PREPARATION BATCH SUMMARY

EPA 1613B

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023
Batch: BLK0112 Batch Matrix: Solid
Preparation: EPA 1613

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SED-07C:0-1	23J0690-01	23121437	11/14/23 13:25	
SED-08C:1-3	23J0690-02	23121438	11/14/23 13:25	
SED-14C:0-1	23J0690-04	23121439	11/14/23 13:25	
SED-27C:0-1	23J0690-06	23121440	11/14/23 13:25	
SED-26C:1-3	23J0690-07	23121441	11/14/23 13:25	
Blank	BLK0112-BLK1	23121421	11/14/23 13:25	
LCS	BLK0112-BS1	23121422	11/14/23 13:25	

Analytical Resources, LLC
Analytical Chemists and Consultants

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

Batch: BLK0112

Solid Samples

ARI Work Orders: 23J0156,23J0255,23J0453,23J0454,23J0690

Matrix (circle one)	(Soil)	Sediment	Oil Tissue
Extraction Method	Start Date/Time:	End Date/Time:	
(Soxhlet) SepF Shake out	11/14/23 13:25	11/15/23 0530	

Reagents/Equipment Used	NA	ID / Lot Number	Initials	Date
Glasswool		L009152	LN	11/16/23
Basic Silica		L011032	LN	11/16/23
Acid Silica		L011692	LN	11/16/23
Activated Florisil		L004480	LN	11/16/23
Balance		24650344	LN	11/14/23
Toluene		L011548	LN	11/14/23
Hexane		L012649	LN	11/15/23
CH2Cl2		L007507	LN	11/16/23
H2SO4		L010375	LN	11/15/23
Na2SO4		L013009	LN	11/14/23
~~Other ( )~~				
0% Silica		L009563	LN	11/16/23
Nonane		I006476	LN	11/16/23

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)
23I0156-05 A	AOC3-03-0.5-1.0	91.98	(10.87)	11.00	(1)/2	0.5	20
23I0156-06 A	AOC3-103-0.5-1.0	91.17	(10.97)	10.98	1/(2)	0.9	20
23I0156-08 A	AOC3-04-0.5-1.0	83.54	(11.97)	12.05	(1)/2	1.5	20
23I0156-10 A	AOC3-05-0.5-1.0	80.75	(12.38)	12.39	(1)/2	2.3	20
23J0255-01 A	P103-SO-25-0-3-2310 04	90.21	(11.09)	11.11	1/(2)	1.0	20
23J0453-02 C	T117-LTM2-20231012	86.47	(11.57)	11.59	(1)/2	1.0	20
23J0453-04 C	T117-LTM4-20231012	50.82	(19.68)	19.72	1/(2)	8.2	20
23J0453-05 C	PERIM-1-LTM-20231 012	71.24	(14.04)	14.05	(1)/2	4.0	20
23J0453-09 C	PERIM-5-LTM-20231 012	45.18	(22.13)	22.46	1/(2)	10.8	20
23J0454-01 B	P103-SO-09-0-1.7-231 011	94.05	(10.63)	10.74	(1)/2	0.1	20
23J0454-04 B	P103-SO-12-0-2-23101 1	95.41	(10.48)	10.52	(1)/2	0.7	20
23J0690-01 A	SED-07C:0-1	80.4	(12.44)	12.57	1/(2)	2.0	20
23J0690-02 A	SED-08C:1-3	72.43	(13.81)	13.87	(1)/2	3.5	20
23J0690-04 A	SED-14C:0-1	69.49	(14.39)	14.50	(1)/2	4.0	20
23J0690-06 A	SED-27C:0-1	69.45	(14.40)	14.52	1/(2)	3.5	20
23J0690-07 A	SED-26C:1-3	74.64	(13.40)	13.42	(1)/2	2.5	20
BLK0112-BLK1	Blank	100	()		(1)/2		20
BLK0112-BS1	LCS	100	()		1/(2)		20
BLK0112-DUP1	23J0454-01B Duplicate	94.05	(10.63)	10.69	(1)/2	0.4	20
Prep Analyst / Date:			LN 11/14/23		11/15/23	11/15/23	

Standards Used	Vol	ID / Lot Number	Concentration	Expiration Date	Analyst	Witness	Date
Recovery Standard	1.0 mL	L011382	2/4 ng/mL	10/03/24	LN		11/14/23
OPR	1.0 mL	L012262	0.2/1.0/2.0 ng/mL	10/23/24	LN		11/14/23
~~QLS Standard~~	~~1.0 mL~~		~~0.01/0.05/0.1ng/mL ng/L~~				
Cleanu-up Standard	1.0 mL	L011383	0.8 ng/mL	10/03/24	LN		11/16/23

Verify Client ID
Analyst / Date: LN 11/14/23

Acid Clean (Y/N)
Analyst / Date: LN 11/15/23

Silica-Florisil Clean (Y/N)
Analyst / Date: LN 11/16/23

Supervisor Review By 12/14/23 Date

Printed: 11/3/2023 8:05:02AM

Dioxin Extraction Laboratory – Glassware

Batch ID: BLK0112 Work Order: 23J0156, 23J0255, 23J0453, 23J0454, 23J0690 Extraction Parameter: Dioxin ARI Analyst: LN

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 Mantle
BLK0112 - BLK1	15	116		60	44	17	68	68				4	4	A1
BS1	49	5		34	36	2	72	84				4	4	A2
DUP1	79	70		30	40	64	29	70				4	4	A3
23J0156 - 05A	63	18		44	47	44	121	79				4	4	A5
06A	44	23		27	51	24	136	59				4	4	A6
08A	17	74		220	85	45	123	8				4	4	B1
10A	6	14		42	12	13	64	21				4	4	B2
23J0255 - 01A	31	16		LN ~~10~~ 245	19	43	15	36				4	4	B3
23J0453 - 02C	67	69		5	48	30	175	39				4	4	B4
-04C	25		45	LN ~~259~~ 57	95	198	163	27				4	4	B5
05C	53	19		62	72	229	70	58				4	4	B6
09C	83		58	19	15	185	46	7				4	4	C1
23J0454 - 01B	39	28		88	38	41	77	16				4	4	C2
04B	24	13		52	45	14	49	55				4	4	C3
23J0690 - 01A	5	15		36	46	LN ~~222~~	39 LN ~~55~~	22				4	4	C4
02A	27	17		59	41	LN ~~161~~	55 LN ~~39~~	51				4	4	C5
04A	60	64		18	87	162	120	24				4	4	C6
06A	56	27		16	18	76	10	14				4	4	D1
07A	68	87		31	62	220	150	19				4	4	D2
												4	4	
												4	4	
												4	4	
												4	4	

TOTAL SOLIDS BENCHSHEET						Batch:	BLK0010
Method: PSEP 1986						Date:	
(dry at 103-105 C)						Analyst:	LN
Instrumentation						Drying Oven:	018
						Analytical Balance:	24650344

Batch drying time			Oven Temp, C	TS (%) calculated as:	Oven Temps, °C	
Record times as mm/dd/yy hh:mm						
Date/time in oven:	11/01/23	15:01	110	Final dry wt (g) = (Dry Wt - Tare Wt)	Start Temp:	110
Date/time out:	11/02/23	07:40	111	TS = (Final Dry Wt X 100)/ (sample & dish -dish tare)	End Temp:	111
Elapsed hrs:	0.0					

SAMPLE ID	Dish Tare Wt (g)	Dish with Sample (g)	Dry Wt (g)	Solids Wt (g)	TS (%)	Sample Decanted
23J0690-01 A	0.792	11.282	9.226			No
23J0690-02 A	0.813	11.070	8.242			No
23J0690-04 A	0.823	11.014	7.905			No
23J0690-06 A	0.823	11.087	7.951			No
23J0690-07 A	0.785	11.187	8.549			No
23J0768-11 F	0.781	11.190	9.157			No
23J0768-12 E	0.801	11.253	10.105			No
23J0768-21 F	0.810	11.356	8.706			No
23J0768-22 F	0.800	11.491	7.686			No
23J0768-23 F	0.800	11.186	9.914			No
23J0768-32 F	0.798	11.197	9.356			No

TOTAL SOLIDS BENCHSHEET							Batch:	BLK0010
Method: PSEP 1986							Date:	11/2/2023 7:40
(dry at 103-105 C)							Analyst:	LN
Instrumentation							Drying Oven:	18
							Analytical Balance:	24650344

Batch drying time					
Record times as mm/dd/yy hh:mm		Oven Temp, C	TS (%) calculated as:	Oven Temps, °C	
Date/time in oven:	11/1/2023 15:01	110	Final dry wt (g) = (Dry Wt - Tare Wt)	Start Temp:	110
Date/time out:	11/2/2023 7:40	111	TS = (Final Dry Wt X 100)/ (sample & dish -dish tare)	End Temp:	111
Elapsed hrs:	16.6				

SAMPLE ID	Dish Tare Wt (g)	Dish with Sample (g)	Dry Wt (g)	Solids Wt (g)	TS (%)	Sample Decanted
23J0690-01	0.7920	11.2820	9.2260	8.43	**80.40%**	No
23J0690-02	0.8130	11.0700	8.2420	7.43	**72.43%**	No
23J0690-04	0.8230	11.0140	7.9050	7.08	**69.49%**	No
23J0690-06	0.8230	11.0870	7.9510	7.13	**69.45%**	No
23J0690-07	0.7850	11.1870	8.5490	7.76	**74.64%**	No
23J0768-11	0.7810	11.1900	9.1570	8.38	**80.47%**	No
23J0768-12	0.8010	11.2530	10.1050	9.30	**89.02%**	No
23J0768-21	0.8100	11.3560	8.7060	7.90	**74.87%**	No
23J0768-22	0.8000	11.4910	7.6860	6.89	**64.41%**	No
23J0768-23	0.8000	11.1860	9.9140	9.11	**87.75%**	No
23J0768-32	0.7980	11.2970	9.3560	8.56	**81.51%**	No

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Organic Extractions Laboratory Analyst Notes

Extraction Parameter: DIOXIN Extraction Batch BLK011Z

Total Solids Batch: BLK010 Work Order(s): 23J0690, 23J0768

Screens: Soil/Sediment/Solid/Other:	Analyst/Date
☑ No Anomalies (standard soil/wet sediment/sand/gravel)= 768-11,12,21,23,32 | 690-06	LN 11/01/23
☐ Standing Water Decanted (Not shared)=	
☐ Standing Water Homogenized (Shared samples)=	
☐ Clay/Clumps (Difficult to homogenize)=	
☑ Rocks (%+size)? 690-01 | 0.25-0.5 inch seashell 60% | 690-02,04,07 : 0.25-0.5 inch sea shell 5%	LN 11/01/23
☑ Organics (Leaves/sticks/grass)= 768-22 : wood sticks	LN 11/01/23
☐ 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).	
690-01, 02: label swapped after transfer sample; correct lable when rinse	LN 11/16/23
690-06: had light blue color after turbo vap; ~~cold~~ LN	LN 11/16/23
☐ Share Samples Y / N	
☐ Multiple Jars Y / N	
☐ Sample Pre-Screens indicate analyte activity=	
☐ Sample weights/volumes reduced based on Pre-Screen=	

TOTAL SOLIDS BENCHSHEET

Method: PSEP 1986

(dry at 103-105 C)

Instrumentation

Batch:	BLJ0767
Date:	10/27/2023 0:00
Analyst:	TW
Drying Oven:	18
Analytical Balance:	24650344

Batch drying time		
Record times as mm/dd/yy hh:mm		
Date/time in oven:	10/26/2023 13:30	
Date/time out:	10/27/2023 5:09	
Elapsed hrs:	15.7	

Oven Temp, C 109

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:	109
End Temp:	110

SAMPLE ID	Dish Tare Wt (g)	Dish with Sample (g)	Dry Wt (g)	Solids Wt (g)	TS (%)	Sample Decanted
23I0156-05	0.8100	11.5300	10.6700	9.86	**91.98%**	No
23I0156-06	0.7900	11.5500	10.6000	9.81	**91.17%**	No
23I0156-08	0.7800	11.0500	9.3600	8.58	**83.54%**	No
23I0156-10	0.7800	11.1200	9.1300	8.35	**80.75%**	No

TOTAL SOLIDS BENCHSHEET							Batch:	BLJ0767
Method: PSEP 1986							Date:	
(dry at 103-105 C)							Analyst:	TW
Instrumentation							Drying Oven:	018
							Analytical Balance:	2465034

Batch drying time								
Record times as mm/dd/yy hh:mm			Oven Temp, C	TS (%) calculated as:			Oven Temps, °C	
Date/time in oven:	10/26/23	13:30	109	Final dry wt (g) = (Dry Wt - Tare Wt)			Start Temp:	109
Date/time out:	10/27/23	0509	110	TS = (Final Dry Wt X 100)/ (sample & dish -dish tare)			End Temp:	110
Elapsed hrs:	0.0							

SAMPLE ID	Dish Tare Wt (g)	Dish with Sample (g)	Dry Wt (g)	Solids Wt (g)	TS (%)	Sample Decanted
23I0156-05 A	0.81	11.53	10.67			No
23I0156-06	0.79	11.55	10.60			No
23I0156-08	0.78	11.05	9.36			No
23I0156-10	0.78	11.12	9.13			No

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Organic Extractions Laboratory Analyst Notes

Extraction Parameter: Dioxin Batch Number: BLK0112

Element Batch:T/S BLJ6767 Work Order(s): 23J0156

Screens: Soil/Sediment/Solid/Other:	Analyst/Date
☐ No Anomalies (standard soil/wet sediment/sand/gravel)=	
☐ Standing Water Decanted (Not shared)=	
☐ Standing Water Homogenized (Shared samples)=	
☐ Clay/Clumps (Difficult to homogenize)=	
☑ Rocks (%+size)? 156-5,6,8,10 = ~10% 1/8-1/4" rocks	TW 10/26/23
☐ Organics (Leaves/sticks/grass)=	
☐ Oily, obvious fuel/sulfur odors=	
☐ Received in 32oz jar(s)=Homogenized in Pyrex dish=	
☐ 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).	
156-6: 2x acid silica gel @ silica gel clean up	LM 11/16/23
☐ Share Samples Y / N	
☐ Multiple Jars Y / N	
☐ Sample Pre-Screens indicate analyte activity=	
☐ Sample weights/volumes reduced based on Pre-Screen=	

TOTAL SOLIDS BENCHSHEET

Method: PSEP 1986

(dry at 103-105 C)

Batch:	BLJ0610
Date:	10/27/2023 5:09
Analyst:	TW
Drying Oven:	18
Analytical Balance:	24650344

Instrumentation

Batch drying time

Record times as mm/dd/yy hh:mm	
Date/time in oven:	10/26/2023 13:30
Date/time out:	10/27/2023 5:09
Elapsed hrs:	15.7

Oven Temp, C	TS (%) calculated as:
109	Final dry wt (g) = (Dry Wt - Tare Wt)
110	TS = (Final Dry Wt X 100)/ (sample & dish -dish tare)

Oven Temps, °C	
Start Temp:	109
End Temp:	110

SAMPLE ID	Dish Tare Wt (g)	Dish with Sample (g)	Dry Wt (g)	Solids Wt (g)	TS (%)	Sample Decanted
23J0453-02	0.8200	11.9100	10.4100	9.59	**86.47%**	No
23J0453-04	0.8200	11.1500	6.0700	5.25	**50.82%**	Yes
23J0453-05	0.8200	11.4600	8.4000	7.58	**71.24%**	Yes
23J0453-09	0.8100	11.5000	5.6400	4.83	**45.18%**	Yes
23J0454-01	0.8100	11.3900	10.7600	9.95	**94.05%**	No
23J0454-04	0.8100	11.2600	10.7800	9.97	**95.41%**	No
23J0454-07	0.8100	11.2500	10.4900	9.68	**92.72%**	No

TOTAL SOLIDS BENCHSHEET

Method: PSEP 1986

(dry at 103-105 C)

Batch:	BLJ0610
Date:	
Analyst:	TV
Drying Oven:	Φ18
Analytical Balance:	24652344

Instrumentation

Batch drying time

Record times as mm/dd/yy hh:mm

			Oven Temp, C
Date/time in oven:	10/26/23	13:30	109
Date/time out:	10/27/23	Φ5Φ9	110
Elapsed hrs:	0.0		

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:	109
End Temp:	110

SAMPLE ID	Dish Tare Wt (g)	Dish with Sample (g)	Dry Wt (g)	Solids Wt (g)	TS (%)	Sample Decanted
23J0453-02 C	Φ.82	11.91	10.41			No
23J0453-04 C	Φ.82	11.15	~~6Φ7 Φ.44~~ 8.54			~~No~~ Y5
23J0453-05 C	Φ.82	11.46	8.54			~~No~~ Y5
23J0453-09 C	Φ.81	11.50	5.64			~~No~~ Y5
23J0454-01 B	Φ.81	11.39	10.76			No
23J0454-04 B	Φ.81	11.76	10.78			No
23J0454-07 B	Φ.81	11.25	10.49			No

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Organic Extractions Laboratory Analyst Notes

Extraction Parameter: Dioxin Batch Number: BLK0112

Element Batch:T/S BLJ0610 Work Order(s): 23J0453

Screens: Soil/Sediment/Solid/Other:	Analyst/Date
☑ No Anomalies (standard soil/wet sediment/sand/gravel)= 453-02, 454-01, 04, 07	TW 10/26/23
☑ Standing Water Decanted (Not shared)= 453-4,5,9	TW 10/26/23
☐ Standing Water Homogenized (Shared samples)=	
☑ Clay/Clumps (Difficult to homogenize)= 453-4,5,9	TW 10/26/23
☐ Rocks (%+size)?	
☑ Organics (Leaves/sticks/grass)= 453-4,5,9	TW 10/26/23
☐ Oily, obvious fuel/sulfur odors=	
☐ Received in 32oz jar(s)=Homogenized in Pyrex dish=	
☐ 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).	
☐ Share Samples Y / N	
☐ Multiple Jars Y / N	
☐ Sample Pre-Screens indicate analyte activity=	
☐ Sample weights/volumes reduced based on Pre-Screen=	

TOTAL SOLIDS BENCHSHEET

Method: PSEP 1986

(dry at 103-105 C)

Instrumentation

Batch:	BLJ0439
Date:	10/19/2023 0:00
Analyst:	TW
Drying Oven:	18
Analytical Balance:	24650344

Batch drying time

Record times as mm/dd/yy hh:mm

Date/time in oven:	10/18/2023 12:49
Date/time out:	10/19/2023 5:10
Elapsed hrs:	16.4

Oven Temp, C: 110

TS (%) calculated as:

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

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

Oven Temps, °C	
Start Temp:	110
End Temp:	111

SAMPLE ID	Dish Tare Wt (g)	Dish with Sample (g)	Dry Wt (g)	Solids Wt (g)	TS (%)	Sample Decanted
23J0254-01	0.8200	11.2400	10.2900	9.47	**90.88%**	No
23J0254-04	0.8100	11.8300	11.1600	10.35	**93.92%**	No
23J0255-01	0.8100	11.3300	10.3000	9.49	**90.21%**	No
23J0255-04	0.8100	11.2100	10.0500	9.24	**88.85%**	No
23J0255-05	0.7900	11.2400	9.8800	9.09	**86.99%**	No
23J0255-09	0.7800	11.2600	10.3600	9.58	**91.41%**	No
23J0256-01	0.8000	11.5100	10.4500	9.65	**90.10%**	No
23J0256-04	0.8200	11.7400	10.9100	10.09	**92.40%**	No
23J0257-01	0.8100	11.0600	10.2400	9.43	**92.00%**	No
23J0257-04	0.8000	11.6800	10.8800	10.08	**92.65%**	No
23J0316-01	0.8100	11.8200	10.2400	9.43	**85.65%**	No
23J0316-04	0.8100	11.4600	9.7500	8.94	**83.94%**	No
23J0316-07	0.8100	11.4600	10.5700	9.76	**91.64%**	No
23J0316-10	0.7900	11.6400	10.6400	9.85	**90.78%**	No
23J0350-01	0.8000	11.4600	10.0100	9.21	**86.40%**	No
23J0350-04	0.8000	11.2400	10.6600	9.86	**94.44%**	No
23J0350-08	0.8000	11.4000	10.7700	9.97	**94.06%**	No
23J0350-11	0.8000	11.5100	10.7200	9.92	**92.62%**	No

CLEANUP BATCH SUMMARY

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Cleanup Batch:	CLK0116	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
SED-07C:0-1	23J0690-01	23121437	11/16/2023	
SED-26C:1-3	23J0690-07	23121441	11/16/2023	
SED-14C:0-1	23J0690-04	23121439	11/16/2023	
SED-08C:1-3	23J0690-02	23121438	11/16/2023	
SED-27C:0-1	23J0690-06	23121440	11/16/2023	
LCS	BLK0112-BS1	23121422	11/16/2023	
Blank	BLK0112-BLK1	23121421	11/16/2023	

Analytical Resources, LLC
Analytical Chemists and Consultants

CLEANUP BENCH SHEET

CLK0116

Matrix: Solid **Cleanup using: HRGCMS - EPA 3665 Sulfuric Acid Cleanup - uL** **Printed: 11/16/2023 4:59:33PM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (uL)	Final (uL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments
23I0156-05	A	AOC3-03-0.5-1.0	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23I0156-06	A	AOC3-103-0.5-1.0	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23I0156-08	A	AOC3-04-0.5-1.0	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23I0156-10	A	AOC3-05-0.5-1.0	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23J0255-01	A	P103-SO-25-0-3-231004	A 03	20	20	1613B Dioxin	11/16/2023	LN	
23J0453-02	C	T117-LTM2-20231012	C 01	20	20	1613B Dioxin	11/16/2023	LN	
23J0453-04	C	T117-LTM4-20231012	C 01	20	20	1613B Dioxin	11/16/2023	LN	
23J0453-05	C	PERIM-1-LTM-20231012	C 01	20	20	1613B Dioxin	11/16/2023	LN	
23J0453-09	C	PERIM-5-LTM-20231012	C 01	20	20	1613B Dioxin	11/16/2023	LN	
23J0454-01	B	P103-SO-09-0-1.7-231011	B 01	20	20	1613B Dioxin	11/16/2023	LN	
23J0454-04	B	P103-SO-12-0-2-231011	B 01	20	20	1613B Dioxin	11/16/2023	LN	
23J0690-01	A	SED-07C:0-1	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23J0690-02	A	SED-08C:1-3	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23J0690-04	A	SED-14C:0-1	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23J0690-06	A	SED-27C:0-1	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23J0690-07	A	SED-26C:1-3	A 01	20	20	1613B Dioxin	11/16/2023	LN	
BLK0112-BLK1	-	Blank	-	20	20	-	11/16/2023	LN	
BLK0112-BS1	-	LCS	-	20	20	-	11/16/2023	LN	
BLK0112-DUP1	-	Duplicate	-	20	20	-	11/16/2023	LN	

CLEANUP BATCH SUMMARY

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Cleanup Batch:	CLK0117	Cleanup Type:	Silica Gel
Cleanup Method:	EPA 3630C Silica Gel Cleanup - uL	Analysis:	EPA 1613B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SED-07C:0-1	23J0690-01	23121437	11/16/2023	
SED-08C:1-3	23J0690-02	23121438	11/16/2023	
SED-14C:0-1	23J0690-04	23121439	11/16/2023	
SED-26C:1-3	23J0690-07	23121441	11/16/2023	
LCS	BLK0112-BS1	23121422	11/16/2023	
SED-27C:0-1	23J0690-06	23121440	11/16/2023	
Blank	BLK0112-BLK1	23121421	11/16/2023	

Analytical Resources, LLC
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CLEANUP BENCH SHEET

CLK0117

Matrix: Solid **Cleanup using: HRGCMS - EPA 3630C Silica Gel Cleanup - uL** **Printed: 11/16/2023 5:01:28PM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (uL)	Final (uL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments
23I0156-05	A	AOC3-03-0.5-1.0	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23I0156-06	A	AOC3-103-0.5-1.0	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23I0156-08	A	AOC3-04-0.5-1.0	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23I0156-10	A	AOC3-05-0.5-1.0	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23J0255-01	A	P103-SO-25-0-3-231004	A 03	20	20	1613B Dioxin	11/16/2023	LN	
23J0453-02	C	T117-LTM2-20231012	C 01	20	20	1613B Dioxin	11/16/2023	LN	
23J0453-04	C	T117-LTM4-20231012	C 01	20	20	1613B Dioxin	11/16/2023	LN	
23J0453-05	C	PERIM-1-LTM-20231012	C 01	20	20	1613B Dioxin	11/16/2023	LN	
23J0453-09	C	PERIM-5-LTM-20231012	C 01	20	20	1613B Dioxin	11/16/2023	LN	
23J0454-01	B	P103-SO-09-0-1.7-231011	B 01	20	20	1613B Dioxin	11/16/2023	LN	
23J0454-04	B	P103-SO-12-0-2-231011	B 01	20	20	1613B Dioxin	11/16/2023	LN	
23J0690-01	A	SED-07C:0-1	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23J0690-02	A	SED-08C:1-3	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23J0690-04	A	SED-14C:0-1	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23J0690-06	A	SED-27C:0-1	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23J0690-07	A	SED-26C:1-3	A 01	20	20	1613B Dioxin	11/16/2023	LN	
BLK0112-BLK1	-	Blank	-	20	20	-	11/16/2023	LN	
BLK0112-BS1	-	LCS	-	20	20	-	11/16/2023	LN	
BLK0112-DUP1	-	Duplicate	-	20	20	-	11/16/2023	LN	

CLEANUP BATCH SUMMARY

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Cleanup Batch:	CLK0118	Cleanup Type:	Florisil
Cleanup Method:	EPA 3620B Florisil Cleanup (uL)	Analysis:	EPA 1613B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SED-07C:0-1	23J0690-01	23121437	11/16/2023	
Blank	BLK0112-BLK1	23121421	11/16/2023	
SED-27C:0-1	23J0690-06	23121440	11/16/2023	
SED-26C:1-3	23J0690-07	23121441	11/16/2023	
SED-14C:0-1	23J0690-04	23121439	11/16/2023	
LCS	BLK0112-BS1	23121422	11/16/2023	
SED-08C:1-3	23J0690-02	23121438	11/16/2023	

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CLEANUP BENCH SHEET

CLK0118

Matrix: Solid **Cleanup using: HRGCMS - EPA 3620B Florisil Cleanup (uL)** **Printed: 11/16/2023 5:02:59PM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (uL)	Final (uL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments
23I0156-05	A	AOC3-03-0.5-1.0	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23I0156-06	A	AOC3-103-0.5-1.0	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23I0156-08	A	AOC3-04-0.5-1.0	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23I0156-10	A	AOC3-05-0.5-1.0	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23J0255-01	A	P103-SO-25-0-3-231004	A 01	20	20	1613B Dioxin	11/16/2023	LN	
23J0453-02	C	T117-LTM2-20231012	C 01	20	20	1613B Dioxin	11/16/2023	LN	
23J0453-04	C	T117-LTM4-20231012	C 01	20	20	1613B Dioxin	11/16/2023	LN	
23J0453-05	C	PERIM-1-LTM-20231012	C 01	20	20	1613B Dioxin	11/16/2023	LN	
23J0453-09	C	PERIM-5-LTM-20231012	C 01	20	20	1613B Dioxin	11/16/2023	LN	
23J0454-01	B	P103-SO-09-0-1.7-231011	B 01	20	20	1613B Dioxin	11/16/2023	LN	
23J0454-04	B	P103-SO-12-0-2-231011	B 01	20	20	1613B Dioxin	11/16/2023	LN	
23J0690-01	A	SED-07C:0-1	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23J0690-02	A	SED-08C:1-3	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23J0690-04	A	SED-14C:0-1	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23J0690-06	A	SED-27C:0-1	A 02	20	20	1613B Dioxin	11/16/2023	LN	
23J0690-07	A	SED-26C:1-3	A 01	20	20	1613B Dioxin	11/16/2023	LN	
BLK0112-BLK1	-	Blank	-	20	20	-	11/16/2023	LN	
BLK0112-BS1	-	LCS	-	20	20	-	11/16/2023	LN	
BLK0112-DUP1	-	Duplicate	-	20	20	-	11/16/2023	LN	

Analytical Resources, LLC
Analytical Chemists and Consultants

Blank

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

Laboratory:	Analytical Resources, LLC			SDG:	23J0690
Client:	Leon Environmental, LLC			Project:	Port of Friday Harbor 2023
Matrix:	Solid	Laboratory ID:	BLK0112-BLK1	File ID:	23121421
Sampled:	N/A	Prepared:	11/14/23 13:25	Analyzed:	12/15/23 02:20
Solids Wt%:		Preparation:	EPA 1613	Initial/Final:	10 g / 20 uL
Result Basis:	Dry	Sequence:	SLL0222	Calibration:	GH00041
Batch:	BLK0112	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	0.235	1.00	ND	ng/kg	U
1746-01-6	2,3,7,8-TCDD	1	0.000	0.655-0.886	0.211	1.00	ND	ng/kg	U
57117-41-6	1,2,3,7,8-PeCDF	1	0.000	1.318-1.783	0.308	1.00	ND	ng/kg	U
57117-31-4	2,3,4,7,8-PeCDF	1	0.000	1.318-1.783	0.293	1.00	ND	ng/kg	U
40321-76-4	1,2,3,7,8-PeCDD	1	0.000	1.318-1.783	0.289	1.00	ND	ng/kg	U
70648-26-9	1,2,3,4,7,8-HxCDF	1	0.000	1.054-1.426	0.240	1.00	ND	ng/kg	U
57117-44-9	1,2,3,6,7,8-HxCDF	1	0.000	1.054-1.426	0.240	1.00	ND	ng/kg	U
60851-34-5	2,3,4,6,7,8-HxCDF	1	0.000	1.054-1.426	0.258	1.00	ND	ng/kg	U
72918-21-9	1,2,3,7,8,9-HxCDF	1	0.000	1.054-1.426	0.365	1.00	ND	ng/kg	U
39227-28-6	1,2,3,4,7,8-HxCDD	1	0.000	1.054-1.426	0.293	1.00	ND	ng/kg	U
57653-85-7	1,2,3,6,7,8-HxCDD	1	0.000	1.054-1.426	0.320	1.00	ND	ng/kg	U
19408-74-3	1,2,3,7,8,9-HxCDD	1	0.000	1.054-1.426	0.350	1.00	ND	ng/kg	U
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	1.133	0.893-1.208	0.389	1.00	1.08	ng/kg	
55673-89-7	1,2,3,4,7,8,9-HpCDF	1	0.000	0.893-1.208	0.647	1.00	ND	ng/kg	U
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	0.998	0.893-1.208	0.485	2.50	3.13	ng/kg	
39001-02-0	OCDF	1	1.704	0.757-1.024	0.776	2.50	1.46	ng/kg	EMPC, J
3268-87-9	OCDD	1	0.825	0.757-1.024	0.910	10.0	17.1	ng/kg	

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	1.08	ng/kg
37871-00-4	Total HpCDD	1	0.000			1.00	3.13	ng/kg

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.048
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.464

Blank

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

Laboratory:	Analytical Resources, LLC			SDG:	23J0690
Client:	Leon Environmental, LLC			Project:	Port of Friday Harbor 2023
Matrix:	Solid	Laboratory ID:	BLK0112-BLK1	File ID:	23121421
Sampled:	N/A	Prepared:	11/14/23 13:25	Analyzed:	12/15/23 02:20
Solids Wt%:	0.00	Preparation:	EPA 1613	Initial/Final:	10 g / 20 uL
Result Basis:	Dry	Sequence:	SLL0222	Calibration:	GH00041
Batch:	BLK0112	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF	1	0.738	0.655-0.886	0.15	46.9	24 - 169 %	
13C12-2,3,7,8-TCDD	1	0.789	0.655-0.886	0.27	56.4	25 - 164 %	
13C12-1,2,3,7,8-PeCDF	1	1.522	1.318-1.783	0.28	46.1	24 - 185 %	
13C12-2,3,4,7,8-PeCDF	1	1.498	1.318-1.783	0.30	46.5	21 - 178 %	
13C12-1,2,3,7,8-PeCDD	1	1.669	1.318-1.783	0.26	55.4	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF	1	0.515	0.434-0.587	0.44	49.8	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF	1	0.502	0.434-0.587	0.36	50.1	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF	1	0.496	0.434-0.587	0.44	47.5	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF	1	0.507	0.434-0.587	0.50	48.0	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD	1	1.258	1.054-1.426	0.44	58.3	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD	1	1.321	1.054-1.426	0.36	56.1	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF	1	0.457	0.374-0.506	0.43	41.3	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF	1	0.442	0.374-0.506	0.57	40.0	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD	1	1.023	0.893-1.208	0.48	52.6	23 - 140 %	
13C12-OCDD	1	0.919	0.757-1.024	0.89	43.3	17 - 157 %	
37Cl4-2,3,7,8-TCDD	1	328.000		0.09	89.1	35 - 197 %	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\231214IH1.qld
Last Altered: Friday, December 15, 2023 13:51:44 Pacific Standard Time
Printed: Friday, December 15, 2023 13:56:18 Pacific Standard Time

Method: T:\Autospec\Methods\Dioxin231215.mdb 15 Dec 2023 13:28:43
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 09:45:18

ID: BLK0112-BLK1, Name: 23121421, Date: 15-Dec-2023, Time: 02:20:02, 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					0.903		0.770	498	719								
12378-PeCDF					0.923		1.550	467	685								
23478-PeCDF					0.991		1.550	467	685								
123478-HxCDF					1.128		1.240	428	451								
234678-HxCDF					1.081		1.240	428	451								
123678-HxCDF					1.032		1.240	428	451								
123789-HxCDF					0.988		1.240	428	451								
1234678-HpCDF	38.384	1.001	3.272e2	2.888e2	1.164	1.133	1.050	564	552	6.61e3	3.71e3	11.7	6.7	NO	bd	bd	0.540
1234789-HpCDF					1.104		1.050	564	552								
OCDF	44.646	1.005	3.457e2	2.029e2	1.130	1.704	0.890	572	484	6.62e3	4.16e3	11.6	8.6	YES	bb	bb	0.732
2378-TCDD					1.243		0.770	676	469								
12378-PeCDD					1.150		1.550	489	510								
123478-HxCDD					0.960		1.240	509	488								
123678-HxCDD					0.883		1.240	509	488								
123789-HxCDD					0.804		1.240	509	488								
1234678-HpCDD	39.855	1.001	7.481e2	7.497e2	1.200	0.998	1.050	544	589	8.78e3	8.74e3	16.1	14.8	NO	bb	bb	1.565
OCDD	44.426	1.000	2.708e3	3.285e3	1.059	0.825	0.890	617	543	3.32e4	3.82e4	53.8	70.3	NO	bb	bd	8.540
13C-2378-TCDF	25.350	1.007	1.043e5	1.412e5	1.835	0.738	0.770	1034	967	1.46e6	1.95e6	1414.0	2020.7	NO	bb	bb	46.896
13C-12378-PeCDF	29.482	1.171	1.093e5	7.177e4	1.377	1.522	1.550	1829	974	1.47e6	9.87e5	802.2	1013.0	NO	bb	bd	46.105
13C-23478-PeCDF	30.830	1.224	1.035e5	6.907e4	1.301	1.498	1.550	1829	974	1.43e6	9.34e5	782.0	958.3	NO	bb	bb	46.495
13C-123478-HxCDF	34.462	0.955	4.451e4	8.635e4	1.091	0.515	0.510	1041	1849	6.63e5	1.28e6	636.9	690.8	NO	bd	bd	49.767
13C-123678-HxCDF	34.596	0.958	5.410e4	1.077e5	1.340	0.502	0.510	1041	1849	7.13e5	1.39e6	685.1	753.9	NO	dd	db	50.092
13C-234678-HxCDF	35.476	0.983	4.150e4	8.375e4	1.093	0.496	0.510	1041	1849	6.27e5	1.24e6	602.1	669.7	NO	bb	bb	47.516
13C-123789-HxCDF	36.512	1.011	3.707e4	7.314e4	0.952	0.507	0.510	1041	1849	4.93e5	9.74e5	473.5	526.5	NO	bd	bb	48.042
13C-1234678-HpCDF	38.361	1.063	3.072e4	6.728e4	0.985	0.457	0.440	987	1598	4.63e5	1.02e6	469.6	635.2	NO	bb	bd	41.273
13C-1234789-HpCDF	40.556	1.123	2.235e4	5.056e4	0.756	0.442	0.440	987	1598	2.88e5	6.82e5	291.4	426.5	NO	bd	bb	40.014
13C-1234-TCDD	25.181	0.000	1.251e5	1.601e5	1.000	0.782	0.770	1221	929	1.92e6	2.43e6	1573.0	2618.8	NO	bb	bb	100.000
13C-2378-TCDD	25.986	1.032	7.867e4	9.975e4	1.110	0.789	0.770	1221	929	1.16e6	1.47e6	946.1	1579.7	NO	bb	bb	56.377
13C-12378-PeCDD	31.075	1.234	7.447e4	4.461e4	0.754	1.669	1.550	696	723	1.13e6	6.73e5	1620.1	931.2	NO	bb	bb	55.393
13C-123478-HxCDD	35.599	0.986	7.521e4	5.980e4	0.960	1.258	1.240	1461	1089	1.18e6	9.36e5	810.7	859.3	NO	bd	bd	58.339
13C-123678-HxCDD	35.710	0.989	8.927e4	6.760e4	1.159	1.321	1.240	1461	1089	1.21e6	9.66e5	826.0	886.5	NO	dd	db	56.132
13C-1234678-HpCDD	39.832	1.103	4.034e4	3.943e4	0.629	1.023	1.050	820	990	5.91e5	5.84e5	721.0	589.8	NO	bb	bb	52.582
13C-OCDD	44.408	1.230	6.348e4	6.910e4	0.635	0.919	0.890	2158	1255	6.92e5	7.69e5	320.6	612.3	NO	bd	bd	86.585
13C-123789-HxCDD	36.100	0.000	1.338e5	1.072e5	1.000	1.248	1.240	1461	1089	2.02e6	1.64e6	1379.3	1503.3	NO	bb	bb	100.000
37CL-2378-TCDD	26.000	1.033	1.177e5		1.157			768		1.73e6		2248.4			bb		35.656

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ID: BLK0112-BLK1, Name: 23121421, Date: 15-Dec-2023, Time: 02:20:02, 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					1.170		0.770	498	719								
1289-TCDF					0.847		0.770	498	719								
13468-PECDF					1.241		1.550	548	558								
12389-PECDF					0.880		1.550	467	685								
123468-HXCDF					1.206		1.240	428	451								
1368-TCDD					1.181		0.770	676	469								
1289-TCDD					0.963		0.770	676	469								
12479-PECDD					2.166		1.550	489	510								
12389-PECDD					1.326		1.550	489	510								
124679-HXCDD					1.127		1.240	509	488								
1234679-HPCDD	38.829	0.975	3.324e2	3.968e2	1.303	0.838	1.050	544	589	5.55e3	6.40e3	10.2	10.9	YES	bb	bb	0.702
Total-tetrafurans			0.000e0		0.973			498		0.00e0							
Total-penta1			0.000e0					548		0.00e0							
Total-pentafurans			0.000e0		0.931			467		0.00e0							
Total-hexafurans			0.000e0		1.087			428		0.00e0							
Total-heptafurans			3.272e2		1.134			564		6.61e3							0.540
Total-Furans			3.272e2		1.053			498		6.61e3							0.540
Total-tetradioxins			0.000e0		1.129			676		0.00e0							
Total-pentadioxins			0.000e0		1.548			489		0.00e0							
Total-hexadioxins			0.000e0		0.943			509		0.00e0							
Total-heptadioxins			7.481e2		1.251			544		8.78e3							1.565
Total-Dioxins			3.456e3		1.182			676		4.20e4							10.105
Total-TEQ			3.783e3					676		4.86e4							10.645
FUNCTION1 PFK			5.310e5					286373		1.14e7							
FUNCTION2 PFK			1.006e5					141268		3.01e6							0.000
FUNCTION3 PFK			1.274e5					210092		4.14e6							0.000
FUNCTION4 PFK			1.175e5					136345		3.37e6							
FUNCTION5 PFK			2.424e4					118074		8.98e5							
FUNCTION1 HXCD...			7.296e2					598		9.91e3							0.000
FUNCTION1 HPCD...																	
FUNCTION2 HPCD...			1.257e2					510		2.39e3							0.000
FUNCTION3 OCDPE			5.946e2					386		1.07e4							0.000
FUNCTION4 NCDPE			2.857e2					470		3.42e3							0.000
FUNCTION5 DCDPE			0.000e0					417		0.00e0							

Method: T:\Autospec\Methods\Dioxin231215.mdb 15 Dec 2023 13:28:43
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 09:45:18

ID: BLK0112-BLK1, Name: 23121421, Date: 15-Dec-2023, Time: 02:20:02, Conditions: AUTOSPEC01, User: pk

TF

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

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	1234678-HpCDF	38.38	3.272e2	2.888e2	1.164	1.13	1.05	11.7	YES	NO	bd	bd	0.540

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	1234678-HpCDF	38.38	3.272e2	2.888e2	1.164	1.13	1.05	11.7	YES	NO	bd	bd	0.540

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													

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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	39.85	7.481e2	7.497e2	1.200	1.00	1.05	16.1	YES	NO	bb	bb	1.565

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	1234678-HpCDD	39.85	7.481e2	7.497e2	1.200	1.00	1.05	16.1	YES	NO	bb	bb	1.565
2	OCDD	44.43	2.708e3	3.285e3	1.059	0.82	0.89	53.8	YES	NO	bb	bd	8.540

TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDF	38.38	3.272e2	2.888e2	1.164	1.13	1.05	11.7	YES	NO	bd	bd	0.540
2	1234678-HpCDD	39.85	7.481e2	7.497e2	1.200	1.00	1.05	16.1	YES	NO	bb	bb	1.565
3	OCDD	44.43	2.708e3	3.285e3	1.059	0.82	0.89	53.8	YES	NO	bb	bd	8.540

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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	21.32	3.877e4					2.2	NO		bd		
2	FUNCTION1 PFK	21.16	3.678e3					0.9	NO		bb		
3	FUNCTION1 PFK	23.88	4.419e3					0.6	NO		bd		
4	FUNCTION1 PFK	23.74	2.498e4					2.4	NO		db		
5	FUNCTION1 PFK	23.73	6.572e4					2.4	NO		bd		
6	FUNCTION1 PFK	22.86	1.733e4					1.2	NO		bb		
7	FUNCTION1 PFK	22.54	1.388e3					0.3	NO		bb		
8	FUNCTION1 PFK	22.40	1.465e3					0.4	NO		bb		
9	FUNCTION1 PFK	22.30	1.139e4					1.4	NO		db		
10	FUNCTION1 PFK	22.26	3.079e4					1.8	NO		dd		
11	FUNCTION1 PFK	22.16	4.766e4					2.3	NO		dd		
12	FUNCTION1 PFK	22.07	1.911e4					2.0	NO		bd		
13	FUNCTION1 PFK	21.92	7.465e4					2.7	NO		db		
14	FUNCTION1 PFK	21.85	1.188e4					1.5	NO		bd		
15	FUNCTION1 PFK	21.68	5.970e3					0.6	NO		bb		
16	FUNCTION1 PFK	21.54	1.657e4					1.1	NO		bb		
17	FUNCTION1 PFK	21.47	1.305e4					1.2	NO		db		
18	FUNCTION1 PFK	21.40	2.941e4					2.1	NO		dd		
19	FUNCTION1 PFK	27.30	4.464e3					0.8	NO		bb		
20	FUNCTION1 PFK	27.24	1.851e3					0.5	NO		bb		
21	FUNCTION1 PFK	26.99	2.389e3					0.6	NO		bb		
22	FUNCTION1 PFK	26.93	2.402e3					0.6	NO		bb		
23	FUNCTION1 PFK	26.64	1.644e3					0.4	NO		bb		
24	FUNCTION1 PFK	26.49	6.761e3					0.6	NO		bb		
25	FUNCTION1 PFK	26.35	1.815e3					0.5	NO		bb		
26	FUNCTION1 PFK	26.07	1.772e4					1.4	NO		bb		
27	FUNCTION1 PFK	25.94	1.302e4					1.2	NO		bb		
28	FUNCTION1 PFK	25.63	1.512e3					0.4	NO		bb		
29	FUNCTION1 PFK	25.56	1.610e4					1.1	NO		bb		
30	FUNCTION1 PFK	25.34	1.692e3					0.4	NO		bb		
31	FUNCTION1 PFK	24.93	1.667e3					0.4	NO		bb		
32	FUNCTION1 PFK	24.25	2.398e3					0.6	NO		bb		
33	FUNCTION1 PFK	23.99	1.147e4					0.9	NO		db		
34	FUNCTION1 PFK	23.94	1.016e4					1.2	NO		dd		
35	FUNCTION1 PFK	27.50	1.570e4					0.9	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	31.54	5.831e3					1.1	NO		bd		0.000
2	FUNCTION2 PFK	31.05	1.999e3					0.8	NO		bb		0.000
3	FUNCTION2 PFK	30.50	1.243e3					0.5	NO		bb		0.000
4	FUNCTION2 PFK	30.43	4.965e3					1.3	NO		bb		0.000
5	FUNCTION2 PFK	30.37	9.103e3					1.4	NO		bb		0.000
6	FUNCTION2 PFK	30.27	6.707e2					0.4	NO		bb		0.000
7	FUNCTION2 PFK	29.26	2.237e3					0.8	NO		bb		0.000
8	FUNCTION2 PFK	28.95	4.913e3					1.2	NO		bb		0.000
9	FUNCTION2 PFK	28.79	1.489e3					0.6	NO		bb		0.000
10	FUNCTION2 PFK	28.69	4.475e3					1.3	NO		bb		0.000
11	FUNCTION2 PFK	28.23	1.238e4					1.9	NO		db		0.000
12	FUNCTION2 PFK	28.19	9.777e3					1.6	NO		bd		0.000
13	FUNCTION2 PFK	27.88	1.033e4					1.4	NO		bb		0.000
14	FUNCTION2 PFK	27.79	6.905e3					2.1	NO		bb		0.000
15	FUNCTION2 PFK	32.36	3.392e3					1.0	NO		bb		0.000
16	FUNCTION2 PFK	32.14	2.633e3					0.8	NO		bb		0.000
17	FUNCTION2 PFK	31.71	1.320e4					1.7	NO		bb		0.000
18	FUNCTION2 PFK	31.60	5.082e3					1.3	NO		db		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	34.79	5.757e3					1.2	NO		bb		0.000
2	FUNCTION3 PFK	34.61	3.344e3					0.8	NO		bb		0.000
3	FUNCTION3 PFK	34.46	7.699e3					1.1	NO		bb		0.000
4	FUNCTION3 PFK	34.03	1.347e4					1.5	NO		bb		0.000
5	FUNCTION3 PFK	33.82	2.965e3					0.9	NO		bb		0.000
6	FUNCTION3 PFK	33.73	1.479e3					0.6	NO		bb		0.000
7	FUNCTION3 PFK	33.59	2.458e3					0.6	NO		bb		0.000
8	FUNCTION3 PFK	33.36	8.508e3					1.4	NO		bb		0.000
9	FUNCTION3 PFK	33.13	7.786e3					1.2	NO		bb		0.000
10	FUNCTION3 PFK	32.80	2.452e3					0.7	NO		bb		0.000
11	FUNCTION3 PFK	32.65	2.224e4					2.0	NO		bb		0.000
12	FUNCTION3 PFK	37.28	8.918e3					1.2	NO		bb		0.000
13	FUNCTION3 PFK	35.47	1.568e4					2.0	NO		bb		0.000
14	FUNCTION3 PFK	35.39	1.074e3					0.5	NO		bb		0.000
15	FUNCTION3 PFK	35.15	3.674e3					0.7	NO		bb		0.000
16	FUNCTION3 PFK	35.02	1.063e4					1.6	NO		db		0.000
17	FUNCTION3 PFK	34.99	9.267e3					1.7	NO		bd		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	40.62	7.902e2					0.5	NO		bb		
2	FUNCTION4 PFK	39.35	1.740e3					0.8	NO		bb		
3	FUNCTION4 PFK	39.09	4.406e3					1.3	NO		bb		
4	FUNCTION4 PFK	38.71	1.172e3					0.8	NO		bb		
5	FUNCTION4 PFK	38.14	5.827e3					1.6	NO		bb		
6	FUNCTION4 PFK	37.83	5.994e3					1.7	NO		db		
7	FUNCTION4 PFK	37.74	2.909e4					3.2	YES		bd		
8	FUNCTION4 PFK	37.65	1.033e4					2.3	NO		bb		
9	FUNCTION4 PFK	37.57	2.046e3					0.9	NO		bb		
10	FUNCTION4 PFK	42.52	6.932e3					1.5	NO		bb		
11	FUNCTION4 PFK	42.42	7.936e2					0.5	NO		bb		
12	FUNCTION4 PFK	42.37	7.388e3					2.1	NO		bb		
13	FUNCTION4 PFK	42.31	5.132e3					1.4	NO		bb		
14	FUNCTION4 PFK	41.85	9.450e3					1.2	NO		bb		
15	FUNCTION4 PFK	41.39	4.241e3					1.3	NO		bb		
16	FUNCTION4 PFK	41.20	5.919e3					1.5	NO		bb		
17	FUNCTION4 PFK	40.79	1.529e4					1.2	NO		bb		
18	FUNCTION4 PFK	40.70	9.951e2					0.7	NO		bb		

PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	44.98	2.398e3					1.0	NO		bb		
2	FUNCTION5 PFK	44.44	6.922e3					1.4	NO		bb		
3	FUNCTION5 PFK	43.99	1.700e3					0.9	NO		bb		
4	FUNCTION5 PFK	43.74	2.867e3					1.2	NO		bb		
5	FUNCTION5 PFK	43.25	5.651e3					1.5	NO		bb		
6	FUNCTION5 PFK	43.12	4.124e3					1.0	NO		bb		
7	FUNCTION5 PFK	45.49	5.811e2					0.5	NO		bb		

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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...	27.31	9.905e1					2.3	NO		bb		0.000
2	FUNCTION1 HXCD...	27.07	1.093e2					1.9	NO		bb		0.000
3	FUNCTION1 HXCD...	24.94	1.057e2					2.4	NO		db		0.000
4	FUNCTION1 HXCD...	24.90	7.534e1					2.0	NO		bd		0.000
5	FUNCTION1 HXCD...	24.35	7.568e1					2.4	NO		bb		0.000
6	FUNCTION1 HXCD...	23.87	1.074e2					2.4	NO		bb		0.000
7	FUNCTION1 HXCD...	23.56	7.397e1					1.8	NO		bb		0.000
8	FUNCTION1 HXCD...	21.75	8.313e1					1.5	NO		bb		0.000

ETHERS2

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

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	28.55	1.257e2					4.7	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	33.83	2.662e2					10.1	YES		db		0.000
2	FUNCTION3 OCDPE	33.66	8.734e1					3.2	YES		bd		0.000
3	FUNCTION3 OCDPE	32.69	2.411e2					14.5	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	42.42	9.647e1					2.8	NO		bb		0.000
2	FUNCTION4 NCDPE	38.50	9.305e1					2.5	NO		bb		0.000
3	FUNCTION4 NCDPE	37.88	9.616e1					2.0	NO		bb		0.000

ETHERS6

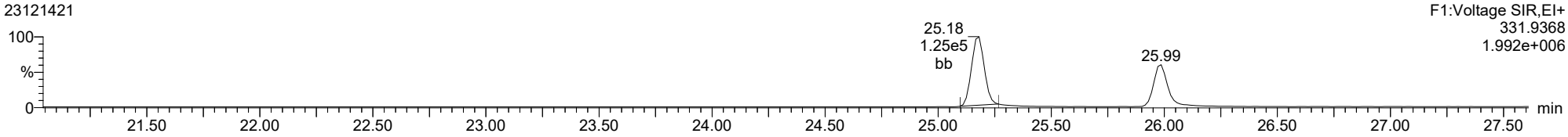
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1													

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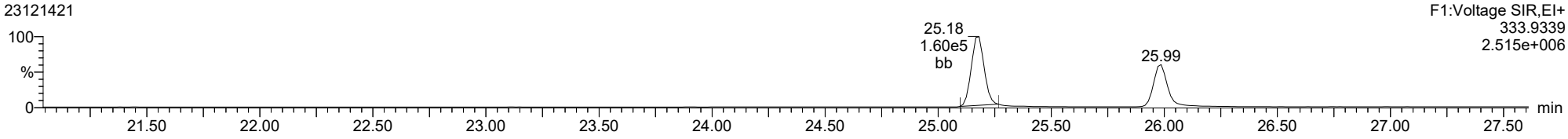
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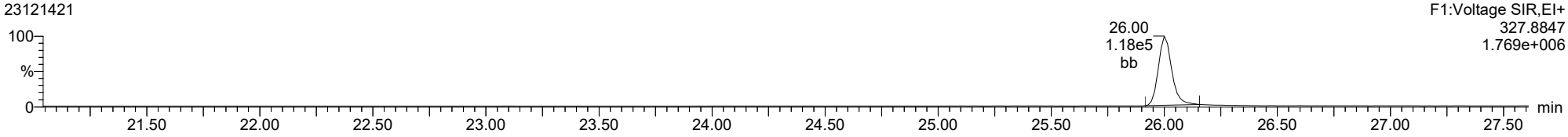
13C-1234-TCDD



13C-1234-TCDD



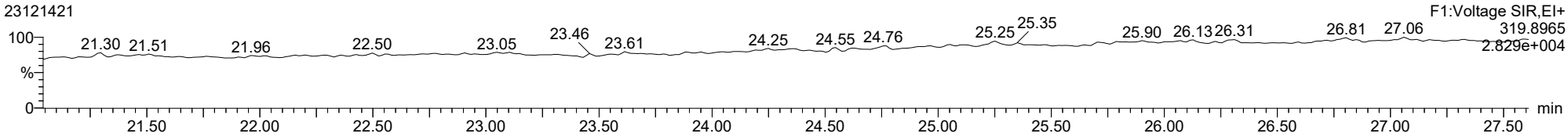
37CL-2378-TCDD



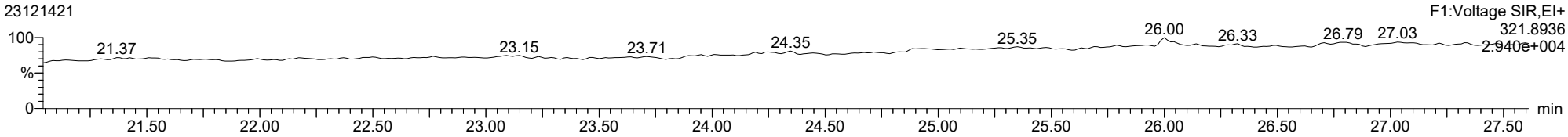
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Last Altered: Friday, December 15, 2023 13:51:44 Pacific Standard Time
Printed: Friday, December 15, 2023 13:56:18 Pacific Standard Time

ID: BLK0112-BLK1, Name: 23121421, Date: 15-Dec-2023, Time: 02:20:02, Conditions: AUTOSPEC01, User: pk

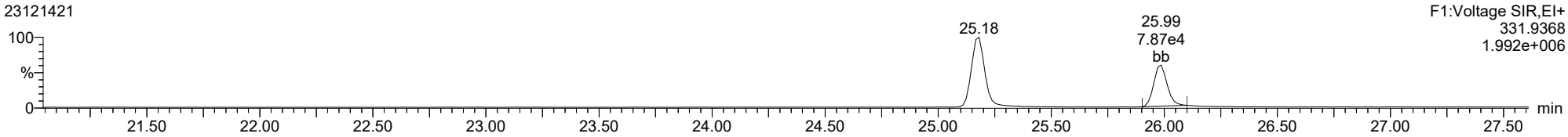
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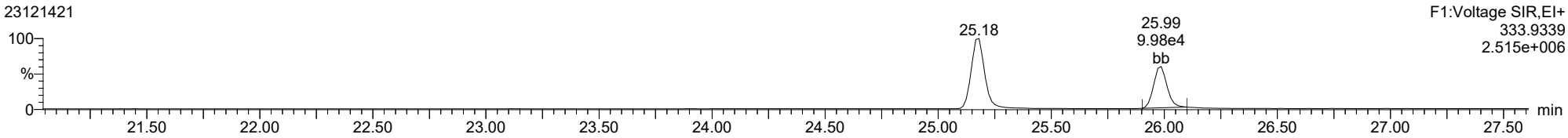
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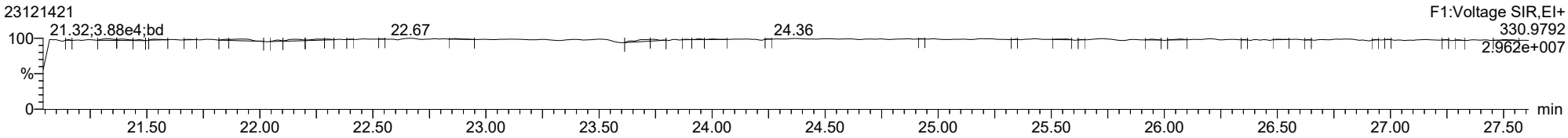
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13C-2378-TCDD

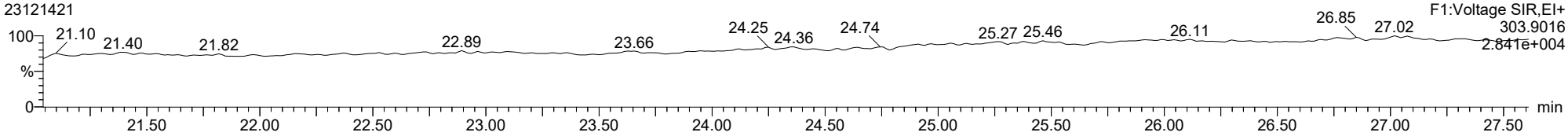


FUNCTION1 PFK

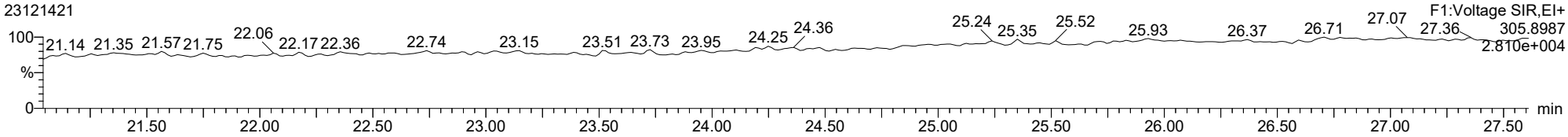


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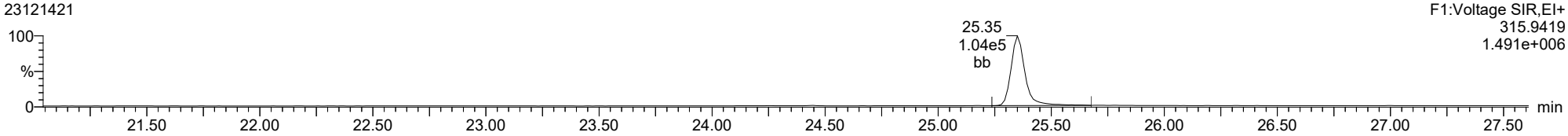
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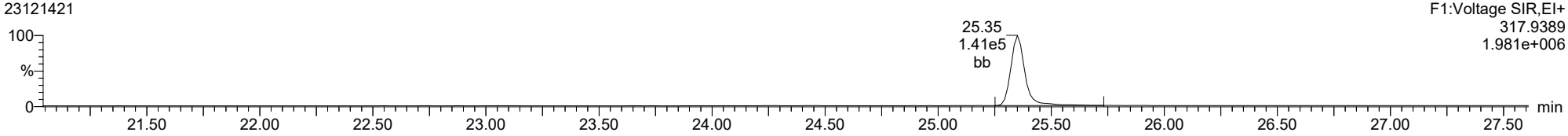
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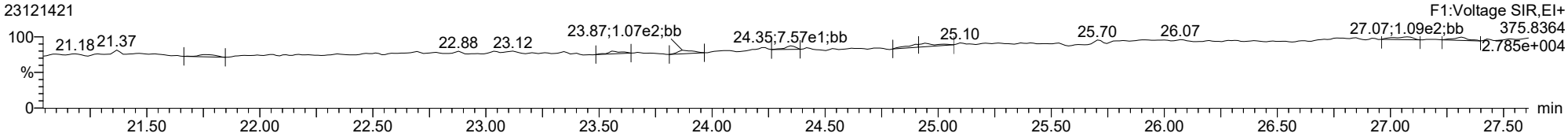
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13C-2378-TCDF

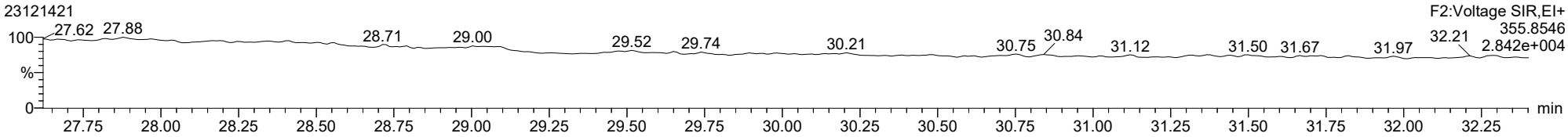


FUNCTION1 HXCDPE

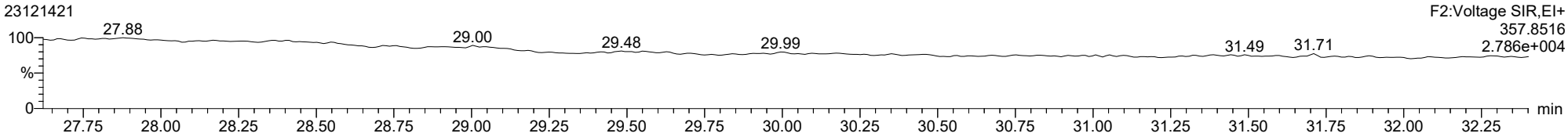


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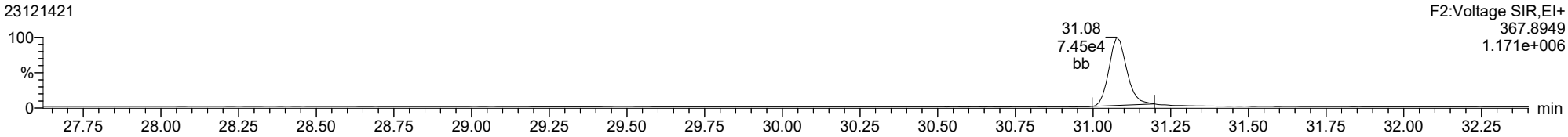
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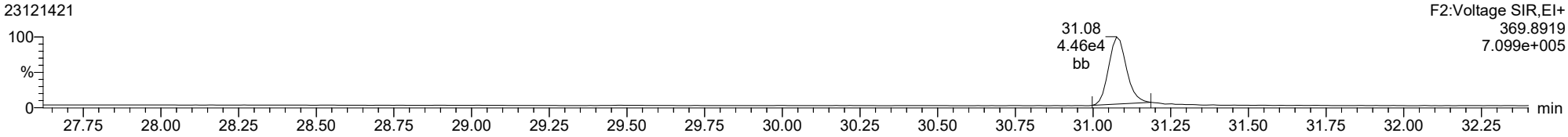
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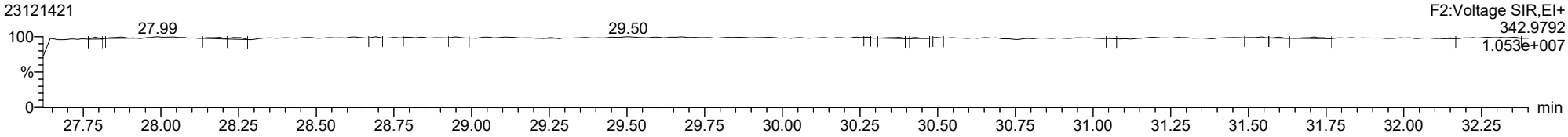
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13C-12378-PeCDD

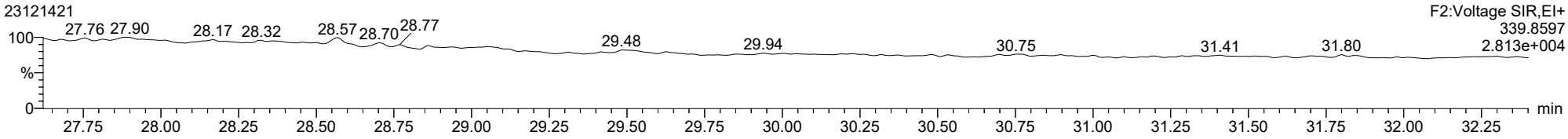


FUNCTION2 PFK

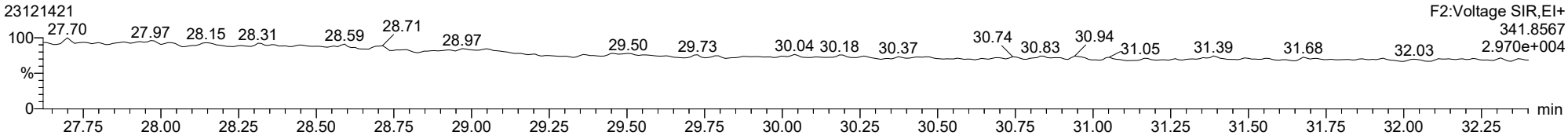


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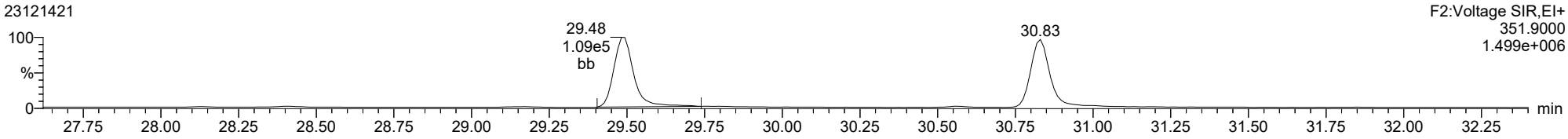
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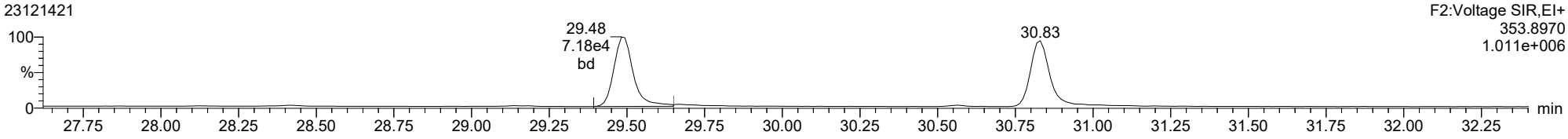
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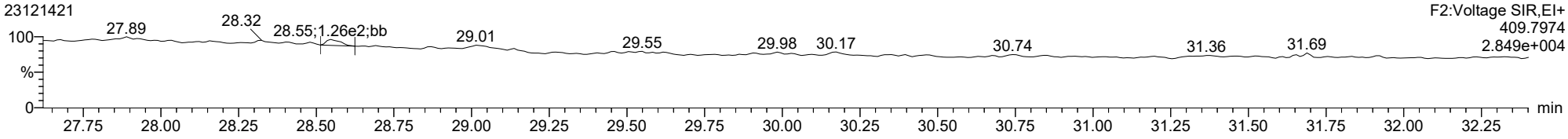
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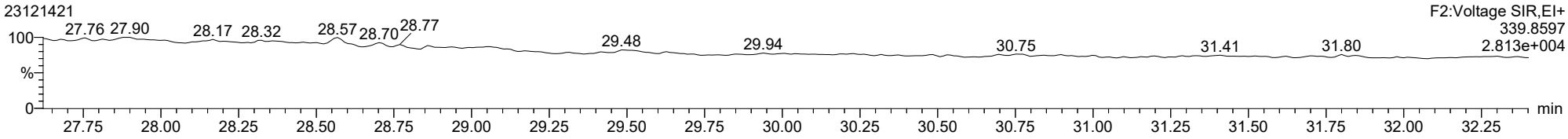


FUNCTION2 HPCDPE

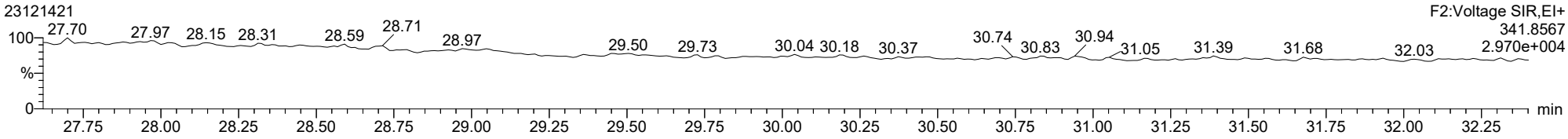


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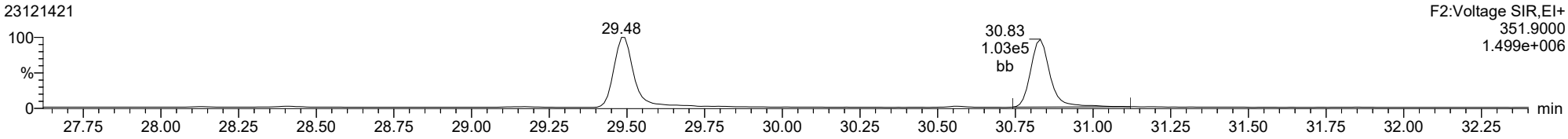
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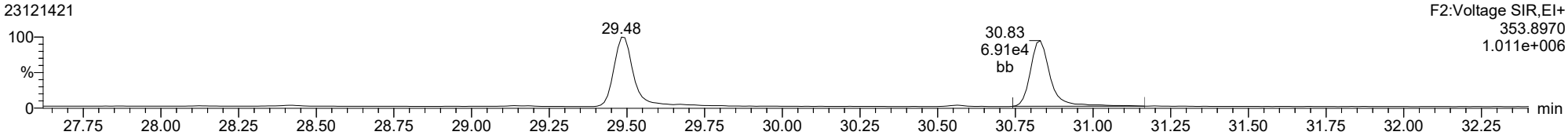
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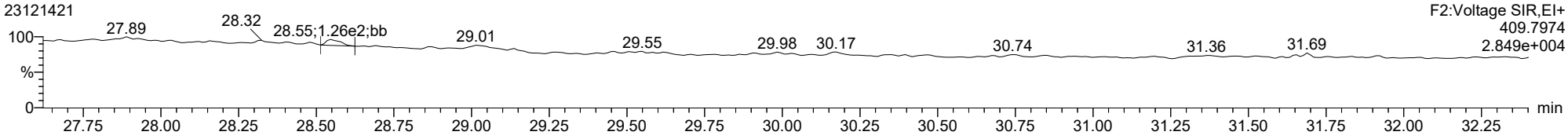
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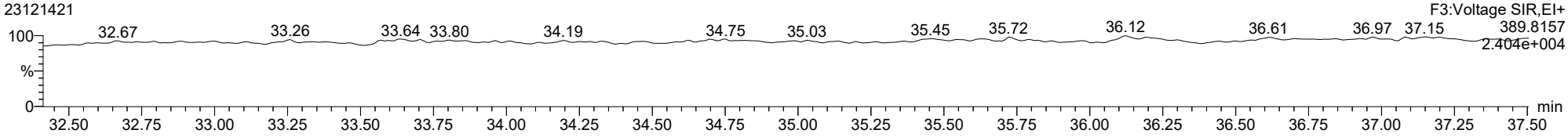


FUNCTION2 HPCDPE

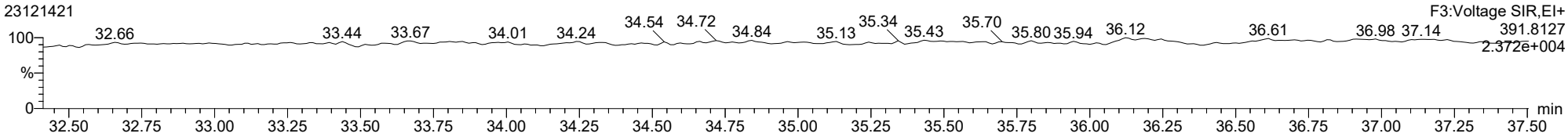


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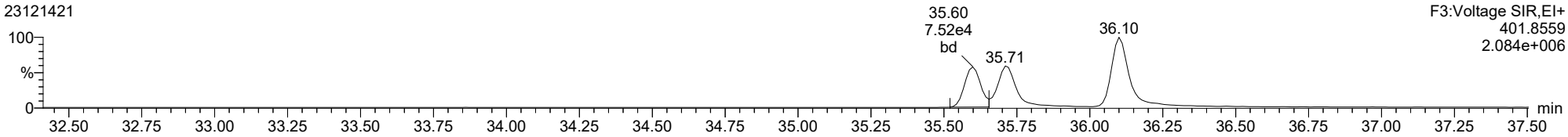
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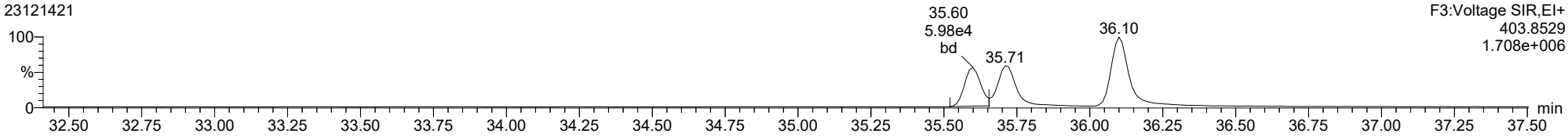
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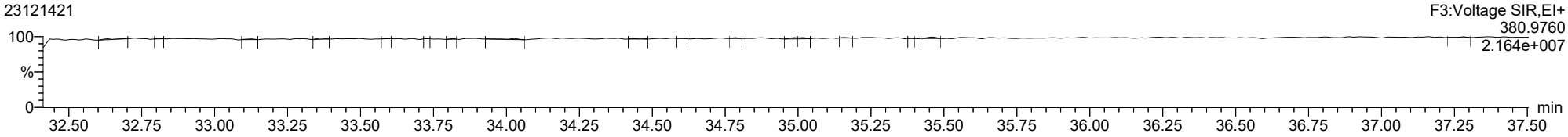
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13C-123478-HxCDD



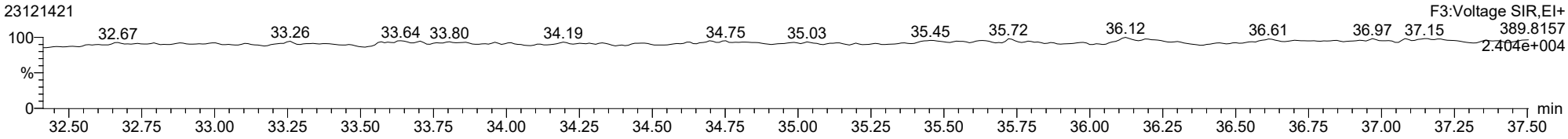
FUNCTION3 PFK



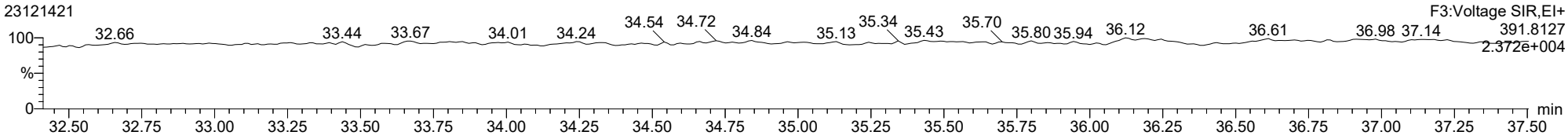
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ID: BLK0112-BLK1, Name: 23121421, Date: 15-Dec-2023, Time: 02:20:02, Conditions: AUTOSPEC01, User: pk

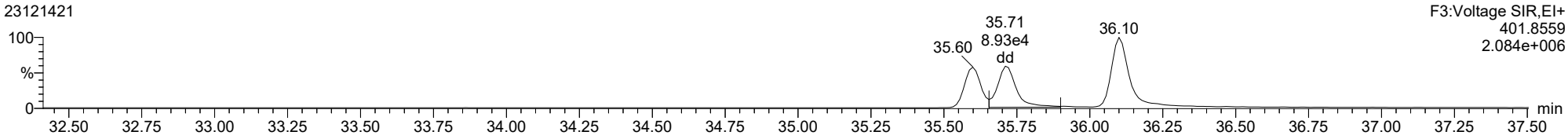
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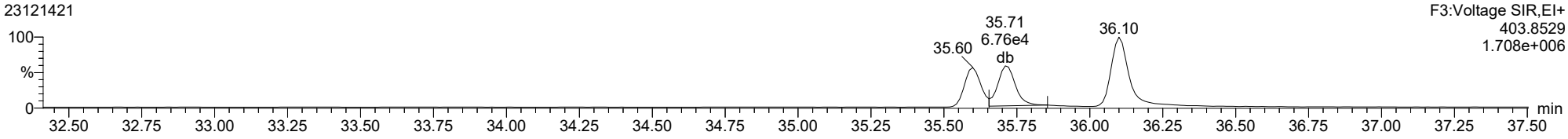
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13C-123678-HxCDD



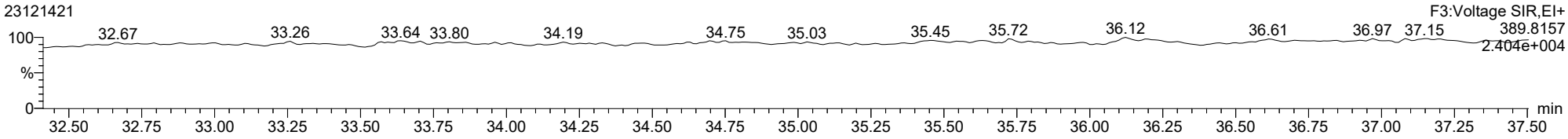
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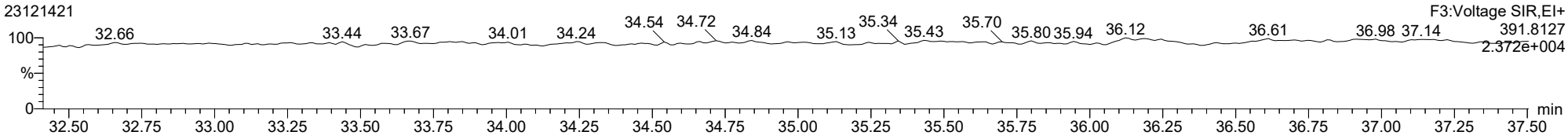
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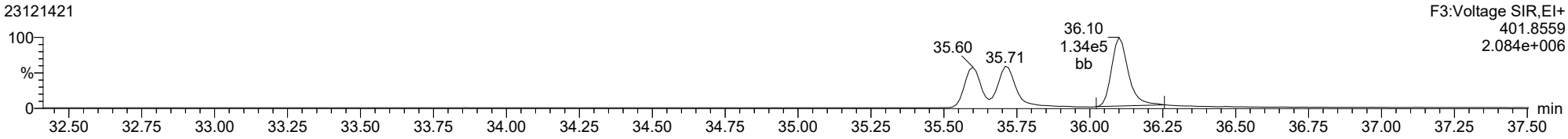
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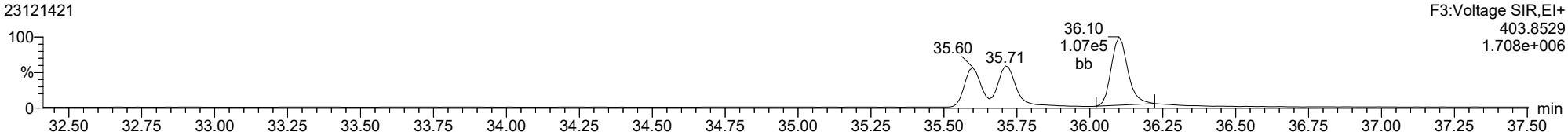
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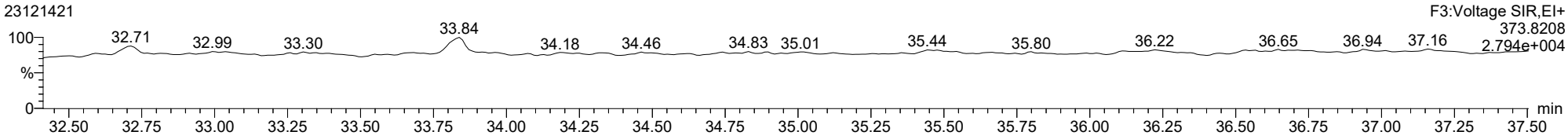
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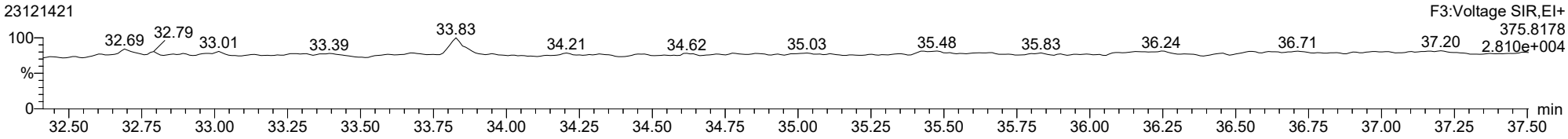
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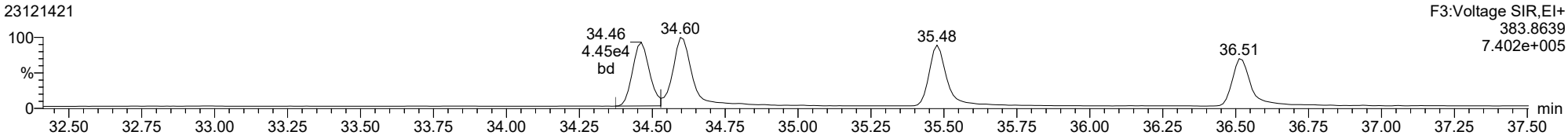
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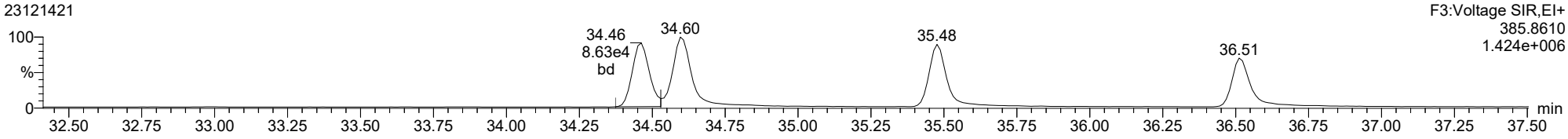
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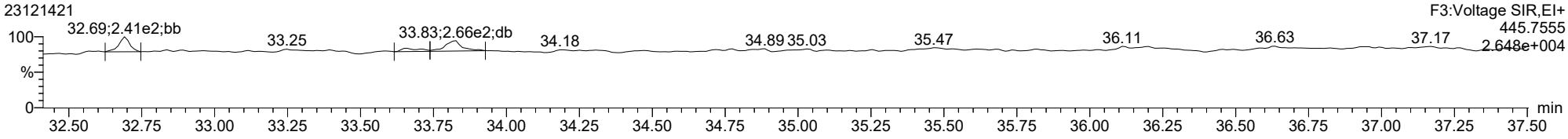
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13C-123478-HxCDF

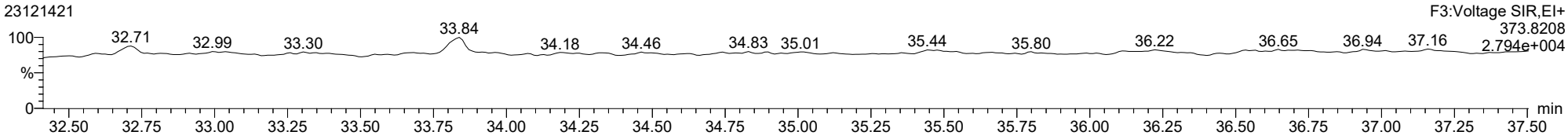


FUNCTION3 OCDPE

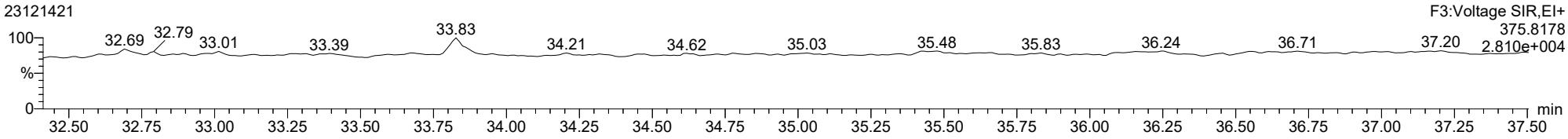


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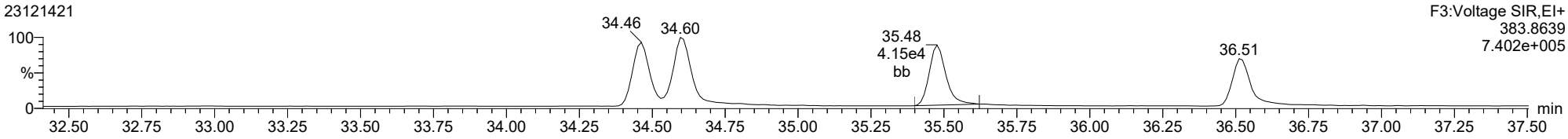
234678-HxCDF



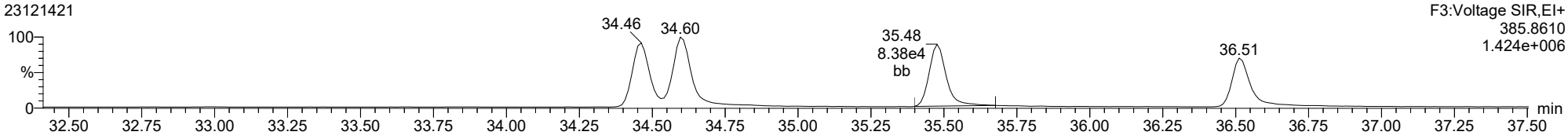
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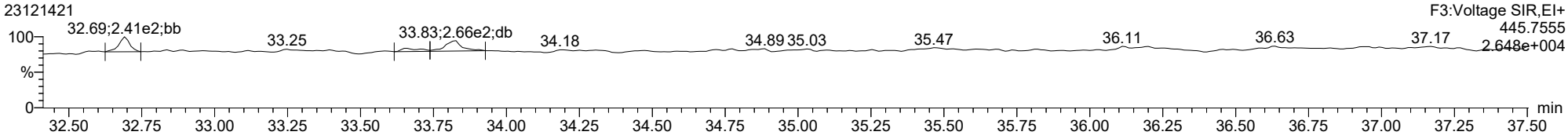
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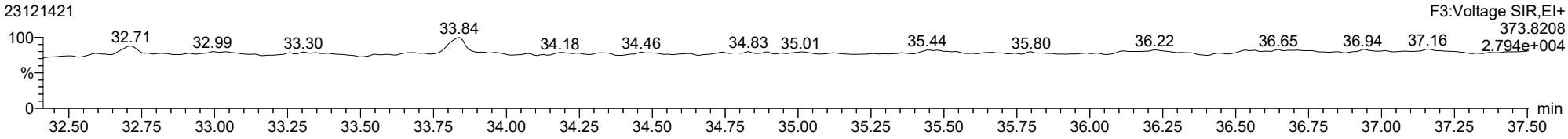


FUNCTION3 OCDPE

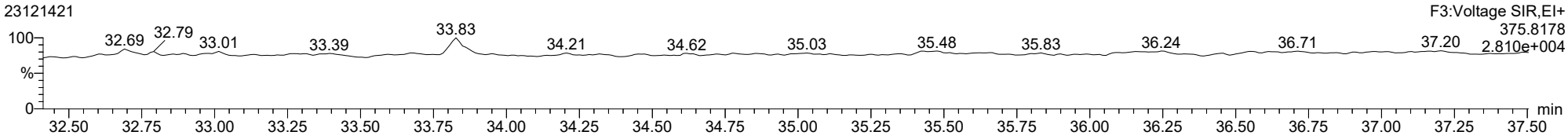


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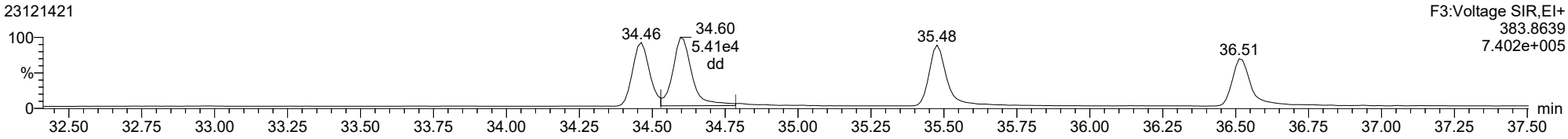
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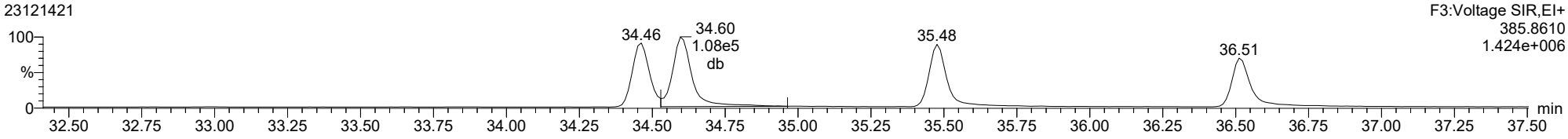
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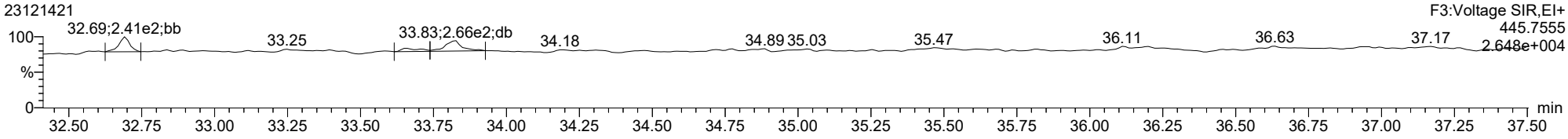
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13C-123678-HxCDF

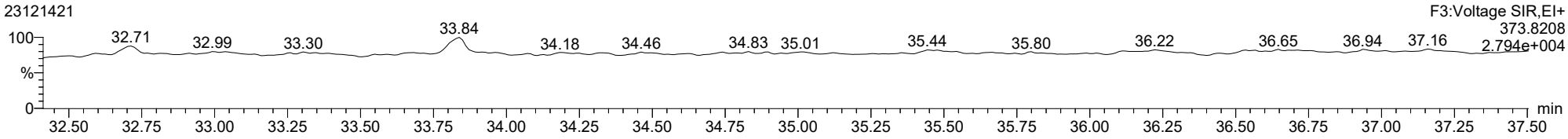


FUNCTION3 OCDPE

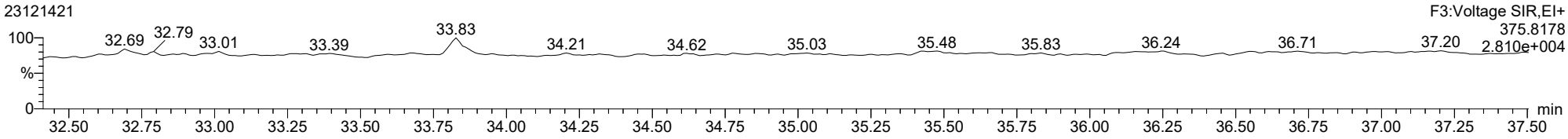


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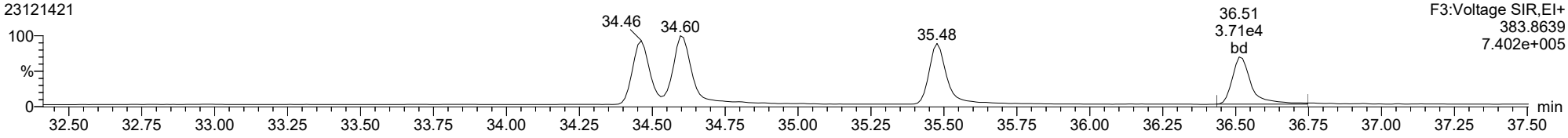
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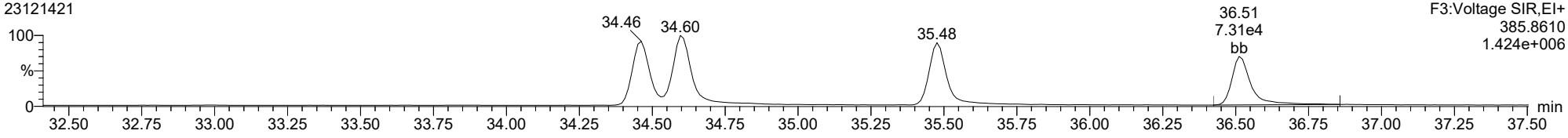
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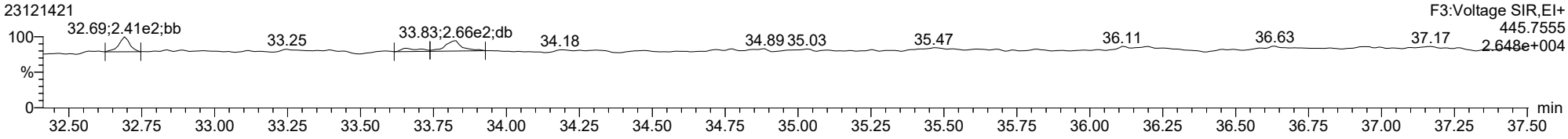
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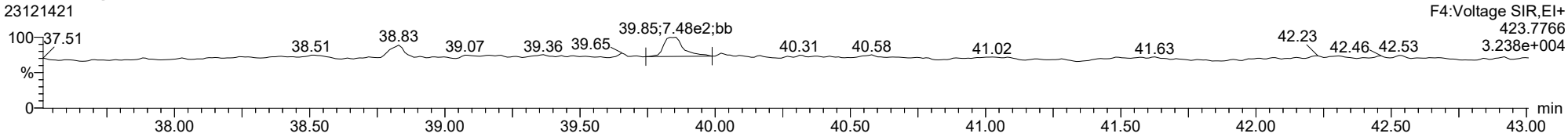


FUNCTION3 OCDPE

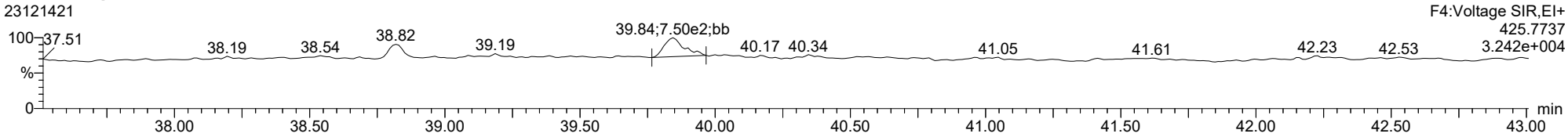


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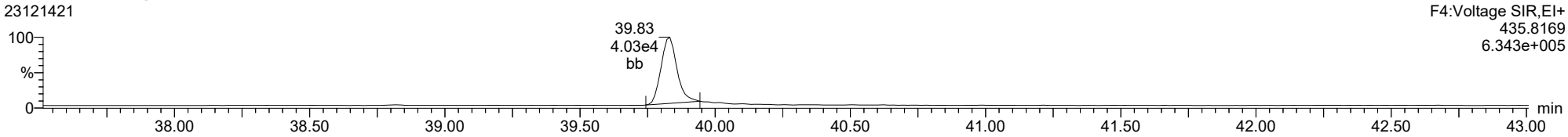
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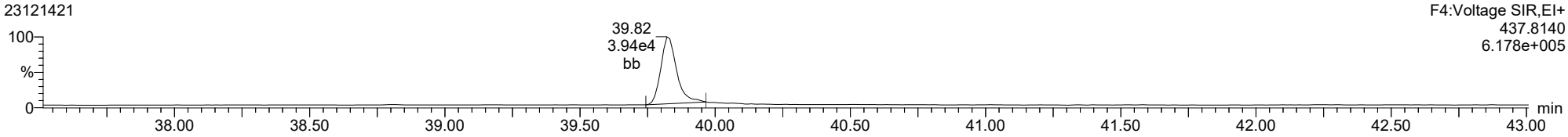
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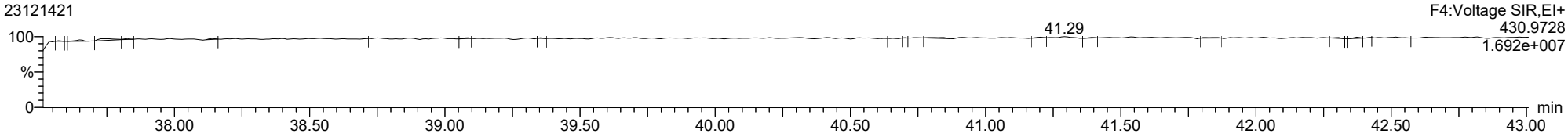
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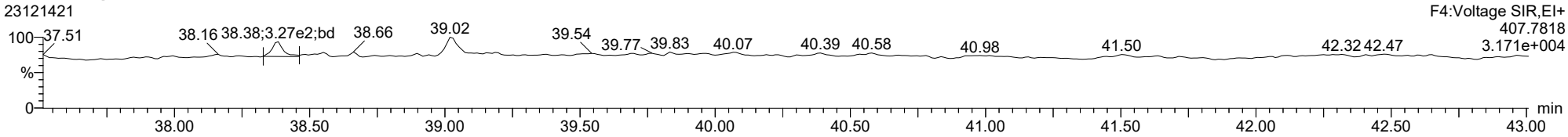


FUNCTION4 PFK

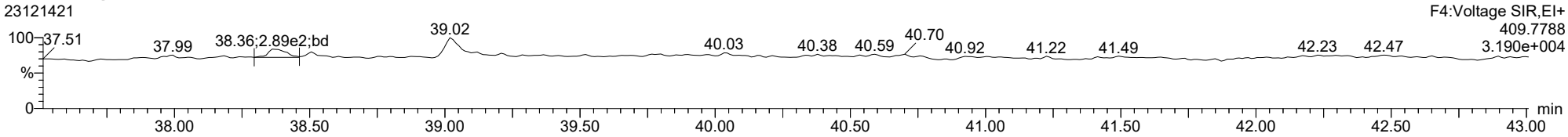


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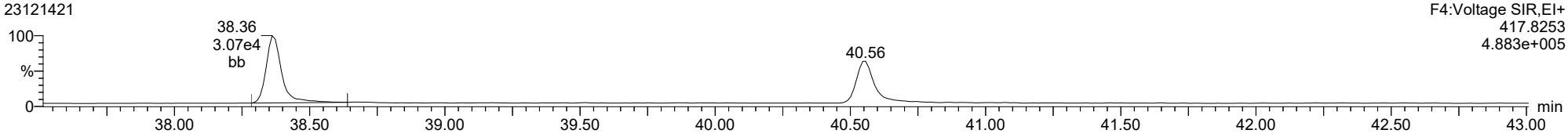
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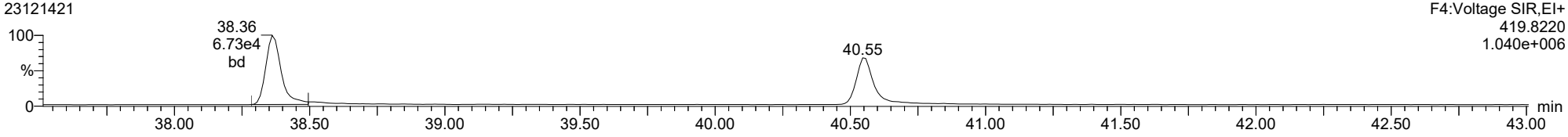
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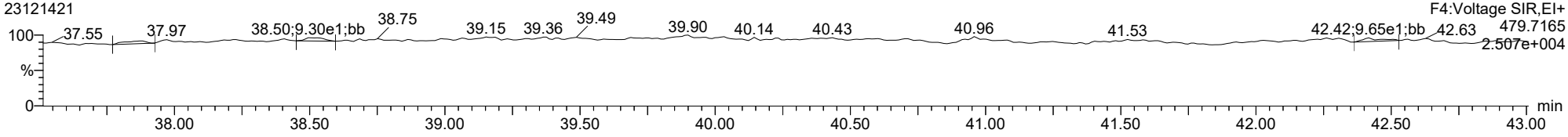
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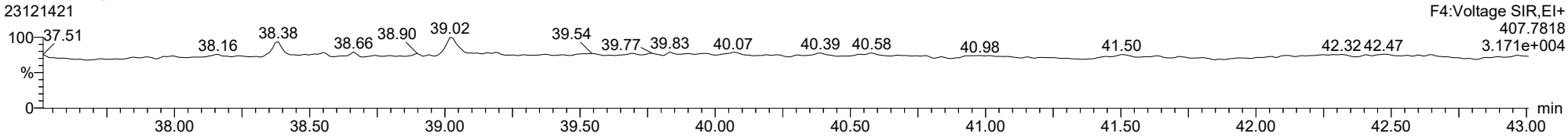


