Analytical Resources, Incorporated
Analytical Chemists and Consultants

22 September 2021

Cindy Fields
Anchor QEA, LLC
1201 3rd Ave, Suite 2600
Seattle, WA 98101

RE: Lower Duwamish AOC4

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
21G0140	N/A

Susan Dunnihoo
Digitally signed by Susan Dunnihoo
Date: 2021.09.22 14:41:46 -07'00'

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Susan Dunnihoo, Director, Client Services

Accredited in accordance with nelac
Cert# 100006-012

1 of 21G0140

CHAIN-OF-CUSTODY/TEST REQUEST FORM

№ 4026

Project/Client Name: Duwamish AOCY
Project Number: 180067-02,02
Contact Name: Amara Vanderwort
Sampled By: Windward

Ship to: ARI
Attn: Sue Dunnihoo
Shipper: Courier
Form filled out by: Nicolas Eckhardt

Shipping Date: 7/13/21
Airbill Number: —
Turnaround requested: STD

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	PCB/BBP	Arsenic/Zinc	TOC/TOTAL SOLIDS	Archive	PCB	D/F		Comments / Instructions [Jar tag number(s)]
7/12/2021	1224	LDW21-SC587B	3	Sediment	X	X	X	X				
	↓	LDW21-SC587C	3		X	X	X	X				
	1224	LDW21-SC587E	3		X	X	X	X				
	1311	LDW21-SC634A	4				X	X	X	X		
		LDW21-SC634A-FD	4				X	X	X	X		
		LDW21-SC634B	4				X	X	X	X		
	↓	LDW21-SC634C	4	↓			X	X	X	X		
7/12/2021	1311	LDW21-SC634E	4	Sediment			X	X	X	X		
		Total Number of Containers		Purchase Order / Statement of Work # CLF-05 2021-ARI								

1) Released by:	1) Rec'd by:	2) Released by:	2) Rec'd by:
Print name: A Vanderwort	Jacob Walter	Print name:	
Signature: A Vanderwort	Company: ARI	Signature:	Company:
Company: Windward		Company:	
Date/Time: 7/13/21 0736	Date/Time: 07/13/2021 0736	Date/Time:	Date/Time:

* Distribution: White copies accompany shipment; yellow retained by consignor.

Wind Ward environmental LLC

200 1st Ave W, Suite 500
Seattle, WA 98119

206.378.1364

To be completed by Laboratory upon sample receipt:

Date of receipt::	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Windward/Anchor

Project Name: Lower Duwamish AOC

COC No(s): 4026 NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 21G0140

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	YES	NO
Were custody papers included with the cooler?	YES	NO
Were custody papers properly filled out (ink, signed, etc.)	YES	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 0804 5.6 ____ ____ ____ ____ ____

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: DOO5006

Cooler Accepted by: JG Date: 07/13/2021 Time: 0736

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	NO
What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____			
Was sufficient ice used (if appropriate)?	NA	YES	NO
How were bottles sealed in plastic bags?	Individually	Grouped	Not
Did all bottles arrive in good condition (unbroken)?		YES	NO
Were all bottle labels complete and legible?		YES	NO
Did the number of containers listed on COC match with the number of containers received?		YES	NO
Did all bottle labels and tags agree with custody papers?		YES	NO
Were all bottles used correct for the requested analyses?		YES	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ...	NA	YES	NO
Were all VOC vials free of air bubbles?	NA	YES	NO
Was sufficient amount of sample sent in each bottle?		YES	NO
Date VOC Trip Blank was made at ARI	NA	_____	

Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: SC Date: 7/14/21 Time: 0846 Labels checked by: SC

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Anchor QEA, LLC	Project:	Lower Duwamish AOC4	
1201 3rd Ave, Suite 2600	Project Number:	180067-02.02	**Reported:**
Seattle, WA 98101	Project Manager:	Cindy Fields	09/22/2021 14:28

ANALYTICAL REPORT FOR SAMPLES

Laboratory ID	Sample ID	Matrix	Date Sampled	Date Received
21G0140-01	LDW21-SC587B	Solid	07/12/21 12:24	07/13/21 07:36
21G0140-02	LDW21-SC587C	Solid	07/12/21 12:24	07/13/21 07:36
21G0140-03	LDW21-SC587E	Solid	07/12/21 12:24	07/13/21 07:36
21G0140-04	LDW21-SC634A	Solid	07/12/21 13:11	07/13/21 07:36
21G0140-05	LDW21-SC634A-FD	Solid	07/12/21 13:11	07/13/21 07:36
21G0140-06	LDW21-SC634B	Solid	07/12/21 13:11	07/13/21 07:36
21G0140-07	LDW21-SC634C	Solid	07/12/21 13:11	07/13/21 07:36
21G0140-08	LDW21-SC634E	Solid	07/12/21 13:11	07/13/21 07:36

Anchor QEA, LLC	Project: Lower Duwamish AOC4	
1201 3rd Ave, Suite 2600	Project Number: 180067-02.02	**Reported:**
Seattle WA, 98101	Project Manager: Cindy Fields	22-Sep-2021 14:28

Case Narrative

Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Work Order: 21G0140

Sample receipt

Samples as listed on the preceding page were received 13-Jul-2021 07:36 under ARI work order 21G0140. For details regarding sample receipt, please refer to the Cooler Receipt Form. Mercury aliquots were frozen to meet QAPP requirements.

Dioxin/Furans - EPA Method 1613

The sample(s) were extracted and analyzed within the recommended holding times for samples stored frozen. Analysis was performed using an application specific column developed by Restek. The RTX-DIoxin2 column has unique isomer separation for the 2378-TCDF, eliminating the need for confirmation analysis.

Initial and continuing calibrations were within method requirements.

Labeled internal standard areas were within limits.

The cleanup surrogate percent recoveries were within control limits.

he method blank(s) were clean at the reporting limits, with response for 1,2,3,4,6,7,8-HpCDD and OCDD below the reporting limit and "J"-flagged. Associated positive results have been "B"-flagged.

The OPR (Ongoing Precision and Recovery) standard percent recoveries were within control limits.

The reference material (SRM) percent recoveries were within control limits.

The batch BJH0152 duplicate (DUP) relative percent difference (RPD) were outside advisory control limits (25%) for 2,3,7,8-TCDD (25.5%) and OCDF (27.8%), reported under work order 21G0126.

QUALIFIERS AND NOTES

Qualifier	Definition
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
J	Estimated concentration value detected below the reporting limit.
EMPC	Estimated Maximum Possible Concentration qualifier for HRGCMS Dioxin
B	This analyte was detected in the method blank.
*	Flagged value is not within established control limits.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-SC634A

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0140
Client:	Anchor QEA, LLC				
Project:	Lower Duwamish AOC4				
Matrix:	Sediment	Laboratory ID:	21G0140-04 C	File ID:	21092018
Sampled:	07/12/21 13:11	Prepared:	09/06/21 16:00	Analyzed:	09/21/21 06:12
% Solids:	57.49	Preparation:	EPA 1613	Initial/Final:	17.4 g Wet / 20 uL
Result Basis:	Dry	Sequence:	SJI0309	Calibration:	EH00030
Batch:	BJH0152	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1	0.813	0.655-0.886	0.103	1.00	0.675	ng/kg	J
1746-01-6	2,3,7,8-TCDD	1	0.547	0.655-0.886	0.114	1.00	0.378	ng/kg	EMPC, J
57117-41-6	1,2,3,7,8-PeCDF	1	1.648	1.318-1.783	0.082	1.00	0.539	ng/kg	J
57117-31-4	2,3,4,7,8-PeCDF	1	1.545	1.318-1.783	0.080	1.00	0.758	ng/kg	J
40321-76-4	1,2,3,7,8-PeCDD	1	1.266	1.318-1.783	0.131	1.00	1.04	ng/kg	EMPC
70648-26-9	1,2,3,4,7,8-HxCDF	1	1.110	1.054-1.426	0.078	1.00	3.31	ng/kg	
57117-44-9	1,2,3,6,7,8-HxCDF	1	1.109	1.054-1.426	0.077	1.00	1.25	ng/kg	
60851-34-5	2,3,4,6,7,8-HxCDF	1	1.056	1.054-1.426	0.077	1.00	0.818	ng/kg	J
72918-21-9	1,2,3,7,8,9-HxCDF	1	1.191	1.054-1.426	0.092	1.00	0.588	ng/kg	J
39227-28-6	1,2,3,4,7,8-HxCDD	1	1.079	1.054-1.426	0.145	1.00	1.05	ng/kg	
57653-85-7	1,2,3,6,7,8-HxCDD	1	1.244	1.054-1.426	0.153	1.00	4.38	ng/kg	
19408-74-3	1,2,3,7,8,9-HxCDD	1	1.269	1.054-1.426	0.160	1.00	2.94	ng/kg	
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	1.038	0.893-1.208	0.081	1.00	22.3	ng/kg	
55673-89-7	1,2,3,4,7,8,9-HpCDF	1	1.171	0.893-1.208	0.112	1.00	2.04	ng/kg	
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.049	0.893-1.208	0.205	2.50	114	ng/kg	B
39001-02-0	OCDF	1	0.855	0.757-1.024	0.164	2.50	47.1	ng/kg	
3268-87-9	OCDD	1	0.884	0.757-1.024	0.310	10.0	890	ng/kg	B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			1.00	6.55	ng/kg
41903-57-5	Total TCDD	1	0.000			1.00	1.99	ng/kg
30402-15-4	Total PeCDF	1	0.000			1.00	16.0	ng/kg
36088-22-9	Total PeCDD	1	0.000			1.00	2.56	ng/kg
55684-94-1	Total HxCDF	1	0.000			1.00	36.2	ng/kg
34465-46-8	Total HxCDD	1	0.000			1.00	36.0	ng/kg
38998-75-3	Total HpCDF	1	0.000			1.00	71.5	ng/kg
37871-00-4	Total HpCDD	1	0.000			1.00	255	ng/kg

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 4.83
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 4.83

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-SC634A

Form 2
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0140
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Matrix:	Sediment	Laboratory ID:	21G0140-04	File ID:	21092018
Sampled:	07/12/21 13:11	Prepared:	09/06/21 16:00	Analyzed:	09/21/21 06:12
Solids Wt%:	57.49	Preparation:	EPA 1613	Initial/Final:	17.4 g / 20 uL
Result Basis:	Dry	Sequence:	SJI0309	Calibration:	EH00030
Batch:	BJH0152	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.793	0.655-0.886	0.076	50.3	24 - 169 %	
13C12-2,3,7,8-TCDD		0.757	0.655-0.886	0.083	68.3	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.599	1.318-1.783	0.074	66.4	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.620	1.318-1.783	0.077	67.0	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.587	1.318-1.783	0.094	79.3	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.507	0.434-0.587	0.075	74.6	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.517	0.434-0.587	0.070	69.3	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.520	0.434-0.587	0.077	74.6	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.512	0.434-0.587	0.093	68.9	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.270	1.054-1.426	0.085	87.7	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.251	1.054-1.426	0.078	78.1	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.464	0.374-0.506	0.080	56.4	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.448	0.374-0.506	0.098	58.4	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.045	0.893-1.208	0.117	71.2	23 - 140 %	
13C12-OCDD		0.880	0.757-1.024	0.133	70.4	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.034	69.1	35 - 197 %	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210920D2.qld
Last Altered: Tuesday, September 21, 2021 13:21:12 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 13:29:04 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0140-04, Name: 21092018, Date: 21-Sep-2021, Time: 06:12:56, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.746	1.000	1.072e3	1.319e3	1.108	0.813	0.770	1081	859	1.20e4	2.01e4	11.1	23.3	NO	bd	bd	0.338
12378-PeCDF	29.931	1.001	1.305e3	7.921e2	1.015	1.648	1.550	736	1005	2.21e4	1.39e4	30.0	13.8	NO	bb	bb	0.269
23478-PeCDF	31.268	1.000	1.911e3	1.237e3	1.126	1.545	1.550	736	1005	3.40e4	2.16e4	46.2	21.5	NO	db	bb	0.379
123478-HxCDF	34.900	1.000	7.234e3	6.516e3	1.017	1.110	1.240	689	1058	1.18e5	1.08e5	171.3	101.9	NO	bd	dd	1.656
234678-HxCDF	35.903	1.000	1.766e3	1.672e3	1.052	1.056	1.240	689	1058	3.32e4	2.81e4	48.1	26.6	NO	MM	MM	0.409
123678-HxCDF	35.045	1.001	2.794e3	2.520e3	1.037	1.109	1.240	689	1058	4.44e4	3.77e4	64.5	35.6	NO	db	db	0.625
123789-HxCDF	36.917	1.000	1.006e3	8.452e2	1.030	1.191	1.240	689	1058	1.62e4	1.53e4	23.5	14.5	NO	bb	bb	0.294
1234678-HpCDF	38.778	1.000	3.461e4	3.335e4	1.327	1.038	1.050	801	605	5.90e5	5.77e5	736.3	953.5	NO	bb	bb	11.131
1234789-HpCDF	41.039	1.001	2.751e3	2.349e3	1.283	1.171	1.050	801	605	3.72e4	3.99e4	46.5	65.9	NO	bb	bb	1.019
OCDF	45.270	1.006	4.911e4	5.742e4	1.447	0.855	0.890	775	820	6.05e5	7.04e5	781.1	858.6	NO	bb	bb	23.579
2378-TCDD	26.396	1.001	4.174e2	7.629e2	0.920	0.547	0.770	1025	871	7.06e3	1.30e4	6.9	14.9	YES	bd	bd	0.189
12378-PeCDD	31.513	1.000	1.491e3	1.178e3	0.995	1.266	1.550	777	998	2.27e4	1.74e4	29.2	17.4	YES	bb	bb	0.519
123478-HxCDD	36.037	1.001	2.081e3	1.929e3	1.027	1.079	1.240	1882	1205	3.89e4	3.41e4	20.7	28.3	NO	bd	bd	0.526
123678-HxCDD	36.148	1.000	8.787e3	7.064e3	1.009	1.244	1.240	1882	1205	1.51e5	1.13e5	80.4	93.9	NO	db	dd	2.193
123789-HxCDD	36.538	1.011	5.702e3	4.494e3	0.950	1.269	1.240	1882	1205	1.02e5	7.88e4	54.1	65.4	NO	bb	bb	1.471
1234678-HpCDD	40.271	1.000	1.235e5	1.177e5	1.068	1.049	1.050	1336	1073	1.99e6	1.90e6	1490.6	1768.9	NO	bb	bb	56.943
OCDD	45.032	1.000	7.707e5	8.715e5	1.181	0.884	0.890	1457	1009	1.02e7	1.15e7	6991.0	11380.0	NO	bb	bb	445.381
13C-2378-TCDF	25.746	1.007	2.828e5	3.568e5	1.427	0.793	0.770	1626	1007	4.53e6	5.69e6	2785.0	5656.8	NO	bb	bb	50.346
13C-12378-PeCDF	29.909	1.170	4.719e5	2.952e5	1.297	1.599	1.550	1443	869	7.69e6	4.67e6	5331.3	5373.9	NO	bb	bb	66.400
13C-23478-PeCDF	31.257	1.223	4.559e5	2.814e5	1.236	1.620	1.550	1443	869	7.18e6	4.43e6	4975.7	5096.5	NO	bb	bb	66.965
13C-123478-HxCDF	34.889	0.955	2.747e5	5.418e5	1.242	0.507	0.510	1185	1271	4.42e6	8.72e6	3730.3	6863.9	NO	bd	bd	74.594
13C-123678-HxCDF	35.023	0.959	2.796e5	5.404e5	1.343	0.517	0.510	1185	1271	4.49e6	8.91e6	3789.9	7012.1	NO	db	db	69.288
13C-234678-HxCDF	35.914	0.983	2.733e5	5.255e5	1.215	0.520	0.510	1185	1271	4.44e6	8.45e6	3750.3	6652.5	NO	bb	bb	74.627
13C-123789-HxCDF	36.928	1.011	2.072e5	4.044e5	1.008	0.512	0.510	1185	1271	3.75e6	7.17e6	3161.2	5644.4	NO	bb	bb	68.888
13C-1234678-HpCDF	38.766	1.061	1.457e5	3.143e5	0.926	0.464	0.440	760	1198	2.49e6	5.29e6	3274.3	4415.7	NO	bd	bd	56.352
13C-1234789-HpCDF	41.006	1.123	1.208e5	2.694e5	0.758	0.448	0.440	760	1198	1.81e6	4.01e6	2383.3	3349.9	NO	bb	bb	58.423
13C-1234-TCDD	25.564	0.000	3.871e5	5.034e5	1.000	0.769	0.770	1390	852	6.30e6	8.23e6	4529.1	9658.4	NO	bb	bb	100.000
13C-2378-TCDD	26.381	1.032	2.926e5	3.863e5	1.116	0.757	0.770	1390	852	4.67e6	6.07e6	3356.2	7126.8	NO	bb	bb	68.281
13C-12378-PeCDD	31.502	1.232	3.172e5	1.999e5	0.732	1.587	1.550	969	684	5.01e6	3.17e6	5172.4	4628.7	NO	bb	bb	79.323
13C-123478-HxCDD	36.014	0.986	4.150e5	3.267e5	0.960	1.270	1.240	1181	952	6.95e6	5.44e6	5884.5	5709.9	NO	bd	bd	87.719
13C-123678-HxCDD	36.137	0.989	3.981e5	3.183e5	1.041	1.251	1.240	1181	952	6.65e6	5.29e6	5632.5	5556.4	NO	db	db	78.080
13C-1234678-HpCDD	40.259	1.102	2.027e5	1.939e5	0.632	1.045	1.050	1107	842	3.37e6	3.19e6	3041.4	3782.1	NO	bb	bb	71.185
13C-OCDD	45.013	1.232	2.922e5	3.323e5	0.504	0.880	0.890	915	846	3.78e6	4.32e6	4134.6	5102.4	NO	bb	bb	140.718
13C-123789-HxCDD	36.527	0.000	4.903e5	3.907e5	1.000	1.255	1.240	1181	952	8.77e6	6.92e6	7424.2	7269.2	NO	bb	bb	100.000
37CL-2378-TCDD	26.396	1.033	2.668e5		1.084			889		4.13e6		4651.6			db		27.652

Dataset: T:\Autospec\Processed Data Batch\210920D2.qld
Last Altered: Tuesday, September 21, 2021 13:21:12 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 13:29:04 Pacific Daylight Time

ID: 21G0140-04, Name: 21092018, Date: 21-Sep-2021, Time: 06:12:56, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	22.238	0.864	3.206e2	3.352e2	1.425	0.956	0.770	1081	859	4.31e3	4.76e3	4.0	5.5	YES	bb	bb	0.072
1289-TCDF	27.363	1.063	8.447e2	1.073e3	1.043	0.787	0.770	1081	859	1.49e4	1.76e4	13.8	20.5	NO	bb	bb	0.287
13468-PECDF					1.376		1.550	729	640								
12389-PECDF					1.000		1.550	736	1005								
123468-HXCDF	33.229	0.952	7.338e3	6.059e3	1.087	1.211	1.240	689	1058	1.20e5	9.62e4	173.9	90.9	NO	bb	bb	1.510
1368-TCDD	23.508	0.891	5.231e2	8.316e2	0.923	0.629	0.770	1025	871	9.43e3	1.24e4	9.2	14.2	YES	bb	bb	0.216
1289-TCDD	27.000	1.023	1.910e2	7.414e1	0.794	2.576	0.770	1025	871	2.63e3	1.64e3	2.6	1.9	YES	db	db	0.049
12479-PECDD	28.806	0.914	2.819e3	2.076e3	1.843	1.358	1.550	777	998	3.00e4	2.04e4	38.6	20.5	NO	bb	bb	0.514
12389-PECDD					1.154		1.550	777	998								
124679-HXCDD	33.998	0.944	2.438e4	1.905e4	1.125	1.280	1.240	1882	1205	3.87e5	3.03e5	205.8	251.4	NO	bb	bb	5.205
1234679-HPCDD	39.223	0.974	1.715e5	1.668e5	1.211	1.028	1.050	1336	1073	2.92e6	2.86e6	2182.4	2664.8	NO	bb	bb	70.437
Total-tetrafurans			1.112e4		1.192			1081		1.59e5							3.277
Total-penta1			2.133e4					729		3.18e5							4.972
Total-pentafurans			1.446e4		1.047			736		2.26e5							3.054
Total-hexafurans			7.852e4		1.045			689		1.25e6							18.101
Total-heptafurans			1.036e5		1.305			801		1.73e6							35.766
Total-Furans			2.781e5		1.158			1081		4.29e6							88.749
Total-tetradioxins			2.605e3		0.879			1025		4.01e4							0.993
Total-pentadioxins			6.066e3		1.331			777		8.28e4							1.282
Total-hexadioxins			7.690e4		1.028			1882		1.13e6							18.024
Total-heptadioxins			2.950e5		1.140			1336		4.91e6							127.380
Total-Dioxins			1.151e6		1.092			1025		1.63e7							593.061
Total-TEQ			1.429e6					1025		2.06e7							681.810
FUNCTION1 PFK			1.257e6					324321		1.86e7							
FUNCTION2 PFK			1.233e6					169410		4.07e6							0.000
FUNCTION3 PFK			1.237e7					204095		1.09e7							0.000
FUNCTION4 PFK			5.345e5					135142		7.84e6							
FUNCTION5 PFK			2.891e4					106429		1.30e6							
FUNCTION1 HXCD...			1.247e3					507		1.97e4							0.000
FUNCTION1 HPCD...			5.274e3					499		9.01e4							0.000
FUNCTION2 HPCD...			4.584e2					538		8.50e3							0.000
FUNCTION3 OCDPE			3.916e2					521		6.23e3							0.000
FUNCTION4 NCDPE			3.415e3					560		5.55e4							0.000
FUNCTION5 DCDPE			9.987e1					638		1.39e3							0.000

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0140-04, Name: 21092018, Date: 21-Sep-2021, Time: 06:12:56, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.75	9.275e2	1.113e3	1.192	0.83	0.77	14.6	YES	NO	dd	bd	0.268
2	Total-tetrafurans	23.08	1.948e3	2.337e3	1.192	0.83	0.77	25.9	YES	NO	bd	bd	0.562
3	1289-TCDF	27.36	8.447e2	1.073e3	1.043	0.79	0.77	13.8	YES	NO	bb	bb	0.287
4	Total-tetrafurans	26.00	1.108e3	1.284e3	1.192	0.86	0.77	16.1	YES	NO	db	db	0.314
5	2378-TCDF	25.75	1.072e3	1.319e3	1.108	0.81	0.77	11.1	YES	NO	bd	bd	0.338
6	Total-tetrafurans	25.53	1.518e3	1.719e3	1.192	0.88	0.77	15.5	YES	NO	db	MM	0.425
7	Total-tetrafurans	25.28	3.261e2	4.313e2	1.192	0.76	0.77	5.0	YES	NO	bd	bb	0.099
8	Total-tetrafurans	24.85	7.728e2	1.049e3	1.192	0.74	0.77	12.5	YES	NO	bb	bb	0.239
9	Total-tetrafurans	24.66	1.329e3	1.593e3	1.192	0.83	0.77	15.8	YES	NO	db	db	0.383
10	Total-tetrafurans	24.01	1.275e3	1.484e3	1.192	0.86	0.77	16.9	YES	NO	MM	MM	0.362

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-penta1	27.18	2.133e4	1.364e4		1.56	1.55	435.9	YES	NO	bb	bb	4.972

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentafurans	28.86	6.438e3	4.420e3	1.047	1.46	1.55	116.6	YES	NO	db	db	1.379
2	Total-pentafurans	28.78	2.146e3	1.428e3	1.047	1.50	1.55	60.0	YES	NO	dd	dd	0.454
3	23478-PeCDF	31.27	1.911e3	1.237e3	1.126	1.54	1.55	46.2	YES	NO	db	bb	0.379
4	Total-pentafurans	31.12	1.554e3	1.167e3	1.047	1.33	1.55	30.5	YES	NO	dd	db	0.346
5	Total-pentafurans	31.01	1.104e3	6.817e2	1.047	1.62	1.55	22.8	YES	NO	bd	bd	0.227
6	12378-PeCDF	29.93	1.305e3	7.921e2	1.015	1.65	1.55	30.0	YES	NO	bb	bb	0.269

Dataset: T:\Autospec\Processed Data Batch\210920D2.qld
Last Altered: Tuesday, September 21, 2021 13:21:12 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 13:29:04 Pacific Daylight Time

ID: 21G0140-04, Name: 21092018, Date: 21-Sep-2021, Time: 06:12:56, Conditions: AUTOSPEC01, User: pk

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-hexafurans	34.76	1.110e3	1.044e3	1.045	1.06	1.24	24.0	YES	NO	bb	bd	0.271
2	Total-hexafurans	34.28	3.108e4	2.690e4	1.045	1.16	1.24	739.8	YES	NO	bb	bb	7.288
3	Total-hexafurans	33.44	2.409e4	2.021e4	1.045	1.19	1.24	523.3	YES	NO	bb	bb	5.567
4	123468-HXCDF	33.23	7.338e3	6.059e3	1.087	1.21	1.24	173.9	YES	NO	bb	bb	1.510
5	123789-HxCDF	36.92	1.006e3	8.452e2	1.030	1.19	1.24	23.5	YES	NO	bb	bb	0.294
6	Total-hexafurans	35.89	2.100e3	1.728e3	1.045	1.21	1.24	53.9	YES	NO	MM	db	0.481
7	234678-HxCDF	35.90	1.766e3	1.672e3	1.052	1.06	1.24	48.1	YES	NO	MM	MM	0.409
8	123678-HxCDF	35.04	2.794e3	2.520e3	1.037	1.11	1.24	64.5	YES	NO	db	db	0.625
9	123478-HxCDF	34.90	7.234e3	6.516e3	1.017	1.11	1.24	171.3	YES	NO	bd	dd	1.656

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	41.04	2.751e3	2.349e3	1.283	1.17	1.05	46.5	YES	NO	bb	bb	1.019
2	Total-heptafurans	39.45	6.623e4	6.480e4	1.305	1.02	1.05	1371.7	YES	NO	bb	bb	23.616
3	1234678-HpCDF	38.78	3.461e4	3.335e4	1.327	1.04	1.05	736.3	YES	NO	bb	bb	11.131

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Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.75	9.275e2	1.113e3	1.192	0.83	0.77	14.6	YES	NO	dd	bd	0.268
2	Total-tetrafurans	23.08	1.948e3	2.337e3	1.192	0.83	0.77	25.9	YES	NO	bd	bd	0.562
3	1289-TCDF	27.36	8.447e2	1.073e3	1.043	0.79	0.77	13.8	YES	NO	bb	bb	0.287
4	Total-tetrafurans	26.00	1.108e3	1.284e3	1.192	0.86	0.77	16.1	YES	NO	db	db	0.314
5	2378-TCDF	25.75	1.072e3	1.319e3	1.108	0.81	0.77	11.1	YES	NO	bd	bd	0.338
6	Total-tetrafurans	25.53	1.518e3	1.719e3	1.192	0.88	0.77	15.5	YES	NO	db	MM	0.425
7	Total-tetrafurans	25.28	3.261e2	4.313e2	1.192	0.76	0.77	5.0	YES	NO	bd	bb	0.099
8	Total-tetrafurans	24.85	7.728e2	1.049e3	1.192	0.74	0.77	12.5	YES	NO	bb	bb	0.239
9	Total-tetrafurans	24.66	1.329e3	1.593e3	1.192	0.83	0.77	15.8	YES	NO	db	db	0.383
10	Total-pentafurans	28.86	6.438e3	4.420e3	1.047	1.46	1.55	116.6	YES	NO	db	db	1.379
11	Total-pentafurans	28.78	2.146e3	1.428e3	1.047	1.50	1.55	60.0	YES	NO	dd	dd	0.454
12	23478-PeCDF	31.27	1.911e3	1.237e3	1.126	1.54	1.55	46.2	YES	NO	db	bb	0.379
13	Total-pentafurans	31.12	1.554e3	1.167e3	1.047	1.33	1.55	30.5	YES	NO	dd	db	0.346
14	Total-pentafurans	31.01	1.104e3	6.817e2	1.047	1.62	1.55	22.8	YES	NO	bd	bd	0.227
15	12378-PeCDF	29.93	1.305e3	7.921e2	1.015	1.65	1.55	30.0	YES	NO	bb	bb	0.269
16	Total-hexafurans	34.76	1.110e3	1.044e3	1.045	1.06	1.24	24.0	YES	NO	bb	bd	0.271
17	Total-hexafurans	34.28	3.108e4	2.690e4	1.045	1.16	1.24	739.8	YES	NO	bb	bb	7.288
18	Total-hexafurans	33.44	2.409e4	2.021e4	1.045	1.19	1.24	523.3	YES	NO	bb	bb	5.567
19	123468-HXCDF	33.23	7.338e3	6.059e3	1.087	1.21	1.24	173.9	YES	NO	bb	bb	1.510
20	123789-HxCDF	36.92	1.006e3	8.452e2	1.030	1.19	1.24	23.5	YES	NO	bb	bb	0.294
21	Total-hexafurans	35.89	2.100e3	1.728e3	1.045	1.21	1.24	53.9	YES	NO	MM	db	0.481
22	234678-HxCDF	35.90	1.766e3	1.672e3	1.052	1.06	1.24	48.1	YES	NO	MM	MM	0.409
23	123678-HxCDF	35.04	2.794e3	2.520e3	1.037	1.11	1.24	64.5	YES	NO	db	db	0.625
24	123478-HxCDF	34.90	7.234e3	6.516e3	1.017	1.11	1.24	171.3	YES	NO	bd	dd	1.656
25	1234789-HpCDF	41.04	2.751e3	2.349e3	1.283	1.17	1.05	46.5	YES	NO	bb	bb	1.019
26	Total-heptafurans	39.45	6.623e4	6.480e4	1.305	1.02	1.05	1371.7	YES	NO	bb	bb	23.616
27	1234678-HpCDF	38.78	3.461e4	3.335e4	1.327	1.04	1.05	736.3	YES	NO	bb	bb	11.131
28	OCDF	45.27	4.911e4	5.742e4	1.447	0.86	0.89	781.1	YES	NO	bb	bb	23.579
29	Total-penta1	27.18	2.133e4	1.364e4		1.56	1.55	435.9	YES	NO	bb	bb	4.972
30	Total-tetrafurans	24.01	1.275e3	1.484e3	1.192	0.86	0.77	16.9	YES	NO	MM	MM	0.362

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TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	25.58	3.535e2	4.508e2	0.879	0.78	0.77	3.9	YES	NO	bd	bd	0.135
2	Total-tetradioxins	25.40	2.008e2	3.055e2	0.879	0.66	0.77	3.5	YES	NO	bb	bb	0.085
3	Total-tetradioxins	24.99	5.097e2	6.324e2	0.879	0.81	0.77	6.7	YES	NO	bd	bb	0.191
4	Total-tetradioxins	24.52	8.031e2	9.375e2	0.879	0.86	0.77	13.1	YES	NO	bb	bd	0.292
5	Total-tetradioxins	24.01	2.108e2	2.477e2	0.879	0.85	0.77	3.2	YES	NO	bb	bb	0.077
6	Total-tetradioxins	23.78	5.274e2	7.499e2	0.879	0.70	0.77	8.7	YES	NO	bb	bb	0.214

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentadioxins	30.12	1.315e3	7.455e2	1.331	1.76	1.55	29.1	YES	NO	bd	bb	0.299
2	Total-pentadioxins	29.91	1.097e3	7.494e2	1.331	1.46	1.55	23.1	YES	NO	bb	bb	0.268
3	Total-pentadioxins	29.31	8.352e2	5.476e2	1.331	1.53	1.55	15.9	YES	NO	bb	bb	0.201
4	12479-PECDD	28.81	2.819e3	2.076e3	1.843	1.36	1.55	38.6	YES	NO	bb	bb	0.514

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDD	36.54	5.702e3	4.494e3	0.950	1.27	1.24	54.1	YES	NO	bb	bb	1.471
2	Total-hexadioxins	36.32	1.324e3	1.130e3	1.028	1.17	1.24	11.7	YES	NO	bb	db	0.328
3	123678-HxCDD	36.15	8.787e3	7.064e3	1.009	1.24	1.24	80.4	YES	NO	db	dd	2.193
4	123478-HxCDD	36.04	2.081e3	1.929e3	1.027	1.08	1.24	20.7	YES	NO	bd	bd	0.526
5	Total-hexadioxins	35.26	2.453e3	1.982e3	1.028	1.24	1.24	20.7	YES	NO	db	db	0.592
6	Total-hexadioxins	35.15	2.774e4	2.239e4	1.028	1.24	1.24	166.7	YES	NO	bd	bd	6.689
7	Total-hexadioxins	34.78	4.427e3	3.220e3	1.028	1.38	1.24	39.2	YES	NO	bb	bb	1.020
8	124679-HXCDD	34.00	2.438e4	1.905e4	1.125	1.28	1.24	205.8	YES	NO	bb	bb	5.205

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234679-HPCDD	39.22	1.715e5	1.668e5	1.211	1.03	1.05	2182.4	YES	NO	bb	bb	70.437
2	1234678-HpCDD	40.27	1.235e5	1.177e5	1.068	1.05	1.05	1490.6	YES	NO	bb	bb	56.943

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Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	25.58	3.535e2	4.508e2	0.879	0.78	0.77	3.9	YES	NO	bd	bd	0.135
2	Total-tetradioxins	25.40	2.008e2	3.055e2	0.879	0.66	0.77	3.5	YES	NO	bb	bb	0.085
3	Total-tetradioxins	24.99	5.097e2	6.324e2	0.879	0.81	0.77	6.7	YES	NO	bd	bb	0.191
4	Total-tetradioxins	24.52	8.031e2	9.375e2	0.879	0.86	0.77	13.1	YES	NO	bb	bd	0.292
5	Total-tetradioxins	24.01	2.108e2	2.477e2	0.879	0.85	0.77	3.2	YES	NO	bb	bb	0.077
6	Total-tetradioxins	23.78	5.274e2	7.499e2	0.879	0.70	0.77	8.7	YES	NO	bb	bb	0.214
7	Total-pentadioxins	30.12	1.315e3	7.455e2	1.331	1.76	1.55	29.1	YES	NO	bd	bb	0.299
8	Total-pentadioxins	29.91	1.097e3	7.494e2	1.331	1.46	1.55	23.1	YES	NO	bb	bb	0.268
9	Total-pentadioxins	29.31	8.352e2	5.476e2	1.331	1.53	1.55	15.9	YES	NO	bb	bb	0.201
10	12479-PECDD	28.81	2.819e3	2.076e3	1.843	1.36	1.55	38.6	YES	NO	bb	bb	0.514
11	123789-HxCDD	36.54	5.702e3	4.494e3	0.950	1.27	1.24	54.1	YES	NO	bb	bb	1.471
12	Total-hexadioxins	36.32	1.324e3	1.130e3	1.028	1.17	1.24	11.7	YES	NO	bb	db	0.328
13	123678-HxCDD	36.15	8.787e3	7.064e3	1.009	1.24	1.24	80.4	YES	NO	db	dd	2.193
14	123478-HxCDD	36.04	2.081e3	1.929e3	1.027	1.08	1.24	20.7	YES	NO	bd	bd	0.526
15	Total-hexadioxins	35.26	2.453e3	1.982e3	1.028	1.24	1.24	20.7	YES	NO	db	db	0.592
16	Total-hexadioxins	35.15	2.774e4	2.239e4	1.028	1.24	1.24	166.7	YES	NO	bd	bd	6.689
17	Total-hexadioxins	34.78	4.427e3	3.220e3	1.028	1.38	1.24	39.2	YES	NO	bb	bb	1.020
18	124679-HXCDD	34.00	2.438e4	1.905e4	1.125	1.28	1.24	205.8	YES	NO	bb	bb	5.205
19	1234679-HPCDD	39.22	1.715e5	1.668e5	1.211	1.03	1.05	2182.4	YES	NO	bb	bb	70.437
20	OCDD	45.03	7.707e5	8.715e5	1.181	0.88	0.89	6991.0	YES	NO	bb	bb	445.381
21	1234678-HpCDD	40.27	1.235e5	1.177e5	1.068	1.05	1.05	1490.6	YES	NO	bb	bb	56.943

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.75	9.275e2	1.113e3	1.192	0.83	0.77	14.6	YES	NO	dd	bd	0.268
2	Total-tetrafurans	23.08	1.948e3	2.337e3	1.192	0.83	0.77	25.9	YES	NO	bd	bd	0.562
3	1289-TCDF	27.36	8.447e2	1.073e3	1.043	0.79	0.77	13.8	YES	NO	bb	bb	0.287
4	Total-tetrafurans	26.00	1.108e3	1.284e3	1.192	0.86	0.77	16.1	YES	NO	db	db	0.314
5	2378-TCDF	25.75	1.072e3	1.319e3	1.108	0.81	0.77	11.1	YES	NO	bd	bd	0.338
6	Total-tetrafurans	25.53	1.518e3	1.719e3	1.192	0.88	0.77	15.5	YES	NO	db	MM	0.425
7	Total-tetrafurans	25.28	3.261e2	4.313e2	1.192	0.76	0.77	5.0	YES	NO	bd	bb	0.099
8	Total-tetrafurans	24.85	7.728e2	1.049e3	1.192	0.74	0.77	12.5	YES	NO	bb	bb	0.239
9	Total-tetrafurans	24.66	1.329e3	1.593e3	1.192	0.83	0.77	15.8	YES	NO	db	db	0.383
10	Total-pentafurans	28.86	6.438e3	4.420e3	1.047	1.46	1.55	116.6	YES	NO	db	db	1.379
11	Total-pentafurans	28.78	2.146e3	1.428e3	1.047	1.50	1.55	60.0	YES	NO	dd	dd	0.454
12	23478-PeCDF	31.27	1.911e3	1.237e3	1.126	1.54	1.55	46.2	YES	NO	db	bb	0.379
13	Total-pentafurans	31.12	1.554e3	1.167e3	1.047	1.33	1.55	30.5	YES	NO	dd	db	0.346
14	Total-pentafurans	31.01	1.104e3	6.817e2	1.047	1.62	1.55	22.8	YES	NO	bd	bd	0.227
15	12378-PeCDF	29.93	1.305e3	7.921e2	1.015	1.65	1.55	30.0	YES	NO	bb	bb	0.269
16	Total-hexafurans	34.76	1.110e3	1.044e3	1.045	1.06	1.24	24.0	YES	NO	bb	bd	0.271
17	Total-hexafurans	34.28	3.108e4	2.690e4	1.045	1.16	1.24	739.8	YES	NO	bb	bb	7.288
18	Total-hexafurans	33.44	2.409e4	2.021e4	1.045	1.19	1.24	523.3	YES	NO	bb	bb	5.567
19	123468-HXCDF	33.23	7.338e3	6.059e3	1.087	1.21	1.24	173.9	YES	NO	bb	bb	1.510
20	123789-HxCDF	36.92	1.006e3	8.452e2	1.030	1.19	1.24	23.5	YES	NO	bb	bb	0.294
21	Total-hexafurans	35.89	2.100e3	1.728e3	1.045	1.21	1.24	53.9	YES	NO	MM	db	0.481
22	234678-HxCDF	35.90	1.766e3	1.672e3	1.052	1.06	1.24	48.1	YES	NO	MM	MM	0.409
23	123678-HxCDF	35.04	2.794e3	2.520e3	1.037	1.11	1.24	64.5	YES	NO	db	db	0.625
24	123478-HxCDF	34.90	7.234e3	6.516e3	1.017	1.11	1.24	171.3	YES	NO	bd	dd	1.656
25	1234789-HpCDF	41.04	2.751e3	2.349e3	1.283	1.17	1.05	46.5	YES	NO	bb	bb	1.019
26	Total-heptafurans	39.45	6.623e4	6.480e4	1.305	1.02	1.05	1371.7	YES	NO	bb	bb	23.616
27	1234678-HpCDF	38.78	3.461e4	3.335e4	1.327	1.04	1.05	736.3	YES	NO	bb	bb	11.131
28	OCDF	45.27	4.911e4	5.742e4	1.447	0.86	0.89	781.1	YES	NO	bb	bb	23.579
29	Total-penta1	27.18	2.133e4	1.364e4		1.56	1.55	435.9	YES	NO	bb	bb	4.972
30	Total-tetrafurans	24.01	1.275e3	1.484e3	1.192	0.86	0.77	16.9	YES	NO	MM	MM	0.362
31	Total-tetradioxins	25.58	3.535e2	4.508e2	0.879	0.78	0.77	3.9	YES	NO	bd	bd	0.135
32	Total-tetradioxins	25.40	2.008e2	3.055e2	0.879	0.66	0.77	3.5	YES	NO	bb	bb	0.085
33	Total-tetradioxins	24.99	5.097e2	6.324e2	0.879	0.81	0.77	6.7	YES	NO	bd	bb	0.191
34	Total-tetradioxins	24.52	8.031e2	9.375e2	0.879	0.86	0.77	13.1	YES	NO	bb	bd	0.292
35	Total-tetradioxins	24.01	2.108e2	2.477e2	0.879	0.85	0.77	3.2	YES	NO	bb	bb	0.077
36	Total-tetradioxins	23.78	5.274e2	7.499e2	0.879	0.70	0.77	8.7	YES	NO	bb	bb	0.214
37	Total-pentadioxins	30.12	1.315e3	7.455e2	1.331	1.76	1.55	29.1	YES	NO	bd	bb	0.299

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Printed: Tuesday, September 21, 2021 13:29:04 Pacific Daylight Time

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	Total-pentadioxins	29.91	1.097e3	7.494e2	1.331	1.46	1.55	23.1	YES	NO	bb	bb	0.268
39	Total-pentadioxins	29.31	8.352e2	5.476e2	1.331	1.53	1.55	15.9	YES	NO	bb	bb	0.201
40	12479-PECDD	28.81	2.819e3	2.076e3	1.843	1.36	1.55	38.6	YES	NO	bb	bb	0.514
41	123789-HxCDD	36.54	5.702e3	4.494e3	0.950	1.27	1.24	54.1	YES	NO	bb	bb	1.471
42	Total-hexadioxins	36.32	1.324e3	1.130e3	1.028	1.17	1.24	11.7	YES	NO	bb	db	0.328
43	123678-HxCDD	36.15	8.787e3	7.064e3	1.009	1.24	1.24	80.4	YES	NO	db	dd	2.193
44	123478-HxCDD	36.04	2.081e3	1.929e3	1.027	1.08	1.24	20.7	YES	NO	bd	bd	0.526
45	Total-hexadioxins	35.26	2.453e3	1.982e3	1.028	1.24	1.24	20.7	YES	NO	db	db	0.592
46	Total-hexadioxins	35.15	2.774e4	2.239e4	1.028	1.24	1.24	166.7	YES	NO	bd	bd	6.689
47	Total-hexadioxins	34.78	4.427e3	3.220e3	1.028	1.38	1.24	39.2	YES	NO	bb	bb	1.020
48	124679-HXCDD	34.00	2.438e4	1.905e4	1.125	1.28	1.24	205.8	YES	NO	bb	bb	5.205
49	1234679-HPCDD	39.22	1.715e5	1.668e5	1.211	1.03	1.05	2182.4	YES	NO	bb	bb	70.437
50	OCDD	45.03	7.707e5	8.715e5	1.181	0.88	0.89	6991.0	YES	NO	bb	bb	445.381
51	1234678-HpCDD	40.27	1.235e5	1.177e5	1.068	1.05	1.05	1490.6	YES	NO	bb	bb	56.943

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PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	22.68	3.837e4					1.2	NO		bb		
2	FUNCTION1 PFK	22.45	1.566e5					2.7	NO		db		
3	FUNCTION1 PFK	22.28	2.672e4					2.3	NO		dd		
4	FUNCTION1 PFK	22.24	8.284e4					3.2	YES		dd		
5	FUNCTION1 PFK	22.15	5.952e4					3.3	YES		dd		
6	FUNCTION1 PFK	22.10	2.742e4					2.6	NO		bd		
7	FUNCTION1 PFK	21.97	8.959e4					3.4	YES		db		
8	FUNCTION1 PFK	21.80	5.340e4					2.2	NO		dd		
9	FUNCTION1 PFK	21.74	7.269e3					0.8	NO		dd		
10	FUNCTION1 PFK	21.68	2.968e4					2.1	NO		bd		
11	FUNCTION1 PFK	21.38	1.819e5					4.1	YES		bb		
12	FUNCTION1 PFK	21.24	1.655e4					1.5	NO		db		
13	FUNCTION1 PFK	21.19	8.557e4					4.4	YES		dd		
14	FUNCTION1 PFK	21.13	2.749e4					2.7	NO		bd		
15	FUNCTION1 PFK	26.49	5.203e3					0.6	NO		bb		
16	FUNCTION1 PFK	25.90	4.773e3					0.6	NO		bb		
17	FUNCTION1 PFK	25.59	1.617e4					1.2	NO		bb		
18	FUNCTION1 PFK	25.46	2.428e4					1.2	NO		bb		
19	FUNCTION1 PFK	25.38	1.272e4					1.1	NO		db		
20	FUNCTION1 PFK	25.28	2.154e4					1.2	NO		bd		
21	FUNCTION1 PFK	24.97	1.693e4					0.8	NO		bb		
22	FUNCTION1 PFK	24.90	3.231e3					0.4	NO		bb		
23	FUNCTION1 PFK	24.19	4.738e3					0.6	NO		bb		
24	FUNCTION1 PFK	24.04	1.867e4					1.1	NO		db		
25	FUNCTION1 PFK	23.98	7.628e3					0.8	NO		bd		
26	FUNCTION1 PFK	23.87	8.812e3					0.7	NO		bb		
27	FUNCTION1 PFK	23.66	4.170e3					0.5	NO		bb		
28	FUNCTION1 PFK	23.60	3.835e4					1.4	NO		bb		
29	FUNCTION1 PFK	23.45	1.713e4					1.1	NO		bb		
30	FUNCTION1 PFK	23.36	9.337e3					0.9	NO		bb		
31	FUNCTION1 PFK	27.42	6.350e4					2.0	NO		db		
32	FUNCTION1 PFK	27.29	2.431e4					1.3	NO		bd		
33	FUNCTION1 PFK	27.20	7.263e3					0.7	NO		bb		
34	FUNCTION1 PFK	27.05	4.635e4					1.2	NO		db		
35	FUNCTION1 PFK	26.92	1.924e4					1.2	NO		bd		

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PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	29.61	3.693e5					8.4	YES		bb		0.000
2	FUNCTION2 PFK	29.37	4.088e4					6.6	YES		bb		0.000
3	FUNCTION2 PFK	28.97	8.177e5					7.9	YES		bb		0.000
4	FUNCTION2 PFK	28.26	4.699e3					1.2	NO		bb		0.000

PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	37.66	5.202e6					12.8	YES		bb		0.000
2	FUNCTION3 PFK	36.37	7.000e6					36.7	YES		bb		0.000
3	FUNCTION3 PFK	34.02	1.663e5					3.8	YES		bb		0.000

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	38.03	1.260e5					8.6	YES		bd		
2	FUNCTION4 PFK	40.55	6.864e3					1.7	NO		bd		
3	FUNCTION4 PFK	40.38	1.041e4					1.5	NO		bb		
4	FUNCTION4 PFK	40.34	9.026e2					0.5	NO		bb		
5	FUNCTION4 PFK	40.24	2.327e3					0.8	NO		db		
6	FUNCTION4 PFK	40.19	1.973e3					0.8	NO		bd		
7	FUNCTION4 PFK	40.13	2.859e3					0.7	NO		bb		
8	FUNCTION4 PFK	40.00	5.989e3					1.2	NO		bb		
9	FUNCTION4 PFK	39.89	4.088e3					1.1	NO		bb		
10	FUNCTION4 PFK	39.74	2.183e4					2.3	NO		bb		
11	FUNCTION4 PFK	39.47	3.026e4					2.9	NO		bb		
12	FUNCTION4 PFK	39.08	7.806e3					1.6	NO		bb		
13	FUNCTION4 PFK	39.03	2.246e3					0.7	NO		bb		
14	FUNCTION4 PFK	38.79	5.761e2					0.4	NO		bb		
15	FUNCTION4 PFK	38.35	2.390e4					3.7	YES		db		
16	FUNCTION4 PFK	38.33	9.160e4					3.2	YES		dd		
17	FUNCTION4 PFK	38.10	9.277e4					7.9	YES		dd		
18	FUNCTION4 PFK	42.94	5.988e3					1.1	NO		bb		
19	FUNCTION4 PFK	42.75	5.049e3					1.2	NO		bb		
20	FUNCTION4 PFK	42.50	5.518e3					1.4	NO		bb		
21	FUNCTION4 PFK	42.38	1.983e3					0.7	NO		bb		
22	FUNCTION4 PFK	42.28	3.924e3					0.9	NO		db		
23	FUNCTION4 PFK	42.23	2.859e3					1.0	NO		bd		
24	FUNCTION4 PFK	41.84	1.252e4					1.3	NO		bb		
25	FUNCTION4 PFK	41.62	3.978e3					1.1	NO		bb		
26	FUNCTION4 PFK	41.07	6.710e2					0.4	NO		bb		
27	FUNCTION4 PFK	40.95	5.976e3					1.1	NO		bb		
28	FUNCTION4 PFK	40.89	2.219e4					1.8	NO		db		
29	FUNCTION4 PFK	40.75	1.023e4					1.8	NO		dd		
30	FUNCTION4 PFK	40.71	1.116e4					1.7	NO		dd		
31	FUNCTION4 PFK	40.64	4.404e3					1.4	NO		bd		
32	FUNCTION4 PFK	40.59	5.677e3					1.6	NO		db		

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PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	45.08	7.713e3					1.8	NO		bb		
2	FUNCTION5 PFK	45.03	5.145e2					0.5	NO		bb		
3	FUNCTION5 PFK	44.48	2.806e3					1.4	NO		bb		
4	FUNCTION5 PFK	44.31	1.474e3					0.9	NO		bb		
5	FUNCTION5 PFK	43.80	8.511e3					2.3	NO		bb		
6	FUNCTION5 PFK	43.59	2.729e3					1.5	NO		bb		
7	FUNCTION5 PFK	43.55	5.144e2					0.5	NO		bb		
8	FUNCTION5 PFK	43.43	6.427e2					0.7	NO		bb		
9	FUNCTION5 PFK	43.15	1.183e3					0.9	NO		bb		
10	FUNCTION5 PFK	43.06	2.824e3					1.8	NO		bb		

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	25.90	1.589e2					5.0	YES		bb		0.000
2	FUNCTION1 HXCD...	23.73	1.313e2					5.9	YES		db		0.000
3	FUNCTION1 HXCD...	23.61	1.056e2					3.2	YES		bd		0.000
4	FUNCTION1 HXCD...	22.33	2.368e2					8.0	YES		db		0.000
5	FUNCTION1 HXCD...	22.15	4.118e2					9.2	YES		bd		0.000
6	FUNCTION1 HXCD...	26.11	2.024e2					7.4	YES		bb		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	25.61	1.007e2					2.9	NO		bb		0.000
2	FUNCTION1 HPCD...	25.28	1.537e2					4.3	YES		bb		0.000
3	FUNCTION1 HPCD...	23.34	2.124e2					8.7	YES		bb		0.000
4	FUNCTION1 HPCD...	23.02	7.876e1					2.7	NO		bb		0.000
5	FUNCTION1 HPCD...	22.03	4.525e3					156.9	YES		bb		0.000
6	FUNCTION1 HPCD...	21.59	1.234e2					2.0	NO		bb		0.000
7	FUNCTION1 HPCD...	21.10	7.959e1					2.9	NO		bb		0.000

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ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	32.49	9.651e1					2.2	NO		bb		0.000
2	FUNCTION2 HPCD...	30.15	7.698e1					3.0	NO		bb		0.000
3	FUNCTION2 HPCD...	28.93	1.661e2					5.9	YES		db		0.000
4	FUNCTION2 HPCD...	28.90	1.188e2					4.7	YES		bd		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	33.88	7.200e1					2.5	NO		bb		0.000
2	FUNCTION3 OCDPE	37.84	9.746e1					4.2	YES		bb		0.000
3	FUNCTION3 OCDPE	37.57	7.589e1					2.7	NO		bb		0.000
4	FUNCTION3 OCDPE	34.21	1.463e2					2.6	NO		bb		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	38.41	3.415e3					99.0	YES		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	45.01	9.987e1					2.2	NO		bb		0.000

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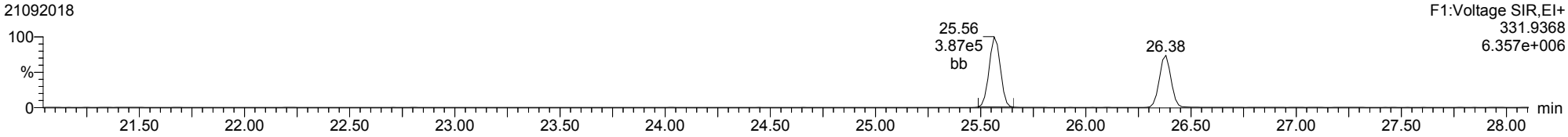

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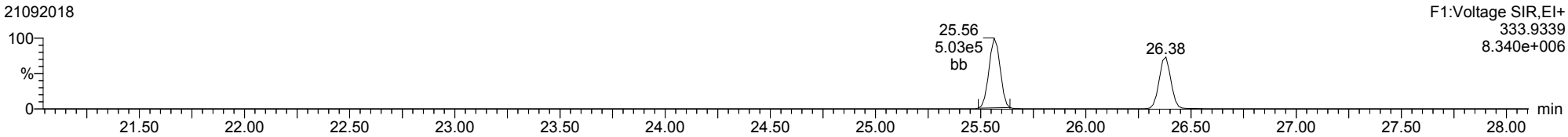

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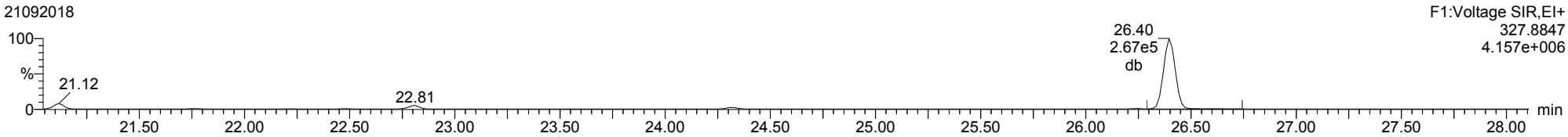

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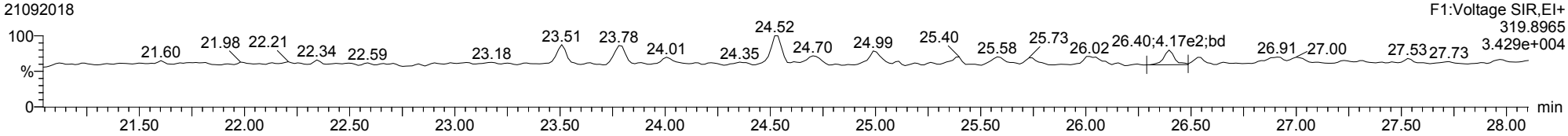
2378-TCDD



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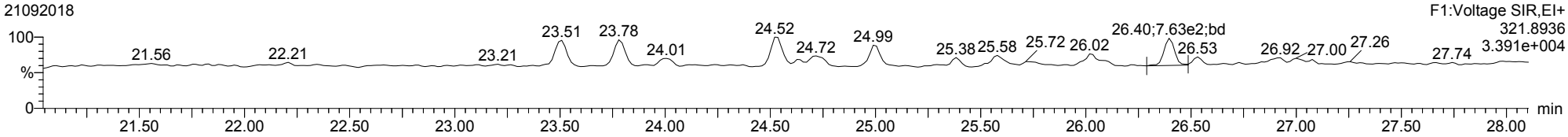
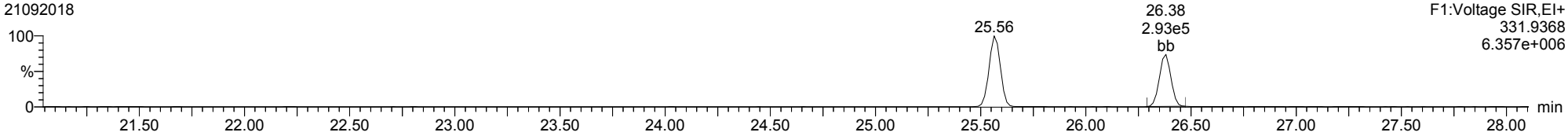
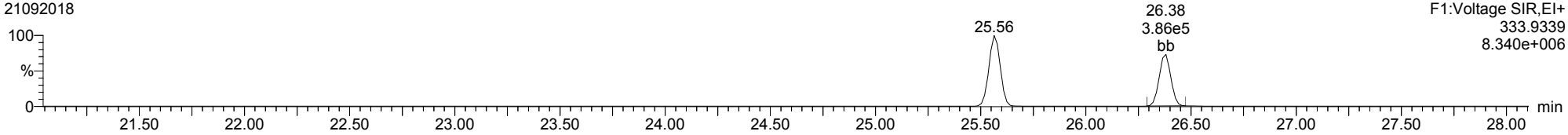


13C-2378-TCDD



13C-2378-TCDD



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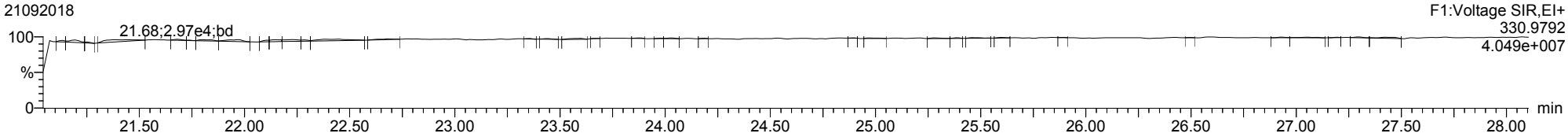

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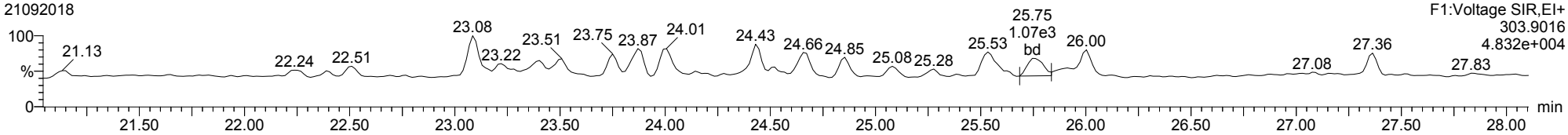
2378-TCDF



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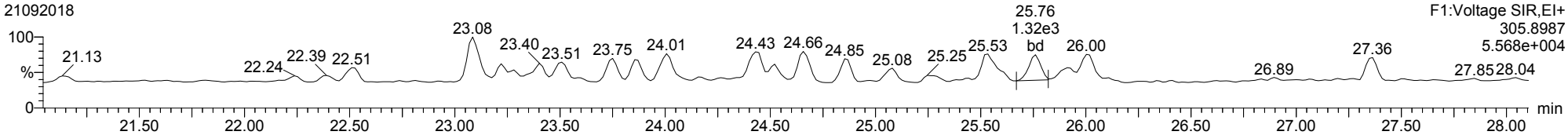

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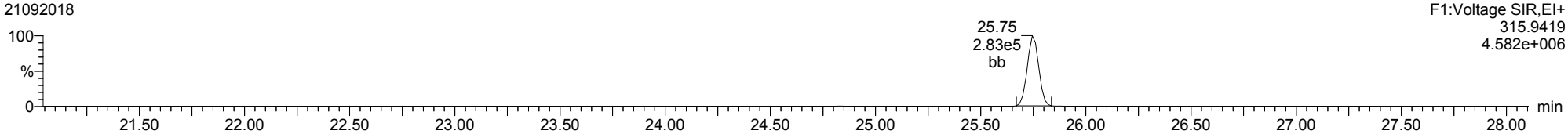

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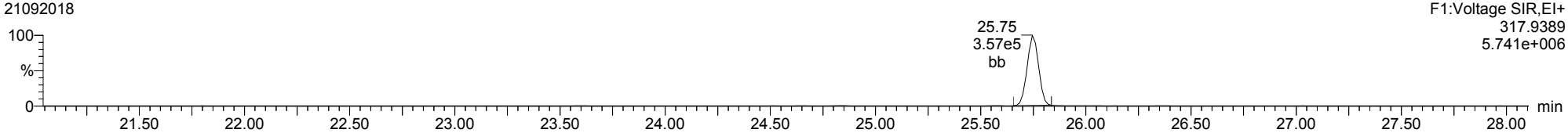

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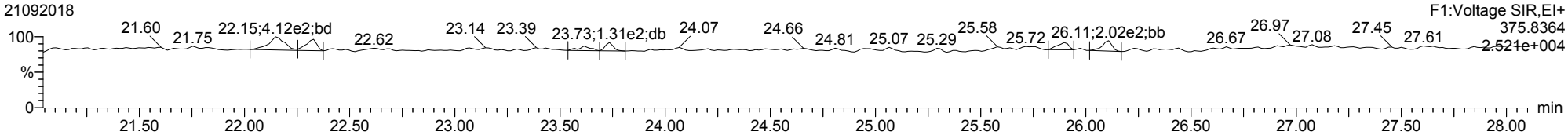

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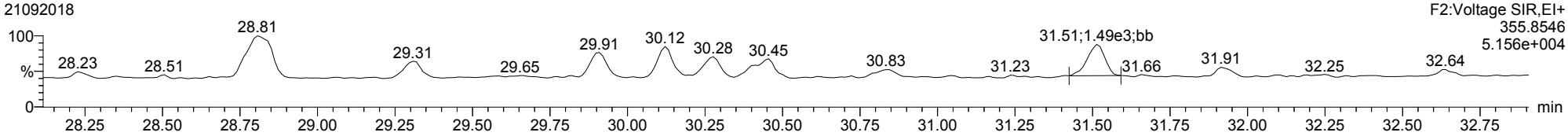
12378-PeCDD



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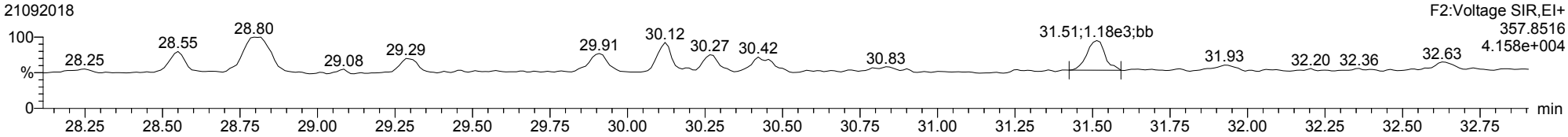

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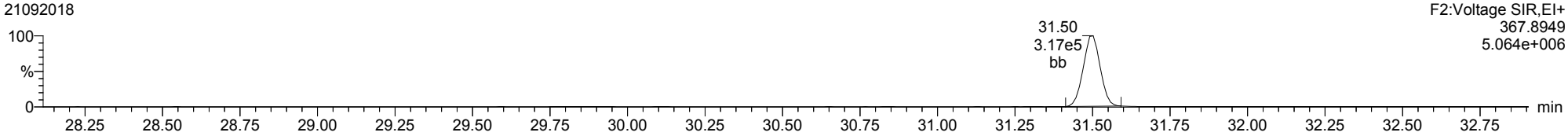

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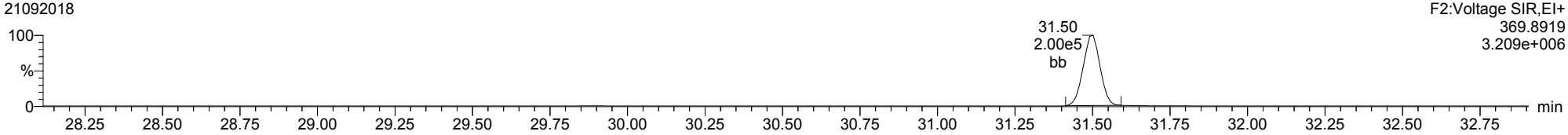

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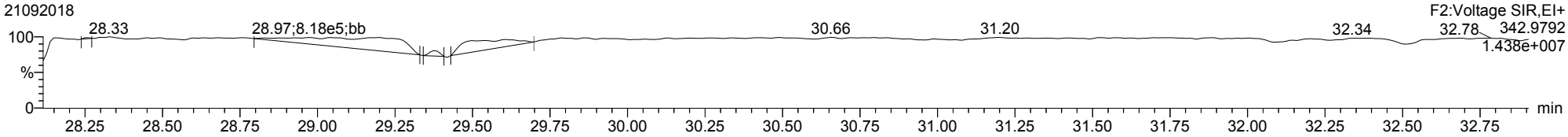

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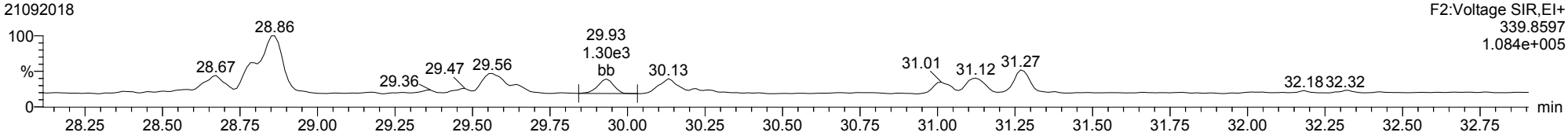

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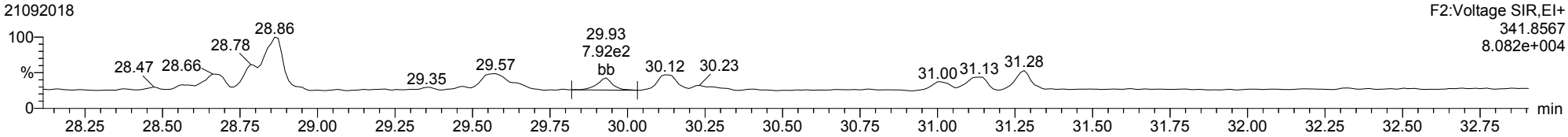

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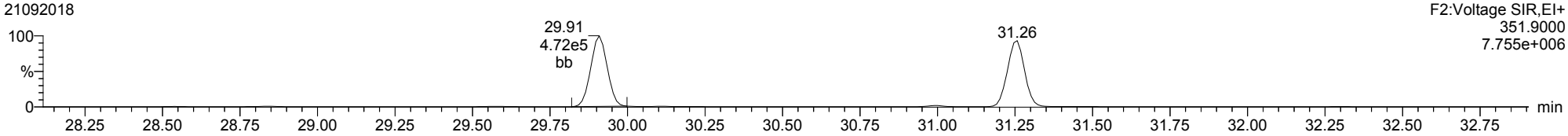

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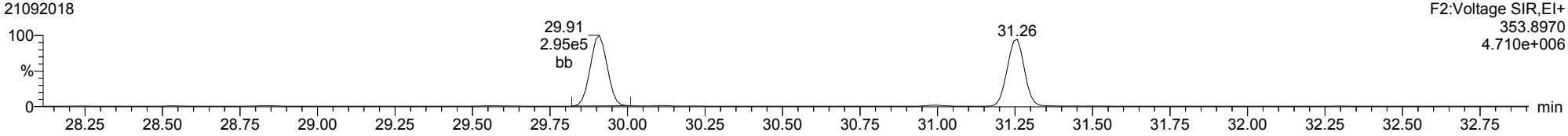
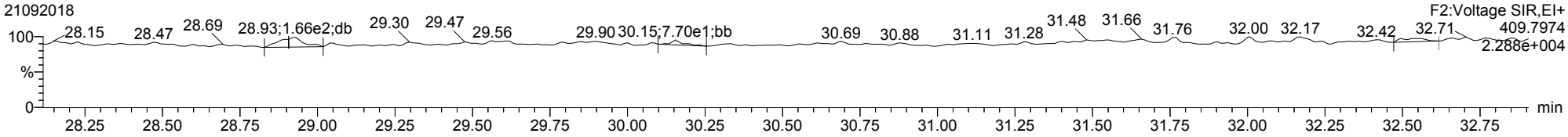


FUNCTION2 HPCDPE



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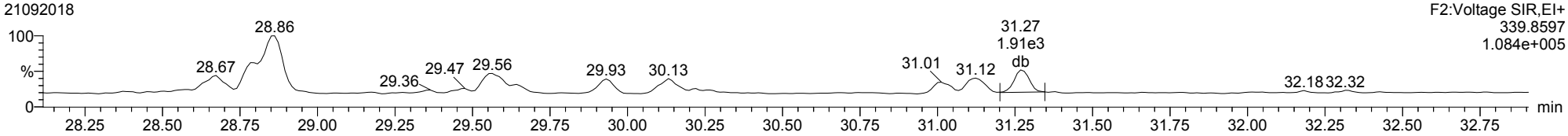
23478-PeCDF



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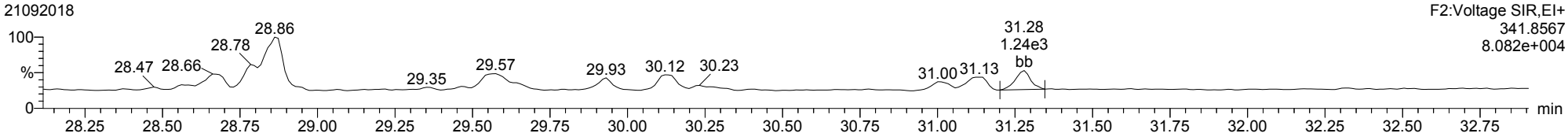

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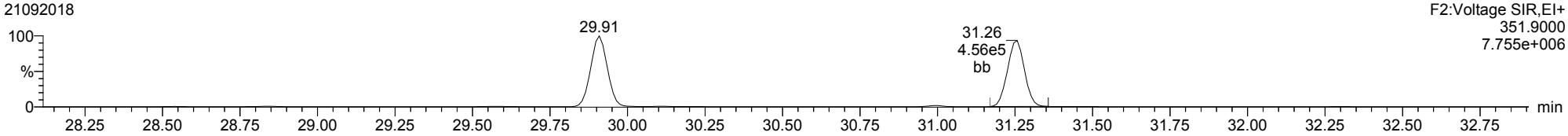

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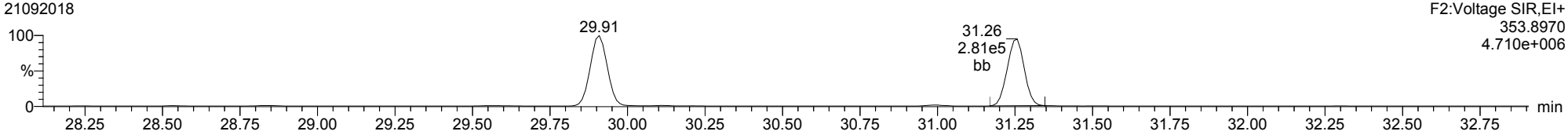
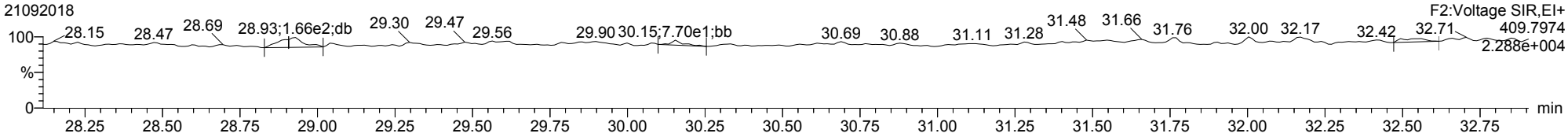


FUNCTION2 HPCDPE



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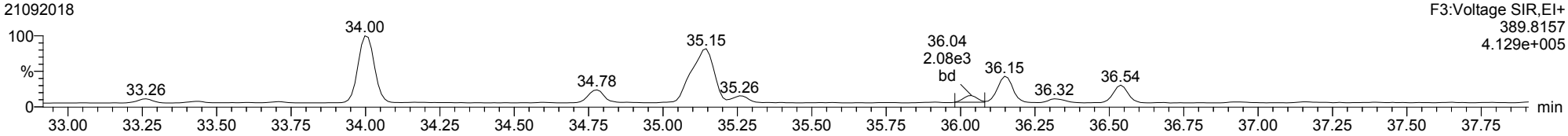
123478-HxCDD



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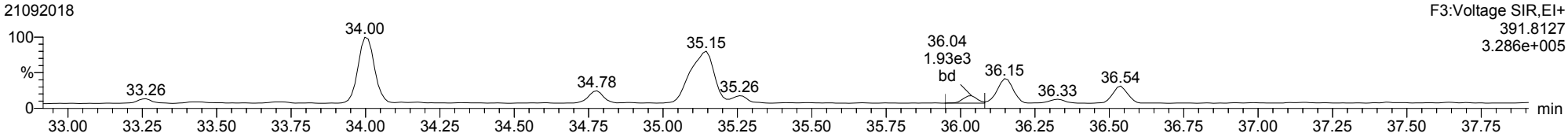

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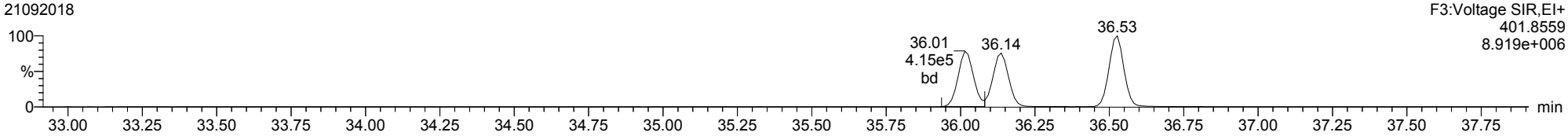

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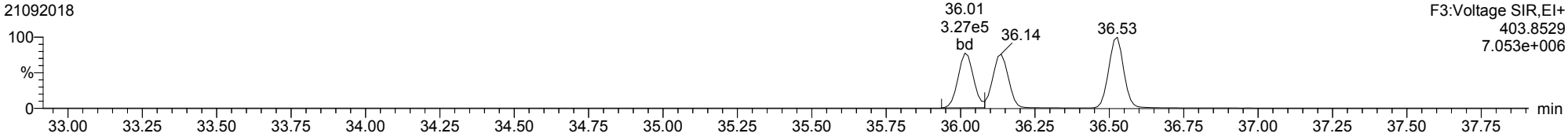
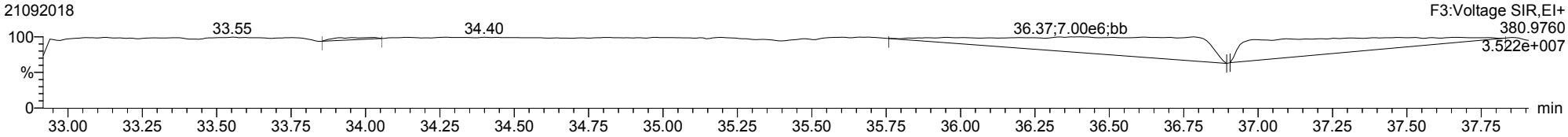


FUNCTION3 PFK



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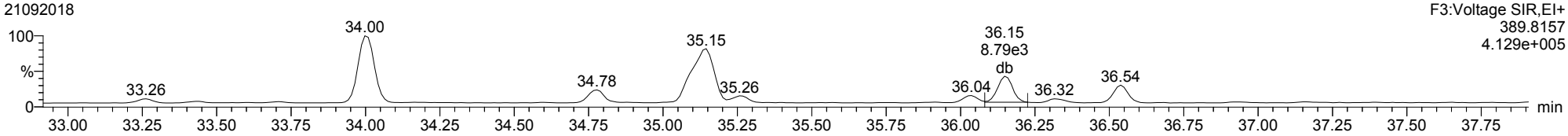
123678-HxCDD



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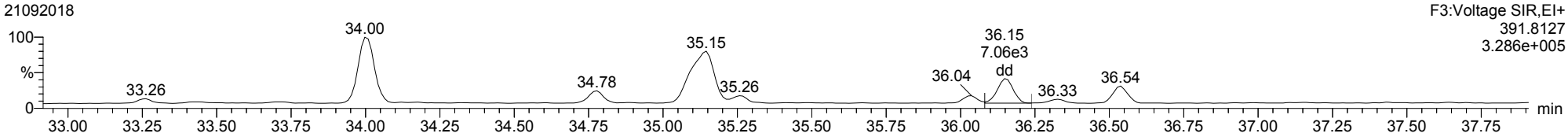

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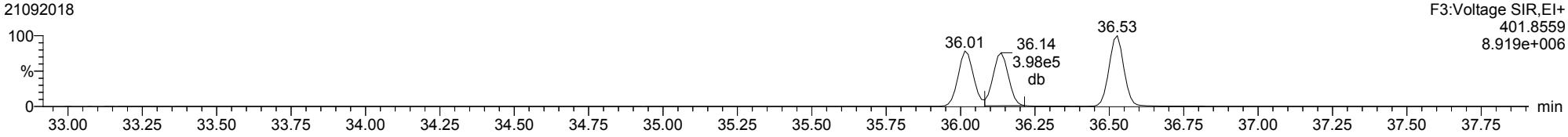

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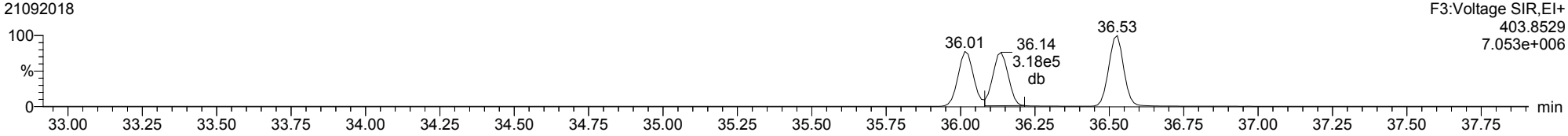

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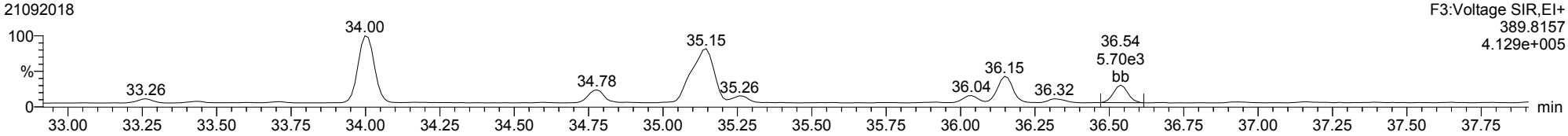

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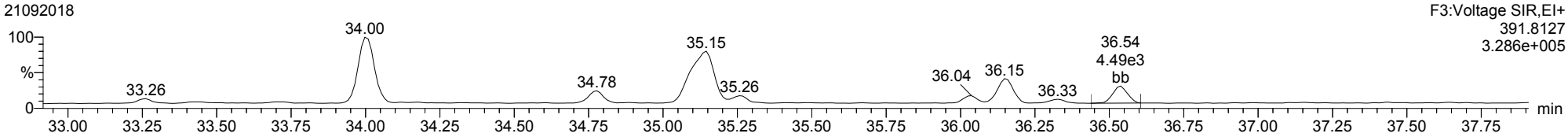

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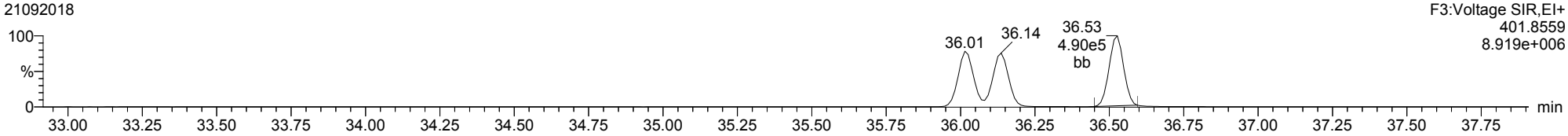

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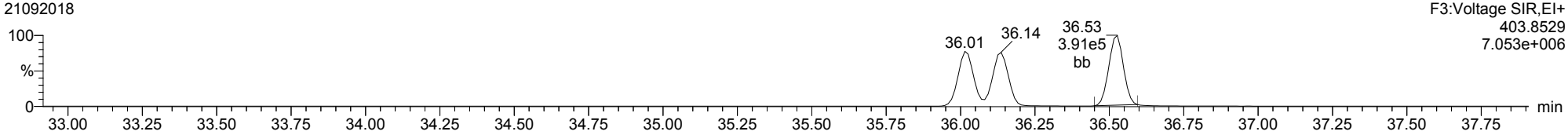

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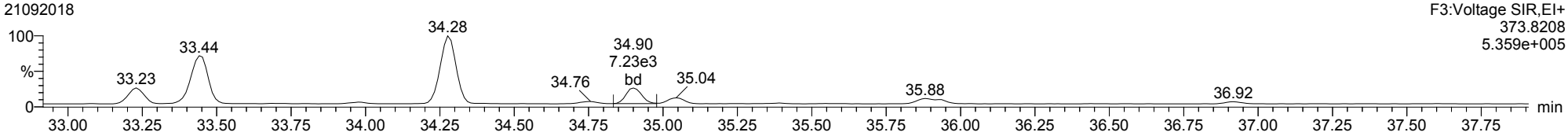
123478-HxCDF



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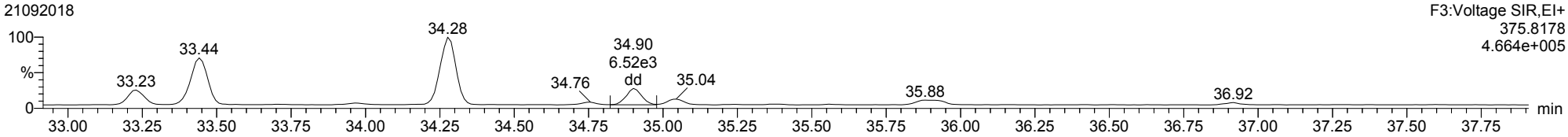

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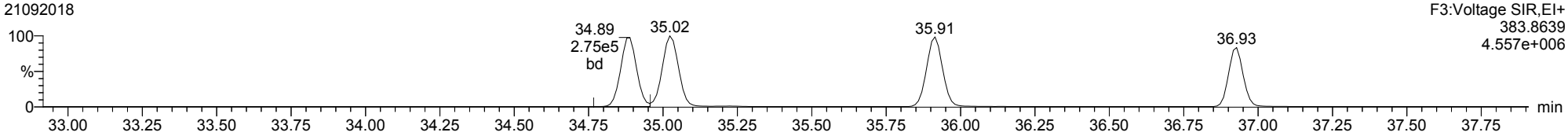

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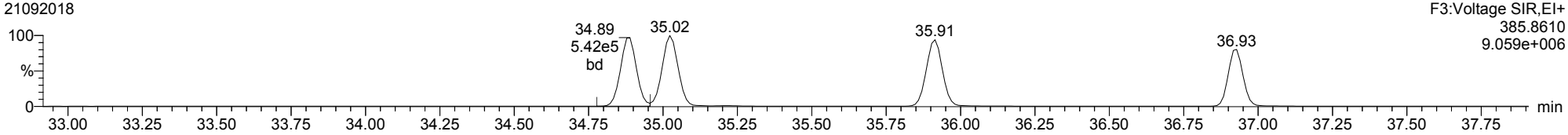
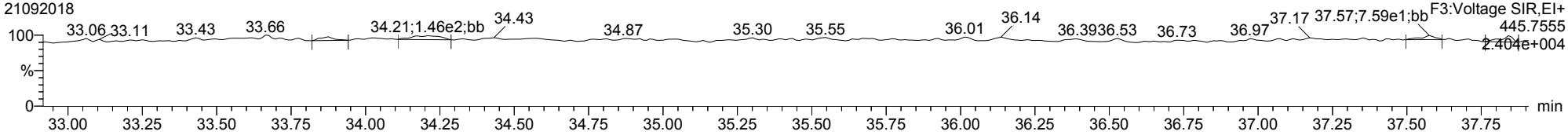


FUNCTION3 OCDPE



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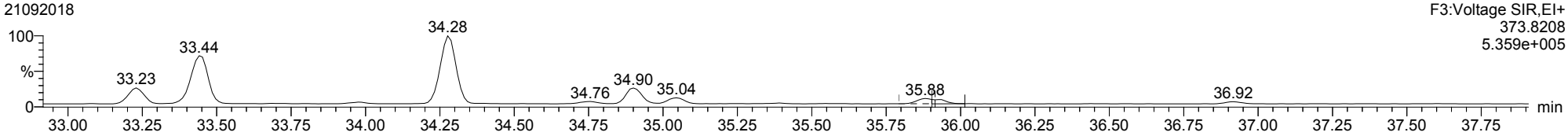
234678-HxCDF



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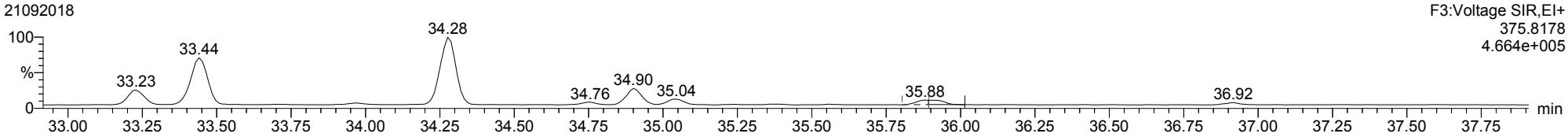

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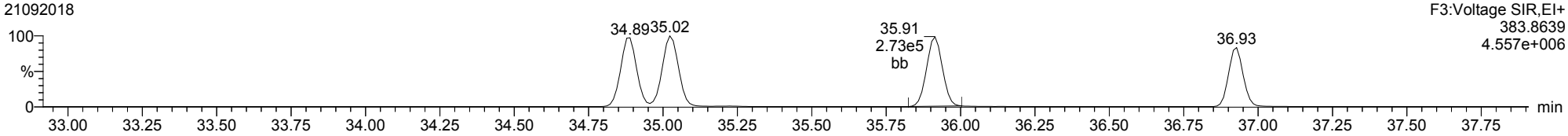

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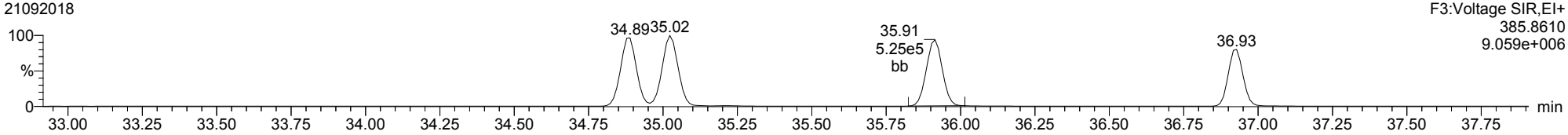
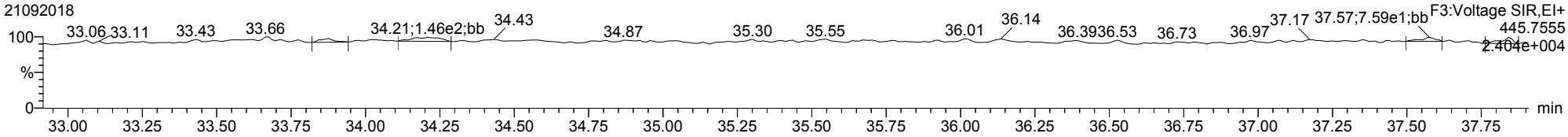


FUNCTION3 OCDPE



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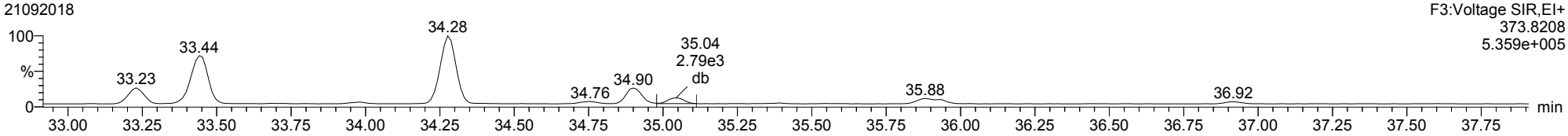
123678-HxCDF



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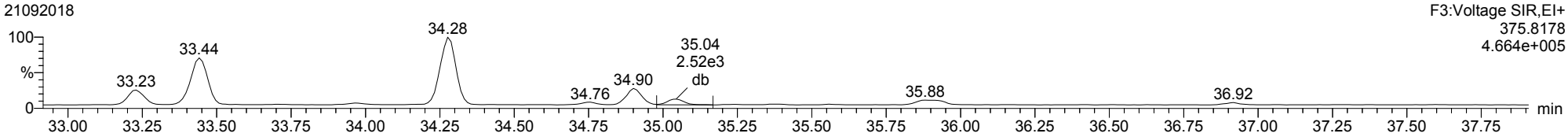

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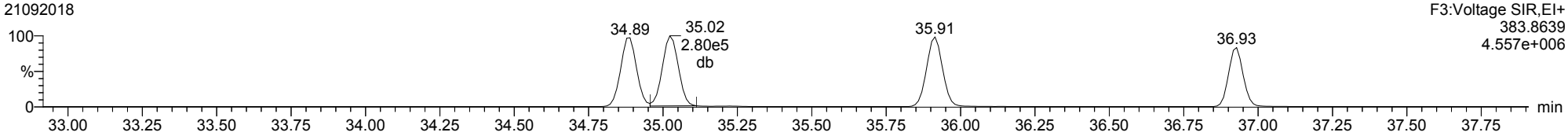

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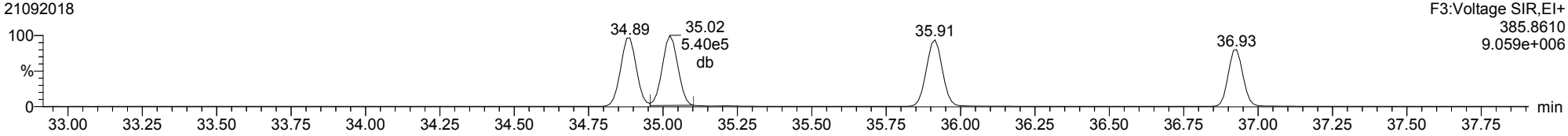
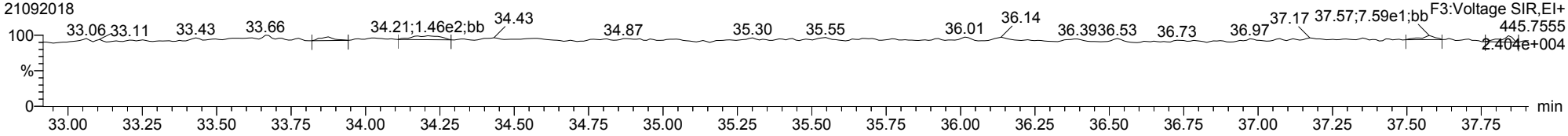
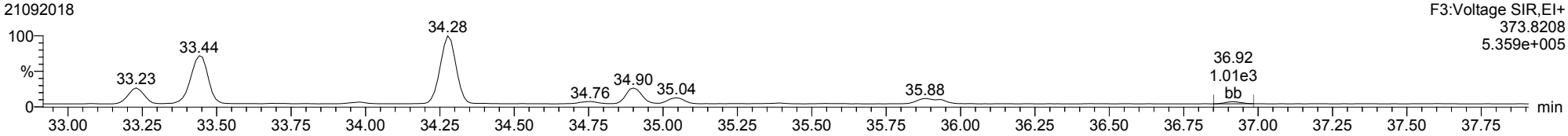


FUNCTION3 OCDPE

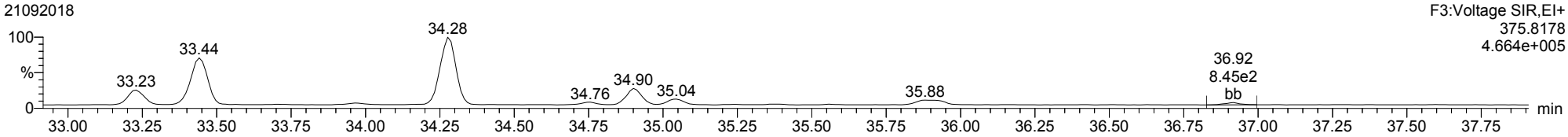


ID: 21G0140-04, Name: 21092018, Date: 21-Sep-2021, Time: 06:12:56, Conditions: AUTOSPEC01, User: pk

123789-HxCDF



123789-HxCDF



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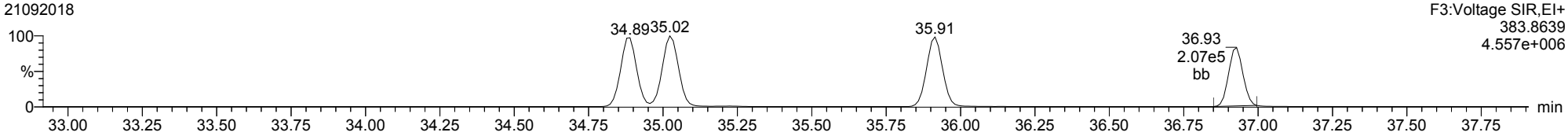

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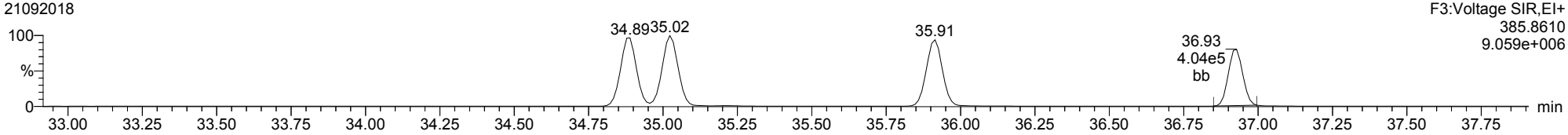
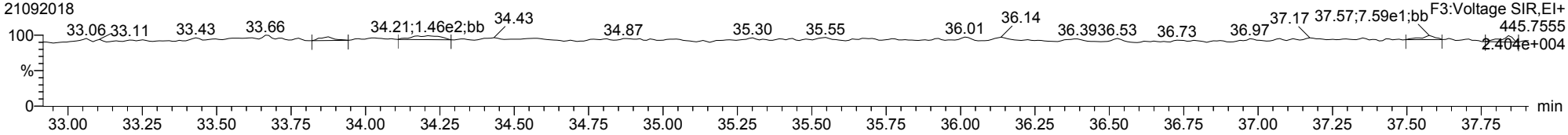


FUNCTION3 OCDPE



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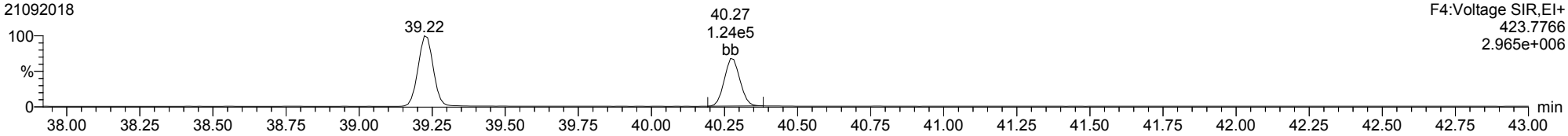

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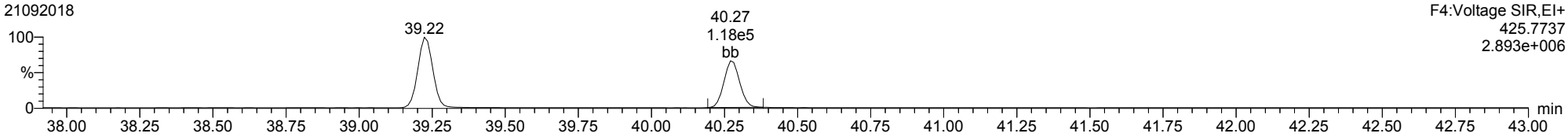

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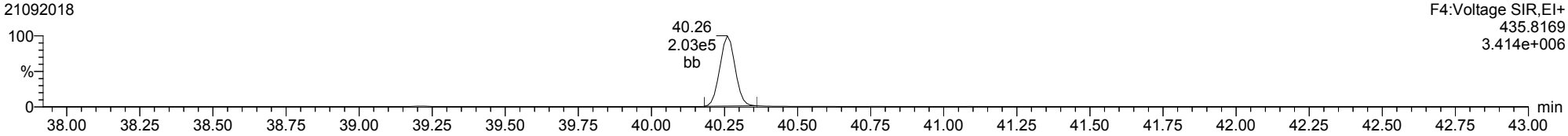

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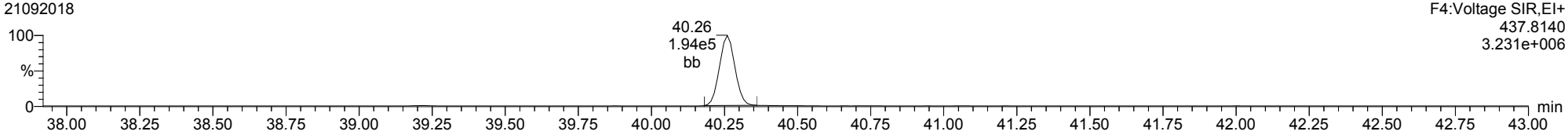

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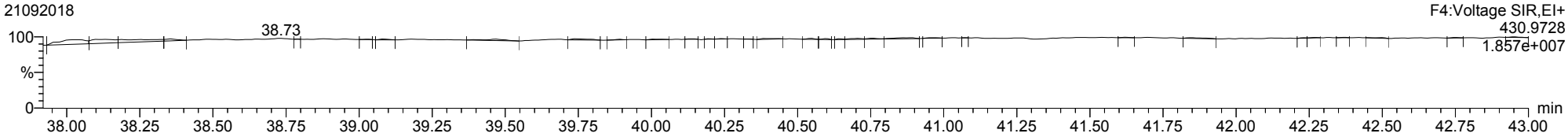

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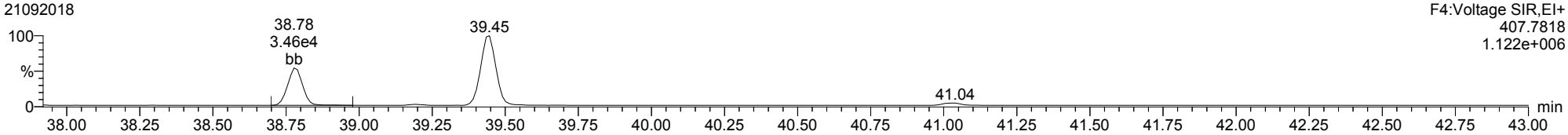

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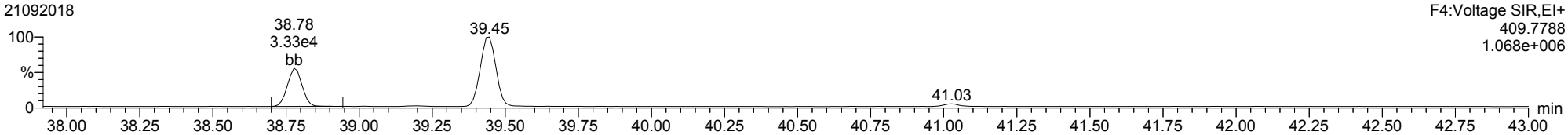

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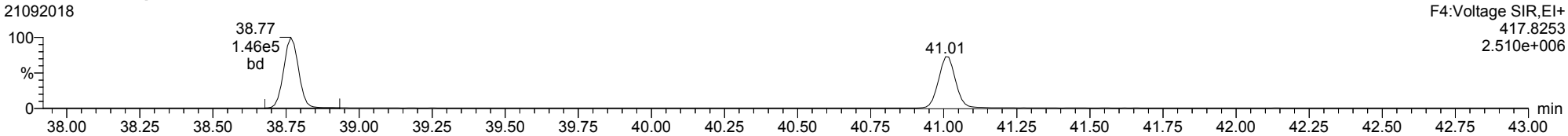

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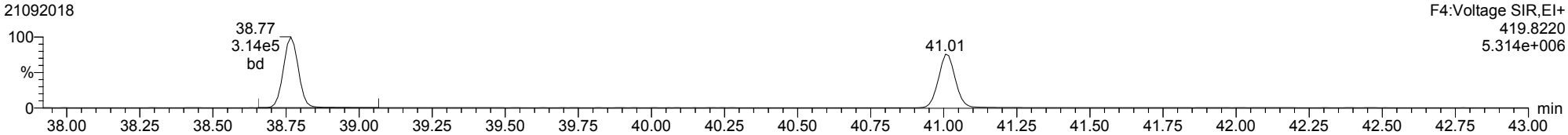
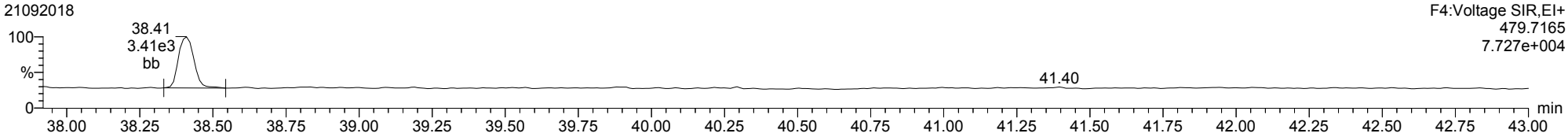


FUNCTION4 NCDPE



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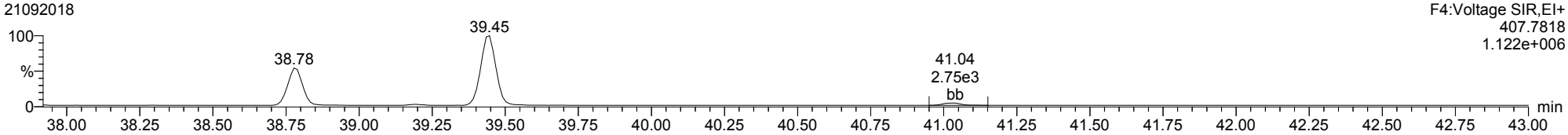

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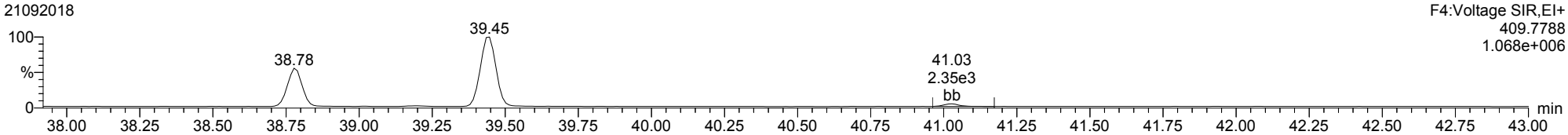

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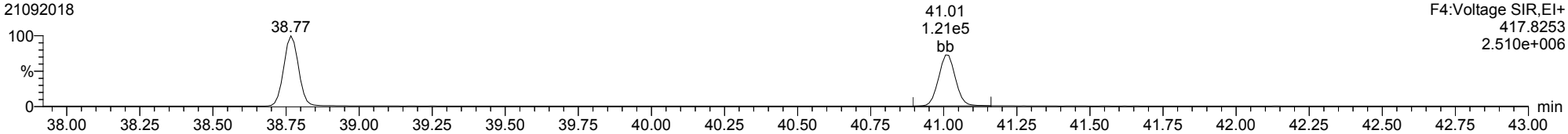

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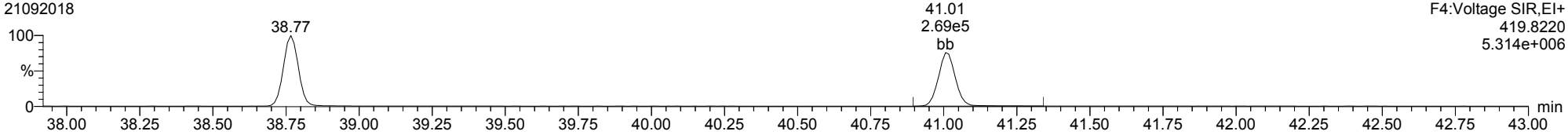
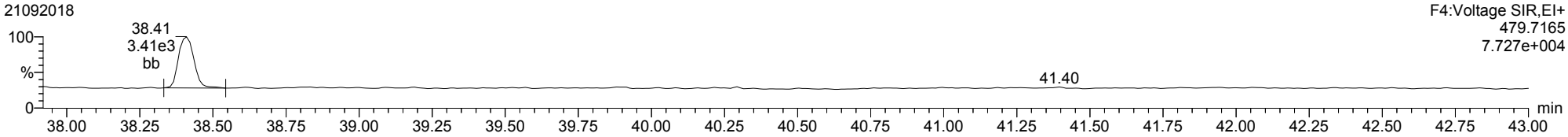
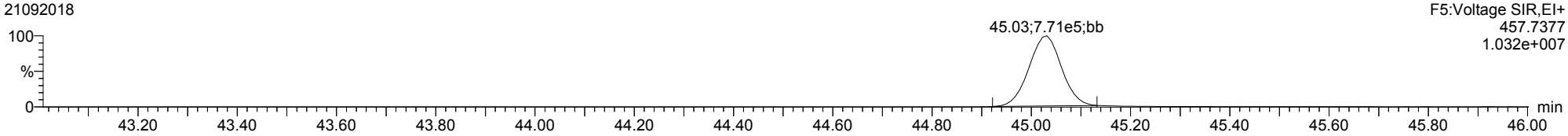


FUNCTION4 NCDPE



ID: 21G0140-04, Name: 21092018, Date: 21-Sep-2021, Time: 06:12:56, Conditions: AUTOSPEC01, User: pk

OCDD



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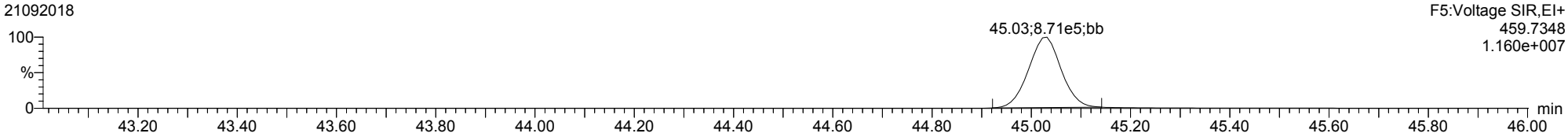

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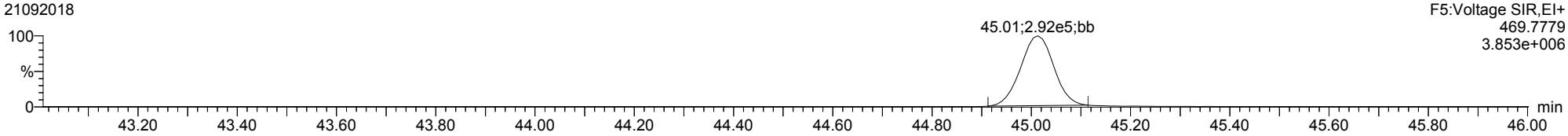

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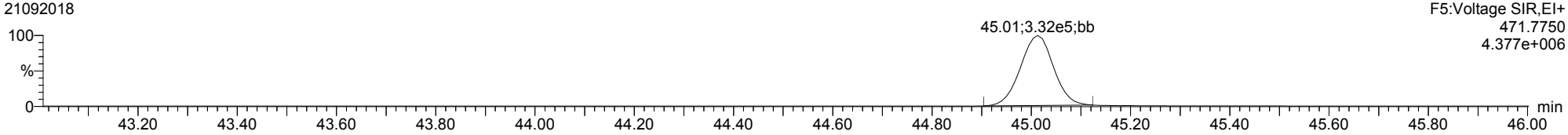
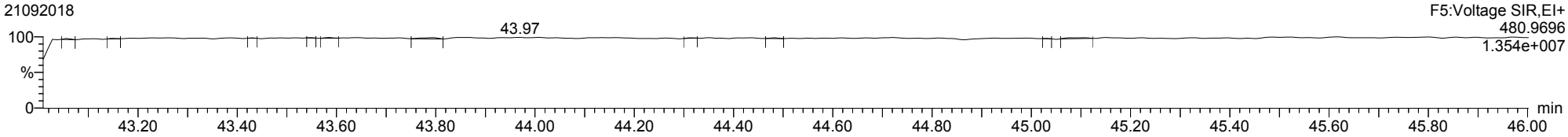


FUNCTION5 PFK



ID: 21G0140-04, Name: 21092018, Date: 21-Sep-2021, Time: 06:12:56, Conditions: AUTOSPEC01, User: pk

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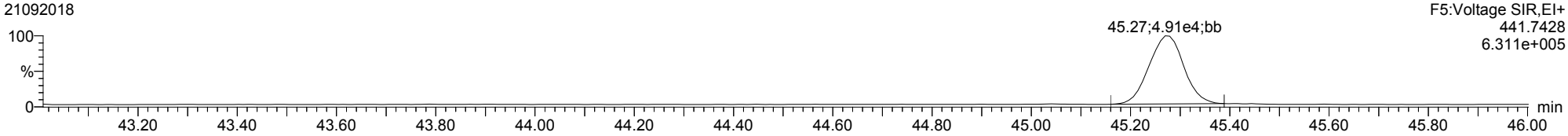

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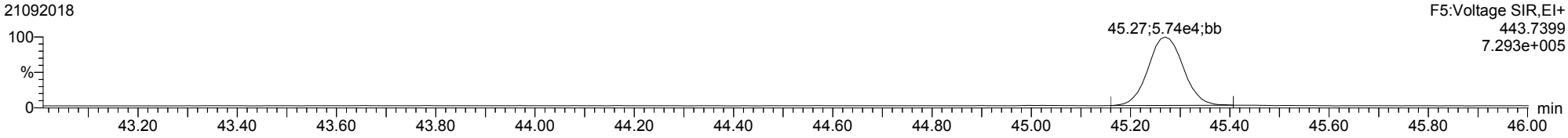

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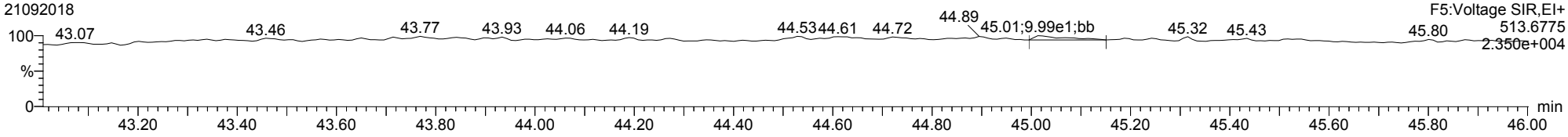
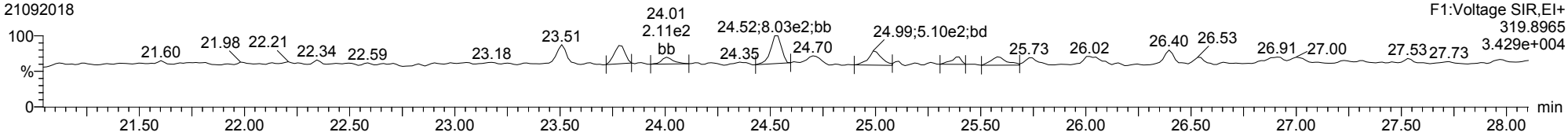
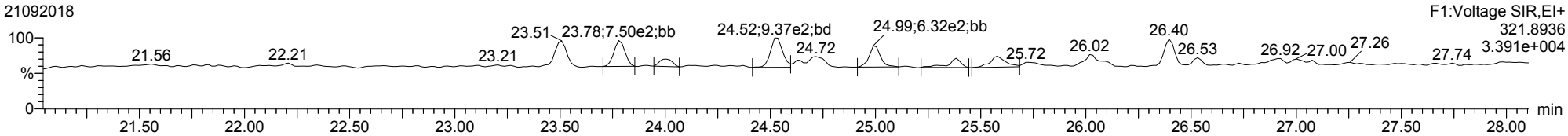


ID: 21G0140-04, Name: 21092018, Date: 21-Sep-2021, Time: 06:12:56, Conditions: AUTOSPEC01, User: pk

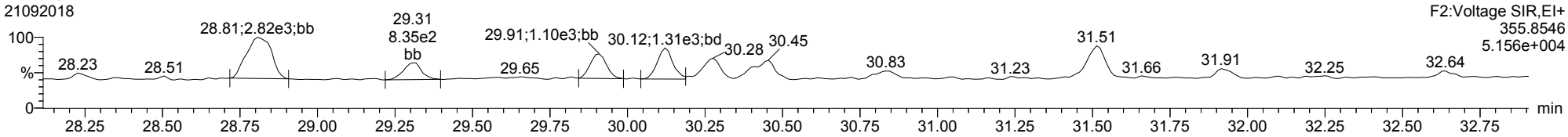
Total-tetradioxins



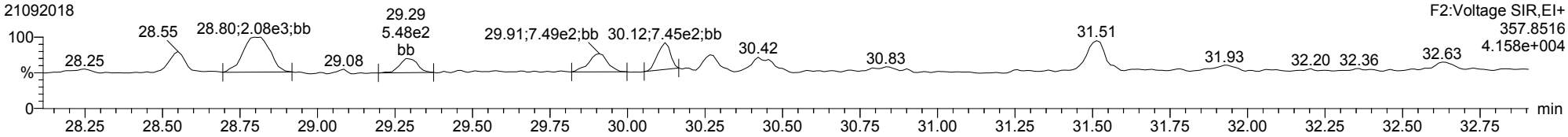
Total-tetradioxins



Total-pentadioxins



Total-pentadioxins



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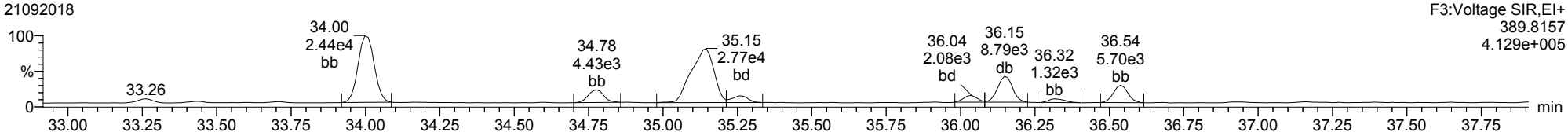
Total-hexadioxins



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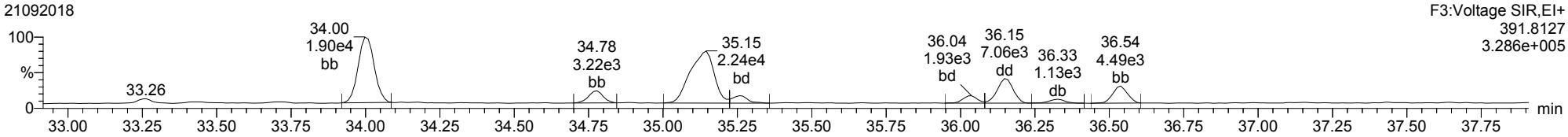
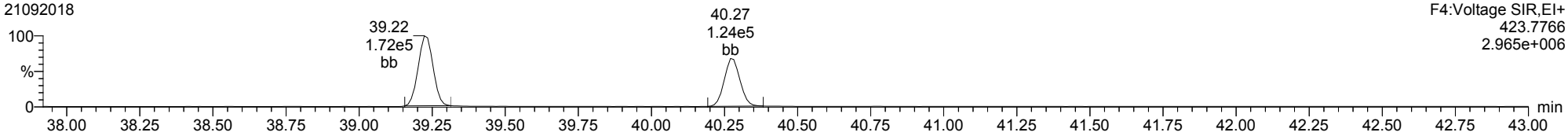
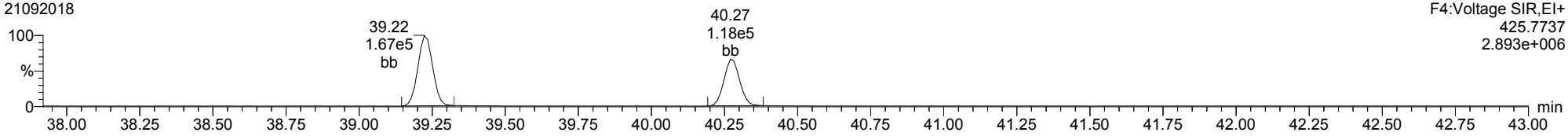


Total-heptadioxins

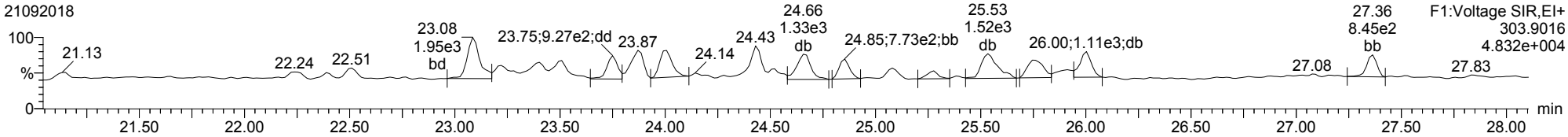


Total-heptadioxins

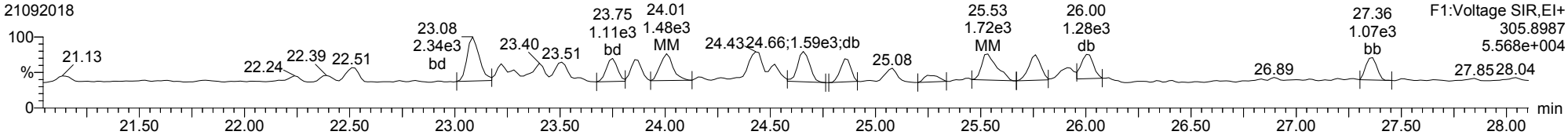


ID: 21G0140-04, Name: 21092018, Date: 21-Sep-2021, Time: 06:12:56, Conditions: AUTOSPEC01, User: pk

Total-tetrafurans



Total-tetrafurans



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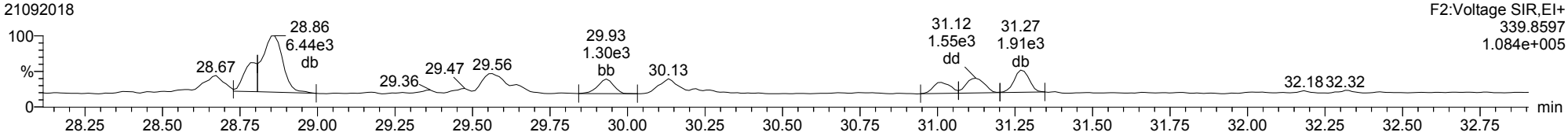
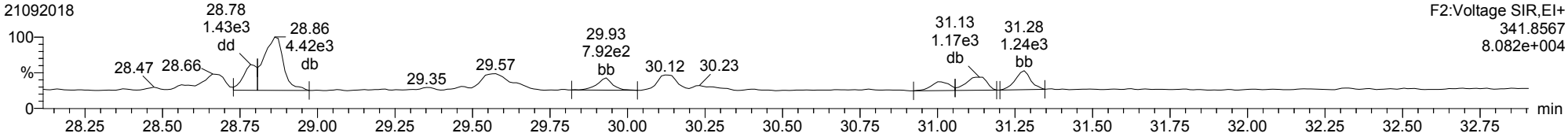


Total-pentafurans



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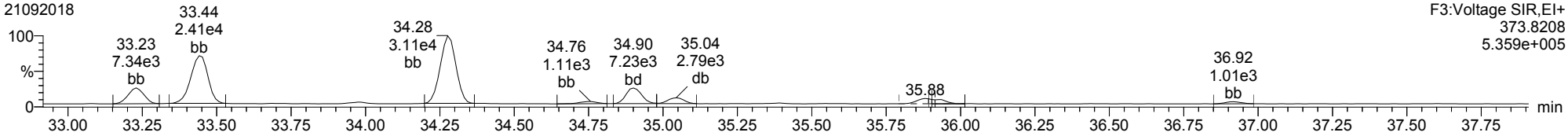

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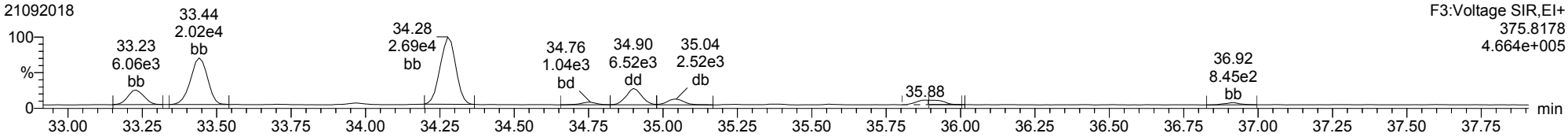
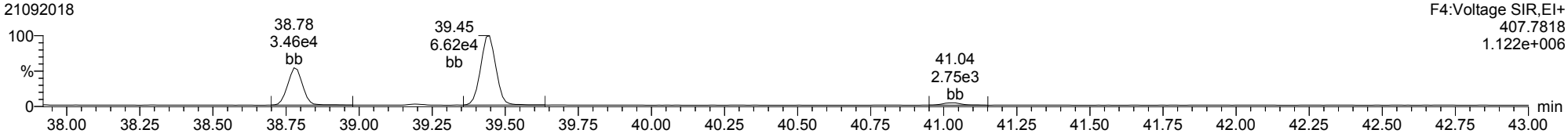


Total-heptafurans



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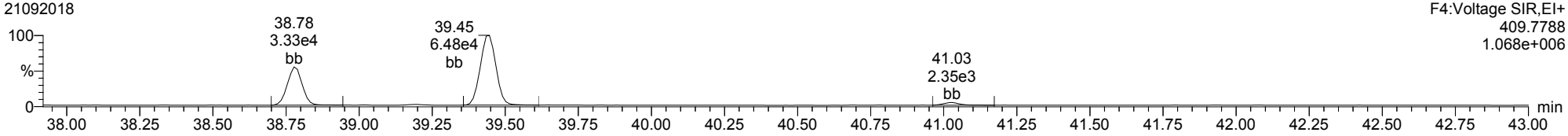

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-SC634A-FD

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0140
Client:	Anchor QEA, LLC				
Project:	Lower Duwamish AOC4				
Matrix:	Sediment	Laboratory ID:	21G0140-05 C	File ID:	21092019
Sampled:	07/12/21 13:11	Prepared:	09/06/21 16:00	Analyzed:	09/21/21 07:02
% Solids:	56.69	Preparation:	EPA 1613	Initial/Final:	17.65 g Wet / 20 uL
Result Basis:	Dry	Sequence:	SJI0309	Calibration:	EH00030
Batch:	BJH0152	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1	0.691	0.655-0.886	0.109	0.999	0.698	ng/kg	J
1746-01-6	2,3,7,8-TCDD	1	0.663	0.655-0.886	0.087	0.999	0.353	ng/kg	J
57117-41-6	1,2,3,7,8-PeCDF	1	1.155	1.318-1.783	0.154	0.999	0.525	ng/kg	EMPC, J
57117-31-4	2,3,4,7,8-PeCDF	1	1.378	1.318-1.783	0.150	0.999	0.826	ng/kg	J
40321-76-4	1,2,3,7,8-PeCDD	1	1.748	1.318-1.783	0.165	0.999	1.08	ng/kg	
70648-26-9	1,2,3,4,7,8-HxCDF	1	1.104	1.054-1.426	0.076	0.999	3.20	ng/kg	
57117-44-9	1,2,3,6,7,8-HxCDF	1	1.168	1.054-1.426	0.075	0.999	1.28	ng/kg	
60851-34-5	2,3,4,6,7,8-HxCDF	1	1.395	1.054-1.426	0.076	0.999	0.828	ng/kg	J
72918-21-9	1,2,3,7,8,9-HxCDF	1	1.358	1.054-1.426	0.085	0.999	0.688	ng/kg	J
39227-28-6	1,2,3,4,7,8-HxCDD	1	1.159	1.054-1.426	0.137	0.999	1.21	ng/kg	
57653-85-7	1,2,3,6,7,8-HxCDD	1	1.183	1.054-1.426	0.144	0.999	4.62	ng/kg	
19408-74-3	1,2,3,7,8,9-HxCDD	1	1.375	1.054-1.426	0.151	0.999	3.04	ng/kg	
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	1.011	0.893-1.208	0.153	0.999	31.6	ng/kg	
55673-89-7	1,2,3,4,7,8,9-HpCDF	1	0.976	0.893-1.208	0.204	0.999	2.45	ng/kg	
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.063	0.893-1.208	0.293	2.50	172	ng/kg	B
39001-02-0	OCDF	1	0.879	0.757-1.024	0.217	2.50	213	ng/kg	
3268-87-9	OCDD	1	0.896	0.757-1.024	0.396	9.99	2080	ng/kg	B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			0.999	9.28	ng/kg
41903-57-5	Total TCDD	1	0.000			0.999	4.18	ng/kg
30402-15-4	Total PeCDF	1	0.000			0.999	16.5	ng/kg
36088-22-9	Total PeCDD	1	0.000			0.999	4.50	ng/kg
55684-94-1	Total HxCDF	1	0.000			0.999	39.7	ng/kg
34465-46-8	Total HxCDD	1	0.000			0.999	38.4	ng/kg
38998-75-3	Total HpCDF	1	0.000			0.999	137	ng/kg
37871-00-4	Total HpCDD	1	0.000			0.999	357	ng/kg

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 6.00
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 6.00

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-SC634A-FD

Form 2
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0140
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Matrix:	Sediment	Laboratory ID:	21G0140-05	File ID:	21092019
Sampled:	07/12/21 13:11	Prepared:	09/06/21 16:00	Analyzed:	09/21/21 07:02
Solids Wt%:	56.69	Preparation:	EPA 1613	Initial/Final:	17.65 g / 20 uL
Result Basis:	Dry	Sequence:	SJI0309	Calibration:	EH00030
Batch:	BJH0152	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.794	0.655-0.886	0.085	60.0	24 - 169 %	
13C12-2,3,7,8-TCDD		0.751	0.655-0.886	0.101	76.3	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.595	1.318-1.783	0.098	69.1	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.618	1.318-1.783	0.102	68.2	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.583	1.318-1.783	0.098	78.7	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.514	0.434-0.587	0.115	76.7	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.516	0.434-0.587	0.106	70.5	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.515	0.434-0.587	0.117	74.7	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.507	0.434-0.587	0.141	74.1	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.290	1.054-1.426	0.107	86.0	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.255	1.054-1.426	0.099	80.7	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.459	0.374-0.506	0.101	57.9	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.463	0.374-0.506	0.124	59.1	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.032	0.893-1.208	0.136	72.4	23 - 140 %	
13C12-OCDD		0.902	0.757-1.024	0.157	72.2	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.036	77.1	35 - 197 %	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210920D2.qld
Last Altered: Tuesday, September 21, 2021 13:21:12 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 13:29:15 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0140-05, Name: 21092019, Date: 21-Sep-2021, Time: 07:02:02, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.761	1.000	1.032e3	1.494e3	1.108	0.691	0.770	850	1159	1.45e4	1.88e4	17.0	16.2	NO	dd	dd	0.349
12378-PeCDF	29.920	1.000	9.770e2	8.456e2	1.015	1.155	1.550	1953	895	1.53e4	1.47e4	7.8	16.4	YES	bb	bb	0.263
23478-PeCDF	31.279	1.001	1.732e3	1.257e3	1.126	1.378	1.550	1953	895	2.69e4	2.24e4	13.8	25.1	NO	db	db	0.413
123478-HxCDF	34.900	1.000	5.829e3	5.278e3	1.017	1.104	1.240	750	686	1.01e5	8.67e4	134.1	126.3	NO	bd	dd	1.600
234678-HxCDF	35.914	1.000	1.652e3	1.185e3	1.052	1.395	1.240	750	686	3.12e4	2.18e4	41.5	31.8	NO	db	MM	0.414
123678-HxCDF	35.045	1.001	2.424e3	2.076e3	1.037	1.168	1.240	750	686	4.15e4	3.13e4	55.3	45.7	NO	db	db	0.639
123789-HxCDF	36.917	1.000	1.094e3	8.051e2	1.030	1.358	1.240	750	686	1.54e4	1.42e4	20.5	20.7	NO	bb	bb	0.344
1234678-HpCDF	38.789	1.001	4.050e4	4.004e4	1.327	1.011	1.050	1000	1167	6.81e5	6.79e5	680.7	581.3	NO	bd	bb	15.787
1234789-HpCDF	41.028	1.000	2.496e3	2.557e3	1.283	0.976	1.050	1000	1167	3.96e4	4.08e4	39.6	35.0	NO	bb	bb	1.227
OCDF	45.280	1.006	1.880e5	2.139e5	1.447	0.879	0.890	663	1130	2.36e6	2.73e6	3566.6	2414.1	NO	bb	bb	106.514
2378-TCDD	26.411	1.001	4.201e2	6.335e2	0.920	0.663	0.770	581	813	6.23e3	9.37e3	10.7	11.5	NO	bd	bd	0.176
12378-PeCDD	31.514	1.000	1.505e3	8.612e2	0.995	1.748	1.550	999	916	2.01e4	1.24e4	20.1	13.5	NO	bb	bb	0.541
123478-HxCDD	36.026	1.000	1.974e3	1.704e3	1.027	1.159	1.240	1442	915	3.24e4	2.76e4	22.5	30.1	NO	bd	bd	0.605
123678-HxCDD	36.148	1.000	7.616e3	6.441e3	1.009	1.183	1.240	1442	915	1.25e5	1.07e5	87.0	117.0	NO	db	dd	2.314
123789-HxCDD	36.538	1.011	5.004e3	3.639e3	0.950	1.375	1.240	1442	915	8.08e4	6.28e4	56.0	68.6	NO	bb	bb	1.523
1234678-HpCDD	40.282	1.000	1.551e5	1.459e5	1.068	1.063	1.050	1233	1507	2.54e6	2.39e6	2058.7	1582.6	NO	bb	bb	85.896
OCDD	45.034	1.000	1.516e6	1.693e6	1.181	0.896	0.890	1520	1151	1.99e7	2.22e7	13075.7	19315.0	NO	bb	bb	1042.256
13C-2378-TCDF	25.761	1.007	2.890e5	3.639e5	1.427	0.794	0.770	1555	857	4.43e6	5.60e6	2846.2	6535.7	NO	bb	bb	60.049
13C-12378-PeCDF	29.909	1.169	4.199e5	2.633e5	1.297	1.595	1.550	1665	845	6.70e6	4.20e6	4025.4	4974.5	NO	bb	bb	69.092
13C-23478-PeCDF	31.257	1.222	3.972e5	2.455e5	1.236	1.618	1.550	1665	845	6.24e6	3.92e6	3745.6	4636.1	NO	bb	bb	68.202
13C-123478-HxCDF	34.889	0.956	2.317e5	4.510e5	1.242	0.514	0.510	1694	1192	3.80e6	7.46e6	2244.4	6261.5	NO	bd	bd	76.673
13C-123678-HxCDF	35.023	0.959	2.311e5	4.480e5	1.343	0.516	0.510	1694	1192	3.76e6	7.28e6	2217.9	6111.8	NO	db	db	70.540
13C-234678-HxCDF	35.914	0.984	2.211e5	4.293e5	1.215	0.515	0.510	1694	1192	3.64e6	7.02e6	2151.8	5891.4	NO	bb	bb	74.715
13C-123789-HxCDF	36.928	1.011	1.802e5	3.551e5	1.008	0.507	0.510	1694	1192	3.31e6	6.50e6	1951.9	5452.8	NO	bb	bb	74.126
13C-1234678-HpCDF	38.766	1.062	1.208e5	2.635e5	0.926	0.459	0.440	847	1048	2.01e6	4.42e6	2378.1	4216.5	NO	bb	bd	57.896
13C-1234789-HpCDF	41.017	1.123	1.017e5	2.194e5	0.758	0.463	0.440	847	1048	1.57e6	3.36e6	1852.7	3208.4	NO	bb	bb	59.114
13C-1234-TCDD	25.579	0.000	3.299e5	4.323e5	1.000	0.763	0.770	1398	832	5.15e6	6.79e6	3679.6	8161.4	NO	bb	bb	100.000
13C-2378-TCDD	26.381	1.031	2.782e5	3.707e5	1.116	0.751	0.770	1398	832	4.47e6	5.94e6	3194.6	7137.5	NO	bb	bb	76.263
13C-12378-PeCDD	31.502	1.232	2.691e5	1.700e5	0.732	1.583	1.550	623	801	4.30e6	2.75e6	6895.2	3434.0	NO	bb	bb	78.718
13C-123478-HxCDD	36.014	0.986	3.333e5	2.584e5	0.960	1.290	1.240	1104	984	5.67e6	4.33e6	5134.9	4400.3	NO	bd	bd	86.028
13C-123678-HxCDD	36.137	0.990	3.351e5	2.670e5	1.041	1.255	1.240	1104	984	5.40e6	4.34e6	4890.9	4410.1	NO	db	db	80.687
13C-1234678-HpCDD	40.270	1.103	1.666e5	1.614e5	0.632	1.032	1.050	912	834	2.67e6	2.61e6	2923.6	3127.1	NO	bb	bb	72.382
13C-OCDD	45.015	1.233	2.473e5	2.742e5	0.504	0.902	0.890	770	830	3.25e6	3.60e6	4221.6	4340.0	NO	bb	bb	144.480
13C-123789-HxCDD	36.516	0.000	3.992e5	3.174e5	1.000	1.258	1.240	1104	984	6.76e6	5.42e6	6125.3	5502.2	NO	bb	bb	100.000
37CL-2378-TCDD	26.396	1.032	2.546e5		1.084			784		3.85e6		4911.2			db		30.831

Dataset: T:\Autospec\Processed Data Batch\210920D2.qld
Last Altered: Tuesday, September 21, 2021 13:21:12 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 13:29:15 Pacific Daylight Time

ID: 21G0140-05, Name: 21092019, Date: 21-Sep-2021, Time: 07:02:02, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	22.253	0.864	2.500e2	4.099e2	1.425	0.610	0.770	850	1159	3.87e3	7.56e3	4.6	6.5	YES	bd	bd	0.071
1289-TCDF	27.363	1.062	6.232e2	8.715e2	1.043	0.715	0.770	850	1159	8.54e3	1.28e4	10.0	11.1	NO	bb	bd	0.220
13468-PECDF					1.376		1.550	698	721								
12389-PECDF					1.000		1.550	1953	895								
123468-HXCDF	33.229	0.952	6.602e3	5.372e3	1.087	1.229	1.240	750	686	9.97e4	8.71e4	132.9	127.0	NO	bb	bb	1.614
1368-TCDD	23.523	0.892	1.303e3	1.606e3	0.923	0.812	0.770	581	813	2.14e4	2.52e4	36.8	31.0	NO	bb	bb	0.486
1289-TCDD	27.046	1.025	1.059e2	1.866e2	0.794	0.567	0.770	581	813	1.95e3	2.49e3	3.3	3.1	YES	db	db	0.057
12479-PECDD	28.829	0.915	3.398e3	2.286e3	1.843	1.487	1.550	999	916	3.24e4	2.29e4	32.4	25.0	NO	MM	MM	0.702
12389-PECDD	31.937	1.014	4.079e2	2.304e2	1.154	1.771	1.550	999	916	6.07e3	4.31e3	6.1	4.7	NO	bb	bb	0.126
124679-HXCDD	33.998	0.944	2.022e4	1.560e4	1.125	1.296	1.240	1442	915	3.17e5	2.51e5	219.7	274.1	NO	bb	bb	5.381
1234679-HPCDD	39.234	0.974	1.873e5	1.802e5	1.211	1.039	1.050	1233	1507	3.20e6	3.08e6	2591.7	2045.5	NO	bb	bb	92.499
Total-tetrafurans			1.515e4		1.192			850		2.13e5							4.643
Total-penta1			1.930e4					698		2.79e5							5.157
Total-pentafurans			1.315e4		1.047			1953		1.67e5							3.112
Total-hexafurans			7.247e4		1.045			750		1.19e6							19.852
Total-heptafurans			1.634e5		1.305			1000		2.73e6							68.488
Total-Furans			4.718e5		1.158			850		6.95e6							207.880
Total-tetradioxins			5.250e3		0.879			581		8.41e4							2.092
Total-pentadioxins			8.532e3		1.331			999		1.14e5							2.250
Total-hexadioxins			6.732e4		1.028			1442		9.54e5							19.231
Total-heptadioxins			3.423e5		1.140			1233		5.74e6							178.396
Total-Dioxins			1.940e6		1.092			581		2.68e7							1244.225
Total-TEQ			2.412e6					581		3.37e7							1452.105
FUNCTION1 PFK			2.133e6					184501		2.80e7							
FUNCTION2 PFK			1.312e6					143438		4.63e6							0.000
FUNCTION3 PFK			1.052e7					224186		8.69e6							0.000
FUNCTION4 PFK			4.124e5					127506		7.11e6							
FUNCTION5 PFK			1.742e4					96659		6.98e5							
FUNCTION1 HXCD...			1.639e3					560		2.41e4							0.000
FUNCTION1 HPCD...			6.654e3					596		1.08e5							0.000
FUNCTION2 HPCD...			2.233e2					526		3.23e3							0.000
FUNCTION3 OCDPE			1.851e2					459		2.68e3							0.000
FUNCTION4 NCDPE			3.975e3					536		7.34e4							0.000
FUNCTION5 DCDPE			0.000e0					451		0.00e0							

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0140-05, Name: 21092019, Date: 21-Sep-2021, Time: 07:02:02, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	24.02	1.173e3	1.613e3	1.192	0.73	0.77	17.2	YES	NO	dd	dd	0.358
2	Total-tetrafurans	23.87	7.432e2	8.657e2	1.192	0.86	0.77	16.4	YES	NO	dd	MM	0.207
3	Total-tetrafurans	23.75	8.852e2	1.141e3	1.192	0.78	0.77	16.4	YES	NO	bd	MM	0.260
4	Total-tetrafurans	23.10	2.062e3	2.562e3	1.192	0.80	0.77	36.5	YES	NO	bd	bd	0.594
5	Total-tetrafurans	22.52	6.917e2	9.643e2	1.192	0.72	0.77	11.0	YES	NO	db	db	0.213
6	1289-TCDF	27.36	6.232e2	8.715e2	1.043	0.72	0.77	10.0	YES	NO	bb	bd	0.220
7	Total-tetrafurans	26.02	1.221e3	1.758e3	1.192	0.69	0.77	18.1	YES	NO	db	dd	0.383
8	2378-TCDF	25.76	1.032e3	1.494e3	1.108	0.69	0.77	17.0	YES	NO	dd	dd	0.349
9	Total-tetrafurans	25.53	1.320e3	1.883e3	1.192	0.70	0.77	17.6	YES	NO	dd	MM	0.412
10	Total-tetrafurans	25.41	2.009e2	3.002e2	1.192	0.67	0.77	3.9	YES	NO	dd	dd	0.064
11	Total-tetrafurans	25.29	4.237e2	5.837e2	1.192	0.73	0.77	5.4	YES	NO	dd	dd	0.129
12	Total-tetrafurans	25.10	5.458e2	7.475e2	1.192	0.73	0.77	9.9	YES	NO	bd	bd	0.166
13	Total-tetrafurans	24.87	9.628e2	1.324e3	1.192	0.73	0.77	16.6	YES	NO	db	db	0.294
14	Total-tetrafurans	24.67	1.186e3	1.791e3	1.192	0.66	0.77	20.0	YES	NO	dd	dd	0.383
15	Total-tetrafurans	24.52	6.332e2	7.823e2	1.192	0.81	0.77	10.3	YES	NO	dd	dd	0.182
16	Total-tetrafurans	24.45	1.451e3	1.885e3	1.192	0.77	0.77	24.6	YES	NO	dd	dd	0.429

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-penta1	27.18	1.930e4	1.300e4		1.48	1.55	400.4	YES	NO	bb	bb	5.157

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	23478-PeCDF	31.28	1.732e3	1.257e3	1.126	1.38	1.55	13.8	YES	NO	db	db	0.413
2	Total-pentafurans	31.11	1.433e3	1.043e3	1.047	1.37	1.55	11.7	YES	NO	dd	dd	0.357
3	Total-pentafurans	31.01	9.241e2	6.524e2	1.047	1.42	1.55	6.7	YES	NO	bd	bd	0.227
4	Total-pentafurans	29.47	3.421e2	2.478e2	1.047	1.38	1.55	4.1	YES	NO	bd	bd	0.085
5	Total-pentafurans	28.86	8.718e3	5.363e3	1.047	1.63	1.55	49.4	YES	NO	MM	MM	2.029

Dataset: T:\Autospec\Processed Data Batch\210920D2.qld
Last Altered: Tuesday, September 21, 2021 13:21:12 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 13:29:15 Pacific Daylight Time

ID: 21G0140-05, Name: 21092019, Date: 21-Sep-2021, Time: 07:02:02, Conditions: AUTOSPEC01, User: pk

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDF	36.92	1.094e3	8.051e2	1.030	1.36	1.24	20.5	YES	NO	bb	bb	0.344
2	234678-HxCDF	35.91	1.652e3	1.185e3	1.052	1.39	1.24	41.5	YES	NO	db	MM	0.414
3	Total-hexafurans	35.88	1.877e3	1.609e3	1.045	1.17	1.24	44.2	YES	NO	bd	MM	0.524
4	123678-HxCDF	35.04	2.424e3	2.076e3	1.037	1.17	1.24	55.3	YES	NO	db	db	0.639
5	123478-HxCDF	34.90	5.829e3	5.278e3	1.017	1.10	1.24	134.1	YES	NO	bd	dd	1.600
6	Total-hexafurans	34.28	3.123e4	2.608e4	1.045	1.20	1.24	699.7	YES	NO	bb	bb	8.615
7	Total-hexafurans	33.96	8.092e2	6.725e2	1.045	1.20	1.24	18.2	YES	NO	bb	bb	0.223
8	Total-hexafurans	33.44	2.096e4	1.815e4	1.045	1.15	1.24	440.7	YES	NO	bb	bb	5.878
9	123468-HXCDF	33.23	6.602e3	5.372e3	1.087	1.23	1.24	132.9	YES	NO	bb	bb	1.614

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	41.03	2.496e3	2.557e3	1.283	0.98	1.05	39.6	YES	NO	bb	bb	1.227
2	Total-heptafurans	39.45	1.204e5	1.166e5	1.305	1.03	1.05	2010.3	YES	NO	bd	bb	51.475
3	1234678-HpCDF	38.79	4.050e4	4.004e4	1.327	1.01	1.05	680.7	YES	NO	bd	bb	15.787

Dataset: T:\Autospec\Processed Data Batch\210920D2.qld
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Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	24.02	1.173e3	1.613e3	1.192	0.73	0.77	17.2	YES	NO	dd	dd	0.358
2	Total-tetrafurans	23.87	7.432e2	8.657e2	1.192	0.86	0.77	16.4	YES	NO	dd	MM	0.207
3	Total-tetrafurans	23.75	8.852e2	1.141e3	1.192	0.78	0.77	16.4	YES	NO	bd	MM	0.260
4	Total-tetrafurans	23.10	2.062e3	2.562e3	1.192	0.80	0.77	36.5	YES	NO	bd	bd	0.594
5	Total-tetrafurans	22.52	6.917e2	9.643e2	1.192	0.72	0.77	11.0	YES	NO	db	db	0.213
6	Total-Furans	21.15	3.634e2	5.022e2	1.158	0.72	0.77	6.3	YES	NO	bb	bb	0.114
7	1289-TCDF	27.36	6.232e2	8.715e2	1.043	0.72	0.77	10.0	YES	NO	bb	bd	0.220
8	Total-tetrafurans	26.02	1.221e3	1.758e3	1.192	0.69	0.77	18.1	YES	NO	db	dd	0.383
9	2378-TCDF	25.76	1.032e3	1.494e3	1.108	0.69	0.77	17.0	YES	NO	dd	dd	0.349
10	Total-tetrafurans	25.53	1.320e3	1.883e3	1.192	0.70	0.77	17.6	YES	NO	dd	MM	0.412
11	Total-tetrafurans	25.41	2.009e2	3.002e2	1.192	0.67	0.77	3.9	YES	NO	dd	dd	0.064
12	Total-tetrafurans	25.29	4.237e2	5.837e2	1.192	0.73	0.77	5.4	YES	NO	dd	dd	0.129
13	Total-tetrafurans	25.10	5.458e2	7.475e2	1.192	0.73	0.77	9.9	YES	NO	bd	bd	0.166
14	Total-tetrafurans	24.87	9.628e2	1.324e3	1.192	0.73	0.77	16.6	YES	NO	db	db	0.294
15	Total-tetrafurans	24.67	1.186e3	1.791e3	1.192	0.66	0.77	20.0	YES	NO	dd	dd	0.383
16	Total-tetrafurans	24.52	6.332e2	7.823e2	1.192	0.81	0.77	10.3	YES	NO	dd	dd	0.182
17	Total-tetrafurans	24.45	1.451e3	1.885e3	1.192	0.77	0.77	24.6	YES	NO	dd	dd	0.429
18	23478-PeCDF	31.28	1.732e3	1.257e3	1.126	1.38	1.55	13.8	YES	NO	db	db	0.413
19	Total-pentafurans	31.11	1.433e3	1.043e3	1.047	1.37	1.55	11.7	YES	NO	dd	dd	0.357
20	Total-pentafurans	31.01	9.241e2	6.524e2	1.047	1.42	1.55	6.7	YES	NO	bd	bd	0.227
21	Total-pentafurans	29.47	3.421e2	2.478e2	1.047	1.38	1.55	4.1	YES	NO	bd	bd	0.085
22	Total-pentafurans	28.86	8.718e3	5.363e3	1.047	1.63	1.55	49.4	YES	NO	MM	MM	2.029
23	123789-HxCDF	36.92	1.094e3	8.051e2	1.030	1.36	1.24	20.5	YES	NO	bb	bb	0.344
24	234678-HxCDF	35.91	1.652e3	1.185e3	1.052	1.39	1.24	41.5	YES	NO	db	MM	0.414
25	Total-hexafurans	35.88	1.877e3	1.609e3	1.045	1.17	1.24	44.2	YES	NO	bd	MM	0.524
26	123678-HxCDF	35.04	2.424e3	2.076e3	1.037	1.17	1.24	55.3	YES	NO	db	db	0.639
27	123478-HxCDF	34.90	5.829e3	5.278e3	1.017	1.10	1.24	134.1	YES	NO	bd	dd	1.600
28	Total-hexafurans	34.28	3.123e4	2.608e4	1.045	1.20	1.24	699.7	YES	NO	bb	bb	8.615
29	Total-hexafurans	33.96	8.092e2	6.725e2	1.045	1.20	1.24	18.2	YES	NO	bb	bb	0.223
30	Total-hexafurans	33.44	2.096e4	1.815e4	1.045	1.15	1.24	440.7	YES	NO	bb	bb	5.878
31	123468-HXCDF	33.23	6.602e3	5.372e3	1.087	1.23	1.24	132.9	YES	NO	bb	bb	1.614
32	1234789-HpCDF	41.03	2.496e3	2.557e3	1.283	0.98	1.05	39.6	YES	NO	bb	bb	1.227
33	Total-heptafurans	39.45	1.204e5	1.166e5	1.305	1.03	1.05	2010.3	YES	NO	bd	bb	51.475
34	1234678-HpCDF	38.79	4.050e4	4.004e4	1.327	1.01	1.05	680.7	YES	NO	bd	bb	15.787
35	OCDF	45.28	1.880e5	2.139e5	1.447	0.88	0.89	3566.6	YES	NO	bb	bb	106.514
36	Total-penta1	27.18	1.930e4	1.300e4		1.48	1.55	400.4	YES	NO	bb	bb	5.157

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TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	23.80	1.208e3	1.550e3	0.879	0.78	0.77	31.8	YES	NO	bb	bb	0.483
2	1368-TCDD	23.52	1.303e3	1.606e3	0.923	0.81	0.77	36.8	YES	NO	bb	bb	0.486
3	2378-TCDD	26.41	4.201e2	6.335e2	0.920	0.66	0.77	10.7	YES	NO	bd	bd	0.176
4	Total-tetradioxins	25.58	3.640e2	4.468e2	0.879	0.81	0.77	11.1	YES	NO	bb	bb	0.142
5	Total-tetradioxins	25.00	6.169e2	8.083e2	0.879	0.76	0.77	17.3	YES	NO	bb	bb	0.250
6	Total-tetradioxins	24.73	4.284e2	5.835e2	0.879	0.73	0.77	8.7	YES	NO	db	db	0.177
7	Total-tetradioxins	24.54	9.095e2	1.241e3	0.879	0.73	0.77	28.2	YES	NO	dd	bd	0.377

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentadioxins	29.32	5.709e2	3.747e2	1.331	1.52	1.55	8.1	YES	NO	bb	bb	0.162
2	12389-PECDD	31.94	4.079e2	2.304e2	1.154	1.77	1.55	6.1	YES	NO	bb	bb	0.126
3	12378-PeCDD	31.51	1.505e3	8.612e2	0.995	1.75	1.55	20.1	YES	NO	bb	bb	0.541
4	Total-pentadioxins	30.28	1.199e3	7.111e2	1.331	1.69	1.55	22.0	YES	NO	bb	bb	0.327
5	Total-pentadioxins	30.12	1.452e3	8.392e2	1.331	1.73	1.55	25.7	YES	NO	db	bb	0.392
6	12479-PECDD	28.83	3.398e3	2.286e3	1.843	1.49	1.55	32.4	YES	NO	MM	MM	0.702

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDD	36.54	5.004e3	3.639e3	0.950	1.38	1.24	56.0	YES	NO	bb	bb	1.523
2	Total-hexadioxins	36.30	1.234e3	1.006e3	1.028	1.23	1.24	12.9	YES	NO	bb	db	0.365
3	123678-HxCDD	36.15	7.616e3	6.441e3	1.009	1.18	1.24	87.0	YES	NO	db	dd	2.314
4	123478-HxCDD	36.03	1.974e3	1.704e3	1.027	1.16	1.24	22.5	YES	NO	bd	bd	0.605
5	Total-hexadioxins	35.26	1.887e3	1.543e3	1.028	1.22	1.24	20.1	YES	NO	db	db	0.559
6	Total-hexadioxins	35.13	2.446e4	1.860e4	1.028	1.32	1.24	190.0	YES	NO	bd	bd	7.018
7	Total-hexadioxins	34.78	4.383e3	3.613e3	1.028	1.21	1.24	48.1	YES	NO	bb	bb	1.303
8	124679-HXCDD	34.00	2.022e4	1.560e4	1.125	1.30	1.24	219.7	YES	NO	bb	bb	5.381
9	Total-hexadioxins	33.73	5.445e2		1.028			5.0	YES		bb		0.163

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	40.28	1.551e5	1.459e5	1.068	1.06	1.05	2058.7	YES	NO	bb	bb	85.896
2	1234679-HPCDD	39.23	1.873e5	1.802e5	1.211	1.04	1.05	2591.7	YES	NO	bb	bb	92.499

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Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	23.80	1.208e3	1.550e3	0.879	0.78	0.77	31.8	YES	NO	bb	bb	0.483
2	1368-TCDD	23.52	1.303e3	1.606e3	0.923	0.81	0.77	36.8	YES	NO	bb	bb	0.486
3	2378-TCDD	26.41	4.201e2	6.335e2	0.920	0.66	0.77	10.7	YES	NO	bd	bd	0.176
4	Total-tetradioxins	25.58	3.640e2	4.468e2	0.879	0.81	0.77	11.1	YES	NO	bb	bb	0.142
5	Total-tetradioxins	25.00	6.169e2	8.083e2	0.879	0.76	0.77	17.3	YES	NO	bb	bb	0.250
6	Total-tetradioxins	24.73	4.284e2	5.835e2	0.879	0.73	0.77	8.7	YES	NO	db	db	0.177
7	Total-tetradioxins	24.54	9.095e2	1.241e3	0.879	0.73	0.77	28.2	YES	NO	dd	bd	0.377
8	Total-pentadioxins	29.32	5.709e2	3.747e2	1.331	1.52	1.55	8.1	YES	NO	bb	bb	0.162
9	12389-PECDD	31.94	4.079e2	2.304e2	1.154	1.77	1.55	6.1	YES	NO	bb	bb	0.126
10	12378-PeCDD	31.51	1.505e3	8.612e2	0.995	1.75	1.55	20.1	YES	NO	bb	bb	0.541
11	Total-pentadioxins	30.28	1.199e3	7.111e2	1.331	1.69	1.55	22.0	YES	NO	bb	bb	0.327
12	Total-pentadioxins	30.12	1.452e3	8.392e2	1.331	1.73	1.55	25.7	YES	NO	db	bb	0.392
13	123789-HxCDD	36.54	5.004e3	3.639e3	0.950	1.38	1.24	56.0	YES	NO	bb	bb	1.523
14	Total-hexadioxins	36.30	1.234e3	1.006e3	1.028	1.23	1.24	12.9	YES	NO	bb	db	0.365
15	123678-HxCDD	36.15	7.616e3	6.441e3	1.009	1.18	1.24	87.0	YES	NO	db	dd	2.314
16	123478-HxCDD	36.03	1.974e3	1.704e3	1.027	1.16	1.24	22.5	YES	NO	bd	bd	0.605
17	Total-hexadioxins	35.26	1.887e3	1.543e3	1.028	1.22	1.24	20.1	YES	NO	db	db	0.559
18	Total-hexadioxins	35.13	2.446e4	1.860e4	1.028	1.32	1.24	190.0	YES	NO	bd	bd	7.018
19	Total-hexadioxins	34.78	4.383e3	3.613e3	1.028	1.21	1.24	48.1	YES	NO	bb	bb	1.303
20	124679-HXCDD	34.00	2.022e4	1.560e4	1.125	1.30	1.24	219.7	YES	NO	bb	bb	5.381
21	Total-hexadioxins	33.73	5.445e2		1.028			5.0	YES		bb		0.163
22	1234678-HpCDD	40.28	1.551e5	1.459e5	1.068	1.06	1.05	2058.7	YES	NO	bb	bb	85.896
23	1234679-HPCDD	39.23	1.873e5	1.802e5	1.211	1.04	1.05	2591.7	YES	NO	bb	bb	92.499
24	OCDD	45.03	1.516e6	1.693e6	1.181	0.90	0.89	13075.7	YES	NO	bb	bb	1042.2...
25	12479-PECDD	28.83	3.398e3	2.286e3	1.843	1.49	1.55	32.4	YES	NO	MM	MM	0.702

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	24.02	1.173e3	1.613e3	1.192	0.73	0.77	17.2	YES	NO	dd	dd	0.358
2	Total-tetrafurans	23.87	7.432e2	8.657e2	1.192	0.86	0.77	16.4	YES	NO	dd	MM	0.207
3	Total-tetrafurans	23.75	8.852e2	1.141e3	1.192	0.78	0.77	16.4	YES	NO	bd	MM	0.260
4	Total-tetrafurans	23.10	2.062e3	2.562e3	1.192	0.80	0.77	36.5	YES	NO	bd	bd	0.594
5	Total-tetrafurans	22.52	6.917e2	9.643e2	1.192	0.72	0.77	11.0	YES	NO	db	db	0.213
6	Total-Furans	21.15	3.634e2	5.022e2	1.158	0.72	0.77	6.3	YES	NO	bb	bb	0.114
7	1289-TCDF	27.36	6.232e2	8.715e2	1.043	0.72	0.77	10.0	YES	NO	bb	bd	0.220
8	Total-tetrafurans	26.02	1.221e3	1.758e3	1.192	0.69	0.77	18.1	YES	NO	db	dd	0.383
9	2378-TCDF	25.76	1.032e3	1.494e3	1.108	0.69	0.77	17.0	YES	NO	dd	dd	0.349
10	Total-tetrafurans	25.53	1.320e3	1.883e3	1.192	0.70	0.77	17.6	YES	NO	dd	MM	0.412
11	Total-tetrafurans	25.41	2.009e2	3.002e2	1.192	0.67	0.77	3.9	YES	NO	dd	dd	0.064
12	Total-tetrafurans	25.29	4.237e2	5.837e2	1.192	0.73	0.77	5.4	YES	NO	dd	dd	0.129
13	Total-tetrafurans	25.10	5.458e2	7.475e2	1.192	0.73	0.77	9.9	YES	NO	bd	bd	0.166
14	Total-tetrafurans	24.87	9.628e2	1.324e3	1.192	0.73	0.77	16.6	YES	NO	db	db	0.294
15	Total-tetrafurans	24.67	1.186e3	1.791e3	1.192	0.66	0.77	20.0	YES	NO	dd	dd	0.383
16	Total-tetrafurans	24.52	6.332e2	7.823e2	1.192	0.81	0.77	10.3	YES	NO	dd	dd	0.182
17	Total-tetrafurans	24.45	1.451e3	1.885e3	1.192	0.77	0.77	24.6	YES	NO	dd	dd	0.429
18	23478-PeCDF	31.28	1.732e3	1.257e3	1.126	1.38	1.55	13.8	YES	NO	db	db	0.413
19	Total-pentafurans	31.11	1.433e3	1.043e3	1.047	1.37	1.55	11.7	YES	NO	dd	dd	0.357
20	Total-pentafurans	31.01	9.241e2	6.524e2	1.047	1.42	1.55	6.7	YES	NO	bd	bd	0.227
21	Total-pentafurans	29.47	3.421e2	2.478e2	1.047	1.38	1.55	4.1	YES	NO	bd	bd	0.085
22	Total-pentafurans	28.86	8.718e3	5.363e3	1.047	1.63	1.55	49.4	YES	NO	MM	MM	2.029
23	123789-HxCDF	36.92	1.094e3	8.051e2	1.030	1.36	1.24	20.5	YES	NO	bb	bb	0.344
24	234678-HxCDF	35.91	1.652e3	1.185e3	1.052	1.39	1.24	41.5	YES	NO	db	MM	0.414
25	Total-hexafurans	35.88	1.877e3	1.609e3	1.045	1.17	1.24	44.2	YES	NO	bd	MM	0.524
26	123678-HxCDF	35.04	2.424e3	2.076e3	1.037	1.17	1.24	55.3	YES	NO	db	db	0.639
27	123478-HxCDF	34.90	5.829e3	5.278e3	1.017	1.10	1.24	134.1	YES	NO	bd	dd	1.600
28	Total-hexafurans	34.28	3.123e4	2.608e4	1.045	1.20	1.24	699.7	YES	NO	bb	bb	8.615
29	Total-hexafurans	33.96	8.092e2	6.725e2	1.045	1.20	1.24	18.2	YES	NO	bb	bb	0.223
30	Total-hexafurans	33.44	2.096e4	1.815e4	1.045	1.15	1.24	440.7	YES	NO	bb	bb	5.878
31	123468-HXCDF	33.23	6.602e3	5.372e3	1.087	1.23	1.24	132.9	YES	NO	bb	bb	1.614
32	1234789-HpCDF	41.03	2.496e3	2.557e3	1.283	0.98	1.05	39.6	YES	NO	bb	bb	1.227
33	Total-heptafurans	39.45	1.204e5	1.166e5	1.305	1.03	1.05	2010.3	YES	NO	bd	bb	51.475
34	1234678-HpCDF	38.79	4.050e4	4.004e4	1.327	1.01	1.05	680.7	YES	NO	bd	bb	15.787
35	OCDF	45.28	1.880e5	2.139e5	1.447	0.88	0.89	3566.6	YES	NO	bb	bb	106.514
36	Total-penta1	27.18	1.930e4	1.300e4		1.48	1.55	400.4	YES	NO	bb	bb	5.157
37	Total-tetradioxins	23.80	1.208e3	1.550e3	0.879	0.78	0.77	31.8	YES	NO	bb	bb	0.483

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	1368-TCDD	23.52	1.303e3	1.606e3	0.923	0.81	0.77	36.8	YES	NO	bb	bb	0.486
39	2378-TCDD	26.41	4.201e2	6.335e2	0.920	0.66	0.77	10.7	YES	NO	bd	bd	0.176
40	Total-tetradioxins	25.58	3.640e2	4.468e2	0.879	0.81	0.77	11.1	YES	NO	bb	bb	0.142
41	Total-tetradioxins	25.00	6.169e2	8.083e2	0.879	0.76	0.77	17.3	YES	NO	bb	bb	0.250
42	Total-tetradioxins	24.73	4.284e2	5.835e2	0.879	0.73	0.77	8.7	YES	NO	db	db	0.177
43	Total-tetradioxins	24.54	9.095e2	1.241e3	0.879	0.73	0.77	28.2	YES	NO	dd	bd	0.377
44	Total-pentadioxins	29.32	5.709e2	3.747e2	1.331	1.52	1.55	8.1	YES	NO	bb	bb	0.162
45	12389-PECDD	31.94	4.079e2	2.304e2	1.154	1.77	1.55	6.1	YES	NO	bb	bb	0.126
46	12378-PeCDD	31.51	1.505e3	8.612e2	0.995	1.75	1.55	20.1	YES	NO	bb	bb	0.541
47	Total-pentadioxins	30.28	1.199e3	7.111e2	1.331	1.69	1.55	22.0	YES	NO	bb	bb	0.327
48	Total-pentadioxins	30.12	1.452e3	8.392e2	1.331	1.73	1.55	25.7	YES	NO	db	bb	0.392
49	123789-HxCDD	36.54	5.004e3	3.639e3	0.950	1.38	1.24	56.0	YES	NO	bb	bb	1.523
50	Total-hexadioxins	36.30	1.234e3	1.006e3	1.028	1.23	1.24	12.9	YES	NO	bb	db	0.365
51	123678-HxCDD	36.15	7.616e3	6.441e3	1.009	1.18	1.24	87.0	YES	NO	db	dd	2.314
52	123478-HxCDD	36.03	1.974e3	1.704e3	1.027	1.16	1.24	22.5	YES	NO	bd	bd	0.605
53	Total-hexadioxins	35.26	1.887e3	1.543e3	1.028	1.22	1.24	20.1	YES	NO	db	db	0.559
54	Total-hexadioxins	35.13	2.446e4	1.860e4	1.028	1.32	1.24	190.0	YES	NO	bd	bd	7.018
55	Total-hexadioxins	34.78	4.383e3	3.613e3	1.028	1.21	1.24	48.1	YES	NO	bb	bb	1.303
56	124679-HXCDD	34.00	2.022e4	1.560e4	1.125	1.30	1.24	219.7	YES	NO	bb	bb	5.381
57	Total-hexadioxins	33.73	5.445e2		1.028			5.0	YES		bb		0.163
58	1234678-HpCDD	40.28	1.551e5	1.459e5	1.068	1.06	1.05	2058.7	YES	NO	bb	bb	85.896
59	1234679-HPCDD	39.23	1.873e5	1.802e5	1.211	1.04	1.05	2591.7	YES	NO	bb	bb	92.499
60	OCDD	45.03	1.516e6	1.693e6	1.181	0.90	0.89	13075.7	YES	NO	bb	bb	1042.2...
61	12479-PECDD	28.83	3.398e3	2.286e3	1.843	1.49	1.55	32.4	YES	NO	MM	MM	0.702

ID: 21G0140-05, Name: 21092019, Date: 21-Sep-2021, Time: 07:02:02, Conditions: AUTOSPEC01, User: pk

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	22.28	1.405e5					6.2	YES		dd		
2	FUNCTION1 PFK	22.18	7.588e4					7.2	YES		dd		
3	FUNCTION1 PFK	22.12	7.234e4					6.7	YES		bd		
4	FUNCTION1 PFK	21.97	1.395e5					7.7	YES		db		
5	FUNCTION1 PFK	21.78	1.500e5					8.2	YES		dd		
6	FUNCTION1 PFK	21.74	1.168e5					9.1	YES		dd		
7	FUNCTION1 PFK	21.66	7.377e4					9.8	YES		dd		
8	FUNCTION1 PFK	21.62	1.630e5					10.2	YES		dd		
9	FUNCTION1 PFK	21.47	4.203e5					11.0	YES		bd		
10	FUNCTION1 PFK	21.22	6.372e4					6.1	YES		db		
11	FUNCTION1 PFK	21.16	2.974e4					4.5	YES		bd		
12	FUNCTION1 PFK	24.78	1.641e4					2.2	NO		db		
13	FUNCTION1 PFK	24.70	2.068e4					2.1	NO		bd		
14	FUNCTION1 PFK	24.64	1.329e4					2.0	NO		bb		
15	FUNCTION1 PFK	24.46	3.048e4					2.5	NO		bb		
16	FUNCTION1 PFK	24.37	1.240e4					1.7	NO		db		
17	FUNCTION1 PFK	24.29	6.596e3					1.1	NO		bd		
18	FUNCTION1 PFK	23.99	2.637e4					2.5	NO		db		
19	FUNCTION1 PFK	23.90	3.113e4					2.8	NO		bd		
20	FUNCTION1 PFK	23.72	5.342e3					1.0	NO		bb		
21	FUNCTION1 PFK	23.22	3.663e4					2.8	NO		bb		
22	FUNCTION1 PFK	23.08	1.661e4					2.1	NO		db		
23	FUNCTION1 PFK	22.99	2.637e4					1.4	NO		bd		
24	FUNCTION1 PFK	22.63	2.264e4					2.2	NO		bb		
25	FUNCTION1 PFK	22.49	2.583e4					3.6	YES		db		
26	FUNCTION1 PFK	22.45	5.534e4					4.5	YES		dd		
27	FUNCTION1 PFK	22.37	4.728e4					4.3	YES		dd		
28	FUNCTION1 PFK	27.91	2.195e4					2.2	NO		bb		
29	FUNCTION1 PFK	27.83	2.205e3					0.8	NO		bb		
30	FUNCTION1 PFK	27.65	2.572e4					2.4	NO		bb		
31	FUNCTION1 PFK	27.47	4.081e4					2.2	NO		bb		
32	FUNCTION1 PFK	27.27	7.234e4					4.0	YES		bb		
33	FUNCTION1 PFK	27.05	3.128e4					1.7	NO		db		
34	FUNCTION1 PFK	26.97	2.529e4					2.6	NO		bd		
35	FUNCTION1 PFK	26.70	1.657e3					0.6	NO		bb		
36	FUNCTION1 PFK	26.59	1.636e3					0.6	NO		bb		
37	FUNCTION1 PFK	26.52	2.097e4					2.2	NO		bb		

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PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION1 PFK	25.99	1.047e4					1.7	NO		bb		
39	FUNCTION1 PFK	25.78	2.389e4					2.2	NO		bb		
40	FUNCTION1 PFK	25.47	5.112e3					0.8	NO		bb		
41	FUNCTION1 PFK	25.00	4.350e3					1.1	NO		bb		
42	FUNCTION1 PFK	24.85	6.455e3					1.1	NO		bb		

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	29.61	3.107e5					8.2	YES		bb		0.000
2	FUNCTION2 PFK	29.37	3.767e4					6.7	YES		bb		0.000
3	FUNCTION2 PFK	28.92	6.101e5					3.8	YES		bb		0.000
4	FUNCTION2 PFK	28.18	3.531e5					13.5	YES		bb		0.000

PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	37.54	5.040e6					19.8	YES		bb		0.000
2	FUNCTION3 PFK	36.17	5.483e6					18.9	YES		bb		0.000

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	39.03	1.019e4					1.6	NO		bb		
2	FUNCTION4 PFK	38.90	1.164e4					1.4	NO		bb		
3	FUNCTION4 PFK	38.70	3.185e3					0.6	NO		bb		
4	FUNCTION4 PFK	38.65	3.616e3					1.2	NO		bb		
5	FUNCTION4 PFK	38.33	8.916e3					2.0	NO		db		
6	FUNCTION4 PFK	38.20	3.334e4					4.4	YES		dd		
7	FUNCTION4 PFK	38.13	5.594e4					6.7	YES		dd		
8	FUNCTION4 PFK	38.02	1.409e5					7.7	YES		bd		
9	FUNCTION4 PFK	41.25	6.638e2					0.5	NO		bb		
10	FUNCTION4 PFK	40.97	6.809e3					1.6	NO		db		
11	FUNCTION4 PFK	40.92	5.426e3					1.3	NO		bd		
12	FUNCTION4 PFK	40.86	2.045e3					0.8	NO		bb		
13	FUNCTION4 PFK	40.77	3.309e3					1.0	NO		bb		
14	FUNCTION4 PFK	40.70	6.694e2					0.5	NO		bb		
15	FUNCTION4 PFK	40.56	8.467e3					1.6	NO		bb		
16	FUNCTION4 PFK	40.45	6.102e3					1.2	NO		bb		
17	FUNCTION4 PFK	40.31	1.329e3					0.6	NO		bb		
18	FUNCTION4 PFK	40.10	3.730e3					1.0	NO		bb		
19	FUNCTION4 PFK	39.84	1.160e3					0.6	NO		bb		
20	FUNCTION4 PFK	39.68	9.242e3					1.4	NO		db		
21	FUNCTION4 PFK	39.59	5.429e3					1.2	NO		bd		
22	FUNCTION4 PFK	39.43	2.083e4					1.4	NO		bb		
23	FUNCTION4 PFK	39.18	8.370e3					2.3	NO		db		
24	FUNCTION4 PFK	39.13	5.132e3					1.4	NO		bd		
25	FUNCTION4 PFK	42.92	9.157e3					2.3	NO		bb		
26	FUNCTION4 PFK	42.82	4.046e3					1.2	NO		db		
27	FUNCTION4 PFK	42.77	1.396e4					2.1	NO		dd		
28	FUNCTION4 PFK	42.63	7.267e3					1.5	NO		bd		
29	FUNCTION4 PFK	42.52	5.285e2					0.4	NO		bb		
30	FUNCTION4 PFK	42.40	2.532e3					0.4	NO		bb		
31	FUNCTION4 PFK	42.23	2.123e3					0.3	NO		bb		
32	FUNCTION4 PFK	42.04	7.098e3					1.8	NO		bb		
33	FUNCTION4 PFK	41.66	6.876e3					0.9	NO		bb		
34	FUNCTION4 PFK	41.30	2.395e3					1.0	NO		bb		

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PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	45.50	4.312e3					1.7	NO		bb		
2	FUNCTION5 PFK	44.83	8.106e3					2.3	NO		bb		
3	FUNCTION5 PFK	44.65	5.285e2					0.6	NO		bb		
4	FUNCTION5 PFK	44.01	3.809e3					1.8	NO		bb		
5	FUNCTION5 PFK	43.96	6.655e2					0.8	NO		bb		

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	27.62	9.976e1					1.9	NO		db		0.000
2	FUNCTION1 HXCD...	27.47	7.477e1					1.6	NO		bd		0.000
3	FUNCTION1 HXCD...	27.15	1.222e2					4.0	YES		bb		0.000
4	FUNCTION1 HXCD...	26.14	1.290e2					2.7	NO		bb		0.000
5	FUNCTION1 HXCD...	25.90	2.049e2					7.3	YES		bb		0.000
6	FUNCTION1 HXCD...	24.84	9.894e1					1.8	NO		bb		0.000
7	FUNCTION1 HXCD...	23.70	1.553e2					4.0	YES		db		0.000
8	FUNCTION1 HXCD...	23.61	1.691e2					2.5	NO		dd		0.000
9	FUNCTION1 HXCD...	23.48	7.858e1					1.7	NO		bd		0.000
10	FUNCTION1 HXCD...	22.49	8.498e1					3.4	YES		db		0.000
11	FUNCTION1 HXCD...	22.43	9.261e1					3.0	NO		dd		0.000
12	FUNCTION1 HXCD...	22.30	1.483e2					3.6	YES		dd		0.000
13	FUNCTION1 HXCD...	22.16	1.803e2					5.4	YES		bd		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	21.47	9.691e1					3.8	YES		bd		0.000
2	FUNCTION1 HPCD...	27.51	9.887e1					2.0	NO		bb		0.000
3	FUNCTION1 HPCD...	27.20	8.703e1					2.9	NO		bb		0.000
4	FUNCTION1 HPCD...	23.36	4.872e2					7.9	YES		bb		0.000
5	FUNCTION1 HPCD...	23.04	9.911e1					2.7	NO		bb		0.000
6	FUNCTION1 HPCD...	22.04	5.640e3					159.1	YES		bb		0.000
7	FUNCTION1 HPCD...	21.59	1.441e2					2.9	NO		db		0.000

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ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	31.47	1.296e2					2.7	NO		bb		0.000
2	FUNCTION2 HPCD...	28.92	9.373e1					3.5	YES		bb		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	36.53	7.704e1					2.6	NO		bb		0.000
2	FUNCTION3 OCDPE	35.04	1.081e2					3.2	YES		bb		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	40.30	7.568e1					3.6	YES		bb		0.000
2	FUNCTION4 NCDPE	38.41	3.900e3					133.3	YES		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

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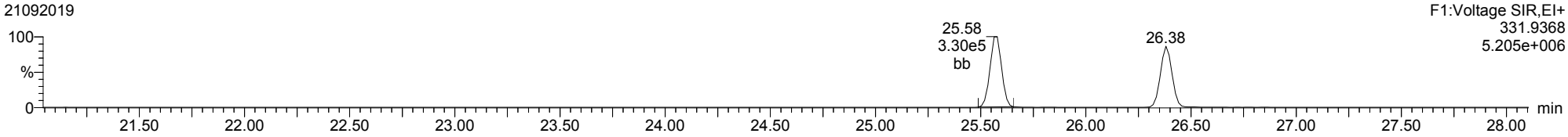

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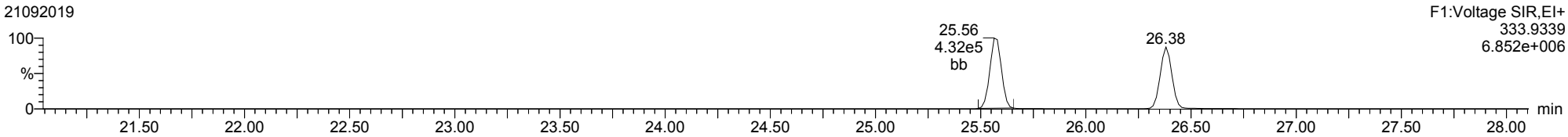

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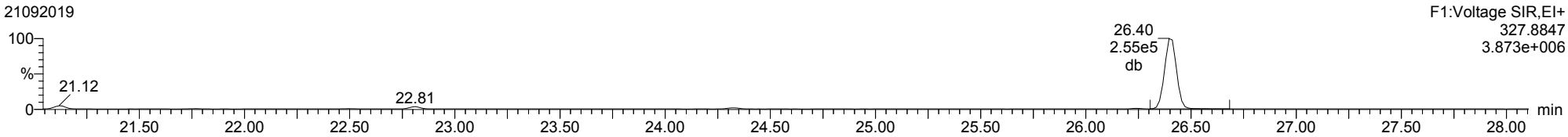

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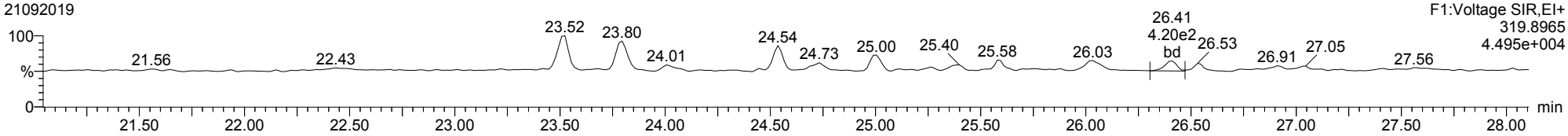

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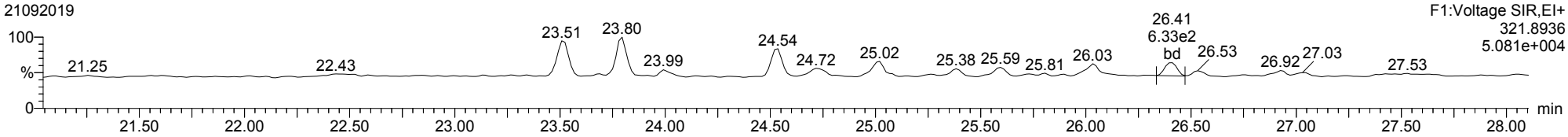

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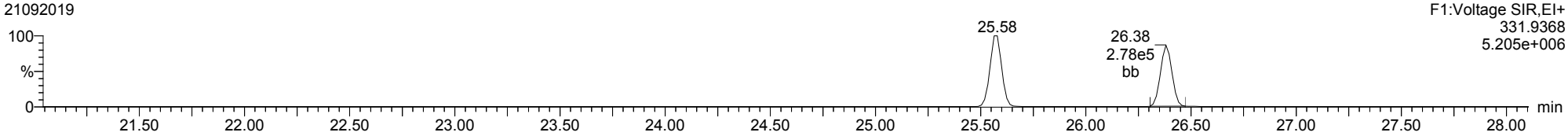

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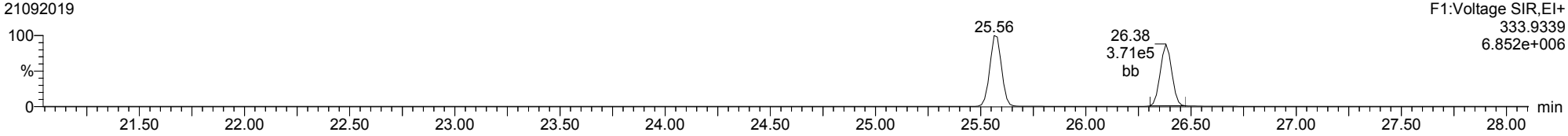

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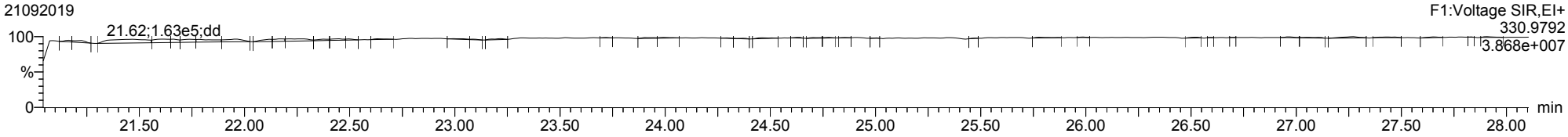

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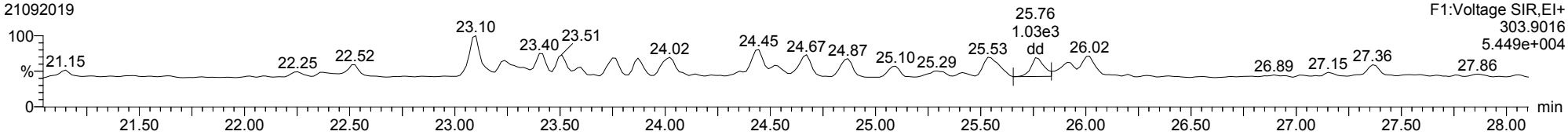
2378-TCDF



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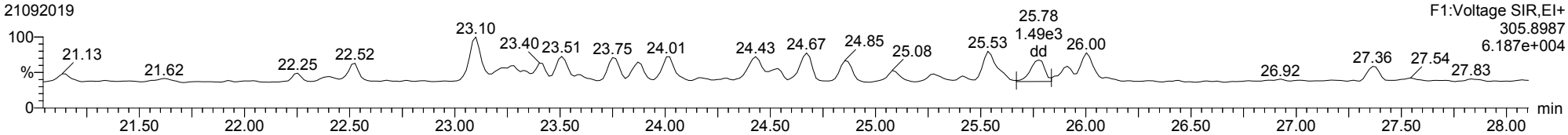

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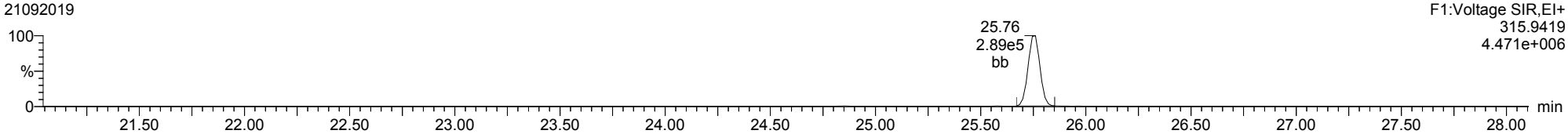

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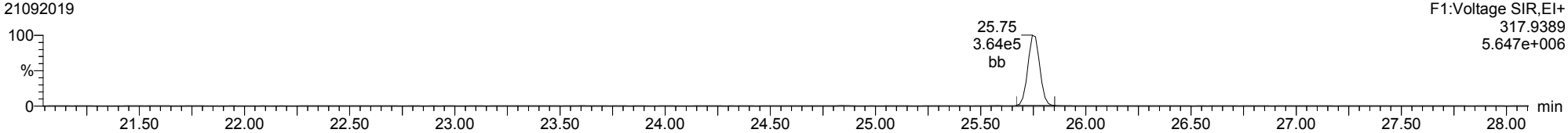

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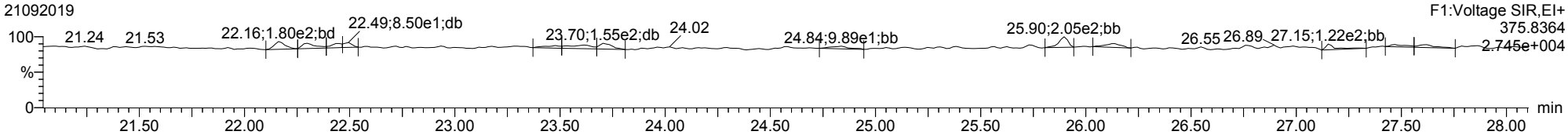

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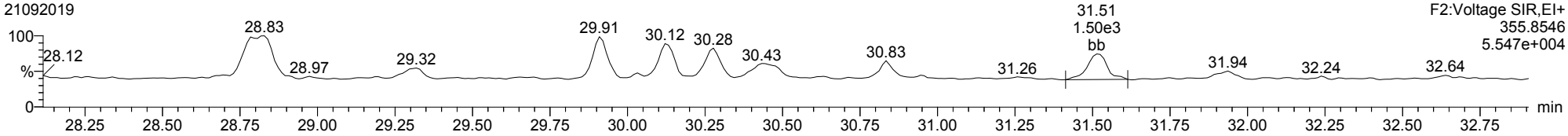
12378-PeCDD



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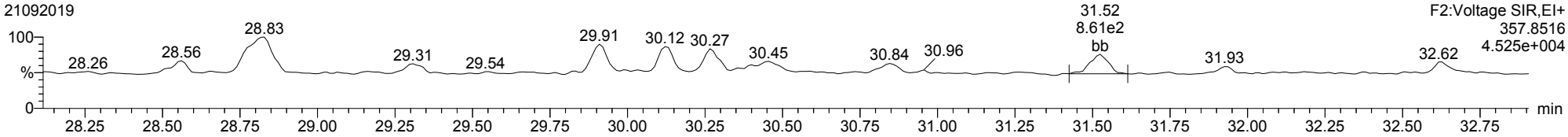

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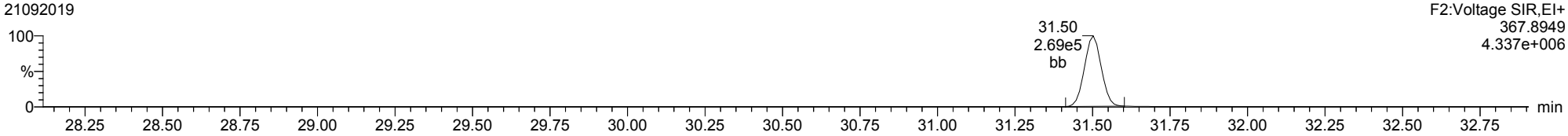

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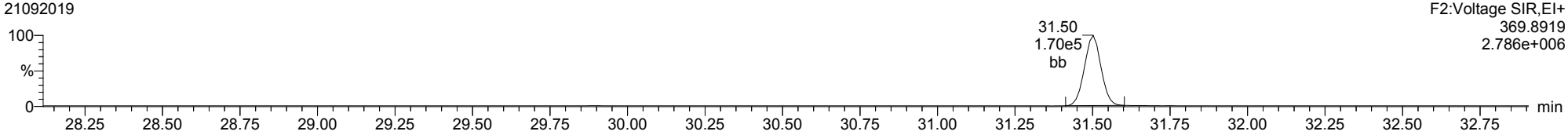

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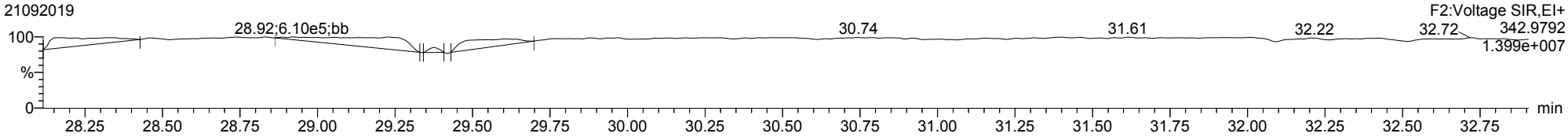

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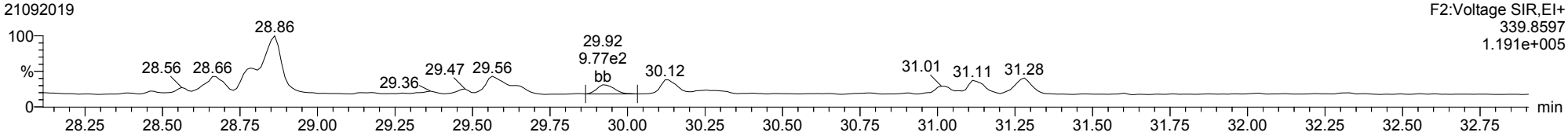

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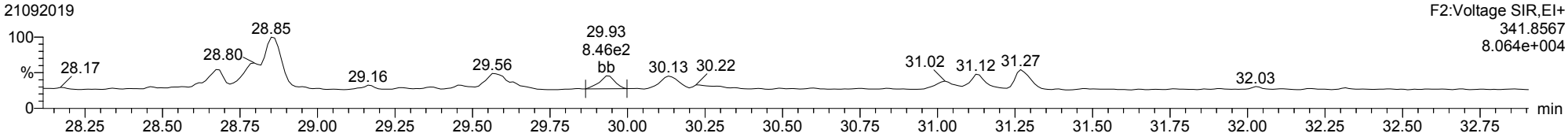

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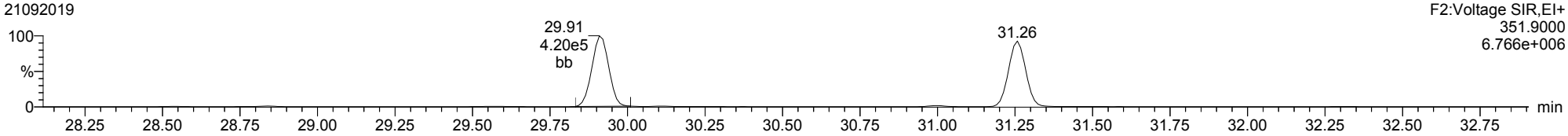

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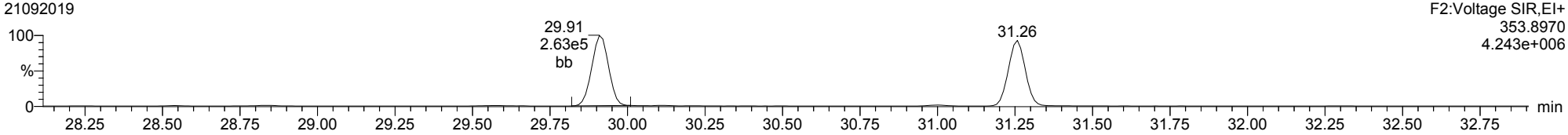

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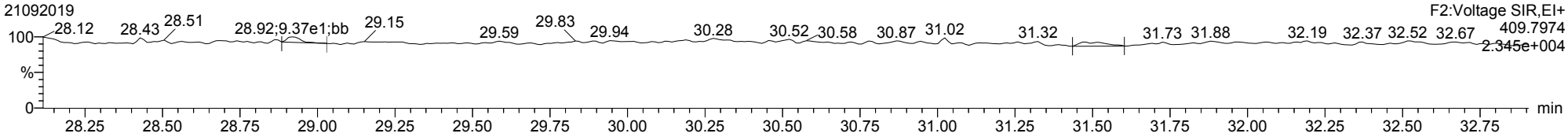

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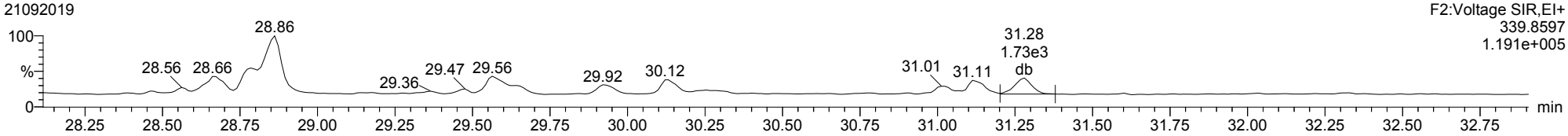

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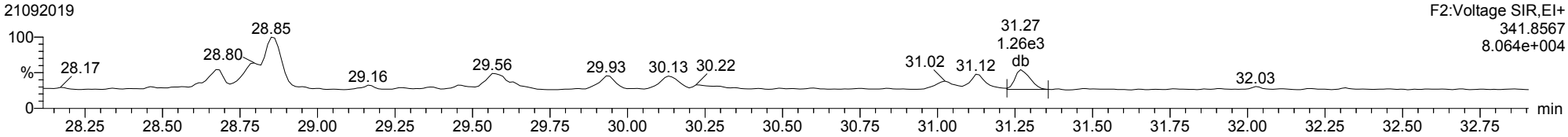

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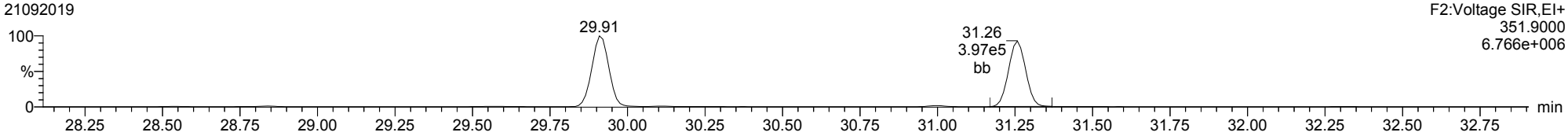

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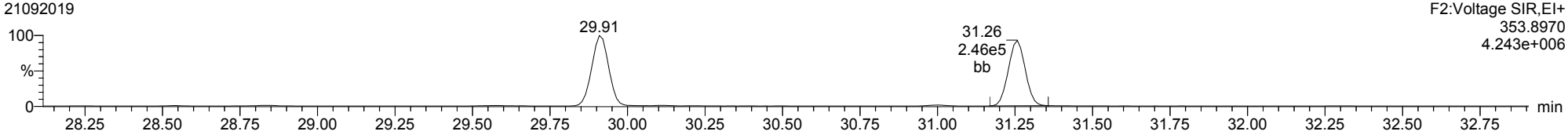

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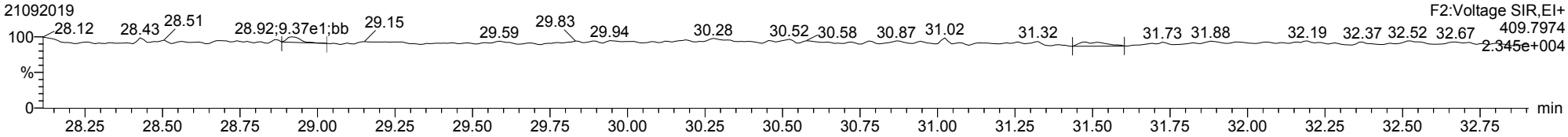

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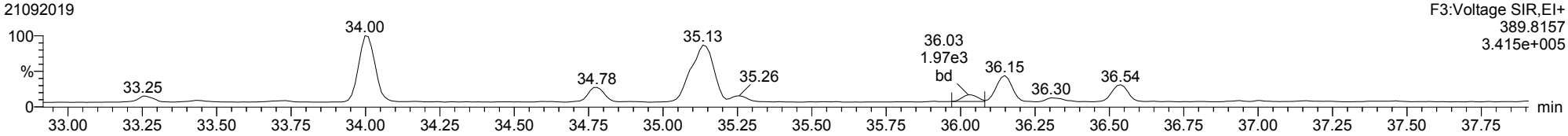

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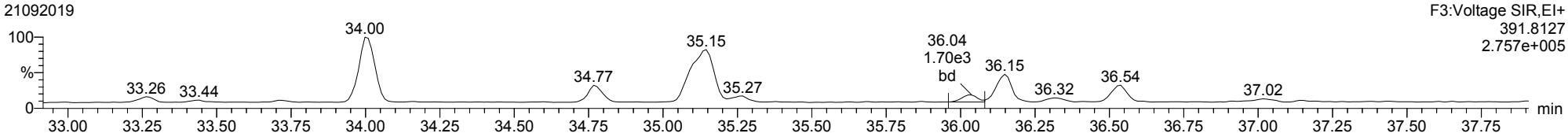

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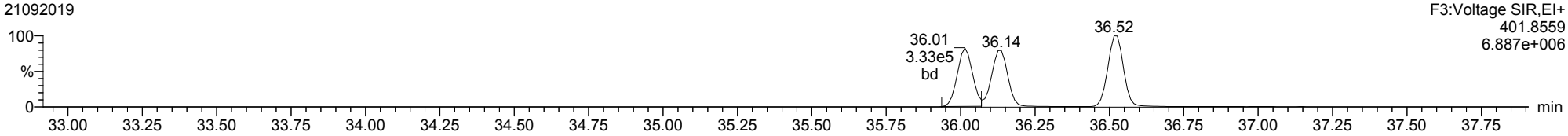

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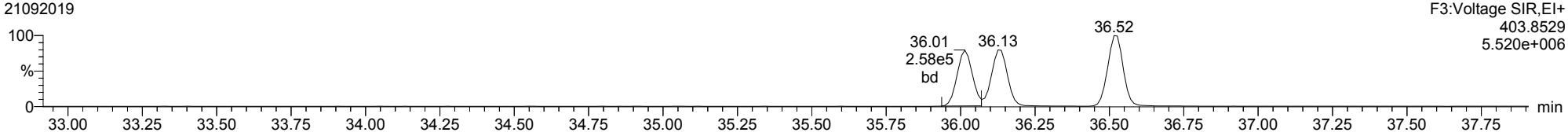

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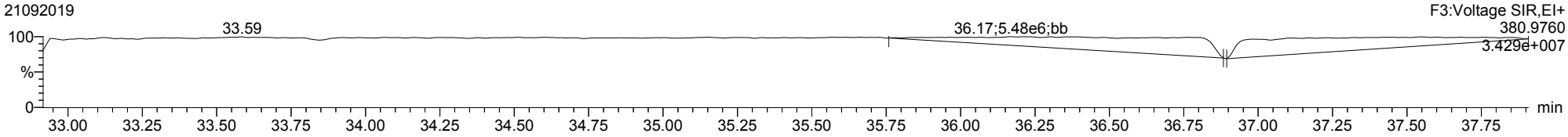

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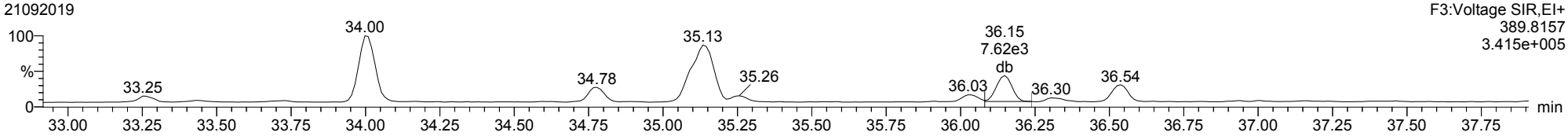

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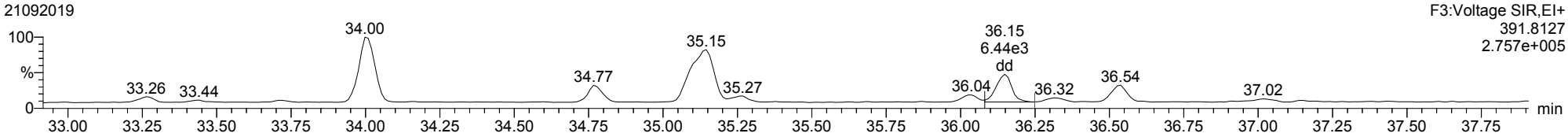

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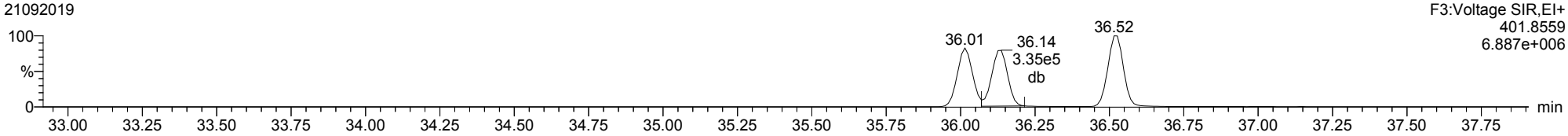

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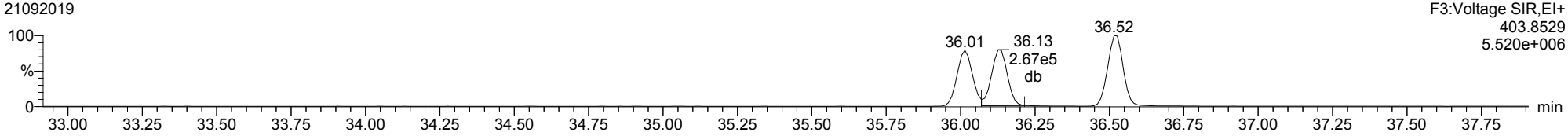

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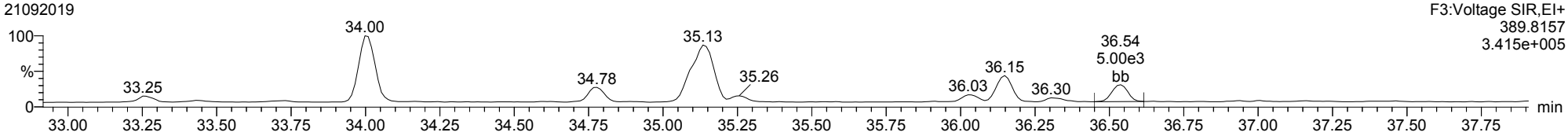

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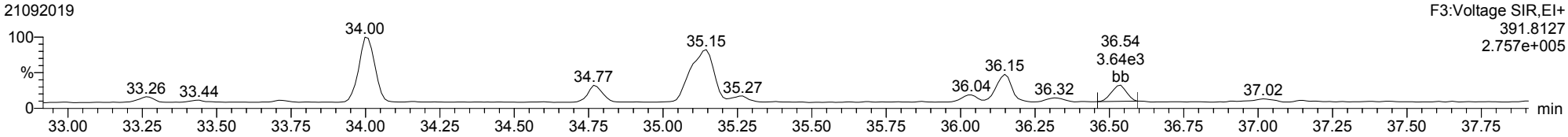

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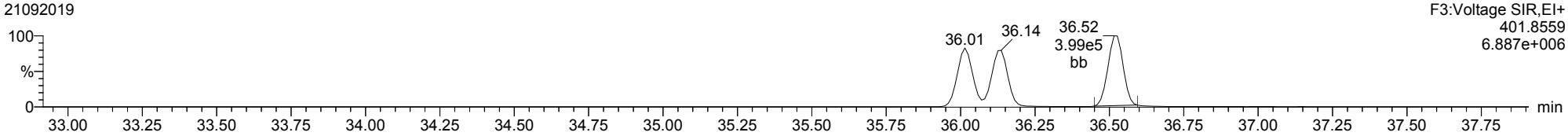

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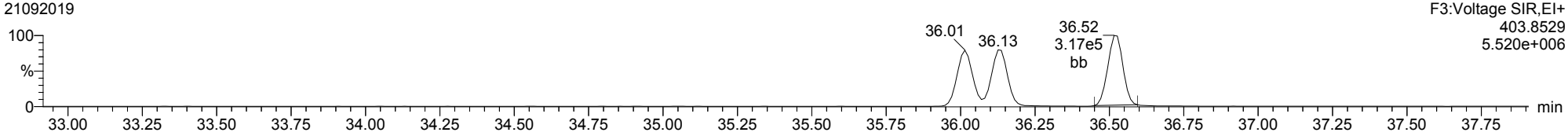

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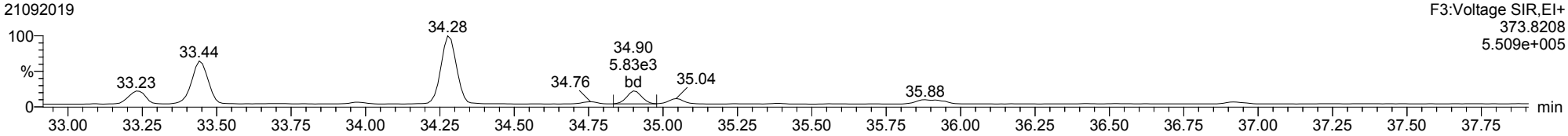

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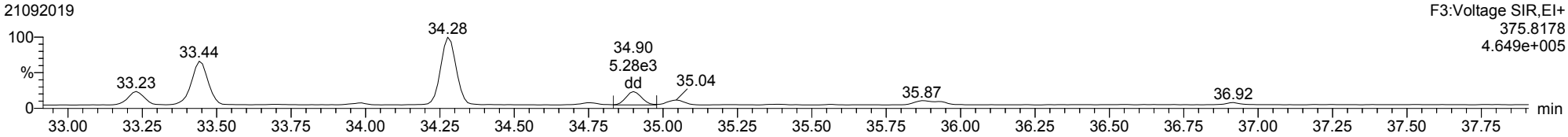

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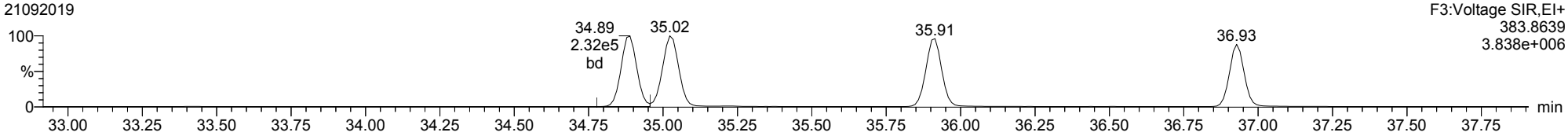

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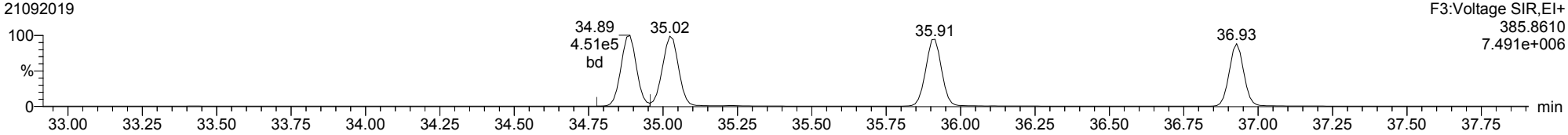

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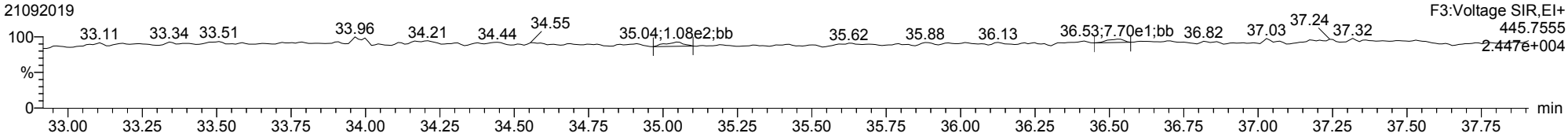

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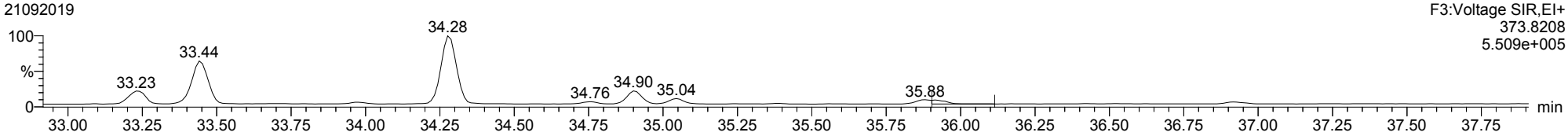
234678-HxCDF



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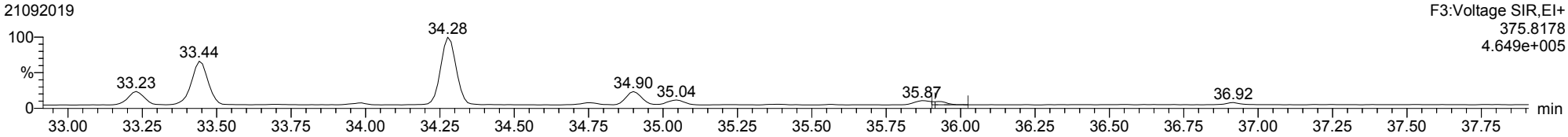

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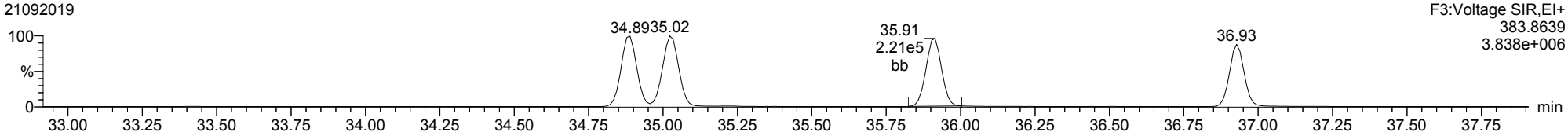

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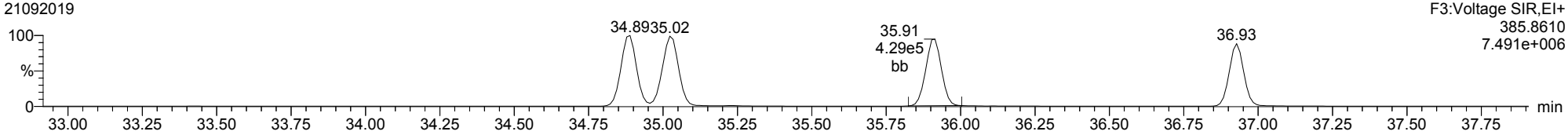

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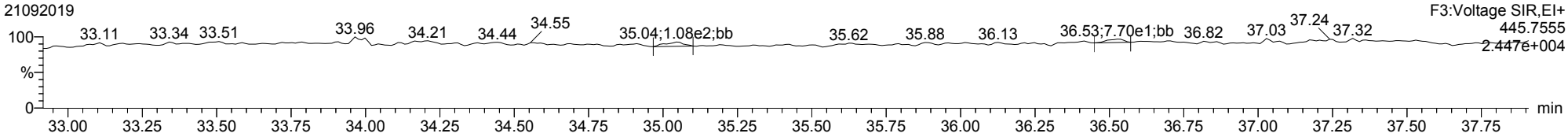

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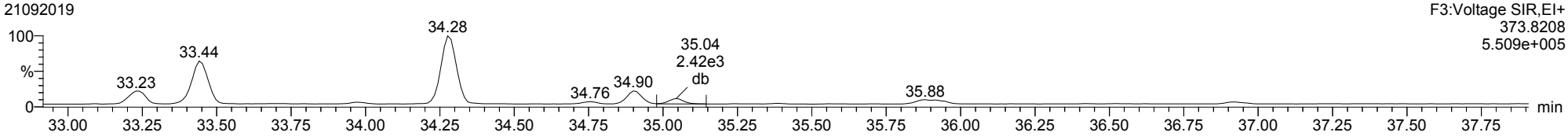

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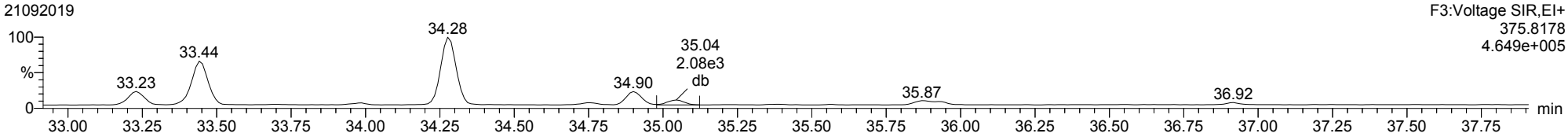

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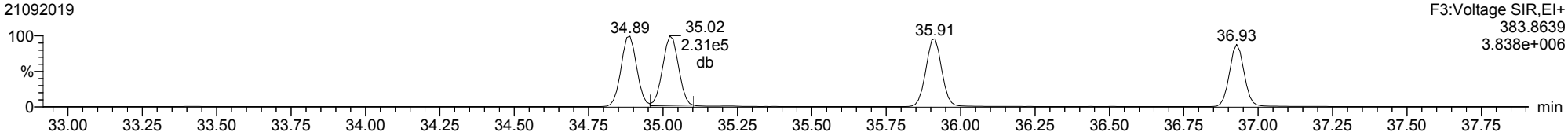

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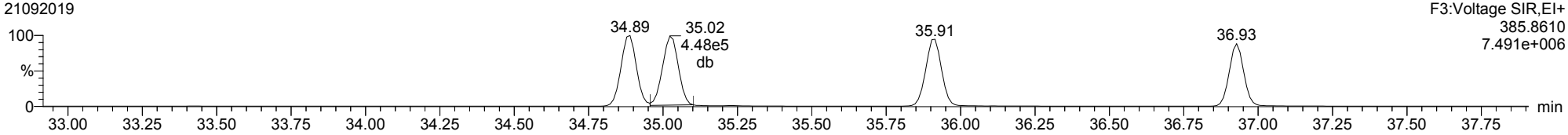

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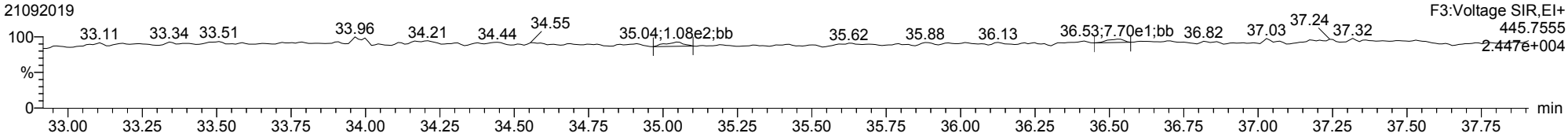

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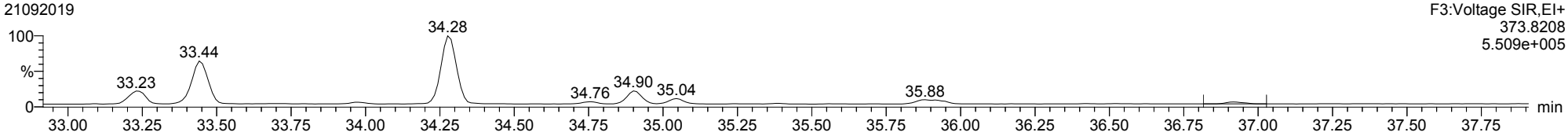

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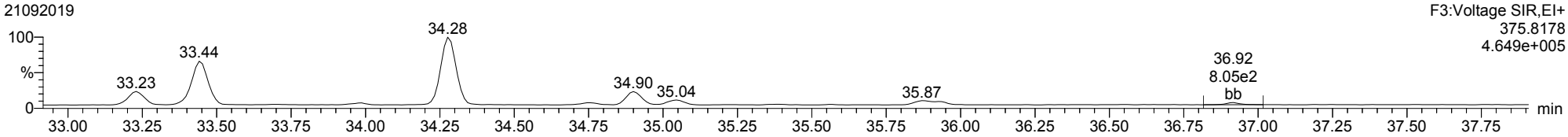

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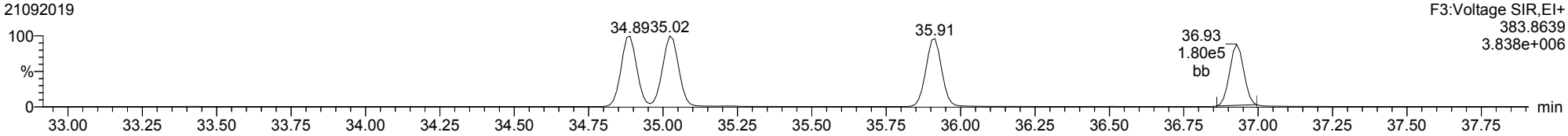

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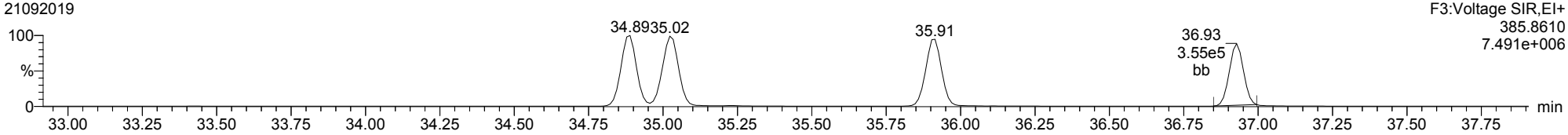
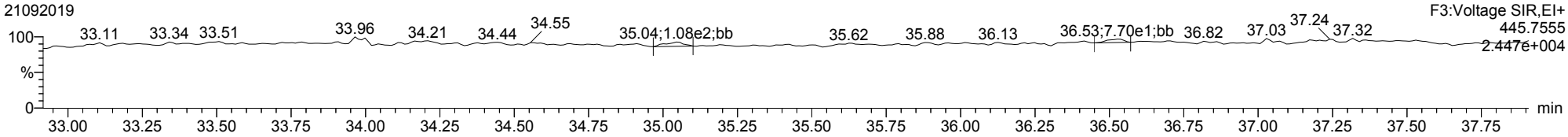


FUNCTION3 OCDPE



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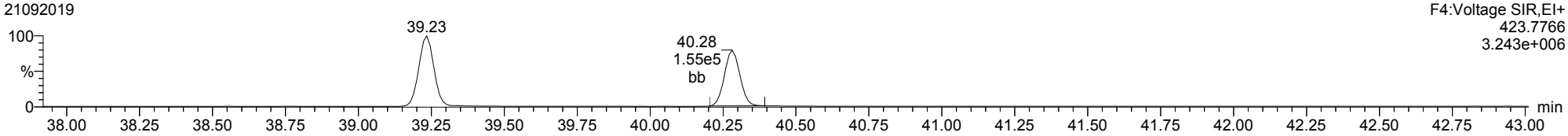
1234678-HpCDD



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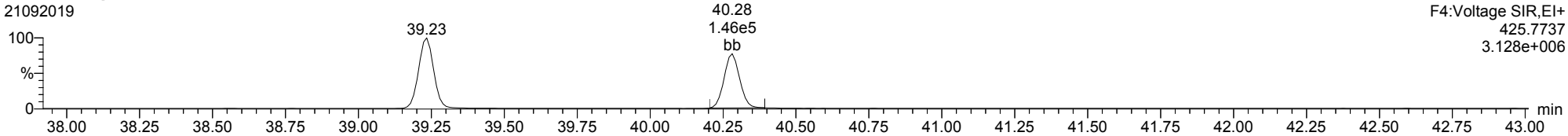

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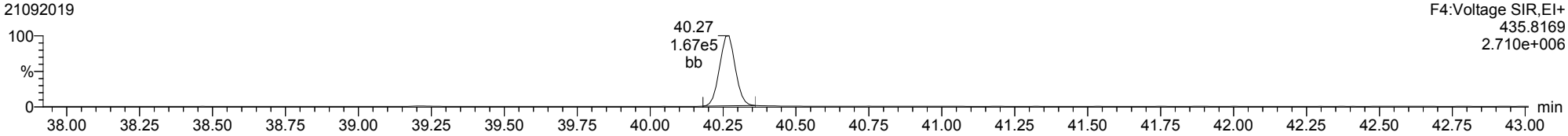

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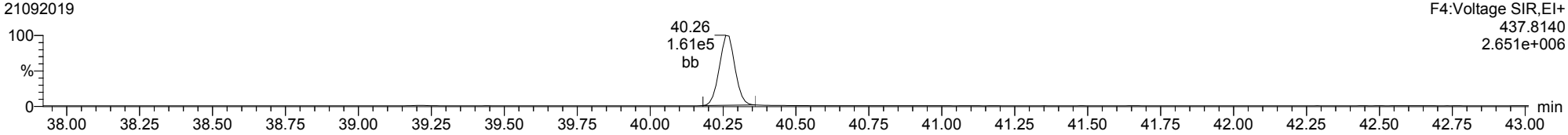
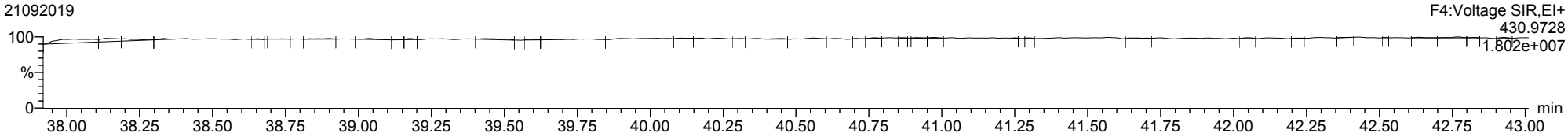


FUNCTION4 PFK



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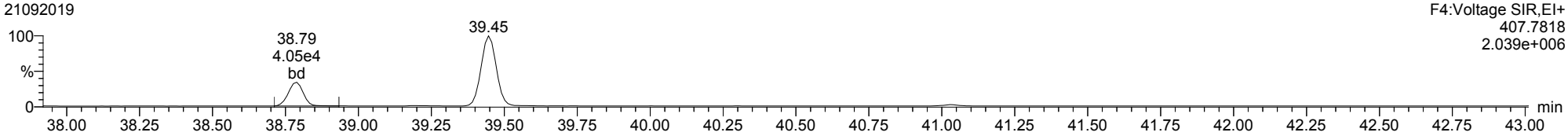

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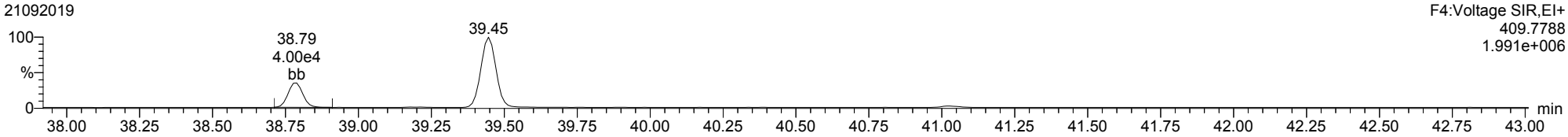

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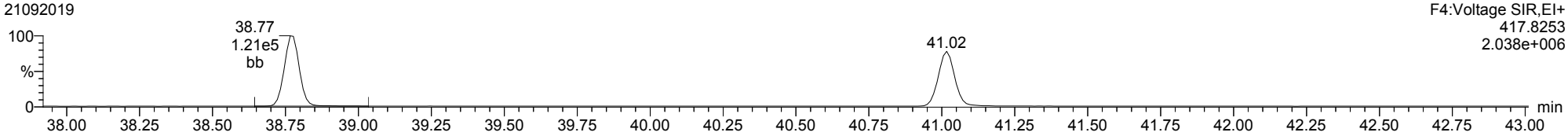

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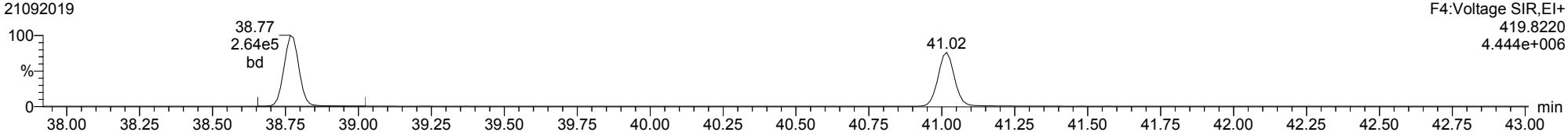

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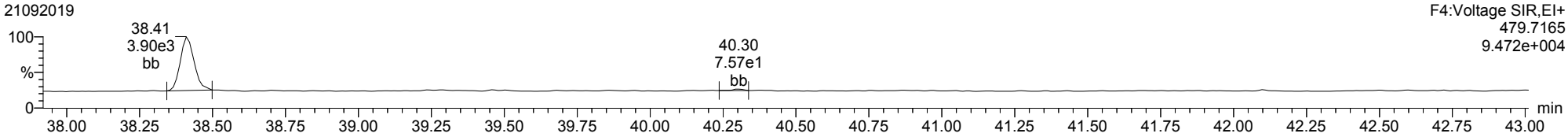

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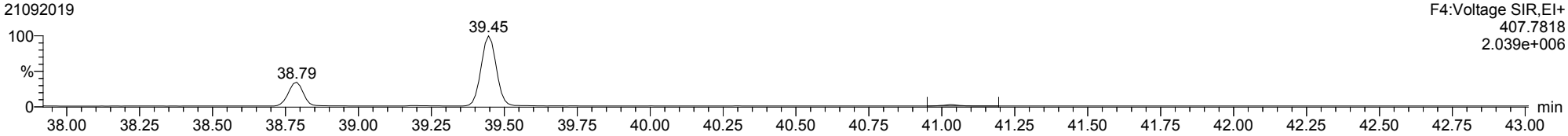
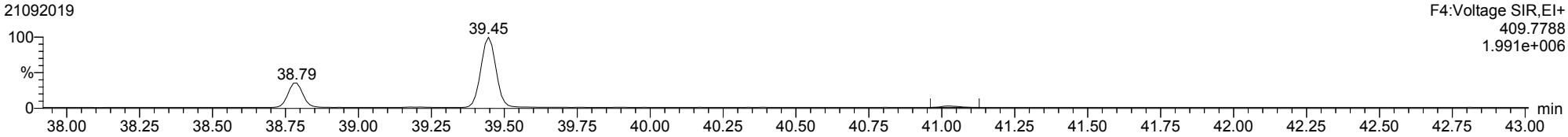


1234789-HpCDF



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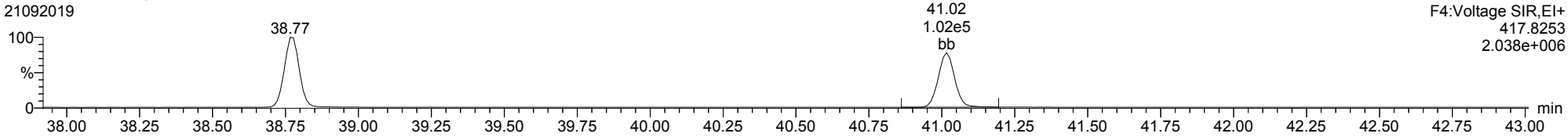

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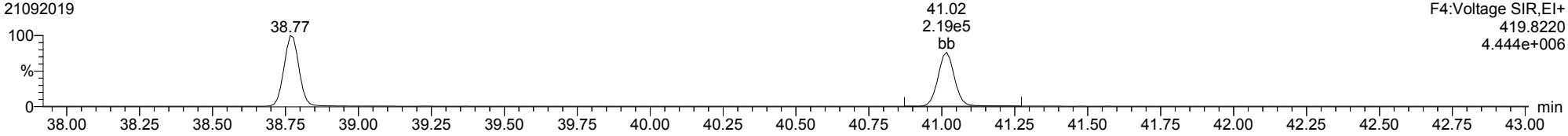
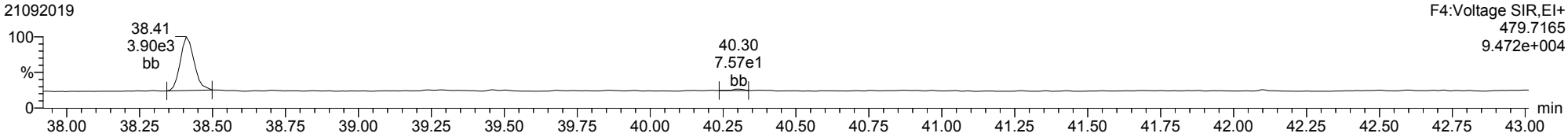


FUNCTION4 NCDPE



ID: 21G0140-05, Name: 21092019, Date: 21-Sep-2021, Time: 07:02:02, Conditions: AUTOSPEC01, User: pk

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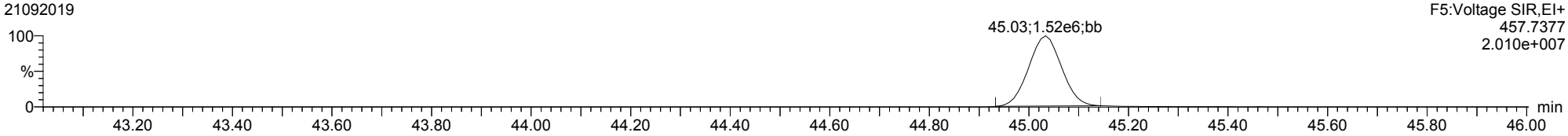

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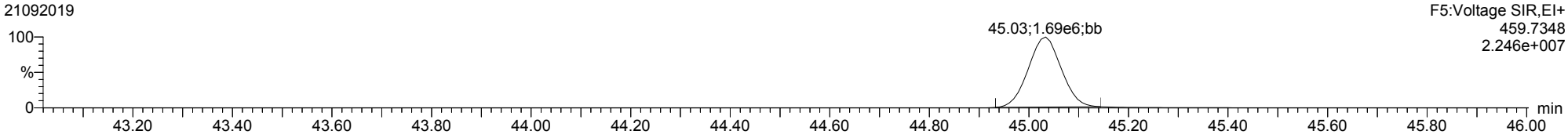

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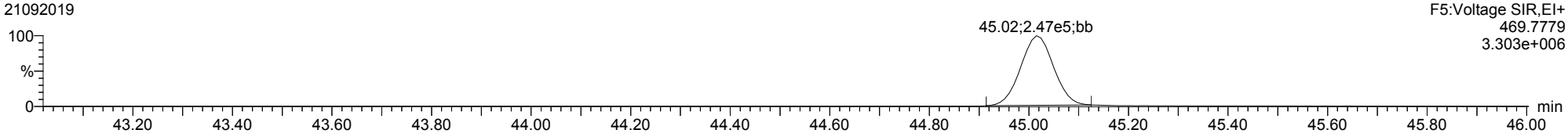

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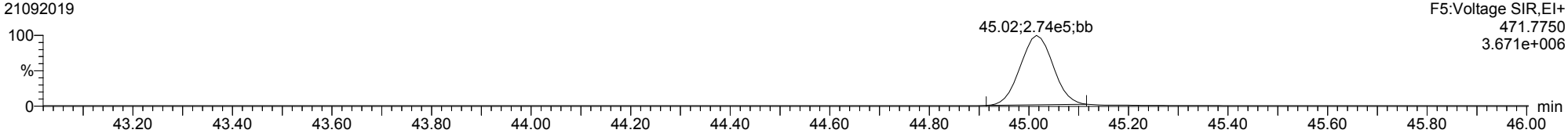

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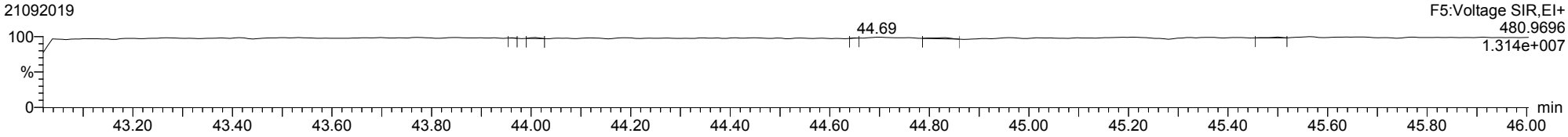
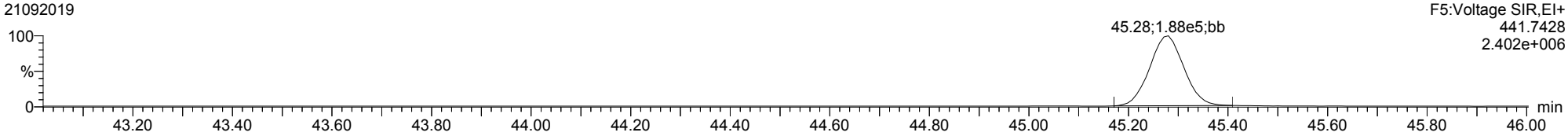


ID: 21G0140-05, Name: 21092019, Date: 21-Sep-2021, Time: 07:02:02, Conditions: AUTOSPEC01, User: pk

OCDF



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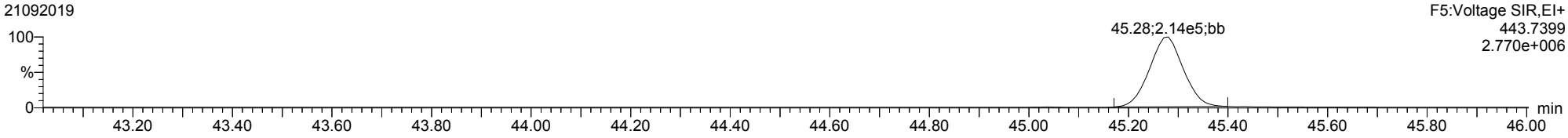
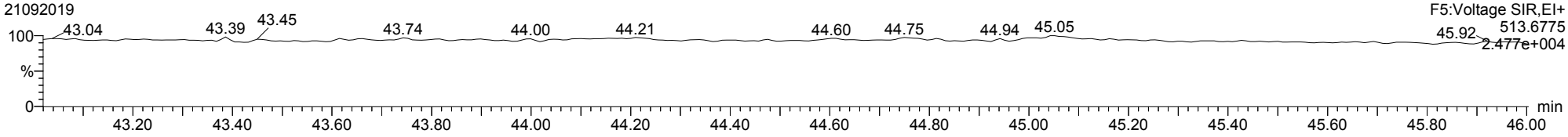
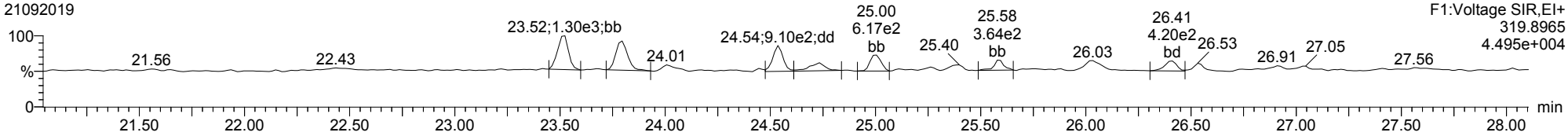


FUNCTION5 DCDPE

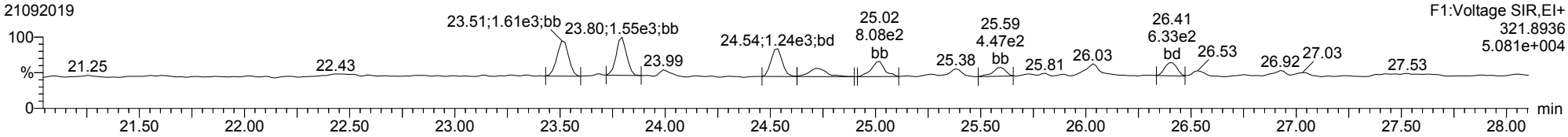


ID: 21G0140-05, Name: 21092019, Date: 21-Sep-2021, Time: 07:02:02, Conditions: AUTOSPEC01, User: pk

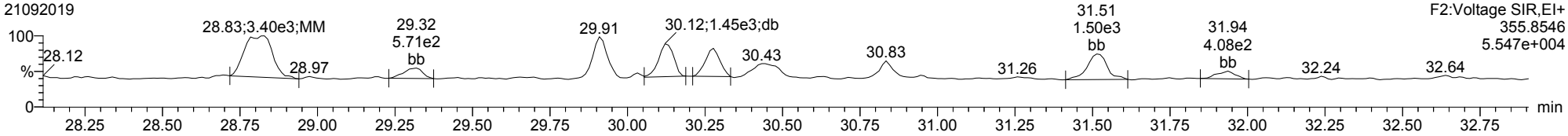
Total-tetradioxins



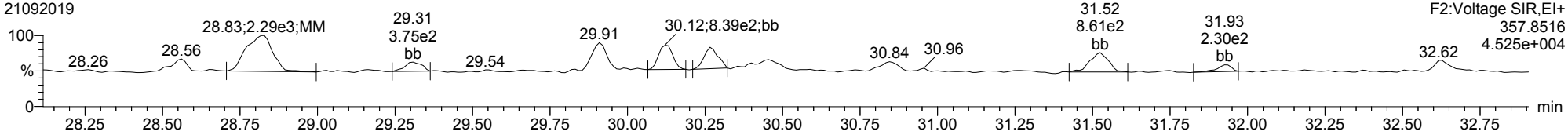
Total-tetradioxins



Total-pentadioxins

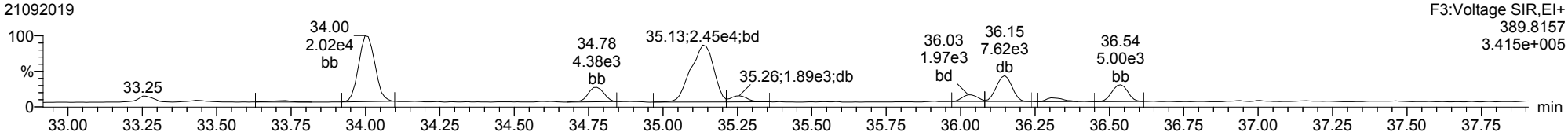


Total-pentadioxins



ID: 21G0140-05, Name: 21092019, Date: 21-Sep-2021, Time: 07:02:02, Conditions: AUTOSPEC01, User: pk

Total-hexadioxins



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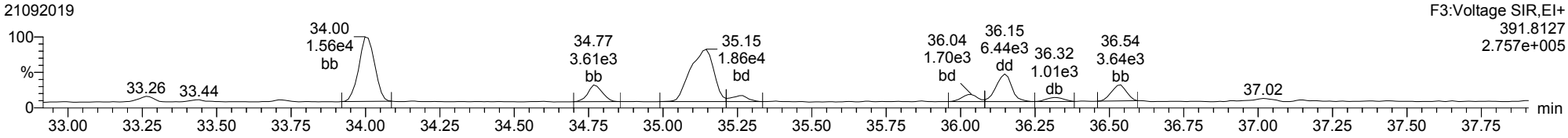

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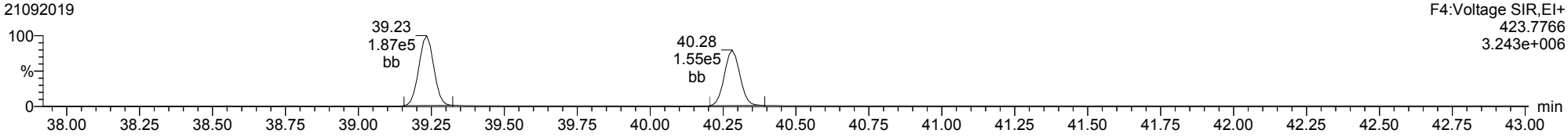

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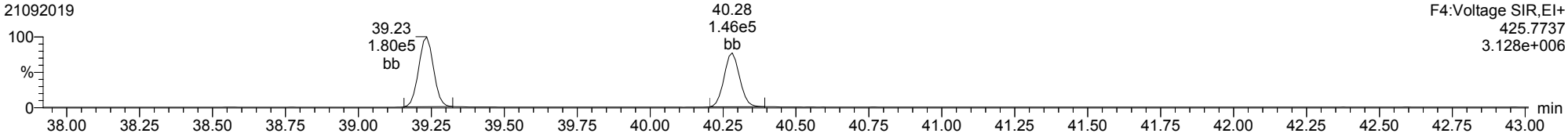
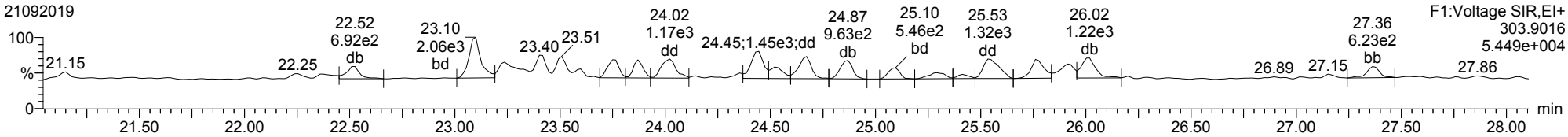


ID: 21G0140-05, Name: 21092019, Date: 21-Sep-2021, Time: 07:02:02, Conditions: AUTOSPEC01, User: pk

Total-tetrafurans



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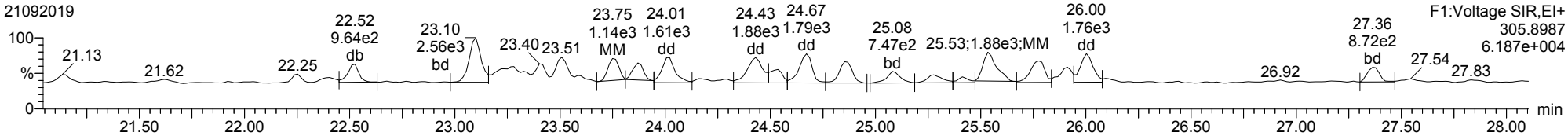

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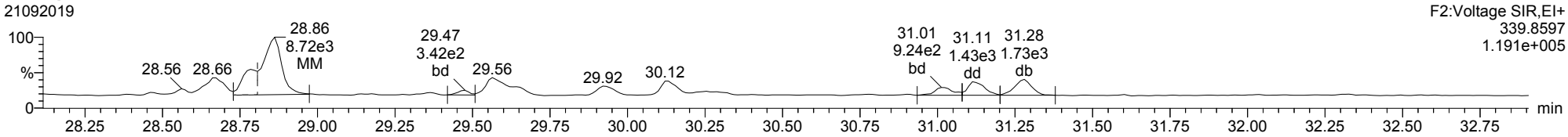
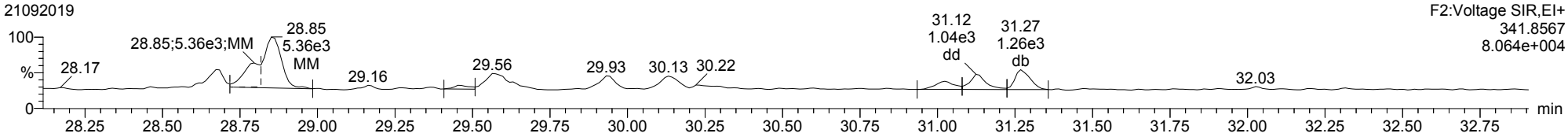


Total-pentafurans



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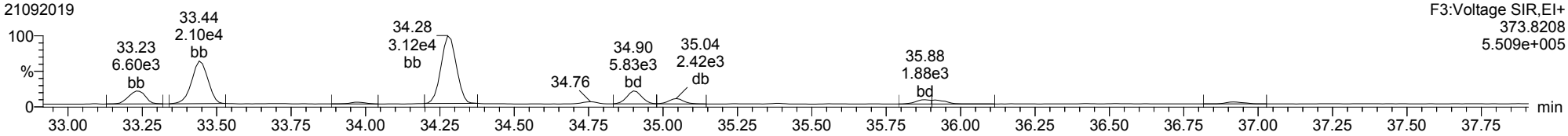
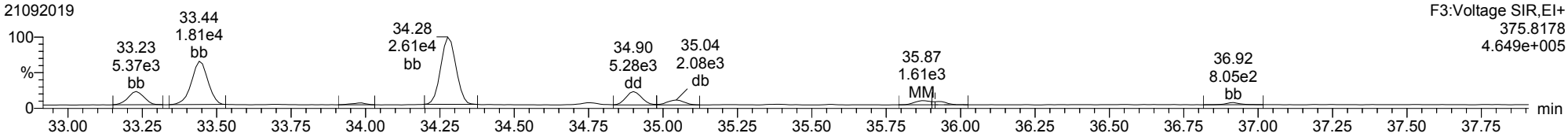
Last Altered: Tuesday, September 21, 2021 13:21:12 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 13:29:15 Pacific Daylight Time

ID: 21G0140-05, Name: 21092019, Date: 21-Sep-2021, Time: 07:02:02, Conditions: AUTOSPEC01, User: pk

Total-hexafurans



Total-hexafurans



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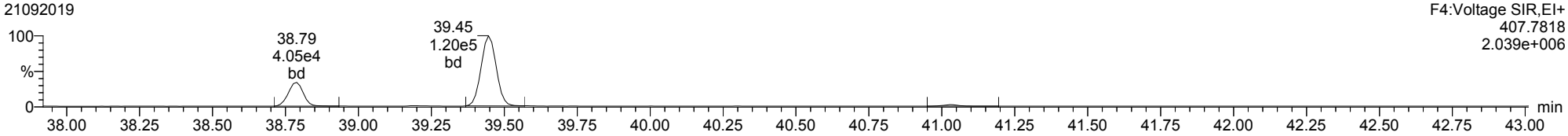

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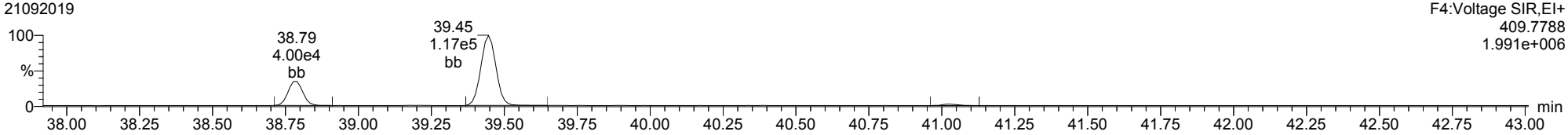

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-SC634B

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0140
Client:	Anchor QEA, LLC				
Project:	Lower Duwamish AOC4				
Matrix:	Sediment	Laboratory ID:	21G0140-06 C	File ID:	21092020
Sampled:	07/12/21 13:11	Prepared:	09/06/21 16:00	Analyzed:	09/21/21 07:50
% Solids:	60.59	Preparation:	EPA 1613	Initial/Final:	16.51 g Wet / 20 uL
Result Basis:	Dry	Sequence:	SJI0309	Calibration:	EH00030
Batch:	BJH0152	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1	0.698	0.655-0.886	0.122	1.00	0.742	ng/kg	J
1746-01-6	2,3,7,8-TCDD	1	0.512	0.655-0.886	0.071	1.00	0.462	ng/kg	EMPC, J
57117-41-6	1,2,3,7,8-PeCDF	1	1.523	1.318-1.783	0.114	1.00	0.536	ng/kg	J
57117-31-4	2,3,4,7,8-PeCDF	1	1.638	1.318-1.783	0.106	1.00	0.819	ng/kg	J
40321-76-4	1,2,3,7,8-PeCDD	1	1.707	1.318-1.783	0.153	1.00	1.41	ng/kg	
70648-26-9	1,2,3,4,7,8-HxCDF	1	1.240	1.054-1.426	0.069	1.00	3.08	ng/kg	
57117-44-9	1,2,3,6,7,8-HxCDF	1	1.085	1.054-1.426	0.070	1.00	1.44	ng/kg	
60851-34-5	2,3,4,6,7,8-HxCDF	1	1.146	1.054-1.426	0.070	1.00	0.901	ng/kg	J
72918-21-9	1,2,3,7,8,9-HxCDF	1	1.071	1.054-1.426	0.094	1.00	0.874	ng/kg	J
39227-28-6	1,2,3,4,7,8-HxCDD	1	1.173	1.054-1.426	0.150	1.00	1.51	ng/kg	
57653-85-7	1,2,3,6,7,8-HxCDD	1	1.233	1.054-1.426	0.148	1.00	6.33	ng/kg	
19408-74-3	1,2,3,7,8,9-HxCDD	1	1.269	1.054-1.426	0.160	1.00	4.59	ng/kg	
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	1.020	0.893-1.208	0.091	1.00	22.7	ng/kg	
55673-89-7	1,2,3,4,7,8,9-HpCDF	1	0.989	0.893-1.208	0.130	1.00	2.03	ng/kg	
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.071	0.893-1.208	0.256	2.50	165	ng/kg	B
39001-02-0	OCDF	1	0.879	0.757-1.024	0.183	2.50	47.4	ng/kg	
3268-87-9	OCDD	1	0.890	0.757-1.024	0.279	10.0	1270	ng/kg	B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			1.00	8.15	ng/kg
41903-57-5	Total TCDD	1	0.000			1.00	4.19	ng/kg
30402-15-4	Total PeCDF	1	0.000			1.00	22.0	ng/kg
36088-22-9	Total PeCDD	1	0.000			1.00	5.99	ng/kg
55684-94-1	Total HxCDF	1	0.000			1.00	41.5	ng/kg
34465-46-8	Total HxCDD	1	0.000			1.00	51.7	ng/kg
38998-75-3	Total HpCDF	1	0.000			1.00	72.5	ng/kg
37871-00-4	Total HpCDD	1	0.000			1.00	358	ng/kg

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 6.37
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 6.37

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-SC634B

Form 2
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0140
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Matrix:	Sediment	Laboratory ID:	21G0140-06	File ID:	21092020
Sampled:	07/12/21 13:11	Prepared:	09/06/21 16:00	Analyzed:	09/21/21 07:50
Solids Wt%:	60.59	Preparation:	EPA 1613	Initial/Final:	16.51 g / 20 uL
Result Basis:	Dry	Sequence:	SJI0309	Calibration:	EH00030
Batch:	BJH0152	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.791	0.655-0.886	0.070	55.8	24 - 169 %	
13C12-2,3,7,8-TCDD		0.753	0.655-0.886	0.075	74.4	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.614	1.318-1.783	0.072	68.2	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.571	1.318-1.783	0.075	67.6	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.560	1.318-1.783	0.077	79.0	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.515	0.434-0.587	0.097	74.5	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.522	0.434-0.587	0.090	69.2	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.513	0.434-0.587	0.099	72.8	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.514	0.434-0.587	0.120	55.3	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.312	1.054-1.426	0.088	83.2	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.216	1.054-1.426	0.081	76.2	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.457	0.374-0.506	0.099	54.7	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.463	0.374-0.506	0.122	56.5	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.039	0.893-1.208	0.122	69.5	23 - 140 %	
13C12-OCDD		0.898	0.757-1.024	0.113	65.3	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.037	74.6	35 - 197 %	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210920D2.qld
Last Altered: Tuesday, September 21, 2021 13:21:12 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 13:29:27 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0140-06, Name: 21092020, Date: 21-Sep-2021, Time: 07:50:55, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.761	1.000	1.186e3	1.700e3	1.108	0.698	0.770	1351	1153	1.74e4	2.27e4	12.9	19.7	NO	bd	dd	0.371
12378-PeCDF	29.931	1.001	1.280e3	8.404e2	1.015	1.523	1.550	1091	1285	2.28e4	1.50e4	20.9	11.7	NO	bb	bb	0.268
23478-PeCDF	31.280	1.001	2.110e3	1.288e3	1.126	1.638	1.550	1091	1285	3.71e4	2.09e4	34.1	16.3	NO	db	db	0.410
123478-HxCDF	34.912	1.000	6.682e3	5.389e3	1.017	1.240	1.240	691	773	1.08e5	8.69e4	156.0	112.5	NO	bd	dd	1.540
234678-HxCDF	35.948	1.000	1.866e3	1.628e3	1.052	1.146	1.240	691	773	3.25e4	2.79e4	47.0	36.1	NO	db	db	0.451
123678-HxCDF	35.056	1.001	3.004e3	2.769e3	1.037	1.085	1.240	691	773	4.66e4	4.24e4	67.4	54.9	NO	db	MM	0.720
123789-HxCDF	36.928	1.000	1.081e3	1.010e3	1.030	1.071	1.240	691	773	1.83e4	1.93e4	26.5	25.0	NO	bb	bb	0.437
1234678-HpCDF	38.789	1.000	3.213e4	3.152e4	1.327	1.020	1.050	586	878	5.67e5	5.45e5	967.8	620.5	NO	bb	bd	11.363
1234789-HpCDF	41.028	1.000	2.307e3	2.332e3	1.283	0.989	1.050	586	878	3.32e4	3.68e4	56.8	41.9	NO	bb	bb	1.013
OCDF	45.288	1.006	4.395e4	5.002e4	1.447	0.879	0.890	632	936	5.52e5	6.45e5	872.6	688.8	NO	bd	bb	23.723
2378-TCDD	26.411	1.001	5.270e2	1.029e3	0.920	0.512	0.770	709	557	9.18e3	1.50e4	12.9	26.9	YES	bb	bd	0.231
12378-PeCDD	31.525	1.001	2.255e3	1.321e3	0.995	1.707	1.550	1039	1034	3.37e4	1.78e4	32.4	17.2	NO	bb	bb	0.705
123478-HxCDD	36.059	1.001	2.789e3	2.378e3	1.027	1.173	1.240	1424	1309	4.94e4	3.86e4	34.7	29.5	NO	bd	bd	0.756
123678-HxCDD	36.171	1.000	1.165e4	9.448e3	1.009	1.233	1.240	1424	1309	1.93e5	1.57e5	135.7	120.0	NO	db	dd	3.165
123789-HxCDD	36.561	1.011	8.093e3	6.376e3	0.950	1.269	1.240	1424	1309	1.45e5	1.10e5	101.9	84.0	NO	bb	bb	2.296
1234678-HpCDD	40.282	1.000	1.663e5	1.553e5	1.068	1.071	1.050	1365	1300	2.63e6	2.46e6	1926.5	1894.3	NO	bb	bb	82.312
OCDD	45.050	1.000	9.641e5	1.083e6	1.181	0.890	0.890	1091	858	1.22e7	1.36e7	11201.0	15881.6	NO	bb	bb	633.350
13C-2378-TCDF	25.761	1.007	3.100e5	3.920e5	1.427	0.791	0.770	1454	898	4.89e6	6.16e6	3364.9	6862.3	NO	bb	bb	55.847
13C-12378-PeCDF	29.909	1.169	4.811e5	2.981e5	1.297	1.614	1.550	1205	999	7.63e6	4.75e6	6333.5	4757.1	NO	bb	bb	68.165
13C-23478-PeCDF	31.257	1.222	4.503e5	2.867e5	1.236	1.571	1.550	1205	999	7.27e6	4.57e6	6035.1	4581.8	NO	bb	bb	67.647
13C-123478-HxCDF	34.901	0.955	2.620e5	5.089e5	1.242	0.515	0.510	1376	1468	4.26e6	8.31e6	3096.4	5659.9	NO	bd	bd	74.533
13C-123678-HxCDF	35.034	0.959	2.655e5	5.083e5	1.343	0.522	0.510	1376	1468	4.17e6	8.02e6	3026.8	5462.4	NO	db	db	69.188
13C-234678-HxCDF	35.937	0.983	2.497e5	4.866e5	1.215	0.513	0.510	1376	1468	4.05e6	7.85e6	2946.2	5344.1	NO	bb	bb	72.806
13C-123789-HxCDF	36.939	1.011	1.575e5	3.067e5	1.008	0.514	0.510	1376	1468	3.09e6	5.96e6	2245.9	4057.8	NO	bb	bb	55.333
13C-1234678-HpCDF	38.778	1.061	1.324e5	2.896e5	0.926	0.457	0.440	1007	1167	2.28e6	5.00e6	2265.0	4279.6	NO	bb	bd	54.713
13C-1234789-HpCDF	41.017	1.122	1.129e5	2.438e5	0.758	0.463	0.440	1007	1167	1.66e6	3.56e6	1652.4	3052.1	NO	bd	bb	56.534
13C-1234-TCDD	25.579	0.000	3.814e5	4.997e5	1.000	0.763	0.770	1216	766	6.15e6	8.02e6	5060.3	10472.3	NO	bb	bb	100.000
13C-2378-TCDD	26.381	1.031	3.145e5	4.175e5	1.116	0.753	0.770	1216	766	4.97e6	6.67e6	4088.9	8713.9	NO	bb	bb	74.412
13C-12378-PeCDD	31.503	1.232	3.107e5	1.992e5	0.732	1.560	1.550	569	768	4.97e6	3.21e6	8747.9	4175.5	NO	bb	bb	79.045
13C-123478-HxCDD	36.037	0.986	3.774e5	2.876e5	0.960	1.312	1.240	1030	958	6.04e6	4.86e6	5859.5	5072.3	NO	bd	bd	83.225
13C-123678-HxCDD	36.159	0.989	3.626e5	2.982e5	1.041	1.216	1.240	1030	958	6.03e6	4.98e6	5856.0	5196.8	NO	db	db	76.220
13C-1234678-HpCDD	40.271	1.102	1.864e5	1.794e5	0.632	1.039	1.050	886	930	2.98e6	2.86e6	3362.6	3074.7	NO	bb	bb	69.476
13C-OCDD	45.032	1.232	2.591e5	2.884e5	0.504	0.898	0.890	699	643	3.36e6	3.76e6	4808.0	5842.9	NO	bb	bb	130.556
13C-123789-HxCDD	36.549	0.000	4.593e5	3.732e5	1.000	1.231	1.240	1030	958	7.81e6	6.35e6	7577.1	6630.2	NO	bb	bb	100.000
37CL-2378-TCDD	26.411	1.033	2.850e5		1.084			952		4.29e6		4510.0			bd		29.846

Dataset: T:\Autospec\Processed Data Batch\210920D2.qld
Last Altered: Tuesday, September 21, 2021 13:21:12 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 13:29:27 Pacific Daylight Time

ID: 21G0140-06, Name: 21092020, Date: 21-Sep-2021, Time: 07:50:55, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	22.238	0.863	5.162e2	4.566e2	1.425	1.130	0.770	1351	1153	4.71e3	5.56e3	3.5	4.8	YES	dd	dd	0.097
1289-TCDF	27.364	1.062	7.432e2	7.126e2	1.043	1.043	0.770	1351	1153	8.83e3	1.03e4	6.5	8.9	YES	db	bd	0.199
13468-PECDF					1.376		1.550	668	701								
12389-PECDF					1.000		1.550	1091	1285								
123468-HXCDF	33.241	0.952	8.365e3	7.202e3	1.087	1.161	1.240	691	773	1.38e5	1.10e5	199.3	142.9	NO	bb	bb	1.858
1368-TCDD	23.508	0.891	8.221e2	1.096e3	0.923	0.750	0.770	709	557	1.43e4	1.72e4	20.2	30.9	NO	bb	bb	0.284
1289-TCDD					0.794		0.770	709	557								
12479-PECDD	28.817	0.915	3.826e3	2.615e3	1.843	1.463	1.550	1039	1034	4.01e4	2.77e4	38.6	26.8	NO	db	db	0.685
12389-PECDD	31.915	1.013	4.679e2	2.548e2	1.154	1.837	1.550	1039	1034	7.85e3	4.19e3	7.6	4.1	YES	bd	bb	0.123
124679-HXCDD	34.020	0.944	2.953e4	2.428e4	1.125	1.216	1.240	1424	1309	4.96e5	3.82e5	348.6	291.9	NO	bb	bb	7.193
1234679-HPCDD	39.234	0.974	2.209e5	2.085e5	1.211	1.060	1.050	1365	1300	3.85e6	3.67e6	2824.9	2824.1	NO	bb	bb	96.925
Total-tetrafurans			1.468e4		1.192			1351		1.97e5							4.074
Total-penta1			2.670e4					668		3.92e5							5.934
Total-pentafurans			2.406e4		1.047			1091		3.14e5							5.049
Total-hexafurans			8.274e4		1.045			691		1.33e6							20.756
Total-heptafurans			9.604e4		1.305			586		1.61e6							36.284
Total-Furans			2.884e5		1.158			1351		4.40e6							95.893
Total-tetradioxins			5.905e3		0.879			709		9.89e4							2.093
Total-pentadioxins			1.276e4		1.331			1039		1.71e5							2.996
Total-hexadioxins			9.961e4		1.028			1424		1.45e6							25.876
Total-heptadioxins			3.872e5		1.140			1365		6.48e6							179.237
Total-Dioxins			1.470e6		1.092			709		2.04e7							843.553
Total-TEQ			1.758e6					709		2.48e7							939.446
FUNCTION1 PFK			3.232e6					248279		3.06e7							
FUNCTION2 PFK			2.177e6					155102		1.23e7							0.000
FUNCTION3 PFK			1.323e7					250591		2.06e7							0.000
FUNCTION4 PFK			5.801e5					133008		9.68e6							
FUNCTION5 PFK			0.000e0					120064		0.00e0							
FUNCTION1 HXCD...			2.962e2					665		3.91e3							0.000
FUNCTION1 HPCD...			1.619e3					488		2.58e4							0.000
FUNCTION2 HPCD...			3.898e2					489		6.51e3							0.000
FUNCTION3 OCDPE			2.629e2					435		3.34e3							0.000
FUNCTION4 NCDPE			2.081e3					452		3.46e4							0.000
FUNCTION5 DCDPE			0.000e0					459		0.00e0							

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0140-06, Name: 21092020, Date: 21-Sep-2021, Time: 07:50:55, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.87	1.120e3	1.622e3	1.192	0.69	0.77	13.3	YES	NO	dd	dd	0.328
2	Total-tetrafurans	23.75	1.198e3	1.490e3	1.192	0.80	0.77	12.8	YES	NO	dd	dd	0.321
3	Total-tetrafurans	23.51	9.978e2	1.372e3	1.192	0.73	0.77	11.1	YES	NO	dd	dd	0.283
4	Total-tetrafurans	23.40	1.167e3	1.526e3	1.192	0.76	0.77	9.5	YES	NO	dd	dd	0.322
5	Total-tetrafurans	23.25	1.235e3	1.446e3	1.192	0.85	0.77	8.7	YES	NO	dd	dd	0.321
6	Total-tetrafurans	25.91	7.745e2	9.738e2	1.192	0.80	0.77	7.1	YES	NO	dd	dd	0.209
7	2378-TCDF	25.76	1.186e3	1.700e3	1.108	0.70	0.77	12.9	YES	NO	bd	dd	0.371
8	Total-tetrafurans	25.55	1.454e3	2.095e3	1.192	0.69	0.77	12.5	YES	NO	bb	MM	0.424
9	Total-tetrafurans	25.08	4.522e2	6.538e2	1.192	0.69	0.77	5.5	YES	NO	bb	bd	0.132
10	Total-tetrafurans	24.87	1.086e3	1.294e3	1.192	0.84	0.77	11.6	YES	NO	db	db	0.284
11	Total-tetrafurans	24.66	1.606e3	1.879e3	1.192	0.85	0.77	17.9	YES	NO	dd	dd	0.417
12	Total-tetrafurans	24.52	6.493e2	7.990e2	1.192	0.81	0.77	5.8	YES	NO	dd	dd	0.173
13	Total-tetrafurans	24.45	1.754e3	2.341e3	1.192	0.75	0.77	17.6	YES	NO	bd	dd	0.489

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-penta1	27.20	2.670e4	1.570e4		1.70	1.55	587.1	YES	NO	db	bb	5.934

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	23478-PeCDF	31.28	2.110e3	1.288e3	1.126	1.64	1.55	34.1	YES	NO	db	db	0.410
2	Total-pentafurans	31.13	1.500e3	1.124e3	1.047	1.34	1.55	23.4	YES	NO	dd	dd	0.331
3	Total-pentafurans	31.02	1.077e3	6.275e2	1.047	1.72	1.55	15.2	YES	NO	bd	bd	0.215
4	Total-pentafurans	30.13	2.075e3	1.363e3	1.047	1.52	1.55	32.8	YES	NO	bd	bd	0.433
5	12378-PeCDF	29.93	1.280e3	8.404e2	1.015	1.52	1.55	20.9	YES	NO	bb	bb	0.268
6	Total-pentafurans	29.56	2.831e3	2.050e3	1.047	1.38	1.55	26.0	YES	NO	db	db	0.615
7	Total-pentafurans	28.87	1.041e4	6.878e3	1.047	1.51	1.55	97.8	YES	NO	MM	MM	2.179
8	Total-pentafurans	28.68	2.251e3	1.659e3	1.047	1.36	1.55	26.6	YES	NO	dd	dd	0.493
9	Total-pentafurans	28.56	3.060e2	1.759e2	1.047	1.74	1.55	7.0	YES	NO	bd	dd	0.061
10	Total-pentafurans	28.46	2.189e2	1.403e2	1.047	1.56	1.55	4.3	YES	NO	bb	bd	0.045

Dataset: T:\Autospec\Processed Data Batch\210920D2.qld
Last Altered: Tuesday, September 21, 2021 13:21:12 Pacific Daylight Time
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ID: 21G0140-06, Name: 21092020, Date: 21-Sep-2021, Time: 07:50:55, Conditions: AUTOSPEC01, User: pk

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	234678-HxCDF	35.95	1.866e3	1.628e3	1.052	1.15	1.24	47.0	YES	NO	db	db	0.451
2	Total-hexafurans	35.90	2.287e3	1.931e3	1.045	1.18	1.24	54.9	YES	NO	bd	bd	0.588
3	123678-HxCDF	35.06	3.004e3	2.769e3	1.037	1.08	1.24	67.4	YES	NO	db	MM	0.720
4	123478-HxCDF	34.91	6.682e3	5.389e3	1.017	1.24	1.24	156.0	YES	NO	bd	dd	1.540
5	Total-hexafurans	34.77	1.300e3	1.102e3	1.045	1.18	1.24	32.8	YES	NO	bb	bd	0.335
6	Total-hexafurans	34.29	3.134e4	2.548e4	1.045	1.23	1.24	727.4	YES	NO	bb	bb	7.926
7	Total-hexafurans	33.98	7.803e2	7.402e2	1.045	1.05	1.24	19.7	YES	NO	bb	bb	0.212
8	Total-hexafurans	33.45	2.603e4	2.192e4	1.045	1.19	1.24	595.9	YES	NO	bb	bb	6.688
9	123468-HXCDF	33.24	8.365e3	7.202e3	1.087	1.16	1.24	199.3	YES	NO	bb	bb	1.858
10	123789-HxCDF	36.93	1.081e3	1.010e3	1.030	1.07	1.24	26.5	YES	NO	bb	bb	0.437

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	41.03	2.307e3	2.332e3	1.283	0.99	1.05	56.8	YES	NO	bb	bb	1.013
2	Total-heptafurans	39.46	6.083e4	5.909e4	1.305	1.03	1.05	1700.4	YES	NO	bd	bd	23.595
3	Total-heptafurans	39.20	7.710e2	8.180e2	1.305	0.94	1.05	22.5	YES	NO	bb	bb	0.313
4	1234678-HpCDF	38.79	3.213e4	3.152e4	1.327	1.02	1.05	967.8	YES	NO	bb	bd	11.363

ID: 21G0140-06, Name: 21092020, Date: 21-Sep-2021, Time: 07:50:55, Conditions: AUTOSPEC01, User: pk

Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.87	1.120e3	1.622e3	1.192	0.69	0.77	13.3	YES	NO	dd	dd	0.328
2	Total-tetrafurans	23.75	1.198e3	1.490e3	1.192	0.80	0.77	12.8	YES	NO	dd	dd	0.321
3	Total-tetrafurans	23.51	9.978e2	1.372e3	1.192	0.73	0.77	11.1	YES	NO	dd	dd	0.283
4	Total-tetrafurans	23.40	1.167e3	1.526e3	1.192	0.76	0.77	9.5	YES	NO	dd	dd	0.322
5	Total-tetrafurans	23.25	1.235e3	1.446e3	1.192	0.85	0.77	8.7	YES	NO	dd	dd	0.321
6	Total-Furans	21.12	2.485e2	3.531e2	1.158	0.70	0.77	2.6	NO	NO	bb	bb	0.074
7	Total-tetrafurans	25.91	7.745e2	9.738e2	1.192	0.80	0.77	7.1	YES	NO	dd	dd	0.209
8	2378-TCDF	25.76	1.186e3	1.700e3	1.108	0.70	0.77	12.9	YES	NO	bd	dd	0.371
9	Total-tetrafurans	25.55	1.454e3	2.095e3	1.192	0.69	0.77	12.5	YES	NO	bb	MM	0.424
10	Total-tetrafurans	25.08	4.522e2	6.538e2	1.192	0.69	0.77	5.5	YES	NO	bb	bd	0.132
11	Total-tetrafurans	24.87	1.086e3	1.294e3	1.192	0.84	0.77	11.6	YES	NO	db	db	0.284
12	Total-tetrafurans	24.66	1.606e3	1.879e3	1.192	0.85	0.77	17.9	YES	NO	dd	dd	0.417
13	Total-tetrafurans	24.52	6.493e2	7.990e2	1.192	0.81	0.77	5.8	YES	NO	dd	dd	0.173
14	Total-tetrafurans	24.45	1.754e3	2.341e3	1.192	0.75	0.77	17.6	YES	NO	bd	dd	0.489
15	23478-PeCDF	31.28	2.110e3	1.288e3	1.126	1.64	1.55	34.1	YES	NO	db	db	0.410
16	Total-pentafurans	31.13	1.500e3	1.124e3	1.047	1.34	1.55	23.4	YES	NO	dd	dd	0.331
17	Total-pentafurans	31.02	1.077e3	6.275e2	1.047	1.72	1.55	15.2	YES	NO	bd	bd	0.215
18	Total-pentafurans	30.13	2.075e3	1.363e3	1.047	1.52	1.55	32.8	YES	NO	bd	bd	0.433
19	12378-PeCDF	29.93	1.280e3	8.404e2	1.015	1.52	1.55	20.9	YES	NO	bb	bb	0.268
20	Total-pentafurans	29.56	2.831e3	2.050e3	1.047	1.38	1.55	26.0	YES	NO	db	db	0.615
21	Total-pentafurans	28.87	1.041e4	6.878e3	1.047	1.51	1.55	97.8	YES	NO	MM	MM	2.179
22	Total-pentafurans	28.68	2.251e3	1.659e3	1.047	1.36	1.55	26.6	YES	NO	dd	dd	0.493
23	Total-pentafurans	28.56	3.060e2	1.759e2	1.047	1.74	1.55	7.0	YES	NO	bd	dd	0.061
24	Total-pentafurans	28.46	2.189e2	1.403e2	1.047	1.56	1.55	4.3	YES	NO	bb	bd	0.045
25	234678-HxCDF	35.95	1.866e3	1.628e3	1.052	1.15	1.24	47.0	YES	NO	db	db	0.451
26	Total-hexafurans	35.90	2.287e3	1.931e3	1.045	1.18	1.24	54.9	YES	NO	bd	bd	0.588
27	123678-HxCDF	35.06	3.004e3	2.769e3	1.037	1.08	1.24	67.4	YES	NO	db	MM	0.720
28	123478-HxCDF	34.91	6.682e3	5.389e3	1.017	1.24	1.24	156.0	YES	NO	bd	dd	1.540
29	Total-hexafurans	34.77	1.300e3	1.102e3	1.045	1.18	1.24	32.8	YES	NO	bb	bd	0.335
30	Total-hexafurans	34.29	3.134e4	2.548e4	1.045	1.23	1.24	727.4	YES	NO	bb	bb	7.926
31	Total-hexafurans	33.98	7.803e2	7.402e2	1.045	1.05	1.24	19.7	YES	NO	bb	bb	0.212
32	Total-hexafurans	33.45	2.603e4	2.192e4	1.045	1.19	1.24	595.9	YES	NO	bb	bb	6.688
33	123468-HXCDF	33.24	8.365e3	7.202e3	1.087	1.16	1.24	199.3	YES	NO	bb	bb	1.858
34	123789-HxCDF	36.93	1.081e3	1.010e3	1.030	1.07	1.24	26.5	YES	NO	bb	bb	0.437
35	1234789-HpCDF	41.03	2.307e3	2.332e3	1.283	0.99	1.05	56.8	YES	NO	bb	bb	1.013
36	Total-heptafurans	39.46	6.083e4	5.909e4	1.305	1.03	1.05	1700.4	YES	NO	bd	bd	23.595
37	Total-heptafurans	39.20	7.710e2	8.180e2	1.305	0.94	1.05	22.5	YES	NO	bb	bb	0.313

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Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	1234678-HpCDF	38.79	3.213e4	3.152e4	1.327	1.02	1.05	967.8	YES	NO	bb	bd	11.363
39	OCDF	45.29	4.395e4	5.002e4	1.447	0.88	0.89	872.6	YES	NO	bd	bb	23.723
40	Total-penta1	27.20	2.670e4	1.570e4		1.70	1.55	587.1	YES	NO	db	bb	5.934

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	24.54	8.732e2	1.002e3	0.879	0.87	0.77	20.2	YES	NO	bd	bd	0.291
2	Total-tetradioxins	23.80	8.286e2	1.210e3	0.879	0.68	0.77	19.2	YES	NO	bd	bd	0.317
3	1368-TCDD	23.51	8.221e2	1.096e3	0.923	0.75	0.77	20.2	YES	NO	bb	bb	0.284
4	Total-tetradioxins	26.91	2.787e3	3.536e3	0.879	0.79	0.77	65.6	YES	NO	bb	bd	0.982
5	Total-tetradioxins	25.00	5.937e2	8.150e2	0.879	0.73	0.77	14.2	YES	NO	bb	bb	0.219

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12479-PECDD	28.82	3.826e3	2.615e3	1.843	1.46	1.55	38.6	YES	NO	db	db	0.685
2	12378-PeCDD	31.52	2.255e3	1.321e3	0.995	1.71	1.55	32.4	YES	NO	bb	bb	0.705
3	Total-pentadioxins	30.46	1.502e3	1.061e3	1.331	1.42	1.55	15.7	YES	NO	db	bb	0.378
4	Total-pentadioxins	29.92	1.663e3	9.397e2	1.331	1.77	1.55	24.3	YES	NO	bd	bd	0.384
5	Total-pentadioxins	30.13	2.345e3	1.487e3	1.331	1.58	1.55	35.2	YES	NO	MM	dd	0.565
6	Total-pentadioxins	30.28	1.166e3	7.332e2	1.331	1.59	1.55	18.7	YES	NO	MM	db	0.280

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-hexadioxins	35.16	3.804e4	3.003e4	1.028	1.27	1.24	285.8	YES	NO	bd	bd	9.990
2	Total-hexadioxins	34.79	5.375e3	4.182e3	1.028	1.29	1.24	64.6	YES	NO	bb	bb	1.402
3	124679-HXCDD	34.02	2.953e4	2.428e4	1.125	1.22	1.24	348.6	YES	NO	bb	bb	7.193
4	123789-HxCDD	36.56	8.093e3	6.376e3	0.950	1.27	1.24	101.9	YES	NO	bb	bb	2.296
5	Total-hexadioxins	36.35	1.480e3	1.282e3	1.028	1.15	1.24	17.0	YES	NO	bb	db	0.405
6	123678-HxCDD	36.17	1.165e4	9.448e3	1.009	1.23	1.24	135.7	YES	NO	db	dd	3.165
7	123478-HxCDD	36.06	2.789e3	2.378e3	1.027	1.17	1.24	34.7	YES	NO	bd	bd	0.756
8	Total-hexadioxins	35.27	2.647e3	1.905e3	1.028	1.39	1.24	30.4	YES	NO	db	db	0.668

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HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	40.28	1.663e5	1.553e5	1.068	1.07	1.05	1926.5	YES	NO	bb	bb	82.312
2	1234679-HPCDD	39.23	2.209e5	2.085e5	1.211	1.06	1.05	2824.9	YES	NO	bb	bb	96.925

Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	24.54	8.732e2	1.002e3	0.879	0.87	0.77	20.2	YES	NO	bd	bd	0.291
2	Total-tetradioxins	23.80	8.286e2	1.210e3	0.879	0.68	0.77	19.2	YES	NO	bd	bd	0.317
3	1368-TCDD	23.51	8.221e2	1.096e3	0.923	0.75	0.77	20.2	YES	NO	bb	bb	0.284
4	Total-tetradioxins	26.91	2.787e3	3.536e3	0.879	0.79	0.77	65.6	YES	NO	bb	bd	0.982
5	Total-tetradioxins	25.00	5.937e2	8.150e2	0.879	0.73	0.77	14.2	YES	NO	bb	bb	0.219
6	12479-PECDD	28.82	3.826e3	2.615e3	1.843	1.46	1.55	38.6	YES	NO	db	db	0.685
7	12378-PeCDD	31.52	2.255e3	1.321e3	0.995	1.71	1.55	32.4	YES	NO	bb	bb	0.705
8	Total-pentadioxins	30.46	1.502e3	1.061e3	1.331	1.42	1.55	15.7	YES	NO	db	bb	0.378
9	Total-pentadioxins	29.92	1.663e3	9.397e2	1.331	1.77	1.55	24.3	YES	NO	bd	bd	0.384
10	Total-hexadioxins	35.16	3.804e4	3.003e4	1.028	1.27	1.24	285.8	YES	NO	bd	bd	9.990
11	Total-hexadioxins	34.79	5.375e3	4.182e3	1.028	1.29	1.24	64.6	YES	NO	bb	bb	1.402
12	124679-HXCDD	34.02	2.953e4	2.428e4	1.125	1.22	1.24	348.6	YES	NO	bb	bb	7.193
13	123789-HxCDD	36.56	8.093e3	6.376e3	0.950	1.27	1.24	101.9	YES	NO	bb	bb	2.296
14	Total-hexadioxins	36.35	1.480e3	1.282e3	1.028	1.15	1.24	17.0	YES	NO	bb	db	0.405
15	123678-HxCDD	36.17	1.165e4	9.448e3	1.009	1.23	1.24	135.7	YES	NO	db	dd	3.165
16	123478-HxCDD	36.06	2.789e3	2.378e3	1.027	1.17	1.24	34.7	YES	NO	bd	bd	0.756
17	Total-hexadioxins	35.27	2.647e3	1.905e3	1.028	1.39	1.24	30.4	YES	NO	db	db	0.668
18	1234678-HpCDD	40.28	1.663e5	1.553e5	1.068	1.07	1.05	1926.5	YES	NO	bb	bb	82.312
19	1234679-HPCDD	39.23	2.209e5	2.085e5	1.211	1.06	1.05	2824.9	YES	NO	bb	bb	96.925
20	OCDD	45.05	9.641e5	1.083e6	1.181	0.89	0.89	11201.0	YES	NO	bb	bb	633.350
21	Total-pentadioxins	30.13	2.345e3	1.487e3	1.331	1.58	1.55	35.2	YES	NO	MM	dd	0.565
22	Total-pentadioxins	30.28	1.166e3	7.332e2	1.331	1.59	1.55	18.7	YES	NO	MM	db	0.280

Dataset: T:\Autospec\Processed Data Batch\210920D2.qld
Last Altered: Tuesday, September 21, 2021 13:21:12 Pacific Daylight Time
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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.87	1.120e3	1.622e3	1.192	0.69	0.77	13.3	YES	NO	dd	dd	0.328
2	Total-tetrafurans	23.75	1.198e3	1.490e3	1.192	0.80	0.77	12.8	YES	NO	dd	dd	0.321
3	Total-tetrafurans	23.51	9.978e2	1.372e3	1.192	0.73	0.77	11.1	YES	NO	dd	dd	0.283
4	Total-tetrafurans	23.40	1.167e3	1.526e3	1.192	0.76	0.77	9.5	YES	NO	dd	dd	0.322
5	Total-tetrafurans	23.25	1.235e3	1.446e3	1.192	0.85	0.77	8.7	YES	NO	dd	dd	0.321
6	Total-Furans	21.12	2.485e2	3.531e2	1.158	0.70	0.77	2.6	NO	NO	bb	bb	0.074
7	Total-tetrafurans	25.91	7.745e2	9.738e2	1.192	0.80	0.77	7.1	YES	NO	dd	dd	0.209
8	2378-TCDF	25.76	1.186e3	1.700e3	1.108	0.70	0.77	12.9	YES	NO	bd	dd	0.371
9	Total-tetrafurans	25.55	1.454e3	2.095e3	1.192	0.69	0.77	12.5	YES	NO	bb	MM	0.424
10	Total-tetrafurans	25.08	4.522e2	6.538e2	1.192	0.69	0.77	5.5	YES	NO	bb	bd	0.132
11	Total-tetrafurans	24.87	1.086e3	1.294e3	1.192	0.84	0.77	11.6	YES	NO	db	db	0.284
12	Total-tetrafurans	24.66	1.606e3	1.879e3	1.192	0.85	0.77	17.9	YES	NO	dd	dd	0.417
13	Total-tetrafurans	24.52	6.493e2	7.990e2	1.192	0.81	0.77	5.8	YES	NO	dd	dd	0.173
14	Total-tetrafurans	24.45	1.754e3	2.341e3	1.192	0.75	0.77	17.6	YES	NO	bd	dd	0.489
15	23478-PeCDF	31.28	2.110e3	1.288e3	1.126	1.64	1.55	34.1	YES	NO	db	db	0.410
16	Total-pentafurans	31.13	1.500e3	1.124e3	1.047	1.34	1.55	23.4	YES	NO	dd	dd	0.331
17	Total-pentafurans	31.02	1.077e3	6.275e2	1.047	1.72	1.55	15.2	YES	NO	bd	bd	0.215
18	Total-pentafurans	30.13	2.075e3	1.363e3	1.047	1.52	1.55	32.8	YES	NO	bd	bd	0.433
19	12378-PeCDF	29.93	1.280e3	8.404e2	1.015	1.52	1.55	20.9	YES	NO	bb	bb	0.268
20	Total-pentafurans	29.56	2.831e3	2.050e3	1.047	1.38	1.55	26.0	YES	NO	db	db	0.615
21	Total-pentafurans	28.87	1.041e4	6.878e3	1.047	1.51	1.55	97.8	YES	NO	MM	MM	2.179
22	Total-pentafurans	28.68	2.251e3	1.659e3	1.047	1.36	1.55	26.6	YES	NO	dd	dd	0.493
23	Total-pentafurans	28.56	3.060e2	1.759e2	1.047	1.74	1.55	7.0	YES	NO	bd	dd	0.061
24	Total-pentafurans	28.46	2.189e2	1.403e2	1.047	1.56	1.55	4.3	YES	NO	bb	bd	0.045
25	234678-HxCDF	35.95	1.866e3	1.628e3	1.052	1.15	1.24	47.0	YES	NO	db	db	0.451
26	Total-hexafurans	35.90	2.287e3	1.931e3	1.045	1.18	1.24	54.9	YES	NO	bd	bd	0.588
27	123678-HxCDF	35.06	3.004e3	2.769e3	1.037	1.08	1.24	67.4	YES	NO	db	MM	0.720
28	123478-HxCDF	34.91	6.682e3	5.389e3	1.017	1.24	1.24	156.0	YES	NO	bd	dd	1.540
29	Total-hexafurans	34.77	1.300e3	1.102e3	1.045	1.18	1.24	32.8	YES	NO	bb	bd	0.335
30	Total-hexafurans	34.29	3.134e4	2.548e4	1.045	1.23	1.24	727.4	YES	NO	bb	bb	7.926
31	Total-hexafurans	33.98	7.803e2	7.402e2	1.045	1.05	1.24	19.7	YES	NO	bb	bb	0.212
32	Total-hexafurans	33.45	2.603e4	2.192e4	1.045	1.19	1.24	595.9	YES	NO	bb	bb	6.688
33	123468-HXCDF	33.24	8.365e3	7.202e3	1.087	1.16	1.24	199.3	YES	NO	bb	bb	1.858
34	123789-HxCDF	36.93	1.081e3	1.010e3	1.030	1.07	1.24	26.5	YES	NO	bb	bb	0.437
35	1234789-HpCDF	41.03	2.307e3	2.332e3	1.283	0.99	1.05	56.8	YES	NO	bb	bb	1.013
36	Total-heptafurans	39.46	6.083e4	5.909e4	1.305	1.03	1.05	1700.4	YES	NO	bd	bd	23.595
37	Total-heptafurans	39.20	7.710e2	8.180e2	1.305	0.94	1.05	22.5	YES	NO	bb	bb	0.313

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	1234678-HpCDF	38.79	3.213e4	3.152e4	1.327	1.02	1.05	967.8	YES	NO	bb	bd	11.363
39	OCDF	45.29	4.395e4	5.002e4	1.447	0.88	0.89	872.6	YES	NO	bd	bb	23.723
40	Total-penta1	27.20	2.670e4	1.570e4		1.70	1.55	587.1	YES	NO	db	bb	5.934
41	Total-tetradioxins	24.54	8.732e2	1.002e3	0.879	0.87	0.77	20.2	YES	NO	bd	bd	0.291
42	Total-tetradioxins	23.80	8.286e2	1.210e3	0.879	0.68	0.77	19.2	YES	NO	bd	bd	0.317
43	1368-TCDD	23.51	8.221e2	1.096e3	0.923	0.75	0.77	20.2	YES	NO	bb	bb	0.284
44	Total-tetradioxins	26.91	2.787e3	3.536e3	0.879	0.79	0.77	65.6	YES	NO	bb	bd	0.982
45	Total-tetradioxins	25.00	5.937e2	8.150e2	0.879	0.73	0.77	14.2	YES	NO	bb	bb	0.219
46	12479-PECDD	28.82	3.826e3	2.615e3	1.843	1.46	1.55	38.6	YES	NO	db	db	0.685
47	12378-PeCDD	31.52	2.255e3	1.321e3	0.995	1.71	1.55	32.4	YES	NO	bb	bb	0.705
48	Total-pentadioxins	30.46	1.502e3	1.061e3	1.331	1.42	1.55	15.7	YES	NO	db	bb	0.378
49	Total-pentadioxins	29.92	1.663e3	9.397e2	1.331	1.77	1.55	24.3	YES	NO	bd	bd	0.384
50	Total-hexadioxins	35.16	3.804e4	3.003e4	1.028	1.27	1.24	285.8	YES	NO	bd	bd	9.990
51	Total-hexadioxins	34.79	5.375e3	4.182e3	1.028	1.29	1.24	64.6	YES	NO	bb	bb	1.402
52	124679-HXCDD	34.02	2.953e4	2.428e4	1.125	1.22	1.24	348.6	YES	NO	bb	bb	7.193
53	123789-HxCDD	36.56	8.093e3	6.376e3	0.950	1.27	1.24	101.9	YES	NO	bb	bb	2.296
54	Total-hexadioxins	36.35	1.480e3	1.282e3	1.028	1.15	1.24	17.0	YES	NO	bb	db	0.405
55	123678-HxCDD	36.17	1.165e4	9.448e3	1.009	1.23	1.24	135.7	YES	NO	db	dd	3.165
56	123478-HxCDD	36.06	2.789e3	2.378e3	1.027	1.17	1.24	34.7	YES	NO	bd	bd	0.756
57	Total-hexadioxins	35.27	2.647e3	1.905e3	1.028	1.39	1.24	30.4	YES	NO	db	db	0.668
58	1234678-HpCDD	40.28	1.663e5	1.553e5	1.068	1.07	1.05	1926.5	YES	NO	bb	bb	82.312
59	1234679-HPCDD	39.23	2.209e5	2.085e5	1.211	1.06	1.05	2824.9	YES	NO	bb	bb	96.925
60	OCDD	45.05	9.641e5	1.083e6	1.181	0.89	0.89	11201.0	YES	NO	bb	bb	633.350
61	Total-pentadioxins	30.13	2.345e3	1.487e3	1.331	1.58	1.55	35.2	YES	NO	MM	dd	0.565
62	Total-pentadioxins	30.28	1.166e3	7.332e2	1.331	1.59	1.55	18.7	YES	NO	MM	db	0.280

Dataset: T:\Autospec\Processed Data Batch\210920D2.qld
Last Altered: Tuesday, September 21, 2021 13:21:12 Pacific Daylight Time
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ID: 21G0140-06, Name: 21092020, Date: 21-Sep-2021, Time: 07:50:55, Conditions: AUTOSPEC01, User: pk

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	21.95	8.927e4					5.2	YES		db		
2	FUNCTION1 PFK	21.83	3.885e4					3.1	YES		dd		
3	FUNCTION1 PFK	21.80	4.022e4					3.4	YES		dd		
4	FUNCTION1 PFK	21.71	3.393e4					2.7	NO		dd		
5	FUNCTION1 PFK	21.66	3.904e4					2.7	NO		dd		
6	FUNCTION1 PFK	21.54	5.192e4					2.0	NO		bd		
7	FUNCTION1 PFK	21.13	1.044e6					24.2	YES		bb		
8	FUNCTION1 PFK	25.34	1.038e4					1.2	NO		bd		
9	FUNCTION1 PFK	25.03	3.497e4					1.9	NO		db		
10	FUNCTION1 PFK	24.96	1.195e4					1.2	NO		dd		
11	FUNCTION1 PFK	24.87	2.925e4					1.7	NO		bd		
12	FUNCTION1 PFK	24.58	1.539e4					1.7	NO		db		
13	FUNCTION1 PFK	24.52	1.917e4					2.3	NO		dd		
14	FUNCTION1 PFK	24.48	4.928e4					2.4	NO		bd		
15	FUNCTION1 PFK	24.07	4.965e4					2.0	NO		bb		
16	FUNCTION1 PFK	23.66	1.947e4					1.1	NO		bb		
17	FUNCTION1 PFK	23.42	2.444e4					1.1	NO		bb		
18	FUNCTION1 PFK	23.07	1.977e5					3.6	YES		db		
19	FUNCTION1 PFK	22.81	2.492e5					4.6	YES		bd		
20	FUNCTION1 PFK	22.46	7.370e4					4.7	YES		db		
21	FUNCTION1 PFK	22.42	1.074e5					4.7	YES		dd		
22	FUNCTION1 PFK	22.27	9.681e4					6.2	YES		dd		
23	FUNCTION1 PFK	22.22	2.316e5					6.3	YES		bd		
24	FUNCTION1 PFK	27.64	1.108e5					3.2	YES		bb		
25	FUNCTION1 PFK	27.42	6.780e4					3.4	YES		db		
26	FUNCTION1 PFK	27.26	8.701e4					3.1	YES		bd		
27	FUNCTION1 PFK	26.88	5.043e4					1.9	NO		bb		
28	FUNCTION1 PFK	26.71	4.041e4					2.0	NO		db		
29	FUNCTION1 PFK	26.52	4.577e4					2.3	NO		dd		
30	FUNCTION1 PFK	26.37	5.873e4					2.3	NO		dd		
31	FUNCTION1 PFK	26.29	2.621e4					2.0	NO		dd		
32	FUNCTION1 PFK	26.23	1.995e4					1.7	NO		bd		
33	FUNCTION1 PFK	26.12	3.531e4					2.0	NO		db		
34	FUNCTION1 PFK	25.97	2.566e4					1.5	NO		bd		
35	FUNCTION1 PFK	25.67	1.832e4					1.8	NO		db		
36	FUNCTION1 PFK	25.61	6.875e4					2.9	NO		dd		
37	FUNCTION1 PFK	25.52	1.523e4					2.0	NO		bd		

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Printed: Tuesday, September 21, 2021 13:29:27 Pacific Daylight Time

ID: 21G0140-06, Name: 21092020, Date: 21-Sep-2021, Time: 07:50:55, Conditions: AUTOSPEC01, User: pk

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION1 PFK	25.38	3.708e3					0.8	NO		db		

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	29.64	5.435e5					12.7	YES		bb		0.000
2	FUNCTION2 PFK	29.39	9.529e4					11.6	YES		db		0.000
3	FUNCTION2 PFK	29.25	6.963e5					26.1	YES		dd		0.000
4	FUNCTION2 PFK	29.05	7.007e5					18.2	YES		bd		0.000
5	FUNCTION2 PFK	28.15	1.414e5					10.7	YES		bb		0.000

PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	37.81	3.678e5					11.8	YES		db		0.000
2	FUNCTION3 PFK	37.59	6.583e6					24.2	YES		bd		0.000
3	FUNCTION3 PFK	36.43	5.616e6					26.7	YES		bb		0.000
4	FUNCTION3 PFK	34.88	1.347e4					2.1	NO		bb		0.000
5	FUNCTION3 PFK	33.99	2.420e5					4.9	YES		bb		0.000
6	FUNCTION3 PFK	33.60	1.703e5					3.3	YES		bb		0.000
7	FUNCTION3 PFK	33.33	1.728e5					5.6	YES		bb		0.000
8	FUNCTION3 PFK	33.05	6.232e4					3.5	YES		bb		0.000

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	38.01	1.314e5					10.1	YES		bd		
2	FUNCTION4 PFK	40.98	2.210e3					0.8	NO		bb		
3	FUNCTION4 PFK	40.83	5.341e3					1.2	NO		bb		
4	FUNCTION4 PFK	40.54	1.052e4					1.7	NO		bb		
5	FUNCTION4 PFK	40.13	2.501e3					0.9	NO		bb		
6	FUNCTION4 PFK	39.89	1.056e4					1.7	NO		bb		
7	FUNCTION4 PFK	39.76	2.467e4					3.5	YES		db		
8	FUNCTION4 PFK	39.67	4.979e4					3.6	YES		bd		
9	FUNCTION4 PFK	39.40	1.595e3					0.7	NO		bb		
10	FUNCTION4 PFK	39.36	2.999e3					1.1	NO		bb		
11	FUNCTION4 PFK	39.18	1.457e4					2.4	NO		bb		
12	FUNCTION4 PFK	39.10	6.578e2					0.4	NO		bb		
13	FUNCTION4 PFK	39.06	4.177e3					1.3	NO		bb		
14	FUNCTION4 PFK	38.35	3.757e4					4.8	YES		db		
15	FUNCTION4 PFK	38.23	1.014e5					5.9	YES		dd		
16	FUNCTION4 PFK	38.11	6.669e4					8.5	YES		dd		
17	FUNCTION4 PFK	38.08	5.105e4					9.5	YES		dd		
18	FUNCTION4 PFK	42.93	1.274e4					1.9	NO		bb		
19	FUNCTION4 PFK	42.81	5.157e3					1.3	NO		bb		
20	FUNCTION4 PFK	42.52	3.833e3					1.1	NO		bb		
21	FUNCTION4 PFK	42.37	6.369e2					0.4	NO		bb		
22	FUNCTION4 PFK	42.12	1.006e4					1.8	NO		db		
23	FUNCTION4 PFK	42.09	8.309e3					1.6	NO		bd		
24	FUNCTION4 PFK	41.90	2.185e3					0.8	NO		bb		
25	FUNCTION4 PFK	41.85	3.174e3					1.2	NO		bb		
26	FUNCTION4 PFK	41.80	3.929e3					1.3	NO		bb		
27	FUNCTION4 PFK	41.69	6.158e3					1.5	NO		bb		
28	FUNCTION4 PFK	41.08	3.010e3					0.8	NO		bb		
29	FUNCTION4 PFK	41.03	3.106e3					1.0	NO		bb		

PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

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ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	22.15	2.962e2					5.9	YES		bb		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	25.17	1.070e2					2.0	NO		bb		0.000
2	FUNCTION1 HPCD...	23.33	2.647e2					8.9	YES		bb		0.000
3	FUNCTION1 HPCD...	22.04	1.247e3					41.9	YES		bb		0.000

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	32.54	3.898e2					13.3	YES		bb		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	36.55	1.329e2					3.6	YES		bb		0.000
2	FUNCTION3 OCDPE	36.17	1.300e2					4.1	YES		bb		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	38.42	2.081e3					76.5	YES		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

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ID: 21G0140-06, Name: 21092020, Date: 21-Sep-2021, Time: 07:50:55, Conditions: AUTOSPEC01, User: pk

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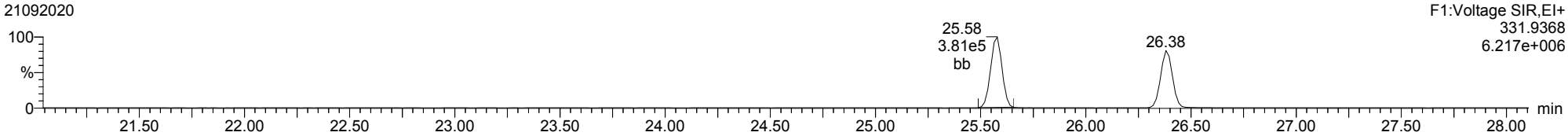

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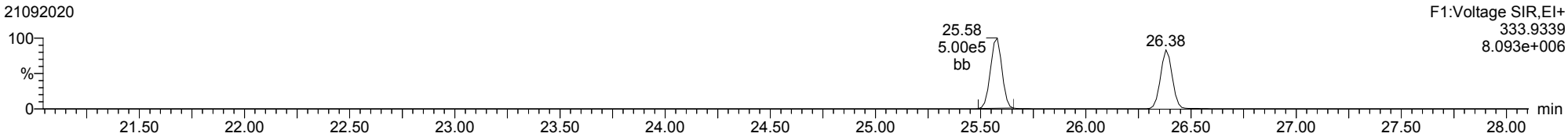

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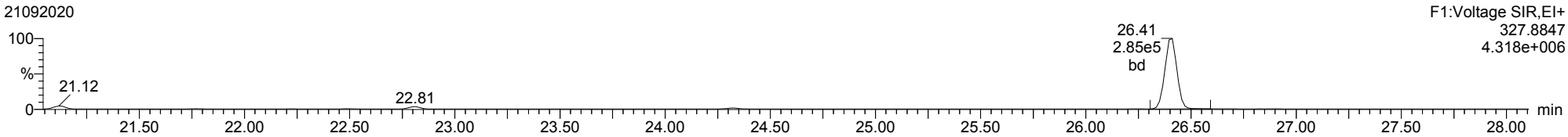

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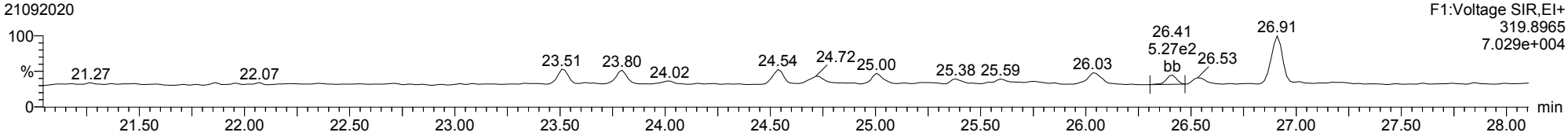

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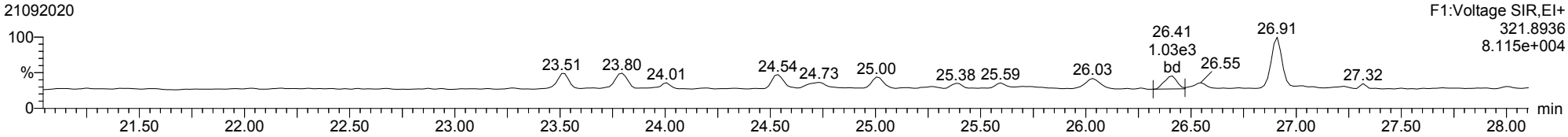

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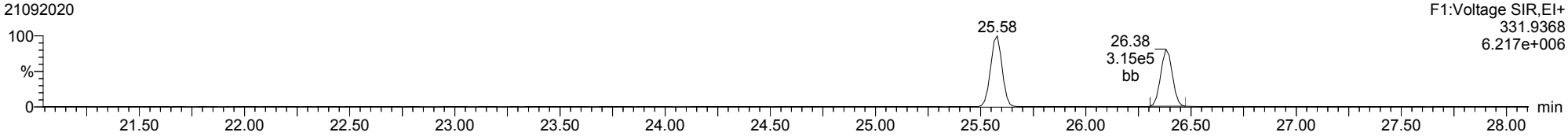

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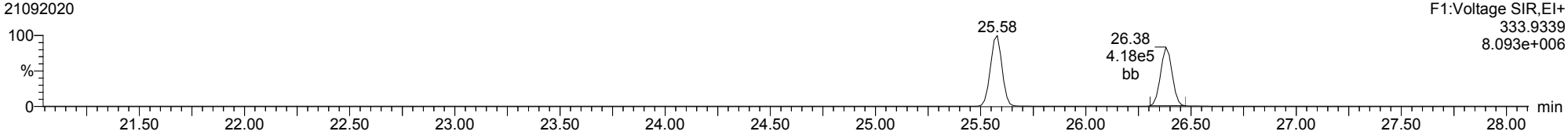

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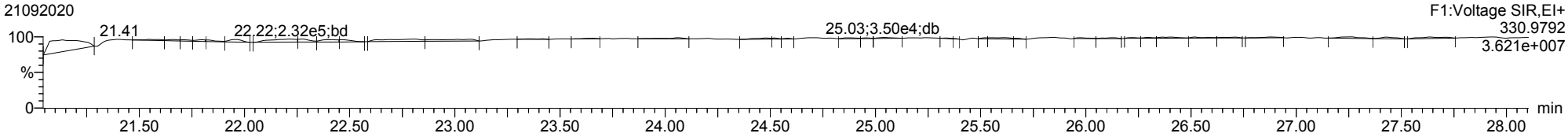

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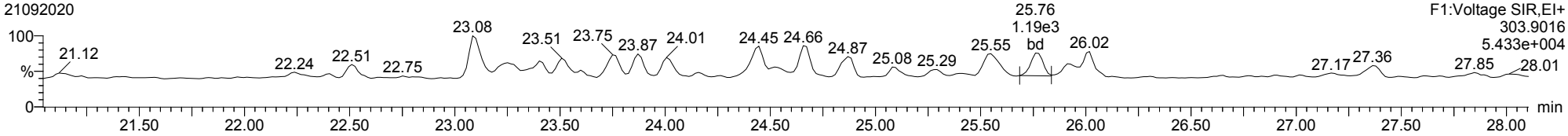

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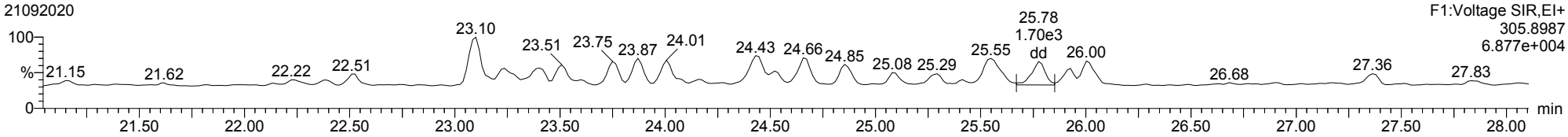

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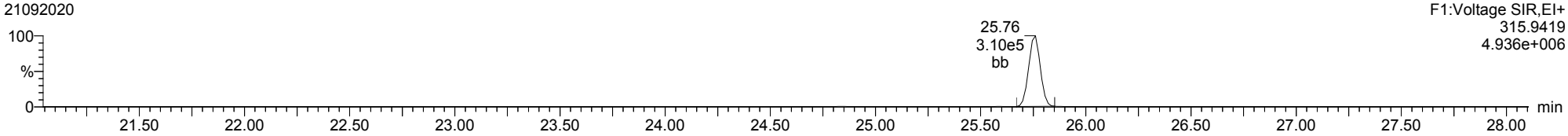

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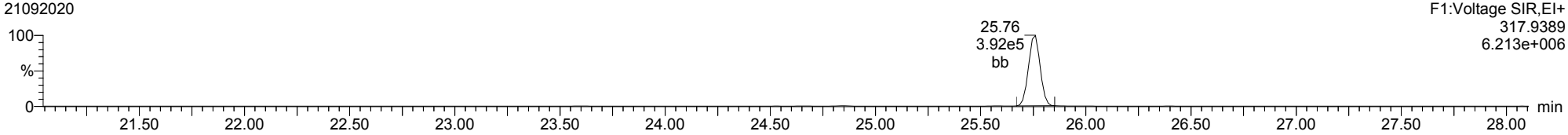

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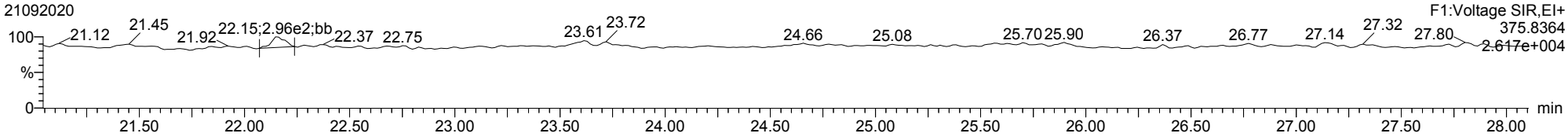

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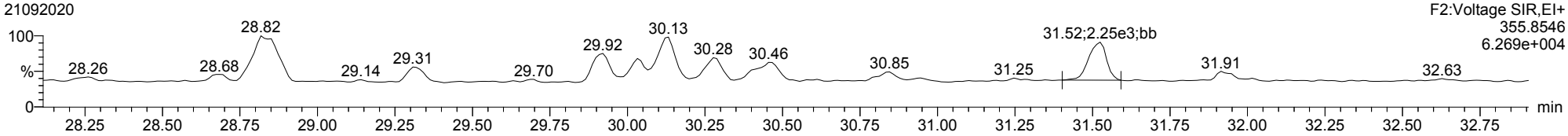
12378-PeCDD



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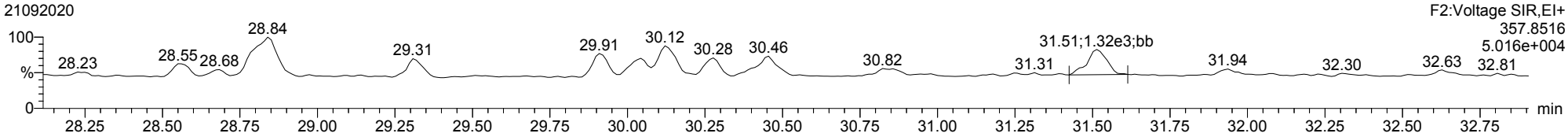

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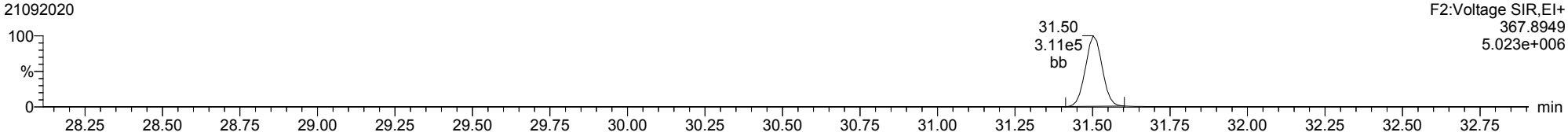

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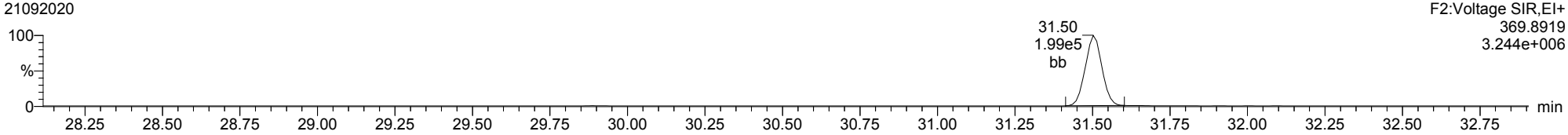
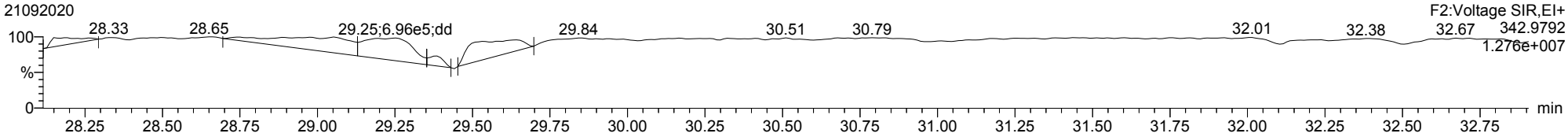


FUNCTION2 PFK



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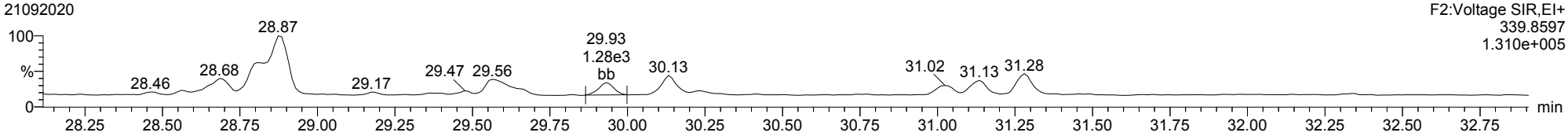

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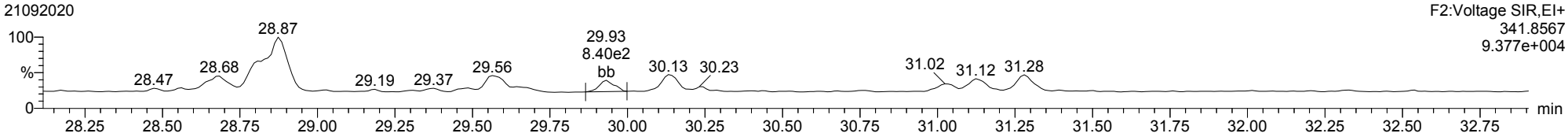

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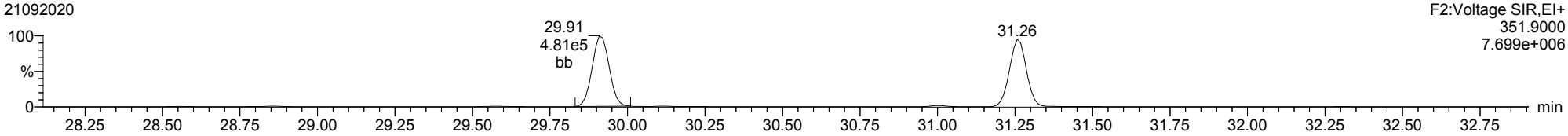

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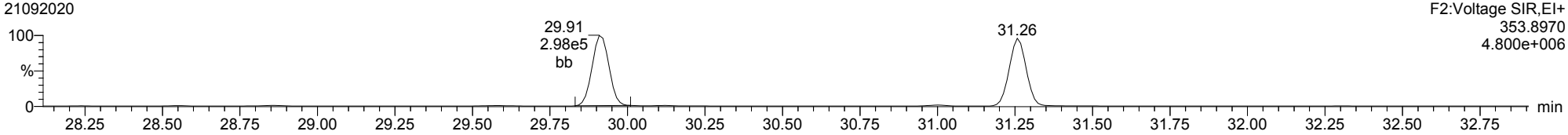

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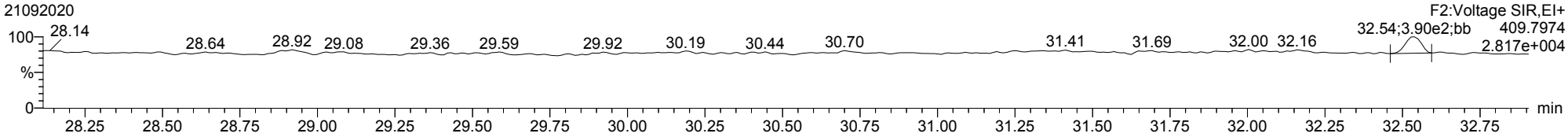

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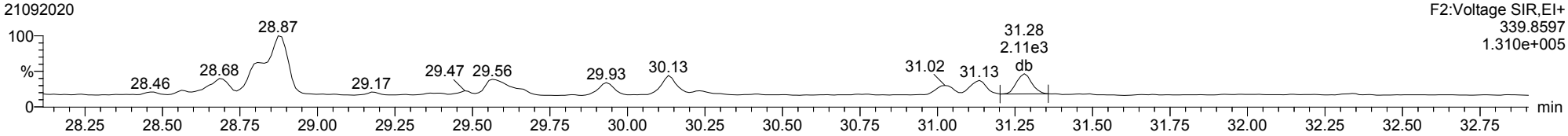
23478-PeCDF



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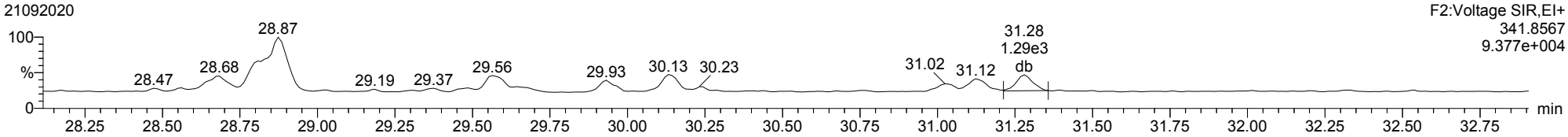

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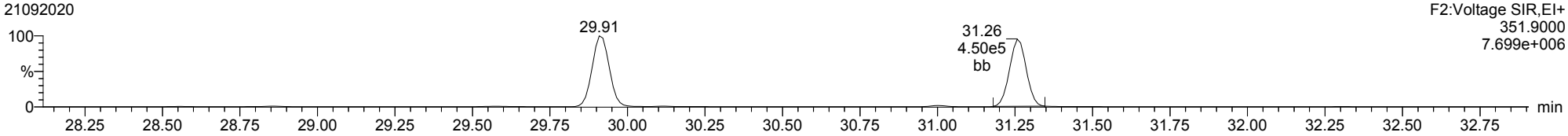

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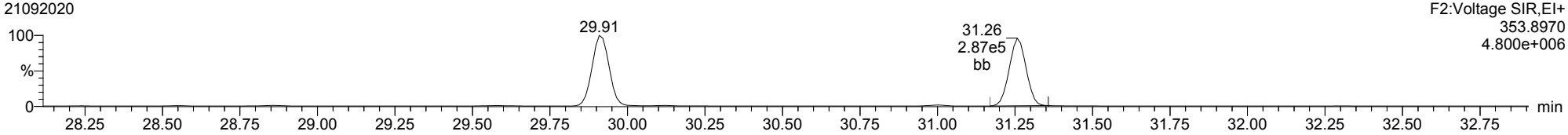

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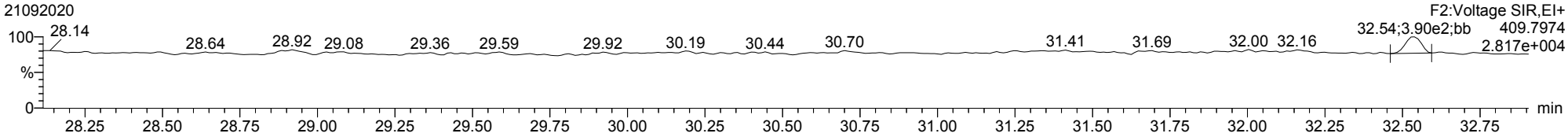

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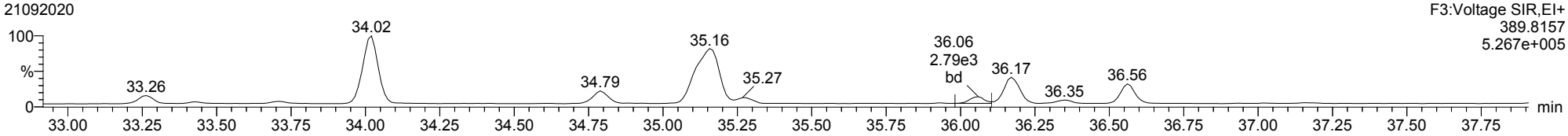

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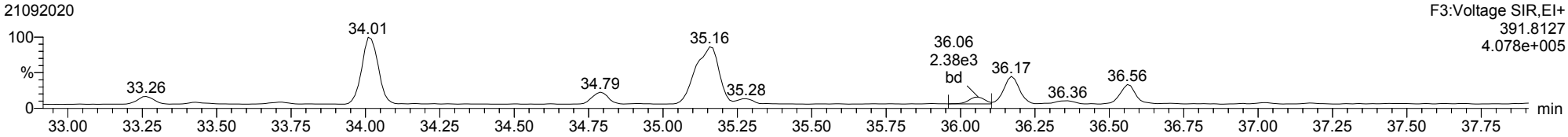

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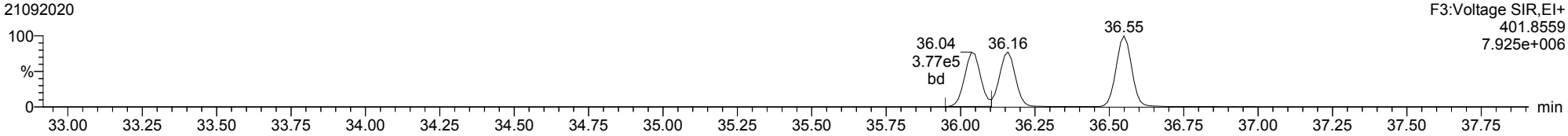

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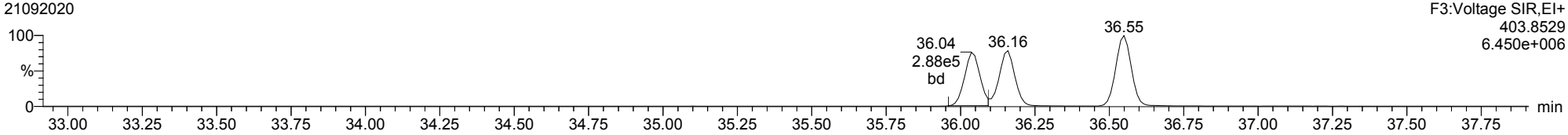

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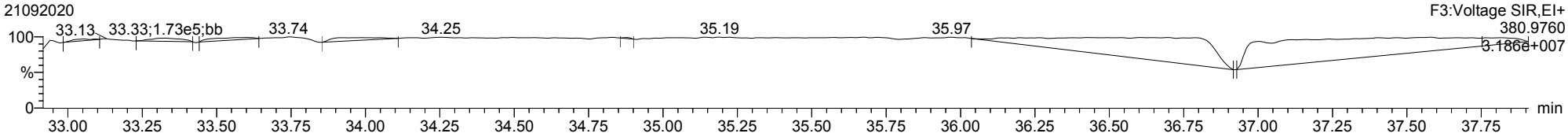

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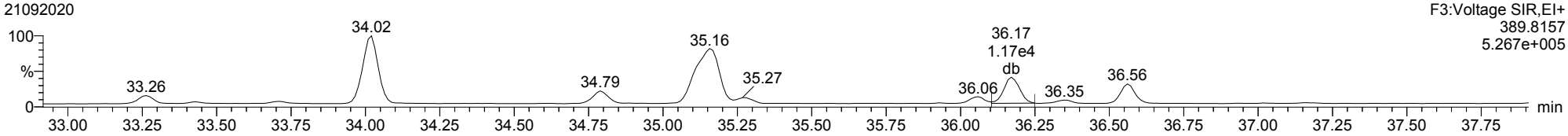

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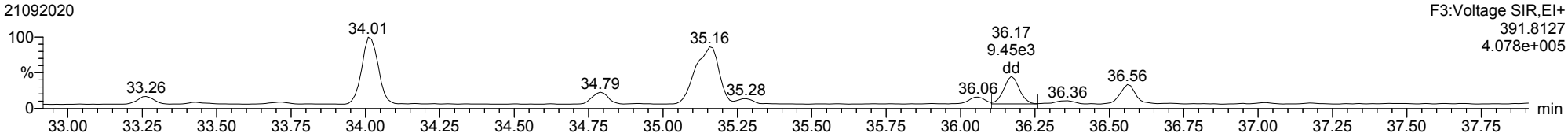

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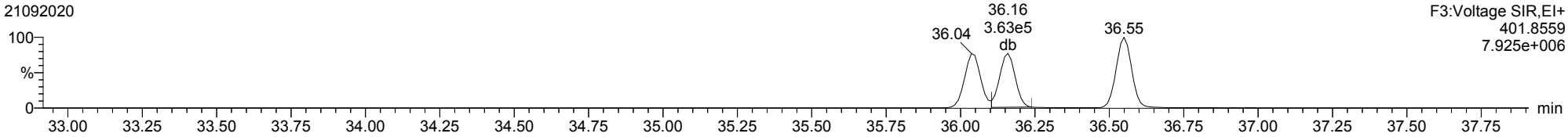

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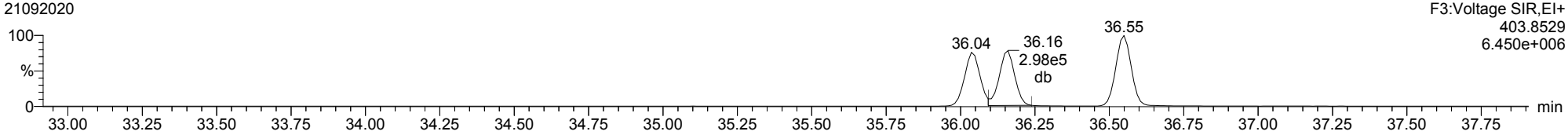

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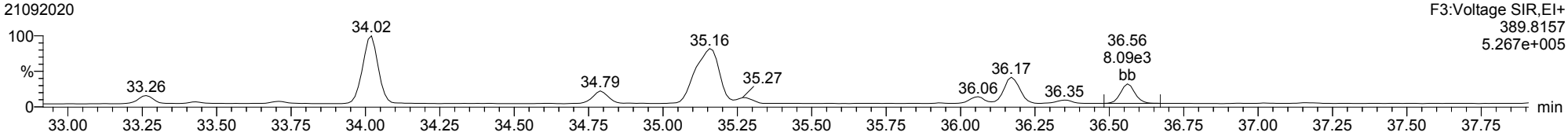

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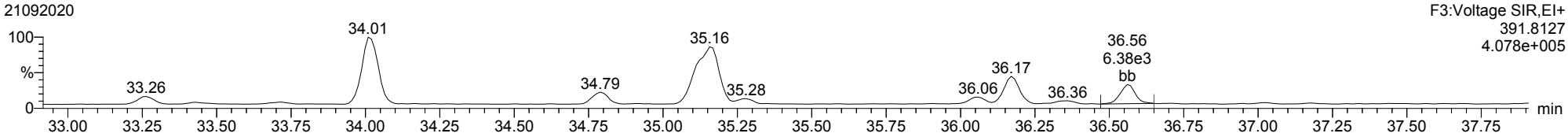

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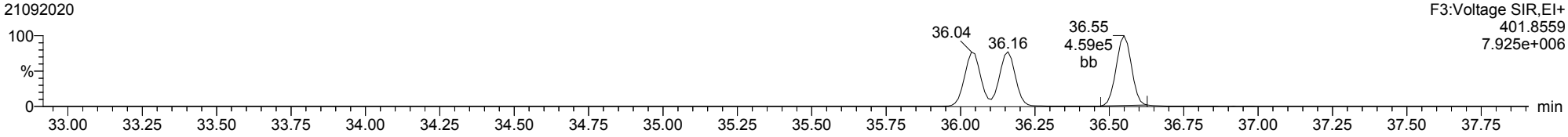

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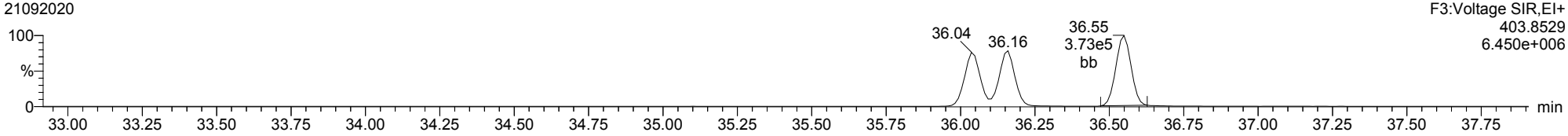

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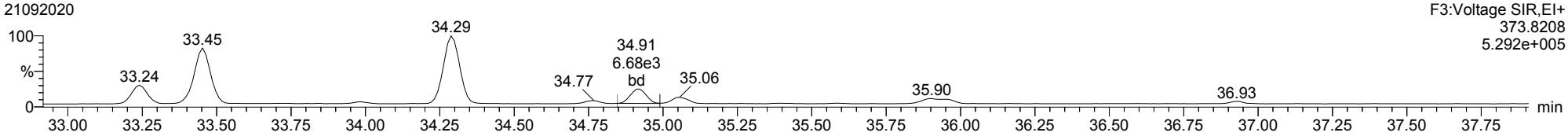

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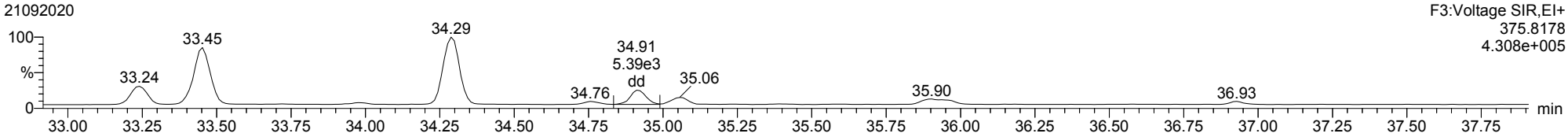

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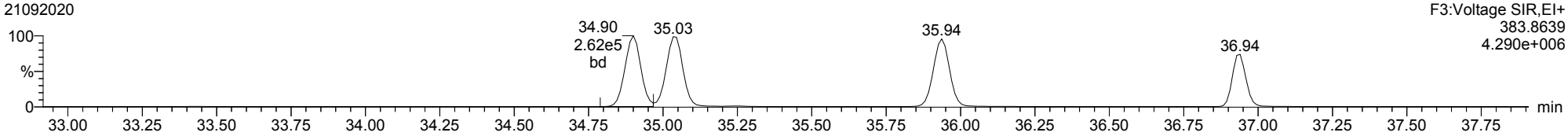

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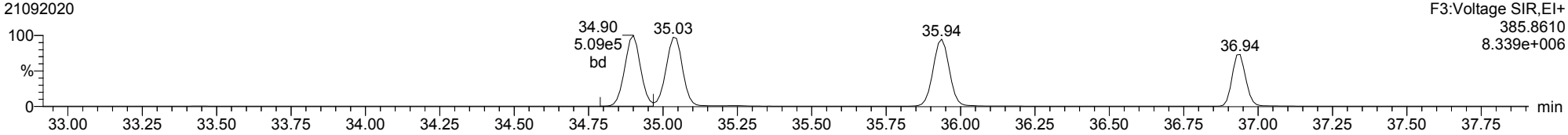

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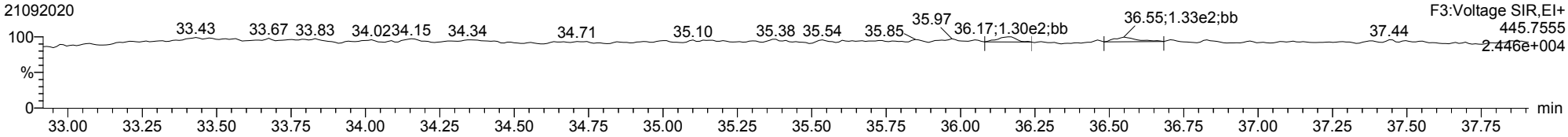

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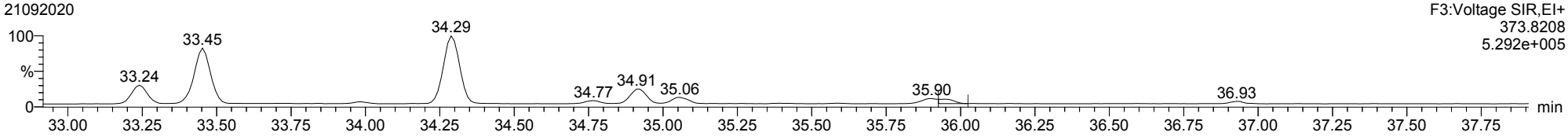

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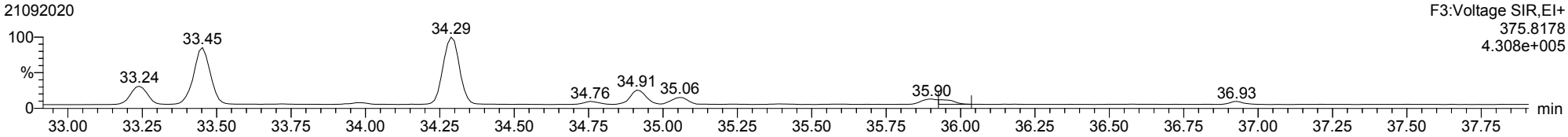

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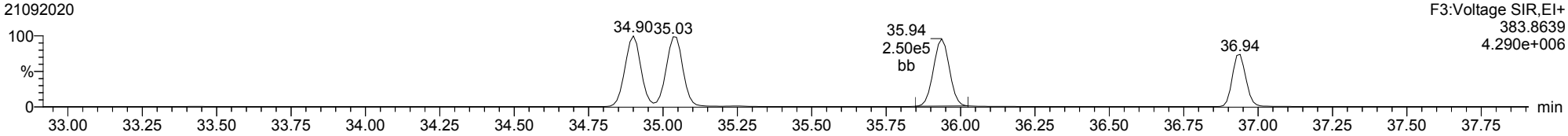

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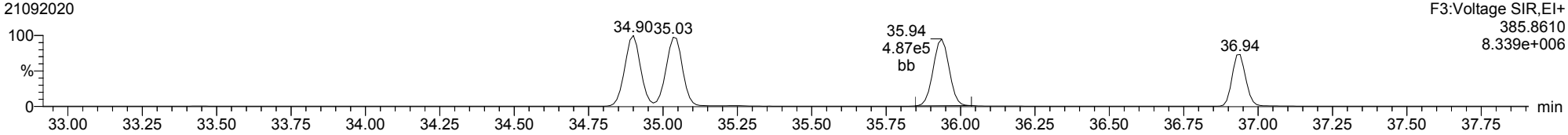

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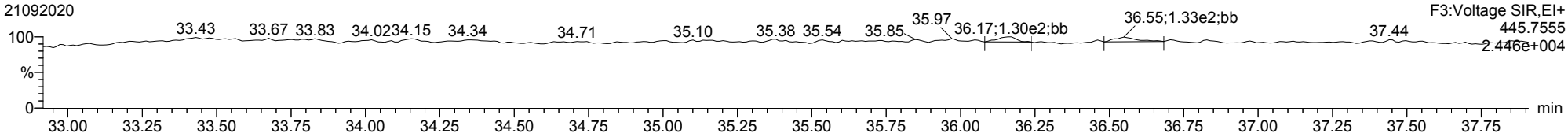

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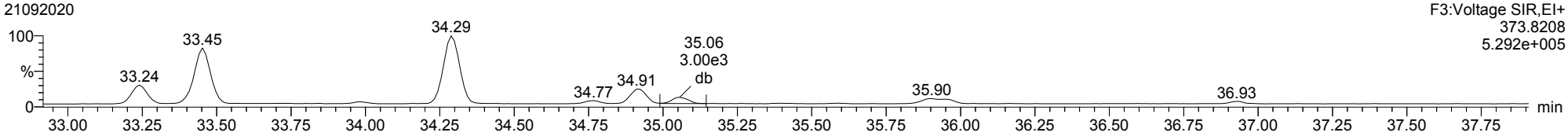

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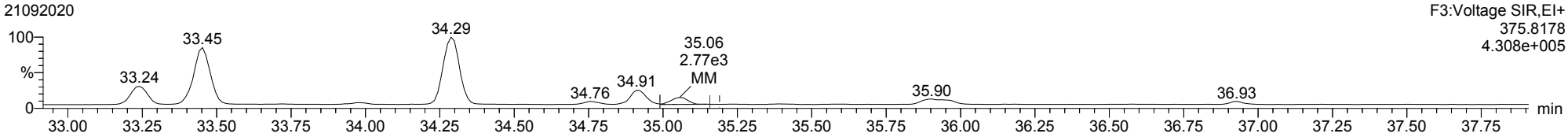

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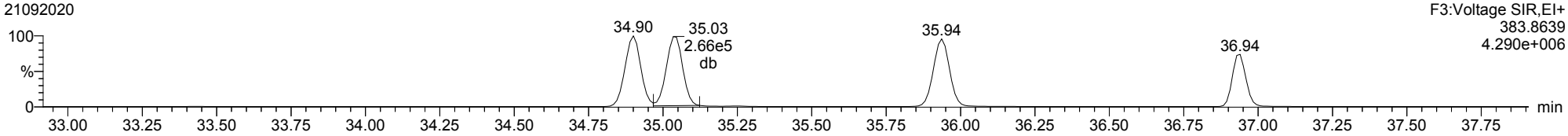

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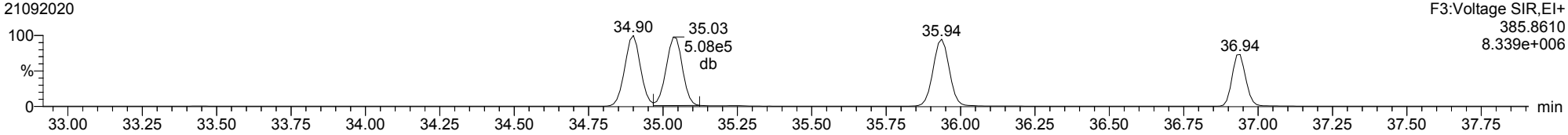

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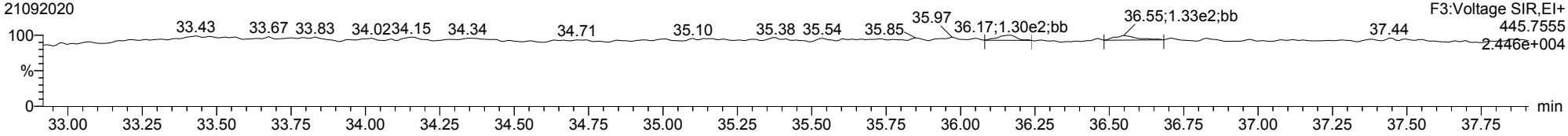

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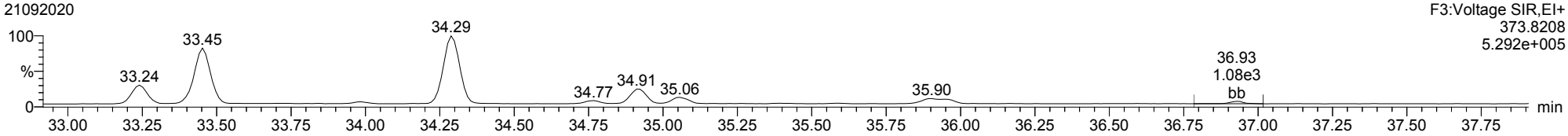

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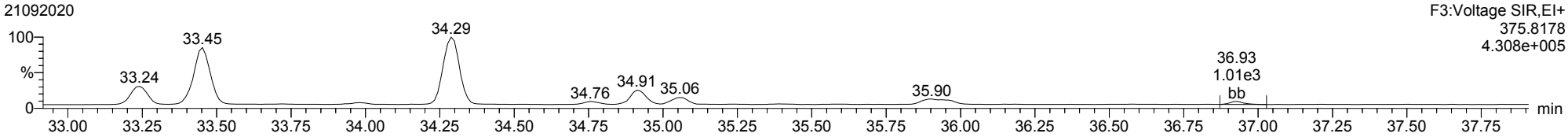

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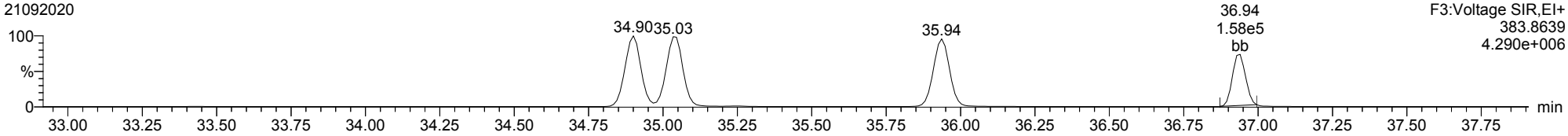

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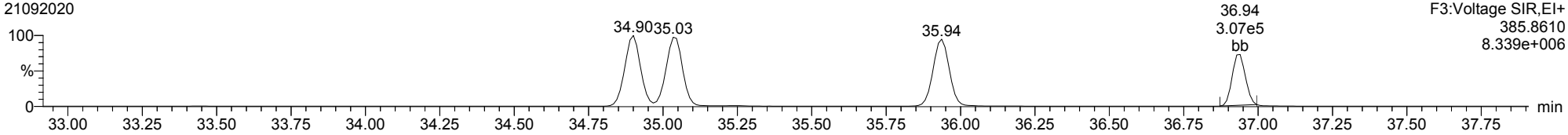

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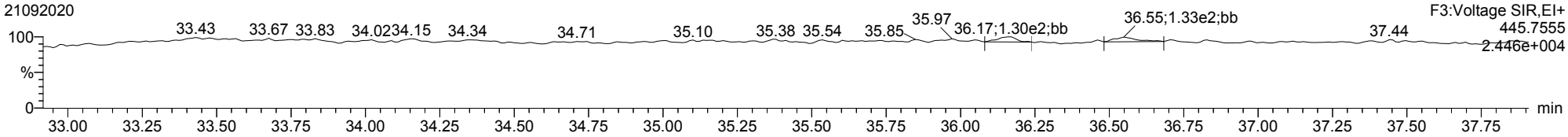

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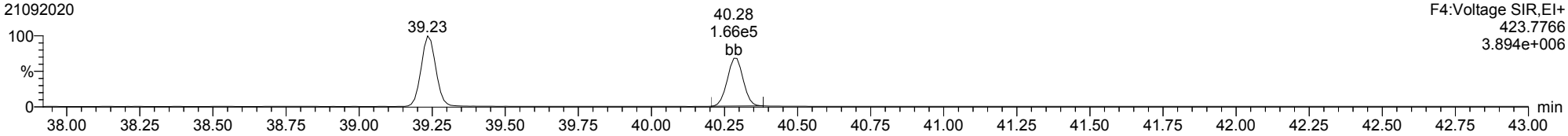

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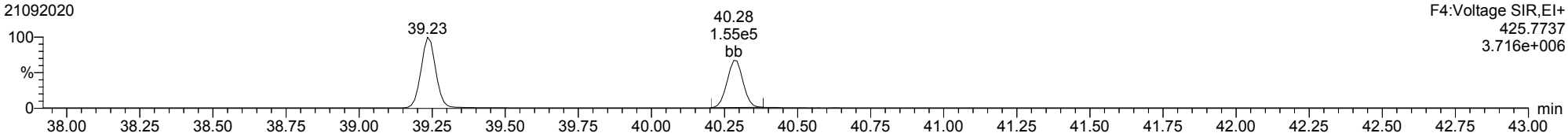

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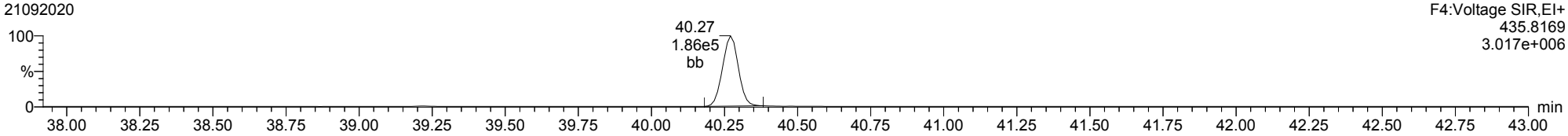

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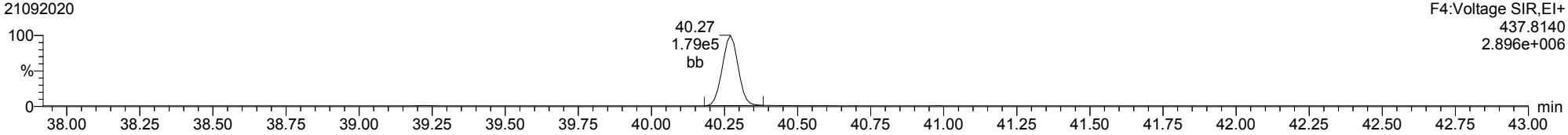
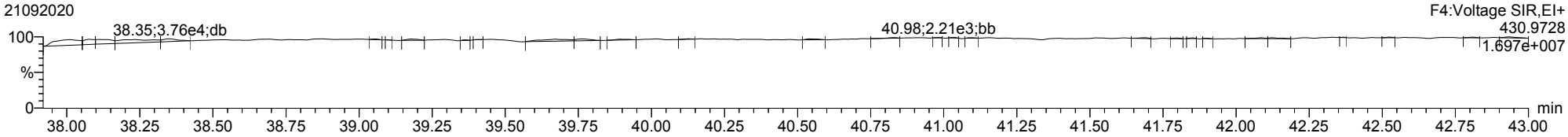


FUNCTION4 PFK



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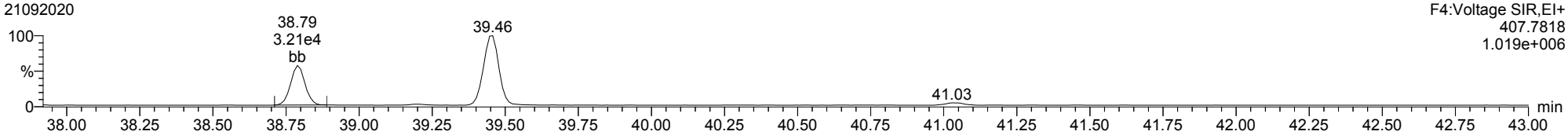

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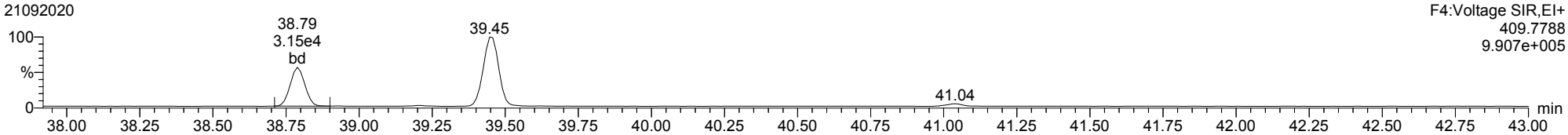

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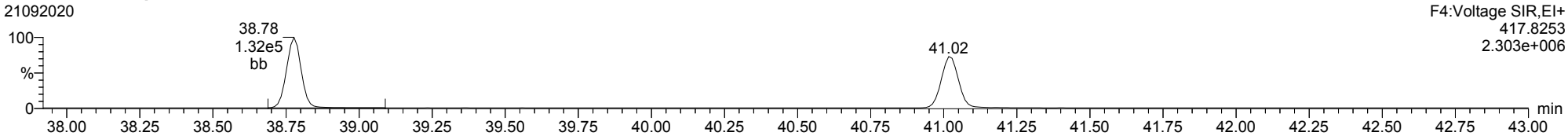

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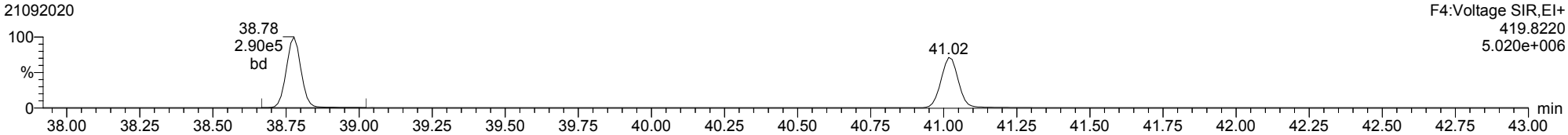

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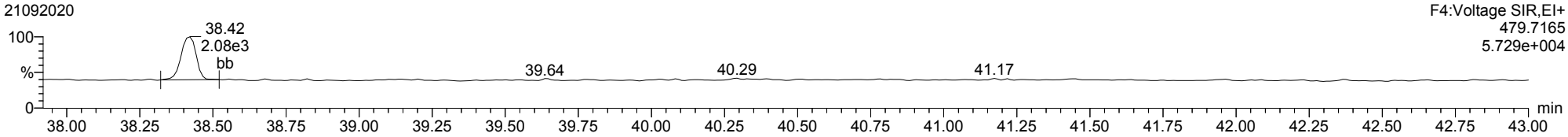

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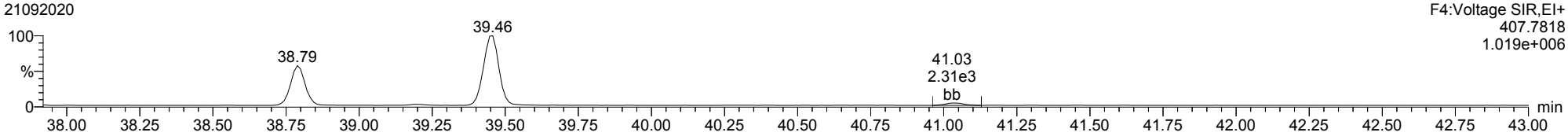

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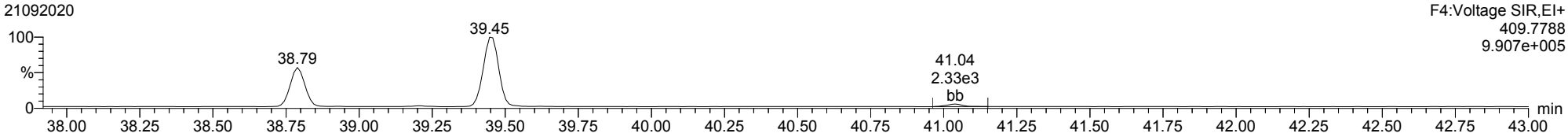

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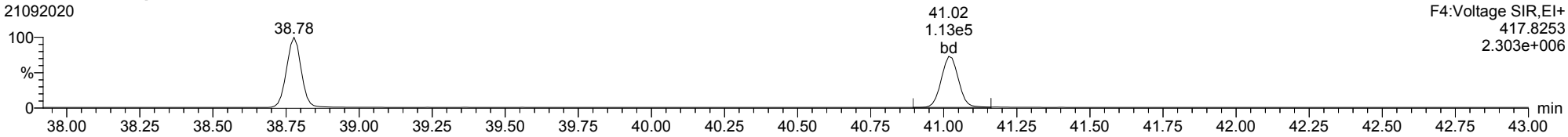

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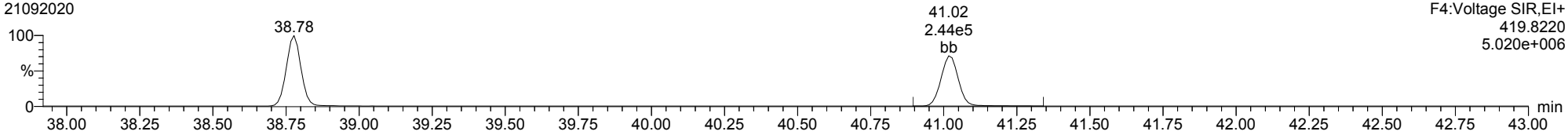

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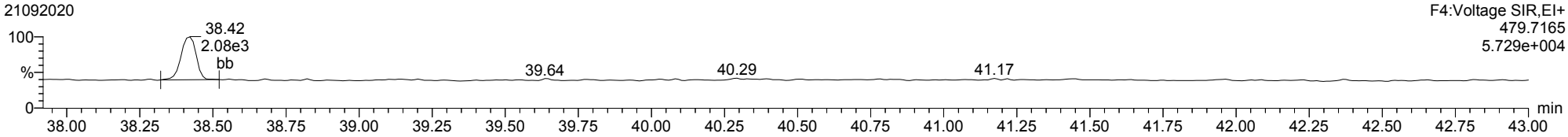

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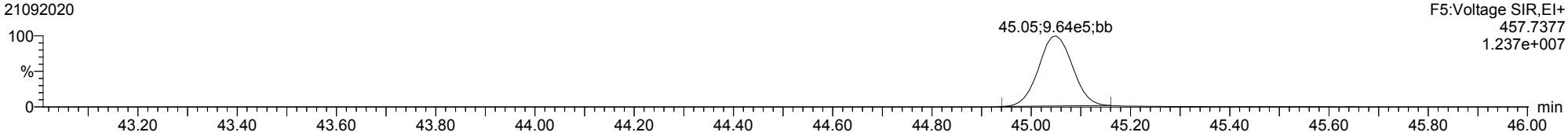

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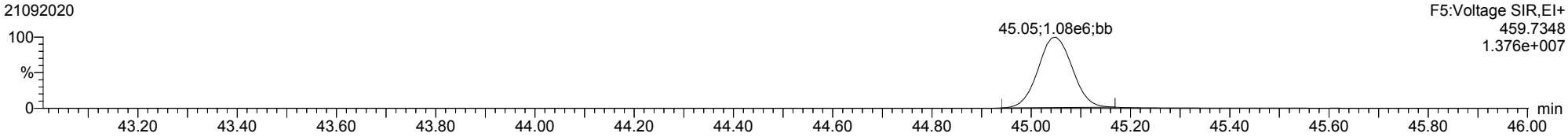

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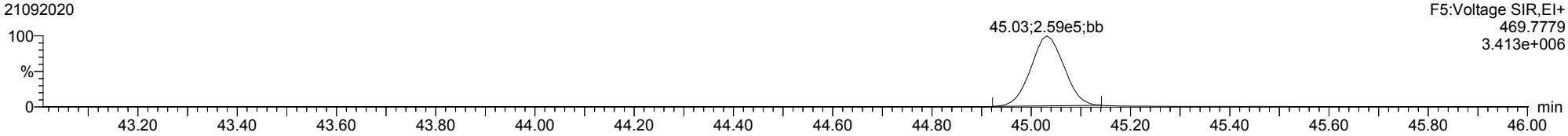
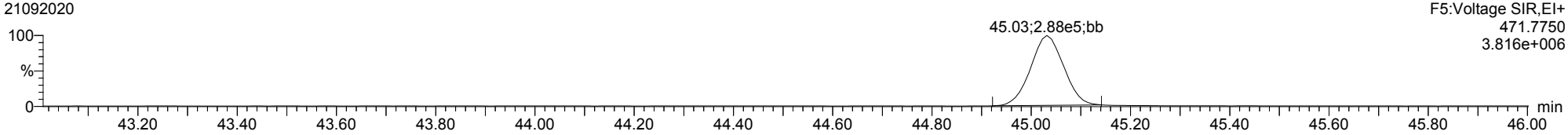
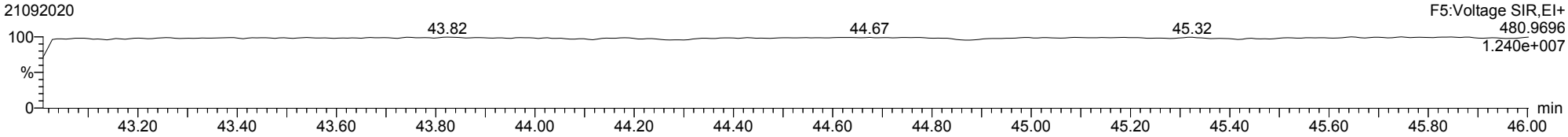


13C-OCDD

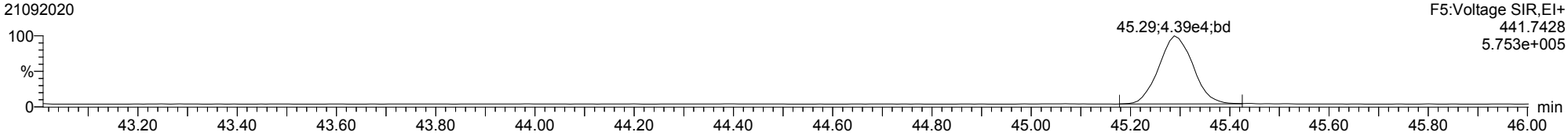


FUNCTION5 PFK

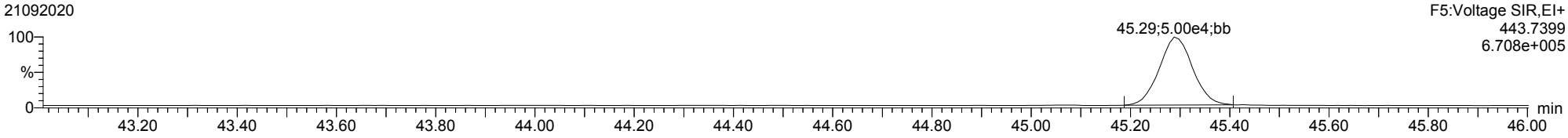


ID: 21G0140-06, Name: 21092020, Date: 21-Sep-2021, Time: 07:50:55, Conditions: AUTOSPEC01, User: pk

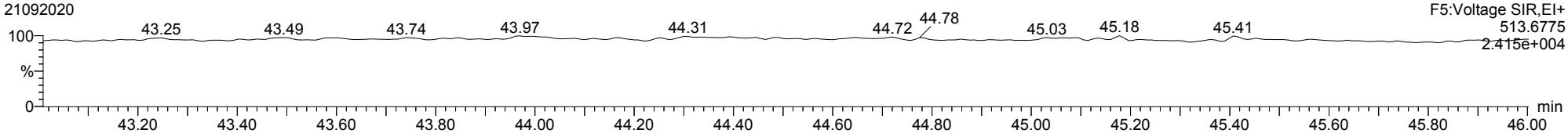
OCDF



OCDF

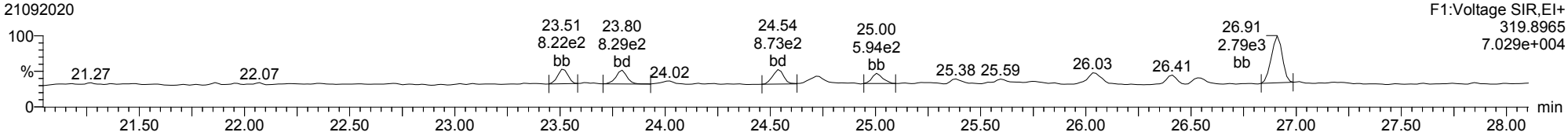


FUNCTION5 DCDPE



ID: 21G0140-06, Name: 21092020, Date: 21-Sep-2021, Time: 07:50:55, Conditions: AUTOSPEC01, User: pk

Total-tetradioxins



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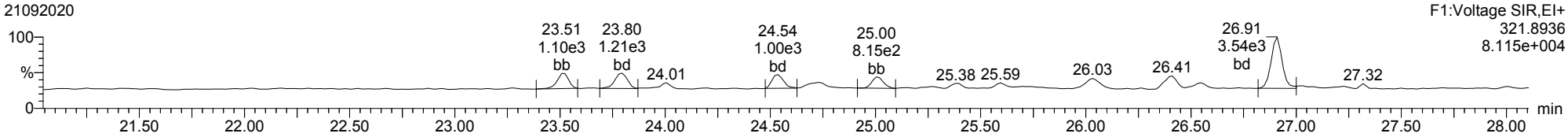
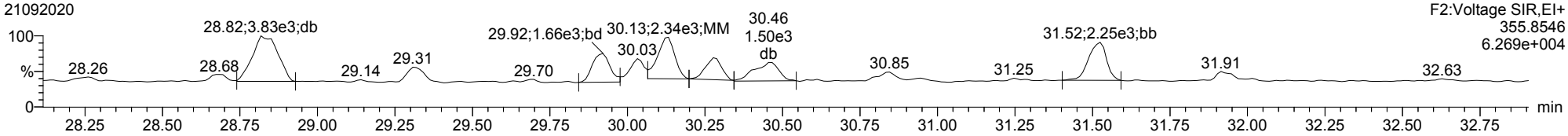
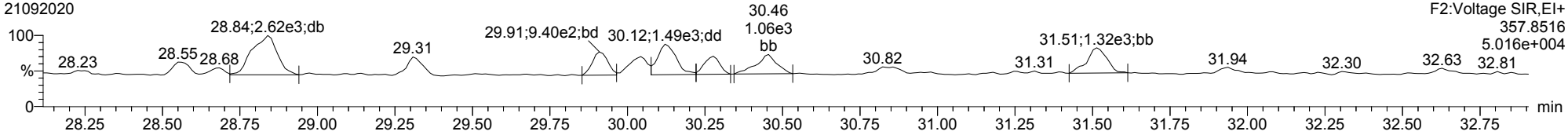


Total-pentadioxins

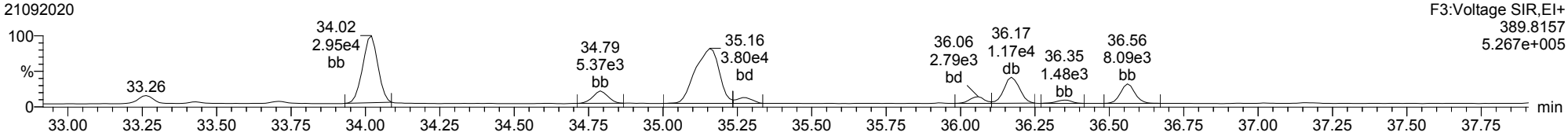


Total-pentadioxins



ID: 21G0140-06, Name: 21092020, Date: 21-Sep-2021, Time: 07:50:55, Conditions: AUTOSPEC01, User: pk

Total-hexadioxins



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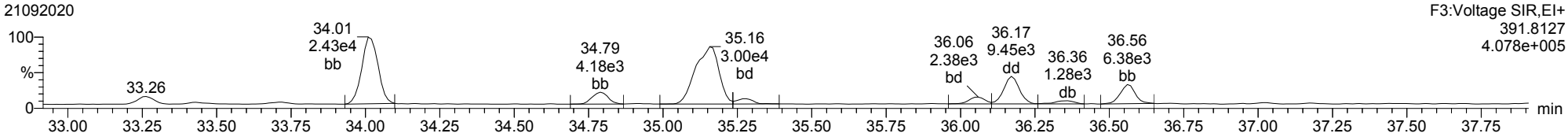

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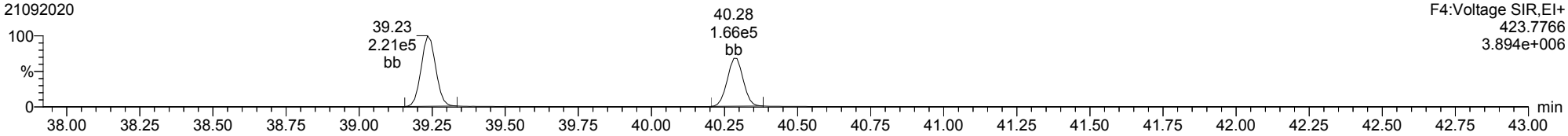

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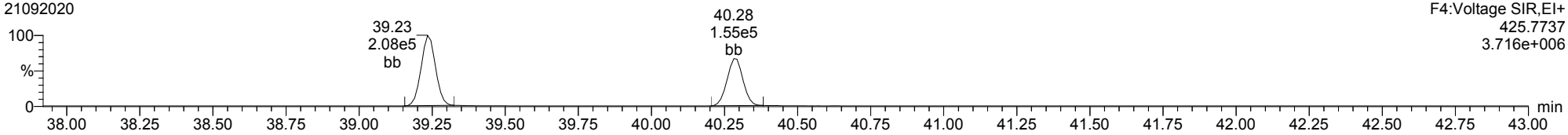
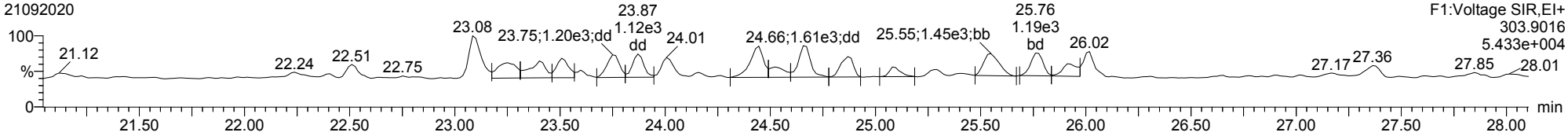
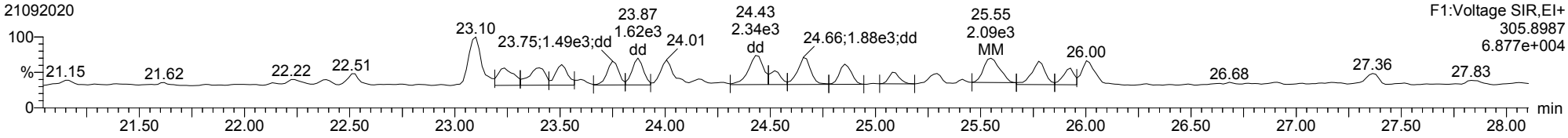


ID: 21G0140-06, Name: 21092020, Date: 21-Sep-2021, Time: 07:50:55, Conditions: AUTOSPEC01, User: pk

Total-tetrafurans



Total-tetrafurans



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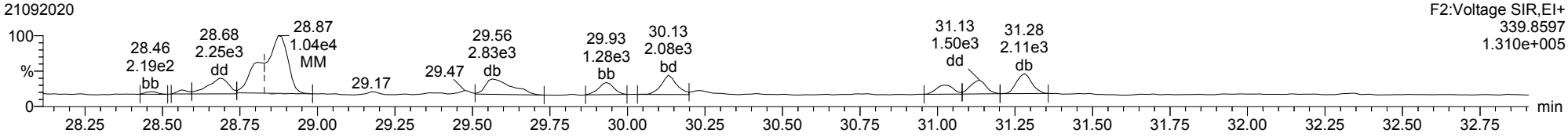
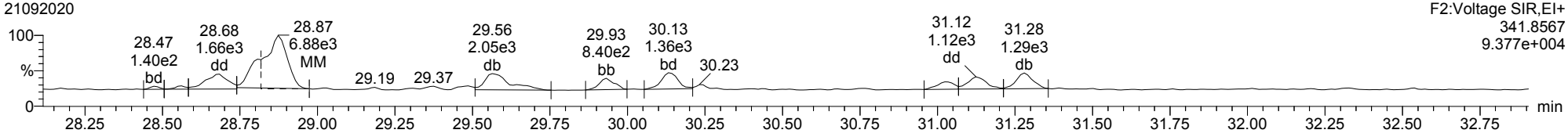


Total-pentafurans



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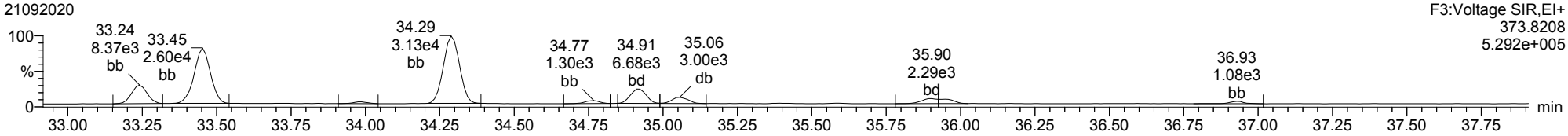
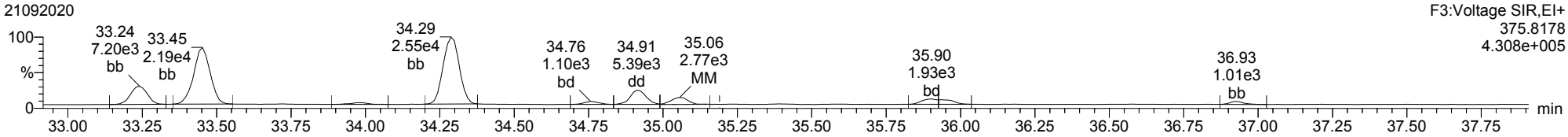
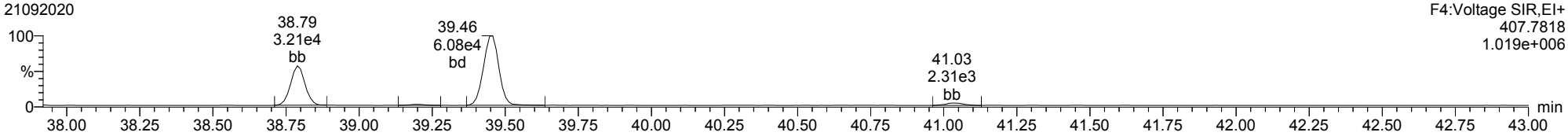
Total-hexafurans



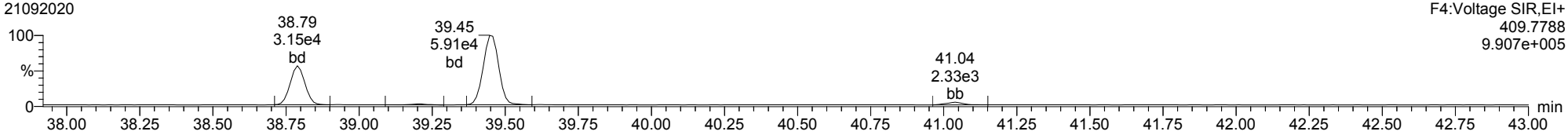
Total-hexafurans



Total-heptafurans



Total-heptafurans



Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-SC634C

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0140
Client:	Anchor QEA, LLC				
Project:	Lower Duwamish AOC4				
Matrix:	Sediment	Laboratory ID:	21G0140-07 C	File ID:	21092021
Sampled:	07/12/21 13:11	Prepared:	09/06/21 16:00	Analyzed:	09/21/21 08:39
% Solids:	79.33	Preparation:	EPA 1613	Initial/Final:	12.63 g Wet / 20 uL
Result Basis:	Dry	Sequence:	SJI0309	Calibration:	EH00030
Batch:	BJH0152	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1	0.736	0.655-0.886	0.094	0.998	0.207	ng/kg	J
1746-01-6	2,3,7,8-TCDD	1		0.655-0.886	0.098	0.998	ND	ng/kg	U
57117-41-6	1,2,3,7,8-PeCDF	1		1.318-1.783	0.102	0.998	ND	ng/kg	U
57117-31-4	2,3,4,7,8-PeCDF	1	1.524	1.318-1.783	0.098	0.998	0.217	ng/kg	J
40321-76-4	1,2,3,7,8-PeCDD	1		1.318-1.783	0.143	0.998	ND	ng/kg	U
70648-26-9	1,2,3,4,7,8-HxCDF	1	1.428	1.054-1.426	0.068	0.998	0.850	ng/kg	EMPC, J
57117-44-9	1,2,3,6,7,8-HxCDF	1	1.212	1.054-1.426	0.062	0.998	0.365	ng/kg	J
60851-34-5	2,3,4,6,7,8-HxCDF	1	0.877	1.054-1.426	0.068	0.998	0.194	ng/kg	EMPC, J
72918-21-9	1,2,3,7,8,9-HxCDF	1		1.054-1.426	0.075	0.998	ND	ng/kg	U
39227-28-6	1,2,3,4,7,8-HxCDD	1	1.134	1.054-1.426	0.083	0.998	0.191	ng/kg	J
57653-85-7	1,2,3,6,7,8-HxCDD	1	1.050	1.054-1.426	0.084	0.998	0.839	ng/kg	EMPC, J
19408-74-3	1,2,3,7,8,9-HxCDD	1	1.230	1.054-1.426	0.089	0.998	0.692	ng/kg	J
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	0.998	0.893-1.208	0.096	0.998	4.08	ng/kg	
55673-89-7	1,2,3,4,7,8,9-HpCDF	1	0.966	0.893-1.208	0.139	0.998	0.539	ng/kg	J
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.080	0.893-1.208	0.156	2.50	20.6	ng/kg	B
39001-02-0	OCDF	1	0.868	0.757-1.024	0.127	2.50	7.85	ng/kg	
3268-87-9	OCDD	1	0.898	0.757-1.024	0.258	9.98	168	ng/kg	B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			0.998	0.475	ng/kg
41903-57-5	Total TCDD	1	0.000			0.998	0.377	ng/kg
30402-15-4	Total PeCDF	1	0.000			0.998	2.41	ng/kg
36088-22-9	Total PeCDD	1	0.000			0.998	0.219	ng/kg
55684-94-1	Total HxCDF	1	0.000			0.998	5.83	ng/kg
34465-46-8	Total HxCDD	1	0.000			0.998	6.76	ng/kg
38998-75-3	Total HpCDF	1	0.000			0.998	12.8	ng/kg
37871-00-4	Total HpCDD	1	0.000			0.998	43.0	ng/kg

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.704
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.830

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-SC634C

Form 2
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0140
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Matrix:	Sediment	Laboratory ID:	21G0140-07	File ID:	21092021
Sampled:	07/12/21 13:11	Prepared:	09/06/21 16:00	Analyzed:	09/21/21 08:39
Solids Wt%:	79.33	Preparation:	EPA 1613	Initial/Final:	12.63 g / 20 uL
Result Basis:	Dry	Sequence:	SJI0309	Calibration:	EH00030
Batch:	BJH0152	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.798	0.655-0.886	0.090	53.0	24 - 169 %	
13C12-2,3,7,8-TCDD		0.752	0.655-0.886	0.092	69.0	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.595	1.318-1.783	0.095	68.3	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.601	1.318-1.783	0.100	66.0	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.547	1.318-1.783	0.093	77.8	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.513	0.434-0.587	0.108	74.5	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.512	0.434-0.587	0.100	70.7	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.512	0.434-0.587	0.111	72.2	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.509	0.434-0.587	0.134	75.4	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.252	1.054-1.426	0.117	85.5	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.238	1.054-1.426	0.108	76.5	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.462	0.374-0.506	0.107	57.2	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.457	0.374-0.506	0.131	55.9	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.030	0.893-1.208	0.137	70.4	23 - 140 %	
13C12-OCDD		0.887	0.757-1.024	0.155	70.2	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.041	67.7	35 - 197 %	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210920D2.qld
Last Altered: Tuesday, September 21, 2021 13:21:12 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 13:29:38 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0140-07, Name: 21092021, Date: 21-Sep-2021, Time: 08:39:59, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.776	1.001	2.555e2	3.473e2	1.108	0.736	0.770	720	717	4.06e3	5.09e3	5.6	7.1	NO	bd	dd	0.104
12378-PeCDF					1.015		1.550	883	781								
23478-PeCDF	31.268	1.001	4.184e2	2.746e2	1.126	1.524	1.550	883	781	7.41e3	4.11e3	8.4	5.3	NO	bb	bb	0.109
123478-HxCDF	34.889	1.001	1.565e3	1.096e3	1.017	1.428	1.240	571	570	2.65e4	1.95e4	46.5	34.2	YES	bd	bd	0.426
234678-HxCDF	35.892	1.000	2.782e2	3.173e2	1.052	0.877	1.240	571	570	5.16e3	5.01e3	9.0	8.8	YES	db	db	0.097
123678-HxCDF	35.034	1.001	6.537e2	5.396e2	1.037	1.212	1.240	571	570	1.08e4	9.38e3	18.9	16.5	NO	db	db	0.183
123789-HxCDF					1.030		1.240	571	570								
1234678-HpCDF	38.778	1.001	4.756e3	4.765e3	1.327	0.998	1.050	661	583	7.99e4	7.47e4	120.9	128.1	NO	bb	bb	2.042
1234789-HpCDF	41.028	1.000	4.786e2	4.956e2	1.283	0.966	1.050	661	583	6.34e3	6.41e3	9.6	11.0	NO	bb	bb	0.270
OCDF	45.251	1.005	6.206e3	7.149e3	1.447	0.868	0.890	504	419	7.47e4	8.98e4	148.3	214.1	NO	bb	bb	3.932
2378-TCDD					0.920		0.770	687	524								
12378-PeCDD					0.995		1.550	739	759								
123478-HxCDD	36.004	1.000	2.839e2	2.504e2	1.027	1.134	1.240	563	753	4.79e3	4.29e3	8.5	5.7	NO	MM	MM	0.096
123678-HxCDD	36.126	1.001	1.148e3	1.093e3	1.009	1.050	1.240	563	753	2.13e4	1.68e4	37.9	22.4	YES	db	db	0.420
123789-HxCDD	36.516	1.011	9.755e2	7.932e2	0.950	1.230	1.240	563	753	1.73e4	1.37e4	30.7	18.3	NO	bb	bb	0.347
1234678-HpCDD	40.271	1.000	1.690e4	1.564e4	1.068	1.080	1.050	670	601	2.56e5	2.38e5	382.3	395.3	NO	bb	bb	10.313
OCDD	45.023	1.000	1.102e5	1.227e5	1.181	0.898	0.890	872	651	1.41e6	1.56e6	1620.9	2395.3	NO	bb	bb	84.020
13C-2378-TCDF	25.746	1.007	2.328e5	2.919e5	1.427	0.798	0.770	1553	855	3.66e6	4.56e6	2355.2	5338.3	NO	bb	bb	52.983
13C-12378-PeCDF	29.898	1.169	3.780e5	2.369e5	1.297	1.595	1.550	971	1337	5.91e6	3.69e6	6087.0	2758.2	NO	bb	bb	68.269
13C-23478-PeCDF	31.246	1.222	3.488e5	2.178e5	1.236	1.601	1.550	971	1337	5.55e6	3.47e6	5721.2	2597.8	NO	bb	bb	65.999
13C-123478-HxCDF	34.867	0.955	2.083e5	4.060e5	1.242	0.513	0.510	1216	1344	3.33e6	6.53e6	2739.9	4860.6	NO	bd	bd	74.539
13C-123678-HxCDF	35.012	0.959	2.134e5	4.166e5	1.343	0.512	0.510	1216	1344	3.58e6	6.97e6	2946.4	5185.5	NO	db	db	70.689
13C-234678-HxCDF	35.881	0.983	1.971e5	3.851e5	1.215	0.512	0.510	1216	1344	3.21e6	6.26e6	2642.6	4657.6	NO	bb	bb	72.231
13C-123789-HxCDF	36.917	1.012	1.698e5	3.339e5	1.008	0.509	0.510	1216	1344	3.00e6	5.86e6	2469.8	4361.3	NO	bb	bb	75.362
13C-1234678-HpCDF	38.756	1.062	1.110e5	2.403e5	0.926	0.462	0.440	730	1161	1.84e6	4.06e6	2519.8	3494.4	NO	bb	bd	57.155
13C-1234789-HpCDF	41.006	1.124	8.809e4	1.928e5	0.758	0.457	0.440	730	1161	1.31e6	2.87e6	1795.0	2468.8	NO	bd	bb	55.871
13C-1234-TCDD	25.564	0.000	3.020e5	3.923e5	1.000	0.770	0.770	1267	652	4.87e6	6.34e6	3845.3	9720.3	NO	bb	bb	100.000
13C-2378-TCDD	26.381	1.032	2.297e5	3.054e5	1.116	0.752	0.770	1267	652	3.46e6	4.57e6	2732.4	7009.8	NO	bb	bb	69.029
13C-12378-PeCDD	31.491	1.232	2.402e5	1.552e5	0.732	1.547	1.550	701	578	3.82e6	2.45e6	5456.0	4245.8	NO	bb	bb	77.804
13C-123478-HxCDD	35.992	0.986	3.026e5	2.416e5	0.960	1.252	1.240	1362	770	5.15e6	4.06e6	3778.6	5279.1	NO	bd	bd	85.479
13C-123678-HxCDD	36.104	0.989	2.926e5	2.363e5	1.041	1.238	1.240	1362	770	5.13e6	4.18e6	3767.6	5429.3	NO	db	db	76.550
13C-1234678-HpCDD	40.259	1.103	1.499e5	1.455e5	0.632	1.030	1.050	941	706	2.32e6	2.27e6	2461.2	3213.2	NO	bb	bb	70.405
13C-OCDD	45.005	1.233	2.207e5	2.488e5	0.504	0.887	0.890	924	558	2.82e6	3.15e6	3050.2	5650.6	NO	bb	bb	140.493
13C-123789-HxCDD	36.494	0.000	3.622e5	3.012e5	1.000	1.203	1.240	1362	770	6.22e6	5.23e6	4567.5	6794.8	NO	bb	bb	100.000
37CL-2378-TCDD	26.396	1.033	2.039e5		1.084			827		3.14e6		3799.5			bb		27.098

Dataset: T:\Autospec\Processed Data Batch\210920D2.qld
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Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF					1.425		0.770	720	717								
1289-TCDF					1.043		0.770	720	717								
13468-PECDF					1.376		1.550	585	631								
12389-PECDF					1.000		1.550	883	781								
123468-HXCDF	33.229	0.953	1.125e3	8.910e2	1.087	1.263	1.240	571	570	1.75e4	1.28e4	30.7	22.5	NO	bd	bb	0.302
1368-TCDD	23.493	0.891	1.755e2	2.804e2	0.923	0.626	0.770	687	524	3.02e3	5.24e3	4.4	10.0	YES	bb	bb	0.092
1289-TCDD					0.794		0.770	687	524								
12479-PECDD	28.773	0.914	5.021e2	2.408e2	1.843	2.086	1.550	739	759	8.98e3	4.68e3	12.2	6.2	YES	dd	bd	0.102
12389-PECDD					1.154		1.550	739	759								
124679-HXCDD	33.998	0.945	3.963e3	3.014e3	1.125	1.315	1.240	563	753	6.54e4	4.52e4	116.2	60.0	NO	bb	bb	1.140
1234679-HPCDD	39.223	0.974	2.036e4	1.978e4	1.211	1.029	1.050	670	601	3.47e5	3.31e5	518.2	550.9	NO	bd	bb	11.224
Total-tetrafurans			6.272e2		1.192			720		1.02e4							0.238
Total-penta1			3.626e3					585		5.60e4							1.016
Total-pentafurans			7.251e2		1.047			883		1.29e4							0.189
Total-hexafurans			9.987e3		1.045			571		1.57e5							2.918
Total-heptafurans			1.407e4		1.305			661		2.30e5							6.426
Total-Furans			3.525e4		1.158			720		5.41e5							14.719
Total-tetradioxins			3.655e2		0.879			687		5.31e3							0.189
Total-pentadioxins			3.294e2		1.331			739		6.88e3							0.110
Total-hexadioxins			1.071e4		1.028			563		1.51e5							3.386
Total-heptadioxins			3.726e4		1.140			670		6.04e5							21.537
Total-Dioxins			1.589e5		1.092			687		2.18e6							109.241
Total-TEQ			1.941e5					687		2.72e6							123.960
FUNCTION1 PFK			8.431e5					288751		9.86e6							
FUNCTION2 PFK			5.328e5					144432		6.46e6							0.000
FUNCTION3 PFK			1.264e5					221654		1.83e6							0.000
FUNCTION4 PFK			1.317e5					146242		4.10e6							
FUNCTION5 PFK			9.583e4					127173		3.31e6							
FUNCTION1 HXCD...			1.468e2					604		1.20e3							0.000
FUNCTION1 HPCD...			2.908e2					512		5.13e3							0.000
FUNCTION2 HPCD...			0.000e0					574		0.00e0							
FUNCTION3 OCDPE			2.466e2					472		4.18e3							0.000
FUNCTION4 NCDPE			5.728e2					533		1.11e4							0.000
FUNCTION5 DCDPE			0.000e0					408		0.00e0							

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

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TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.87	1.944e2	2.684e2	1.192	0.72	0.77	4.6	YES	NO	db	dd	0.074
2	Total-tetrafurans	22.49	1.774e2	2.010e2	1.192	0.88	0.77	3.9	YES	NO	bb	bb	0.060
3	2378-TCDF	25.78	2.555e2	3.473e2	1.108	0.74	0.77	5.6	YES	NO	bd	dd	0.104

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-penta1	27.18	3.626e3	2.103e3		1.72	1.55	95.8	YES	NO	bb	db	1.016

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	23478-PeCDF	31.27	4.184e2	2.746e2	1.126	1.52	1.55	8.4	YES	NO	bb	bb	0.109
2	Total-pentafurans	30.13	3.067e2	1.905e2	1.047	1.61	1.55	6.2	YES	NO	bb	bb	0.080

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123678-HxCDF	35.03	6.537e2	5.396e2	1.037	1.21	1.24	18.9	YES	NO	db	db	0.183
2	Total-hexafurans	34.27	4.552e3	3.538e3	1.045	1.29	1.24	131.5	YES	NO	bb	bb	1.329
3	Total-hexafurans	33.43	3.656e3	3.063e3	1.045	1.19	1.24	93.8	YES	NO	db	bb	1.104
4	123468-HXCDF	33.23	1.125e3	8.910e2	1.087	1.26	1.24	30.7	YES	NO	bd	bb	0.302

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	41.03	4.786e2	4.956e2	1.283	0.97	1.05	9.6	YES	NO	bb	bb	0.270
2	Total-heptafurans	39.44	8.840e3	8.133e3	1.305	1.09	1.05	217.2	YES	NO	bb	bb	4.114
3	1234678-HpCDF	38.78	4.756e3	4.765e3	1.327	1.00	1.05	120.9	YES	NO	bb	bb	2.042

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Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.87	1.944e2	2.684e2	1.192	0.72	0.77	4.6	YES	NO	db	dd	0.074
2	Total-tetrafurans	22.49	1.774e2	2.010e2	1.192	0.88	0.77	3.9	YES	NO	bb	bb	0.060
3	2378-TCDF	25.78	2.555e2	3.473e2	1.108	0.74	0.77	5.6	YES	NO	bd	dd	0.104
4	23478-PeCDF	31.27	4.184e2	2.746e2	1.126	1.52	1.55	8.4	YES	NO	bb	bb	0.109
5	Total-pentafurans	30.13	3.067e2	1.905e2	1.047	1.61	1.55	6.2	YES	NO	bb	bb	0.080
6	123678-HxCDF	35.03	6.537e2	5.396e2	1.037	1.21	1.24	18.9	YES	NO	db	db	0.183
7	Total-hexafurans	34.27	4.552e3	3.538e3	1.045	1.29	1.24	131.5	YES	NO	bb	bb	1.329
8	Total-hexafurans	33.43	3.656e3	3.063e3	1.045	1.19	1.24	93.8	YES	NO	db	bb	1.104
9	123468-HXCDF	33.23	1.125e3	8.910e2	1.087	1.26	1.24	30.7	YES	NO	bd	bb	0.302
10	OCDF	45.25	6.206e3	7.149e3	1.447	0.87	0.89	148.3	YES	NO	bb	bb	3.932
11	1234789-HpCDF	41.03	4.786e2	4.956e2	1.283	0.97	1.05	9.6	YES	NO	bb	bb	0.270
12	Total-heptafurans	39.44	8.840e3	8.133e3	1.305	1.09	1.05	217.2	YES	NO	bb	bb	4.114
13	1234678-HpCDF	38.78	4.756e3	4.765e3	1.327	1.00	1.05	120.9	YES	NO	bb	bb	2.042
14	Total-penta1	27.18	3.626e3	2.103e3		1.72	1.55	95.8	YES	NO	bb	db	1.016

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	24.52	3.655e2	5.241e2	0.879	0.70	0.77	7.7	YES	NO	bb	bd	0.189

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentadioxins	30.12	3.294e2	2.471e2	1.331	1.33	1.55	9.3	YES	NO	bb	bd	0.110

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-hexadioxins	35.25	1.979e2	1.485e2	1.028	1.33	1.24	8.0	YES	NO	db	db	0.063
2	Total-hexadioxins	35.12	4.454e3	3.647e3	1.028	1.22	1.24	79.3	YES	NO	bd	bd	1.469
3	Total-hexadioxins	34.77	8.330e2	6.660e2	1.028	1.25	1.24	26.3	YES	NO	bb	bb	0.272
4	124679-HXCDD	34.00	3.963e3	3.014e3	1.125	1.31	1.24	116.2	YES	NO	bb	bb	1.140
5	123789-HxCDD	36.52	9.755e2	7.932e2	0.950	1.23	1.24	30.7	YES	NO	bb	bb	0.347
6	123478-HxCDD	36.00	2.839e2	2.504e2	1.027	1.13	1.24	8.5	YES	NO	MM	MM	0.096

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HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	40.27	1.690e4	1.564e4	1.068	1.08	1.05	382.3	YES	NO	bb	bb	10.313
2	1234679-HPCDD	39.22	2.036e4	1.978e4	1.211	1.03	1.05	518.2	YES	NO	bd	bb	11.224

Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	24.52	3.655e2	5.241e2	0.879	0.70	0.77	7.7	YES	NO	bb	bd	0.189
2	Total-pentadioxins	30.12	3.294e2	2.471e2	1.331	1.33	1.55	9.3	YES	NO	bb	bd	0.110
3	Total-hexadioxins	35.25	1.979e2	1.485e2	1.028	1.33	1.24	8.0	YES	NO	db	db	0.063
4	Total-hexadioxins	35.12	4.454e3	3.647e3	1.028	1.22	1.24	79.3	YES	NO	bd	bd	1.469
5	Total-hexadioxins	34.77	8.330e2	6.660e2	1.028	1.25	1.24	26.3	YES	NO	bb	bb	0.272
6	124679-HXCDD	34.00	3.963e3	3.014e3	1.125	1.31	1.24	116.2	YES	NO	bb	bb	1.140
7	123789-HxCDD	36.52	9.755e2	7.932e2	0.950	1.23	1.24	30.7	YES	NO	bb	bb	0.347
8	123478-HxCDD	36.00	2.839e2	2.504e2	1.027	1.13	1.24	8.5	YES	NO	MM	MM	0.096
9	OCDD	45.02	1.102e5	1.227e5	1.181	0.90	0.89	1620.9	YES	NO	bb	bb	84.020
10	1234678-HpCDD	40.27	1.690e4	1.564e4	1.068	1.08	1.05	382.3	YES	NO	bb	bb	10.313
11	1234679-HPCDD	39.22	2.036e4	1.978e4	1.211	1.03	1.05	518.2	YES	NO	bd	bb	11.224

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.87	1.944e2	2.684e2	1.192	0.72	0.77	4.6	YES	NO	db	dd	0.074
2	Total-tetrafurans	22.49	1.774e2	2.010e2	1.192	0.88	0.77	3.9	YES	NO	bb	bb	0.060
3	2378-TCDF	25.78	2.555e2	3.473e2	1.108	0.74	0.77	5.6	YES	NO	bd	dd	0.104
4	23478-PeCDF	31.27	4.184e2	2.746e2	1.126	1.52	1.55	8.4	YES	NO	bb	bb	0.109
5	Total-pentafurans	30.13	3.067e2	1.905e2	1.047	1.61	1.55	6.2	YES	NO	bb	bb	0.080
6	123678-HxCDF	35.03	6.537e2	5.396e2	1.037	1.21	1.24	18.9	YES	NO	db	db	0.183
7	Total-hexafurans	34.27	4.552e3	3.538e3	1.045	1.29	1.24	131.5	YES	NO	bb	bb	1.329
8	Total-hexafurans	33.43	3.656e3	3.063e3	1.045	1.19	1.24	93.8	YES	NO	db	bb	1.104
9	123468-HXCDF	33.23	1.125e3	8.910e2	1.087	1.26	1.24	30.7	YES	NO	bd	bb	0.302
10	OCDF	45.25	6.206e3	7.149e3	1.447	0.87	0.89	148.3	YES	NO	bb	bb	3.932
11	1234789-HpCDF	41.03	4.786e2	4.956e2	1.283	0.97	1.05	9.6	YES	NO	bb	bb	0.270
12	Total-heptafurans	39.44	8.840e3	8.133e3	1.305	1.09	1.05	217.2	YES	NO	bb	bb	4.114
13	1234678-HpCDF	38.78	4.756e3	4.765e3	1.327	1.00	1.05	120.9	YES	NO	bb	bb	2.042
14	Total-penta1	27.18	3.626e3	2.103e3		1.72	1.55	95.8	YES	NO	bb	db	1.016
15	Total-tetradioxins	24.52	3.655e2	5.241e2	0.879	0.70	0.77	7.7	YES	NO	bb	bd	0.189
16	Total-pentadioxins	30.12	3.294e2	2.471e2	1.331	1.33	1.55	9.3	YES	NO	bb	bd	0.110
17	Total-hexadioxins	35.25	1.979e2	1.485e2	1.028	1.33	1.24	8.0	YES	NO	db	db	0.063
18	Total-hexadioxins	35.12	4.454e3	3.647e3	1.028	1.22	1.24	79.3	YES	NO	bd	bd	1.469
19	Total-hexadioxins	34.77	8.330e2	6.660e2	1.028	1.25	1.24	26.3	YES	NO	bb	bb	0.272
20	124679-HXCDD	34.00	3.963e3	3.014e3	1.125	1.31	1.24	116.2	YES	NO	bb	bb	1.140
21	123789-HxCDD	36.52	9.755e2	7.932e2	0.950	1.23	1.24	30.7	YES	NO	bb	bb	0.347
22	123478-HxCDD	36.00	2.839e2	2.504e2	1.027	1.13	1.24	8.5	YES	NO	MM	MM	0.096
23	OCDD	45.02	1.102e5	1.227e5	1.181	0.90	0.89	1620.9	YES	NO	bb	bb	84.020
24	1234678-HpCDD	40.27	1.690e4	1.564e4	1.068	1.08	1.05	382.3	YES	NO	bb	bb	10.313
25	1234679-HPCDD	39.22	2.036e4	1.978e4	1.211	1.03	1.05	518.2	YES	NO	bd	bb	11.224

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PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	23.05	5.401e3					0.8	NO		bb		
2	FUNCTION1 PFK	22.63	1.758e4					1.5	NO		bb		
3	FUNCTION1 PFK	22.37	1.394e4					1.4	NO		bb		
4	FUNCTION1 PFK	22.16	7.631e4					3.1	YES		db		
5	FUNCTION1 PFK	22.07	2.407e4					2.7	NO		bd		
6	FUNCTION1 PFK	21.94	6.165e4					3.4	YES		bb		
7	FUNCTION1 PFK	21.66	2.562e4					2.0	NO		db		
8	FUNCTION1 PFK	21.44	3.655e5					4.9	YES		bd		
9	FUNCTION1 PFK	21.19	5.353e4					3.5	YES		db		
10	FUNCTION1 PFK	21.13	1.594e4					1.4	NO		bd		
11	FUNCTION1 PFK	27.65	3.913e4					1.4	NO		bb		
12	FUNCTION1 PFK	27.42	5.690e4					1.5	NO		bb		
13	FUNCTION1 PFK	27.06	2.671e4					1.7	NO		bb		
14	FUNCTION1 PFK	27.00	5.935e3					0.7	NO		bb		
15	FUNCTION1 PFK	25.94	9.340e3					1.1	NO		bb		
16	FUNCTION1 PFK	25.62	6.410e3					0.8	NO		bb		
17	FUNCTION1 PFK	25.50	2.662e4					1.3	NO		bb		
18	FUNCTION1 PFK	25.35	1.246e4					1.2	NO		bb		

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PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	29.71	5.397e3					1.2	NO		bb		0.000
2	FUNCTION2 PFK	29.41	1.024e3					0.6	NO		bb		0.000
3	FUNCTION2 PFK	29.35	5.850e3					1.2	NO		bb		0.000
4	FUNCTION2 PFK	29.12	6.551e2					0.4	NO		bb		0.000
5	FUNCTION2 PFK	28.42	2.092e5					5.4	YES		db		0.000
6	FUNCTION2 PFK	28.25	7.271e4					11.8	YES		dd		0.000
7	FUNCTION2 PFK	28.20	1.899e5					13.8	YES		bd		0.000
8	FUNCTION2 PFK	32.53	2.141e3					0.8	NO		bb		0.000
9	FUNCTION2 PFK	32.37	1.924e3					0.7	NO		bb		0.000
10	FUNCTION2 PFK	31.85	2.059e3					0.6	NO		bb		0.000
11	FUNCTION2 PFK	31.67	3.659e3					0.9	NO		bb		0.000
12	FUNCTION2 PFK	31.48	1.221e4					1.3	NO		bb		0.000
13	FUNCTION2 PFK	31.21	6.667e3					1.6	NO		db		0.000
14	FUNCTION2 PFK	31.17	6.973e3					1.4	NO		bd		0.000
15	FUNCTION2 PFK	31.02	7.342e3					1.6	NO		bb		0.000
16	FUNCTION2 PFK	29.78	5.071e3					1.4	NO		bb		0.000

PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	37.42	3.165e4					2.5	NO		bb		0.000
2	FUNCTION3 PFK	37.00	2.587e4					2.8	NO		bb		0.000
3	FUNCTION3 PFK	36.75	6.884e4					2.9	NO		bb		0.000

ID: 21G0140-07, Name: 21092021, Date: 21-Sep-2021, Time: 08:39:59, Conditions: AUTOSPEC01, User: pk

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	38.13	8.003e3					1.4	NO		bb		
2	FUNCTION4 PFK	37.99	3.511e3					0.8	NO		bb		
3	FUNCTION4 PFK	40.86	6.112e3					1.6	NO		bb		
4	FUNCTION4 PFK	40.79	8.385e3					1.5	NO		bb		
5	FUNCTION4 PFK	40.69	3.934e3					1.2	NO		bb		
6	FUNCTION4 PFK	40.30	2.730e3					0.8	NO		db		
7	FUNCTION4 PFK	40.25	3.634e3					0.9	NO		dd		
8	FUNCTION4 PFK	40.22	2.237e3					0.8	NO		bd		
9	FUNCTION4 PFK	39.66	5.872e3					1.6	NO		bb		
10	FUNCTION4 PFK	39.57	6.251e2					0.4	NO		bb		
11	FUNCTION4 PFK	39.41	5.240e3					1.1	NO		db		
12	FUNCTION4 PFK	39.37	8.331e3					1.8	NO		dd		
13	FUNCTION4 PFK	39.32	7.530e3					1.7	NO		bd		
14	FUNCTION4 PFK	39.19	3.346e3					0.8	NO		bb		
15	FUNCTION4 PFK	39.11	3.924e3					1.2	NO		bb		
16	FUNCTION4 PFK	38.81	6.942e3					1.3	NO		bb		
17	FUNCTION4 PFK	38.72	1.588e4					1.6	NO		bb		
18	FUNCTION4 PFK	38.30	4.722e3					1.1	NO		bb		
19	FUNCTION4 PFK	42.52	1.982e3					0.7	NO		bb		
20	FUNCTION4 PFK	41.84	1.020e4					1.7	NO		db		
21	FUNCTION4 PFK	41.77	6.250e3					1.2	NO		bd		
22	FUNCTION4 PFK	41.37	5.984e2					0.4	NO		bb		
23	FUNCTION4 PFK	41.32	8.856e3					1.8	NO		bb		
24	FUNCTION4 PFK	41.10	2.857e3					0.9	NO		bb		

ID: 21G0140-07, Name: 21092021, Date: 21-Sep-2021, Time: 08:39:59, Conditions: AUTOSPEC01, User: pk

PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	44.42	7.672e3					2.0	NO		db		
2	FUNCTION5 PFK	44.37	1.612e4					2.8	NO		bd		
3	FUNCTION5 PFK	44.32	2.747e3					1.3	NO		bb		
4	FUNCTION5 PFK	44.18	3.862e3					1.3	NO		bb		
5	FUNCTION5 PFK	43.85	4.004e3					1.1	NO		bb		
6	FUNCTION5 PFK	43.81	3.314e3					1.1	NO		bb		
7	FUNCTION5 PFK	43.55	3.248e3					1.1	NO		bb		
8	FUNCTION5 PFK	43.41	5.462e2					0.5	NO		bb		
9	FUNCTION5 PFK	43.07	2.886e3					1.2	NO		bb		
10	FUNCTION5 PFK	45.97	3.198e3					1.0	NO		bb		
11	FUNCTION5 PFK	45.73	4.390e2					0.4	NO		bb		
12	FUNCTION5 PFK	45.63	1.381e4					2.3	NO		db		
13	FUNCTION5 PFK	45.54	1.768e3					0.9	NO		dd		
14	FUNCTION5 PFK	45.51	7.148e3					1.4	NO		bd		
15	FUNCTION5 PFK	45.29	4.323e2					0.4	NO		bb		
16	FUNCTION5 PFK	45.10	1.013e4					2.0	NO		bb		
17	FUNCTION5 PFK	44.98	1.714e3					0.8	NO		bb		
18	FUNCTION5 PFK	44.74	4.716e3					1.4	NO		bb		
19	FUNCTION5 PFK	44.63	1.789e3					0.8	NO		bb		
20	FUNCTION5 PFK	44.59	3.701e3					1.4	NO		bb		
21	FUNCTION5 PFK	44.55	2.576e3					1.1	NO		bb		

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	27.50	1.468e2					2.0	NO		bb		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	22.03	2.908e2					10.0	YES		bb		0.000

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

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Printed: Tuesday, September 21, 2021 13:29:38 Pacific Daylight Time

ID: 21G0140-07, Name: 21092021, Date: 21-Sep-2021, Time: 08:39:59, Conditions: AUTOSPEC01, User: pk

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	36.10	9.903e1					2.3	NO		db		0.000
2	FUNCTION3 OCDPE	35.98	7.706e1					3.0	YES		bd		0.000
3	FUNCTION3 OCDPE	34.21	7.057e1					3.5	YES		bb		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	40.23	7.770e1					2.6	NO		bb		0.000
2	FUNCTION4 NCDPE	38.40	4.951e2					18.3	YES		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

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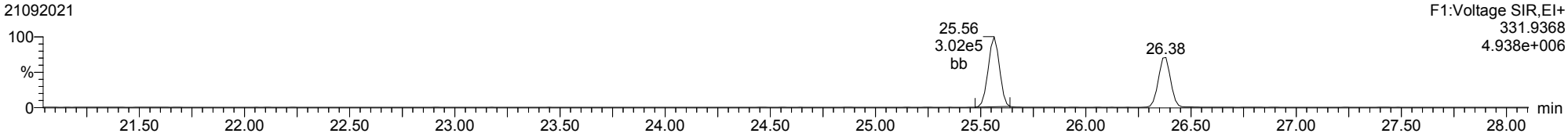
13C-1234-TCDD



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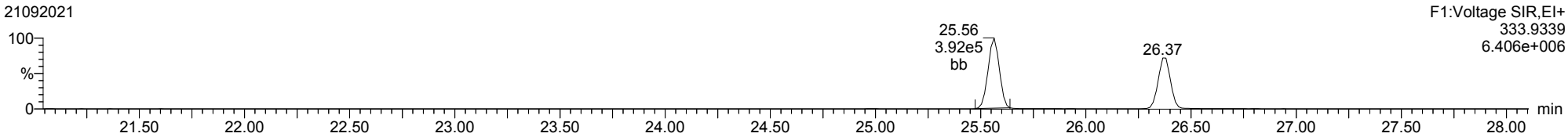

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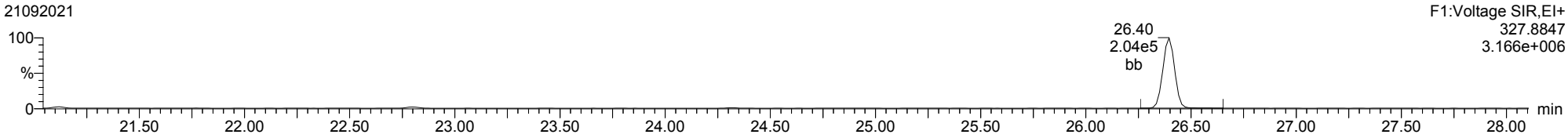

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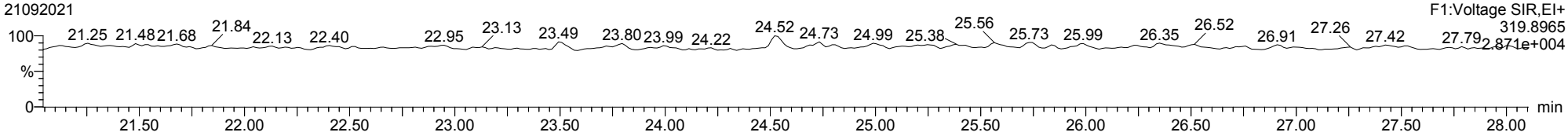

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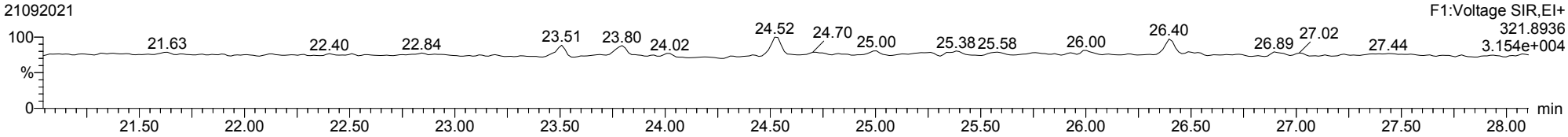

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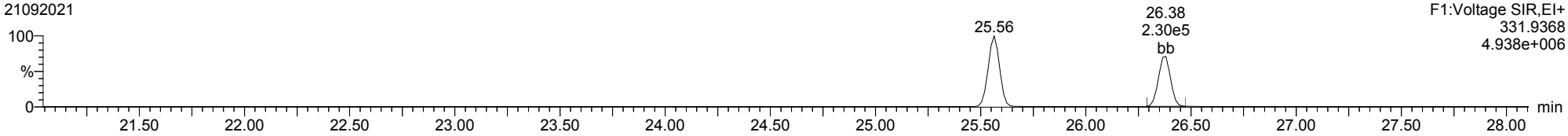

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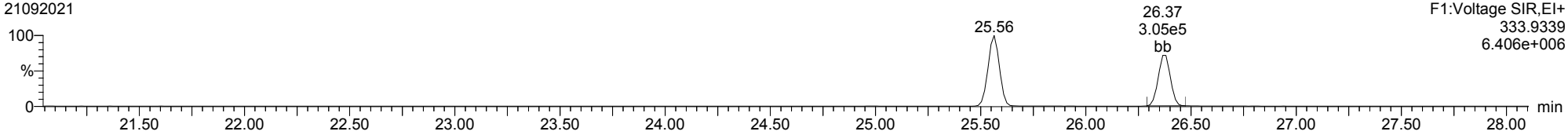

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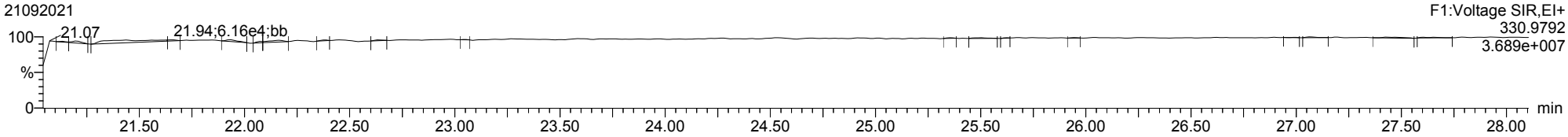

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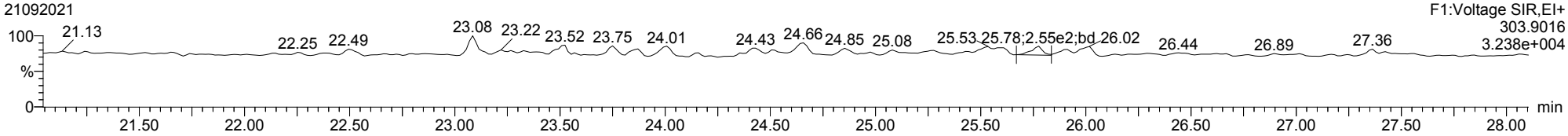

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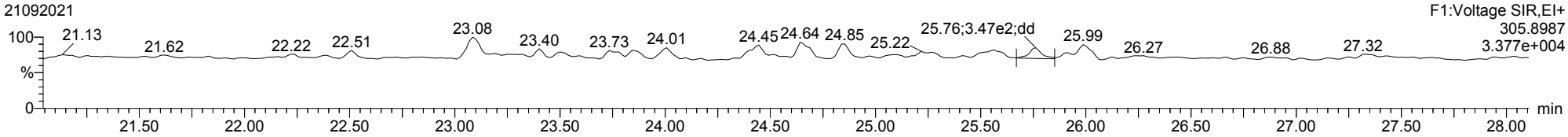

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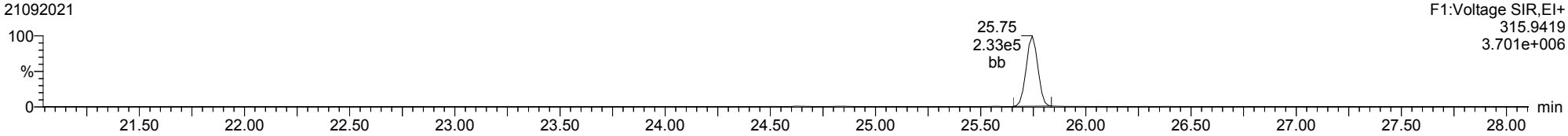

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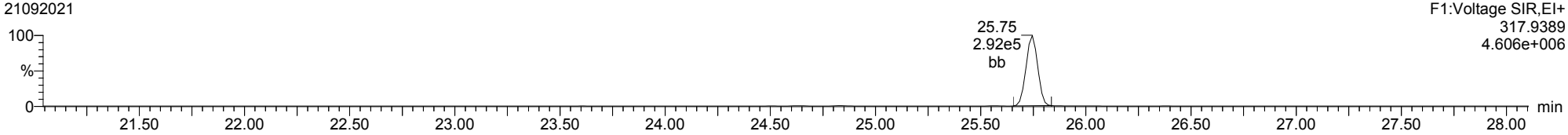
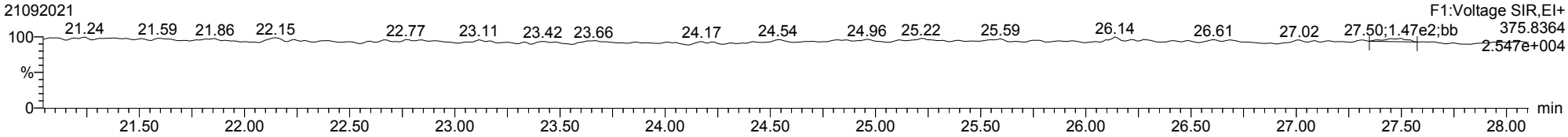


FUNCTION1 HXCDPE



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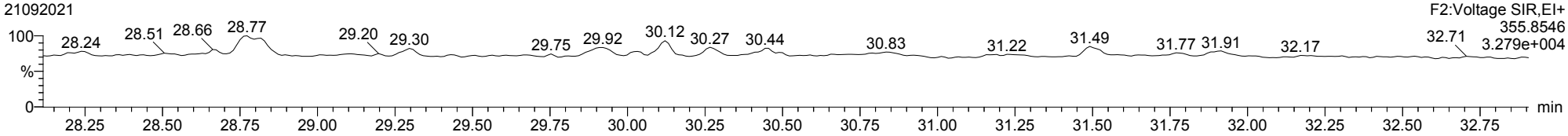

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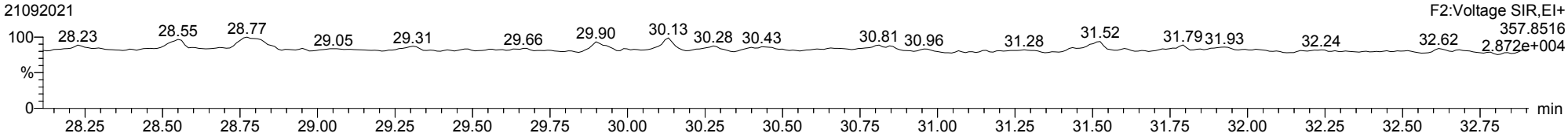

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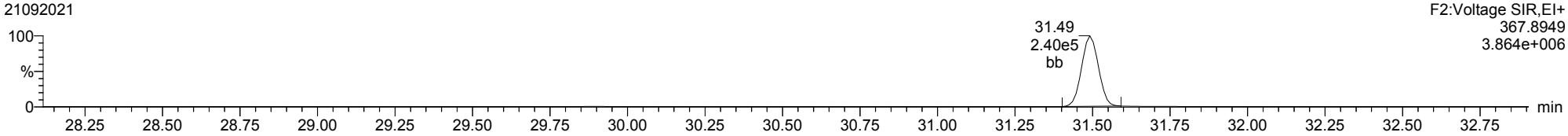

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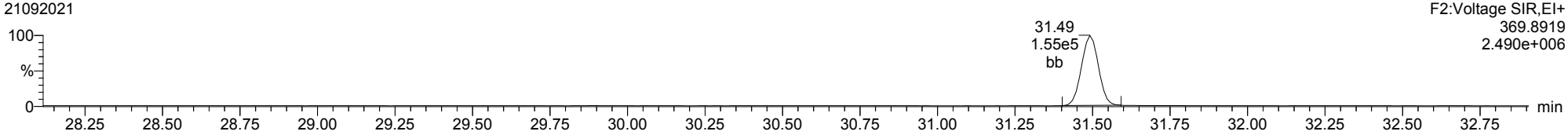

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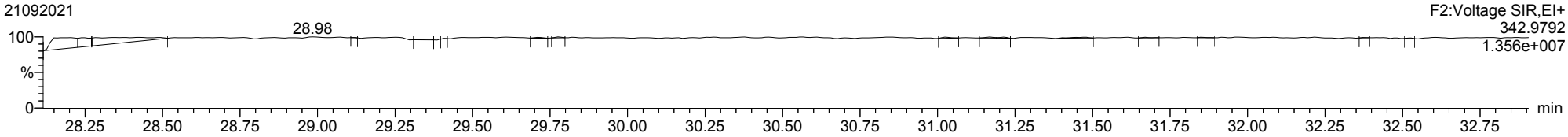

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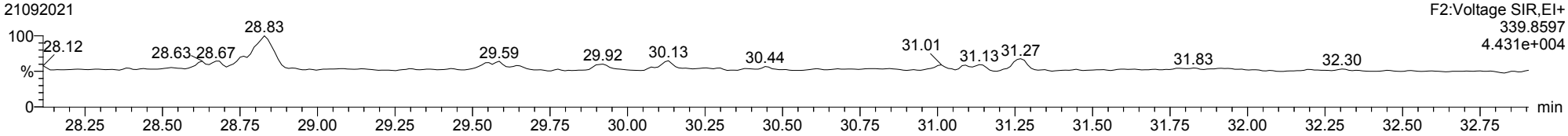

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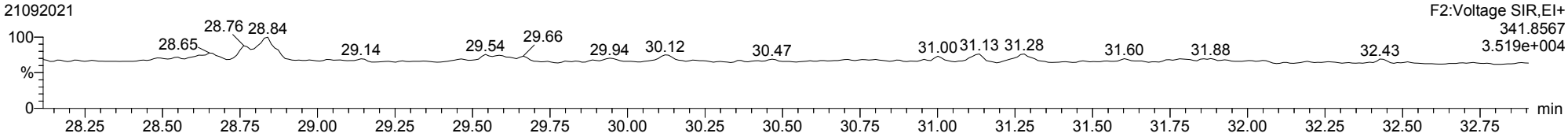

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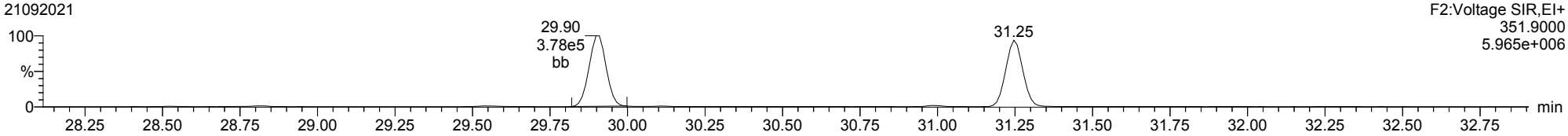

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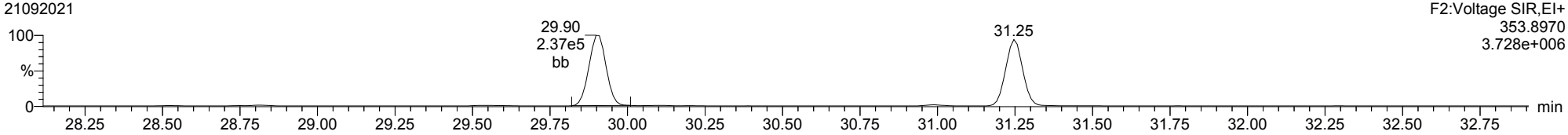
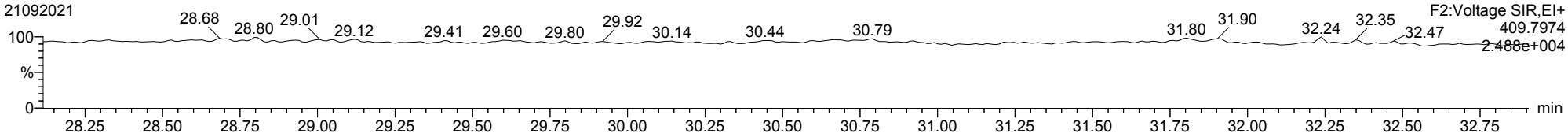


FUNCTION2 HPCDPE



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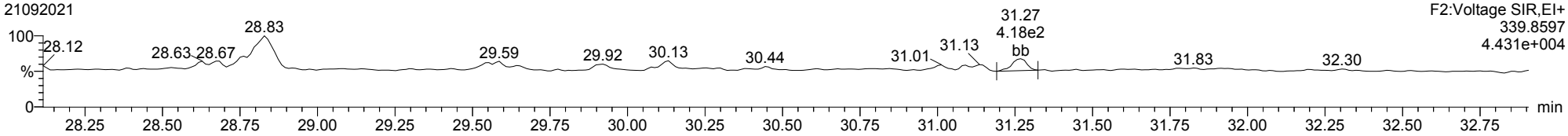
23478-PeCDF



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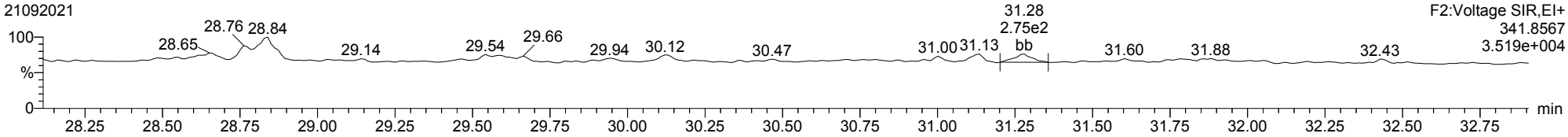

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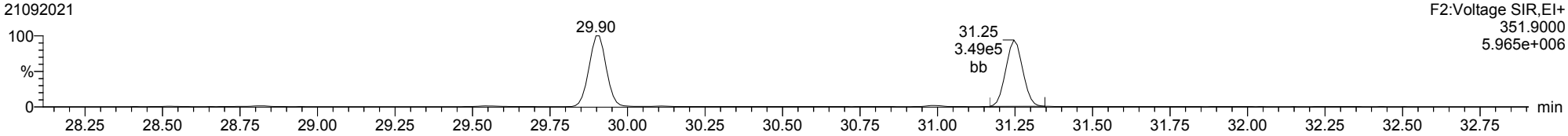

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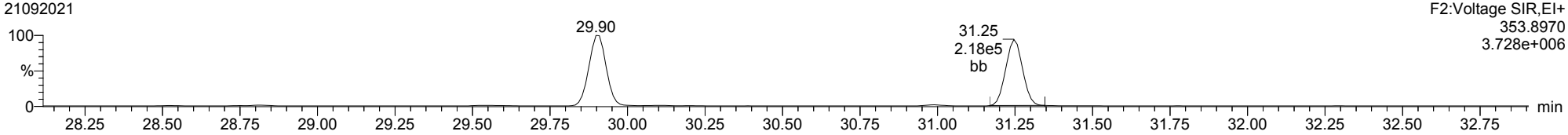

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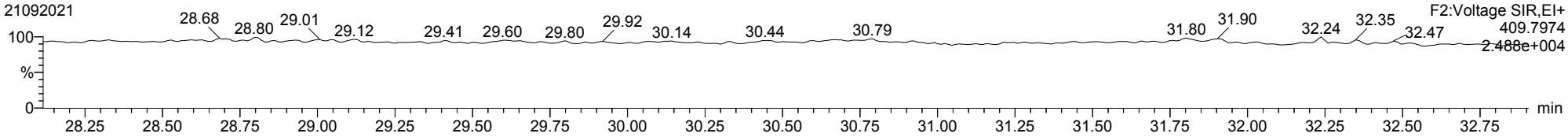

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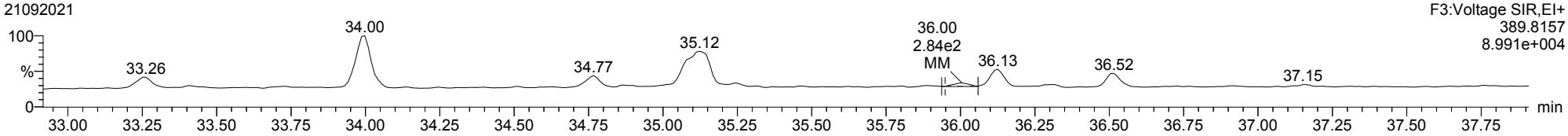
123478-HxCDD



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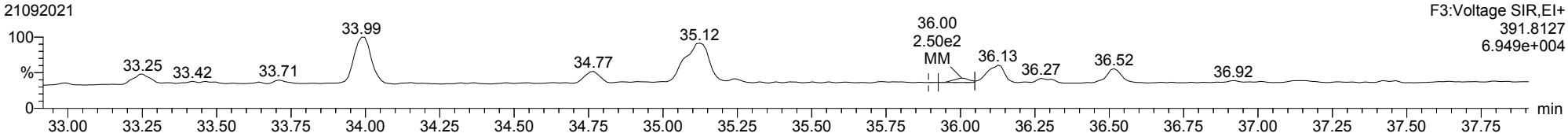

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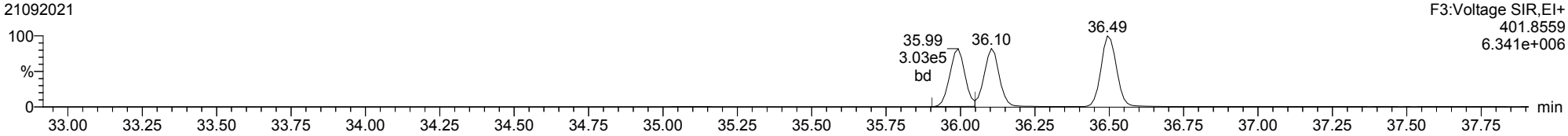

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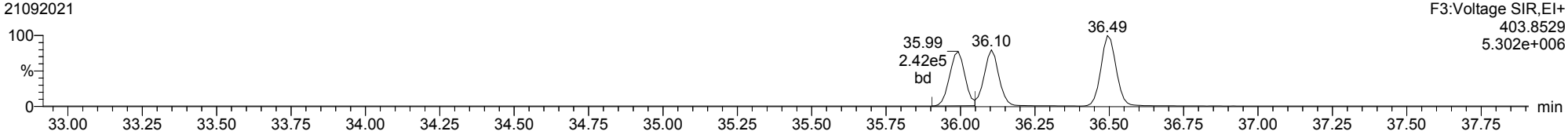

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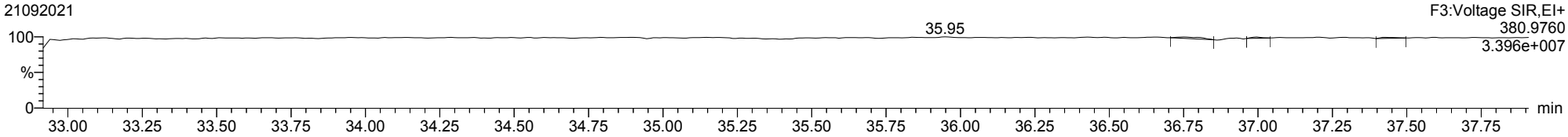

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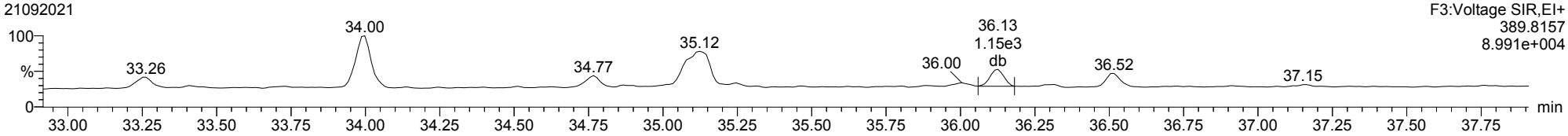

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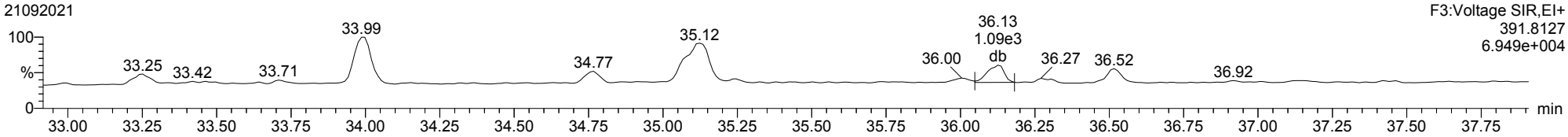

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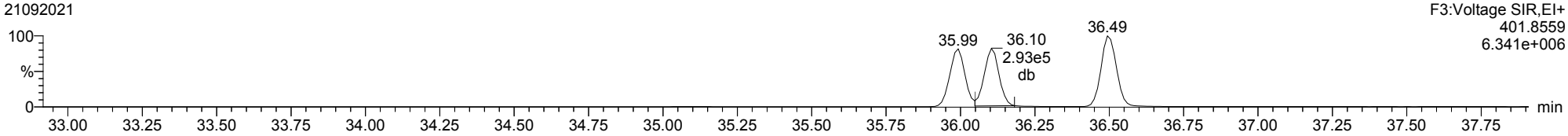

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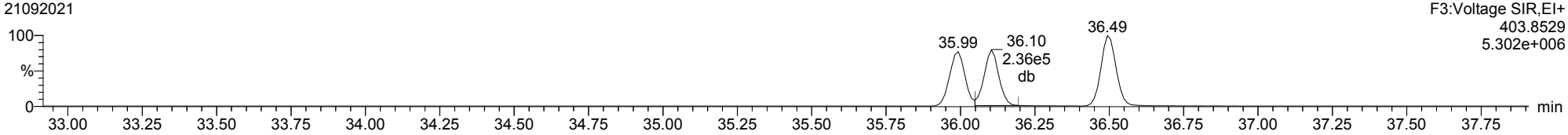

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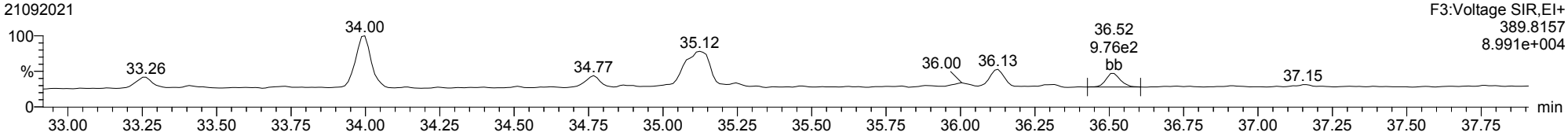

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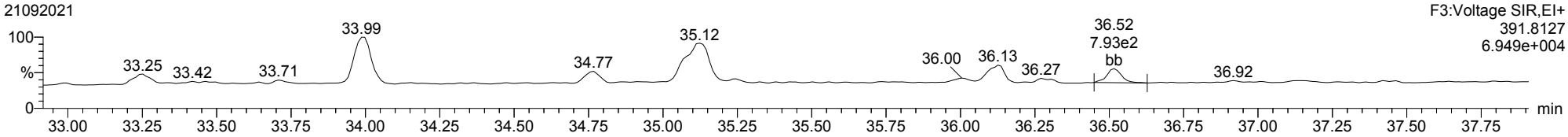

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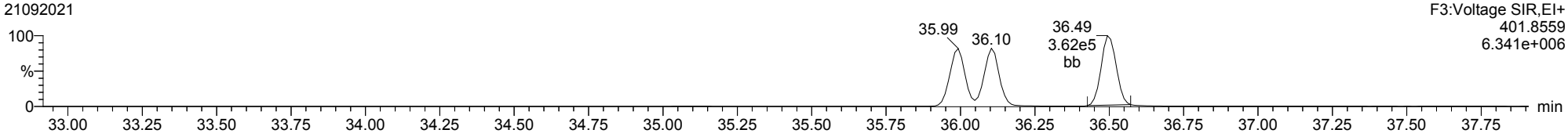

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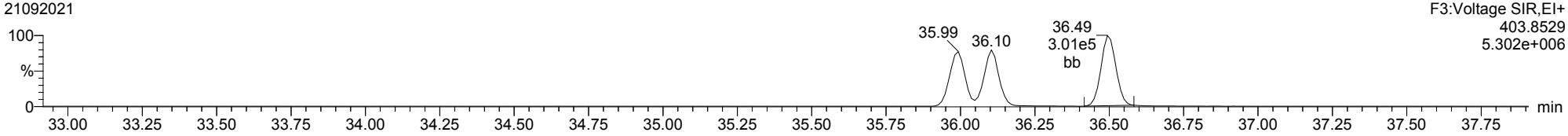

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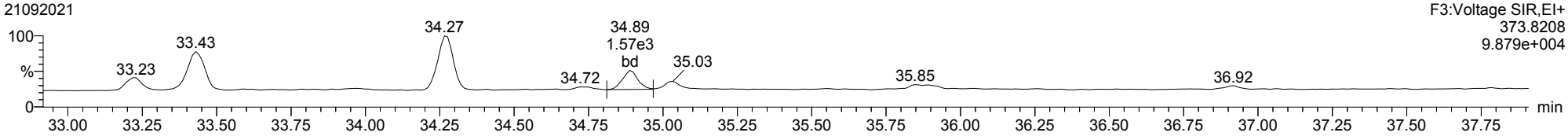

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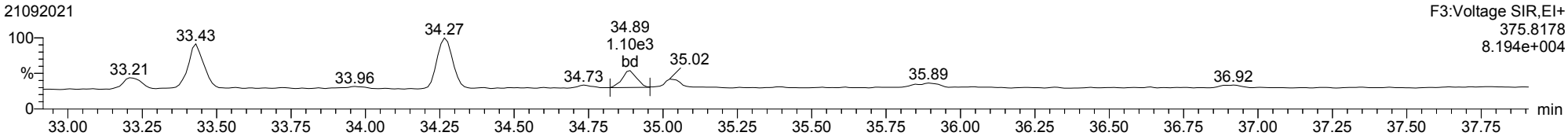

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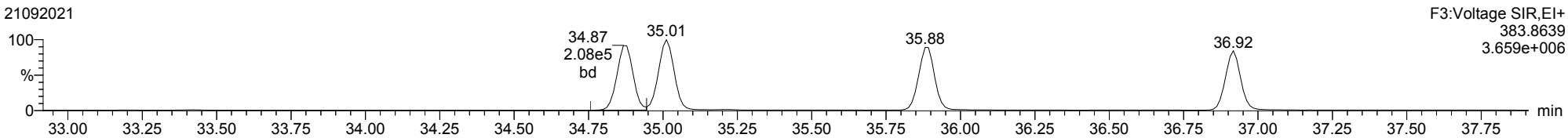

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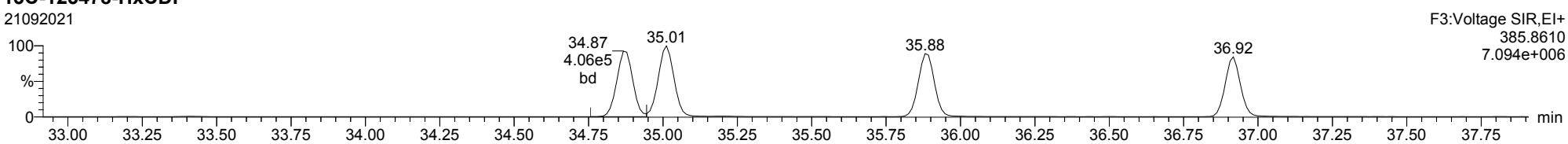

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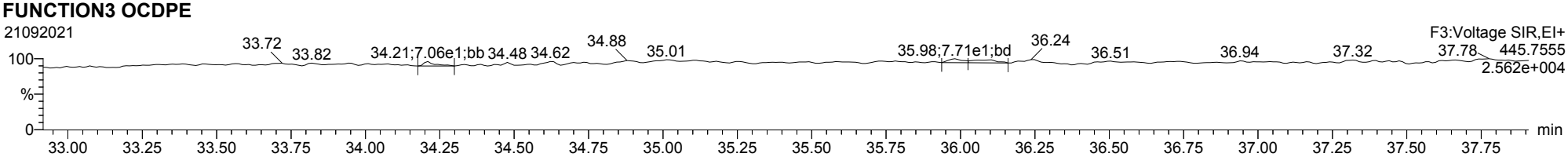

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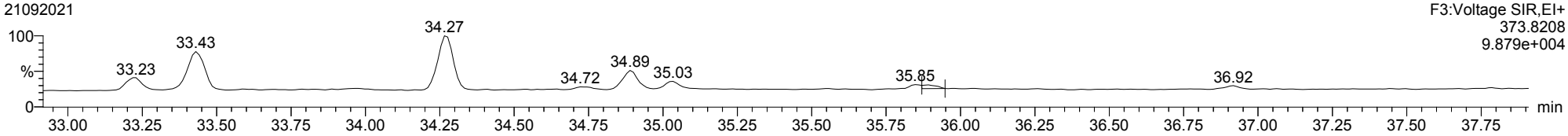

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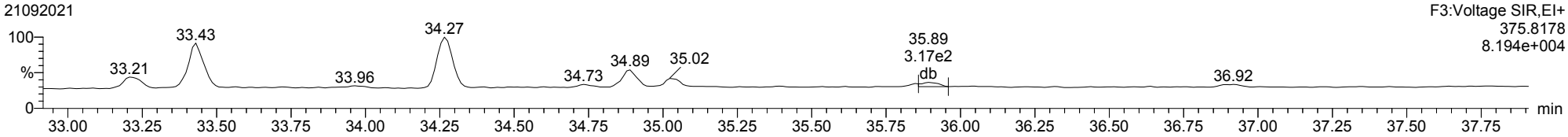

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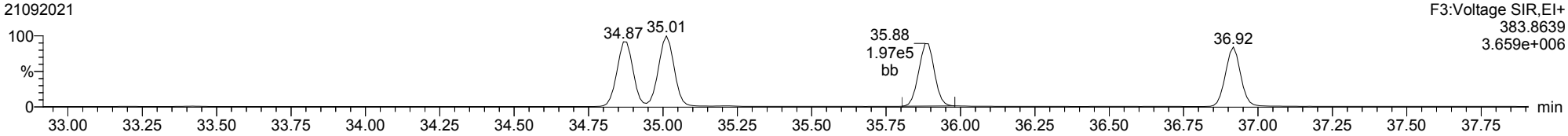

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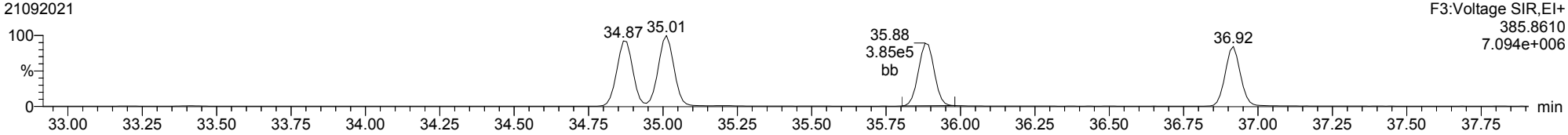

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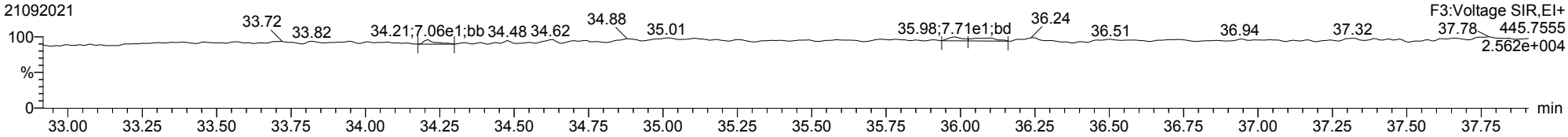

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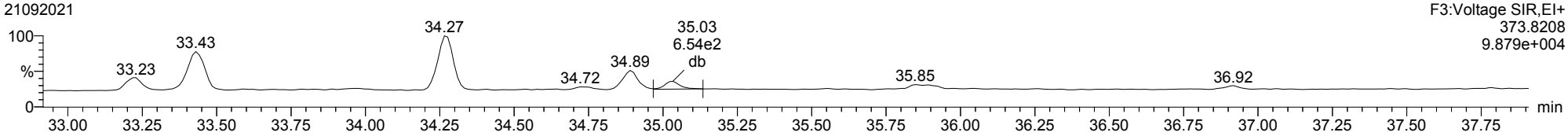

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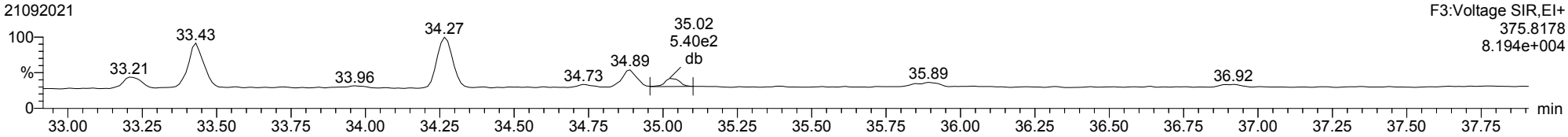

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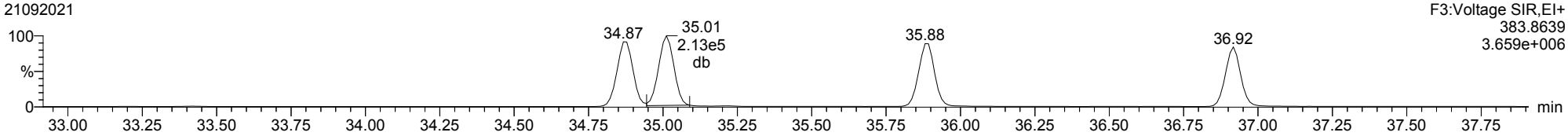

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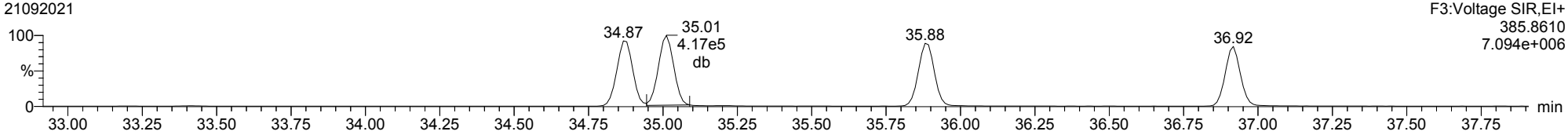

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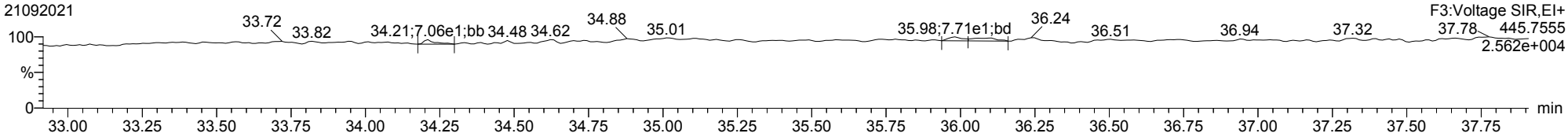

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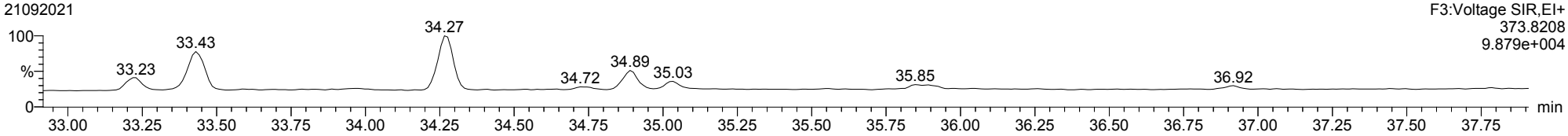

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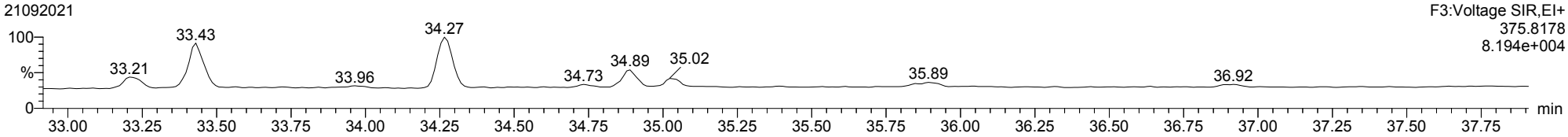

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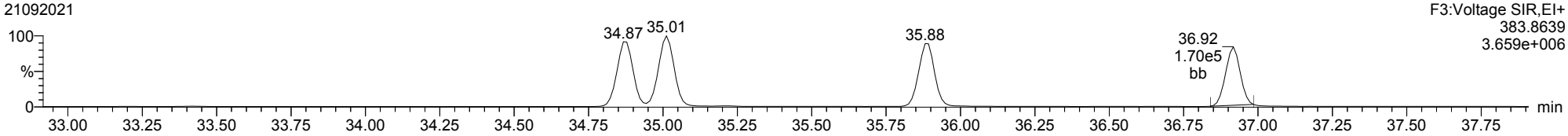

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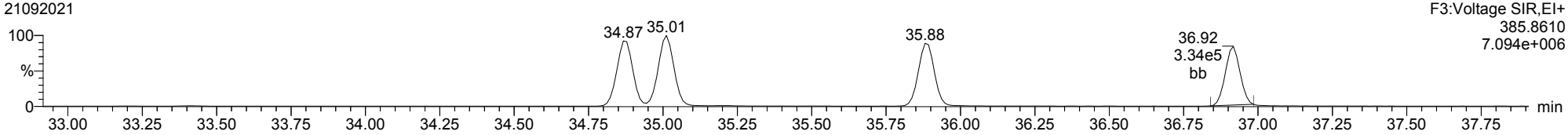

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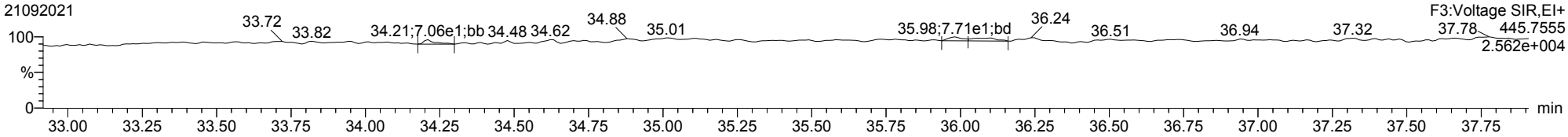

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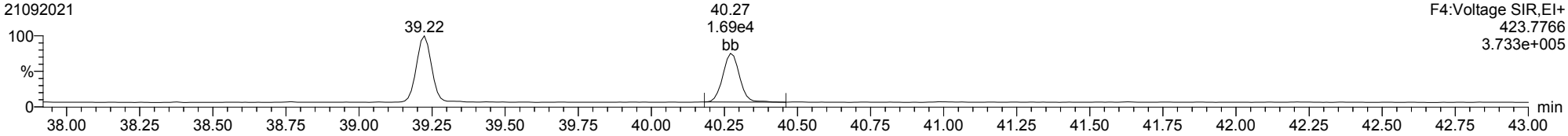

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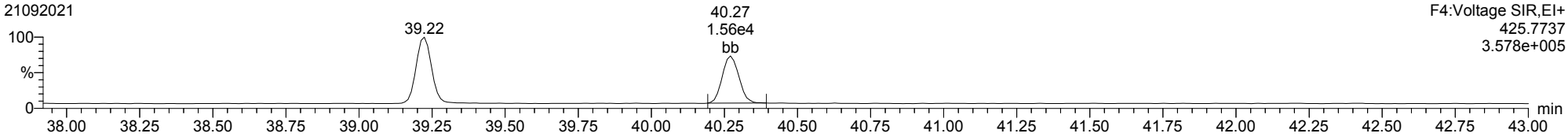

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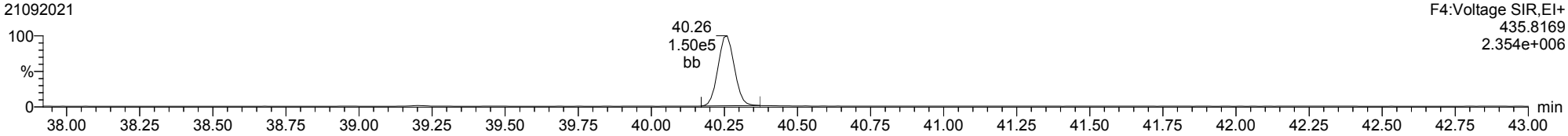

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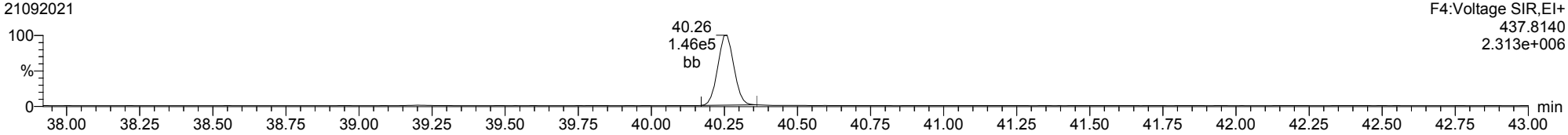

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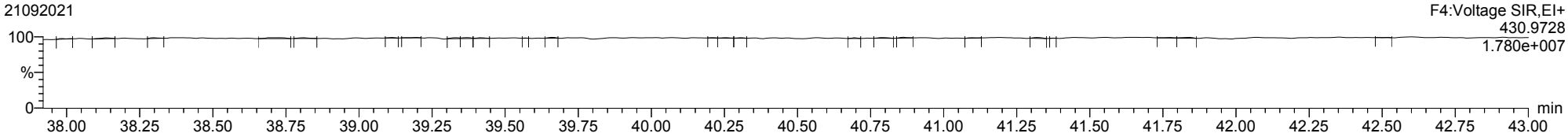

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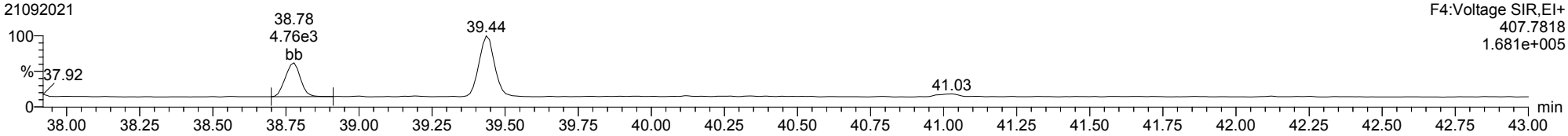

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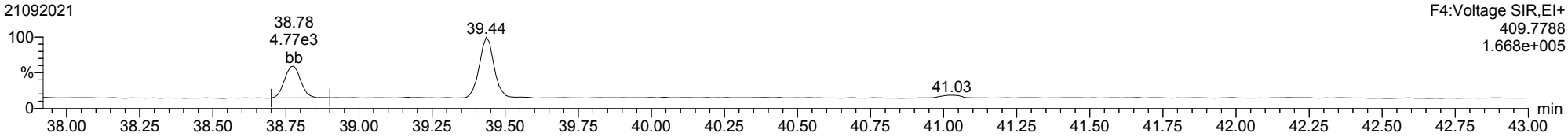

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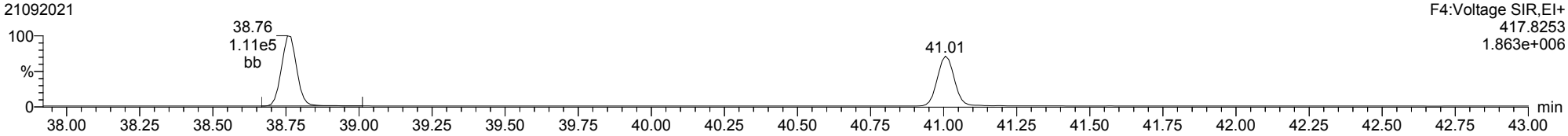

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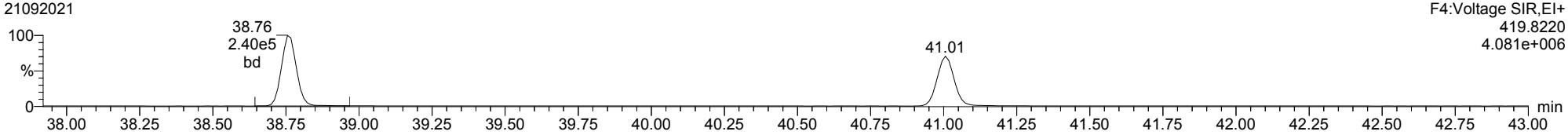

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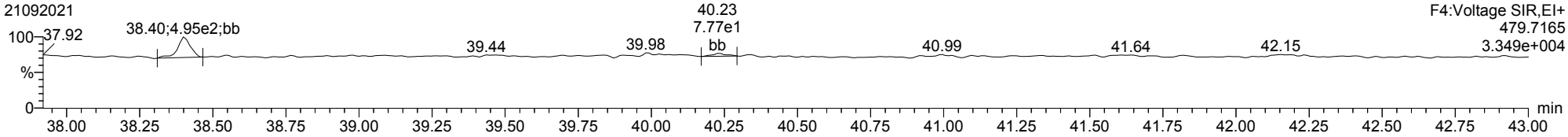

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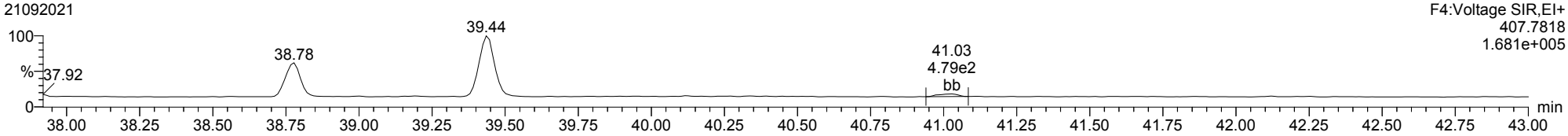

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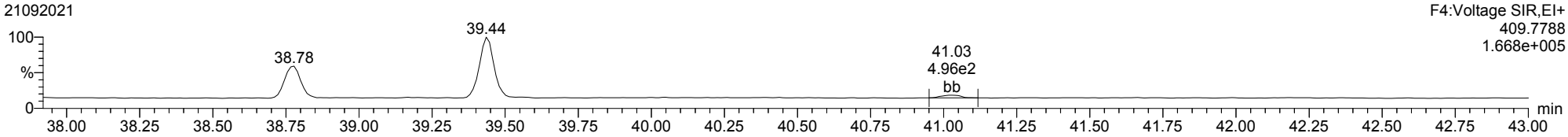

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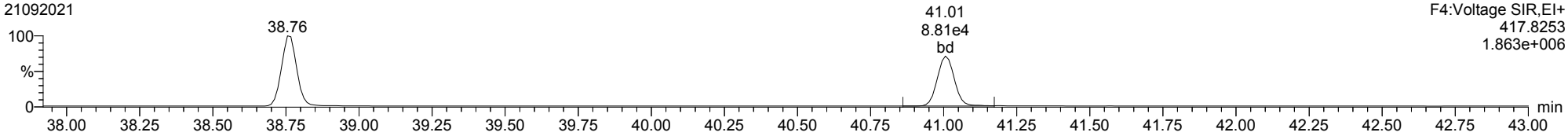

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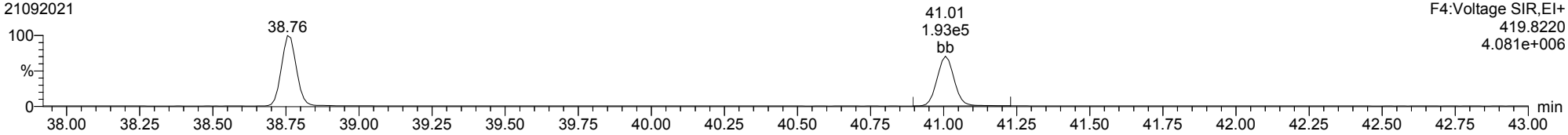

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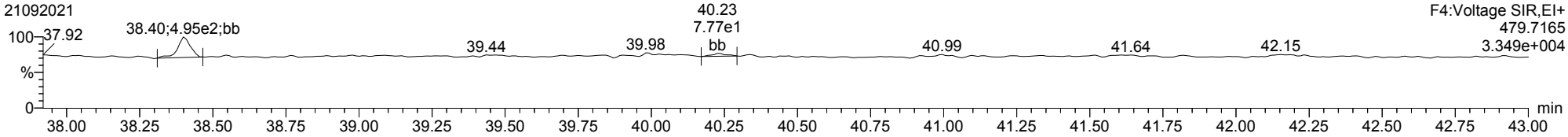

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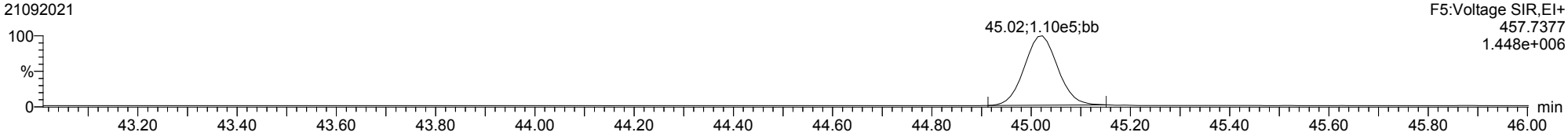

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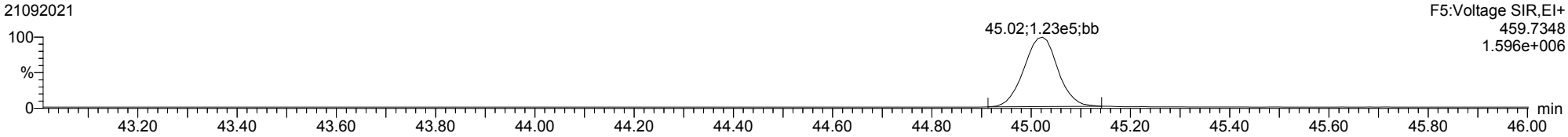

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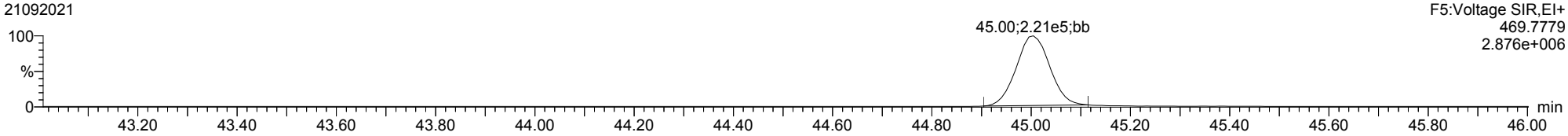

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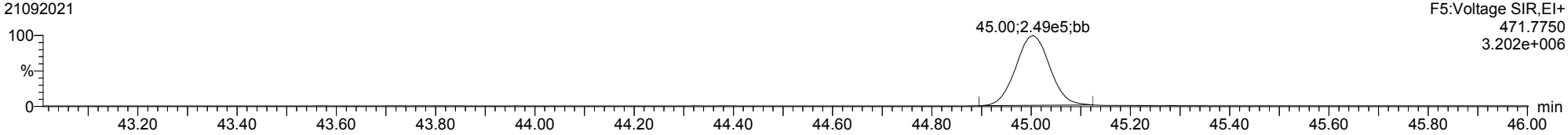
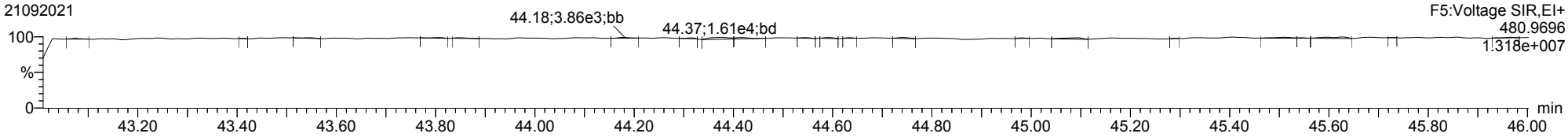


FUNCTION5 PFK



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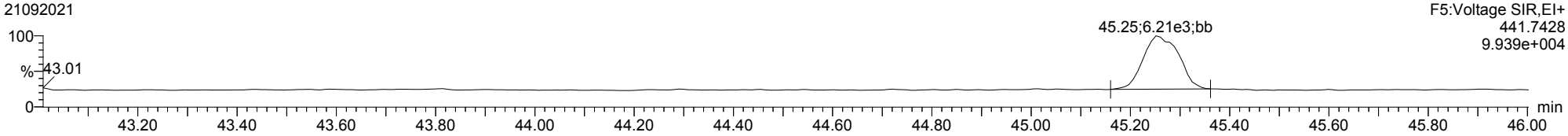

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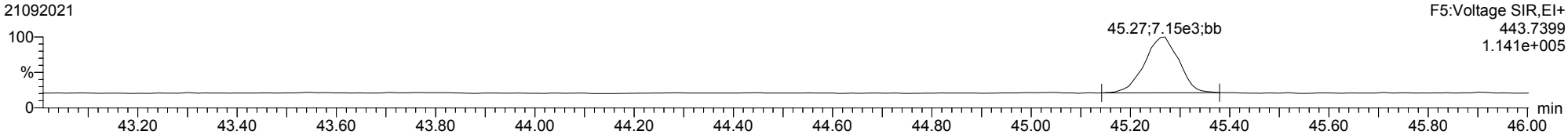
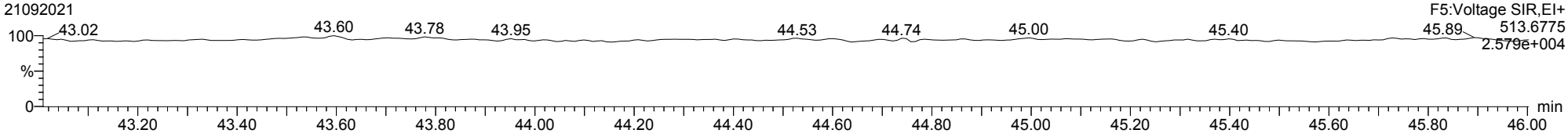


FUNCTION5 DCDPE



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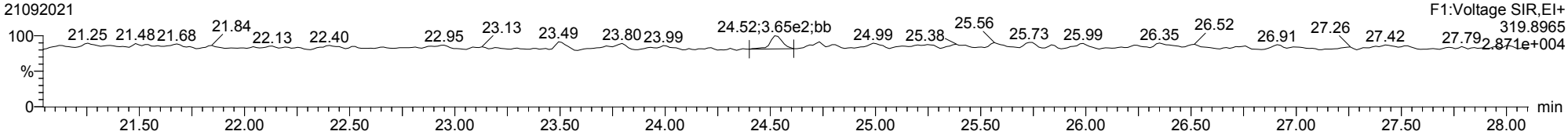
Total-tetradioxins



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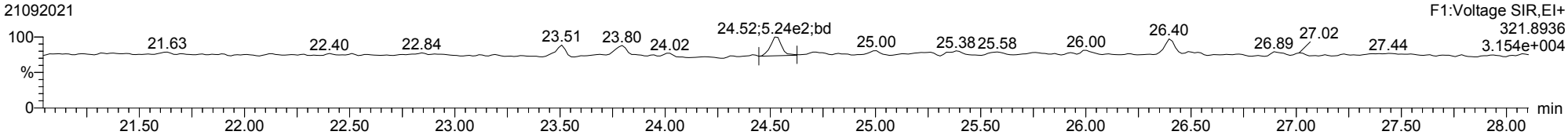

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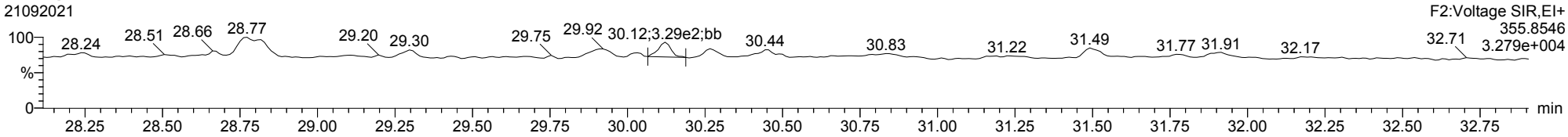
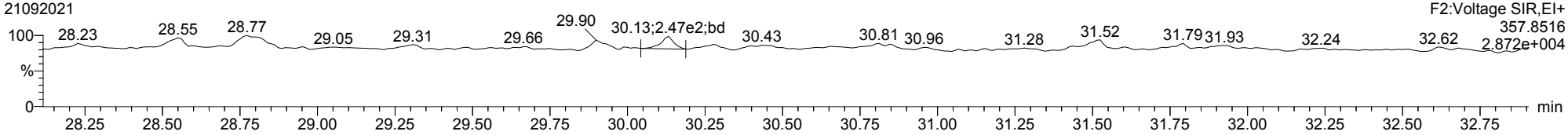
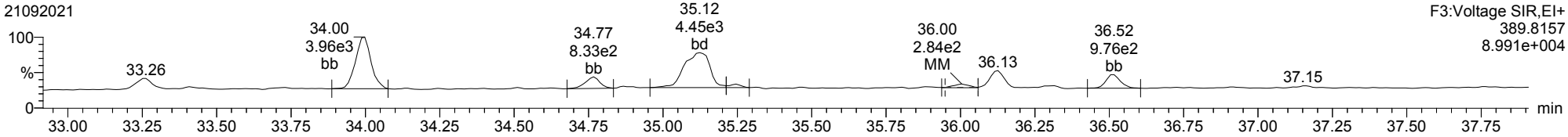


Total-pentadioxins



ID: 21G0140-07, Name: 21092021, Date: 21-Sep-2021, Time: 08:39:59, Conditions: AUTOSPEC01, User: pk

Total-hexadioxins



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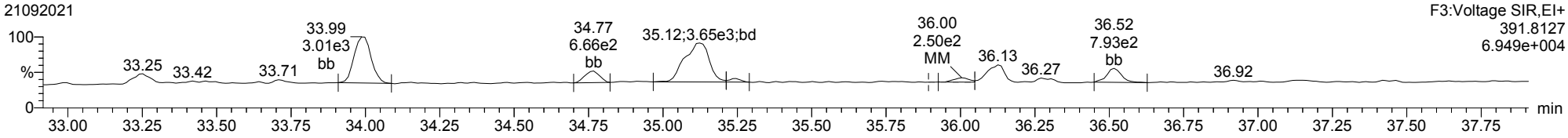

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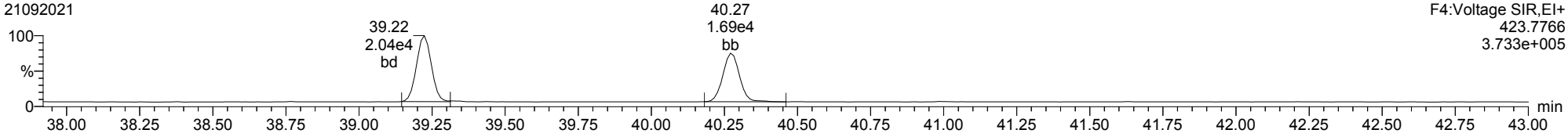

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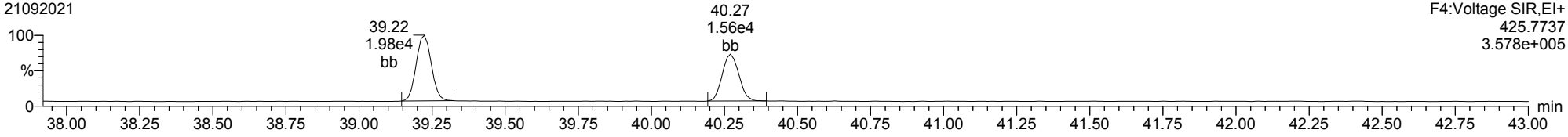
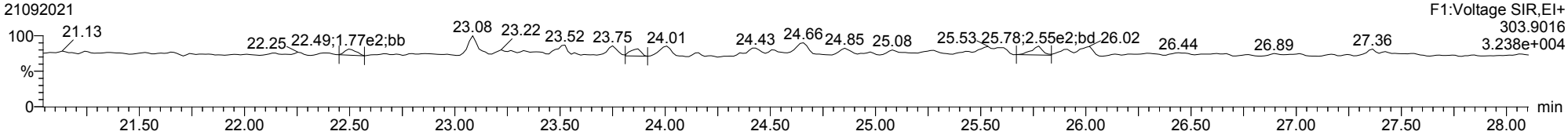


ID: 21G0140-07, Name: 21092021, Date: 21-Sep-2021, Time: 08:39:59, Conditions: AUTOSPEC01, User: pk

Total-tetrafurans



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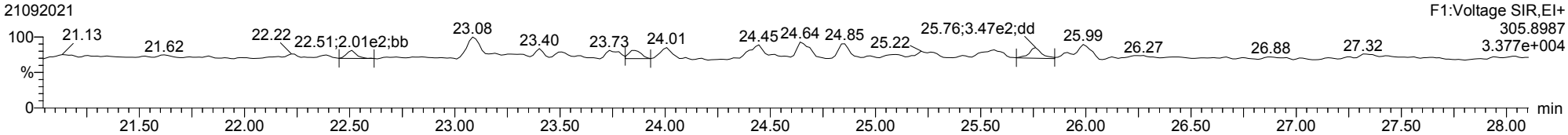

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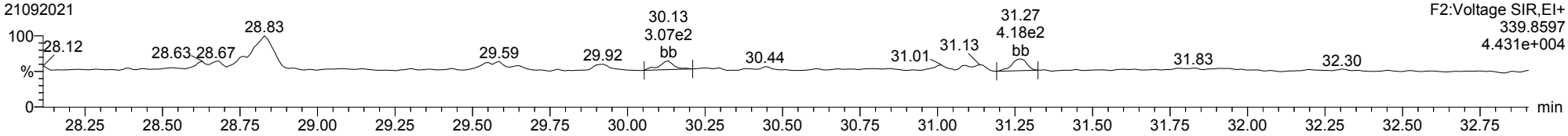

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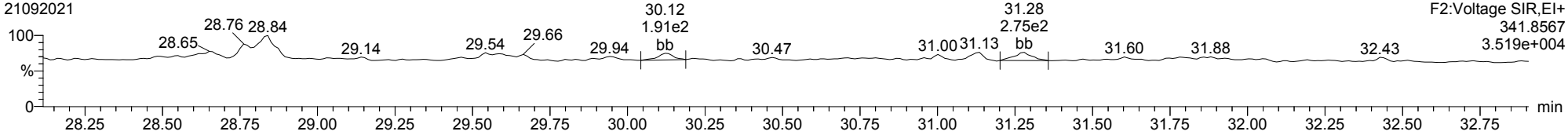

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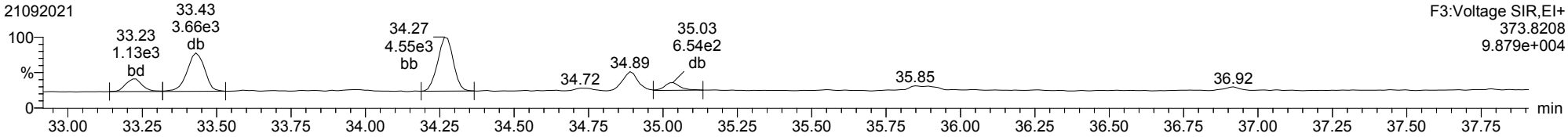
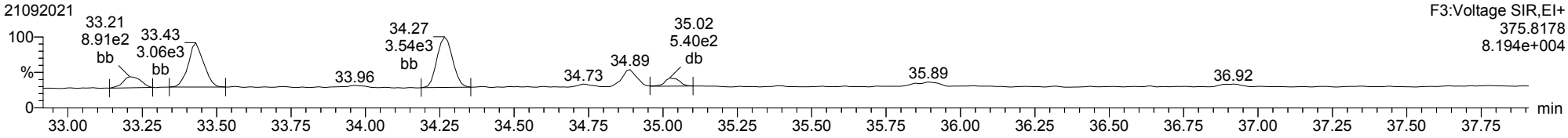
ID: 21G0140-07, Name: 21092021, Date: 21-Sep-2021, Time: 08:39:59, Conditions: AUTOSPEC01, User: pk

Total-hexafurans



Total-hexafurans



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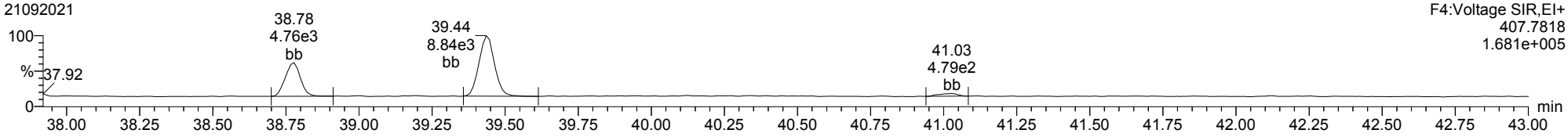

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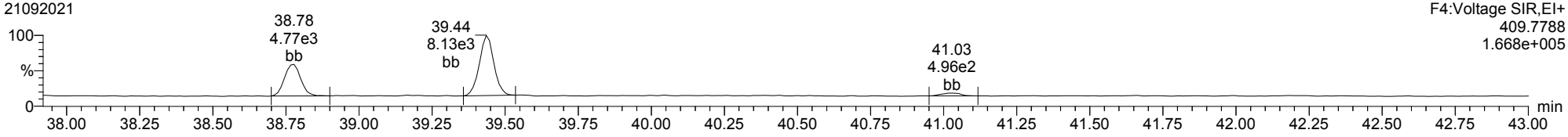

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-SC634E

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0140
Client:	Anchor QEA, LLC				
Project:	Lower Duwamish AOC4				
Matrix:	Sediment	Laboratory ID:	21G0140-08 C	File ID:	21092024
Sampled:	07/12/21 13:11	Prepared:	09/06/21 16:00	Analyzed:	09/21/21 11:26
% Solids:	71.81	Preparation:	EPA 1613	Initial/Final:	13.94 g Wet / 20 uL
Result Basis:	Dry	Sequence:	SJI0309	Calibration:	EH00030
Batch:	BJH0152	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1		0.655-0.886	0.099	0.999	ND	ng/kg	U
1746-01-6	2,3,7,8-TCDD	1		0.655-0.886	0.160	0.999	ND	ng/kg	U
57117-41-6	1,2,3,7,8-PeCDF	1		1.318-1.783	0.096	0.999	ND	ng/kg	U
57117-31-4	2,3,4,7,8-PeCDF	1	1.223	1.318-1.783	0.097	0.999	0.086	ng/kg	EMPC, J
40321-76-4	1,2,3,7,8-PeCDD	1		1.318-1.783	0.131	0.999	ND	ng/kg	U
70648-26-9	1,2,3,4,7,8-HxCDF	1		1.054-1.426	0.101	0.999	ND	ng/kg	U
57117-44-9	1,2,3,6,7,8-HxCDF	1		1.054-1.426	0.092	0.999	ND	ng/kg	U
60851-34-5	2,3,4,6,7,8-HxCDF	1		1.054-1.426	0.101	0.999	ND	ng/kg	U
72918-21-9	1,2,3,7,8,9-HxCDF	1		1.054-1.426	0.112	0.999	ND	ng/kg	U
39227-28-6	1,2,3,4,7,8-HxCDD	1		1.054-1.426	0.125	0.999	ND	ng/kg	U
57653-85-7	1,2,3,6,7,8-HxCDD	1	0.982	1.054-1.426	0.122	0.999	0.226	ng/kg	EMPC, J
19408-74-3	1,2,3,7,8,9-HxCDD	1	1.148	1.054-1.426	0.132	0.999	0.336	ng/kg	J
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	0.868	0.893-1.208	0.102	0.999	0.621	ng/kg	EMPC, J
55673-89-7	1,2,3,4,7,8,9-HpCDF	1		0.893-1.208	0.150	0.999	ND	ng/kg	U
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.076	0.893-1.208	0.177	2.50	3.04	ng/kg	B
39001-02-0	OCDF	1	0.851	0.757-1.024	0.200	2.50	1.30	ng/kg	J
3268-87-9	OCDD	1	0.935	0.757-1.024	0.656	9.99	24.9	ng/kg	B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			0.999	0.473	ng/kg
41903-57-5	Total TCDD	1	0.000			0.999	ND	ng/kg
30402-15-4	Total PeCDF	1	0.000			0.999	ND	ng/kg
36088-22-9	Total PeCDD	1	0.000			0.999	ND	ng/kg
55684-94-1	Total HxCDF	1	0.000			0.999	0.489	ng/kg
34465-46-8	Total HxCDD	1	0.000			0.999	1.36	ng/kg
38998-75-3	Total HpCDF	1	0.000			0.999	1.49	ng/kg
37871-00-4	Total HpCDD	1	0.000			0.999	7.06	ng/kg

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.126
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.306

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-SC634E

Form 2
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0140
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Matrix:	Sediment	Laboratory ID:	21G0140-08	File ID:	21092024
Sampled:	07/12/21 13:11	Prepared:	09/06/21 16:00	Analyzed:	09/21/21 11:26
Solids Wt%:	71.81	Preparation:	EPA 1613	Initial/Final:	13.94 g / 20 uL
Result Basis:	Dry	Sequence:	SJI0309	Calibration:	EH00030
Batch:	BJH0152	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.784	0.655-0.886	0.155	48.5	24 - 169 %	
13C12-2,3,7,8-TCDD		0.753	0.655-0.886	0.150	62.7	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.600	1.318-1.783	0.085	58.5	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.605	1.318-1.783	0.089	55.8	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.574	1.318-1.783	0.118	64.9	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.515	0.434-0.587	0.171	82.5	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.511	0.434-0.587	0.158	78.0	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.518	0.434-0.587	0.174	80.3	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.515	0.434-0.587	0.210	84.1	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.306	1.054-1.426	0.144	90.9	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.285	1.054-1.426	0.133	86.5	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.461	0.374-0.506	0.141	66.7	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.470	0.374-0.506	0.172	65.3	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.068	0.893-1.208	0.220	83.9	23 - 140 %	
13C12-OCDD		0.915	0.757-1.024	0.330	82.2	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.038	62.0	35 - 197 %	

* Values outside of QC limits

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Printed: Tuesday, September 21, 2021 14:04:40 Pacific Daylight Time

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Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0140-08, Name: 21092024, Date: 21-Sep-2021, Time: 11:26:42, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF					1.108		0.770	681	746								
12378-PeCDF					1.015		1.550	698	708								
23478-PeCDF	31.246	1.000	1.317e2	1.077e2	1.126	1.223	1.550	698	708	2.28e3	2.89e3	3.3	4.1	YES	bb	bd	0.043
123478-HxCDF					1.017		1.240	663	770								
234678-HxCDF					1.052		1.240	663	770								
123678-HxCDF					1.037		1.240	663	770								
123789-HxCDF					1.030		1.240	663	770								
1234678-HpCDF	38.767	1.000	6.026e2	6.942e2	1.327	0.868	1.050	577	576	1.19e4	1.06e4	20.6	18.4	YES	dd	bb	0.311
1234789-HpCDF					1.283		1.050	577	576								
OCDF	45.279	1.006	9.112e2	1.070e3	1.447	0.851	0.890	553	700	1.21e4	1.66e4	21.8	23.7	NO	bb	bb	0.651
2378-TCDD					0.920		0.770	1206	699								
12378-PeCDD					0.995		1.550	667	514								
123478-HxCDD					1.027		1.240	805	774								
123678-HxCDD	36.115	1.000	2.583e2	2.631e2	1.009	0.982	1.240	805	774	4.28e3	4.12e3	5.3	5.3	YES	bb	bb	0.113
123789-HxCDD	36.516	1.011	3.851e2	3.355e2	0.950	1.148	1.240	805	774	7.08e3	6.46e3	8.8	8.3	NO	bb	bb	0.168
1234678-HpCDD	40.271	1.000	2.274e3	2.114e3	1.068	1.076	1.050	757	546	3.78e4	3.20e4	49.9	58.6	NO	bb	bb	1.523
OCDD	45.023	1.000	1.497e4	1.601e4	1.181	0.935	0.890	2989	368	1.93e5	1.92e5	64.4	520.9	NO	bb	bb	12.464
13C-2378-TCDF	25.746	1.007	2.171e5	2.770e5	1.427	0.784	0.770	2699	1495	3.43e6	4.40e6	1270.9	2940.7	NO	bb	bb	48.496
13C-12378-PeCDF	29.909	1.170	3.337e5	2.085e5	1.297	1.600	1.550	1145	940	5.30e6	3.26e6	4630.3	3467.1	NO	bb	bb	58.520
13C-23478-PeCDF	31.246	1.222	3.034e5	1.891e5	1.236	1.605	1.550	1145	940	4.74e6	2.97e6	4136.0	3163.5	NO	bb	bb	55.767
13C-123478-HxCDF	34.878	0.955	1.772e5	3.440e5	1.242	0.515	0.510	1328	1594	2.85e6	5.45e6	2149.3	3419.8	NO	bd	bd	82.512
13C-123678-HxCDF	35.012	0.959	1.801e5	3.526e5	1.343	0.511	0.510	1328	1594	3.04e6	5.87e6	2285.9	3681.3	NO	db	db	78.007
13C-234678-HxCDF	35.892	0.983	1.692e5	3.268e5	1.215	0.518	0.510	1328	1594	2.74e6	5.29e6	2065.7	3317.9	NO	bb	bb	80.322
13C-123789-HxCDF	36.917	1.011	1.465e5	2.844e5	1.008	0.515	0.510	1328	1594	2.54e6	4.95e6	1913.4	3107.3	NO	bb	bb	84.139
13C-1234678-HpCDF	38.767	1.062	9.919e4	2.150e5	0.926	0.461	0.440	878	924	1.61e6	3.50e6	1830.6	3788.4	NO	bd	bd	66.713
13C-1234789-HpCDF	41.006	1.123	8.046e4	1.711e5	0.758	0.470	0.440	878	924	1.15e6	2.54e6	1309.5	2746.6	NO	bb	bd	65.281
13C-1234-TCDD	25.564	0.000	3.066e5	4.076e5	1.000	0.752	0.770	2137	1030	4.87e6	6.45e6	2276.8	6256.5	NO	bb	bb	100.000
13C-2378-TCDD	26.381	1.032	2.149e5	2.854e5	1.116	0.753	0.770	2137	1030	3.33e6	4.45e6	1557.5	4319.3	NO	bb	bb	62.747
13C-12378-PeCDD	31.491	1.232	2.076e5	1.319e5	0.732	1.574	1.550	918	716	3.31e6	2.13e6	3609.3	2970.0	NO	bb	bb	64.949
13C-123478-HxCDD	35.993	0.986	2.511e5	1.923e5	0.960	1.306	1.240	939	972	4.18e6	3.21e6	4454.1	3305.0	NO	bd	bd	90.887
13C-123678-HxCDD	36.104	0.989	2.574e5	2.004e5	1.041	1.285	1.240	939	972	4.32e6	3.37e6	4602.5	3468.8	NO	db	db	86.477
13C-1234678-HpCDD	40.259	1.103	1.394e5	1.304e5	0.632	1.068	1.050	1131	792	2.14e6	2.05e6	1891.4	2589.1	NO	bd	bb	83.924
13C-OCDD	45.005	1.233	2.012e5	2.198e5	0.504	0.915	0.890	1622	672	2.48e6	2.76e6	1531.8	4100.4	NO	bb	bb	164.410
13C-123789-HxCDD	36.505	0.000	2.832e5	2.252e5	1.000	1.258	1.240	939	972	4.61e6	3.66e6	4904.0	3762.4	NO	bb	bb	100.000
37CL-2378-TCDD	26.396	1.033	1.920e5		1.084			773		2.95e6		3817.5			bb		24.807

Dataset: T:\Autospec\Processed Data Batch\210920D3.qld
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ID: 21G0140-08, Name: 21092024, Date: 21-Sep-2021, Time: 11:26:42, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF					1.425		0.770	681	746								
1289-TCDF					1.043		0.770	681	746								
13468-PECDF					1.376		1.550	622	796								
12389-PECDF					1.000		1.550	698	708								
123468-HXCDF					1.087		1.240	663	770								
1368-TCDD	23.493	0.891	7.806e1	1.454e2	0.923	0.537	0.770	1206	699	2.20e3	3.40e3	1.8	4.9	YES	bd	bb	0.048
1289-TCDD					0.794		0.770	1206	699								
12479-PECDD					1.843		1.550	667	514								
12389-PECDD					1.154		1.550	667	514								
124679-HXCDD	33.998	0.945	1.385e3	1.173e3	1.125	1.181	1.240	805	774	2.26e4	1.73e4	28.1	22.4	NO	bb	bb	0.513
1234679-HPCDD	39.223	0.974	3.175e3	3.401e3	1.211	0.933	1.050	757	546	5.59e4	5.68e4	73.9	104.1	NO	bb	bb	2.013
Total-tetrafurans			6.176e2		1.192			681		9.33e3							0.237
Total-penta1			0.000e0					622		0.00e0							
Total-pentafurans			0.000e0		1.047			698		0.00e0							
Total-hexafurans			7.345e2		1.045			663		1.20e4							0.245
Total-heptafurans			1.414e3		1.305			577		2.65e4							0.745
Total-Furans			3.677e3		1.158			681		5.98e4							1.877
Total-tetradioxins			0.000e0		0.879			1206		0.00e0							
Total-pentadioxins			0.000e0		1.331			667		0.00e0							
Total-hexadioxins			1.770e3		1.028			805		2.97e4							0.681
Total-heptadioxins			5.449e3		1.140			757		9.37e4							3.535
Total-Dioxins			2.219e4		1.092			1206		3.16e5							16.680
Total-TEQ			2.587e4					1206		3.76e5							18.557
FUNCTION1 PFK			1.569e7					577421		1.19e8							
FUNCTION2 PFK			1.456e6					495048		2.85e7							0.000
FUNCTION3 PFK			2.184e6					543648		4.44e7							0.000
FUNCTION4 PFK			4.117e6					338265		3.68e7							
FUNCTION5 PFK			2.846e5					183918		7.73e6							
FUNCTION1 HXCD...			6.404e2					504		7.44e3							0.000
FUNCTION1 HPCD...			8.123e2					677		1.33e4							0.000
FUNCTION2 HPCD...			2.937e2					650		3.91e3							0.000
FUNCTION3 OCDPE			2.897e2					544		4.76e3							0.000
FUNCTION4 NCDPE			1.058e3					578		1.94e4							0.000
FUNCTION5 DCDPE			7.705e1					468		1.60e3							0.000

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

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TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	24.43	1.552e2	2.083e2	1.192	0.75	0.77	4.6	YES	NO	bd	bb	0.062
2	Total-tetrafurans	23.10	4.624e2	5.686e2	1.192	0.81	0.77	9.1	YES	NO	bb	bd	0.175

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-hexafurans	34.25	4.911e2	3.549e2	1.045	1.38	1.24	12.1	YES	NO	bb	bb	0.164
2	Total-hexafurans	33.44	2.433e2	1.757e2	1.045	1.38	1.24	5.9	YES	NO	bb	bb	0.081

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-heptafurans	39.44	1.414e3	1.338e3	1.305	1.06	1.05	45.9	YES	NO	bb	bb	0.745

Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	24.43	1.552e2	2.083e2	1.192	0.75	0.77	4.6	YES	NO	bd	bb	0.062
2	Total-tetrafurans	23.10	4.624e2	5.686e2	1.192	0.81	0.77	9.1	YES	NO	bb	bd	0.175
3	Total-hexafurans	34.25	4.911e2	3.549e2	1.045	1.38	1.24	12.1	YES	NO	bb	bb	0.164
4	Total-hexafurans	33.44	2.433e2	1.757e2	1.045	1.38	1.24	5.9	YES	NO	bb	bb	0.081
5	Total-heptafurans	39.44	1.414e3	1.338e3	1.305	1.06	1.05	45.9	YES	NO	bb	bb	0.745
6	OCDF	45.28	9.112e2	1.070e3	1.447	0.85	0.89	21.8	YES	NO	bb	bb	0.651

Dataset: T:\Autospec\Processed Data Batch\210920D3.qld
Last Altered: Tuesday, September 21, 2021 13:59:10 Pacific Daylight Time
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TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	124679-HXCDD	34.00	1.385e3	1.173e3	1.125	1.18	1.24	28.1	YES	NO	bb	bb	0.513
2	123789-HxCDD	36.52	3.851e2	3.355e2	0.950	1.15	1.24	8.8	YES	NO	bb	bb	0.168

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	40.27	2.274e3	2.114e3	1.068	1.08	1.05	49.9	YES	NO	bb	bb	1.523
2	1234679-HPCDD	39.22	3.175e3	3.401e3	1.211	0.93	1.05	73.9	YES	NO	bb	bb	2.013

Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	124679-HXCDD	34.00	1.385e3	1.173e3	1.125	1.18	1.24	28.1	YES	NO	bb	bb	0.513
2	123789-HxCDD	36.52	3.851e2	3.355e2	0.950	1.15	1.24	8.8	YES	NO	bb	bb	0.168
3	OCDD	45.02	1.497e4	1.601e4	1.181	0.94	0.89	64.4	YES	NO	bb	bb	12.464
4	1234678-HpCDD	40.27	2.274e3	2.114e3	1.068	1.08	1.05	49.9	YES	NO	bb	bb	1.523
5	1234679-HPCDD	39.22	3.175e3	3.401e3	1.211	0.93	1.05	73.9	YES	NO	bb	bb	2.013

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	24.43	1.552e2	2.083e2	1.192	0.75	0.77	4.6	YES	NO	bd	bb	0.062
2	Total-tetrafurans	23.10	4.624e2	5.686e2	1.192	0.81	0.77	9.1	YES	NO	bb	bd	0.175
3	Total-hexafurans	34.25	4.911e2	3.549e2	1.045	1.38	1.24	12.1	YES	NO	bb	bb	0.164
4	Total-hexafurans	33.44	2.433e2	1.757e2	1.045	1.38	1.24	5.9	YES	NO	bb	bb	0.081
5	Total-heptafurans	39.44	1.414e3	1.338e3	1.305	1.06	1.05	45.9	YES	NO	bb	bb	0.745
6	OCDF	45.28	9.112e2	1.070e3	1.447	0.85	0.89	21.8	YES	NO	bb	bb	0.651
7	124679-HXCDD	34.00	1.385e3	1.173e3	1.125	1.18	1.24	28.1	YES	NO	bb	bb	0.513
8	123789-HxCDD	36.52	3.851e2	3.355e2	0.950	1.15	1.24	8.8	YES	NO	bb	bb	0.168
9	OCDD	45.02	1.497e4	1.601e4	1.181	0.94	0.89	64.4	YES	NO	bb	bb	12.464
10	1234678-HpCDD	40.27	2.274e3	2.114e3	1.068	1.08	1.05	49.9	YES	NO	bb	bb	1.523
11	1234679-HPCDD	39.22	3.175e3	3.401e3	1.211	0.93	1.05	73.9	YES	NO	bb	bb	2.013

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PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	22.81	4.550e4					1.2	NO		bb		
2	FUNCTION1 PFK	22.74	9.964e3					0.8	NO		bb		
3	FUNCTION1 PFK	22.68	1.033e4					0.6	NO		db		
4	FUNCTION1 PFK	22.62	2.132e4					1.1	NO		bd		
5	FUNCTION1 PFK	22.40	3.181e4					1.5	NO		db		
6	FUNCTION1 PFK	22.19	6.670e5					8.1	YES		dd		
7	FUNCTION1 PFK	22.10	4.891e5					9.3	YES		dd		
8	FUNCTION1 PFK	21.98	6.073e5					13.9	YES		dd		
9	FUNCTION1 PFK	21.95	6.275e5					14.2	YES		dd		
10	FUNCTION1 PFK	21.84	2.135e6					17.6	YES		dd		
11	FUNCTION1 PFK	21.65	7.695e5					22.9	YES		dd		
12	FUNCTION1 PFK	21.56	3.902e6					25.5	YES		dd		
13	FUNCTION1 PFK	21.33	9.878e5					29.4	YES		dd		
14	FUNCTION1 PFK	21.18	4.681e6					35.3	YES		bd		
15	FUNCTION1 PFK	25.96	3.737e3					0.4	NO		bb		
16	FUNCTION1 PFK	25.88	4.961e4					2.1	NO		bb		
17	FUNCTION1 PFK	25.82	1.266e4					1.0	NO		bb		
18	FUNCTION1 PFK	25.67	1.481e4					0.9	NO		db		
19	FUNCTION1 PFK	25.62	2.526e4					1.0	NO		bd		
20	FUNCTION1 PFK	25.47	1.356e4					0.8	NO		bb		
21	FUNCTION1 PFK	25.37	1.142e4					0.8	NO		db		
22	FUNCTION1 PFK	25.22	4.827e4					1.1	NO		bd		
23	FUNCTION1 PFK	24.70	4.168e4					1.2	NO		bb		
24	FUNCTION1 PFK	24.28	6.856e4					1.3	NO		bb		
25	FUNCTION1 PFK	24.17	1.619e4					1.0	NO		db		
26	FUNCTION1 PFK	24.11	1.980e4					1.3	NO		bd		
27	FUNCTION1 PFK	24.05	6.496e4					1.5	NO		bb		
28	FUNCTION1 PFK	23.61	1.993e4					1.2	NO		bb		
29	FUNCTION1 PFK	23.25	2.227e4					0.7	NO		bb		
30	FUNCTION1 PFK	23.05	5.650e4					1.8	NO		bb		
31	FUNCTION1 PFK	27.86	5.435e4					1.5	NO		bb		
32	FUNCTION1 PFK	27.11	1.821e4					1.1	NO		bb		
33	FUNCTION1 PFK	27.05	3.904e4					1.2	NO		bb		
34	FUNCTION1 PFK	26.86	3.410e3					0.4	NO		bb		
35	FUNCTION1 PFK	26.61	4.125e3					0.5	NO		bb		
36	FUNCTION1 PFK	26.55	5.900e4					0.7	NO		bb		
37	FUNCTION1 PFK	26.40	1.950e4					0.8	NO		db		

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PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION1 PFK	26.35	6.156e3					0.5	NO		bd		
39	FUNCTION1 PFK	26.21	1.053e4					0.6	NO		bb		

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PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	28.56	1.895e3					0.0	NO		bb		0.000
2	FUNCTION2 PFK	28.45	1.086e5					3.5	YES		db		0.000
3	FUNCTION2 PFK	28.38	2.450e5					5.2	YES		dd		0.000
4	FUNCTION2 PFK	28.26	1.844e5					6.2	YES		dd		0.000
5	FUNCTION2 PFK	28.20	1.623e5					6.7	YES		dd		0.000
6	FUNCTION2 PFK	28.15	1.542e5					7.3	YES		bd		0.000
7	FUNCTION2 PFK	31.29	5.914e3					0.7	NO		bb		0.000
8	FUNCTION2 PFK	31.11	1.783e3					0.3	NO		bb		0.000
9	FUNCTION2 PFK	30.66	1.708e4					0.9	NO		bb		0.000
10	FUNCTION2 PFK	30.53	1.171e4					0.6	NO		bb		0.000
11	FUNCTION2 PFK	30.35	1.242e4					0.8	NO		bb		0.000
12	FUNCTION2 PFK	30.22	2.409e4					1.0	NO		db		0.000
13	FUNCTION2 PFK	30.15	3.058e4					1.5	NO		dd		0.000
14	FUNCTION2 PFK	30.08	9.703e3					0.9	NO		bd		0.000
15	FUNCTION2 PFK	30.01	3.849e4					1.8	NO		bb		0.000
16	FUNCTION2 PFK	29.93	7.688e3					0.6	NO		bb		0.000
17	FUNCTION2 PFK	29.85	1.080e4					1.0	NO		bb		0.000
18	FUNCTION2 PFK	29.71	4.007e4					0.9	NO		bb		0.000
19	FUNCTION2 PFK	29.36	1.354e4					1.0	NO		bb		0.000
20	FUNCTION2 PFK	29.26	3.302e4					1.5	NO		bb		0.000
21	FUNCTION2 PFK	29.16	8.184e3					0.8	NO		db		0.000
22	FUNCTION2 PFK	29.13	1.498e4					0.9	NO		bd		0.000
23	FUNCTION2 PFK	32.85	1.277e4					0.9	NO		db		0.000
24	FUNCTION2 PFK	32.75	4.844e4					1.8	NO		bd		0.000
25	FUNCTION2 PFK	32.68	3.150e4					1.7	NO		db		0.000
26	FUNCTION2 PFK	32.55	1.044e5					2.0	NO		bd		0.000
27	FUNCTION2 PFK	32.45	2.705e3					0.5	NO		bb		0.000
28	FUNCTION2 PFK	32.18	8.053e4					2.5	NO		db		0.000
29	FUNCTION2 PFK	32.12	5.996e3					0.6	NO		bd		0.000
30	FUNCTION2 PFK	32.03	1.019e4					0.8	NO		bb		0.000
31	FUNCTION2 PFK	31.93	1.598e3					0.3	NO		bb		0.000
32	FUNCTION2 PFK	31.88	7.469e3					0.7	NO		bb		0.000
33	FUNCTION2 PFK	31.78	4.902e3					0.5	NO		bb		0.000
34	FUNCTION2 PFK	31.60	9.211e3					0.8	NO		bb		0.000

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	33.10	1.001e5					6.4	YES		dd		0.000
2	FUNCTION3 PFK	33.05	8.927e4					5.4	YES		dd		0.000
3	FUNCTION3 PFK	33.03	1.101e5					5.6	YES		bd		0.000
4	FUNCTION3 PFK	34.57	7.088e3					0.8	NO		db		0.000
5	FUNCTION3 PFK	34.51	3.119e4					1.2	NO		dd		0.000
6	FUNCTION3 PFK	34.47	1.722e4					1.1	NO		bd		0.000
7	FUNCTION3 PFK	34.41	7.479e3					0.8	NO		bb		0.000
8	FUNCTION3 PFK	34.27	9.584e3					0.8	NO		bb		0.000
9	FUNCTION3 PFK	34.21	1.956e4					1.0	NO		db		0.000
10	FUNCTION3 PFK	34.18	1.486e4					1.2	NO		bd		0.000
11	FUNCTION3 PFK	34.09	5.378e3					0.5	NO		bb		0.000
12	FUNCTION3 PFK	34.01	1.885e3					0.3	NO		bb		0.000
13	FUNCTION3 PFK	33.83	1.201e4					0.8	NO		bb		0.000
14	FUNCTION3 PFK	33.65	9.541e4					1.4	NO		db		0.000
15	FUNCTION3 PFK	33.53	6.832e4					2.6	NO		dd		0.000
16	FUNCTION3 PFK	33.39	2.216e5					3.8	YES		dd		0.000
17	FUNCTION3 PFK	33.31	1.508e5					4.9	YES		dd		0.000
18	FUNCTION3 PFK	33.26	1.215e5					5.5	YES		dd		0.000
19	FUNCTION3 PFK	33.13	4.174e5					6.6	YES		dd		0.000
20	FUNCTION3 PFK	36.34	5.102e3					0.3	NO		bb		0.000
21	FUNCTION3 PFK	36.01	2.644e3					0.4	NO		bb		0.000
22	FUNCTION3 PFK	35.94	8.734e3					0.8	NO		bb		0.000
23	FUNCTION3 PFK	35.86	2.495e4					1.3	NO		bb		0.000
24	FUNCTION3 PFK	35.78	5.901e3					0.6	NO		bb		0.000
25	FUNCTION3 PFK	35.74	3.704e4					1.6	NO		db		0.000
26	FUNCTION3 PFK	35.64	1.013e5					2.5	NO		bd		0.000
27	FUNCTION3 PFK	35.58	1.557e4					1.0	NO		bb		0.000
28	FUNCTION3 PFK	35.40	9.997e3					0.7	NO		bb		0.000
29	FUNCTION3 PFK	35.20	5.162e3					0.6	NO		bb		0.000
30	FUNCTION3 PFK	35.16	4.766e4					1.4	NO		db		0.000
31	FUNCTION3 PFK	35.06	2.296e4					1.0	NO		bd		0.000
32	FUNCTION3 PFK	34.82	1.680e4					1.1	NO		db		0.000
33	FUNCTION3 PFK	34.78	9.574e3					0.7	NO		bd		0.000
34	FUNCTION3 PFK	34.73	8.081e3					0.7	NO		bb		0.000
35	FUNCTION3 PFK	34.62	1.939e4					0.9	NO		bb		0.000
36	FUNCTION3 PFK	37.81	4.415e4					1.6	NO		db		0.000
37	FUNCTION3 PFK	37.74	7.762e4					2.6	NO		bd		0.000

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION3 PFK	37.44	5.951e4					1.4	NO		bb		0.000
39	FUNCTION3 PFK	37.34	9.854e3					1.0	NO		bb		0.000
40	FUNCTION3 PFK	37.18	2.117e3					0.4	NO		bb		0.000
41	FUNCTION3 PFK	37.04	3.268e4					1.6	NO		bb		0.000
42	FUNCTION3 PFK	37.00	3.786e3					0.6	NO		bb		0.000
43	FUNCTION3 PFK	36.95	2.103e4					1.0	NO		db		0.000
44	FUNCTION3 PFK	36.91	1.240e4					0.9	NO		bd		0.000
45	FUNCTION3 PFK	36.75	1.311e4					0.6	NO		bb		0.000
46	FUNCTION3 PFK	36.66	1.723e4					1.0	NO		bb		0.000
47	FUNCTION3 PFK	36.59	1.858e4					1.4	NO		bb		0.000
48	FUNCTION3 PFK	36.54	1.821e4					0.7	NO		bb		0.000
49	FUNCTION3 PFK	36.40	1.260e4					0.9	NO		bb		0.000

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	38.00	7.891e5					22.4	YES		bd		
2	FUNCTION4 PFK	40.93	4.327e3					0.6	NO		bb		
3	FUNCTION4 PFK	40.88	3.603e3					0.5	NO		bb		
4	FUNCTION4 PFK	40.45	6.643e3					0.7	NO		bb		
5	FUNCTION4 PFK	40.39	2.762e3					0.7	NO		bb		
6	FUNCTION4 PFK	40.35	2.470e3					0.7	NO		bb		
7	FUNCTION4 PFK	40.27	1.557e4					0.7	NO		bb		
8	FUNCTION4 PFK	39.78	4.849e4					2.0	NO		db		
9	FUNCTION4 PFK	39.68	5.326e3					0.6	NO		dd		
10	FUNCTION4 PFK	39.64	6.762e3					0.7	NO		bd		
11	FUNCTION4 PFK	39.25	3.234e4					1.7	NO		bb		
12	FUNCTION4 PFK	39.19	1.035e4					1.3	NO		bb		
13	FUNCTION4 PFK	38.83	8.508e3					1.2	NO		db		
14	FUNCTION4 PFK	38.64	2.598e5					6.5	YES		dd		
15	FUNCTION4 PFK	38.51	1.201e6					9.7	YES		dd		
16	FUNCTION4 PFK	38.12	1.141e6					19.5	YES		dd		
17	FUNCTION4 PFK	38.05	3.021e5					21.2	YES		dd		
18	FUNCTION4 PFK	42.60	3.177e3					0.5	NO		bb		
19	FUNCTION4 PFK	42.52	2.570e3					0.4	NO		bb		
20	FUNCTION4 PFK	42.41	4.560e3					0.2	NO		bb		
21	FUNCTION4 PFK	42.33	9.867e3					1.0	NO		db		
22	FUNCTION4 PFK	42.29	2.002e4					1.7	NO		dd		
23	FUNCTION4 PFK	42.24	2.869e4					1.7	NO		dd		
24	FUNCTION4 PFK	42.15	1.885e4					1.4	NO		dd		
25	FUNCTION4 PFK	42.11	1.884e4					2.0	NO		dd		
26	FUNCTION4 PFK	42.08	7.141e4					2.4	NO		bd		
27	FUNCTION4 PFK	41.60	2.131e4					1.3	NO		db		
28	FUNCTION4 PFK	41.55	2.174e4					1.5	NO		bd		
29	FUNCTION4 PFK	41.49	9.232e3					0.8	NO		db		
30	FUNCTION4 PFK	41.43	1.051e4					1.1	NO		dd		
31	FUNCTION4 PFK	41.37	3.135e4					1.2	NO		bd		
32	FUNCTION4 PFK	41.08	4.407e3					0.6	NO		bb		

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PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	44.23	1.060e4					1.8	NO		db		
2	FUNCTION5 PFK	44.15	1.972e4					2.3	NO		dd		
3	FUNCTION5 PFK	44.12	1.303e4					1.8	NO		bd		
4	FUNCTION5 PFK	43.87	1.022e4					1.6	NO		db		
5	FUNCTION5 PFK	43.82	9.768e3					1.9	NO		dd		
6	FUNCTION5 PFK	43.77	2.352e4					1.8	NO		bd		
7	FUNCTION5 PFK	43.69	1.193e3					0.5	NO		bb		
8	FUNCTION5 PFK	43.60	4.639e3					1.2	NO		bb		
9	FUNCTION5 PFK	43.34	1.157e3					0.5	NO		db		
10	FUNCTION5 PFK	43.31	2.523e3					0.8	NO		bd		
11	FUNCTION5 PFK	43.27	1.970e4					2.0	NO		db		
12	FUNCTION5 PFK	43.19	1.377e4					1.8	NO		dd		
13	FUNCTION5 PFK	43.15	8.942e3					1.9	NO		dd		
14	FUNCTION5 PFK	43.12	4.774e3					1.6	NO		dd		
15	FUNCTION5 PFK	43.08	6.850e3					2.0	NO		dd		
16	FUNCTION5 PFK	43.06	6.081e3					1.9	NO		bd		
17	FUNCTION5 PFK	45.98	2.631e3					0.7	NO		bb		
18	FUNCTION5 PFK	45.86	1.078e4					1.7	NO		bb		
19	FUNCTION5 PFK	45.72	4.135e3					1.2	NO		db		
20	FUNCTION5 PFK	45.65	9.019e3					1.3	NO		bd		
21	FUNCTION5 PFK	45.45	5.018e3					0.7	NO		bb		
22	FUNCTION5 PFK	45.29	4.316e3					1.1	NO		bb		
23	FUNCTION5 PFK	45.19	1.926e4					1.7	NO		db		
24	FUNCTION5 PFK	45.10	2.361e4					1.9	NO		bd		
25	FUNCTION5 PFK	44.94	9.987e3					1.5	NO		bb		
26	FUNCTION5 PFK	44.76	1.339e4					0.0	NO		bb		
27	FUNCTION5 PFK	44.63	7.293e3					1.6	NO		bb		
28	FUNCTION5 PFK	44.57	7.501e3					0.9	NO		bb		
29	FUNCTION5 PFK	44.46	4.718e2					0.3	NO		bb		
30	FUNCTION5 PFK	44.36	2.597e3					0.6	NO		db		
31	FUNCTION5 PFK	44.33	8.052e3					1.7	NO		bd		

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ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	27.48	9.726e1					2.4	NO		bb		0.000
2	FUNCTION1 HXCD...	26.80	7.720e1					3.0	YES		bb		0.000
3	FUNCTION1 HXCD...	26.06	1.286e2					2.4	NO		bb		0.000
4	FUNCTION1 HXCD...	22.46	1.631e2					3.1	YES		db		0.000
5	FUNCTION1 HXCD...	22.30	9.703e1					2.1	NO		bd		0.000
6	FUNCTION1 HXCD...	21.78	7.722e1					1.8	NO		bb		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	27.65	9.793e1					3.7	YES		bb		0.000
2	FUNCTION1 HPCD...	26.82	1.079e2					1.8	NO		bb		0.000
3	FUNCTION1 HPCD...	25.23	1.017e2					2.4	NO		db		0.000
4	FUNCTION1 HPCD...	25.17	1.222e2					2.8	NO		bd		0.000
5	FUNCTION1 HPCD...	22.48	7.752e1					1.8	NO		bb		0.000
6	FUNCTION1 HPCD...	22.34	8.988e1					3.5	YES		bb		0.000
7	FUNCTION1 HPCD...	21.42	9.688e1					1.7	NO		bb		0.000
8	FUNCTION1 HPCD...	21.13	1.183e2					2.2	NO		bb		0.000

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	31.50	1.737e2					3.5	YES		bb		0.000
2	FUNCTION2 HPCD...	31.28	1.199e2					2.5	NO		bb		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	36.49	8.059e1					3.1	YES		bb		0.000
2	FUNCTION3 OCDPE	36.12	7.781e1					2.5	NO		bb		0.000
3	FUNCTION3 OCDPE	35.98	1.313e2					3.2	YES		bb		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	39.16	9.465e1					2.5	NO		bb		0.000
2	FUNCTION4 NCDPE	38.41	9.638e2					31.0	YES		bb		0.000

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Printed: Tuesday, September 21, 2021 14:04:40 Pacific Daylight Time

ID: 21G0140-08, Name: 21092024, Date: 21-Sep-2021, Time: 11:26:42, Conditions: AUTOSPEC01, User: pk

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	43.18	7.705e1					3.4	YES		bb		0.000

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ID: 21G0140-08, Name: 21092024, Date: 21-Sep-2021, Time: 11:26:42, Conditions: AUTOSPEC01, User: pk

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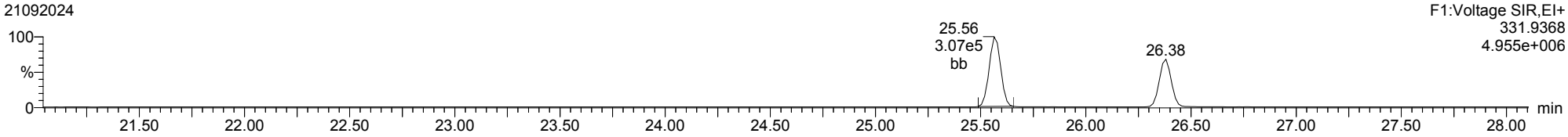

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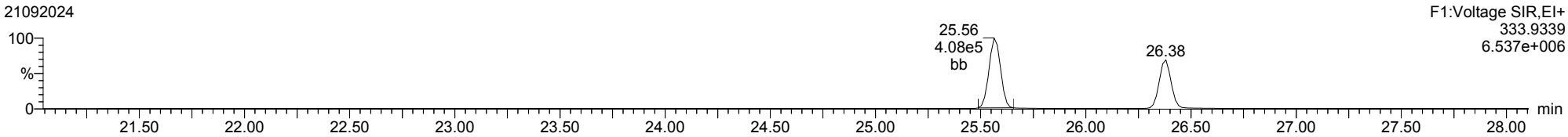

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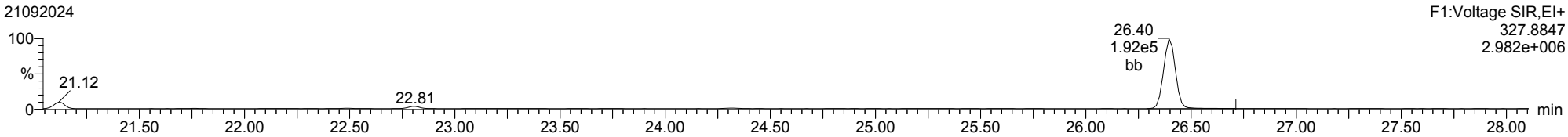

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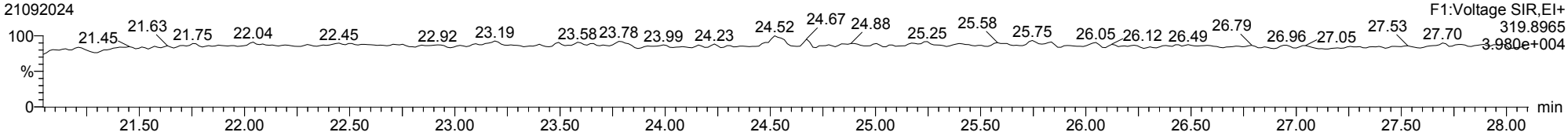

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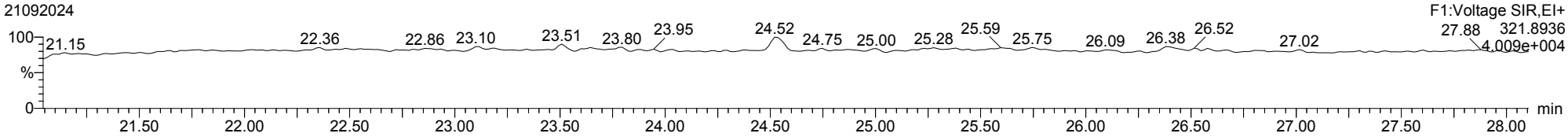

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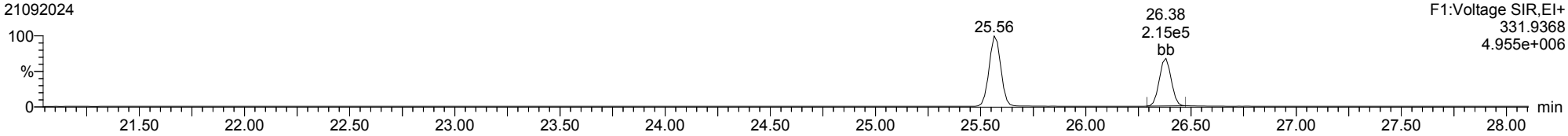

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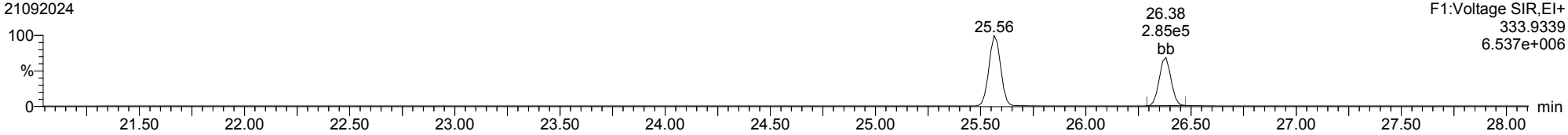

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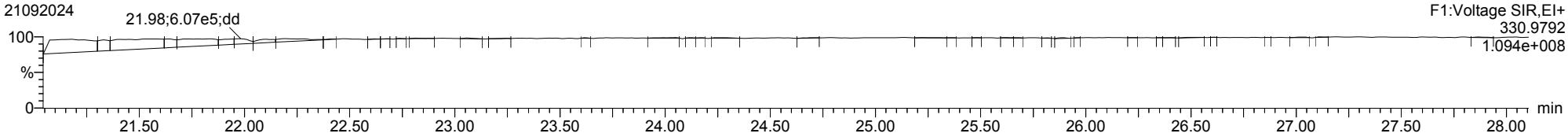

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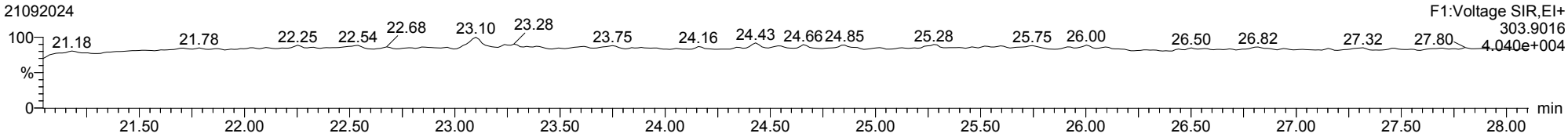

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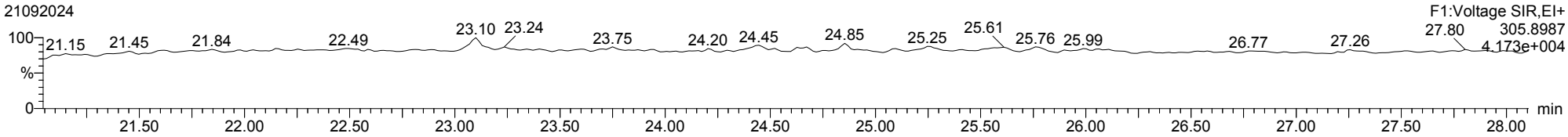

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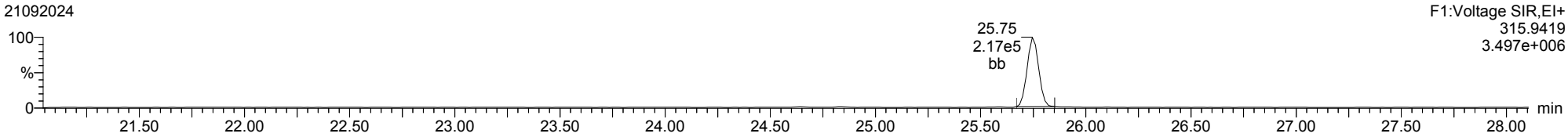

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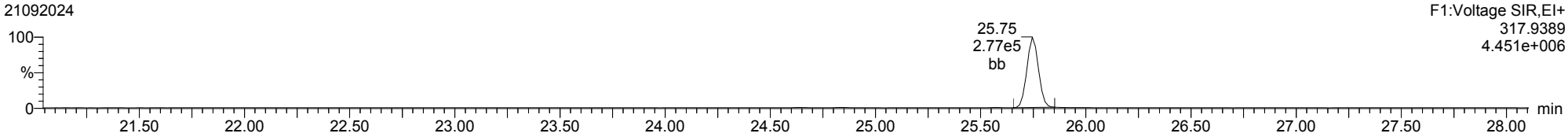

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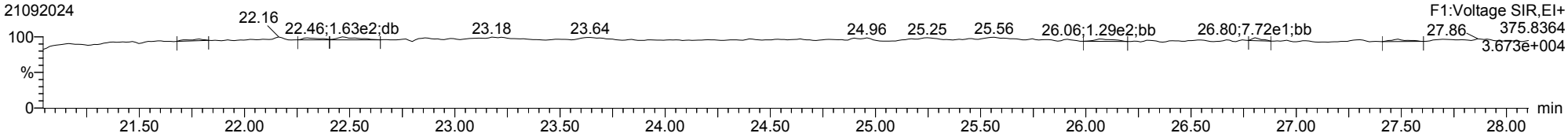

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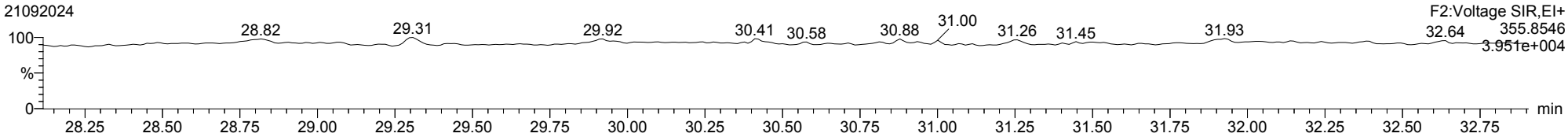
12378-PeCDD



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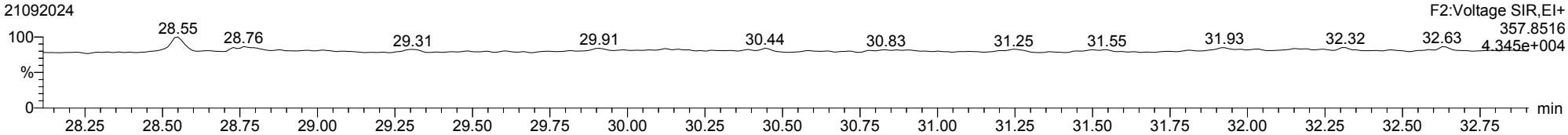

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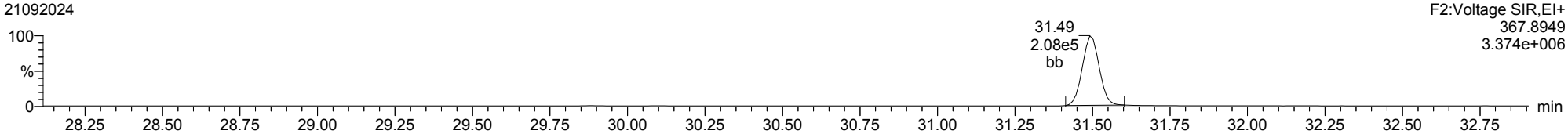

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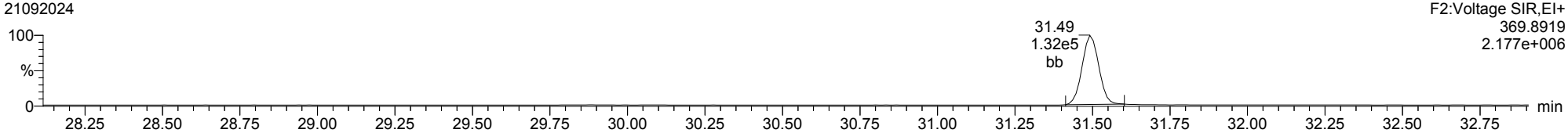
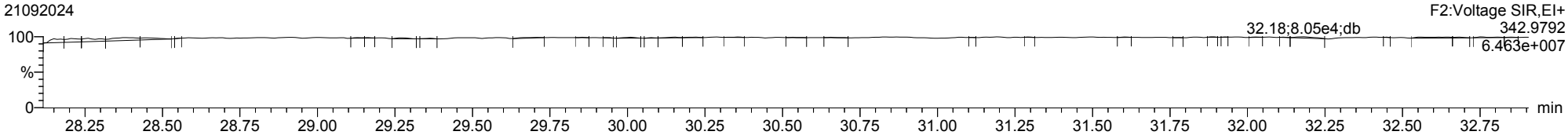


FUNCTION2 PFK



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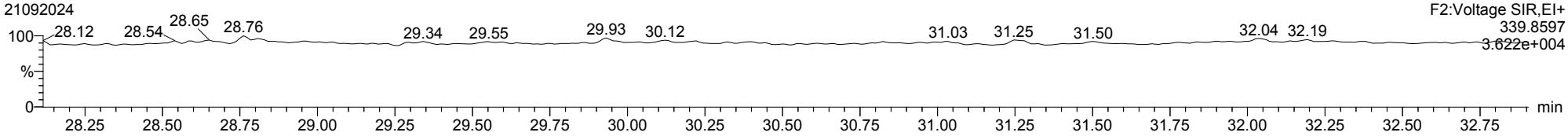
12378-PeCDF



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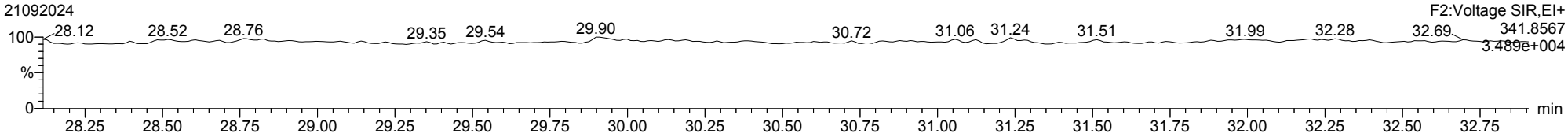

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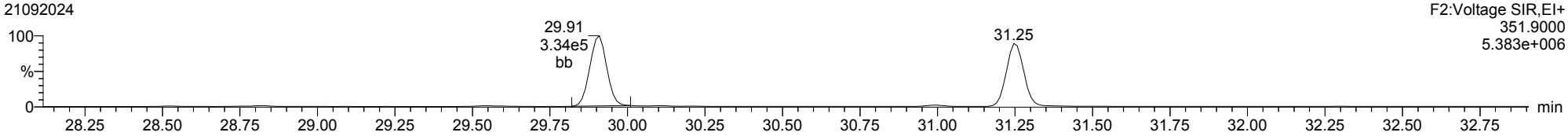

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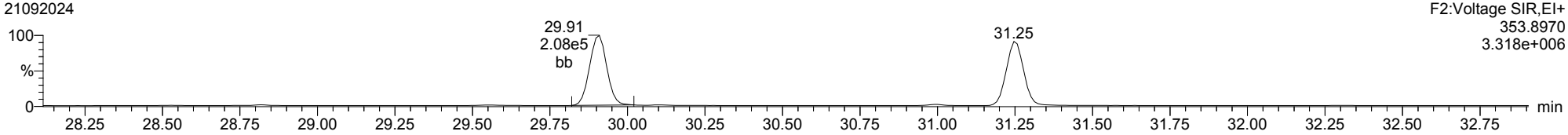
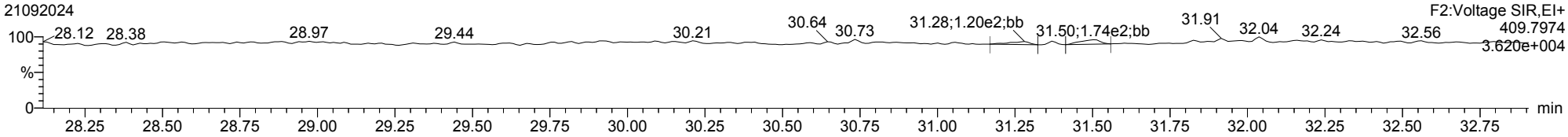


FUNCTION2 HPCDPE



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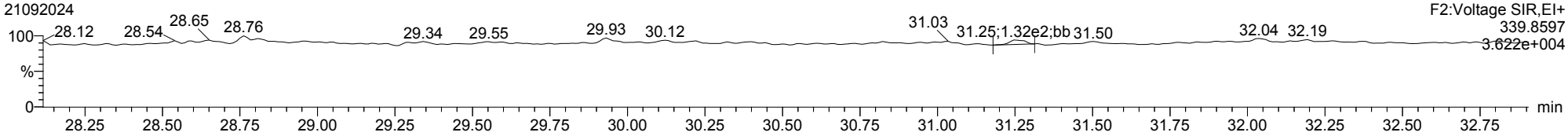
23478-PeCDF



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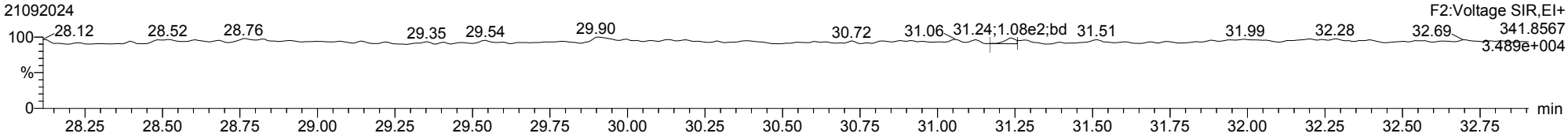

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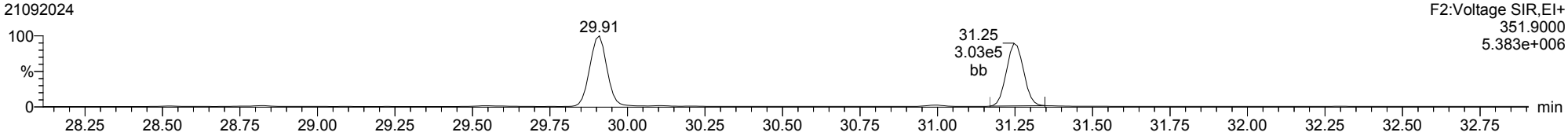

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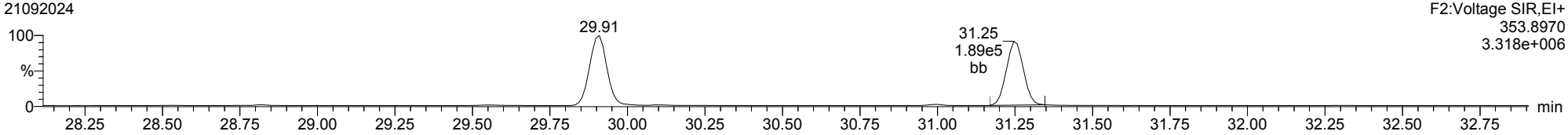

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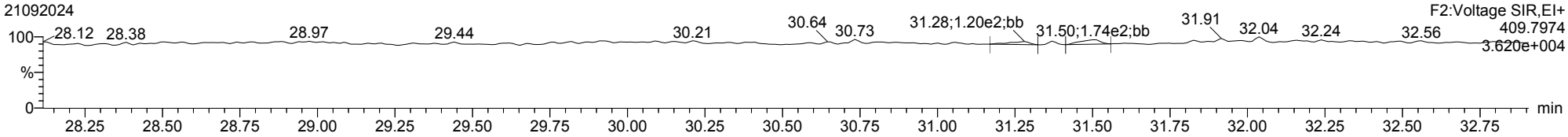

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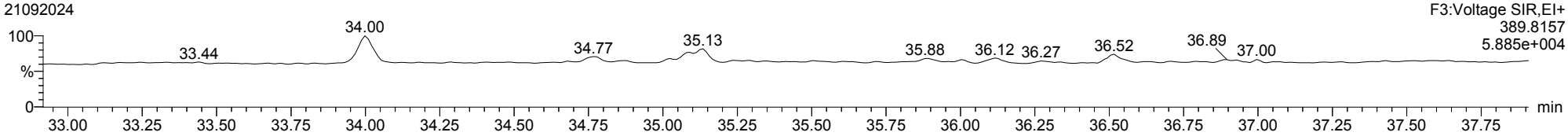
123478-HxCDD



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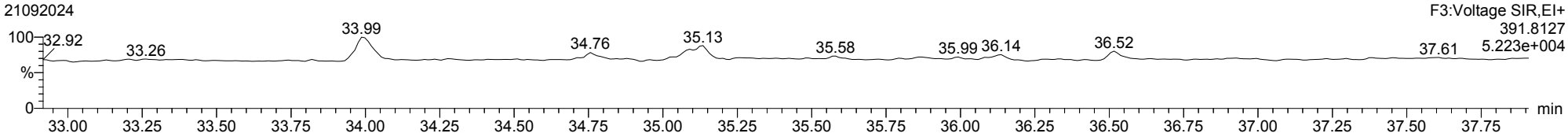

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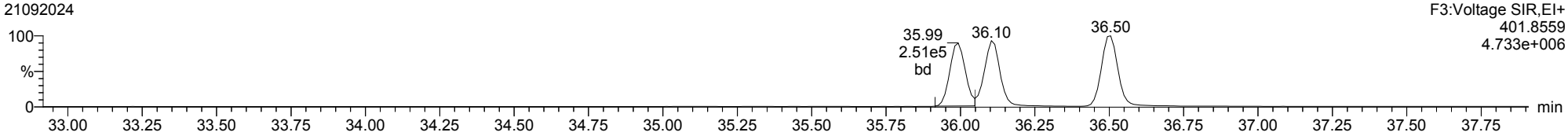

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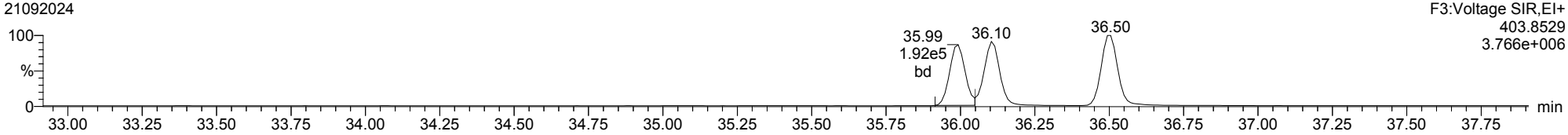

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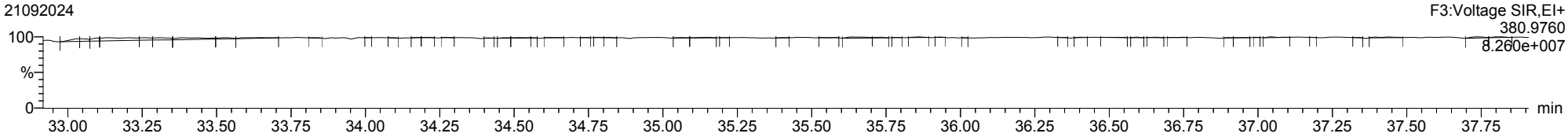

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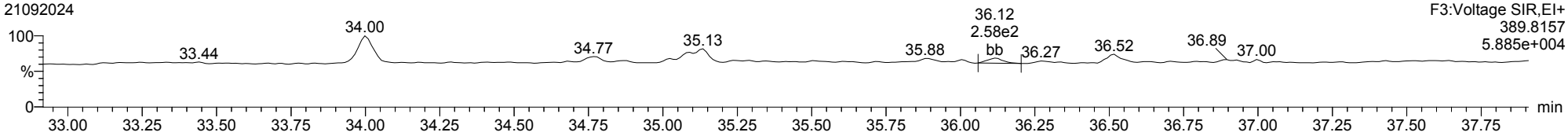

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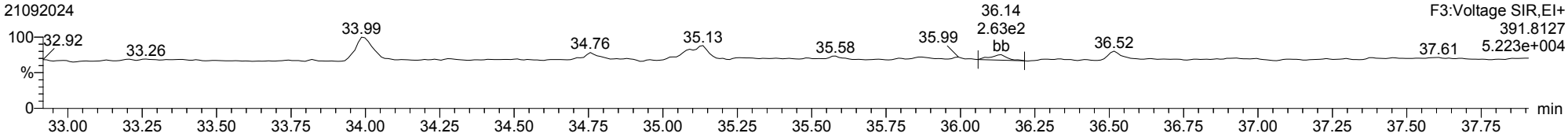

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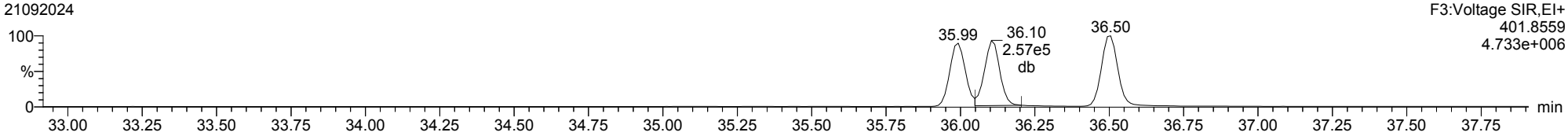

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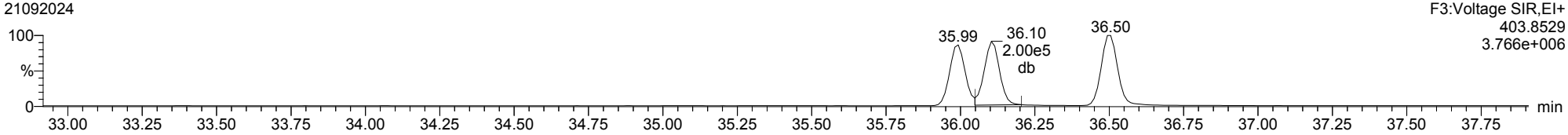

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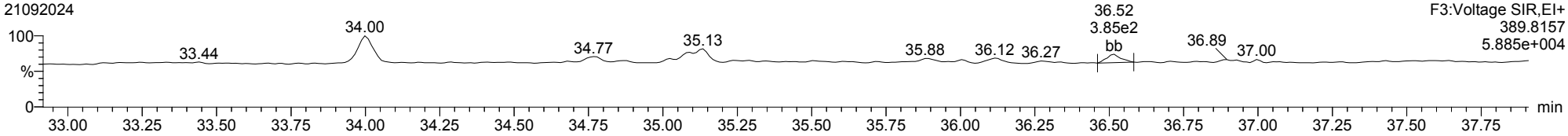

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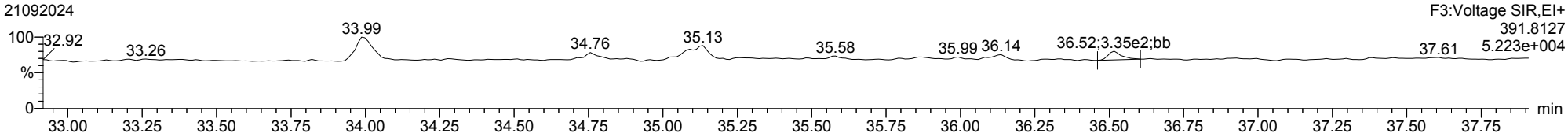

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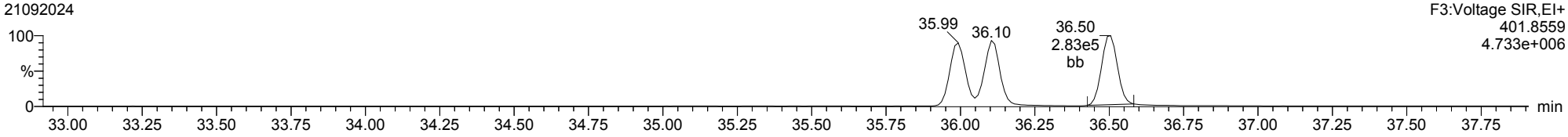

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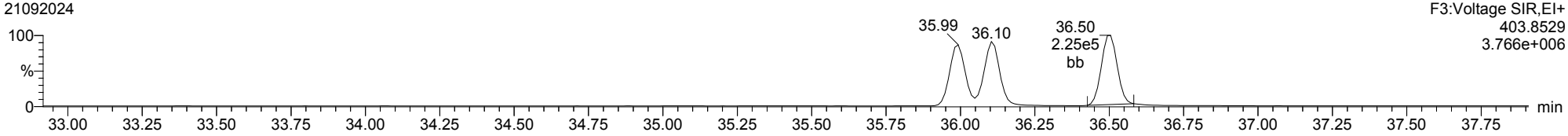

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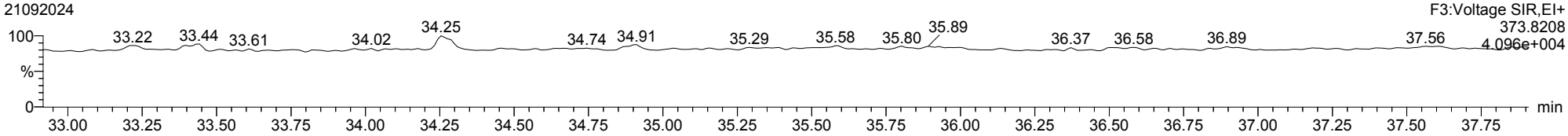

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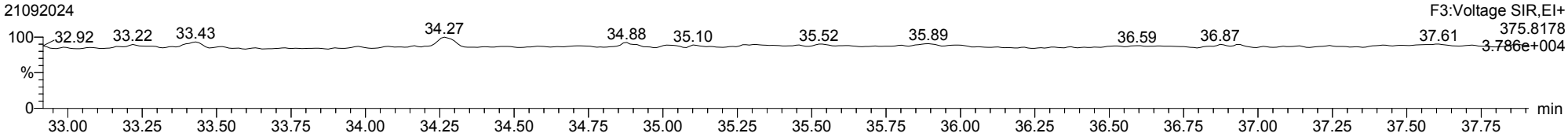

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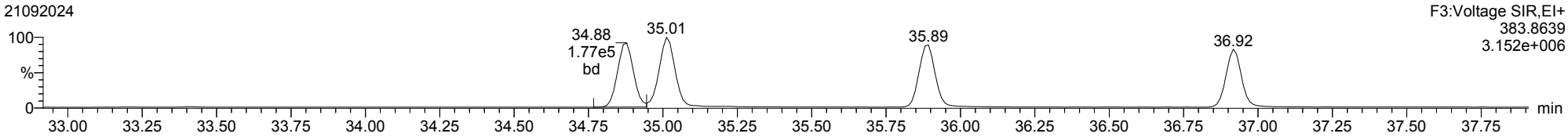

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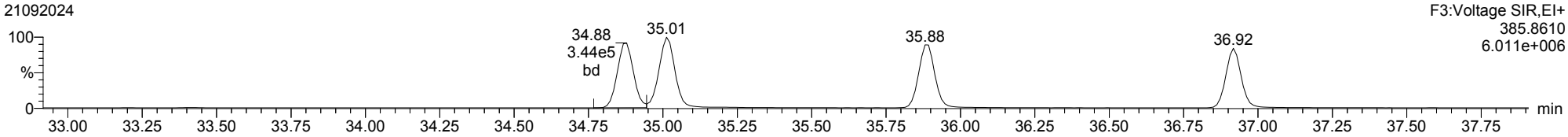

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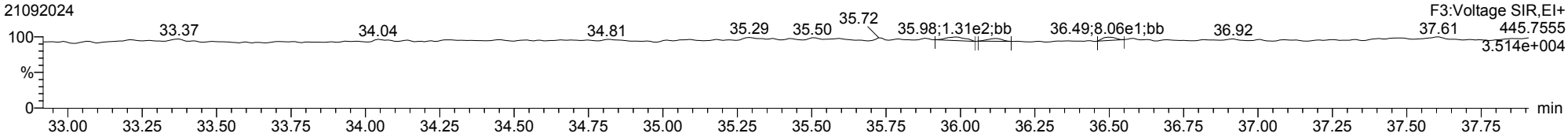

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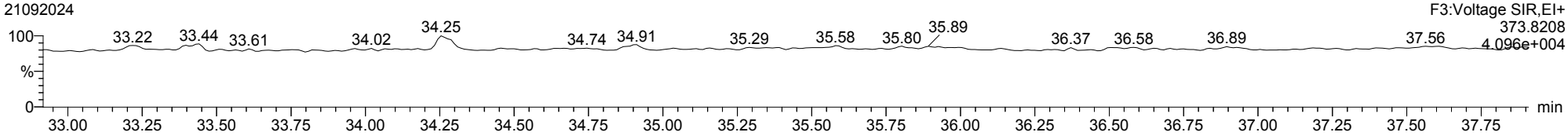

