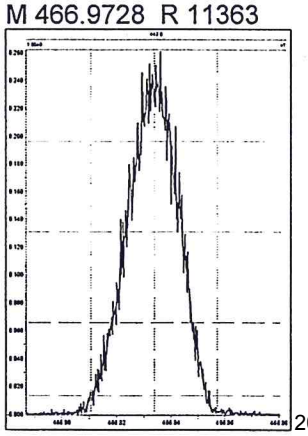

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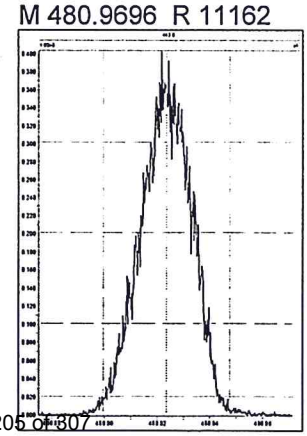

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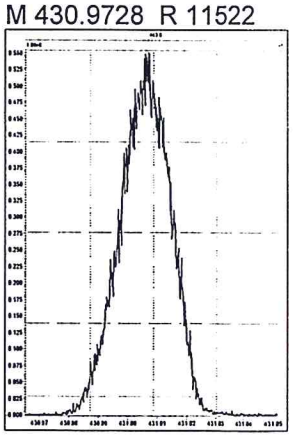
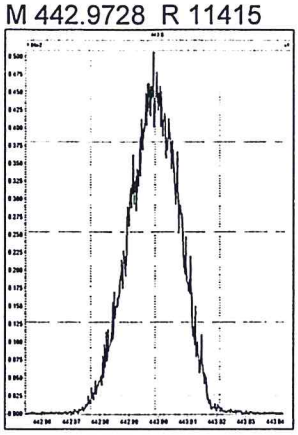
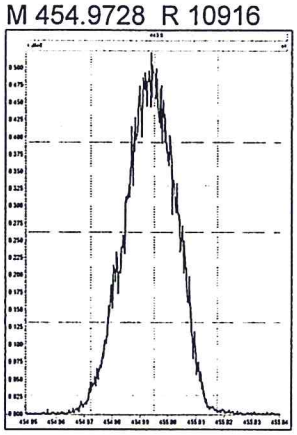


Printed: Tuesday, June 30, 2015 22:18:58 Central Daylight Time

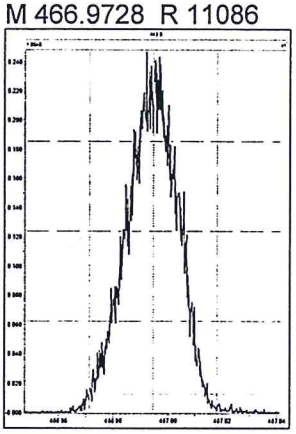
M 442.9728 R 11415



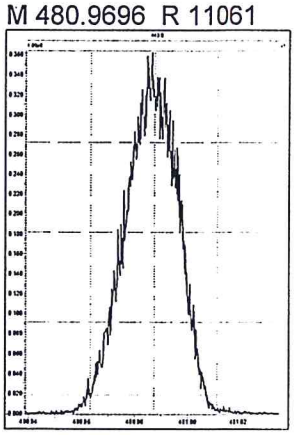
M 454.9728 R 10916



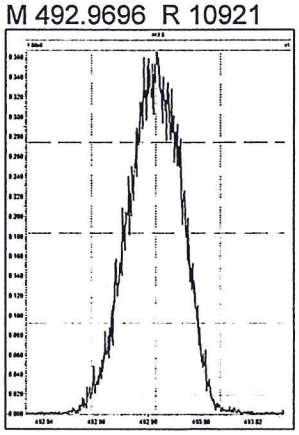
M 466.9728 R 11086



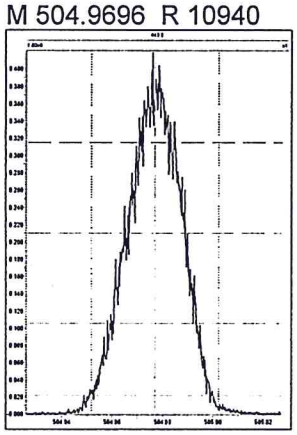
M 480.9696 R 11061



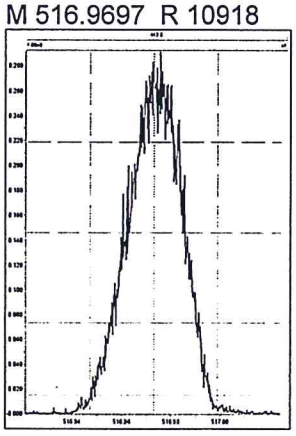
M 492.9696 R 10921



M 504.9696 R 10940



M 516.9697 R 10918



5DFA

WINDOW DEFINING MIX SUMMARY

CLIENT ID:

WDM

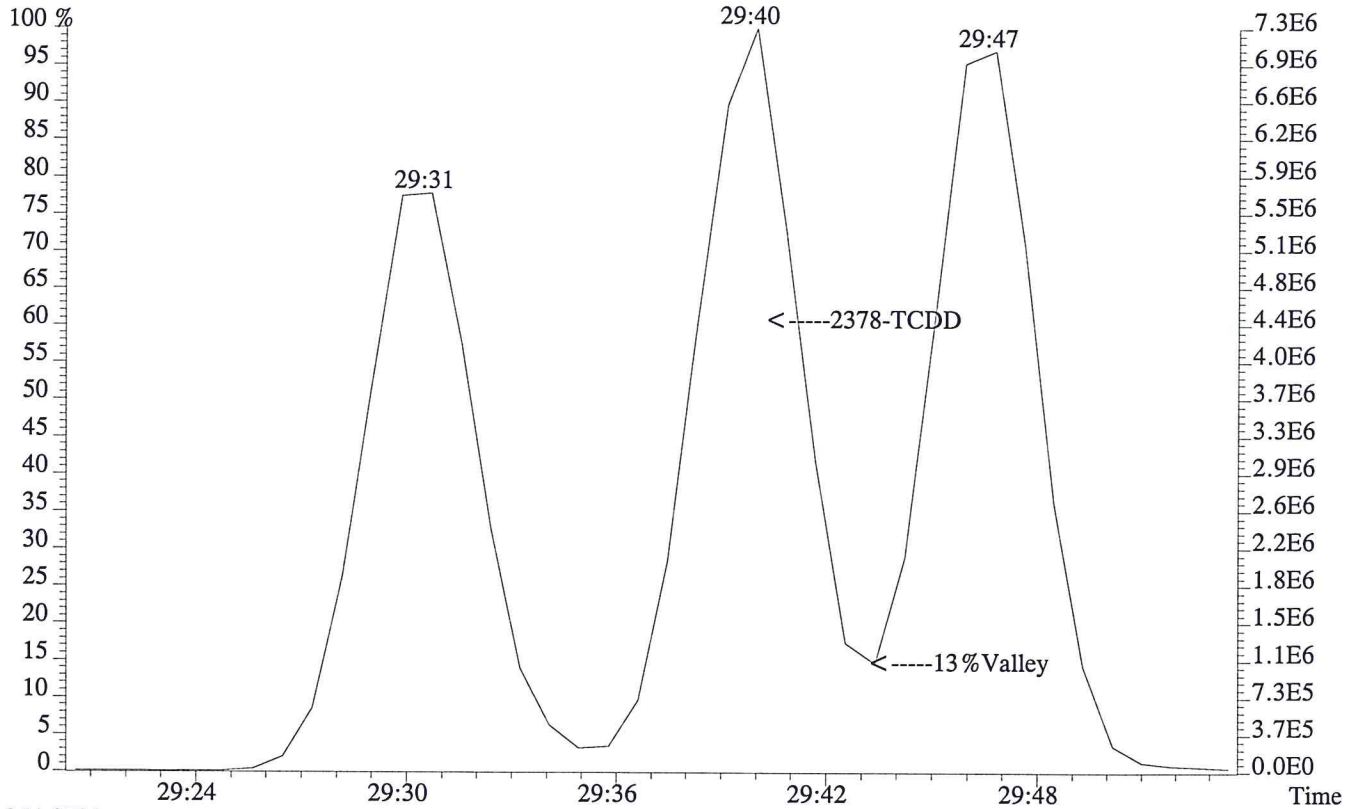
Lab Name: ALS Environmental
Lab Code: ALSTX
GC Column: DB-5MSUI

Case No.: _____ SDG No.:
ID: 0.25 (mm)
Lab File ID: P500014
Date Analyzed: 30-JUN-2015
Time Analyzed: 14:05:09

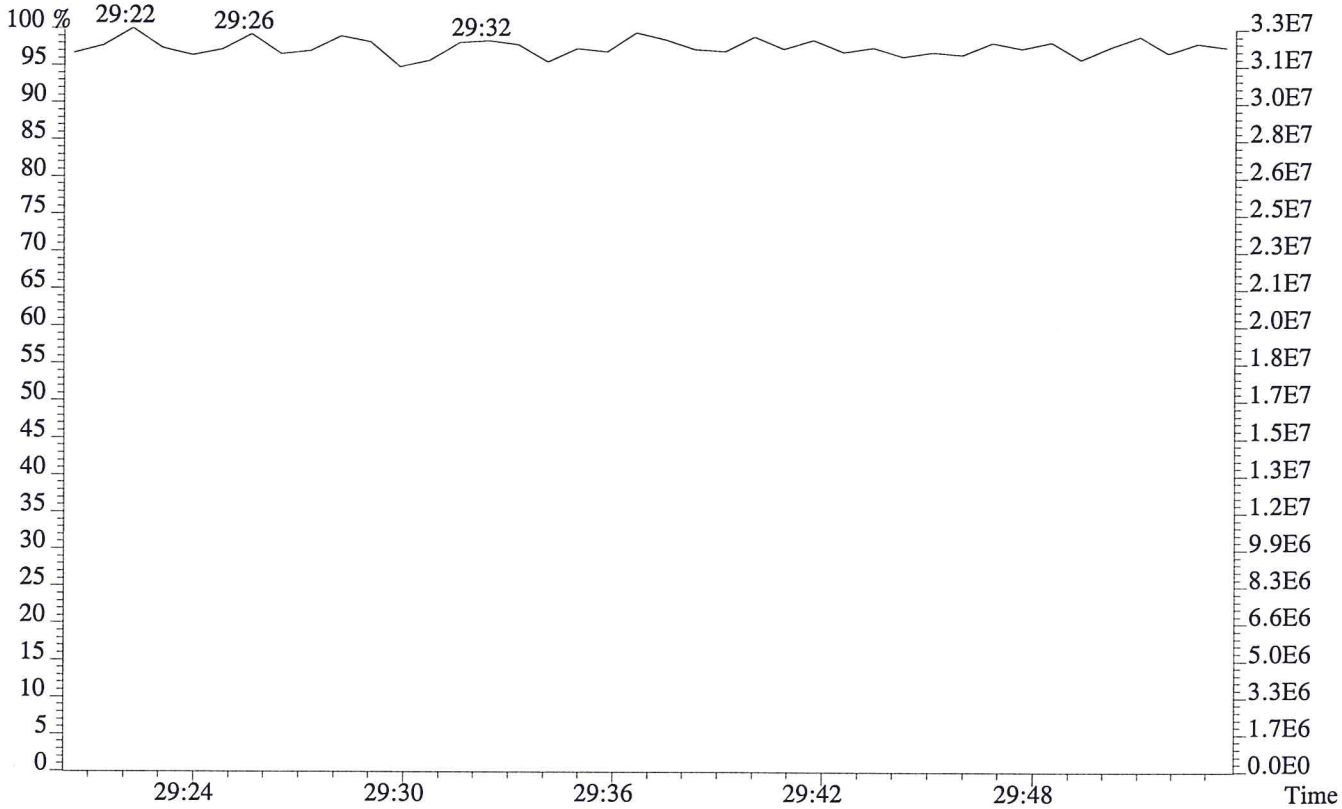
Congener	Retention Time First Eluting	Retention Time Last Eluting
TCDF	24:47	30:45
TCDD	26:37	30:36
PeCDF	29:45	34:45
PeCDD	32:09	34:30
HxCDF	35:23	37:48
HxCDD	35:52	37:25
HpCDF	39:00	40:25
HpCDD	39:15	39:56

% Valley 2378-TCDD: 13 %

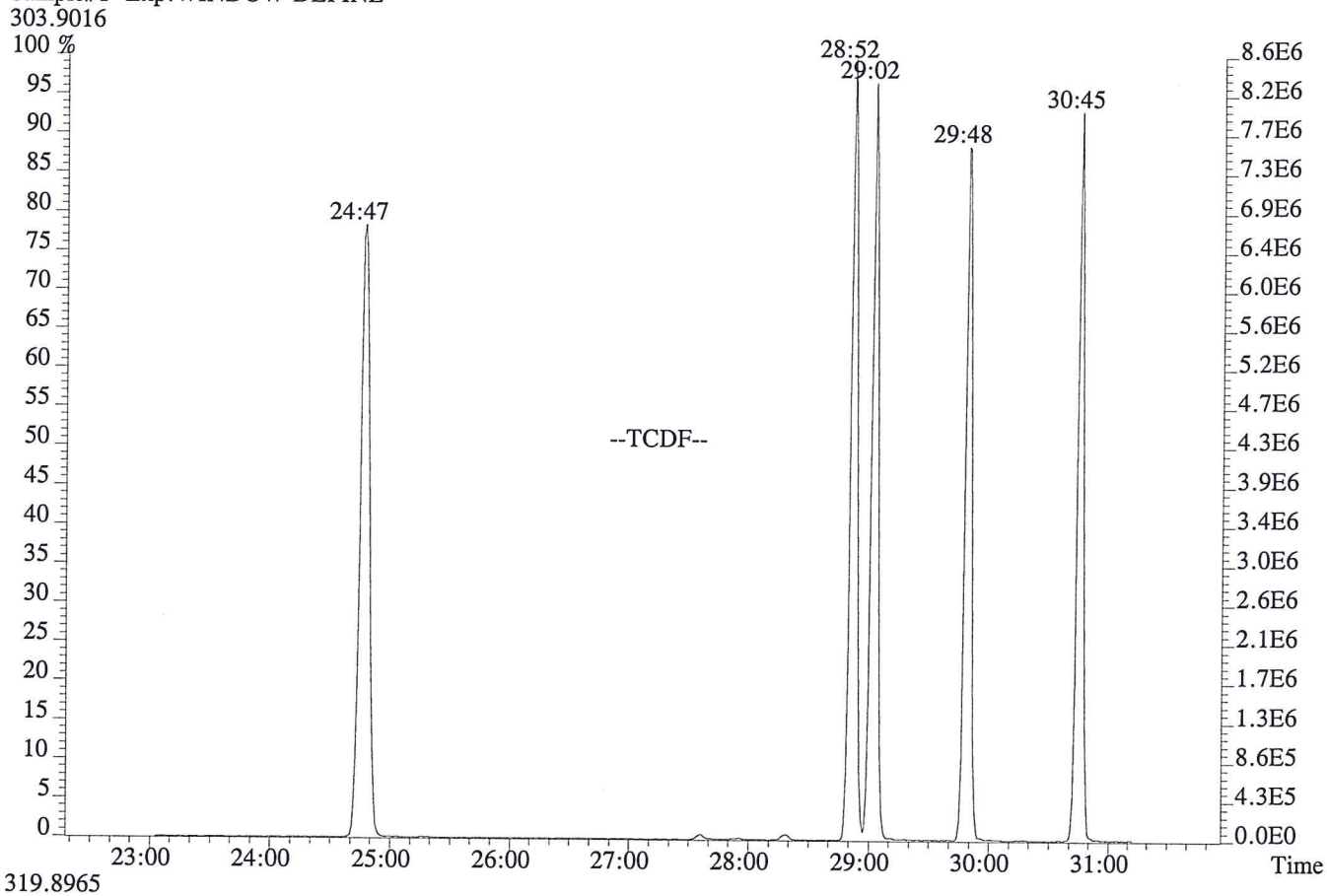
File:P500014 #1-580 Acq:30-JUN-2015 14:05:09 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:WINDOW DEFINE
319.8965

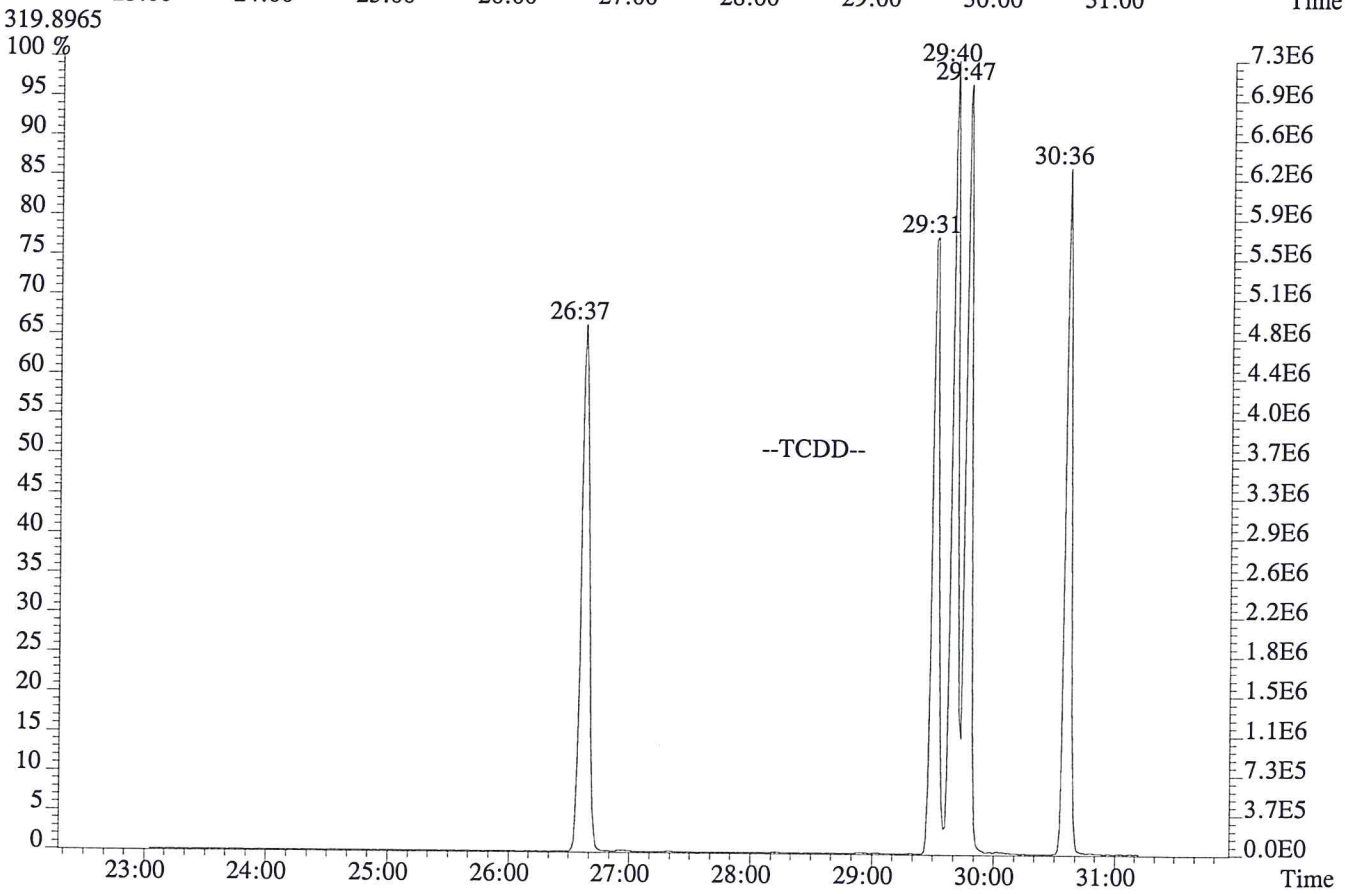


354.9792

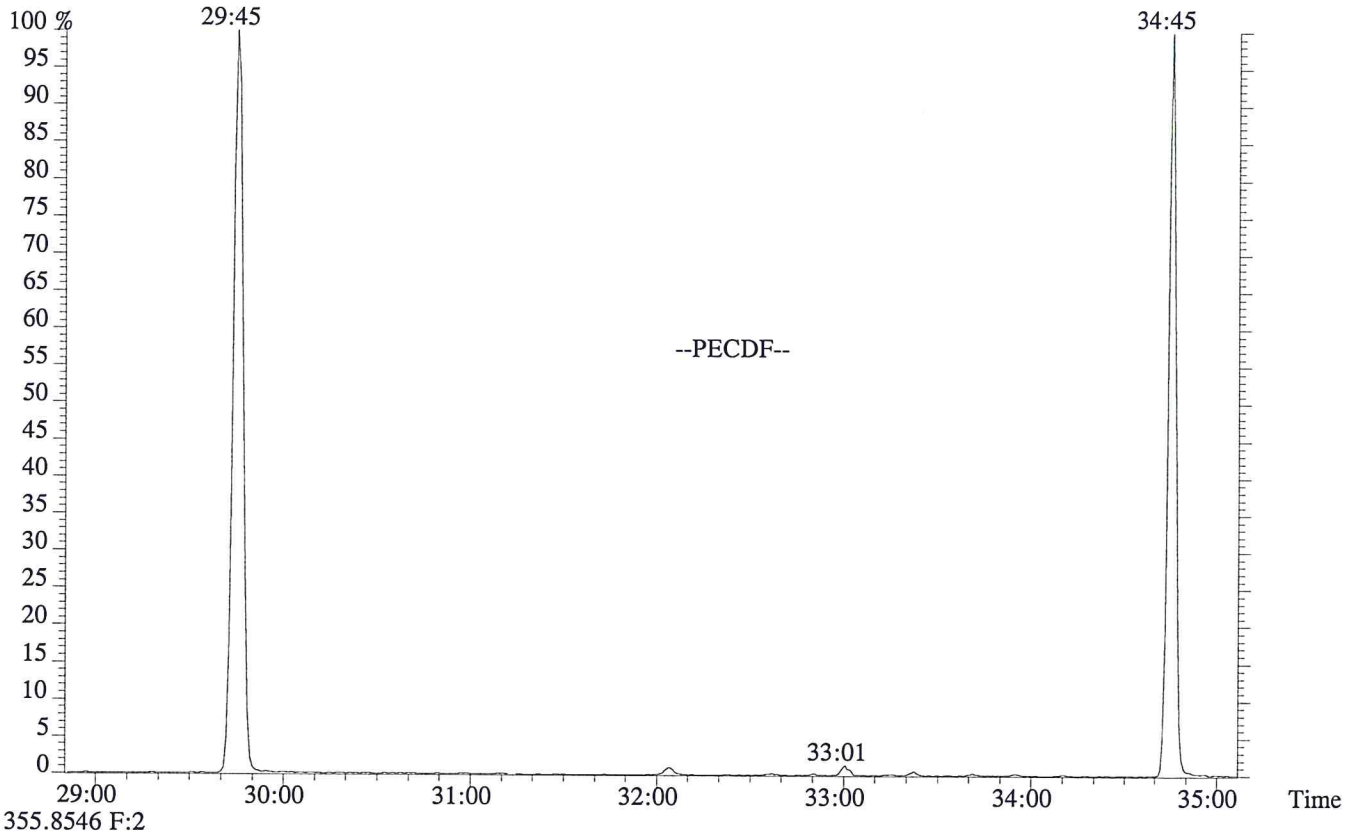


File:P500014 #1-580 Acq:30-JUN-2015 14:05:09 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:WINDOW DEFINE

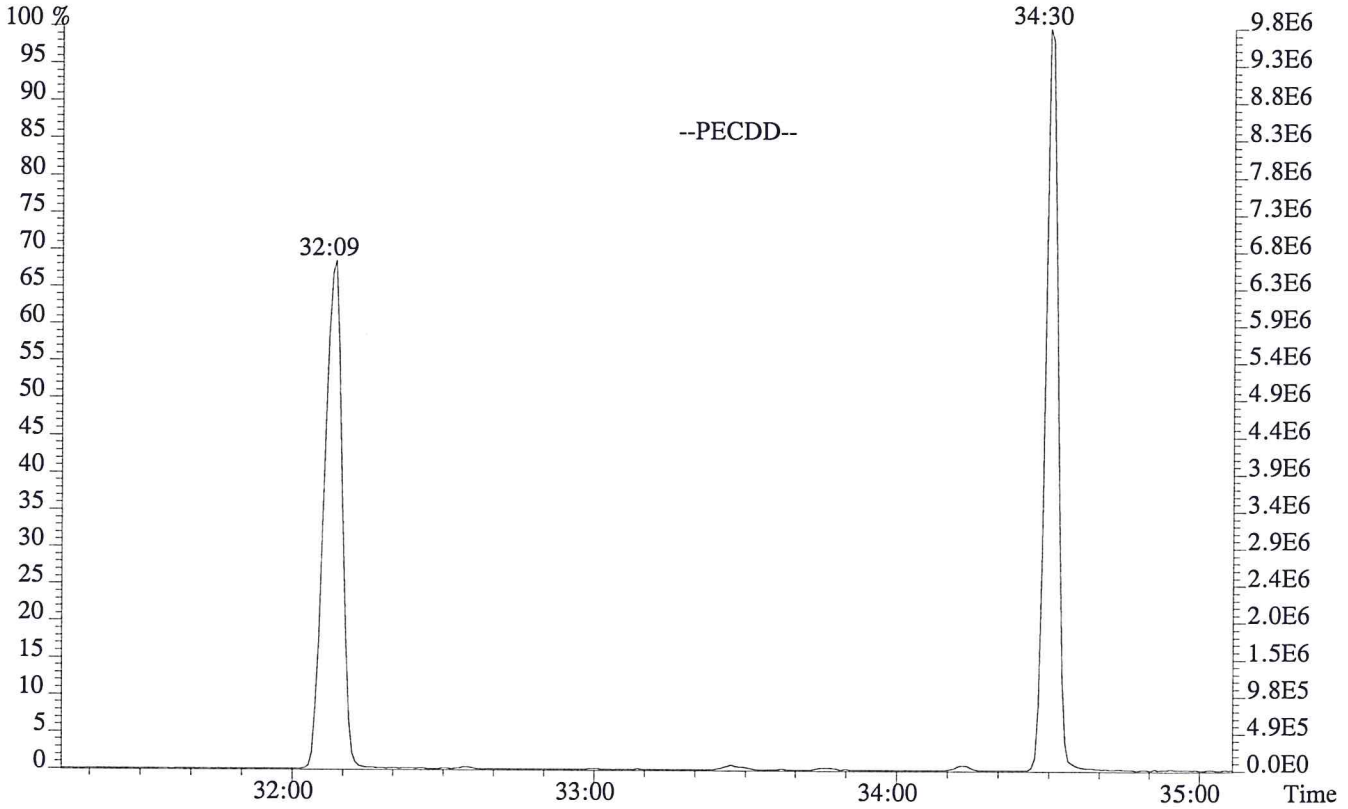




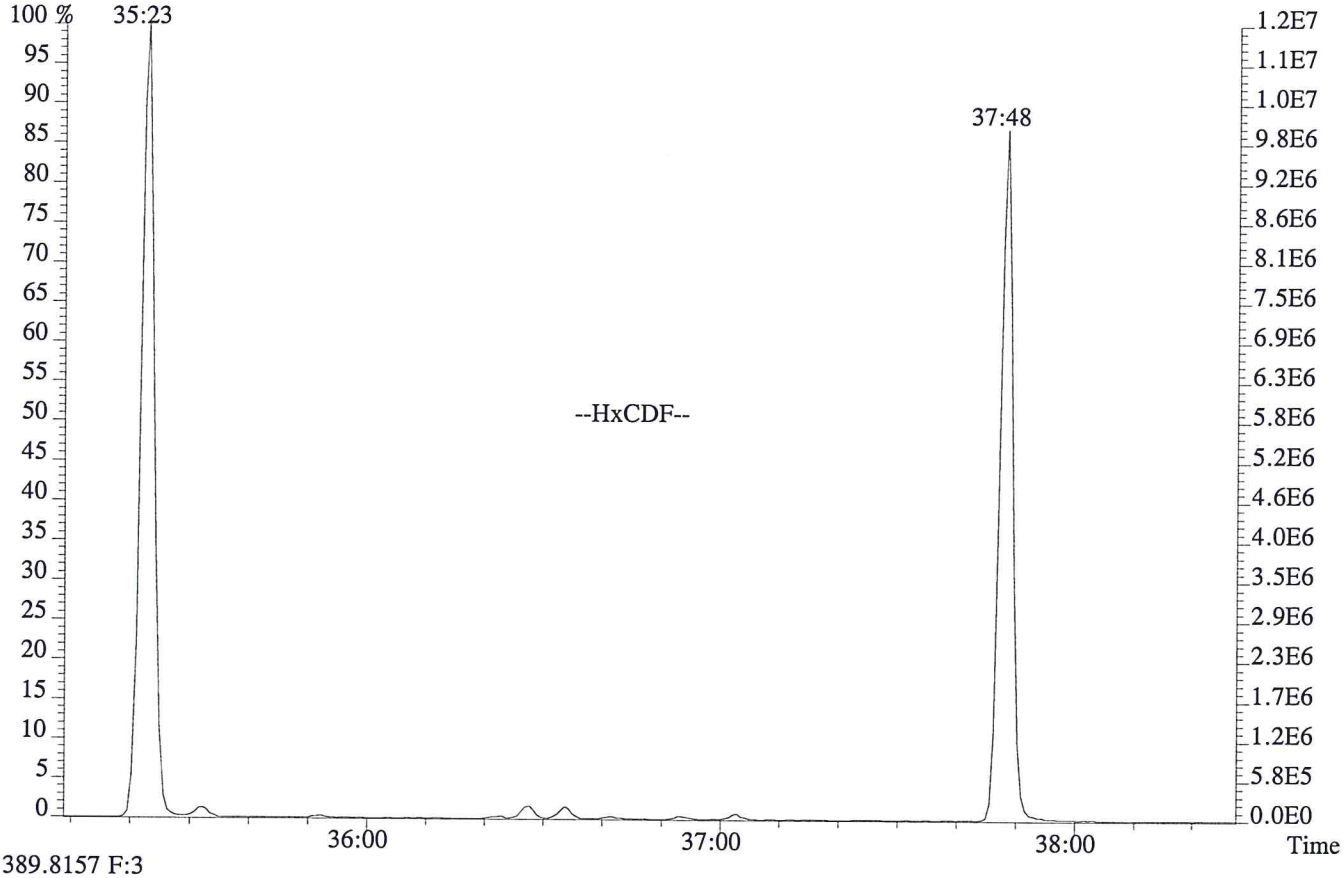
File:P500014 #1-580 Acq:30-JUN-2015 14:05:09 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:WINDOW DEFINE
333.9339,339.8597 F:2



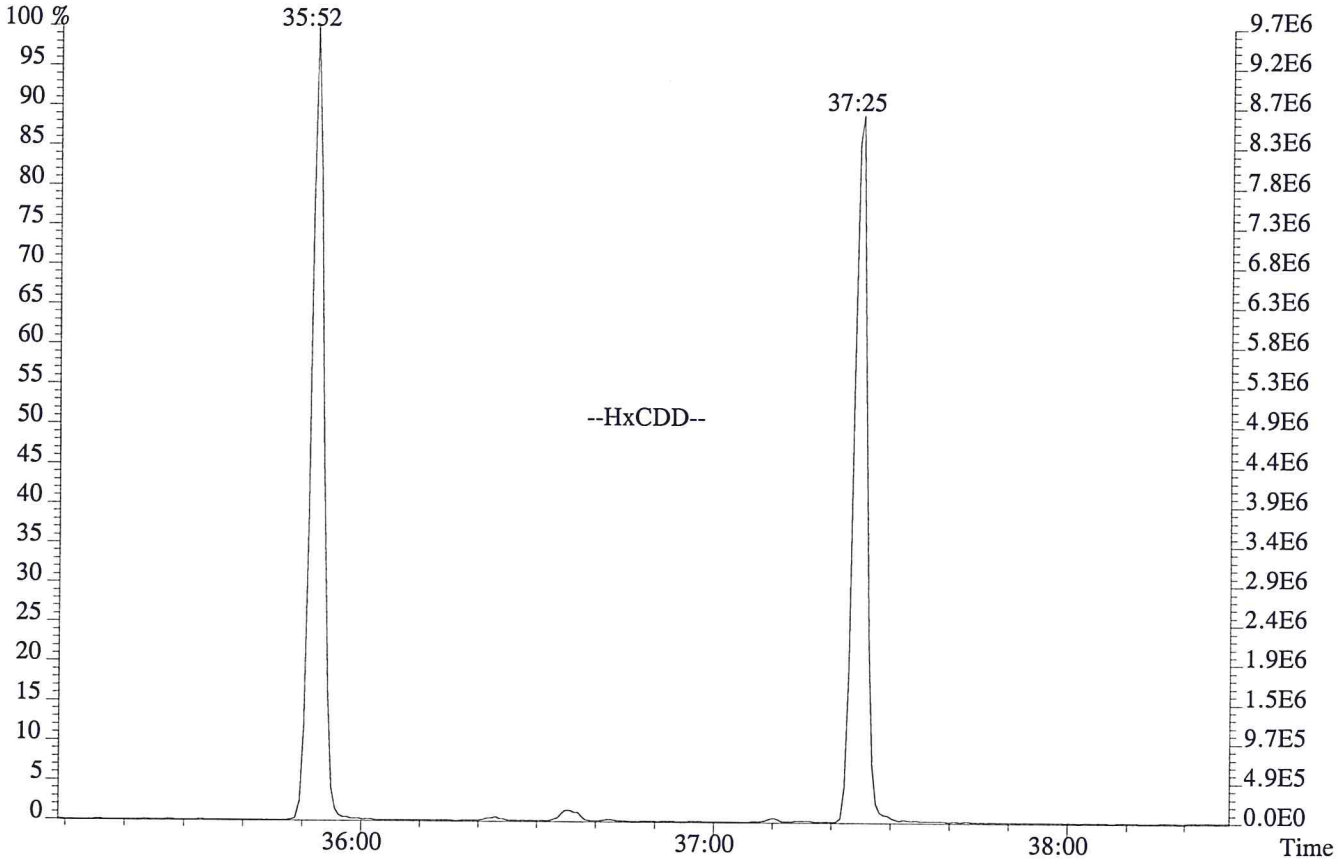
355.8546 F:2



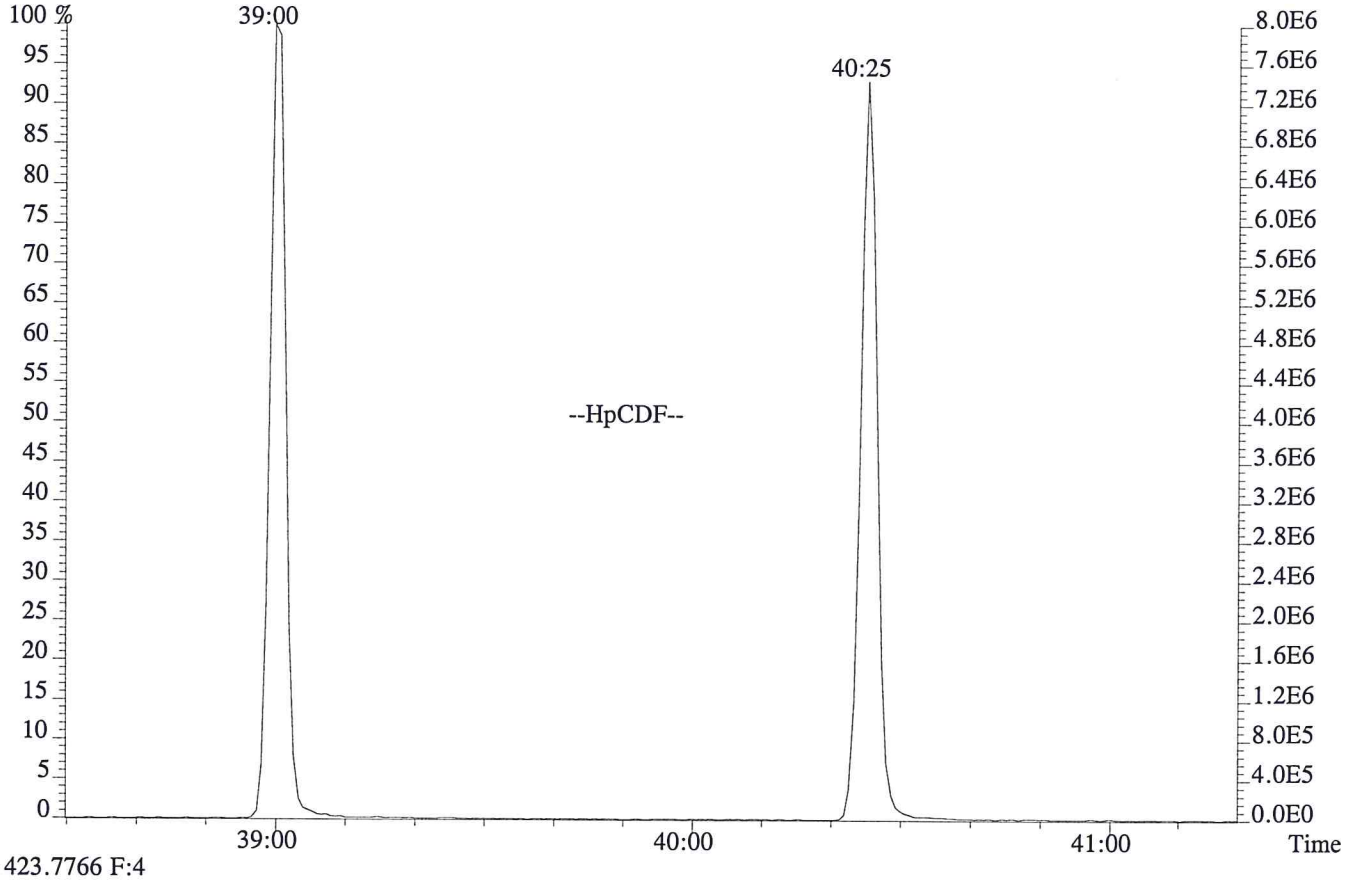
File:P500014 #1-299 Acq:30-JUN-2015 14:05:09 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:WINDOW DEFINE
373.8208 F:3



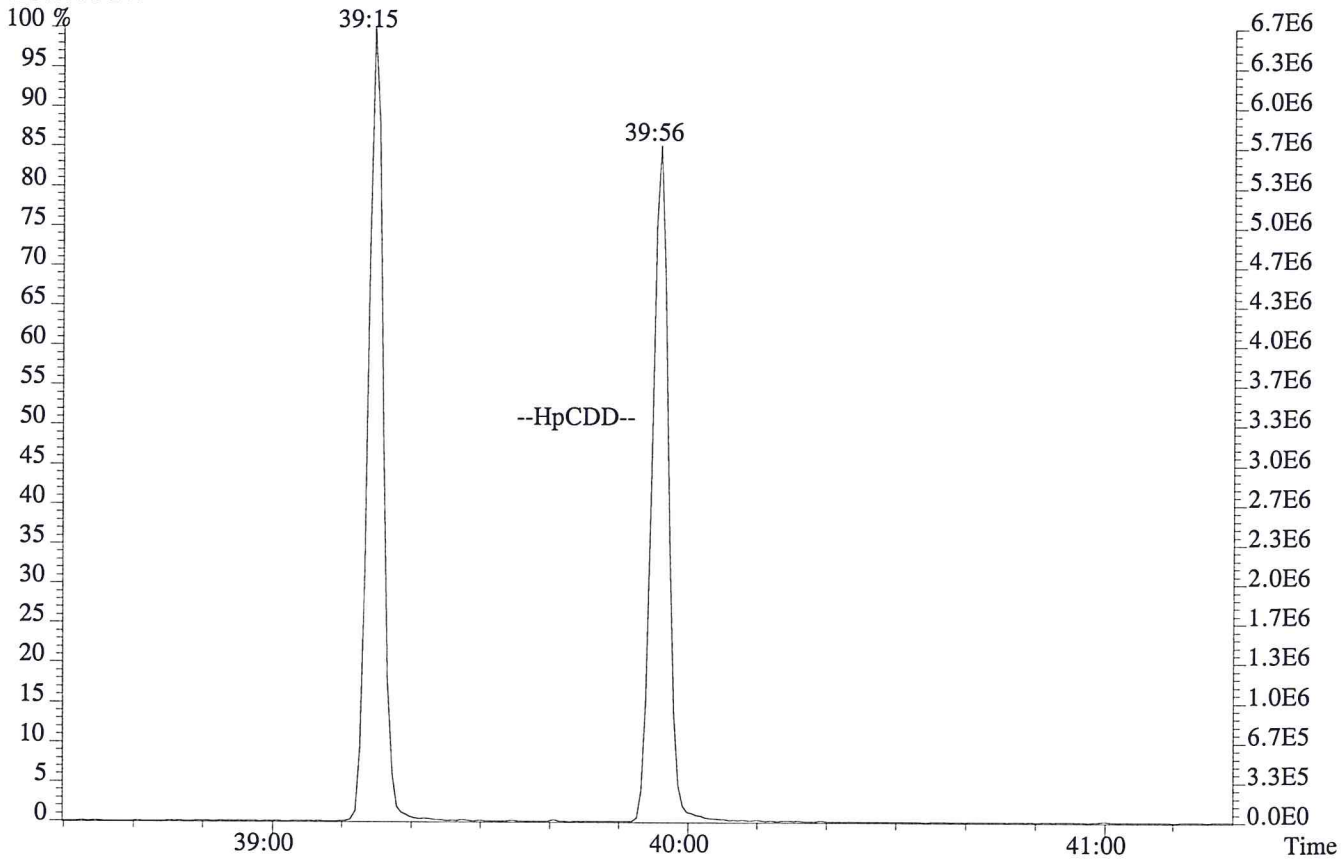
389.8157 F:3



File:P500014 #1-254 Acq:30-JUN-2015 14:05:09 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:WINDOW DEFINE
407.7818 F:4



423.7766 F:4



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).: 6/30/15 Method 1613
Init. Calib. Time.: 15:41:52

	RR/RRF								
Target Analytes	CS0.5	CS1	CS2	CS3	CS4	CS5	MEAN RR/RRF	%RSD	QC LIMITS
2,3,7,8-TCDD	0.95	1.02	1.00	1.00	1.02	1.00	1.00	2.55	+/-20%
2,3,7,8-TCDF	0.83	0.87	0.88	0.91	0.90	0.92	0.89	3.77	+/-20%
1,2,3,7,8-PeCDF	0.94	1.01	1.01	1.00	1.01	0.94	0.98	3.43	+/-20%
1,2,3,7,8-PeCDD	0.90	0.96	0.94	0.94	0.94	0.94	0.94	2.18	+/-20%
2,3,4,7,8-PeCDF	0.92	0.94	0.94	0.95	0.95	1.01	0.95	3.20	+/-20%
1,2,3,4,7,8-HxCDF	1.13	1.21	1.20	1.19	1.21	1.18	1.19	2.47	+/-20%
1,2,3,6,7,8-HxCDF	1.06	1.12	1.12	1.12	1.13	1.14	1.11	2.67	+/-20%
1,2,3,4,7,8-HxCDD	1.00	1.04	1.02	1.03	1.03	1.11	1.04	3.85	+/-20%
1,2,3,6,7,8-HxCDD	0.95	1.03	1.02	1.03	1.03	0.91	1.00	5.34	+/-20%
1,2,3,7,8,9-HxCDD	1.06	1.12	1.11	1.11	1.14	1.10	1.11	2.30	+/-20%
2,3,4,6,7,8-HxCDF	1.05	1.13	1.11	1.12	1.12	1.12	1.11	2.46	+/-20%
1,2,3,7,8,9-HxCDF	1.11	1.17	1.16	1.17	1.17	1.15	1.15	2.01	+/-20%
1,2,3,4,6,7,8-HpCDF	1.33	1.41	1.39	1.39	1.38	1.34	1.38	2.30	+/-20%
1,2,3,4,6,7,8-HpCDD	0.99	1.03	1.02	1.01	1.02	0.99	1.01	1.73	+/-20%
1,2,3,4,7,8,9-HpCDF	1.25	1.33	1.30	1.30	1.30	1.36	1.31	2.76	+/-20%
OCDD	1.09	1.13	1.13	1.10	1.11	0.98	1.09	4.97	+/-20%
OCDF	1.21	1.30	1.29	1.27	1.31	1.19	1.26	3.96	+/-20%
Labeled Compounds									
13C-2,3,7,8-TCDD	1.03	1.03	1.02	0.98	1.03	1.06	1.03	2.56	+/-35%
13C-1,2,3,7,8-PeCDD	1.06	1.04	1.07	1.05	1.08	1.08	1.06	1.55	+/-35%
13C-1,2,3,4,7,8-HxCDD	0.90	0.93	0.89	0.93	0.89	0.91	0.91	1.82	+/-35%
13C-1,2,3,6,7,8-HxCDD	0.90	0.88	0.88	0.87	0.89	0.97	0.90	4.23	+/-35%
13C-1,2,3,4,6,7,8-HpCDD	0.88	0.93	0.90	0.91	0.91	0.92	0.91	1.91	+/-35%
13C-OCDD	0.62	0.63	0.61	0.63	0.62	0.69	0.63	4.66	+/-35%
13C-2,3,7,8-TCDF	1.44	1.45	1.44	1.47	1.45	1.42	1.45	1.04	+/-35%
13C-1,2,3,7,8-PeCDF	1.49	1.46	1.50	1.52	1.52	1.52	1.50	1.66	+/-35%
13C-2,3,4,7,8-PeCDF	1.46	1.44	1.47	1.44	1.50	1.43	1.46	1.79	+/-35%
13C-1,2,3,4,7,8-HxCDF	1.18	1.22	1.21	1.23	1.20	1.20	1.21	1.29	+/-35%
13C-1,2,3,6,7,8-HxCDF	1.26	1.30	1.26	1.28	1.25	1.23	1.26	1.89	+/-35%
13C-2,3,4,6,7,8-HxCDF	1.17	1.17	1.13	1.15	1.14	1.15	1.15	1.27	+/-35%
13C-1,2,3,7,8,9-HxCDF	1.09	1.09	1.09	1.08	1.08	1.10	1.09	0.62	+/-35%
13C-1,2,3,4,6,7,8-HpCDF	0.87	0.88	0.86	0.87	0.88	0.91	0.88	2.06	+/-35%
13C-1,2,3,4,7,8,9-HpCDF	0.89	0.90	0.89	0.87	0.88	0.87	0.88	1.62	+/-35%
37Cl-2,3,7,8-TCDD	1.05	1.06	1.06	1.02	1.09	1.12	1.07	3.17	+/-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

FORM VI-HR CDD-1 DLM02.2

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-07
Init. Calib. Date(s).: 6/30/15 Method 1613
Init. Calib. Time.: 15:41:52

Target Analytes	SELECTED IONS	ION ABUNDANCE RATIO CS0.5	CS1	CS2	CS3	CS4	CS5	FLAG	ION RATIO QC LIMITS
2,3,7,8-TCDF	304/306	0.68	0.74	0.73	0.76	0.75	0.75		0.65-0.89
2,3,7,8-TCDD	320/322	0.80	0.73	0.77	0.79	0.78	0.79		0.65-0.89
1,2,3,7,8-PeCDF	340/342	1.48	1.50	1.52	1.52	1.52	1.55		1.32-1.78
2,3,4,7,8-PeCDF	340/342	1.54	1.49	1.50	1.52	1.54	1.54		1.32-1.78
1,2,3,7,8-PeCDD	356/358	1.49	1.61	1.55	1.57	1.57	1.56		1.32-1.78
1,2,3,4,7,8-HxCDF	374/376	1.25	1.21	1.21	1.20	1.21	1.24		1.05-1.43
1,2,3,6,7,8-HxCDF	374/376	1.25	1.22	1.20	1.20	1.22	1.22		1.05-1.43
2,3,4,6,7,8-HxCDF	374/376	1.20	1.23	1.20	1.21	1.21	1.22		1.05-1.43
1,2,3,7,8,9-HxCDF	374/376	1.25	1.22	1.20	1.23	1.21	1.22		1.05-1.43
1,2,3,4,7,8-HxCDD	390/392	1.35	1.18	1.26	1.24	1.25	1.25		1.05-1.43
1,2,3,6,7,8-HxCDD	390/392	1.24	1.23	1.25	1.26	1.25	1.25		1.05-1.43
1,2,3,7,8,9-HxCDD	390/392	1.28	1.22	1.24	1.24	1.25	1.25		1.05-1.43
1,2,3,4,6,7,8-HpCDF	408/410	0.99	1.00	1.03	1.02	1.02	1.02		0.88-1.20
1,2,3,4,7,8,9-HpCDF	408/410	1.00	1.01	1.01	1.03	1.02	1.03		0.88-1.20
1,2,3,4,6,7,8-HpCDD	424/426	1.08	1.06	1.04	1.05	1.04	1.04		0.88-1.20
OCDF	442/444	0.90	0.88	0.89	0.89	0.90	0.90		0.76-1.02
OCDD	458/460	0.87	0.90	0.88	0.89	0.89	0.90		0.76-1.02
13C-2,3,7,8-TCDD	332/334	0.79	0.79	0.78	0.79	0.79	0.78		0.65-0.89
13C-1,2,3,7,8-PeCDD	368/370	1.58	1.57	1.57	1.58	1.57	1.57		1.32-1.78
13C-1,2,3,4,7,8-HxCDD	402/404	1.26	1.27	1.27	1.27	1.27	1.26		1.05-1.43
13C-1,2,3,6,7,8-HxCDD	402/404	1.26	1.26	1.26	1.26	1.26	1.25		1.05-1.43
13C-1,2,3,4,6,7,8-HpCDD	436/438	1.06	1.05	1.06	1.06	1.05	1.05		0.88-1.20
13C-OCDD	470/472	0.90	0.90	0.90	0.90	0.90	0.90		0.76-1.02
13C-2,3,7,8-TCDF	316/318	0.79	0.79	0.79	0.79	0.79	0.79		0.65-0.89
13C-1,2,3,7,8-PeCDF	352/354	1.58	1.58	1.58	1.57	1.58	1.57		1.32-1.78
13C-2,3,4,7,8-PeCDF	352/354	1.59	1.58	1.58	1.57	1.57	1.57		1.32-1.78
13C-1,2,3,4,7,8-HxCDF	384/386	0.52	0.53	0.52	0.52	0.52	0.51		0.43-0.59
13C-1,2,3,6,7,8-HxCDF	384/386	0.52	0.51	0.51	0.52	0.52	0.52		0.43-0.59
13C-2,3,4,6,7,8-HxCDF	384/386	0.52	0.52	0.52	0.52	0.52	0.52		0.43-0.59
13C-1,2,3,7,8,9-HxCDF	384/386	0.52	0.52	0.52	0.52	0.52	0.52		0.43-0.59
13C-1,2,3,4,6,7,8-HpCDF	418/420	0.45	0.45	0.45	0.44	0.45	0.44		0.37-0.51
13C-1,2,3,4,7,8,9-HpCDF	418/420	0.45	0.45	0.45	0.45	0.44	0.45		0.37-0.51
13C-1,2,3,4-TCDD	332/334	0.79	0.80	0.80	0.80	0.80	0.80		0.65-0.89
13C-1,2,3,7,8,9-HxCDD	402/404	1.25	1.26	1.25	1.26	1.27	1.26		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.
76554

Run #1 Filename P500016 Samp: 1 Inj: 1 Acquired: 30-JUN-15 15:41:52
Processed: 14-JUL-15 14:58:24 Sample ID: IC0.5

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	29:03	5.447e+02	7.985e+02	0.68	yes	no	0.886
2	Unk	1,2,3,7,8-PeCDF	33:01	4.675e+03	3.168e+03	1.48	yes	no	0.983
3	Unk	2,3,4,7,8-PeCDF	33:53	4.559e+03	2.963e+03	1.54	yes	no	0.952
4	Unk	1,2,3,4,7,8-HxCDF	36:28	4.032e+03	3.225e+03	1.25	yes	no	1.190
5	Unk	1,2,3,6,7,8-HxCDF	36:34	4.009e+03	3.206e+03	1.25	yes	no	1.114
6	Unk	2,3,4,6,7,8-HxCDF	37:03	3.632e+03	3.026e+03	1.20	yes	no	1.109
7	Unk	1,2,3,7,8,9-HxCDF	37:48	3.618e+03	2.892e+03	1.25	yes	no	1.153
8	Unk	1,2,3,4,6,7,8-HpCDF	39:01	3.100e+03	3.142e+03	0.99	yes	no	1.376
9	Unk	1,2,3,4,7,8,9-HpCDF	40:26	2.997e+03	3.009e+03	1.00	yes	no	1.306
10	Unk	OCDF	43:00	3.822e+03	4.266e+03	0.90	yes	no	1.263
11	Unk	2,3,7,8-TCDD	29:47	4.901e+02	6.104e+02	0.80	yes	no	0.997
12	Unk	1,2,3,7,8-PeCDD	34:09	3.194e+03	2.147e+03	1.49	yes	no	0.935
13	Unk	1,2,3,4,7,8-HxCDD	37:11	2.782e+03	2.054e+03	1.35	yes	no	1.039
14	Unk	1,2,3,6,7,8-HxCDD	37:16	2.567e+03	2.075e+03	1.24	yes	no	0.996
15	Unk	1,2,3,7,8,9-HxCDD	37:30	2.900e+03	2.265e+03	1.28	yes	no	1.108
16	Unk	1,2,3,4,6,7,8-HpCDD	39:57	2.455e+03	2.270e+03	1.08	yes	no	1.010
17	Unk	OCDD	42:46	3.401e+03	3.900e+03	0.87	yes	no	1.090
18	IS	13C-2,3,7,8-TCDF	29:01	2.849e+05	3.623e+05	0.79	yes	no	1.447
19	IS	13C-1,2,3,7,8-PeCDF	33:01	4.087e+05	2.588e+05	1.58	yes	no	1.500
20	IS	13C-2,3,4,7,8-PeCDF	33:52	4.015e+05	2.527e+05	1.59	yes	no	1.456
21	IS	13C-1,2,3,4,7,8-HxCDF	36:27	1.759e+05	3.358e+05	0.52	yes	no	1.207
22	IS	13C-1,2,3,6,7,8-HxCDF	36:34	1.880e+05	3.581e+05	0.52	yes	no	1.263
23	IS	13C-2,3,4,6,7,8-HxCDF	37:02	1.723e+05	3.326e+05	0.52	yes	no	1.153
24	IS	13C-1,2,3,7,8,9-HxCDF	37:47	1.599e+05	3.099e+05	0.52	yes	no	1.085
25	IS	13C-1,2,3,4,6,7,8-HpCDF	39:01	1.158e+05	2.587e+05	0.45	yes	no	0.876
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:25	1.191e+05	2.658e+05	0.45	yes	no	0.883
27	IS	13C-2,3,7,8-TCDD	29:46	2.050e+05	2.591e+05	0.79	yes	no	1.027
28	IS	13C-1,2,3,7,8-PeCDD	34:09	2.916e+05	1.848e+05	1.58	yes	no	1.064
29	IS	13C-1,2,3,4,7,8-HxCDD	37:10	2.162e+05	1.716e+05	1.26	yes	no	0.908
30	IS	13C-1,2,3,6,7,8-HxCDD	37:15	2.173e+05	1.731e+05	1.26	yes	no	0.899
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:56	1.955e+05	1.850e+05	1.06	yes	no	0.910
32	IS	13C-OCDD	42:46	2.521e+05	2.815e+05	0.90	yes	no	0.633
33	RS/RT	13C-1,2,3,4-TCDD	29:14	1.987e+05	2.500e+05	0.79	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:29	2.401e+05	1.920e+05	1.25	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:47	1.179e+03				no	1.066

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Signal/Noise Height Ratio Summary

CLIENT ID.
76554

Run #1 Filename P500016 Samp: 1 Inj: 1 Acquired: 30-JUN-15 15:41:52
Processed: 14-JUL-15 14:58:24 LAB. ID: IC0.5

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	1.10e+05	1.46e+03	7.5e+01	1.63e+05	3.14e+03	5.2e+01
2	1,2,3,7,8-PeCDF	9.54e+05	2.20e+03	4.3e+02	6.45e+05	5.52e+03	1.2e+02
3	2,3,4,7,8-PeCDF	9.40e+05	2.20e+03	4.3e+02	6.11e+05	5.52e+03	1.1e+02
4	1,2,3,4,7,8-HxCDF	9.10e+05	1.56e+03	5.8e+02	7.41e+05	1.05e+03	7.1e+02
5	1,2,3,6,7,8-HxCDF	9.05e+05	1.56e+03	5.8e+02	7.24e+05	1.05e+03	6.9e+02
6	2,3,4,6,7,8-HxCDF	8.39e+05	1.56e+03	5.4e+02	6.89e+05	1.05e+03	6.6e+02
7	1,2,3,7,8,9-HxCDF	7.90e+05	1.56e+03	5.1e+02	6.22e+05	1.05e+03	5.9e+02
8	1,2,3,4,6,7,8-HpCDF	6.84e+05	1.37e+03	5.0e+02	6.86e+05	2.18e+03	3.2e+02
9	1,2,3,4,7,8,9-HpCDF	6.49e+05	1.37e+03	4.7e+02	6.47e+05	2.18e+03	3.0e+02
10	OCDF	6.84e+05	2.19e+03	3.1e+02	7.79e+05	2.29e+03	3.4e+02
11	2,3,7,8-TCDD	9.89e+04	1.91e+03	5.2e+01	1.24e+05	2.45e+03	5.1e+01
12	1,2,3,7,8-PeCDD	6.90e+05	3.34e+03	2.1e+02	4.55e+05	1.76e+03	2.6e+02
13	1,2,3,4,7,8-HxCDD	6.14e+05	1.55e+03	4.0e+02	4.88e+05	1.96e+03	2.5e+02
14	1,2,3,6,7,8-HxCDD	6.06e+05	1.55e+03	3.9e+02	4.82e+05	1.96e+03	2.5e+02
15	1,2,3,7,8,9-HxCDD	6.77e+05	1.55e+03	4.4e+02	5.20e+05	1.96e+03	2.6e+02
16	1,2,3,4,6,7,8-HpCDD	5.18e+05	1.41e+03	3.7e+02	4.94e+05	1.13e+03	4.4e+02
17	OCDD	6.26e+05	1.42e+03	4.4e+02	7.30e+05	1.87e+03	3.9e+02
18	13C-2,3,7,8-TCDF	5.58e+07	3.84e+03	1.5e+04	7.08e+07	4.32e+03	1.6e+04
19	13C-1,2,3,7,8-PeCDF	8.17e+07	1.21e+03	6.7e+04	5.12e+07	2.20e+03	2.3e+04
20	13C-2,3,4,7,8-PeCDF	8.38e+07	1.21e+03	6.9e+04	5.28e+07	2.20e+03	2.4e+04
21	13C-1,2,3,4,7,8-HxCDF	3.91e+07	1.59e+03	2.5e+04	7.56e+07	3.26e+03	2.3e+04
22	13C-1,2,3,6,7,8-HxCDF	4.25e+07	1.59e+03	2.7e+04	8.14e+07	3.26e+03	2.5e+04
23	13C-2,3,4,6,7,8-HxCDF	3.98e+07	1.59e+03	2.5e+04	7.75e+07	3.26e+03	2.4e+04
24	13C-1,2,3,7,8,9-HxCDF	3.48e+07	1.59e+03	2.2e+04	6.65e+07	3.26e+03	2.0e+04
25	13C-1,2,3,4,6,7,8-HpCDF	2.55e+07	5.88e+03	4.3e+03	5.71e+07	6.85e+03	8.3e+03
26	13C-1,2,3,4,7,8,9-HpCDF	2.57e+07	5.88e+03	4.4e+03	5.71e+07	6.85e+03	8.3e+03
27	13C-2,3,7,8-TCDD	4.26e+07	1.06e+04	4.0e+03	5.39e+07	4.76e+03	1.1e+04
28	13C-1,2,3,7,8-PeCDD	6.20e+07	2.56e+03	2.4e+04	3.90e+07	1.66e+03	2.3e+04
29	13C-1,2,3,4,7,8-HxCDD	5.12e+07	5.35e+03	9.6e+03	4.02e+07	3.84e+03	1.0e+04
30	13C-1,2,3,6,7,8-HxCDD	4.89e+07	5.35e+03	9.1e+03	3.92e+07	3.84e+03	1.0e+04
31	13C-1,2,3,4,6,7,8-HpCDD	4.23e+07	1.74e+03	2.4e+04	3.99e+07	1.80e+03	2.2e+04
32	13C-OCDD	4.58e+07	1.19e+03	3.8e+04	5.16e+07	1.39e+03	3.7e+04
33	13C-1,2,3,4-TCDD	3.97e+07	1.06e+04	3.7e+03	5.05e+07	4.76e+03	1.1e+04
34	13C-1,2,3,7,8,9-HxCDD	5.60e+07	5.35e+03	1.0e+04	4.49e+07	3.84e+03	1.2e+04
35	37Cl-2,3,7,8-TCDD	2.49e+05	2.33e+03	1.1e+02			

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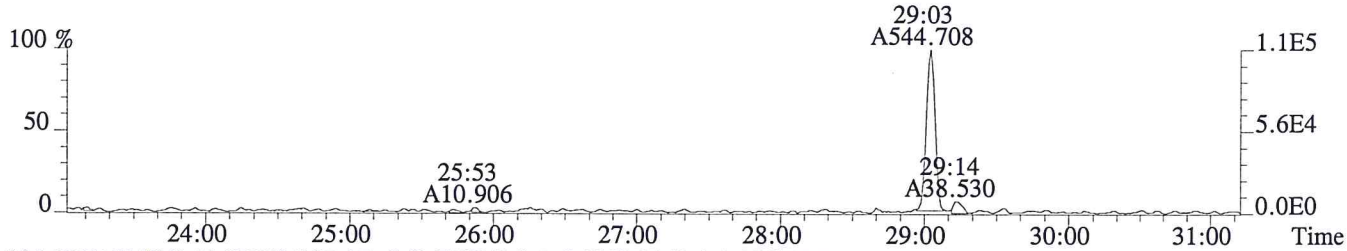
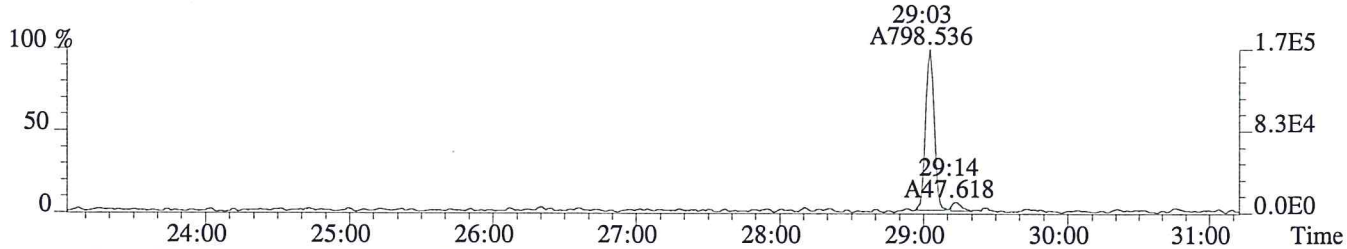
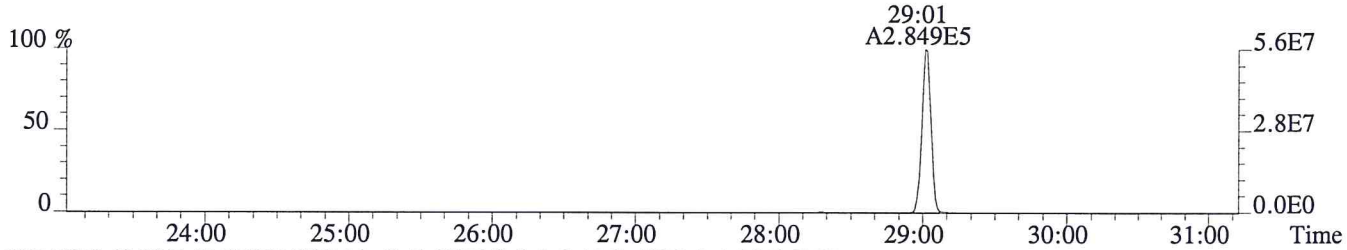
File:P500016 #1-580 Acq:30-JUN-2015 15:41:52 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC0.5
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1460.0,1.00%,F,T)



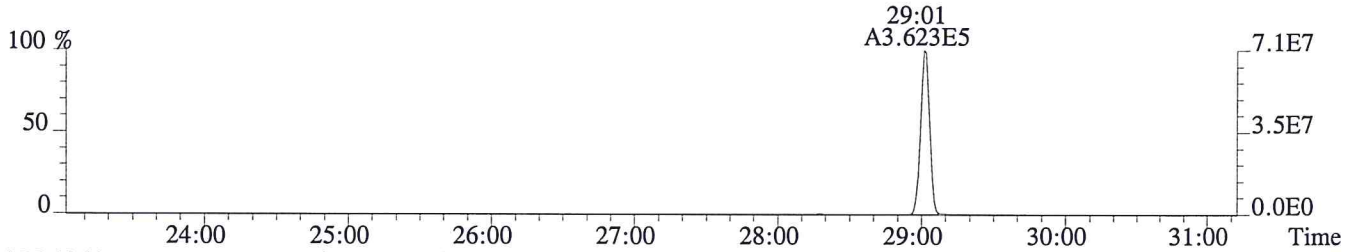
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3140.0,1.00%,F,T)



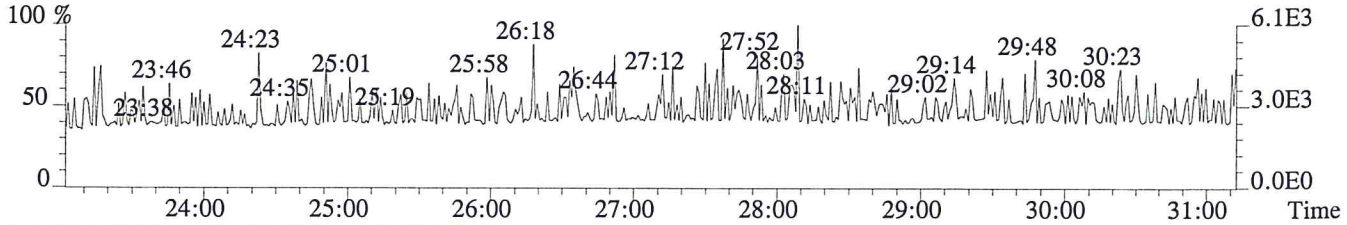
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3836.0,1.00%,F,T)



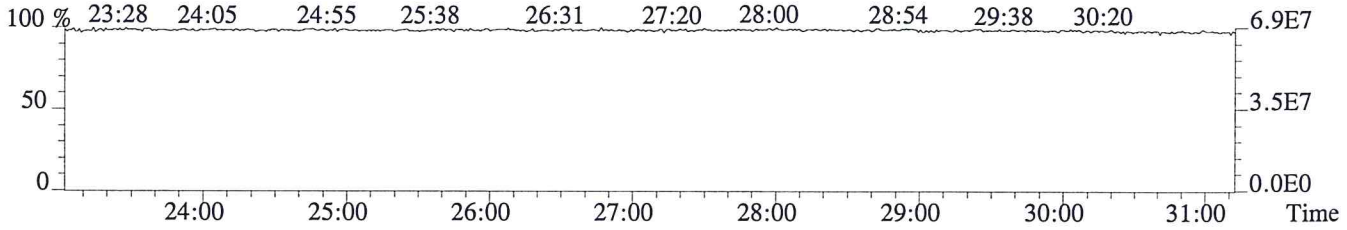
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4320.0,1.00%,F,T)



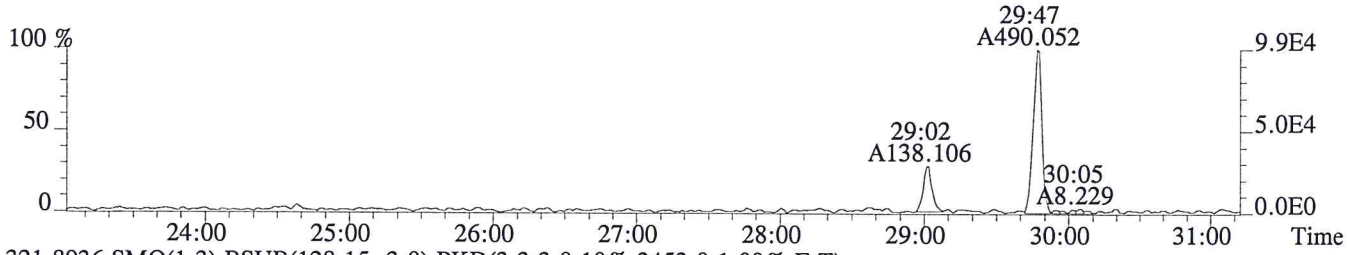
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



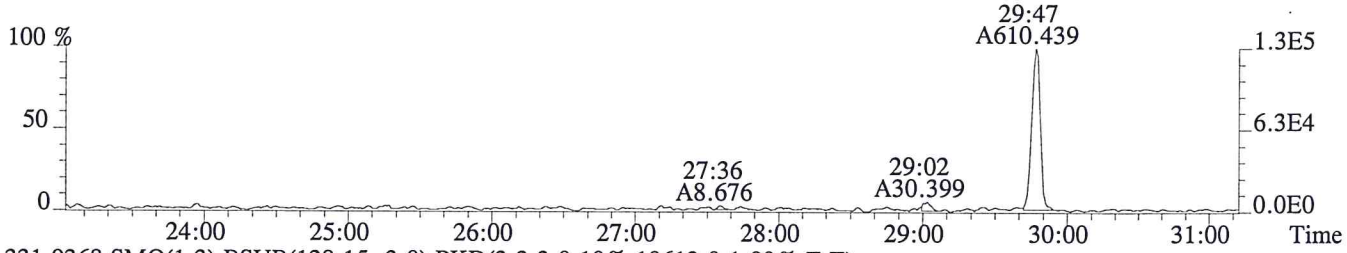
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



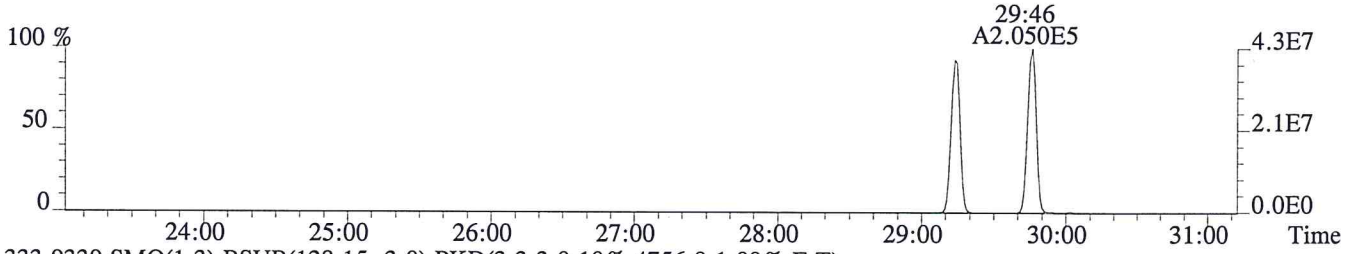
File:P500016 #1-580 Acq:30-JUN-2015 15:41:52 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC0.5
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1912.0,1.00%,F,T)



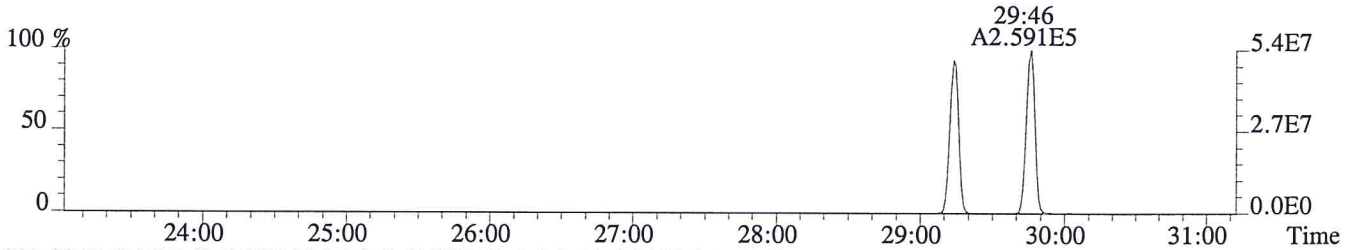
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2452.0,1.00%,F,T)



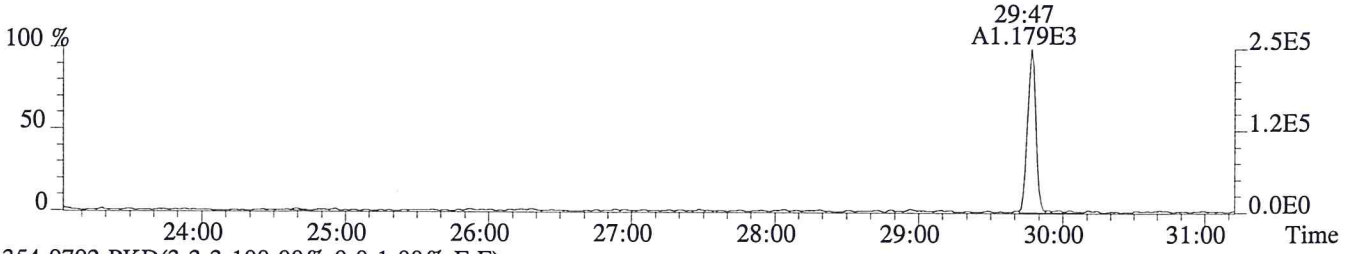
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,10612.0,1.00%,F,T)



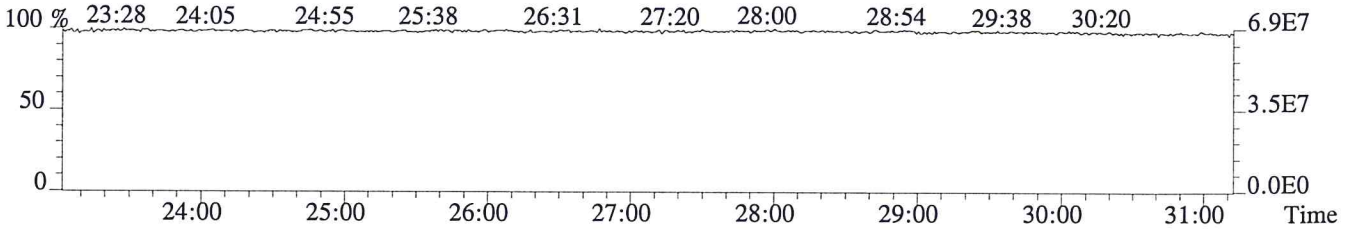
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4756.0,1.00%,F,T)



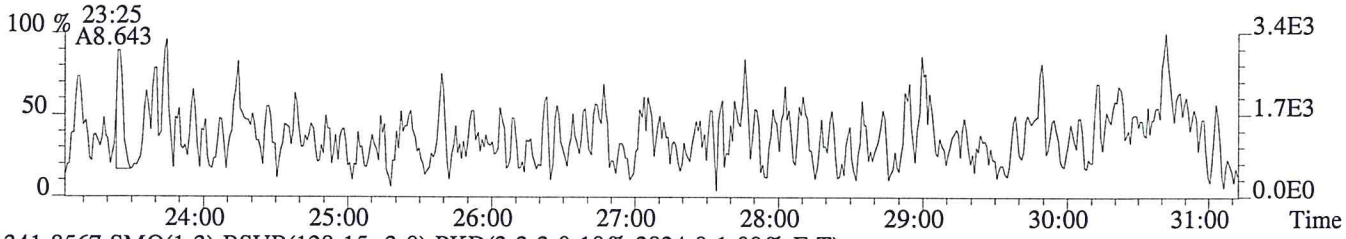
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2328.0,1.00%,F,T)



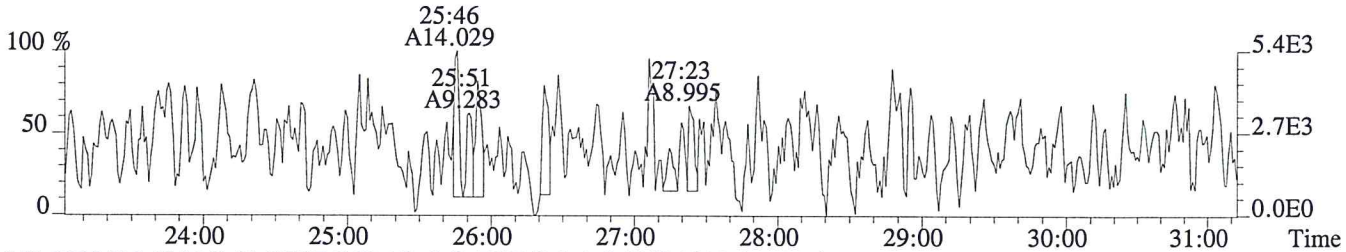
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



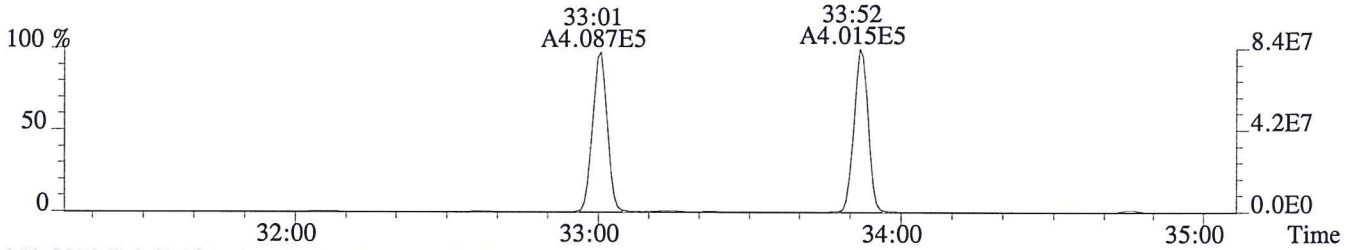
File:P500016 #1-580 Acq:30-JUN-2015 15:41:52 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC0.5
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1552.0,1.00%,F,T)



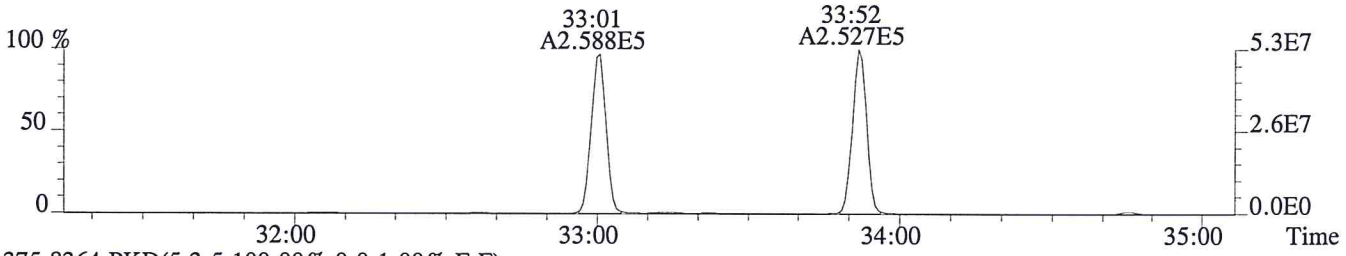
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2824.0,1.00%,F,T)



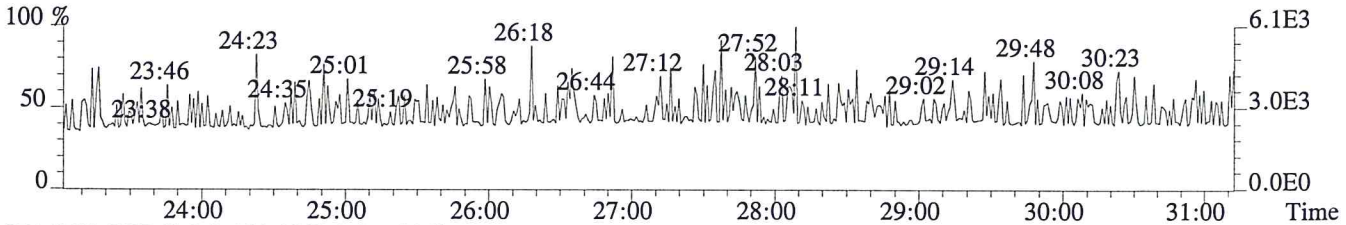
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1212.0,1.00%,F,T)



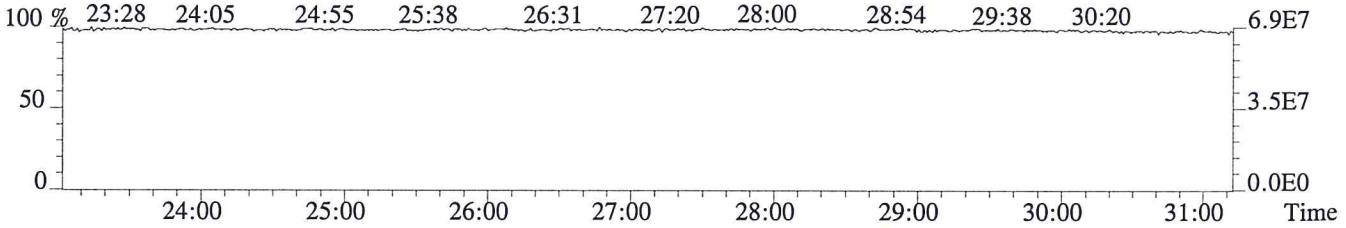
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2200.0,1.00%,F,T)



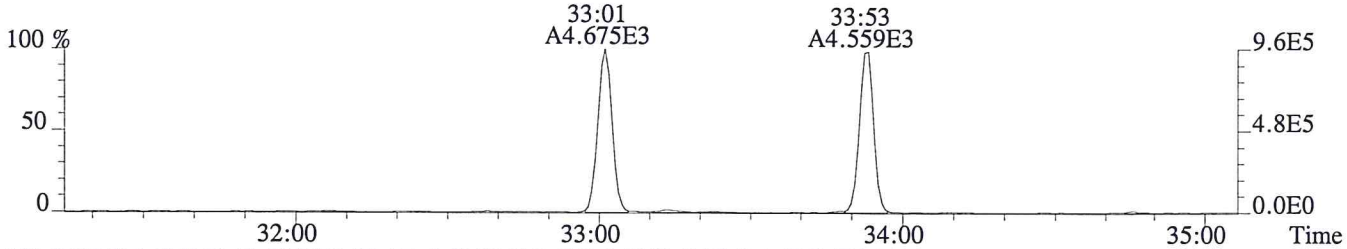
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



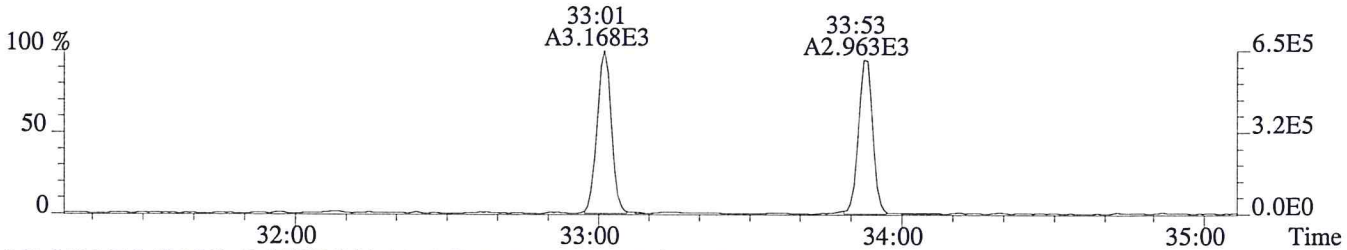
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



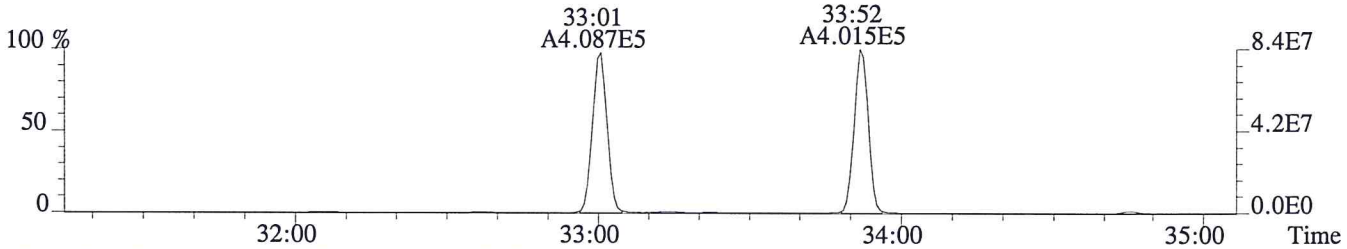
File:P500016 #1-349 Acq:30-JUN-2015 15:41:52 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC0.5
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2204.0,1.00%,F,T)