FUNCTION4 NCDPE

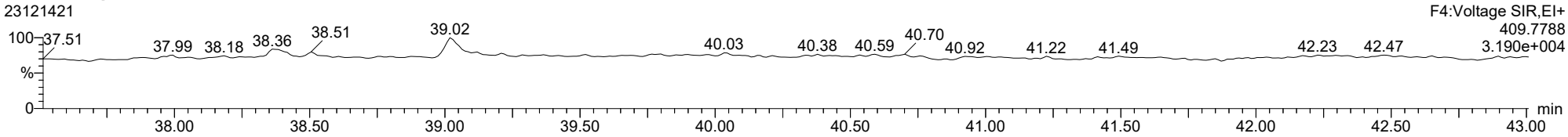


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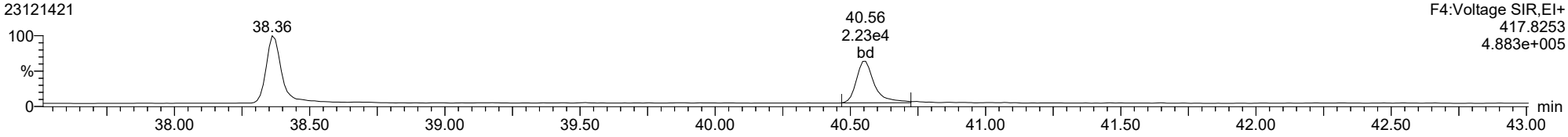
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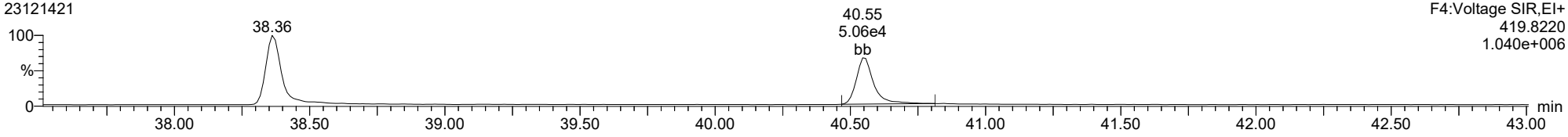
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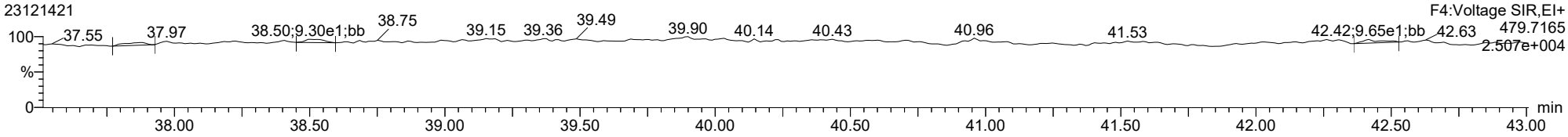
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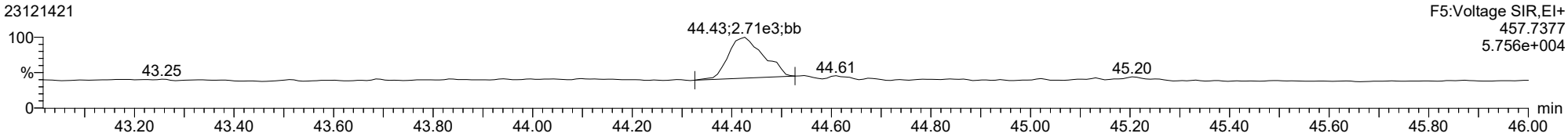


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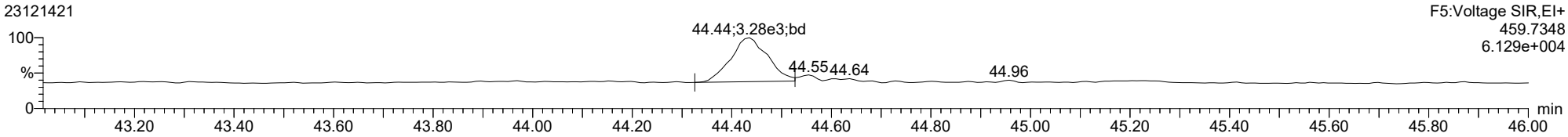


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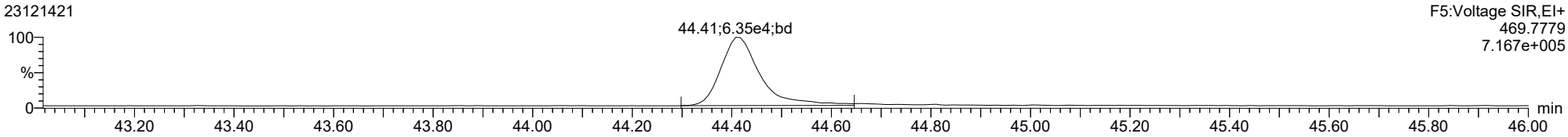
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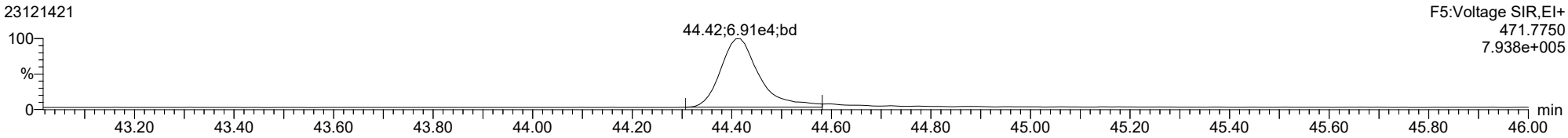
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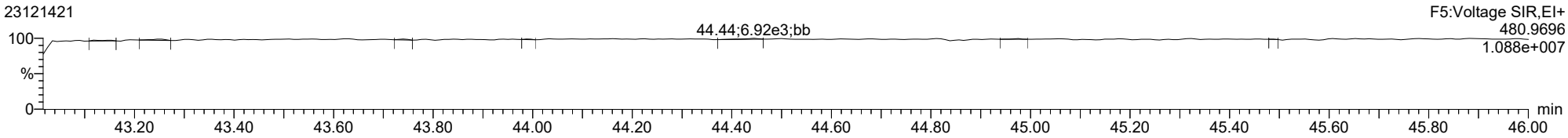
13C-OCDD



13C-OCDD



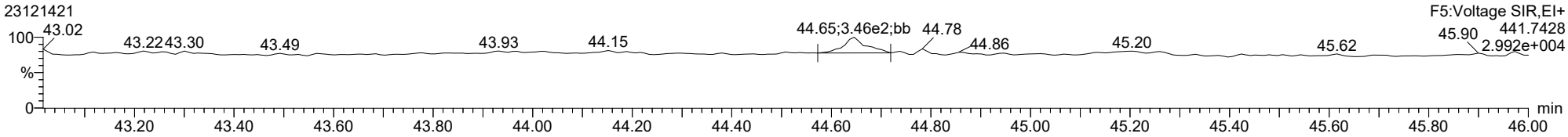
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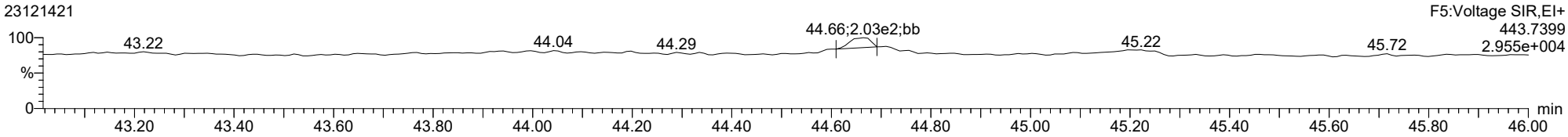
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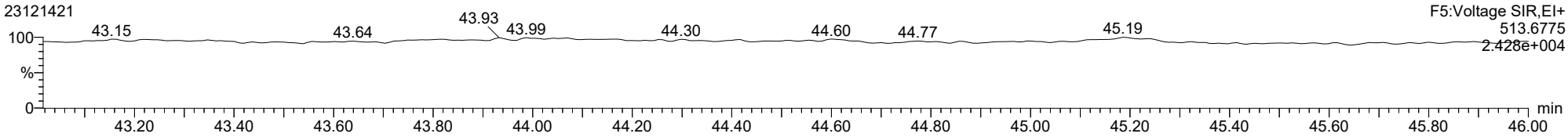
OCDF



OCDF



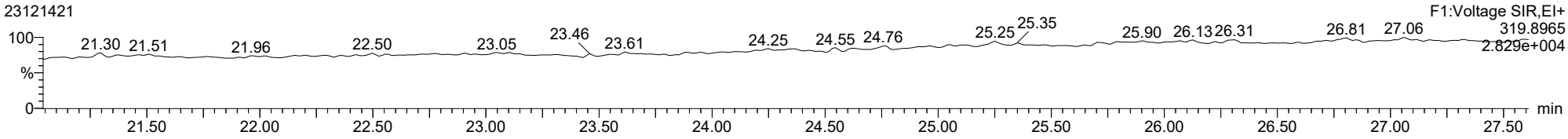
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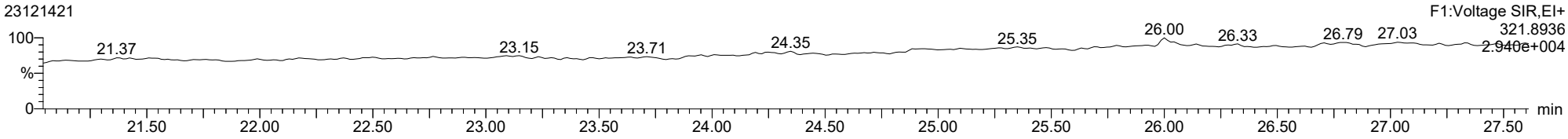
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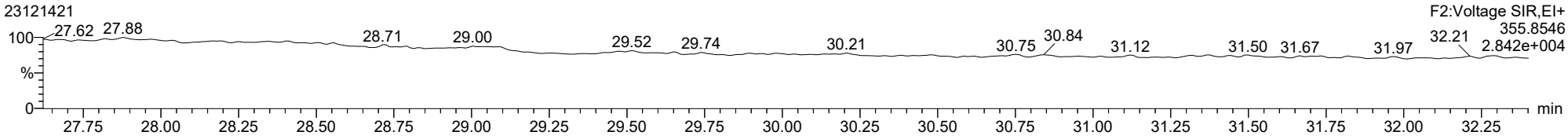
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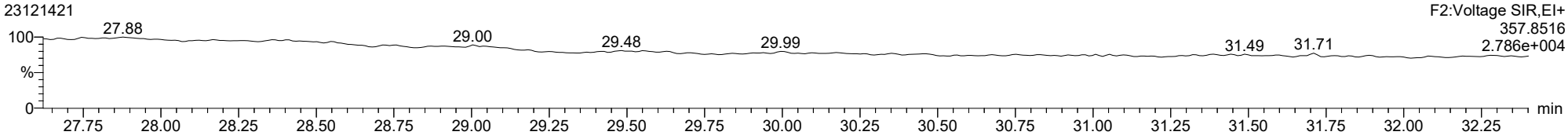
Total-tetradioxins



Total-pentadioxins



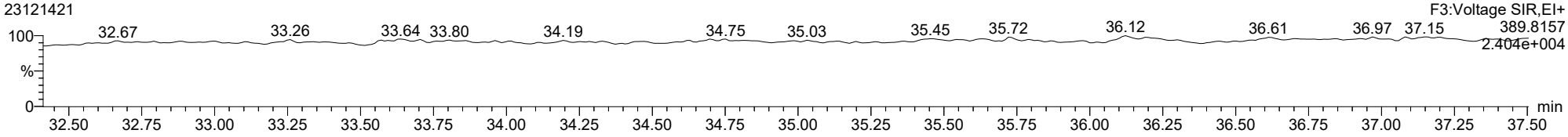
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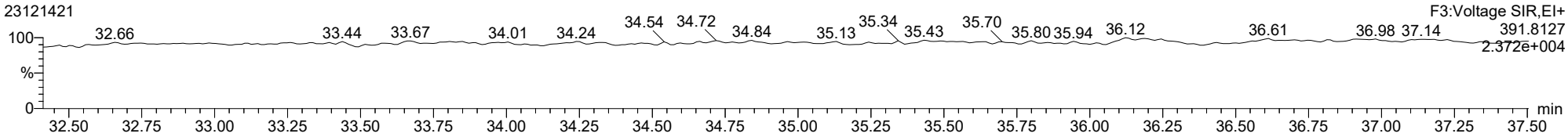
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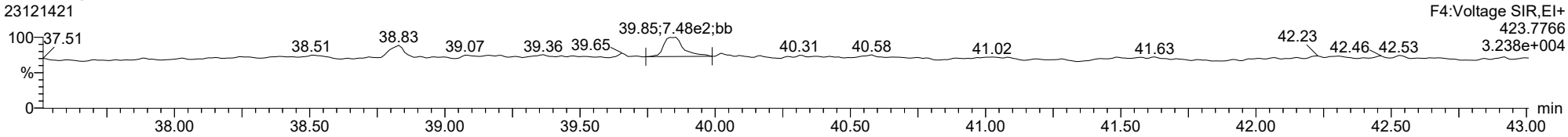
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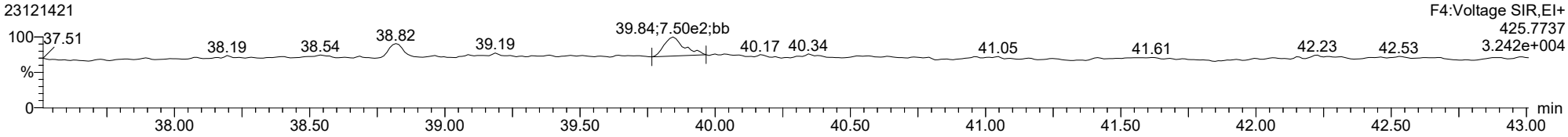
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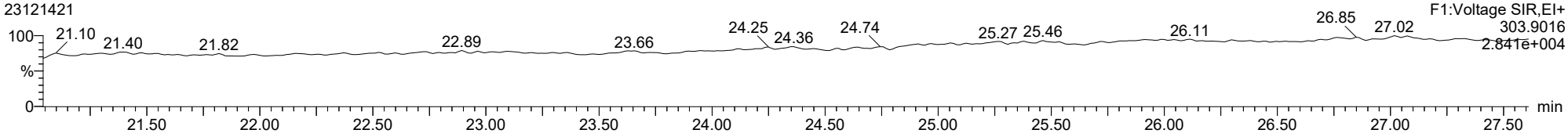


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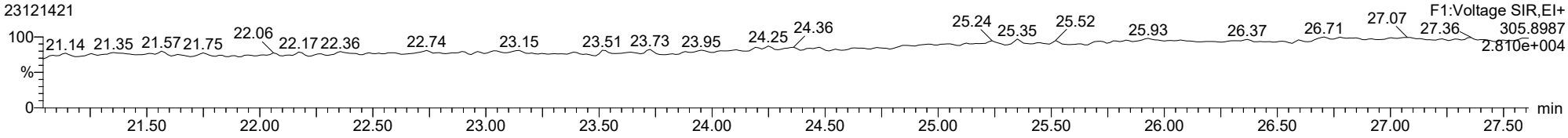


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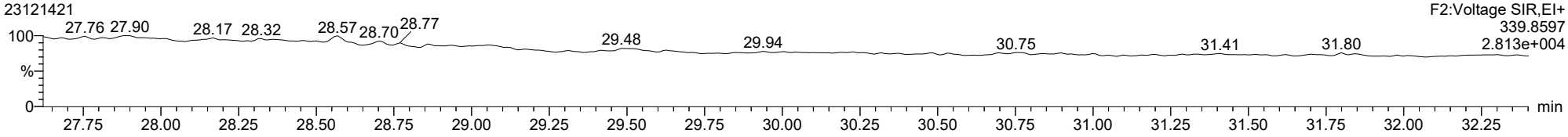
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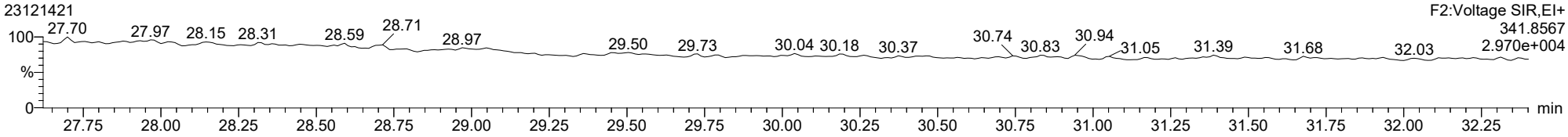
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Total-pentafurans

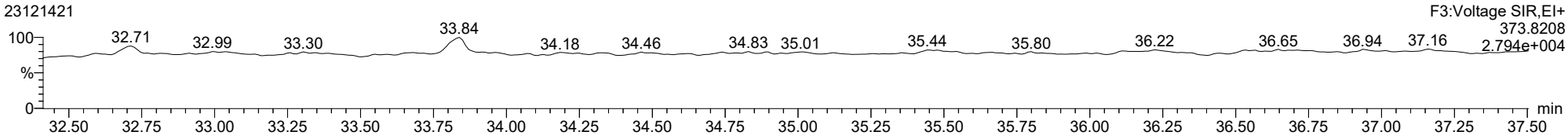


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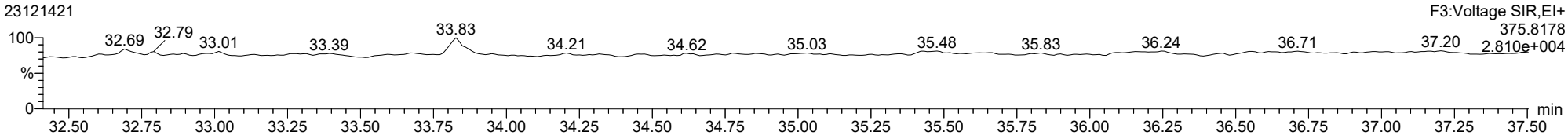


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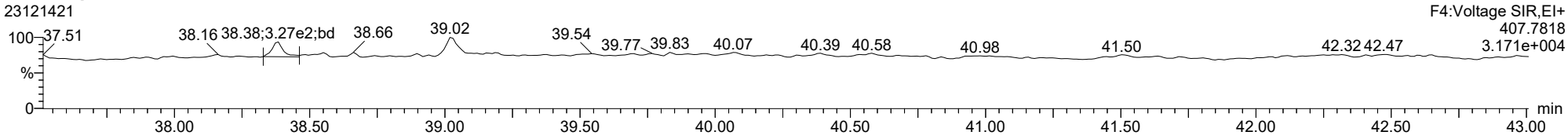
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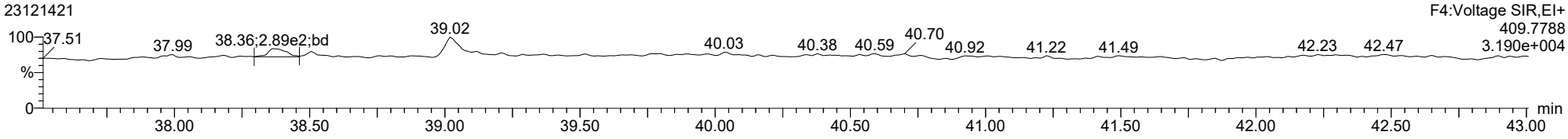
Total-hexafurans



Total-heptafurans



Total-heptafurans



LCS

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

Laboratory:	Analytical Resources, LLC			SDG:	23J0690
Client:	Leon Environmental, LLC			Project:	Port of Friday Harbor 2023
Matrix:	Solid	Laboratory ID:	BLK0112-BS1	File ID:	23121422
Sampled:	N/A	Prepared:	11/14/23 13:25	Analyzed:	12/15/23 03:08
Solids Wt%:		Preparation:	EPA 1613	Initial/Final:	10 g / 20 uL
Result Basis:	Dry	Sequence:	SLL0222	Calibration:	GH00041
Batch:	BLK0112	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	0.794	0.655-0.886	0.278	1.00	17.9	ng/kg	
1746-01-6	2,3,7,8-TCDD	1	0.780	0.655-0.886	0.289	1.00	16.4	ng/kg	
57117-41-6	1,2,3,7,8-PeCDF	1	1.544	1.318-1.783	0.432	1.00	90.9	ng/kg	
57117-31-4	2,3,4,7,8-PeCDF	1	1.564	1.318-1.783	0.463	1.00	95.5	ng/kg	
40321-76-4	1,2,3,7,8-PeCDD	1	1.557	1.318-1.783	0.342	1.00	80.7	ng/kg	
70648-26-9	1,2,3,4,7,8-HxCDF	1	1.337	1.054-1.426	0.515	1.00	90.9	ng/kg	
57117-44-9	1,2,3,6,7,8-HxCDF	1	1.337	1.054-1.426	0.542	1.00	91.1	ng/kg	
60851-34-5	2,3,4,6,7,8-HxCDF	1	1.196	1.054-1.426	0.554	1.00	92.7	ng/kg	
72918-21-9	1,2,3,7,8,9-HxCDF	1	1.248	1.054-1.426	0.683	1.00	93.7	ng/kg	
39227-28-6	1,2,3,4,7,8-HxCDD	1	1.200	1.054-1.426	0.354	1.00	75.0	ng/kg	
57653-85-7	1,2,3,6,7,8-HxCDD	1	1.225	1.054-1.426	0.361	1.00	84.2	ng/kg	
19408-74-3	1,2,3,7,8,9-HxCDD	1	1.223	1.054-1.426	0.408	1.00	88.1	ng/kg	
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	1.093	0.893-1.208	0.646	1.00	99.0	ng/kg	B
55673-89-7	1,2,3,4,7,8,9-HpCDF	1	0.995	0.893-1.208	0.997	1.00	101	ng/kg	
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.043	0.893-1.208	0.554	2.50	83.2	ng/kg	B
39001-02-0	OCDF	1	0.899	0.757-1.024	1.45	2.50	173	ng/kg	B
3268-87-9	OCDD	1	0.868	0.757-1.024	1.27	10.0	179	ng/kg	B

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 194.8
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 194.8

LCS

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

Laboratory:	Analytical Resources, LLC			SDG:	23J0690
Client:	Leon Environmental, LLC			Project:	Port of Friday Harbor 2023
Matrix:	Solid	Laboratory ID:	BLK0112-BS1	File ID:	23121422
Sampled:	N/A	Prepared:	11/14/23 13:25	Analyzed:	12/15/23 03:08
Solids Wt%:	0.00	Preparation:	EPA 1613	Initial/Final:	10 g / 20 uL
Result Basis:	Dry	Sequence:	SLL0222	Calibration:	GH00041
Batch:	BLK0112	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF	1	0.751	0.655-0.886	0.13	42.0	24 - 169 %	
13C12-2,3,7,8-TCDD	1	0.796	0.655-0.886	0.25	54.4	25 - 164 %	
13C12-1,2,3,7,8-PeCDF	1	1.530	1.318-1.783	0.26	57.4	24 - 185 %	
13C12-2,3,4,7,8-PeCDF	1	1.510	1.318-1.783	0.28	53.4	21 - 178 %	
13C12-1,2,3,7,8-PeCDD	1	1.599	1.318-1.783	0.31	67.4	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF	1	0.519	0.434-0.587	0.50	62.1	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF	1	0.491	0.434-0.587	0.41	57.4	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF	1	0.493	0.434-0.587	0.50	60.9	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF	1	0.526	0.434-0.587	0.58	65.4	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD	1	1.240	1.054-1.426	0.63	74.9	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD	1	1.217	1.054-1.426	0.52	73.7	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF	1	0.465	0.374-0.506	0.42	52.1	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF	1	0.442	0.374-0.506	0.55	52.0	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD	1	1.055	0.893-1.208	0.52	67.8	23 - 140 %	
13C12-OCDD	1	0.879	0.757-1.024	0.78	56.7	17 - 157 %	
37Cl4-2,3,7,8-TCDD	1	328.000		0.11	64.6	35 - 197 %	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\231214IH1.qld
Last Altered: Friday, December 15, 2023 13:51:44 Pacific Standard Time
Printed: Friday, December 15, 2023 13:56:31 Pacific Standard Time

Method: T:\Autospec\Methods\Dioxin231215.mdb 15 Dec 2023 13:28:43
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 09:45:18

ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, 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	25.379	1.001	6.293e3	7.931e3	0.903	0.794	0.770	482	591	9.70e4	1.07e5	201.4	180.9	NO	bd	bd	8.945
12378-PeCDF	29.516	1.001	4.595e4	2.977e4	0.923	1.544	1.550	762	926	7.00e5	4.66e5	919.6	502.9	NO	bb	bb	45.435
23478-PeCDF	30.853	1.000	4.571e4	2.923e4	0.991	1.564	1.550	762	926	7.04e5	4.53e5	924.8	489.7	NO	bb	bb	47.728
123478-HxCDF	34.485	1.001	3.706e4	2.771e4	1.128	1.337	1.240	945	952	5.64e5	4.38e5	597.5	460.1	NO	bd	bd	45.466
234678-HxCDF	35.499	1.000	3.393e4	2.837e4	1.081	1.196	1.240	945	952	5.25e5	4.36e5	555.8	458.3	NO	bb	bd	46.368
123678-HxCDF	34.630	1.001	3.859e4	2.886e4	1.032	1.337	1.240	945	952	5.55e5	4.37e5	587.9	459.1	NO	db	db	45.547
123789-HxCDF	36.535	1.000	2.981e4	2.389e4	0.988	1.248	1.240	945	952	4.45e5	3.76e5	471.3	394.6	NO	bb	bb	46.849
1234678-HpCDF	38.384	1.000	2.875e4	2.631e4	1.164	1.093	1.050	961	834	4.57e5	4.19e5	475.0	502.7	NO	bb	bb	49.483
1234789-HpCDF	40.568	1.000	2.046e4	2.056e4	1.104	0.995	1.050	961	834	3.02e5	2.91e5	313.9	348.5	NO	bb	bd	50.728
OCDF	44.664	1.006	3.116e4	3.466e4	1.130	0.899	0.890	766	1448	3.55e5	3.98e5	463.4	274.7	NO	bd	bd	86.730
2378-TCDD	26.014	1.001	6.135e3	7.868e3	1.243	0.780	0.770	784	479	8.84e4	1.13e5	112.9	235.5	NO	bd	bb	8.178
12378-PeCDD	31.109	1.001	3.274e4	2.103e4	1.150	1.557	1.550	571	580	4.60e5	3.11e5	805.7	535.9	NO	bd	bd	40.333
123478-HxCDD	35.621	1.000	2.633e4	2.193e4	0.960	1.200	1.240	598	592	4.27e5	3.53e5	713.9	596.6	NO	bd	bd	37.504
123678-HxCDD	35.732	1.000	3.260e4	2.661e4	0.883	1.225	1.240	598	592	4.65e5	3.78e5	778.2	637.6	NO	db	dd	42.113
123789-HxCDD	36.122	1.011	2.856e4	2.335e4	0.804	1.223	1.240	598	592	4.36e5	3.46e5	730.0	583.7	NO	bd	bd	44.033
1234678-HpCDD	39.843	1.000	2.025e4	1.942e4	1.200	1.043	1.050	637	770	2.90e5	2.83e5	455.8	367.2	NO	bd	bd	41.584
OCDD	44.435	1.000	2.956e4	3.404e4	1.059	0.868	0.890	1154	662	3.36e5	3.78e5	291.2	571.6	NO	bd	bd	89.463
13C-2378-TCDF	25.365	1.007	7.554e4	1.005e5	1.835	0.751	0.770	736	645	1.10e6	1.42e6	1495.8	2204.2	NO	bb	dd	42.021
13C-12378-PeCDF	29.493	1.171	1.092e5	7.135e4	1.377	1.530	1.550	1127	992	1.53e6	1.02e6	1361.0	1032.2	NO	bd	bd	57.437
13C-23478-PeCDF	30.841	1.225	9.537e4	6.314e4	1.301	1.510	1.550	1127	992	1.33e6	8.95e5	1179.1	902.4	NO	bd	bb	53.353
13C-123478-HxCDF	34.462	0.954	4.315e4	8.313e4	1.091	0.519	0.510	1262	1449	6.70e5	1.27e6	531.0	876.9	NO	bd	bd	62.102
13C-123678-HxCDF	34.607	0.958	4.726e4	9.618e4	1.340	0.491	0.510	1262	1449	6.70e5	1.33e6	531.4	916.8	NO	db	dd	57.405
13C-234678-HxCDF	35.487	0.983	4.104e4	8.321e4	1.093	0.493	0.510	1262	1449	6.27e5	1.19e6	497.1	822.8	NO	bb	bb	60.944
13C-123789-HxCDF	36.523	1.011	4.003e4	7.603e4	0.952	0.526	0.510	1262	1449	5.82e5	1.10e6	461.5	757.6	NO	bb	bb	65.418
13C-1234678-HpCDF	38.373	1.063	3.036e4	6.526e4	0.985	0.465	0.440	787	1243	4.55e5	9.79e5	578.7	788.0	NO	bb	bb	52.070
13C-1234789-HpCDF	40.556	1.123	2.248e4	5.080e4	0.756	0.442	0.440	787	1243	3.00e5	7.08e5	381.6	570.0	NO	bb	bb	52.003
13C-1234-TCDD	25.181	0.000	1.013e5	1.270e5	1.000	0.798	0.770	905	679	1.55e6	1.94e6	1713.6	2862.0	NO	bb	bb	100.000
13C-2378-TCDD	26.000	1.033	6.107e4	7.668e4	1.110	0.796	0.770	905	679	9.35e5	1.16e6	1033.6	1704.2	NO	bb	bb	54.379
13C-12378-PeCDD	31.087	1.235	7.132e4	4.459e4	0.754	1.599	1.550	771	587	1.08e6	6.87e5	1400.1	1170.0	NO	bb	bb	67.358
13C-123478-HxCDD	35.610	0.986	7.418e4	5.985e4	0.960	1.240	1.240	1946	1015	1.16e6	9.36e5	598.5	921.4	NO	bd	bd	74.894
13C-123678-HxCDD	35.721	0.989	8.744e4	7.186e4	1.159	1.217	1.240	1946	1015	1.23e6	1.03e6	632.8	1010.5	NO	db	db	73.702
13C-1234678-HpCDD	39.832	1.103	4.081e4	3.870e4	0.629	1.055	1.050	789	815	6.53e5	5.93e5	827.3	727.5	NO	bb	bb	67.770
13C-OCDD	44.417	1.230	6.282e4	7.148e4	0.635	0.879	0.890	1024	1404	7.59e5	8.65e5	741.0	615.9	NO	bb	bb	113.415
13C-123789-HxCDD	36.111	0.000	1.033e5	8.314e4	1.000	1.243	1.240	1946	1015	1.64e6	1.30e6	840.8	1279.8	NO	bb	bb	100.000
37CL-2378-TCDD	26.014	1.033	6.823e4		1.157			719		1.08e6		1495.8			bb		25.820

Dataset: T:\Autospec\Processed Data Batch\231214IH1.qld
Last Altered: Friday, December 15, 2023 13:51:44 Pacific Standard Time
Printed: Friday, December 15, 2023 13:56:31 Pacific Standard Time

ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, 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					1.170		0.770	482	591								
1289-TCDF					0.847		0.770	482	591								
13468-PECDF	26.791	0.908	2.020e2	2.037e2	1.241	0.992	1.550	478	607	2.66e3	2.45e3	5.6	4.0	YES	bb	bb	0.181
12389-PECDF					0.880		1.550	762	926								
123468-HXCDF					1.206		1.240	945	952								
1368-TCDD					1.181		0.770	784	479								
1289-TCDD					0.963		0.770	784	479								
12479-PECDD					2.166		1.550	571	580								
12389-PECDD					1.326		1.550	571	580								
124679-HXCDD					1.127		1.240	598	592								
1234679-HPCDD	38.830	0.975	7.137e2	7.022e2	1.303	1.016	1.050	637	770	1.18e4	1.05e4	18.5	13.6	NO	bd	bb	1.367
Total-tetrafurans			6.293e3		0.973			482		9.70e4							8.945
Total-penta1			0.000e0					478		0.00e0							
Total-pentafurans			9.193e4		0.931			762		1.41e6							93.434
Total-hexafurans			1.397e5		1.087			945		2.10e6							184.616
Total-heptafurans			4.970e4		1.134			961		7.66e5							101.273
Total-Furans			3.188e5		1.053			482		4.72e6							474.998
Total-tetradioxins			6.405e3		1.129			784		9.19e4							8.572
Total-pentadioxins			3.274e4		1.548			571		4.60e5							40.333
Total-hexadioxins			8.749e4		0.943			598		1.33e6							123.650
Total-heptadioxins			2.096e4		1.251			637		3.02e5							42.951
Total-Dioxins			1.772e5		1.182			784		2.52e6							304.969
Total-TEQ			4.959e5					784		7.24e6							779.967
FUNCTION1 PFK			7.925e6					275191		3.53e7							
FUNCTION2 PFK			2.239e5					141954		2.44e6							0.000
FUNCTION3 PFK			4.458e5					178350		1.14e7							0.000
FUNCTION4 PFK			8.386e4					145318		2.97e6							
FUNCTION5 PFK			4.642e5					118681		1.09e7							
FUNCTION1 HXCD...			0.000e0					425		0.00e0							
FUNCTION1 HPCD...																	
FUNCTION2 HPCD...			4.377e2					572		7.24e3							0.000
FUNCTION3 OCDPE			3.846e2					487		6.35e3							0.000
FUNCTION4 NCDPE			0.000e0					472		0.00e0							
FUNCTION5 DCDPE			0.000e0					337		0.00e0							

Method: T:\Autospec\Methods\Dioxin231215.mdb 15 Dec 2023 13:28:43
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 09:45:18

ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDF	25.38	6.293e3	7.931e3	0.903	0.79	0.77	201.4	YES	NO	bd	bd	8.945

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	30.85	4.571e4	2.923e4	0.991	1.56	1.55	924.8	YES	NO	bb	bb	47.728
2	12378-PeCDF	29.52	4.595e4	2.977e4	0.923	1.54	1.55	919.6	YES	NO	bb	bb	45.435
3	Total-pentafurans	29.15	2.646e2	1.636e2	0.931	1.62	1.55	6.5	YES	NO	bb	bb	0.271

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDF	36.53	2.981e4	2.389e4	0.988	1.25	1.24	471.3	YES	NO	bb	bb	46.849
2	234678-HxCDF	35.50	3.393e4	2.837e4	1.081	1.20	1.24	555.8	YES	NO	bb	bd	46.368
3	123678-HxCDF	34.63	3.859e4	2.886e4	1.032	1.34	1.24	587.9	YES	NO	db	db	45.547
4	123478-HxCDF	34.48	3.706e4	2.771e4	1.128	1.34	1.24	597.5	YES	NO	bd	bd	45.466
5	Total-hexafurans	33.84	2.963e2	2.381e2	1.087	1.24	1.24	5.3	YES	NO	bb	bb	0.386

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	40.57	2.046e4	2.056e4	1.104	1.00	1.05	313.9	YES	NO	bb	bd	50.728
2	Total-heptafurans	39.03	4.890e2	5.279e2	1.134	0.93	1.05	8.1	YES	NO	bb	bb	1.062
3	1234678-HpCDF	38.38	2.875e4	2.631e4	1.164	1.09	1.05	475.0	YES	NO	bb	bb	49.483

ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, 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	2378-TCDF	25.38	6.293e3	7.931e3	0.903	0.79	0.77	201.4	YES	NO	bd	bd	8.945
2	23478-PeCDF	30.85	4.571e4	2.923e4	0.991	1.56	1.55	924.8	YES	NO	bb	bb	47.728
3	12378-PeCDF	29.52	4.595e4	2.977e4	0.923	1.54	1.55	919.6	YES	NO	bb	bb	45.435
4	Total-pentafurans	29.15	2.646e2	1.636e2	0.931	1.62	1.55	6.5	YES	NO	bb	bb	0.271
5	123789-HxCDF	36.53	2.981e4	2.389e4	0.988	1.25	1.24	471.3	YES	NO	bb	bb	46.849
6	234678-HxCDF	35.50	3.393e4	2.837e4	1.081	1.20	1.24	555.8	YES	NO	bb	bd	46.368
7	123678-HxCDF	34.63	3.859e4	2.886e4	1.032	1.34	1.24	587.9	YES	NO	db	db	45.547
8	123478-HxCDF	34.48	3.706e4	2.771e4	1.128	1.34	1.24	597.5	YES	NO	bd	bd	45.466
9	Total-hexafurans	33.84	2.963e2	2.381e2	1.087	1.24	1.24	5.3	YES	NO	bb	bb	0.386
10	1234789-HpCDF	40.57	2.046e4	2.056e4	1.104	1.00	1.05	313.9	YES	NO	bb	bd	50.728
11	Total-heptafurans	39.03	4.890e2	5.279e2	1.134	0.93	1.05	8.1	YES	NO	bb	bb	1.062
12	1234678-HpCDF	38.38	2.875e4	2.631e4	1.164	1.09	1.05	475.0	YES	NO	bb	bb	49.483
13	OCDF	44.66	3.116e4	3.466e4	1.130	0.90	0.89	463.4	YES	NO	bd	bd	86.730

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDD	26.01	6.135e3	7.868e3	1.243	0.78	0.77	112.9	YES	NO	bd	bb	8.178
2	Total-tetradioxins	25.63	2.698e2	3.431e2	1.129	0.79	0.77	4.4	YES	NO	bb	bb	0.394

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12378-PeCDD	31.11	3.274e4	2.103e4	1.150	1.56	1.55	805.7	YES	NO	bd	bd	40.333

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDD	36.12	2.856e4	2.335e4	0.804	1.22	1.24	730.0	YES	NO	bd	bd	44.033
2	123678-HxCDD	35.73	3.260e4	2.661e4	0.883	1.23	1.24	778.2	YES	NO	db	dd	42.113
3	123478-HxCDD	35.62	2.633e4	2.193e4	0.960	1.20	1.24	713.9	YES	NO	bd	bd	37.504

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.84	2.025e4	1.942e4	1.200	1.04	1.05	455.8	YES	NO	bd	bd	41.584
2	1234679-HPCDD	38.83	7.137e2	7.022e2	1.303	1.02	1.05	18.5	YES	NO	bd	bb	1.367

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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	26.01	6.135e3	7.868e3	1.243	0.78	0.77	112.9	YES	NO	bd	bb	8.178
2	Total-tetradioxins	25.63	2.698e2	3.431e2	1.129	0.79	0.77	4.4	YES	NO	bb	bb	0.394
3	123789-HxCDD	36.12	2.856e4	2.335e4	0.804	1.22	1.24	730.0	YES	NO	bd	bd	44.033
4	123678-HxCDD	35.73	3.260e4	2.661e4	0.883	1.23	1.24	778.2	YES	NO	db	dd	42.113
5	123478-HxCDD	35.62	2.633e4	2.193e4	0.960	1.20	1.24	713.9	YES	NO	bd	bd	37.504
6	12378-PeCDD	31.11	3.274e4	2.103e4	1.150	1.56	1.55	805.7	YES	NO	bd	bd	40.333
7	1234678-HpCDD	39.84	2.025e4	1.942e4	1.200	1.04	1.05	455.8	YES	NO	bd	bd	41.584
8	1234679-HPCDD	38.83	7.137e2	7.022e2	1.303	1.02	1.05	18.5	YES	NO	bd	bb	1.367
9	OCDD	44.44	2.956e4	3.404e4	1.059	0.87	0.89	291.2	YES	NO	bd	bd	89.463

TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDF	25.38	6.293e3	7.931e3	0.903	0.79	0.77	201.4	YES	NO	bd	bd	8.945
2	23478-PeCDF	30.85	4.571e4	2.923e4	0.991	1.56	1.55	924.8	YES	NO	bb	bb	47.728
3	12378-PeCDF	29.52	4.595e4	2.977e4	0.923	1.54	1.55	919.6	YES	NO	bb	bb	45.435
4	Total-pentafurans	29.15	2.646e2	1.636e2	0.931	1.62	1.55	6.5	YES	NO	bb	bb	0.271
5	123789-HxCDF	36.53	2.981e4	2.389e4	0.988	1.25	1.24	471.3	YES	NO	bb	bb	46.849
6	234678-HxCDF	35.50	3.393e4	2.837e4	1.081	1.20	1.24	555.8	YES	NO	bb	bd	46.368
7	123678-HxCDF	34.63	3.859e4	2.886e4	1.032	1.34	1.24	587.9	YES	NO	db	db	45.547
8	123478-HxCDF	34.48	3.706e4	2.771e4	1.128	1.34	1.24	597.5	YES	NO	bd	bd	45.466
9	Total-hexafurans	33.84	2.963e2	2.381e2	1.087	1.24	1.24	5.3	YES	NO	bb	bb	0.386
10	1234789-HpCDF	40.57	2.046e4	2.056e4	1.104	1.00	1.05	313.9	YES	NO	bb	bd	50.728
11	Total-heptafurans	39.03	4.890e2	5.279e2	1.134	0.93	1.05	8.1	YES	NO	bb	bb	1.062
12	1234678-HpCDF	38.38	2.875e4	2.631e4	1.164	1.09	1.05	475.0	YES	NO	bb	bb	49.483
13	OCDF	44.66	3.116e4	3.466e4	1.130	0.90	0.89	463.4	YES	NO	bd	bd	86.730
14	2378-TCDD	26.01	6.135e3	7.868e3	1.243	0.78	0.77	112.9	YES	NO	bd	bb	8.178
15	Total-tetradioxins	25.63	2.698e2	3.431e2	1.129	0.79	0.77	4.4	YES	NO	bb	bb	0.394
16	123789-HxCDD	36.12	2.856e4	2.335e4	0.804	1.22	1.24	730.0	YES	NO	bd	bd	44.033
17	123678-HxCDD	35.73	3.260e4	2.661e4	0.883	1.23	1.24	778.2	YES	NO	db	dd	42.113
18	123478-HxCDD	35.62	2.633e4	2.193e4	0.960	1.20	1.24	713.9	YES	NO	bd	bd	37.504
19	12378-PeCDD	31.11	3.274e4	2.103e4	1.150	1.56	1.55	805.7	YES	NO	bd	bd	40.333
20	1234678-HpCDD	39.84	2.025e4	1.942e4	1.200	1.04	1.05	455.8	YES	NO	bd	bd	41.584
21	1234679-HPCDD	38.83	7.137e2	7.022e2	1.303	1.02	1.05	18.5	YES	NO	bd	bb	1.367
22	OCDD	44.44	2.956e4	3.404e4	1.059	0.87	0.89	291.2	YES	NO	bd	bd	89.463

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Last Altered: Friday, December 15, 2023 13:51:44 Pacific Standard Time
Printed: Friday, December 15, 2023 13:56:31 Pacific Standard Time

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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	24.36	3.592e5					9.2	YES		dd		
2	FUNCTION1 PFK	24.23	4.930e5					9.5	YES		bd		
3	FUNCTION1 PFK	23.92	1.879e5					6.6	YES		bb		
4	FUNCTION1 PFK	23.54	2.335e5					7.4	YES		db		
5	FUNCTION1 PFK	23.26	2.155e6					12.3	YES		bd		
6	FUNCTION1 PFK	22.57	1.965e6					17.7	YES		db		
7	FUNCTION1 PFK	22.30	1.615e5					10.5	YES		dd		
8	FUNCTION1 PFK	22.16	3.818e5					10.4	YES		bd		
9	FUNCTION1 PFK	21.93	1.329e5					6.3	YES		bb		
10	FUNCTION1 PFK	21.47	1.171e5					4.2	YES		bb		
11	FUNCTION1 PFK	27.12	1.763e5					6.2	YES		bb		
12	FUNCTION1 PFK	26.55	4.282e4					3.2	YES		bb		
13	FUNCTION1 PFK	25.58	2.656e5					3.1	YES		bb		
14	FUNCTION1 PFK	25.19	3.895e5					11.3	YES		bb		
15	FUNCTION1 PFK	25.00	3.621e4					0.0	NO		bb		
16	FUNCTION1 PFK	24.62	8.273e5					10.3	YES		db		

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	27.67	2.239e5					17.2	YES		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	33.26	6.308e3					1.0	NO		db		0.000
2	FUNCTION3 PFK	33.20	5.835e3					1.2	NO		bd		0.000
3	FUNCTION3 PFK	32.88	2.250e4					2.4	NO		bb		0.000
4	FUNCTION3 PFK	32.76	2.250e4					2.3	NO		bb		0.000
5	FUNCTION3 PFK	32.64	4.472e4					3.7	YES		bb		0.000
6	FUNCTION3 PFK	32.52	2.137e4					2.5	NO		db		0.000
7	FUNCTION3 PFK	32.48	1.160e4					2.2	NO		bd		0.000
8	FUNCTION3 PFK	34.82	2.902e3					0.7	NO		db		0.000
9	FUNCTION3 PFK	34.79	9.076e3					0.8	NO		bd		0.000
10	FUNCTION3 PFK	34.60	1.044e4					1.4	NO		bb		0.000
11	FUNCTION3 PFK	34.48	5.365e3					1.3	NO		db		0.000
12	FUNCTION3 PFK	34.44	9.609e3					1.5	NO		bd		0.000
13	FUNCTION3 PFK	34.34	1.065e4					1.5	NO		bb		0.000
14	FUNCTION3 PFK	34.28	9.777e3					1.3	NO		db		0.000
15	FUNCTION3 PFK	34.22	5.183e3					1.2	NO		bd		0.000
16	FUNCTION3 PFK	34.09	6.170e3					1.1	NO		bb		0.000
17	FUNCTION3 PFK	33.88	5.071e3					1.1	NO		db		0.000
18	FUNCTION3 PFK	33.82	1.327e4					2.0	NO		bd		0.000
19	FUNCTION3 PFK	33.75	1.868e4					1.9	NO		bb		0.000
20	FUNCTION3 PFK	33.46	1.120e3					0.6	NO		bb		0.000
21	FUNCTION3 PFK	33.42	1.074e4					1.9	NO		db		0.000
22	FUNCTION3 PFK	33.36	7.187e3					1.4	NO		bd		0.000
23	FUNCTION3 PFK	33.30	2.682e3					0.9	NO		bb		0.000
24	FUNCTION3 PFK	36.53	4.525e3					1.1	NO		bb		0.000
25	FUNCTION3 PFK	36.45	9.057e3					1.4	NO		db		0.000
26	FUNCTION3 PFK	36.40	4.233e3					1.1	NO		bd		0.000
27	FUNCTION3 PFK	36.06	3.687e4					3.0	YES		db		0.000
28	FUNCTION3 PFK	35.94	3.741e4					2.7	NO		bd		0.000
29	FUNCTION3 PFK	35.82	5.663e3					1.0	NO		bb		0.000
30	FUNCTION3 PFK	35.75	6.376e3					1.4	NO		db		0.000
31	FUNCTION3 PFK	35.72	5.680e3					1.0	NO		bd		0.000
32	FUNCTION3 PFK	35.65	5.049e3					1.1	NO		bb		0.000
33	FUNCTION3 PFK	35.49	3.364e3					1.0	NO		bb		0.000
34	FUNCTION3 PFK	35.31	1.228e4					2.2	NO		db		0.000
35	FUNCTION3 PFK	35.26	9.286e3					1.6	NO		bd		0.000
36	FUNCTION3 PFK	35.15	2.150e3					0.7	NO		bb		0.000
37	FUNCTION3 PFK	35.11	1.891e3					0.8	NO		db		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	35.05	9.919e3					1.9	NO		bd		0.000
39	FUNCTION3 PFK	35.01	1.133e3					0.6	NO		bb		0.000
40	FUNCTION3 PFK	37.41	3.934e3					0.9	NO		bb		0.000
41	FUNCTION3 PFK	37.31	3.246e3					1.0	NO		bb		0.000
42	FUNCTION3 PFK	37.19	6.717e3					1.1	NO		bb		0.000
43	FUNCTION3 PFK	37.10	1.024e4					1.3	NO		bb		0.000
44	FUNCTION3 PFK	36.75	3.343e3					0.8	NO		bb		0.000
45	FUNCTION3 PFK	36.58	6.714e2					0.3	NO		bb		0.000

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	40.16	4.818e3					1.2	NO		bb		
2	FUNCTION4 PFK	40.03	3.271e3					0.9	NO		bb		
3	FUNCTION4 PFK	39.85	1.122e4					1.9	NO		bb		
4	FUNCTION4 PFK	38.85	3.660e3					0.9	NO		bb		
5	FUNCTION4 PFK	38.81	2.689e3					0.8	NO		bb		
6	FUNCTION4 PFK	38.51	6.495e3					1.5	NO		bb		
7	FUNCTION4 PFK	38.40	5.860e3					1.0	NO		bb		
8	FUNCTION4 PFK	37.84	1.685e3					0.6	NO		bb		
9	FUNCTION4 PFK	37.65	1.301e4					1.9	NO		bb		
10	FUNCTION4 PFK	42.94	2.305e3					0.9	NO		bb		
11	FUNCTION4 PFK	42.90	2.189e3					0.8	NO		bb		
12	FUNCTION4 PFK	42.80	2.112e3					0.8	NO		bb		
13	FUNCTION4 PFK	42.63	3.426e3					0.8	NO		bb		
14	FUNCTION4 PFK	42.15	8.525e2					0.5	NO		bb		
15	FUNCTION4 PFK	42.10	7.014e2					0.4	NO		bb		
16	FUNCTION4 PFK	42.00	2.475e3					0.8	NO		bb		
17	FUNCTION4 PFK	41.36	7.251e3					1.7	NO		bb		
18	FUNCTION4 PFK	41.15	3.509e3					1.1	NO		bb		
19	FUNCTION4 PFK	40.92	4.725e3					1.1	NO		bb		
20	FUNCTION4 PFK	40.39	1.603e3					0.7	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	43.17	4.289e4					10.4	YES		dd		
2	FUNCTION5 PFK	43.13	4.674e4					11.7	YES		dd		
3	FUNCTION5 PFK	43.09	6.613e4					13.2	YES		dd		
4	FUNCTION5 PFK	43.05	7.523e4					14.5	YES		bd		
5	FUNCTION5 PFK	45.81	3.537e3					1.4	NO		bd		
6	FUNCTION5 PFK	45.71	2.320e3					1.0	NO		bb		
7	FUNCTION5 PFK	45.00	2.072e3					1.0	NO		db		
8	FUNCTION5 PFK	44.98	3.607e3					1.2	NO		bd		
9	FUNCTION5 PFK	44.91	3.011e3					1.3	NO		db		
10	FUNCTION5 PFK	44.87	5.124e3					1.5	NO		bd		
11	FUNCTION5 PFK	44.74	6.273e3					1.9	NO		db		
12	FUNCTION5 PFK	44.70	5.819e3					1.6	NO		dd		
13	FUNCTION5 PFK	44.65	8.636e3					1.3	NO		dd		
14	FUNCTION5 PFK	44.53	1.029e4					1.7	NO		bd		
15	FUNCTION5 PFK	44.21	5.842e3					1.9	NO		bb		
16	FUNCTION5 PFK	44.08	4.572e3					1.7	NO		bb		
17	FUNCTION5 PFK	44.03	4.078e3					0.8	NO		bb		
18	FUNCTION5 PFK	43.38	2.642e4					4.4	YES		db		
19	FUNCTION5 PFK	43.30	6.898e4					6.7	YES		dd		
20	FUNCTION5 PFK	43.23	6.727e4					9.8	YES		dd		
21	FUNCTION5 PFK	45.92	2.565e3					1.1	NO		bb		
22	FUNCTION5 PFK	45.87	1.400e3					0.8	NO		bb		
23	FUNCTION5 PFK	45.84	1.416e3					0.8	NO		db		

ETHERS1

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

ETHERS2

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

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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...	31.44	1.368e2					4.3	YES		bb		0.000
2	FUNCTION2 HPCD...	30.51	9.524e1					2.6	NO		db		0.000
3	FUNCTION2 HPCD...	30.44	8.811e1					2.3	NO		bd		0.000
4	FUNCTION2 HPCD...	28.58	1.175e2					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	36.78	8.018e1					2.5	NO		bb		0.000
2	FUNCTION3 OCDPE	33.82	1.353e2					5.4	YES		bb		0.000
3	FUNCTION3 OCDPE	32.69	1.692e2					5.2	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

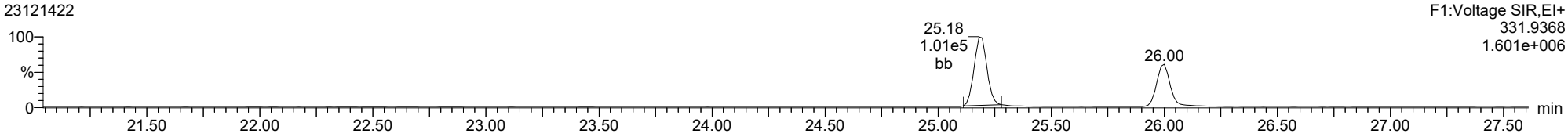
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Dataset: T:\Autospec\Processed Data Batch\231214IH1.qld
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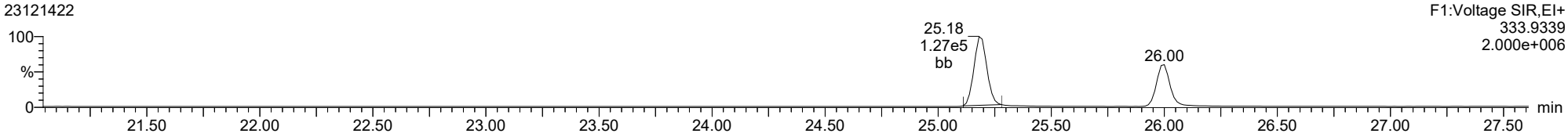
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ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, Conditions: AUTOSPEC01, User: pk

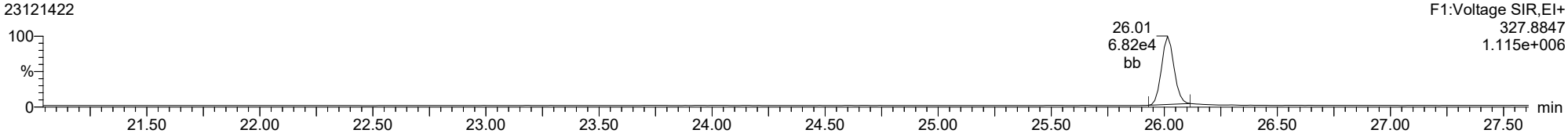
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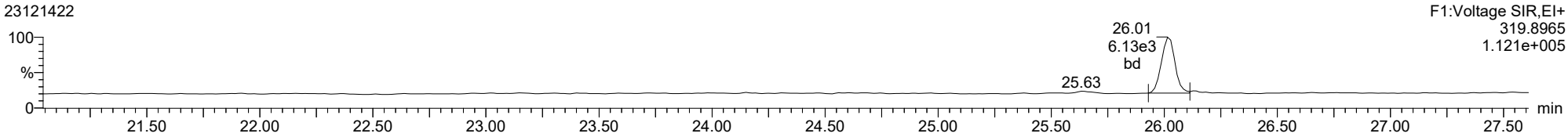


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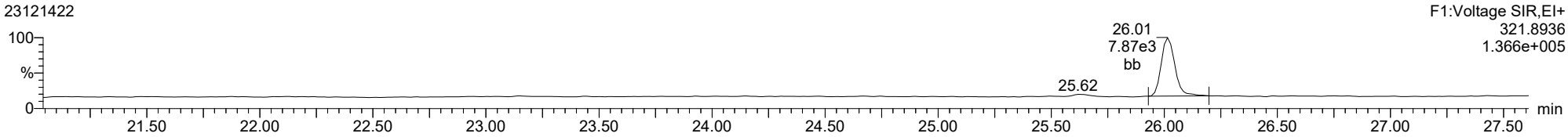


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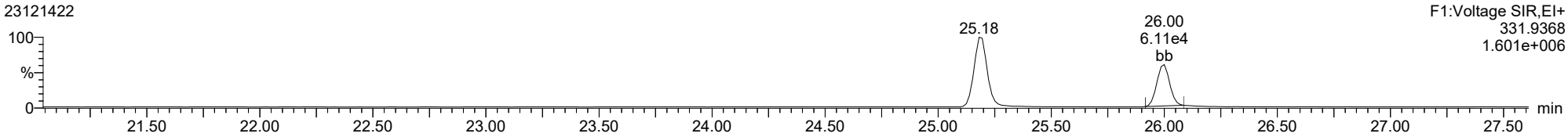
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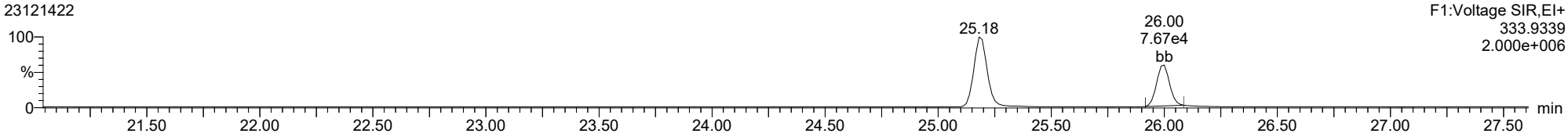
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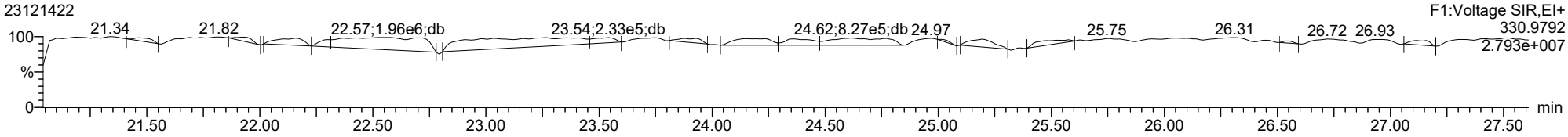
13C-2378-TCDD



13C-2378-TCDD

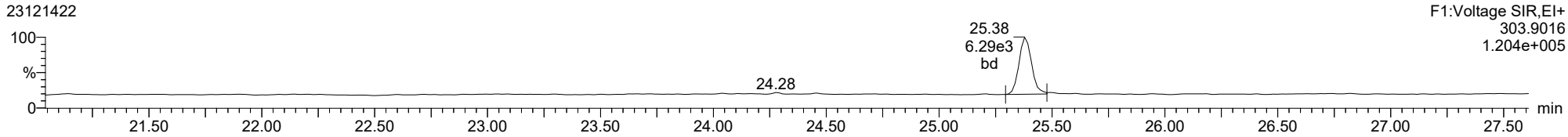


FUNCTION1 PFK

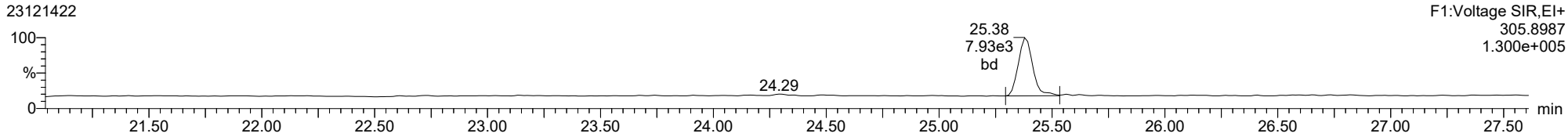


ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, Conditions: AUTOSPEC01, User: pk

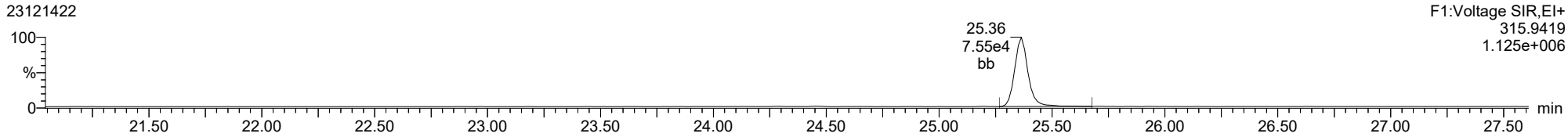
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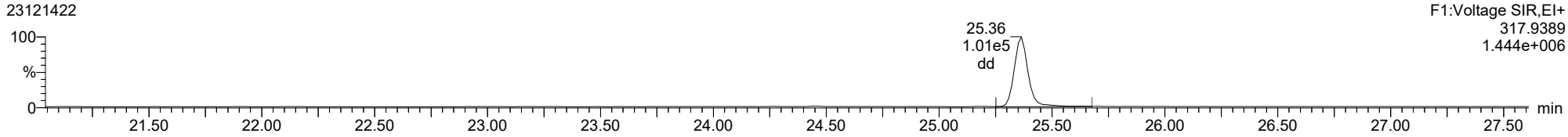
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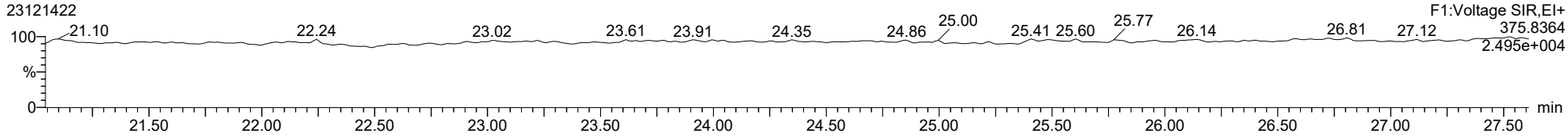
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13C-2378-TCDF

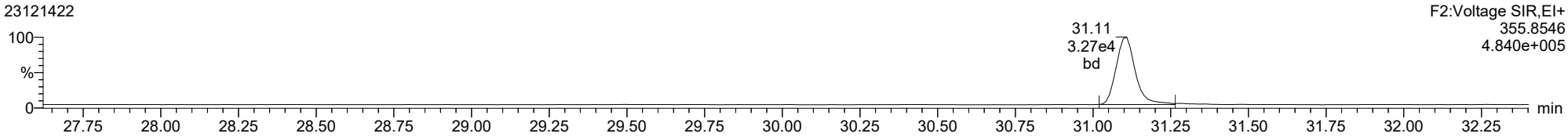


FUNCTION1 HXCDPE

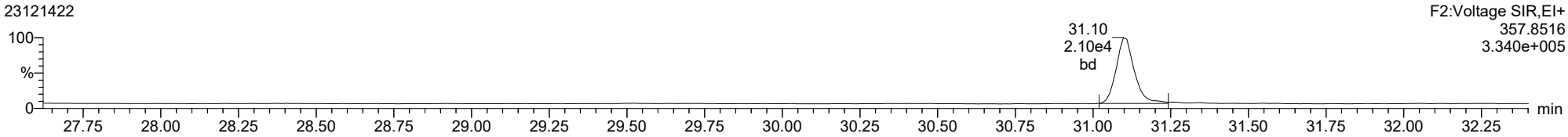


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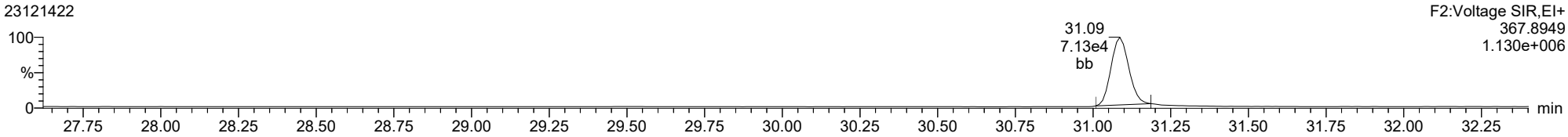
12378-PeCDD



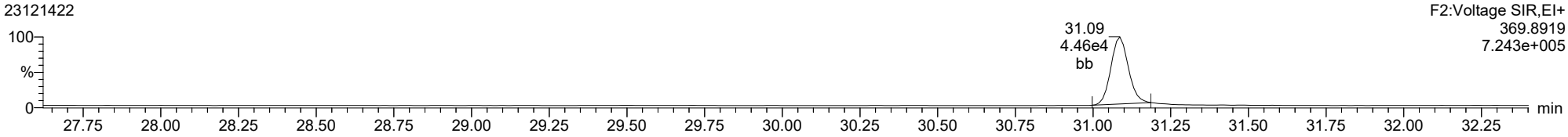
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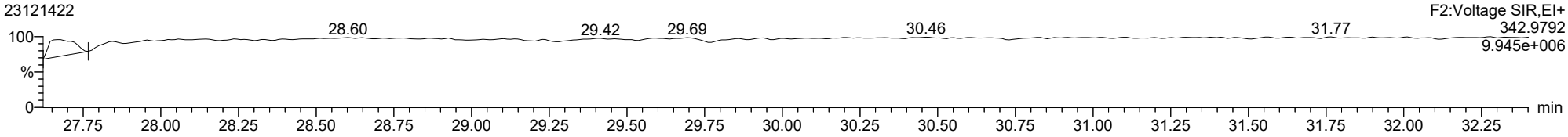
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13C-12378-PeCDD

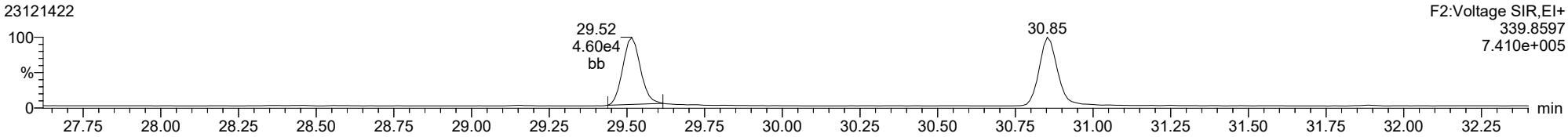


FUNCTION2 PFK

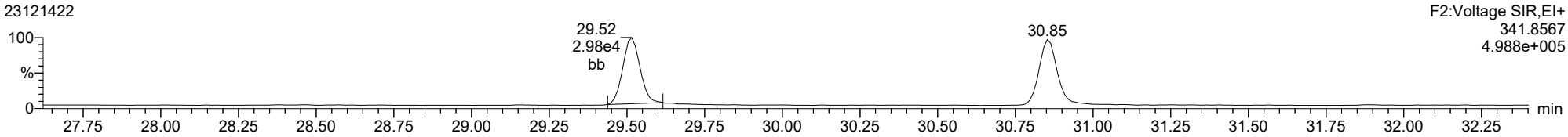


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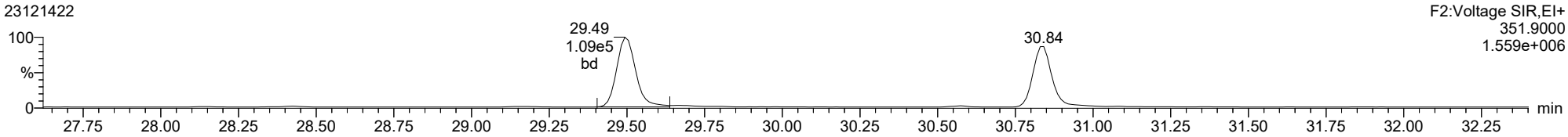
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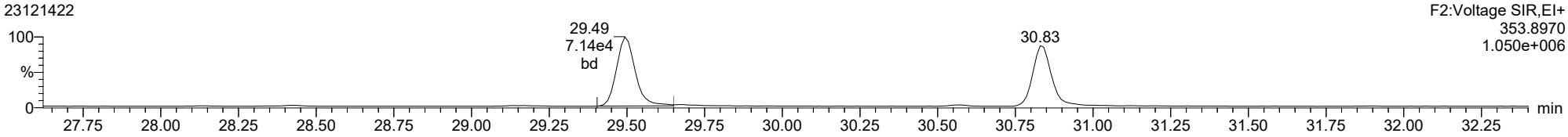
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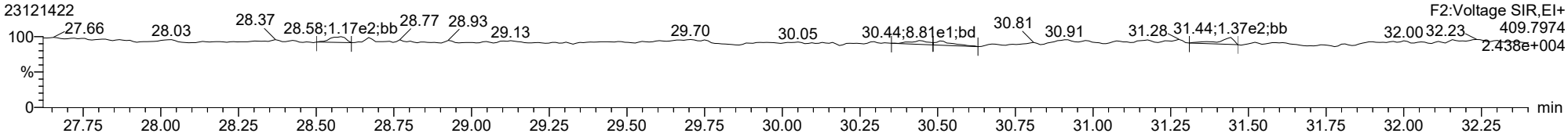
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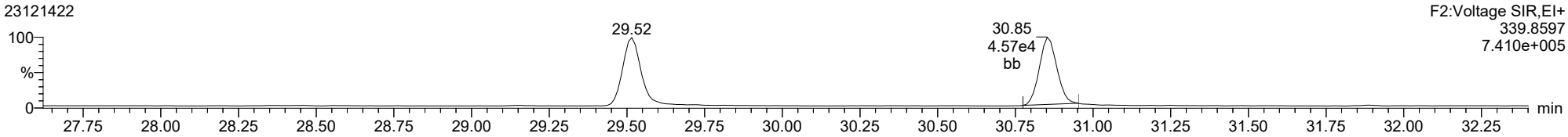


FUNCTION2 HPCDPE

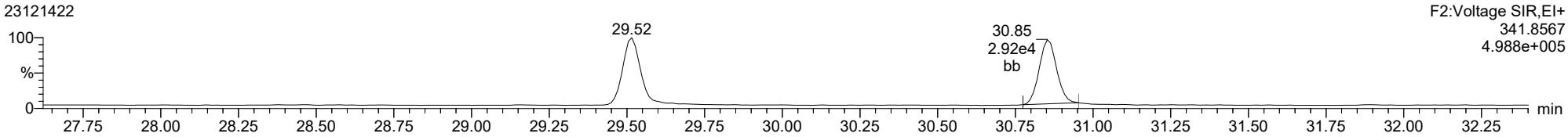


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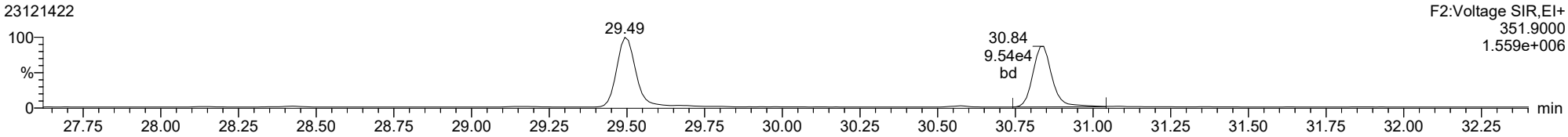
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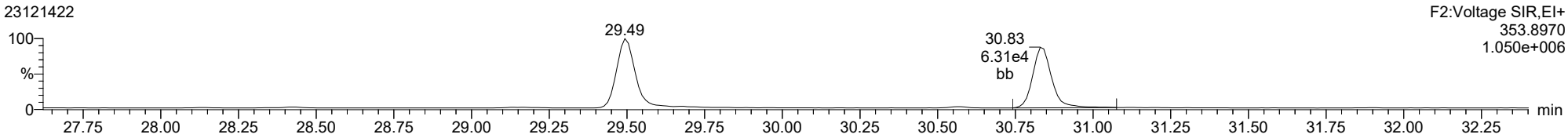
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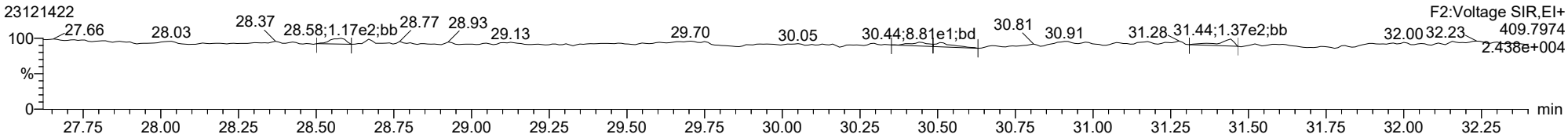
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13C-23478-PeCDF



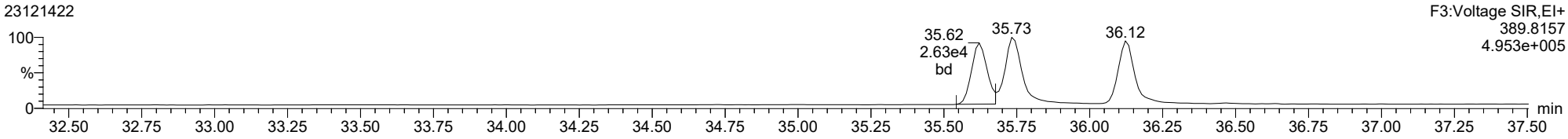
FUNCTION2 HPCDPE



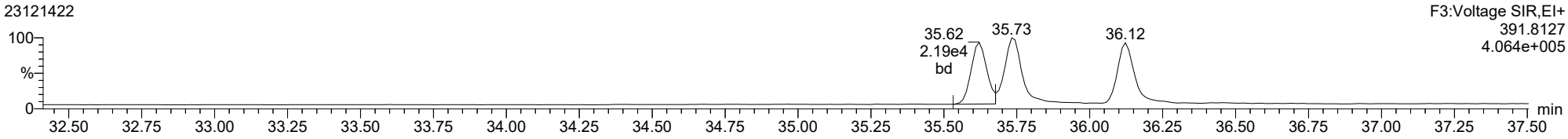
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Printed: Friday, December 15, 2023 13:56:31 Pacific Standard Time

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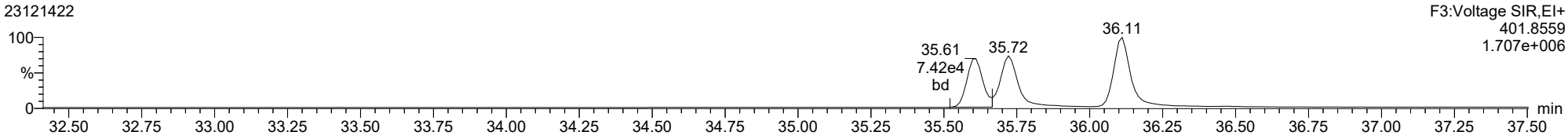
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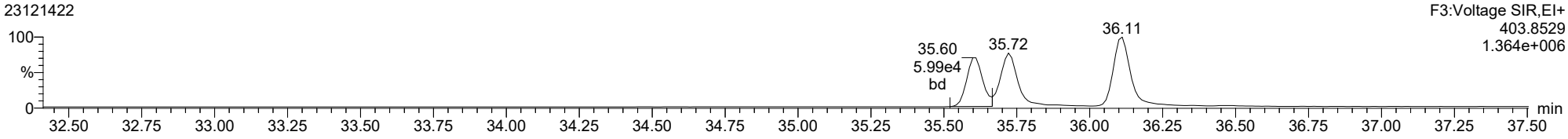
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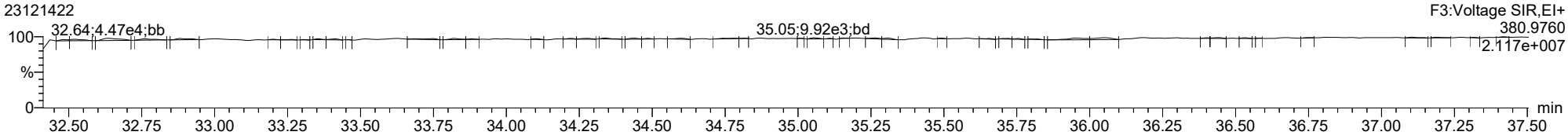
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13C-123478-HxCDD



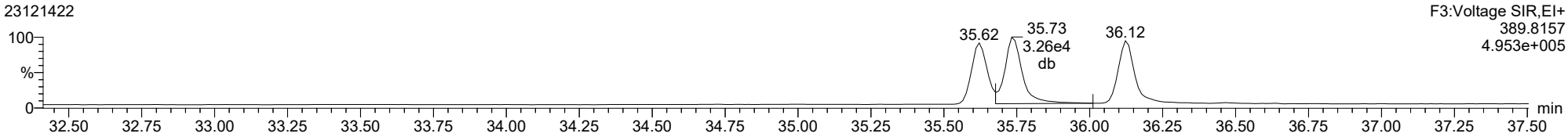
FUNCTION3 PFK



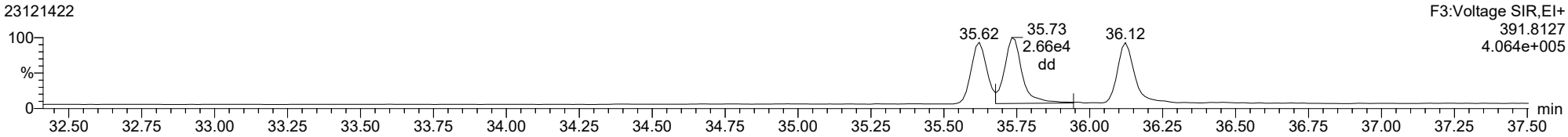
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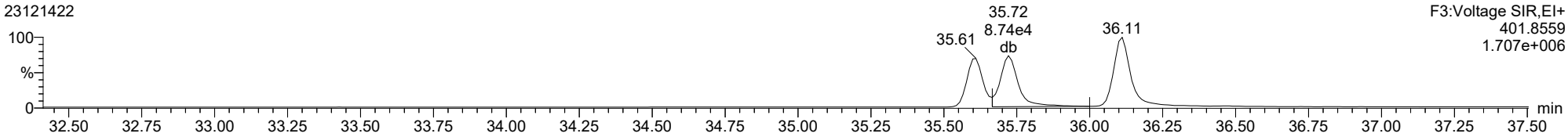
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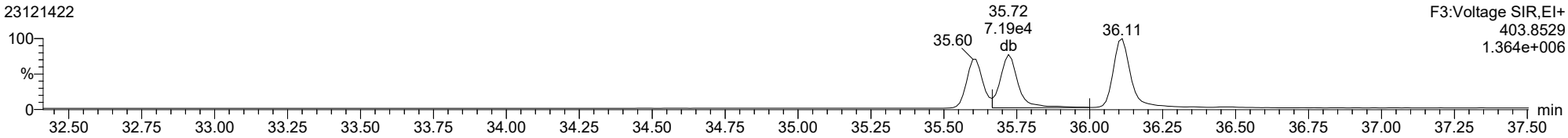
123678-HxCDD



13C-123678-HxCDD

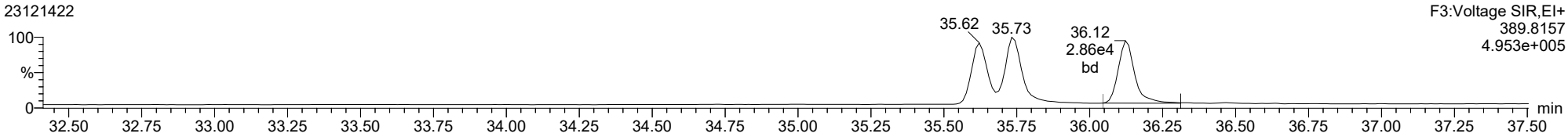


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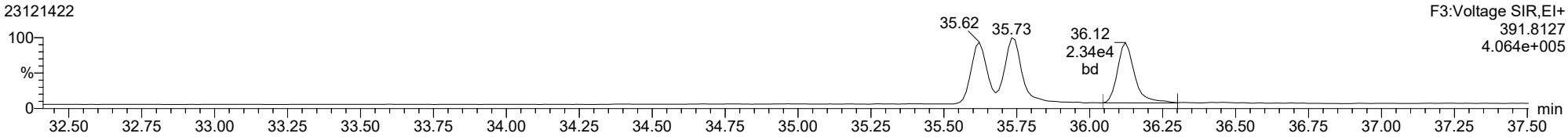


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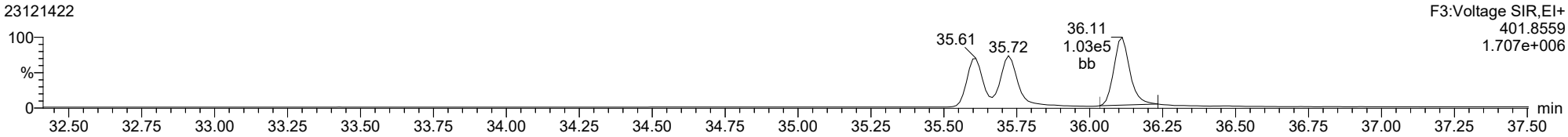
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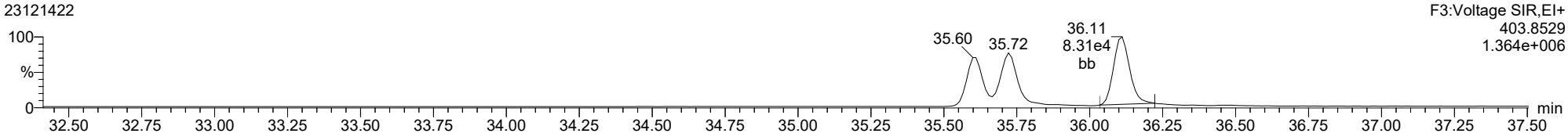
123789-HxCDD



13C-123789-HxCDD

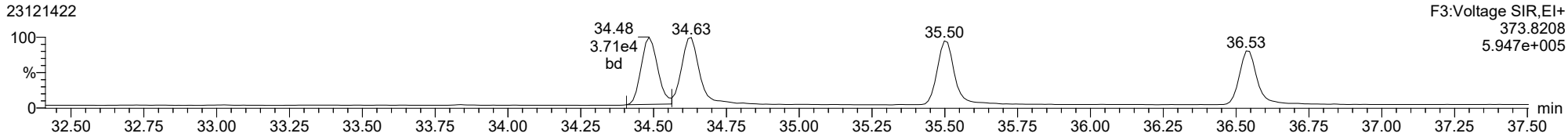


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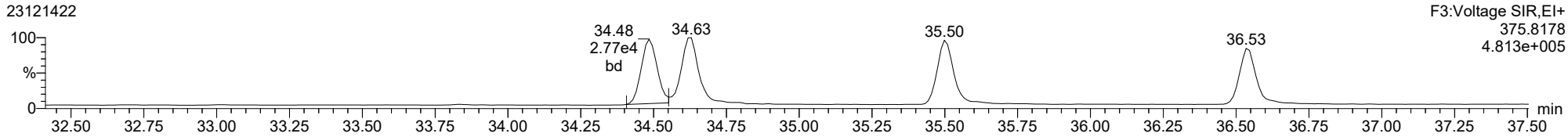


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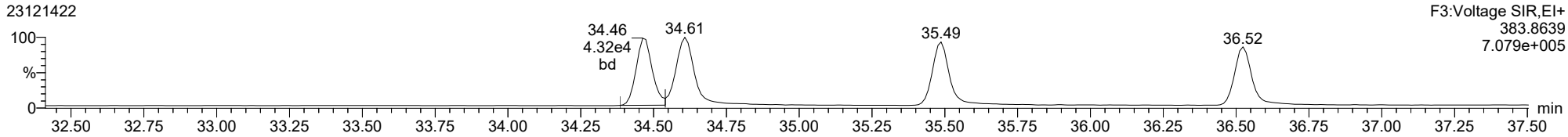
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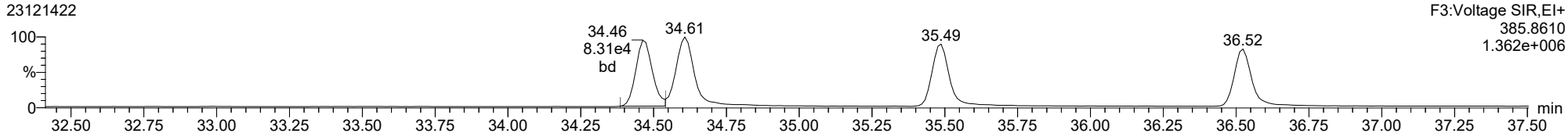
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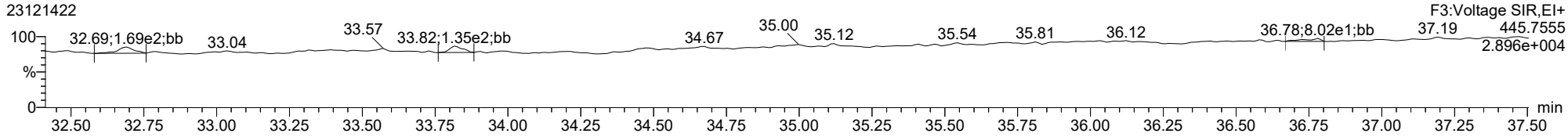
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13C-123478-HxCDF



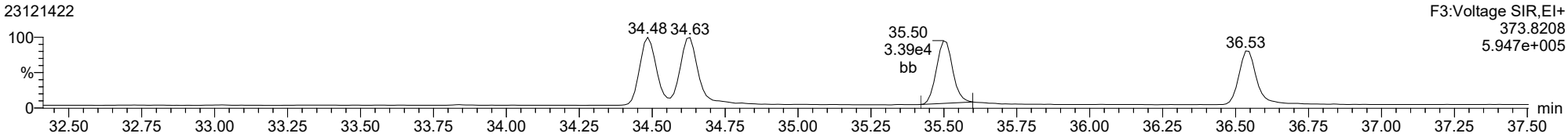
FUNCTION3 OCDPE



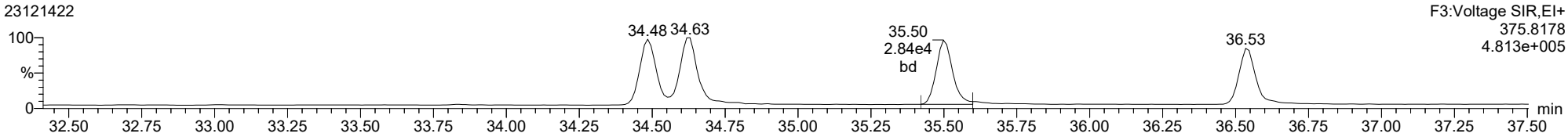
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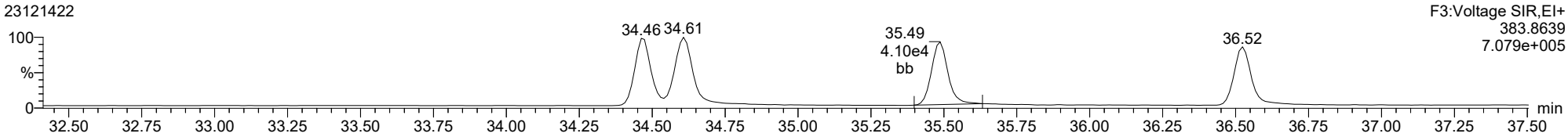
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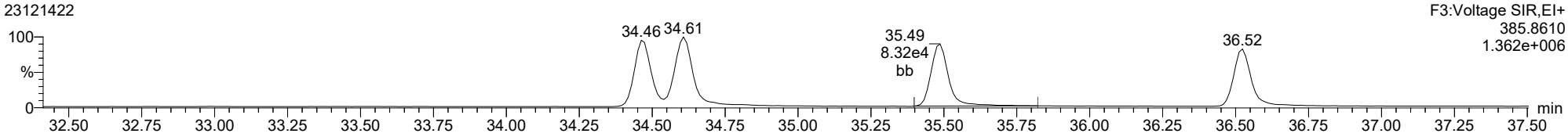
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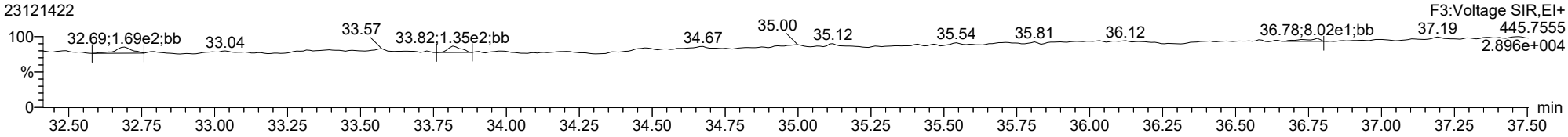
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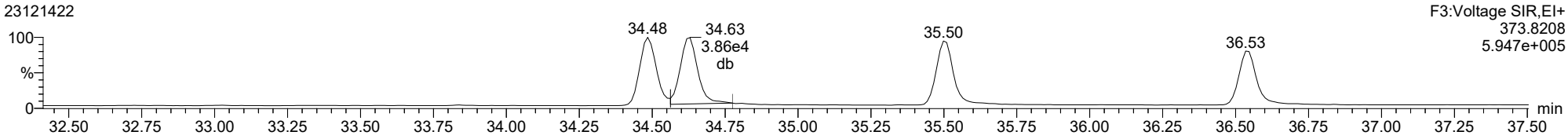


FUNCTION3 OCDPE

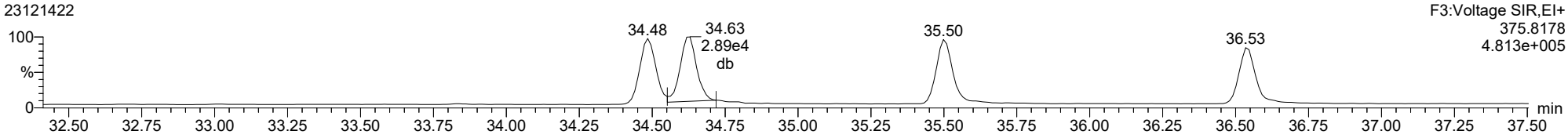


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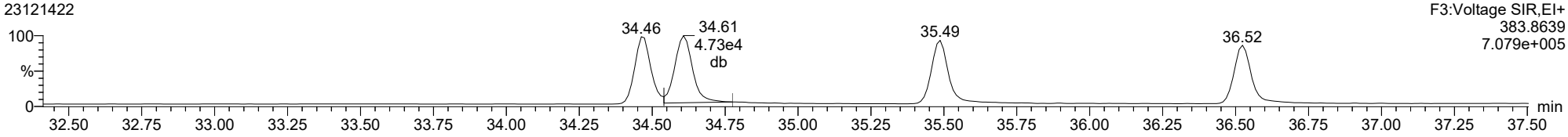
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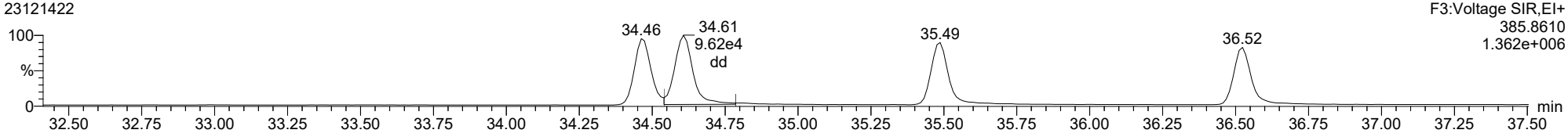
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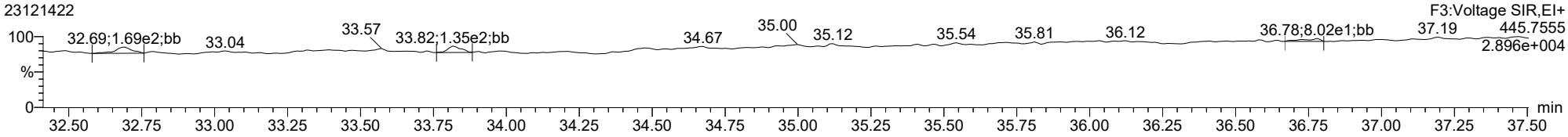
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13C-123678-HxCDF

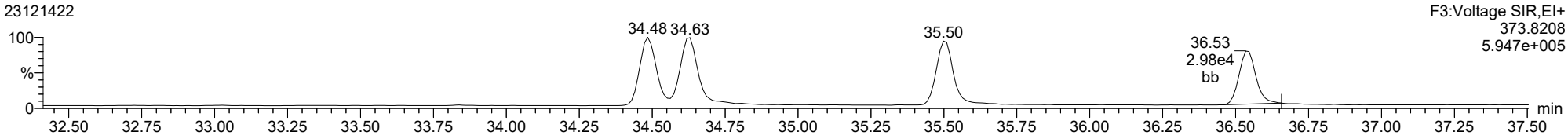


FUNCTION3 OCDPE

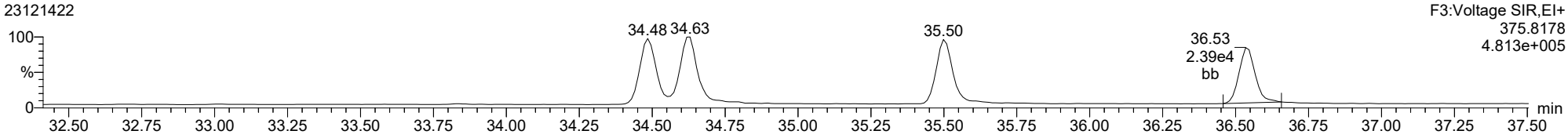


ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, Conditions: AUTOSPEC01, User: pk

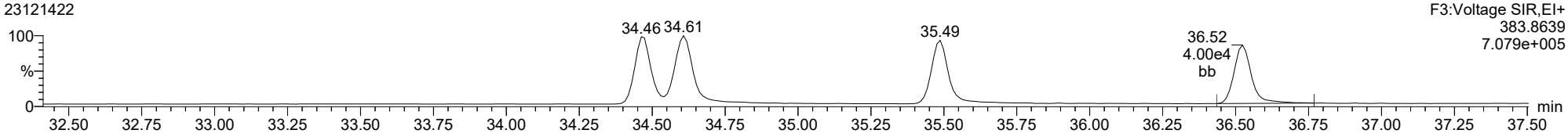
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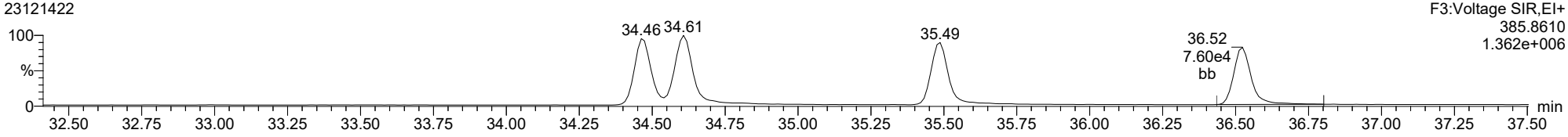
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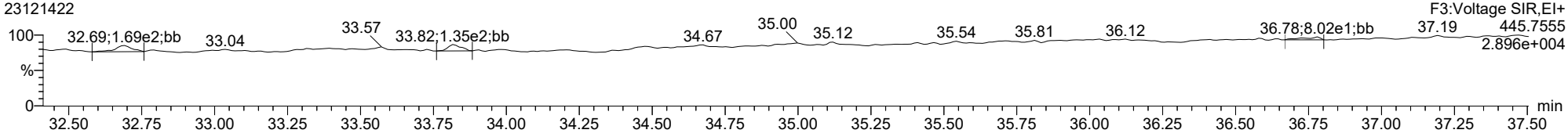
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13C-123789-HxCDF

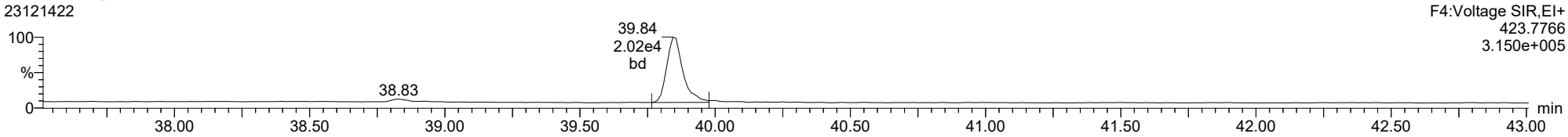


FUNCTION3 OCDPE

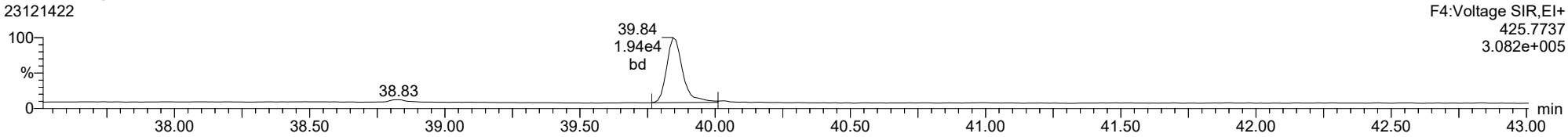


ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, Conditions: AUTOSPEC01, User: pk

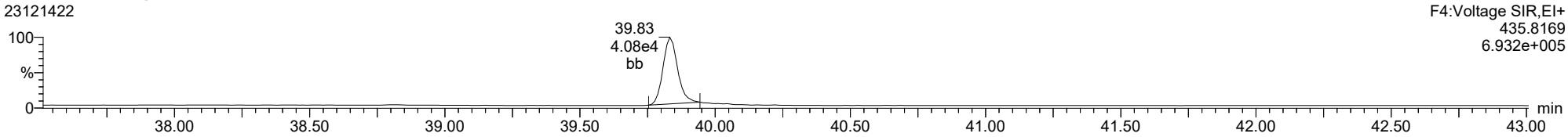
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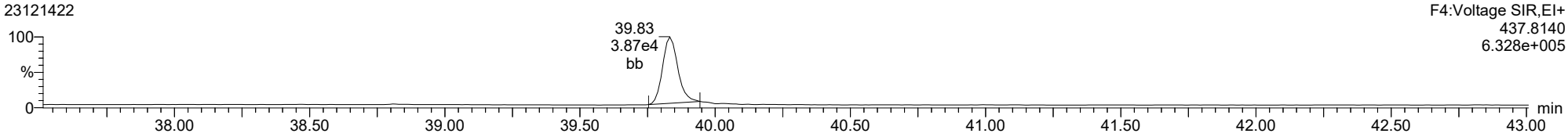
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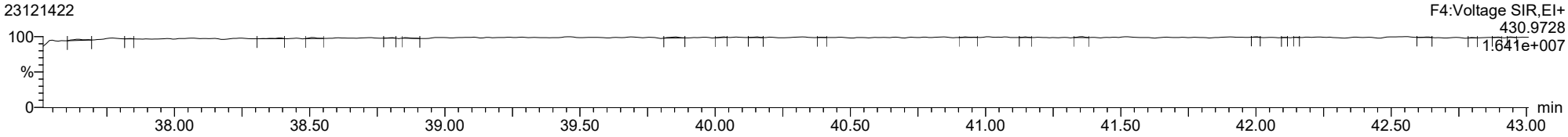
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13C-1234678-HpCDD

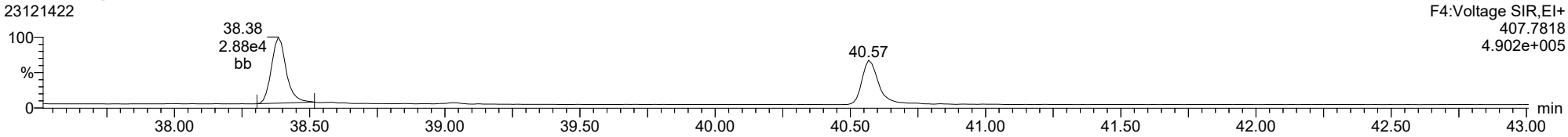


FUNCTION4 PFK

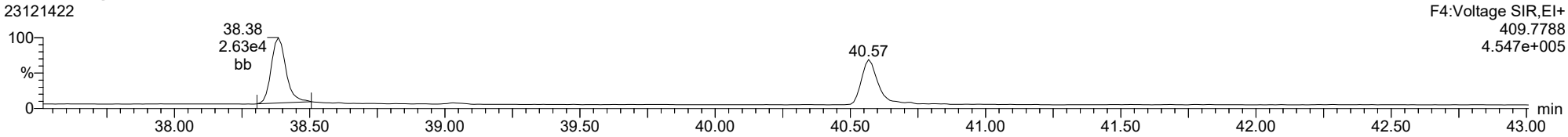


ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, Conditions: AUTOSPEC01, User: pk