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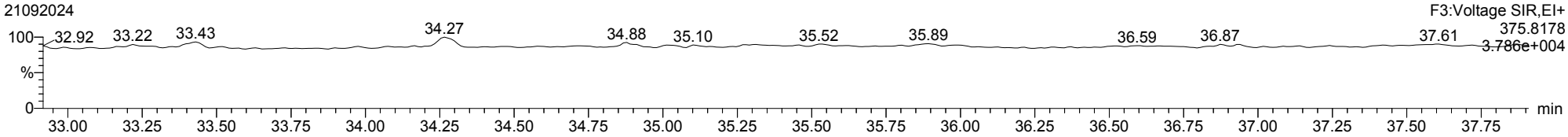

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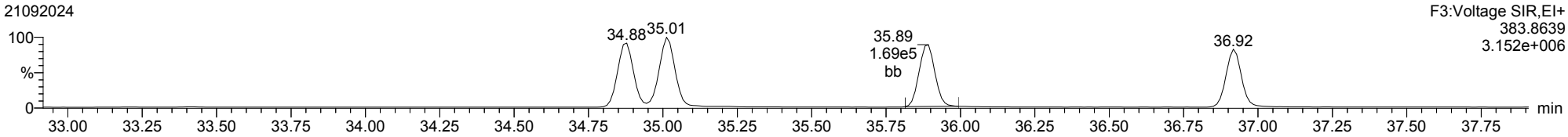

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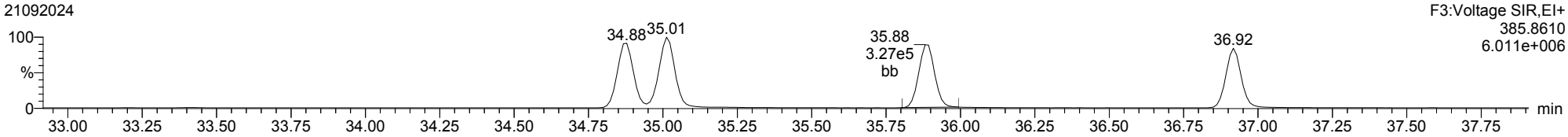

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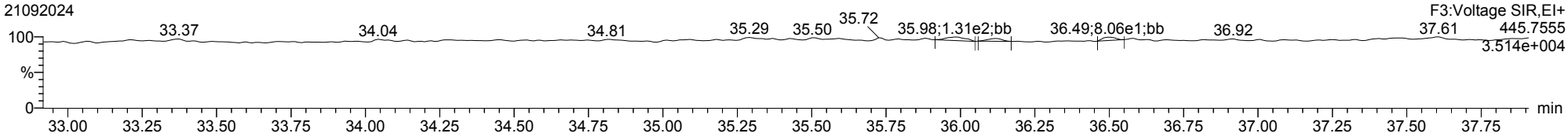

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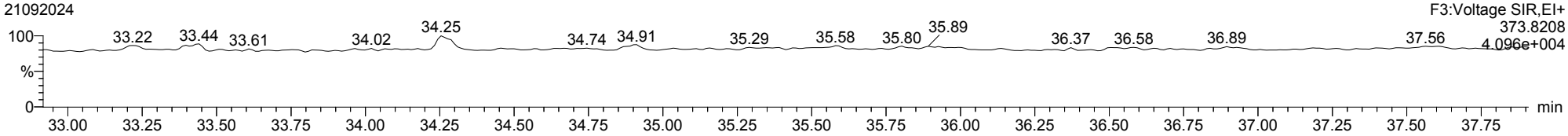

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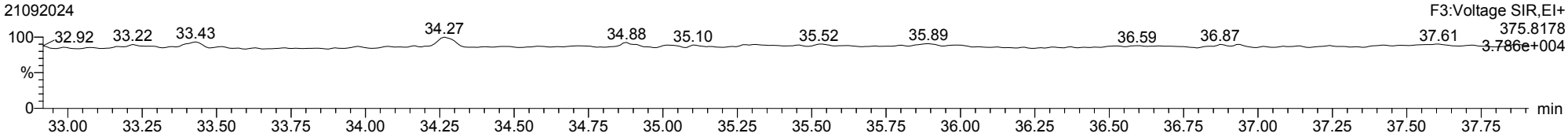

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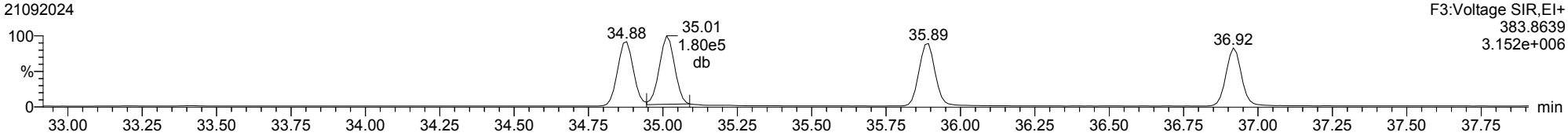

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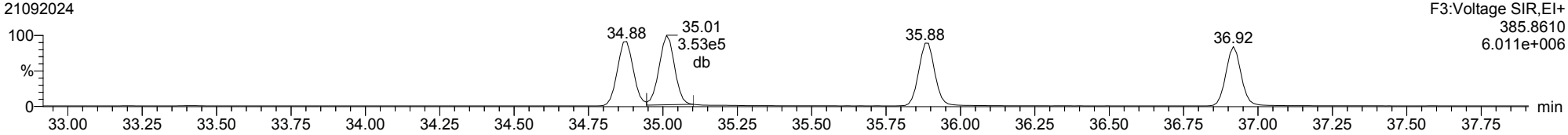

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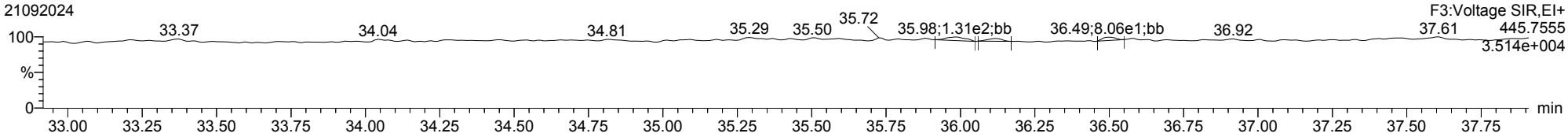

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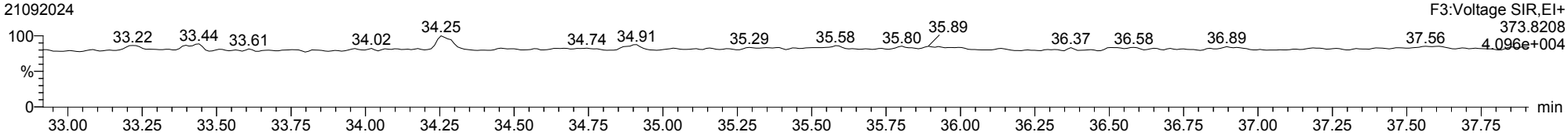

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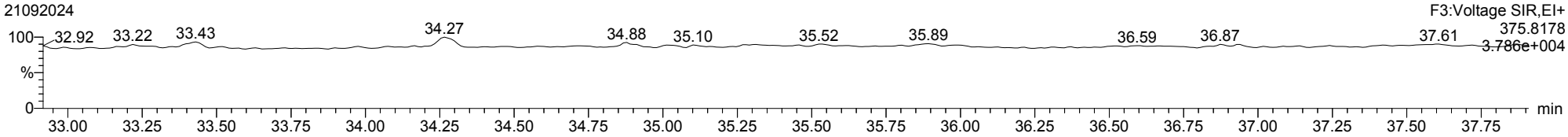

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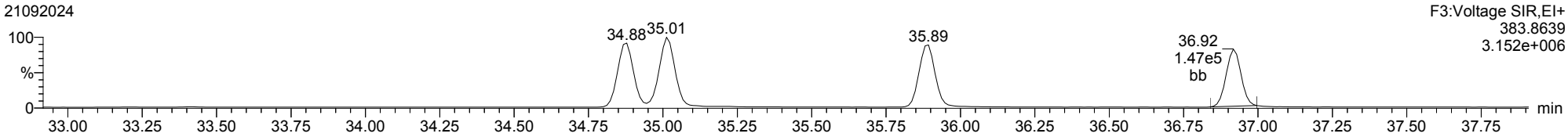

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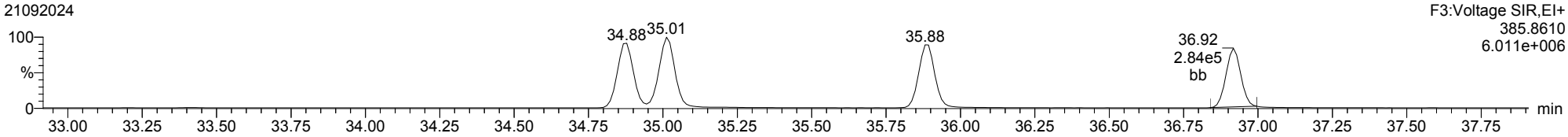

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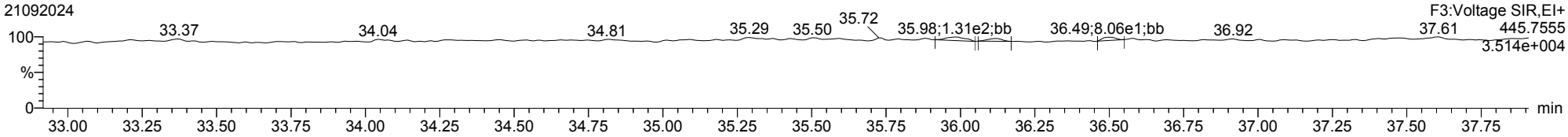

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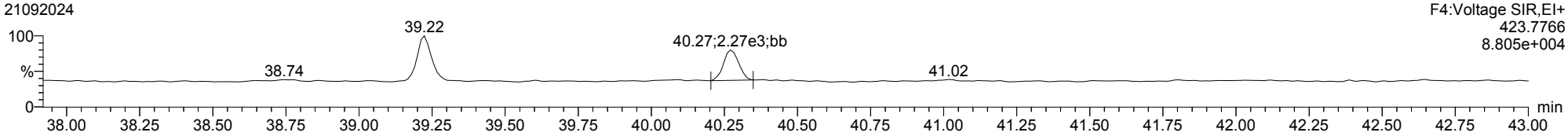

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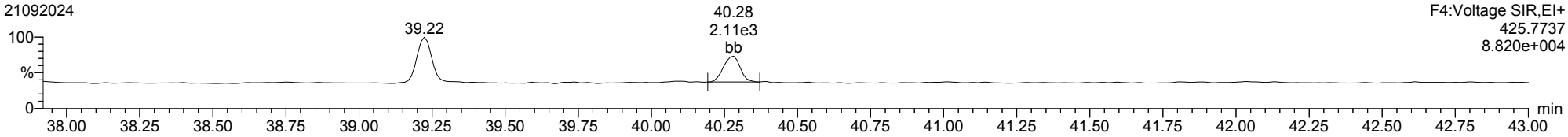

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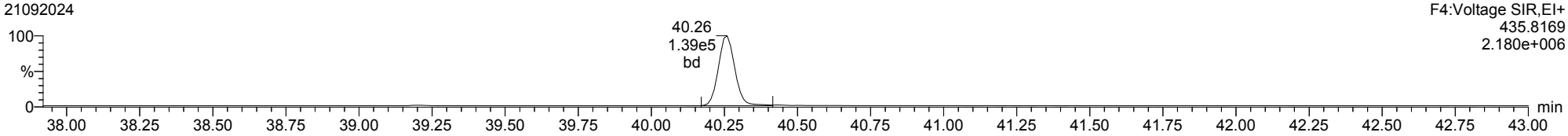

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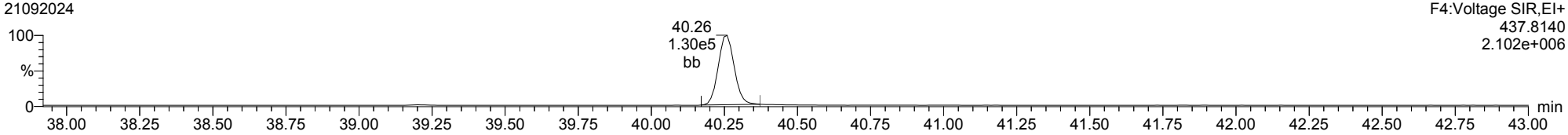

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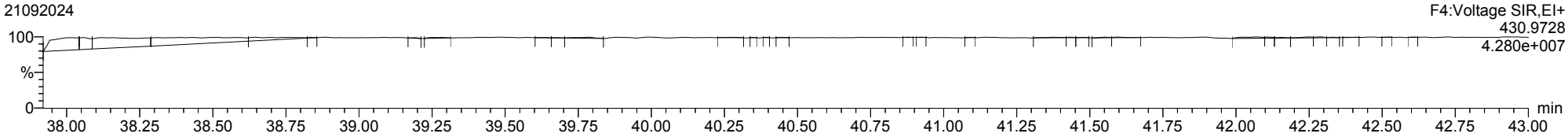

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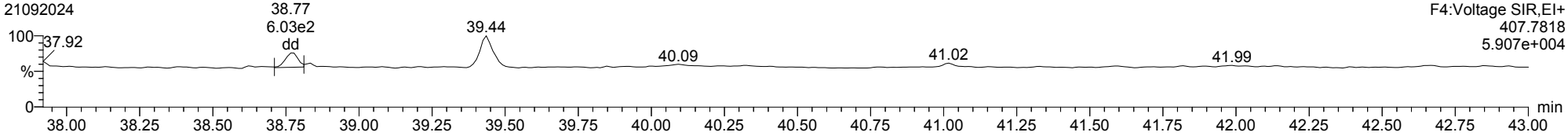

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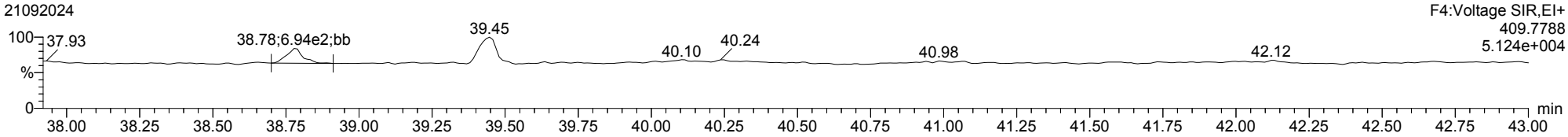

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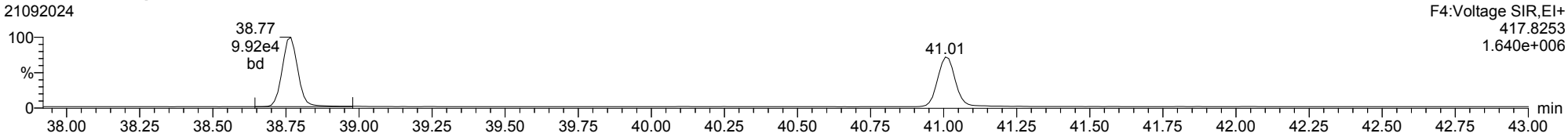

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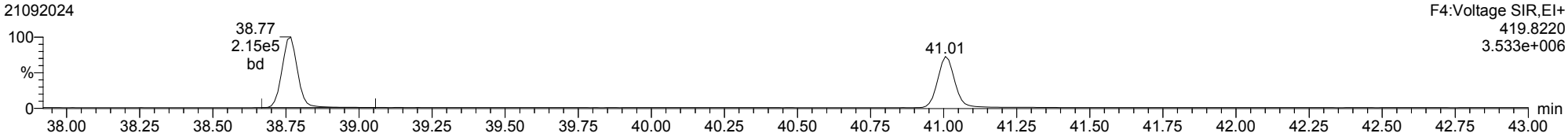

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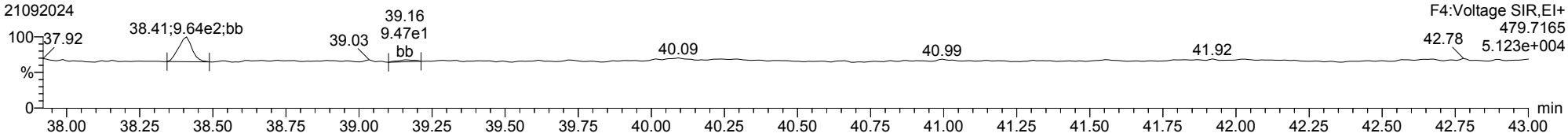

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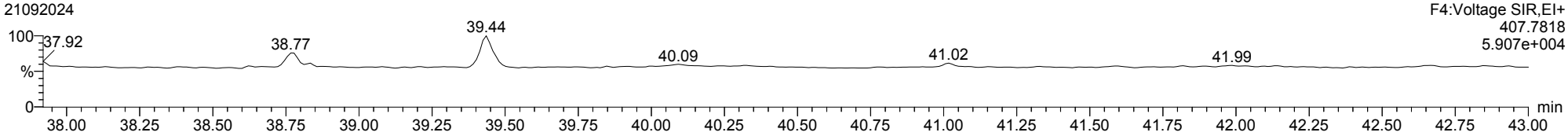

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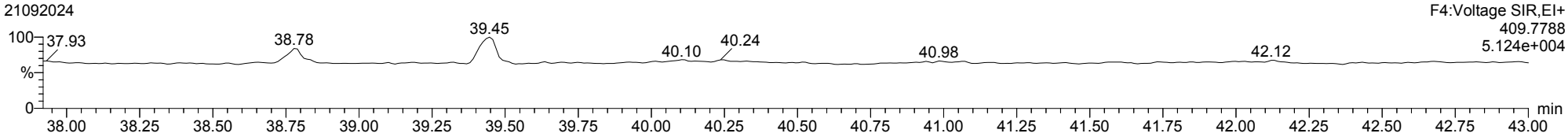

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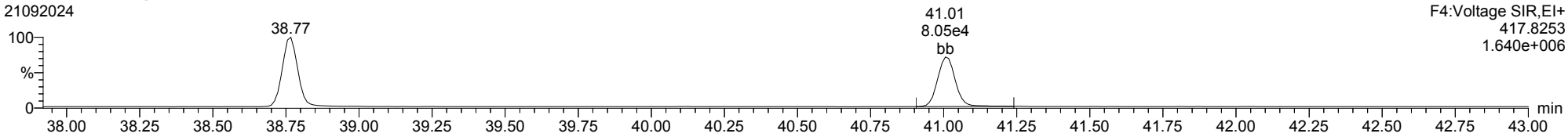

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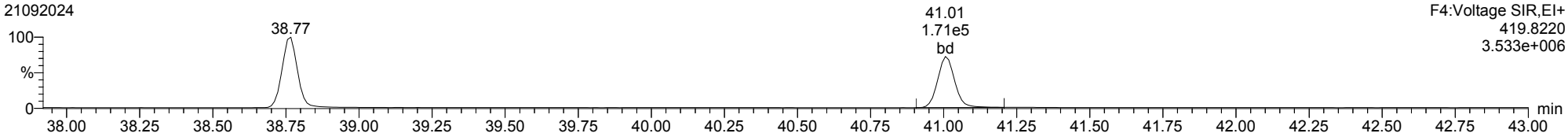

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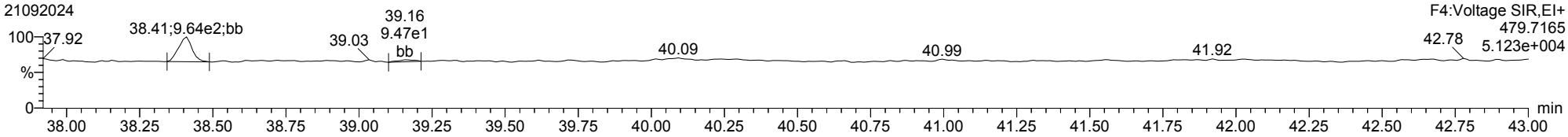

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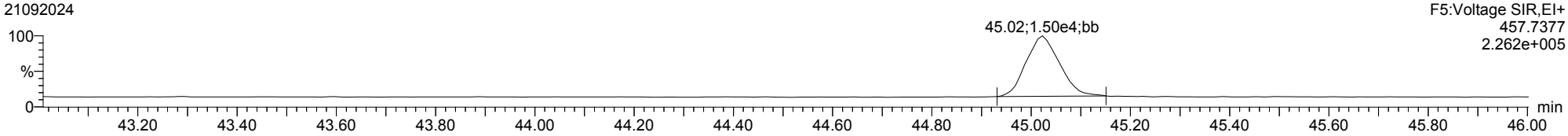

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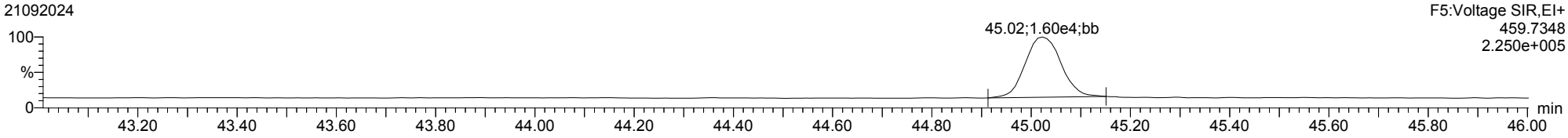

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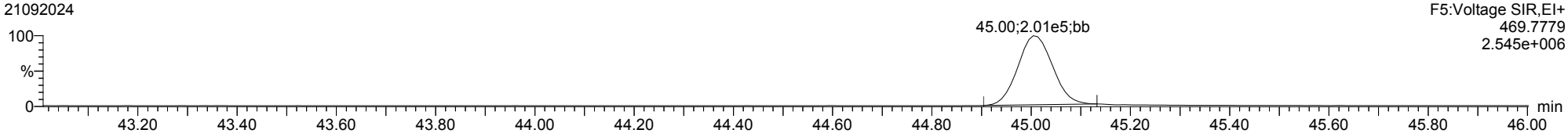
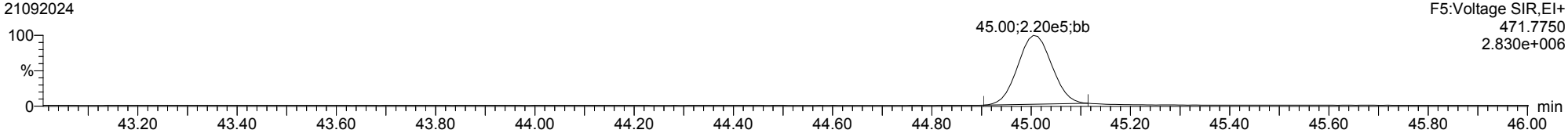


13C-OCDD



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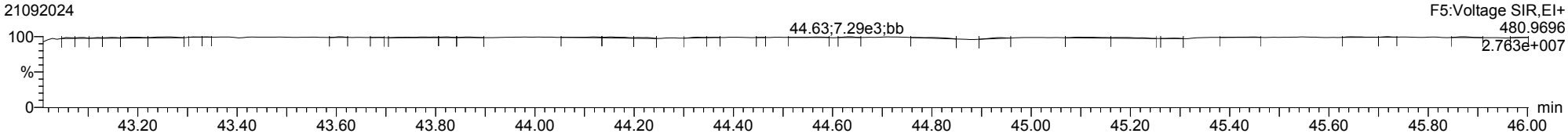

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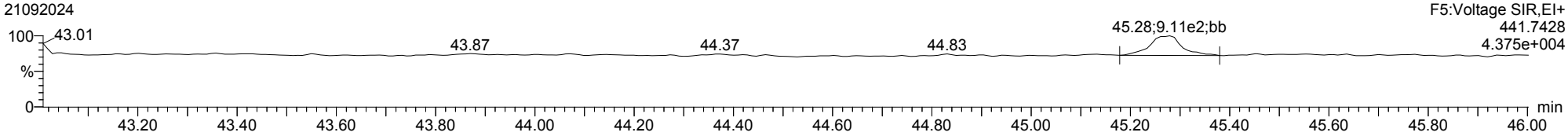
OCDF



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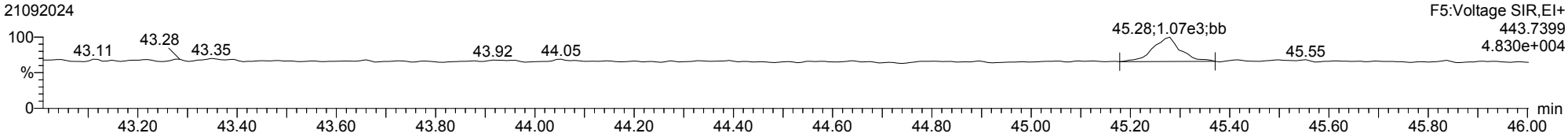

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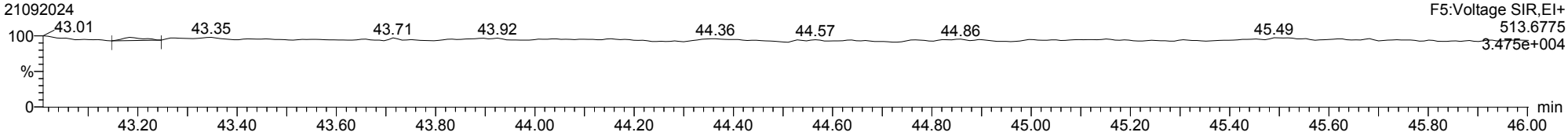

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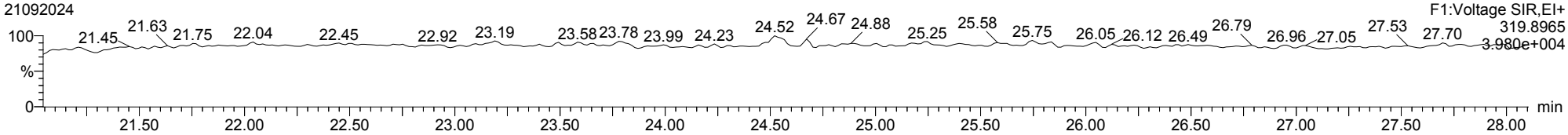

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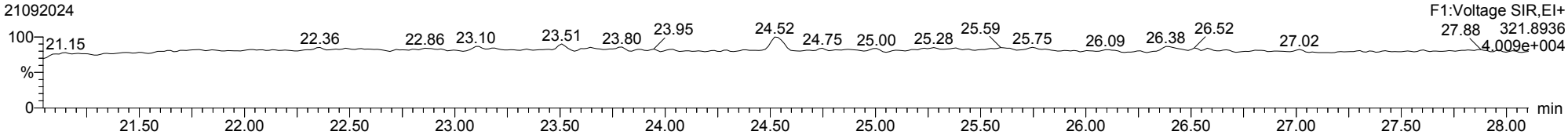
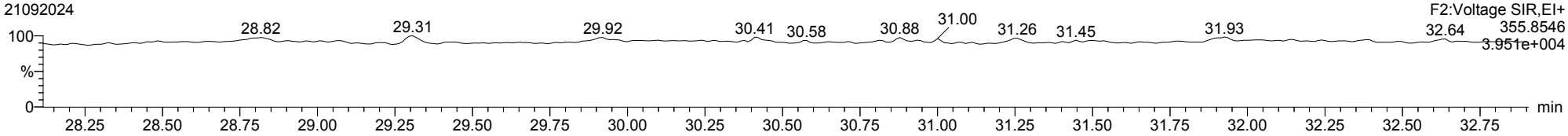
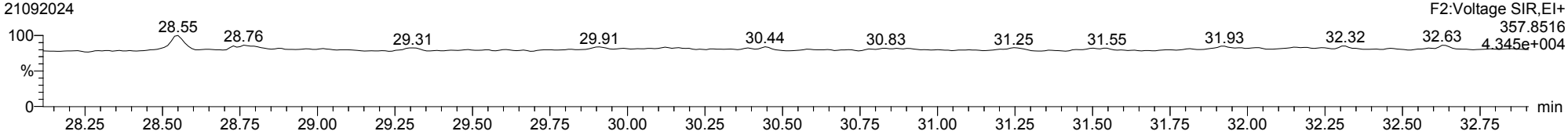


Total-pentadioxins



Total-pentadioxins



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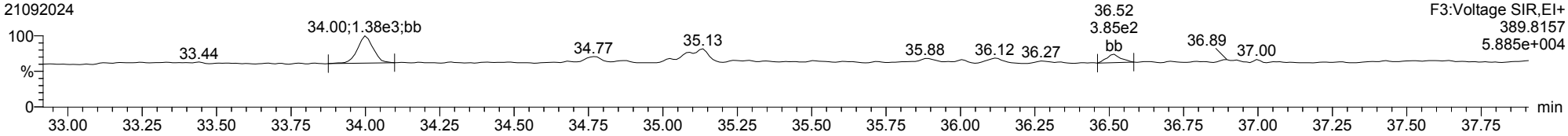
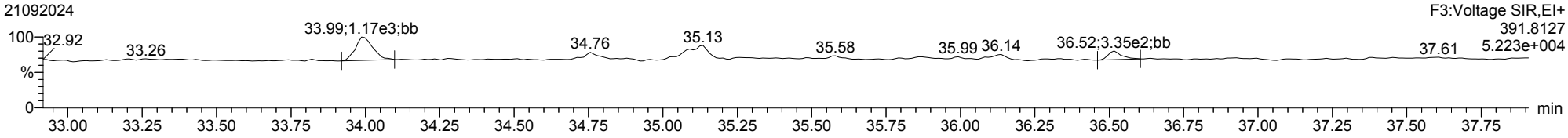
Printed: Tuesday, September 21, 2021 14:04:40 Pacific Daylight Time

ID: 21G0140-08, Name: 21092024, Date: 21-Sep-2021, Time: 11:26:42, Conditions: AUTOSPEC01, User: pk

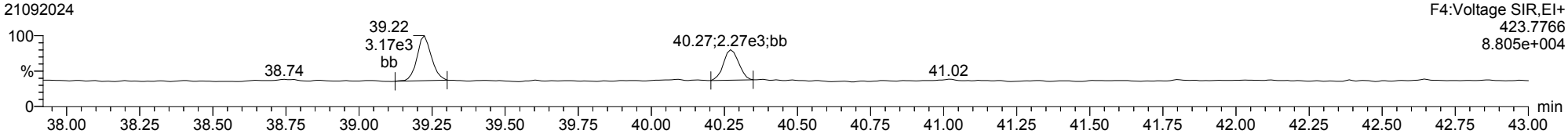
Total-hexadioxins



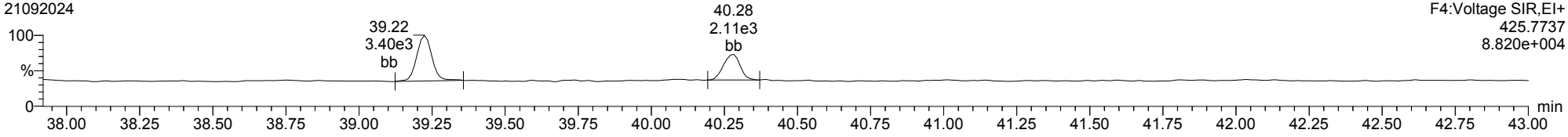
Total-hexadioxins



Total-heptadioxins

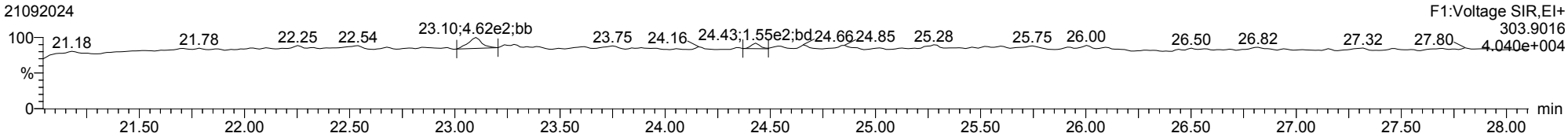


Total-heptadioxins

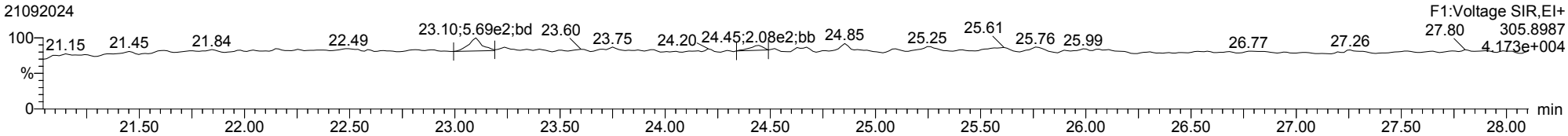


ID: 21G0140-08, Name: 21092024, Date: 21-Sep-2021, Time: 11:26:42, Conditions: AUTOSPEC01, User: pk

Total-tetrafurans



Total-tetrafurans



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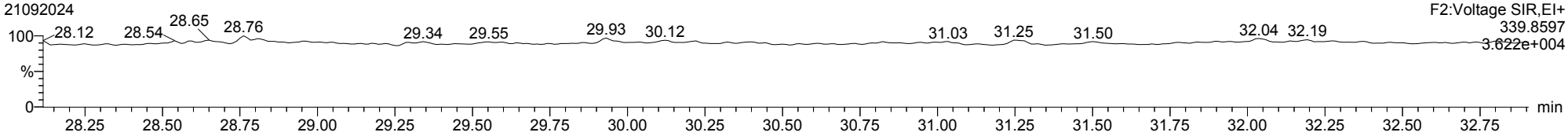
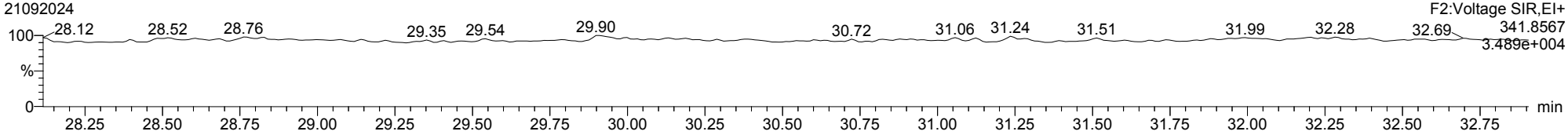


Total-pentafurans



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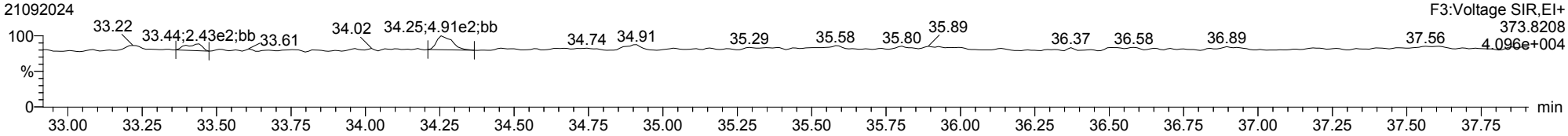
Total-hexafurans



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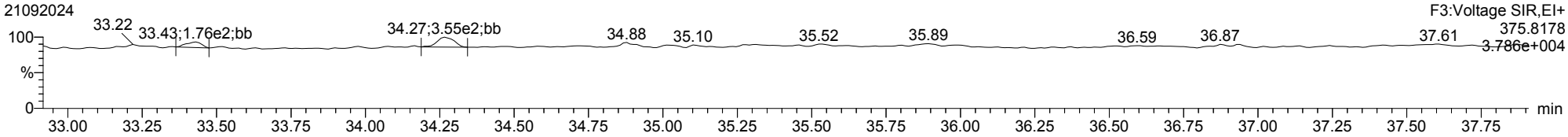

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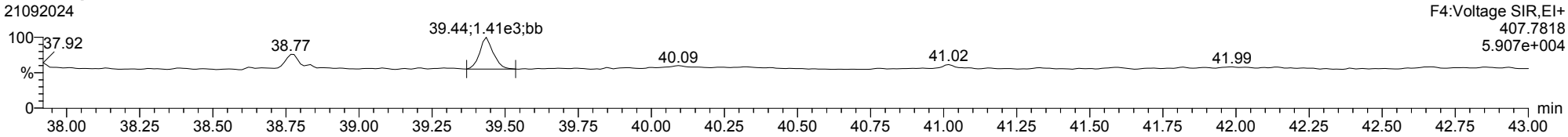

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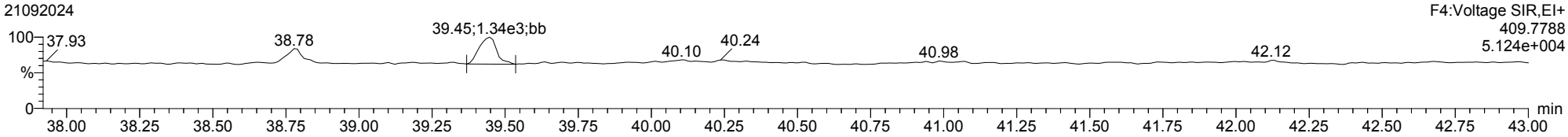

Analytical Resources, Incorporated
Analytical Chemists and Consultants

PREPARATION BATCH SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Batch:	BJH0152 Batch Matrix: Solid	Preparation:	EPA 1613

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
LDW21-SC634A	21G0140-04	21092018	09/06/21 16:00	
LDW21-SC634A-FD	21G0140-05	21092019	09/06/21 16:00	
LDW21-SC634B	21G0140-06	21092020	09/06/21 16:00	
LDW21-SC634C	21G0140-07	21092021	09/06/21 16:00	
LDW21-SC634E	21G0140-08	21092024	09/06/21 16:00	
Blank	BJH0152-BLK1	21092004	09/06/21 16:00	
LCS	BJH0152-BS1	21092005	09/06/21 16:00	
Reference	BJH0152-SRM1	21092006	09/06/21 16:00	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

HRGCMS Dioxin/Furan Preparation Bench Sheet EPA Methods 8290A & 1613B

Batch: BJH0152

Solid Samples

ARI Work Orders:	21G0126,21G0140,21G0156		
Matrix (circle one)	[Soil] Sediment	Oil	Tissue
Extraction Method	Start Date/Time:	End Date/Time:	
[Soxhlet] / EpF Shake out	9/6/21 16:00	9/7/21 8:00	

Reagents/Equipment Used	NA	ID / Lot Number	Initials	Date
Balance		24650344	ULB	9/6/21
Toluene		J007944	ULB	9/6/21
Hexane		J006933	DLP	9/8/21 | 9/9/21 | 9/13/21
CH2Cl2		J008966	M	9/10/21 | 9/13/21
H2SO4		F009222	M	9/9/21
Na2SO4		J009169 | J009500	ULB / M	9/6/21 | 9/9/21 | 9/10/21 | 9/13/21
Glasswool		J006679	M	9/10/21 | 9/13/21
~~(98:2) Hex/DCM~~				
Basic Silica		J002641	M	9/9/21 | 9/13/21
Acid Silica		J007981	M	9/10/21 | 9/13/21
0% Silica		J005622	ULB	9/6/21 | 9/10/21 | 9/13/21
Activated Florisil	M 9/10/21	~~J005622~~ J002451	M	M 9/10/21 ~~9/9~~ 9/10/21 | 9/13/21
Nonane		J006038	M	9/13/21
~~Other~~ (RM)		J007935	ULB	9/6/21

Lab Number & Container	Sample Name	% Solids	Sample Weight Equal to dry (g) (Target Dry)	Actual	RotoVap 45 °C	Water Trap Vol (mL)	Final Vol. (uL)
21G0126-07 A	LDW21-IT653B	60.39	(16.56)	16.56	(1)/2	6.6	20
21G0126-08 A	LDW21-IT653C	68.12	(14.68)	14.69	1/(2)	4.4	20
21G0126-09 A	LDW21-IT653E	59.06	(16.93)	16.94	(1)/2	6.6	20
21G0126-10 A	LDW21-IT652B	67.08	(14.91)	14.92	1/(2)	4.9	20
21G0126-11 A	LDW21-IT652C	61.52	(16.26)	16.27	(1)/2	6.1	20
21G0126-12 A	LDW21-IT652E	63.79	(15.68)	15.68	1/(2)	5.4	20
21G0126-13 A	LDW21-IT632B	63.42	(15.77)	15.78	(1)/2	5.8	20
21G0126-14 A	LDW21-IT632C	65.51	(15.27)	15.28	1/(2)	3.6	20
21G0140-04 C	LDW21-SC634A	57.49	(17.39)	17.40	(1)/2	6.0	20
21G0140-05 C	LDW21-SC634A-FD	56.69	(17.64)	17.65	1/(2)	7.2	20
21G0140-06 C	LDW21-SC634B	60.59	(16.50)	16.51	(1)/2	6.3	20
21G0140-07 C	LDW21-SC634C	79.33	(12.61)	12.63	1/(2)	2.6	20
21G0140-08 C	LDW21-SC634E	71.81	(13.93)	13.94	(1)/2	3.8	20
21G0156-01 C	LDW21-IT622A	57.53	(17.38)	17.38	1/(2)	6.6	20
21G0156-02 C	LDW21-IT622B	77	(12.99)	13.000	(1)/2	2.3	20
21G0156-03 C	LDW21-IT622C	79.02	(12.66)	12.67	1/(2)	2.2	20
21G0156-04 C	LDW21-IT622E	78.26	(12.78)	12.79	(1)/2	2.5	20
21G0156-05 C	LDW21-IT660B	75.4	(13.26)	13.26	1/(2)	3.1	20
BJH0152-BLK1	Blank	100	()		(1)/2	0	20
BJH0152-BS1	LCS	100	()		1/(2)	0	20
BJH0152-DUP1	Duplicate 21G0126-07A	57.49	(16.56)	16.57	0/2	6.1	20
BJH0152-SRM1	Reference	100	(10)	10.02	1/(2)	0	20
Prep Analyst / Date:	ULB 9/6/21						

Standards Used	Vol	ID / Lot Number	Concentration	Expiration Date	Analyst	Witness	Date
Recovery Standard	1.0 mL	J007665	2/4 ng/mL	7/27/22	ULB	DLP	9/6/21
OPR	1.0 mL	J006781	0.2/1.0/2.0 ng/mL	6/29/22	ULB	DLP	9/6/21
~~QLS Standard~~	~~1.0 mL~~		~~0.010/0.050/0.1 ng/mL ng/L~~				
Cleanu-up Standard	1.0 mL	J007666	0.8 ng/mL	7/27/22	M	ULB	9/10/21

Verify Client ID
Analyst / Date: ULB 9/6/21 M 9/9/21 M 9/13/21

Acid Clean
Analyst / Date: [Y] N M 9/9/21

Silica-Florisil Clean
Analyst / Date: [Y] N M 9/10/21 / 9/13/21

Supervisor Review By 9/13/21 Date

Printed: 8/5/2021 12:59:27PM

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Page 1 of 1

Analytical Resources, Incorporated
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Dioxin Extraction Laboratory – Glasswa

Batch ID: BJHΦ152 Work Order: 21GΦ126, 21GΦ14Φ 21GΦ156, Extraction Parameter: Dioxin ARI Analyst NR

ARI Sample ID	300 mL Flat Bottom	Small Soxhlet	Large Soxhlet	250 mL Beaker	Funnel	Column	Florisil Column	Turbo Tube	Sep Funnel	Erlenmeyer Flask	Centrifuge Bottle	Turbo-Vap	Vortex Mixer	Heating Mantles
BJHΦ152 - BLK1	85	3		37	76	145	128	12				4	4	A1
BS1	56	49		24	48	142	88	37				4	4	A2
Dup1	17		52	199	24	146	138	6				4	4	A3
SRM1	43	112		25	81	224	142	1				4	4	A4
21GΦ126- Φ7A	1		57	116	34	207	113	61				4	4	A5
Φ8A	42	84		205	95	189	29	79				4	4	A6
Φ9A	46		60	38	25	3	9	11				4	4	B1
1ΦA	39	70		202	96	75	145	66				4	4	B2
11A	14		62	34	59	162	24	9				4	4	B3
12A	38	110		28	27	164	121	72				4	4	B4
13A	13	1		29	23	2	2	70				4	4	B5
14A	59	88		5	86	212	140	8				4	4	B6
21GΦ14Φ - Φ4C	5		31	163	32	17	67	14				4	4	C1
Φ5C	12		66	235	122	156	123	28				4	4	C2
Φ6C	83		21	20	22	221	135	45				4	4	C3
Φ7C	86	86		40	30	195	103	2				4	4	C4
Φ8C	47	111		8	16	119	5	44				4	4	C5
21GΦ156 - Φ1C	22		58	23	91	198	6	33				4	4	C6
Φ2C	76	108		31	08	18	127	84				4	4	D1
Φ3C	84	93		255	42	213	156	31				4	4	D2
Φ4C	69	99		32	01	191	147	12				4	4	D3
Φ5C	48	5		263	71	225	115	62				4	4	D4
												4	4	

Analytical Resources, Incorporated
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Organic Extractions Laboratory Analyst Notes

Extraction Parameter: Dioxin Extraction Batch BJH0152

Total Solids Batch: BJG0433 Work Order(s): 21G0126, 21G0156

Screens: Soil/Sediment/Solid/Other:	Analyst/Date
☒ No Anomalies (standard soil/wet sediment/sand/gravel)= 156-1,2,4	DLP 7/28/21
☒ Standing Water Decanted (Not shared)= 156-1,4	DLP 7/28/21
☐ Standing Water Homogenized (Shared samples)=	
☒ Clay/Clumps (Difficult to homogenize)= 126-7,8,9,10,11,12,13,14 156-5	DLP 7/28/21
☐ Rocks (%+size)?	
☒ Organics (Leaves/sticks/grass)= 126-8	DLP 7/28/21
☐ Oily, obvious fuel/sulfur odors=	
☐ Received in 32oz jar(s)=Homogenized in Pyrex dish=	
☐ Previously Frozen =	
☐ Other (Details)=	
Aqueous:	
☐ No Anomalies	
☐ Turbid/Color=	
☐ Particulates(%)=(Note: >5%=Notify Supervisor/Lead)	
☐ Emulsions (%)=	
☐ Oily, obvious fuel/sulfur odors=	
☐ Other (Details)=	
☐ Received in 1.0L Bottle(s)=No Bottle Rinse=	
☒ Other Notes/Comments= (Note problems, concerns, corrective actions).	
Rotovaped to 21G0126-12 on 9/8/21	DLP 9/8/21
-Batch # BJH0152-BLK1, BS1, Dup1, SRM1 and 21G0126-07A-14A columns	M 9/13/21
Cleaned on ~~9/9/21~~ 9/10/21	
-21G0156-01C-05C columns Cleaned on 9/13/21	M 9/13/21
☐ ~~Share Samples Y/N~~ 21G0156-01C - Double scoop of Acid silica gel use	M 9/13/21
☐ ~~Multiple Jars Y/N~~ on columns.	
☐ Sample Pre-Screens indicate analyte activity=	
☐ Sample weights/volumes reduced based on Pre-Screen=	

3056F

Revision 15
07/01/19

TOTAL SOLIDS BENCHSHEET
Method HRSM01.2
(dry at 110 C)

Batch:	BJG0433
Date:	
Analyst:	DO
Drying Oven:	Ø18
Analytical Balance:	2465Ø344

Instrumentation

Batch drying time			
Record times as mm/dd/yy hh:mm		Oven Temp, C	TS (%) calculated as:
Date/time in oven:	7/28/21 13:ØØ	1Ø8	Final dry wt (g) = (Dry Wt - Tare Wt)
Date/time out:	7/29/21 Ø825	108	TS = (Final Dry Wt X 100)/ (sample & dish -dish tare)
Elapsed hrs:	0.0		

Oven Temps, °C	
Start Temp:	1Ø8
End Temp:	108

SAMPLE ID	Dish Tare Wt (g)	Dish with Sample (g)	Dry Wt (g)	Solids Wt (g)	TS (%)	Sample Decanted
21G0126-07 A	Ø.79	11.95	7.53			No
21G0126-08 A	Ø.8Ø	11.37	8.ØØ			No
21G0126-09 A	Ø.8Ø	11.Ø6	6.86			No
21G0126-10 A	Ø.79	11.15	7.74			No
21G0126-11 A	Ø.9Ø	11.35	7.~~26~~29			No
21G0126-12 A	Ø.81	11.59	7.68 m 7/29/21			No
21G0126-13 A	Ø.8Ø	11.79	7.77			No
21G0126-14 A	Ø.79	11.17	7.59			No
21G0156-01 C	Ø.79	11.55	6.98			~~No~~ yes
21G0156-02 C	Ø.79	11.139	8.76			No
21G0156-03 C	Ø.79	11.99	9.63			No
21G0156-04 C	Ø.79	11.ØØ	9.25			~~No~~ yes
21G0156-05 C	Ø.78	11.469	8.84			No

TOTAL SOLIDS BENCHSHEET

Method HRSM01.2

(dry at 110 C)

Batch:	BJG0433
Date:	7/29/2021 5:25
Analyst:	DP
Drying Oven:	18
Analytical Balance:	24650344

Instrumentation

Batch drying time			
Record times as mm/dd/yy hh:mm		Oven Temp, C	TS (%) calculated as:
Date/time in oven:	7/28/2021 13:00	108	Final dry wt (g) = (Dry Wt - Tare Wt)
Date/time out:	7/29/2021 5:25	108	TS = (Final Dry Wt X 100)/ (sample & dish -dish tare)
Elapsed hrs:	16.4		

Oven Temps, °C	
Start Temp:	108
End Temp:	108

SAMPLE ID	Dish Tare Wt (g)	Dish with Sample (g)	Dry Wt (g)	Solids Wt (g)	TS (%)	Sample Decanted
21G0126-07	0.7900	11.9500	7.5300	6.74	**60.39%**	No
21G0126-08	0.8000	11.3700	8.0000	7.20	**68.12%**	No
21G0126-09	0.8000	11.0600	6.8600	6.06	**59.06%**	No
21G0126-10	0.7900	11.1500	7.7400	6.95	**67.08%**	No
21G0126-11	0.8000	11.3500	7.2900	6.49	**61.52%**	No
21G0126-12	0.8100	11.5800	7.6800	6.87	**63.79%**	No
21G0126-13	0.8000	11.7900	7.7700	6.97	**63.42%**	No
21G0126-14	0.7900	11.1700	7.5900	6.80	**65.51%**	No
21G0156-01	0.7900	11.5500	6.9800	6.19	**57.53%**	Yes
21G0156-02	0.7900	11.1400	8.7600	7.97	**77.00%**	No
21G0156-03	0.7800	11.9800	9.6300	8.85	**79.02%**	No
21G0156-04	0.7900	11.6000	9.2500	8.46	**78.26%**	Yes
21G0156-05	0.7800	11.4700	8.8400	8.06	**75.40%**	No

```
==========================================================================
Injection Date  : 7/28/2021 6:08:37 PM          Seq. Line :   3
Sample Name     : CS4 STANDARD                   Location : Vial 27
Acq. Operator   : DXP                                 Inj :   1
                                               Inj Volume : 1 µl
Sequence File   : C:\HPCHEM\2\SEQUENCE\072821A.S
Method          : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed    : 2/8/2020 12:13:23 PM by NL
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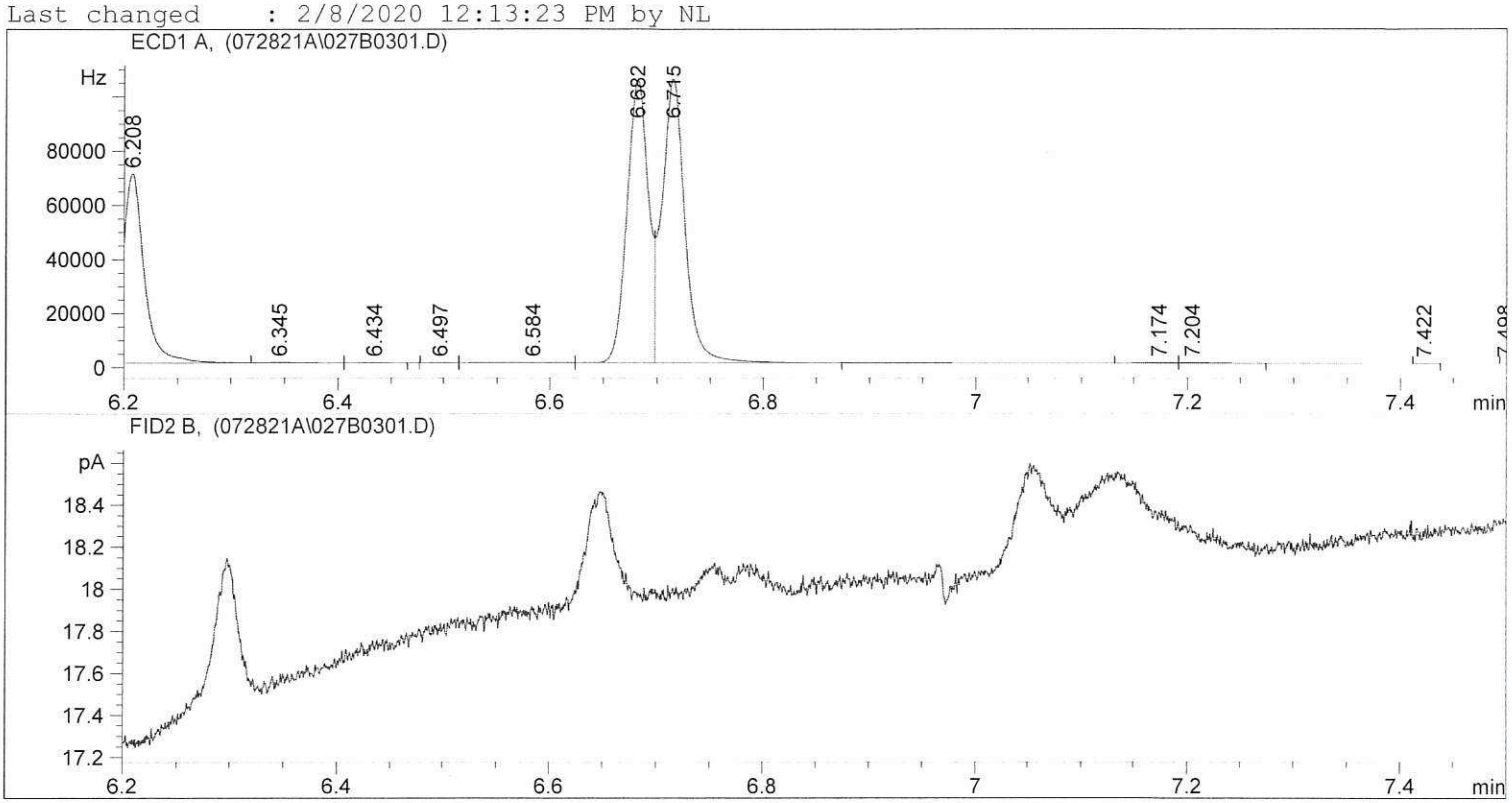


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==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
```

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.223	PP	0.0151	370.70425	329.46451	0.02959
2	5.363	PV	0.0232	188.26331	97.38179	0.01503
3	5.432	BP	0.0144	39.26905	35.88779	0.00313
4	5.509	VV S	0.0263	1.74182e5	9.12244e4	13.90360
5	5.613	VV S	0.0402	2.77688e5	1.15191e5	22.16577
6	5.673	VV S	0.0209	1.01998e5	8.13753e4	8.14174
7	5.720	VV S	0.0232	9.67103e4	6.95011e4	7.71966
8	5.835	VV S	0.0322	665.74304	344.12567	0.05314
9	5.883	VB S	0.0224	194.75439	144.71031	0.01555
10	5.974	PV S	0.0182	1.02632e5	8.43049e4	8.19236
11	6.127	VV S	0.0190	9.10804e4	7.35407e4	7.27026
12	6.208	VB S	0.0232	9.74777e4	6.99599e4	7.78091
13	6.345	BV X	0.0191	300.18759	197.77711	0.02396
14	6.434	VB X	0.0175	116.87370	80.75439	0.00933
15	6.497	BV	0.0162	94.07999	70.18111	0.00751
16	6.584	VV	0.0431	630.05438	172.98628	0.05029
17	6.682	VV S	0.0210	1.45103e5	1.04195e5	11.58248

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	6.715	VB S	0.0257	1.61630e5	1.04736e5	12.90172
19	7.174	PV	0.0244	513.88336	254.34302	0.04102
20	7.204	VP	0.0274	547.69153	246.01257	0.04372
21	7.422	PB	3.77e-3	2.33275	8.59784	0.00019
22	7.498	PB	1.78e-3	7.96650e-1	7.46194	6.359e-5
23	7.526	PB	1.66e-3	1.13771	11.44936	9.081e-5
24	7.645	BP	3.75e-3	3.29657	13.05133	0.00026
25	7.660	VV	6.77e-3	8.12631	16.42196	0.00065
26	7.747	BBA	0.0290	600.92657	245.20866	0.04797

Totals : 1.25278e6 7.96304e5

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

```
==========================================================================
Injection Date  : 7/28/2021 6:42:06 PM          Seq. Line :   6
Sample Name     : 21G0126 07                     Location : Vial 28
Acq. Operator   : DXP                                Inj :   1
                                               Inj Volume : 1 µl
Sequence File   : C:\HPCHEM\2\SEQUENCE\072821A.S
Method          : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed    : 2/8/2020 12:13:23 PM by NL
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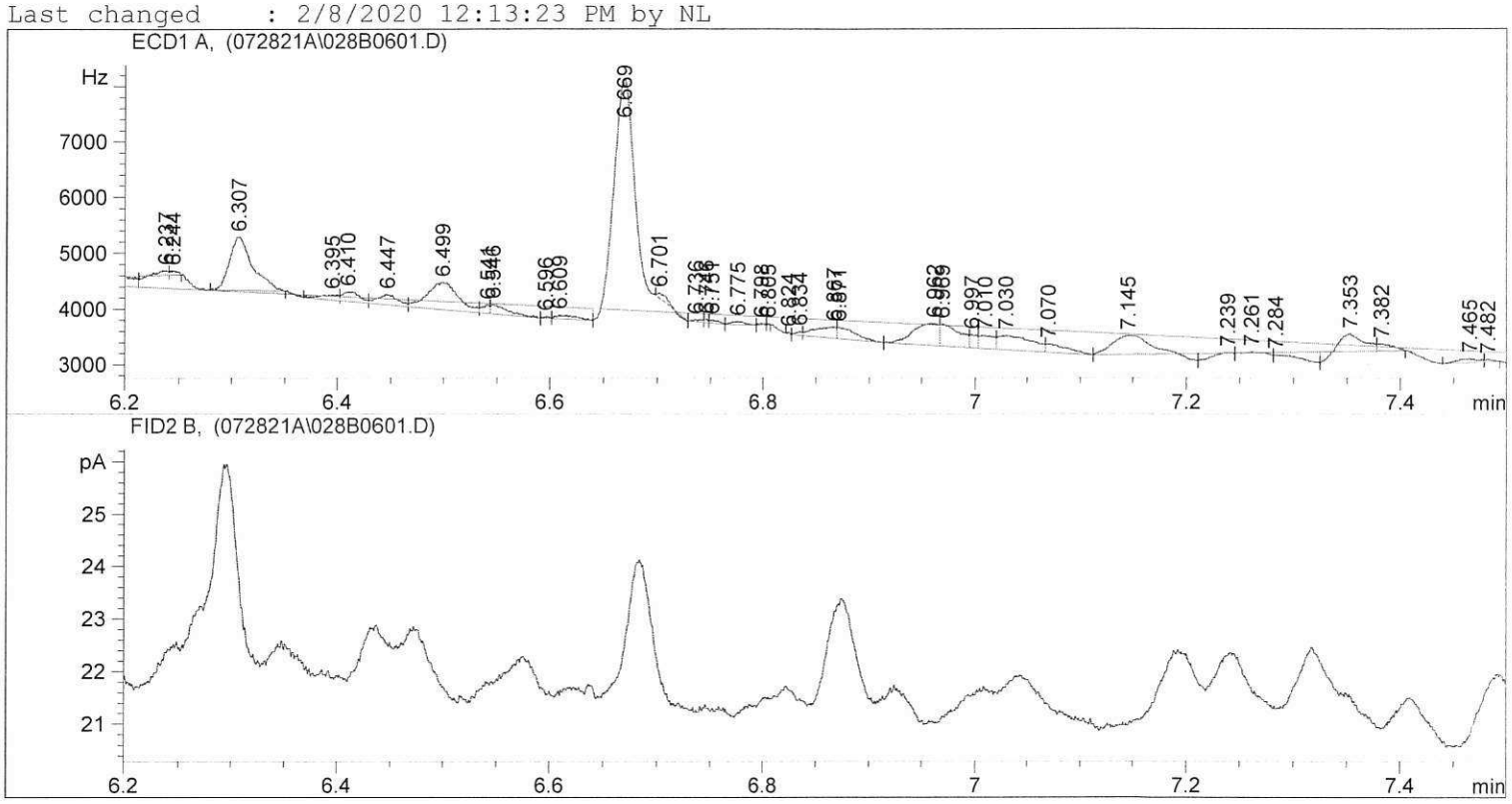


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==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
```

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.211	BV S	0.0146	7859.38525	8998.53223	9.03056
2	5.255	PP T	0.0117	109.90209	115.31288	0.12628
3	5.292	PP S	0.0164	2476.36353	2222.29614	2.84538
4	5.321	BV T	2.51e-3	4.69657	31.21366	0.00540
5	5.328	PV T	8.82e-3	49.70145	93.87546	0.05711
6	5.394	PV S	0.0247	9362.45215	5118.42041	10.75760
7	5.457	BV T	0.0100	172.65906	228.66840	0.19839
8	5.498	PV S	0.0186	1.58611e4	1.26885e4	18.22467
9	5.538	BB T	0.0125	356.18152	411.52115	0.40926
10	5.610	BV T	0.0127	170.20816	169.75330	0.19557
11	5.633	PV T	6.17e-3	57.21021	119.72639	0.06574
12	5.657	PV T	0.0176	358.70044	245.86380	0.41215
13	5.676	PV T	0.0126	94.24097	91.38068	0.10828
14	5.721	PV S	0.0169	4580.65088	4142.81934	5.26324
15	5.784	PV S	0.0295	1.45152e4	6635.45117	16.67817
16	5.835	BV T	0.0102	270.79208	386.45856	0.31114
17	5.903	PV T	0.0138	1216.47021	1144.72229	1.39774

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	5.929	PV T	0.0325	342.57440	175.49696	0.39362
19	5.968	PV T	7.55e-3	348.96378	641.20435	0.40096
20	6.002	PV S	0.0225	5798.52686	3732.53149	6.66260
21	6.085	BV T	0.0163	428.49094	326.24423	0.49234
22	6.114	PV T	0.0178	1408.68604	1050.15491	1.61860
23	6.164	PV T	8.01e-3	60.46975	106.65990	0.06948
24	6.192	PV T	8.88e-3	77.31897	114.44747	0.08884
25	6.237	PV T	7.45e-3	47.54631	83.39920	0.05463
26	6.244	PB T	8.06e-3	36.76849	76.05100	0.04225
27	6.307	BB T	0.0193	1448.89355	955.93433	1.66480
28	6.395	BV T	0.0141	116.53841	98.93571	0.13390
29	6.410	PV T	0.0138	200.86040	174.91301	0.23079
30	6.447	PV T	0.0165	246.17645	185.84178	0.28286
31	6.499	PV T	0.0248	999.99213	489.28357	1.14901
32	6.541	PV T	6.62e-3	76.38779	153.16989	0.08777
33	6.546	PV T	0.0140	196.80852	171.87999	0.22614
34	6.596	PV T	5.25e-3	14.62759	36.71835	0.01681
35	6.609	PV T	0.0142	92.55289	78.01570	0.10634
36	6.669	PBAS	0.0000	1.10209e4	4147.40430	12.66315
37	6.701	BV T	7.05e-3	47.72493	89.09462	0.05484
38	6.736	PV T	7.51e-3	24.00280	39.36751	0.02758
39	6.746	PV T	3.55e-3	13.32173	62.49013	0.01531
40	6.751	PV T	9.79e-3	35.32886	60.14653	0.04059
41	6.775	PV T	0.0112	52.81969	60.25223	0.06069
42	6.798	PV T	4.62e-3	13.02182	35.99921	0.01496
43	6.805	PB T	2.60e-3	4.71719	30.22179	0.00542
44	6.824	BV T	2.82e-3	5.62313	32.41354	0.00646
45	6.834	PV T	5.01e-3	26.56560	73.57017	0.03052
46	6.867	PV T	0.0171	280.51822	208.91743	0.32232
47	6.871	PV T	0.0196	247.32062	210.45053	0.28418
48	6.962	PV T	0.0205	656.57410	400.06018	0.75441
49	6.969	PV T	0.0210	501.56824	398.83917	0.57631
50	6.997	PV T	8.23e-3	117.97250	238.96497	0.13555
51	7.010	PV T	0.0163	234.22969	238.77512	0.26913
52	7.030	PV T	0.0273	602.54242	263.70285	0.69233
53	7.070	PV T	0.0240	226.57779	157.44376	0.26034
54	7.145	PV T	0.0268	753.42603	340.78949	0.86570
55	7.239	PV T	0.0000	90.51412	14.14699	0.10400
56	7.261	PV T	0.0000	6.87020	18.93090	0.00789
57	7.284	PV T	0.1102	275.25253	41.61718	0.31627
58	7.353	PV T	0.0160	403.00891	312.81772	0.46306
59	7.382	PB T	0.0168	135.90132	134.89928	0.15615
60	7.465	BV T	0.0158	101.42931	76.98444	0.11654
61	7.482	PB T	7.04e-3	21.44535	38.87187	0.02464
62	7.552	BV T	0.0154	186.50757	149.43860	0.21430
63	7.584	PV T	0.0214	433.22906	243.28703	0.49779
64	7.623	PV T	0.0000	49.78386	21.98394	0.05720
65	7.699	PV T	0.0295	1004.26099	410.41260	1.15391
Totals :				8.70310e4	6.00477e4	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

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==========================================================================
Injection Date  : 7/28/2021 6:53:19 PM          Seq. Line :   7
Sample Name     : 21G0126 08                     Location : Vial 29
Acq. Operator   : DXP                                 Inj :   1
                                               Inj Volume : 1 µl
Sequence File   : C:\HPCHEM\2\SEQUENCE\072821A.S
Method          : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed    : 2/8/2020 12:13:23 PM by NL
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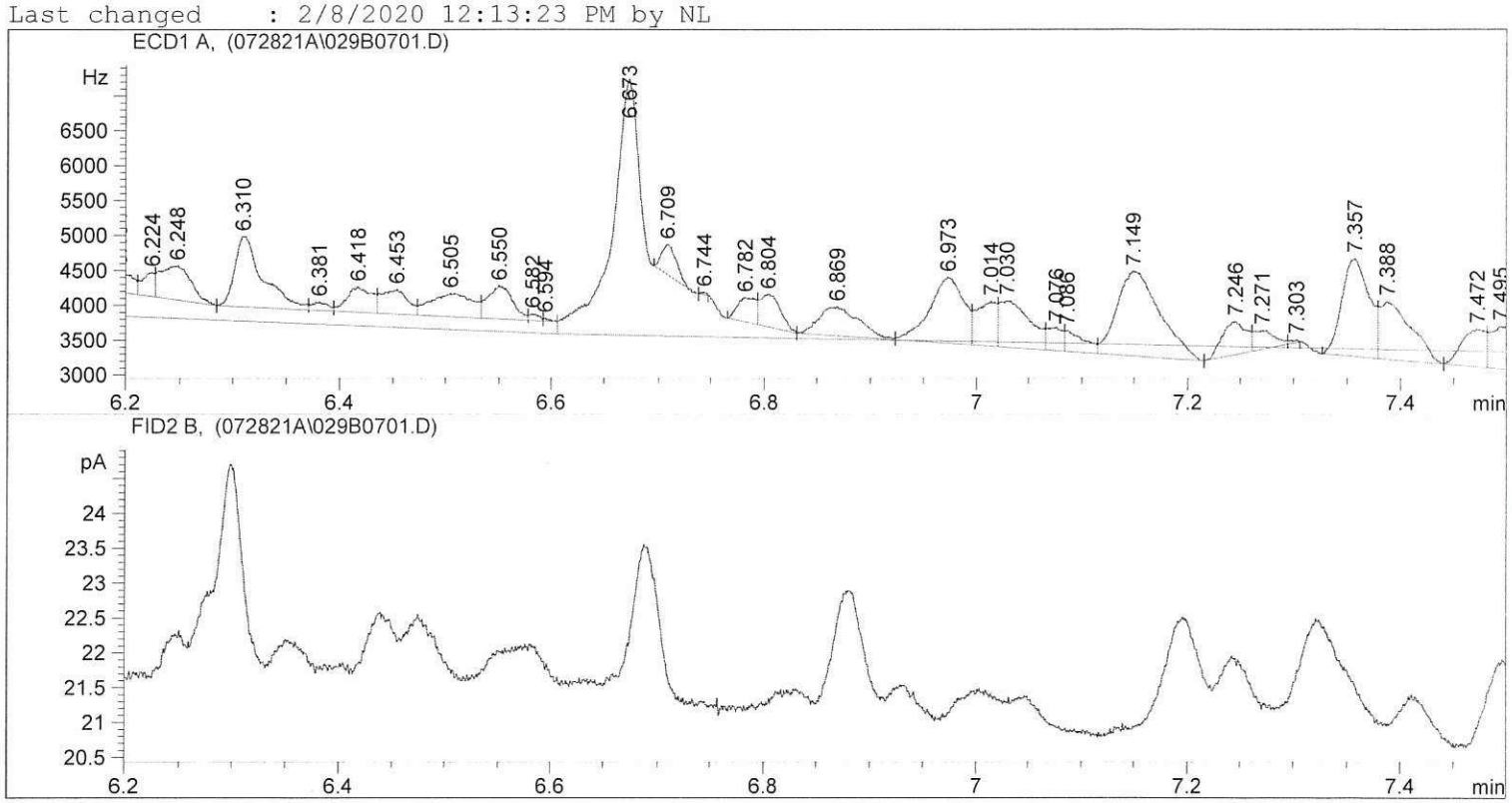


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==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
```

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.212	BV S	0.0143	5865.47900	6384.04785	4.83962
2	5.259	PV T	0.0143	409.08719	357.91531	0.33754
3	5.293	PV T	0.0148	1629.52856	1374.30542	1.34453
4	5.328	PP T	9.32e-3	105.97772	138.58073	0.08744
5	5.394	PV S	0.0208	5976.29688	3710.55444	4.93106
6	5.421	PV S	0.0190	6037.69629	4288.32031	4.98172
7	5.458	BV T	8.42e-3	65.20670	105.42333	0.05380
8	5.499	PV S	0.0213	1.47865e4	9993.78516	12.20038
9	5.536	BB T	7.12e-3	72.61974	129.94594	0.05992
10	5.569	BV T	0.0105	92.02473	106.19204	0.07593
11	5.607	PV T	8.77e-3	72.99448	118.72275	0.06023
12	5.657	PV T	0.0115	173.80385	182.90929	0.14341
13	5.692	PV T	0.0109	113.52089	128.40776	0.09367
14	5.723	PV S	0.0175	8603.00879	7227.38428	7.09837
15	5.788	PV S	0.0503	1.26638e4	3061.73071	10.44894
16	5.835	BV T	0.0118	473.85406	501.19235	0.39098
17	5.908	PV T	0.0174	1925.29504	1584.92920	1.58857

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	5.971	PV T	9.91e-3	291.19238	399.37067	0.24026
19	6.005	PV S	0.0545	1.48236e4	3295.57861	12.23101
20	6.066	BV T	6.59e-3	91.11470	183.44044	0.07518
21	6.071	PV T	7.77e-3	118.99250	199.12186	0.09818
22	6.085	PV T	0.0115	204.31339	218.48830	0.16858
23	6.118	PV T	0.0165	1373.87329	1074.74597	1.13359
24	6.168	PV T	0.0135	215.54219	195.19281	0.17784
25	6.194	PV T	0.0178	438.94781	297.07657	0.36218
26	6.224	PV T	0.0109	267.46796	349.76730	0.22069
27	6.248	PV T	0.0249	973.38605	491.34360	0.80314
28	6.310	PV T	0.0224	1837.11890	1003.70398	1.51581
29	6.381	PV T	0.0134	123.72542	122.71168	0.10209
30	6.418	PV T	0.0196	582.55316	362.23297	0.48067
31	6.453	PV T	0.0200	589.02893	353.34103	0.48601
32	6.505	PV T	0.0327	913.35291	330.26712	0.75361
33	6.550	PV T	0.0196	767.13293	471.64130	0.63296
34	6.582	PV T	8.12e-3	63.73646	96.29089	0.05259
35	6.594	PV T	5.88e-3	14.55042	41.25488	0.01201
36	6.673	PBAS	0.0503	1.51590e4	3691.48608	12.50774
37	6.709	BV T	0.0138	454.43747	432.93167	0.37496
38	6.744	PB T	5.32e-3	13.06431	40.89780	0.01078
39	6.782	BV T	0.0147	417.41159	346.37552	0.34441
40	6.804	PV T	0.0173	644.92865	462.03134	0.53213
41	6.869	PV T	0.0308	1073.76379	415.47064	0.88597
42	6.973	PV T	0.0263	2092.16211	943.86353	1.72625
43	7.014	PV T	0.0163	859.29028	640.46460	0.70900
44	7.030	PV T	0.0245	1357.00659	668.35535	1.11967
45	7.076	PV T	0.0164	331.50040	336.43378	0.27352
46	7.086	PV T	0.0209	372.02612	296.73083	0.30696
47	7.149	PP T	0.0335	3432.60962	1208.13611	2.83226
48	7.246	PV T	0.0189	745.66986	475.01901	0.61525
49	7.271	PV T	0.0168	370.52859	269.81174	0.30572
50	7.303	PB T	7.20e-3	22.47655	39.74399	0.01855
51	7.357	BV T	0.0226	2540.19141	1400.05774	2.09592
52	7.388	PV T	0.0247	1688.72693	824.05249	1.39337
53	7.472	PV T	0.0187	834.49701	536.81085	0.68855
54	7.495	PP T	0.0205	1011.87036	605.56268	0.83490
55	7.583	PV T	0.0332	1687.57141	603.85590	1.39242
56	7.636	PP T	0.0121	64.46980	68.88692	0.05319
57	7.706	PP T	0.0337	3267.45264	1185.76526	2.69598
Totals :				1.21197e5	6.43727e4	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

```
==========================================================================
Injection Date  : 7/28/2021 7:04:32 PM          Seq. Line :   8
Sample Name     : 21G0126 09                     Location : Vial 30
Acq. Operator   : DXP                                Inj :   1
                                               Inj Volume : 1 µl
Sequence File   : C:\HPCHEM\2\SEQUENCE\072821A.S
Method          : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed    : 2/8/2020 12:13:23 PM by NL
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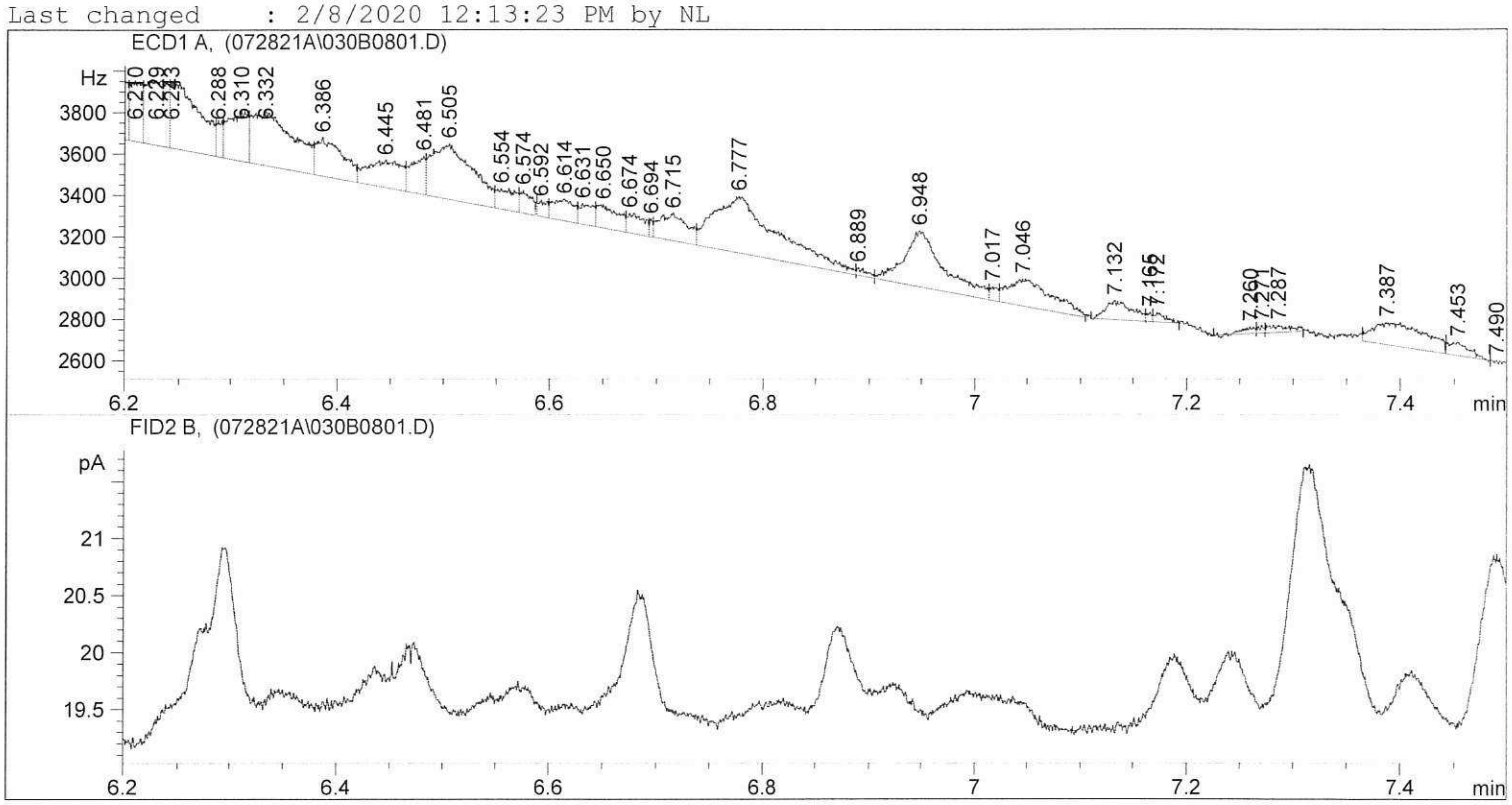


```
==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: ECD1 A,

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]    [Hz*s]     [Hz]       %
----|-------|----|-------|----------|----------|--------|
   1   5.225 PP    0.0160  522.64264  410.78348  1.76217
   2   5.274 VV    0.0122   86.23268   88.53893  0.29075
   3   5.298 VV    0.0109  100.94260  119.11947  0.34034
   4   5.309 VP   9.93e-3   90.35476  126.56510  0.30464
   5   5.384 BV    0.0193  437.34006  278.95547  1.47456
   6   5.408 VV   9.66e-3   90.25220  155.65543  0.30430
   7   5.417 VV   3.07e-3   32.50857  153.30725  0.10961
   8   5.423 VV    0.0108  134.66451  157.46132  0.45404
   9   5.439 VV   5.12e-3   62.92199  162.44043  0.21215
  10   5.457 VV    0.0183  510.56421  336.84436  1.72144
  11   5.496 VV    0.0194  525.08801  322.09106  1.77041
  12   5.519 VV    0.0114  234.75859  248.14153  0.79152
  13   5.538 VV   7.05e-3  190.62067  355.74661  0.64271
  14   5.545 VV    0.0318 1000.77594  379.44788  3.37427
  15   5.599 VV   4.16e-3   70.74485  245.31351  0.23853
  16   5.613 VV    0.0248  665.05145  334.43225  2.24232
  17   5.644 VV   5.17e-3  105.02975  293.57034  0.35412
```

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	5.650	VV	0.0144	367.58481	310.40567	1.23937
19	5.694	VV	0.0176	563.38080	386.81622	1.89952
20	5.719	VV	0.0235	1107.51318	568.44635	3.73415
21	5.742	VV	5.16e-3	148.73267	397.80478	0.50147
22	5.766	VV	0.0146	677.37695	589.52380	2.28388
23	5.775	VV	0.0212	1144.72180	643.26141	3.85960
24	5.821	VV	0.0125	525.99152	526.61816	1.77346
25	5.836	VV	0.0292	1542.47937	660.47308	5.20070
26	5.908	VV	0.0341	3666.91333	1351.62659	12.36355
27	5.969	VV	0.0251	2022.44189	978.91669	6.81897
28	6.001	VV	7.73e-3	288.62915	472.19821	0.97316
29	6.031	VV	0.0290	1335.49182	552.27423	4.50281
30	6.072	VV	0.0121	470.67270	475.74326	1.58694
31	6.087	VV	0.0426	1989.13098	563.34985	6.70666
32	6.162	VV	9.50e-3	199.16025	267.14697	0.67150
33	6.192	VV	0.0197	550.90106	336.63513	1.85745
34	6.210	VV	0.0126	221.09853	292.49567	0.74547
35	6.229	VV	0.0180	432.12363	314.52072	1.45697
36	6.243	VV	0.0228	619.57104	322.62619	2.08898
37	6.288	VV	6.81e-3	70.70557	173.05640	0.23839
38	6.310	VV	0.0161	302.25479	239.59085	1.01910
39	6.332	VV	0.0322	707.86328	264.79254	2.38667
40	6.386	VV	0.0209	322.95392	185.66086	1.08889
41	6.445	VV	0.0262	283.36139	128.90485	0.95540
42	6.481	VV	0.0116	168.45059	185.55807	0.56796
43	6.505	VV	0.0318	722.29895	268.53680	2.43534
44	6.554	VB	0.0146	116.99865	97.76438	0.39448
45	6.574	BB	0.0125	82.18019	109.73913	0.27708
46	6.592	BV	8.26e-3	45.82848	69.75570	0.15452
47	6.614	VV	0.0166	140.89589	102.95451	0.47505
48	6.631	VV	0.0111	89.98442	97.83555	0.30340
49	6.650	VB	0.0171	151.28320	112.35310	0.51007
50	6.674	BV	0.0131	100.61306	93.68965	0.33923
51	6.694	VV	3.06e-3	17.73756	84.12151	0.05980
52	6.715	VV	0.0221	235.68085	130.09497	0.79463
53	6.777	VV	0.0489	1134.40027	272.98242	3.82480
54	6.889	VB	8.19e-3	23.51580	36.12306	0.07929
55	6.948	BV	0.0310	702.63153	269.40845	2.36903
56	7.017	VV	8.44e-3	33.43556	65.99796	0.11273
57	7.046	VB	0.0356	383.92853	130.06018	1.29447
58	7.132	PV	0.0210	155.04021	91.52706	0.52274
59	7.165	VV	4.22e-3	13.56655	43.68523	0.04574
60	7.172	VP	9.07e-3	33.23042	44.72941	0.11204
61	7.260	PV	9.21e-3	23.79689	31.52920	0.08023
62	7.271	VV	4.70e-3	12.71854	34.53525	0.04288
63	7.287	VB	0.0171	47.12917	33.30634	0.15890
64	7.387	BB	0.0426	378.18884	106.17643	1.27512
65	7.453	BB	0.0163	86.10324	63.79428	0.29031
66	7.490	BB	4.91e-3	1.36008	3.68059	0.00459
67	7.511	BP	5.64e-3	6.04350	15.21116	0.02038
68	7.525	VV	5.47e-3	11.97605	28.68879	0.04038
69	7.537	VV	8.67e-3	21.51453	31.09197	0.07254
70	7.557	VP	0.0135	45.01062	40.18457	0.15176
71	7.617	BB	1.25e-3	3.25510e-1	8.50319	0.00110
72	7.681	PV	0.0101	32.12986	40.45304	0.10833
73	7.686	VV	2.98e-3	8.67994	42.48428	0.02927
74	7.691	VV	0.0157	47.38905	36.65265	0.15978
75	7.724	VV	7.22e-3	20.15241	46.82338	0.06795
76	7.746	VV	0.0231	131.34741	69.33505	0.44286
77	7.777	VV	4.70e-3	6.67989	19.00327	0.02252
78	7.790	VPA	4.54e-3	5.26377	14.83744	0.01775
Totals :				2.96591e4	1.81445e4	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

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==========================================================================
Injection Date  : 7/28/2021 7:15:32 PM          Seq. Line :   9
Sample Name     : 21G0126 10                     Location : Vial 31
Acq. Operator   : DXP                                Inj :   1
                                               Inj Volume : 1 µl
Sequence File   : C:\HPCHEM\2\SEQUENCE\072821A.S
Method          : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed    : 2/8/2020 12:13:23 PM by NL
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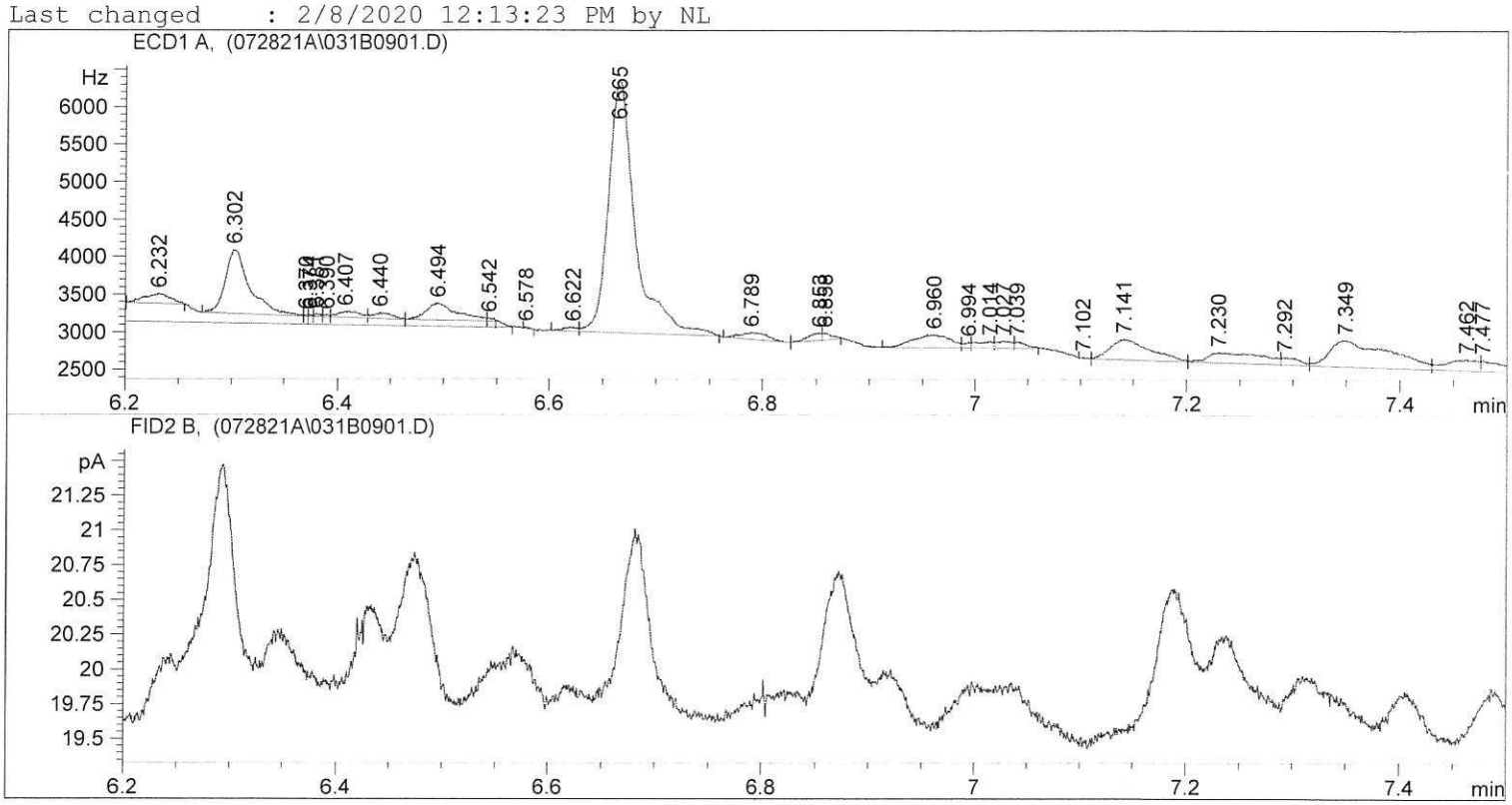


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==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
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Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.210	BV S	0.0123	4326.84521	6064.02881	5.74376
2	5.252	PV T	0.0104	114.32713	133.51799	0.15177
3	5.291	PV S	0.0179	2361.06177	1824.83105	3.13424
4	5.325	PP T	0.0000	95.48331	19.50791	0.12675
5	5.361	PV T	0.0000	89.85645	51.15932	0.11928
6	5.392	PV S	0.0278	9465.78125	4342.52295	12.56554
7	5.451	BV T	0.0134	44.72012	55.61972	0.05936
8	5.495	PV S	0.0188	1.63292e4	1.25094e4	21.67655
9	5.530	BB T	5.76e-3	74.37207	161.96107	0.09873
10	5.599	BV T	8.93e-3	44.79859	64.25043	0.05947
11	5.653	PV T	0.0171	379.39063	270.97488	0.50363
12	5.677	PV T	0.0127	86.06962	81.44151	0.11425
13	5.718	PV S	0.0173	5498.38574	4898.45508	7.29894
14	5.781	PV S	0.0418	9351.84277	2786.34570	12.41429
15	5.831	BV T	9.68e-3	176.40605	226.59604	0.23417
16	5.899	PV T	0.0118	804.81689	825.91211	1.06837
17	5.942	PV T	6.44e-3	78.11230	202.15970	0.10369

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	5.966	PV T	0.0000	53.36757	91.42714	0.07084
19	5.999	PB S	0.0497	1.05416e4	2642.07471	13.99371
20	6.111	BV T	0.0173	1284.91199	957.41467	1.70568
21	6.164	PV T	0.0101	39.84848	53.65043	0.05290
22	6.190	PV T	0.0111	77.18542	85.74934	0.10246
23	6.232	PB T	0.0203	214.44574	133.44748	0.28467
24	6.302	BV T	0.0193	1346.86572	849.90656	1.78792
25	6.370	PV T	2.51e-3	2.57801	17.10466	0.00342
26	6.374	PV T	3.62e-3	4.39854	20.23927	0.00584
27	6.381	PV T	6.28e-3	14.34658	38.04712	0.01904
28	6.390	PV T	4.54e-3	9.99237	31.19633	0.01326
29	6.407	PV T	0.0175	118.50407	81.92616	0.15731
30	6.440	PV T	0.0146	99.98882	82.19749	0.13273
31	6.494	PV T	0.0236	454.53180	228.26303	0.60338
32	6.542	PB T	6.04e-3	15.31867	42.29486	0.02034
33	6.578	BB	4.35e-3	6.56726	21.59665	0.00872
34	6.622	BV	0.0112	47.13832	57.42286	0.06257
35	6.665	VB S	0.0223	5799.04541	3361.37573	7.69806
36	6.789	BP	0.0219	168.94977	91.64418	0.22428
37	6.853	VV	0.0116	90.20830	95.55344	0.11975
38	6.858	VB	7.80e-3	58.54983	92.24989	0.07772
39	6.960	PV	0.0300	427.21307	174.50858	0.56711
40	6.994	VV	6.20e-3	36.49870	78.80629	0.04845
41	7.014	VV	0.0137	97.51077	88.46902	0.12944
42	7.027	VV	0.0122	90.39394	94.56350	0.12000
43	7.039	VB	9.19e-3	64.95357	86.19470	0.08622
44	7.102	PP	3.50e-3	3.75334	15.09921	0.00498
45	7.141	BV	0.0306	700.99231	272.28177	0.93055
46	7.230	VV	0.0444	505.08350	136.52565	0.67048
47	7.292	VV	0.0151	117.50529	97.13670	0.15598
48	7.349	VV	0.0478	1392.34338	351.80978	1.84829
49	7.462	VV	0.0243	308.19846	151.54846	0.40912
50	7.477	VV	0.0175	216.75160	149.86873	0.28773
51	7.571	VP	0.0393	742.35577	227.51947	0.98545
52	7.693	VP	0.0346	849.26062	289.39288	1.12737
53	7.798	VBA	6.13e-3	8.59046	19.82497	0.01140
Totals :				7.53313e4	4.58271e4	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

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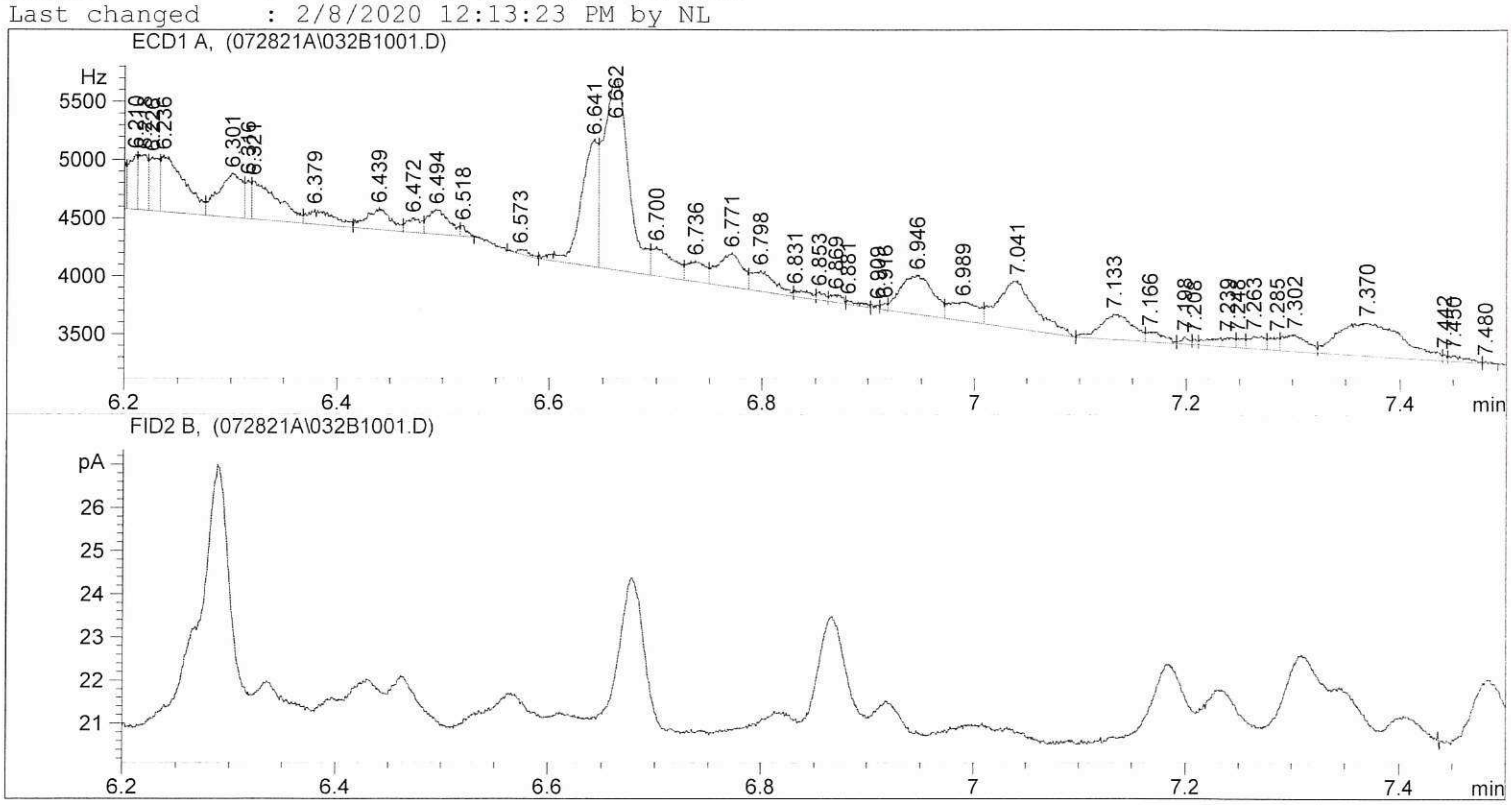
Injection Date : 7/28/2021 7:26:47 PM Seq. Line : 10
Sample Name : 21G0126 11 Location : Vial 32
Acq. Operator : DXP Inj : 1
Inj Volume : 1 µl

Sequence File : C:\HPCHEM\2\SEQUENCE\072821A.S
Method : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed : 2/8/2020 12:13:23 PM by NL



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Area Percent Report

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Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.216	BV	0.0168	567.30438	403.11218	1.14811
2	5.242	VP	0.0218	368.47421	208.49887	0.74571
3	5.310	VP	0.0150	210.51463	175.63303	0.42604
4	5.345	VV	8.89e-3	96.11340	135.28102	0.19451
5	5.386	VV	0.0184	680.72583	447.22949	1.37765
6	5.407	VV	0.0189	1027.11768	655.51208	2.07867
7	5.452	VV	0.0191	935.07568	583.93054	1.89240
8	5.492	VV	0.0182	1096.12769	760.59290	2.21833
9	5.512	VV	0.0177	866.47968	637.77588	1.75357
10	5.536	VV	0.0140	547.61255	507.70822	1.10825
11	5.567	VV	0.0251	1011.81207	490.82385	2.04770
12	5.615	VV	0.0175	766.82672	521.84692	1.55190
13	5.642	VV	0.0303	1624.85083	646.91351	3.28836
14	5.686	VV	0.0185	1026.88818	677.03125	2.07821
15	5.716	VV	0.0227	1633.75903	870.60718	3.30639
16	5.779	VV	0.0318	3040.05957	1137.36621	6.15244
17	5.815	VV	0.0121	665.10638	664.56537	1.34604

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	5.835	VV	0.0242	1881.02930	931.71704	3.80681
19	5.901	VV	0.0336	4942.86523	1748.61072	10.00332
20	5.964	VV	0.0204	2568.17310	1591.28076	5.19744
21	5.995	VV	0.0302	4113.62207	1665.53027	8.32511
22	6.052	VV	0.0106	355.61923	561.37024	0.71970
23	6.086	VV	0.0228	1449.40955	803.48706	2.93330
24	6.108	VV	0.0242	1990.47119	1007.49249	4.02830
25	6.153	VV	0.0156	558.20673	433.29633	1.12969
26	6.183	VV	0.0202	850.16785	507.14450	1.72056
27	6.210	VV	6.85e-3	244.26326	471.29901	0.49434
28	6.218	VV	8.39e-3	284.28622	474.36975	0.57534
29	6.226	VV	8.20e-3	300.79541	461.93460	0.60875
30	6.236	VV	0.0190	746.60034	483.91113	1.51096
31	6.301	VV	0.0184	583.74017	377.36508	1.18137
32	6.316	VV	4.85e-3	120.40614	330.24243	0.24368
33	6.321	VV	0.0210	564.78516	325.67920	1.14301
34	6.379	VV	0.0209	215.20146	123.73477	0.43552
35	6.439	VV	0.0187	281.95480	180.05704	0.57062
36	6.472	VV	0.0116	115.80555	122.85124	0.23437
37	6.494	VV	0.0169	295.02432	211.81033	0.59707
38	6.518	VB	5.48e-3	36.98388	92.16384	0.07485
39	6.573	PP	0.0118	37.23932	40.94223	0.07536
40	6.641	VV	0.0138	1209.45691	1088.30762	2.44769
41	6.662	VV	0.0221	2705.12183	1638.41162	5.47460
42	6.700	VV	0.0169	354.49493	253.64157	0.71742
43	6.736	VV	0.0142	208.12375	178.27104	0.42120
44	6.771	VV	0.0203	475.58197	294.01712	0.96248
45	6.798	VV	0.0187	278.47360	179.68044	0.56357
46	6.831	VV	0.0158	56.09836	59.00264	0.11353
47	6.853	VV	6.98e-3	37.14385	72.47757	0.07517
48	6.869	VV	0.0103	52.51854	66.17509	0.10629
49	6.881	VP	0.0107	31.90890	36.93832	0.06458
50	6.909	VV	4.33e-3	10.79597	33.77009	0.02185
51	6.916	VV	5.12e-3	19.74557	53.32853	0.03996
52	6.946	VV	0.0251	709.86749	335.18625	1.43662
53	6.989	VV	0.0233	317.81705	163.04138	0.64320
54	7.041	VP	0.0299	991.45618	411.32858	2.00650
55	7.133	VV	0.0251	454.64520	216.20227	0.92011
56	7.166	VV	0.0148	101.30879	85.78423	0.20503
57	7.198	VV	6.41e-3	32.04957	64.32072	0.06486
58	7.208	VV	4.15e-3	14.61385	50.90026	0.02958
59	7.239	VV	0.0177	127.69092	86.33313	0.25842
60	7.248	VV	6.30e-3	42.57046	84.22891	0.08615
61	7.263	VV	0.0126	112.83526	109.50752	0.22835
62	7.285	VV	8.16e-3	73.83295	113.96129	0.14942
63	7.302	VV	0.0193	226.72595	146.16982	0.45885
64	7.370	VV	0.0502	1227.04736	288.62292	2.48329
65	7.442	VV	3.49e-3	13.53828	58.77265	0.02740
66	7.450	VV	0.0142	60.56179	53.50370	0.12256
67	7.480	VP	8.69e-3	8.70456	16.68654	0.01762
68	7.531	BV	2.47e-3	4.21086	26.24423	0.00852
69	7.536	VV	0.0104	30.34359	35.37024	0.06141
70	7.571	VP	0.0232	180.05505	95.58691	0.36439
71	7.690	PV	0.0234	323.81189	164.25591	0.65533
72	7.710	VV	5.77e-3	38.02827	85.75195	0.07696
73	7.733	VV	0.0184	131.09000	88.68562	0.26530
74	7.759	VB	0.0102	48.46910	58.62357	0.09809

Totals : 4.94122e4 2.92638e4

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

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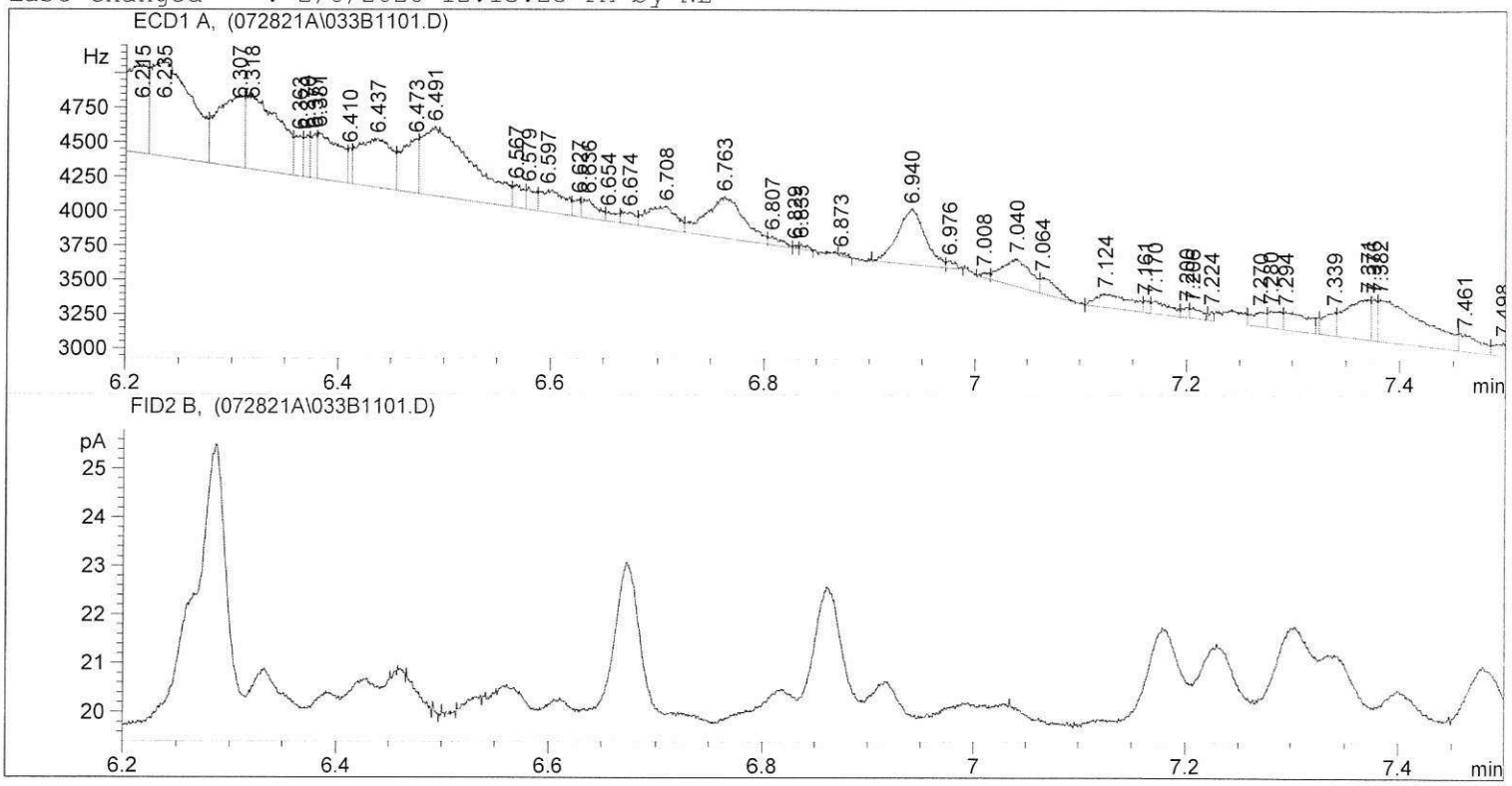
Injection Date : 7/28/2021 7:38:00 PM Seq. Line : 11
Sample Name : 21G0126 12 Location : Vial 33
Acq. Operator : DXP Inj : 1
Inj Volume : 1 µl

Sequence File : C:\HPCHEM\2\SEQUENCE\072821A.S
Method : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed : 2/8/2020 12:13:23 PM by NL



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Area Percent Report

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Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.220	BV	0.0145	572.19385	503.29425	1.08426
2	5.253	VP	4.19e-3	8.79041	27.02884	0.01666
3	5.267	VV	3.56e-3	13.02376	51.29611	0.02468
4	5.271	VB	7.58e-3	38.61575	66.49228	0.07317
5	5.299	BV	2.75e-3	6.25846	33.95113	0.01186
6	5.307	VP	7.20e-3	51.64346	107.54571	0.09786
7	5.338	VV	5.12e-3	34.17740	88.20054	0.06476
8	5.383	VV	0.0247	788.05347	381.98206	1.49329
9	5.400	VV	3.76e-3	74.44557	274.42160	0.14107
10	5.404	VV	0.0115	196.10413	284.61740	0.37160
11	5.454	VV	0.0292	1678.51733	720.81360	3.18064
12	5.487	VV	0.0192	968.63116	607.33179	1.83547
13	5.534	VV	0.0387	2233.03613	680.30151	4.23141
14	5.608	VV	0.0290	1311.34216	541.93359	2.48488
15	5.635	VV	0.0142	657.38885	565.50311	1.24569
16	5.647	VV	0.0113	528.45197	565.99969	1.00137
17	5.684	VV	0.0231	1295.17346	690.80817	2.45424

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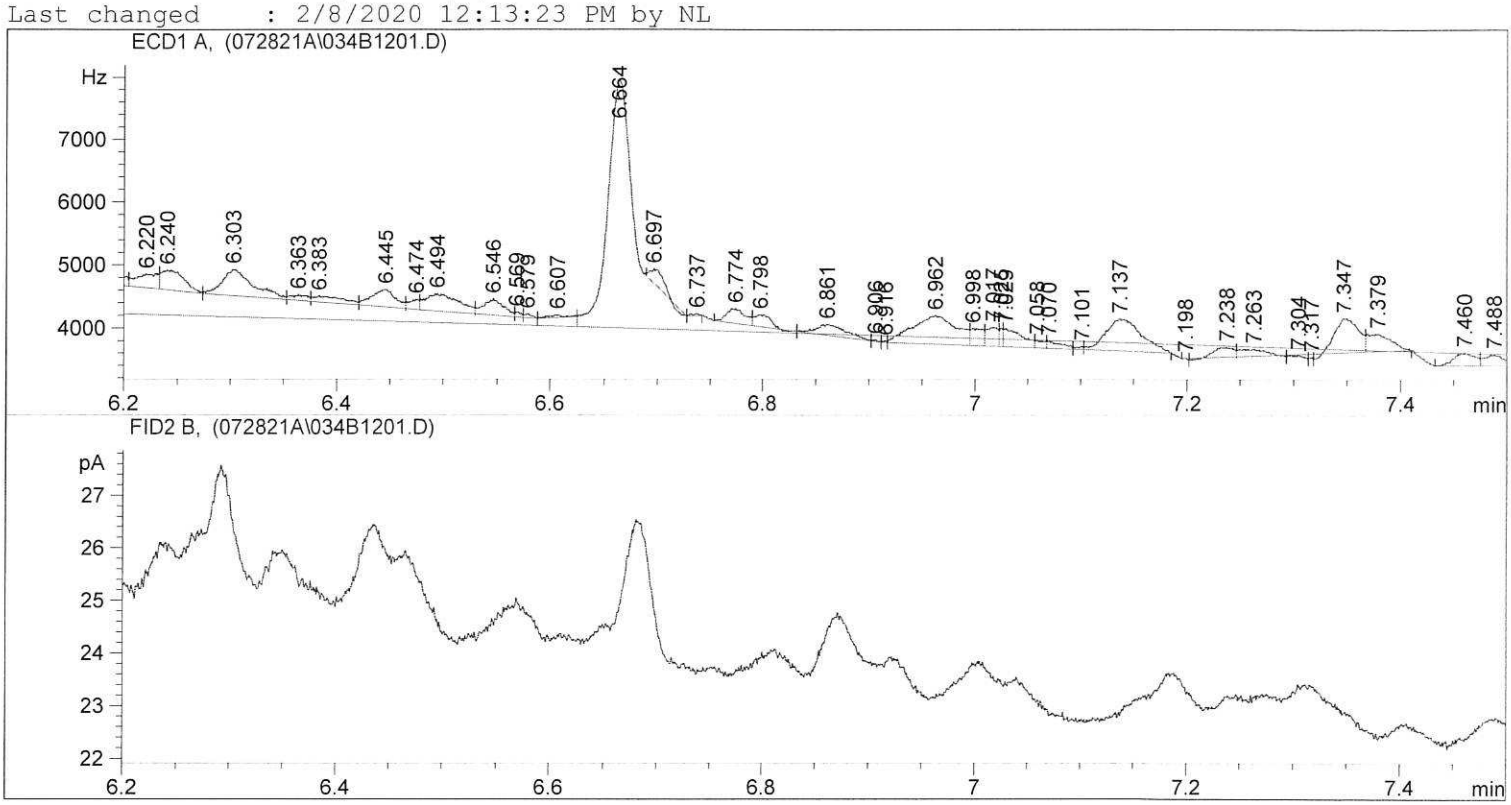
Injection Date : 7/28/2021 7:49:19 PM Seq. Line : 12
Sample Name : 21G0126 13 Location : Vial 34
Acq. Operator : DXP Inj : 1
Inj Volume : 1 µl

Sequence File : C:\HPCHEM\2\SEQUENCE\072821A.S
Method : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed : 2/8/2020 12:13:23 PM by NL



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Area Percent Report

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Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.212	BV S	0.0211	4519.38477	3054.71411	5.05267
2	5.262	PV T	0.0117	485.63528	511.75385	0.54294
3	5.310	PV T	0.0193	1511.22070	1041.42126	1.68954
4	5.360	PV T	8.46e-4	1.80360	85.41547	0.00202
5	5.410	VV S	0.0273	7397.56299	3699.07202	8.27047
6	5.451	BV T	9.57e-3	58.07293	73.87306	0.06493
7	5.497	PV S	0.0314	1.23112e4	5021.40283	13.76395
8	5.569	BV T	2.06e-3	6.38131	86.39236	0.00713
9	5.609	PV T	0.0000	92.38020	31.58580	0.10328
10	5.629	PV T	0.1126	61.66940	6.42107	0.06895
11	5.646	PV T	0.0137	59.48611	52.83871	0.06651
12	5.660	PV T	0.0127	80.97312	106.44637	0.09053
13	5.690	PV T	0.0000	17.85607	76.12527	0.01996
14	5.720	VV S	0.0183	3350.35889	2482.80615	3.74570
15	5.784	PV S	0.0348	2.24511e4	8559.97754	25.10036
16	5.835	BV T	0.0000	244.78972	70.15565	0.27367
17	5.904	PV T	9.13e-3	579.18481	792.55304	0.64753

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	5.958	PV T	6.66e-3	245.10773	471.86868	0.27403
19	5.999	VV S	0.0504	2.12410e4	5297.32568	23.74741
20	6.091	BV T	0.0108	153.52509	175.01764	0.17164
21	6.111	PV T	0.0155	1404.53857	1159.50549	1.57027
22	6.164	PV T	9.57e-3	99.93206	132.99100	0.11172
23	6.188	PV T	0.0181	295.22604	199.41533	0.33006
24	6.220	PV T	0.0172	306.77576	213.05380	0.34297
25	6.240	PV T	0.0185	475.49948	312.98471	0.53161
26	6.303	PV T	0.0238	830.50543	417.56381	0.92850
27	6.363	PV T	0.0121	92.23867	92.35107	0.10312
28	6.383	PV T	0.0244	201.50688	98.96281	0.22528
29	6.445	PV T	0.0185	431.37473	281.04074	0.48228
30	6.474	PV T	7.83e-3	101.05499	163.10161	0.11298
31	6.494	PV T	0.0267	603.68829	276.57501	0.67492
32	6.546	PV T	0.0158	339.27478	259.72107	0.37931
33	6.569	PV T	6.45e-3	30.38760	78.50706	0.03397
34	6.579	PV T	6.88e-3	32.25032	61.90300	0.03606
35	6.607	PV T	0.0132	44.38541	45.15315	0.04962
36	6.664	PBAS	9.89e-3	1661.16528	3967.22144	1.85718
37	6.697	BV T	0.0113	187.96297	227.03760	0.21014
38	6.737	PB T	4.71e-3	13.50395	38.32312	0.01510
39	6.774	BV T	0.0151	296.02582	238.49249	0.33096
40	6.798	PV T	0.0133	197.85678	190.74138	0.22120
41	6.861	PV T	0.0233	332.38229	172.48096	0.37160
42	6.906	PV T	4.12e-3	6.90489	27.90744	0.00772
43	6.916	PV T	3.77e-3	5.45904	20.09627	0.00610
44	6.962	PV T	0.0339	1297.20691	454.07947	1.45028
45	6.998	PV T	9.79e-3	218.03094	270.83466	0.24376
46	7.017	PV T	9.97e-3	230.48463	299.62802	0.25768
47	7.025	PV T	3.66e-3	64.15410	292.31485	0.07172
48	7.029	PV T	0.0205	346.18765	281.36349	0.38704
49	7.058	PV T	9.97e-3	72.29012	120.87605	0.08082
50	7.070	PV T	0.0164	107.13615	109.08675	0.11978
51	7.101	PV T	5.32e-3	20.88956	51.67154	0.02335
52	7.137	PB T	0.0279	1177.50769	503.56818	1.31645
53	7.198	BV T	1.48e-4	9.28007e-2	10.42995	0.00010
54	7.238	PV T	0.0160	186.80739	158.11148	0.20885
55	7.263	PV T	0.0193	180.05579	113.42177	0.20130
56	7.304	PV T	0.0470	35.19309	8.85087	0.03935
57	7.317	PV T	6.03e-3	20.29831	56.11240	0.02269
58	7.347	PV T	0.0186	830.34460	543.77191	0.92832
59	7.379	PB T	0.0190	430.20441	276.17270	0.48097
60	7.460	BV T	0.0179	282.96237	202.05263	0.31635
61	7.488	PV T	0.0114	161.83112	174.48827	0.18093
62	7.575	PV T	0.0000	43.08334	151.13953	0.04817
63	7.615	PV T	0.0106	76.48222	119.93094	0.08551
64	7.627	PV T	0.0290	201.16588	115.56278	0.22490
65	7.694	PV T	0.0135	378.16370	365.68091	0.42279
66	7.758	PV T	9.67e-3	103.76398	139.62297	0.11601
67	7.794	PBAT	0.0000	122.50394	37.16895	0.13696
Totals :				8.94455e4	4.52282e4	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

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Injection Date  : 7/28/2021 8:00:31 PM          Seq. Line :  13
Sample Name     : 21G0126 14                     Location : Vial 35
Acq. Operator   : DXP                                Inj :   1
                                               Inj Volume : 1 µl
Sequence File   : C:\HPCHEM\2\SEQUENCE\072821A.S
Method          : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed    : 2/8/2020 12:13:23 PM by NL
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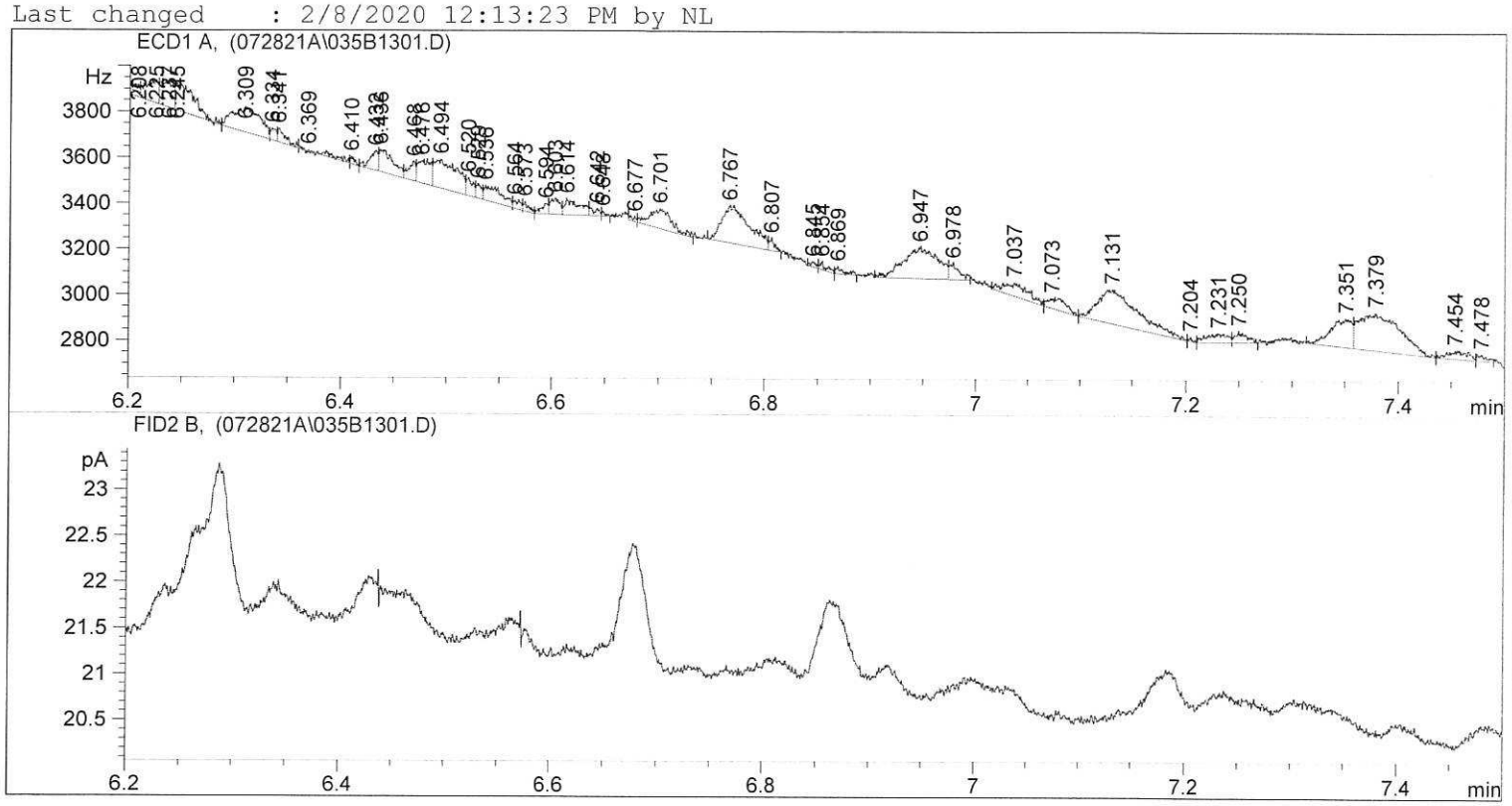


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==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
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Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.210	BV S	0.0201	2311.37842	1544.03516	8.26352
2	5.248	PP T	0.0000	1.00639	20.00371	0.00360
3	5.255	PV T	6.18e-3	7.93281	21.38290	0.02836
4	5.265	PV T	0.0000	4.50997	27.71643	0.01612
5	5.306	PV T	1.18e-3	2.07775	31.03632	0.00743
6	5.324	PV T	7.94e-3	9.56292	20.08356	0.03419
7	5.336	PV T	0.0000	9.23933	14.50803	0.03303
8	5.352	PV T	0.0101	112.68412	145.05183	0.40286
9	5.389	PV T	0.0205	2353.38013	1419.68347	8.41368
10	5.426	PV T	0.0169	313.56372	239.80681	1.12104
11	5.451	PV T	7.38e-3	61.19085	105.33424	0.21877
12	5.494	PB S	0.0700	1.47707e4	2610.61914	52.80728
13	5.535	BV T	9.62e-3	42.79816	55.34670	0.15301
14	5.566	PV T	6.52e-3	49.39913	100.78848	0.17661
15	5.570	PV T	5.29e-3	34.88672	109.90040	0.12473
16	5.576	PV T	6.58e-3	39.37661	99.78096	0.14078
17	5.603	PV T	0.0171	247.91234	182.05771	0.88632

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	5.670	PV T	0.0000	11.44993	25.83548	0.04094
19	5.688	PV T	4.41e-3	17.80349	51.73703	0.06365
20	5.717	PV T	0.0124	863.10516	854.82098	3.08573
21	5.751	PV T	4.09e-3	9.17318	30.67913	0.03280
22	5.781	PV T	0.0118	264.62759	291.35519	0.94608
23	5.822	PV T	0.0000	10.69545	57.99926	0.03824
24	5.838	PV T	0.0117	105.25092	116.26786	0.37629
25	5.905	PV T	0.0211	1763.86182	1086.02979	6.30607
26	5.965	PV T	9.78e-3	129.64899	172.30249	0.46351
27	5.981	PB T	2.92e-3	3.83415	21.87284	0.01371
28	6.023	BV T	0.0177	202.16254	138.13431	0.72276
29	6.062	PV T	8.01e-3	39.77911	68.14661	0.14222
30	6.071	PV T	6.81e-3	28.54004	69.79740	0.10203
31	6.081	PV T	0.0115	93.21471	97.99338	0.33326
32	6.106	PB T	0.0207	59.27794	47.69027	0.21193
33	6.193	PV	9.73e-3	51.83580	70.93288	0.18532
34	6.208	VV	5.59e-3	19.71769	57.68537	0.07049
35	6.225	VV	9.70e-3	77.20350	101.17012	0.27601
36	6.237	VV	9.98e-3	89.57030	111.45211	0.32023
37	6.245	VP	0.0152	148.06247	120.18030	0.52935
38	6.309	VV	0.0207	188.71149	109.58849	0.67467
39	6.334	VV	5.05e-3	19.98180	52.43679	0.07144
40	6.341	VB	6.73e-3	31.26469	59.52844	0.11178
41	6.369	BV	0.0478	17.33582	6.04441	0.06198
42	6.410	VP	3.49e-3	8.52579	32.20147	0.03048
43	6.432	VV	6.74e-3	43.11825	84.74878	0.15415
44	6.436	VB	0.0119	94.55013	95.55128	0.33803
45	6.468	BV	6.19e-3	39.88197	83.26912	0.14258
46	6.476	VV	0.0108	87.65955	98.27569	0.31340
47	6.494	VV	0.0191	191.83551	126.29596	0.68584
48	6.520	VV	5.66e-3	32.91788	79.07352	0.11769
49	6.529	VV	4.97e-3	21.85563	64.25466	0.07814
50	6.536	VV	0.0147	79.27838	65.55150	0.28343
51	6.564	VV	6.25e-3	16.39908	35.09677	0.05863
52	6.573	VP	4.82e-3	14.73209	40.75101	0.05267
53	6.594	VV	6.17e-3	20.87160	45.33693	0.07462
54	6.603	VV	7.27e-3	41.90173	71.18060	0.14980
55	6.614	VB	0.0121	68.03488	70.49241	0.24323
56	6.642	BV	8.67e-3	15.58918	29.97225	0.05573
57	6.648	VP	3.24e-3	4.38741	19.36793	0.01569
58	6.677	BV	4.44e-3	6.67504	20.26087	0.02386
59	6.701	VP	0.0173	124.81640	85.95238	0.44624
60	6.767	BV	0.0225	298.17093	160.02742	1.06601
61	6.807	VP	6.26e-3	19.79028	52.70977	0.07075
62	6.845	PV	4.78e-3	7.67049	21.41762	0.02742
63	6.854	VP	7.06e-3	13.96124	32.98109	0.04991
64	6.869	VB	5.90e-3	14.13787	31.09532	0.05054
65	6.947	PV	0.0268	301.87885	136.59380	1.07926
66	6.978	VB	0.0113	47.77509	70.24133	0.17080
67	7.037	PP	0.0199	92.75100	57.86100	0.33160
68	7.073	VP	0.0172	59.82894	42.53966	0.21390
69	7.131	VP	0.0312	392.57773	148.65569	1.40352
70	7.204	VP	2.65e-3	3.13350	17.84214	0.01120
71	7.231	VV	0.0161	49.22710	37.09278	0.17599
72	7.250	VP	0.0102	34.49650	46.86712	0.12333
73	7.351	PV	0.0167	174.75578	124.98347	0.62478
74	7.379	VP	0.0333	438.86847	164.69273	1.56902
75	7.454	VV	0.0174	48.39760	36.27583	0.17303
76	7.478	VB	8.87e-3	17.27107	27.73060	0.06175
77	7.541	PV	0.0101	23.27467	29.22711	0.08321
78	7.548	VV	3.65e-3	8.43048	32.25869	0.03014
79	7.559	VB	0.0160	63.22209	49.25070	0.22603
80	7.617	PP	9.99e-3	20.48860	26.22955	0.07325
81	7.694	PV	0.0293	254.81955	106.39879	0.91102
82	7.722	VB	0.0104	32.07225	39.96524	0.11466

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
83	7.793	PBA	0.0110	23.17813	26.92076	0.08287

Totals : 2.79709e4 1.32343e4

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

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Injection Date  : 7/28/2021 8:11:49 PM          Seq. Line :  14
Sample Name     : 21G0156 01                     Location : Vial 36
Acq. Operator   : DXP                                Inj :   1
                                               Inj Volume : 1 µl
Sequence File   : C:\HPCHEM\2\SEQUENCE\072821A.S
Method          : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed    : 2/8/2020 12:13:23 PM by NL
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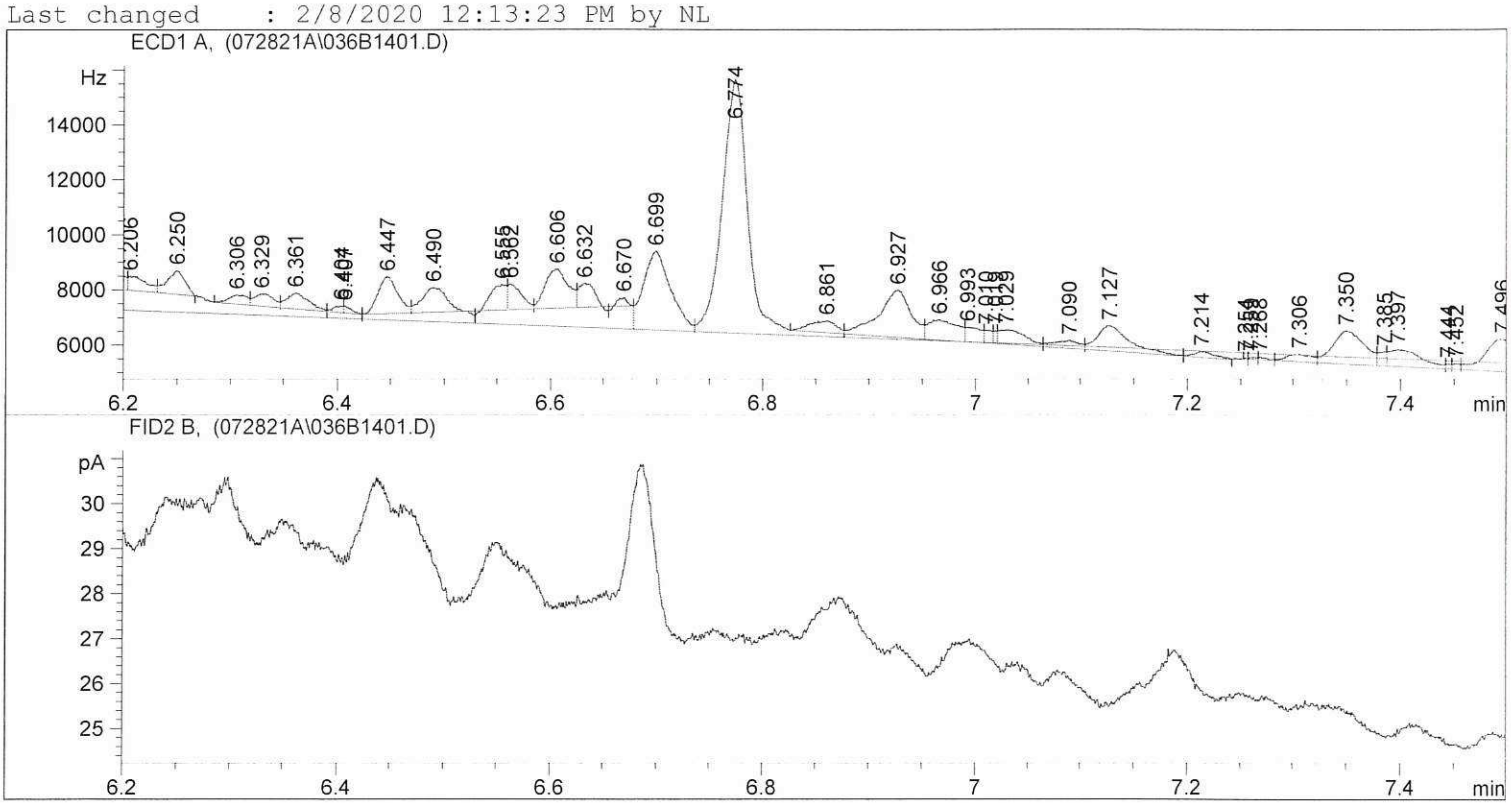


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==========================================================================
                              Area Percent Report
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Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
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Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.221	BP S	0.0176	1.03893e4	8513.89453	3.85602
2	5.311	VV S	0.0168	6.58549e4	5.89991e4	24.44228
3	5.451	VV S	0.0308	2.06282e4	1.11694e4	7.65624
4	5.494	VV S	0.0271	5817.03125	3579.68311	2.15901
5	5.567	VV S	0.0432	1.27722e4	4927.13867	4.74043
6	5.626	VV S	0.0431	7980.88525	3086.30273	2.96213
7	5.684	VV S	0.0219	1.32788e4	7771.42822	4.92848
8	5.782	VV S	0.0427	1.25778e4	3643.76343	4.66829
9	5.836	VV S	0.0299	6188.62207	3451.30347	2.29693
10	5.906	VV S	0.0610	1.99316e4	5443.10498	7.39768
11	5.945	BV T	0.0000	6.06877e-1	20.19000	0.00023
12	5.978	VV T	0.0000	122.31149	159.18112	0.04540
13	6.001	VV S	0.0240	8542.76660	4443.23486	3.17068
14	6.053	VV S	0.0459	4.21696e4	1.53079e4	15.65141
15	6.093	BB T	9.85e-3	154.14172	194.40410	0.05721
16	6.138	BV T	0.0104	178.51579	209.00511	0.06626
17	6.191	PV T	0.0206	970.01001	561.33203	0.36002

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	6.206	PV T	0.0199	609.19916	510.22089	0.22611
19	6.250	PB T	0.0146	980.01556	865.87488	0.36374
20	6.306	BV T	0.0158	415.03519	335.20193	0.15404
21	6.329	PV T	0.0155	580.18268	447.82678	0.21534
22	6.361	PV T	0.0179	820.82599	581.74084	0.30465
23	6.404	PV T	8.01e-3	153.63010	241.96487	0.05702
24	6.407	PV T	8.28e-3	123.85841	249.39551	0.04597
25	6.447	PV T	0.0160	1713.79224	1336.08765	0.63608
26	6.490	PV T	0.0199	1350.86218	890.65521	0.50138
27	6.555	PV T	0.0124	927.50903	916.58356	0.34425
28	6.562	PV T	0.0107	802.50262	926.55457	0.29785
29	6.606	PV T	0.0188	2143.27051	1419.59521	0.79548
30	6.632	PV T	0.0122	840.45532	857.79681	0.31194
31	6.670	PV T	6.71e-3	155.43149	306.94522	0.05769
32	6.699	PV S	0.0225	5061.21191	2851.20825	1.87849
33	6.774	PBAS	0.0127	5422.36670	9218.76367	2.01253
34	6.861	BV T	0.0207	762.24725	443.01025	0.28291
35	6.927	PV T	0.0263	3605.41968	1704.85718	1.33816
36	6.966	PV T	0.0228	1410.39929	748.27612	0.52347
37	6.993	PV T	0.0125	557.30780	537.08685	0.20685
38	7.010	PV T	8.19e-3	231.64717	471.25259	0.08598
39	7.019	PV T	3.95e-3	112.19967	473.58401	0.04164
40	7.029	PV T	0.0211	937.54254	533.37811	0.34797
41	7.090	PV T	0.0201	496.17117	299.37811	0.18416
42	7.127	PV T	0.0251	1932.47119	919.89020	0.71724
43	7.214	PB T	0.0169	288.67883	214.01773	0.10714
44	7.254	BV T	2.17e-3	5.76470	44.25994	0.00214
45	7.259	PV T	8.15e-3	37.11773	75.93900	0.01378
46	7.268	PV T	9.04e-3	51.46674	94.85854	0.01910
47	7.306	PV T	0.0190	435.01971	272.62189	0.16146
48	7.350	PV T	0.0243	2442.39160	1202.52820	0.90650
49	7.385	PV T	6.57e-3	265.17273	517.97815	0.09842
50	7.397	PV T	0.0258	1329.05798	620.13348	0.49328
51	7.444	PV T	5.35e-3	57.47731	179.13614	0.02133
52	7.452	PV T	6.40e-3	97.27277	202.54396	0.03610
53	7.496	PV T	0.0254	2516.55884	1181.54907	0.93403
54	7.542	PV T	3.37e-3	7.93799	33.41655	0.00295
55	7.551	PV T	6.33e-3	29.13751	59.29023	0.01081
56	7.580	PV T	0.0191	544.74835	351.72162	0.20219
57	7.615	PV T	4.30e-3	14.39033	45.41448	0.00534
58	7.625	PB T	6.93e-3	18.74838	45.10697	0.00696
59	7.711	BV T	0.0388	1483.23779	452.72363	0.55051
60	7.760	PV T	0.0000	25.24913	16.44741	0.00937
61	7.775	PV T	6.37e-3	18.96177	49.63551	0.00704
62	7.779	PV T	6.55e-3	22.25898	56.65862	0.00826
63	7.798	PBAT	0.0000	36.83087	19.02359	0.01367
Totals :				2.69430e5	1.65302e5	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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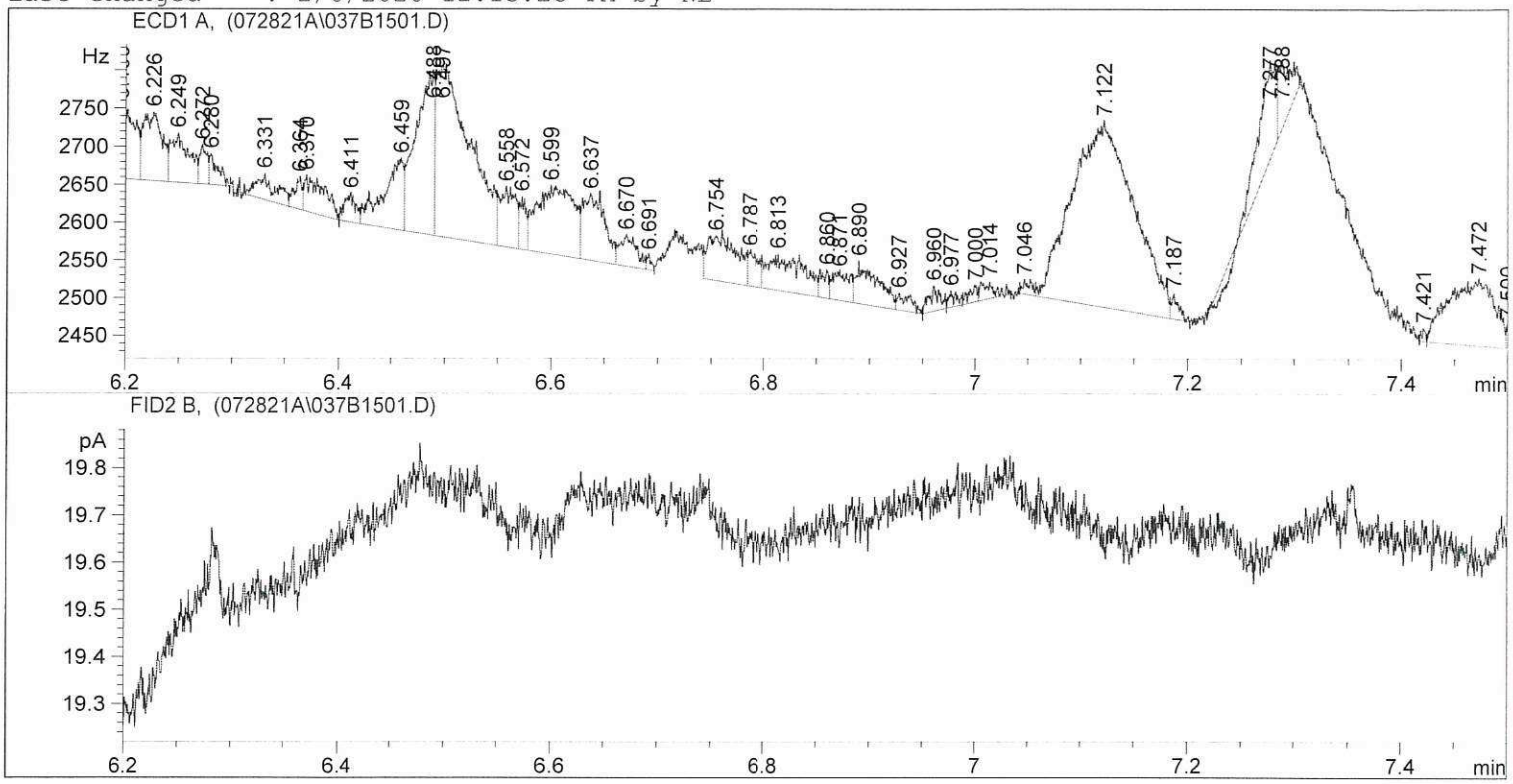
*** End of Report ***

Injection Date : 7/28/2021 8:23:02 PM Seq. Line : 15
Sample Name : 21G0156 02 Location : Vial 37
Acq. Operator : DXP Inj : 1
Inj Volume : 1 µl

Sequence File : C:\HPCHEM\2\SEQUENCE\072821A.S
Method : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed : 2/8/2020 12:13:23 PM by NL



Area Percent Report

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.232	BP	0.0165	53.44434	40.16801	0.62434
2	5.281	VV	0.0127	39.28905	37.84249	0.45898
3	5.294	VV	3.40e-3	5.07904	22.78734	0.05933
4	5.312	VV	8.37e-3	27.76131	41.66117	0.32431
5	5.330	VV	0.0102	22.06755	27.84482	0.25780
6	5.402	VV	0.0215	187.72032	106.58743	2.19297
7	5.410	VV	0.0106	89.10858	103.47517	1.04097
8	5.428	VB	0.0139	89.23818	78.42163	1.04249
9	5.453	BV	5.92e-3	28.96569	63.55326	0.33838
10	5.460	VB	7.43e-3	38.44096	65.61547	0.44907
11	5.494	PP	0.0106	28.25128	32.16365	0.33003
12	5.584	VV	0.0279	135.94646	58.67053	1.58814
13	5.612	VV	0.0207	139.01292	84.73746	1.62396
14	5.648	VV	0.0284	174.25500	82.67068	2.03566
15	5.729	VV	0.0427	489.16104	135.58351	5.71442
16	5.759	VV	9.89e-3	66.65810	85.52426	0.77871
17	5.783	VV	0.0176	156.11899	112.65584	1.82380

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	5.814	VV	0.0142	118.12129	101.13615	1.37990
19	5.839	VV	0.0168	267.55078	190.24240	3.12555
20	5.862	VV	0.0175	293.59116	207.02875	3.42976
21	5.895	VV	0.0285	489.75790	203.59251	5.72140
22	5.932	VB	0.0154	163.45636	132.70619	1.90951
23	5.986	PV	0.0109	34.26487	43.71549	0.40029
24	6.003	VV	0.0261	158.27409	71.80473	1.84897
25	6.037	VB	5.43e-3	25.03860	60.52150	0.29250
26	6.058	BV	0.0287	270.57947	112.51573	3.16093
27	6.122	VV	0.0197	129.06340	79.01835	1.50773
28	6.129	VV	5.80e-3	28.01755	80.47286	0.32730
29	6.156	VV	0.0147	121.87016	103.61873	1.42370
30	6.162	VB	0.0141	116.49162	106.81543	1.36087
31	6.196	BV	0.0186	148.74338	96.30604	1.73763
32	6.226	VV	0.0150	107.64899	89.88840	1.25757
33	6.249	VV	0.0138	73.99042	64.23552	0.86436
34	6.272	VV	6.23e-3	24.74884	51.27822	0.28912
35	6.280	VB	6.98e-3	21.46287	40.50908	0.25073
36	6.331	PV	0.0155	43.31293	33.92878	0.50599
37	6.364	VV	6.18e-3	20.30494	42.42249	0.23720
38	6.370	VP	0.0161	61.77003	47.13090	0.72160
39	6.411	VV	0.0103	28.51043	37.32704	0.33306
40	6.459	VV	0.0156	121.72466	94.44827	1.42200
41	6.488	VV	0.0146	257.00644	214.58005	3.00237
42	6.497	VB	0.0271	508.95438	225.57254	5.94565
43	6.558	BV	0.0122	79.25891	79.44093	0.92591
44	6.572	VV	5.52e-3	30.41754	69.35068	0.35534
45	6.599	VV	0.0287	212.24754	89.95367	2.47949
46	6.637	VV	0.0177	124.63263	87.26714	1.45597
47	6.670	VV	0.0131	42.87268	40.51799	0.50084
48	6.691	VV	4.31e-3	5.73904	19.05914	0.06704
49	6.754	BB	0.0240	115.24929	58.53244	1.34635
50	6.787	BB	8.73e-3	31.31032	46.06544	0.36577
51	6.813	BV	0.0276	109.30605	47.98418	1.27692
52	6.860	VV	6.30e-3	18.20374	37.26782	0.21266
53	6.871	VV	0.0138	41.59688	37.76986	0.48594
54	6.890	VB	0.0168	78.69810	55.96448	0.91936
55	6.927	BP	0.0110	19.53555	21.82421	0.22822
56	6.960	VV	8.66e-3	23.35162	32.98063	0.27280
57	6.977	VB	6.33e-3	10.43446	21.22944	0.12190
58	7.000	BV	7.25e-3	11.35618	20.54869	0.13266
59	7.014	VB	0.0114	18.65436	21.79032	0.21792
60	7.046	BB	7.11e-3	10.42575	18.11509	0.12179
61	7.122	BV	0.0491	981.83484	244.41573	11.46988
62	7.187	VP	6.07e-3	15.48290	33.00999	0.18087
63	7.277	PV	0.0123	129.42995	129.27286	1.51201
64	7.288	VB	9.66e-3	69.54194	91.55866	0.81240
65	7.421	PV	3.79e-3	4.07062	17.01254	0.04755
66	7.472	VV	0.0347	257.45529	87.44675	3.00762
67	7.500	VB	5.92e-3	14.63644	30.95669	0.17098
68	7.635	PP	0.0499	639.51959	152.01817	7.47092
69	7.707	VP	3.82e-3	1.92969	7.46336	0.02254
70	7.766	BV	0.0130	36.50261	34.31659	0.42643
71	7.790	VBA	0.0101	21.64394	28.37166	0.25285

Totals : 8560.11283 5372.28402

Results obtained with enhanced integrator!

Signal 2: FID2 B,

Results obtained with enhanced integrator!

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*** End of Report ***

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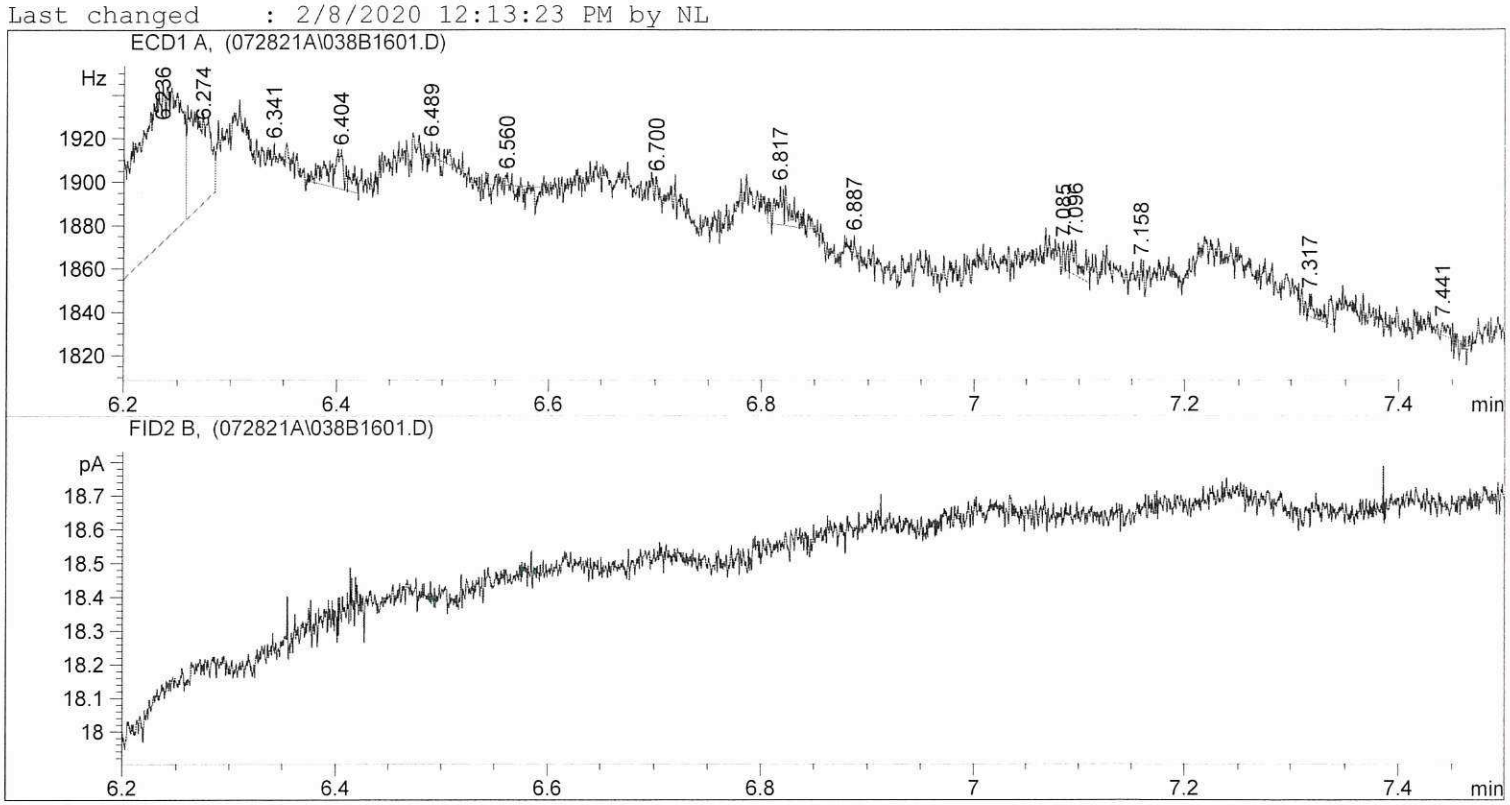
Injection Date : 7/28/2021 8:34:00 PM Seq. Line : 16
Sample Name : 21G0156 03 Location : Vial 38
Acq. Operator : DXP Inj : 1
Inj Volume : 1 µl

Sequence File : C:\HPCHEM\2\SEQUENCE\072821A.S
Method : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed : 2/8/2020 12:13:23 PM by NL



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Area Percent Report

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Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.280	BV	0.0162	48.62773	37.39250	0.94709
2	5.600	BV	0.0903	1119.91907	145.39874	21.81184
3	5.779	VV	0.0849	778.72461	108.23791	15.16665
4	5.935	BV	0.0753	999.17957	156.40709	19.46029
5	5.963	VV	7.80e-3	94.58867	149.20256	1.84223
6	6.037	VV	0.0863	1340.82788	182.45979	26.11432
7	6.124	VV	0.0213	190.51198	107.56315	3.71046
8	6.165	VV	0.0223	124.46679	70.72279	2.42415
9	6.236	VV	0.0475	295.63730	73.80389	5.75791
10	6.274	VV	0.0175	60.14781	41.55211	1.17145
11	6.341	BP	4.26e-3	2.12451	6.77760	0.04138
12	6.404	PP	0.0143	20.04494	17.57203	0.39040
13	6.489	BB	3.17e-3	1.52539	6.43028	0.02971
14	6.560	PB	0.0000	5.09833	4.97700	0.09930
15	6.700	BP	1.46e-3	6.17814e-1	8.34115	0.01203
16	6.817	BB	0.0109	15.55117	17.64916	0.30288
17	6.887	BP	1.96e-3	1.06916	9.19893	0.02082

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	7.085	BP	3.24e-3	2.64646	11.71475	0.05154
19	7.096	VP	6.76e-3	8.12050	15.37527	0.15816
20	7.158	PB	2.31e-3	1.21696	7.42858	0.02370
21	7.317	PP	8.10e-3	6.75591	10.23574	0.13158
22	7.441	PP	3.21e-3	1.30646	5.82975	0.02544
23	7.551	BV	7.77e-3	10.46145	17.03141	0.20375
24	7.556	VB	4.26e-3	5.28444	16.82355	0.10292

Totals : 5134.45491 1228.12574

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

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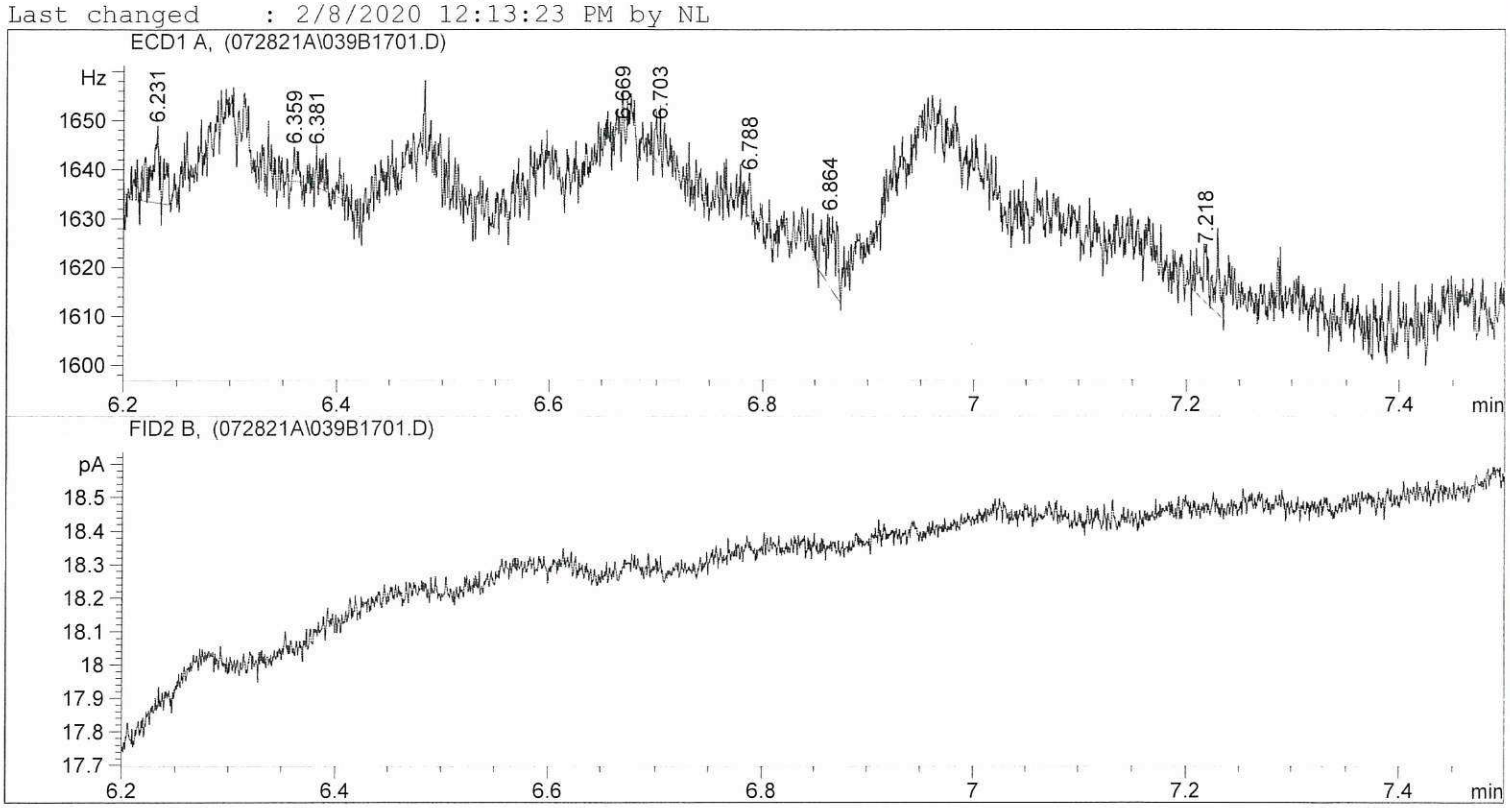
Injection Date : 7/28/2021 8:44:58 PM Seq. Line : 17
Sample Name : 21G0156 04 Location : Vial 39
Acq. Operator : DXP Inj : 1
Inj Volume : 1 µl

Sequence File : C:\HPCHEM\2\SEQUENCE\072821A.S
Method : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed : 2/8/2020 12:13:23 PM by NL



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Area Percent Report

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Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.318	BP	0.0214	54.53975	31.53791	18.32103
2	5.775	BB	0.0202	35.93663	22.07947	12.07186
3	5.940	PV	0.0553	167.21329	35.91561	56.17041
4	6.231	BP	8.06e-3	9.72924	15.20551	3.26825
5	6.359	PB	2.17e-3	9.81025e-1	6.44981	0.32955
6	6.381	BB	6.10e-3	3.53629	7.50536	1.18791
7	6.669	BB	0.0000	1.55003e-1	5.28139	0.05207
8	6.703	BP	4.77e-3	2.78267	11.71456	0.93476
9	6.788	BP	3.12e-3	1.50889	8.31902	0.50687
10	6.864	BP	0.0126	11.64646	14.42374	3.91229
11	7.218	BP	0.0113	9.66003	10.76905	3.24500
Totals :				297.68927	169.20142	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

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==========================================================================
Injection Date  : 7/28/2021 8:55:56 PM          Seq. Line :  18
Sample Name     : 21G0156 05                     Location : Vial 40
Acq. Operator   : DXP                                 Inj :   1
                                               Inj Volume : 1 µl
Sequence File   : C:\HPCHEM\2\SEQUENCE\072821A.S
Method          : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed    : 2/8/2020 12:13:23 PM by NL
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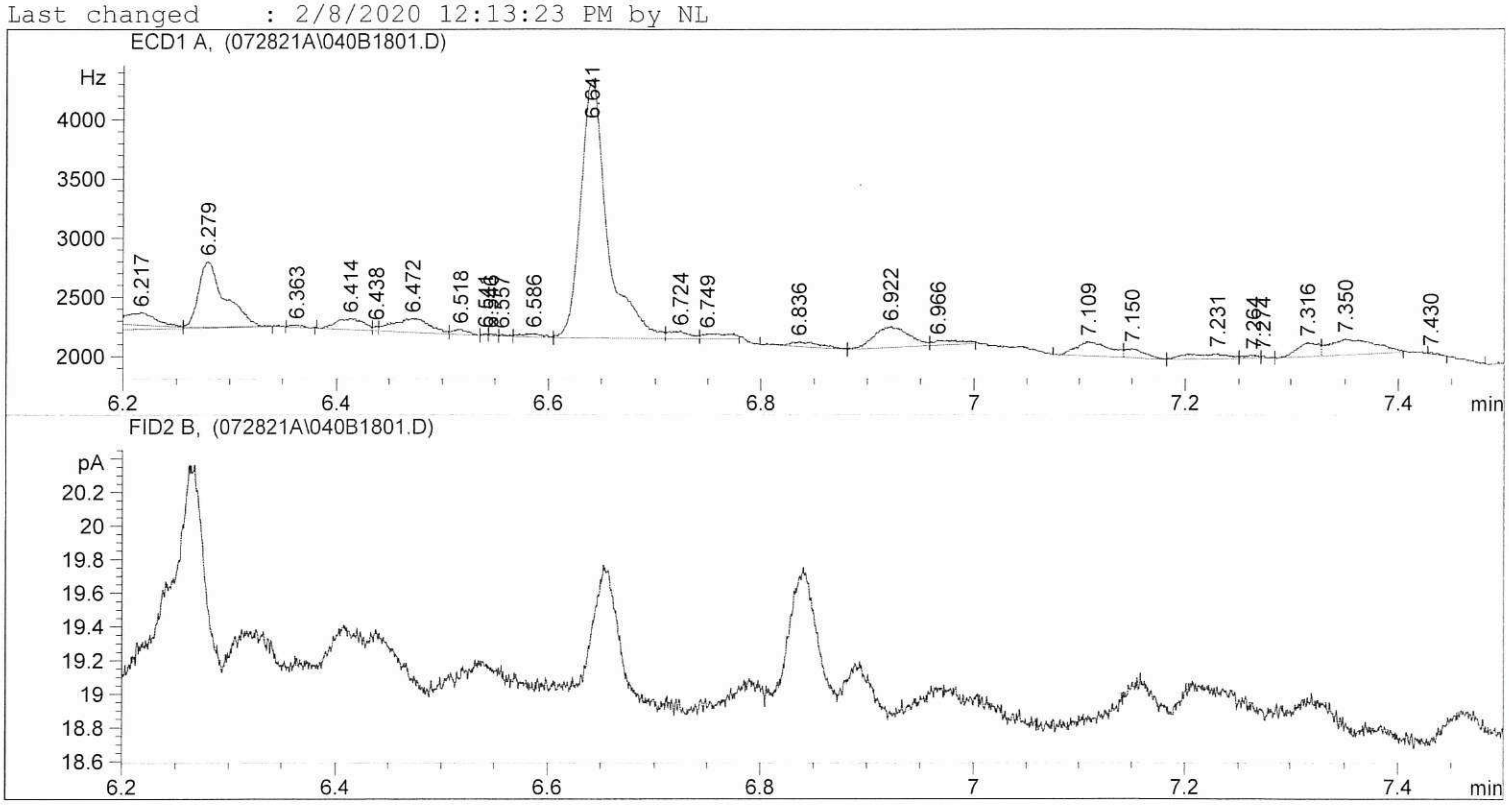


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==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: ECD1 A,
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Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.205	BP	0.0000	152.66603	210.91081	0.46681
2	5.253	VP	9.38e-3	34.33663	47.81258	0.10499
3	5.298	VV	0.0222	686.96570	392.30142	2.10056
4	5.348	VV	0.0105	35.20275	48.53308	0.10764
5	5.401	VV	0.0222	2282.83252	1464.84021	6.98029
6	5.441	VV	0.0167	282.77576	211.94743	0.86465
7	5.485	VV	0.0251	2480.69214	1309.18896	7.58529
8	5.552	VB	0.0198	144.73199	88.79969	0.44255
9	5.596	BV	0.0142	142.10974	123.86709	0.43453
10	5.615	VV	0.0148	133.23001	115.60072	0.40738
11	5.656	VV	0.0223	338.52219	187.48201	1.03511
12	5.680	VV	0.0119	140.71053	162.54855	0.43025
13	5.703	VV	0.0247	831.02698	412.92178	2.54106
14	5.764	VV S	0.0266	9141.03906	4715.95410	27.95084
15	5.818	BV T	0.0130	377.68253	406.74857	1.15485
16	5.891	PV T	7.59e-3	82.48727	137.68158	0.25222
17	5.948	PV T	0.0000	81.34217	39.40038	0.24872

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	5.976	PB S	0.0269	6047.40576	3131.54370	18.49134
19	6.010	BV T	6.21e-3	128.01862	266.15799	0.39145
20	6.057	PV T	7.53e-3	15.26307	25.68423	0.04667
21	6.089	PV T	0.0197	960.96350	695.88513	2.93837
22	6.139	PV T	0.0127	60.18107	57.95170	0.18402
23	6.163	PV T	0.0171	142.06564	104.56208	0.43440
24	6.193	PV T	8.51e-3	40.65295	64.90192	0.12431
25	6.217	PV T	0.0237	212.13628	108.07761	0.64866
26	6.279	PB T	0.0223	958.12537	555.71765	2.92969
27	6.363	BB	0.0105	19.11695	23.42398	0.05845
28	6.414	BV	0.0224	174.32156	95.92403	0.53303
29	6.438	VV	3.86e-3	11.06423	39.60089	0.03383
30	6.472	VV	0.0275	278.29352	119.64518	0.85095
31	6.518	VP	0.0115	40.33511	43.93522	0.12333
32	6.541	VV	3.49e-3	3.50961	16.76155	0.01073
33	6.546	VV	4.67e-3	5.49242	15.74592	0.01679
34	6.557	VV	5.19e-3	6.32961	16.09077	0.01935
35	6.586	VP	0.0152	40.49055	31.89477	0.12381
36	6.641	VV	0.0245	3840.30835	2186.82349	11.74263
37	6.724	VV	0.0162	84.34089	63.69718	0.25789
38	6.749	VB	0.0238	79.94968	43.16035	0.24446
39	6.836	PP	0.0247	83.79875	41.28878	0.25623
40	6.922	VV	0.0268	398.02753	177.15857	1.21706
41	6.966	VB	0.0205	70.50763	42.24940	0.21559
42	7.109	PV	0.0268	259.21362	117.15545	0.79261
43	7.150	VP	0.0153	98.28488	78.05202	0.30053
44	7.231	VV	0.0311	115.39685	46.22879	0.35285
45	7.264	VV	0.0106	23.38195	26.66327	0.07150
46	7.274	VP	4.74e-3	7.29203	21.61704	0.02230
47	7.316	BV	0.0174	164.11415	117.88476	0.50182
48	7.350	VB	0.0336	387.01889	136.82629	1.18340
49	7.430	BB	7.35e-3	10.49639	18.13219	0.03210
50	7.546	PV	0.0303	182.15543	71.62109	0.55698
51	7.607	VP	5.92e-3	5.21568	14.69586	0.01595
52	7.666	VV	0.0284	266.28278	111.02437	0.81422
53	7.691	VB	8.00e-3	21.00363	43.73827	0.06422
54	7.747	PV	6.75e-3	14.82035	29.08171	0.04532
55	7.759	VP	0.0238	80.25575	40.74923	0.24540
Totals :				3.27040e4	1.89179e4	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

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Injection Date  : 7/28/2021 9:29:21 PM          Seq. Line :  21
Sample Name     : CS4 STANDARD                   Location : Vial 27
Acq. Operator   : DXP                                 Inj :   1
                                               Inj Volume : 1 µl
Sequence File   : C:\HPCHEM\2\SEQUENCE\072821A.S
Method          : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed    : 2/8/2020 12:13:23 PM by NL
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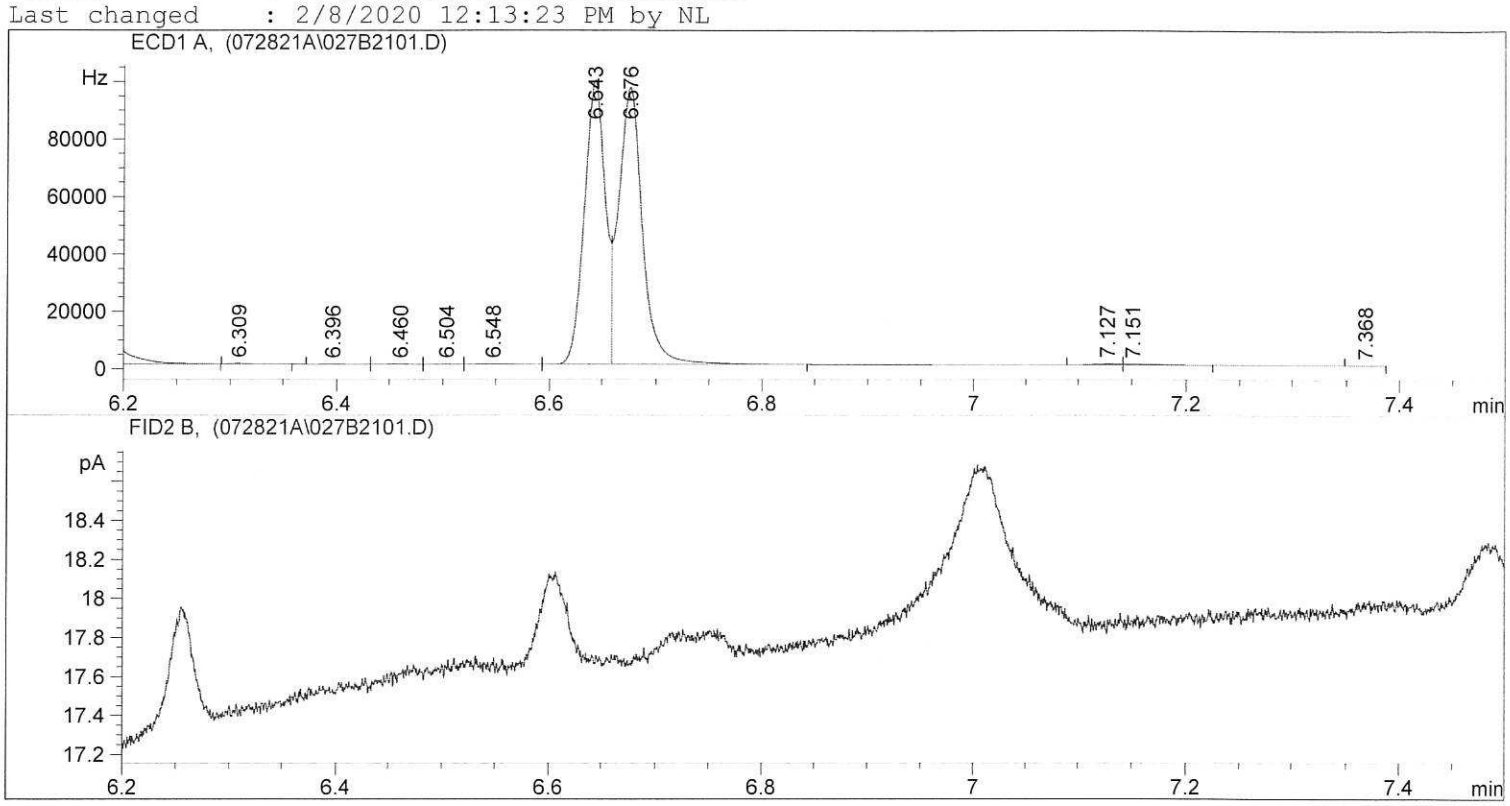


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==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
```

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.214	BP	0.0125	240.99744	283.16803	0.02069
2	5.353	PP	0.0168	65.46605	51.65965	0.00562
3	5.393	VV	0.0102	16.49341	20.87303	0.00142
4	5.417	VB	0.0141	38.05515	36.20744	0.00327
5	5.494	PV S	0.0254	1.61743e5	8.66437e4	13.88822
6	5.594	VV S	0.0383	2.60040e5	1.13106e5	22.32861
7	5.652	VV S	0.0204	9.48267e4	7.74597e4	8.14241
8	5.698	VV S	0.0233	9.00770e4	6.43538e4	7.73456
9	5.806	VV S	0.0301	763.57837	423.20450	0.06557
10	5.851	VB S	0.0247	262.90286	175.69719	0.02257
11	5.941	BP S	0.0173	9.43828e4	8.13461e4	8.10429
12	6.092	VV S	0.0194	8.52725e4	6.71851e4	7.32202
13	6.172	VB S	0.0231	8.95518e4	6.44847e4	7.68947
14	6.309	BP	0.0147	200.52809	165.51535	0.01722
15	6.396	PV	0.0171	141.20029	99.56846	0.01212
16	6.460	VV	0.0194	127.12704	78.87961	0.01092
17	6.504	VV	0.0198	104.63052	63.01527	0.00898

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	6.548	VV	0.0285	300.97293	126.80070	0.02584
19	6.643	VV S	0.0204	1.35912e5	9.89616e4	11.67020
20	6.676	VB S	0.0257	1.48849e5	9.63673e4	12.78108
21	7.127	BV	0.0205	466.66034	276.30173	0.04007
22	7.151	VB	0.0304	609.67786	240.66637	0.05235
23	7.368	PP	8.41e-3	5.97854	8.92918	0.00051
24	7.701	BP	0.0280	605.43732	261.91138	0.05199
Totals :				1.16460e6	7.52220e5	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Organic Extractions Laboratory Analyst Notes

Extraction Parameter: Dioxin Extraction Batch BJH0152

Total Solids Batch: BJG0401 Work Order(s): 21G0108, 21G0111, 21G0140

Screens: Soil/Sediment/Solid/Other:	Analyst/Date
☒ No Anomalies (standard soil/wet sediment/sand/gravel)= 108-4,6,7,8 140-7	DP 7/19/21
☒ Standing Water Decanted (Not shared)= 108-3,7 140-4,5,8	DP 7/19/21
☐ Standing Water Homogenized (Shared samples)=	
☒ Clay/Clumps (Difficult to homogenize)= 108-9,10,11 140-6	DP 7/19/21
☐ Rocks (%+size)?	
☒ Organics (Leaves/sticks/grass)= 108-2	DP 7/19/21
☐ Oily, obvious fuel/sulfur odors=	
☐ Received in 32oz jar(s)=Homogenized in Pyrex dish=	
☐ Previously Frozen =	
☐ Other (Details)=	
Aqueous:	
☐ No Anomalies	
☐ Turbid/Color=	
☐ Particulates(%)=(Note: >5%=Notify Supervisor/Lead)	
☐ Emulsions (%)=	
☐ Oily, obvious fuel/sulfur odors=	
☐ Other (Details)=	
☐ Received in 1.0L Bottle(s)=No Bottle Rinse=	
☒ Other Notes/Comments= (Note problems, concerns, corrective actions). Batchlot BJH0152 - BLK1, BS1, DUP1, SRM1 & 21G0 140 = 04C-08C. columns clean on 9/13/21	M 9/13/21
☐ Share Samples Y / N	
☐ Multiple Jars Y / N	
☐ Sample Pre-Screens indicate analyte activity=	
☐ Sample weights/volumes reduced based on Pre-Screen=	

3056F

Revision 15
07/01/19

TOTAL SOLIDS BENCHSHEET

Method HRSM01.2

(dry at 110 C)

Batch:	BJG0401
Date:	
Analyst:	DP / AL
Drying Oven:	018
Analytical Balance:	2465344

Instrumentation

Batch drying time			
Record times as mm/dd/yy hh:mm		Oven Temp, C	TS (%) calculated as:
Date/time in oven:	07/19/21 13:45	108	Final dry wt (g) = (Dry Wt - Tare Wt)
Date/time out:	07/20/21 0530		TS = (Final Dry Wt X 100)/ (sample & dish -dish tare)
Elapsed hrs:	0.0		

Oven Temps, °C	
Start Temp:	108
End Temp:	108

SAMPLE ID	Dish Tare Wt (g)	Dish with Sample (g)	Dry Wt (g)	Solids Wt (g)	TS (%)	Sample Decanted
21G0108-02	~~10~~ 0.79	11.03	7.70			No
21G0108-03	0.80	11.65	8.77			~~No~~ yes
21G0108-04	0.79	11.39	9.08			No
21G0108-06	0.79	11.74	8.86			No
21G0108-07	0.79	11.93	9.17			~~No~~ yes
21G0108-08	0.80	11.04	9.03			No
21G0108-09	0.79	11.65	7.45			No
21G0108-10	0.79	11.31	7.33			No
21G0108-11	0.79	11.31	8.450			No
21G0140-04	0.80	11.95	7.21			~~No~~ yes
21G0140-05	0.79	11.55	6.89			~~No~~ yes
21G0140-06	0.82	11.30	7.17			No
21G0140-07	0.82	11.03	8.92			No
21G0140-08	0.78	11.60	8.55			~~No~~ yes

TOTAL SOLIDS BENCHSHEET

Method HRSM01.2

(dry at 110 C)

Batch:	BJG0401
Date:	7/20/2021 5:30
Analyst:	DXP / NL
Drying Oven:	18
Analytical Balance:	24650344

Instrumentation

Batch drying time		
Record times as mm/dd/yy hh:mm		Oven Temp, C
Date/time in oven:	7/19/2021 13:45	
Date/time out:	7/20/2021 5:30	
Elapsed hrs:	15.8	

TS (%) calculated as:

Final dry wt (g) = (Dry Wt - Tare Wt)

TS = (Final Dry Wt X 100)/ (sample & dish -dish tare)

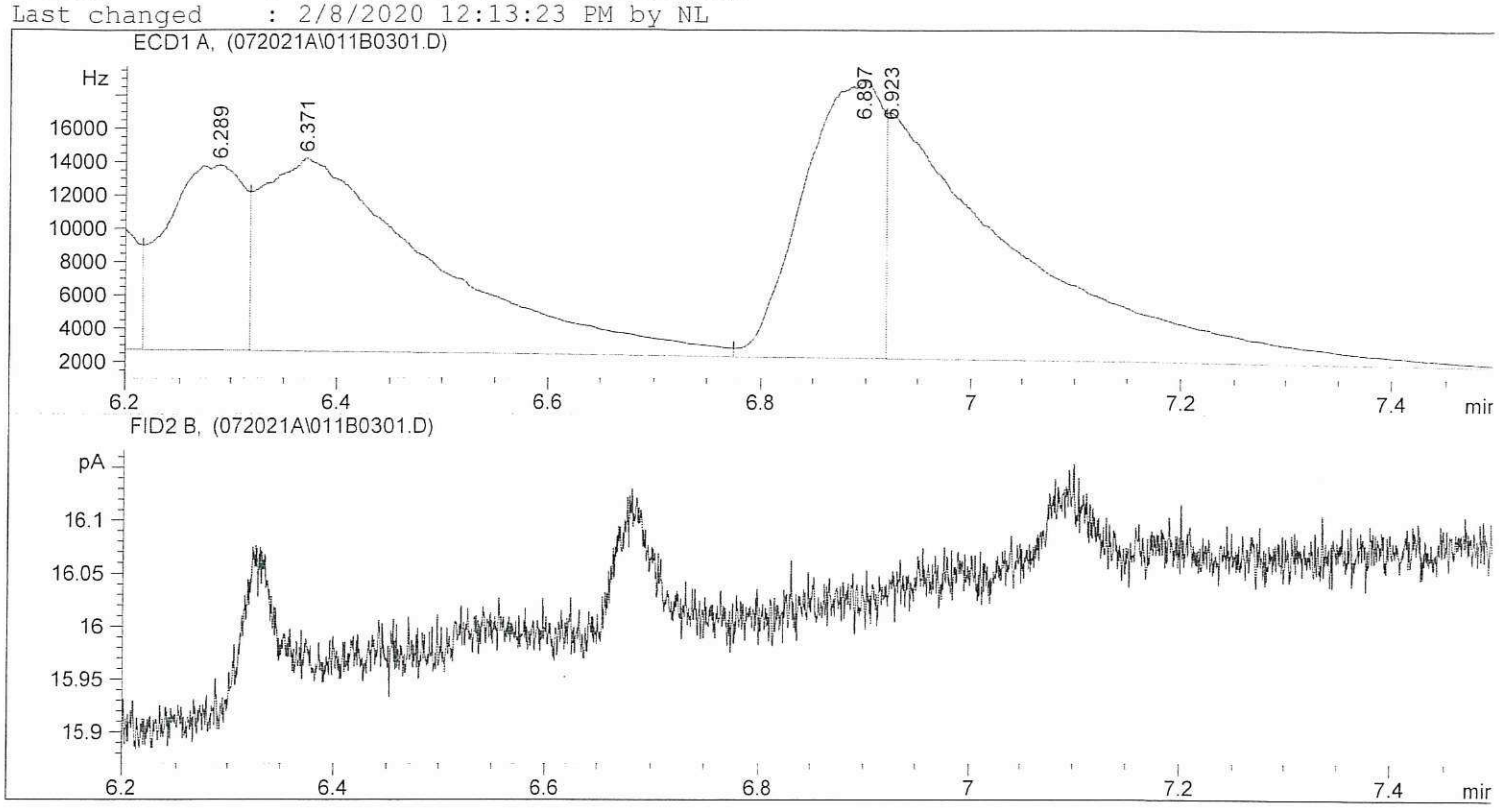
Oven Temps, °C	
Start Temp:	108
End Temp:	108

SAMPLE ID	Dish Tare Wt (g)	Dish with Sample (g)	Dry Wt (g)	Solids Wt (g)	TS (%)	Sample Decanted
21G0108-02	0.7900	11.0300	7.7000	6.91	**67.48%**	No
21G0108-03	0.8000	11.6500	8.7700	7.97	**73.46%**	Yes
21G0108-04	0.7900	11.3900	9.0800	8.29	**78.21%**	No
21G0108-06	0.7900	11.7400	8.8600	8.07	**73.70%**	No
21G0108-07	0.7900	11.9300	9.1700	8.38	**75.22%**	Yes
21G0108-08	0.8000	11.0400	9.0300	8.23	**80.37%**	No
21G0108-09	0.7900	11.6500	7.4500	6.66	**61.33%**	No
21G0108-10	0.7900	11.3100	7.3300	6.54	**62.17%**	No
21G0108-11	0.7900	11.3100	8.5000	7.71	**73.29%**	No
21G0140-04	0.8000	11.9500	7.2100	6.41	**57.49%**	Yes
21G0140-05	0.7900	11.5500	6.8900	6.10	**56.69%**	Yes
21G0140-06	0.8200	11.3000	7.1700	6.35	**60.59%**	No
21G0140-07	0.8200	11.0300	8.9200	8.10	**79.33%**	No
21G0140-08	0.7800	11.6000	8.5500	7.77	**71.81%**	Yes

Injection Date : 7/20/2021 5:21:06 PM
Sample Name : CS4 STANDARD
Acq. Operator : DXP

Seq. Line : 3
Location : Vial 11
Inj : 1
Inj Volume : 1 µl

Sequence File : C:\HPCHEM\2\SEQUENCE\072021A.S
Method : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed : 2/8/2020 12:13:23 PM by NL



Area Percent Report

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.221	BV	0.0234	2464.33350	1343.46509	0.22709
2	5.320	VP S	0.1414	6.76124e4	7969.86230	6.23053
3	5.687	PV S	0.0592	6.77314e4	1.90844e4	6.24149
4	5.764	VV S	0.0734	1.58571e5	3.60136e4	14.61242
5	5.809	VV S	0.1513	2.75473e5	3.03419e4	25.38505
6	6.113	VV S	0.1113	1.07418e5	1.60868e4	9.89864
7	6.289	VV S	0.0855	5.71157e4	1.11373e4	5.26325
8	6.371	VV S	0.1888	1.31290e5	1.15886e4	12.09847
9	6.897	PV S	0.0855	8.54799e4	1.66637e4	7.87704
10	6.923	VB S	0.1491	1.32023e5	1.47576e4	12.16602
Totals :				1.08518e6	1.64987e5	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

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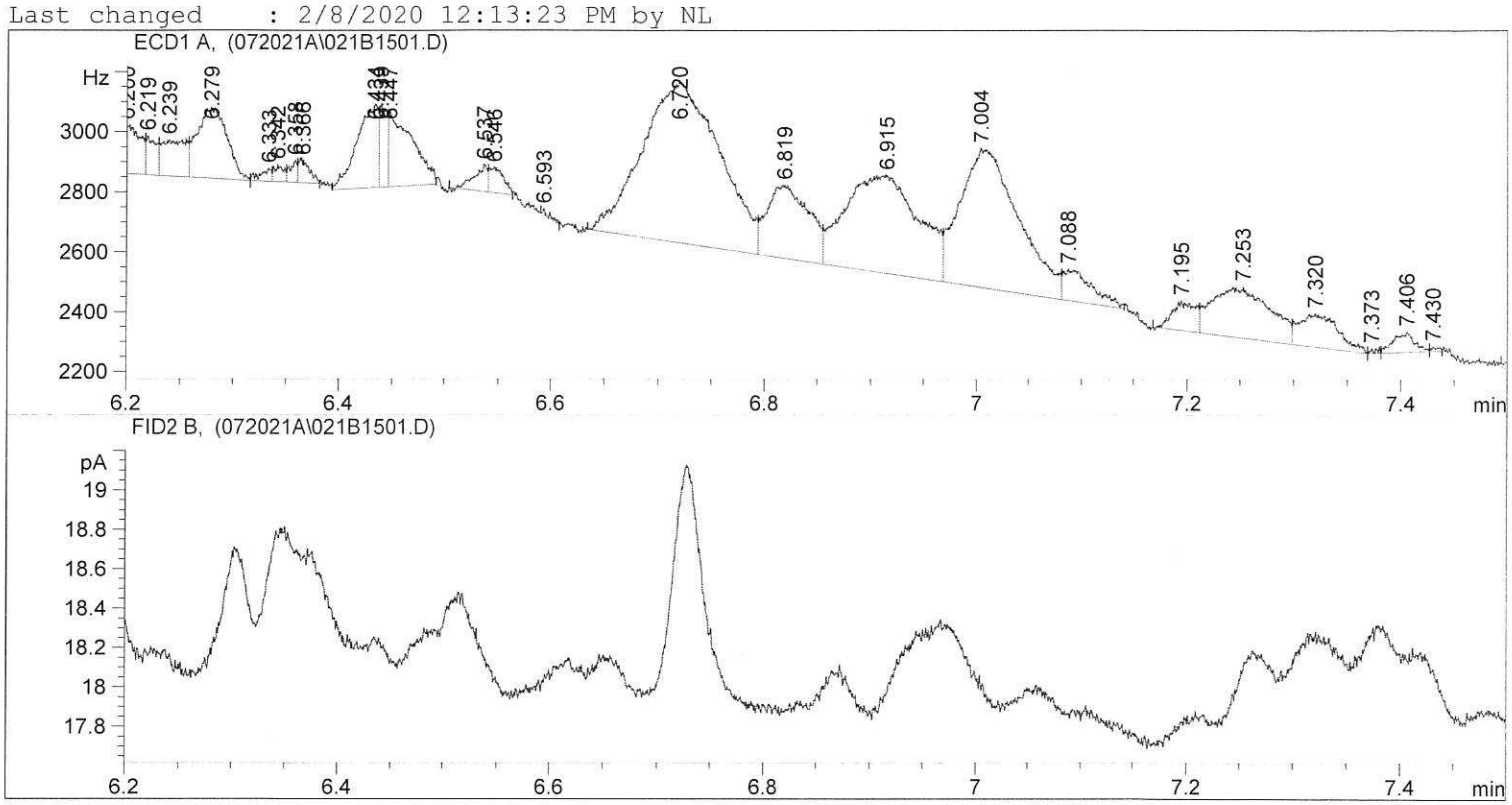
Injection Date : 7/20/2021 7:33:56 PM Seq. Line : 15
Sample Name : 21G0140 04 Location : Vial 21
Acq. Operator : DXP Inj : 1
Inj Volume : 1 µl

Sequence File : C:\HPCHEM\2\SEQUENCE\072021A.S
Method : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed : 2/8/2020 12:13:23 PM by NL



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Area Percent Report

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Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.222	BP	0.0107	195.94461	241.09557	0.53396
2	5.262	VP	0.0168	836.45935	657.27472	2.27939
3	5.352	VV	0.0284	527.48944	222.69150	1.43743
4	5.378	VV	0.0132	171.77202	173.02400	0.46809
5	5.402	VV	0.0134	209.34920	190.46695	0.57049
6	5.438	VV	0.0257	671.47198	319.32181	1.82979
7	5.472	VV	0.0133	246.98967	223.91342	0.67306
8	5.484	VV	5.07e-3	84.48248	242.14096	0.23022
9	5.508	VV	0.0207	708.05005	410.84744	1.92947
10	5.537	VV	0.0220	1164.68335	634.21307	3.17381
11	5.572	VV	0.0288	1043.13892	430.80331	2.84260
12	5.624	VV	7.92e-3	149.83304	238.88631	0.40830
13	5.705	VV	0.0553	2435.79102	520.99072	6.63764
14	5.758	VV	0.0248	1180.66968	583.92920	3.21738
15	5.818	VV	0.0385	3399.23804	1079.36426	9.26307
16	5.914	VV	0.0334	2084.65063	742.52222	5.68076
17	5.933	VV	0.0189	1247.05103	785.95111	3.39827

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	5.997	VV	0.0474	4854.05225	1216.80701	13.22750
19	6.028	VV	0.0255	1528.90771	997.43347	4.16634
20	6.062	VV	0.0366	2803.69971	928.02228	7.64020
21	6.151	VV	9.78e-3	155.67163	202.26947	0.42421
22	6.178	VV	0.0137	207.05542	181.52086	0.56423
23	6.189	VV	6.80e-3	87.72697	165.19542	0.23906
24	6.200	VV	0.0155	202.28732	162.84801	0.55124
25	6.219	VB	0.0104	80.85040	129.82481	0.22032
26	6.239	BV	0.0192	194.24098	120.76405	0.52932
27	6.279	VP	0.0237	465.11871	235.37067	1.26747
28	6.333	VV	9.17e-3	29.77535	42.50032	0.08114
29	6.342	VV	7.47e-3	34.51130	56.92421	0.09404
30	6.358	VV	6.14e-3	33.47779	73.14046	0.09123
31	6.366	VB	0.0104	57.83031	74.82488	0.15759
32	6.434	BV	0.0164	370.99734	276.88831	1.01098
33	6.439	VV	6.27e-3	133.24162	274.29367	0.36309
34	6.447	VB	0.0192	395.03668	247.43605	1.07649
35	6.537	PV	9.89e-3	70.40336	88.41158	0.19185
36	6.546	VB	0.0159	78.94588	82.88529	0.21513
37	6.593	PP	3.95e-3	5.54706	19.31016	0.01512
38	6.720	PV	0.0586	2689.02905	539.10699	7.32772
39	6.819	VV	0.0328	675.85455	243.66489	1.84173
40	6.915	VV	0.0571	1568.23437	326.33041	4.27351
41	7.004	VV	0.0467	1818.34802	462.66867	4.95508
42	7.088	VB	0.0231	199.84480	103.68449	0.54459
43	7.195	PV	0.0185	144.27829	97.44668	0.39316
44	7.253	VV	0.0443	632.67749	170.30920	1.72407
45	7.320	VP	0.0297	279.67493	111.24178	0.76213
46	7.373	VV	5.30e-3	6.26462	15.56546	0.01707
47	7.406	VV	0.0161	89.29754	67.32059	0.24334
48	7.430	VB	5.92e-3	7.19199	15.76017	0.01960
49	7.513	BV	0.0149	59.73737	49.60027	0.16279
50	7.528	VB	0.0120	58.57947	62.25790	0.15963
51	7.579	PP	5.12e-3	4.89192	14.57736	0.01333
52	7.632	VV	0.0202	96.99965	57.84939	0.26433
53	7.767	PP	0.0305	219.32088	86.67241	0.59766
Totals :				3.66967e4	1.56982e4	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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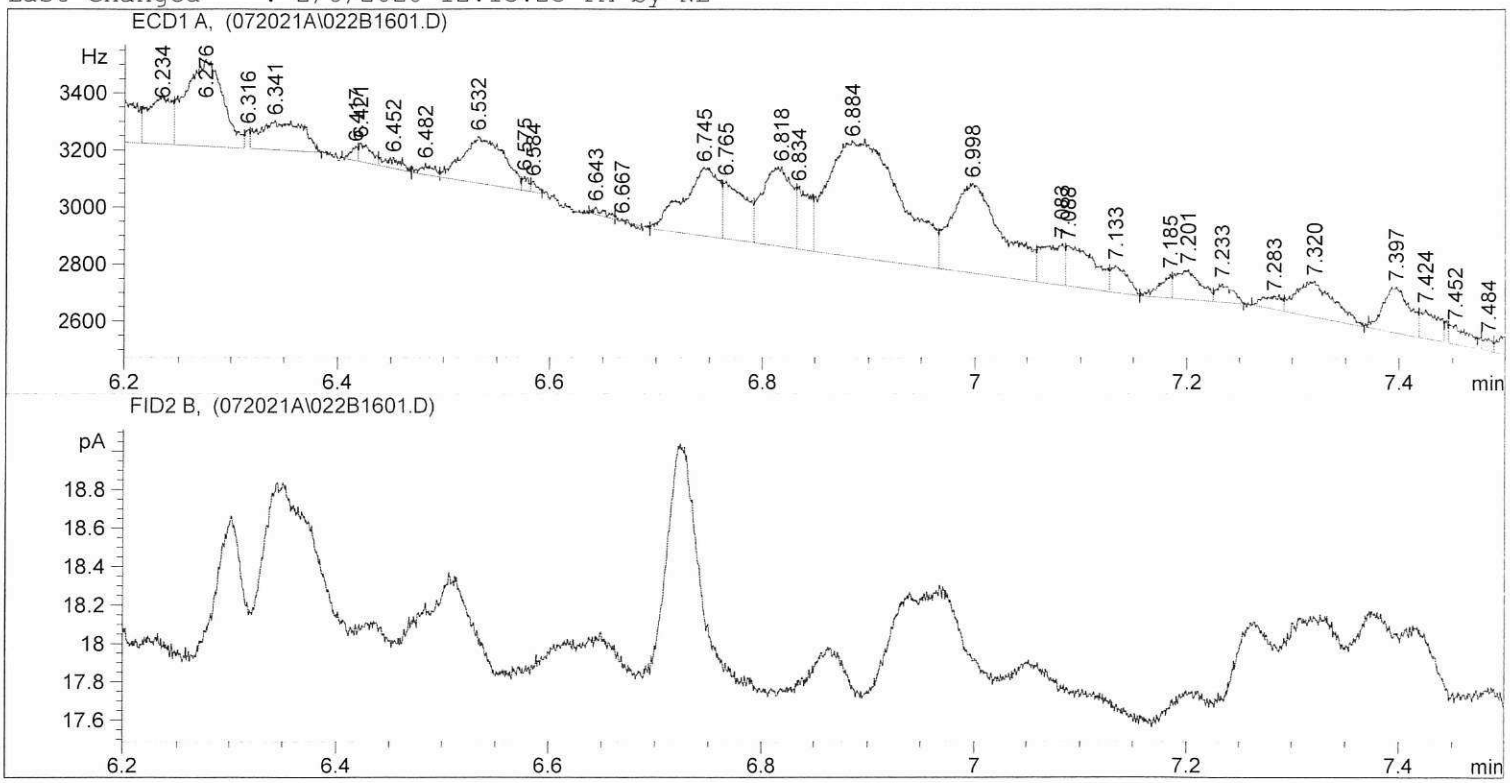
*** End of Report ***

Injection Date : 7/20/2021 7:44:56 PM
Sample Name : 21G0140 05
Acq. Operator : DXP

Seq. Line : 16
Location : Vial 22
Inj : 1
Inj Volume : 1 µl

Sequence File : C:\HPCHEM\2\SEQUENCE\072021A.S
Method : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed : 2/8/2020 12:13:23 PM by NL



Area Percent Report

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.222	BP	0.0114	229.78265	262.19205	0.70331
2	5.261	VP	0.0160	1023.59528	775.49628	3.13298
3	5.339	VV	0.0150	444.55643	356.16058	1.36068
4	5.353	VV	0.0281	939.62036	398.82602	2.87595
5	5.397	VV	6.48e-3	112.01314	257.18982	0.34285
6	5.408	VV	8.63e-3	163.64929	237.77126	0.50089
7	5.434	VV	0.0245	723.30249	352.92261	2.21386
8	5.504	VV	0.0311	1265.14014	493.24130	3.87229
9	5.539	VV	0.0185	1016.15930	669.55334	3.11022
10	5.571	VV	0.0300	996.39795	394.98337	3.04973
11	5.623	VV	8.55e-3	131.17505	187.82666	0.40150
12	5.658	VV	0.0227	654.73468	366.16486	2.00399
13	5.671	VV	6.92e-3	162.21783	355.81845	0.49651
14	5.710	VV	0.0364	1593.75293	517.20166	4.87810
15	5.757	VV	0.0283	1757.70935	734.06427	5.37993
16	5.794	VV	0.0107	515.25287	606.42957	1.57707
17	5.816	VV	0.0286	2605.07593	1079.36816	7.97351

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	5.870	VV	0.0238	1137.83655	572.80542	3.48264
19	5.932	VV	0.0445	2511.05493	674.22455	7.68574
20	5.974	VV	4.15e-3	130.35530	454.43390	0.39899
21	5.998	VV	0.0423	2315.31958	644.27728	7.08664
22	6.063	VB	0.0463	2457.49219	627.31689	7.52179
23	6.176	BV	0.0355	611.08459	206.60976	1.87038
24	6.234	VV	0.0175	255.55971	174.51506	0.78221
25	6.276	VV	0.0294	750.13397	306.14383	2.29598
26	6.316	VV	4.27e-3	18.60048	66.26163	0.05693
27	6.341	VB	0.0342	284.29471	101.64725	0.87016
28	6.417	PV	6.31e-3	22.36515	47.43832	0.06845
29	6.421	VB	0.0101	51.00806	64.24290	0.15612
30	6.452	BP	0.0126	39.47528	37.64553	0.12082
31	6.482	VV	0.0104	32.71072	38.26116	0.10012
32	6.532	VV	0.0322	440.93021	163.97598	1.34958
33	6.575	VV	7.50e-3	22.04809	48.97705	0.06748
34	6.584	VB	5.83e-3	15.20408	36.74836	0.04654
35	6.643	PB	8.85e-3	18.62937	26.99967	0.05702
36	6.667	BP	0.0000	4.60710e-1	7.31184	0.00141
37	6.745	BV	0.0278	556.18433	240.34517	1.70235
38	6.765	VV	0.0175	292.11884	201.50842	0.89411
39	6.818	VV	0.0238	554.95129	279.59552	1.69857
40	6.834	VV	0.0107	189.47836	218.66994	0.57995
41	6.884	VV	0.0580	1947.89807	400.02066	5.96205
42	6.998	VV	0.0403	1053.31519	314.58151	3.22394
43	7.083	VV	0.0177	208.27592	145.46974	0.63748
44	7.088	VB	0.0233	271.12576	141.76797	0.82985
45	7.133	BP	0.0135	104.89729	94.80162	0.32107
46	7.185	VV	0.0101	65.76228	84.35484	0.20128
47	7.201	VV	0.0200	164.46854	104.05566	0.50340
48	7.233	VB	0.0128	69.55453	65.45337	0.21289
49	7.283	BV	0.0158	56.14262	43.76694	0.17184
50	7.320	VB	0.0310	303.74689	124.66563	0.92970
51	7.397	BV	0.0206	276.14194	161.05081	0.84520
52	7.424	VB	0.0137	115.02209	102.30157	0.35205
53	7.452	BB	0.0159	83.20844	64.29065	0.25468
54	7.484	BV	8.26e-3	26.13139	44.44551	0.07998
55	7.509	VP	0.0324	262.34760	98.69059	0.80298
56	7.577	VV	6.14e-3	12.53499	26.37393	0.03837
57	7.626	VV	0.0303	250.19238	99.64554	0.76578
58	7.663	VB	6.17e-3	14.61091	31.74557	0.04472
59	7.753	PBA	0.0270	344.81607	152.66930	1.05540
Totals :				3.26716e4	1.55853e4	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

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Injection Date  : 7/20/2021 7:56:06 PM          Seq. Line :  17
Sample Name     : 21G0140 06                     Location : Vial 23
Acq. Operator   : DXP                                Inj :   1
                                               Inj Volume : 1 µl
Sequence File   : C:\HPCHEM\2\SEQUENCE\072021A.S
Method          : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed    : 2/8/2020 12:13:23 PM by NL
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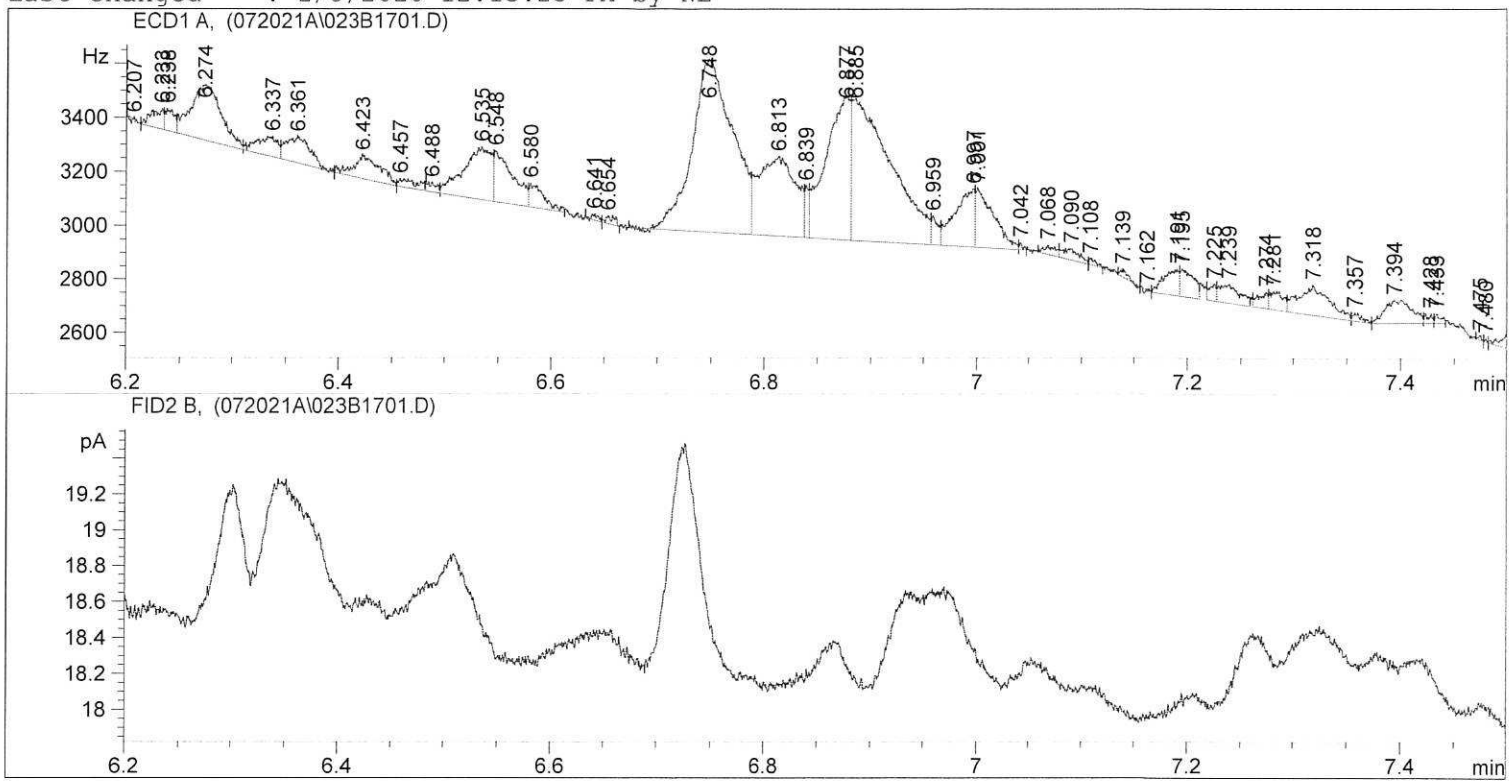


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==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: ECD1 A,
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Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.222	PP	0.0109	300.42267	348.15018	1.03725
2	5.258	VP	0.0158	998.65784	766.38062	3.44800
3	5.338	VV	0.0377	1264.08606	397.22830	4.36443
4	5.389	VV	0.0136	240.92799	254.80586	0.83184
5	5.398	VV	0.0143	289.59616	254.58131	0.99987
6	5.434	VV	0.0233	703.55560	367.94083	2.42912
7	5.502	VV	0.0298	1192.35071	496.86819	4.11675
8	5.537	VV	0.0204	1080.22412	702.04901	3.72962
9	5.573	VV	0.0251	770.84912	370.37186	2.66146
10	5.614	VV	4.09e-3	35.39780	125.40678	0.12222
11	5.652	VV	0.0307	821.08319	325.26080	2.83490
12	5.710	VV	0.0316	1230.69287	463.84274	4.24913
13	5.755	VV	0.0271	1759.10559	779.97449	6.07355
14	5.784	VV	6.39e-3	264.63437	533.12250	0.91369
15	5.815	VV	0.0282	2377.72900	1083.78882	8.20943
16	5.868	VV	0.0233	917.20844	480.31900	3.16679
17	5.899	VV	0.0107	335.16092	386.10831	1.15719

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	5.926	VV	0.0157	713.99255	550.74567	2.46516
19	5.930	VV	0.0153	670.81067	548.37244	2.31606
20	5.955	VV	4.31e-3	119.96192	376.75797	0.41418
21	5.960	VV	4.31e-3	111.22407	369.64636	0.38402
22	5.999	VV	0.0260	1257.75623	597.44025	4.34257
23	6.013	VV	0.0138	647.31128	564.14099	2.23493
24	6.034	VV	0.0106	382.82288	444.99850	1.32175
25	6.061	VV	0.0113	524.98212	574.77783	1.81257
26	6.066	VV	0.0227	1065.73987	566.70270	3.67961
27	6.126	VV	0.0117	105.14243	112.95882	0.36302
28	6.151	VV	8.45e-3	34.54201	50.08930	0.11926
29	6.175	VP	0.0113	48.73536	53.25461	0.16827
30	6.207	BP	0.0000	1.99359	5.49813	0.00688
31	6.233	VV	9.37e-3	55.93773	76.18726	0.19313
32	6.238	VV	9.26e-3	45.20482	81.36365	0.15608
33	6.274	VV	0.0247	412.05258	204.36563	1.42267
34	6.337	VV	0.0157	95.99165	75.40292	0.33142
35	6.361	VP	0.0197	154.56631	95.16862	0.53366
36	6.423	VP	0.0215	150.22333	84.50066	0.51867
37	6.457	VB	0.0150	37.10205	29.57899	0.12810
38	6.488	BV	7.60e-3	20.55353	34.27130	0.07096
39	6.535	VV	0.0213	345.82321	195.09309	1.19400
40	6.548	VV	0.0150	228.55357	188.27115	0.78911
41	6.580	VB	0.0120	88.33175	88.63781	0.30498
42	6.641	BP	6.38e-3	9.86404	22.23120	0.03406
43	6.654	VP	7.89e-3	16.79706	29.27216	0.05799
44	6.748	PV	0.0315	1696.41589	640.11139	5.85711
45	6.813	VV	0.0289	715.40930	295.31851	2.47005
46	6.839	VV	3.45e-3	50.06857	191.33345	0.17287
47	6.877	VV	0.0197	842.34027	530.71515	2.90829
48	6.885	VV	0.0307	1355.37854	524.74677	4.67963
49	6.959	VV	5.92e-3	46.50400	106.00641	0.16056
50	6.997	VV	0.0154	272.51614	214.46391	0.94090
51	7.001	VV	0.0146	264.08893	219.88071	0.91180
52	7.042	VB	3.24e-3	5.67267	25.06836	0.01959
53	7.068	BB	9.17e-3	24.90243	33.89976	0.08598
54	7.090	BV	0.0136	44.82275	42.99241	0.15476
55	7.108	VB	6.06e-3	9.97720	22.12645	0.03445
56	7.139	BP	5.33e-3	10.96910	28.23251	0.03787
57	7.162	BP	0.0000	1.59360	4.19162	0.00550
58	7.191	VV	0.0128	95.21466	99.08473	0.32874
59	7.195	VB	0.0111	89.41166	101.32901	0.30871
60	7.225	BV	6.51e-3	27.41314	62.63576	0.09465
61	7.239	VB	0.0163	94.79963	70.27570	0.32731
62	7.274	BV	7.89e-3	36.75666	60.48923	0.12691
63	7.281	VV	0.0110	61.37136	67.46619	0.21189
64	7.318	VV	0.0234	216.36678	110.68358	0.74704
65	7.357	VP	7.16e-3	15.67148	28.76612	0.05411
66	7.394	VV	0.0211	148.02036	86.07483	0.51106
67	7.428	VV	5.10e-3	13.09746	33.93155	0.04522
68	7.433	VB	5.20e-3	12.83589	34.00816	0.04432
69	7.475	PV	3.02e-3	3.14254	15.17104	0.01085
70	7.480	VP	2.05e-3	1.43290	11.55391	0.00495
71	7.515	VB	0.0279	163.58118	69.40123	0.56479
72	7.580	PV	2.39e-3	2.65651	15.57533	0.00917
73	7.607	VV	0.0138	87.70206	79.66447	0.30280
74	7.622	VV	0.0210	172.40318	98.77910	0.59525
75	7.650	VP	8.54e-3	30.35627	44.59283	0.10481
76	7.761	PV	0.0320	399.33731	152.24324	1.37877
77	7.791	VV	5.70e-3	23.45329	53.64222	0.08098
Totals :				2.89634e4	1.83304e4	

Results obtained with enhanced integrator!

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==========================================================================
Injection Date  : 7/20/2021 8:07:04 PM          Seq. Line :  18
Sample Name     : 21G0140 07                     Location : Vial 24
Acq. Operator   : DXP                                Inj :   1
                                               Inj Volume : 1 µl
Sequence File   : C:\HPCHEM\2\SEQUENCE\072021A.S
Method          : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed    : 2/8/2020 12:13:23 PM by NL
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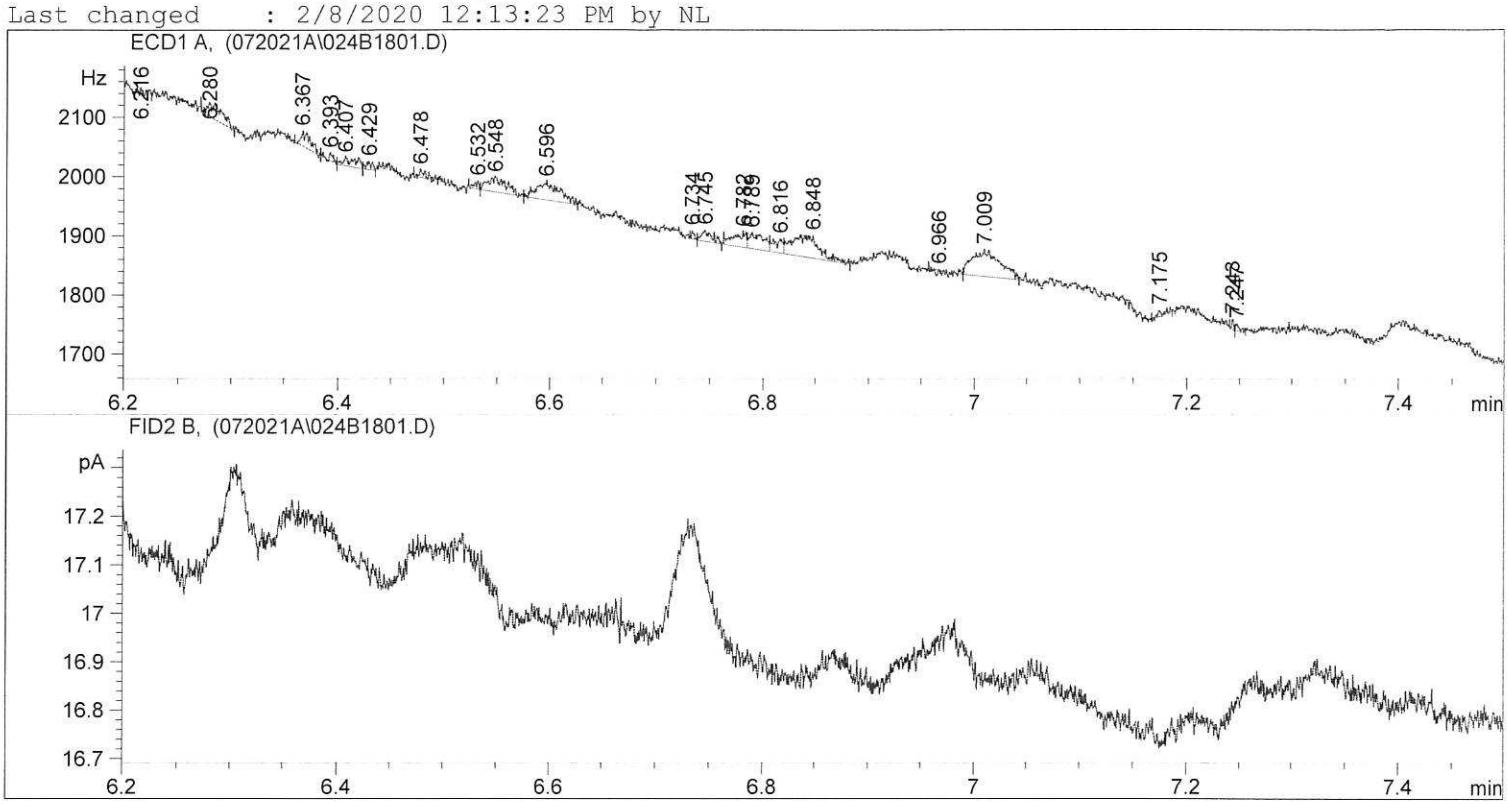


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                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
```

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.224	BP	0.0109	162.44891	183.40749	3.32128
2	5.261	VP	0.0156	425.49094	336.13770	8.69920
3	5.306	BP	7.13e-3	7.46325	14.21571	0.15259
4	5.403	PV	6.36e-3	9.62282	19.49976	0.19674
5	5.438	VV	0.0176	213.35559	146.59996	4.36207
6	5.463	VV	0.0104	37.50337	47.43318	0.76676
7	5.542	VV	0.0314	861.84656	334.76044	17.62052
8	5.655	BP	0.0124	20.91836	20.74690	0.42768
9	5.692	VV	8.40e-3	11.07738	18.46169	0.22648
10	5.714	VP	0.0110	22.47014	25.26335	0.45940
11	5.756	VP	0.0190	143.18098	91.78415	2.92735
12	5.820	VV	0.0222	1822.67688	1129.13757	37.26478
13	5.878	VB	0.0144	76.60168	63.97818	1.56613
14	5.936	BV	0.0150	51.83731	47.13101	1.05982
15	5.948	VV	4.53e-3	10.00396	31.32676	0.20453
16	5.966	VV	0.0175	67.15090	46.43060	1.37291
17	5.998	VP	0.0165	65.20153	48.54924	1.33305

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	6.082	PV	0.0144	78.98672	70.98212	1.61489
19	6.113	VV	0.0256	232.65508	112.35285	4.75665
20	6.151	VB	6.04e-3	9.65655	20.71057	0.19743
21	6.216	PP	1.85e-3	6.02417e-1	4.83836	0.01232
22	6.280	BP	0.0134	24.88242	22.72380	0.50872
23	6.367	PB	7.84e-3	16.19007	25.39674	0.33101
24	6.393	BP	4.21e-3	4.10334	13.27191	0.08389
25	6.407	VP	0.0117	12.42061	13.27954	0.25394
26	6.429	VP	5.96e-3	4.94269	13.82383	0.10105
27	6.478	BB	5.31e-3	5.31433	12.62426	0.10865
28	6.532	BP	4.09e-3	3.22240	13.14272	0.06588
29	6.548	VP	0.0152	29.69434	24.06108	0.60710
30	6.596	BB	0.0188	45.28585	30.06363	0.92587
31	6.734	BP	2.92e-3	2.17186	13.19324	0.04440
32	6.745	VP	8.24e-3	12.48269	18.56997	0.25521
33	6.782	BV	9.43e-3	20.06902	25.92252	0.41031
34	6.789	VB	0.0116	24.52919	26.05320	0.50150
35	6.816	BV	8.20e-3	14.57499	24.29624	0.29799
36	6.848	VP	0.0232	65.89262	38.12936	1.34718
37	6.966	BP	0.0000	3.13502	1.41533	0.06410
38	7.009	VB	0.0240	80.53762	44.42245	1.64660
39	7.175	PB	5.01e-3	3.53569	10.48041	0.07229
40	7.243	BP	2.21e-3	2.28458	16.52460	0.04671
41	7.247	VB	3.29e-3	2.53972	11.02033	0.05192
42	7.520	BB	7.89e-3	9.57408	15.75162	0.19574
43	7.595	PB	6.87e-3	7.26373	13.95458	0.14851
44	7.632	BB	0.0178	40.95436	28.39384	0.83732
45	7.758	PBA	0.0280	124.79935	53.12757	2.55153
Totals :				4891.15190	3323.39036	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

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==========================================================================
Injection Date  : 7/20/2021 8:18:03 PM          Seq. Line :  19
Sample Name     : 21G0140 08                     Location : Vial 25
Acq. Operator   : DXP                                Inj :   1
                                               Inj Volume : 1 µl
Sequence File   : C:\HPCHEM\2\SEQUENCE\072021A.S
Method          : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed    : 2/8/2020 12:13:23 PM by NL
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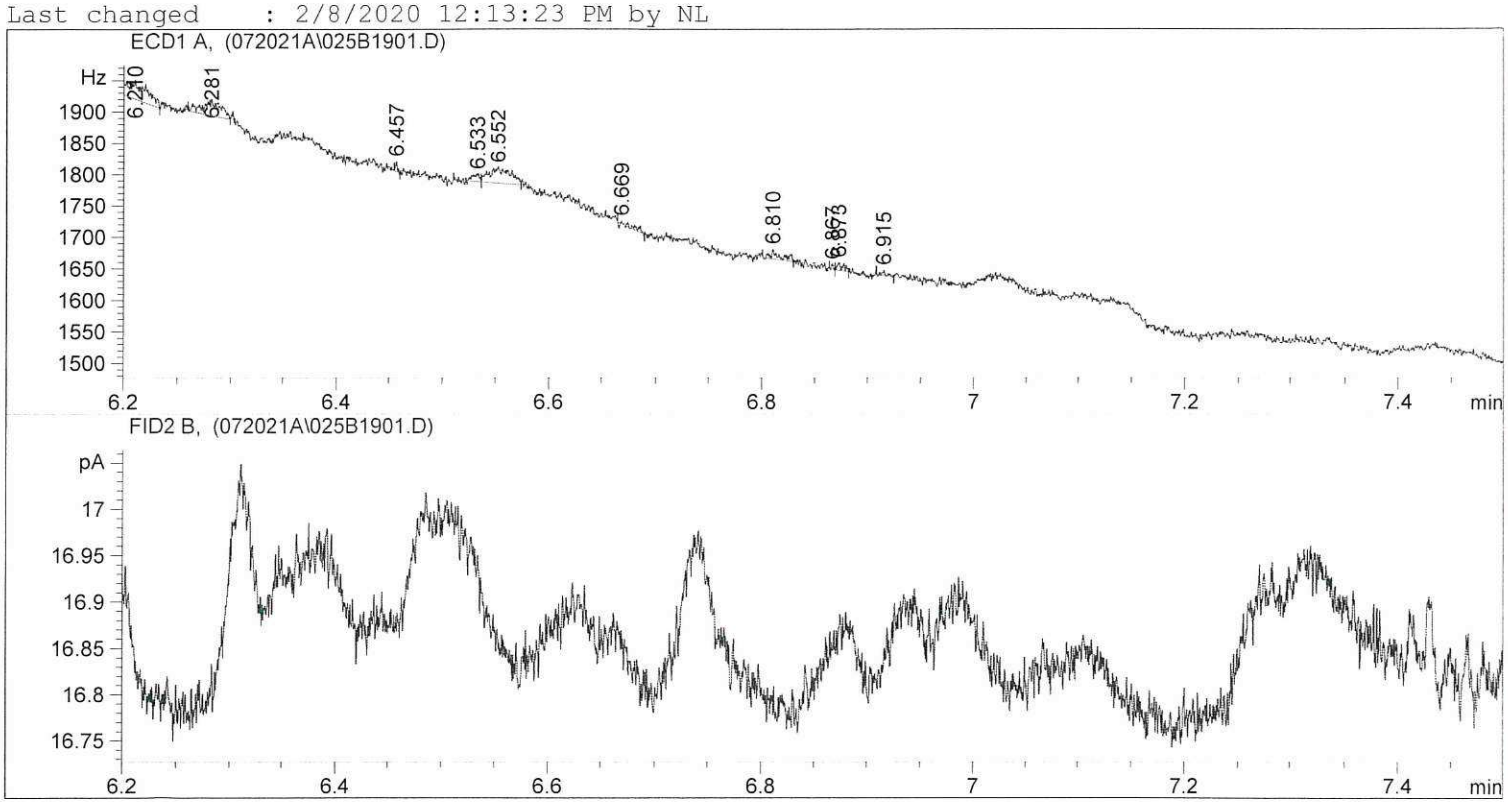


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==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: ECD1 A,
```

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.269	PV	0.0136	37.23270	35.16416	3.95125
2	5.289	VB	3.85e-3	6.44525	23.12906	0.68399
3	5.445	BP	0.0154	23.33663	18.10725	2.47656
4	5.585	PB	0.0190	74.38941	47.58978	7.89444
5	5.662	PV	0.0141	26.11200	22.57642	2.77109
6	5.712	VP	0.0158	33.84187	26.04360	3.59140
7	5.825	BB	0.0236	381.12000	198.42331	40.44565
8	5.876	BV	4.66e-3	16.30819	46.86810	1.73068
9	5.888	VB	0.0162	56.26472	41.49833	5.97099
10	5.924	BB	0.0224	86.00399	49.64144	9.12701
11	5.997	BB	0.0185	47.99645	31.93864	5.09353
12	6.042	PP	2.93e-3	2.32355	11.63311	0.24658
13	6.157	PB	0.0000	3.66893e-1	5.27782	0.03894
14	6.186	BV	7.10e-3	11.35533	20.37148	1.20506
15	6.210	VP	0.0166	40.40614	30.56600	4.28803
16	6.281	BB	0.0141	28.85582	24.52003	3.06227
17	6.457	BP	1.70e-3	1.69005	15.19875	0.17935

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	6.533	PV	5.82e-3	4.77256	10.66355	0.50648
19	6.552	VB	0.0181	34.36296	23.96216	3.64671
20	6.669	BP	8.66e-3	2.74187	4.07190	0.29098
21	6.810	BB	8.30e-3	9.60548	14.54711	1.01936
22	6.867	BP	2.30e-3	9.52997e-1	6.55195	0.10114
23	6.873	VB	5.30e-3	4.66806	11.58500	0.49539
24	6.915	BP	3.55e-3	1.95389	7.72284	0.20735
25	7.682	BP	0.0137	9.19478	8.20224	0.97578
Totals :				942.30157	735.85400	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

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==========================================================================
Injection Date  : 7/20/2021 8:51:12 PM          Seq. Line :  22
Sample Name     : CS4 STANDARD                   Location : Vial 11
Acq. Operator   : DXP                                Inj :   1
                                               Inj Volume : 1 µl
Sequence File   : C:\HPCHEM\2\SEQUENCE\072021A.S
Method          : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed    : 2/8/2020 12:13:23 PM by NL
```

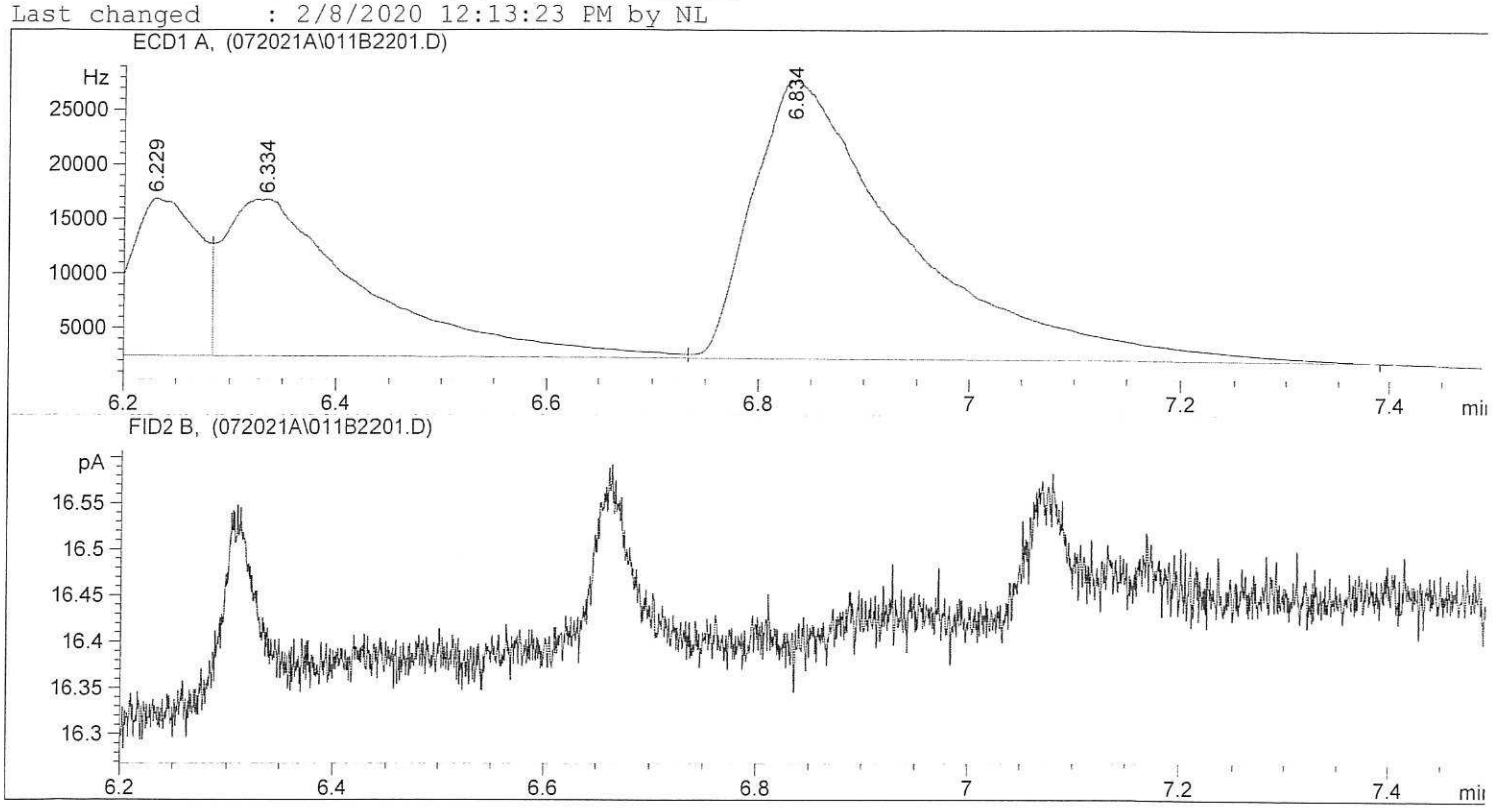


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==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000


Signal 1: ECD1 A,

Peak RetTime Type  Width     Area      Height      Area
  #   [min]        [min]   [Hz*s]      [Hz]        %
----|-------|----|-------|----------|----------|--------|
   1   5.287 BP S  0.1052 6.00138e4  9503.39160  5.03702
   2   5.639 PV S  0.0422 8.96372e4  2.51382e4   7.52334
   3   5.728 VV S  0.1713 4.72530e5  4.59823e4  39.65992
   4   6.069 VV S  0.0939 1.11485e5  1.97806e4   9.35706
   5   6.229 VV S  0.0538 6.61286e4  1.44485e4   5.55025
   6   6.334 VV S  0.1547 1.33577e5  1.43916e4  11.21125
   7   6.834 PB S  0.1196 2.58083e5  2.55564e4  21.66117

Totals :                  1.19145e6  1.54801e5

 Results obtained with enhanced integrator!
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Signal 2: FID2 B,

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*** End of Report ***

Analytical Resources, Incorporated
Analytical Chemists and Consultants

CLEANUP BATCH SUMMARY

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Cleanup Batch:	CJI0096	Cleanup Type:	Sulfuric Acid
Cleanup Method:	EPA 3665 Sulfuric Acid Cleanup - uL	Analysis:	EPA 1613B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
LDW21-SC634C	21G0140-07	21092021	09/09/2021	
LDW21-SC634A-FD	21G0140-05	21092019	09/09/2021	
LDW21-SC634B	21G0140-06	21092020	09/09/2021	
Reference	BJH0152-SRM1	21092006	09/09/2021	
Blank	BJH0152-BLK1	21092004	09/09/2021	
LDW21-SC634E	21G0140-08	21092024	09/09/2021	
LDW21-SC634A	21G0140-04	21092018	09/09/2021	
LCS	BJH0152-BS1	21092005	09/09/2021	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

CLEANUP BENCH SHEET

CJI0096

Matrix: Solid **Cleanup using: HRGCMS - EPA 3665 Sulfuric Acid Cleanup - uL** **Printed: 9/13/2021 12:40:10PM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (uL)	Final (uL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments
21G0156-05	C	LDW21-IT660B	C 01	20	20	1613B Dioxin	9/9/2021	NPL	
21G0156-04	C	LDW21-IT622E	C 01	20	20	1613B Dioxin	9/9/2021	NPL	
21G0140-08	C	LDW21-SC634E	C 01	20	20	1613B Dioxin	9/9/2021	NPL	
21G0156-01	C	LDW21-IT622A	C 01	20	20	1613B Dioxin	9/9/2021	NPL	
21G0156-03	C	LDW21-IT622C	C 01	20	20	1613B Dioxin	9/9/2021	NPL	
21G0156-02	C	LDW21-IT622B	C 01	20	20	1613B Dioxin	9/9/2021	NPL	
21G0126-11	A	LDW21-IT652C	A 01	20	20	1613B Dioxin	9/9/2021	NPL	
21G0126-12	A	LDW21-IT652E	A 01	20	20	1613B Dioxin	9/9/2021	NPL	
21G0126-13	A	LDW21-IT632B	A 01	20	20	1613B Dioxin	9/9/2021	NPL	
21G0126-14	A	LDW21-IT632C	A 01	20	20	1613B Dioxin	9/9/2021	NPL	
21G0140-04	C	LDW21-SC634A	C 01	20	20	1613B Dioxin	9/9/2021	NPL	
21G0140-05	C	LDW21-SC634A-FD	C 01	20	20	1613B Dioxin	9/9/2021	NPL	
21G0140-06	C	LDW21-SC634B	C 01	20	20	1613B Dioxin	9/9/2021	NPL	
21G0140-07	C	LDW21-SC634C	C 01	20	20	1613B Dioxin	9/9/2021	NPL	
21G0126-07	A	LDW21-IT653B	A 01	20	20	1613B Dioxin	9/9/2021	NPL	
21G0126-10	A	LDW21-IT652B	A 01	20	20	1613B Dioxin	9/9/2021	NPL	
21G0126-08	A	LDW21-IT653C	A 01	20	20	1613B Dioxin	9/9/2021	NPL	
21G0126-09	A	LDW21-IT653E	A 01	20	20	1613B Dioxin	9/9/2021	NPL	
BJH0152-SRM1	-	Reference	-	20	20	-	9/9/2021	NPL	
BJH0152-DUP1	-	Duplicate	-	20	20	-	9/9/2021	NPL	
BJH0152-BLK1	-	Blank	-	20	20	-	9/9/2021	NPL	
BJH0152-BS1	-	LCS	-	20	20	-	9/9/2021	NPL	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

CLEANUP BENCH SHEET

CJI0096

Matrix: Solid **Cleanup using: HRGCMS - EPA 3665 Sulfuric Acid Cleanup - uL** **Printed: 9/13/2021 12:40:10PM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (uL)	Final (uL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments

Analytical Resources, Incorporated
Analytical Chemists and Consultants

CLEANUP BATCH SUMMARY

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Cleanup Batch:	CJI0097	Cleanup Type:	Silica Gel
Cleanup Method:	EPA 3630C Silica Gel Cleanup	Analysis:	EPA 1613B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
LDW21-SC634C	21G0140-07	21092021	09/10/2021	
LDW21-SC634E	21G0140-08	21092024	09/10/2021	
LDW21-SC634A-FD	21G0140-05	21092019	09/10/2021	
LDW21-SC634A	21G0140-04	21092018	09/10/2021	
LDW21-SC634B	21G0140-06	21092020	09/10/2021	
Reference	BJH0152-SRM1	21092006	09/10/2021	
LCS	BJH0152-BS1	21092005	09/10/2021	
Blank	BJH0152-BLK1	21092004	09/10/2021	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

CLEANUP BENCH SHEET

CJI0097

Matrix: Solid **Cleanup using: HRGCMS - EPA 3630C Silica Gel Cleanup** **Printed: 9/13/2021 12:40:26PM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (mL)	Final (mL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments
21G0156-05	C	LDW21-IT660B	C 01	20	20	1613B Dioxin	9/13/2021	NPL	
21G0156-04	C	LDW21-IT622E	C 01	20	20	1613B Dioxin	9/13/2021	NPL	
21G0140-08	C	LDW21-SC634E	C 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0156-01	C	LDW21-IT622A	C 01	20	20	1613B Dioxin	9/13/2021	NPL	
21G0156-03	C	LDW21-IT622C	C 01	20	20	1613B Dioxin	9/13/2021	NPL	
21G0156-02	C	LDW21-IT622B	C 01	20	20	1613B Dioxin	9/13/2021	NPL	
21G0126-11	A	LDW21-IT652C	A 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0126-12	A	LDW21-IT652E	A 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0126-13	A	LDW21-IT632B	A 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0126-14	A	LDW21-IT632C	A 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0140-04	C	LDW21-SC634A	C 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0140-05	C	LDW21-SC634A-FD	C 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0140-06	C	LDW21-SC634B	C 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0140-07	C	LDW21-SC634C	C 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0126-07	A	LDW21-IT653B	A 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0126-10	A	LDW21-IT652B	A 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0126-08	A	LDW21-IT653C	A 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0126-09	A	LDW21-IT653E	A 01	20	20	1613B Dioxin	9/10/2021	NPL	
BJH0152-SRM1	-	Reference	-	20	20	-	9/10/2021	NPL	
BJH0152-DUP1	-	Duplicate	-	20	20	-	9/10/2021	NPL	
BJH0152-BLK1	-	Blank	-	20	20	-	9/10/2021	NPL	
BJH0152-BS1	-	LCS	-	20	20	-	9/10/2021	NPL	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

CLEANUP BENCH SHEET

CJI0097

Matrix: Solid **Cleanup using: HRGCMS - EPA 3630C Silica Gel Cleanup** **Printed: 9/13/2021 12:40:26PM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (mL)	Final (mL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments

Analytical Resources, Incorporated
Analytical Chemists and Consultants

CLEANUP BATCH SUMMARY

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Cleanup Batch:	CJI0098	Cleanup Type:	Florisil
Cleanup Method:	EPA 3620B Florisil Cleanup (uL)	Analysis:	EPA 1613B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
LDW21-SC634A	21G0140-04	21092018	09/10/2021	
LCS	BJH0152-BS1	21092005	09/10/2021	
Blank	BJH0152-BLK1	21092004	09/10/2021	
LDW21-SC634E	21G0140-08	21092024	09/10/2021	
LDW21-SC634C	21G0140-07	21092021	09/10/2021	
Reference	BJH0152-SRM1	21092006	09/10/2021	
LDW21-SC634A-FD	21G0140-05	21092019	09/10/2021	
LDW21-SC634B	21G0140-06	21092020	09/10/2021	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

CLEANUP BENCH SHEET

CJI0098

Matrix: Solid **Cleanup using: HRGCMS - EPA 3620B Florisil Cleanup (uL)** **Printed: 9/13/2021 12:40:43PM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (uL)	Final (uL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments
21G0156-05	C	LDW21-IT660B	C 01	20	20	1613B Dioxin	9/13/2021	NPL	
21G0156-04	C	LDW21-IT622E	C 01	20	20	1613B Dioxin	9/13/2021	NPL	
21G0140-08	C	LDW21-SC634E	C 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0156-01	C	LDW21-IT622A	C 01	20	20	1613B Dioxin	9/13/2021	NPL	
21G0156-03	C	LDW21-IT622C	C 01	20	20	1613B Dioxin	9/13/2021	NPL	
21G0156-02	C	LDW21-IT622B	C 01	20	20	1613B Dioxin	9/13/2021	NPL	
21G0126-11	A	LDW21-IT652C	A 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0126-12	A	LDW21-IT652E	A 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0126-13	A	LDW21-IT632B	A 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0126-14	A	LDW21-IT632C	A 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0140-04	C	LDW21-SC634A	C 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0140-05	C	LDW21-SC634A-FD	C 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0140-06	C	LDW21-SC634B	C 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0140-07	C	LDW21-SC634C	C 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0126-07	A	LDW21-IT653B	A 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0126-10	A	LDW21-IT652B	A 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0126-08	A	LDW21-IT653C	A 01	20	20	1613B Dioxin	9/10/2021	NPL	
21G0126-09	A	LDW21-IT653E	A 01	20	20	1613B Dioxin	9/10/2021	NPL	
BJH0152-SRM1	-	Reference	-	20	20	-	9/10/2021	NPL	
BJH0152-DUP1	-	Duplicate	-	20	20	-	9/10/2021	NPL	
BJH0152-BLK1	-	Blank	-	20	20	-	9/10/2021	NPL	
BJH0152-BS1	-	LCS	-	20	20	-	9/10/2021	NPL	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

CLEANUP BENCH SHEET

CJI0098

Matrix: Solid **Cleanup using: HRGCMS - EPA 3620B Florisil Cleanup (uL)** **Printed: 9/13/2021 12:40:43PM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (uL)	Final (uL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Blank

Form 1
METHOD BLANK DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0140
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Matrix:	Solid	Laboratory ID:	BJH0152-BLK1	File ID:	21092004
Sampled:	N/A	Prepared:	09/06/21 16:00	Analyzed:	09/20/21 18:40
Solids Wt%:		Preparation:	EPA 1613	Initial/Final:	10 g / 20 uL
Result Basis:	Dry	Sequence:	SJI0309	Calibration:	EH00030
Batch:	BJH0152	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1	0.000	0.655-0.886	0.086	1.00	ND	ng/kg	U
1746-01-6	2,3,7,8-TCDD	1	0.000	0.655-0.886	0.129	1.00	ND	ng/kg	U
57117-41-6	1,2,3,7,8-PeCDF	1	0.000	1.318-1.783	0.071	1.00	ND	ng/kg	U
57117-31-4	2,3,4,7,8-PeCDF	1	0.000	1.318-1.783	0.073	1.00	ND	ng/kg	U
40321-76-4	1,2,3,7,8-PeCDD	1	0.000	1.318-1.783	0.130	1.00	ND	ng/kg	U
70648-26-9	1,2,3,4,7,8-HxCDF	1	0.000	1.054-1.426	0.073	1.00	ND	ng/kg	U
57117-44-9	1,2,3,6,7,8-HxCDF	1	0.000	1.054-1.426	0.072	1.00	ND	ng/kg	U
60851-34-5	2,3,4,6,7,8-HxCDF	1	0.000	1.054-1.426	0.073	1.00	ND	ng/kg	U
72918-21-9	1,2,3,7,8,9-HxCDF	1	0.000	1.054-1.426	0.088	1.00	ND	ng/kg	U
39227-28-6	1,2,3,4,7,8-HxCDD	1	0.000	1.054-1.426	0.090	1.00	ND	ng/kg	U
57653-85-7	1,2,3,6,7,8-HxCDD	1	0.000	1.054-1.426	0.091	1.00	ND	ng/kg	U
19408-74-3	1,2,3,7,8,9-HxCDD	1	0.000	1.054-1.426	0.097	1.00	ND	ng/kg	U
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	0.000	0.893-1.208	0.072	1.00	ND	ng/kg	U
55673-89-7	1,2,3,4,7,8,9-HpCDF	1	0.000	0.893-1.208	0.108	1.00	ND	ng/kg	U
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.138	0.893-1.208	0.177	2.50	0.346	ng/kg	J
39001-02-0	OCDF	1	0.000	0.757-1.024	0.175	2.50	ND	ng/kg	U
3268-87-9	OCDD	1	0.827	0.757-1.024	0.215	10.0	2.70	ng/kg	J

Homologue Groups

55722-27-5	Total TCDF	1	0.000			1.00	ND	ng/kg
41903-57-5	Total TCDD	1	0.000			1.00	ND	ng/kg
30402-15-4	Total PeCDF	1	0.000			1.00	ND	ng/kg
36088-22-9	Total PeCDD	1	0.000			1.00	ND	ng/kg
55684-94-1	Total HxCDF	1	0.000			1.00	ND	ng/kg
34465-46-8	Total HxCDD	1	0.000			1.00	ND	ng/kg
38998-75-3	Total HpCDF	1	0.000			1.00	ND	ng/kg
37871-00-4	Total HpCDD	1	0.000			1.00	0.346	ng/kg

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.004
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.180

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Blank

Form 2
METHOD BLANK DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0140
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Matrix:	Solid	Laboratory ID:	BJH0152-BLK1	File ID:	21092004
Sampled:	N/A	Prepared:	09/06/21 16:00	Analyzed:	09/20/21 18:40
Solids Wt%:	0.00	Preparation:	EPA 1613	Initial/Final:	10 g / 20 uL
Result Basis:	Dry	Sequence:	SJI0309	Calibration:	EH00030
Batch:	BJH0152	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF	1	0.779	0.655-0.886	0.09	40.3	24 - 169 %	
13C12-2,3,7,8-TCDD	1	0.787	0.655-0.886	0.10	49.7	25 - 164 %	
13C12-1,2,3,7,8-PeCDF	1	1.614	1.318-1.783	0.10	63.0	24 - 185 %	
13C12-2,3,4,7,8-PeCDF	1	1.586	1.318-1.783	0.10	59.6	21 - 178 %	
13C12-1,2,3,7,8-PeCDD	1	1.546	1.318-1.783	0.11	68.3	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF	1	0.514	0.434-0.587	0.18	82.5	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF	1	0.530	0.434-0.587	0.17	79.3	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF	1	0.529	0.434-0.587	0.19	80.6	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF	1	0.521	0.434-0.587	0.23	81.3	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD	1	1.287	1.054-1.426	0.15	84.4	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD	1	1.268	1.054-1.426	0.14	83.6	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF	1	0.455	0.374-0.506	0.17	70.3	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF	1	0.456	0.374-0.506	0.21	65.5	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD	1	1.036	0.893-1.208	0.19	79.6	23 - 140 %	
13C12-OCDD	1	0.898	0.757-1.024	0.21	74.3	17 - 157 %	
37Cl4-2,3,7,8-TCDD	1	328.000		0.04	50.0	35 - 197 %	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210920D1.qld
Last Altered: Tuesday, September 21, 2021 10:30:31 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 11:09:38 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: BJH0152-BLK1, Name: 21092004, Date: 20-Sep-2021, Time: 18:40:21, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF					1.108		0.770	535	576								
12378-PeCDF					1.015		1.550	605	590								
23478-PeCDF					1.126		1.550	605	590								
123478-HxCDF					1.017		1.240	644	529								
234678-HxCDF					1.052		1.240	644	529								
123678-HxCDF					1.037		1.240	644	529								
123789-HxCDF					1.030		1.240	644	529								
1234678-HpCDF					1.327		1.050	480	470								
1234789-HpCDF					1.283		1.050	480	470								
OCDF					1.447		0.890	575	495								
2378-TCDD					0.920		0.770	737	551								
12378-PeCDD					0.995		1.550	678	600								
123478-HxCDD					1.027		1.240	648	591								
123678-HxCDD					1.009		1.240	648	591								
123789-HxCDD					0.950		1.240	648	591								
1234678-HpCDD	40.248	1.000	2.850e2	2.504e2	1.068	1.138	1.050	709	654	4.43e3	3.16e3	6.2	4.8	NO	bb	MM	0.173
OCDD	44.986	1.000	1.553e3	1.878e3	1.181	0.827	0.890	547	525	1.77e4	1.96e4	32.4	37.3	NO	bb	bb	1.348
13C-2378-TCDF	25.730	1.007	1.938e5	2.487e5	1.427	0.779	0.770	1680	885	3.08e6	3.96e6	1830.4	4472.0	NO	bb	bb	40.301
13C-12378-PeCDF	29.887	1.170	3.883e5	2.406e5	1.297	1.614	1.550	1489	1053	6.17e6	3.77e6	4143.4	3585.0	NO	bb	bb	62.976
13C-23478-PeCDF	31.235	1.222	3.478e5	2.193e5	1.236	1.586	1.550	1489	1053	5.34e6	3.35e6	3588.7	3186.1	NO	bb	bb	59.586
13C-123478-HxCDF	34.856	0.955	2.003e5	3.899e5	1.242	0.514	0.510	1637	1995	3.21e6	6.12e6	1959.9	3068.3	NO	bd	bd	82.496
13C-123678-HxCDF	34.989	0.959	2.124e5	4.008e5	1.343	0.530	0.510	1637	1995	3.28e6	6.27e6	2002.1	3142.2	NO	db	db	79.268
13C-234678-HxCDF	35.870	0.983	1.952e5	3.688e5	1.215	0.529	0.510	1637	1995	3.15e6	6.11e6	1925.8	3061.2	NO	bb	bb	80.628
13C-123789-HxCDF	36.895	1.011	1.616e5	3.100e5	1.008	0.521	0.510	1637	1995	2.65e6	5.21e6	1619.8	2611.6	NO	bb	bb	81.273
13C-1234678-HpCDF	38.744	1.062	1.174e5	2.578e5	0.926	0.455	0.440	988	1476	1.86e6	4.10e6	1887.6	2779.5	NO	bb	bb	70.321
13C-1234789-HpCDF	40.984	1.123	8.956e4	1.964e5	0.758	0.456	0.440	988	1476	1.29e6	2.80e6	1301.2	1893.6	NO	bb	bd	65.523
13C-1234-TCDD	25.549	0.000	3.329e5	4.368e5	1.000	0.762	0.770	1289	814	5.14e6	6.73e6	3985.4	8265.9	NO	bb	bb	100.000
13C-2378-TCDD	26.365	1.032	1.883e5	2.393e5	1.116	0.787	0.770	1289	814	2.87e6	3.76e6	2228.2	4616.0	NO	bd	bb	49.743
13C-12378-PeCDD	31.480	1.232	2.336e5	1.511e5	0.732	1.546	1.550	807	846	3.59e6	2.29e6	4446.2	2710.7	NO	bb	bb	68.273
13C-123478-HxCDD	35.970	0.986	2.625e5	2.039e5	0.960	1.287	1.240	1231	1063	4.53e6	3.50e6	3679.3	3295.4	NO	bd	bd	84.391
13C-123678-HxCDD	36.081	0.989	2.802e5	2.210e5	1.041	1.268	1.240	1231	1063	4.54e6	3.62e6	3691.6	3405.0	NO	db	db	83.591
13C-1234678-HpCDD	40.237	1.103	1.474e5	1.423e5	0.632	1.036	1.050	961	965	2.20e6	2.13e6	2293.2	2204.7	NO	bb	bb	79.555
13C-OCDD	44.968	1.233	2.040e5	2.271e5	0.504	0.898	0.890	688	970	2.40e6	2.66e6	3490.3	2745.7	NO	bb	bb	148.608
13C-123789-HxCDD	36.482	0.000	3.198e5	2.560e5	1.000	1.250	1.240	1231	1063	5.27e6	4.15e6	4279.9	3902.0	NO	bb	bb	100.000
37CL-2378-TCDD	26.381	1.033	1.667e5		1.084			815		2.52e6		3095.1			bb		19.987

Dataset: T:\Autospec\Processed Data Batch\210920D1.qld
Last Altered: Tuesday, September 21, 2021 10:30:31 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 11:09:38 Pacific Daylight Time

ID: BJH0152-BLK1, Name: 21092004, Date: 20-Sep-2021, Time: 18:40:21, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF					1.425		0.770	535	576								
1289-TCDF					1.043		0.770	535	576								
13468-PECDF					1.376		1.550	472	592								
12389-PECDF					1.000		1.550	605	590								
123468-HXCDF					1.087		1.240	644	529								
1368-TCDD					0.923		0.770	737	551								
1289-TCDD					0.794		0.770	737	551								
12479-PECDD					1.843		1.550	678	600								
12389-PECDD					1.154		1.550	678	600								
124679-HXCDD					1.125		1.240	648	591								
1234679-HPCDD					1.211		1.050	709	654								
Total-tetrafurans			0.000e0		1.192			535		0.00e0							
Total-penta1			0.000e0					472		0.00e0							
Total-pentafurans			0.000e0		1.047			605		0.00e0							
Total-hexafurans			0.000e0		1.045			644		0.00e0							
Total-heptafurans			0.000e0		1.305			480		0.00e0							
Total-Furans			0.000e0		1.158			535		0.00e0							
Total-tetradioxins			0.000e0		0.879			737		0.00e0							
Total-pentadioxins			0.000e0		1.331			678		0.00e0							
Total-hexadioxins			0.000e0		1.028			648		0.00e0							
Total-heptadioxins			2.850e2		1.140			709		4.43e3							0.173
Total-Dioxins			1.838e3		1.092			737		2.22e4							1.521
Total-TEQ			1.838e3					737		2.22e4							1.521
FUNCTION1 PFK			2.930e4					440442		1.16e6							
FUNCTION2 PFK			3.667e5					331876		1.04e7							0.000
FUNCTION3 PFK			1.360e6					360394		3.26e7							0.000
FUNCTION4 PFK			2.159e5					200197		5.92e6							
FUNCTION5 PFK			2.275e5					204695		6.74e6							
FUNCTION1 HXCD...			7.839e1					395		1.27e3							0.000
FUNCTION1 HPCD...			1.407e2					605		1.10e3							0.000
FUNCTION2 HPCD...			7.294e1					763		1.24e3							0.000
FUNCTION3 OCDPE			2.634e2					457		2.59e3							0.000
FUNCTION4 NCDPE			0.000e0					629		0.00e0							
FUNCTION5 DCDPE			1.510e2					521		1.88e3							0.000

Dataset: T:\Autospec\Processed Data Batch\210920D1.qld
Last Altered: Tuesday, September 21, 2021 10:30:31 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 11:09:38 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: BJH0152-BLK1, Name: 21092004, Date: 20-Sep-2021, Time: 18:40:21, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

Dataset: T:\Autospec\Processed Data Batch\210920D1.qld
Last Altered: Tuesday, September 21, 2021 10:30:31 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 11:09:38 Pacific Daylight Time

ID: BJH0152-BLK1, Name: 21092004, Date: 20-Sep-2021, Time: 18:40:21, Conditions: AUTOSPEC01, User: pk

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	40.25	2.850e2	2.504e2	1.068	1.14	1.05	6.2	YES	NO	bb	MM	0.173

Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	OCDD	44.99	1.553e3	1.878e3	1.181	0.83	0.89	32.4	YES	NO	bb	bb	1.348
2	1234678-HpCDD	40.25	2.850e2	2.504e2	1.068	1.14	1.05	6.2	YES	NO	bb	MM	0.173

TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	21.32	1.333e4					1.2	NO		bb		
2	FUNCTION1 PFK	21.25	1.597e4					1.4	NO		bb		

ID: BJH0152-BLK1, Name: 21092004, Date: 20-Sep-2021, Time: 18:40:21, Conditions: AUTOSPEC01, User: pk

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	30.51	6.401e3					0.9	NO		bb		0.000
2	FUNCTION2 PFK	30.42	7.856e3					0.9	NO		bb		0.000
3	FUNCTION2 PFK	30.28	1.102e4					1.3	NO		db		0.000
4	FUNCTION2 PFK	30.23	1.330e4					1.5	NO		bd		0.000
5	FUNCTION2 PFK	30.18	2.716e4					1.9	NO		bb		0.000
6	FUNCTION2 PFK	29.76	1.486e3					0.4	NO		bb		0.000
7	FUNCTION2 PFK	29.57	1.942e4					1.7	NO		bb		0.000
8	FUNCTION2 PFK	29.47	2.592e4					1.3	NO		bb		0.000
9	FUNCTION2 PFK	29.42	1.689e3					0.5	NO		bb		0.000
10	FUNCTION2 PFK	29.30	6.214e3					0.7	NO		db		0.000
11	FUNCTION2 PFK	29.26	5.659e3					0.8	NO		dd		0.000
12	FUNCTION2 PFK	29.18	1.766e4					1.2	NO		bd		0.000
13	FUNCTION2 PFK	29.02	1.879e4					1.5	NO		bb		0.000
14	FUNCTION2 PFK	28.96	3.074e4					1.5	NO		db		0.000
15	FUNCTION2 PFK	28.85	1.011e4					1.0	NO		bd		0.000
16	FUNCTION2 PFK	28.18	8.433e3					1.3	NO		bb		0.000
17	FUNCTION2 PFK	32.39	8.294e3					1.0	NO		bb		0.000
18	FUNCTION2 PFK	32.08	1.394e3					0.4	NO		bb		0.000
19	FUNCTION2 PFK	31.98	2.675e4					1.4	NO		bb		0.000
20	FUNCTION2 PFK	31.88	2.337e4					1.4	NO		db		0.000
21	FUNCTION2 PFK	31.81	5.942e3					0.7	NO		dd		0.000
22	FUNCTION2 PFK	31.73	3.037e4					1.1	NO		bd		0.000
23	FUNCTION2 PFK	31.64	1.905e3					0.5	NO		bb		0.000
24	FUNCTION2 PFK	31.54	3.061e3					0.5	NO		bb		0.000
25	FUNCTION2 PFK	31.17	3.327e3					0.5	NO		bb		0.000
26	FUNCTION2 PFK	31.12	1.379e4					1.3	NO		db		0.000
27	FUNCTION2 PFK	31.08	1.592e4					1.5	NO		bd		0.000
28	FUNCTION2 PFK	30.98	1.121e4					1.5	NO		bb		0.000
29	FUNCTION2 PFK	30.67	9.544e3					1.2	NO		bb		0.000

ID: BJH0152-BLK1, Name: 21092004, Date: 20-Sep-2021, Time: 18:40:21, Conditions: AUTOSPEC01, User: pk

PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	33.12	6.377e4					3.6	YES		dd		0.000
2	FUNCTION3 PFK	33.04	6.875e4					3.2	YES		bd		0.000
3	FUNCTION3 PFK	34.47	3.063e3					0.8	NO		bb		0.000
4	FUNCTION3 PFK	34.42	2.057e4					2.0	NO		db		0.000
5	FUNCTION3 PFK	34.39	1.960e4					1.9	NO		dd		0.000
6	FUNCTION3 PFK	34.33	5.692e3					0.8	NO		dd		0.000
7	FUNCTION3 PFK	34.30	9.244e3					1.0	NO		bd		0.000
8	FUNCTION3 PFK	34.21	2.193e3					0.5	NO		bb		0.000
9	FUNCTION3 PFK	34.03	5.837e4					1.7	NO		bb		0.000
10	FUNCTION3 PFK	33.74	2.754e3					0.4	NO		bb		0.000
11	FUNCTION3 PFK	33.67	1.043e4					1.0	NO		bb		0.000
12	FUNCTION3 PFK	33.53	1.348e4					1.1	NO		db		0.000
13	FUNCTION3 PFK	33.47	9.989e3					1.0	NO		dd		0.000
14	FUNCTION3 PFK	33.43	9.870e3					1.2	NO		bd		0.000
15	FUNCTION3 PFK	33.37	3.962e4					2.5	NO		db		0.000
16	FUNCTION3 PFK	33.31	9.235e4					3.1	YES		dd		0.000
17	FUNCTION3 PFK	33.22	4.461e4					3.0	NO		dd		0.000
18	FUNCTION3 PFK	33.16	3.949e4					2.9	NO		dd		0.000
19	FUNCTION3 PFK	36.25	1.343e4					1.3	NO		bb		0.000
20	FUNCTION3 PFK	36.17	1.109e3					0.3	NO		bb		0.000
21	FUNCTION3 PFK	35.70	6.813e3					0.8	NO		bb		0.000
22	FUNCTION3 PFK	35.65	2.527e4					1.9	NO		db		0.000
23	FUNCTION3 PFK	35.59	1.702e4					1.7	NO		bd		0.000
24	FUNCTION3 PFK	35.52	2.527e4					1.5	NO		bb		0.000
25	FUNCTION3 PFK	35.36	3.747e3					0.5	NO		bb		0.000
26	FUNCTION3 PFK	35.25	5.858e3					0.6	NO		db		0.000
27	FUNCTION3 PFK	35.20	1.269e4					1.3	NO		bd		0.000
28	FUNCTION3 PFK	35.11	3.336e4					1.9	NO		bb		0.000
29	FUNCTION3 PFK	34.92	1.097e4					1.2	NO		bb		0.000
30	FUNCTION3 PFK	34.86	3.234e4					2.2	NO		db		0.000
31	FUNCTION3 PFK	34.81	2.654e4					2.1	NO		dd		0.000
32	FUNCTION3 PFK	34.77	3.025e4					1.8	NO		dd		0.000
33	FUNCTION3 PFK	34.70	2.066e4					1.6	NO		bd		0.000
34	FUNCTION3 PFK	34.51	1.273e4					1.4	NO		bb		0.000
35	FUNCTION3 PFK	37.77	2.345e4					1.2	NO		bb		0.000
36	FUNCTION3 PFK	37.67	3.583e3					0.5	NO		bb		0.000
37	FUNCTION3 PFK	37.46	2.057e4					1.4	NO		db		0.000

ID: BJH0152-BLK1, Name: 21092004, Date: 20-Sep-2021, Time: 18:40:21, Conditions: AUTOSPEC01, User: pk

PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION3 PFK	37.41	2.906e4					1.6	NO		bd		0.000
39	FUNCTION3 PFK	37.34	4.244e3					1.1	NO		bb		0.000
40	FUNCTION3 PFK	37.24	1.839e4					2.1	NO		bb		0.000
41	FUNCTION3 PFK	37.20	1.675e3					0.4	NO		bb		0.000
42	FUNCTION3 PFK	37.06	5.070e4					2.2	NO		bb		0.000
43	FUNCTION3 PFK	36.85	2.316e4					1.6	NO		bb		0.000
44	FUNCTION3 PFK	36.75	9.349e4					3.8	YES		db		0.000
45	FUNCTION3 PFK	36.68	7.310e4					4.2	YES		dd		0.000
46	FUNCTION3 PFK	36.65	3.806e4					3.5	YES		bd		0.000
47	FUNCTION3 PFK	36.58	4.175e4					2.5	NO		bb		0.000
48	FUNCTION3 PFK	36.44	2.185e4					1.6	NO		db		0.000
49	FUNCTION3 PFK	36.36	6.455e4					3.7	YES		dd		0.000
50	FUNCTION3 PFK	36.30	4.855e3					0.9	NO		bd		0.000
51	FUNCTION3 PFK	37.88	3.485e4					2.6	NO		db		0.000
52	FUNCTION3 PFK	37.84	2.058e4					1.9	NO		bd		0.000

ID: BJH0152-BLK1, Name: 21092004, Date: 20-Sep-2021, Time: 18:40:21, Conditions: AUTOSPEC01, User: pk

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	40.59	1.329e4					1.4	NO		bb		
2	FUNCTION4 PFK	40.06	3.521e3					0.9	NO		bb		
3	FUNCTION4 PFK	39.54	9.583e3					1.5	NO		bb		
4	FUNCTION4 PFK	39.47	6.373e3					1.2	NO		bb		
5	FUNCTION4 PFK	39.22	1.102e4					1.4	NO		bb		
6	FUNCTION4 PFK	39.13	9.032e3					1.6	NO		db		
7	FUNCTION4 PFK	39.08	1.105e4					1.6	NO		bd		
8	FUNCTION4 PFK	39.02	1.856e4					1.9	NO		bb		
9	FUNCTION4 PFK	38.89	6.644e3					1.2	NO		db		
10	FUNCTION4 PFK	38.84	1.244e4					2.0	NO		dd		
11	FUNCTION4 PFK	38.79	2.156e4					2.8	NO		bd		
12	FUNCTION4 PFK	38.52	1.668e4					1.7	NO		bb		
13	FUNCTION4 PFK	38.08	5.389e3					0.8	NO		bb		
14	FUNCTION4 PFK	42.67	7.722e3					1.1	NO		db		
15	FUNCTION4 PFK	42.58	1.552e4					1.9	NO		bd		
16	FUNCTION4 PFK	42.22	5.987e3					1.2	NO		bb		
17	FUNCTION4 PFK	42.01	2.398e3					0.6	NO		bb		
18	FUNCTION4 PFK	41.93	1.097e4					1.8	NO		bb		
19	FUNCTION4 PFK	41.25	2.306e4					1.6	NO		bb		
20	FUNCTION4 PFK	40.74	5.111e3					1.2	NO		bb		

ID: BJH0152-BLK1, Name: 21092004, Date: 20-Sep-2021, Time: 18:40:21, Conditions: AUTOSPEC01, User: pk

PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	43.88	2.094e4					1.8	NO		dd		
2	FUNCTION5 PFK	43.80	9.608e3					1.6	NO		dd		
3	FUNCTION5 PFK	43.73	1.323e4					1.6	NO		bd		
4	FUNCTION5 PFK	43.68	1.855e4					1.9	NO		bb		
5	FUNCTION5 PFK	43.42	5.409e2					0.3	NO		bb		
6	FUNCTION5 PFK	43.29	2.288e3					0.6	NO		db		
7	FUNCTION5 PFK	43.24	4.611e3					0.9	NO		bd		
8	FUNCTION5 PFK	43.14	3.416e3					1.0	NO		bb		
9	FUNCTION5 PFK	45.20	4.285e3					1.0	NO		bb		
10	FUNCTION5 PFK	45.06	4.490e3					1.0	NO		db		
11	FUNCTION5 PFK	45.00	6.188e3					1.1	NO		bd		
12	FUNCTION5 PFK	44.93	6.551e3					0.7	NO		bb		
13	FUNCTION5 PFK	44.84	1.437e3					0.5	NO		db		
14	FUNCTION5 PFK	44.80	6.583e3					1.1	NO		dd		
15	FUNCTION5 PFK	44.75	7.335e3					1.0	NO		bd		
16	FUNCTION5 PFK	44.54	4.970e3					1.0	NO		bb		
17	FUNCTION5 PFK	44.32	1.038e3					0.4	NO		bb		
18	FUNCTION5 PFK	44.28	4.144e3					1.0	NO		bb		
19	FUNCTION5 PFK	44.24	6.434e3					1.1	NO		bb		
20	FUNCTION5 PFK	44.13	6.461e3					0.9	NO		db		
21	FUNCTION5 PFK	44.09	1.126e4					1.5	NO		dd		
22	FUNCTION5 PFK	44.04	1.628e4					2.2	NO		bd		
23	FUNCTION5 PFK	43.96	1.013e4					1.5	NO		db		
24	FUNCTION5 PFK	43.92	1.543e4					1.7	NO		dd		
25	FUNCTION5 PFK	45.92	1.076e4					1.5	NO		bb		
26	FUNCTION5 PFK	45.86	3.118e3					0.8	NO		bb		
27	FUNCTION5 PFK	45.79	4.395e3					0.9	NO		bb		
28	FUNCTION5 PFK	45.47	1.632e4					1.1	NO		bb		
29	FUNCTION5 PFK	45.35	1.122e3					0.4	NO		bb		
30	FUNCTION5 PFK	45.31	2.982e3					0.7	NO		bb		
31	FUNCTION5 PFK	45.24	2.588e3					0.6	NO		bb		

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	26.35	7.839e1					3.2	YES		bb		0.000

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ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	22.45	1.407e2					1.8	NO		bb		0.000

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	28.90	7.294e1					1.6	NO		bb		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	36.48	2.634e2					5.7	YES		bb		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	45.66	7.919e1					2.0	NO		bb		0.000
2	FUNCTION5 DCDPE	45.51	7.181e1					1.6	NO		bb		0.000

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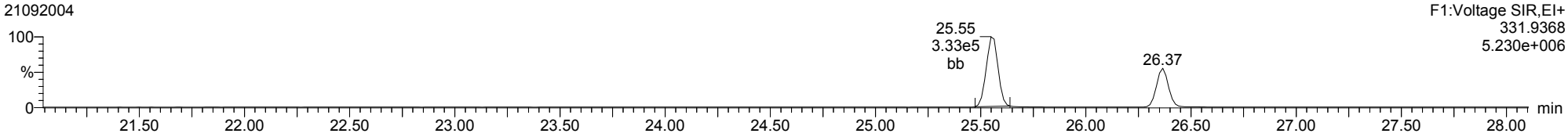
13C-1234-TCDD



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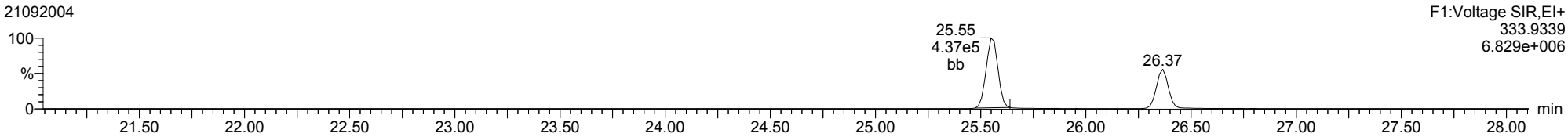

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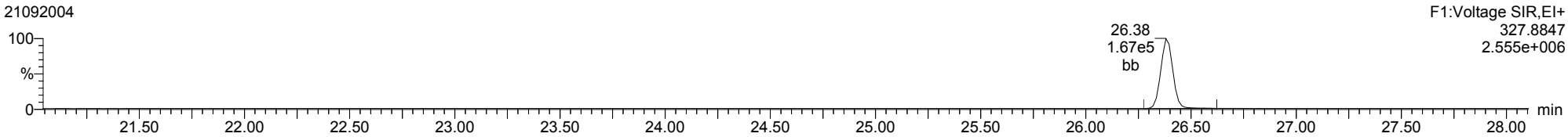

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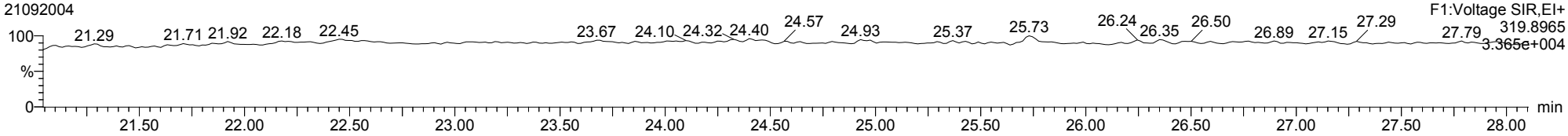

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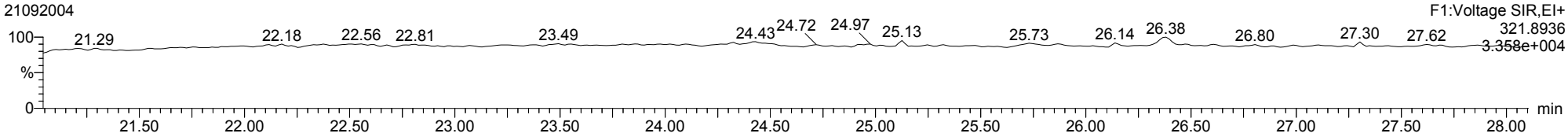