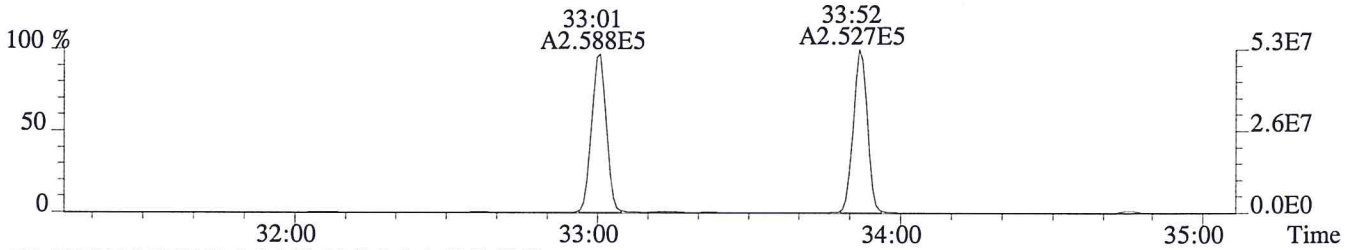
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5520.0,1.00%,F,T)



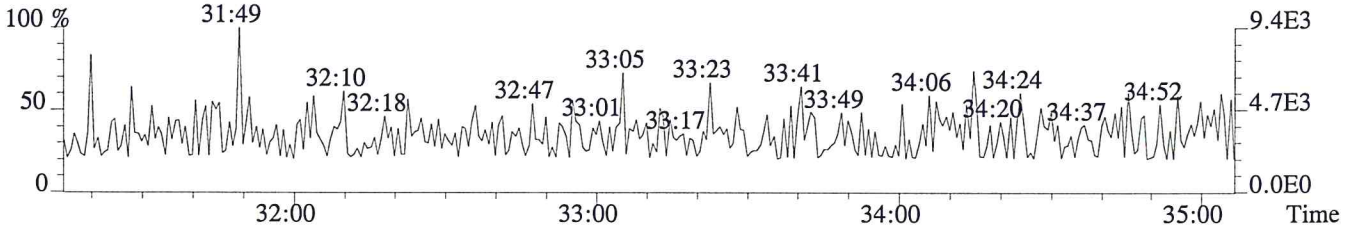
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1212.0,1.00%,F,T)



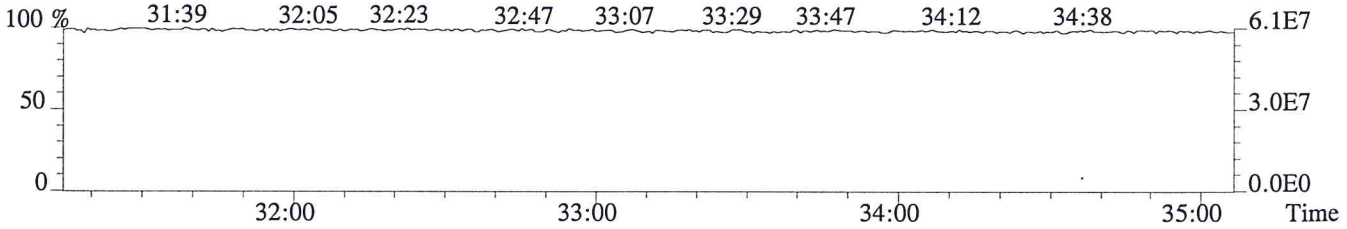
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2200.0,1.00%,F,T)



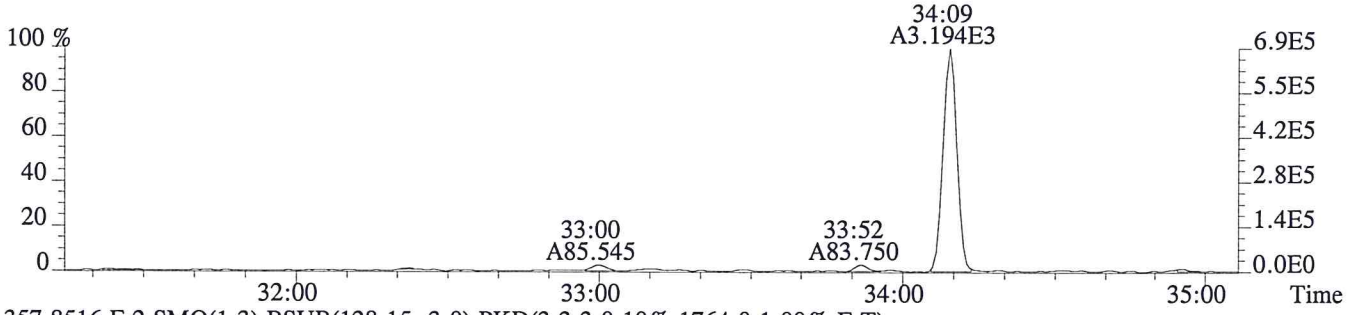
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



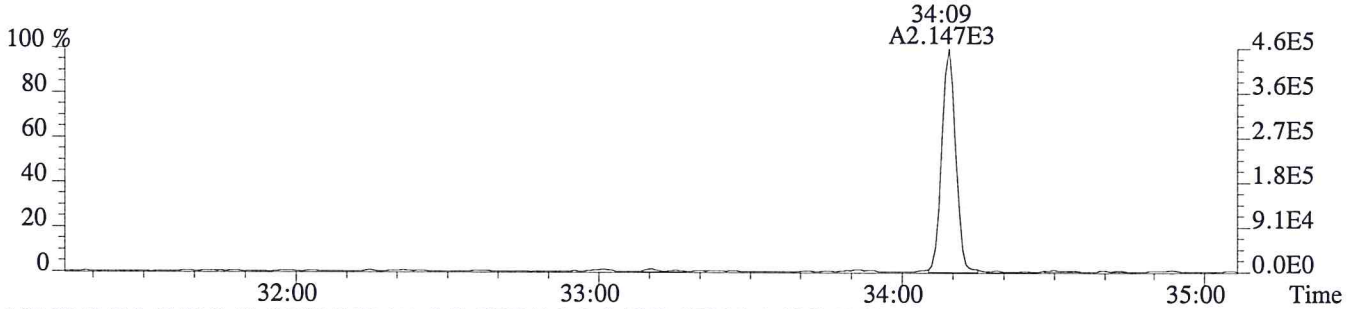
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



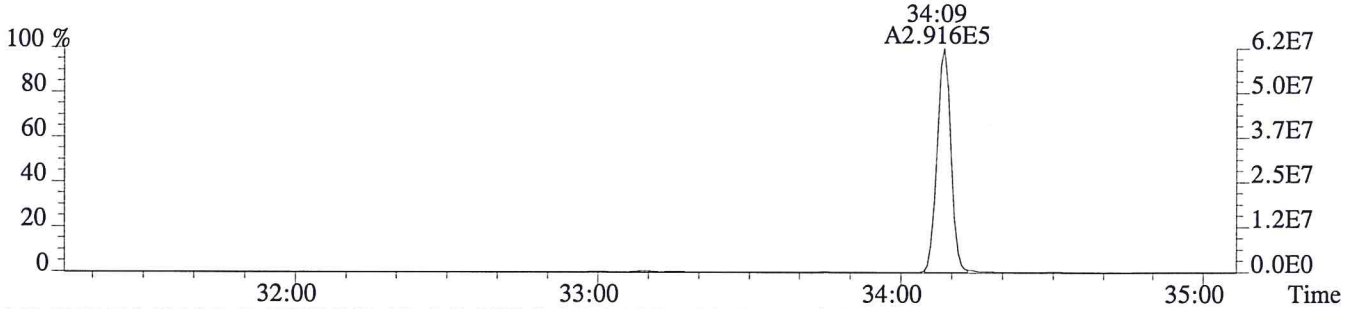
File:P500016 #1-349 Acq:30-JUN-2015 15:41:52 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC0.5
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3340.0,1.00%,F,T)



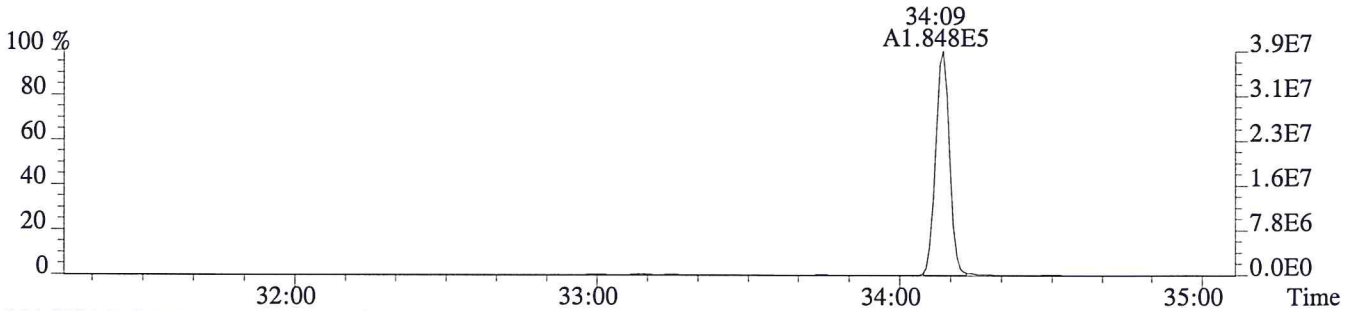
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1764.0,1.00%,F,T)



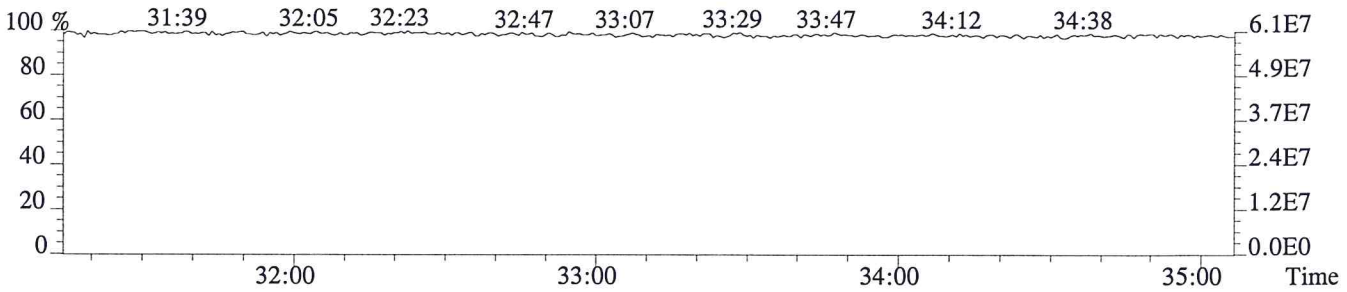
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2556.0,1.00%,F,T)



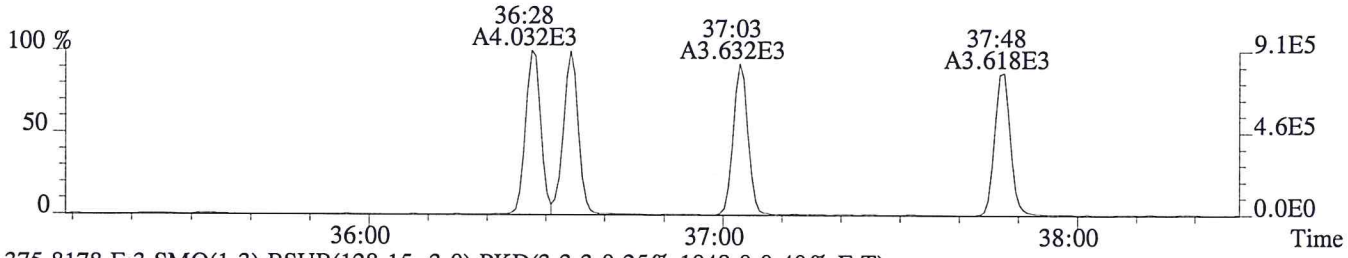
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1664.0,1.00%,F,T)



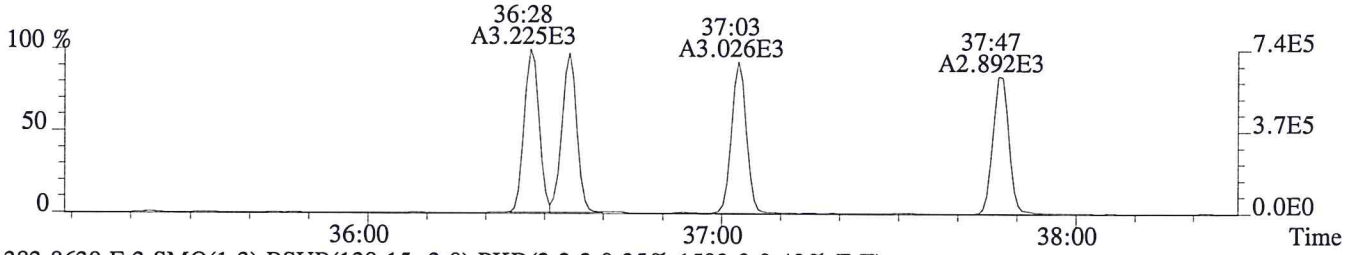
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



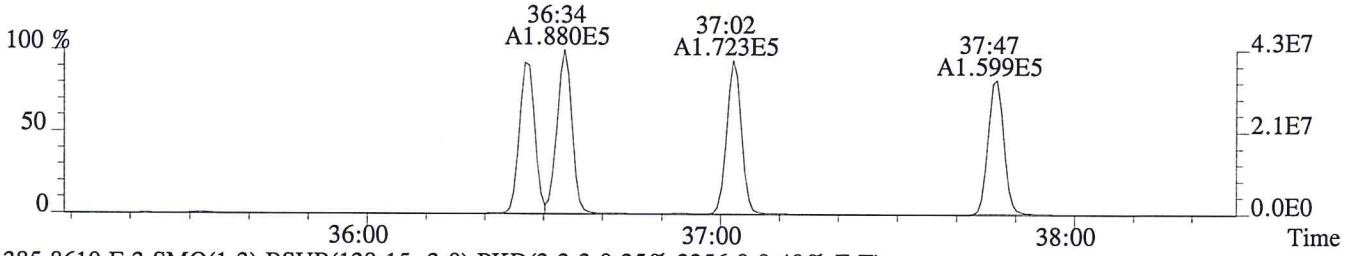
File:P500016 #1-299 Acq:30-JUN-2015 15:41:52 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC0.5
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1556.0,0.40%,F,T)



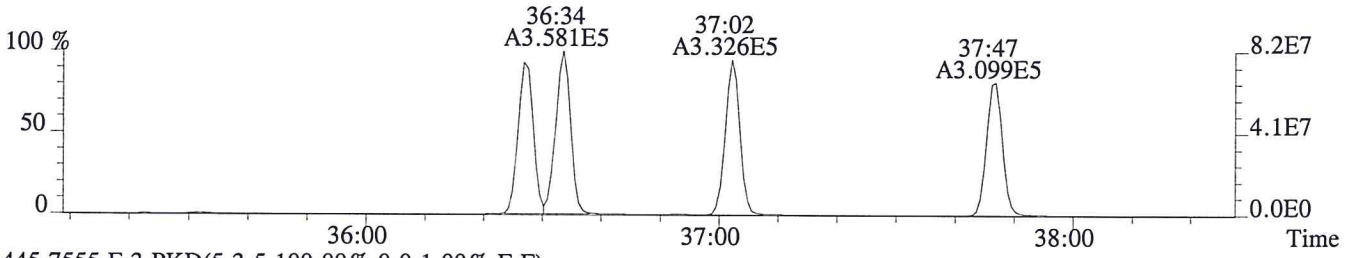
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1048.0,0.40%,F,T)



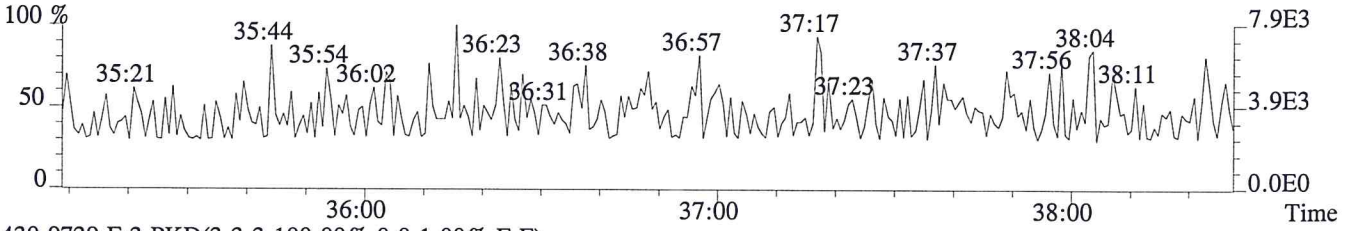
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1592.0,0.40%,F,T)



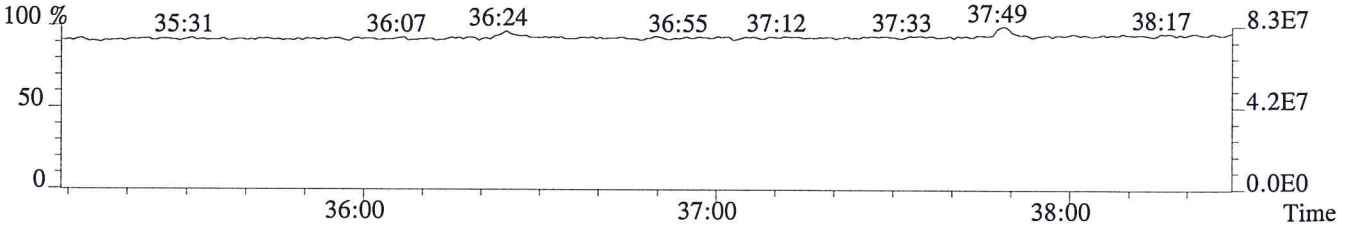
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3256.0,0.40%,F,T)



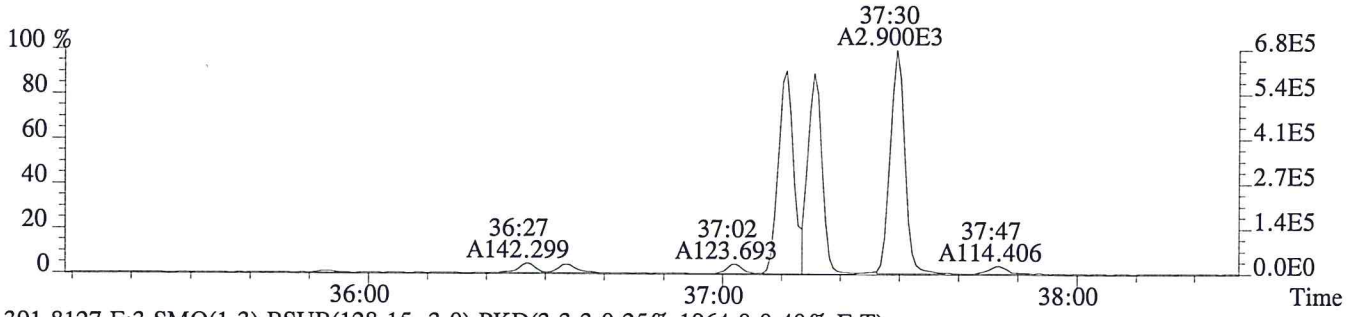
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



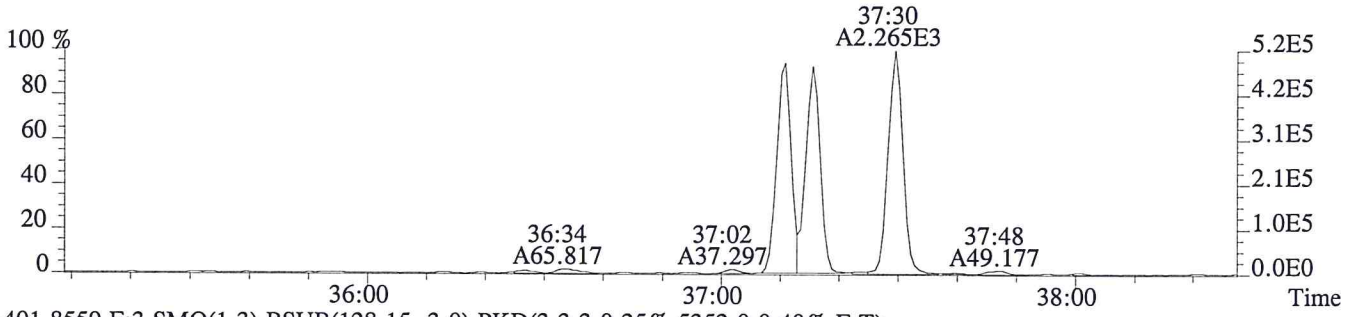
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



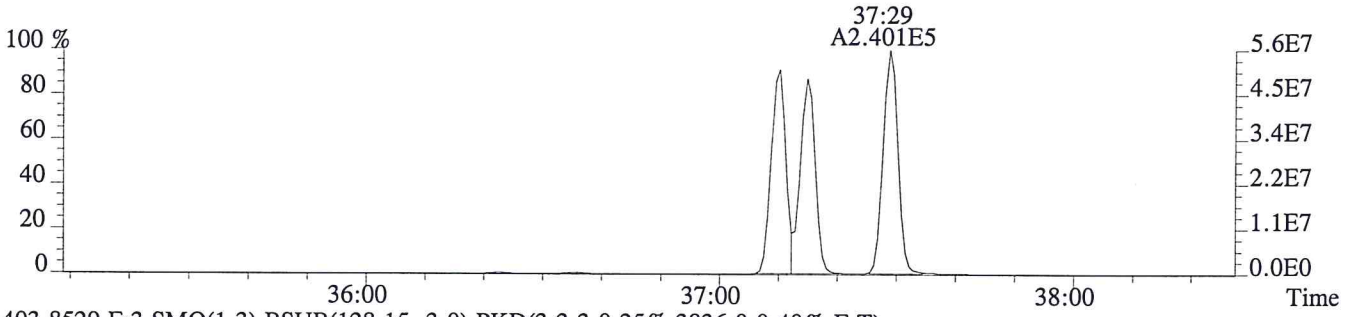
File:P500016 #1-299 Acq:30-JUN-2015 15:41:52 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC0.5
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1548.0,0.40%,F,T)



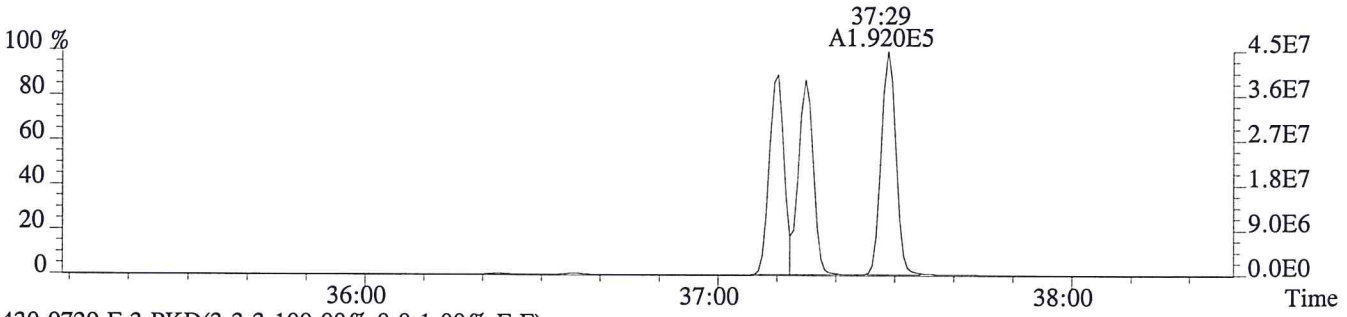
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1964.0,0.40%,F,T)



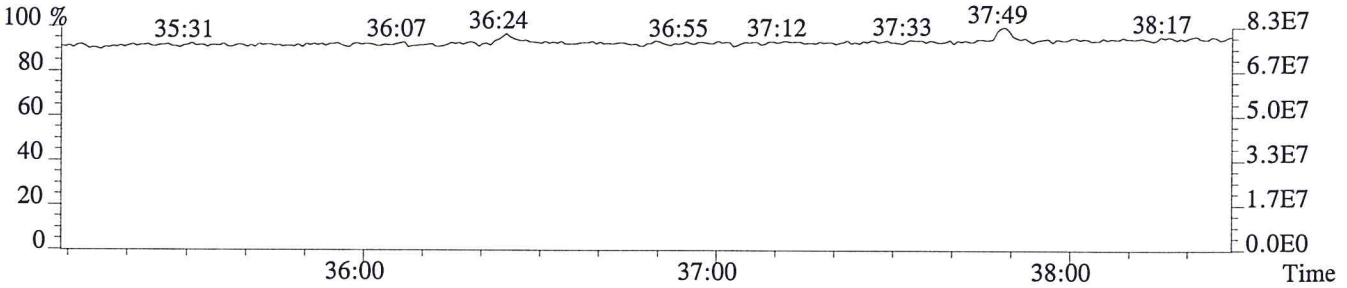
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5352.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3836.0,0.40%,F,T)

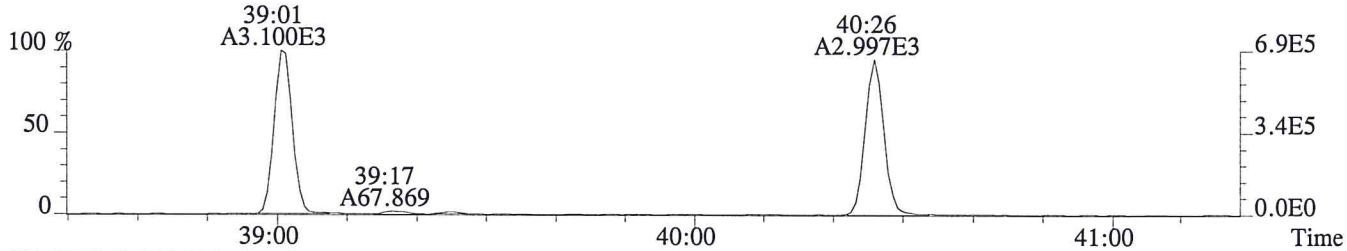


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

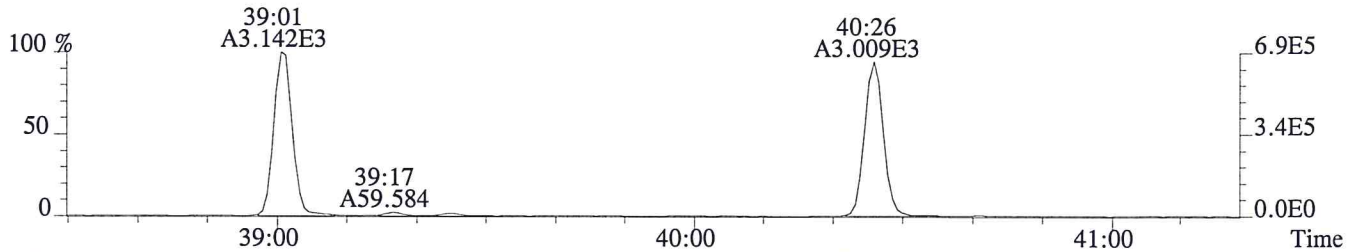


File:P500016 #1-254 Acq:30-JUN-2015 15:41:52 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC0.5

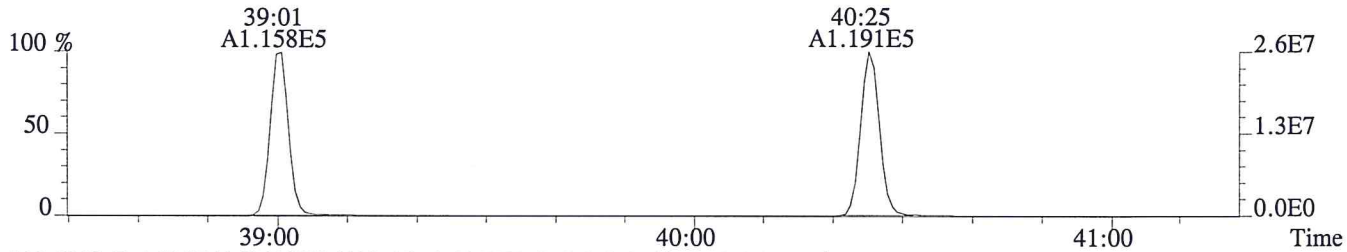
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1368.0,0.50%,F,T)



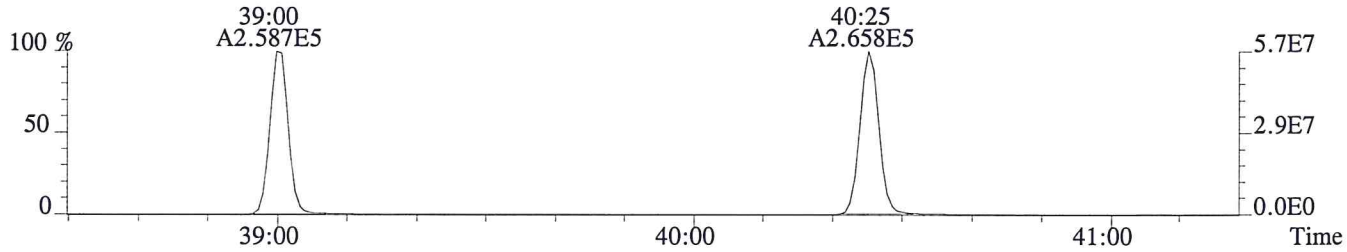
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2176.0,0.50%,F,T)



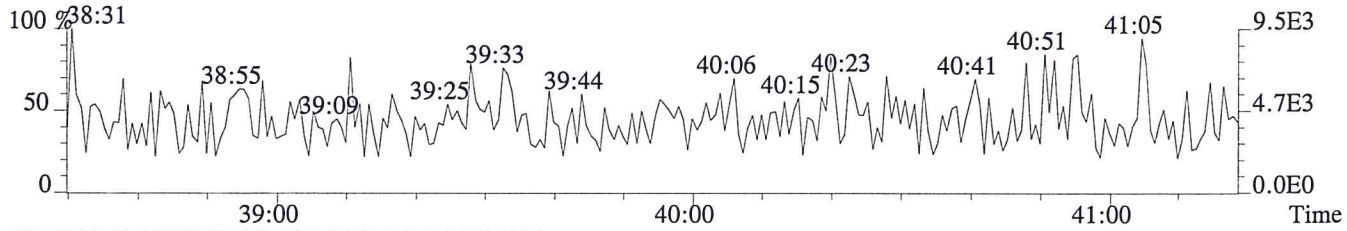
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5884.0,0.50%,F,T)



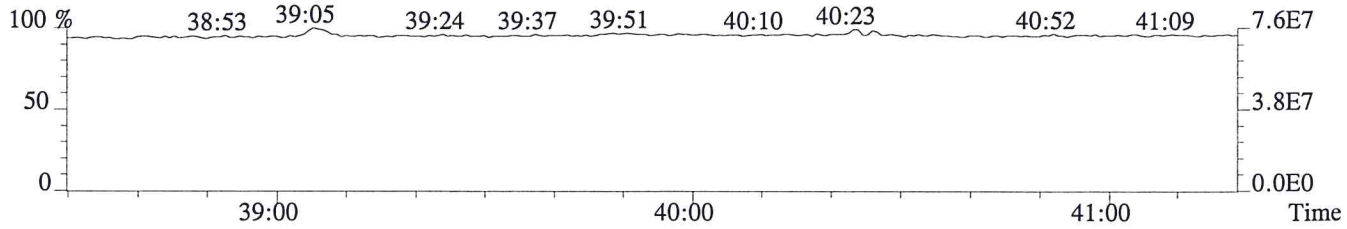
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,6848.0,0.50%,F,T)



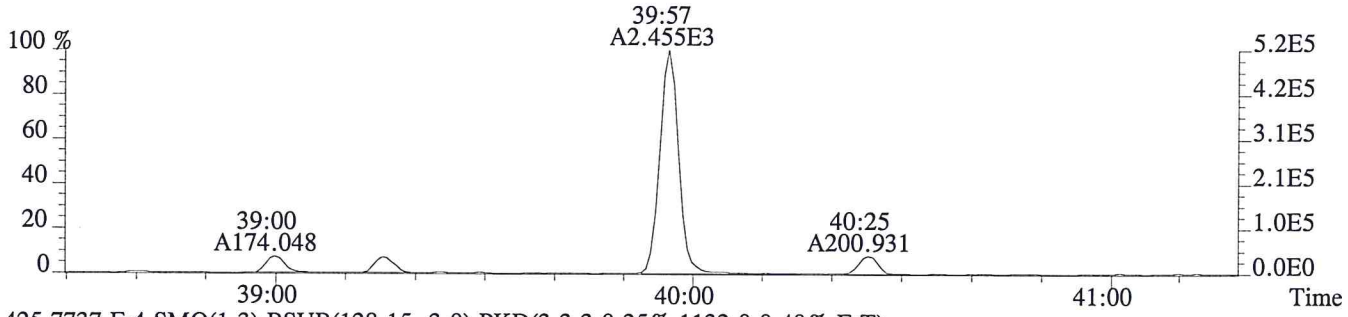
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



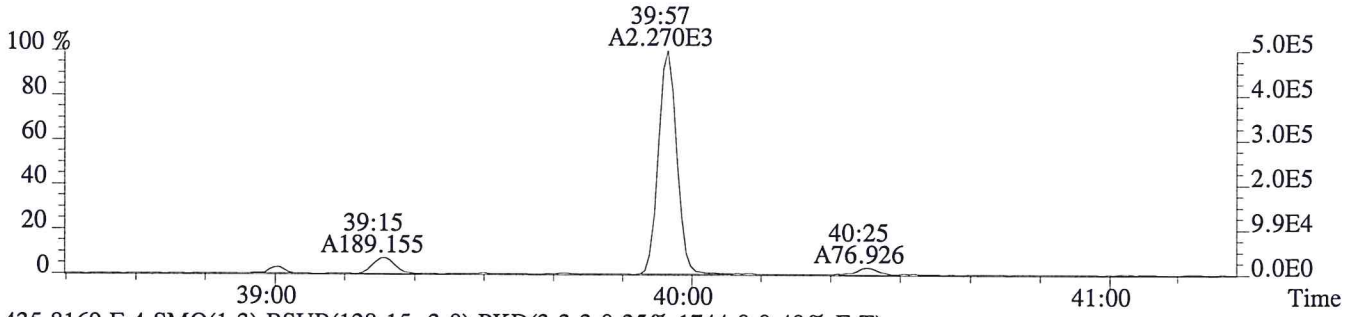
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



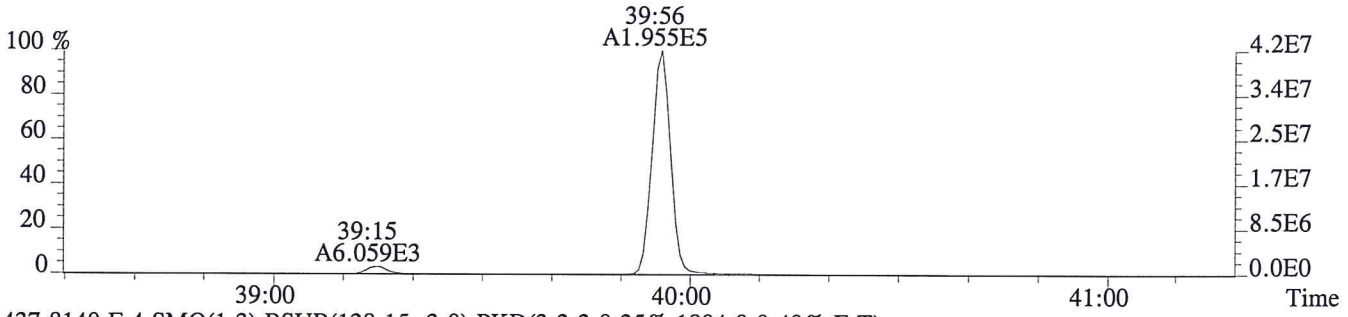
File:P500016 #1-254 Acq:30-JUN-2015 15:41:52 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC0.5
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1412.0,0.40%,F,T)



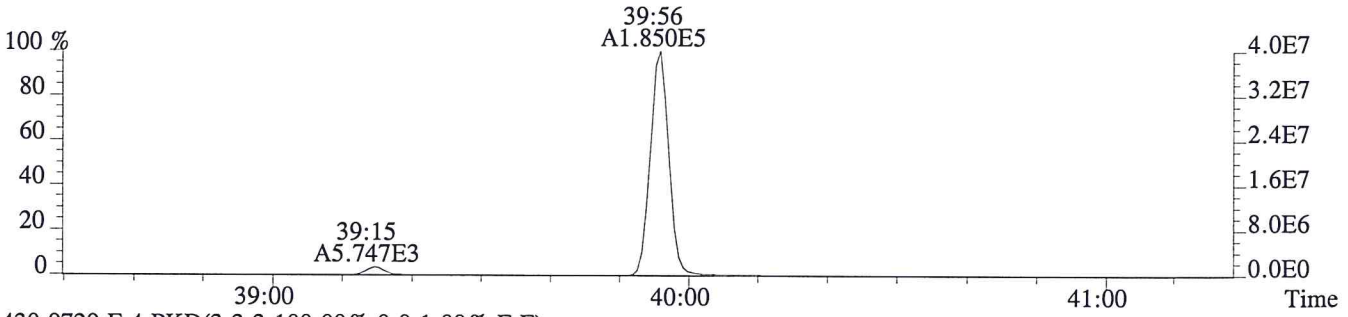
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1132.0,0.40%,F,T)



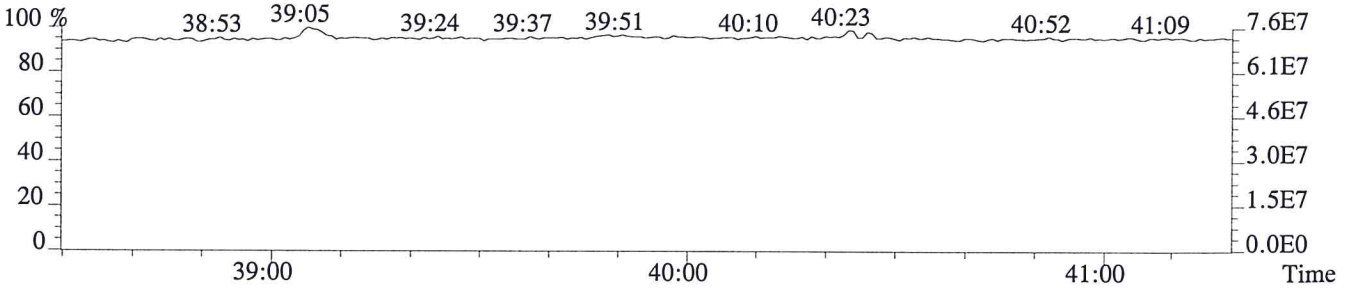
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1744.0,0.40%,F,T)



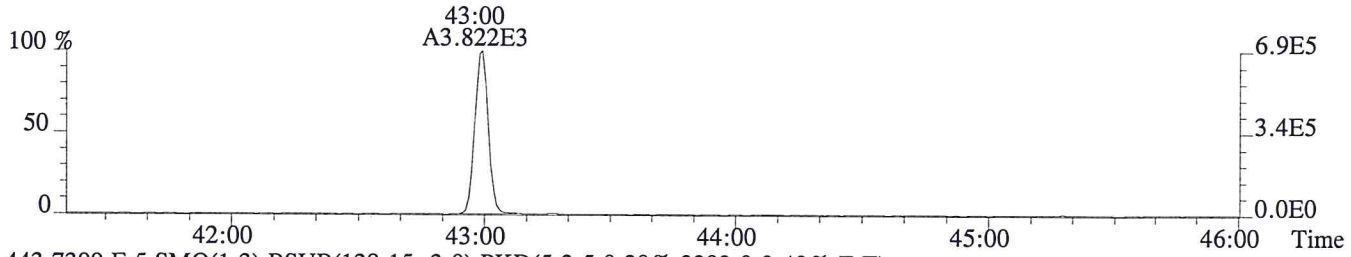
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1804.0,0.40%,F,T)



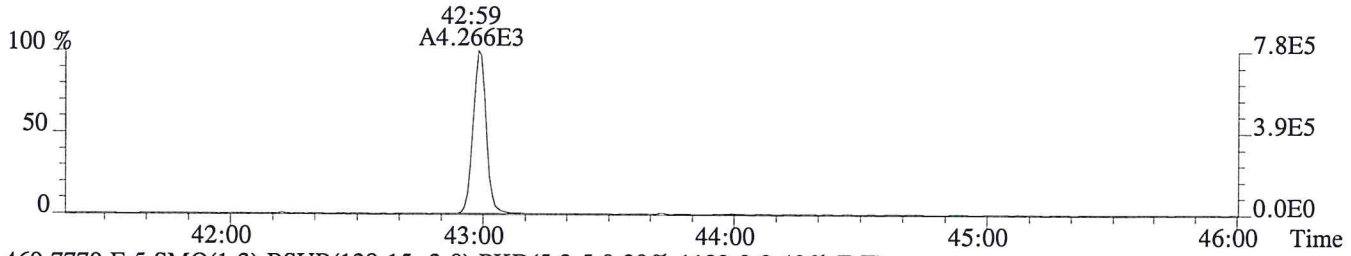
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



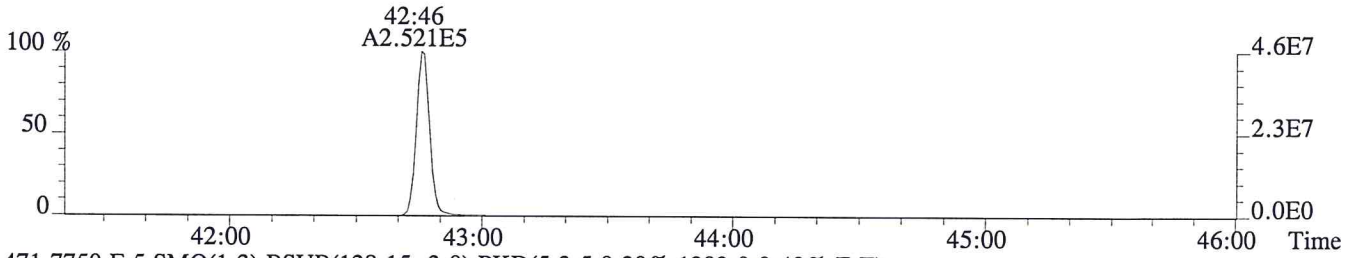
File:P500016 #1-420 Acq:30-JUN-2015 15:41:52 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC0.5
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2192.0,0.40%,F,T)



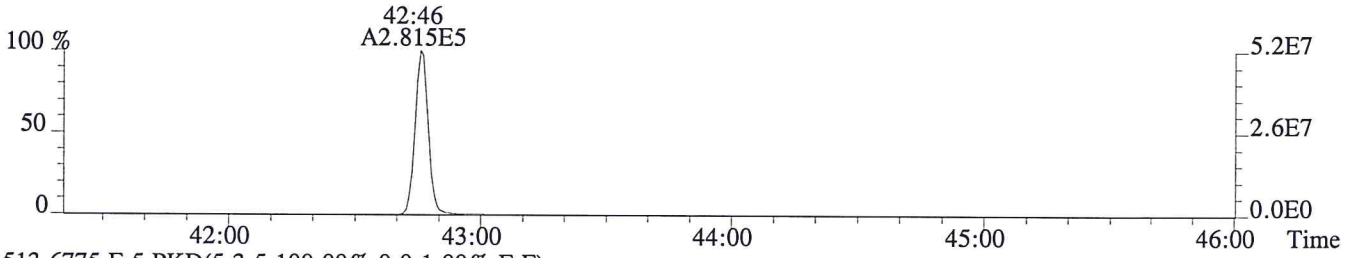
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2292.0,0.40%,F,T)



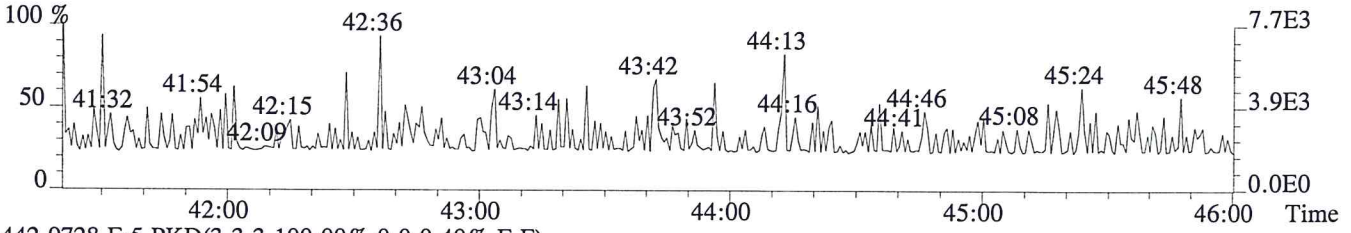
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1192.0,0.40%,F,T)



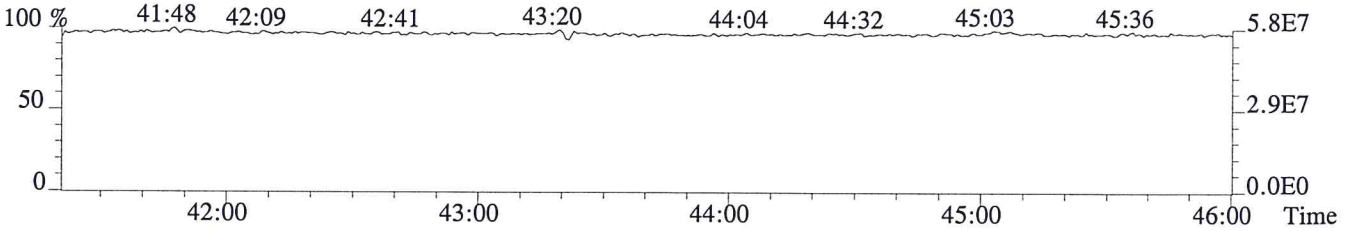
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1392.0,0.40%,F,T)



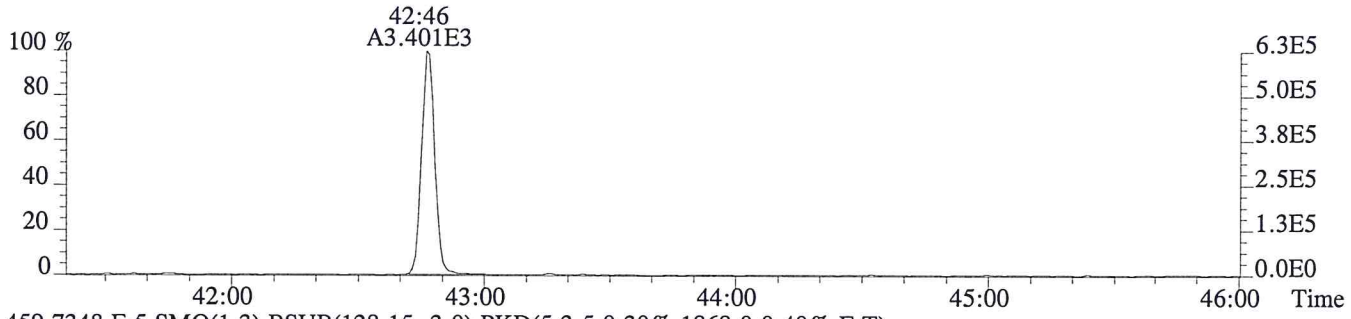
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



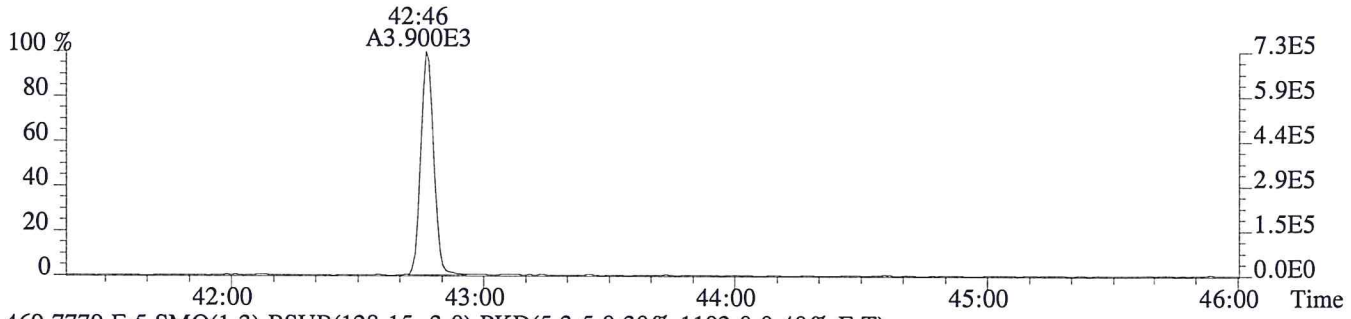
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



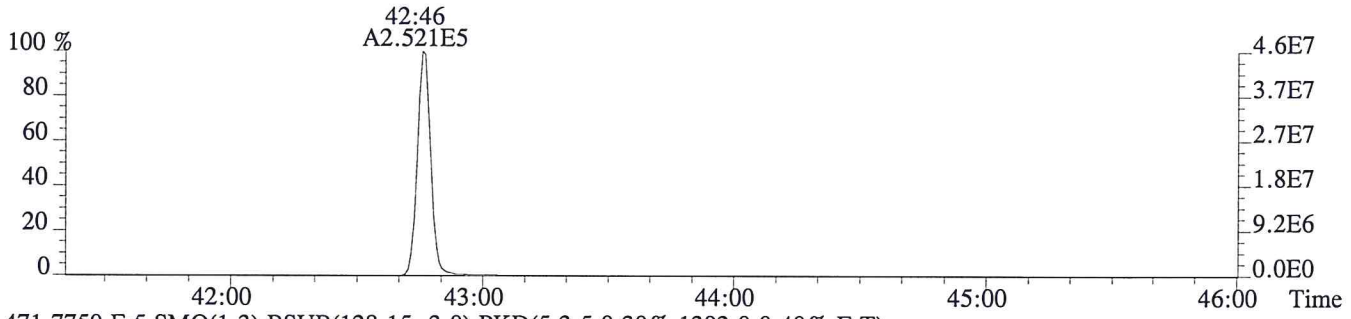
File:P500016 #1-420 Acq:30-JUN-2015 15:41:52 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC0.5
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1424.0,0.40%,F,T)



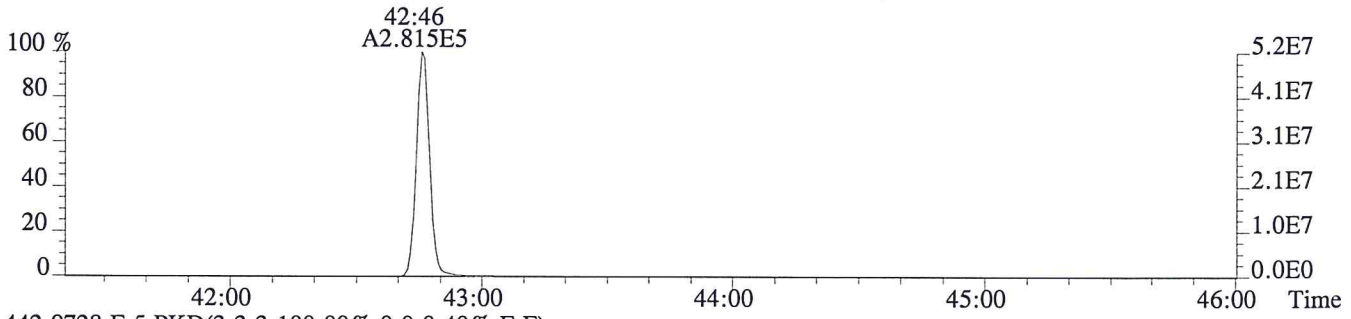
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1868.0,0.40%,F,T)



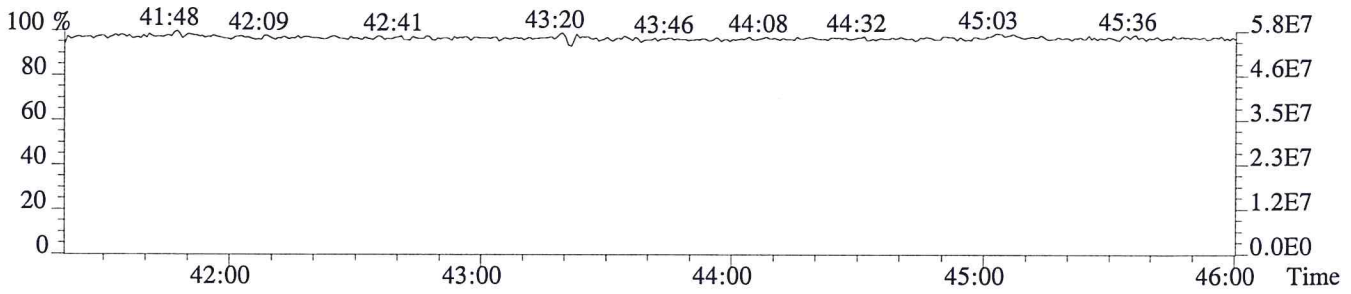
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1192.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1392.0,0.40%,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.
76555

Run #2 Filename P500017 Samp: 1 Inj: 1 Acquired: 30-JUN-15 16:30:29
Processed: 14-JUL-15 14:58:25 Sample ID: IC1

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	29:03	1.229e+03	1.671e+03	0.74	yes	no	0.886
2	Unk	1,2,3,7,8-PeCDF	33:01	1.011e+04	6.746e+03	1.50	yes	no	0.983
3	Unk	2,3,4,7,8-PeCDF	33:53	9.321e+03	6.258e+03	1.49	yes	no	0.952
4	Unk	1,2,3,4,7,8-HxCDF	36:28	8.856e+03	7.346e+03	1.21	yes	no	1.190
5	Unk	1,2,3,6,7,8-HxCDF	36:34	8.691e+03	7.129e+03	1.22	yes	no	1.114
6	Unk	2,3,4,6,7,8-HxCDF	37:03	7.960e+03	6.471e+03	1.23	yes	no	1.109
7	Unk	1,2,3,7,8,9-HxCDF	37:47	7.604e+03	6.232e+03	1.22	yes	no	1.153
8	Unk	1,2,3,4,6,7,8-HpCDF	39:01	6.802e+03	6.796e+03	1.00	yes	no	1.376
9	Unk	1,2,3,4,7,8,9-HpCDF	40:25	6.576e+03	6.509e+03	1.01	yes	no	1.306
10	Unk	OCDF	42:59	8.373e+03	9.503e+03	0.88	yes	no	1.263
11	Unk	2,3,7,8-TCDD	29:47	1.015e+03	1.400e+03	0.73	yes	no	0.997
12	Unk	1,2,3,7,8-PeCDD	34:09	7.076e+03	4.404e+03	1.61	yes	no	0.935
13	Unk	1,2,3,4,7,8-HxCDD	37:10	5.743e+03	4.866e+03	1.18	yes	no	1.039
14	Unk	1,2,3,6,7,8-HxCDD	37:15	5.485e+03	4.442e+03	1.23	yes	no	0.996
15	Unk	1,2,3,7,8,9-HxCDD	37:29	6.097e+03	4.981e+03	1.22	yes	no	1.108
16	Unk	1,2,3,4,6,7,8-HpCDD	39:56	5.385e+03	5.095e+03	1.06	yes	no	1.010
17	Unk	OCDD	42:46	7.347e+03	8.152e+03	0.90	yes	no	1.090
18	IS	13C-2,3,7,8-TCDF	29:01	2.949e+05	3.737e+05	0.79	yes	no	1.447
19	IS	13C-1,2,3,7,8-PeCDF	33:00	4.101e+05	2.590e+05	1.58	yes	no	1.500
20	IS	13C-2,3,4,7,8-PeCDF	33:52	4.050e+05	2.565e+05	1.58	yes	no	1.456
21	IS	13C-1,2,3,4,7,8-HxCDF	36:27	1.850e+05	3.490e+05	0.53	yes	no	1.207
22	IS	13C-1,2,3,6,7,8-HxCDF	36:33	1.916e+05	3.753e+05	0.51	yes	no	1.263
23	IS	13C-2,3,4,6,7,8-HxCDF	37:02	1.739e+05	3.361e+05	0.52	yes	no	1.153
24	IS	13C-1,2,3,7,8,9-HxCDF	37:46	1.616e+05	3.130e+05	0.52	yes	no	1.085
25	IS	13C-1,2,3,4,6,7,8-HpCDF	39:00	1.196e+05	2.650e+05	0.45	yes	no	0.876
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:25	1.226e+05	2.723e+05	0.45	yes	no	0.883
27	IS	13C-2,3,7,8-TCDD	29:45	2.091e+05	2.661e+05	0.79	yes	no	1.027
28	IS	13C-1,2,3,7,8-PeCDD	34:08	2.932e+05	1.863e+05	1.57	yes	no	1.064
29	IS	13C-1,2,3,4,7,8-HxCDD	37:10	2.276e+05	1.786e+05	1.27	yes	no	0.908
30	IS	13C-1,2,3,6,7,8-HxCDD	37:14	2.147e+05	1.701e+05	1.26	yes	no	0.899
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:55	2.084e+05	1.980e+05	1.05	yes	no	0.910
32	IS	13C-OCDD	42:46	2.607e+05	2.898e+05	0.90	yes	no	0.633
33	RS/RT	13C-1,2,3,4-TCDD	29:14	2.040e+05	2.556e+05	0.80	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:29	2.436e+05	1.934e+05	1.26	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:47	2.438e+03				no	1.066

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Signal/Noise Height Ratio Summary

CLIENT ID.
76555

Run #2 Filename P500017 Samp: 1 Inj: 1 Acquired: 30-JUN-15 16:30:29
Processed: 14-JUL-15 14:58:25 LAB. ID: IC1

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	2.47e+05	1.72e+03	1.4e+02	3.20e+05	2.46e+03	1.3e+02
2	1,2,3,7,8-PeCDF	2.04e+06	1.30e+03	1.6e+03	1.36e+06	3.86e+03	3.5e+02
3	2,3,4,7,8-PeCDF	2.01e+06	1.30e+03	1.5e+03	1.35e+06	3.86e+03	3.5e+02
4	1,2,3,4,7,8-HxCDF	2.02e+06	1.77e+03	1.1e+03	1.66e+06	7.60e+02	2.2e+03
5	1,2,3,6,7,8-HxCDF	1.99e+06	1.77e+03	1.1e+03	1.64e+06	7.60e+02	2.2e+03
6	2,3,4,6,7,8-HxCDF	1.79e+06	1.77e+03	1.0e+03	1.49e+06	7.60e+02	2.0e+03
7	1,2,3,7,8,9-HxCDF	1.70e+06	1.77e+03	9.6e+02	1.38e+06	7.60e+02	1.8e+03
8	1,2,3,4,6,7,8-HpCDF	1.55e+06	1.84e+03	8.5e+02	1.53e+06	2.13e+03	7.2e+02
9	1,2,3,4,7,8,9-HpCDF	1.38e+06	1.84e+03	7.5e+02	1.37e+06	2.13e+03	6.4e+02
10	OCDF	1.50e+06	1.98e+03	7.6e+02	1.71e+06	2.94e+03	5.8e+02
11	2,3,7,8-TCDD	2.13e+05	1.80e+03	1.2e+02	2.93e+05	1.77e+03	1.7e+02
12	1,2,3,7,8-PeCDD	1.46e+06	3.84e+03	3.8e+02	9.23e+05	1.94e+03	4.7e+02
13	1,2,3,4,7,8-HxCDD	1.34e+06	1.16e+03	1.2e+03	1.13e+06	2.04e+03	5.6e+02
14	1,2,3,6,7,8-HxCDD	1.24e+06	1.16e+03	1.1e+03	1.02e+06	2.04e+03	5.0e+02
15	1,2,3,7,8,9-HxCDD	1.39e+06	1.16e+03	1.2e+03	1.13e+06	2.04e+03	5.6e+02
16	1,2,3,4,6,7,8-HpCDD	1.18e+06	1.18e+03	1.0e+03	1.11e+06	1.20e+03	9.3e+02
17	OCDD	1.38e+06	8.28e+02	1.7e+03	1.48e+06	2.30e+03	6.4e+02
18	13C-2,3,7,8-TCDF	5.90e+07	4.39e+03	1.3e+04	7.52e+07	4.19e+03	1.8e+04
19	13C-1,2,3,7,8-PeCDF	8.27e+07	1.36e+03	6.1e+04	5.22e+07	2.85e+03	1.8e+04
20	13C-2,3,4,7,8-PeCDF	8.47e+07	1.36e+03	6.2e+04	5.33e+07	2.85e+03	1.9e+04
21	13C-1,2,3,4,7,8-HxCDF	4.18e+07	2.16e+03	1.9e+04	7.95e+07	2.56e+03	3.1e+04
22	13C-1,2,3,6,7,8-HxCDF	4.33e+07	2.16e+03	2.0e+04	8.44e+07	2.56e+03	3.3e+04
23	13C-2,3,4,6,7,8-HxCDF	3.89e+07	2.16e+03	1.8e+04	7.53e+07	2.56e+03	2.9e+04
24	13C-1,2,3,7,8,9-HxCDF	3.59e+07	2.16e+03	1.7e+04	6.91e+07	2.56e+03	2.7e+04
25	13C-1,2,3,4,6,7,8-HpCDF	2.75e+07	4.51e+03	6.1e+03	6.08e+07	7.88e+03	7.7e+03
26	13C-1,2,3,4,7,8,9-HpCDF	2.52e+07	4.51e+03	5.6e+03	5.64e+07	7.88e+03	7.2e+03
27	13C-2,3,7,8-TCDD	4.32e+07	1.16e+04	3.7e+03	5.54e+07	3.90e+03	1.4e+04
28	13C-1,2,3,7,8-PeCDD	6.25e+07	2.70e+03	2.3e+04	3.97e+07	2.09e+03	1.9e+04
29	13C-1,2,3,4,7,8-HxCDD	5.34e+07	3.67e+03	1.5e+04	4.17e+07	3.36e+03	1.2e+04
30	13C-1,2,3,6,7,8-HxCDD	4.88e+07	3.67e+03	1.3e+04	3.91e+07	3.36e+03	1.2e+04
31	13C-1,2,3,4,6,7,8-HpCDD	4.57e+07	3.81e+03	1.2e+04	4.33e+07	1.56e+03	2.8e+04
32	13C-OCDD	4.84e+07	1.06e+03	4.6e+04	5.35e+07	1.43e+03	3.7e+04
33	13C-1,2,3,4-TCDD	4.16e+07	1.16e+04	3.6e+03	5.21e+07	3.90e+03	1.3e+04
34	13C-1,2,3,7,8,9-HxCDD	5.46e+07	3.67e+03	1.5e+04	4.36e+07	3.36e+03	1.3e+04
35	37Cl-2,3,7,8-TCDD	5.07e+05	2.17e+03	2.3e+02			

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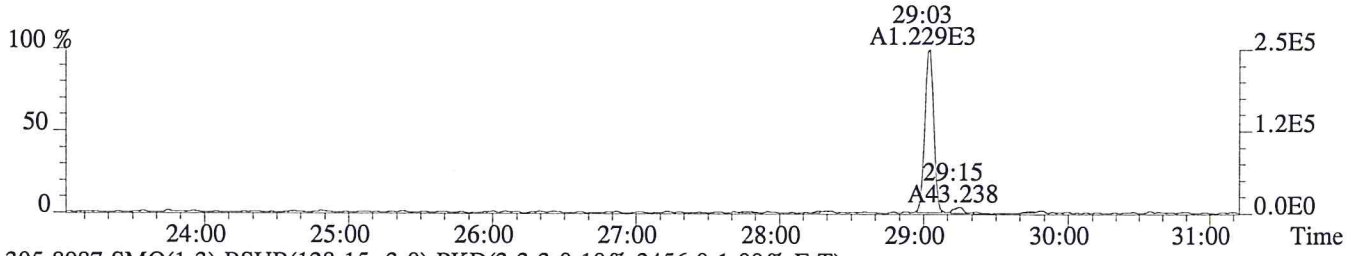
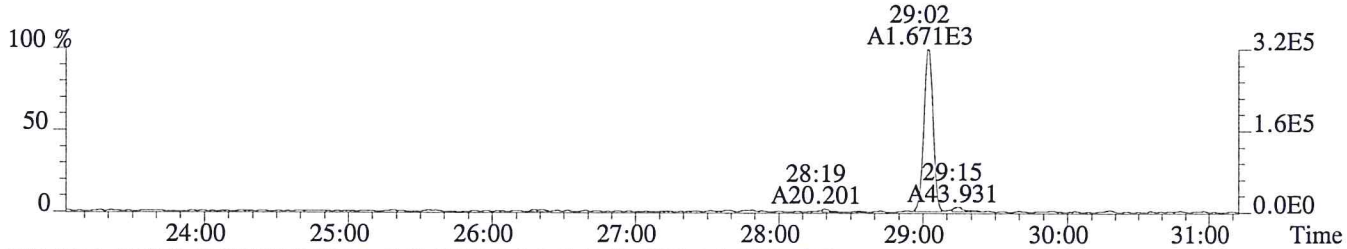
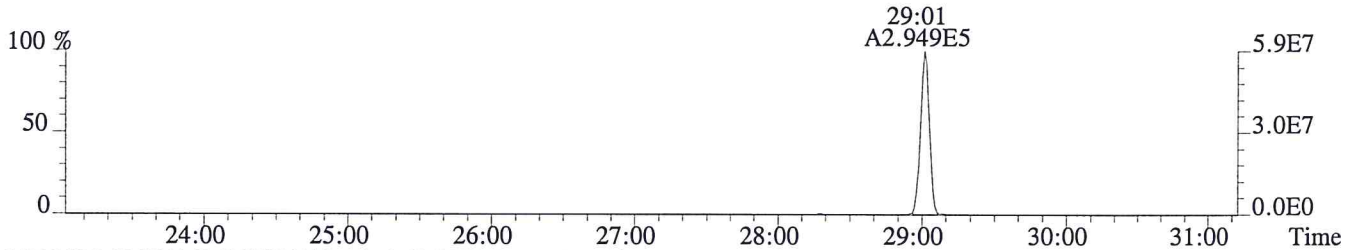
File:P500017 #1-580 Acq:30-JUN-2015 16:30:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC1
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1724.0,1.00%,F,T)



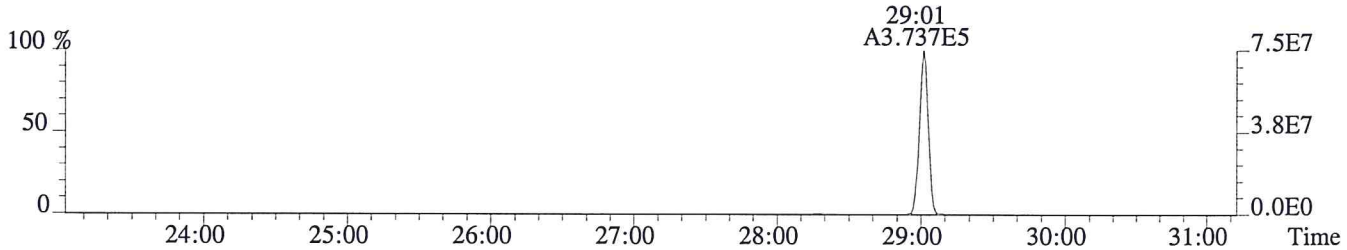
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2456.0,1.00%,F,T)



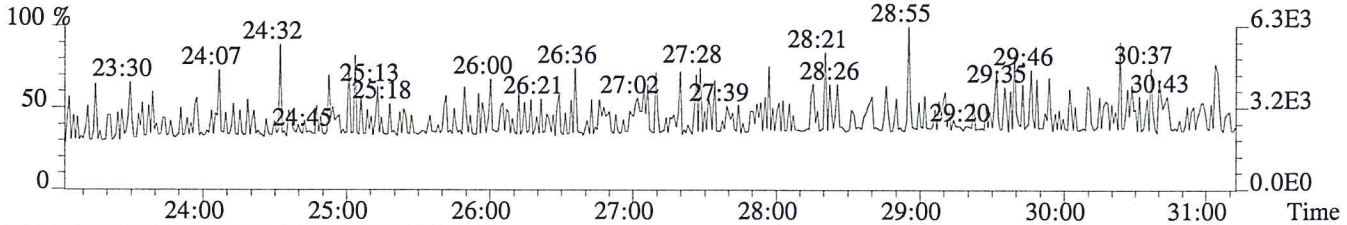
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4388.0,1.00%,F,T)



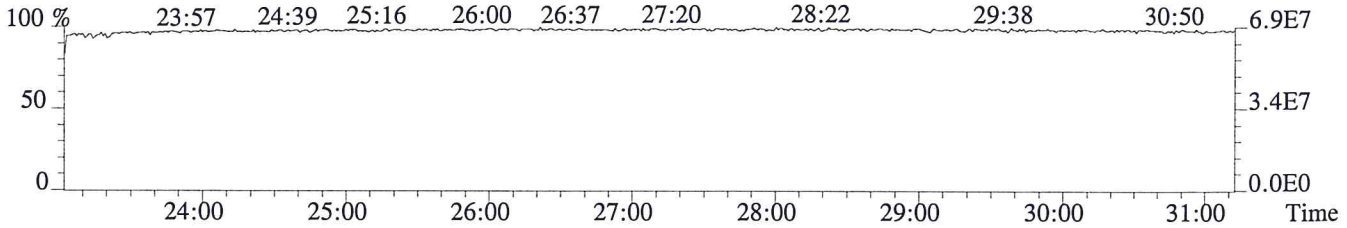
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4192.0,1.00%,F,T)



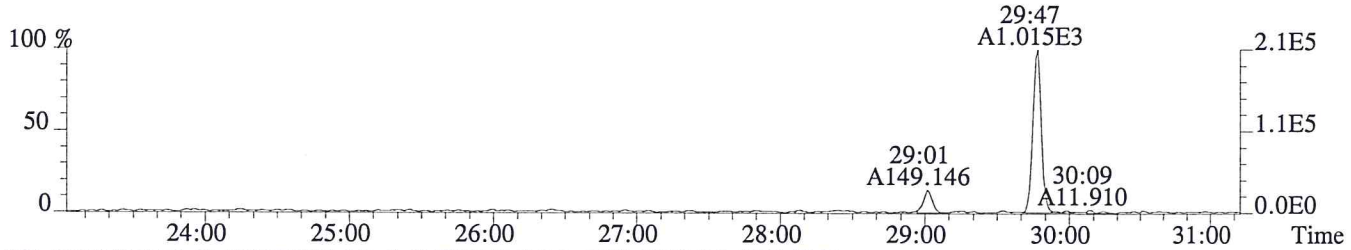
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



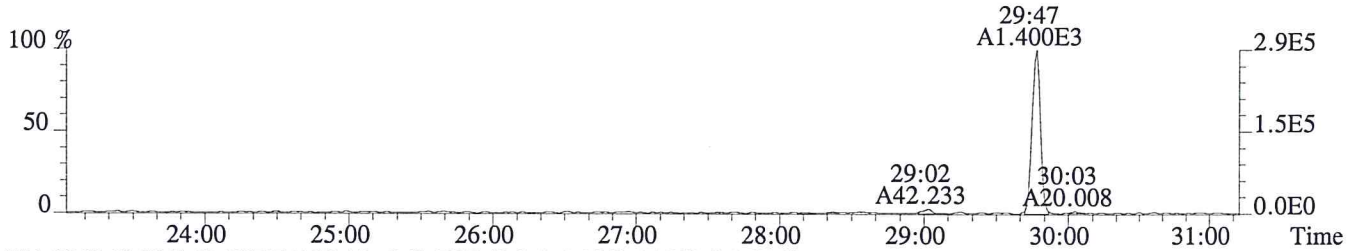
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



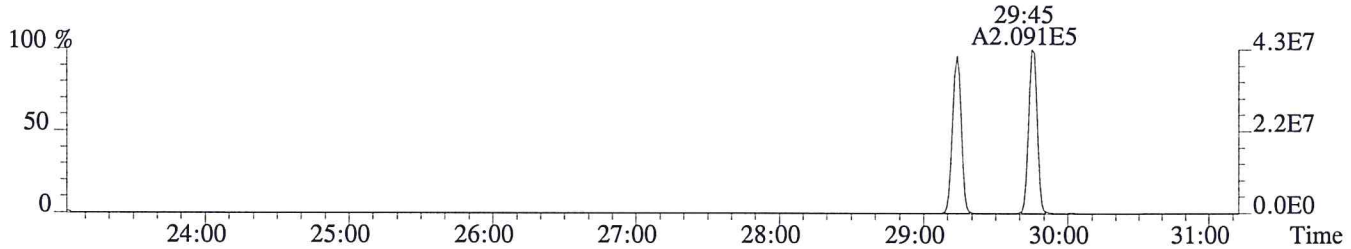
File:P500017 #1-580 Acq:30-JUN-2015 16:30:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC1
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1800.0,1.00%,F,T)



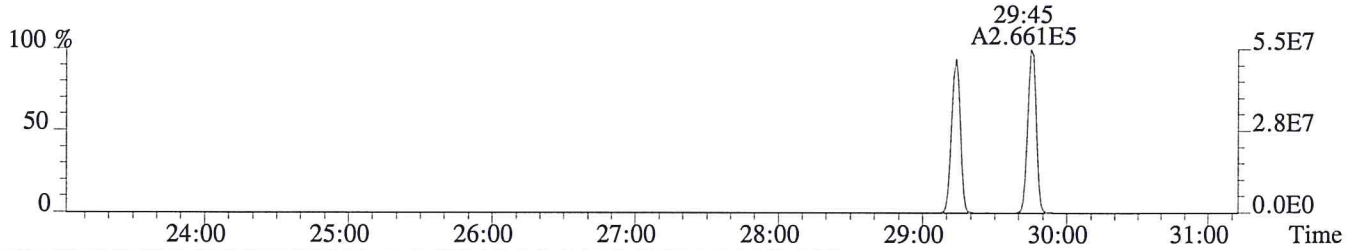
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1768.0,1.00%,F,T)



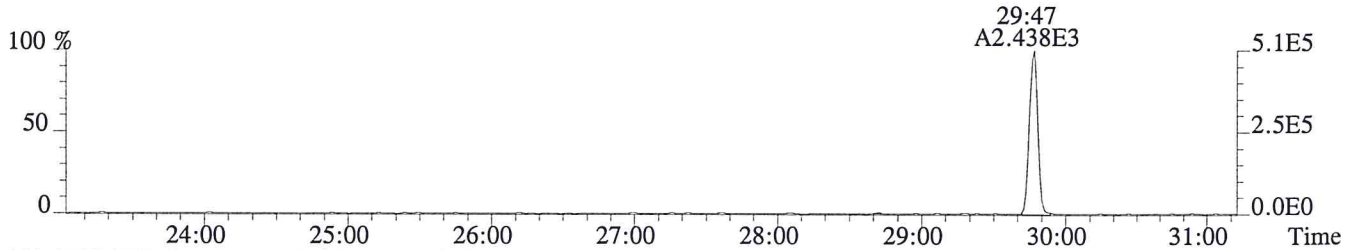
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,11568.0,1.00%,F,T)



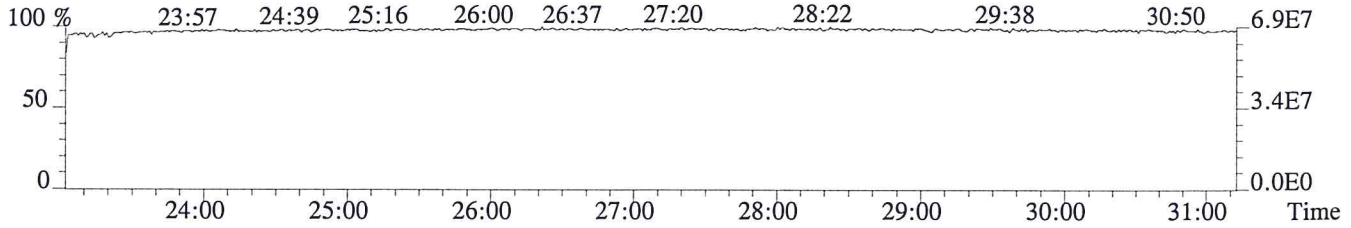
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3904.0,1.00%,F,T)



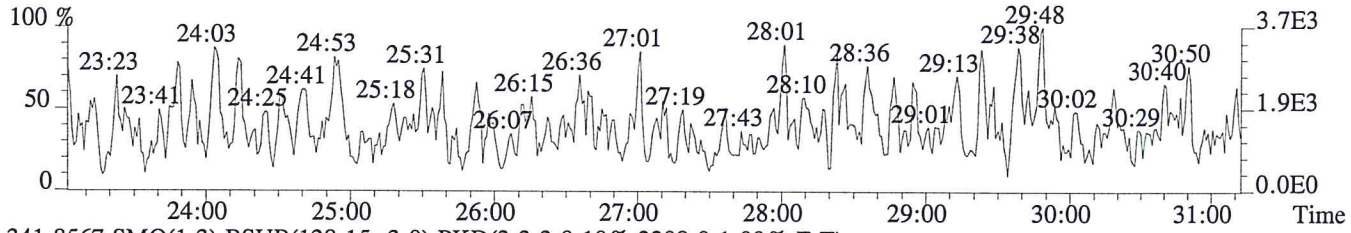
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2168.0,1.00%,F,T)



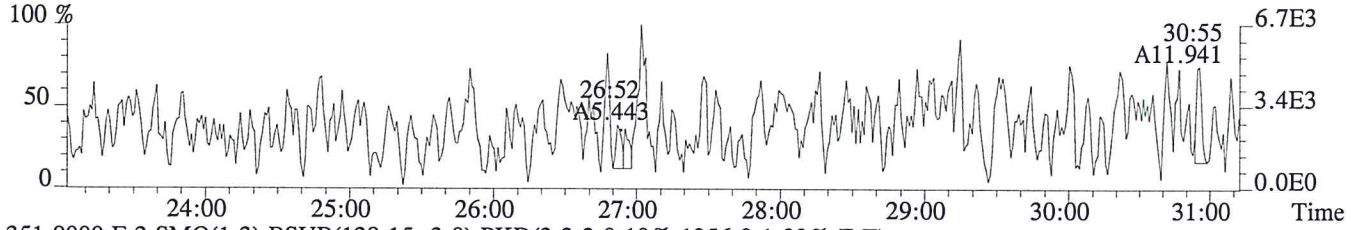
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



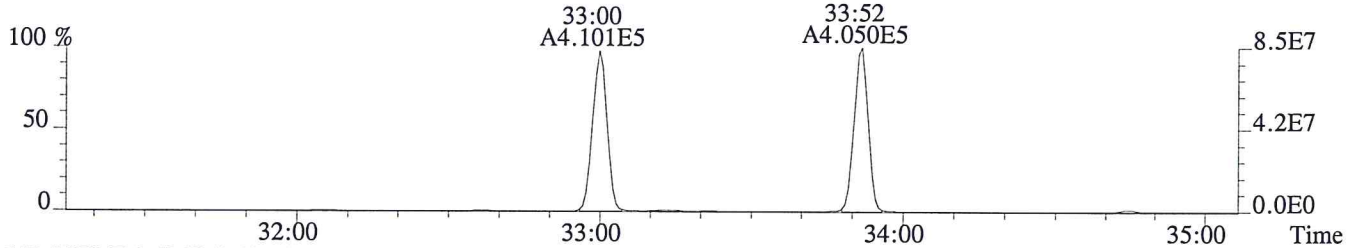
File:P500017 #1-580 Acq:30-JUN-2015 16:30:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC1
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1740.0,1.00%,F,T)



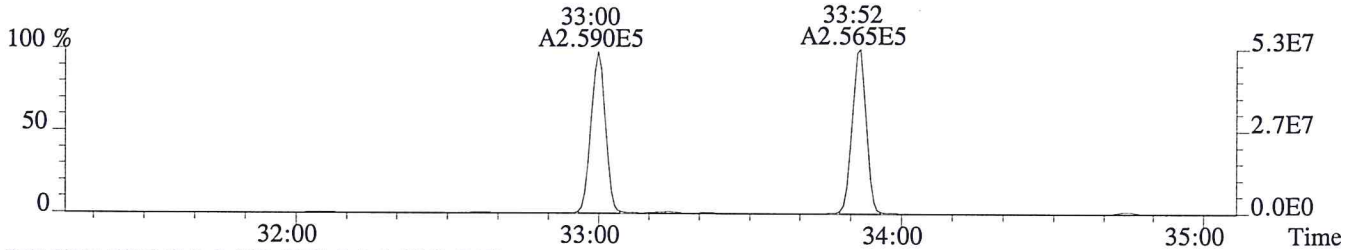
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3208.0,1.00%,F,T)



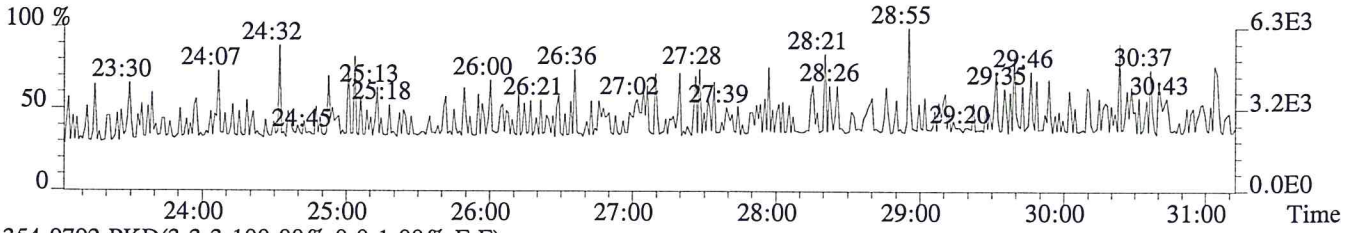
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1356.0,1.00%,F,T)



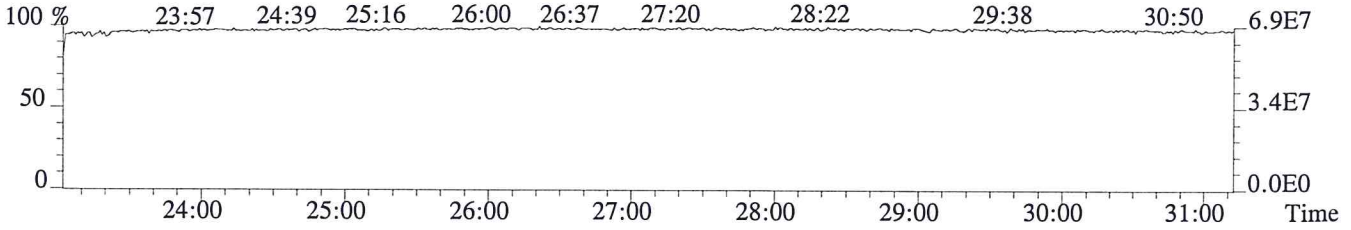
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2848.0,1.00%,F,T)



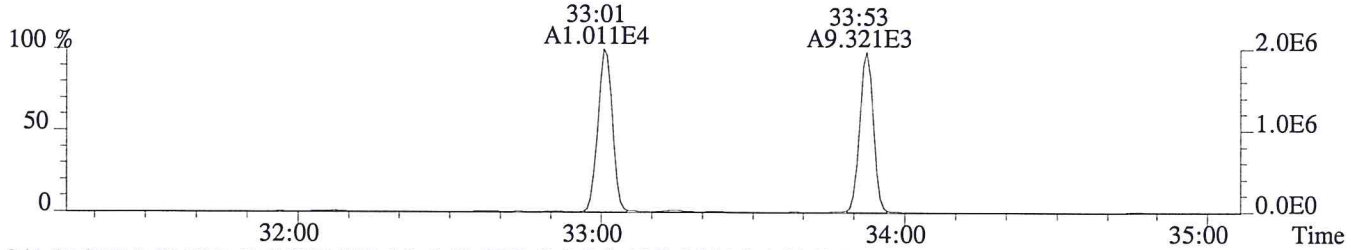
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