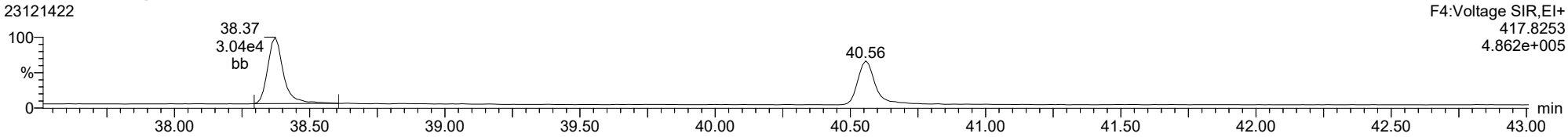
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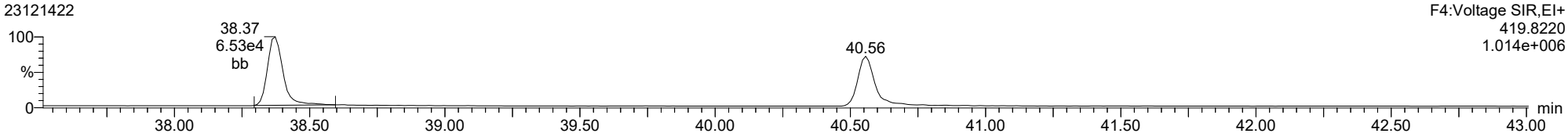
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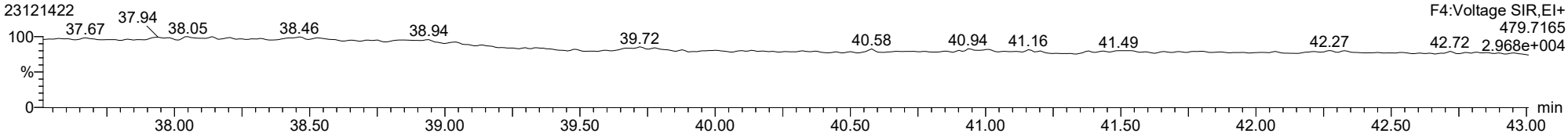
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13C-1234678-HpCDF

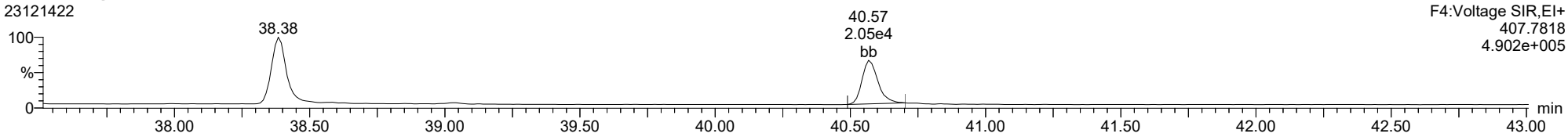


FUNCTION4 NCDPE

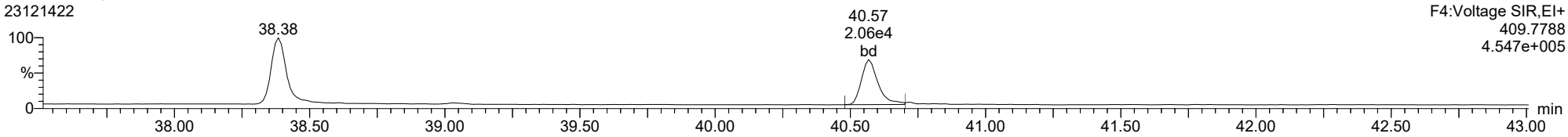


ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, Conditions: AUTOSPEC01, User: pk

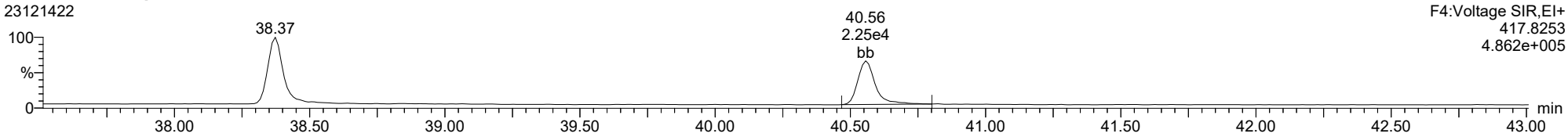
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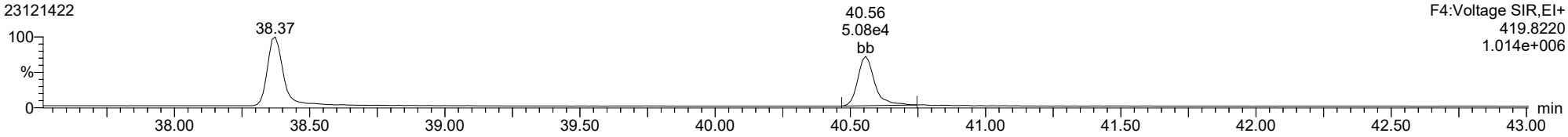
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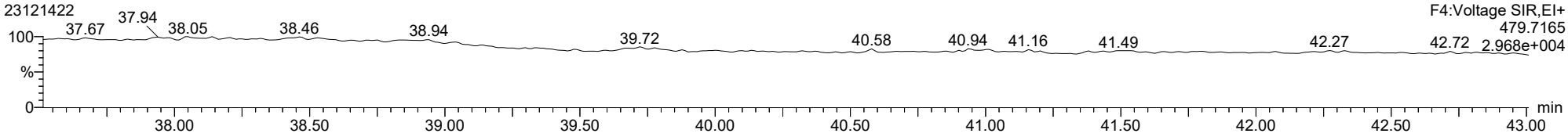
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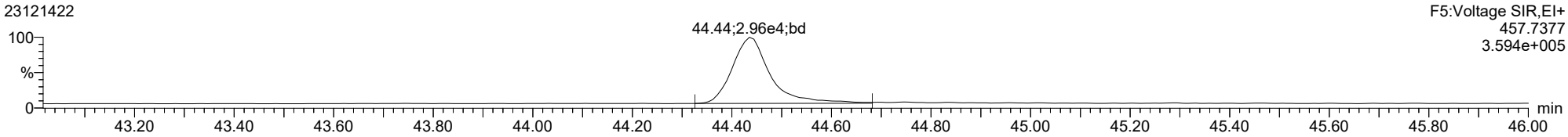


FUNCTION4 NCDPE

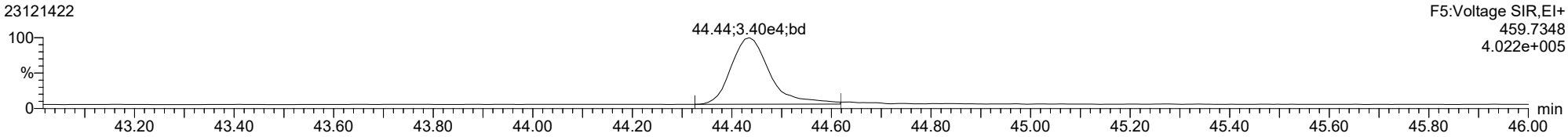


ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, Conditions: AUTOSPEC01, User: pk

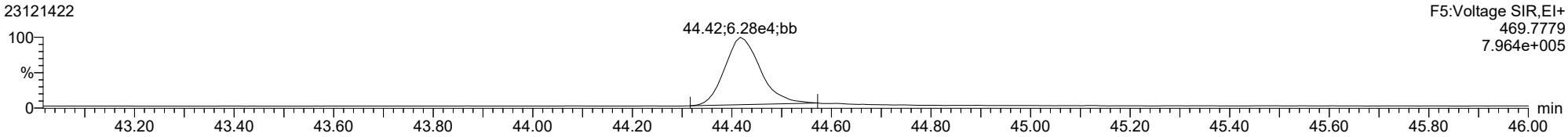
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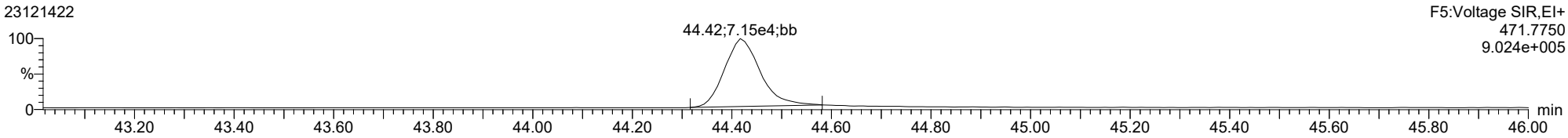
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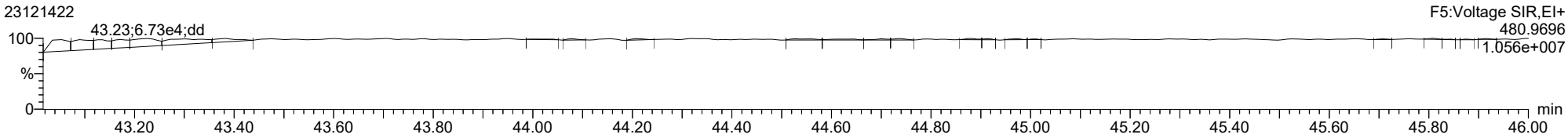
13C-OCDD



13C-OCDD



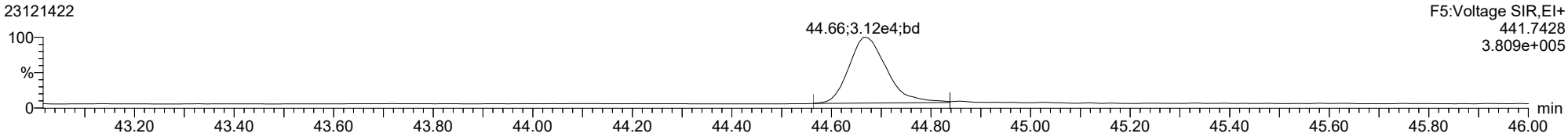
FUNCTION5 PFK



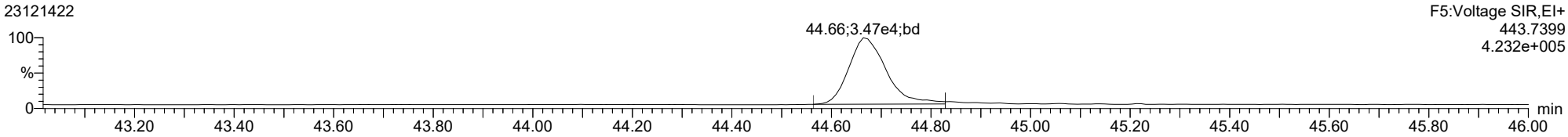
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Last Altered: Friday, December 15, 2023 13:51:44 Pacific Standard Time
Printed: Friday, December 15, 2023 13:56:31 Pacific Standard Time

ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, Conditions: AUTOSPEC01, User: pk

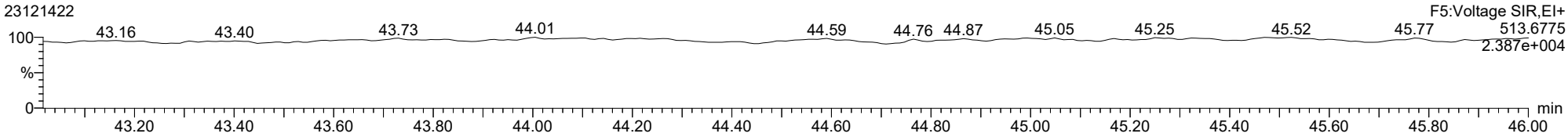
OCDF



OCDF



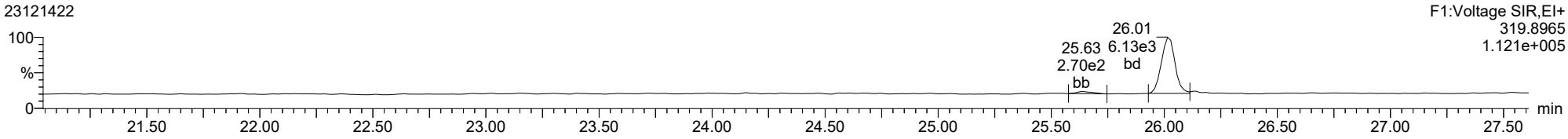
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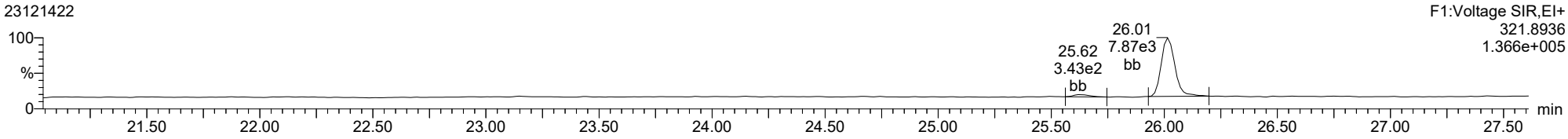
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ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, Conditions: AUTOSPEC01, User: pk

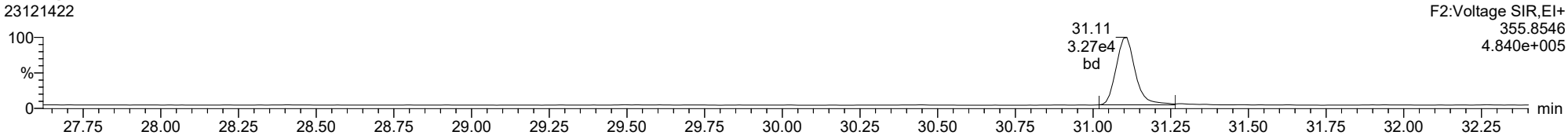
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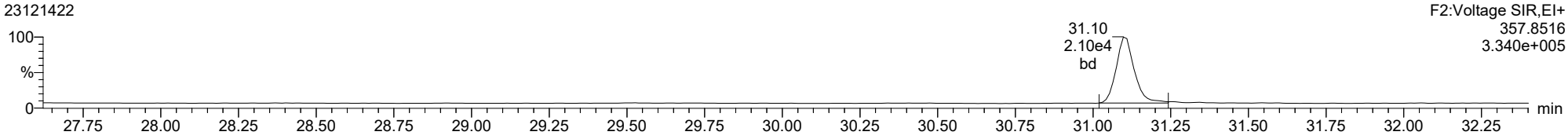
Total-tetradioxins



Total-pentadioxins

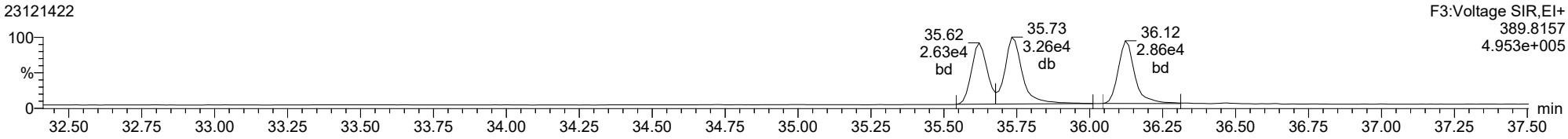


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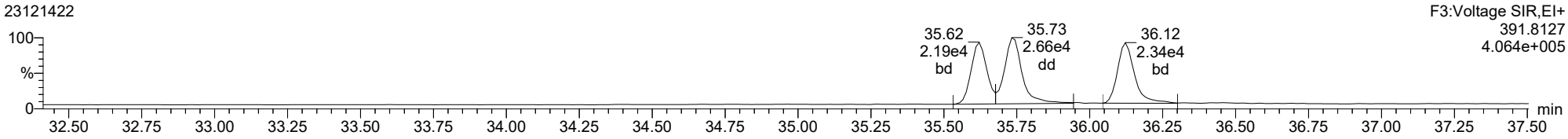


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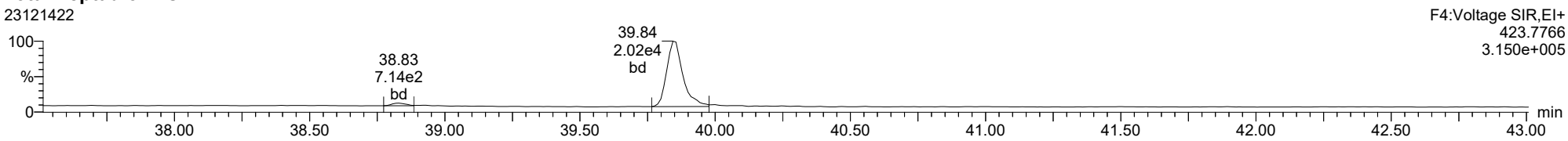
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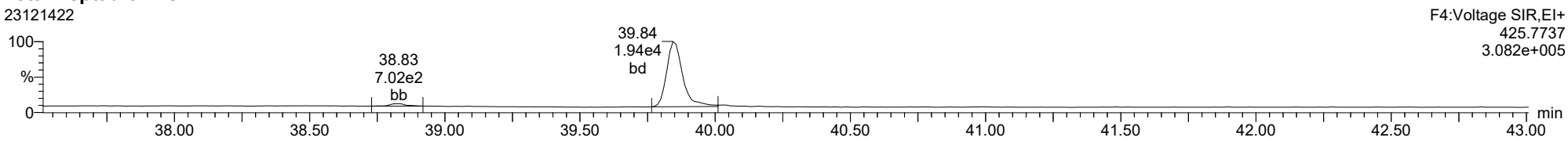
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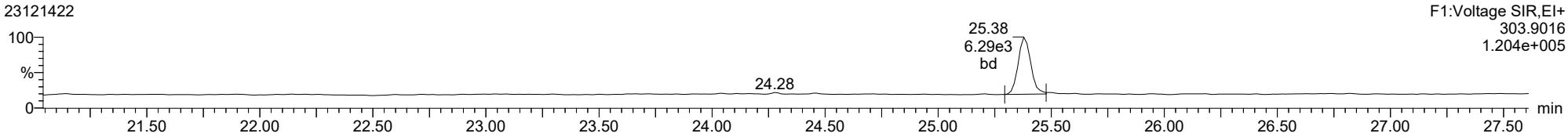


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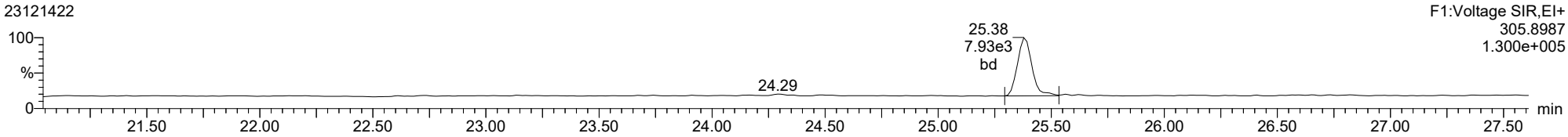


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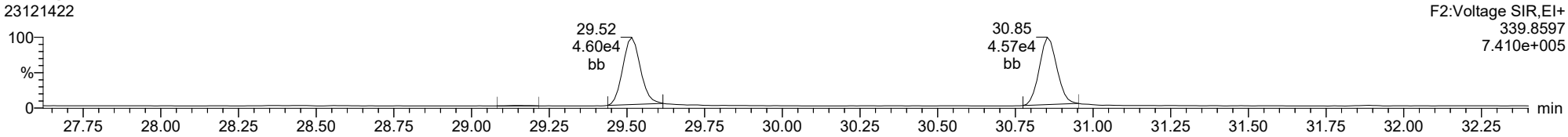
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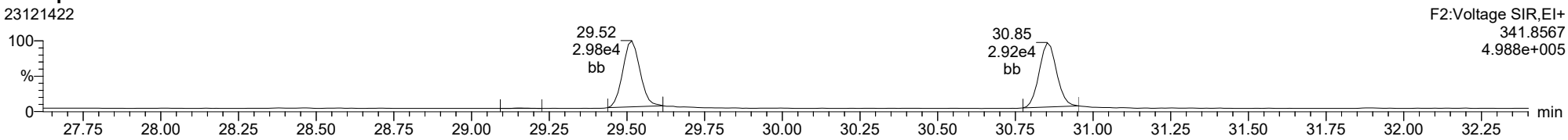
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Total-pentafurans



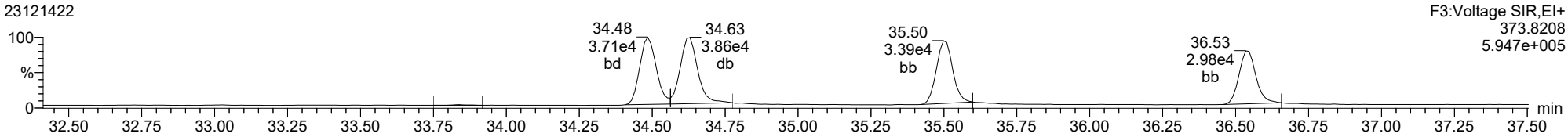
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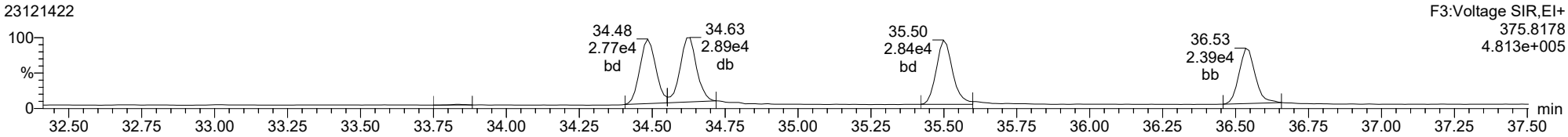
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Last Altered: Friday, December 15, 2023 13:51:44 Pacific Standard Time
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ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, Conditions: AUTOSPEC01, User: pk

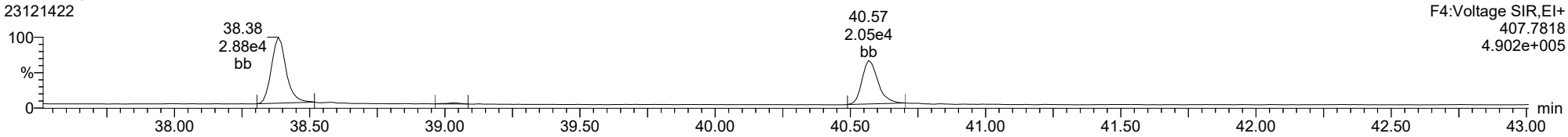
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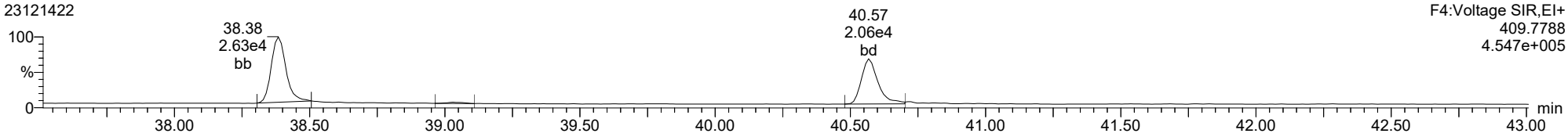
Total-hexafurans



Total-heptafurans



Total-heptafurans



LCS RECOVERY
EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Matrix:	Solid	Analyzed:	12/15/23 03:08
Batch:	BLK0112	Laboratory ID:	BLK0112-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	17.9		89.4	75 - 158
2,3,7,8-TCDD	20.0	16.4		81.8	67 - 158
1,2,3,7,8-PeCDF	100	90.9		90.9	80 - 134
2,3,4,7,8-PeCDF	100	95.5		95.5	68 - 160
1,2,3,7,8-PeCDD	100	80.7		80.7	70 - 142
1,2,3,4,7,8-HxCDF	100	90.9		90.9	72 - 134
1,2,3,6,7,8-HxCDF	100	91.1		91.1	84 - 130
2,3,4,6,7,8-HxCDF	100	92.7		92.7	70 - 156
1,2,3,7,8,9-HxCDF	100	93.7		93.7	78 - 130
1,2,3,4,7,8-HxCDD	100	75.0		75.0	70 - 164
1,2,3,6,7,8-HxCDD	100	84.2		84.2	76 - 134
1,2,3,7,8,9-HxCDD	100	88.1		88.1	64 - 162
1,2,3,4,6,7,8-HpCDF	100	99.0	B	99.0	82 - 122
1,2,3,4,7,8,9-HpCDF	100	101		101	78 - 138
1,2,3,4,6,7,8-HpCDD	100	83.2	B	83.2	70 - 140
OCDF	200	173	B	86.7	63 - 170
OCDD	200	179	B	89.5	78 - 144

* Indicates values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\231214IH1.qld
Last Altered: Friday, December 15, 2023 13:51:44 Pacific Standard Time
Printed: Friday, December 15, 2023 13:56:31 Pacific Standard Time

Method: T:\Autospec\Methods\Dioxin231215.mdb 15 Dec 2023 13:28:43
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 09:45:18

ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, 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	25.379	1.001	6.293e3	7.931e3	0.903	0.794	0.770	482	591	9.70e4	1.07e5	201.4	180.9	NO	bd	bd	8.945
12378-PeCDF	29.516	1.001	4.595e4	2.977e4	0.923	1.544	1.550	762	926	7.00e5	4.66e5	919.6	502.9	NO	bb	bb	45.435
23478-PeCDF	30.853	1.000	4.571e4	2.923e4	0.991	1.564	1.550	762	926	7.04e5	4.53e5	924.8	489.7	NO	bb	bb	47.728
123478-HxCDF	34.485	1.001	3.706e4	2.771e4	1.128	1.337	1.240	945	952	5.64e5	4.38e5	597.5	460.1	NO	bd	bd	45.466
234678-HxCDF	35.499	1.000	3.393e4	2.837e4	1.081	1.196	1.240	945	952	5.25e5	4.36e5	555.8	458.3	NO	bb	bd	46.368
123678-HxCDF	34.630	1.001	3.859e4	2.886e4	1.032	1.337	1.240	945	952	5.55e5	4.37e5	587.9	459.1	NO	db	db	45.547
123789-HxCDF	36.535	1.000	2.981e4	2.389e4	0.988	1.248	1.240	945	952	4.45e5	3.76e5	471.3	394.6	NO	bb	bb	46.849
1234678-HpCDF	38.384	1.000	2.875e4	2.631e4	1.164	1.093	1.050	961	834	4.57e5	4.19e5	475.0	502.7	NO	bb	bb	49.483
1234789-HpCDF	40.568	1.000	2.046e4	2.056e4	1.104	0.995	1.050	961	834	3.02e5	2.91e5	313.9	348.5	NO	bb	bd	50.728
OCDF	44.664	1.006	3.116e4	3.466e4	1.130	0.899	0.890	766	1448	3.55e5	3.98e5	463.4	274.7	NO	bd	bd	86.730
2378-TCDD	26.014	1.001	6.135e3	7.868e3	1.243	0.780	0.770	784	479	8.84e4	1.13e5	112.9	235.5	NO	bd	bb	8.178
12378-PeCDD	31.109	1.001	3.274e4	2.103e4	1.150	1.557	1.550	571	580	4.60e5	3.11e5	805.7	535.9	NO	bd	bd	40.333
123478-HxCDD	35.621	1.000	2.633e4	2.193e4	0.960	1.200	1.240	598	592	4.27e5	3.53e5	713.9	596.6	NO	bd	bd	37.504
123678-HxCDD	35.732	1.000	3.260e4	2.661e4	0.883	1.225	1.240	598	592	4.65e5	3.78e5	778.2	637.6	NO	db	dd	42.113
123789-HxCDD	36.122	1.011	2.856e4	2.335e4	0.804	1.223	1.240	598	592	4.36e5	3.46e5	730.0	583.7	NO	bd	bd	44.033
1234678-HpCDD	39.843	1.000	2.025e4	1.942e4	1.200	1.043	1.050	637	770	2.90e5	2.83e5	455.8	367.2	NO	bd	bd	41.584
OCDD	44.435	1.000	2.956e4	3.404e4	1.059	0.868	0.890	1154	662	3.36e5	3.78e5	291.2	571.6	NO	bd	bd	89.463
13C-2378-TCDF	25.365	1.007	7.554e4	1.005e5	1.835	0.751	0.770	736	645	1.10e6	1.42e6	1495.8	2204.2	NO	bb	dd	42.021
13C-12378-PeCDF	29.493	1.171	1.092e5	7.135e4	1.377	1.530	1.550	1127	992	1.53e6	1.02e6	1361.0	1032.2	NO	bd	bd	57.437
13C-23478-PeCDF	30.841	1.225	9.537e4	6.314e4	1.301	1.510	1.550	1127	992	1.33e6	8.95e5	1179.1	902.4	NO	bd	bb	53.353
13C-123478-HxCDF	34.462	0.954	4.315e4	8.313e4	1.091	0.519	0.510	1262	1449	6.70e5	1.27e6	531.0	876.9	NO	bd	bd	62.102
13C-123678-HxCDF	34.607	0.958	4.726e4	9.618e4	1.340	0.491	0.510	1262	1449	6.70e5	1.33e6	531.4	916.8	NO	db	dd	57.405
13C-234678-HxCDF	35.487	0.983	4.104e4	8.321e4	1.093	0.493	0.510	1262	1449	6.27e5	1.19e6	497.1	822.8	NO	bb	bb	60.944
13C-123789-HxCDF	36.523	1.011	4.003e4	7.603e4	0.952	0.526	0.510	1262	1449	5.82e5	1.10e6	461.5	757.6	NO	bb	bb	65.418
13C-1234678-HpCDF	38.373	1.063	3.036e4	6.526e4	0.985	0.465	0.440	787	1243	4.55e5	9.79e5	578.7	788.0	NO	bb	bb	52.070
13C-1234789-HpCDF	40.556	1.123	2.248e4	5.080e4	0.756	0.442	0.440	787	1243	3.00e5	7.08e5	381.6	570.0	NO	bb	bb	52.003
13C-1234-TCDD	25.181	0.000	1.013e5	1.270e5	1.000	0.798	0.770	905	679	1.55e6	1.94e6	1713.6	2862.0	NO	bb	bb	100.000
13C-2378-TCDD	26.000	1.033	6.107e4	7.668e4	1.110	0.796	0.770	905	679	9.35e5	1.16e6	1033.6	1704.2	NO	bb	bb	54.379
13C-12378-PeCDD	31.087	1.235	7.132e4	4.459e4	0.754	1.599	1.550	771	587	1.08e6	6.87e5	1400.1	1170.0	NO	bb	bb	67.358
13C-123478-HxCDD	35.610	0.986	7.418e4	5.985e4	0.960	1.240	1.240	1946	1015	1.16e6	9.36e5	598.5	921.4	NO	bd	bd	74.894
13C-123678-HxCDD	35.721	0.989	8.744e4	7.186e4	1.159	1.217	1.240	1946	1015	1.23e6	1.03e6	632.8	1010.5	NO	db	db	73.702
13C-1234678-HpCDD	39.832	1.103	4.081e4	3.870e4	0.629	1.055	1.050	789	815	6.53e5	5.93e5	827.3	727.5	NO	bb	bb	67.770
13C-OCDD	44.417	1.230	6.282e4	7.148e4	0.635	0.879	0.890	1024	1404	7.59e5	8.65e5	741.0	615.9	NO	bb	bb	113.415
13C-123789-HxCDD	36.111	0.000	1.033e5	8.314e4	1.000	1.243	1.240	1946	1015	1.64e6	1.30e6	840.8	1279.8	NO	bb	bb	100.000
37CL-2378-TCDD	26.014	1.033	6.823e4		1.157			719		1.08e6		1495.8			bb		25.820

Dataset: T:\Autospec\Processed Data Batch\231214IH1.qld
Last Altered: Friday, December 15, 2023 13:51:44 Pacific Standard Time
Printed: Friday, December 15, 2023 13:56:31 Pacific Standard Time

ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, 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					1.170		0.770	482	591								
1289-TCDF					0.847		0.770	482	591								
13468-PECDF	26.791	0.908	2.020e2	2.037e2	1.241	0.992	1.550	478	607	2.66e3	2.45e3	5.6	4.0	YES	bb	bb	0.181
12389-PECDF					0.880		1.550	762	926								
123468-HXCDF					1.206		1.240	945	952								
1368-TCDD					1.181		0.770	784	479								
1289-TCDD					0.963		0.770	784	479								
12479-PECDD					2.166		1.550	571	580								
12389-PECDD					1.326		1.550	571	580								
124679-HXCDD					1.127		1.240	598	592								
1234679-HPCDD	38.830	0.975	7.137e2	7.022e2	1.303	1.016	1.050	637	770	1.18e4	1.05e4	18.5	13.6	NO	bd	bb	1.367
Total-tetrafurans			6.293e3		0.973			482		9.70e4							8.945
Total-penta1			0.000e0					478		0.00e0							
Total-pentafurans			9.193e4		0.931			762		1.41e6							93.434
Total-hexafurans			1.397e5		1.087			945		2.10e6							184.616
Total-heptafurans			4.970e4		1.134			961		7.66e5							101.273
Total-Furans			3.188e5		1.053			482		4.72e6							474.998
Total-tetradioxins			6.405e3		1.129			784		9.19e4							8.572
Total-pentadioxins			3.274e4		1.548			571		4.60e5							40.333
Total-hexadioxins			8.749e4		0.943			598		1.33e6							123.650
Total-heptadioxins			2.096e4		1.251			637		3.02e5							42.951
Total-Dioxins			1.772e5		1.182			784		2.52e6							304.969
Total-TEQ			4.959e5					784		7.24e6							779.967
FUNCTION1 PFK			7.925e6					275191		3.53e7							
FUNCTION2 PFK			2.239e5					141954		2.44e6							0.000
FUNCTION3 PFK			4.458e5					178350		1.14e7							0.000
FUNCTION4 PFK			8.386e4					145318		2.97e6							
FUNCTION5 PFK			4.642e5					118681		1.09e7							
FUNCTION1 HXCD...			0.000e0					425		0.00e0							
FUNCTION1 HPCD...																	
FUNCTION2 HPCD...			4.377e2					572		7.24e3							0.000
FUNCTION3 OCDPE			3.846e2					487		6.35e3							0.000
FUNCTION4 NCDPE			0.000e0					472		0.00e0							
FUNCTION5 DCDPE			0.000e0					337		0.00e0							

Method: T:\Autospec\Methods\Dioxin231215.mdb 15 Dec 2023 13:28:43
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 09:45:18

ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDF	25.38	6.293e3	7.931e3	0.903	0.79	0.77	201.4	YES	NO	bd	bd	8.945

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	30.85	4.571e4	2.923e4	0.991	1.56	1.55	924.8	YES	NO	bb	bb	47.728
2	12378-PeCDF	29.52	4.595e4	2.977e4	0.923	1.54	1.55	919.6	YES	NO	bb	bb	45.435
3	Total-pentafurans	29.15	2.646e2	1.636e2	0.931	1.62	1.55	6.5	YES	NO	bb	bb	0.271

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDF	36.53	2.981e4	2.389e4	0.988	1.25	1.24	471.3	YES	NO	bb	bb	46.849
2	234678-HxCDF	35.50	3.393e4	2.837e4	1.081	1.20	1.24	555.8	YES	NO	bb	bd	46.368
3	123678-HxCDF	34.63	3.859e4	2.886e4	1.032	1.34	1.24	587.9	YES	NO	db	db	45.547
4	123478-HxCDF	34.48	3.706e4	2.771e4	1.128	1.34	1.24	597.5	YES	NO	bd	bd	45.466
5	Total-hexafurans	33.84	2.963e2	2.381e2	1.087	1.24	1.24	5.3	YES	NO	bb	bb	0.386

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	40.57	2.046e4	2.056e4	1.104	1.00	1.05	313.9	YES	NO	bb	bd	50.728
2	Total-heptafurans	39.03	4.890e2	5.279e2	1.134	0.93	1.05	8.1	YES	NO	bb	bb	1.062
3	1234678-HpCDF	38.38	2.875e4	2.631e4	1.164	1.09	1.05	475.0	YES	NO	bb	bb	49.483

ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, 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	2378-TCDF	25.38	6.293e3	7.931e3	0.903	0.79	0.77	201.4	YES	NO	bd	bd	8.945
2	23478-PeCDF	30.85	4.571e4	2.923e4	0.991	1.56	1.55	924.8	YES	NO	bb	bb	47.728
3	12378-PeCDF	29.52	4.595e4	2.977e4	0.923	1.54	1.55	919.6	YES	NO	bb	bb	45.435
4	Total-pentafurans	29.15	2.646e2	1.636e2	0.931	1.62	1.55	6.5	YES	NO	bb	bb	0.271
5	123789-HxCDF	36.53	2.981e4	2.389e4	0.988	1.25	1.24	471.3	YES	NO	bb	bb	46.849
6	234678-HxCDF	35.50	3.393e4	2.837e4	1.081	1.20	1.24	555.8	YES	NO	bb	bd	46.368
7	123678-HxCDF	34.63	3.859e4	2.886e4	1.032	1.34	1.24	587.9	YES	NO	db	db	45.547
8	123478-HxCDF	34.48	3.706e4	2.771e4	1.128	1.34	1.24	597.5	YES	NO	bd	bd	45.466
9	Total-hexafurans	33.84	2.963e2	2.381e2	1.087	1.24	1.24	5.3	YES	NO	bb	bb	0.386
10	1234789-HpCDF	40.57	2.046e4	2.056e4	1.104	1.00	1.05	313.9	YES	NO	bb	bd	50.728
11	Total-heptafurans	39.03	4.890e2	5.279e2	1.134	0.93	1.05	8.1	YES	NO	bb	bb	1.062
12	1234678-HpCDF	38.38	2.875e4	2.631e4	1.164	1.09	1.05	475.0	YES	NO	bb	bb	49.483
13	OCDF	44.66	3.116e4	3.466e4	1.130	0.90	0.89	463.4	YES	NO	bd	bd	86.730

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDD	26.01	6.135e3	7.868e3	1.243	0.78	0.77	112.9	YES	NO	bd	bb	8.178
2	Total-tetradioxins	25.63	2.698e2	3.431e2	1.129	0.79	0.77	4.4	YES	NO	bb	bb	0.394

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12378-PeCDD	31.11	3.274e4	2.103e4	1.150	1.56	1.55	805.7	YES	NO	bd	bd	40.333

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDD	36.12	2.856e4	2.335e4	0.804	1.22	1.24	730.0	YES	NO	bd	bd	44.033
2	123678-HxCDD	35.73	3.260e4	2.661e4	0.883	1.23	1.24	778.2	YES	NO	db	dd	42.113
3	123478-HxCDD	35.62	2.633e4	2.193e4	0.960	1.20	1.24	713.9	YES	NO	bd	bd	37.504

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.84	2.025e4	1.942e4	1.200	1.04	1.05	455.8	YES	NO	bd	bd	41.584
2	1234679-HPCDD	38.83	7.137e2	7.022e2	1.303	1.02	1.05	18.5	YES	NO	bd	bb	1.367

ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, Conditions: AUTOSPEC01, User: pk

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	26.01	6.135e3	7.868e3	1.243	0.78	0.77	112.9	YES	NO	bd	bb	8.178
2	Total-tetradioxins	25.63	2.698e2	3.431e2	1.129	0.79	0.77	4.4	YES	NO	bb	bb	0.394
3	123789-HxCDD	36.12	2.856e4	2.335e4	0.804	1.22	1.24	730.0	YES	NO	bd	bd	44.033
4	123678-HxCDD	35.73	3.260e4	2.661e4	0.883	1.23	1.24	778.2	YES	NO	db	dd	42.113
5	123478-HxCDD	35.62	2.633e4	2.193e4	0.960	1.20	1.24	713.9	YES	NO	bd	bd	37.504
6	12378-PeCDD	31.11	3.274e4	2.103e4	1.150	1.56	1.55	805.7	YES	NO	bd	bd	40.333
7	1234678-HpCDD	39.84	2.025e4	1.942e4	1.200	1.04	1.05	455.8	YES	NO	bd	bd	41.584
8	1234679-HPCDD	38.83	7.137e2	7.022e2	1.303	1.02	1.05	18.5	YES	NO	bd	bb	1.367
9	OCDD	44.44	2.956e4	3.404e4	1.059	0.87	0.89	291.2	YES	NO	bd	bd	89.463

TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDF	25.38	6.293e3	7.931e3	0.903	0.79	0.77	201.4	YES	NO	bd	bd	8.945
2	23478-PeCDF	30.85	4.571e4	2.923e4	0.991	1.56	1.55	924.8	YES	NO	bb	bb	47.728
3	12378-PeCDF	29.52	4.595e4	2.977e4	0.923	1.54	1.55	919.6	YES	NO	bb	bb	45.435
4	Total-pentafurans	29.15	2.646e2	1.636e2	0.931	1.62	1.55	6.5	YES	NO	bb	bb	0.271
5	123789-HxCDF	36.53	2.981e4	2.389e4	0.988	1.25	1.24	471.3	YES	NO	bb	bb	46.849
6	234678-HxCDF	35.50	3.393e4	2.837e4	1.081	1.20	1.24	555.8	YES	NO	bb	bd	46.368
7	123678-HxCDF	34.63	3.859e4	2.886e4	1.032	1.34	1.24	587.9	YES	NO	db	db	45.547
8	123478-HxCDF	34.48	3.706e4	2.771e4	1.128	1.34	1.24	597.5	YES	NO	bd	bd	45.466
9	Total-hexafurans	33.84	2.963e2	2.381e2	1.087	1.24	1.24	5.3	YES	NO	bb	bb	0.386
10	1234789-HpCDF	40.57	2.046e4	2.056e4	1.104	1.00	1.05	313.9	YES	NO	bb	bd	50.728
11	Total-heptafurans	39.03	4.890e2	5.279e2	1.134	0.93	1.05	8.1	YES	NO	bb	bb	1.062
12	1234678-HpCDF	38.38	2.875e4	2.631e4	1.164	1.09	1.05	475.0	YES	NO	bb	bb	49.483
13	OCDF	44.66	3.116e4	3.466e4	1.130	0.90	0.89	463.4	YES	NO	bd	bd	86.730
14	2378-TCDD	26.01	6.135e3	7.868e3	1.243	0.78	0.77	112.9	YES	NO	bd	bb	8.178
15	Total-tetradioxins	25.63	2.698e2	3.431e2	1.129	0.79	0.77	4.4	YES	NO	bb	bb	0.394
16	123789-HxCDD	36.12	2.856e4	2.335e4	0.804	1.22	1.24	730.0	YES	NO	bd	bd	44.033
17	123678-HxCDD	35.73	3.260e4	2.661e4	0.883	1.23	1.24	778.2	YES	NO	db	dd	42.113
18	123478-HxCDD	35.62	2.633e4	2.193e4	0.960	1.20	1.24	713.9	YES	NO	bd	bd	37.504
19	12378-PeCDD	31.11	3.274e4	2.103e4	1.150	1.56	1.55	805.7	YES	NO	bd	bd	40.333
20	1234678-HpCDD	39.84	2.025e4	1.942e4	1.200	1.04	1.05	455.8	YES	NO	bd	bd	41.584
21	1234679-HPCDD	38.83	7.137e2	7.022e2	1.303	1.02	1.05	18.5	YES	NO	bd	bb	1.367
22	OCDD	44.44	2.956e4	3.404e4	1.059	0.87	0.89	291.2	YES	NO	bd	bd	89.463

Dataset: T:\Autospec\Processed Data Batch\231214IH1.qld
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ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, 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	24.36	3.592e5					9.2	YES		dd		
2	FUNCTION1 PFK	24.23	4.930e5					9.5	YES		bd		
3	FUNCTION1 PFK	23.92	1.879e5					6.6	YES		bb		
4	FUNCTION1 PFK	23.54	2.335e5					7.4	YES		db		
5	FUNCTION1 PFK	23.26	2.155e6					12.3	YES		bd		
6	FUNCTION1 PFK	22.57	1.965e6					17.7	YES		db		
7	FUNCTION1 PFK	22.30	1.615e5					10.5	YES		dd		
8	FUNCTION1 PFK	22.16	3.818e5					10.4	YES		bd		
9	FUNCTION1 PFK	21.93	1.329e5					6.3	YES		bb		
10	FUNCTION1 PFK	21.47	1.171e5					4.2	YES		bb		
11	FUNCTION1 PFK	27.12	1.763e5					6.2	YES		bb		
12	FUNCTION1 PFK	26.55	4.282e4					3.2	YES		bb		
13	FUNCTION1 PFK	25.58	2.656e5					3.1	YES		bb		
14	FUNCTION1 PFK	25.19	3.895e5					11.3	YES		bb		
15	FUNCTION1 PFK	25.00	3.621e4					0.0	NO		bb		
16	FUNCTION1 PFK	24.62	8.273e5					10.3	YES		db		

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	27.67	2.239e5					17.2	YES		bb		0.000

Dataset: T:\Autospec\Processed Data Batch\231214IH1.qld
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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	33.26	6.308e3					1.0	NO		db		0.000
2	FUNCTION3 PFK	33.20	5.835e3					1.2	NO		bd		0.000
3	FUNCTION3 PFK	32.88	2.250e4					2.4	NO		bb		0.000
4	FUNCTION3 PFK	32.76	2.250e4					2.3	NO		bb		0.000
5	FUNCTION3 PFK	32.64	4.472e4					3.7	YES		bb		0.000
6	FUNCTION3 PFK	32.52	2.137e4					2.5	NO		db		0.000
7	FUNCTION3 PFK	32.48	1.160e4					2.2	NO		bd		0.000
8	FUNCTION3 PFK	34.82	2.902e3					0.7	NO		db		0.000
9	FUNCTION3 PFK	34.79	9.076e3					0.8	NO		bd		0.000
10	FUNCTION3 PFK	34.60	1.044e4					1.4	NO		bb		0.000
11	FUNCTION3 PFK	34.48	5.365e3					1.3	NO		db		0.000
12	FUNCTION3 PFK	34.44	9.609e3					1.5	NO		bd		0.000
13	FUNCTION3 PFK	34.34	1.065e4					1.5	NO		bb		0.000
14	FUNCTION3 PFK	34.28	9.777e3					1.3	NO		db		0.000
15	FUNCTION3 PFK	34.22	5.183e3					1.2	NO		bd		0.000
16	FUNCTION3 PFK	34.09	6.170e3					1.1	NO		bb		0.000
17	FUNCTION3 PFK	33.88	5.071e3					1.1	NO		db		0.000
18	FUNCTION3 PFK	33.82	1.327e4					2.0	NO		bd		0.000
19	FUNCTION3 PFK	33.75	1.868e4					1.9	NO		bb		0.000
20	FUNCTION3 PFK	33.46	1.120e3					0.6	NO		bb		0.000
21	FUNCTION3 PFK	33.42	1.074e4					1.9	NO		db		0.000
22	FUNCTION3 PFK	33.36	7.187e3					1.4	NO		bd		0.000
23	FUNCTION3 PFK	33.30	2.682e3					0.9	NO		bb		0.000
24	FUNCTION3 PFK	36.53	4.525e3					1.1	NO		bb		0.000
25	FUNCTION3 PFK	36.45	9.057e3					1.4	NO		db		0.000
26	FUNCTION3 PFK	36.40	4.233e3					1.1	NO		bd		0.000
27	FUNCTION3 PFK	36.06	3.687e4					3.0	YES		db		0.000
28	FUNCTION3 PFK	35.94	3.741e4					2.7	NO		bd		0.000
29	FUNCTION3 PFK	35.82	5.663e3					1.0	NO		bb		0.000
30	FUNCTION3 PFK	35.75	6.376e3					1.4	NO		db		0.000
31	FUNCTION3 PFK	35.72	5.680e3					1.0	NO		bd		0.000
32	FUNCTION3 PFK	35.65	5.049e3					1.1	NO		bb		0.000
33	FUNCTION3 PFK	35.49	3.364e3					1.0	NO		bb		0.000
34	FUNCTION3 PFK	35.31	1.228e4					2.2	NO		db		0.000
35	FUNCTION3 PFK	35.26	9.286e3					1.6	NO		bd		0.000
36	FUNCTION3 PFK	35.15	2.150e3					0.7	NO		bb		0.000
37	FUNCTION3 PFK	35.11	1.891e3					0.8	NO		db		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	35.05	9.919e3					1.9	NO		bd		0.000
39	FUNCTION3 PFK	35.01	1.133e3					0.6	NO		bb		0.000
40	FUNCTION3 PFK	37.41	3.934e3					0.9	NO		bb		0.000
41	FUNCTION3 PFK	37.31	3.246e3					1.0	NO		bb		0.000
42	FUNCTION3 PFK	37.19	6.717e3					1.1	NO		bb		0.000
43	FUNCTION3 PFK	37.10	1.024e4					1.3	NO		bb		0.000
44	FUNCTION3 PFK	36.75	3.343e3					0.8	NO		bb		0.000
45	FUNCTION3 PFK	36.58	6.714e2					0.3	NO		bb		0.000

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	40.16	4.818e3					1.2	NO		bb		
2	FUNCTION4 PFK	40.03	3.271e3					0.9	NO		bb		
3	FUNCTION4 PFK	39.85	1.122e4					1.9	NO		bb		
4	FUNCTION4 PFK	38.85	3.660e3					0.9	NO		bb		
5	FUNCTION4 PFK	38.81	2.689e3					0.8	NO		bb		
6	FUNCTION4 PFK	38.51	6.495e3					1.5	NO		bb		
7	FUNCTION4 PFK	38.40	5.860e3					1.0	NO		bb		
8	FUNCTION4 PFK	37.84	1.685e3					0.6	NO		bb		
9	FUNCTION4 PFK	37.65	1.301e4					1.9	NO		bb		
10	FUNCTION4 PFK	42.94	2.305e3					0.9	NO		bb		
11	FUNCTION4 PFK	42.90	2.189e3					0.8	NO		bb		
12	FUNCTION4 PFK	42.80	2.112e3					0.8	NO		bb		
13	FUNCTION4 PFK	42.63	3.426e3					0.8	NO		bb		
14	FUNCTION4 PFK	42.15	8.525e2					0.5	NO		bb		
15	FUNCTION4 PFK	42.10	7.014e2					0.4	NO		bb		
16	FUNCTION4 PFK	42.00	2.475e3					0.8	NO		bb		
17	FUNCTION4 PFK	41.36	7.251e3					1.7	NO		bb		
18	FUNCTION4 PFK	41.15	3.509e3					1.1	NO		bb		
19	FUNCTION4 PFK	40.92	4.725e3					1.1	NO		bb		
20	FUNCTION4 PFK	40.39	1.603e3					0.7	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	43.17	4.289e4					10.4	YES		dd		
2	FUNCTION5 PFK	43.13	4.674e4					11.7	YES		dd		
3	FUNCTION5 PFK	43.09	6.613e4					13.2	YES		dd		
4	FUNCTION5 PFK	43.05	7.523e4					14.5	YES		bd		
5	FUNCTION5 PFK	45.81	3.537e3					1.4	NO		bd		
6	FUNCTION5 PFK	45.71	2.320e3					1.0	NO		bb		
7	FUNCTION5 PFK	45.00	2.072e3					1.0	NO		db		
8	FUNCTION5 PFK	44.98	3.607e3					1.2	NO		bd		
9	FUNCTION5 PFK	44.91	3.011e3					1.3	NO		db		
10	FUNCTION5 PFK	44.87	5.124e3					1.5	NO		bd		
11	FUNCTION5 PFK	44.74	6.273e3					1.9	NO		db		
12	FUNCTION5 PFK	44.70	5.819e3					1.6	NO		dd		
13	FUNCTION5 PFK	44.65	8.636e3					1.3	NO		dd		
14	FUNCTION5 PFK	44.53	1.029e4					1.7	NO		bd		
15	FUNCTION5 PFK	44.21	5.842e3					1.9	NO		bb		
16	FUNCTION5 PFK	44.08	4.572e3					1.7	NO		bb		
17	FUNCTION5 PFK	44.03	4.078e3					0.8	NO		bb		
18	FUNCTION5 PFK	43.38	2.642e4					4.4	YES		db		
19	FUNCTION5 PFK	43.30	6.898e4					6.7	YES		dd		
20	FUNCTION5 PFK	43.23	6.727e4					9.8	YES		dd		
21	FUNCTION5 PFK	45.92	2.565e3					1.1	NO		bb		
22	FUNCTION5 PFK	45.87	1.400e3					0.8	NO		bb		
23	FUNCTION5 PFK	45.84	1.416e3					0.8	NO		db		

ETHERS1

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

ETHERS2

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

ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, 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...	31.44	1.368e2					4.3	YES		bb		0.000
2	FUNCTION2 HPCD...	30.51	9.524e1					2.6	NO		db		0.000
3	FUNCTION2 HPCD...	30.44	8.811e1					2.3	NO		bd		0.000
4	FUNCTION2 HPCD...	28.58	1.175e2					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	36.78	8.018e1					2.5	NO		bb		0.000
2	FUNCTION3 OCDPE	33.82	1.353e2					5.4	YES		bb		0.000
3	FUNCTION3 OCDPE	32.69	1.692e2					5.2	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

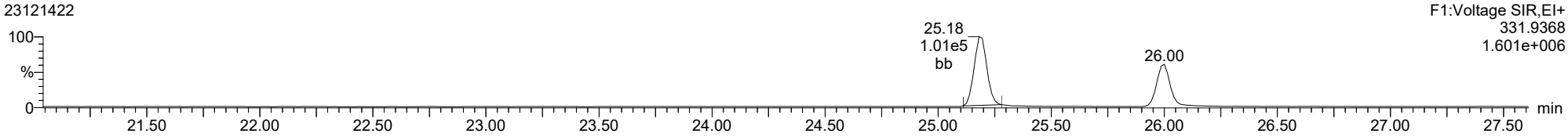
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Dataset: T:\Autospec\Processed Data Batch\231214IH1.qld
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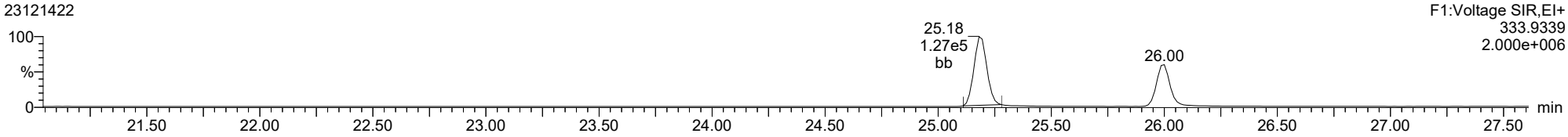
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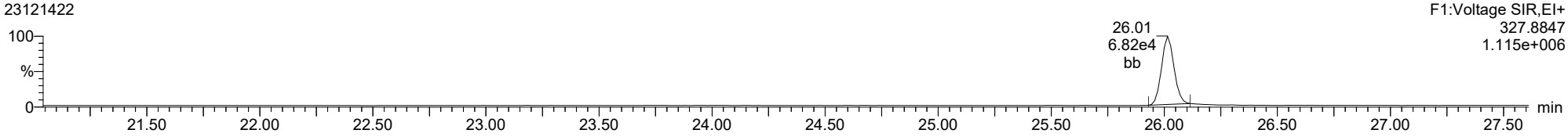
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13C-1234-TCDD



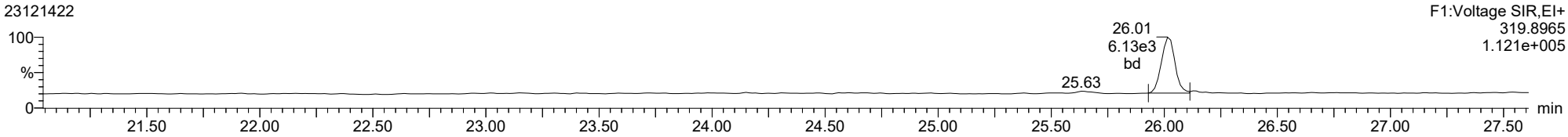
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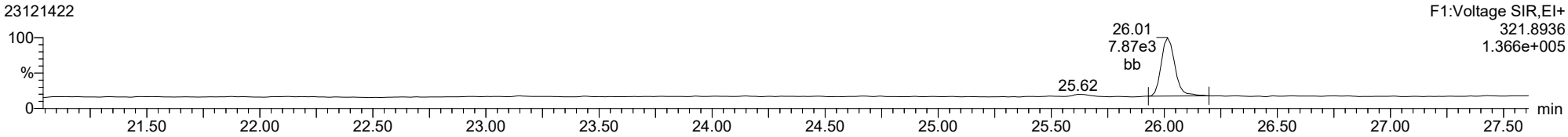
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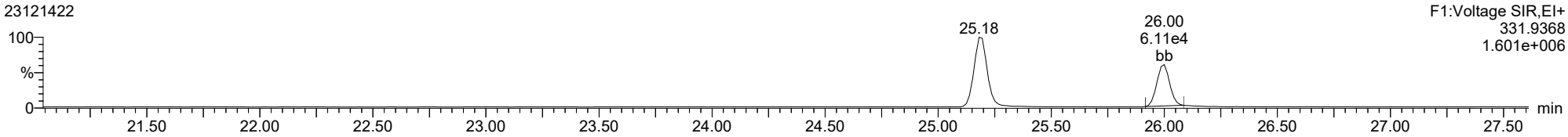
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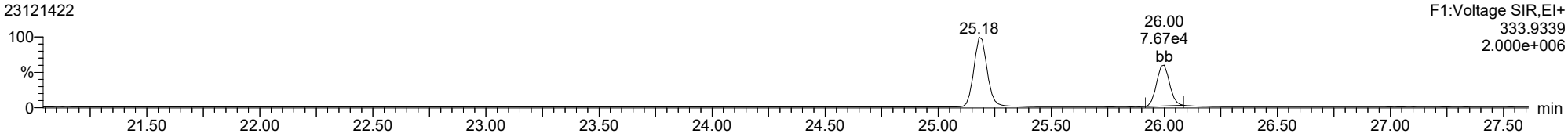
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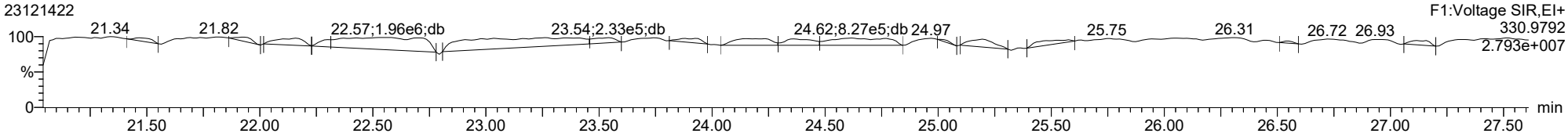
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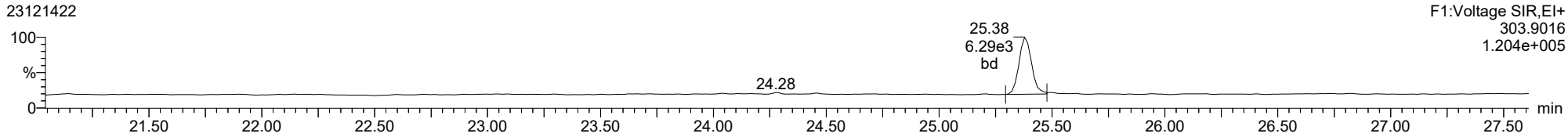


FUNCTION1 PFK

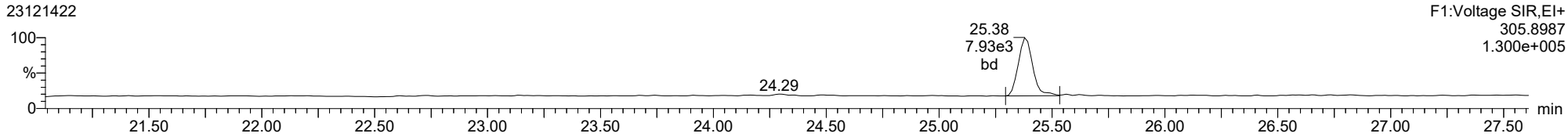


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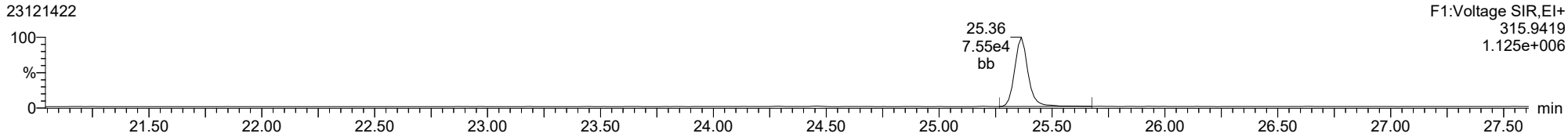
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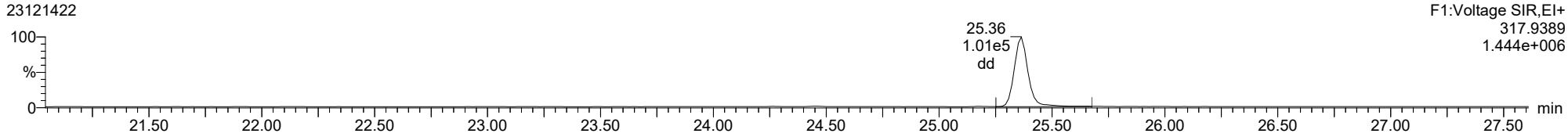
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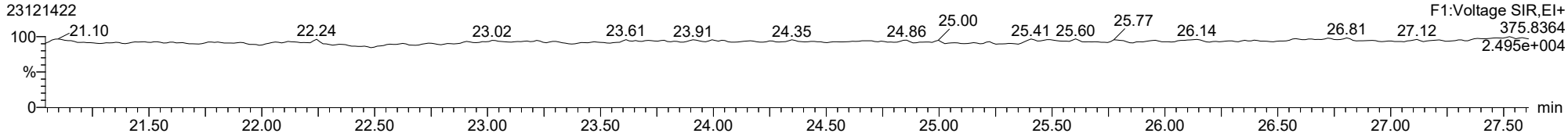
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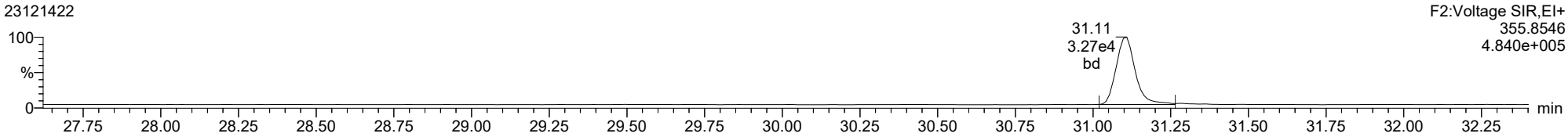


FUNCTION1 HXCDPE

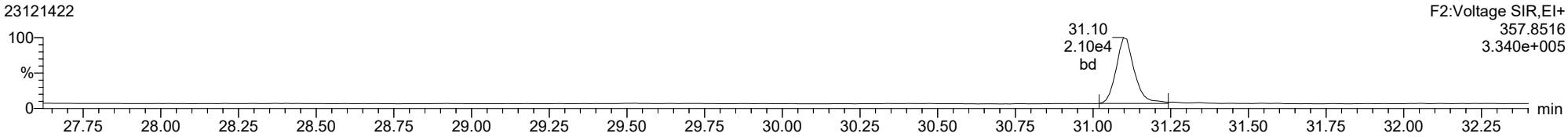


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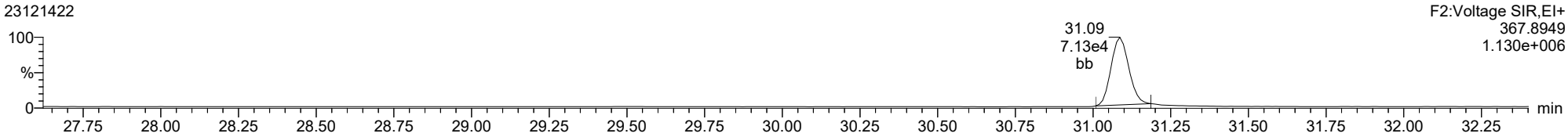
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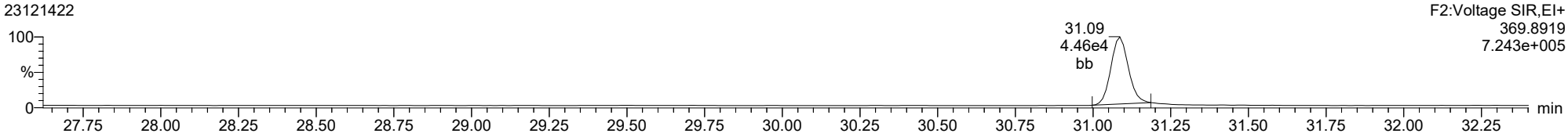
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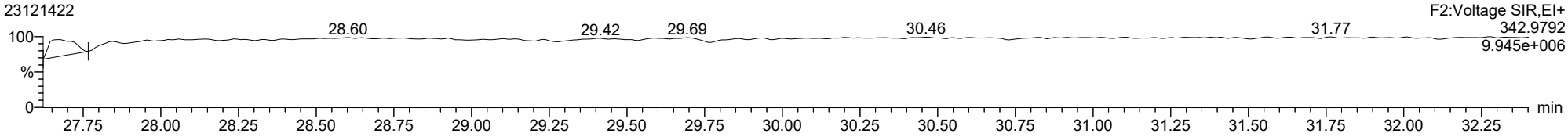
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13C-12378-PeCDD

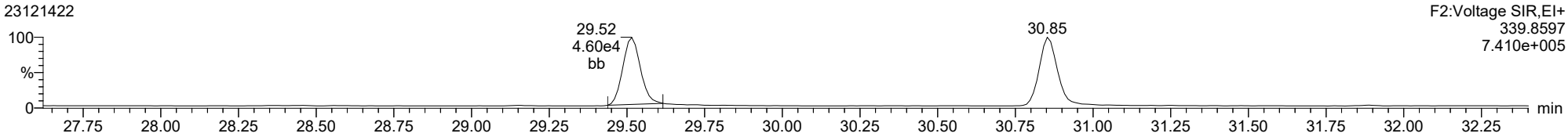


FUNCTION2 PFK

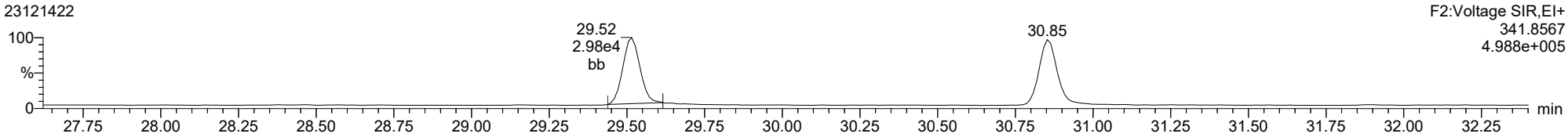


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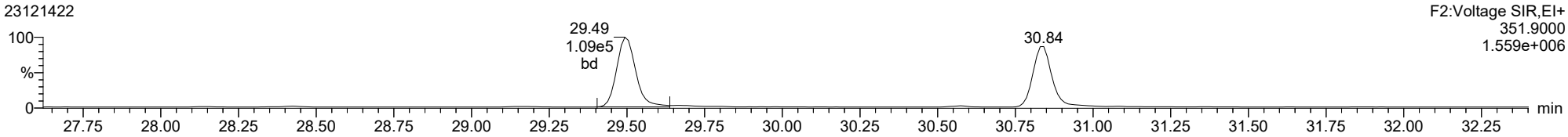
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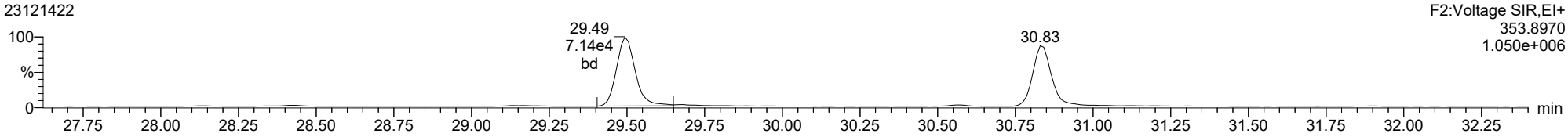
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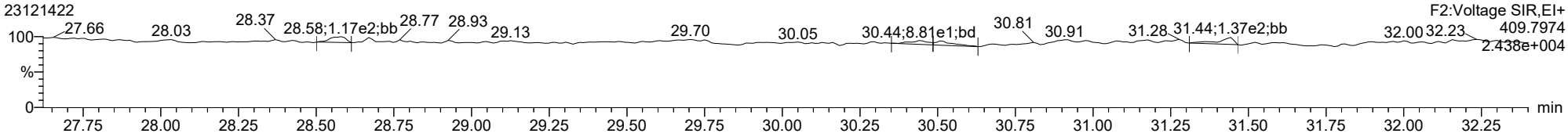
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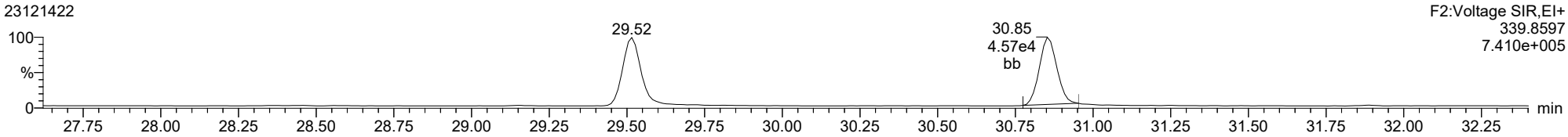


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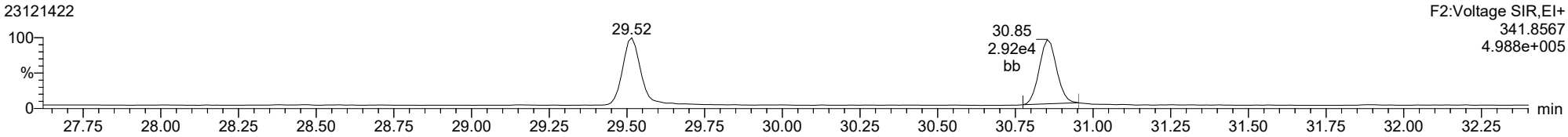


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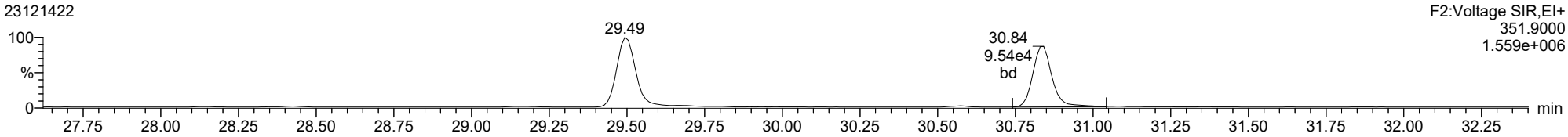
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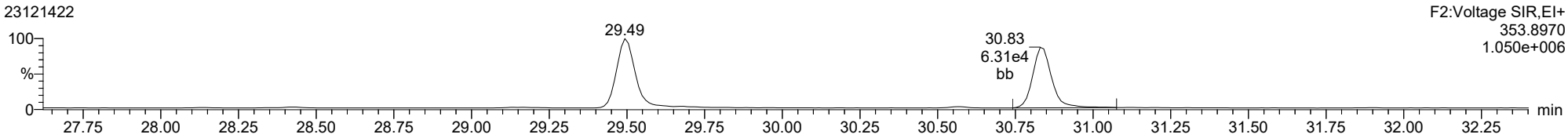
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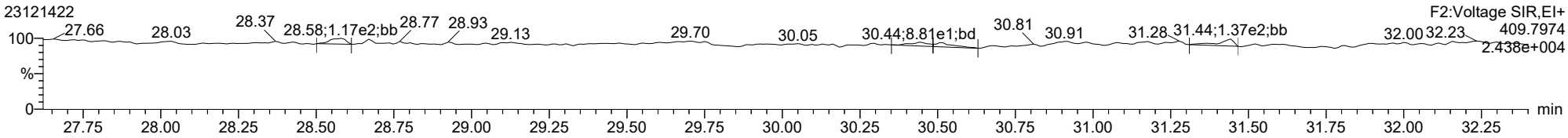
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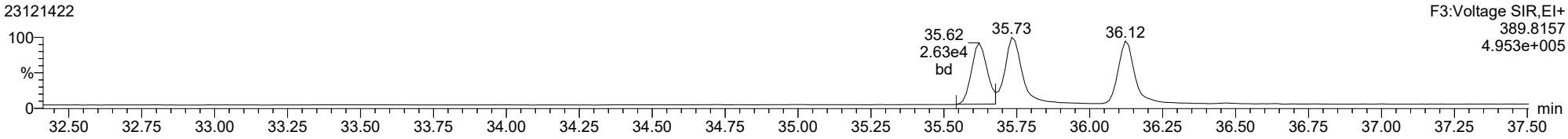


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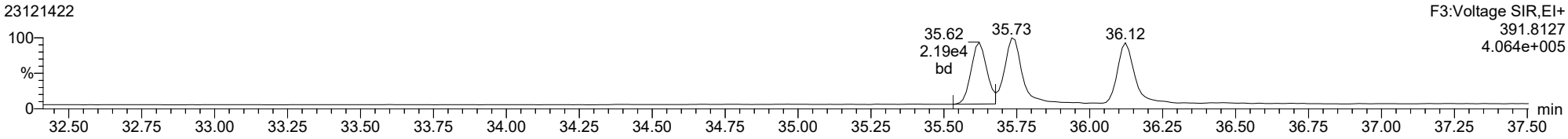


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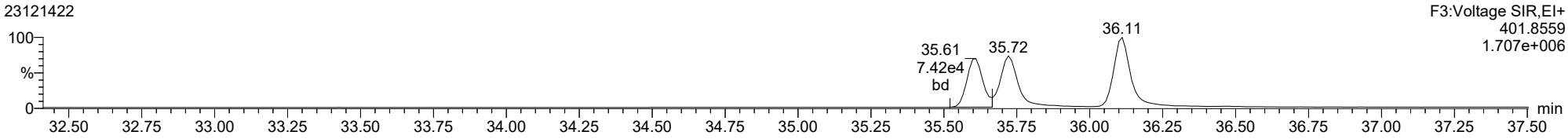
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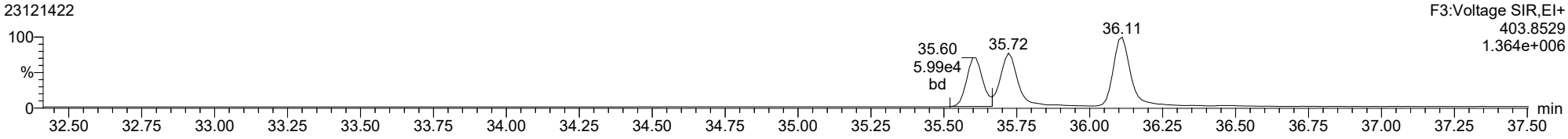
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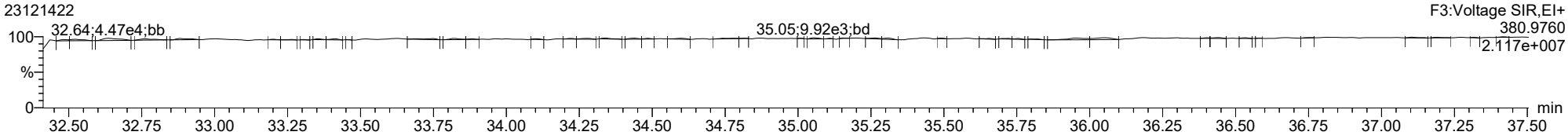
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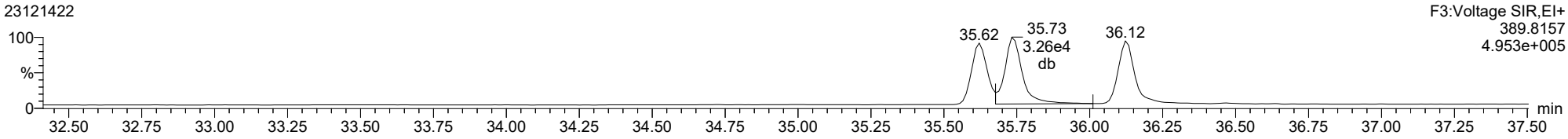
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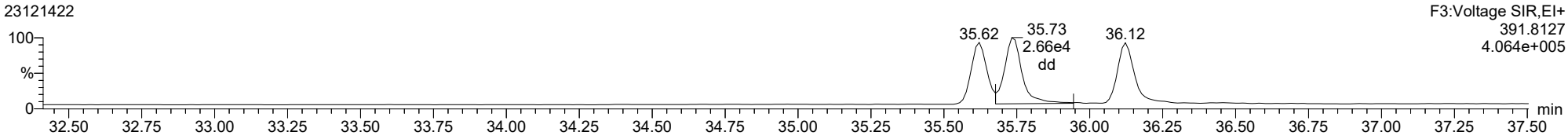
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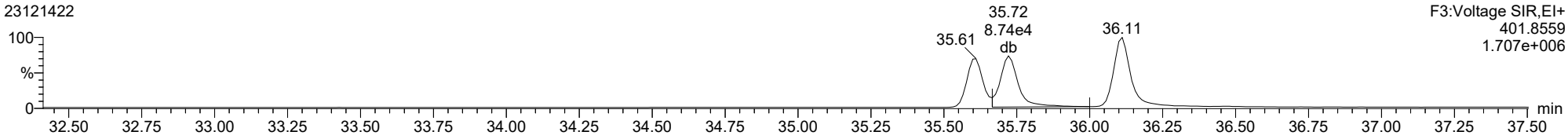
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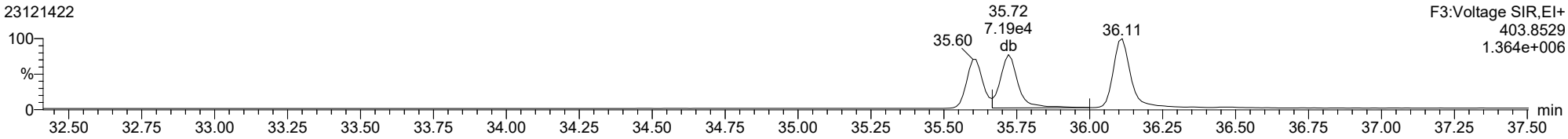
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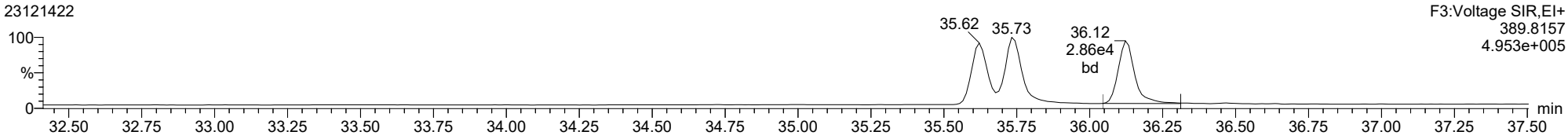


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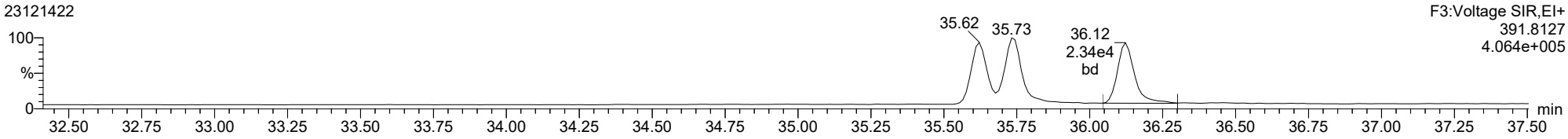


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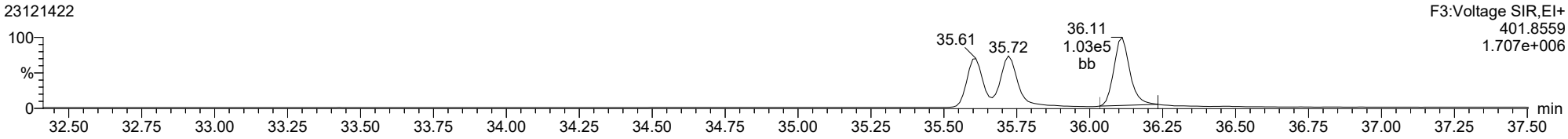
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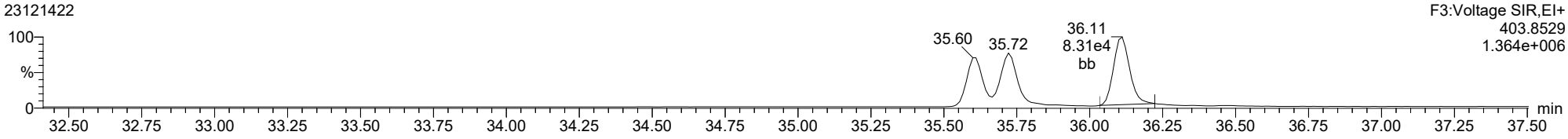
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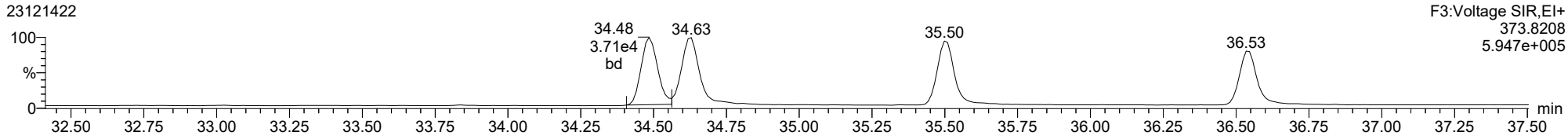


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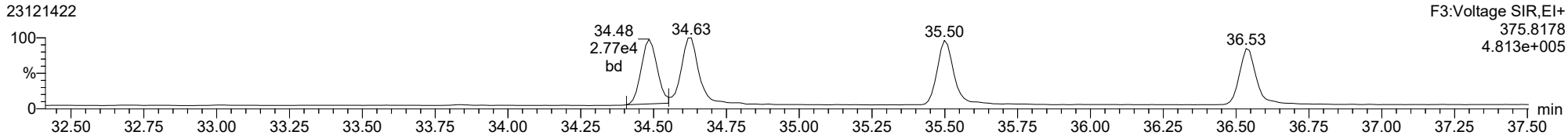


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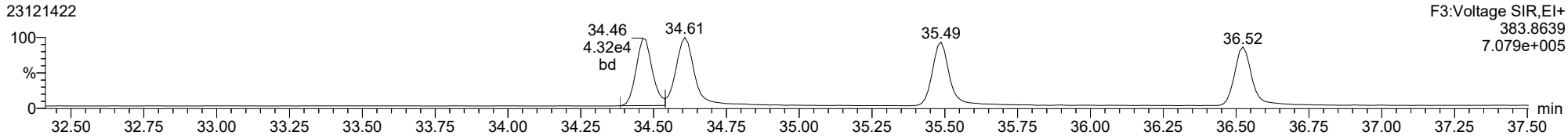
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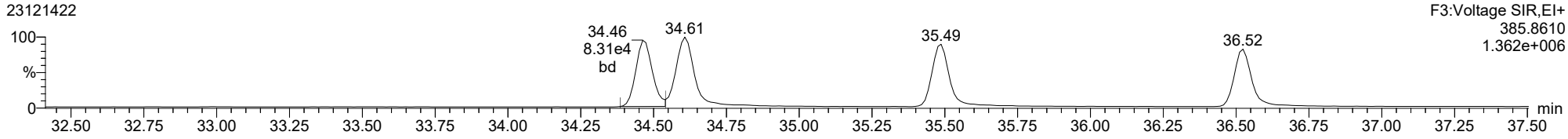
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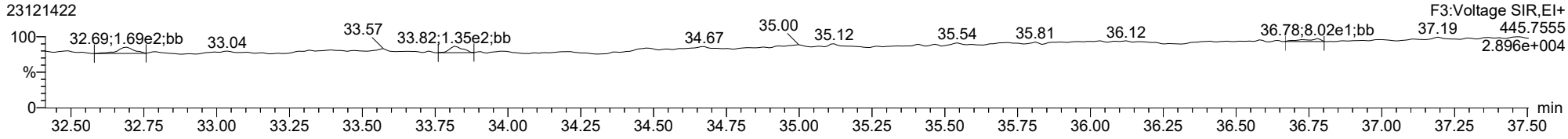
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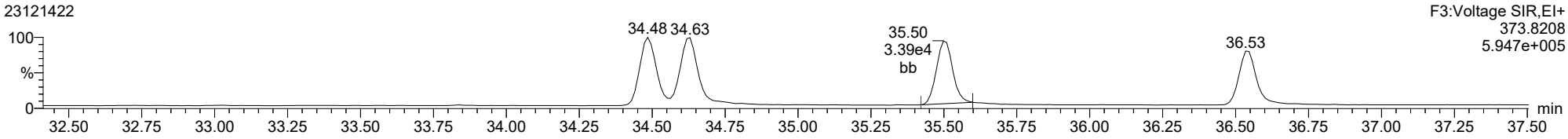


FUNCTION3 OCDPE

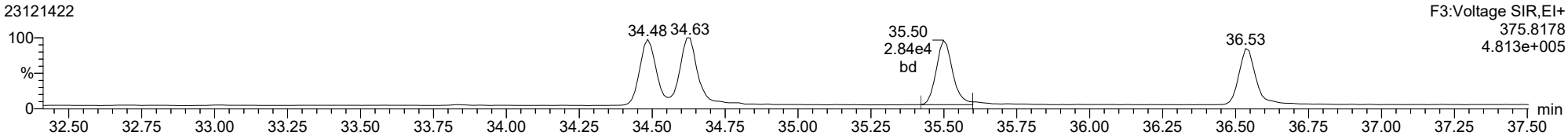


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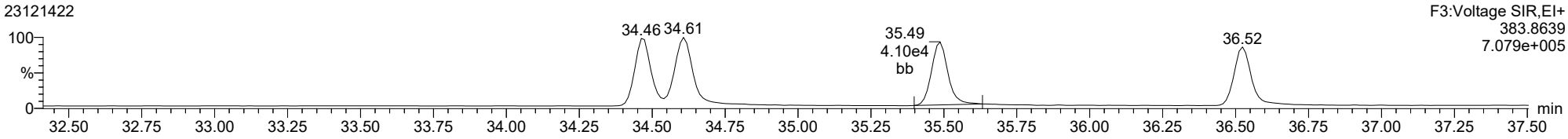
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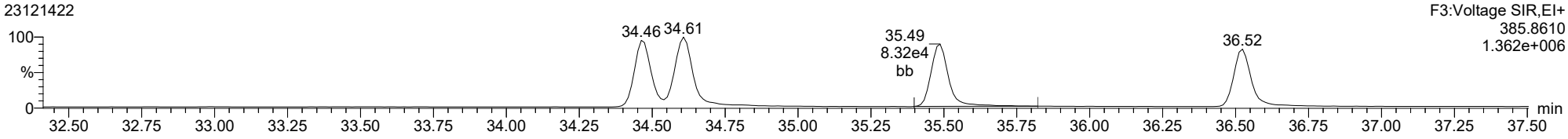
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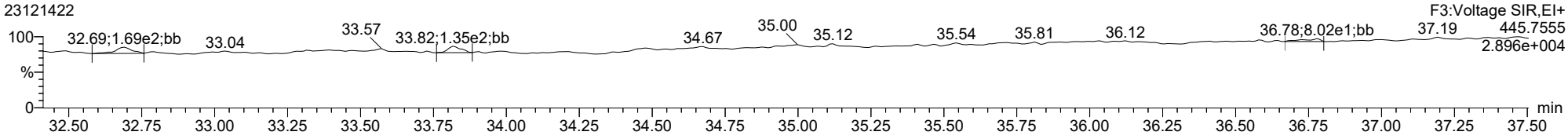
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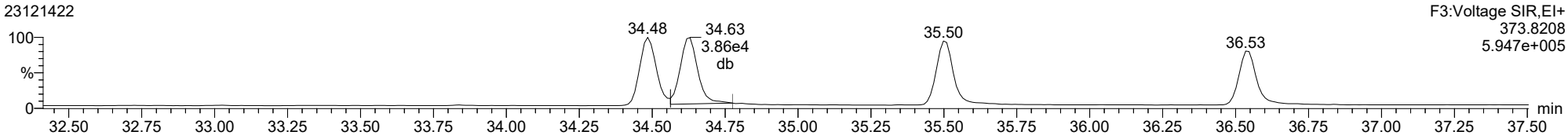


FUNCTION3 OCDPE

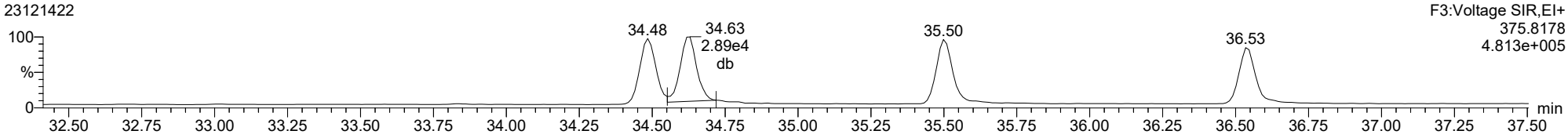


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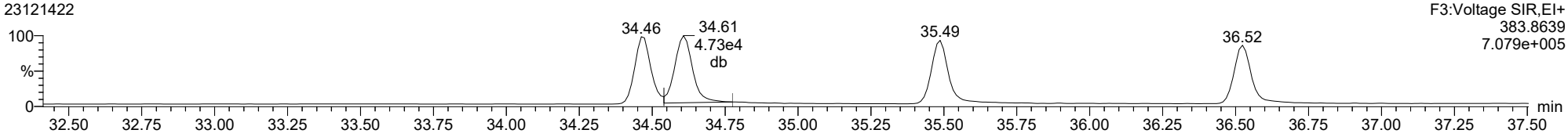
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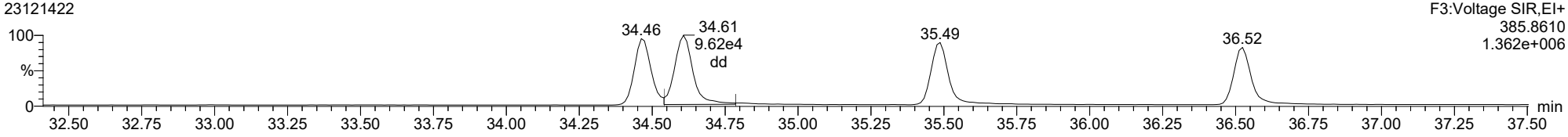
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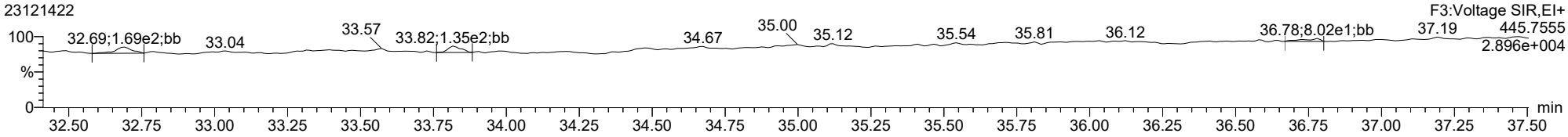
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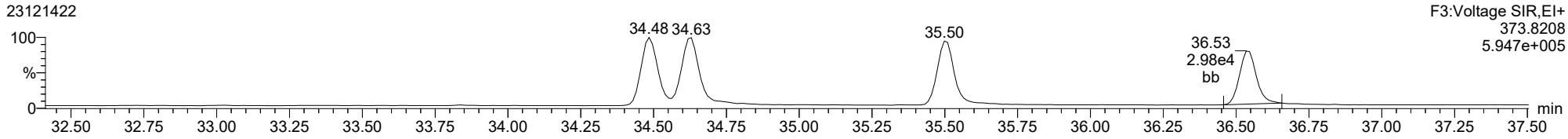


FUNCTION3 OCDPE

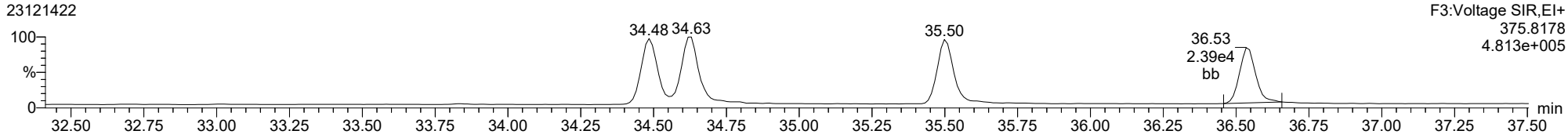


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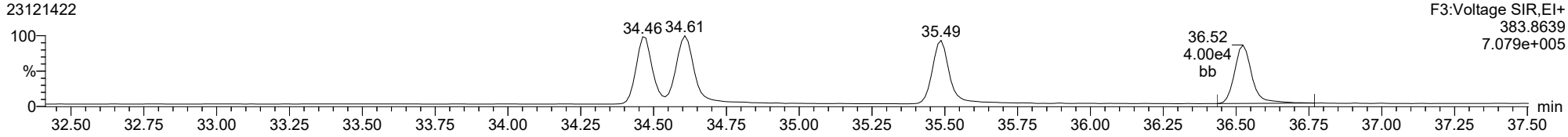
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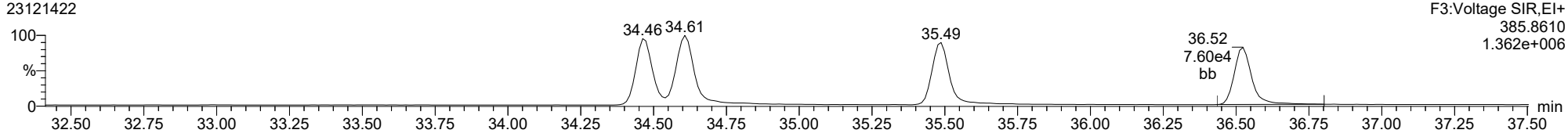
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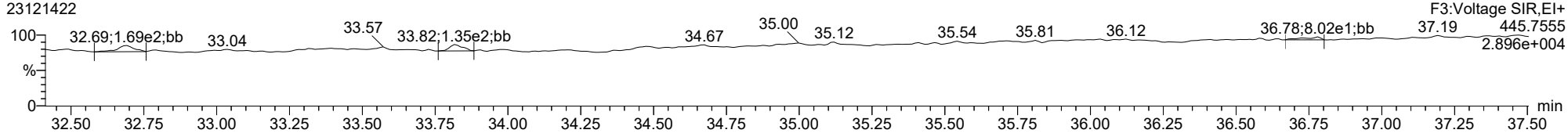
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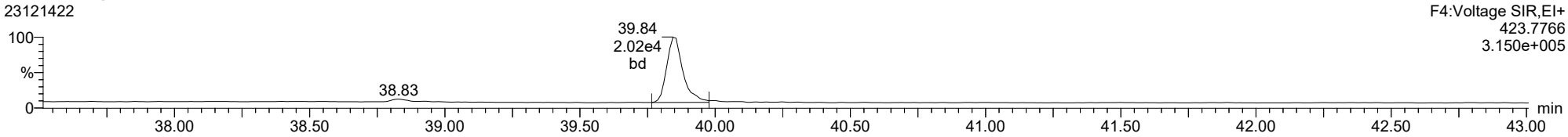


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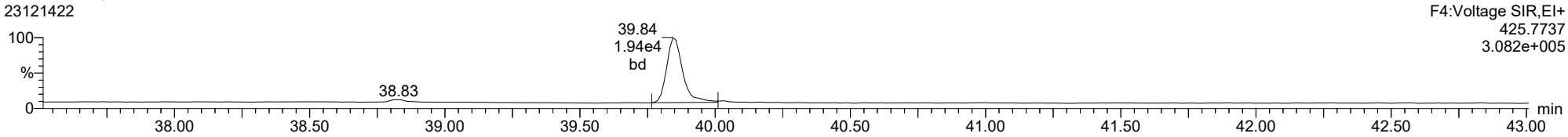


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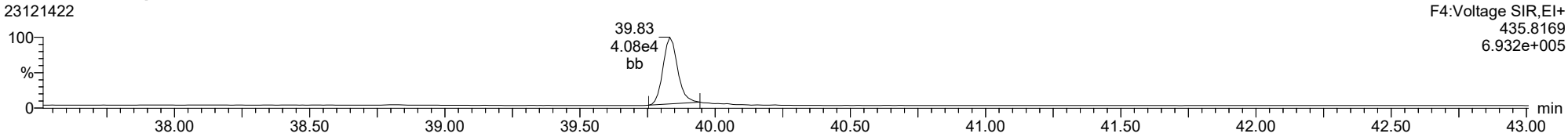
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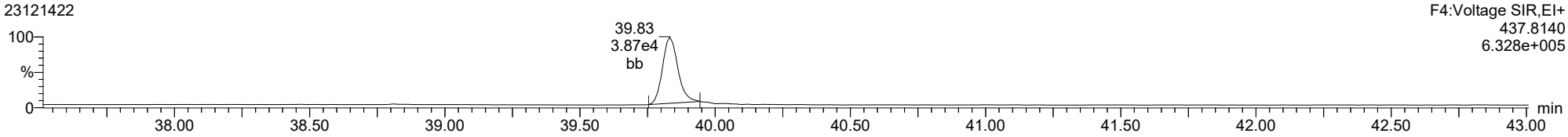
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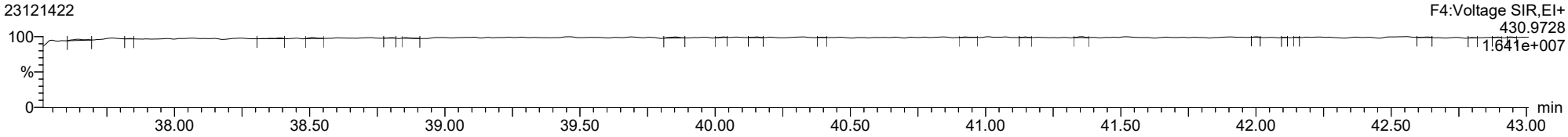
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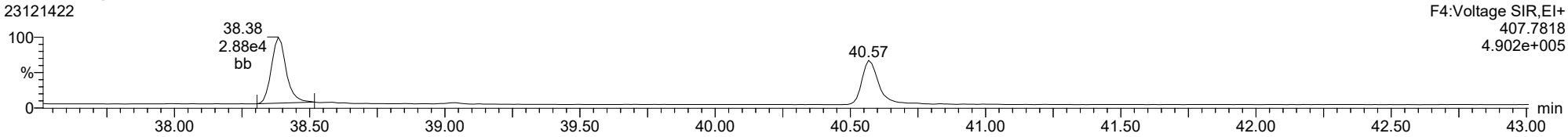


FUNCTION4 PFK

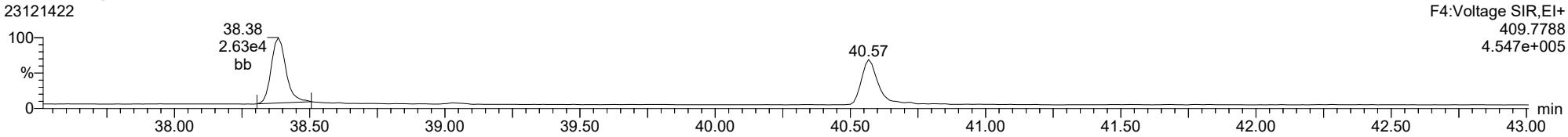


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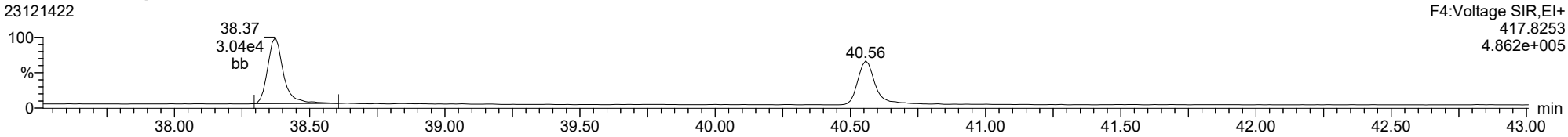
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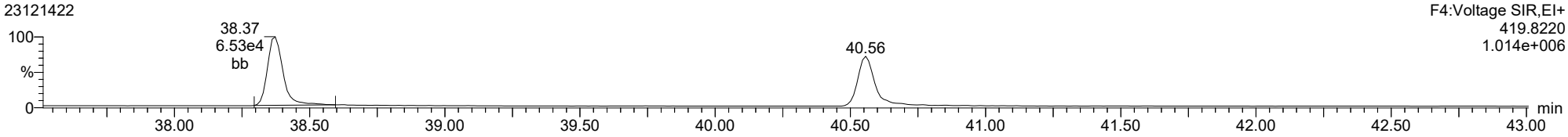
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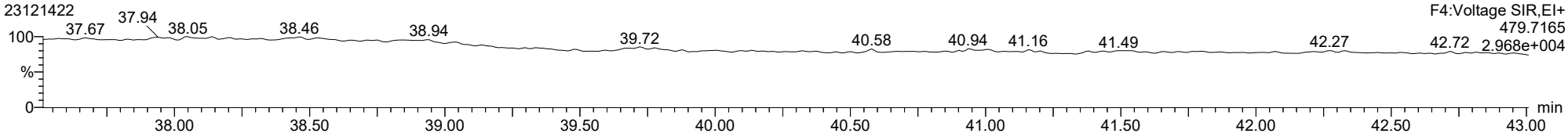
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13C-1234678-HpCDF