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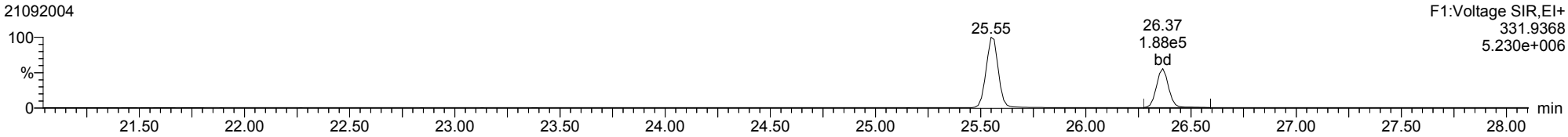

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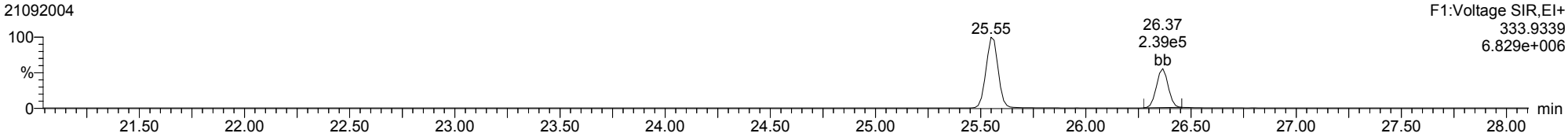

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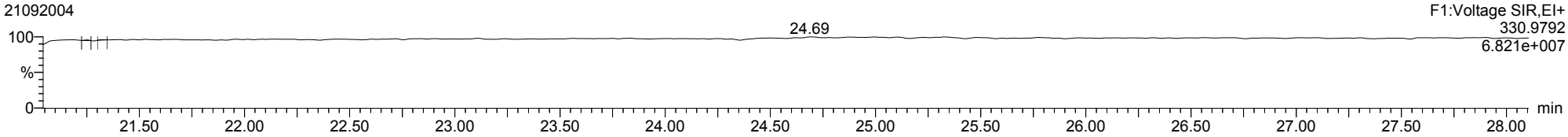

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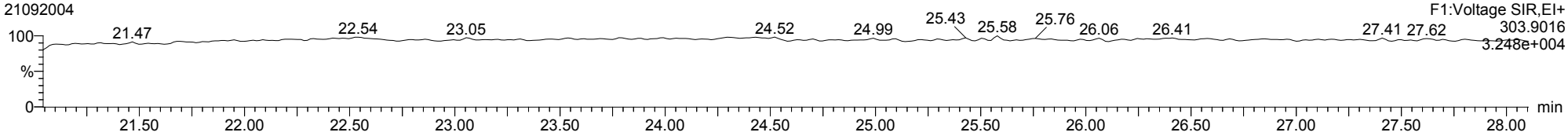

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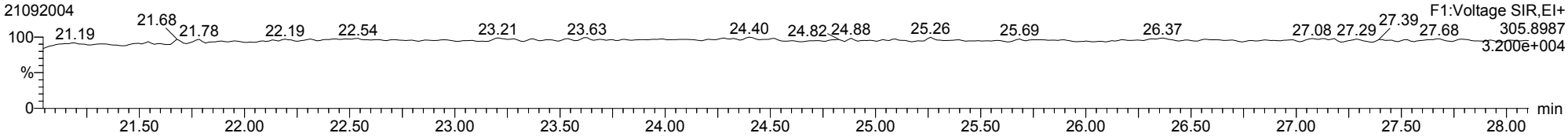

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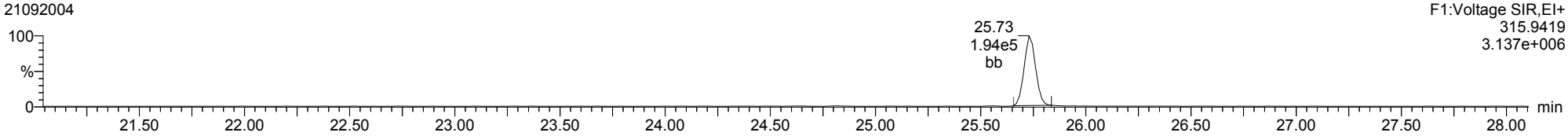

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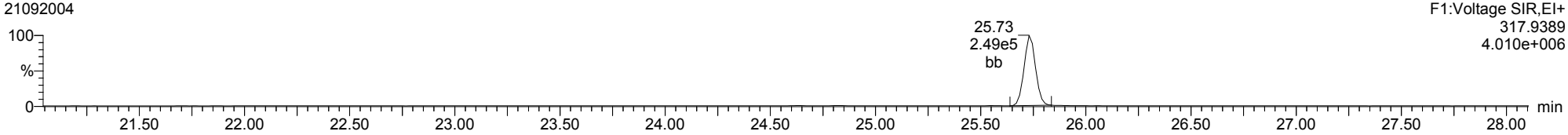

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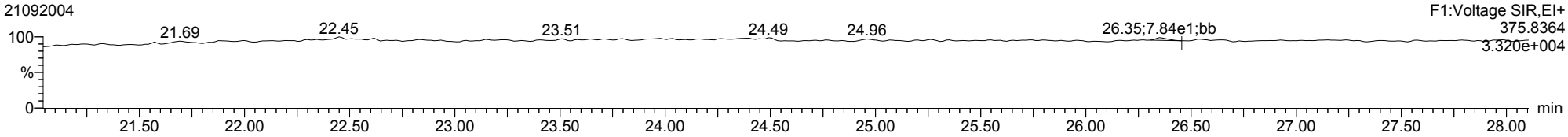

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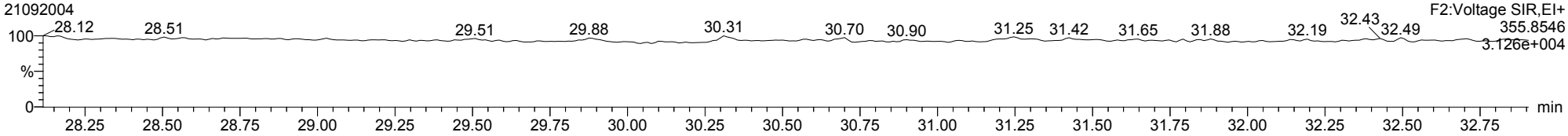

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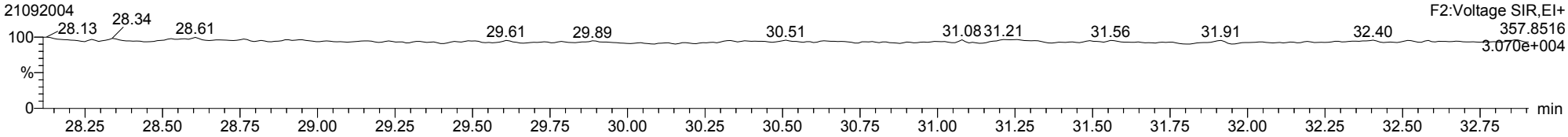

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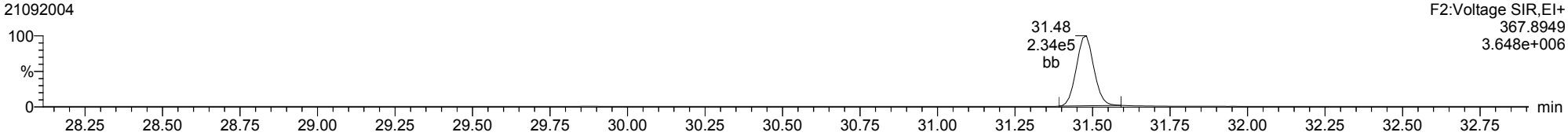

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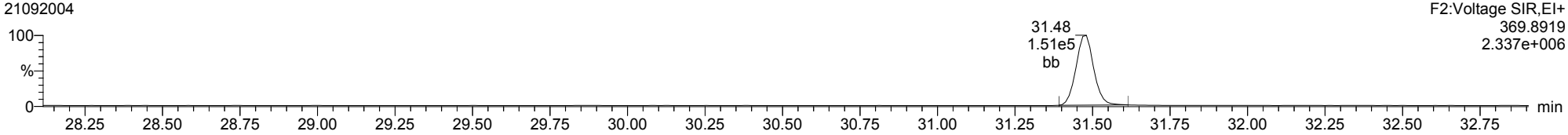

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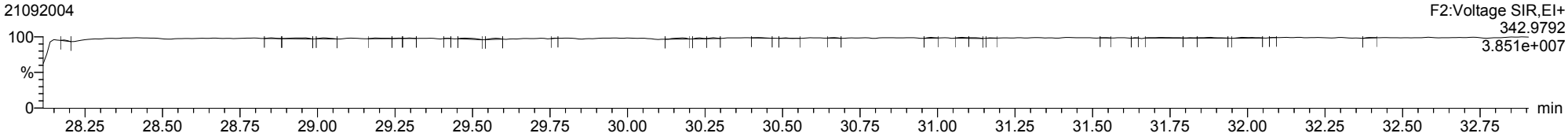

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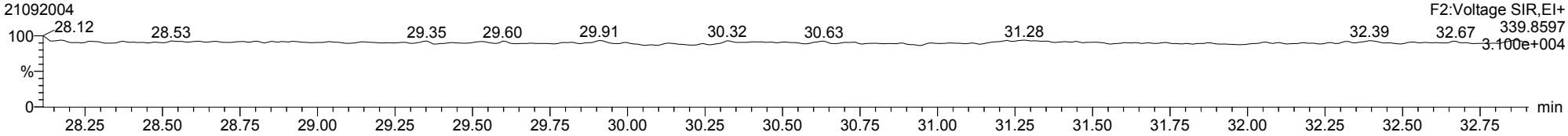

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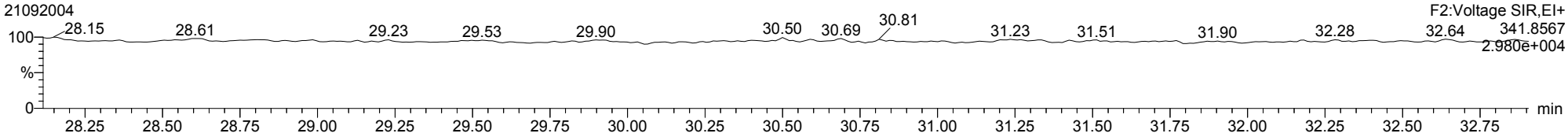

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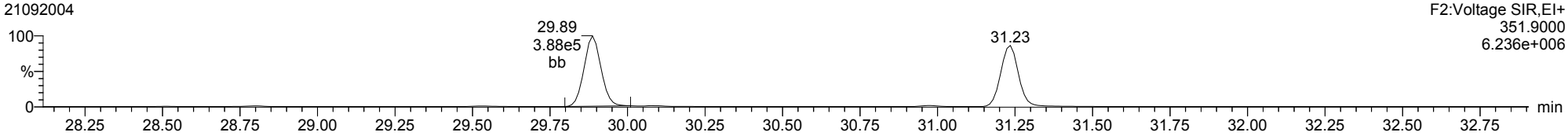

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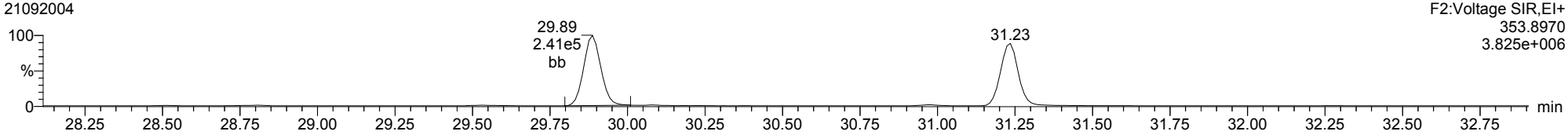

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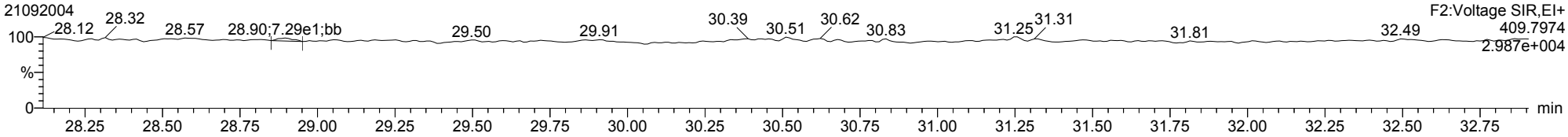

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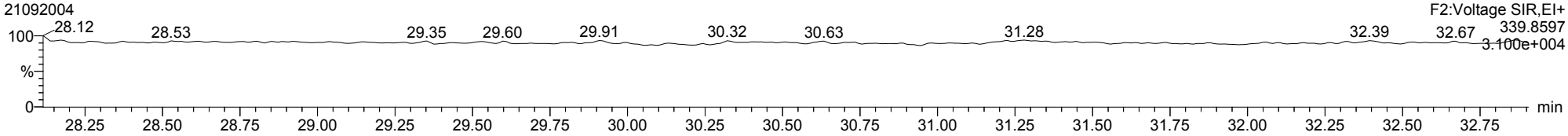
23478-PeCDF



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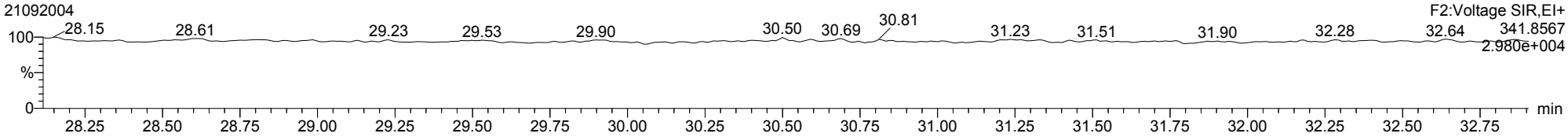

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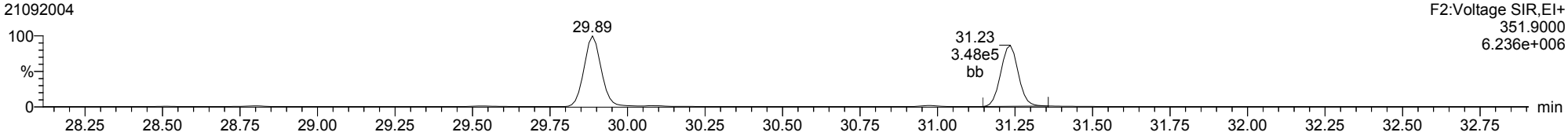

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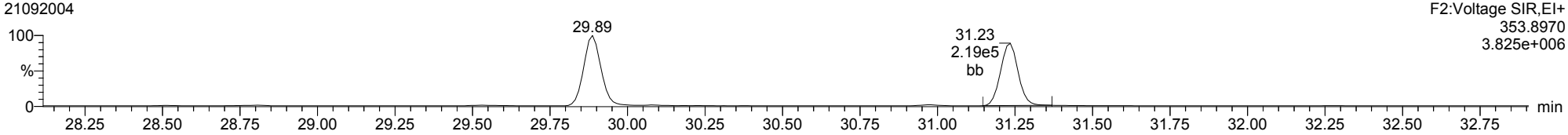

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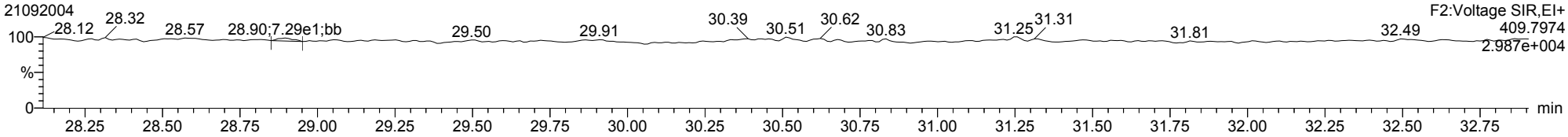

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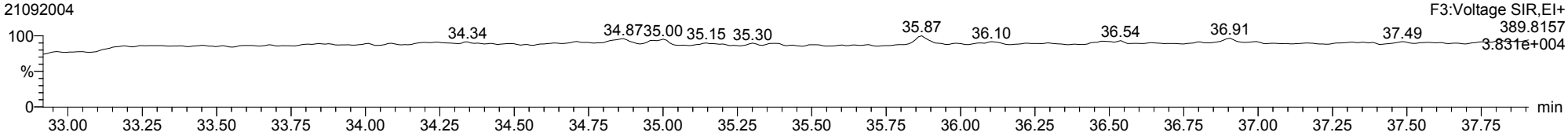

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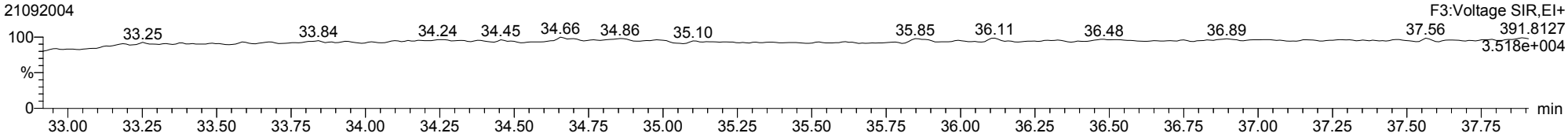

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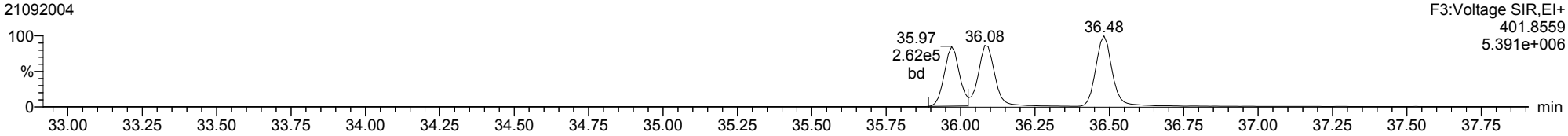

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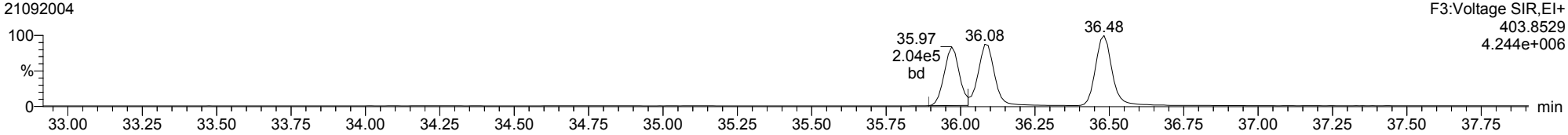

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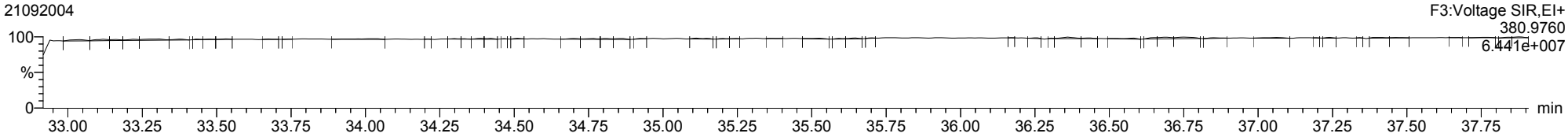

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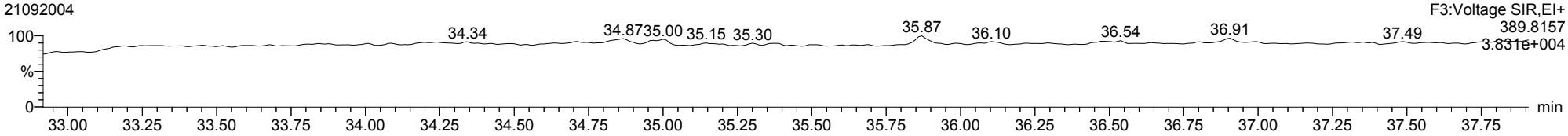

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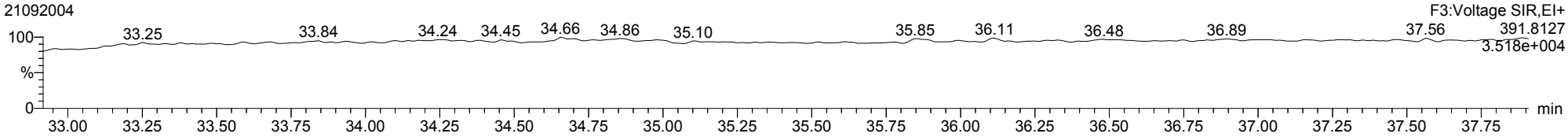

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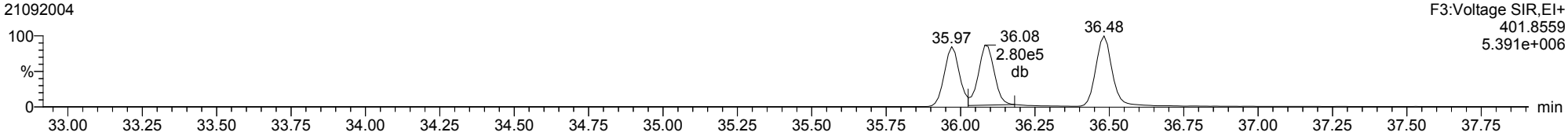

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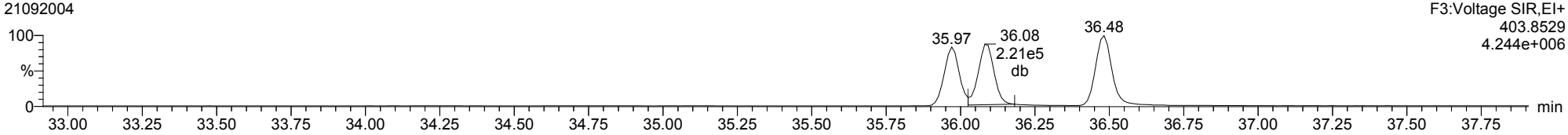

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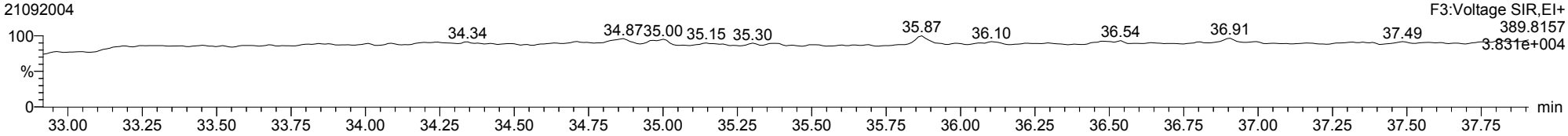

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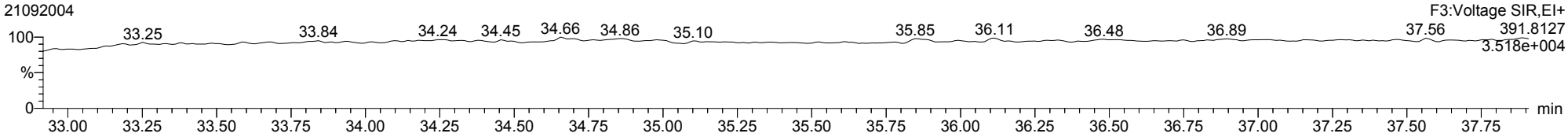

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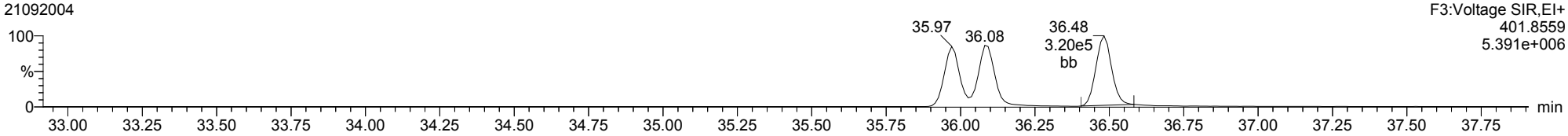

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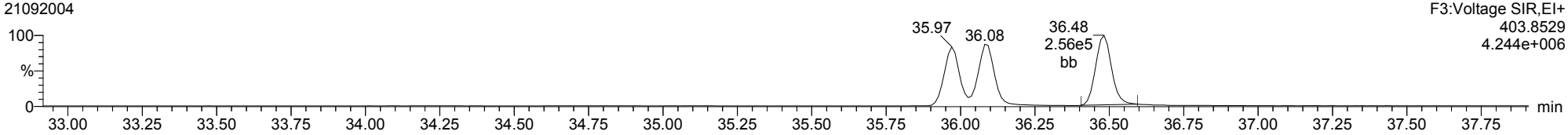

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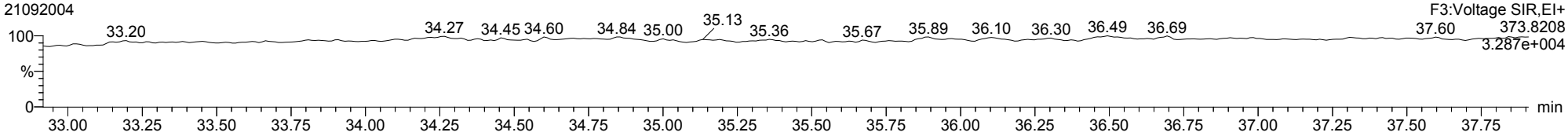

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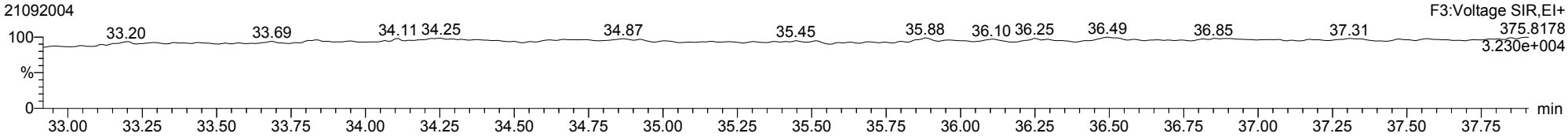

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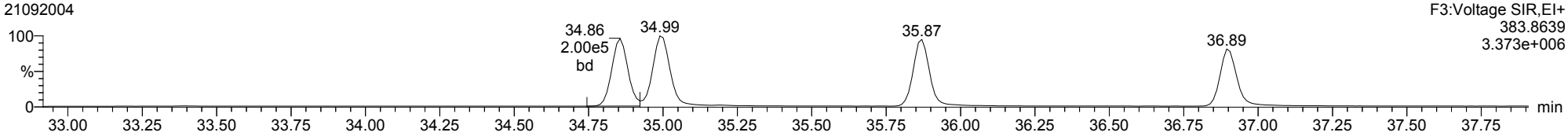

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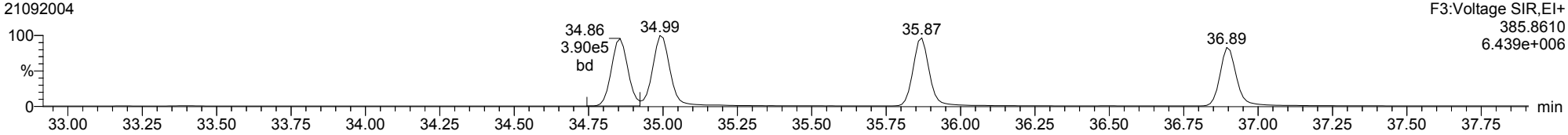

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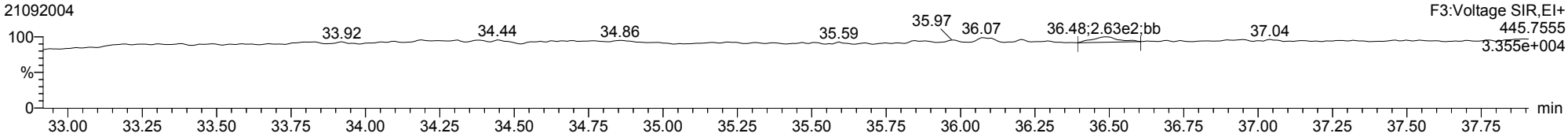

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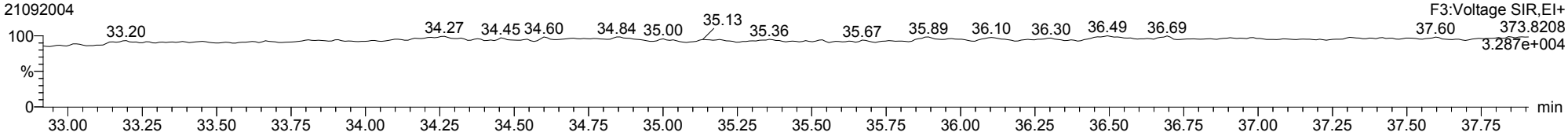

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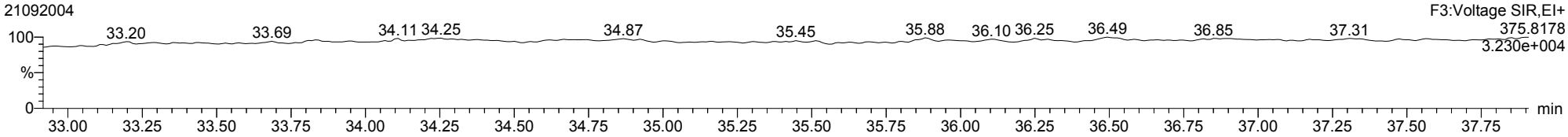

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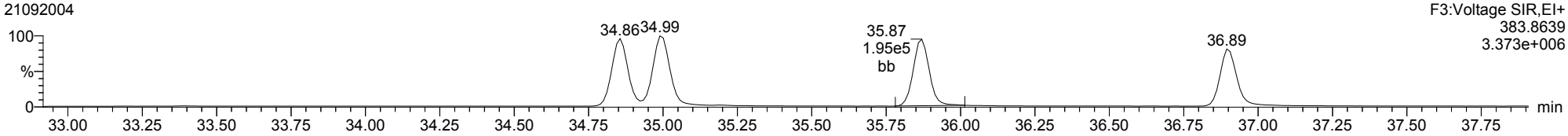

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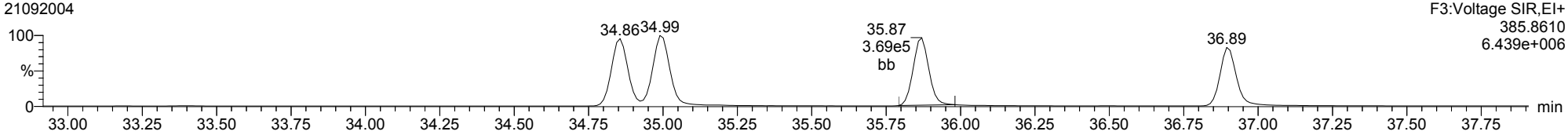

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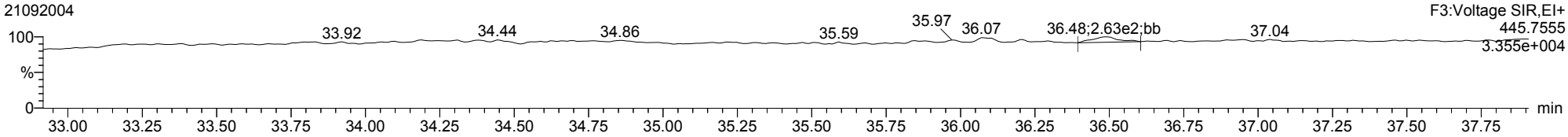

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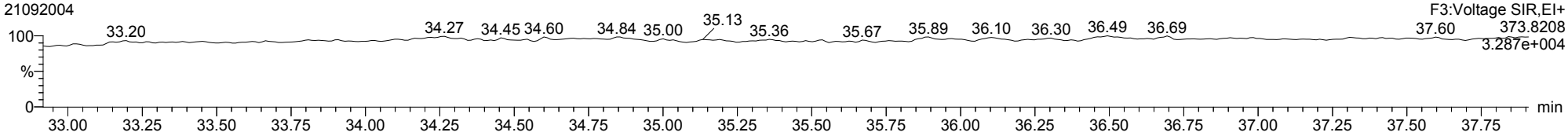

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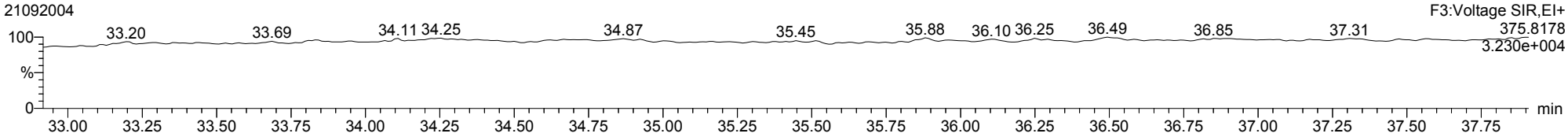

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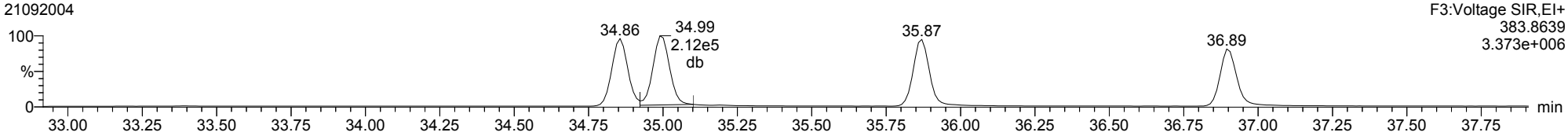

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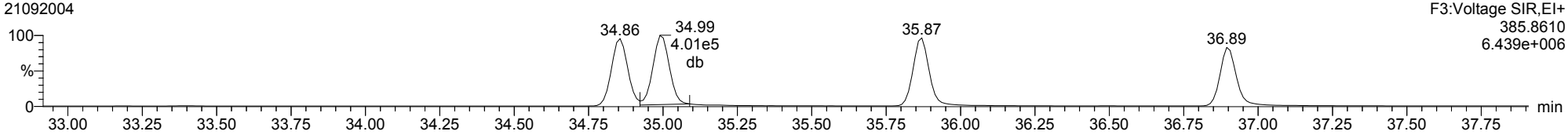

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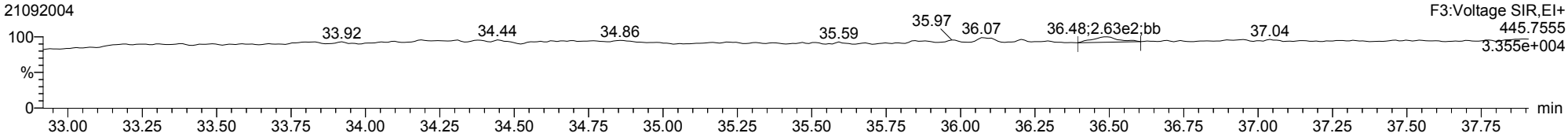

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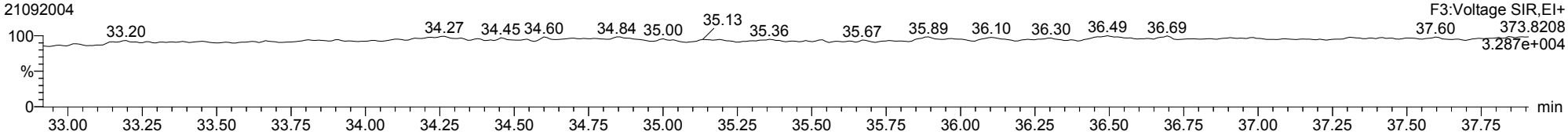

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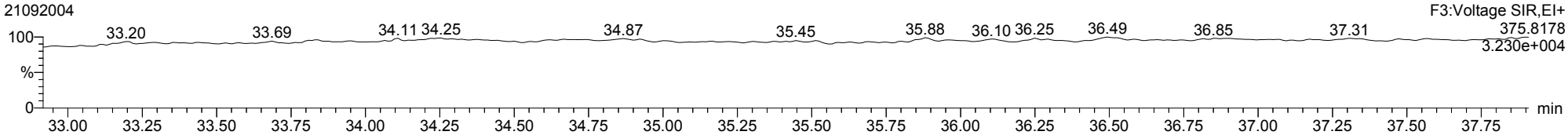

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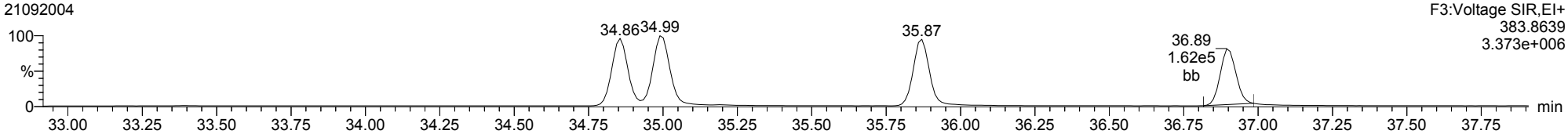

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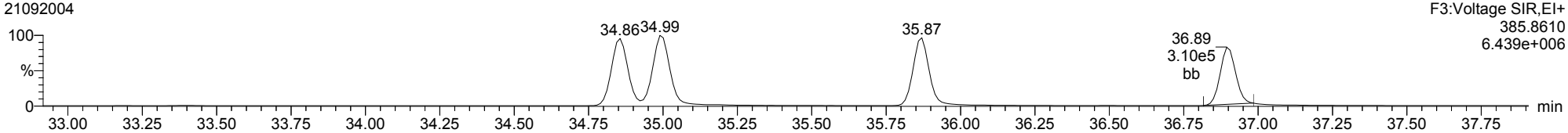
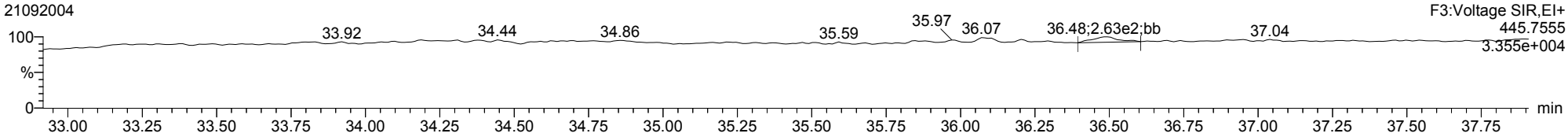


FUNCTION3 OCDPE



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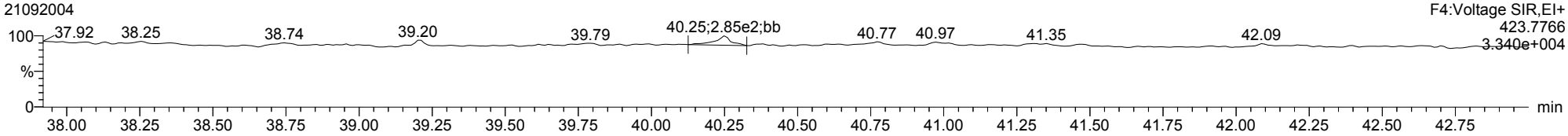

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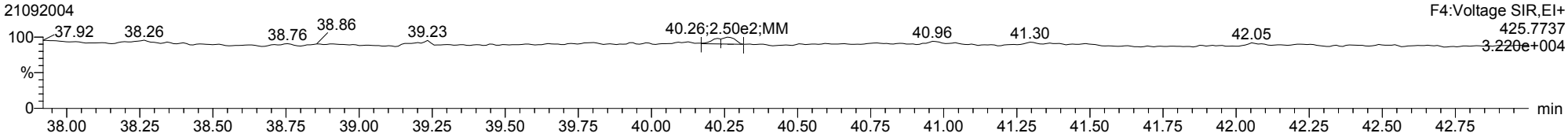

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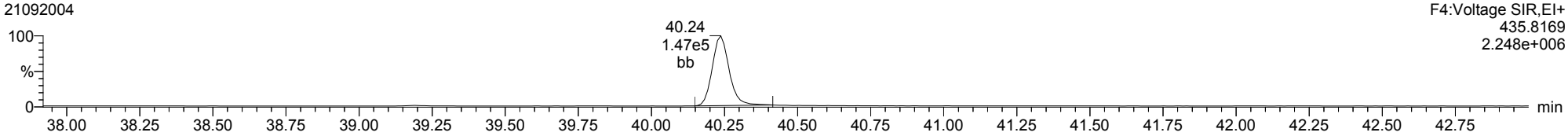

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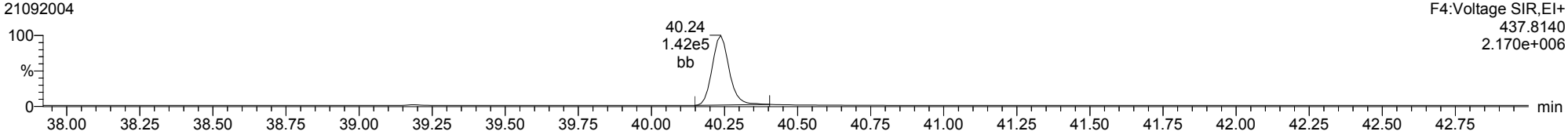
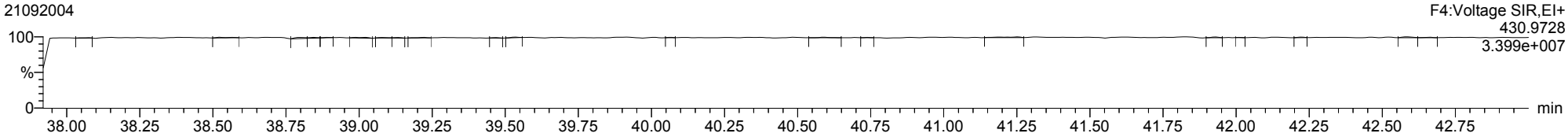


FUNCTION4 PFK



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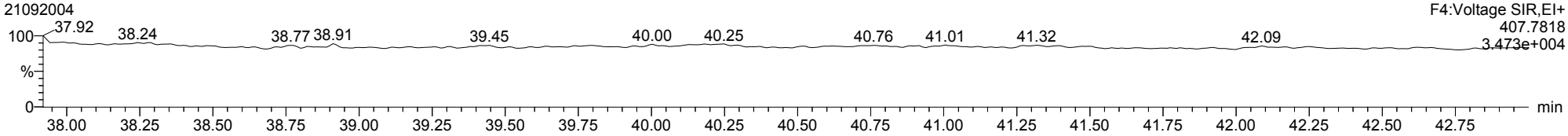

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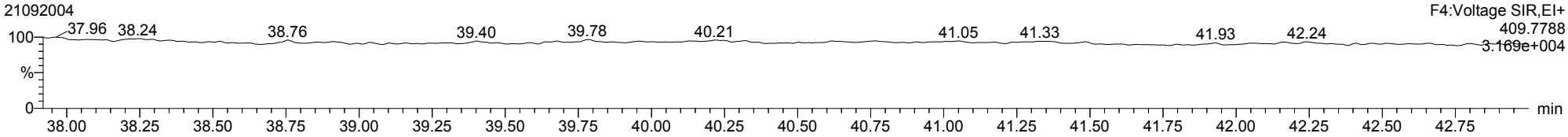

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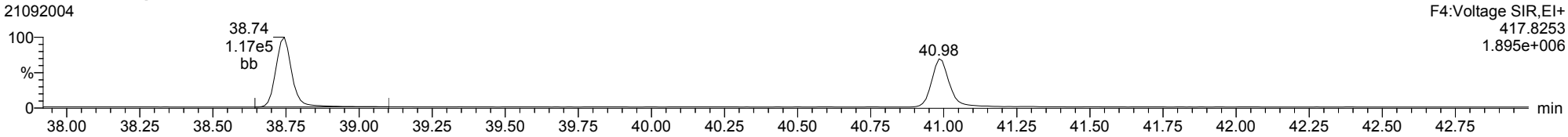

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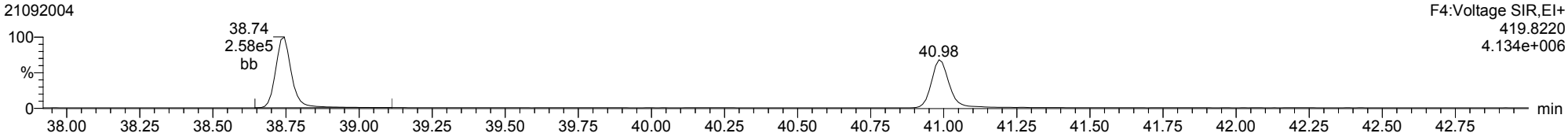

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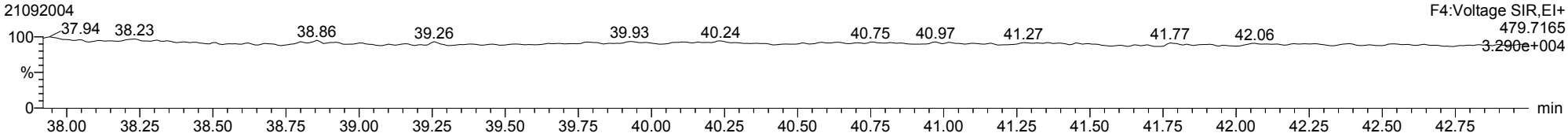

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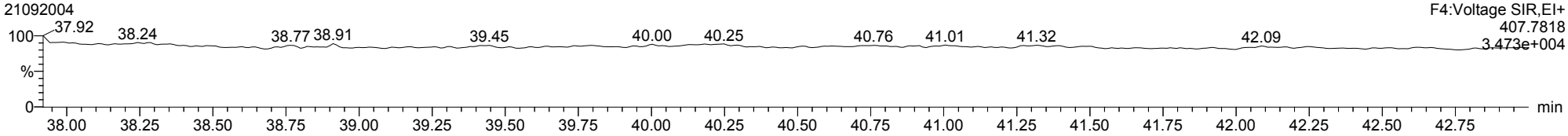

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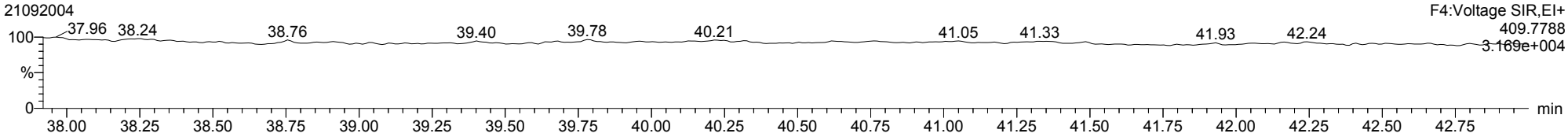

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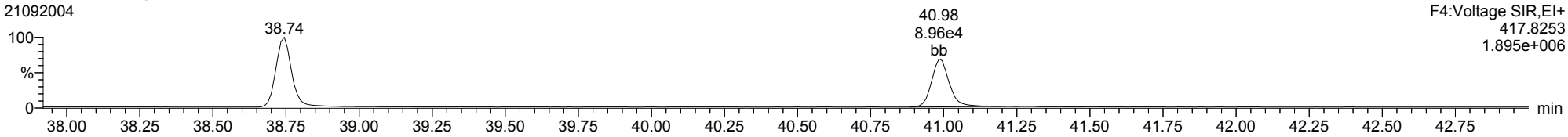
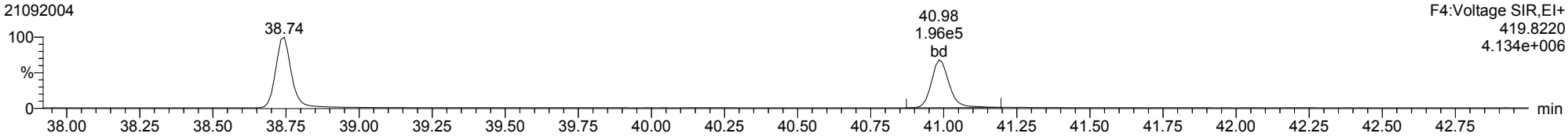
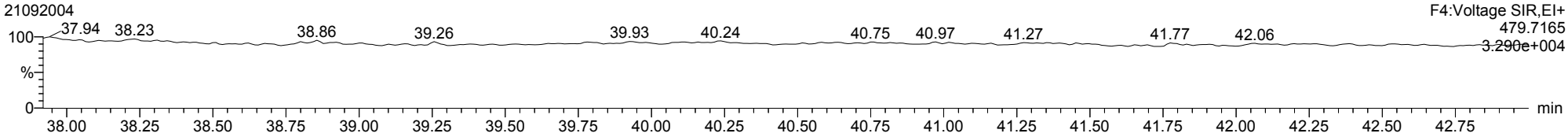


13C-1234789-HpCDF

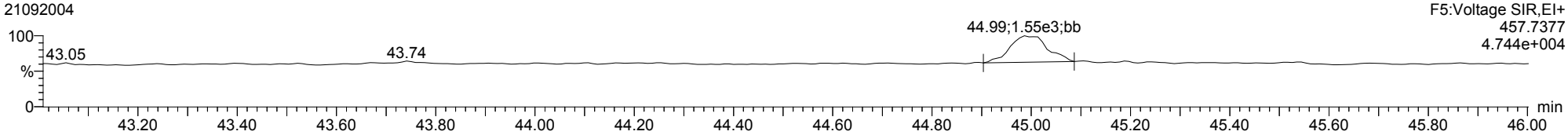


FUNCTION4 NCDPE

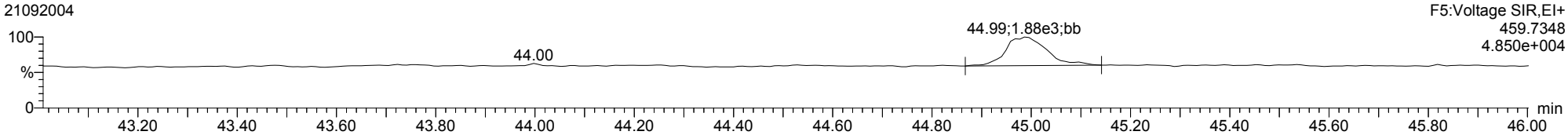


ID: BJH0152-BLK1, Name: 21092004, Date: 20-Sep-2021, Time: 18:40:21, Conditions: AUTOSPEC01, User: pk

OCDD



OCDD



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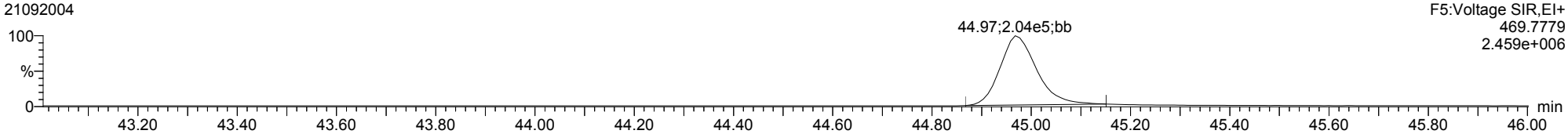
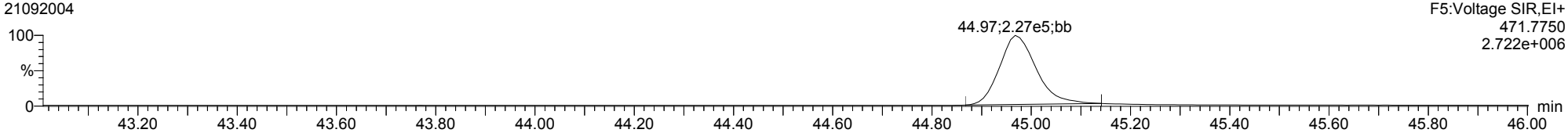
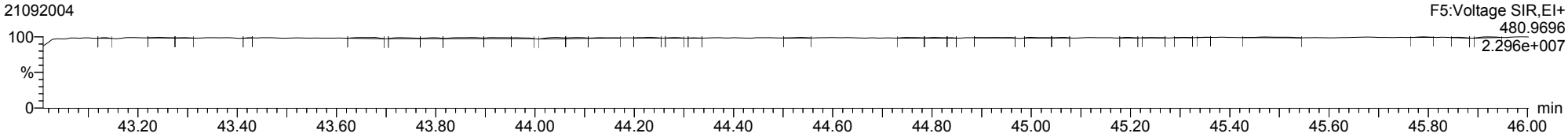


13C-OCDD

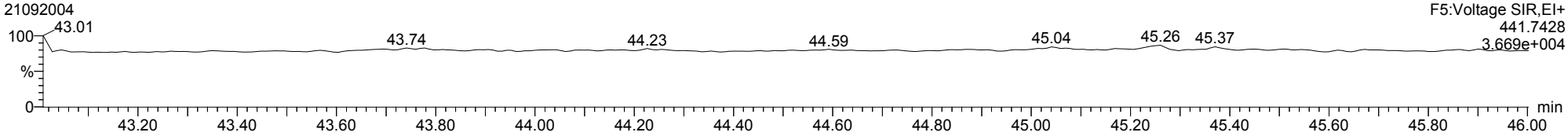


FUNCTION5 PFK

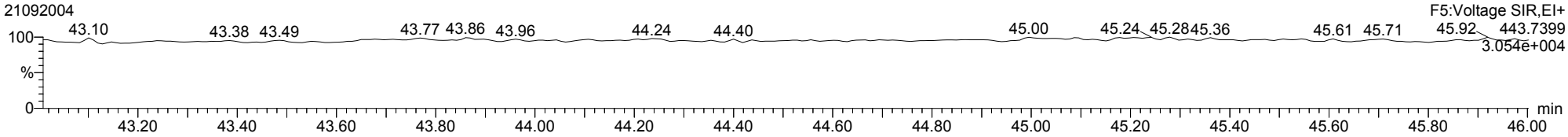


ID: BJH0152-BLK1, Name: 21092004, Date: 20-Sep-2021, Time: 18:40:21, Conditions: AUTOSPEC01, User: pk

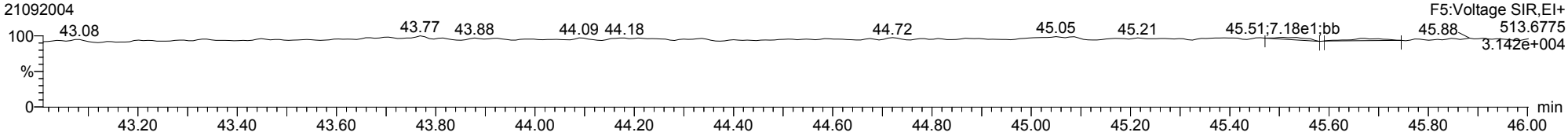
OCDF



OCDF

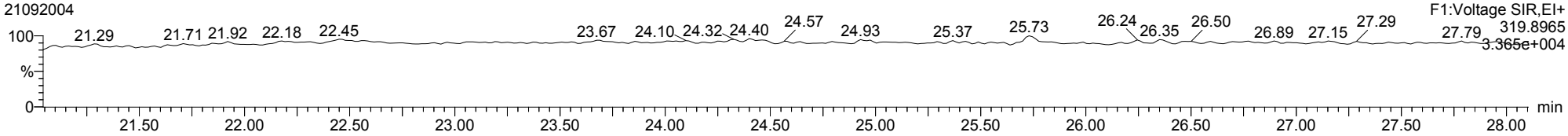


FUNCTION5 DCDPE

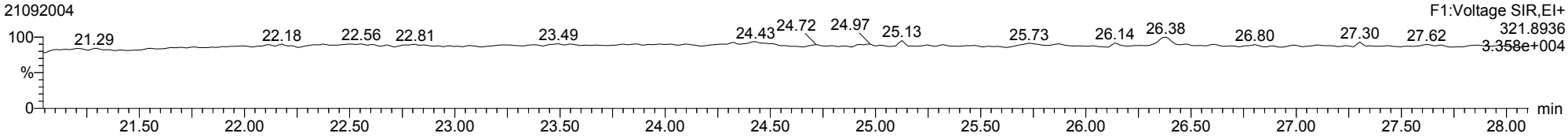


ID: BJH0152-BLK1, Name: 21092004, Date: 20-Sep-2021, Time: 18:40:21, Conditions: AUTOSPEC01, User: pk

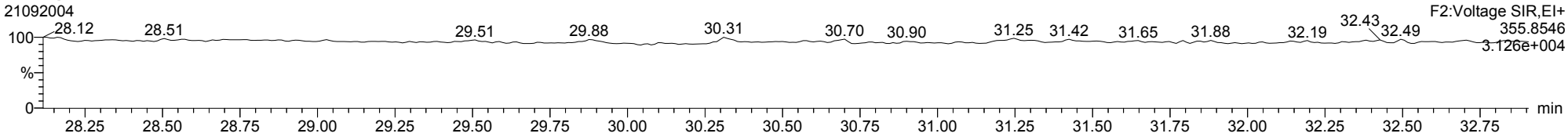
Total-tetradioxins



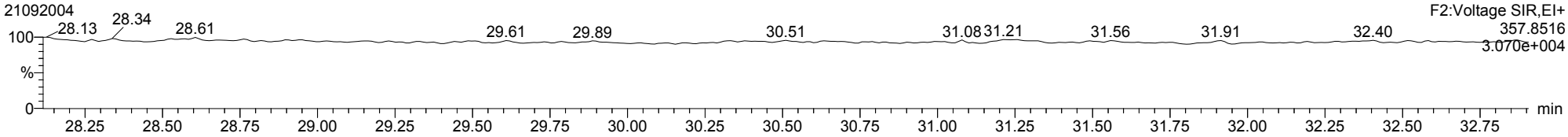
Total-tetradioxins



Total-pentadioxins

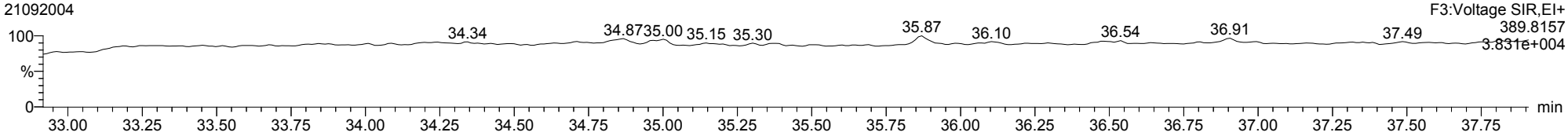


Total-pentadioxins

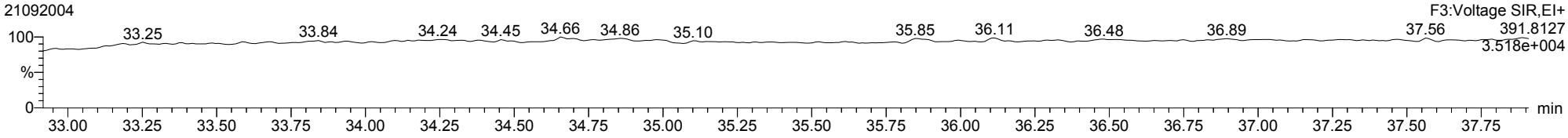


ID: BJH0152-BLK1, Name: 21092004, Date: 20-Sep-2021, Time: 18:40:21, Conditions: AUTOSPEC01, User: pk

Total-hexadioxins



Total-hexadioxins



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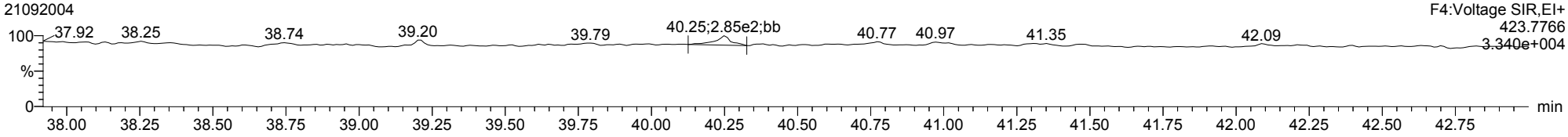
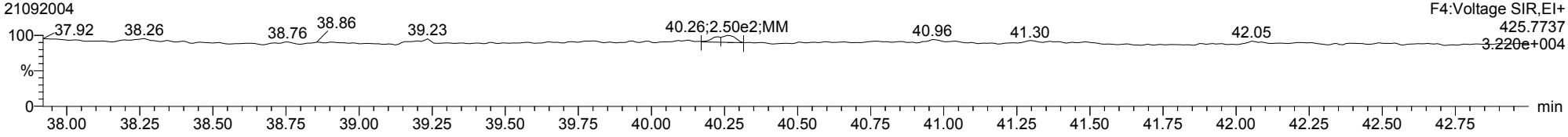
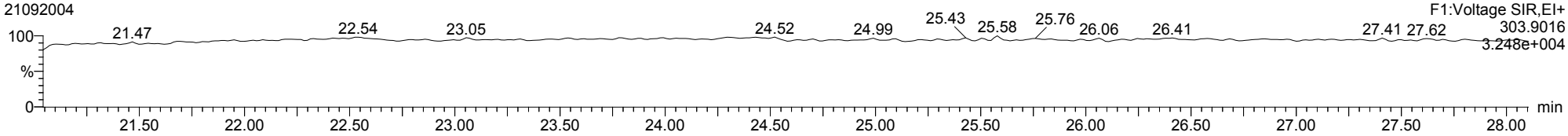


Total-heptadioxins

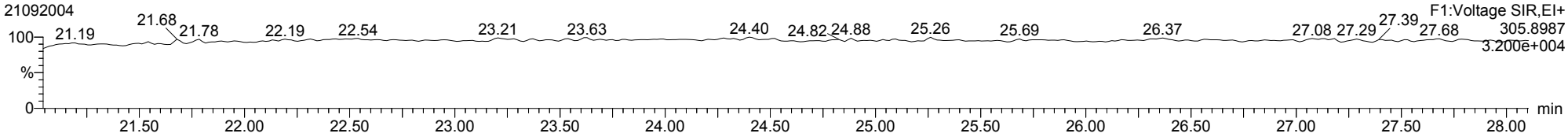


ID: BJH0152-BLK1, Name: 21092004, Date: 20-Sep-2021, Time: 18:40:21, Conditions: AUTOSPEC01, User: pk

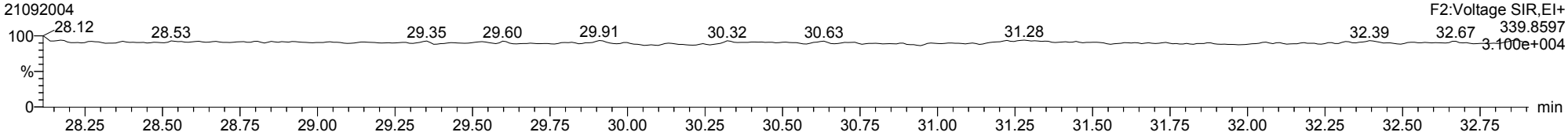
Total-tetrafurans



Total-tetrafurans



Total-pentafurans



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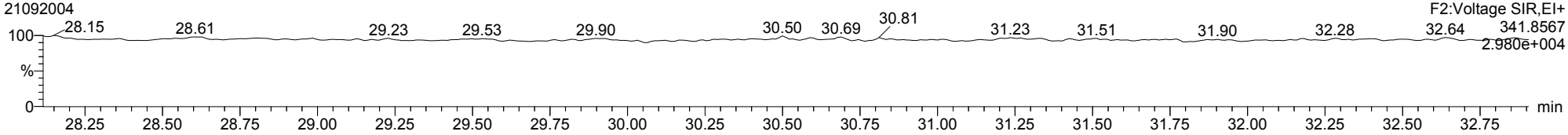

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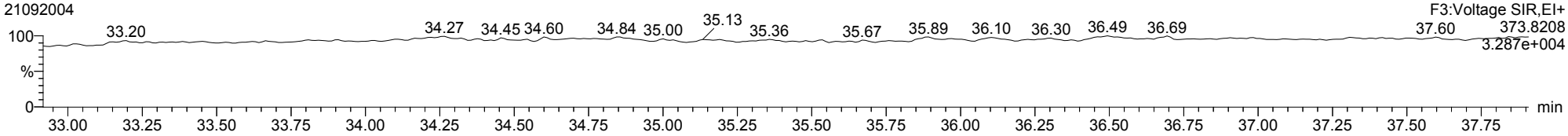
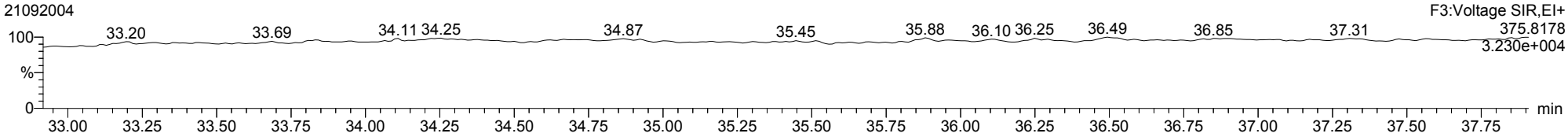
Printed: Tuesday, September 21, 2021 11:09:38 Pacific Daylight Time

ID: BJH0152-BLK1, Name: 21092004, Date: 20-Sep-2021, Time: 18:40:21, Conditions: AUTOSPEC01, User: pk

Total-hexafurans



Total-hexafurans



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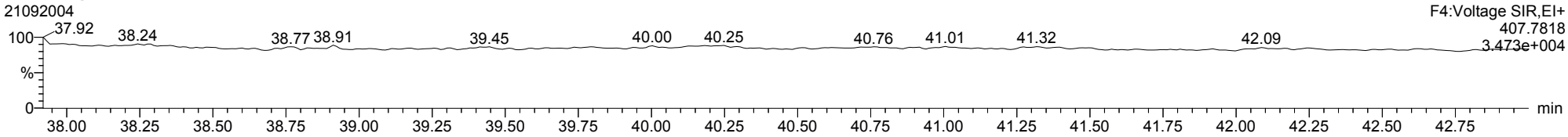

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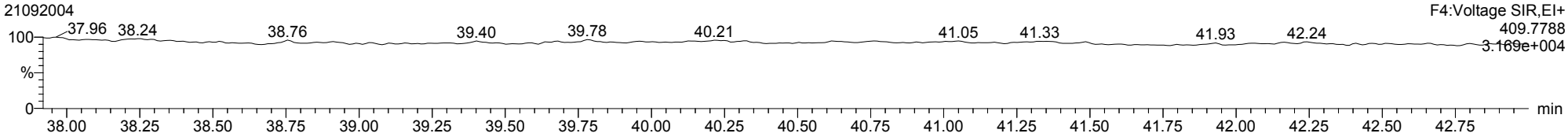

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LCS RECOVERY
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Matrix:	Solid	Analyzed:	09/20/21 19:29
Batch:	BJH0152	Laboratory ID:	BJH0152-BS1
Preparation:	EPA 1613	Sequence Name:	LCS
Initial/Final:	10 g / 20 uL		

COMPOUND	SPIKE ADDED (ng/kg wet)	LCS CONCENTRATION (ng/kg wet)	Q	LCS % REC. #	QC LIMITS REC.
2,3,7,8-TCDF	20.0	16.2		81.0	75 - 158
2,3,7,8-TCDD	20.0	17.7		88.7	67 - 158
1,2,3,7,8-PeCDF	100	84.3		84.3	80 - 134
2,3,4,7,8-PeCDF	100	84.0		84.0	68 - 160
1,2,3,7,8-PeCDD	100	94.3		94.3	70 - 142
1,2,3,4,7,8-HxCDF	100	91.1		91.1	72 - 134
1,2,3,6,7,8-HxCDF	100	91.2		91.2	84 - 130
2,3,4,6,7,8-HxCDF	100	92.6		92.6	70 - 156
1,2,3,7,8,9-HxCDF	100	92.4		92.4	78 - 130
1,2,3,4,7,8-HxCDD	100	96.0		96.0	70 - 164
1,2,3,6,7,8-HxCDD	100	92.6		92.6	76 - 134
1,2,3,7,8,9-HxCDD	100	99.8		99.8	64 - 162
1,2,3,4,6,7,8-HpCDF	100	89.6		89.6	82 - 122
1,2,3,4,7,8,9-HpCDF	100	89.1		89.1	78 - 138
1,2,3,4,6,7,8-HpCDD	100	94.9	B	94.9	70 - 140
OCDF	200	144		72.0	63 - 170
OCDD	200	177	B	88.4	78 - 144

* Indicates values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210920D1.qld
Last Altered: Tuesday, September 21, 2021 10:30:31 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 11:09:48 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: BJH0152-BS1, Name: 21092005, Date: 20-Sep-2021, Time: 19:29:25, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.761	1.001	1.924e4	2.434e4	1.108	0.790	0.770	612	572	2.88e5	3.57e5	470.3	623.6	NO	dd	bb	8.102
12378-PeCDF	29.909	1.001	1.936e5	1.298e5	1.015	1.492	1.550	1771	1013	3.07e6	2.08e6	1731.4	2056.8	NO	bb	bb	42.160
23478-PeCDF	31.246	1.000	1.905e5	1.260e5	1.126	1.512	1.550	1771	1013	2.92e6	1.95e6	1648.7	1924.5	NO	bb	bb	41.994
123478-HxCDF	34.867	1.000	1.837e5	1.548e5	1.017	1.187	1.240	1145	1410	2.93e6	2.44e6	2558.6	1729.6	NO	bd	bd	45.547
234678-HxCDF	35.881	1.000	1.898e5	1.585e5	1.052	1.198	1.240	1145	1410	3.10e6	2.61e6	2711.1	1848.2	NO	bb	bb	46.316
123678-HxCDF	35.012	1.001	1.973e5	1.654e5	1.037	1.193	1.240	1145	1410	3.20e6	2.65e6	2796.4	1877.3	NO	db	db	45.607
123789-HxCDF	36.917	1.001	1.565e5	1.290e5	1.030	1.213	1.240	1145	1410	2.46e6	2.04e6	2147.4	1446.0	NO	bb	bb	46.218
1234678-HpCDF	38.756	1.000	1.442e5	1.402e5	1.327	1.028	1.050	1165	1517	2.38e6	2.36e6	2040.7	1558.2	NO	bd	bd	44.816
1234789-HpCDF	40.995	1.000	1.082e5	1.041e5	1.283	1.039	1.050	1165	1517	1.54e6	1.46e6	1318.1	965.1	NO	bd	bd	44.565
OCDF	45.234	1.006	1.410e5	1.568e5	1.447	0.899	0.890	1311	975	1.67e6	1.85e6	1274.8	1902.2	NO	bb	bb	72.046
2378-TCDD	26.396	1.001	1.678e4	2.103e4	0.920	0.798	0.770	920	627	2.57e5	3.16e5	279.0	504.0	NO	bb	bb	8.869
12378-PeCDD	31.491	1.000	1.331e5	8.310e4	0.995	1.602	1.550	872	643	2.12e6	1.35e6	2429.0	2096.3	NO	bb	bb	47.140
123478-HxCDD	35.981	1.000	1.600e5	1.270e5	1.027	1.260	1.240	892	1009	2.57e6	1.99e6	2880.7	1976.4	NO	bd	bd	48.004
123678-HxCDD	36.104	1.001	1.617e5	1.288e5	1.009	1.256	1.240	892	1009	2.64e6	2.12e6	2959.3	2102.6	NO	db	db	46.325
123789-HxCDD	36.494	1.011	1.597e5	1.258e5	0.950	1.270	1.240	892	1009	2.68e6	2.09e6	2999.1	2069.6	NO	bb	bb	49.913
1234678-HpCDD	40.248	1.000	9.778e4	9.072e4	1.068	1.078	1.050	970	814	1.46e6	1.39e6	1502.5	1710.8	NO	bd	bb	47.475
OCDD	44.986	1.000	1.403e5	1.578e5	1.181	0.889	0.890	917	792	1.72e6	1.96e6	1876.7	2467.8	NO	bb	bb	88.394
13C-2378-TCDF	25.746	1.007	2.147e5	2.709e5	1.427	0.792	0.770	2287	1069	3.21e6	4.02e6	1403.1	3759.4	NO	bb	bb	35.869
13C-12378-PeCDF	29.887	1.169	4.645e5	2.912e5	1.297	1.595	1.550	1187	1115	7.37e6	4.57e6	6203.9	4100.5	NO	bb	bb	61.388
13C-23478-PeCDF	31.235	1.222	4.111e5	2.584e5	1.236	1.591	1.550	1187	1115	6.55e6	4.02e6	5517.0	3608.2	NO	bb	bb	57.064
13C-123478-HxCDF	34.856	0.955	2.500e5	4.809e5	1.242	0.520	0.510	1454	2192	3.98e6	7.59e6	2740.4	3463.0	NO	bd	bd	85.984
13C-123678-HxCDF	34.990	0.959	2.610e5	5.061e5	1.343	0.516	0.510	1454	2192	4.20e6	8.20e6	2888.8	3741.8	NO	db	db	83.462
13C-234678-HxCDF	35.870	0.983	2.454e5	4.691e5	1.215	0.523	0.510	1454	2192	3.99e6	7.61e6	2744.7	3470.4	NO	bb	bb	85.969
13C-123789-HxCDF	36.895	1.011	2.048e5	3.949e5	1.008	0.518	0.510	1454	2192	3.39e6	6.57e6	2329.1	2996.4	NO	bb	bb	86.984
13C-1234678-HpCDF	38.744	1.062	1.512e5	3.269e5	0.926	0.463	0.440	1265	1826	2.42e6	5.24e6	1909.4	2871.8	NO	bd	bd	75.423
13C-1234789-HpCDF	40.984	1.123	1.149e5	2.564e5	0.758	0.448	0.440	1265	1826	1.66e6	3.67e6	1308.7	2012.0	NO	bd	bd	71.617
13C-1234-TCDD	25.564	0.000	4.092e5	5.398e5	1.000	0.758	0.770	1244	828	6.41e6	8.35e6	5152.9	10091.0	NO	bb	bb	100.000
13C-2378-TCDD	26.365	1.031	2.013e5	2.619e5	1.116	0.769	0.770	1244	828	3.11e6	4.05e6	2502.5	4891.2	NO	bb	bb	43.718
13C-12378-PeCDD	31.480	1.231	2.827e5	1.781e5	0.732	1.587	1.550	975	690	4.26e6	2.71e6	4368.9	3936.0	NO	bb	bb	66.349
13C-123478-HxCDD	35.970	0.986	3.278e5	2.541e5	0.960	1.290	1.240	1203	986	5.42e6	4.23e6	4507.9	4294.3	NO	bd	bd	88.617
13C-123678-HxCDD	36.081	0.989	3.490e5	2.725e5	1.041	1.281	1.240	1203	986	5.62e6	4.45e6	4672.7	4518.3	NO	db	db	87.237
13C-1234678-HpCDD	40.237	1.103	1.878e5	1.839e5	0.632	1.021	1.050	1118	978	2.85e6	2.78e6	2548.7	2846.1	NO	bb	bb	85.916
13C-OCDD	44.968	1.233	2.714e5	2.998e5	0.504	0.905	0.890	1235	1287	3.30e6	3.68e6	2668.3	2860.2	NO	bb	bb	165.745
13C-123789-HxCDD	36.482	0.000	3.851e5	2.991e5	1.000	1.288	1.240	1203	986	6.52e6	5.02e6	5415.0	5090.0	NO	bb	bb	100.000
37CL-2378-TCDD	26.396	1.033	1.758e5		1.084			815		2.65e6		3247.6			bb		17.097

Dataset: T:\Autospec\Processed Data Batch\210920D1.qld
Last Altered: Tuesday, September 21, 2021 10:30:31 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 11:09:48 Pacific Daylight Time

ID: BJH0152-BS1, Name: 21092005, Date: 20-Sep-2021, Time: 19:29:25, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF					1.425		0.770	612	572								
1289-TCDF					1.043		0.770	612	572								
13468-PECDF					1.376		1.550	611	695								
12389-PECDF	32.305	1.081	1.678e3	1.015e3	1.000	1.652	1.550	1771	1013	2.59e4	1.89e4	14.6	18.6	NO	bb	bb	0.357
123468-HXCDF	33.196	0.952	3.599e2	3.428e2	1.087	1.050	1.240	1145	1410	6.99e3	5.80e3	6.1	4.1	YES	bb	bb	0.088
1368-TCDD					0.923		0.770	920	627								
1289-TCDD					0.794		0.770	920	627								
12479-PECDD					1.843		1.550	872	643								
12389-PECDD					1.154		1.550	872	643								
124679-HXCDD					1.125		1.240	892	1009								
1234679-HPCDD	39.201	0.974	6.745e2	6.339e2	1.211	1.064	1.050	970	814	1.32e4	9.77e3	13.7	12.0	NO	bb	bb	0.291
Total-tetrafurans			1.956e4		1.192			612		2.93e5							8.232
Total-penta1			0.000e0					611		0.00e0							
Total-pentafurans			3.875e5		1.047			1771		6.04e6							84.899
Total-hexafurans			7.274e5		1.045			1145		1.17e7							183.687
Total-heptafurans			2.524e5		1.305			1165		3.91e6							89.381
Total-Furans			1.528e6		1.158			612		2.36e7							438.245
Total-tetradioxins			1.678e4		0.879			920		2.57e5							8.869
Total-pentadioxins			1.331e5		1.331			872		2.12e6							47.140
Total-hexadioxins			4.814e5		1.028			892		7.89e6							144.242
Total-heptadioxins			9.845e4		1.140			970		1.47e6							47.765
Total-Dioxins			8.700e5		1.092			920		1.35e7							336.411
Total-TEQ			2.398e6					920		3.71e7							774.655
FUNCTION1 PFK			6.746e5					462039		1.56e7							
FUNCTION2 PFK			5.626e5					349112		8.26e6							0.000
FUNCTION3 PFK			7.895e5					405567		1.87e7							0.000
FUNCTION4 PFK			3.646e5					213033		9.54e6							
FUNCTION5 PFK			9.151e4					169380		3.23e6							
FUNCTION1 HXCD...			8.219e2					467		1.05e4							0.000
FUNCTION1 HPCD...			4.365e2					493		6.09e3							0.000
FUNCTION2 HPCD...			1.675e2					591		3.51e3							0.000
FUNCTION3 OCDPE			0.000e0					459		0.00e0							
FUNCTION4 NCDPE			1.711e2					549		3.70e3							0.000
FUNCTION5 DCDPE			7.418e1					428		1.12e3							0.000

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

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TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDF	25.76	1.924e4	2.434e4	1.108	0.79	0.77	470.3	YES	NO	dd	bb	8.102
2	Total-tetrafurans	24.52	3.276e2	4.204e2	1.192	0.78	0.77	8.2	YES	NO	bb	bb	0.129

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	23478-PeCDF	31.25	1.905e5	1.260e5	1.126	1.51	1.55	1648.7	YES	NO	bb	bb	41.994
2	12378-PeCDF	29.91	1.936e5	1.298e5	1.015	1.49	1.55	1731.4	YES	NO	bb	bb	42.160
3	Total-pentafurans	28.83	1.319e3	7.998e2	1.047	1.65	1.55	10.2	YES	NO	db	db	0.284
4	Total-pentafurans	28.76	4.607e2	3.180e2	1.047	1.45	1.55	4.8	YES	NO	bd	bd	0.104
5	12389-PECDF	32.30	1.678e3	1.015e3	1.000	1.65	1.55	14.6	YES	NO	bb	bb	0.357

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDF	36.92	1.565e5	1.290e5	1.030	1.21	1.24	2147.4	YES	NO	bb	bb	46.218
2	234678-HxCDF	35.88	1.898e5	1.585e5	1.052	1.20	1.24	2711.1	YES	NO	bb	bb	46.316
3	123678-HxCDF	35.01	1.973e5	1.654e5	1.037	1.19	1.24	2796.4	YES	NO	db	db	45.607
4	123478-HxCDF	34.87	1.837e5	1.548e5	1.017	1.19	1.24	2558.6	YES	NO	bd	bd	45.547

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDF	38.76	1.442e5	1.402e5	1.327	1.03	1.05	2040.7	YES	NO	bd	bd	44.816
2	1234789-HpCDF	40.99	1.082e5	1.041e5	1.283	1.04	1.05	1318.1	YES	NO	bd	bd	44.565

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Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDF	25.76	1.924e4	2.434e4	1.108	0.79	0.77	470.3	YES	NO	dd	bb	8.102
2	Total-tetrafurans	24.52	3.276e2	4.204e2	1.192	0.78	0.77	8.2	YES	NO	bb	bb	0.129
3	23478-PeCDF	31.25	1.905e5	1.260e5	1.126	1.51	1.55	1648.7	YES	NO	bb	bb	41.994
4	12378-PeCDF	29.91	1.936e5	1.298e5	1.015	1.49	1.55	1731.4	YES	NO	bb	bb	42.160
5	Total-pentafurans	28.83	1.319e3	7.998e2	1.047	1.65	1.55	10.2	YES	NO	db	db	0.284
6	Total-pentafurans	28.76	4.607e2	3.180e2	1.047	1.45	1.55	4.8	YES	NO	bd	bd	0.104
7	12389-PECDF	32.30	1.678e3	1.015e3	1.000	1.65	1.55	14.6	YES	NO	bb	bb	0.357
8	123789-HxCDF	36.92	1.565e5	1.290e5	1.030	1.21	1.24	2147.4	YES	NO	bb	bb	46.218
9	234678-HxCDF	35.88	1.898e5	1.585e5	1.052	1.20	1.24	2711.1	YES	NO	bb	bb	46.316
10	123678-HxCDF	35.01	1.973e5	1.654e5	1.037	1.19	1.24	2796.4	YES	NO	db	db	45.607
11	123478-HxCDF	34.87	1.837e5	1.548e5	1.017	1.19	1.24	2558.6	YES	NO	bd	bd	45.547
12	1234678-HpCDF	38.76	1.442e5	1.402e5	1.327	1.03	1.05	2040.7	YES	NO	bd	bd	44.816
13	1234789-HpCDF	40.99	1.082e5	1.041e5	1.283	1.04	1.05	1318.1	YES	NO	bd	bd	44.565
14	OCDF	45.23	1.410e5	1.568e5	1.447	0.90	0.89	1274.8	YES	NO	bb	bb	72.046

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDD	26.40	1.678e4	2.103e4	0.920	0.80	0.77	279.0	YES	NO	bb	bb	8.869

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12378-PeCDD	31.49	1.331e5	8.310e4	0.995	1.60	1.55	2429.0	YES	NO	bb	bb	47.140

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDD	36.49	1.597e5	1.258e5	0.950	1.27	1.24	2999.1	YES	NO	bb	bb	49.913
2	123678-HxCDD	36.10	1.617e5	1.288e5	1.009	1.26	1.24	2959.3	YES	NO	db	db	46.325
3	123478-HxCDD	35.98	1.600e5	1.270e5	1.027	1.26	1.24	2880.7	YES	NO	bd	bd	48.004

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	40.25	9.778e4	9.072e4	1.068	1.08	1.05	1502.5	YES	NO	bd	bb	47.475
2	1234679-HPCDD	39.20	6.745e2	6.339e2	1.211	1.06	1.05	13.7	YES	NO	bb	bb	0.291

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Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDD	26.40	1.678e4	2.103e4	0.920	0.80	0.77	279.0	YES	NO	bb	bb	8.869
2	123789-HxCDD	36.49	1.597e5	1.258e5	0.950	1.27	1.24	2999.1	YES	NO	bb	bb	49.913
3	123678-HxCDD	36.10	1.617e5	1.288e5	1.009	1.26	1.24	2959.3	YES	NO	db	db	46.325
4	123478-HxCDD	35.98	1.600e5	1.270e5	1.027	1.26	1.24	2880.7	YES	NO	bd	bd	48.004
5	12378-PeCDD	31.49	1.331e5	8.310e4	0.995	1.60	1.55	2429.0	YES	NO	bb	bb	47.140
6	OCDD	44.99	1.403e5	1.578e5	1.181	0.89	0.89	1876.7	YES	NO	bb	bb	88.394
7	1234678-HpCDD	40.25	9.778e4	9.072e4	1.068	1.08	1.05	1502.5	YES	NO	bd	bb	47.475
8	1234679-HPCDD	39.20	6.745e2	6.339e2	1.211	1.06	1.05	13.7	YES	NO	bb	bb	0.291

TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDF	25.76	1.924e4	2.434e4	1.108	0.79	0.77	470.3	YES	NO	dd	bb	8.102
2	Total-tetrafurans	24.52	3.276e2	4.204e2	1.192	0.78	0.77	8.2	YES	NO	bb	bb	0.129
3	23478-PeCDF	31.25	1.905e5	1.260e5	1.126	1.51	1.55	1648.7	YES	NO	bb	bb	41.994
4	12378-PeCDF	29.91	1.936e5	1.298e5	1.015	1.49	1.55	1731.4	YES	NO	bb	bb	42.160
5	Total-pentafurans	28.83	1.319e3	7.998e2	1.047	1.65	1.55	10.2	YES	NO	db	db	0.284
6	Total-pentafurans	28.76	4.607e2	3.180e2	1.047	1.45	1.55	4.8	YES	NO	bd	bd	0.104
7	12389-PECDF	32.30	1.678e3	1.015e3	1.000	1.65	1.55	14.6	YES	NO	bb	bb	0.357
8	123789-HxCDF	36.92	1.565e5	1.290e5	1.030	1.21	1.24	2147.4	YES	NO	bb	bb	46.218
9	234678-HxCDF	35.88	1.898e5	1.585e5	1.052	1.20	1.24	2711.1	YES	NO	bb	bb	46.316
10	123678-HxCDF	35.01	1.973e5	1.654e5	1.037	1.19	1.24	2796.4	YES	NO	db	db	45.607
11	123478-HxCDF	34.87	1.837e5	1.548e5	1.017	1.19	1.24	2558.6	YES	NO	bd	bd	45.547
12	1234678-HpCDF	38.76	1.442e5	1.402e5	1.327	1.03	1.05	2040.7	YES	NO	bd	bd	44.816
13	1234789-HpCDF	40.99	1.082e5	1.041e5	1.283	1.04	1.05	1318.1	YES	NO	bd	bd	44.565
14	OCDF	45.23	1.410e5	1.568e5	1.447	0.90	0.89	1274.8	YES	NO	bb	bb	72.046
15	2378-TCDD	26.40	1.678e4	2.103e4	0.920	0.80	0.77	279.0	YES	NO	bb	bb	8.869
16	123789-HxCDD	36.49	1.597e5	1.258e5	0.950	1.27	1.24	2999.1	YES	NO	bb	bb	49.913
17	123678-HxCDD	36.10	1.617e5	1.288e5	1.009	1.26	1.24	2959.3	YES	NO	db	db	46.325
18	123478-HxCDD	35.98	1.600e5	1.270e5	1.027	1.26	1.24	2880.7	YES	NO	bd	bd	48.004
19	12378-PeCDD	31.49	1.331e5	8.310e4	0.995	1.60	1.55	2429.0	YES	NO	bb	bb	47.140
20	OCDD	44.99	1.403e5	1.578e5	1.181	0.89	0.89	1876.7	YES	NO	bb	bb	88.394
21	1234678-HpCDD	40.25	9.778e4	9.072e4	1.068	1.08	1.05	1502.5	YES	NO	bd	bb	47.475
22	1234679-HPCDD	39.20	6.745e2	6.339e2	1.211	1.06	1.05	13.7	YES	NO	bb	bb	0.291

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PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	23.10	1.390e5					4.8	YES		bb		
2	FUNCTION1 PFK	22.75	1.896e4					1.2	NO		bb		
3	FUNCTION1 PFK	22.33	2.639e4					1.7	NO		bb		
4	FUNCTION1 PFK	22.04	1.971e4					1.3	NO		bb		
5	FUNCTION1 PFK	21.88	1.415e4					0.9	NO		bb		
6	FUNCTION1 PFK	21.24	2.633e4					1.5	NO		bb		
7	FUNCTION1 PFK	21.16	4.615e4					2.5	NO		db		
8	FUNCTION1 PFK	21.12	2.763e4					2.0	NO		bd		
9	FUNCTION1 PFK	27.23	2.603e4					1.6	NO		bb		
10	FUNCTION1 PFK	27.15	3.665e4					1.9	NO		bb		
11	FUNCTION1 PFK	26.77	1.052e4					0.8	NO		bb		
12	FUNCTION1 PFK	26.40	1.074e4					0.9	NO		bb		
13	FUNCTION1 PFK	26.15	1.569e4					1.1	NO		bb		
14	FUNCTION1 PFK	25.90	2.637e4					1.4	NO		bb		
15	FUNCTION1 PFK	25.73	1.245e4					1.1	NO		bb		
16	FUNCTION1 PFK	25.41	5.049e4					2.3	NO		db		
17	FUNCTION1 PFK	25.29	8.087e4					2.0	NO		bd		
18	FUNCTION1 PFK	24.32	3.409e4					2.1	NO		bb		
19	FUNCTION1 PFK	24.02	2.882e4					1.6	NO		bb		
20	FUNCTION1 PFK	23.75	2.348e4					1.1	NO		bb		

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	29.56	2.414e4					2.4	NO		bb		0.000
2	FUNCTION2 PFK	28.17	5.384e5					21.2	YES		bb		0.000

Dataset: T:\Autospec\Processed Data Batch\210920D1.qld
Last Altered: Tuesday, September 21, 2021 10:30:31 Pacific Daylight Time
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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	35.51	4.567e3					0.6	NO		bb		0.000
2	FUNCTION3 PFK	34.81	3.516e4					1.8	NO		bb		0.000
3	FUNCTION3 PFK	34.61	1.991e3					0.4	NO		bb		0.000
4	FUNCTION3 PFK	34.35	3.356e4					1.5	NO		bb		0.000
5	FUNCTION3 PFK	34.24	5.104e4					2.5	NO		db		0.000
6	FUNCTION3 PFK	34.19	4.174e4					2.6	NO		dd		0.000
7	FUNCTION3 PFK	34.14	4.959e4					3.0	YES		bd		0.000
8	FUNCTION3 PFK	33.89	1.012e4					1.1	NO		bb		0.000
9	FUNCTION3 PFK	33.84	5.901e3					0.7	NO		bb		0.000
10	FUNCTION3 PFK	33.59	1.113e5					2.1	NO		bb		0.000
11	FUNCTION3 PFK	33.45	2.410e4					2.3	NO		db		0.000
12	FUNCTION3 PFK	33.44	2.599e4					2.4	NO		dd		0.000
13	FUNCTION3 PFK	33.40	2.256e4					1.4	NO		bd		0.000
14	FUNCTION3 PFK	33.24	3.302e4					1.8	NO		db		0.000
15	FUNCTION3 PFK	33.17	6.333e4					2.3	NO		bd		0.000
16	FUNCTION3 PFK	33.06	1.215e4					0.8	NO		bb		0.000
17	FUNCTION3 PFK	37.82	1.142e4					0.7	NO		db		0.000
18	FUNCTION3 PFK	37.75	1.010e4					0.9	NO		bd		0.000
19	FUNCTION3 PFK	37.71	4.156e3					0.6	NO		bb		0.000
20	FUNCTION3 PFK	37.36	2.986e4					1.7	NO		db		0.000
21	FUNCTION3 PFK	37.32	1.655e4					1.8	NO		bd		0.000
22	FUNCTION3 PFK	37.16	8.278e3					0.7	NO		bb		0.000
23	FUNCTION3 PFK	37.11	3.596e3					0.5	NO		bb		0.000
24	FUNCTION3 PFK	36.93	1.558e3					0.3	NO		bb		0.000
25	FUNCTION3 PFK	36.76	4.593e3					0.5	NO		bb		0.000
26	FUNCTION3 PFK	36.32	2.429e3					0.5	NO		bb		0.000
27	FUNCTION3 PFK	36.16	1.843e4					1.3	NO		db		0.000
28	FUNCTION3 PFK	36.14	2.500e4					1.5	NO		bd		0.000
29	FUNCTION3 PFK	36.03	5.844e4					2.7	NO		db		0.000
30	FUNCTION3 PFK	36.00	4.022e4					2.6	NO		bd		0.000
31	FUNCTION3 PFK	35.78	5.294e3					0.6	NO		bb		0.000
32	FUNCTION3 PFK	35.57	6.510e3					0.8	NO		bb		0.000
33	FUNCTION3 PFK	37.86	1.692e4					1.3	NO		bb		0.000

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	39.76	3.392e4					2.4	NO		db		
2	FUNCTION4 PFK	39.65	1.337e4					1.5	NO		bd		
3	FUNCTION4 PFK	39.29	5.230e3					1.0	NO		bb		
4	FUNCTION4 PFK	39.19	6.291e3					1.2	NO		bb		
5	FUNCTION4 PFK	39.10	1.598e4					1.3	NO		bb		
6	FUNCTION4 PFK	38.99	2.227e4					2.1	NO		bb		
7	FUNCTION4 PFK	38.91	5.269e3					0.8	NO		db		
8	FUNCTION4 PFK	38.87	5.493e3					1.0	NO		bd		
9	FUNCTION4 PFK	38.70	7.337e3					0.8	NO		bb		
10	FUNCTION4 PFK	38.44	1.084e4					1.0	NO		bb		
11	FUNCTION4 PFK	38.22	8.525e3					1.0	NO		db		
12	FUNCTION4 PFK	38.18	9.854e3					1.5	NO		dd		
13	FUNCTION4 PFK	38.13	8.910e3					1.2	NO		bd		
14	FUNCTION4 PFK	38.05	9.642e3					1.2	NO		bb		
15	FUNCTION4 PFK	41.62	3.851e3					0.8	NO		bb		
16	FUNCTION4 PFK	41.40	6.388e3					1.0	NO		bb		
17	FUNCTION4 PFK	41.25	7.625e2					0.3	NO		bb		
18	FUNCTION4 PFK	41.14	9.291e3					0.8	NO		bb		
19	FUNCTION4 PFK	41.06	2.819e3					0.6	NO		bb		
20	FUNCTION4 PFK	41.02	1.061e3					0.4	NO		bb		
21	FUNCTION4 PFK	40.92	7.228e3					1.1	NO		bb		
22	FUNCTION4 PFK	40.84	6.087e3					0.9	NO		bb		
23	FUNCTION4 PFK	40.77	2.931e3					0.6	NO		bb		
24	FUNCTION4 PFK	40.66	3.398e4					1.8	NO		db		
25	FUNCTION4 PFK	40.53	8.384e3					1.4	NO		bd		
26	FUNCTION4 PFK	40.46	3.431e3					0.7	NO		bb		
27	FUNCTION4 PFK	40.33	8.210e3					1.1	NO		bb		
28	FUNCTION4 PFK	40.21	1.208e4					1.3	NO		db		
29	FUNCTION4 PFK	40.13	4.480e3					0.7	NO		bd		
30	FUNCTION4 PFK	39.91	2.125e3					0.6	NO		bb		
31	FUNCTION4 PFK	42.87	7.799e2					0.3	NO		bb		
32	FUNCTION4 PFK	42.83	2.471e3					0.2	NO		bb		
33	FUNCTION4 PFK	42.77	1.082e3					0.5	NO		bb		
34	FUNCTION4 PFK	42.72	8.579e2					0.4	NO		bb		
35	FUNCTION4 PFK	42.67	1.646e4					1.5	NO		db		
36	FUNCTION4 PFK	42.59	1.554e4					1.6	NO		bd		
37	FUNCTION4 PFK	42.47	1.883e3					0.6	NO		db		

ID: BJH0152-BS1, Name: 21092005, Date: 20-Sep-2021, Time: 19:29:25, Conditions: AUTOSPEC01, User: pk

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION4 PFK	42.43	3.641e3					0.7	NO		bd		
39	FUNCTION4 PFK	42.34	2.721e3					0.7	NO		bb		
40	FUNCTION4 PFK	42.21	7.048e2					0.3	NO		bb		
41	FUNCTION4 PFK	42.00	9.282e2					0.4	NO		bb		
42	FUNCTION4 PFK	41.95	4.325e3					0.8	NO		bb		
43	FUNCTION4 PFK	41.82	1.493e4					1.9	NO		bb		
44	FUNCTION4 PFK	41.74	7.723e3					1.0	NO		db		
45	FUNCTION4 PFK	41.67	1.452e4					1.5	NO		bd		

PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	45.76	3.915e3					0.5	NO		bd		
2	FUNCTION5 PFK	45.60	6.719e2					0.4	NO		bb		
3	FUNCTION5 PFK	45.51	2.002e3					0.7	NO		bb		
4	FUNCTION5 PFK	45.05	6.875e3					1.3	NO		bb		
5	FUNCTION5 PFK	44.93	3.140e3					0.9	NO		bb		
6	FUNCTION5 PFK	44.72	9.506e3					1.5	NO		bb		
7	FUNCTION5 PFK	44.68	3.813e3					0.9	NO		bb		
8	FUNCTION5 PFK	44.31	8.530e3					1.5	NO		bb		
9	FUNCTION5 PFK	44.24	8.889e3					1.4	NO		bb		
10	FUNCTION5 PFK	43.68	6.985e3					1.5	NO		bb		
11	FUNCTION5 PFK	43.45	5.554e3					1.0	NO		bb		
12	FUNCTION5 PFK	43.40	2.141e3					0.8	NO		bb		
13	FUNCTION5 PFK	43.37	5.885e3					1.2	NO		bb		
14	FUNCTION5 PFK	43.17	3.053e3					0.9	NO		bb		
15	FUNCTION5 PFK	43.11	1.058e4					1.9	NO		db		
16	FUNCTION5 PFK	43.06	2.383e3					0.7	NO		bd		
17	FUNCTION5 PFK	45.96	3.809e3					1.0	NO		bb		
18	FUNCTION5 PFK	45.79	3.771e3					1.1	NO		db		

ID: BJH0152-BS1, Name: 21092005, Date: 20-Sep-2021, Time: 19:29:25, Conditions: AUTOSPEC01, User: pk

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	27.88	7.782e1					2.1	NO		bb		0.000
2	FUNCTION1 HXCD...	27.67	8.897e1					2.6	NO		db		0.000
3	FUNCTION1 HXCD...	27.50	1.155e2					2.5	NO		bd		0.000
4	FUNCTION1 HXCD...	27.03	7.401e1					2.4	NO		bb		0.000
5	FUNCTION1 HXCD...	25.64	8.880e1					2.1	NO		db		0.000
6	FUNCTION1 HXCD...	25.56	1.003e2					3.1	YES		bd		0.000
7	FUNCTION1 HXCD...	25.43	8.381e1					2.5	NO		db		0.000
8	FUNCTION1 HXCD...	25.14	1.001e2					2.1	NO		bd		0.000
9	FUNCTION1 HXCD...	24.07	9.274e1					2.9	NO		bb		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	25.20	9.573e1					2.5	NO		bb		0.000
2	FUNCTION1 HPCD...	21.74	9.686e1					2.4	NO		bb		0.000
3	FUNCTION1 HPCD...	21.29	7.927e1					3.0	NO		bb		0.000
4	FUNCTION1 HPCD...	26.18	7.556e1					1.7	NO		bb		0.000
5	FUNCTION1 HPCD...	25.56	8.905e1					2.7	NO		bb		0.000

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	31.50	8.752e1					3.7	YES		bb		0.000
2	FUNCTION2 HPCD...	29.37	7.996e1					2.3	NO		bb		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	42.06	8.351e1					3.7	YES		bb		0.000
2	FUNCTION4 NCDPE	38.21	8.760e1					3.1	YES		bb		0.000

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Printed: Tuesday, September 21, 2021 11:09:48 Pacific Daylight Time

ID: BJH0152-BS1, Name: 21092005, Date: 20-Sep-2021, Time: 19:29:25, Conditions: AUTOSPEC01, User: pk

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	45.26	7.418e1					2.6	NO		bb		0.000

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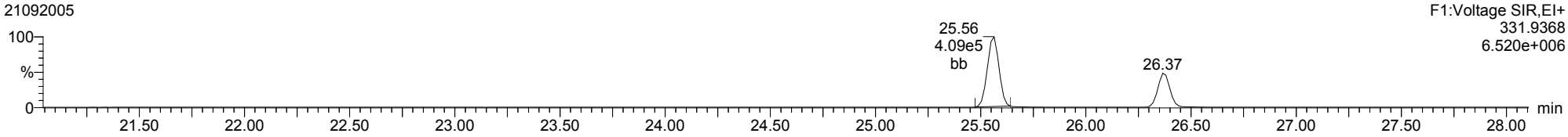
ID: BJH0152-BS1, Name: 21092005, Date: 20-Sep-2021, Time: 19:29:25, Conditions: AUTOSPEC01, User: pk

13C-1234-TCDD



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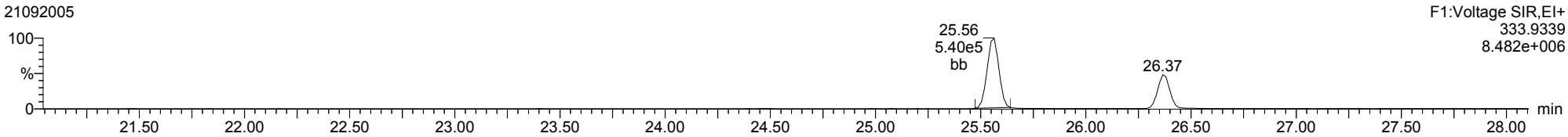

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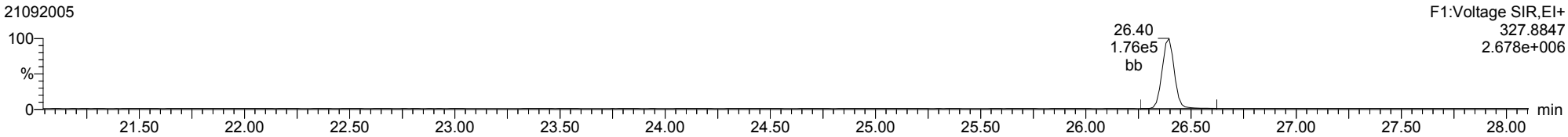

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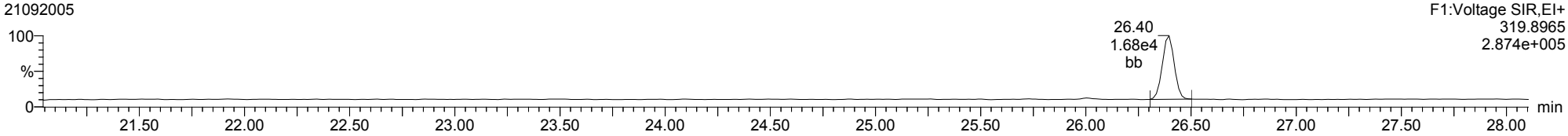

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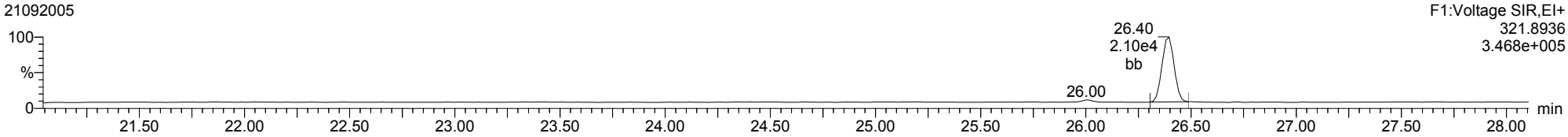

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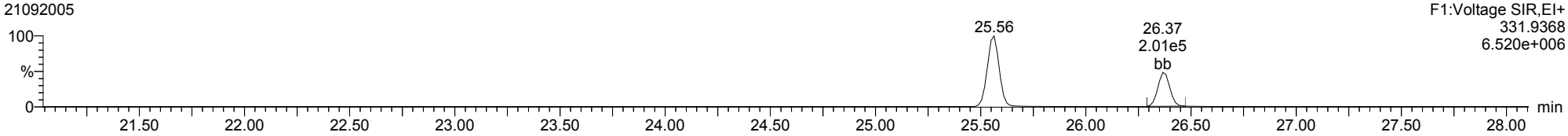

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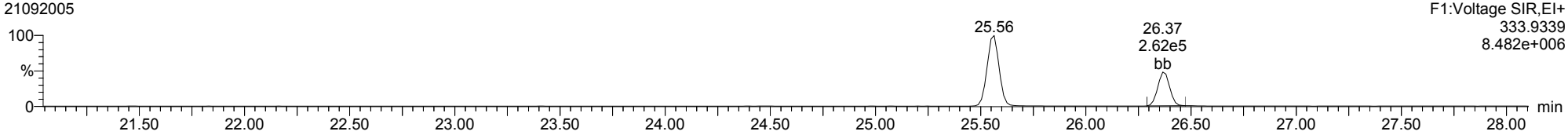

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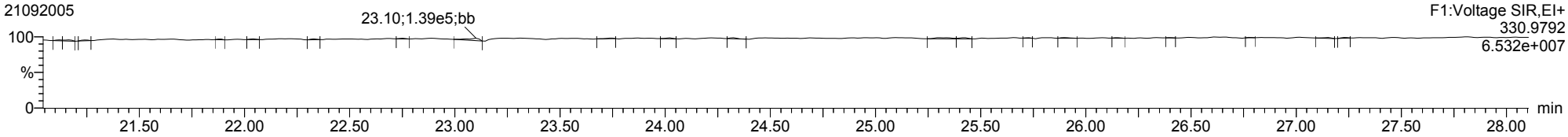

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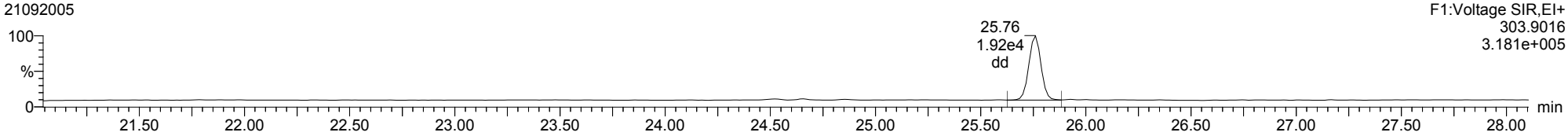

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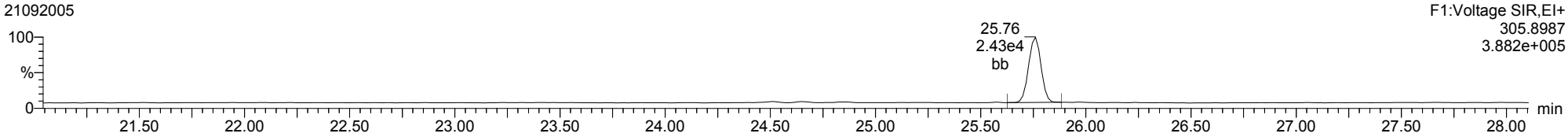

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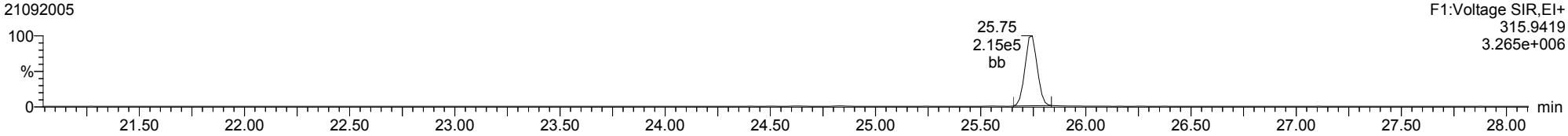

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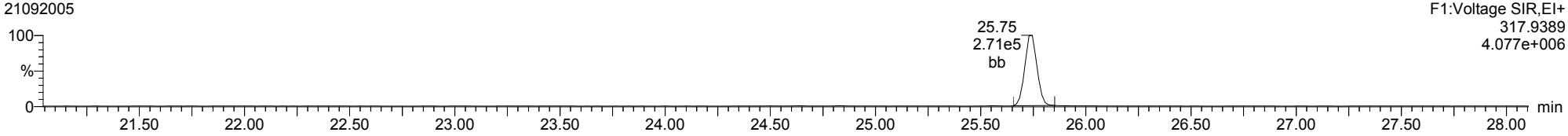

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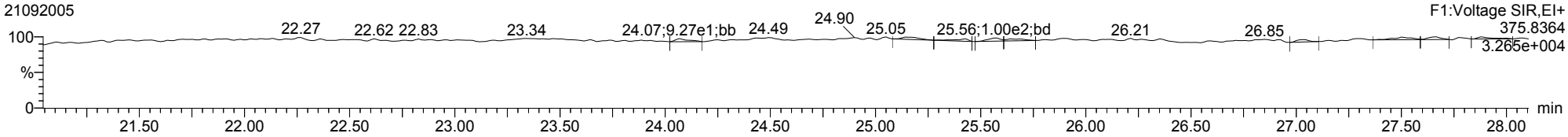

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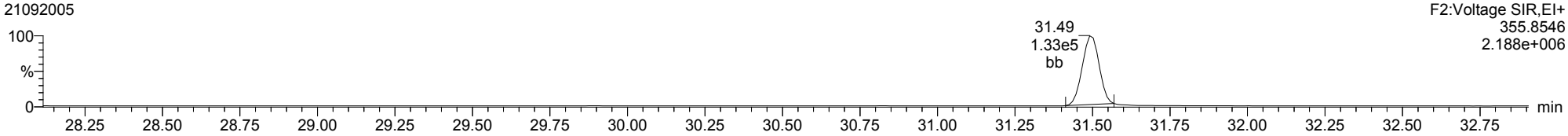
12378-PeCDD



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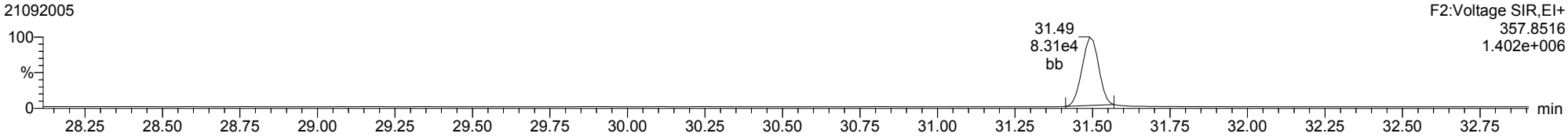

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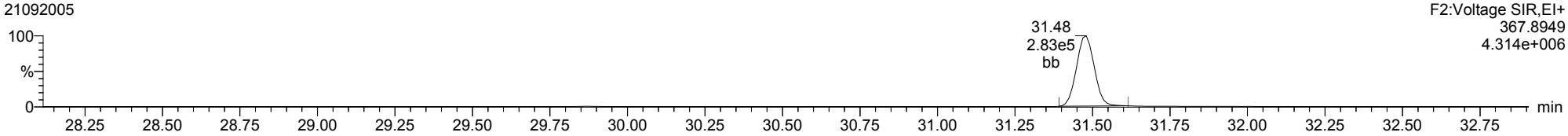

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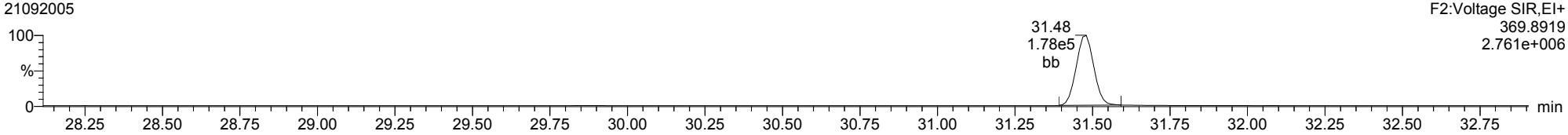
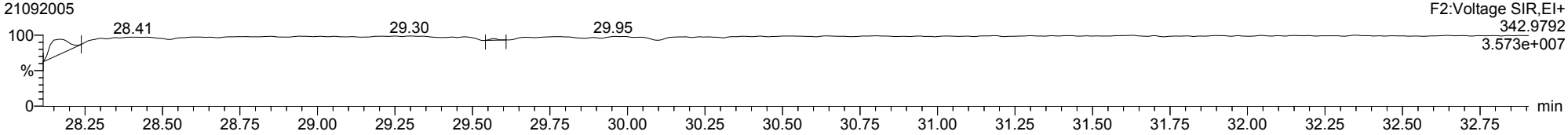


FUNCTION2 PFK



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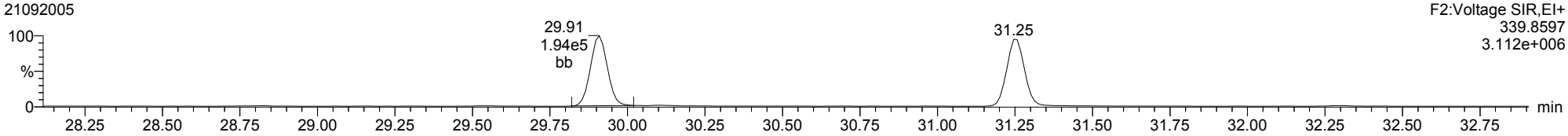

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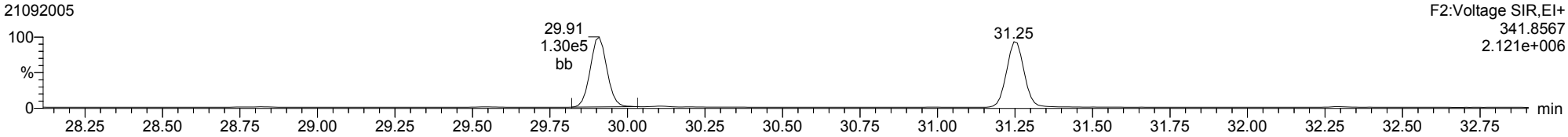

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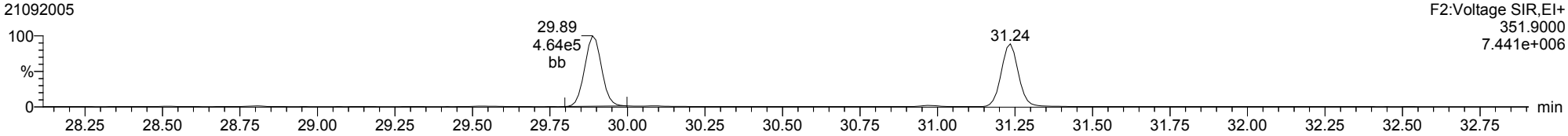

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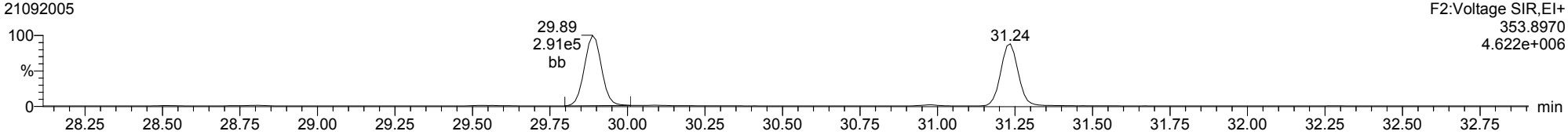
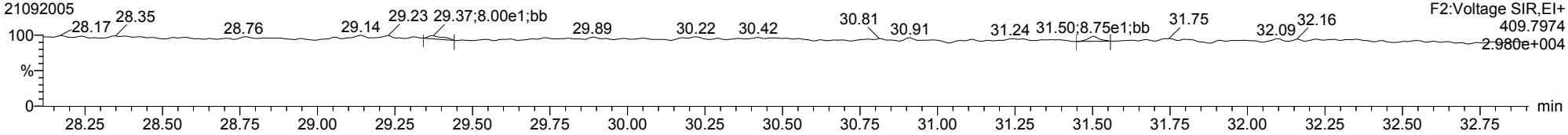


FUNCTION2 HPCDPE



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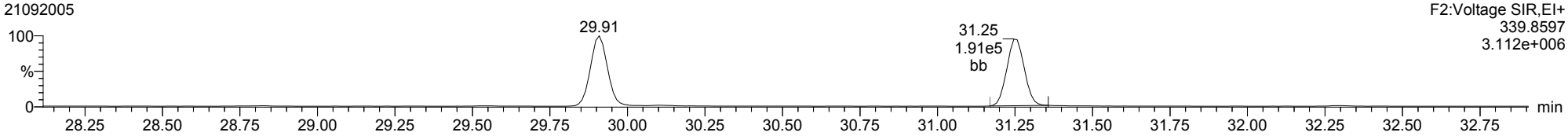
23478-PeCDF



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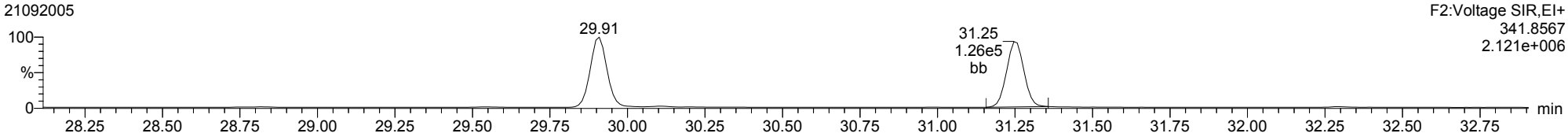

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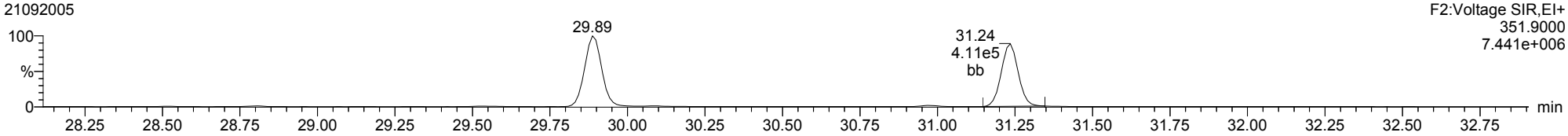

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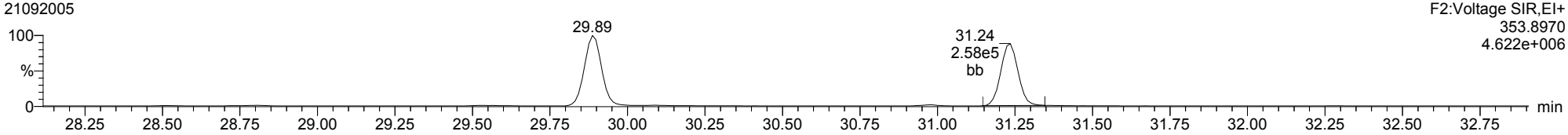

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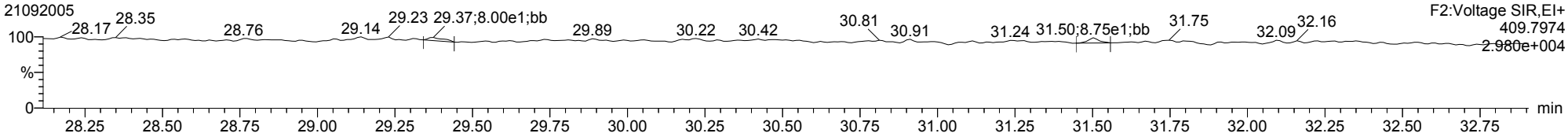

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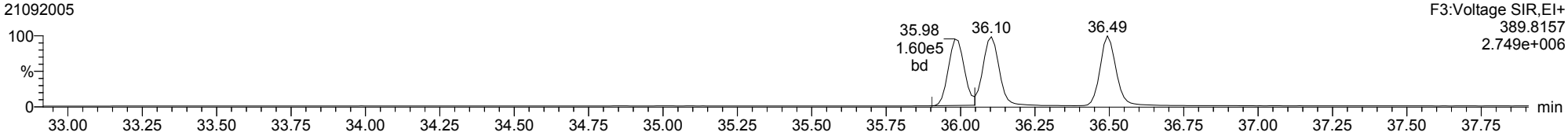

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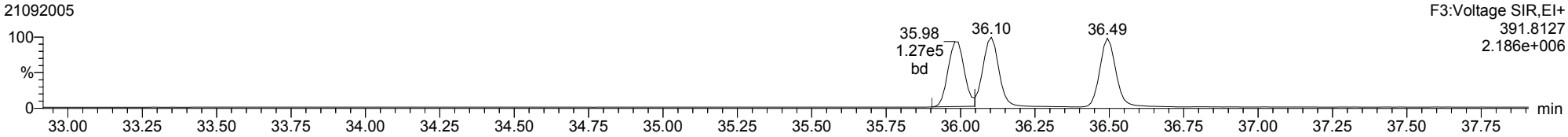

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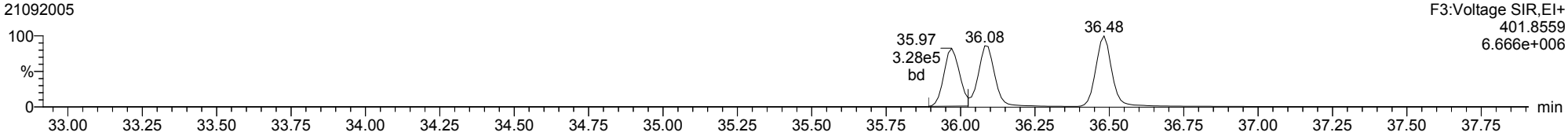

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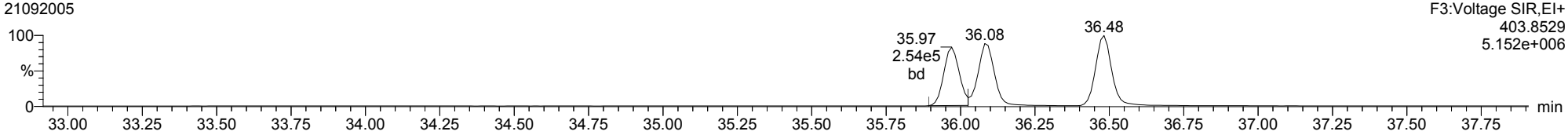

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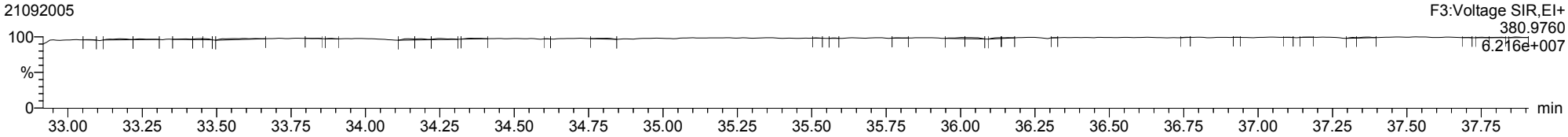

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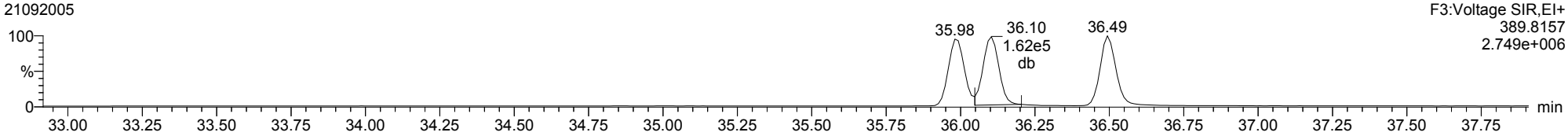

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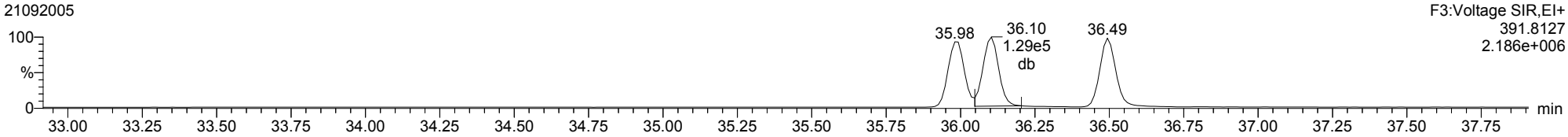

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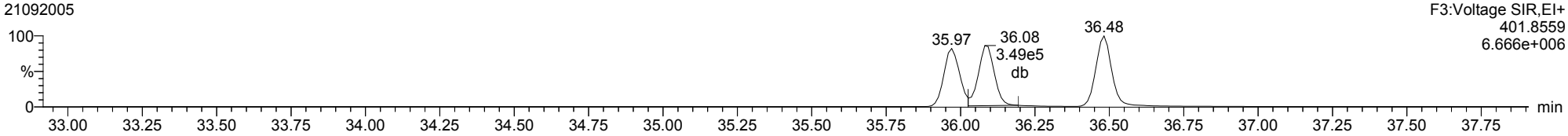

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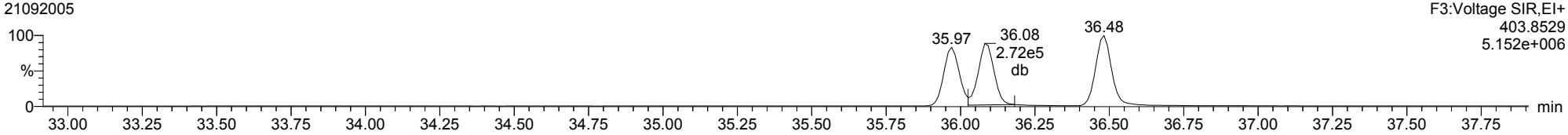

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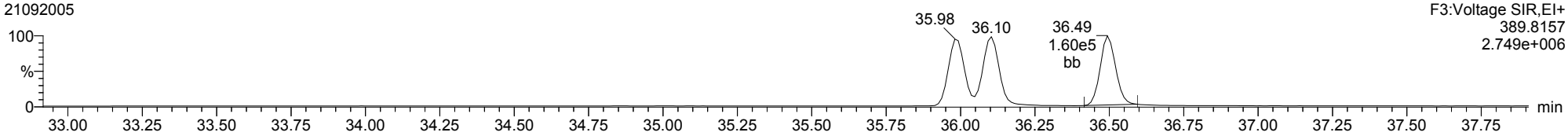

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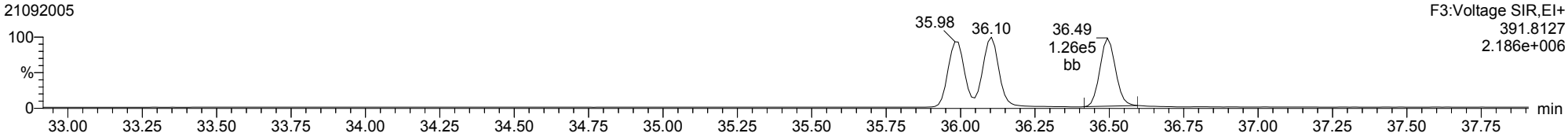

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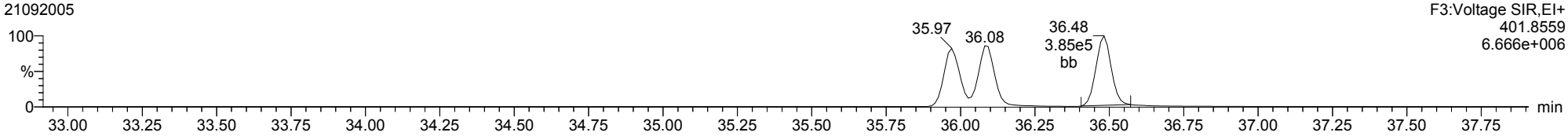

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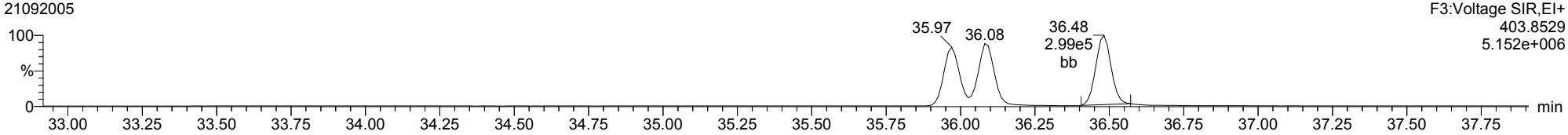

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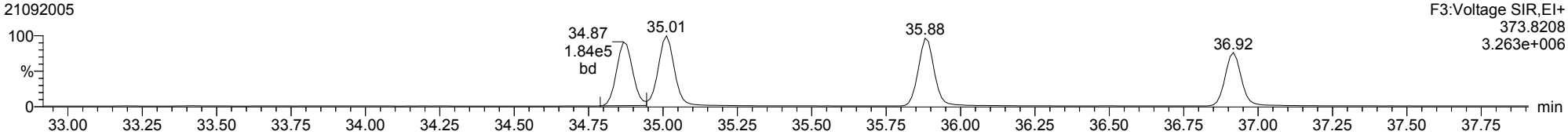

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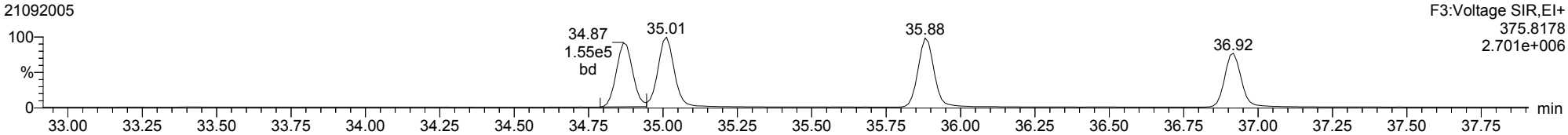

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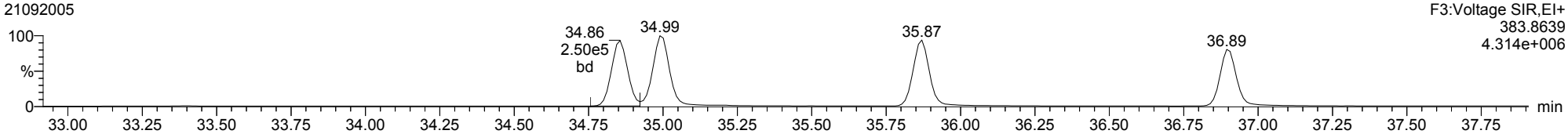

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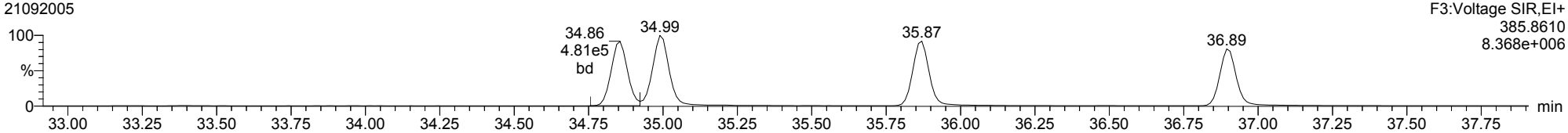

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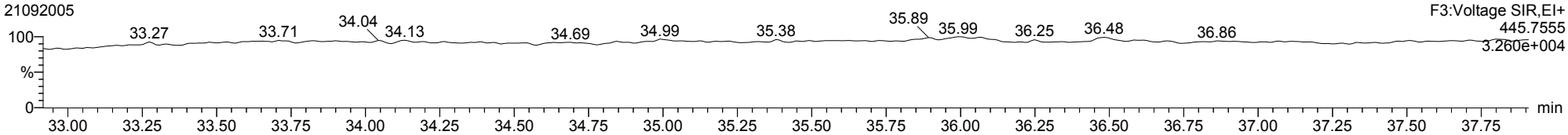

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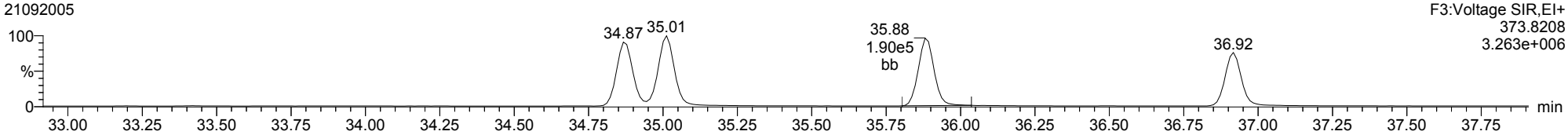

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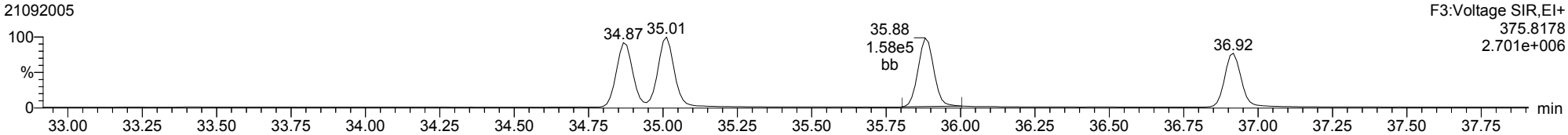

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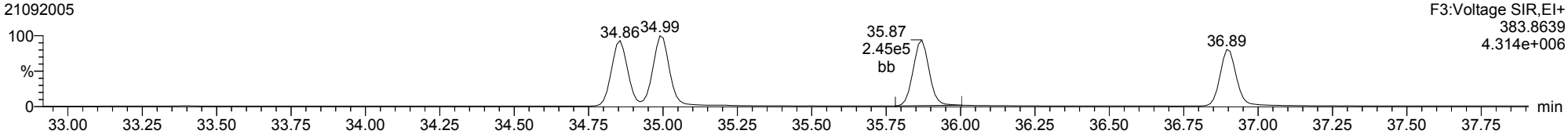

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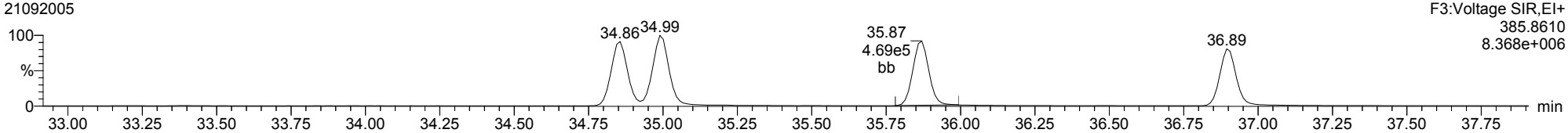

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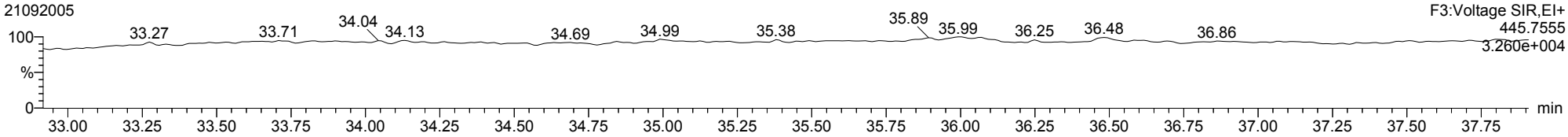

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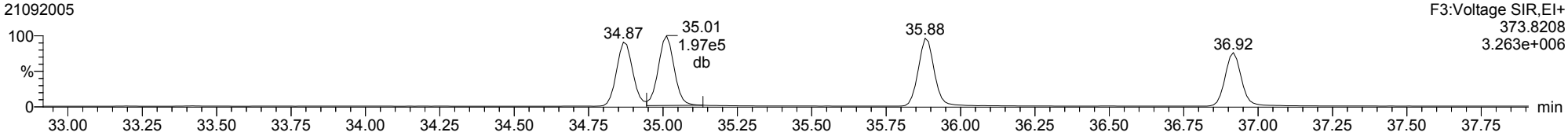

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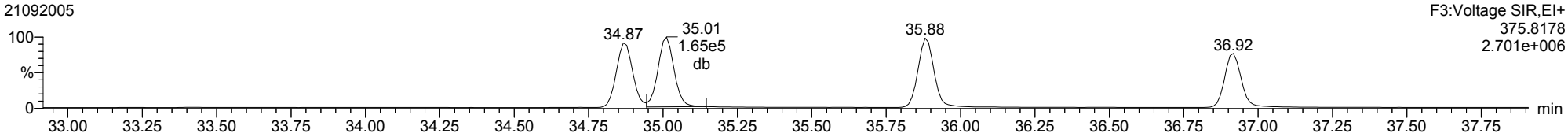

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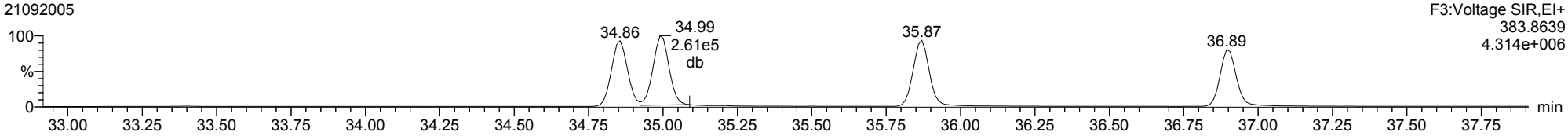

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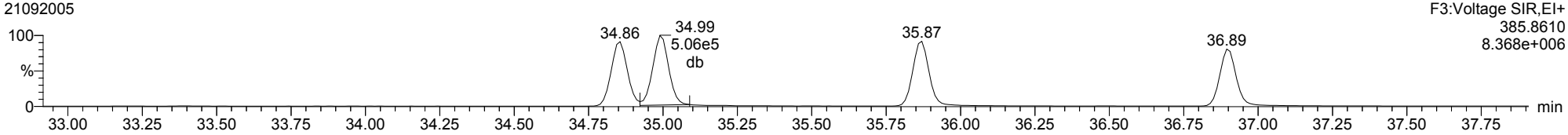

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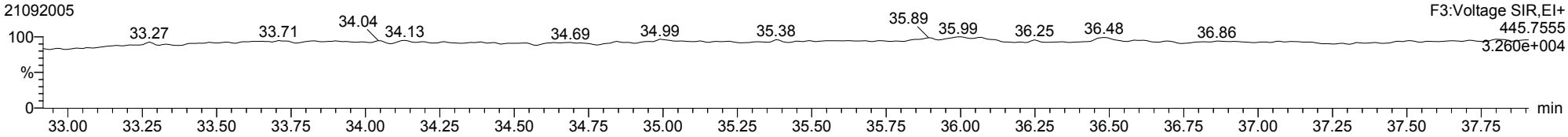

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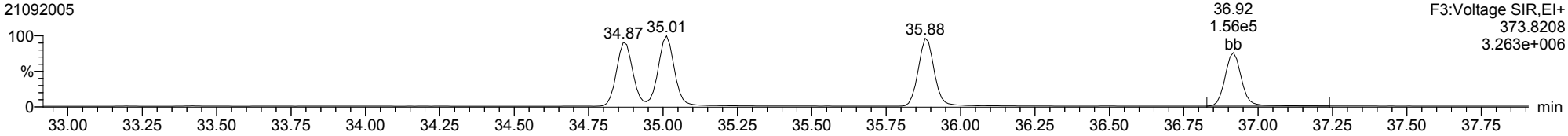

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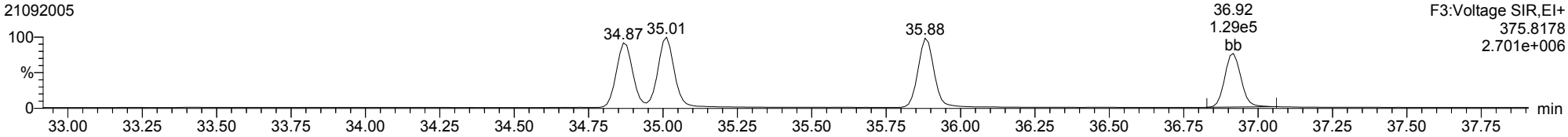

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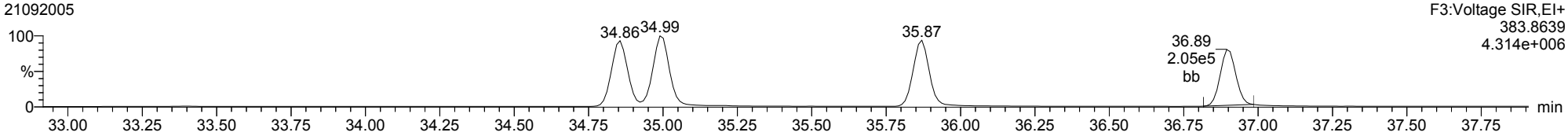

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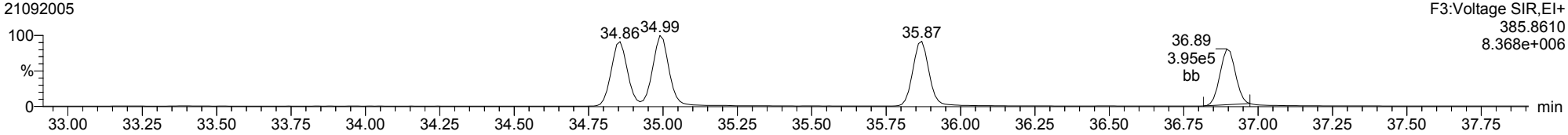

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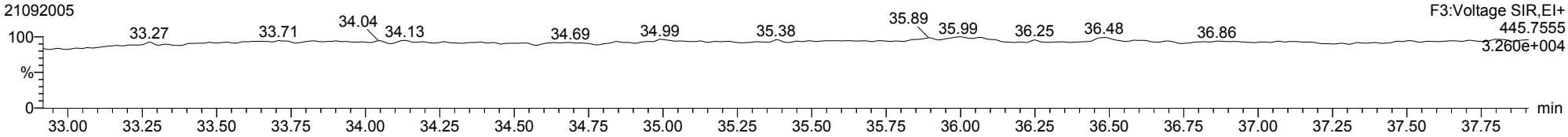

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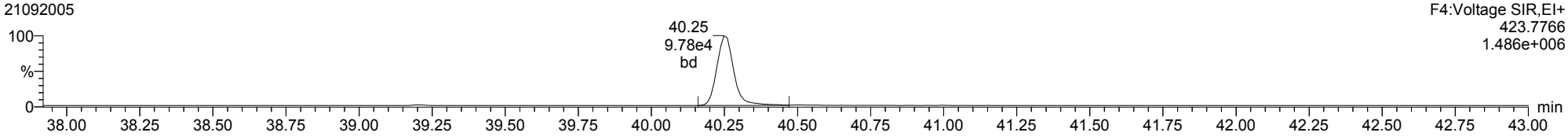

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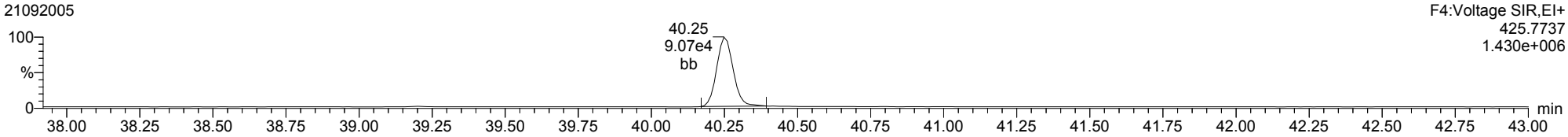

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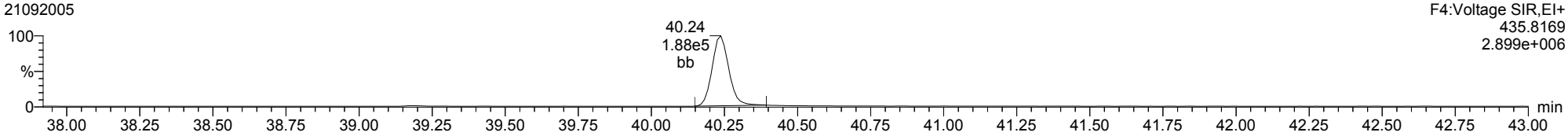

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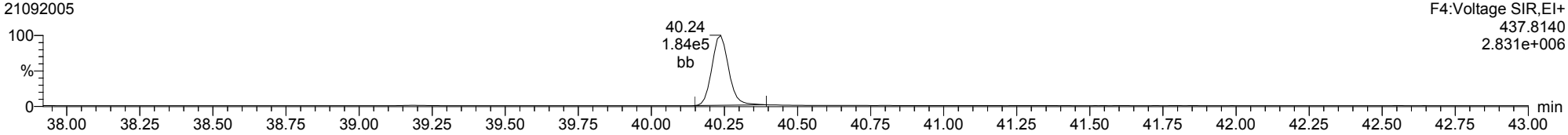

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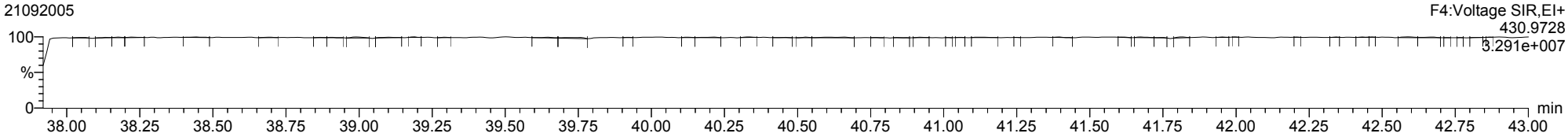

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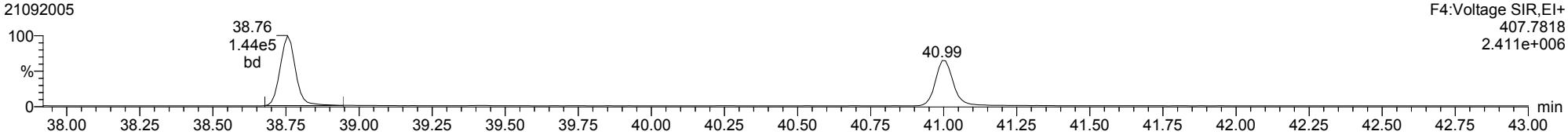

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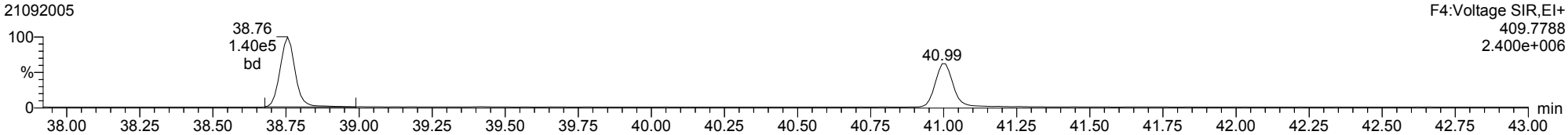

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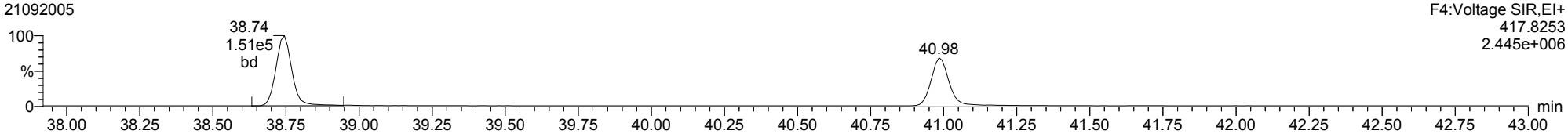

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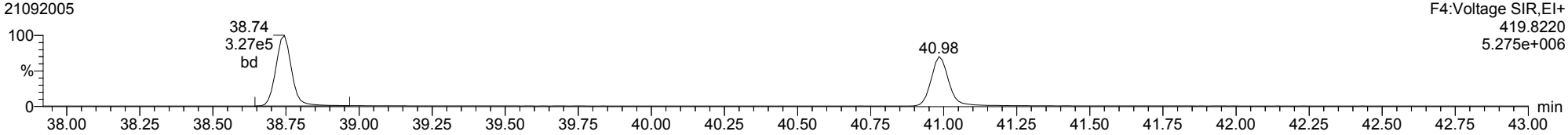

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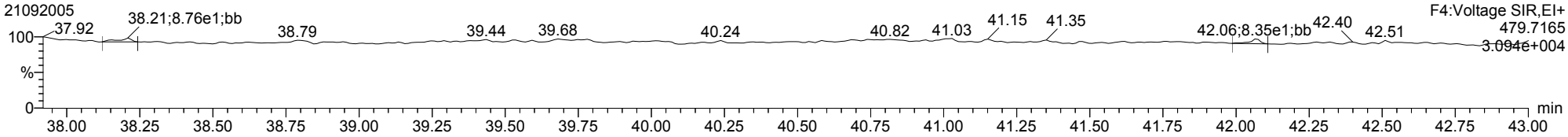

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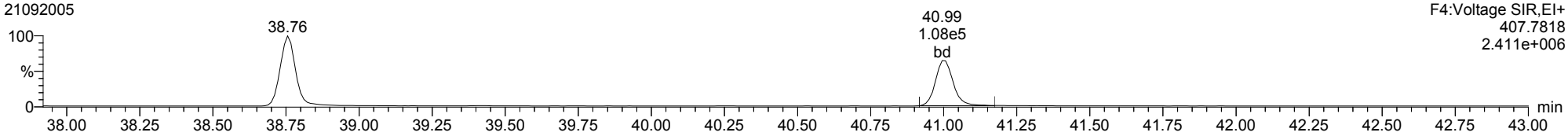
1234789-HpCDF



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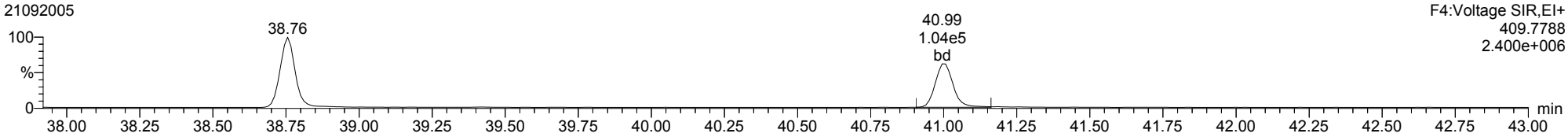

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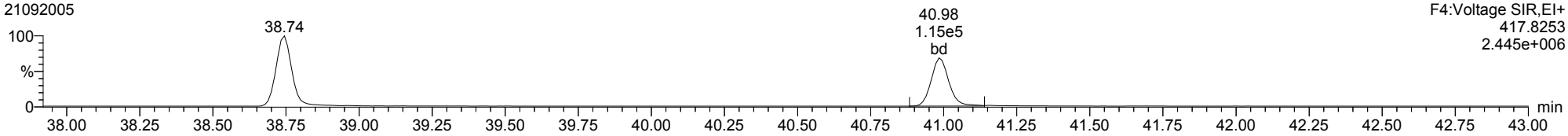

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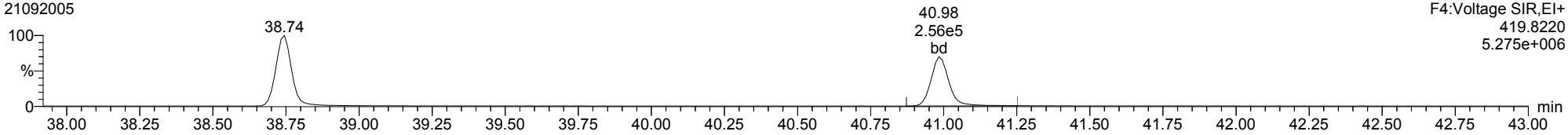

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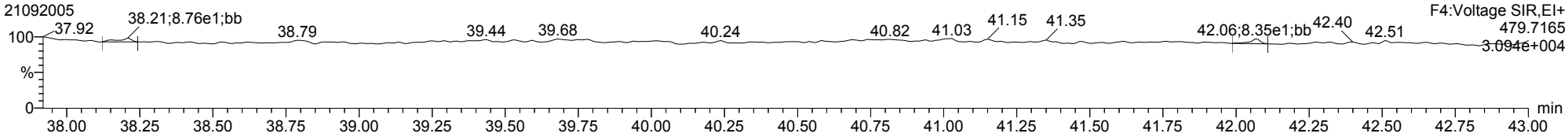

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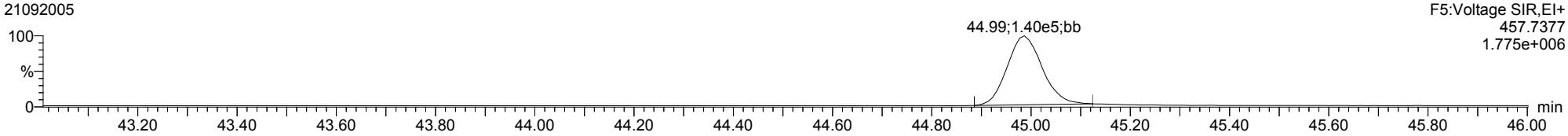
OCDD



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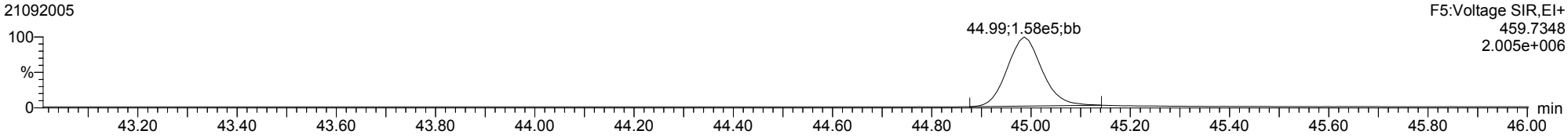

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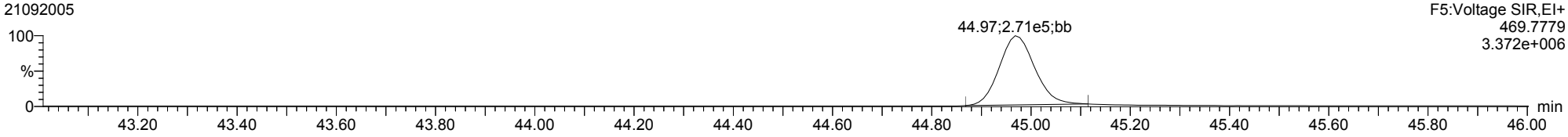

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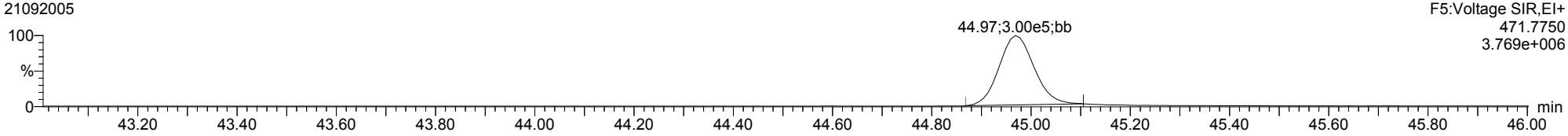
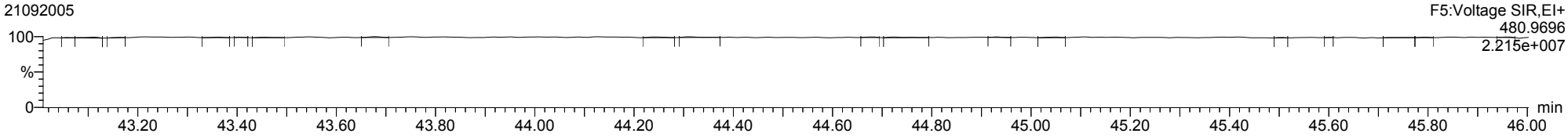


FUNCTION5 PFK



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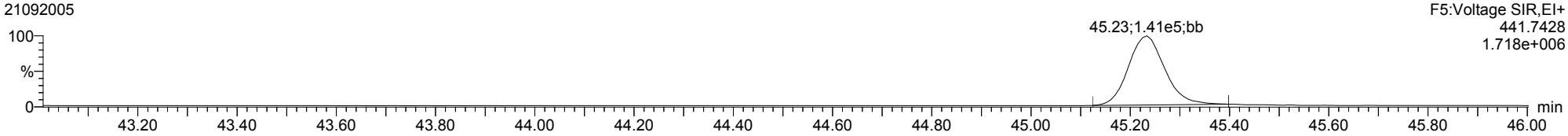
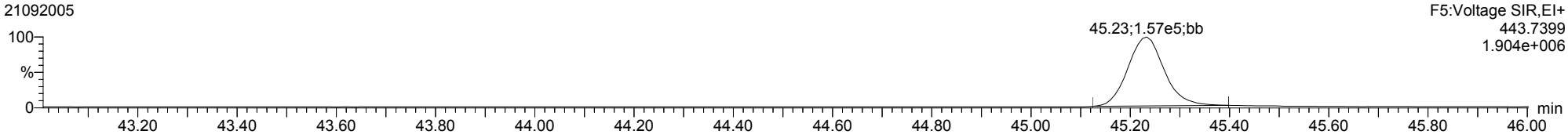
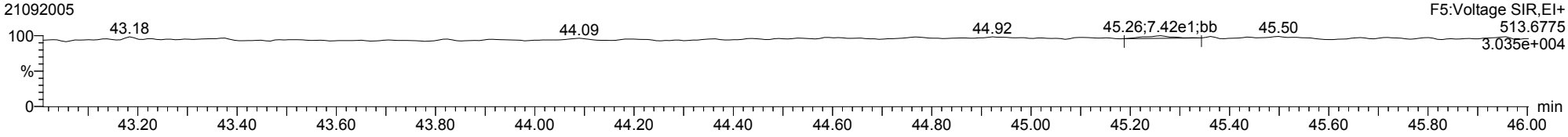
OCDF



OCDF



FUNCTION5 DCDPE



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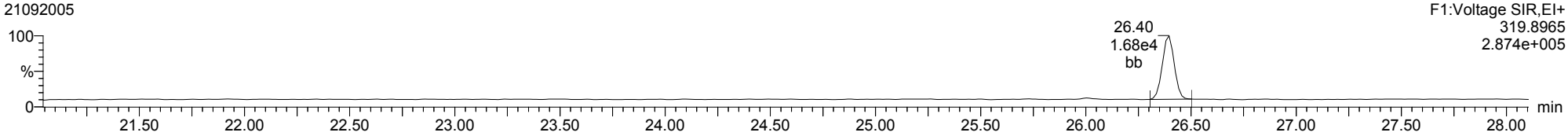
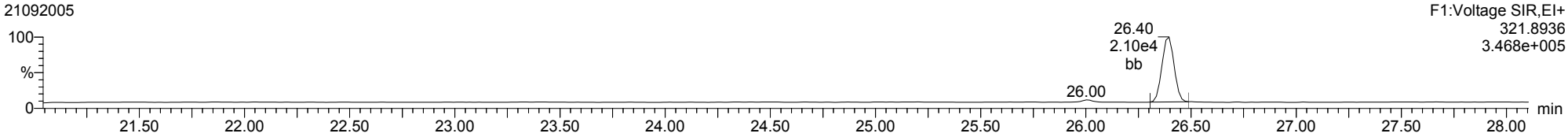
Printed: Tuesday, September 21, 2021 11:09:48 Pacific Daylight Time

ID: BJH0152-BS1, Name: 21092005, Date: 20-Sep-2021, Time: 19:29:25, Conditions: AUTOSPEC01, User: pk

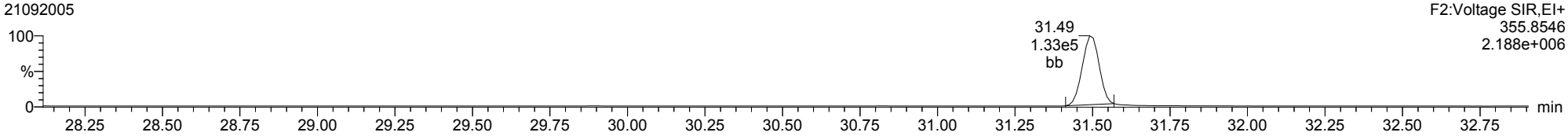
Total-tetradioxins



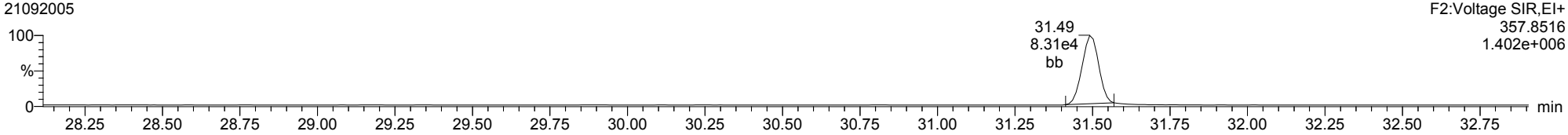
Total-tetradioxins



Total-pentadioxins



Total-pentadioxins



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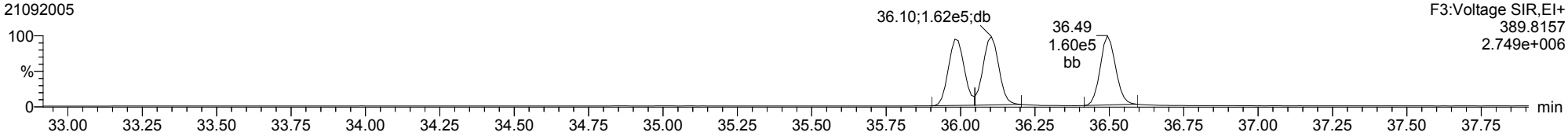
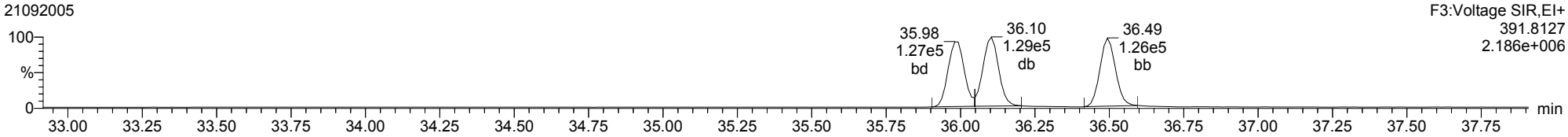
ID: BJH0152-BS1, Name: 21092005, Date: 20-Sep-2021, Time: 19:29:25, Conditions: AUTOSPEC01, User: pk

Total-hexadioxins



Total-hexadioxins



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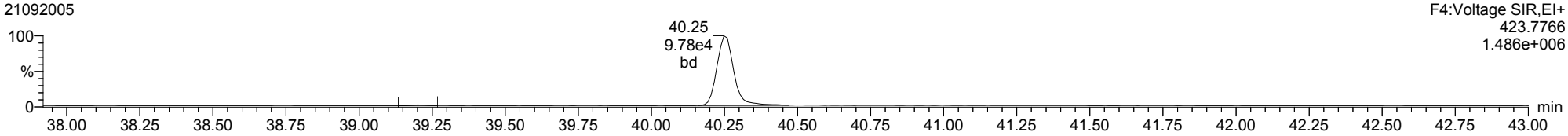

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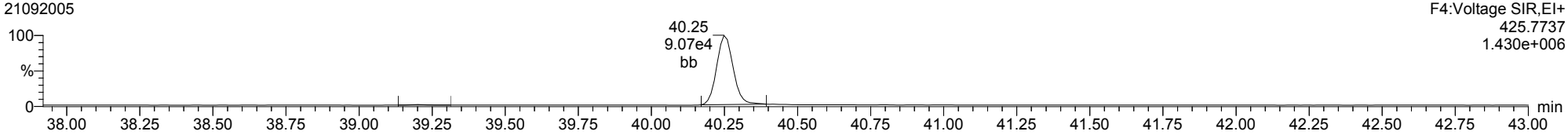
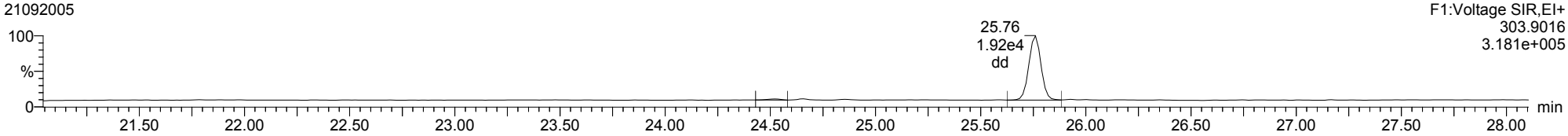
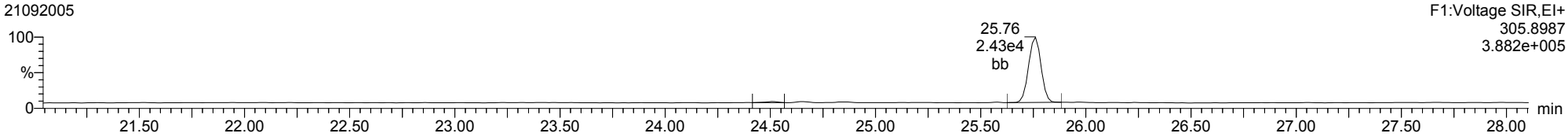


ID: BJH0152-BS1, Name: 21092005, Date: 20-Sep-2021, Time: 19:29:25, Conditions: AUTOSPEC01, User: pk

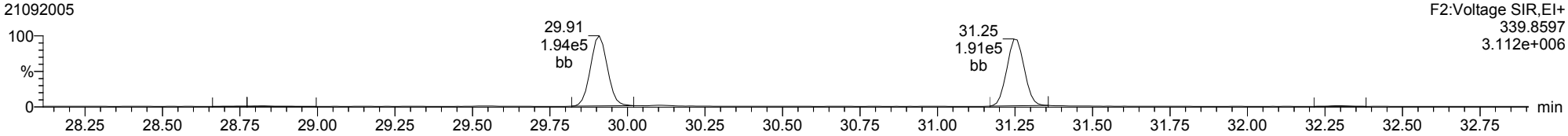
Total-tetrafurans



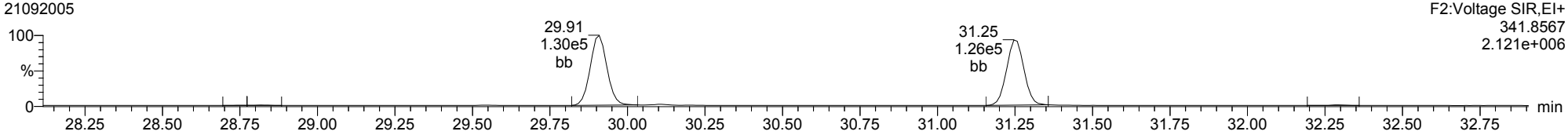
Total-tetrafurans



Total-pentafurans



Total-pentafurans



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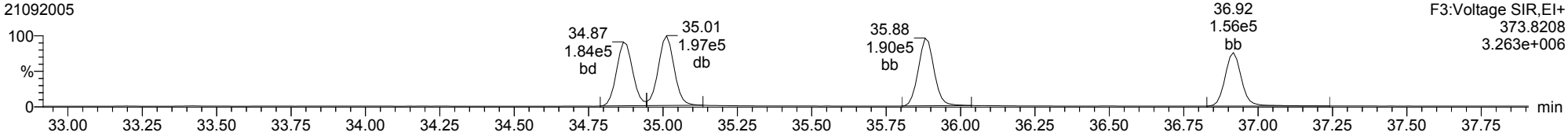
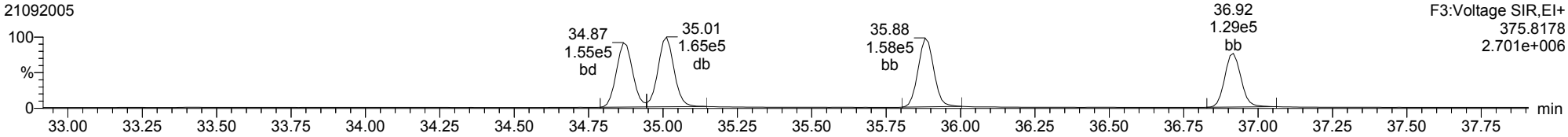
ID: BJH0152-BS1, Name: 21092005, Date: 20-Sep-2021, Time: 19:29:25, Conditions: AUTOSPEC01, User: pk

Total-hexafurans



Total-hexafurans



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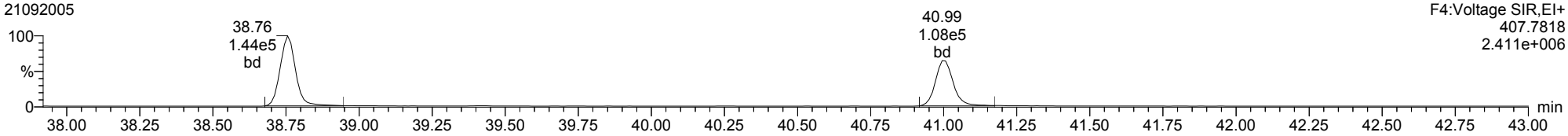
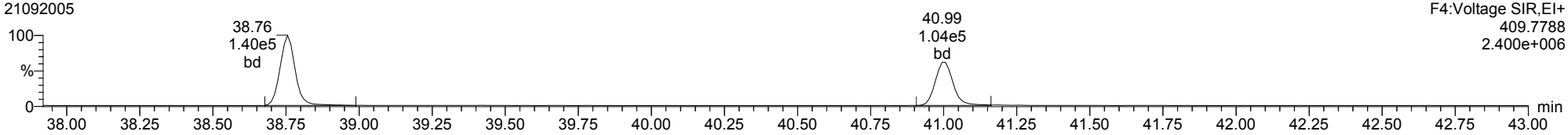


Total-heptafurans



Analytical Resources, Incorporated
Analytical Chemists and Consultants

STANDARD REFERENCE MATERIAL RECOVERY

EPA 1613B

Laboratory: Analytical Resources, Inc.
SDG: 21G0140
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Matrix: Solid
Laboratory ID: BJH0152-SRM1
Batch: BJH0152
Initial/Final: 10.02 g / 20 uL
Preparation: EPA 1613
Analyzed: 09/20/2021 20:18
Standard ID: J007935
Expires: 01/30/2022
Standard Lot#: PSRM0140
Description: Puget Sound reference-SRM

ANALYTE	TRUE (ng/kg wet)	FOUND (ng/kg wet)	MDL	MRL	Q	SRM % REC.	QC LIMITS REC.
2,3,7,8-TCDF	1.1080	0.857	0.179	0.998	J	77.4	50 - 150
2,3,7,8-TCDD	1.0481	0.919	0.150	0.998	EMPC, J	87.7	50 - 150
1,2,3,7,8-PeCDF	1.2278	0.981	0.240	0.998	J	79.9	50 - 150
2,3,4,7,8-PeCDF	1.0681	0.729	0.220	0.998	EMPC, J	68.2	50 - 150
1,2,3,7,8-PeCDD	1.0781	1.14	0.170	0.998		106	50 - 150
1,2,3,4,7,8-HxCDF	3.0146	2.72	0.279	0.998		90.3	50 - 150
1,2,3,6,7,8-HxCDF	1.0880	0.921	0.200	0.998	J	84.6	50 - 150
2,3,4,6,7,8-HxCDF	1.8267	1.85	0.170	0.998		101	50 - 150
1,2,3,7,8,9-HxCDF	0.51008	0.507	0.190	0.998	J	99.3	50 - 150
1,2,3,4,7,8-HxCDD	1.5871	1.36	0.170	0.998		85.5	50 - 150
1,2,3,6,7,8-HxCDD	3.8730	3.77	0.180	0.998		97.4	50 - 150
1,2,3,7,8,9-HxCDD	3.0345	2.88	0.220	0.998		94.8	50 - 150
1,2,3,4,6,7,8-HpCDF	18.666	18.0	0.210	0.998		96.6	50 - 150
1,2,3,4,7,8,9-HpCDF	1.6271	1.44	0.240	0.998		88.6	50 - 150
1,2,3,4,6,7,8-HpCDD	90.437	97.5	0.559	2.50	B	108	50 - 150
OCDF	58.295	47.0	1.10	2.50		80.6	50 - 150
OCDD	809.54	1130	4.59	9.98	B	140	50 - 150

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210920D1.qld
Last Altered: Tuesday, September 21, 2021 10:30:31 Pacific Daylight Time
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Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: BJH0152-SRM1, Name: 21092006, Date: 20-Sep-2021, Time: 20:18:17, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.746	1.001	9.806e2	1.448e3	1.108	0.677	0.770	1239	1416	1.52e4	1.78e4	12.3	12.6	NO	bd	MM	0.429
12378-PeCDF	29.909	1.001	2.592e3	1.489e3	1.015	1.740	1.550	1196	747	3.53e4	2.51e4	29.5	33.7	NO	dd	bb	0.492
23478-PeCDF	31.246	1.000	1.806e3	1.397e3	1.126	1.293	1.550	1196	747	2.51e4	2.19e4	21.0	29.4	YES	db	MM	0.365
123478-HxCDF	34.889	1.001	6.278e3	5.259e3	1.017	1.194	1.240	600	868	9.87e4	8.84e4	164.5	101.8	NO	bd	bd	1.363
234678-HxCDF	35.926	1.001	4.081e3	3.751e3	1.052	1.088	1.240	600	868	4.63e4	4.49e4	77.2	51.7	NO	bb	bb	0.928
123678-HxCDF	35.023	1.000	2.264e3	1.736e3	1.037	1.304	1.240	600	868	3.64e4	2.76e4	60.6	31.9	NO	db	db	0.461
123789-HxCDF	36.906	1.000	8.518e2	8.017e2	1.030	1.063	1.240	600	868	1.23e4	1.18e4	20.4	13.6	NO	bb	MM	0.254
1234678-HpCDF	38.756	1.000	2.809e4	2.767e4	1.327	1.015	1.050	655	741	4.89e5	4.68e5	747.2	631.4	NO	bd	bd	9.036
1234789-HpCDF	41.006	1.000	2.020e3	1.864e3	1.283	1.084	1.050	655	741	3.15e4	2.56e4	48.1	34.5	NO	bb	bb	0.722
OCDF	45.252	1.006	4.514e4	4.968e4	1.447	0.909	0.890	723	680	5.47e5	6.17e5	756.6	907.0	NO	bb	bb	23.550
2378-TCDD	26.381	1.001	8.935e2	1.467e3	0.920	0.609	0.770	1067	848	1.41e4	2.20e4	13.3	26.0	YES	bb	bd	0.460
12378-PeCDD	31.503	1.001	1.769e3	1.283e3	0.995	1.378	1.550	813	918	2.46e4	1.94e4	30.3	21.1	NO	bb	bb	0.571
123478-HxCDD	36.015	1.000	2.686e3	2.257e3	1.027	1.190	1.240	813	1287	3.92e4	3.77e4	48.2	29.3	NO	bd	bd	0.680
123678-HxCDD	36.137	1.000	7.489e3	5.923e3	1.009	1.264	1.240	813	1287	1.29e5	1.02e5	159.2	79.3	NO	db	db	1.890
123789-HxCDD	36.527	1.011	5.281e3	4.381e3	0.950	1.205	1.240	813	1287	9.01e4	7.19e4	110.8	55.9	NO	bb	bb	1.441
1234678-HpCDD	40.259	1.001	1.057e5	1.015e5	1.068	1.042	1.050	1722	1336	1.68e6	1.58e6	977.0	1186.3	NO	bb	bb	48.846
OCDD	45.014	1.001	8.807e5	9.839e5	1.181	0.895	0.890	1032	1176	1.10e7	1.22e7	10681.7	10384.9	NO	bb	bb	567.484
13C-2378-TCDF	25.730	1.007	2.262e5	2.844e5	1.427	0.795	0.770	1813	837	3.55e6	4.45e6	1958.9	5317.3	NO	bb	bb	38.974
13C-12378-PeCDF	29.887	1.170	5.057e5	3.124e5	1.297	1.619	1.550	2030	1546	7.98e6	4.90e6	3932.8	3170.2	NO	bb	bb	68.667
13C-23478-PeCDF	31.235	1.223	4.805e5	2.987e5	1.236	1.609	1.550	2030	1546	7.81e6	4.83e6	3849.2	3120.8	NO	bb	bb	68.630
13C-123478-HxCDF	34.867	0.955	2.820e5	5.502e5	1.242	0.513	0.510	1441	1462	4.51e6	8.79e6	3128.9	6010.2	NO	bd	bd	77.175
13C-123678-HxCDF	35.012	0.959	2.866e5	5.497e5	1.343	0.521	0.510	1441	1462	4.53e6	8.69e6	3144.4	5943.8	NO	db	db	71.716
13C-234678-HxCDF	35.903	0.983	2.747e5	5.274e5	1.215	0.521	0.510	1441	1462	4.39e6	8.52e6	3044.4	5828.6	NO	bb	bb	76.070
13C-123789-HxCDF	36.906	1.011	2.136e5	4.186e5	1.008	0.510	0.510	1441	1462	4.04e6	8.02e6	2802.4	5486.0	NO	bb	bb	72.290
13C-1234678-HpCDF	38.744	1.061	1.474e5	3.174e5	0.926	0.464	0.440	1034	1342	2.52e6	5.33e6	2434.3	3971.2	NO	bb	bb	57.803
13C-1234789-HpCDF	40.995	1.123	1.318e5	2.874e5	0.758	0.459	0.440	1034	1342	1.89e6	4.14e6	1826.0	3081.1	NO	bd	bd	63.723
13C-1234-TCDD	25.549	0.000	3.965e5	5.218e5	1.000	0.760	0.770	1632	946	6.31e6	8.22e6	3867.5	8689.7	NO	bb	bb	100.000
13C-2378-TCDD	26.365	1.032	2.407e5	3.166e5	1.116	0.760	0.770	1632	946	3.68e6	4.76e6	2256.5	5034.5	NO	bb	bb	54.361
13C-12378-PeCDD	31.480	1.232	3.288e5	2.084e5	0.732	1.577	1.550	795	896	5.18e6	3.27e6	6524.5	3649.5	NO	bb	bb	79.918
13C-123478-HxCDD	36.004	0.986	3.975e5	3.098e5	0.960	1.283	1.240	977	1495	6.34e6	5.10e6	6486.8	3414.6	NO	bd	bd	84.901
13C-123678-HxCDD	36.126	0.989	3.905e5	3.130e5	1.041	1.248	1.240	977	1495	6.46e6	5.06e6	6610.6	3382.6	NO	db	db	77.826
13C-1234678-HpCDD	40.237	1.102	2.004e5	1.966e5	0.632	1.019	1.050	922	874	3.25e6	3.20e6	3529.6	3662.9	NO	bb	bb	72.324
13C-OCDD	44.986	1.232	2.634e5	2.931e5	0.504	0.899	0.890	847	773	3.36e6	3.77e6	3971.8	4870.0	NO	bb	bb	127.279
13C-123789-HxCDD	36.516	0.000	4.849e5	3.831e5	1.000	1.266	1.240	977	1495	8.33e6	6.54e6	8519.7	4373.9	NO	bb	bb	100.000
37CL-2378-TCDD	26.381	1.033	2.143e5		1.084			760		3.37e6		4437.6			db		21.533

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ID: BJH0152-SRM1, Name: 21092006, Date: 20-Sep-2021, Time: 20:18:17, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	22.359	0.869	1.152e2	3.637e2	1.425	0.317	0.770	1239	1416	2.81e3	5.70e3	2.3	4.0	YES	bb	bd	0.066
1289-TCDF					1.043		0.770	1239	1416								
13468-PECDF	27.046	0.905	1.653e3	8.443e2	1.376	1.958	1.550	606	746	2.25e4	1.37e4	37.1	18.3	YES	bd	bd	0.222
12389-PECDF	32.316	1.081	8.045e1	1.220e2	1.000	0.659	1.550	1196	747	1.49e3	2.65e3	1.2	3.6	YES	bb	bb	0.025
123468-HXCDF	33.207	0.952	6.224e3	5.191e3	1.087	1.199	1.240	600	868	9.87e4	8.36e4	164.5	96.3	NO	bd	bd	1.262
1368-TCDD	23.493	0.891	4.322e2	6.631e2	0.923	0.652	0.770	1067	848	7.54e3	1.22e4	7.1	14.4	YES	bb	bb	0.213
1289-TCDD					0.794		0.770	1067	848								
12479-PECDD	28.795	0.915	1.700e3	1.815e3	1.843	0.937	1.550	813	918	3.43e4	2.01e4	42.2	21.9	YES	dd	db	0.355
12389-PECDD	31.915	1.014	3.101e2	3.562e2	1.154	0.871	1.550	813	918	5.10e3	5.18e3	6.3	5.6	YES	bb	bb	0.108
124679-HXCDD	33.987	0.944	2.006e4	1.617e4	1.125	1.240	1.240	813	1287	3.26e5	2.61e5	400.9	202.8	NO	bb	bb	4.553
1234679-HPCDD	39.212	0.975	1.646e5	1.535e5	1.211	1.073	1.050	1722	1336	2.84e6	2.62e6	1648.8	1959.0	NO	bb	bb	66.165
Total-tetrafurans			6.254e3		1.192			1239		9.41e4							2.496
Total-penta1			1.746e4					606		2.53e5							3.849
Total-pentafurans			1.903e4		1.047			1196		2.33e5							3.752
Total-hexafurans			6.544e4		1.045			600		9.84e5							14.728
Total-heptafurans			8.709e4		1.305			655		1.50e6							29.312
Total-Furans			2.404e5		1.158			1239		3.61e6							77.688
Total-tetradioxins			1.781e3		0.879			1067		2.67e4							0.830
Total-pentadioxins			3.119e3		1.331			813		4.54e4							0.873
Total-hexadioxins			6.649e4		1.028			813		9.65e5							16.318
Total-heptadioxins			2.703e5		1.140			1722		4.52e6							115.011
Total-Dioxins			1.222e6		1.092			1067		1.66e7							700.515
Total-TEQ			1.463e6					1067		2.02e7							778.203
FUNCTION1 PFK			1.368e6					380760		2.05e7							
FUNCTION2 PFK			5.747e6					296999		2.20e7							0.000
FUNCTION3 PFK			1.116e7					434796		1.82e7							0.000
FUNCTION4 PFK			1.269e7					169739		1.39e8							
FUNCTION5 PFK			4.505e4					133916		1.38e6							
FUNCTION1 HXCD...			9.704e2					671		1.59e4							0.000
FUNCTION1 HPCD...			2.112e3					555		3.32e4							0.000
FUNCTION2 HPCD...			4.535e2					724		7.11e3							0.000
FUNCTION3 OCDPE			3.523e2					667		5.77e3							0.000
FUNCTION4 NCDPE			5.502e3					684		1.01e5							0.000
FUNCTION5 DCDPE			0.000e0					484		0.00e0							

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

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TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.98	1.067e3	1.494e3	1.192	0.71	0.77	10.9	YES	NO	dd	dd	0.421
2	Total-tetrafurans	23.84	1.086e3	1.283e3	1.192	0.85	0.77	16.1	YES	NO	dd	dd	0.389
3	Total-tetrafurans	23.48	5.438e2	7.347e2	1.192	0.74	0.77	6.8	YES	NO	dd	dd	0.210
4	2378-TCDF	25.75	9.806e2	1.448e3	1.108	0.68	0.77	12.3	YES	NO	bd	MM	0.429
5	Total-tetrafurans	25.40	5.739e2	8.744e2	1.192	0.66	0.77	4.5	YES	NO	dd	dd	0.238
6	Total-tetrafurans	24.49	1.090e3	1.615e3	1.192	0.68	0.77	13.0	YES	NO	dd	dd	0.445
7	Total-tetrafurans	24.13	9.130e2	1.299e3	1.192	0.70	0.77	12.3	YES	NO	dd	dd	0.364

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-penta1	27.97	4.648e2	2.733e2		1.70	1.55	10.7	YES	NO	db	bb	0.098
2	Total-penta1	27.17	1.699e4	1.115e4		1.52	1.55	406.6	YES	NO	db	db	3.751

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentafurans	30.13	3.284e3	2.173e3	1.047	1.51	1.55	33.1	YES	NO	dd	bd	0.653
2	12378-PeCDF	29.91	2.592e3	1.489e3	1.015	1.74	1.55	29.5	YES	NO	dd	bb	0.492
3	Total-pentafurans	29.55	2.204e3	1.478e3	1.047	1.49	1.55	22.9	YES	NO	dd	dd	0.441
4	Total-pentafurans	28.85	7.275e3	4.533e3	1.047	1.61	1.55	61.4	YES	NO	MM	MM	1.413
5	Total-pentafurans	28.45	1.726e3	1.270e3	1.047	1.36	1.55	22.9	YES	NO	bd	bd	0.358
6	Total-pentafurans	31.11	9.228e2	6.035e2	1.047	1.53	1.55	11.3	YES	NO	dd	dd	0.183
7	Total-pentafurans	31.00	1.030e3	7.552e2	1.047	1.36	1.55	14.0	YES	NO	bd	bd	0.214

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HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-hexafurans	33.94	6.757e2	4.761e2	1.045	1.42	1.24	17.5	YES	NO	bb	bb	0.142
2	Total-hexafurans	33.42	1.971e4	1.710e4	1.045	1.15	1.24	467.6	YES	NO	dd	db	4.543
3	123468-HXCDF	33.21	6.224e3	5.191e3	1.087	1.20	1.24	164.5	YES	NO	bd	bd	1.262
4	123789-HxCDF	36.91	8.518e2	8.017e2	1.030	1.06	1.24	20.4	YES	NO	bb	MM	0.254
5	234678-HxCDF	35.93	4.081e3	3.751e3	1.052	1.09	1.24	77.2	YES	NO	bb	bb	0.928
6	Total-hexafurans	35.37	2.511e2	2.003e2	1.045	1.25	1.24	6.7	YES	NO	bb	bb	0.056
7	123678-HxCDF	35.02	2.264e3	1.736e3	1.037	1.30	1.24	60.6	YES	NO	db	db	0.461
8	123478-HxCDF	34.89	6.278e3	5.259e3	1.017	1.19	1.24	164.5	YES	NO	bd	bd	1.363
9	Total-hexafurans	34.73	8.592e2	7.990e2	1.045	1.08	1.24	27.1	YES	NO	bb	bb	0.205
10	Total-hexafurans	34.27	2.425e4	2.044e4	1.045	1.19	1.24	634.3	YES	NO	bb	bb	5.514

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDF	38.76	2.809e4	2.767e4	1.327	1.02	1.05	747.2	YES	NO	bd	bd	9.036
2	1234789-HpCDF	41.01	2.020e3	1.864e3	1.283	1.08	1.05	48.1	YES	NO	bb	bb	0.722
3	Total-heptafurans	39.42	5.698e4	5.584e4	1.305	1.02	1.05	1496.4	YES	NO	bd	bd	19.554

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Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.98	1.067e3	1.494e3	1.192	0.71	0.77	10.9	YES	NO	dd	dd	0.421
2	Total-tetrafurans	23.84	1.086e3	1.283e3	1.192	0.85	0.77	16.1	YES	NO	dd	dd	0.389
3	Total-tetrafurans	23.48	5.438e2	7.347e2	1.192	0.74	0.77	6.8	YES	NO	dd	dd	0.210
4	2378-TCDF	25.75	9.806e2	1.448e3	1.108	0.68	0.77	12.3	YES	NO	bd	MM	0.429
5	Total-tetrafurans	25.40	5.739e2	8.744e2	1.192	0.66	0.77	4.5	YES	NO	dd	dd	0.238
6	Total-tetrafurans	24.49	1.090e3	1.615e3	1.192	0.68	0.77	13.0	YES	NO	dd	dd	0.445
7	Total-tetrafurans	24.13	9.130e2	1.299e3	1.192	0.70	0.77	12.3	YES	NO	dd	dd	0.364
8	Total-pentafurans	30.13	3.284e3	2.173e3	1.047	1.51	1.55	33.1	YES	NO	dd	bd	0.653
9	12378-PeCDF	29.91	2.592e3	1.489e3	1.015	1.74	1.55	29.5	YES	NO	dd	bb	0.492
10	Total-pentafurans	29.55	2.204e3	1.478e3	1.047	1.49	1.55	22.9	YES	NO	dd	dd	0.441
11	Total-pentafurans	28.85	7.275e3	4.533e3	1.047	1.61	1.55	61.4	YES	NO	MM	MM	1.413
12	Total-pentafurans	28.45	1.726e3	1.270e3	1.047	1.36	1.55	22.9	YES	NO	bd	bd	0.358
13	Total-pentafurans	31.11	9.228e2	6.035e2	1.047	1.53	1.55	11.3	YES	NO	dd	dd	0.183
14	Total-pentafurans	31.00	1.030e3	7.552e2	1.047	1.36	1.55	14.0	YES	NO	bd	bd	0.214
15	Total-hexafurans	33.94	6.757e2	4.761e2	1.045	1.42	1.24	17.5	YES	NO	bb	bb	0.142
16	Total-hexafurans	33.42	1.971e4	1.710e4	1.045	1.15	1.24	467.6	YES	NO	dd	db	4.543
17	123468-HXCDF	33.21	6.224e3	5.191e3	1.087	1.20	1.24	164.5	YES	NO	bd	bd	1.262
18	123789-HxCDF	36.91	8.518e2	8.017e2	1.030	1.06	1.24	20.4	YES	NO	bb	MM	0.254
19	234678-HxCDF	35.93	4.081e3	3.751e3	1.052	1.09	1.24	77.2	YES	NO	bb	bb	0.928
20	Total-hexafurans	35.37	2.511e2	2.003e2	1.045	1.25	1.24	6.7	YES	NO	bb	bb	0.056
21	123678-HxCDF	35.02	2.264e3	1.736e3	1.037	1.30	1.24	60.6	YES	NO	db	db	0.461
22	123478-HxCDF	34.89	6.278e3	5.259e3	1.017	1.19	1.24	164.5	YES	NO	bd	bd	1.363
23	Total-hexafurans	34.73	8.592e2	7.990e2	1.045	1.08	1.24	27.1	YES	NO	bb	bb	0.205
24	Total-hexafurans	34.27	2.425e4	2.044e4	1.045	1.19	1.24	634.3	YES	NO	bb	bb	5.514
25	1234678-HpCDF	38.76	2.809e4	2.767e4	1.327	1.02	1.05	747.2	YES	NO	bd	bd	9.036
26	1234789-HpCDF	41.01	2.020e3	1.864e3	1.283	1.08	1.05	48.1	YES	NO	bb	bb	0.722
27	Total-heptafurans	39.42	5.698e4	5.584e4	1.305	1.02	1.05	1496.4	YES	NO	bd	bd	19.554
28	OCDF	45.25	4.514e4	4.968e4	1.447	0.91	0.89	756.6	YES	NO	bb	bb	23.550
29	Total-penta1	27.97	4.648e2	2.733e2		1.70	1.55	10.7	YES	NO	db	bb	0.098
30	Total-penta1	27.17	1.699e4	1.115e4		1.52	1.55	406.6	YES	NO	db	db	3.751

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	24.51	8.898e2	1.022e3	0.879	0.87	0.77	10.9	YES	NO	bb	bb	0.390
2	Total-tetradioxins	23.76	5.221e2	7.654e2	0.879	0.68	0.77	8.6	YES	NO	bb	bd	0.263
3	Total-tetradioxins	26.02	3.687e2	4.976e2	0.879	0.74	0.77	5.6	YES	NO	bb	bb	0.177

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PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentadioxins	29.89	1.351e3	8.071e2	1.331	1.67	1.55	25.6	YES	NO	bd	bb	0.302
2	12378-PeCDD	31.50	1.769e3	1.283e3	0.995	1.38	1.55	30.3	YES	NO	bb	bb	0.571

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDD	36.53	5.281e3	4.381e3	0.950	1.21	1.24	110.8	YES	NO	bb	bb	1.441
2	Total-hexadioxins	36.32	1.437e3	1.150e3	1.028	1.25	1.24	29.8	YES	NO	bb	bb	0.357
3	123678-HxCDD	36.14	7.489e3	5.923e3	1.009	1.26	1.24	159.2	YES	NO	db	db	1.890
4	123478-HxCDD	36.01	2.686e3	2.257e3	1.027	1.19	1.24	48.2	YES	NO	bd	bd	0.680
5	Total-hexadioxins	35.25	2.404e3	1.887e3	1.028	1.27	1.24	48.4	YES	NO	db	db	0.592
6	Total-hexadioxins	35.13	2.246e4	1.858e4	1.028	1.21	1.24	297.1	YES	NO	bd	bd	5.660
7	Total-hexadioxins	34.76	4.678e3	3.625e3	1.028	1.29	1.24	91.8	YES	NO	bb	bb	1.145
8	124679-HXCDD	33.99	2.006e4	1.617e4	1.125	1.24	1.24	400.9	YES	NO	bb	bb	4.553

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	40.26	1.057e5	1.015e5	1.068	1.04	1.05	977.0	YES	NO	bb	bb	48.846
2	1234679-HPCDD	39.21	1.646e5	1.535e5	1.211	1.07	1.05	1648.8	YES	NO	bb	bb	66.165

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Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	24.51	8.898e2	1.022e3	0.879	0.87	0.77	10.9	YES	NO	bb	bb	0.390
2	Total-tetradioxins	23.76	5.221e2	7.654e2	0.879	0.68	0.77	8.6	YES	NO	bb	bd	0.263
3	Total-tetradioxins	26.02	3.687e2	4.976e2	0.879	0.74	0.77	5.6	YES	NO	bb	bb	0.177
4	Total-pentadioxins	29.89	1.351e3	8.071e2	1.331	1.67	1.55	25.6	YES	NO	bd	bb	0.302
5	12378-PeCDD	31.50	1.769e3	1.283e3	0.995	1.38	1.55	30.3	YES	NO	bb	bb	0.571
6	123789-HxCDD	36.53	5.281e3	4.381e3	0.950	1.21	1.24	110.8	YES	NO	bb	bb	1.441
7	Total-hexadioxins	36.32	1.437e3	1.150e3	1.028	1.25	1.24	29.8	YES	NO	bb	bb	0.357
8	123678-HxCDD	36.14	7.489e3	5.923e3	1.009	1.26	1.24	159.2	YES	NO	db	db	1.890
9	123478-HxCDD	36.01	2.686e3	2.257e3	1.027	1.19	1.24	48.2	YES	NO	bd	bd	0.680
10	Total-hexadioxins	35.25	2.404e3	1.887e3	1.028	1.27	1.24	48.4	YES	NO	db	db	0.592
11	Total-hexadioxins	35.13	2.246e4	1.858e4	1.028	1.21	1.24	297.1	YES	NO	bd	bd	5.660
12	Total-hexadioxins	34.76	4.678e3	3.625e3	1.028	1.29	1.24	91.8	YES	NO	bb	bb	1.145
13	124679-HXCDD	33.99	2.006e4	1.617e4	1.125	1.24	1.24	400.9	YES	NO	bb	bb	4.553
14	OCDD	45.01	8.807e5	9.839e5	1.181	0.90	0.89	10681.7	YES	NO	bb	bb	567.484
15	1234678-HpCDD	40.26	1.057e5	1.015e5	1.068	1.04	1.05	977.0	YES	NO	bb	bb	48.846
16	1234679-HPCDD	39.21	1.646e5	1.535e5	1.211	1.07	1.05	1648.8	YES	NO	bb	bb	66.165

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.98	1.067e3	1.494e3	1.192	0.71	0.77	10.9	YES	NO	dd	dd	0.421
2	Total-tetrafurans	23.84	1.086e3	1.283e3	1.192	0.85	0.77	16.1	YES	NO	dd	dd	0.389
3	Total-tetrafurans	23.48	5.438e2	7.347e2	1.192	0.74	0.77	6.8	YES	NO	dd	dd	0.210
4	2378-TCDF	25.75	9.806e2	1.448e3	1.108	0.68	0.77	12.3	YES	NO	bd	MM	0.429
5	Total-tetrafurans	25.40	5.739e2	8.744e2	1.192	0.66	0.77	4.5	YES	NO	dd	dd	0.238
6	Total-tetrafurans	24.49	1.090e3	1.615e3	1.192	0.68	0.77	13.0	YES	NO	dd	dd	0.445
7	Total-tetrafurans	24.13	9.130e2	1.299e3	1.192	0.70	0.77	12.3	YES	NO	dd	dd	0.364
8	Total-pentafurans	30.13	3.284e3	2.173e3	1.047	1.51	1.55	33.1	YES	NO	dd	bd	0.653
9	12378-PeCDF	29.91	2.592e3	1.489e3	1.015	1.74	1.55	29.5	YES	NO	dd	bb	0.492
10	Total-pentafurans	29.55	2.204e3	1.478e3	1.047	1.49	1.55	22.9	YES	NO	dd	dd	0.441
11	Total-pentafurans	28.85	7.275e3	4.533e3	1.047	1.61	1.55	61.4	YES	NO	MM	MM	1.413
12	Total-pentafurans	28.45	1.726e3	1.270e3	1.047	1.36	1.55	22.9	YES	NO	bd	bd	0.358
13	Total-pentafurans	31.11	9.228e2	6.035e2	1.047	1.53	1.55	11.3	YES	NO	dd	dd	0.183
14	Total-pentafurans	31.00	1.030e3	7.552e2	1.047	1.36	1.55	14.0	YES	NO	bd	bd	0.214
15	Total-hexafurans	33.94	6.757e2	4.761e2	1.045	1.42	1.24	17.5	YES	NO	bb	bb	0.142
16	Total-hexafurans	33.42	1.971e4	1.710e4	1.045	1.15	1.24	467.6	YES	NO	dd	db	4.543
17	123468-HXCDF	33.21	6.224e3	5.191e3	1.087	1.20	1.24	164.5	YES	NO	bd	bd	1.262
18	123789-HxCDF	36.91	8.518e2	8.017e2	1.030	1.06	1.24	20.4	YES	NO	bb	MM	0.254
19	234678-HxCDF	35.93	4.081e3	3.751e3	1.052	1.09	1.24	77.2	YES	NO	bb	bb	0.928
20	Total-hexafurans	35.37	2.511e2	2.003e2	1.045	1.25	1.24	6.7	YES	NO	bb	bb	0.056
21	123678-HxCDF	35.02	2.264e3	1.736e3	1.037	1.30	1.24	60.6	YES	NO	db	db	0.461
22	123478-HxCDF	34.89	6.278e3	5.259e3	1.017	1.19	1.24	164.5	YES	NO	bd	bd	1.363
23	Total-hexafurans	34.73	8.592e2	7.990e2	1.045	1.08	1.24	27.1	YES	NO	bb	bb	0.205
24	Total-hexafurans	34.27	2.425e4	2.044e4	1.045	1.19	1.24	634.3	YES	NO	bb	bb	5.514
25	1234678-HpCDF	38.76	2.809e4	2.767e4	1.327	1.02	1.05	747.2	YES	NO	bd	bd	9.036
26	1234789-HpCDF	41.01	2.020e3	1.864e3	1.283	1.08	1.05	48.1	YES	NO	bb	bb	0.722
27	Total-heptafurans	39.42	5.698e4	5.584e4	1.305	1.02	1.05	1496.4	YES	NO	bd	bd	19.554
28	OCDF	45.25	4.514e4	4.968e4	1.447	0.91	0.89	756.6	YES	NO	bb	bb	23.550
29	Total-penta1	27.97	4.648e2	2.733e2		1.70	1.55	10.7	YES	NO	db	bb	0.098
30	Total-penta1	27.17	1.699e4	1.115e4		1.52	1.55	406.6	YES	NO	db	db	3.751
31	Total-tetradioxins	24.51	8.898e2	1.022e3	0.879	0.87	0.77	10.9	YES	NO	bb	bb	0.390
32	Total-tetradioxins	23.76	5.221e2	7.654e2	0.879	0.68	0.77	8.6	YES	NO	bb	bd	0.263
33	Total-tetradioxins	26.02	3.687e2	4.976e2	0.879	0.74	0.77	5.6	YES	NO	bb	bb	0.177
34	Total-pentadioxins	29.89	1.351e3	8.071e2	1.331	1.67	1.55	25.6	YES	NO	bd	bb	0.302
35	12378-PeCDD	31.50	1.769e3	1.283e3	0.995	1.38	1.55	30.3	YES	NO	bb	bb	0.571
36	123789-HxCDD	36.53	5.281e3	4.381e3	0.950	1.21	1.24	110.8	YES	NO	bb	bb	1.441
37	Total-hexadioxins	36.32	1.437e3	1.150e3	1.028	1.25	1.24	29.8	YES	NO	bb	bb	0.357

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	123678-HxCDD	36.14	7.489e3	5.923e3	1.009	1.26	1.24	159.2	YES	NO	db	db	1.890
39	123478-HxCDD	36.01	2.686e3	2.257e3	1.027	1.19	1.24	48.2	YES	NO	bd	bd	0.680
40	Total-hexadioxins	35.25	2.404e3	1.887e3	1.028	1.27	1.24	48.4	YES	NO	db	db	0.592
41	Total-hexadioxins	35.13	2.246e4	1.858e4	1.028	1.21	1.24	297.1	YES	NO	bd	bd	5.660
42	Total-hexadioxins	34.76	4.678e3	3.625e3	1.028	1.29	1.24	91.8	YES	NO	bb	bb	1.145
43	124679-HXCDD	33.99	2.006e4	1.617e4	1.125	1.24	1.24	400.9	YES	NO	bb	bb	4.553
44	OCDD	45.01	8.807e5	9.839e5	1.181	0.90	0.89	10681.7	YES	NO	bb	bb	567.484
45	1234678-HpCDD	40.26	1.057e5	1.015e5	1.068	1.04	1.05	977.0	YES	NO	bb	bb	48.846
46	1234679-HPCDD	39.21	1.646e5	1.535e5	1.211	1.07	1.05	1648.8	YES	NO	bb	bb	66.165

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PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	22.80	1.496e4					0.9	NO		bb		
2	FUNCTION1 PFK	22.63	1.139e4					1.0	NO		bb		
3	FUNCTION1 PFK	22.36	7.609e3					0.7	NO		bb		
4	FUNCTION1 PFK	22.25	2.685e4					1.6	NO		bb		
5	FUNCTION1 PFK	22.01	2.081e4					1.5	NO		bb		
6	FUNCTION1 PFK	21.62	4.112e4					2.2	NO		db		
7	FUNCTION1 PFK	21.56	5.126e4					2.6	NO		dd		
8	FUNCTION1 PFK	21.41	3.433e5					4.8	YES		bd		
9	FUNCTION1 PFK	21.24	4.040e4					2.8	NO		db		
10	FUNCTION1 PFK	21.18	3.877e4					2.5	NO		dd		
11	FUNCTION1 PFK	21.10	7.955e4					4.2	YES		bd		
12	FUNCTION1 PFK	27.53	6.888e4					2.7	NO		db		
13	FUNCTION1 PFK	27.45	2.564e4					2.0	NO		bd		
14	FUNCTION1 PFK	26.97	1.784e4					1.4	NO		bb		
15	FUNCTION1 PFK	26.56	2.308e3					0.4	NO		bb		
16	FUNCTION1 PFK	25.91	1.339e4					1.0	NO		bb		
17	FUNCTION1 PFK	25.62	7.793e3					0.8	NO		bb		
18	FUNCTION1 PFK	25.28	6.143e4					1.5	NO		bb		
19	FUNCTION1 PFK	24.94	3.427e4					1.7	NO		bb		
20	FUNCTION1 PFK	24.87	1.464e4					1.2	NO		bb		
21	FUNCTION1 PFK	24.72	1.268e4					1.0	NO		bb		
22	FUNCTION1 PFK	24.51	4.437e4					1.4	NO		bb		
23	FUNCTION1 PFK	24.23	2.106e5					3.8	YES		bb		
24	FUNCTION1 PFK	23.64	3.132e4					1.1	NO		bb		
25	FUNCTION1 PFK	23.36	9.672e3					0.9	NO		bb		
26	FUNCTION1 PFK	23.15	2.131e4					1.8	NO		bb		
27	FUNCTION1 PFK	22.89	2.555e4					1.2	NO		bb		
28	FUNCTION1 PFK	27.91	2.370e4					1.8	NO		bb		
29	FUNCTION1 PFK	27.80	3.010e4					1.2	NO		bb		
30	FUNCTION1 PFK	27.65	3.694e4					2.3	NO		bb		

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PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	32.40	5.420e5					9.7	YES		bb		0.000
2	FUNCTION2 PFK	32.14	4.110e5					9.5	YES		bb		0.000
3	FUNCTION2 PFK	29.84	2.981e6					14.3	YES		bb		0.000
4	FUNCTION2 PFK	29.35	1.958e5					12.1	YES		db		0.000
5	FUNCTION2 PFK	29.22	7.427e5					17.3	YES		bd		0.000
6	FUNCTION2 PFK	28.27	8.746e5					11.1	YES		bb		0.000

PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	37.37	3.169e6					0.0	NO		bb		0.000
2	FUNCTION3 PFK	36.65	7.456e6					32.4	YES		bb		0.000
3	FUNCTION3 PFK	33.04	5.315e5					9.4	YES		bb		0.000

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	38.01	1.427e6					64.3	YES		bd		
2	FUNCTION4 PFK	39.48	4.214e5					20.1	YES		dd		
3	FUNCTION4 PFK	39.37	3.700e5					22.9	YES		dd		
4	FUNCTION4 PFK	39.23	5.273e5					27.3	YES		dd		
5	FUNCTION4 PFK	39.13	4.236e5					29.5	YES		dd		
6	FUNCTION4 PFK	39.02	7.436e5					34.8	YES		dd		
7	FUNCTION4 PFK	38.96	2.711e5					36.3	YES		dd		
8	FUNCTION4 PFK	38.89	4.286e5					39.3	YES		dd		
9	FUNCTION4 PFK	38.84	3.053e5					41.0	YES		dd		
10	FUNCTION4 PFK	38.80	3.891e5					41.6	YES		dd		
11	FUNCTION4 PFK	38.67	8.221e5					45.9	YES		dd		
12	FUNCTION4 PFK	38.66	1.059e6					45.5	YES		dd		
13	FUNCTION4 PFK	38.50	2.717e5					48.3	YES		dd		
14	FUNCTION4 PFK	38.45	4.677e5					50.4	YES		dd		
15	FUNCTION4 PFK	38.31	1.317e6					56.3	YES		dd		
16	FUNCTION4 PFK	38.29	1.082e6					56.0	YES		dd		
17	FUNCTION4 PFK	38.10	1.141e6					63.0	YES		dd		
18	FUNCTION4 PFK	41.30	2.109e4					2.1	NO		bb		
19	FUNCTION4 PFK	41.16	3.502e4					3.2	YES		db		
20	FUNCTION4 PFK	41.13	1.957e4					3.2	YES		dd		
21	FUNCTION4 PFK	41.08	2.510e4					2.5	NO		dd		
22	FUNCTION4 PFK	40.93	2.207e4					1.3	NO		bd		
23	FUNCTION4 PFK	40.79	4.906e3					1.0	NO		bb		
24	FUNCTION4 PFK	40.66	2.268e3					0.7	NO		bb		
25	FUNCTION4 PFK	40.53	9.645e3					1.5	NO		bb		
26	FUNCTION4 PFK	40.40	7.792e3					1.5	NO		db		
27	FUNCTION4 PFK	40.36	1.520e4					2.4	NO		bd		
28	FUNCTION4 PFK	40.10	1.315e4					2.0	NO		db		
29	FUNCTION4 PFK	40.03	3.556e4					3.6	YES		dd		
30	FUNCTION4 PFK	39.93	6.834e4					6.1	YES		dd		
31	FUNCTION4 PFK	39.85	1.488e5					9.1	YES		dd		
32	FUNCTION4 PFK	39.64	3.995e5					16.1	YES		dd		
33	FUNCTION4 PFK	39.59	1.506e5					16.4	YES		dd		
34	FUNCTION4 PFK	42.81	1.797e4					1.2	NO		db		
35	FUNCTION4 PFK	42.77	2.634e3					0.7	NO		bd		
36	FUNCTION4 PFK	42.64	1.729e3					0.4	NO		bb		
37	FUNCTION4 PFK	42.49	4.038e3					0.9	NO		bb		

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION4 PFK	42.33	7.539e3					1.6	NO		db		
39	FUNCTION4 PFK	42.26	2.178e4					1.7	NO		dd		
40	FUNCTION4 PFK	42.19	8.930e3					2.2	NO		bd		
41	FUNCTION4 PFK	42.08	6.490e4					3.4	YES		bb		
42	FUNCTION4 PFK	41.83	1.161e3					0.6	NO		bb		
43	FUNCTION4 PFK	41.70	4.393e4					2.7	NO		db		
44	FUNCTION4 PFK	41.56	1.939e4					2.0	NO		dd		
45	FUNCTION4 PFK	41.49	1.386e4					2.3	NO		dd		
46	FUNCTION4 PFK	41.42	3.360e4					2.1	NO		bd		

PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	43.15	5.889e3					1.8	NO		bb		
2	FUNCTION5 PFK	43.09	9.232e2					0.8	NO		bb		
3	FUNCTION5 PFK	45.56	2.259e4					2.8	NO		bb		
4	FUNCTION5 PFK	45.13	2.319e3					1.1	NO		bb		
5	FUNCTION5 PFK	44.53	6.496e3					1.2	NO		bb		
6	FUNCTION5 PFK	44.18	5.441e3					1.9	NO		bb		
7	FUNCTION5 PFK	44.14	1.386e3					0.8	NO		bb		

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	26.76	1.608e2					3.9	YES		bb		0.000
2	FUNCTION1 HXCD...	25.88	5.575e2					12.8	YES		bb		0.000
3	FUNCTION1 HXCD...	23.69	1.325e2					3.6	YES		db		0.000
4	FUNCTION1 HXCD...	23.57	1.197e2					3.3	YES		bd		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	23.31	3.029e2					4.8	YES		bb		0.000
2	FUNCTION1 HPCD...	22.01	1.809e3					55.0	YES		bb		0.000

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ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	32.18	1.215e2					4.5	YES		bb		0.000
2	FUNCTION2 HPCD...	28.91	3.320e2					5.3	YES		bb		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	36.52	1.812e2					4.1	YES		bb		0.000
2	FUNCTION3 OCDPE	36.32	7.046e1					1.7	NO		bb		0.000
3	FUNCTION3 OCDPE	36.12	1.007e2					2.9	NO		bb		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	42.38	2.715e2					6.4	YES		bb		0.000
2	FUNCTION4 NCDPE	38.39	5.230e3					140.9	YES		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
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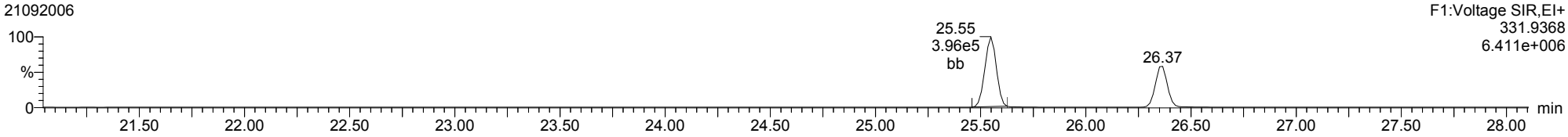
13C-1234-TCDD



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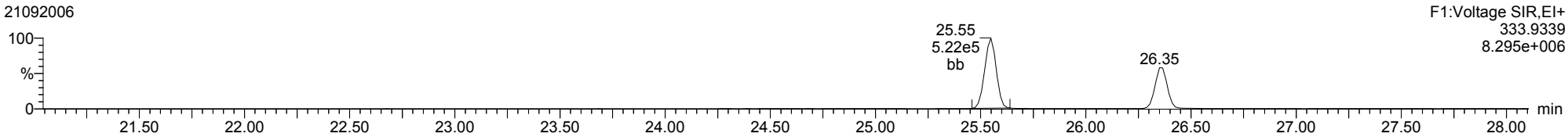
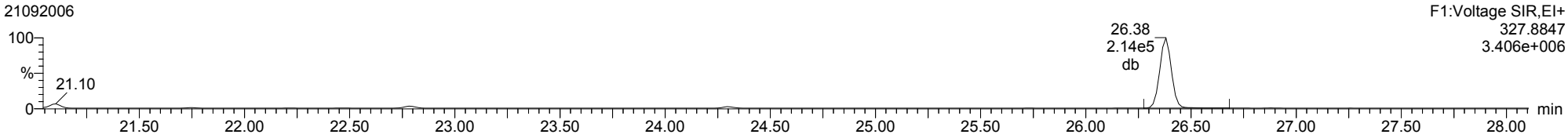


37CL-2378-TCDD



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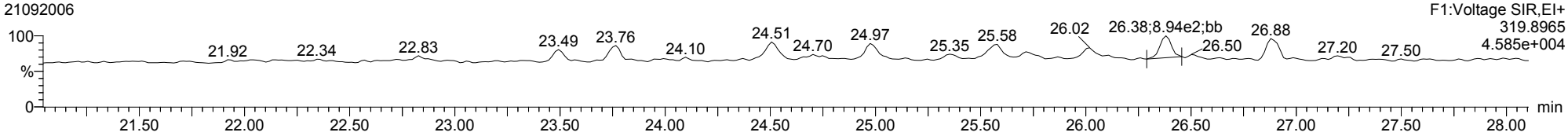
2378-TCDD



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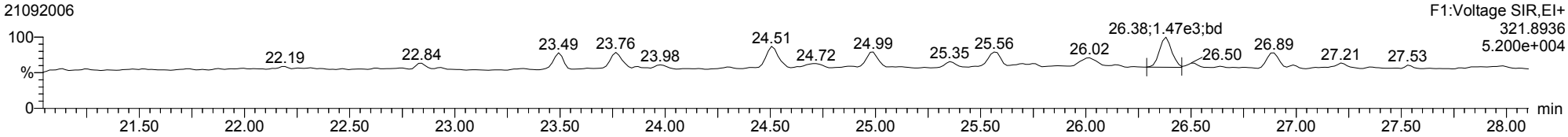

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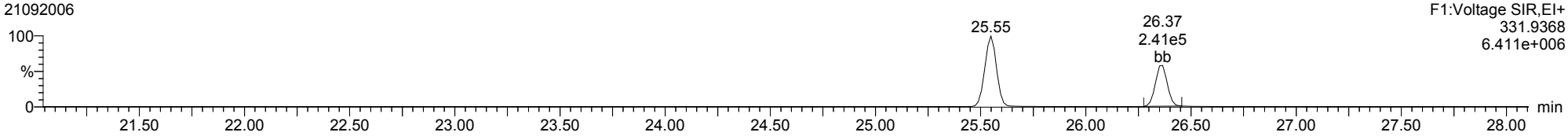

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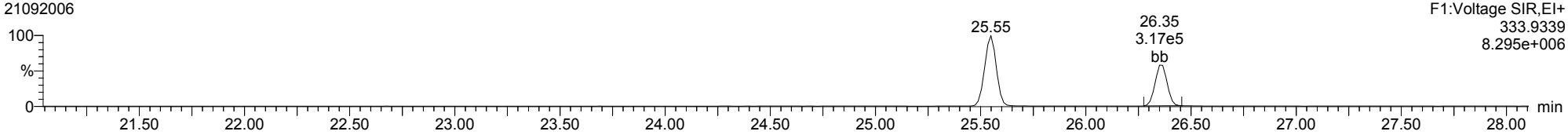
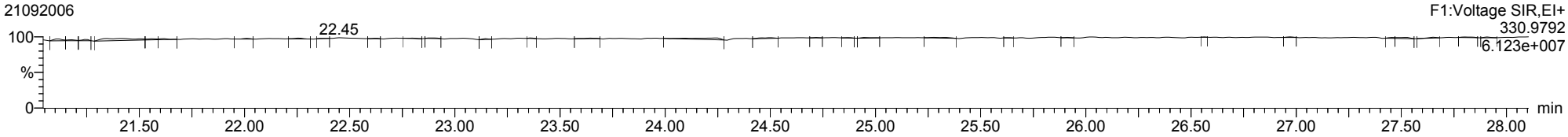


FUNCTION1 PFK



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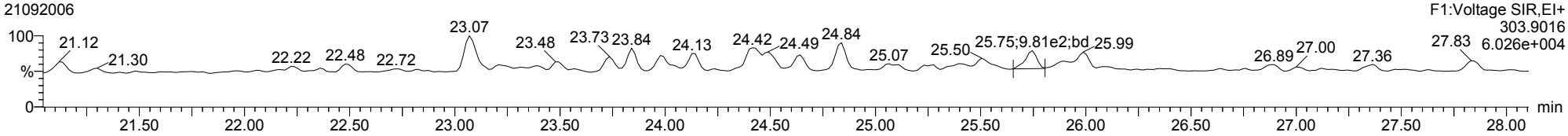
2378-TCDF



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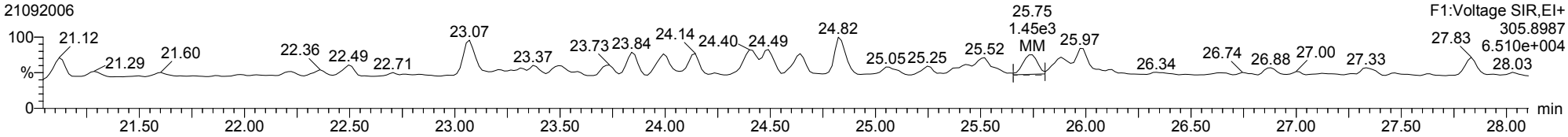

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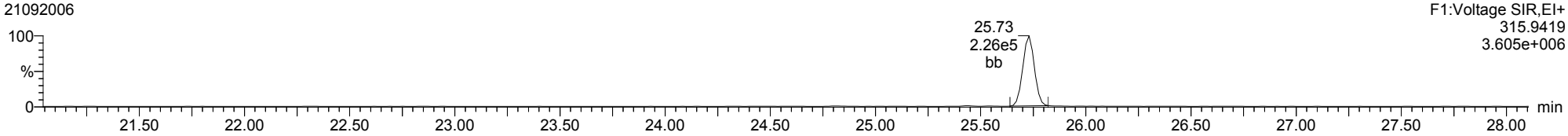

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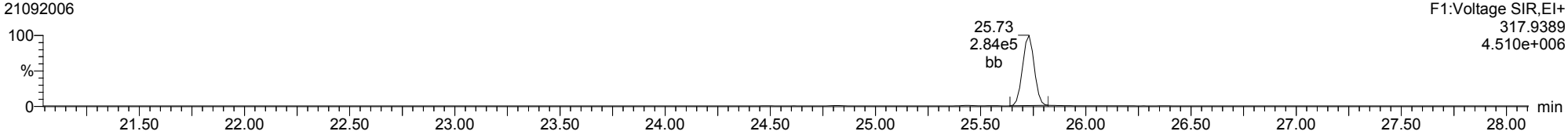

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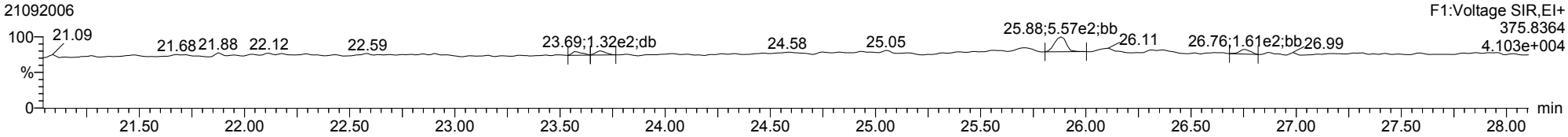

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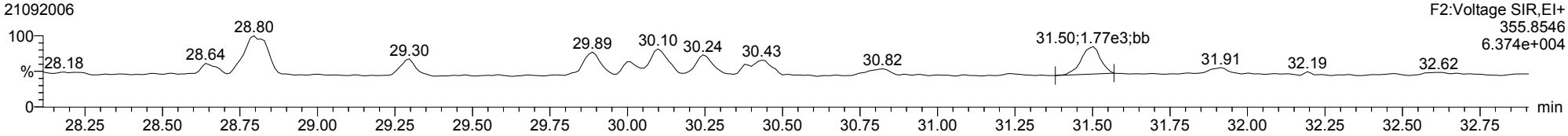
12378-PeCDD



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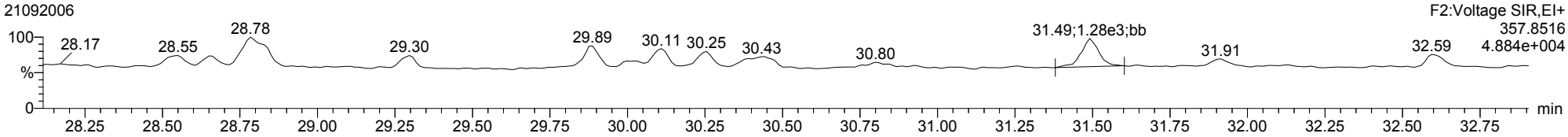

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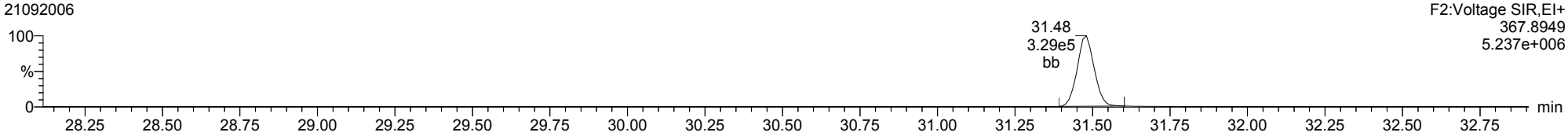

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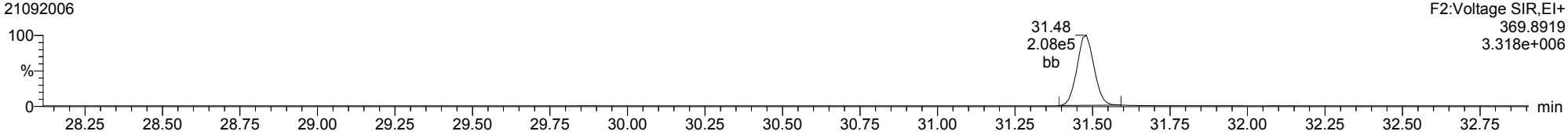

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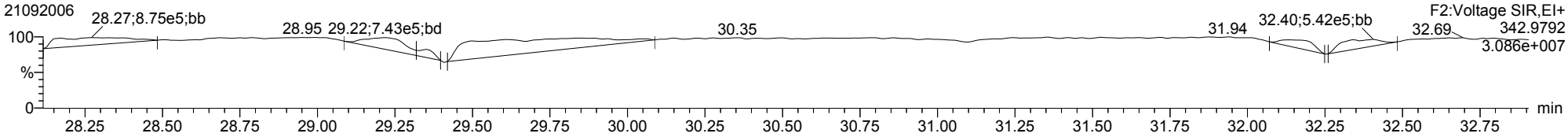

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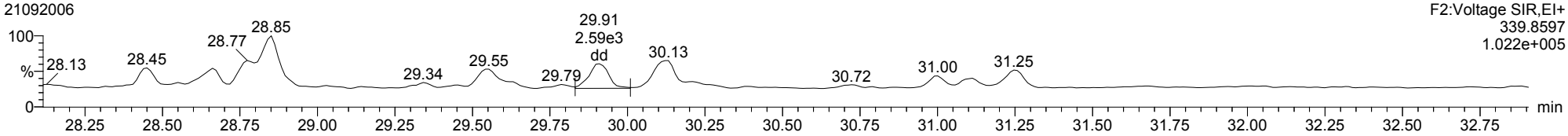

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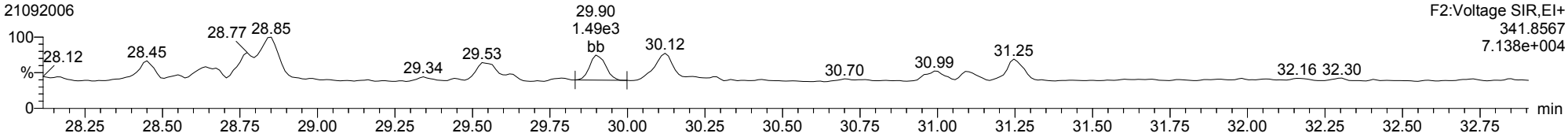

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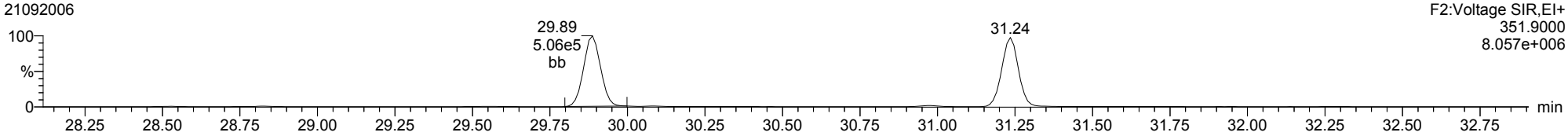

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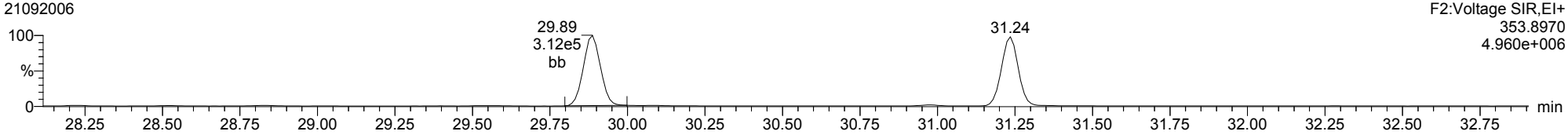

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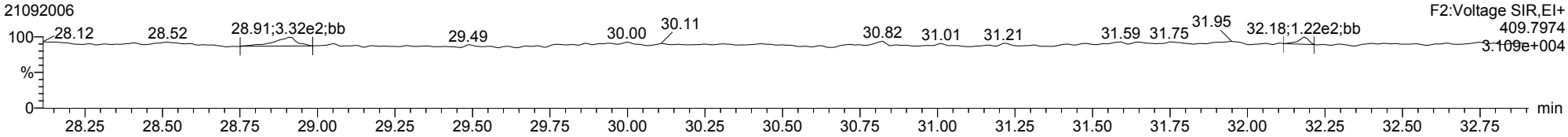

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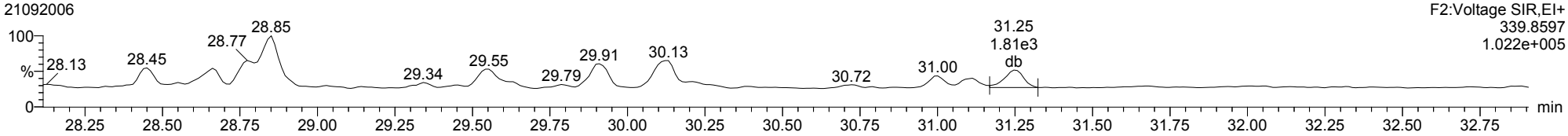

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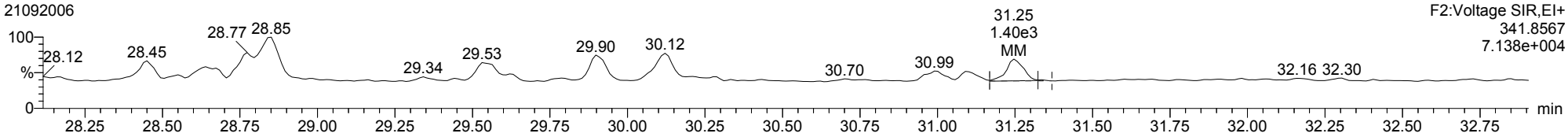

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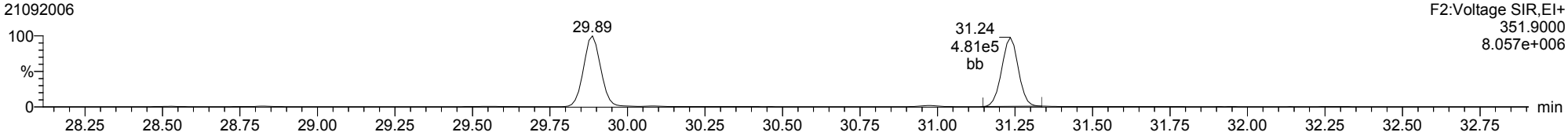

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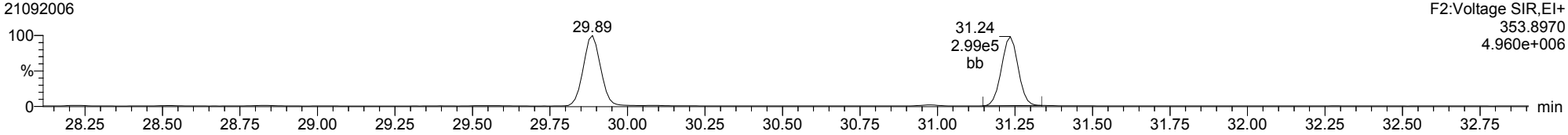

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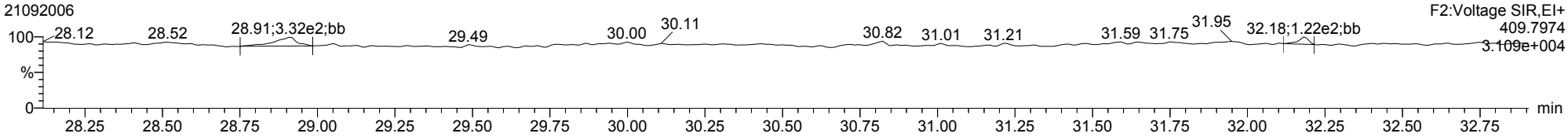

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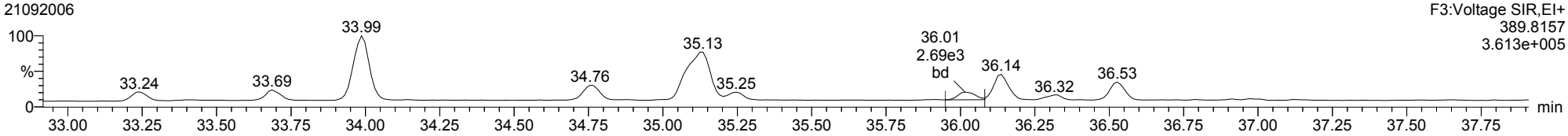

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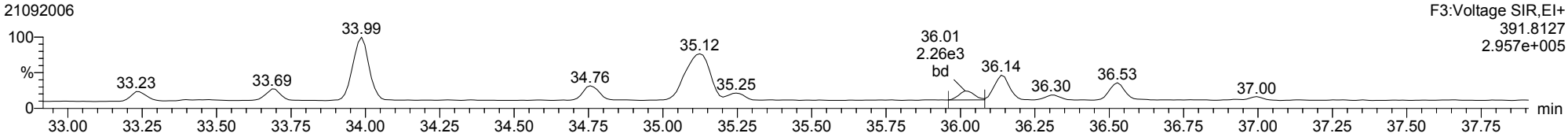

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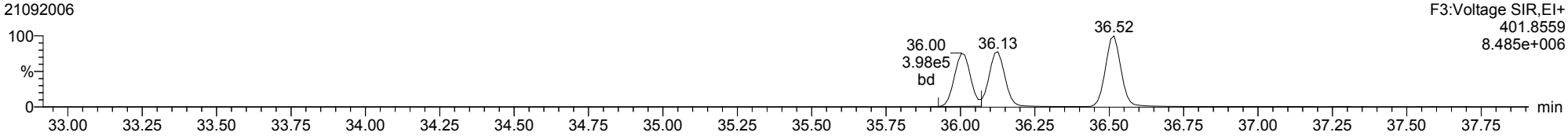

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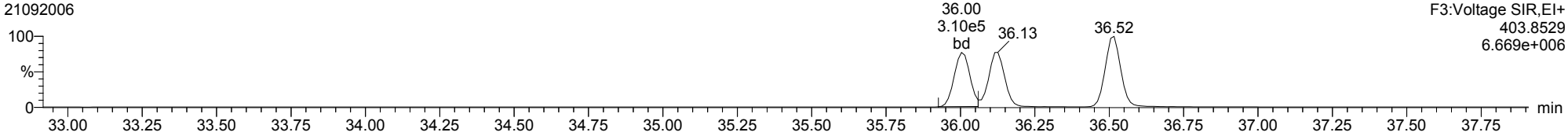

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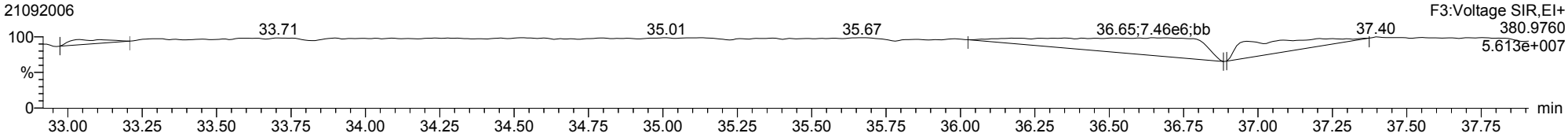

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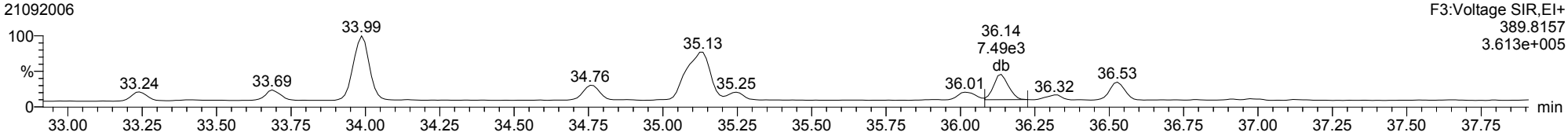

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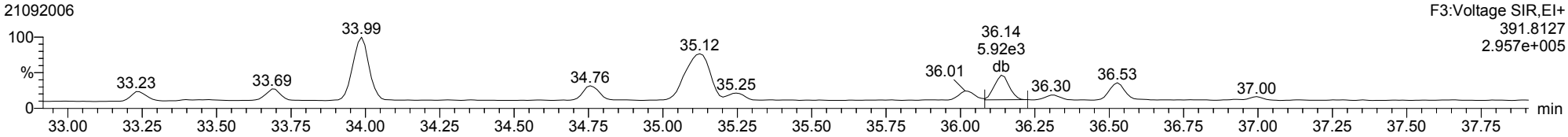

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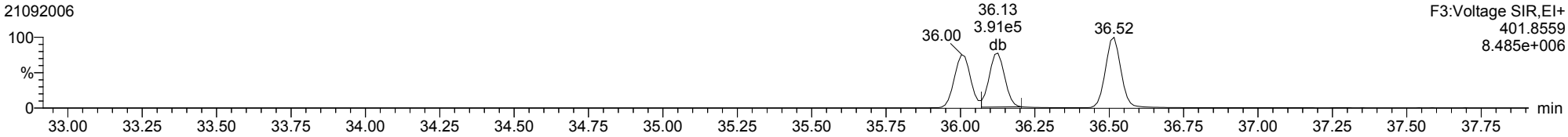

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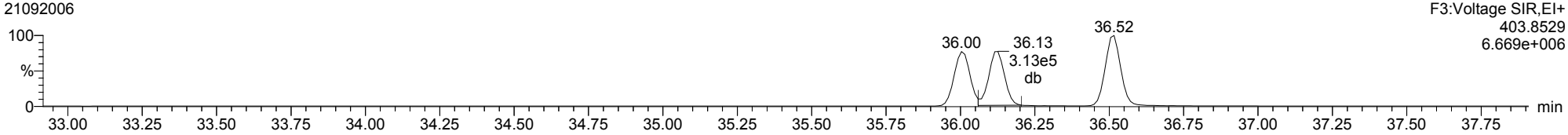

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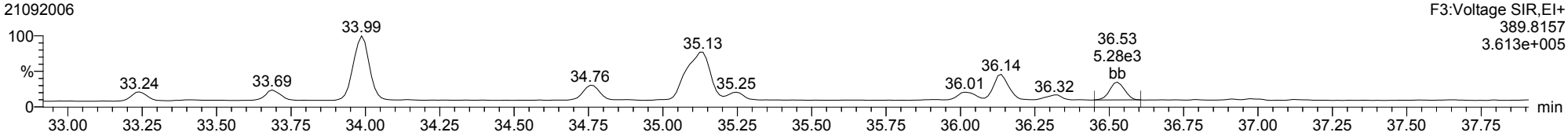

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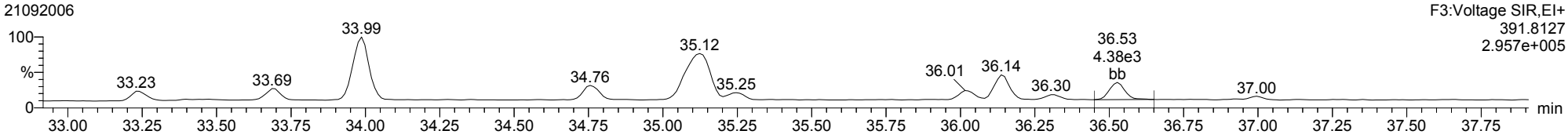

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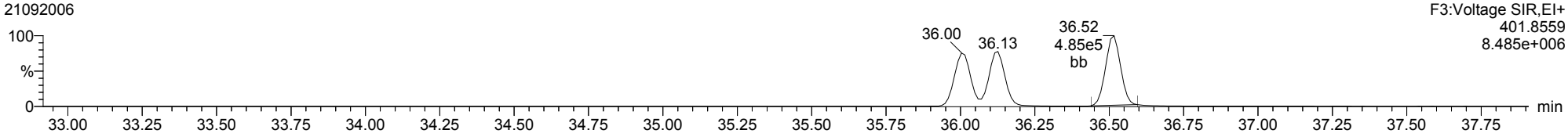

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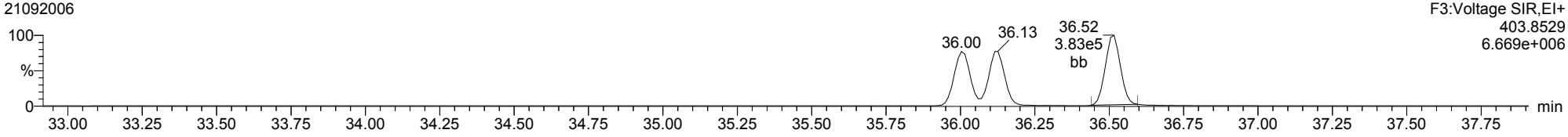

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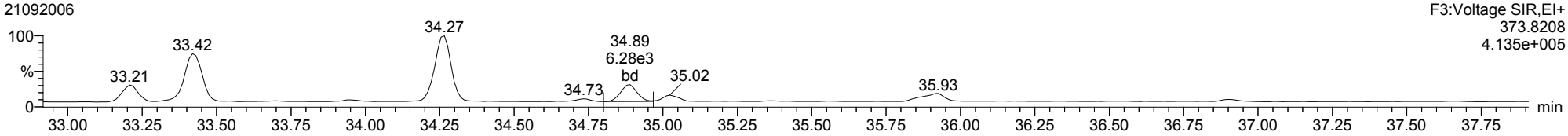

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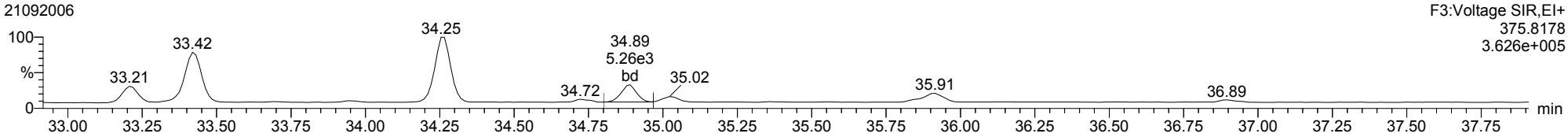

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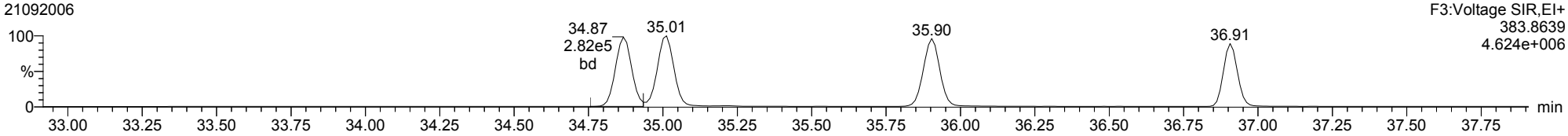

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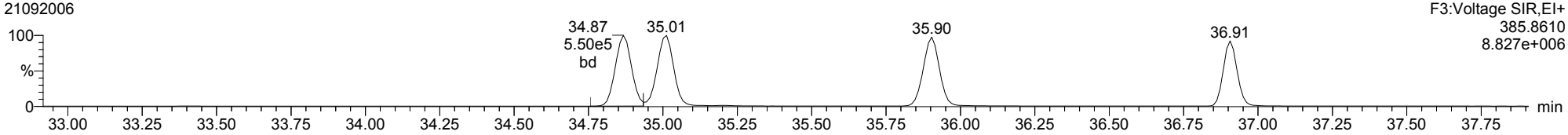

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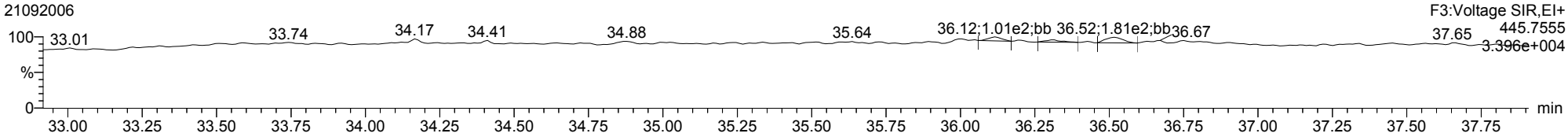

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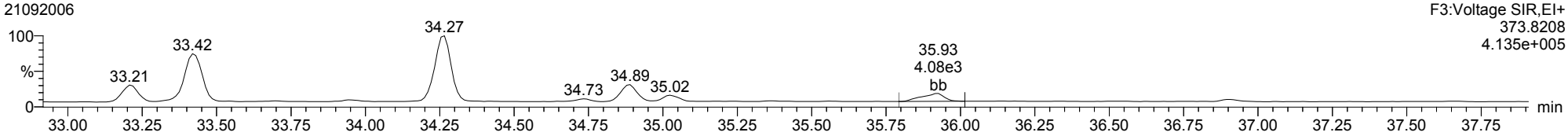

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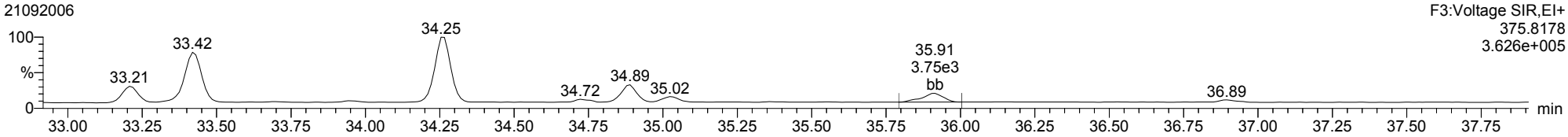

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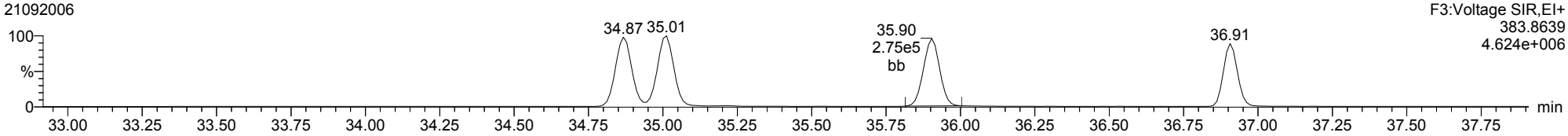

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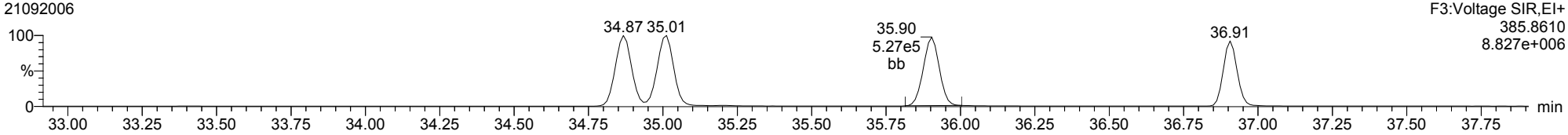

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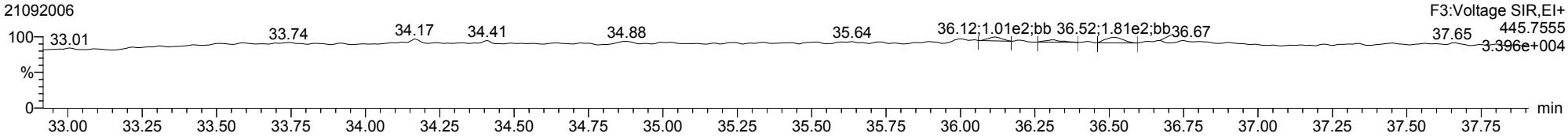

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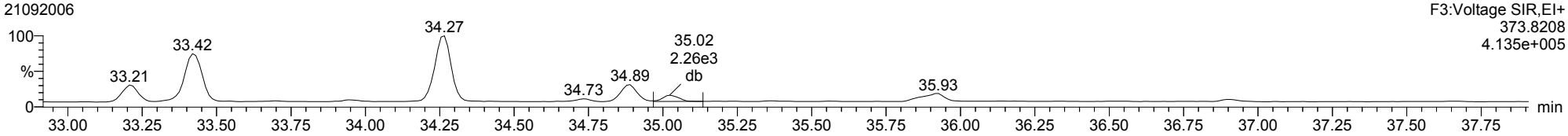

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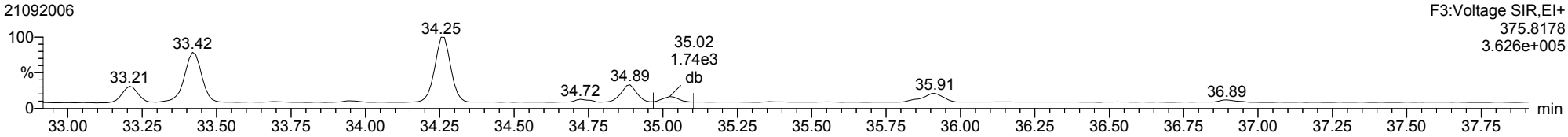

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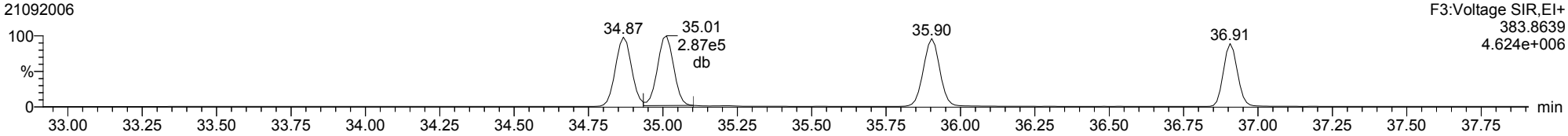

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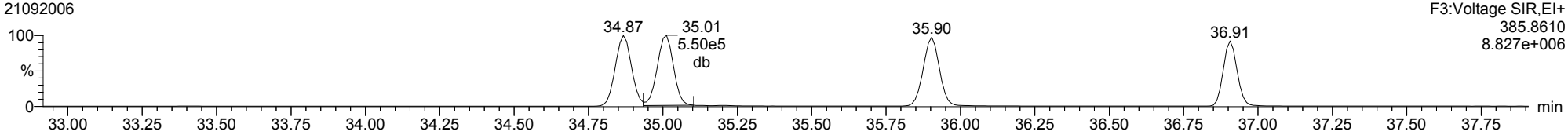

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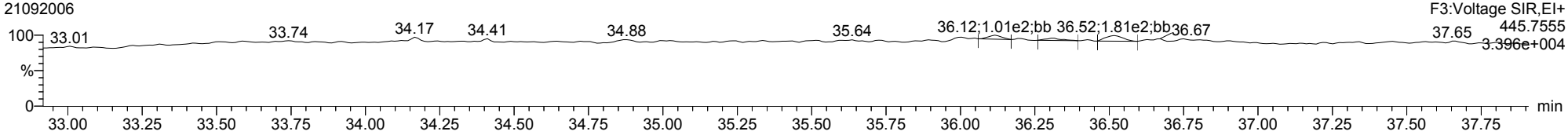

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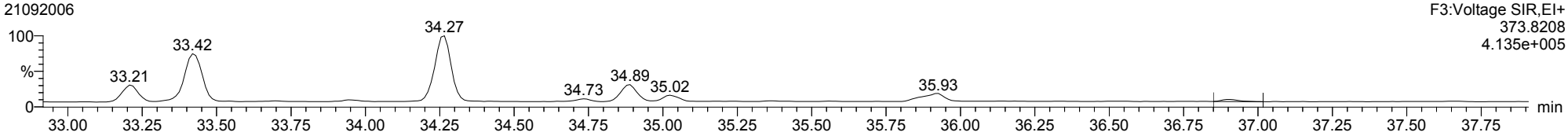

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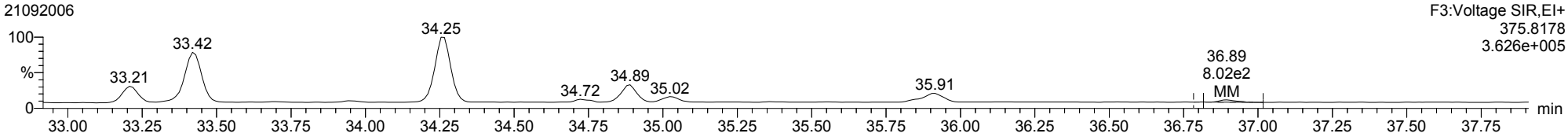

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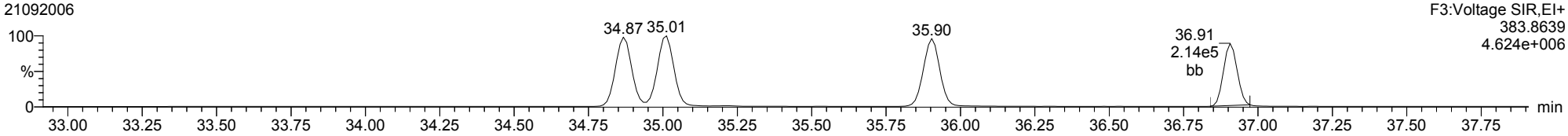

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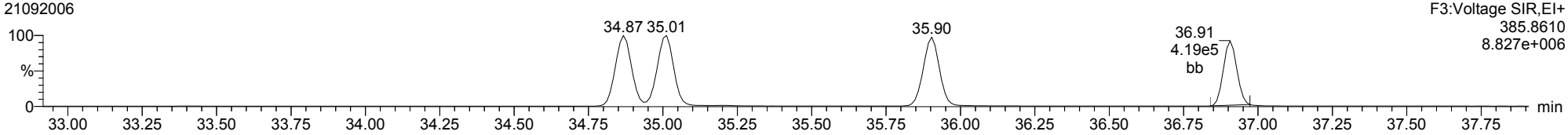

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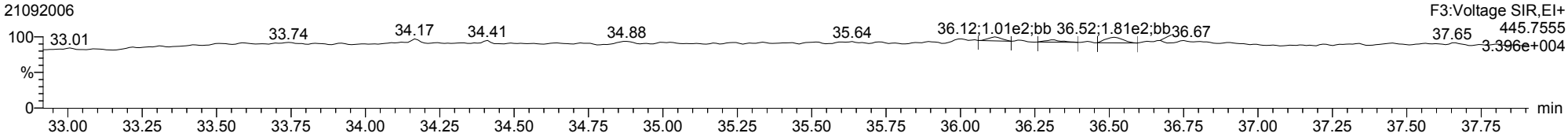

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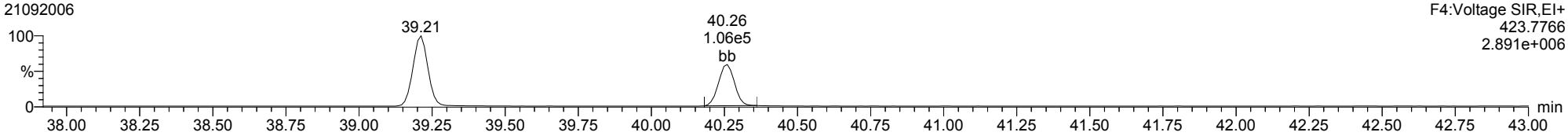

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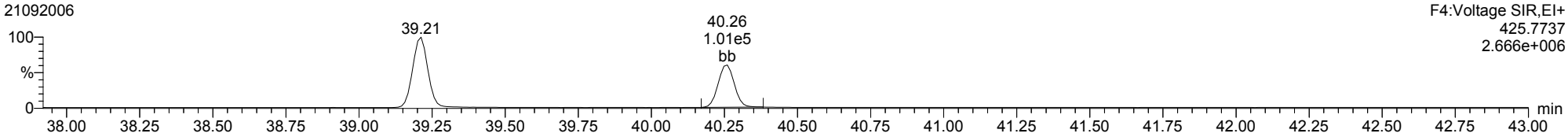

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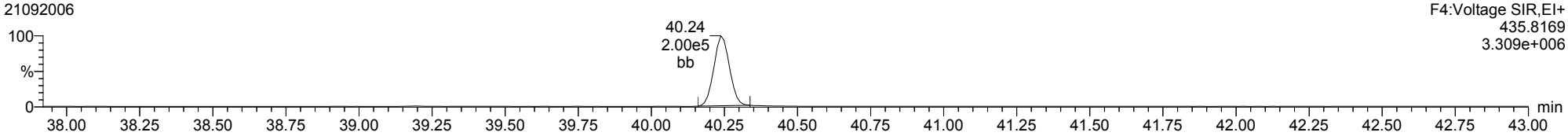

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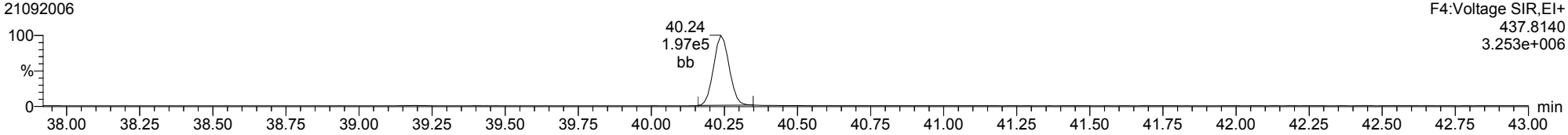
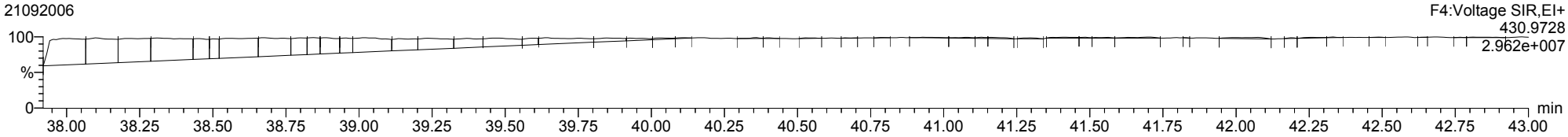
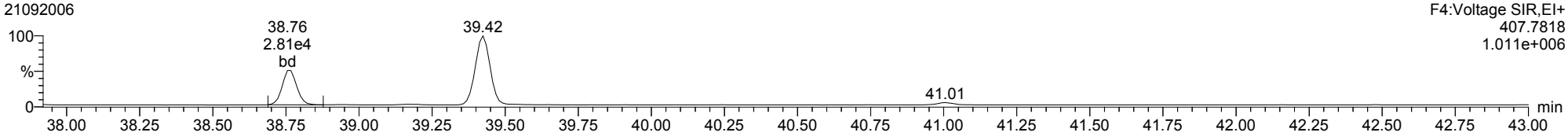


FUNCTION4 PFK



ID: BJH0152-SRM1, Name: 21092006, Date: 20-Sep-2021, Time: 20:18:17, Conditions: AUTOSPEC01, User: pk

1234678-HpCDF



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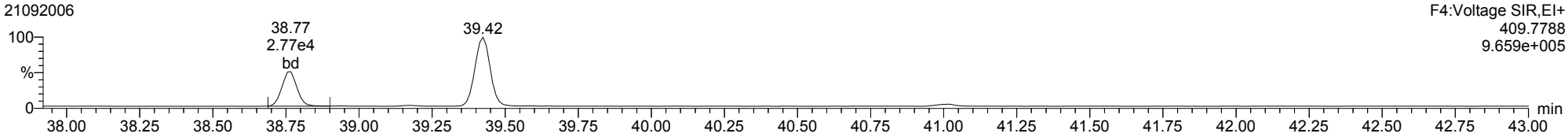

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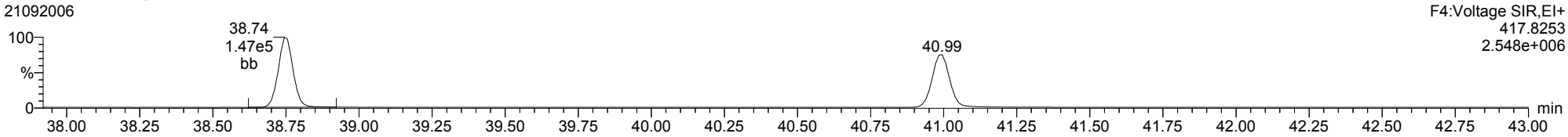

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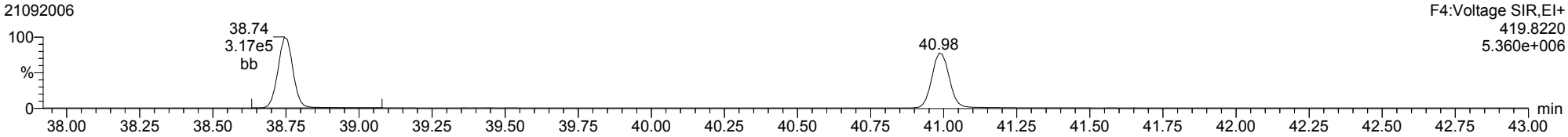
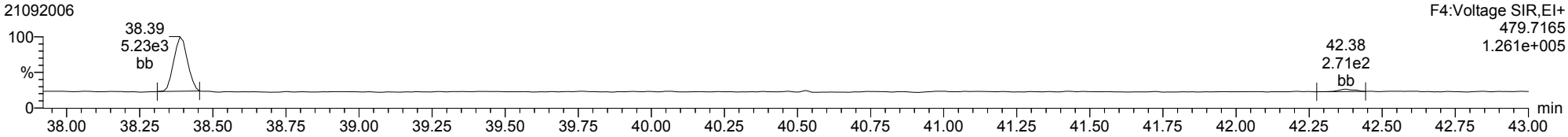
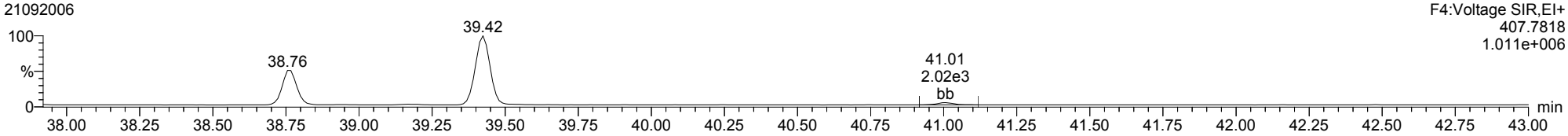


FUNCTION4 NCDPE

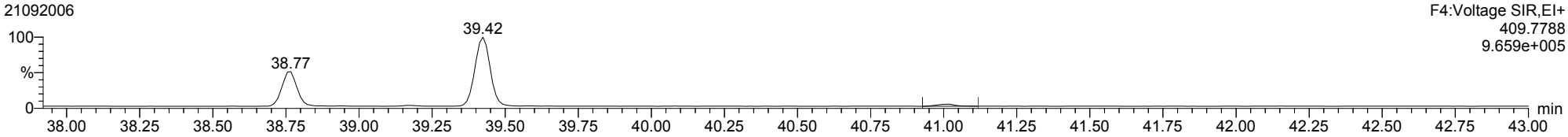


ID: BJH0152-SRM1, Name: 21092006, Date: 20-Sep-2021, Time: 20:18:17, Conditions: AUTOSPEC01, User: pk

1234789-HpCDF



1234789-HpCDF



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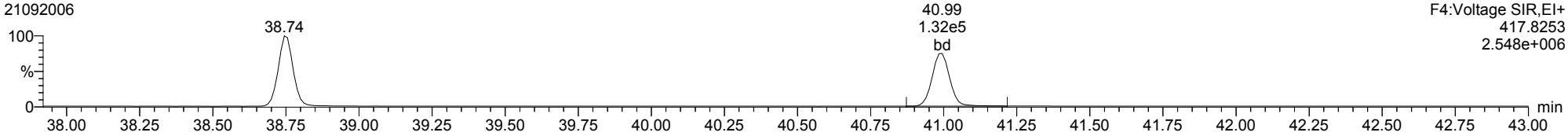

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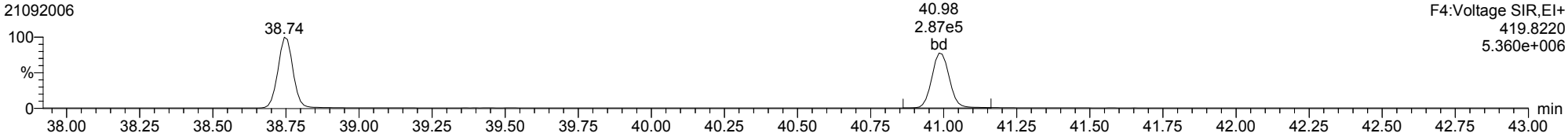
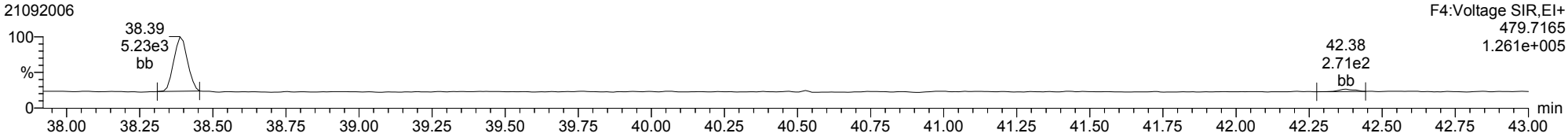
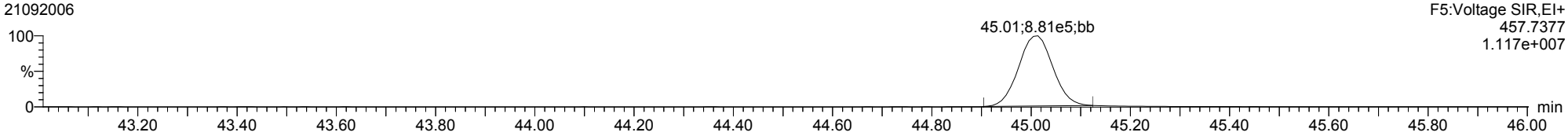


FUNCTION4 NCDPE

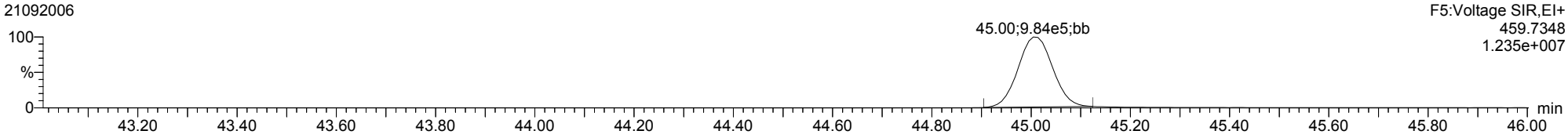


ID: BJH0152-SRM1, Name: 21092006, Date: 20-Sep-2021, Time: 20:18:17, Conditions: AUTOSPEC01, User: pk

OCDD



OCDD



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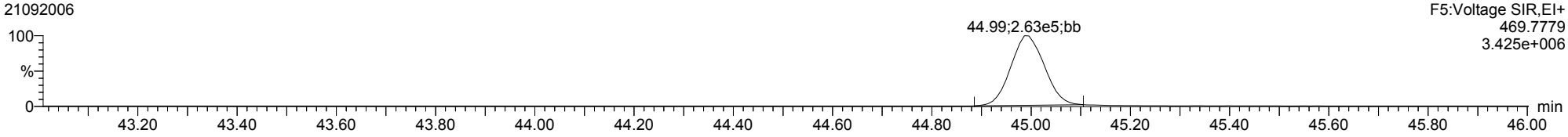