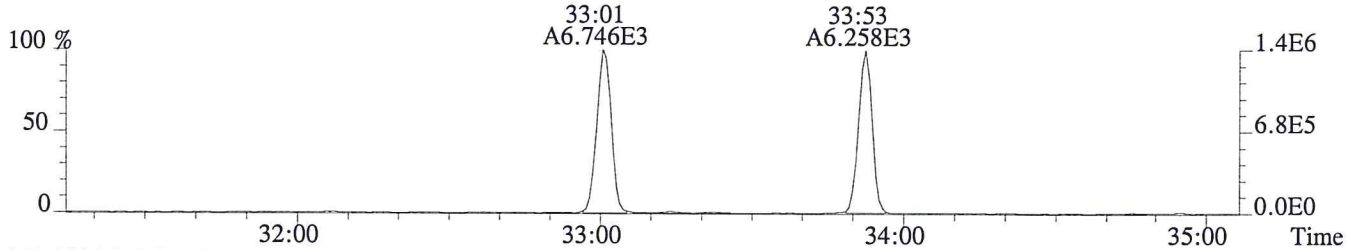
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



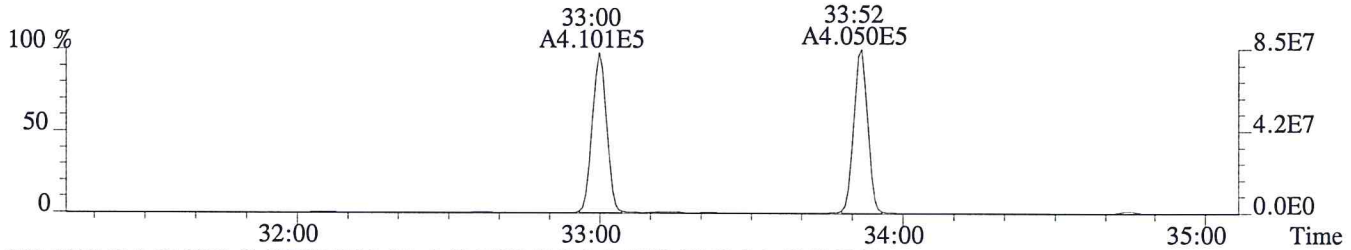
File:P500017 #1-349 Acq:30-JUN-2015 16:30:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC1
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1300.0,1.00%,F,T)



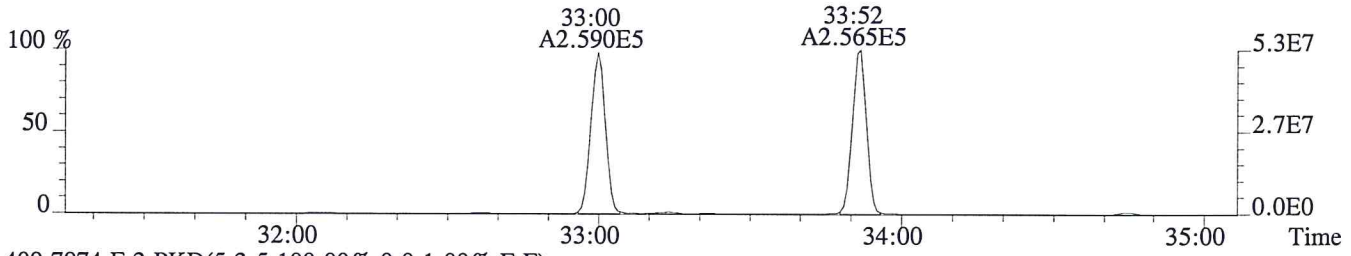
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3864.0,1.00%,F,T)



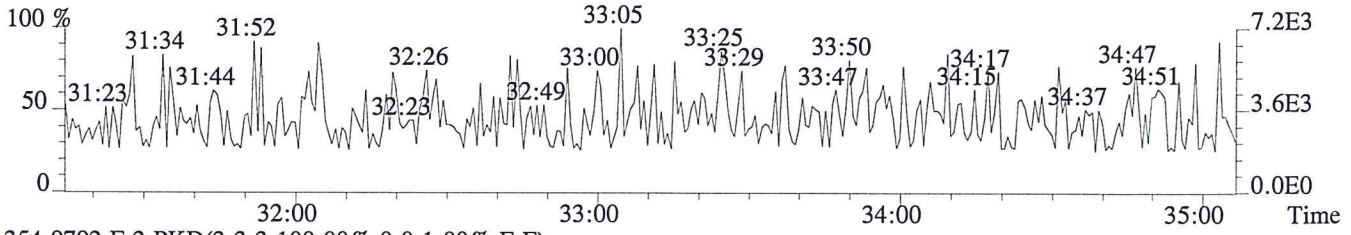
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1356.0,1.00%,F,T)



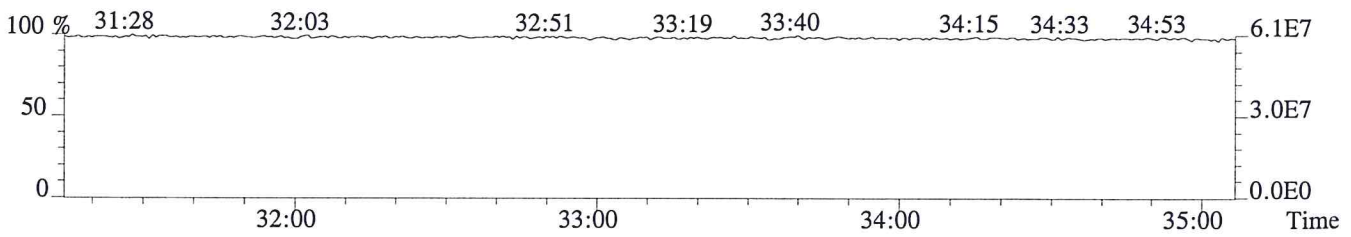
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2848.0,1.00%,F,T)



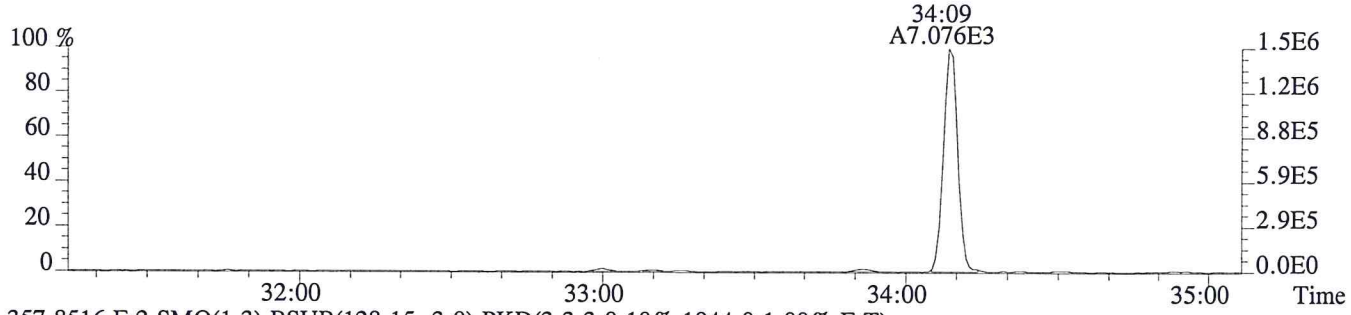
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



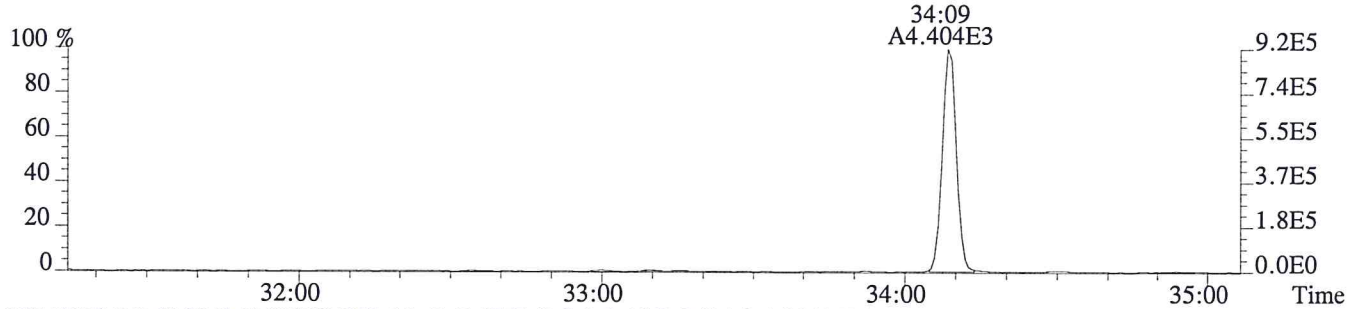
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



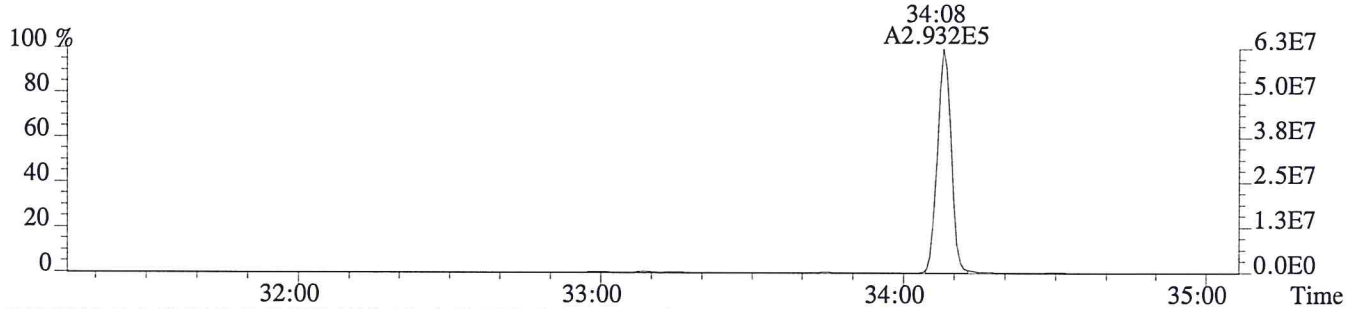
File:P500017 #1-349 Acq:30-JUN-2015 16:30:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC1
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3840.0,1.00%,F,T)



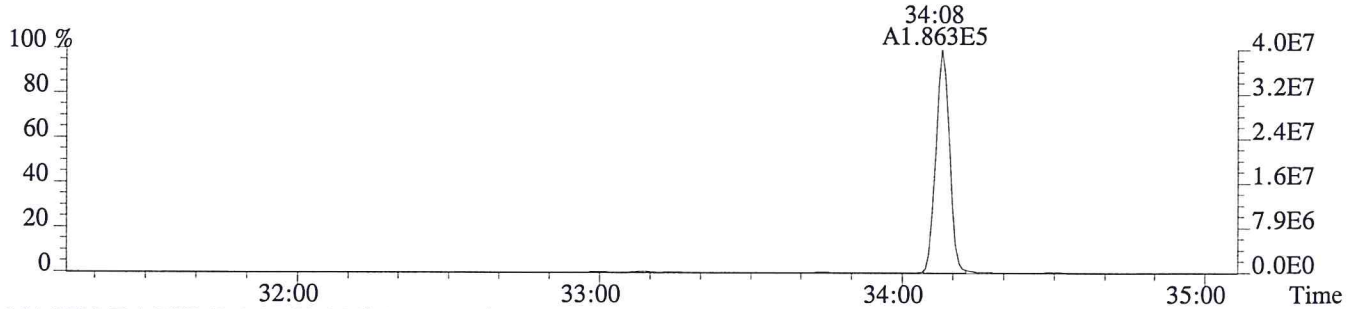
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1944.0,1.00%,F,T)



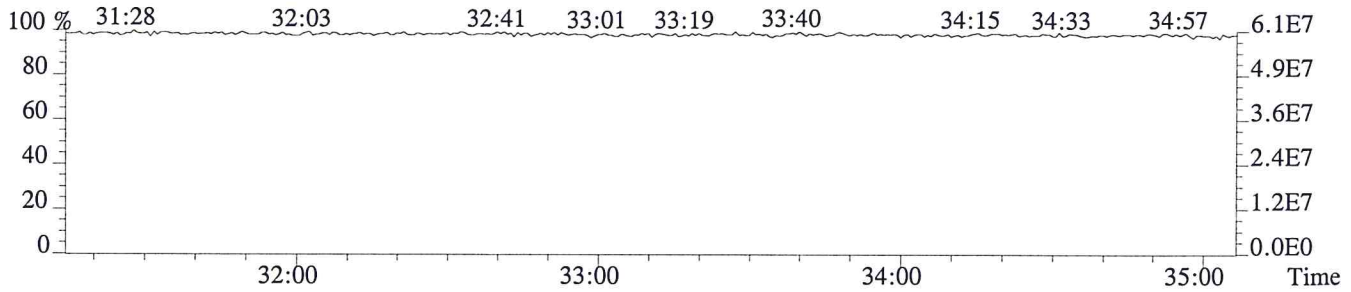
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2696.0,1.00%,F,T)



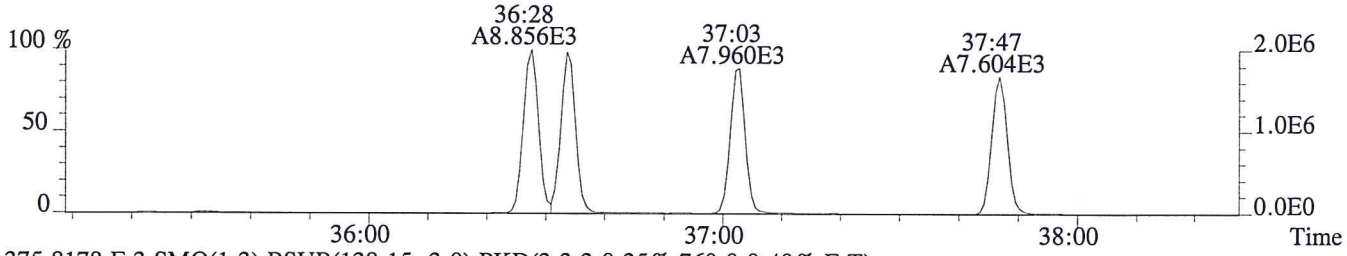
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2092.0,1.00%,F,T)



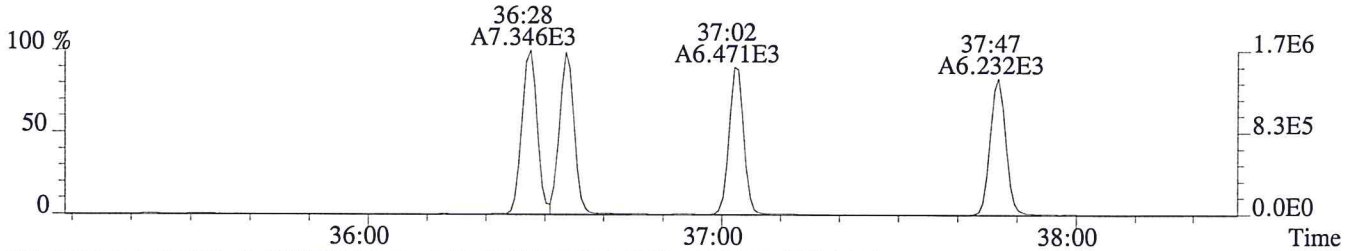
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



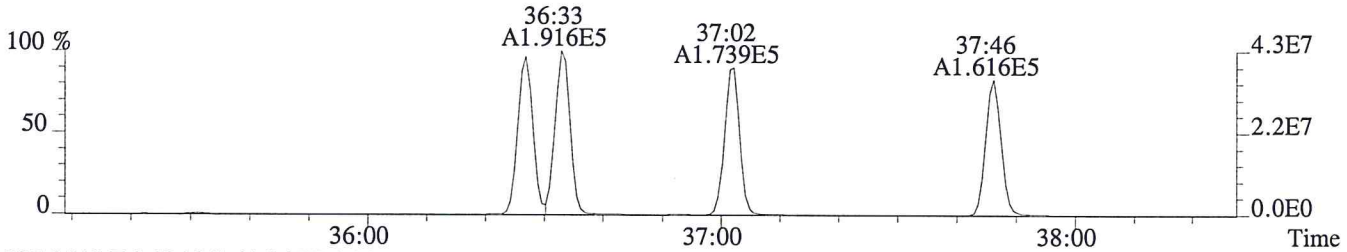
File:P500017 #1-299 Acq:30-JUN-2015 16:30:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC1
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1768.0,0.40%,F,T)



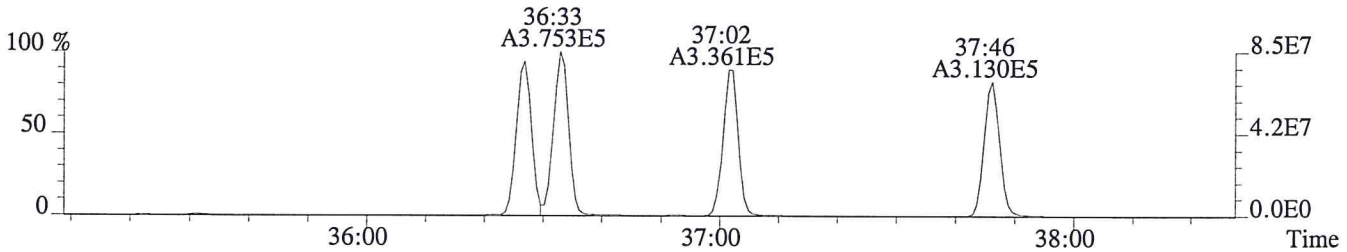
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,760.0,0.40%,F,T)



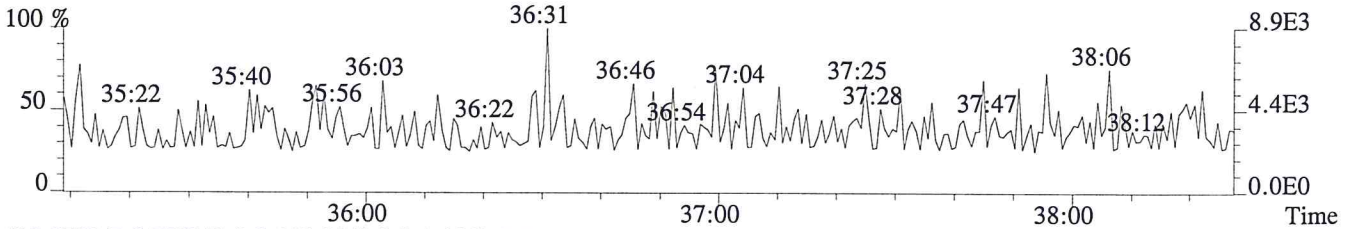
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2156.0,0.40%,F,T)



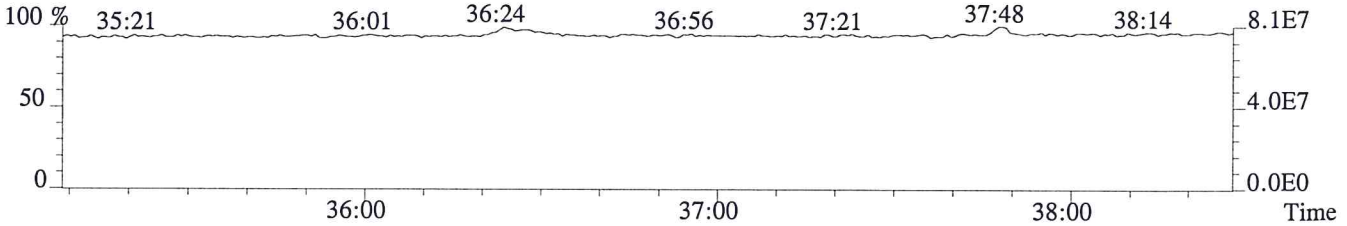
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2556.0,0.40%,F,T)



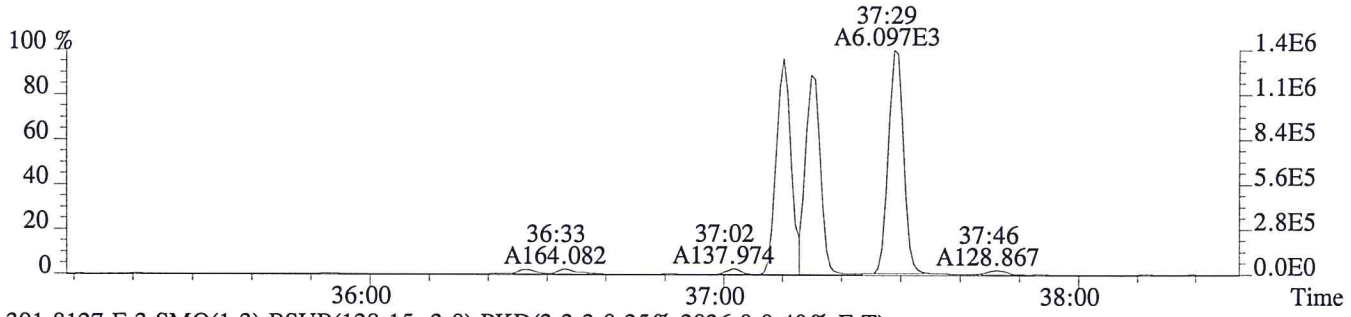
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



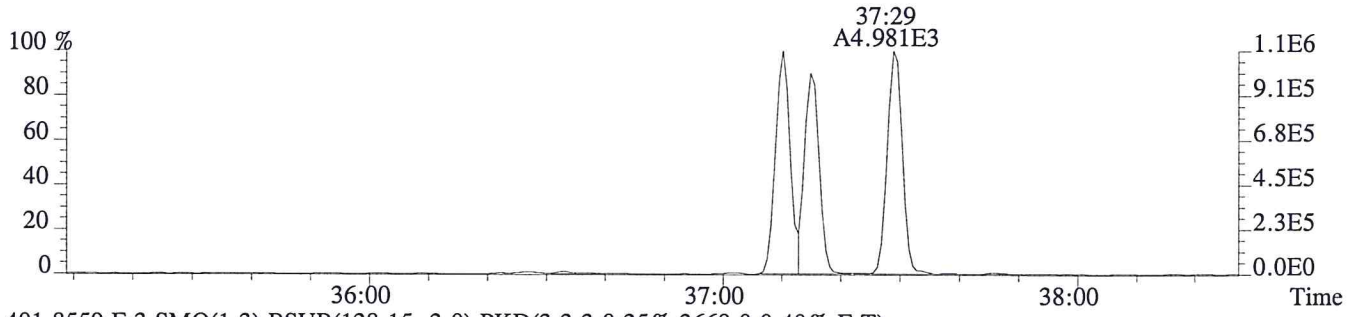
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



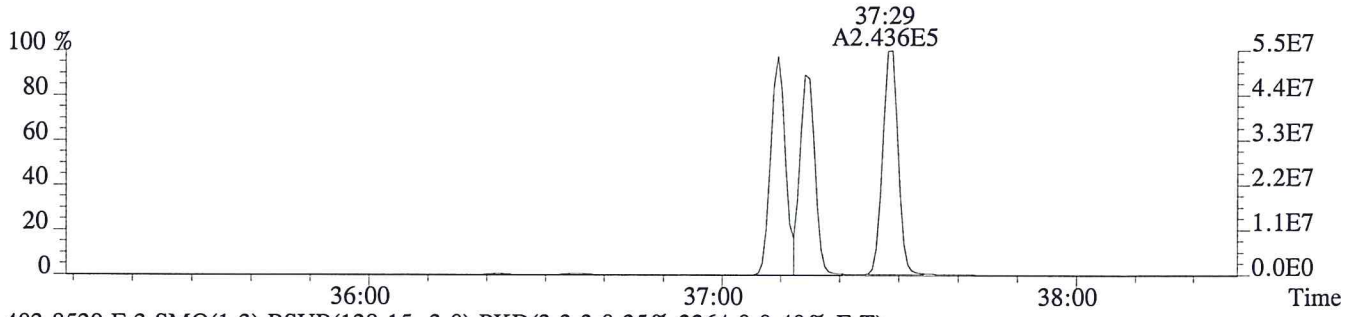
File:P500017 #1-299 Acq:30-JUN-2015 16:30:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC1
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1160.0,0.40%,F,T)



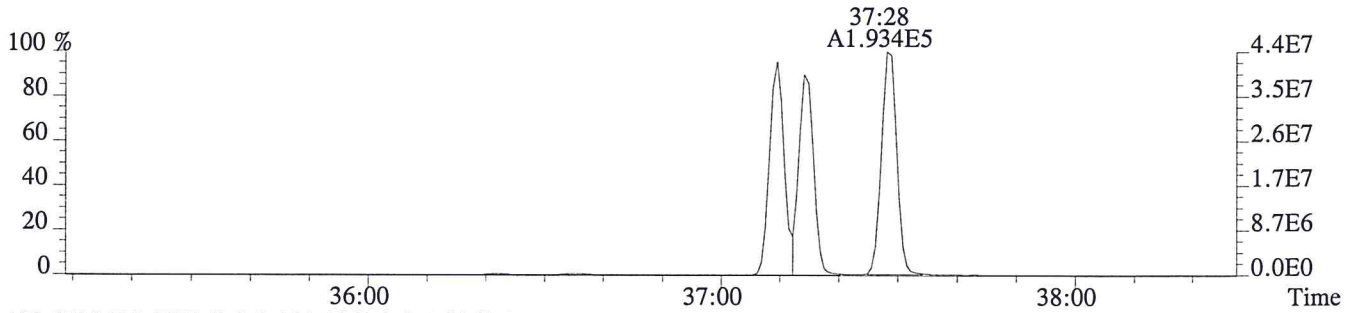
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2036.0,0.40%,F,T)



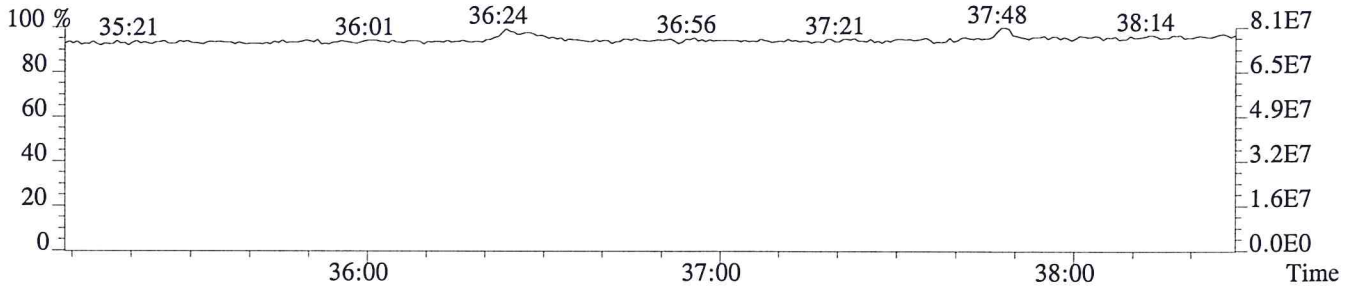
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3668.0,0.40%,F,T)



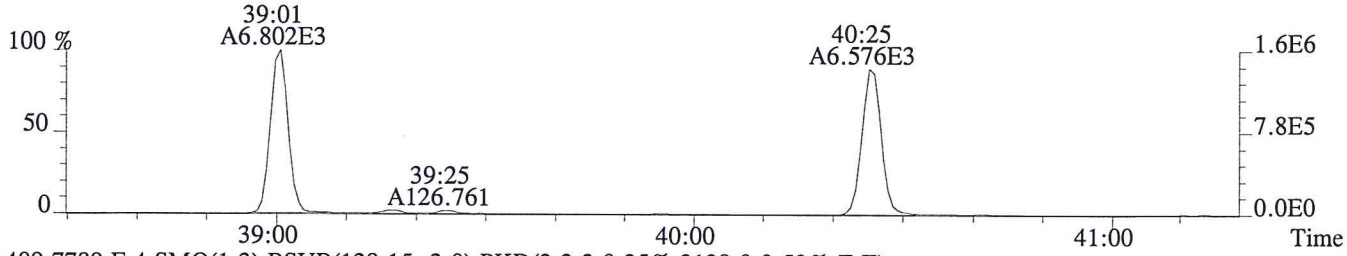
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3364.0,0.40%,F,T)



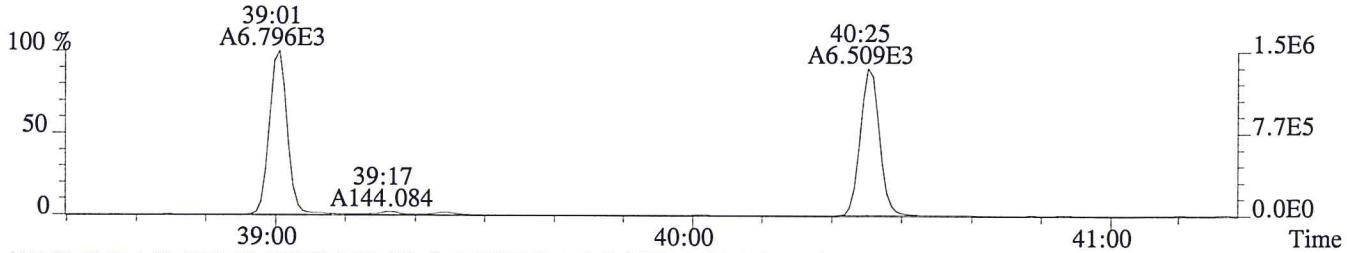
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



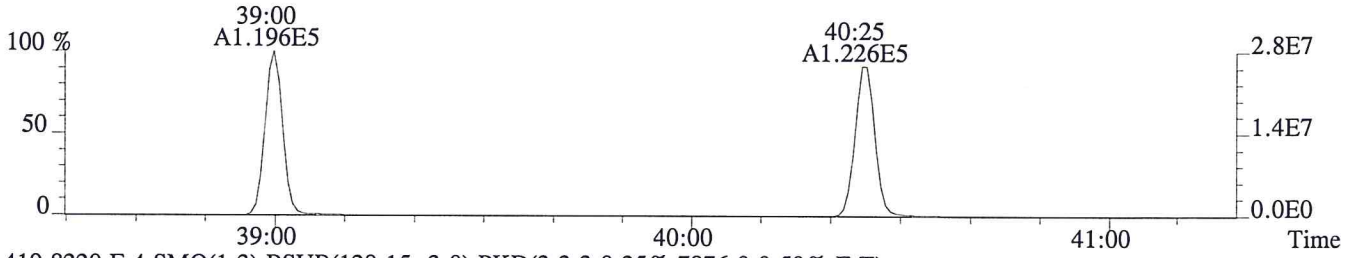
File:P500017 #1-254 Acq:30-JUN-2015 16:30:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC1
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1836.0,0.50%,F,T)



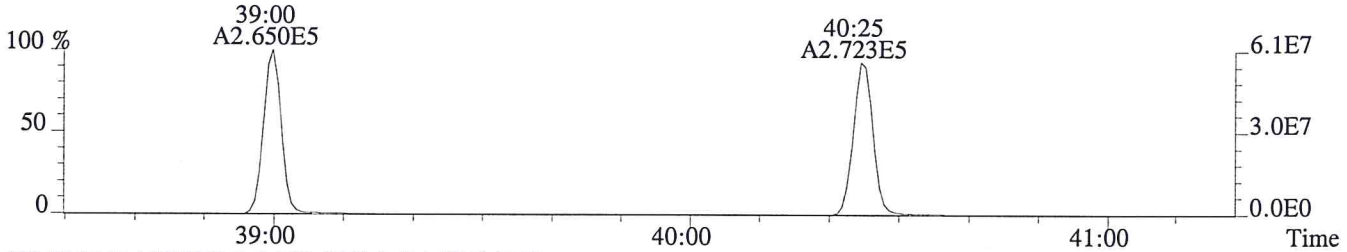
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2128.0,0.50%,F,T)



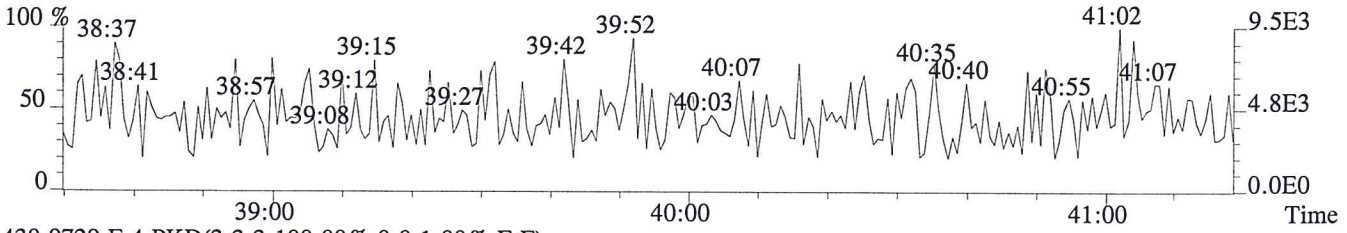
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4508.0,0.50%,F,T)



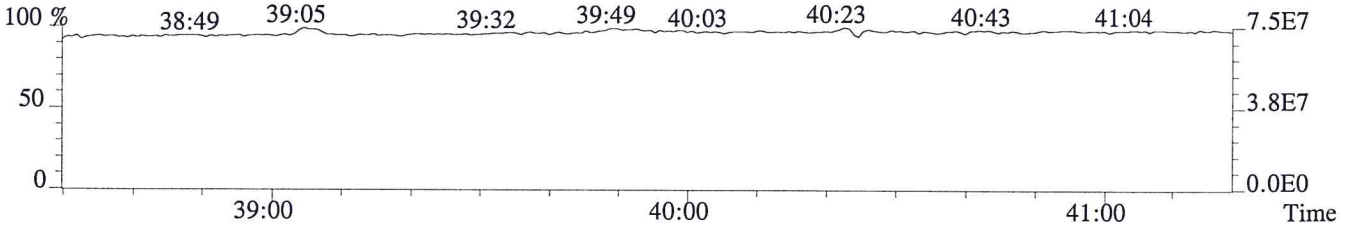
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,7876.0,0.50%,F,T)



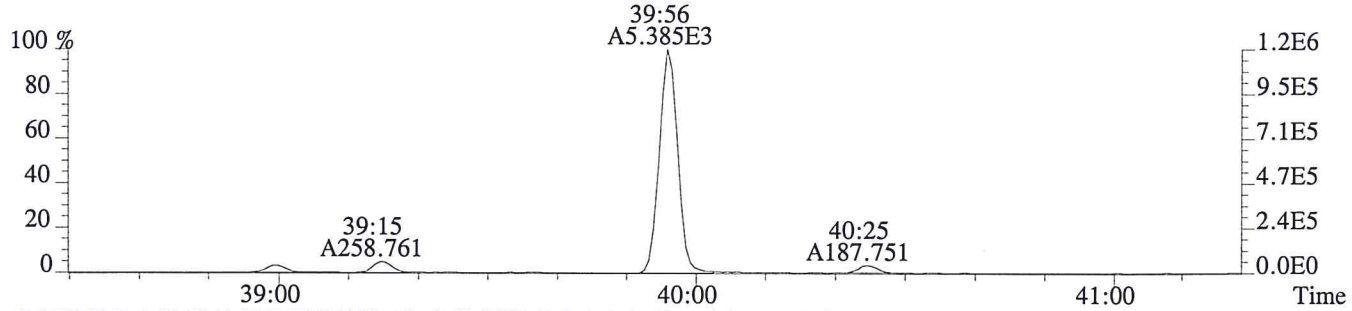
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



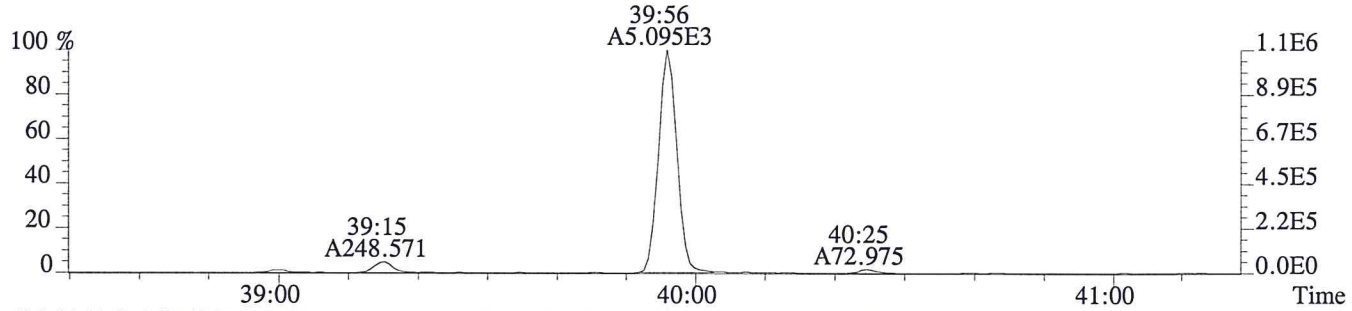
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



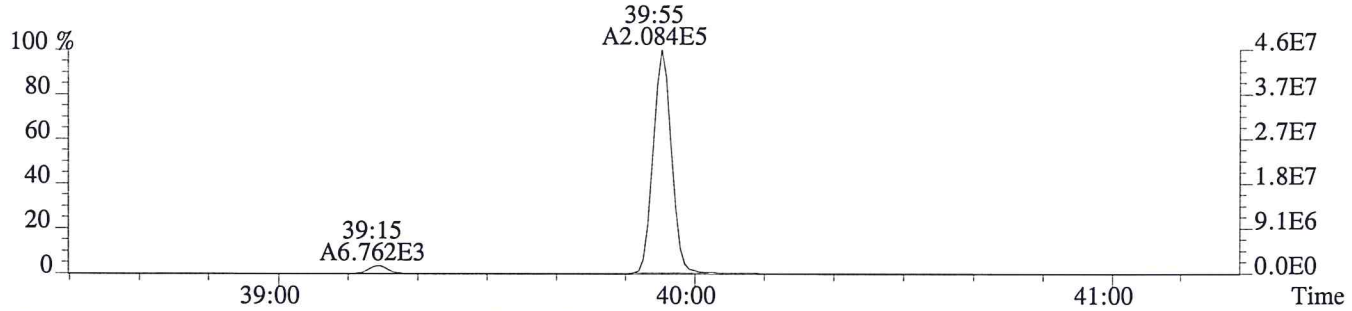
File:P500017 #1-254 Acq:30-JUN-2015 16:30:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC1
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1184.0,0.40%,F,T)



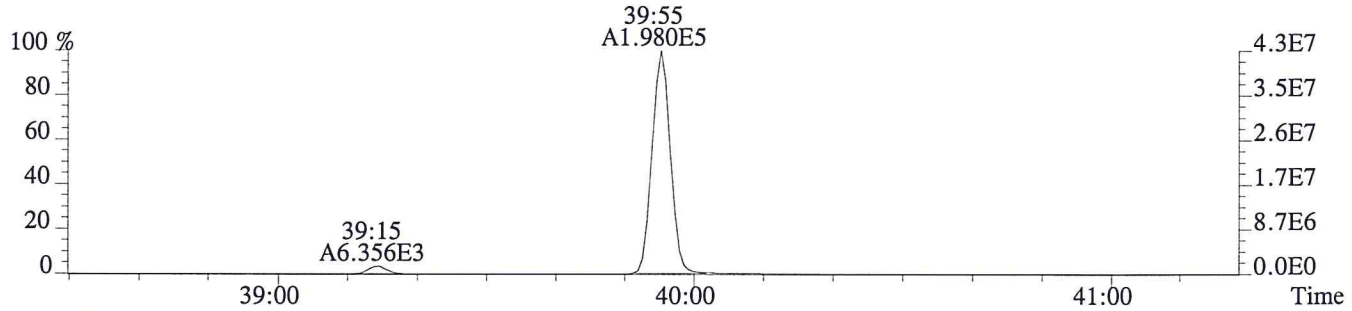
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1196.0,0.40%,F,T)



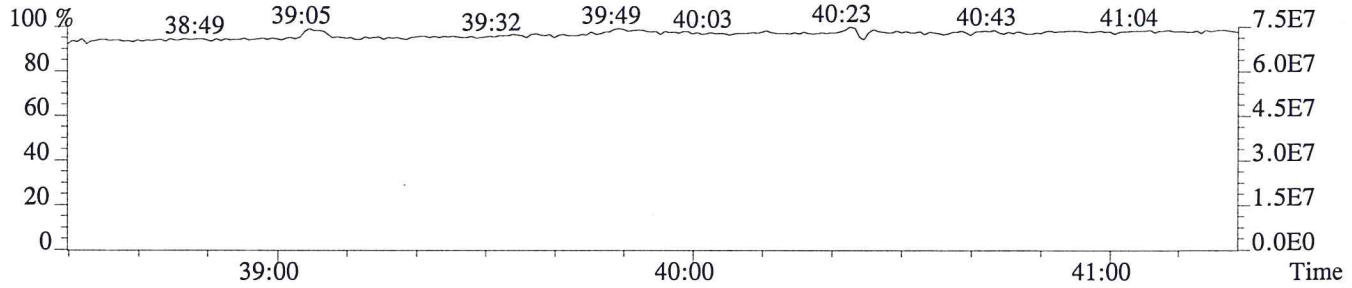
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3808.0,0.40%,F,T)



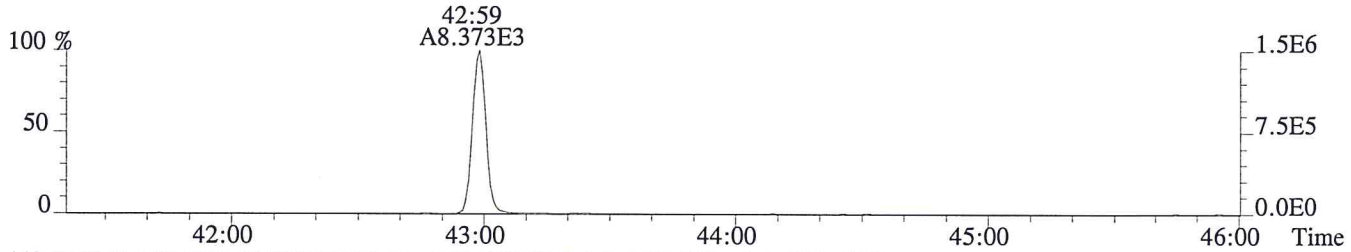
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1560.0,0.40%,F,T)



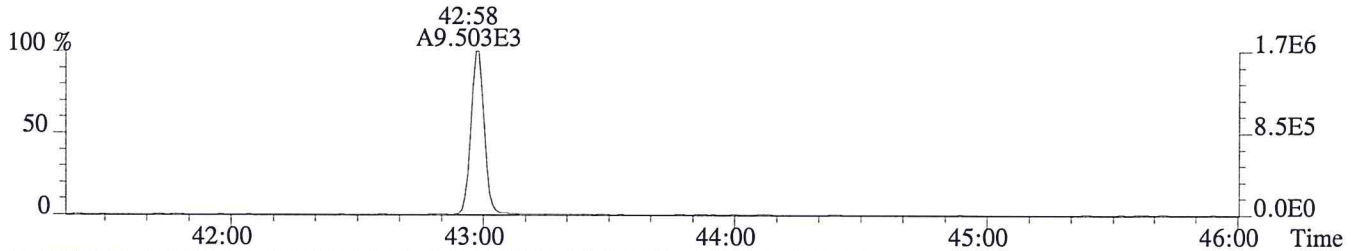
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



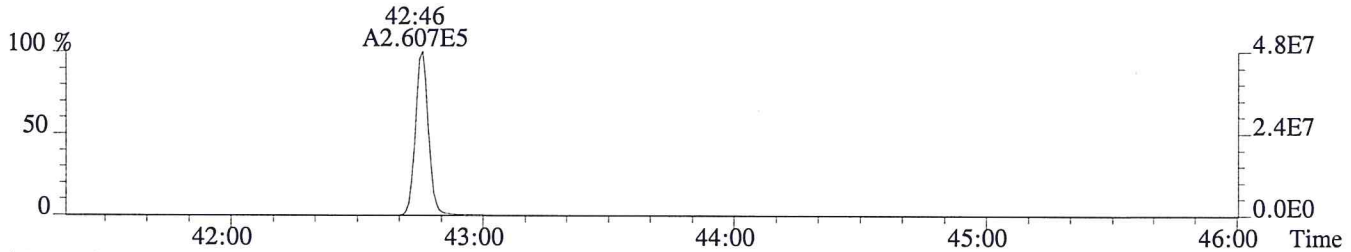
File:P500017 #1-420 Acq:30-JUN-2015 16:30:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC1
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1980.0,0.40%,F,T)



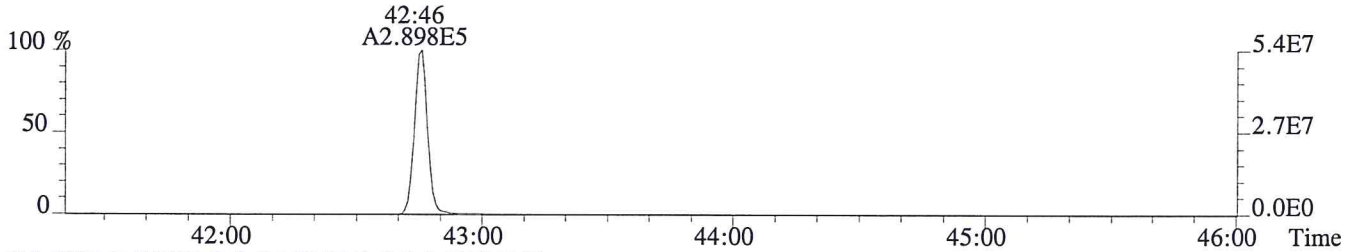
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2936.0,0.40%,F,T)



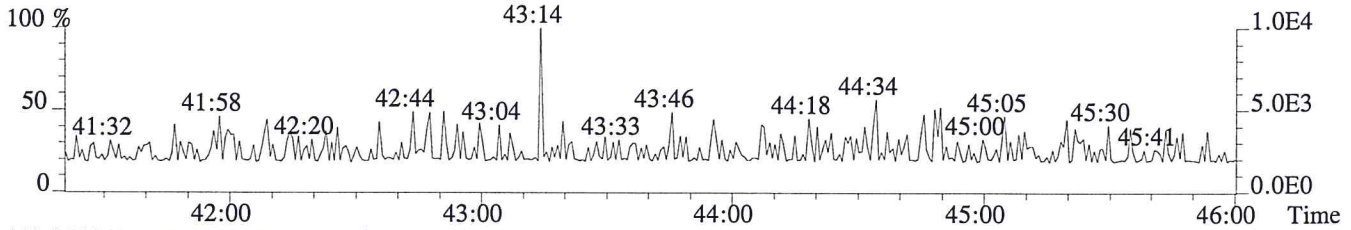
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1060.0,0.40%,F,T)



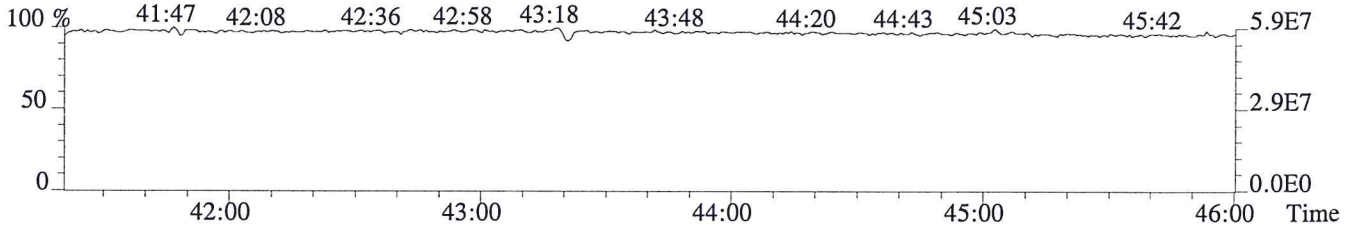
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1428.0,0.40%,F,T)



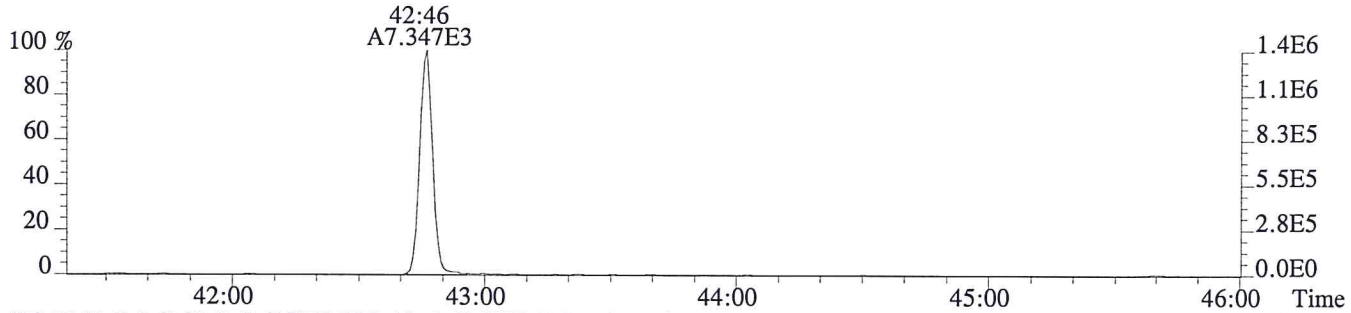
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



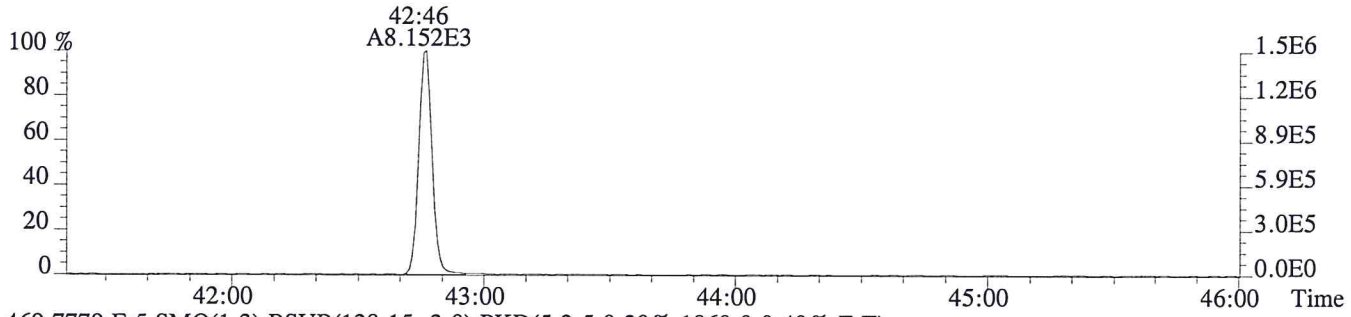
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



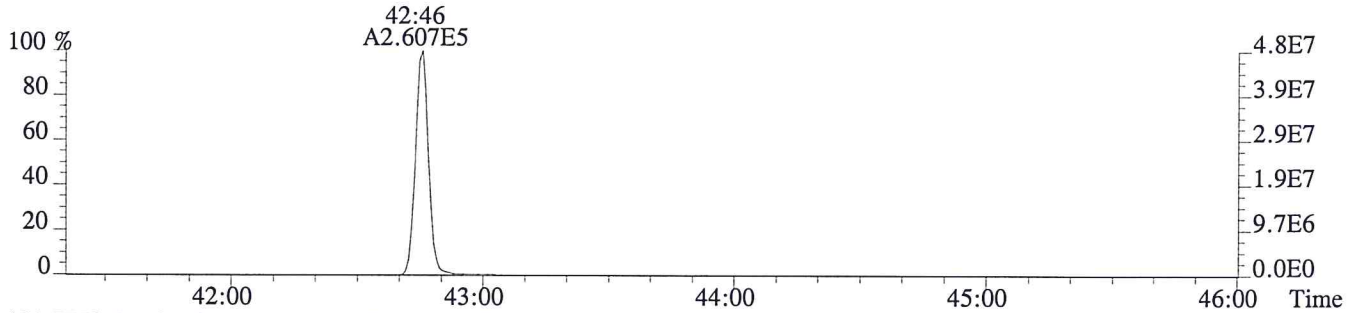
File:P500017 #1-420 Acq:30-JUN-2015 16:30:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC1
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,828.0,0.40%,F,T)



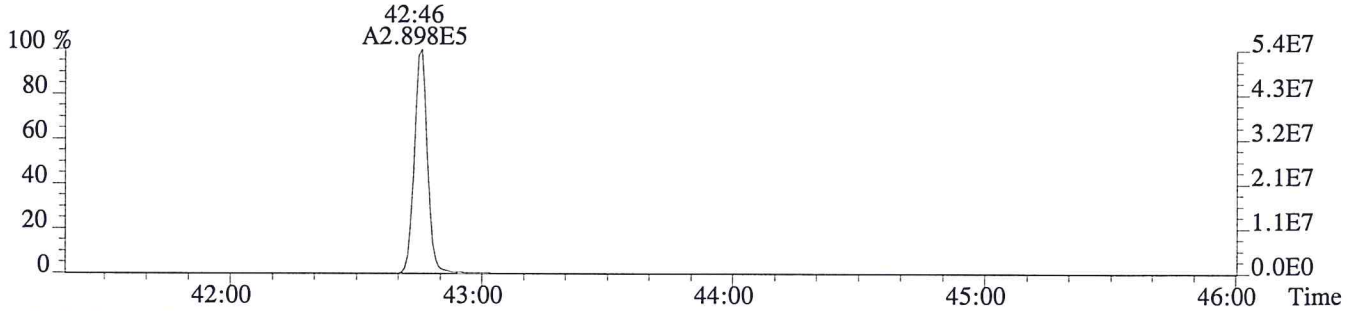
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2304.0,0.40%,F,T)



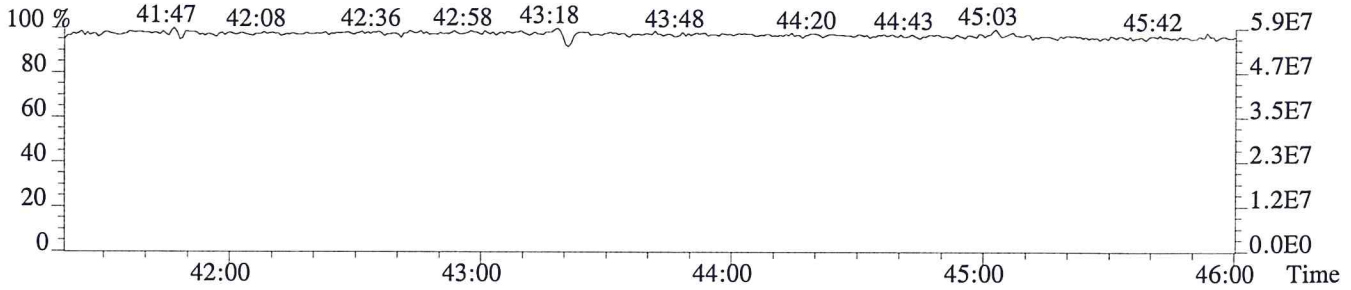
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1060.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1428.0,0.40%,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.
76556

Run #3 Filename P500018 Samp: 1 Inj: 1 Acquired: 30-JUN-15 17:19:02
Processed: 14-JUL-15 14:58:25 Sample ID: IC2

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	29:02	6.687e+03	9.150e+03	0.73	yes	no	0.886
2	Unk	1,2,3,7,8-PeCDF	33:01	5.677e+04	3.741e+04	1.52	yes	no	0.983
3	Unk	2,3,4,7,8-PeCDF	33:52	5.183e+04	3.457e+04	1.50	yes	no	0.952
4	Unk	1,2,3,4,7,8-HxCDF	36:27	5.027e+04	4.144e+04	1.21	yes	no	1.190
5	Unk	1,2,3,6,7,8-HxCDF	36:34	4.864e+04	4.046e+04	1.20	yes	no	1.114
6	Unk	2,3,4,6,7,8-HxCDF	37:02	4.325e+04	3.605e+04	1.20	yes	no	1.109
7	Unk	1,2,3,7,8,9-HxCDF	37:46	4.328e+04	3.603e+04	1.20	yes	no	1.153
8	Unk	1,2,3,4,6,7,8-HpCDF	39:00	3.817e+04	3.721e+04	1.03	yes	no	1.376
9	Unk	1,2,3,4,7,8,9-HpCDF	40:25	3.672e+04	3.626e+04	1.01	yes	no	1.306
10	Unk	OCDF	42:58	4.677e+04	5.259e+04	0.89	yes	no	1.263
11	Unk	2,3,7,8-TCDD	29:46	5.541e+03	7.210e+03	0.77	yes	no	0.997
12	Unk	1,2,3,7,8-PeCDD	34:09	3.828e+04	2.465e+04	1.55	yes	no	0.935
13	Unk	1,2,3,4,7,8-HxCDD	37:10	3.208e+04	2.550e+04	1.26	yes	no	1.039
14	Unk	1,2,3,6,7,8-HxCDD	37:15	3.170e+04	2.537e+04	1.25	yes	no	0.996
15	Unk	1,2,3,7,8,9-HxCDD	37:29	3.462e+04	2.789e+04	1.24	yes	no	1.108
16	Unk	1,2,3,4,6,7,8-HpCDD	39:56	2.968e+04	2.851e+04	1.04	yes	no	1.010
17	Unk	OCDD	42:46	4.074e+04	4.609e+04	0.88	yes	no	1.090
18	IS	13C-2,3,7,8-TCDF	29:01	3.962e+05	5.021e+05	0.79	yes	no	1.447
19	IS	13C-1,2,3,7,8-PeCDF	32:59	5.728e+05	3.633e+05	1.58	yes	no	1.500
20	IS	13C-2,3,4,7,8-PeCDF	33:51	5.601e+05	3.556e+05	1.58	yes	no	1.456
21	IS	13C-1,2,3,4,7,8-HxCDF	36:26	2.592e+05	5.028e+05	0.52	yes	no	1.207
22	IS	13C-1,2,3,6,7,8-HxCDF	36:33	2.702e+05	5.275e+05	0.51	yes	no	1.263
23	IS	13C-2,3,4,6,7,8-HxCDF	37:02	2.445e+05	4.690e+05	0.52	yes	no	1.153
24	IS	13C-1,2,3,7,8,9-HxCDF	37:46	2.355e+05	4.495e+05	0.52	yes	no	1.085
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:59	1.668e+05	3.747e+05	0.45	yes	no	0.876
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:25	1.725e+05	3.869e+05	0.45	yes	no	0.883
27	IS	13C-2,3,7,8-TCDD	29:45	2.794e+05	3.580e+05	0.78	yes	no	1.027
28	IS	13C-1,2,3,7,8-PeCDD	34:08	4.066e+05	2.596e+05	1.57	yes	no	1.064
29	IS	13C-1,2,3,4,7,8-HxCDD	37:09	3.163e+05	2.482e+05	1.27	yes	no	0.908
30	IS	13C-1,2,3,6,7,8-HxCDD	37:14	3.109e+05	2.468e+05	1.26	yes	no	0.899
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:55	2.929e+05	2.772e+05	1.06	yes	no	0.910
32	IS	13C-OCDD	42:45	3.633e+05	4.042e+05	0.90	yes	no	0.633
33	RS/RT	13C-1,2,3,4-TCDD	29:13	2.759e+05	3.463e+05	0.80	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:28	3.508e+05	2.802e+05	1.25	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:46	1.319e+04				no	1.066

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Signal/Noise Height Ratio Summary

CLIENT ID.
76556

Run #3 Filename P500018 Samp: 1 Inj: 1 Acquired: 30-JUN-15 17:19:02
Processed: 14-JUL-15 14:58:25 LAB. ID: IC2

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	1.35e+06	2.05e+03	6.6e+02	1.82e+06	2.54e+03	7.2e+02
2	1,2,3,7,8-PeCDF	1.16e+07	2.96e+03	3.9e+03	7.60e+06	3.53e+03	2.2e+03
3	2,3,4,7,8-PeCDF	1.10e+07	2.96e+03	3.7e+03	7.40e+06	3.53e+03	2.1e+03
4	1,2,3,4,7,8-HxCDF	1.15e+07	1.73e+03	6.7e+03	9.49e+06	1.07e+03	8.9e+03
5	1,2,3,6,7,8-HxCDF	1.10e+07	1.73e+03	6.4e+03	9.11e+06	1.07e+03	8.5e+03
6	2,3,4,6,7,8-HxCDF	1.01e+07	1.73e+03	5.8e+03	8.39e+06	1.07e+03	7.8e+03
7	1,2,3,7,8,9-HxCDF	9.64e+06	1.73e+03	5.6e+03	7.98e+06	1.07e+03	7.4e+03
8	1,2,3,4,6,7,8-HpCDF	8.76e+06	2.72e+03	3.2e+03	8.57e+06	2.57e+03	3.3e+03
9	1,2,3,4,7,8,9-HpCDF	7.96e+06	2.72e+03	2.9e+03	7.77e+06	2.57e+03	3.0e+03
10	OCDF	8.70e+06	2.10e+03	4.1e+03	9.63e+06	2.42e+03	4.0e+03
11	2,3,7,8-TCDD	1.18e+06	1.47e+03	8.0e+02	1.55e+06	2.52e+03	6.1e+02
12	1,2,3,7,8-PeCDD	8.29e+06	4.82e+03	1.7e+03	5.33e+06	1.90e+03	2.8e+03
13	1,2,3,4,7,8-HxCDD	7.43e+06	1.24e+03	6.0e+03	5.92e+06	2.41e+03	2.5e+03
14	1,2,3,6,7,8-HxCDD	7.26e+06	1.24e+03	5.9e+03	5.81e+06	2.41e+03	2.4e+03
15	1,2,3,7,8,9-HxCDD	7.99e+06	1.24e+03	6.4e+03	6.42e+06	2.41e+03	2.7e+03
16	1,2,3,4,6,7,8-HpCDD	6.36e+06	1.69e+03	3.8e+03	6.02e+06	1.33e+03	4.5e+03
17	OCDD	7.61e+06	1.38e+03	5.5e+03	8.57e+06	1.94e+03	4.4e+03
18	13C-2,3,7,8-TCDF	7.72e+07	4.46e+03	1.7e+04	9.81e+07	3.38e+03	2.9e+04
19	13C-1,2,3,7,8-PeCDF	1.13e+08	1.78e+03	6.4e+04	7.24e+07	3.05e+03	2.4e+04
20	13C-2,3,4,7,8-PeCDF	1.20e+08	1.78e+03	6.8e+04	7.64e+07	3.05e+03	2.5e+04
21	13C-1,2,3,4,7,8-HxCDF	5.95e+07	1.88e+03	3.2e+04	1.15e+08	2.80e+03	4.1e+04
22	13C-1,2,3,6,7,8-HxCDF	6.10e+07	1.88e+03	3.3e+04	1.18e+08	2.80e+03	4.2e+04
23	13C-2,3,4,6,7,8-HxCDF	5.66e+07	1.88e+03	3.0e+04	1.09e+08	2.80e+03	3.9e+04
24	13C-1,2,3,7,8,9-HxCDF	5.18e+07	1.88e+03	2.8e+04	9.95e+07	2.80e+03	3.6e+04
25	13C-1,2,3,4,6,7,8-HpCDF	3.75e+07	7.56e+03	5.0e+03	8.50e+07	5.08e+03	1.7e+04
26	13C-1,2,3,4,7,8,9-HpCDF	3.70e+07	7.56e+03	4.9e+03	8.28e+07	5.08e+03	1.6e+04
27	13C-2,3,7,8-TCDD	5.88e+07	1.05e+04	5.6e+03	7.51e+07	4.16e+03	1.8e+04
28	13C-1,2,3,7,8-PeCDD	8.48e+07	3.11e+03	2.7e+04	5.40e+07	2.00e+03	2.7e+04
29	13C-1,2,3,4,7,8-HxCDD	7.27e+07	3.02e+03	2.4e+04	5.72e+07	4.89e+03	1.2e+04
30	13C-1,2,3,6,7,8-HxCDD	7.10e+07	3.02e+03	2.3e+04	5.63e+07	4.89e+03	1.2e+04
31	13C-1,2,3,4,6,7,8-HpCDD	6.20e+07	3.64e+03	1.7e+04	5.85e+07	1.31e+03	4.5e+04
32	13C-OCDD	6.69e+07	9.28e+02	7.2e+04	7.46e+07	1.45e+03	5.1e+04
33	13C-1,2,3,4-TCDD	5.53e+07	1.05e+04	5.3e+03	6.97e+07	4.16e+03	1.7e+04
34	13C-1,2,3,7,8,9-HxCDD	8.08e+07	3.02e+03	2.7e+04	6.49e+07	4.89e+03	1.3e+04
35	37Cl-2,3,7,8-TCDD	2.81e+06	2.58e+03	1.1e+03			

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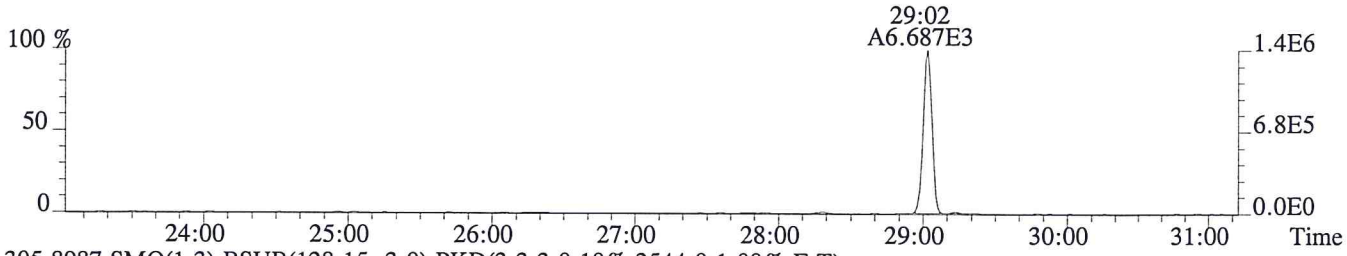
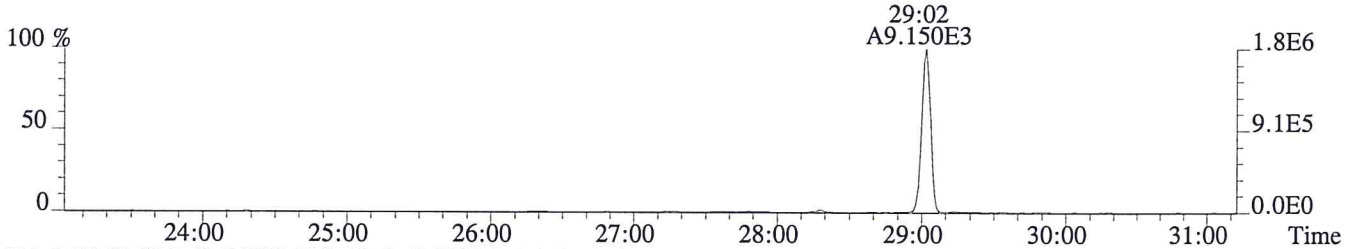
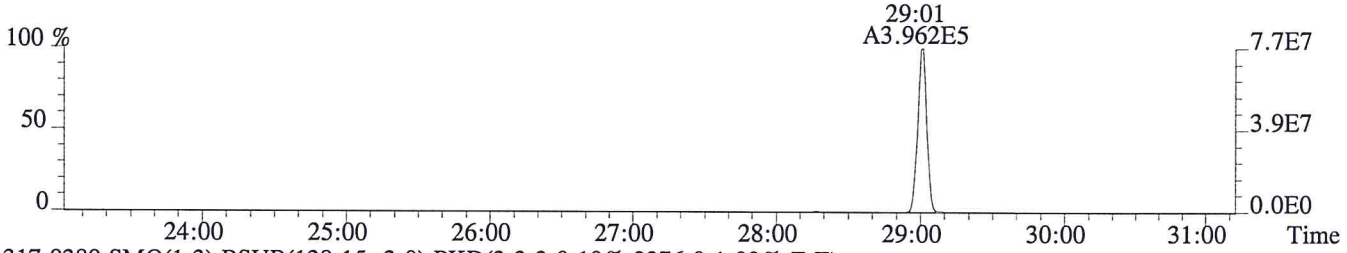
File:P500018 #1-580 Acq:30-JUN-2015 17:19:02 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC2
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2048.0,1.00%,F,T)



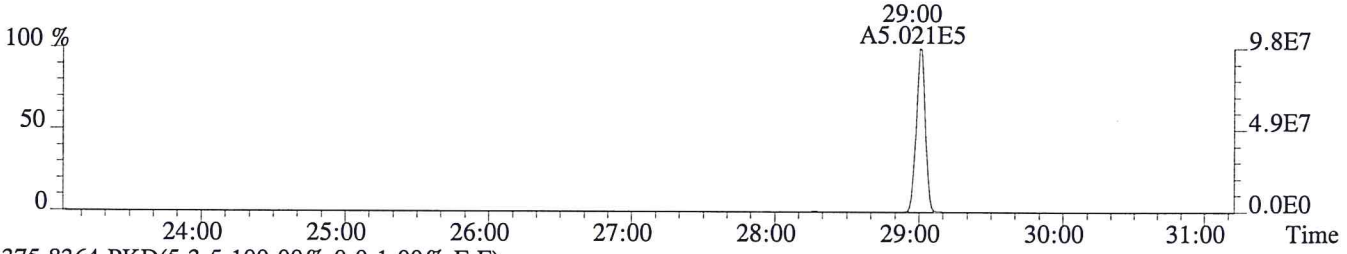
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2544.0,1.00%,F,T)



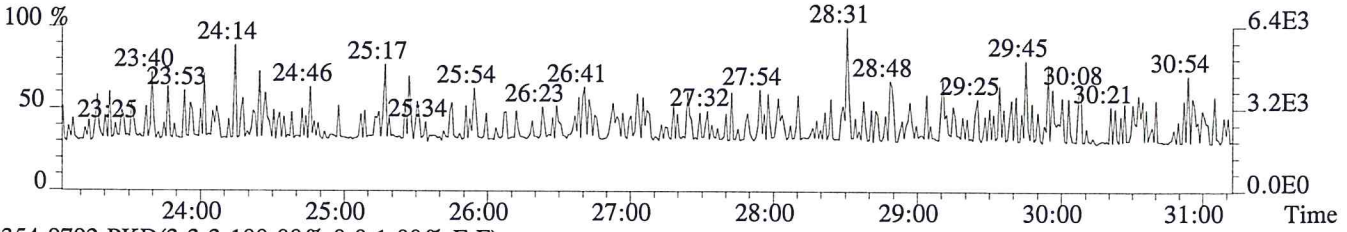
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4460.0,1.00%,F,T)



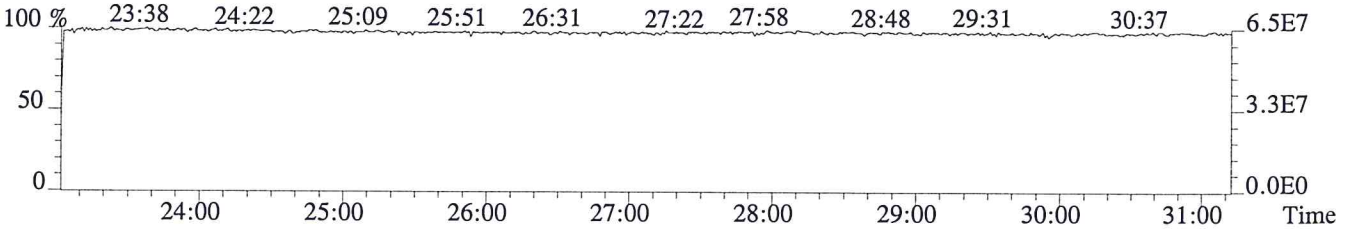
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3376.0,1.00%,F,T)



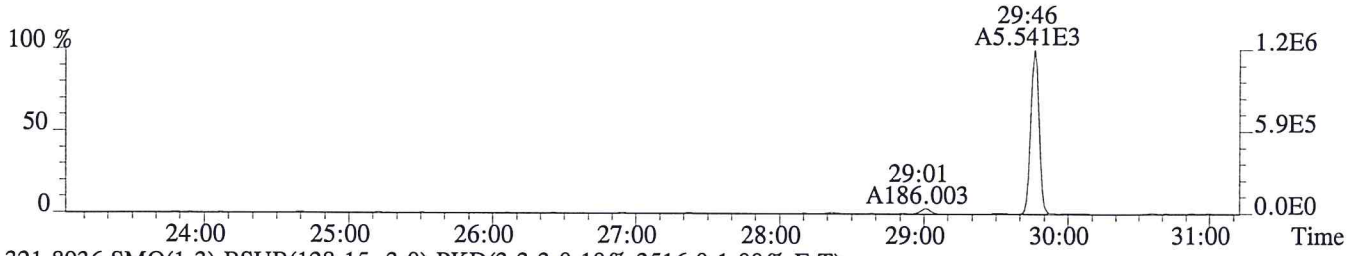
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



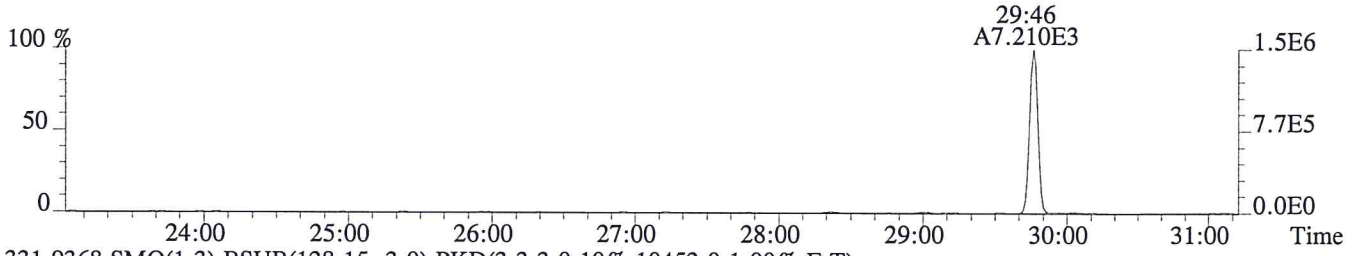
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



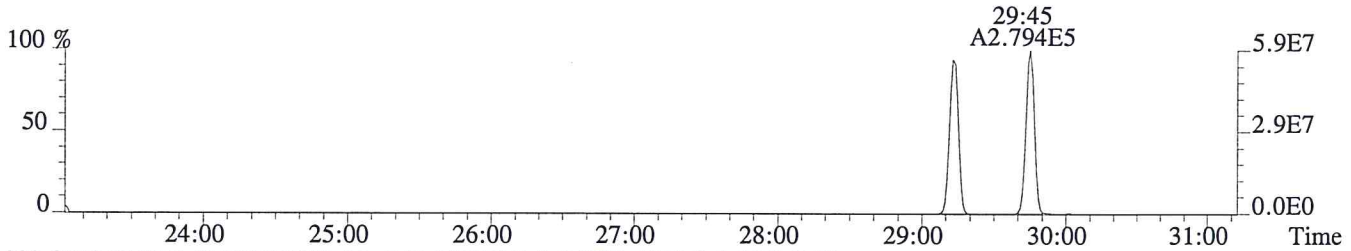
File:P500018 #1-580 Acq:30-JUN-2015 17:19:02 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC2
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1472.0,1.00%,F,T)



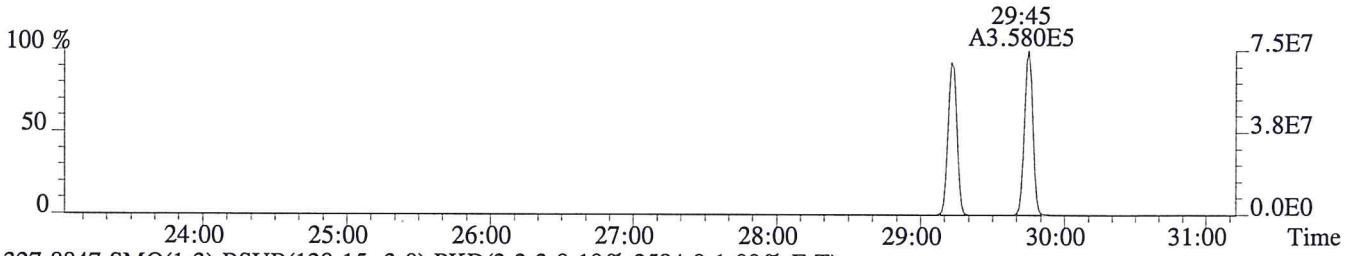
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2516.0,1.00%,F,T)



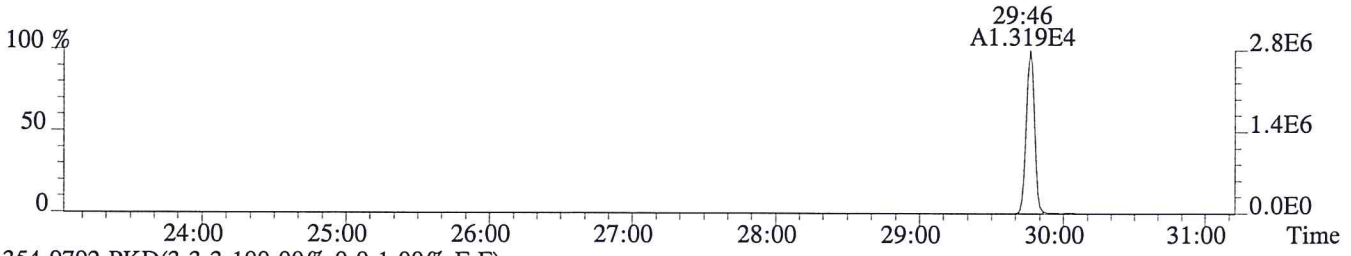
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,10452.0,1.00%,F,T)



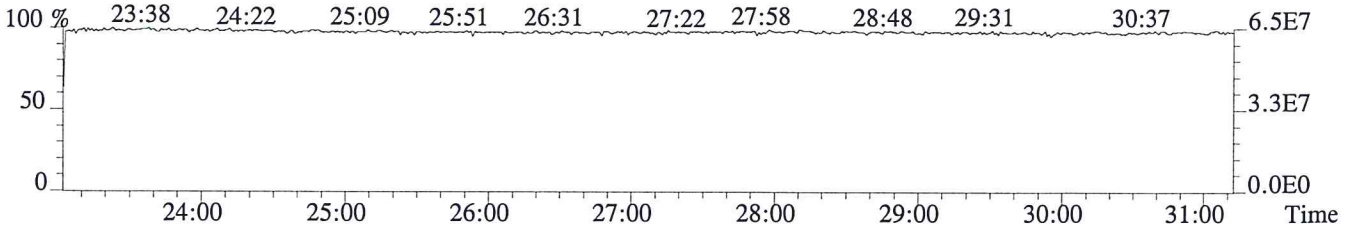
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4160.0,1.00%,F,T)



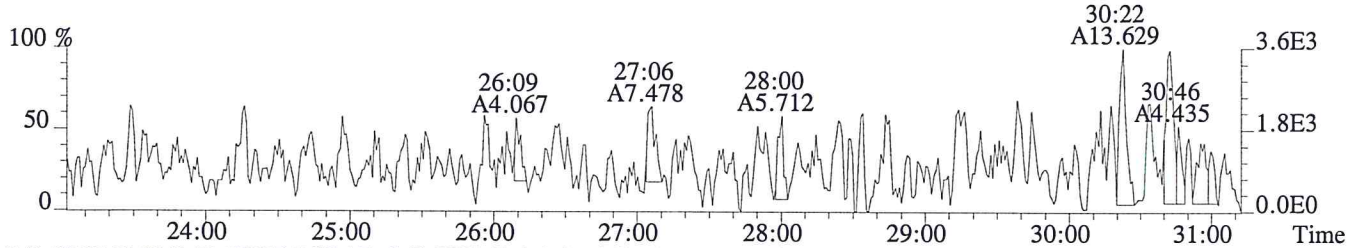
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2584.0,1.00%,F,T)



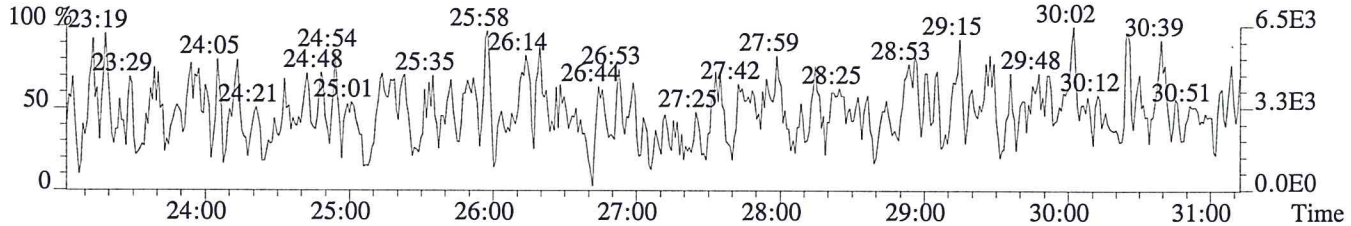
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



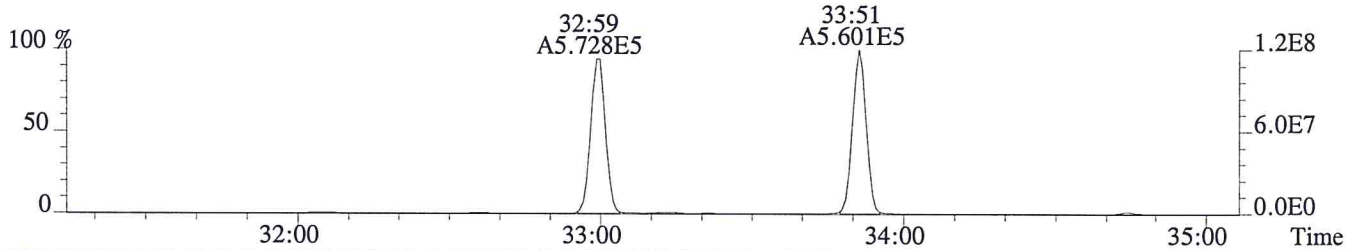
File:P500018 #1-580 Acq:30-JUN-2015 17:19:02 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC2
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1216.0,1.00%,F,T)



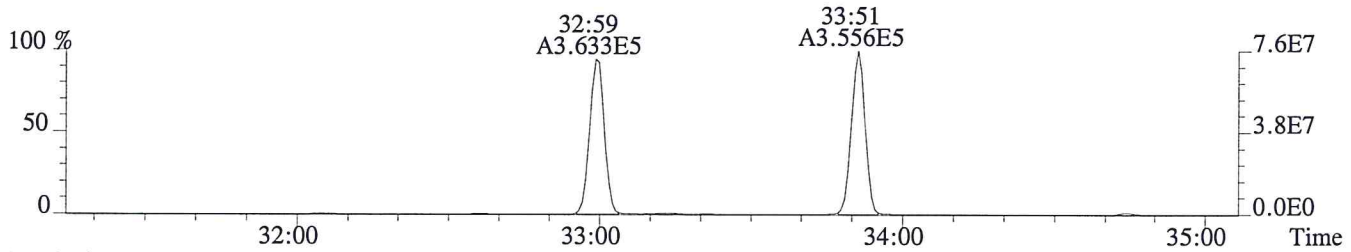
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3920.0,1.00%,F,T)



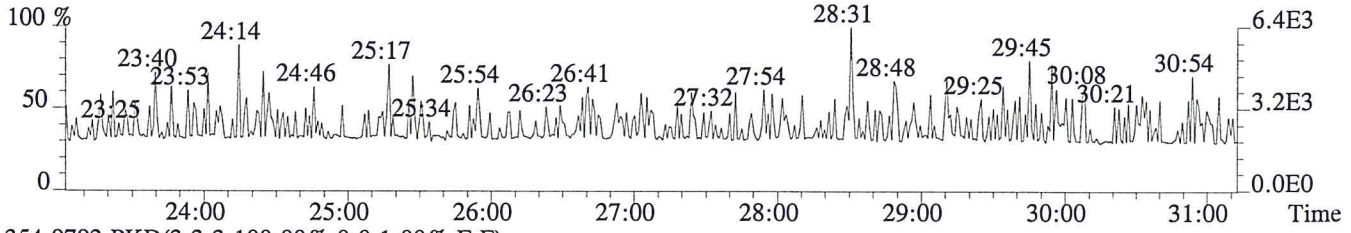
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1776.0,1.00%,F,T)