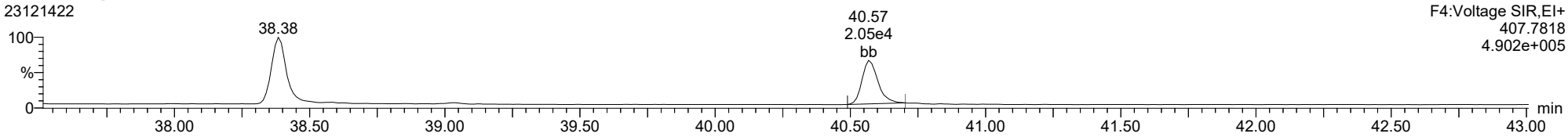


FUNCTION4 NCDPE

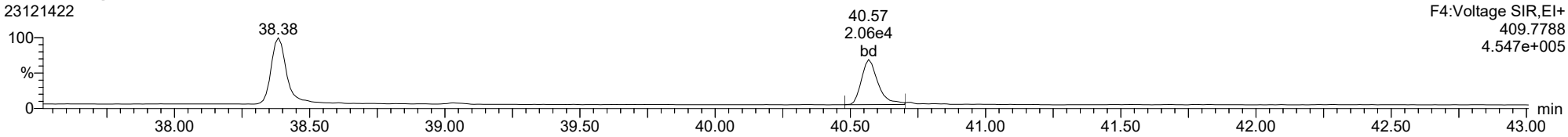


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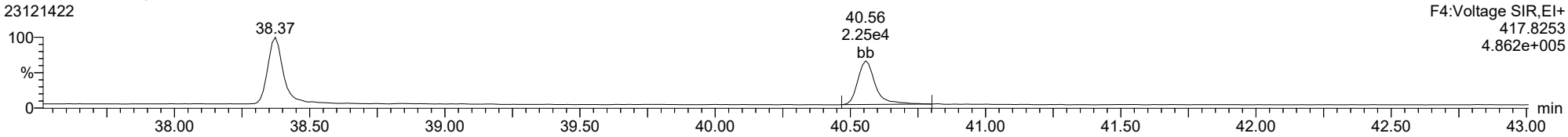
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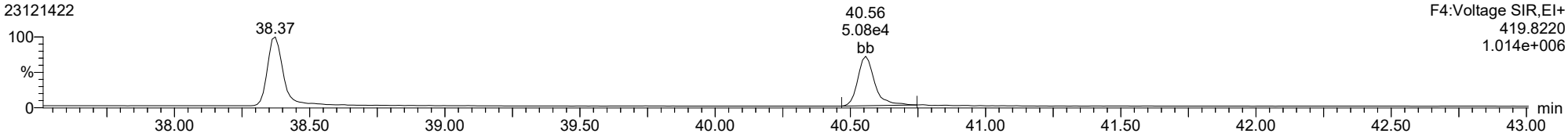
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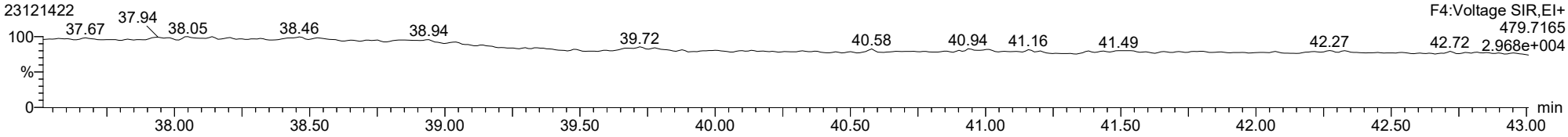
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13C-1234789-HpCDF

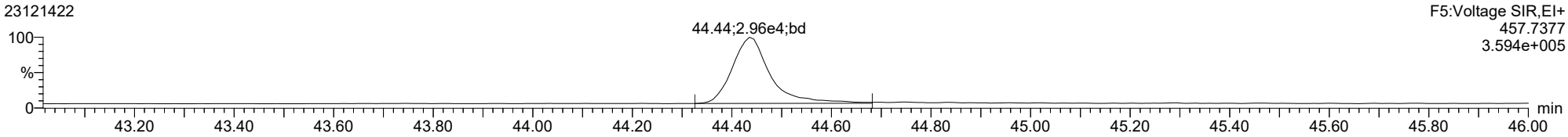


FUNCTION4 NCDPE

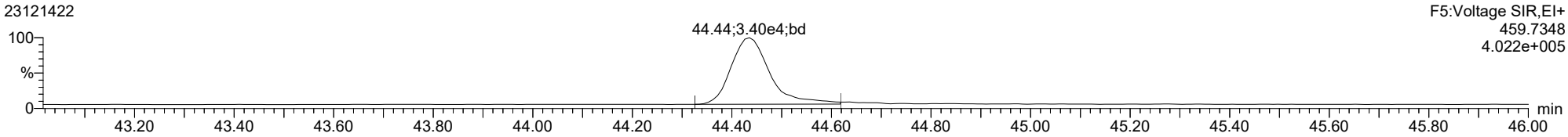


ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, Conditions: AUTOSPEC01, User: pk

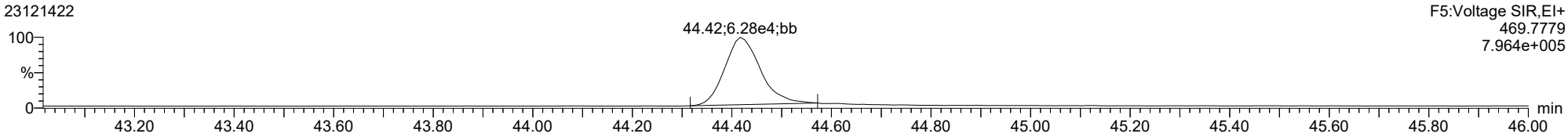
OCDD



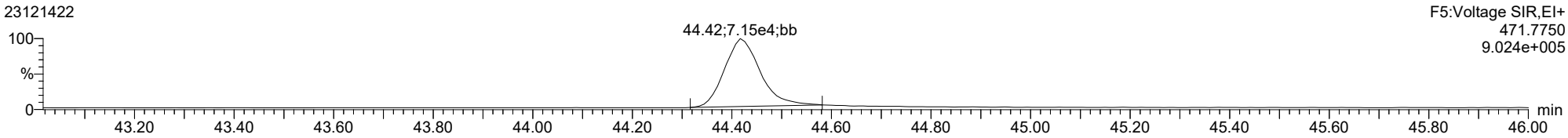
OCDD



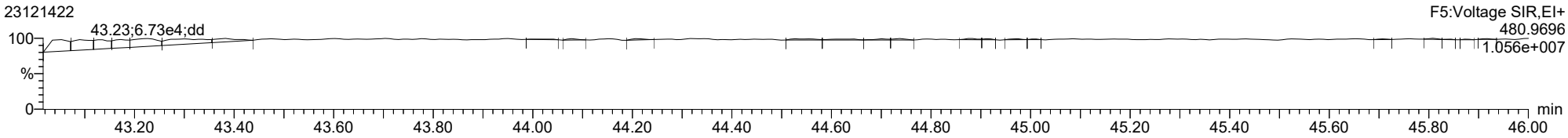
13C-OCDD



13C-OCDD



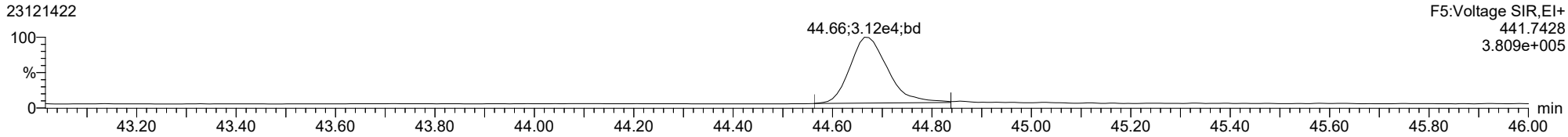
FUNCTION5 PFK



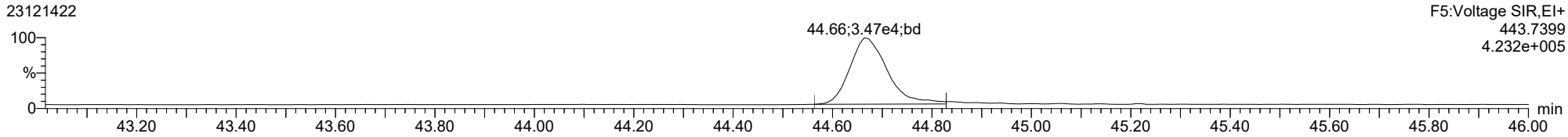
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Printed: Friday, December 15, 2023 13:56:31 Pacific Standard Time

ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, Conditions: AUTOSPEC01, User: pk

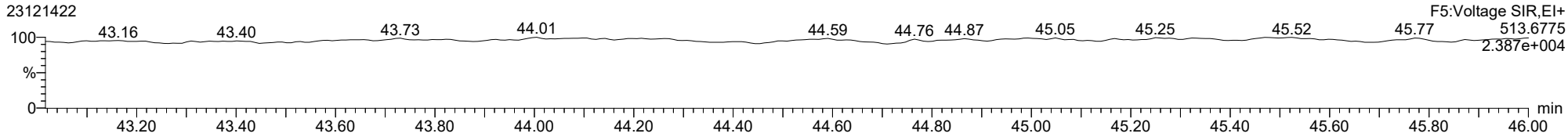
OCDF



OCDF



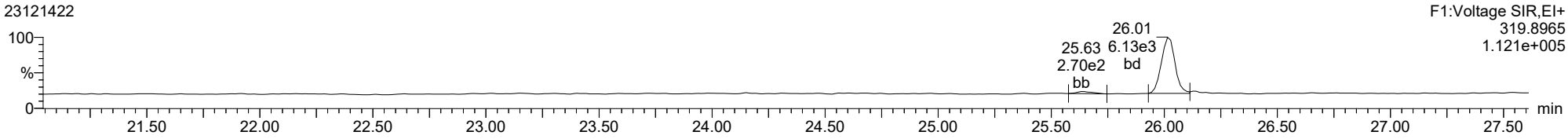
FUNCTION5 DCDPE



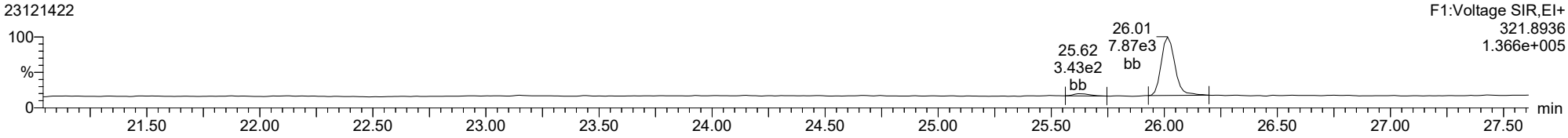
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ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, Conditions: AUTOSPEC01, User: pk

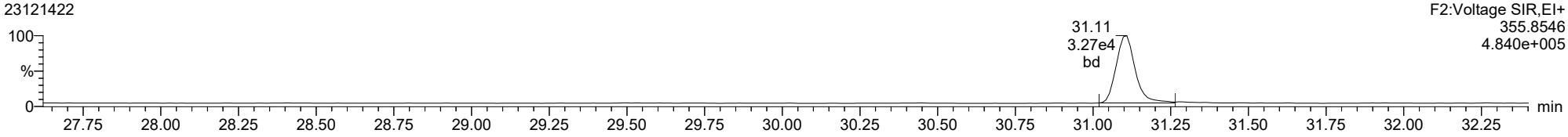
Total-tetradioxins



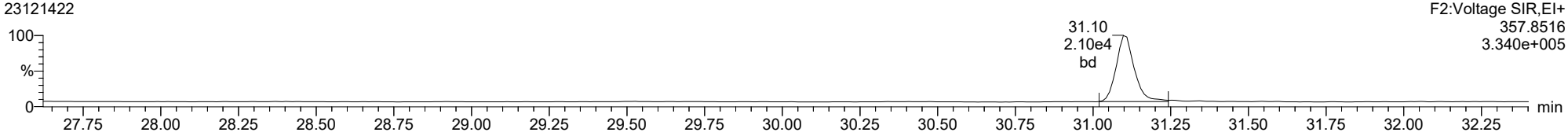
Total-tetradioxins



Total-pentadioxins

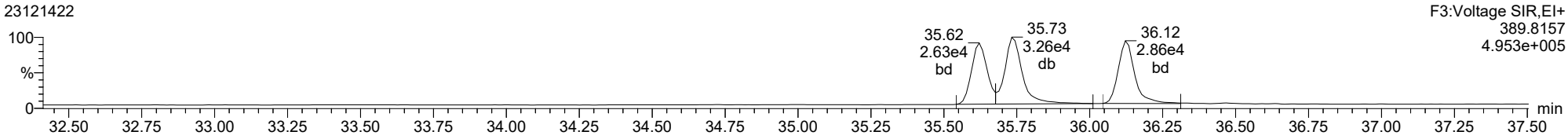


Total-pentadioxins

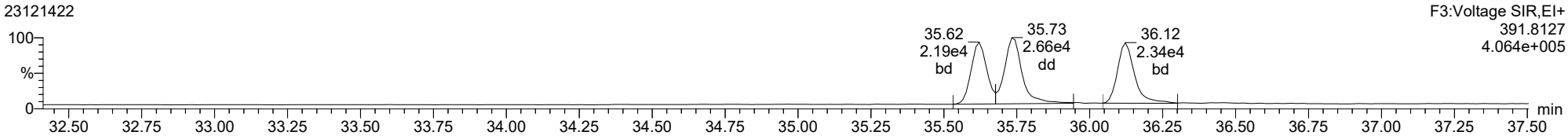


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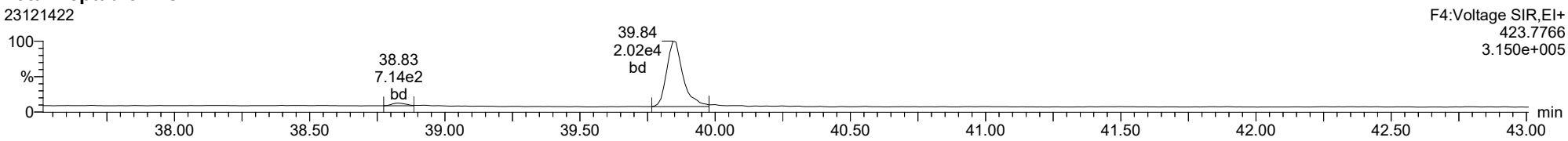
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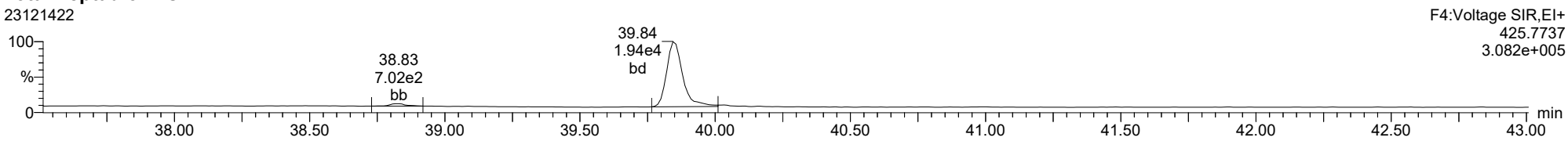
Total-hexadioxins



Total-heptadioxins

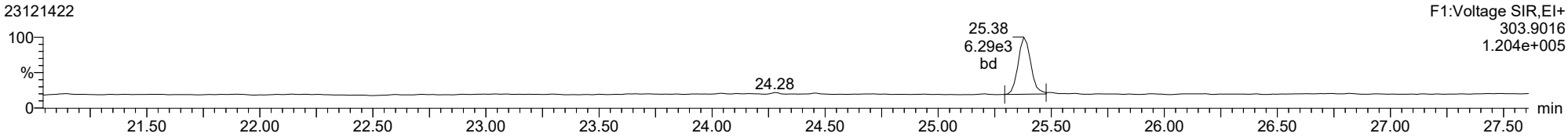


Total-heptadioxins

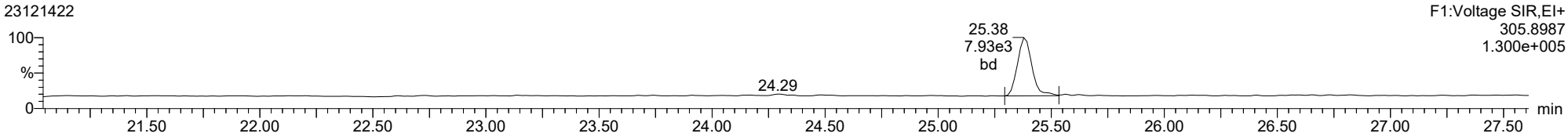


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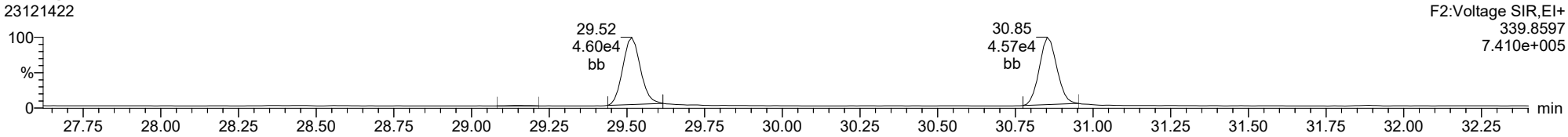
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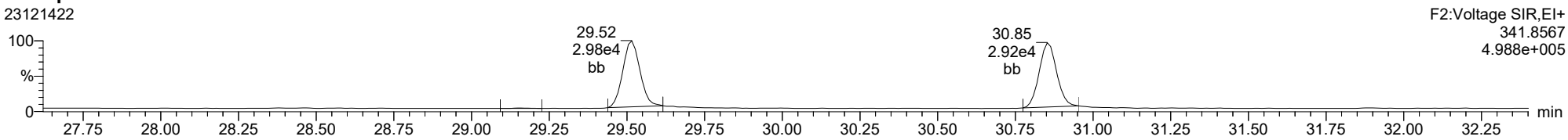
Total-tetrafurans



Total-pentafurans



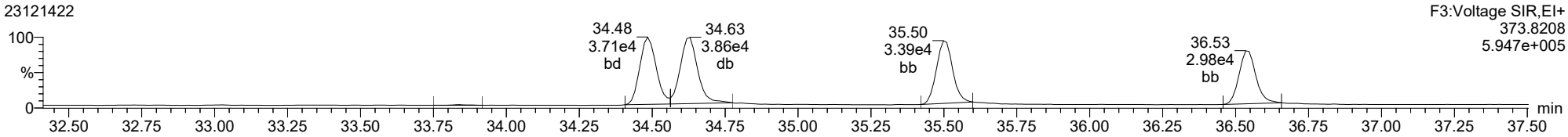
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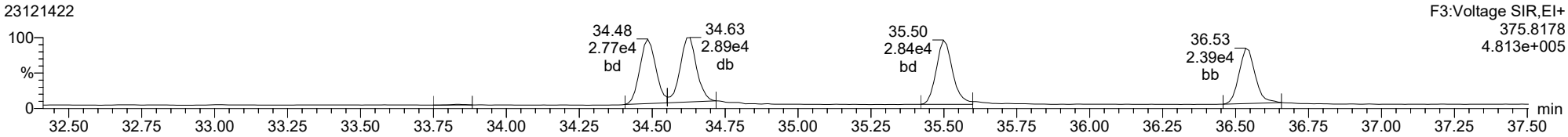
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ID: BLK0112-BS1, Name: 23121422, Date: 15-Dec-2023, Time: 03:08:54, Conditions: AUTOSPEC01, User: pk

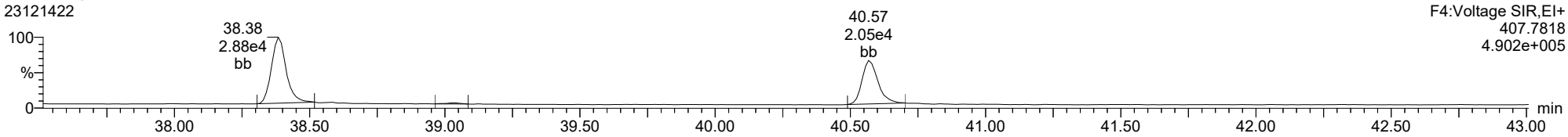
Total-hexafurans



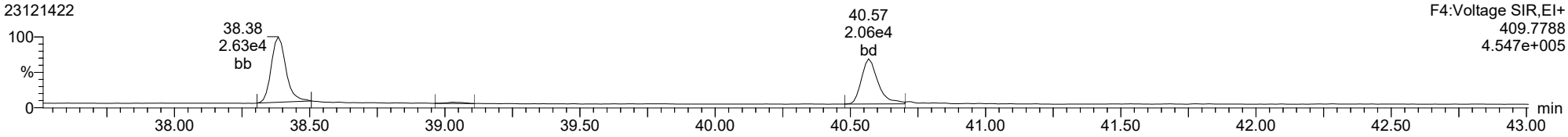
Total-hexafurans



Total-heptafurans



Total-heptafurans



INITIAL CALIBRATION DATA

EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Calibration:	GH00041	Instrument:	AUTOSPEC01
Calibration Date:	08/11/2023	Column (1):	RTX-Dioxin2

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	Conc	RRF	Conc	RRF	Conc	RRF	Conc	RRF	Conc	RRF	Conc	RRF
2,3,7,8-TCDF			0.5	0.9170169	2	0.8896049	10	0.8956648	40	0.9072161	200	0.9062335
2,3,7,8-TCDD			0.5	1.291459	2	1.233047	10	1.171298	40	1.242227	200	1.27688
1,2,3,7,8-PeCDF	0.5	0.9050012	2.5	0.8965486	10	0.9540675	50	0.9277948	200	0.9293139	1000	0.9266945
2,3,4,7,8-PeCDF	0.5	0.9085743	2.5	1.051184	10	0.9802419	50	0.9945154	200	0.9985836	1000	1.010871
1,2,3,7,8-PeCDD	0.5	1.13089	2.5	1.142394	10	1.12465	50	1.173623	200	1.163067	1000	1.165895
1,2,3,4,7,8-HxCDF	0.5	1.171522	2.5	1.146258	10	1.102409	50	1.083471	200	1.1275	1000	1.137861
1,2,3,6,7,8-HxCDF	0.5	1.002442	2.5	1.01135	10	1.068924	50	1.022077	200	1.03404	1000	1.055313
2,3,4,6,7,8-HxCDF	0.5	1.047067	2.5	1.079021	10	1.105346	50	1.050327	200	1.086324	1000	1.120738
1,2,3,7,8,9-HxCDF	0.5	0.9624625	2.5	0.9081871	10	0.9833481	50	0.9872332	200	1.040889	1000	1.043569
1,2,3,4,7,8-HxCDD	0.5	1.146907	2.5	0.8861021	10	0.9660919	50	0.8986722	200	0.9337293	1000	0.9290194
1,2,3,6,7,8-HxCDD	0.5	0.8554847	2.5	0.8247378	10	0.8750677	50	0.9220737	200	0.8930401	1000	0.9257571
1,2,3,7,8,9-HxCDD	0.5	0.7019908	2.5	0.7130637	10	0.8584371	50	0.8446464	200	0.829624	1000	0.8746994
1,2,3,4,6,7,8-HpCDF	0.5	1.223099	2.5	1.104545	10	1.167736	50	1.124315	200	1.161503	1000	1.201057
1,2,3,4,7,8,9-HpCDF	0.5	0.93457	2.5	1.013728	10	1.111552	50	1.146994	200	1.261925	1000	1.153009
1,2,3,4,6,7,8-HpCDD	0.5	1.487743	2.5	1.080656	10	1.131152	50	1.184304	200	1.134631	1000	1.179134
OCDF	1	0.9623343	5	0.9592974	20	1.274279	100	1.104526	400	1.250961	2000	1.229832
OCDD	1	1.11973	5	0.9863372	20	1.039534	100	0.989959	400	1.135737	2000	1.080698
13C12-2,3,7,8-TCDF	100	1.827549	100	1.875447	100	1.843357	100	1.772636	100	1.770442	100	1.922881
13C12-2,3,7,8-TCDD	100	1.088774	100	1.14768	100	1.064817	100	1.160829	100	0.9954637	100	1.199712
13C12-1,2,3,7,8-PeCDF	100	1.417003	100	1.445072	100	1.312187	100	1.305943	100	1.210215	100	1.568867
13C12-2,3,4,7,8-PeCDF	100	1.306495	100	1.301506	100	1.260886	100	1.252619	100	1.167718	100	1.518179
13C12-1,2,3,7,8-PeCDD	100	0.7639065	100	0.7852329	100	0.685109	100	0.7320055	100	0.6328894	100	0.9229378
13C12-1,2,3,4,7,8-HxCDF	100	1.017315	100	1.068631	100	1.169113	100	1.126009	100	1.156912	100	1.005921
13C12-1,2,3,6,7,8-HxCDF	100	1.231598	100	1.390159	100	1.481835	100	1.379081	100	1.388592	100	1.170109
13C12-2,3,4,6,7,8-HxCDF	100	1.027322	100	1.107706	100	1.15593	100	1.115236	100	1.117234	100	1.037253
13C12-1,2,3,7,8,9-HxCDF	100	0.8795225	100	0.9166548	100	1.027554	100	0.9757214	100	0.9944612	100	0.9157163
13C12-1,2,3,4,7,8-HxCDD	100	0.9104907	100	0.9956927	100	0.9346567	100	0.972884	100	0.9645194	100	0.981134
13C12-1,2,3,6,7,8-HxCDD	100	1.183922	100	1.232021	100	1.115505	100	1.222273	100	1.126356	100	1.075454

INITIAL CALIBRATION DATA

EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Calibration:	GH00041	Instrument:	AUTOSPEC01
Calibration Date:	08/11/2023	Column (1):	RTX-Dioxin2

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	Conc	RRF	Conc	RRF	Conc	RRF	Conc	RRF	Conc	RRF	Conc	RRF
13C12-1,2,3,4,6,7,8-HpCDF	100	0.9279461	100	1.003576	100	1.022714	100	1.032271	100	0.9834014	100	0.939784
13C12-1,2,3,4,7,8,9-HpCDF	100	0.7242028	100	0.7724378	100	0.7645327	100	0.7376695	100	0.747954	100	0.7880098
13C12-1,2,3,4,6,7,8-HpCDD	100	0.6408675	100	0.6675492	100	0.5609532	100	0.6552775	100	0.61085	100	0.6402193
13C12-OCDD	200	0.6642378	200	0.7010461	200	0.5069038	200	0.6533745	200	0.5799566	200	0.7053341
37Cl4-2,3,7,8-TCDD	0.1	1.195029	0.5	1.123797	2	1.12089	10	1.150483	40	1.052937	200	1.300967
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

INITIAL CALIBRATION DATA

EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Calibration:	GH00041	Instrument:	AUTOSPEC01
Calibration Date:	08/11/2023	Column (1):	RTX-Dioxin2

COMPOUND	Mean RRF	RRF RSD	Linear COD	Quad COD	Limit Type & Limit	Q
2,3,7,8-TCDF	0.9031472	1.2			RSD ()	
2,3,7,8-TCDD	1.242982	3.8			RSD ()	
1,2,3,7,8-PeCDF	0.9232368	2.2			RSD ()	
2,3,4,7,8-PeCDF	0.9906617	4.7			RSD ()	
1,2,3,7,8-PeCDD	1.150086	1.8			RSD ()	
1,2,3,4,7,8-HxCDF	1.12817	2.8			RSD ()	
1,2,3,6,7,8-HxCDF	1.032358	2.5			RSD ()	
2,3,4,6,7,8-HxCDF	1.08147	2.7			RSD ()	
1,2,3,7,8,9-HxCDF	0.9876148	5.1			RSD ()	
1,2,3,4,7,8-HxCDD	0.960087	10.0			RSD ()	
1,2,3,6,7,8-HxCDD	0.8826935	4.4			RSD ()	
1,2,3,7,8,9-HxCDD	0.8037436	9.5			RSD ()	
1,2,3,4,6,7,8-HpCDF	1.163709	3.8			RSD ()	
1,2,3,4,7,8,9-HpCDF	1.10363	10.4			RSD ()	
1,2,3,4,6,7,8-HpCDD	1.199603	12.2			RSD ()	
OCDF	1.130205	12.7			RSD ()	
OCDD	1.058666	6.0			RSD ()	
13C12-2,3,7,8-TCDF	1.835385	3.2			RSD ()	
13C12-2,3,7,8-TCDD	1.109546	6.7			RSD ()	
13C12-1,2,3,7,8-PeCDF	1.376548	9.2			RSD ()	
13C12-2,3,4,7,8-PeCDF	1.301234	9.0			RSD ()	
13C12-1,2,3,7,8-PeCDD	0.7536802	13.2			RSD ()	
13C12-1,2,3,4,7,8-HxCDF	1.09065	6.5			RSD ()	
13C12-1,2,3,6,7,8-HxCDF	1.340229	8.6			RSD ()	
13C12-2,3,4,6,7,8-HxCDF	1.093447	4.6			RSD ()	
13C12-1,2,3,7,8,9-HxCDF	0.951605	5.9			RSD ()	
13C12-1,2,3,4,7,8-HxCDD	0.9598962	3.3			RSD ()	
13C12-1,2,3,6,7,8-HxCDD	1.159255	5.4			RSD ()	
13C12-1,2,3,4,6,7,8-HpCDF	0.9849488	4.4			RSD ()	
13C12-1,2,3,4,7,8,9-HpCDF	0.7558011	3.1			RSD ()	
13C12-1,2,3,4,6,7,8-HpCDD	0.6292861	6.1			RSD ()	

INITIAL CALIBRATION DATA

EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Calibration:	GH00041	Instrument:	AUTOSPEC01
Calibration Date:	08/11/2023	Column (1):	RTX-Dioxin2

COMPOUND	Mean RRF	RRF RSD	Linear COD	Quad COD	Limit Type & Limit	Q
13C12-OCDD	0.6351422	12.2			RSD ()	
37Cl4-2,3,7,8-TCDD	1.157351	7.3			RSD ()	
13C12-1,2,3,4-TCDD	1	0.0			RSD ()	
13C12-1,2,3,7,8,9-HxCDD	1	0.0			RSD ()	

Printed: 8/15/2023 1:59:43PM

ANALYSIS SEQUENCE

SLH0135

Instrument: AUTOSPEC01 HRGCMS Column ID: L2314
Calibration ID: GH00041 Tune File: JUL0323_1
EM Voltage: 350 Resolution check times : 10:27, 18:59

Lab Number	Sample Name	Analysis	Container	Order	STD ID	ISTD ID	Analyzed	File ID	Analyst	Comments
SLH0135-ICV1	CS3F1	QC		1	K009821	G007694	08/11/2023 10:28	23081102	PK	
SLH0135-RES1	ISCF1	QC		2	L002084	G007694	08/11/2023 11:19	23081103	PK	
SLH0135-CAL1	CSLCF	QC		3	I005460		08/11/2023 12:07	23081104	PK	
SLH0135-CAL2	CS1CF	QC		4	I005456		08/11/2023 13:01	23081105	PK	
SLH0135-CAL3	CS2CF	QC		5	I005457		08/11/2023 13:56	23081106	PK	
SLH0135-CAL4	CS3CF	QC		6	K009821		08/11/2023 14:52	23081107	PK	
SLH0135-CAL5	CS4CF	QC		7	I005458		08/11/2023 15:40	23081108	PK	
SLH0135-CAL6	CS5CF	QC		8	I005459		08/11/2023 16:29	23081109	PK	
SLH0135-SCV1	ICVCF	QC		9	H008219		08/11/2023 17:18	23081110	PK	
SLH0135-CCV1	CS3F2	QC		10	K009821	G007694	08/11/2023 18:06	23081111	PK	
SLH0135-RES2	ISCF2	QC		11	L002084	G007694	08/11/2023 18:59	23081112	PK	

Dataset: T:\Autospec\Processed Data Batch\230811ICIH.qld
Last Altered: Saturday, August 12, 2023 10:45:18 Pacific Daylight Time
Printed: Tuesday, August 15, 2023 12:23:00 Pacific Daylight Time 8/15/23 PK

Event	Details	Sample ID
Process Quantify		
Process Integrate		
Process Extract		
Process Calibrate		
Pre modification peak	Sample:23081104, Compound:HF, RT:34.421	1
Pre modification peak	Sample:23081104, Compound:PD, RT:30.878	1
Pre modification peak	Sample:23081104, Compound:HD, RT:35.412	1
Pre modification peak	Sample:23081104, Compound:HPD, RT:39.657	1
Pre modification peak	Sample:23081104, Compound:OD, RT:44.238	1
Pre modification peak	Sample:23081104, Compound:PF, RT:30.622	1
Pre modification peak	Sample:23081104, Compound:HF, RT:35.312	1
Pre modification peak	Sample:23081104, Compound:HF, RT:36.326	1
Pre modification peak	Sample:23081107, Compound:HPD, RT:38.666	4
Peak modified	Sample:23081104, Compound:HF, RT:34.421	1
Peak modified	Sample:23081104, Compound:PD, RT:30.878	1
Peak modified	Sample:23081104, Compound:HD, RT:35.412	1
Peak modified	Sample:23081104, Compound:HD, RT:35.412	1
Peak modified	Sample:23081104, Compound:HD, RT:35.412	1
Peak modified	Sample:23081104, Compound:HD, RT:35.412	1
Peak modified	Sample:23081104, Compound:HPD, RT:39.657	1
Peak modified	Sample:23081104, Compound:HPD, RT:39.657	1
Peak modified	Sample:23081104, Compound:OD, RT:44.238	1
Peak modified	Sample:23081104, Compound:PF, RT:30.622	1
Peak modified	Sample:23081104, Compound:HF, RT:35.312	1
Peak modified	Sample:23081104, Compound:HF, RT:36.326	1
Peak modified	Sample:23081107, Compound:HPD, RT:38.666	4
Peak deleted	Sample:23081104, Compound:TF, RT:25.167	1
Peak deleted	Sample:23081104, Compound:TD, RT:25.774	1
Peak deleted	Sample:23081109, Compound:TF, RT:26.594	6
Peak deleted	Sample:23081108, Compound:PF, RT:31.646	5
Peak deleted	Sample:23081109, Compound:PF, RT:31.658	6
Peak deleted	Sample:23081109, Compound:HF, RT:32.582	6
Peak deleted	Sample:23081109, Compound:TD, RT:26.368	6
Peak deleted	Sample:23081108, Compound:PD, RT:31.234	5
Peak deleted	Sample:23081108, Compound:HPD, RT:38.665	5
Peak deleted	Sample:23081109, Compound:HPD, RT:38.654	6
Dataset Saved	Saved to 'T:\Autospec\Processed Data Batch\230811ICIH.qld'	
Dataset Saved	Saved to 'T:\Autospec\Processed Data Batch\230811ICIH.qld'	
Dataset Created		
Calibration Saved	Saved to 'T:\Autospec\Curves\230811ICIH.cdb'	

Dataset: T:\Autospec\Processed Data Batch\230811ICVIH.qld
Last Altered: Tuesday, August 15, 2023 12:21:02 Pacific Daylight Time
Printed: Tuesday, August 15, 2023 12:22:06 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin230810.mdb 12 Aug 2023 10:54:09
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 10:45:18

ID: CS3F1, Name: 23081102, Date: 11-Aug-2023, Time: 10:28:53, 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	25.153	1.001	3.267e4	4.418e4	0.903	0.739	0.770	1410	1260	4.83e5	6.44e5	342.9	510.8	NO	bb	bb	10.031
12378-PeCDF	29.307	1.001	1.871e5	1.156e5	0.923	1.618	1.550	1821	2061	2.72e6	1.69e6	1495.1	820.5	NO	bb	bb	48.648
23478-PeCDF	30.644	1.001	1.913e5	1.241e5	0.991	1.541	1.550	1821	2061	2.79e6	1.79e6	1530.5	870.8	NO	bb	bb	49.008
123478-HxCDF	34.287	1.000	1.489e5	1.185e5	1.128	1.257	1.240	2017	1502	2.25e6	1.80e6	1117.2	1197.9	NO	bd	bd	48.528
234678-HxCDF	35.312	1.000	1.362e5	1.137e5	1.081	1.198	1.240	2017	1502	2.11e6	1.73e6	1048.4	1153.8	NO	bb	bb	50.502
123678-HxCDF	34.432	1.001	1.589e5	1.237e5	1.032	1.285	1.240	2017	1502	2.28e6	1.79e6	1128.5	1194.7	NO	db	db	50.011
123789-HxCDF	36.360	1.001	1.143e5	9.000e4	0.988	1.270	1.240	2017	1502	1.64e6	1.31e6	815.1	875.3	NO	bb	bb	52.425
1234678-HpCDF	38.231	1.000	1.206e5	1.238e5	1.164	0.975	1.050	1813	1581	1.96e6	1.86e6	1080.8	1179.7	NO	bb	bd	48.385
1234789-HpCDF	40.393	1.000	9.889e4	9.879e4	1.104	1.001	1.050	1813	1581	1.34e6	1.31e6	741.6	828.6	NO	bb	bd	50.882
OCDF	44.467	1.005	1.502e5	1.593e5	1.130	0.943	0.890	2635	2358	1.65e6	1.82e6	627.8	770.8	NO	bd	bb	91.314
2378-TCDD	25.803	1.001	2.952e4	3.590e4	1.243	0.822	0.770	909	976	4.44e5	5.33e5	488.6	546.5	NO	bb	bb	9.127
12378-PeCDD	30.889	1.000	1.367e5	8.588e4	1.150	1.592	1.550	1821	1131	2.04e6	1.27e6	1120.9	1118.1	NO	bb	bb	51.387
123478-HxCDD	35.435	1.001	1.108e5	8.990e4	0.960	1.233	1.240	1642	1463	1.69e6	1.40e6	1029.2	955.0	NO	bd	bd	47.909
123678-HxCDD	35.546	1.000	1.224e5	1.046e5	0.883	1.170	1.240	1642	1463	1.84e6	1.52e6	1119.7	1039.8	NO	db	dd	52.387
123789-HxCDD	35.936	1.011	1.128e5	9.363e4	0.804	1.205	1.240	1642	1463	1.66e6	1.38e6	1013.3	945.6	NO	bb	bb	55.394
1234678-HpCDD	39.680	1.000	9.018e4	7.760e4	1.200	1.162	1.050	1298	1454	1.26e6	1.16e6	968.3	797.3	NO	bd	bb	46.513
OCDD	44.247	1.000	1.584e5	1.773e5	1.059	0.893	0.890	2820	2004	1.74e6	1.94e6	616.2	969.1	NO	bd	bd	105.741
13C-2378-TCDF	25.139	1.007	3.752e5	4.731e5	1.835	0.793	0.770	1743	1019	5.50e6	6.96e6	3156.8	6833.5	NO	bb	bb	93.584
13C-12378-PeCDF	29.285	1.173	4.095e5	2.644e5	1.377	1.549	1.550	2319	2122	6.02e6	3.91e6	2596.1	1840.7	NO	bb	bb	99.132
13C-23478-PeCDF	30.622	1.226	3.942e5	2.553e5	1.301	1.544	1.550	2319	2122	5.70e6	3.76e6	2456.8	1772.1	NO	bb	bb	101.066
13C-123478-HxCDF	34.276	0.954	1.654e5	3.231e5	1.091	0.512	0.510	1344	2378	2.47e6	4.81e6	1838.1	2021.3	NO	bd	bd	100.193
13C-123678-HxCDF	34.410	0.958	1.939e5	3.534e5	1.340	0.549	0.510	1344	2378	2.59e6	5.02e6	1926.2	2110.2	NO	dd	db	91.372
13C-234678-HxCDF	35.301	0.983	1.551e5	3.025e5	1.093	0.513	0.510	1344	2378	2.26e6	4.41e6	1679.6	1852.4	NO	bb	bb	93.633
13C-123789-HxCDF	36.337	1.011	1.338e5	2.608e5	0.952	0.513	0.510	1344	2378	1.91e6	3.82e6	1420.2	1605.6	NO	bb	bb	92.769
13C-1234678-HpCDF	38.220	1.064	1.397e5	2.943e5	0.985	0.475	0.440	1575	2088	2.04e6	4.54e6	1292.2	2173.4	NO	bd	bb	98.578
13C-1234789-HpCDF	40.382	1.124	1.068e5	2.453e5	0.756	0.435	0.440	1575	2088	1.42e6	3.11e6	899.8	1489.6	NO	bd	bb	104.203
13C-1234-TCDD	24.969	0.000	2.166e5	2.773e5	1.000	0.781	0.770	1831	1204	3.27e6	4.17e6	1785.4	3464.8	NO	bb	bb	100.000
13C-2378-TCDD	25.774	1.032	2.575e5	3.192e5	1.110	0.807	0.770	1831	1204	3.85e6	4.88e6	2104.1	4053.6	NO	bb	bb	105.229
13C-12378-PeCDD	30.878	1.237	2.354e5	1.412e5	0.754	1.667	1.550	948	840	3.39e6	2.08e6	3572.5	2479.5	NO	bb	bb	101.171
13C-123478-HxCDD	35.412	0.986	2.434e5	1.930e5	0.960	1.261	1.240	1622	1115	3.72e6	2.95e6	2295.3	2649.4	NO	bd	bd	101.721
13C-123678-HxCDD	35.535	0.989	2.685e5	2.223e5	1.159	1.208	1.240	1622	1115	3.87e6	3.15e6	2386.3	2828.6	NO	db	db	94.721
13C-1234678-HpCDD	39.668	1.104	1.607e5	1.400e5	0.629	1.148	1.050	1237	1522	2.19e6	2.03e6	1766.5	1330.4	NO	bd	bb	106.902
13C-OCDD	44.229	1.231	2.897e5	3.101e5	0.635	0.934	0.890	1717	2028	3.19e6	3.43e6	1855.4	1692.1	NO	bd	bd	211.248
13C-123789-HxCDD	35.925	0.000	2.477e5	1.993e5	1.000	1.243	1.240	1622	1115	3.79e6	2.98e6	2336.3	2673.0	NO	bb	bb	100.000
37CL-2378-TCDD	25.788	1.033	5.819e4		1.157			1031		8.39e5		814.2			bb		10.181

Dataset: T:\Autospec\Processed Data Batch\230811ICVIH.qld
Last Altered: Tuesday, August 15, 2023 12:21:02 Pacific Daylight Time
Printed: Tuesday, August 15, 2023 12:22:06 Pacific Daylight Time

ID: CS3F1, Name: 23081102, Date: 11-Aug-2023, Time: 10:28:53, 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	21.678	0.862	4.357e4	5.802e4	1.170	0.751	0.770	1410	1260	6.55e5	8.89e5	464.6	705.7	NO	bb	bb	10.233
1289-TCDF	26.636	1.060	3.249e4	4.226e4	0.847	0.769	0.770	1410	1260	4.59e5	5.91e5	325.7	469.0	NO	db	db	10.408
13468-PECDF	26.509	0.905	2.435e5	1.584e5	1.241	1.538	1.550	709	694	3.73e6	2.42e6	5263.9	3490.4	NO	bb	bb	48.052
12389-PECDF	31.669	1.081	1.948e5	1.176e5	0.880	1.656	1.550	1821	2061	2.59e6	1.63e6	1421.1	790.4	NO	bd	bb	52.702
123468-HXCDF	32.594	0.951	1.572e5	1.265e5	1.206	1.243	1.240	2017	1502	2.34e6	1.90e6	1162.2	1262.2	NO	bb	bb	48.177
1368-TCDD	22.935	0.890	2.959e4	3.663e4	1.181	0.808	0.770	909	976	4.61e5	5.72e5	507.2	585.7	NO	bb	bb	9.725
1289-TCDD	26.396	1.024	2.667e4	3.303e4	0.963	0.807	0.770	909	976	3.82e5	4.40e5	420.6	451.1	NO	bb	bd	10.754
12479-PECDD	28.170	0.912	2.449e5	1.524e5	2.166	1.607	1.550	1821	1131	2.32e6	1.47e6	1275.6	1295.2	NO	bb	bb	48.697
12389-PECDD	31.290	1.013	1.599e5	1.040e5	1.326	1.538	1.550	1821	1131	2.26e6	1.42e6	1241.0	1256.0	NO	bb	bd	52.847
124679-HXCDD	33.385	0.943	1.262e5	1.040e5	1.127	1.213	1.240	1642	1463	1.83e6	1.51e6	1114.4	1030.9	NO	bb	bb	46.808
1234679-HPCDD	38.666	0.975	1.017e5	9.556e4	1.303	1.064	1.050	1298	1454	1.56e6	1.48e6	1205.3	1021.4	NO	bb	bb	50.367
Total-tetrafurans			1.090e5		0.973			1410		1.60e6							30.751
Total-penta1			2.435e5					709		3.73e6							48.052
Total-pentafurans			6.055e5		0.931			1821		8.58e6							158.813
Total-hexafurans			7.156e5		1.087			2017		1.06e7							249.643
Total-heptafurans			2.195e5		1.134			1813		3.30e6							99.267
Total-Furans			2.043e6		1.053			1410		2.95e7							677.840
Total-tetradioxins			1.446e5		1.129			909		1.97e6							49.641
Total-pentadioxins			5.415e5		1.548			1821		6.62e6							152.931
Total-hexadioxins			4.722e5		0.943			1642		7.02e6							202.499
Total-heptadioxins			1.919e5		1.251			1298		2.82e6							96.880
Total-Dioxins			1.509e6		1.182			909		2.02e7							607.691
Total-TEQ			3.552e6					909		4.97e7							1285.531
FUNCTION1 PFK			7.924e5					446175		1.36e7							
FUNCTION2 PFK			5.581e5					351760		1.44e7							0.000
FUNCTION3 PFK			1.585e5					424568		5.08e6							0.000
FUNCTION4 PFK			0.000e0					308815		0.00e0							
FUNCTION5 PFK			5.965e4					171904		2.21e6							
FUNCTION1 HXCD...			1.292e3					668		1.76e4							0.000
FUNCTION1 HPCD...																	
FUNCTION2 HPCD...			3.182e2					688		6.67e3							0.000
FUNCTION3 OCDPE			6.041e2					430		9.00e3							0.000
FUNCTION4 NCDPE			3.725e2					636		5.58e3							0.000
FUNCTION5 DCDPE			0.000e0					371		0.00e0							

Method: T:\Autospec\Methods\Dioxin230810.mdb 12 Aug 2023 10:54:09
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 10:45:18

ID: CS3F1, Name: 23081102, Date: 11-Aug-2023, Time: 10:28:53, 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	26.64	3.249e4	4.226e4	0.847	0.77	0.77	325.7	YES	NO	db	db	10.408
2	2378-TCDF	25.15	3.267e4	4.418e4	0.903	0.74	0.77	342.9	YES	NO	bb	bb	10.031
3	Total-tetrafurans	24.26	2.922e2	3.648e2	0.973	0.80	0.77	4.1	YES	NO	bb	bb	0.080
4	1368-TCDF	21.68	4.357e4	5.802e4	1.170	0.75	0.77	464.6	YES	NO	bb	bb	10.233

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	26.51	2.435e5	1.584e5	1.241	1.54	1.55	5263.9	YES	NO	bb	bb	48.052

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	23478-PeCDF	30.64	1.913e5	1.241e5	0.991	1.54	1.55	1530.5	YES	NO	bb	bb	49.008
2	12378-PeCDF	29.31	1.871e5	1.156e5	0.923	1.62	1.55	1495.1	YES	NO	bb	bb	48.648
3	Total-pentafurans	28.16	3.242e4	1.967e4	0.931	1.65	1.55	264.3	YES	NO	bb	bb	8.454
4	12389-PECDF	31.67	1.948e5	1.176e5	0.880	1.66	1.55	1421.1	YES	NO	bd	bb	52.702

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDF	36.36	1.143e5	9.000e4	0.988	1.27	1.24	815.1	YES	NO	bb	bb	52.425
2	234678-HxCDF	35.31	1.362e5	1.137e5	1.081	1.20	1.24	1048.4	YES	NO	bb	bb	50.502
3	123678-HxCDF	34.43	1.589e5	1.237e5	1.032	1.28	1.24	1128.5	YES	NO	db	db	50.011
4	123478-HxCDF	34.29	1.489e5	1.185e5	1.128	1.26	1.24	1117.2	YES	NO	bd	bd	48.528
5	123468-HXCDF	32.59	1.572e5	1.265e5	1.206	1.24	1.24	1162.2	YES	NO	bb	bb	48.177

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	40.39	9.889e4	9.879e4	1.104	1.00	1.05	741.6	YES	NO	bb	bd	50.882
2	1234678-HpCDF	38.23	1.206e5	1.238e5	1.164	0.97	1.05	1080.8	YES	NO	bb	bd	48.385

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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	26.64	3.249e4	4.226e4	0.847	0.77	0.77	325.7	YES	NO	db	db	10.408
2	2378-TCDF	25.15	3.267e4	4.418e4	0.903	0.74	0.77	342.9	YES	NO	bb	bb	10.031
3	Total-tetrafurans	24.26	2.922e2	3.648e2	0.973	0.80	0.77	4.1	YES	NO	bb	bb	0.080
4	1368-TCDF	21.68	4.357e4	5.802e4	1.170	0.75	0.77	464.6	YES	NO	bb	bb	10.233
5	23478-PeCDF	30.64	1.913e5	1.241e5	0.991	1.54	1.55	1530.5	YES	NO	bb	bb	49.008
6	12378-PeCDF	29.31	1.871e5	1.156e5	0.923	1.62	1.55	1495.1	YES	NO	bb	bb	48.648
7	Total-pentafurans	28.16	3.242e4	1.967e4	0.931	1.65	1.55	264.3	YES	NO	bb	bb	8.454
8	12389-PECDF	31.67	1.948e5	1.176e5	0.880	1.66	1.55	1421.1	YES	NO	bd	bb	52.702
9	123789-HxCDF	36.36	1.143e5	9.000e4	0.988	1.27	1.24	815.1	YES	NO	bb	bb	52.425
10	234678-HxCDF	35.31	1.362e5	1.137e5	1.081	1.20	1.24	1048.4	YES	NO	bb	bb	50.502
11	123678-HxCDF	34.43	1.589e5	1.237e5	1.032	1.28	1.24	1128.5	YES	NO	db	db	50.011
12	123478-HxCDF	34.29	1.489e5	1.185e5	1.128	1.26	1.24	1117.2	YES	NO	bd	bd	48.528
13	123468-HXCDF	32.59	1.572e5	1.265e5	1.206	1.24	1.24	1162.2	YES	NO	bb	bb	48.177
14	1234789-HpCDF	40.39	9.889e4	9.879e4	1.104	1.00	1.05	741.6	YES	NO	bb	bd	50.882
15	1234678-HpCDF	38.23	1.206e5	1.238e5	1.164	0.97	1.05	1080.8	YES	NO	bb	bd	48.385
16	OCDF	44.47	1.502e5	1.593e5	1.130	0.94	0.89	627.8	YES	NO	bd	bb	91.314
17	13468-PECDF	26.51	2.435e5	1.584e5	1.241	1.54	1.55	5263.9	YES	NO	bb	bb	48.052

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDD	26.40	2.667e4	3.303e4	0.963	0.81	0.77	420.6	YES	NO	bb	bd	10.754
2	2378-TCDD	25.80	2.952e4	3.590e4	1.243	0.82	0.77	488.6	YES	NO	bb	bb	9.127
3	Total-tetradioxins	25.46	4.462e4	5.454e4	1.129	0.82	0.77	507.1	YES	NO	bd	bb	15.232
4	Total-tetradioxins	24.98	1.421e4	1.705e4	1.129	0.83	0.77	248.5	YES	NO	bd	bb	4.803
5	1368-TCDD	22.94	2.959e4	3.663e4	1.181	0.81	0.77	507.2	YES	NO	bb	bb	9.725

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDD	31.29	1.599e5	1.040e5	1.326	1.54	1.55	1241.0	YES	NO	bb	bd	52.847
2	12378-PeCDD	30.89	1.367e5	8.588e4	1.150	1.59	1.55	1120.9	YES	NO	bb	bb	51.387
3	12479-PECDD	28.17	2.449e5	1.524e5	2.166	1.61	1.55	1275.6	YES	NO	bb	bb	48.697

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HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123478-HxCDD	35.43	1.108e5	8.990e4	0.960	1.23	1.24	1029.2	YES	NO	bd	bd	47.909
2	124679-HXCDD	33.38	1.262e5	1.040e5	1.127	1.21	1.24	1114.4	YES	NO	bb	bb	46.808
3	123789-HxCDD	35.94	1.128e5	9.363e4	0.804	1.20	1.24	1013.3	YES	NO	bb	bb	55.394
4	123678-HxCDD	35.55	1.224e5	1.046e5	0.883	1.17	1.24	1119.7	YES	NO	db	dd	52.387

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.68	9.018e4	7.760e4	1.200	1.16	1.05	968.3	YES	NO	bd	bb	46.513
2	1234679-HPCDD	38.67	1.017e5	9.556e4	1.303	1.06	1.05	1205.3	YES	NO	bb	bb	50.367

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	26.40	2.667e4	3.303e4	0.963	0.81	0.77	420.6	YES	NO	bb	bd	10.754
2	2378-TCDD	25.80	2.952e4	3.590e4	1.243	0.82	0.77	488.6	YES	NO	bb	bb	9.127
3	Total-tetradioxins	25.46	4.462e4	5.454e4	1.129	0.82	0.77	507.1	YES	NO	bd	bb	15.232
4	Total-tetradioxins	24.98	1.421e4	1.705e4	1.129	0.83	0.77	248.5	YES	NO	bd	bb	4.803
5	1368-TCDD	22.94	2.959e4	3.663e4	1.181	0.81	0.77	507.2	YES	NO	bb	bb	9.725
6	12389-PECDD	31.29	1.599e5	1.040e5	1.326	1.54	1.55	1241.0	YES	NO	bb	bd	52.847
7	12378-PeCDD	30.89	1.367e5	8.588e4	1.150	1.59	1.55	1120.9	YES	NO	bb	bb	51.387
8	12479-PECDD	28.17	2.449e5	1.524e5	2.166	1.61	1.55	1275.6	YES	NO	bb	bb	48.697
9	123478-HxCDD	35.43	1.108e5	8.990e4	0.960	1.23	1.24	1029.2	YES	NO	bd	bd	47.909
10	124679-HXCDD	33.38	1.262e5	1.040e5	1.127	1.21	1.24	1114.4	YES	NO	bb	bb	46.808
11	123789-HxCDD	35.94	1.128e5	9.363e4	0.804	1.20	1.24	1013.3	YES	NO	bb	bb	55.394
12	123678-HxCDD	35.55	1.224e5	1.046e5	0.883	1.17	1.24	1119.7	YES	NO	db	dd	52.387
13	1234678-HpCDD	39.68	9.018e4	7.760e4	1.200	1.16	1.05	968.3	YES	NO	bd	bb	46.513
14	1234679-HPCDD	38.67	1.017e5	9.556e4	1.303	1.06	1.05	1205.3	YES	NO	bb	bb	50.367
15	OCDD	44.25	1.584e5	1.773e5	1.059	0.89	0.89	616.2	YES	NO	bd	bd	105.741

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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	26.64	3.249e4	4.226e4	0.847	0.77	0.77	325.7	YES	NO	db	db	10.408
2	2378-TCDF	25.15	3.267e4	4.418e4	0.903	0.74	0.77	342.9	YES	NO	bb	bb	10.031
3	Total-tetrafurans	24.26	2.922e2	3.648e2	0.973	0.80	0.77	4.1	YES	NO	bb	bb	0.080
4	1368-TCDF	21.68	4.357e4	5.802e4	1.170	0.75	0.77	464.6	YES	NO	bb	bb	10.233
5	23478-PeCDF	30.64	1.913e5	1.241e5	0.991	1.54	1.55	1530.5	YES	NO	bb	bb	49.008
6	12378-PeCDF	29.31	1.871e5	1.156e5	0.923	1.62	1.55	1495.1	YES	NO	bb	bb	48.648
7	Total-pentafurans	28.16	3.242e4	1.967e4	0.931	1.65	1.55	264.3	YES	NO	bb	bb	8.454
8	12389-PECDF	31.67	1.948e5	1.176e5	0.880	1.66	1.55	1421.1	YES	NO	bd	bb	52.702
9	123789-HxCDF	36.36	1.143e5	9.000e4	0.988	1.27	1.24	815.1	YES	NO	bb	bb	52.425
10	234678-HxCDF	35.31	1.362e5	1.137e5	1.081	1.20	1.24	1048.4	YES	NO	bb	bb	50.502
11	123678-HxCDF	34.43	1.589e5	1.237e5	1.032	1.28	1.24	1128.5	YES	NO	db	db	50.011
12	123478-HxCDF	34.29	1.489e5	1.185e5	1.128	1.26	1.24	1117.2	YES	NO	bd	bd	48.528
13	123468-HXCDF	32.59	1.572e5	1.265e5	1.206	1.24	1.24	1162.2	YES	NO	bb	bb	48.177
14	1234789-HpCDF	40.39	9.889e4	9.879e4	1.104	1.00	1.05	741.6	YES	NO	bb	bd	50.882
15	1234678-HpCDF	38.23	1.206e5	1.238e5	1.164	0.97	1.05	1080.8	YES	NO	bb	bd	48.385
16	OCDF	44.47	1.502e5	1.593e5	1.130	0.94	0.89	627.8	YES	NO	bd	bb	91.314
17	13468-PECDF	26.51	2.435e5	1.584e5	1.241	1.54	1.55	5263.9	YES	NO	bb	bb	48.052
18	1289-TCDD	26.40	2.667e4	3.303e4	0.963	0.81	0.77	420.6	YES	NO	bb	bd	10.754
19	2378-TCDD	25.80	2.952e4	3.590e4	1.243	0.82	0.77	488.6	YES	NO	bb	bb	9.127
20	Total-tetradioxins	25.46	4.462e4	5.454e4	1.129	0.82	0.77	507.1	YES	NO	bd	bb	15.232
21	Total-tetradioxins	24.98	1.421e4	1.705e4	1.129	0.83	0.77	248.5	YES	NO	bd	bb	4.803
22	1368-TCDD	22.94	2.959e4	3.663e4	1.181	0.81	0.77	507.2	YES	NO	bb	bb	9.725
23	12389-PECDD	31.29	1.599e5	1.040e5	1.326	1.54	1.55	1241.0	YES	NO	bb	bd	52.847
24	12378-PeCDD	30.89	1.367e5	8.588e4	1.150	1.59	1.55	1120.9	YES	NO	bb	bb	51.387
25	12479-PECDD	28.17	2.449e5	1.524e5	2.166	1.61	1.55	1275.6	YES	NO	bb	bb	48.697
26	123478-HxCDD	35.43	1.108e5	8.990e4	0.960	1.23	1.24	1029.2	YES	NO	bd	bd	47.909
27	124679-HXCDD	33.38	1.262e5	1.040e5	1.127	1.21	1.24	1114.4	YES	NO	bb	bb	46.808
28	123789-HxCDD	35.94	1.128e5	9.363e4	0.804	1.20	1.24	1013.3	YES	NO	bb	bb	55.394
29	123678-HxCDD	35.55	1.224e5	1.046e5	0.883	1.17	1.24	1119.7	YES	NO	db	dd	52.387
30	1234678-HpCDD	39.68	9.018e4	7.760e4	1.200	1.16	1.05	968.3	YES	NO	bd	bb	46.513
31	1234679-HPCDD	38.67	1.017e5	9.556e4	1.303	1.06	1.05	1205.3	YES	NO	bb	bb	50.367
32	OCDD	44.25	1.584e5	1.773e5	1.059	0.89	0.89	616.2	YES	NO	bd	bd	105.741

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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	26.10	3.058e4					0.7	NO		bb		
2	FUNCTION1 PFK	25.83	2.167e4					1.5	NO		bb		
3	FUNCTION1 PFK	25.75	1.003e4					1.0	NO		bb		
4	FUNCTION1 PFK	25.68	2.815e4					1.7	NO		bb		
5	FUNCTION1 PFK	25.20	4.577e4					1.7	NO		bb		
6	FUNCTION1 PFK	25.10	1.950e4					1.5	NO		bb		
7	FUNCTION1 PFK	24.98	1.460e4					1.0	NO		bb		
8	FUNCTION1 PFK	24.25	2.099e4					1.6	NO		bb		
9	FUNCTION1 PFK	22.89	4.902e4					1.9	NO		bb		
10	FUNCTION1 PFK	22.67	2.144e4					1.5	NO		db		
11	FUNCTION1 PFK	22.61	1.329e4					1.0	NO		bd		
12	FUNCTION1 PFK	22.53	9.681e3					1.0	NO		bb		
13	FUNCTION1 PFK	22.00	3.405e4					2.0	NO		bb		
14	FUNCTION1 PFK	21.38	2.152e5					5.1	YES		bb		
15	FUNCTION1 PFK	21.13	2.235e4					1.5	NO		bb		
16	FUNCTION1 PFK	26.38	2.126e5					4.1	YES		bb		
17	FUNCTION1 PFK	26.27	2.350e4					1.6	NO		bb		

Dataset: T:\Autospec\Processed Data Batch\230811ICVIH.qld
Last Altered: Tuesday, August 15, 2023 12:21:02 Pacific Daylight Time
Printed: Tuesday, August 15, 2023 12:22:06 Pacific Daylight Time

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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	29.26	1.698e4					1.3	NO		bd		0.000
2	FUNCTION2 PFK	29.22	9.896e3					0.8	NO		db		0.000
3	FUNCTION2 PFK	29.13	1.828e4					1.7	NO		bd		0.000
4	FUNCTION2 PFK	28.98	6.411e3					0.9	NO		db		0.000
5	FUNCTION2 PFK	28.91	3.286e4					2.2	NO		bd		0.000
6	FUNCTION2 PFK	28.76	8.921e3					1.0	NO		bb		0.000
7	FUNCTION2 PFK	28.35	2.476e3					0.6	NO		bb		0.000
8	FUNCTION2 PFK	28.30	1.117e4					1.4	NO		bb		0.000
9	FUNCTION2 PFK	28.26	1.521e3					0.4	NO		bb		0.000
10	FUNCTION2 PFK	28.20	2.571e4					1.7	NO		bb		0.000
11	FUNCTION2 PFK	27.96	1.137e4					1.0	NO		bb		0.000
12	FUNCTION2 PFK	27.76	1.343e4					1.0	NO		bb		0.000
13	FUNCTION2 PFK	27.50	5.807e3					0.8	NO		bb		0.000
14	FUNCTION2 PFK	31.48	1.330e4					1.4	NO		db		0.000
15	FUNCTION2 PFK	31.45	2.866e4					1.6	NO		dd		0.000
16	FUNCTION2 PFK	31.35	6.909e3					0.8	NO		dd		0.000
17	FUNCTION2 PFK	31.29	1.971e4					1.8	NO		bd		0.000
18	FUNCTION2 PFK	30.92	2.157e4					1.4	NO		bb		0.000
19	FUNCTION2 PFK	30.73	1.688e3					0.4	NO		bb		0.000
20	FUNCTION2 PFK	30.50	1.583e4					1.4	NO		bb		0.000
21	FUNCTION2 PFK	30.43	7.919e3					0.8	NO		bb		0.000
22	FUNCTION2 PFK	30.20	1.363e4					1.2	NO		bb		0.000
23	FUNCTION2 PFK	30.01	3.933e4					2.2	NO		db		0.000
24	FUNCTION2 PFK	29.85	1.133e5					4.0	YES		bd		0.000
25	FUNCTION2 PFK	29.76	1.253e4					1.2	NO		db		0.000
26	FUNCTION2 PFK	29.66	4.510e4					1.8	NO		bd		0.000
27	FUNCTION2 PFK	29.55	1.168e4					1.2	NO		bb		0.000
28	FUNCTION2 PFK	29.42	1.201e4					1.4	NO		bb		0.000
29	FUNCTION2 PFK	29.32	7.622e3					1.1	NO		db		0.000
30	FUNCTION2 PFK	31.96	1.865e3					0.5	NO		bb		0.000
31	FUNCTION2 PFK	31.91	6.856e3					1.0	NO		bb		0.000
32	FUNCTION2 PFK	31.80	1.369e4					1.0	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	35.95	2.169e4					1.7	NO		bb		0.000
2	FUNCTION3 PFK	35.70	2.880e4					2.0	NO		bb		0.000
3	FUNCTION3 PFK	34.21	2.768e3					0.6	NO		bb		0.000
4	FUNCTION3 PFK	33.50	2.810e4					2.1	NO		db		0.000
5	FUNCTION3 PFK	33.46	3.177e4					2.4	NO		bd		0.000
6	FUNCTION3 PFK	33.07	1.826e4					1.5	NO		bb		0.000
7	FUNCTION3 PFK	32.40	2.714e4					1.7	NO		bb		0.000

PFK4

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

PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	44.38	4.668e3					1.2	NO		bd		
2	FUNCTION5 PFK	44.06	1.022e4					2.0	NO		bb		
3	FUNCTION5 PFK	43.01	7.561e3					2.2	NO		bb		
4	FUNCTION5 PFK	45.92	5.621e3					1.7	NO		bb		
5	FUNCTION5 PFK	45.85	3.368e3					1.3	NO		bb		
6	FUNCTION5 PFK	44.70	2.424e3					0.9	NO		db		
7	FUNCTION5 PFK	44.66	2.009e4					2.1	NO		bd		
8	FUNCTION5 PFK	44.42	5.700e3					1.5	NO		db		

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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...	26.31	9.776e1					2.1	NO		db		0.000
2	FUNCTION1 HXCD...	26.17	1.145e2					2.2	NO		dd		0.000
3	FUNCTION1 HXCD...	26.10	1.085e2					2.3	NO		bd		0.000
4	FUNCTION1 HXCD...	25.79	1.710e2					2.7	NO		db		0.000
5	FUNCTION1 HXCD...	25.66	8.247e1					2.4	NO		dd		0.000
6	FUNCTION1 HXCD...	25.56	9.000e1					1.7	NO		bd		0.000
7	FUNCTION1 HXCD...	24.96	1.201e2					2.8	NO		bb		0.000
8	FUNCTION1 HXCD...	23.43	1.148e2					2.1	NO		bb		0.000
9	FUNCTION1 HXCD...	22.43	7.998e1					1.3	NO		bb		0.000
10	FUNCTION1 HXCD...	21.38	1.181e2					2.0	NO		bb		0.000
11	FUNCTION1 HXCD...	27.05	1.032e2					1.9	NO		bb		0.000
12	FUNCTION1 HXCD...	26.66	9.117e1					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													

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	30.90	7.786e1					1.4	NO		bb		0.000
2	FUNCTION2 HPCD...	30.49	2.403e2					8.3	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	35.91	9.546e1					2.9	NO		bb		0.000
2	FUNCTION3 OCDPE	35.53	1.655e2					5.4	YES		db		0.000
3	FUNCTION3 OCDPE	35.42	1.776e2					8.6	YES		dd		0.000
4	FUNCTION3 OCDPE	35.30	1.655e2					4.0	YES		bd		0.000

ID: CS3F1, Name: 23081102, Date: 11-Aug-2023, Time: 10:28:53, 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	41.97	8.451e1					2.2	NO		bb		0.000
2	FUNCTION4 NCDPE	40.79	7.795e1					2.1	NO		bb		0.000
3	FUNCTION4 NCDPE	38.00	8.803e1					1.5	NO		bb		0.000
4	FUNCTION4 NCDPE	37.36	1.220e2					2.9	NO		bb		0.000

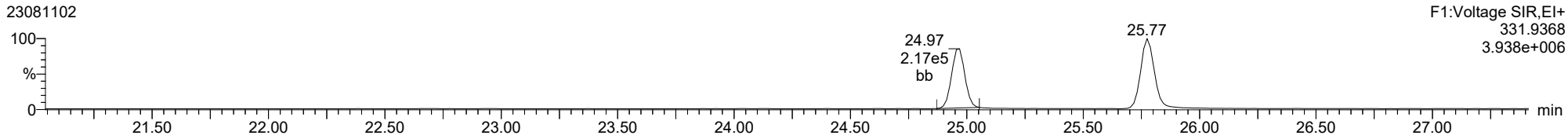
ETHERS6

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

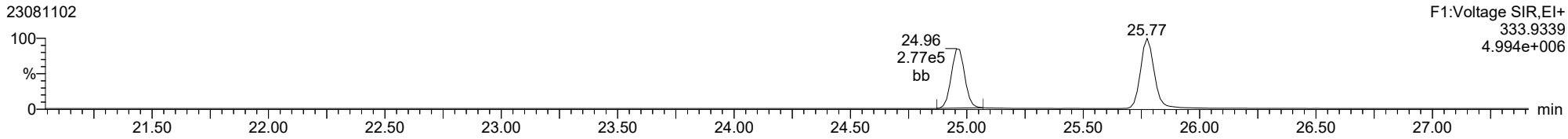
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ID: CS3F1, Name: 23081102, Date: 11-Aug-2023, Time: 10:28:53, Conditions: AUTOSPEC01, User: pk

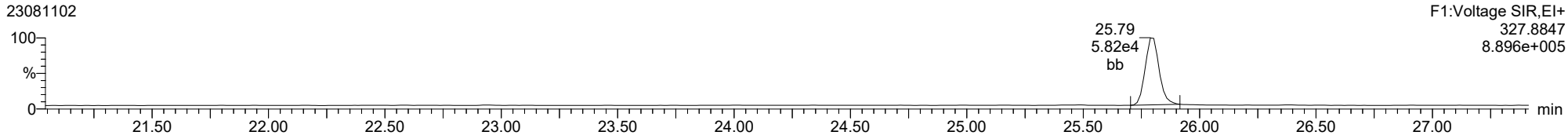
13C-1234-TCDD



13C-1234-TCDD

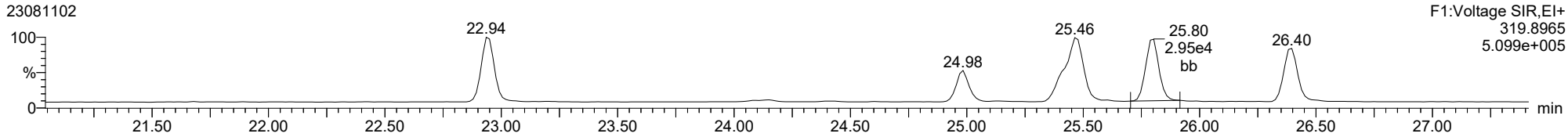


37CL-2378-TCDD

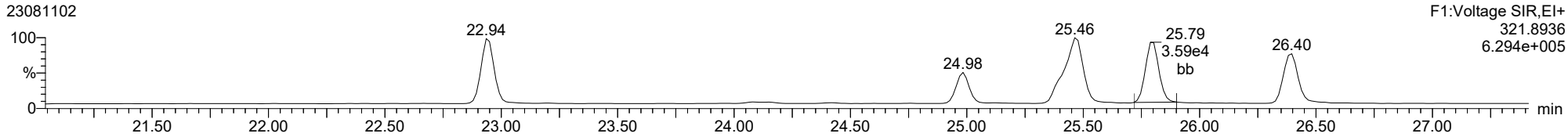


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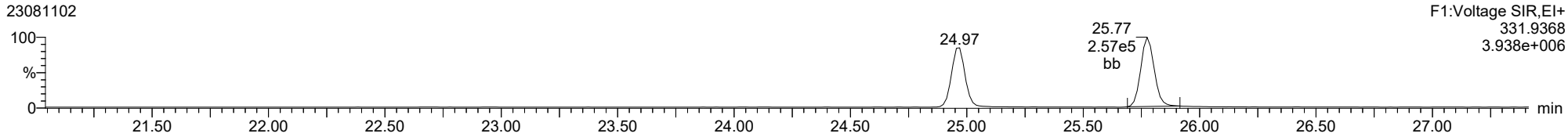
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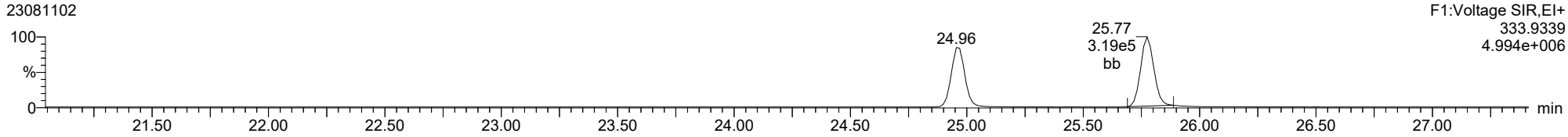
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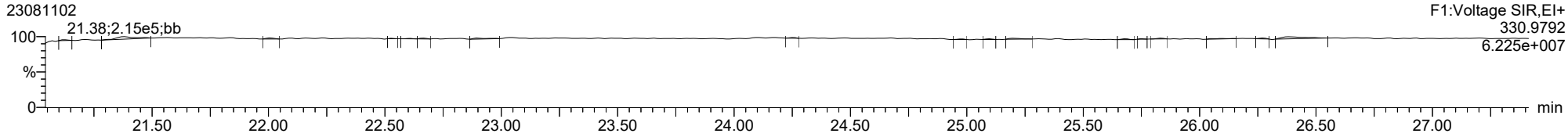
13C-2378-TCDD



13C-2378-TCDD

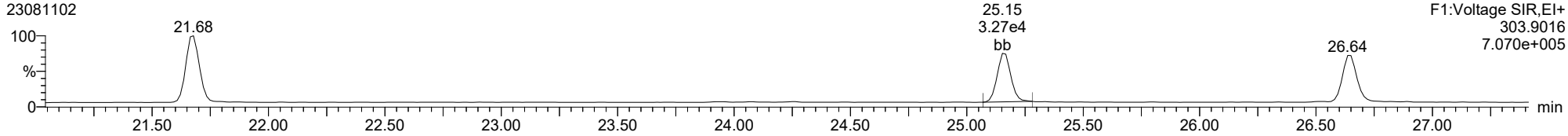


FUNCTION1 PFK

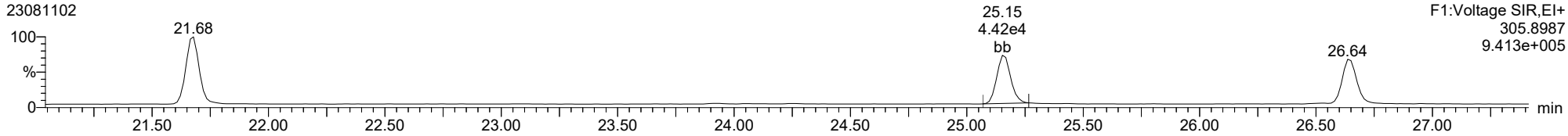


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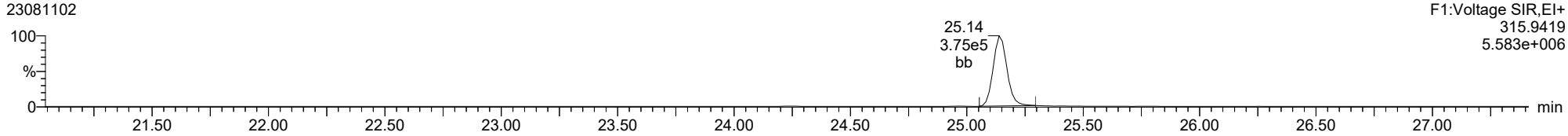
2378-TCDF



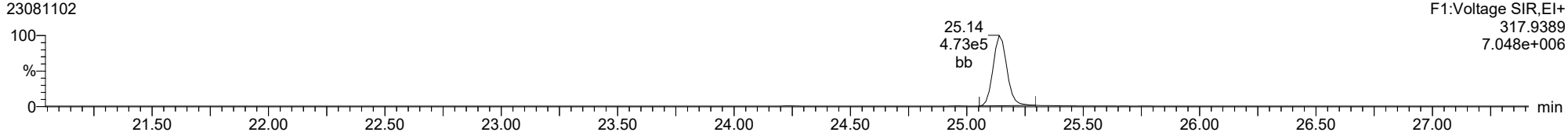
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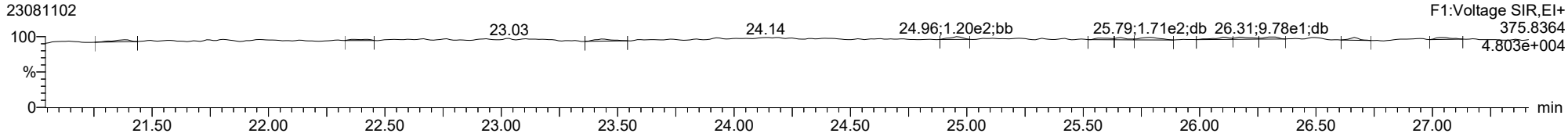
13C-2378-TCDF



13C-2378-TCDF

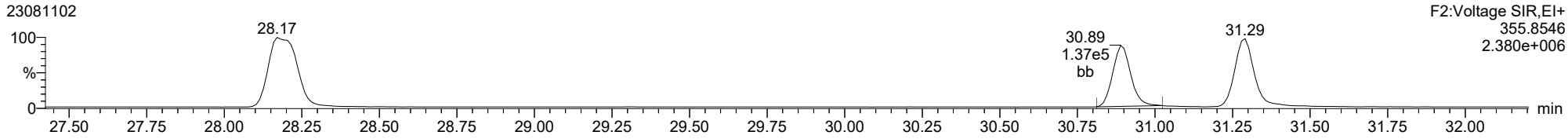


FUNCTION1 HXCDPE

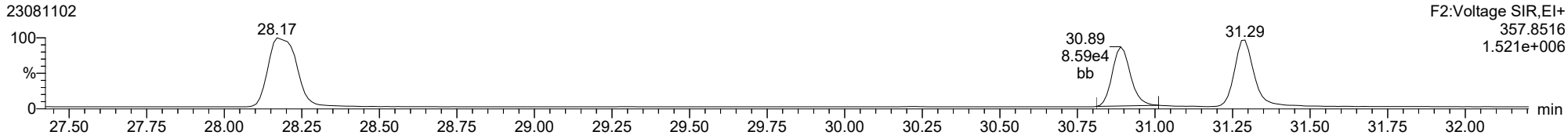


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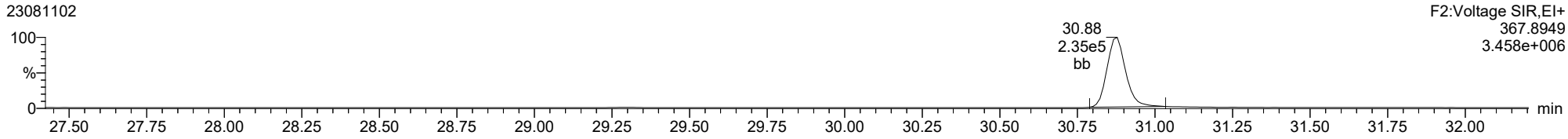
12378-PeCDD



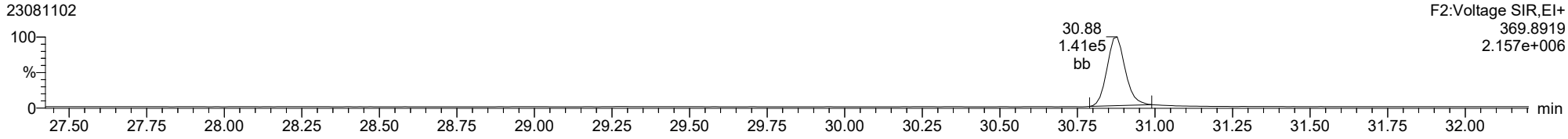
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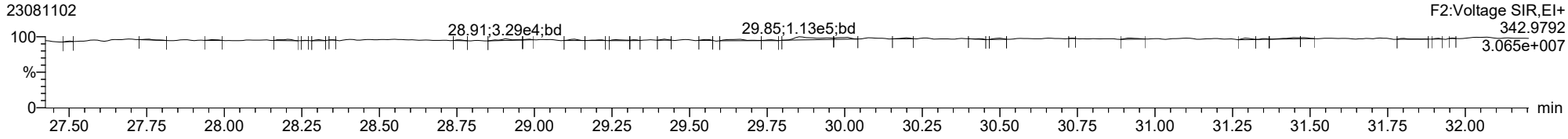
13C-12378-PeCDD



13C-12378-PeCDD

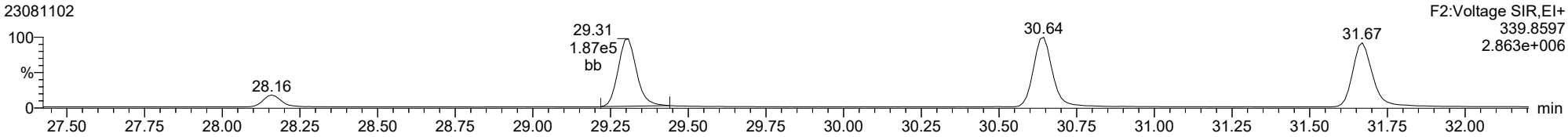


FUNCTION2 PFK

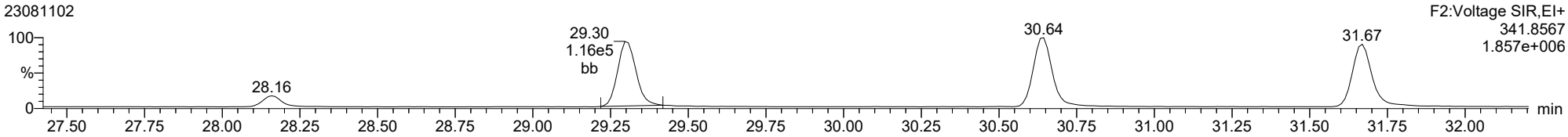


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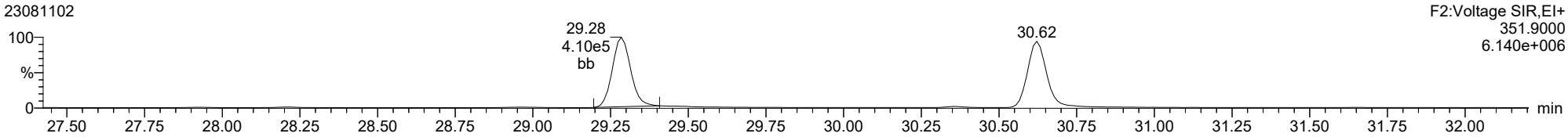
12378-PeCDF



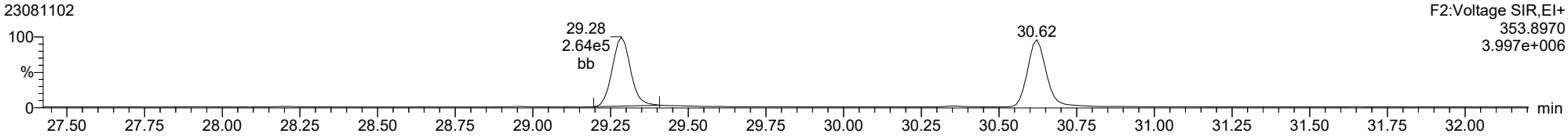
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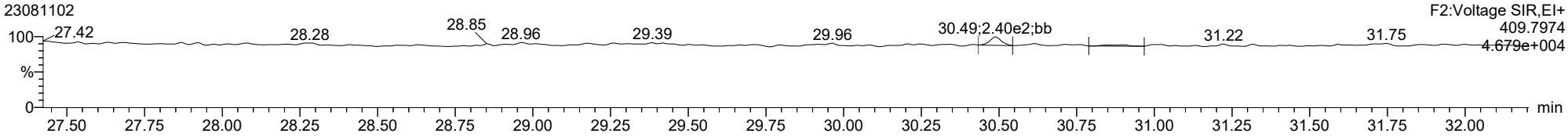
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13C-12378-PeCDF

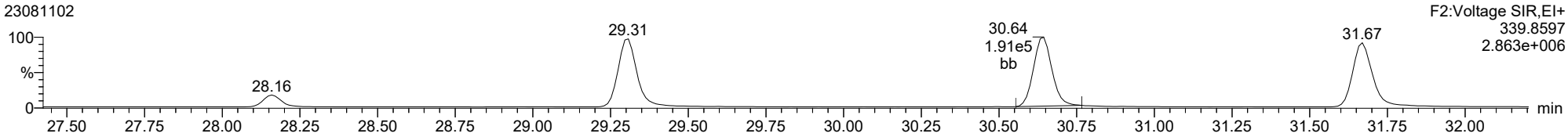


FUNCTION2 HPCDPE

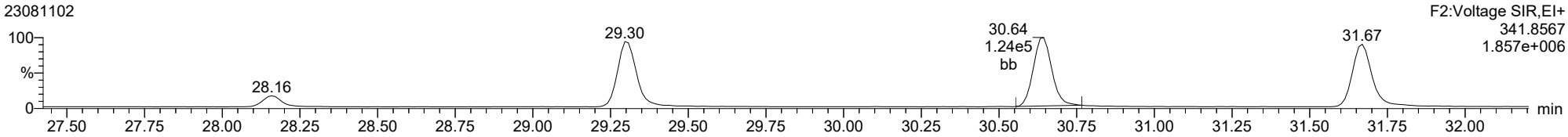


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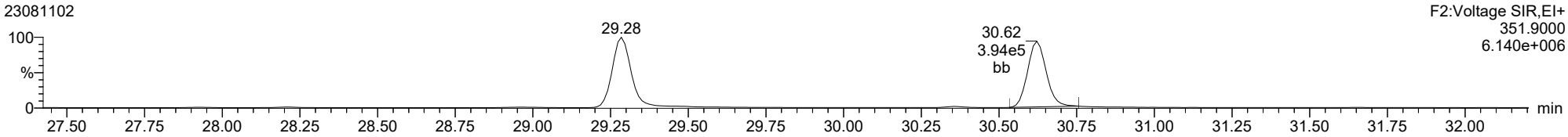
23478-PeCDF



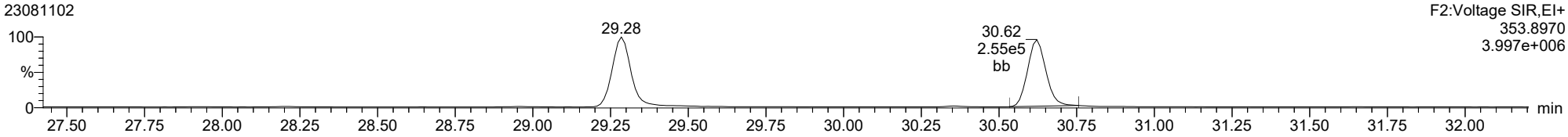
23478-PeCDF



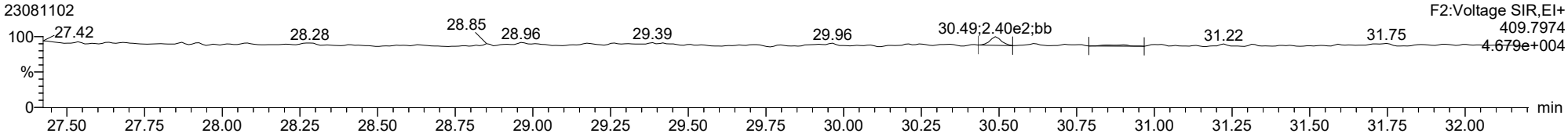
13C-23478-PeCDF



13C-23478-PeCDF

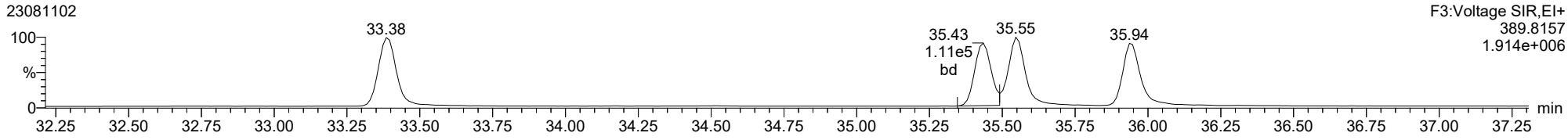


FUNCTION2 HPCDPE

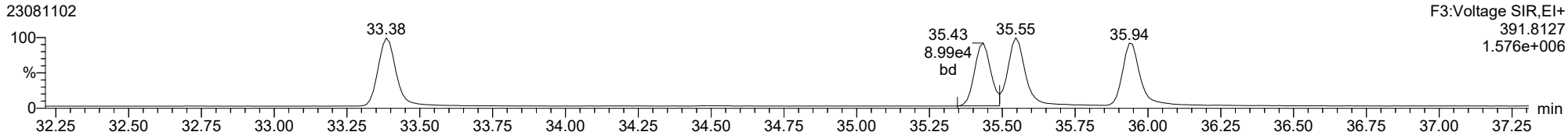


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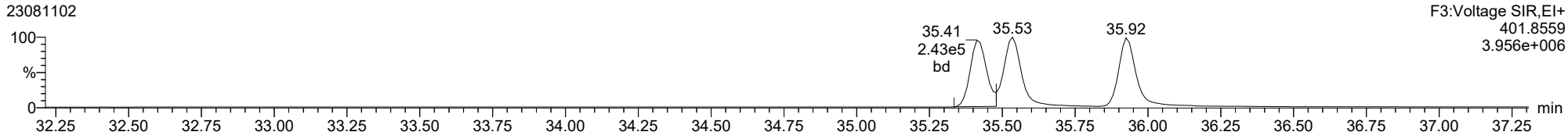
123478-HxCDD



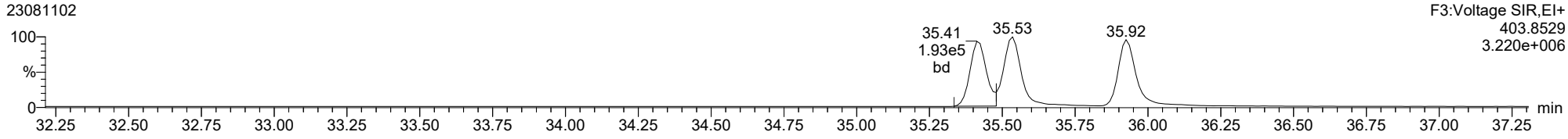
123478-HxCDD



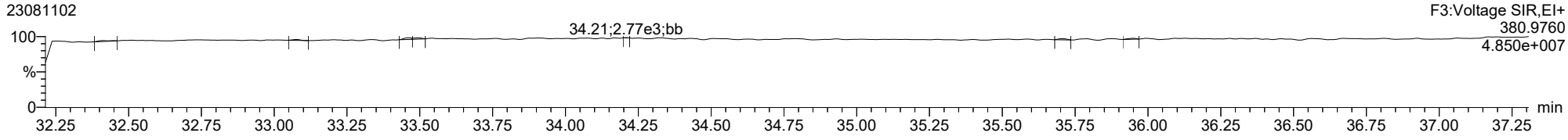
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13C-123478-HxCDD



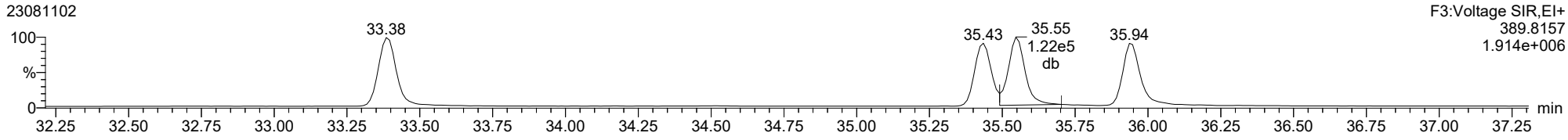
FUNCTION3 PFK



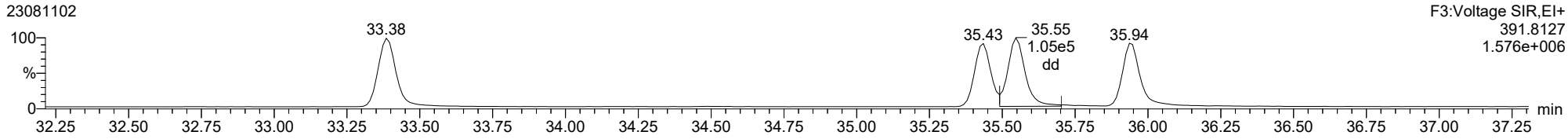
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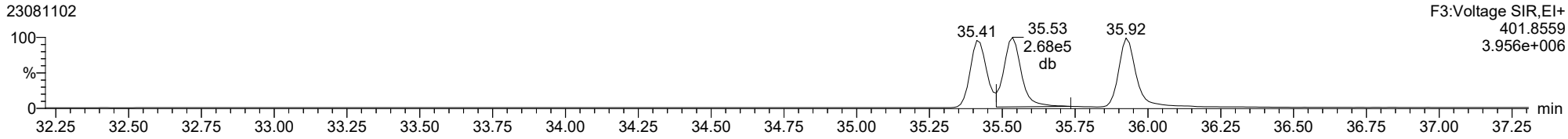
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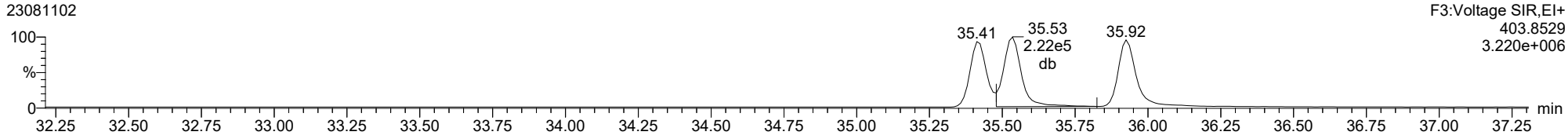
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13C-123678-HxCDD

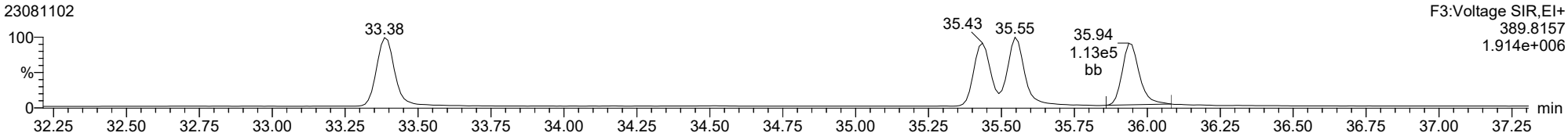


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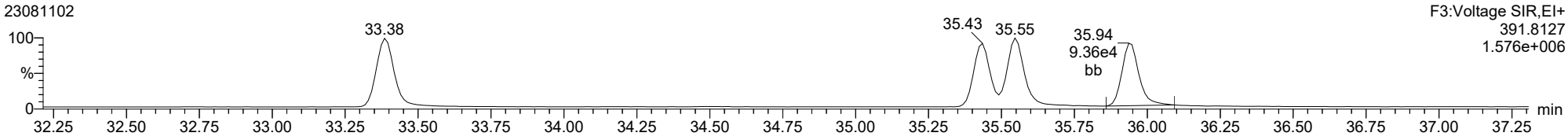


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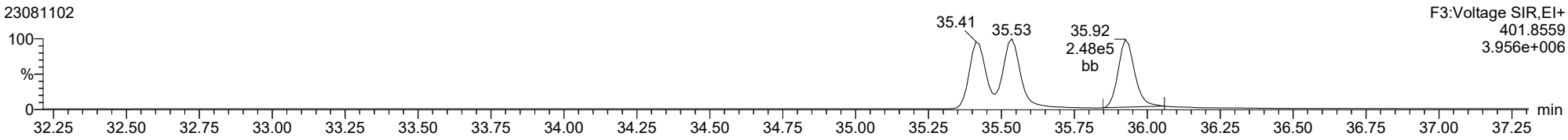
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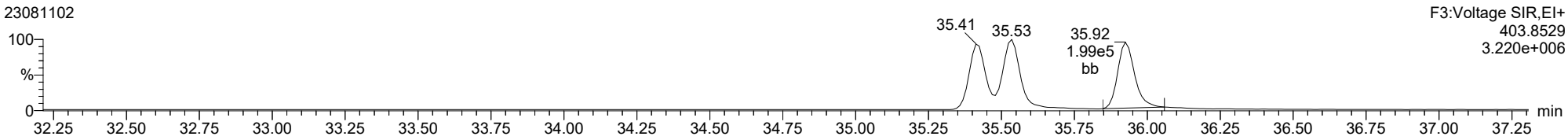
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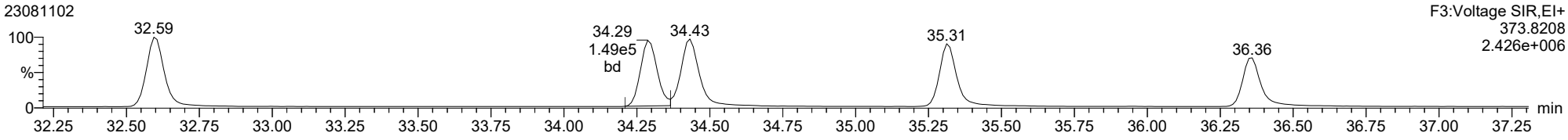


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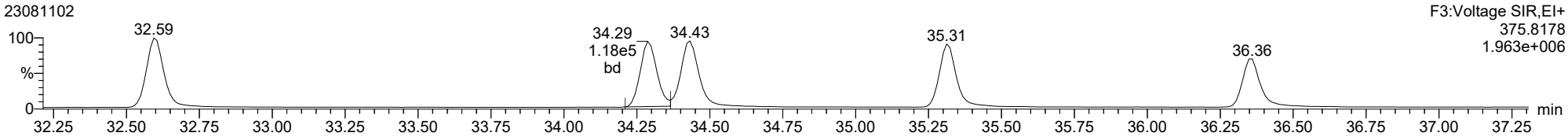


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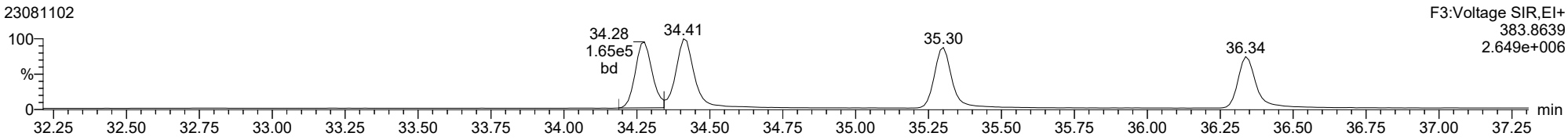
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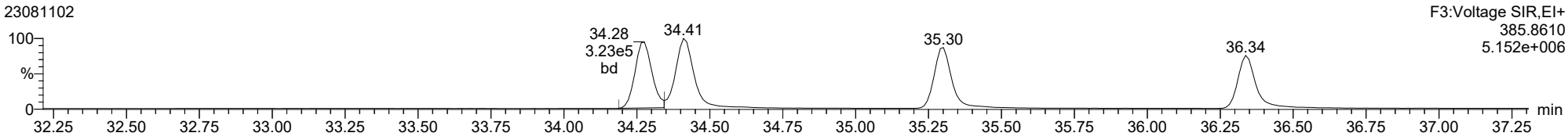
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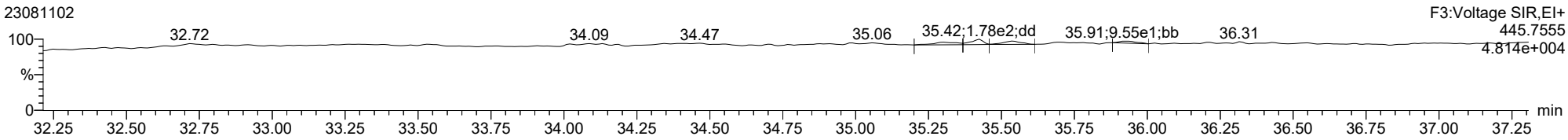
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13C-123478-HxCDF