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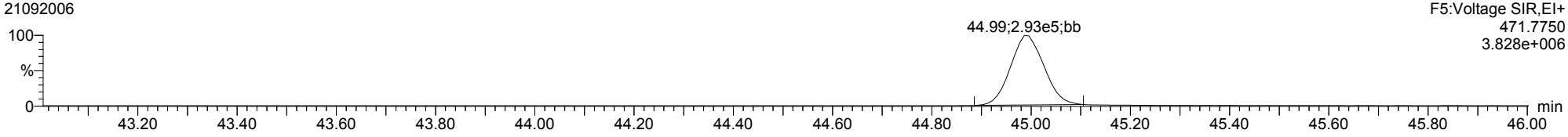
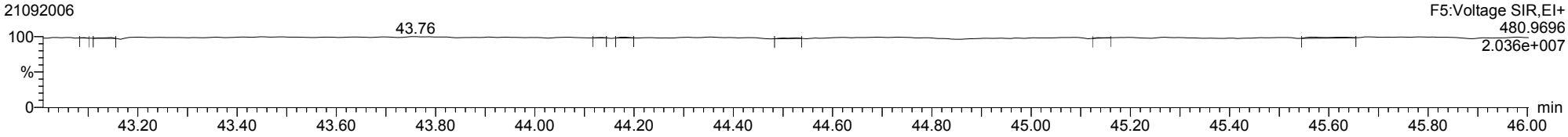
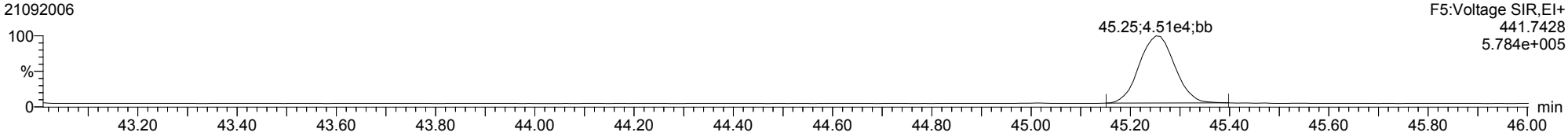


FUNCTION5 PFK

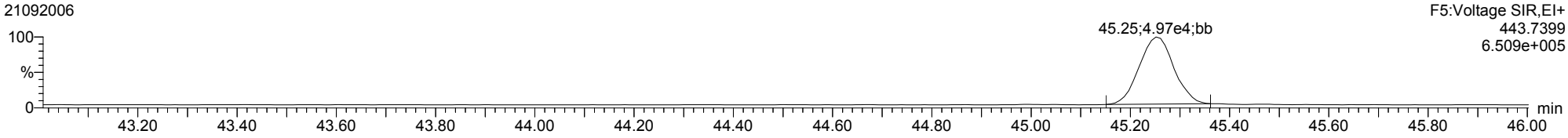


ID: BJH0152-SRM1, Name: 21092006, Date: 20-Sep-2021, Time: 20:18:17, Conditions: AUTOSPEC01, User: pk

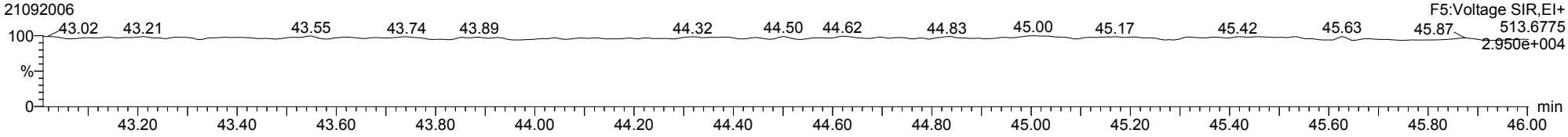
OCDF



OCDF

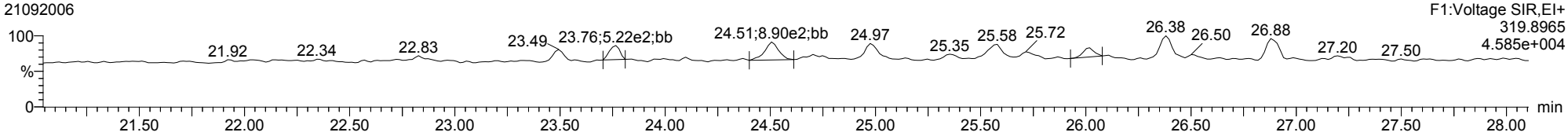


FUNCTION5 DCDPE

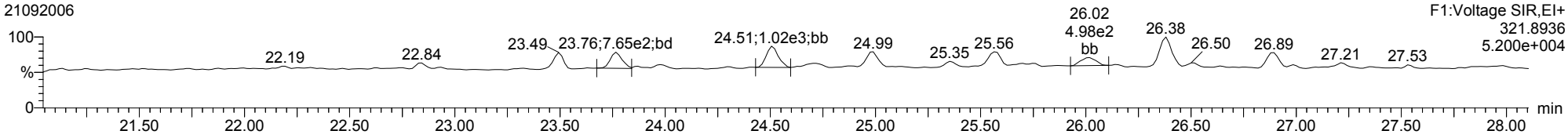


ID: BJH0152-SRM1, Name: 21092006, Date: 20-Sep-2021, Time: 20:18:17, Conditions: AUTOSPEC01, User: pk

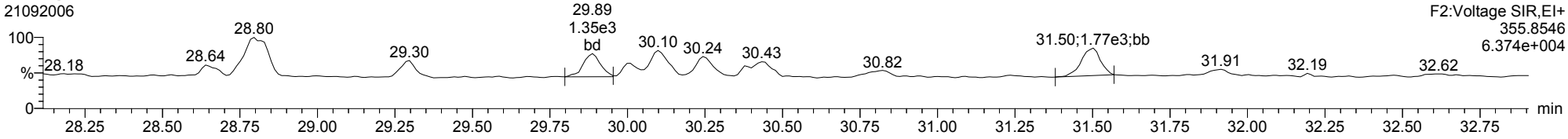
Total-tetradioxins



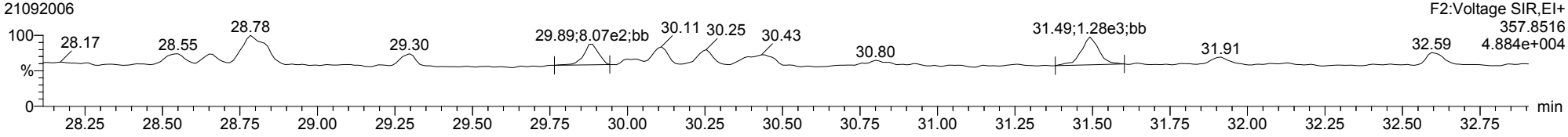
Total-tetradioxins



Total-pentadioxins



Total-pentadioxins



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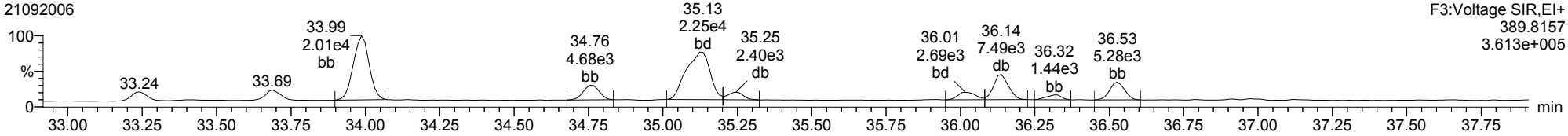
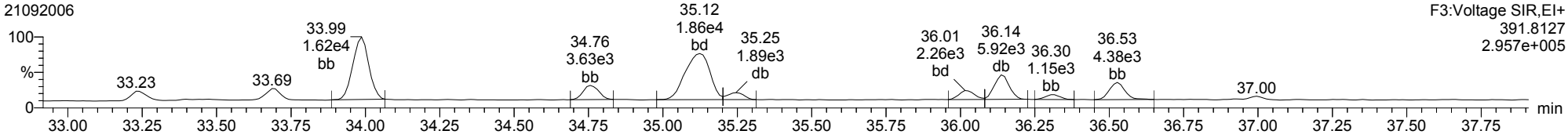
Last Altered: Tuesday, September 21, 2021 10:30:31 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 11:09:58 Pacific Daylight Time

ID: BJH0152-SRM1, Name: 21092006, Date: 20-Sep-2021, Time: 20:18:17, Conditions: AUTOSPEC01, User: pk

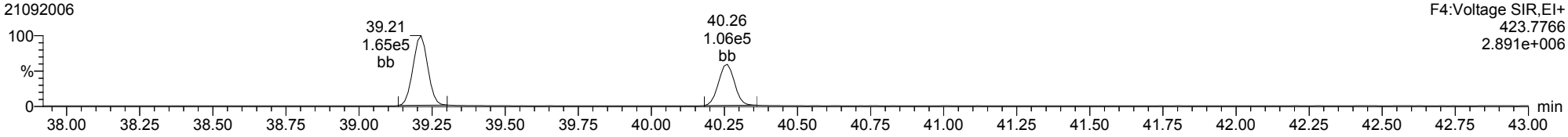
Total-hexadioxins



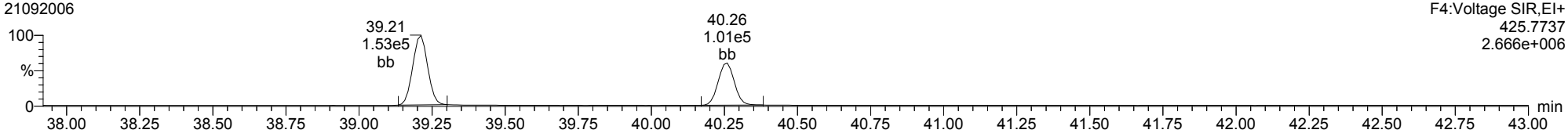
Total-hexadioxins



Total-heptadioxins

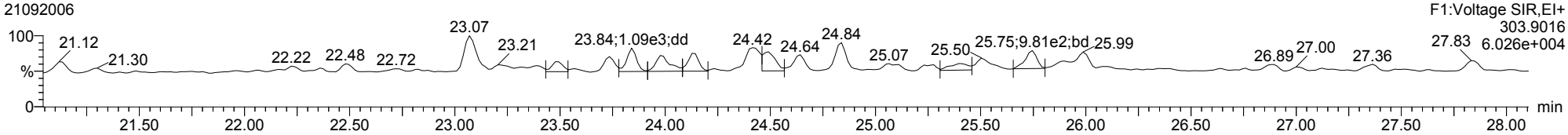


Total-heptadioxins

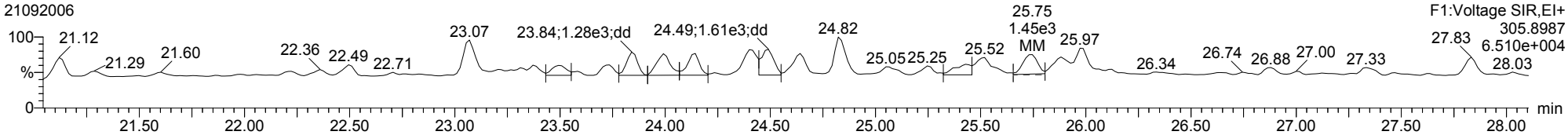


ID: BJH0152-SRM1, Name: 21092006, Date: 20-Sep-2021, Time: 20:18:17, Conditions: AUTOSPEC01, User: pk

Total-tetrafurans



Total-tetrafurans



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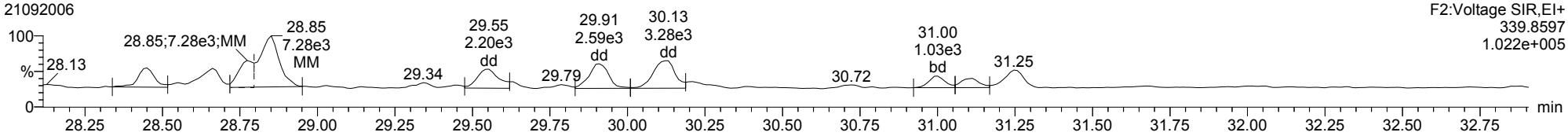
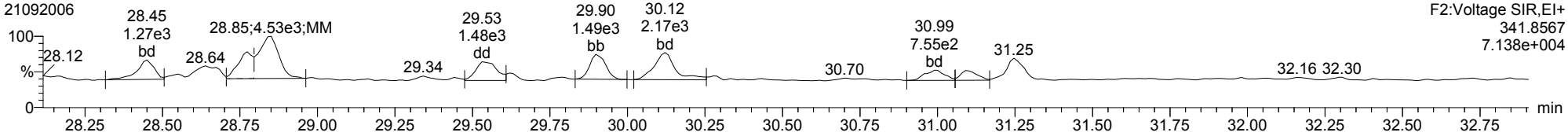


Total-pentafurans



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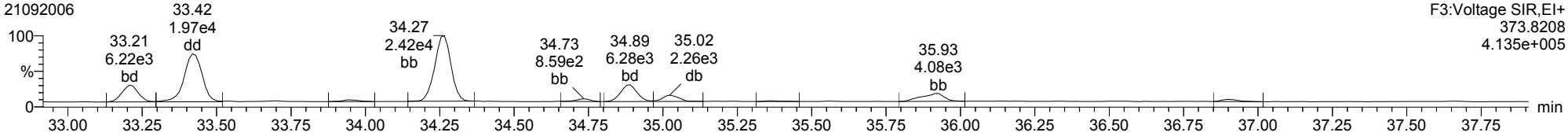
ID: BJH0152-SRM1, Name: 21092006, Date: 20-Sep-2021, Time: 20:18:17, Conditions: AUTOSPEC01, User: pk

Total-hexafurans



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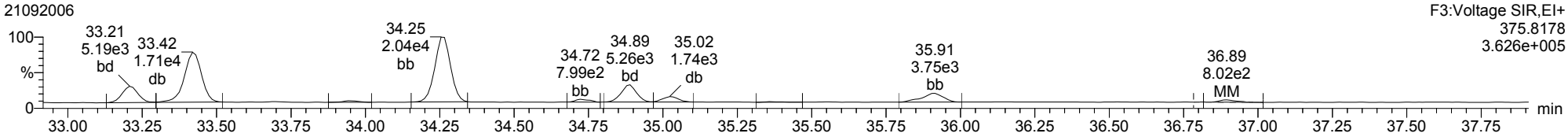

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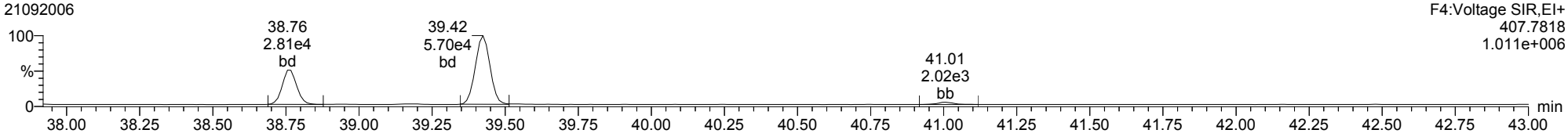
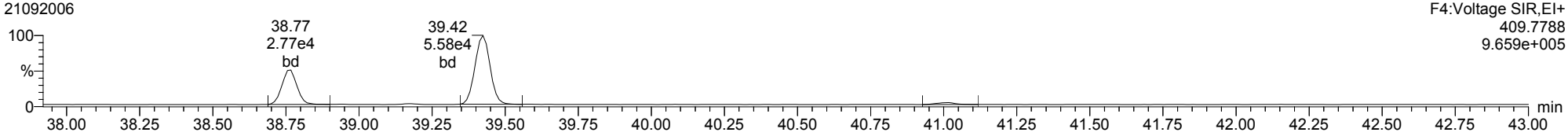


Total-heptafurans



Analytical Resources, Incorporated
Analytical Chemists and Consultants

INITIAL CALIBRATION DATA
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Calibration:	EH00030	Instrument:	AUTOSPEC01
Calibration Date:	08/11/2021	Column (1):	RTX-Dioxin2

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
		RRF		RRF		RRF		RRF		RRF		RRF
2,3,7,8-TCDF			0.5	1.177779	2	1.089564	10	1.083206	40	1.09573	200	1.091684
2,3,7,8-TCDD			0.5	0.9055873	2	0.9678062	10	0.9085186	40	0.8960008	200	0.9235243
1,2,3,7,8-PeCDF	0.5	1.055376	2.5	0.9749948	10	0.9890582	50	1.04064	200	1.01544	1000	1.013695
2,3,4,7,8-PeCDF	0.5	1.154709	2.5	1.162487	10	1.08879	50	1.108527	200	1.12263	1000	1.116149
1,2,3,7,8-PeCDD	0.5	1.042847	2.5	0.9347965	10	1.000426	50	1.023433	200	0.967595	1000	1.00284
1,2,3,4,7,8-HxCDF	0.5	0.9510236	2.5	1.043616	10	1.027461	50	1.004481	200	1.030496	1000	1.044283
1,2,3,6,7,8-HxCDF	0.5	1.146121	2.5	1.02211	10	1.074838	50	0.9512592	200	1.003115	1000	1.02354
2,3,4,6,7,8-HxCDF	0.5	1.127526	2.5	1.070857	10	1.079018	50	1.043215	200	1.009624	1000	0.9845533
1,2,3,7,8,9-HxCDF	0.5	1.098409	2.5	1.018068	10	1.023691	50	1.015326	200	1.012664	1000	1.012763
1,2,3,4,7,8-HxCDD	0.5	1.061437	2.5	1.066813	10	1.04129	50	0.9862893	200	0.988471	1000	1.019875
1,2,3,6,7,8-HxCDD	0.5	0.9987812	2.5	1.00345	10	1.014563	50	1.005616	200	1.025933	1000	1.005535
1,2,3,7,8,9-HxCDD	0.5	0.9340398	2.5	0.9232118	10	0.9937847	50	0.9399502	200	0.9446474	1000	0.9672851
1,2,3,4,6,7,8-HpCDF	0.5	1.389904	2.5	1.344079	10	1.329355	50	1.296772	200	1.274981	1000	1.329007
1,2,3,4,7,8,9-HpCDF	0.5	1.296099	2.5	1.298231	10	1.306049	50	1.250104	200	1.264967	1000	1.284581
1,2,3,4,6,7,8-HpCDD	0.5	1.188982	2.5	0.9715609	10	1.075415	50	1.051009	200	1.0446	1000	1.076963
OCDF	1	1.386229	5	1.321192	20	1.473428	100	1.440564	400	1.519487	2000	1.540503
OCDD			5	1.230403	20	1.209327	100	1.133227	400	1.156307	2000	1.174851
13C12-2,3,7,8-TCDF	100	1.368644	100	1.423872	100	1.423929	100	1.432983	100	1.427899	100	1.482172
13C12-2,3,7,8-TCDD	100	1.085201	100	1.102248	100	1.115748	100	1.11594	100	1.126097	100	1.153713
13C12-1,2,3,7,8-PeCDF	100	1.199089	100	1.277562	100	1.315098	100	1.301019	100	1.280476	100	1.410636
13C12-2,3,4,7,8-PeCDF	100	1.157138	100	1.217571	100	1.208288	100	1.25174	100	1.225075	100	1.35907
13C12-1,2,3,7,8-PeCDD	100	0.6771591	100	0.7210236	100	0.7142954	100	0.7228749	100	0.7511038	100	0.805443
13C12-1,2,3,4,7,8-HxCDF	100	1.286327	100	1.201751	100	1.230613	100	1.269148	100	1.245045	100	1.221854
13C12-1,2,3,6,7,8-HxCDF	100	1.339141	100	1.30779	100	1.316908	100	1.430696	100	1.354788	100	1.311536
13C12-2,3,4,6,7,8-HxCDF	100	1.24279	100	1.168157	100	1.194712	100	1.212905	100	1.242651	100	1.227916
13C12-1,2,3,7,8,9-HxCDF	100	1.031792	100	0.9827749	100	0.9825353	100	1.01982	100	0.9970797	100	1.03182
13C12-1,2,3,4,7,8-HxCDD	100	0.9931736	100	0.9197633	100	0.9354684	100	0.9847809	100	0.9652949	100	0.9604585
13C12-1,2,3,6,7,8-HxCDD	100	1.065671	100	1.027995	100	1.028764	100	1.057951	100	1.039041	100	1.028891

Analytical Resources, Incorporated
Analytical Chemists and Consultants

INITIAL CALIBRATION DATA
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Calibration:	EH00030	Instrument:	AUTOSPEC01
Calibration Date:	08/11/2021	Column (1):	RTX-Dioxin2

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
		RRF		RRF		RRF		RRF		RRF		RRF
13C12-1,2,3,4,6,7,8-HpCDF	100	0.9372866	100	0.9086205	100	0.9102718	100	0.922368	100	0.9442818	100	0.9359936
13C12-1,2,3,4,7,8,9-HpCDF	100	0.7416153	100	0.7182342	100	0.7567011	100	0.7658258	100	0.7723607	100	0.7927589
13C12-1,2,3,4,6,7,8-HpCDD	100	0.6435664	100	0.6169459	100	0.6151049	100	0.6260609	100	0.6432814	100	0.6497259
13C12-OCDD	200	0.4894078	200	0.4833068	200	0.4662427	200	0.5014182	200	0.5191023	200	0.5629814
37Cl4-2,3,7,8-TCDD	0.1	1.029849	0.5	1.178508	2	1.088624	10	1.009798	40	1.061277	200	1.133499
13C12-1,2,3,4-TCDD	100	1	100	1	100	1	100	1	100	1	100	1
13C12-1,2,3,7,8,9-HxCDD	100	1	100	1	100	1	100	1	100	1	100	1

Analytical Resources, Incorporated
Analytical Chemists and Consultants

INITIAL CALIBRATION DATA
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Calibration:	EH00030	Instrument:	AUTOSPEC01
Calibration Date:	08/11/2021	Column (1):	RTX-Dioxin2

COMPOUND	Mean RRF	RRF RSD	Linear COD	Quad COD	Limit Type & Limit	Q
2,3,7,8-TCDF	1.107593	3.6			RSD ()	
2,3,7,8-TCDD	0.9202875	3.1			RSD ()	
1,2,3,7,8-PeCDF	1.014867	3.0			RSD ()	
2,3,4,7,8-PeCDF	1.125549	2.5			RSD ()	
1,2,3,7,8-PeCDD	0.9953229	3.9			RSD ()	
1,2,3,4,7,8-HxCDF	1.016893	3.5			RSD ()	
1,2,3,6,7,8-HxCDF	1.036831	6.4			RSD ()	
2,3,4,6,7,8-HxCDF	1.052466	4.9			RSD ()	
1,2,3,7,8,9-HxCDF	1.030154	3.3			RSD ()	
1,2,3,4,7,8-HxCDD	1.027363	3.4			RSD ()	
1,2,3,6,7,8-HxCDD	1.00898	1.0			RSD ()	
1,2,3,7,8,9-HxCDD	0.9504865	2.7			RSD ()	
1,2,3,4,6,7,8-HpCDF	1.32735	3.0			RSD ()	
1,2,3,4,7,8,9-HpCDF	1.283338	1.7			RSD ()	
1,2,3,4,6,7,8-HpCDD	1.068088	6.6			RSD ()	
OCDF	1.446901	5.7			RSD ()	
OCDD	1.180823	3.3			RSD ()	
13C12-2,3,7,8-TCDF	1.426583	2.5			RSD ()	
13C12-2,3,7,8-TCDD	1.116491	2.1			RSD ()	
13C12-1,2,3,7,8-PeCDF	1.297313	5.3			RSD ()	
13C12-2,3,4,7,8-PeCDF	1.23648	5.5			RSD ()	
13C12-1,2,3,7,8-PeCDD	0.7319833	5.9			RSD ()	
13C12-1,2,3,4,7,8-HxCDF	1.242456	2.5			RSD ()	
13C12-1,2,3,6,7,8-HxCDF	1.343476	3.5			RSD ()	
13C12-2,3,4,6,7,8-HxCDF	1.214855	2.4			RSD ()	
13C12-1,2,3,7,8,9-HxCDF	1.007637	2.3			RSD ()	
13C12-1,2,3,4,7,8-HxCDD	0.9598233	2.9			RSD ()	
13C12-1,2,3,6,7,8-HxCDD	1.041385	1.6			RSD ()	
13C12-1,2,3,4,6,7,8-HpCDF	0.9264704	1.6			RSD ()	
13C12-1,2,3,4,7,8,9-HpCDF	0.757916	3.4			RSD ()	
13C12-1,2,3,4,6,7,8-HpCDD	0.6324476	2.4			RSD ()	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

INITIAL CALIBRATION DATA
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Calibration:	EH00030	Instrument:	AUTOSPEC01
Calibration Date:	08/11/2021	Column (1):	RTX-Dioxin2

COMPOUND	Mean RRF	RRF RSD	Linear COD	Quad COD	Limit Type & Limit	Q
13C12-OCDD	0.5037432	6.7			RSD ()	
37Cl4-2,3,7,8-TCDD	1.083593	5.9			RSD ()	
13C12-1,2,3,4-TCDD	1	0.0			RSD ()	
13C12-1,2,3,7,8,9-HxCDD	1	0.0			RSD ()	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SECOND-SOURCE CALIBRATION VERIFICATION

EPA 1613B

Laboratory: Analytical Resources, Inc.
Client: Anchor QEA, LLC
Calibration: UNASSIGNED
Sequence: SJH0117

SDG: 21G0140
Project: Lower Duwamish AOC4
Laboratory ID: SJH0117-SCV1
Sequence Name: ICVCV
Standard ID: G001361

ANALYTE	EXPECTED (ng/mL)	FOUND (ng/mL)	% DRIFT	QC LIMIT
2,3,7,8-TCDF	10.000	10.1	1.1	
2,3,7,8-TCDD	10.000	11.1	10.6	
1,2,3,7,8-PeCDF	50.000	52.8	5.7	
2,3,4,7,8-PeCDF	50.000	50.7	1.4	
1,2,3,7,8-PeCDD	50.000	52.2	4.4	
1,2,3,4,7,8-HxCDF	50.000	54.0	8.0	
1,2,3,6,7,8-HxCDF	50.000	51.5	3.0	
2,3,4,6,7,8-HxCDF	50.000	55.5	11.0	
1,2,3,7,8,9-HxCDF	50.000	53.6	7.2	
1,2,3,4,7,8-HxCDD	50.000	54.6	9.3	
1,2,3,6,7,8-HxCDD	50.000	50.6	1.1	
1,2,3,7,8,9-HxCDD	50.000	52.3	4.7	
1,2,3,4,6,7,8-HpCDF	50.000	54.8	9.6	
1,2,3,4,7,8,9-HpCDF	50.000	59.1	18.3	
1,2,3,4,6,7,8-HpCDD	50.000	51.9	3.7	
OCDF	100.00	105	5.4	
OCDD	100.00	105	5.0	
13C12-2,3,7,8-TCDF	100.00	102	1.7	
13C12-2,3,7,8-TCDD	100.00	81.6	-18.4	
13C12-1,2,3,7,8-PeCDF	100.00	105	4.8	
13C12-2,3,4,7,8-PeCDF	100.00	104	4.3	
13C12-1,2,3,7,8-PeCDD	100.00	98.4	-1.6	
13C12-1,2,3,4,7,8-HxCDF	100.00	116	15.9	
13C12-1,2,3,6,7,8-HxCDF	100.00	119	19.4	
13C12-2,3,4,6,7,8-HxCDF	100.00	109	8.8	
13C12-1,2,3,7,8,9-HxCDF	100.00	113	13.2	
13C12-1,2,3,4,7,8-HxCDD	100.00	114	14.1	
13C12-1,2,3,6,7,8-HxCDD	100.00	119	19.5	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	114	13.7	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	110	9.8	
13C12-1,2,3,4,6,7,8-HpCDD	100.00	110	10.5	
13C12-OCDD	200.00	212	5.9	
37Cl4-2,3,7,8-TCDD	10.000	10.4	4.0	

* Indicates values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210811ICVIH.qld
Last Altered: Friday, August 13, 2021 13:47:27 Pacific Daylight Time
Printed: Friday, August 13, 2021 13:51:56 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210720.mdb 11 Aug 2021 14:23:13
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.655	1.001	8.598e4	1.128e5	1.108	0.762	0.770	1727	2357	1.26e6	1.68e6	728.4	713.0	NO	bb	bb	10.110
12378-PeCDF	29.816	1.000	5.436e5	3.483e5	1.015	1.561	1.550	6428	5298	7.67e6	4.88e6	1193.2	921.9	NO	bd	bd	52.831
23478-PeCDF	31.165	1.001	5.567e5	3.442e5	1.126	1.617	1.550	6428	5298	7.71e6	5.06e6	1200.0	955.7	NO	dd	bb	50.709
123478-HxCDF	34.797	1.000	3.790e5	3.119e5	1.017	1.215	1.240	6025	4489	5.81e6	4.80e6	963.5	1070.0	NO	bd	bd	54.003
234678-HxCDF	35.810	1.001	3.741e5	3.010e5	1.052	1.243	1.240	6025	4489	5.56e6	4.51e6	922.2	1004.3	NO	bb	bb	55.515
123678-HxCDF	34.941	1.001	4.107e5	3.376e5	1.037	1.217	1.240	6025	4489	5.99e6	4.89e6	994.0	1090.0	NO	db	db	51.475
123789-HxCDF	36.835	1.000	3.029e5	2.474e5	1.030	1.224	1.240	6025	4489	4.62e6	3.69e6	767.5	821.7	NO	bb	bb	53.582
1234678-HpCDF	38.685	1.000	3.428e5	3.268e5	1.327	1.049	1.050	5528	5142	5.22e6	4.97e6	945.1	966.6	NO	bb	bb	54.784
1234789-HpCDF	40.924	1.000	2.799e5	2.719e5	1.283	1.029	1.050	5528	5142	3.60e6	3.43e6	650.7	667.0	NO	bd	bd	59.145
OCDF	45.140	1.006	3.368e5	3.743e5	1.447	0.900	0.890	5198	2808	3.79e6	4.27e6	729.8	1522.4	NO	bb	bb	105.415
2378-TCDD	26.305	1.001	4.924e4	6.425e4	0.920	0.766	0.770	2440	1603	7.12e5	9.28e5	291.6	579.2	NO	bb	db	11.057
12378-PeCDD	31.421	1.001	2.834e5	1.748e5	0.995	1.621	1.550	4032	3115	4.22e6	2.62e6	1046.5	841.2	NO	bb	bb	52.211
123478-HxCDD	35.922	1.000	2.965e5	2.407e5	1.027	1.232	1.240	4241	3010	4.65e6	3.73e6	1096.7	1237.9	NO	bd	bd	54.629
123678-HxCDD	36.044	1.001	3.082e5	2.464e5	1.009	1.251	1.240	4241	3010	4.61e6	3.72e6	1085.9	1237.1	NO	db	db	50.555
123789-HxCDD	36.423	1.011	2.887e5	2.199e5	0.950	1.313	1.240	4241	3010	4.19e6	3.34e6	989.1	1108.9	NO	bd	bb	52.339
1234678-HpCDD	40.178	1.000	1.757e5	1.625e5	1.068	1.081	1.050	3111	3083	2.53e6	2.35e6	814.6	763.1	NO	bb	bb	51.865
OCDD	44.903	1.000	2.642e5	3.138e5	1.181	0.842	0.890	2972	3108	3.12e6	3.44e6	1050.3	1105.9	NO	bb	bd	104.997
13C-2378-TCDF	25.640	1.007	7.798e5	9.953e5	1.427	0.784	0.770	3469	3089	1.16e7	1.43e7	3339.4	4613.3	NO	bb	bb	101.689
13C-12378-PeCDF	29.806	1.171	1.051e6	6.125e5	1.297	1.716	1.550	4922	3645	1.42e7	8.62e6	2881.8	2364.6	NO	bd	bb	104.785
13C-23478-PeCDF	31.142	1.223	9.754e5	6.030e5	1.236	1.617	1.550	4922	3645	1.41e7	8.69e6	2860.8	2384.9	NO	bb	bb	104.321
13C-123478-HxCDF	34.785	0.955	4.274e5	8.307e5	1.242	0.514	0.510	5265	6298	6.41e6	1.24e7	1218.4	1973.2	NO	bd	bd	115.885
13C-123678-HxCDF	34.919	0.959	4.860e5	9.161e5	1.343	0.530	0.510	5265	6298	7.00e6	1.35e7	1330.1	2144.5	NO	db	db	119.442
13C-234678-HxCDF	35.788	0.983	3.967e5	7.587e5	1.215	0.523	0.510	5265	6298	5.75e6	1.13e7	1091.4	1799.0	NO	bb	bb	108.848
13C-123789-HxCDF	36.824	1.011	3.447e5	6.522e5	1.008	0.529	0.510	5265	6298	5.11e6	9.81e6	969.9	1558.1	NO	bb	bb	113.229
13C-1234678-HpCDF	38.674	1.062	3.005e5	6.203e5	0.926	0.484	0.440	3480	6125	4.35e6	9.34e6	1249.4	1525.5	NO	bd	bb	113.744
13C-1234789-HpCDF	40.902	1.123	2.223e5	5.047e5	0.758	0.440	0.440	3480	6125	2.90e6	6.30e6	833.4	1029.2	NO	bb	bb	109.773
13C-1234-TCDD	25.458	0.000	5.298e5	6.938e5	1.000	0.764	0.770	5513	2305	7.87e6	1.03e7	1428.2	4481.1	NO	bb	bb	100.000
13C-2378-TCDD	26.275	1.032	4.826e5	6.328e5	1.116	0.763	0.770	5513	2305	7.09e6	9.32e6	1285.5	4044.7	NO	bb	bb	81.637
13C-12378-PeCDD	31.399	1.233	5.423e5	3.395e5	0.732	1.598	1.550	2388	2135	7.53e6	4.95e6	3154.4	2319.5	NO	bb	bb	98.449
13C-123478-HxCDD	35.911	0.986	5.361e5	4.211e5	0.960	1.273	1.240	3574	5521	8.65e6	6.70e6	2421.3	1213.6	NO	bd	bd	114.124
13C-123678-HxCDD	36.022	0.989	6.017e5	4.857e5	1.041	1.239	1.240	3574	5521	9.06e6	7.24e6	2535.4	1311.0	NO	db	db	119.499
13C-1234678-HpCDD	40.167	1.103	3.074e5	3.031e5	0.632	1.014	1.050	3260	2760	4.30e6	4.19e6	1318.4	1519.0	NO	bb	bb	110.470
13C-OCDD	44.884	1.233	4.208e5	5.116e5	0.504	0.822	0.890	2744	3477	4.92e6	5.55e6	1792.3	1596.9	NO	bb	bd	211.835
13C-123789-HxCDD	36.412	0.000	4.843e5	3.895e5	1.000	1.243	1.240	3574	5521	7.18e6	5.79e6	2010.2	1047.9	NO	bb	bb	100.000
37CL-2378-TCDD	26.305	1.033	1.379e5		1.084			1849		1.90e6		1029.2			bd		10.397

Dataset: T:\Autospec\Processed Data Batch\210811ICVIH.qld
Last Altered: Friday, August 13, 2021 13:47:27 Pacific Daylight Time
Printed: Friday, August 13, 2021 13:51:56 Pacific Daylight Time

ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	22.147	0.864	1.063e5	1.324e5	1.425	0.802	0.770	1727	2357	1.66e6	2.09e6	959.0	886.5	NO	bb	bb	9.436
1289-TCDF	27.152	1.059	5.661e4	7.137e4	1.043	0.793	0.770	1727	2357	8.15e5	1.06e6	472.0	447.8	NO	bb	bb	6.913
13468-PECDF	27.015	0.906	5.743e5	3.714e5	1.376	1.546	1.550	1557	1759	8.45e6	5.45e6	5425.9	3099.7	NO	bb	bb	41.310
12389-PECDF	32.201	1.080	4.075e5	2.638e5	1.000	1.544	1.550	6428	5298	5.63e6	3.72e6	875.5	702.7	NO	bb	bb	40.376
123468-HXCDF	33.125	0.952	4.315e5	3.546e5	1.087	1.217	1.240	6025	4489	6.40e6	5.20e6	1061.8	1158.1	NO	bb	bb	57.507
1368-TCDD	23.417	0.891	5.716e4	7.362e4	0.923	0.776	0.770	2440	1603	8.73e5	1.13e6	357.6	706.6	NO	bb	bb	12.700
1289-TCDD	26.895	1.024	4.776e4	6.026e4	0.794	0.793	0.770	2440	1603	6.91e5	8.63e5	283.1	538.1	NO	bb	bb	12.197
12479-PECDD	28.691	0.914	4.186e5	2.632e5	1.843	1.590	1.550	4032	3115	3.99e6	2.51e6	988.7	804.5	NO	bb	bb	41.945
12389-PECDD	31.822	1.013	2.780e5	1.664e5	1.154	1.671	1.550	4032	3115	4.00e6	2.46e6	992.1	791.3	NO	bb	bb	43.683
124679-HXCDD	33.905	0.944	3.632e5	2.896e5	1.125	1.254	1.240	4241	3010	5.57e6	4.44e6	1314.1	1475.1	NO	bb	bb	60.629
1234679-HPCDD	39.141	0.975	2.129e5	1.840e5	1.211	1.157	1.050	3111	3083	2.93e6	2.75e6	941.5	893.1	NO	bd	bb	53.689
Total-tetrafurans			2.574e5		1.192			1727		3.86e6							27.363
Total-penta1			5.743e5					1557		8.45e6							41.310
Total-pentafurans			1.602e6		1.047			6428		2.23e7							153.079
Total-hexafurans			1.898e6		1.045			6025		2.84e7							272.082
Total-heptafurans			6.227e5		1.305			5528		8.82e6							113.929
Total-Furans			5.291e6		1.158			1727		7.56e7							713.177
Total-tetradioxins			2.709e5		0.879			2440		3.41e6							62.800
Total-pentadioxins			9.817e5		1.331			4032		1.22e7							138.087
Total-hexadioxins			1.266e6		1.028			4241		1.92e7							219.741
Total-heptadioxins			3.886e5		1.140			3111		5.46e6							105.554
Total-Dioxins			3.171e6		1.092			2440		4.34e7							631.178
Total-TEQ			8.462e6					2440		1.19e8							1344.355
FUNCTION1 PFK			6.450e7					839971		2.37e8							
FUNCTION2 PFK			0.000e0					483349		0.00e0							
FUNCTION3 PFK			5.184e7					675979		4.54e8							0.000
FUNCTION4 PFK			3.964e5					425264		1.39e7							
FUNCTION5 PFK			3.414e4					345829		1.67e6							
FUNCTION1 HXCD...			2.903e3					1258		5.64e4							0.000
FUNCTION1 HPCD...			2.863e3					1421		5.44e4							0.000
FUNCTION2 HPCD...			2.720e3					1471		5.70e4							0.000
FUNCTION3 OCDPE			1.392e3					890		2.72e4							0.000
FUNCTION4 NCDPE			1.187e3					1520		2.23e4							0.000
FUNCTION5 DCDPE			1.665e2					1065		6.42e3							0.000

Dataset: T:\Autospec\Processed Data Batch\210811ICVIH.qld
Last Altered: Friday, August 13, 2021 13:47:27 Pacific Daylight Time
Printed: Friday, August 13, 2021 13:51:56 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210720.mdb 11 Aug 2021 14:23:13
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.15	5.661e4	7.137e4	1.043	0.79	0.77	472.0	YES	NO	bb	bb	6.913
2	2378-TCDF	25.65	8.598e4	1.128e5	1.108	0.76	0.77	728.4	YES	NO	bb	bb	10.110
3	Total-tetrafurans	24.75	7.210e3	8.958e3	1.192	0.80	0.77	60.0	YES	NO	bb	bb	0.764
4	Total-tetrafurans	24.42	1.138e3	1.365e3	1.192	0.83	0.77	9.8	YES	NO	bb	bb	0.118
5	1368-TCDF	22.15	1.063e5	1.324e5	1.425	0.80	0.77	959.0	YES	NO	bb	bb	9.436
6	Total-tetrafurans	27.47	1.965e2	2.354e2	1.192	0.83	0.77	3.7	YES	NO	db	bb	0.020

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	27.02	5.743e5	3.714e5	1.376	1.55	1.55	5425.9	YES	NO	bb	bb	41.310

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentafurans	28.67	7.393e4	4.763e4	1.047	1.55	1.55	167.4	YES	NO	bb	bb	7.165
2	12389-PECDF	32.20	4.075e5	2.638e5	1.000	1.54	1.55	875.5	YES	NO	bb	bb	40.376
3	23478-PeCDF	31.16	5.567e5	3.442e5	1.126	1.62	1.55	1200.0	YES	NO	dd	bb	50.709
4	Total-pentafurans	30.02	2.035e4	1.353e4	1.047	1.50	1.55	37.7	YES	NO	dd	dd	1.997
5	12378-PeCDF	29.82	5.436e5	3.483e5	1.015	1.56	1.55	1193.2	YES	NO	bd	bd	52.831

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123468-HXCDF	33.13	4.315e5	3.546e5	1.087	1.22	1.24	1061.8	YES	NO	bb	bb	57.507
2	123789-HxCDF	36.84	3.029e5	2.474e5	1.030	1.22	1.24	767.5	YES	NO	bb	bb	53.582
3	234678-HxCDF	35.81	3.741e5	3.010e5	1.052	1.24	1.24	922.2	YES	NO	bb	bb	55.515
4	123678-HxCDF	34.94	4.107e5	3.376e5	1.037	1.22	1.24	994.0	YES	NO	db	db	51.475
5	123478-HxCDF	34.80	3.790e5	3.119e5	1.017	1.22	1.24	963.5	YES	NO	bd	bd	54.003

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDF	38.68	3.428e5	3.268e5	1.327	1.05	1.05	945.1	YES	NO	bb	bb	54.784
2	1234789-HpCDF	40.92	2.799e5	2.719e5	1.283	1.03	1.05	650.7	YES	NO	bd	bd	59.145

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Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.15	5.661e4	7.137e4	1.043	0.79	0.77	472.0	YES	NO	bb	bb	6.913
2	2378-TCDF	25.65	8.598e4	1.128e5	1.108	0.76	0.77	728.4	YES	NO	bb	bb	10.110
3	Total-tetrafurans	24.75	7.210e3	8.958e3	1.192	0.80	0.77	60.0	YES	NO	bb	bb	0.764
4	Total-tetrafurans	24.42	1.138e3	1.365e3	1.192	0.83	0.77	9.8	YES	NO	bb	bb	0.118
5	1368-TCDF	22.15	1.063e5	1.324e5	1.425	0.80	0.77	959.0	YES	NO	bb	bb	9.436
6	Total-tetrafurans	27.47	1.965e2	2.354e2	1.192	0.83	0.77	3.7	YES	NO	db	bb	0.020
7	Total-pentafurans	28.67	7.393e4	4.763e4	1.047	1.55	1.55	167.4	YES	NO	bb	bb	7.165
8	12389-PECDF	32.20	4.075e5	2.638e5	1.000	1.54	1.55	875.5	YES	NO	bb	bb	40.376
9	23478-PeCDF	31.16	5.567e5	3.442e5	1.126	1.62	1.55	1200.0	YES	NO	dd	bb	50.709
10	Total-pentafurans	30.02	2.035e4	1.353e4	1.047	1.50	1.55	37.7	YES	NO	dd	dd	1.997
11	12378-PeCDF	29.82	5.436e5	3.483e5	1.015	1.56	1.55	1193.2	YES	NO	bd	bd	52.831
12	123468-HXCDF	33.13	4.315e5	3.546e5	1.087	1.22	1.24	1061.8	YES	NO	bb	bb	57.507
13	123789-HxCDF	36.84	3.029e5	2.474e5	1.030	1.22	1.24	767.5	YES	NO	bb	bb	53.582
14	234678-HxCDF	35.81	3.741e5	3.010e5	1.052	1.24	1.24	922.2	YES	NO	bb	bb	55.515
15	123678-HxCDF	34.94	4.107e5	3.376e5	1.037	1.22	1.24	994.0	YES	NO	db	db	51.475
16	123478-HxCDF	34.80	3.790e5	3.119e5	1.017	1.22	1.24	963.5	YES	NO	bd	bd	54.003
17	1234678-HpCDF	38.68	3.428e5	3.268e5	1.327	1.05	1.05	945.1	YES	NO	bb	bb	54.784
18	1234789-HpCDF	40.92	2.799e5	2.719e5	1.283	1.03	1.05	650.7	YES	NO	bd	bd	59.145
19	OCDF	45.14	3.368e5	3.743e5	1.447	0.90	0.89	729.8	YES	NO	bb	bb	105.415
20	13468-PECDF	27.02	5.743e5	3.714e5	1.376	1.55	1.55	5425.9	YES	NO	bb	bb	41.310

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	25.97	8.932e4	1.141e5	0.879	0.78	0.77	303.9	YES	NO	bd	bd	20.744
2	Total-tetradioxins	25.49	2.543e4	2.972e4	0.879	0.86	0.77	154.2	YES	NO	bd	bb	5.625
3	Total-tetradioxins	24.63	2.020e3	2.647e3	0.879	0.76	0.77	8.0	YES	NO	bd	bb	0.476
4	1368-TCDD	23.42	5.716e4	7.362e4	0.923	0.78	0.77	357.6	YES	NO	bb	bb	12.700
5	1289-TCDD	26.89	4.776e4	6.026e4	0.794	0.79	0.77	283.1	YES	NO	bb	bb	12.197
6	2378-TCDD	26.30	4.924e4	6.425e4	0.920	0.77	0.77	291.6	YES	NO	bb	db	11.057

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PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDD	31.82	2.780e5	1.664e5	1.154	1.67	1.55	992.1	YES	NO	bb	bb	43.683
2	12378-PeCDD	31.42	2.834e5	1.748e5	0.995	1.62	1.55	1046.5	YES	NO	bb	bb	52.211
3	Total-pentadioxins	30.75	1.739e3	1.177e3	1.331	1.48	1.55	6.0	YES	NO	bb	bb	0.249
4	12479-PECDD	28.69	4.186e5	2.632e5	1.843	1.59	1.55	988.7	YES	NO	bb	bb	41.945

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	124679-HXCDD	33.91	3.632e5	2.896e5	1.125	1.25	1.24	1314.1	YES	NO	bb	bb	60.629
2	123789-HxCDD	36.42	2.887e5	2.199e5	0.950	1.31	1.24	989.1	YES	NO	bd	bb	52.339
3	123678-HxCDD	36.04	3.082e5	2.464e5	1.009	1.25	1.24	1085.9	YES	NO	db	db	50.555
4	123478-HxCDD	35.92	2.965e5	2.407e5	1.027	1.23	1.24	1096.7	YES	NO	bd	bd	54.629
5	Total-hexadioxins	35.04	7.156e3	6.136e3	1.028	1.17	1.24	26.9	YES	NO	db	db	1.265
6	Total-hexadioxins	34.67	1.781e3	1.631e3	1.028	1.09	1.24	7.7	YES	NO	bb	bb	0.325

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	40.18	1.757e5	1.625e5	1.068	1.08	1.05	814.6	YES	NO	bb	bb	51.865
2	1234679-HPCDD	39.14	2.129e5	1.840e5	1.211	1.16	1.05	941.5	YES	NO	bd	bb	53.689

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Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	25.97	8.932e4	1.141e5	0.879	0.78	0.77	303.9	YES	NO	bd	bd	20.744
2	Total-tetradioxins	25.49	2.543e4	2.972e4	0.879	0.86	0.77	154.2	YES	NO	bd	bb	5.625
3	Total-tetradioxins	24.63	2.020e3	2.647e3	0.879	0.76	0.77	8.0	YES	NO	bd	bb	0.476
4	1368-TCDD	23.42	5.716e4	7.362e4	0.923	0.78	0.77	357.6	YES	NO	bb	bb	12.700
5	1289-TCDD	26.89	4.776e4	6.026e4	0.794	0.79	0.77	283.1	YES	NO	bb	bb	12.197
6	2378-TCDD	26.30	4.924e4	6.425e4	0.920	0.77	0.77	291.6	YES	NO	bb	db	11.057
7	12389-PECDD	31.82	2.780e5	1.664e5	1.154	1.67	1.55	992.1	YES	NO	bb	bb	43.683
8	12378-PeCDD	31.42	2.834e5	1.748e5	0.995	1.62	1.55	1046.5	YES	NO	bb	bb	52.211
9	Total-pentadioxins	30.75	1.739e3	1.177e3	1.331	1.48	1.55	6.0	YES	NO	bb	bb	0.249
10	12479-PECDD	28.69	4.186e5	2.632e5	1.843	1.59	1.55	988.7	YES	NO	bb	bb	41.945
11	124679-HXCDD	33.91	3.632e5	2.896e5	1.125	1.25	1.24	1314.1	YES	NO	bb	bb	60.629
12	123789-HxCDD	36.42	2.887e5	2.199e5	0.950	1.31	1.24	989.1	YES	NO	bd	bb	52.339
13	123678-HxCDD	36.04	3.082e5	2.464e5	1.009	1.25	1.24	1085.9	YES	NO	db	db	50.555
14	123478-HxCDD	35.92	2.965e5	2.407e5	1.027	1.23	1.24	1096.7	YES	NO	bd	bd	54.629
15	Total-hexadioxins	35.04	7.156e3	6.136e3	1.028	1.17	1.24	26.9	YES	NO	db	db	1.265
16	Total-hexadioxins	34.67	1.781e3	1.631e3	1.028	1.09	1.24	7.7	YES	NO	bb	bb	0.325
17	1234678-HpCDD	40.18	1.757e5	1.625e5	1.068	1.08	1.05	814.6	YES	NO	bb	bb	51.865
18	1234679-HPCDD	39.14	2.129e5	1.840e5	1.211	1.16	1.05	941.5	YES	NO	bd	bb	53.689
19	OCDD	44.90	2.642e5	3.138e5	1.181	0.84	0.89	1050.3	YES	NO	bb	bd	104.997

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.15	5.661e4	7.137e4	1.043	0.79	0.77	472.0	YES	NO	bb	bb	6.913
2	2378-TCDF	25.65	8.598e4	1.128e5	1.108	0.76	0.77	728.4	YES	NO	bb	bb	10.110
3	Total-tetrafurans	24.75	7.210e3	8.958e3	1.192	0.80	0.77	60.0	YES	NO	bb	bb	0.764
4	Total-tetrafurans	24.42	1.138e3	1.365e3	1.192	0.83	0.77	9.8	YES	NO	bb	bb	0.118
5	1368-TCDF	22.15	1.063e5	1.324e5	1.425	0.80	0.77	959.0	YES	NO	bb	bb	9.436
6	Total-tetrafurans	27.47	1.965e2	2.354e2	1.192	0.83	0.77	3.7	YES	NO	db	bb	0.020
7	Total-pentafurans	28.67	7.393e4	4.763e4	1.047	1.55	1.55	167.4	YES	NO	bb	bb	7.165
8	12389-PECDF	32.20	4.075e5	2.638e5	1.000	1.54	1.55	875.5	YES	NO	bb	bb	40.376
9	23478-PeCDF	31.16	5.567e5	3.442e5	1.126	1.62	1.55	1200.0	YES	NO	dd	bb	50.709
10	Total-pentafurans	30.02	2.035e4	1.353e4	1.047	1.50	1.55	37.7	YES	NO	dd	dd	1.997
11	12378-PeCDF	29.82	5.436e5	3.483e5	1.015	1.56	1.55	1193.2	YES	NO	bd	bd	52.831
12	123468-HXCDF	33.13	4.315e5	3.546e5	1.087	1.22	1.24	1061.8	YES	NO	bb	bb	57.507
13	123789-HxCDF	36.84	3.029e5	2.474e5	1.030	1.22	1.24	767.5	YES	NO	bb	bb	53.582
14	234678-HxCDF	35.81	3.741e5	3.010e5	1.052	1.24	1.24	922.2	YES	NO	bb	bb	55.515
15	123678-HxCDF	34.94	4.107e5	3.376e5	1.037	1.22	1.24	994.0	YES	NO	db	db	51.475
16	123478-HxCDF	34.80	3.790e5	3.119e5	1.017	1.22	1.24	963.5	YES	NO	bd	bd	54.003
17	1234678-HpCDF	38.68	3.428e5	3.268e5	1.327	1.05	1.05	945.1	YES	NO	bb	bb	54.784
18	1234789-HpCDF	40.92	2.799e5	2.719e5	1.283	1.03	1.05	650.7	YES	NO	bd	bd	59.145
19	OCDF	45.14	3.368e5	3.743e5	1.447	0.90	0.89	729.8	YES	NO	bb	bb	105.415
20	13468-PECDF	27.02	5.743e5	3.714e5	1.376	1.55	1.55	5425.9	YES	NO	bb	bb	41.310
21	Total-tetradioxins	25.97	8.932e4	1.141e5	0.879	0.78	0.77	303.9	YES	NO	bd	bd	20.744
22	Total-tetradioxins	25.49	2.543e4	2.972e4	0.879	0.86	0.77	154.2	YES	NO	bd	bb	5.625
23	Total-tetradioxins	24.63	2.020e3	2.647e3	0.879	0.76	0.77	8.0	YES	NO	bd	bb	0.476
24	1368-TCDD	23.42	5.716e4	7.362e4	0.923	0.78	0.77	357.6	YES	NO	bb	bb	12.700
25	1289-TCDD	26.89	4.776e4	6.026e4	0.794	0.79	0.77	283.1	YES	NO	bb	bb	12.197
26	2378-TCDD	26.30	4.924e4	6.425e4	0.920	0.77	0.77	291.6	YES	NO	bb	db	11.057
27	12389-PECDD	31.82	2.780e5	1.664e5	1.154	1.67	1.55	992.1	YES	NO	bb	bb	43.683
28	12378-PeCDD	31.42	2.834e5	1.748e5	0.995	1.62	1.55	1046.5	YES	NO	bb	bb	52.211
29	Total-pentadioxins	30.75	1.739e3	1.177e3	1.331	1.48	1.55	6.0	YES	NO	bb	bb	0.249
30	12479-PECDD	28.69	4.186e5	2.632e5	1.843	1.59	1.55	988.7	YES	NO	bb	bb	41.945
31	124679-HXCDD	33.91	3.632e5	2.896e5	1.125	1.25	1.24	1314.1	YES	NO	bb	bb	60.629
32	123789-HxCDD	36.42	2.887e5	2.199e5	0.950	1.31	1.24	989.1	YES	NO	bd	bb	52.339
33	123678-HxCDD	36.04	3.082e5	2.464e5	1.009	1.25	1.24	1085.9	YES	NO	db	db	50.555
34	123478-HxCDD	35.92	2.965e5	2.407e5	1.027	1.23	1.24	1096.7	YES	NO	bd	bd	54.629
35	Total-hexadioxins	35.04	7.156e3	6.136e3	1.028	1.17	1.24	26.9	YES	NO	db	db	1.265
36	Total-hexadioxins	34.67	1.781e3	1.631e3	1.028	1.09	1.24	7.7	YES	NO	bb	bb	0.325
37	1234678-HpCDD	40.18	1.757e5	1.625e5	1.068	1.08	1.05	814.6	YES	NO	bb	bb	51.865

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	1234679-HPCDD	39.14	2.129e5	1.840e5	1.211	1.16	1.05	941.5	YES	NO	bd	bb	53.689
39	OCDD	44.90	2.642e5	3.138e5	1.181	0.84	0.89	1050.3	YES	NO	bb	bd	104.997

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	22.34	1.094e7					29.2	YES		db		
2	FUNCTION1 PFK	22.07	1.938e7					38.3	YES		dd		
3	FUNCTION1 PFK	21.38	2.077e7					61.6	YES		dd		
4	FUNCTION1 PFK	21.25	7.452e6					64.7	YES		dd		
5	FUNCTION1 PFK	21.10	5.199e6					69.3	YES		bd		
6	FUNCTION1 PFK	27.62	5.202e4					1.5	NO		bb		
7	FUNCTION1 PFK	26.61	3.088e4					1.4	NO		bb		
8	FUNCTION1 PFK	26.53	3.772e4					1.3	NO		bb		
9	FUNCTION1 PFK	26.21	4.215e4					1.3	NO		bb		
10	FUNCTION1 PFK	26.14	2.091e4					0.7	NO		bb		
11	FUNCTION1 PFK	25.90	2.782e4					1.0	NO		bb		
12	FUNCTION1 PFK	25.64	2.244e4					0.9	NO		bb		
13	FUNCTION1 PFK	25.38	4.475e4					1.3	NO		bb		
14	FUNCTION1 PFK	25.32	8.085e4					1.5	NO		bb		
15	FUNCTION1 PFK	25.10	6.333e4					1.7	NO		db		
16	FUNCTION1 PFK	24.94	2.192e5					2.0	NO		dd		
17	FUNCTION1 PFK	24.82	2.857e4					1.1	NO		bd		
18	FUNCTION1 PFK	24.63	2.787e4					1.0	NO		bb		
19	FUNCTION1 PFK	24.35	1.463e4					0.7	NO		bb		
20	FUNCTION1 PFK	23.43	4.951e4					1.7	NO		bb		

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	34.47	2.892e5					8.3	YES		dd		0.000
2	FUNCTION3 PFK	34.42	3.441e5					9.9	YES		dd		0.000
3	FUNCTION3 PFK	34.30	9.123e5					14.6	YES		dd		0.000
4	FUNCTION3 PFK	33.96	4.870e6					27.1	YES		dd		0.000
5	FUNCTION3 PFK	33.92	6.208e5					27.9	YES		dd		0.000
6	FUNCTION3 PFK	33.75	6.775e6					34.2	YES		dd		0.000
7	FUNCTION3 PFK	33.58	8.843e5					39.8	YES		dd		0.000
8	FUNCTION3 PFK	33.52	4.828e6					42.2	YES		dd		0.000
9	FUNCTION3 PFK	33.37	2.844e6					47.3	YES		dd		0.000
10	FUNCTION3 PFK	33.18	5.432e6					54.3	YES		dd		0.000
11	FUNCTION3 PFK	33.04	5.575e6					59.2	YES		dd		0.000
12	FUNCTION3 PFK	32.95	3.680e6					62.9	YES		dd		0.000
13	FUNCTION3 PFK	32.86	7.904e6					65.6	YES		dd		0.000
14	FUNCTION3 PFK	32.74	1.549e6					69.1	YES		dd		0.000
15	FUNCTION3 PFK	32.67	4.268e6					72.4	YES		bd		0.000
16	FUNCTION3 PFK	36.86	8.449e3					0.3	NO		bb		0.000
17	FUNCTION3 PFK	36.72	6.925e4					2.0	NO		bb		0.000
18	FUNCTION3 PFK	36.59	5.799e4					1.2	NO		bb		0.000
19	FUNCTION3 PFK	36.30	7.563e3					0.7	NO		bb		0.000
20	FUNCTION3 PFK	36.04	6.922e3					0.5	NO		bb		0.000
21	FUNCTION3 PFK	35.83	2.532e4					1.1	NO		bb		0.000
22	FUNCTION3 PFK	35.75	1.516e4					0.9	NO		bb		0.000
23	FUNCTION3 PFK	35.63	1.004e4					0.7	NO		bb		0.000
24	FUNCTION3 PFK	35.33	1.433e4					0.8	NO		bb		0.000
25	FUNCTION3 PFK	35.04	1.089e4					0.6	NO		bb		0.000
26	FUNCTION3 PFK	34.97	5.517e3					0.7	NO		bb		0.000
27	FUNCTION3 PFK	34.89	3.001e4					1.0	NO		bb		0.000
28	FUNCTION3 PFK	34.81	1.594e4					1.0	NO		db		0.000
29	FUNCTION3 PFK	34.76	3.092e4					1.3	NO		bd		0.000
30	FUNCTION3 PFK	34.60	1.659e5					4.5	YES		db		0.000
31	FUNCTION3 PFK	34.53	2.985e5					6.7	YES		dd		0.000
32	FUNCTION3 PFK	37.64	2.742e4					1.1	NO		bb		0.000
33	FUNCTION3 PFK	37.58	2.711e4					1.4	NO		db		0.000
34	FUNCTION3 PFK	37.54	1.758e4					0.9	NO		dd		0.000
35	FUNCTION3 PFK	37.49	3.447e4					1.6	NO		dd		0.000
36	FUNCTION3 PFK	37.45	2.646e4					1.5	NO		dd		0.000
37	FUNCTION3 PFK	37.38	4.745e4					1.5	NO		dd		0.000

Dataset: T:\Autospec\Processed Data Batch\210811ICVIH.qld
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ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION3 PFK	37.34	2.452e4					1.6	NO		bd		0.000
39	FUNCTION3 PFK	37.29	9.653e3					0.8	NO		bb		0.000
40	FUNCTION3 PFK	37.08	5.064e3					0.5	NO		bb		0.000
41	FUNCTION3 PFK	36.98	6.612e4					1.7	NO		bb		0.000

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	38.42	2.469e3					0.5	NO		bb		
2	FUNCTION4 PFK	38.08	2.954e4					1.7	NO		bb		
3	FUNCTION4 PFK	37.98	4.856e4					2.3	NO		db		
4	FUNCTION4 PFK	37.94	3.614e4					2.6	NO		bd		
5	FUNCTION4 PFK	37.85	8.390e3					1.0	NO		bb		
6	FUNCTION4 PFK	40.91	1.035e4					1.0	NO		bb		
7	FUNCTION4 PFK	40.71	1.742e3					0.4	NO		bb		
8	FUNCTION4 PFK	40.68	3.176e3					0.5	NO		bb		
9	FUNCTION4 PFK	40.61	6.362e3					0.7	NO		bb		
10	FUNCTION4 PFK	40.38	7.075e3					0.8	NO		bb		
11	FUNCTION4 PFK	40.32	3.115e4					1.2	NO		bb		
12	FUNCTION4 PFK	39.94	4.461e3					0.6	NO		bb		
13	FUNCTION4 PFK	39.80	5.746e3					0.6	NO		bb		
14	FUNCTION4 PFK	39.51	2.799e3					0.4	NO		bb		
15	FUNCTION4 PFK	39.43	1.949e3					0.4	NO		bb		
16	FUNCTION4 PFK	39.36	2.879e3					0.6	NO		bb		
17	FUNCTION4 PFK	39.32	5.365e3					1.1	NO		bb		
18	FUNCTION4 PFK	39.28	3.621e3					0.8	NO		bb		
19	FUNCTION4 PFK	39.21	1.666e4					1.0	NO		bb		
20	FUNCTION4 PFK	39.07	6.512e3					0.8	NO		bb		
21	FUNCTION4 PFK	38.46	1.263e4					1.2	NO		bb		
22	FUNCTION4 PFK	42.68	1.445e4					0.9	NO		bb		
23	FUNCTION4 PFK	42.62	2.052e4					1.7	NO		bb		
24	FUNCTION4 PFK	42.51	2.321e3					0.5	NO		bb		
25	FUNCTION4 PFK	42.43	3.121e4					1.9	NO		bb		
26	FUNCTION4 PFK	42.18	7.742e3					0.8	NO		bb		
27	FUNCTION4 PFK	42.05	1.748e4					1.2	NO		db		
28	FUNCTION4 PFK	41.97	1.470e4					1.2	NO		bd		
29	FUNCTION4 PFK	41.63	2.487e3					0.5	NO		bb		
30	FUNCTION4 PFK	41.48	1.442e4					1.2	NO		bb		
31	FUNCTION4 PFK	41.24	1.211e4					1.0	NO		bb		
32	FUNCTION4 PFK	41.17	1.136e4					1.2	NO		bb		

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PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	45.97	5.710e3					1.0	NO		bb		
2	FUNCTION5 PFK	45.74	1.859e3					0.6	NO		bb		
3	FUNCTION5 PFK	43.26	1.526e4					1.8	NO		bb		
4	FUNCTION5 PFK	42.93	1.131e4					1.5	NO		bb		

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	25.35	1.892e2					4.2	YES		db		0.000
2	FUNCTION1 HXCD...	25.23	1.187e2					1.3	NO		bd		0.000
3	FUNCTION1 HXCD...	24.87	7.961e1					1.9	NO		db		0.000
4	FUNCTION1 HXCD...	24.81	1.259e2					2.7	NO		bd		0.000
5	FUNCTION1 HXCD...	24.72	1.584e2					1.4	NO		bb		0.000
6	FUNCTION1 HXCD...	24.40	9.113e1					1.6	NO		bb		0.000
7	FUNCTION1 HXCD...	23.72	7.480e1					1.5	NO		bb		0.000
8	FUNCTION1 HXCD...	23.61	1.381e2					2.9	NO		bb		0.000
9	FUNCTION1 HXCD...	23.11	9.740e1					2.5	NO		bb		0.000
10	FUNCTION1 HXCD...	22.43	1.791e2					2.1	NO		db		0.000
11	FUNCTION1 HXCD...	22.30	7.125e1					1.5	NO		bd		0.000
12	FUNCTION1 HXCD...	22.19	7.195e1					1.3	NO		bb		0.000
13	FUNCTION1 HXCD...	21.98	1.102e2					1.5	NO		db		0.000
14	FUNCTION1 HXCD...	21.89	2.251e2					4.2	YES		bd		0.000
15	FUNCTION1 HXCD...	21.80	1.414e2					2.0	NO		bb		0.000
16	FUNCTION1 HXCD...	27.03	2.453e2					2.4	NO		bb		0.000
17	FUNCTION1 HXCD...	26.29	2.686e2					2.1	NO		db		0.000
18	FUNCTION1 HXCD...	26.12	1.763e2					2.9	NO		dd		0.000
19	FUNCTION1 HXCD...	26.03	9.387e1					1.2	NO		bd		0.000
20	FUNCTION1 HXCD...	25.82	1.399e2					2.0	NO		bb		0.000
21	FUNCTION1 HXCD...	25.46	1.064e2					1.7	NO		bb		0.000

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ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	22.51	7.992e1					1.4	NO		bb		0.000
2	FUNCTION1 HPCD...	22.07	1.029e2					2.1	NO		bb		0.000
3	FUNCTION1 HPCD...	21.98	1.510e2					1.6	NO		db		0.000
4	FUNCTION1 HPCD...	21.88	1.949e2					3.5	YES		bd		0.000
5	FUNCTION1 HPCD...	21.75	2.528e2					1.8	NO		bb		0.000
6	FUNCTION1 HPCD...	21.47	1.508e2					2.1	NO		bb		0.000
7	FUNCTION1 HPCD...	21.25	1.018e2					1.3	NO		db		0.000
8	FUNCTION1 HPCD...	21.16	1.149e2					1.6	NO		dd		0.000
9	FUNCTION1 HPCD...	21.09	2.200e2					3.0	NO		bd		0.000
10	FUNCTION1 HPCD...	27.00	1.586e2					1.8	NO		bb		0.000
11	FUNCTION1 HPCD...	26.83	9.159e1					0.8	NO		bb		0.000
12	FUNCTION1 HPCD...	26.59	1.663e2					2.5	NO		bb		0.000
13	FUNCTION1 HPCD...	26.32	1.753e2					1.6	NO		db		0.000
14	FUNCTION1 HPCD...	26.14	2.616e2					2.2	NO		bd		0.000
15	FUNCTION1 HPCD...	25.59	8.230e1					1.9	NO		bb		0.000
16	FUNCTION1 HPCD...	25.44	8.713e1					1.0	NO		bb		0.000
17	FUNCTION1 HPCD...	25.16	7.125e1					1.1	NO		db		0.000
18	FUNCTION1 HPCD...	25.05	1.030e2					1.1	NO		bd		0.000
19	FUNCTION1 HPCD...	24.07	1.494e2					2.5	NO		bb		0.000
20	FUNCTION1 HPCD...	23.83	1.478e2					3.3	YES		bb		0.000

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ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	28.48	1.146e2					2.7	NO		bb		0.000
2	FUNCTION2 HPCD...	28.07	8.040e1					1.2	NO		db		0.000
3	FUNCTION2 HPCD...	27.98	1.117e2					1.5	NO		bd		0.000
4	FUNCTION2 HPCD...	27.82	9.308e1					2.0	NO		bb		0.000
5	FUNCTION2 HPCD...	31.82	1.073e2					1.6	NO		bb		0.000
6	FUNCTION2 HPCD...	31.41	3.440e2					4.0	YES		bb		0.000
7	FUNCTION2 HPCD...	31.18	9.044e1					1.2	NO		db		0.000
8	FUNCTION2 HPCD...	31.11	9.781e1					2.1	NO		dd		0.000
9	FUNCTION2 HPCD...	31.03	7.279e2					8.6	YES		bd		0.000
10	FUNCTION2 HPCD...	30.26	7.257e1					1.3	NO		bb		0.000
11	FUNCTION2 HPCD...	30.21	7.122e1					1.7	NO		db		0.000
12	FUNCTION2 HPCD...	30.14	1.157e2					1.5	NO		dd		0.000
13	FUNCTION2 HPCD...	30.06	7.412e1					1.1	NO		dd		0.000
14	FUNCTION2 HPCD...	29.98	7.219e1					1.2	NO		dd		0.000
15	FUNCTION2 HPCD...	29.91	9.212e1					2.0	NO		bd		0.000
16	FUNCTION2 HPCD...	29.69	7.977e1					1.3	NO		bb		0.000
17	FUNCTION2 HPCD...	29.08	1.408e2					1.5	NO		db		0.000
18	FUNCTION2 HPCD...	28.96	1.497e2					1.4	NO		bd		0.000
19	FUNCTION2 HPCD...	28.71	8.490e1					1.0	NO		bb		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	37.65	1.580e2					2.6	NO		db		0.000
2	FUNCTION3 OCDPE	37.55	1.150e2					2.8	NO		bd		0.000
3	FUNCTION3 OCDPE	36.42	1.835e2					2.9	NO		bb		0.000
4	FUNCTION3 OCDPE	36.04	2.520e2					4.7	YES		db		0.000
5	FUNCTION3 OCDPE	35.93	1.106e2					3.8	YES		dd		0.000
6	FUNCTION3 OCDPE	35.90	1.018e2					3.4	YES		bd		0.000
7	FUNCTION3 OCDPE	34.40	1.321e2					5.0	YES		bb		0.000
8	FUNCTION3 OCDPE	33.58	1.010e2					2.3	NO		bb		0.000
9	FUNCTION3 OCDPE	32.70	2.382e2					3.1	YES		bb		0.000

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ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	40.42	7.136e1					0.9	NO		bb		0.000
2	FUNCTION4 NCDPE	40.16	1.641e2					1.6	NO		bb		0.000
3	FUNCTION4 NCDPE	39.69	1.182e2					1.5	NO		bb		0.000
4	FUNCTION4 NCDPE	38.52	1.487e2					1.6	NO		db		0.000
5	FUNCTION4 NCDPE	38.34	2.790e2					2.3	NO		dd		0.000
6	FUNCTION4 NCDPE	38.26	1.556e2					2.2	NO		bd		0.000
7	FUNCTION4 NCDPE	41.34	1.448e2					1.6	NO		bb		0.000
8	FUNCTION4 NCDPE	40.81	1.056e2					2.8	NO		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	44.58	7.112e1					3.0	NO		bb		0.000
2	FUNCTION5 DCDPE	43.59	9.542e1					3.1	YES		bb		0.000

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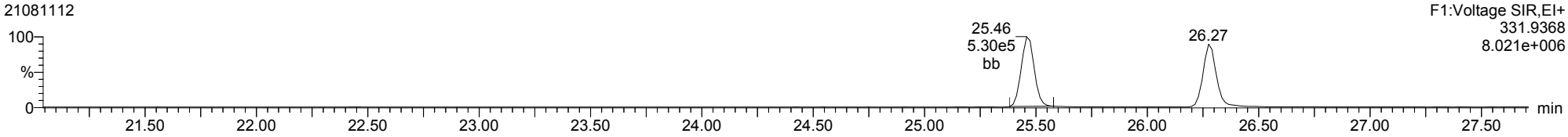
13C-1234-TCDD



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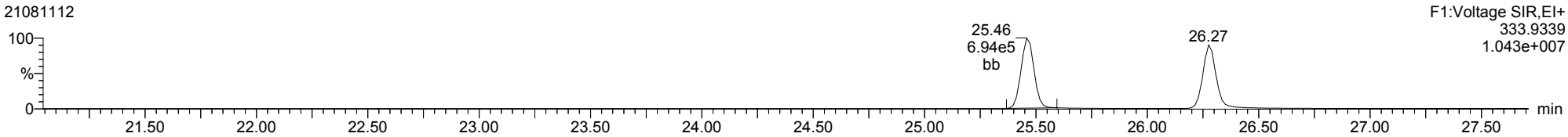

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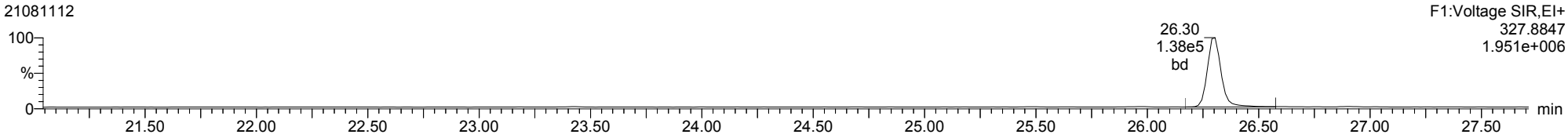

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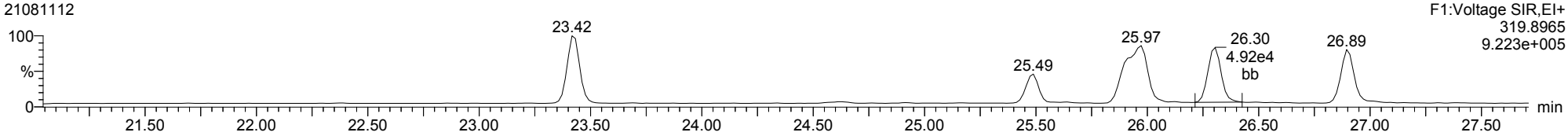
2378-TCDD



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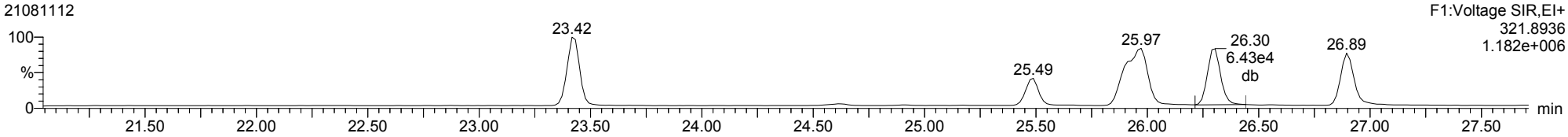

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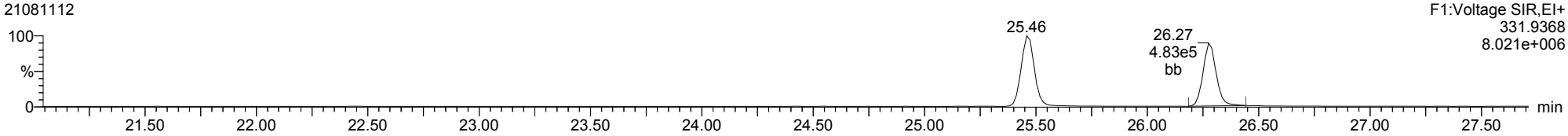

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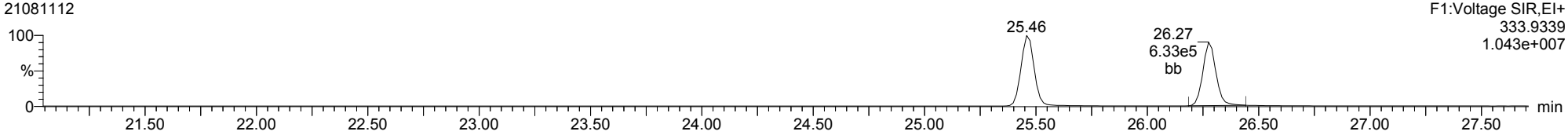
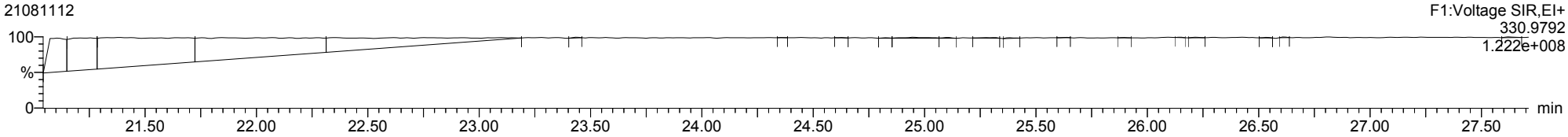


FUNCTION1 PFK



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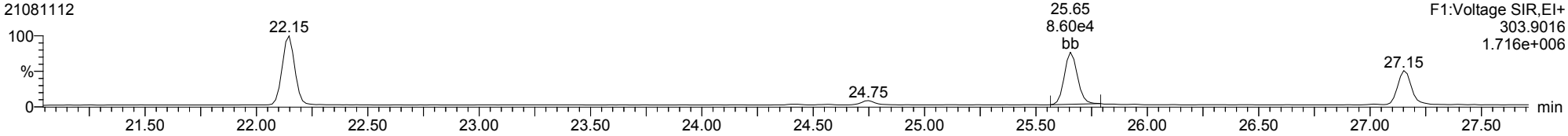
2378-TCDF



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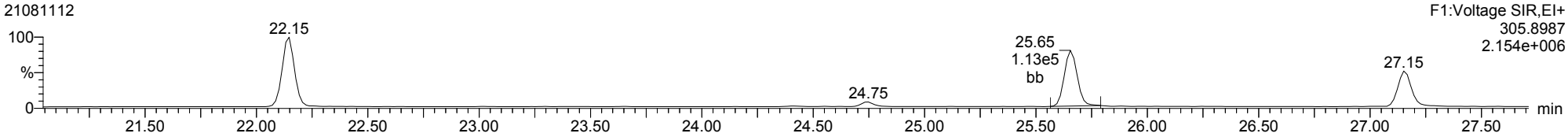

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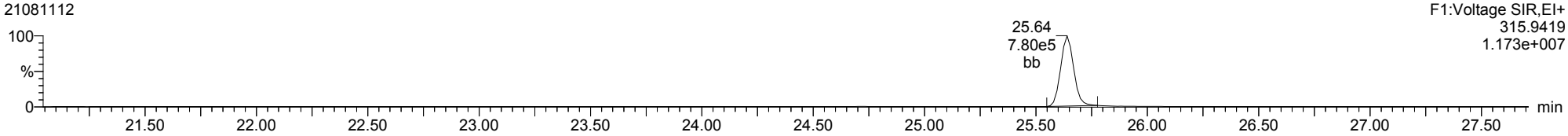

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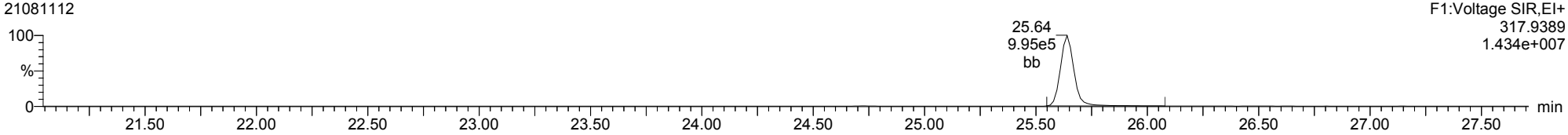

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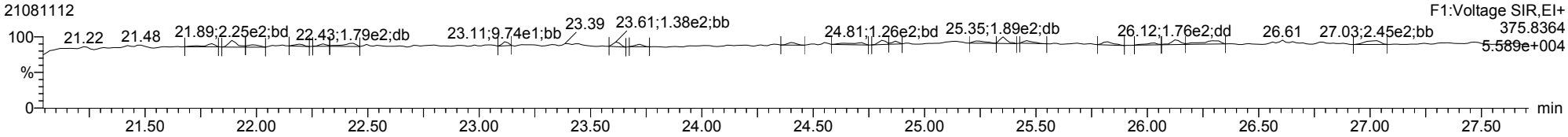

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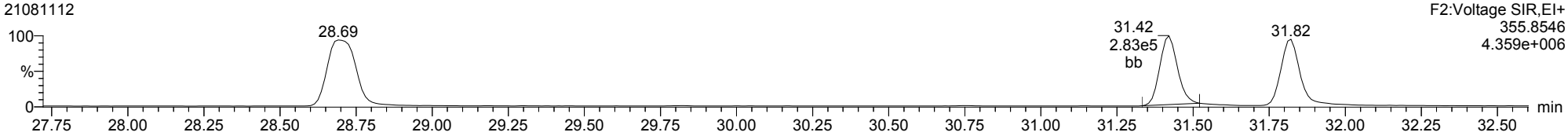

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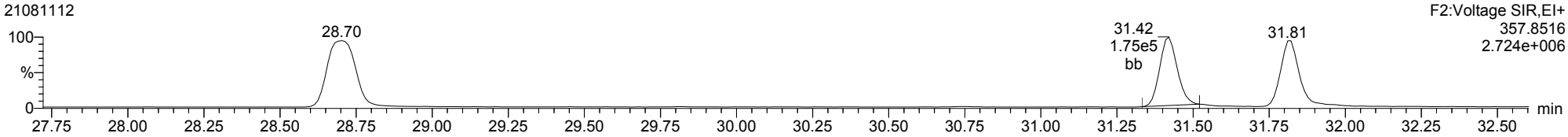

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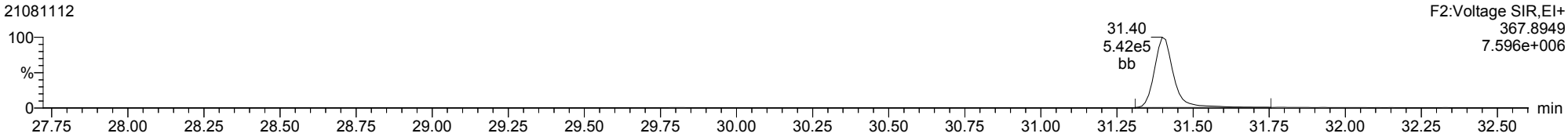

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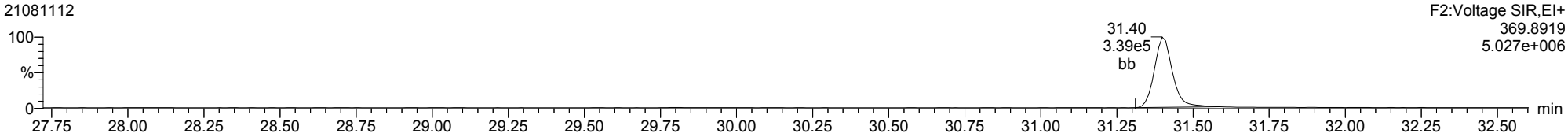

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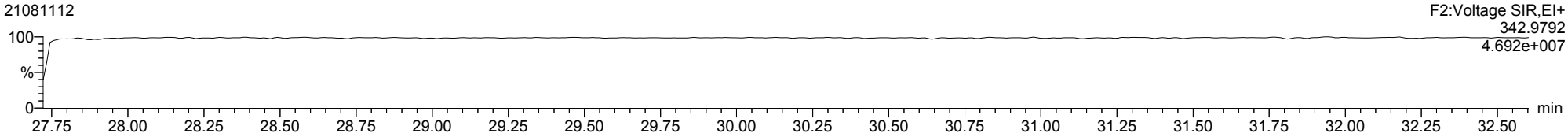

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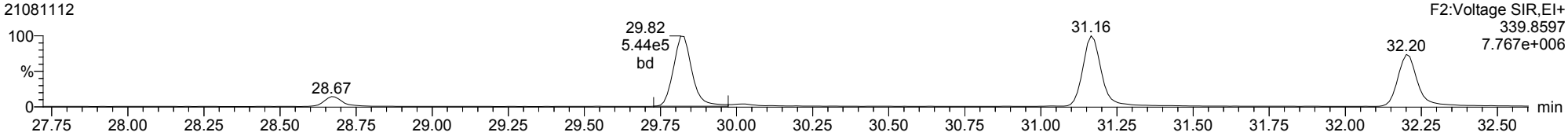

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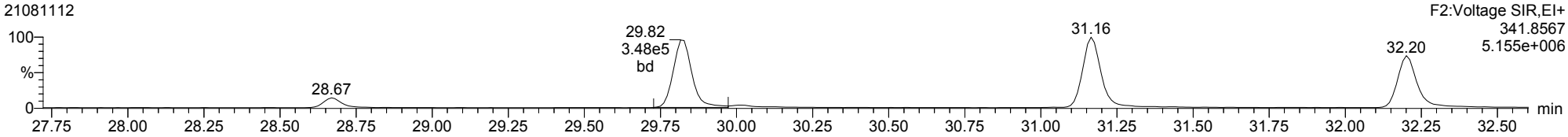

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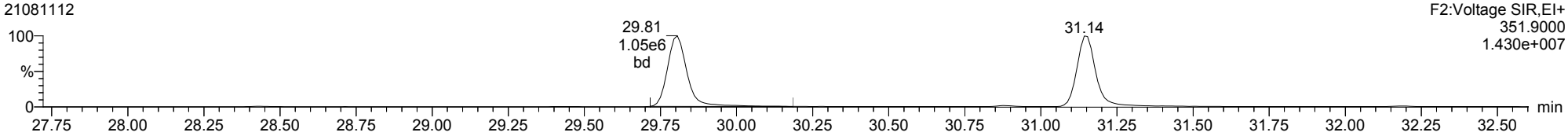

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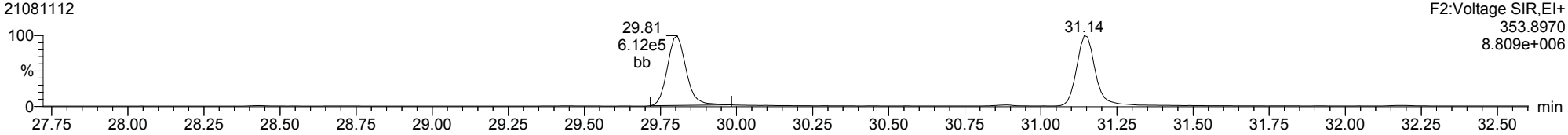
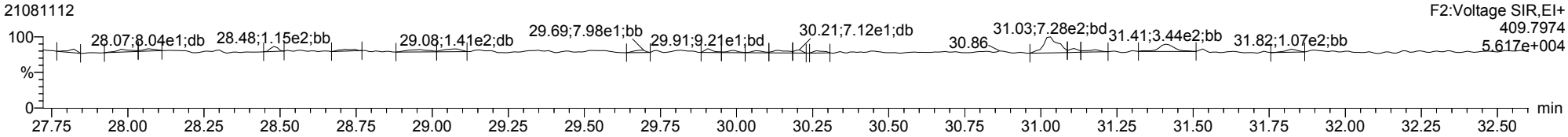


FUNCTION2 HPCDPE



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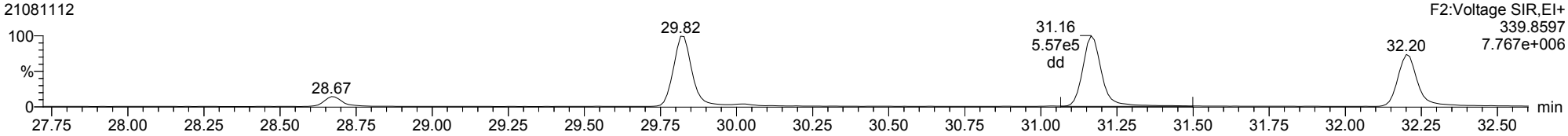

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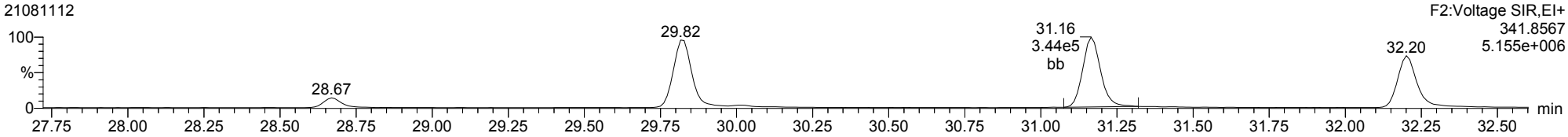

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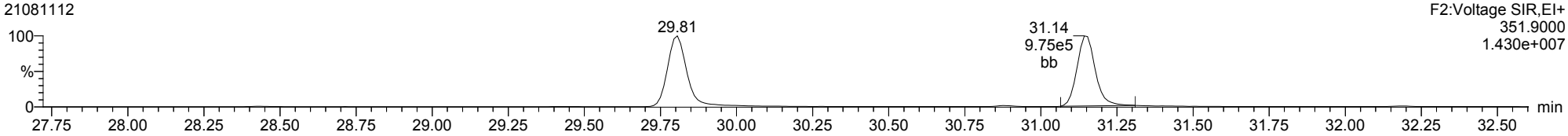

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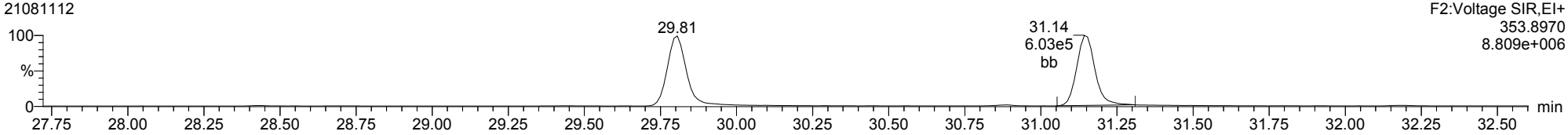

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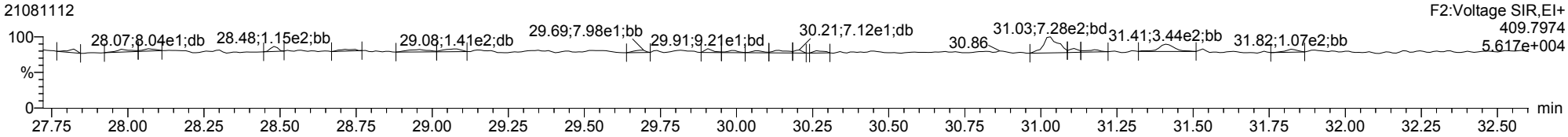

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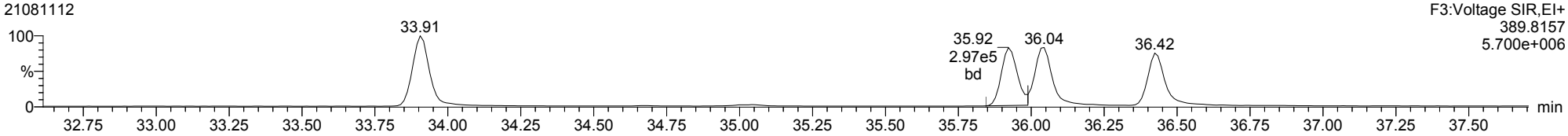

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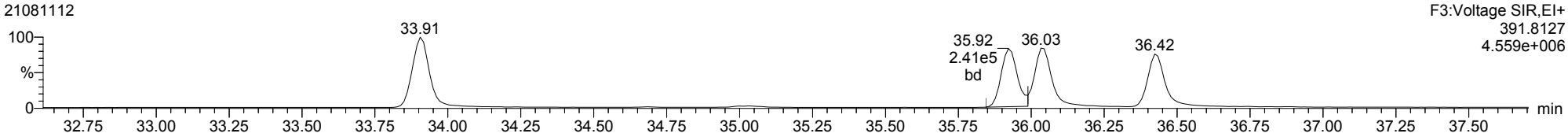

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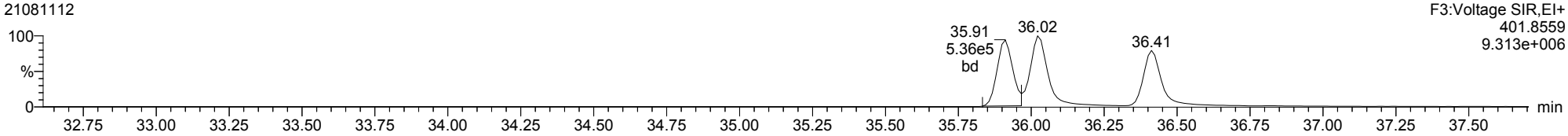

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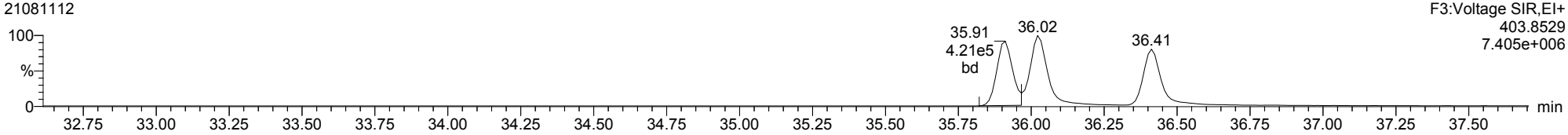

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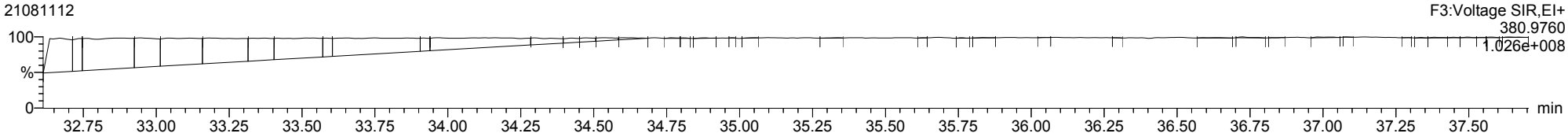

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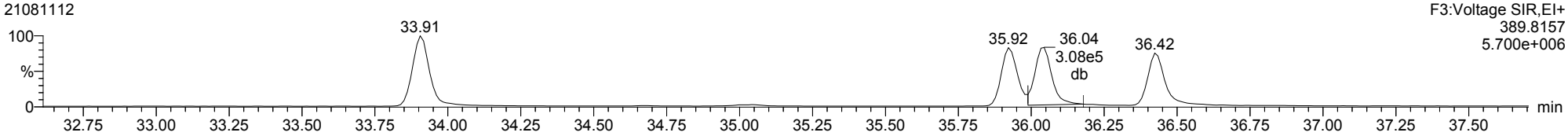

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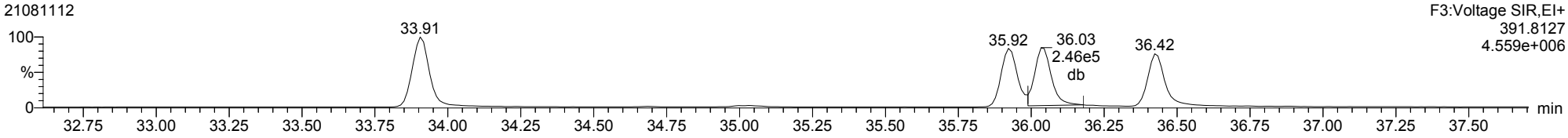

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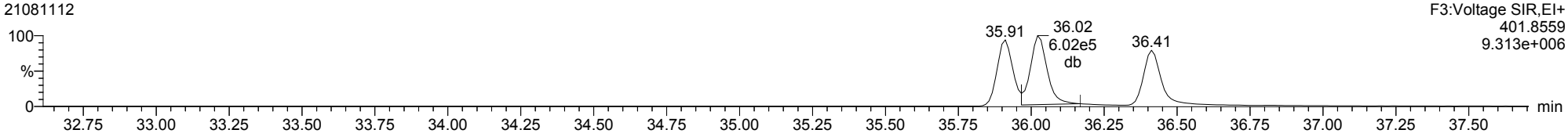

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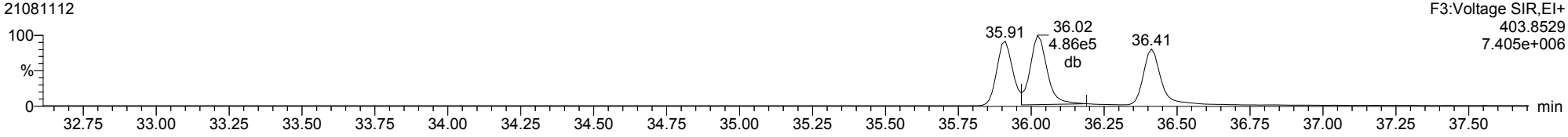

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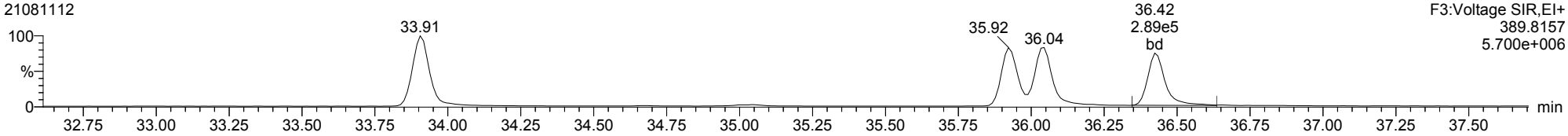

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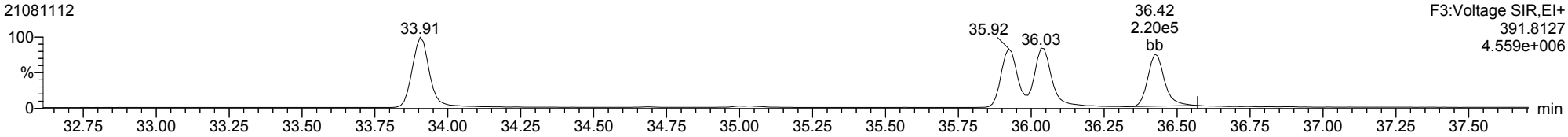

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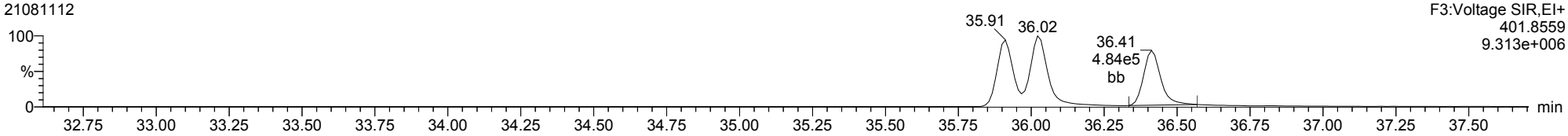

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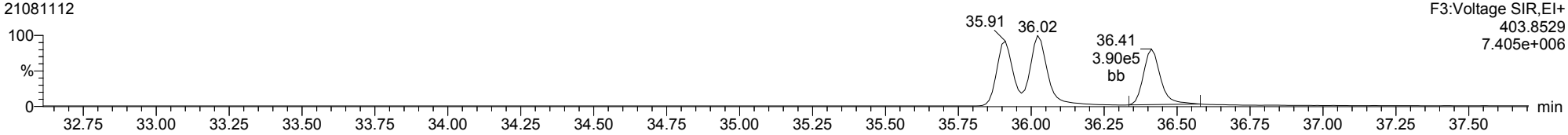

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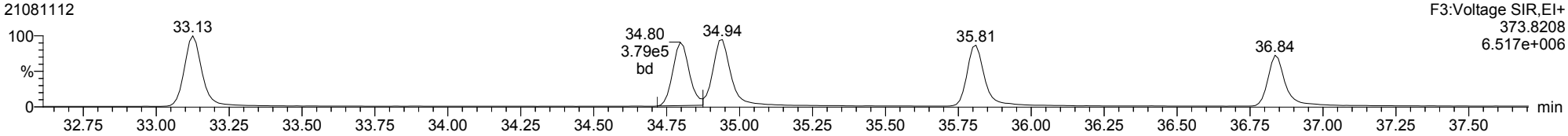

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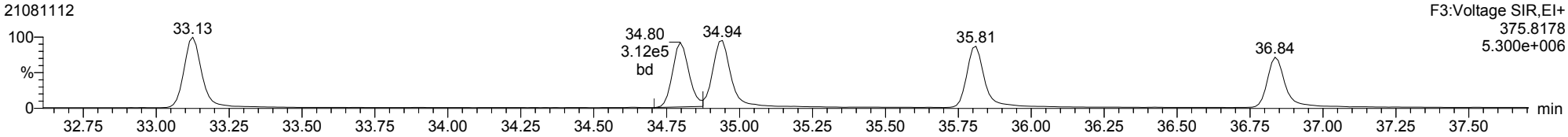

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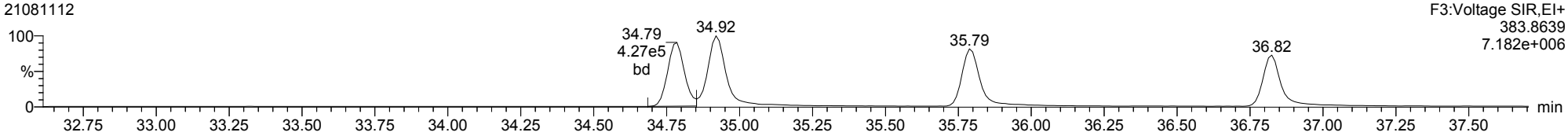

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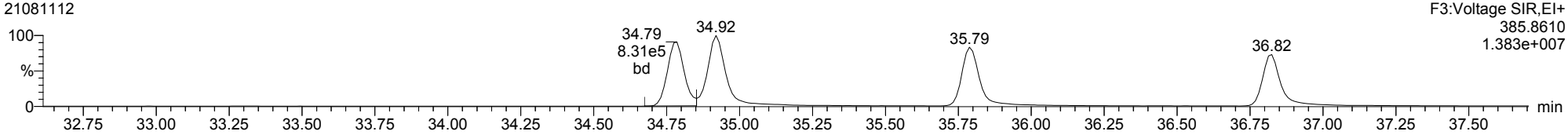

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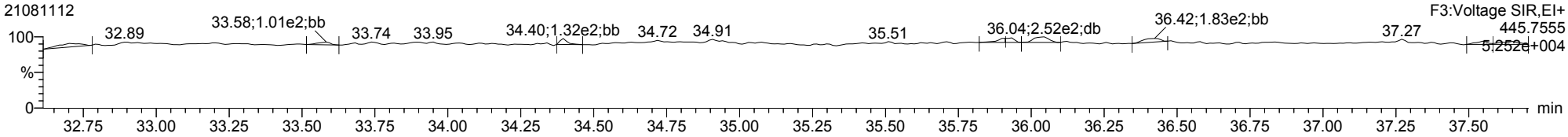

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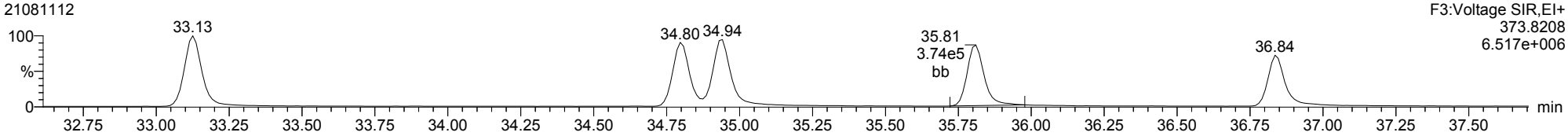

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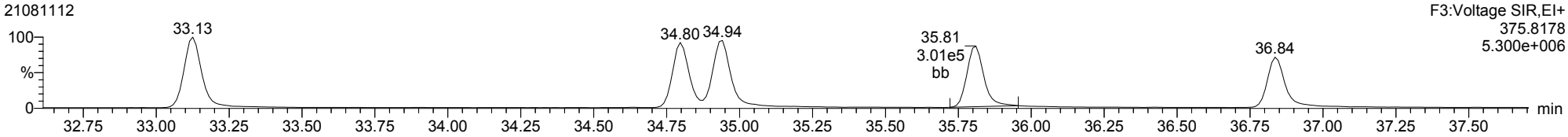

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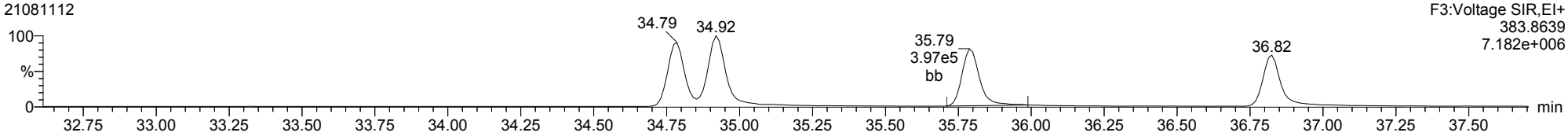

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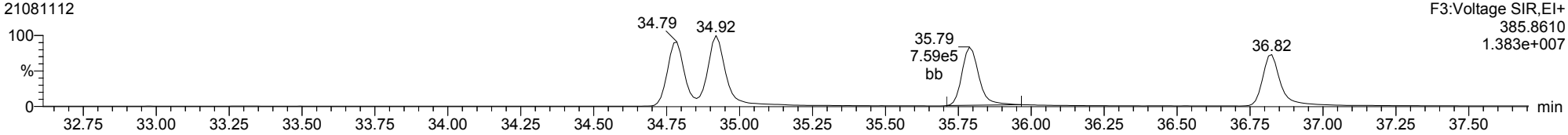
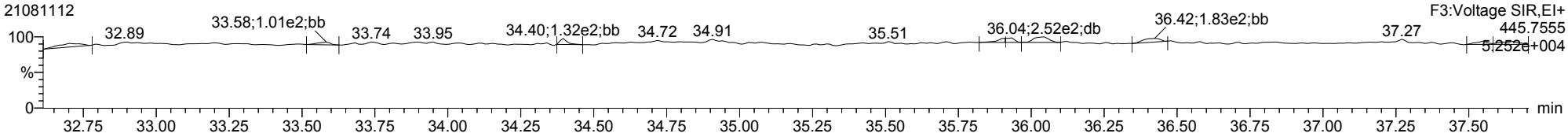


FUNCTION3 OCDPE



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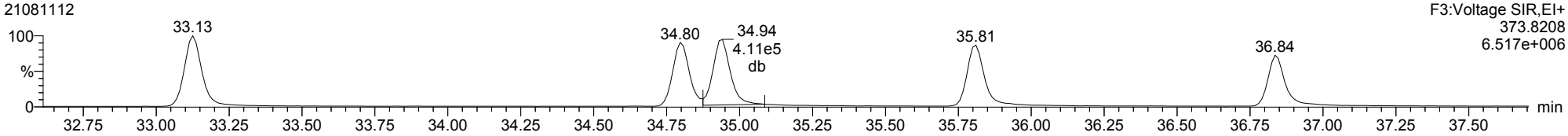

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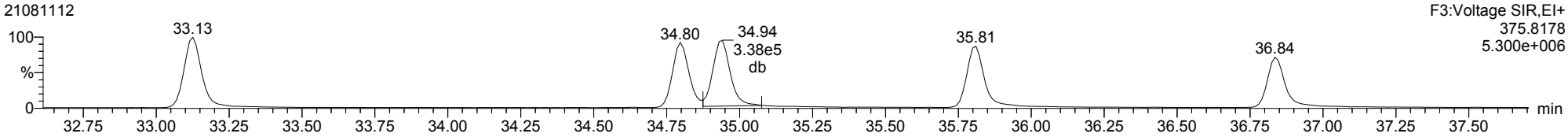

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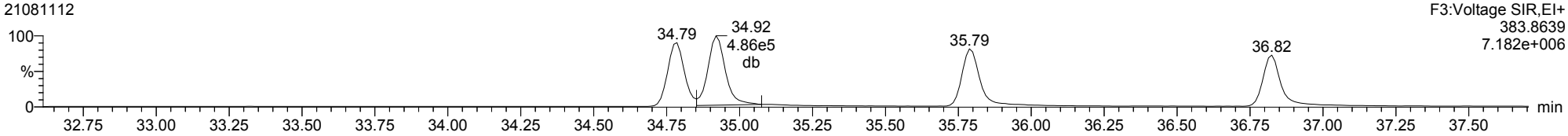

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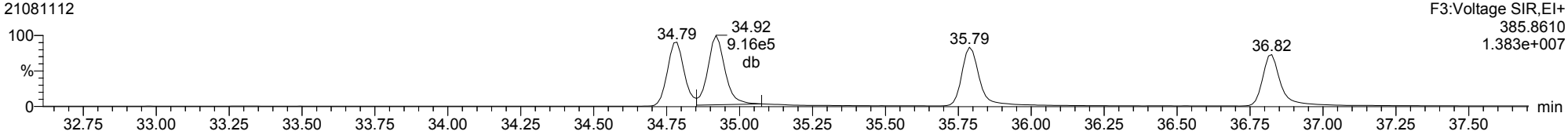

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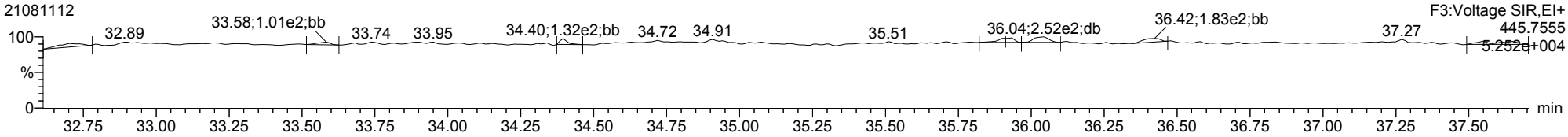

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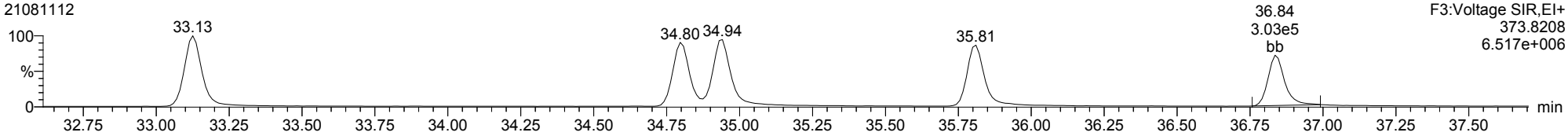

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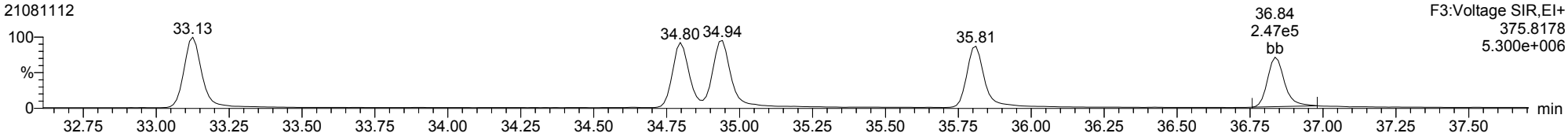

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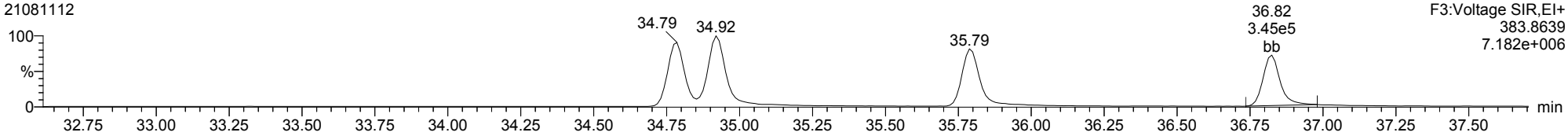

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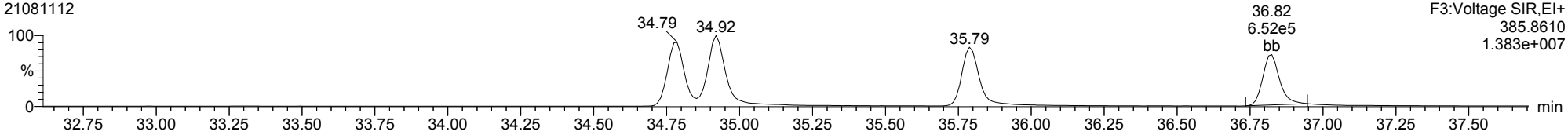
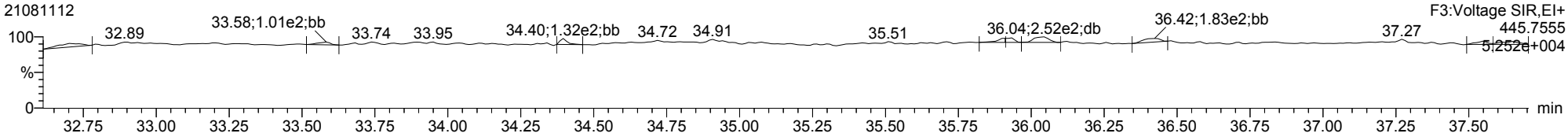


FUNCTION3 OCDPE



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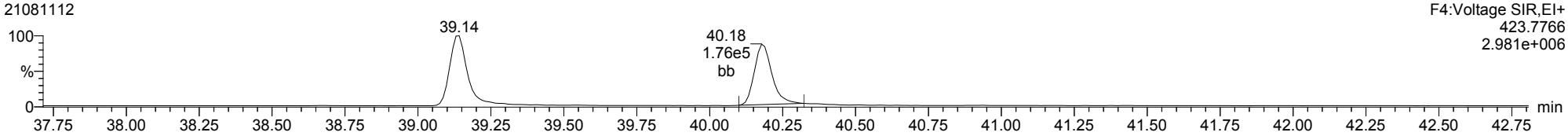

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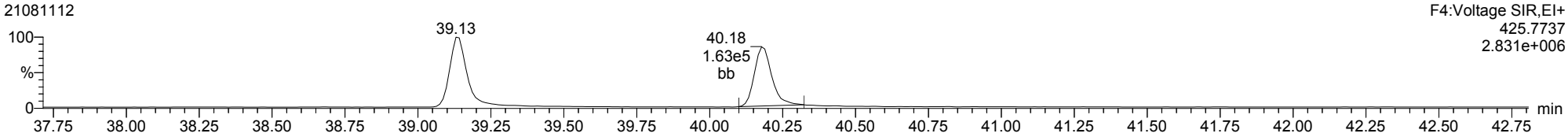

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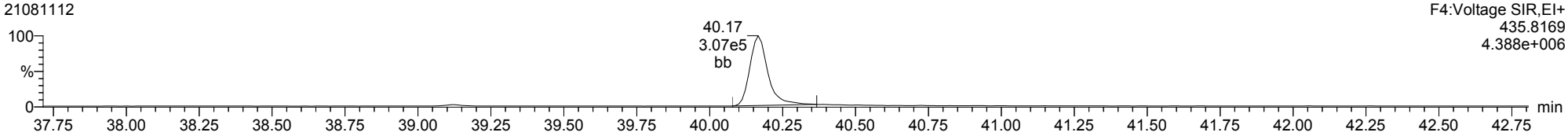

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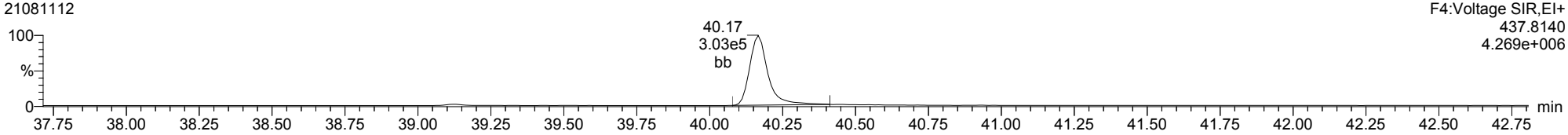
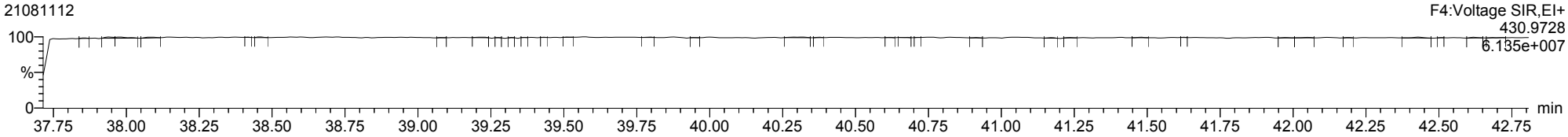


FUNCTION4 PFK



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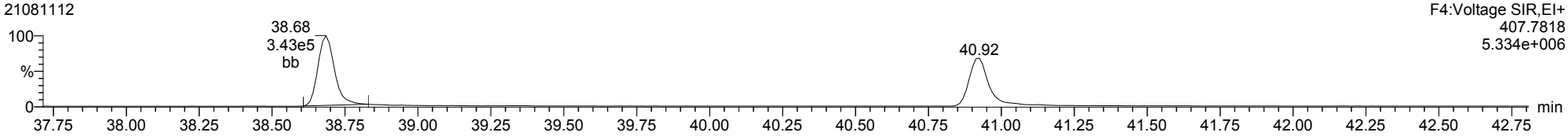

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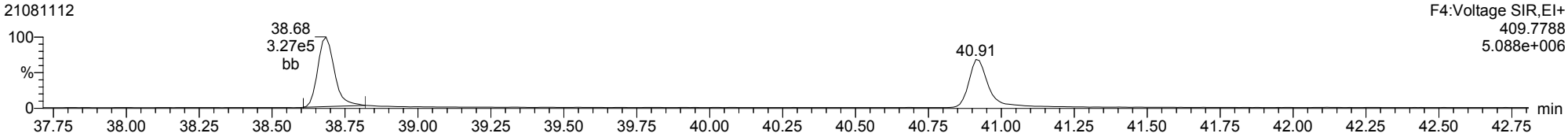

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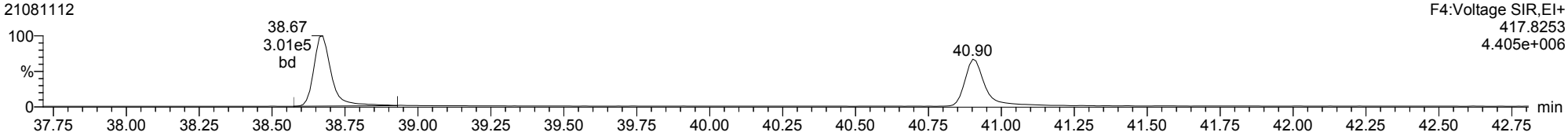

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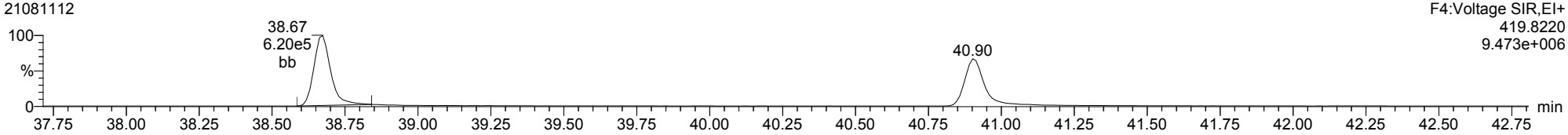
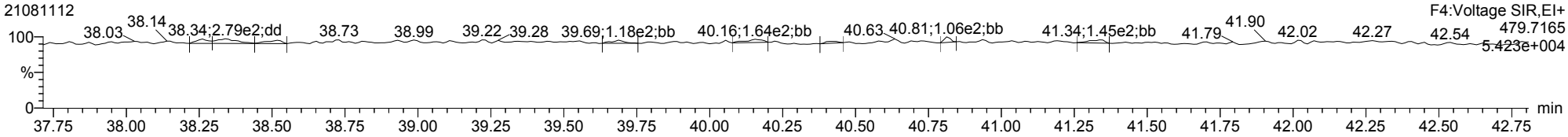


FUNCTION4 NCDPE



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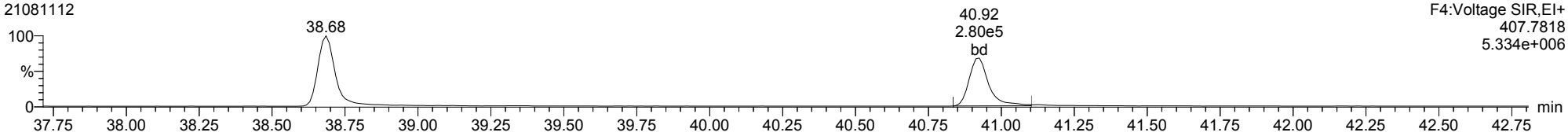
1234789-HpCDF



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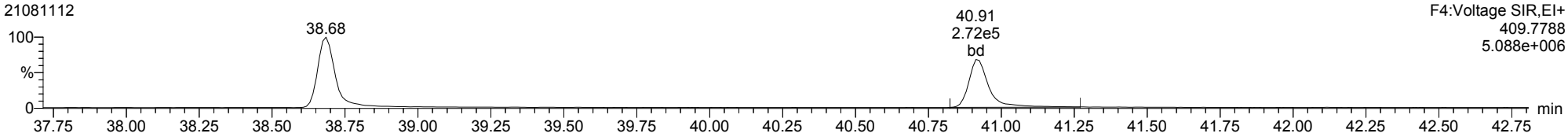

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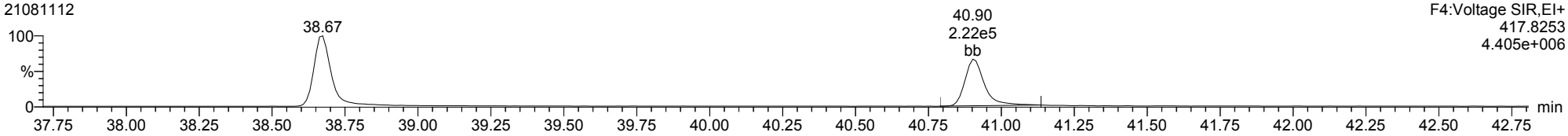

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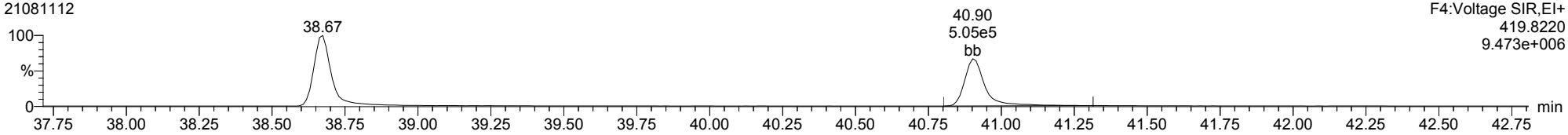
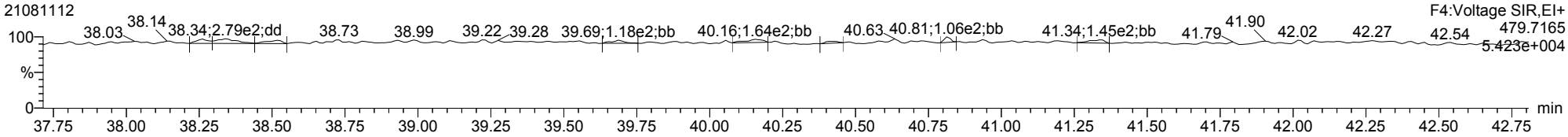


FUNCTION4 NCDPE



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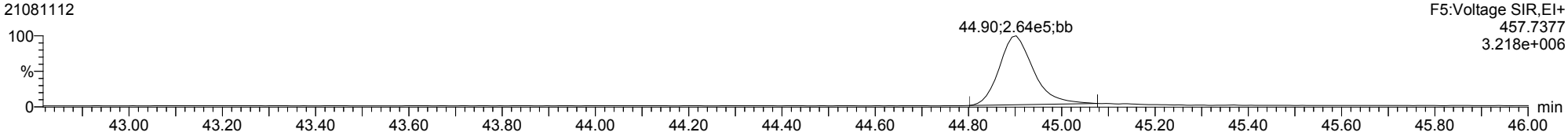
OCDD



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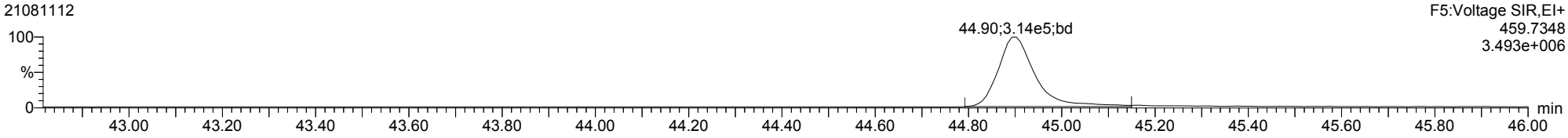

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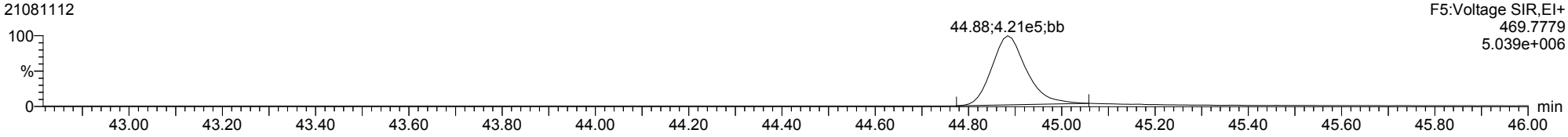

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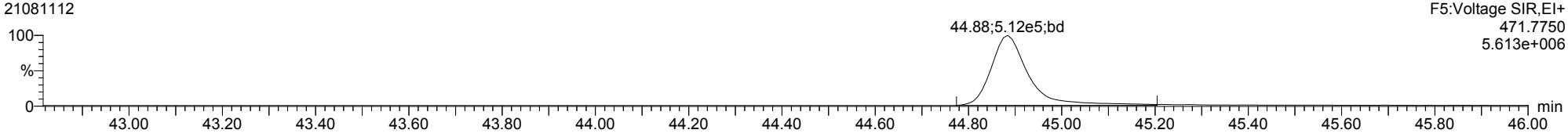
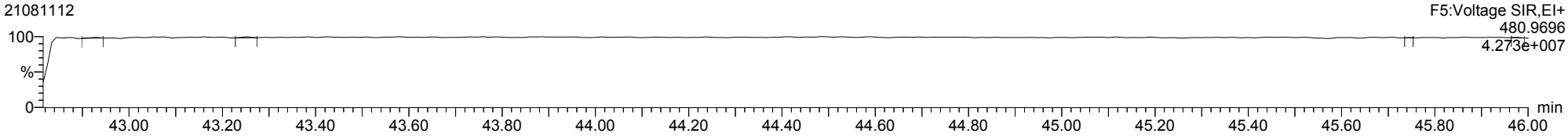


FUNCTION5 PFK



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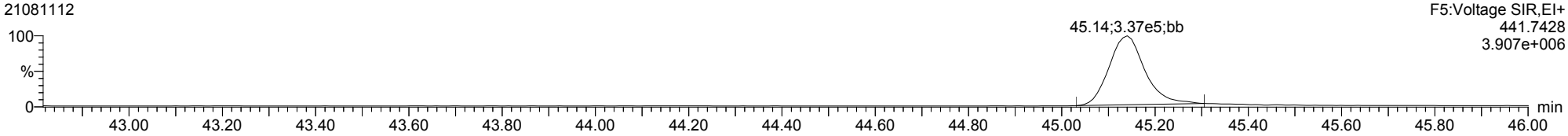
OCDF



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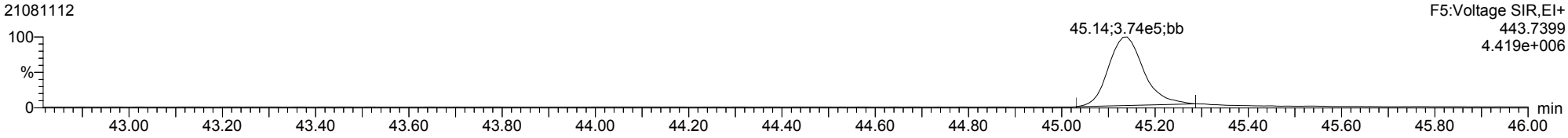
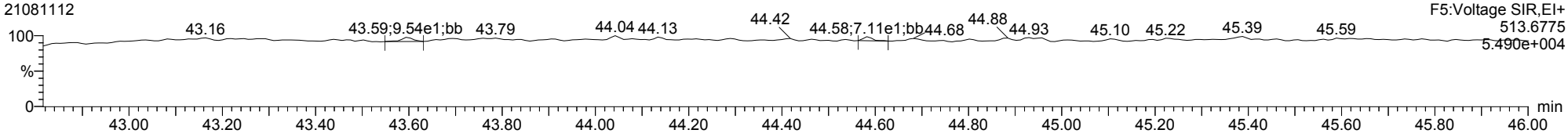


FUNCTION5 DCDPE



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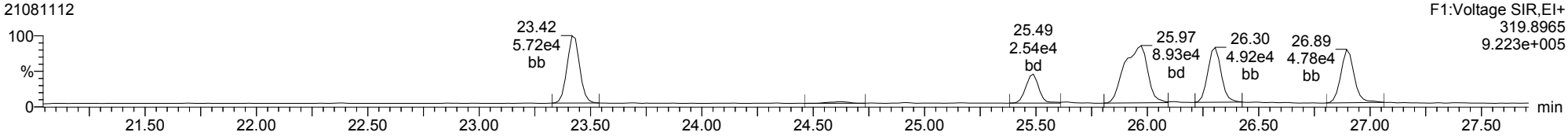
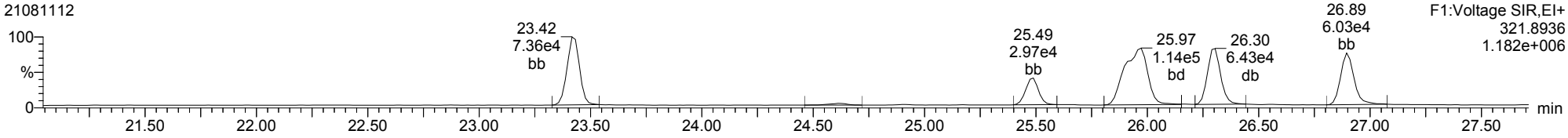
Total-tetradioxins



Total-tetradioxins



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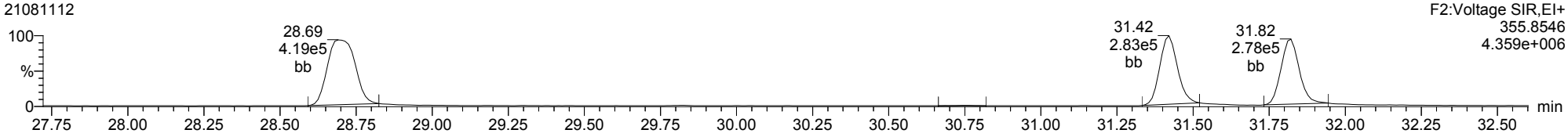

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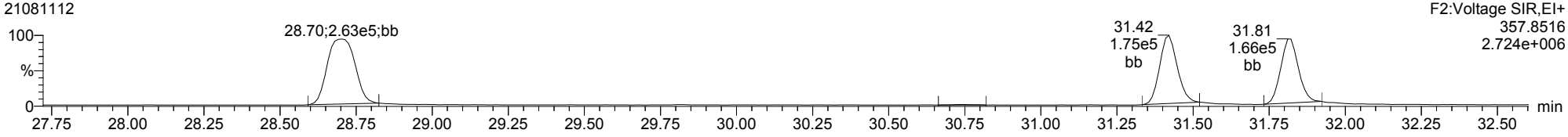

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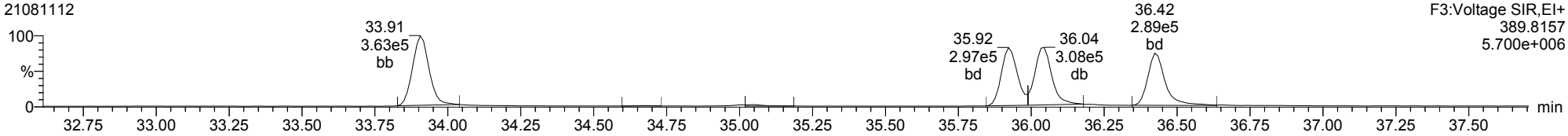

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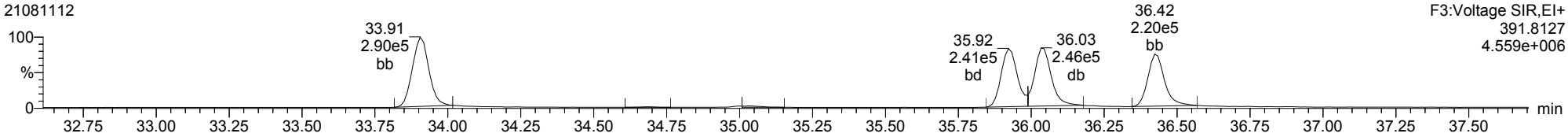

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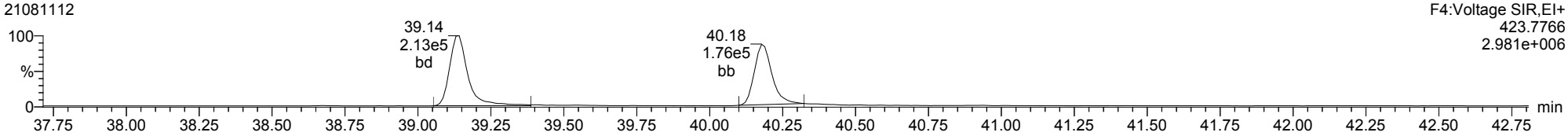

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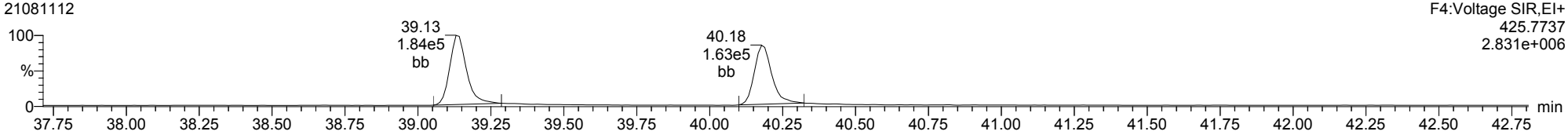
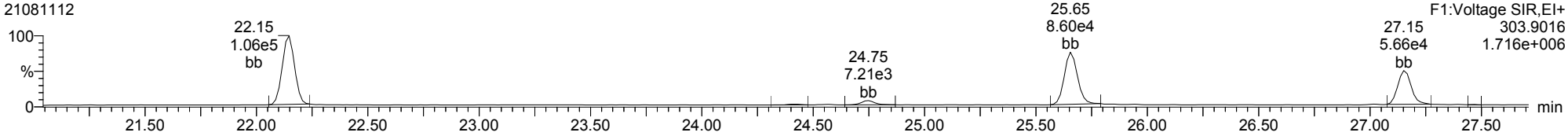
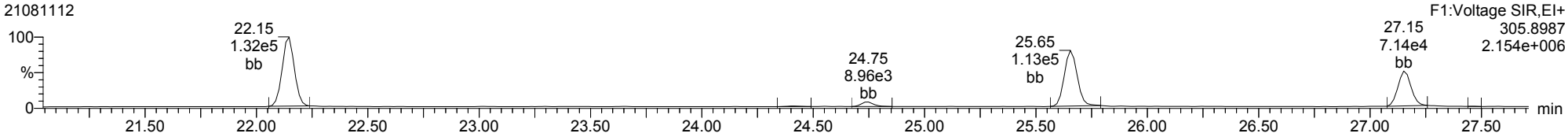


ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

Total-tetrafurans



Total-tetrafurans



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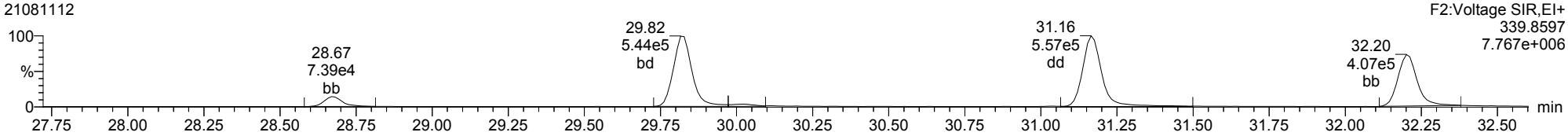

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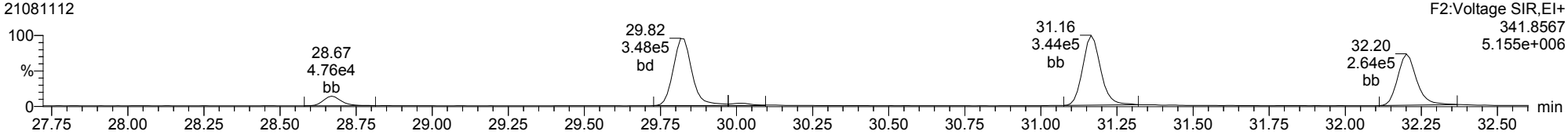

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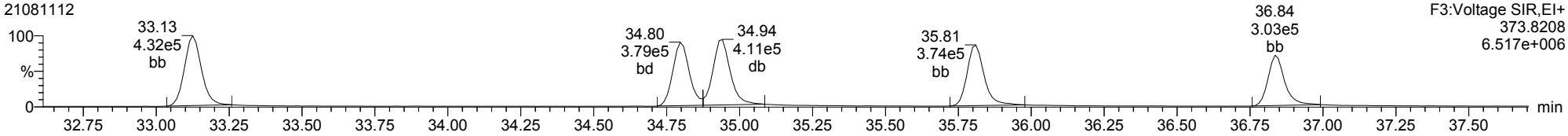
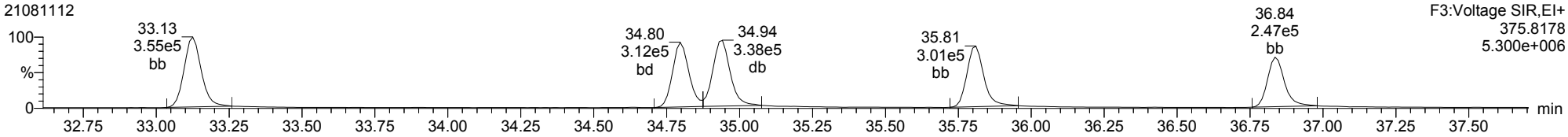
Last Altered: Friday, August 13, 2021 13:47:27 Pacific Daylight Time
Printed: Friday, August 13, 2021 13:51:56 Pacific Daylight Time

ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

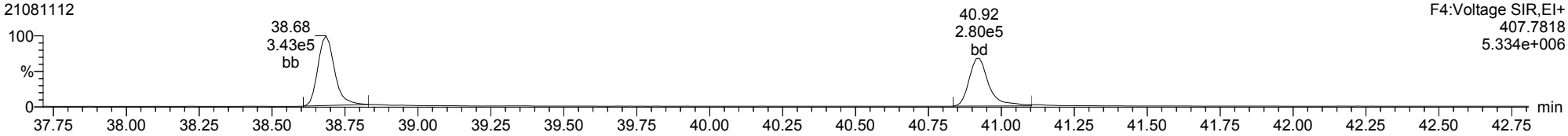
Total-hexafurans



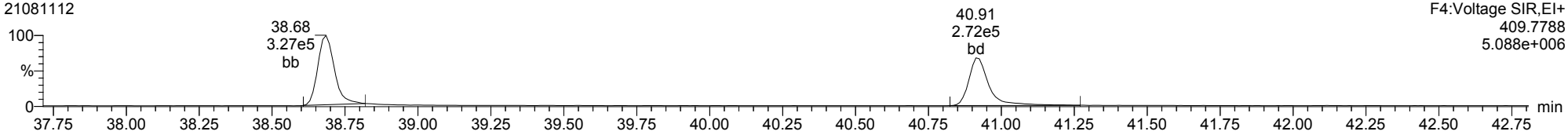
Total-hexafurans



Total-heptafurans



Total-heptafurans



Analytical Resources, Incorporated
Analytical Chemists and Consultants

SECOND-SOURCE CALIBRATION VERIFICATION

EPA 1613B

Laboratory: Analytical Resources, Inc.
SDG: 21G0140
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Calibration: UNASSIGNED
Laboratory ID: SJH0117-SCV1
Sequence: SJH0117
Standard ID: G001361

ANALYTE	EXPECTED (ng/mL)	FOUND (ng/mL)	% DRIFT	QC LIMIT
OCDF	100.00	105	5.4	
OCDD	100.00	105	5.0	
13C12-2,3,7,8-TCDF	100.00	102	1.7	
13C12-2,3,7,8-TCDD	100.00	81.6	-18.4	
13C12-1,2,3,7,8-PeCDF	100.00	105	4.8	
13C12-2,3,4,7,8-PeCDF	100.00	104	4.3	
13C12-1,2,3,7,8-PeCDD	100.00	98.4	-1.6	
13C12-1,2,3,4,7,8-HxCDF	100.00	116	15.9	
13C12-1,2,3,6,7,8-HxCDF	100.00	119	19.4	
13C12-2,3,4,6,7,8-HxCDF	100.00	109	8.8	
13C12-1,2,3,7,8,9-HxCDF	100.00	113	13.2	
13C12-1,2,3,4,7,8-HxCDD	100.00	114	14.1	
13C12-1,2,3,6,7,8-HxCDD	100.00	119	19.5	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	114	13.7	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	110	9.8	
13C12-1,2,3,4,6,7,8-HpCDD	100.00	110	10.5	
13C12-OCDD	200.00	212	5.9	
37Cl4-2,3,7,8-TCDD	10.000	10.4	4.0	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210811ICVIH.qld
Last Altered: Friday, August 13, 2021 13:47:27 Pacific Daylight Time
Printed: Friday, August 13, 2021 13:51:56 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210720.mdb 11 Aug 2021 14:23:13
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.655	1.001	8.598e4	1.128e5	1.108	0.762	0.770	1727	2357	1.26e6	1.68e6	728.4	713.0	NO	bb	bb	10.110
12378-PeCDF	29.816	1.000	5.436e5	3.483e5	1.015	1.561	1.550	6428	5298	7.67e6	4.88e6	1193.2	921.9	NO	bd	bd	52.831
23478-PeCDF	31.165	1.001	5.567e5	3.442e5	1.126	1.617	1.550	6428	5298	7.71e6	5.06e6	1200.0	955.7	NO	dd	bb	50.709
123478-HxCDF	34.797	1.000	3.790e5	3.119e5	1.017	1.215	1.240	6025	4489	5.81e6	4.80e6	963.5	1070.0	NO	bd	bd	54.003
234678-HxCDF	35.810	1.001	3.741e5	3.010e5	1.052	1.243	1.240	6025	4489	5.56e6	4.51e6	922.2	1004.3	NO	bb	bb	55.515
123678-HxCDF	34.941	1.001	4.107e5	3.376e5	1.037	1.217	1.240	6025	4489	5.99e6	4.89e6	994.0	1090.0	NO	db	db	51.475
123789-HxCDF	36.835	1.000	3.029e5	2.474e5	1.030	1.224	1.240	6025	4489	4.62e6	3.69e6	767.5	821.7	NO	bb	bb	53.582
1234678-HpCDF	38.685	1.000	3.428e5	3.268e5	1.327	1.049	1.050	5528	5142	5.22e6	4.97e6	945.1	966.6	NO	bb	bb	54.784
1234789-HpCDF	40.924	1.000	2.799e5	2.719e5	1.283	1.029	1.050	5528	5142	3.60e6	3.43e6	650.7	667.0	NO	bd	bd	59.145
OCDF	45.140	1.006	3.368e5	3.743e5	1.447	0.900	0.890	5198	2808	3.79e6	4.27e6	729.8	1522.4	NO	bb	bb	105.415
2378-TCDD	26.305	1.001	4.924e4	6.425e4	0.920	0.766	0.770	2440	1603	7.12e5	9.28e5	291.6	579.2	NO	bb	db	11.057
12378-PeCDD	31.421	1.001	2.834e5	1.748e5	0.995	1.621	1.550	4032	3115	4.22e6	2.62e6	1046.5	841.2	NO	bb	bb	52.211
123478-HxCDD	35.922	1.000	2.965e5	2.407e5	1.027	1.232	1.240	4241	3010	4.65e6	3.73e6	1096.7	1237.9	NO	bd	bd	54.629
123678-HxCDD	36.044	1.001	3.082e5	2.464e5	1.009	1.251	1.240	4241	3010	4.61e6	3.72e6	1085.9	1237.1	NO	db	db	50.555
123789-HxCDD	36.423	1.011	2.887e5	2.199e5	0.950	1.313	1.240	4241	3010	4.19e6	3.34e6	989.1	1108.9	NO	bd	bb	52.339
1234678-HpCDD	40.178	1.000	1.757e5	1.625e5	1.068	1.081	1.050	3111	3083	2.53e6	2.35e6	814.6	763.1	NO	bb	bb	51.865
OCDD	44.903	1.000	2.642e5	3.138e5	1.181	0.842	0.890	2972	3108	3.12e6	3.44e6	1050.3	1105.9	NO	bb	bd	104.997
13C-2378-TCDF	25.640	1.007	7.798e5	9.953e5	1.427	0.784	0.770	3469	3089	1.16e7	1.43e7	3339.4	4613.3	NO	bb	bb	101.689
13C-12378-PeCDF	29.806	1.171	1.051e6	6.125e5	1.297	1.716	1.550	4922	3645	1.42e7	8.62e6	2881.8	2364.6	NO	bd	bb	104.785
13C-23478-PeCDF	31.142	1.223	9.754e5	6.030e5	1.236	1.617	1.550	4922	3645	1.41e7	8.69e6	2860.8	2384.9	NO	bb	bb	104.321
13C-123478-HxCDF	34.785	0.955	4.274e5	8.307e5	1.242	0.514	0.510	5265	6298	6.41e6	1.24e7	1218.4	1973.2	NO	bd	bd	115.885
13C-123678-HxCDF	34.919	0.959	4.860e5	9.161e5	1.343	0.530	0.510	5265	6298	7.00e6	1.35e7	1330.1	2144.5	NO	db	db	119.442
13C-234678-HxCDF	35.788	0.983	3.967e5	7.587e5	1.215	0.523	0.510	5265	6298	5.75e6	1.13e7	1091.4	1799.0	NO	bb	bb	108.848
13C-123789-HxCDF	36.824	1.011	3.447e5	6.522e5	1.008	0.529	0.510	5265	6298	5.11e6	9.81e6	969.9	1558.1	NO	bb	bb	113.229
13C-1234678-HpCDF	38.674	1.062	3.005e5	6.203e5	0.926	0.484	0.440	3480	6125	4.35e6	9.34e6	1249.4	1525.5	NO	bd	bb	113.744
13C-1234789-HpCDF	40.902	1.123	2.223e5	5.047e5	0.758	0.440	0.440	3480	6125	2.90e6	6.30e6	833.4	1029.2	NO	bb	bb	109.773
13C-1234-TCDD	25.458	0.000	5.298e5	6.938e5	1.000	0.764	0.770	5513	2305	7.87e6	1.03e7	1428.2	4481.1	NO	bb	bb	100.000
13C-2378-TCDD	26.275	1.032	4.826e5	6.328e5	1.116	0.763	0.770	5513	2305	7.09e6	9.32e6	1285.5	4044.7	NO	bb	bb	81.637
13C-12378-PeCDD	31.399	1.233	5.423e5	3.395e5	0.732	1.598	1.550	2388	2135	7.53e6	4.95e6	3154.4	2319.5	NO	bb	bb	98.449
13C-123478-HxCDD	35.911	0.986	5.361e5	4.211e5	0.960	1.273	1.240	3574	5521	8.65e6	6.70e6	2421.3	1213.6	NO	bd	bd	114.124
13C-123678-HxCDD	36.022	0.989	6.017e5	4.857e5	1.041	1.239	1.240	3574	5521	9.06e6	7.24e6	2535.4	1311.0	NO	db	db	119.499
13C-1234678-HpCDD	40.167	1.103	3.074e5	3.031e5	0.632	1.014	1.050	3260	2760	4.30e6	4.19e6	1318.4	1519.0	NO	bb	bb	110.470
13C-OCDD	44.884	1.233	4.208e5	5.116e5	0.504	0.822	0.890	2744	3477	4.92e6	5.55e6	1792.3	1596.9	NO	bb	bd	211.835
13C-123789-HxCDD	36.412	0.000	4.843e5	3.895e5	1.000	1.243	1.240	3574	5521	7.18e6	5.79e6	2010.2	1047.9	NO	bb	bb	100.000
37CL-2378-TCDD	26.305	1.033	1.379e5		1.084			1849		1.90e6		1029.2			bd		10.397

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ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	22.147	0.864	1.063e5	1.324e5	1.425	0.802	0.770	1727	2357	1.66e6	2.09e6	959.0	886.5	NO	bb	bb	9.436
1289-TCDF	27.152	1.059	5.661e4	7.137e4	1.043	0.793	0.770	1727	2357	8.15e5	1.06e6	472.0	447.8	NO	bb	bb	6.913
13468-PECDF	27.015	0.906	5.743e5	3.714e5	1.376	1.546	1.550	1557	1759	8.45e6	5.45e6	5425.9	3099.7	NO	bb	bb	41.310
12389-PECDF	32.201	1.080	4.075e5	2.638e5	1.000	1.544	1.550	6428	5298	5.63e6	3.72e6	875.5	702.7	NO	bb	bb	40.376
123468-HXCDF	33.125	0.952	4.315e5	3.546e5	1.087	1.217	1.240	6025	4489	6.40e6	5.20e6	1061.8	1158.1	NO	bb	bb	57.507
1368-TCDD	23.417	0.891	5.716e4	7.362e4	0.923	0.776	0.770	2440	1603	8.73e5	1.13e6	357.6	706.6	NO	bb	bb	12.700
1289-TCDD	26.895	1.024	4.776e4	6.026e4	0.794	0.793	0.770	2440	1603	6.91e5	8.63e5	283.1	538.1	NO	bb	bb	12.197
12479-PECDD	28.691	0.914	4.186e5	2.632e5	1.843	1.590	1.550	4032	3115	3.99e6	2.51e6	988.7	804.5	NO	bb	bb	41.945
12389-PECDD	31.822	1.013	2.780e5	1.664e5	1.154	1.671	1.550	4032	3115	4.00e6	2.46e6	992.1	791.3	NO	bb	bb	43.683
124679-HXCDD	33.905	0.944	3.632e5	2.896e5	1.125	1.254	1.240	4241	3010	5.57e6	4.44e6	1314.1	1475.1	NO	bb	bb	60.629
1234679-HPCDD	39.141	0.975	2.129e5	1.840e5	1.211	1.157	1.050	3111	3083	2.93e6	2.75e6	941.5	893.1	NO	bd	bb	53.689
Total-tetrafurans			2.574e5		1.192			1727		3.86e6							27.363
Total-penta1			5.743e5					1557		8.45e6							41.310
Total-pentafurans			1.602e6		1.047			6428		2.23e7							153.079
Total-hexafurans			1.898e6		1.045			6025		2.84e7							272.082
Total-heptafurans			6.227e5		1.305			5528		8.82e6							113.929
Total-Furans			5.291e6		1.158			1727		7.56e7							713.177
Total-tetradioxins			2.709e5		0.879			2440		3.41e6							62.800
Total-pentadioxins			9.817e5		1.331			4032		1.22e7							138.087
Total-hexadioxins			1.266e6		1.028			4241		1.92e7							219.741
Total-heptadioxins			3.886e5		1.140			3111		5.46e6							105.554
Total-Dioxins			3.171e6		1.092			2440		4.34e7							631.178
Total-TEQ			8.462e6					2440		1.19e8							1344.355
FUNCTION1 PFK			6.450e7					839971		2.37e8							
FUNCTION2 PFK			0.000e0					483349		0.00e0							
FUNCTION3 PFK			5.184e7					675979		4.54e8							0.000
FUNCTION4 PFK			3.964e5					425264		1.39e7							
FUNCTION5 PFK			3.414e4					345829		1.67e6							
FUNCTION1 HXCD...			2.903e3					1258		5.64e4							0.000
FUNCTION1 HPCD...			2.863e3					1421		5.44e4							0.000
FUNCTION2 HPCD...			2.720e3					1471		5.70e4							0.000
FUNCTION3 OCDPE			1.392e3					890		2.72e4							0.000
FUNCTION4 NCDPE			1.187e3					1520		2.23e4							0.000
FUNCTION5 DCDPE			1.665e2					1065		6.42e3							0.000

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Method: T:\Autospec\Methods\Dioxin210720.mdb 11 Aug 2021 14:23:13
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

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TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.15	5.661e4	7.137e4	1.043	0.79	0.77	472.0	YES	NO	bb	bb	6.913
2	2378-TCDF	25.65	8.598e4	1.128e5	1.108	0.76	0.77	728.4	YES	NO	bb	bb	10.110
3	Total-tetrafurans	24.75	7.210e3	8.958e3	1.192	0.80	0.77	60.0	YES	NO	bb	bb	0.764
4	Total-tetrafurans	24.42	1.138e3	1.365e3	1.192	0.83	0.77	9.8	YES	NO	bb	bb	0.118
5	1368-TCDF	22.15	1.063e5	1.324e5	1.425	0.80	0.77	959.0	YES	NO	bb	bb	9.436
6	Total-tetrafurans	27.47	1.965e2	2.354e2	1.192	0.83	0.77	3.7	YES	NO	db	bb	0.020

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	27.02	5.743e5	3.714e5	1.376	1.55	1.55	5425.9	YES	NO	bb	bb	41.310

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentafurans	28.67	7.393e4	4.763e4	1.047	1.55	1.55	167.4	YES	NO	bb	bb	7.165
2	12389-PECDF	32.20	4.075e5	2.638e5	1.000	1.54	1.55	875.5	YES	NO	bb	bb	40.376
3	23478-PeCDF	31.16	5.567e5	3.442e5	1.126	1.62	1.55	1200.0	YES	NO	dd	bb	50.709
4	Total-pentafurans	30.02	2.035e4	1.353e4	1.047	1.50	1.55	37.7	YES	NO	dd	dd	1.997
5	12378-PeCDF	29.82	5.436e5	3.483e5	1.015	1.56	1.55	1193.2	YES	NO	bd	bd	52.831

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123468-HXCDF	33.13	4.315e5	3.546e5	1.087	1.22	1.24	1061.8	YES	NO	bb	bb	57.507
2	123789-HxCDF	36.84	3.029e5	2.474e5	1.030	1.22	1.24	767.5	YES	NO	bb	bb	53.582
3	234678-HxCDF	35.81	3.741e5	3.010e5	1.052	1.24	1.24	922.2	YES	NO	bb	bb	55.515
4	123678-HxCDF	34.94	4.107e5	3.376e5	1.037	1.22	1.24	994.0	YES	NO	db	db	51.475
5	123478-HxCDF	34.80	3.790e5	3.119e5	1.017	1.22	1.24	963.5	YES	NO	bd	bd	54.003

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDF	38.68	3.428e5	3.268e5	1.327	1.05	1.05	945.1	YES	NO	bb	bb	54.784
2	1234789-HpCDF	40.92	2.799e5	2.719e5	1.283	1.03	1.05	650.7	YES	NO	bd	bd	59.145

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Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.15	5.661e4	7.137e4	1.043	0.79	0.77	472.0	YES	NO	bb	bb	6.913
2	2378-TCDF	25.65	8.598e4	1.128e5	1.108	0.76	0.77	728.4	YES	NO	bb	bb	10.110
3	Total-tetrafurans	24.75	7.210e3	8.958e3	1.192	0.80	0.77	60.0	YES	NO	bb	bb	0.764
4	Total-tetrafurans	24.42	1.138e3	1.365e3	1.192	0.83	0.77	9.8	YES	NO	bb	bb	0.118
5	1368-TCDF	22.15	1.063e5	1.324e5	1.425	0.80	0.77	959.0	YES	NO	bb	bb	9.436
6	Total-tetrafurans	27.47	1.965e2	2.354e2	1.192	0.83	0.77	3.7	YES	NO	db	bb	0.020
7	Total-pentafurans	28.67	7.393e4	4.763e4	1.047	1.55	1.55	167.4	YES	NO	bb	bb	7.165
8	12389-PECDF	32.20	4.075e5	2.638e5	1.000	1.54	1.55	875.5	YES	NO	bb	bb	40.376
9	23478-PeCDF	31.16	5.567e5	3.442e5	1.126	1.62	1.55	1200.0	YES	NO	dd	bb	50.709
10	Total-pentafurans	30.02	2.035e4	1.353e4	1.047	1.50	1.55	37.7	YES	NO	dd	dd	1.997
11	12378-PeCDF	29.82	5.436e5	3.483e5	1.015	1.56	1.55	1193.2	YES	NO	bd	bd	52.831
12	123468-HXCDF	33.13	4.315e5	3.546e5	1.087	1.22	1.24	1061.8	YES	NO	bb	bb	57.507
13	123789-HxCDF	36.84	3.029e5	2.474e5	1.030	1.22	1.24	767.5	YES	NO	bb	bb	53.582
14	234678-HxCDF	35.81	3.741e5	3.010e5	1.052	1.24	1.24	922.2	YES	NO	bb	bb	55.515
15	123678-HxCDF	34.94	4.107e5	3.376e5	1.037	1.22	1.24	994.0	YES	NO	db	db	51.475
16	123478-HxCDF	34.80	3.790e5	3.119e5	1.017	1.22	1.24	963.5	YES	NO	bd	bd	54.003
17	1234678-HpCDF	38.68	3.428e5	3.268e5	1.327	1.05	1.05	945.1	YES	NO	bb	bb	54.784
18	1234789-HpCDF	40.92	2.799e5	2.719e5	1.283	1.03	1.05	650.7	YES	NO	bd	bd	59.145
19	OCDF	45.14	3.368e5	3.743e5	1.447	0.90	0.89	729.8	YES	NO	bb	bb	105.415
20	13468-PECDF	27.02	5.743e5	3.714e5	1.376	1.55	1.55	5425.9	YES	NO	bb	bb	41.310

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	25.97	8.932e4	1.141e5	0.879	0.78	0.77	303.9	YES	NO	bd	bd	20.744
2	Total-tetradioxins	25.49	2.543e4	2.972e4	0.879	0.86	0.77	154.2	YES	NO	bd	bb	5.625
3	Total-tetradioxins	24.63	2.020e3	2.647e3	0.879	0.76	0.77	8.0	YES	NO	bd	bb	0.476
4	1368-TCDD	23.42	5.716e4	7.362e4	0.923	0.78	0.77	357.6	YES	NO	bb	bb	12.700
5	1289-TCDD	26.89	4.776e4	6.026e4	0.794	0.79	0.77	283.1	YES	NO	bb	bb	12.197
6	2378-TCDD	26.30	4.924e4	6.425e4	0.920	0.77	0.77	291.6	YES	NO	bb	db	11.057

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PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDD	31.82	2.780e5	1.664e5	1.154	1.67	1.55	992.1	YES	NO	bb	bb	43.683
2	12378-PeCDD	31.42	2.834e5	1.748e5	0.995	1.62	1.55	1046.5	YES	NO	bb	bb	52.211
3	Total-pentadioxins	30.75	1.739e3	1.177e3	1.331	1.48	1.55	6.0	YES	NO	bb	bb	0.249
4	12479-PECDD	28.69	4.186e5	2.632e5	1.843	1.59	1.55	988.7	YES	NO	bb	bb	41.945

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	124679-HXCDD	33.91	3.632e5	2.896e5	1.125	1.25	1.24	1314.1	YES	NO	bb	bb	60.629
2	123789-HxCDD	36.42	2.887e5	2.199e5	0.950	1.31	1.24	989.1	YES	NO	bd	bb	52.339
3	123678-HxCDD	36.04	3.082e5	2.464e5	1.009	1.25	1.24	1085.9	YES	NO	db	db	50.555
4	123478-HxCDD	35.92	2.965e5	2.407e5	1.027	1.23	1.24	1096.7	YES	NO	bd	bd	54.629
5	Total-hexadioxins	35.04	7.156e3	6.136e3	1.028	1.17	1.24	26.9	YES	NO	db	db	1.265
6	Total-hexadioxins	34.67	1.781e3	1.631e3	1.028	1.09	1.24	7.7	YES	NO	bb	bb	0.325

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	40.18	1.757e5	1.625e5	1.068	1.08	1.05	814.6	YES	NO	bb	bb	51.865
2	1234679-HPCDD	39.14	2.129e5	1.840e5	1.211	1.16	1.05	941.5	YES	NO	bd	bb	53.689

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Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	25.97	8.932e4	1.141e5	0.879	0.78	0.77	303.9	YES	NO	bd	bd	20.744
2	Total-tetradioxins	25.49	2.543e4	2.972e4	0.879	0.86	0.77	154.2	YES	NO	bd	bb	5.625
3	Total-tetradioxins	24.63	2.020e3	2.647e3	0.879	0.76	0.77	8.0	YES	NO	bd	bb	0.476
4	1368-TCDD	23.42	5.716e4	7.362e4	0.923	0.78	0.77	357.6	YES	NO	bb	bb	12.700
5	1289-TCDD	26.89	4.776e4	6.026e4	0.794	0.79	0.77	283.1	YES	NO	bb	bb	12.197
6	2378-TCDD	26.30	4.924e4	6.425e4	0.920	0.77	0.77	291.6	YES	NO	bb	db	11.057
7	12389-PECDD	31.82	2.780e5	1.664e5	1.154	1.67	1.55	992.1	YES	NO	bb	bb	43.683
8	12378-PeCDD	31.42	2.834e5	1.748e5	0.995	1.62	1.55	1046.5	YES	NO	bb	bb	52.211
9	Total-pentadioxins	30.75	1.739e3	1.177e3	1.331	1.48	1.55	6.0	YES	NO	bb	bb	0.249
10	12479-PECDD	28.69	4.186e5	2.632e5	1.843	1.59	1.55	988.7	YES	NO	bb	bb	41.945
11	124679-HXCDD	33.91	3.632e5	2.896e5	1.125	1.25	1.24	1314.1	YES	NO	bb	bb	60.629
12	123789-HxCDD	36.42	2.887e5	2.199e5	0.950	1.31	1.24	989.1	YES	NO	bd	bb	52.339
13	123678-HxCDD	36.04	3.082e5	2.464e5	1.009	1.25	1.24	1085.9	YES	NO	db	db	50.555
14	123478-HxCDD	35.92	2.965e5	2.407e5	1.027	1.23	1.24	1096.7	YES	NO	bd	bd	54.629
15	Total-hexadioxins	35.04	7.156e3	6.136e3	1.028	1.17	1.24	26.9	YES	NO	db	db	1.265
16	Total-hexadioxins	34.67	1.781e3	1.631e3	1.028	1.09	1.24	7.7	YES	NO	bb	bb	0.325
17	1234678-HpCDD	40.18	1.757e5	1.625e5	1.068	1.08	1.05	814.6	YES	NO	bb	bb	51.865
18	1234679-HPCDD	39.14	2.129e5	1.840e5	1.211	1.16	1.05	941.5	YES	NO	bd	bb	53.689
19	OCDD	44.90	2.642e5	3.138e5	1.181	0.84	0.89	1050.3	YES	NO	bb	bd	104.997

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.15	5.661e4	7.137e4	1.043	0.79	0.77	472.0	YES	NO	bb	bb	6.913
2	2378-TCDF	25.65	8.598e4	1.128e5	1.108	0.76	0.77	728.4	YES	NO	bb	bb	10.110
3	Total-tetrafurans	24.75	7.210e3	8.958e3	1.192	0.80	0.77	60.0	YES	NO	bb	bb	0.764
4	Total-tetrafurans	24.42	1.138e3	1.365e3	1.192	0.83	0.77	9.8	YES	NO	bb	bb	0.118
5	1368-TCDF	22.15	1.063e5	1.324e5	1.425	0.80	0.77	959.0	YES	NO	bb	bb	9.436
6	Total-tetrafurans	27.47	1.965e2	2.354e2	1.192	0.83	0.77	3.7	YES	NO	db	bb	0.020
7	Total-pentafurans	28.67	7.393e4	4.763e4	1.047	1.55	1.55	167.4	YES	NO	bb	bb	7.165
8	12389-PECDF	32.20	4.075e5	2.638e5	1.000	1.54	1.55	875.5	YES	NO	bb	bb	40.376
9	23478-PeCDF	31.16	5.567e5	3.442e5	1.126	1.62	1.55	1200.0	YES	NO	dd	bb	50.709
10	Total-pentafurans	30.02	2.035e4	1.353e4	1.047	1.50	1.55	37.7	YES	NO	dd	dd	1.997
11	12378-PeCDF	29.82	5.436e5	3.483e5	1.015	1.56	1.55	1193.2	YES	NO	bd	bd	52.831
12	123468-HXCDF	33.13	4.315e5	3.546e5	1.087	1.22	1.24	1061.8	YES	NO	bb	bb	57.507
13	123789-HxCDF	36.84	3.029e5	2.474e5	1.030	1.22	1.24	767.5	YES	NO	bb	bb	53.582
14	234678-HxCDF	35.81	3.741e5	3.010e5	1.052	1.24	1.24	922.2	YES	NO	bb	bb	55.515
15	123678-HxCDF	34.94	4.107e5	3.376e5	1.037	1.22	1.24	994.0	YES	NO	db	db	51.475
16	123478-HxCDF	34.80	3.790e5	3.119e5	1.017	1.22	1.24	963.5	YES	NO	bd	bd	54.003
17	1234678-HpCDF	38.68	3.428e5	3.268e5	1.327	1.05	1.05	945.1	YES	NO	bb	bb	54.784
18	1234789-HpCDF	40.92	2.799e5	2.719e5	1.283	1.03	1.05	650.7	YES	NO	bd	bd	59.145
19	OCDF	45.14	3.368e5	3.743e5	1.447	0.90	0.89	729.8	YES	NO	bb	bb	105.415
20	13468-PECDF	27.02	5.743e5	3.714e5	1.376	1.55	1.55	5425.9	YES	NO	bb	bb	41.310
21	Total-tetradioxins	25.97	8.932e4	1.141e5	0.879	0.78	0.77	303.9	YES	NO	bd	bd	20.744
22	Total-tetradioxins	25.49	2.543e4	2.972e4	0.879	0.86	0.77	154.2	YES	NO	bd	bb	5.625
23	Total-tetradioxins	24.63	2.020e3	2.647e3	0.879	0.76	0.77	8.0	YES	NO	bd	bb	0.476
24	1368-TCDD	23.42	5.716e4	7.362e4	0.923	0.78	0.77	357.6	YES	NO	bb	bb	12.700
25	1289-TCDD	26.89	4.776e4	6.026e4	0.794	0.79	0.77	283.1	YES	NO	bb	bb	12.197
26	2378-TCDD	26.30	4.924e4	6.425e4	0.920	0.77	0.77	291.6	YES	NO	bb	db	11.057
27	12389-PECDD	31.82	2.780e5	1.664e5	1.154	1.67	1.55	992.1	YES	NO	bb	bb	43.683
28	12378-PeCDD	31.42	2.834e5	1.748e5	0.995	1.62	1.55	1046.5	YES	NO	bb	bb	52.211
29	Total-pentadioxins	30.75	1.739e3	1.177e3	1.331	1.48	1.55	6.0	YES	NO	bb	bb	0.249
30	12479-PECDD	28.69	4.186e5	2.632e5	1.843	1.59	1.55	988.7	YES	NO	bb	bb	41.945
31	124679-HXCDD	33.91	3.632e5	2.896e5	1.125	1.25	1.24	1314.1	YES	NO	bb	bb	60.629
32	123789-HxCDD	36.42	2.887e5	2.199e5	0.950	1.31	1.24	989.1	YES	NO	bd	bb	52.339
33	123678-HxCDD	36.04	3.082e5	2.464e5	1.009	1.25	1.24	1085.9	YES	NO	db	db	50.555
34	123478-HxCDD	35.92	2.965e5	2.407e5	1.027	1.23	1.24	1096.7	YES	NO	bd	bd	54.629
35	Total-hexadioxins	35.04	7.156e3	6.136e3	1.028	1.17	1.24	26.9	YES	NO	db	db	1.265
36	Total-hexadioxins	34.67	1.781e3	1.631e3	1.028	1.09	1.24	7.7	YES	NO	bb	bb	0.325
37	1234678-HpCDD	40.18	1.757e5	1.625e5	1.068	1.08	1.05	814.6	YES	NO	bb	bb	51.865

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	1234679-HPCDD	39.14	2.129e5	1.840e5	1.211	1.16	1.05	941.5	YES	NO	bd	bb	53.689
39	OCDD	44.90	2.642e5	3.138e5	1.181	0.84	0.89	1050.3	YES	NO	bb	bd	104.997

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	22.34	1.094e7					29.2	YES		db		
2	FUNCTION1 PFK	22.07	1.938e7					38.3	YES		dd		
3	FUNCTION1 PFK	21.38	2.077e7					61.6	YES		dd		
4	FUNCTION1 PFK	21.25	7.452e6					64.7	YES		dd		
5	FUNCTION1 PFK	21.10	5.199e6					69.3	YES		bd		
6	FUNCTION1 PFK	27.62	5.202e4					1.5	NO		bb		
7	FUNCTION1 PFK	26.61	3.088e4					1.4	NO		bb		
8	FUNCTION1 PFK	26.53	3.772e4					1.3	NO		bb		
9	FUNCTION1 PFK	26.21	4.215e4					1.3	NO		bb		
10	FUNCTION1 PFK	26.14	2.091e4					0.7	NO		bb		
11	FUNCTION1 PFK	25.90	2.782e4					1.0	NO		bb		
12	FUNCTION1 PFK	25.64	2.244e4					0.9	NO		bb		
13	FUNCTION1 PFK	25.38	4.475e4					1.3	NO		bb		
14	FUNCTION1 PFK	25.32	8.085e4					1.5	NO		bb		
15	FUNCTION1 PFK	25.10	6.333e4					1.7	NO		db		
16	FUNCTION1 PFK	24.94	2.192e5					2.0	NO		dd		
17	FUNCTION1 PFK	24.82	2.857e4					1.1	NO		bd		
18	FUNCTION1 PFK	24.63	2.787e4					1.0	NO		bb		
19	FUNCTION1 PFK	24.35	1.463e4					0.7	NO		bb		
20	FUNCTION1 PFK	23.43	4.951e4					1.7	NO		bb		

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	34.47	2.892e5					8.3	YES		dd		0.000
2	FUNCTION3 PFK	34.42	3.441e5					9.9	YES		dd		0.000
3	FUNCTION3 PFK	34.30	9.123e5					14.6	YES		dd		0.000
4	FUNCTION3 PFK	33.96	4.870e6					27.1	YES		dd		0.000
5	FUNCTION3 PFK	33.92	6.208e5					27.9	YES		dd		0.000
6	FUNCTION3 PFK	33.75	6.775e6					34.2	YES		dd		0.000
7	FUNCTION3 PFK	33.58	8.843e5					39.8	YES		dd		0.000
8	FUNCTION3 PFK	33.52	4.828e6					42.2	YES		dd		0.000
9	FUNCTION3 PFK	33.37	2.844e6					47.3	YES		dd		0.000
10	FUNCTION3 PFK	33.18	5.432e6					54.3	YES		dd		0.000
11	FUNCTION3 PFK	33.04	5.575e6					59.2	YES		dd		0.000
12	FUNCTION3 PFK	32.95	3.680e6					62.9	YES		dd		0.000
13	FUNCTION3 PFK	32.86	7.904e6					65.6	YES		dd		0.000
14	FUNCTION3 PFK	32.74	1.549e6					69.1	YES		dd		0.000
15	FUNCTION3 PFK	32.67	4.268e6					72.4	YES		bd		0.000
16	FUNCTION3 PFK	36.86	8.449e3					0.3	NO		bb		0.000
17	FUNCTION3 PFK	36.72	6.925e4					2.0	NO		bb		0.000
18	FUNCTION3 PFK	36.59	5.799e4					1.2	NO		bb		0.000
19	FUNCTION3 PFK	36.30	7.563e3					0.7	NO		bb		0.000
20	FUNCTION3 PFK	36.04	6.922e3					0.5	NO		bb		0.000
21	FUNCTION3 PFK	35.83	2.532e4					1.1	NO		bb		0.000
22	FUNCTION3 PFK	35.75	1.516e4					0.9	NO		bb		0.000
23	FUNCTION3 PFK	35.63	1.004e4					0.7	NO		bb		0.000
24	FUNCTION3 PFK	35.33	1.433e4					0.8	NO		bb		0.000
25	FUNCTION3 PFK	35.04	1.089e4					0.6	NO		bb		0.000
26	FUNCTION3 PFK	34.97	5.517e3					0.7	NO		bb		0.000
27	FUNCTION3 PFK	34.89	3.001e4					1.0	NO		bb		0.000
28	FUNCTION3 PFK	34.81	1.594e4					1.0	NO		db		0.000
29	FUNCTION3 PFK	34.76	3.092e4					1.3	NO		bd		0.000
30	FUNCTION3 PFK	34.60	1.659e5					4.5	YES		db		0.000
31	FUNCTION3 PFK	34.53	2.985e5					6.7	YES		dd		0.000
32	FUNCTION3 PFK	37.64	2.742e4					1.1	NO		bb		0.000
33	FUNCTION3 PFK	37.58	2.711e4					1.4	NO		db		0.000
34	FUNCTION3 PFK	37.54	1.758e4					0.9	NO		dd		0.000
35	FUNCTION3 PFK	37.49	3.447e4					1.6	NO		dd		0.000
36	FUNCTION3 PFK	37.45	2.646e4					1.5	NO		dd		0.000
37	FUNCTION3 PFK	37.38	4.745e4					1.5	NO		dd		0.000

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION3 PFK	37.34	2.452e4					1.6	NO		bd		0.000
39	FUNCTION3 PFK	37.29	9.653e3					0.8	NO		bb		0.000
40	FUNCTION3 PFK	37.08	5.064e3					0.5	NO		bb		0.000
41	FUNCTION3 PFK	36.98	6.612e4					1.7	NO		bb		0.000

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	38.42	2.469e3					0.5	NO		bb		
2	FUNCTION4 PFK	38.08	2.954e4					1.7	NO		bb		
3	FUNCTION4 PFK	37.98	4.856e4					2.3	NO		db		
4	FUNCTION4 PFK	37.94	3.614e4					2.6	NO		bd		
5	FUNCTION4 PFK	37.85	8.390e3					1.0	NO		bb		
6	FUNCTION4 PFK	40.91	1.035e4					1.0	NO		bb		
7	FUNCTION4 PFK	40.71	1.742e3					0.4	NO		bb		
8	FUNCTION4 PFK	40.68	3.176e3					0.5	NO		bb		
9	FUNCTION4 PFK	40.61	6.362e3					0.7	NO		bb		
10	FUNCTION4 PFK	40.38	7.075e3					0.8	NO		bb		
11	FUNCTION4 PFK	40.32	3.115e4					1.2	NO		bb		
12	FUNCTION4 PFK	39.94	4.461e3					0.6	NO		bb		
13	FUNCTION4 PFK	39.80	5.746e3					0.6	NO		bb		
14	FUNCTION4 PFK	39.51	2.799e3					0.4	NO		bb		
15	FUNCTION4 PFK	39.43	1.949e3					0.4	NO		bb		
16	FUNCTION4 PFK	39.36	2.879e3					0.6	NO		bb		
17	FUNCTION4 PFK	39.32	5.365e3					1.1	NO		bb		
18	FUNCTION4 PFK	39.28	3.621e3					0.8	NO		bb		
19	FUNCTION4 PFK	39.21	1.666e4					1.0	NO		bb		
20	FUNCTION4 PFK	39.07	6.512e3					0.8	NO		bb		
21	FUNCTION4 PFK	38.46	1.263e4					1.2	NO		bb		
22	FUNCTION4 PFK	42.68	1.445e4					0.9	NO		bb		
23	FUNCTION4 PFK	42.62	2.052e4					1.7	NO		bb		
24	FUNCTION4 PFK	42.51	2.321e3					0.5	NO		bb		
25	FUNCTION4 PFK	42.43	3.121e4					1.9	NO		bb		
26	FUNCTION4 PFK	42.18	7.742e3					0.8	NO		bb		
27	FUNCTION4 PFK	42.05	1.748e4					1.2	NO		db		
28	FUNCTION4 PFK	41.97	1.470e4					1.2	NO		bd		
29	FUNCTION4 PFK	41.63	2.487e3					0.5	NO		bb		
30	FUNCTION4 PFK	41.48	1.442e4					1.2	NO		bb		
31	FUNCTION4 PFK	41.24	1.211e4					1.0	NO		bb		
32	FUNCTION4 PFK	41.17	1.136e4					1.2	NO		bb		

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PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	45.97	5.710e3					1.0	NO		bb		
2	FUNCTION5 PFK	45.74	1.859e3					0.6	NO		bb		
3	FUNCTION5 PFK	43.26	1.526e4					1.8	NO		bb		
4	FUNCTION5 PFK	42.93	1.131e4					1.5	NO		bb		

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	25.35	1.892e2					4.2	YES		db		0.000
2	FUNCTION1 HXCD...	25.23	1.187e2					1.3	NO		bd		0.000
3	FUNCTION1 HXCD...	24.87	7.961e1					1.9	NO		db		0.000
4	FUNCTION1 HXCD...	24.81	1.259e2					2.7	NO		bd		0.000
5	FUNCTION1 HXCD...	24.72	1.584e2					1.4	NO		bb		0.000
6	FUNCTION1 HXCD...	24.40	9.113e1					1.6	NO		bb		0.000
7	FUNCTION1 HXCD...	23.72	7.480e1					1.5	NO		bb		0.000
8	FUNCTION1 HXCD...	23.61	1.381e2					2.9	NO		bb		0.000
9	FUNCTION1 HXCD...	23.11	9.740e1					2.5	NO		bb		0.000
10	FUNCTION1 HXCD...	22.43	1.791e2					2.1	NO		db		0.000
11	FUNCTION1 HXCD...	22.30	7.125e1					1.5	NO		bd		0.000
12	FUNCTION1 HXCD...	22.19	7.195e1					1.3	NO		bb		0.000
13	FUNCTION1 HXCD...	21.98	1.102e2					1.5	NO		db		0.000
14	FUNCTION1 HXCD...	21.89	2.251e2					4.2	YES		bd		0.000
15	FUNCTION1 HXCD...	21.80	1.414e2					2.0	NO		bb		0.000
16	FUNCTION1 HXCD...	27.03	2.453e2					2.4	NO		bb		0.000
17	FUNCTION1 HXCD...	26.29	2.686e2					2.1	NO		db		0.000
18	FUNCTION1 HXCD...	26.12	1.763e2					2.9	NO		dd		0.000
19	FUNCTION1 HXCD...	26.03	9.387e1					1.2	NO		bd		0.000
20	FUNCTION1 HXCD...	25.82	1.399e2					2.0	NO		bb		0.000
21	FUNCTION1 HXCD...	25.46	1.064e2					1.7	NO		bb		0.000

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ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	22.51	7.992e1					1.4	NO		bb		0.000
2	FUNCTION1 HPCD...	22.07	1.029e2					2.1	NO		bb		0.000
3	FUNCTION1 HPCD...	21.98	1.510e2					1.6	NO		db		0.000
4	FUNCTION1 HPCD...	21.88	1.949e2					3.5	YES		bd		0.000
5	FUNCTION1 HPCD...	21.75	2.528e2					1.8	NO		bb		0.000
6	FUNCTION1 HPCD...	21.47	1.508e2					2.1	NO		bb		0.000
7	FUNCTION1 HPCD...	21.25	1.018e2					1.3	NO		db		0.000
8	FUNCTION1 HPCD...	21.16	1.149e2					1.6	NO		dd		0.000
9	FUNCTION1 HPCD...	21.09	2.200e2					3.0	NO		bd		0.000
10	FUNCTION1 HPCD...	27.00	1.586e2					1.8	NO		bb		0.000
11	FUNCTION1 HPCD...	26.83	9.159e1					0.8	NO		bb		0.000
12	FUNCTION1 HPCD...	26.59	1.663e2					2.5	NO		bb		0.000
13	FUNCTION1 HPCD...	26.32	1.753e2					1.6	NO		db		0.000
14	FUNCTION1 HPCD...	26.14	2.616e2					2.2	NO		bd		0.000
15	FUNCTION1 HPCD...	25.59	8.230e1					1.9	NO		bb		0.000
16	FUNCTION1 HPCD...	25.44	8.713e1					1.0	NO		bb		0.000
17	FUNCTION1 HPCD...	25.16	7.125e1					1.1	NO		db		0.000
18	FUNCTION1 HPCD...	25.05	1.030e2					1.1	NO		bd		0.000
19	FUNCTION1 HPCD...	24.07	1.494e2					2.5	NO		bb		0.000
20	FUNCTION1 HPCD...	23.83	1.478e2					3.3	YES		bb		0.000

ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	28.48	1.146e2					2.7	NO		bb		0.000
2	FUNCTION2 HPCD...	28.07	8.040e1					1.2	NO		db		0.000
3	FUNCTION2 HPCD...	27.98	1.117e2					1.5	NO		bd		0.000
4	FUNCTION2 HPCD...	27.82	9.308e1					2.0	NO		bb		0.000
5	FUNCTION2 HPCD...	31.82	1.073e2					1.6	NO		bb		0.000
6	FUNCTION2 HPCD...	31.41	3.440e2					4.0	YES		bb		0.000
7	FUNCTION2 HPCD...	31.18	9.044e1					1.2	NO		db		0.000
8	FUNCTION2 HPCD...	31.11	9.781e1					2.1	NO		dd		0.000
9	FUNCTION2 HPCD...	31.03	7.279e2					8.6	YES		bd		0.000
10	FUNCTION2 HPCD...	30.26	7.257e1					1.3	NO		bb		0.000
11	FUNCTION2 HPCD...	30.21	7.122e1					1.7	NO		db		0.000
12	FUNCTION2 HPCD...	30.14	1.157e2					1.5	NO		dd		0.000
13	FUNCTION2 HPCD...	30.06	7.412e1					1.1	NO		dd		0.000
14	FUNCTION2 HPCD...	29.98	7.219e1					1.2	NO		dd		0.000
15	FUNCTION2 HPCD...	29.91	9.212e1					2.0	NO		bd		0.000
16	FUNCTION2 HPCD...	29.69	7.977e1					1.3	NO		bb		0.000
17	FUNCTION2 HPCD...	29.08	1.408e2					1.5	NO		db		0.000
18	FUNCTION2 HPCD...	28.96	1.497e2					1.4	NO		bd		0.000
19	FUNCTION2 HPCD...	28.71	8.490e1					1.0	NO		bb		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	37.65	1.580e2					2.6	NO		db		0.000
2	FUNCTION3 OCDPE	37.55	1.150e2					2.8	NO		bd		0.000
3	FUNCTION3 OCDPE	36.42	1.835e2					2.9	NO		bb		0.000
4	FUNCTION3 OCDPE	36.04	2.520e2					4.7	YES		db		0.000
5	FUNCTION3 OCDPE	35.93	1.106e2					3.8	YES		dd		0.000
6	FUNCTION3 OCDPE	35.90	1.018e2					3.4	YES		bd		0.000
7	FUNCTION3 OCDPE	34.40	1.321e2					5.0	YES		bb		0.000
8	FUNCTION3 OCDPE	33.58	1.010e2					2.3	NO		bb		0.000
9	FUNCTION3 OCDPE	32.70	2.382e2					3.1	YES		bb		0.000

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ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	40.42	7.136e1					0.9	NO		bb		0.000
2	FUNCTION4 NCDPE	40.16	1.641e2					1.6	NO		bb		0.000
3	FUNCTION4 NCDPE	39.69	1.182e2					1.5	NO		bb		0.000
4	FUNCTION4 NCDPE	38.52	1.487e2					1.6	NO		db		0.000
5	FUNCTION4 NCDPE	38.34	2.790e2					2.3	NO		dd		0.000
6	FUNCTION4 NCDPE	38.26	1.556e2					2.2	NO		bd		0.000
7	FUNCTION4 NCDPE	41.34	1.448e2					1.6	NO		bb		0.000
8	FUNCTION4 NCDPE	40.81	1.056e2					2.8	NO		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	44.58	7.112e1					3.0	NO		bb		0.000
2	FUNCTION5 DCDPE	43.59	9.542e1					3.1	YES		bb		0.000

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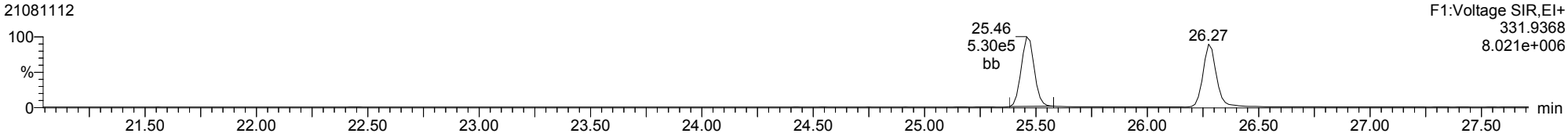

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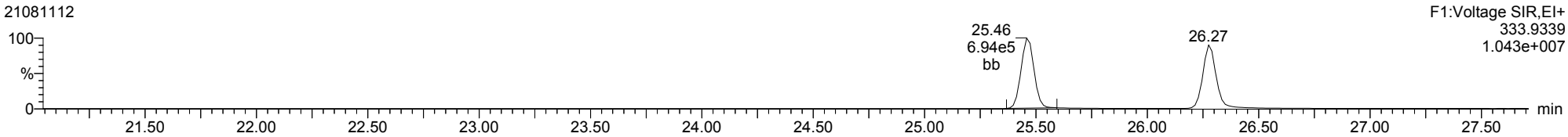

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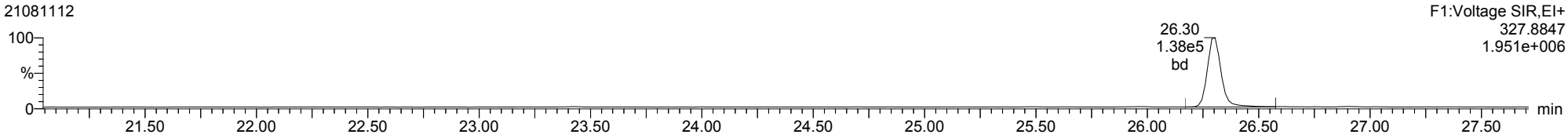

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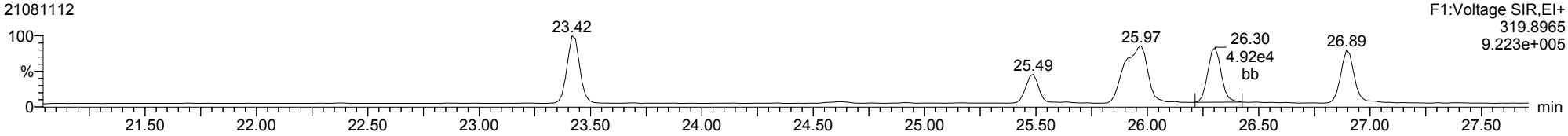

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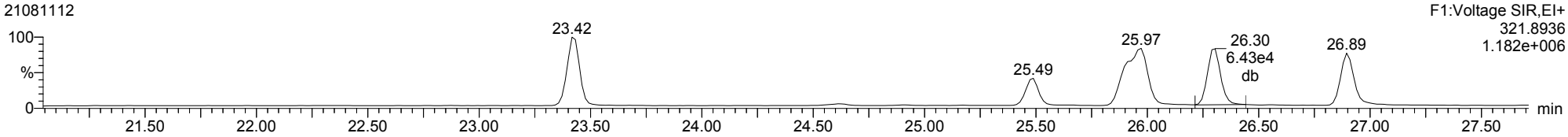

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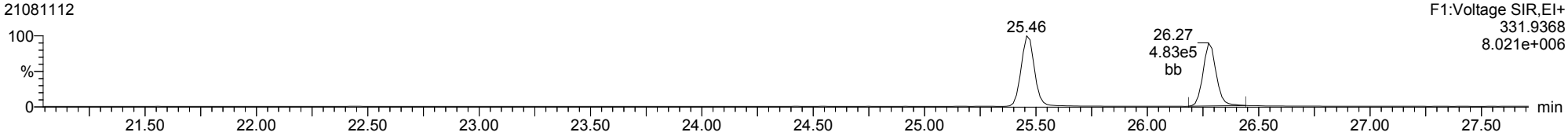

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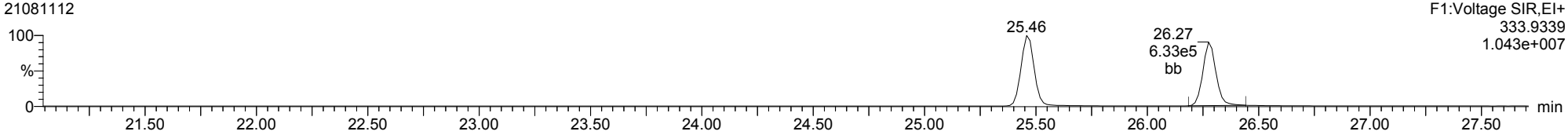

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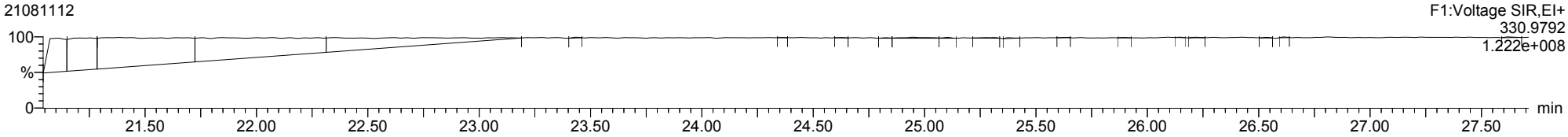

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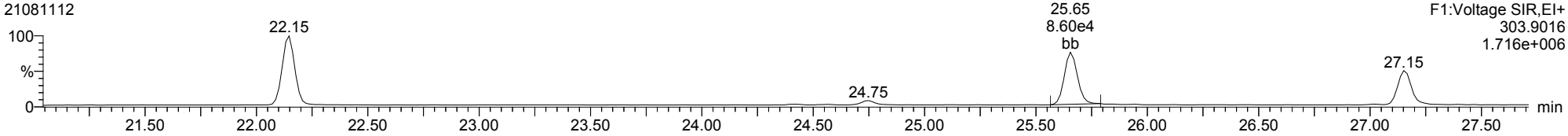

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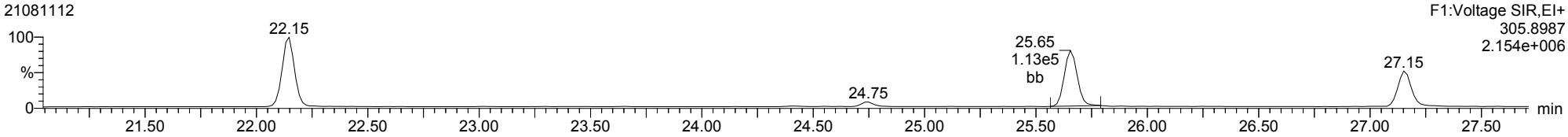

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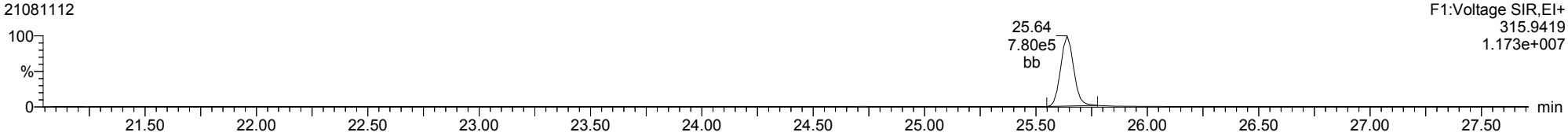

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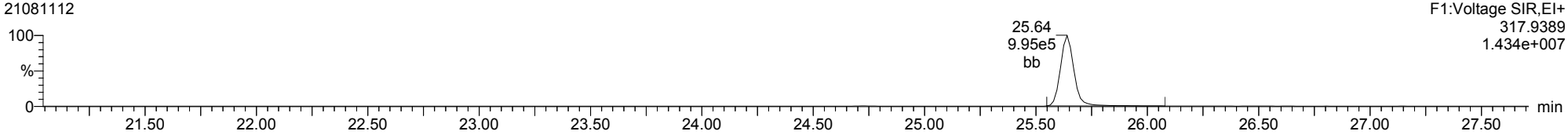

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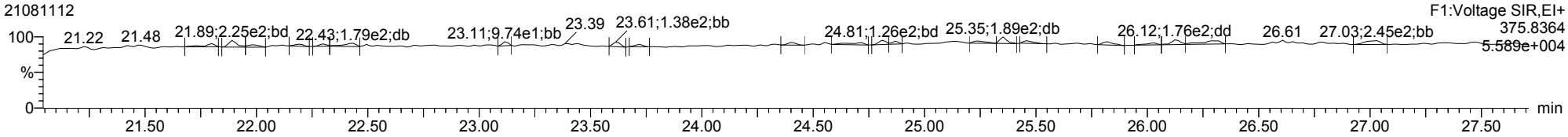

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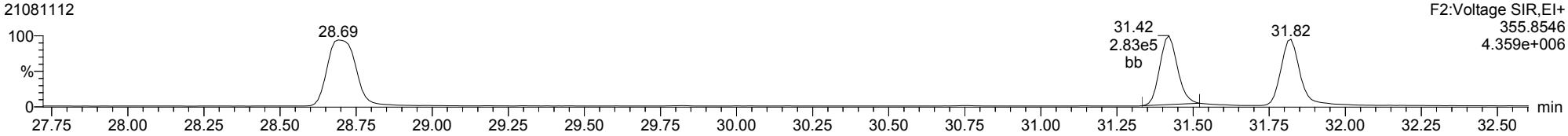

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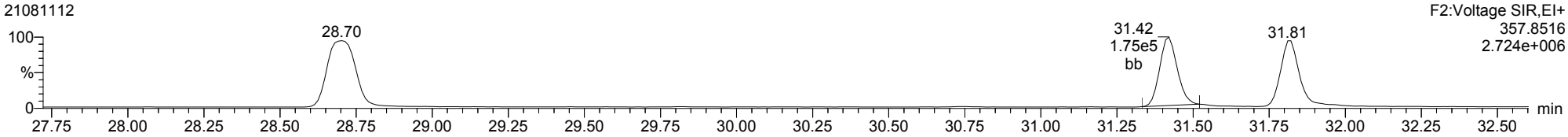

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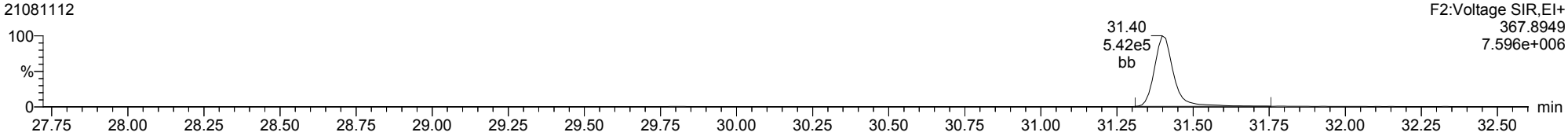

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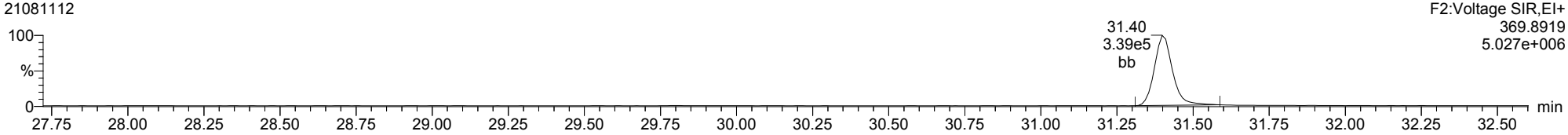

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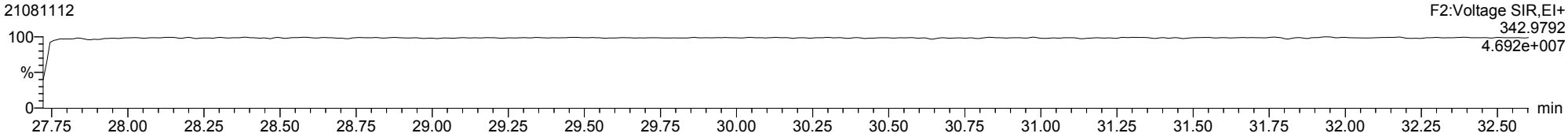

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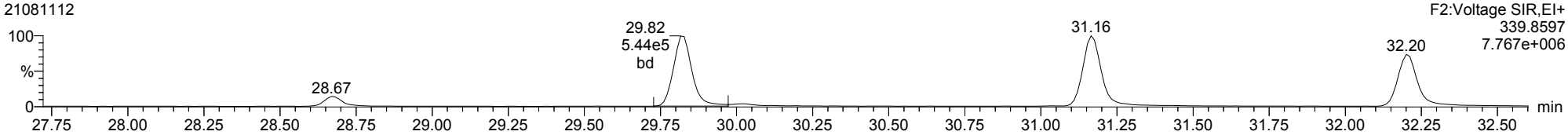

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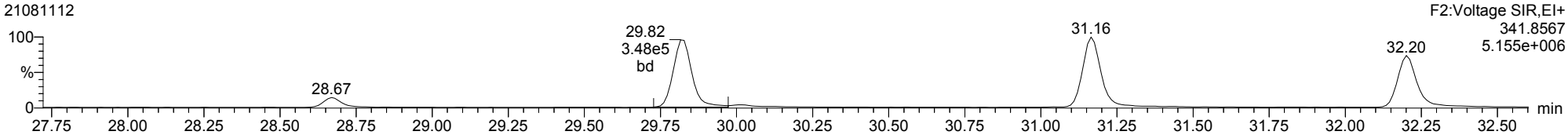

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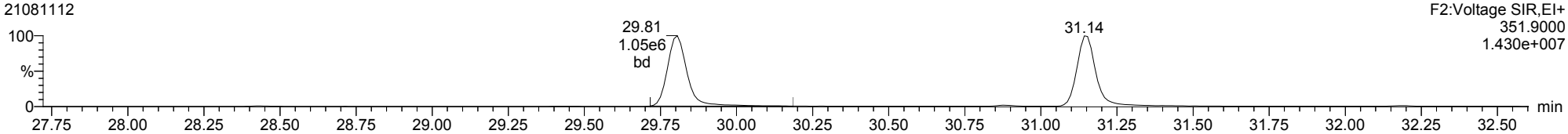

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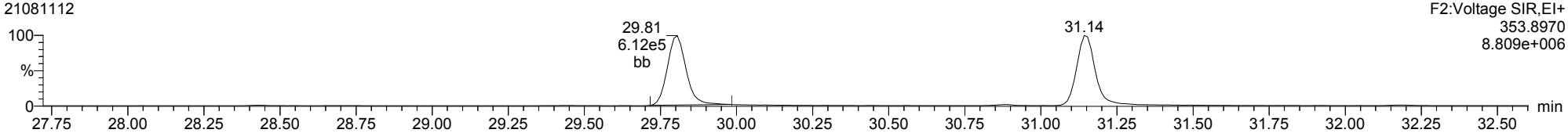

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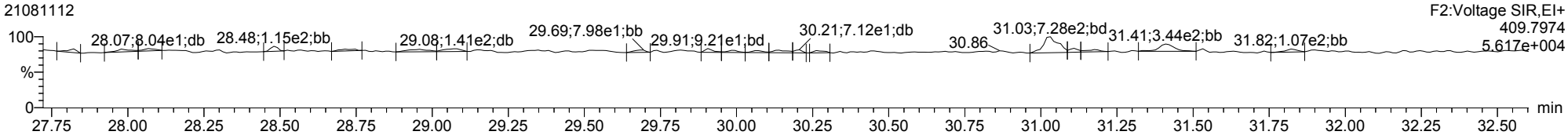

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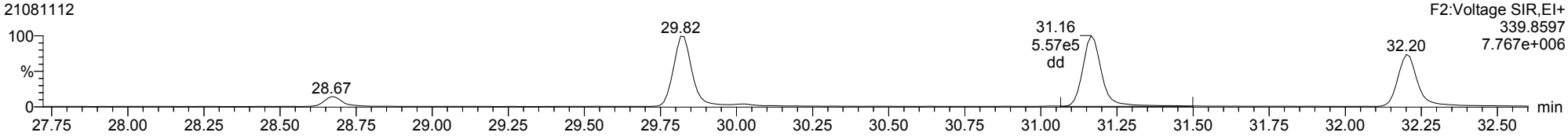

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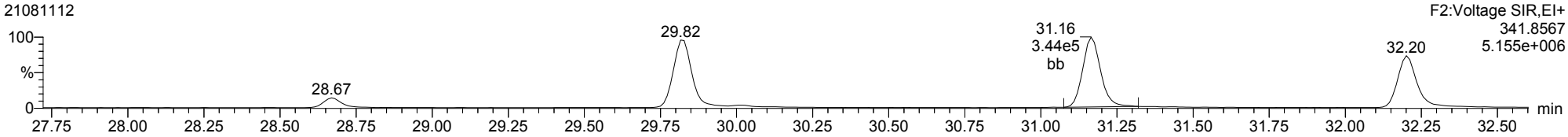

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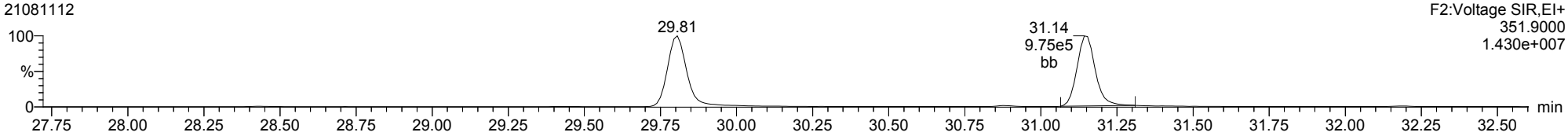

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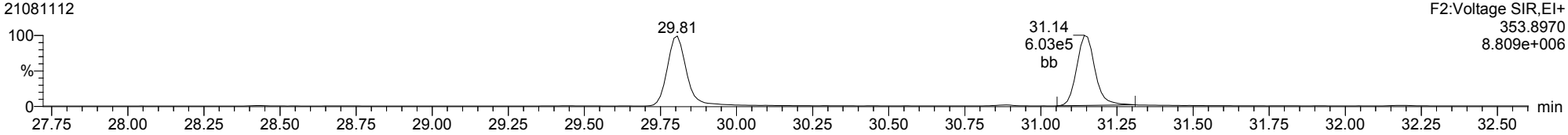

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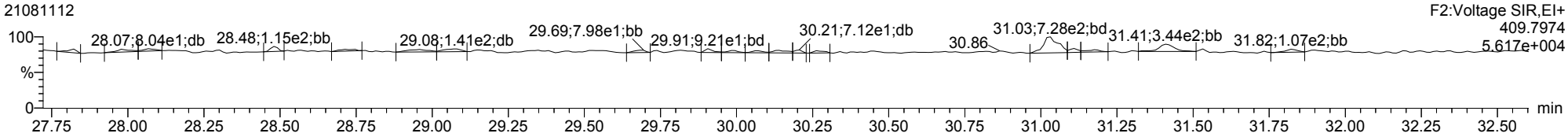

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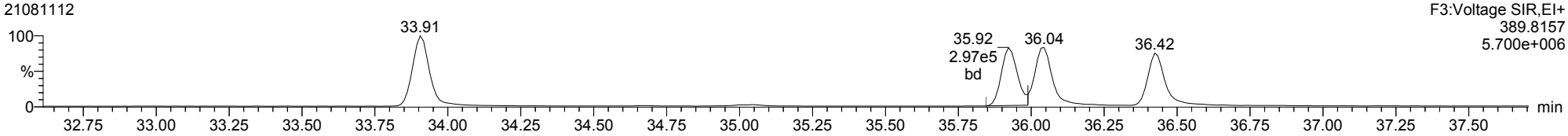

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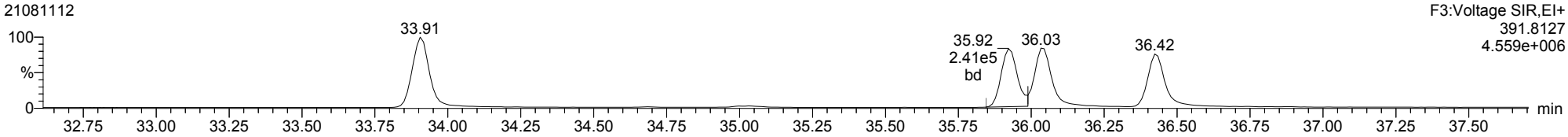

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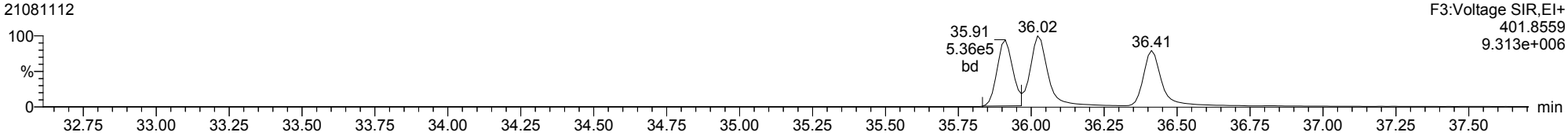

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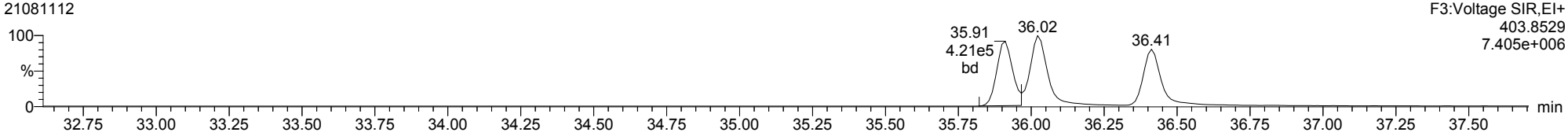

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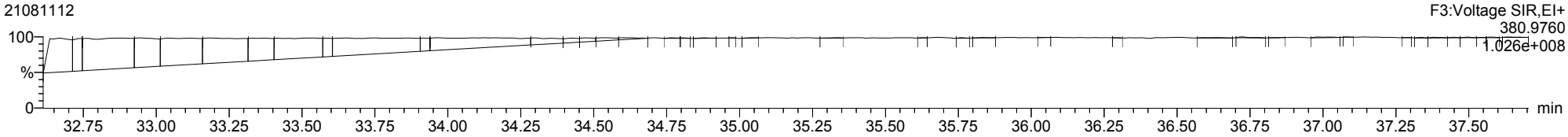

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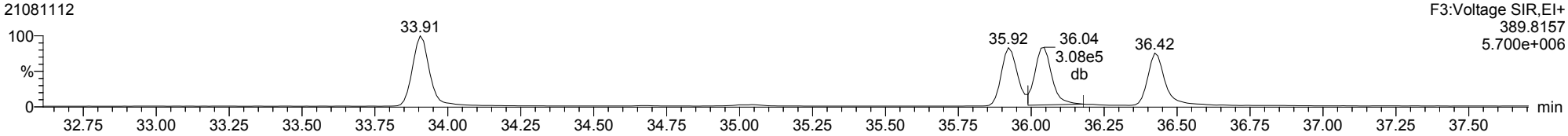

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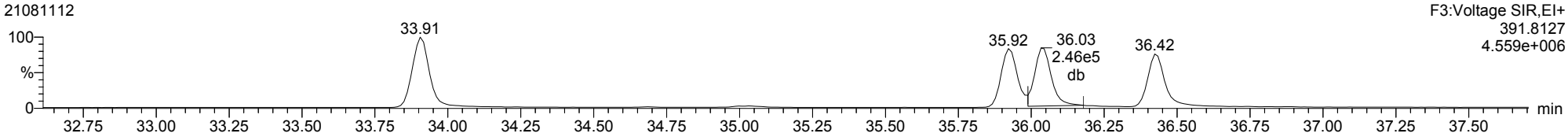

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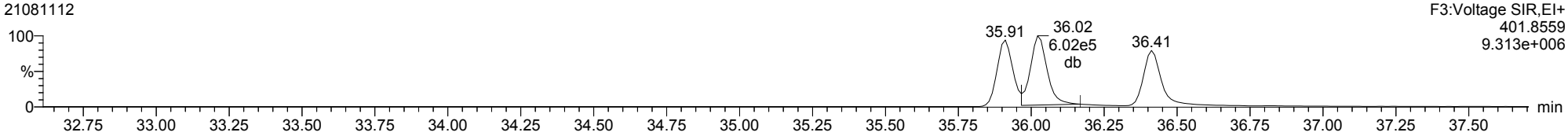

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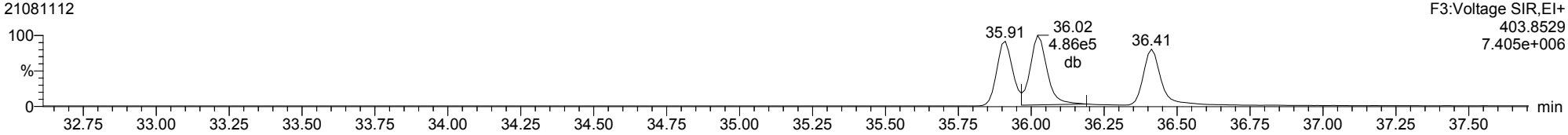

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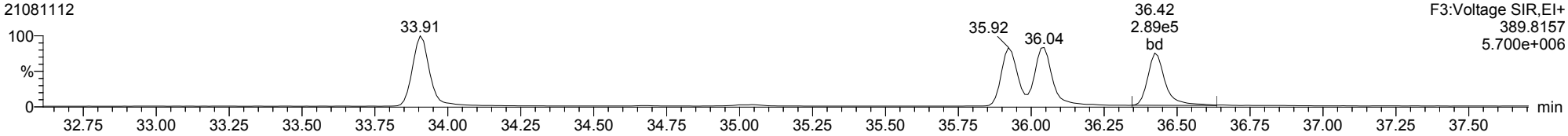

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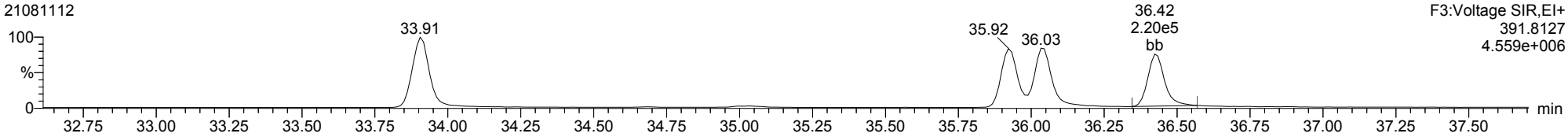

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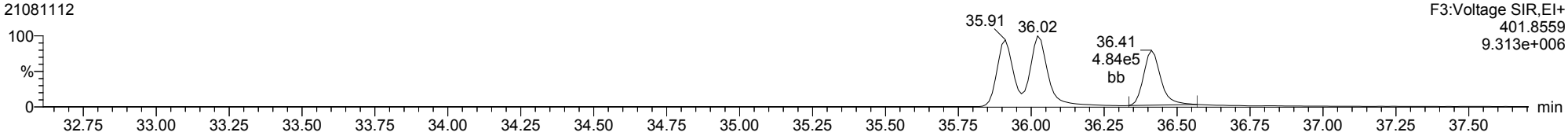

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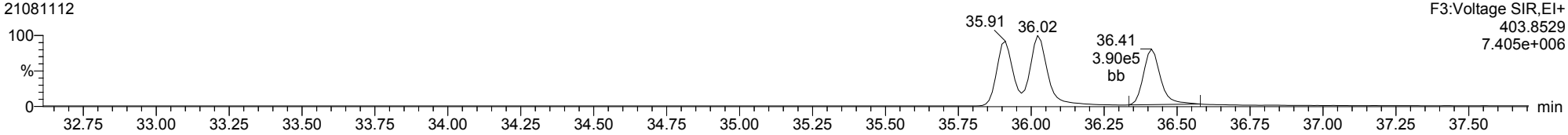

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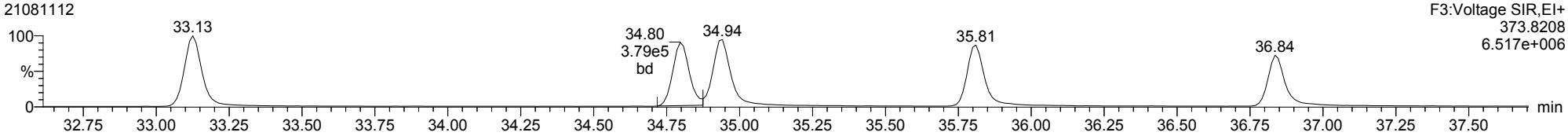

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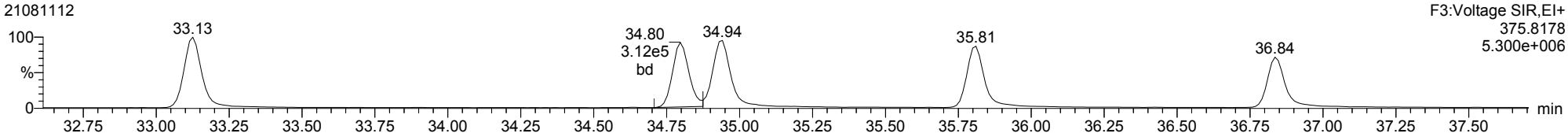

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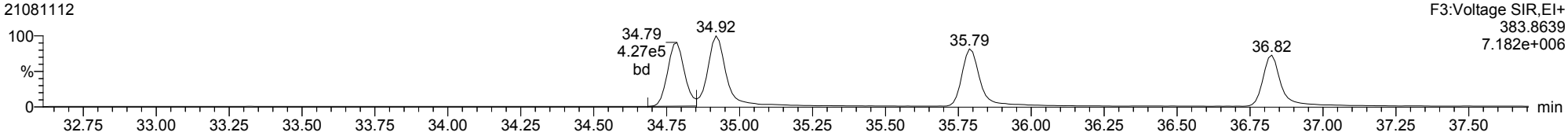

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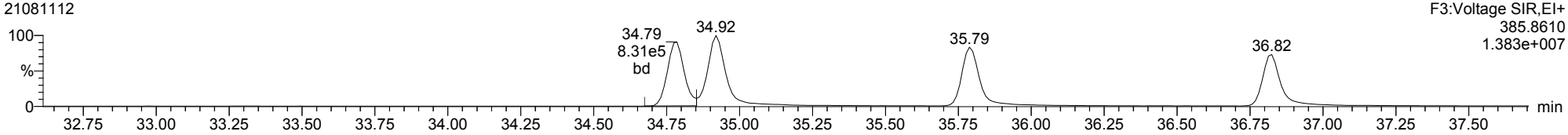

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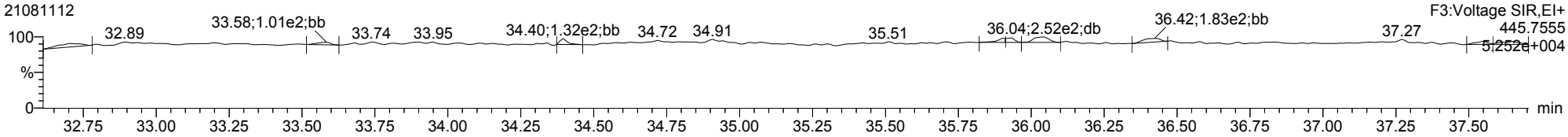

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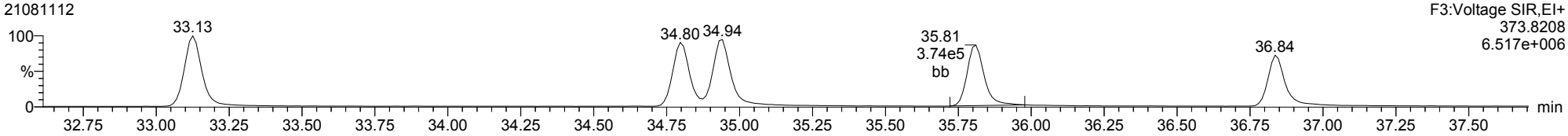

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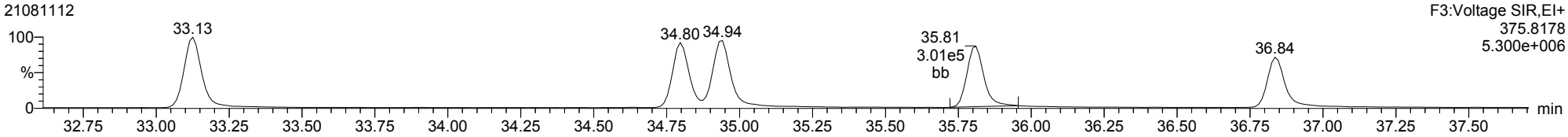

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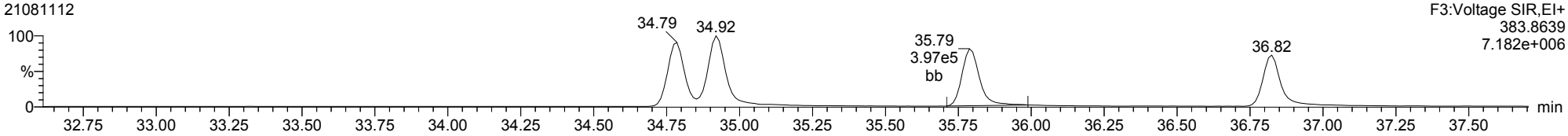

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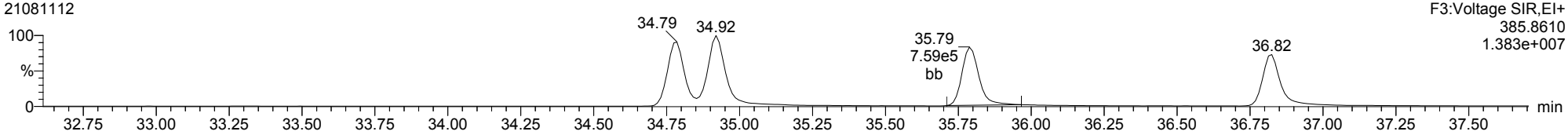

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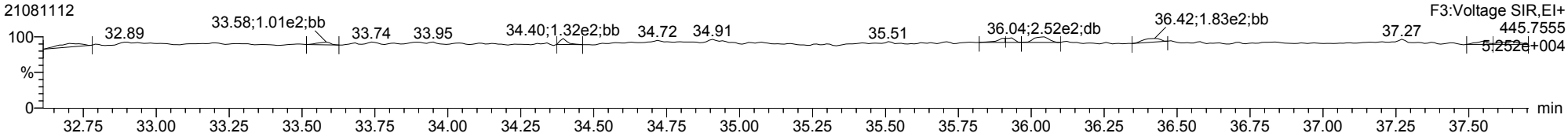

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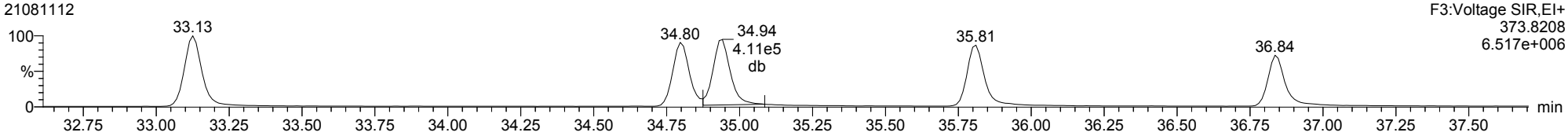

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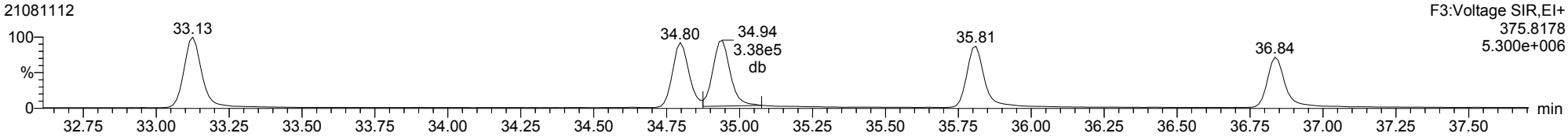

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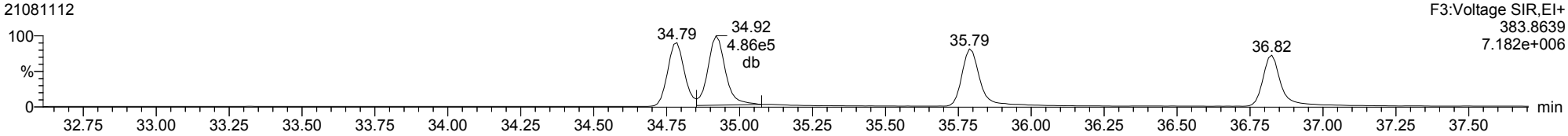

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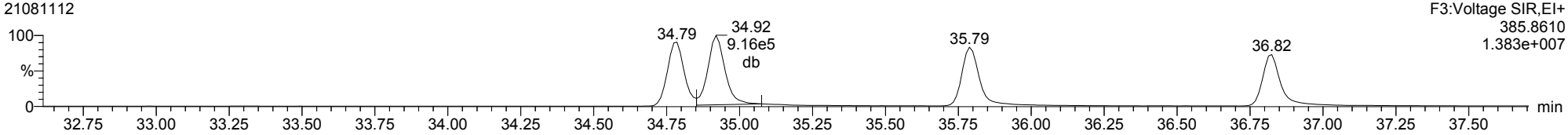

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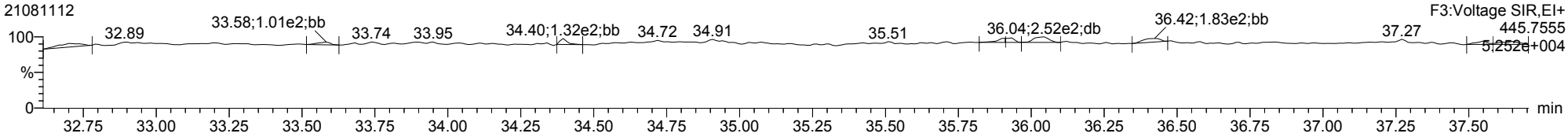

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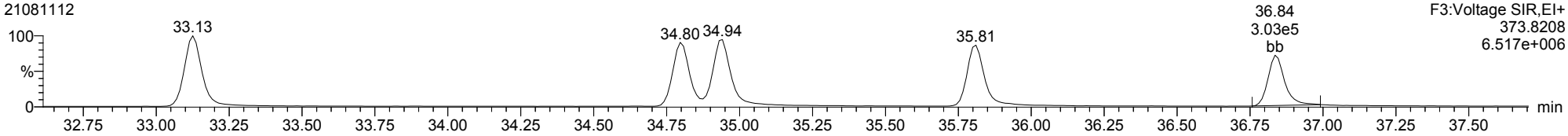

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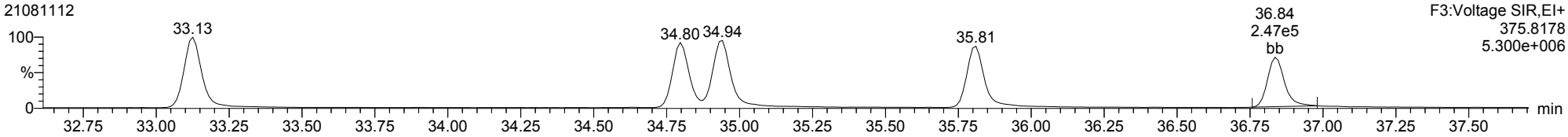

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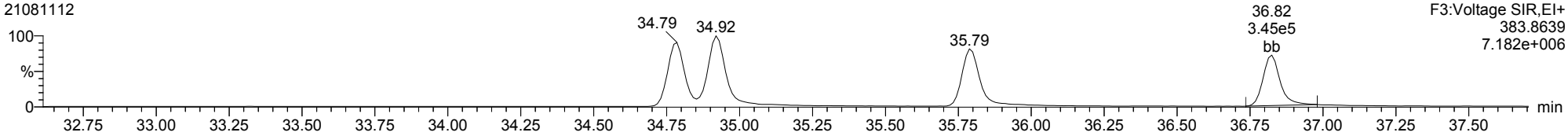

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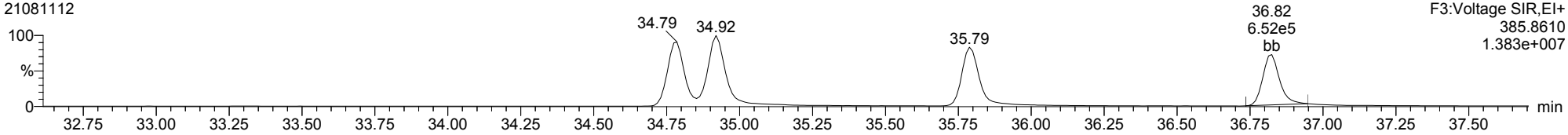

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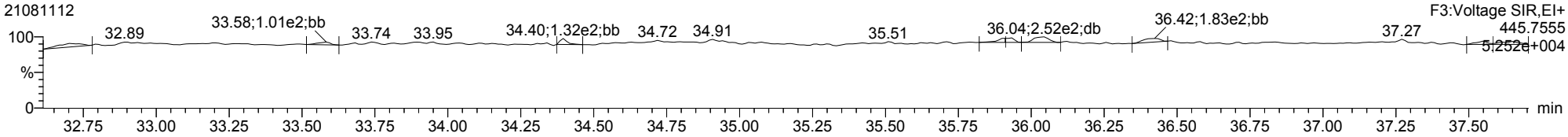

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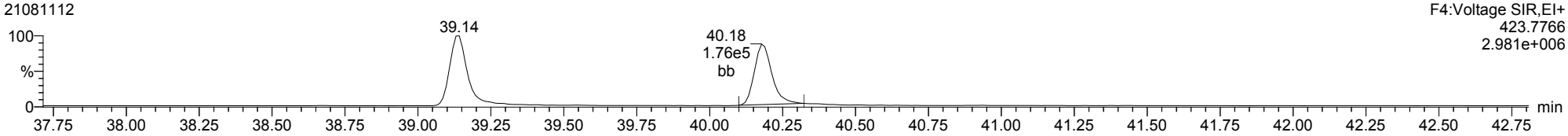

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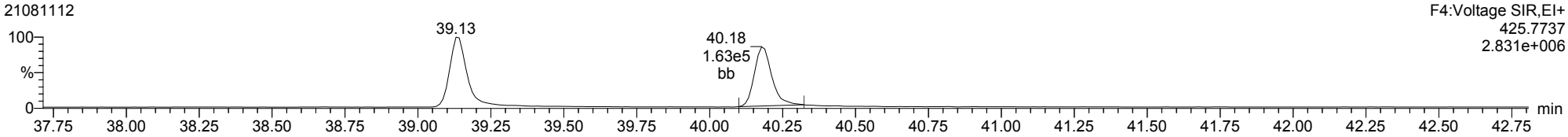

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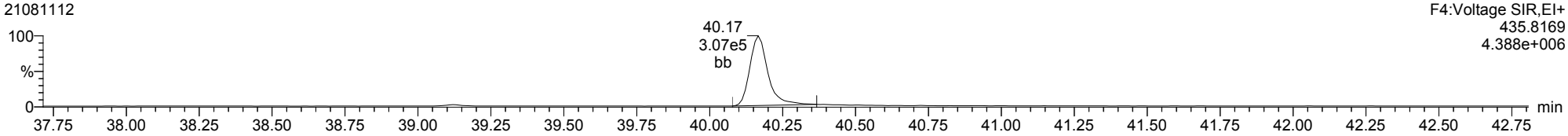

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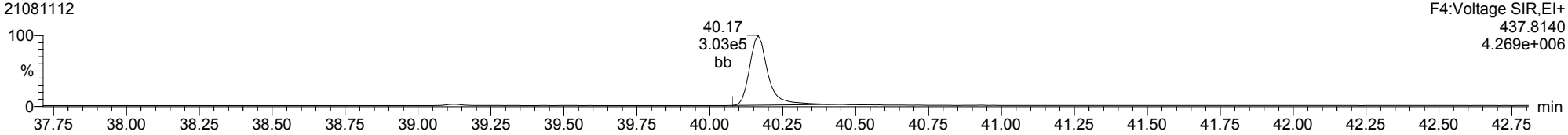

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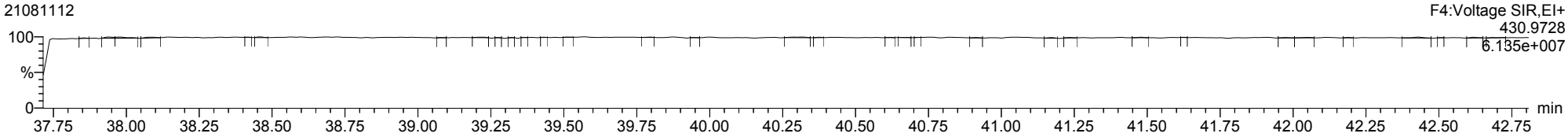

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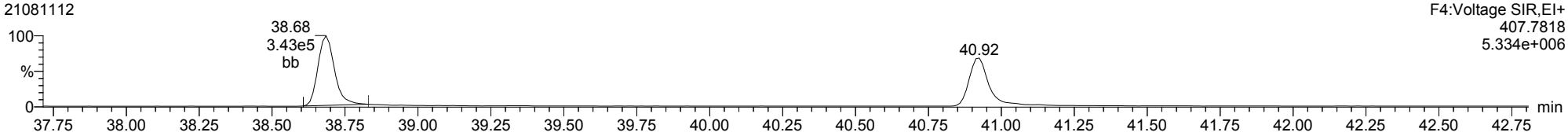

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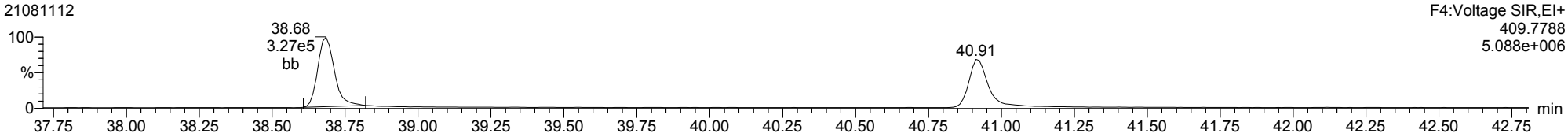

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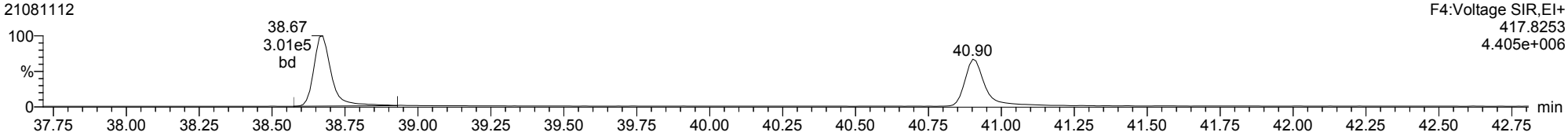

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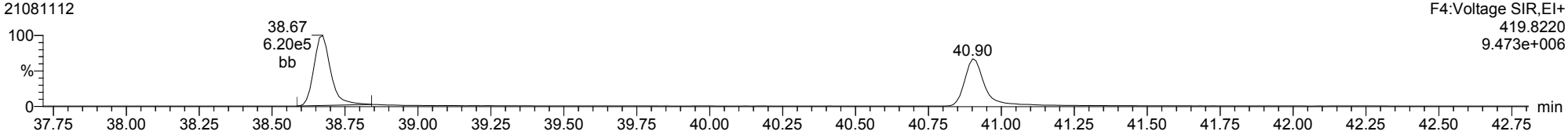

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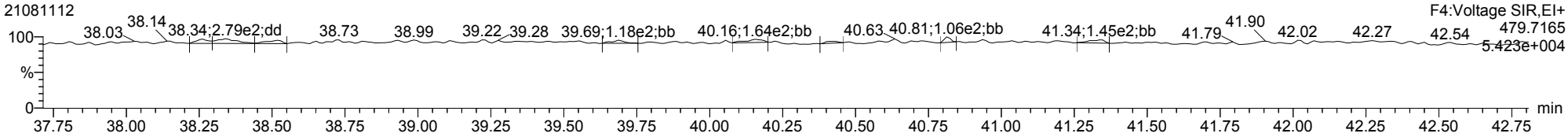

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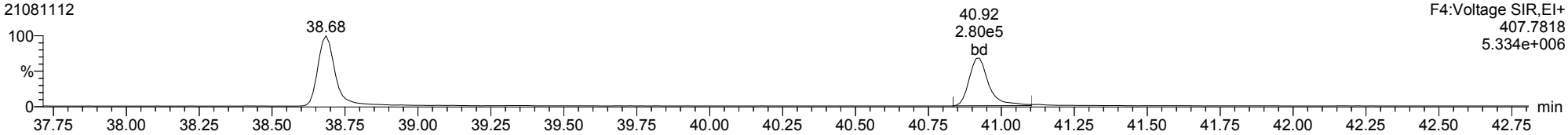

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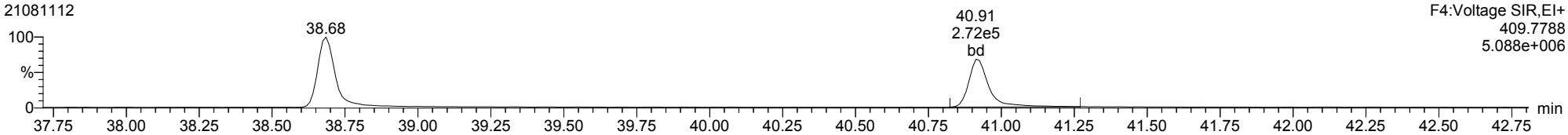

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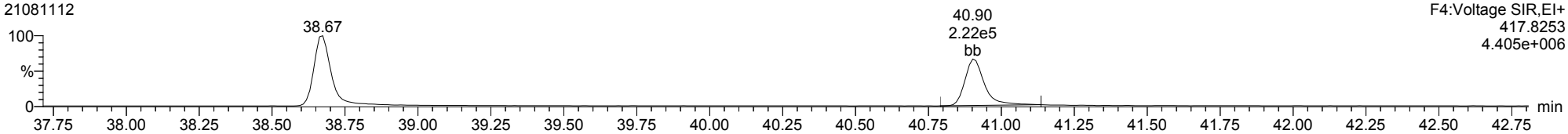

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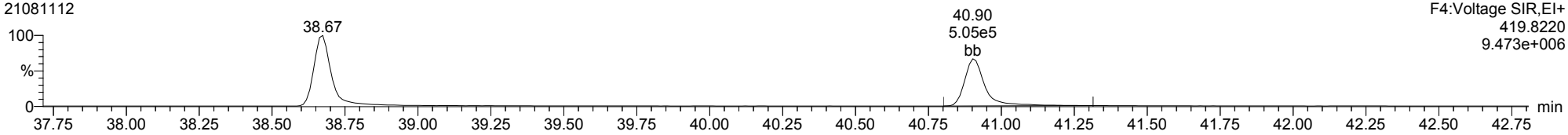

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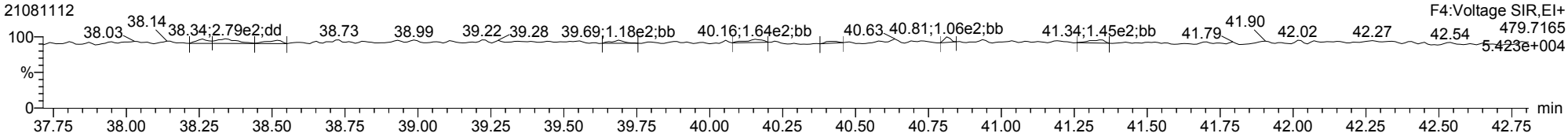

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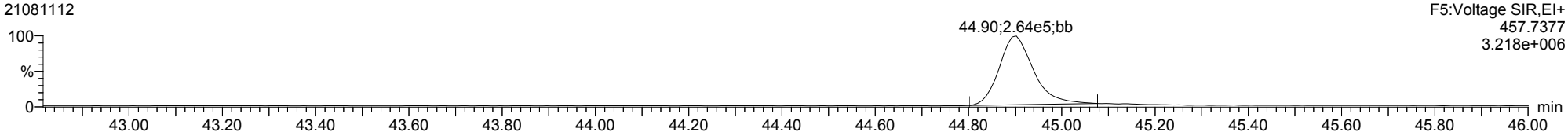

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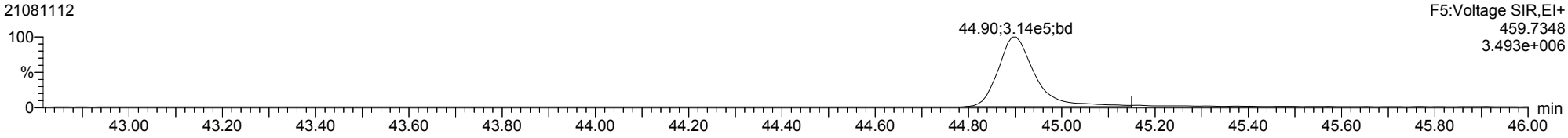

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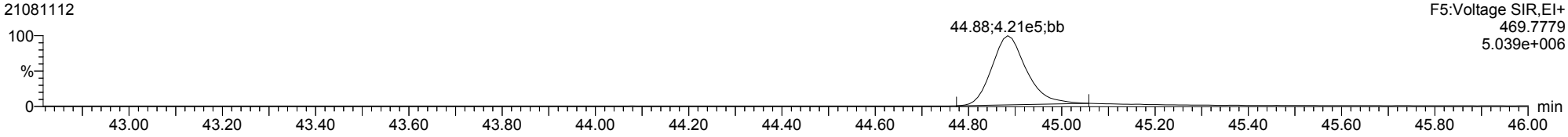

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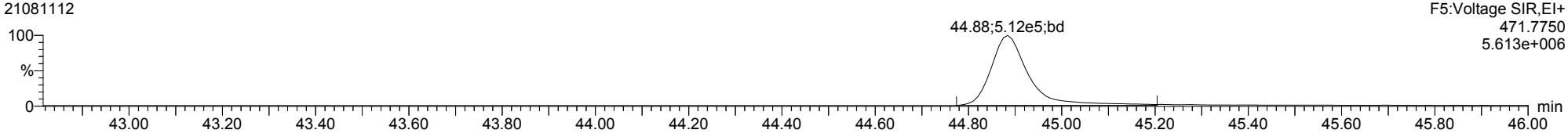

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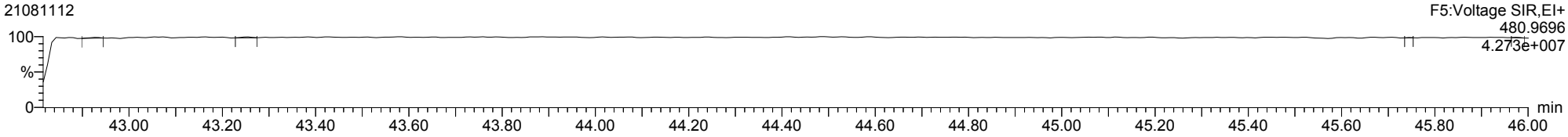

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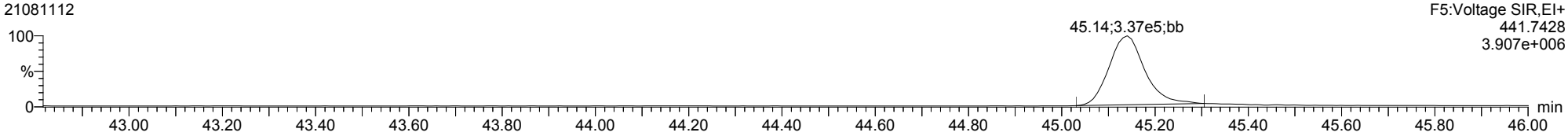

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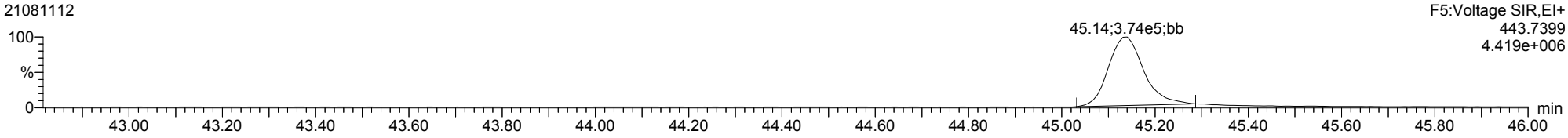

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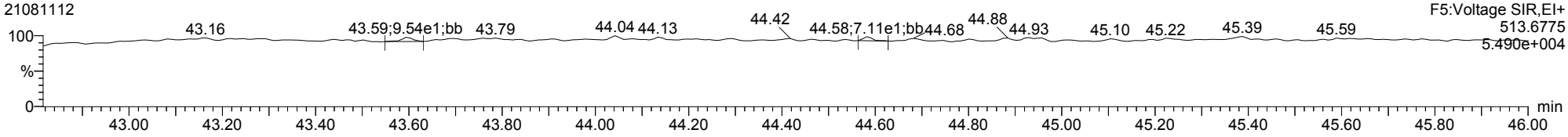

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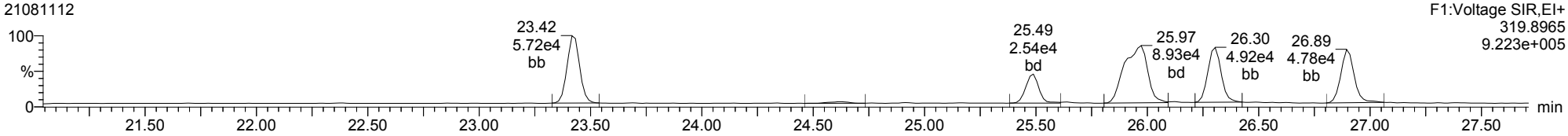

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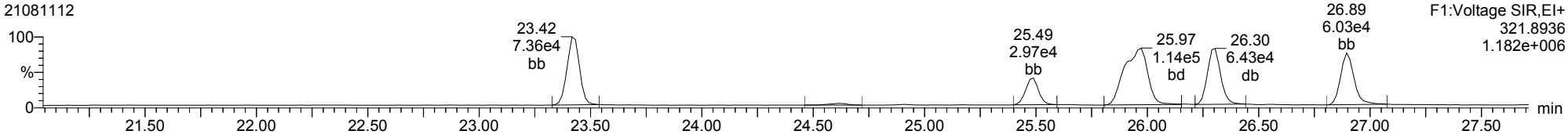

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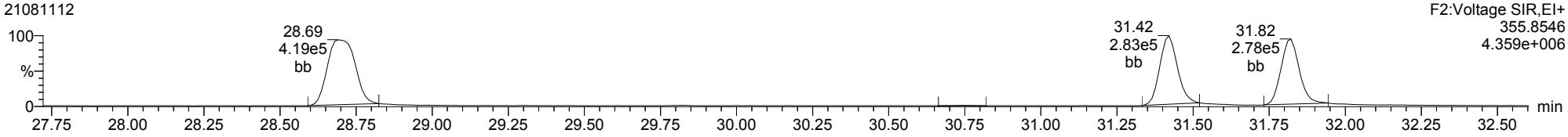

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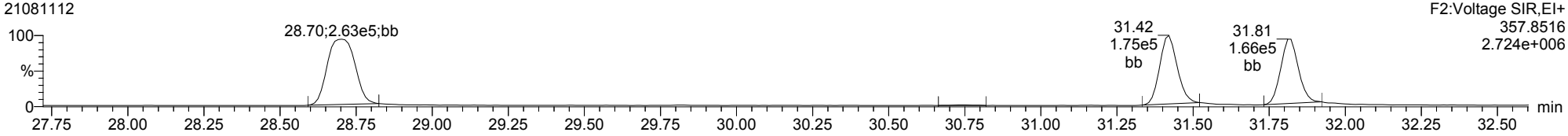

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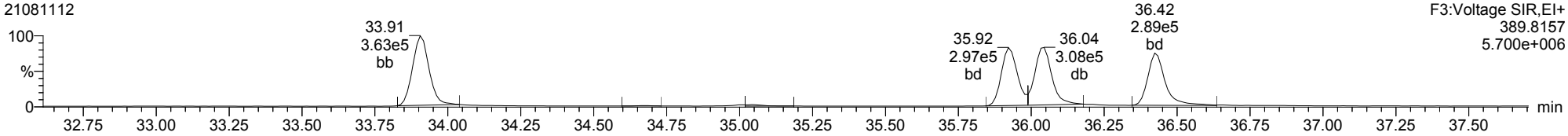
Total-hexadioxins



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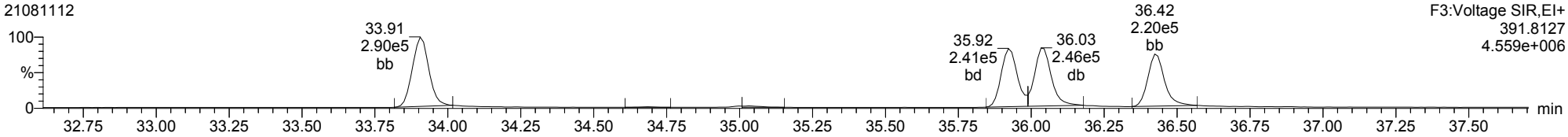

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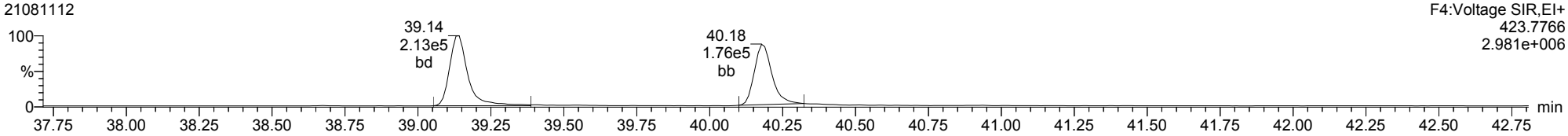

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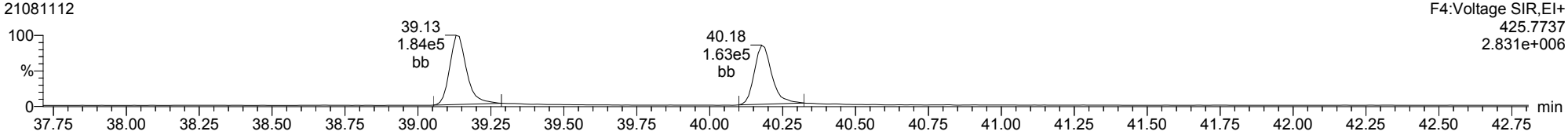

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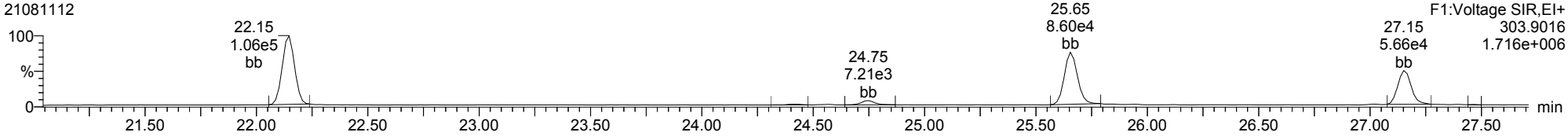
Total-tetrafurans



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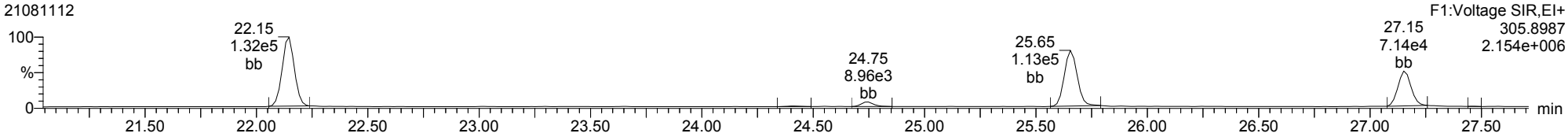

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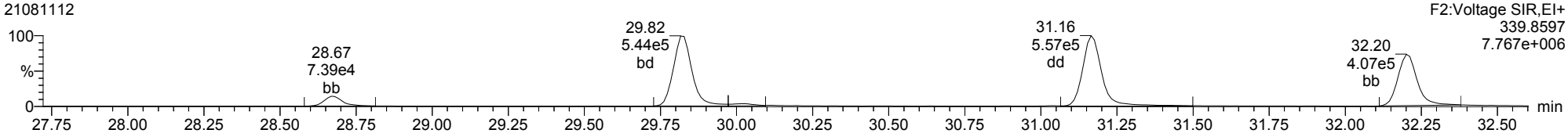

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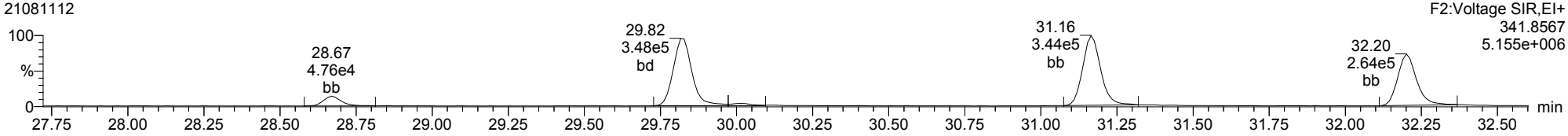

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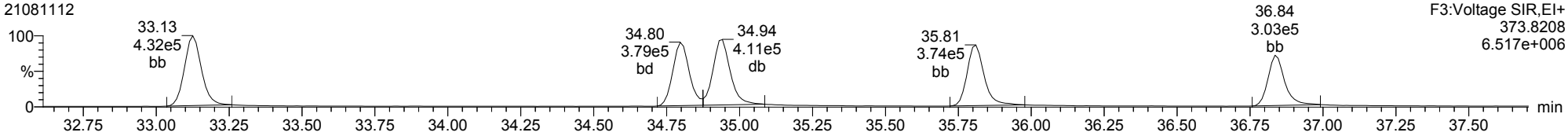

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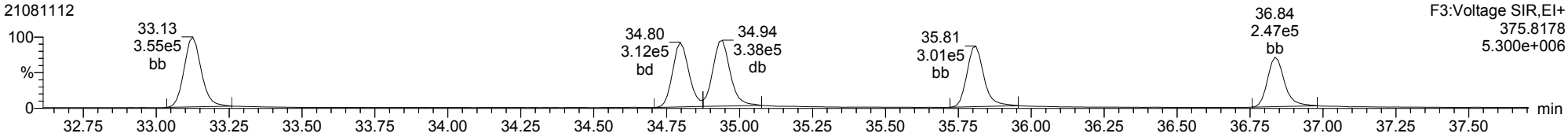

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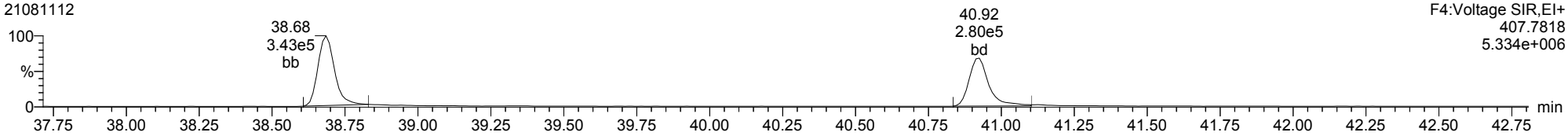

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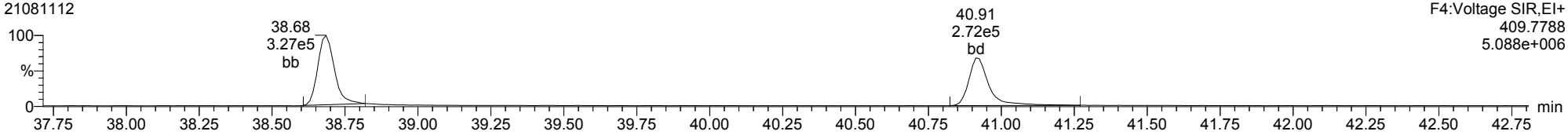

Analytical Resources, Incorporated
Analytical Chemists and Consultants

INITIAL CALIBRATION CHECK

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	AUTOSPEC01	Calibration:	EH00030
Lab File ID:	21092002A	Calibration Date:	08/11/2021
Sequence:	SJI0309	Injection Date:	09/20/21
Lab Sample ID:	SJI0309-ICV1	Injection Time:	15:25
Sequence Name:	CS3S1		

		CONC. (ng/mL)		RESPONSE FACTOR			% DRIFT/DIFF	
COMPOUND	TYPE	STD	ICV	ICAL	ICV	MIN	ICV	LIMIT
2,3,7,8-TCDF	A	10.000	9.01	1.1075930	0.9979800		-9.9	+/-16
2,3,7,8-TCDD	A	10.000	9.72	0.9202875	0.8945763		-2.8	+/-22
1,2,3,7,8-PeCDF	A	50.000	44.1	1.0148670	0.8948605		-11.8	+/-18
2,3,4,7,8-PeCDF	A	50.000	44.2	1.1255490	0.9938923		-11.7	+/-18
1,2,3,7,8-PeCDD	A	50.000	50.1	0.9953229	0.9969413		0.2	+/-22
1,2,3,4,7,8-HxCDF	A	50.000	47.5	1.0168930	0.9659534		-5.0	+/-10
1,2,3,6,7,8-HxCDF	A	50.000	48.3	1.0368310	1.0016310		-3.4	+/-12
2,3,4,6,7,8-HxCDF	A	50.000	48.8	1.0524660	1.0262460		-2.5	+/-12
1,2,3,7,8,9-HxCDF	A	50.000	48.9	1.0301540	1.0069930		-2.2	+/-10
1,2,3,4,7,8-HxCDD	A	50.000	47.9	1.0273630	0.9837729		-4.2	+/-22
1,2,3,6,7,8-HxCDD	A	50.000	50.4	1.0089800	1.0165110		0.7	+/-22
1,2,3,7,8,9-HxCDD	A	50.000	48.9	0.9504865	0.9290140		-2.3	+/-18
1,2,3,4,6,7,8-HpCDF	A	50.000	45.7	1.3273500	1.2138720		-8.5	+/-10
1,2,3,4,7,8,9-HpCDF	A	50.000	47.0	1.2833380	1.2071710		-5.9	+/-14
1,2,3,4,6,7,8-HpCDD	A	50.000	48.4	1.0680880	1.0342880		-3.2	+/-14
OCDF	A	100.00	75.4	1.4469010	1.0904390		-24.6	+/-37
OCDD	A	100.00	91.9	1.1808230	1.0853860		-8.1	+/-21
13C12-2,3,7,8-TCDF	A	100.00	96.5	1.4265830	1.3772668		-3.5	+/-29
13C12-2,3,7,8-TCDD	A	100.00	105	1.1164910	1.1774860		5.5	+/-18
13C12-1,2,3,7,8-PeCDF	A	100.00	86.7	1.2973130	1.1253279		-13.3	+/-24
13C12-2,3,4,7,8-PeCDF	A	100.00	84.0	1.2364800	1.0387610		-16.0	+/-23
13C12-1,2,3,7,8-PeCDD	A	100.00	91.1	0.7319833	0.6671682		-8.9	+/-38
13C12-1,2,3,4,7,8-HxCDF	A	100.00	100	1.2424560	1.2482698		0.5	+/-24
13C12-1,2,3,6,7,8-HxCDF	A	100.00	94.1	1.3434760	1.2648358		-5.9	+/-30
13C12-2,3,4,6,7,8-HxCDF	A	100.00	94.3	1.2148550	1.1454414		-5.7	+/-27
13C12-1,2,3,7,8,9-HxCDF	A	100.00	92.4	1.0076370	0.9312253		-7.6	+/-26
13C12-1,2,3,4,7,8-HxCDD	A	100.00	102	0.9598233	0.9771166		1.8	+/-15
13C12-1,2,3,6,7,8-HxCDD	A	100.00	96.4	1.0413850	1.0041943		-3.6	+/-15
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	82.3	0.9264704	0.7627981		-17.7	+/-22
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	73.8	0.7579160	0.5592302		-26.2	+/-23 *
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	87.1	0.6324476	0.5506878		-12.9	+/-28

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

INITIAL CALIBRATION CHECK

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	AUTOSPEC01	Calibration:	EH00030
Lab File ID:	21092002A	Calibration Date:	08/11/2021
Sequence:	SJI0309	Injection Date:	09/20/21
Lab Sample ID:	SJI0309-ICV1	Injection Time:	15:25
Sequence Name:	CS3S1		

COMPOUND	TYPE	CONC. (ng/mL)		RESPONSE FACTOR			% DRIFT/DIFF	
		STD	ICV	ICAL	ICV	MIN	ICV	LIMIT
13C12-OCDD	A	200.00	164	0.5037432	0.4134822		-17.9	+/-52
37Cl4-2,3,7,8-TCDD	A	10.000	9.85	1.0835930	1.0671105		-1.5	

* Values outside of QC limits

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ID: CS3S1, Name: 21092002A, Date: 20-Sep-2021, Time: 15:25:26, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.761	1.001	3.975e4	5.306e4	1.108	0.749	0.770	1150	1086	5.84e5	8.04e5	507.5	740.8	NO	MM	MM	9.010
12378-PeCDF	29.909	1.000	2.045e5	1.355e5	1.015	1.510	1.550	2196	1977	3.00e6	2.02e6	1364.6	1023.0	NO	bb	bb	44.088
23478-PeCDF	31.257	1.001	2.080e5	1.406e5	1.126	1.479	1.550	2196	1977	3.26e6	2.20e6	1482.7	1110.4	NO	bb	bb	44.151
123478-HxCDF	34.878	1.001	1.719e5	1.431e5	1.017	1.201	1.240	1391	1567	2.75e6	2.30e6	1978.1	1465.2	NO	bd	bd	47.495
234678-HxCDF	35.892	1.001	1.629e5	1.442e5	1.052	1.130	1.240	1391	1567	2.61e6	2.24e6	1879.7	1425.9	NO	bb	bb	48.754
123678-HxCDF	35.023	1.001	1.796e5	1.513e5	1.037	1.188	1.240	1391	1567	2.68e6	2.29e6	1930.3	1462.8	NO	db	db	48.303
123789-HxCDF	36.917	1.000	1.359e5	1.090e5	1.030	1.247	1.240	1391	1567	2.06e6	1.68e6	1477.7	1071.8	NO	bd	bb	48.876
1234678-HpCDF	38.756	1.000	1.231e5	1.187e5	1.327	1.037	1.050	1495	1301	1.93e6	1.88e6	1292.0	1448.1	NO	bd	bd	45.725
1234789-HpCDF	41.006	1.000	9.023e4	8.610e4	1.283	1.048	1.050	1495	1301	1.20e6	1.17e6	803.6	902.4	NO	bd	bd	47.032
OCDF	45.242	1.006	1.112e5	1.244e5	1.447	0.894	0.890	953	820	1.19e6	1.29e6	1249.0	1574.9	NO	bb	bb	75.364
2378-TCDD	26.396	1.001	3.087e4	4.026e4	0.920	0.767	0.770	980	612	4.57e5	5.90e5	465.8	963.9	NO	bb	bb	9.721
12378-PeCDD	31.503	1.001	1.378e5	8.674e4	0.995	1.589	1.550	1314	846	2.13e6	1.33e6	1619.6	1568.1	NO	bb	bb	50.081
123478-HxCDD	35.993	1.000	1.411e5	1.100e5	1.027	1.283	1.240	1199	1377	2.34e6	1.84e6	1947.9	1336.4	NO	bd	bd	47.879
123678-HxCDD	36.104	1.000	1.499e5	1.167e5	1.009	1.285	1.240	1199	1377	2.39e6	1.80e6	1996.6	1309.5	NO	db	db	50.373
123789-HxCDD	36.494	1.011	1.328e5	1.076e5	0.950	1.235	1.240	1199	1377	2.08e6	1.67e6	1737.2	1212.3	NO	bb	bb	48.870
1234678-HpCDD	40.259	1.000	7.617e4	7.260e4	1.068	1.049	1.050	1185	1204	1.12e6	1.04e6	945.1	866.4	NO	bb	bd	48.418
OCDD	44.995	1.000	1.127e5	1.218e5	1.181	0.925	0.890	1775	1841	1.19e6	1.30e6	672.9	704.8	NO	bb	bd	91.918
13C-2378-TCDF	25.746	1.007	4.141e5	5.158e5	1.427	0.803	0.770	2457	1610	6.25e6	7.70e6	2543.3	4786.6	NO	bb	bb	96.543
13C-12378-PeCDF	29.898	1.169	4.677e5	2.921e5	1.297	1.601	1.550	2639	1820	6.95e6	4.29e6	2634.7	2356.8	NO	bb	bb	86.743
13C-23478-PeCDF	31.235	1.222	4.322e5	2.692e5	1.236	1.605	1.550	2639	1820	6.77e6	4.21e6	2563.4	2310.8	NO	bb	bb	84.010
13C-123478-HxCDF	34.856	0.955	2.214e5	4.307e5	1.242	0.514	0.510	1623	2216	3.46e6	6.68e6	2129.5	3015.2	NO	bd	bd	100.468
13C-123678-HxCDF	35.001	0.959	2.264e5	4.344e5	1.343	0.521	0.510	1623	2216	3.53e6	6.74e6	2176.5	3043.5	NO	db	db	94.146
13C-234678-HxCDF	35.870	0.983	2.058e5	3.926e5	1.215	0.524	0.510	1623	2216	3.26e6	6.31e6	2008.3	2847.0	NO	bb	bb	94.286
13C-123789-HxCDF	36.906	1.012	1.639e5	3.225e5	1.008	0.508	0.510	1623	2216	2.71e6	5.26e6	1669.2	2372.9	NO	bb	bb	92.417
13C-1234678-HpCDF	38.744	1.062	1.239e5	2.746e5	0.926	0.451	0.440	1089	1884	1.96e6	4.29e6	1800.0	2278.7	NO	bd	bd	82.334
13C-1234789-HpCDF	40.995	1.124	9.021e4	2.019e5	0.758	0.447	0.440	1089	1884	1.25e6	2.71e6	1150.6	1440.6	NO	bb	bb	73.785
13C-1234-TCDD	25.564	0.000	2.922e5	3.830e5	1.000	0.763	0.770	1652	1229	4.53e6	5.88e6	2740.1	4785.9	NO	bb	bb	100.000
13C-2378-TCDD	26.365	1.031	3.400e5	4.551e5	1.116	0.747	0.770	1652	1229	5.10e6	6.80e6	3084.3	5536.6	NO	bb	bb	105.463
13C-12378-PeCDD	31.480	1.231	2.752e5	1.753e5	0.732	1.569	1.550	830	1006	4.18e6	2.68e6	5036.4	2667.5	NO	bb	bb	91.145
13C-123478-HxCDD	35.981	0.986	2.876e5	2.228e5	0.960	1.291	1.240	1732	1465	4.74e6	3.62e6	2736.2	2472.7	NO	bd	bd	101.802
13C-123678-HxCDD	36.093	0.989	2.930e5	2.316e5	1.041	1.265	1.240	1732	1465	4.67e6	3.67e6	2696.3	2504.4	NO	db	db	96.429
13C-1234678-HpCDD	40.248	1.103	1.501e5	1.376e5	0.632	1.091	1.050	1254	1016	2.08e6	1.99e6	1659.4	1963.2	NO	bd	bb	87.072
13C-OCDD	44.977	1.233	1.977e5	2.343e5	0.504	0.844	0.890	719	1130	2.22e6	2.52e6	3091.1	2231.8	NO	bb	bd	164.164
13C-123789-HxCDD	36.483	0.000	2.897e5	2.327e5	1.000	1.245	1.240	1732	1465	4.66e6	3.74e6	2691.0	2554.9	NO	bb	bb	100.000
37CL-2378-TCDD	26.381	1.032	7.205e4		1.084			934		1.04e6		1113.3			bb		9.848