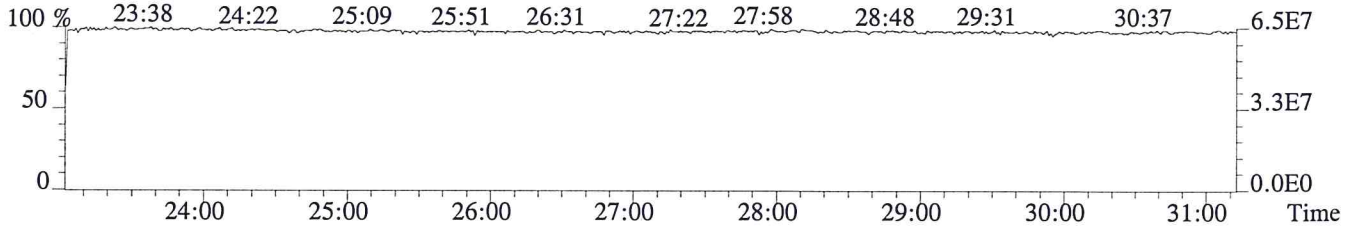
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3048.0,1.00%,F,T)



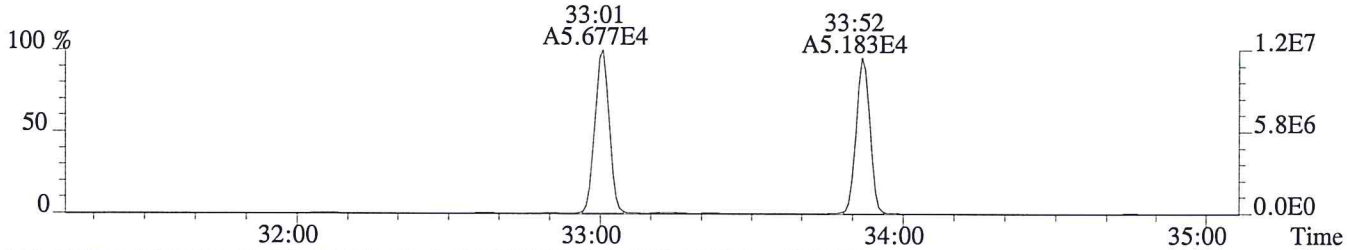
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



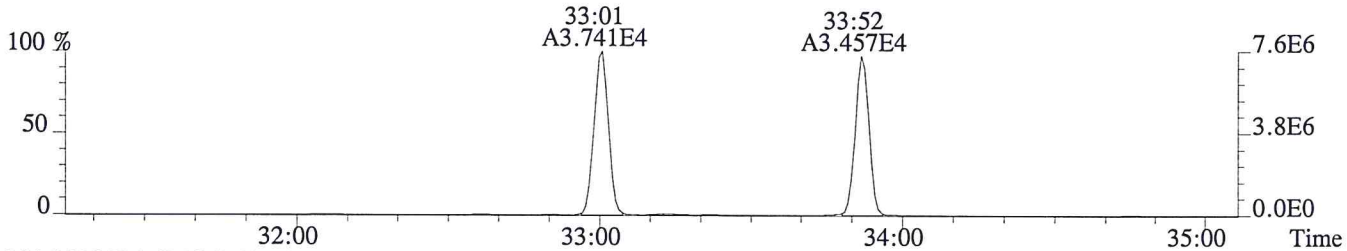
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



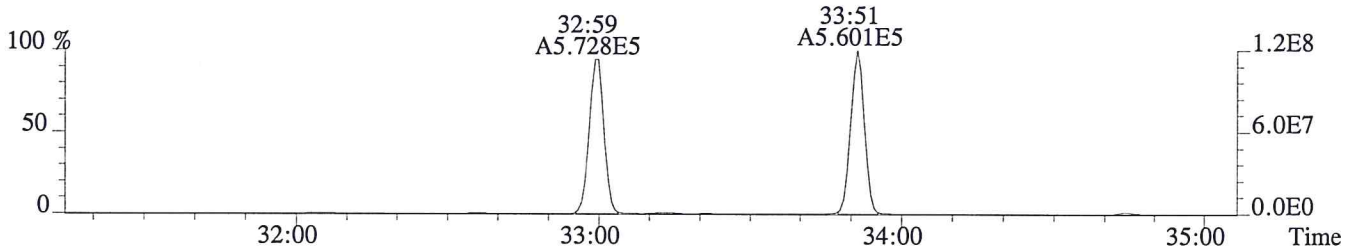
File:P500018 #1-349 Acq:30-JUN-2015 17:19:02 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC2
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2960.0,1.00%,F,T)



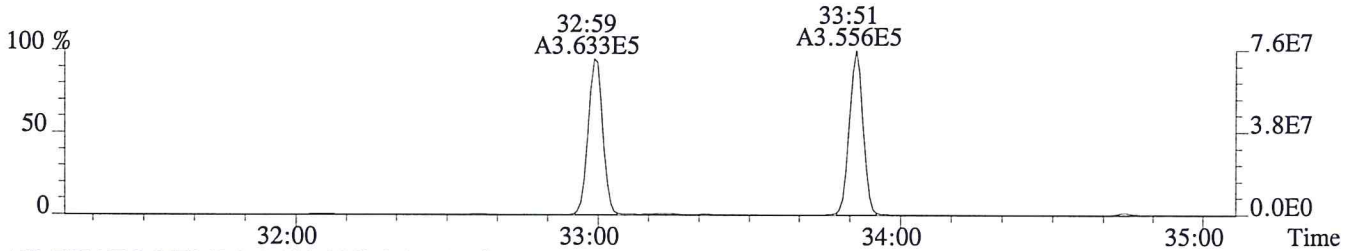
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3528.0,1.00%,F,T)



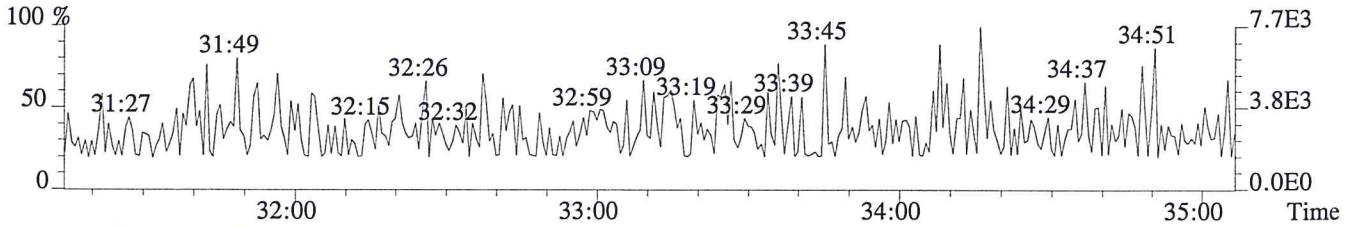
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1776.0,1.00%,F,T)



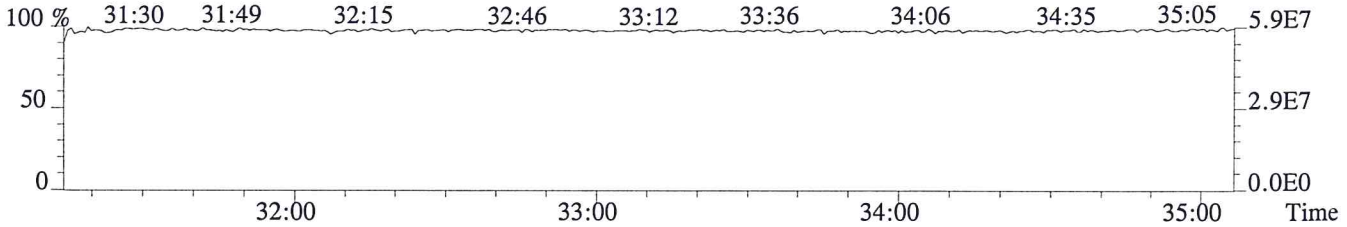
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3048.0,1.00%,F,T)



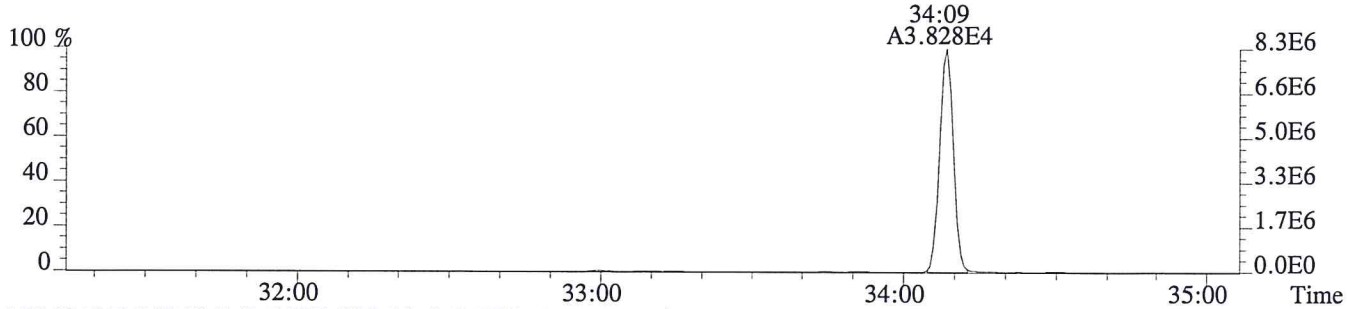
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



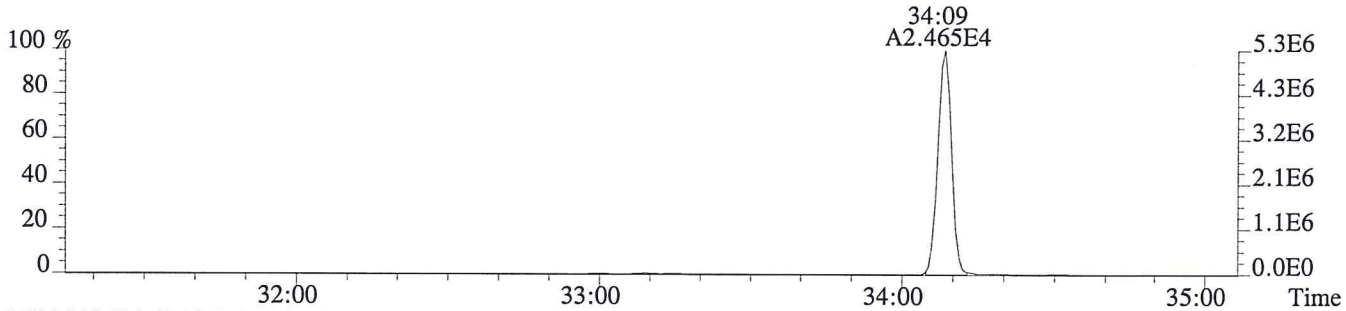
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



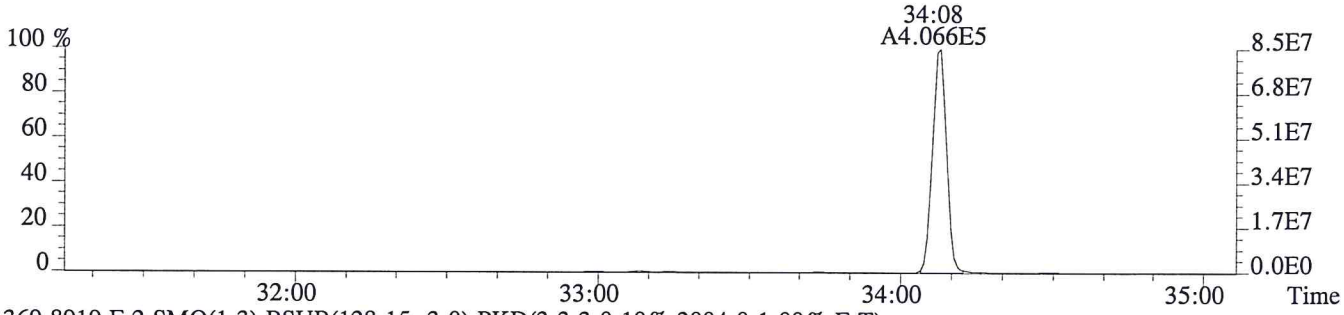
File:P500018 #1-349 Acq:30-JUN-2015 17:19:02 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC2
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4816.0,1.00%,F,T)



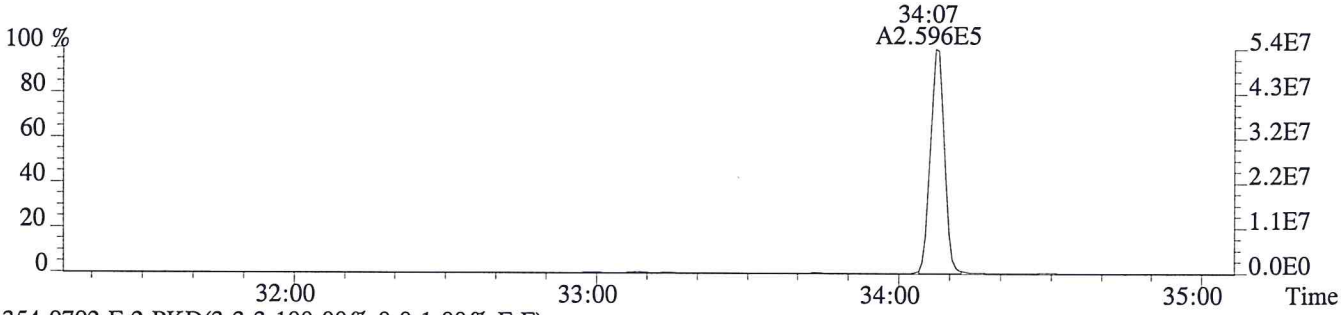
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1904.0,1.00%,F,T)



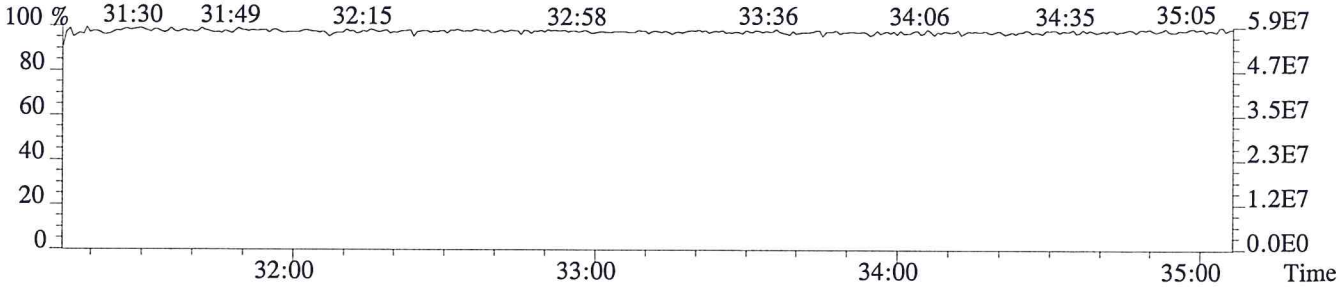
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3108.0,1.00%,F,T)



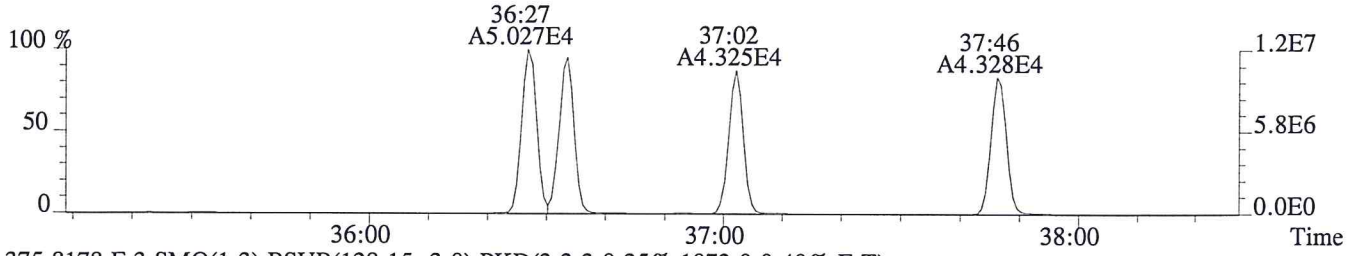
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2004.0,1.00%,F,T)



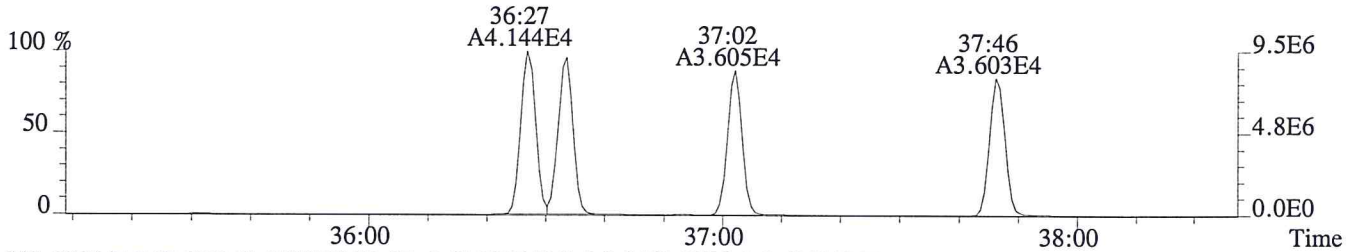
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



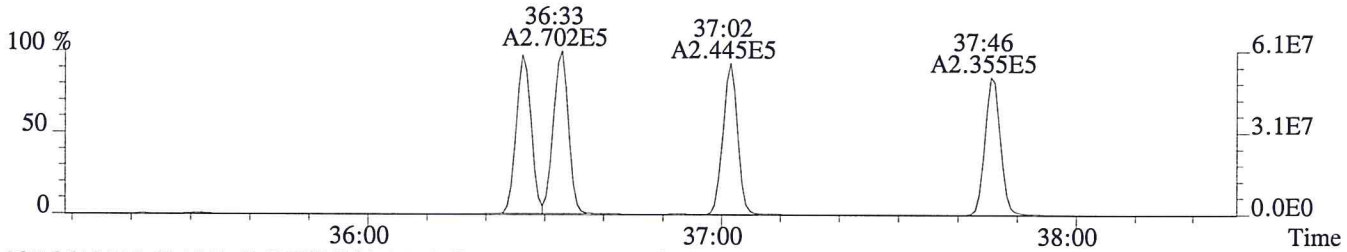
File:P500018 #1-299 Acq:30-JUN-2015 17:19:02 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC2
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1732.0,0.40%,F,T)



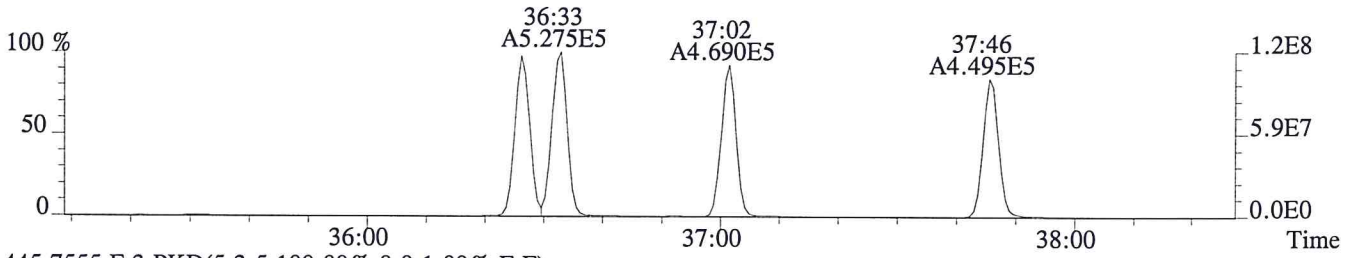
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1072.0,0.40%,F,T)



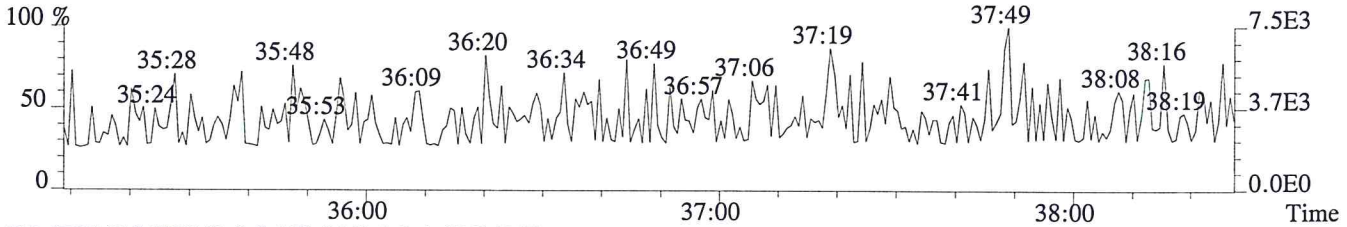
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1876.0,0.40%,F,T)



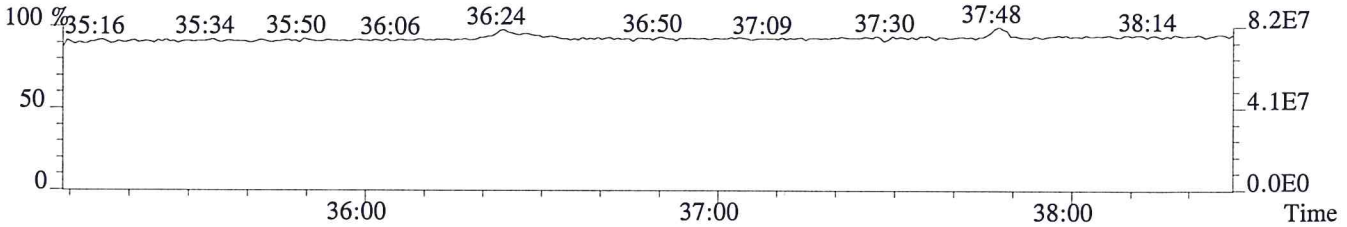
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2800.0,0.40%,F,T)



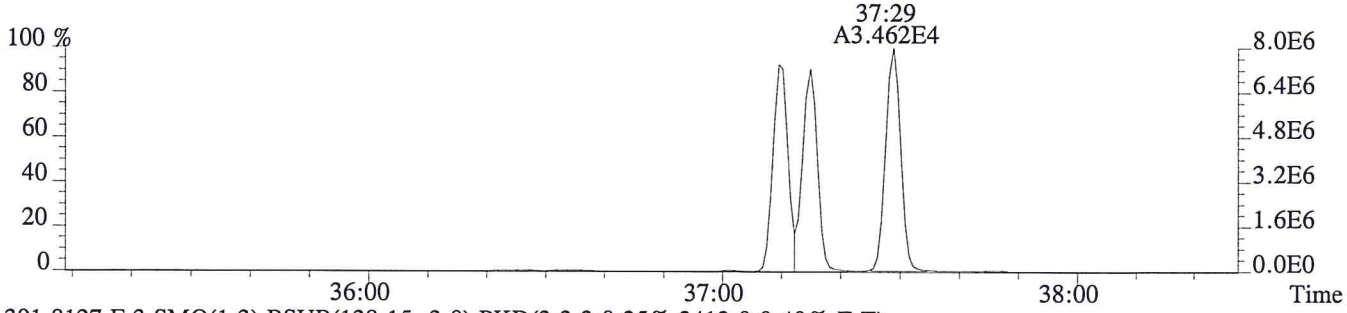
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



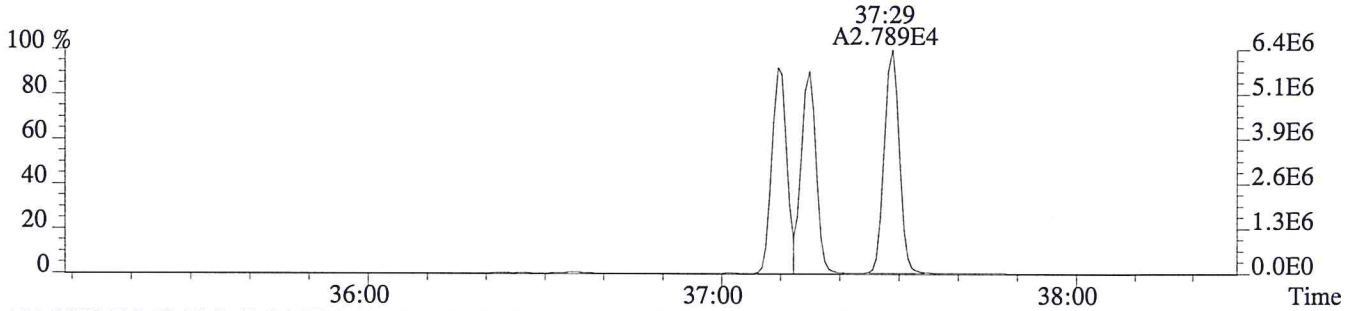
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



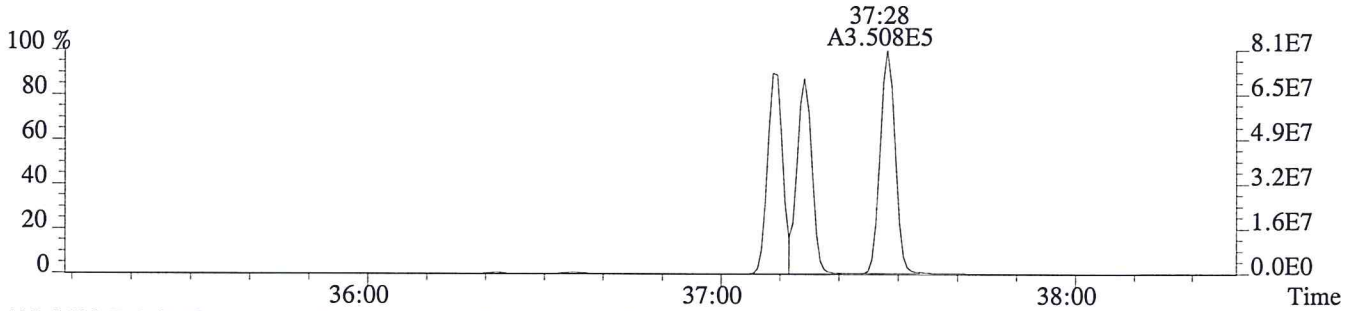
File:P500018 #1-299 Acq:30-JUN-2015 17:19:02 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC2
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1240.0,0.40%,F,T)



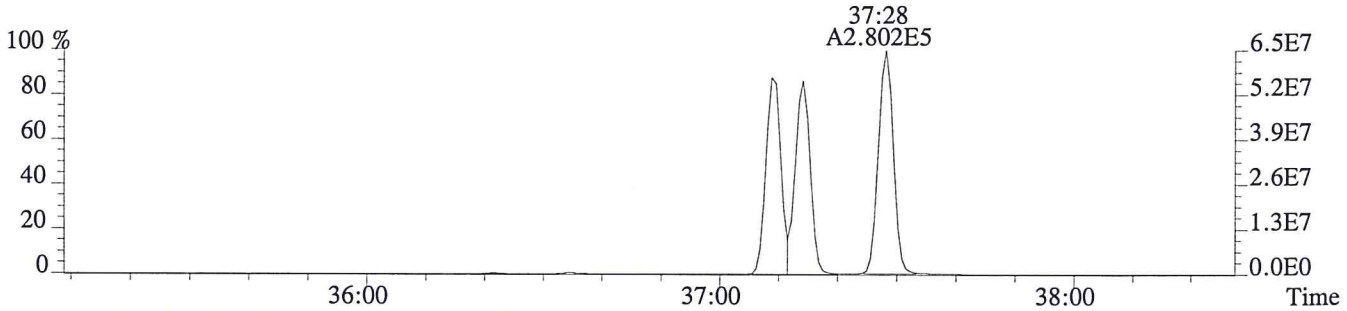
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2412.0,0.40%,F,T)



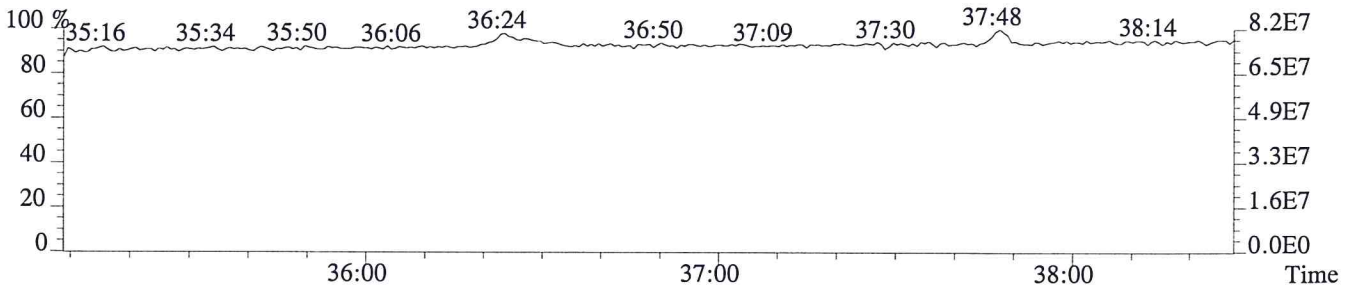
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3020.0,0.40%,F,T)



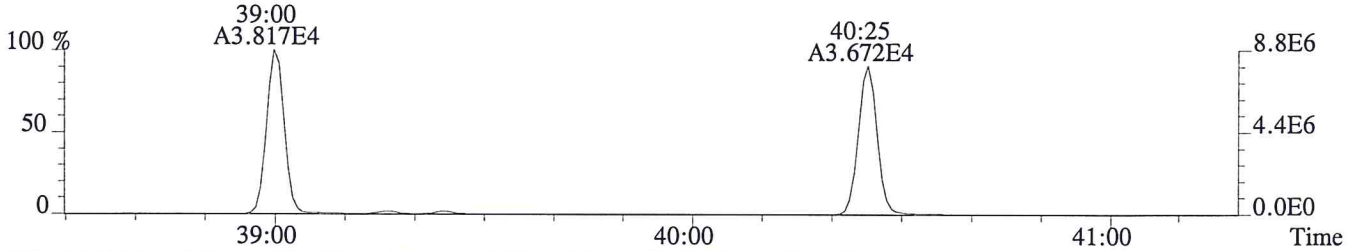
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4892.0,0.40%,F,T)



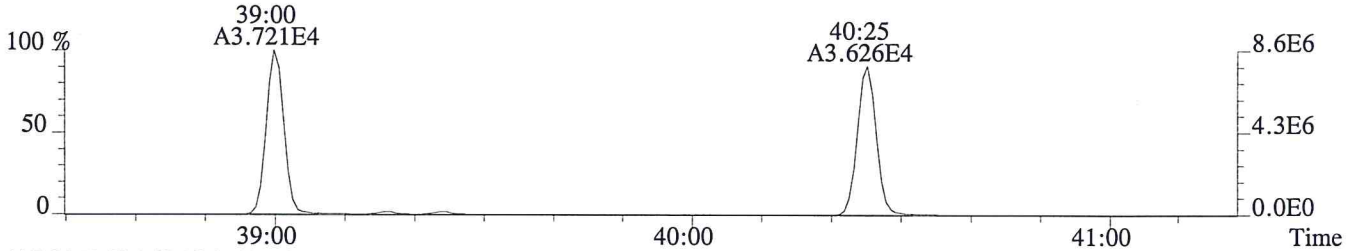
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



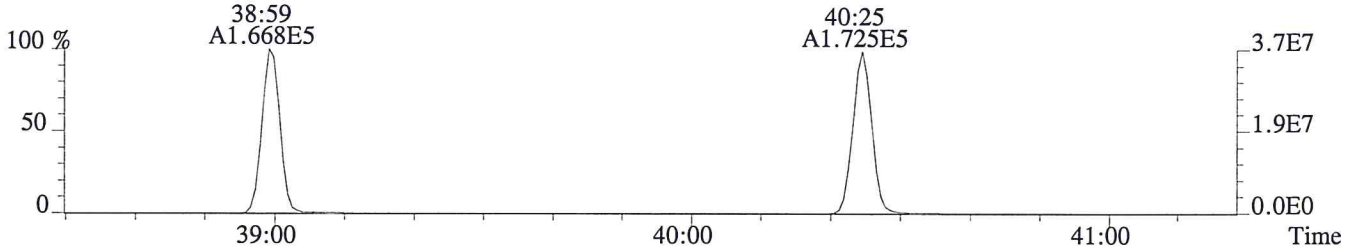
File:P500018 #1-254 Acq:30-JUN-2015 17:19:02 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC2
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2720.0,0.50%,F,T)



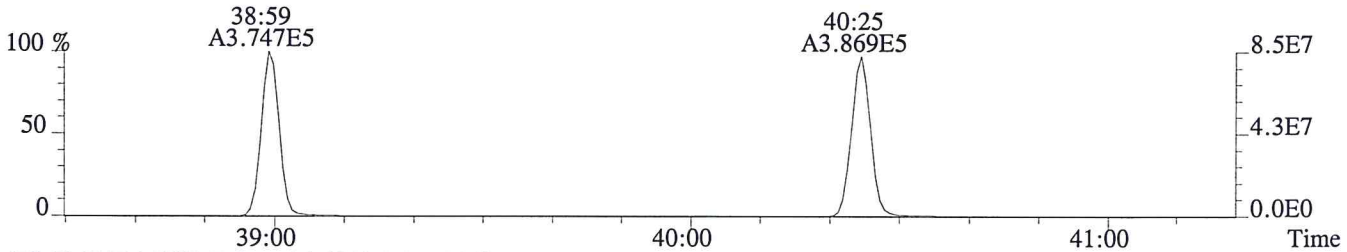
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2572.0,0.50%,F,T)



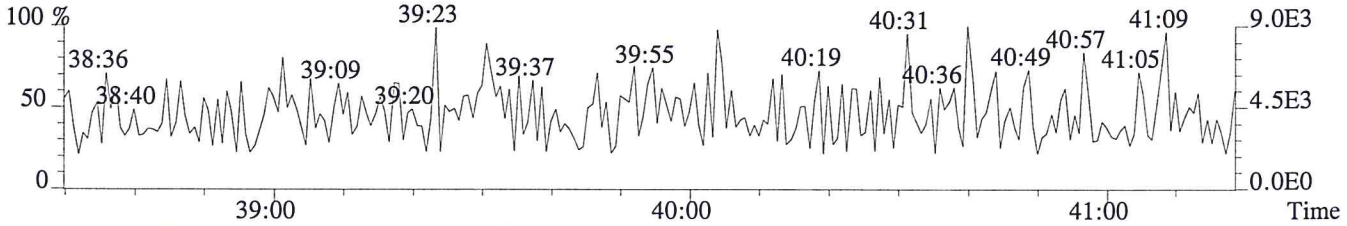
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,7560.0,0.50%,F,T)



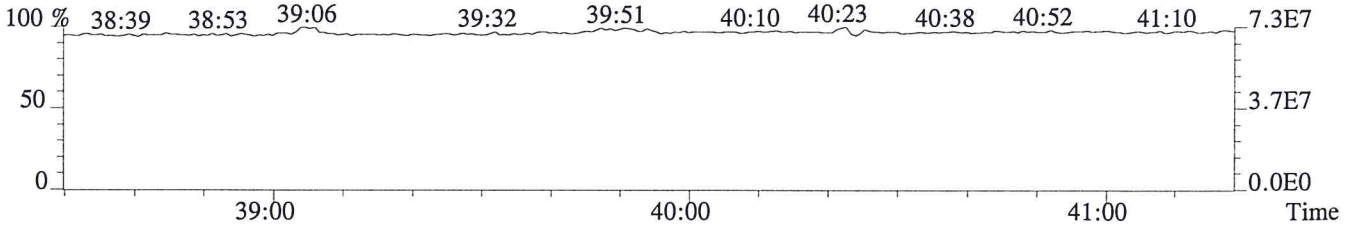
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5080.0,0.50%,F,T)



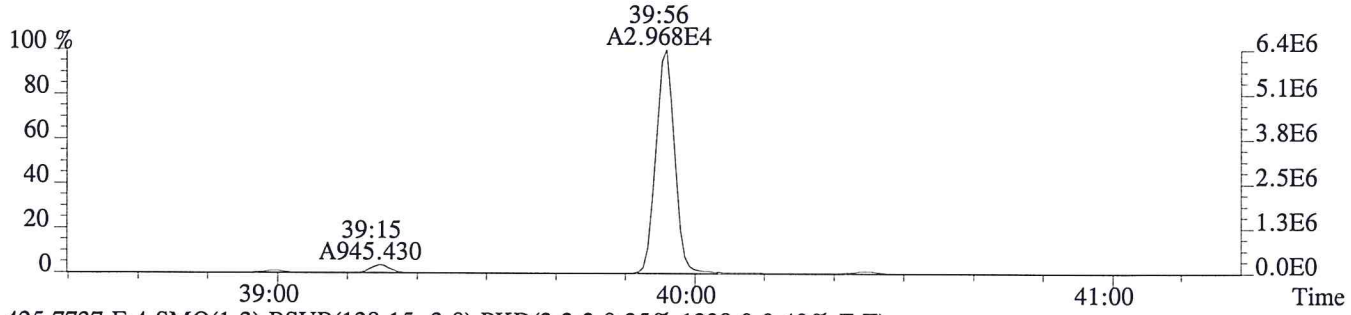
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



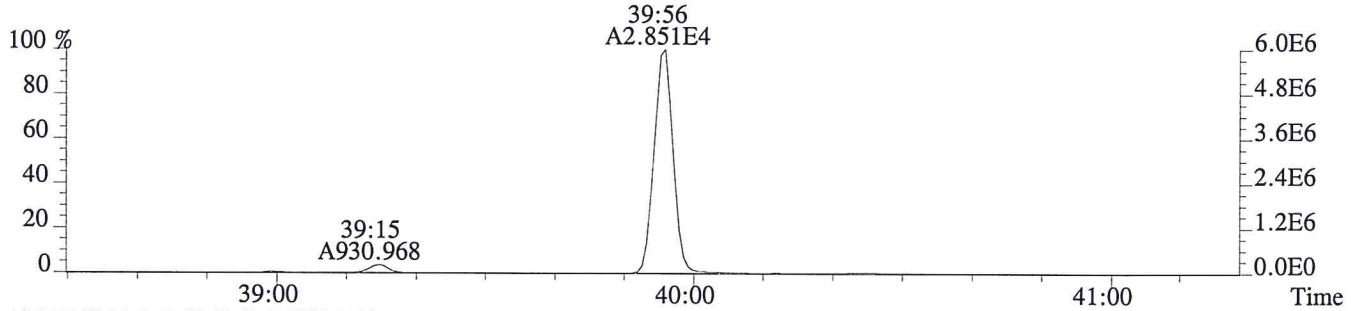
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



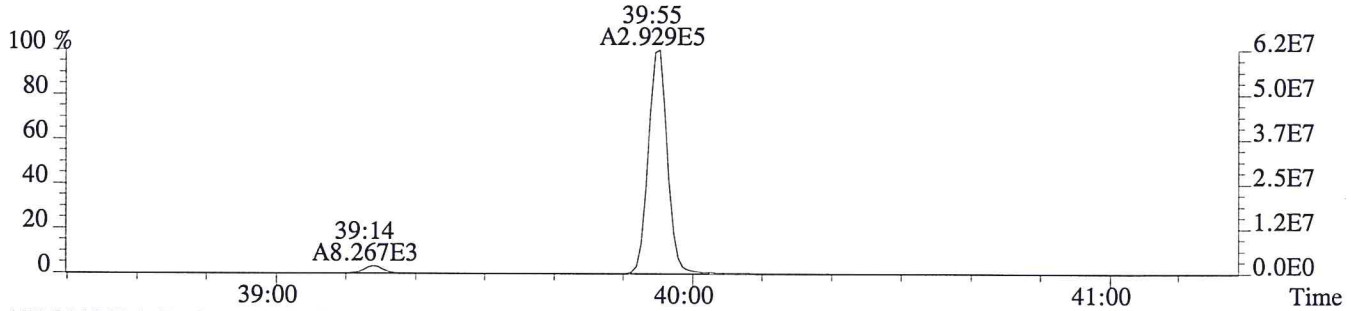
File:P500018 #1-254 Acq:30-JUN-2015 17:19:02 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC2
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1692.0,0.40%,F,T)



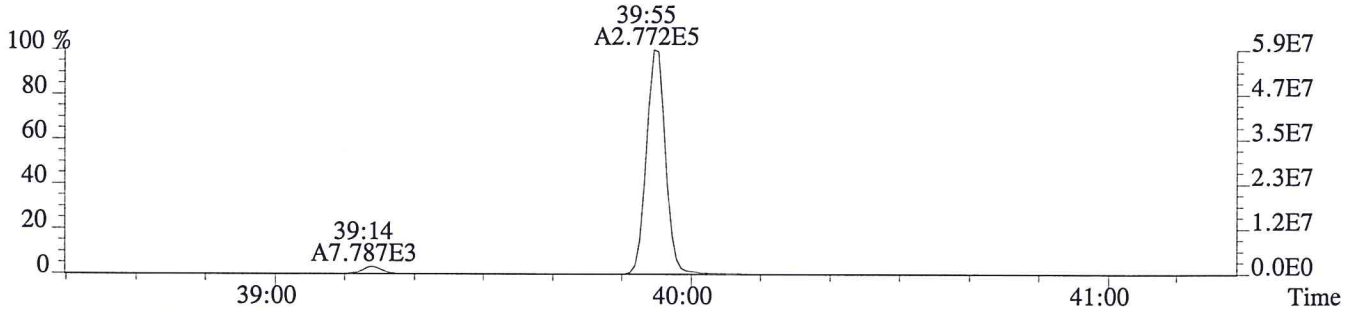
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1328.0,0.40%,F,T)



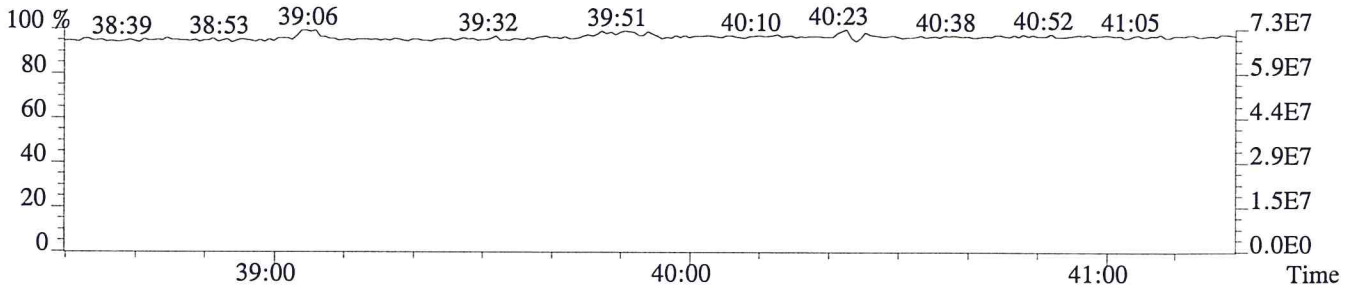
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3636.0,0.40%,F,T)



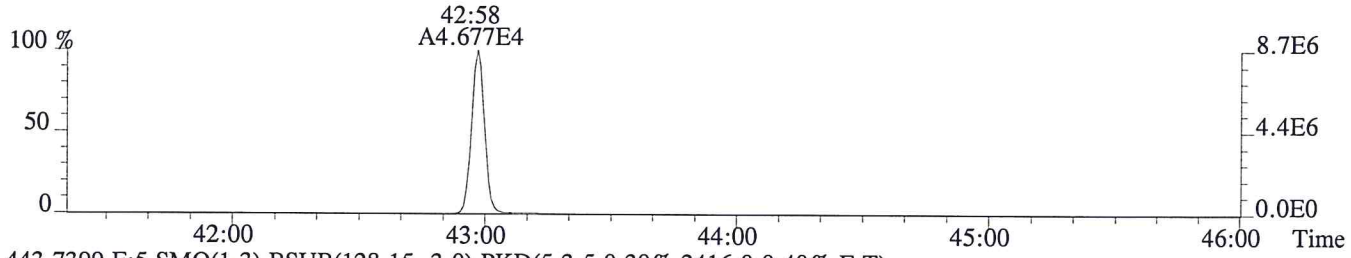
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1308.0,0.40%,F,T)



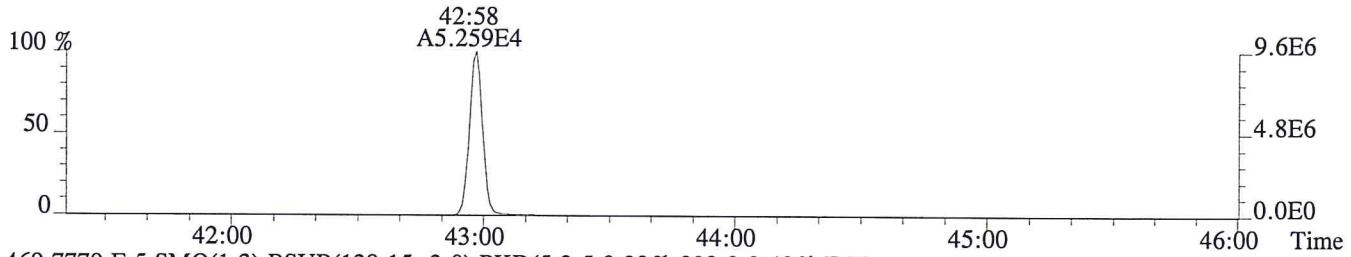
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



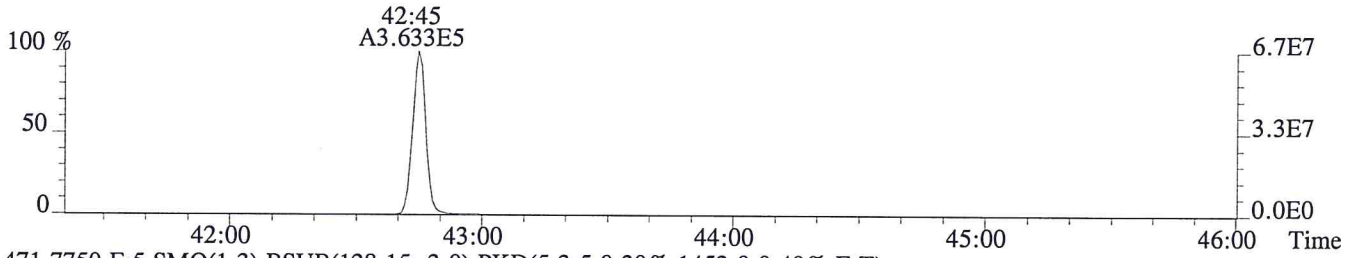
File:P500018 #1-420 Acq:30-JUN-2015 17:19:02 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC2
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2104.0,0.40%,F,T)



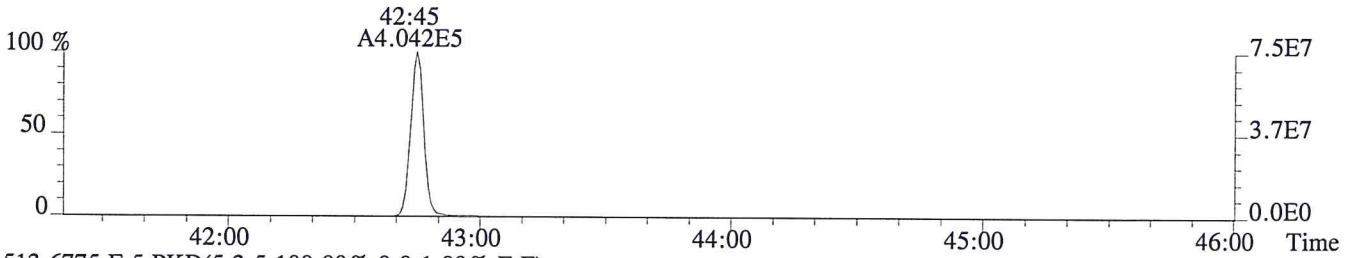
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2416.0,0.40%,F,T)



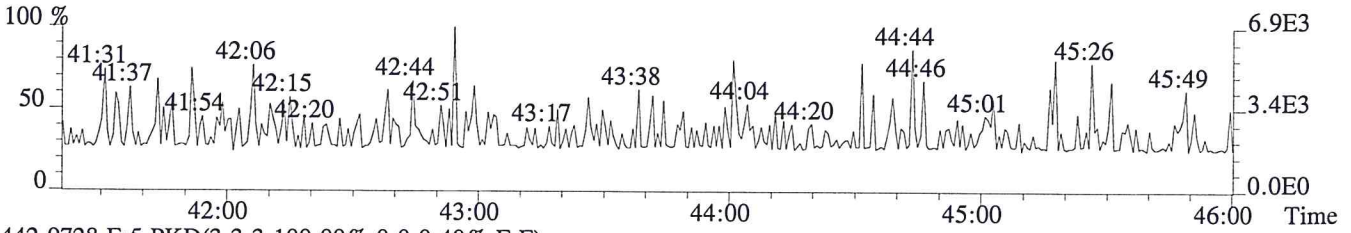
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,928.0,0.40%,F,T)



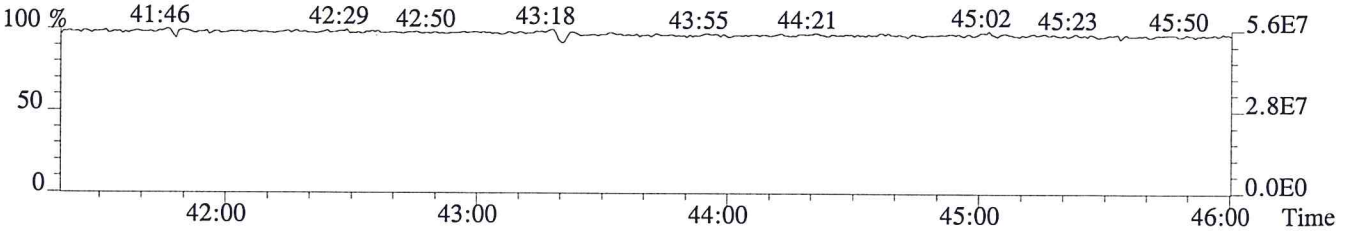
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1452.0,0.40%,F,T)



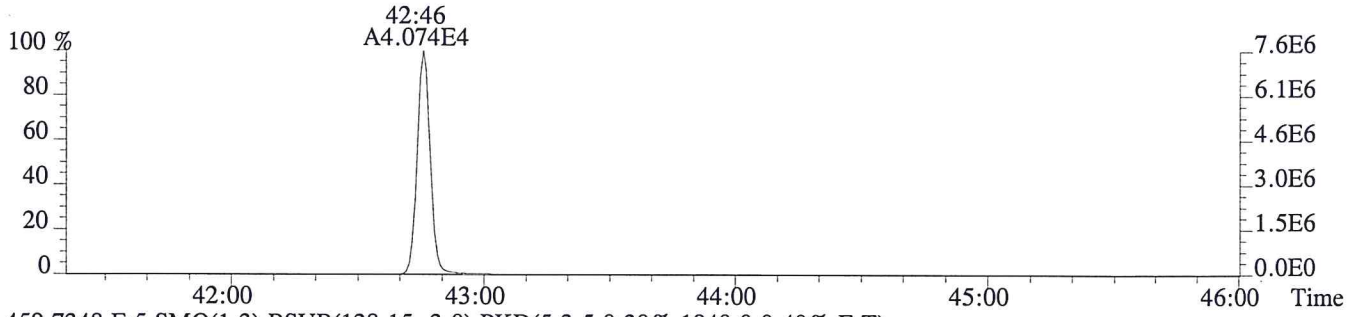
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



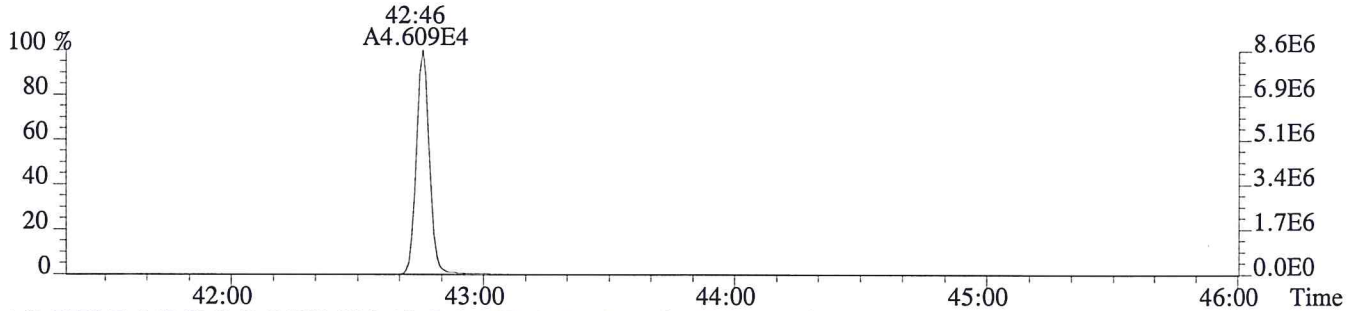
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



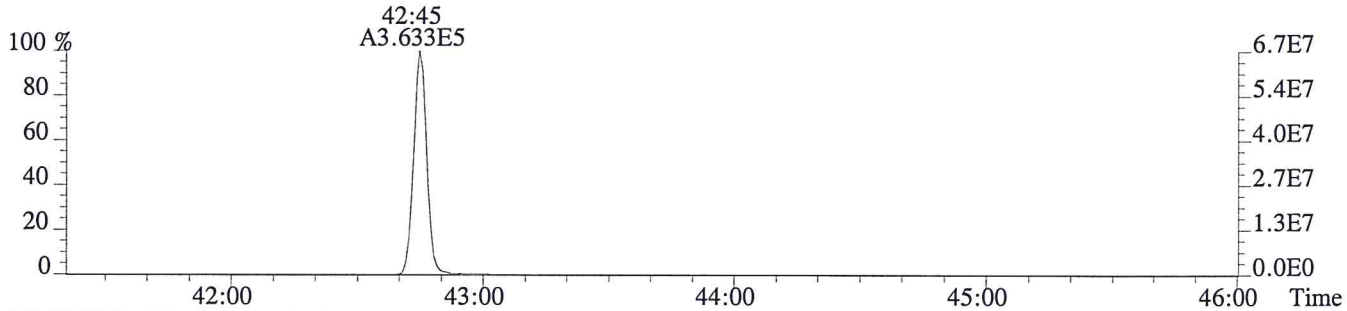
File:P500018 #1-420 Acq:30-JUN-2015 17:19:02 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC2
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1376.0,0.40%,F,T)



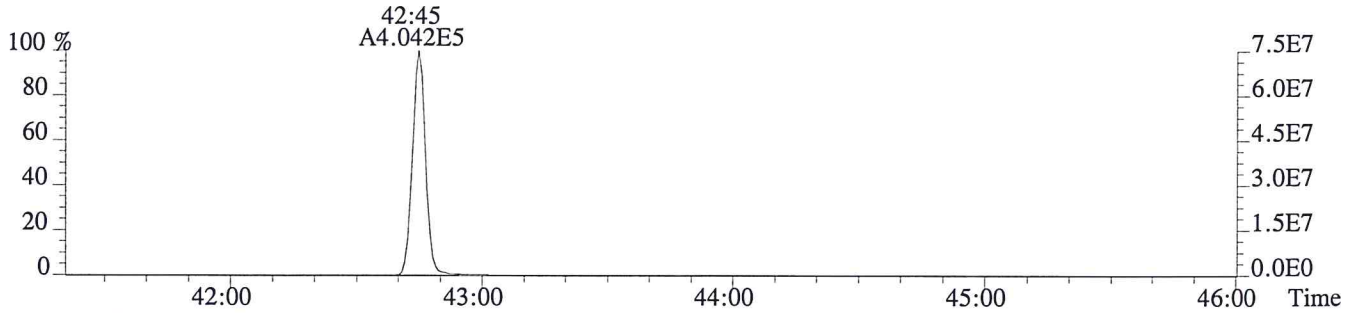
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1940.0,0.40%,F,T)



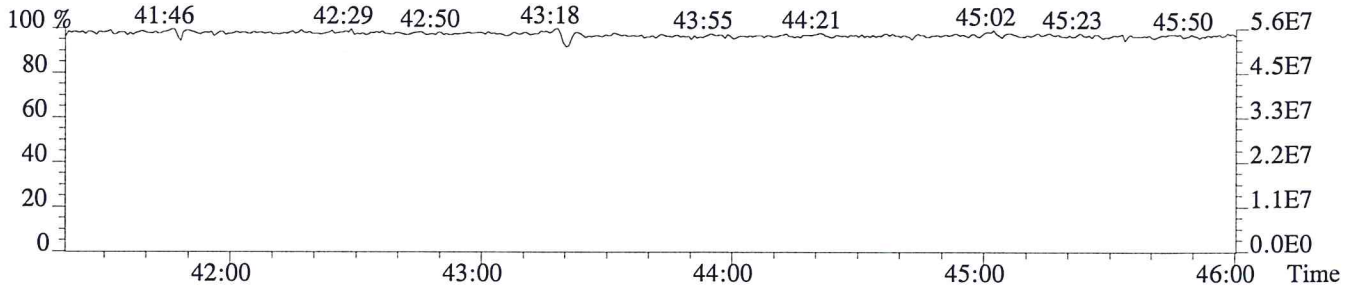
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,928.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1452.0,0.40%,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.
76557

Run #4 Filename P500019 Samp: 1 Inj: 1 Acquired: 30-JUN-15 18:07:39
Processed: 14-JUL-15 14:58:25 Sample ID: IC3

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	29:03	2.573e+04	3.392e+04	0.76	yes	no	0.886
2	Unk	1,2,3,7,8-PeCDF	33:01	2.031e+05	1.335e+05	1.52	yes	no	0.983
3	Unk	2,3,4,7,8-PeCDF	33:53	1.822e+05	1.201e+05	1.52	yes	no	0.952
4	Unk	1,2,3,4,7,8-HxCDF	36:28	1.750e+05	1.454e+05	1.20	yes	no	1.190
5	Unk	1,2,3,6,7,8-HxCDF	36:34	1.700e+05	1.418e+05	1.20	yes	no	1.114
6	Unk	2,3,4,6,7,8-HxCDF	37:03	1.539e+05	1.273e+05	1.21	yes	no	1.109
7	Unk	1,2,3,7,8,9-HxCDF	37:48	1.518e+05	1.239e+05	1.23	yes	no	1.153
8	Unk	1,2,3,4,6,7,8-HpCDF	39:01	1.330e+05	1.300e+05	1.02	yes	no	1.376
9	Unk	1,2,3,4,7,8,9-HpCDF	40:26	1.246e+05	1.210e+05	1.03	yes	no	1.306
10	Unk	OCDF	42:59	1.651e+05	1.851e+05	0.89	yes	no	1.263
11	Unk	2,3,7,8-TCDD	29:47	1.924e+04	2.429e+04	0.79	yes	no	0.997
12	Unk	1,2,3,7,8-PeCDD	34:09	1.327e+05	8.476e+04	1.57	yes	no	0.935
13	Unk	1,2,3,4,7,8-HxCDD	37:11	1.149e+05	9.261e+04	1.24	yes	no	1.039
14	Unk	1,2,3,6,7,8-HxCDD	37:16	1.086e+05	8.623e+04	1.26	yes	no	0.996
15	Unk	1,2,3,7,8,9-HxCDD	37:30	1.207e+05	9.726e+04	1.24	yes	no	1.108
16	Unk	1,2,3,4,6,7,8-HpCDD	39:57	1.026e+05	9.787e+04	1.05	yes	no	1.010
17	Unk	OCDD	42:46	1.427e+05	1.607e+05	0.89	yes	no	1.090
18	IS	13C-2,3,7,8-TCDF	29:02	2.872e+05	3.651e+05	0.79	yes	no	1.447
19	IS	13C-1,2,3,7,8-PeCDF	33:01	4.129e+05	2.623e+05	1.57	yes	no	1.500
20	IS	13C-2,3,4,7,8-PeCDF	33:52	3.906e+05	2.483e+05	1.57	yes	no	1.456
21	IS	13C-1,2,3,4,7,8-HxCDF	36:28	1.831e+05	3.534e+05	0.52	yes	no	1.207
22	IS	13C-1,2,3,6,7,8-HxCDF	36:34	1.909e+05	3.666e+05	0.52	yes	no	1.263
23	IS	13C-2,3,4,6,7,8-HxCDF	37:02	1.727e+05	3.315e+05	0.52	yes	no	1.153
24	IS	13C-1,2,3,7,8,9-HxCDF	37:47	1.616e+05	3.110e+05	0.52	yes	no	1.085
25	IS	13C-1,2,3,4,6,7,8-HpCDF	39:01	1.164e+05	2.619e+05	0.44	yes	no	0.876
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:25	1.171e+05	2.612e+05	0.45	yes	no	0.883
27	IS	13C-2,3,7,8-TCDD	29:46	1.921e+05	2.446e+05	0.79	yes	no	1.027
28	IS	13C-1,2,3,7,8-PeCDD	34:09	2.844e+05	1.806e+05	1.58	yes	no	1.064
29	IS	13C-1,2,3,4,7,8-HxCDD	37:10	2.263e+05	1.785e+05	1.27	yes	no	0.908
30	IS	13C-1,2,3,6,7,8-HxCDD	37:15	2.113e+05	1.672e+05	1.26	yes	no	0.899
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:56	2.051e+05	1.927e+05	1.06	yes	no	0.910
32	IS	13C-OCDD	42:46	2.617e+05	2.903e+05	0.90	yes	no	0.633
33	RS/RT	13C-1,2,3,4-TCDD	29:15	1.975e+05	2.471e+05	0.80	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:29	2.434e+05	1.937e+05	1.26	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:47	4.528e+04				no	1.066

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www.alsglobal.com

ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
76557

Run #4 Filename P500019 Samp: 1 Inj: 1 Acquired: 30-JUN-15 18:07:39
Processed: 14-JUL-15 14:58:25 LAB. ID: IC3

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	5.14e+06	2.03e+03	2.5e+03	6.75e+06	3.49e+03	1.9e+03
2	1,2,3,7,8-PeCDF	4.13e+07	2.57e+03	1.6e+04	2.73e+07	3.26e+03	8.4e+03
3	2,3,4,7,8-PeCDF	3.82e+07	2.57e+03	1.5e+04	2.50e+07	3.26e+03	7.7e+03
4	1,2,3,4,7,8-HxCDF	3.97e+07	2.21e+03	1.8e+04	3.26e+07	8.96e+02	3.6e+04
5	1,2,3,6,7,8-HxCDF	3.85e+07	2.21e+03	1.7e+04	3.20e+07	8.96e+02	3.6e+04
6	2,3,4,6,7,8-HxCDF	3.53e+07	2.21e+03	1.6e+04	2.94e+07	8.96e+02	3.3e+04
7	1,2,3,7,8,9-HxCDF	3.37e+07	2.21e+03	1.5e+04	2.73e+07	8.96e+02	3.0e+04
8	1,2,3,4,6,7,8-HpCDF	2.99e+07	4.73e+03	6.3e+03	2.89e+07	6.27e+03	4.6e+03
9	1,2,3,4,7,8,9-HpCDF	2.65e+07	4.73e+03	5.6e+03	2.59e+07	6.27e+03	4.1e+03
10	OCDF	2.97e+07	2.34e+03	1.3e+04	3.38e+07	2.83e+03	1.2e+04
11	2,3,7,8-TCDD	3.98e+06	1.63e+03	2.4e+03	5.07e+06	2.60e+03	2.0e+03
12	1,2,3,7,8-PeCDD	2.86e+07	5.21e+03	5.5e+03	1.84e+07	1.93e+03	9.5e+03
13	1,2,3,4,7,8-HxCDD	2.67e+07	1.30e+03	2.1e+04	2.13e+07	2.00e+03	1.1e+04
14	1,2,3,6,7,8-HxCDD	2.52e+07	1.30e+03	1.9e+04	2.03e+07	2.00e+03	1.0e+04
15	1,2,3,7,8,9-HxCDD	2.75e+07	1.30e+03	2.1e+04	2.24e+07	2.00e+03	1.1e+04
16	1,2,3,4,6,7,8-HpCDD	2.28e+07	1.23e+03	1.8e+04	2.16e+07	1.21e+03	1.8e+04
17	OCDD	2.62e+07	1.13e+03	2.3e+04	2.96e+07	2.01e+03	1.5e+04
18	13C-2,3,7,8-TCDF	5.72e+07	4.56e+03	1.3e+04	7.23e+07	3.43e+03	2.1e+04
19	13C-1,2,3,7,8-PeCDF	8.36e+07	2.13e+03	3.9e+04	5.31e+07	3.07e+03	1.7e+04
20	13C-2,3,4,7,8-PeCDF	8.06e+07	2.13e+03	3.8e+04	5.18e+07	3.07e+03	1.7e+04
21	13C-1,2,3,4,7,8-HxCDF	4.14e+07	2.28e+03	1.8e+04	7.94e+07	2.49e+03	3.2e+04
22	13C-1,2,3,6,7,8-HxCDF	4.31e+07	2.28e+03	1.9e+04	8.30e+07	2.49e+03	3.3e+04
23	13C-2,3,4,6,7,8-HxCDF	3.93e+07	2.28e+03	1.7e+04	7.59e+07	2.49e+03	3.0e+04
24	13C-1,2,3,7,8,9-HxCDF	3.59e+07	2.28e+03	1.6e+04	6.89e+07	2.49e+03	2.8e+04
25	13C-1,2,3,4,6,7,8-HpCDF	2.66e+07	5.96e+03	4.5e+03	5.88e+07	9.68e+03	6.1e+03
26	13C-1,2,3,4,7,8,9-HpCDF	2.45e+07	5.96e+03	4.1e+03	5.47e+07	9.68e+03	5.7e+03
27	13C-2,3,7,8-TCDD	4.07e+07	9.16e+03	4.4e+03	5.16e+07	4.25e+03	1.2e+04
28	13C-1,2,3,7,8-PeCDD	6.14e+07	2.20e+03	2.8e+04	3.89e+07	1.72e+03	2.3e+04
29	13C-1,2,3,4,7,8-HxCDD	5.24e+07	5.75e+03	9.1e+03	4.09e+07	3.20e+03	1.3e+04
30	13C-1,2,3,6,7,8-HxCDD	4.86e+07	5.75e+03	8.5e+03	3.88e+07	3.20e+03	1.2e+04
31	13C-1,2,3,4,6,7,8-HpCDD	4.52e+07	2.44e+03	1.9e+04	4.25e+07	1.28e+03	3.3e+04
32	13C-OCDD	4.81e+07	1.34e+03	3.6e+04	5.34e+07	1.61e+03	3.3e+04
33	13C-1,2,3,4-TCDD	3.99e+07	9.16e+03	4.4e+03	4.97e+07	4.25e+03	1.2e+04
34	13C-1,2,3,7,8,9-HxCDD	5.57e+07	5.75e+03	9.7e+03	4.43e+07	3.20e+03	1.4e+04
35	37Cl-2,3,7,8-TCDD	9.37e+06	2.65e+03	3.5e+03			

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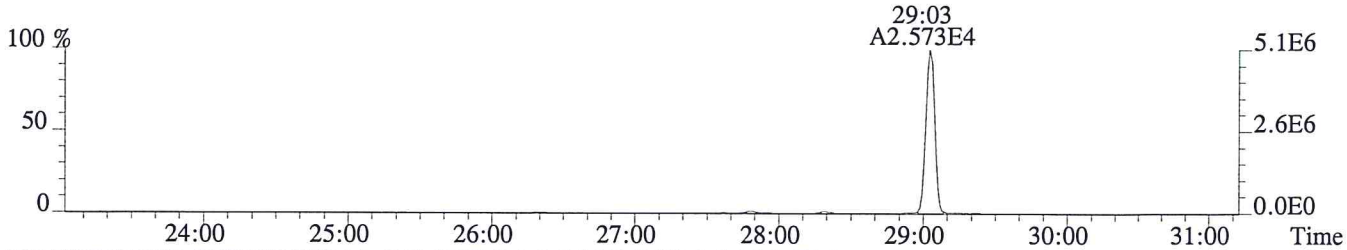
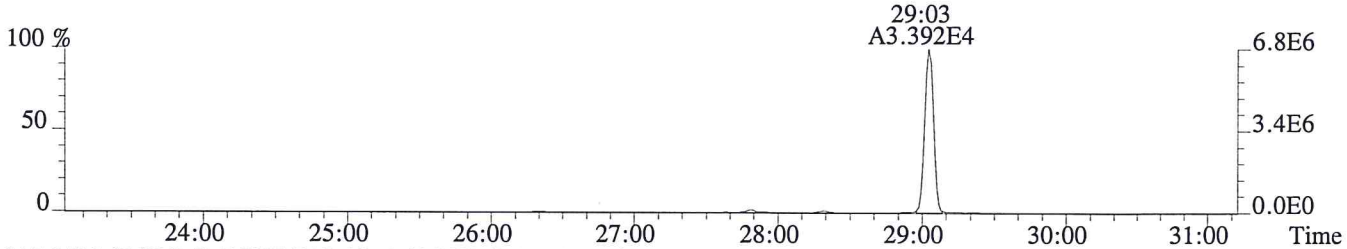
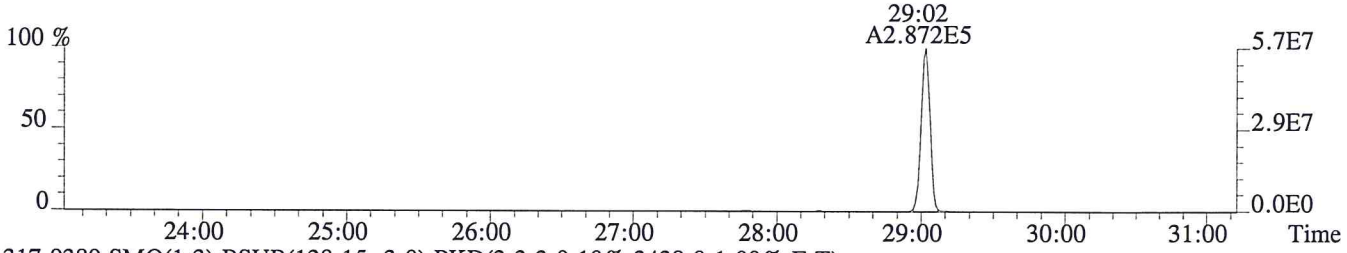
File:P500019 #1-580 Acq:30-JUN-2015 18:07:39 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC3
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2032.0,1.00%,F,T)



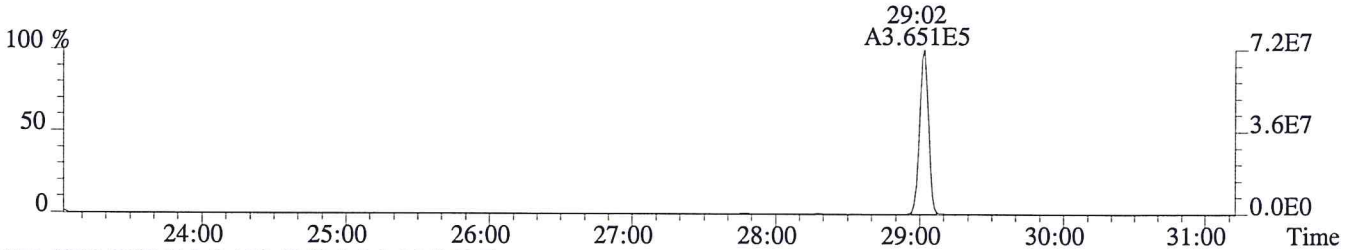
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3492.0,1.00%,F,T)



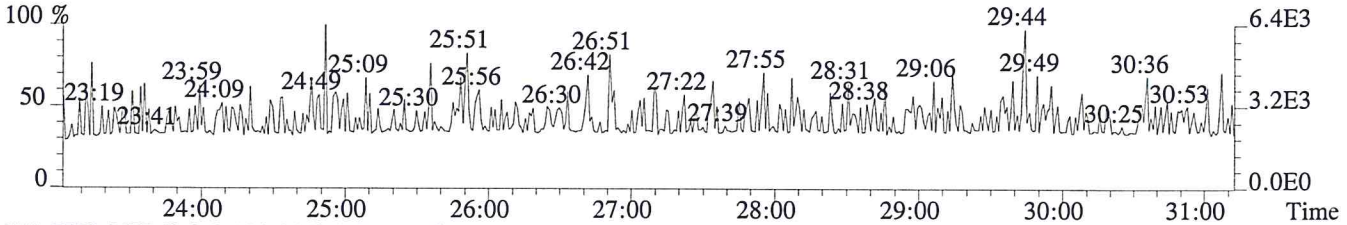
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4560.0,1.00%,F,T)



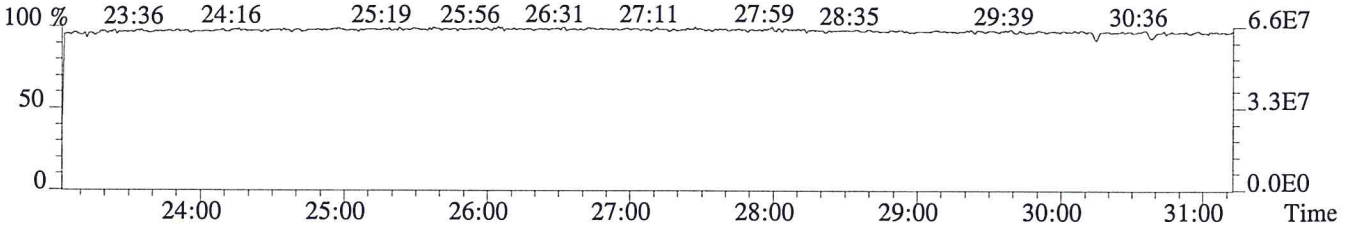
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3428.0,1.00%,F,T)



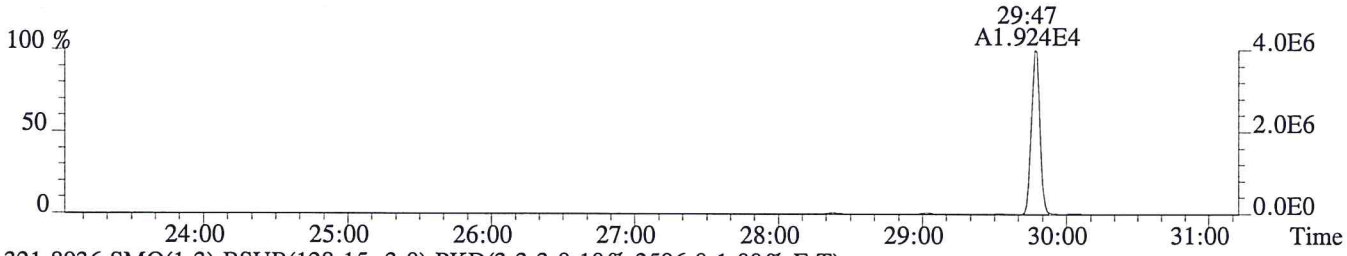
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



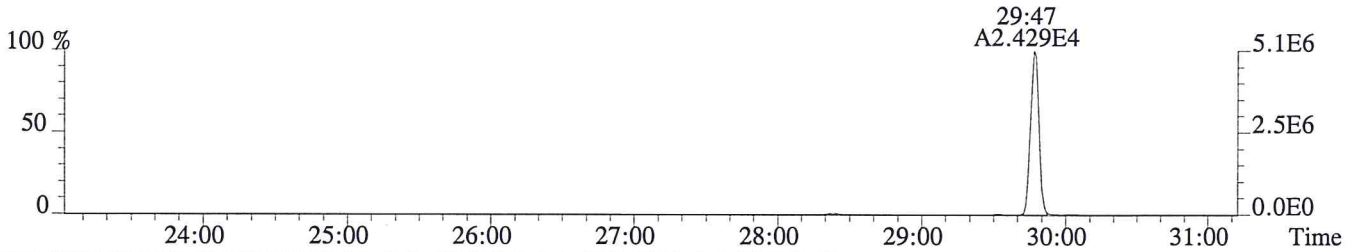
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



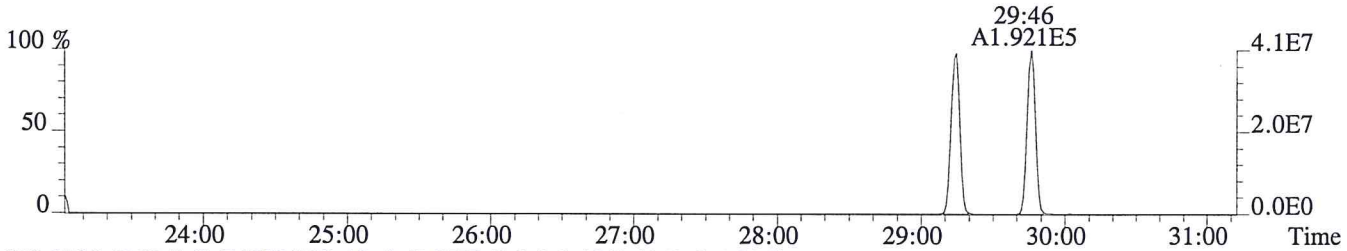
File:P500019 #1-580 Acq:30-JUN-2015 18:07:39 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC3
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1628.0,1.00%,F,T)



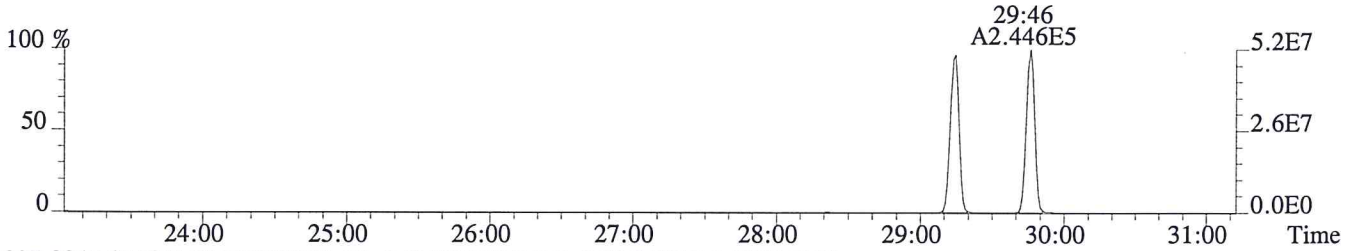
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2596.0,1.00%,F,T)



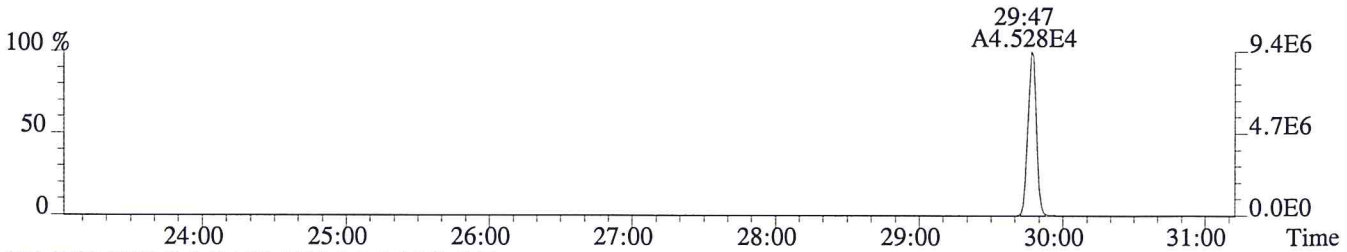
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,9160.0,1.00%,F,T)



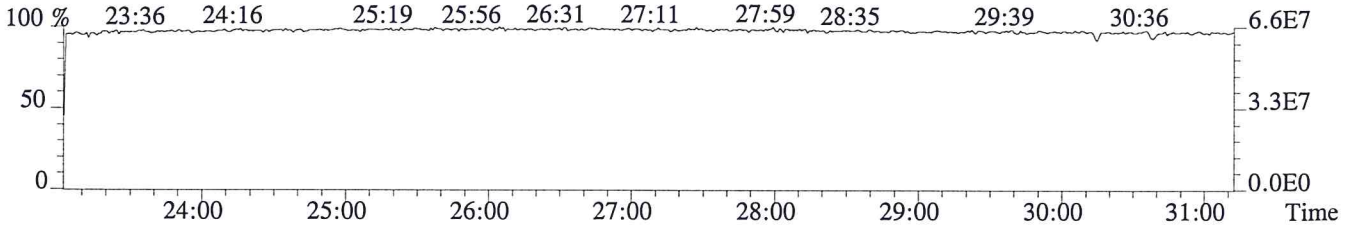
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4252.0,1.00%,F,T)



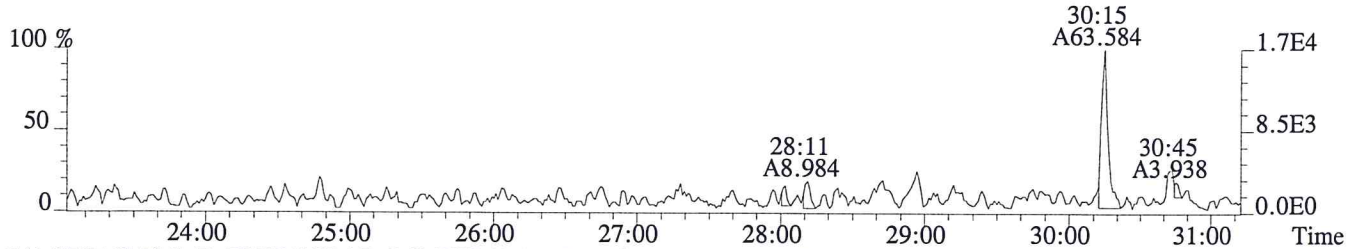
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2652.0,1.00%,F,T)



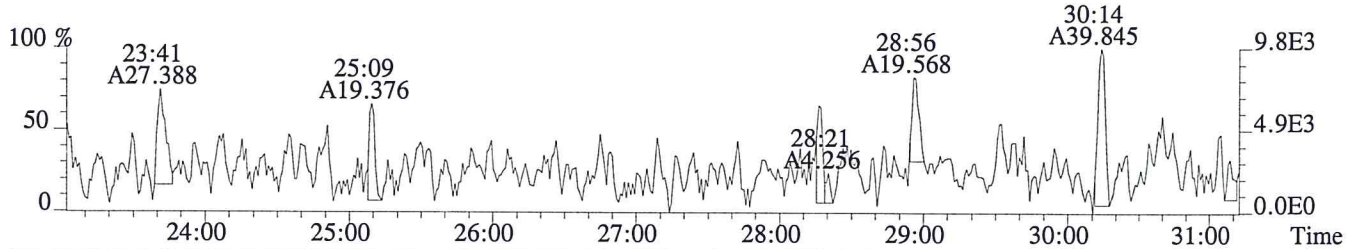
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



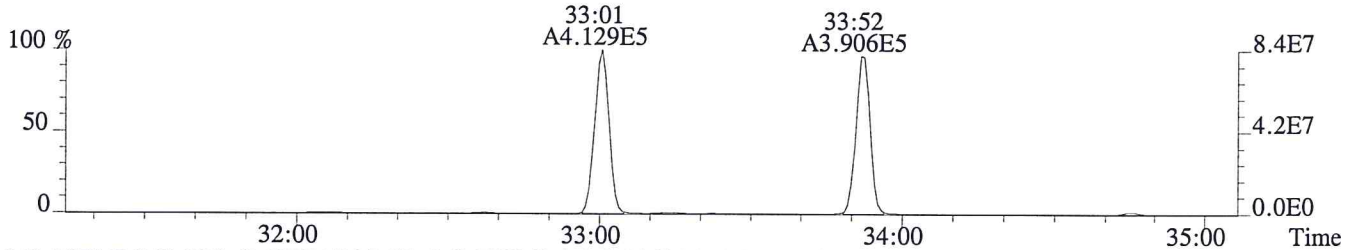
File:P500019 #1-580 Acq:30-JUN-2015 18:07:39 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC3
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1584.0,1.00%,F,T)



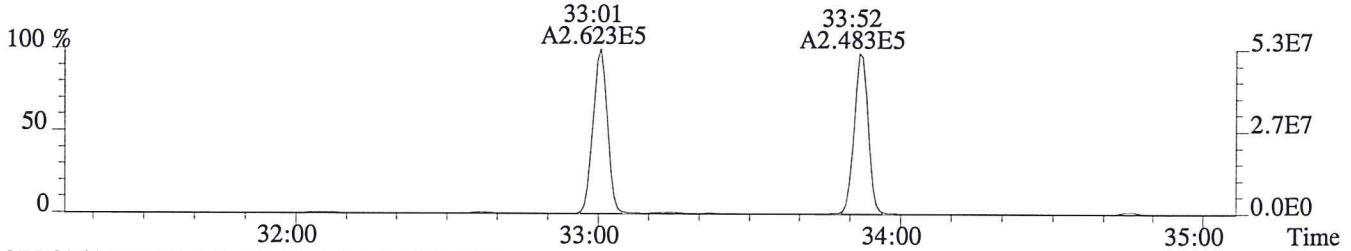
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3008.0,1.00%,F,T)