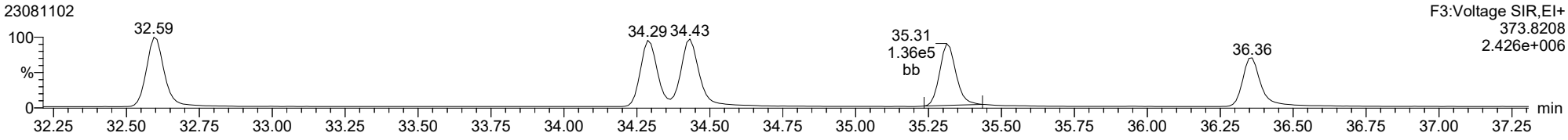


FUNCTION3 OCDPE

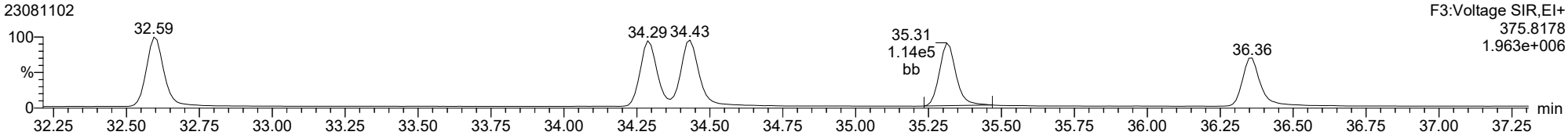


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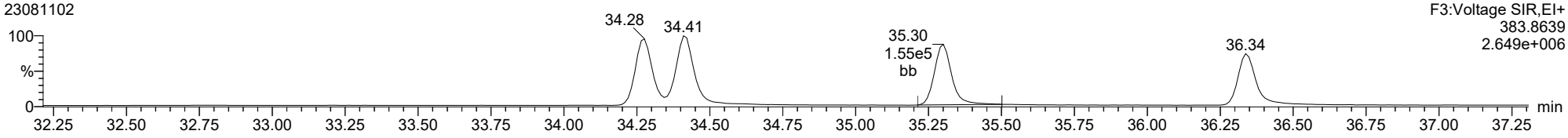
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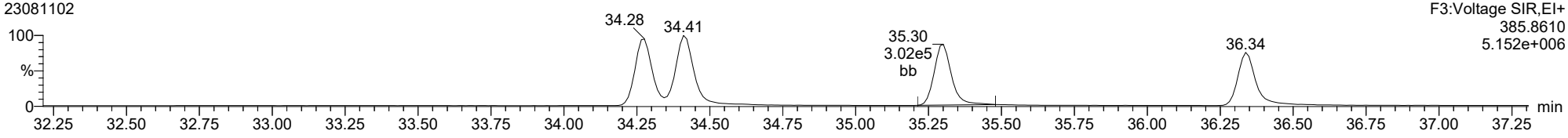
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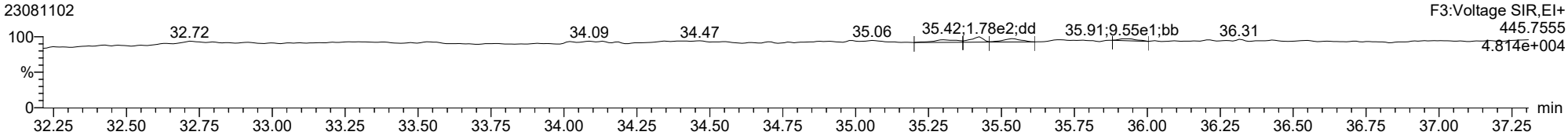
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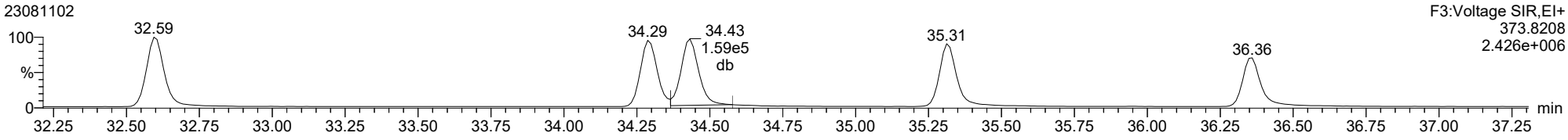


FUNCTION3 OCDPE

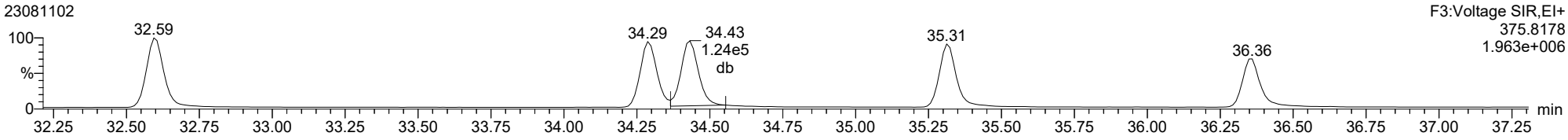


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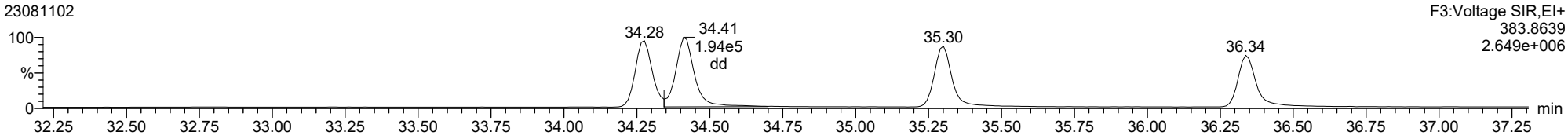
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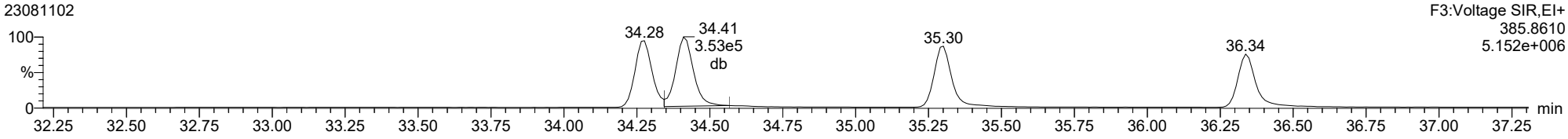
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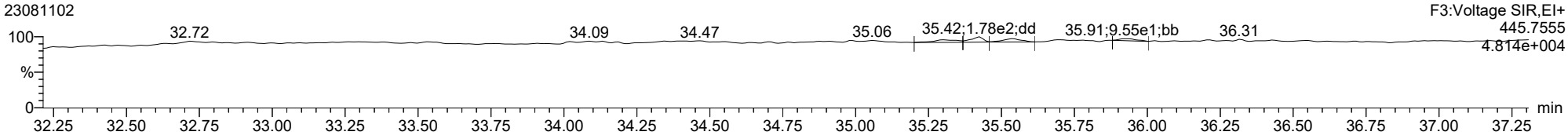
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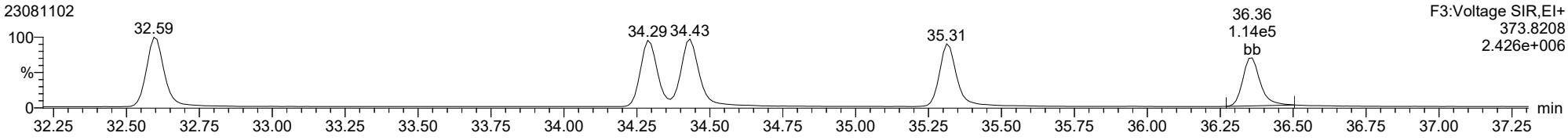


FUNCTION3 OCDPE

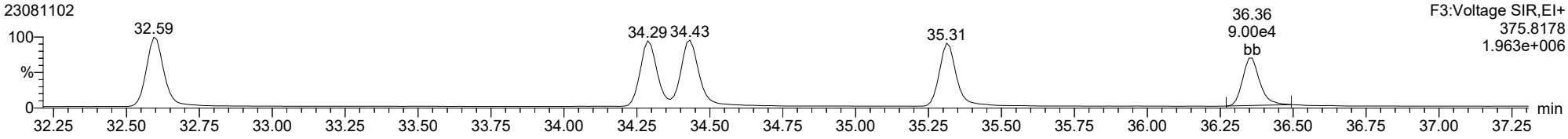


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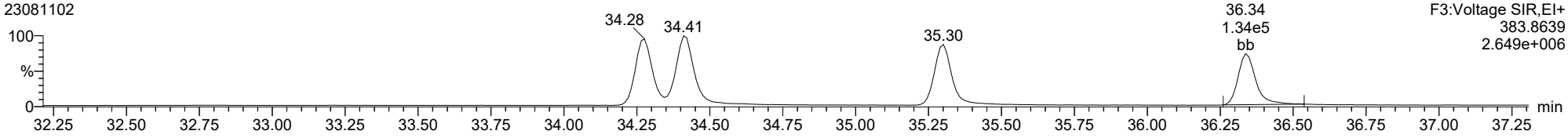
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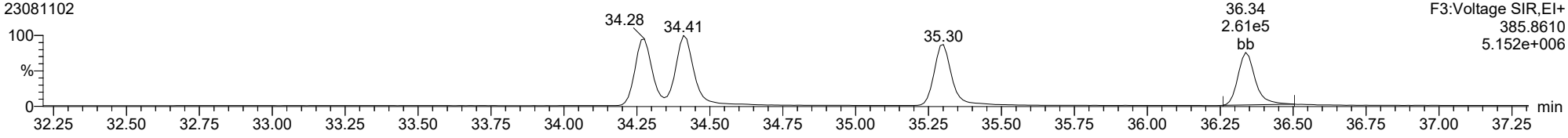
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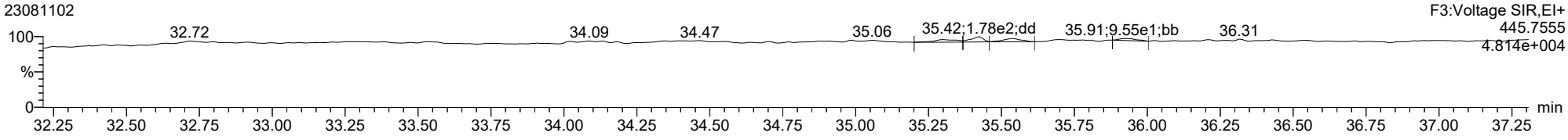
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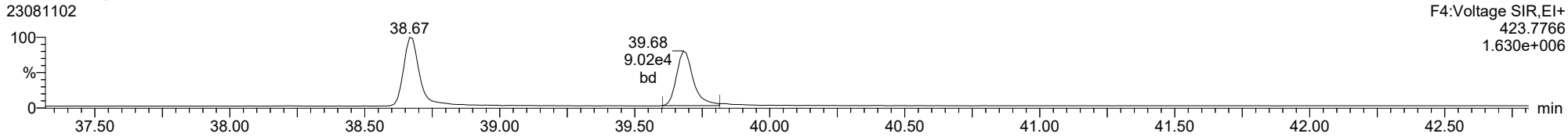


FUNCTION3 OCDPE

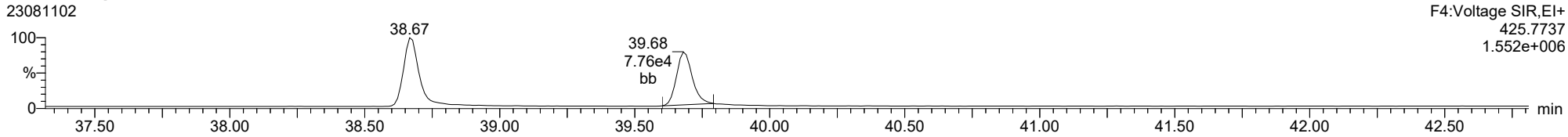


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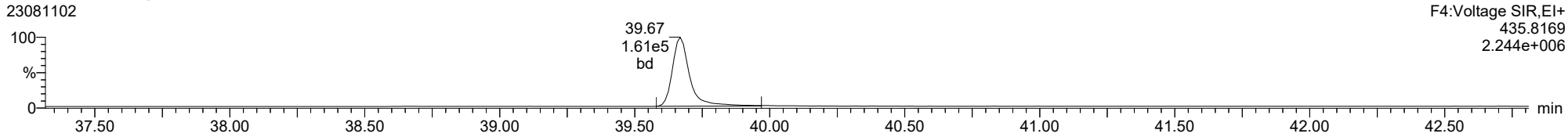
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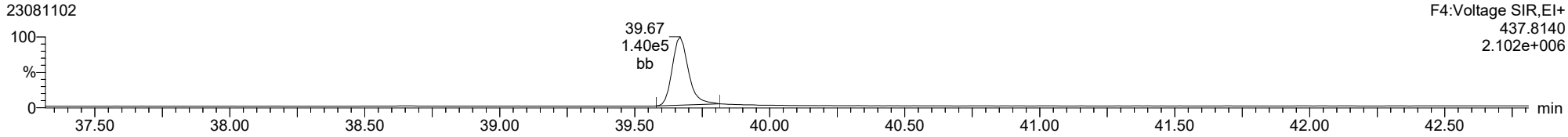
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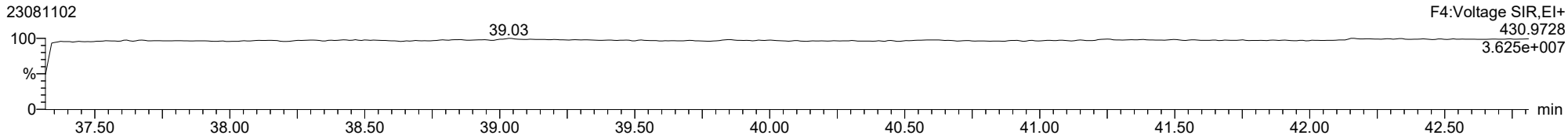
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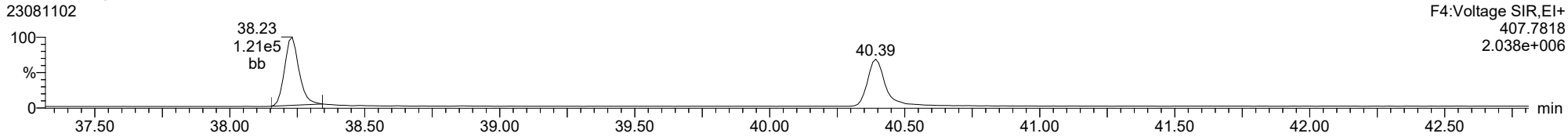


FUNCTION4 PFK

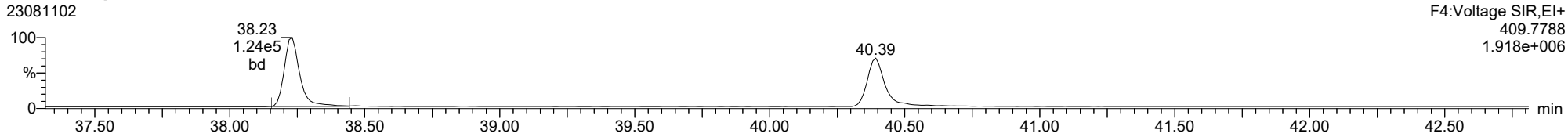


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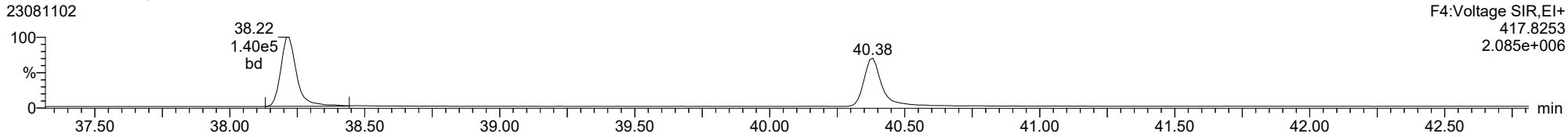
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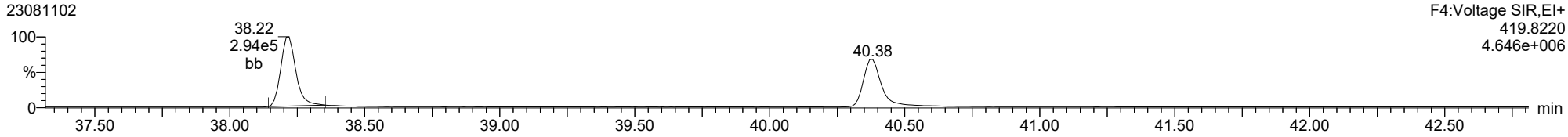
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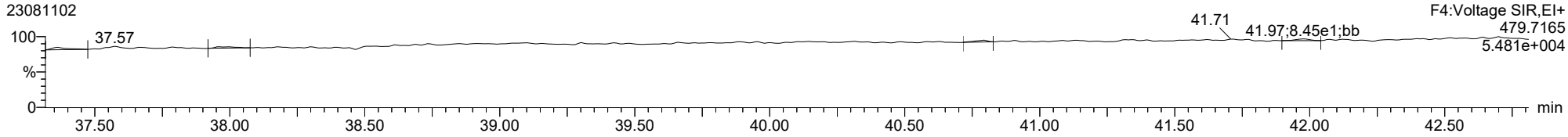
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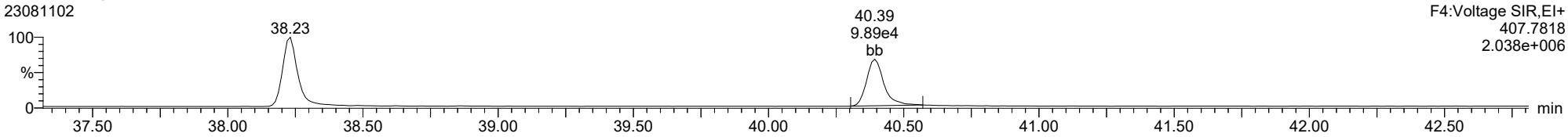


FUNCTION4 NCDPE

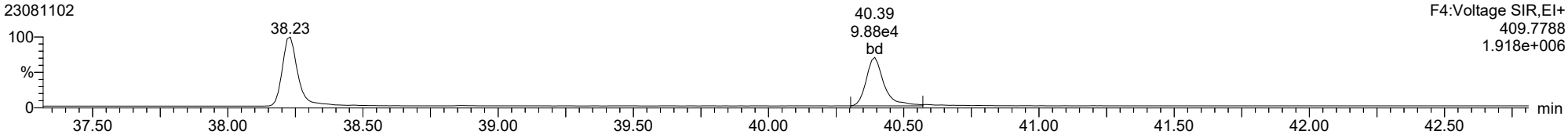


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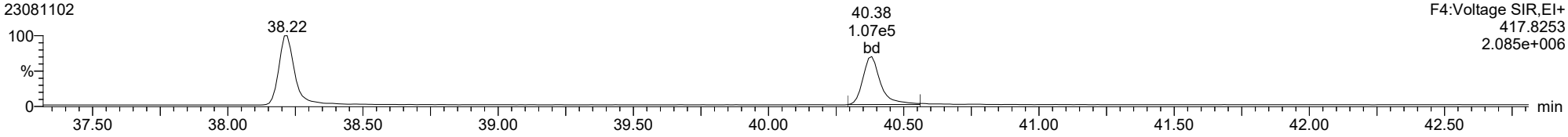
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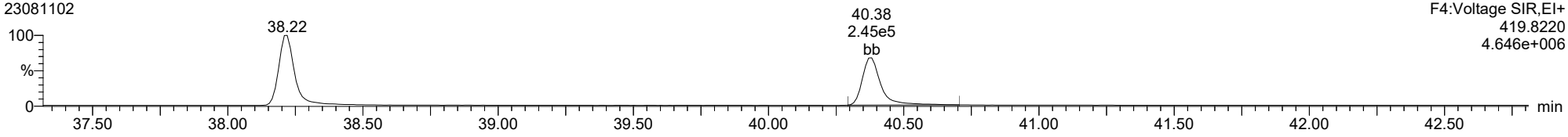
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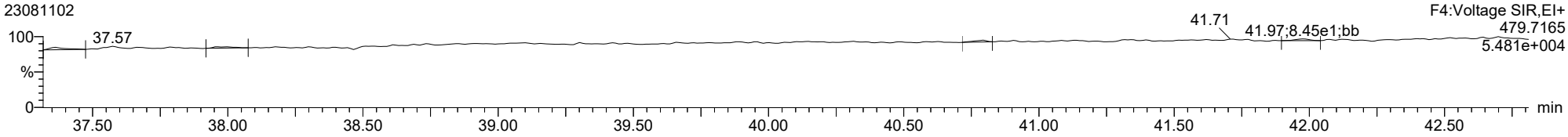
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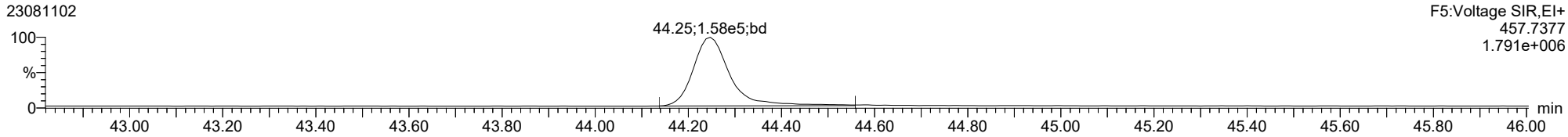


FUNCTION4 NCDPE

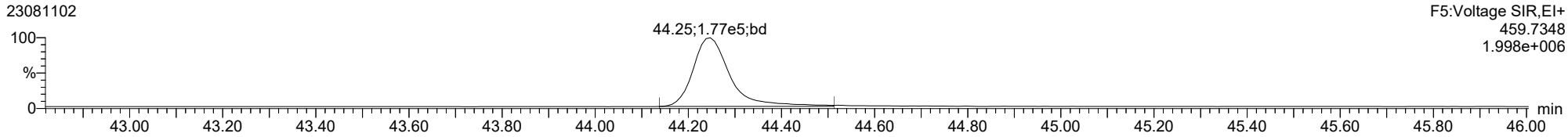


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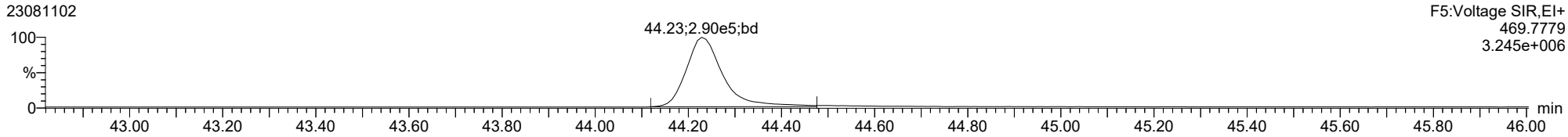
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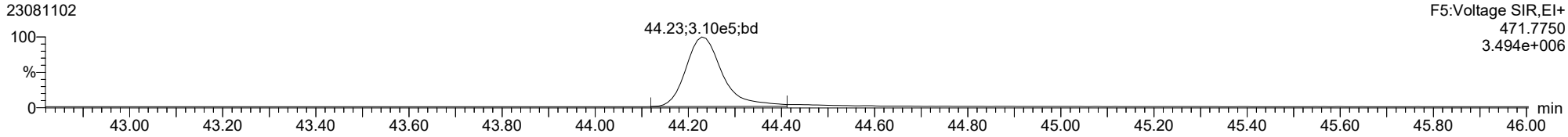
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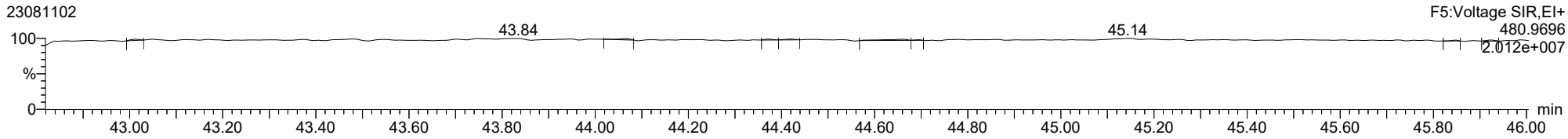
13C-OCDD



13C-OCDD

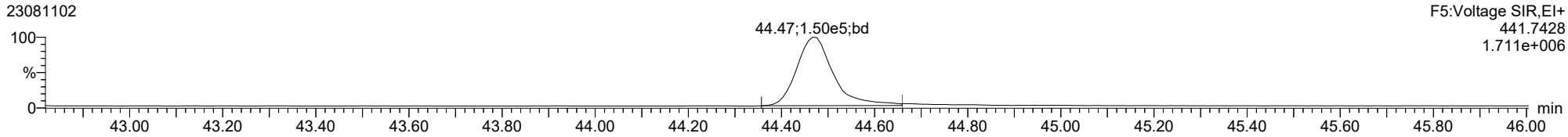


FUNCTION5 PFK

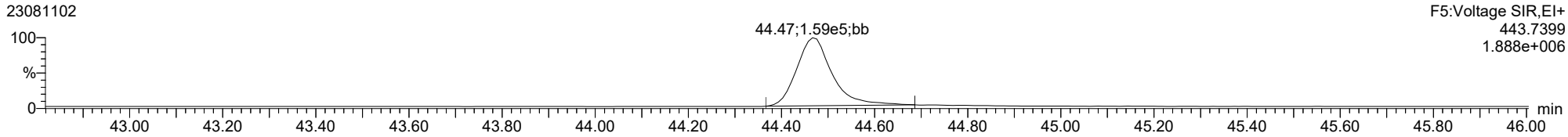


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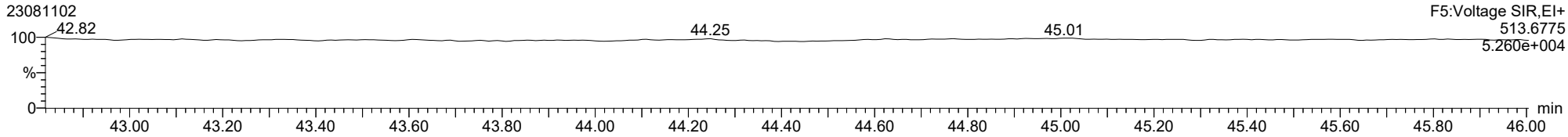
OCDF



OCDF

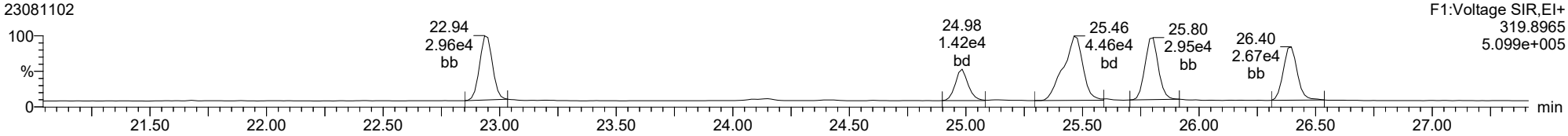


FUNCTION5 DCDPE

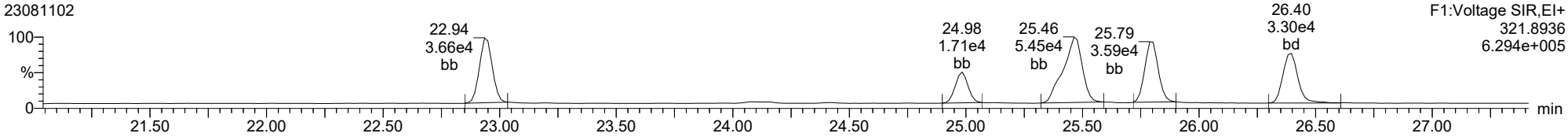


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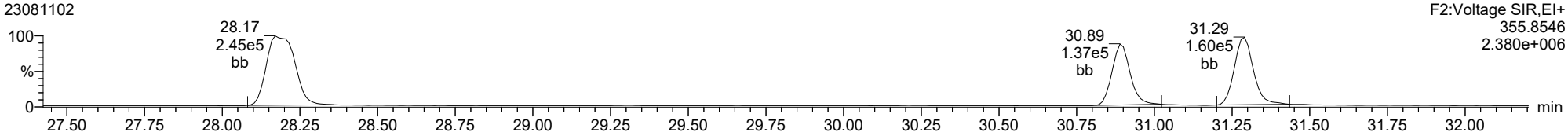
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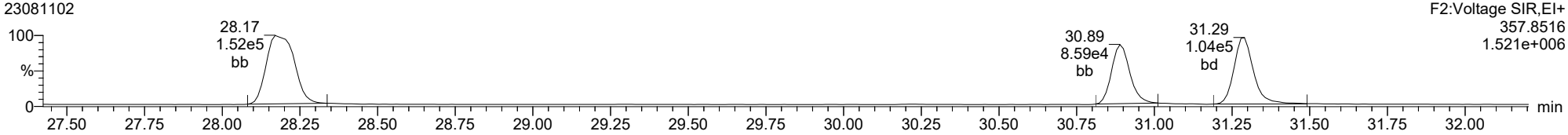
Total-tetradioxins



Total-pentadioxins

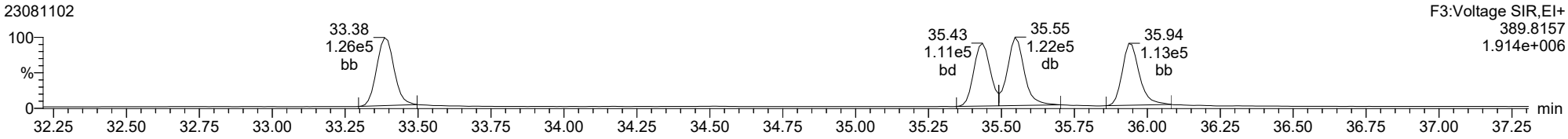


Total-pentadioxins

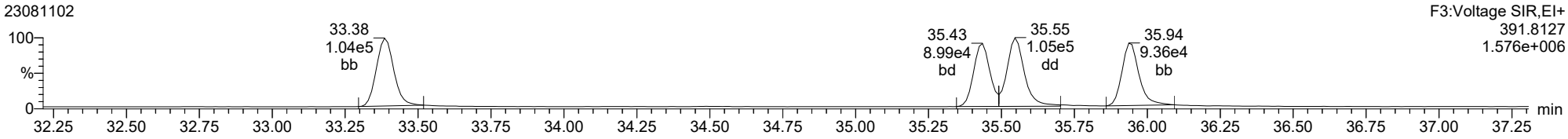


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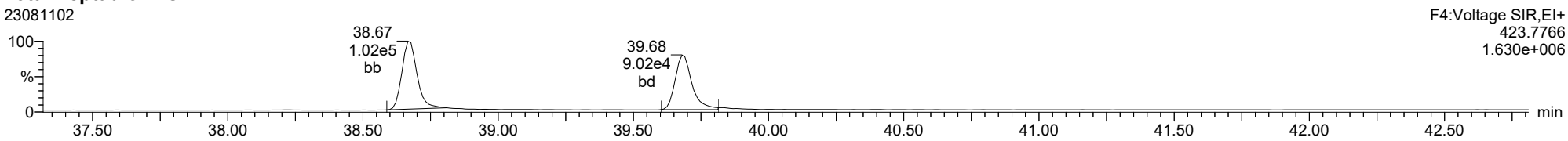
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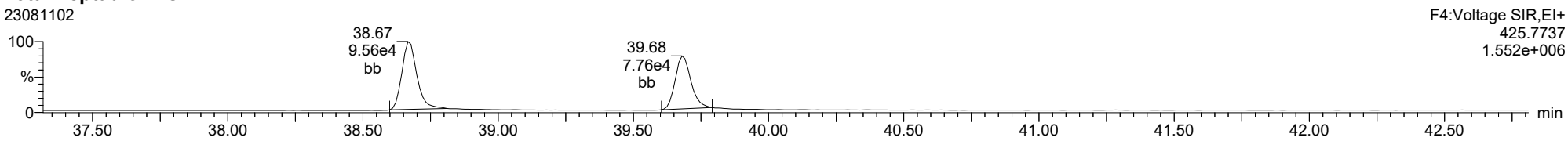
Total-hexadioxins



Total-heptadioxins

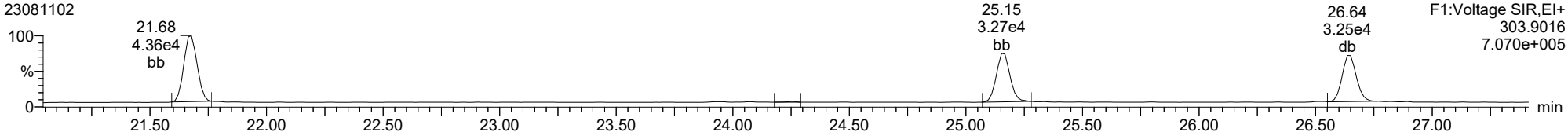


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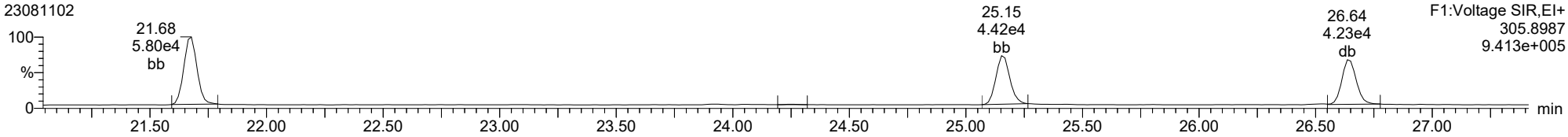


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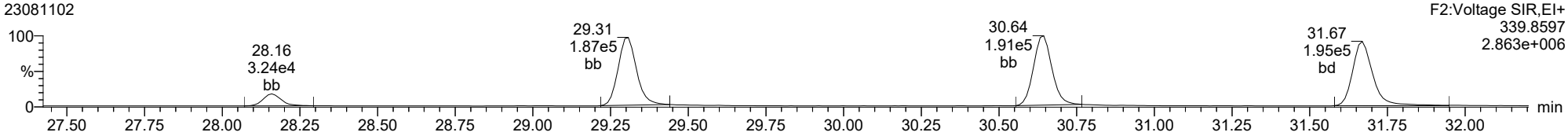
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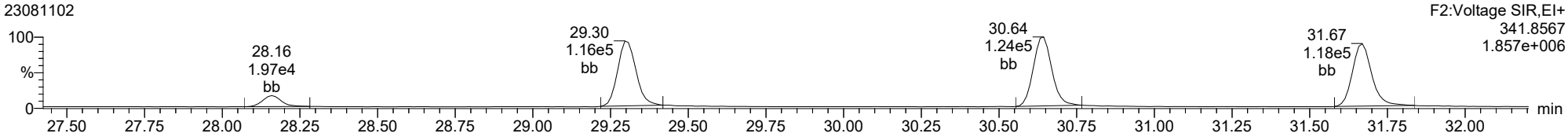
Total-tetrafurans



Total-pentafurans

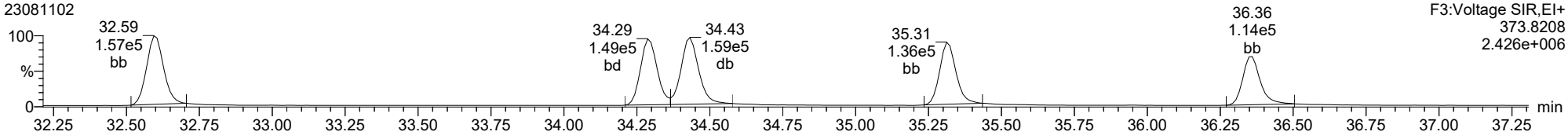


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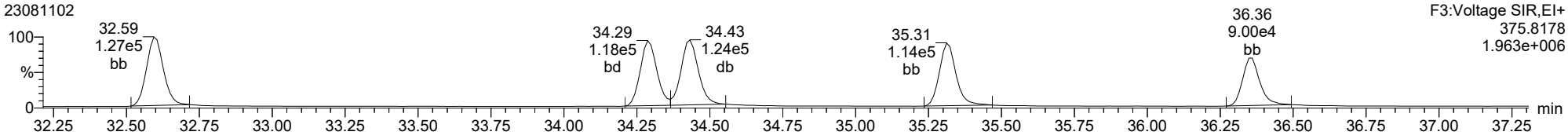


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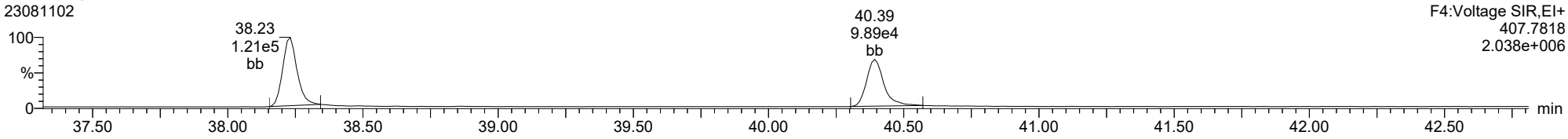
Total-hexafurans



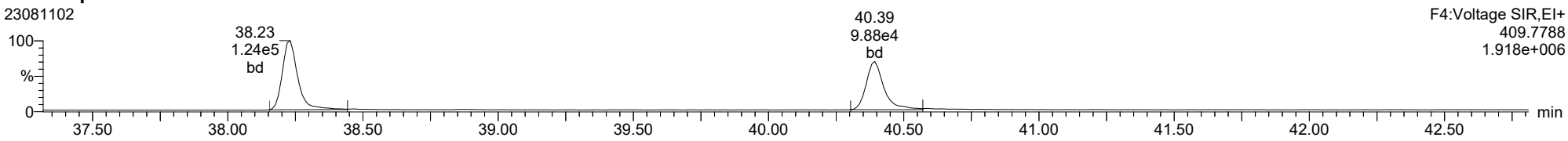
Total-hexafurans



Total-heptafurans



Total-heptafurans



Dataset: T:\Autospec\Processed Data Batch\230811ICIH.qld
Last Altered: Saturday, August 12, 2023 10:45:18 Pacific Daylight Time
Printed: Tuesday, August 15, 2023 12:23:54 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin230810.mdb 11 Aug 2023 22:18:32
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 10:45:18

ID: CSLCF, Name: 23081104, Date: 11-Aug-2023, Time: 12:07:03, 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					0.903		0.770	620	1084								
12378-PeCDF	29.285	1.000	1.884e3	1.134e3	0.923	1.661	1.550	694	714	2.90e4	1.67e4	41.8	23.4	NO	bb	bb	0.490
23478-PeCDF	30.622	1.000	1.678e3	1.115e3	0.991	1.504	1.550	694	714	2.63e4	1.74e4	37.8	24.3	NO	bb	MM	0.459
123478-HxCDF	34.276	1.000	1.424e3	1.052e3	1.128	1.355	1.240	557	621	1.90e4	1.52e4	34.0	24.4	NO	bd	bd	0.519
234678-HxCDF	35.301	1.000	1.282e3	9.529e2	1.081	1.345	1.240	557	621	1.62e4	1.44e4	29.0	23.3	NO	bd	MM	0.484
123678-HxCDF	34.421	1.001	1.456e3	1.109e3	1.032	1.313	1.240	557	621	2.26e4	1.47e4	40.6	23.7	NO	MM	db	0.486
123789-HxCDF	36.337	1.000	9.213e2	8.373e2	0.988	1.100	1.240	557	621	1.31e4	1.08e4	23.4	17.4	NO	bd	MM	0.487
1234678-HpCDF	38.220	1.000	1.279e3	1.078e3	1.164	1.186	1.050	652	594	1.98e4	1.55e4	30.3	26.1	NO	bb	bb	0.526
1234789-HpCDF	40.382	1.000	7.409e2	6.652e2	1.104	1.114	1.050	652	594	1.15e4	1.20e4	17.6	20.2	NO	bb	bb	0.423
OCDF	44.458	1.005	1.244e3	1.412e3	1.130	0.881	0.890	747	1121	1.70e4	1.59e4	22.7	14.1	NO	bd	bb	0.851
2378-TCDD					1.243		0.770	1009	502								
12378-PeCDD	30.878	1.001	1.244e3	7.881e2	1.150	1.579	1.550	698	698	1.80e4	1.04e4	25.7	14.9	NO	MM	bb	0.492
123478-HxCDD	35.424	1.001	1.264e3	9.051e2	0.960	1.397	1.240	537	779	2.06e4	1.40e4	38.4	18.0	NO	dd	MM	0.597
123678-HxCDD	35.546	1.001	1.088e3	1.016e3	0.883	1.071	1.240	537	779	1.58e4	1.42e4	29.3	18.2	NO	db	db	0.485
123789-HxCDD	35.936	1.012	8.774e2	6.498e2	0.804	1.350	1.240	537	779	1.17e4	1.12e4	21.8	14.4	NO	bb	bb	0.437
1234678-HpCDD	39.657	1.000	1.060e3	9.203e2	1.200	1.152	1.050	800	828	1.59e4	1.09e4	19.9	13.1	NO	MM	bb	0.620
OCDD	44.238	1.000	1.480e3	1.611e3	1.059	0.919	0.890	745	807	1.88e4	1.99e4	25.2	24.6	NO	bb	MM	1.058
13C-2378-TCDF	25.125	1.007	3.809e5	4.791e5	1.835	0.795	0.770	1678	1670	5.47e6	6.97e6	3260.3	4171.6	NO	bb	bb	99.573
13C-12378-PeCDF	29.274	1.174	3.978e5	2.690e5	1.377	1.479	1.550	2452	1825	5.52e6	3.61e6	2253.4	1977.4	NO	bb	bd	102.939
13C-23478-PeCDF	30.611	1.227	3.737e5	2.411e5	1.301	1.550	1.550	2452	1825	5.25e6	3.34e6	2140.6	1832.6	NO	bb	bb	100.404
13C-123478-HxCDF	34.265	0.954	1.433e5	2.793e5	1.091	0.513	0.510	1837	2437	2.05e6	4.04e6	1114.0	1659.7	NO	bd	bd	93.276
13C-123678-HxCDF	34.398	0.958	1.744e5	3.373e5	1.340	0.517	0.510	1837	2437	2.22e6	4.36e6	1206.1	1788.4	NO	db	db	91.895
13C-234678-HxCDF	35.290	0.983	1.411e5	2.858e5	1.093	0.494	0.510	1837	2437	1.89e6	3.72e6	1026.7	1525.6	NO	bb	bb	93.953
13C-123789-HxCDF	36.326	1.012	1.194e5	2.460e5	0.952	0.486	0.510	1837	2437	1.61e6	3.15e6	878.8	1293.2	NO	bb	bd	92.425
13C-1234678-HpCDF	38.209	1.064	1.196e5	2.660e5	0.985	0.450	0.440	1900	2426	1.78e6	3.88e6	937.8	1599.4	NO	bb	bb	94.213
13C-1234789-HpCDF	40.370	1.124	9.081e4	2.101e5	0.756	0.432	0.440	1900	2426	1.18e6	2.64e6	620.8	1088.8	NO	bb	bb	95.819
13C-1234-TCDD	24.941	0.000	2.078e5	2.628e5	1.000	0.791	0.770	1573	1080	3.13e6	3.99e6	1989.5	3694.9	NO	bb	bb	100.000
13C-2378-TCDD	25.760	1.033	2.247e5	2.876e5	1.110	0.781	0.770	1573	1080	3.38e6	4.29e6	2151.4	3969.2	NO	bb	bb	98.128
13C-12378-PeCDD	30.855	1.237	2.225e5	1.369e5	0.754	1.625	1.550	1069	1005	3.13e6	1.95e6	2925.3	1945.2	NO	bb	bb	101.357
13C-123478-HxCDD	35.401	0.986	2.102e5	1.681e5	0.960	1.250	1.240	2398	2304	3.26e6	2.62e6	1360.6	1138.7	NO	bd	bd	94.853
13C-123678-HxCDD	35.524	0.989	2.731e5	2.188e5	1.159	1.248	1.240	2398	2304	3.39e6	2.76e6	1413.4	1196.6	NO	db	dd	102.128
13C-1234678-HpCDD	39.657	1.104	1.414e5	1.248e5	0.629	1.133	1.050	1206	1681	1.79e6	1.67e6	1480.9	994.5	NO	bd	bb	101.840
13C-OCDD	44.220	1.231	2.620e5	2.900e5	0.635	0.904	0.890	2308	3179	2.71e6	2.93e6	1172.9	920.5	NO	bd	bd	209.162
13C-123789-HxCDD	35.914	0.000	2.382e5	1.773e5	1.000	1.343	1.240	2398	2304	3.12e6	2.48e6	1302.6	1074.2	NO	bd	bb	100.000
37CL-2378-TCDD	25.774	1.033	5.623e2		1.157			715		6.32e3		8.8			bb		0.103

Dataset: T:\Autospec\Processed Data Batch\230811ICIH.qld
Last Altered: Saturday, August 12, 2023 10:45:18 Pacific Daylight Time
Printed: Tuesday, August 15, 2023 12:23:54 Pacific Daylight Time

ID: CSLCF, Name: 23081104, Date: 11-Aug-2023, Time: 12:07:03, 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					1.170		0.770	620	1084								
1289-TCDF					0.847		0.770	620	1084								
13468-PECDF					1.241		1.550	569	726								
12389-PECDF					0.880		1.550	694	714								
123468-HXCDF					1.206		1.240	557	621								
1368-TCDD					1.181		0.770	1009	502								
1289-TCDD					0.963		0.770	1009	502								
12479-PECDD					2.166		1.550	698	698								
12389-PECDD					1.326		1.550	698	698								
124679-HXCDD					1.127		1.240	537	779								
1234679-HPCDD					1.303		1.050	800	828								
Total-tetrafurans			0.000e0		0.973			620		0.00e0							
Total-penta1			0.000e0					569		0.00e0							
Total-pentafurans			3.561e3		0.931			694		5.53e4							0.949
Total-hexafurans			5.083e3		1.087			557		7.08e4							1.976
Total-heptafurans			2.020e3		1.134			652		3.12e4							0.949
Total-Furans			1.191e4		1.053			620		1.74e5							4.725
Total-tetradioxins			0.000e0		1.129			1009		0.00e0							
Total-pentadioxins			1.244e3		1.548			698		1.80e4							0.492
Total-hexadioxins			3.230e3		0.943			537		4.81e4							1.519
Total-heptadioxins			1.060e3		1.251			800		1.59e4							0.620
Total-Dioxins			7.014e3		1.182			1009		1.01e5							3.688
Total-TEQ			1.892e4					1009		2.75e5							8.413
FUNCTION1 PFK			6.705e5					413218		1.14e7							
FUNCTION2 PFK			7.487e5					282117		1.93e7							0.000
FUNCTION3 PFK			0.000e0					352784		0.00e0							
FUNCTION4 PFK			2.154e4					324184		7.26e5							
FUNCTION5 PFK			1.598e5					219229		6.10e6							
FUNCTION1 HXCD...			0.000e0					576		0.00e0							
FUNCTION1 HPCD...																	
FUNCTION2 HPCD...			2.109e2					630		4.06e3							0.000
FUNCTION3 OCDPE			2.113e2					513		2.77e3							0.000
FUNCTION4 NCDPE			0.000e0					613		0.00e0							
FUNCTION5 DCDPE			1.021e2					592		2.13e3							0.000

Method: T:\Autospec\Methods\Dioxin230810.mdb 11 Aug 2023 22:18:32
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 10:45:18

ID: CSLCF, Name: 23081104, Date: 11-Aug-2023, Time: 12:07:03, Conditions: AUTOSPEC01, User: pk

TF

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

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	30.62	1.678e3	1.115e3	0.991	1.50	1.55	37.8	YES	NO	bb	MM	0.459
2	12378-PeCDF	29.28	1.884e3	1.134e3	0.923	1.66	1.55	41.8	YES	NO	bb	bb	0.490

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	234678-HxCDF	35.30	1.282e3	9.529e2	1.081	1.35	1.24	29.0	YES	NO	bd	MM	0.484
2	123678-HxCDF	34.42	1.456e3	1.109e3	1.032	1.31	1.24	40.6	YES	NO	MM	db	0.486
3	123478-HxCDF	34.28	1.424e3	1.052e3	1.128	1.35	1.24	34.0	YES	NO	bd	bd	0.519
4	123789-HxCDF	36.34	9.213e2	8.373e2	0.988	1.10	1.24	23.4	YES	NO	bd	MM	0.487

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDF	38.22	1.279e3	1.078e3	1.164	1.19	1.05	30.3	YES	NO	bb	bb	0.526
2	1234789-HpCDF	40.38	7.409e2	6.652e2	1.104	1.11	1.05	17.6	YES	NO	bb	bb	0.423

ID: CSLCF, Name: 23081104, Date: 11-Aug-2023, Time: 12:07:03, 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	234678-HxCDF	35.30	1.282e3	9.529e2	1.081	1.35	1.24	29.0	YES	NO	bd	MM	0.484
2	123678-HxCDF	34.42	1.456e3	1.109e3	1.032	1.31	1.24	40.6	YES	NO	MM	db	0.486
3	123478-HxCDF	34.28	1.424e3	1.052e3	1.128	1.35	1.24	34.0	YES	NO	bd	bd	0.519
4	23478-PeCDF	30.62	1.678e3	1.115e3	0.991	1.50	1.55	37.8	YES	NO	bb	MM	0.459
5	12378-PeCDF	29.28	1.884e3	1.134e3	0.923	1.66	1.55	41.8	YES	NO	bb	bb	0.490
6	1234678-HpCDF	38.22	1.279e3	1.078e3	1.164	1.19	1.05	30.3	YES	NO	bb	bb	0.526
7	123789-HxCDF	36.34	9.213e2	8.373e2	0.988	1.10	1.24	23.4	YES	NO	bd	MM	0.487
8	OCDF	44.46	1.244e3	1.412e3	1.130	0.88	0.89	22.7	YES	NO	bd	bb	0.851
9	1234789-HpCDF	40.38	7.409e2	6.652e2	1.104	1.11	1.05	17.6	YES	NO	bb	bb	0.423

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	12378-PeCDD	30.88	1.244e3	7.881e2	1.150	1.58	1.55	25.7	YES	NO	MM	bb	0.492

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDD	35.94	8.774e2	6.498e2	0.804	1.35	1.24	21.8	YES	NO	bb	bb	0.437
2	123678-HxCDD	35.55	1.088e3	1.016e3	0.883	1.07	1.24	29.3	YES	NO	db	db	0.485
3	123478-HxCDD	35.42	1.264e3	9.051e2	0.960	1.40	1.24	38.4	YES	NO	dd	MM	0.597

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.66	1.060e3	9.203e2	1.200	1.15	1.05	19.9	YES	NO	MM	bb	0.620

ID: CSLCF, Name: 23081104, Date: 11-Aug-2023, Time: 12:07:03, Conditions: AUTOSPEC01, User: pk

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	123789-HxCDD	35.94	8.774e2	6.498e2	0.804	1.35	1.24	21.8	YES	NO	bb	bb	0.437
2	123678-HxCDD	35.55	1.088e3	1.016e3	0.883	1.07	1.24	29.3	YES	NO	db	db	0.485
3	123478-HxCDD	35.42	1.264e3	9.051e2	0.960	1.40	1.24	38.4	YES	NO	dd	MM	0.597
4	12378-PeCDD	30.88	1.244e3	7.881e2	1.150	1.58	1.55	25.7	YES	NO	MM	bb	0.492
5	OCDD	44.24	1.480e3	1.611e3	1.059	0.92	0.89	25.2	YES	NO	bb	MM	1.058
6	1234678-HpCDD	39.66	1.060e3	9.203e2	1.200	1.15	1.05	19.9	YES	NO	MM	bb	0.620

TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	234678-HxCDF	35.30	1.282e3	9.529e2	1.081	1.35	1.24	29.0	YES	NO	bd	MM	0.484
2	123678-HxCDF	34.42	1.456e3	1.109e3	1.032	1.31	1.24	40.6	YES	NO	MM	db	0.486
3	123478-HxCDF	34.28	1.424e3	1.052e3	1.128	1.35	1.24	34.0	YES	NO	bd	bd	0.519
4	23478-PeCDF	30.62	1.678e3	1.115e3	0.991	1.50	1.55	37.8	YES	NO	bb	MM	0.459
5	12378-PeCDF	29.28	1.884e3	1.134e3	0.923	1.66	1.55	41.8	YES	NO	bb	bb	0.490
6	1234678-HpCDF	38.22	1.279e3	1.078e3	1.164	1.19	1.05	30.3	YES	NO	bb	bb	0.526
7	123789-HxCDF	36.34	9.213e2	8.373e2	0.988	1.10	1.24	23.4	YES	NO	bd	MM	0.487
8	OCDF	44.46	1.244e3	1.412e3	1.130	0.88	0.89	22.7	YES	NO	bd	bb	0.851
9	1234789-HpCDF	40.38	7.409e2	6.652e2	1.104	1.11	1.05	17.6	YES	NO	bb	bb	0.423
10	123789-HxCDD	35.94	8.774e2	6.498e2	0.804	1.35	1.24	21.8	YES	NO	bb	bb	0.437
11	123678-HxCDD	35.55	1.088e3	1.016e3	0.883	1.07	1.24	29.3	YES	NO	db	db	0.485
12	123478-HxCDD	35.42	1.264e3	9.051e2	0.960	1.40	1.24	38.4	YES	NO	dd	MM	0.597
13	12378-PeCDD	30.88	1.244e3	7.881e2	1.150	1.58	1.55	25.7	YES	NO	MM	bb	0.492
14	OCDD	44.24	1.480e3	1.611e3	1.059	0.92	0.89	25.2	YES	NO	bb	MM	1.058
15	1234678-HpCDD	39.66	1.060e3	9.203e2	1.200	1.15	1.05	19.9	YES	NO	MM	bb	0.620

ID: CSLCF, Name: 23081104, Date: 11-Aug-2023, Time: 12:07:03, 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	27.33	7.051e4					2.0	NO		bb		
2	FUNCTION1 PFK	26.51	8.607e4					2.9	NO		bb		
3	FUNCTION1 PFK	25.58	7.848e4					2.2	NO		bb		
4	FUNCTION1 PFK	24.45	7.780e4					3.9	YES		bb		
5	FUNCTION1 PFK	23.99	3.124e4					1.6	NO		bb		
6	FUNCTION1 PFK	23.18	5.543e4					2.6	NO		bb		
7	FUNCTION1 PFK	23.02	5.454e4					2.2	NO		bb		
8	FUNCTION1 PFK	22.86	2.387e4					1.6	NO		bb		
9	FUNCTION1 PFK	21.38	1.061e5					2.6	NO		db		
10	FUNCTION1 PFK	21.32	3.918e4					2.4	NO		bd		
11	FUNCTION1 PFK	21.16	2.365e4					2.1	NO		db		
12	FUNCTION1 PFK	21.13	2.362e4					1.6	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	29.45	1.899e4					1.2	NO		bb		0.000
2	FUNCTION2 PFK	29.21	6.358e4					1.7	NO		bb		0.000
3	FUNCTION2 PFK	29.04	1.204e4					1.0	NO		bb		0.000
4	FUNCTION2 PFK	28.79	1.769e4					1.9	NO		db		0.000
5	FUNCTION2 PFK	28.72	2.654e4					2.1	NO		bd		0.000
6	FUNCTION2 PFK	28.65	8.539e3					1.2	NO		db		0.000
7	FUNCTION2 PFK	28.60	8.457e3					1.1	NO		bd		0.000
8	FUNCTION2 PFK	28.44	1.958e3					0.4	NO		bb		0.000
9	FUNCTION2 PFK	28.39	3.544e3					0.8	NO		bb		0.000
10	FUNCTION2 PFK	27.98	4.790e3					0.8	NO		db		0.000
11	FUNCTION2 PFK	27.94	1.066e4					1.6	NO		dd		0.000
12	FUNCTION2 PFK	27.90	2.600e4					2.5	NO		bd		0.000
13	FUNCTION2 PFK	27.84	1.458e3					0.5	NO		bb		0.000
14	FUNCTION2 PFK	27.62	4.636e4					2.4	NO		bb		0.000
15	FUNCTION2 PFK	27.51	1.812e4					2.0	NO		db		0.000
16	FUNCTION2 PFK	27.47	2.559e4					2.6	NO		bd		0.000
17	FUNCTION2 PFK	30.73	5.726e4					2.3	NO		bb		0.000
18	FUNCTION2 PFK	30.57	3.668e3					0.8	NO		db		0.000
19	FUNCTION2 PFK	30.52	3.079e4					2.3	NO		bd		0.000
20	FUNCTION2 PFK	30.41	1.410e4					1.2	NO		bb		0.000
21	FUNCTION2 PFK	30.29	7.170e3					1.1	NO		bb		0.000
22	FUNCTION2 PFK	30.21	1.308e4					1.4	NO		bb		0.000
23	FUNCTION2 PFK	30.10	4.503e3					0.6	NO		db		0.000
24	FUNCTION2 PFK	30.05	1.008e4					1.5	NO		dd		0.000
25	FUNCTION2 PFK	30.02	1.789e4					1.8	NO		dd		0.000
26	FUNCTION2 PFK	29.98	1.502e4					1.7	NO		bd		0.000
27	FUNCTION2 PFK	29.89	2.330e4					2.5	NO		db		0.000
28	FUNCTION2 PFK	29.83	1.834e4					2.0	NO		dd		0.000
29	FUNCTION2 PFK	29.75	3.782e4					2.3	NO		dd		0.000
30	FUNCTION2 PFK	29.70	1.853e4					1.6	NO		bd		0.000
31	FUNCTION2 PFK	29.62	4.685e3					0.8	NO		bb		0.000
32	FUNCTION2 PFK	29.56	2.778e3					0.5	NO		bb		0.000
33	FUNCTION2 PFK	32.08	5.572e3					0.7	NO		bb		0.000
34	FUNCTION2 PFK	31.91	3.439e4					2.3	NO		bb		0.000
35	FUNCTION2 PFK	31.82	8.072e3					1.1	NO		db		0.000
36	FUNCTION2 PFK	31.78	9.469e3					1.1	NO		bd		0.000
37	FUNCTION2 PFK	31.58	4.107e3					0.8	NO		bb		0.000

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PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION2 PFK	31.54	1.047e4					1.2	NO		bb		0.000
39	FUNCTION2 PFK	31.46	7.901e3					1.1	NO		bb		0.000
40	FUNCTION2 PFK	31.40	1.825e3					0.6	NO		bb		0.000
41	FUNCTION2 PFK	31.29	1.391e4					1.5	NO		bb		0.000
42	FUNCTION2 PFK	31.22	4.769e3					0.6	NO		bb		0.000
43	FUNCTION2 PFK	31.18	3.877e3					0.8	NO		bb		0.000
44	FUNCTION2 PFK	31.11	1.368e4					1.6	NO		db		0.000
45	FUNCTION2 PFK	31.07	1.582e4					1.6	NO		dd		0.000
46	FUNCTION2 PFK	30.99	1.154e4					1.3	NO		bd		0.000
47	FUNCTION2 PFK	30.87	8.968e3					1.4	NO		db		0.000
48	FUNCTION2 PFK	30.86	9.432e3					1.2	NO		bd		0.000
49	FUNCTION2 PFK	32.15	1.152e4					1.3	NO		bb		0.000

PFK3

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

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	41.41	2.154e4					2.2	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	44.54	6.590e3					1.3	NO		bd		
2	FUNCTION5 PFK	44.35	1.591e4					2.0	NO		bb		
3	FUNCTION5 PFK	44.29	1.893e3					0.6	NO		bb		
4	FUNCTION5 PFK	43.92	8.732e3					1.8	NO		bb		
5	FUNCTION5 PFK	43.77	3.693e3					0.9	NO		bb		
6	FUNCTION5 PFK	43.49	1.170e4					1.9	NO		db		
7	FUNCTION5 PFK	43.44	3.839e3					1.0	NO		bd		
8	FUNCTION5 PFK	43.17	6.024e3					1.4	NO		bb		
9	FUNCTION5 PFK	43.00	4.281e3					0.8	NO		bb		
10	FUNCTION5 PFK	42.96	1.229e4					1.3	NO		db		
11	FUNCTION5 PFK	42.89	8.136e3					1.2	NO		bd		
12	FUNCTION5 PFK	45.63	1.111e4					1.4	NO		db		
13	FUNCTION5 PFK	45.57	1.193e4					1.9	NO		bd		
14	FUNCTION5 PFK	45.35	8.690e2					0.4	NO		bb		
15	FUNCTION5 PFK	45.30	8.430e3					1.4	NO		bb		
16	FUNCTION5 PFK	45.25	2.811e3					0.8	NO		bb		
17	FUNCTION5 PFK	45.18	3.339e3					1.0	NO		bb		
18	FUNCTION5 PFK	45.07	9.295e3					1.2	NO		bb		
19	FUNCTION5 PFK	45.01	7.058e3					1.3	NO		bb		
20	FUNCTION5 PFK	44.84	4.703e3					1.2	NO		bb		
21	FUNCTION5 PFK	44.78	1.010e4					1.3	NO		bb		
22	FUNCTION5 PFK	44.72	8.244e2					0.4	NO		bb		
23	FUNCTION5 PFK	44.59	6.289e3					1.4	NO		db		

ETHERS1

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

ETHERS2

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

ID: CSLCF, Name: 23081104, Date: 11-Aug-2023, Time: 12:07:03, 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...	30.90	1.280e2					1.8	NO		bb		0.000
2	FUNCTION2 HPCD...	29.04	8.294e1					4.7	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	33.99	1.362e2					3.8	YES		bb		0.000
2	FUNCTION3 OCDPE	33.64	7.511e1					1.6	NO		bb		0.000

ETHERS5

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

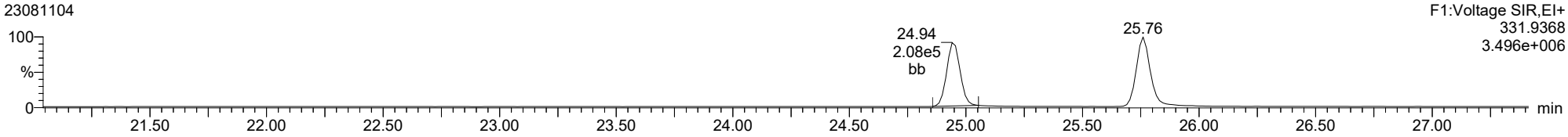
ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	44.60	1.021e2					3.6	YES		bb		0.000

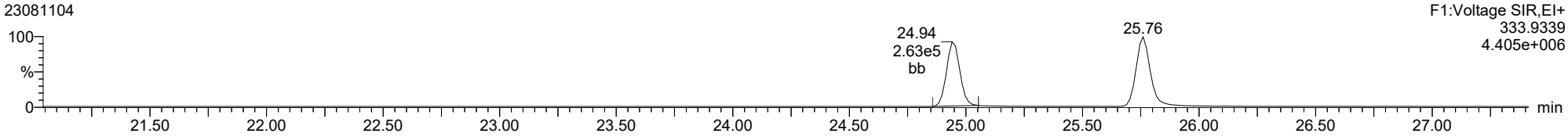
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ID: CSLCF, Name: 23081104, Date: 11-Aug-2023, Time: 12:07:03, Conditions: AUTOSPEC01, User: pk

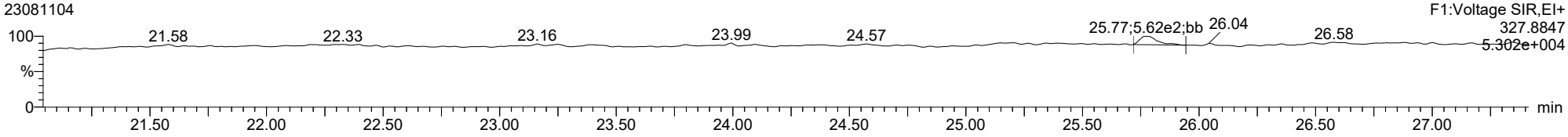
13C-1234-TCDD



13C-1234-TCDD

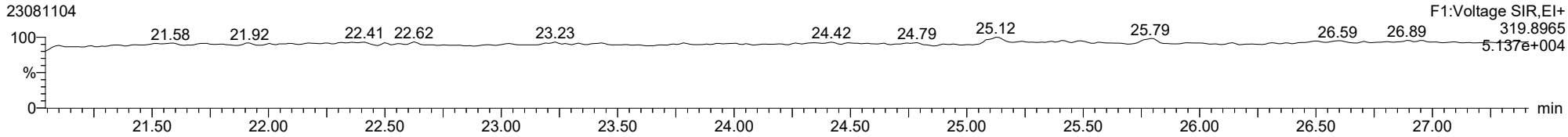


37CL-2378-TCDD

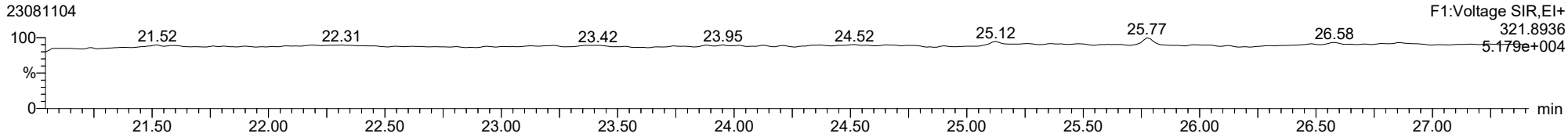


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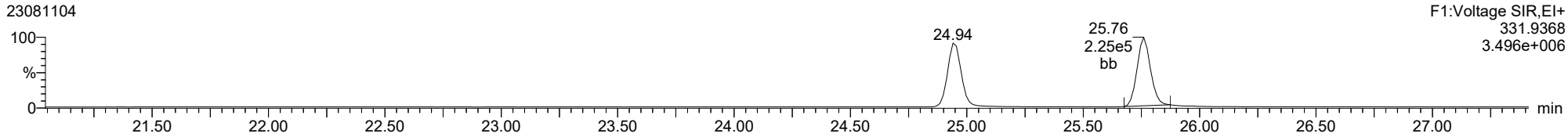
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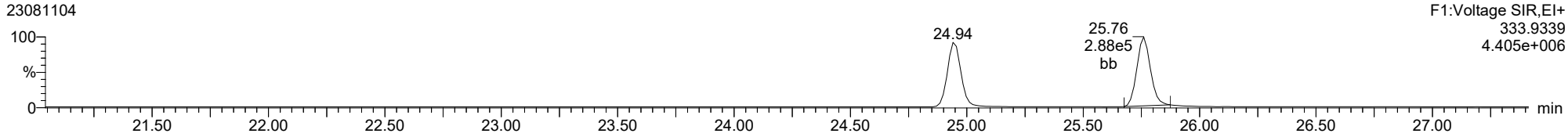
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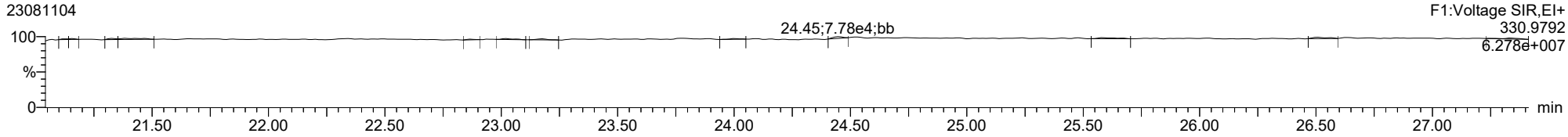
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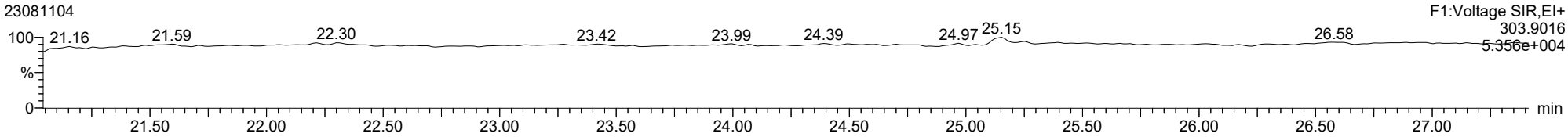


FUNCTION1 PFK

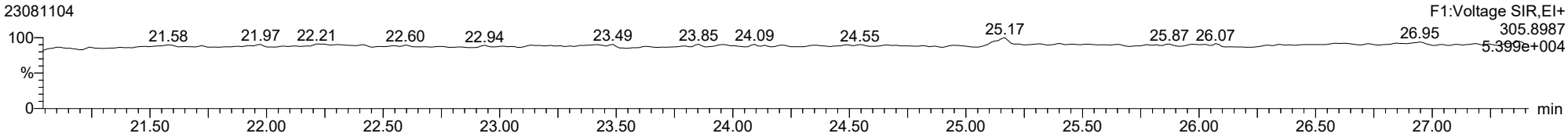


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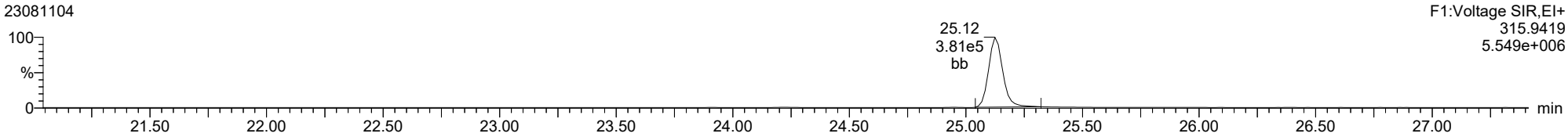
2378-TCDF



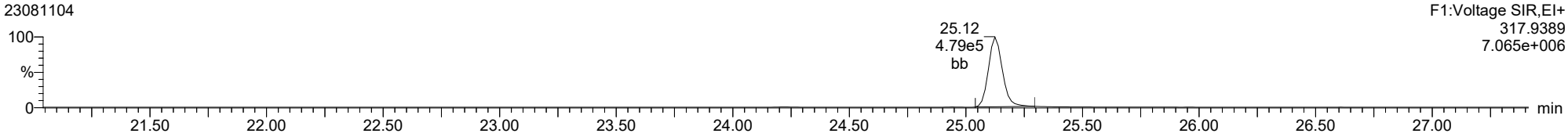
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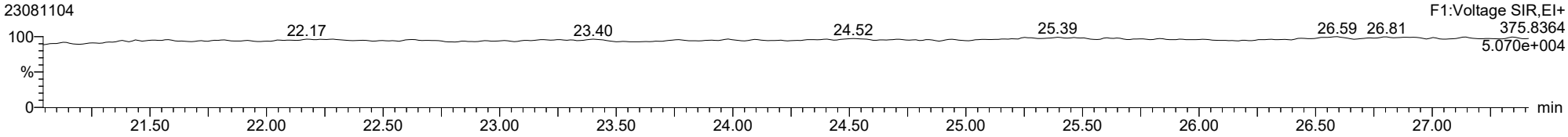
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13C-2378-TCDF

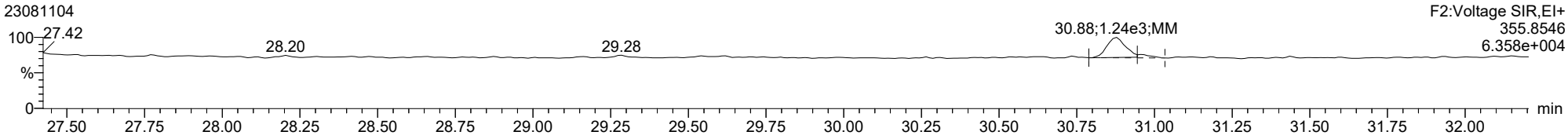


FUNCTION1 HXCDPE

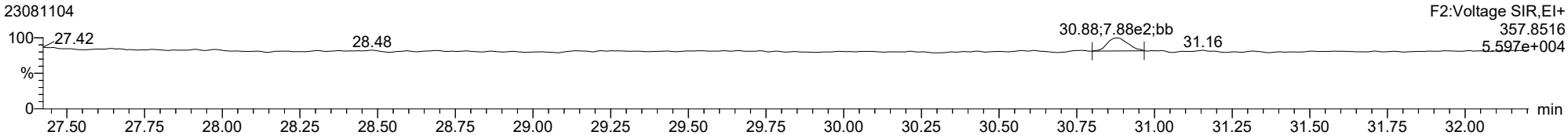


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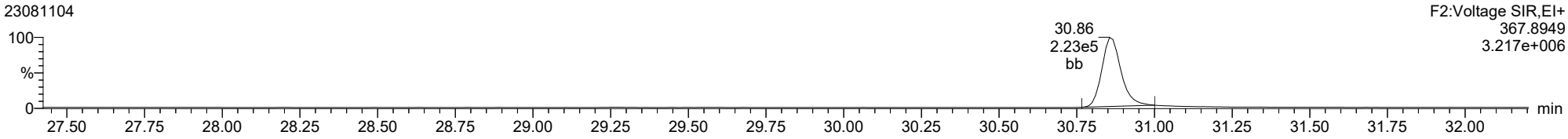
12378-PeCDD



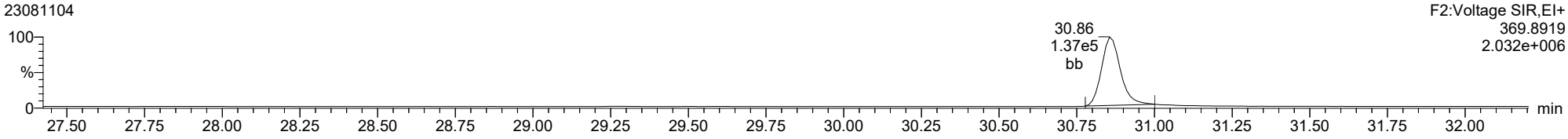
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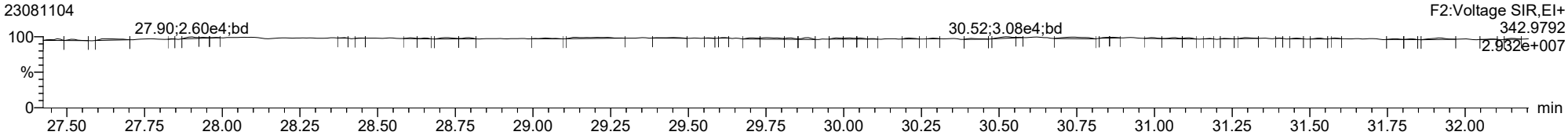
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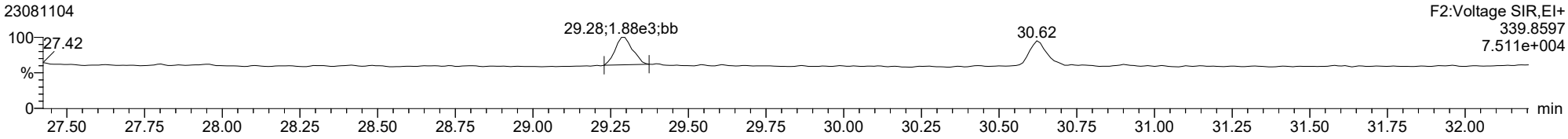


FUNCTION2 PFK

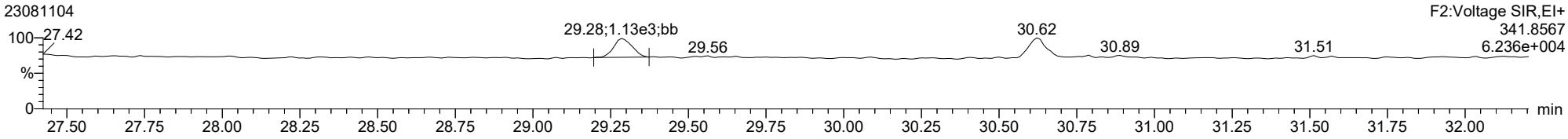


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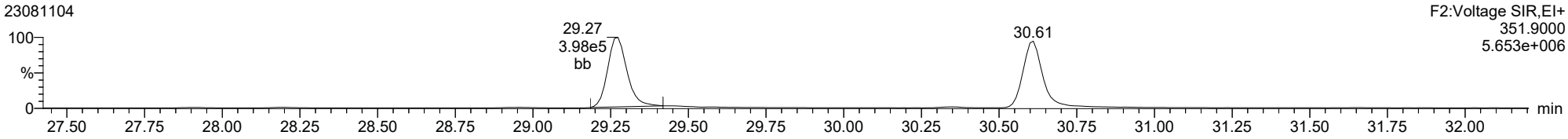
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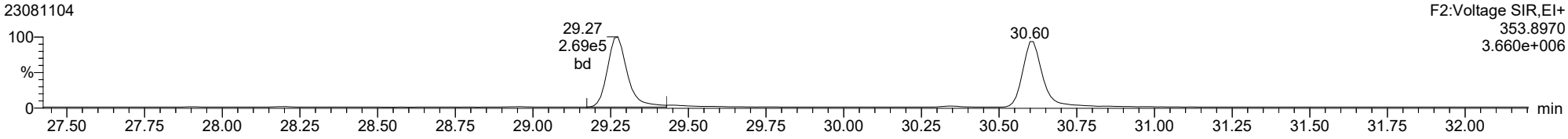
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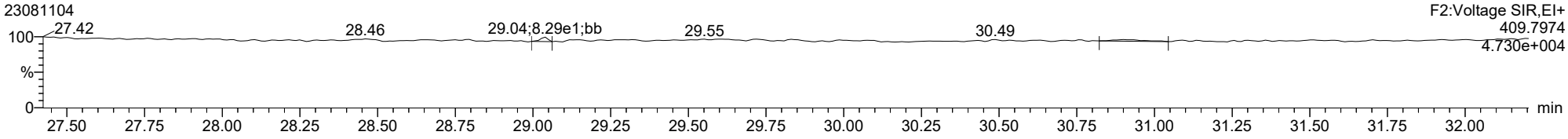
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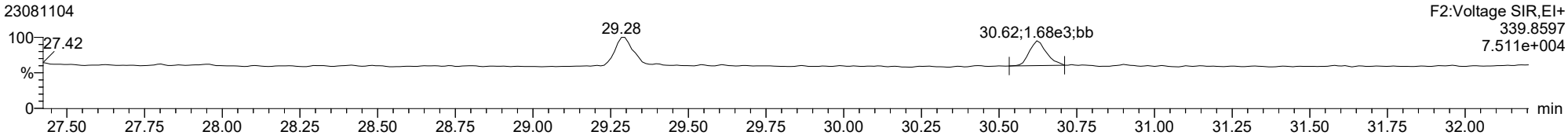


FUNCTION2 HPCDPE

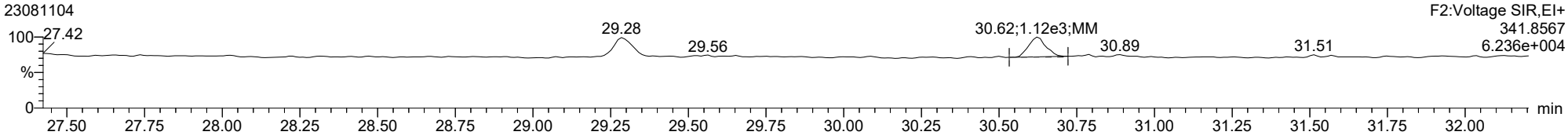


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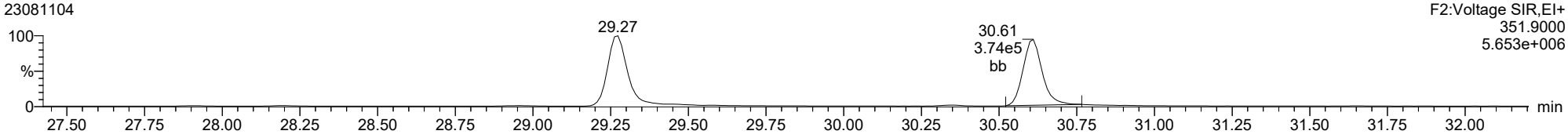
23478-PeCDF



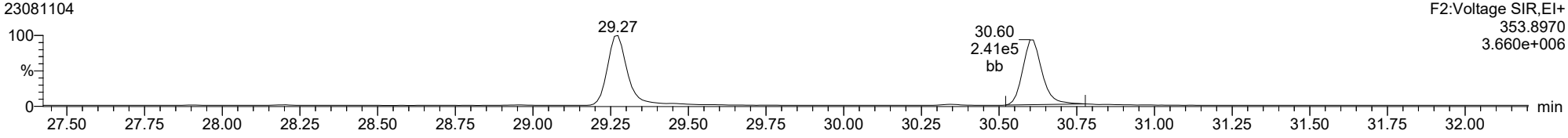
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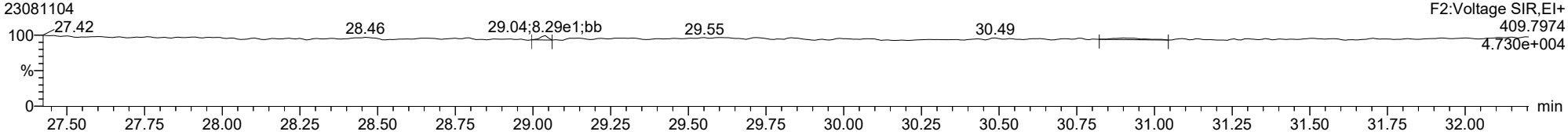
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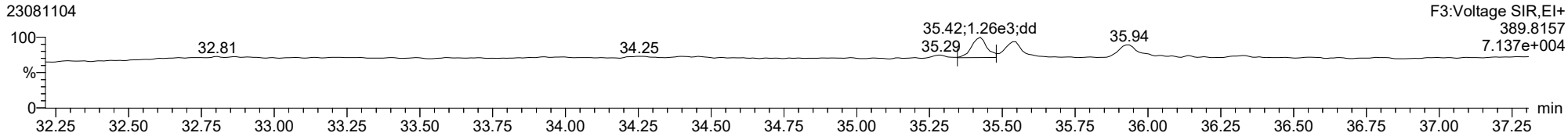


FUNCTION2 HPCDPE

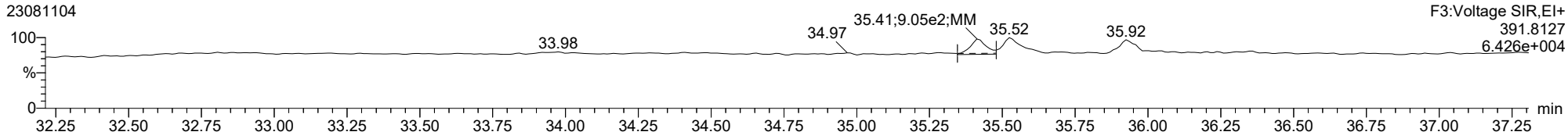


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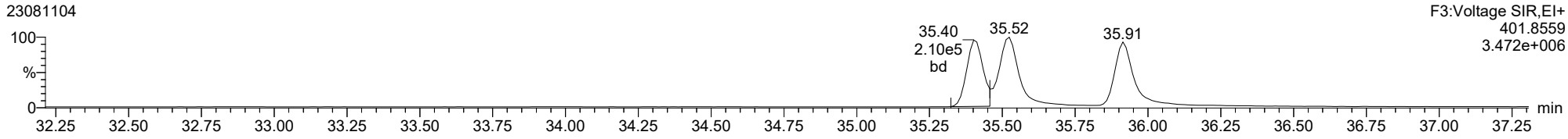
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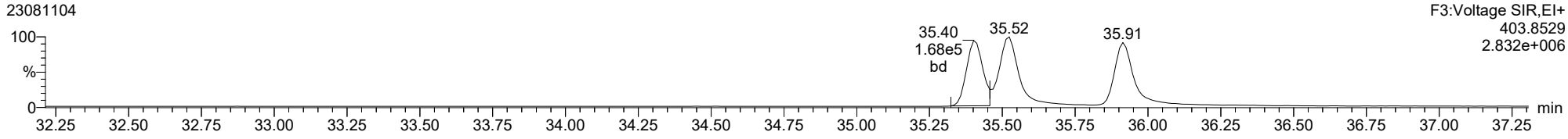
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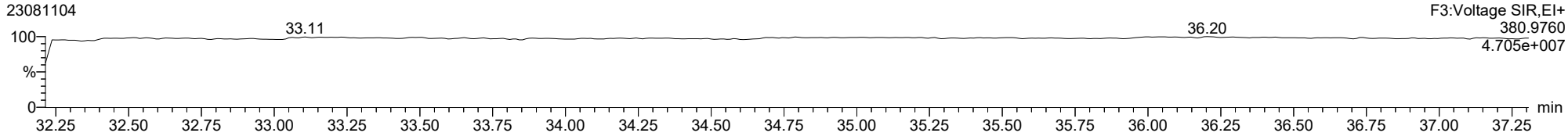
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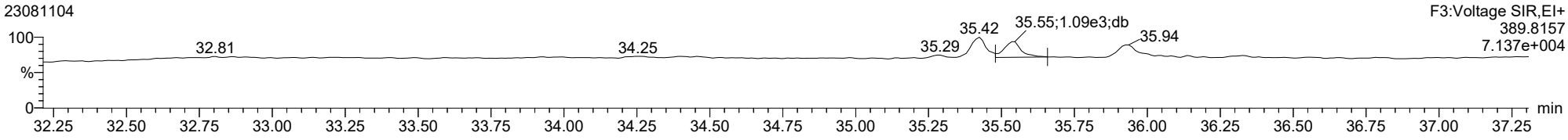
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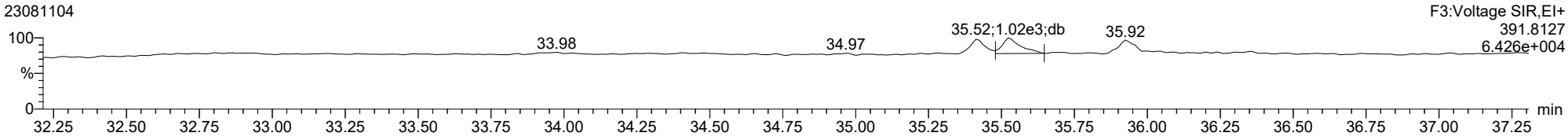
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ID: CSLCF, Name: 23081104, Date: 11-Aug-2023, Time: 12:07:03, Conditions: AUTOSPEC01, User: pk

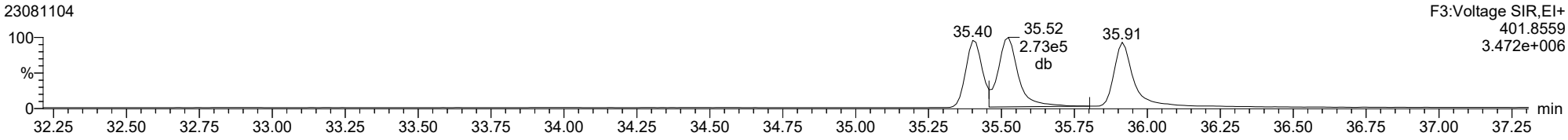
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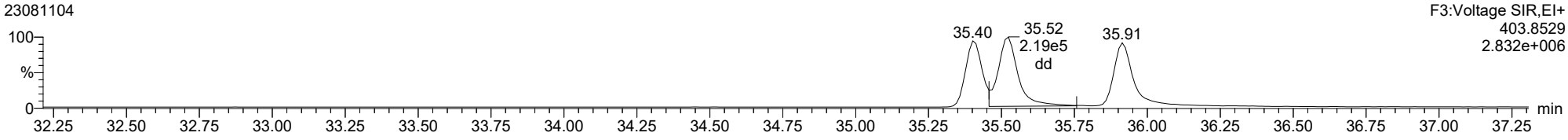
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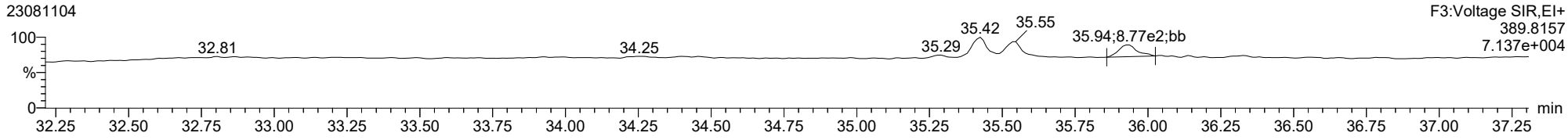
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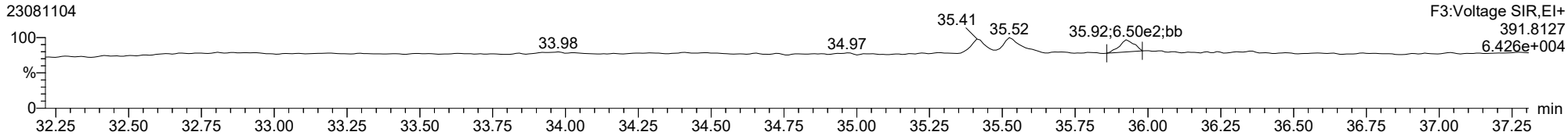
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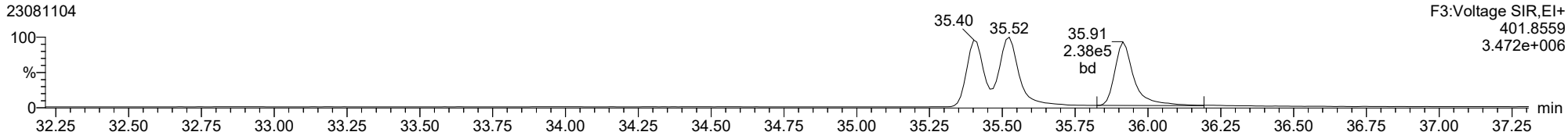
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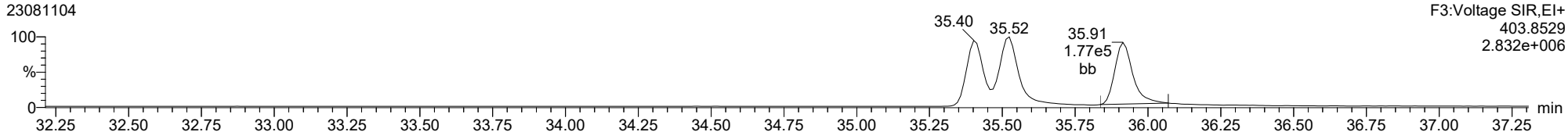
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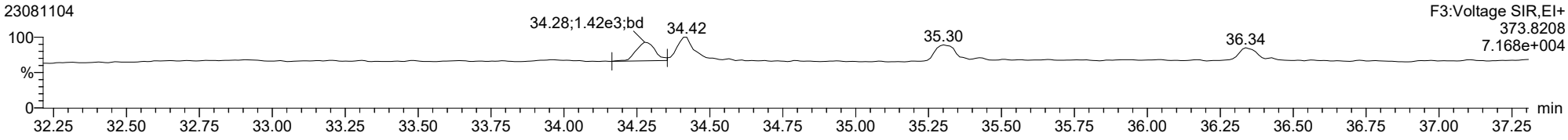


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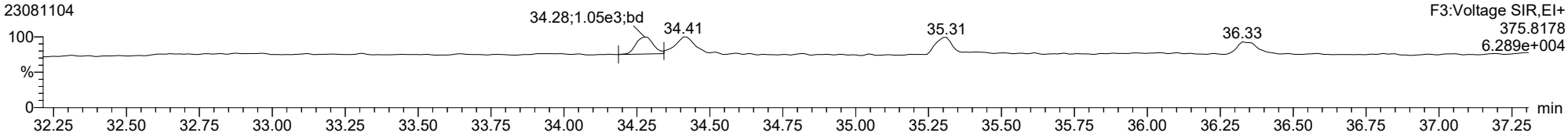


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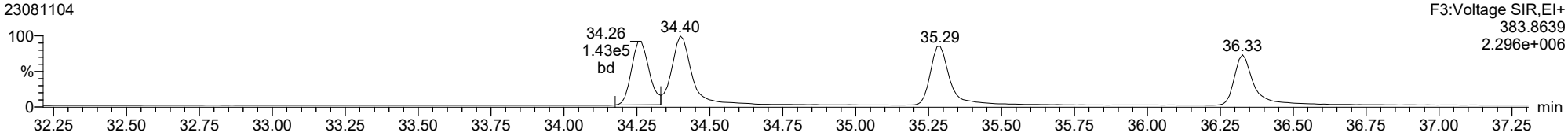
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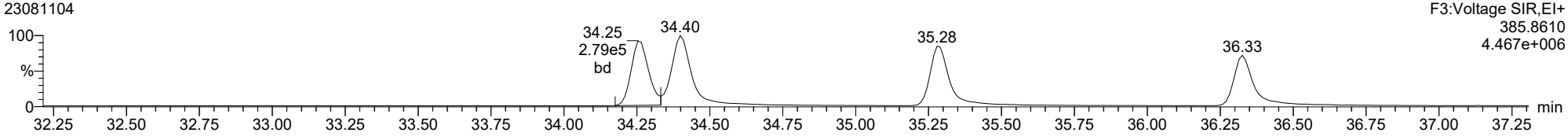
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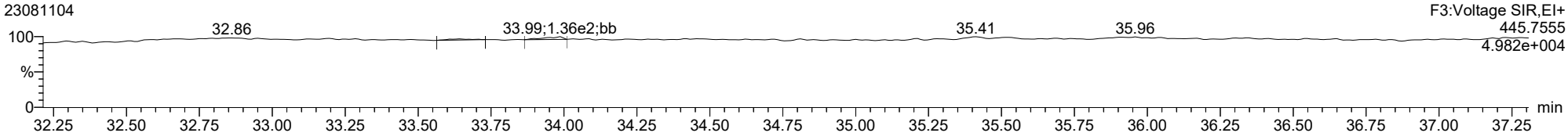
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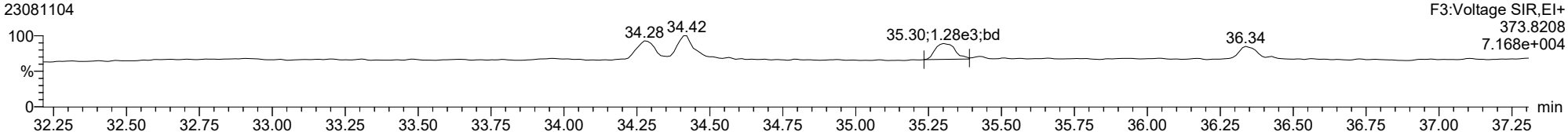


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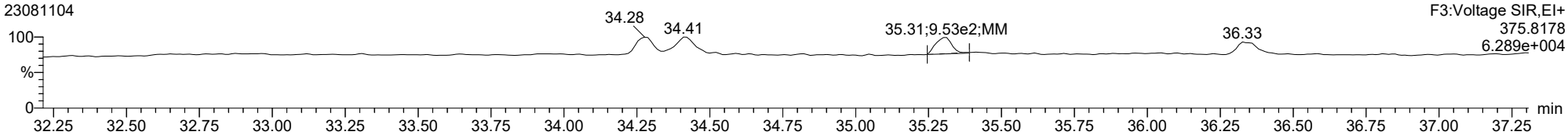


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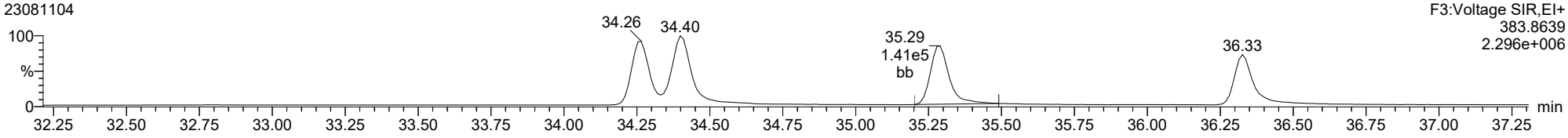
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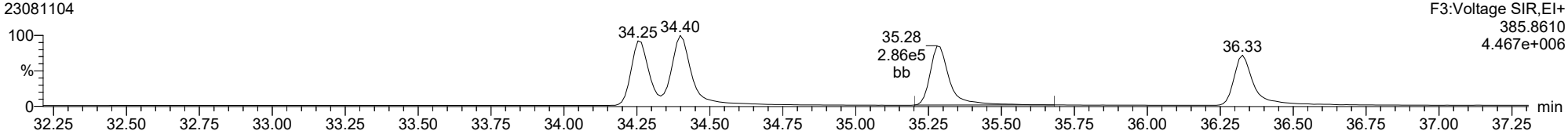
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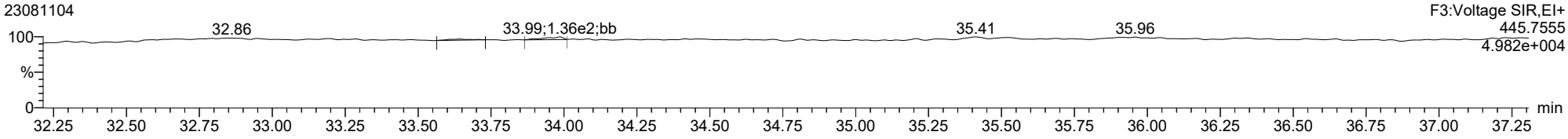
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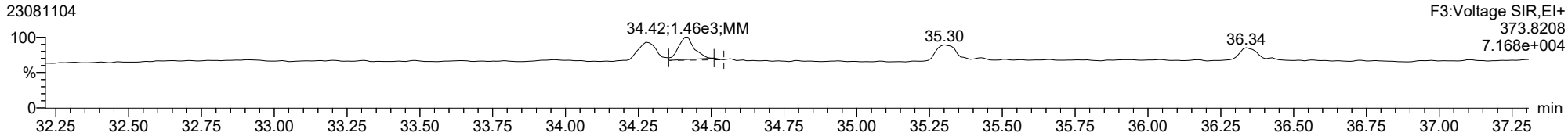


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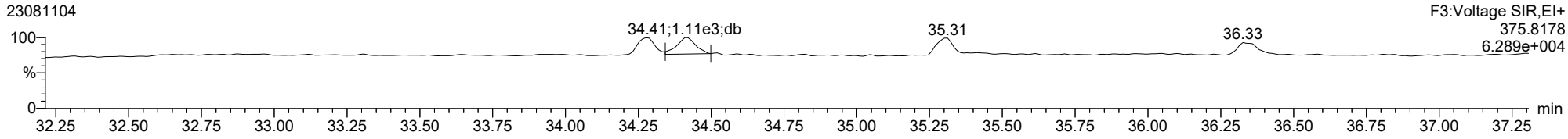


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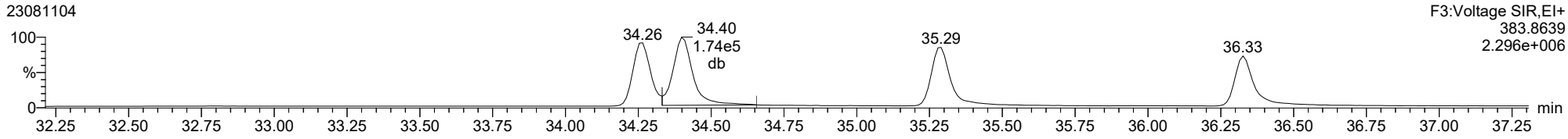
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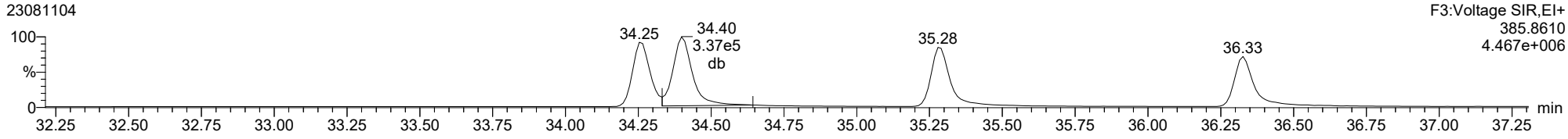
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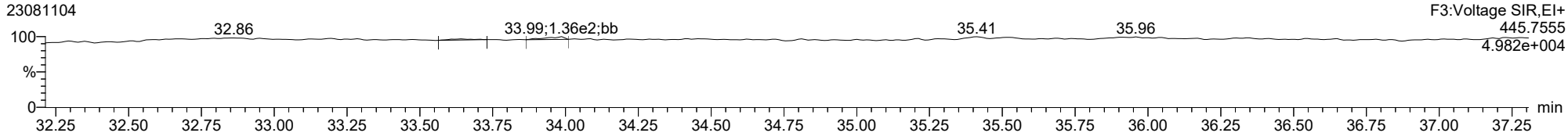
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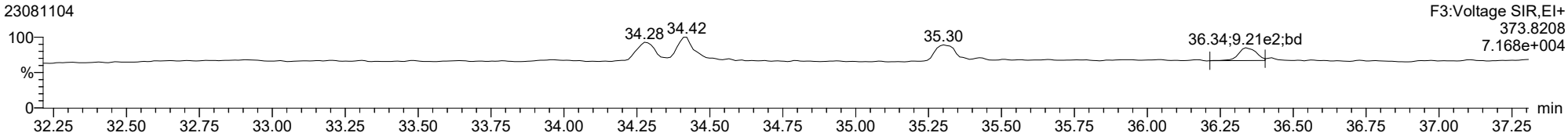


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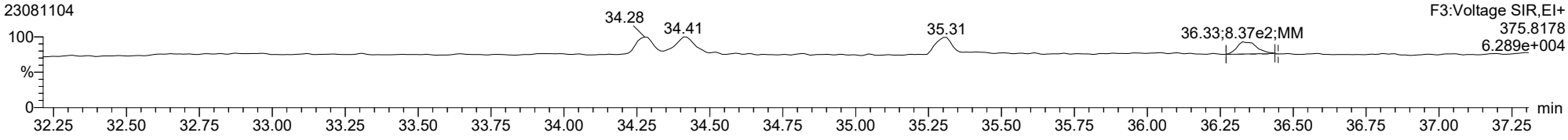