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ID: CS3S1, Name: 21092002A, Date: 20-Sep-2021, Time: 15:25:26, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	22.238	0.864	4.969e4	6.567e4	1.425	0.757	0.770	1150	1086	7.54e5	9.75e5	655.6	898.3	NO	bb	bd	8.704
1289-TCDF	27.273	1.059	3.630e4	4.955e4	1.043	0.733	0.770	1150	1086	5.12e5	6.78e5	444.9	624.7	NO	db	db	8.852
13468-PECDF	27.091	0.906	3.407e5	2.220e5	1.376	1.535	1.550	580	733	5.07e6	3.31e6	8748.7	4522.9	NO	bb	bb	53.803
12389-PECDF	32.305	1.081	1.963e5	1.282e5	1.000	1.530	1.550	2196	1977	2.88e6	1.89e6	1311.7	953.9	NO	bb	bb	42.727
123468-HXCDF	33.207	0.953	1.841e5	1.546e5	1.087	1.191	1.240	1391	1567	2.81e6	2.38e6	2023.5	1519.2	NO	bb	bb	47.796
1368-TCDD	23.508	0.892	3.184e4	4.065e4	0.923	0.783	0.770	980	612	4.83e5	6.25e5	492.9	1020.5	NO	bb	bb	9.875
1289-TCDD	27.001	1.024	2.809e4	3.538e4	0.794	0.794	0.770	980	612	4.23e5	5.23e5	431.6	854.5	NO	bb	bd	10.055
12479-PECDD	28.773	0.914	2.517e5	1.556e5	1.843	1.618	1.550	1314	846	2.50e6	1.56e6	1904.9	1842.6	NO	bb	bb	49.045
12389-PECDD	31.915	1.014	1.628e5	1.014e5	1.154	1.606	1.550	1314	846	2.46e6	1.55e6	1874.2	1827.0	NO	bb	bb	50.846
124679-HXCDD	33.976	0.944	1.647e5	1.280e5	1.125	1.287	1.240	1199	1377	2.58e6	2.03e6	2152.9	1471.3	NO	bb	bb	50.982
1234679-HPCDD	39.212	0.974	8.832e4	8.208e4	1.211	1.076	1.050	1185	1204	1.36e6	1.27e6	1146.1	1052.7	NO	bb	bb	48.915
Total-tetrafurans			1.260e5		1.192			1150		1.85e6							26.615
Total-penta1			3.407e5					580		5.07e6							53.803
Total-pentafurans			6.448e5		1.047			2196		9.66e6							138.882
Total-hexafurans			8.343e5		1.045			1391		1.29e7							241.224
Total-heptafurans			2.134e5		1.305			1495		3.13e6							92.758
Total-Furans			2.270e6		1.158			1150		3.38e7							628.645
Total-tetradioxins			1.540e5		0.879			980		2.09e6							50.440
Total-pentadioxins			5.531e5		1.331			1314		7.11e6							150.179
Total-hexadioxins			5.893e5		1.028			1199		9.40e6							198.336
Total-heptadioxins			1.645e5		1.140			1185		2.48e6							97.333
Total-Dioxins			1.574e6		1.092			980		2.23e7							588.205
Total-TEQ			3.844e6					980		5.61e7							1216.851
FUNCTION1 PFK			1.499e6					532872		2.61e7							
FUNCTION2 PFK			7.472e4					413138		1.54e6							0.000
FUNCTION3 PFK			1.920e5					453677		3.77e6							0.000
FUNCTION4 PFK			4.293e5					252326		1.03e7							
FUNCTION5 PFK			3.416e6					193677		1.22e7							
FUNCTION1 HXCD...			5.763e2					486		8.09e3							0.000
FUNCTION1 HPCD...			2.227e2					529		3.56e3							0.000
FUNCTION2 HPCD...			4.377e2					767		7.77e3							0.000
FUNCTION3 OCDPE			2.503e2					527		5.31e3							0.000
FUNCTION4 NCDPE			8.002e1					657		1.41e3							0.000
FUNCTION5 DCDPE			1.755e2					469		2.74e3							0.000

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

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TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.27	3.630e4	4.955e4	1.043	0.73	0.77	444.9	YES	NO	db	db	8.852
2	2378-TCDF	25.76	3.975e4	5.306e4	1.108	0.75	0.77	507.5	YES	NO	MM	MM	9.010
3	Total-tetrafurans	24.64	2.299e2	3.012e2	1.192	0.76	0.77	3.8	YES	NO	bb	bb	0.048
4	1368-TCDF	22.24	4.969e4	6.567e4	1.425	0.76	0.77	655.6	YES	NO	bb	bd	8.704

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	27.09	3.407e5	2.220e5	1.376	1.53	1.55	8748.7	YES	NO	bb	bb	53.803

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDF	32.30	1.963e5	1.282e5	1.000	1.53	1.55	1311.7	YES	NO	bb	bb	42.727
2	23478-PeCDF	31.26	2.080e5	1.406e5	1.126	1.48	1.55	1482.7	YES	NO	bb	bb	44.151
3	12378-PeCDF	29.91	2.045e5	1.355e5	1.015	1.51	1.55	1364.6	YES	NO	bb	bb	44.088
4	Total-pentafurans	28.76	3.611e4	2.442e4	1.047	1.48	1.55	240.9	YES	NO	bb	bb	7.916

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDF	36.92	1.359e5	1.090e5	1.030	1.25	1.24	1477.7	YES	NO	bd	bb	48.876
2	234678-HxCDF	35.89	1.629e5	1.442e5	1.052	1.13	1.24	1879.7	YES	NO	bb	bb	48.754
3	123678-HxCDF	35.02	1.796e5	1.513e5	1.037	1.19	1.24	1930.3	YES	NO	db	db	48.303
4	123478-HxCDF	34.88	1.719e5	1.431e5	1.017	1.20	1.24	1978.1	YES	NO	bd	bd	47.495
5	123468-HXCDF	33.21	1.841e5	1.546e5	1.087	1.19	1.24	2023.5	YES	NO	bb	bb	47.796

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	41.01	9.023e4	8.610e4	1.283	1.05	1.05	803.6	YES	NO	bd	bd	47.032
2	1234678-HpCDF	38.76	1.231e5	1.187e5	1.327	1.04	1.05	1292.0	YES	NO	bd	bd	45.725

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Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.27	3.630e4	4.955e4	1.043	0.73	0.77	444.9	YES	NO	db	db	8.852
2	2378-TCDF	25.76	3.975e4	5.306e4	1.108	0.75	0.77	507.5	YES	NO	MM	MM	9.010
3	Total-tetrafurans	24.64	2.299e2	3.012e2	1.192	0.76	0.77	3.8	YES	NO	bb	bb	0.048
4	1368-TCDF	22.24	4.969e4	6.567e4	1.425	0.76	0.77	655.6	YES	NO	bb	bd	8.704
5	12389-PECDF	32.30	1.963e5	1.282e5	1.000	1.53	1.55	1311.7	YES	NO	bb	bb	42.727
6	23478-PeCDF	31.26	2.080e5	1.406e5	1.126	1.48	1.55	1482.7	YES	NO	bb	bb	44.151
7	12378-PeCDF	29.91	2.045e5	1.355e5	1.015	1.51	1.55	1364.6	YES	NO	bb	bb	44.088
8	Total-pentafurans	28.76	3.611e4	2.442e4	1.047	1.48	1.55	240.9	YES	NO	bb	bb	7.916
9	123789-HxCDF	36.92	1.359e5	1.090e5	1.030	1.25	1.24	1477.7	YES	NO	bd	bb	48.876
10	234678-HxCDF	35.89	1.629e5	1.442e5	1.052	1.13	1.24	1879.7	YES	NO	bb	bb	48.754
11	123678-HxCDF	35.02	1.796e5	1.513e5	1.037	1.19	1.24	1930.3	YES	NO	db	db	48.303
12	123478-HxCDF	34.88	1.719e5	1.431e5	1.017	1.20	1.24	1978.1	YES	NO	bd	bd	47.495
13	123468-HXCDF	33.21	1.841e5	1.546e5	1.087	1.19	1.24	2023.5	YES	NO	bb	bb	47.796
14	1234789-HpCDF	41.01	9.023e4	8.610e4	1.283	1.05	1.05	803.6	YES	NO	bd	bd	47.032
15	1234678-HpCDF	38.76	1.231e5	1.187e5	1.327	1.04	1.05	1292.0	YES	NO	bd	bd	45.725
16	OCDF	45.24	1.112e5	1.244e5	1.447	0.89	0.89	1249.0	YES	NO	bb	bb	75.364
17	13468-PECDF	27.09	3.407e5	2.220e5	1.376	1.53	1.55	8748.7	YES	NO	bb	bb	53.803

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDD	27.00	2.809e4	3.538e4	0.794	0.79	0.77	431.6	YES	NO	bb	bd	10.055
2	2378-TCDD	26.40	3.087e4	4.026e4	0.920	0.77	0.77	465.8	YES	NO	bb	bb	9.721
3	Total-tetradioxins	26.08	4.733e4	6.162e4	0.879	0.77	0.77	487.8	YES	NO	bb	bd	15.587
4	Total-tetradioxins	25.58	1.459e4	1.868e4	0.879	0.78	0.77	237.3	YES	NO	bb	bb	4.760
5	Total-tetradioxins	24.72	1.268e3	1.821e3	0.879	0.70	0.77	15.8	YES	NO	bb	bb	0.442
6	1368-TCDD	23.51	3.184e4	4.065e4	0.923	0.78	0.77	492.9	YES	NO	bb	bb	9.875

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDD	31.91	1.628e5	1.014e5	1.154	1.61	1.55	1874.2	YES	NO	bb	bb	50.846
2	12378-PeCDD	31.50	1.378e5	8.674e4	0.995	1.59	1.55	1619.6	YES	NO	bb	bb	50.081
3	Total-pentadioxins	30.82	7.599e2	4.731e2	1.331	1.61	1.55	9.9	YES	NO	bb	bb	0.206
4	12479-PECDD	28.77	2.517e5	1.556e5	1.843	1.62	1.55	1904.9	YES	NO	bb	bb	49.045

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HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDD	36.49	1.328e5	1.076e5	0.950	1.23	1.24	1737.2	YES	NO	bb	bb	48.870
2	123678-HxCDD	36.10	1.499e5	1.167e5	1.009	1.28	1.24	1996.6	YES	NO	db	db	50.373
3	123478-HxCDD	35.99	1.411e5	1.100e5	1.027	1.28	1.24	1947.9	YES	NO	bd	bd	47.879
4	Total-hexadioxins	35.07	7.023e2	5.346e2	1.028	1.31	1.24	8.5	YES	NO	db	bd	0.233
5	124679-HXCDD	33.98	1.647e5	1.280e5	1.125	1.29	1.24	2152.9	YES	NO	bb	bb	50.982

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	40.26	7.617e4	7.260e4	1.068	1.05	1.05	945.1	YES	NO	bb	bd	48.418
2	1234679-HPCDD	39.21	8.832e4	8.208e4	1.211	1.08	1.05	1146.1	YES	NO	bb	bb	48.915

Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDD	27.00	2.809e4	3.538e4	0.794	0.79	0.77	431.6	YES	NO	bb	bd	10.055
2	2378-TCDD	26.40	3.087e4	4.026e4	0.920	0.77	0.77	465.8	YES	NO	bb	bb	9.721
3	Total-tetradioxins	26.08	4.733e4	6.162e4	0.879	0.77	0.77	487.8	YES	NO	bb	bd	15.587
4	Total-tetradioxins	25.58	1.459e4	1.868e4	0.879	0.78	0.77	237.3	YES	NO	bb	bb	4.760
5	Total-tetradioxins	24.72	1.268e3	1.821e3	0.879	0.70	0.77	15.8	YES	NO	bb	bb	0.442
6	1368-TCDD	23.51	3.184e4	4.065e4	0.923	0.78	0.77	492.9	YES	NO	bb	bb	9.875
7	12389-PECDD	31.91	1.628e5	1.014e5	1.154	1.61	1.55	1874.2	YES	NO	bb	bb	50.846
8	12378-PeCDD	31.50	1.378e5	8.674e4	0.995	1.59	1.55	1619.6	YES	NO	bb	bb	50.081
9	Total-pentadioxins	30.82	7.599e2	4.731e2	1.331	1.61	1.55	9.9	YES	NO	bb	bb	0.206
10	12479-PECDD	28.77	2.517e5	1.556e5	1.843	1.62	1.55	1904.9	YES	NO	bb	bb	49.045
11	123789-HxCDD	36.49	1.328e5	1.076e5	0.950	1.23	1.24	1737.2	YES	NO	bb	bb	48.870
12	123678-HxCDD	36.10	1.499e5	1.167e5	1.009	1.28	1.24	1996.6	YES	NO	db	db	50.373
13	123478-HxCDD	35.99	1.411e5	1.100e5	1.027	1.28	1.24	1947.9	YES	NO	bd	bd	47.879
14	Total-hexadioxins	35.07	7.023e2	5.346e2	1.028	1.31	1.24	8.5	YES	NO	db	bd	0.233
15	124679-HXCDD	33.98	1.647e5	1.280e5	1.125	1.29	1.24	2152.9	YES	NO	bb	bb	50.982
16	1234678-HpCDD	40.26	7.617e4	7.260e4	1.068	1.05	1.05	945.1	YES	NO	bb	bd	48.418
17	1234679-HPCDD	39.21	8.832e4	8.208e4	1.211	1.08	1.05	1146.1	YES	NO	bb	bb	48.915
18	OCDD	45.00	1.127e5	1.218e5	1.181	0.93	0.89	672.9	YES	NO	bb	bd	91.918

Dataset: T:\Autospec\Processed Data Batch\210920OP.qld
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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.27	3.630e4	4.955e4	1.043	0.73	0.77	444.9	YES	NO	db	db	8.852
2	2378-TCDF	25.76	3.975e4	5.306e4	1.108	0.75	0.77	507.5	YES	NO	MM	MM	9.010
3	Total-tetrafurans	24.64	2.299e2	3.012e2	1.192	0.76	0.77	3.8	YES	NO	bb	bb	0.048
4	1368-TCDF	22.24	4.969e4	6.567e4	1.425	0.76	0.77	655.6	YES	NO	bb	bd	8.704
5	12389-PECDF	32.30	1.963e5	1.282e5	1.000	1.53	1.55	1311.7	YES	NO	bb	bb	42.727
6	23478-PeCDF	31.26	2.080e5	1.406e5	1.126	1.48	1.55	1482.7	YES	NO	bb	bb	44.151
7	12378-PeCDF	29.91	2.045e5	1.355e5	1.015	1.51	1.55	1364.6	YES	NO	bb	bb	44.088
8	Total-pentafurans	28.76	3.611e4	2.442e4	1.047	1.48	1.55	240.9	YES	NO	bb	bb	7.916
9	123789-HxCDF	36.92	1.359e5	1.090e5	1.030	1.25	1.24	1477.7	YES	NO	bd	bb	48.876
10	234678-HxCDF	35.89	1.629e5	1.442e5	1.052	1.13	1.24	1879.7	YES	NO	bb	bb	48.754
11	123678-HxCDF	35.02	1.796e5	1.513e5	1.037	1.19	1.24	1930.3	YES	NO	db	db	48.303
12	123478-HxCDF	34.88	1.719e5	1.431e5	1.017	1.20	1.24	1978.1	YES	NO	bd	bd	47.495
13	123468-HXCDF	33.21	1.841e5	1.546e5	1.087	1.19	1.24	2023.5	YES	NO	bb	bb	47.796
14	1234789-HpCDF	41.01	9.023e4	8.610e4	1.283	1.05	1.05	803.6	YES	NO	bd	bd	47.032
15	1234678-HpCDF	38.76	1.231e5	1.187e5	1.327	1.04	1.05	1292.0	YES	NO	bd	bd	45.725
16	OCDF	45.24	1.112e5	1.244e5	1.447	0.89	0.89	1249.0	YES	NO	bb	bb	75.364
17	13468-PECDF	27.09	3.407e5	2.220e5	1.376	1.53	1.55	8748.7	YES	NO	bb	bb	53.803
18	1289-TCDD	27.00	2.809e4	3.538e4	0.794	0.79	0.77	431.6	YES	NO	bb	bd	10.055
19	2378-TCDD	26.40	3.087e4	4.026e4	0.920	0.77	0.77	465.8	YES	NO	bb	bb	9.721
20	Total-tetradioxins	26.08	4.733e4	6.162e4	0.879	0.77	0.77	487.8	YES	NO	bb	bd	15.587
21	Total-tetradioxins	25.58	1.459e4	1.868e4	0.879	0.78	0.77	237.3	YES	NO	bb	bb	4.760
22	Total-tetradioxins	24.72	1.268e3	1.821e3	0.879	0.70	0.77	15.8	YES	NO	bb	bb	0.442
23	1368-TCDD	23.51	3.184e4	4.065e4	0.923	0.78	0.77	492.9	YES	NO	bb	bb	9.875
24	12389-PECDD	31.91	1.628e5	1.014e5	1.154	1.61	1.55	1874.2	YES	NO	bb	bb	50.846
25	12378-PeCDD	31.50	1.378e5	8.674e4	0.995	1.59	1.55	1619.6	YES	NO	bb	bb	50.081
26	Total-pentadioxins	30.82	7.599e2	4.731e2	1.331	1.61	1.55	9.9	YES	NO	bb	bb	0.206
27	12479-PECDD	28.77	2.517e5	1.556e5	1.843	1.62	1.55	1904.9	YES	NO	bb	bb	49.045
28	123789-HxCDD	36.49	1.328e5	1.076e5	0.950	1.23	1.24	1737.2	YES	NO	bb	bb	48.870
29	123678-HxCDD	36.10	1.499e5	1.167e5	1.009	1.28	1.24	1996.6	YES	NO	db	db	50.373
30	123478-HxCDD	35.99	1.411e5	1.100e5	1.027	1.28	1.24	1947.9	YES	NO	bd	bd	47.879
31	Total-hexadioxins	35.07	7.023e2	5.346e2	1.028	1.31	1.24	8.5	YES	NO	db	bd	0.233
32	124679-HXCDD	33.98	1.647e5	1.280e5	1.125	1.29	1.24	2152.9	YES	NO	bb	bb	50.982
33	1234678-HpCDD	40.26	7.617e4	7.260e4	1.068	1.05	1.05	945.1	YES	NO	bb	bd	48.418
34	1234679-HPCDD	39.21	8.832e4	8.208e4	1.211	1.08	1.05	1146.1	YES	NO	bb	bb	48.915
35	OCDD	45.00	1.127e5	1.218e5	1.181	0.93	0.89	672.9	YES	NO	bb	bd	91.918

Dataset: T:\Autospec\Processed Data Batch\210920OP.qld
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PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	22.59	4.270e4					1.4	NO		bd		
2	FUNCTION1 PFK	22.39	3.708e4					1.2	NO		bb		
3	FUNCTION1 PFK	22.19	3.386e4					1.2	NO		bb		
4	FUNCTION1 PFK	21.69	1.790e5					2.2	NO		db		
5	FUNCTION1 PFK	21.60	3.236e4					1.6	NO		dd		
6	FUNCTION1 PFK	21.56	6.077e4					2.0	NO		dd		
7	FUNCTION1 PFK	21.45	7.635e4					2.3	NO		dd		
8	FUNCTION1 PFK	21.35	8.509e4					2.2	NO		dd		
9	FUNCTION1 PFK	21.30	6.739e4					2.3	NO		bd		
10	FUNCTION1 PFK	21.19	7.657e4					2.6	NO		db		
11	FUNCTION1 PFK	21.13	3.751e4					1.8	NO		bd		
12	FUNCTION1 PFK	25.41	3.713e4					1.4	NO		db		
13	FUNCTION1 PFK	25.31	5.229e4					1.6	NO		dd		
14	FUNCTION1 PFK	25.23	6.380e4					2.0	NO		bd		
15	FUNCTION1 PFK	25.14	2.243e4					1.2	NO		bb		
16	FUNCTION1 PFK	24.97	1.509e4					0.8	NO		db		
17	FUNCTION1 PFK	24.90	3.497e4					1.5	NO		bd		
18	FUNCTION1 PFK	24.82	3.064e4					1.1	NO		bb		
19	FUNCTION1 PFK	24.34	5.100e4					1.2	NO		db		
20	FUNCTION1 PFK	24.28	2.228e4					1.3	NO		bd		
21	FUNCTION1 PFK	23.90	1.126e4					0.8	NO		bb		
22	FUNCTION1 PFK	23.81	9.416e3					0.6	NO		bb		
23	FUNCTION1 PFK	23.70	2.441e3					0.3	NO		bb		
24	FUNCTION1 PFK	23.36	6.175e4					1.6	NO		bb		
25	FUNCTION1 PFK	23.04	8.822e4					1.7	NO		db		
26	FUNCTION1 PFK	22.89	4.638e4					1.8	NO		bd		
27	FUNCTION1 PFK	22.65	1.655e4					1.0	NO		db		
28	FUNCTION1 PFK	27.61	1.600e4					0.8	NO		bb		
29	FUNCTION1 PFK	27.42	5.038e3					0.6	NO		bb		
30	FUNCTION1 PFK	27.36	1.002e4					0.6	NO		bb		
31	FUNCTION1 PFK	27.02	1.551e4					0.6	NO		bb		
32	FUNCTION1 PFK	26.92	7.601e4					2.0	NO		bb		
33	FUNCTION1 PFK	26.80	5.084e4					1.6	NO		bb		
34	FUNCTION1 PFK	26.52	7.872e3					0.7	NO		bb		
35	FUNCTION1 PFK	25.96	1.017e4					0.7	NO		bb		
36	FUNCTION1 PFK	25.88	1.326e4					0.8	NO		bb		

ID: CS3S1, Name: 21092002A, Date: 20-Sep-2021, Time: 15:25:26, Conditions: AUTOSPEC01, User: pk

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	28.24	7.472e4					3.7	YES		bb		0.000

PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	34.54	3.764e3					0.7	NO		bb		0.000
2	FUNCTION3 PFK	33.90	2.950e4					1.8	NO		bb		0.000
3	FUNCTION3 PFK	33.12	6.739e4					2.4	NO		bb		0.000
4	FUNCTION3 PFK	33.04	3.326e4					2.1	NO		bb		0.000
5	FUNCTION3 PFK	34.64	5.813e4					1.2	NO		bb		0.000

ID: CS3S1, Name: 21092002A, Date: 20-Sep-2021, Time: 15:25:26, Conditions: AUTOSPEC01, User: pk

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	39.65	8.729e3					1.0	NO		bb		
2	FUNCTION4 PFK	39.54	8.296e3					1.3	NO		bb		
3	FUNCTION4 PFK	39.09	9.960e3					1.5	NO		bb		
4	FUNCTION4 PFK	38.80	1.585e3					0.6	NO		bb		
5	FUNCTION4 PFK	38.76	1.706e3					0.6	NO		bb		
6	FUNCTION4 PFK	38.72	8.939e2					0.3	NO		bb		
7	FUNCTION4 PFK	38.68	4.314e3					0.6	NO		bb		
8	FUNCTION4 PFK	38.58	4.799e3					0.8	NO		bb		
9	FUNCTION4 PFK	38.41	1.922e4					1.3	NO		bb		
10	FUNCTION4 PFK	38.28	1.321e4					1.6	NO		db		
11	FUNCTION4 PFK	38.23	1.398e4					1.6	NO		bd		
12	FUNCTION4 PFK	38.17	1.257e4					1.6	NO		bb		
13	FUNCTION4 PFK	38.11	8.094e3					1.2	NO		db		
14	FUNCTION4 PFK	38.06	4.117e4					2.5	NO		bd		
15	FUNCTION4 PFK	41.79	1.070e3					0.4	NO		bb		
16	FUNCTION4 PFK	41.74	3.121e3					0.5	NO		bb		
17	FUNCTION4 PFK	41.64	3.339e4					2.1	NO		db		
18	FUNCTION4 PFK	41.56	1.276e4					1.0	NO		bd		
19	FUNCTION4 PFK	41.37	1.411e3					0.4	NO		bb		
20	FUNCTION4 PFK	41.33	3.701e3					0.8	NO		bb		
21	FUNCTION4 PFK	40.57	4.673e4					2.6	NO		db		
22	FUNCTION4 PFK	40.50	1.704e4					2.1	NO		bd		
23	FUNCTION4 PFK	40.44	2.880e4					2.0	NO		db		
24	FUNCTION4 PFK	40.37	1.848e4					1.8	NO		dd		
25	FUNCTION4 PFK	40.30	2.020e4					1.9	NO		bd		
26	FUNCTION4 PFK	40.17	1.482e4					1.0	NO		bb		
27	FUNCTION4 PFK	40.03	1.167e4					0.9	NO		bb		
28	FUNCTION4 PFK	39.97	5.994e3					0.9	NO		bb		
29	FUNCTION4 PFK	39.78	1.420e3					0.5	NO		bb		
30	FUNCTION4 PFK	39.70	1.183e4					1.0	NO		bb		
31	FUNCTION4 PFK	42.94	6.403e3					0.7	NO		bb		
32	FUNCTION4 PFK	42.35	2.087e4					1.4	NO		bb		
33	FUNCTION4 PFK	42.04	1.197e4					0.9	NO		bb		
34	FUNCTION4 PFK	41.93	1.804e3					0.6	NO		bb		
35	FUNCTION4 PFK	41.88	7.304e3					1.1	NO		bb		

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PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	44.61	2.831e3					0.9	NO		bb		
2	FUNCTION5 PFK	43.85	7.675e3					1.7	NO		db		
3	FUNCTION5 PFK	43.45	3.003e6					21.7	YES		dd		
4	FUNCTION5 PFK	43.06	4.020e5					38.8	YES		bd		

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	27.06	7.246e1					3.1	YES		bb		0.000
2	FUNCTION1 HXCD...	24.61	8.612e1					1.6	NO		db		0.000
3	FUNCTION1 HXCD...	24.46	9.567e1					3.9	YES		bd		0.000
4	FUNCTION1 HXCD...	24.23	1.368e2					3.0	NO		bb		0.000
5	FUNCTION1 HXCD...	21.91	1.047e2					2.2	NO		bb		0.000
6	FUNCTION1 HXCD...	27.92	8.058e1					2.9	NO		bb		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	25.35	7.728e1					2.3	NO		bb		0.000
2	FUNCTION1 HPCD...	21.29	1.454e2					4.4	YES		bb		0.000

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	32.14	1.375e2					3.0	NO		bb		0.000
2	FUNCTION2 HPCD...	31.07	3.002e2					7.2	YES		bb		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	36.08	7.345e1					2.2	NO		bb		0.000
2	FUNCTION3 OCDPE	35.99	1.769e2					7.8	YES		bb		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	41.02	8.002e1					2.1	NO		bb		0.000

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Printed: Tuesday, September 21, 2021 11:13:03 Pacific Daylight Time

ID: CS3S1, Name: 21092002A, Date: 20-Sep-2021, Time: 15:25:26, Conditions: AUTOSPEC01, User: pk

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	44.94	9.768e1					3.4	YES		bb		0.000
2	FUNCTION5 DCDPE	44.61	7.781e1					2.5	NO		bb		0.000

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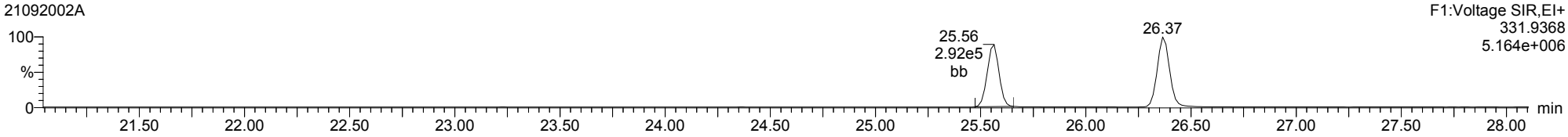

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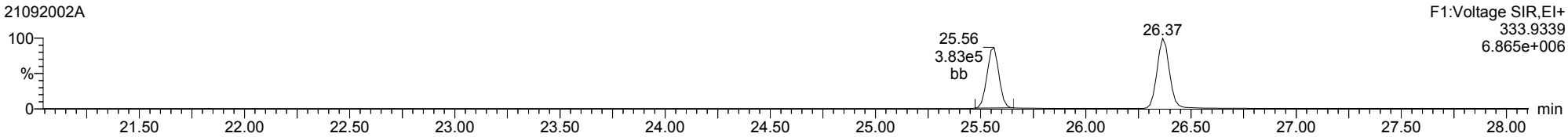

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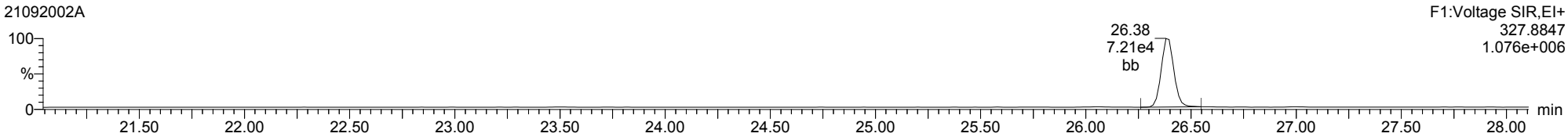

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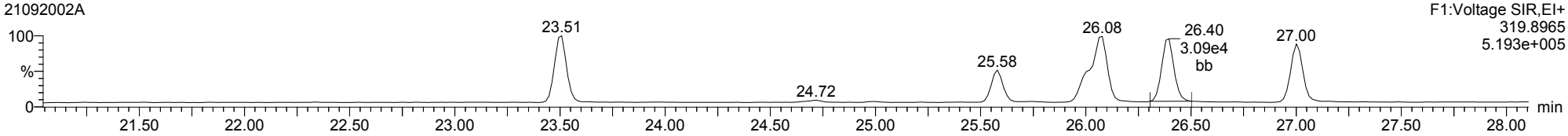

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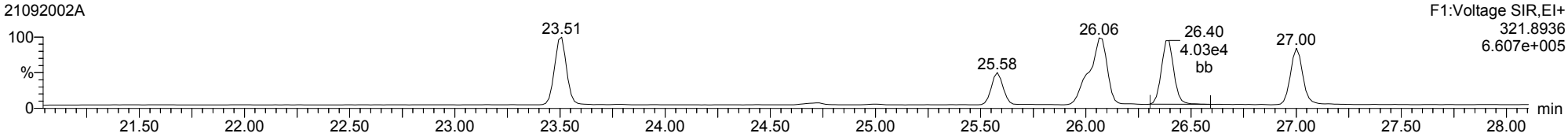

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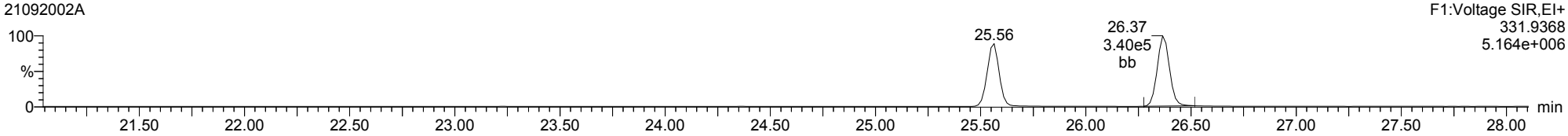

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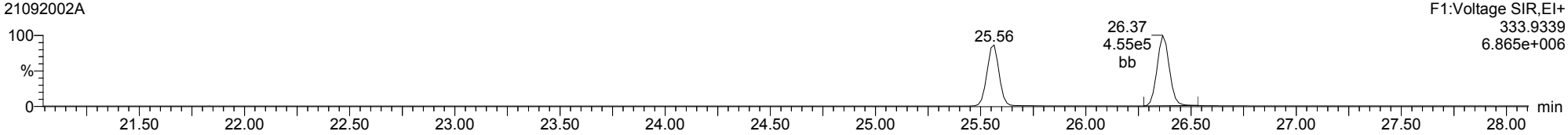

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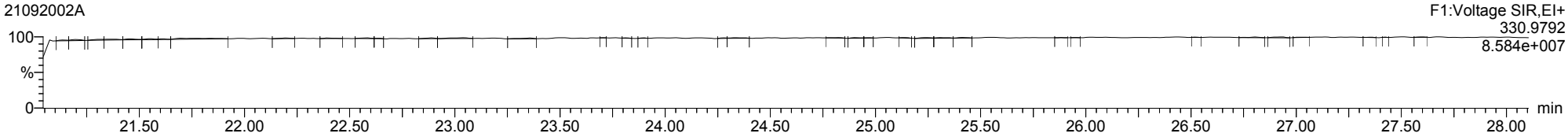

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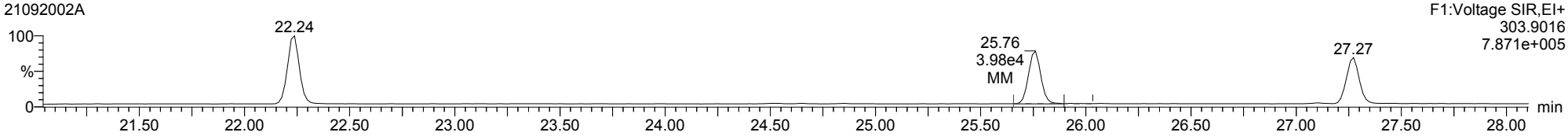

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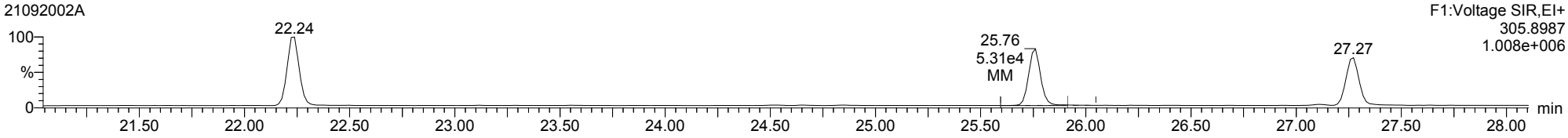

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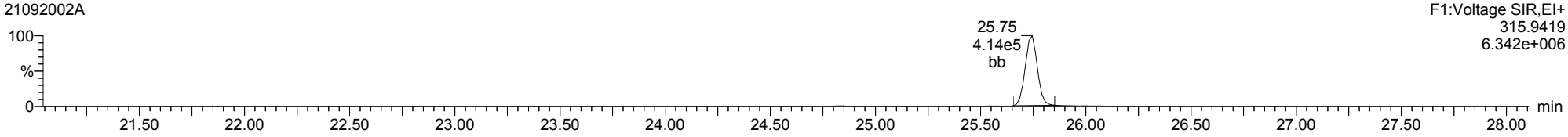

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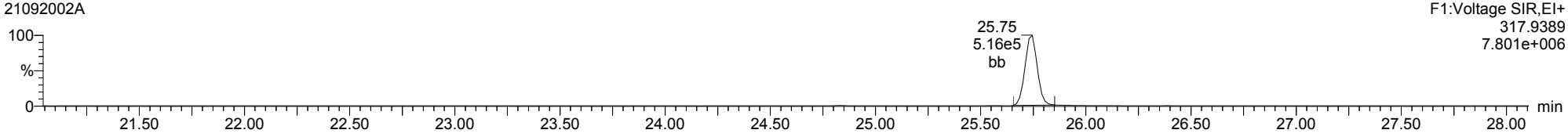
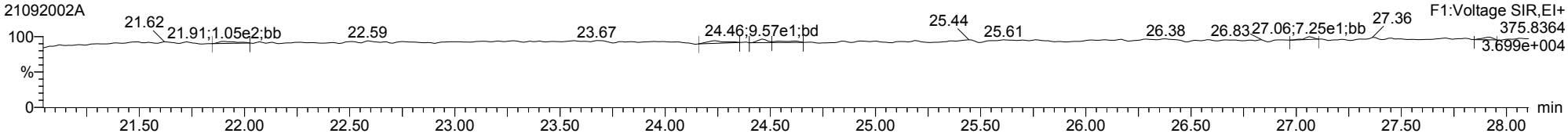


FUNCTION1 HXCDPE



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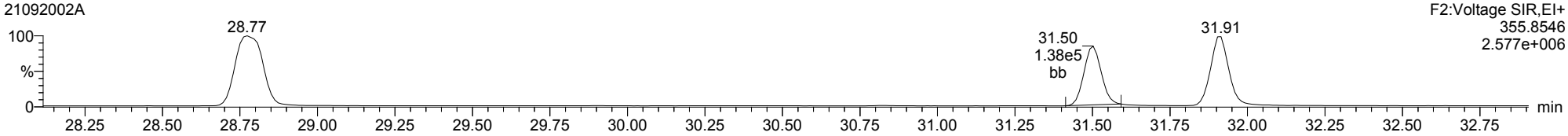

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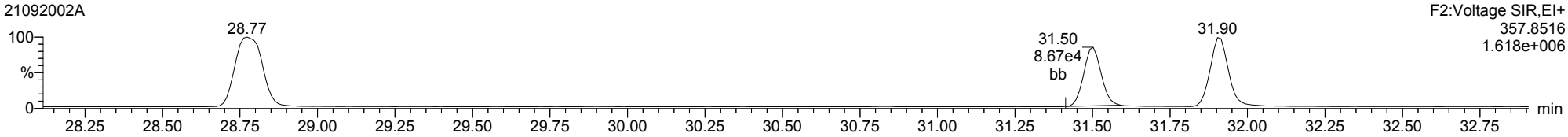

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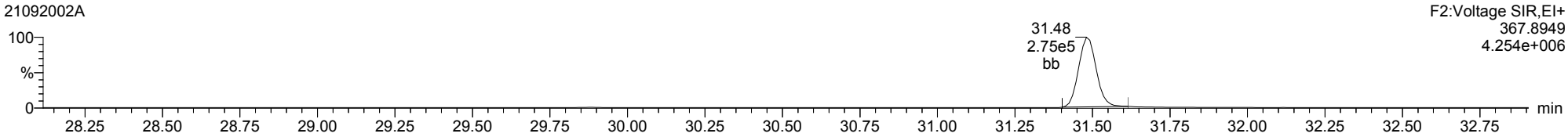

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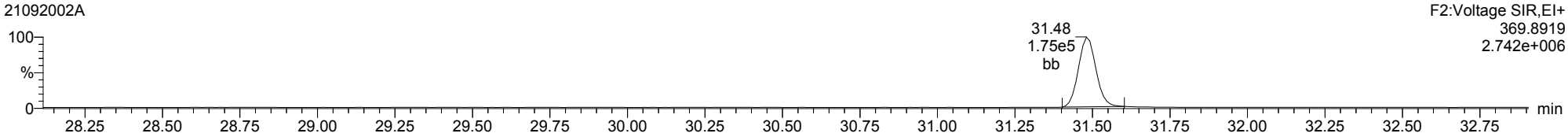
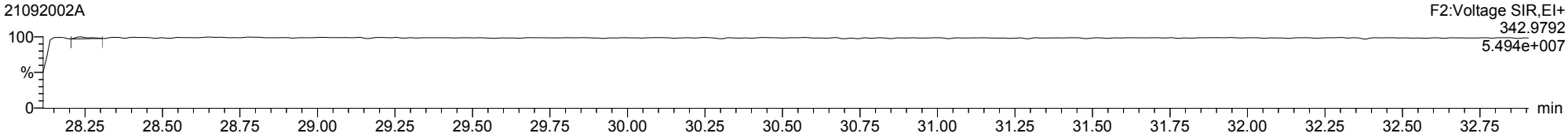


FUNCTION2 PFK



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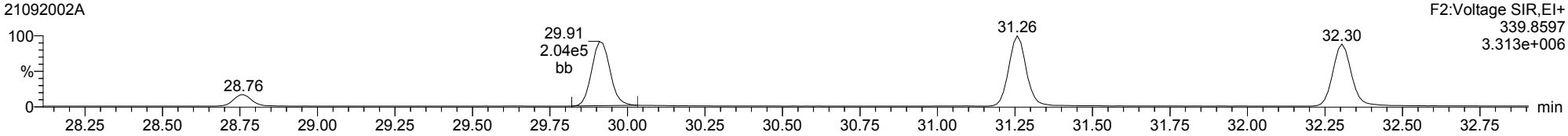

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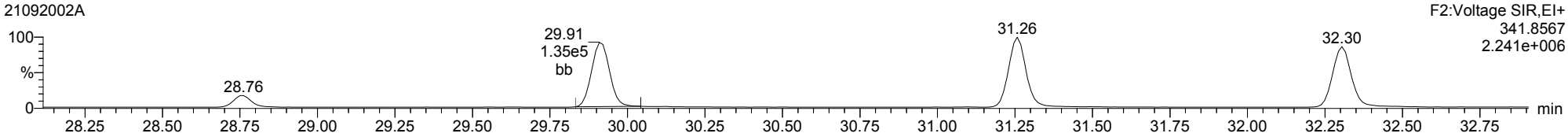

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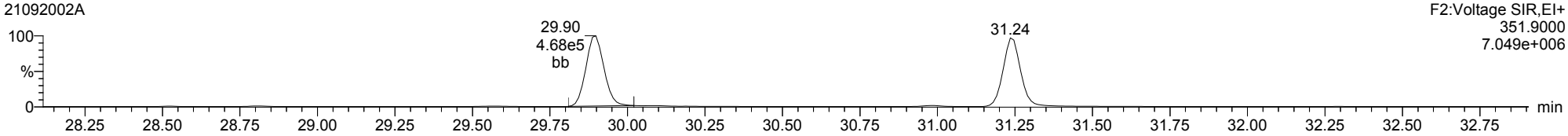

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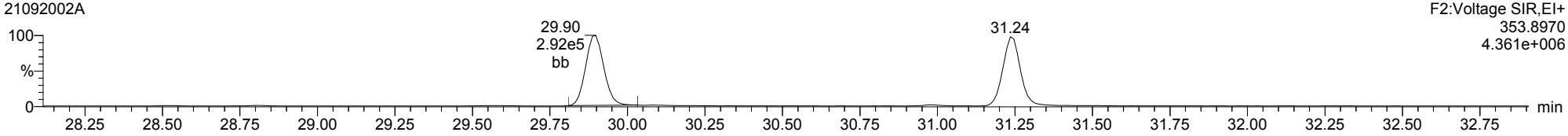

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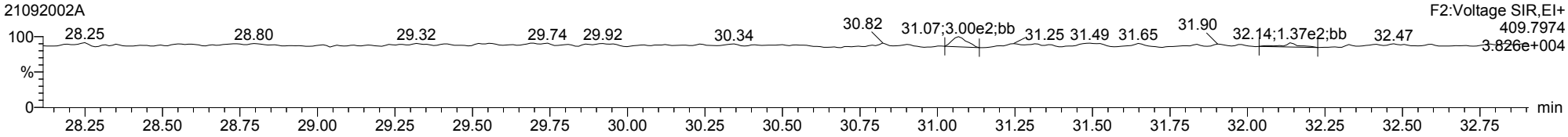

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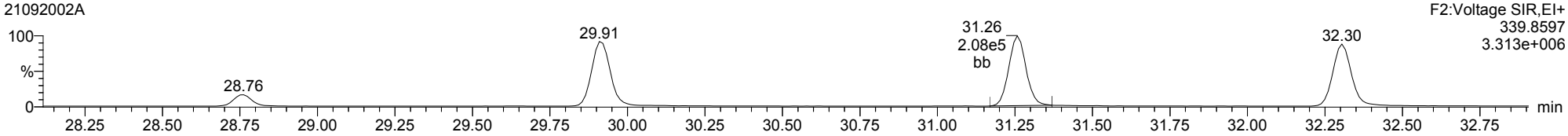
23478-PeCDF



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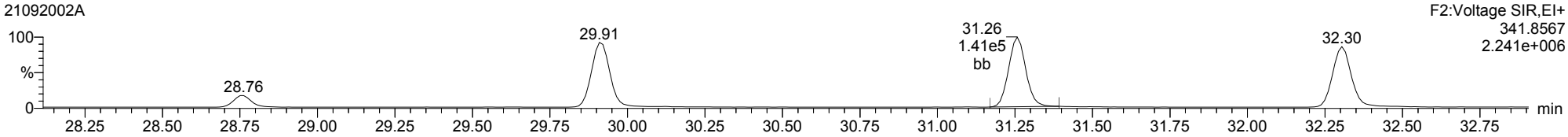

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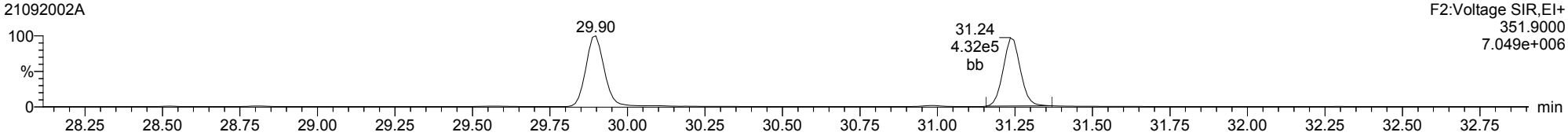

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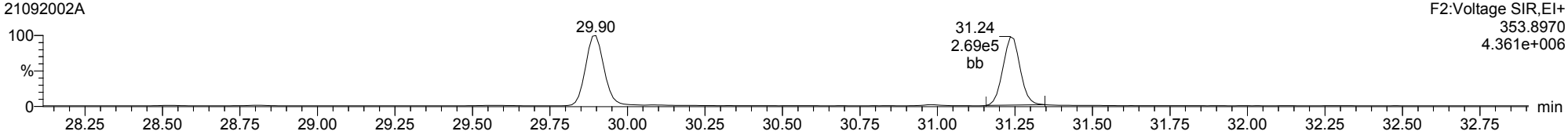

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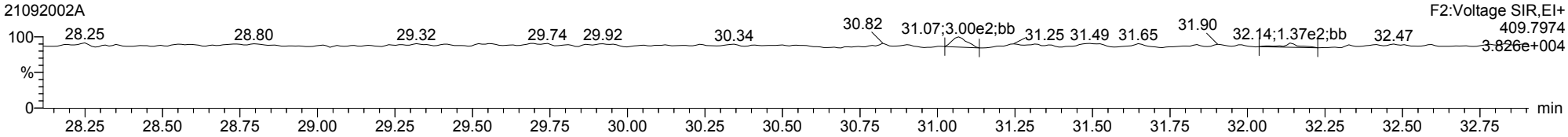

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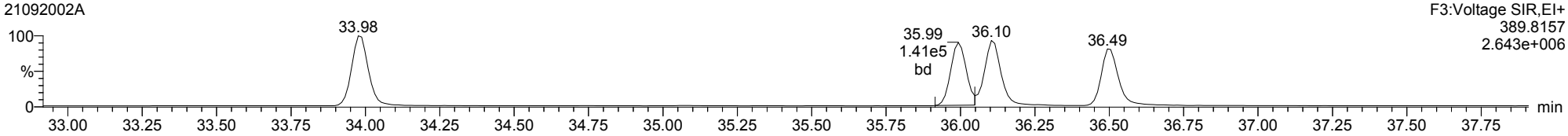
123478-HxCDD



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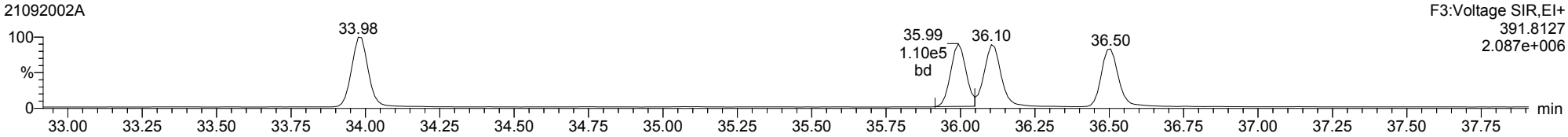

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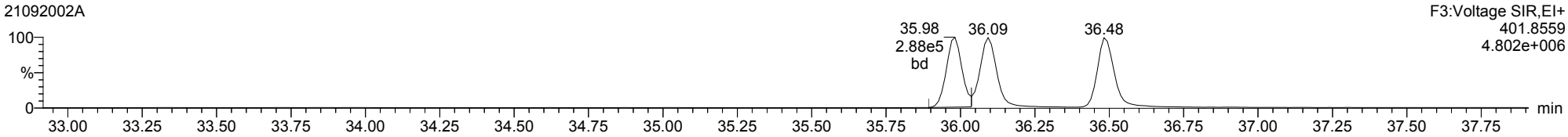

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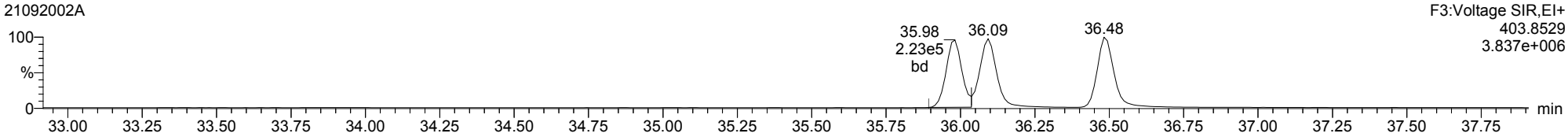
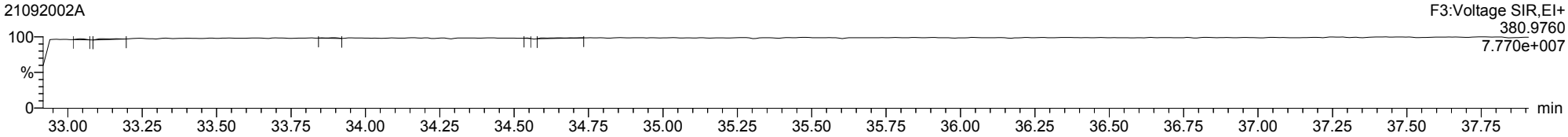


FUNCTION3 PFK



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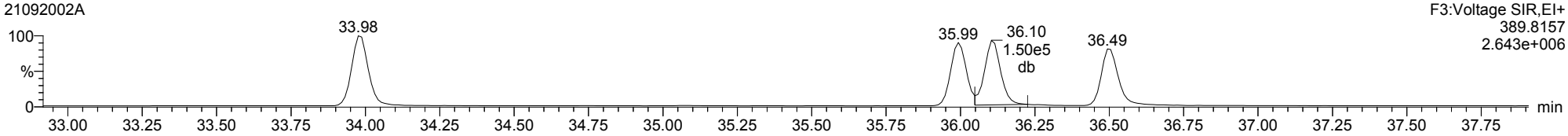

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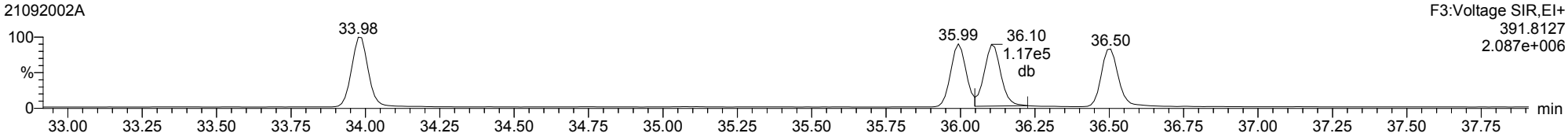

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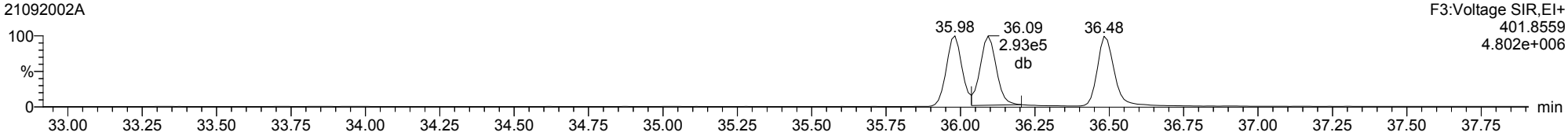

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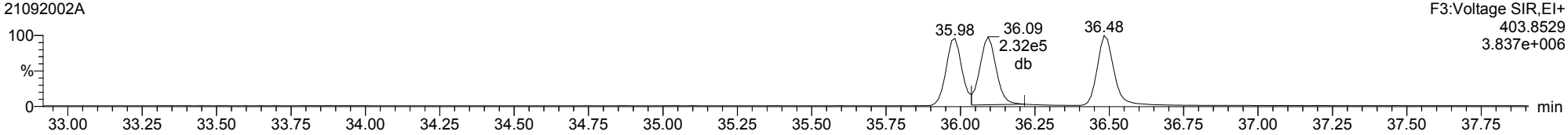

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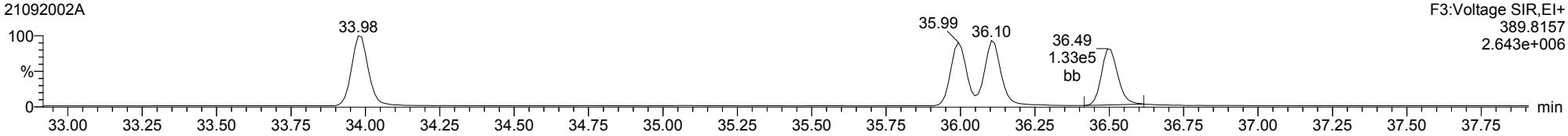

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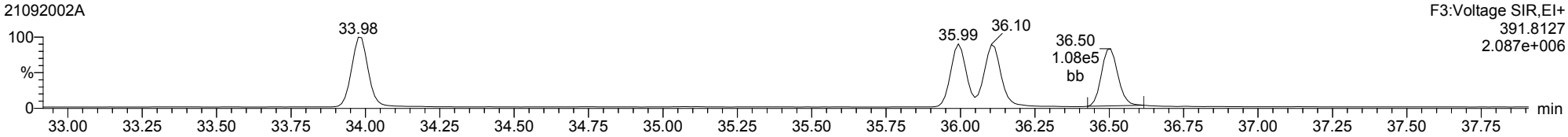

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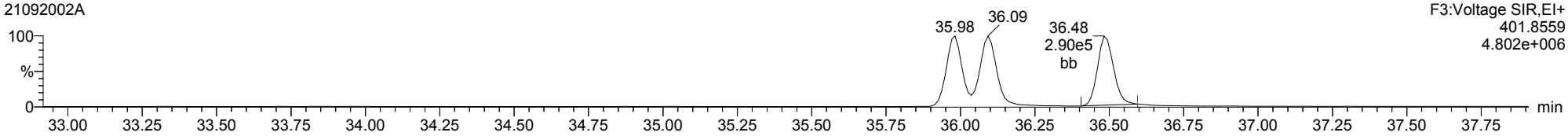

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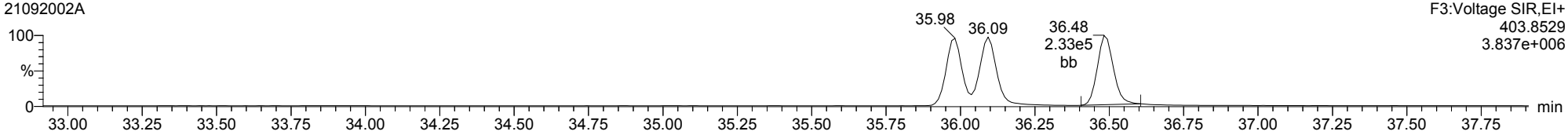

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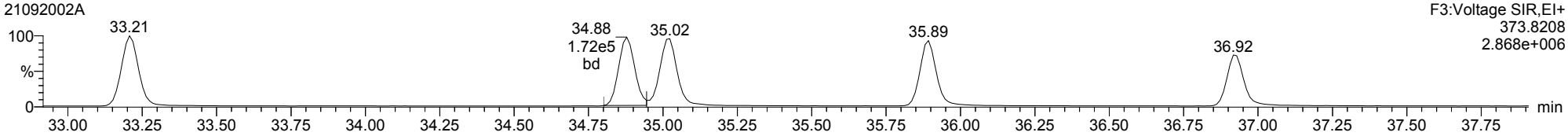

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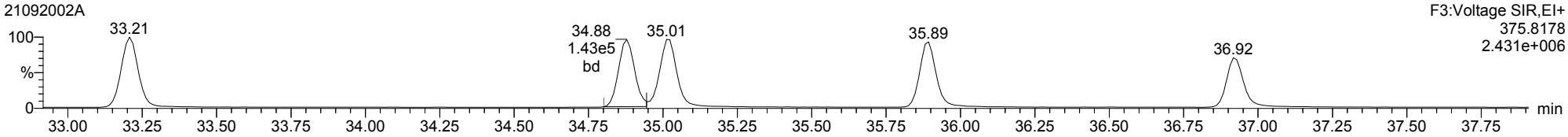

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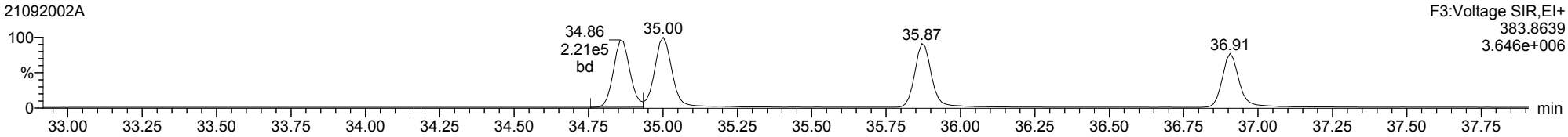

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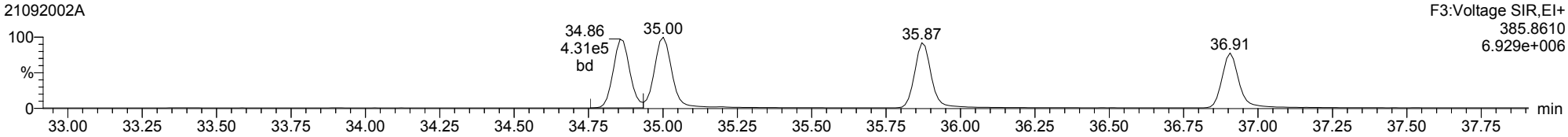

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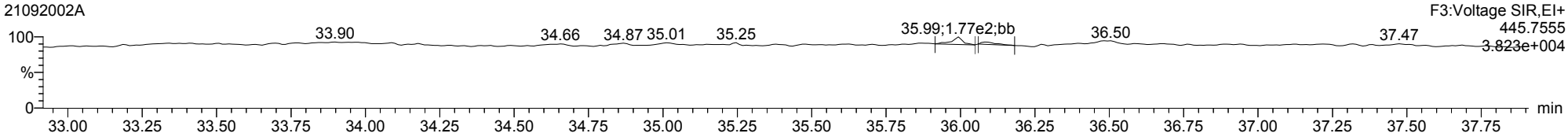

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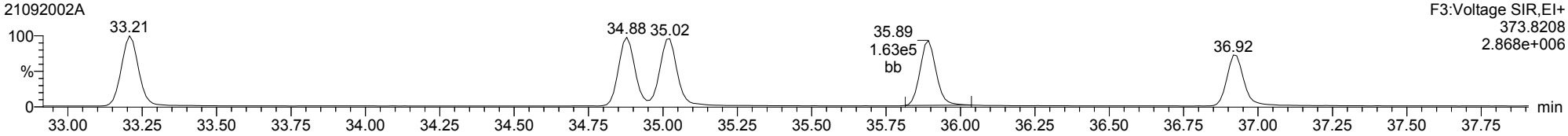

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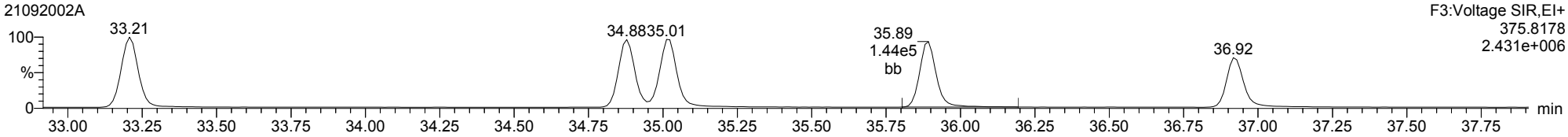

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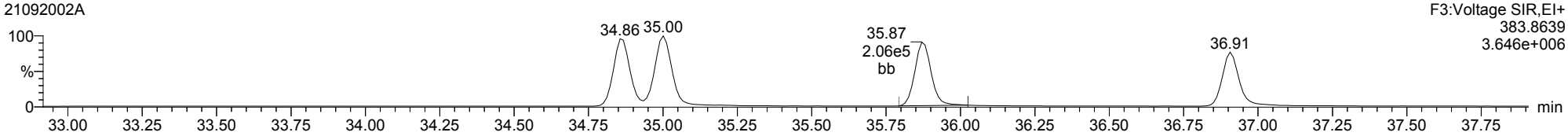

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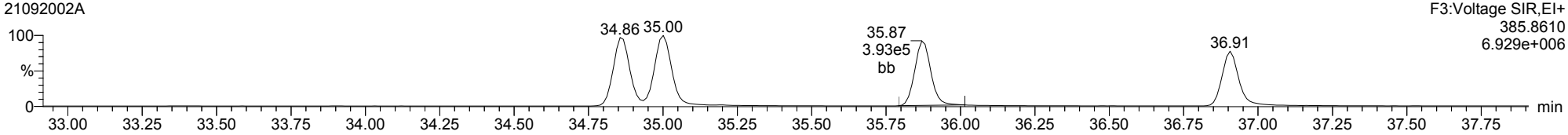

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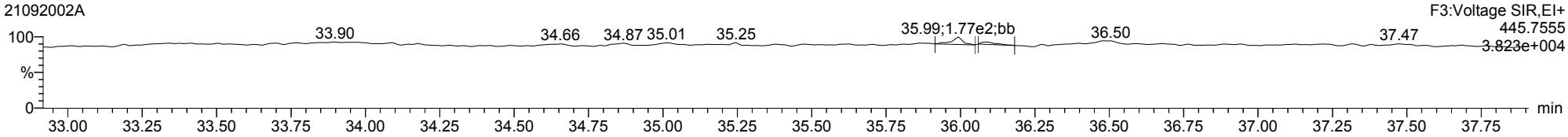

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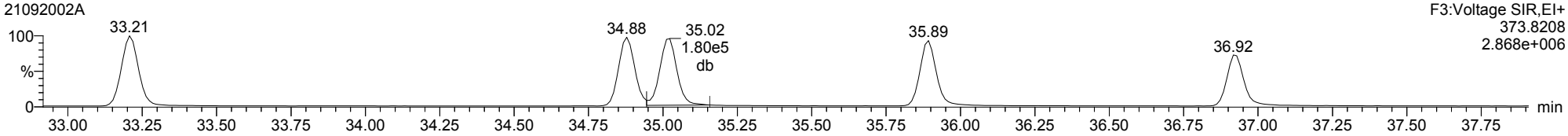

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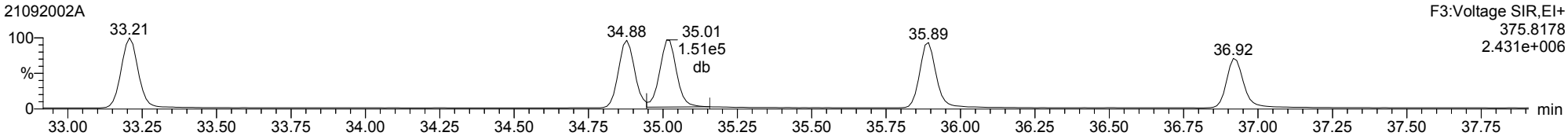

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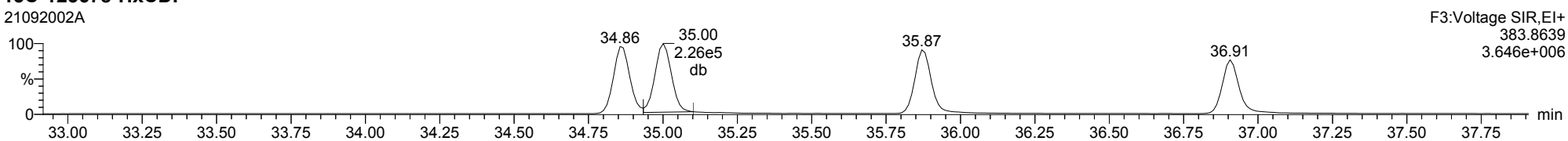

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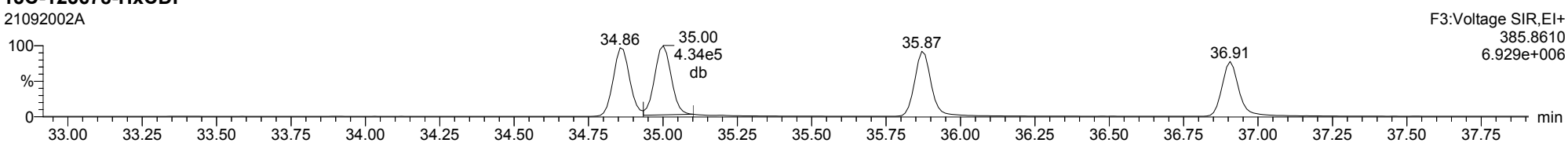

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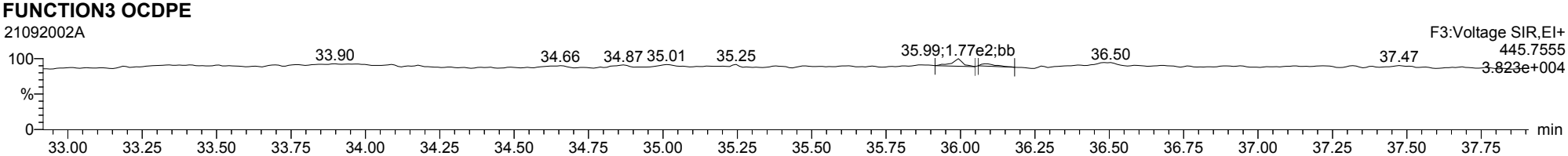

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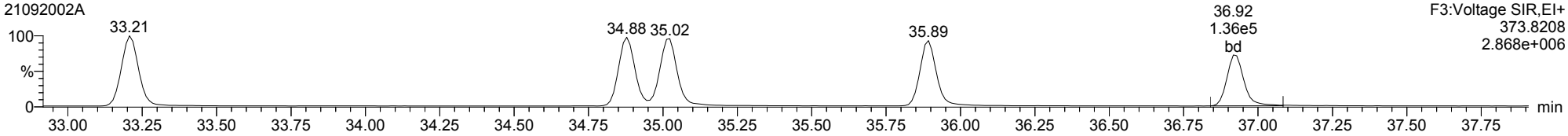

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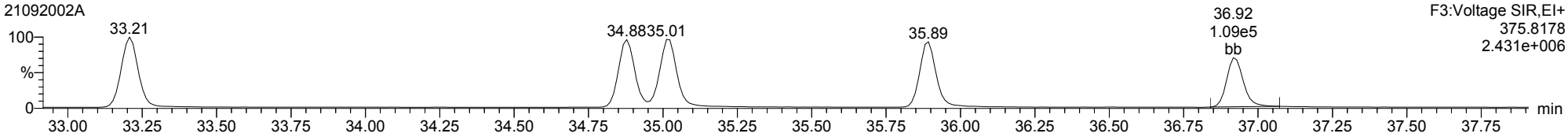

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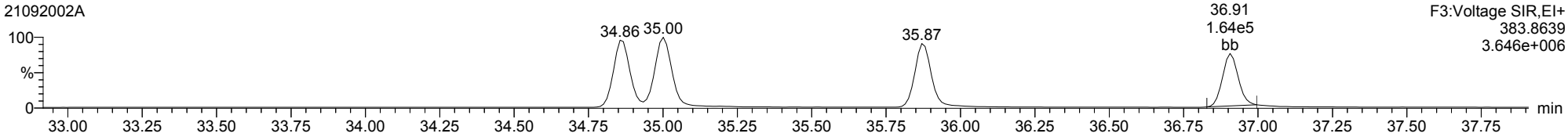

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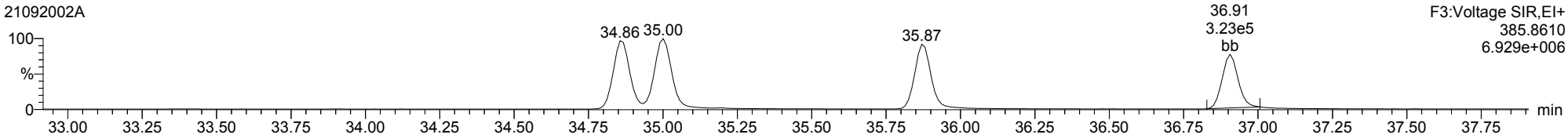

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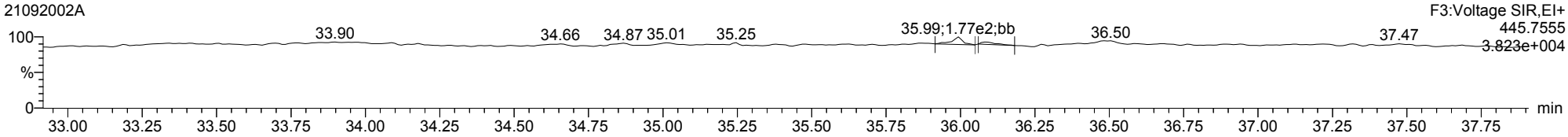

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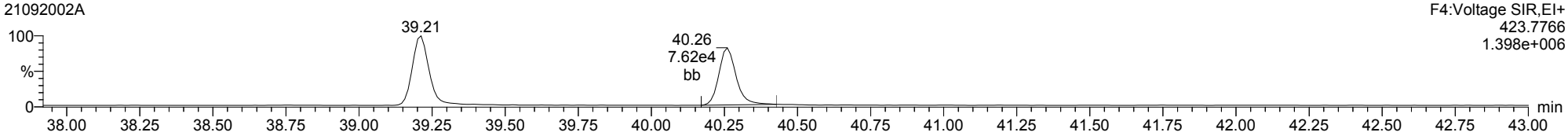

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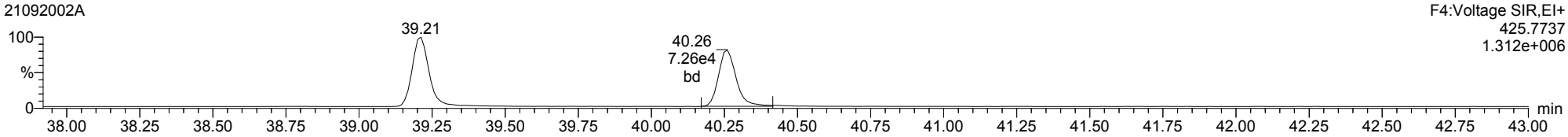

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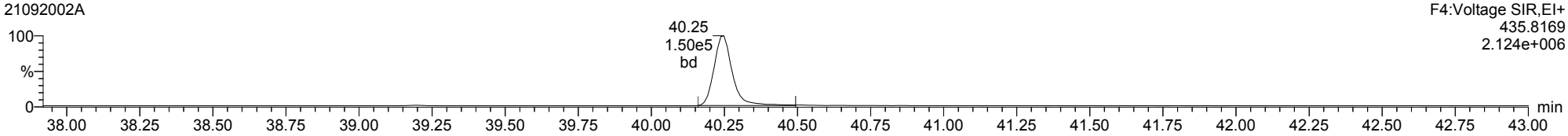

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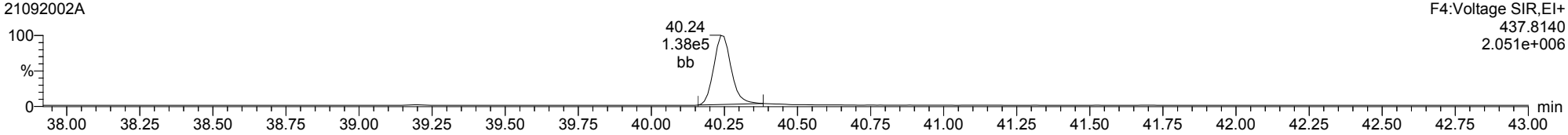

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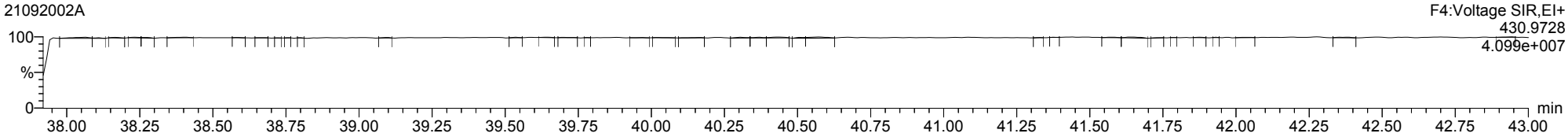

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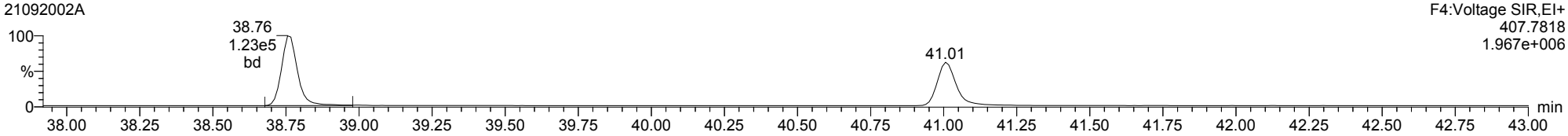

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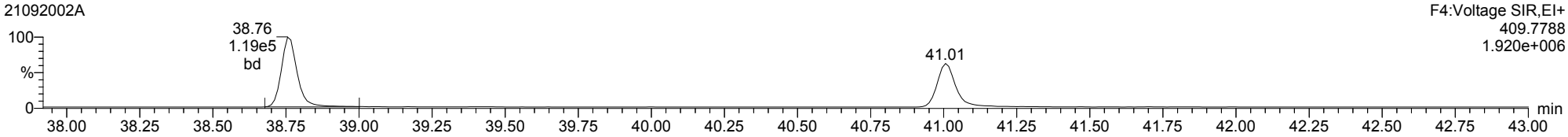

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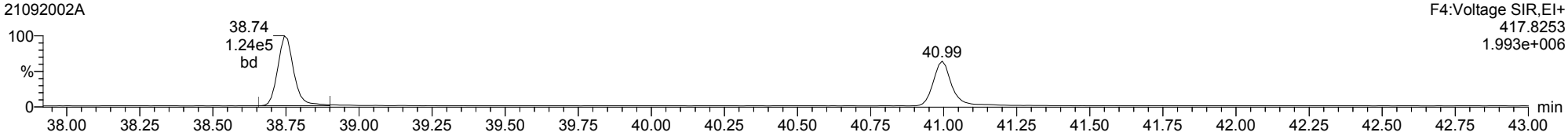

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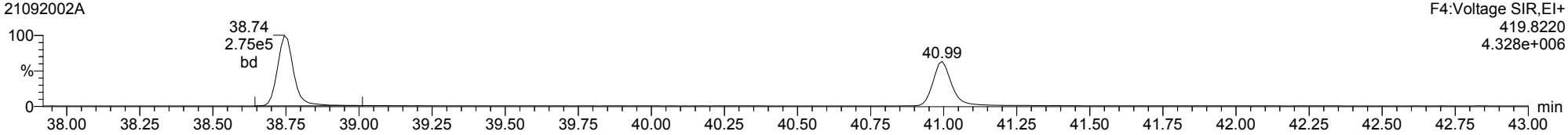

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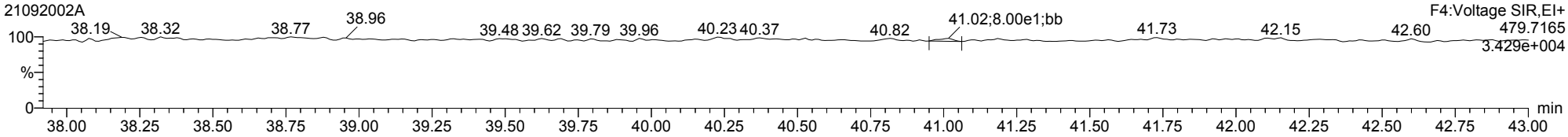

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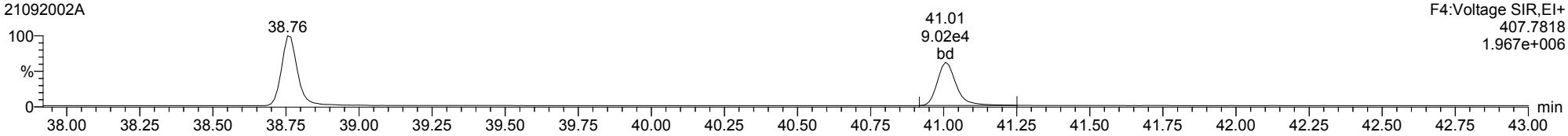

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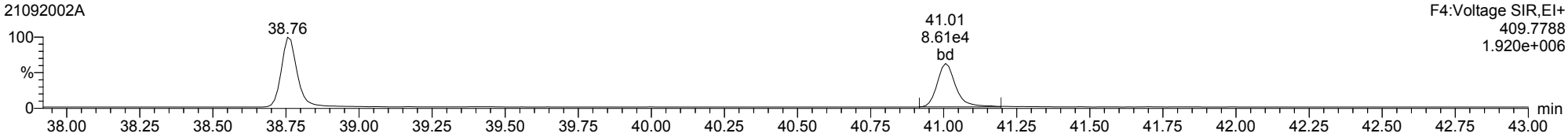

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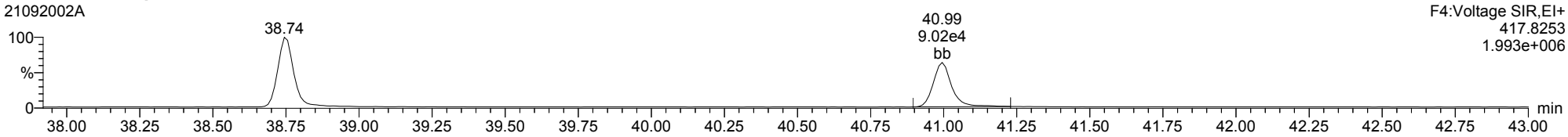

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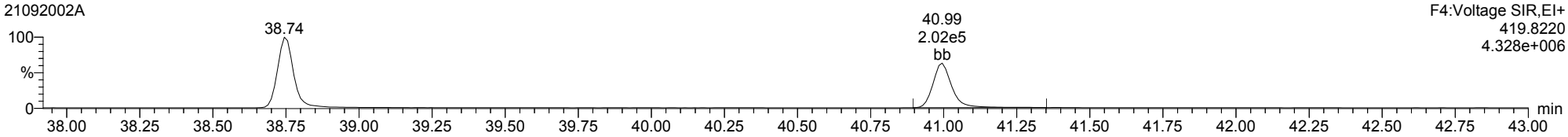

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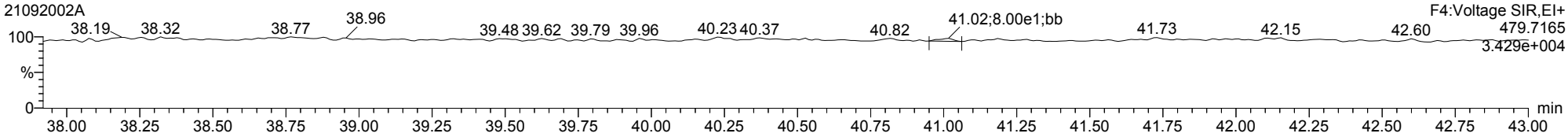

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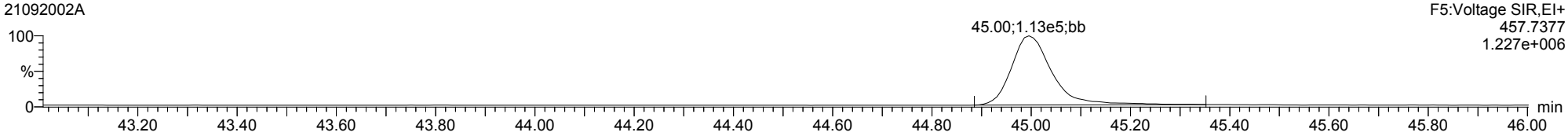
OCDD



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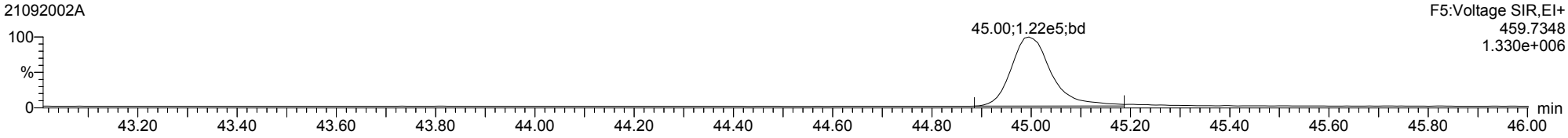

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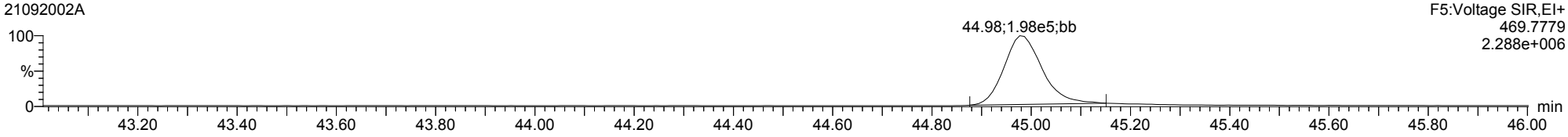

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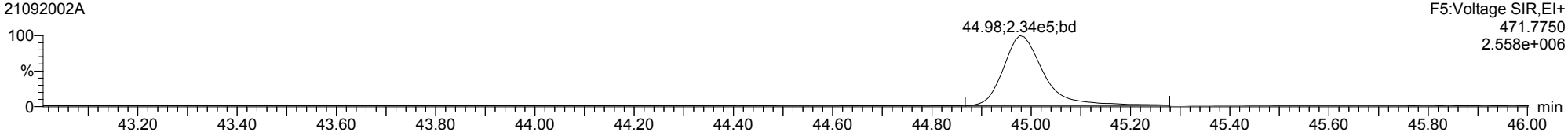
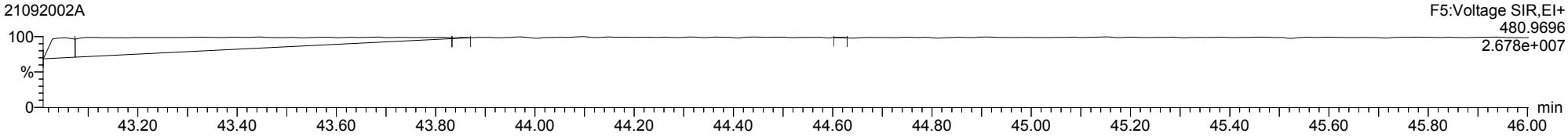


FUNCTION5 PFK



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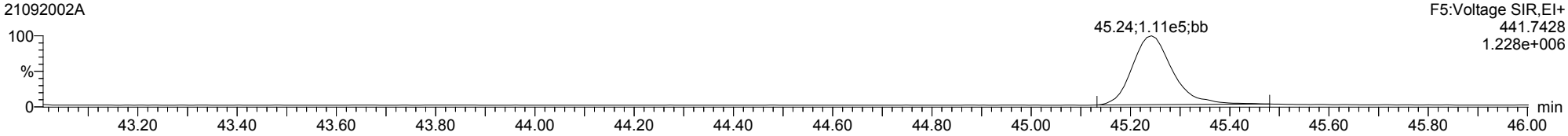

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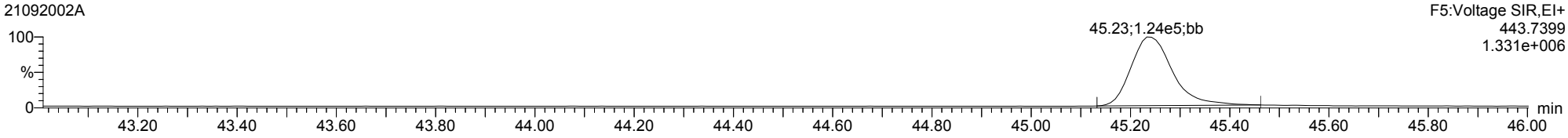
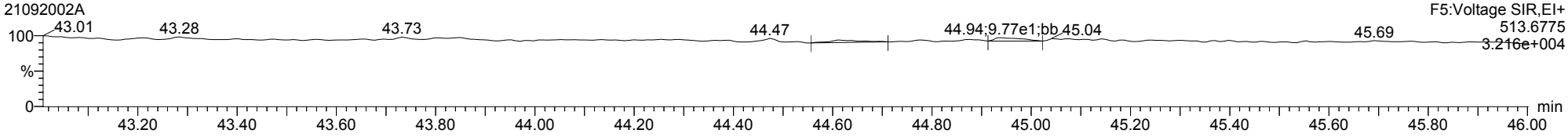


FUNCTION5 DCDPE



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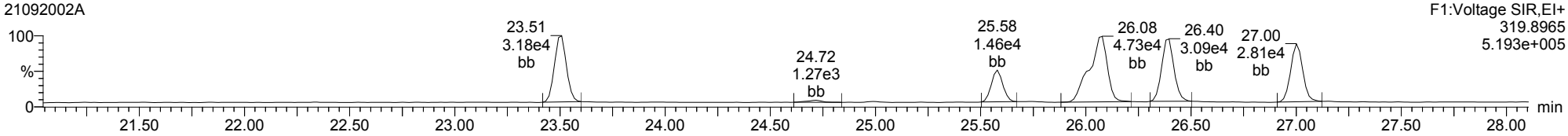

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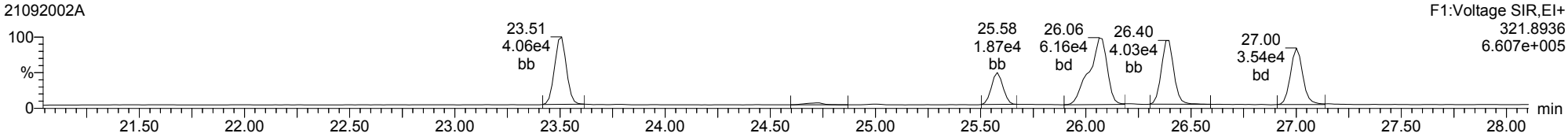

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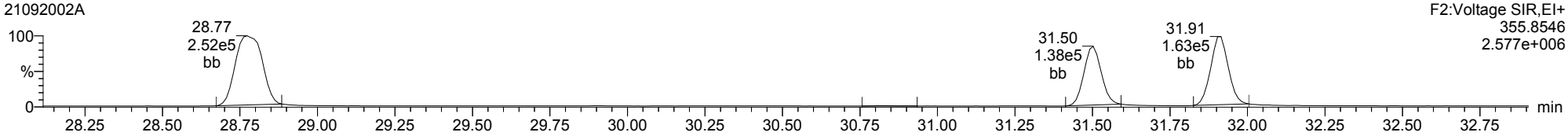

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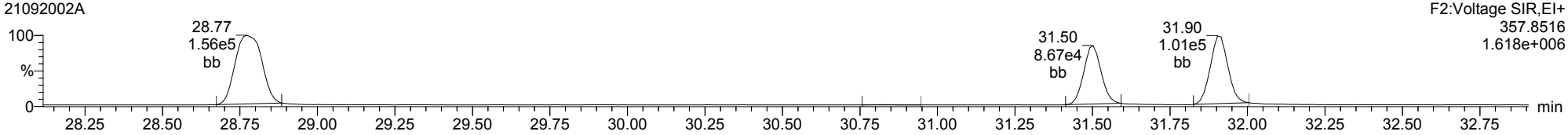

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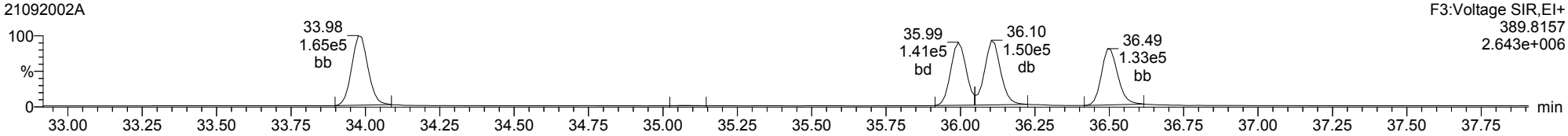

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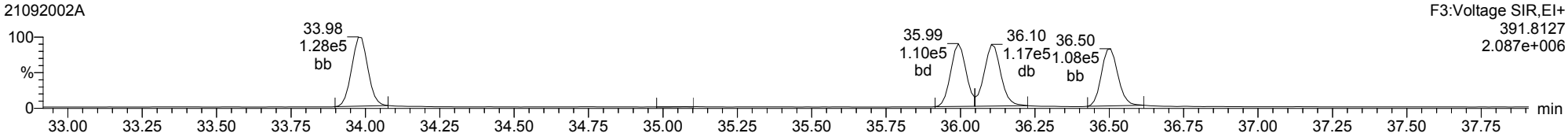

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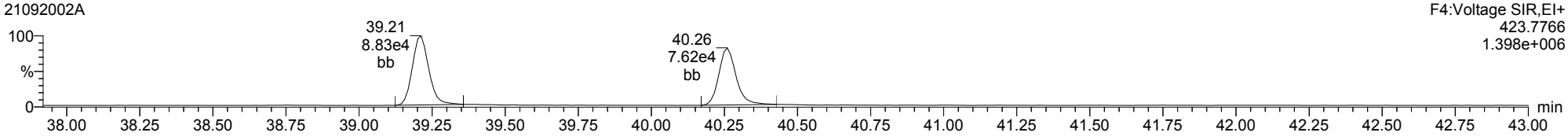

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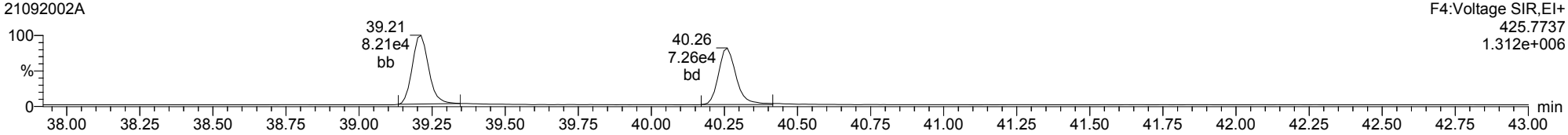

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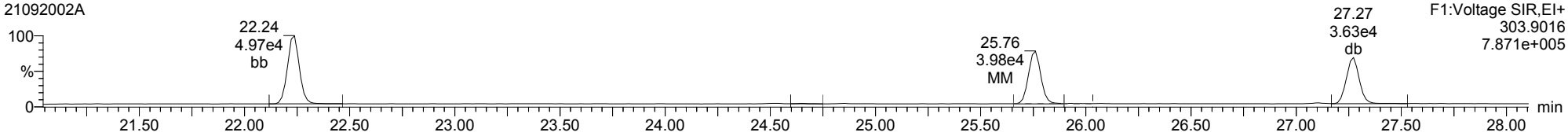
Printed: Tuesday, September 21, 2021 11:13:03 Pacific Daylight Time

ID: CS3S1, Name: 21092002A, Date: 20-Sep-2021, Time: 15:25:26, Conditions: AUTOSPEC01, User: pk

Total-tetrafurans



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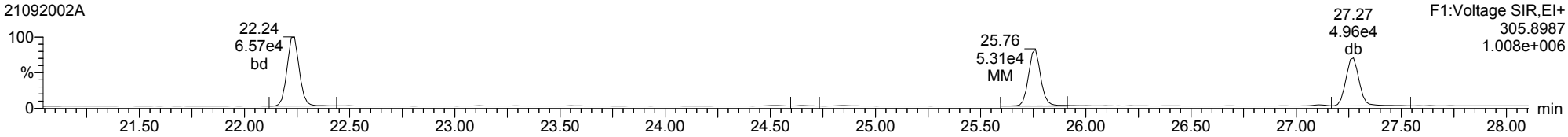

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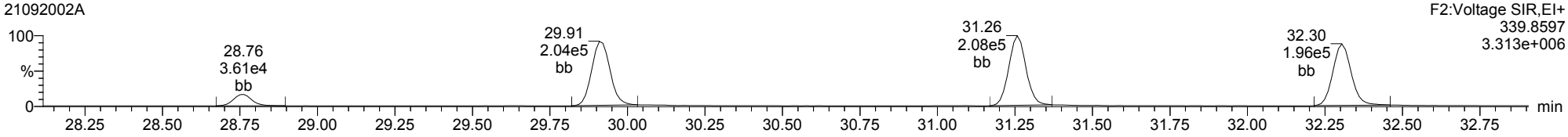

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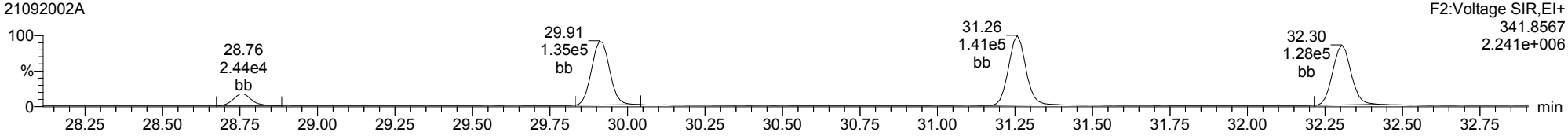

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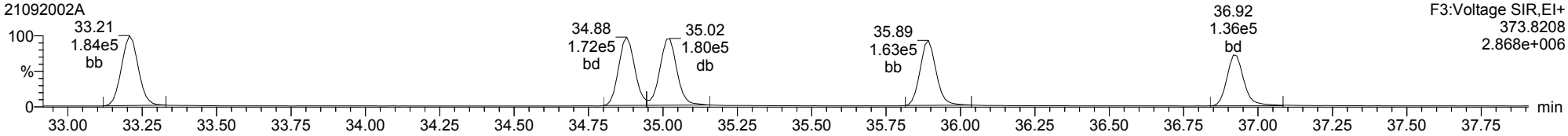

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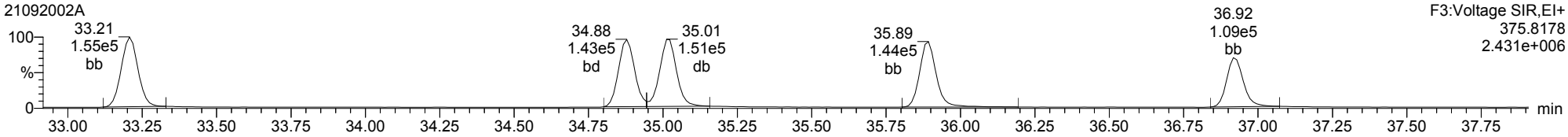

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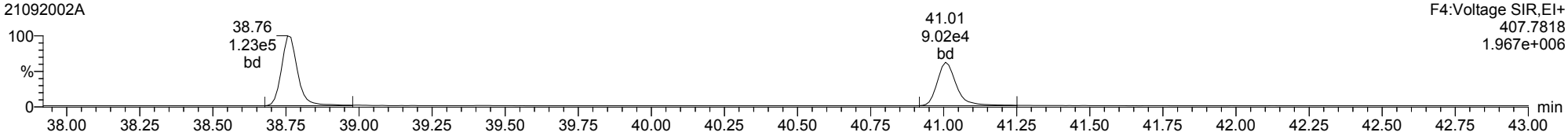

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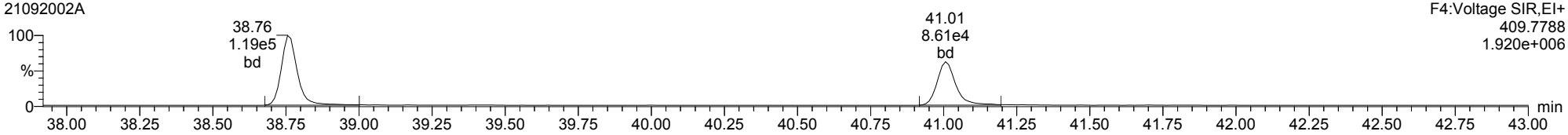

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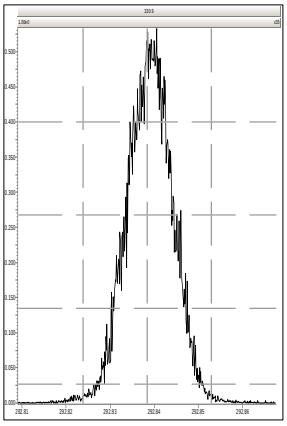

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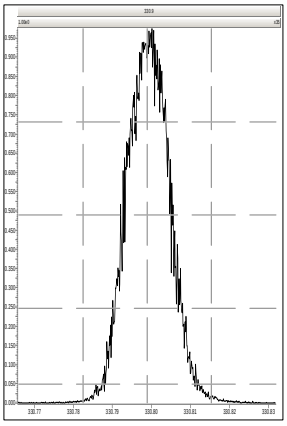

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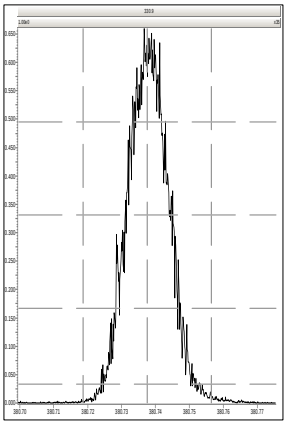

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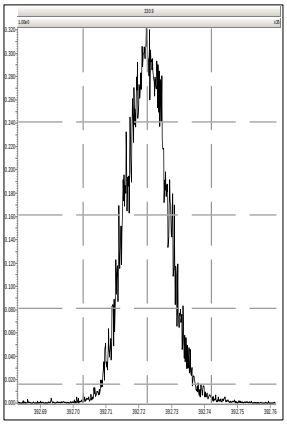

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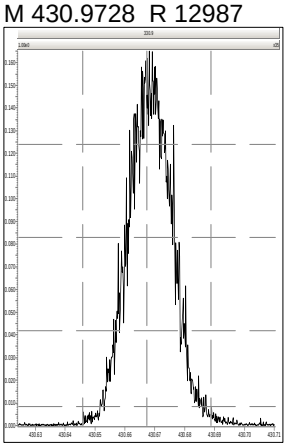

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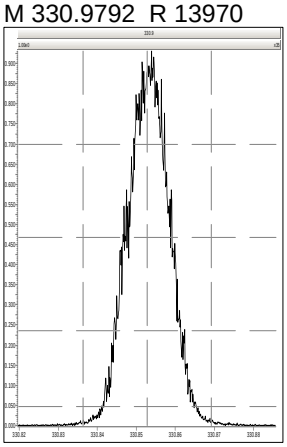

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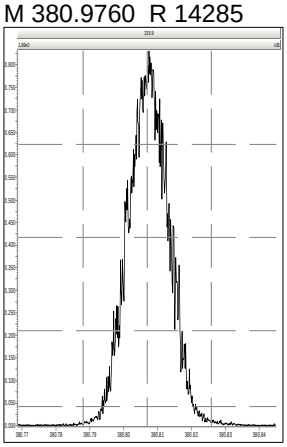

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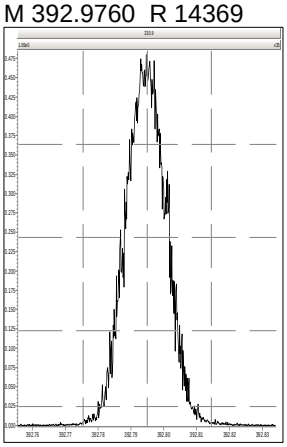

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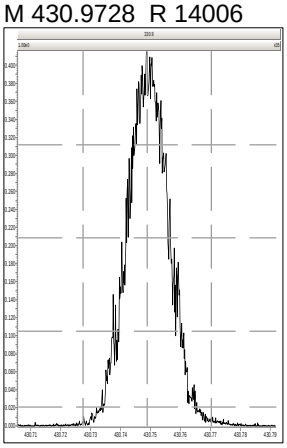

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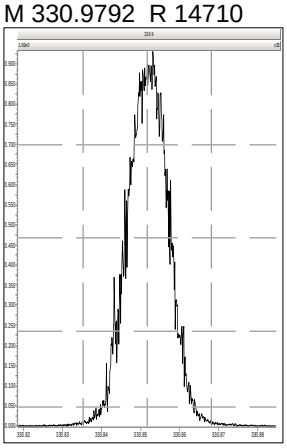

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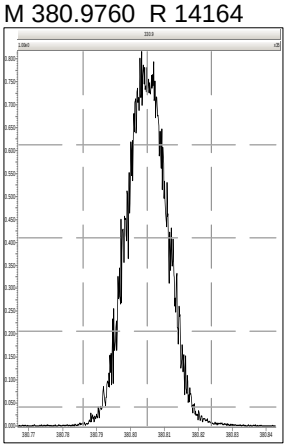

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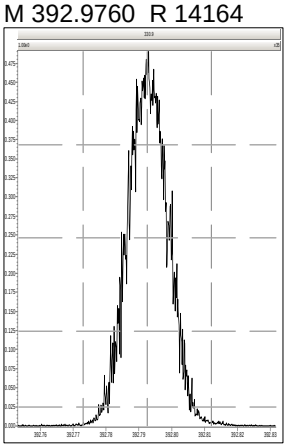

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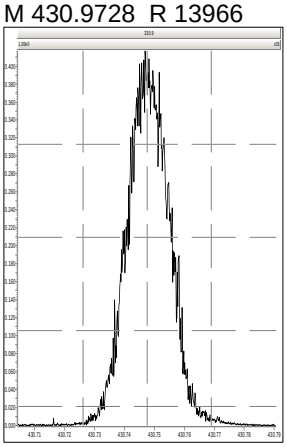

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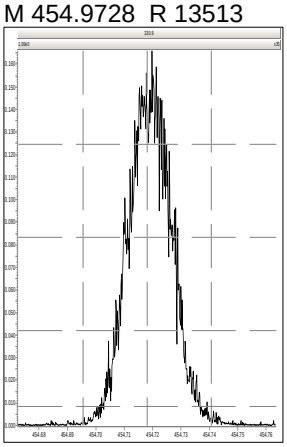

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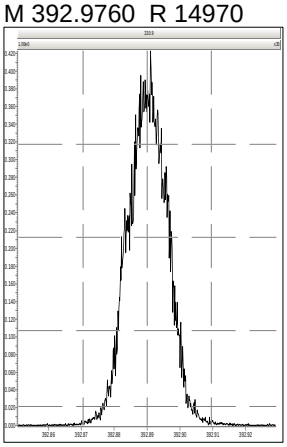

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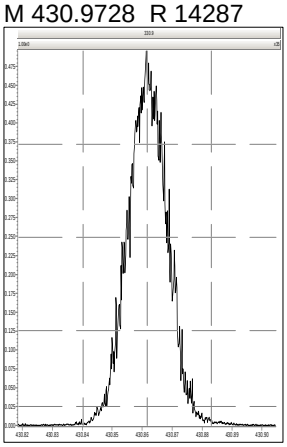

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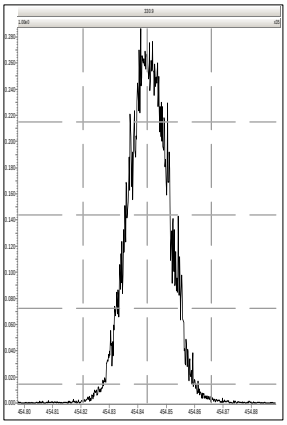

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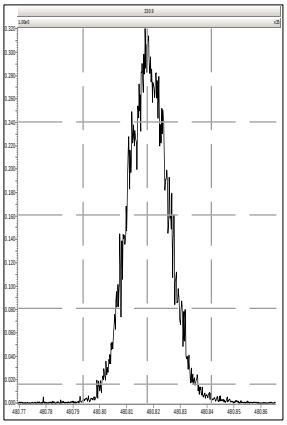

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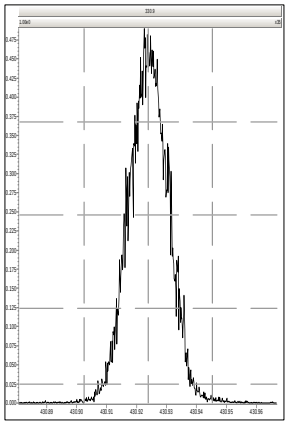

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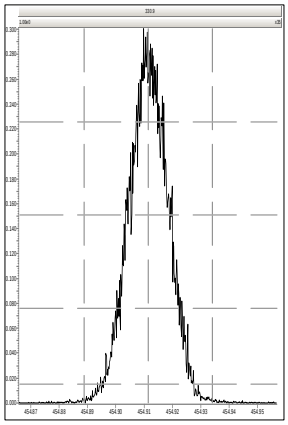

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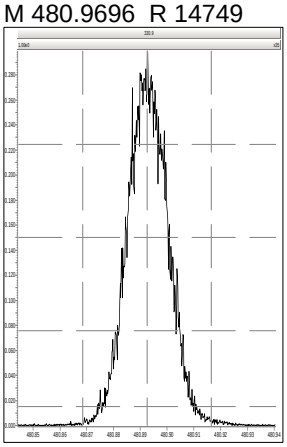

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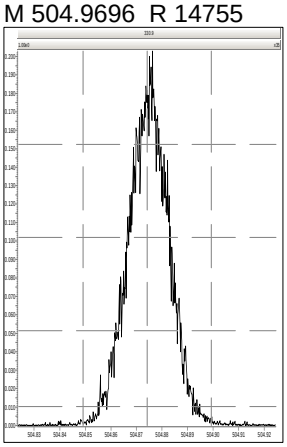

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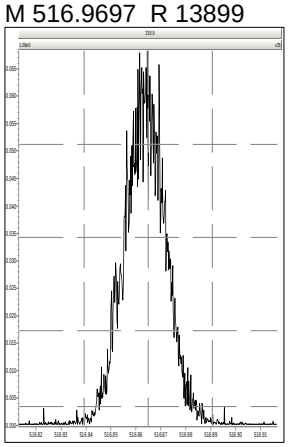
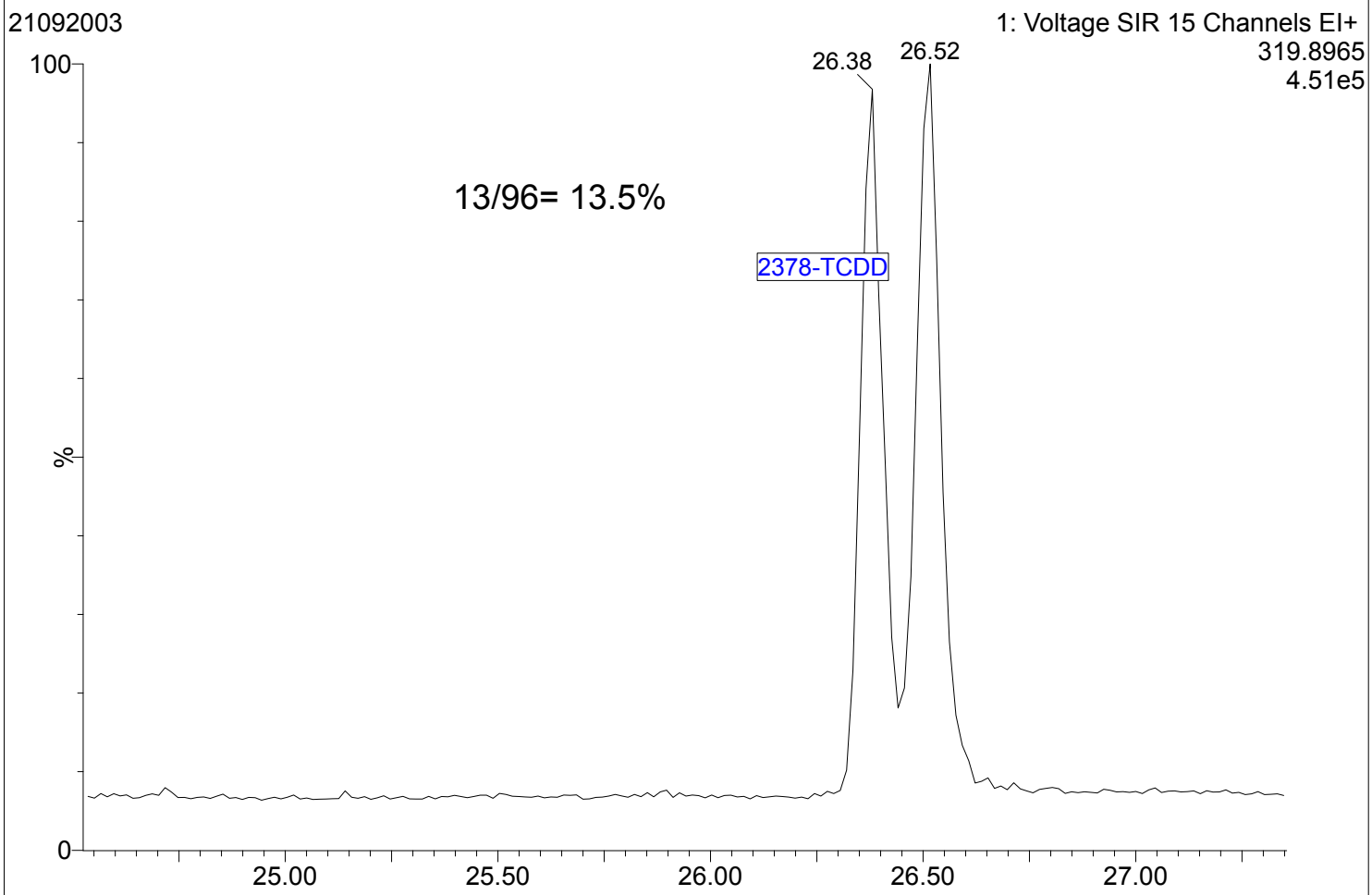
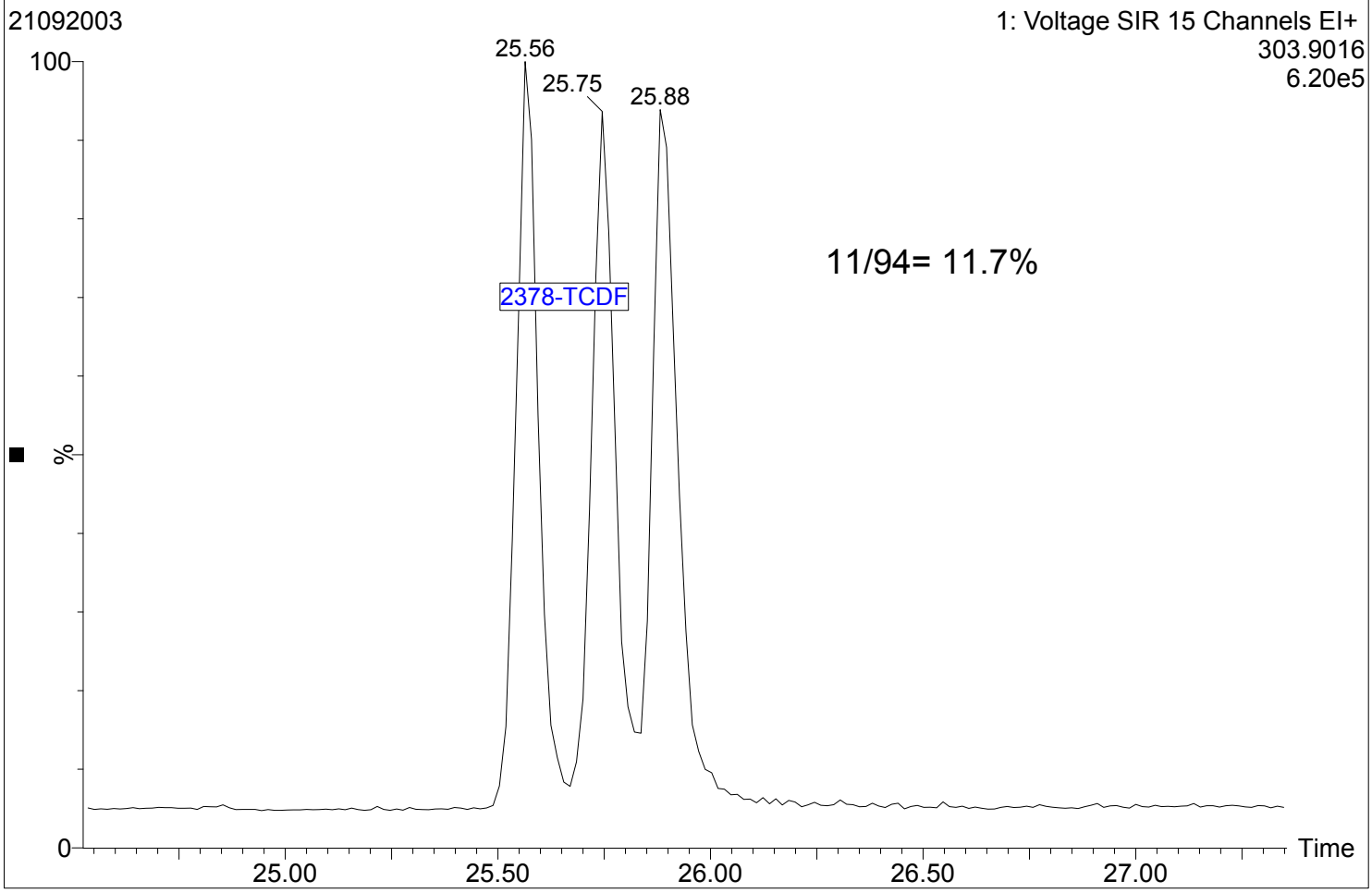



21092003
1: Voltage SIR 15 Channels EI+
319.8965
4.51e5
100
%
0
26.38
26.52
13/96= 13.5%
2378-TCDD
25.00
25.50
26.00
26.50
27.00


21092003
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6.20e5
100
%
0
25.56
25.75
25.88
11/94= 11.7%
2378-TCDF
Time
25.00
25.50
26.00
26.50
27.00

Analytical Resources, Incorporated
Analytical Chemists and Consultants

CONTINUING CALIBRATION CHECK
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	AUTOSPEC01	Calibration:	EH00030
Lab File ID:	21092012	Calibration Date:	08/11/2021
Sequence:	SJI0309	Injection Date:	09/21/21
Lab Sample ID:	SJI0309-CCV1	Injection Time:	01:12
Sequence Name:	CS3S2		

		CONC. (ng/mL)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN	CCV	LIMIT
2,3,7,8-TCDF	A	10.000	8.49	1.1075930	0.9407674		-15.1	+/-16
2,3,7,8-TCDD	A	10.000	9.93	0.9202875	0.9141564		-0.7	+/-22
1,2,3,7,8-PeCDF	A	50.000	43.7	1.0148670	0.8866967		-12.6	+/-18
2,3,4,7,8-PeCDF	A	50.000	44.5	1.1255490	1.0013990		-11.0	+/-18
1,2,3,7,8-PeCDD	A	50.000	49.2	0.9953229	0.9794280		-1.6	+/-22
1,2,3,4,7,8-HxCDF	A	50.000	46.0	1.0168930	0.9364793		-7.9	+/-10
1,2,3,6,7,8-HxCDF	A	50.000	46.8	1.0368310	0.9701589		-6.4	+/-12
2,3,4,6,7,8-HxCDF	A	50.000	46.8	1.0524660	0.9861093		-6.3	+/-12
1,2,3,7,8,9-HxCDF	A	50.000	45.9	1.0301540	0.9464727		-8.1	+/-10
1,2,3,4,7,8-HxCDD	A	50.000	47.2	1.0273630	0.9700052		-5.6	+/-22
1,2,3,6,7,8-HxCDD	A	50.000	48.2	1.0089800	0.9724158		-3.6	+/-22
1,2,3,7,8,9-HxCDD	A	50.000	50.4	0.9504865	0.9583340		0.8	+/-18
1,2,3,4,6,7,8-HpCDF	A	50.000	45.0	1.3273500	1.1955380		-9.9	+/-10
1,2,3,4,7,8,9-HpCDF	A	50.000	45.7	1.2833380	1.1731980		-8.6	+/-14
1,2,3,4,6,7,8-HpCDD	A	50.000	48.0	1.0680880	1.0258750		-4.0	+/-14
OCDF	A	100.00	76.3	1.4469010	1.1039710		-23.7	+/-37
OCDD	A	100.00	92.2	1.1808230	1.0887380		-7.8	+/-21
13C12-2,3,7,8-TCDF	A	100.00	93.9	1.4265830	1.3400420		-6.1	+/-29
13C12-2,3,7,8-TCDD	A	100.00	103	1.1164910	1.1511105		3.1	+/-18
13C12-1,2,3,7,8-PeCDF	A	100.00	82.4	1.2973130	1.0686109		-17.6	+/-24
13C12-2,3,4,7,8-PeCDF	A	100.00	80.5	1.2364800	0.9950246		-19.5	+/-23
13C12-1,2,3,7,8-PeCDD	A	100.00	90.0	0.7319833	0.6586172		-10.0	+/-38
13C12-1,2,3,4,7,8-HxCDF	A	100.00	92.8	1.2424560	1.1528948		-7.2	+/-24
13C12-1,2,3,6,7,8-HxCDF	A	100.00	85.4	1.3434760	1.1469266		-14.6	+/-30
13C12-2,3,4,6,7,8-HxCDF	A	100.00	88.3	1.2148550	1.0723728		-11.7	+/-27
13C12-1,2,3,7,8,9-HxCDF	A	100.00	91.3	1.0076370	0.9200531		-8.7	+/-26
13C12-1,2,3,4,7,8-HxCDD	A	100.00	99.7	0.9598233	0.9573668		-0.3	+/-15
13C12-1,2,3,6,7,8-HxCDD	A	100.00	93.5	1.0413850	0.9733443		-6.5	+/-15
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	73.6	0.9264704	0.6814820		-26.4	+/-22 *
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	70.3	0.7579160	0.5326420		-29.7	+/-23 *
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	84.5	0.6324476	0.5343820		-15.5	+/-28
13C12-OCDD	A	200.00	155	0.5037432	0.3896578		-22.6	+/-52
37Cl4-2,3,7,8-TCDD	A	10.000	9.73	1.0835930	1.0538178		-2.7	

* Values outside of QC limits

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210920D1.qld
Last Altered: Tuesday, September 21, 2021 10:30:31 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 11:11:10 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: CS3S2, Name: 21092012, Date: 21-Sep-2021, Time: 01:12:19, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.745	1.001	4.073e4	5.376e4	1.108	0.758	0.770	772	678	6.00e5	7.96e5	777.1	1174.2	NO	bb	bd	8.494
12378-PeCDF	29.909	1.000	2.149e5	1.402e5	1.015	1.533	1.550	1106	1419	3.26e6	2.13e6	2943.7	1497.2	NO	bb	bb	43.685
23478-PeCDF	31.257	1.001	2.250e5	1.484e5	1.126	1.516	1.550	1106	1419	3.50e6	2.31e6	3162.6	1628.2	NO	bb	bb	44.485
123478-HxCDF	34.878	1.000	1.907e5	1.614e5	1.017	1.182	1.240	1822	1265	3.12e6	2.61e6	1714.2	2060.9	NO	bd	bd	46.046
234678-HxCDF	35.891	1.001	1.866e5	1.582e5	1.052	1.179	1.240	1822	1265	3.09e6	2.63e6	1697.1	2082.0	NO	bb	bb	46.848
123678-HxCDF	35.012	1.000	1.967e5	1.662e5	1.037	1.183	1.240	1822	1265	3.12e6	2.63e6	1714.6	2078.5	NO	db	db	46.785
123789-HxCDF	36.917	1.000	1.542e5	1.298e5	1.030	1.188	1.240	1822	1265	2.47e6	2.08e6	1354.2	1646.7	NO	bb	bb	45.938
1234678-HpCDF	38.766	1.000	1.363e5	1.294e5	1.327	1.054	1.050	1034	1177	2.21e6	2.10e6	2134.3	1785.7	NO	bd	bd	45.035
1234789-HpCDF	41.005	1.000	1.029e5	1.009e5	1.283	1.019	1.050	1034	1177	1.45e6	1.41e6	1400.6	1196.4	NO	bd	bd	45.709
OCDF	45.243	1.006	1.303e5	1.503e5	1.447	0.867	0.890	853	868	1.41e6	1.68e6	1652.8	1938.3	NO	bd	bd	76.299
2378-TCDD	26.380	1.001	3.520e4	4.367e4	0.920	0.806	0.770	797	563	5.35e5	6.61e5	670.9	1174.9	NO	bb	bb	9.933
12378-PeCDD	31.502	1.001	1.486e5	9.312e4	0.995	1.596	1.550	983	822	2.35e6	1.45e6	2391.2	1757.3	NO	bb	bb	49.202
123478-HxCDD	35.992	1.000	1.685e5	1.344e5	1.027	1.254	1.240	1288	1422	2.89e6	2.31e6	2240.4	1624.7	NO	bd	bd	47.209
123678-HxCDD	36.103	1.000	1.720e5	1.367e5	1.009	1.259	1.240	1288	1422	2.85e6	2.26e6	2214.7	1587.4	NO	db	db	48.188
123789-HxCDD	36.504	1.011	1.671e5	1.346e5	0.950	1.242	1.240	1288	1422	2.76e6	2.22e6	2145.5	1562.4	NO	bb	bb	50.413
1234678-HpCDD	40.259	1.000	9.090e4	8.789e4	1.068	1.034	1.050	789	975	1.39e6	1.35e6	1765.7	1382.5	NO	bb	bb	48.024
OCDD	44.996	1.000	1.328e5	1.439e5	1.181	0.922	0.890	1164	638	1.48e6	1.69e6	1267.5	2645.6	NO	bd	bb	92.202
13C-2378-TCDF	25.730	1.007	4.460e5	5.584e5	1.427	0.799	0.770	1447	1247	6.83e6	8.58e6	4722.1	6880.4	NO	bb	bb	93.934
13C-12378-PeCDF	29.898	1.170	4.907e5	3.102e5	1.297	1.582	1.550	1416	1238	7.31e6	4.60e6	5160.2	3720.3	NO	bb	bb	82.371
13C-23478-PeCDF	31.235	1.223	4.575e5	2.883e5	1.236	1.587	1.550	1416	1238	7.07e6	4.49e6	4993.8	3625.2	NO	bb	bb	80.472
13C-123478-HxCDF	34.867	0.956	2.529e5	4.991e5	1.242	0.507	0.510	1435	1999	3.96e6	7.93e6	2761.9	3968.0	NO	bd	bd	92.792
13C-123678-HxCDF	35.000	0.959	2.546e5	4.935e5	1.343	0.516	0.510	1435	1999	4.15e6	8.04e6	2889.4	4020.6	NO	db	db	85.370
13C-234678-HxCDF	35.869	0.983	2.383e5	4.612e5	1.215	0.517	0.510	1435	1999	3.87e6	7.50e6	2700.2	3754.7	NO	bb	bb	88.272
13C-123789-HxCDF	36.905	1.012	2.035e5	3.966e5	1.008	0.513	0.510	1435	1999	3.35e6	6.61e6	2333.9	3305.0	NO	bb	bb	91.308
13C-1234678-HpCDF	38.755	1.062	1.390e5	3.055e5	0.926	0.455	0.440	876	1209	2.22e6	4.82e6	2538.1	3983.2	NO	bb	bb	73.557
13C-1234789-HpCDF	40.994	1.124	1.093e5	2.381e5	0.758	0.459	0.440	876	1209	1.53e6	3.34e6	1742.0	2765.0	NO	bd	bb	70.277
13C-1234-TCDD	25.549	0.000	3.263e5	4.232e5	1.000	0.771	0.770	1387	1053	5.11e6	6.71e6	3680.8	6372.0	NO	bb	bb	100.000
13C-2378-TCDD	26.365	1.032	3.706e5	4.922e5	1.116	0.753	0.770	1387	1053	5.68e6	7.52e6	4092.6	7138.5	NO	bb	bb	103.101
13C-12378-PeCDD	31.480	1.232	3.020e5	1.916e5	0.732	1.576	1.550	795	705	4.69e6	2.98e6	5892.0	4236.5	NO	bb	bb	89.977
13C-123478-HxCDD	35.981	0.986	3.518e5	2.726e5	0.960	1.290	1.240	1373	942	5.87e6	4.43e6	4275.5	4699.4	NO	bd	bd	99.744
13C-123678-HxCDD	36.092	0.989	3.556e5	2.792e5	1.041	1.274	1.240	1373	942	5.98e6	4.69e6	4357.5	4977.2	NO	db	db	93.466
13C-1234678-HpCDD	40.248	1.103	1.785e5	1.701e5	0.632	1.050	1.050	749	862	2.65e6	2.56e6	3532.0	2975.1	NO	bb	bb	84.494
13C-OCDD	44.987	1.233	2.397e5	2.686e5	0.504	0.893	0.890	1118	881	2.86e6	3.17e6	2557.6	3597.3	NO	bb	bb	154.705
13C-123789-HxCDD	36.482	0.000	3.620e5	2.902e5	1.000	1.247	1.240	1373	942	6.08e6	4.95e6	4426.0	5258.4	NO	bb	bb	100.000
37CL-2378-TCDD	26.380	1.033	7.899e4		1.084			915		1.20e6		1313.1			bb		9.725

Dataset: T:\Autospec\Processed Data Batch\210920D1.qld
Last Altered: Tuesday, September 21, 2021 10:30:31 Pacific Daylight Time
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ID: CS3S2, Name: 21092012, Date: 21-Sep-2021, Time: 01:12:19, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	22.223	0.864	5.475e4	7.016e4	1.425	0.780	0.770	772	678	8.37e5	1.10e6	1084.2	1617.1	NO	bb	bb	8.726
1289-TCDF	27.257	1.059	3.950e4	5.412e4	1.043	0.730	0.770	772	678	5.61e5	7.86e5	726.1	1160.3	NO	dd	db	8.936
13468-PECDF	27.091	0.906	3.774e5	2.477e5	1.376	1.524	1.550	547	694	5.78e6	3.80e6	10573.3	5471.7	NO	bb	bb	56.702
12389-PECDF	32.304	1.081	2.097e5	1.352e5	1.000	1.551	1.550	1106	1419	3.18e6	2.02e6	2875.8	1423.3	NO	bb	bb	43.081
123468-HXCDF	33.207	0.952	2.056e5	1.746e5	1.087	1.178	1.240	1822	1265	3.18e6	2.71e6	1747.9	2139.6	NO	bb	bb	46.543
1368-TCDD	23.493	0.891	3.582e4	4.451e4	0.923	0.805	0.770	797	563	5.38e5	6.97e5	674.6	1237.6	NO	bb	bb	10.084
1289-TCDD	27.000	1.024	3.071e4	3.836e4	0.794	0.801	0.770	797	563	4.71e5	5.78e5	590.6	1026.5	NO	bb	bb	10.083
12479-PECDD	28.761	0.914	2.680e5	1.669e5	1.843	1.606	1.550	983	822	2.66e6	1.66e6	2703.9	2022.7	NO	bb	bb	47.789
12389-PECDD	31.903	1.013	1.742e5	1.115e5	1.154	1.562	1.550	983	822	2.78e6	1.73e6	2824.9	2101.7	NO	bb	bb	50.168
124679-HXCDD	33.975	0.944	1.847e5	1.487e5	1.125	1.242	1.240	1288	1422	2.91e6	2.36e6	2257.7	1662.2	NO	bb	bb	47.471
1234679-HPCDD	39.211	0.974	1.029e5	9.712e4	1.211	1.059	1.050	789	975	1.67e6	1.59e6	2120.6	1628.5	NO	bb	bb	47.386
Total-tetrafurans			1.366e5		1.192			772		2.02e6							26.484
Total-penta1			3.774e5					547		5.78e6							56.702
Total-pentafurans			6.857e5		1.047			1106		1.05e7							138.695
Total-hexafurans			9.339e5		1.045			1822		1.50e7							232.160
Total-heptafurans			2.392e5		1.305			1034		3.65e6							90.744
Total-Furans			2.503e6		1.158			772		3.84e7							621.084
Total-tetradioxins			1.720e5		0.879			797		2.35e6							51.477
Total-pentadioxins			5.919e5		1.331			983		7.80e6							147.440
Total-hexadioxins			6.934e5		1.028			1288		1.14e7							193.601
Total-heptadioxins			1.938e5		1.140			789		3.07e6							95.410
Total-Dioxins			1.784e6		1.092			797		2.61e7							580.130
Total-TEQ			4.287e6					797		6.45e7							1201.215
FUNCTION1 PFK			1.959e7					316393		1.06e8							
FUNCTION2 PFK			1.708e6					171823		1.45e7							0.000
FUNCTION3 PFK			3.095e5					268431		8.48e6							0.000
FUNCTION4 PFK			1.349e5					135735		4.55e6							
FUNCTION5 PFK			3.063e6					131128		3.08e7							
FUNCTION1 HXCD...			5.144e2					374		4.93e3							0.000
FUNCTION1 HPCD...			7.426e2					461		8.07e3							0.000
FUNCTION2 HPCD...			1.437e2					543		3.95e3							0.000
FUNCTION3 OCDPE			2.199e2					449		2.78e3							0.000
FUNCTION4 NCDPE			0.000e0					587		0.00e0							
FUNCTION5 DCDPE			0.000e0					472		0.00e0							

Dataset: T:\Autospec\Processed Data Batch\210920D1.qld
Last Altered: Tuesday, September 21, 2021 10:30:31 Pacific Daylight Time
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Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: CS3S2, Name: 21092012, Date: 21-Sep-2021, Time: 01:12:19, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.26	3.950e4	5.412e4	1.043	0.73	0.77	726.1	YES	NO	dd	db	8.936
2	Total-tetrafurans	27.11	8.534e2	1.273e3	1.192	0.67	0.77	15.5	YES	NO	bd	bd	0.178
3	2378-TCDF	25.75	4.073e4	5.376e4	1.108	0.76	0.77	777.1	YES	NO	bb	bd	8.494
4	Total-tetrafurans	24.81	3.243e2	4.546e2	1.192	0.71	0.77	5.9	YES	NO	bb	db	0.065
5	Total-tetrafurans	24.52	4.424e2	5.786e2	1.192	0.76	0.77	9.2	YES	NO	bd	bd	0.085
6	1368-TCDF	22.22	5.475e4	7.016e4	1.425	0.78	0.77	1084.2	YES	NO	bb	bb	8.726

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	27.09	3.774e5	2.477e5	1.376	1.52	1.55	10573.3	YES	NO	bb	bb	56.702

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDF	32.30	2.097e5	1.352e5	1.000	1.55	1.55	2875.8	YES	NO	bb	bb	43.081
2	23478-PeCDF	31.26	2.250e5	1.484e5	1.126	1.52	1.55	3162.6	YES	NO	bb	bb	44.485
3	12378-PeCDF	29.91	2.149e5	1.402e5	1.015	1.53	1.55	2943.7	YES	NO	bb	bb	43.685
4	Total-pentafurans	29.63	2.882e2	2.067e2	1.047	1.39	1.55	6.5	YES	NO	bb	bb	0.061
5	Total-pentafurans	28.75	3.581e4	2.395e4	1.047	1.50	1.55	498.7	YES	NO	bb	bb	7.383

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDF	36.92	1.542e5	1.298e5	1.030	1.19	1.24	1354.2	YES	NO	bb	bb	45.938
2	234678-HxCDF	35.89	1.866e5	1.582e5	1.052	1.18	1.24	1697.1	YES	NO	bb	bb	46.848
3	123678-HxCDF	35.01	1.967e5	1.662e5	1.037	1.18	1.24	1714.6	YES	NO	db	db	46.785
4	123478-HxCDF	34.88	1.907e5	1.614e5	1.017	1.18	1.24	1714.2	YES	NO	bd	bd	46.046
5	123468-HXCDF	33.21	2.056e5	1.746e5	1.087	1.18	1.24	1747.9	YES	NO	bb	bb	46.543

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	41.01	1.029e5	1.009e5	1.283	1.02	1.05	1400.6	YES	NO	bd	bd	45.709
2	1234678-HpCDF	38.77	1.363e5	1.294e5	1.327	1.05	1.05	2134.3	YES	NO	bd	bd	45.035

ID: CS3S2, Name: 21092012, Date: 21-Sep-2021, Time: 01:12:19, Conditions: AUTOSPEC01, User: pk

Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.26	3.950e4	5.412e4	1.043	0.73	0.77	726.1	YES	NO	dd	db	8.936
2	Total-tetrafurans	27.11	8.534e2	1.273e3	1.192	0.67	0.77	15.5	YES	NO	bd	bd	0.178
3	2378-TCDF	25.75	4.073e4	5.376e4	1.108	0.76	0.77	777.1	YES	NO	bb	bd	8.494
4	Total-tetrafurans	24.81	3.243e2	4.546e2	1.192	0.71	0.77	5.9	YES	NO	bb	db	0.065
5	Total-tetrafurans	24.52	4.424e2	5.786e2	1.192	0.76	0.77	9.2	YES	NO	bd	bd	0.085
6	1368-TCDF	22.22	5.475e4	7.016e4	1.425	0.78	0.77	1084.2	YES	NO	bb	bb	8.726
7	12389-PECDF	32.30	2.097e5	1.352e5	1.000	1.55	1.55	2875.8	YES	NO	bb	bb	43.081
8	23478-PeCDF	31.26	2.250e5	1.484e5	1.126	1.52	1.55	3162.6	YES	NO	bb	bb	44.485
9	12378-PeCDF	29.91	2.149e5	1.402e5	1.015	1.53	1.55	2943.7	YES	NO	bb	bb	43.685
10	Total-pentafurans	29.63	2.882e2	2.067e2	1.047	1.39	1.55	6.5	YES	NO	bb	bb	0.061
11	Total-pentafurans	28.75	3.581e4	2.395e4	1.047	1.50	1.55	498.7	YES	NO	bb	bb	7.383
12	123789-HxCDF	36.92	1.542e5	1.298e5	1.030	1.19	1.24	1354.2	YES	NO	bb	bb	45.938
13	234678-HxCDF	35.89	1.866e5	1.582e5	1.052	1.18	1.24	1697.1	YES	NO	bb	bb	46.848
14	123678-HxCDF	35.01	1.967e5	1.662e5	1.037	1.18	1.24	1714.6	YES	NO	db	db	46.785
15	123478-HxCDF	34.88	1.907e5	1.614e5	1.017	1.18	1.24	1714.2	YES	NO	bd	bd	46.046
16	123468-HXCDF	33.21	2.056e5	1.746e5	1.087	1.18	1.24	1747.9	YES	NO	bb	bb	46.543
17	1234789-HpCDF	41.01	1.029e5	1.009e5	1.283	1.02	1.05	1400.6	YES	NO	bd	bd	45.709
18	1234678-HpCDF	38.77	1.363e5	1.294e5	1.327	1.05	1.05	2134.3	YES	NO	bd	bd	45.035
19	OCDF	45.24	1.303e5	1.503e5	1.447	0.87	0.89	1652.8	YES	NO	bd	bd	76.299
20	13468-PECDF	27.09	3.774e5	2.477e5	1.376	1.52	1.55	10573.3	YES	NO	bb	bb	56.702

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	25.00	3.775e2	4.781e2	0.879	0.79	0.77	5.8	YES	NO	bb	bb	0.113
2	Total-tetradioxins	24.70	1.691e3	1.980e3	0.879	0.85	0.77	20.5	YES	NO	bb	bb	0.484
3	1368-TCDD	23.49	3.582e4	4.451e4	0.923	0.80	0.77	674.6	YES	NO	bb	bb	10.084
4	1289-TCDD	27.00	3.071e4	3.836e4	0.794	0.80	0.77	590.6	YES	NO	bb	bb	10.083
5	2378-TCDD	26.38	3.520e4	4.367e4	0.920	0.81	0.77	670.9	YES	NO	bb	bb	9.933
6	Total-tetradioxins	26.06	5.156e4	6.800e4	0.879	0.76	0.77	671.1	YES	NO	bb	bb	15.761
7	Total-tetradioxins	25.58	1.662e4	2.146e4	0.879	0.77	0.77	315.7	YES	NO	bb	bb	5.020

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PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDD	31.90	1.742e5	1.115e5	1.154	1.56	1.55	2824.9	YES	NO	bb	bb	50.168
2	12378-PeCDD	31.50	1.486e5	9.312e4	0.995	1.60	1.55	2391.2	YES	NO	bb	bb	49.202
3	Total-pentadioxins	30.82	6.955e2	4.838e2	1.331	1.44	1.55	11.1	YES	NO	bb	bb	0.180
4	Total-pentadioxins	29.89	4.305e2	2.472e2	1.331	1.74	1.55	6.0	YES	NO	bb	bb	0.103
5	12479-PECDD	28.76	2.680e5	1.669e5	1.843	1.61	1.55	2703.9	YES	NO	bb	bb	47.789

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	124679-HXCDD	33.98	1.847e5	1.487e5	1.125	1.24	1.24	2257.7	YES	NO	bb	bb	47.471
2	123789-HxCDD	36.50	1.671e5	1.346e5	0.950	1.24	1.24	2145.5	YES	NO	bb	bb	50.413
3	123678-HxCDD	36.10	1.720e5	1.367e5	1.009	1.26	1.24	2214.7	YES	NO	db	db	48.188
4	123478-HxCDD	35.99	1.685e5	1.344e5	1.027	1.25	1.24	2240.4	YES	NO	bd	bd	47.209
5	Total-hexadioxins	35.07	1.081e3	9.933e2	1.028	1.09	1.24	7.6	YES	NO	bb	bb	0.320

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	40.26	9.090e4	8.789e4	1.068	1.03	1.05	1765.7	YES	NO	bb	bb	48.024
2	1234679-HPCDD	39.21	1.029e5	9.712e4	1.211	1.06	1.05	2120.6	YES	NO	bb	bb	47.386

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Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	25.00	3.775e2	4.781e2	0.879	0.79	0.77	5.8	YES	NO	bb	bb	0.113
2	Total-tetradioxins	24.70	1.691e3	1.980e3	0.879	0.85	0.77	20.5	YES	NO	bb	bb	0.484
3	1368-TCDD	23.49	3.582e4	4.451e4	0.923	0.80	0.77	674.6	YES	NO	bb	bb	10.084
4	1289-TCDD	27.00	3.071e4	3.836e4	0.794	0.80	0.77	590.6	YES	NO	bb	bb	10.083
5	2378-TCDD	26.38	3.520e4	4.367e4	0.920	0.81	0.77	670.9	YES	NO	bb	bb	9.933
6	Total-tetradioxins	26.06	5.156e4	6.800e4	0.879	0.76	0.77	671.1	YES	NO	bb	bb	15.761
7	Total-tetradioxins	25.58	1.662e4	2.146e4	0.879	0.77	0.77	315.7	YES	NO	bb	bb	5.020
8	124679-HXCDD	33.98	1.847e5	1.487e5	1.125	1.24	1.24	2257.7	YES	NO	bb	bb	47.471
9	12389-PECDD	31.90	1.742e5	1.115e5	1.154	1.56	1.55	2824.9	YES	NO	bb	bb	50.168
10	12378-PeCDD	31.50	1.486e5	9.312e4	0.995	1.60	1.55	2391.2	YES	NO	bb	bb	49.202
11	Total-pentadioxins	30.82	6.955e2	4.838e2	1.331	1.44	1.55	11.1	YES	NO	bb	bb	0.180
12	Total-pentadioxins	29.89	4.305e2	2.472e2	1.331	1.74	1.55	6.0	YES	NO	bb	bb	0.103
13	12479-PECDD	28.76	2.680e5	1.669e5	1.843	1.61	1.55	2703.9	YES	NO	bb	bb	47.789
14	123789-HxCDD	36.50	1.671e5	1.346e5	0.950	1.24	1.24	2145.5	YES	NO	bb	bb	50.413
15	123678-HxCDD	36.10	1.720e5	1.367e5	1.009	1.26	1.24	2214.7	YES	NO	db	db	48.188
16	123478-HxCDD	35.99	1.685e5	1.344e5	1.027	1.25	1.24	2240.4	YES	NO	bd	bd	47.209
17	Total-hexadioxins	35.07	1.081e3	9.933e2	1.028	1.09	1.24	7.6	YES	NO	bb	bb	0.320
18	OCDD	45.00	1.328e5	1.439e5	1.181	0.92	0.89	1267.5	YES	NO	bd	bb	92.202
19	1234678-HpCDD	40.26	9.090e4	8.789e4	1.068	1.03	1.05	1765.7	YES	NO	bb	bb	48.024
20	1234679-HPCDD	39.21	1.029e5	9.712e4	1.211	1.06	1.05	2120.6	YES	NO	bb	bb	47.386

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.26	3.950e4	5.412e4	1.043	0.73	0.77	726.1	YES	NO	dd	db	8.936
2	Total-tetrafurans	27.11	8.534e2	1.273e3	1.192	0.67	0.77	15.5	YES	NO	bd	bd	0.178
3	2378-TCDF	25.75	4.073e4	5.376e4	1.108	0.76	0.77	777.1	YES	NO	bb	bd	8.494
4	Total-tetrafurans	24.81	3.243e2	4.546e2	1.192	0.71	0.77	5.9	YES	NO	bb	db	0.065
5	Total-tetrafurans	24.52	4.424e2	5.786e2	1.192	0.76	0.77	9.2	YES	NO	bd	bd	0.085
6	1368-TCDF	22.22	5.475e4	7.016e4	1.425	0.78	0.77	1084.2	YES	NO	bb	bb	8.726
7	12389-PECDF	32.30	2.097e5	1.352e5	1.000	1.55	1.55	2875.8	YES	NO	bb	bb	43.081
8	23478-PeCDF	31.26	2.250e5	1.484e5	1.126	1.52	1.55	3162.6	YES	NO	bb	bb	44.485
9	12378-PeCDF	29.91	2.149e5	1.402e5	1.015	1.53	1.55	2943.7	YES	NO	bb	bb	43.685
10	Total-pentafurans	29.63	2.882e2	2.067e2	1.047	1.39	1.55	6.5	YES	NO	bb	bb	0.061
11	Total-pentafurans	28.75	3.581e4	2.395e4	1.047	1.50	1.55	498.7	YES	NO	bb	bb	7.383
12	123789-HxCDF	36.92	1.542e5	1.298e5	1.030	1.19	1.24	1354.2	YES	NO	bb	bb	45.938
13	234678-HxCDF	35.89	1.866e5	1.582e5	1.052	1.18	1.24	1697.1	YES	NO	bb	bb	46.848
14	123678-HxCDF	35.01	1.967e5	1.662e5	1.037	1.18	1.24	1714.6	YES	NO	db	db	46.785
15	123478-HxCDF	34.88	1.907e5	1.614e5	1.017	1.18	1.24	1714.2	YES	NO	bd	bd	46.046
16	123468-HXCDF	33.21	2.056e5	1.746e5	1.087	1.18	1.24	1747.9	YES	NO	bb	bb	46.543
17	1234789-HpCDF	41.01	1.029e5	1.009e5	1.283	1.02	1.05	1400.6	YES	NO	bd	bd	45.709
18	1234678-HpCDF	38.77	1.363e5	1.294e5	1.327	1.05	1.05	2134.3	YES	NO	bd	bd	45.035
19	OCDF	45.24	1.303e5	1.503e5	1.447	0.87	0.89	1652.8	YES	NO	bd	bd	76.299
20	13468-PECDF	27.09	3.774e5	2.477e5	1.376	1.52	1.55	10573.3	YES	NO	bb	bb	56.702
21	Total-tetradioxins	25.00	3.775e2	4.781e2	0.879	0.79	0.77	5.8	YES	NO	bb	bb	0.113
22	Total-tetradioxins	24.70	1.691e3	1.980e3	0.879	0.85	0.77	20.5	YES	NO	bb	bb	0.484
23	1368-TCDD	23.49	3.582e4	4.451e4	0.923	0.80	0.77	674.6	YES	NO	bb	bb	10.084
24	1289-TCDD	27.00	3.071e4	3.836e4	0.794	0.80	0.77	590.6	YES	NO	bb	bb	10.083
25	2378-TCDD	26.38	3.520e4	4.367e4	0.920	0.81	0.77	670.9	YES	NO	bb	bb	9.933
26	Total-tetradioxins	26.06	5.156e4	6.800e4	0.879	0.76	0.77	671.1	YES	NO	bb	bb	15.761
27	Total-tetradioxins	25.58	1.662e4	2.146e4	0.879	0.77	0.77	315.7	YES	NO	bb	bb	5.020
28	124679-HXCDD	33.98	1.847e5	1.487e5	1.125	1.24	1.24	2257.7	YES	NO	bb	bb	47.471
29	12389-PECDD	31.90	1.742e5	1.115e5	1.154	1.56	1.55	2824.9	YES	NO	bb	bb	50.168
30	12378-PeCDD	31.50	1.486e5	9.312e4	0.995	1.60	1.55	2391.2	YES	NO	bb	bb	49.202
31	Total-pentadioxins	30.82	6.955e2	4.838e2	1.331	1.44	1.55	11.1	YES	NO	bb	bb	0.180
32	Total-pentadioxins	29.89	4.305e2	2.472e2	1.331	1.74	1.55	6.0	YES	NO	bb	bb	0.103
33	12479-PECDD	28.76	2.680e5	1.669e5	1.843	1.61	1.55	2703.9	YES	NO	bb	bb	47.789
34	123789-HxCDD	36.50	1.671e5	1.346e5	0.950	1.24	1.24	2145.5	YES	NO	bb	bb	50.413
35	123678-HxCDD	36.10	1.720e5	1.367e5	1.009	1.26	1.24	2214.7	YES	NO	db	db	48.188
36	123478-HxCDD	35.99	1.685e5	1.344e5	1.027	1.25	1.24	2240.4	YES	NO	bd	bd	47.209
37	Total-hexadioxins	35.07	1.081e3	9.933e2	1.028	1.09	1.24	7.6	YES	NO	bb	bb	0.320

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	OCDD	45.00	1.328e5	1.439e5	1.181	0.92	0.89	1267.5	YES	NO	bd	bb	92.202
39	1234678-HpCDD	40.26	9.090e4	8.789e4	1.068	1.03	1.05	1765.7	YES	NO	bb	bb	48.024
40	1234679-HPCDD	39.21	1.029e5	9.712e4	1.211	1.06	1.05	2120.6	YES	NO	bb	bb	47.386

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	24.02	1.024e4					1.0	NO		bb		
2	FUNCTION1 PFK	23.70	5.825e3					0.7	NO		bb		
3	FUNCTION1 PFK	23.13	2.250e6					5.8	YES		db		
4	FUNCTION1 PFK	22.54	3.513e5					19.1	YES		dd		
5	FUNCTION1 PFK	22.40	1.119e6					23.0	YES		dd		
6	FUNCTION1 PFK	22.27	7.085e6					25.4	YES		dd		
7	FUNCTION1 PFK	21.51	1.775e6					43.1	YES		dd		
8	FUNCTION1 PFK	21.42	2.580e6					45.3	YES		dd		
9	FUNCTION1 PFK	21.24	1.567e6					47.9	YES		dd		
10	FUNCTION1 PFK	21.18	9.376e5					49.9	YES		dd		
11	FUNCTION1 PFK	21.12	1.425e6					51.3	YES		bd		
12	FUNCTION1 PFK	27.83	7.986e3					0.8	NO		db		
13	FUNCTION1 PFK	27.73	4.726e4					1.9	NO		bd		
14	FUNCTION1 PFK	27.51	2.577e4					1.6	NO		db		
15	FUNCTION1 PFK	27.38	3.944e4					1.4	NO		dd		
16	FUNCTION1 PFK	27.32	5.501e4					2.1	NO		dd		
17	FUNCTION1 PFK	27.12	9.358e4					2.7	NO		dd		
18	FUNCTION1 PFK	27.05	4.399e4					2.9	NO		bd		
19	FUNCTION1 PFK	26.43	3.011e3					0.5	NO		bb		
20	FUNCTION1 PFK	26.37	5.911e3					0.8	NO		bb		
21	FUNCTION1 PFK	26.09	4.332e4					1.4	NO		bb		
22	FUNCTION1 PFK	25.20	3.523e4					1.8	NO		bb		
23	FUNCTION1 PFK	24.81	3.761e4					1.6	NO		bb		
24	FUNCTION1 PFK	24.42	6.974e3					0.8	NO		bb		
25	FUNCTION1 PFK	24.35	8.641e3					0.6	NO		bb		
26	FUNCTION1 PFK	24.20	2.205e4					1.3	NO		bb		
27	FUNCTION1 PFK	24.11	2.361e3					0.5	NO		bb		
28	FUNCTION1 PFK	27.88	1.771e3					0.4	NO		bb		

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PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	31.39	6.069e3					1.3	NO		bb		0.000
2	FUNCTION2 PFK	31.27	1.424e4					1.4	NO		bb		0.000
3	FUNCTION2 PFK	30.97	1.729e3					0.6	NO		bb		0.000
4	FUNCTION2 PFK	30.91	6.560e3					1.5	NO		bb		0.000
5	FUNCTION2 PFK	30.53	1.714e4					1.8	NO		bb		0.000
6	FUNCTION2 PFK	30.41	9.194e3					1.8	NO		bb		0.000
7	FUNCTION2 PFK	30.02	1.801e4					2.3	NO		bb		0.000
8	FUNCTION2 PFK	29.93	1.165e3					0.6	NO		bb		0.000
9	FUNCTION2 PFK	29.80	9.143e2					0.5	NO		bb		0.000
10	FUNCTION2 PFK	29.40	2.153e3					0.8	NO		bb		0.000
11	FUNCTION2 PFK	29.08	1.263e4					1.8	NO		bb		0.000
12	FUNCTION2 PFK	28.52	3.961e5					12.2	YES		db		0.000
13	FUNCTION2 PFK	28.35	9.426e5					20.7	YES		dd		0.000
14	FUNCTION2 PFK	28.16	2.309e5					27.8	YES		bd		0.000
15	FUNCTION2 PFK	32.78	5.076e3					1.2	NO		bb		0.000
16	FUNCTION2 PFK	32.74	3.891e3					0.9	NO		bb		0.000
17	FUNCTION2 PFK	32.25	4.297e3					1.1	NO		bb		0.000
18	FUNCTION2 PFK	32.00	3.459e3					0.9	NO		db		0.000
19	FUNCTION2 PFK	31.96	5.424e3					1.2	NO		dd		0.000
20	FUNCTION2 PFK	31.89	7.430e3					1.3	NO		dd		0.000
21	FUNCTION2 PFK	31.80	1.396e4					1.0	NO		bd		0.000
22	FUNCTION2 PFK	31.70	1.806e3					0.7	NO		db		0.000
23	FUNCTION2 PFK	31.66	3.642e3					1.0	NO		bd		0.000

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	33.24	9.007e3					1.0	NO		db		0.000
2	FUNCTION3 PFK	33.21	2.060e3					0.6	NO		bd		0.000
3	FUNCTION3 PFK	33.16	3.090e3					1.0	NO		bb		0.000
4	FUNCTION3 PFK	33.12	1.957e4					2.4	NO		bb		0.000
5	FUNCTION3 PFK	33.02	2.051e4					2.0	NO		bb		0.000
6	FUNCTION3 PFK	32.98	2.948e3					1.0	NO		bb		0.000
7	FUNCTION3 PFK	36.99	1.338e4					1.6	NO		bb		0.000
8	FUNCTION3 PFK	36.89	7.750e3					1.2	NO		bb		0.000
9	FUNCTION3 PFK	36.30	8.824e3					1.4	NO		db		0.000
10	FUNCTION3 PFK	36.26	1.632e4					2.0	NO		bd		0.000
11	FUNCTION3 PFK	36.21	1.356e3					0.5	NO		bb		0.000
12	FUNCTION3 PFK	36.06	3.115e4					1.6	NO		bb		0.000
13	FUNCTION3 PFK	35.79	2.415e4					1.6	NO		bb		0.000
14	FUNCTION3 PFK	35.55	1.562e3					0.5	NO		bb		0.000
15	FUNCTION3 PFK	35.39	6.184e4					3.5	YES		bb		0.000
16	FUNCTION3 PFK	35.04	6.643e3					1.1	NO		bb		0.000
17	FUNCTION3 PFK	34.76	1.300e3					0.4	NO		bb		0.000
18	FUNCTION3 PFK	34.38	2.702e3					0.6	NO		bb		0.000
19	FUNCTION3 PFK	34.33	8.416e3					1.1	NO		bb		0.000
20	FUNCTION3 PFK	34.20	3.881e4					2.8	NO		bb		0.000
21	FUNCTION3 PFK	34.09	1.568e3					0.5	NO		bb		0.000
22	FUNCTION3 PFK	33.47	1.802e4					1.5	NO		bb		0.000
23	FUNCTION3 PFK	37.18	1.310e3					0.4	NO		bb		0.000
24	FUNCTION3 PFK	37.14	7.175e3					1.1	NO		bb		0.000

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	41.32	7.226e2					0.5	NO		bb		
2	FUNCTION4 PFK	40.88	6.987e2					0.5	NO		bb		
3	FUNCTION4 PFK	40.58	3.997e3					1.3	NO		db		
4	FUNCTION4 PFK	40.54	1.314e4					2.4	NO		dd		
5	FUNCTION4 PFK	40.50	9.846e3					2.3	NO		bd		
6	FUNCTION4 PFK	40.00	3.205e3					1.0	NO		bb		
7	FUNCTION4 PFK	38.69	3.410e3					0.9	NO		bb		
8	FUNCTION4 PFK	38.41	1.110e3					0.5	NO		bb		
9	FUNCTION4 PFK	38.33	6.718e2					0.4	NO		bb		
10	FUNCTION4 PFK	38.10	1.092e3					0.7	NO		bb		
11	FUNCTION4 PFK	38.05	7.110e3					2.0	NO		db		
12	FUNCTION4 PFK	38.02	8.524e3					2.4	NO		dd		
13	FUNCTION4 PFK	37.95	2.302e4					5.1	YES		bd		
14	FUNCTION4 PFK	42.68	5.516e3					0.8	NO		bb		
15	FUNCTION4 PFK	42.48	3.710e3					1.0	NO		bb		
16	FUNCTION4 PFK	42.42	5.568e3					1.6	NO		bb		
17	FUNCTION4 PFK	42.26	1.365e4					2.2	NO		db		
18	FUNCTION4 PFK	42.23	4.804e3					1.6	NO		bd		
19	FUNCTION4 PFK	42.11	2.715e3					0.9	NO		bb		
20	FUNCTION4 PFK	41.90	1.008e4					1.5	NO		bb		
21	FUNCTION4 PFK	41.76	2.113e3					0.8	NO		bb		
22	FUNCTION4 PFK	41.53	2.400e3					0.9	NO		db		
23	FUNCTION4 PFK	41.46	7.134e3					1.7	NO		bd		
24	FUNCTION4 PFK	41.35	7.167e2					0.5	NO		bb		

ID: CS3S2, Name: 21092012, Date: 21-Sep-2021, Time: 01:12:19, Conditions: AUTOSPEC01, User: pk

PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	43.31	4.309e5					31.7	YES		dd		
2	FUNCTION5 PFK	43.15	4.748e5					37.8	YES		dd		
3	FUNCTION5 PFK	43.11	2.690e5					37.7	YES		dd		
4	FUNCTION5 PFK	43.06	2.306e5					38.9	YES		bd		
5	FUNCTION5 PFK	45.14	1.762e3					0.6	NO		bb		
6	FUNCTION5 PFK	45.11	1.135e3					0.5	NO		bb		
7	FUNCTION5 PFK	45.01	6.897e3					1.8	NO		bb		
8	FUNCTION5 PFK	44.95	3.043e3					0.8	NO		bb		
9	FUNCTION5 PFK	44.88	2.125e3					0.7	NO		bb		
10	FUNCTION5 PFK	44.73	2.812e3					0.9	NO		db		
11	FUNCTION5 PFK	44.69	1.154e4					1.8	NO		dd		
12	FUNCTION5 PFK	44.54	1.060e4					2.0	NO		bd		
13	FUNCTION5 PFK	44.49	2.803e3					0.9	NO		bb		
14	FUNCTION5 PFK	44.34	3.033e3					1.0	NO		bb		
15	FUNCTION5 PFK	44.24	3.630e3					1.3	NO		bb		
16	FUNCTION5 PFK	44.09	1.382e4					1.2	NO		db		
17	FUNCTION5 PFK	43.86	1.592e5					11.0	YES		dd		
18	FUNCTION5 PFK	43.76	1.821e5					15.0	YES		dd		
19	FUNCTION5 PFK	43.65	3.644e5					19.0	YES		dd		
20	FUNCTION5 PFK	43.52	8.693e5					23.9	YES		dd		
21	FUNCTION5 PFK	45.93	6.073e3					1.6	NO		bb		
22	FUNCTION5 PFK	45.87	1.262e3					0.5	NO		bb		
23	FUNCTION5 PFK	45.79	3.904e2					0.3	NO		bb		
24	FUNCTION5 PFK	45.71	1.490e3					0.7	NO		bb		
25	FUNCTION5 PFK	45.55	2.165e3					0.7	NO		bb		
26	FUNCTION5 PFK	45.45	5.155e3					0.9	NO		bb		
27	FUNCTION5 PFK	45.33	2.619e3					0.9	NO		bb		

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	27.74	8.923e1					3.5	YES		bb		0.000
2	FUNCTION1 HXCD...	27.08	1.648e2					4.1	YES		bb		0.000
3	FUNCTION1 HXCD...	26.38	2.604e2					5.6	YES		bb		0.000

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Printed: Tuesday, September 21, 2021 11:11:10 Pacific Daylight Time

ID: CS3S2, Name: 21092012, Date: 21-Sep-2021, Time: 01:12:19, Conditions: AUTOSPEC01, User: pk

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	26.94	7.392e1					2.1	NO		bd		0.000
2	FUNCTION1 HPCD...	26.40	1.450e2					3.5	YES		bb		0.000
3	FUNCTION1 HPCD...	22.84	1.186e2					2.3	NO		bb		0.000
4	FUNCTION1 HPCD...	21.15	9.068e1					2.3	NO		bb		0.000
5	FUNCTION1 HPCD...	27.23	1.224e2					2.1	NO		db		0.000
6	FUNCTION1 HPCD...	27.08	1.921e2					5.2	YES		dd		0.000

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	31.07	1.437e2					7.3	YES		bb		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	36.48	2.199e2					6.2	YES		bb		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

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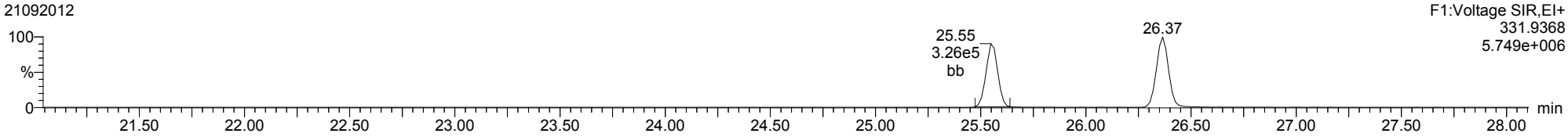
13C-1234-TCDD



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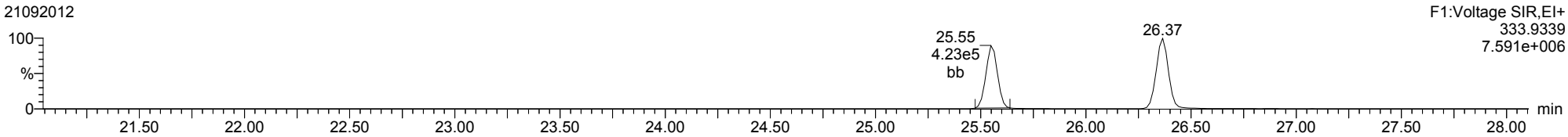

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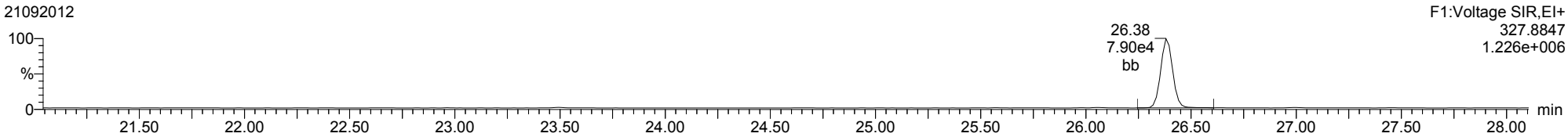

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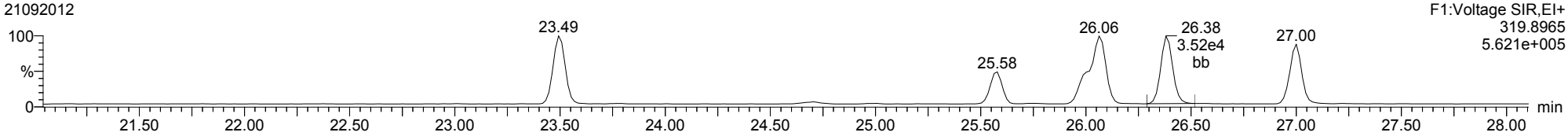

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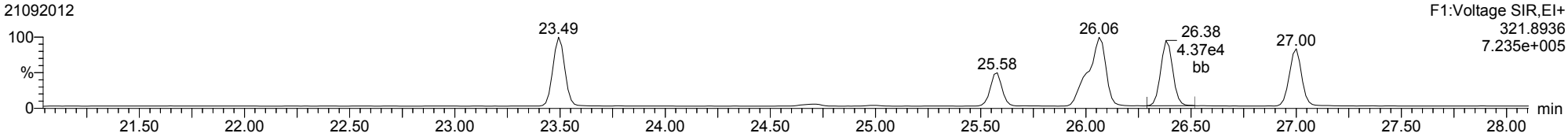

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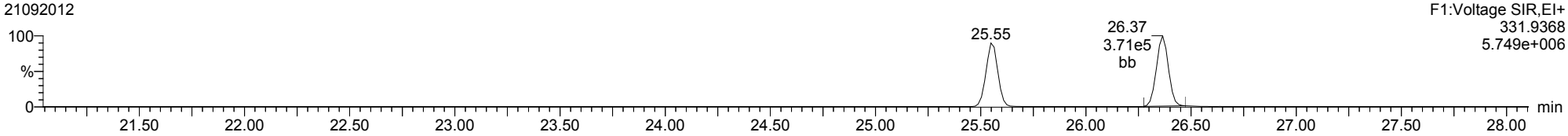

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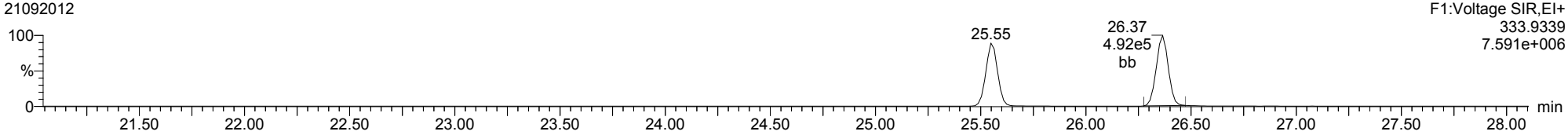

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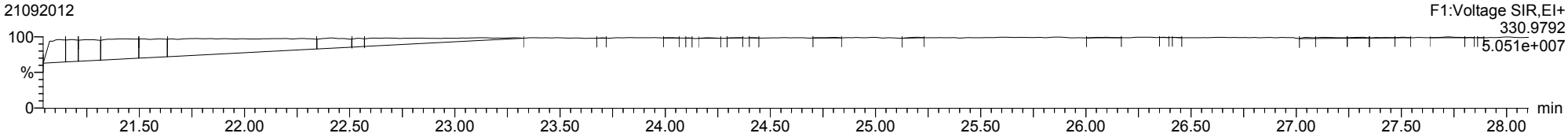

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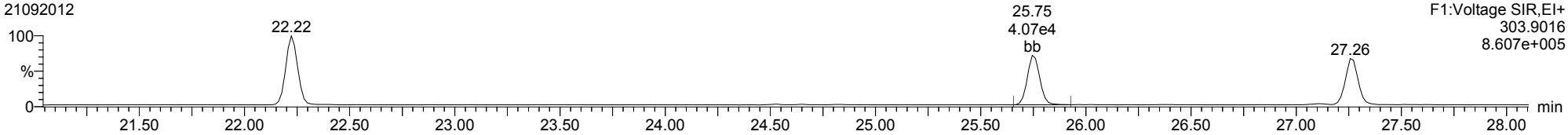

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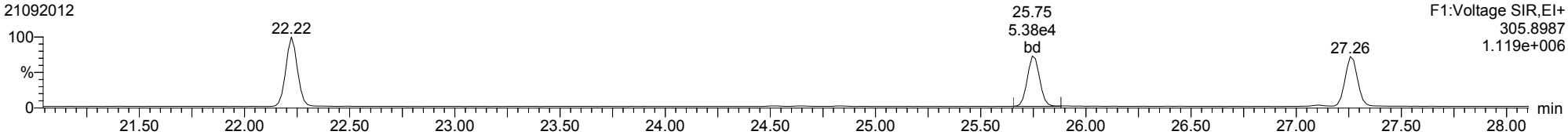

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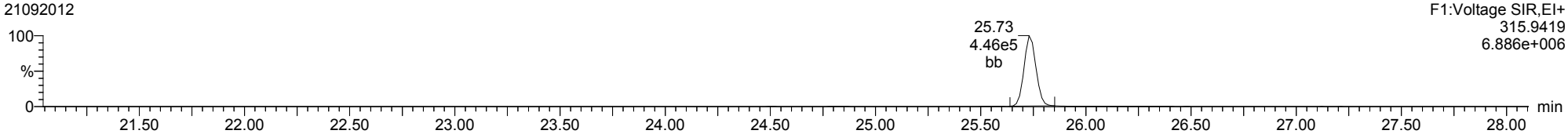

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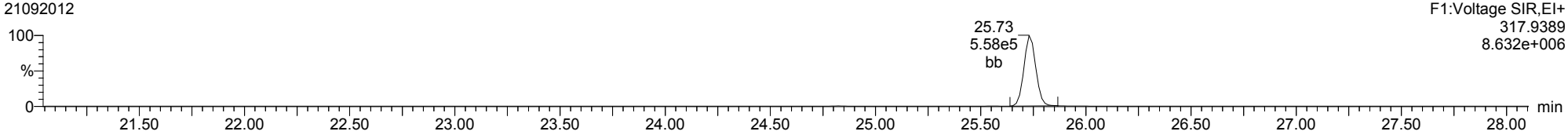

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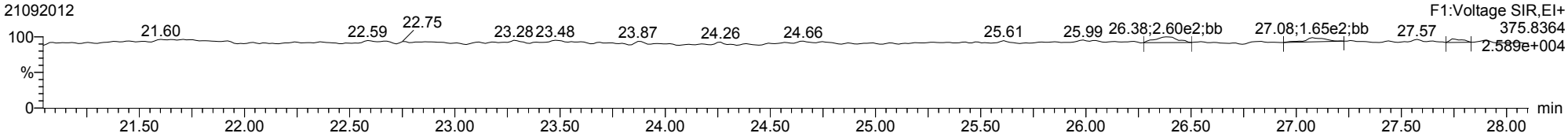

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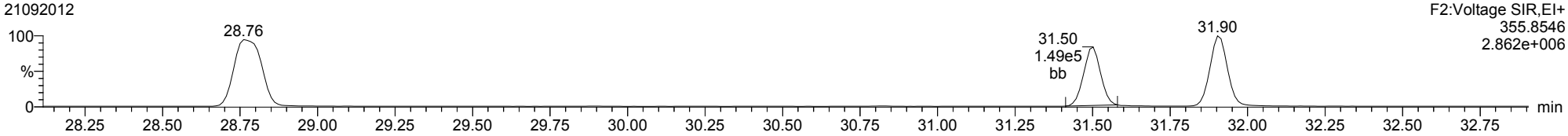

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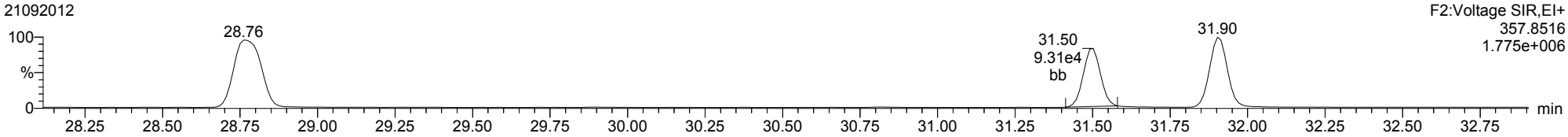

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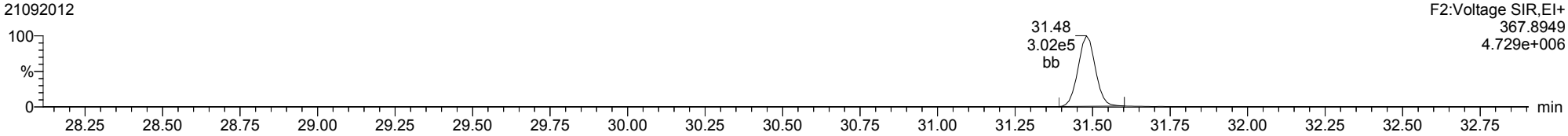

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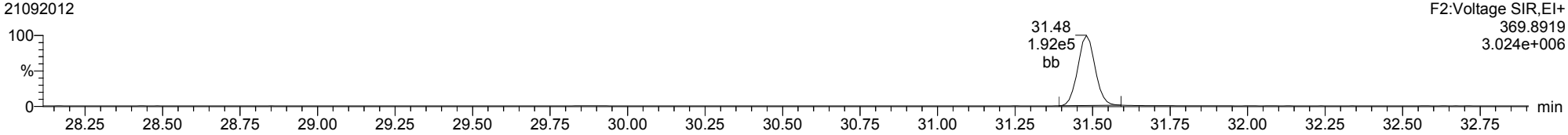

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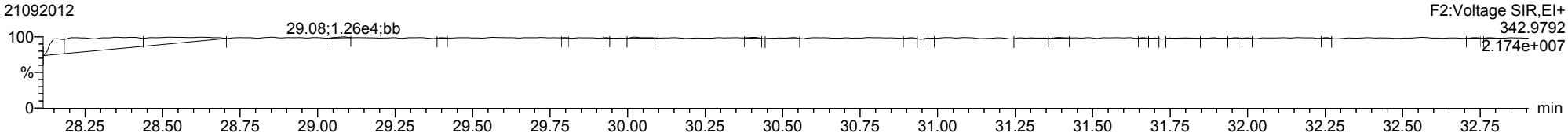

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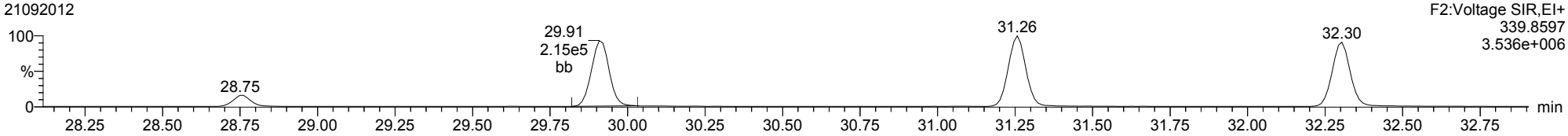

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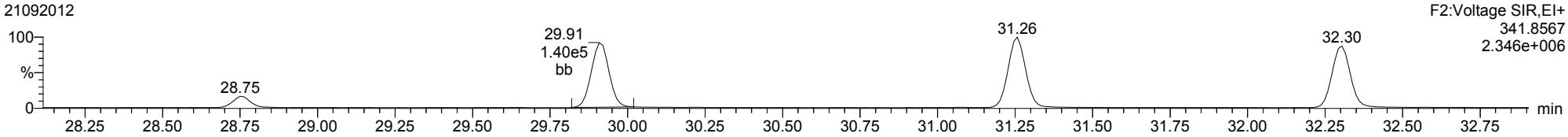

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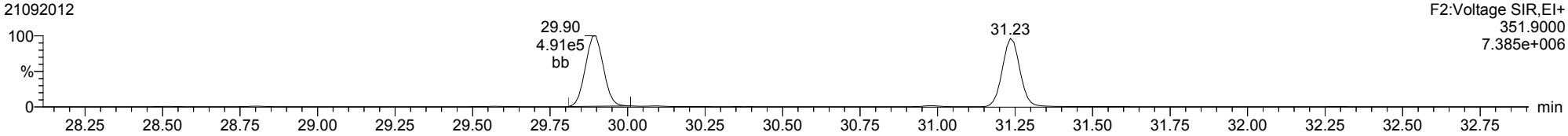

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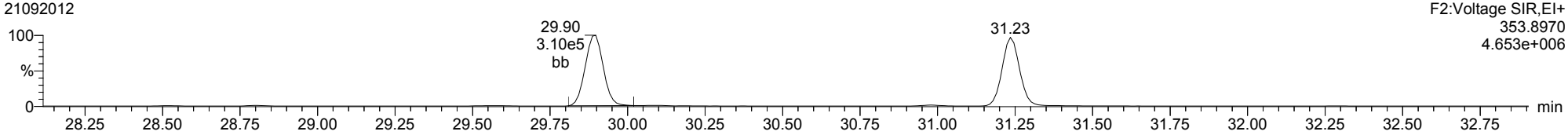
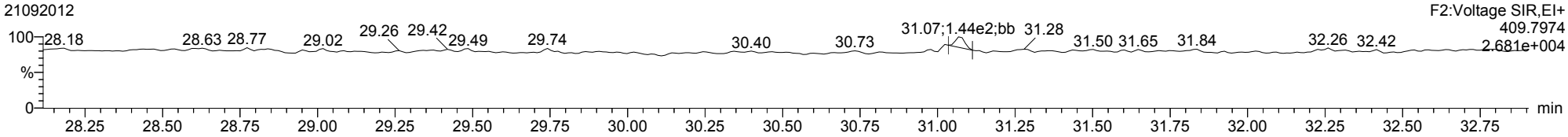


FUNCTION2 HPCDPE



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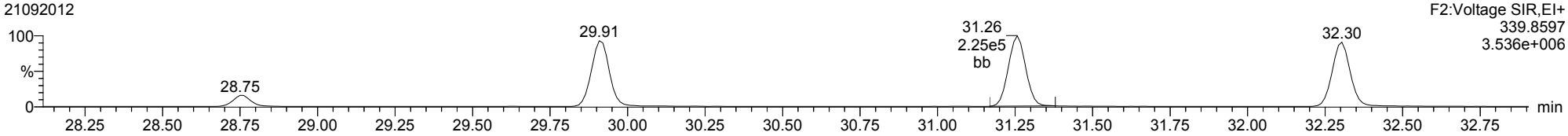
23478-PeCDF



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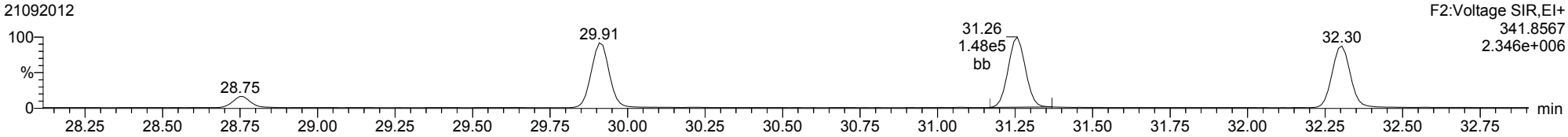

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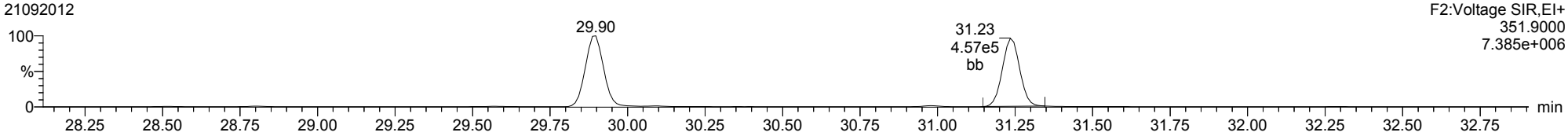

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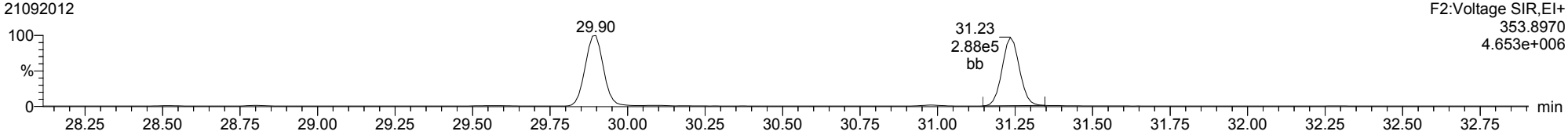

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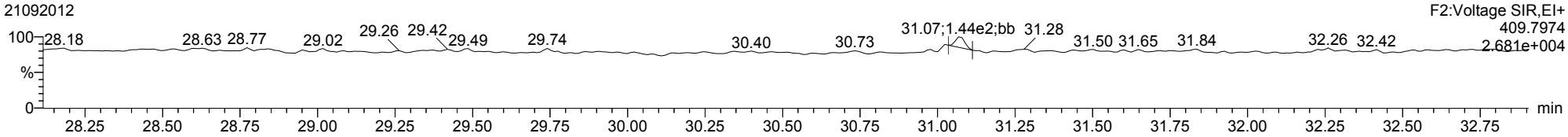

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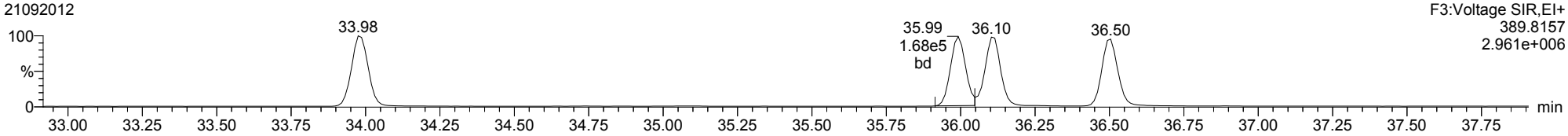
123478-HxCDD



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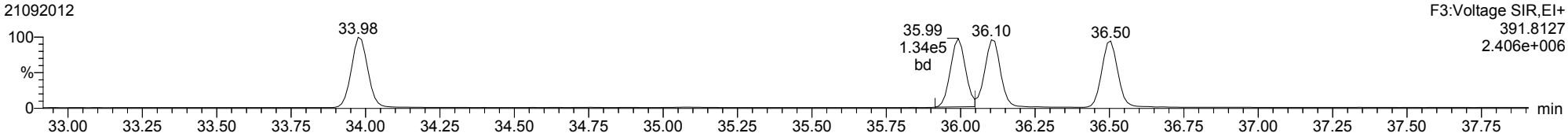

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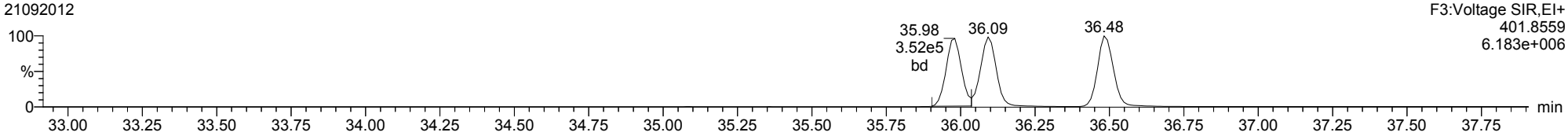

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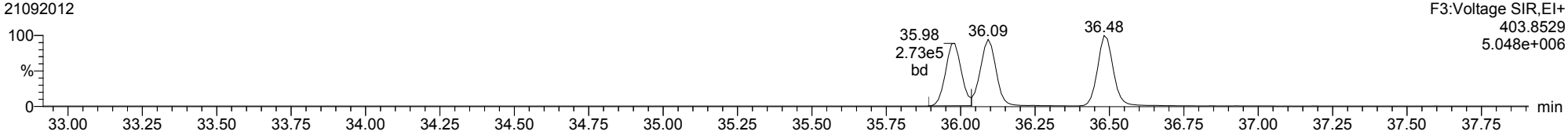

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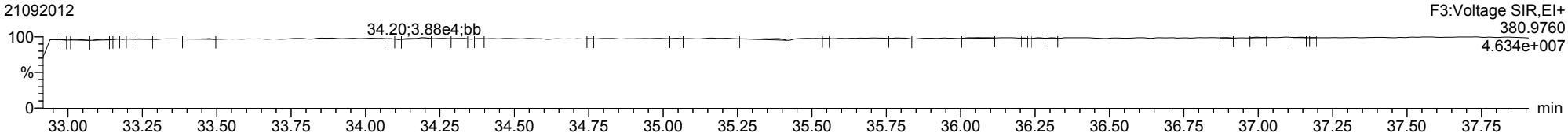

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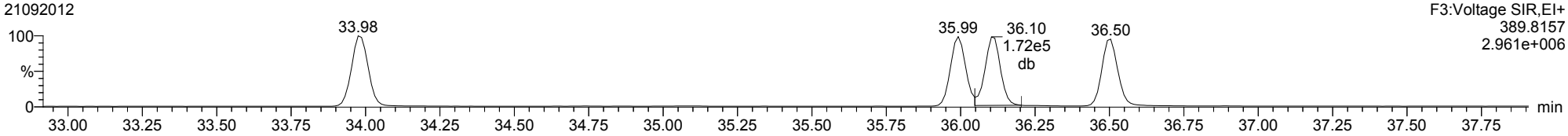

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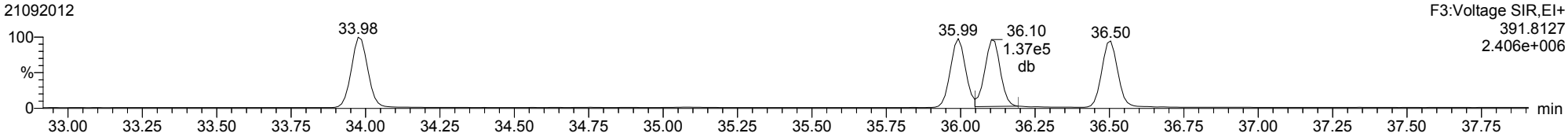

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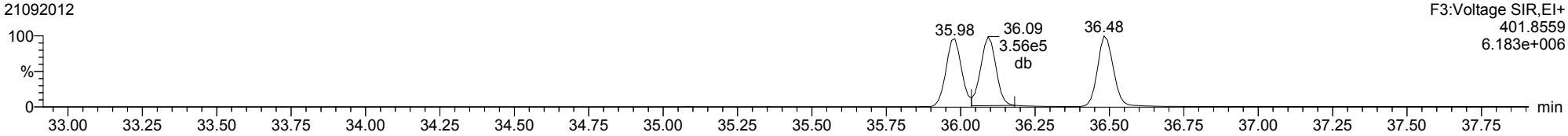

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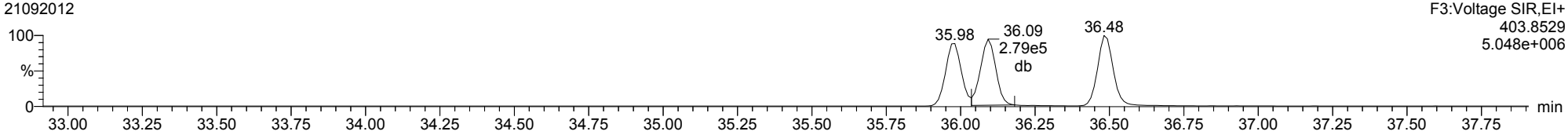

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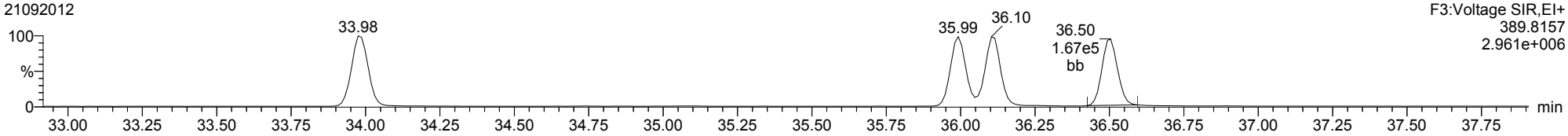

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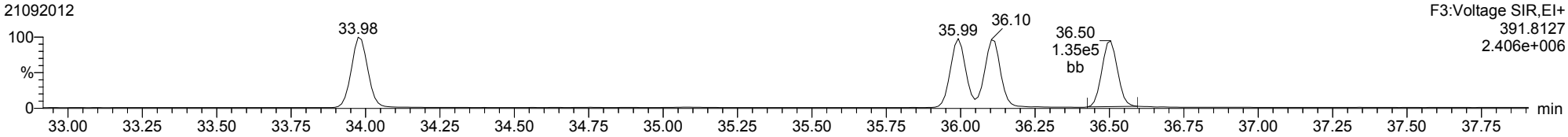

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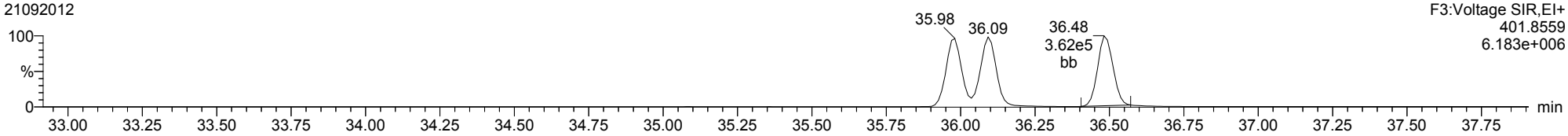

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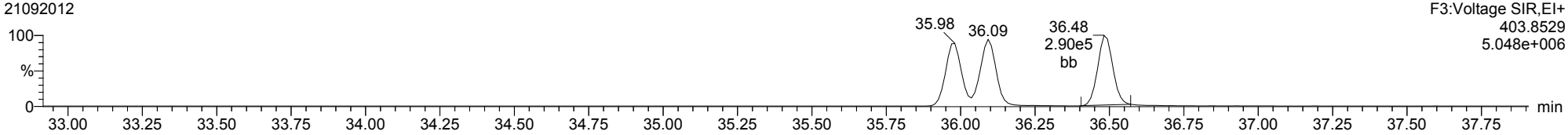

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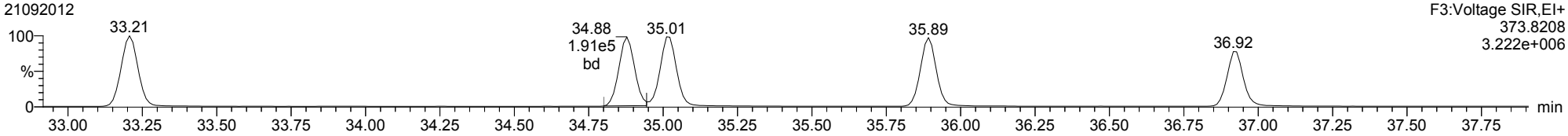

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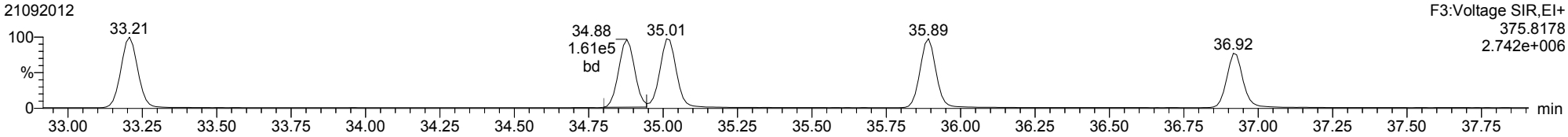

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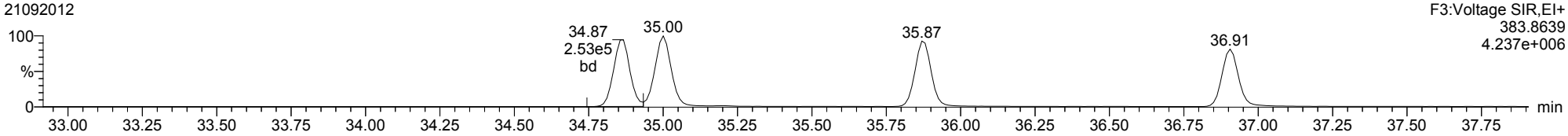

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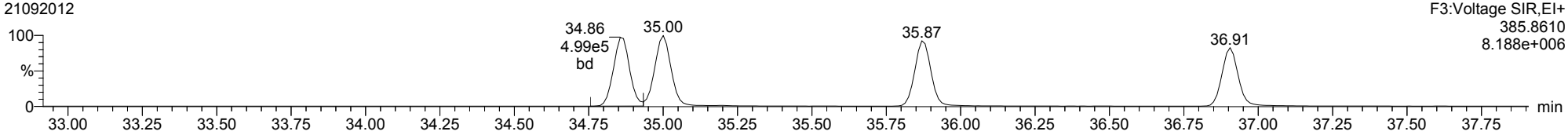

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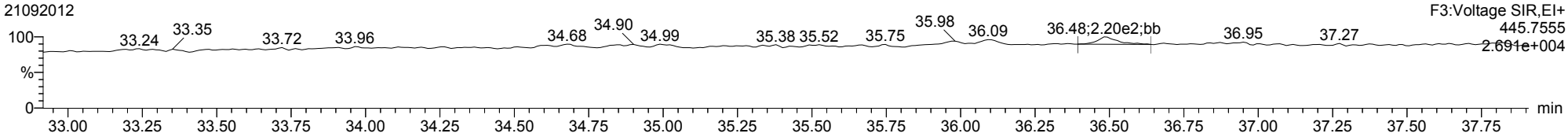

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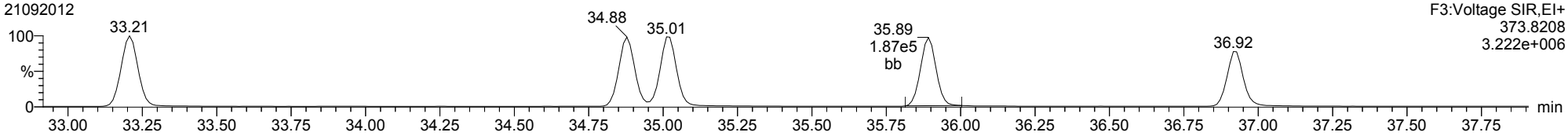

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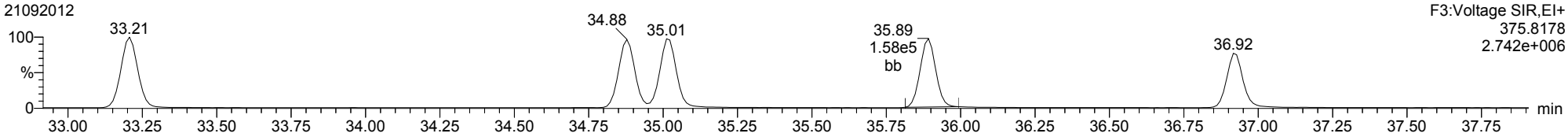

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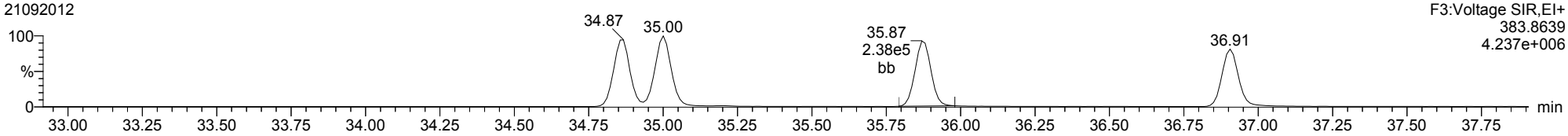

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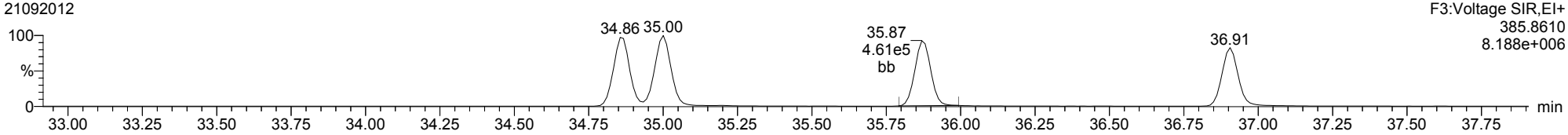

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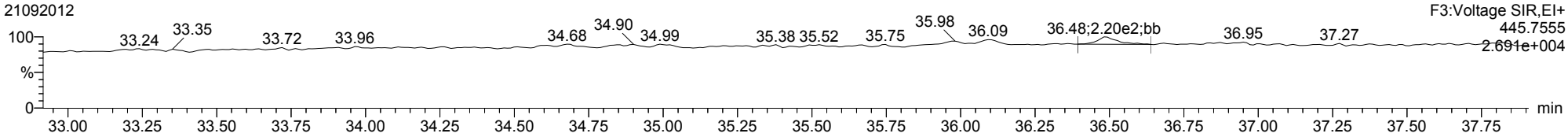

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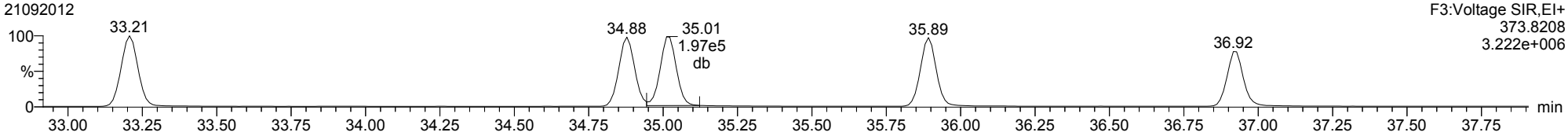

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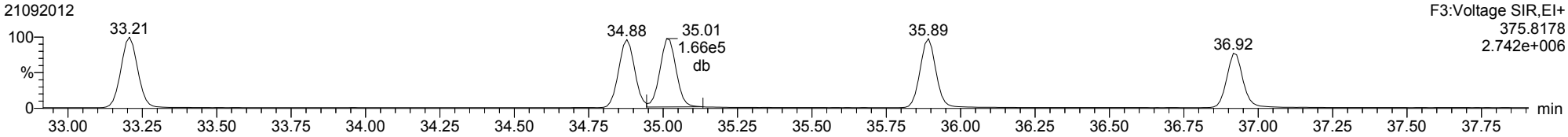

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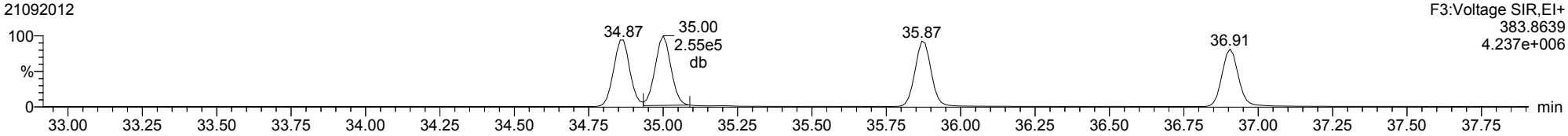

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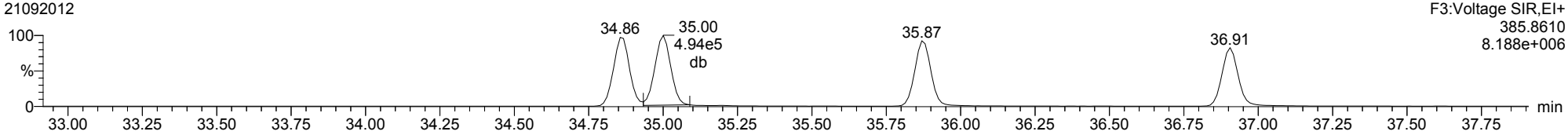

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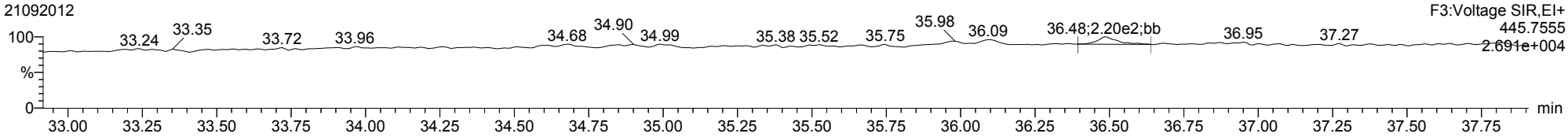

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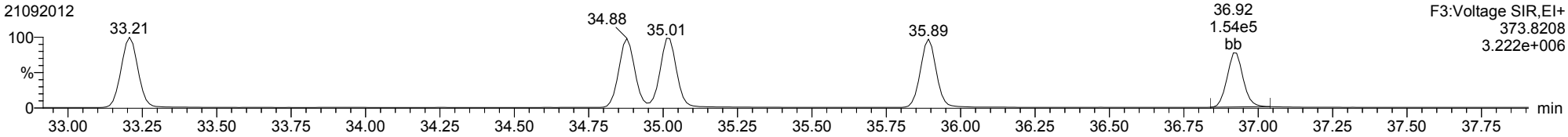

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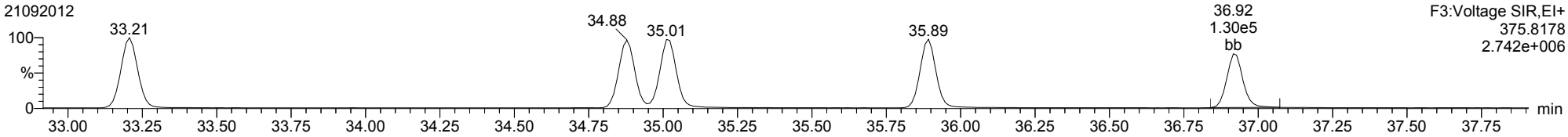

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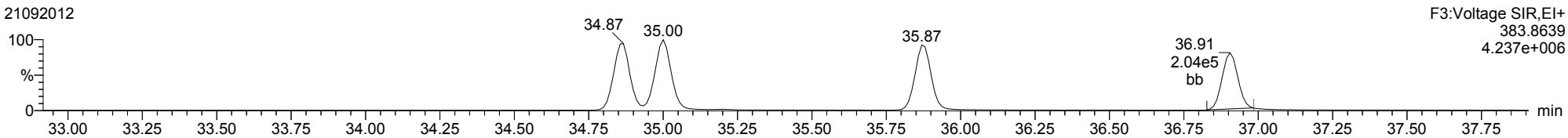

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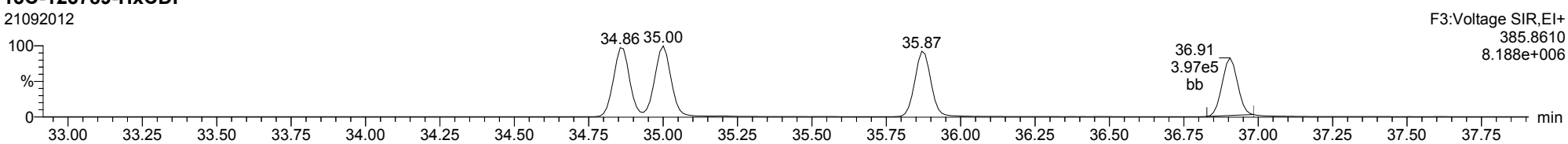

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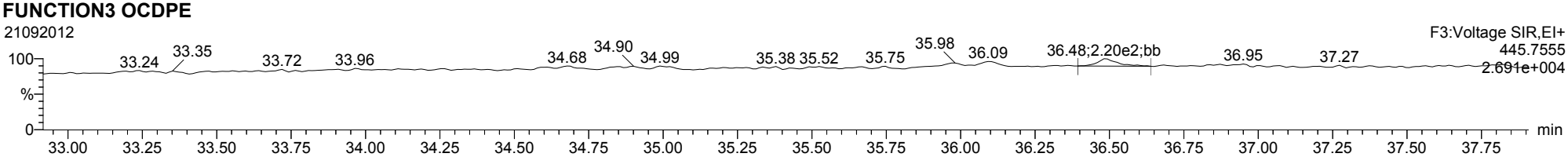

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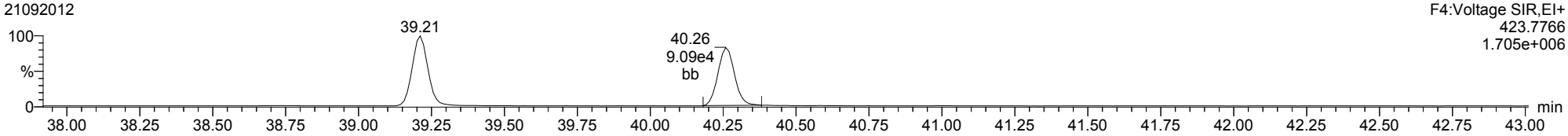

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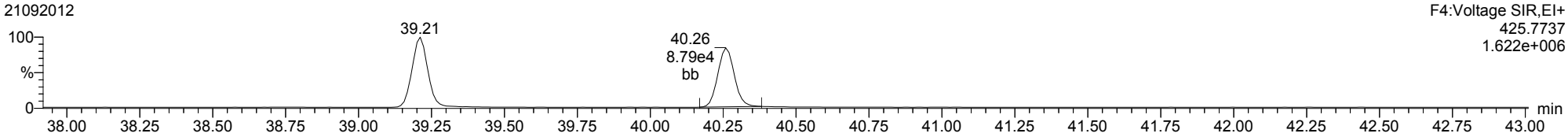

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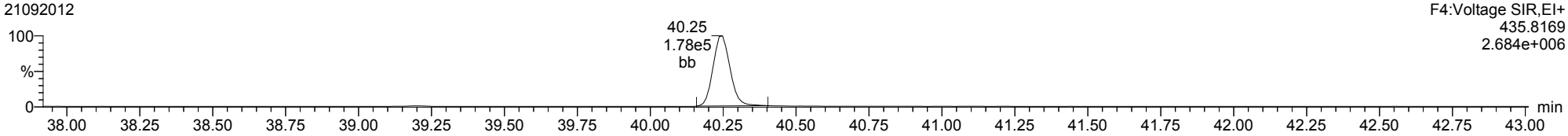

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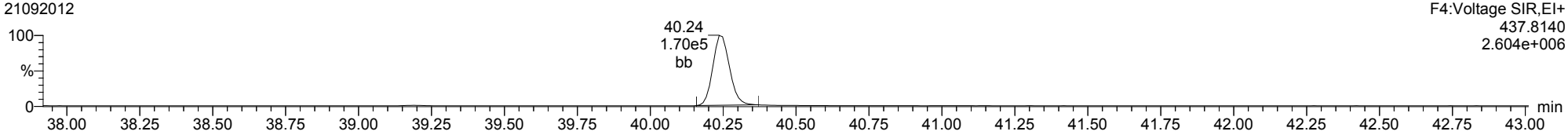

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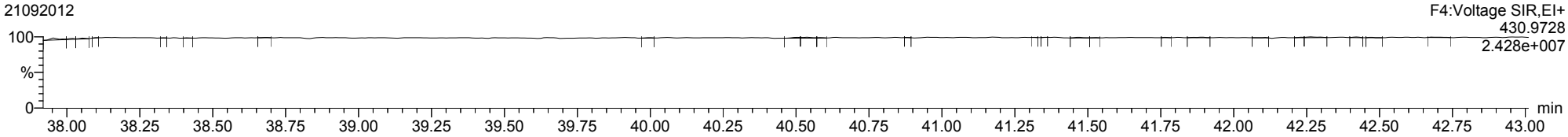

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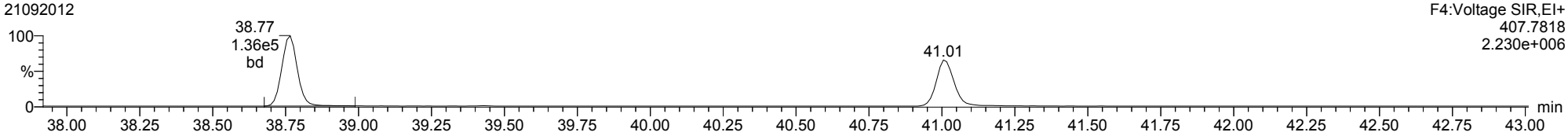

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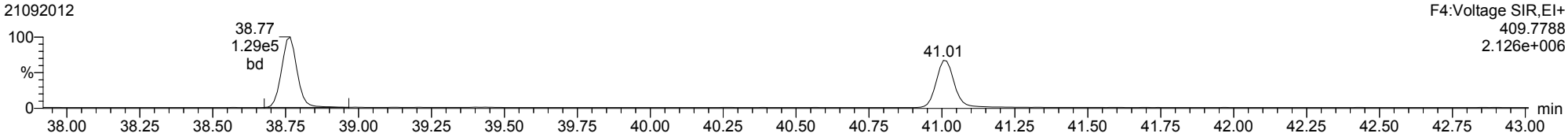

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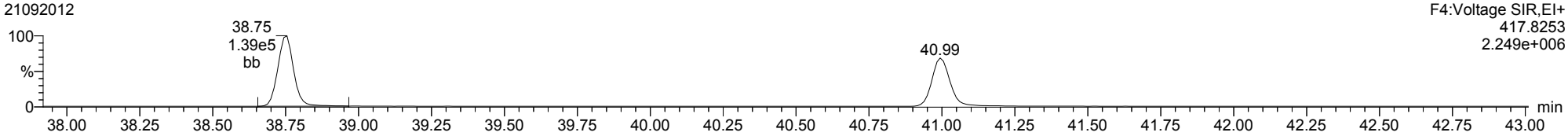

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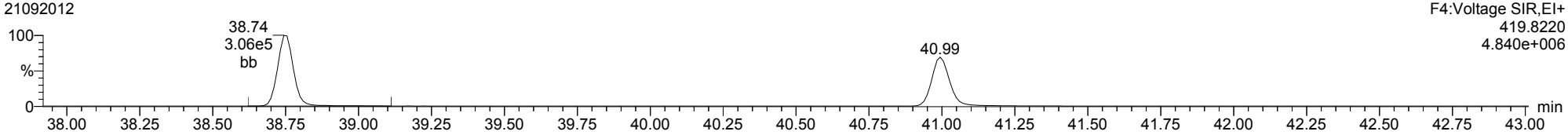

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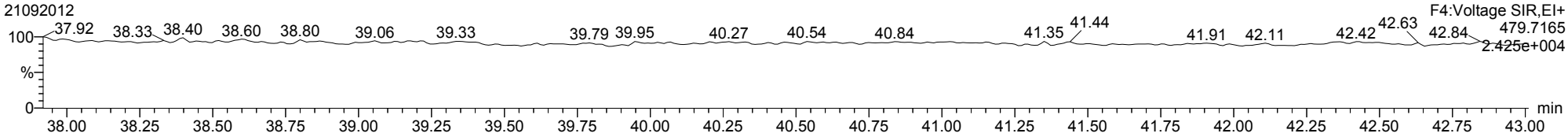

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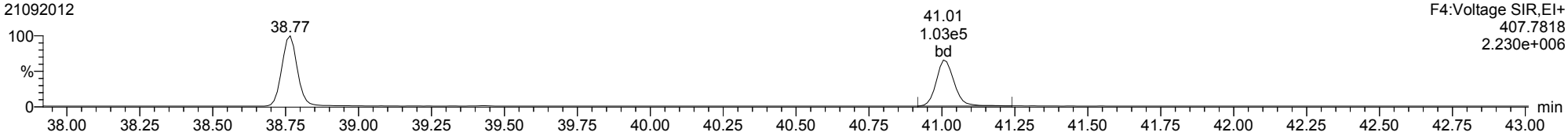

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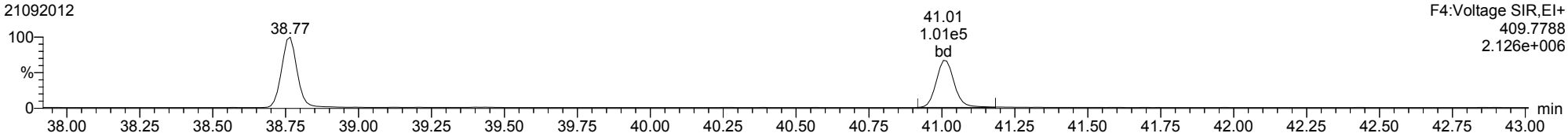

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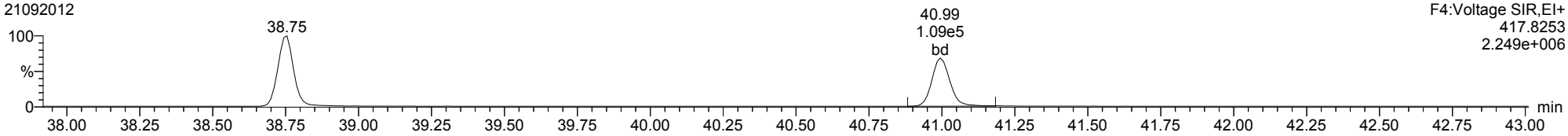

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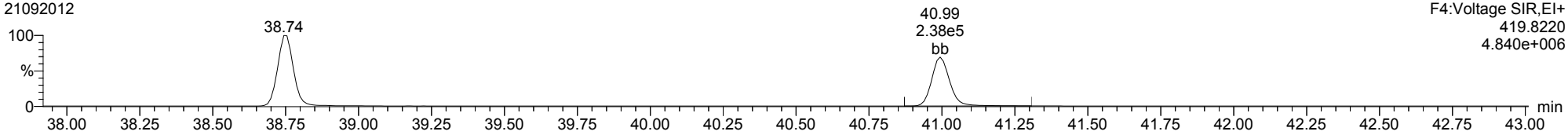

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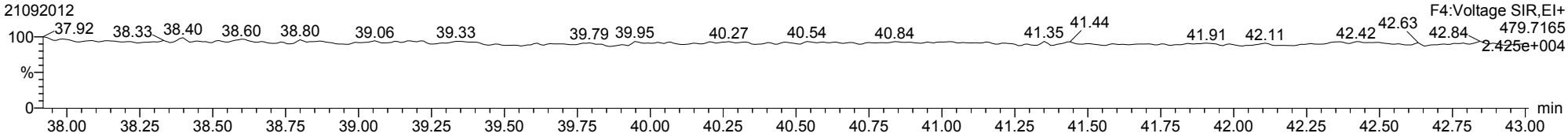

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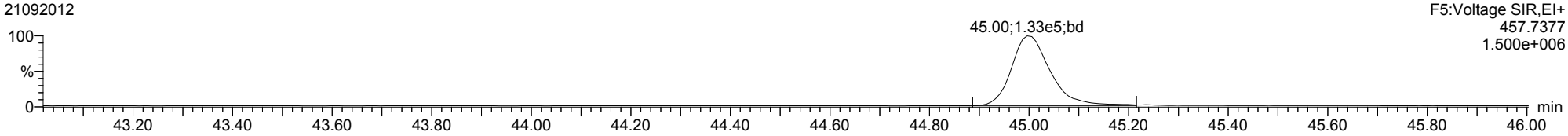

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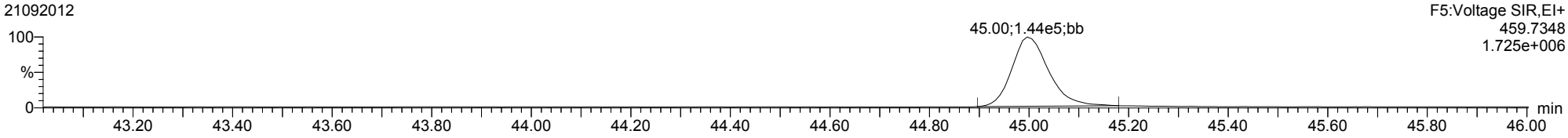

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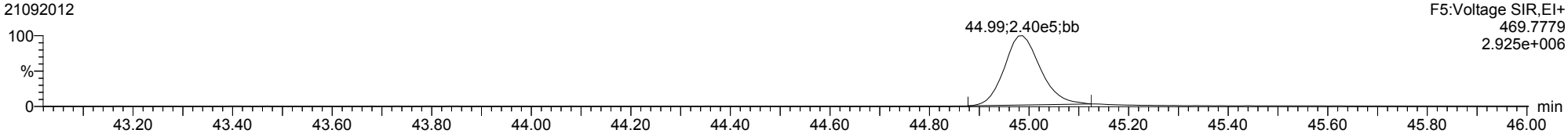

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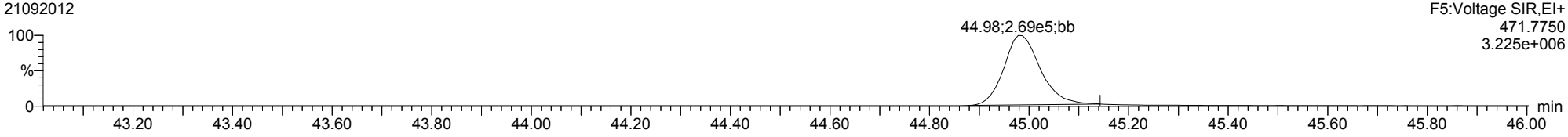
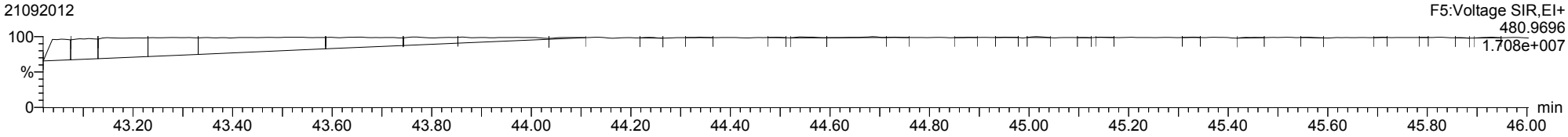


FUNCTION5 PFK



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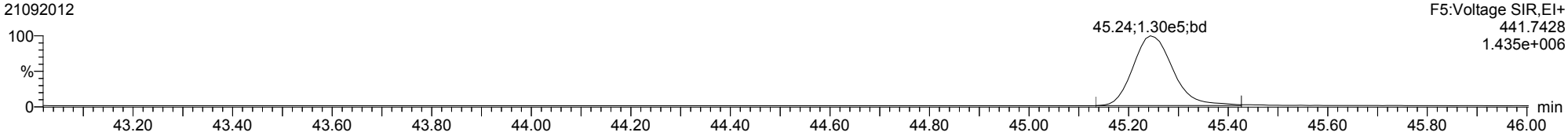

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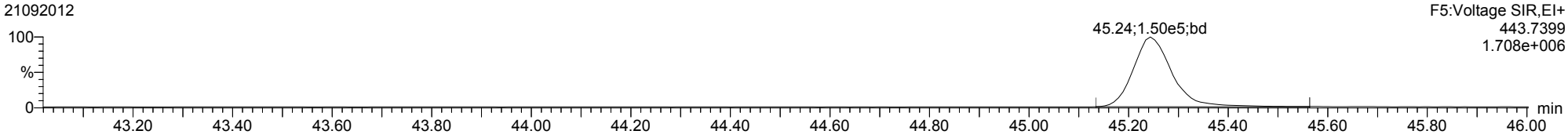

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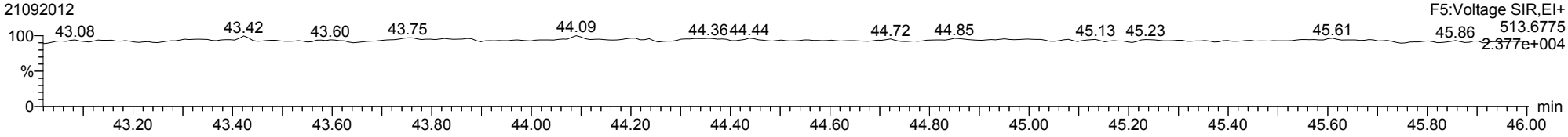

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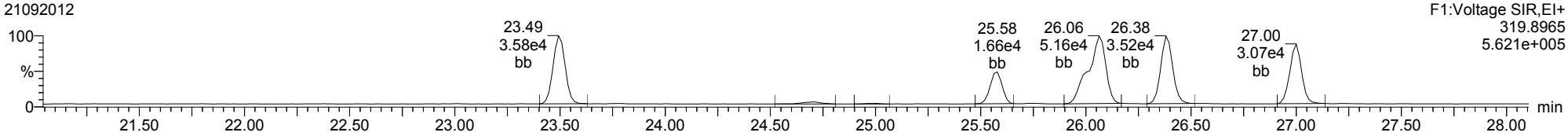
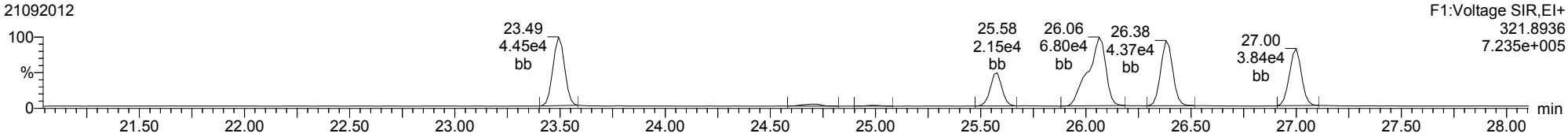
Total-tetradioxins



Total-tetradioxins



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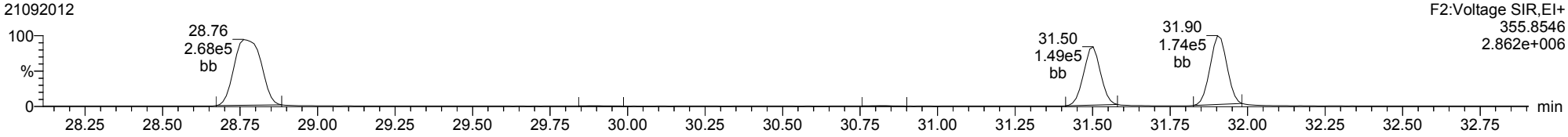

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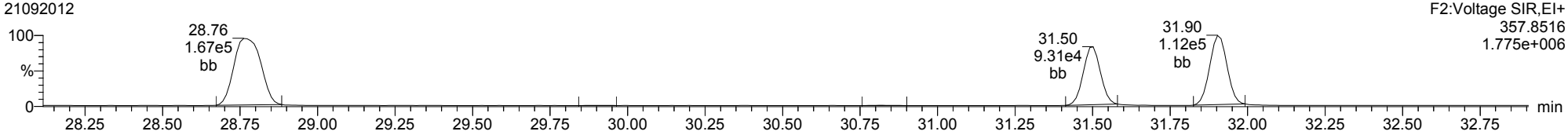

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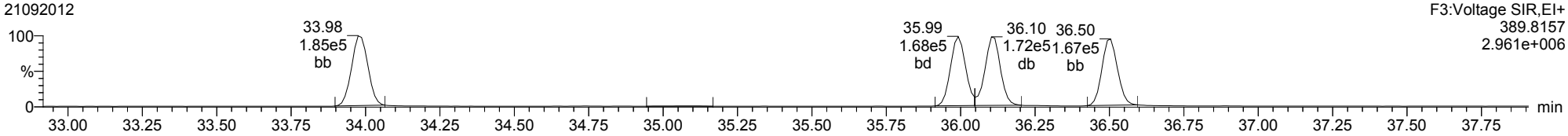
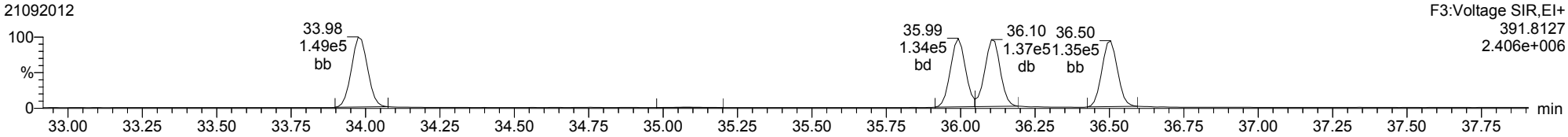
Total-hexadioxins



Total-hexadioxins



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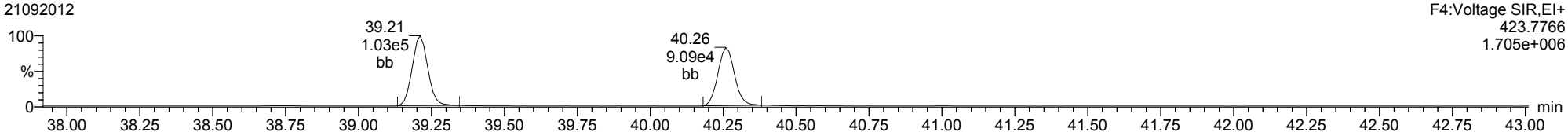
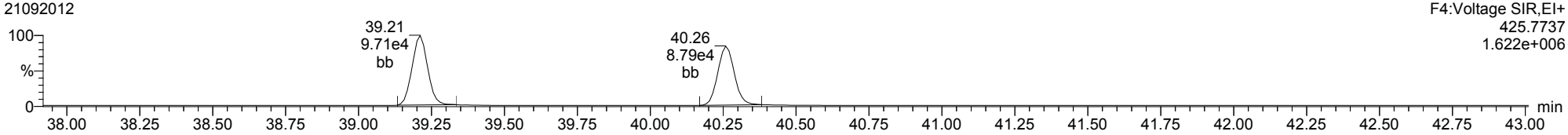


Total-heptadioxins



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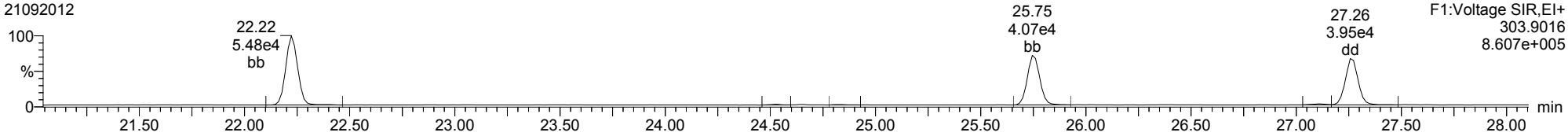
Total-tetrafurans



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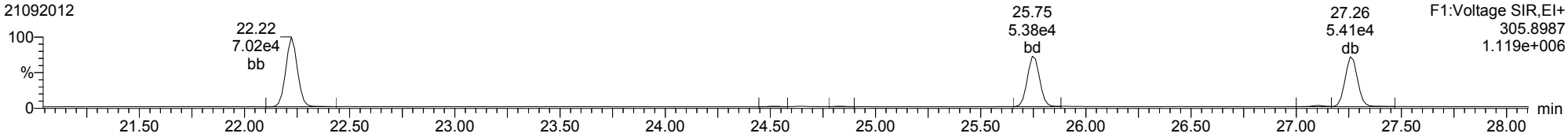

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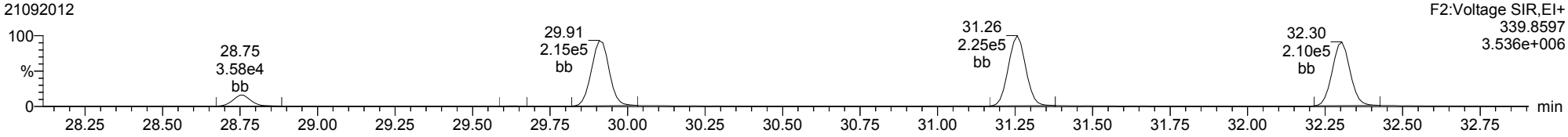
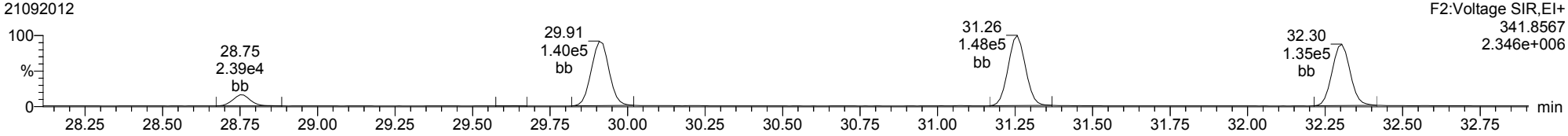


Total-pentafurans



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Printed: Tuesday, September 21, 2021 11:11:10 Pacific Daylight Time

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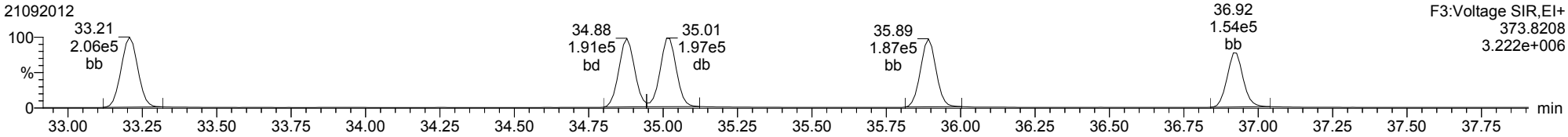
Total-hexafurans



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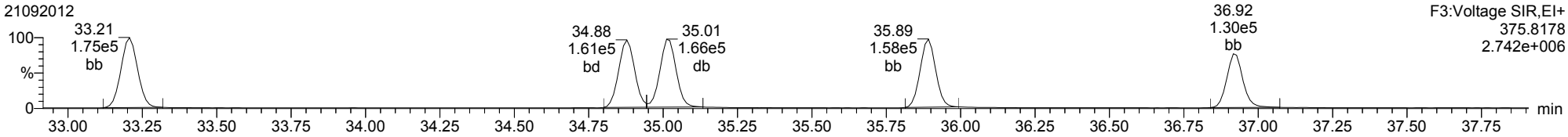

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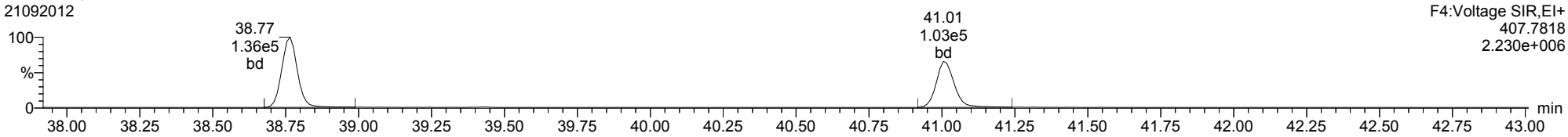

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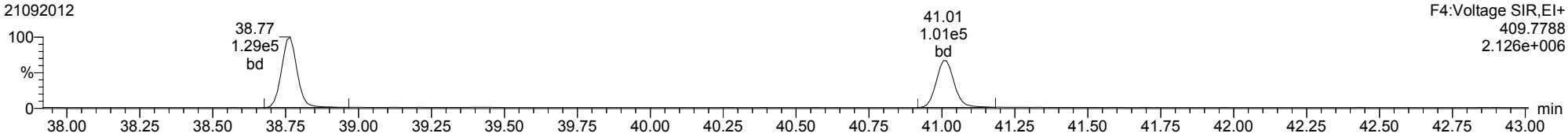

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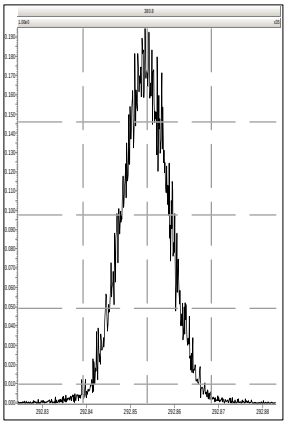

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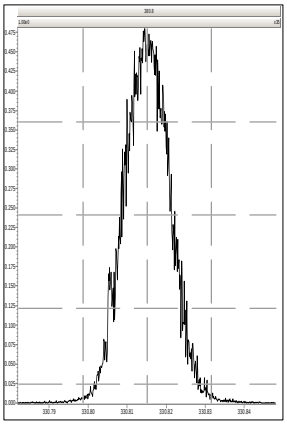

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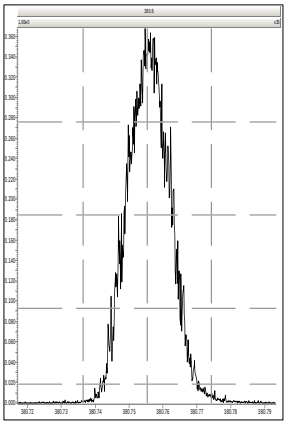

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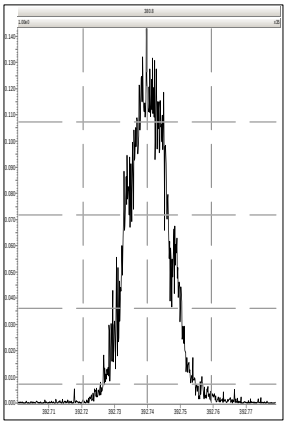
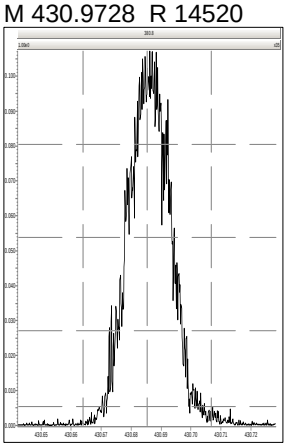


M 430.9728 R 14520



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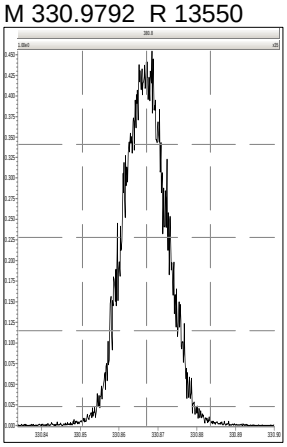

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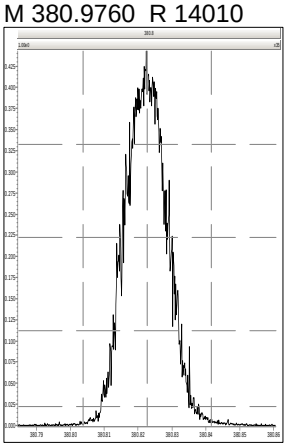

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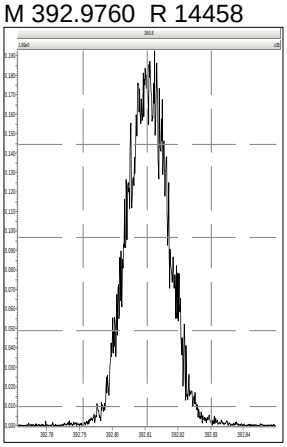

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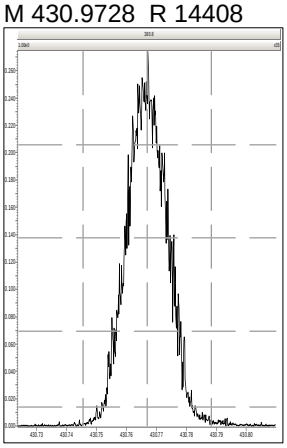

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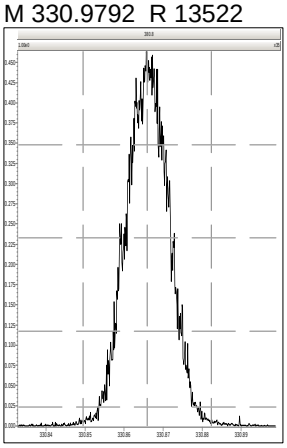

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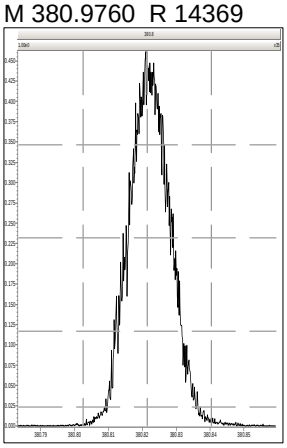

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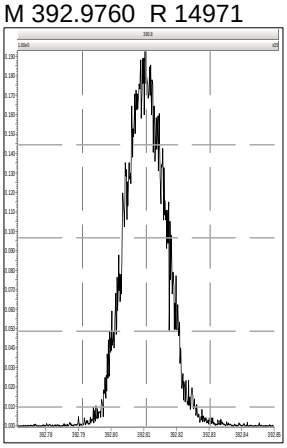

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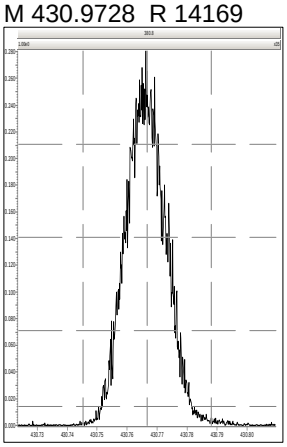

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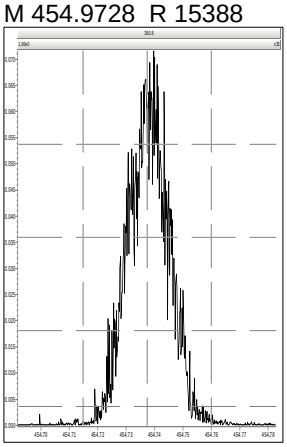

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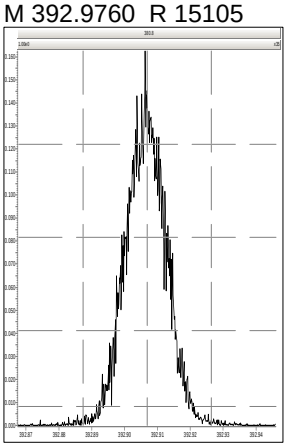

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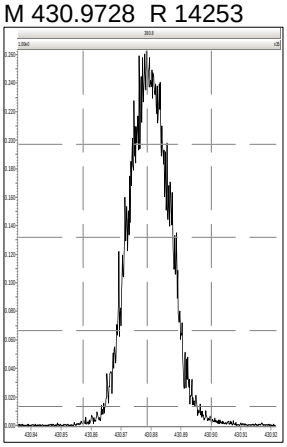

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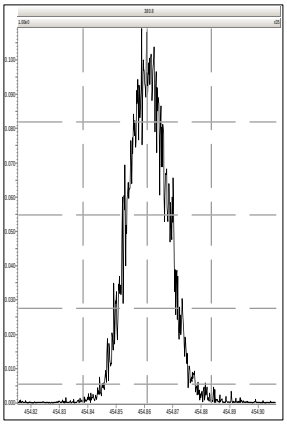
M 454.9728 R 14632



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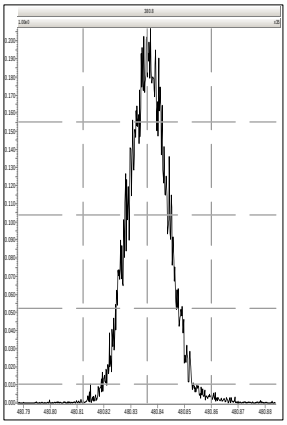

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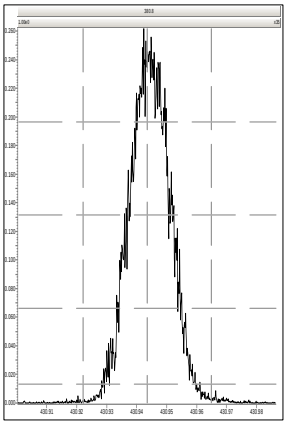

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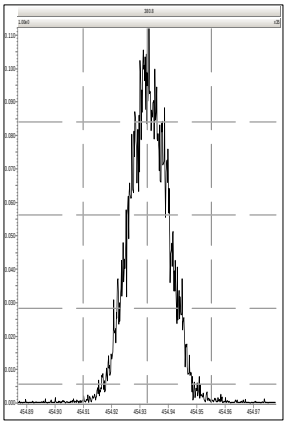

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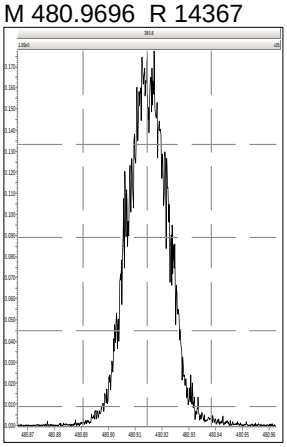

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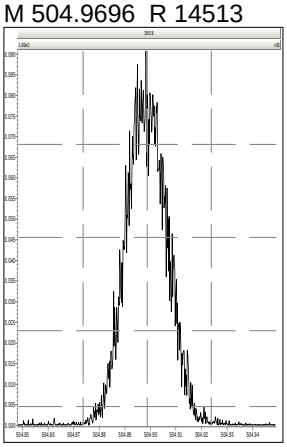

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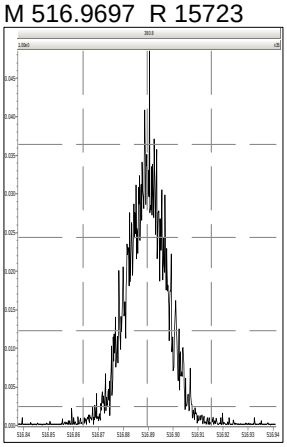
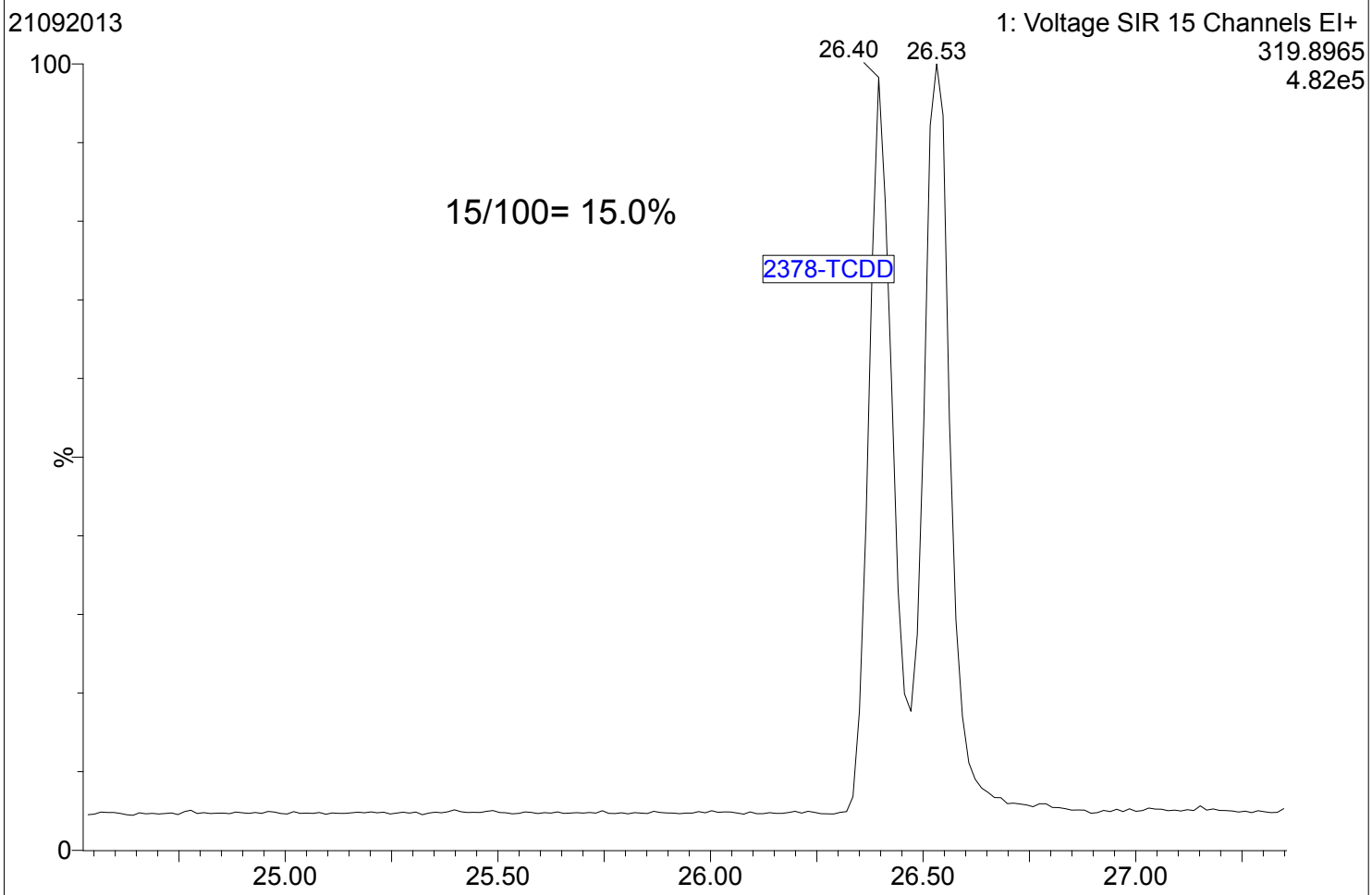
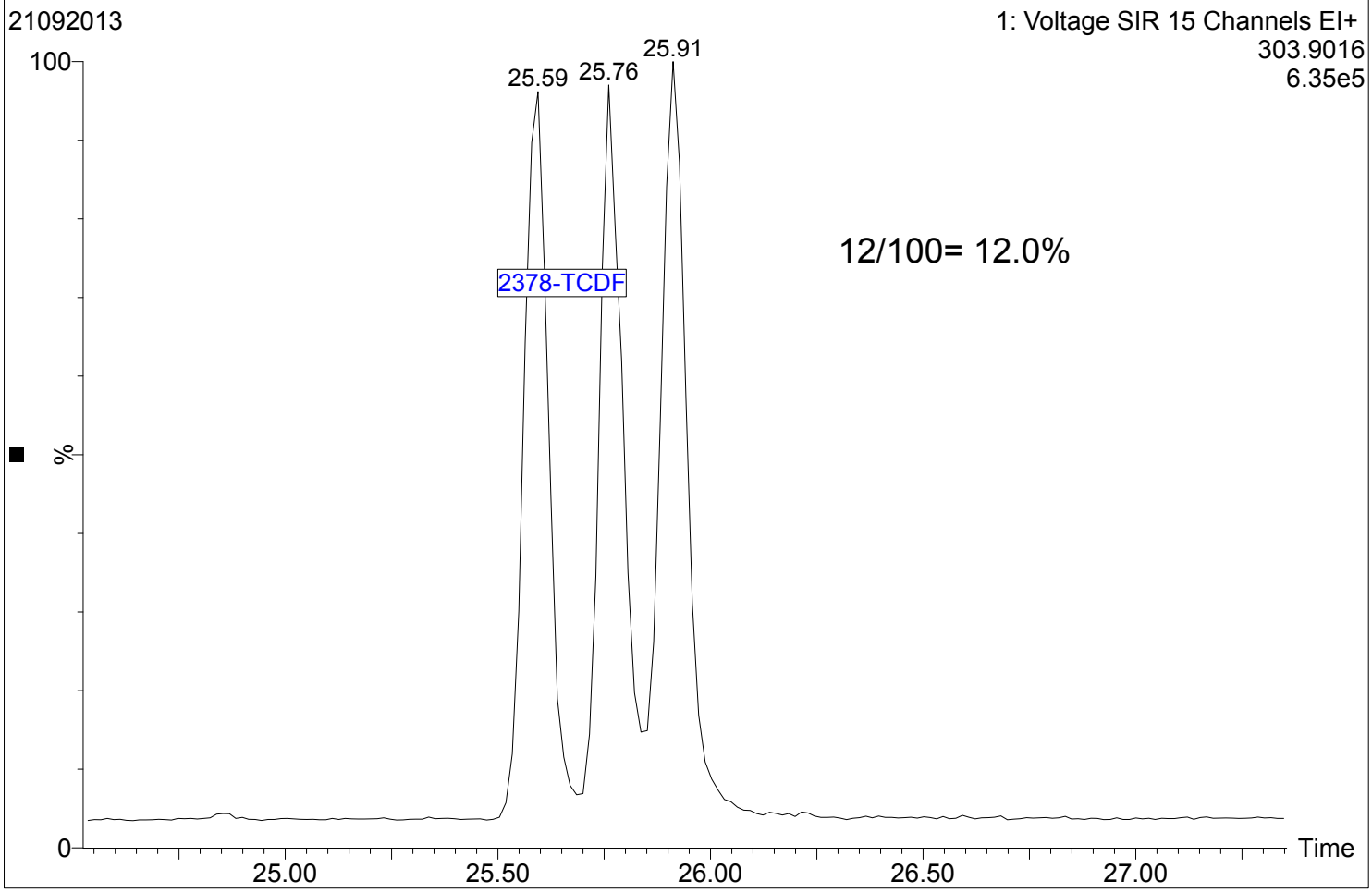



21092013
1: Voltage SIR 15 Channels EI+
319.8965
4.82e5
26.40
26.53
15/100= 15.0%
2378-TCDD
100
%
0
25.00
25.50
26.00
26.50
27.00


21092013
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6.35e5
25.59
25.76
25.91
12/100= 12.0%
2378-TCDF
100
%
0
Time
25.00
25.50
26.00
26.50
27.00

Analytical Resources, Incorporated
Analytical Chemists and Consultants

CONTINUING CALIBRATION CHECK
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	AUTOSPEC01	Calibration:	EH00030
Lab File ID:	21092022	Calibration Date:	08/11/2021
Sequence:	SJI0309	Injection Date:	09/21/21
Lab Sample ID:	SJI0309-CCV2	Injection Time:	09:36
Sequence Name:	CS3S3		

		CONC. (ng/mL)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN	CCV	LIMIT
2,3,7,8-TCDF	A	10.000	9.00	1.1075930	0.9971538		-10.0	+/-16
2,3,7,8-TCDD	A	10.000	9.81	0.9202875	0.9030215		-1.9	+/-22
1,2,3,7,8-PeCDF	A	50.000	44.1	1.0148670	0.8955406		-11.8	+/-18
2,3,4,7,8-PeCDF	A	50.000	44.5	1.1255490	1.0023210		-10.9	+/-18
1,2,3,7,8-PeCDD	A	50.000	48.9	0.9953229	0.9742293		-2.1	+/-22
1,2,3,4,7,8-HxCDF	A	50.000	47.6	1.0168930	0.9675911		-4.8	+/-10
1,2,3,6,7,8-HxCDF	A	50.000	47.8	1.0368310	0.9902760		-4.5	+/-12
2,3,4,6,7,8-HxCDF	A	50.000	47.0	1.0524660	0.9898356		-6.0	+/-12
1,2,3,7,8,9-HxCDF	A	50.000	46.7	1.0301540	0.9630725		-6.5	+/-10
1,2,3,4,7,8-HxCDD	A	50.000	47.3	1.0273630	0.9713503		-5.5	+/-22
1,2,3,6,7,8-HxCDD	A	50.000	47.7	1.0089800	0.9634866		-4.5	+/-22
1,2,3,7,8,9-HxCDD	A	50.000	50.2	0.9504865	0.9552367		0.5	+/-18
1,2,3,4,6,7,8-HpCDF	A	50.000	45.1	1.3273500	1.1979120		-9.8	+/-10
1,2,3,4,7,8,9-HpCDF	A	50.000	45.9	1.2833380	1.1774090		-8.3	+/-14
1,2,3,4,6,7,8-HpCDD	A	50.000	46.7	1.0680880	0.9968081		-6.7	+/-14
OCDF	A	100.00	74.1	1.4469010	1.0728520		-25.9	+/-37
OCDD	A	100.00	89.1	1.1808230	1.0526300		-10.9	+/-21
13C12-2,3,7,8-TCDF	A	100.00	95.2	1.4265830	1.3582032		-4.8	+/-29
13C12-2,3,7,8-TCDD	A	100.00	105	1.1164910	1.1764820		5.4	+/-18
13C12-1,2,3,7,8-PeCDF	A	100.00	85.2	1.2973130	1.1049153		-14.8	+/-24
13C12-2,3,4,7,8-PeCDF	A	100.00	83.1	1.2364800	1.0280804		-16.9	+/-23
13C12-1,2,3,7,8-PeCDD	A	100.00	93.3	0.7319833	0.6825818		-6.7	+/-38
13C12-1,2,3,4,7,8-HxCDF	A	100.00	93.6	1.2424560	1.1634992		-6.4	+/-24
13C12-1,2,3,6,7,8-HxCDF	A	100.00	85.9	1.3434760	1.1547172		-14.1	+/-30
13C12-2,3,4,6,7,8-HxCDF	A	100.00	88.2	1.2148550	1.0712828		-11.8	+/-27
13C12-1,2,3,7,8,9-HxCDF	A	100.00	91.2	1.0076370	0.9187089		-8.8	+/-26
13C12-1,2,3,4,7,8-HxCDD	A	100.00	98.4	0.9598233	0.9445651		-1.6	+/-15
13C12-1,2,3,6,7,8-HxCDD	A	100.00	93.9	1.0413850	0.9777363		-6.1	+/-15
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	72.7	0.9264704	0.6734246		-27.3	+/-22 *
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	69.9	0.7579160	0.5298441		-30.1	+/-23 *
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	83.9	0.6324476	0.5303382		-16.1	+/-28
13C12-OCDD	A	200.00	154	0.5037432	0.3866381		-23.2	+/-52
37Cl4-2,3,7,8-TCDD	A	10.000	9.85	1.0835930	1.0676427		-1.5	

* Values outside of QC limits

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210920D2.qld
Last Altered: Tuesday, September 21, 2021 13:21:12 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 13:29:48 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: CS3S3, Name: 21092022, Date: 21-Sep-2021, Time: 09:36:53, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.776	1.001	4.116e4	5.541e4	1.108	0.743	0.770	615	853	6.04e5	8.02e5	982.7	940.7	NO	bb	bb	9.003
12378-PeCDF	29.931	1.001	2.132e5	1.396e5	1.015	1.528	1.550	1437	966	3.27e6	2.11e6	2275.2	2184.4	NO	bb	bb	44.121
23478-PeCDF	31.268	1.000	2.231e5	1.442e5	1.126	1.547	1.550	1437	966	3.49e6	2.24e6	2430.3	2319.9	NO	bb	bb	44.526
123478-HxCDF	34.889	1.000	1.998e5	1.706e5	1.017	1.171	1.240	1571	1394	3.22e6	2.75e6	2051.7	1972.4	NO	bd	bd	47.576
234678-HxCDF	35.903	1.001	1.895e5	1.593e5	1.052	1.189	1.240	1571	1394	3.15e6	2.61e6	2006.3	1872.8	NO	bb	bb	47.025
123678-HxCDF	35.034	1.001	2.041e5	1.721e5	1.037	1.186	1.240	1571	1394	3.28e6	2.74e6	2089.7	1969.2	NO	db	db	47.755
123789-HxCDF	36.939	1.001	1.584e5	1.327e5	1.030	1.194	1.240	1571	1394	2.54e6	2.14e6	1615.9	1535.2	NO	bb	bb	46.744
1234678-HpCDF	38.778	1.001	1.351e5	1.303e5	1.327	1.036	1.050	1192	1017	2.24e6	2.13e6	1876.7	2091.9	NO	bd	bd	45.124
1234789-HpCDF	41.017	1.000	1.034e5	1.018e5	1.283	1.015	1.050	1192	1017	1.43e6	1.41e6	1196.9	1385.6	NO	bd	bd	45.873
OCDF	45.270	1.006	1.282e5	1.447e5	1.447	0.886	0.890	510	1903	1.51e6	1.70e6	2952.5	892.7	NO	bb	bb	74.148
2378-TCDD	26.396	1.001	3.420e4	4.155e4	0.920	0.823	0.770	737	709	4.98e5	6.24e5	675.0	879.8	NO	bb	bb	9.812
12378-PeCDD	31.514	1.001	1.462e5	9.086e4	0.995	1.609	1.550	922	820	2.25e6	1.40e6	2439.2	1711.9	NO	bb	bb	48.940
123478-HxCDD	36.003	1.000	1.668e5	1.350e5	1.027	1.235	1.240	1533	1287	2.84e6	2.29e6	1854.2	1782.4	NO	bd	bd	47.274
123678-HxCDD	36.115	1.000	1.709e5	1.390e5	1.009	1.230	1.240	1533	1287	2.78e6	2.29e6	1812.4	1781.2	NO	db	db	47.746
123789-HxCDD	36.516	1.011	1.680e5	1.341e5	0.950	1.253	1.240	1533	1287	2.83e6	2.24e6	1842.5	1736.2	NO	bb	bb	50.250
1234678-HpCDD	40.271	1.000	8.969e4	8.422e4	1.068	1.065	1.050	846	822	1.41e6	1.33e6	1668.6	1611.4	NO	bb	bb	46.663
OCDD	45.023	1.000	1.263e5	1.414e5	1.181	0.893	0.890	1236	769	1.45e6	1.62e6	1172.2	2102.9	NO	bb	bb	89.144
13C-2378-TCDF	25.746	1.007	4.289e5	5.396e5	1.427	0.795	0.770	1252	916	6.50e6	8.17e6	5197.6	8916.7	NO	bb	bb	95.207
13C-12378-PeCDF	29.909	1.170	4.858e5	3.020e5	1.297	1.608	1.550	1753	1179	7.35e6	4.56e6	4191.7	3868.5	NO	bb	bb	85.169
13C-23478-PeCDF	31.257	1.223	4.515e5	2.816e5	1.236	1.603	1.550	1753	1179	6.91e6	4.31e6	3941.6	3657.2	NO	bb	bb	83.146
13C-123478-HxCDF	34.878	0.956	2.594e5	5.061e5	1.242	0.512	0.510	1872	3320	4.16e6	8.01e6	2219.5	2413.3	NO	bd	bd	93.645
13C-123678-HxCDF	35.012	0.959	2.606e5	4.992e5	1.343	0.522	0.510	1872	3320	4.29e6	8.16e6	2289.0	2457.9	NO	db	db	85.950
13C-234678-HxCDF	35.881	0.983	2.402e5	4.647e5	1.215	0.517	0.510	1872	3320	3.84e6	7.40e6	2053.5	2230.6	NO	bb	bb	88.182
13C-123789-HxCDF	36.917	1.012	2.052e5	3.992e5	1.008	0.514	0.510	1872	3320	3.48e6	6.83e6	1857.6	2058.0	NO	bb	bb	91.175
13C-1234678-HpCDF	38.755	1.062	1.405e5	3.026e5	0.926	0.464	0.440	1091	1131	2.26e6	4.87e6	2072.4	4304.2	NO	bd	bd	72.687
13C-1234789-HpCDF	41.006	1.124	1.101e5	2.385e5	0.758	0.461	0.440	1091	1131	1.57e6	3.34e6	1436.5	2955.8	NO	bd	bb	69.908
13C-1234-TCDD	25.564	0.000	3.066e5	4.064e5	1.000	0.754	0.770	1115	853	4.84e6	6.44e6	4340.0	7556.5	NO	bb	bb	100.000
13C-2378-TCDD	26.381	1.032	3.624e5	4.765e5	1.116	0.761	0.770	1115	853	5.46e6	7.19e6	4897.3	8429.8	NO	bb	bb	105.373
13C-12378-PeCDD	31.491	1.232	2.987e5	1.880e5	0.732	1.589	1.550	590	1078	4.63e6	2.90e6	7843.6	2689.9	NO	bb	bb	93.251
13C-123478-HxCDD	35.992	0.986	3.480e5	2.735e5	0.960	1.273	1.240	1004	1727	5.75e6	4.44e6	5727.9	2571.9	NO	bd	bd	98.410
13C-123678-HxCDD	36.104	0.989	3.587e5	2.846e5	1.041	1.260	1.240	1004	1727	5.97e6	4.75e6	5947.0	2751.7	NO	db	db	93.888
13C-1234678-HpCDD	40.259	1.103	1.777e5	1.713e5	0.632	1.037	1.050	1062	907	2.74e6	2.62e6	2583.2	2891.2	NO	bb	bb	83.855
13C-OCDD	45.004	1.233	2.417e5	2.671e5	0.504	0.905	0.890	975	1165	2.70e6	3.05e6	2765.8	2613.9	NO	bb	bb	153.506
13C-123789-HxCDD	36.494	0.000	3.664e5	2.916e5	1.000	1.256	1.240	1004	1727	5.94e6	4.80e6	5913.1	2777.5	NO	bb	bb	100.000
37CL-2378-TCDD	26.396	1.033	7.613e4		1.084			1208		1.12e6		923.5			bb		9.853

Dataset: T:\Autospec\Processed Data Batch\210920D2.qld
Last Altered: Tuesday, September 21, 2021 13:21:12 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 13:29:48 Pacific Daylight Time

ID: CS3S3, Name: 21092022, Date: 21-Sep-2021, Time: 09:36:53, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	22.238	0.864	5.174e4	6.945e4	1.425	0.745	0.770	615	853	7.84e5	1.05e6	1275.8	1231.5	NO	bb	bb	8.781
1289-TCDF	27.272	1.059	3.864e4	5.261e4	1.043	0.734	0.770	615	853	5.64e5	7.61e5	918.1	892.2	NO	db	dd	9.035
13468-PECDF	27.106	0.906	3.651e5	2.378e5	1.376	1.535	1.550	685	550	5.58e6	3.64e6	8140.0	6611.6	NO	bb	bb	55.604
12389-PECDF	32.316	1.081	2.092e5	1.375e5	1.000	1.521	1.550	1437	966	3.14e6	2.07e6	2187.2	2139.4	NO	bb	bb	44.031
123468-HXCDF	33.218	0.952	2.116e5	1.798e5	1.087	1.177	1.240	1571	1394	3.29e6	2.82e6	2093.1	2021.2	NO	bb	bb	47.056
1368-TCDD	23.508	0.891	3.317e4	4.163e4	0.923	0.797	0.770	737	709	5.05e5	6.53e5	685.6	920.4	NO	bb	bb	9.658
1289-TCDD	27.015	1.024	2.887e4	3.611e4	0.794	0.800	0.770	737	709	4.16e5	5.13e5	564.1	723.5	NO	bb	bb	9.756
12479-PECDD	28.773	0.914	2.579e5	1.647e5	1.843	1.566	1.550	922	820	2.49e6	1.58e6	2695.7	1923.4	NO	bb	bb	47.113
12389-PECDD	31.926	1.014	1.723e5	1.064e5	1.154	1.619	1.550	922	820	2.67e6	1.67e6	2892.3	2035.6	NO	bb	bb	49.631
124679-HXCDD	33.998	0.945	1.899e5	1.502e5	1.125	1.265	1.240	1533	1287	2.99e6	2.36e6	1947.7	1829.4	NO	bb	bb	48.652
1234679-HPCDD	39.223	0.974	1.024e5	9.586e4	1.211	1.069	1.050	846	822	1.71e6	1.59e6	2024.4	1935.7	NO	bb	bb	46.930
Total-tetrafurans			1.322e5		1.192			615		1.96e6							26.966
Total-penta1			3.651e5					685		5.58e6							55.604
Total-pentafurans			6.819e5		1.047			1437		1.05e7							140.286
Total-hexafurans			9.634e5		1.045			1571		1.55e7							236.155
Total-heptafurans			2.385e5		1.305			1192		3.66e6							90.997
Total-Furans			2.509e6		1.158			615		3.87e7							624.157
Total-tetradioxins			1.631e5		0.879			737		2.19e6							49.922
Total-pentadioxins			5.764e5		1.331			922		7.40e6							145.684
Total-hexadioxins			6.957e5		1.028			1533		1.14e7							193.921
Total-heptadioxins			1.921e5		1.140			846		3.12e6							93.593
Total-Dioxins			1.754e6		1.092			737		2.56e7							572.265
Total-TEQ			4.263e6					737		6.43e7							1196.422
FUNCTION1 PFK			2.073e5					263896		5.77e6							
FUNCTION2 PFK			9.201e4					155296		3.06e6							0.000
FUNCTION3 PFK			2.209e5					192669		6.19e6							0.000
FUNCTION4 PFK			1.221e5					133682		3.65e6							
FUNCTION5 PFK			5.656e5					100519		9.64e6							
FUNCTION1 HXCD...			6.565e2					472		5.98e3							0.000
FUNCTION1 HPCD...			5.265e2					501		6.49e3							0.000
FUNCTION2 HPCD...			4.031e2					518		6.43e3							0.000
FUNCTION3 OCDPE			1.837e2					408		3.08e3							0.000
FUNCTION4 NCDPE			8.073e1					600		1.27e3							0.000
FUNCTION5 DCDPE			0.000e0					467		0.00e0							

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: CS3S3, Name: 21092022, Date: 21-Sep-2021, Time: 09:36:53, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.27	3.864e4	5.261e4	1.043	0.73	0.77	918.1	YES	NO	db	dd	9.035
2	Total-tetrafurans	27.12	6.860e2	1.014e3	1.192	0.68	0.77	15.0	YES	NO	bd	bd	0.147
3	2378-TCDF	25.78	4.116e4	5.541e4	1.108	0.74	0.77	982.7	YES	NO	bb	bb	9.003
4	1368-TCDF	22.24	5.174e4	6.945e4	1.425	0.75	0.77	1275.8	YES	NO	bb	bb	8.781

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	27.11	3.651e5	2.378e5	1.376	1.54	1.55	8140.0	YES	NO	bb	bb	55.604

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDF	32.32	2.092e5	1.375e5	1.000	1.52	1.55	2187.2	YES	NO	bb	bb	44.031
2	23478-PeCDF	31.27	2.231e5	1.442e5	1.126	1.55	1.55	2430.3	YES	NO	bb	bb	44.526
3	12378-PeCDF	29.93	2.132e5	1.396e5	1.015	1.53	1.55	2275.2	YES	NO	bb	bb	44.121
4	Total-pentafurans	28.77	3.637e4	2.419e4	1.047	1.50	1.55	398.2	YES	NO	bb	bb	7.608

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDF	36.94	1.584e5	1.327e5	1.030	1.19	1.24	1615.9	YES	NO	bb	bb	46.744
2	234678-HxCDF	35.90	1.895e5	1.593e5	1.052	1.19	1.24	2006.3	YES	NO	bb	bb	47.025
3	123678-HxCDF	35.03	2.041e5	1.721e5	1.037	1.19	1.24	2089.7	YES	NO	db	db	47.755
4	123478-HxCDF	34.89	1.998e5	1.706e5	1.017	1.17	1.24	2051.7	YES	NO	bd	bd	47.576
5	123468-HXCDF	33.22	2.116e5	1.798e5	1.087	1.18	1.24	2093.1	YES	NO	bb	bb	47.056

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDF	38.78	1.351e5	1.303e5	1.327	1.04	1.05	1876.7	YES	NO	bd	bd	45.124
2	1234789-HpCDF	41.02	1.034e5	1.018e5	1.283	1.02	1.05	1196.9	YES	NO	bd	bd	45.873

ID: CS3S3, Name: 21092022, Date: 21-Sep-2021, Time: 09:36:53, Conditions: AUTOSPEC01, User: pk

Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.27	3.864e4	5.261e4	1.043	0.73	0.77	918.1	YES	NO	db	dd	9.035
2	Total-tetrafurans	27.12	6.860e2	1.014e3	1.192	0.68	0.77	15.0	YES	NO	bd	bd	0.147
3	2378-TCDF	25.78	4.116e4	5.541e4	1.108	0.74	0.77	982.7	YES	NO	bb	bb	9.003
4	1368-TCDF	22.24	5.174e4	6.945e4	1.425	0.75	0.77	1275.8	YES	NO	bb	bb	8.781
5	12389-PECDF	32.32	2.092e5	1.375e5	1.000	1.52	1.55	2187.2	YES	NO	bb	bb	44.031
6	23478-PeCDF	31.27	2.231e5	1.442e5	1.126	1.55	1.55	2430.3	YES	NO	bb	bb	44.526
7	12378-PeCDF	29.93	2.132e5	1.396e5	1.015	1.53	1.55	2275.2	YES	NO	bb	bb	44.121
8	Total-pentafurans	28.77	3.637e4	2.419e4	1.047	1.50	1.55	398.2	YES	NO	bb	bb	7.608
9	123789-HxCDF	36.94	1.584e5	1.327e5	1.030	1.19	1.24	1615.9	YES	NO	bb	bb	46.744
10	234678-HxCDF	35.90	1.895e5	1.593e5	1.052	1.19	1.24	2006.3	YES	NO	bb	bb	47.025
11	123678-HxCDF	35.03	2.041e5	1.721e5	1.037	1.19	1.24	2089.7	YES	NO	db	db	47.755
12	123478-HxCDF	34.89	1.998e5	1.706e5	1.017	1.17	1.24	2051.7	YES	NO	bd	bd	47.576
13	123468-HXCDF	33.22	2.116e5	1.798e5	1.087	1.18	1.24	2093.1	YES	NO	bb	bb	47.056
14	1234678-HpCDF	38.78	1.351e5	1.303e5	1.327	1.04	1.05	1876.7	YES	NO	bd	bd	45.124
15	1234789-HpCDF	41.02	1.034e5	1.018e5	1.283	1.02	1.05	1196.9	YES	NO	bd	bd	45.873
16	OCDF	45.27	1.282e5	1.447e5	1.447	0.89	0.89	2952.5	YES	NO	bb	bb	74.148
17	13468-PECDF	27.11	3.651e5	2.378e5	1.376	1.54	1.55	8140.0	YES	NO	bb	bb	55.604