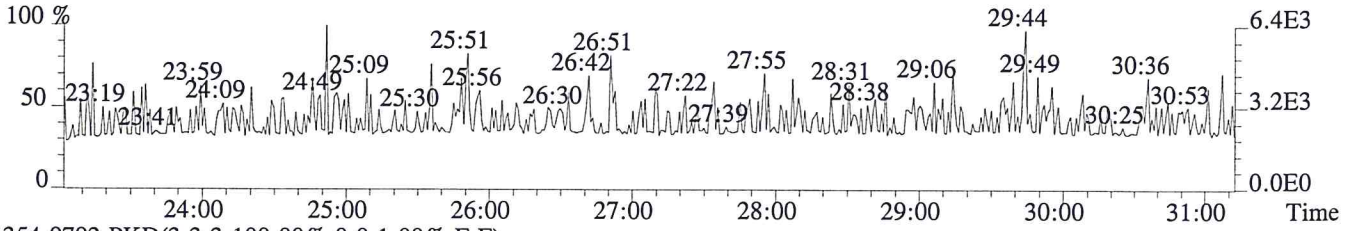
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2128.0,1.00%,F,T)



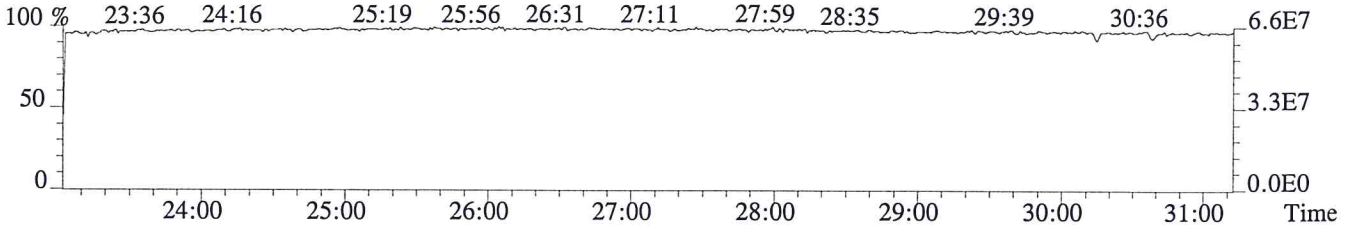
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3072.0,1.00%,F,T)



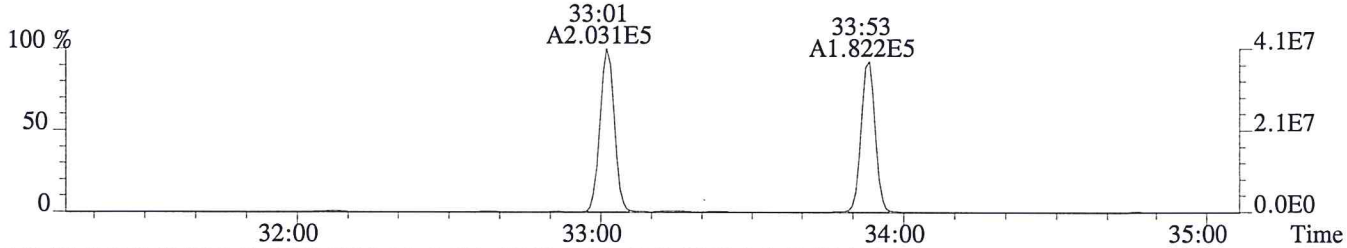
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



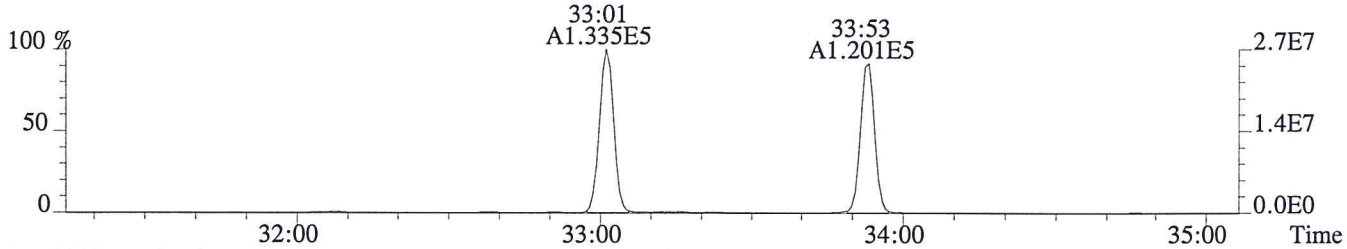
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



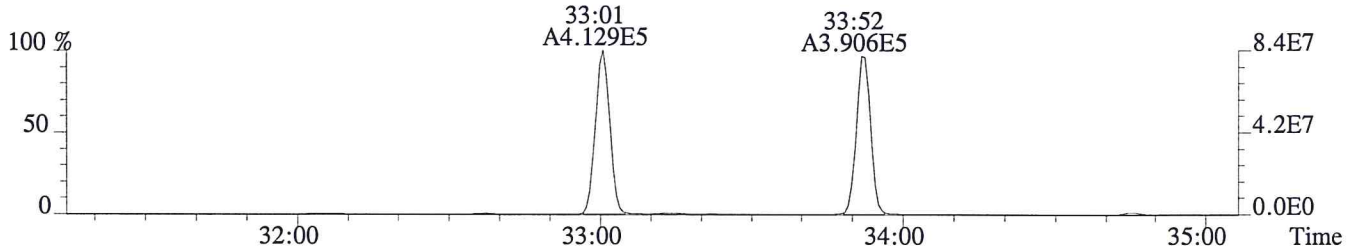
File:P500019 #1-349 Acq:30-JUN-2015 18:07:39 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC3
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2568.0,1.00%,F,T)



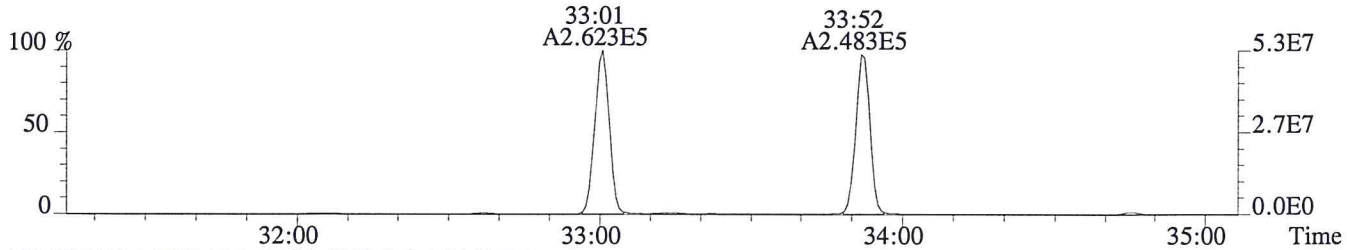
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3260.0,1.00%,F,T)



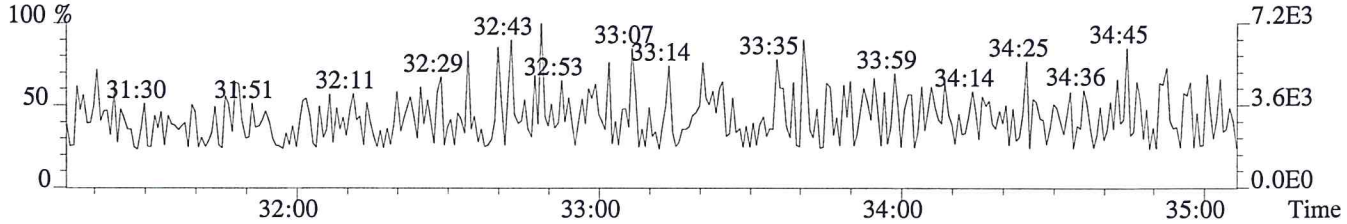
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2128.0,1.00%,F,T)



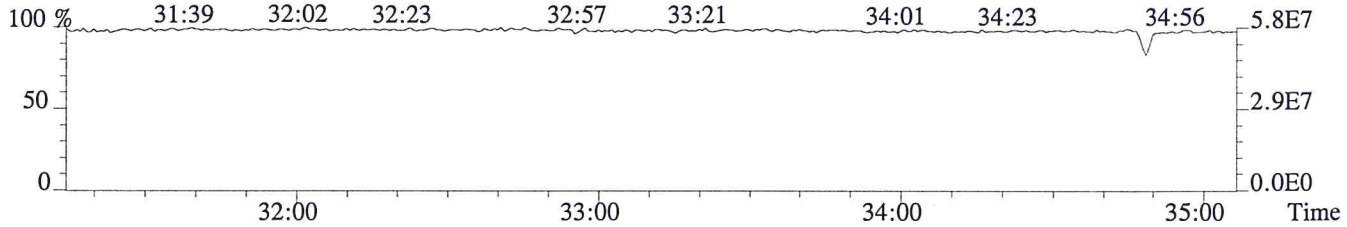
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3072.0,1.00%,F,T)



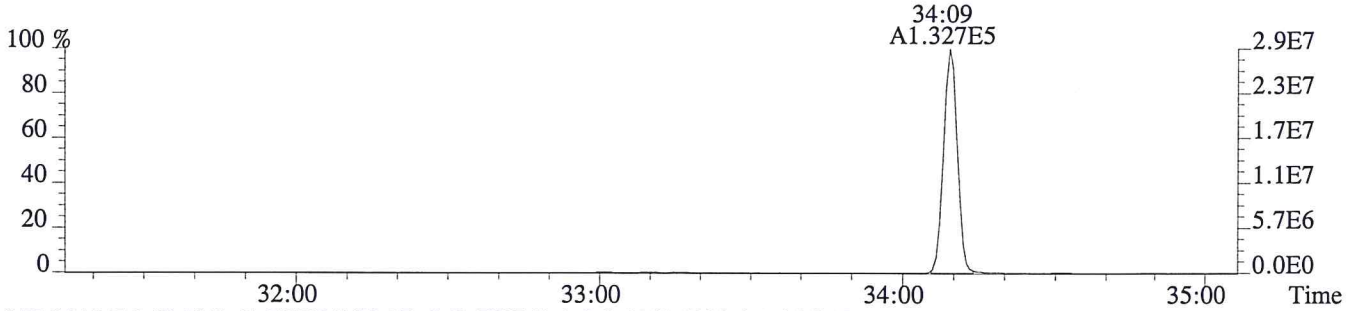
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



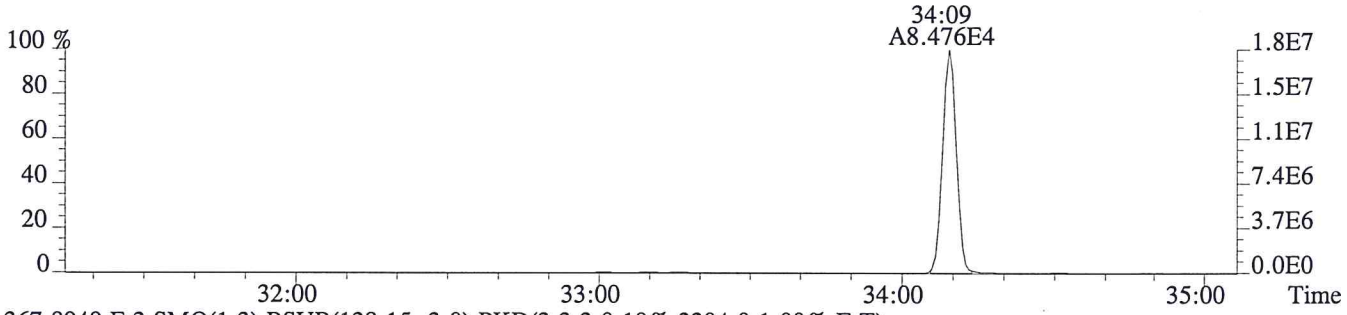
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



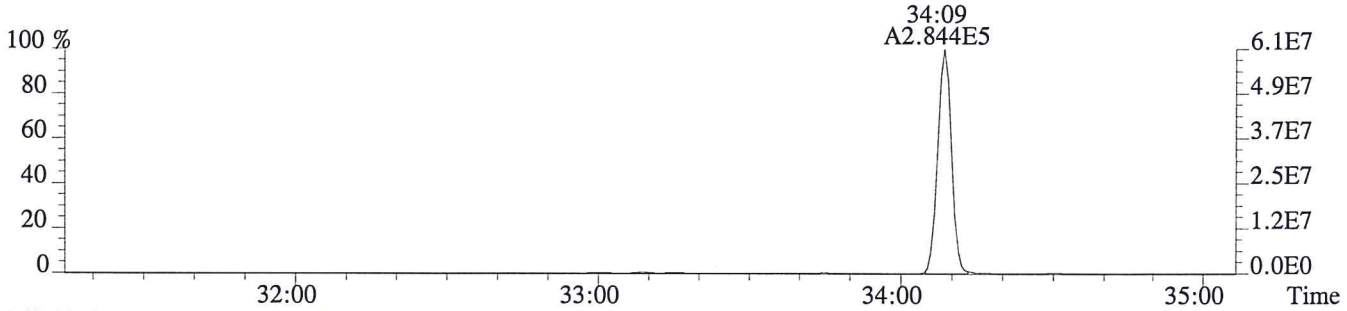
File:P500019 #1-349 Acq:30-JUN-2015 18:07:39 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC3
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5212.0,1.00%,F,T)



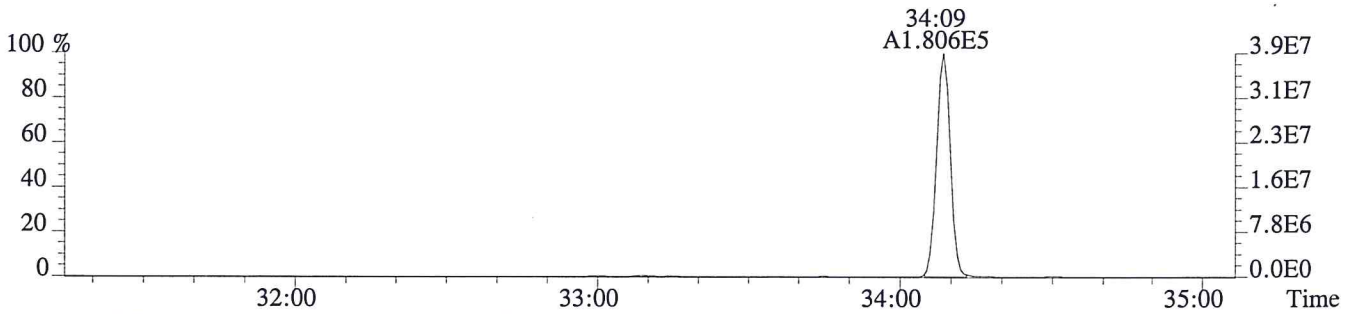
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1928.0,1.00%,F,T)



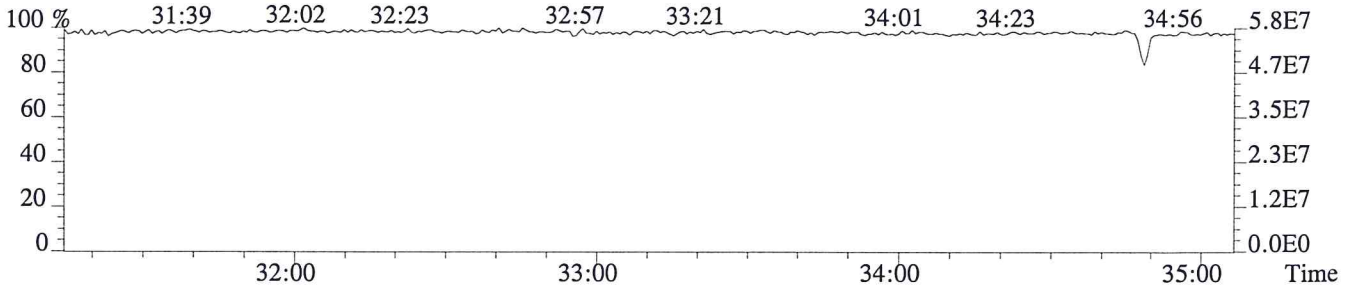
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2204.0,1.00%,F,T)



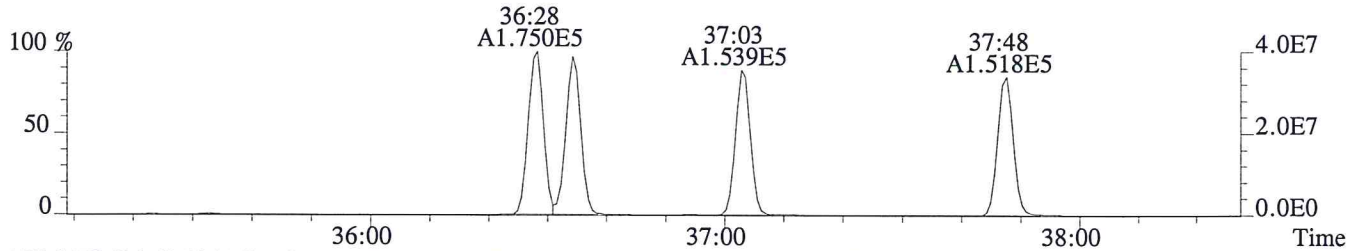
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1720.0,1.00%,F,T)



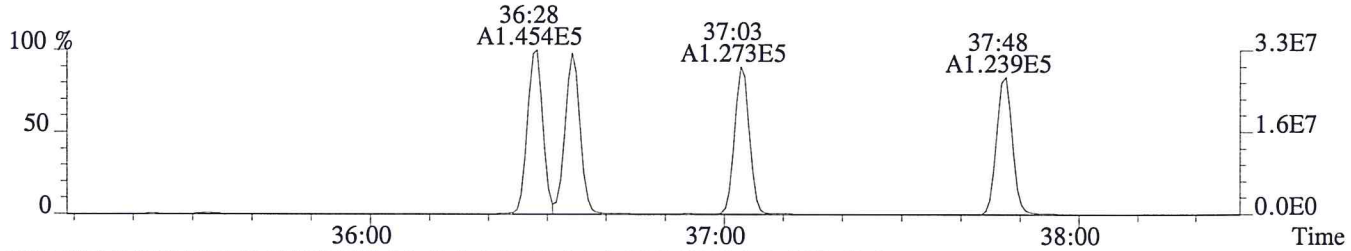
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



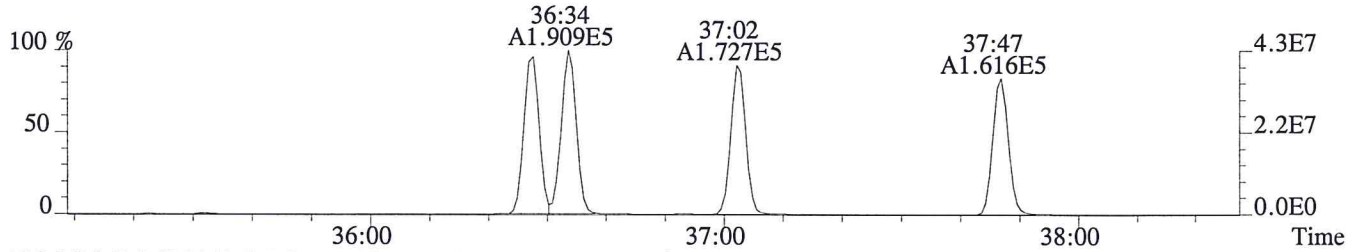
File:P500019 #1-299 Acq:30-JUN-2015 18:07:39 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC3
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2208.0,0.40%,F,T)



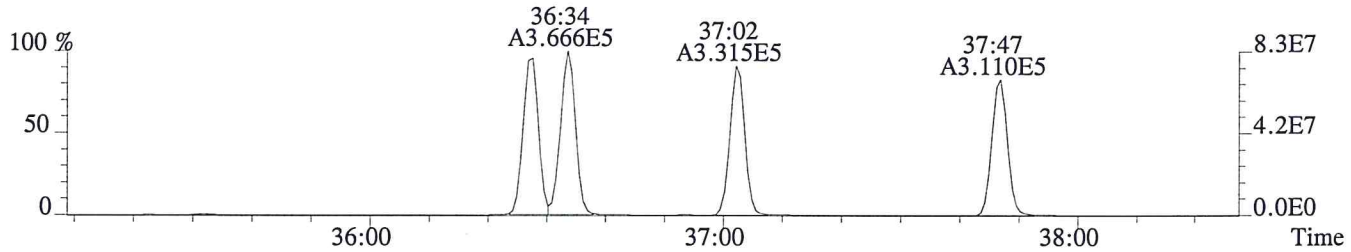
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,896.0,0.40%,F,T)



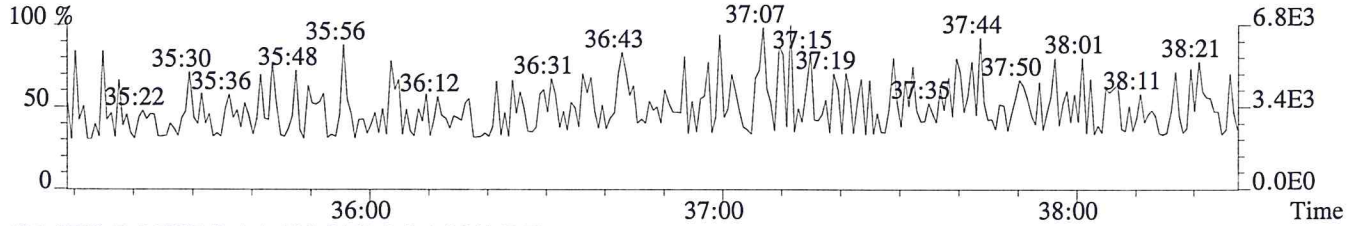
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2284.0,0.40%,F,T)



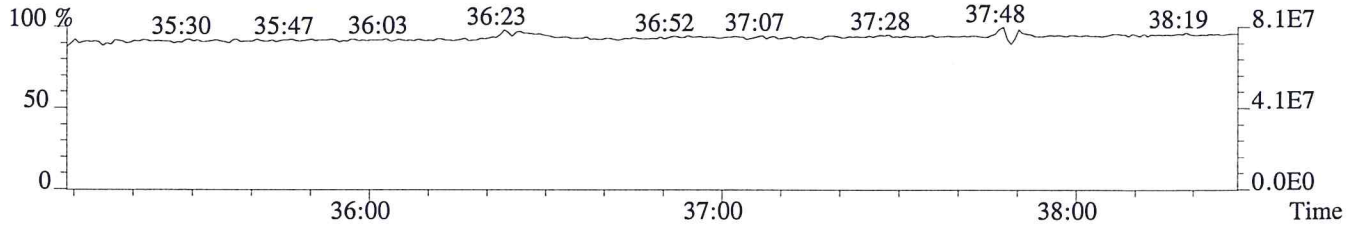
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2492.0,0.40%,F,T)



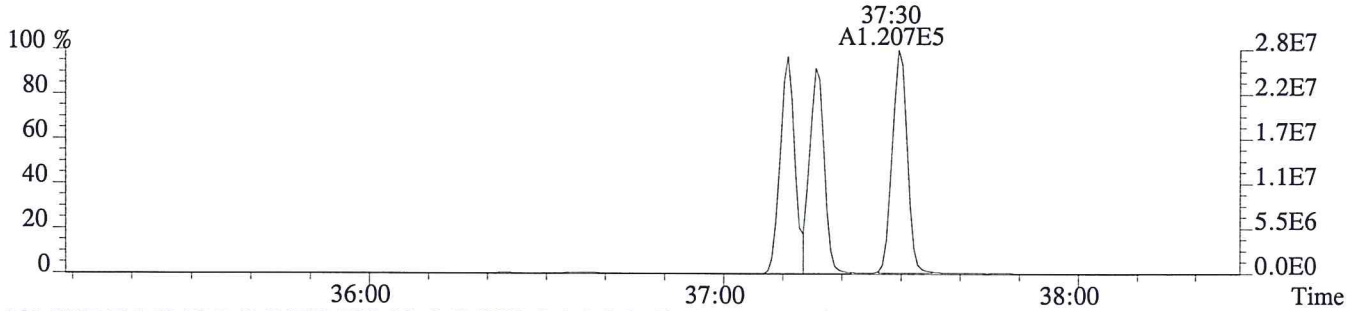
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



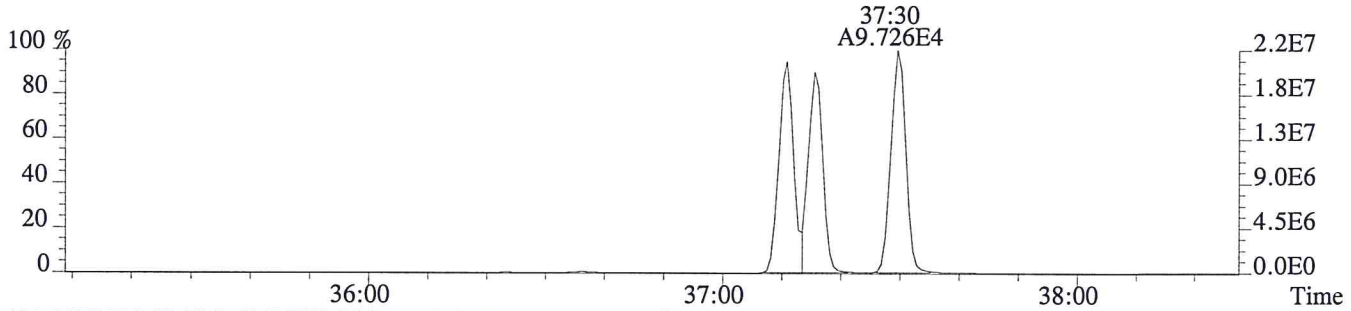
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



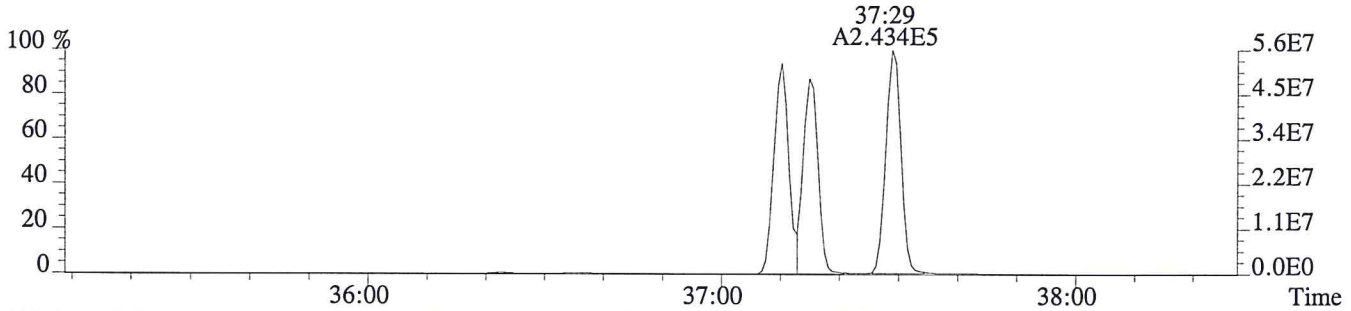
File:P500019 #1-299 Acq:30-JUN-2015 18:07:39 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC3
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1296.0,0.40%,F,T)



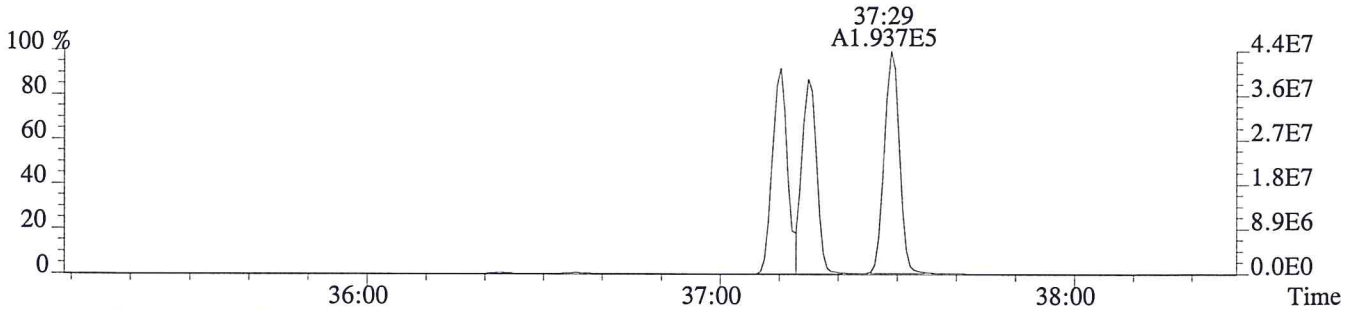
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2000.0,0.40%,F,T)



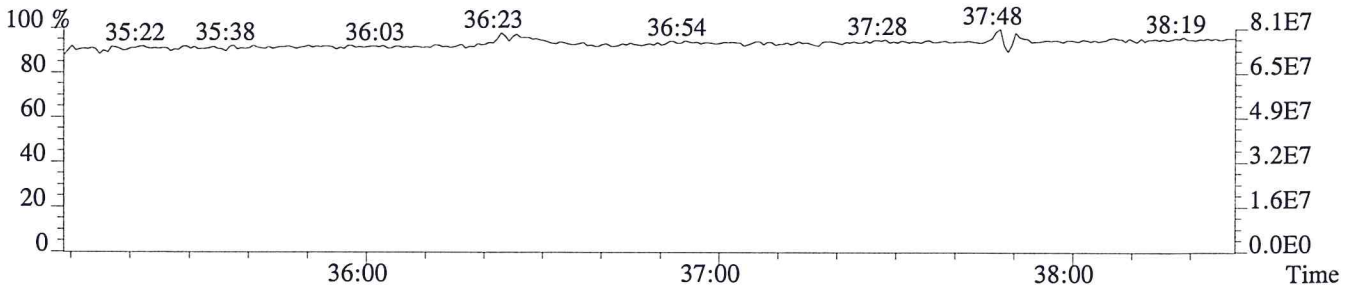
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5752.0,0.40%,F,T)



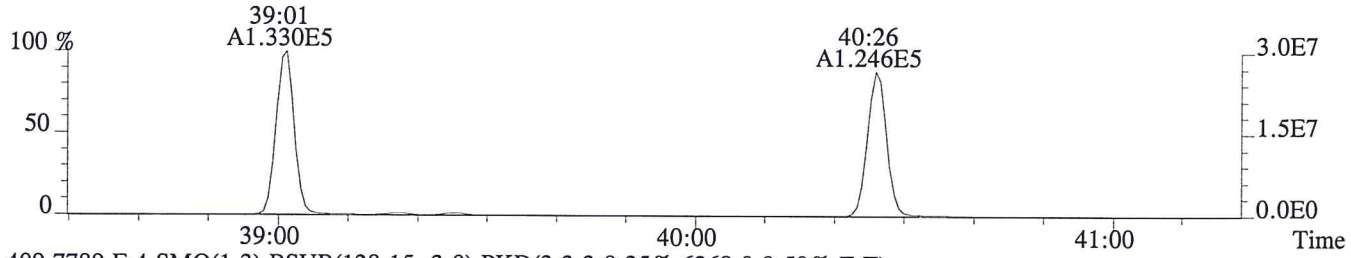
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3204.0,0.40%,F,T)



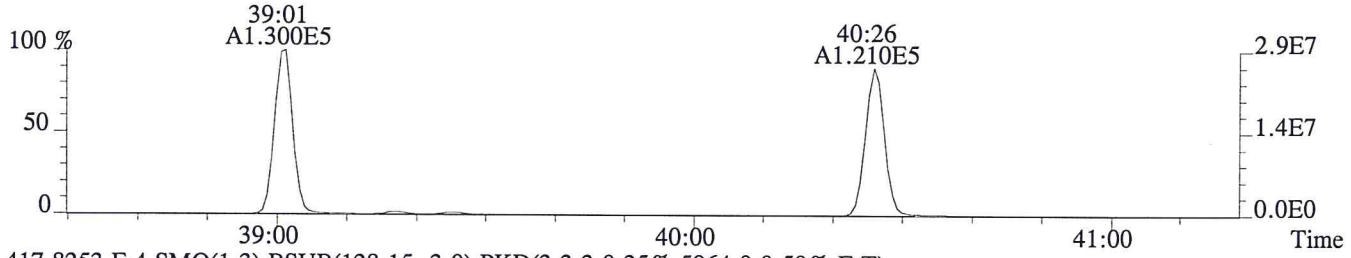
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



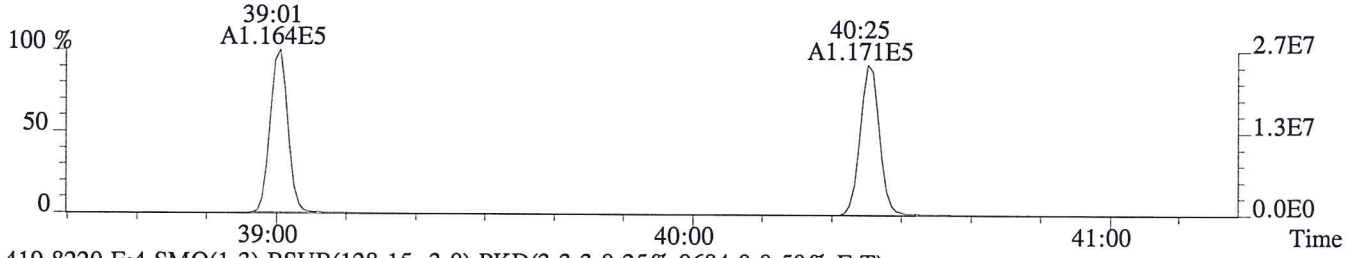
File:P500019 #1-254 Acq:30-JUN-2015 18:07:39 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC3
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4732.0,0.50%,F,T)



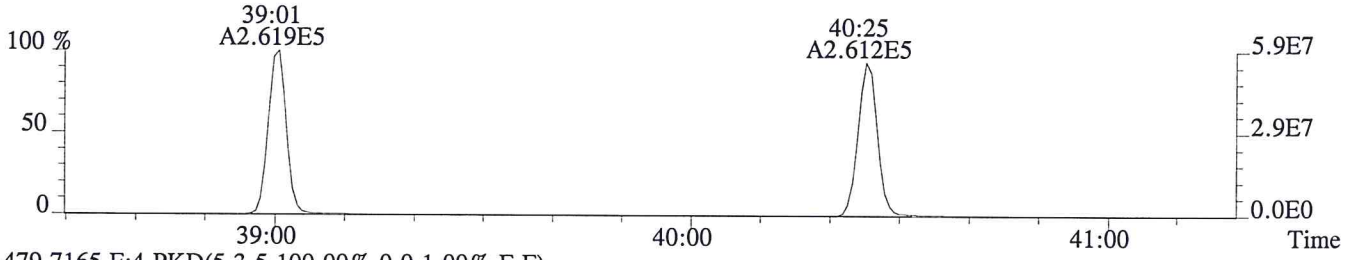
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,6268.0,0.50%,F,T)



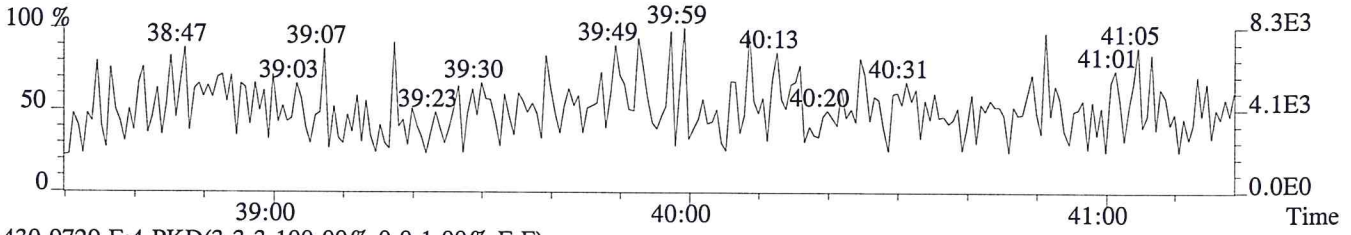
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5964.0,0.50%,F,T)



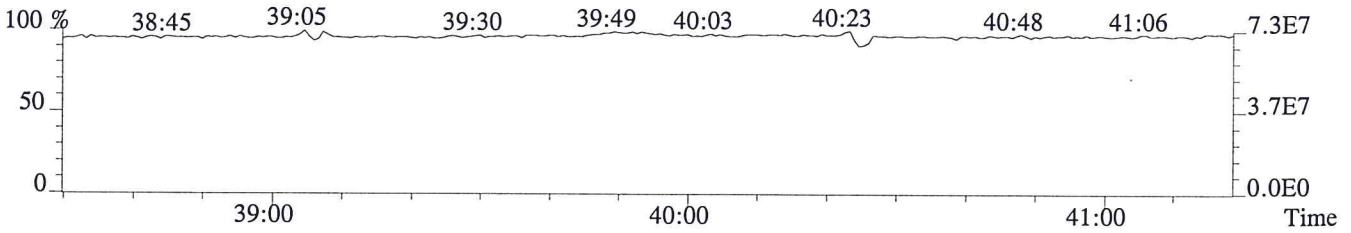
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,9684.0,0.50%,F,T)



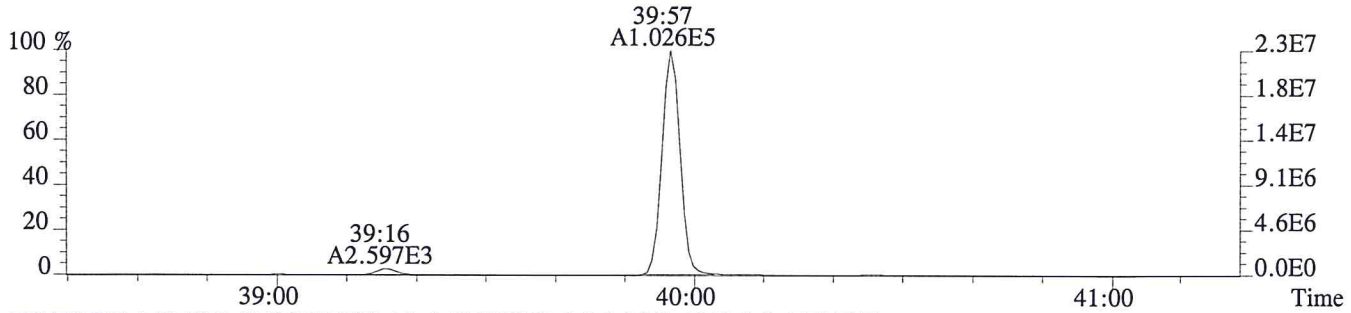
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



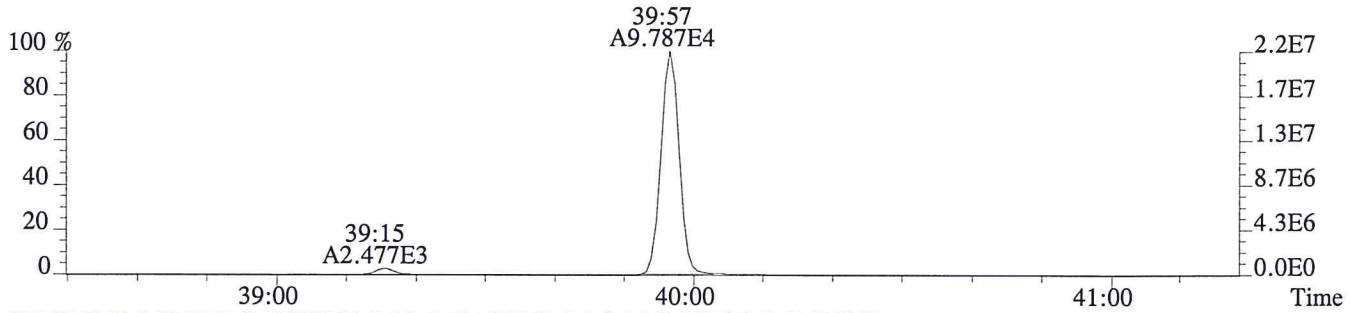
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



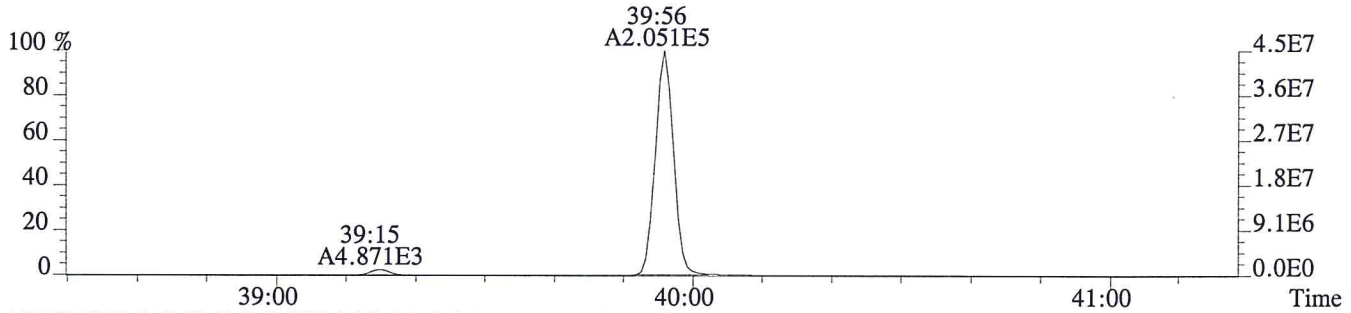
File:P500019 #1-254 Acq:30-JUN-2015 18:07:39 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC3
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1232.0,0.40%,F,T)



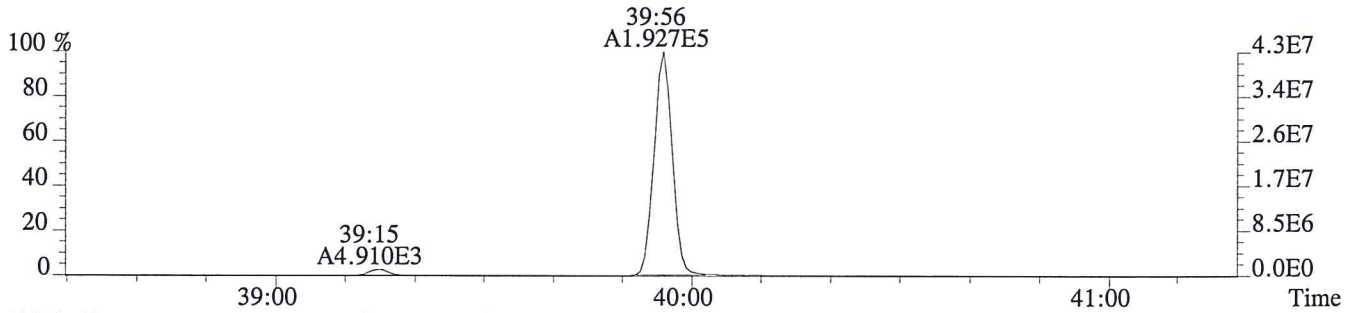
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1212.0,0.40%,F,T)



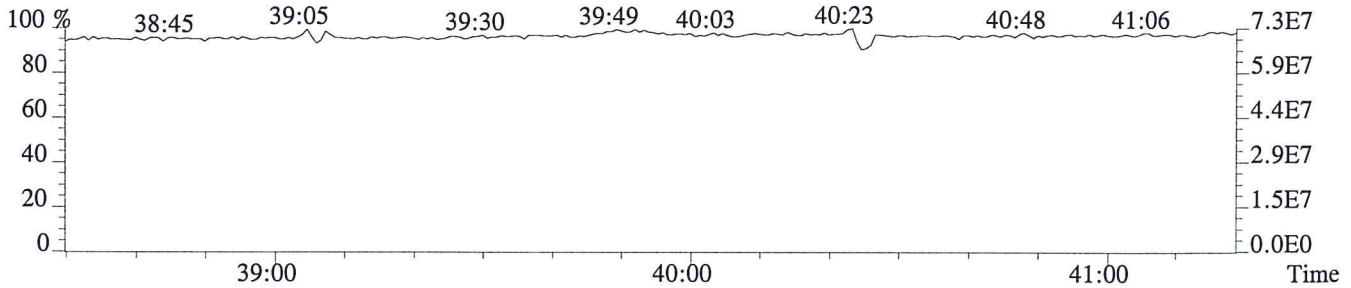
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2436.0,0.40%,F,T)



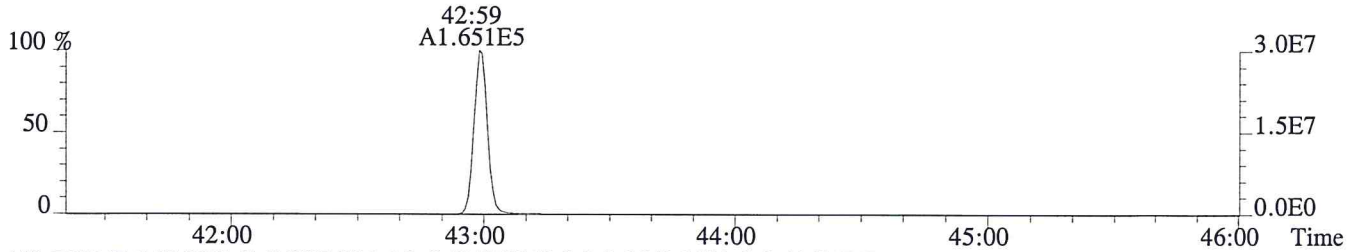
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1280.0,0.40%,F,T)



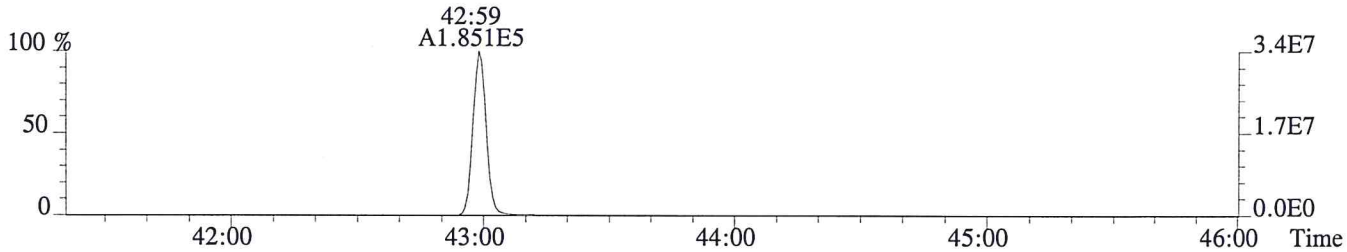
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



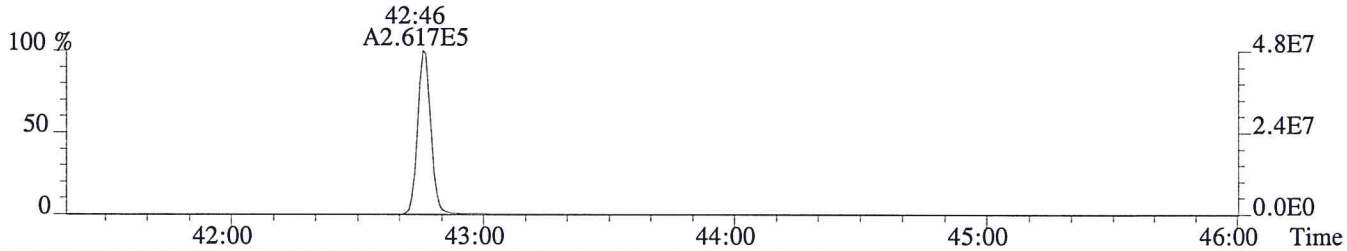
File:P500019 #1-420 Acq:30-JUN-2015 18:07:39 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC3
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2340.0,0.40%,F,T)



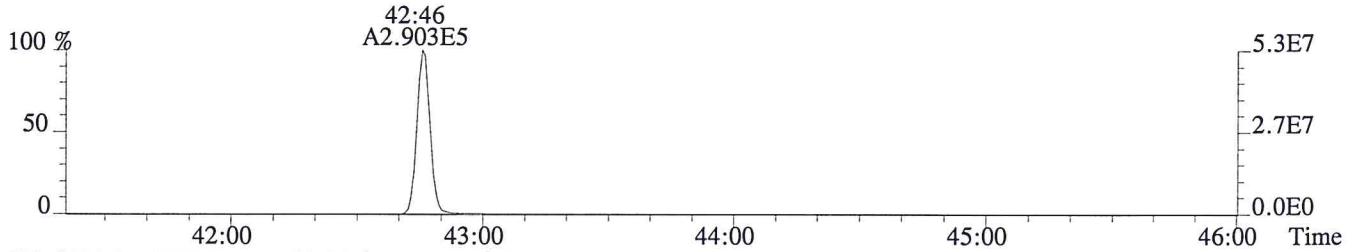
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2832.0,0.40%,F,T)



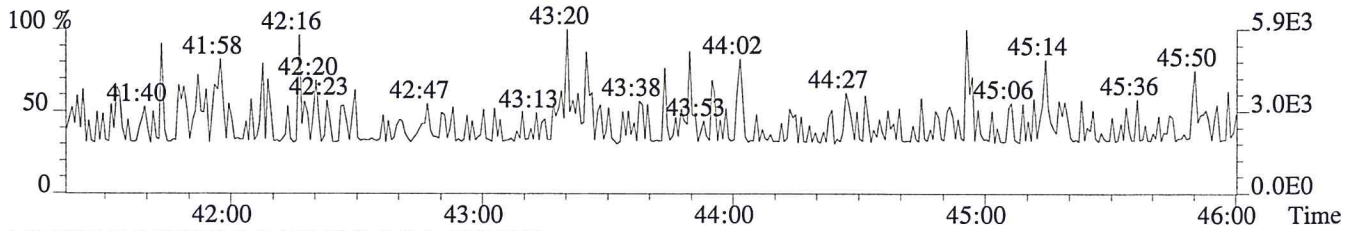
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1336.0,0.40%,F,T)



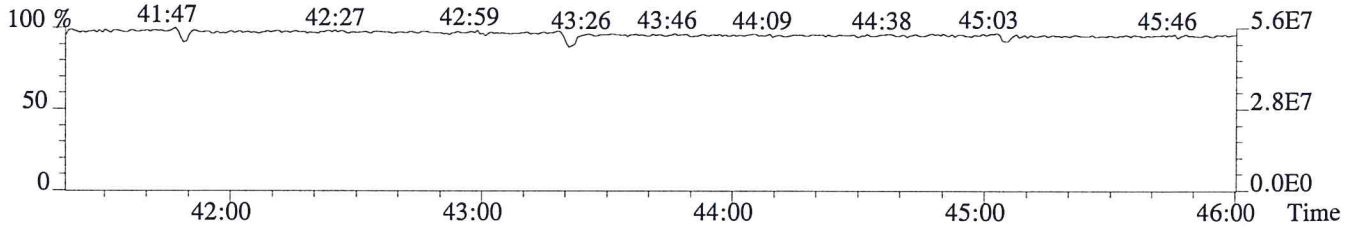
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1608.0,0.40%,F,T)



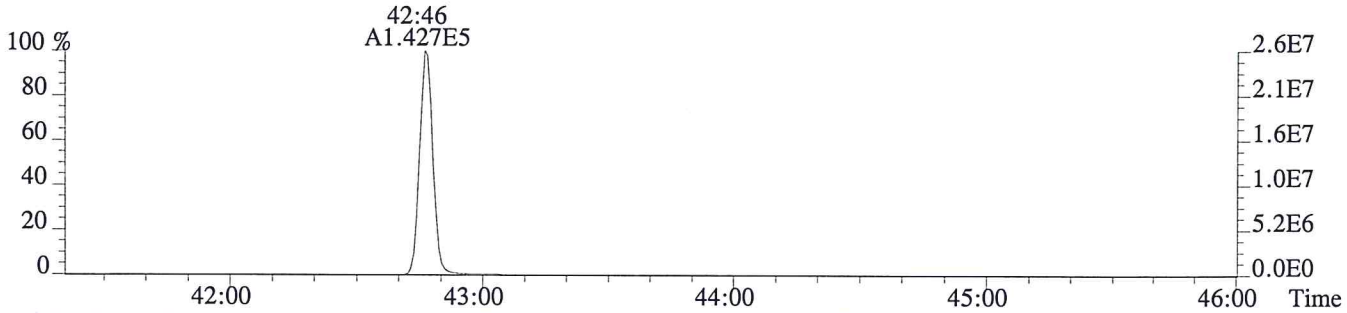
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



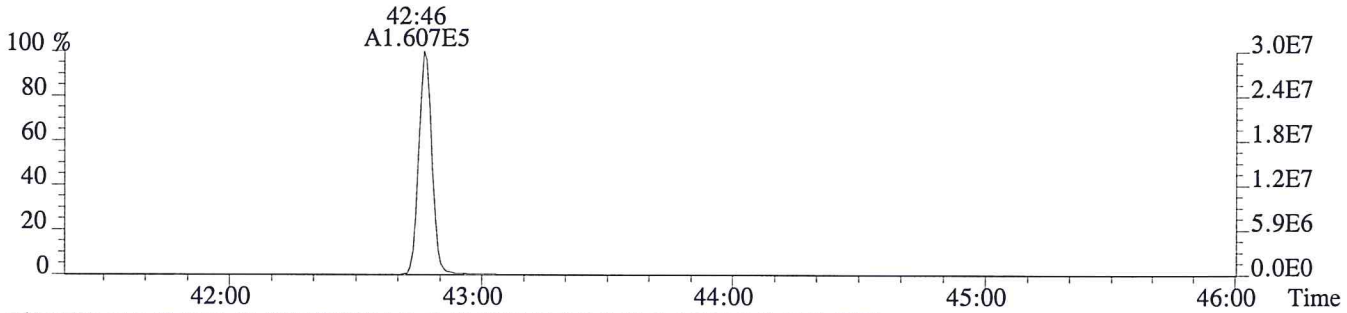
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



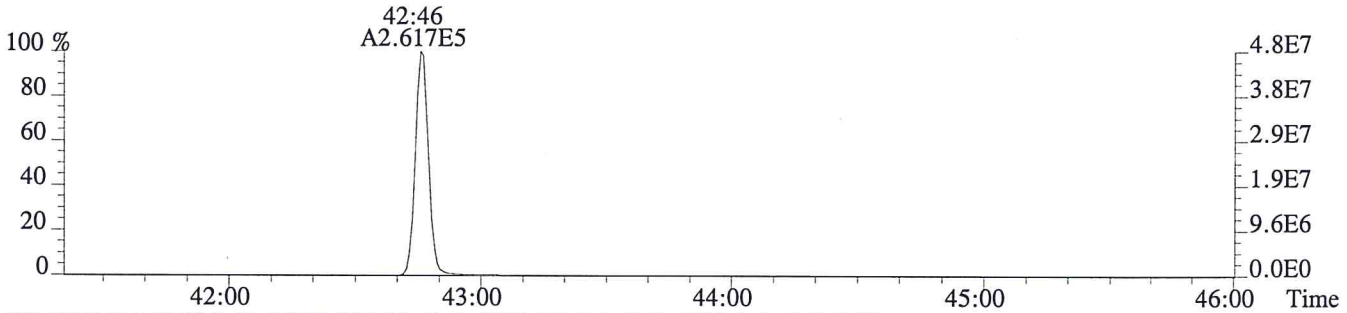
File:P500019 #1-420 Acq:30-JUN-2015 18:07:39 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC3
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1132.0,0.40%,F,T)



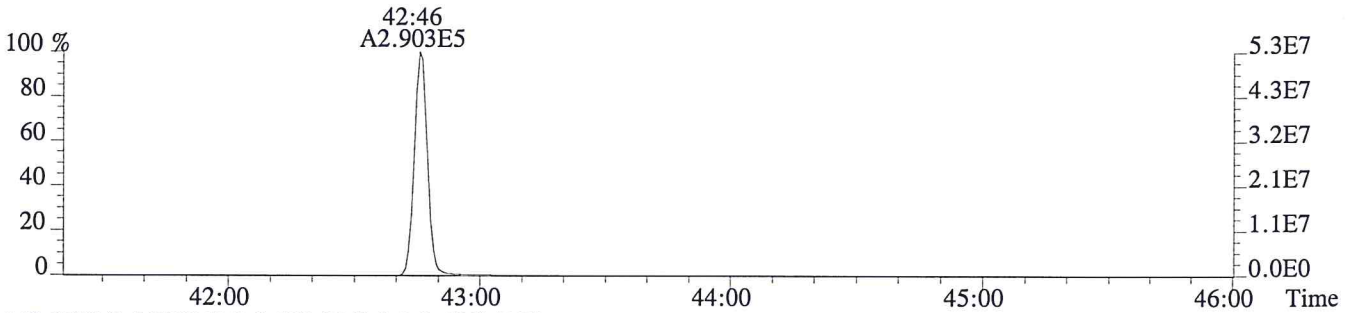
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2012.0,0.40%,F,T)



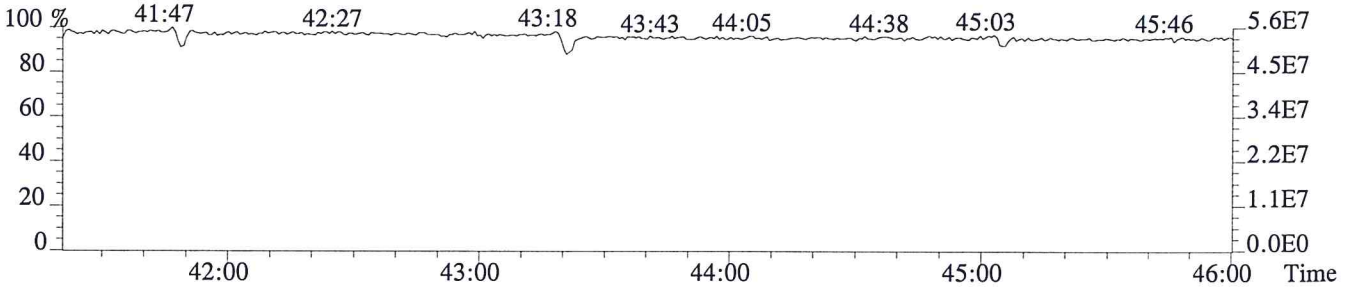
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1336.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1608.0,0.40%,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.
76558

Run #5 Filename P500020 Samp: 1 Inj: 1 Acquired: 30-JUN-15 18:56:17
Processed: 14-JUL-15 14:58:26 Sample ID: IC4

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	29:03	1.195e+05	1.586e+05	0.75	yes	no	0.886
2	Unk	1,2,3,7,8-PeCDF	33:01	9.769e+05	6.409e+05	1.52	yes	no	0.983
3	Unk	2,3,4,7,8-PeCDF	33:53	9.168e+05	5.961e+05	1.54	yes	no	0.952
4	Unk	1,2,3,4,7,8-HxCDF	36:28	8.458e+05	6.969e+05	1.21	yes	no	1.190
5	Unk	1,2,3,6,7,8-HxCDF	36:34	8.226e+05	6.738e+05	1.22	yes	no	1.114
6	Unk	2,3,4,6,7,8-HxCDF	37:03	7.432e+05	6.125e+05	1.21	yes	no	1.109
7	Unk	1,2,3,7,8,9-HxCDF	37:47	7.306e+05	6.032e+05	1.21	yes	no	1.153
8	Unk	1,2,3,4,6,7,8-HpCDF	39:01	6.475e+05	6.359e+05	1.02	yes	no	1.376
9	Unk	1,2,3,4,7,8,9-HpCDF	40:26	6.133e+05	6.029e+05	1.02	yes	no	1.306
10	Unk	OCDF	42:59	8.201e+05	9.095e+05	0.90	yes	no	1.263
11	Unk	2,3,7,8-TCDD	29:47	9.745e+04	1.242e+05	0.78	yes	no	0.997
12	Unk	1,2,3,7,8-PeCDD	34:09	6.598e+05	4.198e+05	1.57	yes	no	0.935
13	Unk	1,2,3,4,7,8-HxCDD	37:11	5.424e+05	4.332e+05	1.25	yes	no	1.039
14	Unk	1,2,3,6,7,8-HxCDD	37:16	5.407e+05	4.314e+05	1.25	yes	no	0.996
15	Unk	1,2,3,7,8,9-HxCDD	37:30	5.966e+05	4.770e+05	1.25	yes	no	1.108
16	Unk	1,2,3,4,6,7,8-HpCDD	39:57	5.039e+05	4.822e+05	1.04	yes	no	1.010
17	Unk	OCDD	42:46	6.865e+05	7.708e+05	0.89	yes	no	1.090
18	IS	13C-2,3,7,8-TCDF	29:01	3.392e+05	4.298e+05	0.79	yes	no	1.447
19	IS	13C-1,2,3,7,8-PeCDF	33:01	4.918e+05	3.118e+05	1.58	yes	no	1.500
20	IS	13C-2,3,4,7,8-PeCDF	33:52	4.856e+05	3.091e+05	1.57	yes	no	1.456
21	IS	13C-1,2,3,4,7,8-HxCDF	36:27	2.175e+05	4.193e+05	0.52	yes	no	1.207
22	IS	13C-1,2,3,6,7,8-HxCDF	36:34	2.264e+05	4.358e+05	0.52	yes	no	1.263
23	IS	13C-2,3,4,6,7,8-HxCDF	37:02	2.064e+05	3.986e+05	0.52	yes	no	1.153
24	IS	13C-1,2,3,7,8,9-HxCDF	37:47	1.940e+05	3.762e+05	0.52	yes	no	1.085
25	IS	13C-1,2,3,4,6,7,8-HpCDF	39:00	1.435e+05	3.204e+05	0.45	yes	no	0.876
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:25	1.438e+05	3.244e+05	0.44	yes	no	0.883
27	IS	13C-2,3,7,8-TCDD	29:46	2.401e+05	3.040e+05	0.79	yes	no	1.027
28	IS	13C-1,2,3,7,8-PeCDD	34:09	3.509e+05	2.234e+05	1.57	yes	no	1.064
29	IS	13C-1,2,3,4,7,8-HxCDD	37:10	2.637e+05	2.084e+05	1.27	yes	no	0.908
30	IS	13C-1,2,3,6,7,8-HxCDD	37:15	2.629e+05	2.087e+05	1.26	yes	no	0.899
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:56	2.481e+05	2.352e+05	1.05	yes	no	0.910
32	IS	13C-OCDD	42:46	3.128e+05	3.458e+05	0.90	yes	no	0.633
33	RS/RT	13C-1,2,3,4-TCDD	29:14	2.349e+05	2.953e+05	0.80	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:29	2.960e+05	2.339e+05	1.27	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:47	2.319e+05				no	1.066

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
76558

Run #5 Filename P500020 Samp: 1 Inj: 1 Acquired: 30-JUN-15 18:56:17
Processed: 14-JUL-15 14:58:26 LAB. ID: IC4

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	2.39e+07	1.17e+03	2.0e+04	3.15e+07	2.25e+03	1.4e+04
2	1,2,3,7,8-PeCDF	2.01e+08	2.00e+03	1.0e+05	1.32e+08	7.50e+03	1.8e+04
3	2,3,4,7,8-PeCDF	1.89e+08	2.00e+03	9.5e+04	1.23e+08	7.50e+03	1.6e+04
4	1,2,3,4,7,8-HxCDF	1.91e+08	1.66e+03	1.1e+05	1.58e+08	1.03e+03	1.5e+05
5	1,2,3,6,7,8-HxCDF	1.89e+08	1.66e+03	1.1e+05	1.54e+08	1.03e+03	1.5e+05
6	2,3,4,6,7,8-HxCDF	1.75e+08	1.66e+03	1.1e+05	1.44e+08	1.03e+03	1.4e+05
7	1,2,3,7,8,9-HxCDF	1.59e+08	1.66e+03	9.6e+04	1.33e+08	1.03e+03	1.3e+05
8	1,2,3,4,6,7,8-HpCDF	1.46e+08	2.02e+04	7.2e+03	1.44e+08	1.65e+04	8.8e+03
9	1,2,3,4,7,8,9-HpCDF	1.32e+08	2.02e+04	6.5e+03	1.29e+08	1.65e+04	7.8e+03
10	OCDF	1.51e+08	2.59e+03	5.8e+04	1.69e+08	2.84e+03	6.0e+04
11	2,3,7,8-TCDD	2.03e+07	2.07e+03	9.8e+03	2.63e+07	2.31e+03	1.1e+04
12	1,2,3,7,8-PeCDD	1.41e+08	3.98e+03	3.5e+04	8.98e+07	1.16e+03	7.7e+04
13	1,2,3,4,7,8-HxCDD	1.28e+08	1.34e+03	9.5e+04	1.01e+08	1.86e+03	5.4e+04
14	1,2,3,6,7,8-HxCDD	1.25e+08	1.34e+03	9.3e+04	1.01e+08	1.86e+03	5.4e+04
15	1,2,3,7,8,9-HxCDD	1.41e+08	1.34e+03	1.0e+05	1.13e+08	1.86e+03	6.1e+04
16	1,2,3,4,6,7,8-HpCDD	1.11e+08	3.24e+03	3.4e+04	1.06e+08	1.97e+03	5.4e+04
17	OCDD	1.29e+08	1.83e+03	7.0e+04	1.45e+08	2.46e+03	5.9e+04
18	13C-2,3,7,8-TCDF	6.57e+07	4.62e+03	1.4e+04	8.31e+07	2.89e+03	2.9e+04
19	13C-1,2,3,7,8-PeCDF	9.90e+07	2.19e+03	4.5e+04	6.21e+07	2.30e+03	2.7e+04
20	13C-2,3,4,7,8-PeCDF	1.02e+08	2.19e+03	4.7e+04	6.53e+07	2.30e+03	2.8e+04
21	13C-1,2,3,4,7,8-HxCDF	4.83e+07	2.29e+03	2.1e+04	9.38e+07	2.90e+03	3.2e+04
22	13C-1,2,3,6,7,8-HxCDF	5.17e+07	2.29e+03	2.3e+04	9.98e+07	2.90e+03	3.4e+04
23	13C-2,3,4,6,7,8-HxCDF	4.84e+07	2.29e+03	2.1e+04	9.46e+07	2.90e+03	3.3e+04
24	13C-1,2,3,7,8,9-HxCDF	4.24e+07	2.29e+03	1.9e+04	8.27e+07	2.90e+03	2.9e+04
25	13C-1,2,3,4,6,7,8-HpCDF	3.19e+07	7.06e+03	4.5e+03	7.18e+07	8.12e+03	8.8e+03
26	13C-1,2,3,4,7,8,9-HpCDF	3.13e+07	7.06e+03	4.4e+03	7.01e+07	8.12e+03	8.6e+03
27	13C-2,3,7,8-TCDD	4.98e+07	8.93e+03	5.6e+03	6.28e+07	4.30e+03	1.5e+04
28	13C-1,2,3,7,8-PeCDD	7.46e+07	2.48e+03	3.0e+04	4.74e+07	1.36e+03	3.5e+04
29	13C-1,2,3,4,7,8-HxCDD	6.18e+07	4.98e+03	1.2e+04	4.80e+07	3.04e+03	1.6e+04
30	13C-1,2,3,6,7,8-HxCDD	6.06e+07	4.98e+03	1.2e+04	4.84e+07	3.04e+03	1.6e+04
31	13C-1,2,3,4,6,7,8-HpCDD	5.42e+07	2.79e+03	1.9e+04	5.11e+07	1.28e+03	4.0e+04
32	13C-OCDD	5.82e+07	9.84e+02	5.9e+04	6.48e+07	1.83e+03	3.5e+04
33	13C-1,2,3,4-TCDD	4.69e+07	8.93e+03	5.2e+03	5.93e+07	4.30e+03	1.4e+04
34	13C-1,2,3,7,8,9-HxCDD	6.96e+07	4.98e+03	1.4e+04	5.51e+07	3.04e+03	1.8e+04
35	37Cl-2,3,7,8-TCDD	4.87e+07	2.60e+03	1.9e+04			

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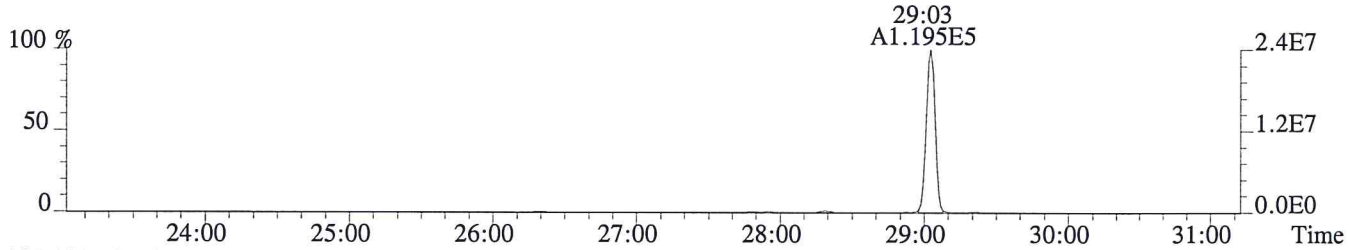
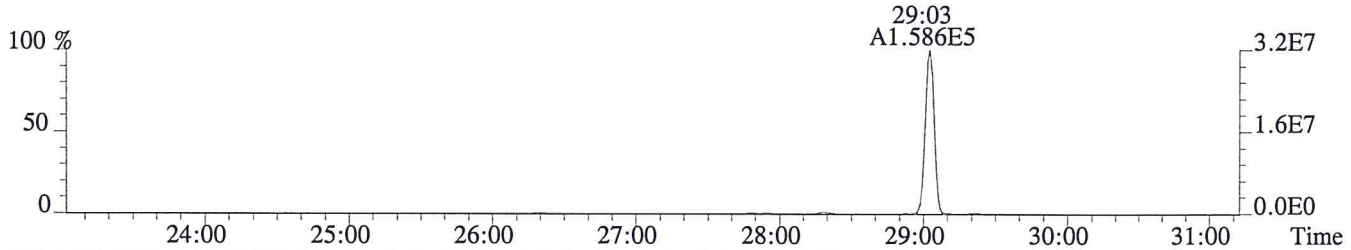
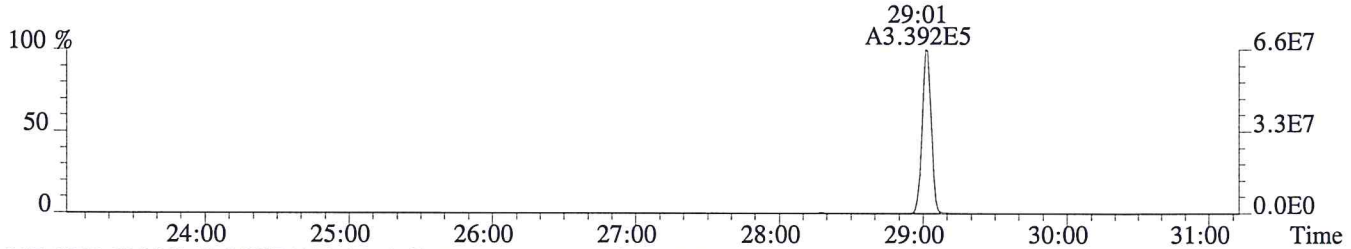
File:P500020 #1-580 Acq:30-JUN-2015 18:56:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC4
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1172.0,1.00%,F,T)



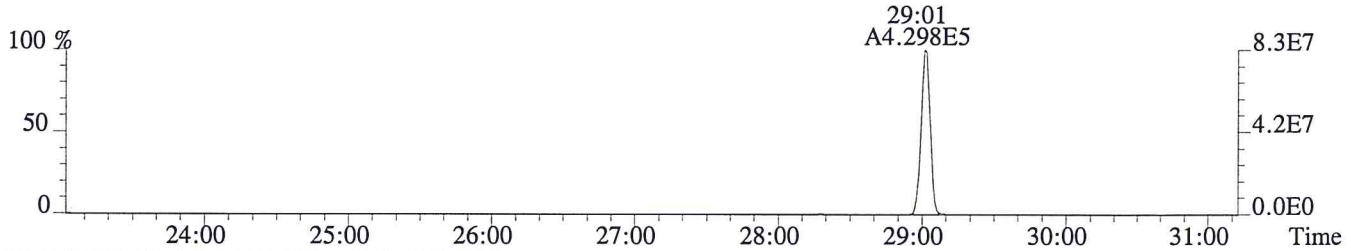
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2248.0,1.00%,F,T)



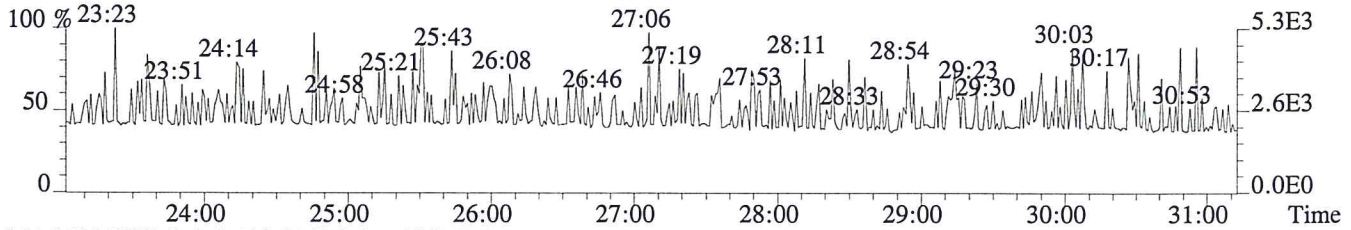
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4624.0,1.00%,F,T)



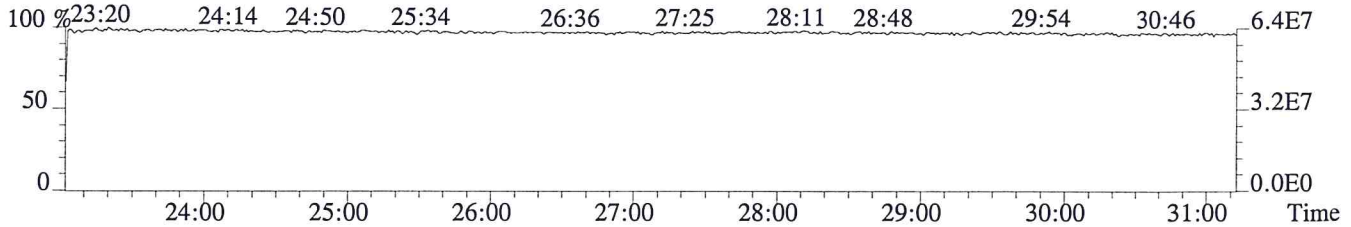
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2892.0,1.00%,F,T)



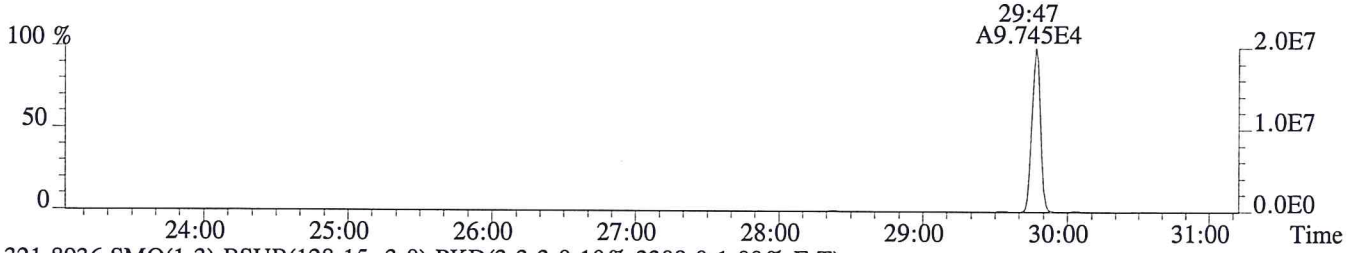
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



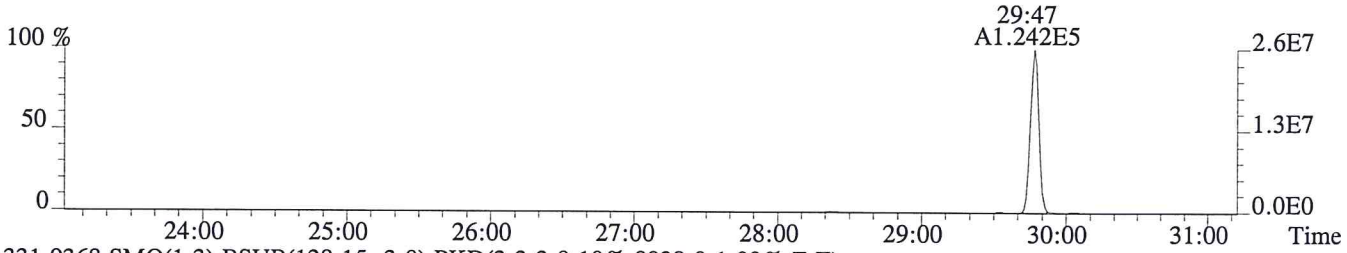
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



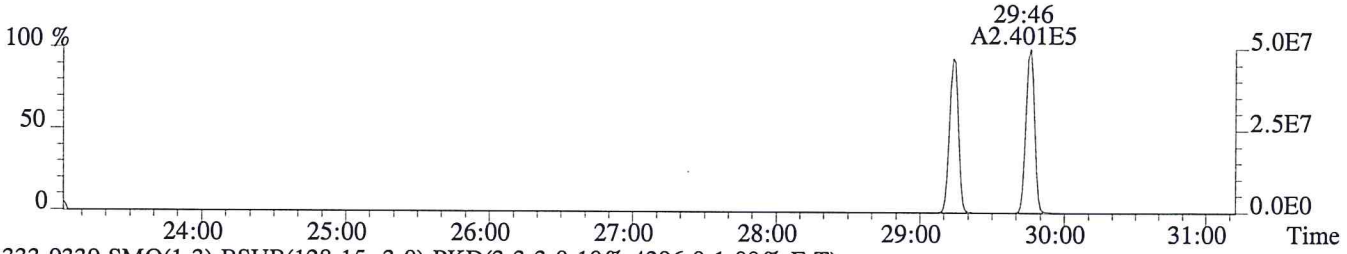
File:P500020 #1-580 Acq:30-JUN-2015 18:56:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC4
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2068.0,1.00%,F,T)



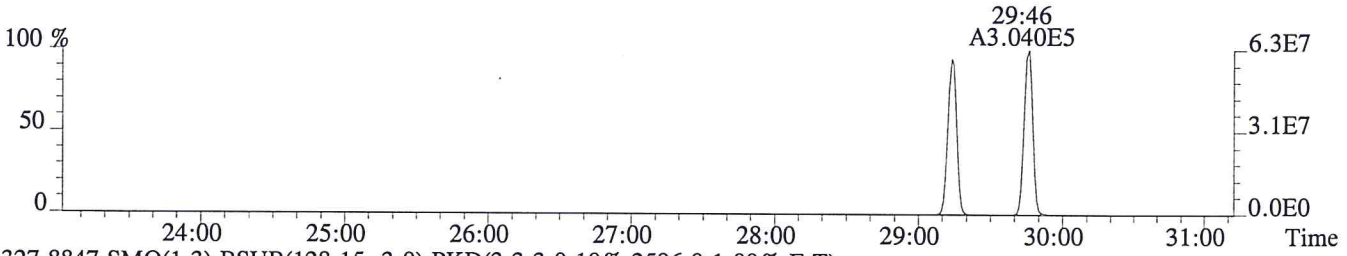
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2308.0,1.00%,F,T)



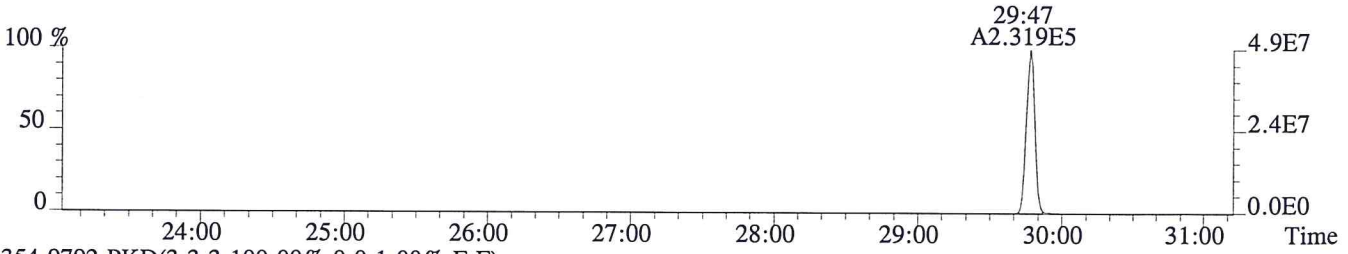
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,8928.0,1.00%,F,T)



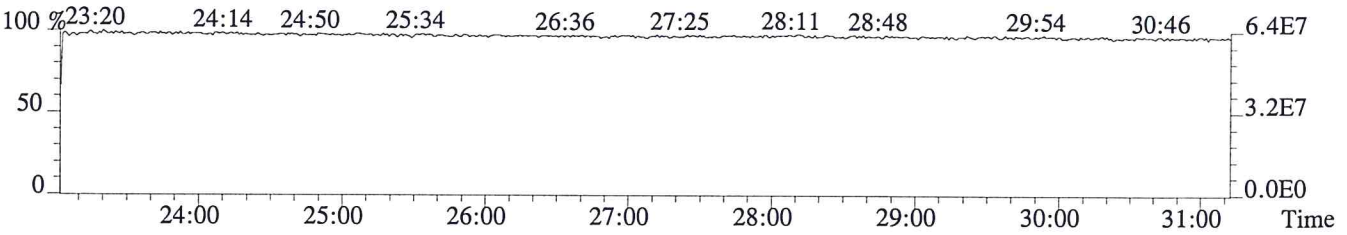
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4296.0,1.00%,F,T)



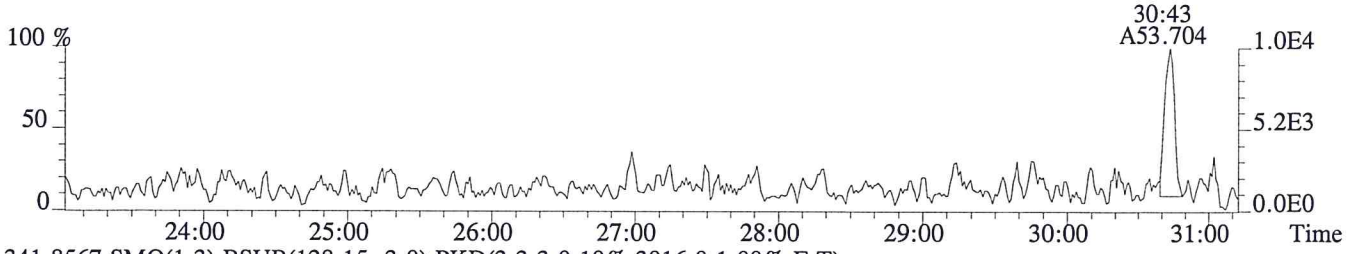
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2596.0,1.00%,F,T)



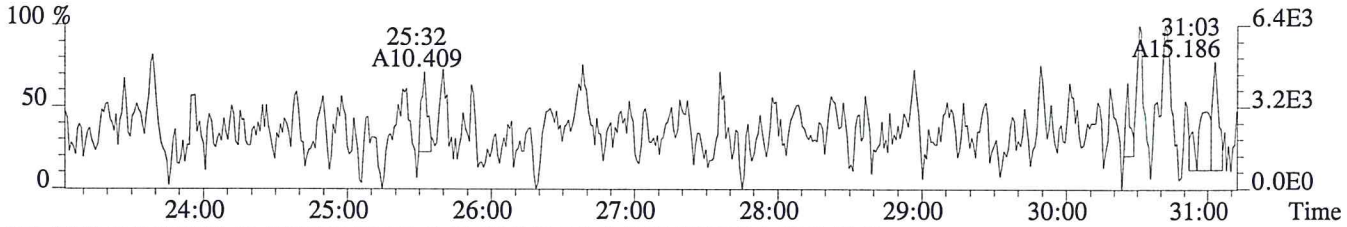
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