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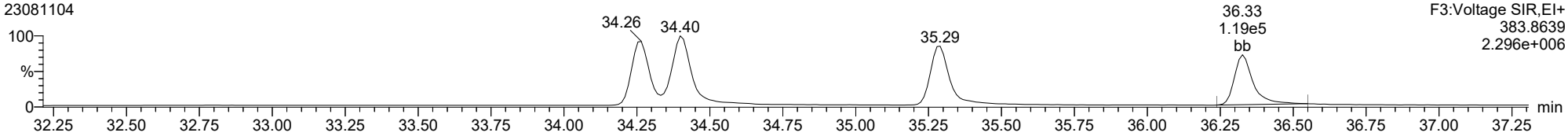
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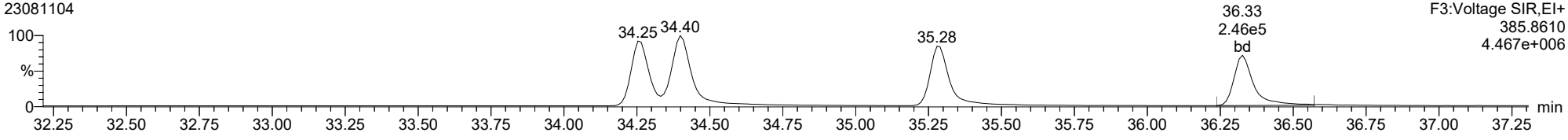
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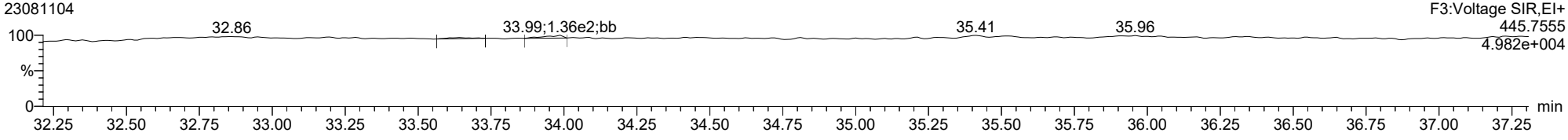
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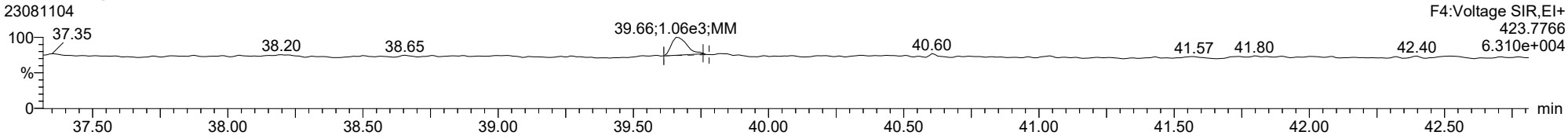


FUNCTION3 OCDPE

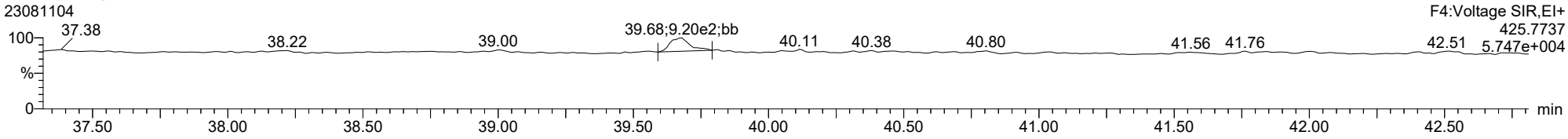


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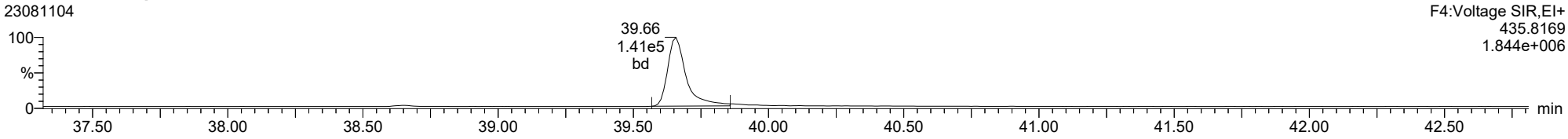
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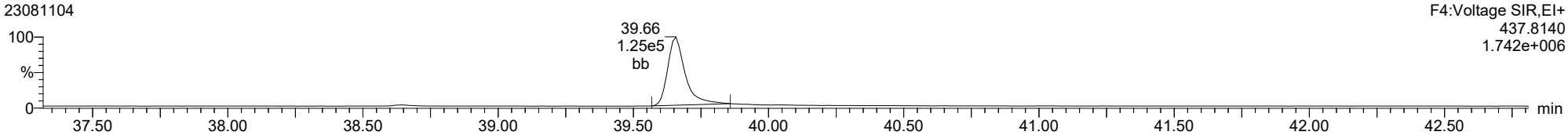
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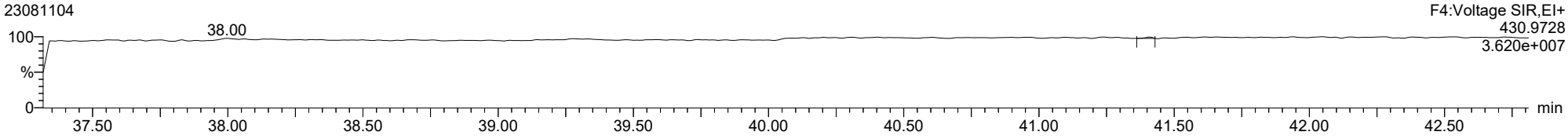
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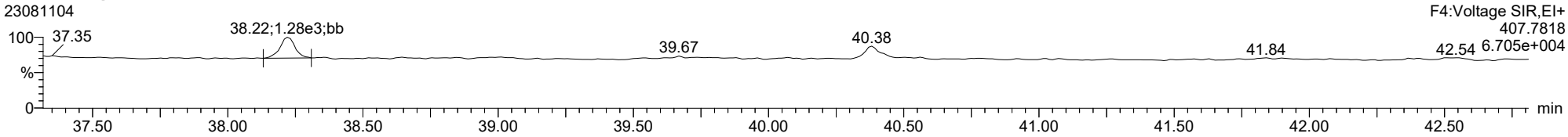


FUNCTION4 PFK

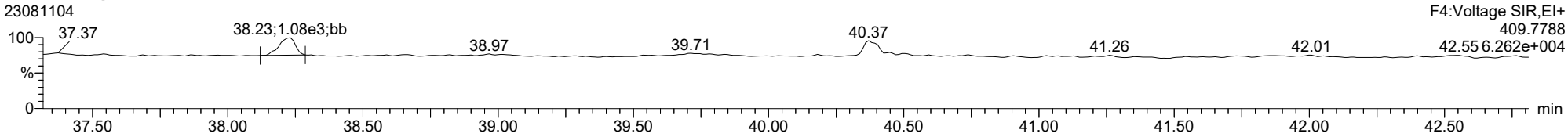


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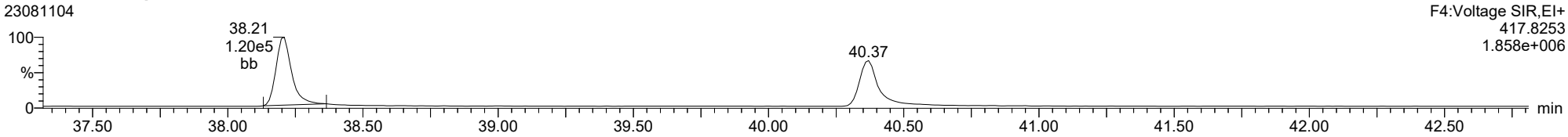
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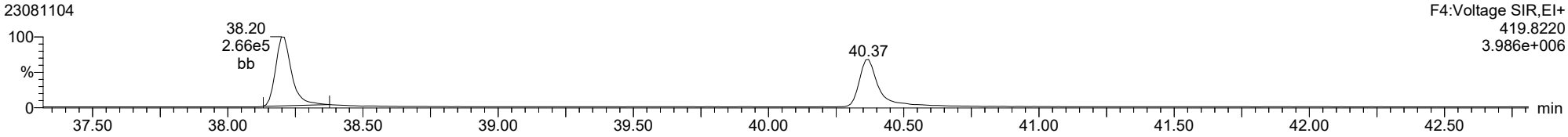
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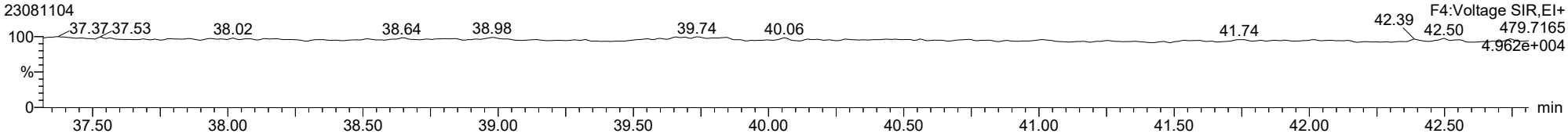
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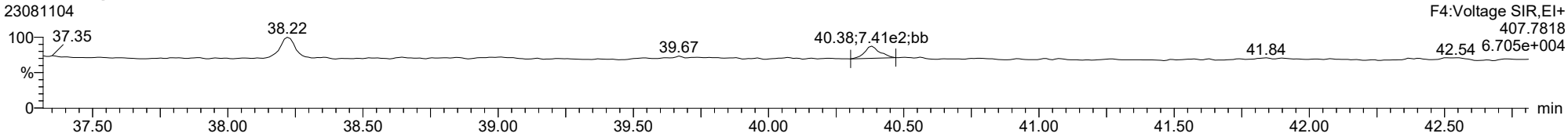


FUNCTION4 NCDPE

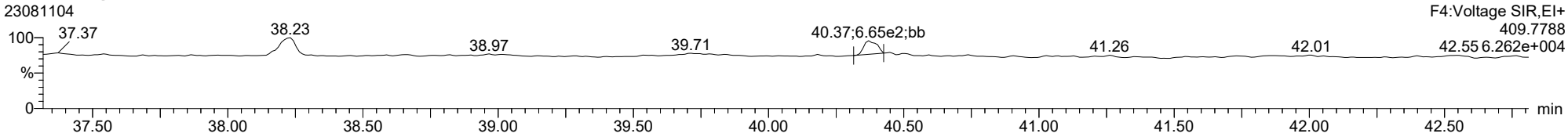


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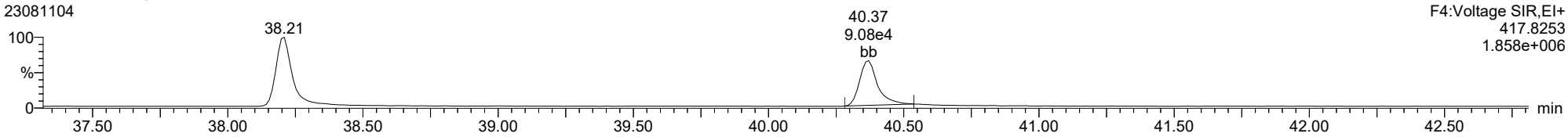
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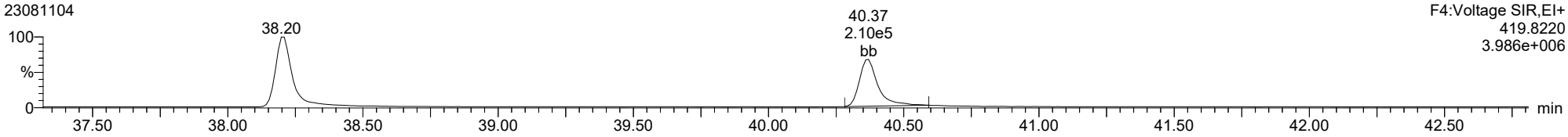
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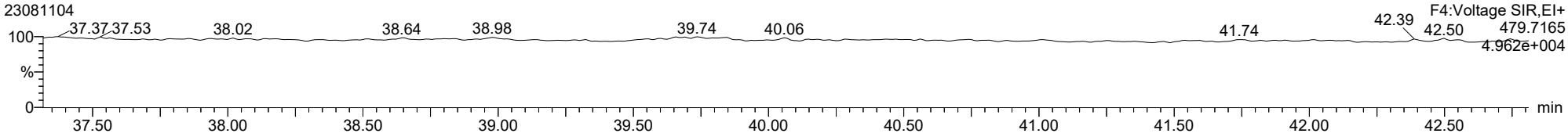
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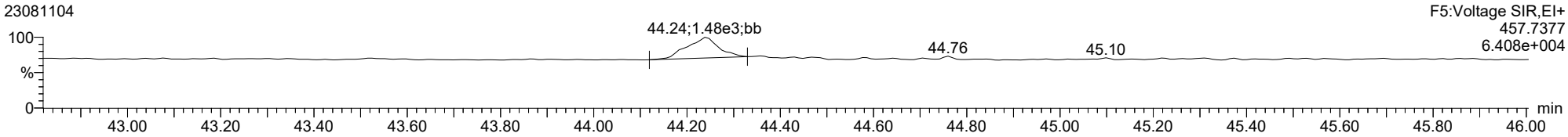


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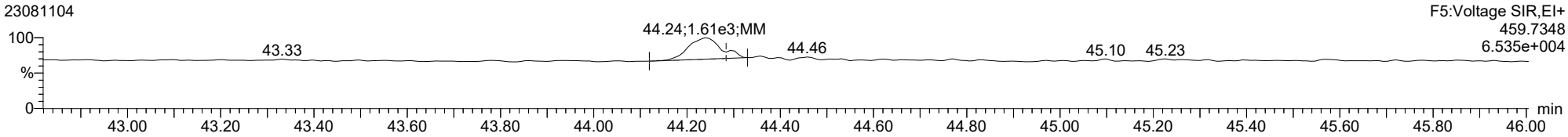


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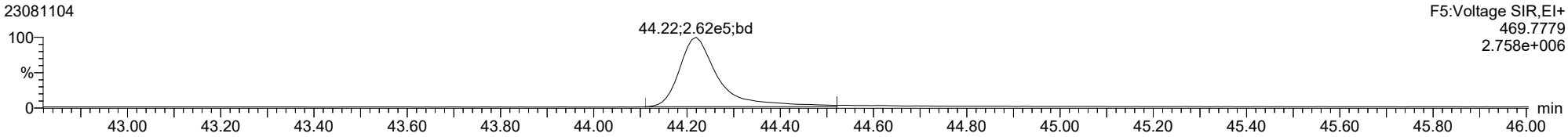
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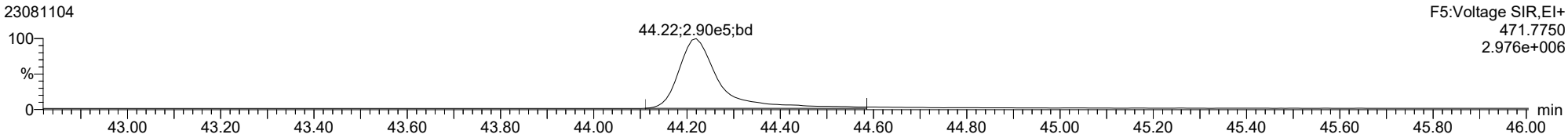
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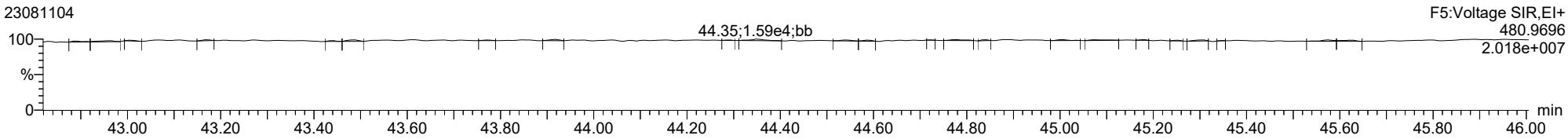
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13C-OCDD



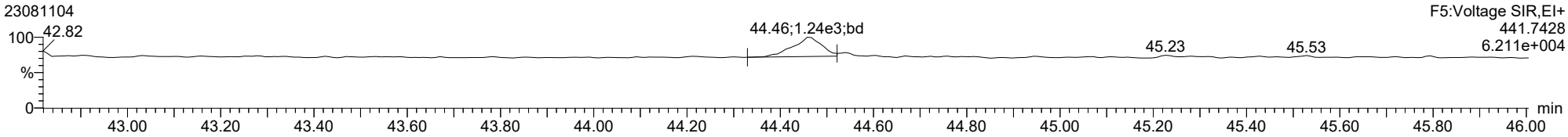
FUNCTION5 PFK



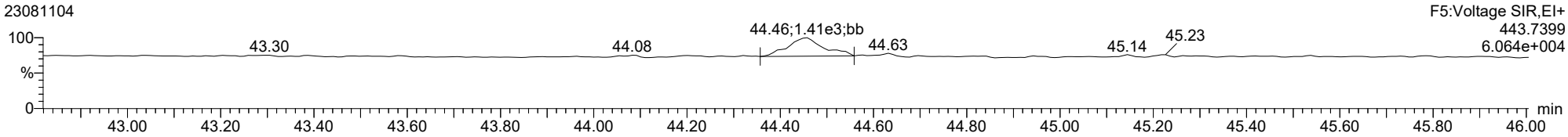
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Printed: Tuesday, August 15, 2023 12:23:54 Pacific Daylight Time

ID: CSLCF, Name: 23081104, Date: 11-Aug-2023, Time: 12:07:03, Conditions: AUTOSPEC01, User: pk

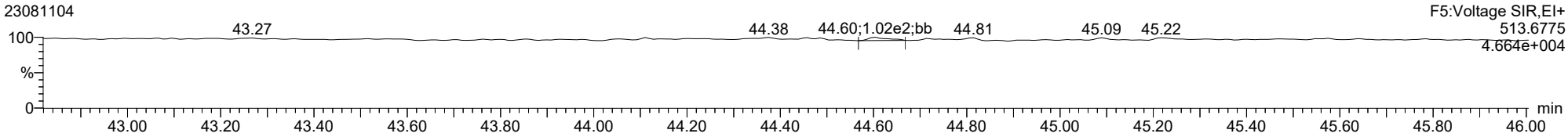
OCDF



OCDF

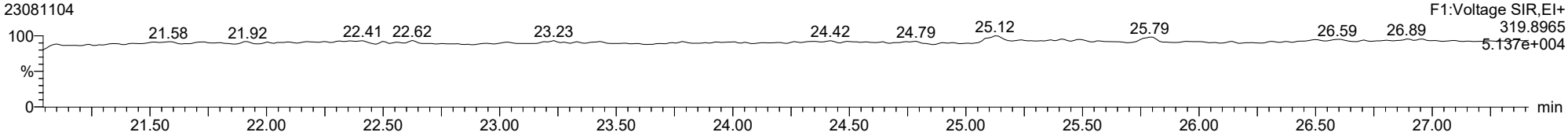


FUNCTION5 DCDPE

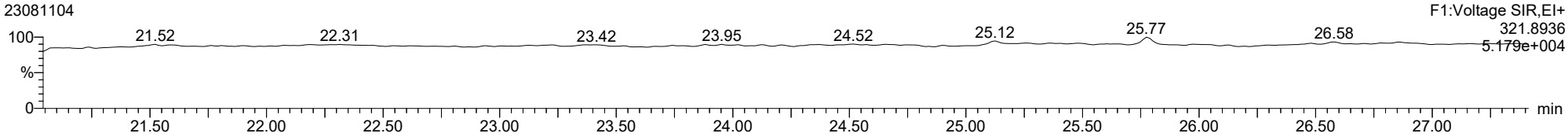


ID: CSLCF, Name: 23081104, Date: 11-Aug-2023, Time: 12:07:03, Conditions: AUTOSPEC01, User: pk

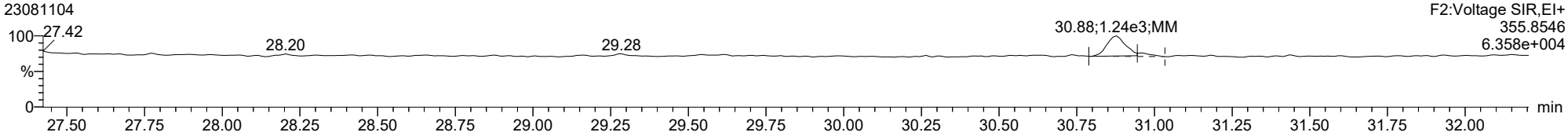
Total-tetradioxins



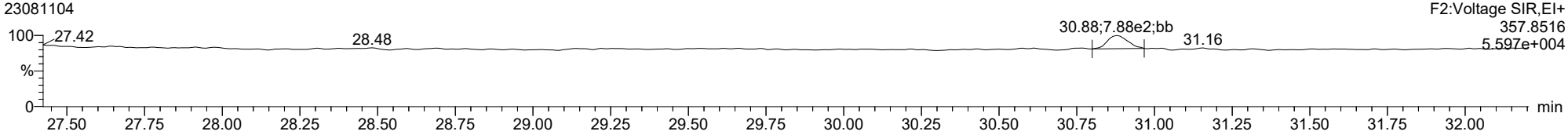
Total-tetradioxins



Total-pentadioxins

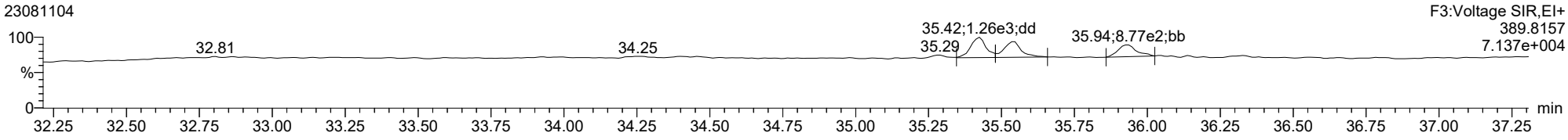


Total-pentadioxins

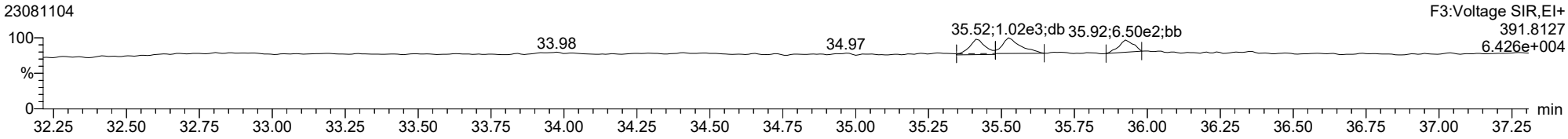


ID: CSLCF, Name: 23081104, Date: 11-Aug-2023, Time: 12:07:03, Conditions: AUTOSPEC01, User: pk

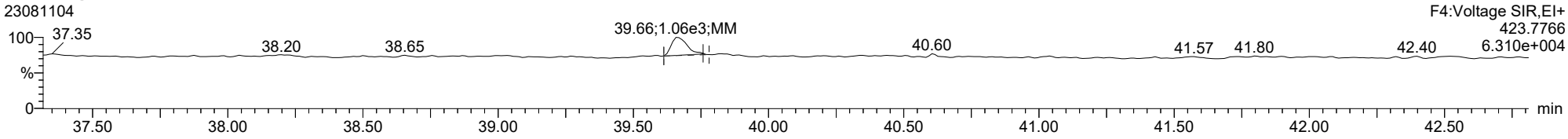
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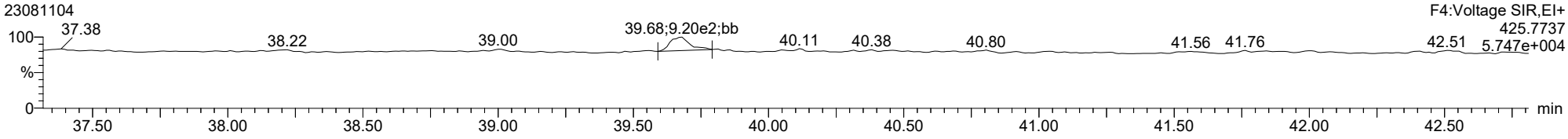
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Total-heptadioxins

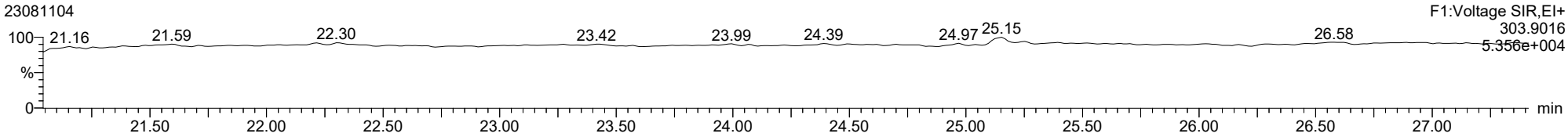


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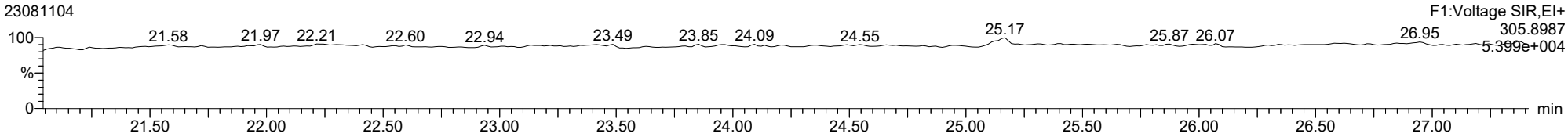


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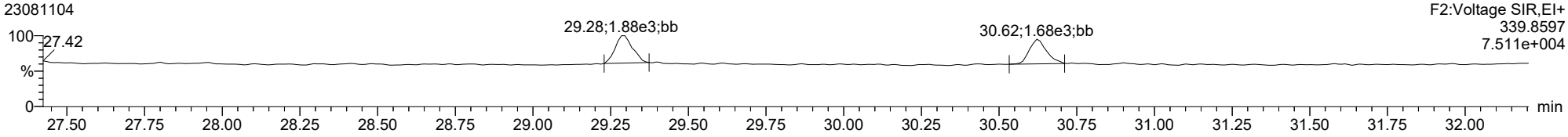
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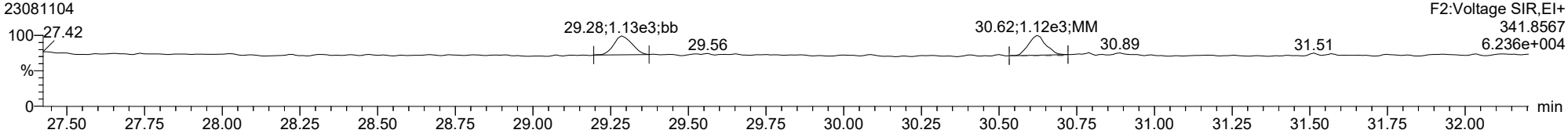
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Total-pentafurans



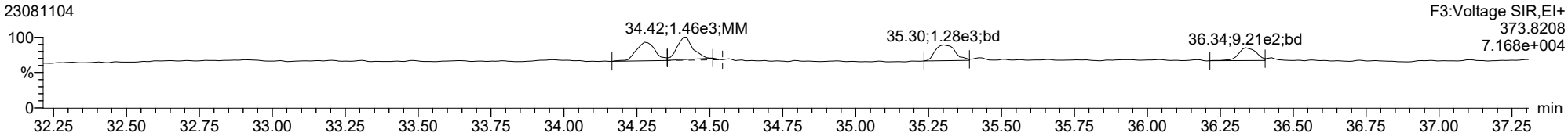
Total-pentafurans



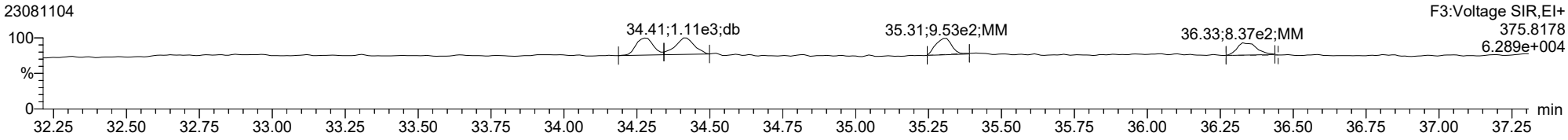
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Last Altered: Saturday, August 12, 2023 10:45:18 Pacific Daylight Time
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ID: CSLCF, Name: 23081104, Date: 11-Aug-2023, Time: 12:07:03, Conditions: AUTOSPEC01, User: pk

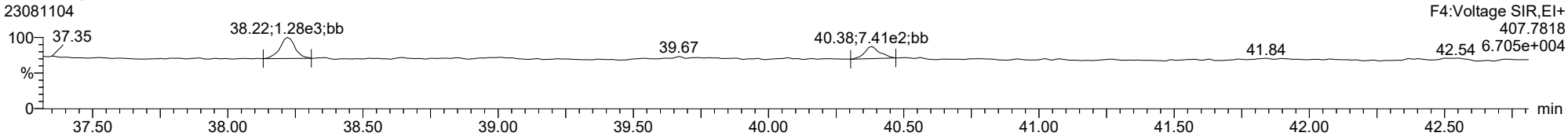
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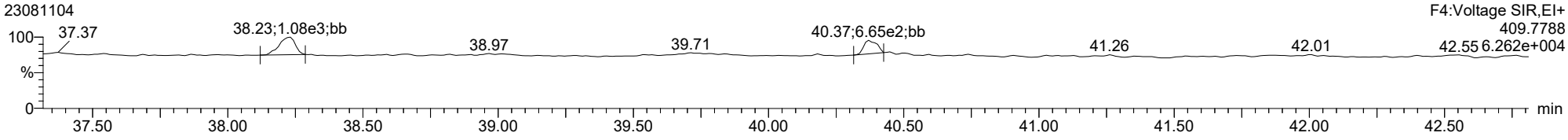
Total-hexafurans



Total-heptafurans



Total-heptafurans



Dataset: T:\Autospec\Processed Data Batch\230811ICIH.qld
Last Altered: Saturday, August 12, 2023 10:45:18 Pacific Daylight Time
Printed: Tuesday, August 15, 2023 12:24:07 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin230810.mdb 11 Aug 2023 22:18:32
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 10:45:18

ID: CS1CF, Name: 23081105, Date: 11-Aug-2023, Time: 13:01:52, 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	25.153	1.001	1.869e3	2.531e3	0.903	0.738	0.770	607	948	2.63e4	3.50e4	43.4	37.0	NO	bb	bb	0.508
12378-PeCDF	29.296	1.000	9.818e3	6.752e3	0.923	1.454	1.550	897	870	1.32e5	1.05e5	147.3	121.1	NO	bb	bb	2.428
23478-PeCDF	30.644	1.001	1.114e4	6.361e3	0.991	1.751	1.550	897	870	1.63e5	9.08e4	181.2	104.4	NO	bd	bb	2.653
123478-HxCDF	34.287	1.000	7.325e3	5.847e3	1.128	1.253	1.240	965	778	1.03e5	8.56e4	106.5	110.0	NO	bd	bd	2.540
234678-HxCDF	35.312	1.000	6.992e3	5.860e3	1.081	1.193	1.240	965	778	9.58e4	7.93e4	99.2	101.9	NO	bd	bb	2.494
123678-HxCDF	34.432	1.001	8.290e3	6.828e3	1.032	1.214	1.240	965	778	1.12e5	9.41e4	116.4	121.0	NO	db	dd	2.449
123789-HxCDF	36.348	1.000	4.809e3	4.143e3	0.988	1.161	1.240	965	778	7.16e4	5.08e4	74.2	65.3	NO	bb	bb	2.299
1234678-HpCDF	38.231	1.000	6.302e3	5.617e3	1.164	1.122	1.050	701	740	8.16e4	8.79e4	116.5	118.7	NO	bb	bd	2.373
1234789-HpCDF	40.393	1.000	4.119e3	4.301e3	1.104	0.958	1.050	701	740	5.52e4	5.68e4	78.8	76.7	NO	bb	bd	2.296
OCDF	44.467	1.005	7.021e3	7.442e3	1.130	0.943	0.890	689	1027	7.58e4	8.91e4	110.0	86.8	NO	bd	bd	4.244
2378-TCDD	25.803	1.001	1.741e3	2.051e3	1.243	0.849	0.770	749	648	2.33e4	3.20e4	31.1	49.3	NO	bb	bd	0.520
12378-PeCDD	30.889	1.000	7.141e3	4.332e3	1.150	1.648	1.550	748	524	1.09e5	6.14e4	146.1	117.2	NO	bd	bb	2.483
123478-HxCDD	35.435	1.001	5.228e3	4.259e3	0.960	1.227	1.240	969	784	7.96e4	6.49e4	82.2	82.8	NO	bd	bd	2.307
123678-HxCDD	35.546	1.000	6.122e3	4.803e3	0.883	1.275	1.240	969	784	8.53e4	6.59e4	88.0	84.0	NO	dd	db	2.336
123789-HxCDD	35.936	1.011	4.721e3	3.820e3	0.804	1.236	1.240	969	784	7.02e4	5.55e4	72.5	70.7	NO	bd	bb	2.218
1234678-HpCDD	39.680	1.000	4.195e3	3.562e3	1.200	1.178	1.050	930	787	6.18e4	5.19e4	66.4	65.9	NO	bb	bb	2.252
OCDD	44.238	1.000	7.186e3	7.684e3	1.059	0.935	0.890	1114	762	8.26e4	9.31e4	74.1	122.3	NO	bb	bd	4.658
13C-2378-TCDF	25.139	1.007	4.246e5	5.349e5	1.835	0.794	0.770	1462	1519	5.96e6	7.55e6	4077.1	4968.7	NO	bb	bb	102.183
13C-12378-PeCDF	29.285	1.173	4.516e5	2.877e5	1.377	1.570	1.550	3504	2886	6.51e6	4.14e6	1859.1	1432.9	NO	bb	bb	104.978
13C-23478-PeCDF	30.622	1.226	4.060e5	2.598e5	1.301	1.563	1.550	3504	2886	5.72e6	3.71e6	1632.3	1285.9	NO	bb	bb	100.021
13C-123478-HxCDF	34.276	0.954	1.550e5	3.046e5	1.091	0.509	0.510	1767	3144	2.20e6	4.37e6	1244.4	1391.1	NO	bd	bd	97.981
13C-123678-HxCDF	34.410	0.958	1.978e5	4.002e5	1.340	0.494	0.510	1767	3144	2.44e6	4.84e6	1379.8	1538.2	NO	db	db	103.726
13C-234678-HxCDF	35.301	0.983	1.551e5	3.213e5	1.093	0.483	0.510	1767	3144	2.13e6	4.17e6	1206.1	1327.8	NO	bb	bb	101.304
13C-123789-HxCDF	36.337	1.012	1.331e5	2.611e5	0.952	0.510	0.510	1767	3144	1.70e6	3.36e6	962.9	1069.8	NO	bb	bb	96.327
13C-1234678-HpCDF	38.220	1.064	1.295e5	3.022e5	0.985	0.428	0.440	2154	2867	1.90e6	4.11e6	882.3	1433.9	NO	bb	bd	101.891
13C-1234789-HpCDF	40.382	1.124	1.038e5	2.284e5	0.756	0.455	0.440	2154	2867	1.27e6	2.80e6	589.1	976.5	NO	bd	bb	102.201
13C-1234-TCDD	24.969	0.000	2.249e5	2.867e5	1.000	0.785	0.770	1471	1413	3.31e6	4.16e6	2247.7	2946.6	NO	bb	bb	100.000
13C-2378-TCDD	25.774	1.032	2.598e5	3.274e5	1.110	0.794	0.770	1471	1413	3.75e6	4.74e6	2547.1	3354.2	NO	bb	bb	103.437
13C-12378-PeCDD	30.878	1.237	2.472e5	1.545e5	0.754	1.600	1.550	1248	1186	3.35e6	2.06e6	2685.7	1740.2	NO	bb	bb	104.186
13C-123478-HxCDD	35.412	0.986	2.370e5	1.912e5	0.960	1.239	1.240	1678	2744	3.48e6	2.81e6	2071.0	1025.4	NO	bd	bd	103.729
13C-123678-HxCDD	35.535	0.989	2.914e5	2.386e5	1.159	1.221	1.240	1678	2744	3.80e6	3.07e6	2262.4	1117.2	NO	db	db	106.277
13C-1234678-HpCDD	39.668	1.104	1.492e5	1.379e5	0.629	1.082	1.050	2077	1506	1.99e6	1.88e6	959.9	1249.3	NO	bb	bb	106.080
13C-OCDD	44.229	1.231	2.878e5	3.153e5	0.635	0.913	0.890	1771	2421	2.88e6	3.12e6	1628.5	1289.7	NO	bd	bb	220.753
13C-123789-HxCDD	35.925	0.000	2.385e5	1.916e5	1.000	1.245	1.240	1678	2744	3.26e6	2.67e6	1945.5	973.8	NO	bb	bb	100.000
37CL-2378-TCDD	25.803	1.033	2.875e3		1.157			862		4.26e4		49.4			bb		0.486

Dataset: T:\Autospec\Processed Data Batch\230811ICIH.qld
Last Altered: Saturday, August 12, 2023 10:45:18 Pacific Daylight Time
Printed: Tuesday, August 15, 2023 12:24:07 Pacific Daylight Time

ID: CS1CF, Name: 23081105, Date: 11-Aug-2023, Time: 13:01:52, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRF	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					1.170		0.770	607	948								
1289-TCDF					0.847		0.770	607	948								
13468-PECDF					1.241		1.550	544	667								
12389-PECDF					0.880		1.550	897	870								
123468-HXCDF					1.206		1.240	965	778								
1368-TCDD					1.181		0.770	749	648								
1289-TCDD					0.963		0.770	749	648								
12479-PECDD					2.166		1.550	748	524								
12389-PECDD					1.326		1.550	748	524								
124679-HXCDD					1.127		1.240	969	784								
1234679-HPCDD					1.303		1.050	930	787								
Total-tetrafurans			1.869e3		0.973			607		2.63e4							0.508
Total-penta1			0.000e0					544		0.00e0							
Total-pentafurans			2.095e4		0.931			897		2.95e5							5.080
Total-hexafurans			2.742e4		1.087			965		3.83e5							9.782
Total-heptafurans			1.042e4		1.134			701		1.37e5							4.669
Total-Furans			6.768e4		1.053			607		9.16e5							24.284
Total-tetradioxins			1.741e3		1.129			749		2.33e4							0.520
Total-pentadioxins			7.141e3		1.548			748		1.09e5							2.483
Total-hexadioxins			1.607e4		0.943			969		2.35e5							6.861
Total-heptadioxins			4.195e3		1.251			930		6.18e4							2.252
Total-Dioxins			3.633e4		1.182			749		5.12e5							16.774
Total-TEQ			1.040e5					749		1.43e6							41.058
FUNCTION1 PFK			1.685e5					481618		3.23e6							
FUNCTION2 PFK			3.490e5					353619		9.72e6							0.000
FUNCTION3 PFK			3.025e5					411684		5.51e6							0.000
FUNCTION4 PFK			5.244e4					281669		8.98e5							
FUNCTION5 PFK			5.040e4					232970		2.05e6							
FUNCTION1 HXCD...			1.506e2					618		4.08e3							0.000
FUNCTION1 HPCD...																	
FUNCTION2 HPCD...			1.806e2					647		3.08e3							0.000
FUNCTION3 OCDPE			0.000e0					540		0.00e0							
FUNCTION4 NCDPE			3.562e2					656		5.44e3							0.000
FUNCTION5 DCDPE			7.446e1					445		7.45e2							0.000

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Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 10:45:18

ID: CS1CF, Name: 23081105, Date: 11-Aug-2023, Time: 13:01:52, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDF	25.15	1.869e3	2.531e3	0.903	0.74	0.77	43.4	YES	NO	bb	bb	0.508

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	30.64	1.114e4	6.361e3	0.991	1.75	1.55	181.2	YES	NO	bd	bb	2.653
2	12378-PeCDF	29.30	9.818e3	6.752e3	0.923	1.45	1.55	147.3	YES	NO	bb	bb	2.428

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDF	36.35	4.809e3	4.143e3	0.988	1.16	1.24	74.2	YES	NO	bb	bb	2.299
2	234678-HxCDF	35.31	6.992e3	5.860e3	1.081	1.19	1.24	99.2	YES	NO	bd	bb	2.494
3	123678-HxCDF	34.43	8.290e3	6.828e3	1.032	1.21	1.24	116.4	YES	NO	db	dd	2.449
4	123478-HxCDF	34.29	7.325e3	5.847e3	1.128	1.25	1.24	106.5	YES	NO	bd	bd	2.540

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	40.39	4.119e3	4.301e3	1.104	0.96	1.05	78.8	YES	NO	bb	bd	2.296
2	1234678-HpCDF	38.23	6.302e3	5.617e3	1.164	1.12	1.05	116.5	YES	NO	bb	bd	2.373

ID: CS1CF, Name: 23081105, Date: 11-Aug-2023, Time: 13:01:52, 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	23478-PeCDF	30.64	1.114e4	6.361e3	0.991	1.75	1.55	181.2	YES	NO	bd	bb	2.653
2	12378-PeCDF	29.30	9.818e3	6.752e3	0.923	1.45	1.55	147.3	YES	NO	bb	bb	2.428
3	2378-TCDF	25.15	1.869e3	2.531e3	0.903	0.74	0.77	43.4	YES	NO	bb	bb	0.508
4	123789-HxCDF	36.35	4.809e3	4.143e3	0.988	1.16	1.24	74.2	YES	NO	bb	bb	2.299
5	234678-HxCDF	35.31	6.992e3	5.860e3	1.081	1.19	1.24	99.2	YES	NO	bd	bb	2.494
6	123678-HxCDF	34.43	8.290e3	6.828e3	1.032	1.21	1.24	116.4	YES	NO	db	dd	2.449
7	123478-HxCDF	34.29	7.325e3	5.847e3	1.128	1.25	1.24	106.5	YES	NO	bd	bd	2.540
8	1234789-HpCDF	40.39	4.119e3	4.301e3	1.104	0.96	1.05	78.8	YES	NO	bb	bd	2.296
9	1234678-HpCDF	38.23	6.302e3	5.617e3	1.164	1.12	1.05	116.5	YES	NO	bb	bd	2.373
10	OCDF	44.47	7.021e3	7.442e3	1.130	0.94	0.89	110.0	YES	NO	bd	bd	4.244

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDD	25.80	1.741e3	2.051e3	1.243	0.85	0.77	31.1	YES	NO	bb	bd	0.520

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12378-PeCDD	30.89	7.141e3	4.332e3	1.150	1.65	1.55	146.1	YES	NO	bd	bb	2.483

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDD	35.94	4.721e3	3.820e3	0.804	1.24	1.24	72.5	YES	NO	bd	bb	2.218
2	123678-HxCDD	35.55	6.122e3	4.803e3	0.883	1.27	1.24	88.0	YES	NO	dd	db	2.336
3	123478-HxCDD	35.43	5.228e3	4.259e3	0.960	1.23	1.24	82.2	YES	NO	bd	bd	2.307

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.68	4.195e3	3.562e3	1.200	1.18	1.05	66.4	YES	NO	bb	bb	2.252

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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	25.80	1.741e3	2.051e3	1.243	0.85	0.77	31.1	YES	NO	bb	bd	0.520
2	123789-HxCDD	35.94	4.721e3	3.820e3	0.804	1.24	1.24	72.5	YES	NO	bd	bb	2.218
3	123678-HxCDD	35.55	6.122e3	4.803e3	0.883	1.27	1.24	88.0	YES	NO	dd	db	2.336
4	123478-HxCDD	35.43	5.228e3	4.259e3	0.960	1.23	1.24	82.2	YES	NO	bd	bd	2.307
5	12378-PeCDD	30.89	7.141e3	4.332e3	1.150	1.65	1.55	146.1	YES	NO	bd	bb	2.483
6	OCDD	44.24	7.186e3	7.684e3	1.059	0.94	0.89	74.1	YES	NO	bb	bd	4.658
7	1234678-HpCDD	39.68	4.195e3	3.562e3	1.200	1.18	1.05	66.4	YES	NO	bb	bb	2.252

TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	23478-PeCDF	30.64	1.114e4	6.361e3	0.991	1.75	1.55	181.2	YES	NO	bd	bb	2.653
2	12378-PeCDF	29.30	9.818e3	6.752e3	0.923	1.45	1.55	147.3	YES	NO	bb	bb	2.428
3	2378-TCDF	25.15	1.869e3	2.531e3	0.903	0.74	0.77	43.4	YES	NO	bb	bb	0.508
4	123789-HxCDF	36.35	4.809e3	4.143e3	0.988	1.16	1.24	74.2	YES	NO	bb	bb	2.299
5	234678-HxCDF	35.31	6.992e3	5.860e3	1.081	1.19	1.24	99.2	YES	NO	bd	bb	2.494
6	123678-HxCDF	34.43	8.290e3	6.828e3	1.032	1.21	1.24	116.4	YES	NO	db	dd	2.449
7	123478-HxCDF	34.29	7.325e3	5.847e3	1.128	1.25	1.24	106.5	YES	NO	bd	bd	2.540
8	1234789-HpCDF	40.39	4.119e3	4.301e3	1.104	0.96	1.05	78.8	YES	NO	bb	bd	2.296
9	1234678-HpCDF	38.23	6.302e3	5.617e3	1.164	1.12	1.05	116.5	YES	NO	bb	bd	2.373
10	OCDF	44.47	7.021e3	7.442e3	1.130	0.94	0.89	110.0	YES	NO	bd	bd	4.244
11	2378-TCDD	25.80	1.741e3	2.051e3	1.243	0.85	0.77	31.1	YES	NO	bb	bd	0.520
12	123789-HxCDD	35.94	4.721e3	3.820e3	0.804	1.24	1.24	72.5	YES	NO	bd	bb	2.218
13	123678-HxCDD	35.55	6.122e3	4.803e3	0.883	1.27	1.24	88.0	YES	NO	dd	db	2.336
14	123478-HxCDD	35.43	5.228e3	4.259e3	0.960	1.23	1.24	82.2	YES	NO	bd	bd	2.307
15	12378-PeCDD	30.89	7.141e3	4.332e3	1.150	1.65	1.55	146.1	YES	NO	bd	bb	2.483
16	OCDD	44.24	7.186e3	7.684e3	1.059	0.94	0.89	74.1	YES	NO	bb	bd	4.658
17	1234678-HpCDD	39.68	4.195e3	3.562e3	1.200	1.18	1.05	66.4	YES	NO	bb	bb	2.252

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	24.46	9.288e4					3.6	YES		bb		
2	FUNCTION1 PFK	21.17	7.566e4					3.1	YES		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	27.78	1.684e4					1.7	NO		bd		0.000
2	FUNCTION2 PFK	27.66	6.206e3					0.7	NO		bb		0.000
3	FUNCTION2 PFK	27.52	1.777e4					1.7	NO		bb		0.000
4	FUNCTION2 PFK	31.50	2.220e3					0.5	NO		bb		0.000
5	FUNCTION2 PFK	31.35	1.532e4					1.0	NO		bb		0.000
6	FUNCTION2 PFK	31.29	3.058e4					1.7	NO		db		0.000
7	FUNCTION2 PFK	31.22	1.055e4					1.3	NO		bd		0.000
8	FUNCTION2 PFK	31.17	7.982e3					0.9	NO		bb		0.000
9	FUNCTION2 PFK	31.02	2.210e4					1.6	NO		bb		0.000
10	FUNCTION2 PFK	30.78	6.727e3					0.8	NO		bb		0.000
11	FUNCTION2 PFK	30.63	3.779e4					3.0	NO		db		0.000
12	FUNCTION2 PFK	30.59	2.979e4					2.9	NO		bd		0.000
13	FUNCTION2 PFK	30.50	2.622e4					1.4	NO		bb		0.000
14	FUNCTION2 PFK	29.88	6.065e3					0.9	NO		bb		0.000
15	FUNCTION2 PFK	29.69	3.832e4					1.9	NO		bb		0.000
16	FUNCTION2 PFK	29.44	9.175e3					1.0	NO		bb		0.000
17	FUNCTION2 PFK	28.98	7.307e3					0.6	NO		bb		0.000
18	FUNCTION2 PFK	28.18	2.082e4					1.2	NO		bb		0.000
19	FUNCTION2 PFK	27.81	1.127e4					1.5	NO		db		0.000
20	FUNCTION2 PFK	31.76	2.592e4					1.1	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	34.32	2.413e4					2.4	NO		bb		0.000
2	FUNCTION3 PFK	33.62	1.658e5					3.9	YES		bb		0.000
3	FUNCTION3 PFK	33.41	7.609e4					3.5	YES		bb		0.000
4	FUNCTION3 PFK	33.34	1.911e4					1.8	NO		bb		0.000
5	FUNCTION3 PFK	32.35	1.740e4					1.9	NO		bb		0.000

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	39.52	5.244e4					3.2	YES		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	43.67	1.198e4					1.6	NO		bb		
2	FUNCTION5 PFK	43.51	4.599e3					1.1	NO		bb		
3	FUNCTION5 PFK	43.42	3.079e3					0.8	NO		bb		
4	FUNCTION5 PFK	43.39	3.025e3					0.7	NO		bb		
5	FUNCTION5 PFK	43.31	1.081e3					0.5	NO		bb		
6	FUNCTION5 PFK	42.96	1.023e3					0.5	NO		bb		
7	FUNCTION5 PFK	45.28	9.172e2					0.4	NO		bb		
8	FUNCTION5 PFK	44.70	2.577e3					0.7	NO		bb		
9	FUNCTION5 PFK	43.99	3.331e3					0.7	NO		bb		
10	FUNCTION5 PFK	43.80	1.879e4					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...	22.34	7.892e1					3.3	YES		bb		0.000
2	FUNCTION1 HXCD...	22.16	7.163e1					3.3	YES		bb		0.000

ETHERS2

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

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	30.00	8.618e1					2.2	NO		bb		0.000
2	FUNCTION2 HPCD...	28.87	9.443e1					2.6	NO		bb		0.000

ETHERS4

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

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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	40.28	8.452e1					2.0	NO		bb		0.000
2	FUNCTION4 NCDPE	38.59	1.002e2					2.2	NO		db		0.000
3	FUNCTION4 NCDPE	38.48	8.467e1					2.4	NO		bd		0.000
4	FUNCTION4 NCDPE	37.87	8.682e1					1.7	NO		bb		0.000

ETHERS6

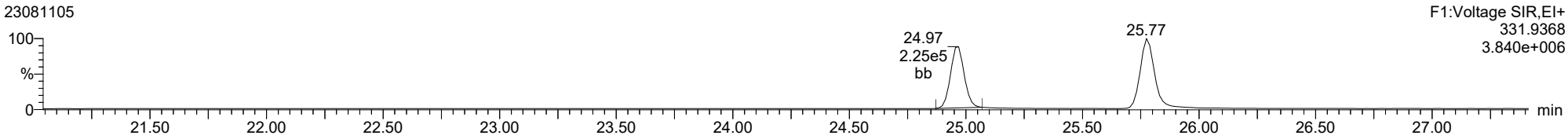
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1	FUNCTION5 DCDPE	43.03	7.446e1					1.7	NO		bb		0.000

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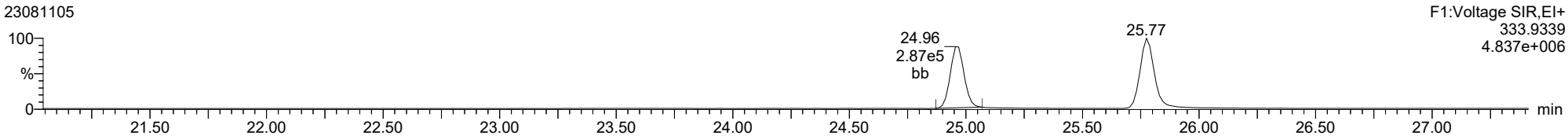
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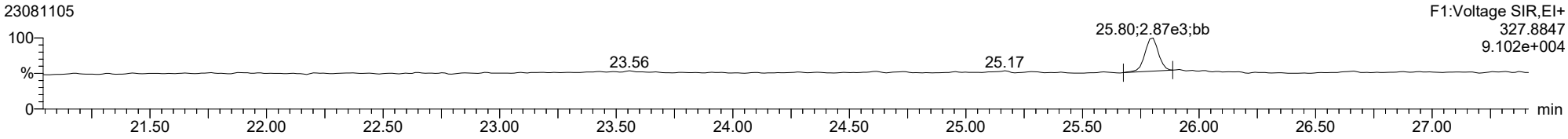
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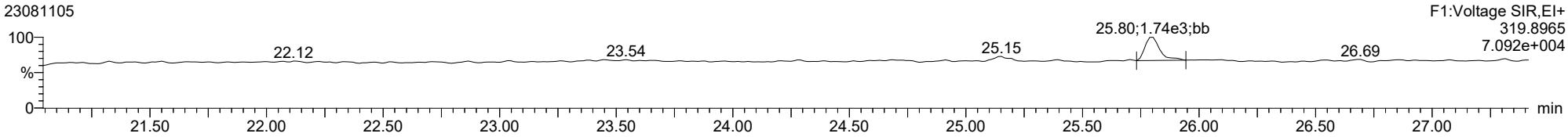


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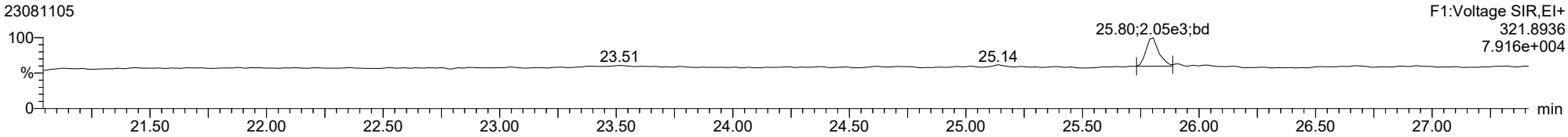


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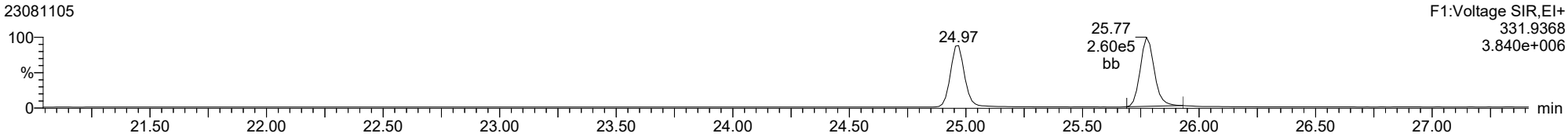
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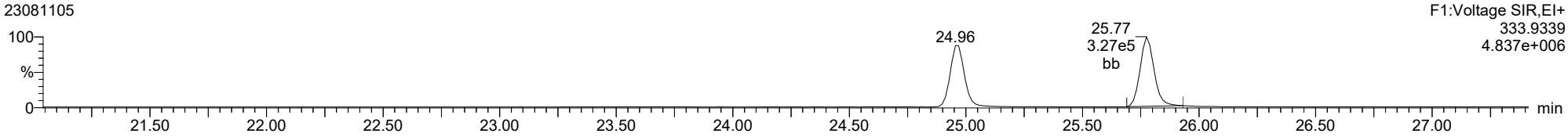
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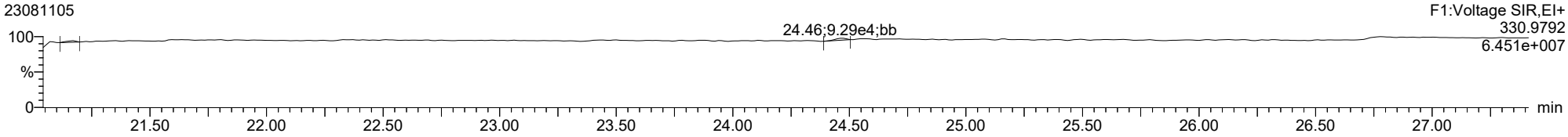
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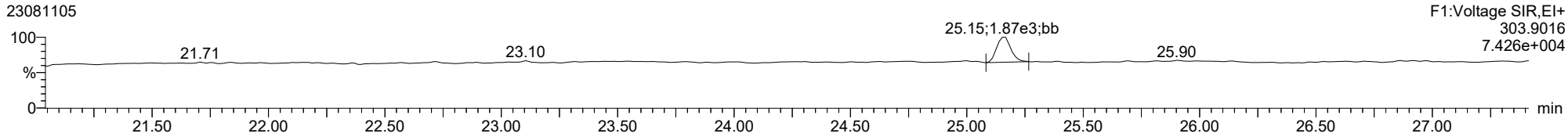


FUNCTION1 PFK

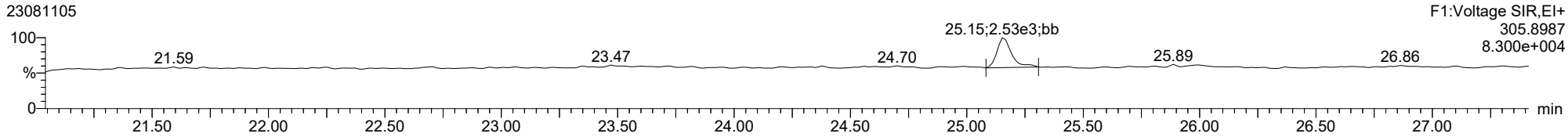


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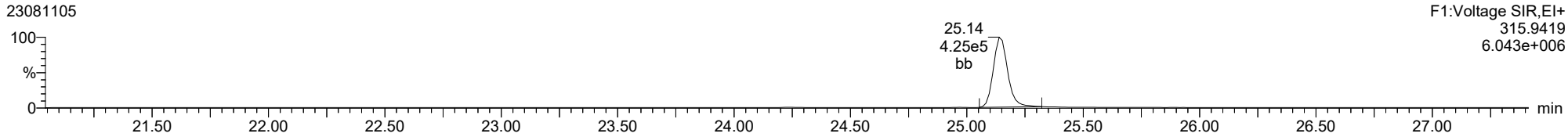
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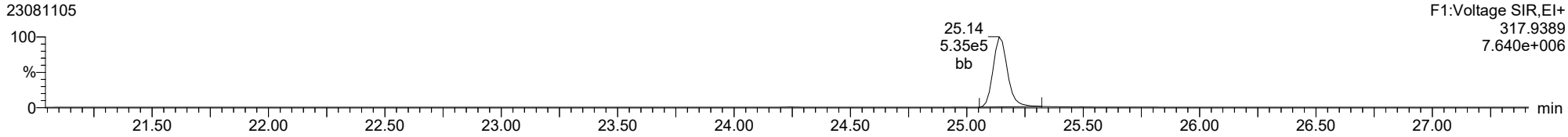
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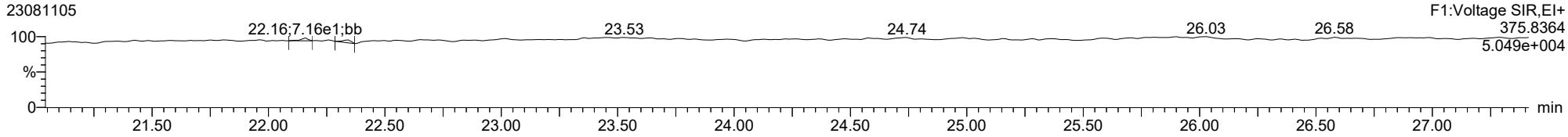
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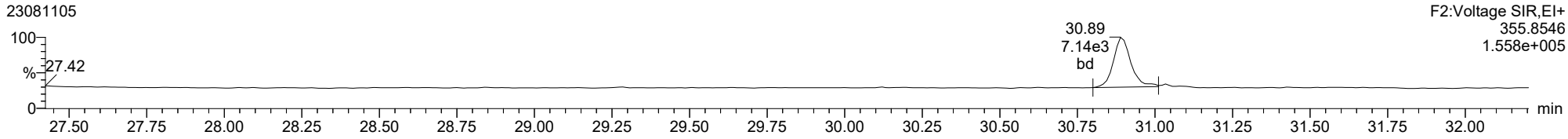


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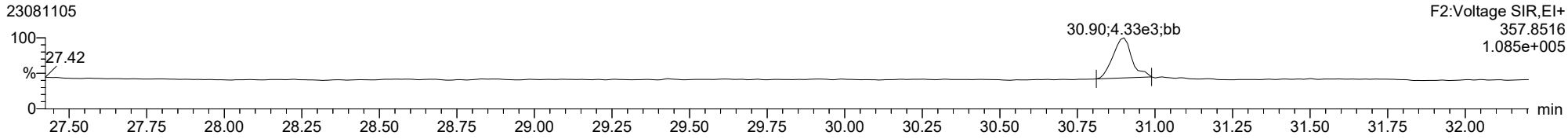


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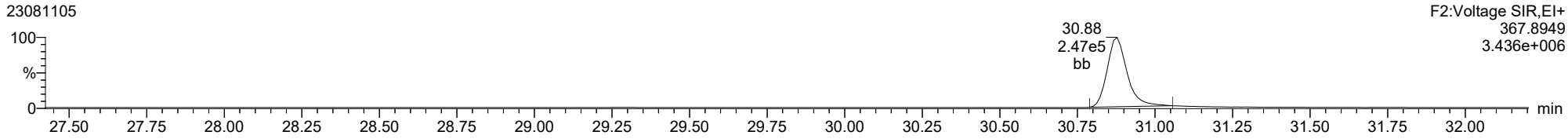
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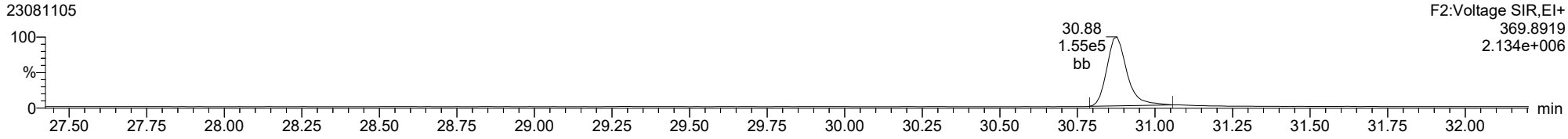
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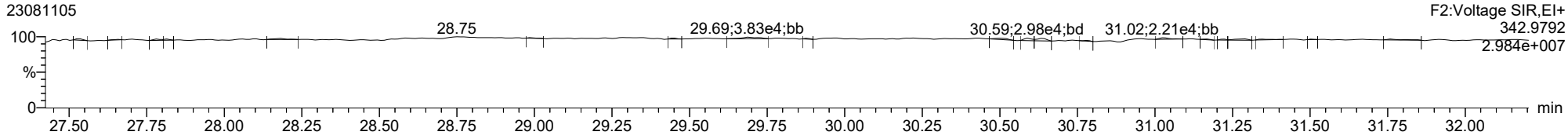
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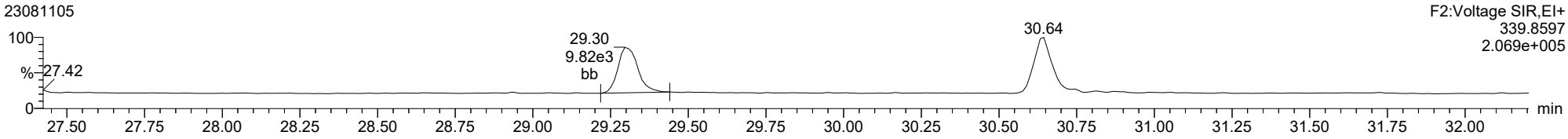


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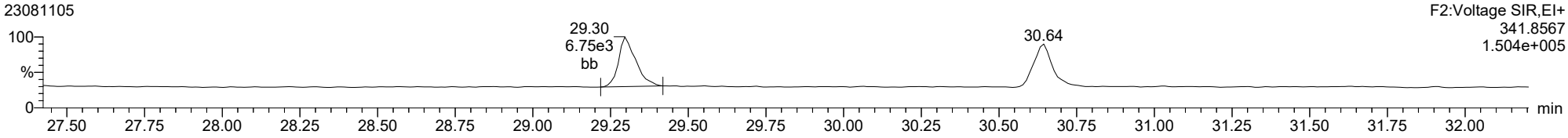


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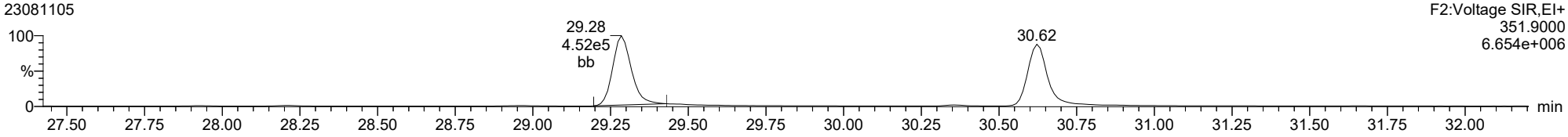
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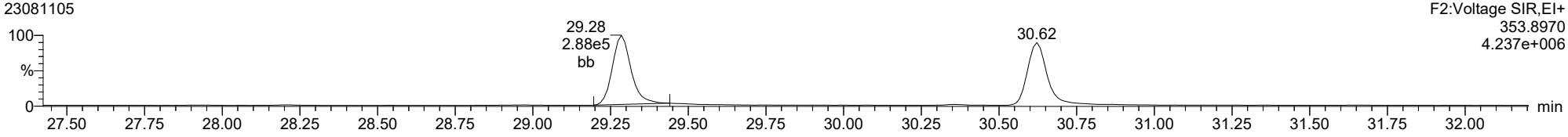
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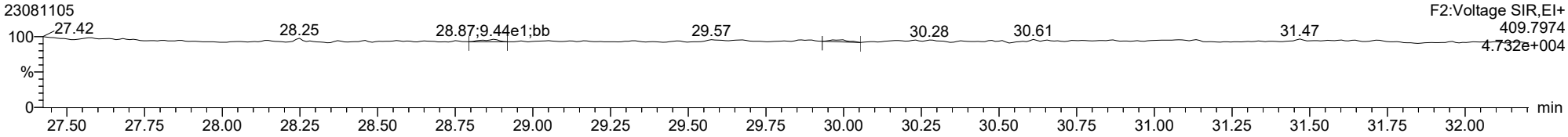
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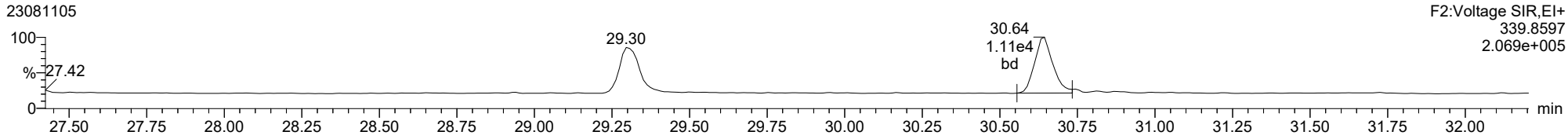


FUNCTION2 HPCDPE

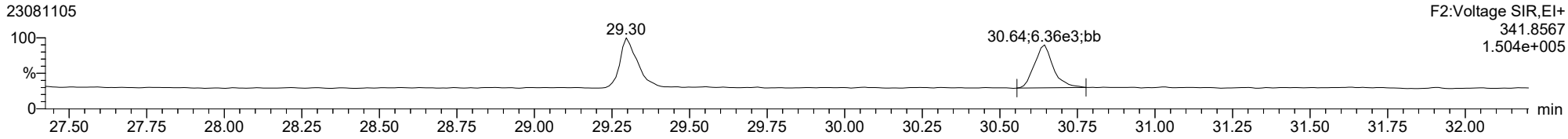


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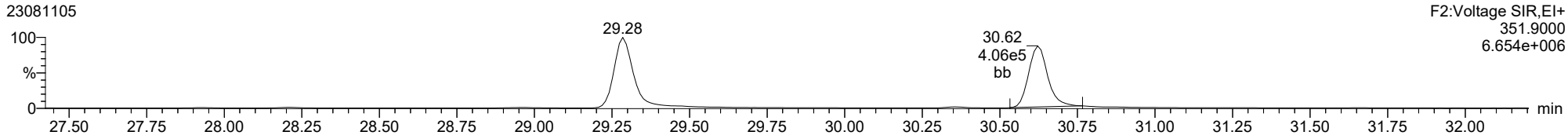
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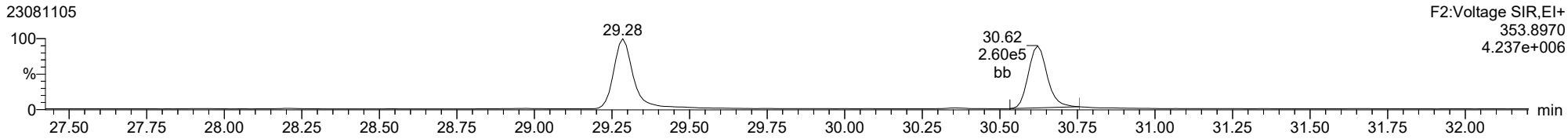
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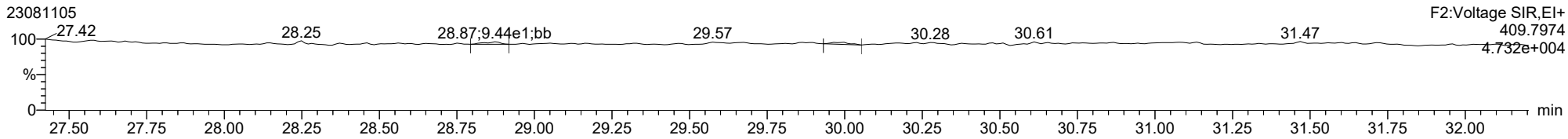
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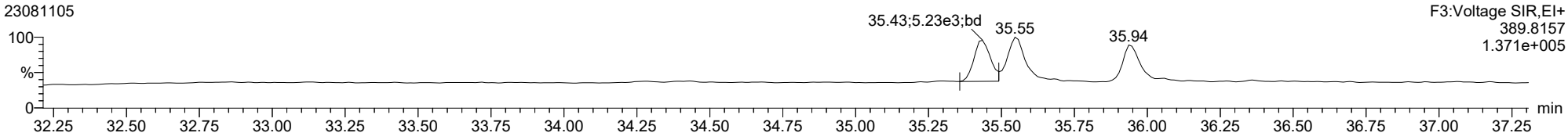


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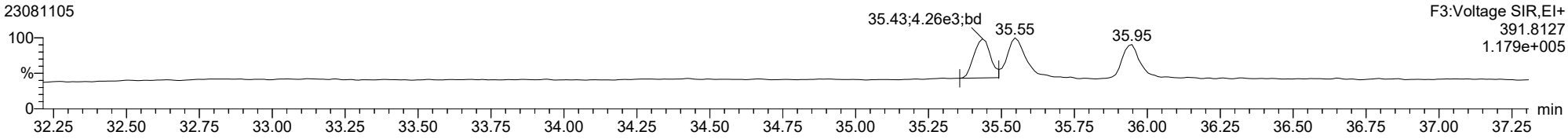


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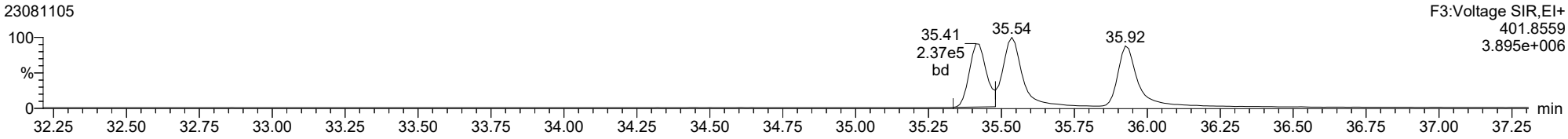
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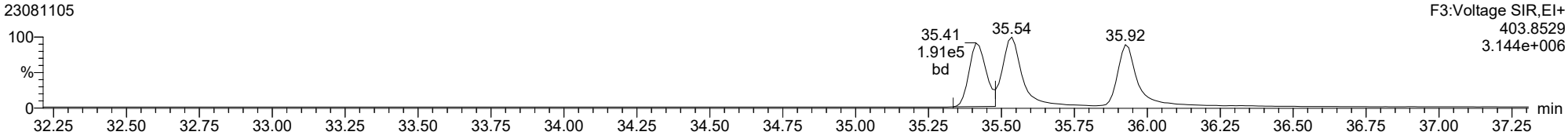
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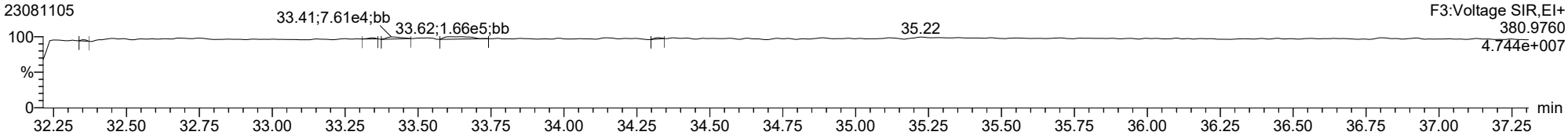
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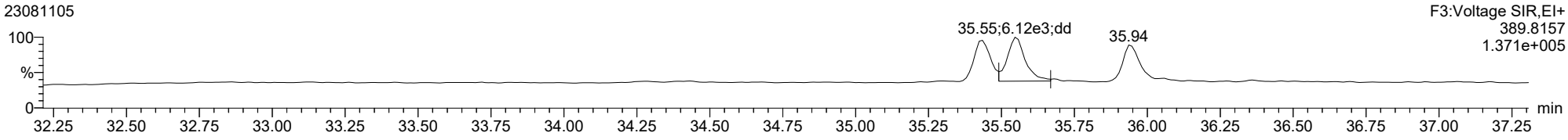


FUNCTION3 PFK

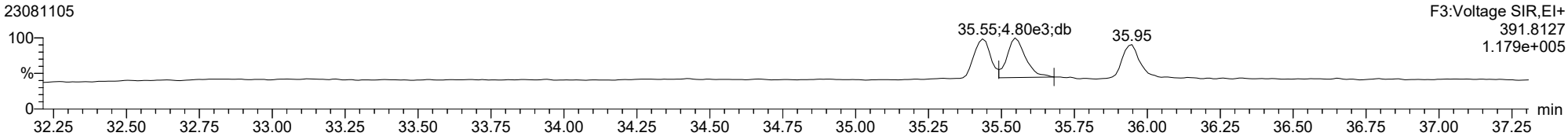


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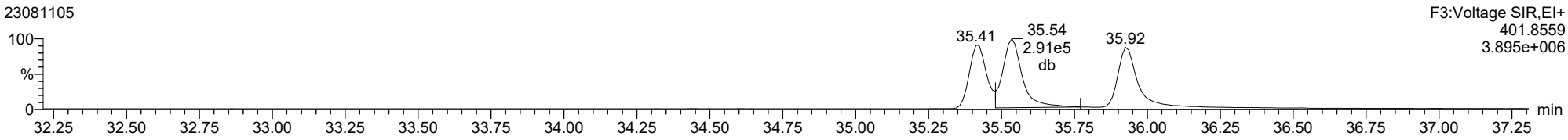
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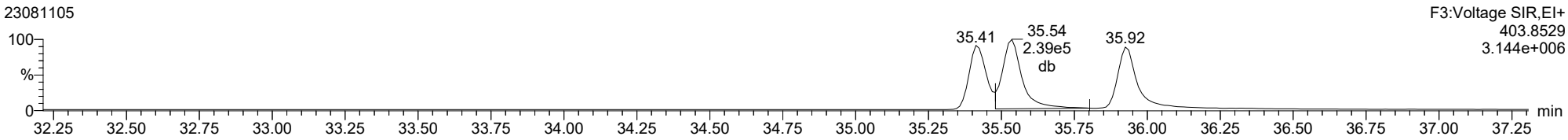
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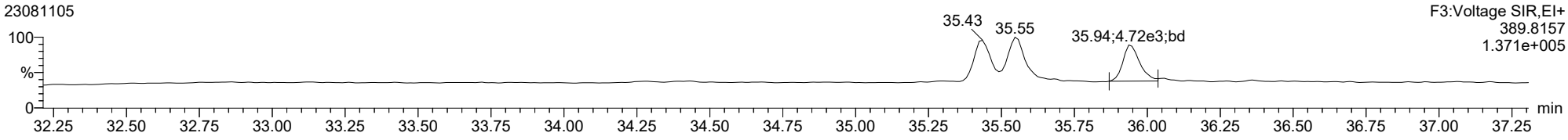
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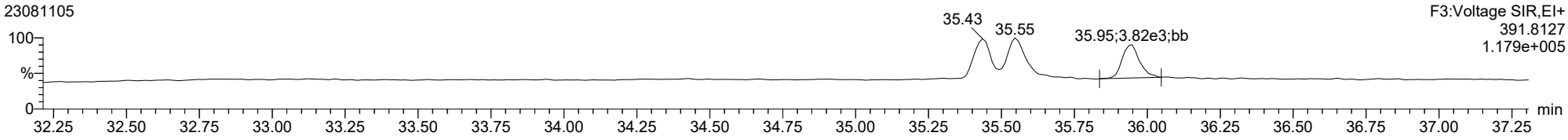
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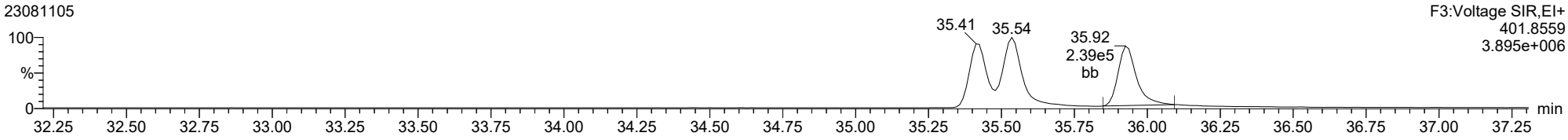
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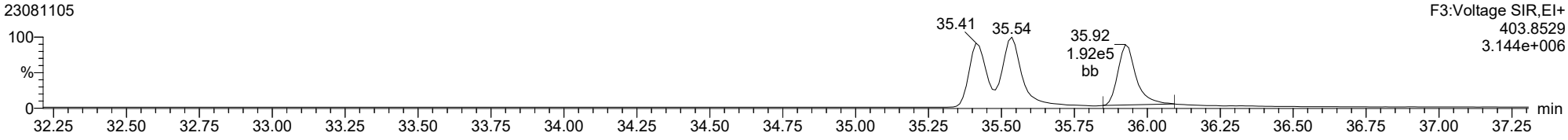
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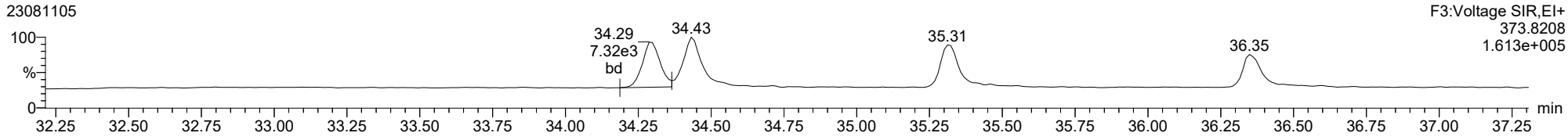


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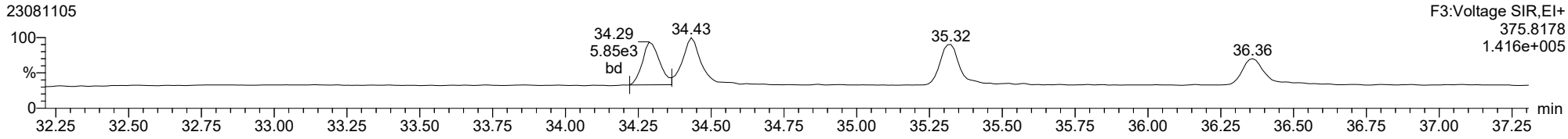


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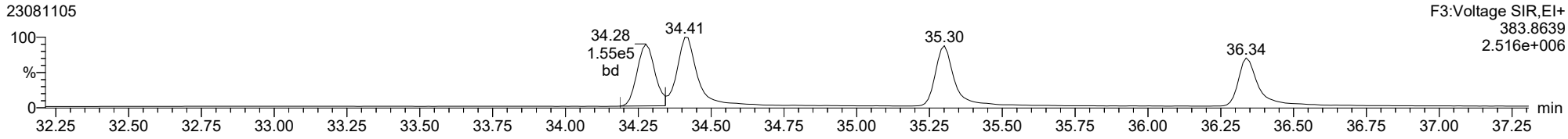
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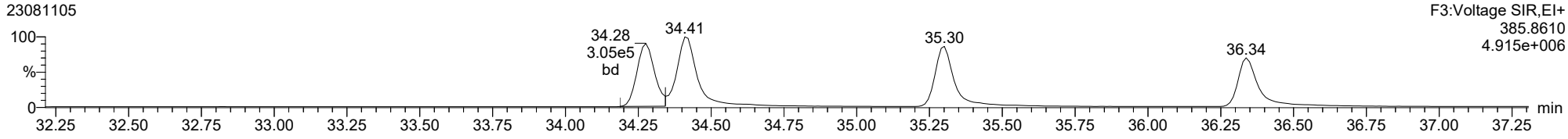
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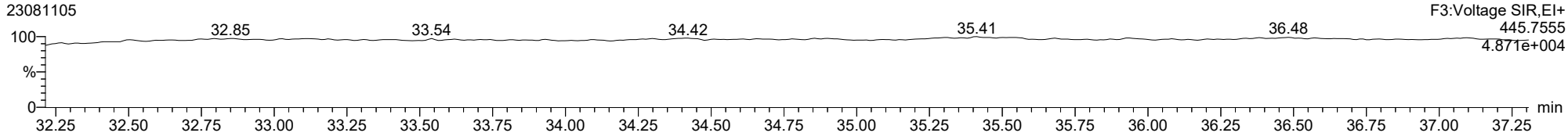
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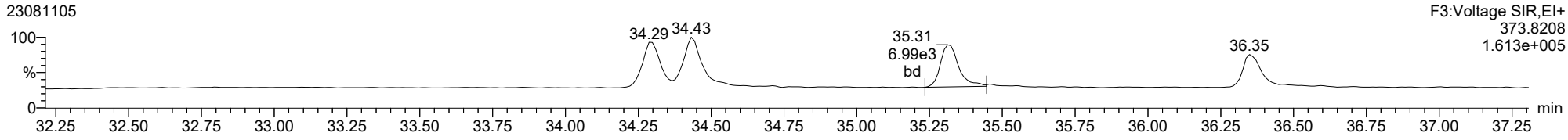


FUNCTION3 OCDPE

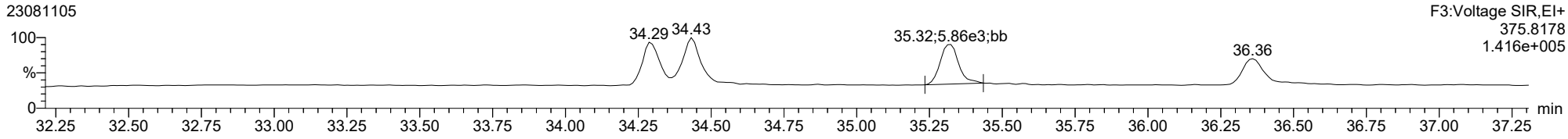


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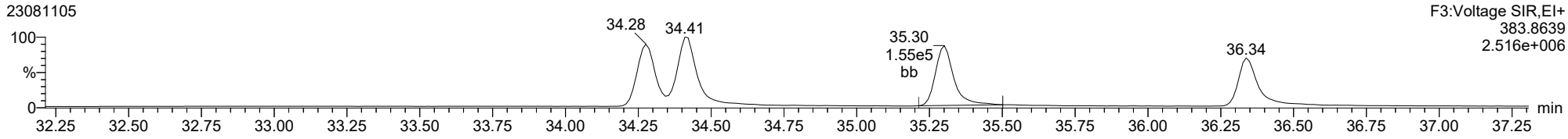
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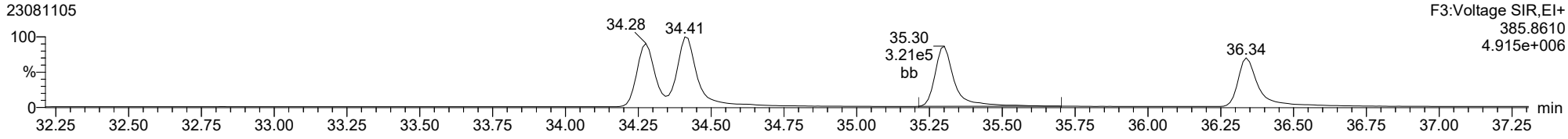
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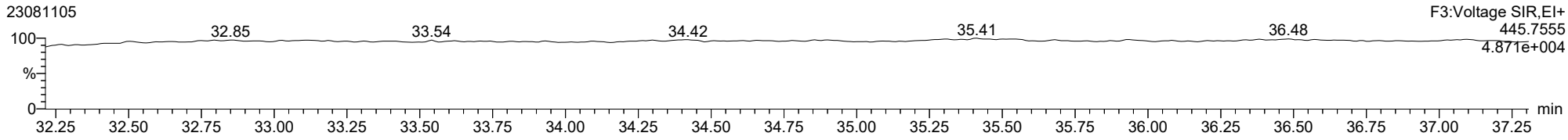
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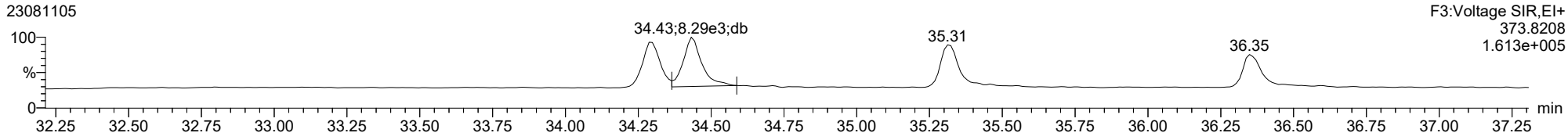


FUNCTION3 OCDPE

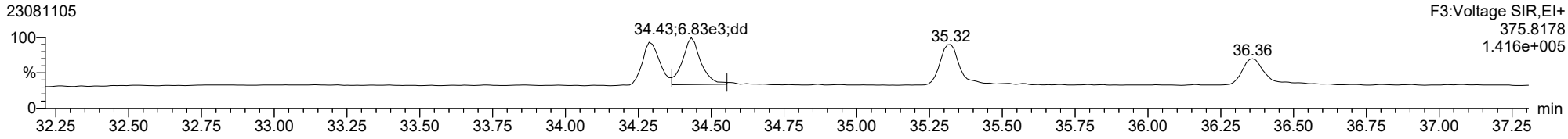


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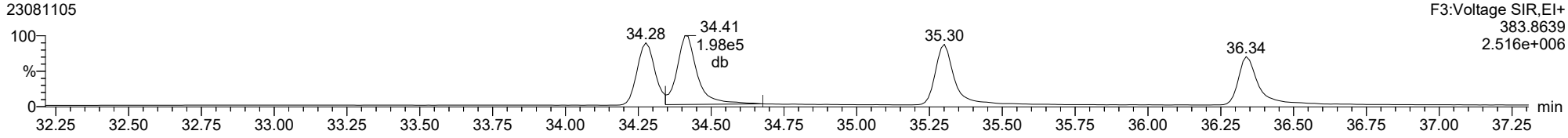
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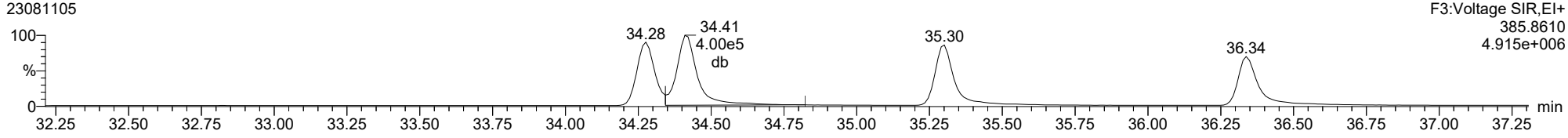
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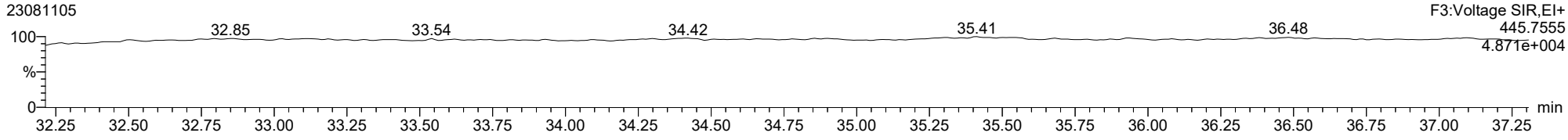
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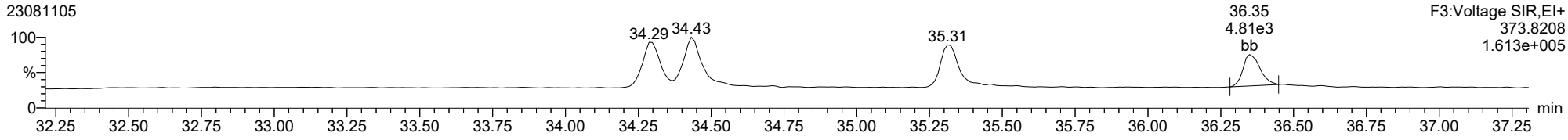


FUNCTION3 OCDPE

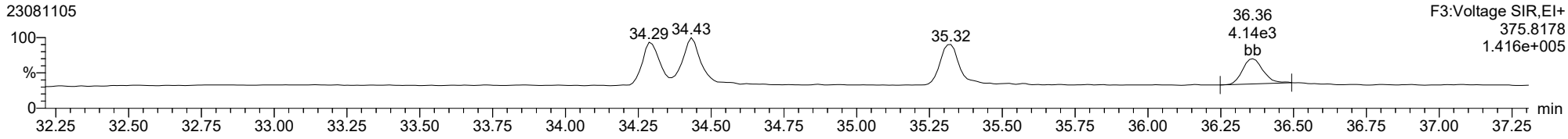


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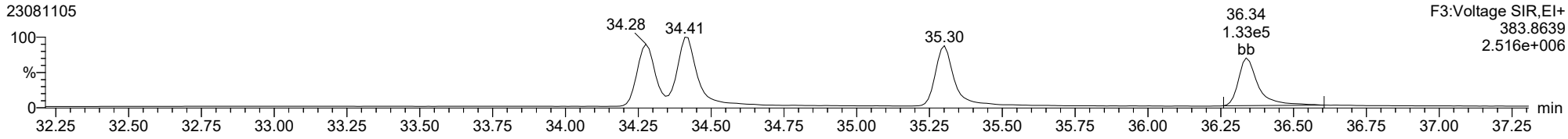
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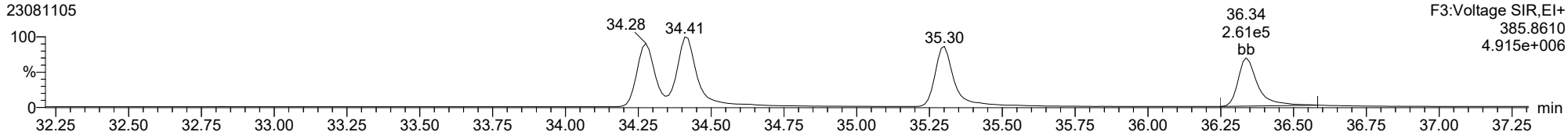
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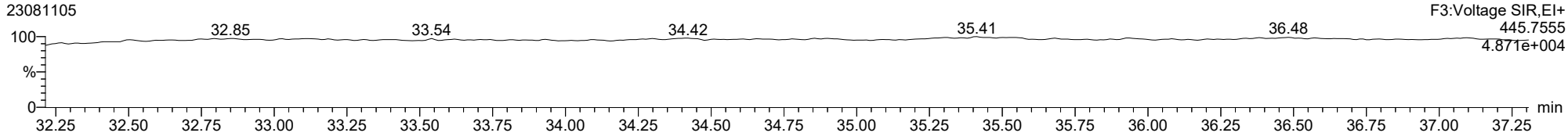
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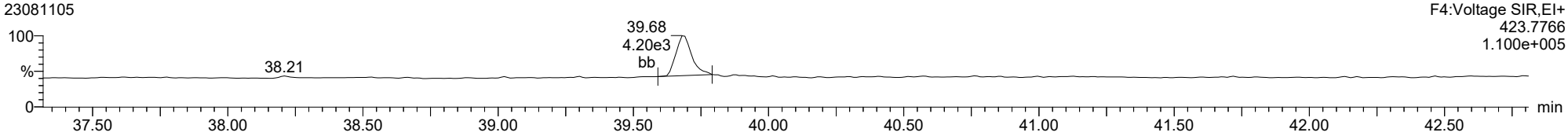


FUNCTION3 OCDPE

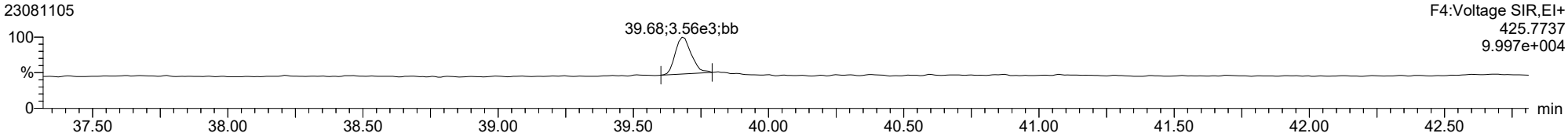


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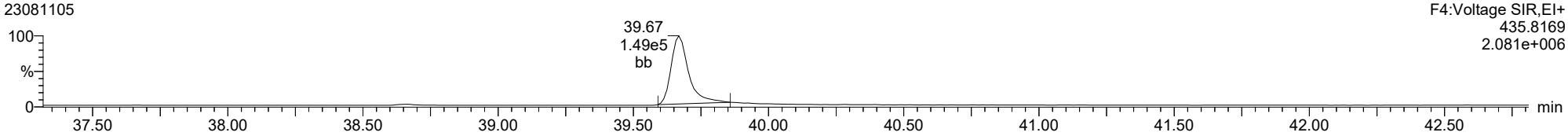
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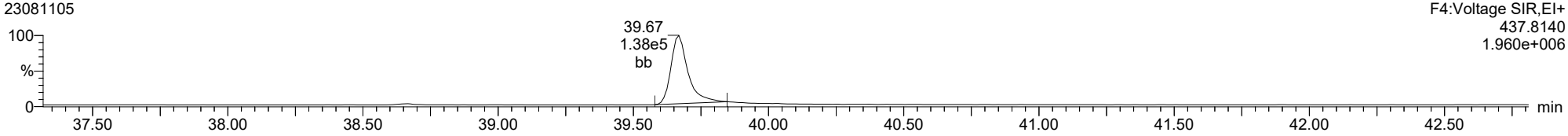
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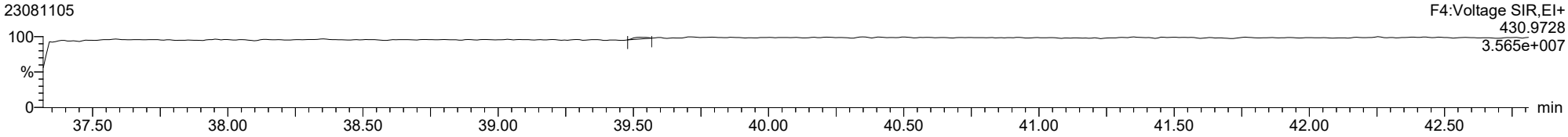
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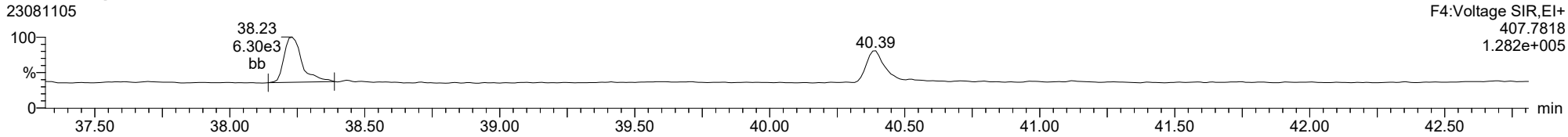


FUNCTION4 PFK

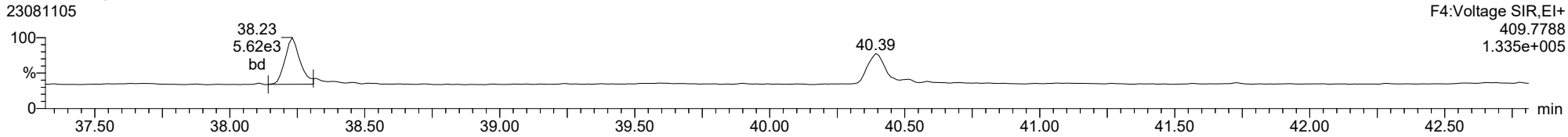


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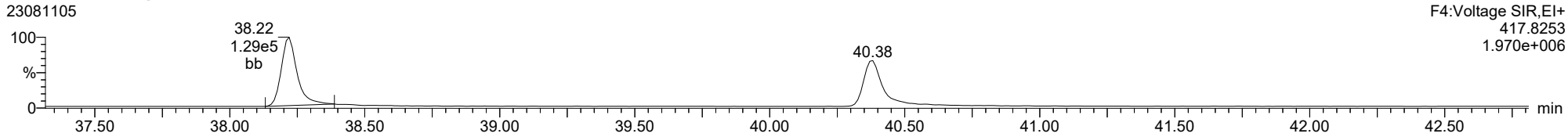
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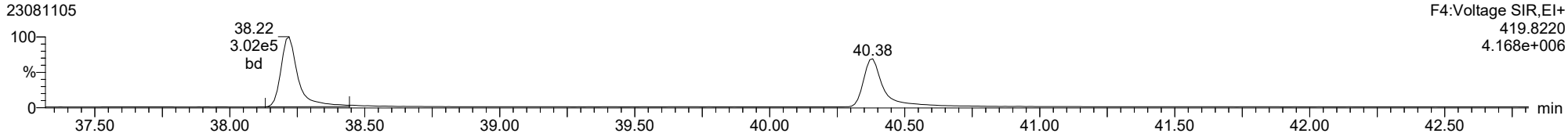
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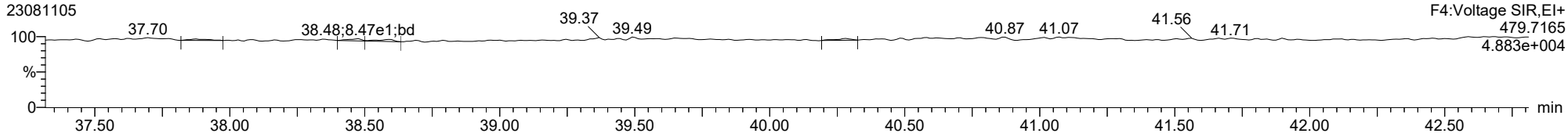
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13C-1234678-HpCDF

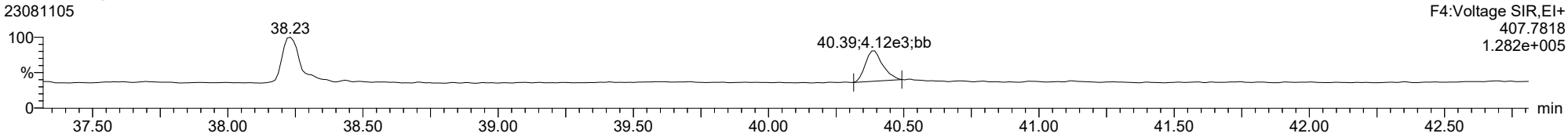


FUNCTION4 NCDPE

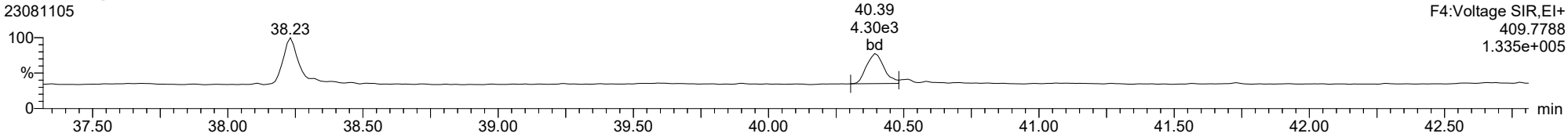


ID: CS1CF, Name: 23081105, Date: 11-Aug-2023, Time: 13:01:52, Conditions: AUTOSPEC01, User: pk