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1368-TCDD	23.51	3.317e4	4.163e4	0.923	0.80	0.77	685.6	YES	NO	bb	bb	9.658
2	1289-TCDD	27.02	2.887e4	3.611e4	0.794	0.80	0.77	564.1	YES	NO	bb	bb	9.756
3	2378-TCDD	26.40	3.420e4	4.155e4	0.920	0.82	0.77	675.0	YES	NO	bb	bb	9.812
4	Total-tetradioxins	26.08	4.935e4	6.332e4	0.879	0.78	0.77	690.0	YES	NO	bb	bb	15.277
5	Total-tetradioxins	25.59	1.586e4	2.014e4	0.879	0.79	0.77	329.3	YES	NO	bb	bb	4.880
6	Total-tetradioxins	24.99	3.778e2	5.081e2	0.879	0.74	0.77	8.2	YES	NO	bb	bb	0.120
7	Total-tetradioxins	24.72	1.264e3	1.828e3	0.879	0.69	0.77	19.4	YES	NO	bb	bb	0.419

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDD	31.93	1.723e5	1.064e5	1.154	1.62	1.55	2892.3	YES	NO	bb	bb	49.631
2	12378-PeCDD	31.51	1.462e5	9.086e4	0.995	1.61	1.55	2439.2	YES	NO	bb	bb	48.940
3	12479-PECDD	28.77	2.579e5	1.647e5	1.843	1.57	1.55	2695.7	YES	NO	bb	bb	47.113

ID: CS3S3, Name: 21092022, Date: 21-Sep-2021, Time: 09:36:53, Conditions: AUTOSPEC01, User: pk

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDD	36.52	1.680e5	1.341e5	0.950	1.25	1.24	1842.5	YES	NO	bb	bb	50.250
2	123678-HxCDD	36.11	1.709e5	1.390e5	1.009	1.23	1.24	1812.4	YES	NO	db	db	47.746
3	123478-HxCDD	36.00	1.668e5	1.350e5	1.027	1.24	1.24	1854.2	YES	NO	bd	bd	47.274
4	124679-HXCDD	34.00	1.899e5	1.502e5	1.125	1.26	1.24	1947.7	YES	NO	bb	bb	48.652

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	40.27	8.969e4	8.422e4	1.068	1.06	1.05	1668.6	YES	NO	bb	bb	46.663
2	1234679-HPCDD	39.22	1.024e5	9.586e4	1.211	1.07	1.05	2024.4	YES	NO	bb	bb	46.930

Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1368-TCDD	23.51	3.317e4	4.163e4	0.923	0.80	0.77	685.6	YES	NO	bb	bb	9.658
2	1289-TCDD	27.02	2.887e4	3.611e4	0.794	0.80	0.77	564.1	YES	NO	bb	bb	9.756
3	2378-TCDD	26.40	3.420e4	4.155e4	0.920	0.82	0.77	675.0	YES	NO	bb	bb	9.812
4	Total-tetradioxins	26.08	4.935e4	6.332e4	0.879	0.78	0.77	690.0	YES	NO	bb	bb	15.277
5	Total-tetradioxins	25.59	1.586e4	2.014e4	0.879	0.79	0.77	329.3	YES	NO	bb	bb	4.880
6	Total-tetradioxins	24.99	3.778e2	5.081e2	0.879	0.74	0.77	8.2	YES	NO	bb	bb	0.120
7	Total-tetradioxins	24.72	1.264e3	1.828e3	0.879	0.69	0.77	19.4	YES	NO	bb	bb	0.419
8	12389-PECDD	31.93	1.723e5	1.064e5	1.154	1.62	1.55	2892.3	YES	NO	bb	bb	49.631
9	12378-PeCDD	31.51	1.462e5	9.086e4	0.995	1.61	1.55	2439.2	YES	NO	bb	bb	48.940
10	12479-PECDD	28.77	2.579e5	1.647e5	1.843	1.57	1.55	2695.7	YES	NO	bb	bb	47.113
11	123789-HxCDD	36.52	1.680e5	1.341e5	0.950	1.25	1.24	1842.5	YES	NO	bb	bb	50.250
12	123678-HxCDD	36.11	1.709e5	1.390e5	1.009	1.23	1.24	1812.4	YES	NO	db	db	47.746
13	123478-HxCDD	36.00	1.668e5	1.350e5	1.027	1.24	1.24	1854.2	YES	NO	bd	bd	47.274
14	124679-HXCDD	34.00	1.899e5	1.502e5	1.125	1.26	1.24	1947.7	YES	NO	bb	bb	48.652
15	OCDD	45.02	1.263e5	1.414e5	1.181	0.89	0.89	1172.2	YES	NO	bb	bb	89.144
16	1234678-HpCDD	40.27	8.969e4	8.422e4	1.068	1.06	1.05	1668.6	YES	NO	bb	bb	46.663
17	1234679-HPCDD	39.22	1.024e5	9.586e4	1.211	1.07	1.05	2024.4	YES	NO	bb	bb	46.930

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.27	3.864e4	5.261e4	1.043	0.73	0.77	918.1	YES	NO	db	dd	9.035
2	Total-tetrafurans	27.12	6.860e2	1.014e3	1.192	0.68	0.77	15.0	YES	NO	bd	bd	0.147
3	2378-TCDF	25.78	4.116e4	5.541e4	1.108	0.74	0.77	982.7	YES	NO	bb	bb	9.003
4	1368-TCDF	22.24	5.174e4	6.945e4	1.425	0.75	0.77	1275.8	YES	NO	bb	bb	8.781
5	12389-PECDF	32.32	2.092e5	1.375e5	1.000	1.52	1.55	2187.2	YES	NO	bb	bb	44.031
6	23478-PeCDF	31.27	2.231e5	1.442e5	1.126	1.55	1.55	2430.3	YES	NO	bb	bb	44.526
7	12378-PeCDF	29.93	2.132e5	1.396e5	1.015	1.53	1.55	2275.2	YES	NO	bb	bb	44.121
8	Total-pentafurans	28.77	3.637e4	2.419e4	1.047	1.50	1.55	398.2	YES	NO	bb	bb	7.608
9	123789-HxCDF	36.94	1.584e5	1.327e5	1.030	1.19	1.24	1615.9	YES	NO	bb	bb	46.744
10	234678-HxCDF	35.90	1.895e5	1.593e5	1.052	1.19	1.24	2006.3	YES	NO	bb	bb	47.025
11	123678-HxCDF	35.03	2.041e5	1.721e5	1.037	1.19	1.24	2089.7	YES	NO	db	db	47.755
12	123478-HxCDF	34.89	1.998e5	1.706e5	1.017	1.17	1.24	2051.7	YES	NO	bd	bd	47.576
13	123468-HXCDF	33.22	2.116e5	1.798e5	1.087	1.18	1.24	2093.1	YES	NO	bb	bb	47.056
14	1234678-HpCDF	38.78	1.351e5	1.303e5	1.327	1.04	1.05	1876.7	YES	NO	bd	bd	45.124
15	1234789-HpCDF	41.02	1.034e5	1.018e5	1.283	1.02	1.05	1196.9	YES	NO	bd	bd	45.873
16	OCDF	45.27	1.282e5	1.447e5	1.447	0.89	0.89	2952.5	YES	NO	bb	bb	74.148
17	13468-PECDF	27.11	3.651e5	2.378e5	1.376	1.54	1.55	8140.0	YES	NO	bb	bb	55.604
18	1368-TCDD	23.51	3.317e4	4.163e4	0.923	0.80	0.77	685.6	YES	NO	bb	bb	9.658
19	1289-TCDD	27.02	2.887e4	3.611e4	0.794	0.80	0.77	564.1	YES	NO	bb	bb	9.756
20	2378-TCDD	26.40	3.420e4	4.155e4	0.920	0.82	0.77	675.0	YES	NO	bb	bb	9.812
21	Total-tetradioxins	26.08	4.935e4	6.332e4	0.879	0.78	0.77	690.0	YES	NO	bb	bb	15.277
22	Total-tetradioxins	25.59	1.586e4	2.014e4	0.879	0.79	0.77	329.3	YES	NO	bb	bb	4.880
23	Total-tetradioxins	24.99	3.778e2	5.081e2	0.879	0.74	0.77	8.2	YES	NO	bb	bb	0.120
24	Total-tetradioxins	24.72	1.264e3	1.828e3	0.879	0.69	0.77	19.4	YES	NO	bb	bb	0.419
25	12389-PECDD	31.93	1.723e5	1.064e5	1.154	1.62	1.55	2892.3	YES	NO	bb	bb	49.631
26	12378-PeCDD	31.51	1.462e5	9.086e4	0.995	1.61	1.55	2439.2	YES	NO	bb	bb	48.940
27	12479-PECDD	28.77	2.579e5	1.647e5	1.843	1.57	1.55	2695.7	YES	NO	bb	bb	47.113
28	123789-HxCDD	36.52	1.680e5	1.341e5	0.950	1.25	1.24	1842.5	YES	NO	bb	bb	50.250
29	123678-HxCDD	36.11	1.709e5	1.390e5	1.009	1.23	1.24	1812.4	YES	NO	db	db	47.746
30	123478-HxCDD	36.00	1.668e5	1.350e5	1.027	1.24	1.24	1854.2	YES	NO	bd	bd	47.274
31	124679-HXCDD	34.00	1.899e5	1.502e5	1.125	1.26	1.24	1947.7	YES	NO	bb	bb	48.652
32	OCDD	45.02	1.263e5	1.414e5	1.181	0.89	0.89	1172.2	YES	NO	bb	bb	89.144
33	1234678-HpCDD	40.27	8.969e4	8.422e4	1.068	1.06	1.05	1668.6	YES	NO	bb	bb	46.663
34	1234679-HPCDD	39.22	1.024e5	9.586e4	1.211	1.07	1.05	2024.4	YES	NO	bb	bb	46.930

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PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	24.69	9.215e3					0.9	NO		bb		
2	FUNCTION1 PFK	24.48	5.666e3					0.9	NO		bb		
3	FUNCTION1 PFK	24.17	1.394e4					1.5	NO		bb		
4	FUNCTION1 PFK	23.36	9.190e3					1.1	NO		bb		
5	FUNCTION1 PFK	22.16	1.118e4					1.3	NO		bb		
6	FUNCTION1 PFK	21.60	2.300e3					0.5	NO		db		
7	FUNCTION1 PFK	21.53	1.838e4					1.6	NO		bd		
8	FUNCTION1 PFK	21.33	8.220e3					1.3	NO		bb		
9	FUNCTION1 PFK	21.27	9.109e3					1.1	NO		bb		
10	FUNCTION1 PFK	21.21	1.268e4					1.8	NO		bb		
11	FUNCTION1 PFK	27.73	1.969e4					1.8	NO		db		
12	FUNCTION1 PFK	27.65	2.934e4					2.1	NO		bd		
13	FUNCTION1 PFK	27.18	4.123e3					0.7	NO		bb		
14	FUNCTION1 PFK	26.20	2.136e4					1.7	NO		bb		
15	FUNCTION1 PFK	26.12	2.672e3					0.7	NO		bb		
16	FUNCTION1 PFK	25.72	2.260e4					1.4	NO		bb		
17	FUNCTION1 PFK	25.53	4.058e3					0.7	NO		bb		
18	FUNCTION1 PFK	25.34	1.900e3					0.5	NO		bb		
19	FUNCTION1 PFK	25.00	1.731e3					0.4	NO		bb		

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PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	28.80	5.340e3					1.2	NO		bb		0.000
2	FUNCTION2 PFK	28.65	4.843e3					1.3	NO		bb		0.000
3	FUNCTION2 PFK	28.51	4.870e3					1.3	NO		bb		0.000
4	FUNCTION2 PFK	28.34	1.859e3					0.7	NO		bb		0.000
5	FUNCTION2 PFK	28.27	8.371e3					1.9	NO		bb		0.000
6	FUNCTION2 PFK	28.23	5.283e3					1.3	NO		bb		0.000
7	FUNCTION2 PFK	32.67	6.547e3					1.3	NO		bb		0.000
8	FUNCTION2 PFK	32.04	5.229e3					1.1	NO		bb		0.000
9	FUNCTION2 PFK	31.74	8.063e2					0.5	NO		bb		0.000
10	FUNCTION2 PFK	31.65	3.658e3					0.8	NO		bb		0.000
11	FUNCTION2 PFK	31.05	1.268e4					1.5	NO		bb		0.000
12	FUNCTION2 PFK	30.20	1.055e4					1.6	NO		bb		0.000
13	FUNCTION2 PFK	29.41	7.220e3					1.3	NO		db		0.000
14	FUNCTION2 PFK	29.37	2.991e3					0.9	NO		bd		0.000
15	FUNCTION2 PFK	29.29	4.047e3					1.0	NO		bb		0.000
16	FUNCTION2 PFK	28.90	1.628e3					0.6	NO		db		0.000
17	FUNCTION2 PFK	28.85	6.091e3					1.5	NO		bd		0.000

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	33.98	7.733e3					1.5	NO		bb		0.000
2	FUNCTION3 PFK	33.72	1.198e4					1.6	NO		bb		0.000
3	FUNCTION3 PFK	33.45	5.862e3					1.2	NO		bb		0.000
4	FUNCTION3 PFK	33.41	2.375e3					0.7	NO		bb		0.000
5	FUNCTION3 PFK	37.82	2.907e3					0.8	NO		bb		0.000
6	FUNCTION3 PFK	37.76	1.846e4					1.6	NO		bb		0.000
7	FUNCTION3 PFK	37.54	1.890e4					2.1	NO		bb		0.000
8	FUNCTION3 PFK	36.91	5.557e3					1.5	NO		bb		0.000
9	FUNCTION3 PFK	36.76	8.221e3					1.8	NO		db		0.000
10	FUNCTION3 PFK	36.72	1.471e4					1.6	NO		bd		0.000
11	FUNCTION3 PFK	36.54	7.534e3					1.7	NO		db		0.000
12	FUNCTION3 PFK	36.53	7.376e3					1.2	NO		bd		0.000
13	FUNCTION3 PFK	36.40	4.701e4					3.9	YES		bb		0.000
14	FUNCTION3 PFK	36.36	6.801e3					2.0	NO		bb		0.000
15	FUNCTION3 PFK	36.26	9.644e2					0.4	NO		bb		0.000
16	FUNCTION3 PFK	35.86	8.710e3					1.8	NO		bb		0.000
17	FUNCTION3 PFK	35.68	6.610e3					1.3	NO		bb		0.000
18	FUNCTION3 PFK	35.35	1.115e3					0.5	NO		bb		0.000
19	FUNCTION3 PFK	34.73	1.154e4					2.0	NO		bb		0.000
20	FUNCTION3 PFK	34.41	2.655e4					2.9	NO		bb		0.000

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	41.17	4.850e3					1.3	NO		db		
2	FUNCTION4 PFK	41.14	3.994e3					1.0	NO		bd		
3	FUNCTION4 PFK	40.89	1.535e3					0.7	NO		bb		
4	FUNCTION4 PFK	40.58	5.300e3					1.1	NO		bb		
5	FUNCTION4 PFK	40.08	2.606e3					0.8	NO		db		
6	FUNCTION4 PFK	40.04	4.409e3					1.2	NO		bd		
7	FUNCTION4 PFK	39.47	1.652e3					0.7	NO		bb		
8	FUNCTION4 PFK	39.18	4.056e3					1.0	NO		bb		
9	FUNCTION4 PFK	39.04	6.700e2					0.4	NO		bb		
10	FUNCTION4 PFK	38.98	5.033e3					1.4	NO		db		
11	FUNCTION4 PFK	38.93	5.054e3					1.3	NO		bd		
12	FUNCTION4 PFK	38.88	5.318e3					1.3	NO		bb		
13	FUNCTION4 PFK	38.73	5.917e2					0.4	NO		bb		
14	FUNCTION4 PFK	38.57	1.631e4					1.4	NO		bb		
15	FUNCTION4 PFK	38.03	9.334e3					1.8	NO		bb		
16	FUNCTION4 PFK	42.53	1.247e4					2.6	NO		bb		
17	FUNCTION4 PFK	42.35	2.016e4					2.8	NO		bb		
18	FUNCTION4 PFK	41.92	8.142e2					0.5	NO		bb		
19	FUNCTION4 PFK	41.82	1.476e3					0.6	NO		bb		
20	FUNCTION4 PFK	41.77	8.480e3					1.6	NO		bb		
21	FUNCTION4 PFK	41.60	1.937e3					0.7	NO		bb		
22	FUNCTION4 PFK	41.45	1.991e3					0.7	NO		bb		
23	FUNCTION4 PFK	41.28	2.348e3					0.9	NO		bb		
24	FUNCTION4 PFK	41.24	1.750e3					0.8	NO		bb		

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PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	43.62	2.771e3					0.9	NO		bb		
2	FUNCTION5 PFK	43.36	1.159e4					3.5	YES		db		
3	FUNCTION5 PFK	43.32	4.810e4					6.2	YES		dd		
4	FUNCTION5 PFK	43.24	1.028e5					10.6	YES		dd		
5	FUNCTION5 PFK	43.13	8.104e4					16.7	YES		dd		
6	FUNCTION5 PFK	43.05	2.004e5					22.0	YES		bd		
7	FUNCTION5 PFK	45.39	1.619e3					0.9	NO		bb		
8	FUNCTION5 PFK	45.26	2.110e3					0.9	NO		bb		
9	FUNCTION5 PFK	45.10	1.608e4					2.3	NO		bb		
10	FUNCTION5 PFK	44.98	2.484e3					1.4	NO		db		
11	FUNCTION5 PFK	44.95	6.624e3					2.3	NO		dd		
12	FUNCTION5 PFK	44.91	1.604e4					3.5	YES		dd		
13	FUNCTION5 PFK	44.86	1.476e4					2.9	NO		bd		
14	FUNCTION5 PFK	44.78	9.261e3					2.3	NO		db		
15	FUNCTION5 PFK	44.73	9.014e3					2.5	NO		bd		
16	FUNCTION5 PFK	44.43	2.533e3					1.4	NO		db		
17	FUNCTION5 PFK	44.40	4.565e3					1.5	NO		bd		
18	FUNCTION5 PFK	44.07	1.006e3					0.7	NO		bb		
19	FUNCTION5 PFK	43.92	7.783e3					2.3	NO		bb		
20	FUNCTION5 PFK	43.82	7.392e3					2.4	NO		db		
21	FUNCTION5 PFK	43.80	3.417e3					1.9	NO		bd		
22	FUNCTION5 PFK	43.72	4.416e2					0.5	NO		bb		
23	FUNCTION5 PFK	45.88	7.009e2					0.8	NO		bb		
24	FUNCTION5 PFK	45.79	3.639e3					1.6	NO		bb		
25	FUNCTION5 PFK	45.70	8.478e2					0.7	NO		db		
26	FUNCTION5 PFK	45.67	4.758e2					0.5	NO		bd		
27	FUNCTION5 PFK	45.49	3.967e3					1.3	NO		db		
28	FUNCTION5 PFK	45.44	4.113e3					1.5	NO		bd		

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	27.86	7.614e1					2.2	NO		db		0.000
2	FUNCTION1 HXCD...	27.64	2.304e2					4.5	YES		bd		0.000
3	FUNCTION1 HXCD...	27.12	1.416e2					3.4	YES		bb		0.000
4	FUNCTION1 HXCD...	24.11	2.084e2					2.6	NO		bb		0.000

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ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	26.79	7.226e1					3.8	YES		bb		0.000
2	FUNCTION1 HPCD...	26.12	1.169e2					2.4	NO		bb		0.000
3	FUNCTION1 HPCD...	25.13	1.398e2					2.0	NO		bb		0.000
4	FUNCTION1 HPCD...	23.15	8.494e1					2.4	NO		bb		0.000
5	FUNCTION1 HPCD...	27.14	1.125e2					2.3	NO		bb		0.000

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	31.61	7.335e1					3.3	YES		bb		0.000
2	FUNCTION2 HPCD...	31.09	3.298e2					9.1	YES		bb		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	36.13	7.636e1					4.1	YES		db		0.000
2	FUNCTION3 OCDPE	35.99	1.074e2					3.4	YES		bd		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	42.62	8.073e1					2.1	NO		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

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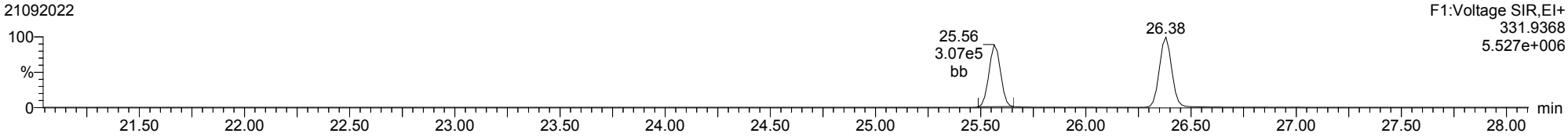
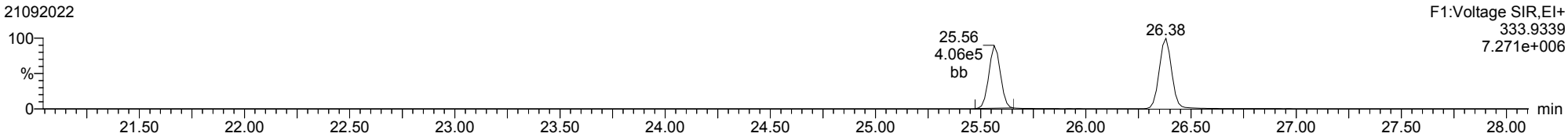
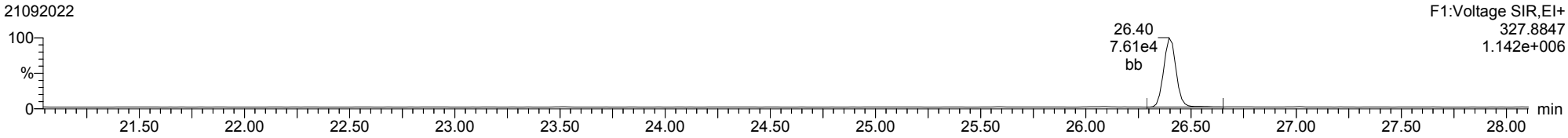
13C-1234-TCDD



13C-1234-TCDD



37CL-2378-TCDD



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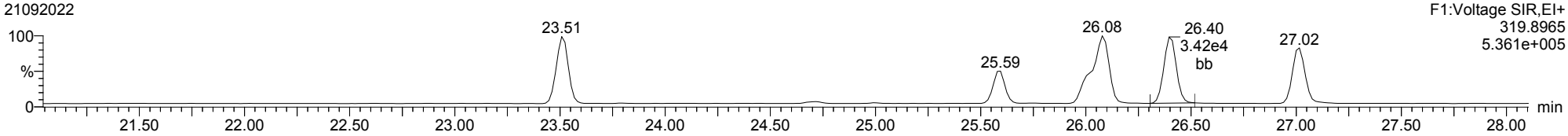
2378-TCDD



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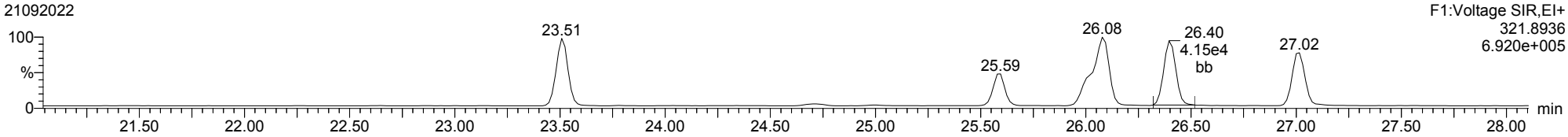

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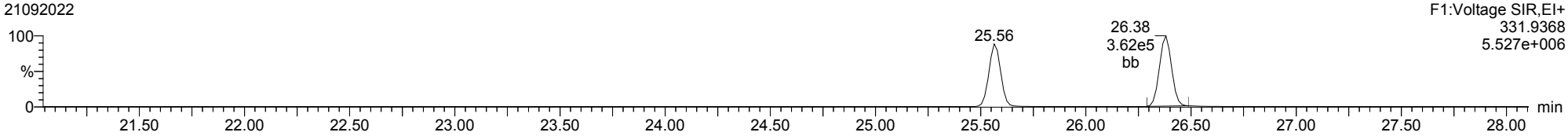

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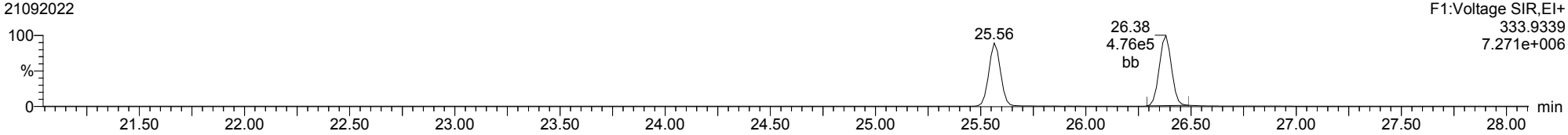

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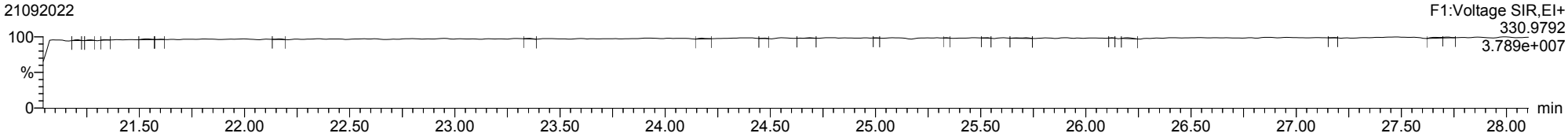

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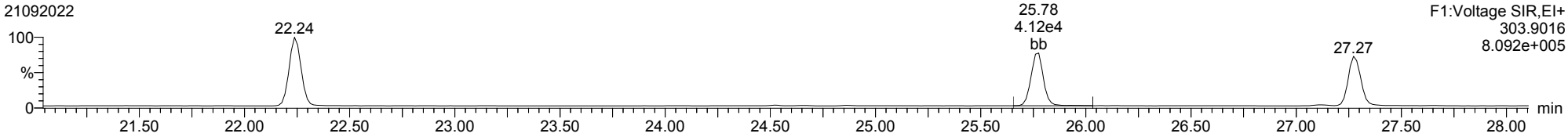

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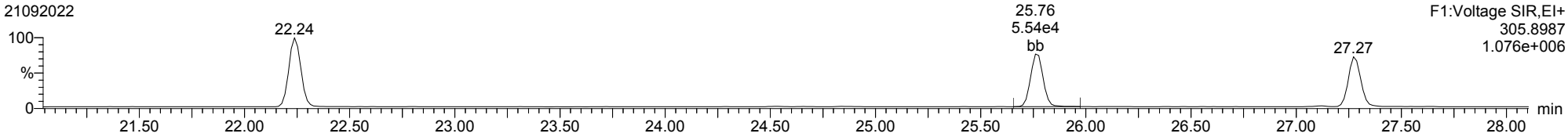

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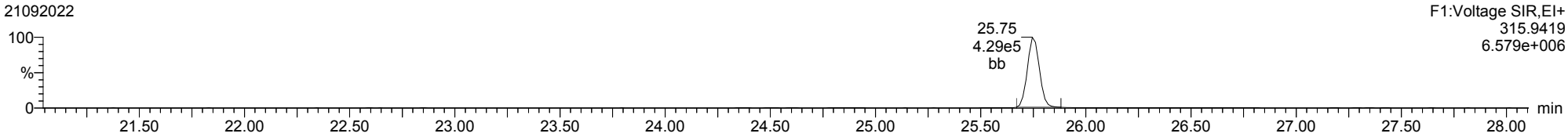

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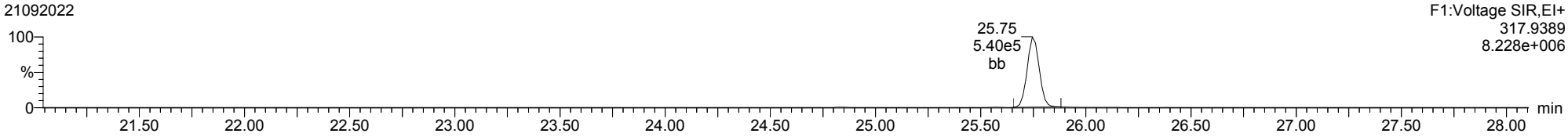

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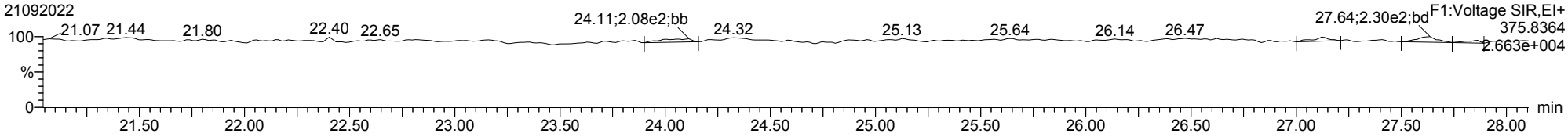

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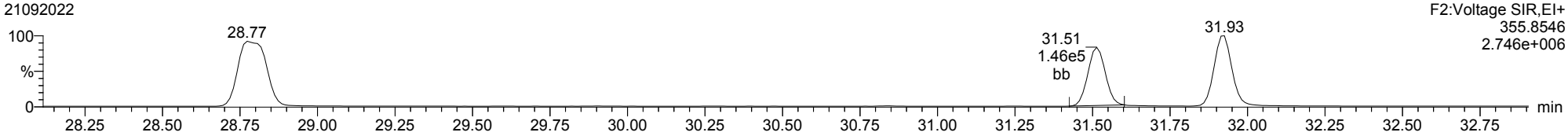
12378-PeCDD



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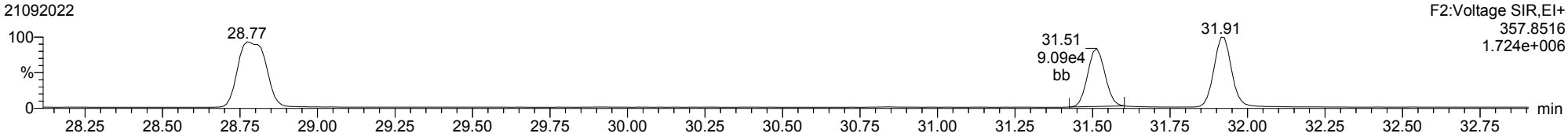

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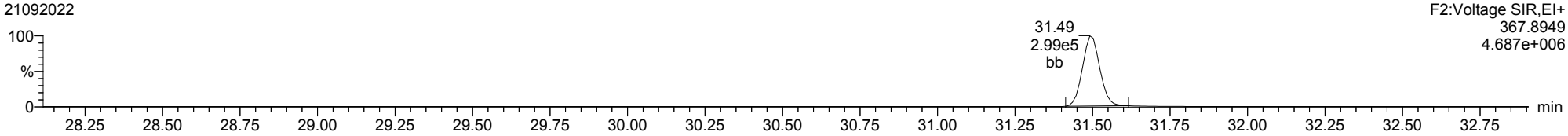

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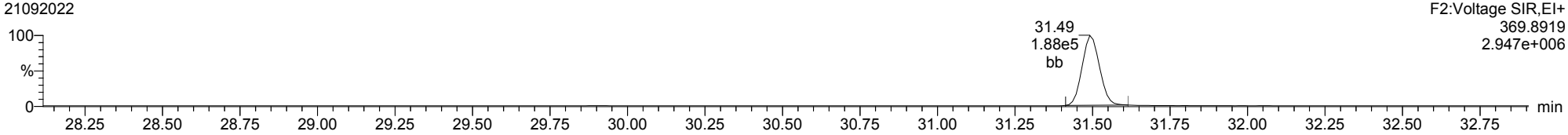

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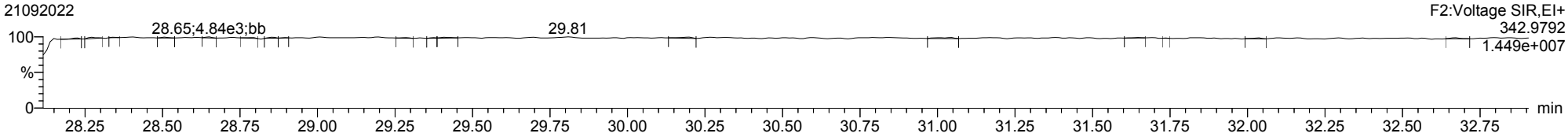

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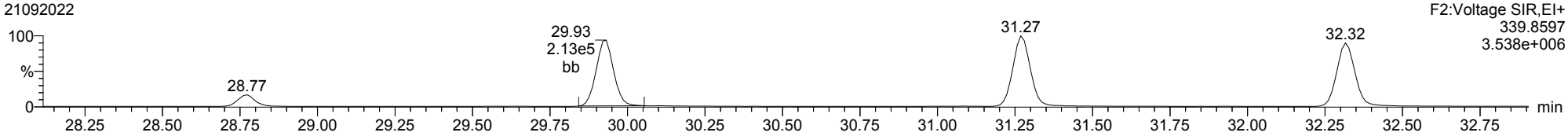

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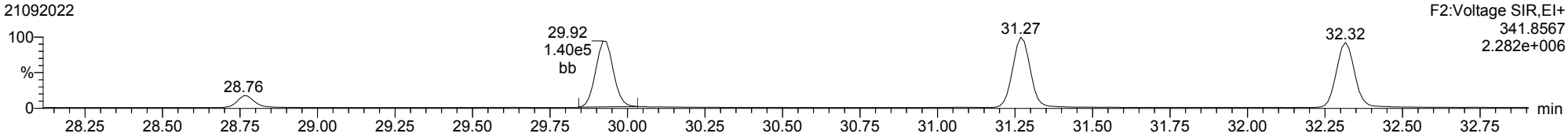

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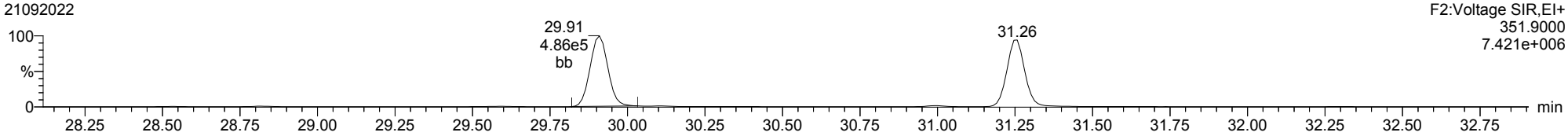

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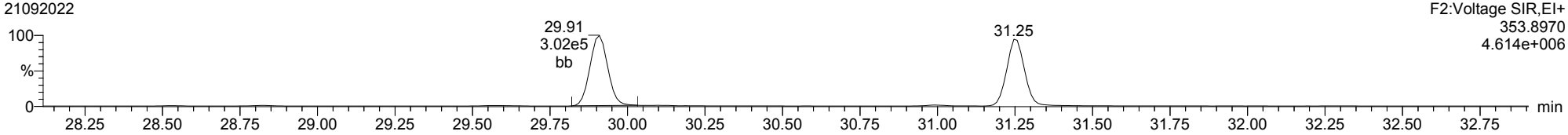
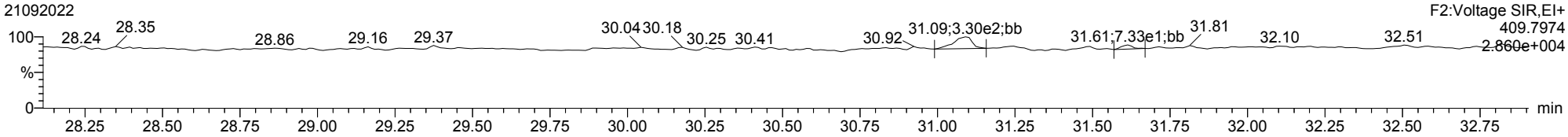


FUNCTION2 HPCDPE



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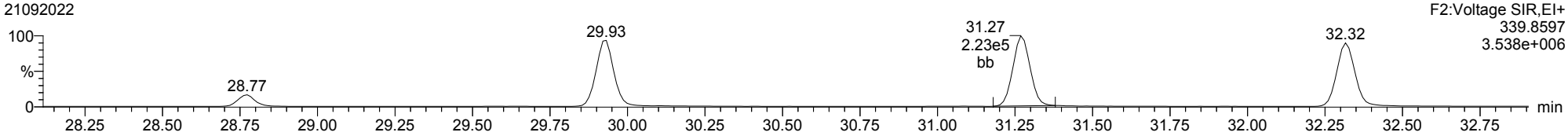

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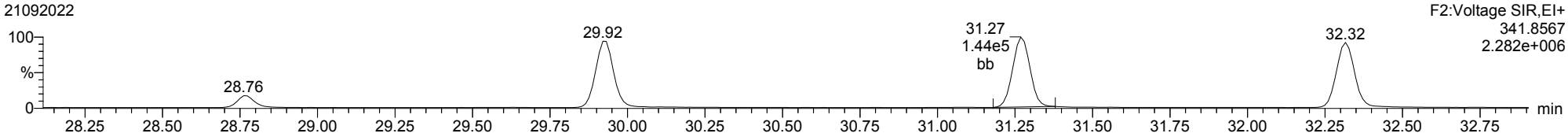

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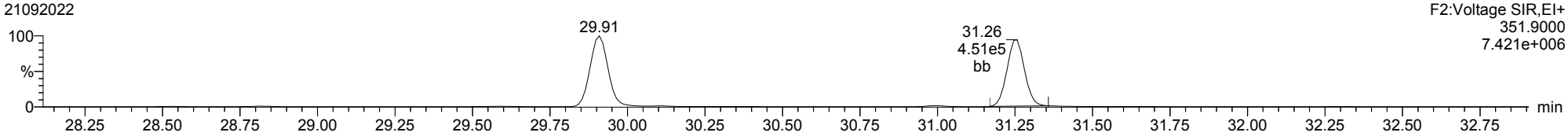

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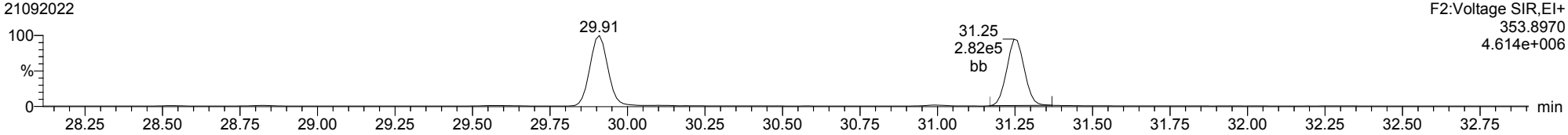

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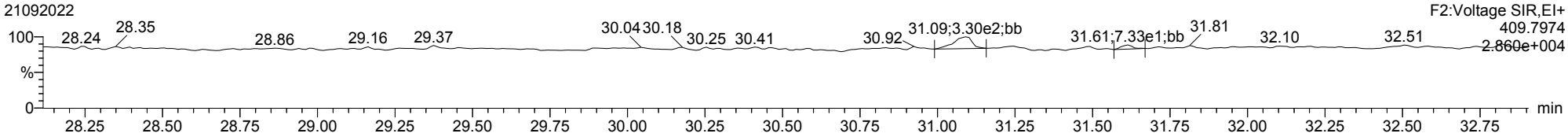

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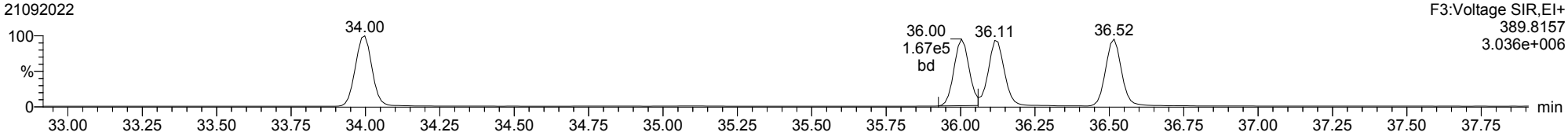

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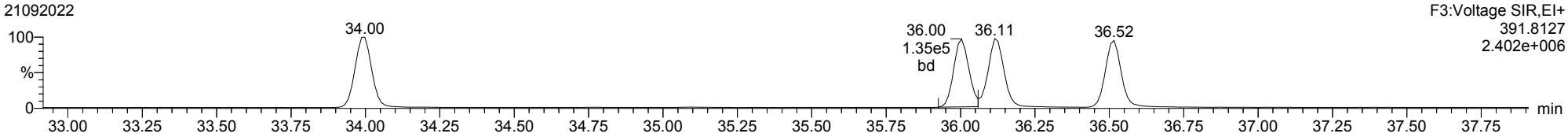

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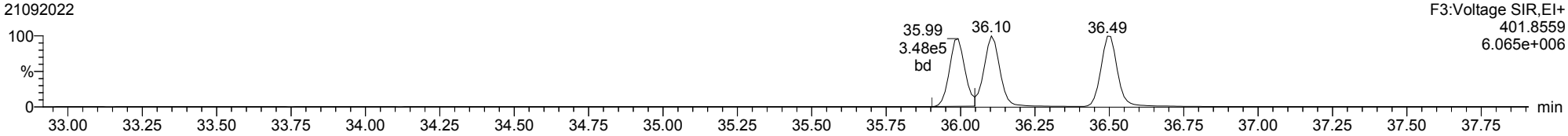

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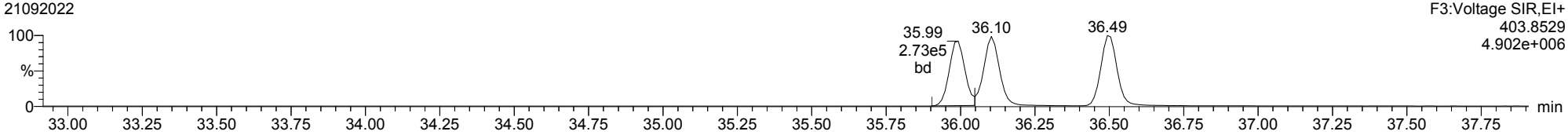

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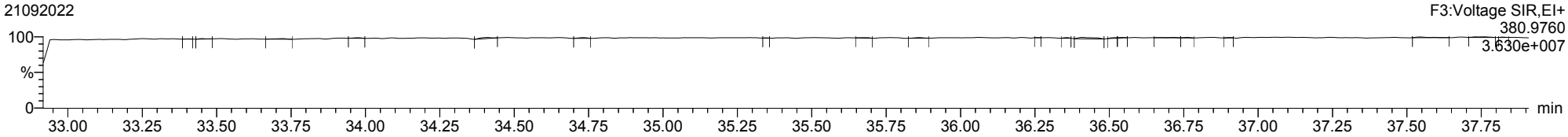

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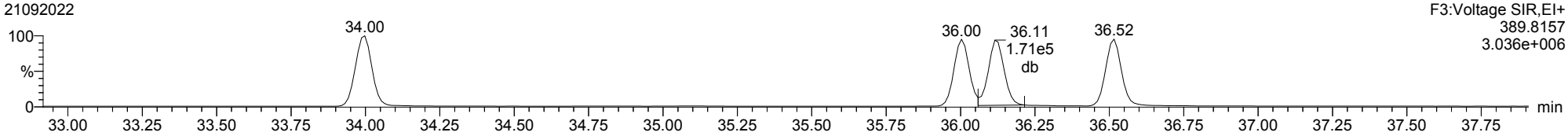

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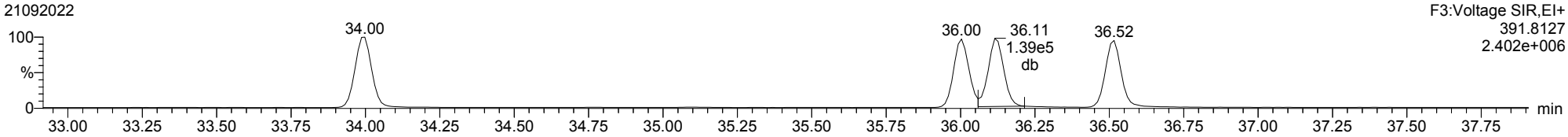

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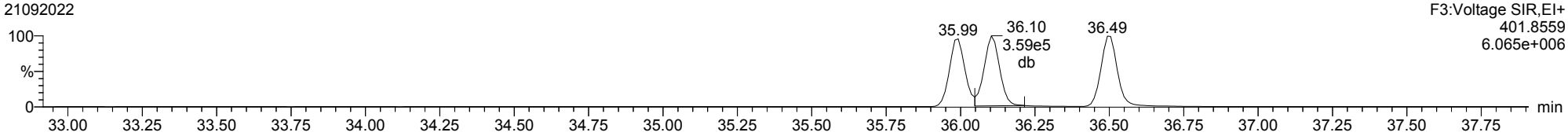

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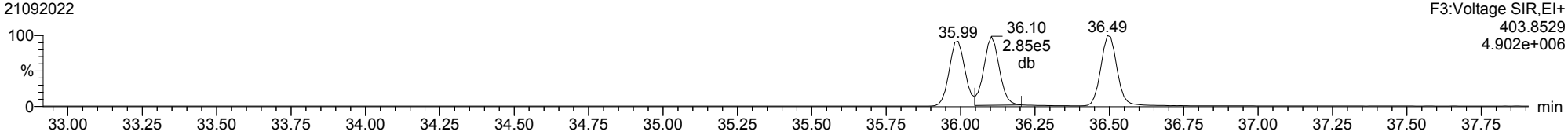

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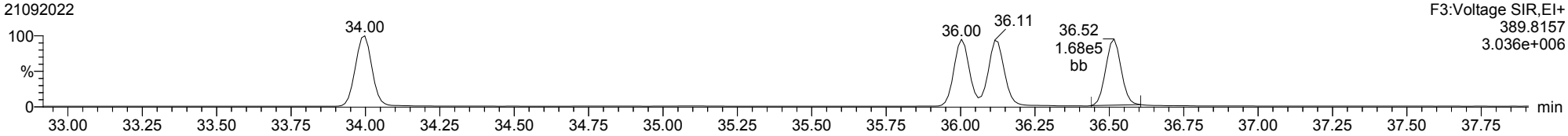

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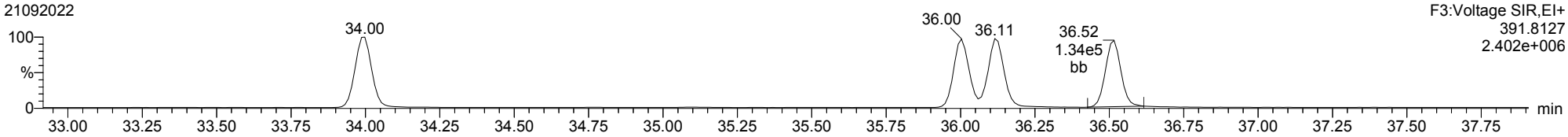

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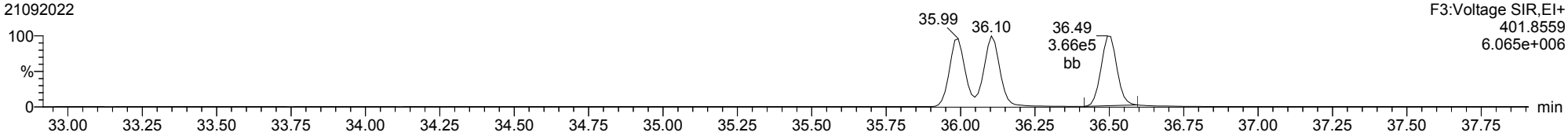

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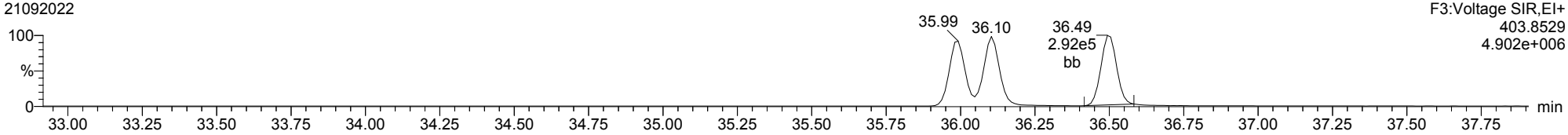

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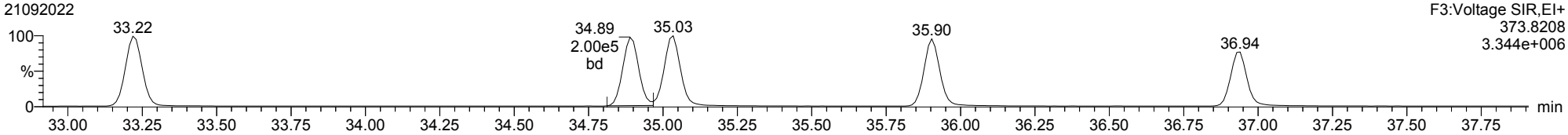

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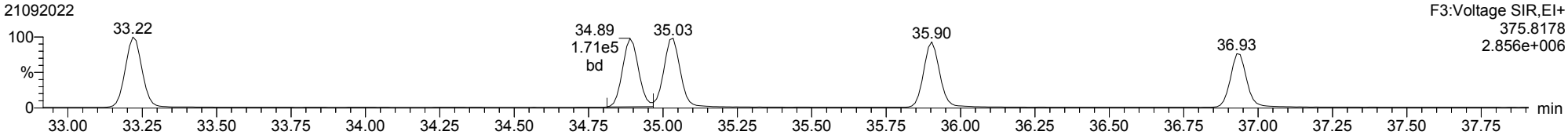

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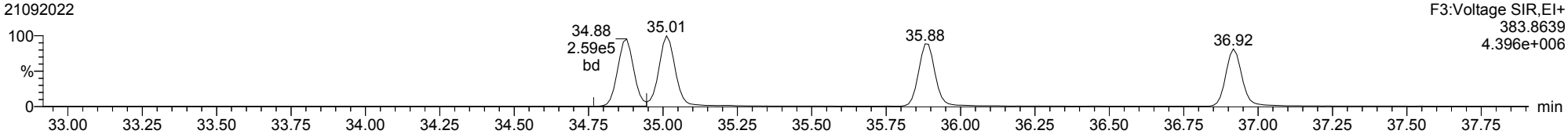

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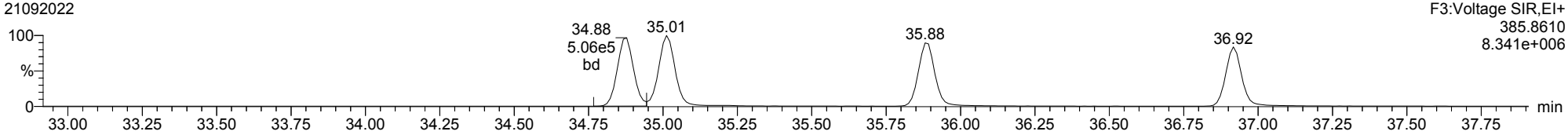

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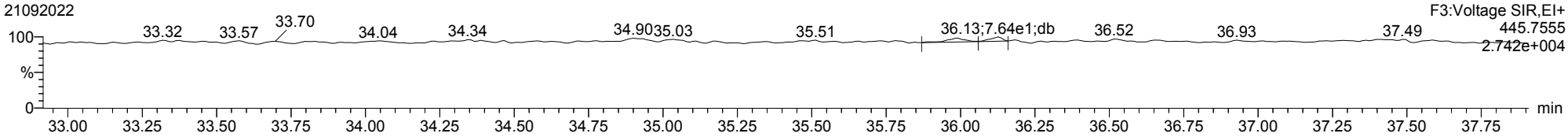

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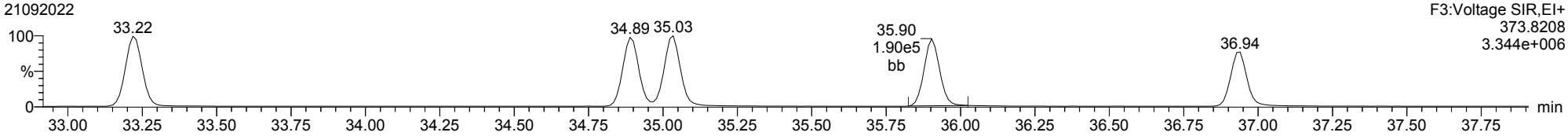
234678-HxCDF



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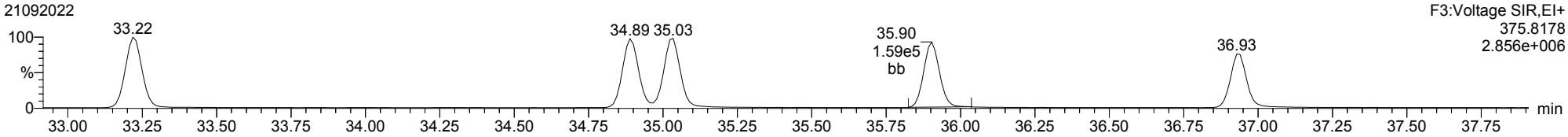

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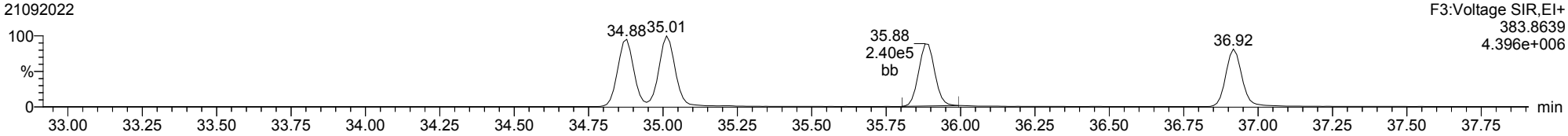

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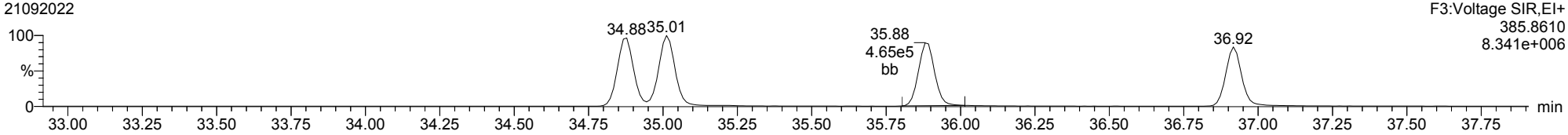

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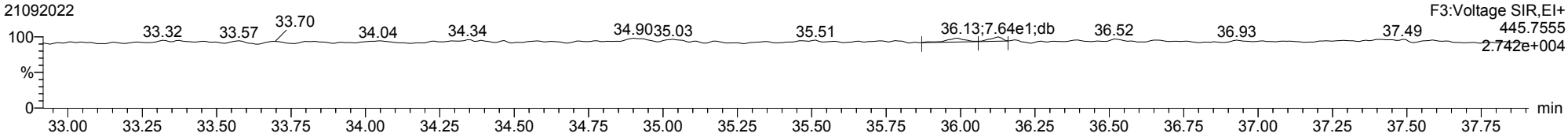

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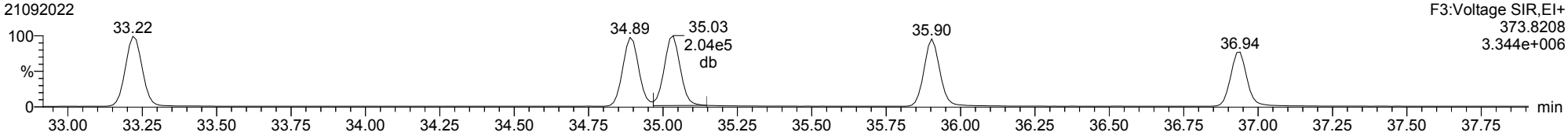

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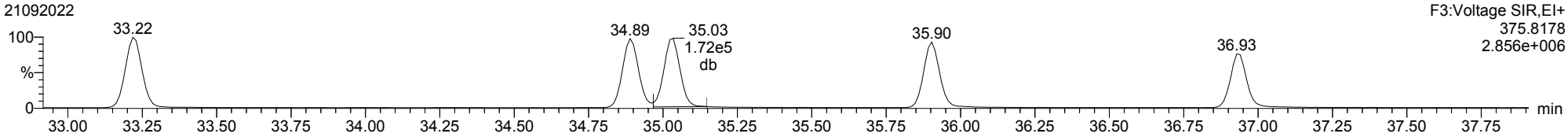

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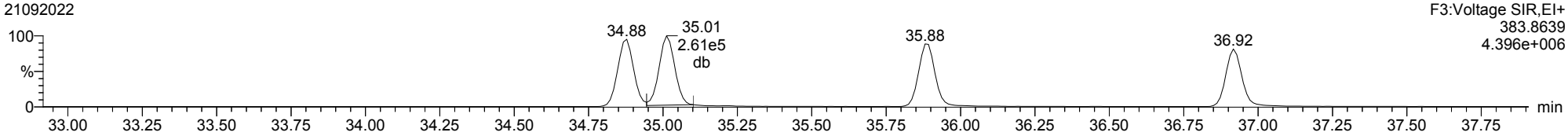

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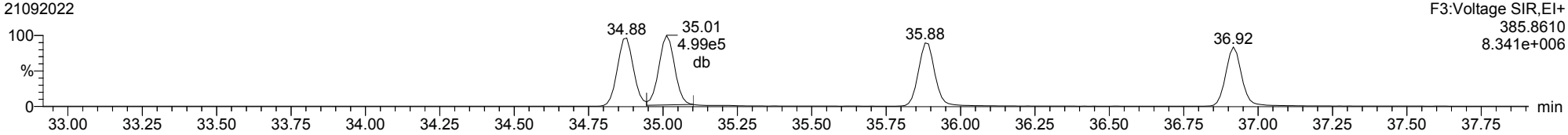

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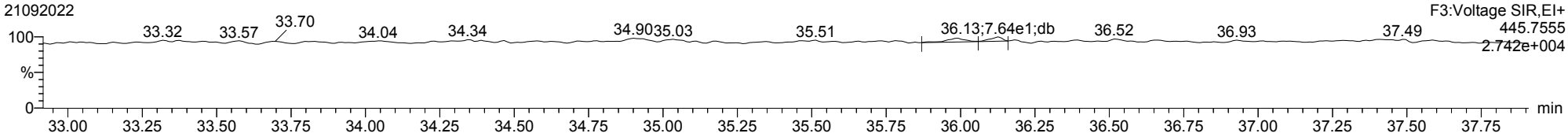

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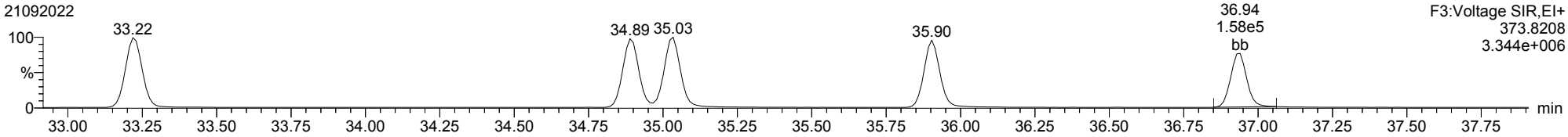

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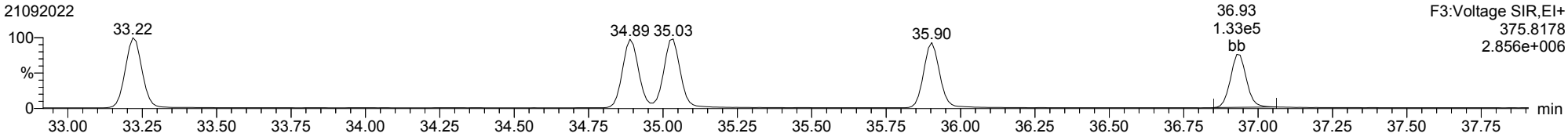

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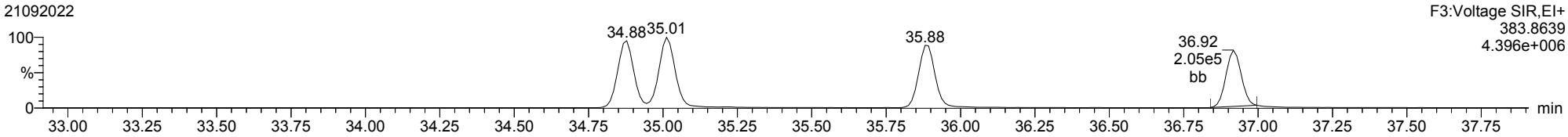

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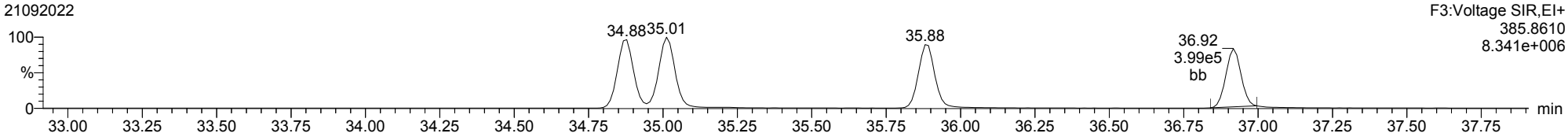

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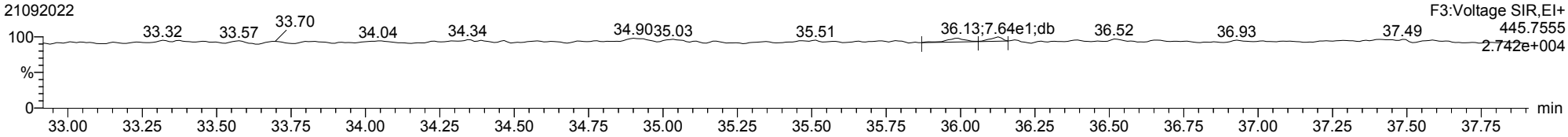

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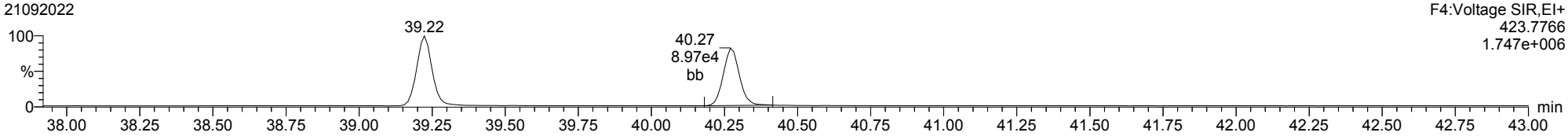

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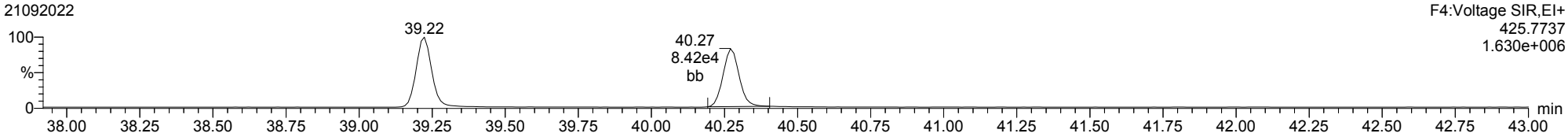

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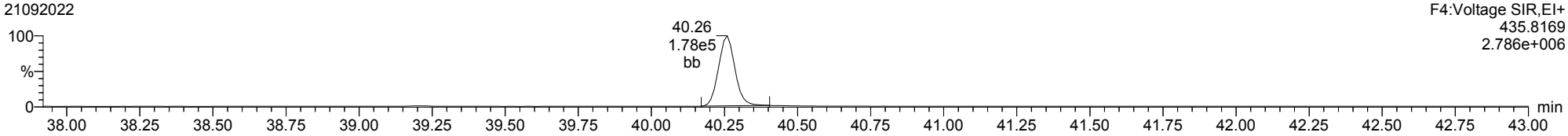

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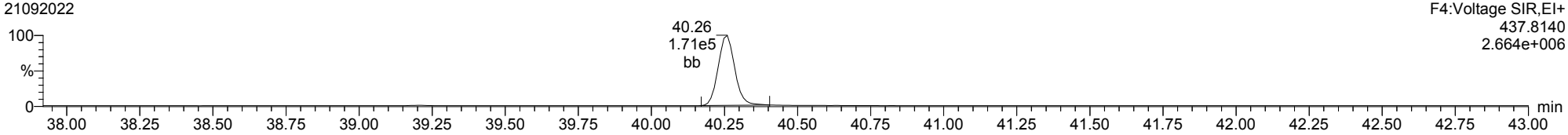

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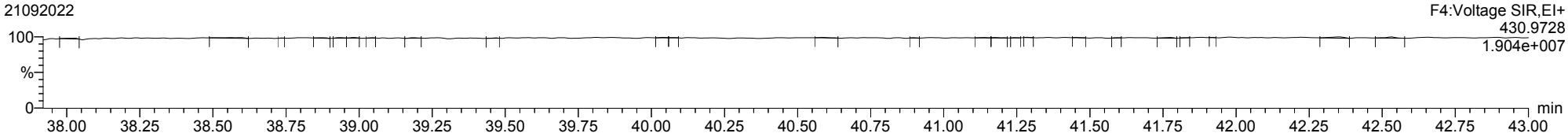

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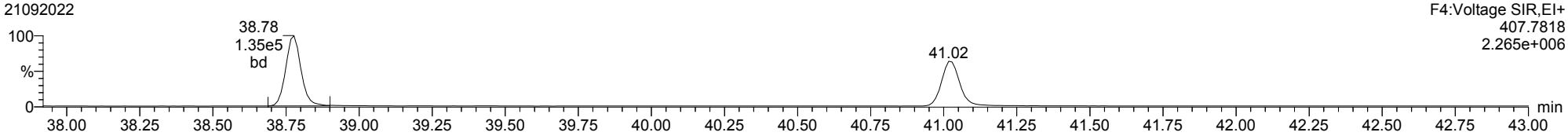

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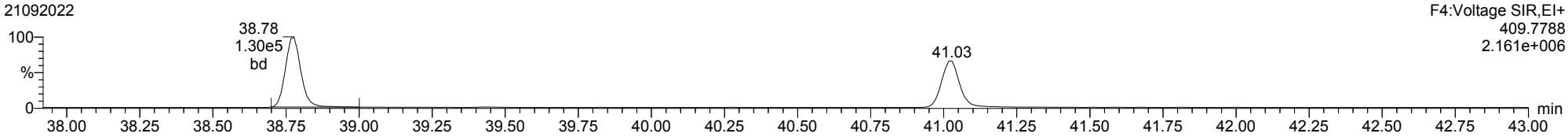

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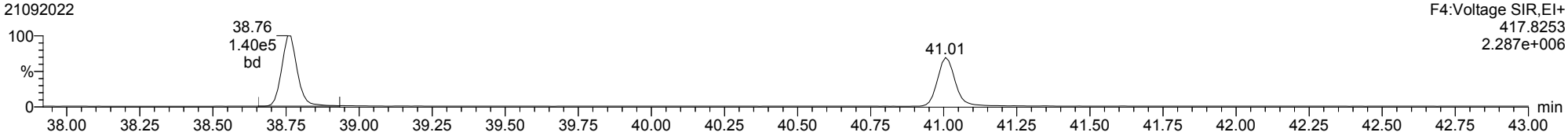

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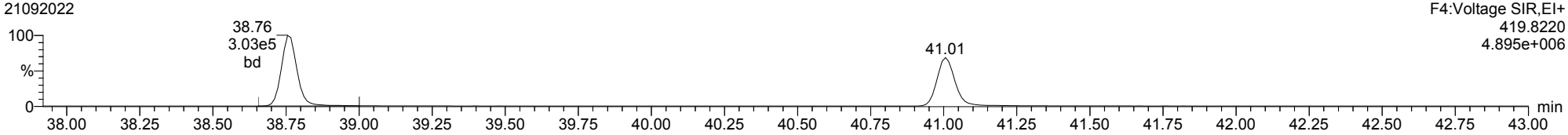

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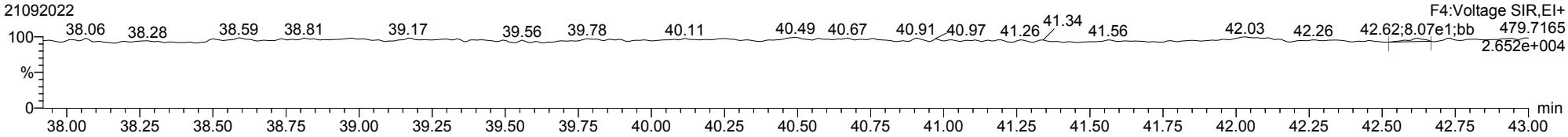

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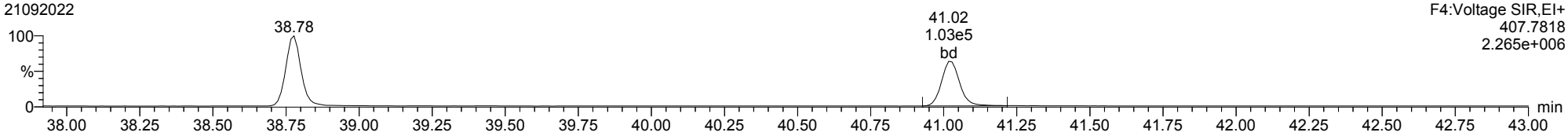

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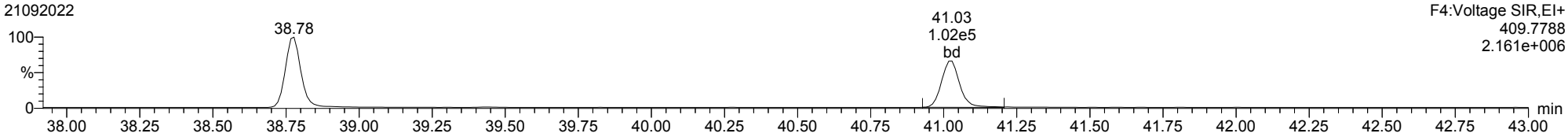

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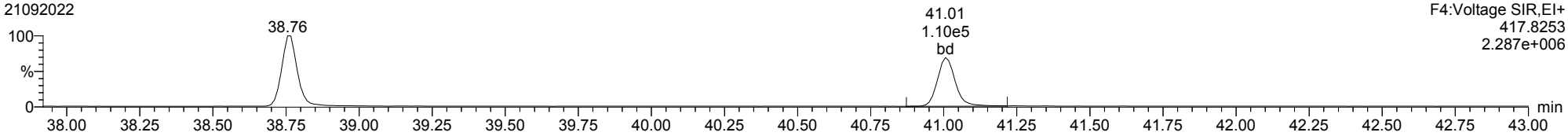

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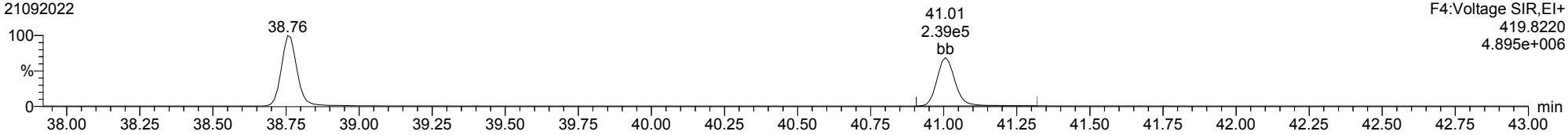

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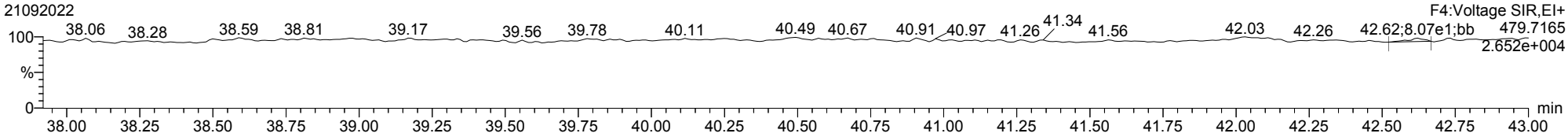

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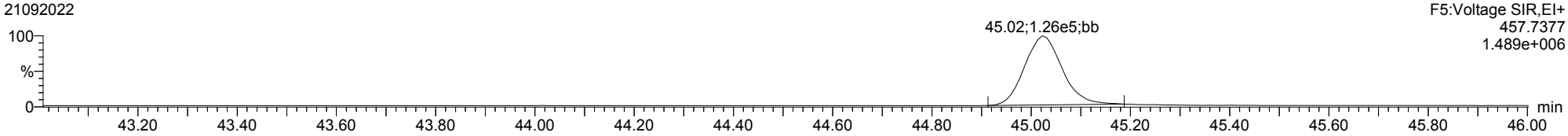

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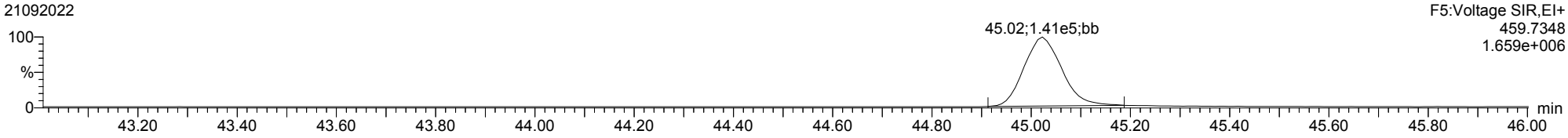

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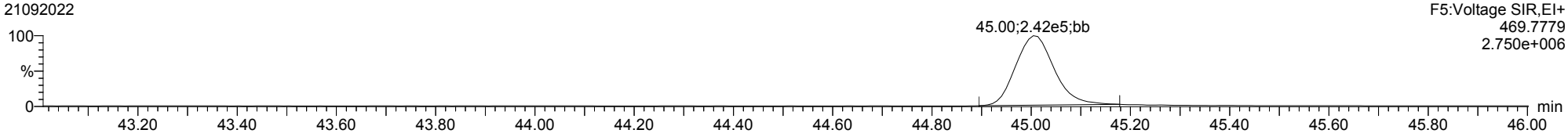

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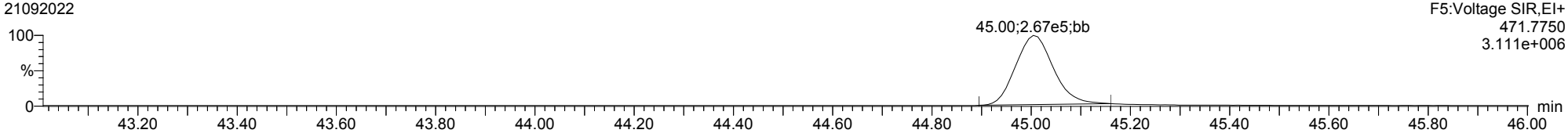

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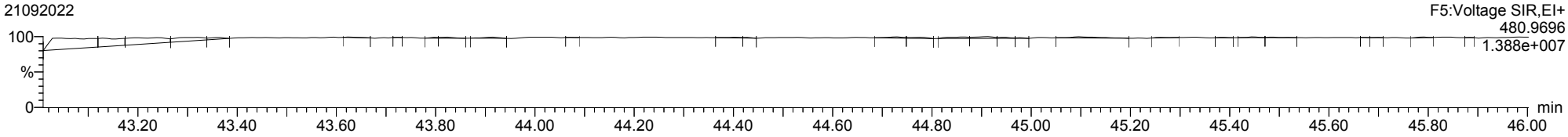

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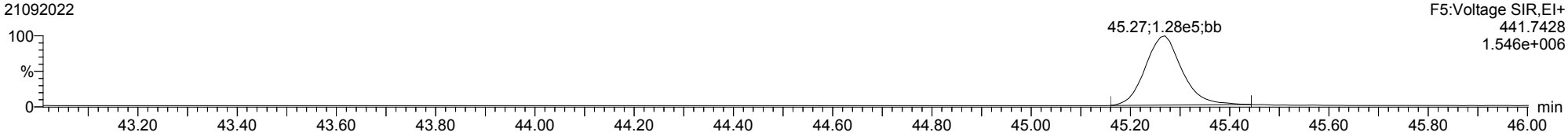

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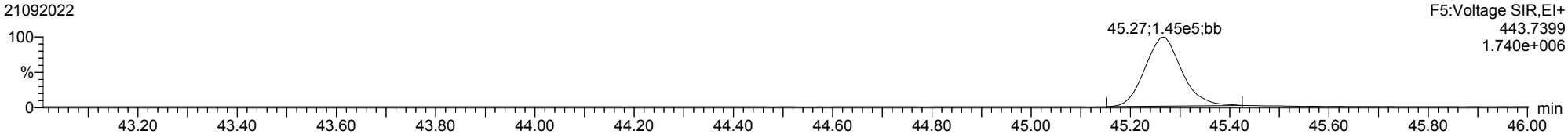

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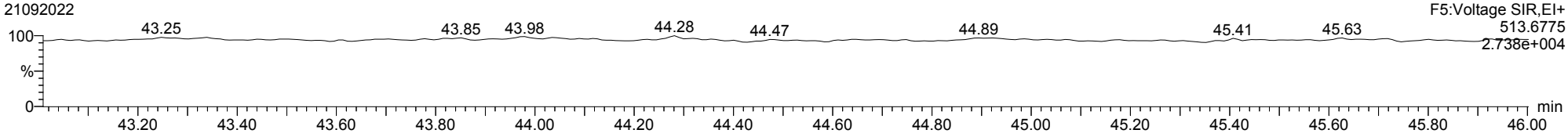

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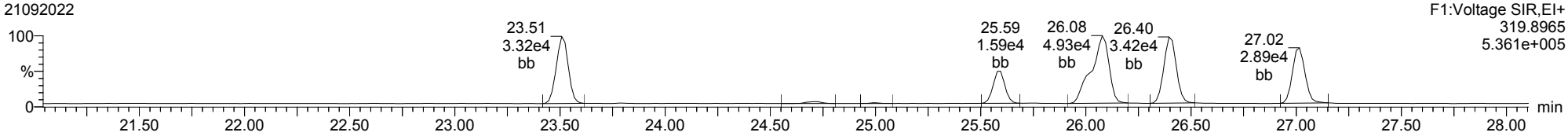

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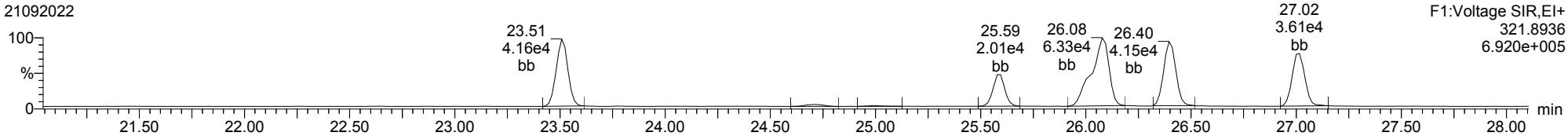

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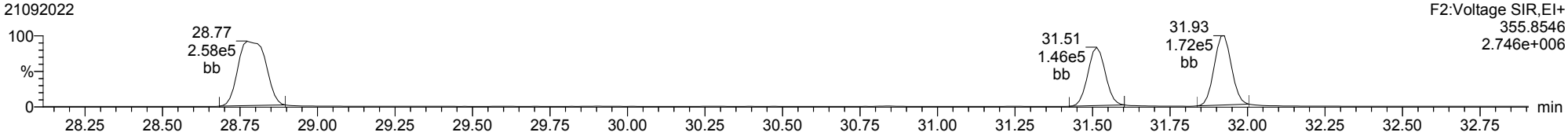

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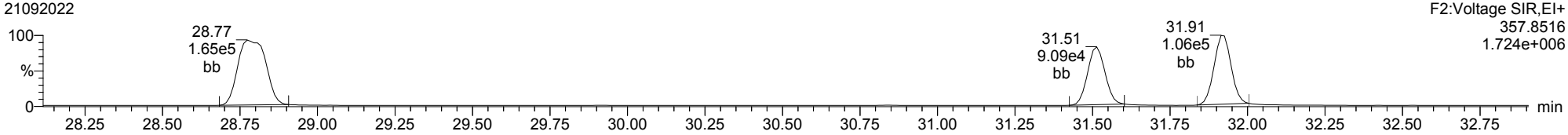

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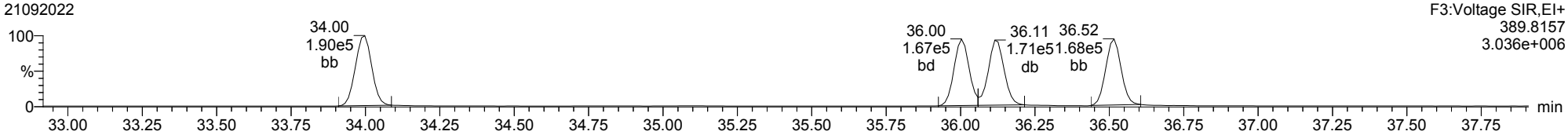

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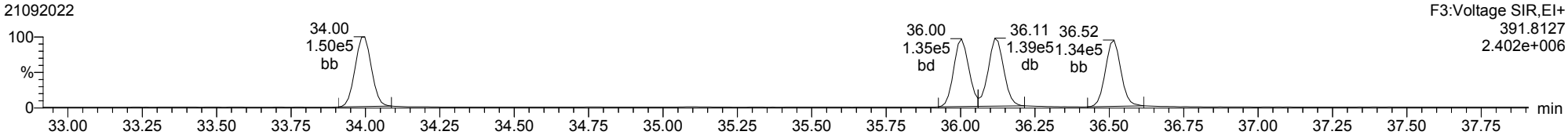

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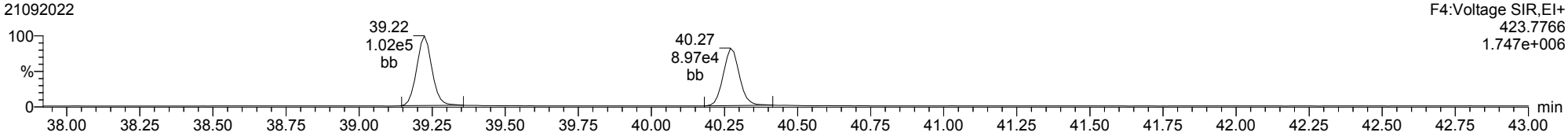

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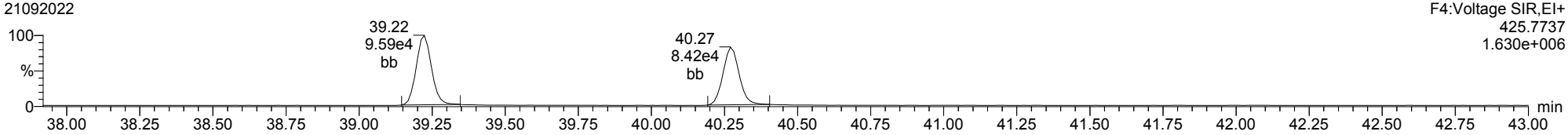

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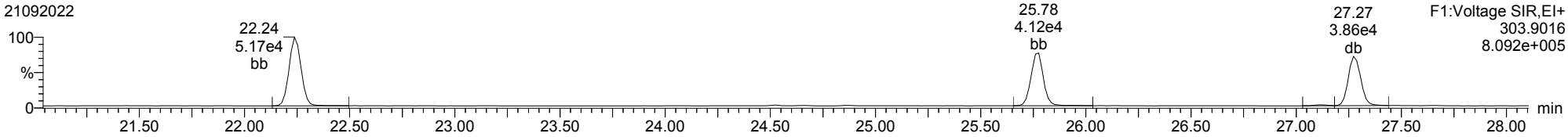
Total-tetrafurans



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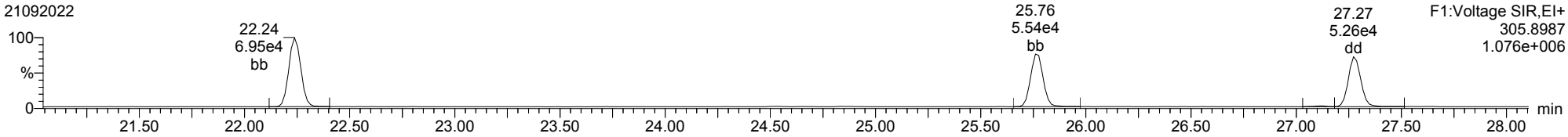

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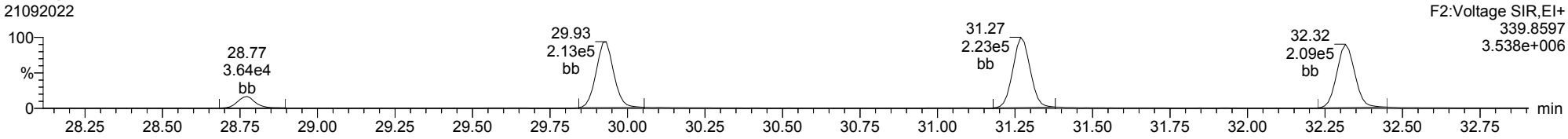

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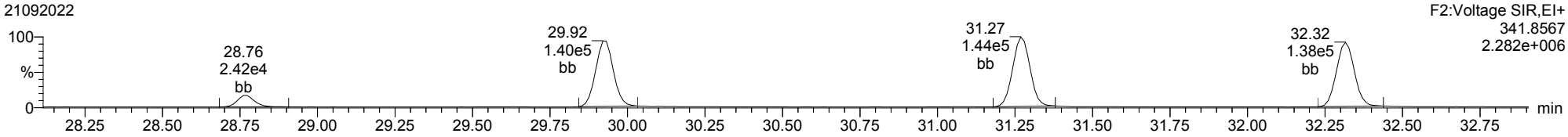

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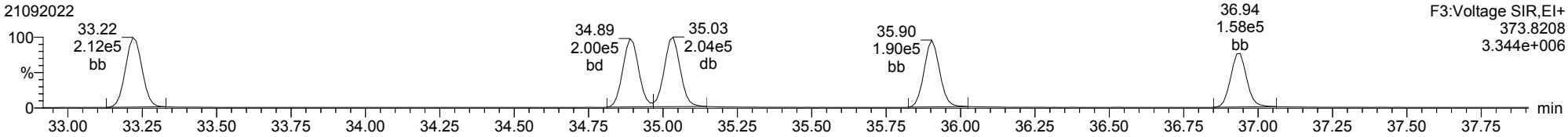

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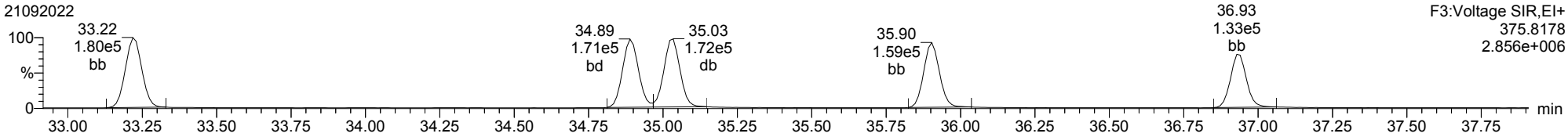

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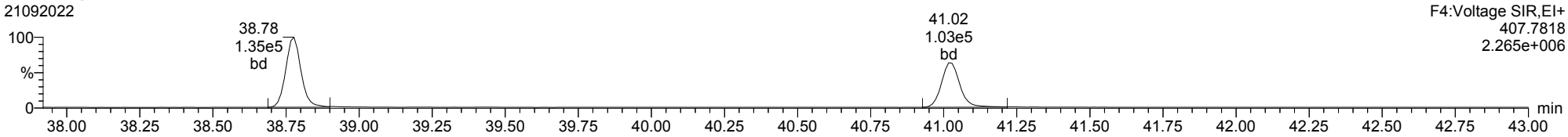

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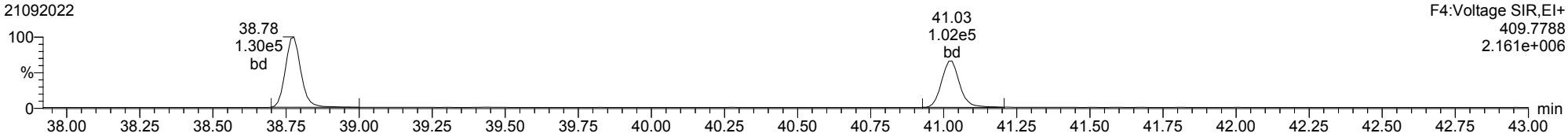

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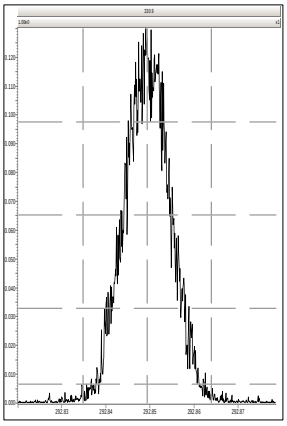
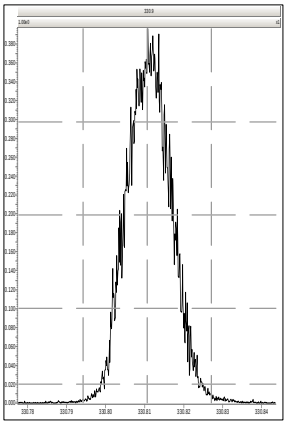
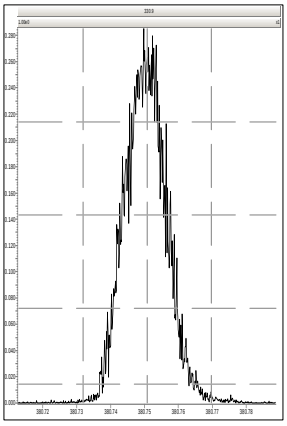
M 292.9824 R 12953



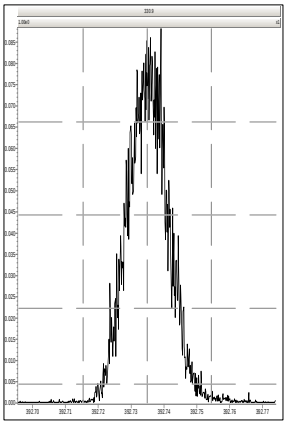
M 330.9792 R 13736



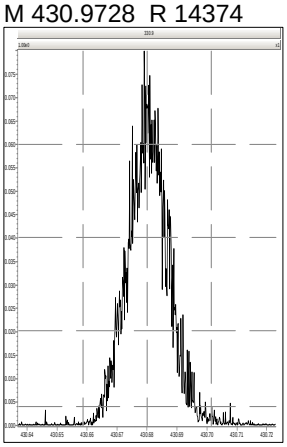
M 380.9760 R 14450



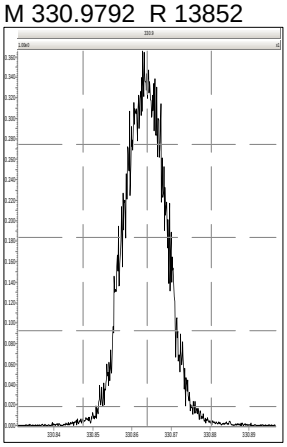
M 392.9760 R 14208



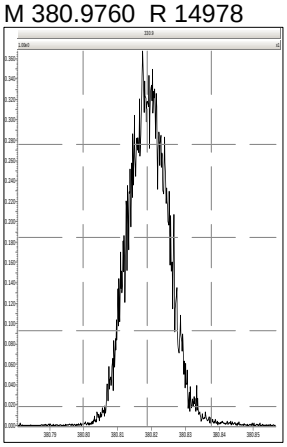
M 430.9728 R 14374



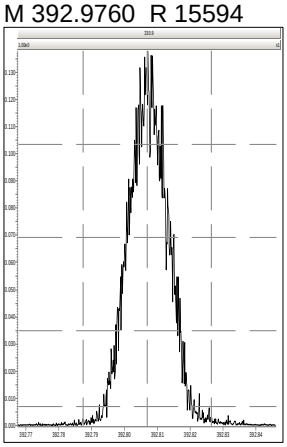
M 330.9792 R 13852



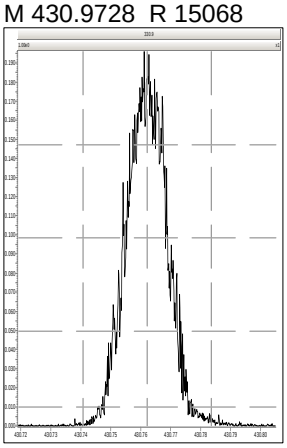
M 380.9760 R 14978



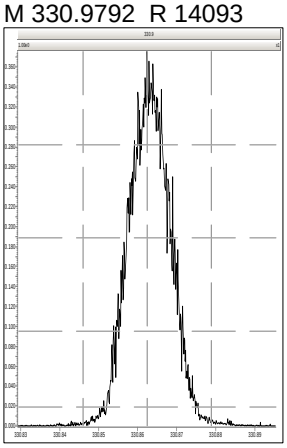
M 392.9760 R 15594



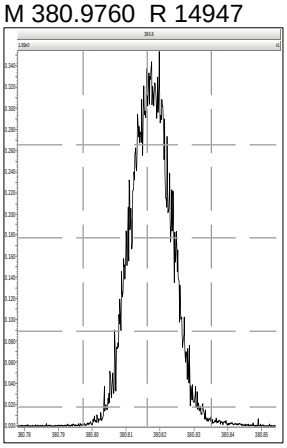
M 430.9728 R 15068



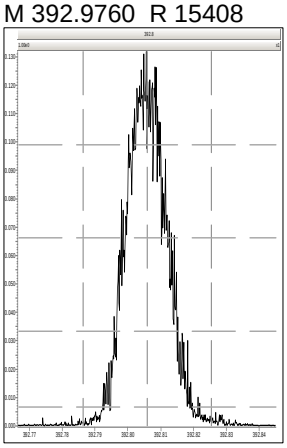
M 330.9792 R 14093



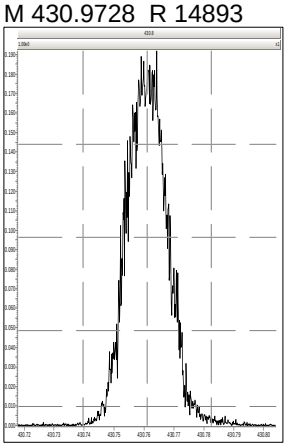
M 380.9760 R 14947



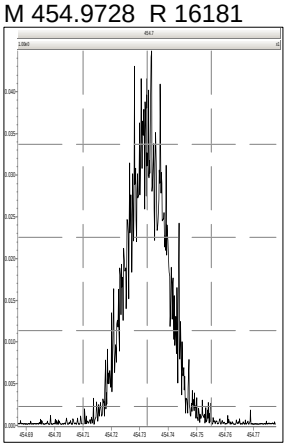
M 392.9760 R 15408



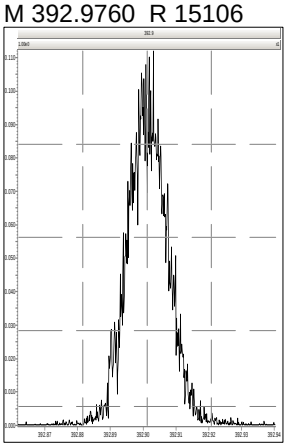
M 430.9728 R 14893



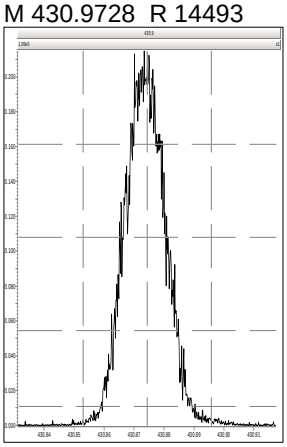
M 454.9728 R 16181



M 392.9760 R 15106



M 430.9728 R 14493



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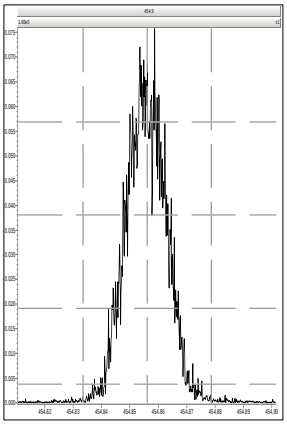
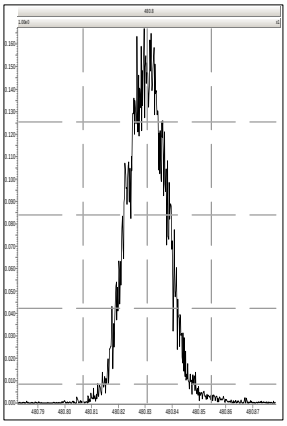
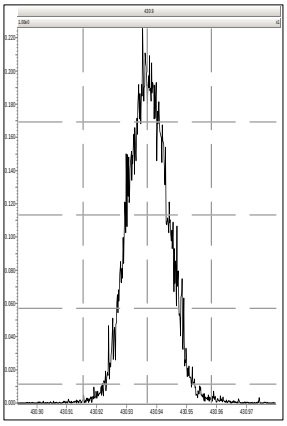
M 454.9728 R 15832



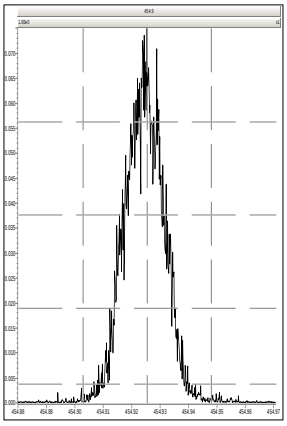
M 480.9696 R 14941



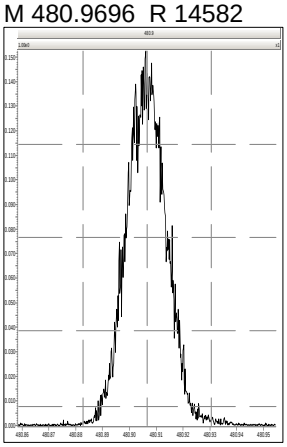
M 430.9728 R 15353



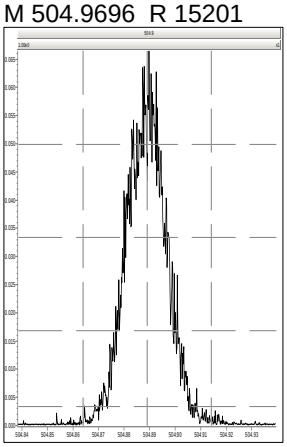
M 454.9728 R 15452



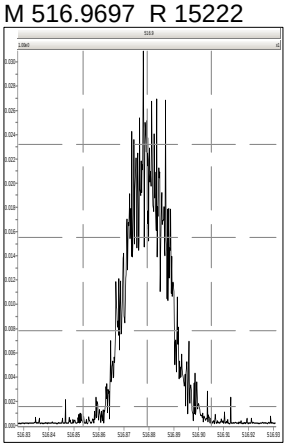
M 480.9696 R 14582

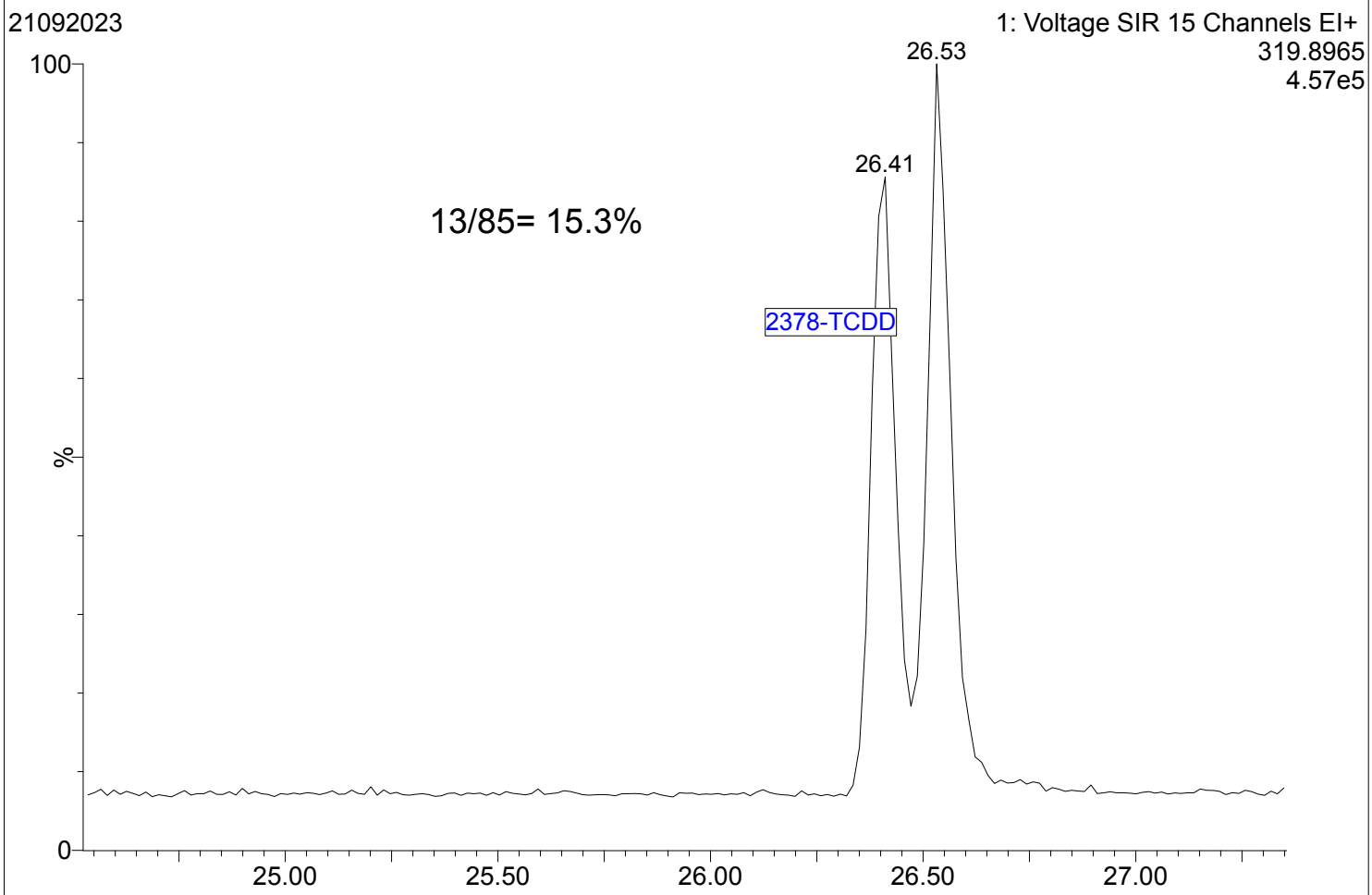


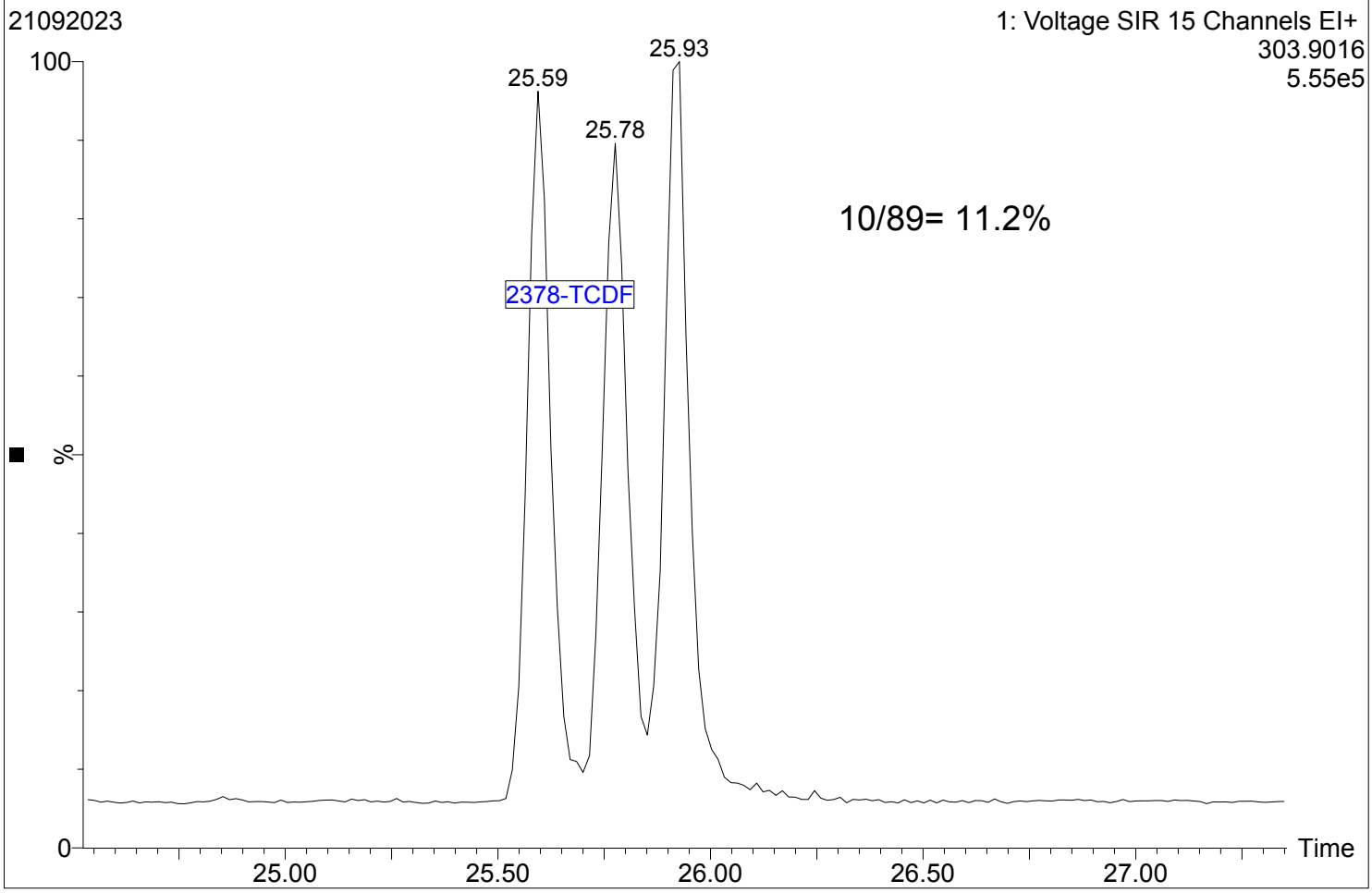
M 504.9696 R 15201



M 516.9697 R 15222




21092023
1: Voltage SIR 15 Channels EI+
319.8965
4.57e5
26.53
26.41
13/85= 15.3%
2378-TCDD
100
%
0
25.00
25.50
26.00
26.50
27.00


21092023
1: Voltage SIR 15 Channels EI+
303.9016
5.55e5
25.93
25.59
25.78
10/89= 11.2%
2378-TCDF
100
%
0
Time
25.00
25.50
26.00
26.50
27.00

Analytical Resources, Incorporated
Analytical Chemists and Consultants

CONTINUING CALIBRATION CHECK
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	AUTOSPEC01	Calibration:	EH00030
Lab File ID:	21092034	Calibration Date:	08/11/2021
Sequence:	SJI0309	Injection Date:	09/21/21
Lab Sample ID:	SJI0309-CCV3	Injection Time:	19:37
Sequence Name:	CS3S4		

		CONC. (ng/mL)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN	CCV	LIMIT
2,3,7,8-TCDF	A	10.000	8.98	1.1075930	0.9949200		-10.2	+/-16
2,3,7,8-TCDD	A	10.000	9.62	0.9202875	0.8850186		-3.8	+/-22
1,2,3,7,8-PeCDF	A	50.000	44.5	1.0148670	0.9036635		-11.0	+/-18
2,3,4,7,8-PeCDF	A	50.000	43.8	1.1255490	0.9851844		-12.5	+/-18
1,2,3,7,8-PeCDD	A	50.000	49.5	0.9953229	0.9863302		-0.9	+/-22
1,2,3,4,7,8-HxCDF	A	50.000	47.4	1.0168930	0.9630273		-5.3	+/-10
1,2,3,6,7,8-HxCDF	A	50.000	47.2	1.0368310	0.9784772		-5.6	+/-12
2,3,4,6,7,8-HxCDF	A	50.000	47.3	1.0524660	0.9956772		-5.4	+/-12
1,2,3,7,8,9-HxCDF	A	50.000	47.0	1.0301540	0.9691928		-5.9	+/-10
1,2,3,4,7,8-HxCDD	A	50.000	47.4	1.0273630	0.9729998		-5.3	+/-22
1,2,3,6,7,8-HxCDD	A	50.000	49.7	1.0089800	1.0038010		-0.5	+/-22
1,2,3,7,8,9-HxCDD	A	50.000	50.8	0.9504865	0.9653490		1.6	+/-18
1,2,3,4,6,7,8-HpCDF	A	50.000	45.0	1.3273500	1.1951880		-10.0	+/-10
1,2,3,4,7,8,9-HpCDF	A	50.000	45.4	1.2833380	1.1658060		-9.2	+/-14
1,2,3,4,6,7,8-HpCDD	A	50.000	47.4	1.0680880	1.0126890		-5.2	+/-14
OCDF	A	100.00	76.1	1.4469010	1.1011330		-23.9	+/-37
OCDD	A	100.00	91.3	1.1808230	1.0777590		-8.7	+/-21
13C12-2,3,7,8-TCDF	A	100.00	90.2	1.4265830	1.2866258		-9.8	+/-29
13C12-2,3,7,8-TCDD	A	100.00	104	1.1164910	1.1556000		3.5	+/-18
13C12-1,2,3,7,8-PeCDF	A	100.00	79.4	1.2973130	1.0299390		-20.6	+/-24
13C12-2,3,4,7,8-PeCDF	A	100.00	79.0	1.2364800	0.9768381		-21.0	+/-23
13C12-1,2,3,7,8-PeCDD	A	100.00	86.4	0.7319833	0.6323505		-13.6	+/-38
13C12-1,2,3,4,7,8-HxCDF	A	100.00	96.7	1.2424560	1.2011834		-3.3	+/-24
13C12-1,2,3,6,7,8-HxCDF	A	100.00	89.0	1.3434760	1.1959137		-11.0	+/-30
13C12-2,3,4,6,7,8-HxCDF	A	100.00	92.3	1.2148550	1.1214778		-7.7	+/-27
13C12-1,2,3,7,8,9-HxCDF	A	100.00	94.1	1.0076370	0.9481570		-5.9	+/-26
13C12-1,2,3,4,7,8-HxCDD	A	100.00	103	0.9598233	0.9848137		2.6	+/-15
13C12-1,2,3,6,7,8-HxCDD	A	100.00	92.6	1.0413850	0.9647198		-7.4	+/-15
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	76.2	0.9264704	0.7057658		-23.8	+/-22 *
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	72.9	0.7579160	0.5527332		-27.1	+/-23 *
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	88.0	0.6324476	0.5568552		-12.0	+/-28
13C12-OCDD	A	200.00	157	0.5037432	0.3957951		-21.4	+/-52
37Cl4-2,3,7,8-TCDD	A	10.000	9.82	1.0835930	1.0642593		-1.8	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210920D4.qld
Last Altered: Wednesday, September 22, 2021 09:29:09 Pacific Daylight Time
Printed: Wednesday, September 22, 2021 09:38:52 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: CS3S4, Name: 21092034, Date: 21-Sep-2021, Time: 19:37:20, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.775	1.001	4.039e4	5.658e4	1.108	0.714	0.770	728	1029	6.00e5	8.49e5	824.6	825.6	NO	bb	bb	8.983
12378-PeCDF	29.931	1.000	2.130e5	1.396e5	1.015	1.526	1.550	2171	1680	3.28e6	2.15e6	1512.8	1281.6	NO	bb	bb	44.521
23478-PeCDF	31.279	1.001	2.201e5	1.444e5	1.126	1.524	1.550	2171	1680	3.33e6	2.21e6	1533.1	1315.3	NO	bb	bb	43.765
123478-HxCDF	34.900	1.001	1.939e5	1.653e5	1.017	1.173	1.240	1557	1541	3.13e6	2.69e6	2010.7	1743.9	NO	bd	bd	47.351
234678-HxCDF	35.914	1.001	1.871e5	1.596e5	1.052	1.172	1.240	1557	1541	3.03e6	2.59e6	1944.5	1679.9	NO	bb	bb	47.302
123678-HxCDF	35.034	1.000	1.964e5	1.669e5	1.037	1.177	1.240	1557	1541	3.07e6	2.65e6	1974.5	1717.8	NO	db	db	47.186
123789-HxCDF	36.939	1.000	1.542e5	1.311e5	1.030	1.176	1.240	1557	1541	2.45e6	2.09e6	1574.4	1356.8	NO	bb	bb	47.041
1234678-HpCDF	38.788	1.001	1.324e5	1.294e5	1.327	1.023	1.050	1364	1498	2.16e6	2.07e6	1586.9	1380.2	NO	bd	bd	45.022
1234789-HpCDF	41.039	1.001	1.030e5	9.704e4	1.283	1.062	1.050	1364	1498	1.44e6	1.31e6	1054.5	874.2	NO	bd	bb	45.421
OCDF	45.280	1.006	1.277e5	1.429e5	1.447	0.893	0.890	747	938	1.44e6	1.62e6	1924.0	1732.5	NO	bd	bb	76.103
2378-TCDD	26.410	1.001	3.413e4	4.334e4	0.920	0.788	0.770	1153	680	5.12e5	6.55e5	444.5	962.4	NO	bb	bb	9.617
12378-PeCDD	31.524	1.001	1.454e5	9.087e4	0.995	1.600	1.550	957	960	2.29e6	1.43e6	2388.7	1491.7	NO	bb	bb	49.548
123478-HxCDD	36.014	1.001	1.673e5	1.302e5	1.027	1.285	1.240	1248	1658	2.74e6	2.17e6	2196.6	1309.2	NO	bd	bd	47.354
123678-HxCDD	36.125	1.000	1.676e5	1.331e5	1.009	1.260	1.240	1248	1658	2.79e6	2.24e6	2238.9	1349.5	NO	db	db	49.743
123789-HxCDD	36.527	1.011	1.623e5	1.298e5	0.950	1.250	1.240	1248	1658	2.72e6	2.16e6	2180.2	1302.0	NO	bb	bb	50.782
1234678-HpCDD	40.281	1.000	9.127e4	8.380e4	1.068	1.089	1.050	1017	771	1.36e6	1.25e6	1340.6	1626.9	NO	bb	bb	47.407
OCDD	45.033	1.000	1.241e5	1.407e5	1.181	0.882	0.890	1304	1545	1.42e6	1.58e6	1085.4	1020.7	NO	bb	bb	91.272
13C-2378-TCDF	25.760	1.007	4.301e5	5.446e5	1.427	0.790	0.770	1501	1379	6.31e6	7.95e6	4204.9	5765.1	NO	bb	bb	90.189
13C-12378-PeCDF	29.920	1.170	4.830e5	2.973e5	1.297	1.625	1.550	1437	1138	7.38e6	4.43e6	5138.6	3889.3	NO	bb	bb	79.390
13C-23478-PeCDF	31.257	1.222	4.567e5	2.833e5	1.236	1.612	1.550	1437	1138	7.05e6	4.43e6	4906.3	3892.3	NO	bb	bb	79.002
13C-123478-HxCDF	34.878	0.955	2.534e5	4.924e5	1.242	0.515	0.510	2086	2300	3.92e6	7.77e6	1878.0	3376.8	NO	bd	bd	96.678
13C-123678-HxCDF	35.022	0.959	2.534e5	4.892e5	1.343	0.518	0.510	2086	2300	4.20e6	8.14e6	2014.4	3539.8	NO	db	db	89.016
13C-234678-HxCDF	35.892	0.983	2.382e5	4.581e5	1.215	0.520	0.510	2086	2300	3.86e6	7.40e6	1851.6	3218.7	NO	bb	bb	92.314
13C-123789-HxCDF	36.928	1.012	2.014e5	3.873e5	1.008	0.520	0.510	2086	2300	3.28e6	6.34e6	1570.1	2755.5	NO	bb	bb	94.097
13C-1234678-HpCDF	38.766	1.062	1.379e5	3.003e5	0.926	0.459	0.440	907	1206	2.23e6	4.86e6	2462.9	4025.8	NO	bb	bd	76.178
13C-1234789-HpCDF	41.016	1.124	1.082e5	2.350e5	0.758	0.460	0.440	907	1206	1.50e6	3.28e6	1654.4	2718.2	NO	bb	bd	72.928
13C-1234-TCDD	25.579	0.000	3.268e5	4.308e5	1.000	0.759	0.770	1636	888	4.96e6	6.51e6	3029.9	7331.8	NO	bb	bb	100.000
13C-2378-TCDD	26.380	1.031	3.730e5	5.024e5	1.116	0.743	0.770	1636	888	5.62e6	7.55e6	3439.0	8503.2	NO	bb	bb	103.503
13C-12378-PeCDD	31.502	1.232	2.922e5	1.869e5	0.732	1.564	1.550	884	839	4.57e6	2.95e6	5174.2	3516.2	NO	bb	bb	86.389
13C-123478-HxCDD	35.992	0.986	3.451e5	2.664e5	0.960	1.295	1.240	1427	1226	5.70e6	4.47e6	3990.0	3643.0	NO	bd	bd	102.604
13C-123678-HxCDD	36.114	0.989	3.352e5	2.638e5	1.041	1.270	1.240	1427	1226	5.64e6	4.40e6	3950.3	3588.7	NO	db	db	92.638
13C-1234678-HpCDD	40.270	1.103	1.755e5	1.702e5	0.632	1.031	1.050	1071	805	2.63e6	2.53e6	2458.9	3147.8	NO	bb	bb	88.048
13C-OCDD	45.024	1.233	2.308e5	2.607e5	0.504	0.886	0.890	1796	844	2.68e6	2.99e6	1491.3	3543.5	NO	bb	bb	157.142
13C-123789-HxCDD	36.504	0.000	3.505e5	2.704e5	1.000	1.296	1.240	1427	1226	5.75e6	4.50e6	4024.9	3667.3	NO	bb	bb	100.000
37CL-2378-TCDD	26.410	1.033	8.063e4		1.084			1036		1.18e6		1138.7			bb		9.822

Dataset: T:\Autospec\Processed Data Batch\210920D4.qld
Last Altered: Wednesday, September 22, 2021 09:29:09 Pacific Daylight Time
Printed: Wednesday, September 22, 2021 09:38:52 Pacific Daylight Time

ID: CS3S4, Name: 21092034, Date: 21-Sep-2021, Time: 19:37:20, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	22.238	0.863	5.192e4	7.051e4	1.425	0.736	0.770	728	1029	7.82e5	1.06e6	1074.6	1028.6	NO	bb	bb	8.814
1289-TCDF	27.287	1.059	3.965e4	5.221e4	1.043	0.759	0.770	728	1029	5.76e5	7.51e5	790.6	729.8	NO	db	dd	9.036
13468-PECDF	27.106	0.906	3.785e5	2.461e5	1.376	1.538	1.550	539	729	5.62e6	3.69e6	10417.7	5053.2	NO	bb	bb	58.165
12389-PECDF	32.326	1.080	2.081e5	1.375e5	1.000	1.513	1.550	2171	1680	3.08e6	2.03e6	1420.7	1210.1	NO	bb	bb	44.309
123468-HXCDF	33.229	0.953	2.064e5	1.718e5	1.087	1.201	1.240	1557	1541	3.24e6	2.69e6	2078.6	1744.4	NO	bb	bb	46.664
1368-TCDD	23.508	0.891	3.489e4	4.464e4	0.923	0.781	0.770	1153	680	5.52e5	7.05e5	479.0	1036.0	NO	bb	bb	9.839
1289-TCDD	27.015	1.024	2.941e4	3.912e4	0.794	0.752	0.770	1153	680	4.39e5	5.78e5	381.0	849.0	NO	bd	bb	9.860
12479-PECDD	28.784	0.914	2.614e5	1.653e5	1.843	1.582	1.550	957	960	2.63e6	1.62e6	2742.5	1687.1	NO	bb	bb	48.322
12389-PECDD	31.925	1.013	1.735e5	1.087e5	1.154	1.597	1.550	957	960	2.70e6	1.68e6	2823.0	1754.7	NO	bb	bb	51.065
124679-HXCDD	33.998	0.945	1.842e5	1.449e5	1.125	1.271	1.240	1248	1658	2.87e6	2.25e6	2302.8	1358.7	NO	bb	bb	47.852
1234679-HPCDD	39.234	0.974	1.040e5	9.520e4	1.211	1.092	1.050	1017	771	1.70e6	1.56e6	1674.5	2027.2	NO	bb	bb	47.575
Total-tetrafurans			1.337e5		1.192			728		1.98e6							27.194
Total-penta1			3.785e5					539		5.62e6							58.165
Total-pentafurans			6.776e5		1.047			2171		1.03e7							140.267
Total-hexafurans			9.379e5		1.045			1557		1.49e7							235.544
Total-heptafurans			2.354e5		1.305			1364		3.60e6							90.442
Total-Furans			2.491e6		1.158			728		3.78e7							627.716
Total-tetradioxins			1.708e5		0.879			1153		2.33e6							50.538
Total-pentadioxins			5.815e5		1.331			957		7.63e6							149.245
Total-hexadioxins			6.819e5		1.028			1248		1.11e7							195.877
Total-heptadioxins			1.953e5		1.140			1017		3.07e6							94.981
Total-Dioxins			1.754e6		1.092			1153		2.56e7							581.912
Total-TEQ			4.244e6					1153		6.34e7							1209.628
FUNCTION1 PFK			8.599e4					375963		2.34e6							
FUNCTION2 PFK			7.787e5					382994		9.44e6							0.000
FUNCTION3 PFK			1.110e6					386864		2.11e7							0.000
FUNCTION4 PFK			3.038e6					200132		2.33e7							
FUNCTION5 PFK			1.062e5					142793		3.61e6							
FUNCTION1 HXCD...			5.739e2					482		6.39e3							0.000
FUNCTION1 HPCD...			0.000e0					567		0.00e0							
FUNCTION2 HPCD...			3.345e2					1052		6.43e3							0.000
FUNCTION3 OCDPE			0.000e0					721		0.00e0							
FUNCTION4 NCDPE			0.000e0					480		0.00e0							
FUNCTION5 DCDPE			1.630e2					496		2.46e3							0.000

Method: T:\Autospec\Methods\Dioxin210920.mdb 21 Sep 2021 09:52:17
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: CS3S4, Name: 21092034, Date: 21-Sep-2021, Time: 19:37:20, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.29	3.965e4	5.221e4	1.043	0.76	0.77	790.6	YES	NO	db	dd	9.036
2	Total-tetrafurans	27.12	8.125e2	1.147e3	1.192	0.71	0.77	14.8	YES	NO	bd	bd	0.169
3	2378-TCDF	25.78	4.039e4	5.658e4	1.108	0.71	0.77	824.6	YES	NO	bb	bb	8.983
4	Total-tetrafurans	24.87	3.941e2	5.857e2	1.192	0.67	0.77	6.8	YES	NO	db	db	0.084
5	Total-tetrafurans	24.54	5.352e2	7.325e2	1.192	0.73	0.77	9.5	YES	NO	bd	bd	0.109
6	1368-TCDF	22.24	5.192e4	7.051e4	1.425	0.74	0.77	1074.6	YES	NO	bb	bb	8.814

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	27.11	3.785e5	2.461e5	1.376	1.54	1.55	10417.7	YES	NO	bb	bb	58.165

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	23478-PeCDF	31.28	2.201e5	1.444e5	1.126	1.52	1.55	1533.1	YES	NO	bb	bb	43.765
2	Total-pentafurans	30.13	3.694e2	2.742e2	1.047	1.35	1.55	5.1	YES	NO	bb	bb	0.081
3	12378-PeCDF	29.93	2.130e5	1.396e5	1.015	1.53	1.55	1512.8	YES	NO	bb	bb	44.521
4	Total-pentafurans	28.77	3.610e4	2.430e4	1.047	1.49	1.55	251.1	YES	NO	bb	bb	7.591
5	12389-PECDF	32.33	2.081e5	1.375e5	1.000	1.51	1.55	1420.7	YES	NO	bb	bb	44.309

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123678-HxCDF	35.03	1.964e5	1.669e5	1.037	1.18	1.24	1974.5	YES	NO	db	db	47.186
2	123478-HxCDF	34.90	1.939e5	1.653e5	1.017	1.17	1.24	2010.7	YES	NO	bd	bd	47.351
3	123468-HXCDF	33.23	2.064e5	1.718e5	1.087	1.20	1.24	2078.6	YES	NO	bb	bb	46.664
4	123789-HxCDF	36.94	1.542e5	1.311e5	1.030	1.18	1.24	1574.4	YES	NO	bb	bb	47.041
5	234678-HxCDF	35.91	1.871e5	1.596e5	1.052	1.17	1.24	1944.5	YES	NO	bb	bb	47.302

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	41.04	1.030e5	9.704e4	1.283	1.06	1.05	1054.5	YES	NO	bd	bb	45.421
2	1234678-HpCDF	38.79	1.324e5	1.294e5	1.327	1.02	1.05	1586.9	YES	NO	bd	bd	45.022

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Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.29	3.965e4	5.221e4	1.043	0.76	0.77	790.6	YES	NO	db	dd	9.036
2	Total-tetrafurans	27.12	8.125e2	1.147e3	1.192	0.71	0.77	14.8	YES	NO	bd	bd	0.169
3	2378-TCDF	25.78	4.039e4	5.658e4	1.108	0.71	0.77	824.6	YES	NO	bb	bb	8.983
4	Total-tetrafurans	24.87	3.941e2	5.857e2	1.192	0.67	0.77	6.8	YES	NO	db	db	0.084
5	Total-tetrafurans	24.54	5.352e2	7.325e2	1.192	0.73	0.77	9.5	YES	NO	bd	bd	0.109
6	1368-TCDF	22.24	5.192e4	7.051e4	1.425	0.74	0.77	1074.6	YES	NO	bb	bb	8.814
7	23478-PeCDF	31.28	2.201e5	1.444e5	1.126	1.52	1.55	1533.1	YES	NO	bb	bb	43.765
8	Total-pentafurans	30.13	3.694e2	2.742e2	1.047	1.35	1.55	5.1	YES	NO	bb	bb	0.081
9	12378-PeCDF	29.93	2.130e5	1.396e5	1.015	1.53	1.55	1512.8	YES	NO	bb	bb	44.521
10	Total-pentafurans	28.77	3.610e4	2.430e4	1.047	1.49	1.55	251.1	YES	NO	bb	bb	7.591
11	123678-HxCDF	35.03	1.964e5	1.669e5	1.037	1.18	1.24	1974.5	YES	NO	db	db	47.186
12	123478-HxCDF	34.90	1.939e5	1.653e5	1.017	1.17	1.24	2010.7	YES	NO	bd	bd	47.351
13	123468-HXCDF	33.23	2.064e5	1.718e5	1.087	1.20	1.24	2078.6	YES	NO	bb	bb	46.664
14	12389-PECDF	32.33	2.081e5	1.375e5	1.000	1.51	1.55	1420.7	YES	NO	bb	bb	44.309
15	123789-HxCDF	36.94	1.542e5	1.311e5	1.030	1.18	1.24	1574.4	YES	NO	bb	bb	47.041
16	234678-HxCDF	35.91	1.871e5	1.596e5	1.052	1.17	1.24	1944.5	YES	NO	bb	bb	47.302
17	1234789-HpCDF	41.04	1.030e5	9.704e4	1.283	1.06	1.05	1054.5	YES	NO	bd	bb	45.421
18	1234678-HpCDF	38.79	1.324e5	1.294e5	1.327	1.02	1.05	1586.9	YES	NO	bd	bd	45.022
19	OCDF	45.28	1.277e5	1.429e5	1.447	0.89	0.89	1924.0	YES	NO	bd	bb	76.103
20	13468-PECDF	27.11	3.785e5	2.461e5	1.376	1.54	1.55	10417.7	YES	NO	bb	bb	58.165

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	25.00	3.572e2	4.669e2	0.879	0.77	0.77	4.2	YES	NO	bb	bb	0.107
2	Total-tetradioxins	24.70	1.455e3	1.738e3	0.879	0.84	0.77	11.9	YES	NO	bb	bb	0.415
3	1368-TCDD	23.51	3.489e4	4.464e4	0.923	0.78	0.77	479.0	YES	NO	bb	bb	9.839
4	1289-TCDD	27.02	2.941e4	3.912e4	0.794	0.75	0.77	381.0	YES	NO	bd	bb	9.860
5	2378-TCDD	26.41	3.413e4	4.334e4	0.920	0.79	0.77	444.5	YES	NO	bb	bb	9.617
6	Total-tetradioxins	26.08	5.348e4	6.736e4	0.879	0.79	0.77	461.9	YES	NO	bb	bb	15.700
7	Total-tetradioxins	25.59	1.706e4	2.143e4	0.879	0.80	0.77	235.3	YES	NO	bb	bb	5.001

Dataset: T:\Autospec\Processed Data Batch\210920D4.qld
Last Altered: Wednesday, September 22, 2021 09:29:09 Pacific Daylight Time
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ID: CS3S4, Name: 21092034, Date: 21-Sep-2021, Time: 19:37:20, Conditions: AUTOSPEC01, User: pk

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDD	31.93	1.735e5	1.087e5	1.154	1.60	1.55	2823.0	YES	NO	bb	bb	51.065
2	12378-PeCDD	31.52	1.454e5	9.087e4	0.995	1.60	1.55	2388.7	YES	NO	bb	bb	49.548
3	Total-pentadioxins	30.86	6.021e2	4.143e2	1.331	1.45	1.55	7.9	YES	NO	bb	bb	0.159
4	Total-pentadioxins	29.91	5.567e2	3.998e2	1.331	1.39	1.55	9.0	YES	NO	bb	bb	0.150
5	12479-PECDD	28.78	2.614e5	1.653e5	1.843	1.58	1.55	2742.5	YES	NO	bb	bb	48.322

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	124679-HXCDD	34.00	1.842e5	1.449e5	1.125	1.27	1.24	2302.8	YES	NO	bb	bb	47.852
2	123789-HxCDD	36.53	1.623e5	1.298e5	0.950	1.25	1.24	2180.2	YES	NO	bb	bb	50.782
3	123678-HxCDD	36.13	1.676e5	1.331e5	1.009	1.26	1.24	2238.9	YES	NO	db	db	49.743
4	123478-HxCDD	36.01	1.673e5	1.302e5	1.027	1.28	1.24	2196.6	YES	NO	bd	bd	47.354
5	Total-hexadioxins	34.77	4.766e2	4.246e2	1.028	1.12	1.24	7.9	YES	NO	bd	bb	0.145

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	40.28	9.127e4	8.380e4	1.068	1.09	1.05	1340.6	YES	NO	bb	bb	47.407
2	1234679-HPCDD	39.23	1.040e5	9.520e4	1.211	1.09	1.05	1674.5	YES	NO	bb	bb	47.575

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Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	25.00	3.572e2	4.669e2	0.879	0.77	0.77	4.2	YES	NO	bb	bb	0.107
2	Total-tetradioxins	24.70	1.455e3	1.738e3	0.879	0.84	0.77	11.9	YES	NO	bb	bb	0.415
3	1368-TCDD	23.51	3.489e4	4.464e4	0.923	0.78	0.77	479.0	YES	NO	bb	bb	9.839
4	1289-TCDD	27.02	2.941e4	3.912e4	0.794	0.75	0.77	381.0	YES	NO	bd	bb	9.860
5	2378-TCDD	26.41	3.413e4	4.334e4	0.920	0.79	0.77	444.5	YES	NO	bb	bb	9.617
6	Total-tetradioxins	26.08	5.348e4	6.736e4	0.879	0.79	0.77	461.9	YES	NO	bb	bb	15.700
7	Total-tetradioxins	25.59	1.706e4	2.143e4	0.879	0.80	0.77	235.3	YES	NO	bb	bb	5.001
8	124679-HXCDD	34.00	1.842e5	1.449e5	1.125	1.27	1.24	2302.8	YES	NO	bb	bb	47.852
9	12389-PECDD	31.93	1.735e5	1.087e5	1.154	1.60	1.55	2823.0	YES	NO	bb	bb	51.065
10	12378-PeCDD	31.52	1.454e5	9.087e4	0.995	1.60	1.55	2388.7	YES	NO	bb	bb	49.548
11	Total-pentadioxins	30.86	6.021e2	4.143e2	1.331	1.45	1.55	7.9	YES	NO	bb	bb	0.159
12	Total-pentadioxins	29.91	5.567e2	3.998e2	1.331	1.39	1.55	9.0	YES	NO	bb	bb	0.150
13	12479-PECDD	28.78	2.614e5	1.653e5	1.843	1.58	1.55	2742.5	YES	NO	bb	bb	48.322
14	123789-HxCDD	36.53	1.623e5	1.298e5	0.950	1.25	1.24	2180.2	YES	NO	bb	bb	50.782
15	123678-HxCDD	36.13	1.676e5	1.331e5	1.009	1.26	1.24	2238.9	YES	NO	db	db	49.743
16	123478-HxCDD	36.01	1.673e5	1.302e5	1.027	1.28	1.24	2196.6	YES	NO	bd	bd	47.354
17	Total-hexadioxins	34.77	4.766e2	4.246e2	1.028	1.12	1.24	7.9	YES	NO	bd	bb	0.145
18	1234678-HpCDD	40.28	9.127e4	8.380e4	1.068	1.09	1.05	1340.6	YES	NO	bb	bb	47.407
19	1234679-HPCDD	39.23	1.040e5	9.520e4	1.211	1.09	1.05	1674.5	YES	NO	bb	bb	47.575
20	OCDD	45.03	1.241e5	1.407e5	1.181	0.88	0.89	1085.4	YES	NO	bb	bb	91.272

Dataset: T:\Autospec\Processed Data Batch\210920D4.qld
Last Altered: Wednesday, September 22, 2021 09:29:09 Pacific Daylight Time
Printed: Wednesday, September 22, 2021 09:38:52 Pacific Daylight Time

ID: CS3S4, Name: 21092034, Date: 21-Sep-2021, Time: 19:37:20, Conditions: AUTOSPEC01, User: pk

TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.29	3.965e4	5.221e4	1.043	0.76	0.77	790.6	YES	NO	db	dd	9.036
2	Total-tetrafurans	27.12	8.125e2	1.147e3	1.192	0.71	0.77	14.8	YES	NO	bd	bd	0.169
3	2378-TCDF	25.78	4.039e4	5.658e4	1.108	0.71	0.77	824.6	YES	NO	bb	bb	8.983
4	Total-tetrafurans	24.87	3.941e2	5.857e2	1.192	0.67	0.77	6.8	YES	NO	db	db	0.084
5	Total-tetrafurans	24.54	5.352e2	7.325e2	1.192	0.73	0.77	9.5	YES	NO	bd	bd	0.109
6	1368-TCDF	22.24	5.192e4	7.051e4	1.425	0.74	0.77	1074.6	YES	NO	bb	bb	8.814
7	23478-PeCDF	31.28	2.201e5	1.444e5	1.126	1.52	1.55	1533.1	YES	NO	bb	bb	43.765
8	Total-pentafurans	30.13	3.694e2	2.742e2	1.047	1.35	1.55	5.1	YES	NO	bb	bb	0.081
9	12378-PeCDF	29.93	2.130e5	1.396e5	1.015	1.53	1.55	1512.8	YES	NO	bb	bb	44.521
10	Total-pentafurans	28.77	3.610e4	2.430e4	1.047	1.49	1.55	251.1	YES	NO	bb	bb	7.591
11	123678-HxCDF	35.03	1.964e5	1.669e5	1.037	1.18	1.24	1974.5	YES	NO	db	db	47.186
12	123478-HxCDF	34.90	1.939e5	1.653e5	1.017	1.17	1.24	2010.7	YES	NO	bd	bd	47.351
13	123468-HXCDF	33.23	2.064e5	1.718e5	1.087	1.20	1.24	2078.6	YES	NO	bb	bb	46.664
14	12389-PECDF	32.33	2.081e5	1.375e5	1.000	1.51	1.55	1420.7	YES	NO	bb	bb	44.309
15	123789-HxCDF	36.94	1.542e5	1.311e5	1.030	1.18	1.24	1574.4	YES	NO	bb	bb	47.041
16	234678-HxCDF	35.91	1.871e5	1.596e5	1.052	1.17	1.24	1944.5	YES	NO	bb	bb	47.302
17	1234789-HpCDF	41.04	1.030e5	9.704e4	1.283	1.06	1.05	1054.5	YES	NO	bd	bb	45.421
18	1234678-HpCDF	38.79	1.324e5	1.294e5	1.327	1.02	1.05	1586.9	YES	NO	bd	bd	45.022
19	OCDF	45.28	1.277e5	1.429e5	1.447	0.89	0.89	1924.0	YES	NO	bd	bb	76.103
20	13468-PECDF	27.11	3.785e5	2.461e5	1.376	1.54	1.55	10417.7	YES	NO	bb	bb	58.165
21	Total-tetradioxins	25.00	3.572e2	4.669e2	0.879	0.77	0.77	4.2	YES	NO	bb	bb	0.107
22	Total-tetradioxins	24.70	1.455e3	1.738e3	0.879	0.84	0.77	11.9	YES	NO	bb	bb	0.415
23	1368-TCDD	23.51	3.489e4	4.464e4	0.923	0.78	0.77	479.0	YES	NO	bb	bb	9.839
24	1289-TCDD	27.02	2.941e4	3.912e4	0.794	0.75	0.77	381.0	YES	NO	bd	bb	9.860
25	2378-TCDD	26.41	3.413e4	4.334e4	0.920	0.79	0.77	444.5	YES	NO	bb	bb	9.617
26	Total-tetradioxins	26.08	5.348e4	6.736e4	0.879	0.79	0.77	461.9	YES	NO	bb	bb	15.700
27	Total-tetradioxins	25.59	1.706e4	2.143e4	0.879	0.80	0.77	235.3	YES	NO	bb	bb	5.001
28	124679-HXCDD	34.00	1.842e5	1.449e5	1.125	1.27	1.24	2302.8	YES	NO	bb	bb	47.852
29	12389-PECDD	31.93	1.735e5	1.087e5	1.154	1.60	1.55	2823.0	YES	NO	bb	bb	51.065
30	12378-PeCDD	31.52	1.454e5	9.087e4	0.995	1.60	1.55	2388.7	YES	NO	bb	bb	49.548
31	Total-pentadioxins	30.86	6.021e2	4.143e2	1.331	1.45	1.55	7.9	YES	NO	bb	bb	0.159
32	Total-pentadioxins	29.91	5.567e2	3.998e2	1.331	1.39	1.55	9.0	YES	NO	bb	bb	0.150
33	12479-PECDD	28.78	2.614e5	1.653e5	1.843	1.58	1.55	2742.5	YES	NO	bb	bb	48.322
34	123789-HxCDD	36.53	1.623e5	1.298e5	0.950	1.25	1.24	2180.2	YES	NO	bb	bb	50.782
35	123678-HxCDD	36.13	1.676e5	1.331e5	1.009	1.26	1.24	2238.9	YES	NO	db	db	49.743
36	123478-HxCDD	36.01	1.673e5	1.302e5	1.027	1.28	1.24	2196.6	YES	NO	bd	bd	47.354
37	Total-hexadioxins	34.77	4.766e2	4.246e2	1.028	1.12	1.24	7.9	YES	NO	bd	bb	0.145

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	1234678-HpCDD	40.28	9.127e4	8.380e4	1.068	1.09	1.05	1340.6	YES	NO	bb	bb	47.407
39	1234679-HPCDD	39.23	1.040e5	9.520e4	1.211	1.09	1.05	1674.5	YES	NO	bb	bb	47.575
40	OCDD	45.03	1.241e5	1.407e5	1.181	0.88	0.89	1085.4	YES	NO	bb	bb	91.272

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	21.30	1.134e4					1.3	NO		bb		
2	FUNCTION1 PFK	21.24	2.335e4					2.0	NO		db		
3	FUNCTION1 PFK	21.18	5.129e4					2.9	NO		bd		

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	29.90	5.920e3					0.7	NO		bb		0.000
2	FUNCTION2 PFK	29.41	5.416e3					0.6	NO		bb		0.000
3	FUNCTION2 PFK	28.84	1.223e4					1.0	NO		bb		0.000
4	FUNCTION2 PFK	28.69	1.417e3					0.3	NO		bb		0.000
5	FUNCTION2 PFK	28.56	8.849e3					1.0	NO		bb		0.000
6	FUNCTION2 PFK	28.23	5.700e5					8.3	YES		bb		0.000
7	FUNCTION2 PFK	32.72	1.786e3					0.4	NO		bb		0.000
8	FUNCTION2 PFK	32.55	1.529e4					0.9	NO		bb		0.000
9	FUNCTION2 PFK	32.14	3.893e3					0.6	NO		bb		0.000
10	FUNCTION2 PFK	31.97	1.109e4					1.2	NO		db		0.000
11	FUNCTION2 PFK	31.87	3.145e4					1.3	NO		bd		0.000
12	FUNCTION2 PFK	31.79	3.369e4					1.6	NO		bb		0.000
13	FUNCTION2 PFK	31.49	8.047e3					0.8	NO		bb		0.000
14	FUNCTION2 PFK	31.33	3.367e3					0.5	NO		bb		0.000
15	FUNCTION2 PFK	31.12	1.733e4					0.9	NO		bb		0.000
16	FUNCTION2 PFK	30.90	1.110e4					1.1	NO		bb		0.000
17	FUNCTION2 PFK	30.84	1.096e4					1.2	NO		db		0.000
18	FUNCTION2 PFK	30.80	8.958e3					1.0	NO		bd		0.000
19	FUNCTION2 PFK	29.94	1.790e4					1.2	NO		bb		0.000

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	33.14	9.515e4					4.7	YES		bd		0.000
2	FUNCTION3 PFK	33.05	8.497e4					3.1	YES		bb		0.000
3	FUNCTION3 PFK	34.63	1.777e4					1.5	NO		dd		0.000
4	FUNCTION3 PFK	34.58	1.295e4					1.5	NO		dd		0.000
5	FUNCTION3 PFK	34.53	3.941e4					2.1	NO		dd		0.000
6	FUNCTION3 PFK	34.48	6.031e4					2.3	NO		dd		0.000
7	FUNCTION3 PFK	34.40	5.087e4					2.6	NO		bd		0.000
8	FUNCTION3 PFK	34.29	5.777e4					2.5	NO		db		0.000
9	FUNCTION3 PFK	34.21	1.101e4					1.0	NO		bd		0.000
10	FUNCTION3 PFK	33.98	5.834e3					0.9	NO		bb		0.000
11	FUNCTION3 PFK	33.88	3.220e3					0.7	NO		bb		0.000
12	FUNCTION3 PFK	33.83	2.698e4					1.4	NO		db		0.000
13	FUNCTION3 PFK	33.75	3.759e3					0.5	NO		bd		0.000
14	FUNCTION3 PFK	33.63	1.391e4					1.4	NO		bb		0.000
15	FUNCTION3 PFK	33.49	3.577e4					1.8	NO		db		0.000
16	FUNCTION3 PFK	33.43	1.281e4					1.2	NO		bd		0.000
17	FUNCTION3 PFK	33.33	2.748e4					2.4	NO		db		0.000
18	FUNCTION3 PFK	33.24	1.831e5					4.2	YES		dd		0.000
19	FUNCTION3 PFK	37.38	3.173e4					0.9	NO		bb		0.000
20	FUNCTION3 PFK	37.30	1.323e4					1.5	NO		db		0.000
21	FUNCTION3 PFK	37.26	3.255e4					1.7	NO		bd		0.000
22	FUNCTION3 PFK	36.88	2.589e4					1.5	NO		db		0.000
23	FUNCTION3 PFK	36.82	7.160e3					0.7	NO		bd		0.000
24	FUNCTION3 PFK	36.69	4.349e3					0.6	NO		bb		0.000
25	FUNCTION3 PFK	36.56	2.484e3					0.6	NO		bb		0.000
26	FUNCTION3 PFK	36.37	6.493e3					0.7	NO		bb		0.000
27	FUNCTION3 PFK	36.28	4.865e3					0.6	NO		bb		0.000
28	FUNCTION3 PFK	36.11	3.208e3					0.3	NO		bb		0.000
29	FUNCTION3 PFK	35.72	6.678e4					2.1	NO		db		0.000
30	FUNCTION3 PFK	35.64	8.841e4					2.1	NO		dd		0.000
31	FUNCTION3 PFK	35.50	3.472e4					1.9	NO		bd		0.000
32	FUNCTION3 PFK	34.87	4.841e3					0.7	NO		bb		0.000
33	FUNCTION3 PFK	34.77	1.603e3					0.4	NO		bb		0.000
34	FUNCTION3 PFK	34.68	4.657e3					0.6	NO		db		0.000
35	FUNCTION3 PFK	37.80	5.835e3					0.7	NO		bb		0.000
36	FUNCTION3 PFK	37.54	2.824e4					1.4	NO		bb		0.000

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	40.58	6.354e3					1.2	NO		bb		
2	FUNCTION4 PFK	40.17	4.901e3					1.0	NO		bb		
3	FUNCTION4 PFK	39.84	3.538e3					0.8	NO		bb		
4	FUNCTION4 PFK	39.68	4.077e3					0.9	NO		bb		
5	FUNCTION4 PFK	39.48	3.279e3					0.8	NO		bb		
6	FUNCTION4 PFK	39.39	6.026e3					1.2	NO		bb		
7	FUNCTION4 PFK	39.19	9.173e2					0.4	NO		bb		
8	FUNCTION4 PFK	38.92	5.050e3					0.9	NO		bb		
9	FUNCTION4 PFK	38.78	1.451e4					2.4	NO		db		
10	FUNCTION4 PFK	38.54	1.561e6					11.6	YES		dd		
11	FUNCTION4 PFK	38.14	3.994e5					26.0	YES		dd		
12	FUNCTION4 PFK	38.08	2.475e5					28.5	YES		dd		
13	FUNCTION4 PFK	37.99	7.284e5					31.9	YES		bd		
14	FUNCTION4 PFK	42.92	8.073e3					1.6	NO		bb		
15	FUNCTION4 PFK	42.42	1.987e3					0.6	NO		bb		
16	FUNCTION4 PFK	42.10	1.746e3					0.6	NO		bb		
17	FUNCTION4 PFK	41.99	9.772e2					0.4	NO		bb		
18	FUNCTION4 PFK	41.94	1.556e3					0.7	NO		bb		
19	FUNCTION4 PFK	41.84	1.321e3					0.6	NO		bb		
20	FUNCTION4 PFK	41.80	5.071e3					1.2	NO		bb		
21	FUNCTION4 PFK	40.94	2.294e4					1.8	NO		bb		
22	FUNCTION4 PFK	40.65	9.789e3					1.3	NO		bb		

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PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	43.73	8.251e2					0.6	NO		bb		
2	FUNCTION5 PFK	43.69	7.819e3					1.4	NO		bb		
3	FUNCTION5 PFK	43.57	3.794e3					0.9	NO		bb		
4	FUNCTION5 PFK	43.35	3.428e3					1.2	NO		bb		
5	FUNCTION5 PFK	43.25	5.614e3					1.4	NO		bb		
6	FUNCTION5 PFK	43.07	1.786e3					1.1	NO		bb		
7	FUNCTION5 PFK	45.94	1.888e3					0.8	NO		bb		
8	FUNCTION5 PFK	45.66	7.132e3					1.0	NO		bb		
9	FUNCTION5 PFK	45.57	2.994e3					1.0	NO		bb		
10	FUNCTION5 PFK	45.53	2.148e3					0.6	NO		bb		
11	FUNCTION5 PFK	45.43	2.990e3					1.1	NO		bb		
12	FUNCTION5 PFK	44.97	4.710e3					1.5	NO		bb		
13	FUNCTION5 PFK	44.92	1.019e4					1.9	NO		bb		
14	FUNCTION5 PFK	44.76	1.003e4					1.5	NO		db		
15	FUNCTION5 PFK	44.66	7.554e3					1.3	NO		bd		
16	FUNCTION5 PFK	44.18	2.048e3					0.9	NO		bb		
17	FUNCTION5 PFK	44.08	7.452e3					1.6	NO		db		
18	FUNCTION5 PFK	44.04	5.205e3					1.5	NO		bd		
19	FUNCTION5 PFK	43.89	8.228e3					1.6	NO		bb		
20	FUNCTION5 PFK	43.79	1.039e4					2.5	NO		bb		

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	21.68	8.044e1					1.4	NO		bb		0.000
2	FUNCTION1 HXCD...	27.12	2.249e2					4.8	YES		db		0.000
3	FUNCTION1 HXCD...	27.02	1.053e2					2.6	NO		bd		0.000
4	FUNCTION1 HXCD...	25.58	8.429e1					2.3	NO		bb		0.000
5	FUNCTION1 HXCD...	23.17	7.895e1					2.2	NO		bb		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

Dataset: T:\Autospec\Processed Data Batch\210920D4.qld
Last Altered: Wednesday, September 22, 2021 09:29:09 Pacific Daylight Time
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ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	31.51	7.024e1					1.3	NO		bb		0.000
2	FUNCTION2 HPCD...	31.08	1.739e2					3.2	YES		bb		0.000
3	FUNCTION2 HPCD...	28.83	9.031e1					1.5	NO		bb		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	45.02	8.571e1					3.1	YES		bb		0.000
2	FUNCTION5 DCDPE	44.47	7.733e1					1.8	NO		bb		0.000

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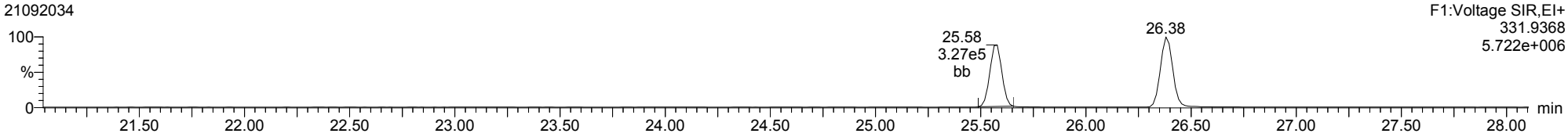
13C-1234-TCDD



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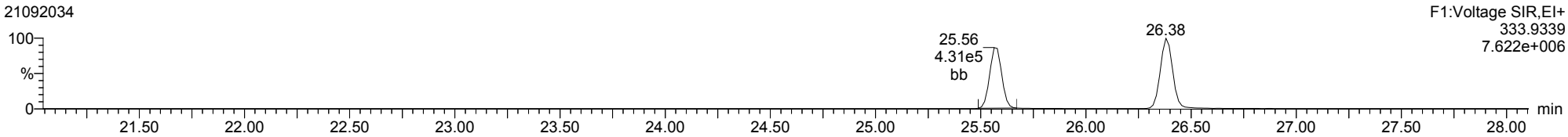

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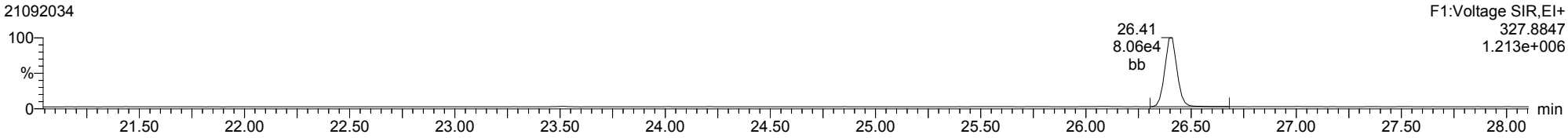

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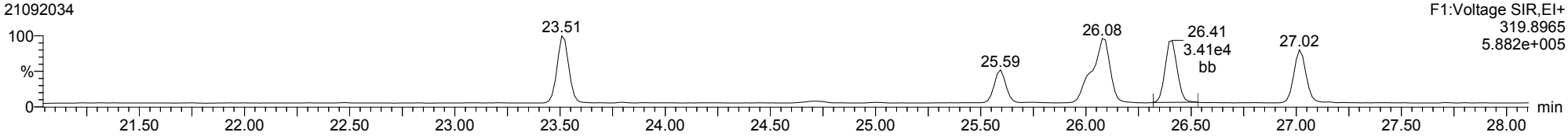
ID: CS3S4, Name: 21092034, Date: 21-Sep-2021, Time: 19:37:20, Conditions: AUTOSPEC01, User: pk

2378-TCDD



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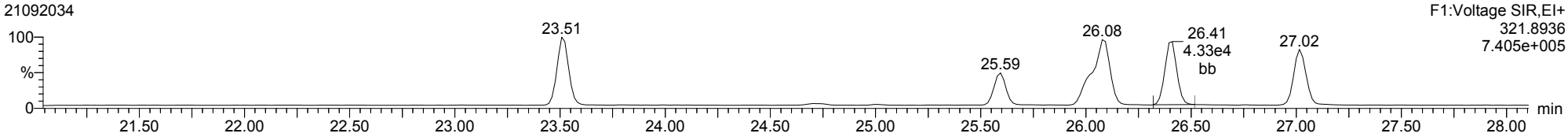

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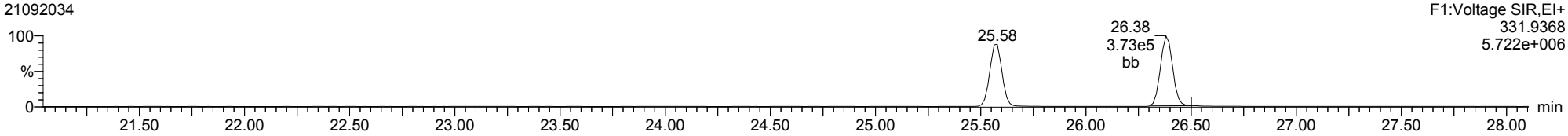
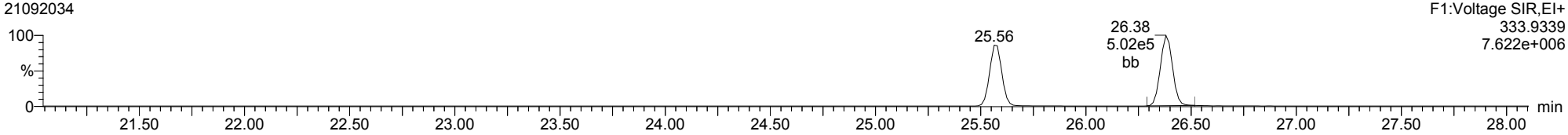
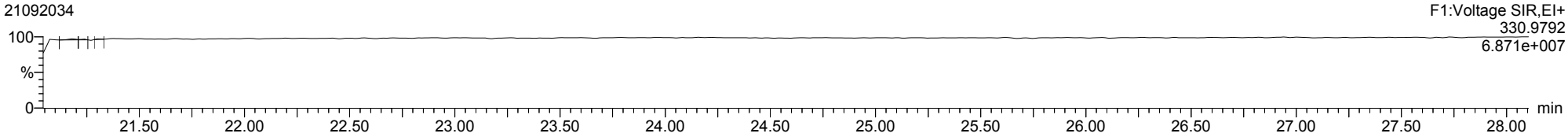


13C-2378-TCDD



FUNCTION1 PFK



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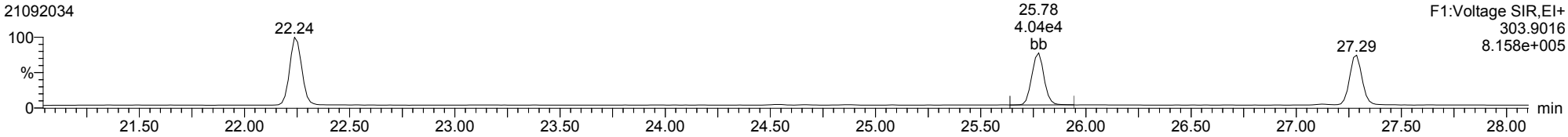
2378-TCDF



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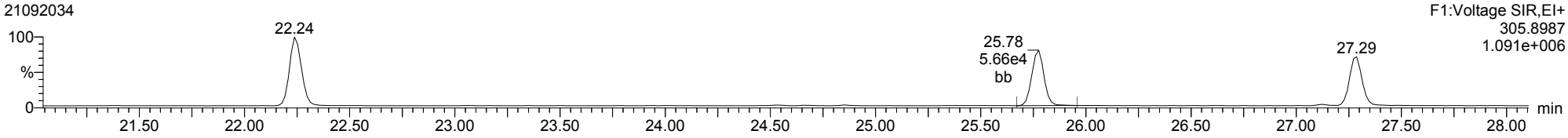

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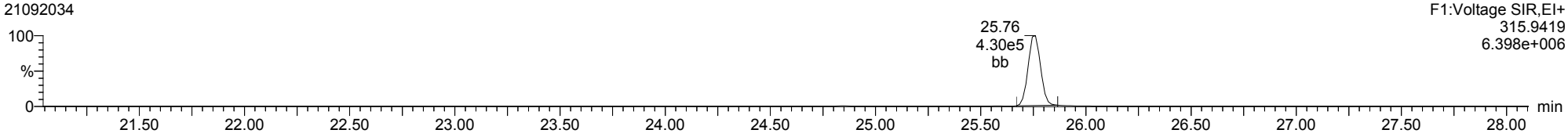

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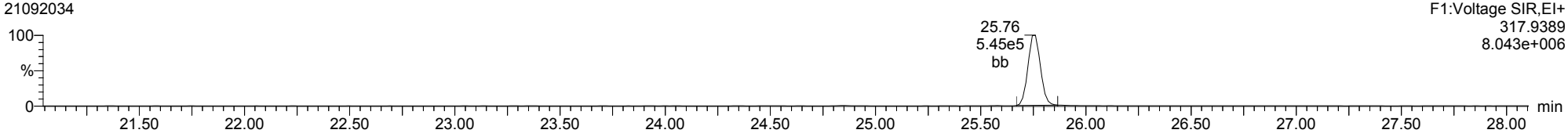

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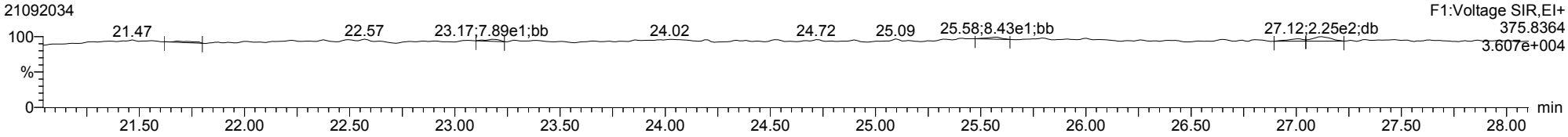

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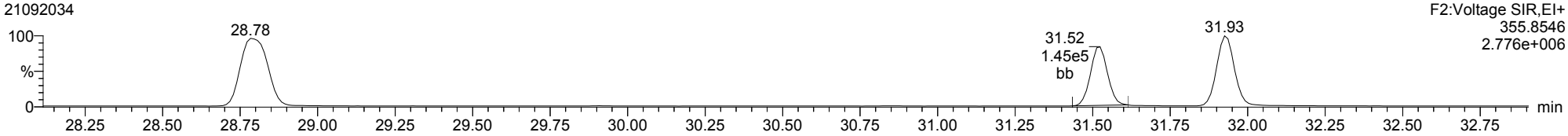
12378-PeCDD



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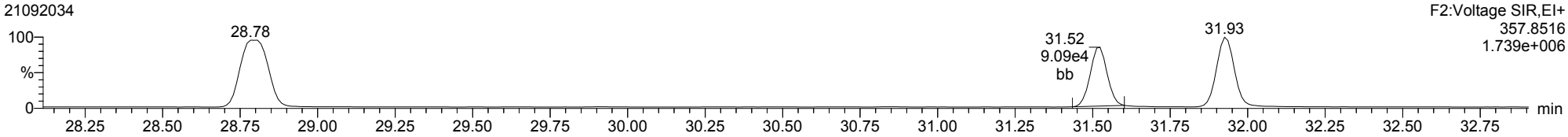

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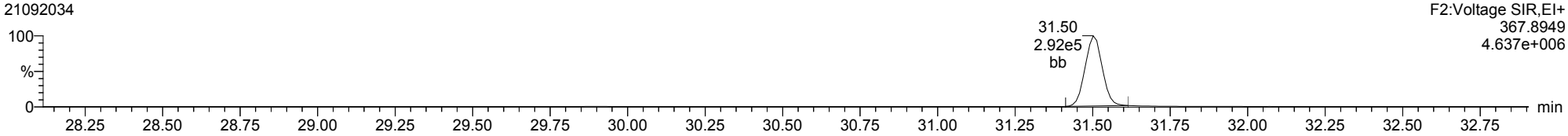

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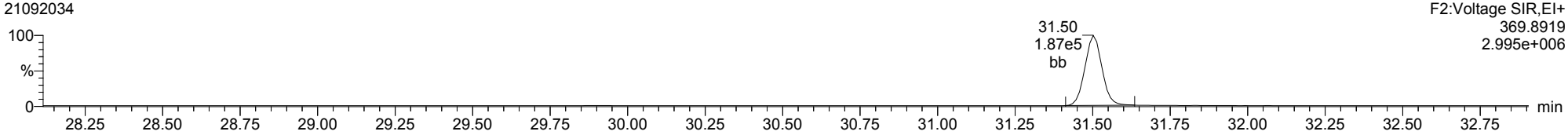

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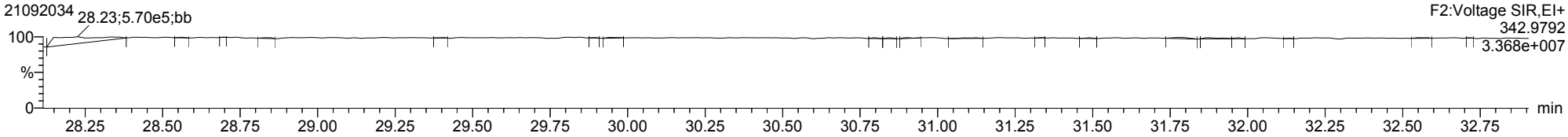

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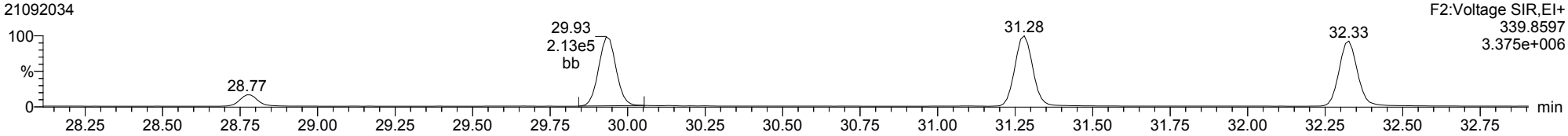

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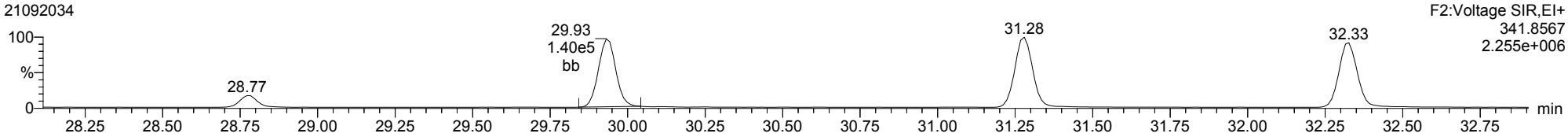

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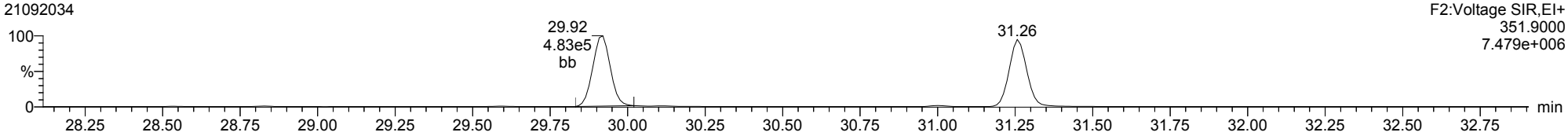

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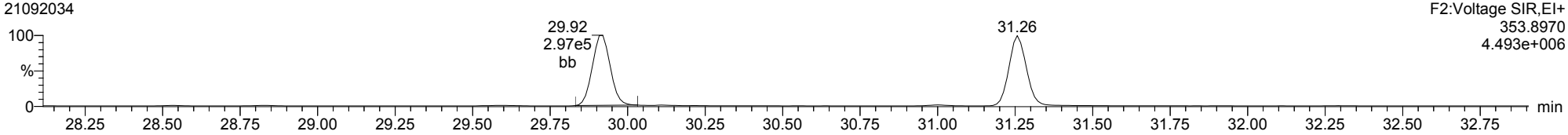
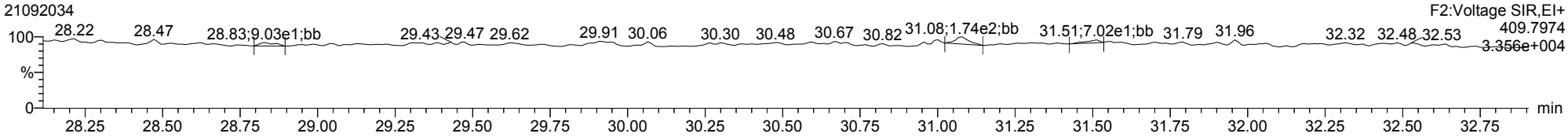


FUNCTION2 HPCDPE



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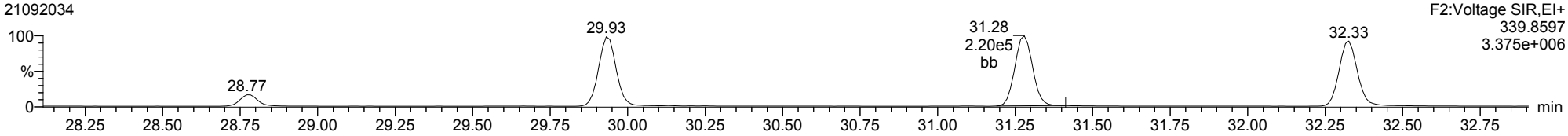
23478-PeCDF



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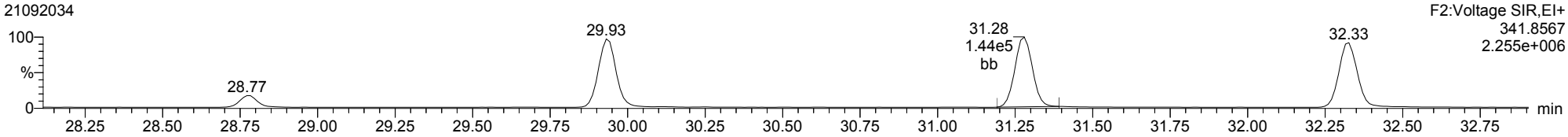

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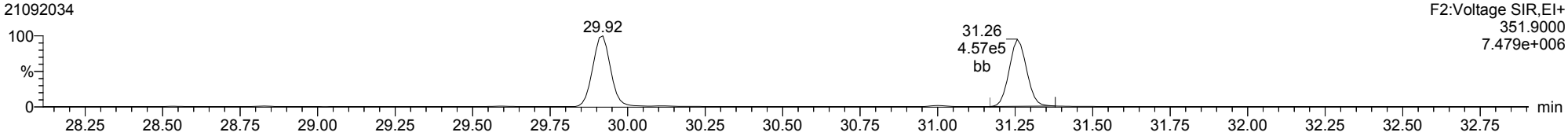

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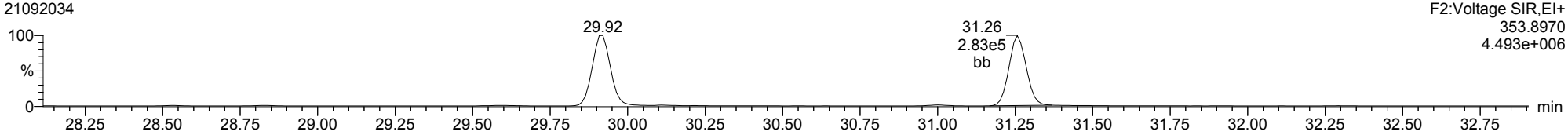

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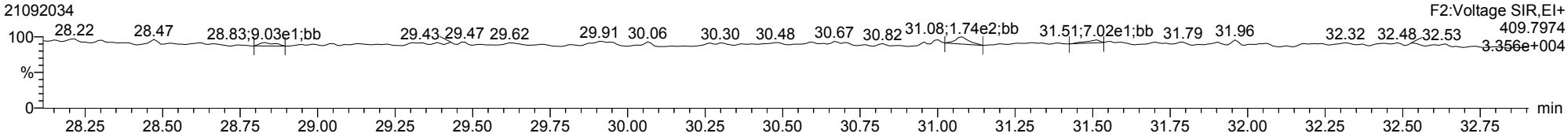

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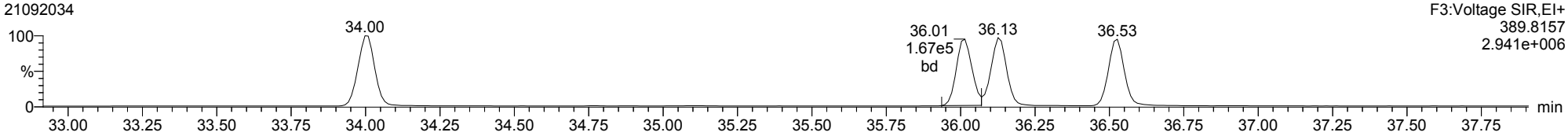
123478-HxCDD



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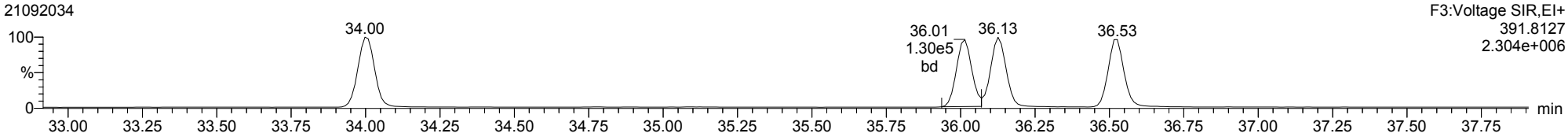

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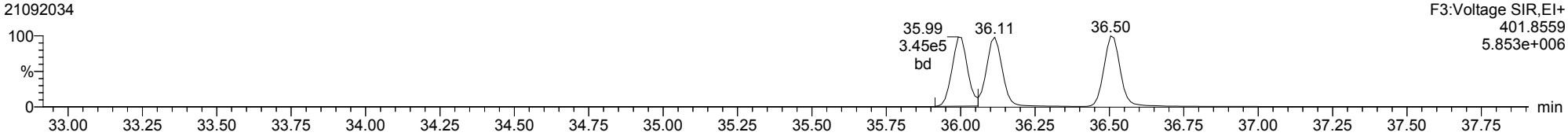

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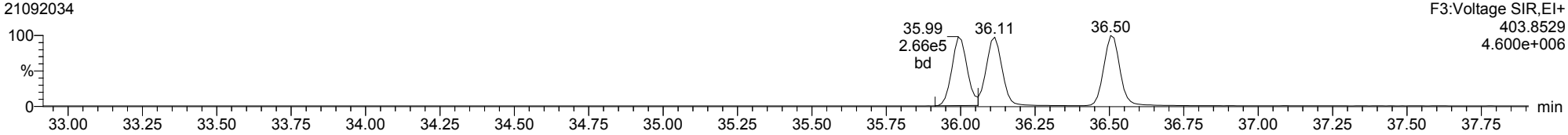

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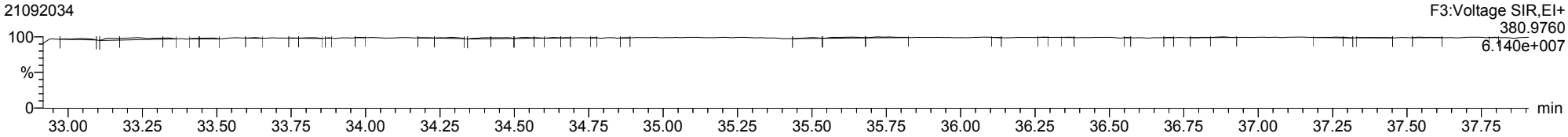

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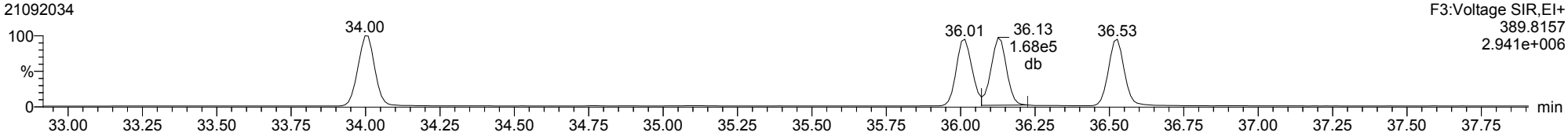

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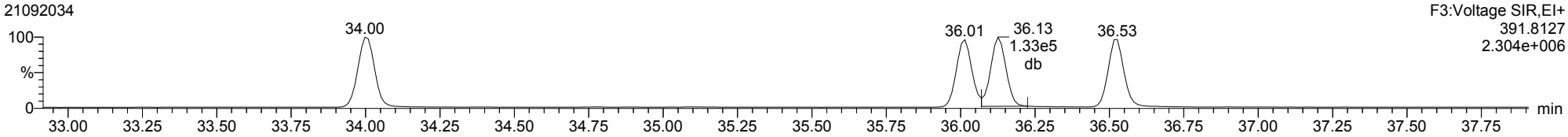

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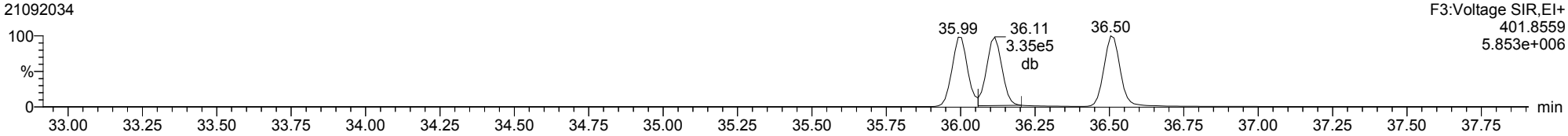

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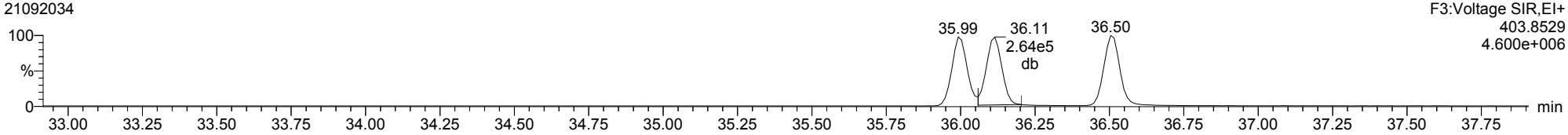

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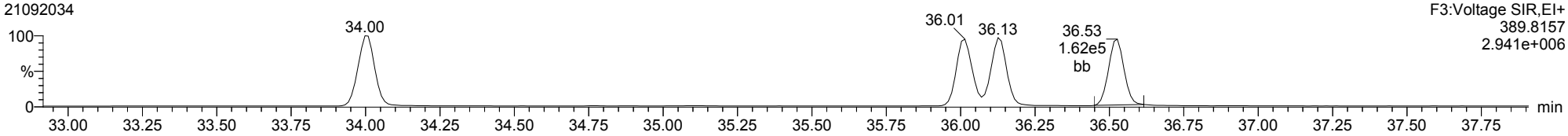

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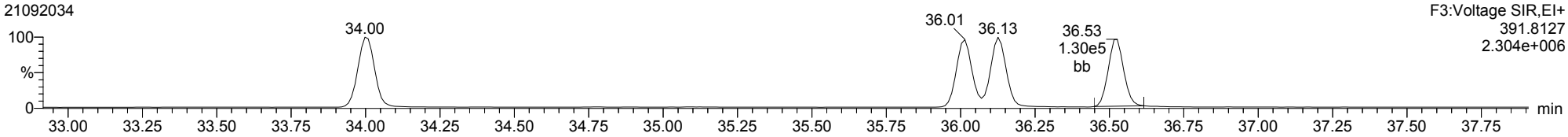

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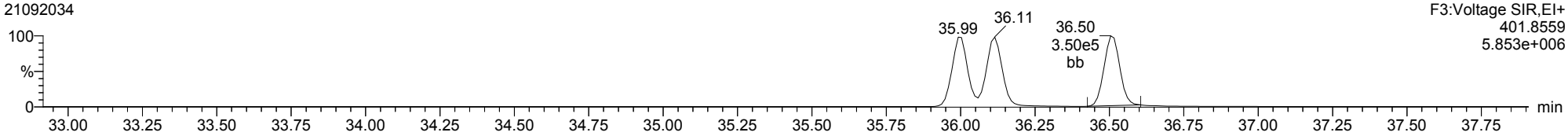

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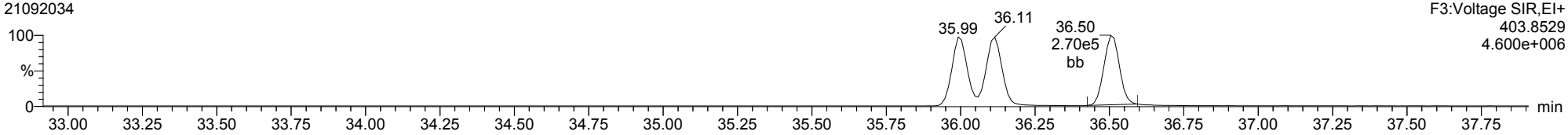

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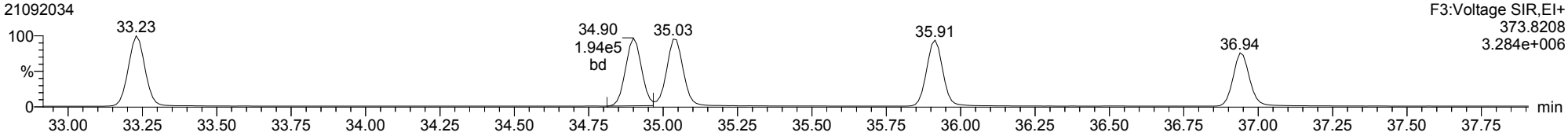

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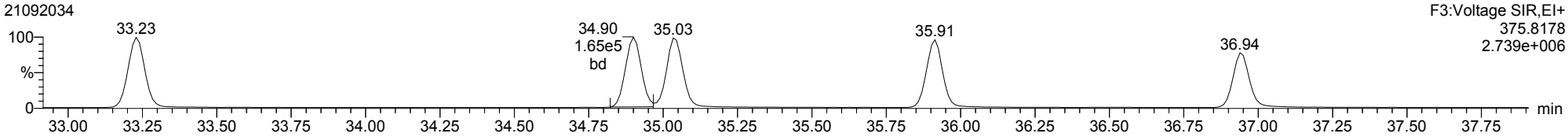

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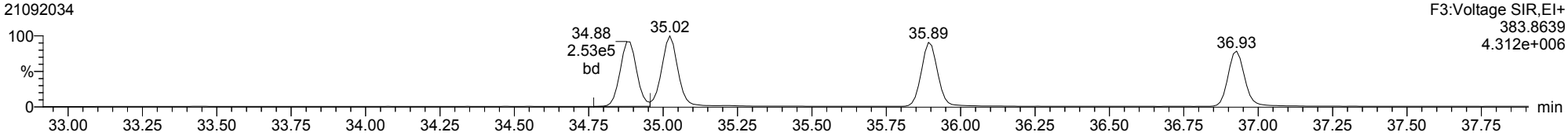

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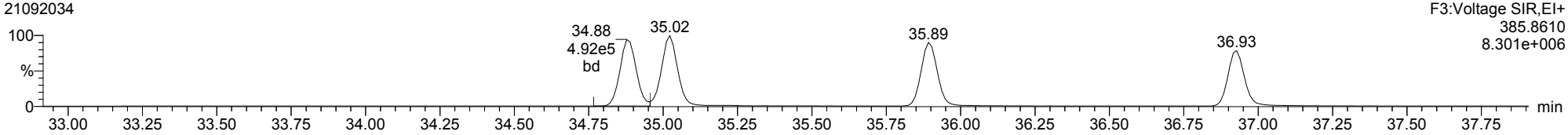
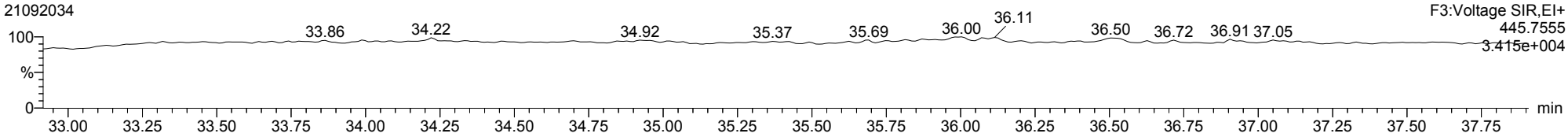


FUNCTION3 OCDPE



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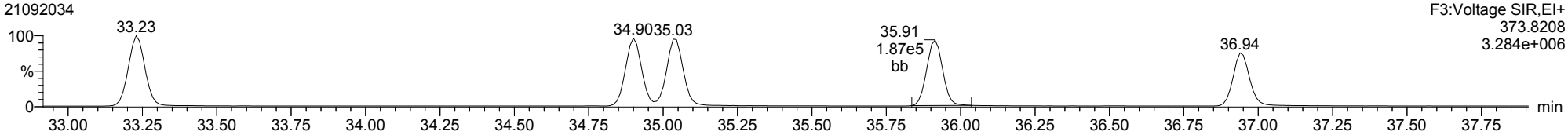
234678-HxCDF



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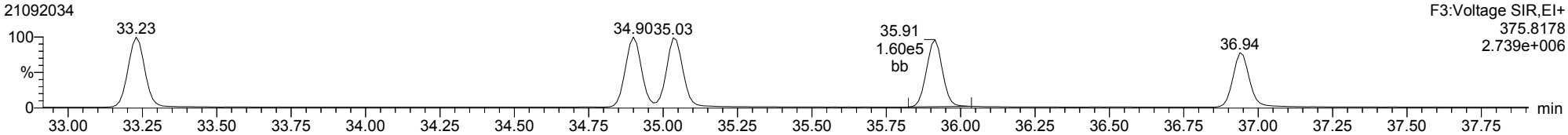

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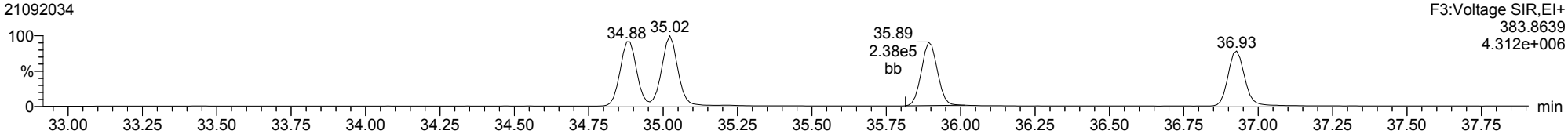

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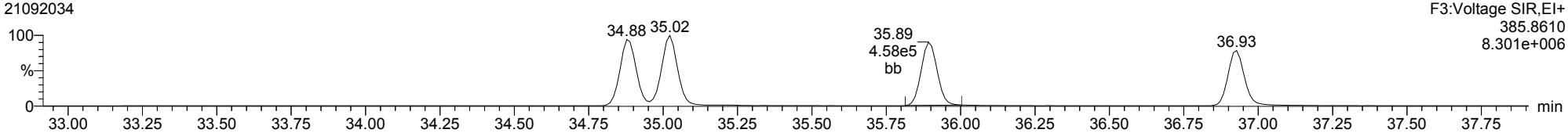
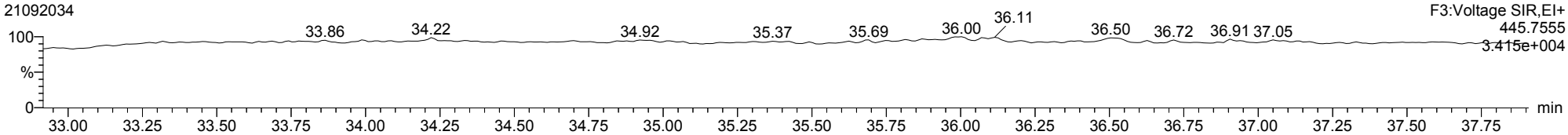


FUNCTION3 OCDPE



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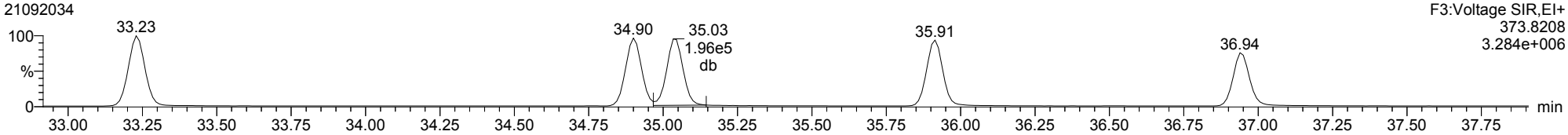

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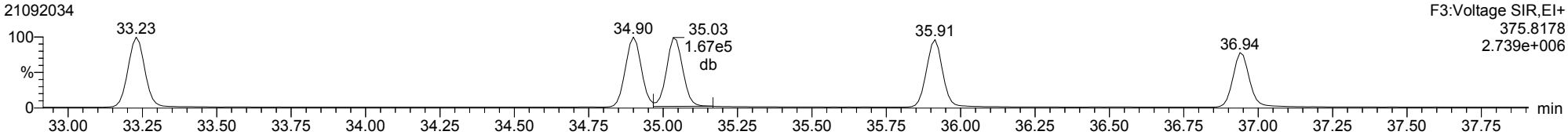

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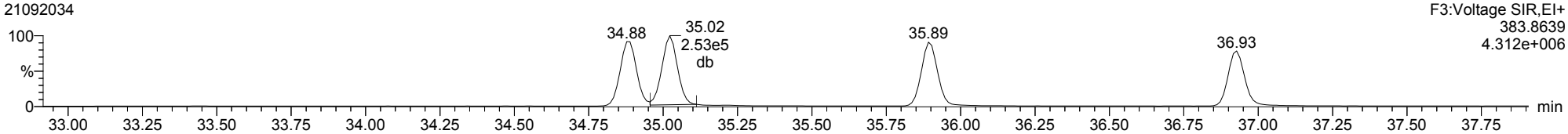

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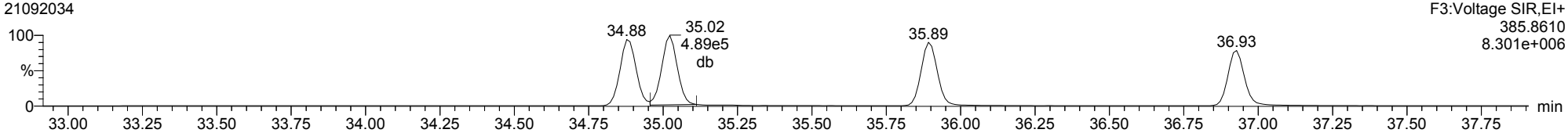
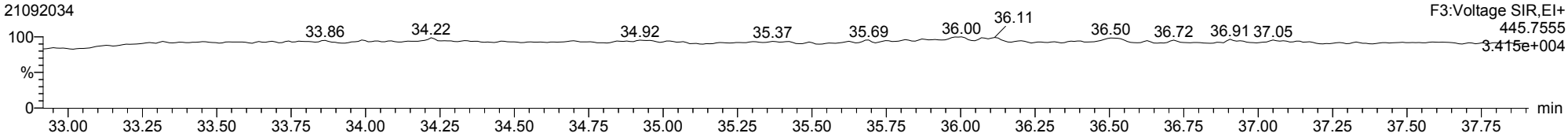


FUNCTION3 OCDPE



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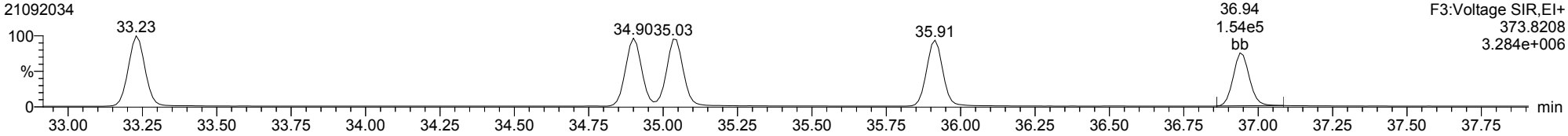

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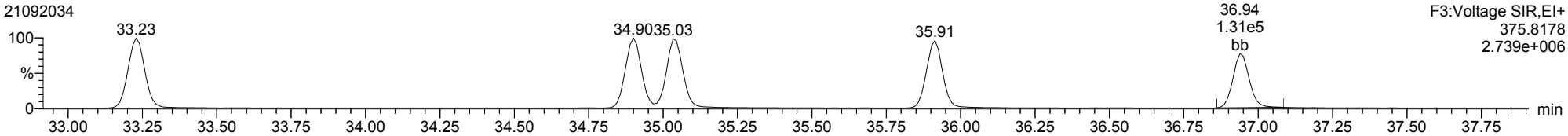

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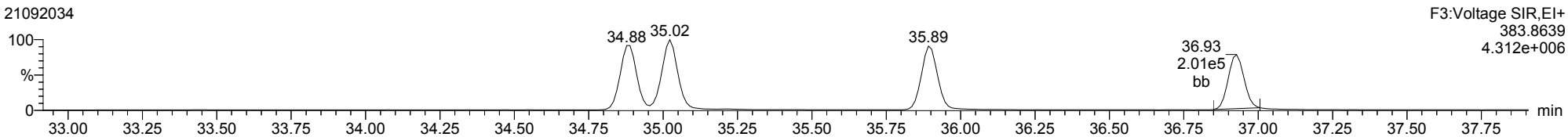

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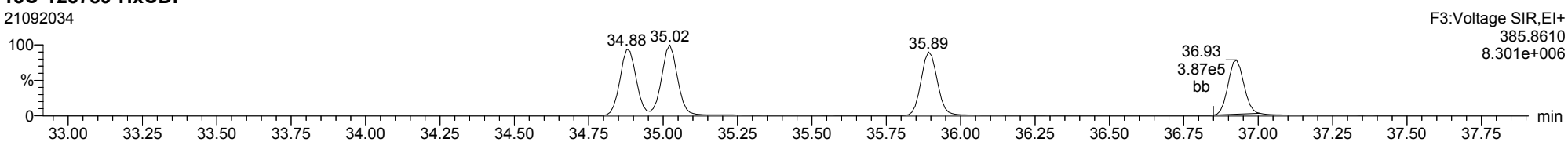

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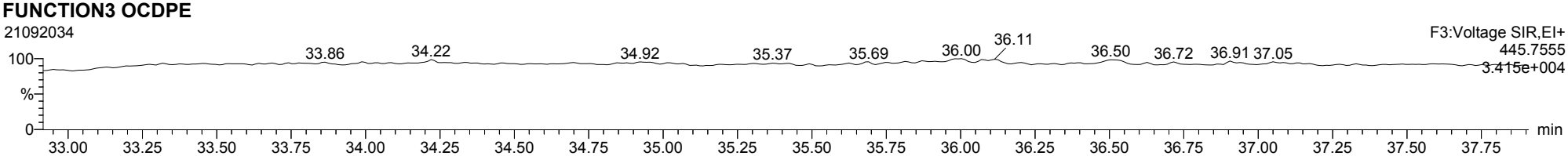

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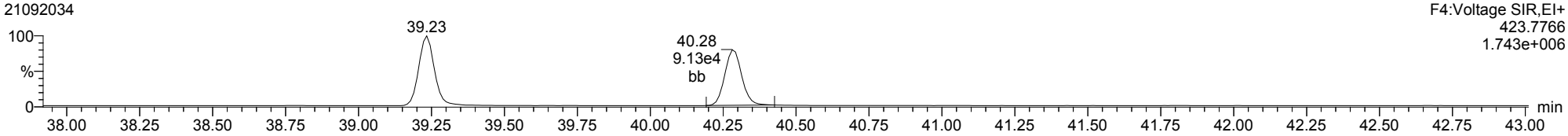

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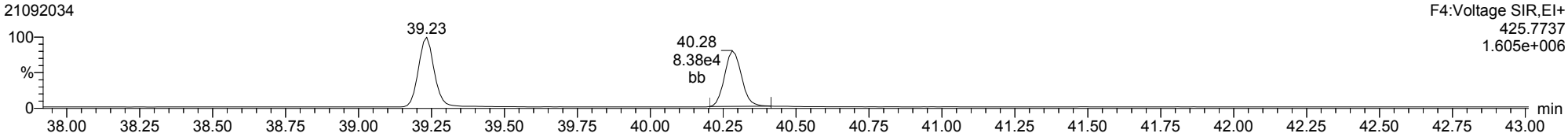

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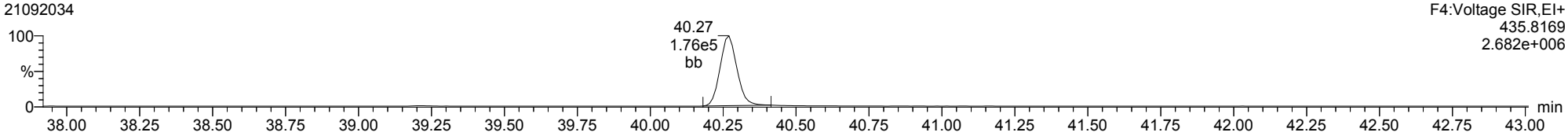

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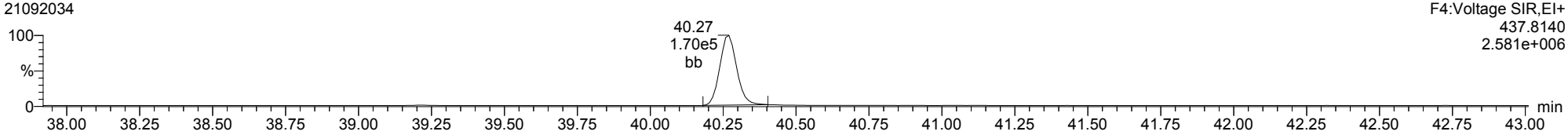

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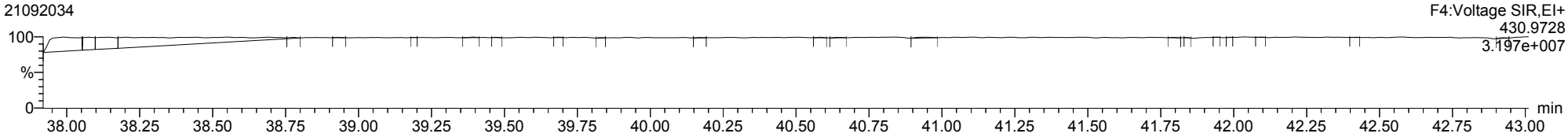

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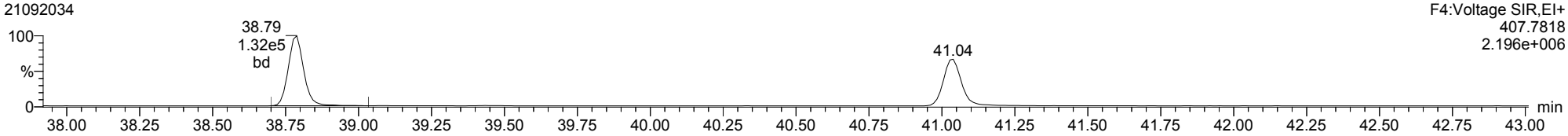

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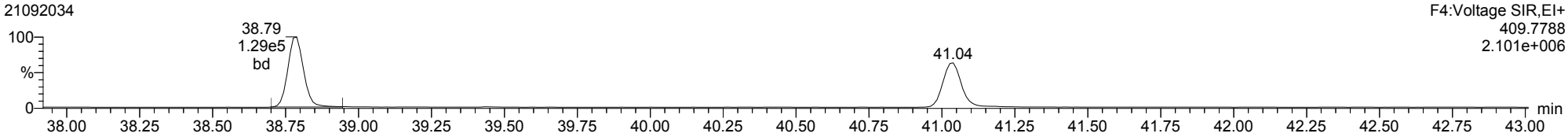

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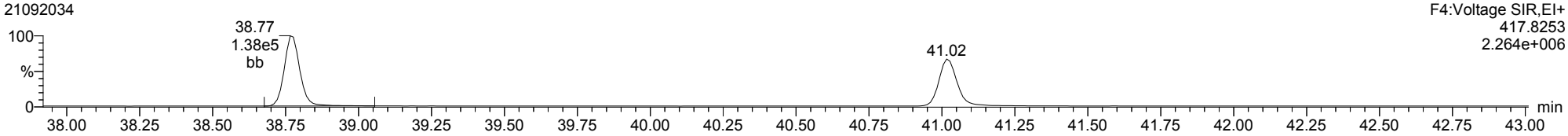

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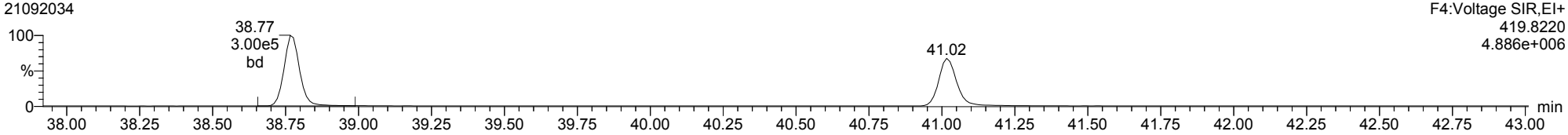

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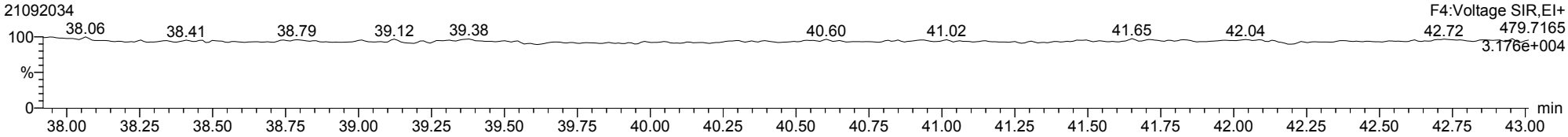

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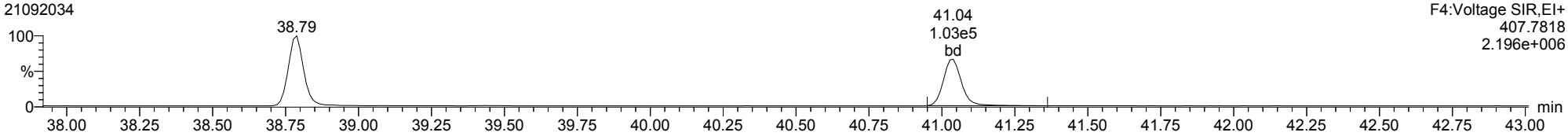

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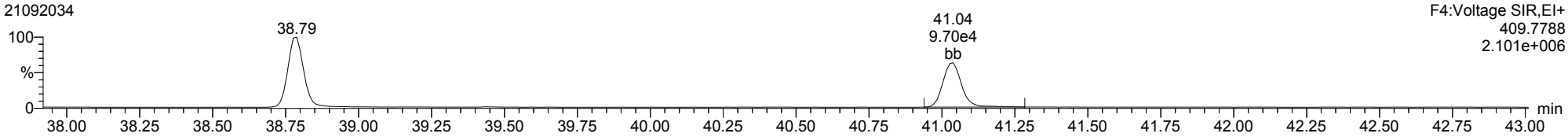

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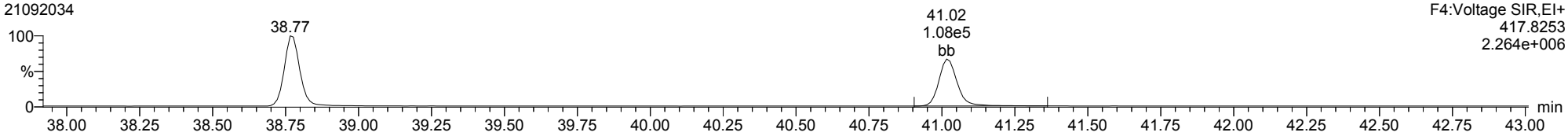

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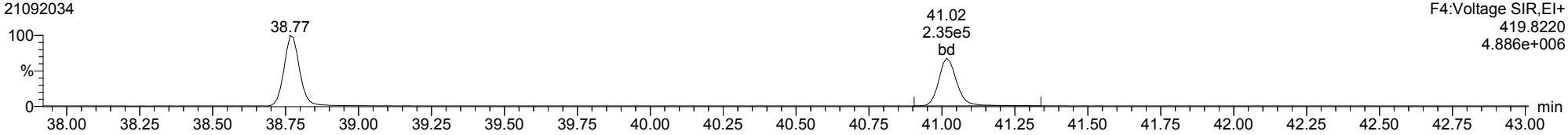

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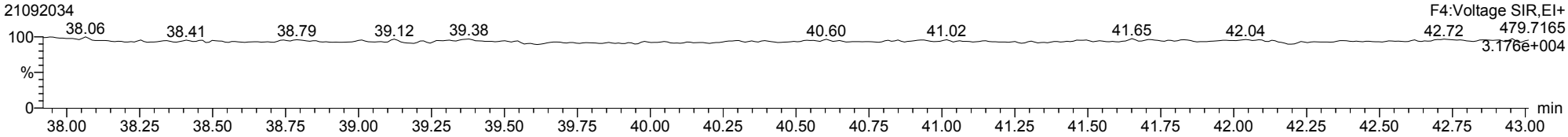

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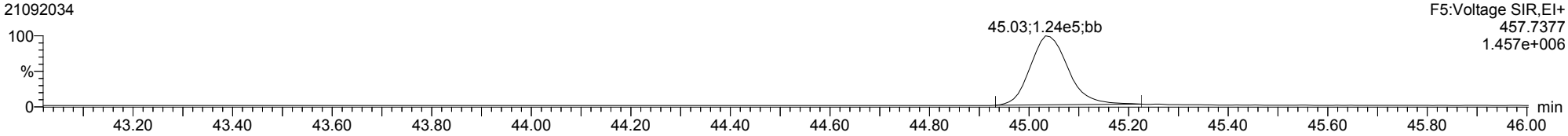

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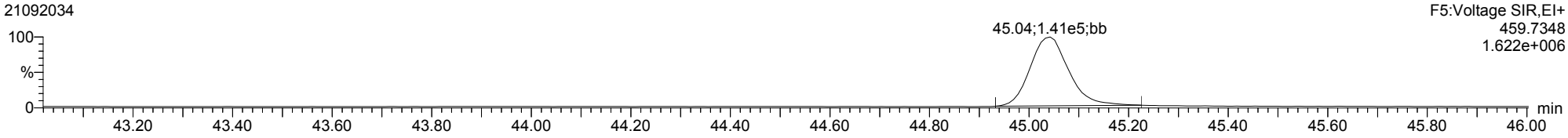

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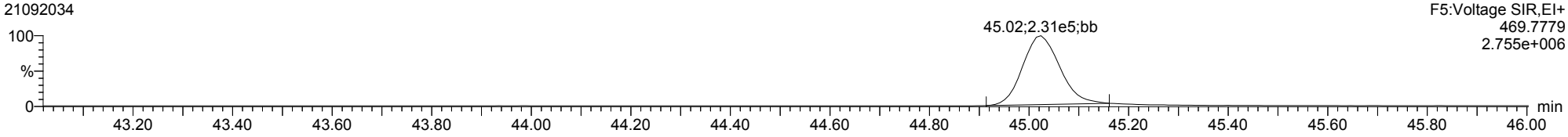

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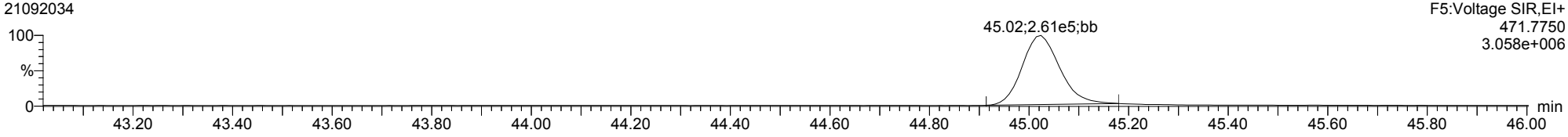

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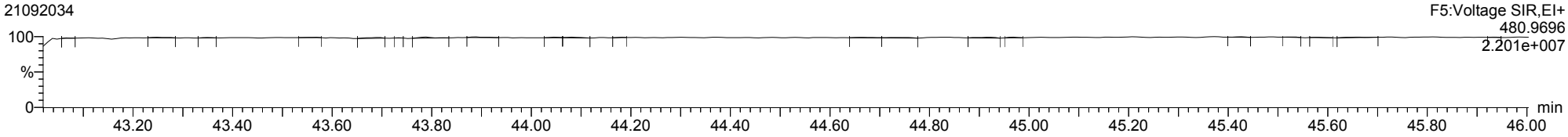

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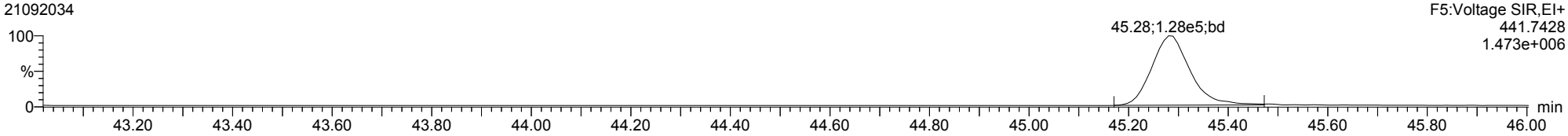

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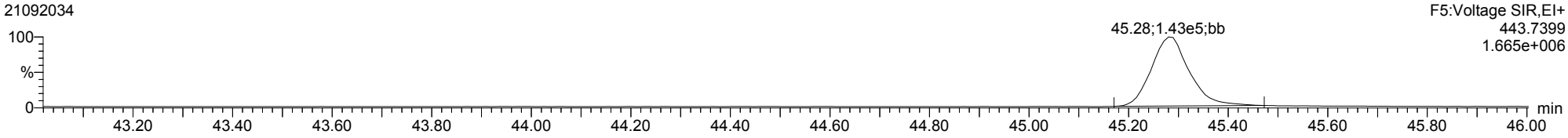

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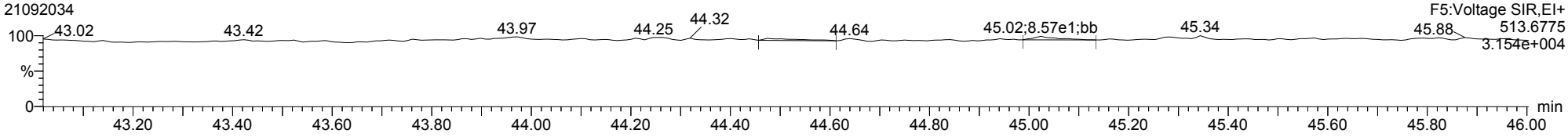

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Printed: Wednesday, September 22, 2021 09:38:52 Pacific Daylight Time

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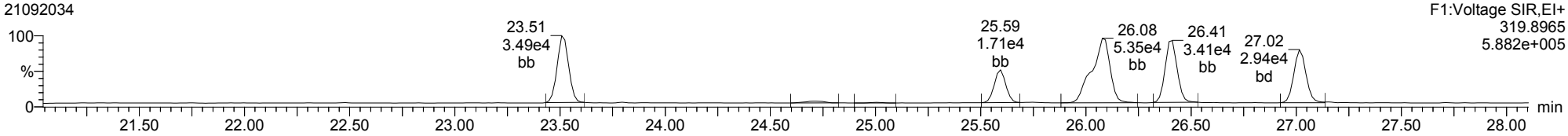

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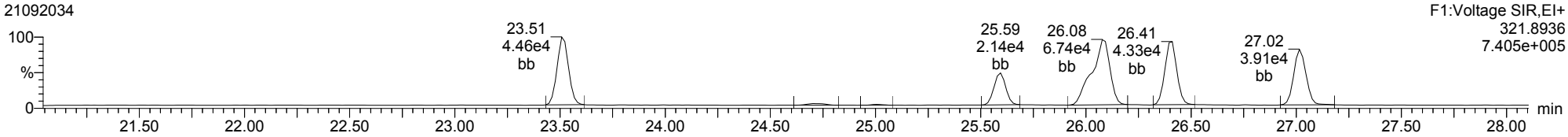

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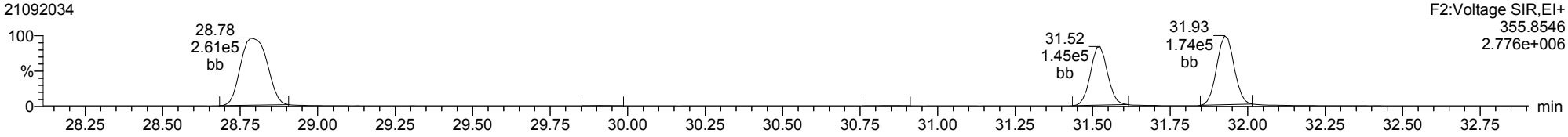

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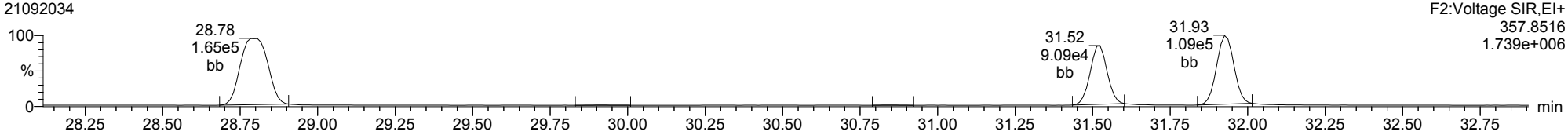

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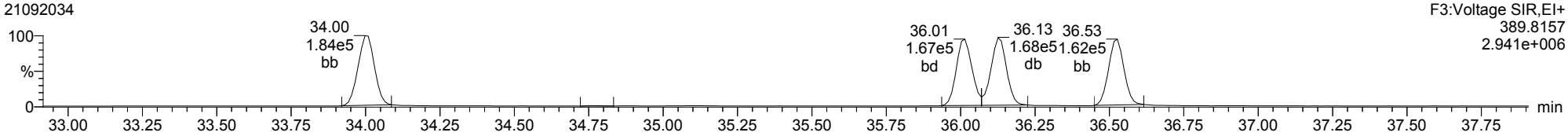

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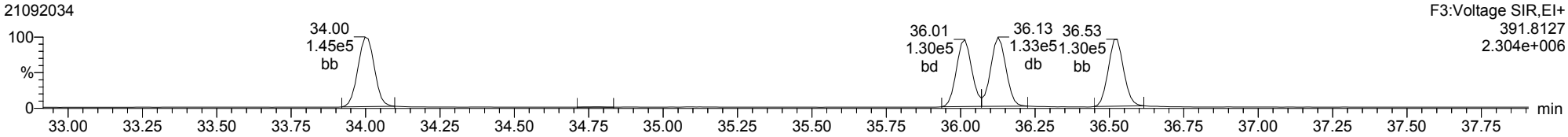

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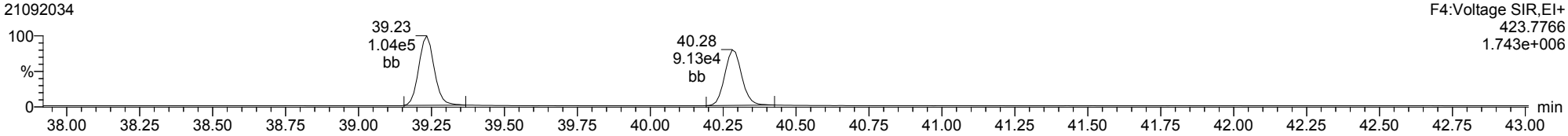

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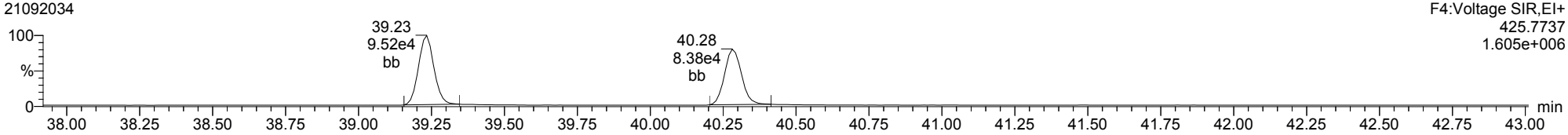

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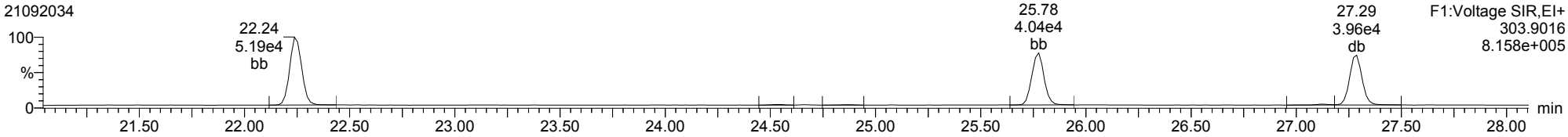
Total-tetrafurans



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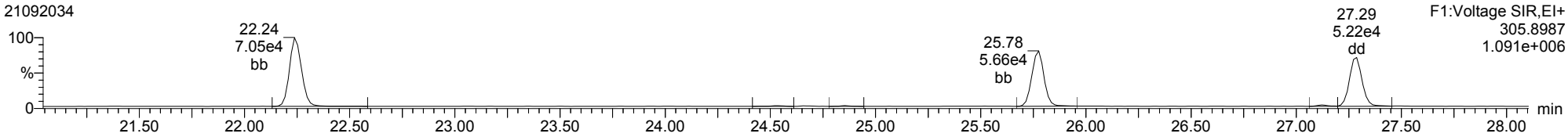

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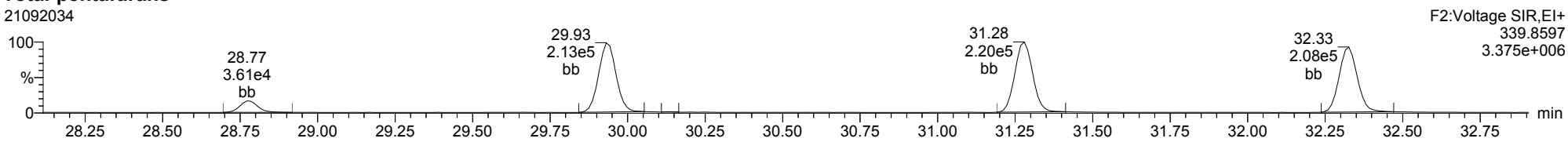

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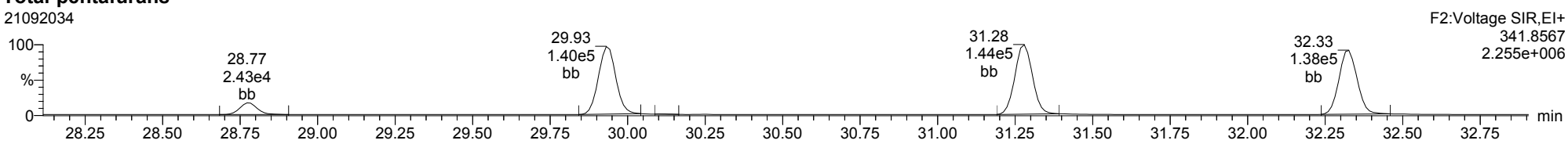

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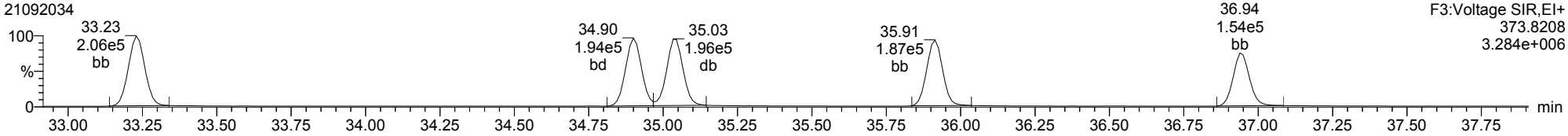
Total-hexafurans



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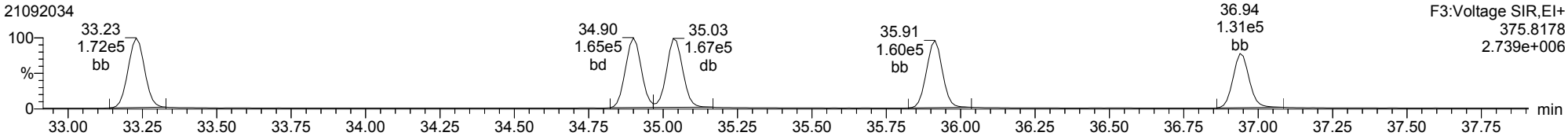

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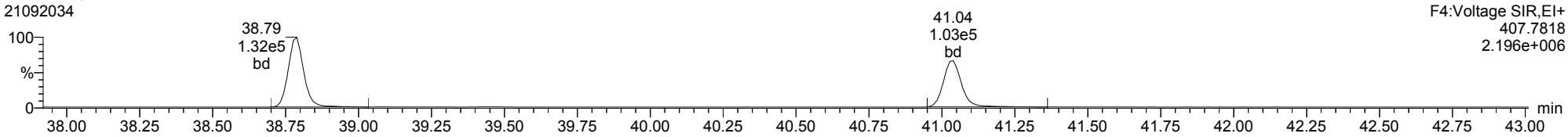

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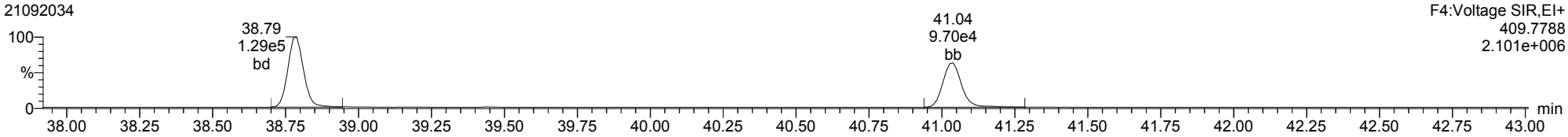

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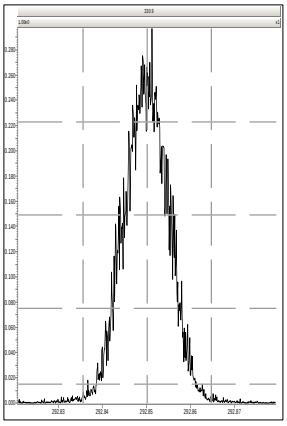

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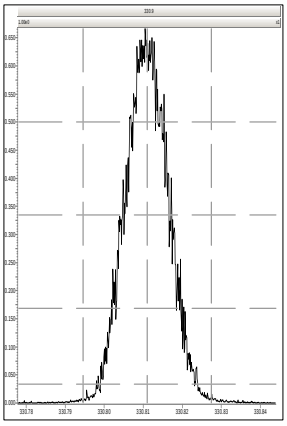

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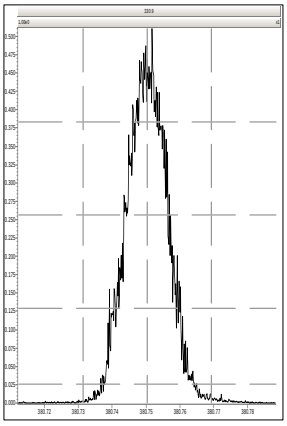

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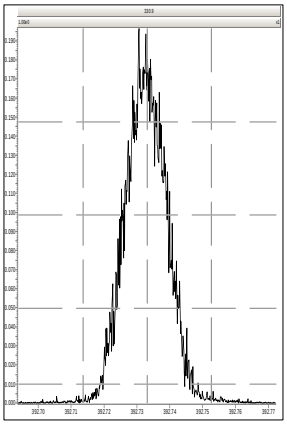
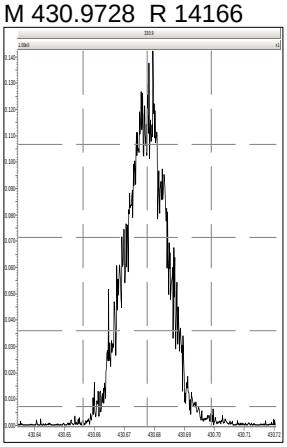
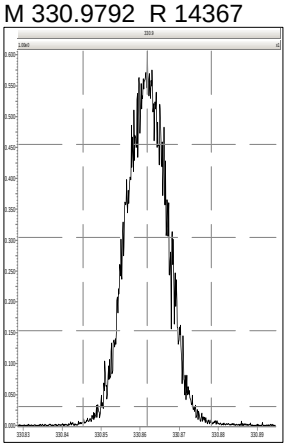


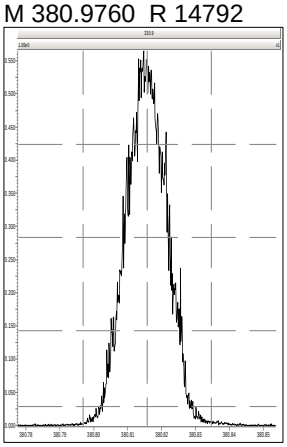
M 430.9728 R 14166



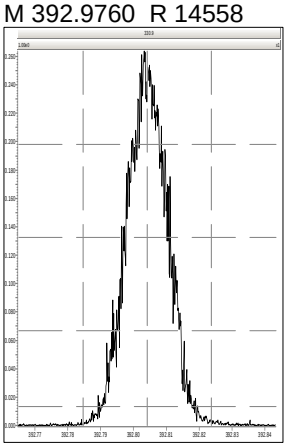
M 330.9792 R 14367



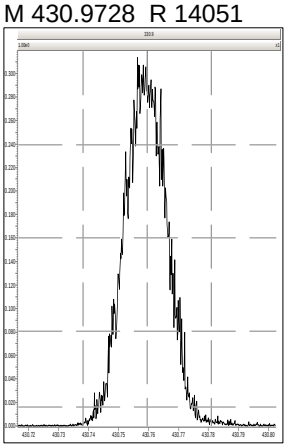
M 380.9760 R 14792



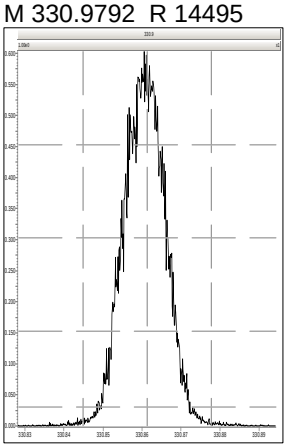
M 392.9760 R 14558



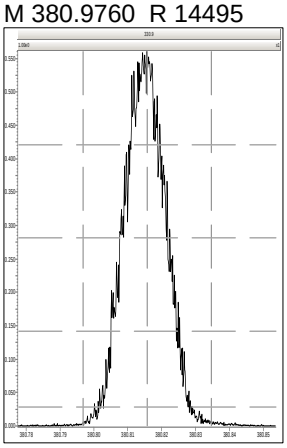
M 430.9728 R 14051



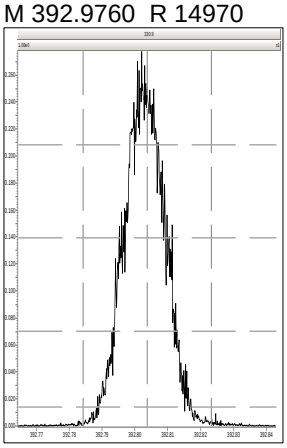
M 330.9792 R 14495



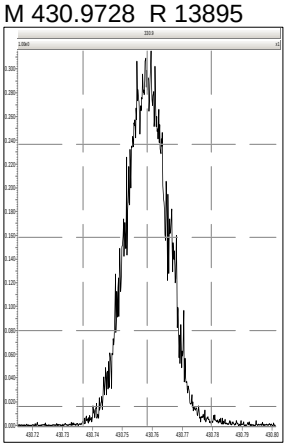
M 380.9760 R 14495



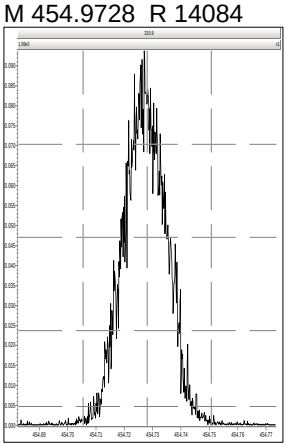
M 392.9760 R 14970



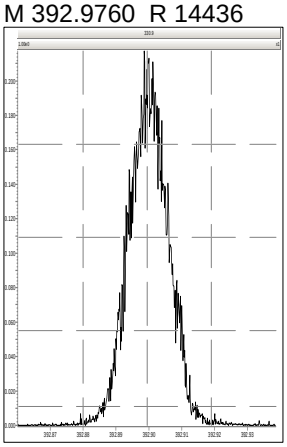
M 430.9728 R 13895



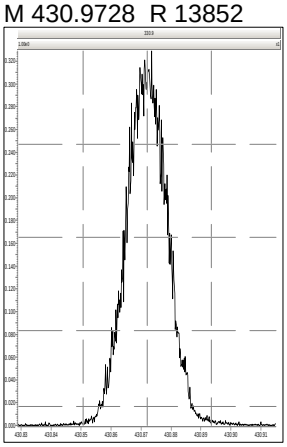
M 454.9728 R 14084



M 392.9760 R 14436

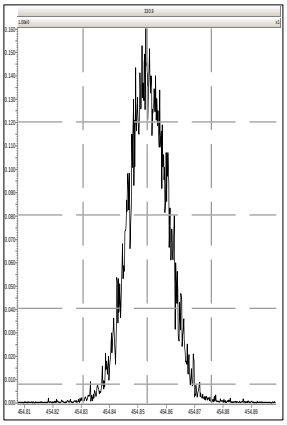


M 430.9728 R 13852

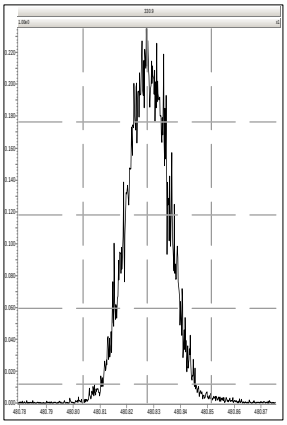


Printed: Tuesday, September 21, 2021 20:30:42 Pacific Daylight Time

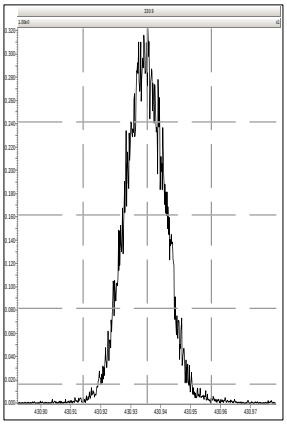
M 454.9728 R 13968



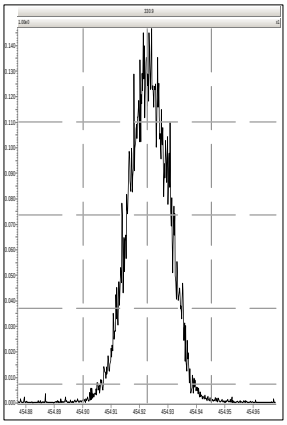
M 480.9696 R 14006



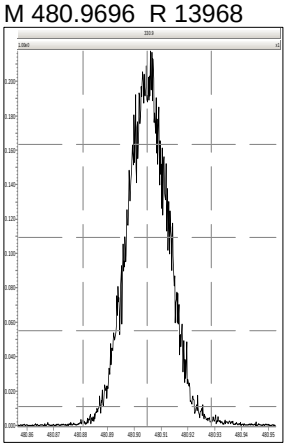
M 430.9728 R 14124



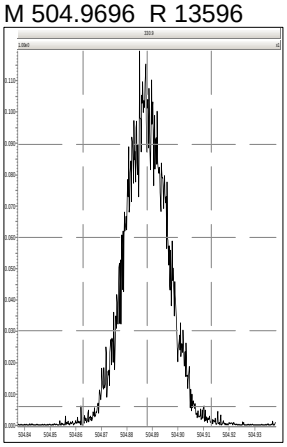
M 454.9728 R 14619



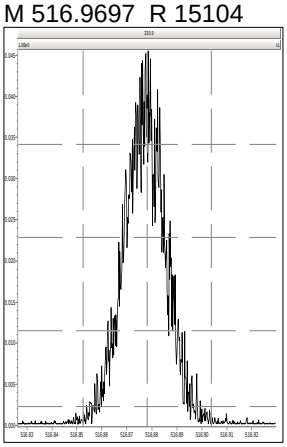
M 480.9696 R 13968

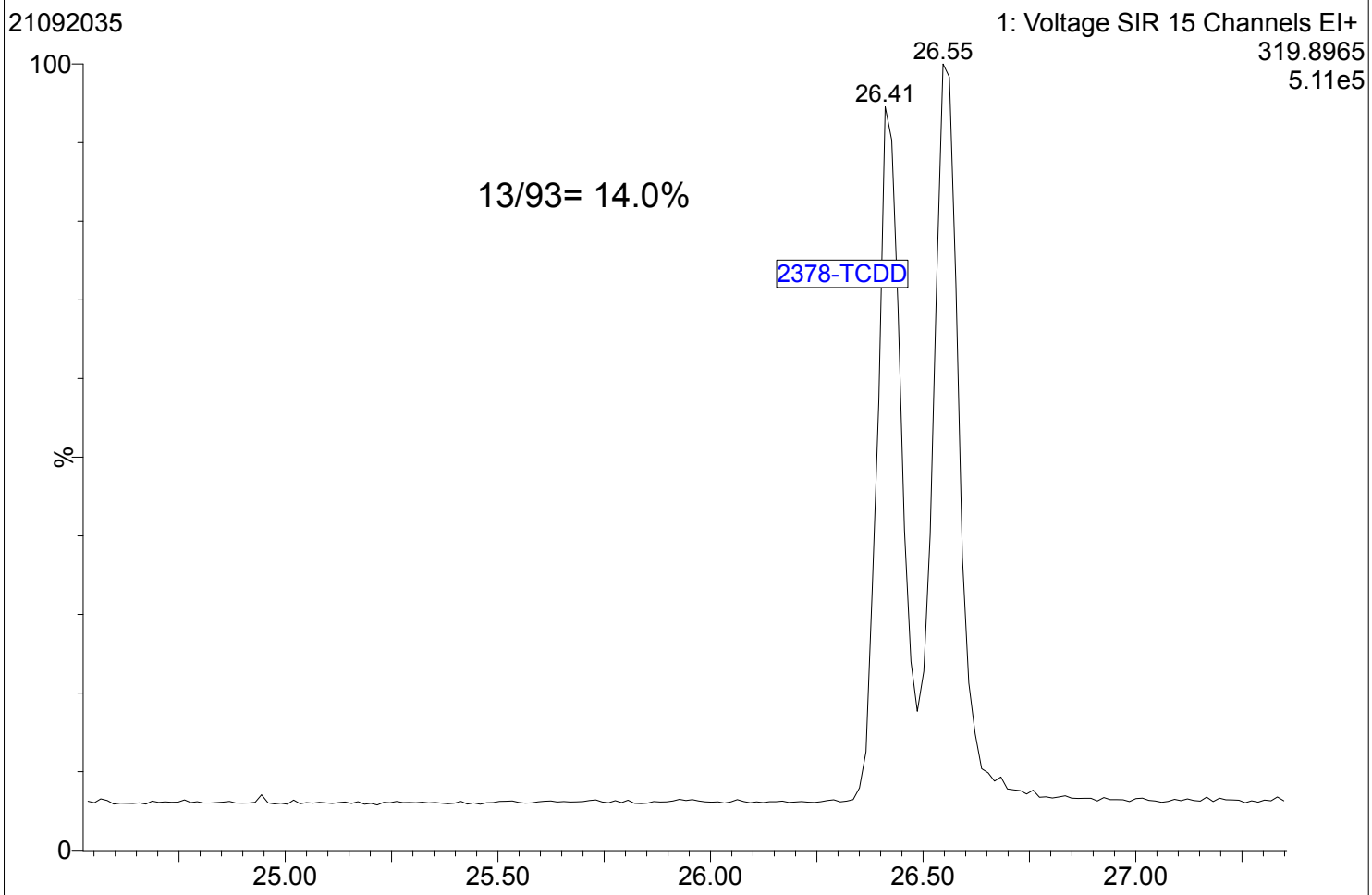


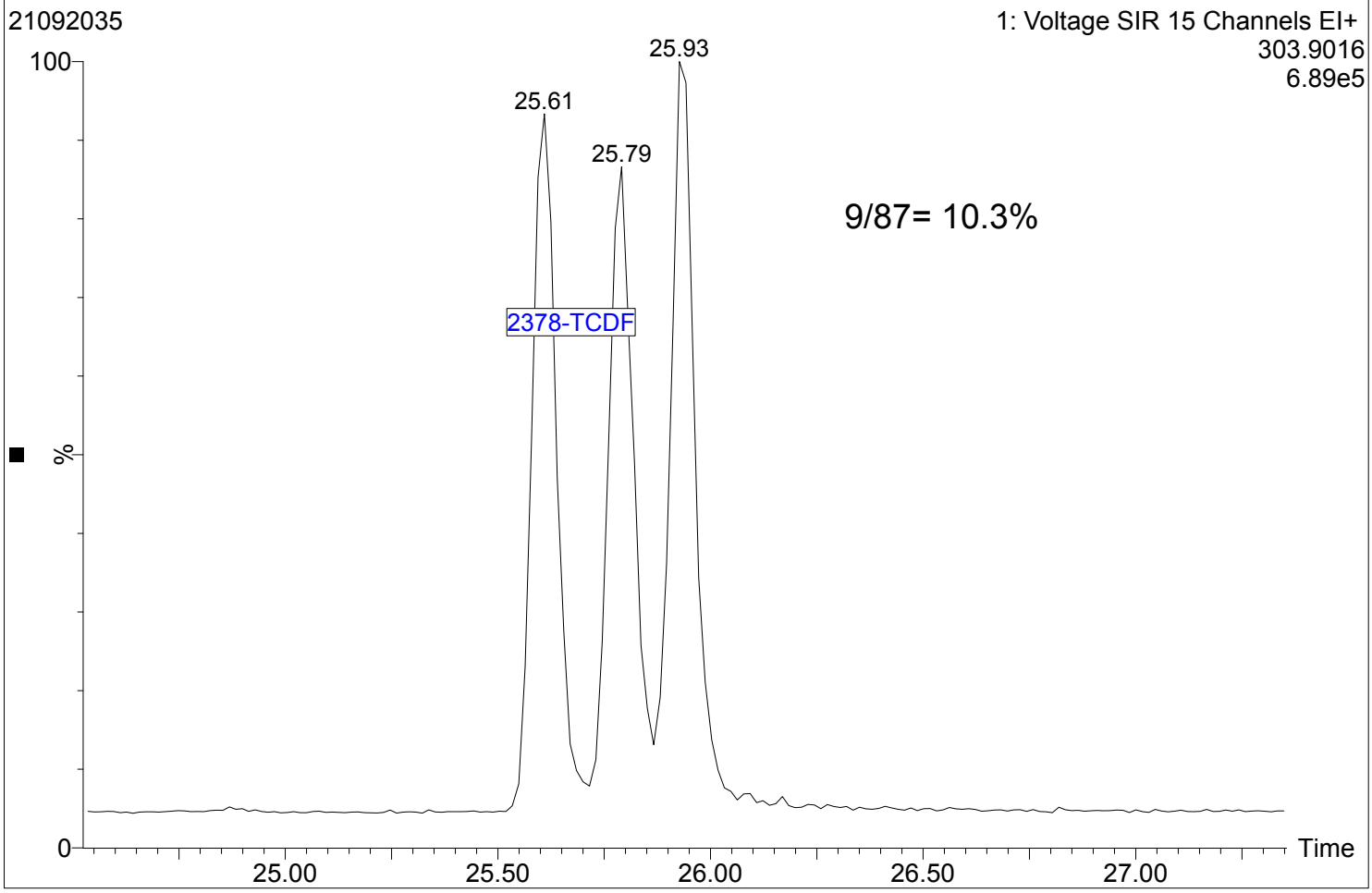
M 504.9696 R 13596



M 516.9697 R 15104




21092035
1: Voltage SIR 15 Channels EI+
319.8965
5.11e5
26.55
26.41
13/93= 14.0%
2378-TCDD
100
%
0
25.00
25.50
26.00
26.50
27.00


21092035
1: Voltage SIR 15 Channels EI+
303.9016
6.89e5
25.93
25.61
25.79
9/87= 10.3%
2378-TCDF
100
%
0
Time
25.00
25.50
26.00
26.50
27.00

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CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
EPA 1613B

Lab Name: Analytical Resources, Inc.
SDG: 21G0140
Instrument .ID: AUTOSPEC01
Lab File ID: 21081103
Date Analyzed: 08/11/21
Time Analyzed: 16:41
Lab Sample ID: SJH0117-RES1
Sequence: SJH0117

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 9

3467-TCDF/2378-TCDF: 9

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SJH0117-ICV1	CS3Z1	21081102A	08/11/2021	15:52
SJH0117-RES1	ISCZ1	21081103	08/11/2021	16:41
SJH0117-CAL1	CSLCV	21081104A	08/11/2021	17:30
SJH0117-CAL2	CS1CV	21081107A	08/11/2021	19:56
SJH0117-CAL3	CS2CV	21081108A	08/11/2021	20:45
SJH0117-CAL4	CS3CV	21081109A	08/11/2021	21:34
SJH0117-CAL5	CS4CV	21081110A	08/11/2021	22:22
SJH0117-CAL6	CS5CV	21081111A	08/11/2021	23:11
SJH0117-SCV1	ICVCV	21081112A	08/12/2021	00:00
SJH0117-CCV1	CS3Z2	21081113B	08/12/2021	00:48
SJH0117-RES2	ISCZ2	21081114	08/12/2021	01:42

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CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
EPA 1613B

Lab Name: Analytical Resources, Inc.
SDG: 21G0140
Instrument .ID: AUTOSPEC01
Lab File ID: 21081114
Date Analyzed: 08/12/21
Time Analyzed: 01:42
Lab Sample ID: SJH0117-RES2
Sequence: SJH0117

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 10.6

3467-TCDF/2378-TCDF: 11.1

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SJH0117-ICV1	CS3Z1	21081102A	08/11/2021	15:52
SJH0117-RES1	ISCZ1	21081103	08/11/2021	16:41
SJH0117-CAL1	CSLCV	21081104A	08/11/2021	17:30
SJH0117-CAL2	CS1CV	21081107A	08/11/2021	19:56
SJH0117-CAL3	CS2CV	21081108A	08/11/2021	20:45
SJH0117-CAL4	CS3CV	21081109A	08/11/2021	21:34
SJH0117-CAL5	CS4CV	21081110A	08/11/2021	22:22
SJH0117-CAL6	CS5CV	21081111A	08/11/2021	23:11
SJH0117-SCV1	ICVCV	21081112A	08/12/2021	00:00
SJH0117-CCV1	CS3Z2	21081113B	08/12/2021	00:48
SJH0117-RES2	ISCZ2	21081114	08/12/2021	01:42

Analytical Resources, Incorporated
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CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
EPA 1613B

Lab Name: Analytical Resources, Inc.
SDG: 21G0140
Instrument .ID: AUTOSPEC01
Lab File ID: 21092003
Date Analyzed: 09/20/21
Time Analyzed: 16:13
Lab Sample ID: SJI0309-RES1
Sequence: SJI0309

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 13.5

3467-TCDF/2378-TCDF: 11.7

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SJI0309-ICV1	CS3S1	21092002A	09/20/2021	15:25
SJI0309-RES1	ISCS1	21092003	09/20/2021	16:13
BJH0152-BLK1	Blank	21092004	09/20/2021	18:40
BJH0152-BS1	LCS	21092005	09/20/2021	19:29
BJH0152-SRM1	Reference	21092006	09/20/2021	20:18
SJI0309-CCV1	CS3S2	21092012	09/21/2021	01:12
SJI0309-RES2	ISCS2	21092013	09/21/2021	02:05
21G0140-04	LDW21-SC634A	21092018	09/21/2021	06:12
21G0140-05	LDW21-SC634A-FD	21092019	09/21/2021	07:02
21G0140-06	LDW21-SC634B	21092020	09/21/2021	07:50
21G0140-07	LDW21-SC634C	21092021	09/21/2021	08:39
SJI0309-CCV2	CS3S3	21092022	09/21/2021	09:36
SJI0309-RES3	ISCS3	21092023	09/21/2021	10:38
21G0140-08	LDW21-SC634E	21092024	09/21/2021	11:26
SJI0309-CCV3	CS3S4	21092034	09/21/2021	19:37
SJI0309-RES4	ISCS4	21092035	09/21/2021	20:30

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CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
EPA 1613B

Lab Name: Analytical Resources, Inc.
SDG: 21G0140
Instrument .ID: AUTOSPEC01
Lab File ID: 21092013
Date Analyzed: 09/21/21
Time Analyzed: 02:05
Lab Sample ID: SJI0309-RES2
Sequence: SJI0309

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 15

3467-TCDF/2378-TCDF: 12

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SJI0309-ICV1	CS3S1	21092002A	09/20/2021	15:25
SJI0309-RES1	ISCS1	21092003	09/20/2021	16:13
BJH0152-BLK1	Blank	21092004	09/20/2021	18:40
BJH0152-BS1	LCS	21092005	09/20/2021	19:29
BJH0152-SRM1	Reference	21092006	09/20/2021	20:18
SJI0309-CCV1	CS3S2	21092012	09/21/2021	01:12
SJI0309-RES2	ISCS2	21092013	09/21/2021	02:05
21G0140-04	LDW21-SC634A	21092018	09/21/2021	06:12
21G0140-05	LDW21-SC634A-FD	21092019	09/21/2021	07:02
21G0140-06	LDW21-SC634B	21092020	09/21/2021	07:50
21G0140-07	LDW21-SC634C	21092021	09/21/2021	08:39
SJI0309-CCV2	CS3S3	21092022	09/21/2021	09:36
SJI0309-RES3	ISCS3	21092023	09/21/2021	10:38
21G0140-08	LDW21-SC634E	21092024	09/21/2021	11:26
SJI0309-CCV3	CS3S4	21092034	09/21/2021	19:37
SJI0309-RES4	ISCS4	21092035	09/21/2021	20:30

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CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
EPA 1613B

Lab Name: Analytical Resources, Inc.
SDG: 21G0140
Instrument .ID: AUTOSPEC01
Lab File ID: 21092023
Date Analyzed: 09/21/21
Time Analyzed: 10:38
Lab Sample ID: SJI0309-RES3
Sequence: SJI0309

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 15.3

3467-TCDF/2378-TCDF: 11.2

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SJI0309-ICV1	CS3S1	21092002A	09/20/2021	15:25
SJI0309-RES1	ISCS1	21092003	09/20/2021	16:13
BJH0152-BLK1	Blank	21092004	09/20/2021	18:40
BJH0152-BS1	LCS	21092005	09/20/2021	19:29
BJH0152-SRM1	Reference	21092006	09/20/2021	20:18
SJI0309-CCV1	CS3S2	21092012	09/21/2021	01:12
SJI0309-RES2	ISCS2	21092013	09/21/2021	02:05
21G0140-04	LDW21-SC634A	21092018	09/21/2021	06:12
21G0140-05	LDW21-SC634A-FD	21092019	09/21/2021	07:02
21G0140-06	LDW21-SC634B	21092020	09/21/2021	07:50
21G0140-07	LDW21-SC634C	21092021	09/21/2021	08:39
SJI0309-CCV2	CS3S3	21092022	09/21/2021	09:36
SJI0309-RES3	ISCS3	21092023	09/21/2021	10:38
21G0140-08	LDW21-SC634E	21092024	09/21/2021	11:26
SJI0309-CCV3	CS3S4	21092034	09/21/2021	19:37
SJI0309-RES4	ISCS4	21092035	09/21/2021	20:30

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CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
EPA 1613B

Lab Name: Analytical Resources, Inc.
SDG: 21G0140
Instrument .ID: AUTOSPEC01
Lab File ID: 21092035
Date Analyzed: 09/21/21
Time Analyzed: 20:30
Lab Sample ID: SJI0309-RES4
Sequence: SJI0309

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 14

3467-TCDF/2378-TCDF: 10.3

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SJI0309-ICV1	CS3S1	21092002A	09/20/2021	15:25
SJI0309-RES1	ISCS1	21092003	09/20/2021	16:13
BJH0152-BLK1	Blank	21092004	09/20/2021	18:40
BJH0152-BS1	LCS	21092005	09/20/2021	19:29
BJH0152-SRM1	Reference	21092006	09/20/2021	20:18
SJI0309-CCV1	CS3S2	21092012	09/21/2021	01:12
SJI0309-RES2	ISCS2	21092013	09/21/2021	02:05
21G0140-04	LDW21-SC634A	21092018	09/21/2021	06:12
21G0140-05	LDW21-SC634A-FD	21092019	09/21/2021	07:02
21G0140-06	LDW21-SC634B	21092020	09/21/2021	07:50
21G0140-07	LDW21-SC634C	21092021	09/21/2021	08:39
SJI0309-CCV2	CS3S3	21092022	09/21/2021	09:36
SJI0309-RES3	ISCS3	21092023	09/21/2021	10:38
21G0140-08	LDW21-SC634E	21092024	09/21/2021	11:26
SJI0309-CCV3	CS3S4	21092034	09/21/2021	19:37
SJI0309-RES4	ISCS4	21092035	09/21/2021	20:30

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJH0117	Instrument:	AUTOSPEC01
		Calibration:	UNASSIGNED

Sample Name	Lab Sample ID	Lab File ID	Matrix	Analysis Date/Time
CS3Z1	SJH0117-ICV1	21081102A	NA	08/11/21 15:52
ISCZ1	SJH0117-RES1	21081103	NA	08/11/21 16:41
CSLCV	SJH0117-CAL1	21081104A	NA	08/11/21 17:30
CS1CV	SJH0117-CAL2	21081107A	NA	08/11/21 19:56
CS2CV	SJH0117-CAL3	21081108A	NA	08/11/21 20:45
CS3CV	SJH0117-CAL4	21081109A	NA	08/11/21 21:34
CS4CV	SJH0117-CAL5	21081110A	NA	08/11/21 22:22
CS5CV	SJH0117-CAL6	21081111A	NA	08/11/21 23:11
ICVCV	SJH0117-SCV1	21081112A	NA	08/12/21 00:00
CS3Z2	SJH0117-CCV1	21081113B	NA	08/12/21 00:48
ISCZ2	SJH0117-RES2	21081114	NA	08/12/21 01:42

Analytical Resources, Incorporated
Analytical Chemists and Consultants

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJI0309	Instrument:	AUTOSPEC01
		Calibration:	EH00030

Sample Name	Lab Sample ID	Lab File ID	Matrix	Analysis Date/Time
CS3S1	SJI0309-ICV1	21092002A	NA	09/20/21 15:25
ISCS1	SJI0309-RES1	21092003	NA	09/20/21 16:13
Blank	BJH0152-BLK1	21092004	Solid	09/20/21 18:40
LCS	BJH0152-BS1	21092005	Solid	09/20/21 19:29
Reference	BJH0152-SRM1	21092006	Solid	09/20/21 20:18
CS3S2	SJI0309-CCV1	21092012	NA	09/21/21 01:12
ISCS2	SJI0309-RES2	21092013	NA	09/21/21 02:05
LDW21-SC634A	21G0140-04	21092018	Solid	09/21/21 06:12
LDW21-SC634A-FD	21G0140-05	21092019	Solid	09/21/21 07:02
LDW21-SC634B	21G0140-06	21092020	Solid	09/21/21 07:50
LDW21-SC634C	21G0140-07	21092021	Solid	09/21/21 08:39
CS3S3	SJI0309-CCV2	21092022	NA	09/21/21 09:36
ISCS3	SJI0309-RES3	21092023	NA	09/21/21 10:38
LDW21-SC634E	21G0140-08	21092024	Solid	09/21/21 11:26
CS3S4	SJI0309-CCV3	21092034	NA	09/21/21 19:37
ISCS4	SJI0309-RES4	21092035	NA	09/21/21 20:30

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Printed: 9/22/2021 10:04:48AM

ANALYSIS SEQUENCE

SJI0309

Instrument: AUTOSPEC01 Element Column ID: J6460
Calibration ID: EH00030 Tune File: SEP0321_1-5
EM Voltage: 350 Resolution check times : 14:24, 02:05, 10:37, 20:30

Lab Number	Sample Name	Analysis	Container	Order	STD ID	ISTD ID	Analyzed	File ID	Analyst	Comments
SJI0309-ICV1	CS3S1	QC		1	J001522		09/20/2021 15:25	21092002A	PK	
SJI0309-RES1	ISCS1	QC		2	J005595		09/20/2021 16:13	21092003	PK	
BJH0152-BLK1	Blank	QC		3		J005741	09/20/2021 18:40	21092004	PK	
BJH0152-BS1	LCS	QC		4		J005741	09/20/2021 19:29	21092005	PK	
BJH0152-SRM1	Reference	QC		5		J005741	09/20/2021 20:18	21092006	PK	
BJH0152-DUP1	Duplicate	QC		6		J005741	09/20/2021 21:07	21092007	PK	
21G0126-07	LDW21-IT653B	1613B Dioxin	A 01	7		J005741	09/20/2021 21:56	21092008	PK	
21G0126-08	LDW21-IT653C	1613B Dioxin	A 01	8		J005741	09/20/2021 22:45	21092009	PK	
21G0126-09	LDW21-IT653E	1613B Dioxin	A 01	9		J005741	09/20/2021 23:34	21092010	PK	
21G0126-10	LDW21-IT652B	1613B Dioxin	A 01	10		J005741	09/21/2021 00:23	21092011	PK	
SJI0309-CCV1	CS3S2	QC		11	J001522		09/21/2021 01:12	21092012	PK	
SJI0309-RES2	ISCS2	QC		12	J005595		09/21/2021 02:05	21092013	PK	
21G0126-11	LDW21-IT652C	1613B Dioxin	A 01	13		J005741	09/21/2021 02:57	21092014	PK	
21G0126-12	LDW21-IT652E	1613B Dioxin	A 01	14		J005741	09/21/2021 03:46	21092015	PK	
21G0126-13	LDW21-IT632B	1613B Dioxin	A 01	15		J005741	09/21/2021 04:34	21092016	PK	
21G0126-14	LDW21-IT632C	1613B Dioxin	A 01	16		J005741	09/21/2021 05:24	21092017	PK	
21G0140-04	LDW21-SC634A	1613B Dioxin	C 01	17		J005741	09/21/2021 06:12	21092018	PK	
21G0140-05	LDW21-SC634A-FD	1613B Dioxin	C 01	18		J005741	09/21/2021 07:02	21092019	PK	
21G0140-06	LDW21-SC634B	1613B Dioxin	C 01	19		J005741	09/21/2021 07:50	21092020	PK	
21G0140-07	LDW21-SC634C	1613B Dioxin	C 01	20		J005741	09/21/2021 08:39	21092021	PK	
SJI0309-CCV2	CS3S3	QC		21	J001522		09/21/2021 09:36	21092022	PK	
SJI0309-RES3	ISCS3	QC		22	J005595		09/21/2021 10:38	21092023	PK	

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ANALYSIS SEQUENCE

SJI0309

Instrument: AUTOSPEC01 Element Column ID: J6460
Calibration ID: EH00030 Tune File: SEP0321_1-5
EM Voltage: 350 Resolution check times : 14:24, 02:05, 10:37, 20:30

Lab Number	Sample Name	Analysis	Container	Order	STD ID	ISTD ID	Analyzed	File ID	Analyst	Comments
21G0140-08	LDW21-SC634E	1613B Dioxin	C 01	23		J005741	09/21/2021 11:26	21092024	PK	
21G0156-01	LDW21-IT622A	1613B Dioxin	C 01	24		J005741	09/21/2021 12:15	21092025	PK	
21G0156-02	LDW21-IT622B	1613B Dioxin	C 01	25		J005741	09/21/2021 13:05	21092026	PK	
21G0156-03	LDW21-IT622C	1613B Dioxin	C 01	26		J005741	09/21/2021 13:53	21092027	PK	
21G0156-04	LDW21-IT622E	1613B Dioxin	C 01	27		J005741	09/21/2021 14:43	21092028	PK	
21G0156-05	LDW21-IT660B	1613B Dioxin	C 01	28		J005741	09/21/2021 15:32	21092029	PK	
SJI0309-CCV3	CS3S4	QC		29	J001522		09/21/2021 19:37	21092034	PK	
SJI0309-RES4	ISCS4	QC		30	J005595		09/21/2021 20:30	21092035	PK	

Quantify Audit Report MassLynx MassLynx V4.1 SCN909

Dataset: T:\Autospec\Processed Data Batch\210920OP.qld
Last Altered: Tuesday, September 21, 2021 09:53:43 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 09:55:15 Pacific Daylight Time 9/21/21 pk

Event	Details	Sample ID
Process Extract		
Process Integrate		
Process Quantify		
Dataset Created		
Pre modification peak	Sample:21092002A, Compound:TF, RT:25.761	1
Peak modified	Sample:21092002A, Compound:TF, RT:25.761	1
Pre modification peak	Sample:21092002A, Compound:TF, RT:25.761	1
Peak modified	Sample:21092002A, Compound:TF, RT:25.761	1
Peak modified	Sample:21092002A, Compound:TF, RT:25.761	1
Peak modified	Sample:21092002A, Compound:TF, RT:25.761	1
Dataset Saved	Saved to 'T:\Autospec\Processed Data Batch\210920OP.qld'	

Dataset: T:\Autospec\Processed Data Batch\210920D1.qld
Last Altered: Tuesday, September 21, 2021 10:30:31 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 10:31:33 Pacific Daylight Time 9/21/21 pk

Event	Details	Sample ID
Process Extract		
Process Integrate		
Process Quantify		
Dataset Created		
Peak deleted	Sample:21092004, Compound:OF, RT:44.995	1
Peak deleted	Sample:21092004, Compound:TD, RT:26.381	1
Pre modification peak	Sample:21092006, Compound:TF, RT:25.746	3
Peak modified	Sample:21092006, Compound:TF, RT:25.746	3
Pre modification peak	Sample:21092006, Compound:PF, RT:31.246	3
Peak modified	Sample:21092006, Compound:PF, RT:31.246	3
Pre modification peak	Sample:21092006, Compound:HF, RT:36.895	3
Peak modified	Sample:21092006, Compound:HF, RT:36.895	3
Pre modification peak	Sample:21092010, Compound:HF, RT:35.914	7
Peak modified	Sample:21092010, Compound:HF, RT:35.914	7
Peak added	Sample:21092010, Compound:HF, RT:35.914	7
Peak added	Sample:21092010, Compound:HF, RT:35.892	7
Peak modified	Sample:21092010, Compound:HF, RT:35.914	7
Pre modification peak	Sample:21092010, Compound:HF, RT:36.917	7
Peak modified	Sample:21092010, Compound:HF, RT:36.917	7
Pre modification peak	Sample:21092010, Compound:HF, RT:36.905	7
Peak modified	Sample:21092010, Compound:HF, RT:36.905	7
Pre modification peak	Sample:21092010, Compound:HPF, RT:41.017	7
Peak modified	Sample:21092010, Compound:HPF, RT:41.017	7
Pre modification peak	Sample:21092010, Compound:TD, RT:26.396	7
Peak modified	Sample:21092010, Compound:TD, RT:26.396	7
Pre modification peak	Sample:21092004, Compound:HPD, RT:40.259	1
Peak modified	Sample:21092004, Compound:HPD, RT:40.259	1
Peak deleted	Sample:21092005, Compound:TF, RT:25.972	2
Peak deleted	Sample:21092005, Compound:TF, RT:25.579	2
Peak deleted	Sample:21092005, Compound:HF, RT:36.081	2
Peak deleted	Sample:21092005, Compound:HF, RT:35.491	2
Peak deleted	Sample:21092005, Compound:HPF, RT:41.184	2
Peak deleted	Sample:21092006, Compound:TF, RT:22.223	3
Peak deleted	Sample:21092006, Compound:TF, RT:23.583	3
Peak deleted	Sample:21092006, Compound:TF, RT:27.469	3
Pre modification peak	Sample:21092006, Compound:PF, RT:28.851	3
Peak modified	Sample:21092006, Compound:PF, RT:28.851	3
Pre modification peak	Sample:21092006, Compound:PF, RT:28.851	3
Peak modified	Sample:21092006, Compound:PF, RT:28.851	3
Peak added	Sample:21092006, Compound:TD, RT:24.990	3
Peak added	Sample:21092006, Compound:TD, RT:24.975	3
Peak deleted	Sample:21092007, Compound:TF, RT:22.843	4
Peak deleted	Sample:21092007, Compound:PP, RT:27.968	4
Pre modification peak	Sample:21092007, Compound:PF, RT:29.642	4
Peak modified	Sample:21092007, Compound:PF, RT:29.642	4
Pre modification peak	Sample:21092007, Compound:PF, RT:29.631	4
Peak modified	Sample:21092007, Compound:PF, RT:29.631	4
Pre modification peak	Sample:21092007, Compound:HPF, RT:38.766	4
Peak modified	Sample:21092007, Compound:HPF, RT:38.766	4
Pre modification peak	Sample:21092007, Compound:HPF, RT:38.766	4
Peak modified	Sample:21092007, Compound:HPF, RT:38.766	4
Peak deleted	Sample:21092008, Compound:TF, RT:24.279	5
Pre modification peak	Sample:21092008, Compound:HPF, RT:38.789	5
Peak modified	Sample:21092008, Compound:HPF, RT:38.789	5
Peak added	Sample:21092008, Compound:TD, RT:25.383	5

Dataset: T:\Autospec\Processed Data Batch\210920D1.qld
Last Altered: Tuesday, September 21, 2021 10:30:31 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 10:31:33 Pacific Daylight Time

Event	Details	Sample ID
Peak added	Sample:21092008, Compound:TD, RT:25.383	5
Peak added	Sample:21092008, Compound:PD, RT:28.784	5
Peak added	Sample:21092008, Compound:PD, RT:28.795	5
Peak added	Sample:21092008, Compound:PD, RT:28.784	5
Peak added	Sample:21092008, Compound:PD, RT:28.795	5
Peak added	Sample:21092009, Compound:PF, RT:28.862	6
Peak added	Sample:21092009, Compound:PF, RT:28.862	6
Peak added	Sample:21092009, Compound:PD, RT:28.784	6
Peak added	Sample:21092009, Compound:PD, RT:28.829	6
Peak added	Sample:21092009, Compound:PD, RT:28.806	6
Peak added	Sample:21092009, Compound:PD, RT:28.829	6
Peak added	Sample:21092010, Compound:HF, RT:35.869	7
Peak added	Sample:21092010, Compound:HF, RT:35.881	7
Peak added	Sample:21092010, Compound:HF, RT:35.869	7
Peak added	Sample:21092010, Compound:HF, RT:35.881	7
Pre modification peak	Sample:21092010, Compound:PD, RT:30.466	7
Peak modified	Sample:21092010, Compound:PD, RT:30.466	7
Peak added	Sample:21092010, Compound:PD, RT:30.277	7
Peak added	Sample:21092010, Compound:PD, RT:30.121	7
Pre modification peak	Sample:21092010, Compound:PD, RT:30.455	7
Peak modified	Sample:21092010, Compound:PD, RT:30.455	7
Peak added	Sample:21092010, Compound:PD, RT:30.277	7
Peak added	Sample:21092010, Compound:PD, RT:30.121	7
Pre modification peak	Sample:21092010, Compound:PD, RT:30.455	7
Peak modified	Sample:21092010, Compound:PD, RT:30.455	7
Peak deleted	Sample:21092011, Compound:TF, RT:27.348	8
Peak deleted	Sample:21092011, Compound:HF, RT:33.062	8
Pre modification peak	Sample:21092011, Compound:HPF, RT:38.767	8
Peak modified	Sample:21092011, Compound:HPF, RT:38.767	8
Pre modification peak	Sample:21092011, Compound:HPF, RT:38.767	8
Peak modified	Sample:21092011, Compound:HPF, RT:38.767	8
Peak deleted	Sample:21092011, Compound:HD, RT:36.939	8
Dataset Saved	Saved to 'T:\Autospec\Processed Data Batch\210920D1.qld'	

Dataset: T:\Autospec\Processed Data Batch\210920D2.qld
Last Altered: Tuesday, September 21, 2021 13:21:12 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 13:22:04 Pacific Daylight Time 9/21/21 pk

Event	Details	Sample ID
Process Extract		
Process Integrate		
Process Quantify		
Dataset Created		
Peak deleted	Sample:21092014, Compound:HF, RT:36.505	1
Pre modification peak	Sample:21092014, Compound:HF, RT:36.906	1
Peak modified	Sample:21092014, Compound:HF, RT:36.906	1
Pre modification peak	Sample:21092014, Compound:HF, RT:36.906	1
Peak modified	Sample:21092014, Compound:HF, RT:36.906	1
Pre modification peak	Sample:21092014, Compound:PF, RT:28.851	1
Peak modified	Sample:21092014, Compound:PF, RT:28.851	1
Pre modification peak	Sample:21092014, Compound:PF, RT:28.851	1
Peak modified	Sample:21092014, Compound:PF, RT:28.851	1
Pre modification peak	Sample:21092014, Compound:TF, RT:25.534	1
Peak modified	Sample:21092014, Compound:TF, RT:25.534	1
Pre modification peak	Sample:21092014, Compound:TF, RT:25.534	1
Peak modified	Sample:21092014, Compound:TF, RT:25.534	1
Peak added	Sample:21092014, Compound:TF, RT:26.003	1
Peak added	Sample:21092014, Compound:TF, RT:26.003	1
Pre modification peak	Sample:21092015, Compound:HF, RT:35.914	2
Peak modified	Sample:21092015, Compound:HF, RT:35.914	2
Pre modification peak	Sample:21092015, Compound:HF, RT:36.905	2
Peak modified	Sample:21092015, Compound:HF, RT:36.905	2
Peak added	Sample:21092015, Compound:HPF, RT:41.039	2
Pre modification peak	Sample:21092015, Compound:HPF, RT:41.039	2
Peak modified	Sample:21092015, Compound:HPF, RT:41.039	2
Peak added	Sample:21092015, Compound:HPF, RT:41.050	2
Pre modification peak	Sample:21092015, Compound:PF, RT:29.552	2
Peak modified	Sample:21092015, Compound:PF, RT:29.552	2
Peak deleted	Sample:21092015, Compound:TD, RT:24.007	2
Peak deleted	Sample:21092015, Compound:TF, RT:22.722	2
Peak deleted	Sample:21092015, Compound:TF, RT:26.955	2
Peak deleted	Sample:21092016, Compound:HF, RT:33.084	3
Pre modification peak	Sample:21092016, Compound:HPF, RT:38.789	3
Peak modified	Sample:21092016, Compound:HPF, RT:38.789	3
Pre modification peak	Sample:21092016, Compound:HPF, RT:38.800	3
Peak modified	Sample:21092016, Compound:HPF, RT:38.800	3
Peak added	Sample:21092016, Compound:PD, RT:28.795	3
Peak added	Sample:21092016, Compound:PD, RT:28.829	3
Peak deleted	Sample:21092016, Compound:TF, RT:27.378	3
Pre modification peak	Sample:21092017, Compound:HD, RT:36.159	4
Peak modified	Sample:21092017, Compound:HD, RT:36.159	4
Peak added	Sample:21092017, Compound:HF, RT:35.892	4
Peak added	Sample:21092017, Compound:HF, RT:35.892	4
Pre modification peak	Sample:21092017, Compound:HF, RT:35.914	4
Peak modified	Sample:21092017, Compound:HF, RT:35.914	4
Pre modification peak	Sample:21092017, Compound:HF, RT:35.937	4
Peak modified	Sample:21092017, Compound:HF, RT:35.937	4
Peak deleted	Sample:21092017, Compound:PF, RT:32.338	4
Peak deleted	Sample:21092017, Compound:TF, RT:26.305	4
Peak added	Sample:21092018, Compound:HF, RT:35.881	5
Peak added	Sample:21092018, Compound:HF, RT:35.881	5
Peak added	Sample:21092018, Compound:HF, RT:35.881	5
Pre modification peak	Sample:21092018, Compound:HF, RT:35.892	5
Peak modified	Sample:21092018, Compound:HF, RT:35.892	5

Dataset: T:\Autospec\Processed Data Batch\210920D2.qld
Last Altered: Tuesday, September 21, 2021 13:21:12 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 13:22:04 Pacific Daylight Time

Event	Details	Sample ID
Pre modification peak	Sample:21092018, Compound:HF, RT:35.903	5
Peak modified	Sample:21092018, Compound:HF, RT:35.903	5
Pre modification peak	Sample:21092018, Compound:HF, RT:35.903	5
Peak modified	Sample:21092018, Compound:HF, RT:35.903	5
Peak added	Sample:21092018, Compound:TF, RT:23.855	5
Peak added	Sample:21092018, Compound:TF, RT:23.871	5
Peak added	Sample:21092018, Compound:TF, RT:24.007	5
Peak added	Sample:21092018, Compound:TF, RT:24.007	5
Peak added	Sample:21092018, Compound:TF, RT:25.534	5
Peak added	Sample:21092018, Compound:TF, RT:25.534	5
Peak added	Sample:21092019, Compound:HF, RT:35.869	6
Peak added	Sample:21092019, Compound:HF, RT:35.881	6
Pre modification peak	Sample:21092019, Compound:HF, RT:35.925	6
Peak modified	Sample:21092019, Compound:HF, RT:35.925	6
Peak deleted	Sample:21092019, Compound:HPD, RT:40.549	6
Peak added	Sample:21092019, Compound:PD, RT:28.829	6
Peak added	Sample:21092019, Compound:PD, RT:28.829	6
Peak added	Sample:21092019, Compound:PD, RT:29.909	6
Peak added	Sample:21092019, Compound:PD, RT:29.909	6
Pre modification peak	Sample:21092019, Compound:PF, RT:28.851	6
Peak modified	Sample:21092019, Compound:PF, RT:28.851	6
Pre modification peak	Sample:21092019, Compound:PF, RT:28.862	6
Peak modified	Sample:21092019, Compound:PF, RT:28.862	6
Peak added	Sample:21092019, Compound:PF, RT:30.121	6
Peak added	Sample:21092019, Compound:PF, RT:30.132	6
Peak deleted	Sample:21092019, Compound:TF, RT:23.583	6
Peak added	Sample:21092019, Compound:TF, RT:23.750	6
Peak added	Sample:21092019, Compound:TF, RT:23.750	6
Peak added	Sample:21092019, Compound:TF, RT:23.871	6
Peak added	Sample:21092019, Compound:TF, RT:23.871	6
Peak added	Sample:21092019, Compound:TF, RT:25.534	6
Peak added	Sample:21092019, Compound:TF, RT:25.534	6
Pre modification peak	Sample:21092020, Compound:HF, RT:35.056	7
Peak modified	Sample:21092020, Compound:HF, RT:35.056	7
Peak deleted	Sample:21092020, Compound:HPD, RT:39.491	7
Peak added	Sample:21092020, Compound:PD, RT:30.121	7
Peak added	Sample:21092020, Compound:PD, RT:30.132	7
Peak added	Sample:21092020, Compound:PD, RT:30.277	7
Peak added	Sample:21092020, Compound:PD, RT:30.277	7
Pre modification peak	Sample:21092020, Compound:PF, RT:28.873	7
Peak modified	Sample:21092020, Compound:PF, RT:28.873	7
Pre modification peak	Sample:21092020, Compound:PF, RT:28.873	7
Peak modified	Sample:21092020, Compound:PF, RT:28.873	7
Peak added	Sample:21092020, Compound:TF, RT:25.549	7
Peak added	Sample:21092020, Compound:TF, RT:25.549	7
Pre modification peak	Sample:21092021, Compound:HD, RT:36.004	8
Peak modified	Sample:21092021, Compound:HD, RT:36.004	8
Pre modification peak	Sample:21092021, Compound:HD, RT:36.004	8
Peak modified	Sample:21092021, Compound:HD, RT:36.004	8
Peak deleted	Sample:21092021, Compound:PD, RT:30.277	8
Peak deleted	Sample:21092021, Compound:TF, RT:24.521	8
Peak deleted	Sample:21092023, Compound:13C-1234-TCDD, RT:25.640	10
Dataset Saved	Saved to 'T:\Autospec\Processed Data Batch\210920D2.qld'	
Dataset Saved	Saved to 'T:\Autospec\Processed Data Batch\210920D2.qld'	

Quantify Audit Report MassLynx MassLynx V4.1 SCN909

Dataset: T:\Autospec\Processed Data Batch\210920D3.qld
Last Altered: Tuesday, September 21, 2021 13:59:10 Pacific Daylight Time
Printed: Tuesday, September 21, 2021 14:01:31 Pacific Daylight Time 9/21/21 pk

Event	Details	Sample ID
Process Extract		
Process Integrate		
Process Quantify		
Dataset Created		
Peak deleted	Sample:21092024, Compound:PF, RT:29.898	1
Peak deleted	Sample:21092024, Compound:TF, RT:25.761	1
Peak added	Sample:21092025, Compound:PD, RT:28.895	2
Peak added	Sample:21092025, Compound:PD, RT:28.895	2
Peak deleted	Sample:21092025, Compound:PF, RT:28.494	2
Peak deleted	Sample:21092026, Compound:PF, RT:29.931	3
Peak deleted	Sample:21092026, Compound:TD, RT:26.396	3
Dataset Saved	Saved to 'T:\Autospec\Processed Data Batch\210920D3.qld'	

Quantify Audit Report MassLynx MassLynx V4.1 SCN909
Dataset: T:\Autospec\Processed Data Batch\210920D4.qld
Last Altered: Wednesday, September 22, 2021 09:29:09 Pacific Daylight Time
Printed: Wednesday, September 22, 2021 09:30:11 Pacific Daylight Time 9/22/21 pk

Event	Details	Sample ID
Process Extract		
Process Integrate		
Process Quantify		
Dataset Created		
Peak deleted	Sample:21092027, Compound:HF, RT:34.276	1
Peak deleted	Sample:21092027, Compound:PP, RT:27.182	1
Peak deleted	Sample:21092027, Compound:TF, RT:24.158	1
Peak deleted	Sample:21092028, Compound:HD, RT:36.293	2
Pre modification peak	Sample:21092029, Compound:HF, RT:35.045	3
Peak modified	Sample:21092029, Compound:HF, RT:35.045	3
Pre modification peak	Sample:21092029, Compound:HF, RT:35.903	3
Peak modified	Sample:21092029, Compound:HF, RT:35.903	3
Peak added	Sample:21092029, Compound:PF, RT:28.851	3
Peak added	Sample:21092029, Compound:PF, RT:28.851	3
Pre modification peak	Sample:21092029, Compound:PF, RT:29.575	3
Peak modified	Sample:21092029, Compound:PF, RT:29.575	3
Pre modification peak	Sample:21092029, Compound:PF, RT:29.575	3
Peak modified	Sample:21092029, Compound:PF, RT:29.575	3
Pre modification peak	Sample:21092029, Compound:TD, RT:26.411	3
Peak modified	Sample:21092029, Compound:TD, RT:26.411	3
Peak deleted	Sample:21092029, Compound:TD, RT:26.759	3
Peak deleted	Sample:21092029, Compound:TD, RT:27.031	3
Peak deleted	Sample:21092029, Compound:TF, RT:22.752	3
Peak deleted	Sample:21092030, Compound:HF, RT:36.527	4
Peak deleted	Sample:21092030, Compound:HF, RT:36.906	4
Peak deleted	Sample:21092030, Compound:OF, RT:45.297	4
Peak deleted	Sample:21092030, Compound:TF, RT:25.564	4
Peak deleted	Sample:21092031, Compound:HPD, RT:40.493	5
Pre modification peak	Sample:21092032, Compound:HF, RT:35.937	6
Peak modified	Sample:21092032, Compound:HF, RT:35.937	6
Peak deleted	Sample:21092032, Compound:HPD, RT:39.869	6
Peak added	Sample:21092032, Compound:PD, RT:29.920	6
Peak added	Sample:21092032, Compound:PD, RT:29.920	6
Pre modification peak	Sample:21092032, Compound:PF, RT:28.862	6
Peak modified	Sample:21092032, Compound:PF, RT:28.862	6
Pre modification peak	Sample:21092032, Compound:PF, RT:28.873	6
Peak modified	Sample:21092032, Compound:PF, RT:28.873	6
Peak deleted	Sample:21092032, Compound:TF, RT:22.737	6
Peak added	Sample:21092032, Compound:TF, RT:23.100	6
Peak added	Sample:21092032, Compound:TF, RT:23.100	6
Peak added	Sample:21092032, Compound:TF, RT:24.672	6
Peak added	Sample:21092032, Compound:TF, RT:24.672	6
Peak deleted	Sample:21092033, Compound:HD, RT:36.950	7
Peak deleted	Sample:21092033, Compound:HF, RT:33.107	7
Peak deleted	Sample:21092033, Compound:HPD, RT:40.783	7
Peak added	Sample:21092033, Compound:PD, RT:28.829	7
Peak added	Sample:21092033, Compound:PD, RT:28.829	7
Peak added	Sample:21092033, Compound:PD, RT:29.931	7
Peak added	Sample:21092033, Compound:PD, RT:29.931	7
Pre modification peak	Sample:21092033, Compound:PF, RT:31.302	7
Peak modified	Sample:21092033, Compound:PF, RT:31.302	7
Peak deleted	Sample:21092033, Compound:TF, RT:26.335	7
Peak deleted	Sample:21092033, Compound:TF, RT:27.378	7
Dataset Saved	Saved to 'T:\Autospec\Processed Data Batch\210920D4.qld'	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJI0309	Instrument:	AUTOSPEC01
Sample ID:	SJI0309-ICV1	Calibration:	EH00030
File ID:	21092002A	Analyzed:	09/20/21 15:25

Surrogate Compound	Spike Level ng/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	100.00	96.5	71 - 129	25.7457	25.63973	0.1060	N/A	
13C12-2,3,7,8-TCDD	100.00	105	82 - 118	26.3655	26.27478	0.0907	N/A	
13C12-1,2,3,7,8-PeCDF	100.00	86.7	76 - 124	29.8982	29.80383	0.0944	N/A	
13C12-2,3,4,7,8-PeCDF	100.00	84.0	77 - 123	31.2352	31.14815	0.0870	N/A	
13C12-1,2,3,7,8-PeCDD	100.00	91.1	62 - 138	31.4803	31.40067	0.0796	N/A	
13C12-1,2,3,4,7,8-HxCDF	100.00	100	76 - 124	34.856	34.782	0.0740	N/A	
13C12-1,2,3,6,7,8-HxCDF	100.00	94.1	70 - 130	35.0008	34.91943	0.0814	N/A	
13C12-2,3,4,6,7,8-HxCDF	100.00	94.3	73 - 127	35.87	35.7884	0.0816	N/A	
13C12-1,2,3,7,8,9-HxCDF	100.00	92.4	74 - 126	36.906	36.8227	0.0833	N/A	
13C12-1,2,3,4,7,8-HxCDD	100.00	102	85 - 115	35.9813	35.90912	0.0722	N/A	
13C12-1,2,3,6,7,8-HxCDD	100.00	96.4	85 - 115	36.0927	36.0242	0.0685	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	82.3	78 - 122	38.7443	38.67025	0.0740	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	73.8	77 - 123	40.9948	40.90587	0.0889	N/A	*
13C12-1,2,3,4,6,7,8-HpCDD	100.00	87.1	72 - 128	40.2483	40.16678	0.0815	N/A	
13C12-OCDD	200.00	82.1	48 - 152	44.977	44.88763	0.0894	N/A	
37Cl4-2,3,7,8-TCDD	10.000	98.5	0 - 200	26.3807	26.30253	0.0782	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJI0309	Instrument:	AUTOSPEC01
Sample ID:	BJH0152-BLK1	Calibration:	EH00030
File ID:	21092004	Analyzed:	09/20/21 18:40

Surrogate Compound	Spike Level ng/kg wet	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	200.00	40.3	24 - 169	25.7305	25.63973	0.0908	N/A	
13C12-2,3,7,8-TCDD	200.00	49.7	25 - 164	26.3655	26.27478	0.0907	N/A	
13C12-1,2,3,7,8-PeCDF	200.00	63.0	24 - 185	29.8868	29.80383	0.0830	N/A	
13C12-2,3,4,7,8-PeCDF	200.00	59.6	21 - 178	31.2348	31.14815	0.0866	N/A	
13C12-1,2,3,7,8-PeCDD	200.00	68.3	25 - 181	31.48	31.40067	0.0793	N/A	
13C12-1,2,3,4,7,8-HxCDF	200.00	82.5	26 - 152	34.8558	34.782	0.0738	N/A	
13C12-1,2,3,6,7,8-HxCDF	200.00	79.3	26 - 123	34.9895	34.91943	0.0701	N/A	
13C12-2,3,4,6,7,8-HxCDF	200.00	80.6	28 - 136	35.8697	35.7884	0.0813	N/A	
13C12-1,2,3,7,8,9-HxCDF	200.00	81.3	29 - 147	36.8947	36.8227	0.0720	N/A	
13C12-1,2,3,4,7,8-HxCDD	200.00	84.4	32 - 141	35.97	35.90912	0.0609	N/A	
13C12-1,2,3,6,7,8-HxCDD	200.00	83.6	28 - 130	36.0813	36.0242	0.0571	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	200.00	70.3	28 - 143	38.7442	38.67025	0.0739	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	200.00	65.5	26 - 138	40.9835	40.90587	0.0776	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	200.00	79.6	23 - 140	40.237	40.16678	0.0702	N/A	
13C12-OCDD	400.00	74.3	17 - 157	44.9677	44.88763	0.0801	N/A	
37Cl4-2,3,7,8-TCDD	80.000	50.0	35 - 197	26.3805	26.30253	0.0780	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJI0309	Instrument:	AUTOSPEC01
Sample ID:	BJH0152-BS1	Calibration:	EH00030
File ID:	21092005	Analyzed:	09/20/21 19:29

Surrogate Compound	Spike Level ng/kg wet	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	200.00	35.9	24 - 169	25.7457	25.63973	0.1060	N/A	
13C12-2,3,7,8-TCDD	200.00	43.7	25 - 164	26.3655	26.27478	0.0907	N/A	
13C12-1,2,3,7,8-PeCDF	200.00	61.4	24 - 185	29.8868	29.80383	0.0830	N/A	
13C12-2,3,4,7,8-PeCDF	200.00	57.1	21 - 178	31.235	31.14815	0.0868	N/A	
13C12-1,2,3,7,8-PeCDD	200.00	66.3	25 - 181	31.48	31.40067	0.0793	N/A	
13C12-1,2,3,4,7,8-HxCDF	200.00	86.0	26 - 152	34.8558	34.782	0.0738	N/A	
13C12-1,2,3,6,7,8-HxCDF	200.00	83.5	26 - 123	34.9897	34.91943	0.0703	N/A	
13C12-2,3,4,6,7,8-HxCDF	200.00	86.0	28 - 136	35.8697	35.7884	0.0813	N/A	
13C12-1,2,3,7,8,9-HxCDF	200.00	87.0	29 - 147	36.8947	36.8227	0.0720	N/A	
13C12-1,2,3,4,7,8-HxCDD	200.00	88.6	32 - 141	35.97	35.90912	0.0609	N/A	
13C12-1,2,3,6,7,8-HxCDD	200.00	87.2	28 - 130	36.0813	36.0242	0.0571	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	200.00	75.4	28 - 143	38.7443	38.67025	0.0740	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	200.00	71.6	26 - 138	40.9837	40.90587	0.0778	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	200.00	85.9	23 - 140	40.2372	40.16678	0.0704	N/A	
13C12-OCDD	400.00	82.9	17 - 157	44.9682	44.88763	0.0806	N/A	
37Cl4-2,3,7,8-TCDD	80.000	42.7	35 - 197	26.3958	26.30253	0.0933	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJI0309	Instrument:	AUTOSPEC01
Sample ID:	BJH0152-SRM1	Calibration:	EH00030
File ID:	21092006	Analyzed:	09/20/21 20:18

Surrogate Compound	Spike Level ng/kg wet	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	199.60	39.0	24 - 169	25.7305	25.63973	0.0908	N/A	
13C12-2,3,7,8-TCDD	199.60	54.4	25 - 164	26.3655	26.27478	0.0907	N/A	
13C12-1,2,3,7,8-PeCDF	199.60	68.7	24 - 185	29.887	29.80383	0.0832	N/A	
13C12-2,3,4,7,8-PeCDF	199.60	68.6	21 - 178	31.235	31.14815	0.0868	N/A	
13C12-1,2,3,7,8-PeCDD	199.60	79.9	25 - 181	31.4802	31.40067	0.0795	N/A	
13C12-1,2,3,4,7,8-HxCDF	199.60	77.2	26 - 152	34.8672	34.782	0.0852	N/A	
13C12-1,2,3,6,7,8-HxCDF	199.60	71.7	26 - 123	35.012	34.91943	0.0926	N/A	
13C12-2,3,4,6,7,8-HxCDF	199.60	76.1	28 - 136	35.9033	35.7884	0.1149	N/A	
13C12-1,2,3,7,8,9-HxCDF	199.60	72.3	29 - 147	36.906	36.8227	0.0833	N/A	
13C12-1,2,3,4,7,8-HxCDD	199.60	84.9	32 - 141	36.0037	35.90912	0.0946	N/A	
13C12-1,2,3,6,7,8-HxCDD	199.60	77.8	28 - 130	36.126	36.0242	0.1018	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	199.60	57.8	28 - 143	38.7443	38.67025	0.0740	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	199.60	63.7	26 - 138	40.9948	40.90587	0.0889	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	199.60	72.3	23 - 140	40.2372	40.16678	0.0704	N/A	
13C12-OCDD	399.20	63.6	17 - 157	44.9863	44.88763	0.0987	N/A	
37Cl4-2,3,7,8-TCDD	79.840	53.8	35 - 197	26.3807	26.30253	0.0782	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJI0309	Instrument:	AUTOSPEC01
Sample ID:	SJI0309-CCV1	Calibration:	EH00030
File ID:	21092012	Analyzed:	09/21/21 01:12

Surrogate Compound	Spike Level ng/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	100.00	93.9	71 - 129	25.7303	25.63973	0.0906	N/A	
13C12-2,3,7,8-TCDD	100.00	103	82 - 118	26.3653	26.27478	0.0905	N/A	
13C12-1,2,3,7,8-PeCDF	100.00	82.4	76 - 124	29.8977	29.80383	0.0939	N/A	
13C12-2,3,4,7,8-PeCDF	100.00	80.5	77 - 123	31.2348	31.14815	0.0866	N/A	
13C12-1,2,3,7,8-PeCDD	100.00	90.0	62 - 138	31.4798	31.40067	0.0791	N/A	
13C12-1,2,3,4,7,8-HxCDF	100.00	92.8	76 - 124	34.8667	34.782	0.0847	N/A	
13C12-1,2,3,6,7,8-HxCDF	100.00	85.4	70 - 130	35.0003	34.91943	0.0809	N/A	
13C12-2,3,4,6,7,8-HxCDF	100.00	88.3	73 - 127	35.8693	35.7884	0.0809	N/A	
13C12-1,2,3,7,8,9-HxCDF	100.00	91.3	74 - 126	36.9053	36.8227	0.0826	N/A	
13C12-1,2,3,4,7,8-HxCDD	100.00	99.7	85 - 115	35.9807	35.90912	0.0716	N/A	
13C12-1,2,3,6,7,8-HxCDD	100.00	93.5	85 - 115	36.092	36.0242	0.0678	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	73.6	78 - 122	38.7547	38.67025	0.0844	N/A	*
13C12-1,2,3,4,7,8,9-HpCDF	100.00	70.3	77 - 123	40.994	40.90587	0.0881	N/A	*
13C12-1,2,3,4,6,7,8-HpCDD	100.00	84.5	72 - 128	40.2477	40.16678	0.0809	N/A	
13C12-OCDD	200.00	77.4	48 - 152	44.9873	44.88763	0.0997	N/A	
37Cl4-2,3,7,8-TCDD	10.000	97.3	0 - 200	26.3803	26.30253	0.0778	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJI0309	Instrument:	AUTOSPEC01
Sample ID:	21G0140-04	Calibration:	EH00030
File ID:	21092018	Analyzed:	09/21/21 06:12

Surrogate Compound	Spike Level ng/kg dry	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	199.93	50.3	24 - 169	25.7455	25.63973	0.1058	N/A	
13C12-2,3,7,8-TCDD	199.93	68.3	25 - 164	26.3805	26.27478	0.1057	N/A	
13C12-1,2,3,7,8-PeCDF	199.93	66.4	24 - 185	29.909	29.80383	0.1052	N/A	
13C12-2,3,4,7,8-PeCDF	199.93	67.0	21 - 178	31.2572	31.14815	0.1091	N/A	
13C12-1,2,3,7,8-PeCDD	199.93	79.3	25 - 181	31.5022	31.40067	0.1015	N/A	
13C12-1,2,3,4,7,8-HxCDF	199.93	74.6	26 - 152	34.8892	34.782	0.1072	N/A	
13C12-1,2,3,6,7,8-HxCDF	199.93	69.3	26 - 123	35.0228	34.91943	0.1034	N/A	
13C12-2,3,4,6,7,8-HxCDF	199.93	74.6	28 - 136	35.9142	35.7884	0.1258	N/A	
13C12-1,2,3,7,8,9-HxCDF	199.93	68.9	29 - 147	36.928	36.8227	0.1053	N/A	
13C12-1,2,3,4,7,8-HxCDD	199.93	87.7	32 - 141	36.0143	35.90912	0.1052	N/A	
13C12-1,2,3,6,7,8-HxCDD	199.93	78.1	28 - 130	36.1368	36.0242	0.1126	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	199.93	56.4	28 - 143	38.7663	38.67025	0.0960	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	199.93	58.4	26 - 138	41.0058	40.90587	0.0999	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	199.93	71.2	23 - 140	40.2593	40.16678	0.0925	N/A	
13C12-OCDD	399.87	70.4	17 - 157	45.0133	44.88763	0.1257	N/A	
37Cl4-2,3,7,8-TCDD	79.974	69.1	35 - 197	26.3957	26.30253	0.0932	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJI0309	Instrument:	AUTOSPEC01
Sample ID:	21G0140-05	Calibration:	EH00030
File ID:	21092019	Analyzed:	09/21/21 07:02

Surrogate Compound	Spike Level ng/kg dry	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	199.88	60.0	24 - 169	25.7607	25.63973	0.1210	N/A	
13C12-2,3,7,8-TCDD	199.88	76.3	25 - 164	26.3805	26.27478	0.1057	N/A	
13C12-1,2,3,7,8-PeCDF	199.88	69.1	24 - 185	29.9092	29.80383	0.1054	N/A	
13C12-2,3,4,7,8-PeCDF	199.88	68.2	21 - 178	31.2573	31.14815	0.1092	N/A	
13C12-1,2,3,7,8-PeCDD	199.88	78.7	25 - 181	31.5023	31.40067	0.1016	N/A	
13C12-1,2,3,4,7,8-HxCDF	199.88	76.7	26 - 152	34.8892	34.782	0.1072	N/A	
13C12-1,2,3,6,7,8-HxCDF	199.88	70.5	26 - 123	35.0228	34.91943	0.1034	N/A	
13C12-2,3,4,6,7,8-HxCDF	199.88	74.7	28 - 136	35.9142	35.7884	0.1258	N/A	
13C12-1,2,3,7,8,9-HxCDF	199.88	74.1	29 - 147	36.9278	36.8227	0.1051	N/A	
13C12-1,2,3,4,7,8-HxCDD	199.88	86.0	32 - 141	36.0145	35.90912	0.1054	N/A	
13C12-1,2,3,6,7,8-HxCDD	199.88	80.7	28 - 130	36.137	36.0242	0.1128	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	199.88	57.9	28 - 143	38.7662	38.67025	0.0959	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	199.88	59.1	26 - 138	41.0167	40.90587	0.1108	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	199.88	72.4	23 - 140	40.2703	40.16678	0.1035	N/A	
13C12-OCDD	399.77	72.2	17 - 157	45.0152	44.88763	0.1276	N/A	
37Cl4-2,3,7,8-TCDD	79.954	77.1	35 - 197	26.3957	26.30253	0.0932	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJI0309	Instrument:	AUTOSPEC01
Sample ID:	21G0140-06	Calibration:	EH00030
File ID:	21092020	Analyzed:	09/21/21 07:50

Surrogate Compound	Spike Level ng/kg dry	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	199.93	55.8	24 - 169	25.7607	25.63973	0.1210	N/A	
13C12-2,3,7,8-TCDD	199.93	74.4	25 - 164	26.3807	26.27478	0.1059	N/A	
13C12-1,2,3,7,8-PeCDF	199.93	68.2	24 - 185	29.9092	29.80383	0.1054	N/A	
13C12-2,3,4,7,8-PeCDF	199.93	67.6	21 - 178	31.2573	31.14815	0.1092	N/A	
13C12-1,2,3,7,8-PeCDD	199.93	79.0	25 - 181	31.5025	31.40067	0.1018	N/A	
13C12-1,2,3,4,7,8-HxCDF	199.93	74.5	26 - 152	34.9005	34.782	0.1185	N/A	
13C12-1,2,3,6,7,8-HxCDF	199.93	69.2	26 - 123	35.0342	34.91943	0.1148	N/A	
13C12-2,3,4,6,7,8-HxCDF	199.93	72.8	28 - 136	35.9365	35.7884	0.1481	N/A	
13C12-1,2,3,7,8,9-HxCDF	199.93	55.3	29 - 147	36.9393	36.8227	0.1166	N/A	
13C12-1,2,3,4,7,8-HxCDD	199.93	83.2	32 - 141	36.0368	35.90912	0.1277	N/A	
13C12-1,2,3,6,7,8-HxCDD	199.93	76.2	28 - 130	36.1593	36.0242	0.1351	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	199.93	54.7	28 - 143	38.7775	38.67025	0.1073	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	199.93	56.5	26 - 138	41.017	40.90587	0.1111	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	199.93	69.5	23 - 140	40.2705	40.16678	0.1037	N/A	
13C12-OCDD	399.86	65.3	17 - 157	45.0317	44.88763	0.1441	N/A	
37Cl4-2,3,7,8-TCDD	79.973	74.6	35 - 197	26.4108	26.30253	0.1083	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJI0309	Instrument:	AUTOSPEC01
Sample ID:	21G0140-07	Calibration:	EH00030
File ID:	21092021	Analyzed:	09/21/21 08:39

Surrogate Compound	Spike Level ng/kg dry	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	199.61	53.0	24 - 169	25.7455	25.63973	0.1058	N/A	
13C12-2,3,7,8-TCDD	199.61	69.0	25 - 164	26.3805	26.27478	0.1057	N/A	
13C12-1,2,3,7,8-PeCDF	199.61	68.3	24 - 185	29.898	29.80383	0.0942	N/A	
13C12-2,3,4,7,8-PeCDF	199.61	66.0	21 - 178	31.246	31.14815	0.0978	N/A	
13C12-1,2,3,7,8-PeCDD	199.61	77.8	25 - 181	31.4912	31.40067	0.0905	N/A	
13C12-1,2,3,4,7,8-HxCDF	199.61	74.5	26 - 152	34.867	34.782	0.0850	N/A	
13C12-1,2,3,6,7,8-HxCDF	199.61	70.7	26 - 123	35.0118	34.91943	0.0924	N/A	
13C12-2,3,4,6,7,8-HxCDF	199.61	72.2	28 - 136	35.881	35.7884	0.0926	N/A	
13C12-1,2,3,7,8,9-HxCDF	199.61	75.4	29 - 147	36.9172	36.8227	0.0945	N/A	
13C12-1,2,3,4,7,8-HxCDD	199.61	85.5	32 - 141	35.9923	35.90912	0.0832	N/A	
13C12-1,2,3,6,7,8-HxCDD	199.61	76.5	28 - 130	36.1038	36.0242	0.0796	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	199.61	57.2	28 - 143	38.7555	38.67025	0.0852	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	199.61	55.9	26 - 138	41.006	40.90587	0.1001	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	199.61	70.4	23 - 140	40.2595	40.16678	0.0927	N/A	
13C12-OCDD	399.23	70.2	17 - 157	45.0045	44.88763	0.1169	N/A	
37Cl4-2,3,7,8-TCDD	79.845	67.7	35 - 197	26.3957	26.30253	0.0932	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJI0309	Instrument:	AUTOSPEC01
Sample ID:	SJI0309-CCV2	Calibration:	EH00030
File ID:	21092022	Analyzed:	09/21/21 09:36

Surrogate Compound	Spike Level ng/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	100.00	95.2	71 - 129	25.7455	25.63973	0.1058	N/A	
13C12-2,3,7,8-TCDD	100.00	105	82 - 118	26.3805	26.27478	0.1057	N/A	
13C12-1,2,3,7,8-PeCDF	100.00	85.2	76 - 124	29.9092	29.80383	0.1054	N/A	
13C12-2,3,4,7,8-PeCDF	100.00	83.1	77 - 123	31.2573	31.14815	0.1092	N/A	
13C12-1,2,3,7,8-PeCDD	100.00	93.3	62 - 138	31.4913	31.40067	0.0906	N/A	
13C12-1,2,3,4,7,8-HxCDF	100.00	93.6	76 - 124	34.8782	34.782	0.0962	N/A	
13C12-1,2,3,6,7,8-HxCDF	100.00	85.9	70 - 130	35.0118	34.91943	0.0924	N/A	
13C12-2,3,4,6,7,8-HxCDF	100.00	88.2	73 - 127	35.8808	35.7884	0.0924	N/A	
13C12-1,2,3,7,8,9-HxCDF	100.00	91.2	74 - 126	36.917	36.8227	0.0943	N/A	
13C12-1,2,3,4,7,8-HxCDD	100.00	98.4	85 - 115	35.9922	35.90912	0.0831	N/A	
13C12-1,2,3,6,7,8-HxCDD	100.00	93.9	85 - 115	36.1037	36.0242	0.0795	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	72.7	78 - 122	38.7553	38.67025	0.0850	N/A	*
13C12-1,2,3,4,7,8,9-HpCDF	100.00	69.9	77 - 123	41.0058	40.90587	0.0999	N/A	*
13C12-1,2,3,4,6,7,8-HpCDD	100.00	83.9	72 - 128	40.2593	40.16678	0.0925	N/A	
13C12-OCDD	200.00	76.8	48 - 152	45.0043	44.88763	0.1167	N/A	
37Cl4-2,3,7,8-TCDD	10.000	98.5	0 - 200	26.3957	26.30253	0.0932	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJI0309	Instrument:	AUTOSPEC01
Sample ID:	21G0140-08	Calibration:	EH00030
File ID:	21092024	Analyzed:	09/21/21 11:26

Surrogate Compound	Spike Level ng/kg dry	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	199.79	48.5	24 - 169	25.7457	25.63973	0.1060	N/A	
13C12-2,3,7,8-TCDD	199.79	62.7	25 - 164	26.3807	26.27478	0.1059	N/A	
13C12-1,2,3,7,8-PeCDF	199.79	58.5	24 - 185	29.9093	29.80383	0.1055	N/A	
13C12-2,3,4,7,8-PeCDF	199.79	55.8	21 - 178	31.2462	31.14815	0.0981	N/A	
13C12-1,2,3,7,8-PeCDD	199.79	64.9	25 - 181	31.4913	31.40067	0.0906	N/A	
13C12-1,2,3,4,7,8-HxCDF	199.79	82.5	26 - 152	34.8783	34.782	0.0963	N/A	
13C12-1,2,3,6,7,8-HxCDF	199.79	78.0	26 - 123	35.012	34.91943	0.0926	N/A	
13C12-2,3,4,6,7,8-HxCDF	199.79	80.3	28 - 136	35.8922	35.7884	0.1038	N/A	
13C12-1,2,3,7,8,9-HxCDF	199.79	84.1	29 - 147	36.9172	36.8227	0.0945	N/A	
13C12-1,2,3,4,7,8-HxCDD	199.79	90.9	32 - 141	35.9925	35.90912	0.0834	N/A	
13C12-1,2,3,6,7,8-HxCDD	199.79	86.5	28 - 130	36.1038	36.0242	0.0796	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	199.79	66.7	28 - 143	38.7667	38.67025	0.0964	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	199.79	65.3	26 - 138	41.006	40.90587	0.1001	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	199.79	83.9	23 - 140	40.2595	40.16678	0.0927	N/A	
13C12-OCDD	399.59	82.2	17 - 157	45.0045	44.88763	0.1169	N/A	
37Cl4-2,3,7,8-TCDD	79.918	62.0	35 - 197	26.3957	26.30253	0.0932	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0140
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJI0309	Instrument:	AUTOSPEC01
Sample ID:	SJI0309-CCV3	Calibration:	EH00030
File ID:	21092034	Analyzed:	09/21/21 19:37

Surrogate Compound	Spike Level ng/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	100.00	90.2	71 - 129	25.7603	25.63973	0.1206	N/A	
13C12-2,3,7,8-TCDD	100.00	104	82 - 118	26.3802	26.27478	0.1054	N/A	
13C12-1,2,3,7,8-PeCDF	100.00	79.4	76 - 124	29.9198	29.80383	0.1160	N/A	
13C12-2,3,4,7,8-PeCDF	100.00	79.0	77 - 123	31.2568	31.14815	0.1086	N/A	
13C12-1,2,3,7,8-PeCDD	100.00	86.4	62 - 138	31.502	31.40067	0.1013	N/A	
13C12-1,2,3,4,7,8-HxCDF	100.00	96.7	76 - 124	34.8777	34.782	0.0957	N/A	
13C12-1,2,3,6,7,8-HxCDF	100.00	89.0	70 - 130	35.0225	34.91943	0.1031	N/A	
13C12-2,3,4,6,7,8-HxCDF	100.00	92.3	73 - 127	35.8917	35.7884	0.1033	N/A	
13C12-1,2,3,7,8,9-HxCDF	100.00	94.1	74 - 126	36.9277	36.8227	0.1050	N/A	
13C12-1,2,3,4,7,8-HxCDD	100.00	103	85 - 115	35.9918	35.90912	0.0827	N/A	
13C12-1,2,3,6,7,8-HxCDD	100.00	92.6	85 - 115	36.1145	36.0242	0.0903	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	76.2	78 - 122	38.766	38.67025	0.0957	N/A	*
13C12-1,2,3,4,7,8,9-HpCDF	100.00	72.9	77 - 123	41.0163	40.90587	0.1104	N/A	*
13C12-1,2,3,4,6,7,8-HpCDD	100.00	88.0	72 - 128	40.2698	40.16678	0.1030	N/A	
13C12-OCDD	200.00	78.6	48 - 152	45.0238	44.88763	0.1362	N/A	
37Cl4-2,3,7,8-TCDD	10.000	98.2	0 - 200	26.4103	26.30253	0.1078	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

HOLDING TIME SUMMARY

Analysis: EPA 1613B

Laboratory: Analytical Resources, Inc. SDG: 21G0140

Client: Anchor QEA, LLC Project: Lower Duwamish AOC4

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
LDW21-SC634A 21G0140-04	07/12/21 13:11	07/13/21 07:36	09/06/21 16:00	56	365	09/21/21 06:12	15	365	
LDW21-SC634A-FD 21G0140-05	07/12/21 13:11	07/13/21 07:36	09/06/21 16:00	56	365	09/21/21 07:02	15	365	
LDW21-SC634B 21G0140-06	07/12/21 13:11	07/13/21 07:36	09/06/21 16:00	56	365	09/21/21 07:50	15	365	
LDW21-SC634C 21G0140-07	07/12/21 13:11	07/13/21 07:36	09/06/21 16:00	56	365	09/21/21 08:39	15	365	
LDW21-SC634E 21G0140-08	07/12/21 13:11	07/13/21 07:36	09/06/21 16:00	56	365	09/21/21 11:26	15	365	

* Indicates hold time exceedance.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

METHOD DETECTION AND REPORTING LIMITS

EPA 1613B

Laboratory: Analytical Resources, Inc.
SDG: 21G0140
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Matrix: Solid
Instrument: AUTOSPEC01

Analyte	MDL	RL	Units
2,3,7,8-TCDF	0.058	1.00	ng/kg
2,3,7,8-TCDD	0.150	1.00	ng/kg
1,2,3,7,8-PeCDF	0.240	1.00	ng/kg
2,3,4,7,8-PeCDF	0.220	1.00	ng/kg
1,2,3,7,8-PeCDD	0.170	1.00	ng/kg
1,2,3,4,7,8-HxCDF	0.280	1.00	ng/kg
1,2,3,6,7,8-HxCDF	0.200	1.00	ng/kg
2,3,4,6,7,8-HxCDF	0.170	1.00	ng/kg
1,2,3,7,8,9-HxCDF	0.190	1.00	ng/kg
1,2,3,4,7,8-HxCDD	0.170	1.00	ng/kg
1,2,3,6,7,8-HxCDD	0.180	1.00	ng/kg
1,2,3,7,8,9-HxCDD	0.220	1.00	ng/kg
1,2,3,4,6,7,8-HpCDF	0.210	1.00	ng/kg
1,2,3,4,7,8,9-HpCDF	0.240	1.00	ng/kg
1,2,3,4,6,7,8-HpCDD	0.560	2.50	ng/kg
OCDF	1.10	2.50	ng/kg
OCDD	4.60	10.0	ng/kg
Total TCDF		1.00	ng/kg
Total TCDD		1.00	ng/kg
Total PeCDF		1.00	ng/kg
Total PeCDD		1.00	ng/kg
Total HxCDF		1.00	ng/kg
Total HxCDD		1.00	ng/kg
Total HpCDF		1.00	ng/kg
Total HpCDD		1.00	ng/kg

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

CS3WT

Calibration and Verification Solution (EPA-1613CS3) combined with Window Defining and 2,3,7,8-TCDD Resolution Testing Congeners

G 001361
Recd.
02/13/18

PRODUCT CODE:	CS3WT
LOT NUMBER:	CS3WT0617
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	06/27/2017
LAST TESTED: (mm/dd/yyyy)	06/27/2017
EXPIRY DATE: (mm/dd/yyyy)	06/27/2024
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

CS3WT is a solution/mixture of native and $^{13}C_{12}$-labelled chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The components and their concentrations are given in Table A.