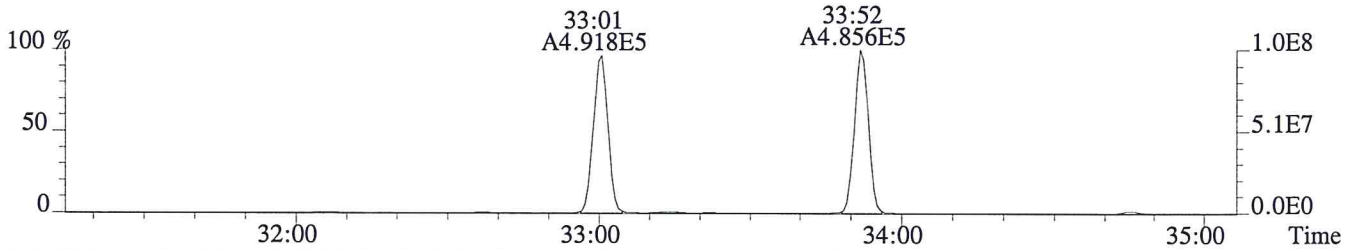
File:P500020 #1-580 Acq:30-JUN-2015 18:56:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC4
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1728.0,1.00%,F,T)



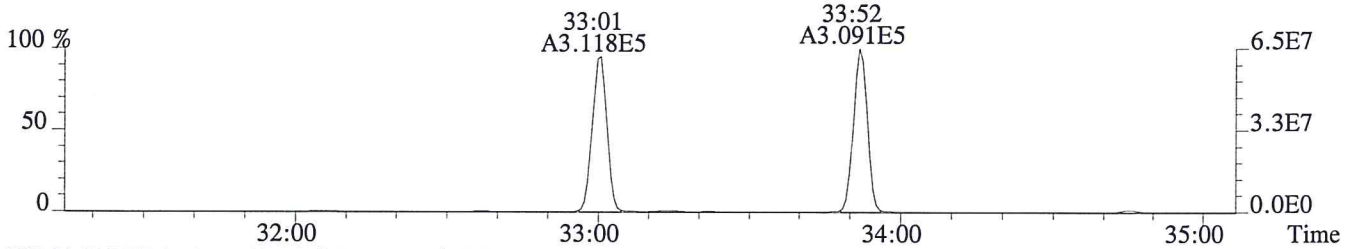
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3016.0,1.00%,F,T)



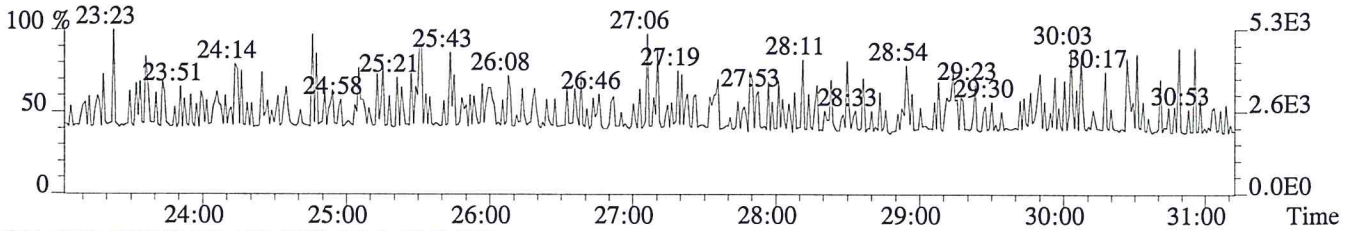
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2188.0,1.00%,F,T)



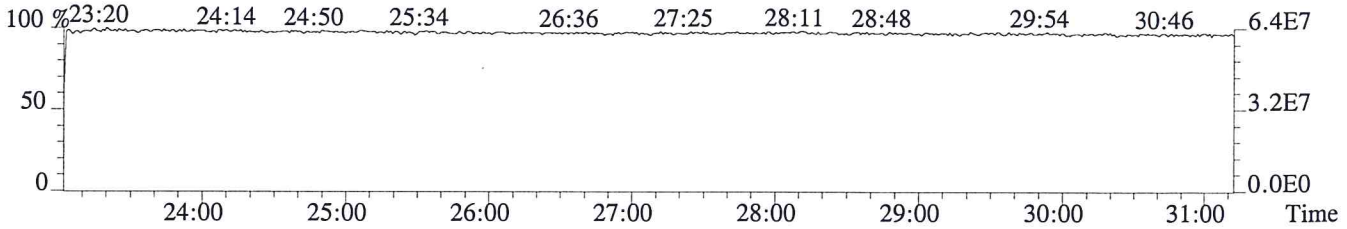
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2300.0,1.00%,F,T)



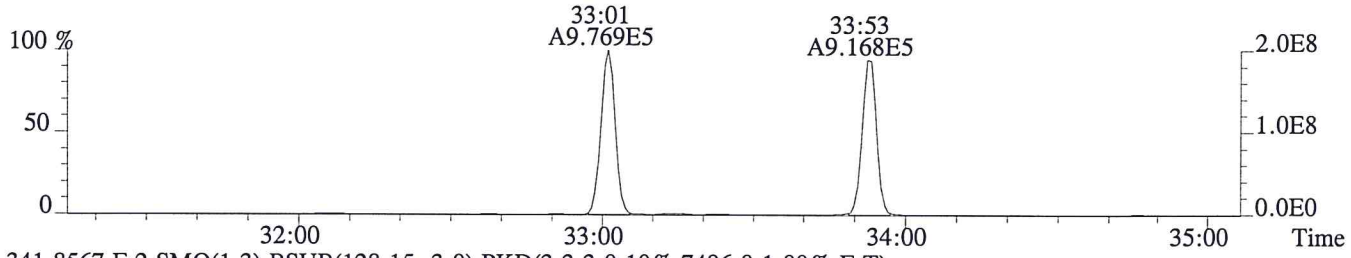
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



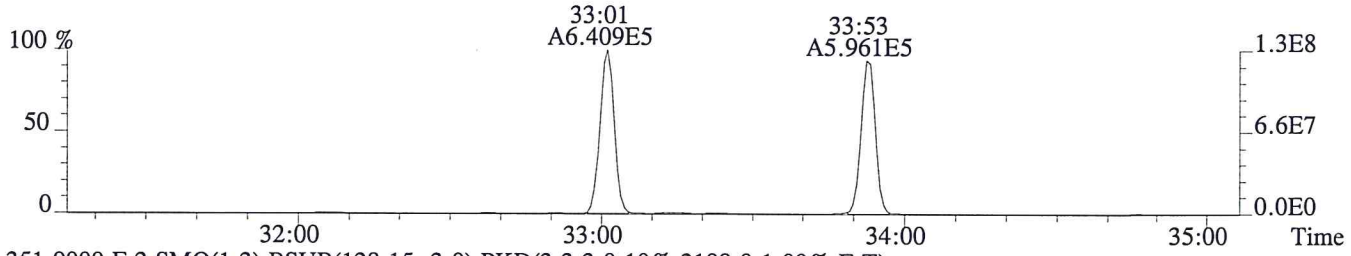
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



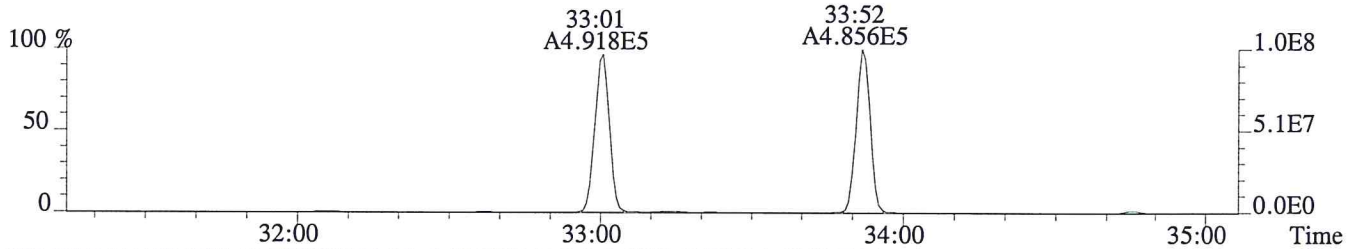
File:P500020 #1-349 Acq:30-JUN-2015 18:56:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC4
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1996.0,1.00%,F,T)



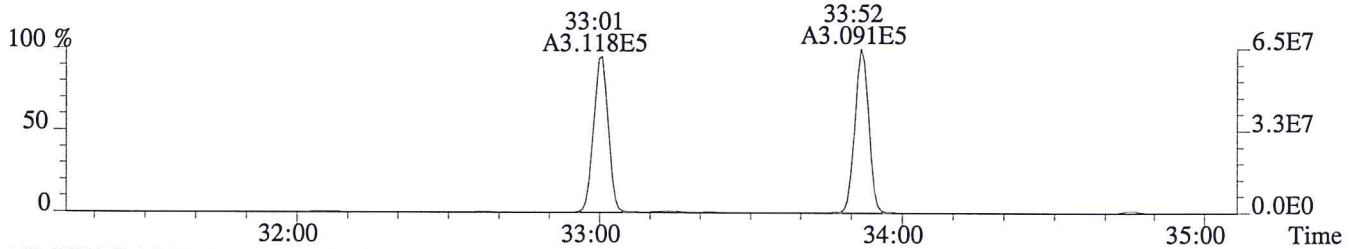
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,7496.0,1.00%,F,T)



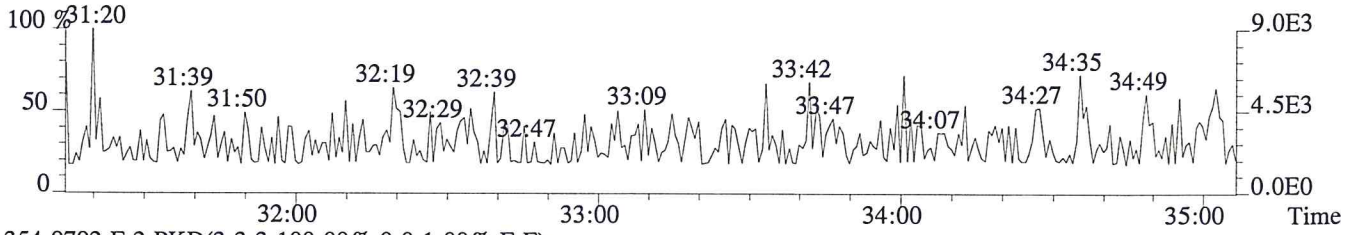
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2188.0,1.00%,F,T)



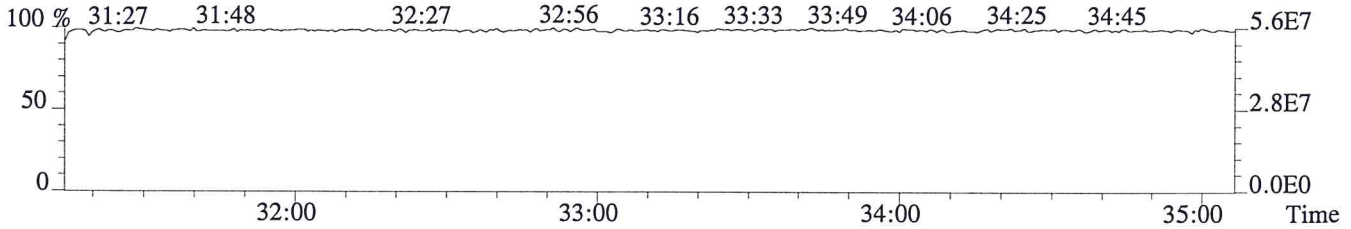
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2300.0,1.00%,F,T)



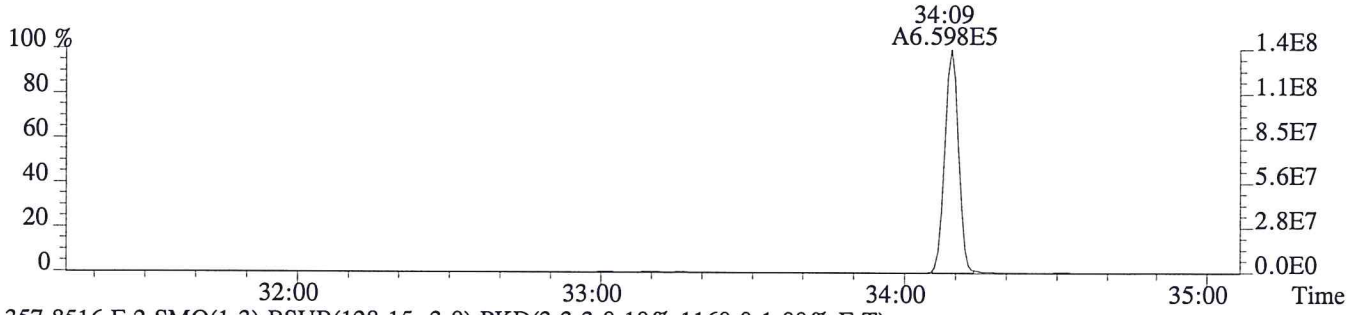
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



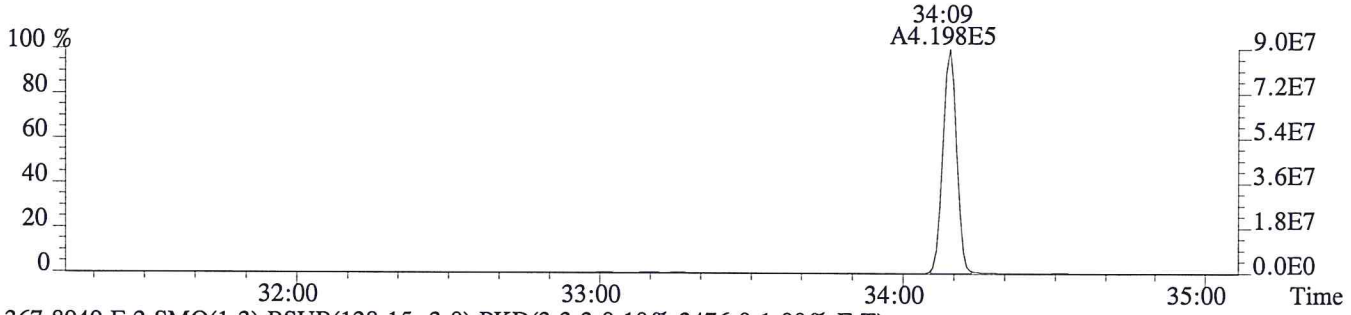
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



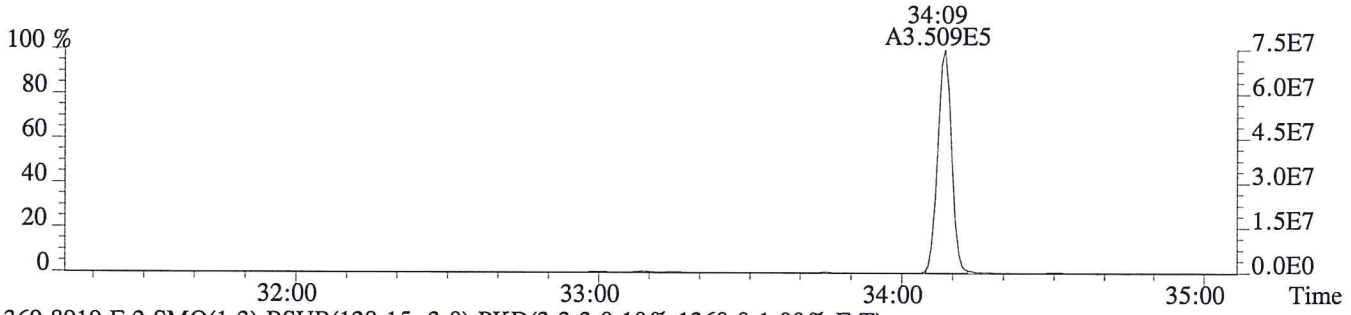
File:P500020 #1-349 Acq:30-JUN-2015 18:56:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC4
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3984.0,1.00%,F,T)



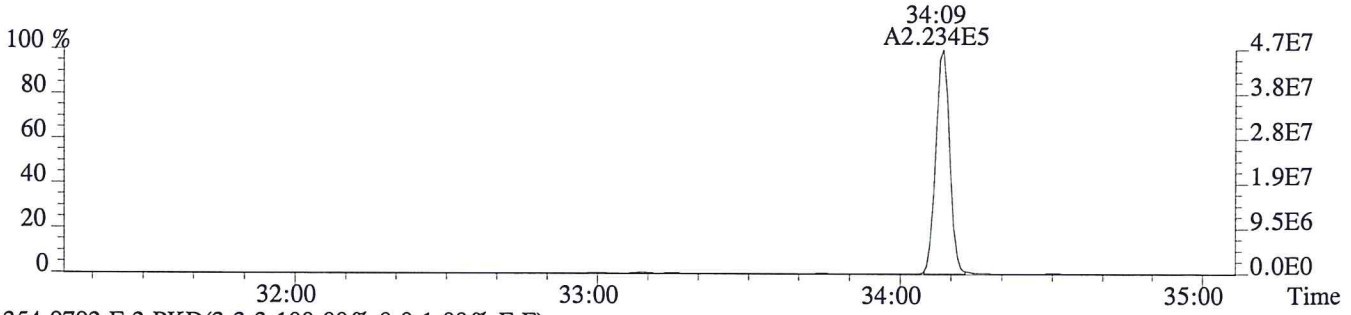
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1160.0,1.00%,F,T)



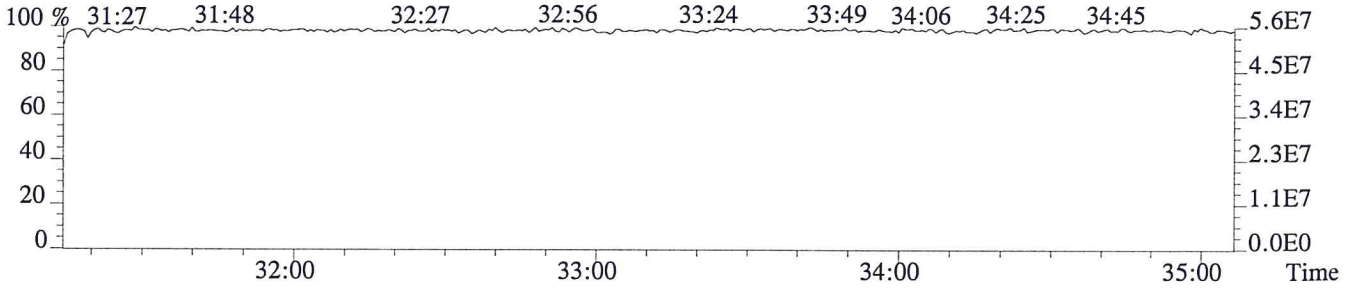
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2476.0,1.00%,F,T)



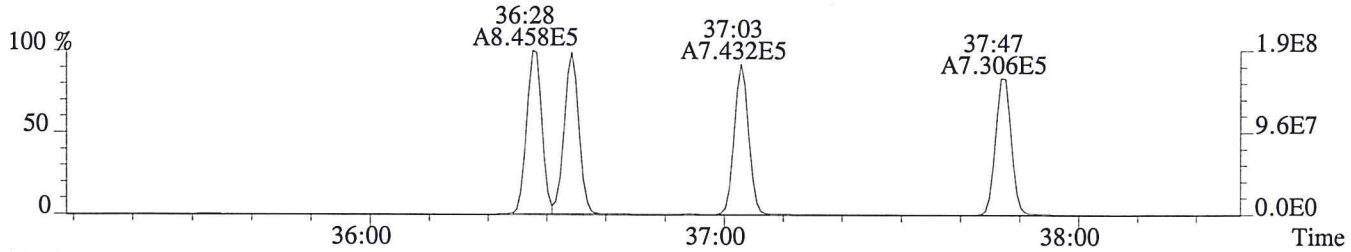
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1360.0,1.00%,F,T)



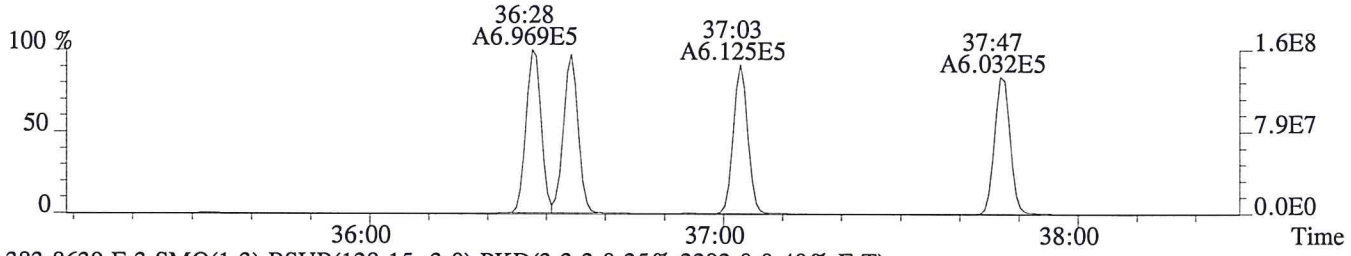
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



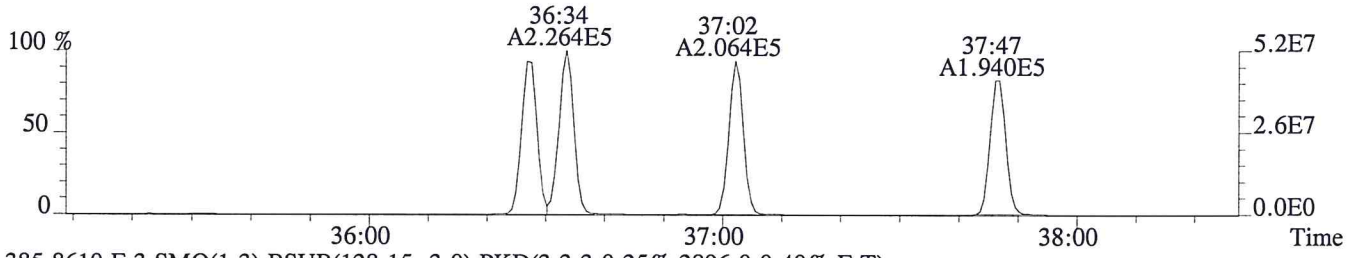
File:P500020 #1-299 Acq:30-JUN-2015 18:56:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC4
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1664.0,0.40%,F,T)



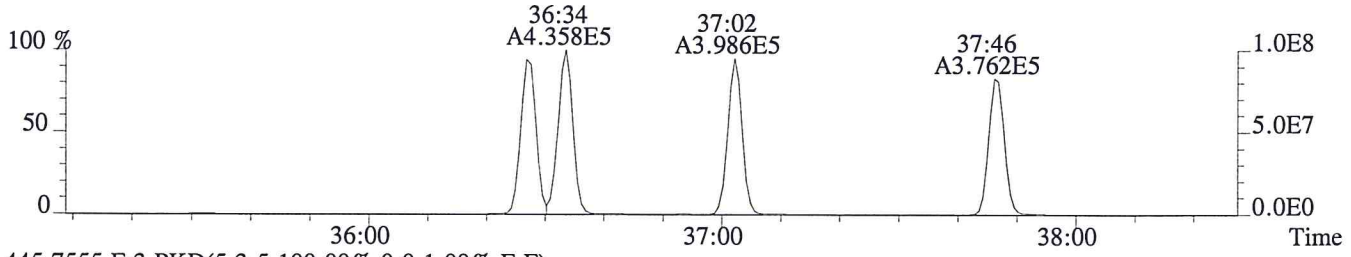
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1032.0,0.40%,F,T)



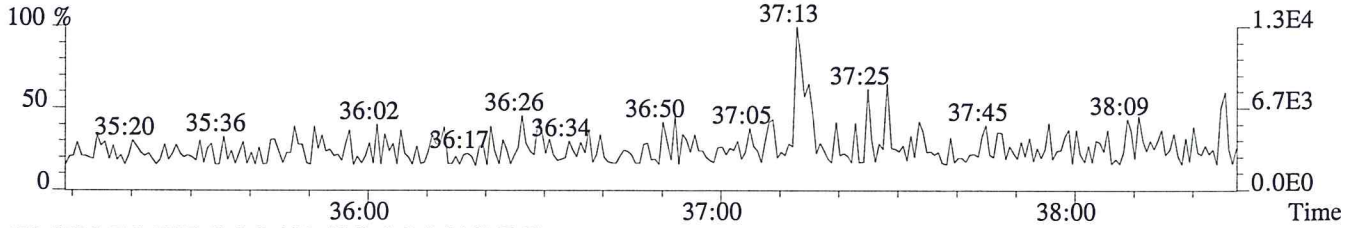
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2292.0,0.40%,F,T)



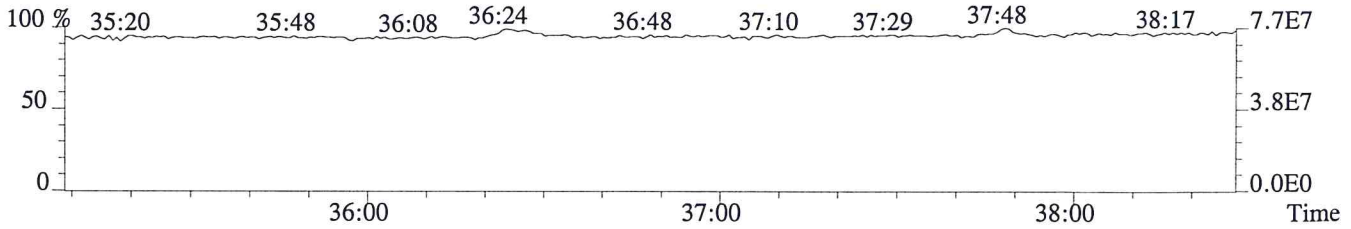
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2896.0,0.40%,F,T)



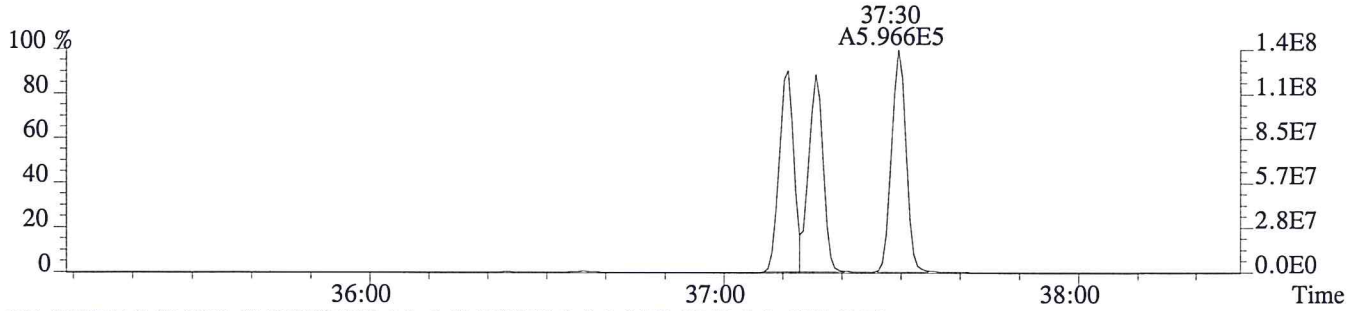
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



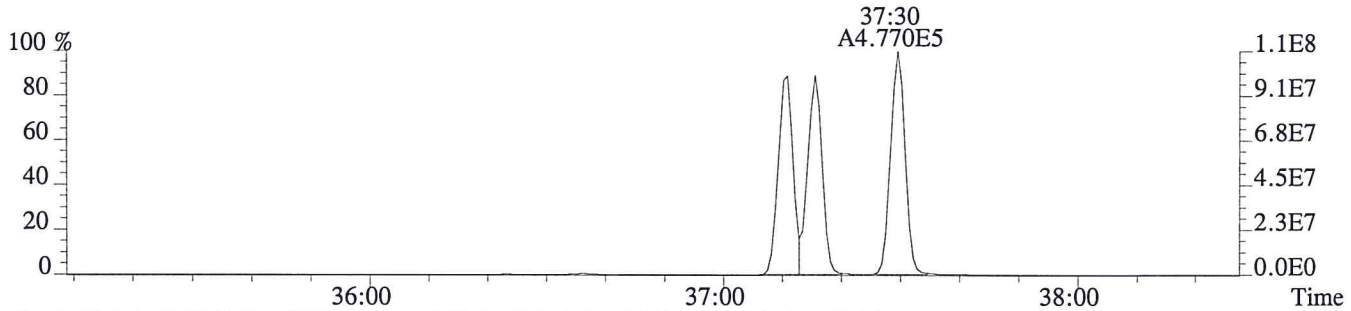
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



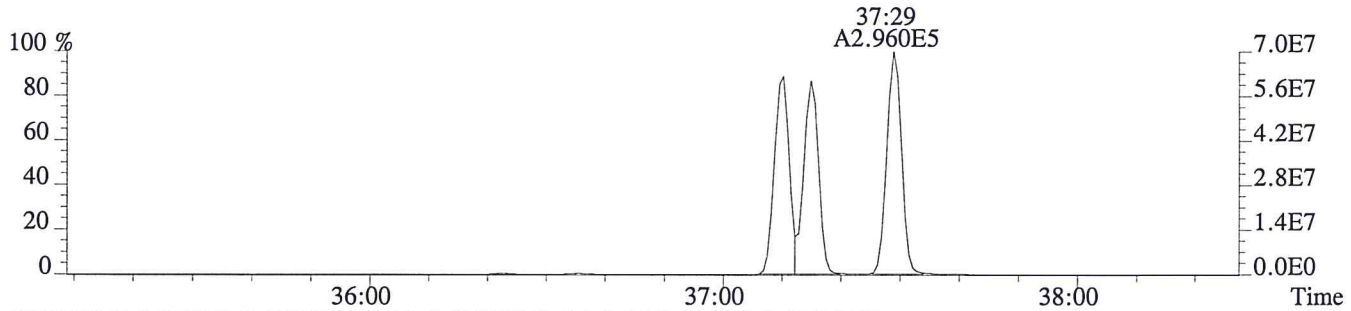
File:P500020 #1-299 Acq:30-JUN-2015 18:56:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC4
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1344.0,0.40%,F,T)



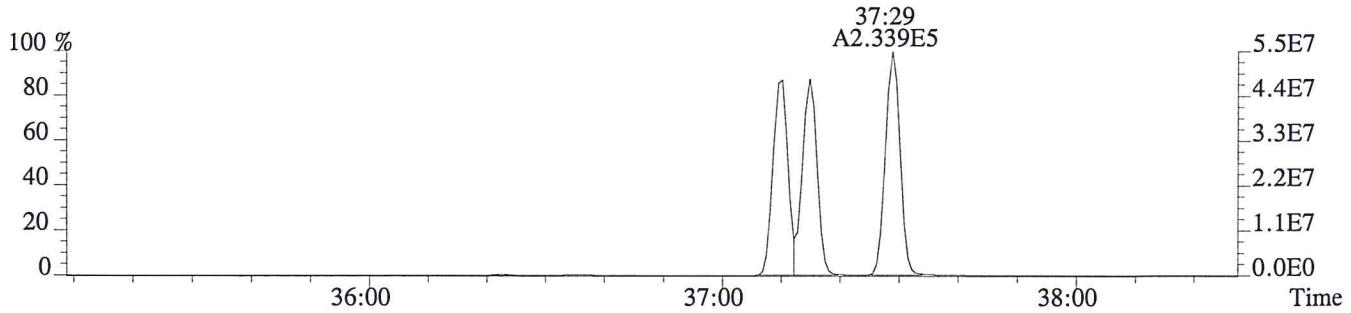
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1864.0,0.40%,F,T)



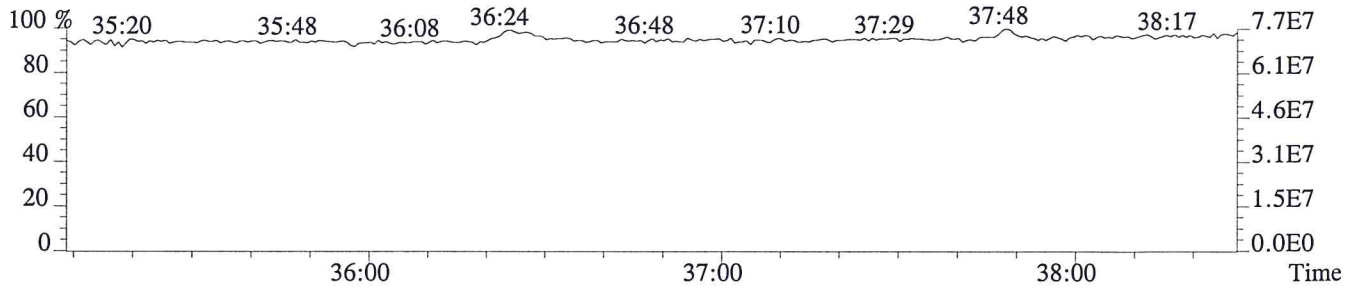
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4984.0,0.40%,F,T)



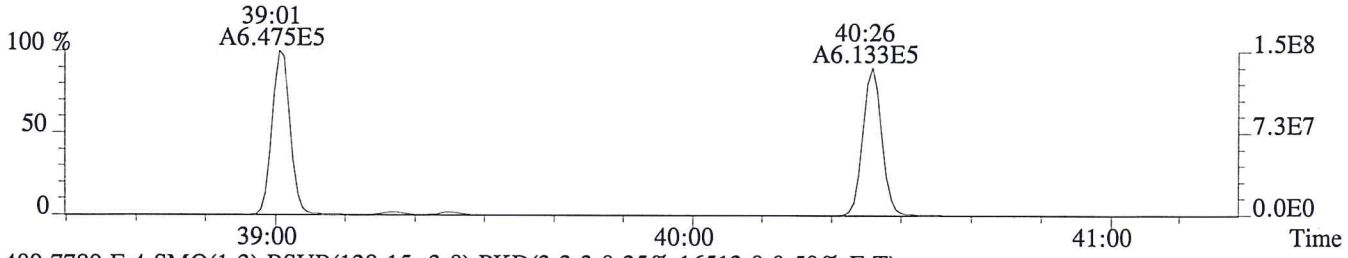
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3040.0,0.40%,F,T)



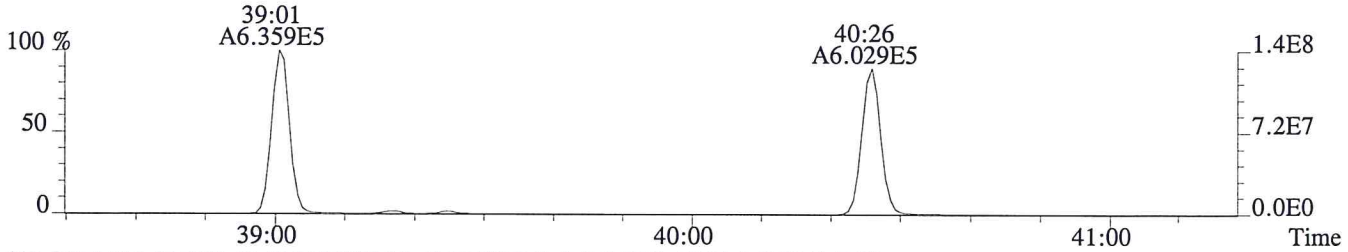
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



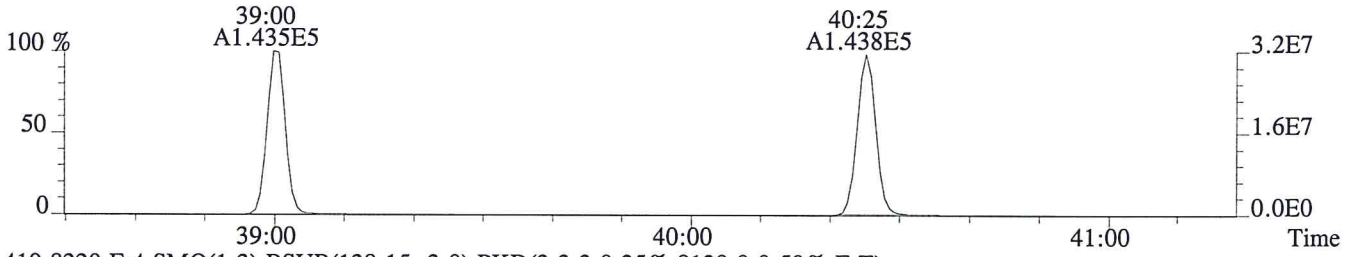
File:P500020 #1-254 Acq:30-JUN-2015 18:56:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC4
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,20204.0,0.50%,F,T)



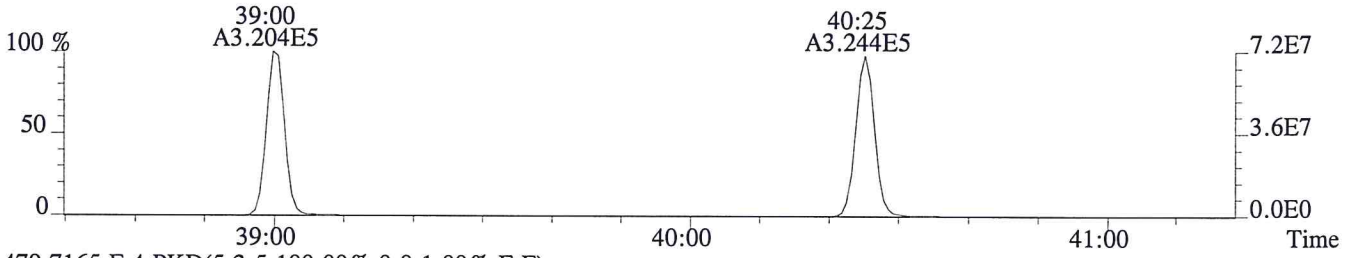
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,16512.0,0.50%,F,T)



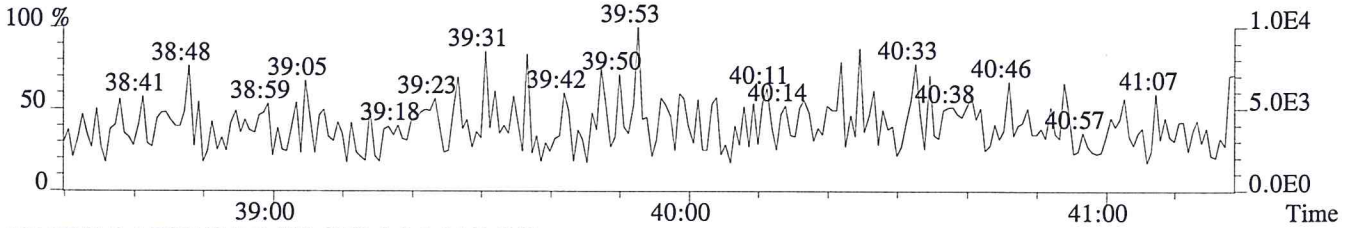
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,7064.0,0.50%,F,T)



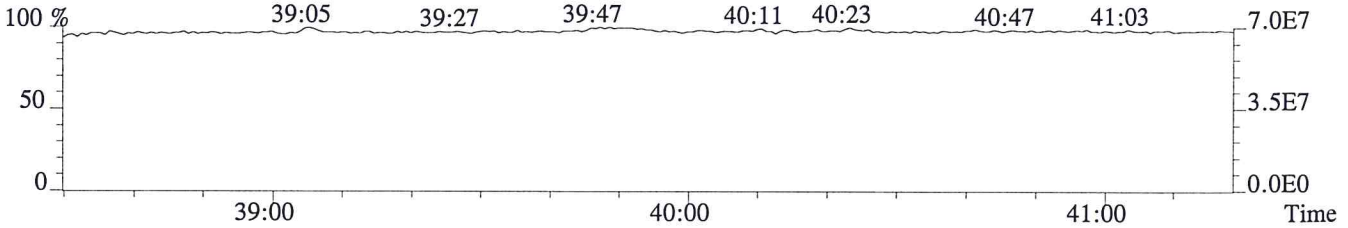
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,8120.0,0.50%,F,T)



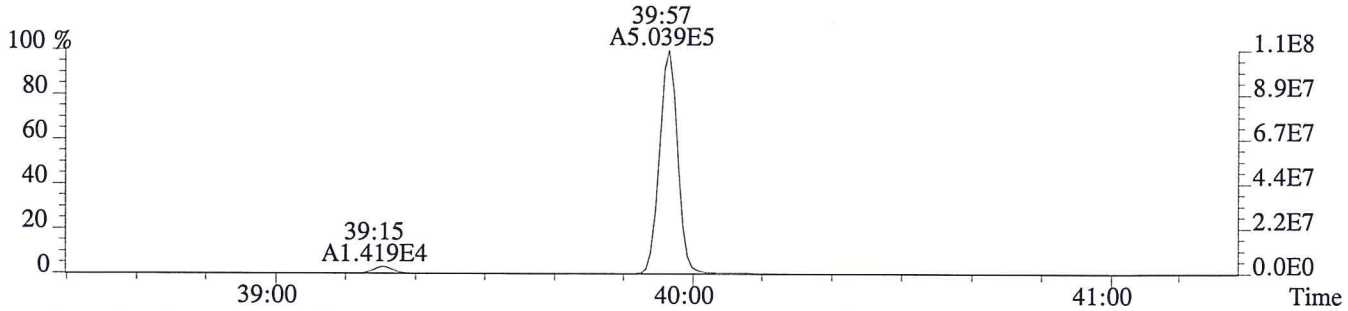
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



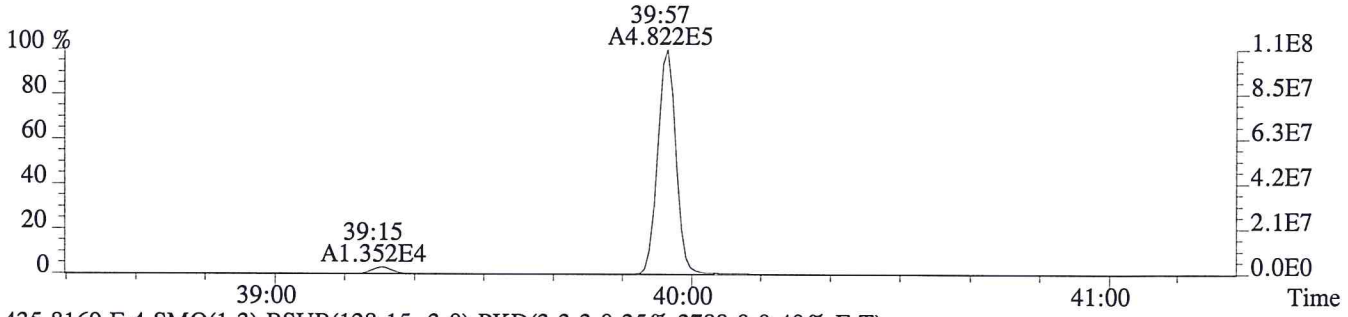
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



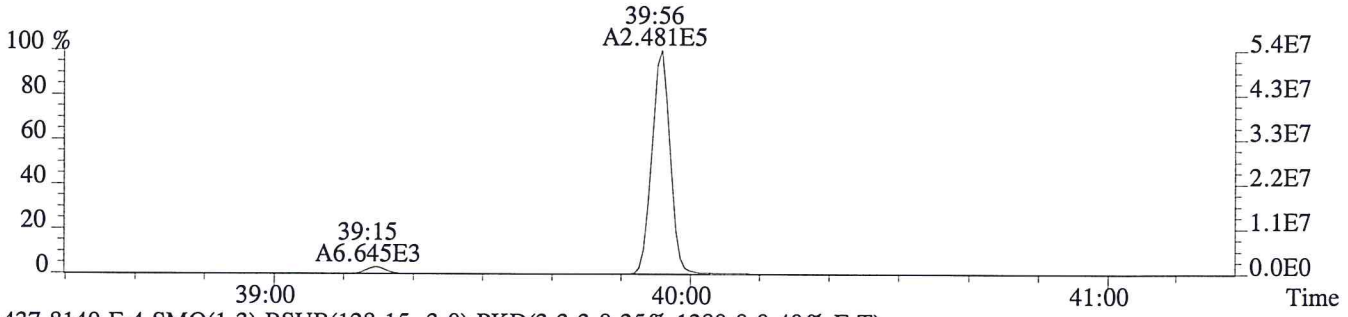
File:P500020 #1-254 Acq:30-JUN-2015 18:56:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC4
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3236.0,0.40%,F,T)



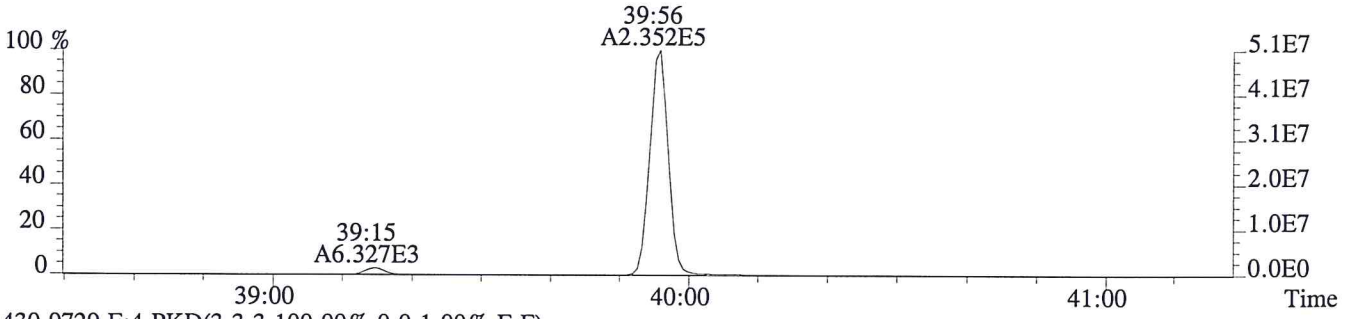
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1968.0,0.40%,F,T)



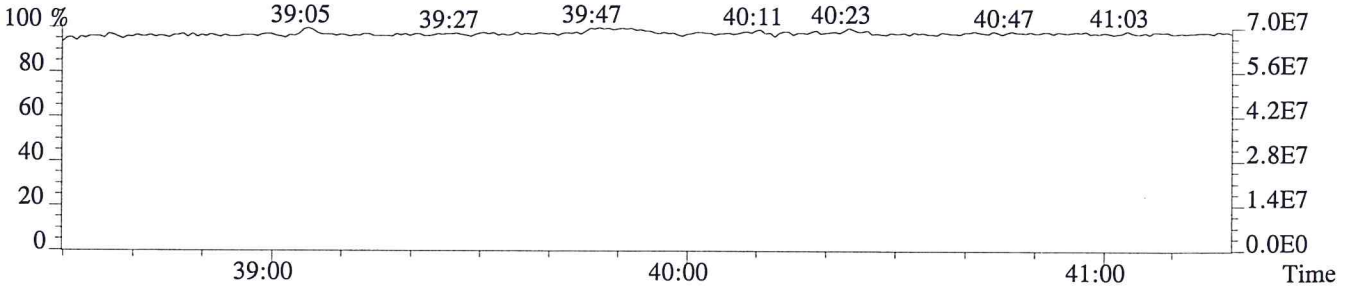
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2788.0,0.40%,F,T)



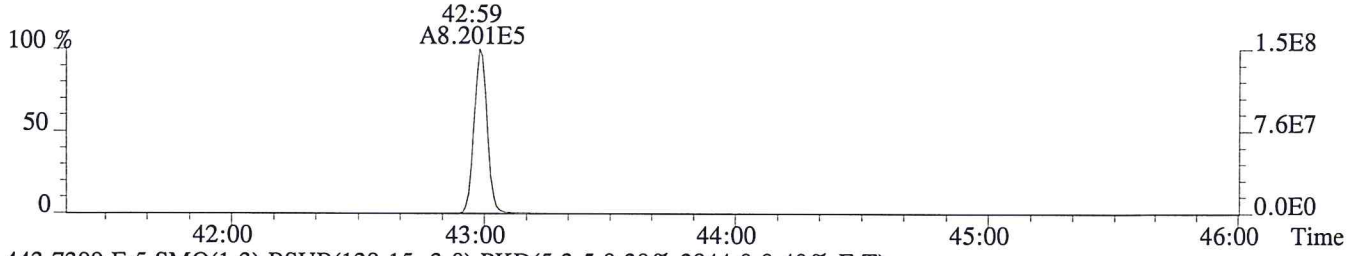
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1280.0,0.40%,F,T)



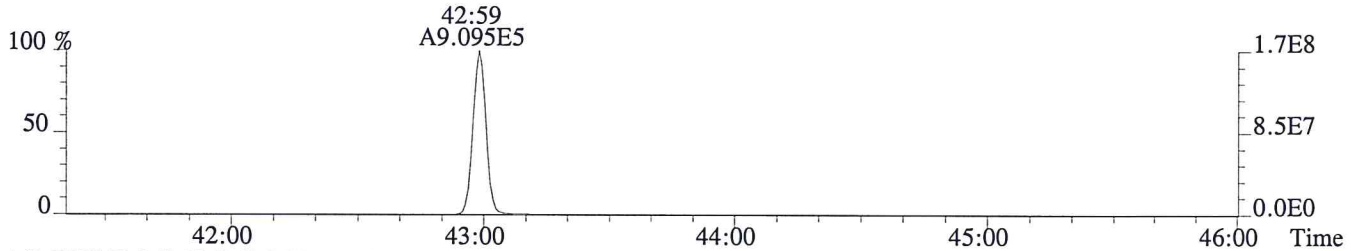
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



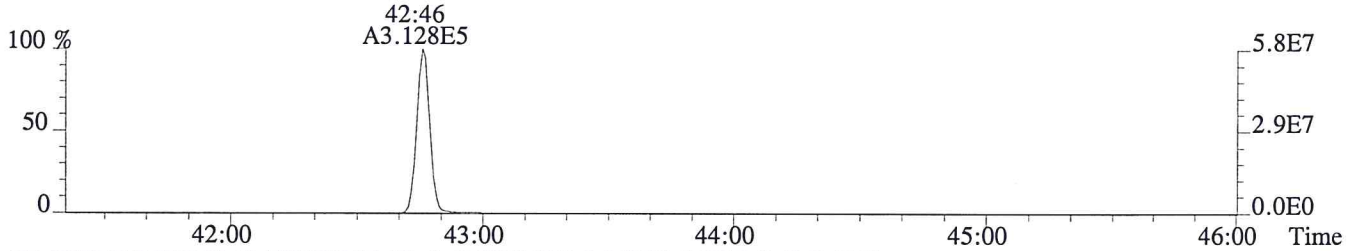
File:P500020 #1-420 Acq:30-JUN-2015 18:56:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC4
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2588.0,0.40%,F,T)



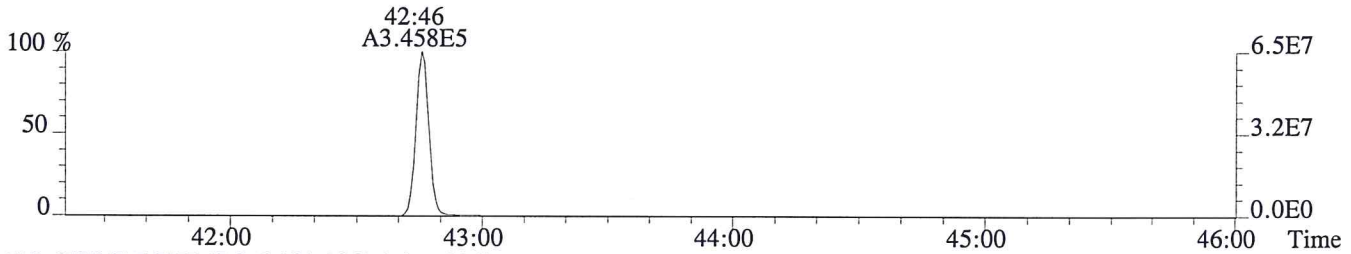
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2844.0,0.40%,F,T)



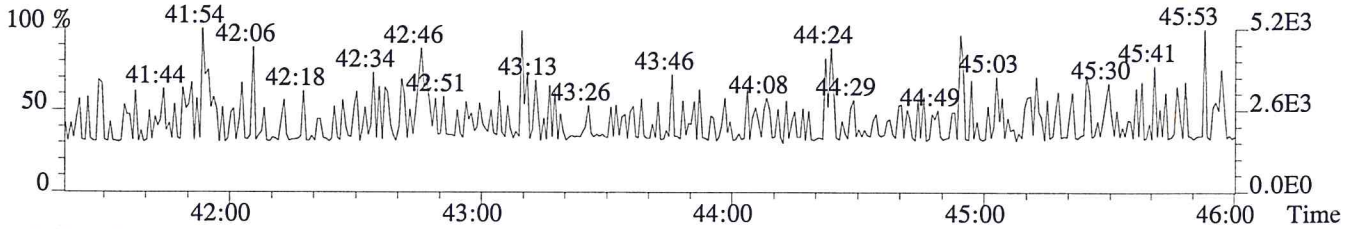
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,984.0,0.40%,F,T)



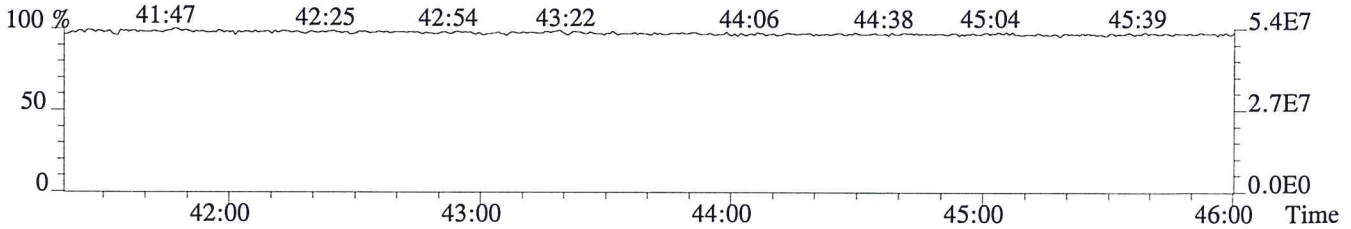
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1828.0,0.40%,F,T)



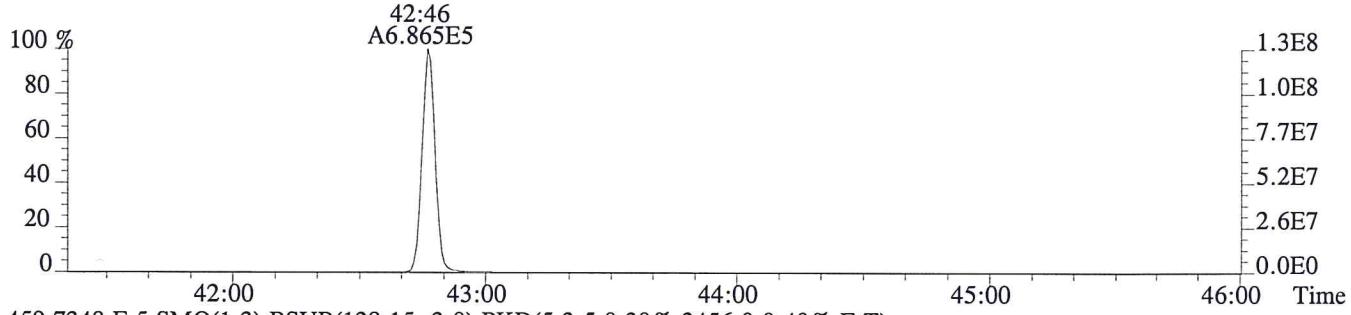
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



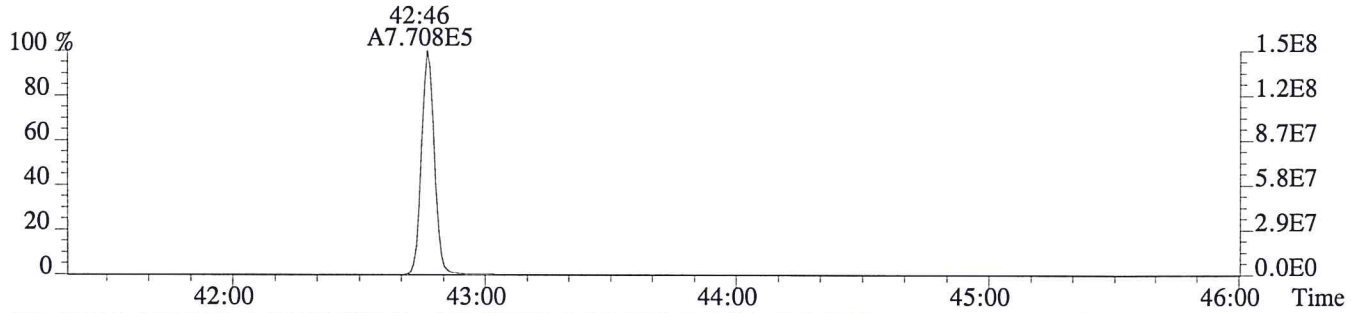
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



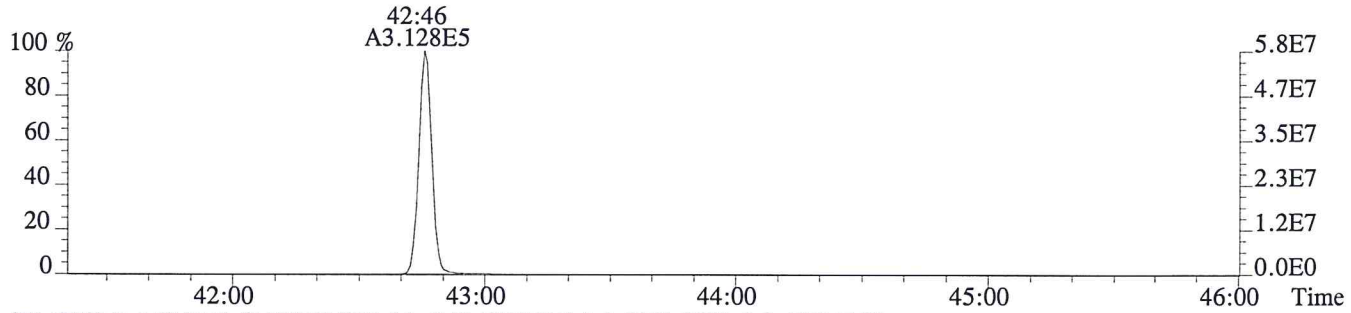
File:P500020 #1-420 Acq:30-JUN-2015 18:56:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC4
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1832.0,0.40%,F,T)



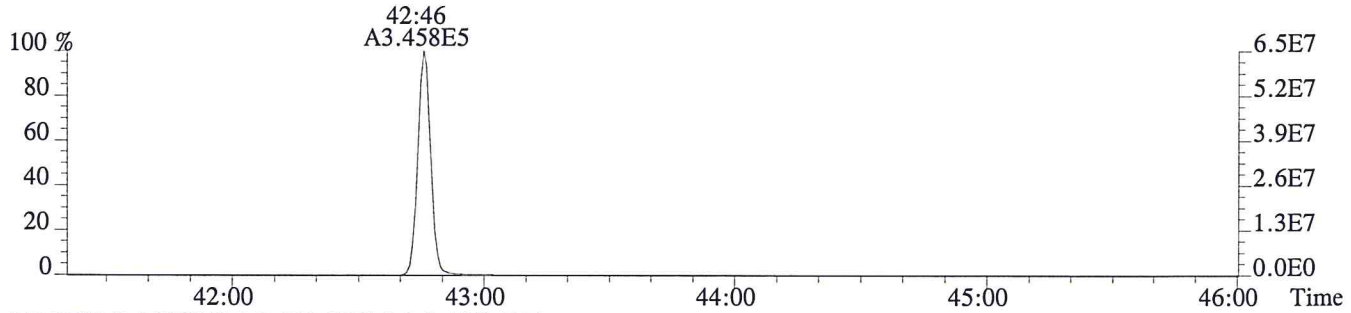
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2456.0,0.40%,F,T)



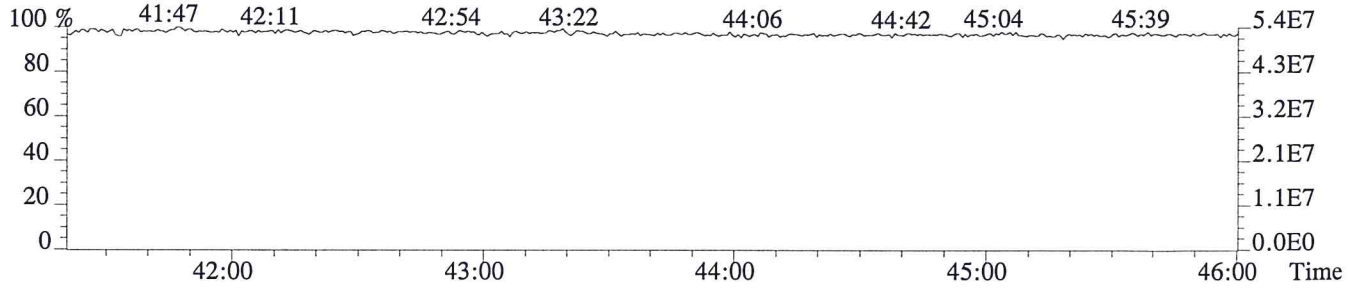
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,984.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1828.0,0.40%,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.
76559

Run #6 Filename P500021 Samp: 1 Inj: 1 Acquired: 30-JUN-15 19:44:53
Processed: 14-JUL-15 14:58:26 Sample ID: IC5

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	29:02	5.421e+05	7.266e+05	0.75	yes	no	0.886
2	Unk	1,2,3,7,8-PeCDF	33:01	4.216e+06	2.727e+06	1.55	yes	no	0.983
3	Unk	2,3,4,7,8-PeCDF	33:53	4.259e+06	2.771e+06	1.54	yes	no	0.952
4	Unk	1,2,3,4,7,8-HxCDF	36:28	3.748e+06	3.025e+06	1.24	yes	no	1.190
5	Unk	1,2,3,6,7,8-HxCDF	36:34	3.663e+06	3.014e+06	1.22	yes	no	1.114
6	Unk	2,3,4,6,7,8-HxCDF	37:02	3.377e+06	2.770e+06	1.22	yes	no	1.109
7	Unk	1,2,3,7,8,9-HxCDF	37:47	3.292e+06	2.688e+06	1.22	yes	no	1.153
8	Unk	1,2,3,4,6,7,8-HpCDF	39:01	2.936e+06	2.869e+06	1.02	yes	no	1.376
9	Unk	1,2,3,4,7,8,9-HpCDF	40:25	2.844e+06	2.768e+06	1.03	yes	no	1.306
10	Unk	OCDF	42:59	3.717e+06	4.117e+06	0.90	yes	no	1.263
11	Unk	2,3,7,8-TCDD	29:47	4.569e+05	5.820e+05	0.79	yes	no	0.997
12	Unk	1,2,3,7,8-PeCDD	34:09	2.993e+06	1.914e+06	1.56	yes	no	0.935
13	Unk	1,2,3,4,7,8-HxCDD	37:10	2.668e+06	2.141e+06	1.25	yes	no	1.039
14	Unk	1,2,3,6,7,8-HxCDD	37:15	2.336e+06	1.868e+06	1.25	yes	no	0.996
15	Unk	1,2,3,7,8,9-HxCDD	37:29	2.745e+06	2.188e+06	1.25	yes	no	1.108
16	Unk	1,2,3,4,6,7,8-HpCDD	39:56	2.216e+06	2.123e+06	1.04	yes	no	1.010
17	Unk	OCDD	42:46	3.057e+06	3.413e+06	0.90	yes	no	1.090
18	IS	13C-2,3,7,8-TCDF	29:01	3.043e+05	3.875e+05	0.79	yes	no	1.447
19	IS	13C-1,2,3,7,8-PeCDF	33:00	4.519e+05	2.877e+05	1.57	yes	no	1.500
20	IS	13C-2,3,4,7,8-PeCDF	33:52	4.253e+05	2.703e+05	1.57	yes	no	1.456
21	IS	13C-1,2,3,4,7,8-HxCDF	36:27	1.942e+05	3.778e+05	0.51	yes	no	1.207
22	IS	13C-1,2,3,6,7,8-HxCDF	36:33	2.009e+05	3.827e+05	0.52	yes	no	1.263
23	IS	13C-2,3,4,6,7,8-HxCDF	37:02	1.883e+05	3.615e+05	0.52	yes	no	1.153
24	IS	13C-1,2,3,7,8,9-HxCDF	37:46	1.782e+05	3.434e+05	0.52	yes	no	1.085
25	IS	13C-1,2,3,4,6,7,8-HpCDF	39:00	1.327e+05	3.001e+05	0.44	yes	no	0.876
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:25	1.275e+05	2.859e+05	0.45	yes	no	0.883
27	IS	13C-2,3,7,8-TCDD	29:45	2.274e+05	2.901e+05	0.78	yes	no	1.027
28	IS	13C-1,2,3,7,8-PeCDD	34:08	3.203e+05	2.038e+05	1.57	yes	no	1.064
29	IS	13C-1,2,3,4,7,8-HxCDD	37:10	2.405e+05	1.911e+05	1.26	yes	no	0.908
30	IS	13C-1,2,3,6,7,8-HxCDD	37:14	2.575e+05	2.056e+05	1.25	yes	no	0.899
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:55	2.253e+05	2.148e+05	1.05	yes	no	0.910
32	IS	13C-OCDD	42:46	3.111e+05	3.465e+05	0.90	yes	no	0.633
33	RS/RT	13C-1,2,3,4-TCDD	29:14	2.165e+05	2.700e+05	0.80	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:28	2.655e+05	2.105e+05	1.26	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:47	1.085e+06				no	1.066

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
76559

Run #6 Filename P500021 Samp: 1 Inj: 1 Acquired: 30-JUN-15 19:44:53
Processed: 14-JUL-15 14:58:26 LAB. ID: IC5

	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+08	1.72e+03	6.3e+04	1.46e+08	3.18e+03	4.6e+04
2	1,2,3,7,8-PeCDF	8.67e+08	5.46e+03	1.6e+05	5.62e+08	4.27e+03	1.3e+05
3	2,3,4,7,8-PeCDF	9.13e+08	5.46e+03	1.7e+05	5.89e+08	4.27e+03	1.4e+05
4	1,2,3,4,7,8-HxCDF	8.49e+08	1.70e+03	5.0e+05	6.90e+08	3.33e+03	2.1e+05
5	1,2,3,6,7,8-HxCDF	8.48e+08	1.70e+03	5.0e+05	6.94e+08	3.33e+03	2.1e+05
6	2,3,4,6,7,8-HxCDF	7.72e+08	1.70e+03	4.5e+05	6.39e+08	3.33e+03	1.9e+05
7	1,2,3,7,8,9-HxCDF	7.58e+08	1.70e+03	4.5e+05	6.16e+08	3.33e+03	1.9e+05
8	1,2,3,4,6,7,8-HpCDF	6.71e+08	5.44e+04	1.2e+04	6.50e+08	3.47e+04	1.9e+04
9	1,2,3,4,7,8,9-HpCDF	6.20e+08	5.44e+04	1.1e+04	6.05e+08	3.47e+04	1.7e+04
10	OCDF	7.01e+08	1.71e+03	4.1e+05	7.59e+08	3.14e+03	2.4e+05
11	2,3,7,8-TCDD	9.62e+07	2.12e+03	4.5e+04	1.21e+08	2.27e+03	5.3e+04
12	1,2,3,7,8-PeCDD	6.45e+08	3.42e+03	1.9e+05	4.15e+08	2.34e+03	1.8e+05
13	1,2,3,4,7,8-HxCDD	6.30e+08	1.82e+03	3.5e+05	5.03e+08	2.11e+03	2.4e+05
14	1,2,3,6,7,8-HxCDD	5.42e+08	1.82e+03	3.0e+05	4.40e+08	2.11e+03	2.1e+05
15	1,2,3,7,8,9-HxCDD	6.28e+08	1.82e+03	3.4e+05	5.04e+08	2.11e+03	2.4e+05
16	1,2,3,4,6,7,8-HpCDD	4.96e+08	5.67e+03	8.7e+04	4.76e+08	5.40e+03	8.8e+04
17	OCDD	5.78e+08	1.26e+03	4.6e+05	6.41e+08	3.00e+03	2.1e+05
18	13C-2,3,7,8-TCDF	6.18e+07	5.56e+03	1.1e+04	7.86e+07	3.75e+03	2.1e+04
19	13C-1,2,3,7,8-PeCDF	9.21e+07	1.47e+03	6.3e+04	5.88e+07	2.89e+03	2.0e+04
20	13C-2,3,4,7,8-PeCDF	8.87e+07	1.47e+03	6.0e+04	5.58e+07	2.89e+03	1.9e+04
21	13C-1,2,3,4,7,8-HxCDF	4.40e+07	2.38e+03	1.8e+04	8.62e+07	1.99e+03	4.3e+04
22	13C-1,2,3,6,7,8-HxCDF	4.49e+07	2.38e+03	1.9e+04	8.68e+07	1.99e+03	4.4e+04
23	13C-2,3,4,6,7,8-HxCDF	4.25e+07	2.38e+03	1.8e+04	8.27e+07	1.99e+03	4.2e+04
24	13C-1,2,3,7,8,9-HxCDF	4.09e+07	2.38e+03	1.7e+04	7.89e+07	1.99e+03	4.0e+04
25	13C-1,2,3,4,6,7,8-HpCDF	3.08e+07	7.82e+03	3.9e+03	6.86e+07	3.80e+03	1.8e+04
26	13C-1,2,3,4,7,8,9-HpCDF	2.77e+07	7.82e+03	3.5e+03	6.20e+07	3.80e+03	1.6e+04
27	13C-2,3,7,8-TCDD	4.76e+07	1.00e+04	4.7e+03	6.15e+07	4.18e+03	1.5e+04
28	13C-1,2,3,7,8-PeCDD	6.85e+07	2.30e+03	3.0e+04	4.37e+07	1.52e+03	2.9e+04
29	13C-1,2,3,4,7,8-HxCDD	5.63e+07	5.80e+03	9.7e+03	4.45e+07	3.98e+03	1.1e+04
30	13C-1,2,3,6,7,8-HxCDD	5.91e+07	5.80e+03	1.0e+04	4.80e+07	3.98e+03	1.2e+04
31	13C-1,2,3,4,6,7,8-HpCDD	5.03e+07	2.35e+03	2.1e+04	4.80e+07	2.30e+03	2.1e+04
32	13C-OCDD	5.84e+07	1.40e+03	4.2e+04	6.47e+07	2.24e+03	2.9e+04
33	13C-1,2,3,4-TCDD	4.41e+07	1.00e+04	4.4e+03	5.48e+07	4.18e+03	1.3e+04
34	13C-1,2,3,7,8,9-HxCDD	5.97e+07	5.80e+03	1.0e+04	4.79e+07	3.98e+03	1.2e+04
35	37Cl-2,3,7,8-TCDD	2.26e+08	2.16e+03	1.0e+05			

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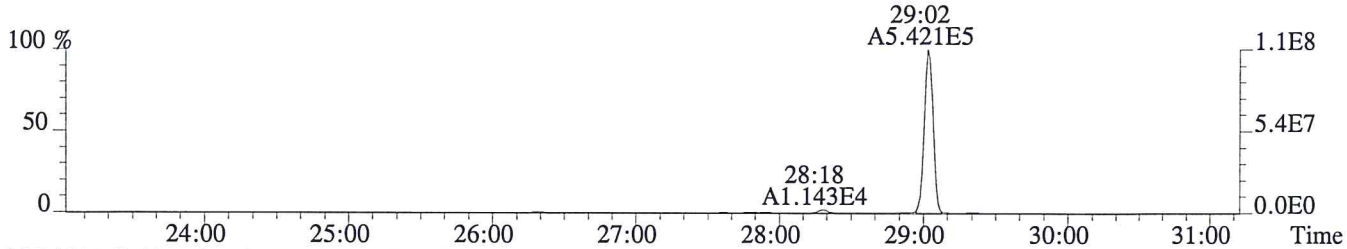
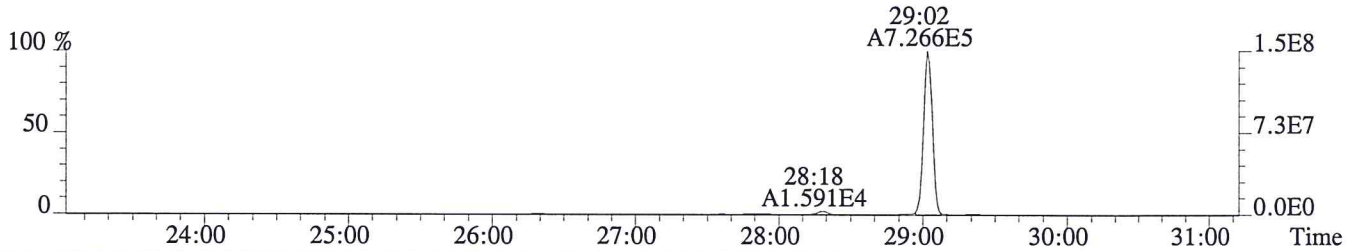
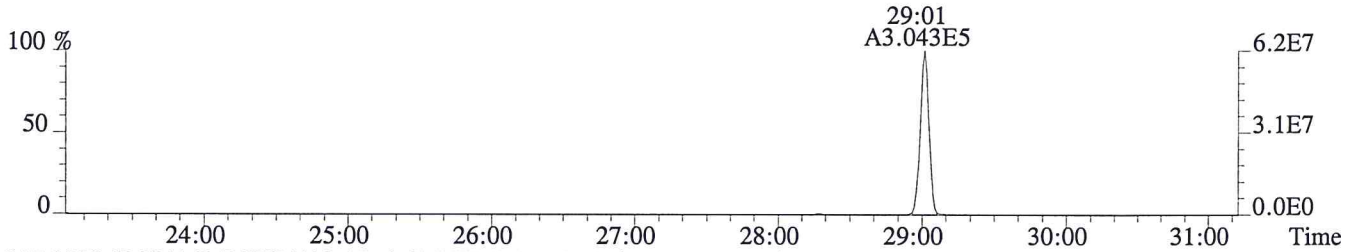
File:P500021 #1-580 Acq:30-JUN-2015 19:44:53 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC5
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1716.0,1.00%,F,T)



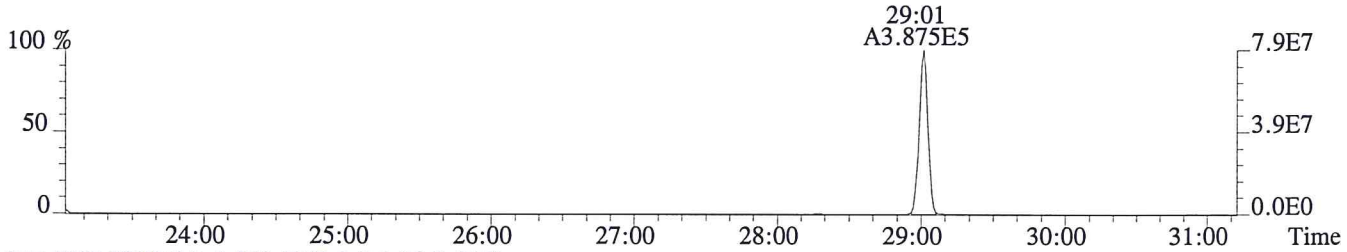
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3184.0,1.00%,F,T)



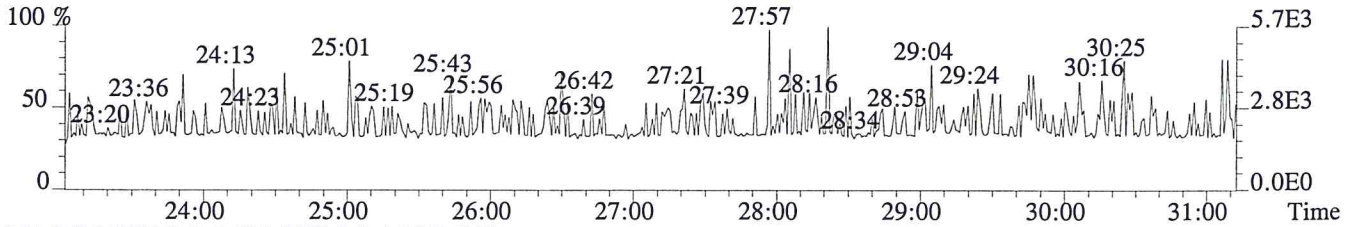
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5564.0,1.00%,F,T)



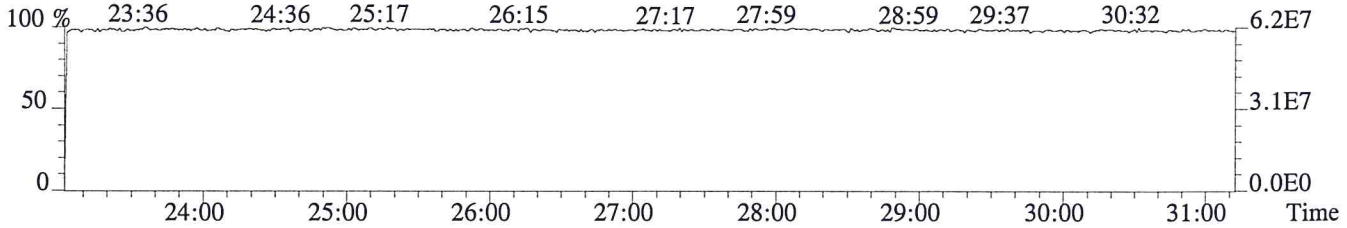
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3752.0,1.00%,F,T)



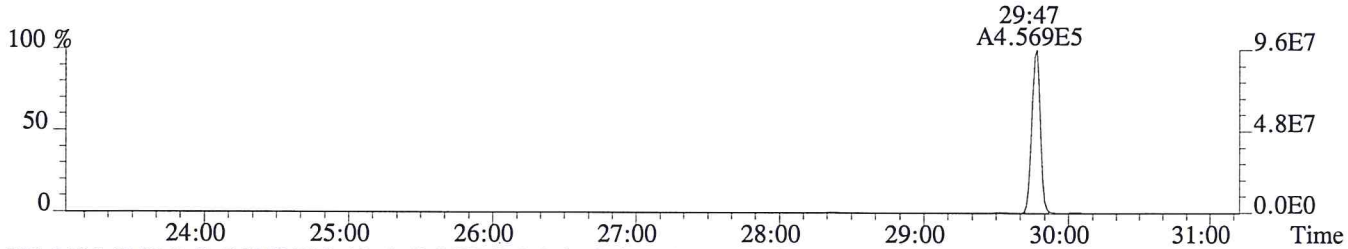
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



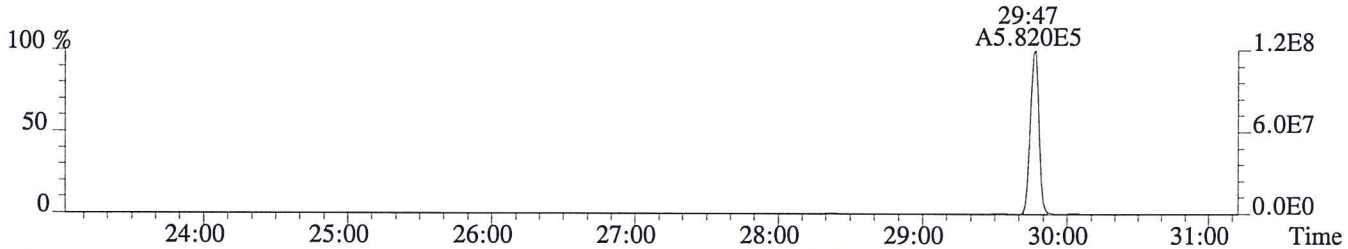
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



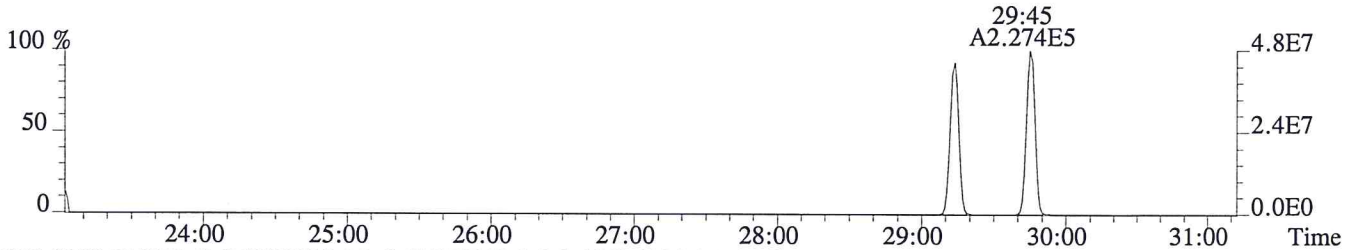
File:P500021 #1-580 Acq:30-JUN-2015 19:44:53 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC5
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2120.0,1.00%,F,T)



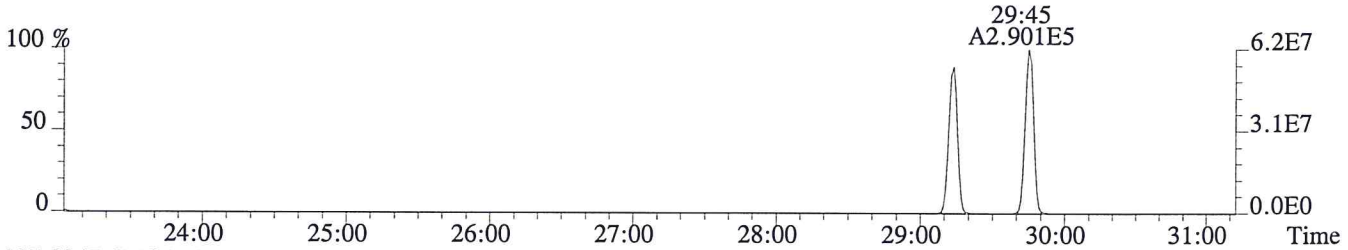
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2268.0,1.00%,F,T)



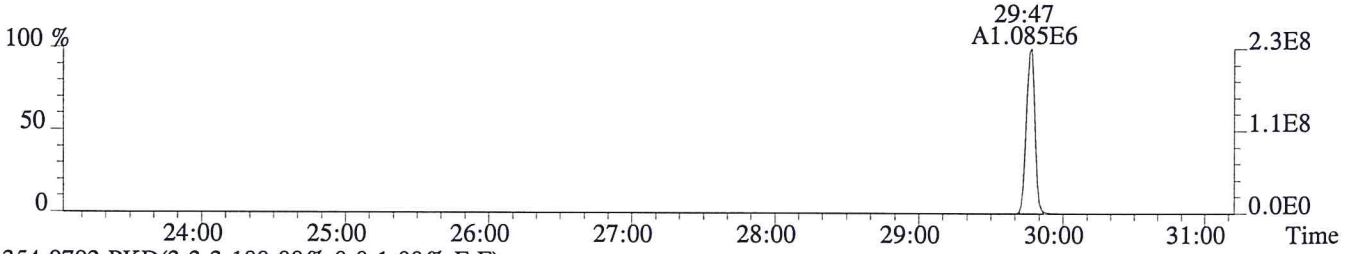
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,10040.0,1.00%,F,T)



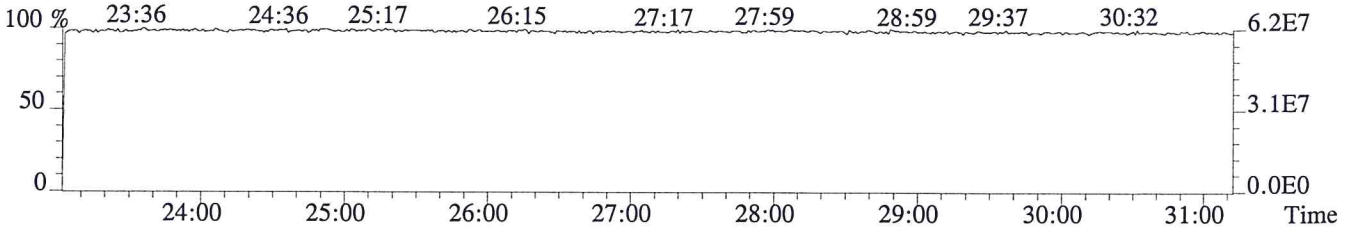
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4184.0,1.00%,F,T)