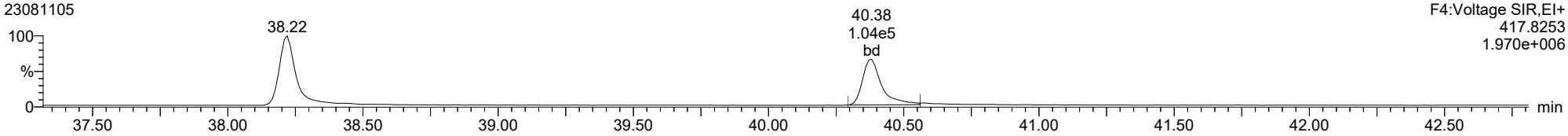
1234789-HpCDF



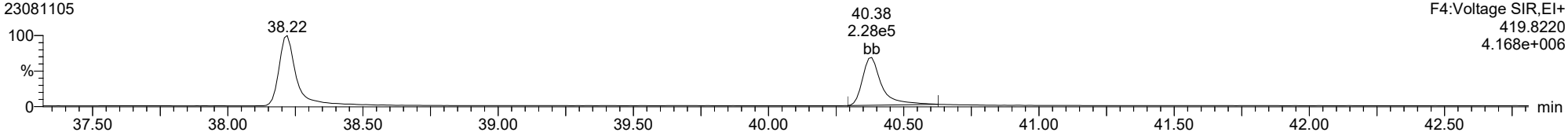
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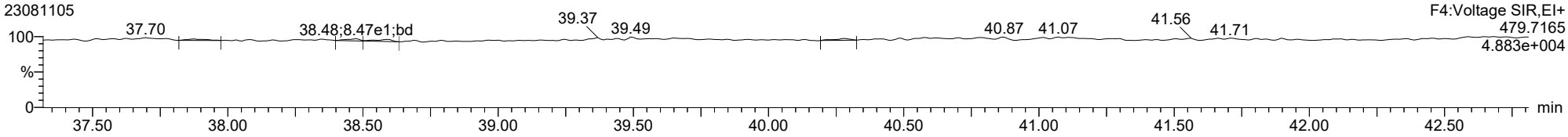
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13C-1234789-HpCDF

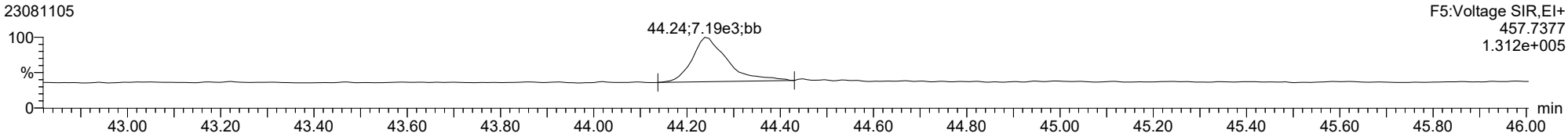


FUNCTION4 NCDPE

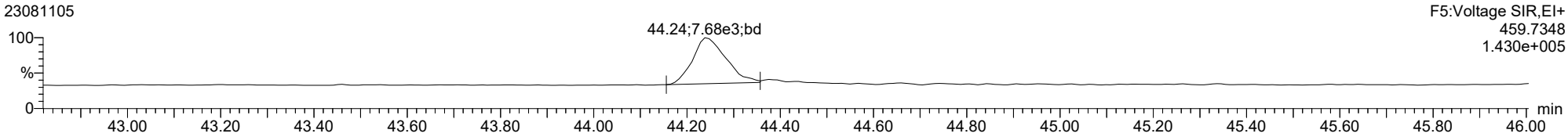


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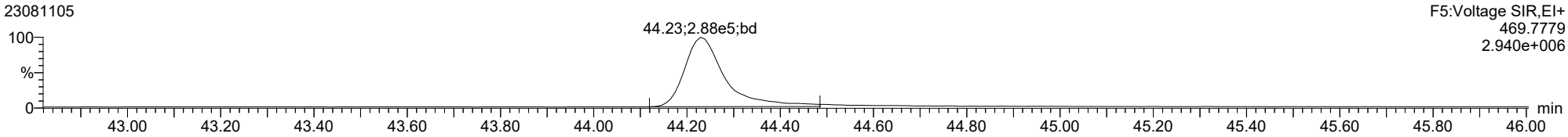
OCDD



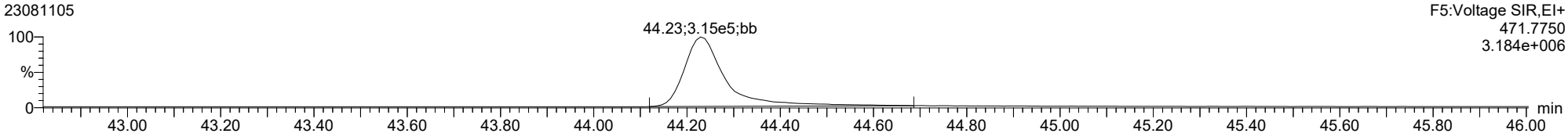
OCDD



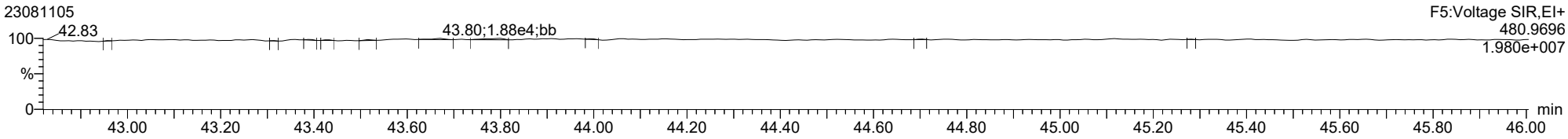
13C-OCDD



13C-OCDD



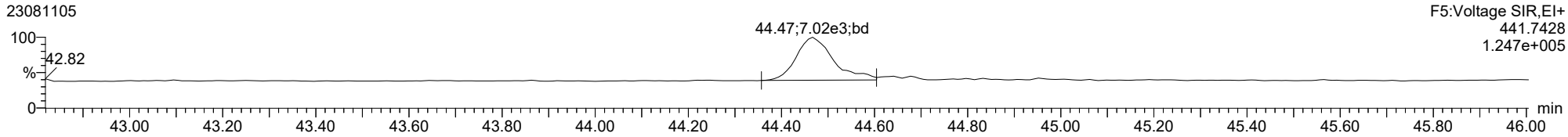
FUNCTION5 PFK



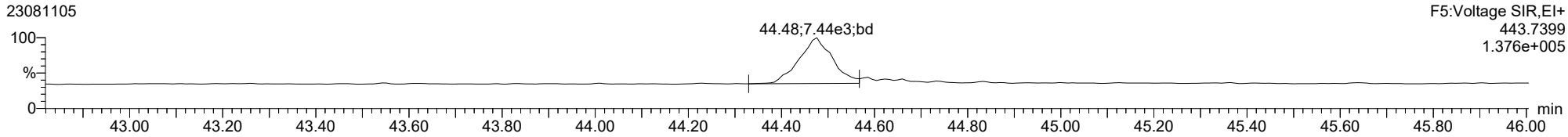
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Last Altered: Saturday, August 12, 2023 10:45:18 Pacific Daylight Time
Printed: Tuesday, August 15, 2023 12:24:07 Pacific Daylight Time

ID: CS1CF, Name: 23081105, Date: 11-Aug-2023, Time: 13:01:52, Conditions: AUTOSPEC01, User: pk

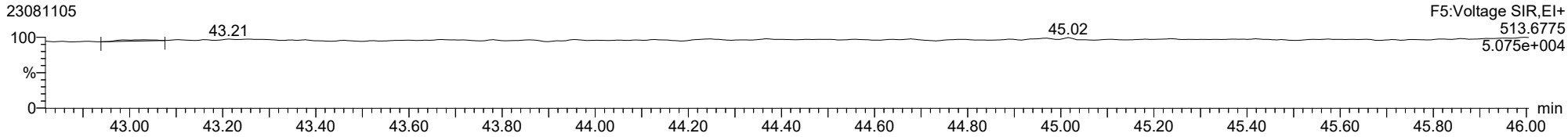
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OCDF

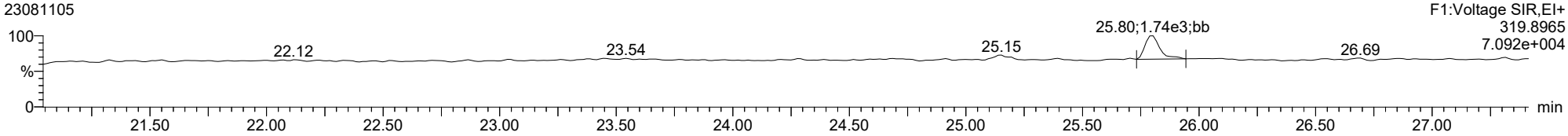


FUNCTION5 DCDPE

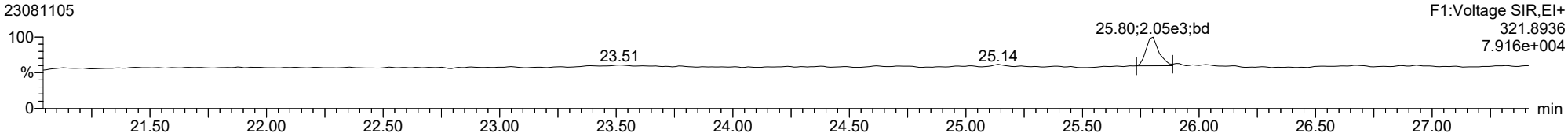


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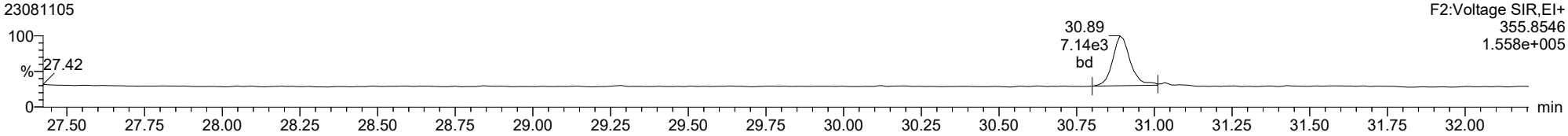
Total-tetradioxins



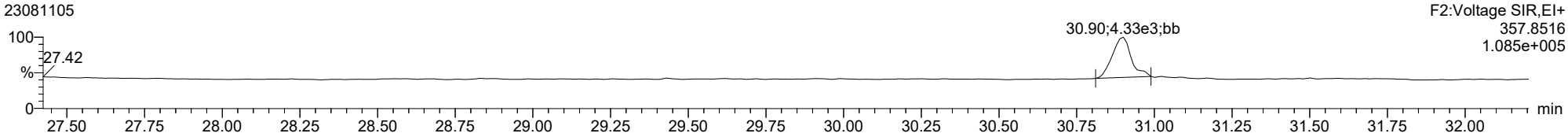
Total-tetradioxins



Total-pentadioxins

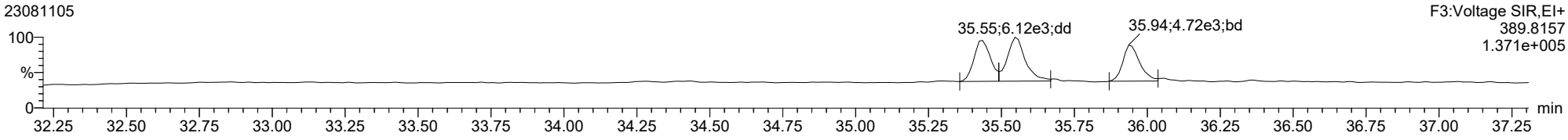


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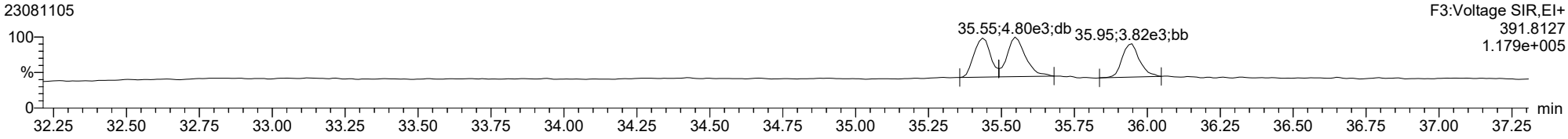


ID: CS1CF, Name: 23081105, Date: 11-Aug-2023, Time: 13:01:52, Conditions: AUTOSPEC01, User: pk

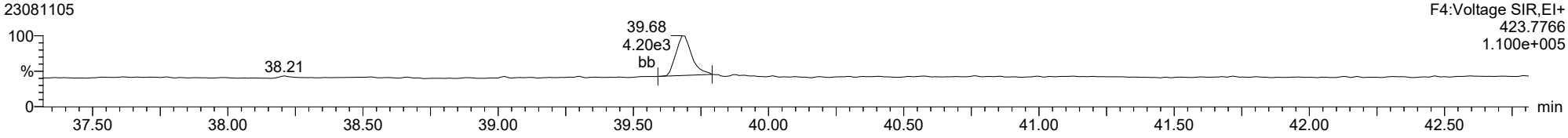
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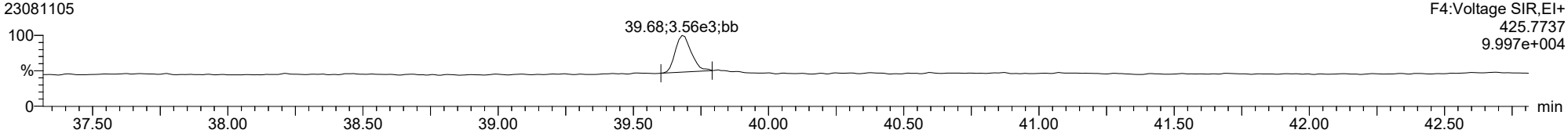
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Total-heptadioxins

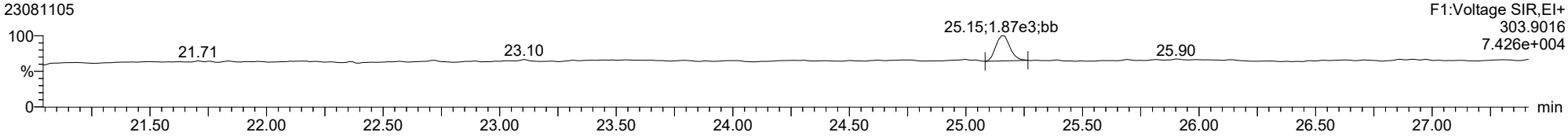


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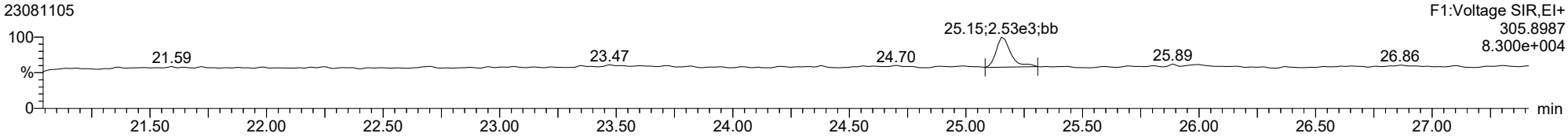


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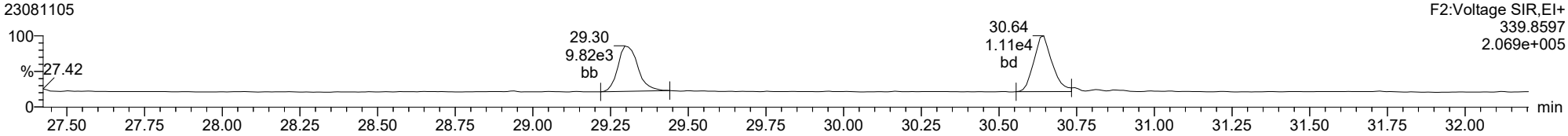
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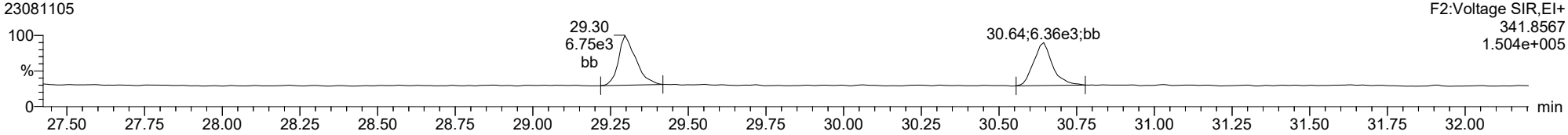
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Total-pentafurans



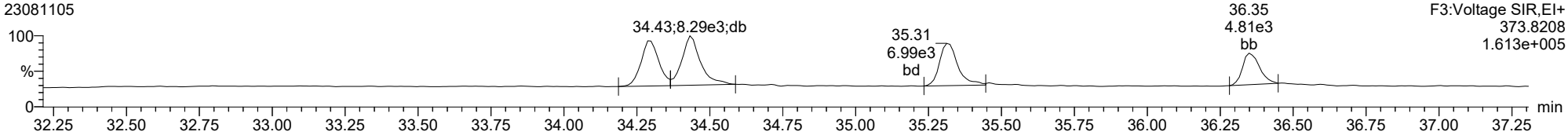
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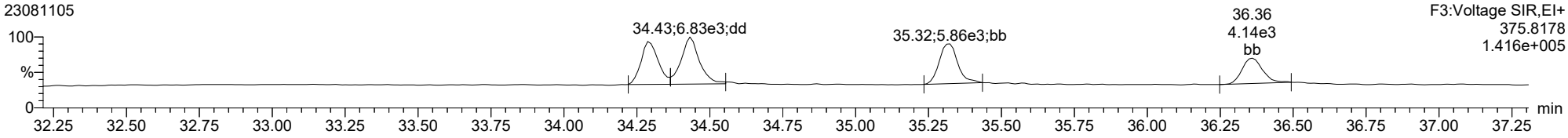
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Printed: Tuesday, August 15, 2023 12:24:07 Pacific Daylight Time

ID: CS1CF, Name: 23081105, Date: 11-Aug-2023, Time: 13:01:52, Conditions: AUTOSPEC01, User: pk

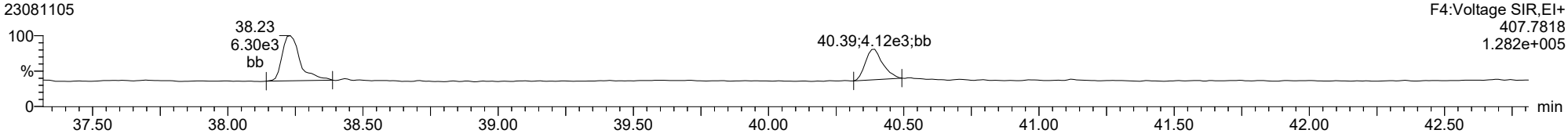
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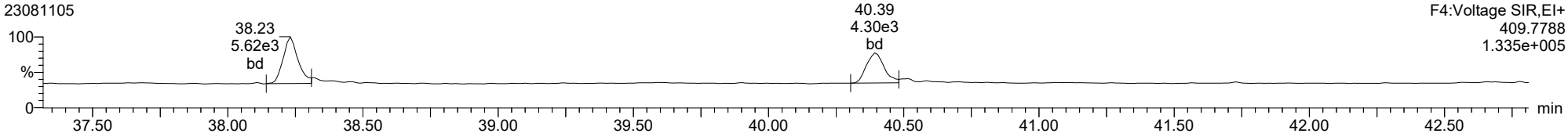
Total-hexafurans



Total-heptafurans



Total-heptafurans



Dataset: T:\Autospec\Processed Data Batch\230811ICIH.qld
Last Altered: Saturday, August 12, 2023 10:45:18 Pacific Daylight Time
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Method: T:\Autospec\Methods\Dioxin230810.mdb 11 Aug 2023 22:18:32
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 10:45:18

ID: CS2CF, Name: 23081106, Date: 11-Aug-2023, Time: 13:56:53, 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	25.167	1.001	6.639e3	8.975e3	0.903	0.740	0.770	538	993	9.21e4	1.31e5	171.1	132.1	NO	bb	bb	1.970
12378-PeCDF	29.307	1.001	3.740e4	2.220e4	0.923	1.684	1.550	1167	1190	4.81e5	3.04e5	411.7	255.4	NO	bb	bd	10.334
23478-PeCDF	30.644	1.001	3.540e4	2.344e4	0.991	1.510	1.550	1167	1190	4.95e5	3.17e5	424.4	266.2	NO	bb	bd	9.895
123478-HxCDF	34.298	1.001	2.384e4	1.903e4	1.128	1.253	1.240	1466	1136	3.44e5	2.76e5	234.6	242.7	NO	bd	bd	9.772
234678-HxCDF	35.323	1.001	2.434e4	1.816e4	1.081	1.340	1.240	1466	1136	3.13e5	2.58e5	213.5	227.4	NO	bd	bb	10.221
123678-HxCDF	34.432	1.000	2.948e4	2.321e4	1.032	1.270	1.240	1466	1136	3.59e5	2.86e5	244.6	251.7	NO	dd	dd	10.354
123789-HxCDF	36.359	1.000	1.833e4	1.528e4	0.988	1.200	1.240	1466	1136	2.44e5	1.98e5	166.3	174.1	NO	bb	bd	9.957
1234678-HpCDF	38.231	1.000	2.069e4	1.904e4	1.164	1.087	1.050	1165	914	2.82e5	2.63e5	242.1	287.7	NO	bd	bd	10.035
1234789-HpCDF	40.403	1.000	1.452e4	1.375e4	1.104	1.056	1.050	1165	914	1.89e5	1.80e5	161.9	196.4	NO	bd	bd	10.072
OCDF	44.475	1.005	2.020e4	2.277e4	1.130	0.887	0.890	1047	1105	2.11e5	2.19e5	201.8	198.1	NO	bd	bd	22.550
2378-TCDD	25.803	1.001	5.548e3	6.953e3	1.243	0.798	0.770	803	625	7.86e4	9.57e4	97.9	153.2	NO	bd	bd	1.984
12378-PeCDD	30.900	1.001	2.229e4	1.439e4	1.150	1.549	1.550	754	561	3.06e5	2.04e5	405.8	364.2	NO	bb	bd	9.779
123478-HxCDD	35.435	1.000	1.653e4	1.351e4	0.960	1.224	1.240	811	937	2.39e5	1.94e5	295.1	207.1	NO	bd	bd	10.063
123678-HxCDD	35.557	1.001	1.716e4	1.531e4	0.883	1.121	1.240	811	937	2.38e5	1.95e5	293.1	207.7	NO	dd	dd	9.914
123789-HxCDD	35.947	1.012	1.586e4	1.341e4	0.804	1.183	1.240	811	937	2.09e5	1.88e5	257.8	200.7	NO	bd	bd	10.680
1234678-HpCDD	39.690	1.001	1.073e4	1.037e4	1.200	1.035	1.050	1103	680	1.37e5	1.38e5	123.9	203.2	NO	bd	bd	9.429
OCDD	44.247	1.000	1.670e4	1.836e4	1.059	0.910	0.890	879	1587	1.83e5	2.04e5	207.8	128.8	NO	bd	bb	19.639
13C-2378-TCDF	25.153	1.007	3.886e5	4.890e5	1.835	0.795	0.770	1364	1344	5.37e6	6.83e6	3939.0	5083.6	NO	bb	bb	100.434
13C-12378-PeCDF	29.285	1.173	3.779e5	2.468e5	1.377	1.531	1.550	3286	2729	5.12e6	3.35e6	1559.6	1229.0	NO	bb	bb	95.324
13C-23478-PeCDF	30.622	1.226	3.655e5	2.348e5	1.301	1.557	1.550	3286	2729	4.81e6	3.14e6	1465.3	1148.8	NO	bb	bb	96.899
13C-123478-HxCDF	34.276	0.954	1.314e5	2.576e5	1.091	0.510	0.510	1750	2697	1.85e6	3.61e6	1057.7	1339.3	NO	bd	bd	107.194
13C-123678-HxCDF	34.421	0.958	1.547e5	3.382e5	1.340	0.457	0.510	1750	2697	2.05e6	4.08e6	1171.2	1512.3	NO	db	db	110.566
13C-234678-HxCDF	35.301	0.982	1.364e5	2.481e5	1.093	0.550	0.510	1750	2697	1.72e6	3.32e6	983.2	1231.8	NO	bb	bb	105.714
13C-123789-HxCDF	36.348	1.012	1.112e5	2.306e5	0.952	0.482	0.510	1750	2697	1.36e6	2.75e6	779.0	1019.4	NO	bb	bb	107.981
13C-1234678-HpCDF	38.220	1.064	9.913e4	2.411e5	0.985	0.411	0.440	1895	2595	1.40e6	3.17e6	737.2	1220.7	NO	bb	bb	103.834
13C-1234789-HpCDF	40.381	1.124	7.550e4	1.788e5	0.756	0.422	0.440	1895	2595	9.30e5	2.09e6	490.9	805.4	NO	bb	bd	101.155
13C-1234-TCDD	24.969	0.000	2.112e5	2.649e5	1.000	0.797	0.770	1680	1124	3.19e6	4.00e6	1899.2	3554.0	NO	bb	bb	100.000
13C-2378-TCDD	25.788	1.033	2.248e5	2.821e5	1.110	0.797	0.770	1680	1124	3.12e6	3.97e6	1858.7	3527.9	NO	bb	bb	95.969
13C-12378-PeCDD	30.878	1.237	2.020e5	1.242e5	0.754	1.627	1.550	1223	944	2.75e6	1.67e6	2245.0	1771.6	NO	bb	bb	90.902
13C-123478-HxCDD	35.423	0.986	1.742e5	1.367e5	0.960	1.275	1.240	1410	1296	2.60e6	2.05e6	1845.4	1580.5	NO	bd	bd	97.371
13C-123678-HxCDD	35.535	0.989	2.078e5	1.633e5	1.159	1.273	1.240	1410	1296	2.57e6	2.02e6	1824.4	1557.0	NO	db	db	96.226
13C-1234678-HpCDD	39.668	1.104	9.858e4	8.803e4	0.629	1.120	1.050	1254	2104	1.25e6	1.14e6	994.6	540.8	NO	bd	bd	89.141
13C-OCDD	44.238	1.231	1.612e5	1.761e5	0.635	0.915	0.890	2400	1954	1.62e6	1.78e6	676.5	910.4	NO	bd	bd	159.619
13C-123789-HxCDD	35.936	0.000	1.861e5	1.465e5	1.000	1.270	1.240	1410	1296	2.41e6	1.88e6	1710.5	1449.2	NO	bb	bb	100.000
37CL-2378-TCDD	25.803	1.033	1.067e4		1.157			862		1.46e5		169.4			bb		1.937

Dataset: T:\Autospec\Processed Data Batch\230811ICIH.qld
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ID: CS2CF, Name: 23081106, Date: 11-Aug-2023, Time: 13:56:53, 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					1.170		0.770	538	993								
1289-TCDF					0.847		0.770	538	993								
13468-PECDF					1.241		1.550	576	687								
12389-PECDF					0.880		1.550	1167	1190								
123468-HXCDF					1.206		1.240	1466	1136								
1368-TCDD					1.181		0.770	803	625								
1289-TCDD					0.963		0.770	803	625								
12479-PECDD					2.166		1.550	754	561								
12389-PECDD					1.326		1.550	754	561								
124679-HXCDD					1.127		1.240	811	937								
1234679-HPCDD					1.303		1.050	1103	680								
Total-tetrafurans			6.639e3		0.973			538		9.21e4							1.970
Total-penta1			0.000e0					576		0.00e0							
Total-pentafurans			7.280e4		0.931			1167		9.76e5							20.229
Total-hexafurans			9.600e4		1.087			1466		1.26e6							40.303
Total-heptafurans			3.521e4		1.134			1165		4.71e5							20.106
Total-Furans			2.308e5		1.053			538		3.01e6							105.158
Total-tetradioxins			5.548e3		1.129			803		7.86e4							1.984
Total-pentadioxins			2.229e4		1.548			754		3.06e5							9.779
Total-hexadioxins			4.955e4		0.943			811		6.86e5							30.657
Total-heptadioxins			1.073e4		1.251			1103		1.37e5							9.429
Total-Dioxins			1.048e5		1.182			803		1.39e6							71.487
Total-TEQ			3.357e5					803		4.40e6							176.646
FUNCTION1 PFK			6.101e5					529815		9.62e6							
FUNCTION2 PFK			3.300e5					262661		9.68e6							0.000
FUNCTION3 PFK			3.679e4					410224		9.46e5							0.000
FUNCTION4 PFK			9.280e4					245564		2.16e6							
FUNCTION5 PFK			2.234e4					217516		1.10e6							
FUNCTION1 HXCD...			1.047e3					646		1.33e4							0.000
FUNCTION1 HPCD...																	
FUNCTION2 HPCD...			1.453e2					593		3.14e3							0.000
FUNCTION3 OCDPE			0.000e0					501		0.00e0							
FUNCTION4 NCDPE			0.000e0					705		0.00e0							
FUNCTION5 DCDPE			0.000e0					568		0.00e0							

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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	25.17	6.639e3	8.975e3	0.903	0.74	0.77	171.1	YES	NO	bb	bb	1.970

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	30.64	3.540e4	2.344e4	0.991	1.51	1.55	424.4	YES	NO	bb	bd	9.895
2	12378-PeCDF	29.31	3.740e4	2.220e4	0.923	1.68	1.55	411.7	YES	NO	bb	bd	10.334

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDF	36.36	1.833e4	1.528e4	0.988	1.20	1.24	166.3	YES	NO	bb	bd	9.957
2	234678-HxCDF	35.32	2.434e4	1.816e4	1.081	1.34	1.24	213.5	YES	NO	bd	bb	10.221
3	123678-HxCDF	34.43	2.948e4	2.321e4	1.032	1.27	1.24	244.6	YES	NO	dd	dd	10.354
4	123478-HxCDF	34.30	2.384e4	1.903e4	1.128	1.25	1.24	234.6	YES	NO	bd	bd	9.772

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	40.40	1.452e4	1.375e4	1.104	1.06	1.05	161.9	YES	NO	bd	bd	10.072
2	1234678-HpCDF	38.23	2.069e4	1.904e4	1.164	1.09	1.05	242.1	YES	NO	bd	bd	10.035

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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	23478-PeCDF	30.64	3.540e4	2.344e4	0.991	1.51	1.55	424.4	YES	NO	bb	bd	9.895
2	12378-PeCDF	29.31	3.740e4	2.220e4	0.923	1.68	1.55	411.7	YES	NO	bb	bd	10.334
3	2378-TCDF	25.17	6.639e3	8.975e3	0.903	0.74	0.77	171.1	YES	NO	bb	bb	1.970
4	123789-HxCDF	36.36	1.833e4	1.528e4	0.988	1.20	1.24	166.3	YES	NO	bb	bd	9.957
5	234678-HxCDF	35.32	2.434e4	1.816e4	1.081	1.34	1.24	213.5	YES	NO	bd	bb	10.221
6	123678-HxCDF	34.43	2.948e4	2.321e4	1.032	1.27	1.24	244.6	YES	NO	dd	dd	10.354
7	123478-HxCDF	34.30	2.384e4	1.903e4	1.128	1.25	1.24	234.6	YES	NO	bd	bd	9.772
8	1234789-HpCDF	40.40	1.452e4	1.375e4	1.104	1.06	1.05	161.9	YES	NO	bd	bd	10.072
9	1234678-HpCDF	38.23	2.069e4	1.904e4	1.164	1.09	1.05	242.1	YES	NO	bd	bd	10.035
10	OCDF	44.48	2.020e4	2.277e4	1.130	0.89	0.89	201.8	YES	NO	bd	bd	22.550

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDD	25.80	5.548e3	6.953e3	1.243	0.80	0.77	97.9	YES	NO	bd	bd	1.984

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12378-PeCDD	30.90	2.229e4	1.439e4	1.150	1.55	1.55	405.8	YES	NO	bb	bd	9.779

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDD	35.95	1.586e4	1.341e4	0.804	1.18	1.24	257.8	YES	NO	bd	bd	10.680
2	123678-HxCDD	35.56	1.716e4	1.531e4	0.883	1.12	1.24	293.1	YES	NO	dd	dd	9.914
3	123478-HxCDD	35.43	1.653e4	1.351e4	0.960	1.22	1.24	295.1	YES	NO	bd	bd	10.063

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.69	1.073e4	1.037e4	1.200	1.03	1.05	123.9	YES	NO	bd	bd	9.429

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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	25.80	5.548e3	6.953e3	1.243	0.80	0.77	97.9	YES	NO	bd	bd	1.984
2	123789-HxCDD	35.95	1.586e4	1.341e4	0.804	1.18	1.24	257.8	YES	NO	bd	bd	10.680
3	123678-HxCDD	35.56	1.716e4	1.531e4	0.883	1.12	1.24	293.1	YES	NO	dd	dd	9.914
4	123478-HxCDD	35.43	1.653e4	1.351e4	0.960	1.22	1.24	295.1	YES	NO	bd	bd	10.063
5	12378-PeCDD	30.90	2.229e4	1.439e4	1.150	1.55	1.55	405.8	YES	NO	bb	bd	9.779
6	OCDD	44.25	1.670e4	1.836e4	1.059	0.91	0.89	207.8	YES	NO	bd	bb	19.639
7	1234678-HpCDD	39.69	1.073e4	1.037e4	1.200	1.03	1.05	123.9	YES	NO	bd	bd	9.429

TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	23478-PeCDF	30.64	3.540e4	2.344e4	0.991	1.51	1.55	424.4	YES	NO	bb	bd	9.895
2	12378-PeCDF	29.31	3.740e4	2.220e4	0.923	1.68	1.55	411.7	YES	NO	bb	bd	10.334
3	2378-TCDF	25.17	6.639e3	8.975e3	0.903	0.74	0.77	171.1	YES	NO	bb	bb	1.970
4	123789-HxCDF	36.36	1.833e4	1.528e4	0.988	1.20	1.24	166.3	YES	NO	bb	bd	9.957
5	234678-HxCDF	35.32	2.434e4	1.816e4	1.081	1.34	1.24	213.5	YES	NO	bd	bb	10.221
6	123678-HxCDF	34.43	2.948e4	2.321e4	1.032	1.27	1.24	244.6	YES	NO	dd	dd	10.354
7	123478-HxCDF	34.30	2.384e4	1.903e4	1.128	1.25	1.24	234.6	YES	NO	bd	bd	9.772
8	1234789-HpCDF	40.40	1.452e4	1.375e4	1.104	1.06	1.05	161.9	YES	NO	bd	bd	10.072
9	1234678-HpCDF	38.23	2.069e4	1.904e4	1.164	1.09	1.05	242.1	YES	NO	bd	bd	10.035
10	OCDF	44.48	2.020e4	2.277e4	1.130	0.89	0.89	201.8	YES	NO	bd	bd	22.550
11	2378-TCDD	25.80	5.548e3	6.953e3	1.243	0.80	0.77	97.9	YES	NO	bd	bd	1.984
12	123789-HxCDD	35.95	1.586e4	1.341e4	0.804	1.18	1.24	257.8	YES	NO	bd	bd	10.680
13	123678-HxCDD	35.56	1.716e4	1.531e4	0.883	1.12	1.24	293.1	YES	NO	dd	dd	9.914
14	123478-HxCDD	35.43	1.653e4	1.351e4	0.960	1.22	1.24	295.1	YES	NO	bd	bd	10.063
15	12378-PeCDD	30.90	2.229e4	1.439e4	1.150	1.55	1.55	405.8	YES	NO	bb	bd	9.779
16	OCDD	44.25	1.670e4	1.836e4	1.059	0.91	0.89	207.8	YES	NO	bd	bb	19.639
17	1234678-HpCDD	39.69	1.073e4	1.037e4	1.200	1.03	1.05	123.9	YES	NO	bd	bd	9.429

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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	27.13	4.567e4					1.8	NO		bb		
2	FUNCTION1 PFK	26.93	1.033e5					1.9	NO		bb		
3	FUNCTION1 PFK	25.83	1.767e4					0.9	NO		db		
4	FUNCTION1 PFK	25.76	2.157e4					1.2	NO		bd		
5	FUNCTION1 PFK	25.36	1.644e4					1.0	NO		bb		
6	FUNCTION1 PFK	24.72	9.596e3					0.9	NO		bb		
7	FUNCTION1 PFK	23.80	8.729e4					1.7	NO		bb		
8	FUNCTION1 PFK	23.68	1.279e4					0.8	NO		bb		
9	FUNCTION1 PFK	22.95	2.100e4					1.1	NO		bb		
10	FUNCTION1 PFK	22.55	1.612e5					2.6	NO		bb		
11	FUNCTION1 PFK	21.37	6.636e4					1.6	NO		bb		
12	FUNCTION1 PFK	21.24	1.932e4					1.3	NO		bb		
13	FUNCTION1 PFK	27.37	2.793e4					1.4	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	29.56	1.108e3					0.4	NO		bb		0.000
2	FUNCTION2 PFK	29.42	1.592e4					1.3	NO		bb		0.000
3	FUNCTION2 PFK	29.14	8.800e3					0.6	NO		bb		0.000
4	FUNCTION2 PFK	29.04	1.126e3					0.4	NO		bb		0.000
5	FUNCTION2 PFK	28.89	1.092e3					0.4	NO		bb		0.000
6	FUNCTION2 PFK	28.67	2.760e3					0.6	NO		bb		0.000
7	FUNCTION2 PFK	28.54	4.266e4					2.3	NO		db		0.000
8	FUNCTION2 PFK	28.50	7.502e3					1.4	NO		bd		0.000
9	FUNCTION2 PFK	28.44	4.754e3					0.8	NO		bb		0.000
10	FUNCTION2 PFK	28.24	1.817e3					0.6	NO		bb		0.000
11	FUNCTION2 PFK	27.91	2.129e4					1.8	NO		bb		0.000
12	FUNCTION2 PFK	27.70	1.104e4					1.3	NO		bb		0.000
13	FUNCTION2 PFK	27.56	1.554e4					2.6	NO		bb		0.000
14	FUNCTION2 PFK	27.48	7.233e3					1.3	NO		bb		0.000
15	FUNCTION2 PFK	31.65	2.742e3					0.7	NO		db		0.000
16	FUNCTION2 PFK	31.61	7.483e3					1.0	NO		dd		0.000
17	FUNCTION2 PFK	31.57	8.598e3					1.1	NO		bd		0.000
18	FUNCTION2 PFK	31.48	5.872e3					0.9	NO		bb		0.000
19	FUNCTION2 PFK	31.17	2.153e4					1.7	NO		bb		0.000
20	FUNCTION2 PFK	31.02	6.265e3					1.0	NO		bb		0.000
21	FUNCTION2 PFK	30.97	5.713e3					1.0	NO		db		0.000
22	FUNCTION2 PFK	30.93	5.520e3					1.0	NO		bd		0.000
23	FUNCTION2 PFK	30.78	1.253e4					1.2	NO		db		0.000
24	FUNCTION2 PFK	30.72	1.563e4					2.1	NO		dd		0.000
25	FUNCTION2 PFK	30.69	5.597e4					3.6	YES		bd		0.000
26	FUNCTION2 PFK	30.50	7.111e3					1.1	NO		bb		0.000
27	FUNCTION2 PFK	30.34	3.928e3					0.6	NO		bb		0.000
28	FUNCTION2 PFK	30.29	1.253e4					1.3	NO		db		0.000
29	FUNCTION2 PFK	30.22	9.994e3					1.2	NO		bd		0.000
30	FUNCTION2 PFK	30.08	3.205e3					0.7	NO		bb		0.000
31	FUNCTION2 PFK	31.76	2.713e3					0.6	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	36.80	3.679e4					2.3	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	41.57	1.891e4					2.5	NO		bb		
2	FUNCTION4 PFK	40.08	2.932e4					2.7	NO		bb		
3	FUNCTION4 PFK	37.54	4.458e4					3.6	YES		bb		

PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	45.33	1.090e3					0.5	NO		bb		
2	FUNCTION5 PFK	44.09	8.882e3					1.5	NO		bb		
3	FUNCTION5 PFK	43.42	9.419e3					1.5	NO		bb		
4	FUNCTION5 PFK	43.07	1.093e3					0.5	NO		bb		
5	FUNCTION5 PFK	43.00	1.858e3					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...	21.45	1.010e2					1.8	NO		db		0.000
2	FUNCTION1 HXCD...	21.33	1.737e2					2.5	NO		bd		0.000
3	FUNCTION1 HXCD...	26.28	1.182e2					1.7	NO		db		0.000
4	FUNCTION1 HXCD...	26.16	8.898e1					2.4	NO		dd		0.000
5	FUNCTION1 HXCD...	26.10	1.100e2					2.3	NO		bd		0.000
6	FUNCTION1 HXCD...	25.92	8.664e1					2.0	NO		db		0.000
7	FUNCTION1 HXCD...	25.80	8.460e1					1.7	NO		bd		0.000
8	FUNCTION1 HXCD...	23.51	1.186e2					2.4	NO		db		0.000
9	FUNCTION1 HXCD...	23.39	8.900e1					2.1	NO		bd		0.000
10	FUNCTION1 HXCD...	22.67	7.641e1					1.6	NO		bb		0.000

ETHERS2

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

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	28.44	7.425e1					2.3	NO		bb		0.000
2	FUNCTION2 HPCD...	27.79	7.103e1					3.0	NO		bb		0.000

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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

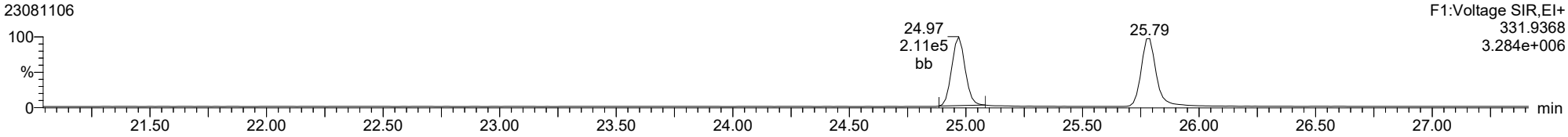
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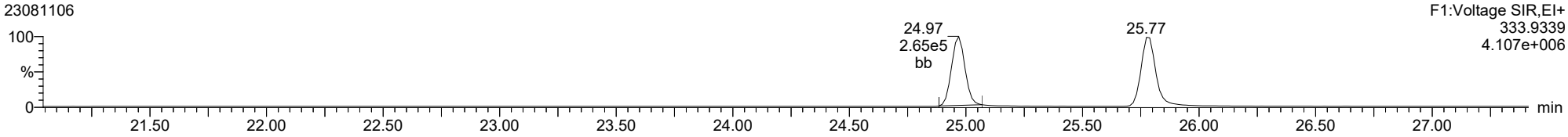
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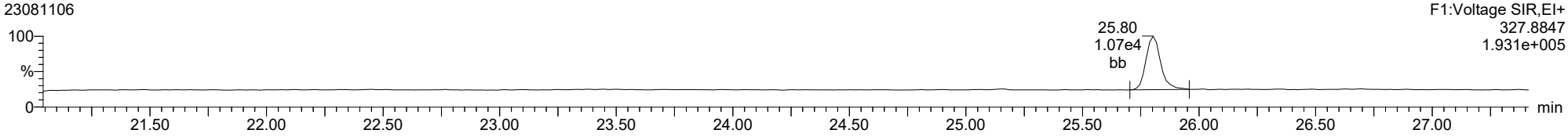
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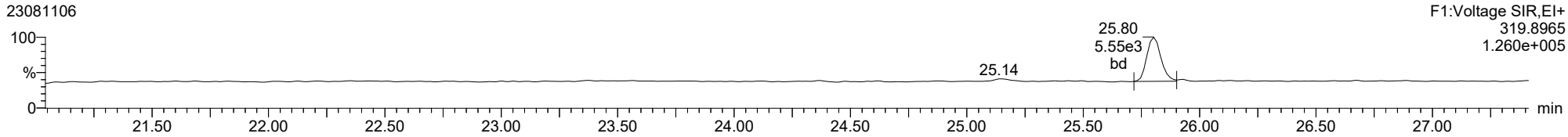


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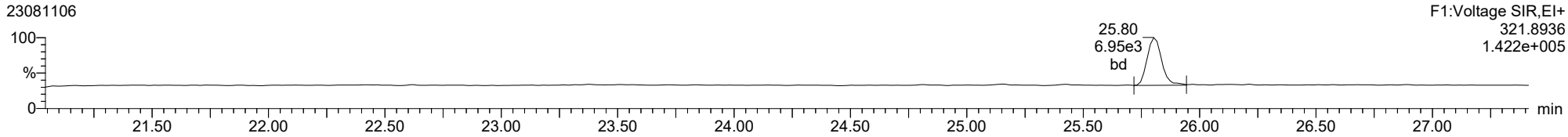


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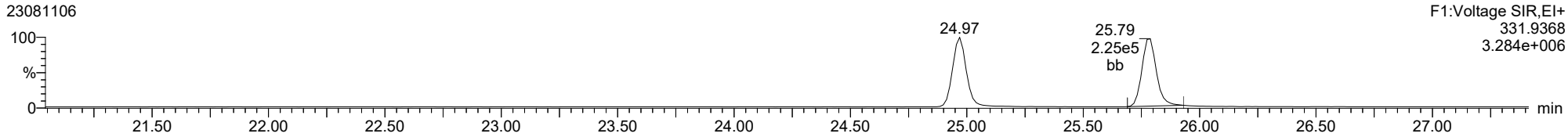
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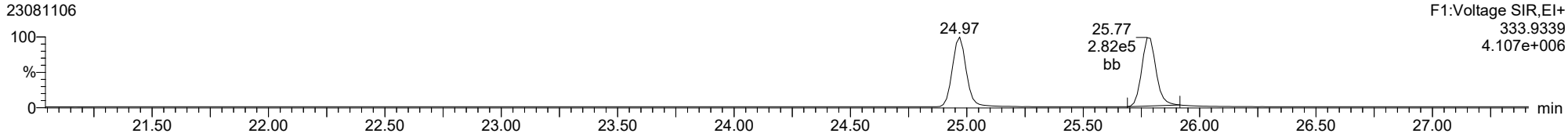
2378-TCDD



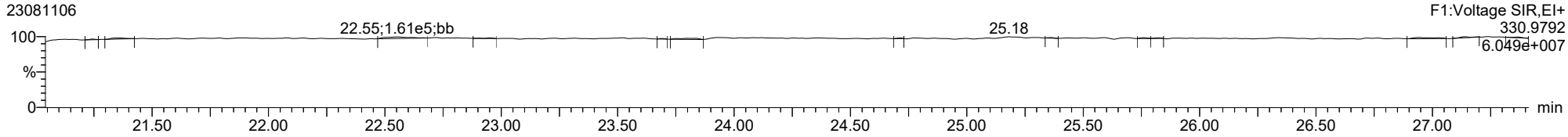
13C-2378-TCDD



13C-2378-TCDD

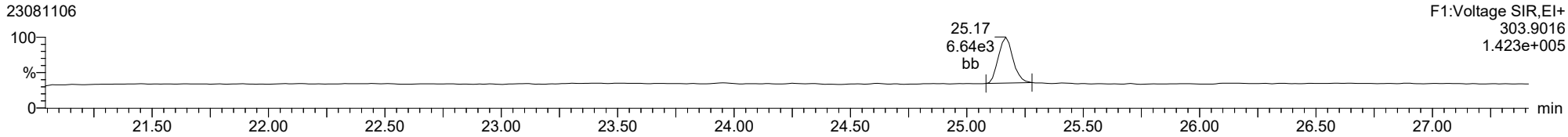


FUNCTION1 PFK

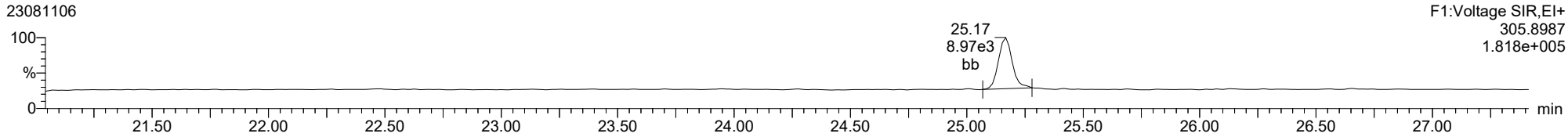


ID: CS2CF, Name: 23081106, Date: 11-Aug-2023, Time: 13:56:53, Conditions: AUTOSPEC01, User: pk

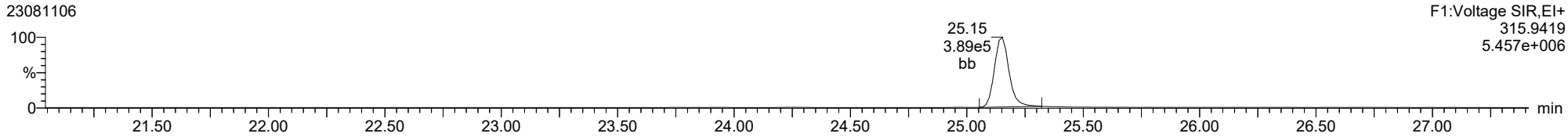
2378-TCDF



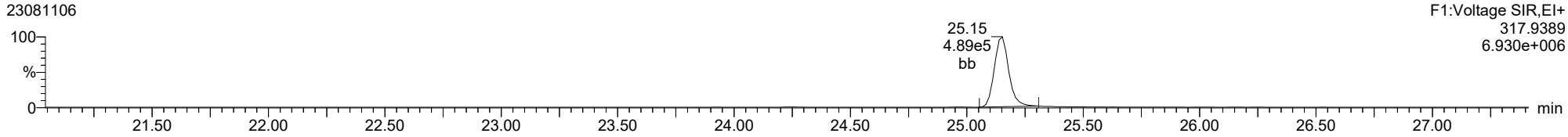
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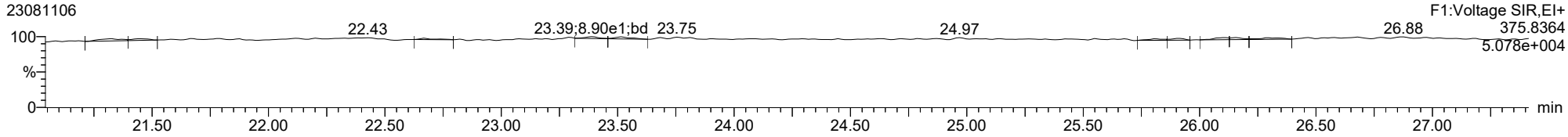
13C-2378-TCDF



13C-2378-TCDF

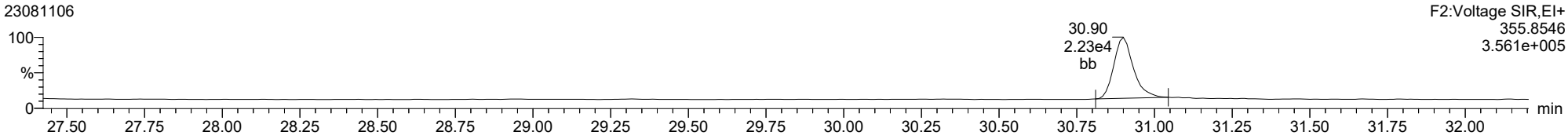


FUNCTION1 HXCDPE

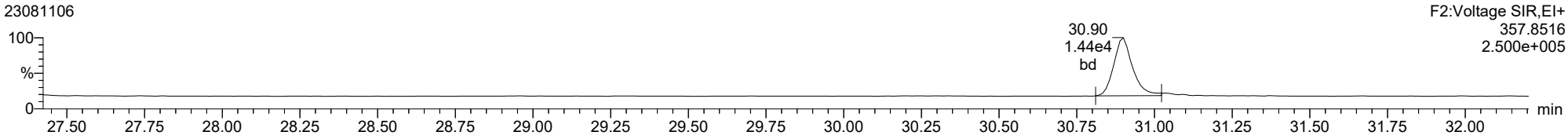


ID: CS2CF, Name: 23081106, Date: 11-Aug-2023, Time: 13:56:53, Conditions: AUTOSPEC01, User: pk

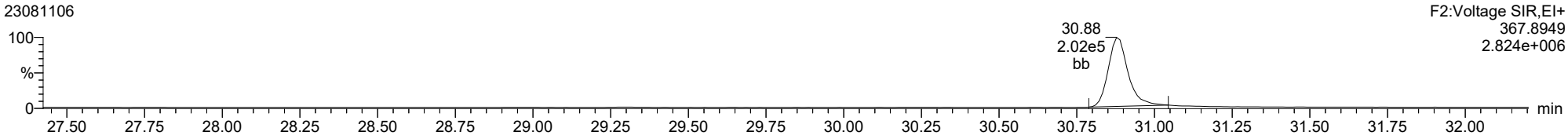
12378-PeCDD



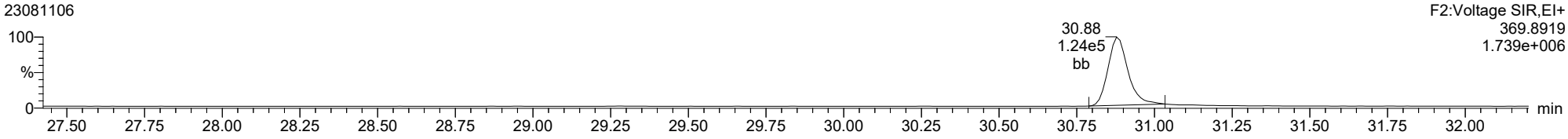
12378-PeCDD



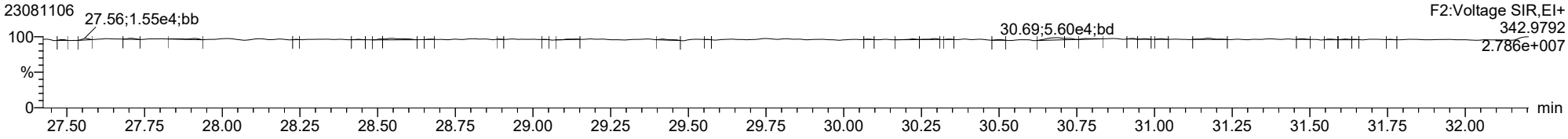
13C-12378-PeCDD



13C-12378-PeCDD

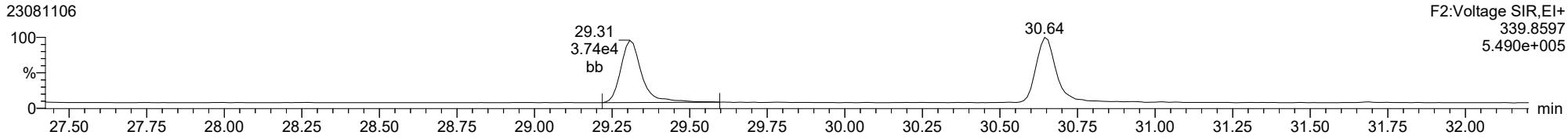


FUNCTION2 PFK

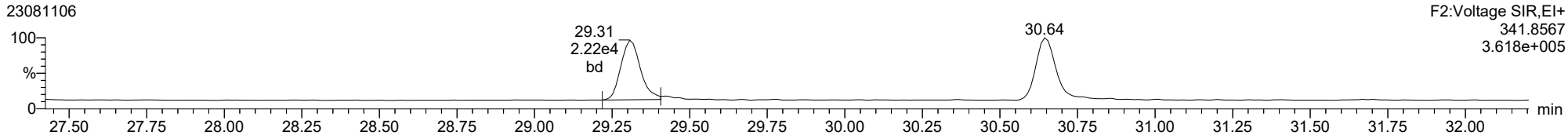


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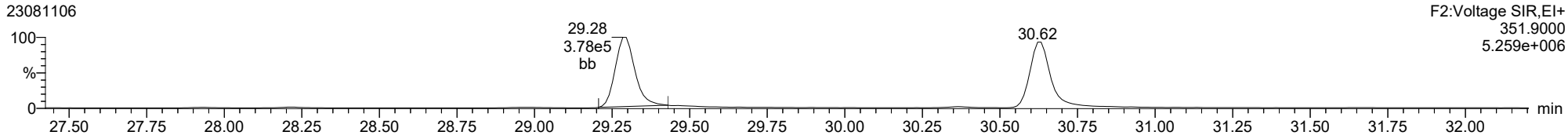
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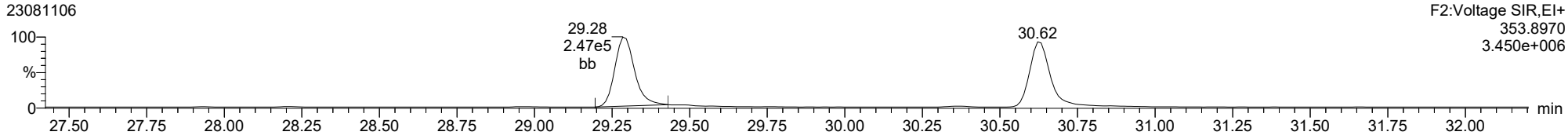
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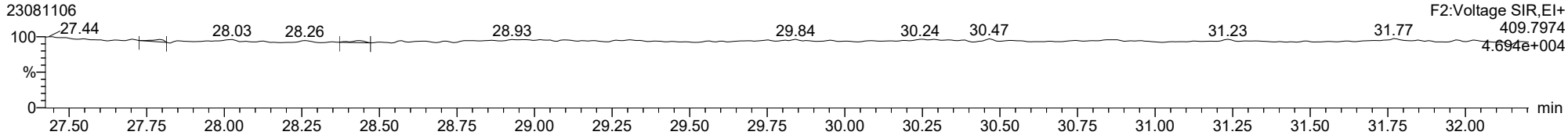
13C-12378-PeCDF



13C-12378-PeCDF

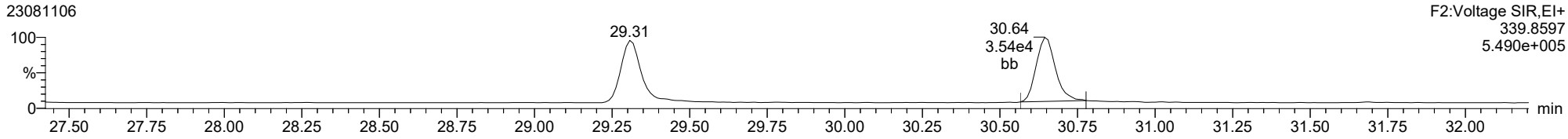


FUNCTION2 HPCDPE

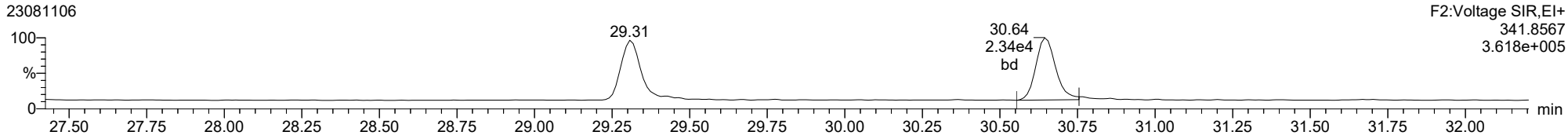


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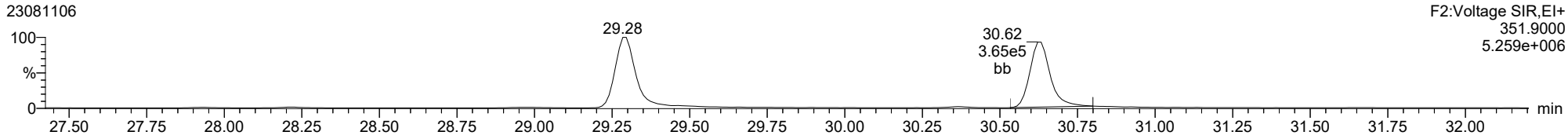
23478-PeCDF



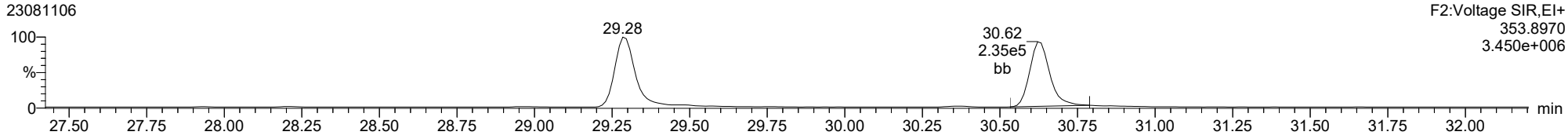
23478-PeCDF



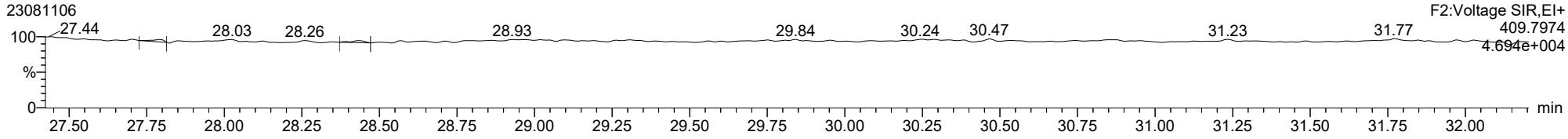
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13C-23478-PeCDF

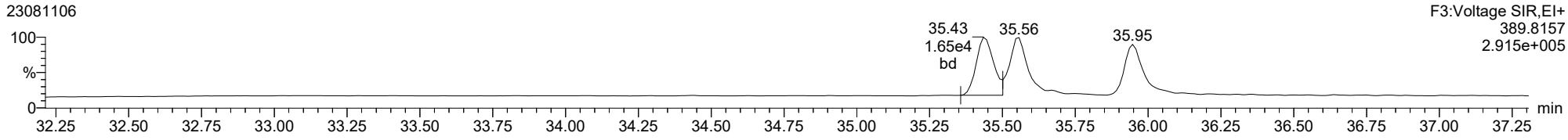


FUNCTION2 HPCDPE

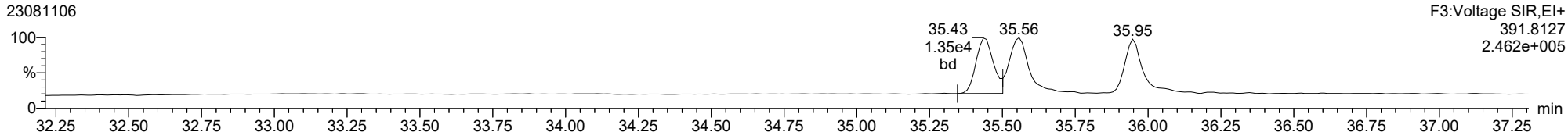


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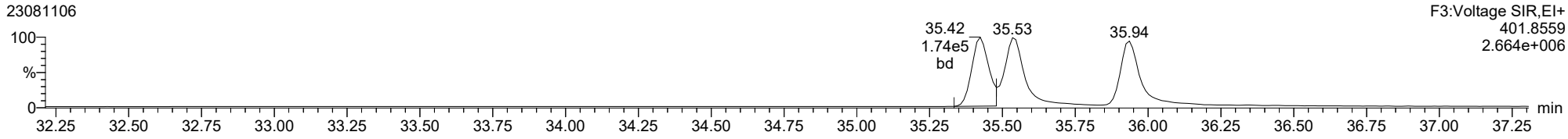
123478-HxCDD



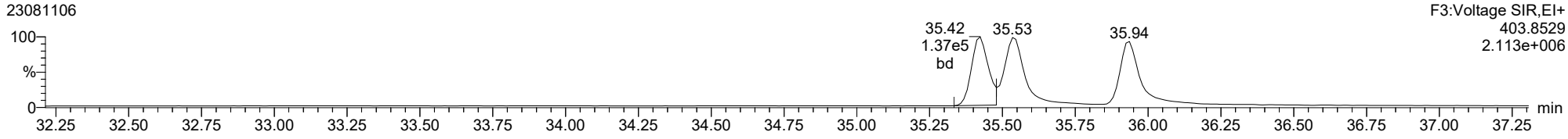
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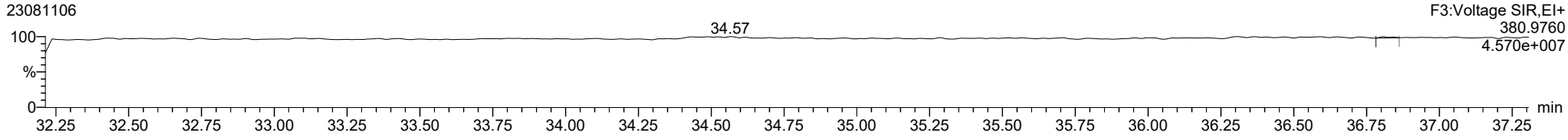
13C-123478-HxCDD



13C-123478-HxCDD



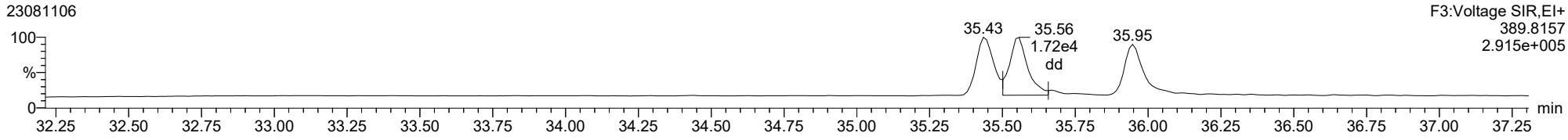
FUNCTION3 PFK



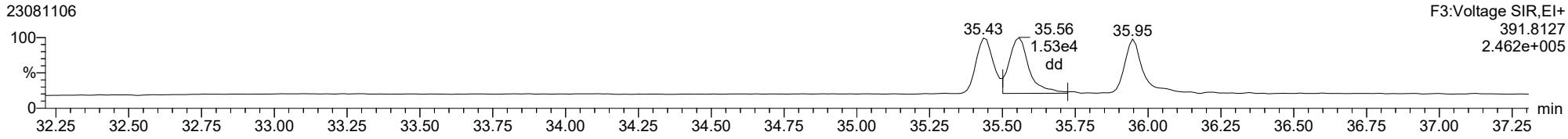
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Printed: Tuesday, August 15, 2023 12:24:22 Pacific Daylight Time

ID: CS2CF, Name: 23081106, Date: 11-Aug-2023, Time: 13:56:53, Conditions: AUTOSPEC01, User: pk

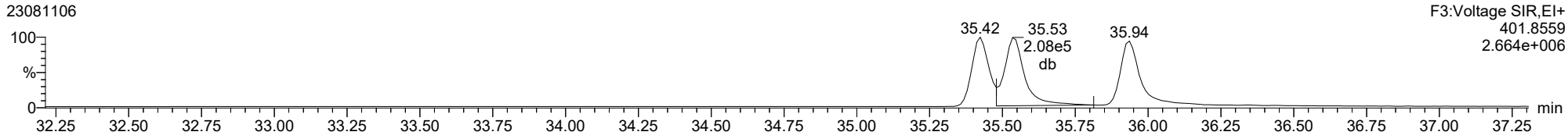
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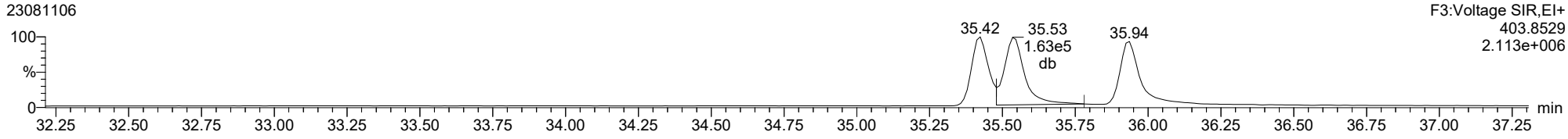
123678-HxCDD



13C-123678-HxCDD



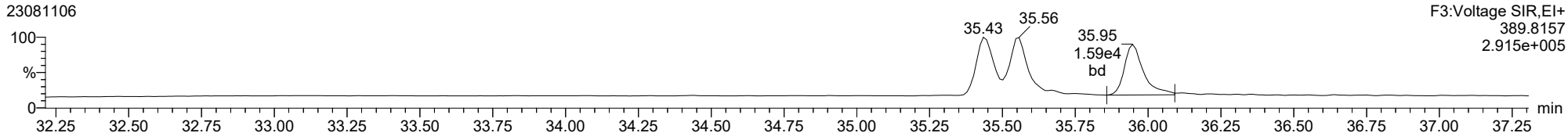
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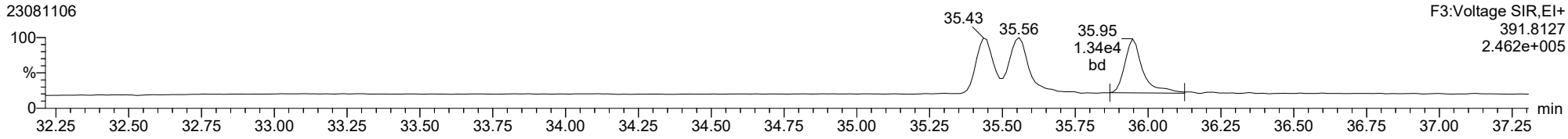
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ID: CS2CF, Name: 23081106, Date: 11-Aug-2023, Time: 13:56:53, Conditions: AUTOSPEC01, User: pk

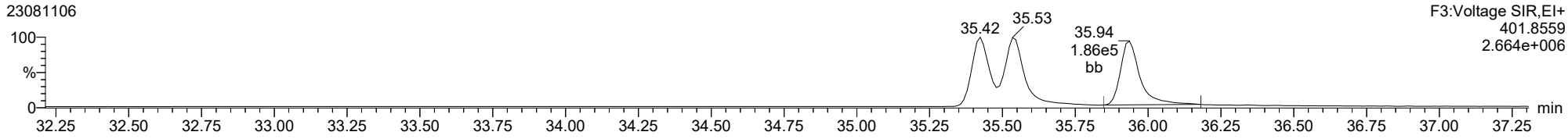
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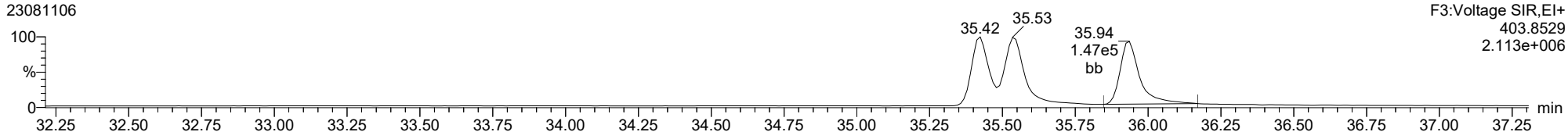
123789-HxCDD



13C-123789-HxCDD

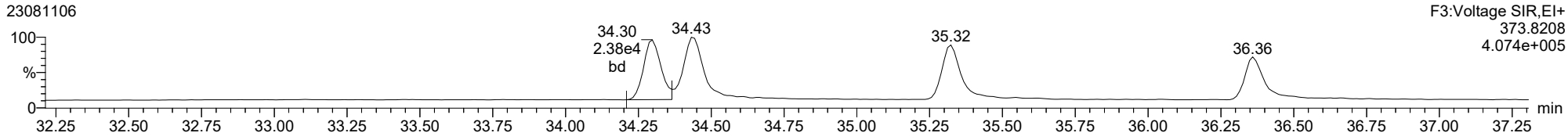


13C-123789-HxCDD

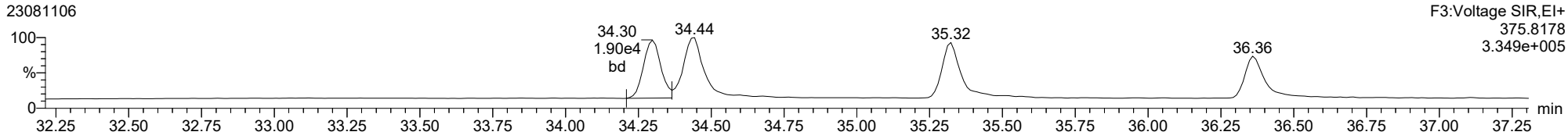


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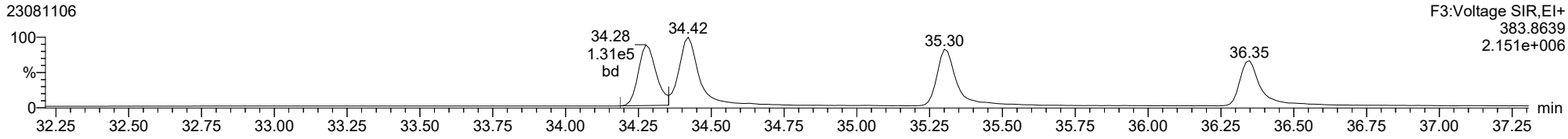
123478-HxCDF



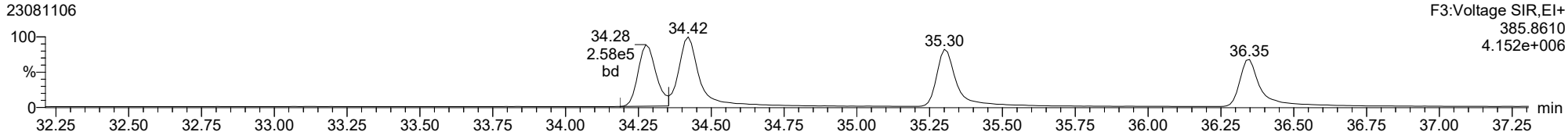
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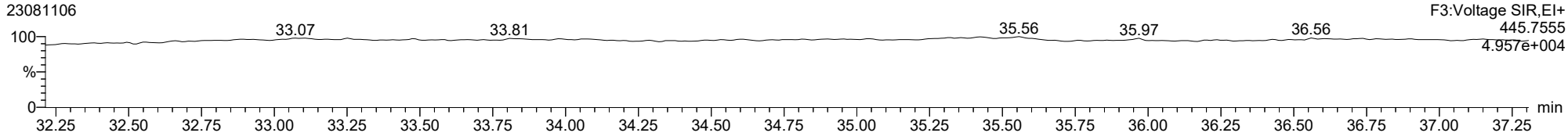
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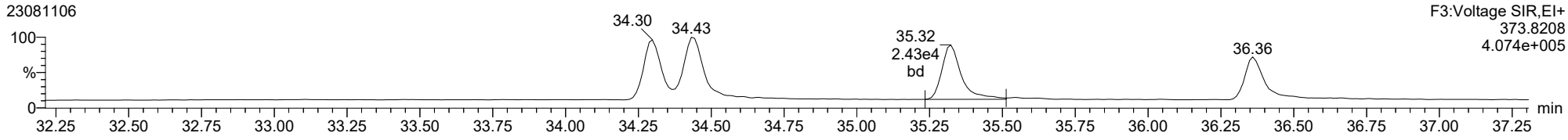


FUNCTION3 OCDPE

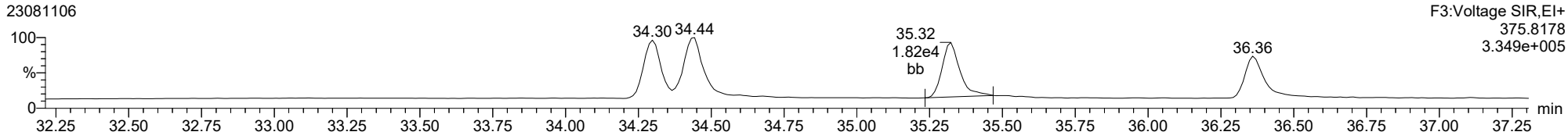


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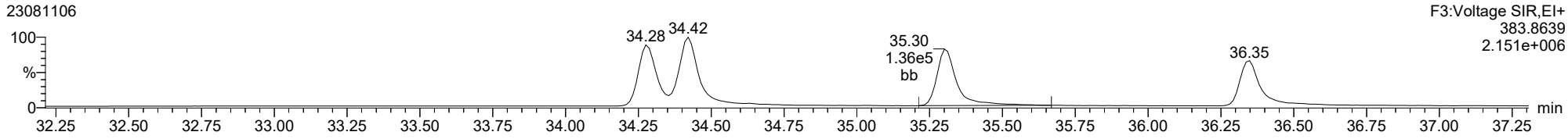
234678-HxCDF



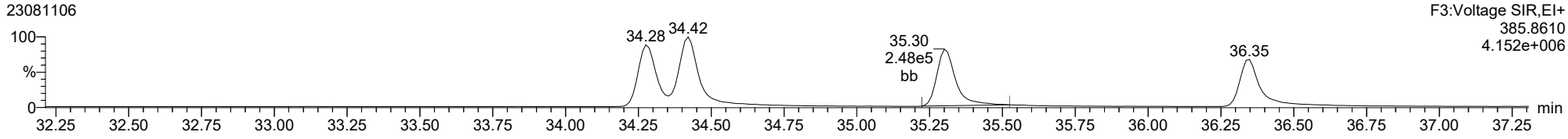
234678-HxCDF



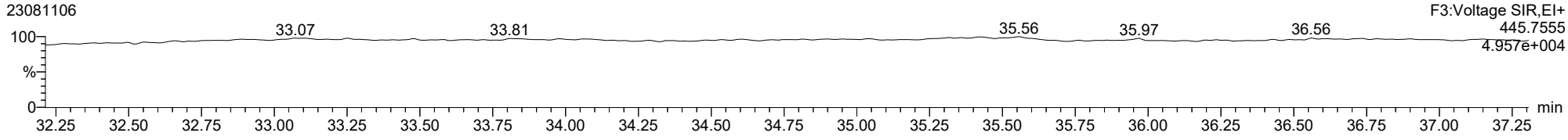
13C-234678-HxCDF



13C-234678-HxCDF

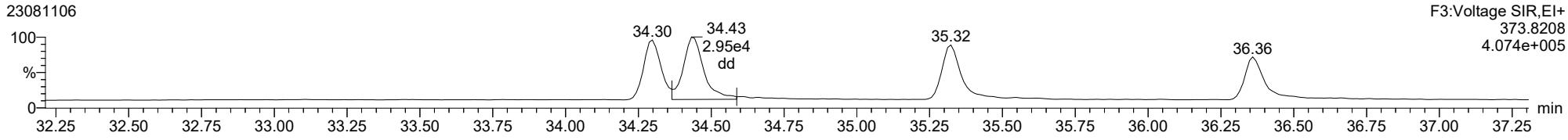


FUNCTION3 OCDPE

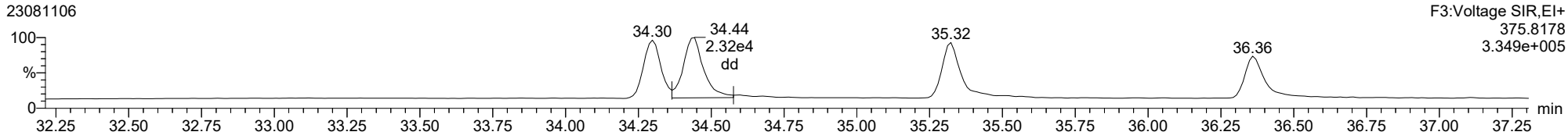


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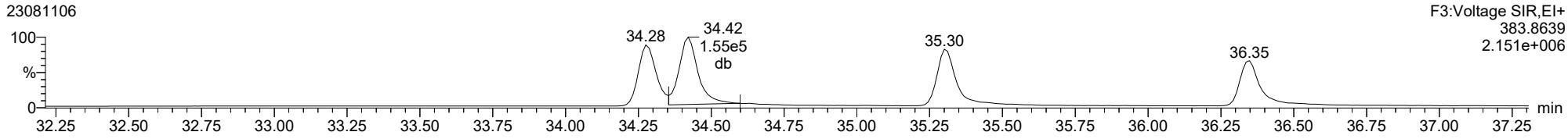
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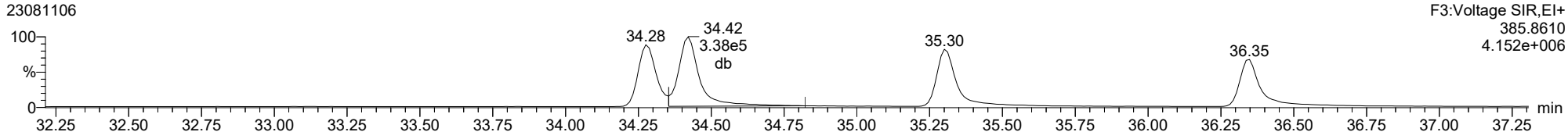
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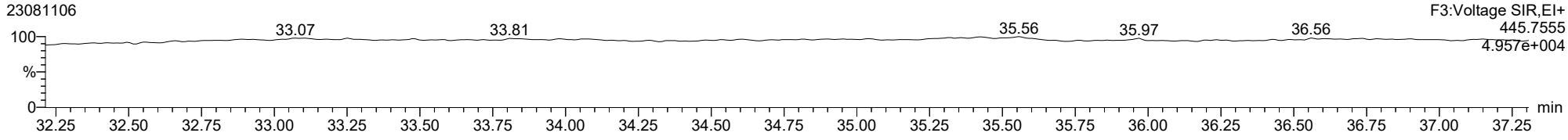
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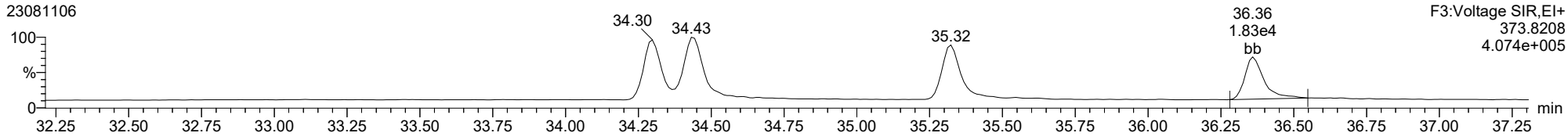


FUNCTION3 OCDPE

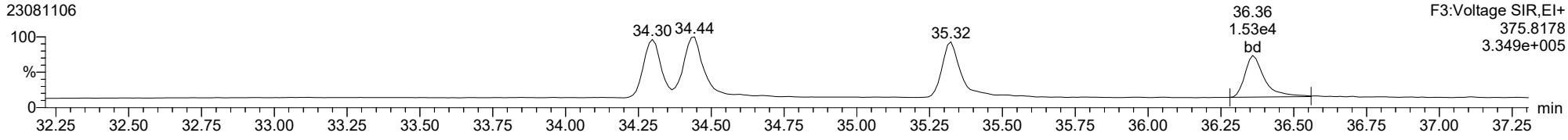


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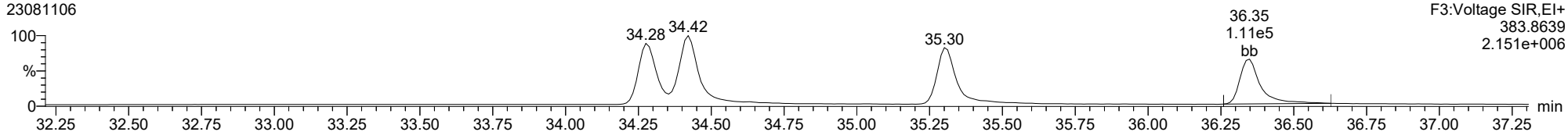
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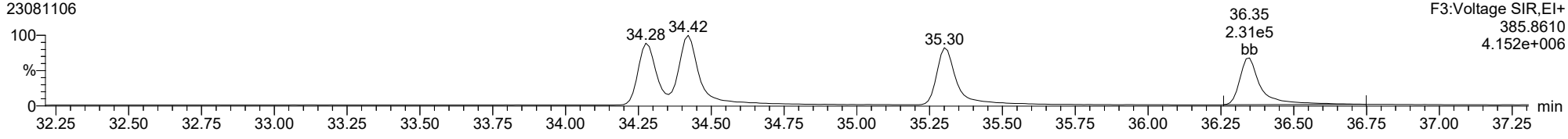
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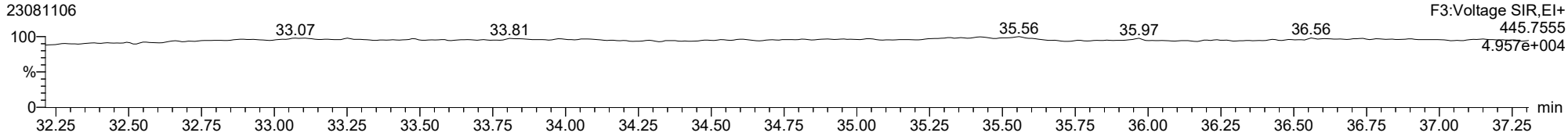
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13C-123789-HxCDF

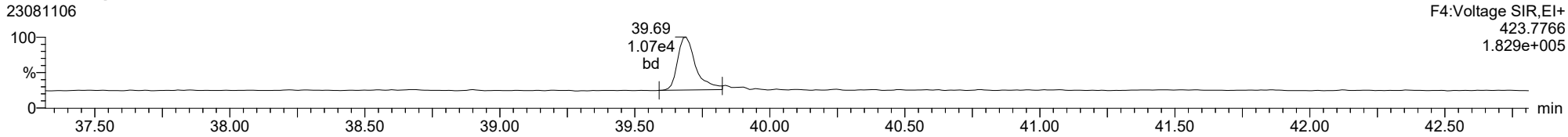


FUNCTION3 OCDPE

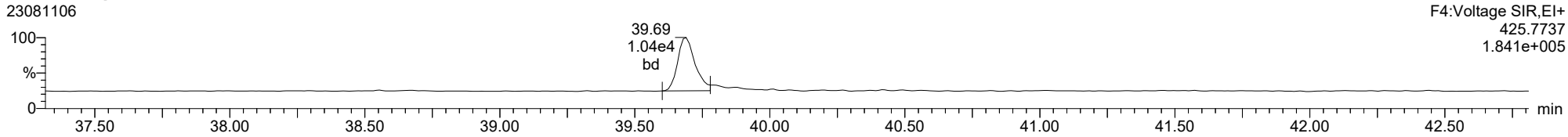


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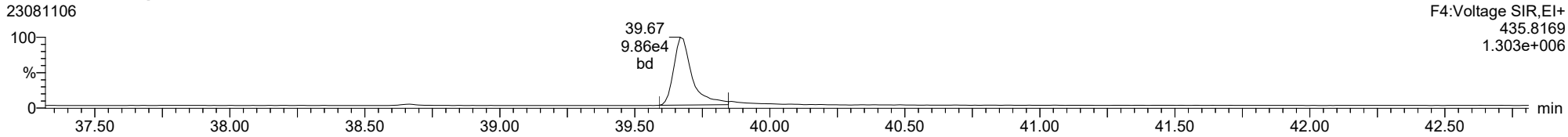
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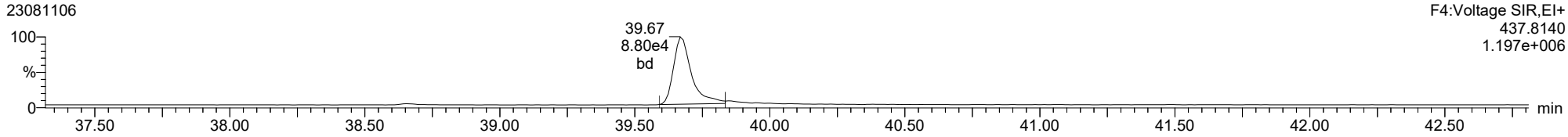
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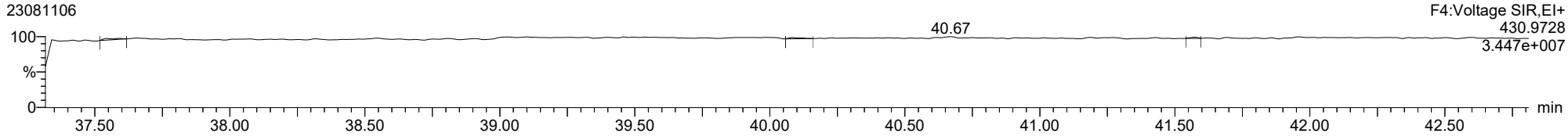
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13C-1234678-HpCDD

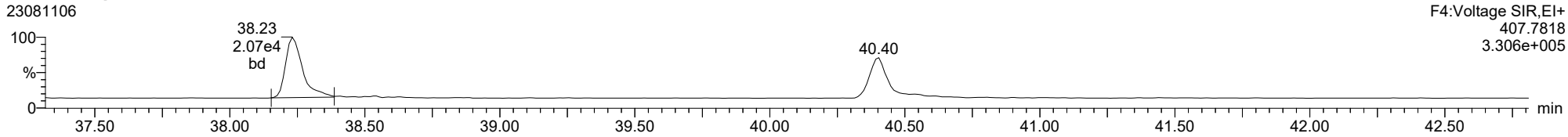


FUNCTION4 PFK

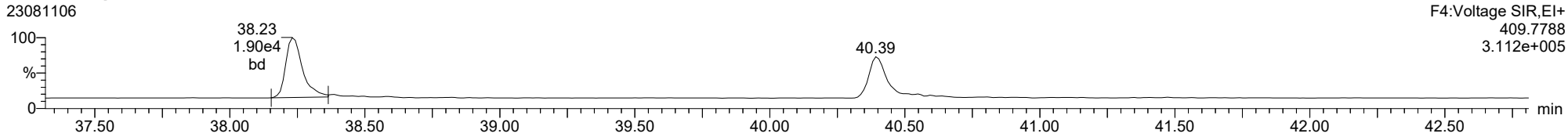


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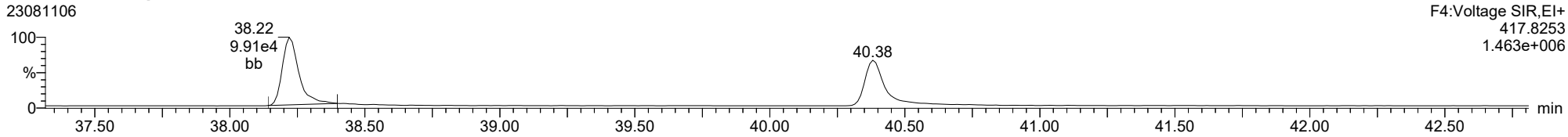
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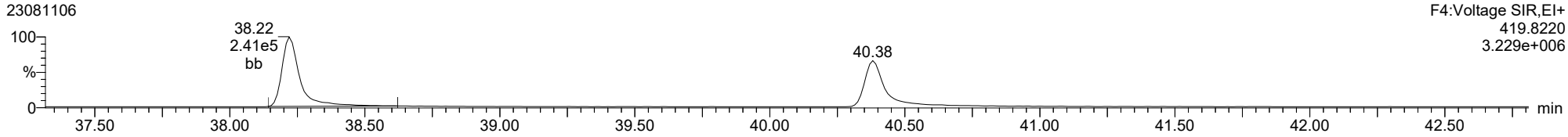
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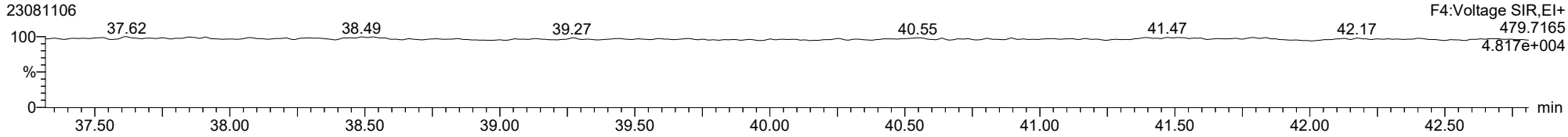
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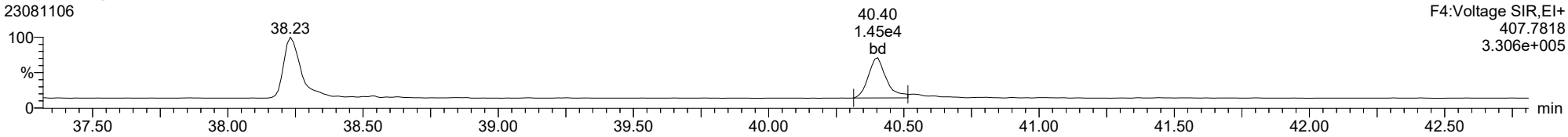


FUNCTION4 NCDPE

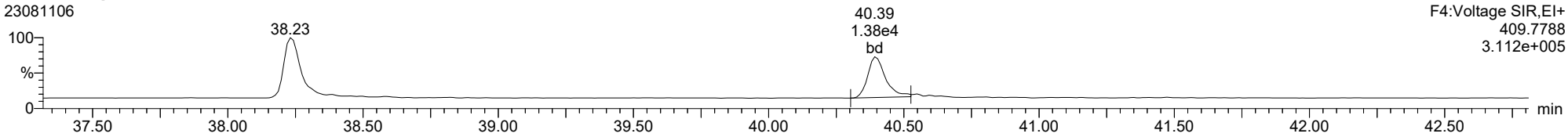


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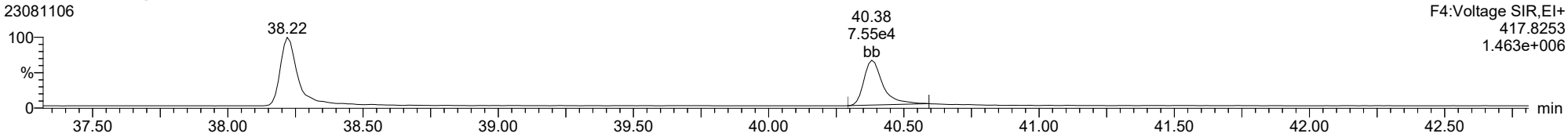
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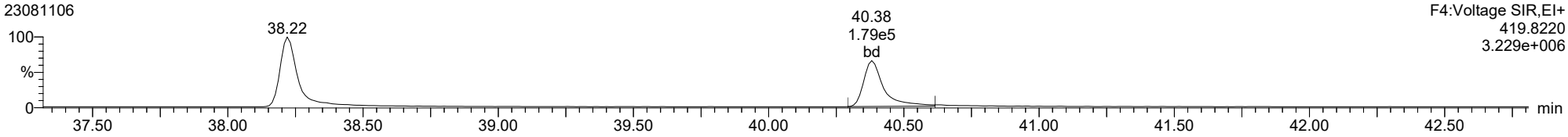
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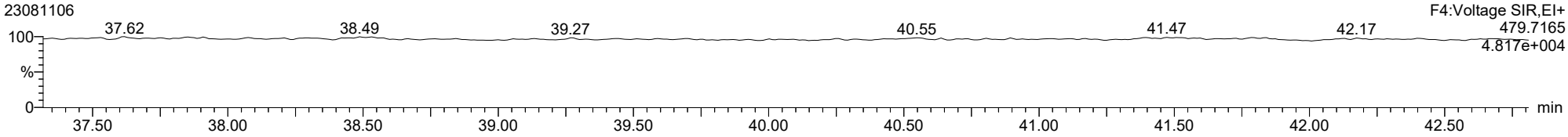
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13C-1234789-HpCDF

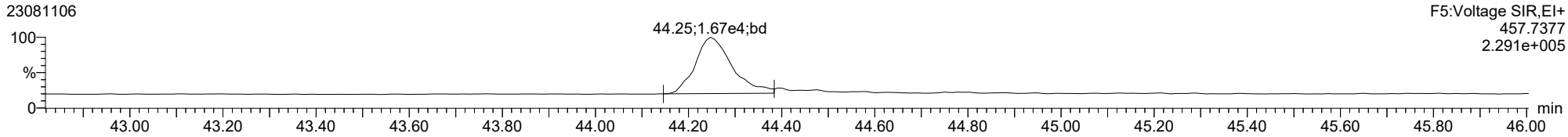


FUNCTION4 NCDPE

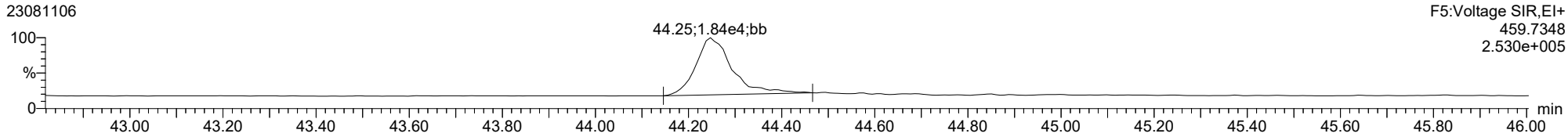


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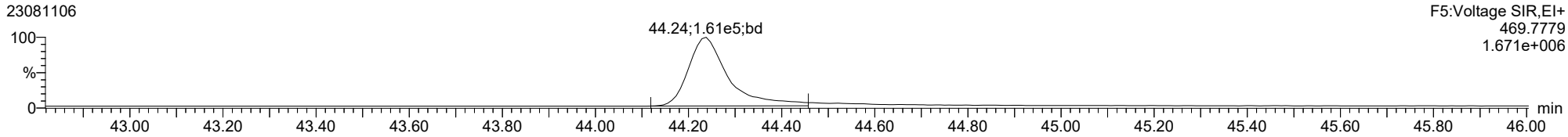
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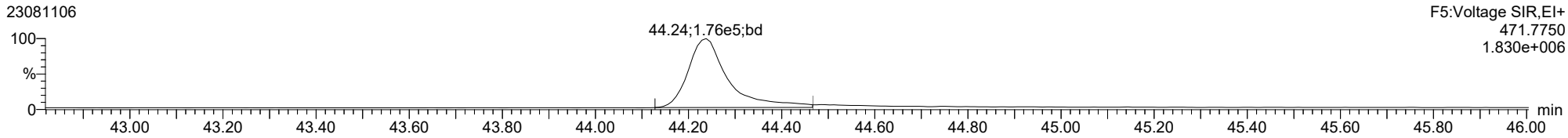
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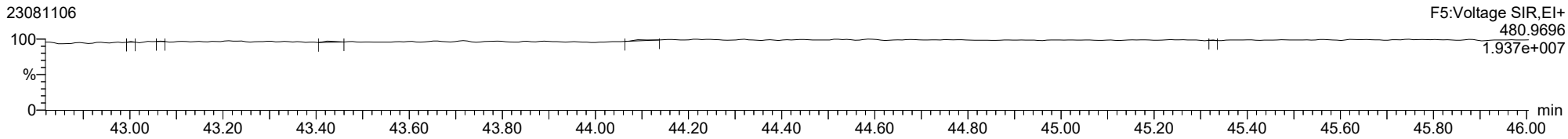
13C-OCDD



13C-OCDD



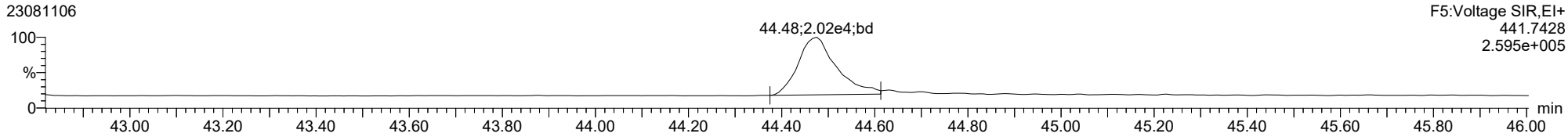
FUNCTION5 PFK



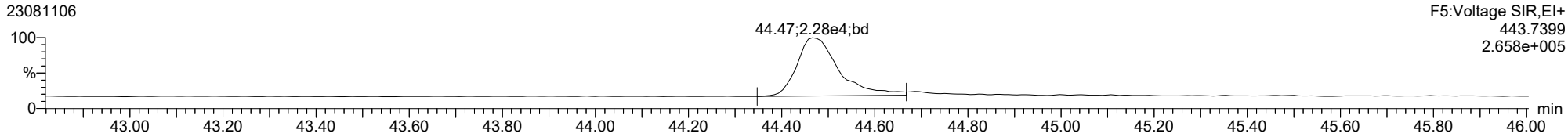
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Printed: Tuesday, August 15, 2023 12:24:22 Pacific Daylight Time

ID: CS2CF, Name: 23081106, Date: 11-Aug-2023, Time: 13:56:53, Conditions: AUTOSPEC01, User: pk

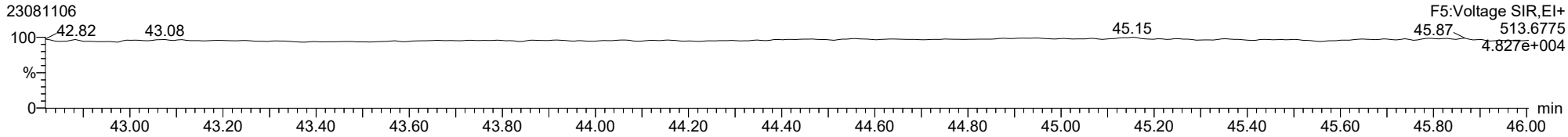
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OCDF