CS3WT was designed and prepared to be used as a HRMS calibration standard according to U.S. EPA Method 1613B.

It is to be used for calibration verification in place of EPA-1613CS3 (Lot: 13CS30617). It also contains the PCDD and PCDF window defining congeners for a DB-5 (or equivalent) capillary column as well as the TCDD isomers required to test and confirm the resolution of 2,3,7,8-TCDD.

The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-$^{37}Cl_4$-tetrachlorodibenzo-p-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%. The individual native 2,3,7,8-substituted PCDD and PCDF congeners all have chemical purities of >98%; the other congeners (window defining and resolution testing) should only be considered semi-quantitative.

This current lot of CS3WT (CS3WT0617) is to be used with the 1613 calibration solutions having the following lot numbers:

PRODUCT CODE	LOT NUMBER
EPA-1613CS1	13CS10617
EPA-1613CS2	13CS20617
EPA-1613CS3	13CS30617
EPA-1613CS4	13CS40617
EPA-1613CS5	13CS50617
EPA-1613CSL	13CSL0617
EPA-1613CS0.5	13CS0.50617

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) has been assigned to the quantitative analytes in this mixture. Conversely, semi-quantitative analytes have been assigned an uncertainty of ±20%.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**

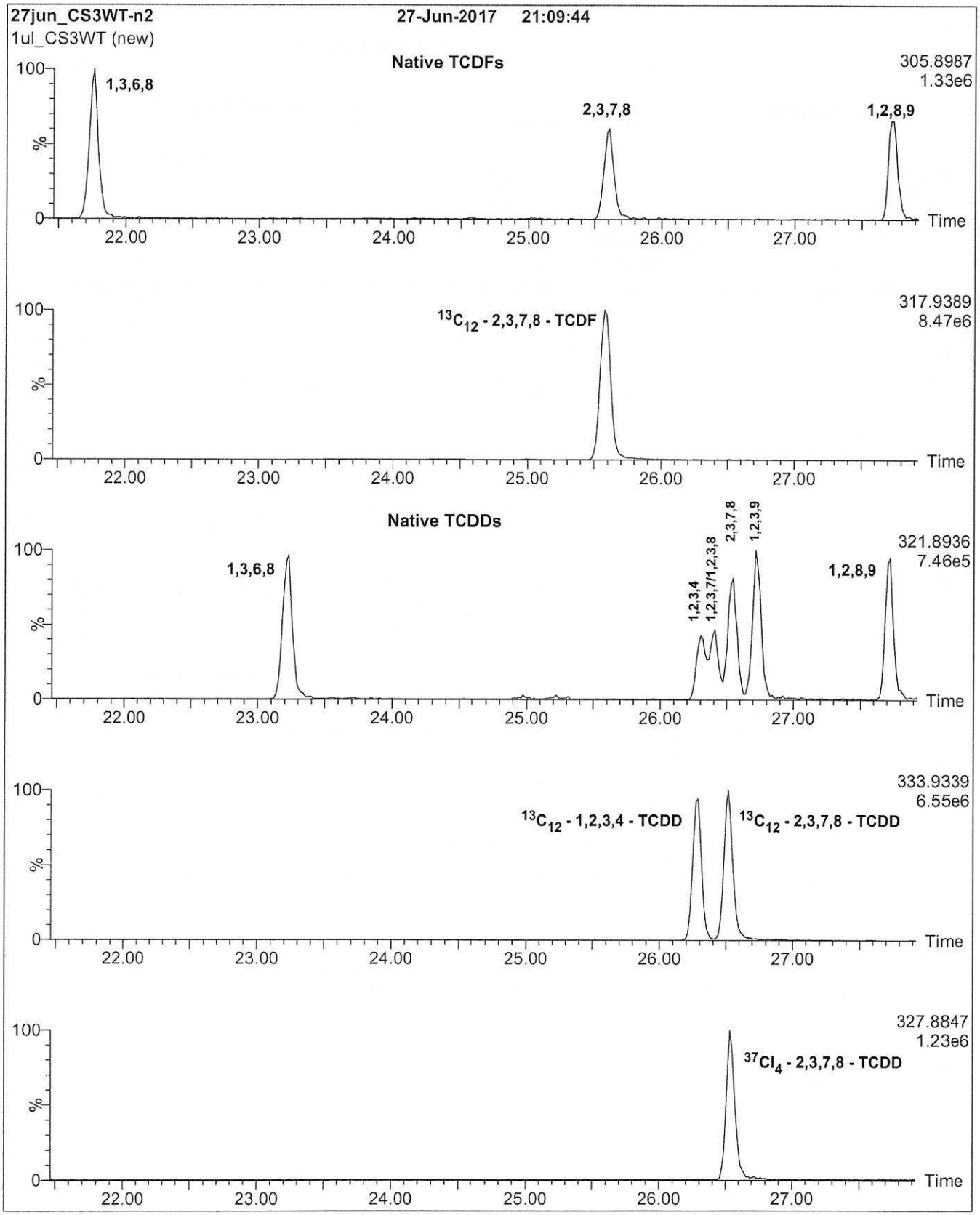


Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**

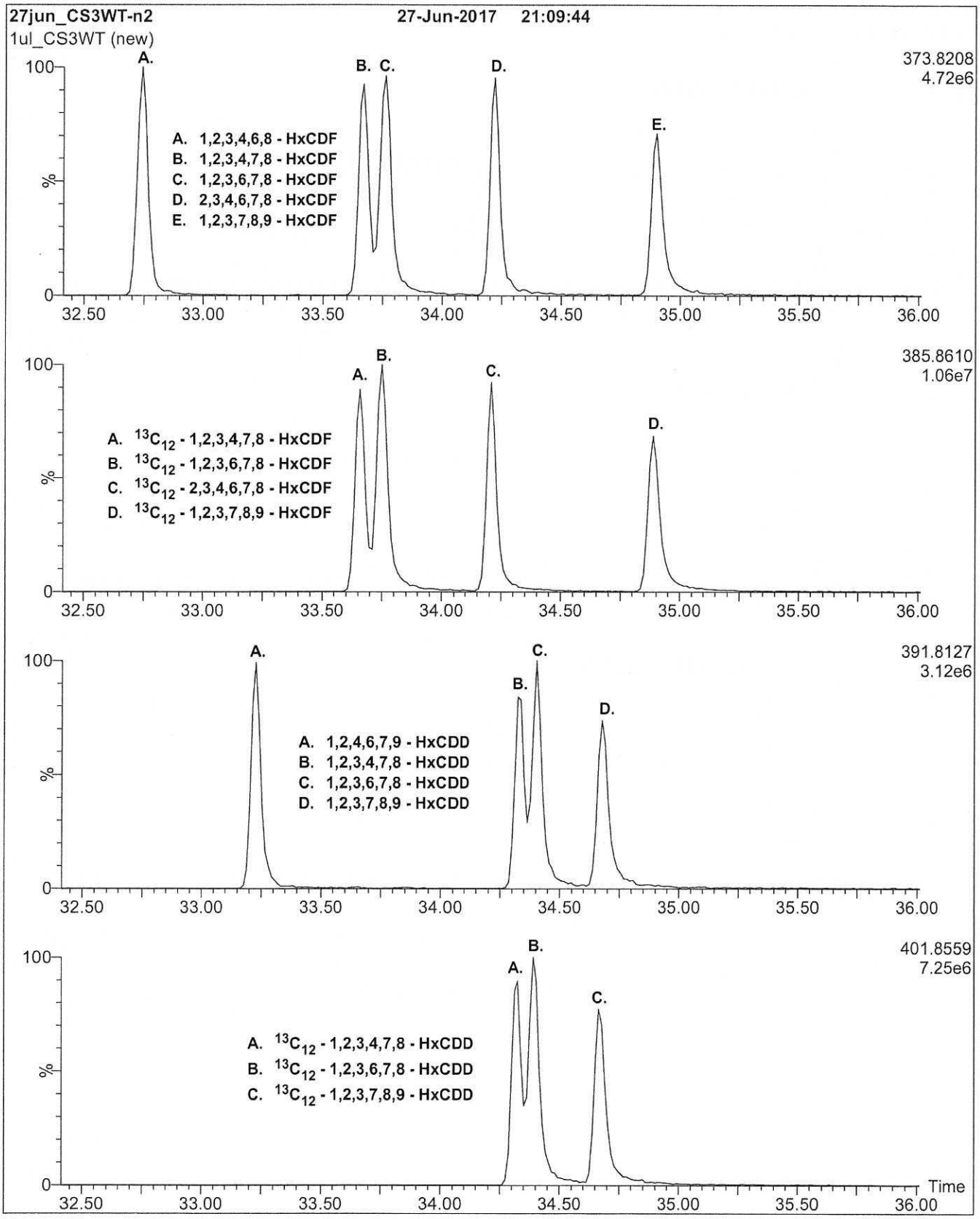
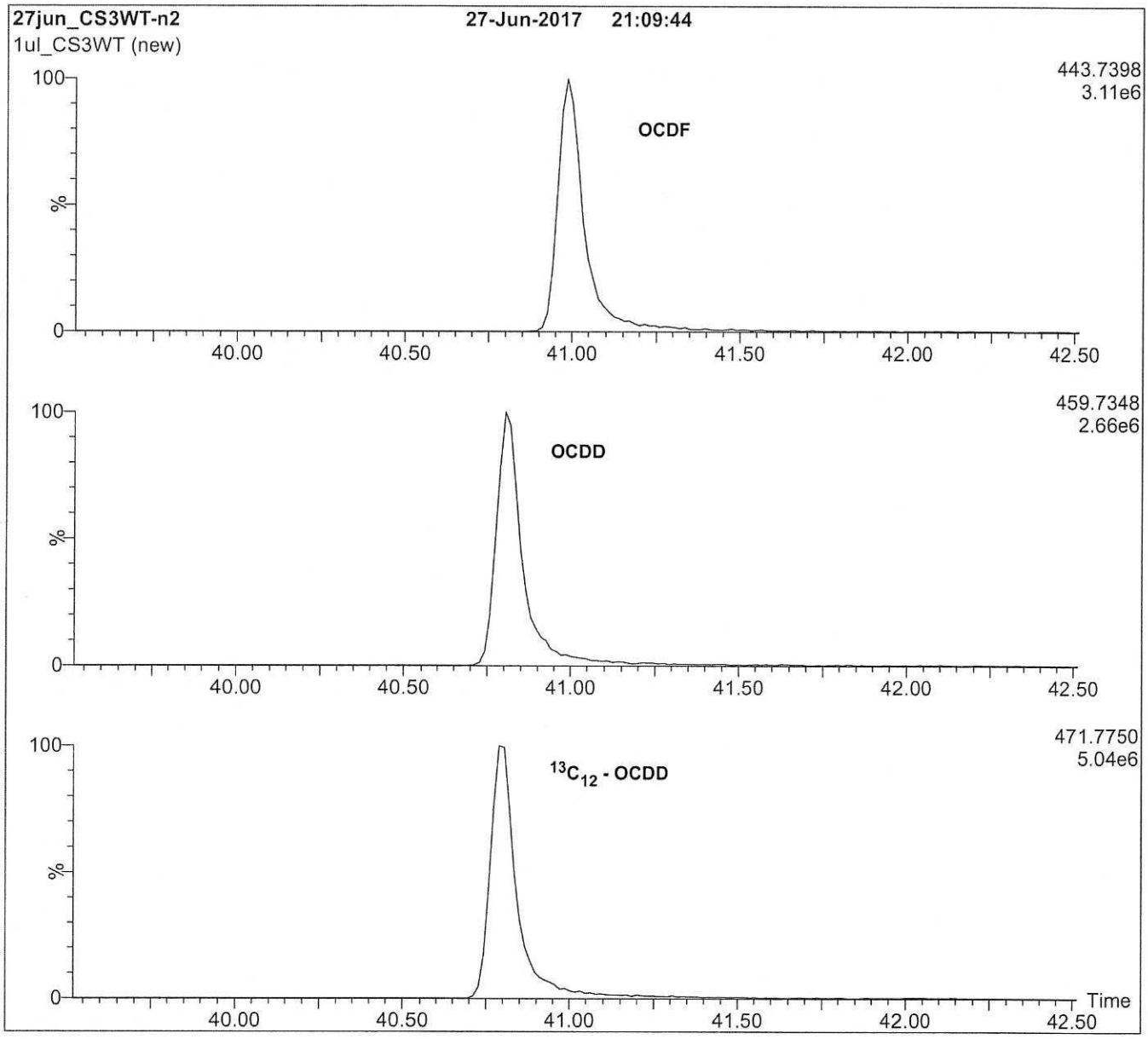


Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 ml/min	Oven:	150 °C (1 min)
Injector:	280 °C (Splitless Injection)		12 °C/min to 200 °C
Ionization:	EI+		3 °C/min to 235 °C
Detector:	280 °C		235 °C (8 min)
	SIR at 10,000 mass resolving power		8 °C/min to 310 °C
			310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613PAR

U.S. EPA Method 1613 Native PCDD/PCDF
Precision and Recovery Stock Solution

PRODUCT CODE:	EPA-1613PAR
LOT NUMBER:	13PAR1019
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/16/2019
LAST TESTED: (mm/dd/yyyy)	10/17/2019
EXPIRY DATE: (mm/dd/yyyy)	10/17/2026
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

I 000197

DESCRIPTION:

EPA-1613PAR is a solution/mixture of all the 2,3,7,8-substituted chlorinated dibenzo-p-dioxins (PCDDs) and 2,3,7,8-substituted dibenzofurans (PCDFs). The components and their concentrations are given in Table A.

EPA-1613PAR was designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B).

The individual PCDDs and PCDFs all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: HRGC/HRMS Data (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

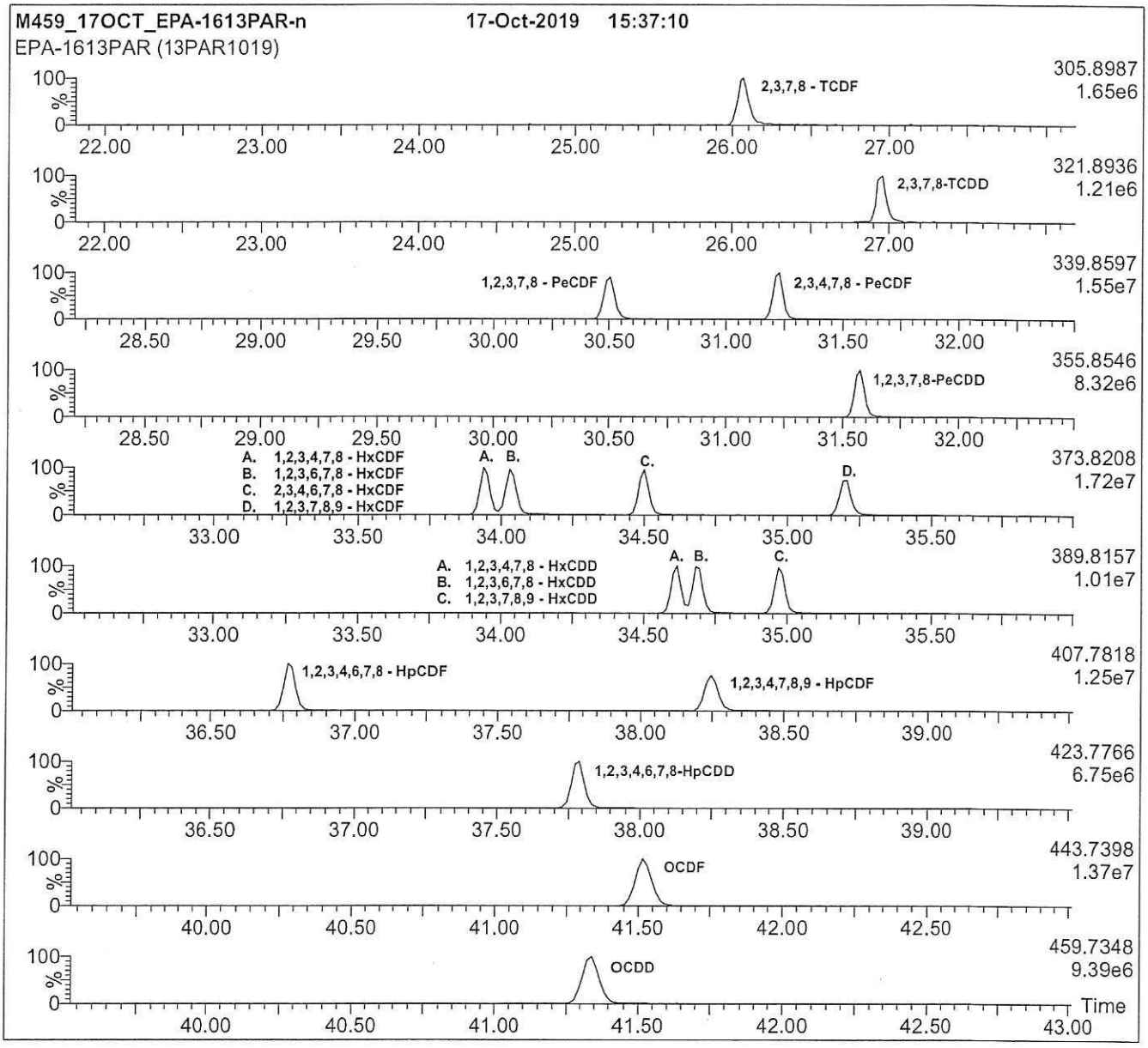
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: **EPA-1613PAR; Components and Concentrations (ng/ml, ± 5% in nonane/ 2.4% toluene)**

Component	Concentration (ng/ml)
PCDDs:	
2,3,7,8-Tetrachlorodibenzo-p-dioxin	40
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	200
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	200
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	200
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	200
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	200
Octachlorodibenzo-p-dioxin	400
PCDFs:	
2,3,7,8-Tetrachlorodibenzofuran	40
1,2,3,7,8-Pentachlorodibenzofuran	200
2,3,4,7,8-Pentachlorodibenzofuran	200
1,2,3,4,7,8-Hexachlorodibenzofuran	200
1,2,3,6,7,8-Hexachlorodibenzofuran	200
1,2,3,7,8,9-Hexachlorodibenzofuran	200
2,3,4,6,7,8-Hexachlorodibenzofuran	200
1,2,3,4,6,7,8-Heptachlorodibenzofuran	200
1,2,3,4,7,8,9-Heptachlorodibenzofuran	200
Octachlorodibenzofuran	400

Certified By: _____ **Date:** 11/07/2019
(mm/dd/yyyy)
B.G. Chittim, General Manager

Figure 1: **EPA-1613PAR; HRGC/HRMS Data (60 m DB-5 Column)**



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 ml/min	Oven:	150 °C (1 min)
Injector:	280 °C (Splitless Injection)		12 °C/min to 200 °C
Ionization:	EI+		3 °C/min to 235 °C
Detector:	280 °C		235 °C (8 min)
	SIR at 10,000 mass resolving power		8 °C/min to 310 °C
			310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

EPA-1613CVS

U.S. EPA Method 1613 Calibration and Verification Solutions plus Supplemental Calibration Solutions EPA-1613CSL & EPA-1613CS0.5

PRODUCT CODES:	EPA-1613CVS	**LOT NUMBERS:**	(see below)
	EPA-1613CS1		13CS11019 I005456
	EPA-1613CS2		13CS21019 I005457
	EPA-1613CS3		13CS31019
	EPA-1613CS4		13CS41019 I005458
	EPA-1613CS5		13CS51019 I005459

Note: EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to this calibration set that must be ordered separately.

EPA-1613CS0.5	13CS0.51019
EPA-1613CSL	13CSL1019

SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/22/2019
LAST TESTED: (mm/dd/yyyy)	10/24/2019
EXPIRY DATE: (mm/dd/yyyy)	10/24/2026 I005460
RECOMMENDED STORAGE:	Store ampoules in a cool, dark place

DESCRIPTION:

EPA-1613CVS is a series of 5 calibration solutions containing native ($^{12}C_{12}$) and mass-labelled ($^{13}C_{12}$ and $^{37}Cl_4$) chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The components of each solution, and their concentrations, are given in Table A.

They were designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B). They are to be used as received.

EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to EPA-1613CVS. Neither is required by the method, but either or both can be used to extend the calibration to lower levels.

The individual native PCDDs and PCDFs all have chemical purities of >98%. The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-$^{37}Cl_4$-Tetrachlorodibenzo-p-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

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519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations
Table B: 5-point HRGC/HRMS Calibration and RRF Summary
Table C: 7-point HRGC/HRMS Calibration and RRF Summary
Figure 1: HRGC/HRMS Data for EPA-1613CS3 (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 3 for further details.

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a series of standards for the identification and quantification of specific chemical compounds.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned values, and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analytes is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); Components and Concentrations (ng/ml, ± 5% in nonane/toluene)

Compound	Concentration (ng/ml)						
Native PCDDs and PCDFs:	**CS1**	**CS2**	**CS3**	**CS4**	**CS5**	**CSL**	**CS0.5**
2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
2,3,7,8-TCDF	0.5	2	10	40	200	0.1	0.25
1,2,3,7,8-PeCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8,9-HpCDF	2.5	10	50	200	1000	0.5	1.25
OCDD	5.0	20	100	400	2000	1.0	2.5
OCDF	5.0	20	100	400	2000	1.0	2.5
Labelled PCDDs and PCDFs:							
$^{13}C_{12}$-2,3,7,8-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,7,8-TCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-OCDD	200	200	200	200	200	200	200
Cleanup Standard:							
$^{37}Cl_4$-2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
Internal Standards:							
$^{13}C_{12}$-1,2,3,4-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100	100	100	100	100	100	100
Percent toluene (v/v)	3.6%	3.7%	4.2%	6.1%	16.2%	3.6%	3.6%

Certified By: _____ **Date:** 10/25/2019 (mm/dd/yyyy)

B.G. Chittim, General Manager

Table B: **EPA-1613CVS; 5-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard				
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5
2,3,7,8-TCDF	0.93	0.013	1.4	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.015	1.6	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.04	0.019	1.8	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.035	3.7	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.93	0.013	1.4	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.96	0.022	2.3	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.89	0.021	2.4	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.91	0.011	1.2	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.010	1.1	0.90	0.90	0.92	0.91	0.92
OCDF	1.19	0.056	4.7	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.05	0.023	2.2	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.97	0.018	1.9	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	1.00	0.019	1.9	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.98	0.032	3.2	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.97	0.016	1.6	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.025	2.5	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.013	1.3	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.57	0.047	3.0	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.21	0.078	6.5	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.17	0.081	6.9	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.020	1.5	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.51	0.034	2.2	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.38	0.012	0.9	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.014	1.2	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.033	2.5	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.08	0.046	4.3	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.13	0.036	3.2	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.79	0.047	5.9	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.027	3.1	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.04	0.010	1.0	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.017	2.1	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.74	0.055	7.4	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.026	2.6	0.95	0.94	0.99	0.99	0.99

Table C: **EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); 7-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard						
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CSL	CS0.5	CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5	RRF#6	RRF#7
2,3,7,8-TCDF	0.92	0.045	4.8	0.96	0.83	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.013	1.4	0.94	0.92	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.02	0.058	5.7	0.90	1.00	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.029	3.0	0.96	0.97	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.92	0.030	3.3	0.90	0.86	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.94	0.047	5.0	0.87	0.89	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.88	0.029	3.3	0.83	0.88	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.90	0.033	3.7	0.83	0.93	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.018	1.9	0.89	0.94	0.90	0.90	0.92	0.91	0.92
OCDF	1.18	0.052	4.4	1.15	1.14	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.03	0.051	5.0	1.03	0.92	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.95	0.042	4.4	0.87	0.98	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	0.97	0.066	6.8	0.83	0.98	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.96	0.044	4.5	0.90	0.92	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.94	0.054	5.7	0.83	0.92	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.033	3.3	0.95	1.03	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.023	2.3	0.95	1.00	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.56	0.042	2.7	1.52	1.54	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.20	0.066	5.5	1.18	1.17	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.16	0.071	6.1	1.12	1.13	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.018	1.4	1.32	1.35	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.53	0.045	3.0	1.60	1.56	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.39	0.019	1.4	1.39	1.42	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.012	1.0	1.19	1.19	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.028	2.2	1.30	1.33	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.07	0.045	4.2	1.02	1.08	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.12	0.033	3.0	1.09	1.11	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.78	0.040	5.1	0.75	0.78	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.025	2.9	0.86	0.90	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.05	0.015	1.5	1.08	1.06	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.016	2.0	0.79	0.81	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.73	0.046	6.3	0.71	0.72	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.053	5.4	0.90	1.07	0.95	0.94	0.99	0.99	0.99

Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

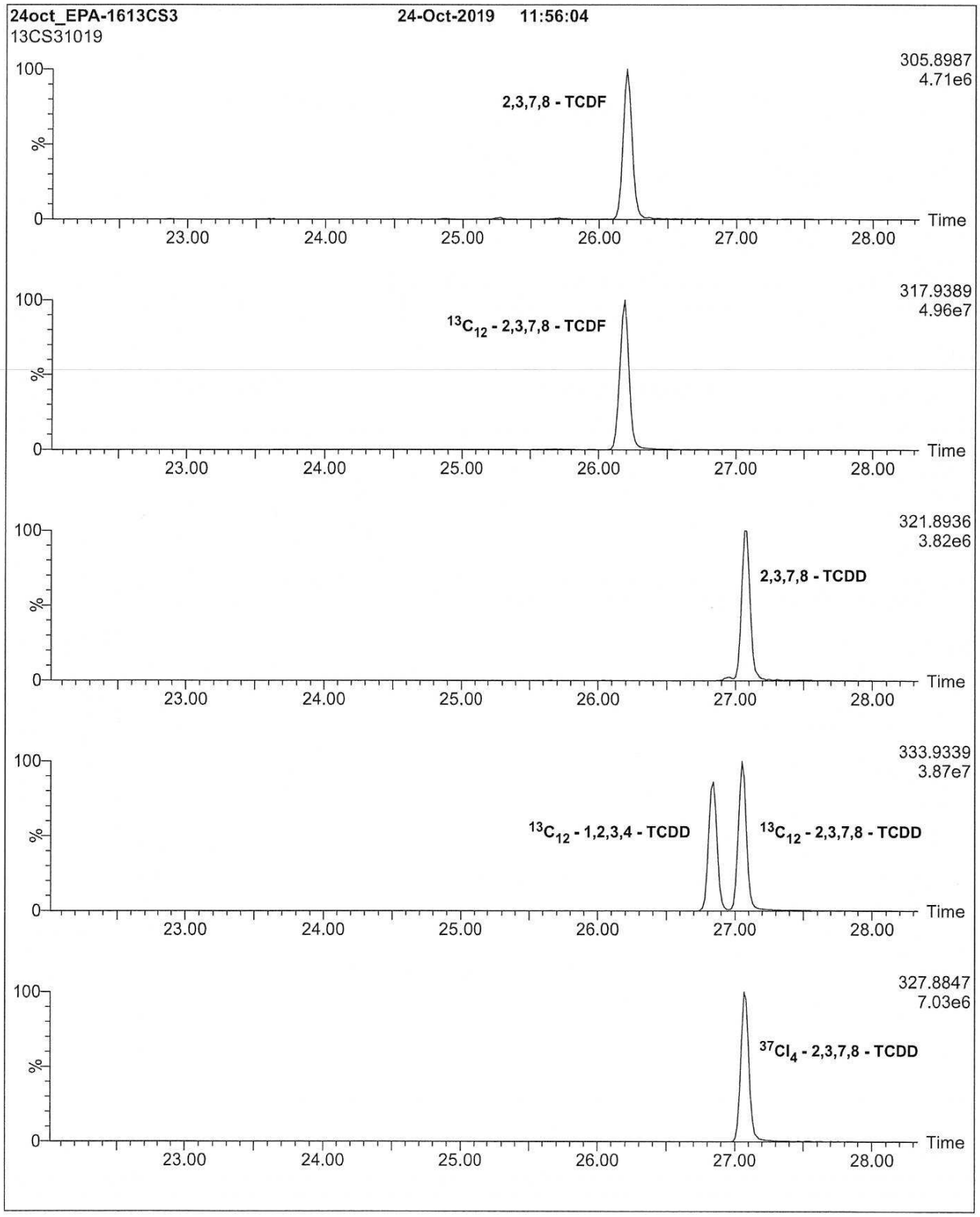


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

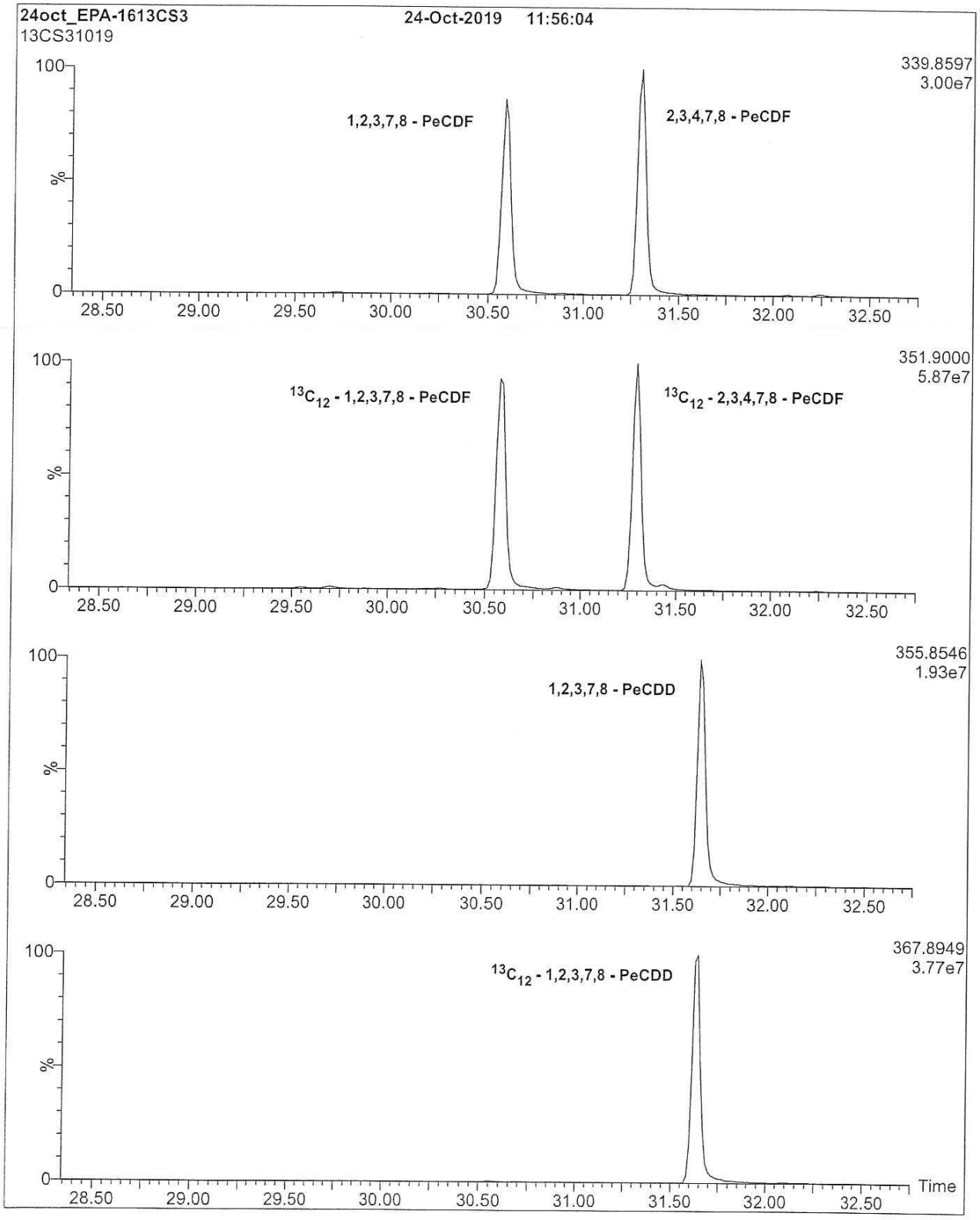


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

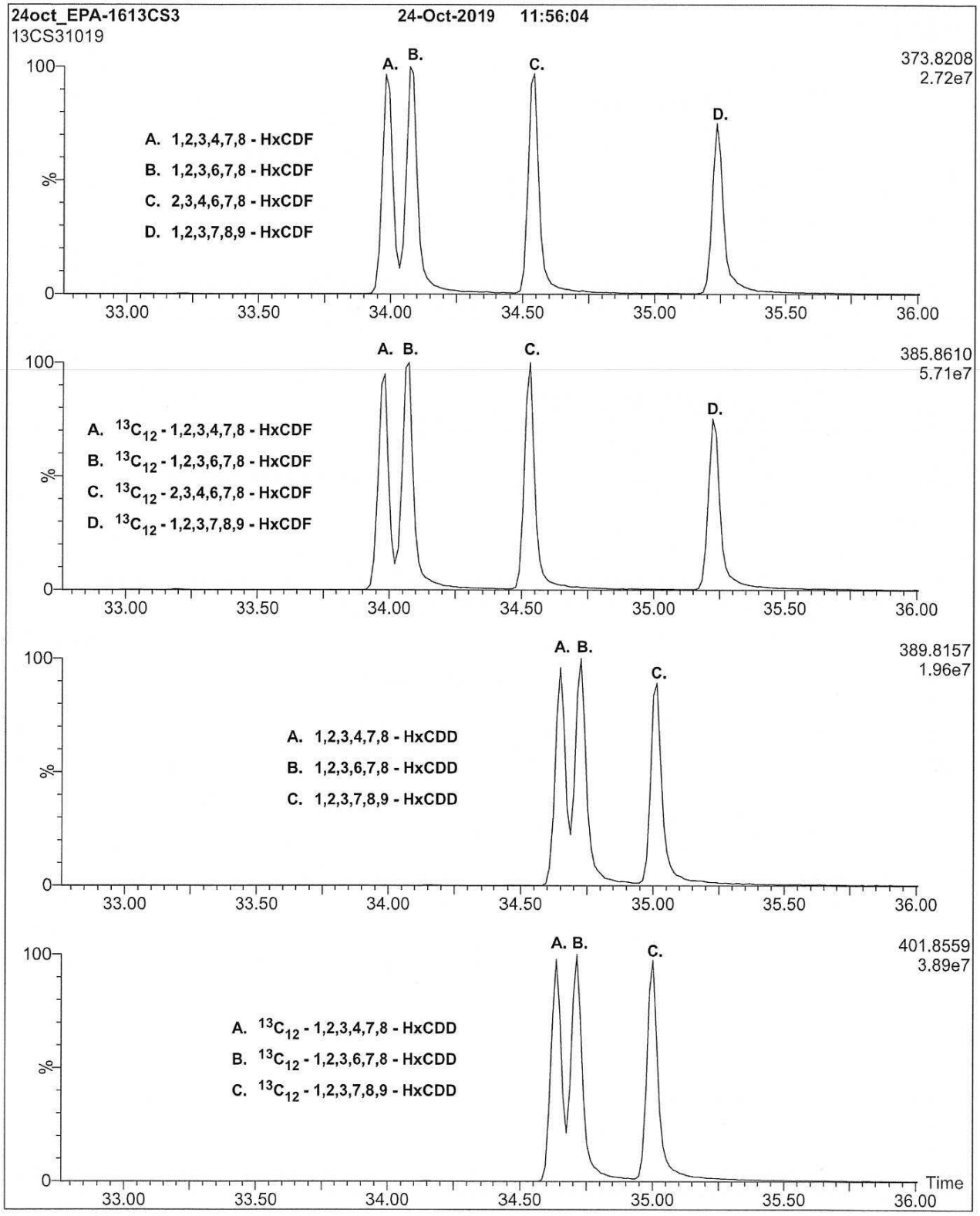


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

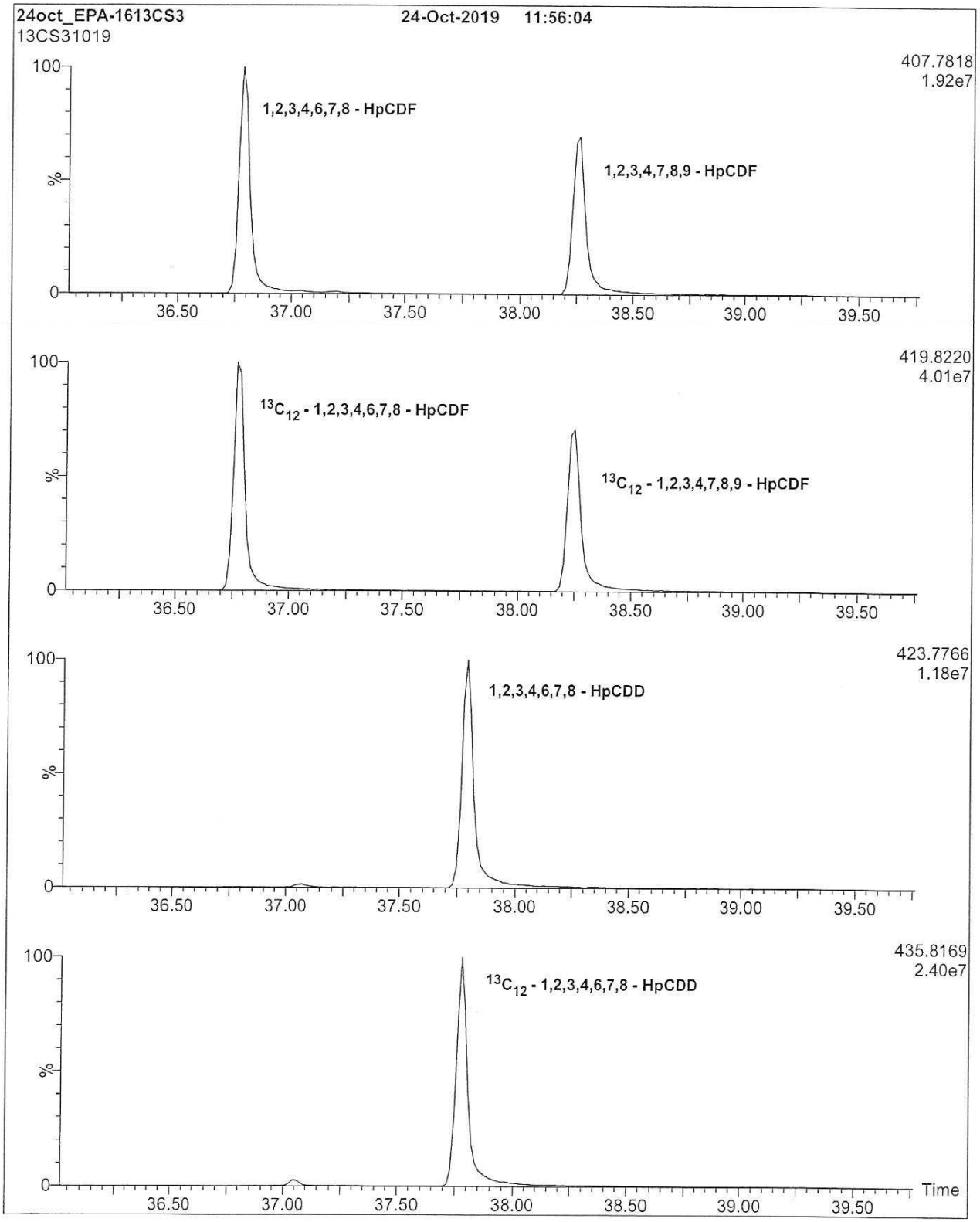
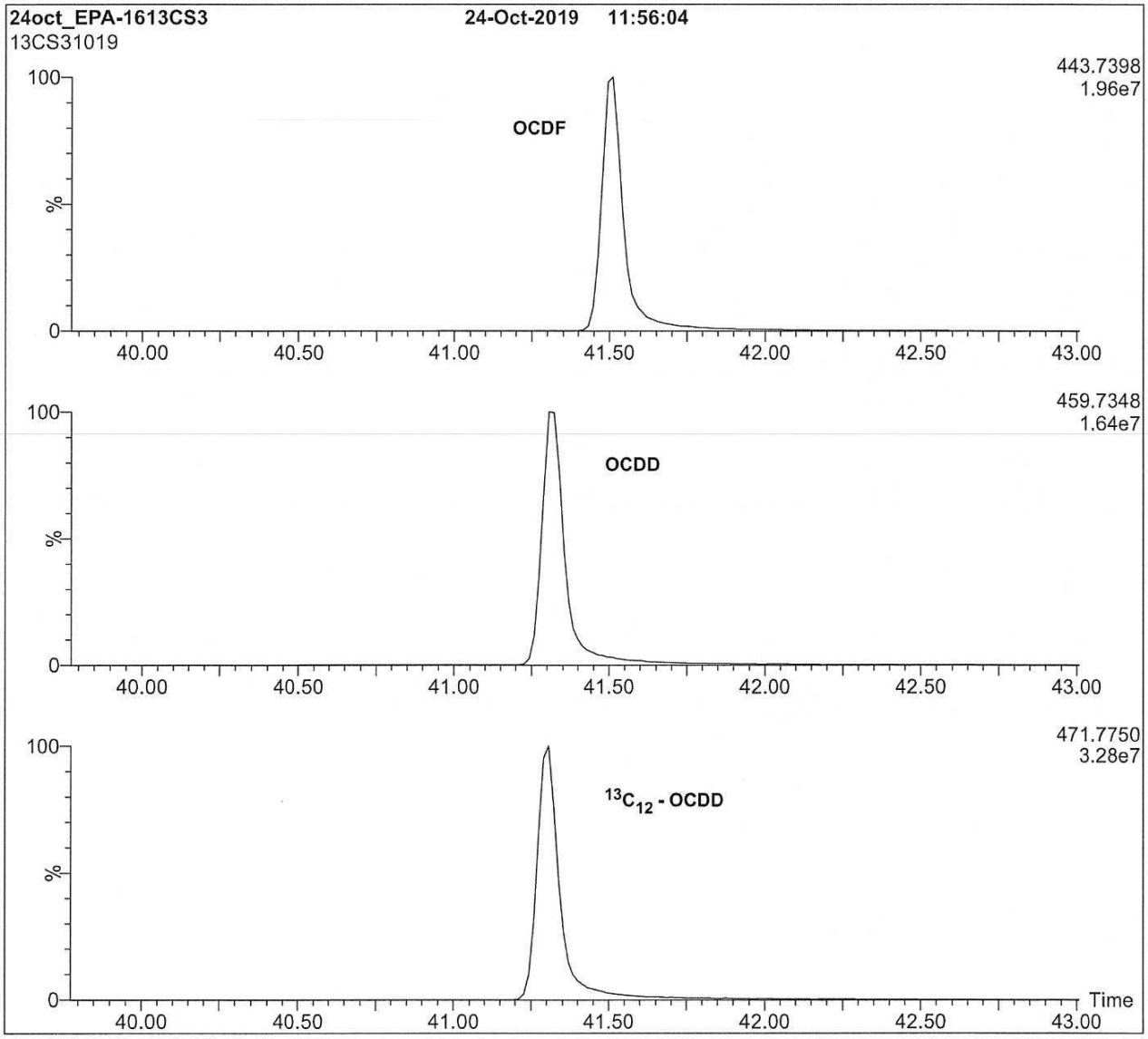


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 ml/min	Oven:	150 °C (1 min)
Injector:	280 °C (Splitless Injection)		12 °C/min to 200 °C
Ionization:	EI+		3 °C/min to 235 °C
Detector:	280 °C		235 °C (8 min)
	SIR at 10,000 mass resolving power		8 °C/min to 310 °C
			310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

EPA-1613CVS

U.S. EPA Method 1613 Calibration and Verification Solutions plus Supplemental Calibration Solutions EPA-1613CSL & EPA-1613CS0.5

PRODUCT CODES:	EPA-1613CVS	**LOT NUMBERS:**	(see below)	06/23/20
	EPA-1613CS1		13CS11019	I005456
	EPA-1613CS2		13CS21019	I005457
	EPA-1613CS3		13CS31019	
	EPA-1613CS4		13CS41019	I005458
	EPA-1613CS5		13CS51019	I005459

Note: EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to this calibration set that must be ordered separately.

EPA-1613CS0.5	13CS0.51019
EPA-1613CSL	13CSL1019

SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/22/2019
LAST TESTED: (mm/dd/yyyy)	10/24/2019
EXPIRY DATE: (mm/dd/yyyy)	10/24/2026 I005460
RECOMMENDED STORAGE:	Store ampoules in a cool, dark place

DESCRIPTION: 06/23/20

EPA-1613CVS is a series of 5 calibration solutions containing native ($^{12}C_{12}$) and mass-labelled ($^{13}C_{12}$ and $^{37}Cl_4$) chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The components of each solution, and their concentrations, are given in Table A.

They were designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B). They are to be used as received.

EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to EPA-1613CVS. Neither is required by the method, but either or both can be used to extend the calibration to lower levels.

The individual native PCDDs and PCDFs all have chemical purities of >98%. The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-$^{37}Cl_4$-Tetrachlorodibenzo-p-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations
Table B: 5-point HRGC/HRMS Calibration and RRF Summary
Table C: 7-point HRGC/HRMS Calibration and RRF Summary
Figure 1: HRGC/HRMS Data for EPA-1613CS3 (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 3 for further details.

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a series of standards for the identification and quantification of specific chemical compounds.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned values, and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analytes is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); Components and Concentrations (ng/ml, ± 5% in nonane/toluene)

Compound	Concentration (ng/ml)						
Native PCDDs and PCDFs:	**CS1**	**CS2**	**CS3**	**CS4**	**CS5**	**CSL**	**CS0.5**
2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
2,3,7,8-TCDF	0.5	2	10	40	200	0.1	0.25
1,2,3,7,8-PeCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8,9-HpCDF	2.5	10	50	200	1000	0.5	1.25
OCDD	5.0	20	100	400	2000	1.0	2.5
OCDF	5.0	20	100	400	2000	1.0	2.5
Labelled PCDDs and PCDFs:							
$^{13}C_{12}$-2,3,7,8-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,7,8-TCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-OCDD	200	200	200	200	200	200	200
Cleanup Standard:							
$^{37}Cl_4$-2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
Internal Standards:							
$^{13}C_{12}$-1,2,3,4-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100	100	100	100	100	100	100
Percent toluene (v/v)	3.6%	3.7%	4.2%	6.1%	16.2%	3.6%	3.6%

Certified By: _____ **Date:** 10/25/2019 (mm/dd/yyyy)

B.G. Chittim, General Manager

Table B: **EPA-1613CVS; 5-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard				
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5
2,3,7,8-TCDF	0.93	0.013	1.4	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.015	1.6	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.04	0.019	1.8	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.035	3.7	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.93	0.013	1.4	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.96	0.022	2.3	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.89	0.021	2.4	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.91	0.011	1.2	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.010	1.1	0.90	0.90	0.92	0.91	0.92
OCDF	1.19	0.056	4.7	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.05	0.023	2.2	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.97	0.018	1.9	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	1.00	0.019	1.9	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.98	0.032	3.2	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.97	0.016	1.6	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.025	2.5	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.013	1.3	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.57	0.047	3.0	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.21	0.078	6.5	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.17	0.081	6.9	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.020	1.5	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.51	0.034	2.2	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.38	0.012	0.9	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.014	1.2	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.033	2.5	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.08	0.046	4.3	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.13	0.036	3.2	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.79	0.047	5.9	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.027	3.1	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.04	0.010	1.0	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.017	2.1	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.74	0.055	7.4	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.026	2.6	0.95	0.94	0.99	0.99	0.99

Table C: **EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); 7-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard						
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CSL	CS0.5	CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5	RRF#6	RRF#7
2,3,7,8-TCDF	0.92	0.045	4.8	0.96	0.83	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.013	1.4	0.94	0.92	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.02	0.058	5.7	0.90	1.00	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.029	3.0	0.96	0.97	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.92	0.030	3.3	0.90	0.86	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.94	0.047	5.0	0.87	0.89	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.88	0.029	3.3	0.83	0.88	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.90	0.033	3.7	0.83	0.93	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.018	1.9	0.89	0.94	0.90	0.90	0.92	0.91	0.92
OCDF	1.18	0.052	4.4	1.15	1.14	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.03	0.051	5.0	1.03	0.92	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.95	0.042	4.4	0.87	0.98	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	0.97	0.066	6.8	0.83	0.98	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.96	0.044	4.5	0.90	0.92	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.94	0.054	5.7	0.83	0.92	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.033	3.3	0.95	1.03	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.023	2.3	0.95	1.00	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.56	0.042	2.7	1.52	1.54	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.20	0.066	5.5	1.18	1.17	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.16	0.071	6.1	1.12	1.13	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.018	1.4	1.32	1.35	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.53	0.045	3.0	1.60	1.56	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.39	0.019	1.4	1.39	1.42	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.012	1.0	1.19	1.19	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.028	2.2	1.30	1.33	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.07	0.045	4.2	1.02	1.08	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.12	0.033	3.0	1.09	1.11	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.78	0.040	5.1	0.75	0.78	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.025	2.9	0.86	0.90	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.05	0.015	1.5	1.08	1.06	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.016	2.0	0.79	0.81	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.73	0.046	6.3	0.71	0.72	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.053	5.4	0.90	1.07	0.95	0.94	0.99	0.99	0.99

Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

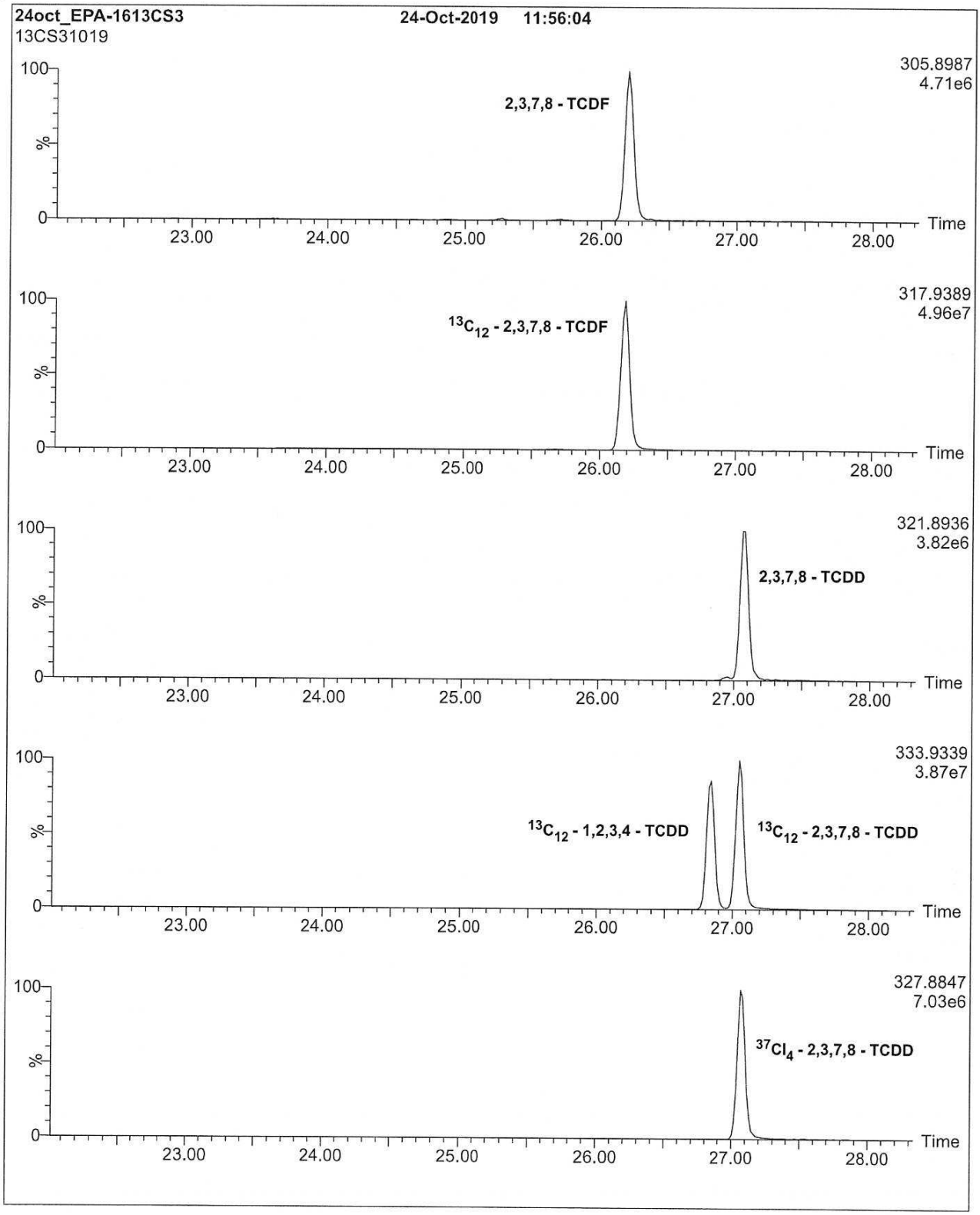


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

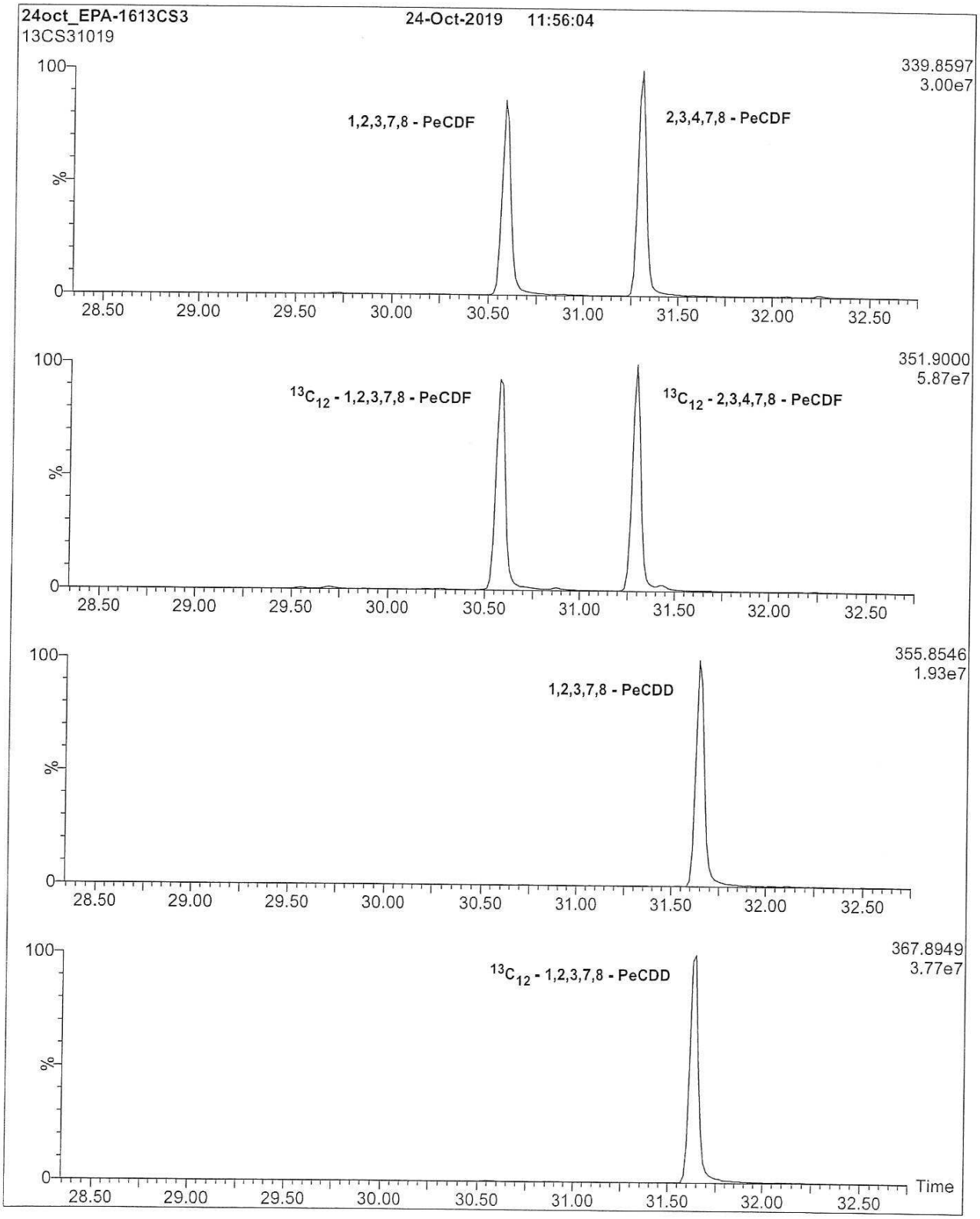


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

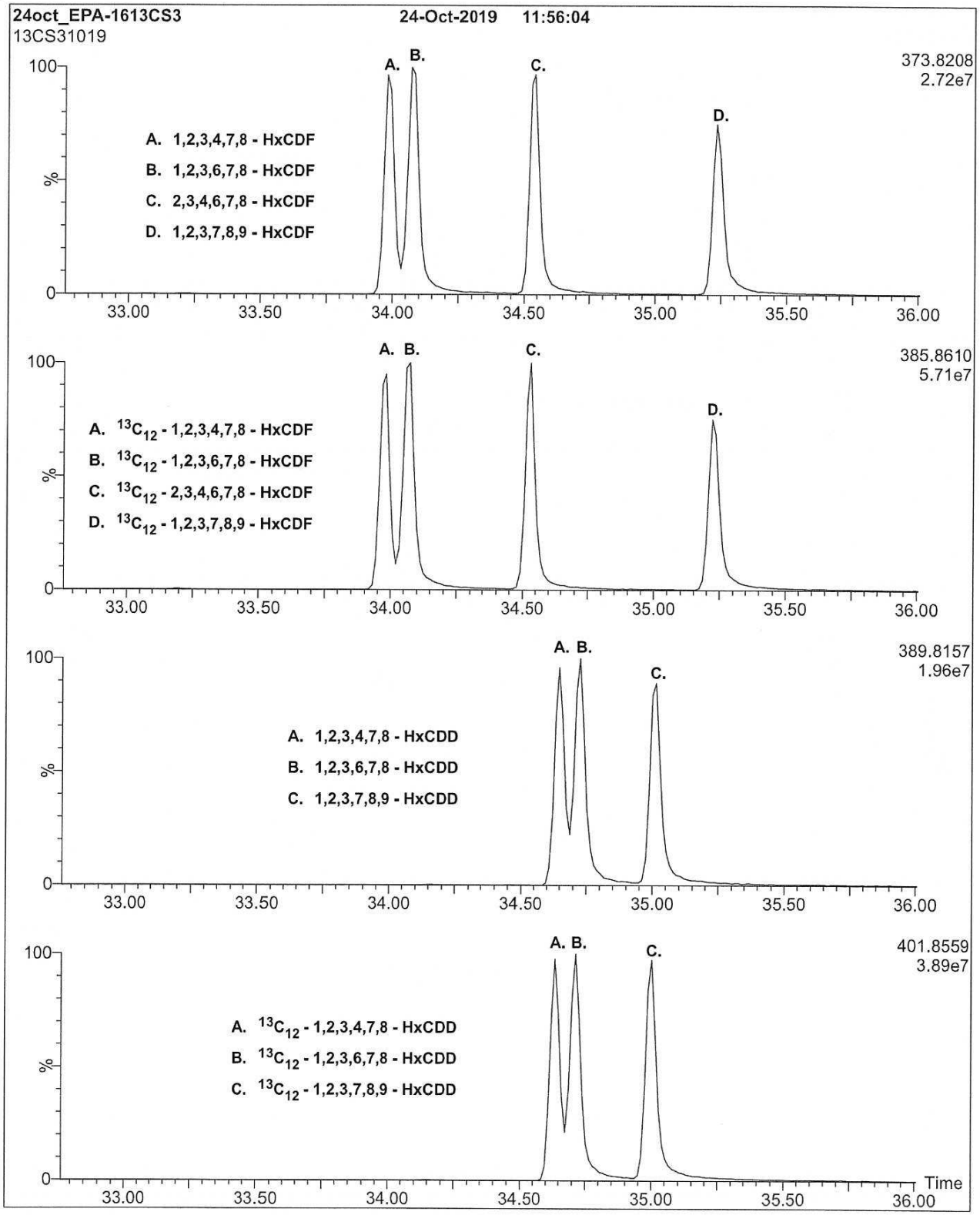


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

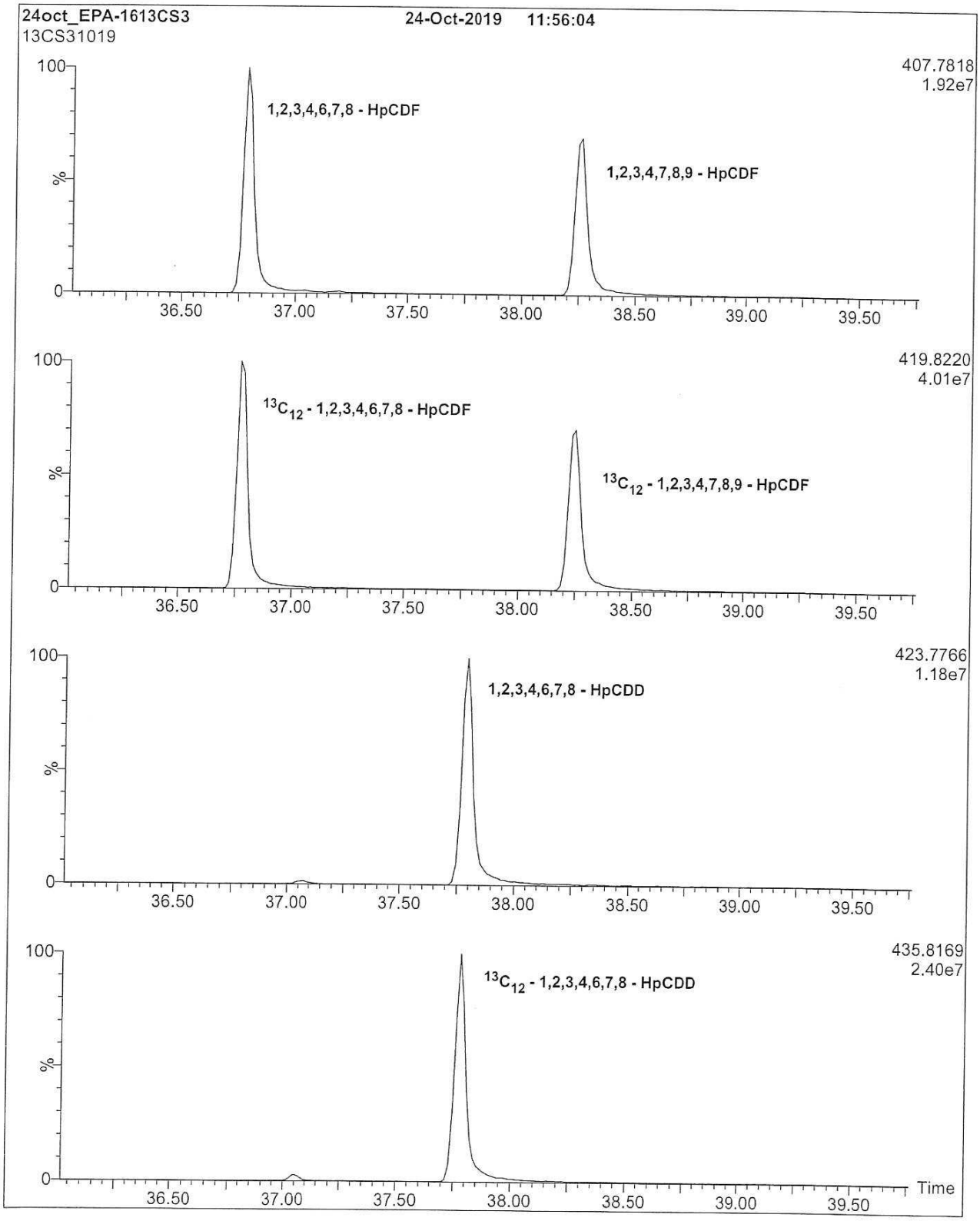
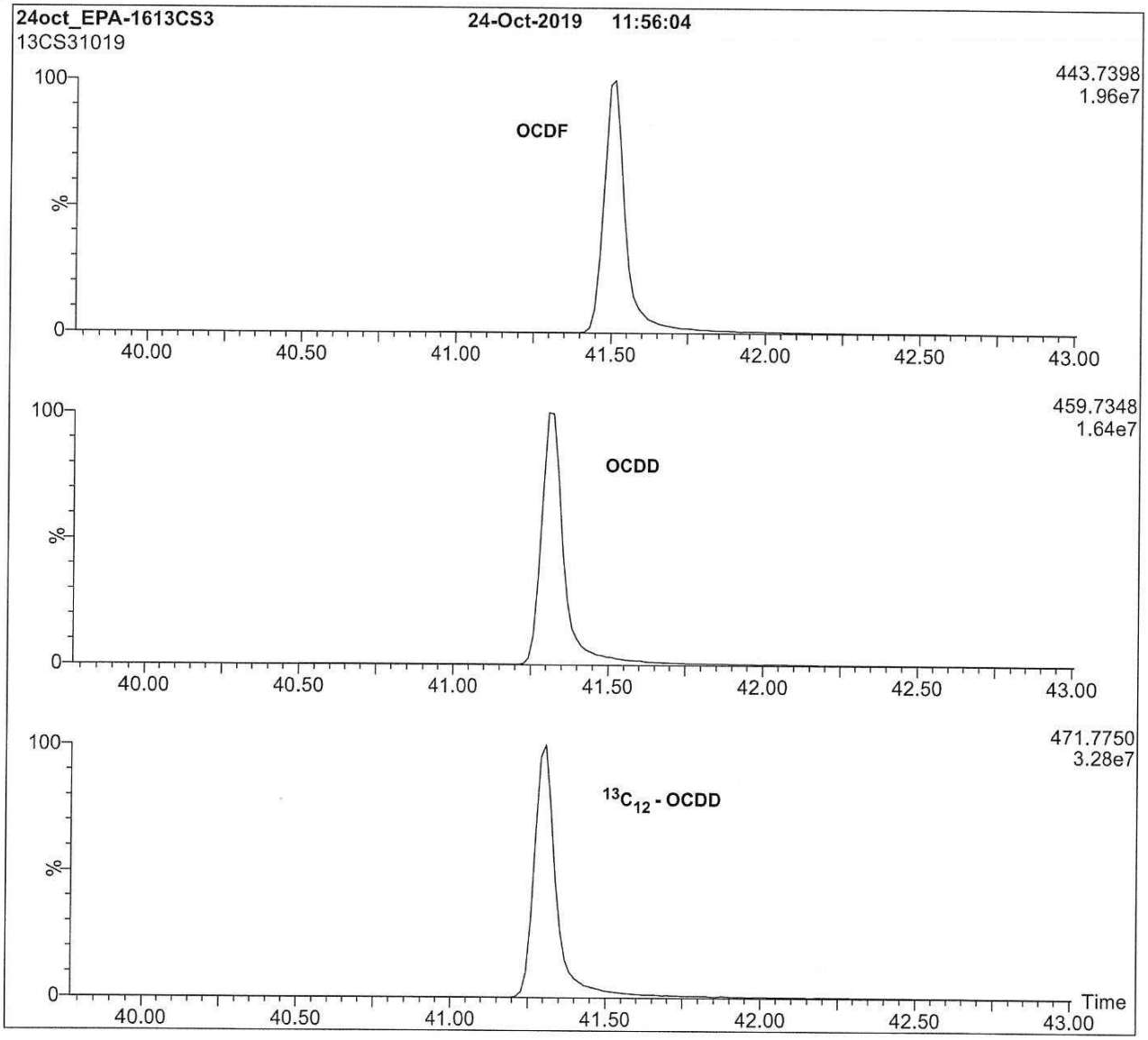


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 ml/min	Oven:	150 °C (1 min)
Injector:	280 °C (Splitless Injection)		12 °C/min to 200 °C
Ionization:	EI+		3 °C/min to 235 °C
Detector:	280 °C		235 °C (8 min)
	SIR at 10,000 mass resolving power		8 °C/min to 310 °C
			310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613CVS
U.S. EPA Method 1613 Calibration and Verification Solutions
plus Supplemental Calibration Solutions EPA-1613CSL & EPA-1613CS0.5

PRODUCT CODES:	EPA-1613CVS	**LOT NUMBERS:**	(see below)
	EPA-1613CS1		13CS11019 I005456
	EPA-1613CS2		13CS21019 I005457
	EPA-1613CS3		13CS31019
	EPA-1613CS4		13CS41019 I005458
	EPA-1613CS5		13CS51019 I005459

Note: EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to this calibration set that must be ordered separately.

EPA-1613CS0.5	13CS0.51019
EPA-1613CSL	13CSL1019

SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/22/2019
LAST TESTED: (mm/dd/yyyy)	10/24/2019
EXPIRY DATE: (mm/dd/yyyy)	10/24/2026 I005460
RECOMMENDED STORAGE:	Store ampoules in a cool, dark place

DESCRIPTION:

EPA-1613CVS is a series of 5 calibration solutions containing native ($^{12}C_{12}$) and mass-labelled ($^{13}C_{12}$ and $^{37}Cl_4$) chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The components of each solution, and their concentrations, are given in Table A.

They were designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B). They are to be used as received.

EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to EPA-1613CVS. Neither is required by the method, but either or both can be used to extend the calibration to lower levels.

The individual native PCDDs and PCDFs all have chemical purities of >98%. The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-$^{37}Cl_4$-Tetrachlorodibenzo-p-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations
Table B: 5-point HRGC/HRMS Calibration and RRF Summary
Table C: 7-point HRGC/HRMS Calibration and RRF Summary
Figure 1: HRGC/HRMS Data for EPA-1613CS3 (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 3 for further details.

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a series of standards for the identification and quantification of specific chemical compounds.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned values, and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analytes is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); Components and Concentrations (ng/ml, ± 5% in nonane/toluene)

Compound	Concentration (ng/ml)						
Native PCDDs and PCDFs:	**CS1**	**CS2**	**CS3**	**CS4**	**CS5**	**CSL**	**CS0.5**
2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
2,3,7,8-TCDF	0.5	2	10	40	200	0.1	0.25
1,2,3,7,8-PeCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8,9-HpCDF	2.5	10	50	200	1000	0.5	1.25
OCDD	5.0	20	100	400	2000	1.0	2.5
OCDF	5.0	20	100	400	2000	1.0	2.5
Labelled PCDDs and PCDFs:							
$^{13}C_{12}$-2,3,7,8-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,7,8-TCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-OCDD	200	200	200	200	200	200	200
Cleanup Standard:							
$^{37}Cl_4$-2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
Internal Standards:							
$^{13}C_{12}$-1,2,3,4-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100	100	100	100	100	100	100
Percent toluene (v/v)	3.6%	3.7%	4.2%	6.1%	16.2%	3.6%	3.6%

Certified By: _____ **Date:** 10/25/2019 (mm/dd/yyyy)

B.G. Chittim, General Manager

Table B: **EPA-1613CVS; 5-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard				
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5
2,3,7,8-TCDF	0.93	0.013	1.4	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.015	1.6	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.04	0.019	1.8	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.035	3.7	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.93	0.013	1.4	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.96	0.022	2.3	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.89	0.021	2.4	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.91	0.011	1.2	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.010	1.1	0.90	0.90	0.92	0.91	0.92
OCDF	1.19	0.056	4.7	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.05	0.023	2.2	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.97	0.018	1.9	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	1.00	0.019	1.9	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.98	0.032	3.2	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.97	0.016	1.6	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.025	2.5	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.013	1.3	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.57	0.047	3.0	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.21	0.078	6.5	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.17	0.081	6.9	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.020	1.5	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.51	0.034	2.2	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.38	0.012	0.9	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.014	1.2	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.033	2.5	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.08	0.046	4.3	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.13	0.036	3.2	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.79	0.047	5.9	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.027	3.1	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.04	0.010	1.0	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.017	2.1	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.74	0.055	7.4	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.026	2.6	0.95	0.94	0.99	0.99	0.99

Table C: **EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); 7-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard						
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CSL	CS0.5	CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5	RRF#6	RRF#7
2,3,7,8-TCDF	0.92	0.045	4.8	0.96	0.83	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.013	1.4	0.94	0.92	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.02	0.058	5.7	0.90	1.00	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.029	3.0	0.96	0.97	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.92	0.030	3.3	0.90	0.86	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.94	0.047	5.0	0.87	0.89	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.88	0.029	3.3	0.83	0.88	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.90	0.033	3.7	0.83	0.93	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.018	1.9	0.89	0.94	0.90	0.90	0.92	0.91	0.92
OCDF	1.18	0.052	4.4	1.15	1.14	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.03	0.051	5.0	1.03	0.92	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.95	0.042	4.4	0.87	0.98	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	0.97	0.066	6.8	0.83	0.98	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.96	0.044	4.5	0.90	0.92	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.94	0.054	5.7	0.83	0.92	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.033	3.3	0.95	1.03	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.023	2.3	0.95	1.00	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.56	0.042	2.7	1.52	1.54	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.20	0.066	5.5	1.18	1.17	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.16	0.071	6.1	1.12	1.13	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.018	1.4	1.32	1.35	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.53	0.045	3.0	1.60	1.56	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.39	0.019	1.4	1.39	1.42	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.012	1.0	1.19	1.19	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.028	2.2	1.30	1.33	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.07	0.045	4.2	1.02	1.08	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.12	0.033	3.0	1.09	1.11	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.78	0.040	5.1	0.75	0.78	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.025	2.9	0.86	0.90	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.05	0.015	1.5	1.08	1.06	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.016	2.0	0.79	0.81	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.73	0.046	6.3	0.71	0.72	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.053	5.4	0.90	1.07	0.95	0.94	0.99	0.99	0.99

Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

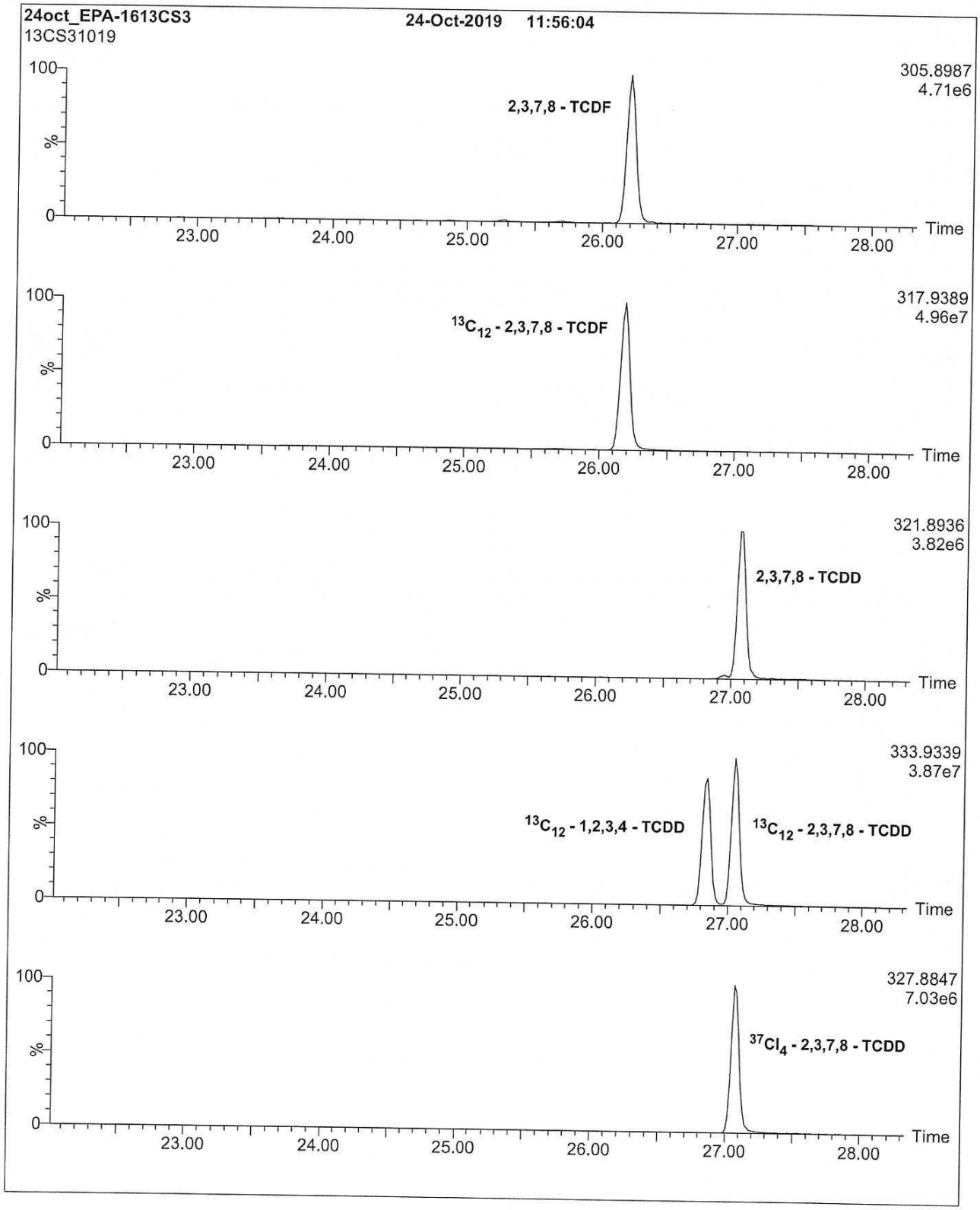


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

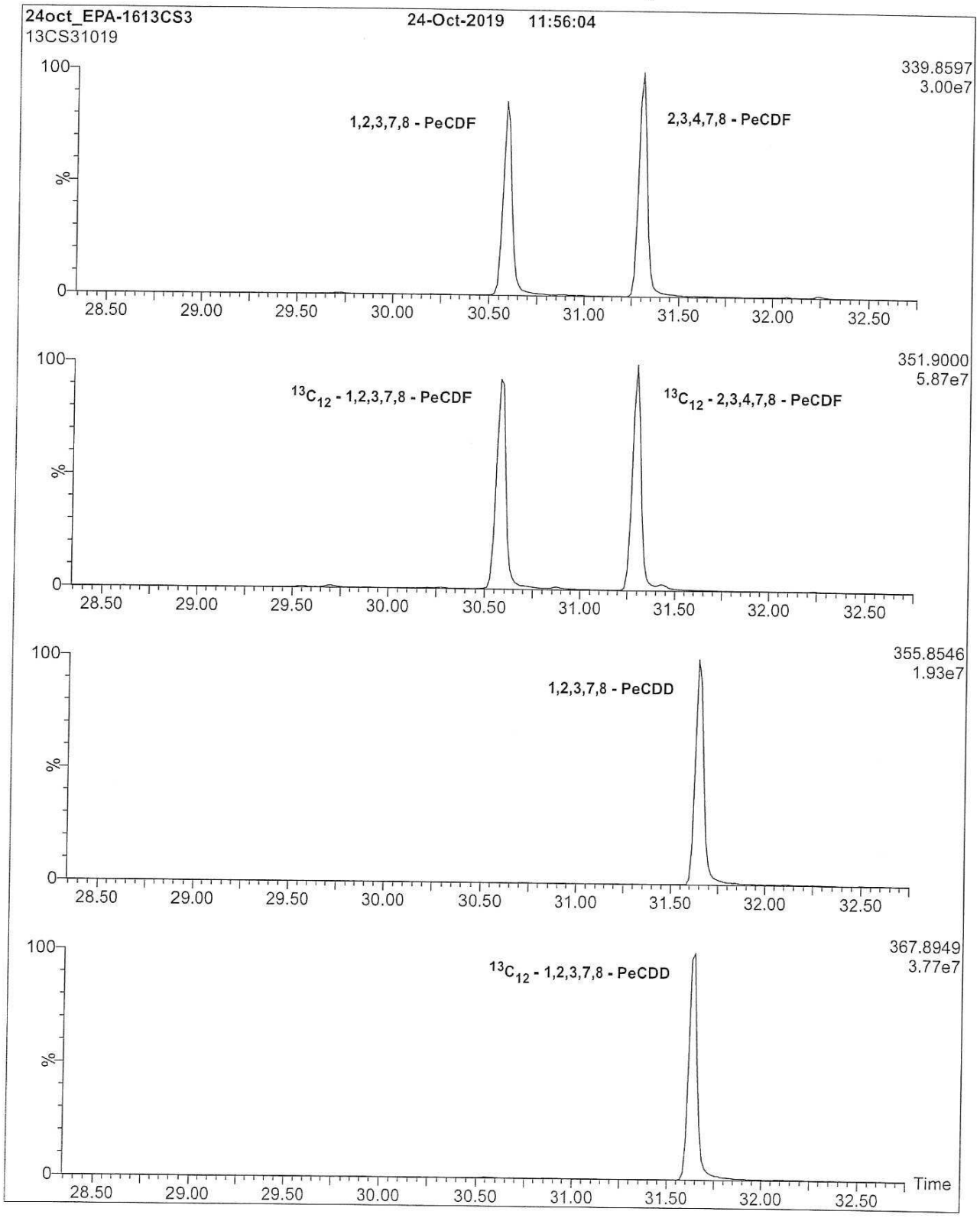


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

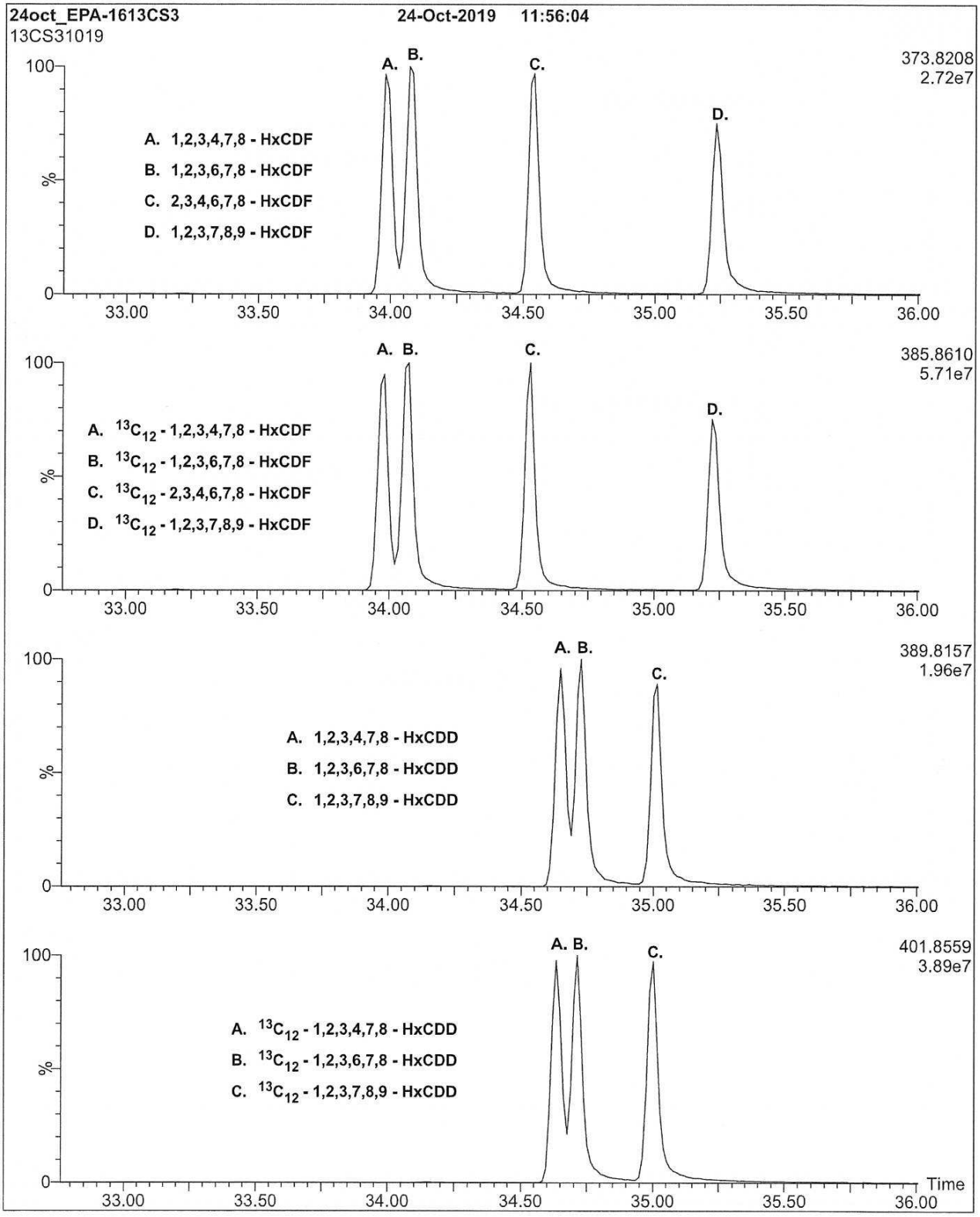


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

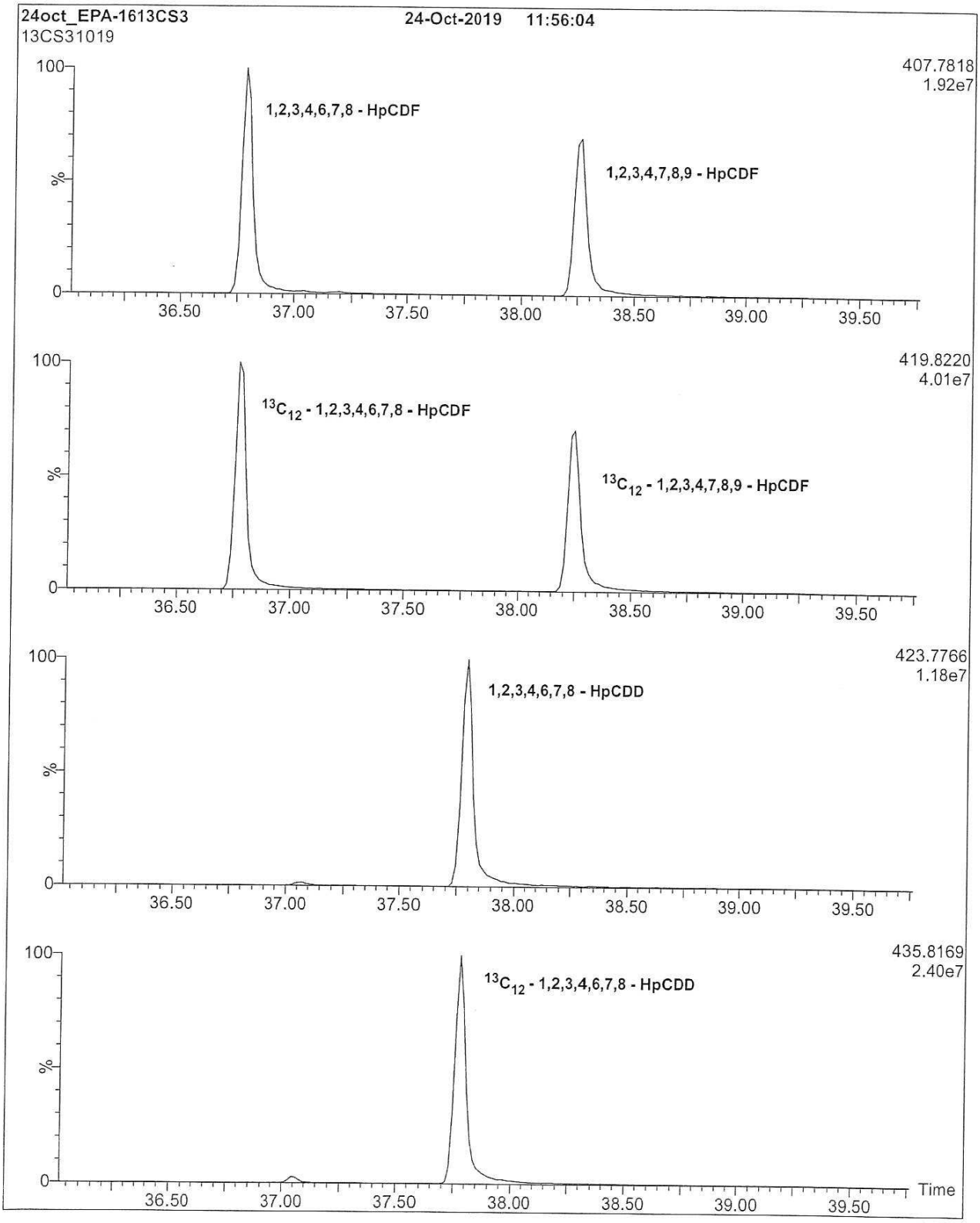
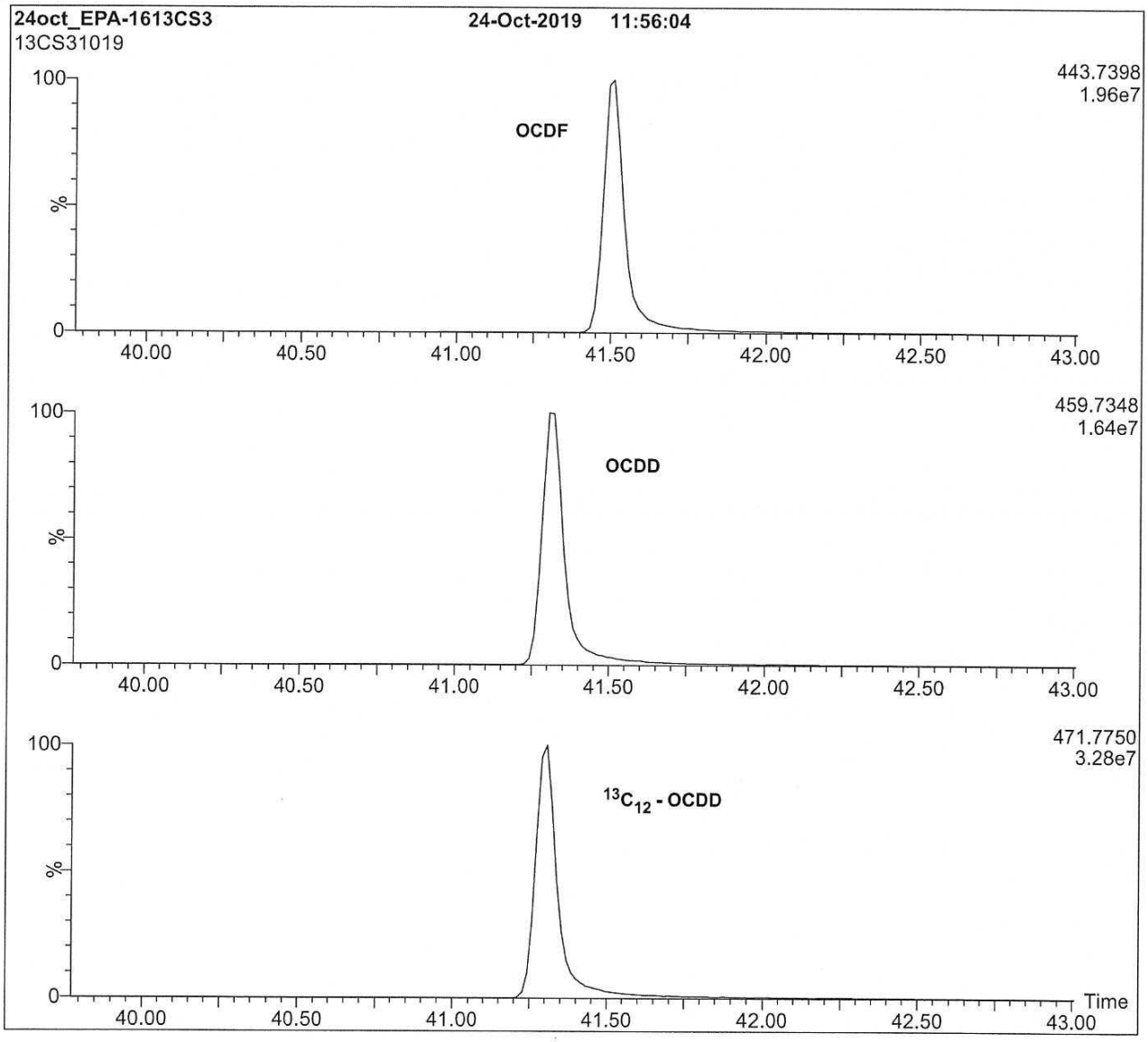


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 ml/min	Oven:	150 °C (1 min)
Injector:	280 °C (Splitless Injection)		12 °C/min to 200 °C
Ionization:	EI+		3 °C/min to 235 °C
Detector:	280 °C		235 °C (8 min)
	SIR at 10,000 mass resolving power		8 °C/min to 310 °C
			310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

EPA-1613CVS

U.S. EPA Method 1613 Calibration and Verification Solutions plus Supplemental Calibration Solutions EPA-1613CSL & EPA-1613CS0.5

PRODUCT CODES:	EPA-1613CVS	**LOT NUMBERS:**	(see below) 06/23/20
	EPA-1613CS1		13CS11019 I005456
	EPA-1613CS2		13CS21019 I005457
	EPA-1613CS3		13CS31019
	EPA-1613CS4		13CS41019 I005458
	EPA-1613CS5		13CS51019 I005459

Note: EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to this calibration set that must be ordered separately.

EPA-1613CS0.5	13CS0.51019
EPA-1613CSL	13CSL1019

SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/22/2019
LAST TESTED: (mm/dd/yyyy)	10/24/2019
EXPIRY DATE: (mm/dd/yyyy)	10/24/2026 I005460
RECOMMENDED STORAGE:	Store ampoules in a cool, dark place

DESCRIPTION: 06/23/20

EPA-1613CVS is a series of 5 calibration solutions containing native ($^{12}C_{12}$) and mass-labelled ($^{13}C_{12}$ and $^{37}Cl_4$) chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The components of each solution, and their concentrations, are given in Table A.

They were designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B). They are to be used as received.

EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to EPA-1613CVS. Neither is required by the method, but either or both can be used to extend the calibration to lower levels.

The individual native PCDDs and PCDFs all have chemical purities of >98%. The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-$^{37}Cl_4$-Tetrachlorodibenzo-p-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations
Table B: 5-point HRGC/HRMS Calibration and RRF Summary
Table C: 7-point HRGC/HRMS Calibration and RRF Summary
Figure 1: HRGC/HRMS Data for EPA-1613CS3 (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 3 for further details.

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a series of standards for the identification and quantification of specific chemical compounds.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned values, and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analytes is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); Components and Concentrations (ng/ml, ± 5% in nonane/toluene)

Compound	Concentration (ng/ml)						
Native PCDDs and PCDFs:	CS1	CS2	CS3	CS4	CS5	CSL	CS0.5
2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
2,3,7,8-TCDF	0.5	2	10	40	200	0.1	0.25
1,2,3,7,8-PeCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8,9-HpCDF	2.5	10	50	200	1000	0.5	1.25
OCDD	5.0	20	100	400	2000	1.0	2.5
OCDF	5.0	20	100	400	2000	1.0	2.5
Labelled PCDDs and PCDFs:							
$^{13}C_{12}$-2,3,7,8-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,7,8-TCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-OCDD	200	200	200	200	200	200	200
Cleanup Standard:							
$^{37}Cl_4$-2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
Internal Standards:							
$^{13}C_{12}$-1,2,3,4-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100	100	100	100	100	100	100
Percent toluene (v/v)	3.6%	3.7%	4.2%	6.1%	16.2%	3.6%	3.6%

Certified By: _____ **Date:** 10/25/2019 (mm/dd/yyyy)

B.G. Chittim, General Manager

Table B: **EPA-1613CVS; 5-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard				
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5
2,3,7,8-TCDF	0.93	0.013	1.4	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.015	1.6	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.04	0.019	1.8	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.035	3.7	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.93	0.013	1.4	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.96	0.022	2.3	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.89	0.021	2.4	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.91	0.011	1.2	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.010	1.1	0.90	0.90	0.92	0.91	0.92
OCDF	1.19	0.056	4.7	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.05	0.023	2.2	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.97	0.018	1.9	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	1.00	0.019	1.9	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.98	0.032	3.2	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.97	0.016	1.6	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.025	2.5	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.013	1.3	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.57	0.047	3.0	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.21	0.078	6.5	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.17	0.081	6.9	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.020	1.5	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.51	0.034	2.2	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.38	0.012	0.9	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.014	1.2	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.033	2.5	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.08	0.046	4.3	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.13	0.036	3.2	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.79	0.047	5.9	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.027	3.1	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.04	0.010	1.0	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.017	2.1	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.74	0.055	7.4	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.026	2.6	0.95	0.94	0.99	0.99	0.99

Table C: **EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); 7-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard						
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CSL	CS0.5	CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5	RRF#6	RRF#7
2,3,7,8-TCDF	0.92	0.045	4.8	0.96	0.83	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.013	1.4	0.94	0.92	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.02	0.058	5.7	0.90	1.00	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.029	3.0	0.96	0.97	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.92	0.030	3.3	0.90	0.86	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.94	0.047	5.0	0.87	0.89	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.88	0.029	3.3	0.83	0.88	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.90	0.033	3.7	0.83	0.93	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.018	1.9	0.89	0.94	0.90	0.90	0.92	0.91	0.92
OCDF	1.18	0.052	4.4	1.15	1.14	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.03	0.051	5.0	1.03	0.92	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.95	0.042	4.4	0.87	0.98	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	0.97	0.066	6.8	0.83	0.98	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.96	0.044	4.5	0.90	0.92	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.94	0.054	5.7	0.83	0.92	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.033	3.3	0.95	1.03	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.023	2.3	0.95	1.00	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.56	0.042	2.7	1.52	1.54	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.20	0.066	5.5	1.18	1.17	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.16	0.071	6.1	1.12	1.13	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.018	1.4	1.32	1.35	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.53	0.045	3.0	1.60	1.56	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.39	0.019	1.4	1.39	1.42	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.012	1.0	1.19	1.19	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.028	2.2	1.30	1.33	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.07	0.045	4.2	1.02	1.08	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.12	0.033	3.0	1.09	1.11	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.78	0.040	5.1	0.75	0.78	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.025	2.9	0.86	0.90	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.05	0.015	1.5	1.08	1.06	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.016	2.0	0.79	0.81	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.73	0.046	6.3	0.71	0.72	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.053	5.4	0.90	1.07	0.95	0.94	0.99	0.99	0.99

Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

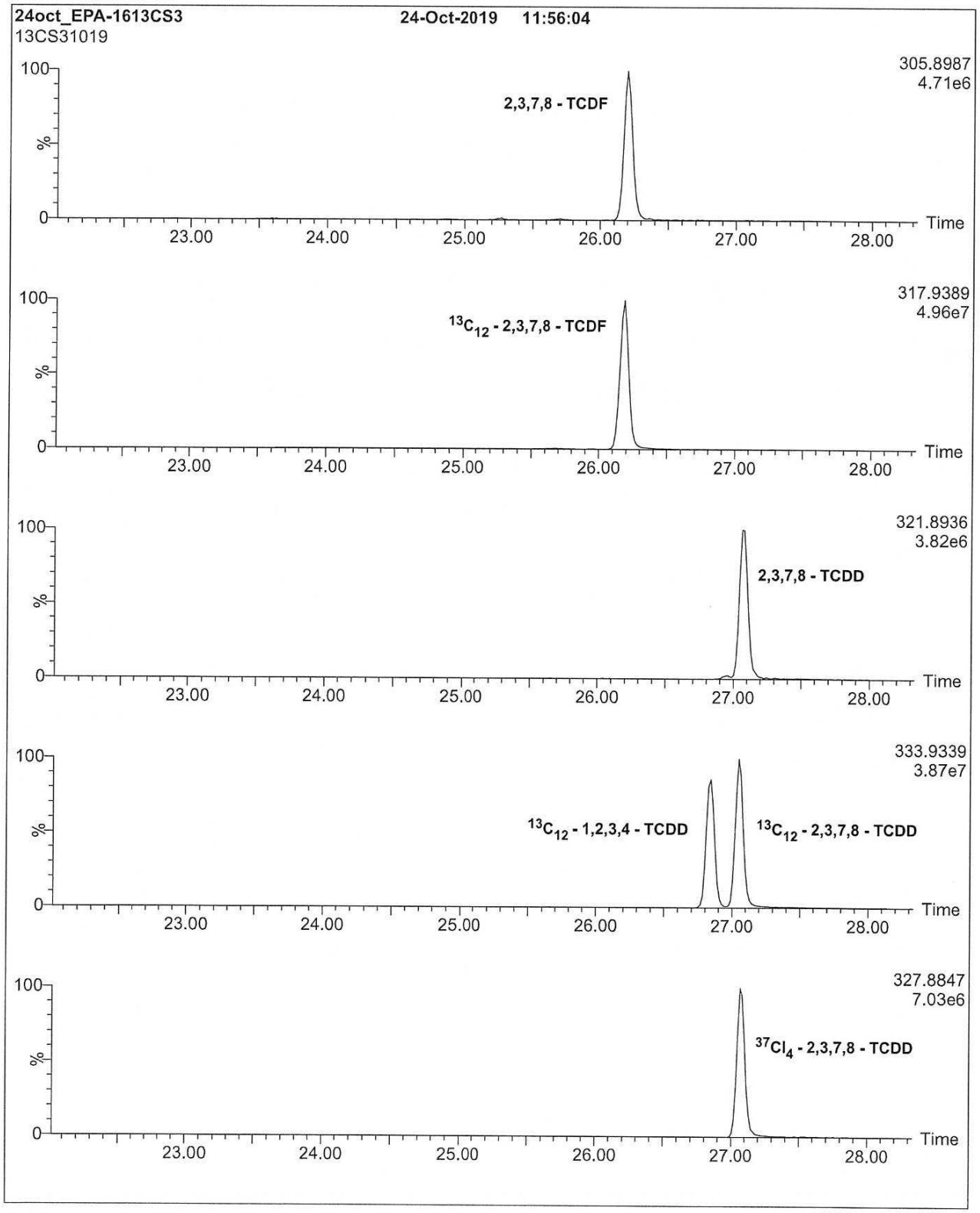


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

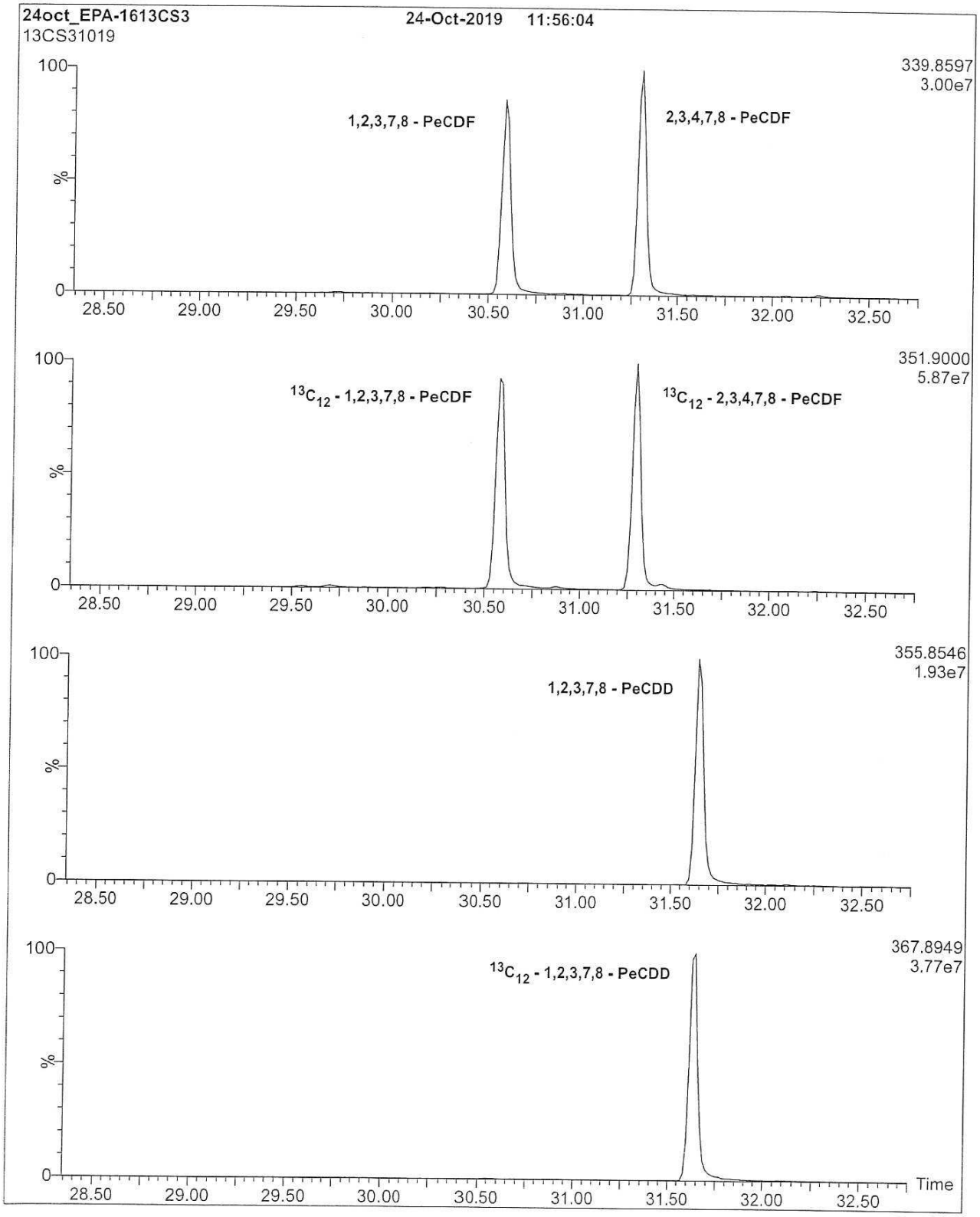


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

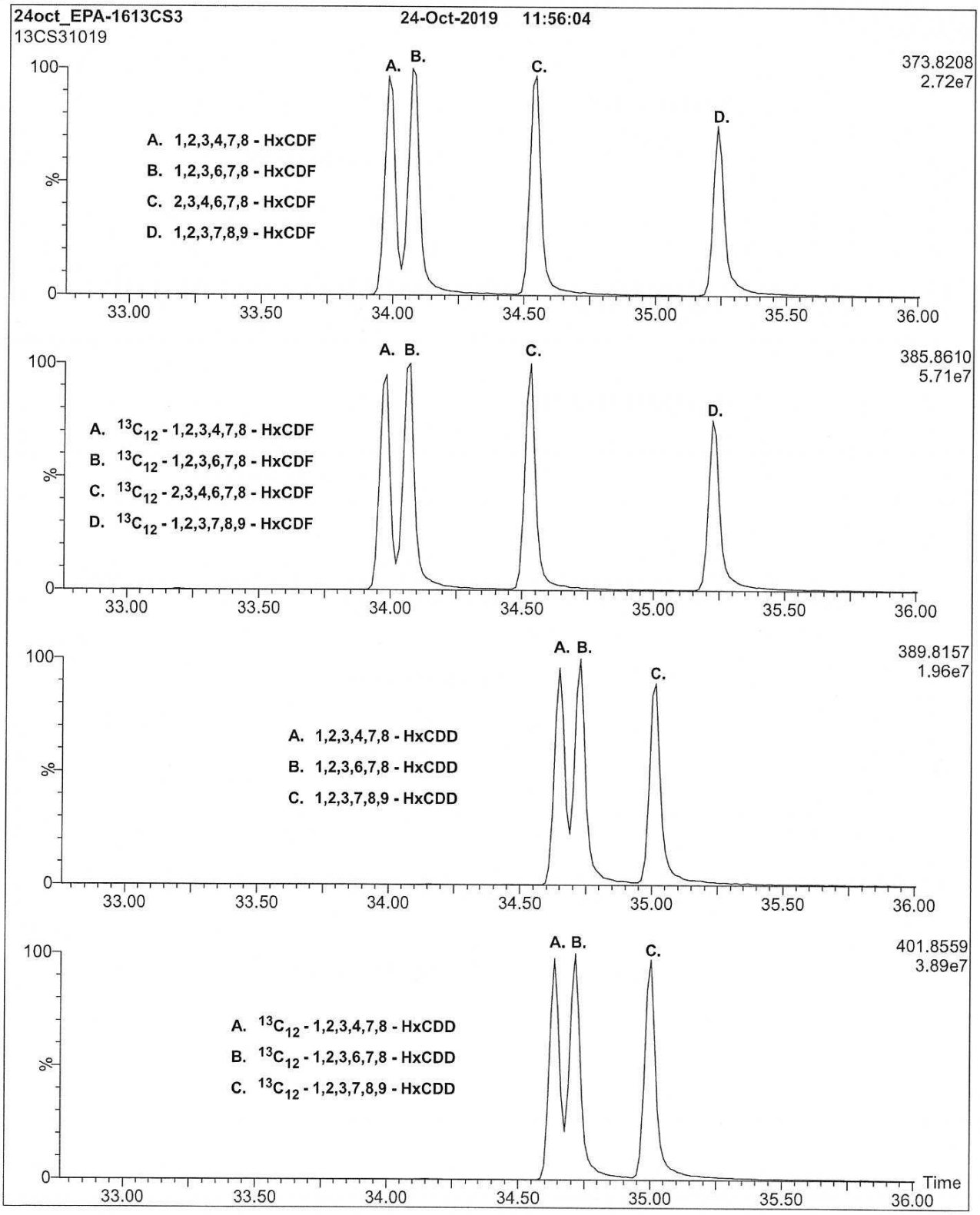


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

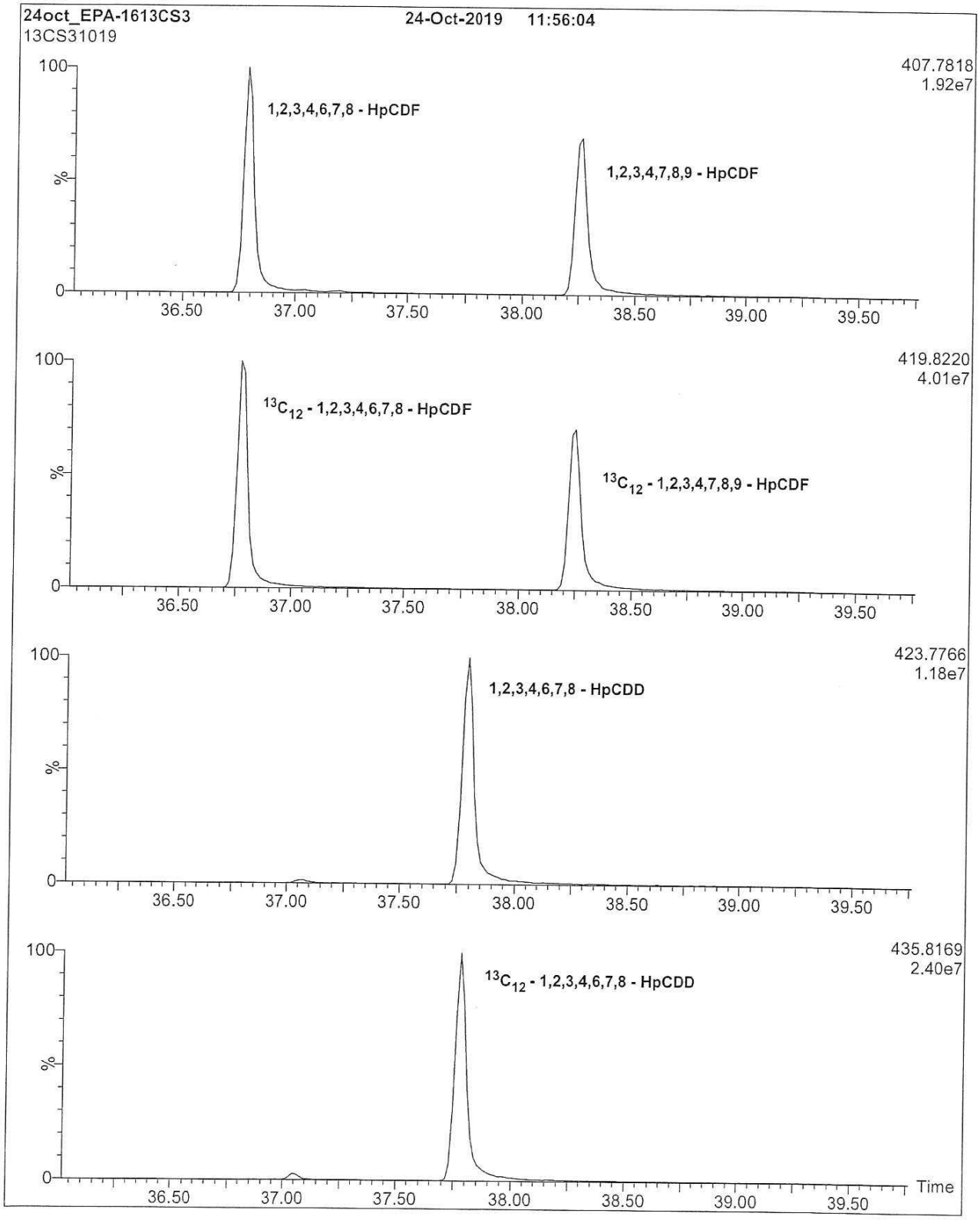
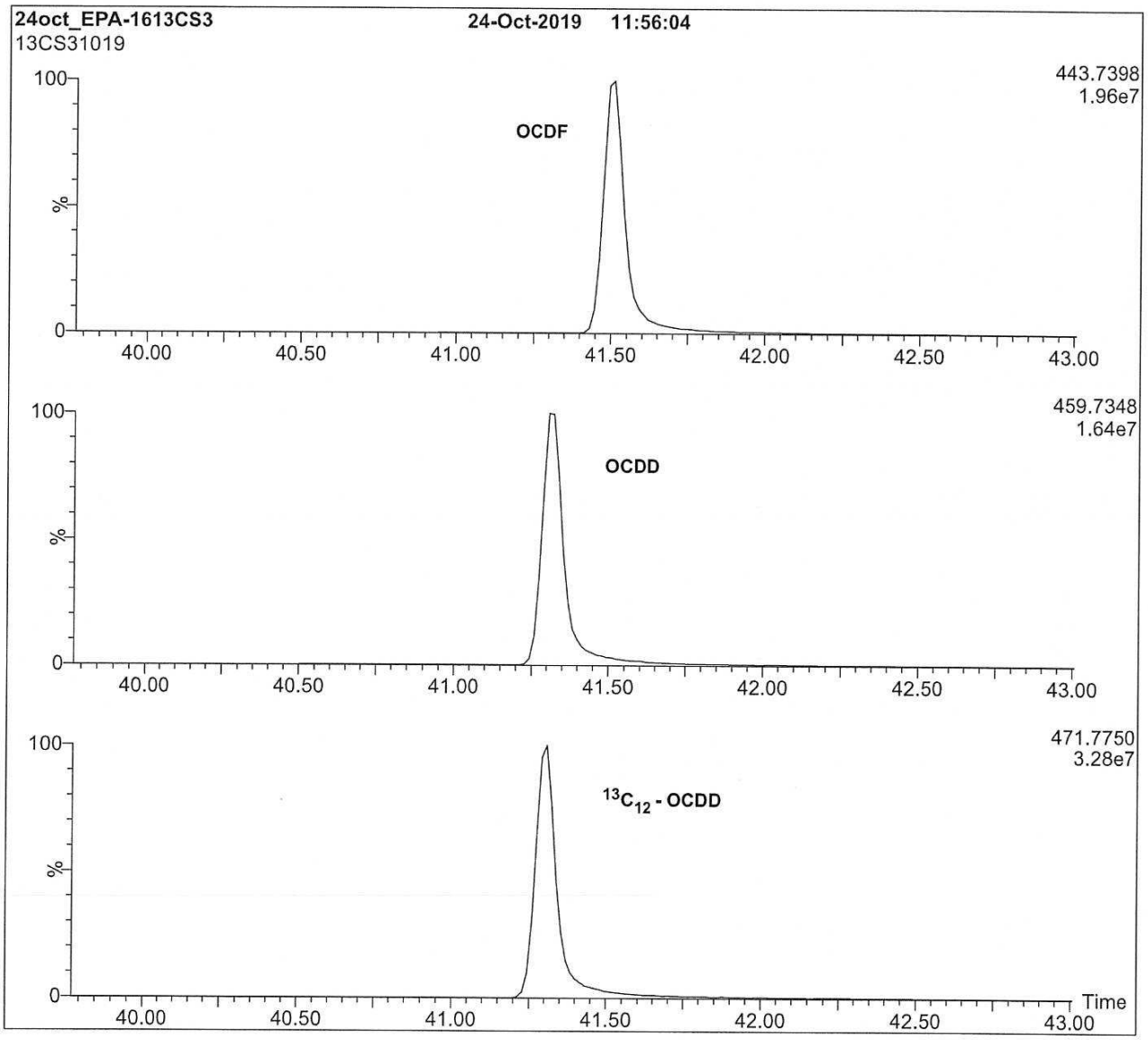


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 ml/min	Oven:	150 °C (1 min)
Injector:	280 °C (Splitless Injection)		12 °C/min to 200 °C
Ionization:	EI+		3 °C/min to 235 °C
Detector:	280 °C		235 °C (8 min)
	SIR at 10,000 mass resolving power		8 °C/min to 310 °C
			310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613CVS

U.S. EPA Method 1613 Calibration and Verification Solutions
plus Supplemental Calibration Solutions EPA-1613CSL & EPA-1613CS0.5

PRODUCT CODES:	EPA-1613CVS	**LOT NUMBERS:**	(see below)	06/23/20
	EPA-1613CS1		13CS11019	I005456
	EPA-1613CS2		13CS21019	I005457
	EPA-1613CS3		13CS31019	
	EPA-1613CS4		13CS41019	I005458
	EPA-1613CS5		13CS51019	I005459

Note: EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to this calibration set that must be ordered separately.

EPA-1613CS0.5	13CS0.51019
EPA-1613CSL	13CSL1019

SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/22/2019
LAST TESTED: (mm/dd/yyyy)	10/24/2019
EXPIRY DATE: (mm/dd/yyyy)	10/24/2026 I005460
RECOMMENDED STORAGE:	Store ampoules in a cool, dark place

DESCRIPTION: 06/23/20

EPA-1613CVS is a series of 5 calibration solutions containing native ($^{12}C_{12}$) and mass-labelled ($^{13}C_{12}$ and $^{37}Cl_4$) chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The components of each solution, and their concentrations, are given in Table A.

They were designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B). They are to be used as received.

EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to EPA-1613CVS. Neither is required by the method, but either or both can be used to extend the calibration to lower levels.

The individual native PCDDs and PCDFs all have chemical purities of >98%. The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-$^{37}Cl_4$-Tetrachlorodibenzo-p-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations
Table B: 5-point HRGC/HRMS Calibration and RRF Summary
Table C: 7-point HRGC/HRMS Calibration and RRF Summary
Figure 1: HRGC/HRMS Data for EPA-1613CS3 (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 3 for further details.

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a series of standards for the identification and quantification of specific chemical compounds.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned values, and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analytes is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); Components and Concentrations (ng/ml, ± 5% in nonane/toluene)

Compound	Concentration (ng/ml)						
Native PCDDs and PCDFs:	CS1	CS2	CS3	CS4	CS5	CSL	CS0.5
2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
2,3,7,8-TCDF	0.5	2	10	40	200	0.1	0.25
1,2,3,7,8-PeCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8,9-HpCDF	2.5	10	50	200	1000	0.5	1.25
OCDD	5.0	20	100	400	2000	1.0	2.5
OCDF	5.0	20	100	400	2000	1.0	2.5
Labelled PCDDs and PCDFs:							
$^{13}C_{12}$-2,3,7,8-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,7,8-TCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-OCDD	200	200	200	200	200	200	200
Cleanup Standard:							
$^{37}Cl_4$-2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
Internal Standards:							
$^{13}C_{12}$-1,2,3,4-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100	100	100	100	100	100	100
Percent toluene (v/v)	3.6%	3.7%	4.2%	6.1%	16.2%	3.6%	3.6%

Certified By: _____ **Date:** 10/25/2019 (mm/dd/yyyy)

B.G. Chittim, General Manager

Form#:52, Issued 2010-07-26

Table B: **EPA-1613CVS; 5-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard				
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5
2,3,7,8-TCDF	0.93	0.013	1.4	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.015	1.6	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.04	0.019	1.8	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.035	3.7	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.93	0.013	1.4	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.96	0.022	2.3	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.89	0.021	2.4	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.91	0.011	1.2	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.010	1.1	0.90	0.90	0.92	0.91	0.92
OCDF	1.19	0.056	4.7	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.05	0.023	2.2	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.97	0.018	1.9	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	1.00	0.019	1.9	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.98	0.032	3.2	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.97	0.016	1.6	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.025	2.5	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.013	1.3	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.57	0.047	3.0	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.21	0.078	6.5	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.17	0.081	6.9	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.020	1.5	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.51	0.034	2.2	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.38	0.012	0.9	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.014	1.2	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.033	2.5	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.08	0.046	4.3	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.13	0.036	3.2	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.79	0.047	5.9	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.027	3.1	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.04	0.010	1.0	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.017	2.1	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.74	0.055	7.4	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.026	2.6	0.95	0.94	0.99	0.99	0.99

Table C: **EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); 7-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard						
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CSL	CS0.5	CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5	RRF#6	RRF#7
2,3,7,8-TCDF	0.92	0.045	4.8	0.96	0.83	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.013	1.4	0.94	0.92	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.02	0.058	5.7	0.90	1.00	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.029	3.0	0.96	0.97	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.92	0.030	3.3	0.90	0.86	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.94	0.047	5.0	0.87	0.89	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.88	0.029	3.3	0.83	0.88	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.90	0.033	3.7	0.83	0.93	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.018	1.9	0.89	0.94	0.90	0.90	0.92	0.91	0.92
OCDF	1.18	0.052	4.4	1.15	1.14	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.03	0.051	5.0	1.03	0.92	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.95	0.042	4.4	0.87	0.98	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	0.97	0.066	6.8	0.83	0.98	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.96	0.044	4.5	0.90	0.92	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.94	0.054	5.7	0.83	0.92	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.033	3.3	0.95	1.03	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.023	2.3	0.95	1.00	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.56	0.042	2.7	1.52	1.54	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.20	0.066	5.5	1.18	1.17	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.16	0.071	6.1	1.12	1.13	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.018	1.4	1.32	1.35	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.53	0.045	3.0	1.60	1.56	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.39	0.019	1.4	1.39	1.42	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.012	1.0	1.19	1.19	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.028	2.2	1.30	1.33	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.07	0.045	4.2	1.02	1.08	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.12	0.033	3.0	1.09	1.11	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.78	0.040	5.1	0.75	0.78	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.025	2.9	0.86	0.90	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.05	0.015	1.5	1.08	1.06	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.016	2.0	0.79	0.81	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.73	0.046	6.3	0.71	0.72	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.053	5.4	0.90	1.07	0.95	0.94	0.99	0.99	0.99

Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

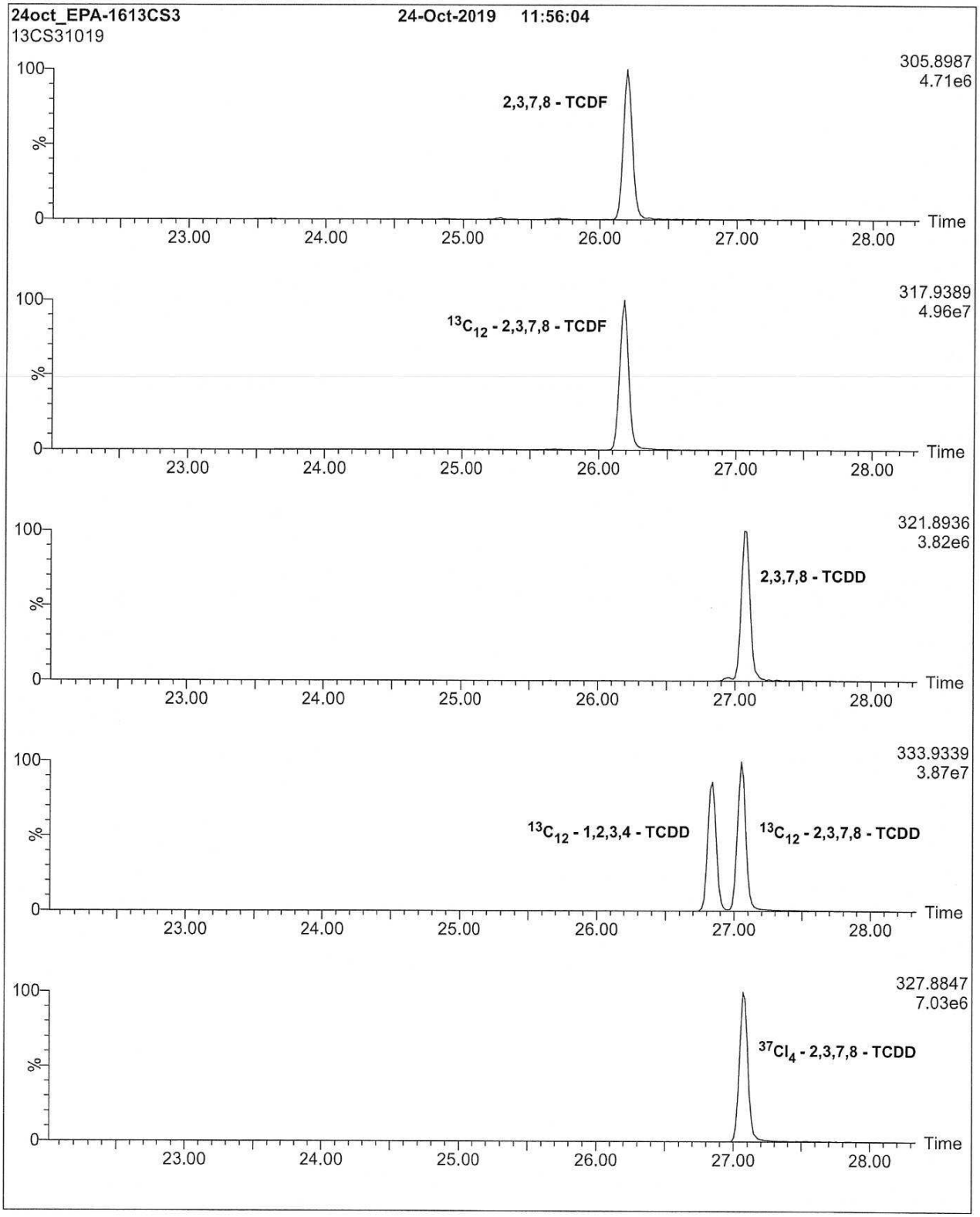


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

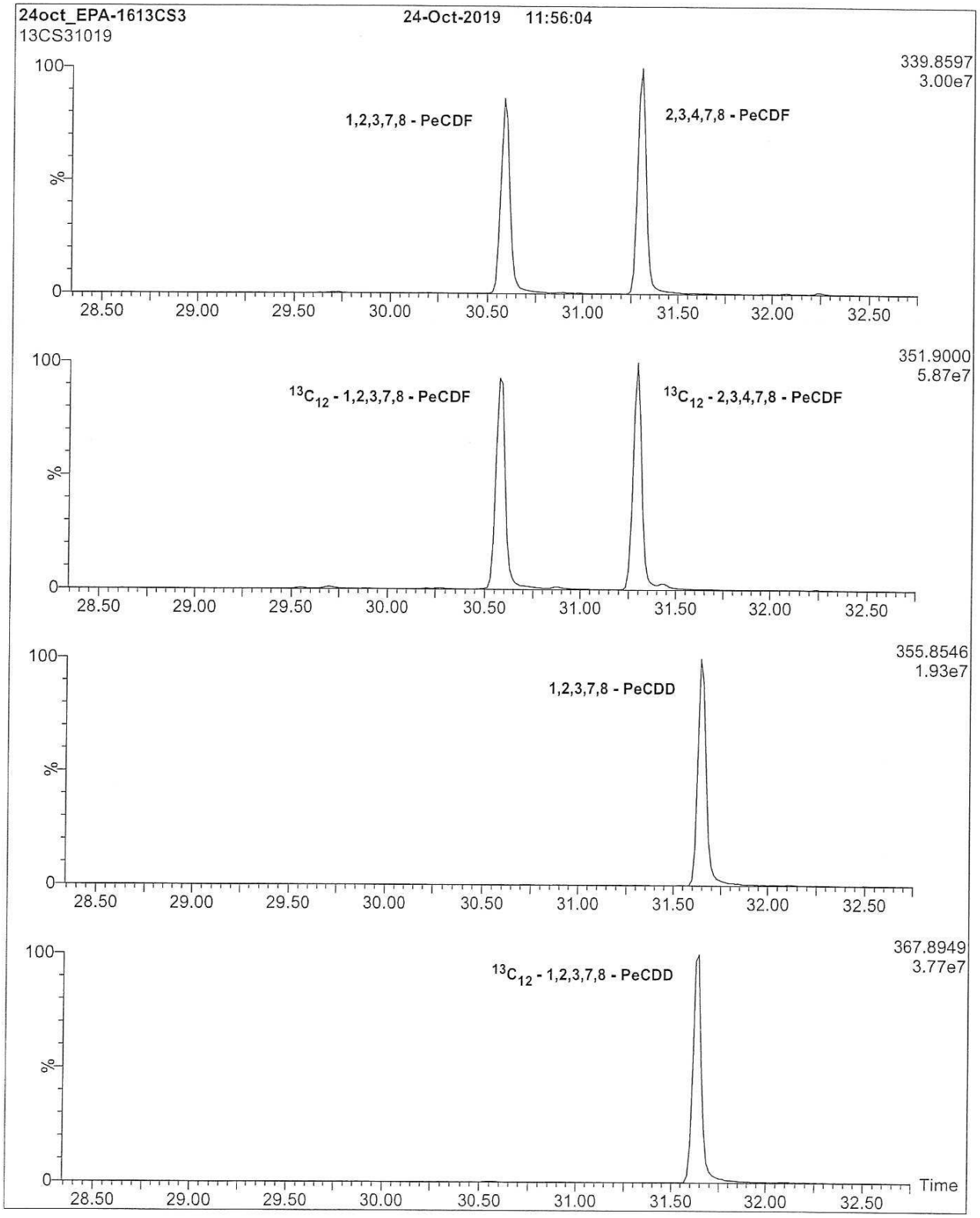


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

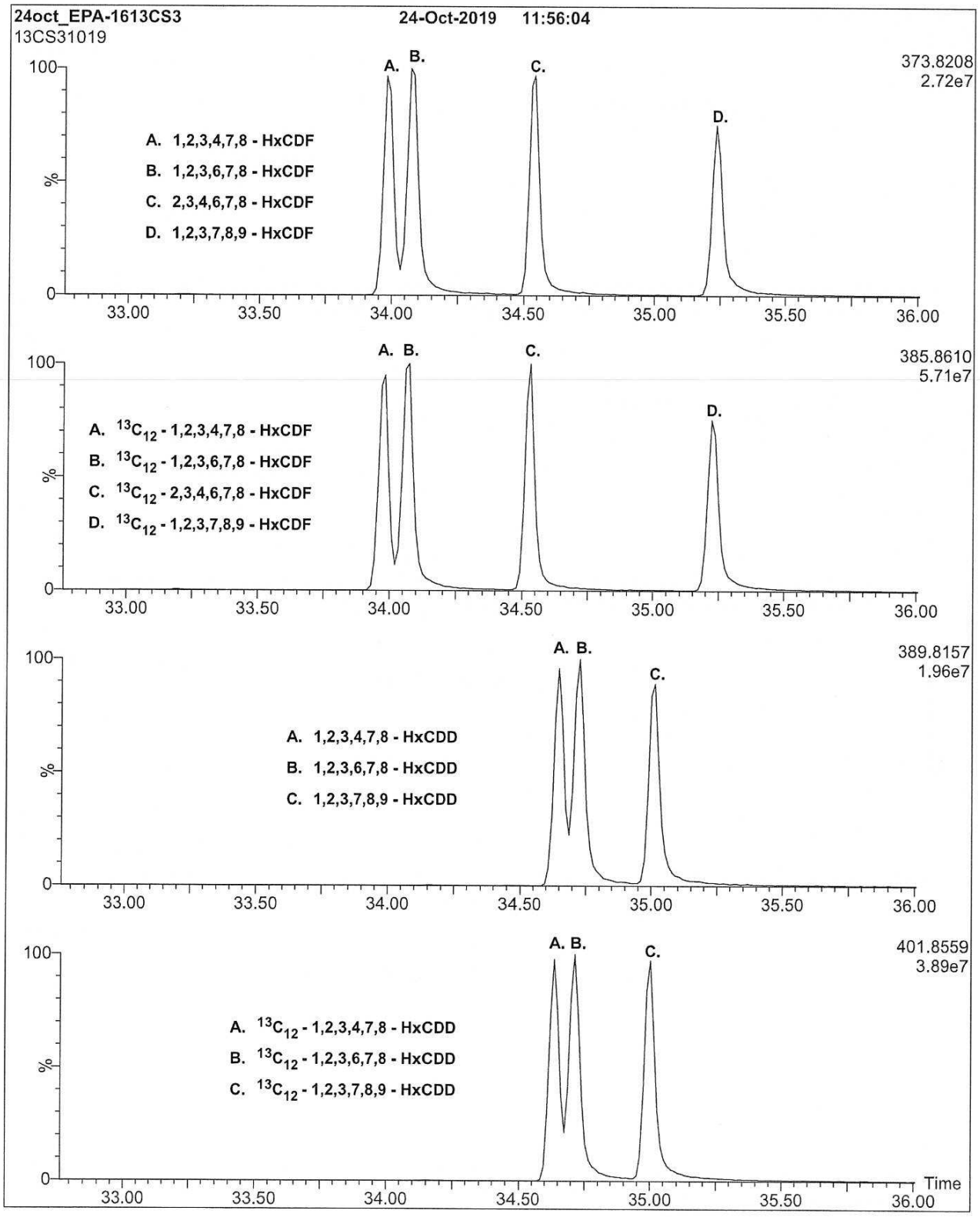


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

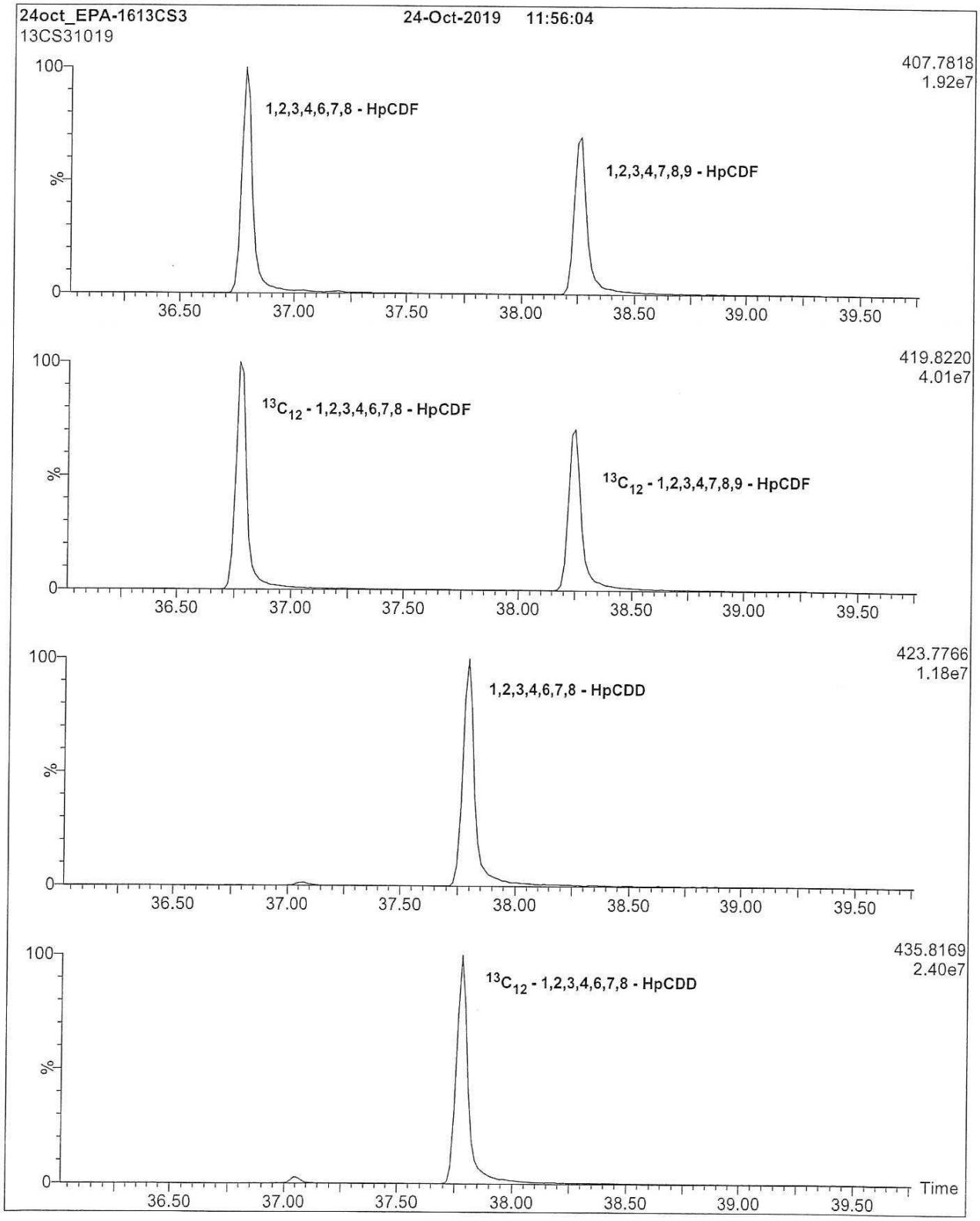
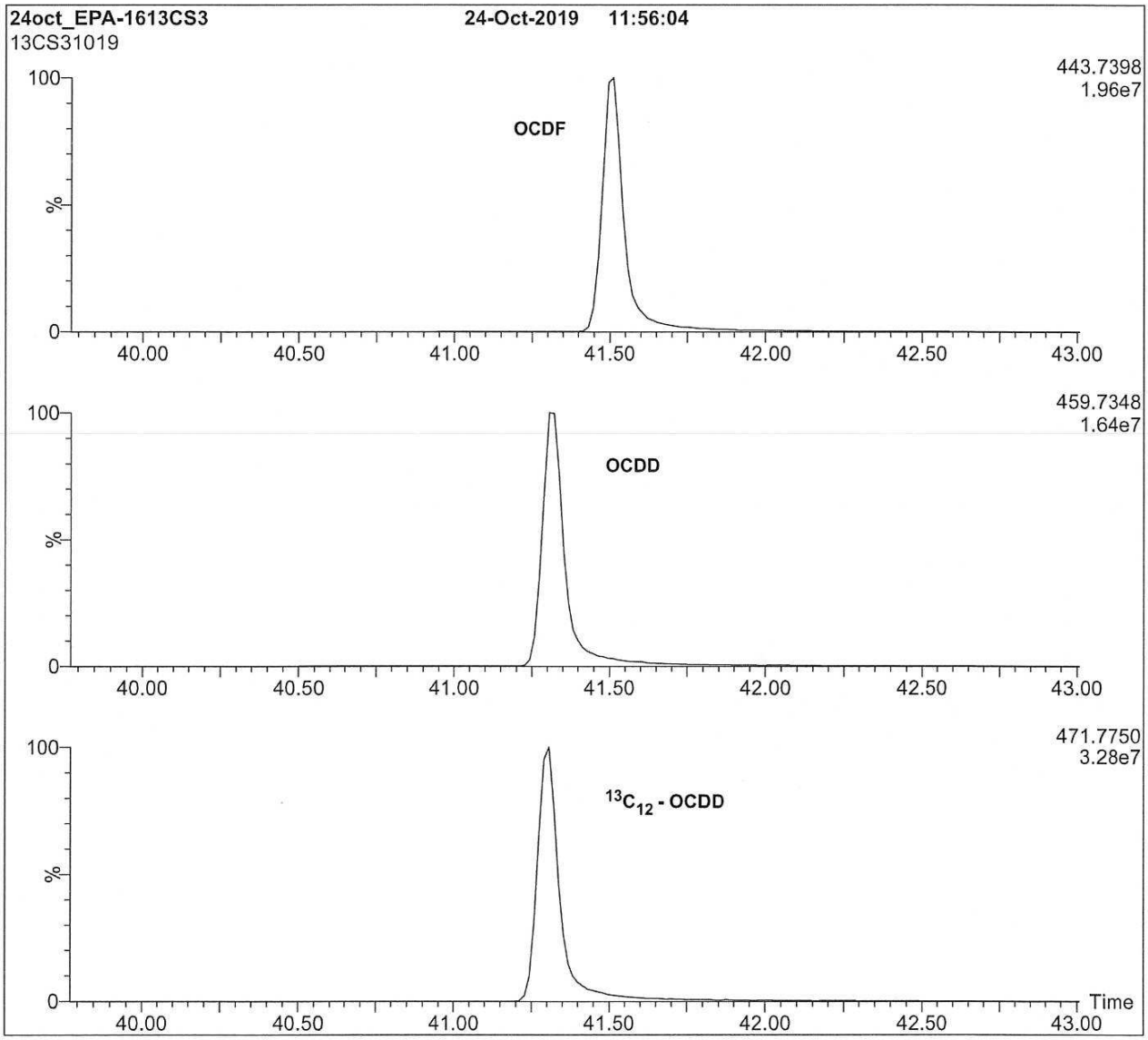


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 ml/min	Oven:	150 °C (1 min)
Injector:	280 °C (Splitless Injection)		12 °C/min to 200 °C
Ionization:	EI+		3 °C/min to 235 °C
Detector:	280 °C		235 °C (8 min)
	SIR at 10,000 mass resolving power		8 °C/min to 310 °C
			310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

EPA-1613CSS

U.S. EPA Method 1613 Cleanup Standard Spiking Solution

PRODUCT CODE:	EPA-1613CSS
LOT NUMBER:	13CSS1020
SOLVENT(S):	Nonane
DATE PREPARED: (mm/dd/yyyy)	11/12/2020
LAST TESTED: (mm/dd/yyyy)	11/19/2020
EXPIRY DATE: (mm/dd/yyyy)	11/19/2027
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

I 11575

DESCRIPTION:

EPA-1613CSS contains 2,3,7,8-[$^{37}Cl_4$]-tetrachlorodibenzo-*p*-dioxin at the concentration given in Table A.

EPA-1613CSS was designed and prepared to be used according to U.S. EPA Method 1613, Revision B.

2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-*p*-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution
Figure 1: HRGC/HRMS Data (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 2 for further details.

Table A: **EPA-1613CSS; Components and Concentrations (ng/mL, ± 5% in nonane)**

Compound	Acronym	CAS #	Concentration (ng/mL)
2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-*p*-dioxin	$^{37}Cl_4$-2,3,7,8-TCDD	85508-50-5	40.0

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 11/20/2020 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

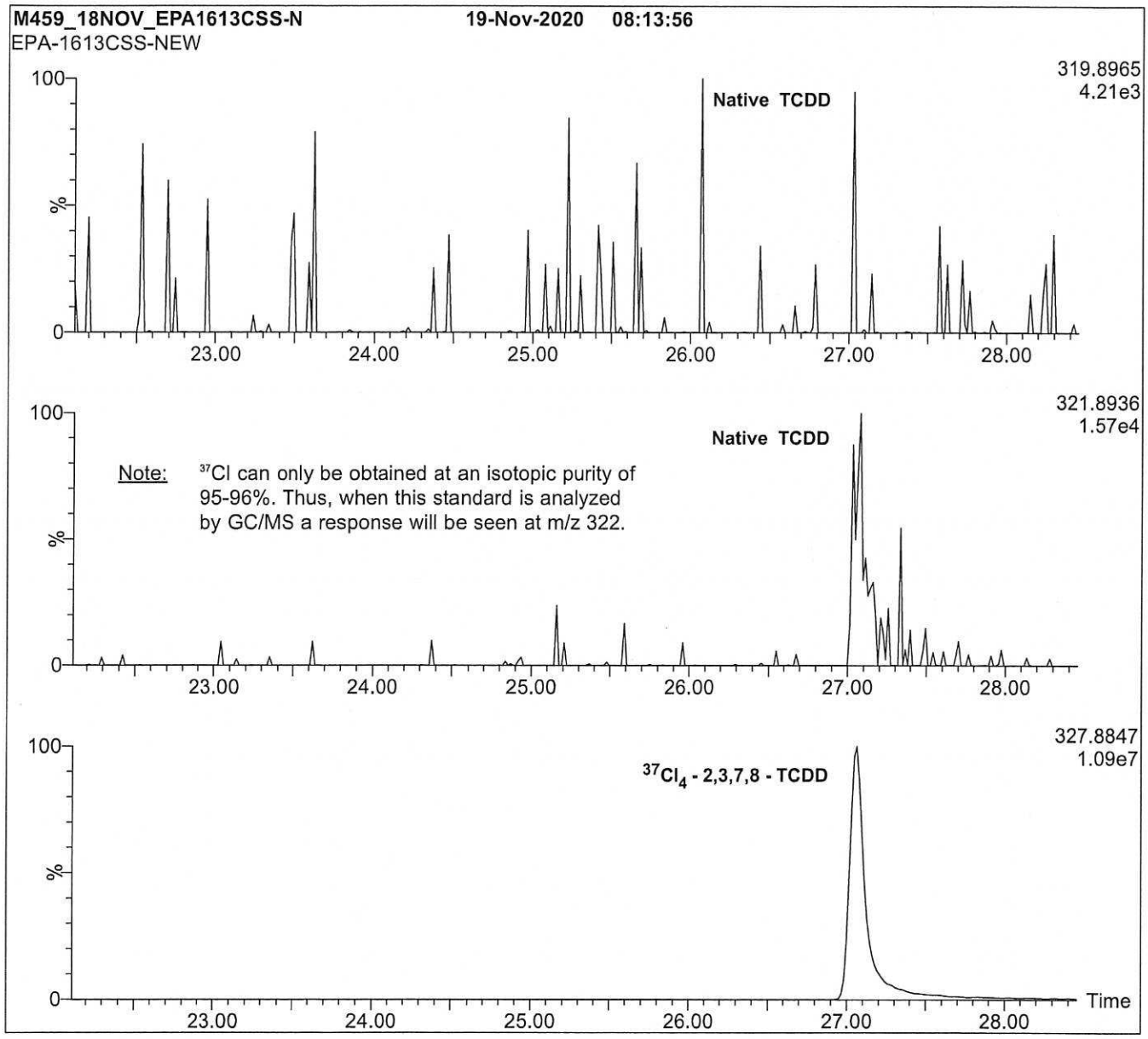
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ANSI National Accreditation Board ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **EPA-1613CSS; HRGC/HRMS Data (60 m DB-5 Column)**



Conditions for Figure 1:

Agilent 6890N HRGC
Autospec Ultima HRMS

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 mL/min	Oven:	150°C (1 min)
Injector:	280°C (Splitless Injection)		12°C/min to 200°C
Ionization:	EI+		3°C/min to 235°C
Detector:	280°C		235°C (8 min)
	SIR at 10,000 mass resolving power		8°C/min to 310°C
			310°C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613LCS

U.S. EPA Method 1613
Labelled Compound Stock Solution

PRODUCT CODE:	EPA-1613LCS
LOT NUMBER:	13LCS1020
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/16/2020
LAST TESTED: (mm/dd/yyyy)	10/21/2020
EXPIRY DATE: (mm/dd/yyyy)	10/21/2027
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

I 11 576

DESCRIPTION:

EPA-1613LCS is a solution/mixture of mass-labelled ($^{13}C_{12}$) chlorinated dibenzo-*p*-dioxins (PCDDs) and dibenzofurans (PCDFs). The components and their concentrations are given in Table A.

EPA-1613LCS was designed and prepared to be used according to U.S. EPA Method 1613, Revision B.

The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations
Figure 1: HRGC/HRMS Data (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ANSI National Accreditation Board ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: **EPA-1613LCS; Components and Concentrations (ng/mL, ± 5% in nonane/3.2% toluene)**

Compound	Acronym	CAS #	Concentration (ng/mL)
Mass-Labelled PCDDs:			
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin	$^{13}C_{12}$-2,3,7,8-TCDD	76523-40-5	100
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin	$^{13}C_{12}$-1,2,3,7,8-PeCDD	109719-79-1	100
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin	$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	109719-80-4	100
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin	$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	109719-81-5	100
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin	$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	109719-83-7	100
Octachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin	$^{13}C_{12}$-OCDD	114423-97-1	200
Mass-Labelled PCDFs:			
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-2,3,7,8-TCDF	89059-46-1	100
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-1,2,3,7,8-PeCDF	109719-77-9	100
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-2,3,4,7,8-PeCDF	116843-02-8	100
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	114423-98-2	100
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	116843-03-9	100
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	116843-04-0	100
2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	116843-05-1	100
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	109719-84-8	100
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	109719-94-0	100

Certified By: _____ **Date:** 11/09/2020 (mm/dd/yyyy)

B.G. Chittim, General Manager

Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)

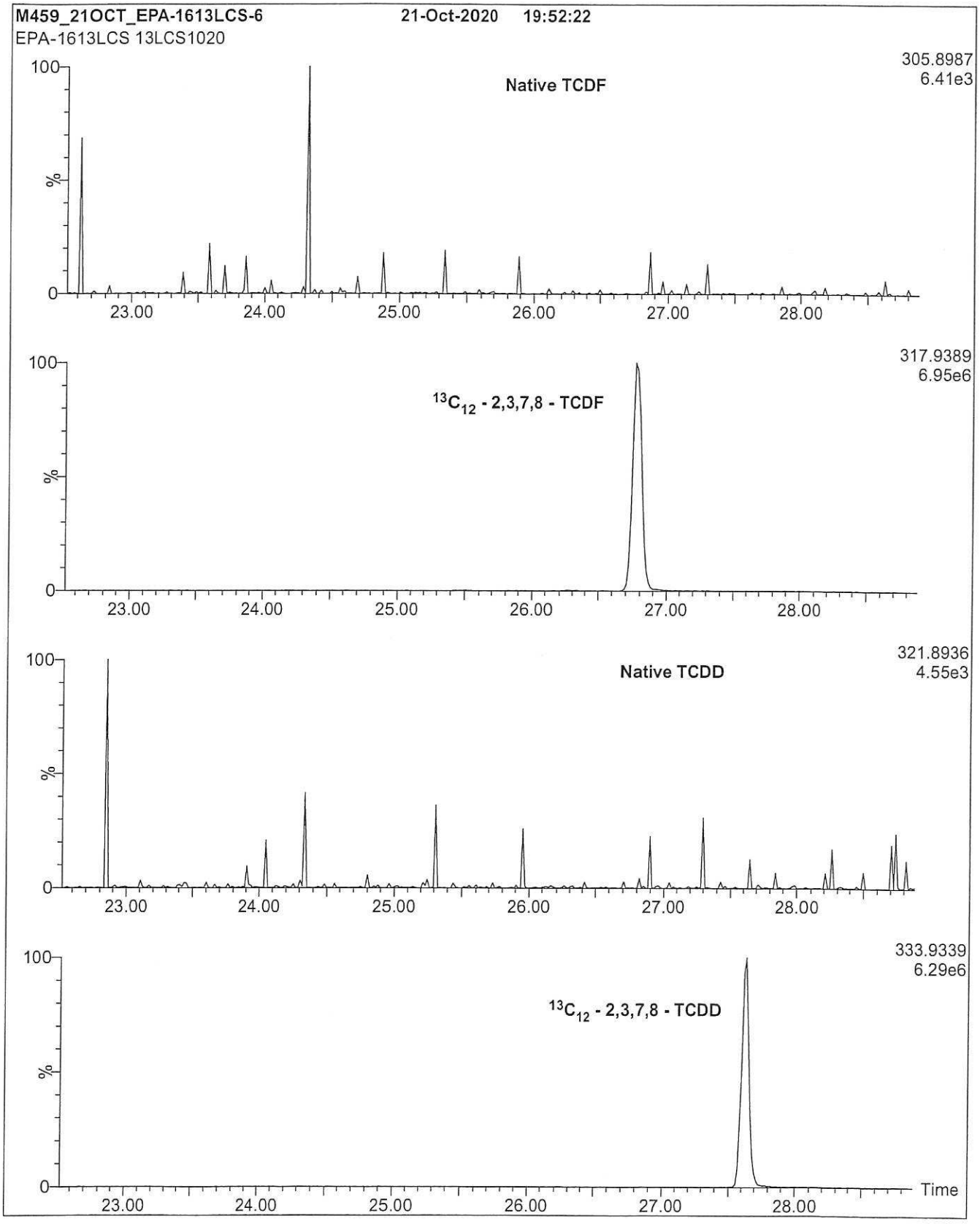


Figure 1: **EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)**

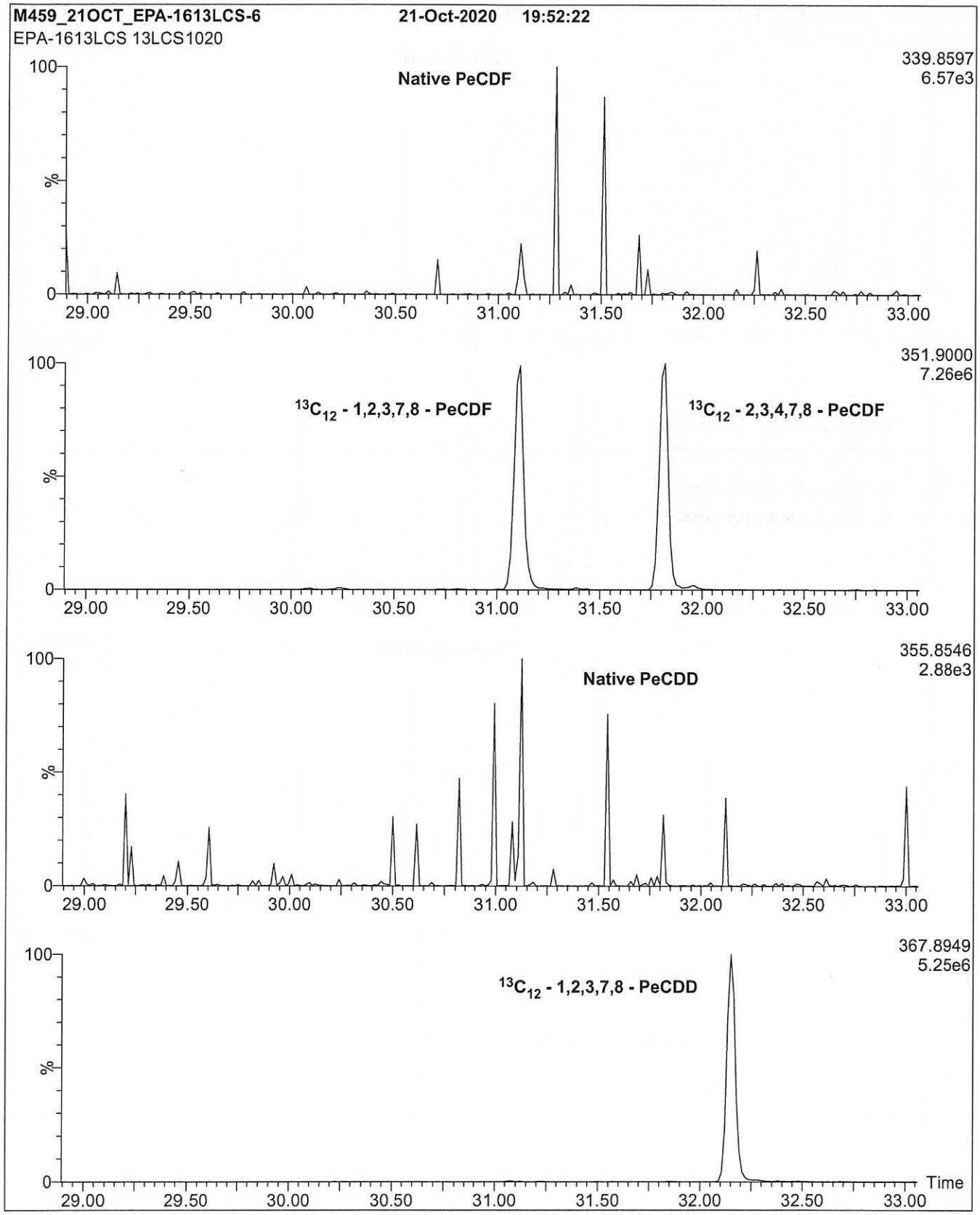


Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)

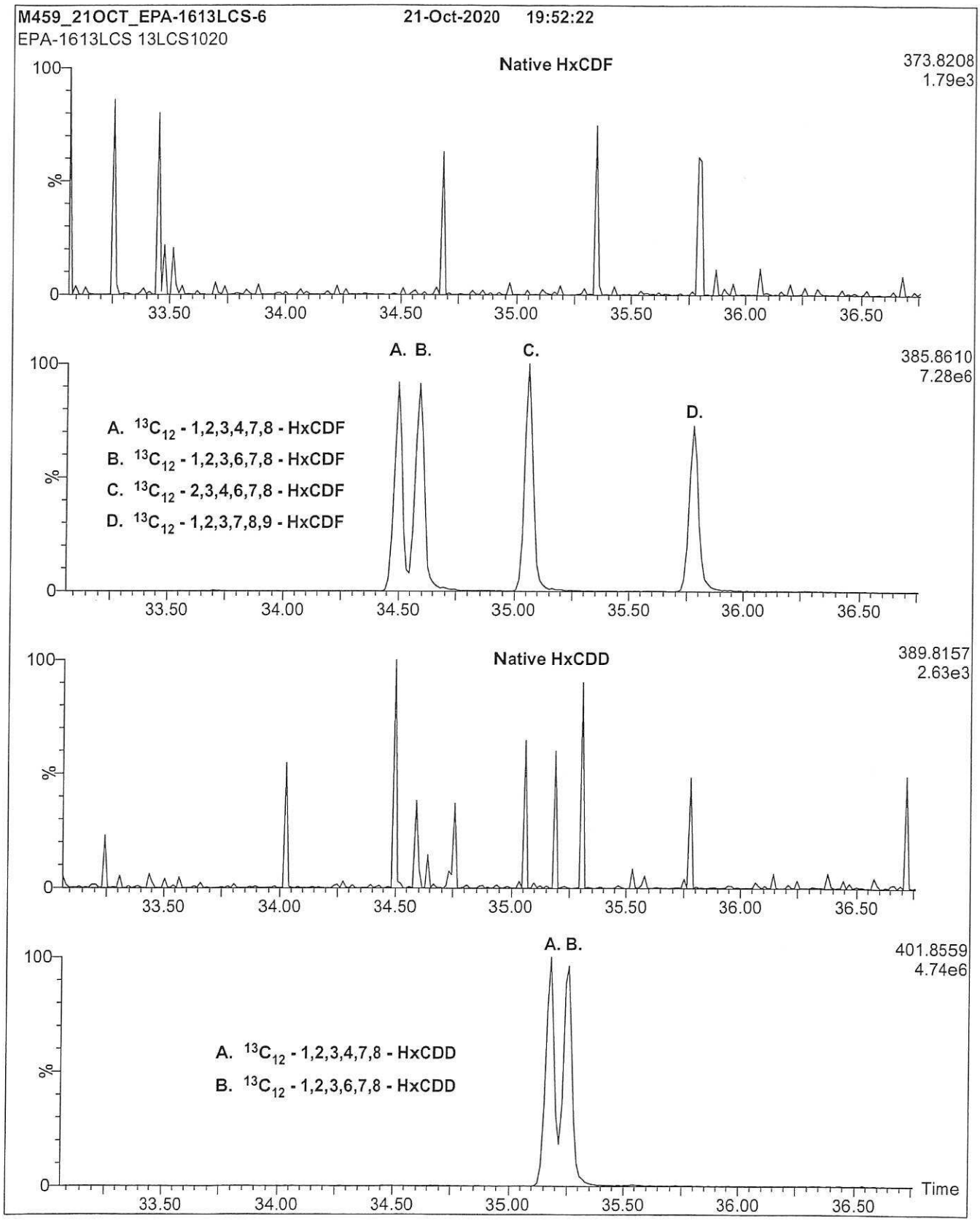


Figure 1: **EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)**

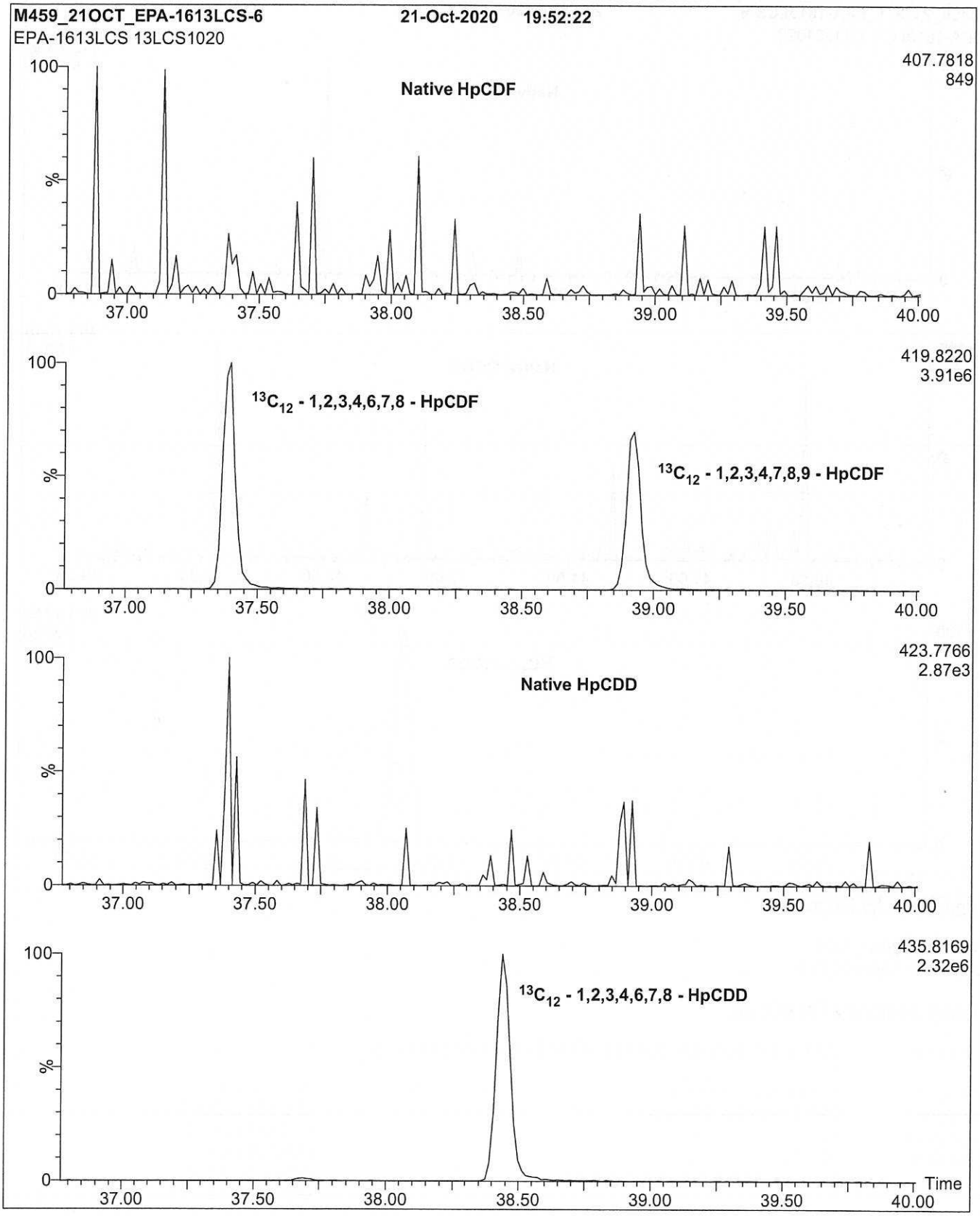
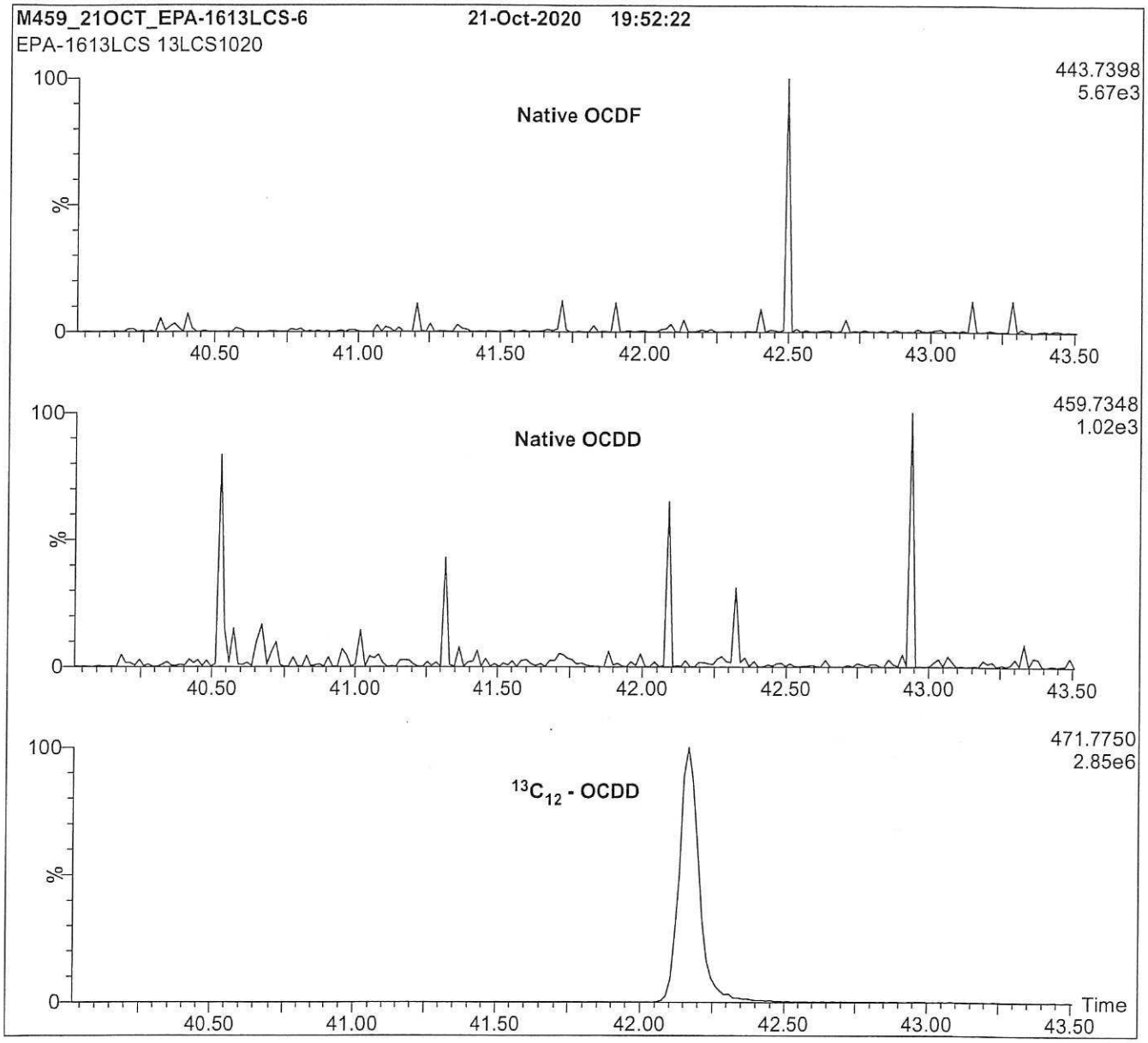


Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)



Conditions for Figure 1:

Agilent 6890N HRGC
Autospec Ultima HRMS

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 mL/min	Oven:	150°C (1 min)
Injector:	280°C (Splitless Injection)		12°C/min to 200°C
Ionization:	EI+		3°C/min to 235°C
Detector:	300°C		235°C (8 min)
	SIR at 10,000 mass resolving power		8°C/min to 310°C
			310°C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

CS3WT

Calibration and Verification Solution (EPA-1613CS3) combined with Window Defining and 2,3,7,8-TCDD Resolution Testing Congeners

PRODUCT CODE:	CS3WT
LOT NUMBER:	CS3WT1020
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	12/02/2020
LAST TESTED: (mm/dd/yyyy)	12/10/2020
EXPIRY DATE: (mm/dd/yyyy)	12/10/2027
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

J001522

DESCRIPTION:

CS3WT is a solution/mixture of native ($^{12}C_{12}$) and mass-labelled ($^{13}C_{12}$) chlorinated dibenzo-*p*-dioxins (PCDDs) and dibenzofurans (PCDFs). The components and their concentrations are given in Tables A and B.

CS3WT is an HRGC/HRMS calibration solution that was designed and prepared to be used according to U.S. EPA Method 1613, Revision B, in place of EPA-1613CS3 (lot: 13CS31020). Additionally, it contains the PCDD and PCDF isomers required to set retention time windows as well as test and establish isomer specificity for 2,3,7,8-TCDD on a DB-5 (or equivalent) capillary column.

The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-[$^{37}Cl_4$]-tetrachlorodibenzo-*p*-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%. The individual native 2,3,7,8-substituted PCDD and PCDF congeners all have chemical purities of >98%; the other congeners (window defining and resolution testing) should only be considered semi-quantitative.

This current lot of CS3WT is to be used with the 1613 calibration solutions having the following lot numbers:

PRODUCT CODE	LOT NUMBER
EPA-1613CS1	13CS11020
EPA-1613CS2	13CS21020
EPA-1613CS3	13CS31020
EPA-1613CS4	13CS41020
EPA-1613CS5	13CS51020
EPA-1613CSL	13CSL1020
EPA-1613CS0.5	13CS0.51020

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

DOCUMENTATION/ DATA ATTACHED:

Table A: Quantitative Components and Concentrations of the Solution/Mixture
Table B: Semi-Quantitative Components and Concentrations of the Solution/Mixture
Figure 1: HRGC/HRMS Data (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 3 for further details.
- Only the 2,3,7,8-substituted PCDDs and PCDFs should be used for quantitation. The other congeners (window defining and 2,3,7,8-TCDD resolution testing) should be considered semi-quantitative (within ±20% of their design value). Impurities have been identified where possible.

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) has been assigned to the quantitative components in this product. A maximum combined percent relative uncertainty of ±20% has been assigned to the semi-quantitative components in this product.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ANSI National Accreditation Board ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: **CS3WT; Quantitative Components and Concentrations (ng/mL, ± 5%, in nonane/4.5% toluene)**

Compound		Acronym	CAS #	Concentration (ng/mL)
Native PCDDs:	**Designation[a]**			
2,3,7,8-Tetrachlorodibenzo-*p*-dioxin		2,3,7,8-TCDD	1746-01-6	10.0
1,2,3,7,8-Pentachlorodibenzo-*p*-dioxin		1,2,3,7,8-PeCDD	40321-76-4	50.0
1,2,3,4,7,8-Hexachlorodibenzo-*p*-dioxin		1,2,3,4,7,8-HxCDD	39227-28-6	50.0
1,2,3,6,7,8-Hexachlorodibenzo-*p*-dioxin		1,2,3,6,7,8-HxCDD	57653-85-7	50.0
1,2,3,7,8,9-Hexachlorodibenzo-*p*-dioxin	Last HxCDD[b]	1,2,3,7,8,9-HxCDD	19408-74-3	50.0
1,2,3,4,6,7,8-Heptachlorodibenzo-*p*-dioxin	Last HpCDD	1,2,3,4,6,7,8-HpCDD	35822-46-9	50.0
Octachlorodibenzo-*p*-dioxin		OCDD	3268-87-9	100
Native PCDFs:	**Designation[a]**			
2,3,7,8-Tetrachlorodibenzofuran		2,3,7,8-TCDF	51207-31-9	10.0
1,2,3,7,8-Pentachlorodibenzofuran		1,2,3,7,8-PeCDF	57117-41-6	50.0
2,3,4,7,8-Pentachlorodibenzofuran		2,3,4,7,8-PeCDF	57117-31-4	50.0
1,2,3,4,7,8-Hexachlorodibenzofuran		1,2,3,4,7,8-HxCDF	70648-26-9	50.0
1,2,3,6,7,8-Hexachlorodibenzofuran		1,2,3,6,7,8-HxCDF	57117-44-9	50.0
1,2,3,7,8,9-Hexachlorodibenzofuran		1,2,3,7,8,9-HxCDF	72918-21-9	50.0
2,3,4,6,7,8-Hexachlorodibenzofuran		2,3,4,6,7,8-HxCDF	60851-34-5	50.0
1,2,3,4,6,7,8-Heptachlorodibenzofuran	First HpCDF[c]	1,2,3,4,6,7,8-HpCDF	67562-39-4	50.0
1,2,3,4,7,8,9-Heptachlorodibenzofuran	Last HpCDF	1,2,3,4,7,8,9-HpCDF	55673-89-7	50.0
Octachlorodibenzofuran		OCDF	39001-02-0	100
Mass-Labelled PCDDs:				
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin		$^{13}C_{12}$-2,3,7,8-TCDD	76523-40-5	100
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin		$^{13}C_{12}$-1,2,3,7,8-PeCDD	109719-79-1	100
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin		$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	109719-80-4	100
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin		$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	109719-81-5	100
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin		$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	109719-83-7	100
Octachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin		$^{13}C_{12}$-OCDD	114423-97-1	200
Mass-Labelled PCDFs:				
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran		$^{13}C_{12}$-2,3,7,8-TCDF	89059-46-1	100
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran		$^{13}C_{12}$-1,2,3,7,8-PeCDF	109719-77-9	100
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran		$^{13}C_{12}$-2,3,4,7,8-PeCDF	116843-02-8	100
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran		$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	114423-98-2	100
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran		$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	116843-03-9	100
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran		$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	116843-04-0	100
2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran		$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	116843-05-1	100
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran		$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	109719-84-8	100
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran		$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	109719-94-0	100
Cleanup Standard:				
2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-*p*-dioxin		$^{37}Cl_4$-2,3,7,8-TCDD	85508-50-5	10.0
Internal Standards:				
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin		$^{13}C_{12}$-1,2,3,4-TCDD	114423-99-3	100
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin		$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	109719-82-6	100

[a] First/Last eluting isomer for the specified homologue group (see Table B for additional Window Definers).
[b, c] – see Table B for footnote.

Table B: **CS3WT; Semi-Quantitative Components and Concentrations (ng/mL, ± 20%, in nonane/4.5% toluene)**

Compound		Acronym	CAS #	Concentration (ng/mL)
PCDD Window Definers:	**Designation[a]**			
1,3,6,8-Tetrachlorodibenzo-*p*-dioxin	First TCDD	1,3,6,8-TCDD	33423-92-6	10.0
1,2,8,9-Tetrachlorodibenzo-*p*-dioxin	Last TCDD	1,2,8,9-TCDD	62470-54-6	10.0
1,2,4,6,8-/1,2,4,7,9-Pentachlorodibenzo-*p*-dioxin	First PeCDD	1,2,4,6,8-PeCDD 1,2,4,7,9-PeCDD	71998-76-0 82291-37-0	50.0[d]
1,2,3,8,9-Pentachlorodibenzo-*p*-dioxin	Last PeCDD	1,2,3,8,9-PeCDD	71925-18-3	50.0
1,2,4,6,7,9-Hexachlorodibenzo-*p*-dioxin	First HxCDD	1,2,4,6,7,9-HxCDD	39227-62-8	50.0
1,2,3,4,6,7,9-Heptachlorodibenzo-*p*-dioxin	First HpCDD	1,2,3,4,6,7,9-HpCDD	58200-70-7	50.0
PCDF Window Definers:	**Designation[a]**			
1,3,6,8-Tetrachlorodibenzofuran	First TCDF	1,3,6,8-TCDF	71998-72-6	10.0
1,2,8,9-Tetrachlorodibenzofuran	Last TCDF	1,2,8,9-TCDF	70648-22-5	10.0
1,3,4,6,8-Pentachlorodibenzofuran	First PeCDF	1,3,4,6,8-PeCDF	83704-55-6	50.0
1,2,3,8,9-Pentachlorodibenzofuran	Last PeCDF	1,2,3,8,9-PeCDF	83704-54-5	50.0
1,2,3,4,6,8-Hexachlorodibenzofuran	First HxCDF	1,2,3,4,6,8-HxCDF	69698-60-8	50.0
2,3,7,8-TCDD Resolution Testing Isomers:				
1,2,3,4-Tetrachlorodibenzo-*p*-dioxin		1,2,3,4-TCDD	30746-58-8	5.00
1,2,3,7-/1,2,3,8-Tetrachlorodibenzo-*p*-dioxin		1,2,3,7-TCDD 1,2,3,8-TCDD	67028-18-6 53555-02-5	5.00[d]
1,2,3,9-Tetrachlorodibenzo-*p*-dioxin		1,2,3,9-TCDD	71669-26-6	10.0

[a] First/Last eluting isomer for the specified homologue group (see Table A for additional Window Definers).

[b] 1,2,3,4,6,7-HxCDD (last eluting HxCDD) not included; coelutes with 1,2,3,7,8,9-HxCDD on a 60 m DB-5 column. Use 1,2,3,7,8,9-HxCDD (see Table A) and 1,2,3,4,6,7,9-HpCDD to approximate the end of the HxCDD window.

[c] 1,2,3,4,8,9-HxCDF (last eluting HxCDF) not included; can interfere with 1,2,3,7,8,9-HxCDF on a 60 m DB-5 column. Use 1,2,3,4,6,7,8-HpCDF (see Table A) to approximate the end of the HxCDF window.

[d] Total concentration of isomers.

Certified By: _____ **Date:** 01/07/2020 (mm/dd/yyyy)

B.G. Chittim, General Manager

Figure 1: CS3WT; HRGC/HRMS Data (60 m DB-5 Column)

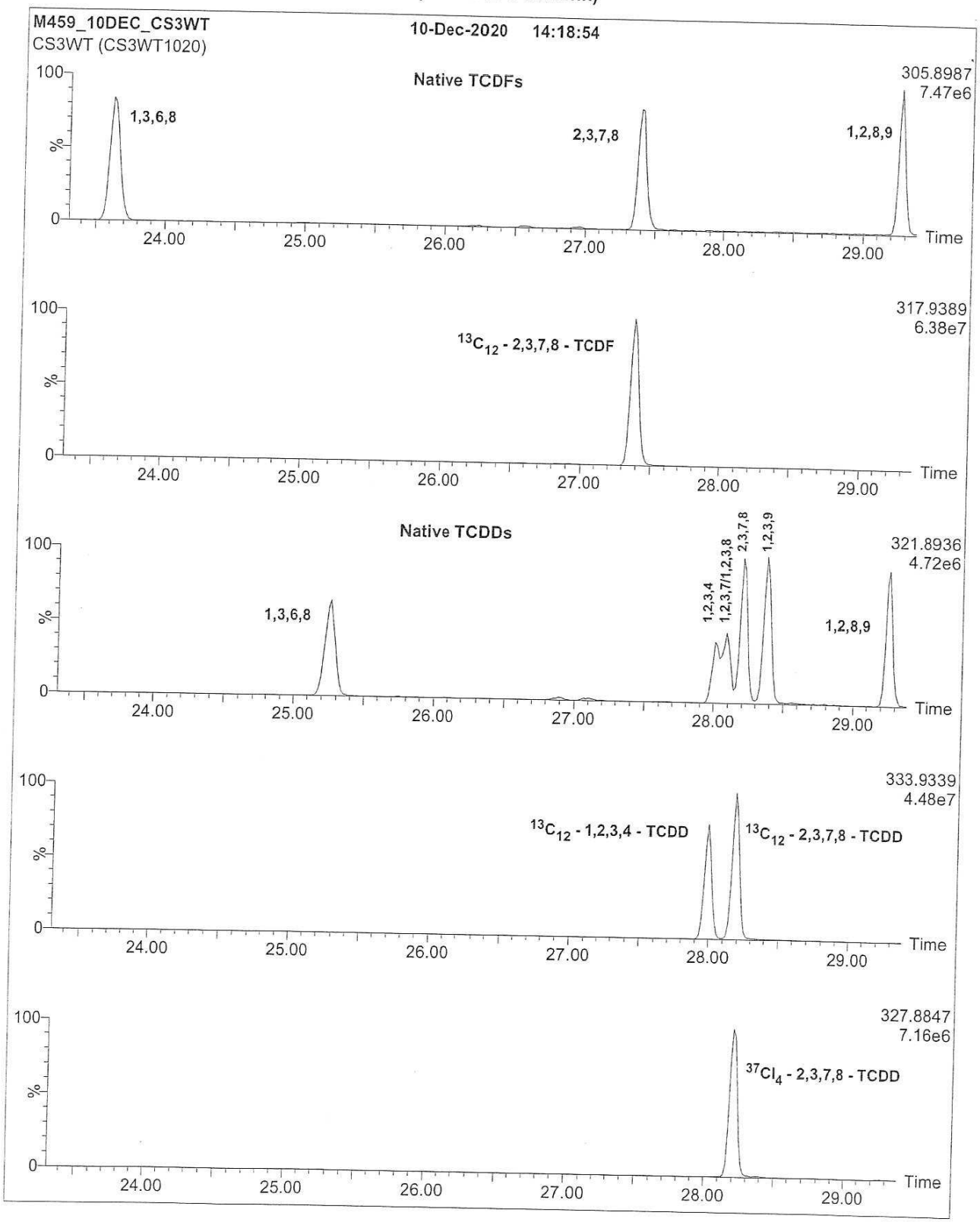


Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**

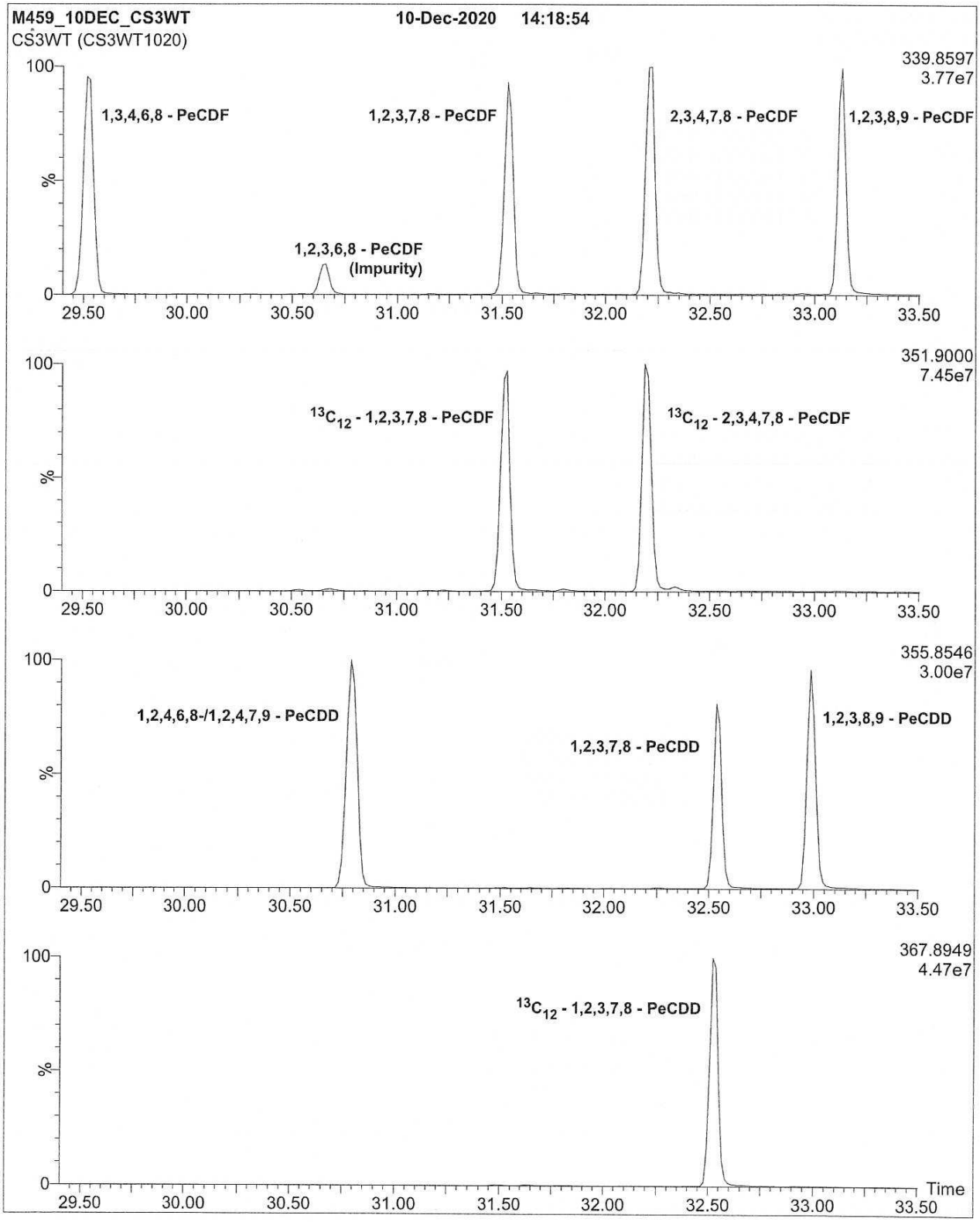


Figure 1: CS3WT; HRGC/HRMS Data (60 m DB-5 Column)

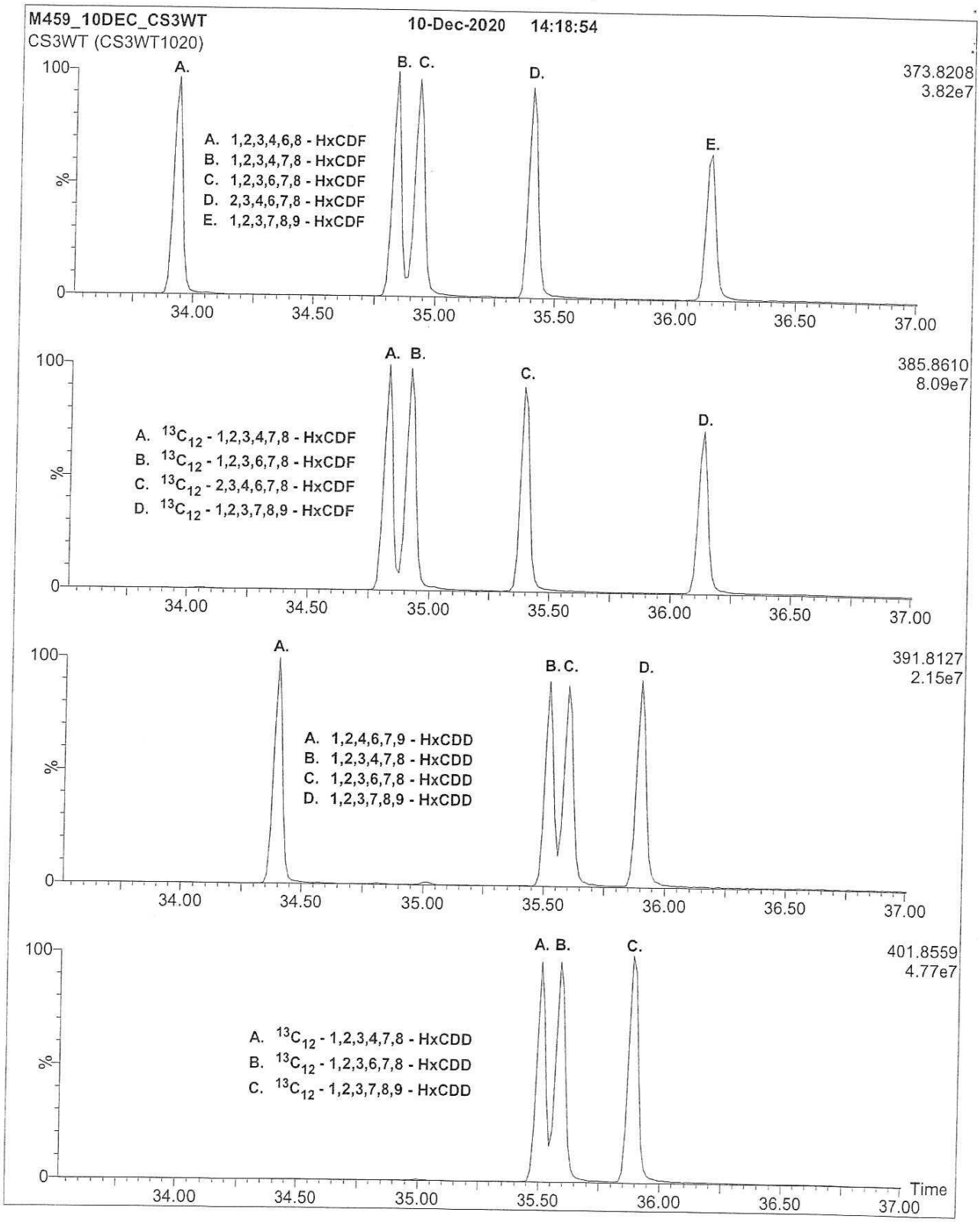


Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**

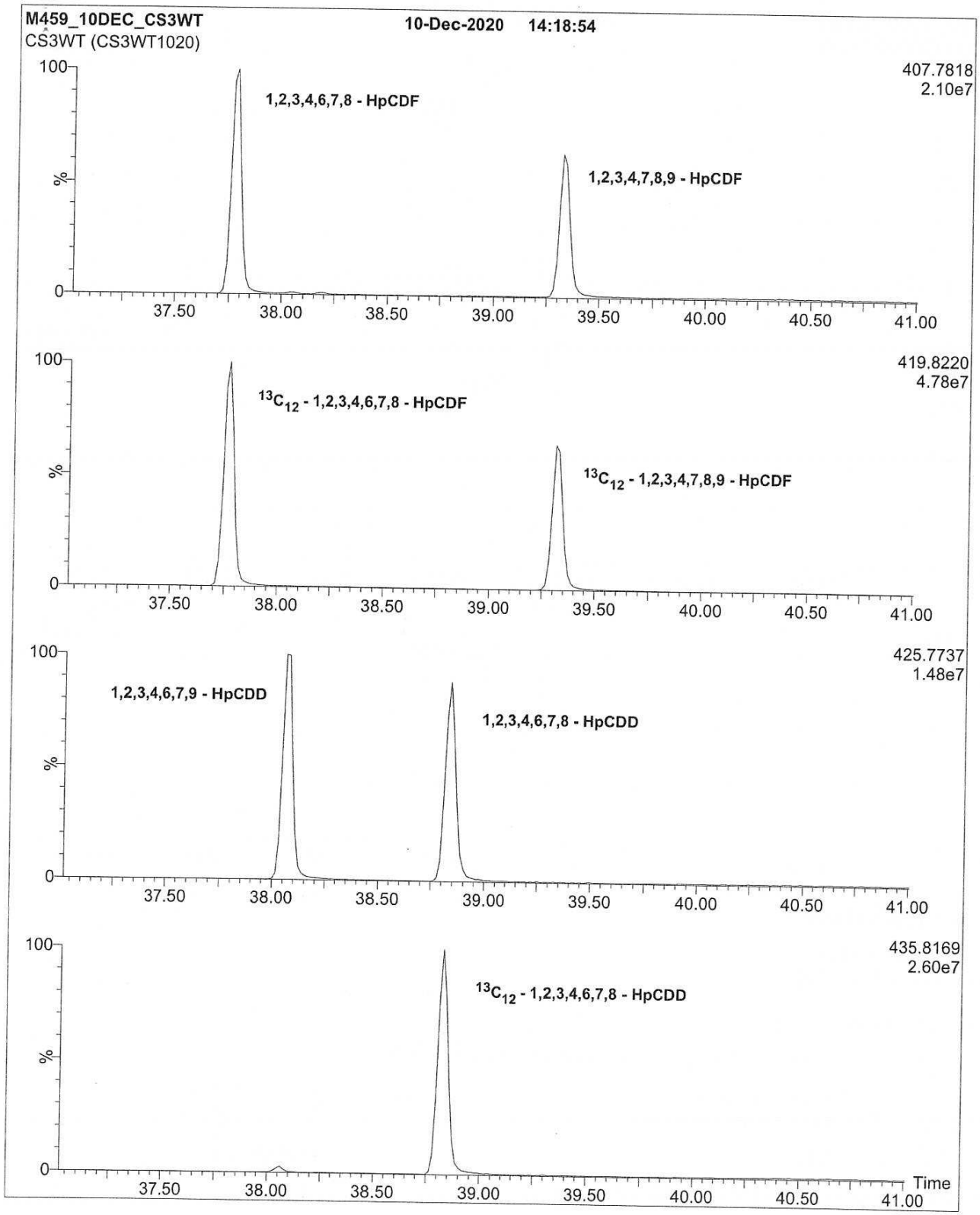
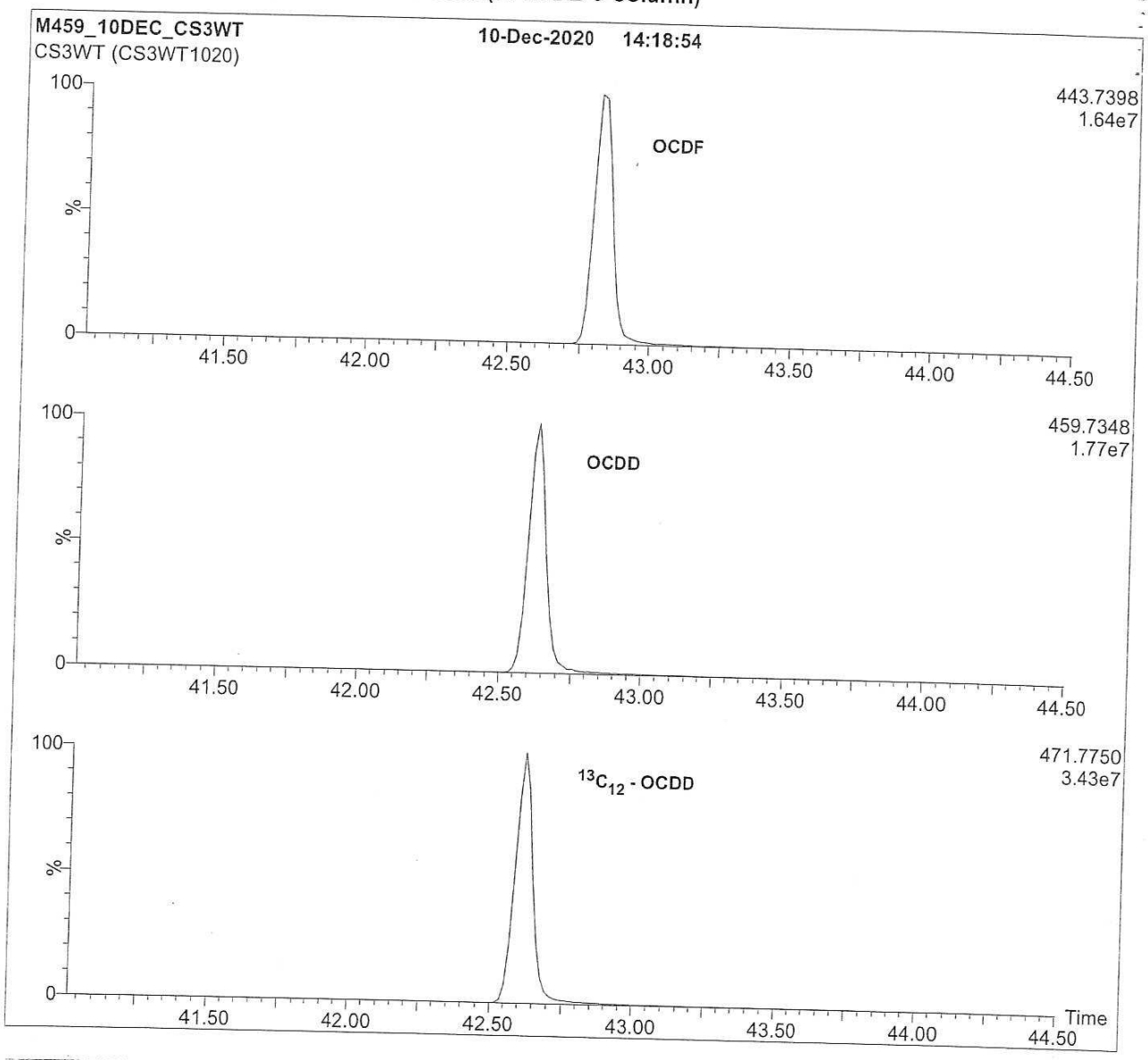


Figure 1: CS3WT; HRGC/HRMS Data (60 m DB-5 Column)



Conditions for Figure 1:

Agilent 6890N HRGC
Autospec Ultima HRMS

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow: Constant at 1 mL/min
Injector: 280°C (Splitless Injection)
Ionization: EI+
Detector: 280°C
SIR at 10,000 mass resolving power

Oven: 150°C (1 min)
12°C/min to 200°C
3°C/min to 235°C
235°C (8 min)
8°C/min to 310°C
310°C (8 min)

Form#:13, Issued 2004-11-10

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613CSS

U.S. EPA Method 1613 Cleanup Standard Spiking Solution

PRODUCT CODE:	EPA-1613CSS
LOT NUMBER:	13CSS1020
SOLVENT(S):	Nonane
DATE PREPARED: (mm/dd/yyyy)	11/12/2020
LAST TESTED: (mm/dd/yyyy)	01/30/2021
EXPIRY DATE: (mm/dd/yyyy)	11/19/2027
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

J004693 pr
Recd. 04/30/21

DESCRIPTION:

EPA-1613CSS contains 2,3,7,8-($^{37}Cl_4$)tetrachlorodibenzo-*p*-dioxin at the concentration given in Table A.

EPA-1613CSS was designed and prepared to be used according to U.S. EPA Method 1613, Revision B.

2,3,7,8-($^{37}Cl_4$)Tetrachlorodibenzo-*p*-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution
Figure 1: HRGC/HRMS Data (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 2 for further details.

Table A: **EPA-1613CSS; Components and Concentrations (ng/mL, ± 5% in nonane)**

Compound	Acronym	CAS #	Concentration (ng/mL)
2,3,7,8-($^{37}Cl_4$)Tetrachlorodibenzo-*p*-dioxin	$^{37}Cl_4$-2,3,7,8-TCDD	85508-50-5	40.0

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 03/20/2021 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

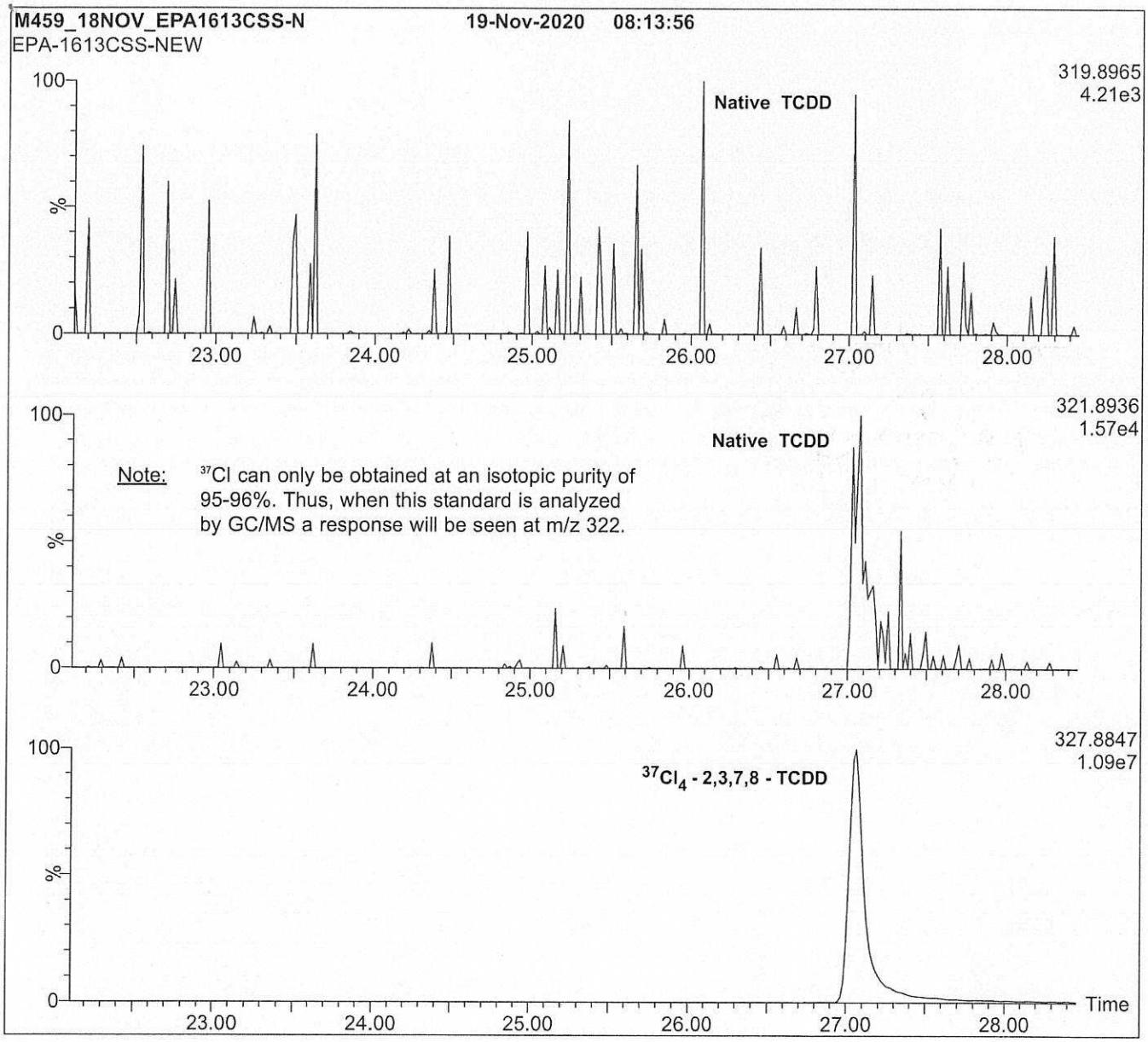
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ANSI National Accreditation Board ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **EPA-1613CSS; HRGC/HRMS Data (60 m DB-5 Column)**



Conditions for Figure 1:

Agilent 6890N HRGC
Autospec Ultima HRMS

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 mL/min	Oven:	150°C (1 min)
Injector:	280°C (Splitless Injection)		12°C/min to 200°C
Ionization:	EI+		3°C/min to 235°C
Detector:	280°C		235°C (8 min)
	SIR at 10,000 mass resolving power		8°C/min to 310°C
			310°C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613LCS

U.S. EPA Method 1613
Labelled Compound Stock Solution

PRODUCT CODE:	EPA-1613LCS
LOT NUMBER:	13LCS1020
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/16/2020
LAST TESTED: (mm/dd/yyyy)	01/30/2021
EXPIRY DATE: (mm/dd/yyyy)	10/21/2027
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

J004694
Recd. JR
01/30/21

DESCRIPTION:

EPA-1613LCS is a solution/mixture of mass-labelled ($^{13}C_{12}$) polychlorinated dibenzo-*p*-dioxins (PCDDs) and dibenzofurans (PCDFs). The components and their concentrations are given in Table A.

EPA-1613LCS was designed and prepared to be used according to U.S. EPA Method 1613, Revision B.

The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations
Figure 1: HRGC/HRMS Data (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A1226

ANAB ANSI National Accreditation Board ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: **EPA-1613LCS; Components and Concentrations (ng/mL, ± 5% in nonane/3.2% toluene)**

Compound	Acronym	CAS #	Concentration (ng/mL)
Mass-Labelled PCDDs:			
2,3,7,8-Tetrachloro($^{13}C_{12}$)dibenzo-*p*-dioxin	$^{13}C_{12}$-2,3,7,8-TCDD	76523-40-5	100
1,2,3,7,8-Pentachloro($^{13}C_{12}$)dibenzo-*p*-dioxin	$^{13}C_{12}$-1,2,3,7,8-PeCDD	109719-79-1	100
1,2,3,4,7,8-Hexachloro($^{13}C_{12}$)dibenzo-*p*-dioxin	$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	109719-80-4	100
1,2,3,6,7,8-Hexachloro($^{13}C_{12}$)dibenzo-*p*-dioxin	$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	109719-81-5	100
1,2,3,4,6,7,8-Heptachloro($^{13}C_{12}$)dibenzo-*p*-dioxin	$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	109719-83-7	100
Octachloro($^{13}C_{12}$)dibenzo-*p*-dioxin	$^{13}C_{12}$-OCDD	114423-97-1	200
Mass-Labelled PCDFs:			
2,3,7,8-Tetrachloro($^{13}C_{12}$)dibenzofuran	$^{13}C_{12}$-2,3,7,8-TCDF	89059-46-1	100
1,2,3,7,8-Pentachloro($^{13}C_{12}$)dibenzofuran	$^{13}C_{12}$-1,2,3,7,8-PeCDF	109719-77-9	100
2,3,4,7,8-Pentachloro($^{13}C_{12}$)dibenzofuran	$^{13}C_{12}$-2,3,4,7,8-PeCDF	116843-02-8	100
1,2,3,4,7,8-Hexachloro($^{13}C_{12}$)dibenzofuran	$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	114423-98-2	100
1,2,3,6,7,8-Hexachloro($^{13}C_{12}$)dibenzofuran	$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	116843-03-9	100
1,2,3,7,8,9-Hexachloro($^{13}C_{12}$)dibenzofuran	$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	116843-04-0	100
2,3,4,6,7,8-Hexachloro($^{13}C_{12}$)dibenzofuran	$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	116843-05-1	100
1,2,3,4,6,7,8-Heptachloro($^{13}C_{12}$)dibenzofuran	$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	109719-84-8	100
1,2,3,4,7,8,9-Heptachloro($^{13}C_{12}$)dibenzofuran	$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	109719-94-0	100

Certified By: _____ **Date:** 04/19/2021 (mm/dd/yyyy)

B.G. Chittim, General Manager

Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)

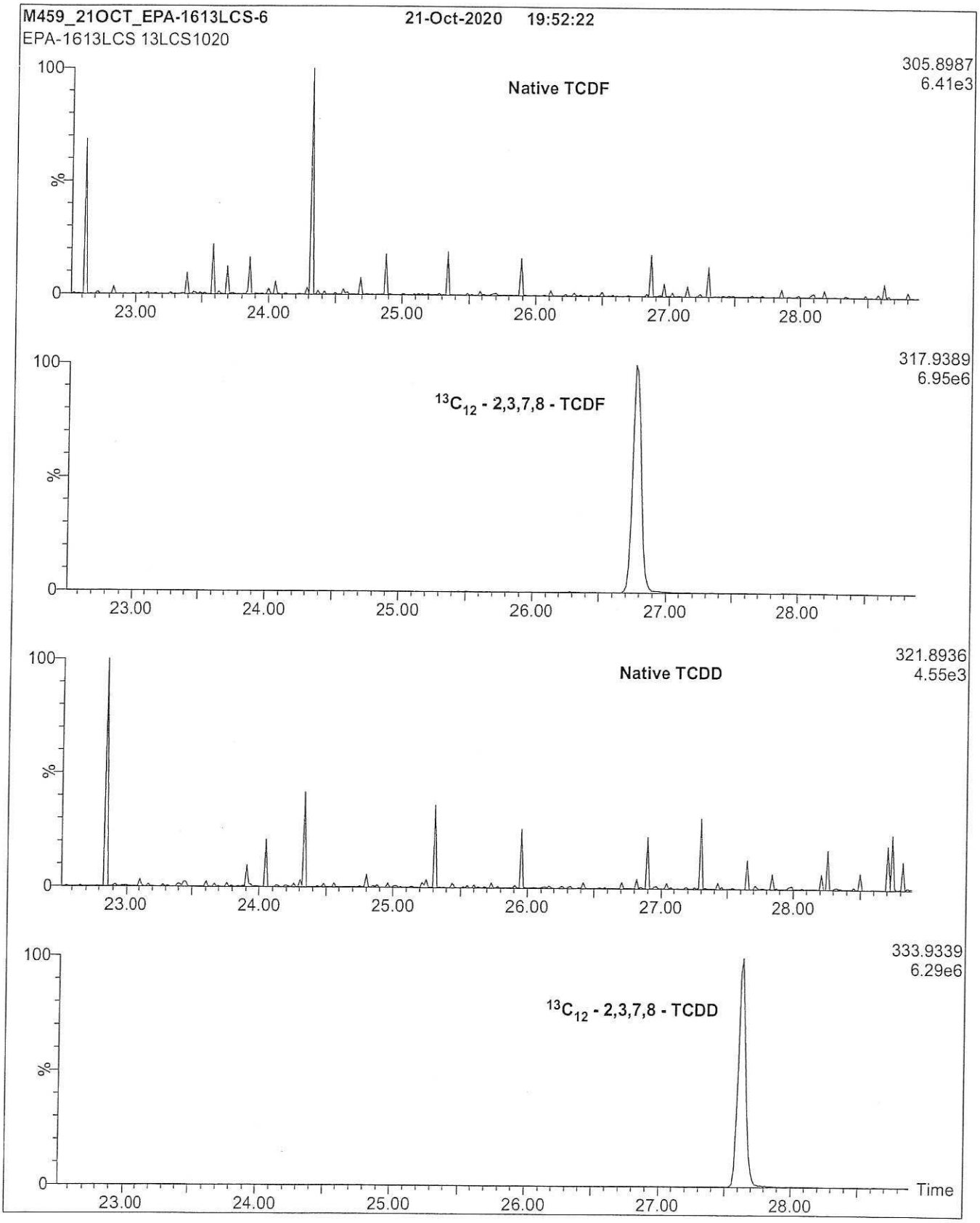


Figure 1: **EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)**

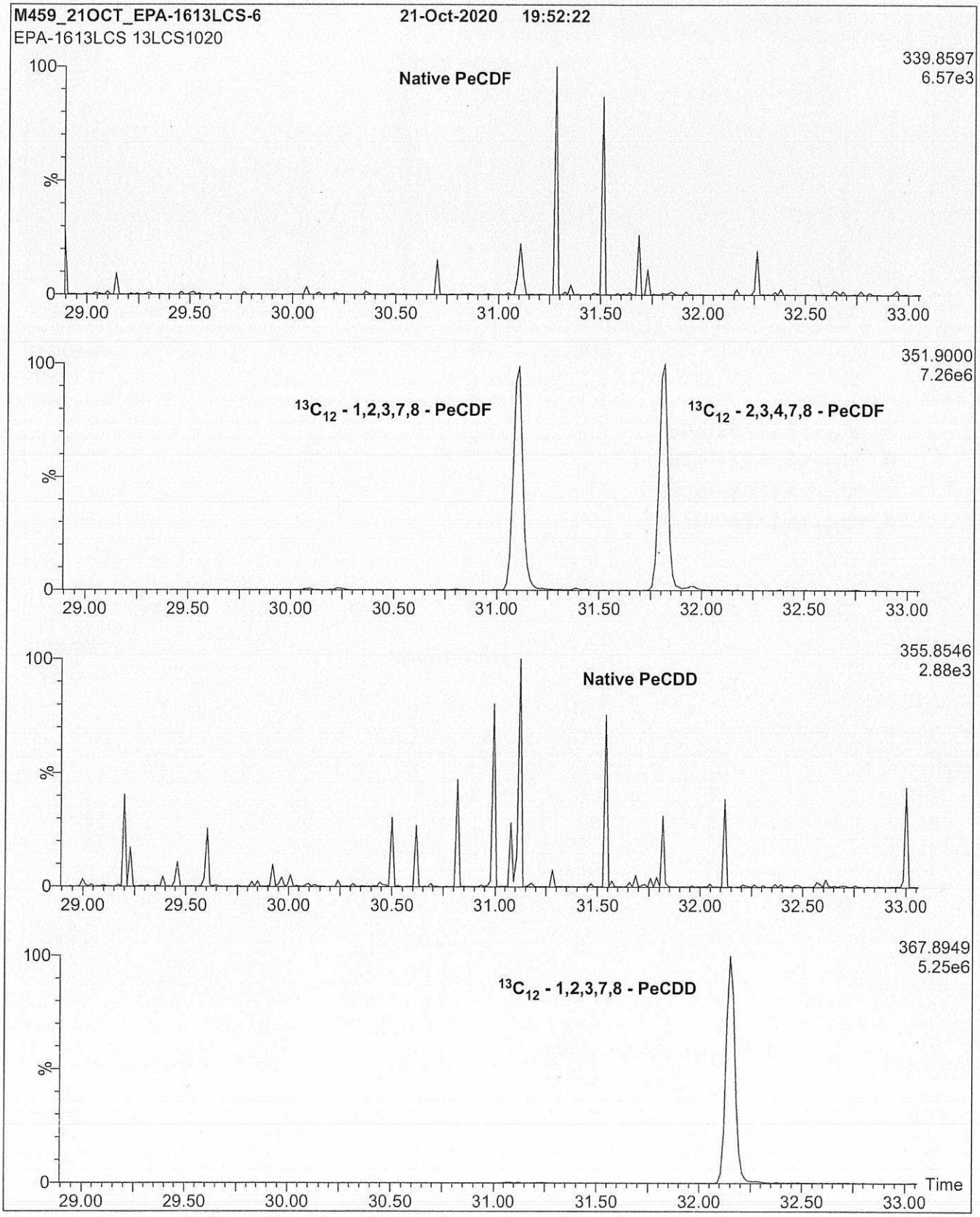


Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)

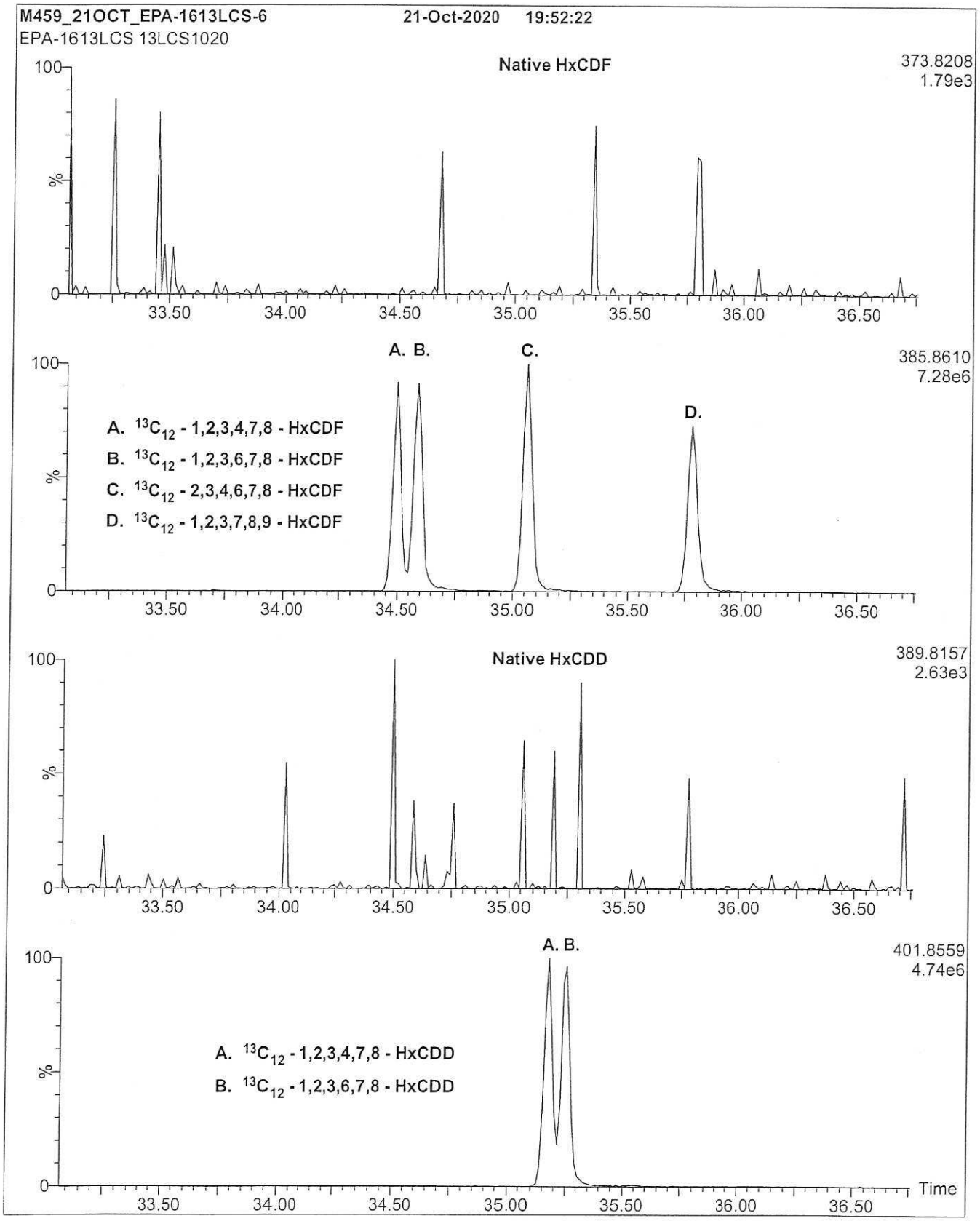


Figure 1: **EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)**

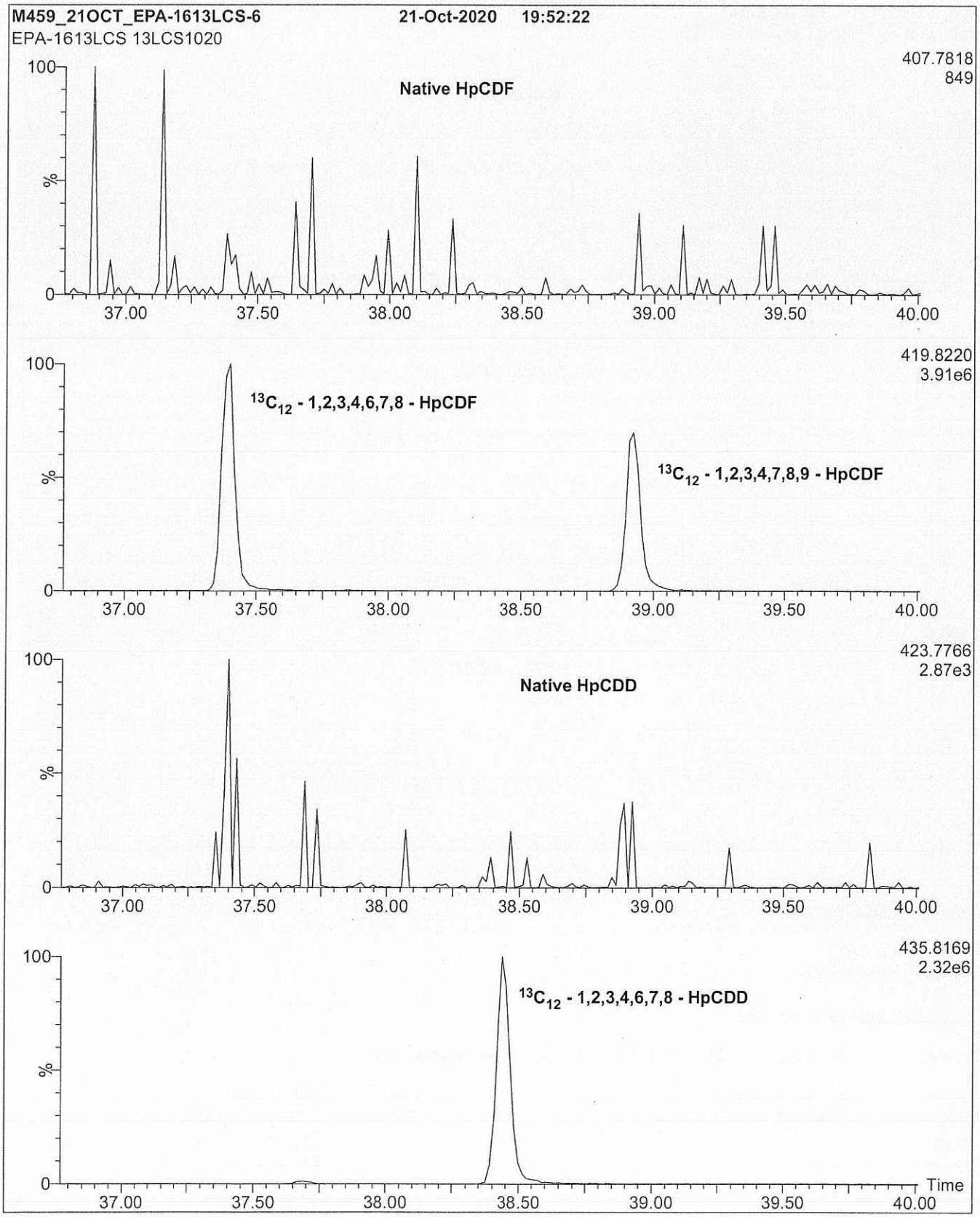
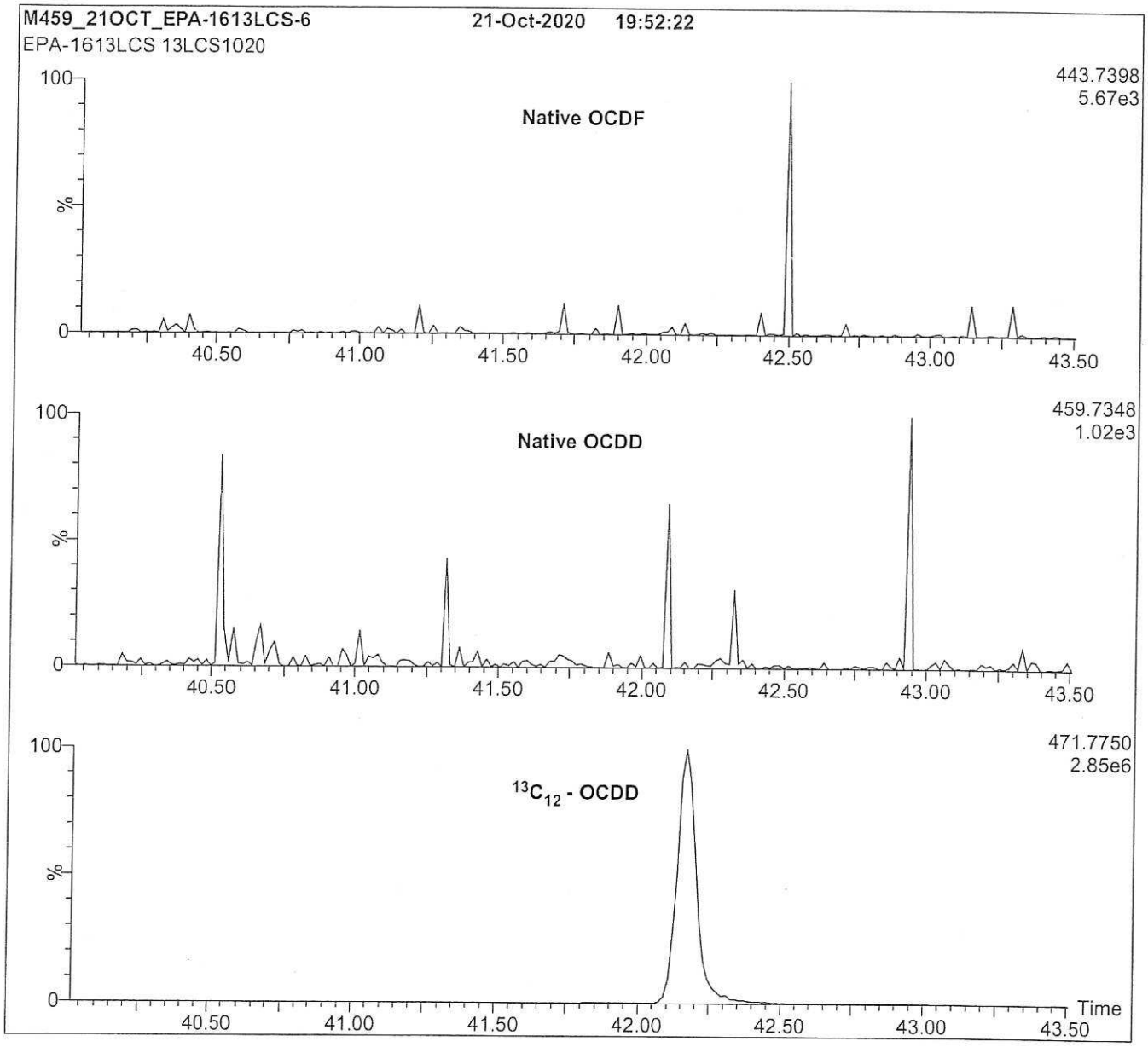


Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)



Conditions for Figure 1:

Agilent 6890N HRGC
Autospec Ultima HRMS

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 mL/min	Oven:	150°C (1 min)
Injector:	280°C (Splitless Injection)		12°C/min to 200°C
Ionization:	EI+		3°C/min to 235°C
Detector:	300°C		235°C (8 min)
	SIR at 10,000 mass resolving power		8°C/min to 310°C
			310°C (8 min)

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Analytical Standard Record

Standard ID: J005595 **Printed: 5/26/2021 2:15:33PM**

Description:	Dioxin ISC Mix	Expires:	26-May-2022
Standard Type:	Other	Prepared:	26-May-2021
Solvent:	Nonane	Prepared By:	Peter Kepler
Final Volume (mls):	1	Department:	HRGCMS
Vials:	1	Last Edit:	26-May-2021 14:05 by PK
Vendor:		Lot #:	1234
Vendor Catalog #:			

Comments

Stock: H9902: 2378-TCDF, 3467-TCDF, 2348-TCDF, 1278-TCDD, 2378-TCDD. each @ 1000 ng/mL

10 ul to 1 mL FV in Nonane. Final Conc = 10 ng/mL. Analytes and units not available in Element.

Reviewed By Date

Recipient Copy

CHAIN-OF-CUSTODY RECORD

COC No. 15155

Order Number: CB014575

Date Shipped: 8/2/2021

AirBill No(s): 460843970024

From: QATS LABORATORY
2700 CHANDLER AVENUE, BLDG. B
LAS VEGAS, NV 89120
PHONE: 1-702-895-8712
FAX: 1-702-795-8210

To: SUE DUNNIHOO
ANALYTICAL RESOURCES INC.
4611 S. 134TH PLACE SUITE 100
TUKWILA WA 98168
250-695-6207

Sample ID	Qty	Description/Remarks	→ Catalogue Number
PSRM0140 J007935	1	PUGET SOUND SEDIMENT RM	PS-SRM
PSRM0141 J007936	1	PUGET SOUND SEDIMENT RM	PS-SRM
		DUWAMISH AOC4	

8/2/2021

Please use the enclosed Sample Preparation Instructions. If catalogue number(s) are listed at the top of the Sample Preparation Instructions use the Sample Preparation Instructions with catalogue number(s) matching the catalogue number(s) of each of the samples listed above.

Relinquished by: (Signature)	Date/Time 1400 8/2/2021	Received by: Jacob Walter (Signature)	Date/Time 08/03/2021 1138
Custody Seal(s): Present/Absent	Remarks:		
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

Report No. 00, 9/11/2014

SMP Version 3.3