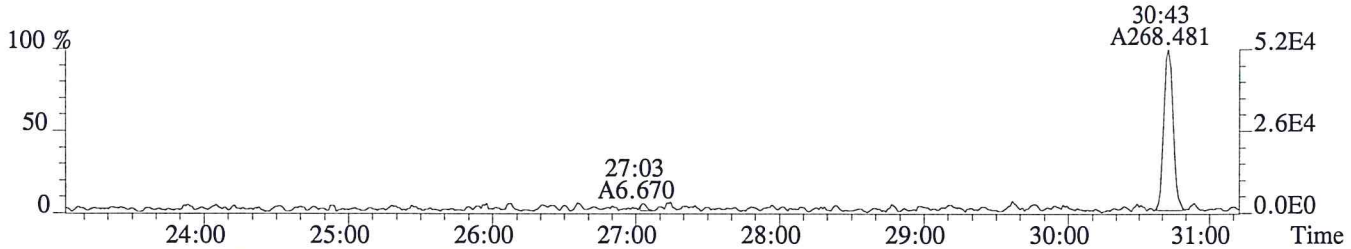
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2156.0,1.00%,F,T)



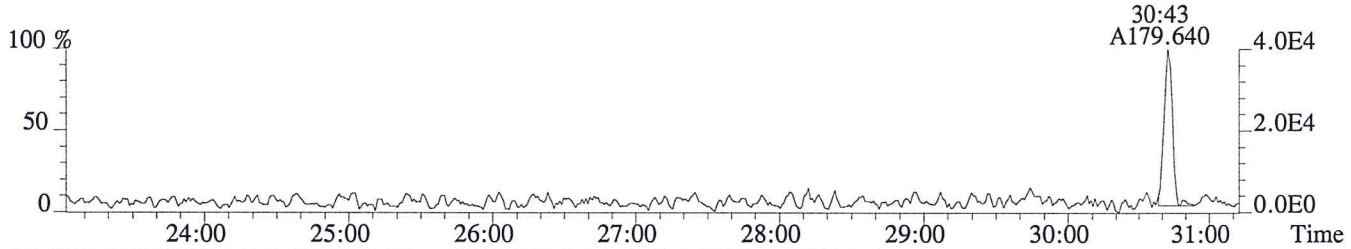
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



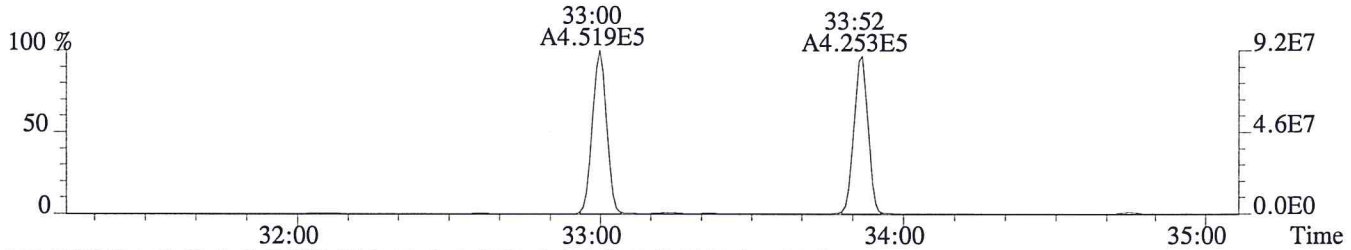
File:P500021 #1-580 Acq:30-JUN-2015 19:44:53 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC5
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1764.0,1.00%,F,T)



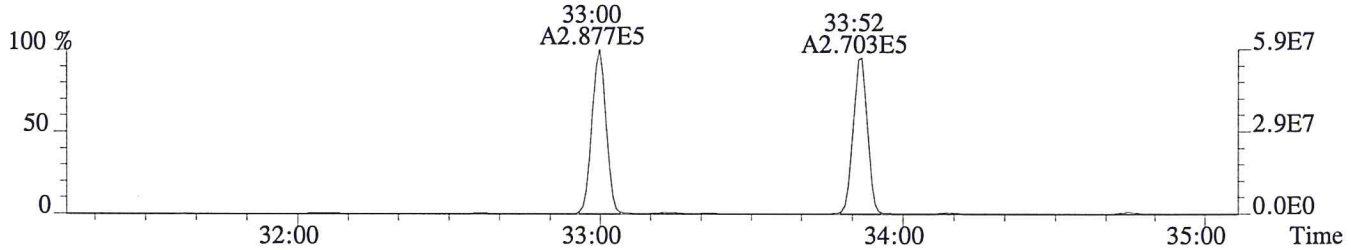
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3308.0,1.00%,F,T)



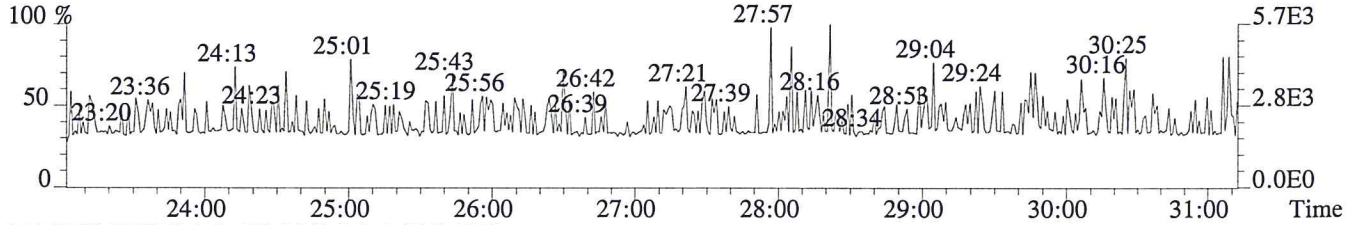
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1468.0,1.00%,F,T)



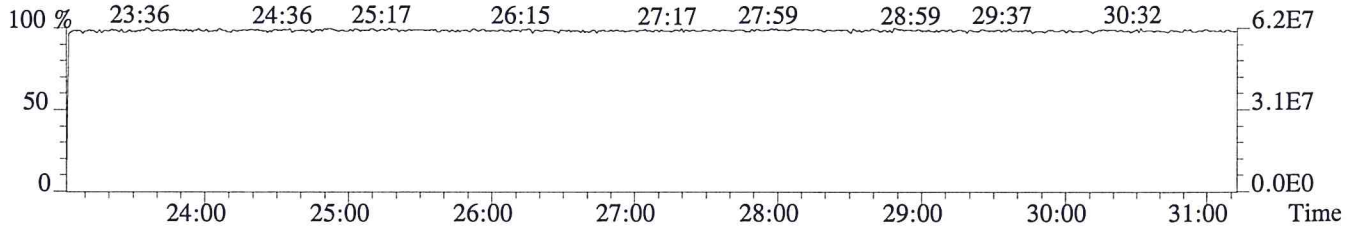
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2892.0,1.00%,F,T)



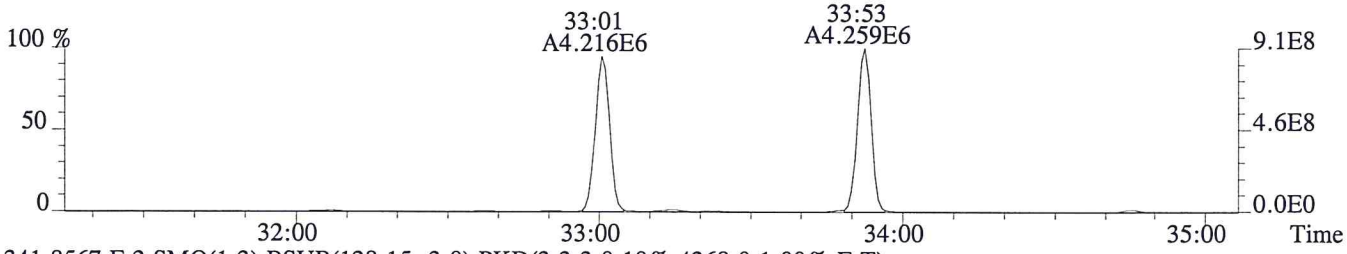
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



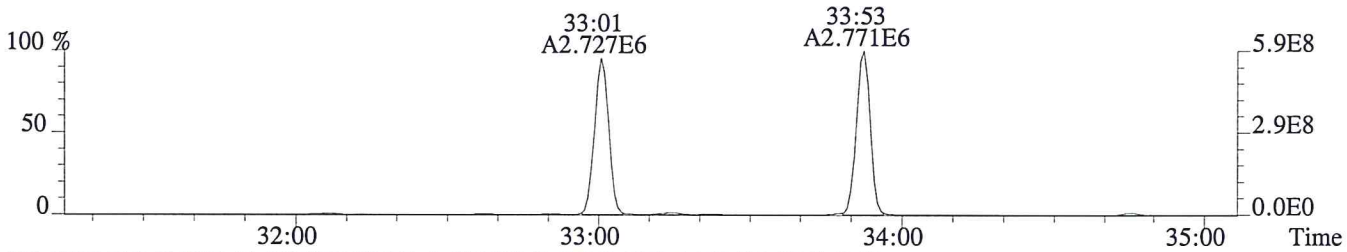
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



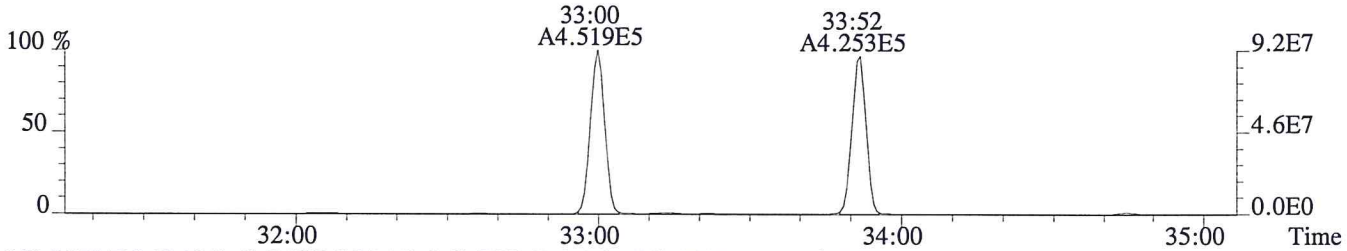
File:P500021 #1-349 Acq:30-JUN-2015 19:44:53 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC5
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5464.0,1.00%,F,T)



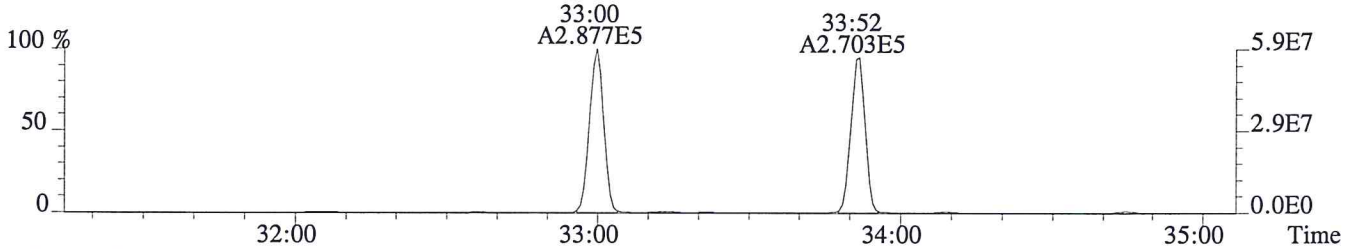
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4268.0,1.00%,F,T)



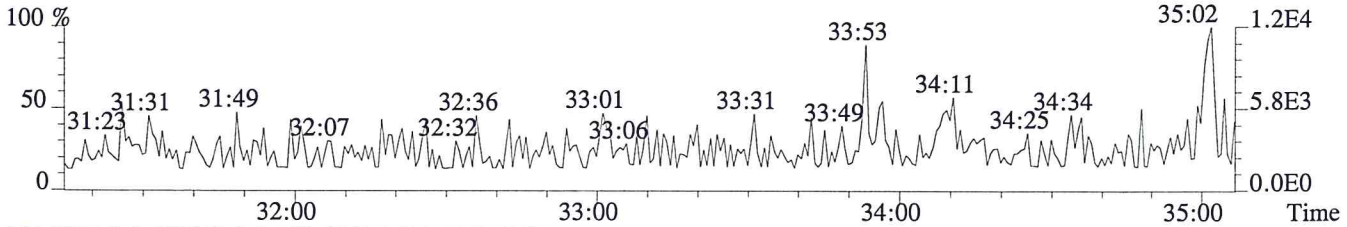
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1468.0,1.00%,F,T)



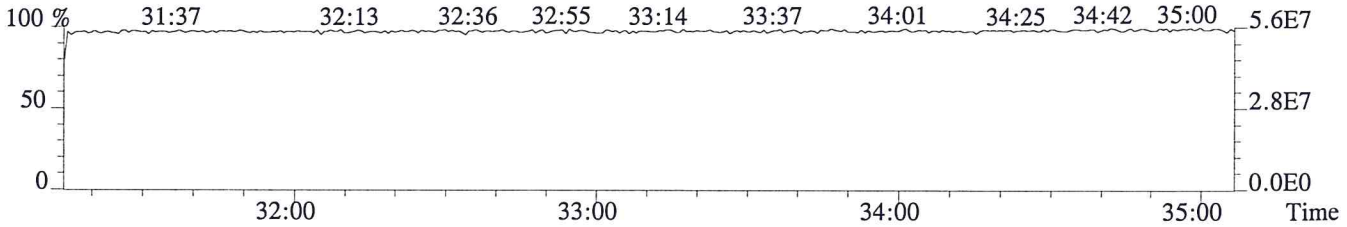
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2892.0,1.00%,F,T)



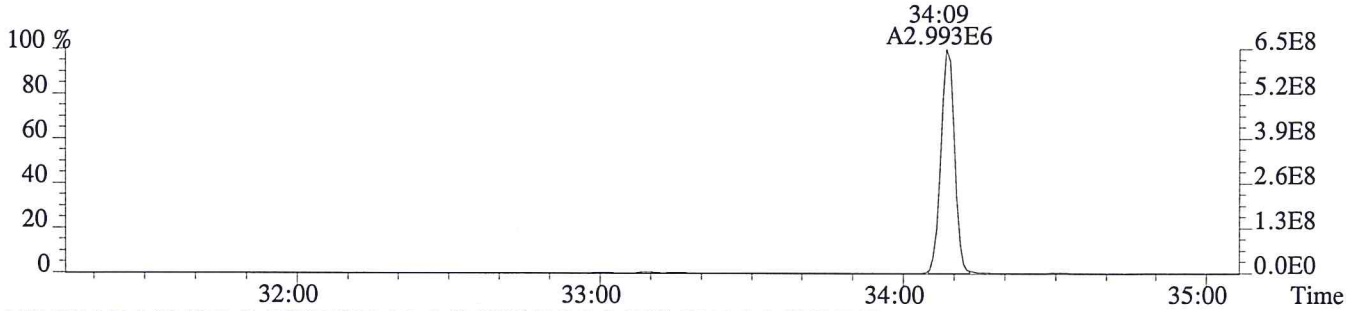
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



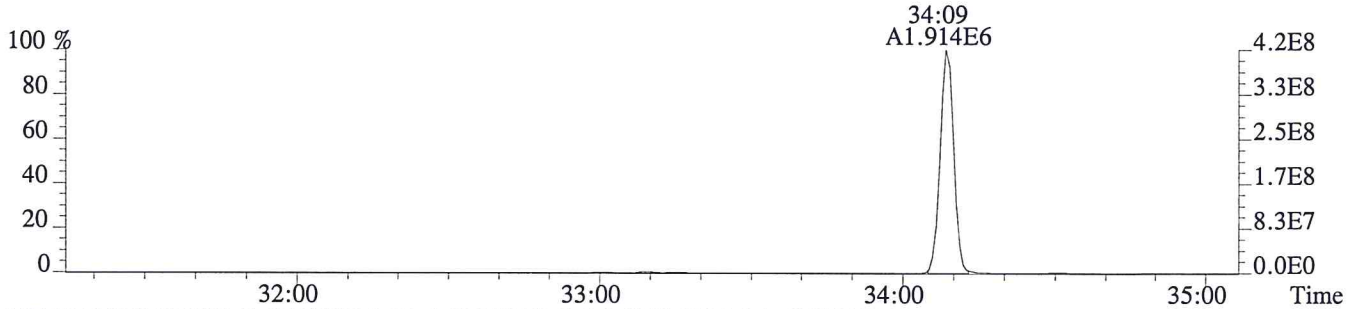
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



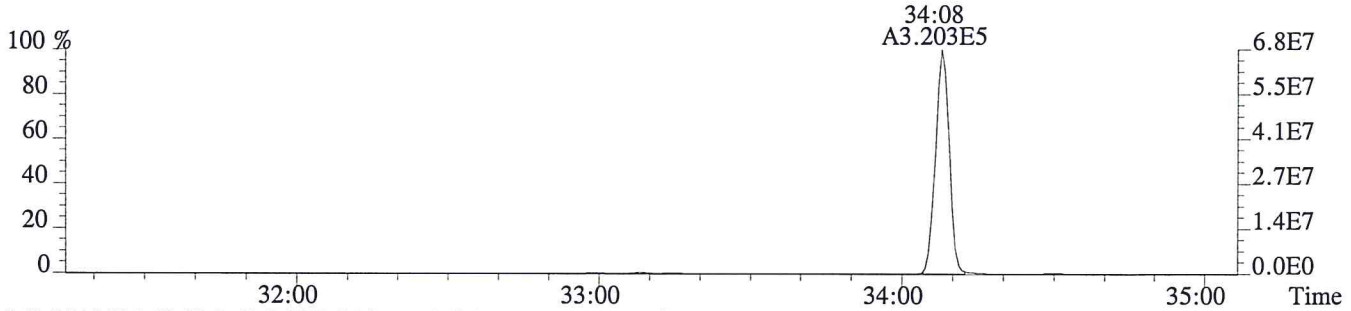
File:P500021 #1-349 Acq:30-JUN-2015 19:44:53 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC5
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3420.0,1.00%,F,T)



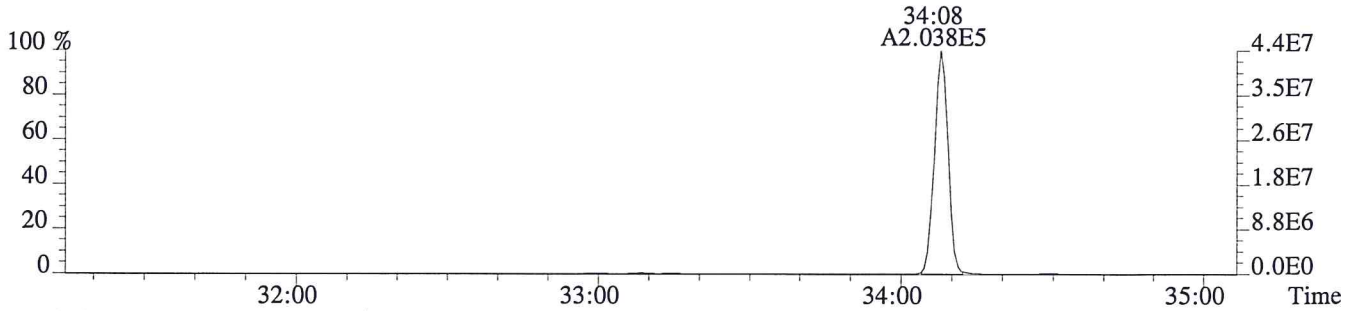
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2344.0,1.00%,F,T)



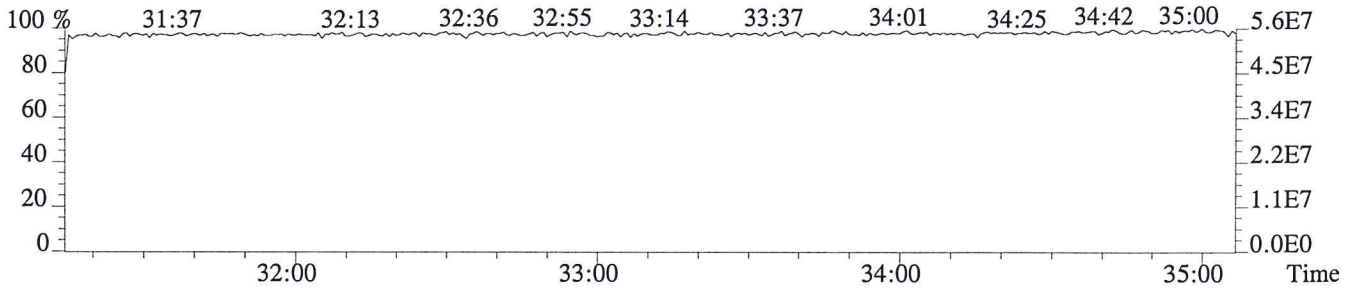
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2296.0,1.00%,F,T)



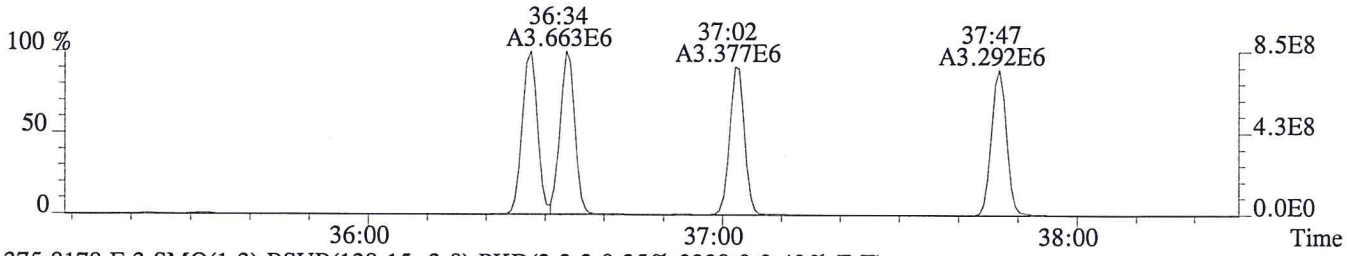
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1524.0,1.00%,F,T)



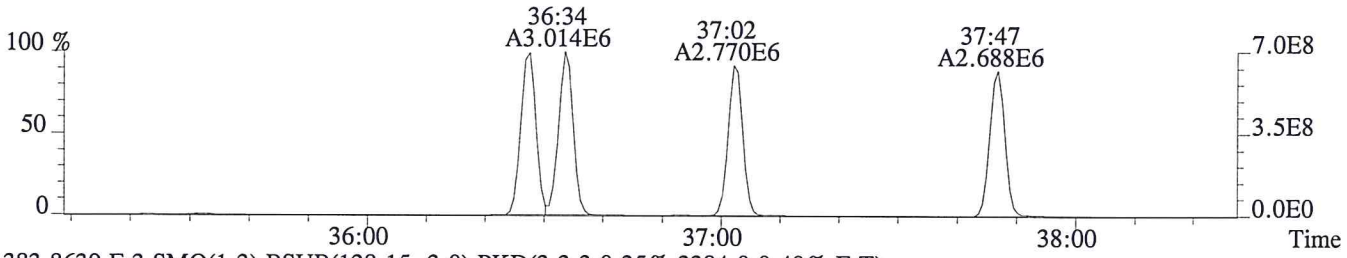
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



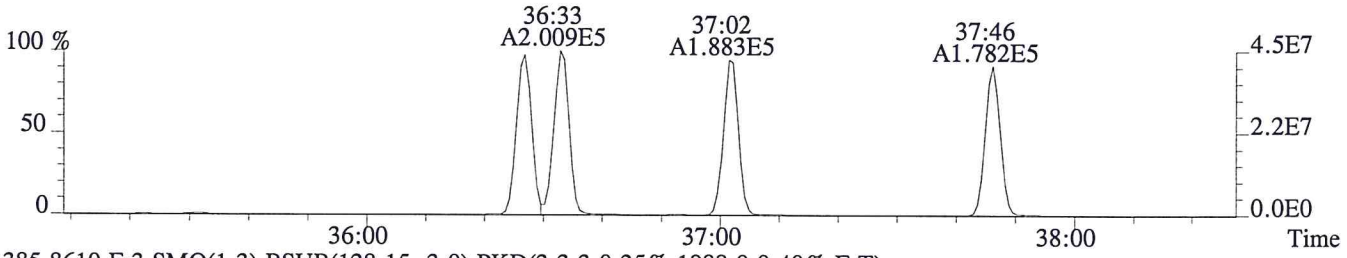
File:P500021 #1-299 Acq:30-JUN-2015 19:44:53 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC5
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1700.0,0.40%,F,T)



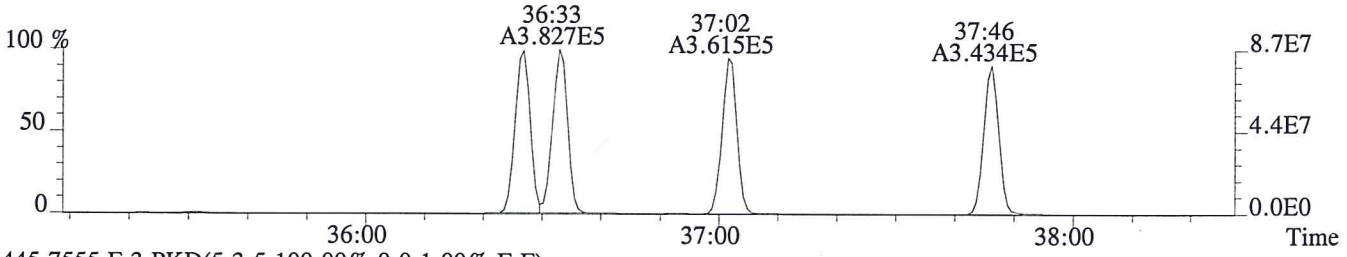
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3328.0,0.40%,F,T)



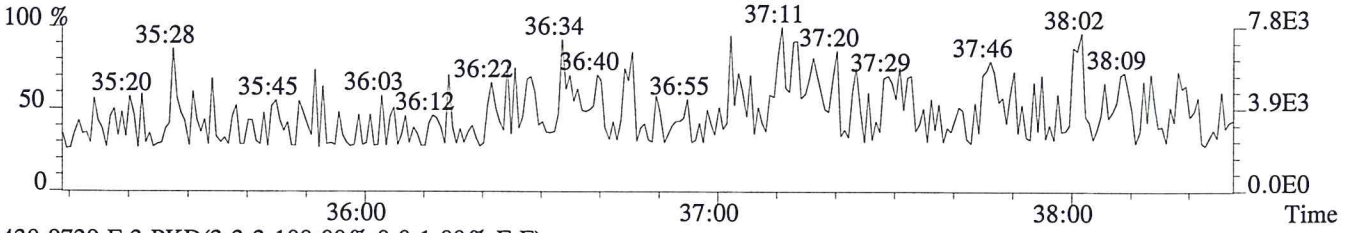
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2384.0,0.40%,F,T)



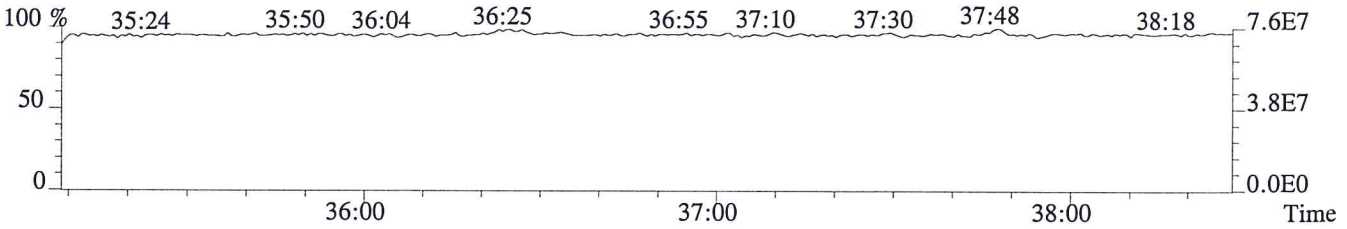
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1988.0,0.40%,F,T)



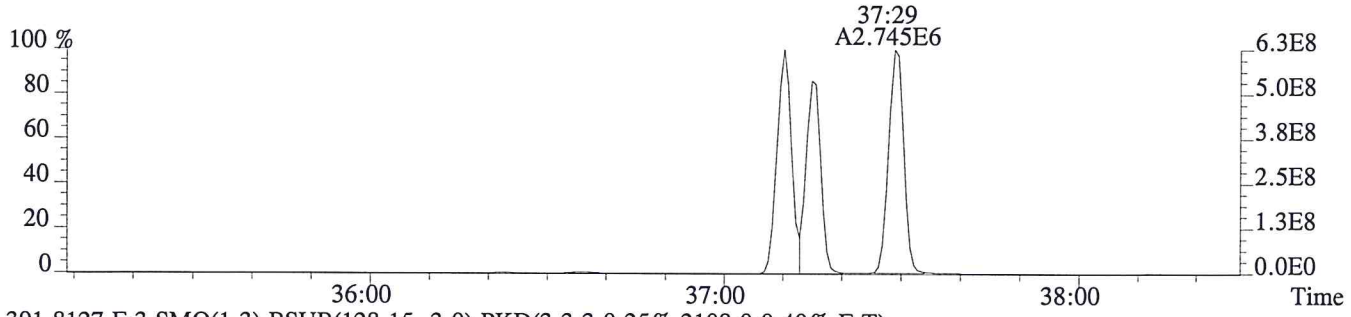
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



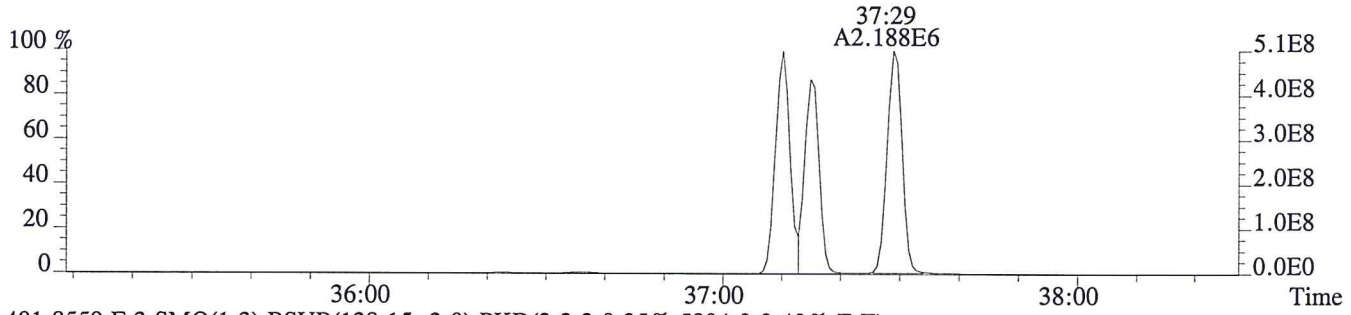
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



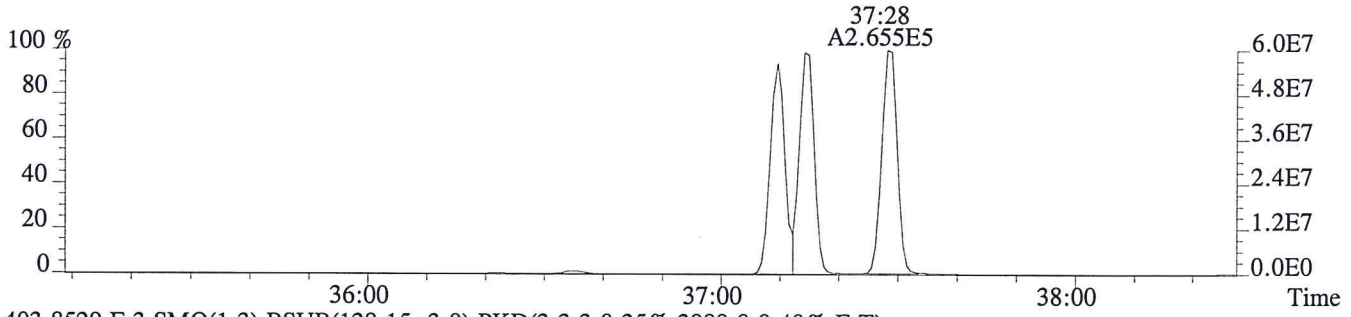
File:P500021 #1-299 Acq:30-JUN-2015 19:44:53 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC5
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1824.0,0.40%,F,T)



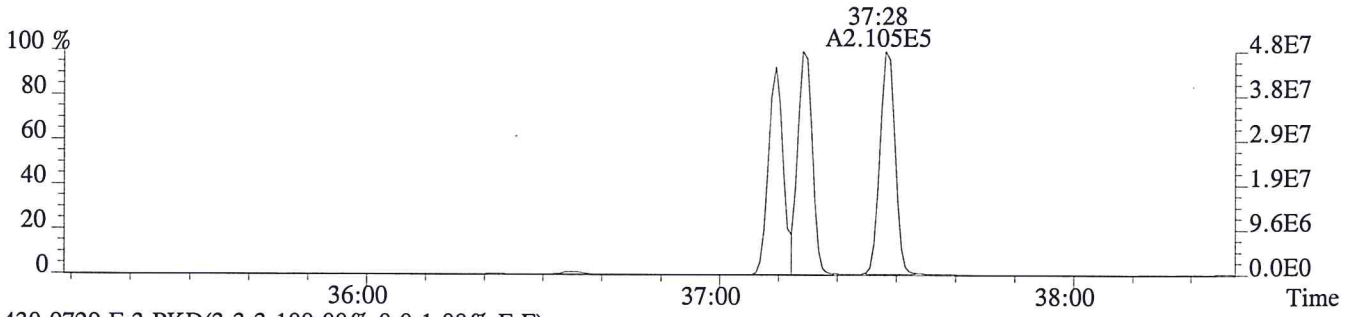
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2108.0,0.40%,F,T)



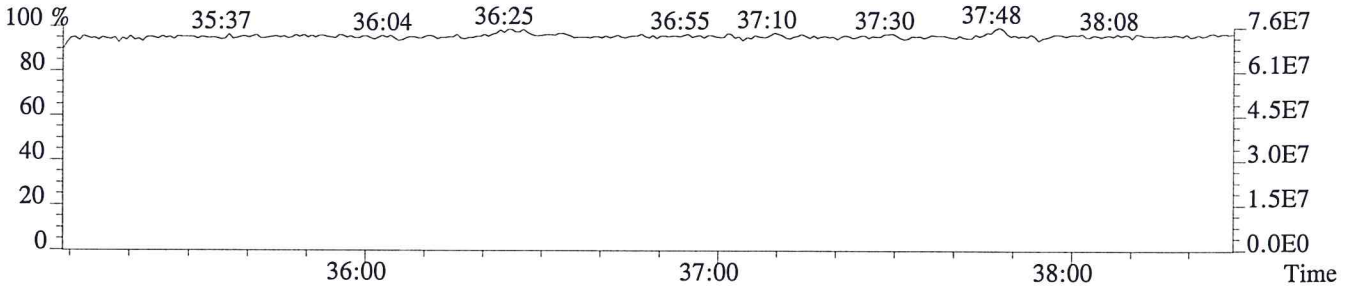
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5804.0,0.40%,F,T)



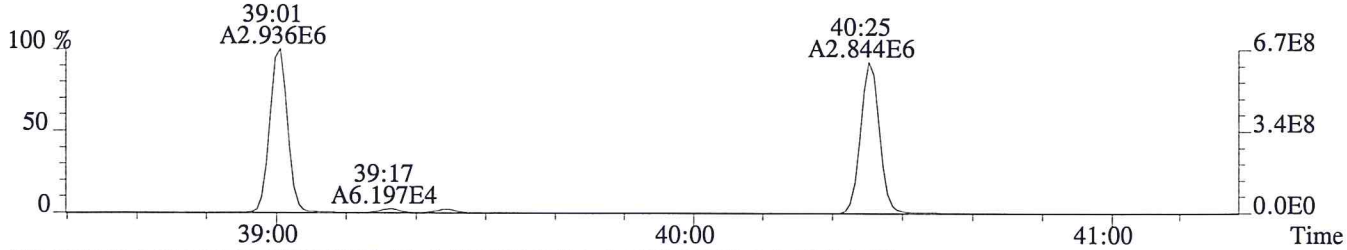
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3980.0,0.40%,F,T)



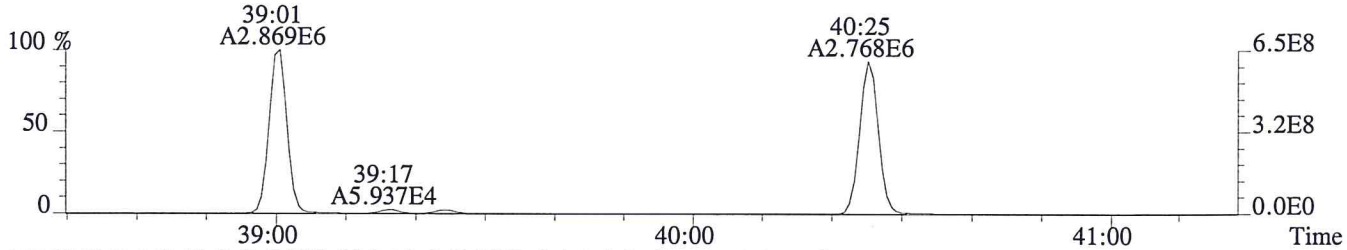
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



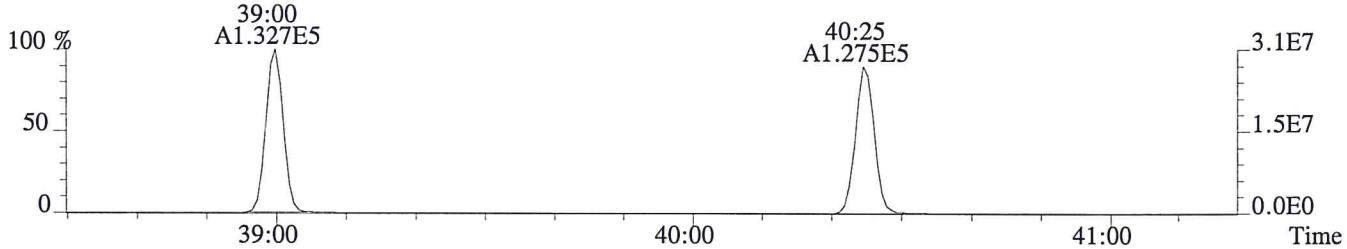
File:P500021 #1-254 Acq:30-JUN-2015 19:44:53 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC5
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,54400.0,0.50%,F,T)



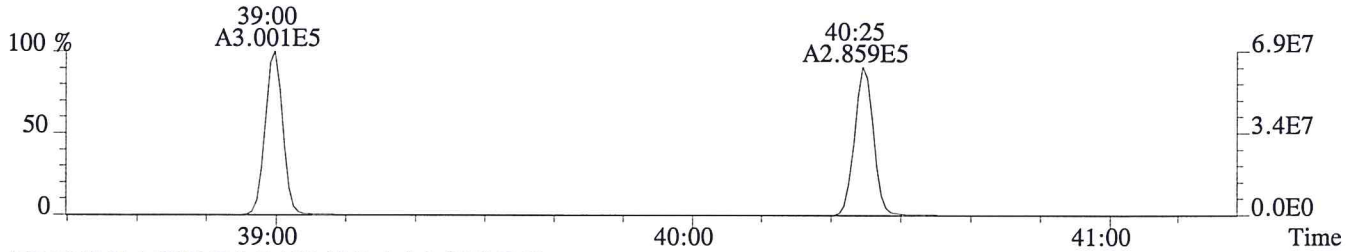
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,34740.0,0.50%,F,T)



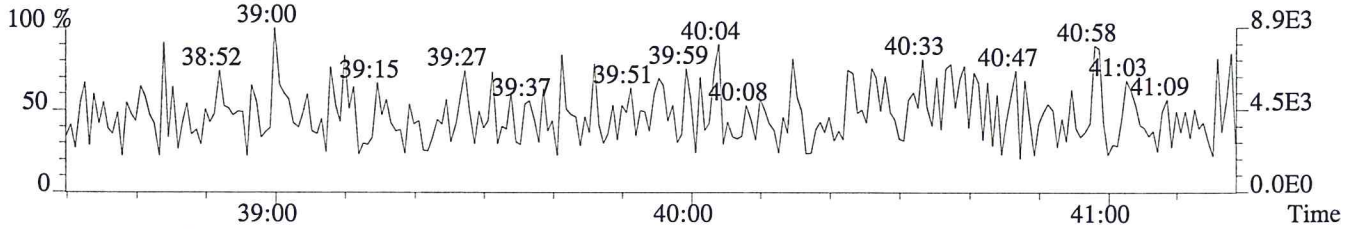
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,7824.0,0.50%,F,T)



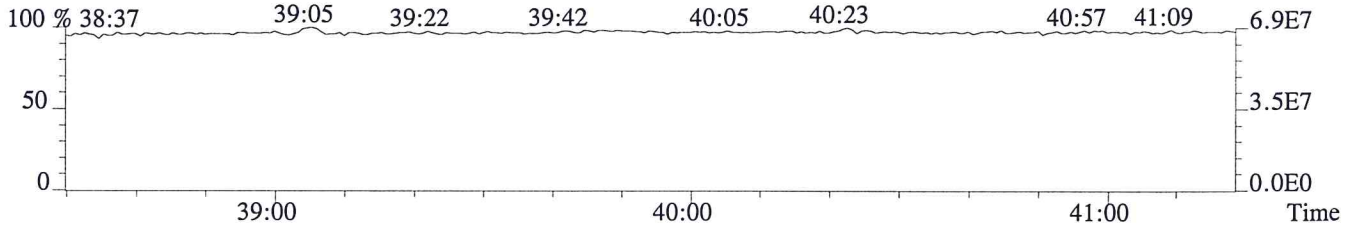
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3800.0,0.50%,F,T)



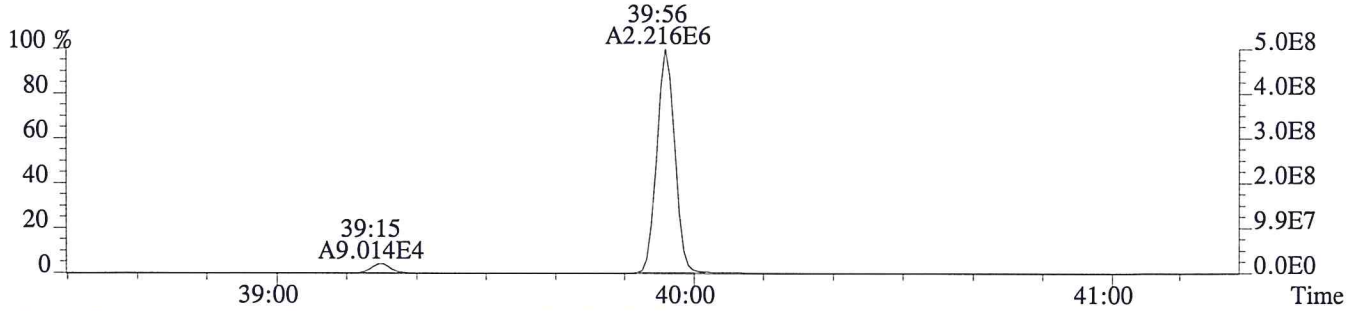
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



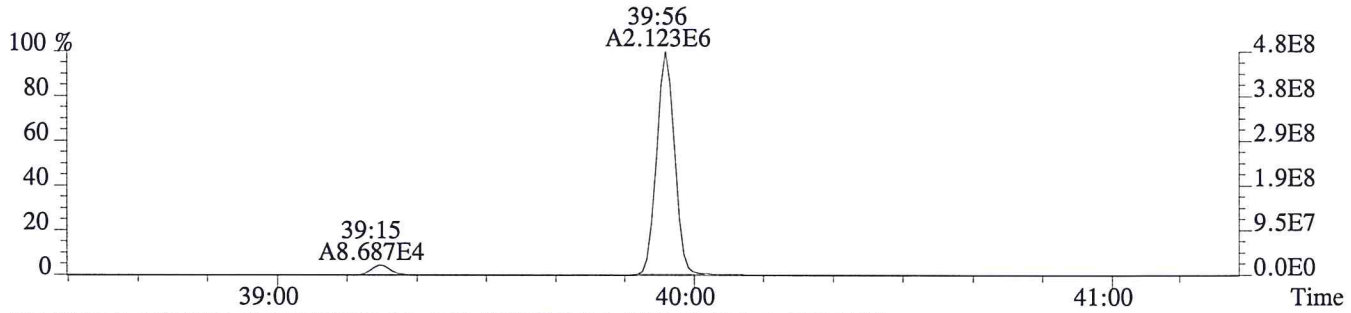
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



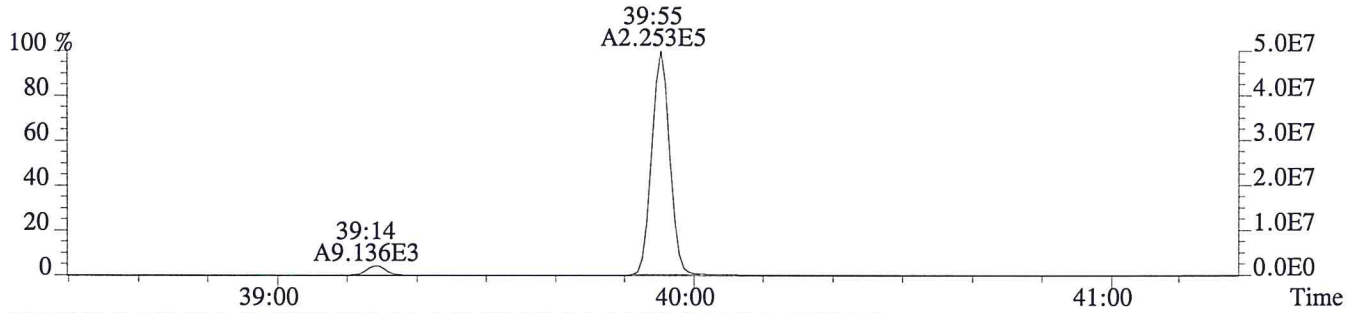
File:P500021 #1-254 Acq:30-JUN-2015 19:44:53 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC5
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5672.0,0.40%,F,T)



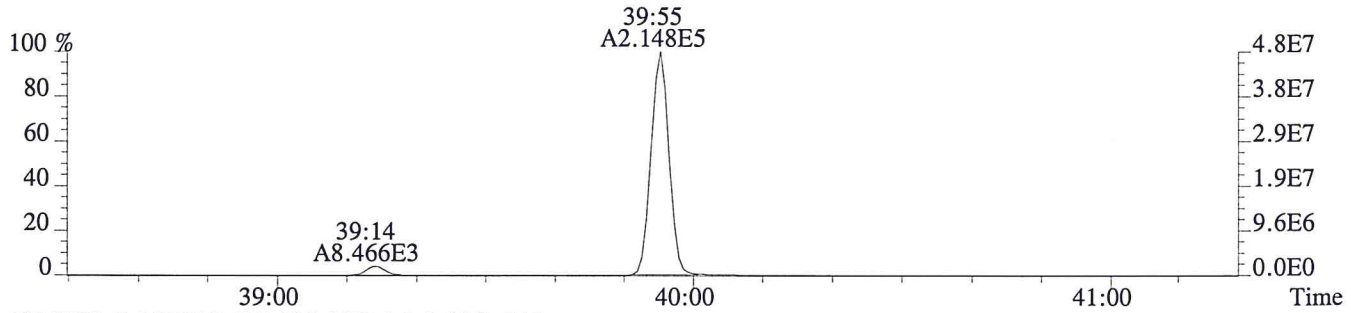
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5404.0,0.40%,F,T)



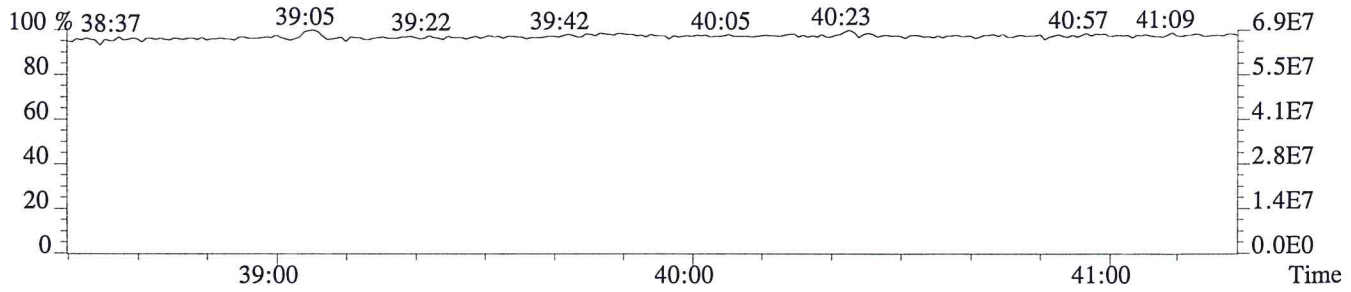
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2348.0,0.40%,F,T)



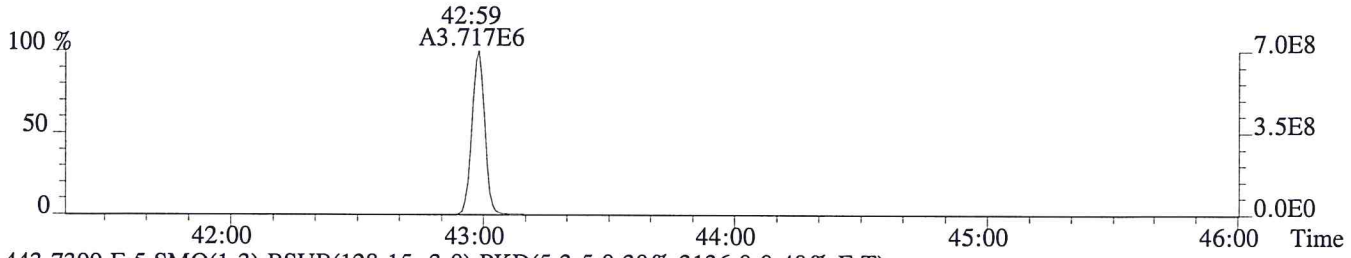
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2304.0,0.40%,F,T)



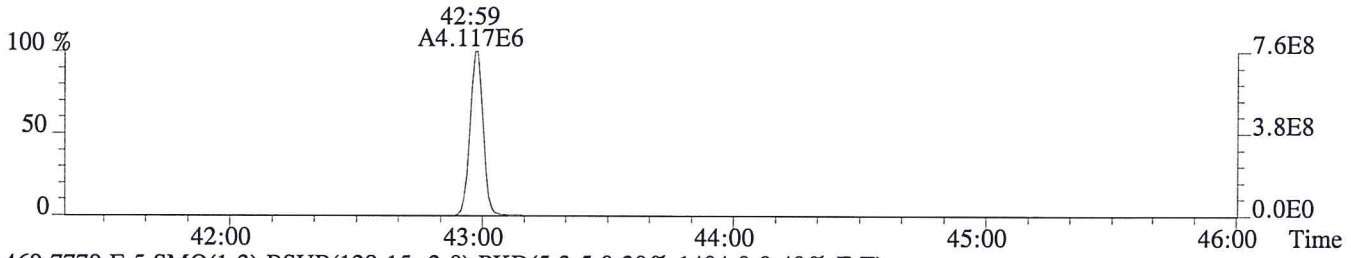
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



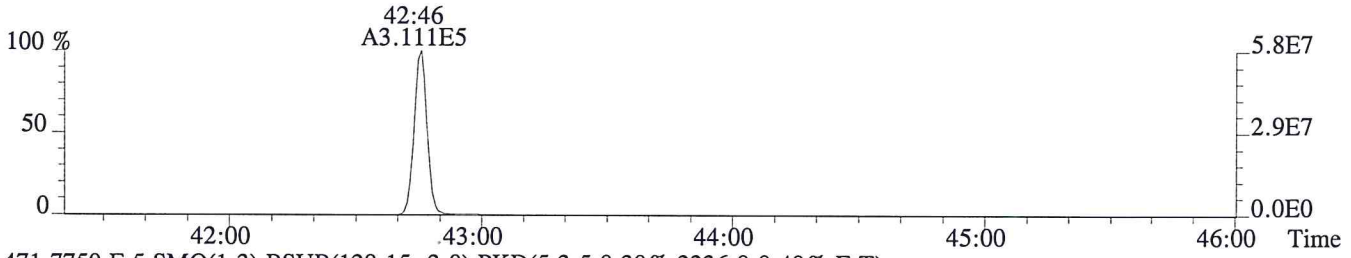
File:P500021 #1-420 Acq:30-JUN-2015 19:44:53 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC5
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1708.0,0.40%,F,T)



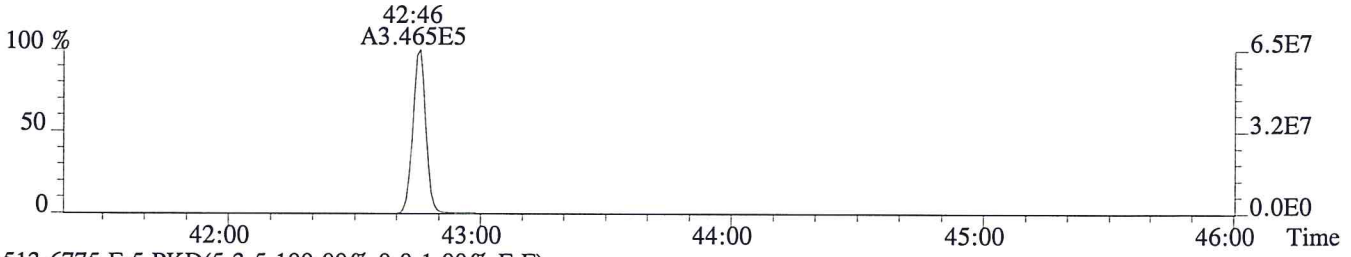
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3136.0,0.40%,F,T)



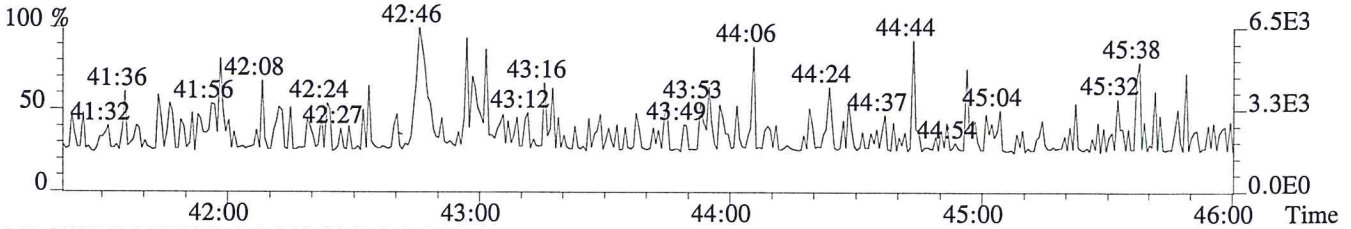
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1404.0,0.40%,F,T)



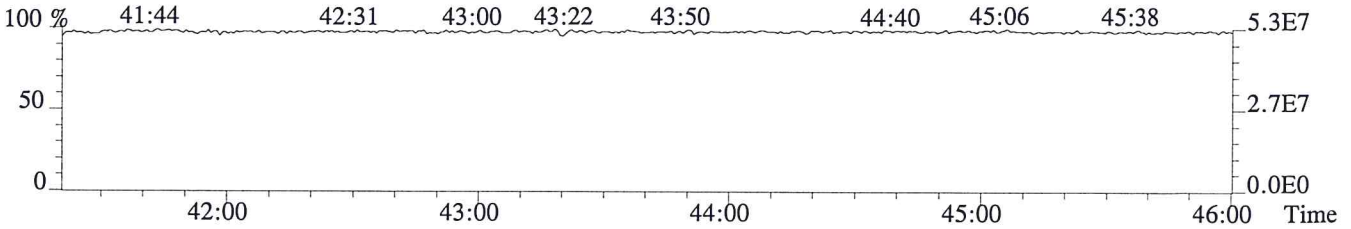
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2236.0,0.40%,F,T)



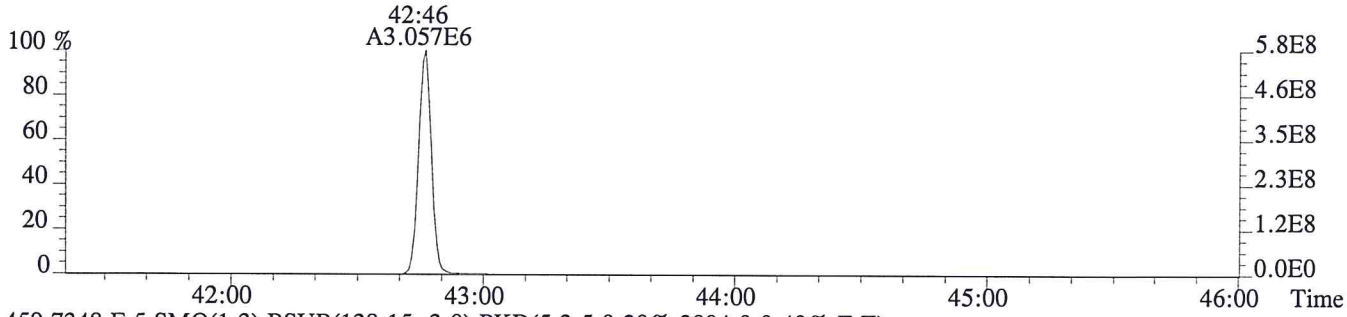
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



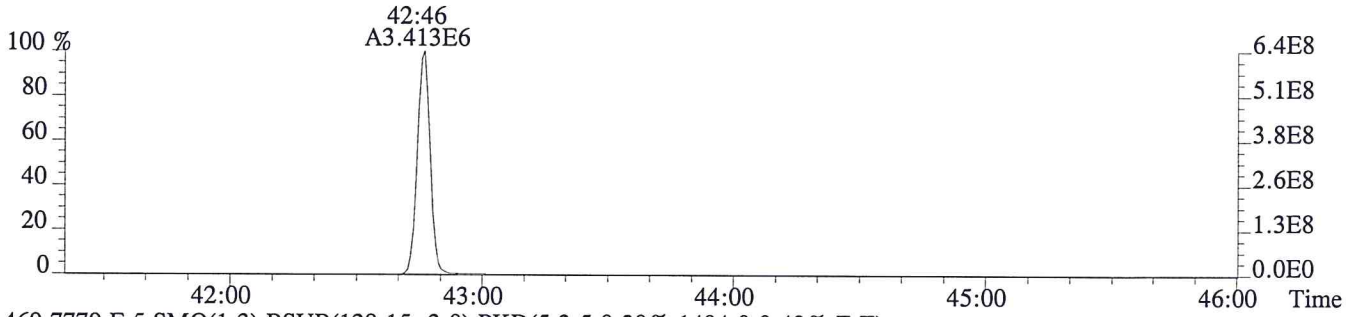
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



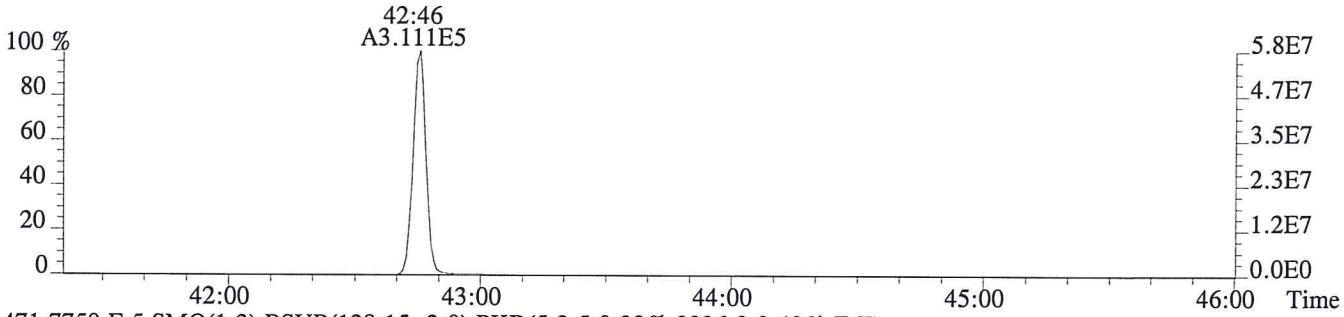
File:P500021 #1-420 Acq:30-JUN-2015 19:44:53 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:IC5
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1264.0,0.40%,F,T)



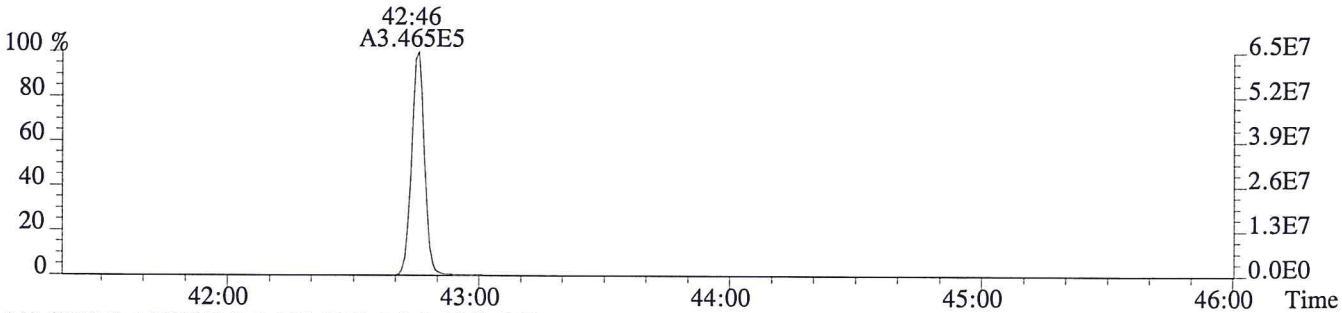
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3004.0,0.40%,F,T)



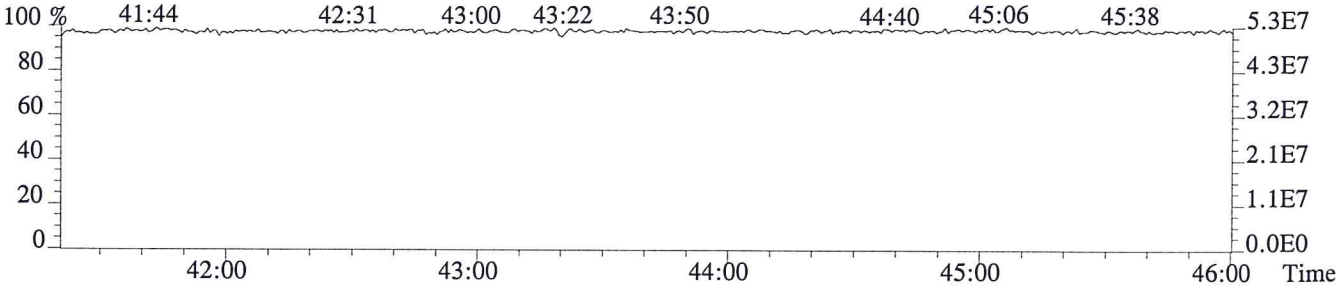
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1404.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2236.0,0.40%,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: 06/30/15

Instrument ID: E-HRMS-07 GC Column ID: DB-5MSUI

VER Data Filename: P500023 Analysis Date: 30-JUN-15 Time: 21:22:08

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	9.9	7.8 - 12.9	-0.9
1,2,3,7,8-PeCDD	M+2/M+4	1.56	1.32-1.78	50	39 - 65	0.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	49	39 - 64	-1.9
1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	52	39 - 64	3.7
1,2,3,7,8,9-HxCDD	M+2/M+4	1.25	1.05-1.43	50	41 - 61	0.6
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.03	0.88-1.20	50	43 - 58	0.5
OCDD	M+2/M+4	0.89	0.76-1.02	102	79 - 126	2.4
2,3,7,8-TCDF	M/M+2	0.74	0.65-0.89	10.1	8.4 - 12.0	1.2
1,2,3,7,8-PeCDF	M+2/M+4	1.52	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	1.22	1.05-1.43	50	45 - 56	0.6
1,2,3,6,7,8-HxCDF	M+2/M+4	1.21	1.05-1.43	50	44 - 57	-0.4
1,2,3,7,8,9-HxCDF	M+2/M+4	1.21	1.05-1.43	50	45 - 56	-0.5
2,3,4,6,7,8-HxCDF	M+2/M+4	1.20	1.05-1.43	50	44 - 57	0.7
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.02	0.88-1.20	50	45 - 55	0.2
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.01	0.88-1.20	49	43 - 58	-1.6
OCDF	M+2/M+4	0.90	0.76-1.02	104	63 - 159	3.6

(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: 06/30/15

Instrument ID: E-HRMS-07 GC Column ID: DB-5MSUI

VER Data Filename: P500023 Analysis Date: 30-JUN-15 Time: 21:22:08

	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (5)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	M/M+2	0.79	0.65-0.89	97	82 - 121	-2.7
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.56	1.32-1.78	98	62 - 160	-2.2
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	97	85 - 117	-3.0
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	99	85 - 118	-1.4
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.05	0.88-1.20	98	72 - 138	-1.9
13C-OCDD	M+2/M+4	0.90	0.76-1.02	208	96 - 415	4.1
13C-2,3,7,8-TCDF	M/M+2	0.79	0.65-0.89	99	71 - 140	-1.4
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.58	1.32-1.78	99	76 - 130	-1.4
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.57	1.32-1.78	99	77 - 130	-1.2
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.52	0.43-0.59	93	76 - 131	-6.9
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.52	0.43-0.59	97	70 - 143	-2.7
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.51	0.43-0.59	96	74 - 135	-3.6
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.52	0.43-0.59	98	73 - 137	-1.8
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.45	0.37-0.51	102	78 - 129	2.2
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				9.8	7.8 - 12.7	-1.9

(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 beginnning 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.
CS3

Run #7 Filename P500023 Samp: 1 Inj: 1 Acquired: 30-JUN-15 21:22:08
Processed: 9-JUL-15 13:10:40 Sample ID: CS3

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	29:02	3.446e+04	4.640e+04	0.74	yes	no	0.886
2	Unk	1,2,3,7,8-PeCDF	33:01	2.816e+05	1.855e+05	1.52	yes	no	0.983
3	Unk	2,3,4,7,8-PeCDF	33:52	2.584e+05	1.704e+05	1.52	yes	no	0.952
4	Unk	1,2,3,4,7,8-HxCDF	36:27	2.303e+05	1.886e+05	1.22	yes	no	1.190
5	Unk	1,2,3,6,7,8-HxCDF	36:34	2.322e+05	1.924e+05	1.21	yes	no	1.114
6	Unk	2,3,4,6,7,8-HxCDF	37:02	2.146e+05	1.786e+05	1.20	yes	no	1.109
7	Unk	1,2,3,7,8,9-HxCDF	37:47	2.046e+05	1.688e+05	1.21	yes	no	1.153
8	Unk	1,2,3,4,6,7,8-HpCDF	39:00	1.942e+05	1.900e+05	1.02	yes	no	1.376
9	Unk	1,2,3,4,7,8,9-HpCDF	40:25	1.771e+05	1.749e+05	1.01	yes	no	1.306
10	Unk	OCDF	42:58	2.539e+05	2.833e+05	0.90	yes	no	1.263
11	Unk	2,3,7,8-TCDD	29:46	2.750e+04	3.496e+04	0.79	yes	no	0.997
12	Unk	1,2,3,7,8-PeCDD	34:09	1.873e+05	1.202e+05	1.56	yes	no	0.935
13	Unk	1,2,3,4,7,8-HxCDD	37:10	1.550e+05	1.247e+05	1.24	yes	no	1.039
14	Unk	1,2,3,6,7,8-HxCDD	37:15	1.589e+05	1.262e+05	1.26	yes	no	0.996
15	Unk	1,2,3,7,8,9-HxCDD	37:29	1.707e+05	1.362e+05	1.25	yes	no	1.108
16	Unk	1,2,3,4,6,7,8-HpCDD	39:56	1.430e+05	1.391e+05	1.03	yes	no	1.010
17	Unk	OCDD	42:46	2.159e+05	2.426e+05	0.89	yes	no	1.090
18	IS	13C-2,3,7,8-TCDF	29:00	3.966e+05	5.051e+05	0.79	yes	no	1.447
19	IS	13C-1,2,3,7,8-PeCDF	33:00	5.725e+05	3.632e+05	1.58	yes	no	1.500
20	IS	13C-2,3,4,7,8-PeCDF	33:51	5.552e+05	3.544e+05	1.57	yes	no	1.456
21	IS	13C-1,2,3,4,7,8-HxCDF	36:26	2.385e+05	4.612e+05	0.52	yes	no	1.207
22	IS	13C-1,2,3,6,7,8-HxCDF	36:33	2.615e+05	5.037e+05	0.52	yes	no	1.263
23	IS	13C-2,3,4,6,7,8-HxCDF	37:02	2.425e+05	4.622e+05	0.52	yes	no	1.153
24	IS	13C-1,2,3,7,8,9-HxCDF	37:46	2.206e+05	4.309e+05	0.51	yes	no	1.085
25	IS	13C-1,2,3,4,6,7,8-HpCDF	39:00	1.722e+05	3.850e+05	0.45	yes	no	0.876
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:25	1.687e+05	3.795e+05	0.44	yes	no	0.883
27	IS	13C-2,3,7,8-TCDD	29:45	2.788e+05	3.529e+05	0.79	yes	no	1.027
28	IS	13C-1,2,3,7,8-PeCDD	34:08	4.009e+05	2.568e+05	1.56	yes	no	1.064
29	IS	13C-1,2,3,4,7,8-HxCDD	37:10	3.058e+05	2.426e+05	1.26	yes	no	0.908
30	IS	13C-1,2,3,6,7,8-HxCDD	37:14	3.095e+05	2.428e+05	1.27	yes	no	0.899
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:55	2.853e+05	2.707e+05	1.05	yes	no	0.910
32	IS	13C-OCDD	42:45	3.884e+05	4.325e+05	0.90	yes	no	0.633
33	RS/RT	13C-1,2,3,4-TCDD	29:13	2.793e+05	3.529e+05	0.79	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:28	3.483e+05	2.744e+05	1.27	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:46	6.615e+04				no	1.066

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
CS3

Run #7 Filename P500023 Samp: 1 Inj: 1 Acquired: 30-JUN-15 21:22:08
Processed: 9-JUL-15 13:10:40 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	6.90e+06	2.13e+03	3.2e+03	9.21e+06	2.47e+03	3.7e+03
2	1,2,3,7,8-PeCDF	5.66e+07	2.24e+03	2.5e+04	3.72e+07	5.24e+03	7.1e+03
3	2,3,4,7,8-PeCDF	5.27e+07	2.24e+03	2.3e+04	3.53e+07	5.24e+03	6.7e+03
4	1,2,3,4,7,8-HxCDF	5.14e+07	1.45e+03	3.5e+04	4.24e+07	1.71e+03	2.5e+04
5	1,2,3,6,7,8-HxCDF	5.20e+07	1.45e+03	3.6e+04	4.35e+07	1.71e+03	2.5e+04
6	2,3,4,6,7,8-HxCDF	4.97e+07	1.45e+03	3.4e+04	4.15e+07	1.71e+03	2.4e+04
7	1,2,3,7,8,9-HxCDF	4.48e+07	1.45e+03	3.1e+04	3.69e+07	1.71e+03	2.2e+04
8	1,2,3,4,6,7,8-HpCDF	4.28e+07	1.18e+04	3.6e+03	4.24e+07	6.04e+03	7.0e+03
9	1,2,3,4,7,8,9-HpCDF	3.79e+07	1.18e+04	3.2e+03	3.72e+07	6.04e+03	6.2e+03
10	OCDF	4.66e+07	2.36e+03	2.0e+04	5.23e+07	3.61e+03	1.5e+04
11	2,3,7,8-TCDD	5.71e+06	1.62e+03	3.5e+03	7.35e+06	2.52e+03	2.9e+03
12	1,2,3,7,8-PeCDD	4.00e+07	4.44e+03	9.0e+03	2.57e+07	1.78e+03	1.4e+04
13	1,2,3,4,7,8-HxCDD	3.69e+07	1.47e+03	2.5e+04	2.96e+07	2.33e+03	1.3e+04
14	1,2,3,6,7,8-HxCDD	3.58e+07	1.47e+03	2.4e+04	2.87e+07	2.33e+03	1.2e+04
15	1,2,3,7,8,9-HxCDD	3.91e+07	1.47e+03	2.7e+04	3.15e+07	2.33e+03	1.4e+04
16	1,2,3,4,6,7,8-HpCDD	3.15e+07	1.98e+03	1.6e+04	3.04e+07	1.12e+03	2.7e+04
17	OCDD	4.06e+07	1.99e+03	2.0e+04	4.59e+07	3.27e+03	1.4e+04
18	13C-2,3,7,8-TCDF	7.79e+07	5.59e+03	1.4e+04	9.93e+07	3.66e+03	2.7e+04
19	13C-1,2,3,7,8-PeCDF	1.12e+08	1.08e+03	1.0e+05	7.09e+07	2.38e+03	3.0e+04
20	13C-2,3,4,7,8-PeCDF	1.16e+08	1.08e+03	1.1e+05	7.43e+07	2.38e+03	3.1e+04
21	13C-1,2,3,4,7,8-HxCDF	5.34e+07	1.48e+03	3.6e+04	1.04e+08	3.37e+03	3.1e+04
22	13C-1,2,3,6,7,8-HxCDF	5.88e+07	1.48e+03	4.0e+04	1.14e+08	3.37e+03	3.4e+04
23	13C-2,3,4,6,7,8-HxCDF	5.61e+07	1.48e+03	3.8e+04	1.07e+08	3.37e+03	3.2e+04
24	13C-1,2,3,7,8,9-HxCDF	4.87e+07	1.48e+03	3.3e+04	9.37e+07	3.37e+03	2.8e+04
25	13C-1,2,3,4,6,7,8-HpCDF	3.84e+07	7.67e+03	5.0e+03	8.48e+07	8.98e+03	9.4e+03
26	13C-1,2,3,4,7,8,9-HpCDF	3.63e+07	7.67e+03	4.7e+03	8.15e+07	8.98e+03	9.1e+03
27	13C-2,3,7,8-TCDD	5.79e+07	8.93e+03	6.5e+03	7.30e+07	4.89e+03	1.5e+04
28	13C-1,2,3,7,8-PeCDD	8.44e+07	2.72e+03	3.1e+04	5.37e+07	1.56e+03	3.5e+04
29	13C-1,2,3,4,7,8-HxCDD	7.24e+07	5.30e+03	1.4e+04	5.68e+07	2.81e+03	2.0e+04
30	13C-1,2,3,6,7,8-HxCDD	6.95e+07	5.30e+03	1.3e+04	5.47e+07	2.81e+03	1.9e+04
31	13C-1,2,3,4,6,7,8-HpCDD	6.20e+07	2.42e+03	2.6e+04	5.85e+07	8.44e+02	6.9e+04
32	13C-OCDD	7.22e+07	9.40e+02	7.7e+04	8.08e+07	1.53e+03	5.3e+04
33	13C-1,2,3,4-TCDD	5.54e+07	8.93e+03	6.2e+03	7.07e+07	4.89e+03	1.4e+04
34	13C-1,2,3,7,8,9-HxCDD	7.98e+07	5.30e+03	1.5e+04	6.32e+07	2.81e+03	2.3e+04
35	37Cl-2,3,7,8-TCDD	1.38e+07	2.12e+03	6.5e+03			

---Sample Calculation---

$$\text{D/L TCDD} = \frac{2.5 \times (1.616e{+}03 + 2.524e{+}03\ ) \times 100}{(5.786e{+}07 + 7.303e{+}07\ ) \times (\qquad\qquad\qquad\qquad) \times 0.997} =$$

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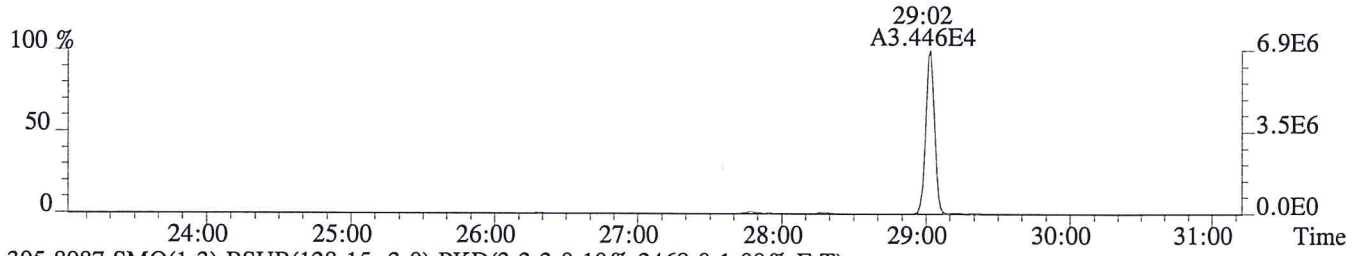
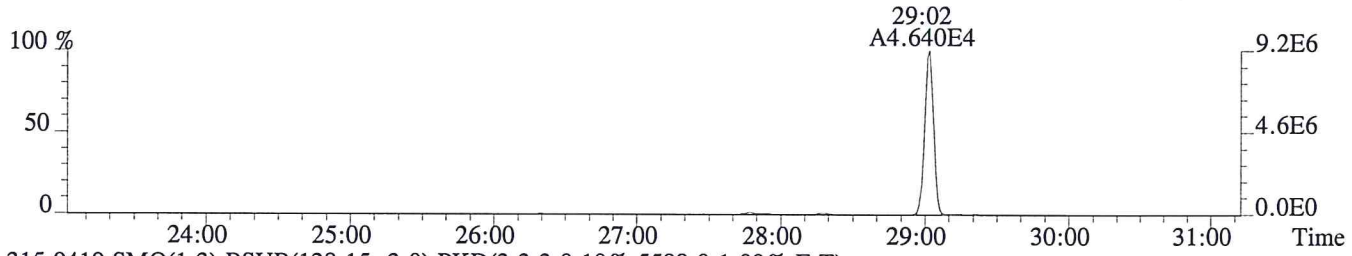
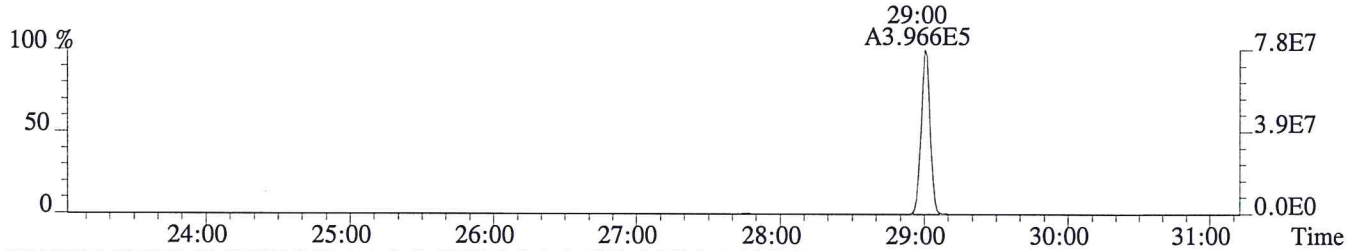
File:P500023 #1-580 Acq:30-JUN-2015 21:22:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3 2ND SOURCE
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2128.0,1.00%,F,T)



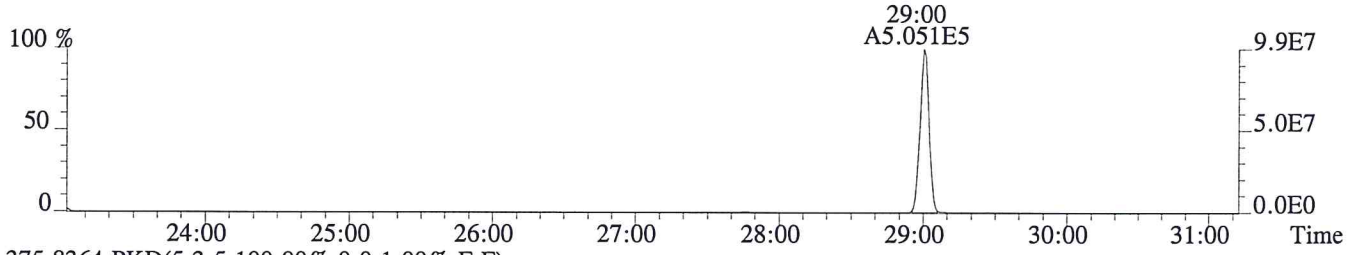
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2468.0,1.00%,F,T)



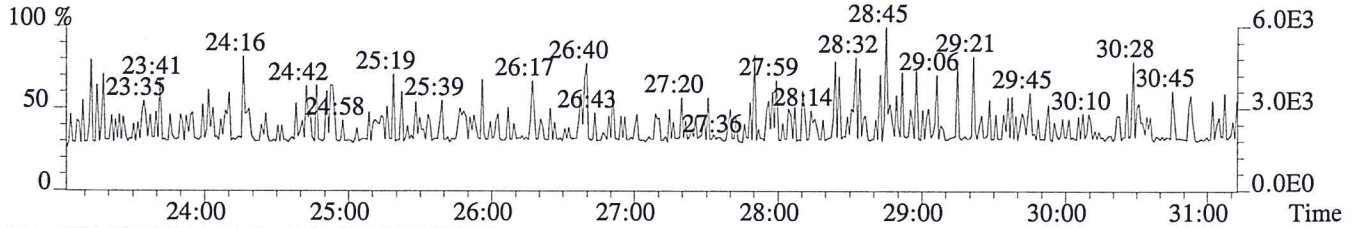
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5588.0,1.00%,F,T)



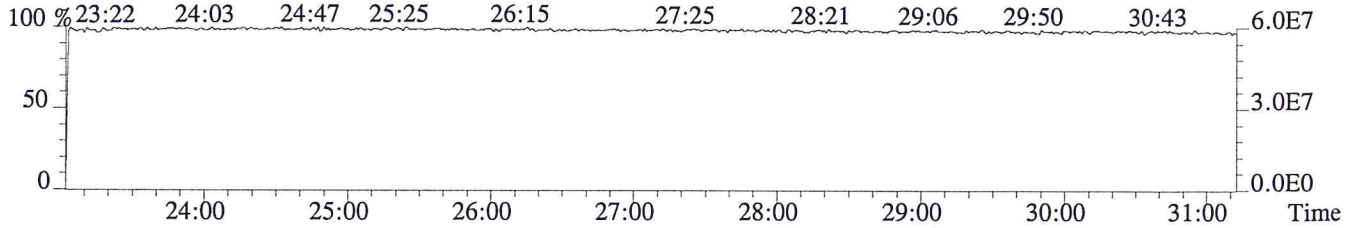
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3660.0,1.00%,F,T)



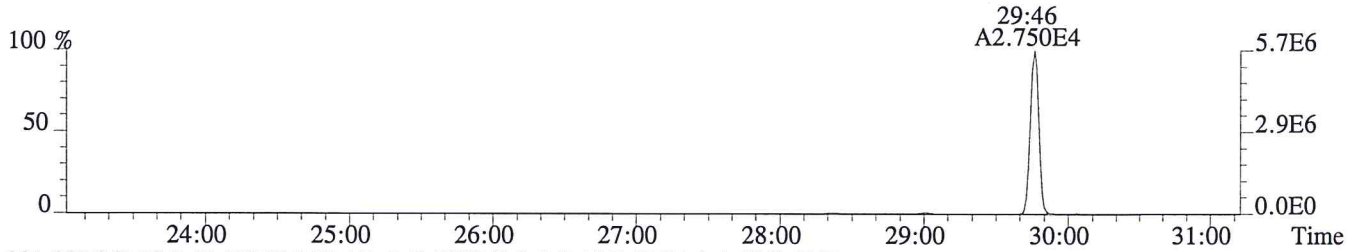
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



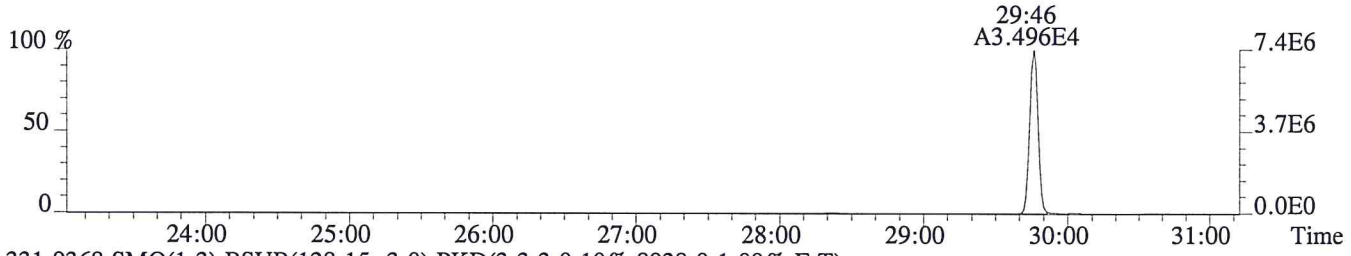
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



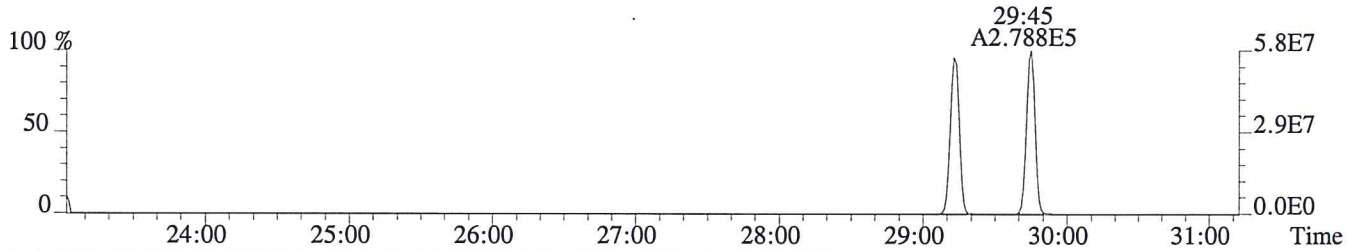
File:P500023 #1-580 Acq:30-JUN-2015 21:22:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3 2ND SOURCE
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1616.0,1.00%,F,T)



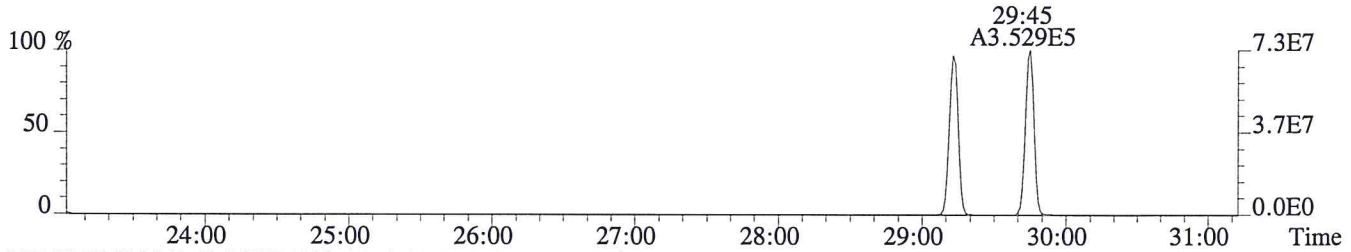
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2524.0,1.00%,F,T)



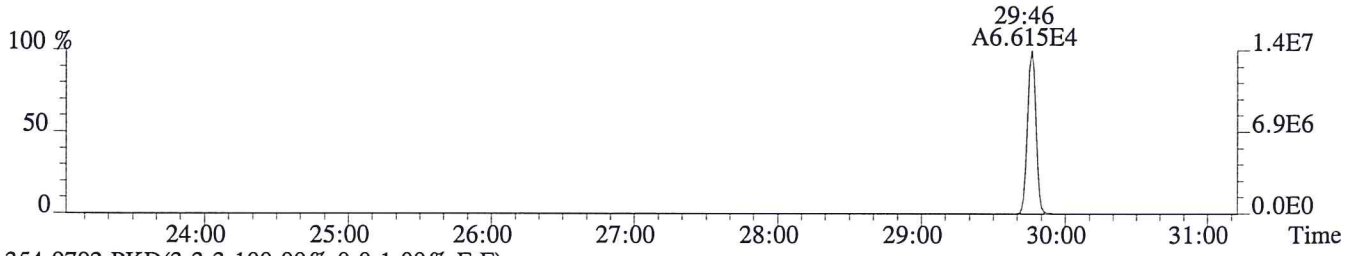
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,8928.0,1.00%,F,T)



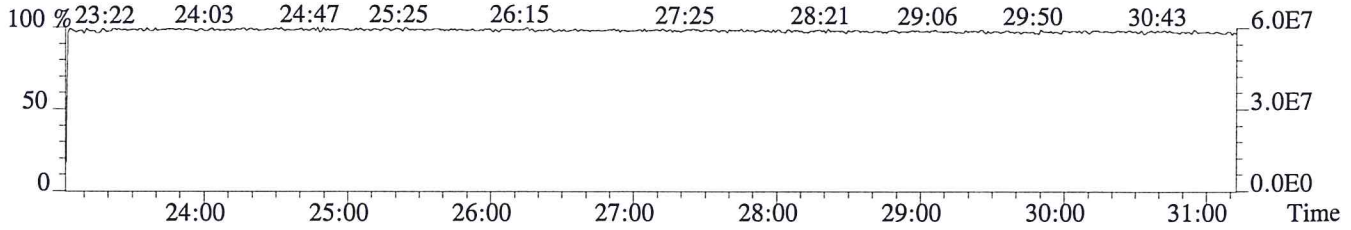
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4892.0,1.00%,F,T)



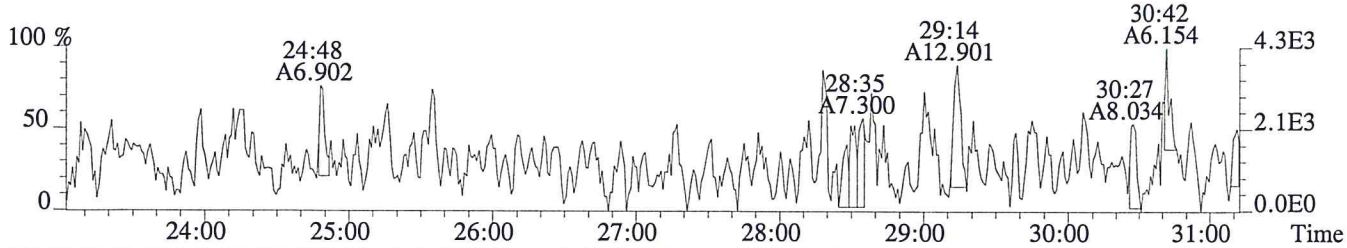
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2116.0,1.00%,F,T)



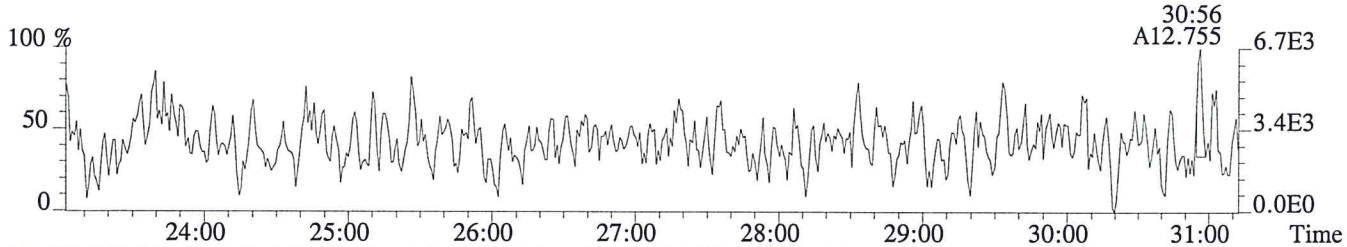
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



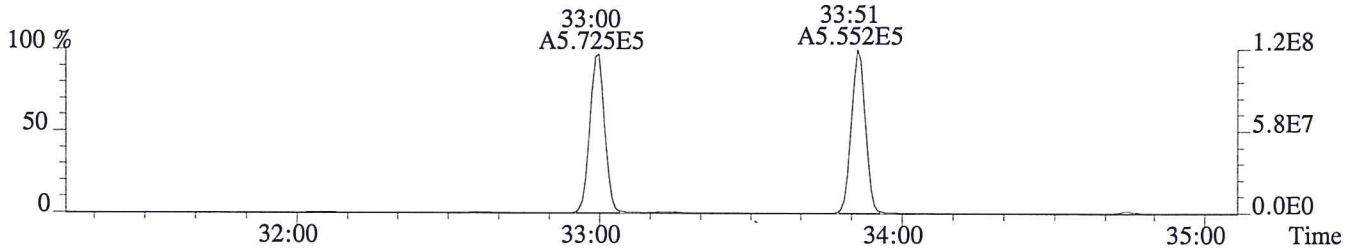
File:P500023 #1-580 Acq:30-JUN-2015 21:22:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3 2ND SOURCE
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1596.0,1.00%,F,T)



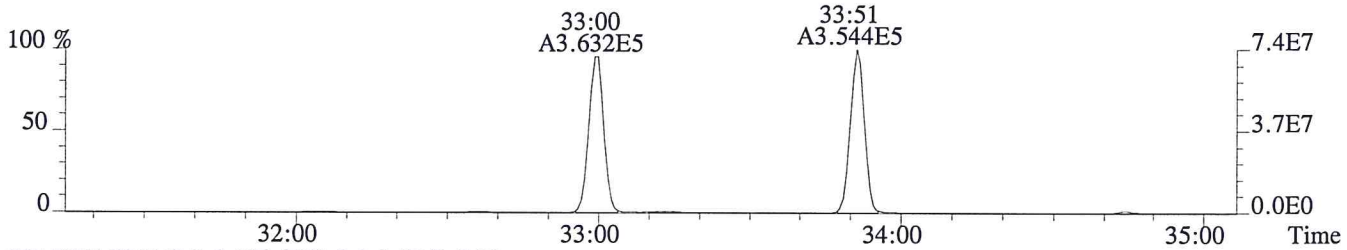
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3764.0,1.00%,F,T)



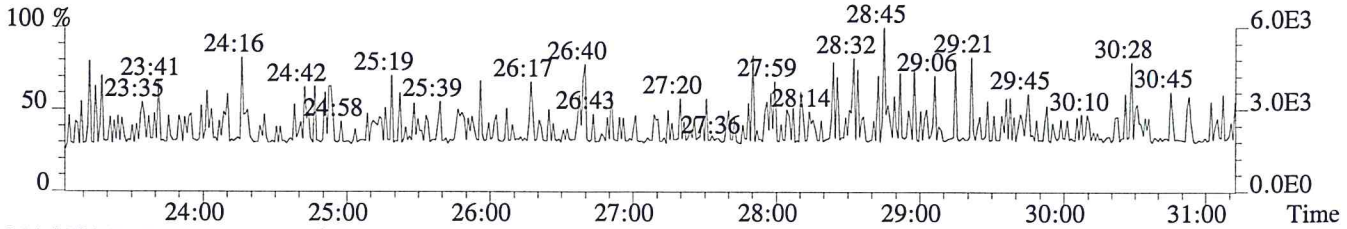
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1080.0,1.00%,F,T)



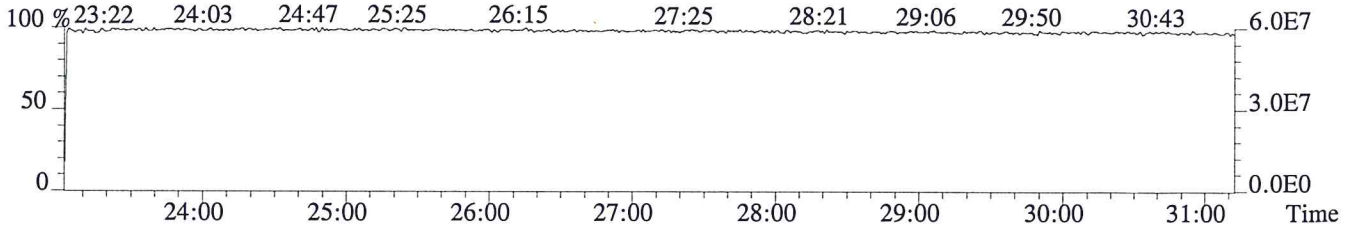
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2380.0,1.00%,F,T)



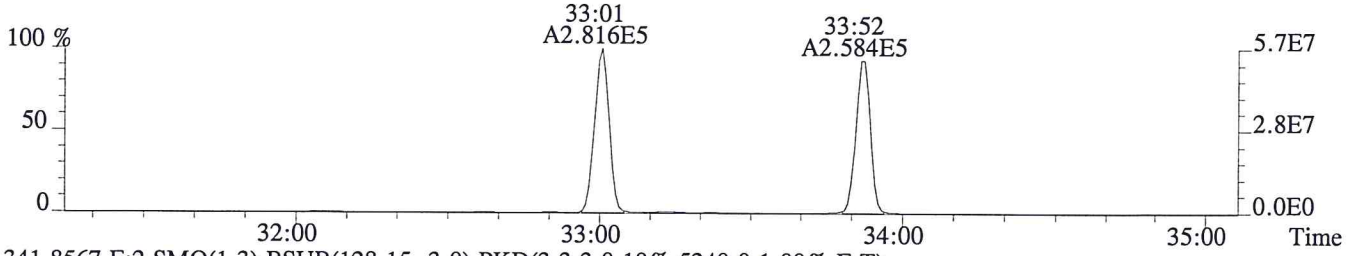
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



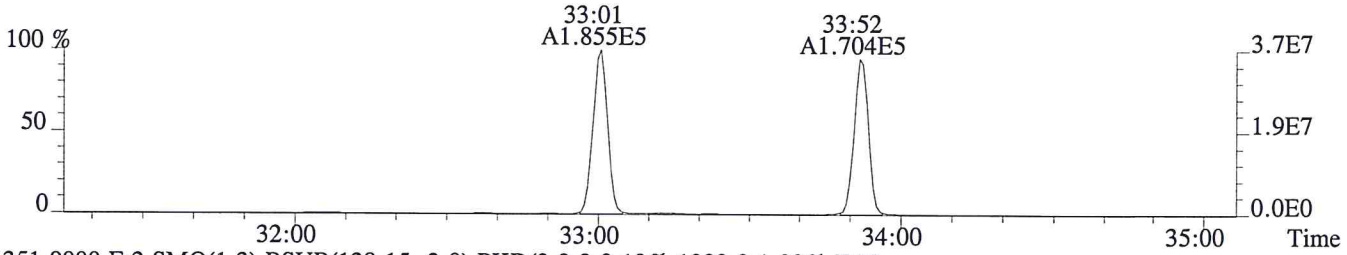
354.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



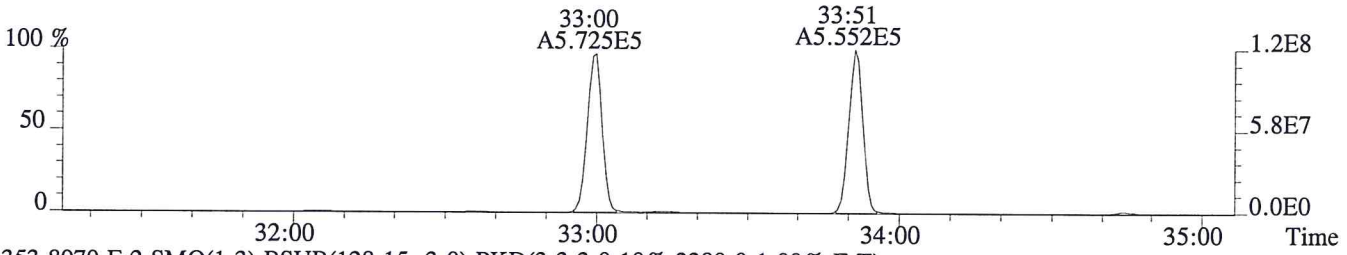
File:P500023 #1-349 Acq:30-JUN-2015 21:22:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3 2ND SOURCE
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2244.0,1.00%,F,T)



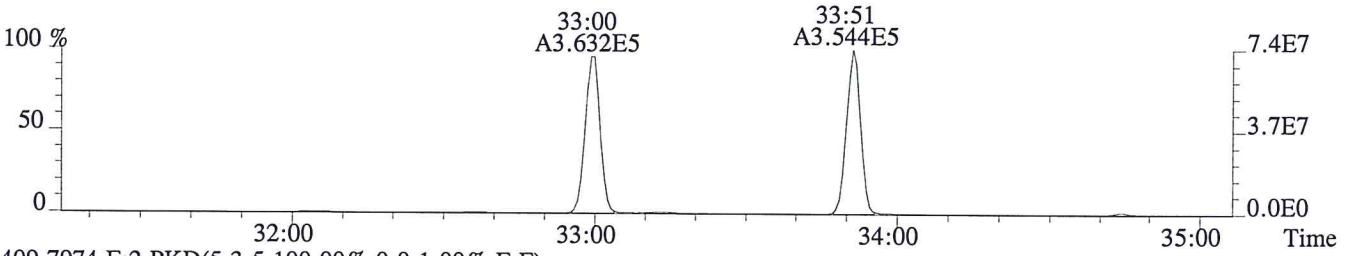
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5240.0,1.00%,F,T)



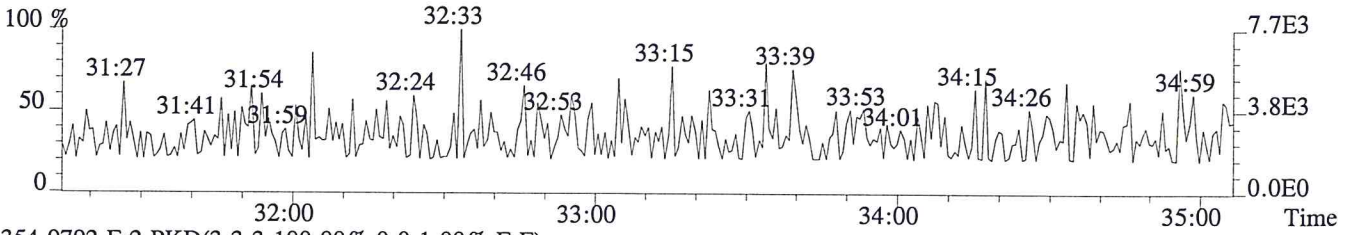
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1080.0,1.00%,F,T)



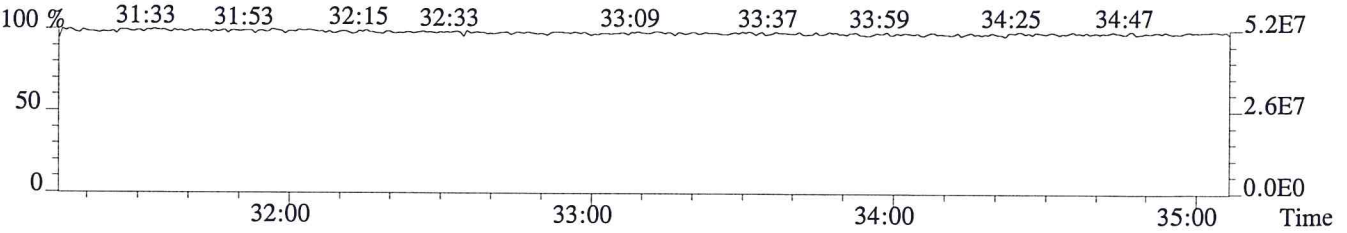
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2380.0,1.00%,F,T)



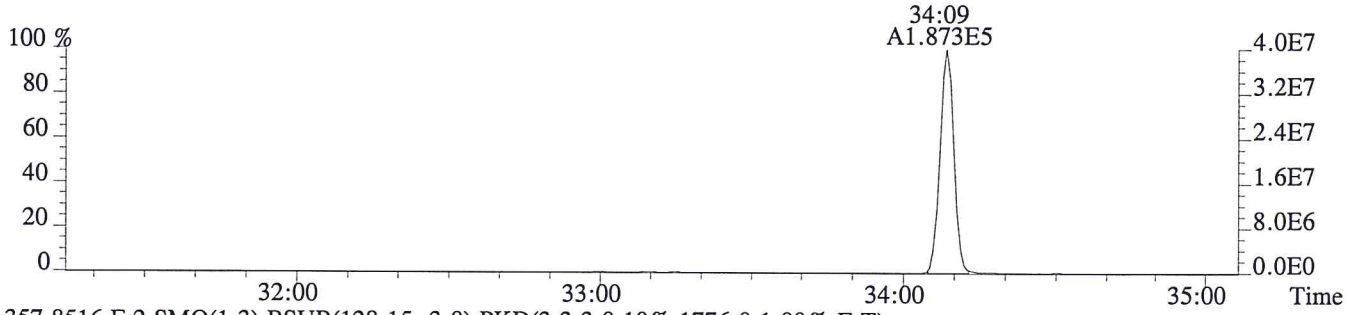
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



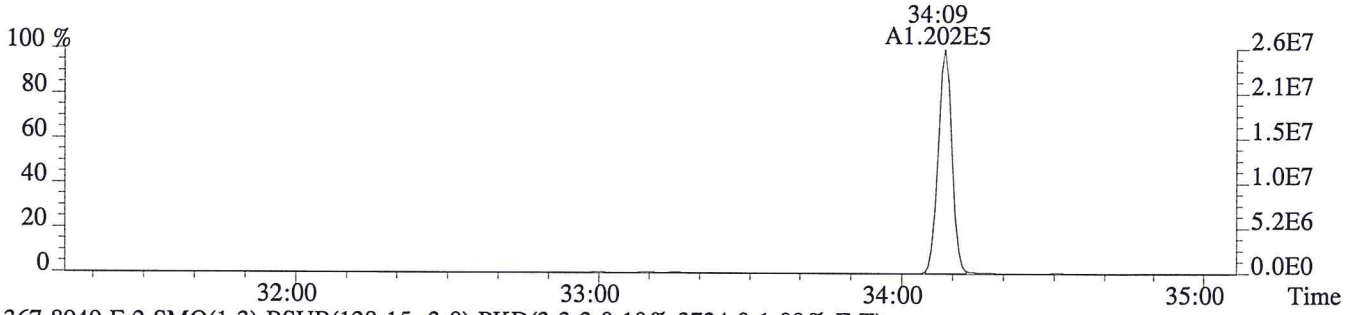
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



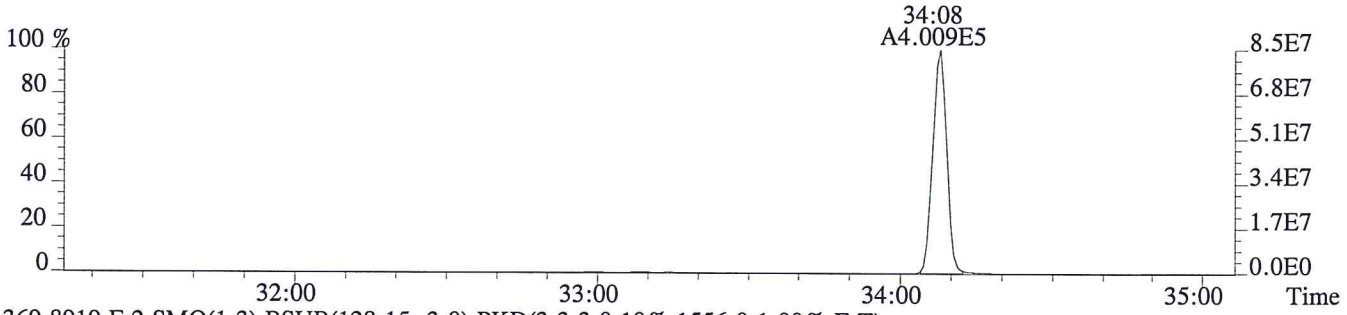
File:P500023 #1-349 Acq:30-JUN-2015 21:22:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3 2ND SOURCE
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4444.0,1.00%,F,T)



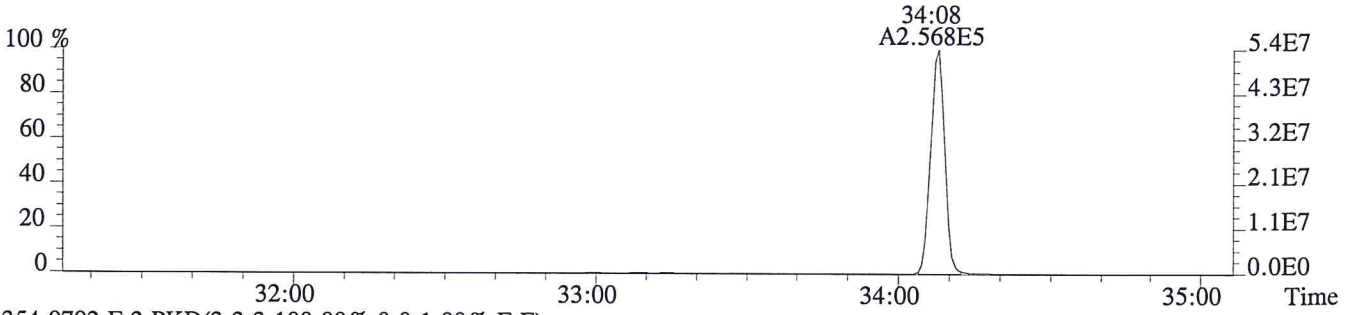
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1776.0,1.00%,F,T)



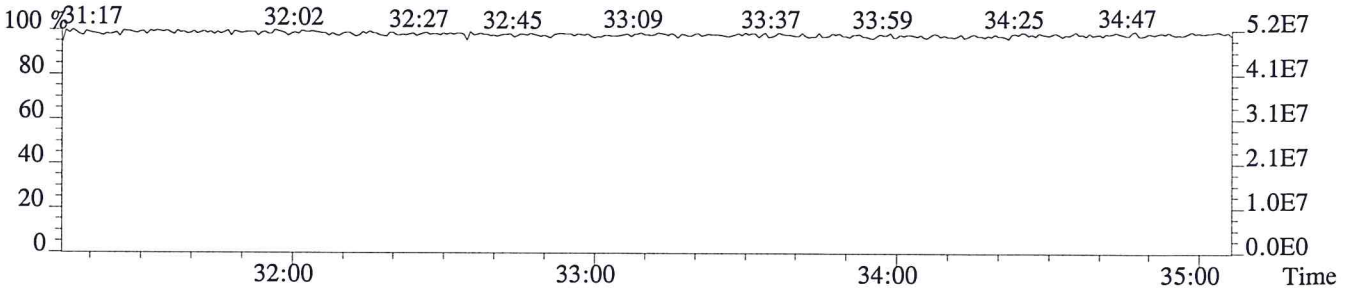
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2724.0,1.00%,F,T)



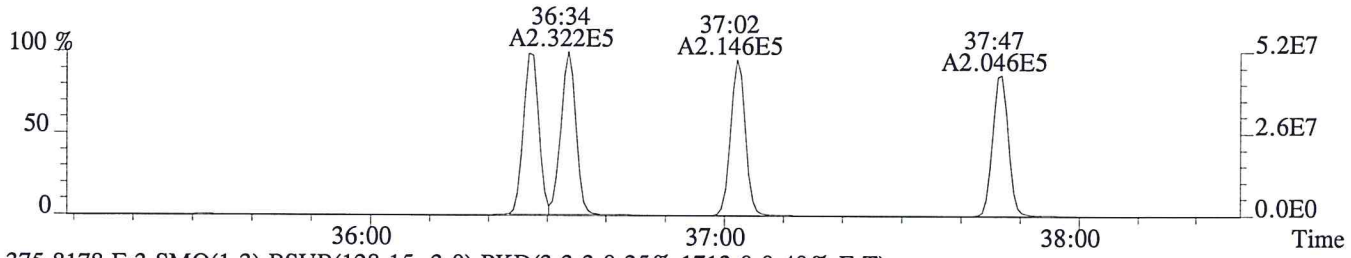
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1556.0,1.00%,F,T)



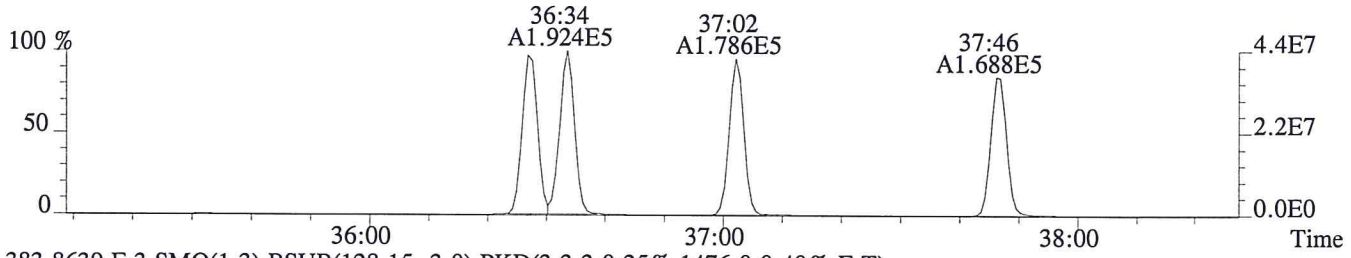
354.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



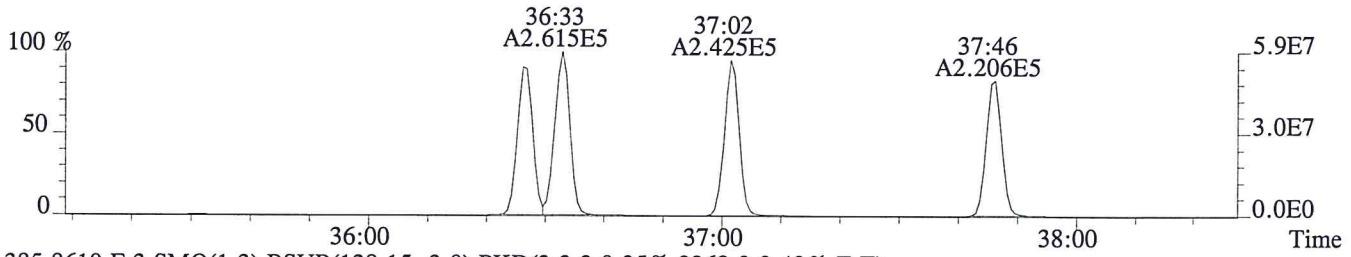
File:P500023 #1-299 Acq:30-JUN-2015 21:22:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3 2ND SOURCE
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1448.0,0.40%,F,T)



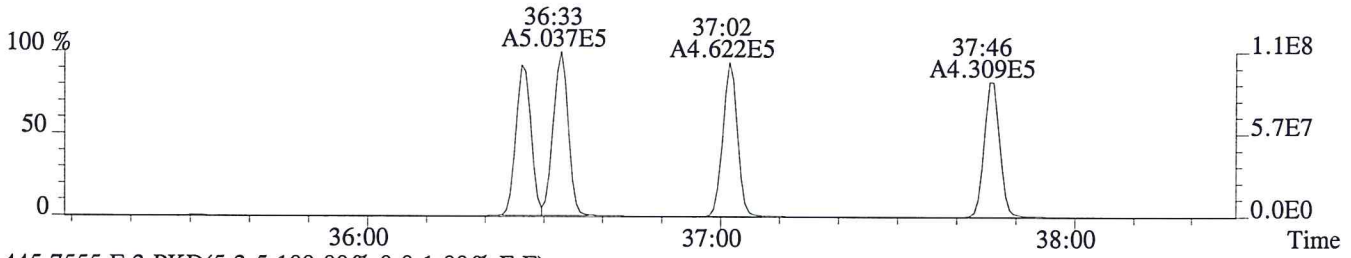
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1712.0,0.40%,F,T)



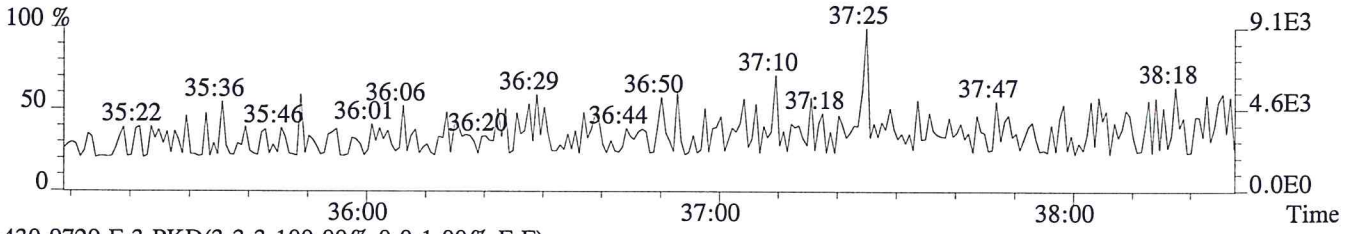
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1476.0,0.40%,F,T)



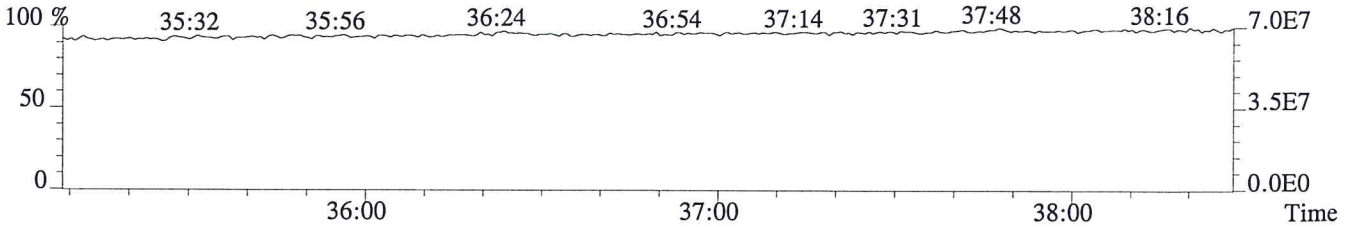
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3368.0,0.40%,F,T)



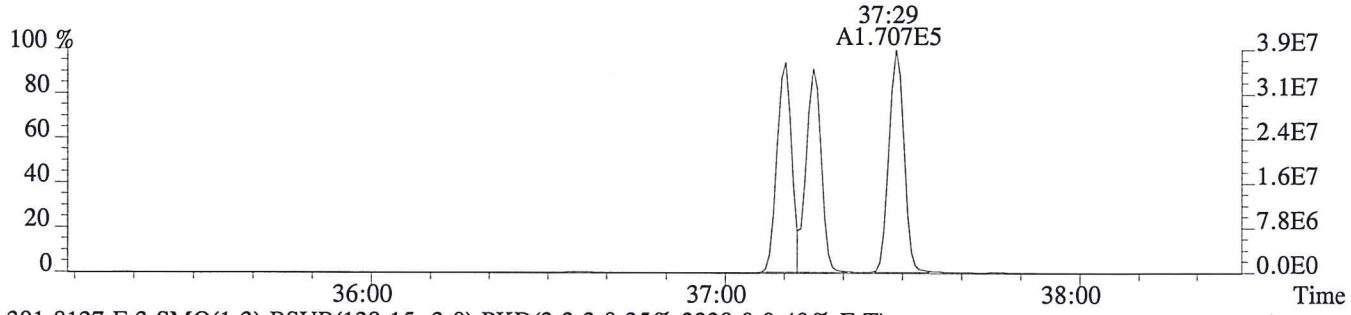
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



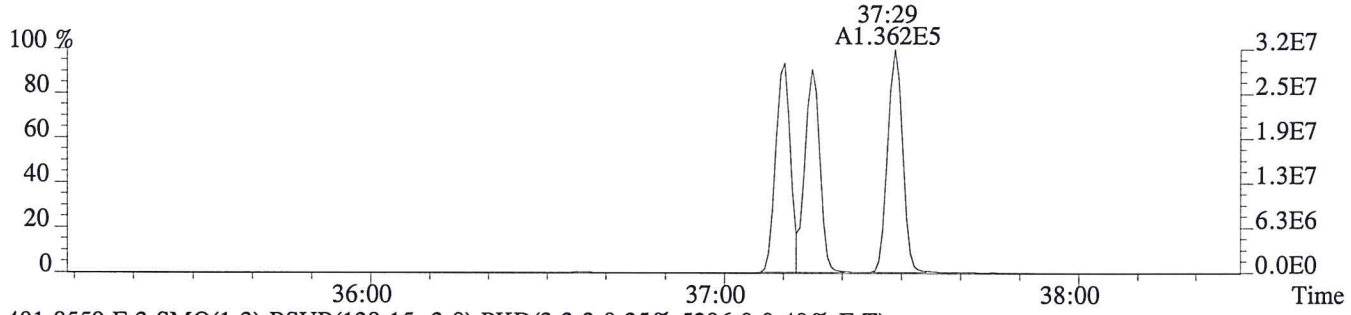
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



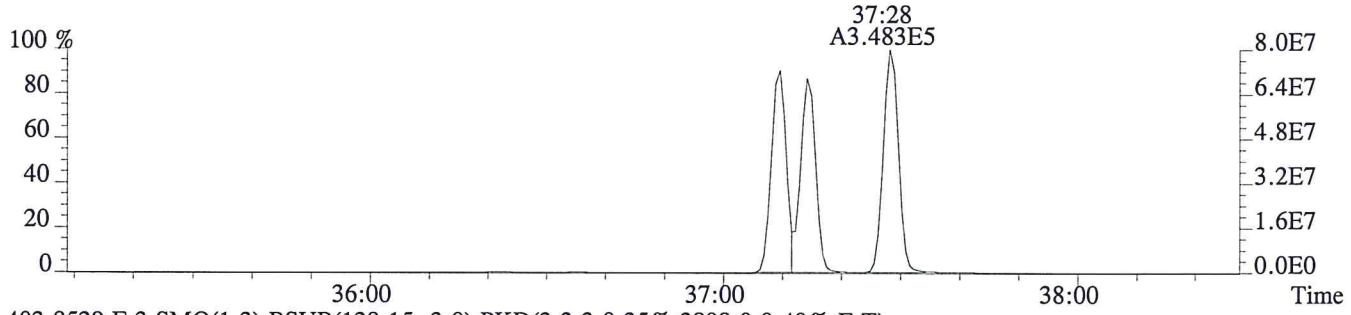
File:P500023 #1-299 Acq:30-JUN-2015 21:22:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3 2ND SOURCE
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1468.0,0.40%,F,T)



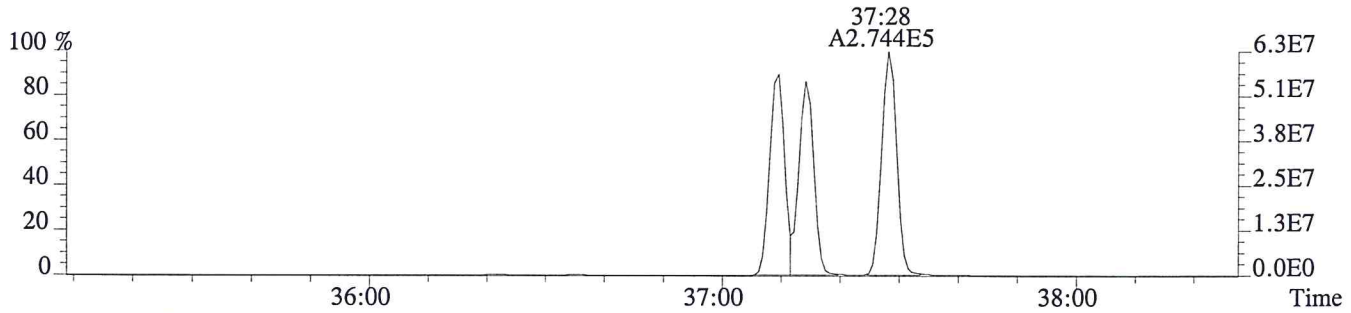
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2328.0,0.40%,F,T)



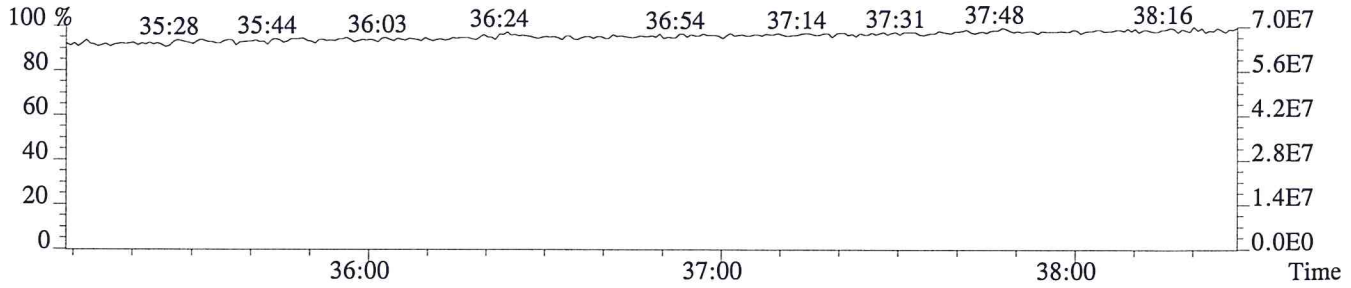
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5296.0,0.40%,F,T)



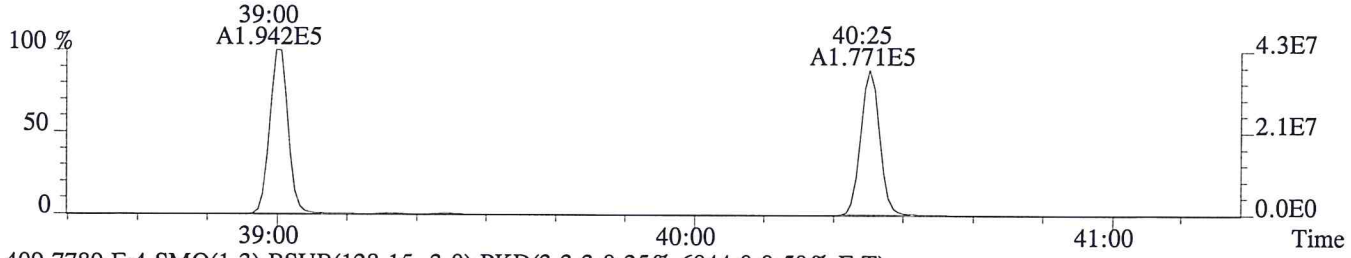
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2808.0,0.40%,F,T)



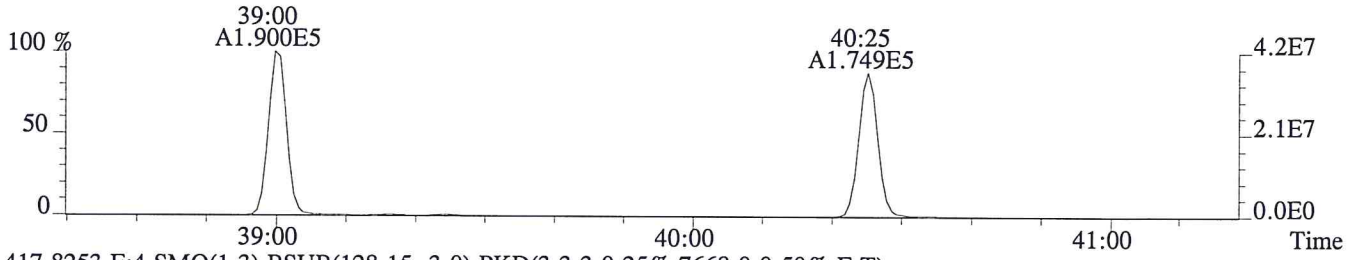
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



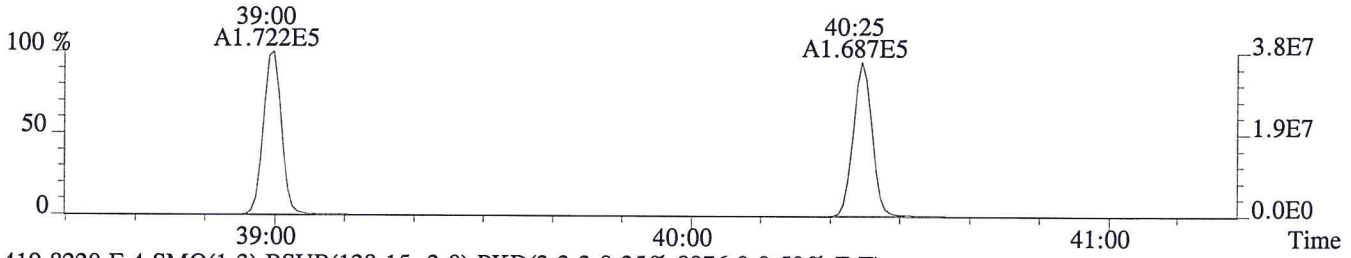
File:P500023 #1-254 Acq:30-JUN-2015 21:22:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3 2ND SOURCE
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,11816.0,0.50%,F,T)



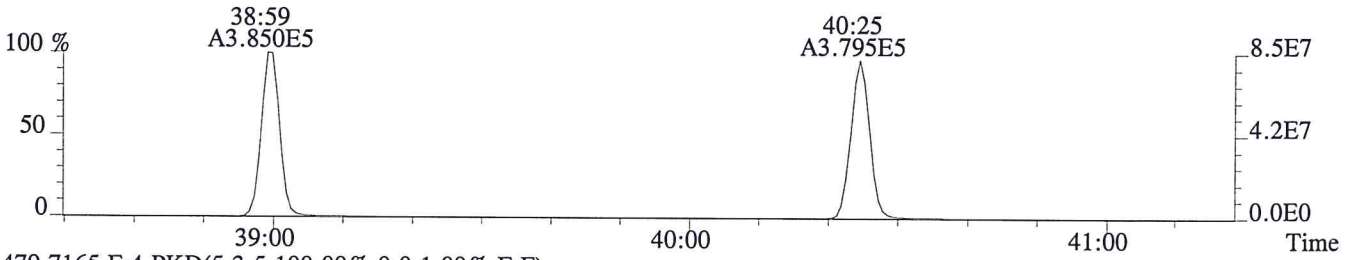
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,6044.0,0.50%,F,T)



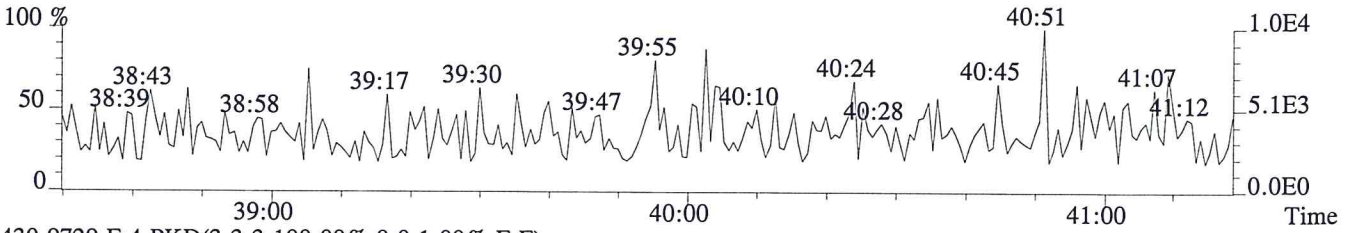
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,7668.0,0.50%,F,T)



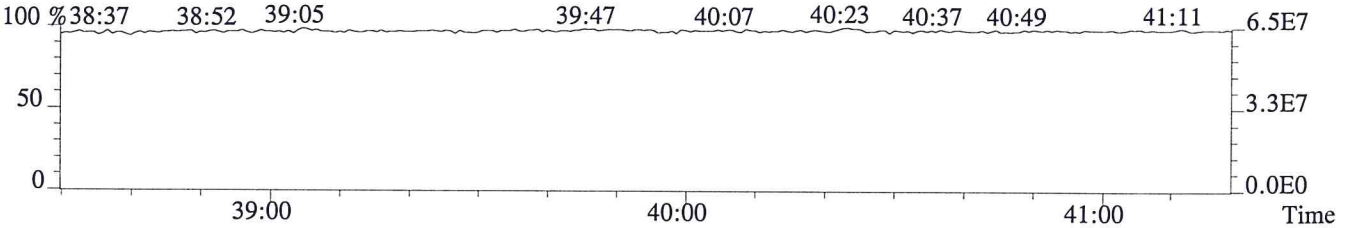
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,8976.0,0.50%,F,T)



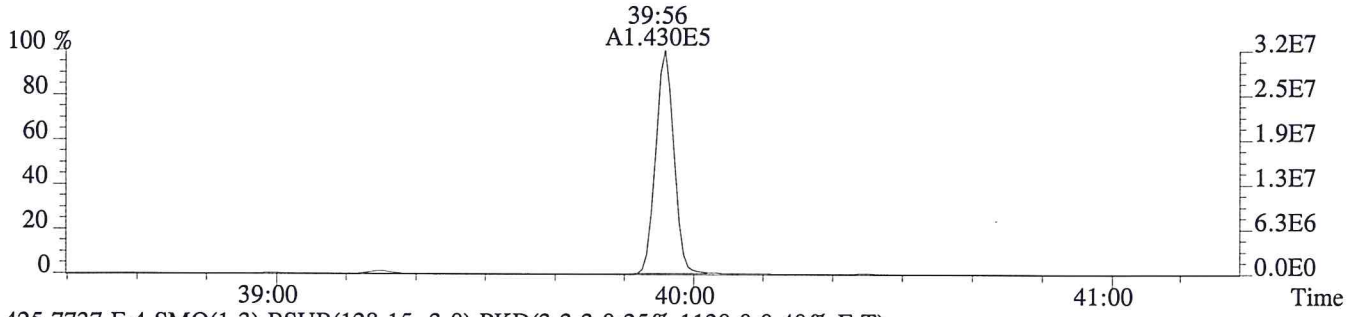
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



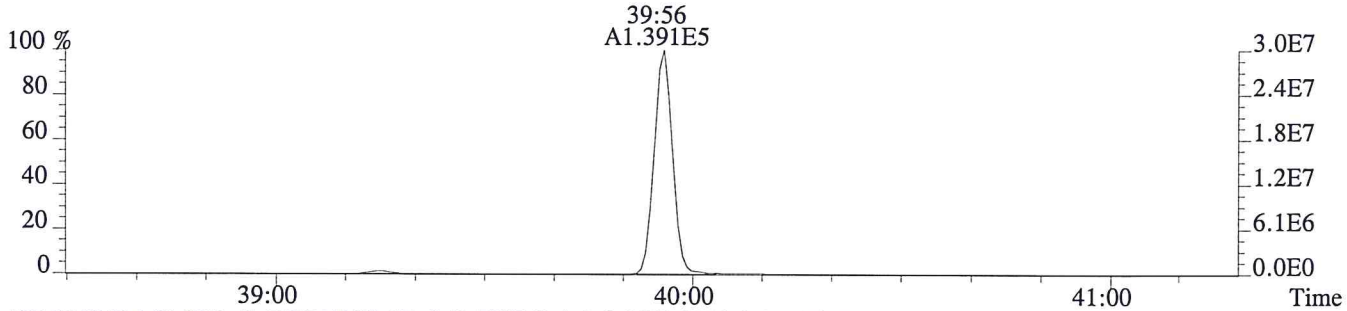
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



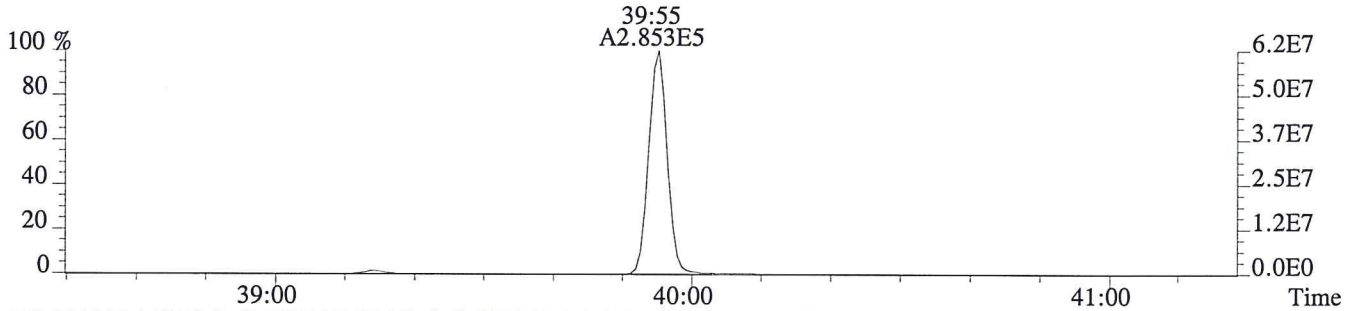
File:P500023 #1-254 Acq:30-JUN-2015 21:22:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3 2ND SOURCE
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1984.0,0.40%,F,T)



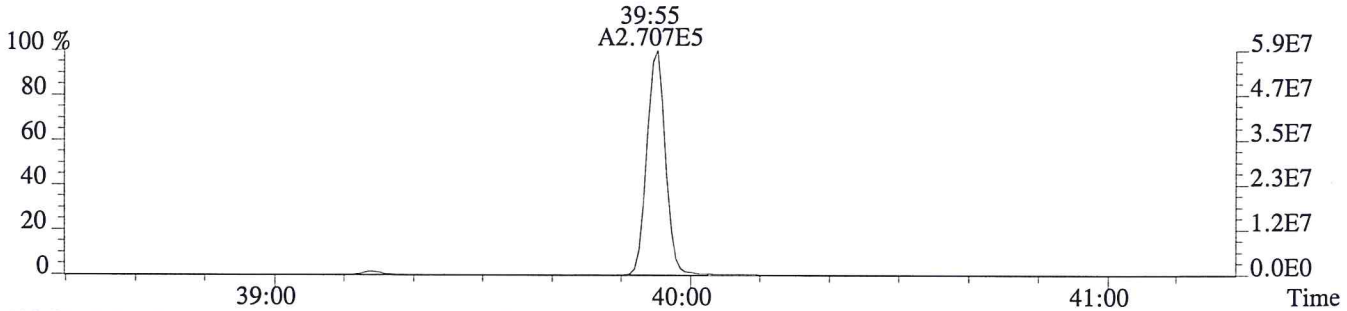
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1120.0,0.40%,F,T)



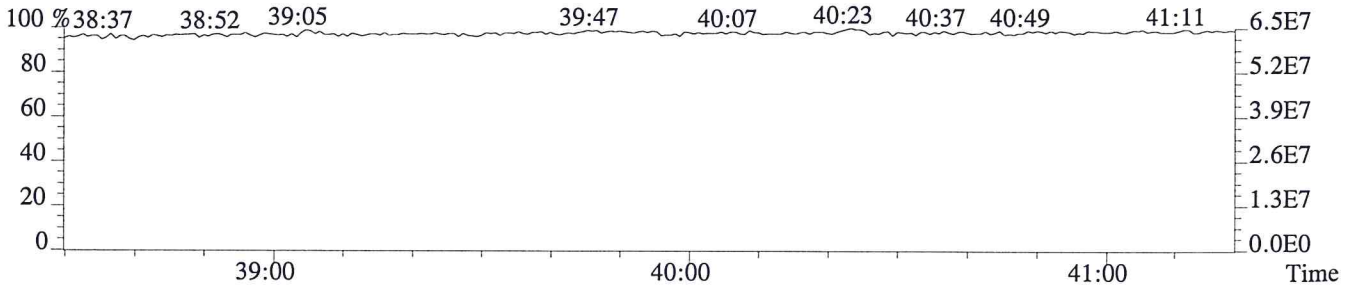
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2420.0,0.40%,F,T)



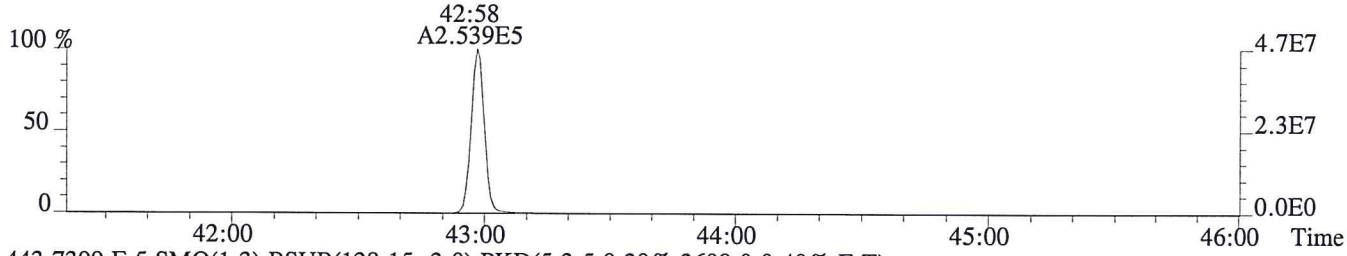
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,844.0,0.40%,F,T)



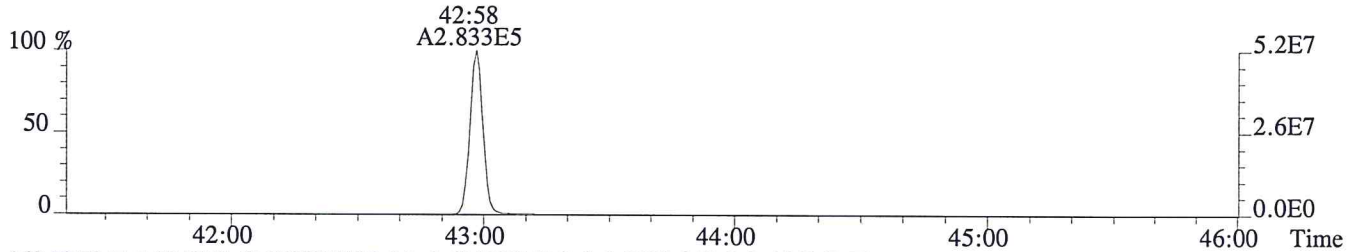
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



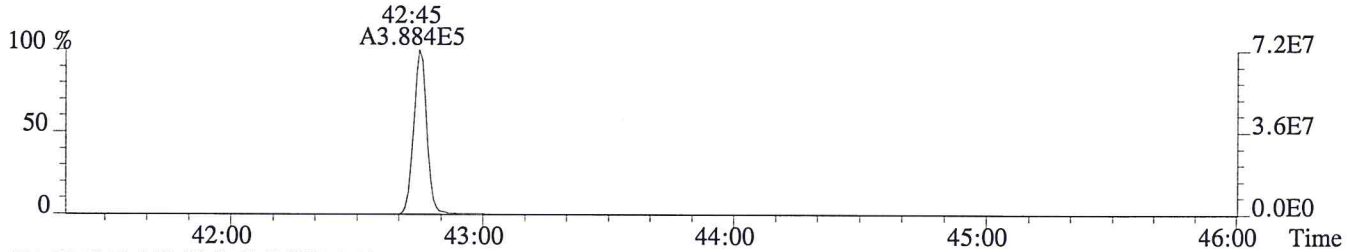
File:P500023 #1-420 Acq:30-JUN-2015 21:22:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3 2ND SOURCE
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2364.0,0.40%,F,T)



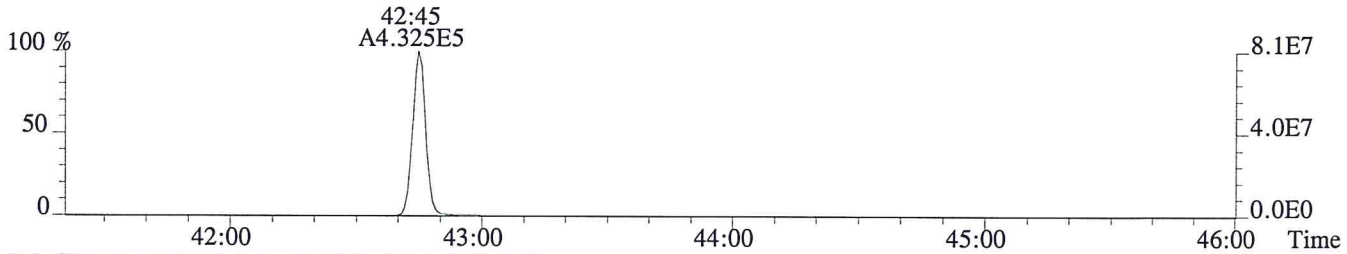
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3608.0,0.40%,F,T)



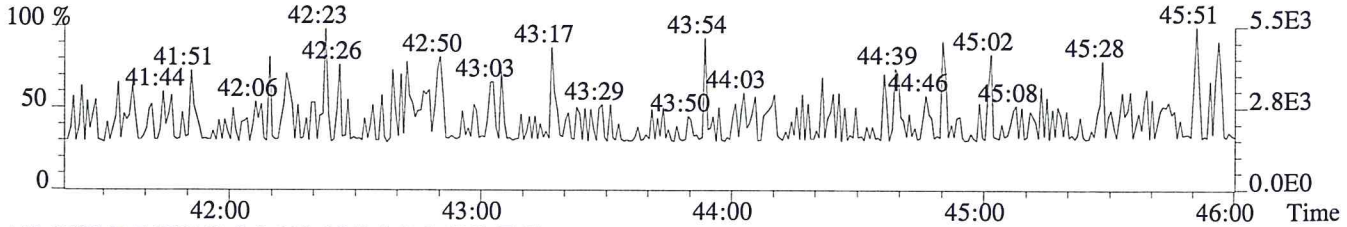
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,940.0,0.40%,F,T)



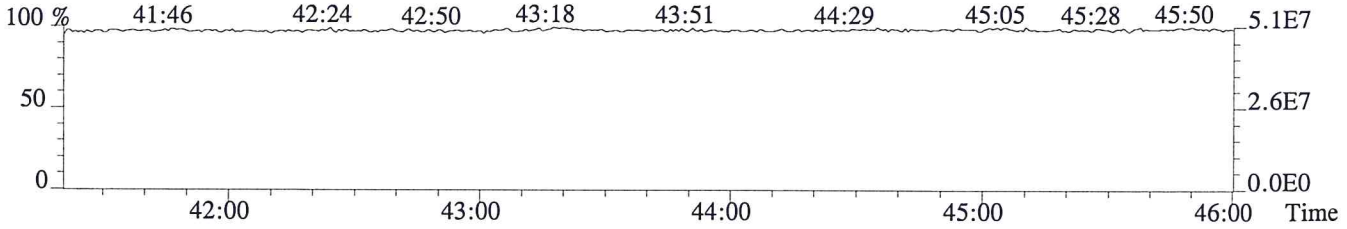
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1528.0,0.40%,F,T)



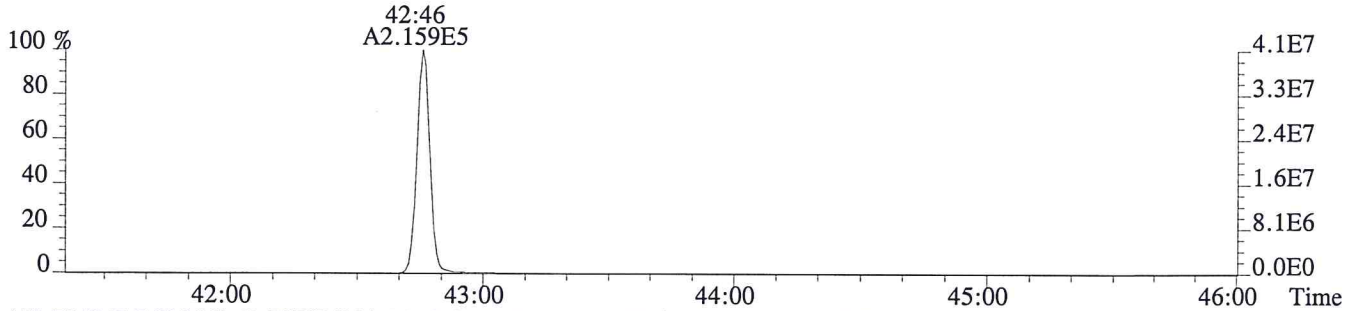
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



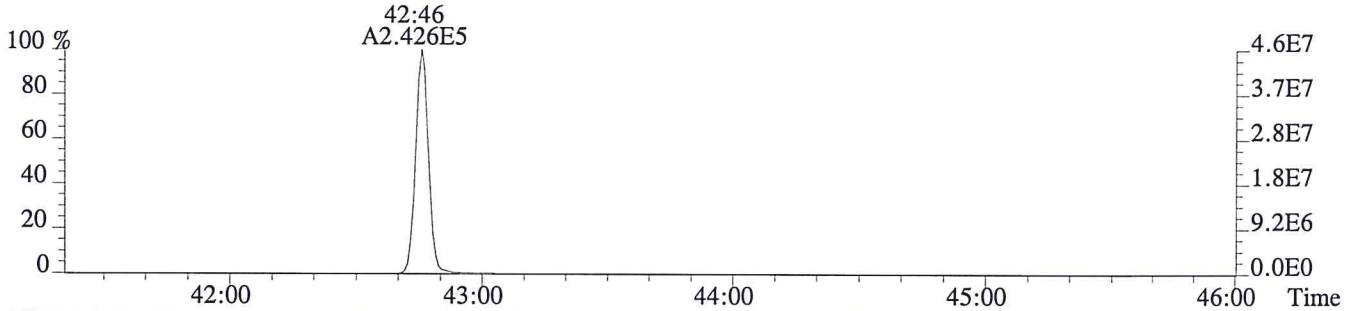
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



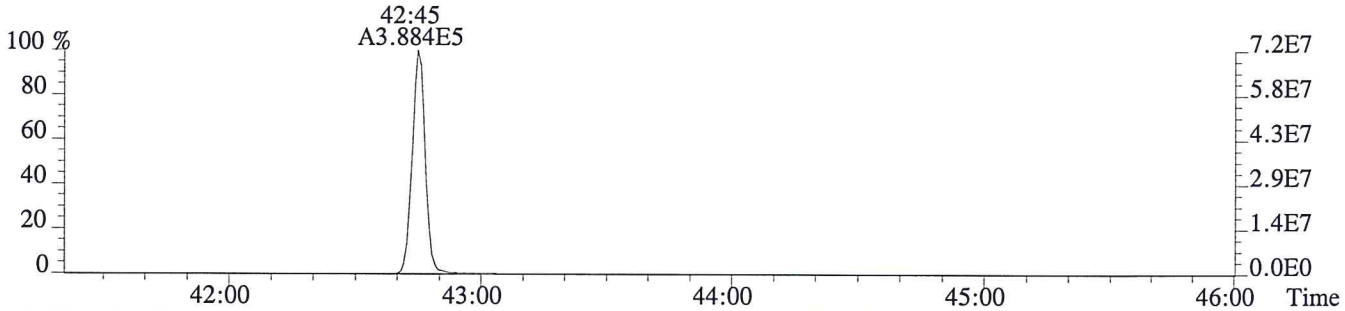
File:P500023 #1-420 Acq:30-JUN-2015 21:22:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3 2ND SOURCE
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1988.0,0.40%,F,T)



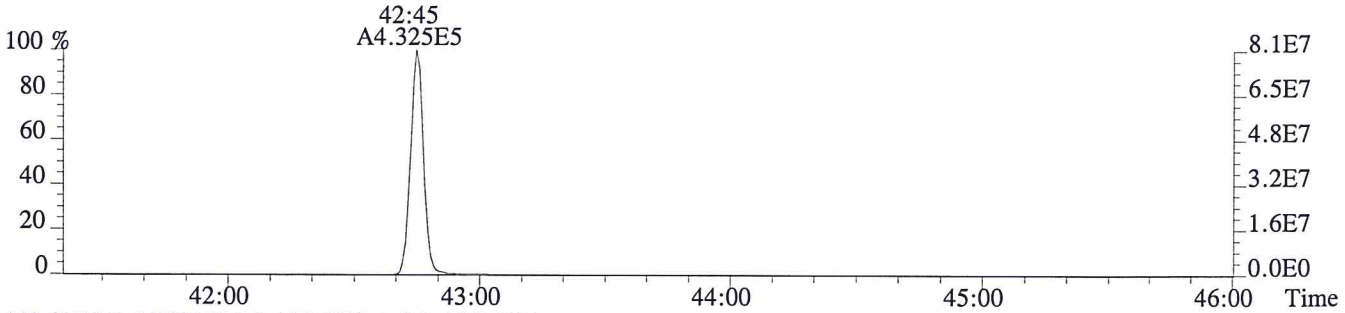
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3268.0,0.40%,F,T)



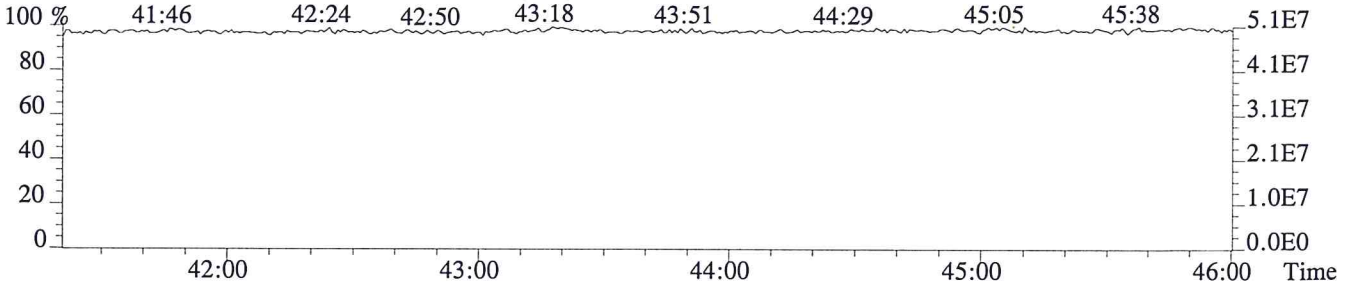
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,940.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1528.0,0.40%,F,T)



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



ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	03/09/16 15:00
Sample Matrix:	Misc. Liquid	**Date Received:**	03/15/16 07:53
Sample Name:	03092016 SJ1	**Units:**	pg/L
Lab Code:	E1600203-001	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/19/16 06:59
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	26mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503417	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503406

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	33.4	192			1
2,3,7,8-TCDF	ND	U	36.7	192			1
2,3,4,7,8-PeCDF	ND	U	26.5	962			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	03/09/16 15:00
Sample Matrix:	Misc. Liquid	**Date Received:**	03/15/16 07:53
Sample Name:	03092016 SJ1	**Units:**	pg/L
Lab Code:	E1600203-001	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/19/16 06:59
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	26mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503417	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503406

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	33.4	192			1
Total Penta-Dioxins	ND	U	29.8	962			1
Total Tetra-Furans	ND	U	36.7	192			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	03/10/16 16:00
Sample Matrix:	Misc. Liquid	**Date Received:**	03/15/16 07:53
Sample Name:	03102016 SJ4	**Units:**	pg/L
Lab Code:	E1600203-005	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/19/16 07:48
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	26mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503418	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503406

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	37.9	192			1
2,3,7,8-TCDF	ND	U	33.1	192			1
2,3,4,7,8-PeCDF	ND	U	16.4	962			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	03/10/16 16:00
Sample Matrix:	Misc. Liquid	**Date Received:**	03/15/16 07:53
Sample Name:	03102016 SJ4	**Units:**	pg/L
Lab Code:	E1600203-005	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/19/16 07:48
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	26mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503418	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503406

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	37.9	192			1
Total Penta-Dioxins	ND	U	22.0	962			1
Total Tetra-Furans	ND	U	33.1	192			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	03/10/16 16:00
Sample Matrix:	Misc. Liquid	**Date Received:**	03/15/16 07:53
Sample Name:	03102016 SJ5	**Units:**	pg/L
Lab Code:	E1600203-006	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/19/16 08:37
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	25mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503419	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503406

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	27.8	200			1
2,3,7,8-TCDF	ND	U	36.5	200			1
2,3,4,7,8-PeCDF	ND	U	21.1	1000			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Anchor QEA, LLC	**Service Request:**	E1600203
Project:	San Jacinto River/1150557-01.01	**Date Collected:**	03/10/16 16:00
Sample Matrix:	Misc. Liquid	**Date Received:**	03/15/16 07:53
Sample Name:	03102016 SJ5	**Units:**	pg/L
Lab Code:	E1600203-006	**Basis:**	NA

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	03/19/16 08:37
Prep Method:	Method Sep Funnel/Jar	**Date Extracted:**	3/16/16
Sample Amount:	25mL	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P503419	**Blank File Name:**	P503397
ICAL Date:	06/30/15	**Cal Ver. File Name:**	P503406

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	27.8	200			1
Total Penta-Dioxins	ND	U	26.0	1000			1
Total Tetra-Furans	ND	U	36.5	200			1

Table 2. Summary of Data Files Provided

Project	SDG	Lab Data Packages	Lab Electronic Data Deliverables
Cap Monitoring Data	E1600203	E1600203 - Final.pdf	E1600203_EDD.zip
		Rinse_Samples_ From E1600203 - Final.pdf	

method_code	description
EPA1613B	EPA Standard Method for High Resolution Analysis of Dioxins/Furans in Water

lab_prep_r	lab_leach_	lab_extract	lab_anal_method
			EPA1613B

lab	lab_pkg	anal_type	labsample	material_analyze	method_code
ALS_E	E1600203	DioxFuran	E1600203-001	Misc. Liquid	EPA1613B
ALS_E	E1600203	DioxFuran	E1600203-005	Misc. Liquid	EPA1613B
ALS_E	E1600203	DioxFuran	E1600203-006	Misc. Liquid	EPA1613B
ALS_E	E1600203	DioxFuran	EQ1600129-01	Misc. Liquid	EPA1613B
ALS_E	E1600203	DioxFuran	EQ1600129-02	Misc. Liquid	EPA1613B
ALS_E	E1600203	DioxFuran	EQ1600129-03	Misc. Liquid	EPA1613B

date_extracted	date_analyzed	mass_gm	vol_ml
3/16/2016	3/19/2016		
3/16/2016	3/19/2016		
3/16/2016	3/19/2016		
3/16/2016	3/18/2016		
3/16/2016	3/18/2016		
3/16/2016	3/18/2016		

lab	lab_cal_batch	instrument_type	instrument_id	initial_cal_date
ALS_E	P503406.0203	HRGC/HRMS	E-HRMS-07	6/30/2015
ALS_E	P503392.0203	HRGC/HRMS	E-HRMS-07	6/30/2015

lab	lab_pkg	anal_type	anal_begun	anal_completed	analyst
ALS_E	E1600203	DioxFuran	3/19/2016	3/19/2016	

comments

lab	lab_qc_batch	prep_date	extraction_date
ALS_E	257568	3/16/2016	3/16/2016

lab	labqc_samp	qc_type	comments
ALS_E	EQ1600129-01	MethodBlank	
ALS_E	EQ1600129-02	LCS	
ALS_E	EQ1600129-03	LCSDUP	

lab	lab_pkg	anal_type	labsample	material_analyz	method_code	analyte	analyte_name	cas_rn	meas_lab_n	meas_ units	std_dev	detected	detection_ quantificat	reporting_	maximum	lab_flags	comments	lab_qc_bat	lab_cal_ba	original_lal	lab_conc_c	sig_figs	estimated	rejected	greater_th	tic	qa_level	validator_f	reportable	principal_d
ALS_E	E1600203	DioxFuran	E1600203-001	Misc. Liquid	EPA1613B	2378TetDioxin	2,3,7,8-Tetrachlorodibenzodioxin	1746016	NA	1 192 pg/L		N	33.4	192	192	U		257568	P503406.0203											
ALS_E	E1600203	DioxFuran	E1600203-001	Misc. Liquid	EPA1613B	2378TetFuran	2,3,7,8-Tetrachlorodibenzofuran	51207319	NA	1 192 pg/L		N	36.7	192	192	U		257568	P503406.0203											
ALS_E	E1600203	DioxFuran	E1600203-001	Misc. Liquid	EPA1613B	23478PenFuran	2,3,4,7,8-Pentachlorodibenzofuran	57117314	NA	1 962 pg/L		N	26.5	962	962	U		257568	P503406.0203											
ALS_E	E1600203	DioxFuran	E1600203-001	Misc. Liquid	EPA1613B	TetClDiBzDioxin	Tetrachlorodibenzodioxin (Total)	41903575	NA	1 192 pg/L		N	33.4	192	192	U		257568	P503406.0203											
ALS_E	E1600203	DioxFuran	E1600203-001	Misc. Liquid	EPA1613B	PenClDiBzDioxin	Pentachlorodibenzodioxin (Total)	36088229	NA	1 962 pg/L		N	29.8	962	962	U		257568	P503406.0203											
ALS_E	E1600203	DioxFuran	E1600203-001	Misc. Liquid	EPA1613B	TetClDiBzFuran	Tetrachlorodibenzofuran (Total)	30402143	NA	1 192 pg/L		N	36.7	192	192	U		257568	P503406.0203											
ALS_E	E1600203	DioxFuran	E1600203-005	Misc. Liquid	EPA1613B	2378TetDioxin	2,3,7,8-Tetrachlorodibenzodioxin	1746016	NA	1 192 pg/L		N	37.9	192	192	U		257568	P503406.0203											
ALS_E	E1600203	DioxFuran	E1600203-005	Misc. Liquid	EPA1613B	2378TetFuran	2,3,7,8-Tetrachlorodibenzofuran	51207319	NA	1 192 pg/L		N	33.1	192	192	U		257568	P503406.0203											
ALS_E	E1600203	DioxFuran	E1600203-005	Misc. Liquid	EPA1613B	23478PenFuran	2,3,4,7,8-Pentachlorodibenzofuran	57117314	NA	1 962 pg/L		N	16.4	962	962	U		257568	P503406.0203											
ALS_E	E1600203	DioxFuran	E1600203-005	Misc. Liquid	EPA1613B	TetClDiBzDioxin	Tetrachlorodibenzodioxin (Total)	41903575	NA	1 192 pg/L		N	37.9	192	192	U		257568	P503406.0203											
ALS_E	E1600203	DioxFuran	E1600203-005	Misc. Liquid	EPA1613B	PenClDiBzDioxin	Pentachlorodibenzodioxin (Total)	36088229	NA	1 962 pg/L		N	22	962	962	U		257568	P503406.0203											
ALS_E	E1600203	DioxFuran	E1600203-005	Misc. Liquid	EPA1613B	TetClDiBzFuran	Tetrachlorodibenzofuran (Total)	30402143	NA	1 192 pg/L		N	33.1	192	192	U		257568	P503406.0203											
ALS_E	E1600203	DioxFuran	E1600203-006	Misc. Liquid	EPA1613B	2378TetDioxin	2,3,7,8-Tetrachlorodibenzodioxin	1746016	NA	1 200 pg/L		N	27.8	200	200	U		257568	P503406.0203											
ALS_E	E1600203	DioxFuran	E1600203-006	Misc. Liquid	EPA1613B	2378TetFuran	2,3,7,8-Tetrachlorodibenzofuran	51207319	NA	1 200 pg/L		N	36.5	200	200	U		257568	P503406.0203											
ALS_E	E1600203	DioxFuran	E1600203-006	Misc. Liquid	EPA1613B	23478PenFuran	2,3,4,7,8-Pentachlorodibenzofuran	57117314	NA	1 1000 pg/L		N	21.1	1000	1000	U		257568	P503406.0203											
ALS_E	E1600203	DioxFuran	E1600203-006	Misc. Liquid	EPA1613B	TetClDiBzDioxin	Tetrachlorodibenzodioxin (Total)	41903575	NA	1 200 pg/L		N	27.8	200	200	U		257568	P503406.0203											
ALS_E	E1600203	DioxFuran	E1600203-006	Misc. Liquid	EPA1613B	PenClDiBzDioxin	Pentachlorodibenzodioxin (Total)	36088229	NA	1 1000 pg/L		N	26	1000	1000	U		257568	P503406.0203											
ALS_E	E1600203	DioxFuran	E1600203-006	Misc. Liquid	EPA1613B	TetClDiBzFuran	Tetrachlorodibenzofuran (Total)	30402143	NA	1 200 pg/L		N	36.5	200	200	U		257568	P503406.0203											

loc

lab	labsample	study_id	sample_no	labqc_samp	receipt_date
ALS_E	E1600203-001	1150557-01.01	03092016 SJ1	NA	3/15/2016
ALS_E	E1600203-005	1150557-01.01	03102016 SJ4	NA	3/15/2016
ALS_E	E1600203-006	1150557-01.01	03102016 SJ5	NA	3/15/2016
ALS_E	EQ1600129-01			EQ1600129-01	NA
ALS_E	EQ1600129-02			EQ1600129-02	NA
ALS_E	EQ1600129-03			EQ1600129-03	NA

coc_id

NA
NA
NA

lab	lab_qc_batch	lcs_id	analyte	meas_basis	lcs_type	true_lcs_conc	meas_lcs_conc	lcs_lowlimit	lcs_highlimit	units	conc_qual
ALS_E	257568	EQ1600129-02	2378TetDioxin	NA	L	3330	3220	67	158	pg/L	
ALS_E	257568	EQ1600129-02	2378TetFuran	NA	L	3330	3230	75	158	pg/L	
ALS_E	257568	EQ1600129-02	23478PenFuran	NA	L	16700	16100	68	160	pg/L	
ALS_E	257568	EQ1600129-03	2378TetDioxin	NA	L	3330	3290	67	158	pg/L	
ALS_E	257568	EQ1600129-03	2378TetFuran	NA	L	3330	3110	75	158	pg/L	
ALS_E	257568	EQ1600129-03	23478PenFuran	NA	L	16700	16000	68	160	pg/L	

lab	lab_qc_batch	labsample	method_code	analyte	meas_basis	spike_no	samp_conc	initial_qual	spike_added	spiked_conc	final_qual	lab_flags	units

lab	lab_qc_batch	labsample	method_code	analyte	lab_rep	concentration	retention_time	units	lab_flags
ALS_E	257568	EQ1600129-01	EPA1613B	2378TetDioxin	1	38.9		pg/L	U
ALS_E	257568	EQ1600129-01	EPA1613B	2378TetFuran	1	37.9		pg/L	U
ALS_E	257568	EQ1600129-01	EPA1613B	23478PenFuran	1	13.8		pg/L	U
ALS_E	257568	EQ1600129-01	EPA1613B	TetClDiBzDioxin	1	38.9		pg/L	U
ALS_E	257568	EQ1600129-01	EPA1613B	PenClDiBzDioxin	1	14.5		pg/L	U
ALS_E	257568	EQ1600129-01	EPA1613B	TetClDiBzFuran	1	37.9		pg/L	U

lab	lab_qc_batch	labsample	method_code	surrogate	meas_basis	column_no	lab_rep	recovery	out_flag
ALS_E	257568	E1600203-001	EPA1613B	13C2378TCDD	NA	PR	1	74	N
ALS_E	257568	E1600203-001	EPA1613B	13C2378TCDF	NA	PR	1	69	N
ALS_E	257568	E1600203-001	EPA1613B	13C23478PeCDF	NA	PR	1	87	N
ALS_E	257568	E1600203-001	EPA1613B	37Cl4-2378TCDD	NA	PR	1	91	N
ALS_E	257568	E1600203-005	EPA1613B	13C2378TCDD	NA	PR	1	77	N
ALS_E	257568	E1600203-005	EPA1613B	13C2378TCDF	NA	PR	1	74	N
ALS_E	257568	E1600203-005	EPA1613B	13C23478PeCDF	NA	PR	1	86	N
ALS_E	257568	E1600203-005	EPA1613B	37Cl4-2378TCDD	NA	PR	1	95	N
ALS_E	257568	E1600203-006	EPA1613B	13C2378TCDD	NA	PR	1	80	N
ALS_E	257568	E1600203-006	EPA1613B	13C2378TCDF	NA	PR	1	79	N
ALS_E	257568	E1600203-006	EPA1613B	13C23478PeCDF	NA	PR	1	89	N
ALS_E	257568	E1600203-006	EPA1613B	37Cl4-2378TCDD	NA	PR	1	99	N
ALS_E	257568	EQ1600129-01	EPA1613B	13C2378TCDD	NA	PR	1	45	N
ALS_E	257568	EQ1600129-01	EPA1613B	13C2378TCDF	NA	PR	1	39	N
ALS_E	257568	EQ1600129-01	EPA1613B	13C23478PeCDF	NA	PR	1	75	N
ALS_E	257568	EQ1600129-01	EPA1613B	37Cl4-2378TCDD	NA	PR	1	57	N
ALS_E	257568	EQ1600129-02	EPA1613B	13C2378TCDD	NA	PR	1	61	N
ALS_E	257568	EQ1600129-02	EPA1613B	13C2378TCDF	NA	PR	1	57	N
ALS_E	257568	EQ1600129-02	EPA1613B	13C23478PeCDF	NA	PR	1	80	N
ALS_E	257568	EQ1600129-02	EPA1613B	37Cl4-2378TCDD	NA	PR	1	73	N
ALS_E	257568	EQ1600129-03	EPA1613B	13C2378TCDD	NA	PR	1	62	N
ALS_E	257568	EQ1600129-03	EPA1613B	13C2378TCDF	NA	PR	1	57	N
ALS_E	257568	EQ1600129-03	EPA1613B	13C23478PeCDF	NA	PR	1	80	N
ALS_E	257568	EQ1600129-03	EPA1613B	37Cl4-2378TCDD	NA	PR	1	75	N

San Jacinto River Waste Pits
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9490530

ANCHOR QEA

integral consulting inc.

Date: 06-15-2016
CERCLA Docket No. 06-03-10 Data Files
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