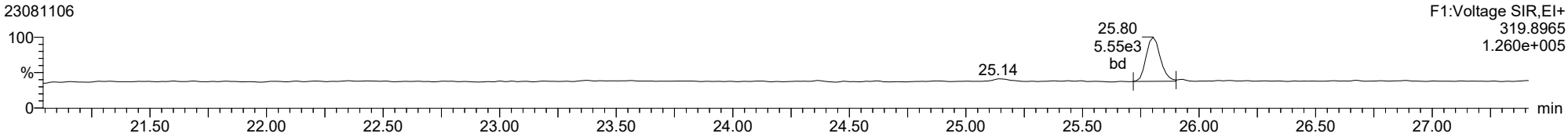


FUNCTION5 DCDPE

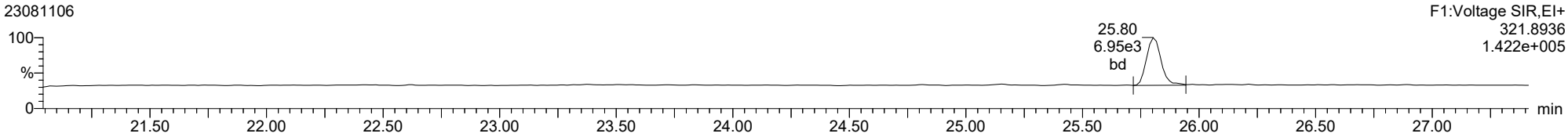


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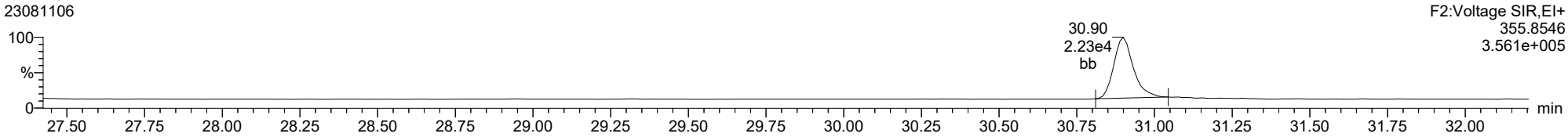
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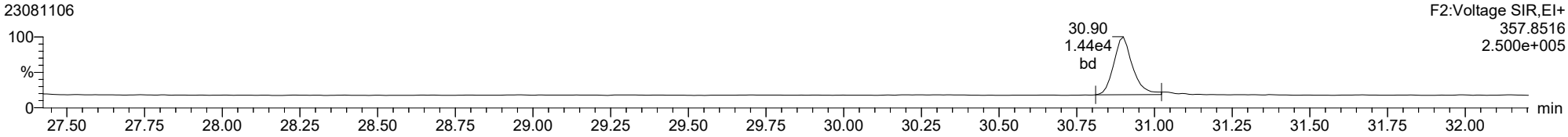
Total-tetradioxins



Total-pentadioxins

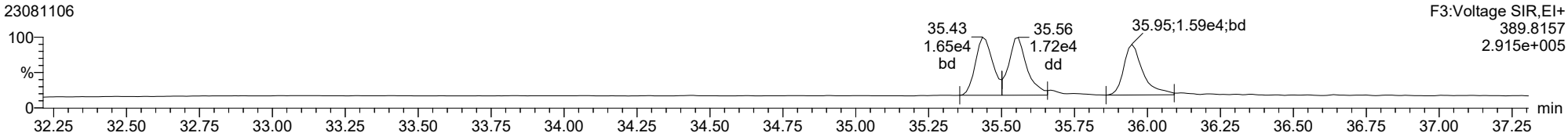


Total-pentadioxins

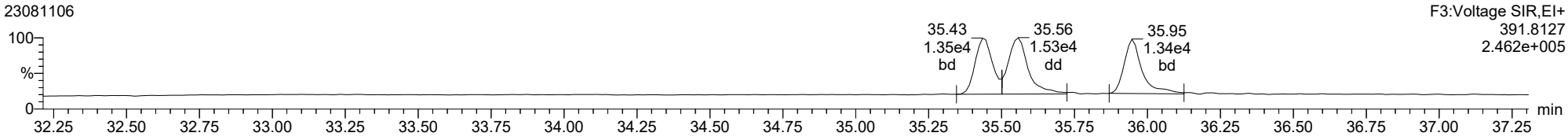


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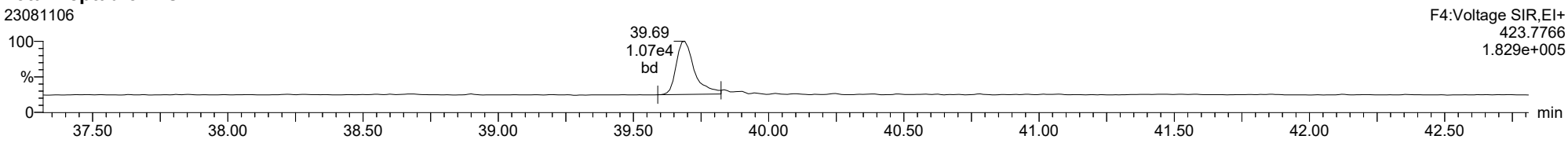
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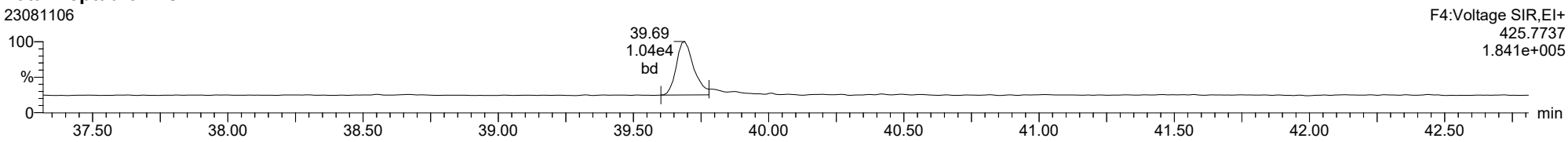
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Total-heptadioxins

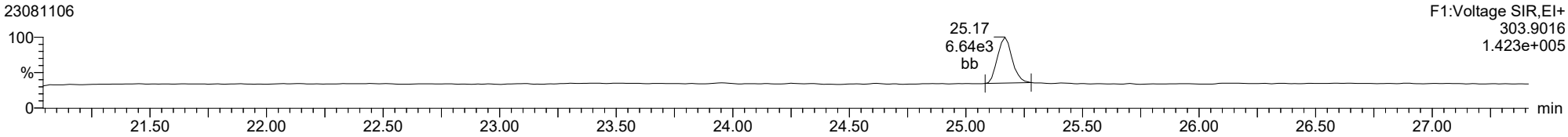


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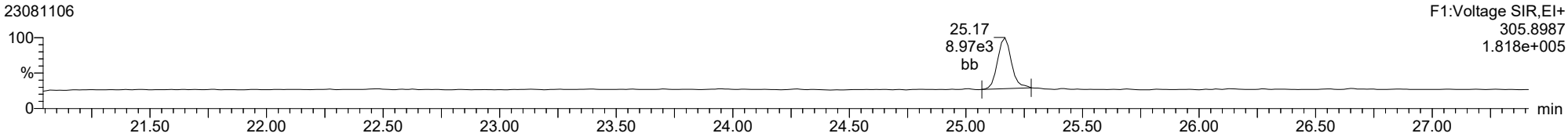


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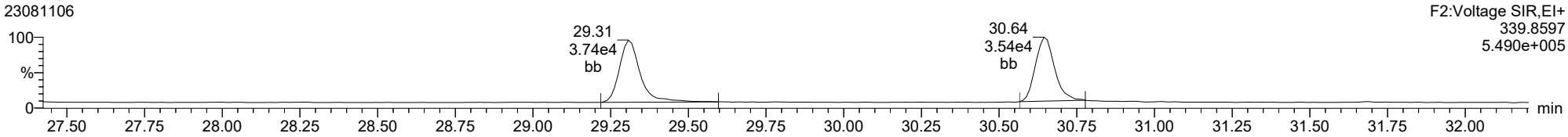
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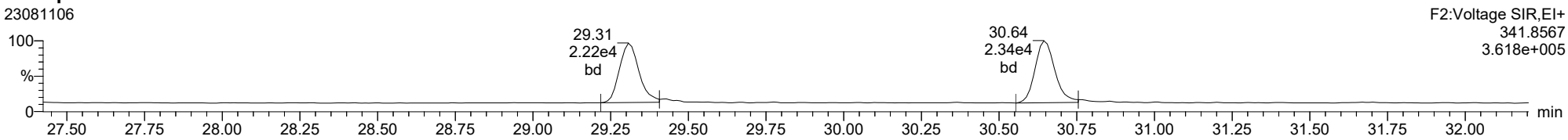
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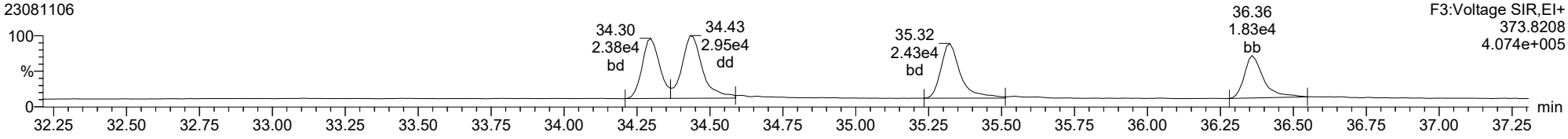


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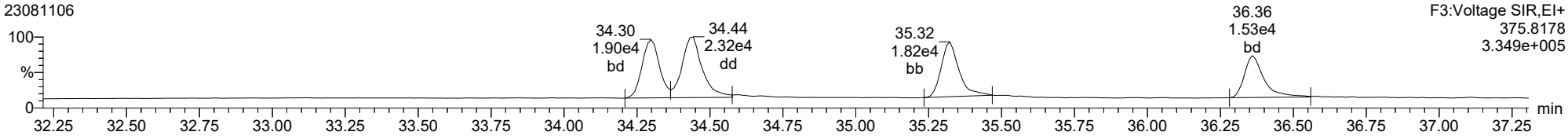


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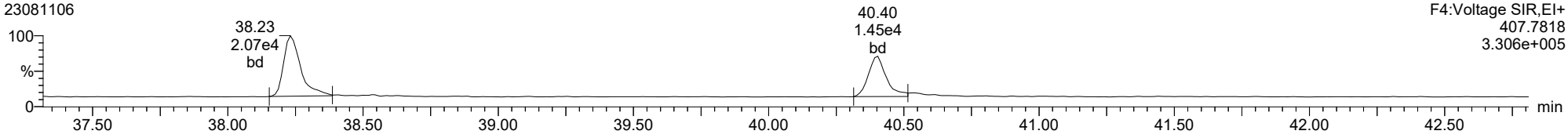
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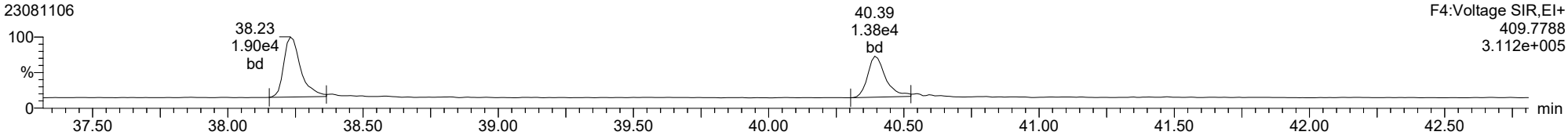
Total-hexafurans



Total-heptafurans



Total-heptafurans



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Printed: Tuesday, August 15, 2023 12:24:35 Pacific Daylight Time

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ID: CS3CF, Name: 23081107, Date: 11-Aug-2023, Time: 14:52:57, 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	25.153	1.001	3.950e4	4.814e4	0.903	0.820	0.770	873	1493	5.76e5	7.02e5	660.2	470.0	NO	bb	bb	9.917
12378-PeCDF	29.296	1.001	2.038e5	1.306e5	0.923	1.560	1.550	2701	2600	2.84e6	1.82e6	1052.5	698.6	NO	bb	bb	50.247
23478-PeCDF	30.633	1.001	2.084e5	1.355e5	0.991	1.538	1.550	2701	2600	2.94e6	1.88e6	1090.3	724.9	NO	bb	bb	50.195
123478-HxCDF	34.287	1.001	1.471e5	1.155e5	1.128	1.273	1.240	2156	1968	2.16e6	1.67e6	999.7	847.7	NO	bd	bd	48.019
234678-HxCDF	35.312	1.001	1.397e5	1.124e5	1.081	1.242	1.240	2156	1968	1.96e6	1.53e6	909.5	778.6	NO	bb	bb	48.560
123678-HxCDF	34.421	1.000	1.708e5	1.326e5	1.032	1.288	1.240	2156	1968	2.22e6	1.77e6	1031.8	901.1	NO	db	db	49.502
123789-HxCDF	36.348	1.000	1.152e5	9.214e4	0.988	1.250	1.240	2156	1968	1.55e6	1.22e6	720.9	619.7	NO	bb	bb	49.981
1234678-HpCDF	38.220	1.000	1.266e5	1.232e5	1.164	1.028	1.050	2236	2527	1.73e6	1.70e6	772.6	672.1	NO	bd	bd	48.307
1234789-HpCDF	40.381	1.000	9.773e4	8.439e4	1.104	1.158	1.050	2236	2527	1.18e6	1.09e6	527.4	431.6	NO	bd	bb	51.965
OCDF	44.457	1.005	1.439e5	1.668e5	1.130	0.863	0.890	3053	2200	1.51e6	1.65e6	496.2	748.3	NO	bd	bd	97.728
2378-TCDD	25.788	1.001	3.416e4	4.089e4	1.243	0.835	0.770	867	861	4.83e5	5.94e5	557.1	689.8	NO	db	bb	9.423
12378-PeCDD	30.878	1.000	1.444e5	9.272e4	1.150	1.557	1.550	1474	1776	2.00e6	1.26e6	1355.0	710.8	NO	bb	bb	51.023
123478-HxCDD	35.424	1.000	1.045e5	8.370e4	0.960	1.248	1.240	2064	1909	1.64e6	1.31e6	794.5	688.4	NO	bd	bd	46.802
123678-HxCDD	35.535	1.000	1.368e5	1.058e5	0.883	1.293	1.240	2064	1909	1.73e6	1.40e6	836.6	732.4	NO	db	db	52.231
123789-HxCDD	35.936	1.012	1.075e5	9.200e4	0.804	1.169	1.240	2064	1909	1.46e6	1.18e6	706.7	615.7	NO	bb	bd	52.545
1234678-HpCDD	39.668	1.000	8.606e4	8.097e4	1.200	1.063	1.050	1598	1550	1.09e6	1.03e6	679.9	666.2	NO	bd	bd	49.362
OCDD	44.238	1.000	1.310e5	1.474e5	1.059	0.889	0.890	2537	2205	1.35e6	1.50e6	533.8	680.4	NO	bd	bd	93.510
13C-2378-TCDF	25.139	1.007	4.359e5	5.426e5	1.835	0.803	0.770	1414	1242	6.17e6	7.67e6	4364.7	6173.2	NO	bb	bb	96.581
13C-12378-PeCDF	29.274	1.173	4.378e5	2.830e5	1.377	1.547	1.550	3103	2166	6.17e6	3.98e6	1989.0	1837.3	NO	bb	bb	94.871
13C-23478-PeCDF	30.610	1.227	4.199e5	2.715e5	1.301	1.547	1.550	3103	2166	5.81e6	3.79e6	1871.2	1752.0	NO	bb	bb	96.264
13C-123478-HxCDF	34.265	0.954	1.623e5	3.225e5	1.091	0.503	0.510	1940	1819	2.28e6	4.56e6	1177.0	2508.0	NO	bd	bd	103.242
13C-123678-HxCDF	34.410	0.958	1.881e5	4.055e5	1.340	0.464	0.510	1940	1819	2.45e6	4.92e6	1263.9	2702.9	NO	db	dd	102.899
13C-234678-HxCDF	35.290	0.983	1.605e5	3.196e5	1.093	0.502	0.510	1940	1819	2.11e6	4.12e6	1086.3	2264.8	NO	bd	bb	101.993
13C-123789-HxCDF	36.337	1.012	1.422e5	2.778e5	0.952	0.512	0.510	1940	1819	1.72e6	3.42e6	888.9	1878.1	NO	bd	bb	102.534
13C-1234678-HpCDF	38.209	1.064	1.341e5	3.102e5	0.985	0.432	0.440	2232	3004	1.84e6	4.12e6	826.4	1371.4	NO	bd	bd	104.805
13C-1234789-HpCDF	40.370	1.124	1.014e5	2.161e5	0.756	0.469	0.440	2232	3004	1.20e6	2.70e6	536.5	900.2	NO	bd	bb	97.601
13C-1234-TCDD	24.955	0.000	2.441e5	3.079e5	1.000	0.793	0.770	1284	927	3.72e6	4.66e6	2895.0	5027.7	NO	bb	bb	100.000
13C-2378-TCDD	25.774	1.033	2.818e5	3.589e5	1.110	0.785	0.770	1284	927	3.93e6	5.00e6	3063.6	5390.0	NO	bb	bb	104.622
13C-12378-PeCDD	30.867	1.237	2.486e5	1.554e5	0.754	1.600	1.550	1606	1291	3.49e6	2.16e6	2172.2	1676.1	NO	bb	bb	97.124
13C-123478-HxCDD	35.412	0.986	2.333e5	1.855e5	0.960	1.258	1.240	2335	1654	3.56e6	2.79e6	1524.6	1684.4	NO	bd	bd	101.353
13C-123678-HxCDD	35.524	0.989	2.914e5	2.348e5	1.159	1.241	1.240	2335	1654	3.67e6	3.00e6	1571.1	1811.5	NO	db	db	105.436
13C-1234678-HpCDD	39.657	1.104	1.504e5	1.316e5	0.629	1.143	1.050	1322	1098	1.89e6	1.73e6	1430.1	1574.5	NO	bd	bb	104.130
13C-OCDD	44.219	1.231	2.700e5	2.925e5	0.635	0.923	0.890	2095	2668	2.66e6	2.85e6	1270.5	1068.4	NO	bd	bd	205.741
13C-123789-HxCDD	35.914	0.000	2.377e5	1.927e5	1.000	1.234	1.240	2335	1654	3.19e6	2.58e6	1365.8	1558.0	NO	bb	bb	100.000
37CL-2378-TCDD	25.788	1.033	6.351e4		1.157			931		9.35e5		1004.8			bb		9.941

Dataset: T:\Autospec\Processed Data Batch\230811ICIH.qld
Last Altered: Saturday, August 12, 2023 10:45:18 Pacific Daylight Time
Printed: Tuesday, August 15, 2023 12:24:35 Pacific Daylight Time

ID: CS3CF, Name: 23081107, Date: 11-Aug-2023, Time: 14:52:57, 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	21.664	0.862	4.983e4	6.469e4	1.170	0.770	0.770	873	1493	7.90e5	1.00e6	904.1	670.7	NO	bb	bb	10.000
1289-TCDF	26.636	1.060	3.514e4	4.772e4	0.847	0.736	0.770	873	1493	4.94e5	6.43e5	565.8	430.8	NO	db	db	10.000
13468-PECDF	26.495	0.905	2.671e5	1.802e5	1.241	1.482	1.550	728	832	3.87e6	2.64e6	5321.4	3168.6	NO	bb	bb	50.000
12389-PECDF	31.658	1.081	1.897e5	1.273e5	0.880	1.490	1.550	2701	2600	2.48e6	1.60e6	916.9	617.2	NO	bb	bb	50.000
123468-HXCDF	32.593	0.951	1.625e5	1.297e5	1.206	1.252	1.240	2156	1968	2.24e6	1.79e6	1039.7	910.7	NO	bb	bb	50.000
1368-TCDD	22.935	0.890	3.442e4	4.124e4	1.181	0.835	0.770	867	861	5.40e5	6.51e5	623.2	756.9	NO	bb	bb	10.000
1289-TCDD	26.382	1.024	2.831e4	3.339e4	0.963	0.848	0.770	867	861	3.83e5	4.79e5	442.0	556.7	NO	bb	bb	10.000
12479-PECDD	28.182	0.913	2.672e5	1.705e5	2.166	1.567	1.550	1474	1776	2.50e6	1.55e6	1692.5	875.4	NO	bb	bb	50.000
12389-PECDD	31.279	1.013	1.628e5	1.051e5	1.326	1.549	1.550	1474	1776	2.18e6	1.42e6	1481.5	799.1	NO	bb	bb	50.000
124679-HXCDD	33.385	0.943	1.240e5	1.119e5	1.127	1.108	1.240	2064	1909	1.71e6	1.40e6	829.1	734.3	NO	bb	bd	50.000
1234679-HPCDD	38.666	0.975	8.959e4	9.414e4	1.303	0.952	1.050	1598	1550	1.33e6	1.31e6	833.2	845.1	NO	bb	MM	50.000
Total-tetrafurans			1.249e5		0.973			873		1.87e6							30.041
Total-penta1			2.671e5					728		3.87e6							50.000
Total-pentafurans			6.376e5		0.931			2701		8.77e6							159.187
Total-hexafurans			7.351e5		1.087			2156		1.01e7							246.062
Total-heptafurans			2.244e5		1.134			2236		2.91e6							100.272
Total-Furans			2.133e6		1.053			873		2.91e7							683.290
Total-tetradioxins			1.636e5		1.129			867		2.16e6							49.715
Total-pentadioxins			5.744e5		1.548			1474		6.68e6							151.023
Total-hexadioxins			4.728e5		0.943			2064		6.54e6							201.577
Total-heptadioxins			1.756e5		1.251			1598		2.42e6							99.362
Total-Dioxins			1.517e6		1.182			867		1.91e7							595.187
Total-TEQ			3.650e6					867		4.82e7							1278.478
FUNCTION1 PFK			1.576e6					595063		2.59e7							
FUNCTION2 PFK			1.622e5					281424		5.13e6							0.000
FUNCTION3 PFK			6.816e4					308943		1.50e6							0.000
FUNCTION4 PFK			1.483e6					342383		2.05e7							
FUNCTION5 PFK			2.231e5					155278		7.98e6							
FUNCTION1 HXCD...			9.737e2					478		1.12e4							0.000
FUNCTION1 HPCD...																	
FUNCTION2 HPCD...			5.383e2					679		9.82e3							0.000
FUNCTION3 OCDPE			8.571e2					439		1.41e4							0.000
FUNCTION4 NCDPE			3.213e2					631		3.18e3							0.000
FUNCTION5 DCDPE			1.396e2					581		1.95e3							0.000

Method: T:\Autospec\Methods\Dioxin230810.mdb 11 Aug 2023 22:18:32
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 10:45:18

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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	27.02	9.270e1	1.173e2	0.973	0.79	0.77	2.6	NO	NO	bb	bb	0.022
2	Total-tetrafurans	26.83	7.458e1	1.106e2	0.973	0.67	0.77	2.7	NO	NO	bb	bb	0.019
3	1289-TCDF	26.64	3.514e4	4.772e4	0.847	0.74	0.77	565.8	YES	NO	db	db	10.000
4	Total-tetrafurans	26.54	3.122e2	4.768e2	0.973	0.65	0.77	4.2	YES	NO	bd	bd	0.083
5	2378-TCDF	25.15	3.950e4	4.814e4	0.903	0.82	0.77	660.2	YES	NO	bb	bb	9.917
6	1368-TCDF	21.66	4.983e4	6.469e4	1.170	0.77	0.77	904.1	YES	NO	bb	bb	10.000

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	26.49	2.671e5	1.802e5	1.241	1.48	1.55	5321.4	YES	NO	bb	bb	50.000

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12378-PeCDF	29.30	2.038e5	1.306e5	0.923	1.56	1.55	1052.5	YES	NO	bb	bb	50.247
2	Total-pentafurans	28.15	3.570e4	2.180e4	0.931	1.64	1.55	186.8	YES	NO	bb	bb	8.746
3	12389-PECDF	31.66	1.897e5	1.273e5	0.880	1.49	1.55	916.9	YES	NO	bb	bb	50.000
4	23478-PeCDF	30.63	2.084e5	1.355e5	0.991	1.54	1.55	1090.3	YES	NO	bb	bb	50.195

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123468-HXCDF	32.59	1.625e5	1.297e5	1.206	1.25	1.24	1039.7	YES	NO	bb	bb	50.000
2	123789-HxCDF	36.35	1.152e5	9.214e4	0.988	1.25	1.24	720.9	YES	NO	bb	bb	49.981
3	234678-HxCDF	35.31	1.397e5	1.124e5	1.081	1.24	1.24	909.5	YES	NO	bb	bb	48.560
4	123678-HxCDF	34.42	1.708e5	1.326e5	1.032	1.29	1.24	1031.8	YES	NO	db	db	49.502
5	123478-HxCDF	34.29	1.471e5	1.155e5	1.128	1.27	1.24	999.7	YES	NO	bd	bd	48.019

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	40.38	9.773e4	8.439e4	1.104	1.16	1.05	527.4	YES	NO	bd	bb	51.965
2	1234678-HpCDF	38.22	1.266e5	1.232e5	1.164	1.03	1.05	772.6	YES	NO	bd	bd	48.307

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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	27.02	9.270e1	1.173e2	0.973	0.79	0.77	2.6	NO	NO	bb	bb	0.022
2	Total-tetrafurans	26.83	7.458e1	1.106e2	0.973	0.67	0.77	2.7	NO	NO	bb	bb	0.019
3	1289-TCDF	26.64	3.514e4	4.772e4	0.847	0.74	0.77	565.8	YES	NO	db	db	10.000
4	Total-tetrafurans	26.54	3.122e2	4.768e2	0.973	0.65	0.77	4.2	YES	NO	bd	bd	0.083
5	2378-TCDF	25.15	3.950e4	4.814e4	0.903	0.82	0.77	660.2	YES	NO	bb	bb	9.917
6	1368-TCDF	21.66	4.983e4	6.469e4	1.170	0.77	0.77	904.1	YES	NO	bb	bb	10.000
7	12378-PeCDF	29.30	2.038e5	1.306e5	0.923	1.56	1.55	1052.5	YES	NO	bb	bb	50.247
8	Total-pentafurans	28.15	3.570e4	2.180e4	0.931	1.64	1.55	186.8	YES	NO	bb	bb	8.746
9	123468-HXCDF	32.59	1.625e5	1.297e5	1.206	1.25	1.24	1039.7	YES	NO	bb	bb	50.000
10	12389-PECDF	31.66	1.897e5	1.273e5	0.880	1.49	1.55	916.9	YES	NO	bb	bb	50.000
11	23478-PeCDF	30.63	2.084e5	1.355e5	0.991	1.54	1.55	1090.3	YES	NO	bb	bb	50.195
12	123789-HxCDF	36.35	1.152e5	9.214e4	0.988	1.25	1.24	720.9	YES	NO	bb	bb	49.981
13	234678-HxCDF	35.31	1.397e5	1.124e5	1.081	1.24	1.24	909.5	YES	NO	bb	bb	48.560
14	123678-HxCDF	34.42	1.708e5	1.326e5	1.032	1.29	1.24	1031.8	YES	NO	db	db	49.502
15	123478-HxCDF	34.29	1.471e5	1.155e5	1.128	1.27	1.24	999.7	YES	NO	bd	bd	48.019
16	1234789-HpCDF	40.38	9.773e4	8.439e4	1.104	1.16	1.05	527.4	YES	NO	bd	bb	51.965
17	1234678-HpCDF	38.22	1.266e5	1.232e5	1.164	1.03	1.05	772.6	YES	NO	bd	bd	48.307
18	OCDF	44.46	1.439e5	1.668e5	1.130	0.86	0.89	496.2	YES	NO	bd	bd	97.728
19	13468-PECDF	26.49	2.671e5	1.802e5	1.241	1.48	1.55	5321.4	YES	NO	bb	bb	50.000

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1368-TCDD	22.94	3.442e4	4.124e4	1.181	0.83	0.77	623.2	YES	NO	bb	bb	10.000
2	1289-TCDD	26.38	2.831e4	3.339e4	0.963	0.85	0.77	442.0	YES	NO	bb	bb	10.000
3	2378-TCDD	25.79	3.416e4	4.089e4	1.243	0.84	0.77	557.1	YES	NO	db	bb	9.423
4	Total-tetradioxins	25.46	5.003e4	6.062e4	1.129	0.83	0.77	586.5	YES	NO	bd	bb	15.297
5	Total-tetradioxins	24.97	1.665e4	1.948e4	1.129	0.85	0.77	278.4	YES	NO	bd	bb	4.994

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDD	31.28	1.628e5	1.051e5	1.326	1.55	1.55	1481.5	YES	NO	bb	bb	50.000
2	12378-PeCDD	30.88	1.444e5	9.272e4	1.150	1.56	1.55	1355.0	YES	NO	bb	bb	51.023
3	12479-PECDD	28.18	2.672e5	1.705e5	2.166	1.57	1.55	1692.5	YES	NO	bb	bb	50.000

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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	35.94	1.075e5	9.200e4	0.804	1.17	1.24	706.7	YES	NO	bb	bd	52.545
2	123678-HxCDD	35.53	1.368e5	1.058e5	0.883	1.29	1.24	836.6	YES	NO	db	db	52.231
3	123478-HxCDD	35.42	1.045e5	8.370e4	0.960	1.25	1.24	794.5	YES	NO	bd	bd	46.802
4	124679-HXCDD	33.38	1.240e5	1.119e5	1.127	1.11	1.24	829.1	YES	NO	bb	bd	50.000

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234679-HPCDD	38.67	8.959e4	9.414e4	1.303	0.95	1.05	833.2	YES	NO	bb	MM	50.000
2	1234678-HpCDD	39.67	8.606e4	8.097e4	1.200	1.06	1.05	679.9	YES	NO	bd	bd	49.362

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	22.94	3.442e4	4.124e4	1.181	0.83	0.77	623.2	YES	NO	bb	bb	10.000
2	1289-TCDD	26.38	2.831e4	3.339e4	0.963	0.85	0.77	442.0	YES	NO	bb	bb	10.000
3	2378-TCDD	25.79	3.416e4	4.089e4	1.243	0.84	0.77	557.1	YES	NO	db	bb	9.423
4	Total-tetradioxins	25.46	5.003e4	6.062e4	1.129	0.83	0.77	586.5	YES	NO	bd	bb	15.297
5	Total-tetradioxins	24.97	1.665e4	1.948e4	1.129	0.85	0.77	278.4	YES	NO	bd	bb	4.994
6	12389-PECDD	31.28	1.628e5	1.051e5	1.326	1.55	1.55	1481.5	YES	NO	bb	bb	50.000
7	12378-PeCDD	30.88	1.444e5	9.272e4	1.150	1.56	1.55	1355.0	YES	NO	bb	bb	51.023
8	12479-PECDD	28.18	2.672e5	1.705e5	2.166	1.57	1.55	1692.5	YES	NO	bb	bb	50.000
9	123789-HxCDD	35.94	1.075e5	9.200e4	0.804	1.17	1.24	706.7	YES	NO	bb	bd	52.545
10	123678-HxCDD	35.53	1.368e5	1.058e5	0.883	1.29	1.24	836.6	YES	NO	db	db	52.231
11	123478-HxCDD	35.42	1.045e5	8.370e4	0.960	1.25	1.24	794.5	YES	NO	bd	bd	46.802
12	124679-HXCDD	33.38	1.240e5	1.119e5	1.127	1.11	1.24	829.1	YES	NO	bb	bd	50.000
13	1234679-HPCDD	38.67	8.959e4	9.414e4	1.303	0.95	1.05	833.2	YES	NO	bb	MM	50.000
14	1234678-HpCDD	39.67	8.606e4	8.097e4	1.200	1.06	1.05	679.9	YES	NO	bd	bd	49.362
15	OCDD	44.24	1.310e5	1.474e5	1.059	0.89	0.89	533.8	YES	NO	bd	bd	93.510

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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	27.02	9.270e1	1.173e2	0.973	0.79	0.77	2.6	NO	NO	bb	bb	0.022
2	Total-tetrafurans	26.83	7.458e1	1.106e2	0.973	0.67	0.77	2.7	NO	NO	bb	bb	0.019
3	1289-TCDF	26.64	3.514e4	4.772e4	0.847	0.74	0.77	565.8	YES	NO	db	db	10.000
4	Total-tetrafurans	26.54	3.122e2	4.768e2	0.973	0.65	0.77	4.2	YES	NO	bd	bd	0.083
5	2378-TCDF	25.15	3.950e4	4.814e4	0.903	0.82	0.77	660.2	YES	NO	bb	bb	9.917
6	1368-TCDF	21.66	4.983e4	6.469e4	1.170	0.77	0.77	904.1	YES	NO	bb	bb	10.000
7	12378-PeCDF	29.30	2.038e5	1.306e5	0.923	1.56	1.55	1052.5	YES	NO	bb	bb	50.247
8	Total-pentafurans	28.15	3.570e4	2.180e4	0.931	1.64	1.55	186.8	YES	NO	bb	bb	8.746
9	123468-HXCDF	32.59	1.625e5	1.297e5	1.206	1.25	1.24	1039.7	YES	NO	bb	bb	50.000
10	12389-PECDF	31.66	1.897e5	1.273e5	0.880	1.49	1.55	916.9	YES	NO	bb	bb	50.000
11	23478-PeCDF	30.63	2.084e5	1.355e5	0.991	1.54	1.55	1090.3	YES	NO	bb	bb	50.195
12	123789-HxCDF	36.35	1.152e5	9.214e4	0.988	1.25	1.24	720.9	YES	NO	bb	bb	49.981
13	234678-HxCDF	35.31	1.397e5	1.124e5	1.081	1.24	1.24	909.5	YES	NO	bb	bb	48.560
14	123678-HxCDF	34.42	1.708e5	1.326e5	1.032	1.29	1.24	1031.8	YES	NO	db	db	49.502
15	123478-HxCDF	34.29	1.471e5	1.155e5	1.128	1.27	1.24	999.7	YES	NO	bd	bd	48.019
16	1234789-HpCDF	40.38	9.773e4	8.439e4	1.104	1.16	1.05	527.4	YES	NO	bd	bb	51.965
17	1234678-HpCDF	38.22	1.266e5	1.232e5	1.164	1.03	1.05	772.6	YES	NO	bd	bd	48.307
18	OCDF	44.46	1.439e5	1.668e5	1.130	0.86	0.89	496.2	YES	NO	bd	bd	97.728
19	13468-PECDF	26.49	2.671e5	1.802e5	1.241	1.48	1.55	5321.4	YES	NO	bb	bb	50.000
20	1368-TCDD	22.94	3.442e4	4.124e4	1.181	0.83	0.77	623.2	YES	NO	bb	bb	10.000
21	1289-TCDD	26.38	2.831e4	3.339e4	0.963	0.85	0.77	442.0	YES	NO	bb	bb	10.000
22	2378-TCDD	25.79	3.416e4	4.089e4	1.243	0.84	0.77	557.1	YES	NO	db	bb	9.423
23	Total-tetradioxins	25.46	5.003e4	6.062e4	1.129	0.83	0.77	586.5	YES	NO	bd	bb	15.297
24	Total-tetradioxins	24.97	1.665e4	1.948e4	1.129	0.85	0.77	278.4	YES	NO	bd	bb	4.994
25	12389-PECDD	31.28	1.628e5	1.051e5	1.326	1.55	1.55	1481.5	YES	NO	bb	bb	50.000
26	12378-PeCDD	30.88	1.444e5	9.272e4	1.150	1.56	1.55	1355.0	YES	NO	bb	bb	51.023
27	12479-PECDD	28.18	2.672e5	1.705e5	2.166	1.57	1.55	1692.5	YES	NO	bb	bb	50.000
28	123789-HxCDD	35.94	1.075e5	9.200e4	0.804	1.17	1.24	706.7	YES	NO	bb	bd	52.545
29	123678-HxCDD	35.53	1.368e5	1.058e5	0.883	1.29	1.24	836.6	YES	NO	db	db	52.231
30	123478-HxCDD	35.42	1.045e5	8.370e4	0.960	1.25	1.24	794.5	YES	NO	bd	bd	46.802
31	124679-HXCDD	33.38	1.240e5	1.119e5	1.127	1.11	1.24	829.1	YES	NO	bb	bd	50.000
32	1234679-HPCDD	38.67	8.959e4	9.414e4	1.303	0.95	1.05	833.2	YES	NO	bb	MM	50.000
33	1234678-HpCDD	39.67	8.606e4	8.097e4	1.200	1.06	1.05	679.9	YES	NO	bd	bd	49.362
34	OCDD	44.24	1.310e5	1.474e5	1.059	0.89	0.89	533.8	YES	NO	bd	bd	93.510

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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	21.88	2.287e4					1.1	NO		bb		
2	FUNCTION1 PFK	21.21	1.199e5					3.0	YES		db		
3	FUNCTION1 PFK	21.11	2.695e5					5.2	YES		bd		
4	FUNCTION1 PFK	24.73	3.950e4					1.7	NO		bb		
5	FUNCTION1 PFK	24.47	6.758e4					1.8	NO		bb		
6	FUNCTION1 PFK	24.01	3.389e4					1.4	NO		db		
7	FUNCTION1 PFK	23.95	6.931e4					2.0	NO		dd		
8	FUNCTION1 PFK	23.88	1.455e4					0.7	NO		bd		
9	FUNCTION1 PFK	23.68	2.296e4					1.0	NO		bb		
10	FUNCTION1 PFK	23.49	7.036e3					0.5	NO		bb		
11	FUNCTION1 PFK	23.43	2.558e4					1.1	NO		bb		
12	FUNCTION1 PFK	23.32	2.769e4					1.1	NO		bb		
13	FUNCTION1 PFK	23.08	4.539e4					1.3	NO		bb		
14	FUNCTION1 PFK	22.99	3.202e4					1.0	NO		bb		
15	FUNCTION1 PFK	22.84	2.617e4					0.9	NO		bb		
16	FUNCTION1 PFK	22.67	3.895e3					0.5	NO		bb		
17	FUNCTION1 PFK	22.53	5.474e4					1.0	NO		bb		
18	FUNCTION1 PFK	22.16	1.513e5					2.3	NO		bb		
19	FUNCTION1 PFK	21.95	2.770e4					1.0	NO		bb		
20	FUNCTION1 PFK	27.07	9.015e3					0.4	NO		bb		
21	FUNCTION1 PFK	26.93	4.581e4					1.0	NO		db		
22	FUNCTION1 PFK	26.85	1.433e4					0.8	NO		dd		
23	FUNCTION1 PFK	26.78	1.200e5					2.0	NO		bd		
24	FUNCTION1 PFK	26.28	1.708e4					0.9	NO		bb		
25	FUNCTION1 PFK	26.17	1.425e4					0.8	NO		bb		
26	FUNCTION1 PFK	25.97	8.325e4					1.9	NO		db		
27	FUNCTION1 PFK	25.89	5.720e4					1.6	NO		dd		
28	FUNCTION1 PFK	25.80	3.276e4					1.4	NO		dd		
29	FUNCTION1 PFK	25.76	1.712e4					1.1	NO		bd		
30	FUNCTION1 PFK	25.58	2.001e4					1.1	NO		bb		
31	FUNCTION1 PFK	25.00	8.396e4					1.9	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	29.20	6.101e3					0.9	NO		bb		0.000
2	FUNCTION2 PFK	27.72	7.538e3					1.2	NO		bb		0.000
3	FUNCTION2 PFK	27.56	7.896e3					1.5	NO		bb		0.000
4	FUNCTION2 PFK	31.61	1.118e4					1.8	NO		bb		0.000
5	FUNCTION2 PFK	31.49	2.001e3					0.6	NO		bb		0.000
6	FUNCTION2 PFK	31.33	4.573e3					0.8	NO		bb		0.000
7	FUNCTION2 PFK	30.61	3.430e3					0.7	NO		bb		0.000
8	FUNCTION2 PFK	30.38	1.955e4					1.9	NO		db		0.000
9	FUNCTION2 PFK	30.32	2.856e4					2.4	NO		dd		0.000
10	FUNCTION2 PFK	30.25	4.260e4					2.7	NO		bd		0.000
11	FUNCTION2 PFK	30.02	6.437e3					1.2	NO		bb		0.000
12	FUNCTION2 PFK	29.72	8.785e3					1.2	NO		bb		0.000
13	FUNCTION2 PFK	29.64	1.359e4					1.3	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	34.03	6.816e4					4.9	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	37.55	4.035e5					9.6	YES		dd		
2	FUNCTION4 PFK	37.43	4.089e5					13.1	YES		dd		
3	FUNCTION4 PFK	37.37	3.953e5					15.9	YES		bd		
4	FUNCTION4 PFK	41.72	1.671e4					1.8	NO		bb		
5	FUNCTION4 PFK	41.06	1.961e3					0.5	NO		bb		
6	FUNCTION4 PFK	40.73	2.014e4					1.4	NO		db		
7	FUNCTION4 PFK	40.63	3.971e4					1.5	NO		bd		
8	FUNCTION4 PFK	40.28	1.671e4					1.7	NO		db		
9	FUNCTION4 PFK	40.24	7.359e3					0.8	NO		bd		
10	FUNCTION4 PFK	40.11	1.431e4					0.8	NO		bb		
11	FUNCTION4 PFK	39.76	1.218e4					1.3	NO		db		
12	FUNCTION4 PFK	39.71	1.469e4					1.6	NO		bd		
13	FUNCTION4 PFK	39.47	2.072e3					0.5	NO		bb		
14	FUNCTION4 PFK	39.26	3.995e3					0.7	NO		bb		
15	FUNCTION4 PFK	38.96	1.705e4					1.3	NO		bb		
16	FUNCTION4 PFK	38.87	1.236e4					1.6	NO		bb		
17	FUNCTION4 PFK	38.20	7.116e3					1.0	NO		bb		
18	FUNCTION4 PFK	38.14	9.317e3					1.1	NO		bb		
19	FUNCTION4 PFK	37.73	8.009e4					3.6	YES		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	44.08	6.313e3					2.2	NO		dd		
2	FUNCTION5 PFK	44.05	1.663e4					2.5	NO		dd		
3	FUNCTION5 PFK	43.97	7.549e3					1.6	NO		dd		
4	FUNCTION5 PFK	43.91	1.172e4					1.7	NO		bd		
5	FUNCTION5 PFK	43.73	5.981e3					1.8	NO		db		
6	FUNCTION5 PFK	43.68	8.401e3					1.9	NO		bd		
7	FUNCTION5 PFK	43.60	6.754e3					1.2	NO		db		
8	FUNCTION5 PFK	43.57	5.515e3					1.5	NO		dd		
9	FUNCTION5 PFK	43.53	3.330e3					1.0	NO		bd		
10	FUNCTION5 PFK	43.39	8.995e3					1.6	NO		db		
11	FUNCTION5 PFK	43.31	1.183e4					2.8	NO		bd		
12	FUNCTION5 PFK	43.26	7.475e3					1.3	NO		bb		
13	FUNCTION5 PFK	43.01	6.561e3					1.5	NO		bb		
14	FUNCTION5 PFK	42.95	1.254e4					3.2	YES		bb		
15	FUNCTION5 PFK	42.88	1.024e4					2.9	NO		bb		
16	FUNCTION5 PFK	45.78	4.070e3					1.1	NO		bb		
17	FUNCTION5 PFK	45.48	1.651e4					1.8	NO		bb		
18	FUNCTION5 PFK	45.43	2.652e3					1.0	NO		bb		
19	FUNCTION5 PFK	45.35	1.162e4					2.3	NO		db		
20	FUNCTION5 PFK	45.27	1.211e3					0.5	NO		bd		
21	FUNCTION5 PFK	45.02	1.216e3					0.5	NO		bb		
22	FUNCTION5 PFK	44.98	5.040e3					1.1	NO		db		
23	FUNCTION5 PFK	44.92	3.169e3					1.2	NO		bd		
24	FUNCTION5 PFK	44.74	8.901e3					1.7	NO		bb		
25	FUNCTION5 PFK	44.64	2.230e3					0.8	NO		bb		
26	FUNCTION5 PFK	44.39	4.221e3					1.4	NO		bb		
27	FUNCTION5 PFK	44.35	6.245e3					2.1	NO		db		
28	FUNCTION5 PFK	44.31	1.675e3					0.8	NO		bd		
29	FUNCTION5 PFK	44.27	3.130e3					1.3	NO		bb		
30	FUNCTION5 PFK	44.17	6.199e3					1.1	NO		db		
31	FUNCTION5 PFK	44.12	7.116e3					1.8	NO		dd		
32	FUNCTION5 PFK	45.96	6.001e3					1.3	NO		bb		
33	FUNCTION5 PFK	45.89	2.093e3					0.9	NO		bb		

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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...	26.30	7.466e1					1.0	NO		bb		0.000
2	FUNCTION1 HXCD...	26.07	1.160e2					3.2	YES		db		0.000
3	FUNCTION1 HXCD...	26.03	8.861e1					3.1	YES		dd		0.000
4	FUNCTION1 HXCD...	25.93	1.189e2					2.9	NO		bd		0.000
5	FUNCTION1 HXCD...	25.77	1.258e2					2.8	NO		bb		0.000
6	FUNCTION1 HXCD...	25.10	1.754e2					3.6	YES		bb		0.000
7	FUNCTION1 HXCD...	24.57	7.378e1					2.0	NO		bb		0.000
8	FUNCTION1 HXCD...	23.85	1.002e2					2.1	NO		bb		0.000
9	FUNCTION1 HXCD...	21.59	1.003e2					2.5	NO		bb		0.000

ETHERS2

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

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	30.18	7.496e1					2.3	NO		db		0.000
2	FUNCTION2 HPCD...	30.08	1.084e2					1.9	NO		bd		0.000
3	FUNCTION2 HPCD...	29.33	7.147e1					2.3	NO		bb		0.000
4	FUNCTION2 HPCD...	31.57	8.584e1					1.8	NO		bb		0.000
5	FUNCTION2 HPCD...	30.48	1.977e2					6.2	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	36.04	1.580e2					4.1	YES		db		0.000
2	FUNCTION3 OCDPE	35.91	2.583e2					6.6	YES		bd		0.000
3	FUNCTION3 OCDPE	35.41	1.273e2					4.3	YES		bb		0.000
4	FUNCTION3 OCDPE	35.18	1.247e2					3.1	YES		bb		0.000
5	FUNCTION3 OCDPE	34.94	1.056e2					10.5	YES		bb		0.000
6	FUNCTION3 OCDPE	34.43	8.328e1					3.7	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	39.67	2.033e2					2.8	NO		bb		0.000
2	FUNCTION4 NCDPE	38.63	1.180e2					2.2	NO		bb		0.000

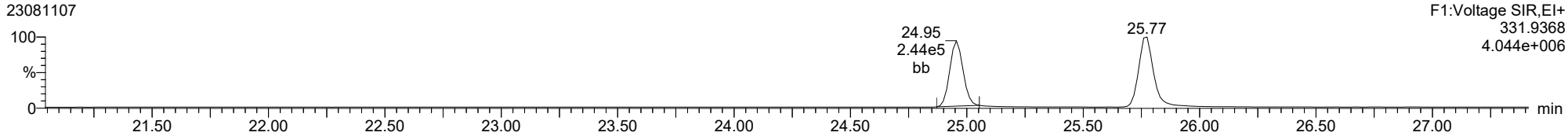
ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	43.93	1.396e2					3.3	YES		bb		0.000

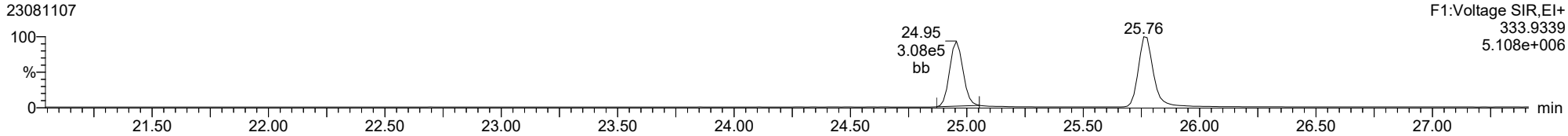
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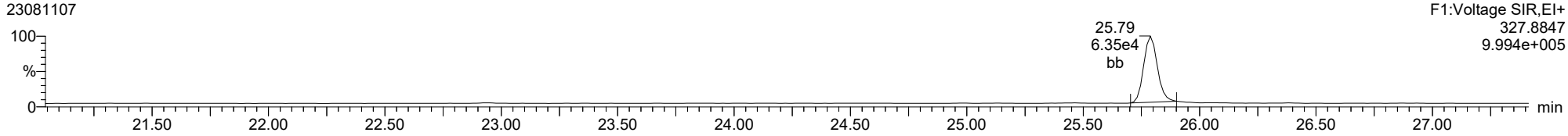
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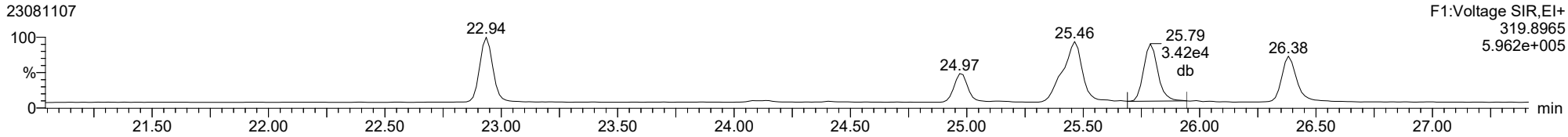


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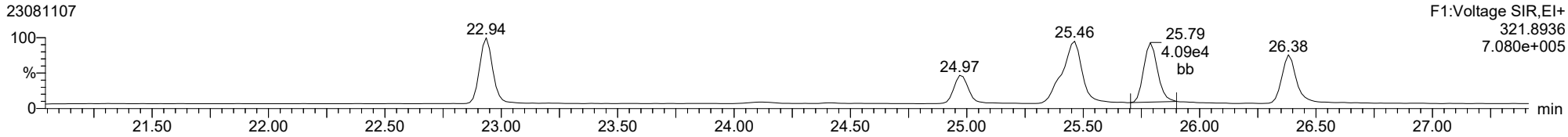


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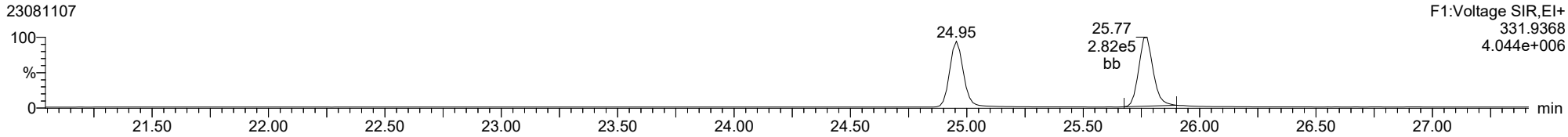
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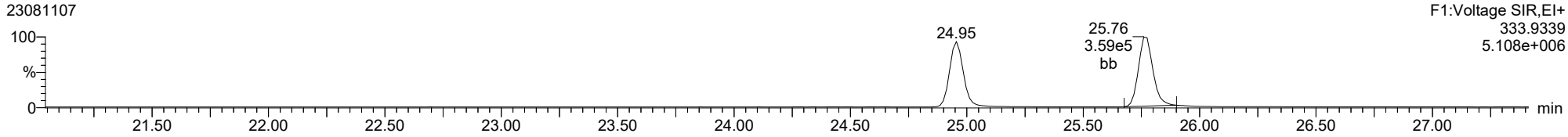
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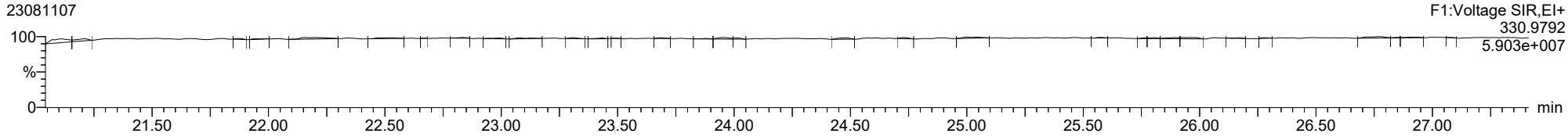
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13C-2378-TCDD

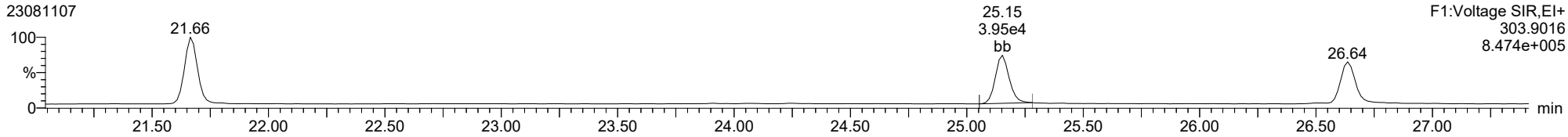


FUNCTION1 PFK

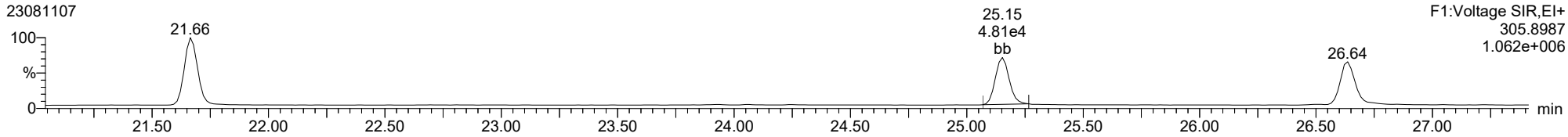


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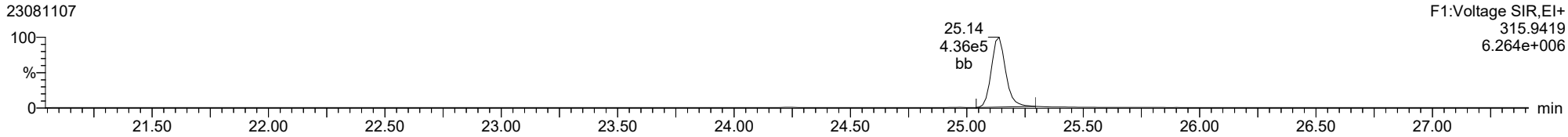
2378-TCDF



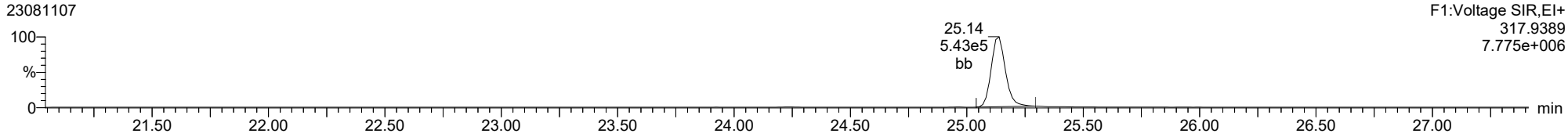
2378-TCDF



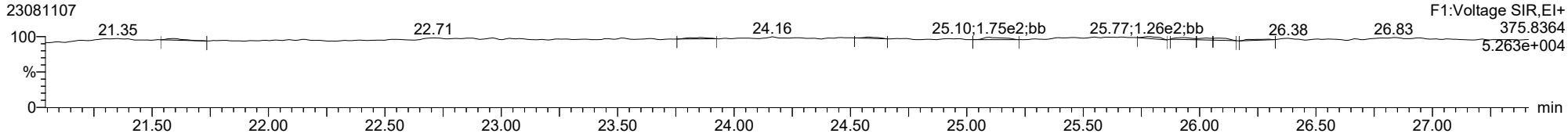
13C-2378-TCDF



13C-2378-TCDF

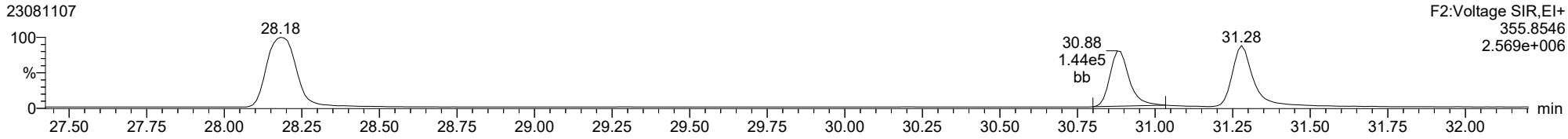


FUNCTION1 HXCDPE

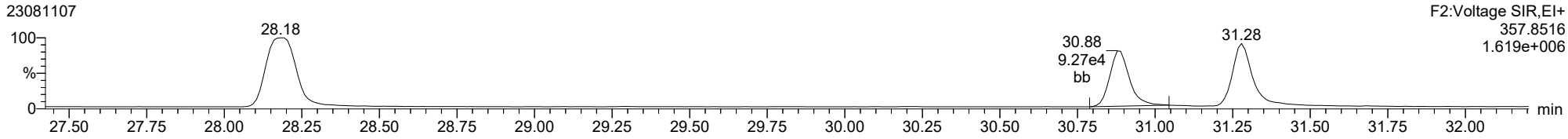


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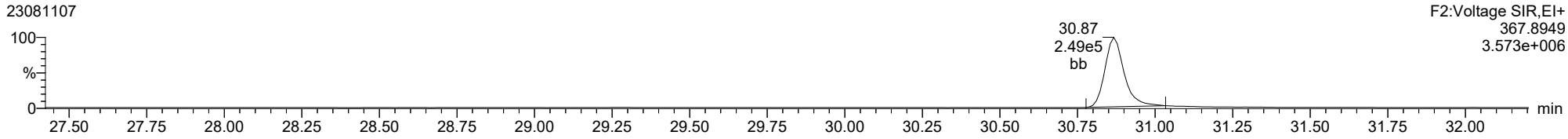
12378-PeCDD



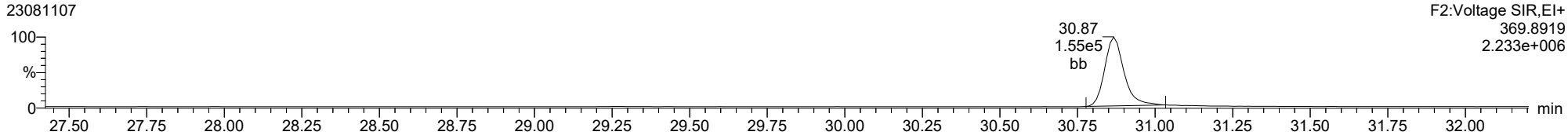
12378-PeCDD



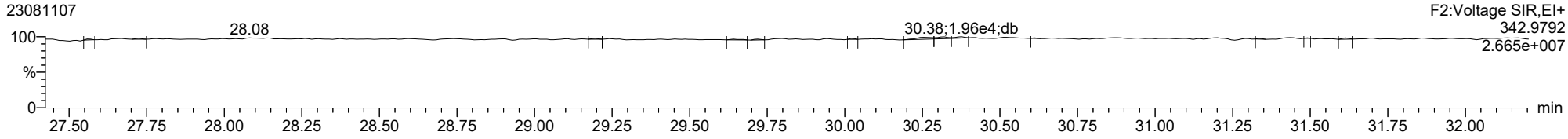
13C-12378-PeCDD



13C-12378-PeCDD

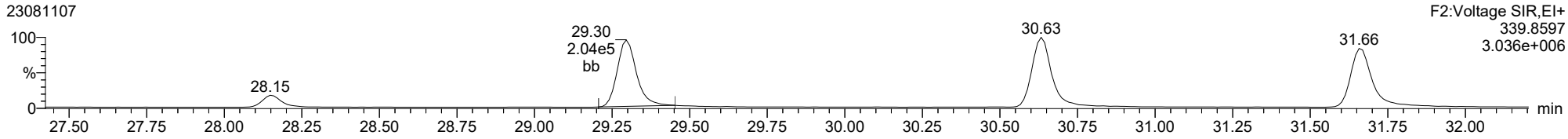


FUNCTION2 PFK

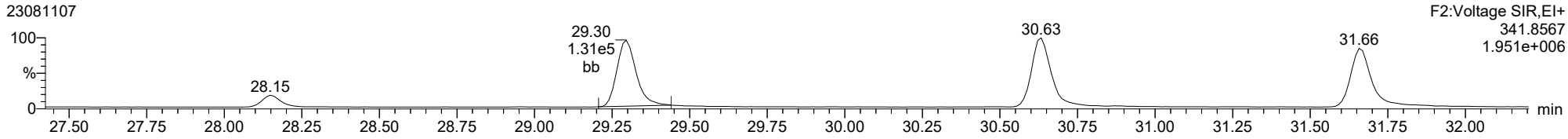


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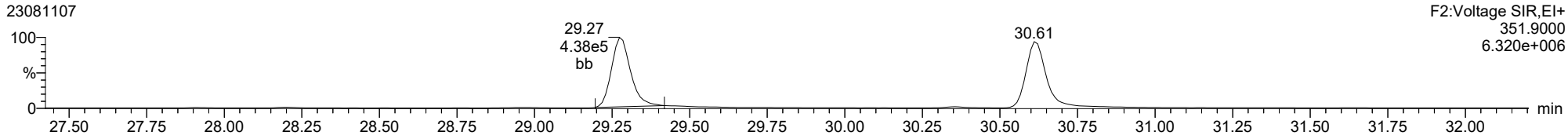
12378-PeCDF



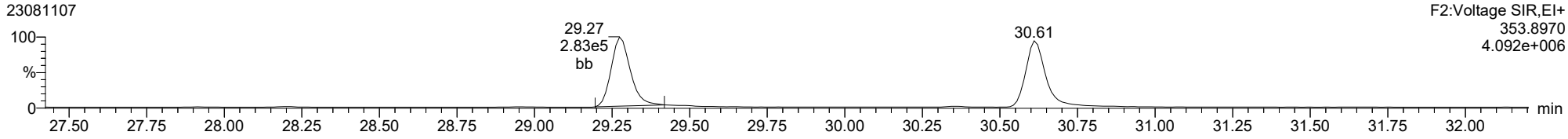
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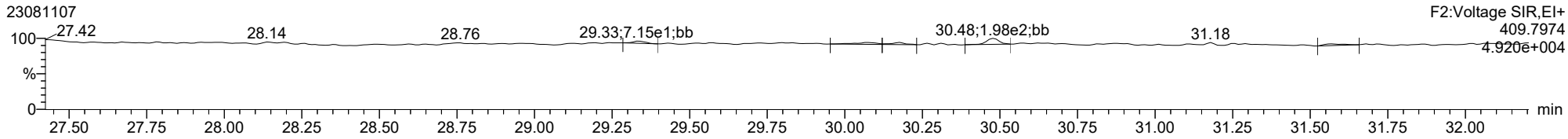
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13C-12378-PeCDF

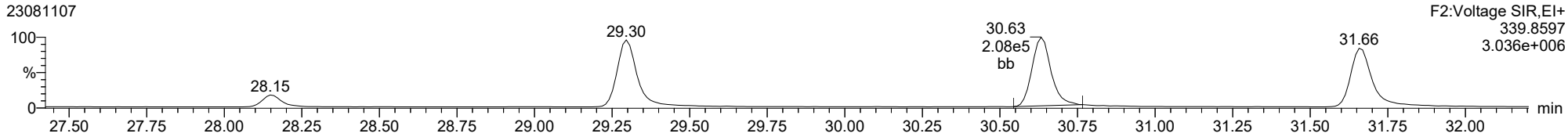


FUNCTION2 HPCDPE

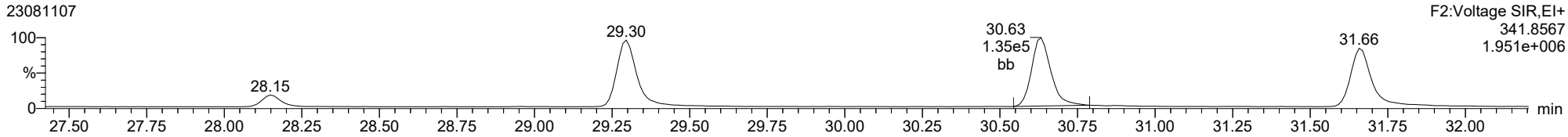


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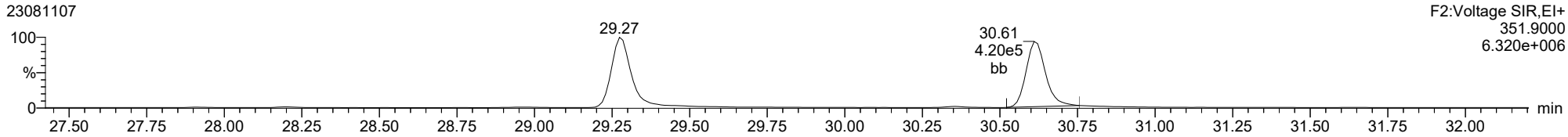
23478-PeCDF



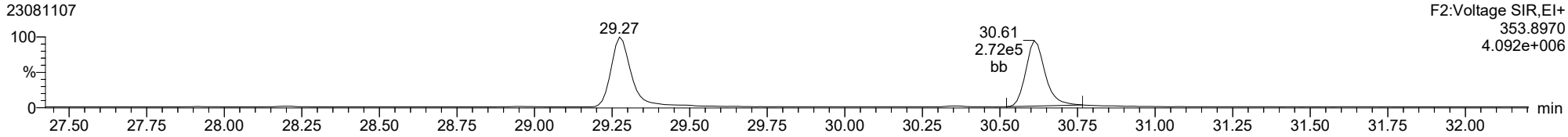
23478-PeCDF



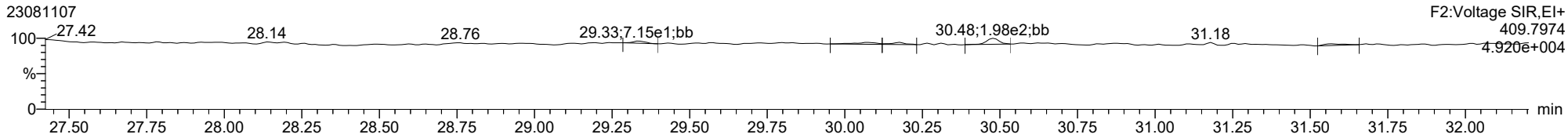
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13C-23478-PeCDF

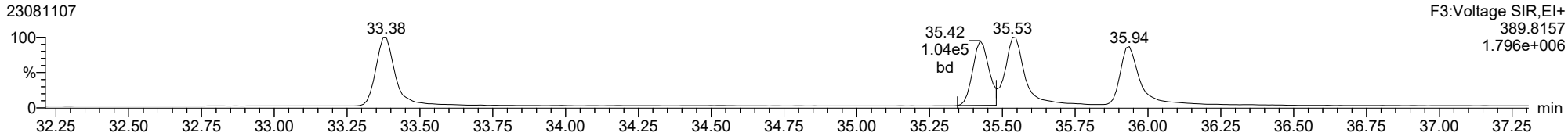


FUNCTION2 HPCDPE

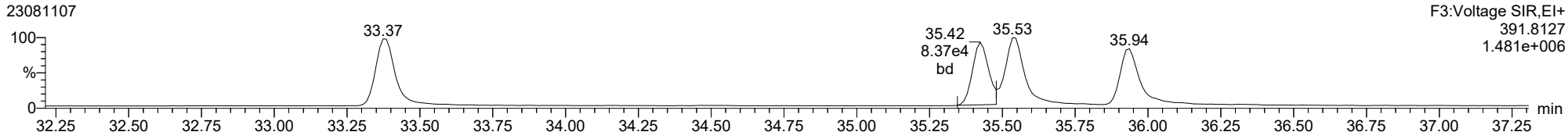


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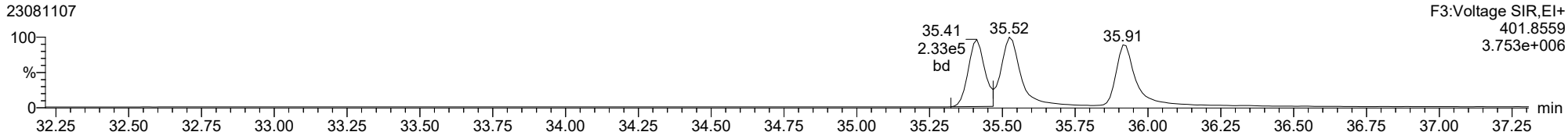
123478-HxCDD



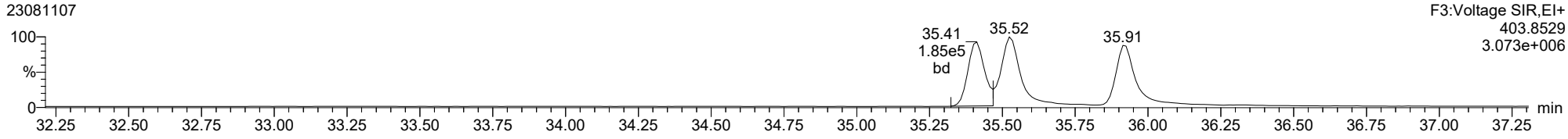
123478-HxCDD



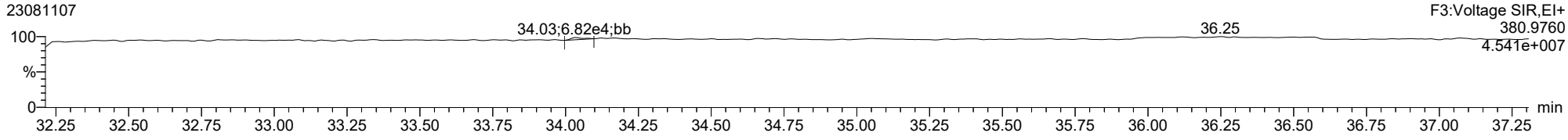
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13C-123478-HxCDD



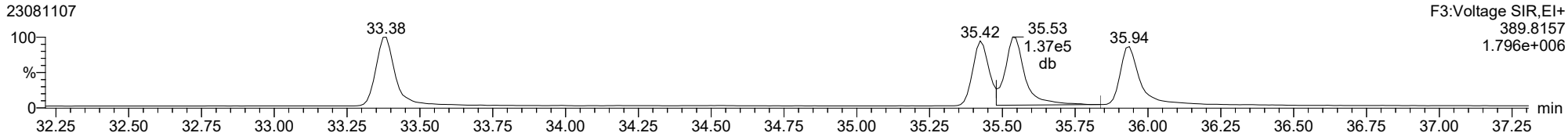
FUNCTION3 PFK



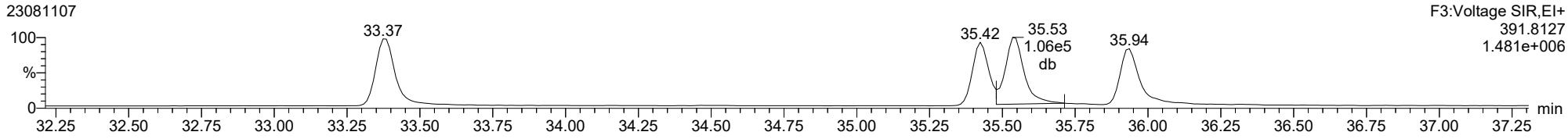
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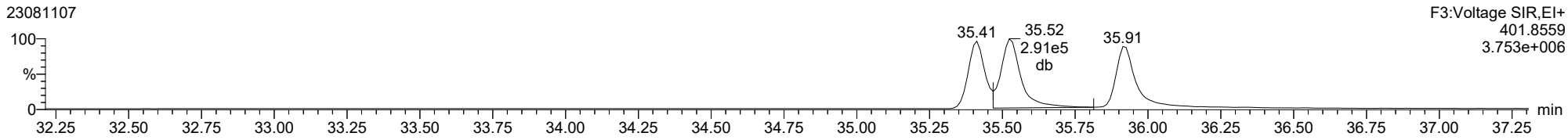
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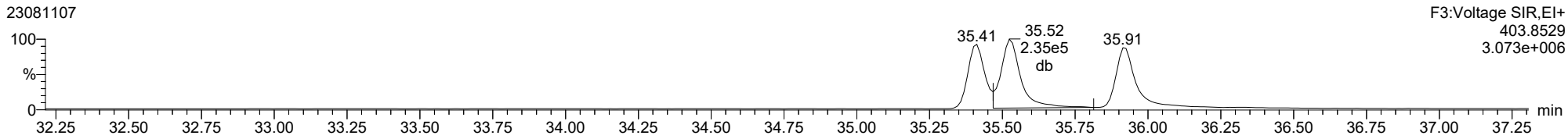
123678-HxCDD



13C-123678-HxCDD

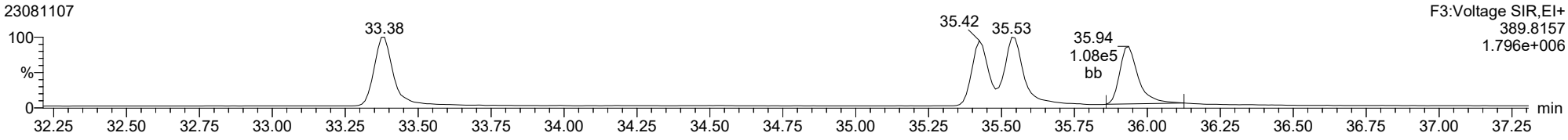


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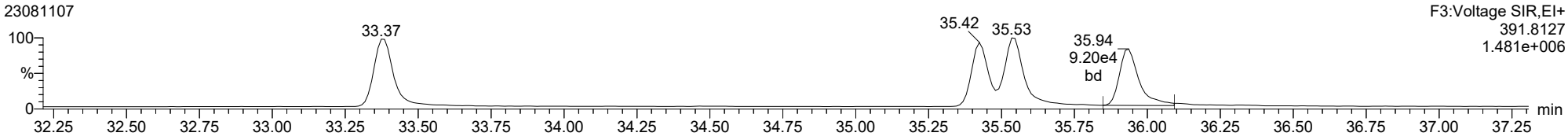


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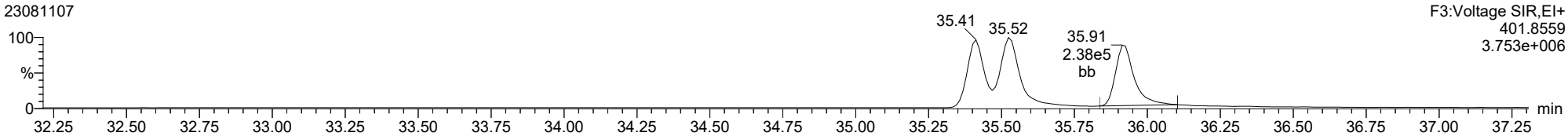
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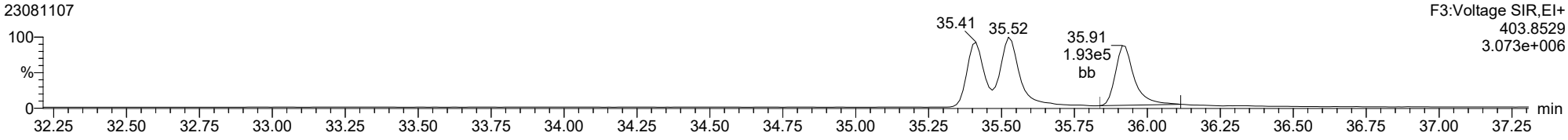
123789-HxCDD



13C-123789-HxCDD

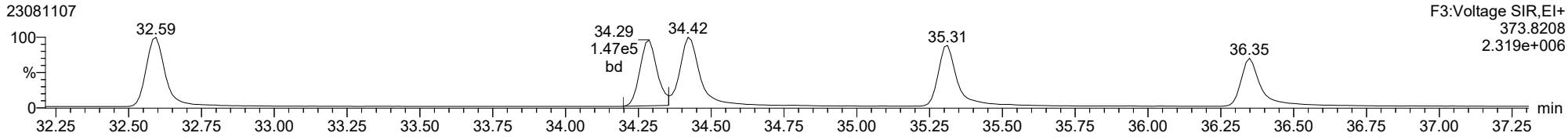


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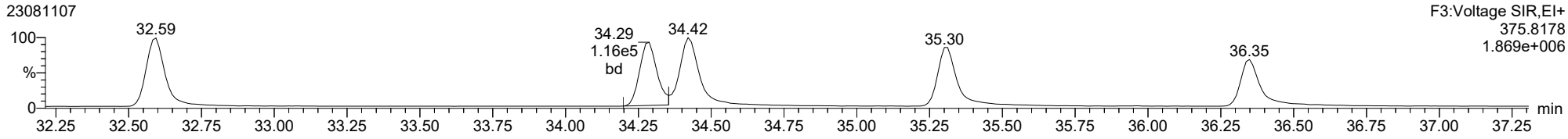


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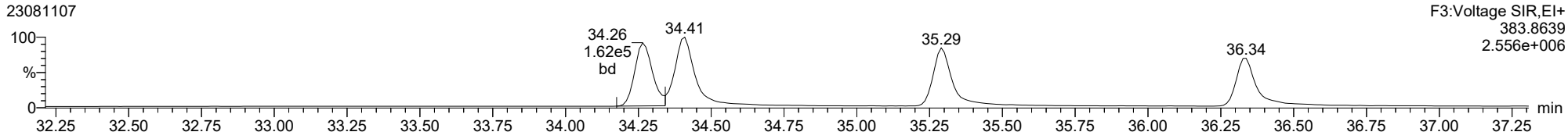
123478-HxCDF



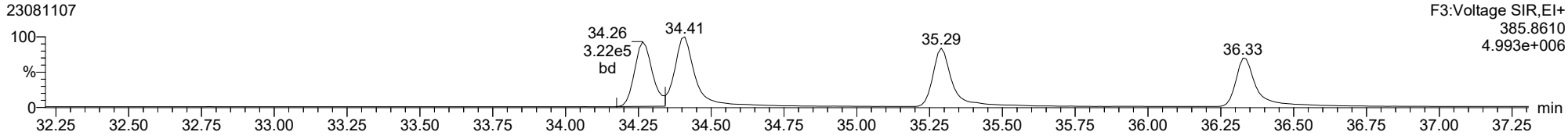
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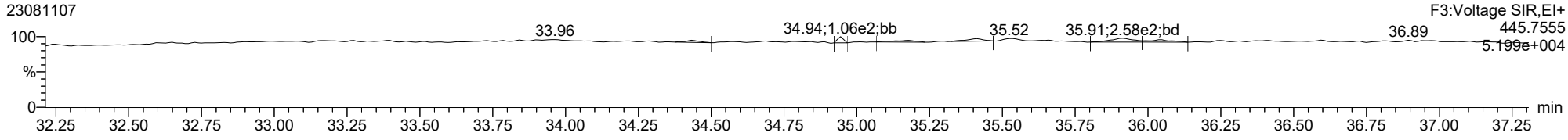
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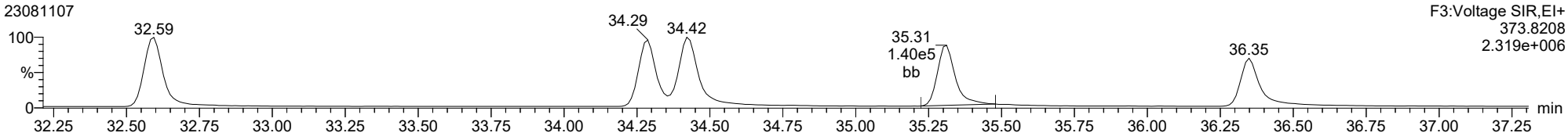


FUNCTION3 OCDPE

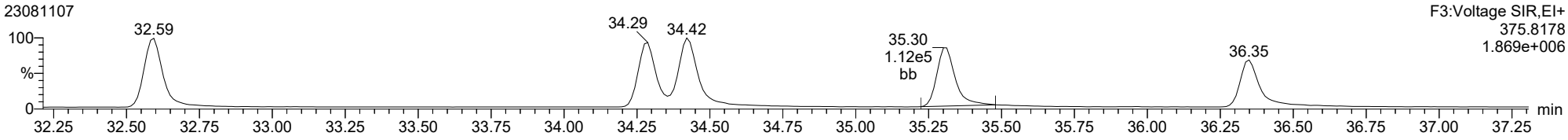


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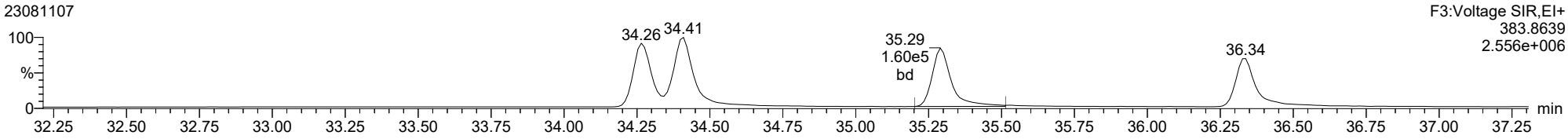
234678-HxCDF



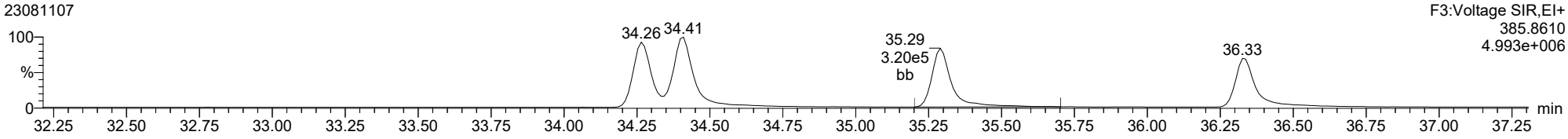
234678-HxCDF



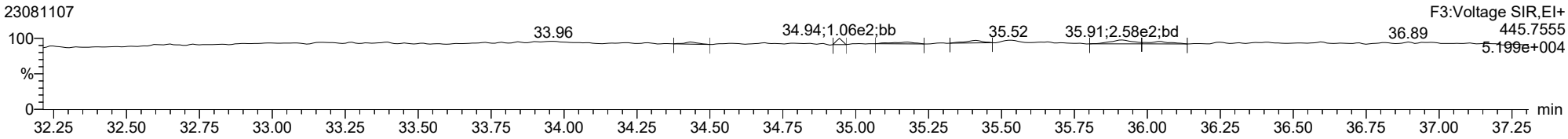
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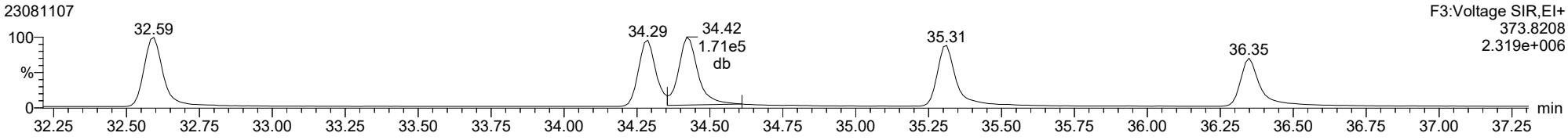


FUNCTION3 OCDPE

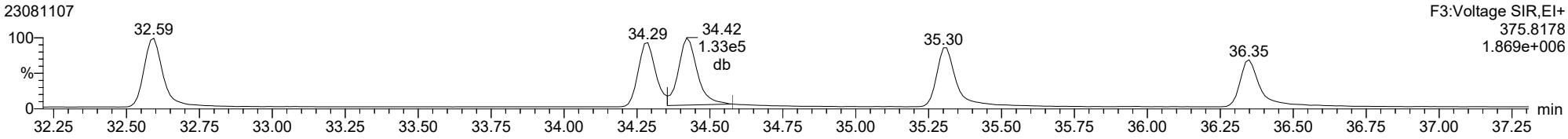


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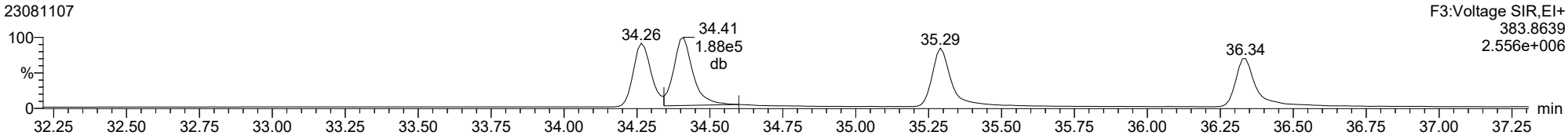
123678-HxCDF



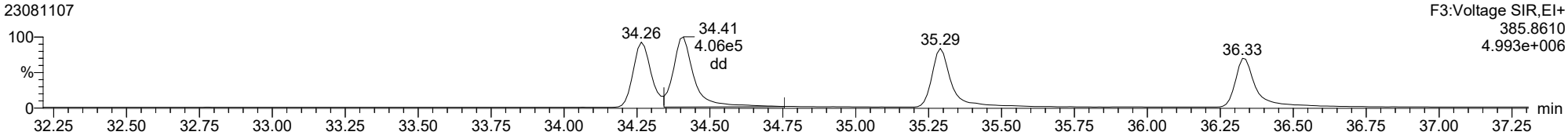
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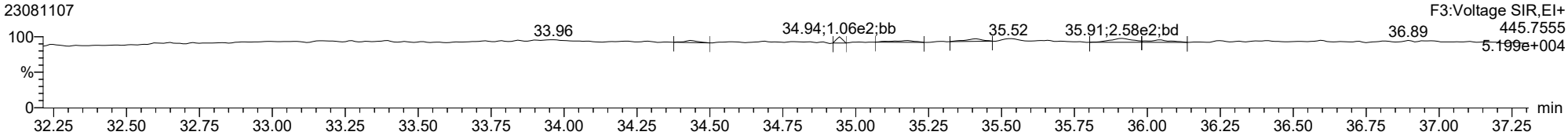
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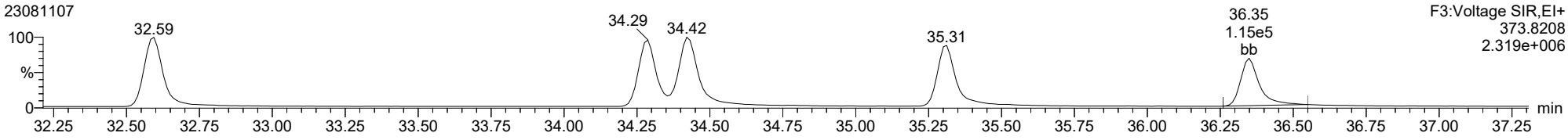


FUNCTION3 OCDPE

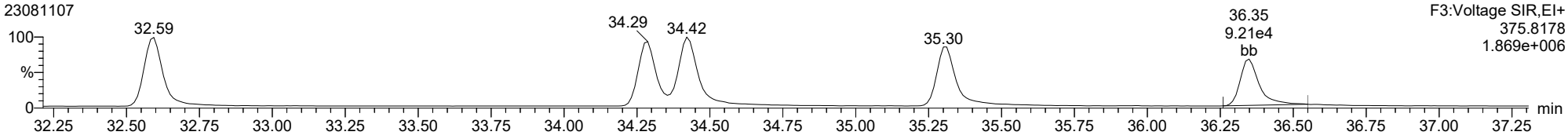


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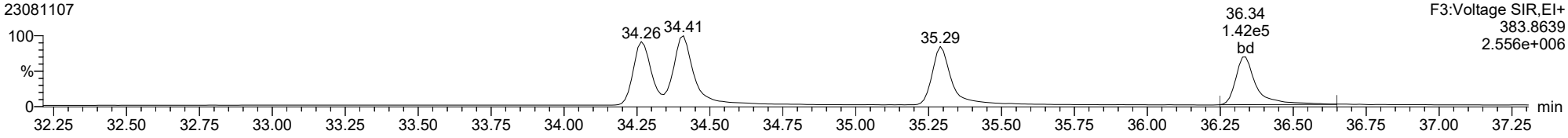
123789-HxCDF



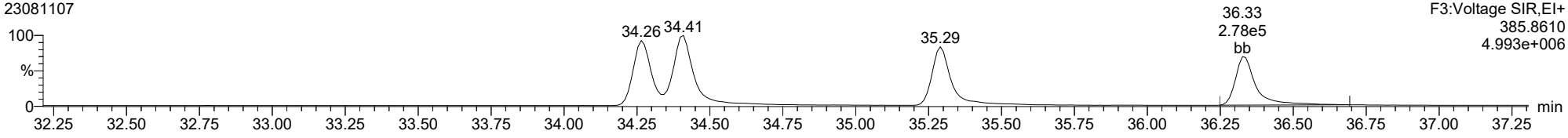
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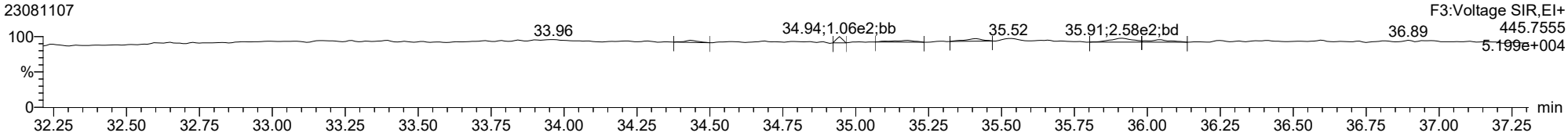
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13C-123789-HxCDF

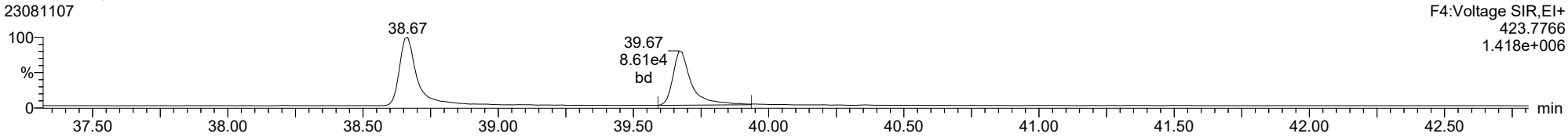


FUNCTION3 OCDPE

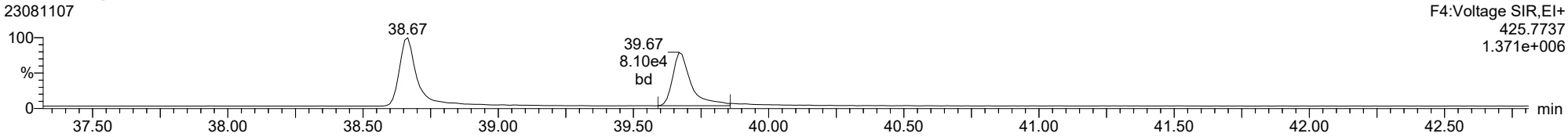


ID: CS3CF, Name: 23081107, Date: 11-Aug-2023, Time: 14:52:57, Conditions: AUTOSPEC01, User: pk

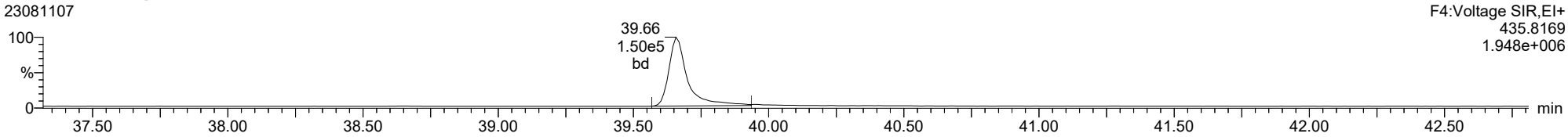
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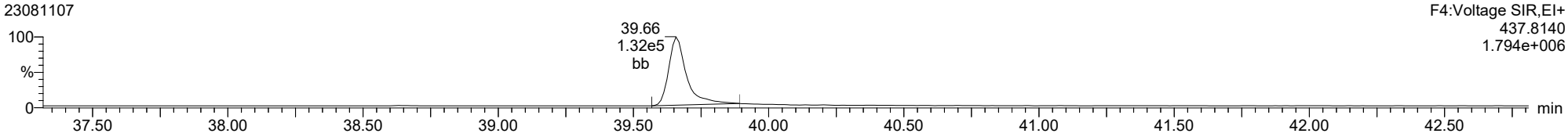
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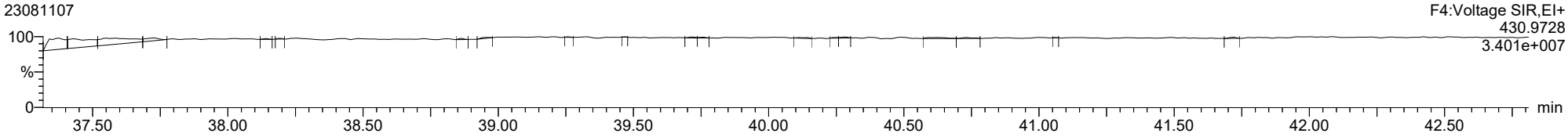
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13C-1234678-HpCDD

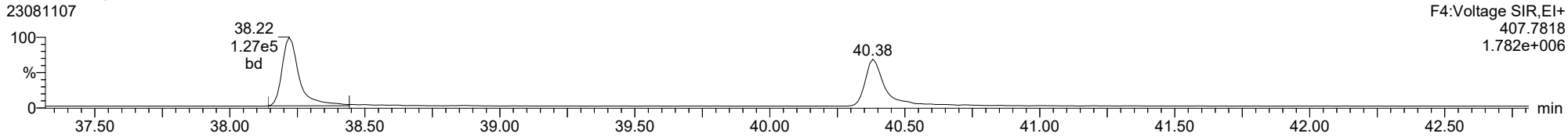


FUNCTION4 PFK

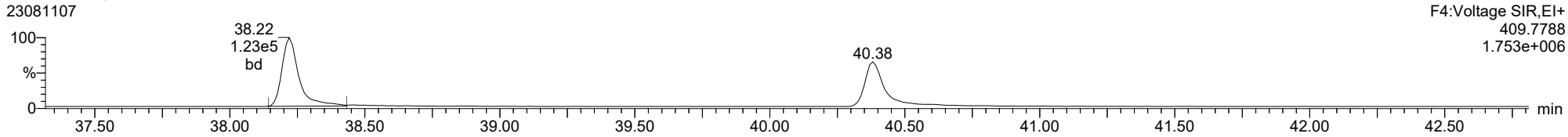


ID: CS3CF, Name: 23081107, Date: 11-Aug-2023, Time: 14:52:57, Conditions: AUTOSPEC01, User: pk

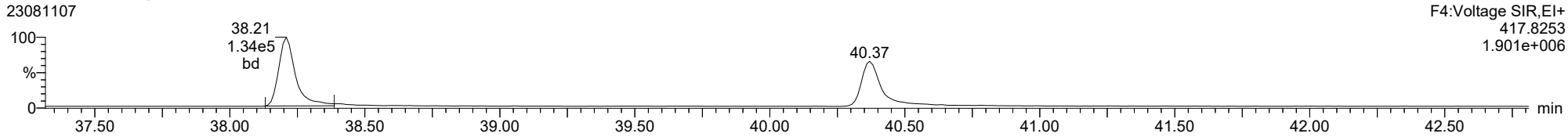
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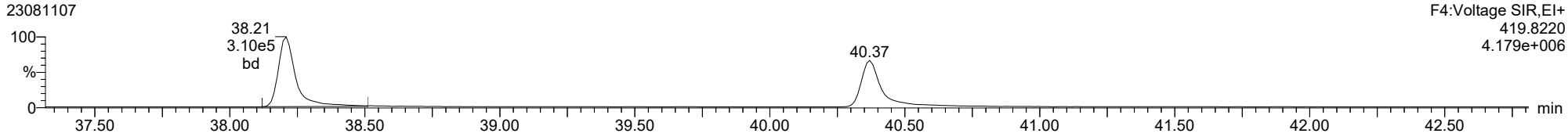
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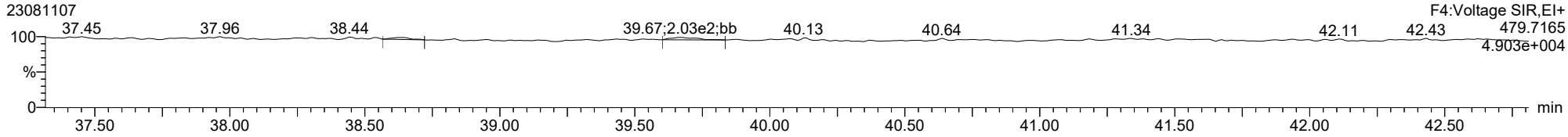
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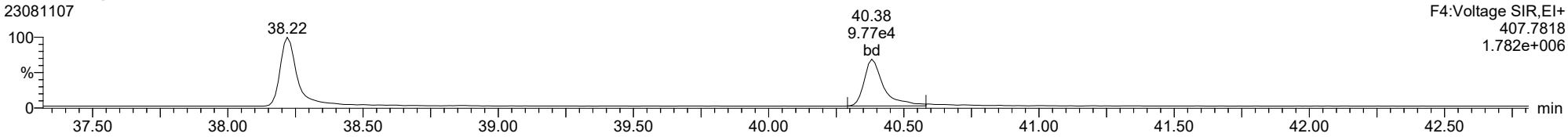


FUNCTION4 NCDPE

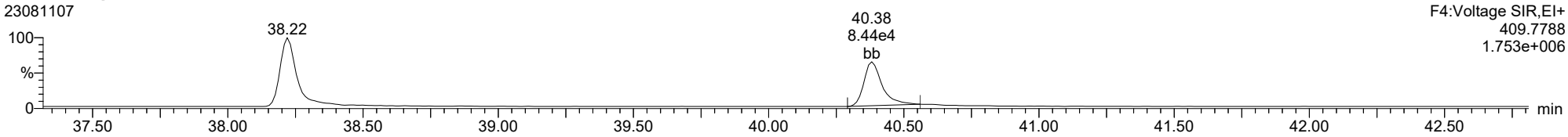


ID: CS3CF, Name: 23081107, Date: 11-Aug-2023, Time: 14:52:57, Conditions: AUTOSPEC01, User: pk

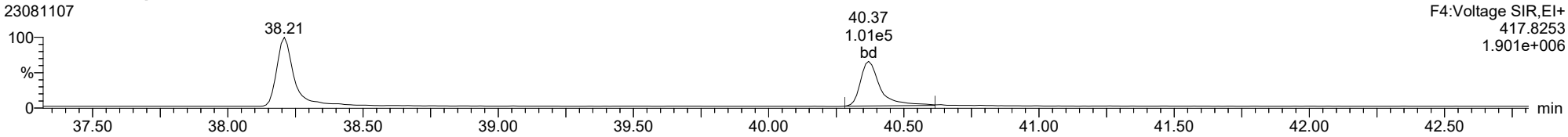
1234789-HpCDF



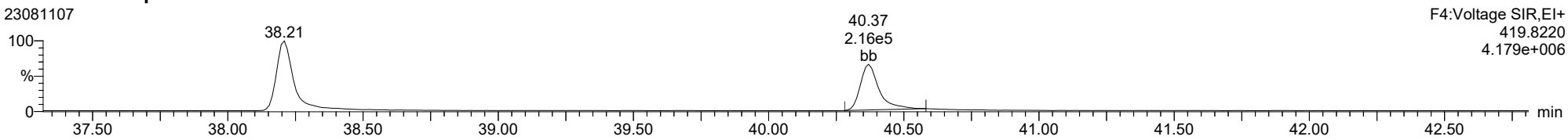
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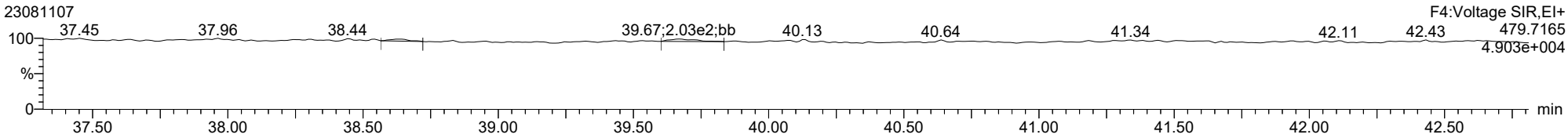
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13C-1234789-HpCDF

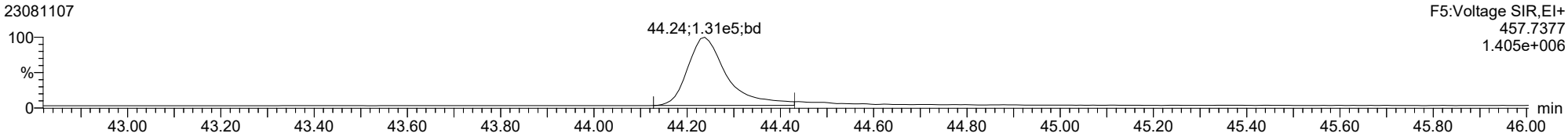


FUNCTION4 NCDPE

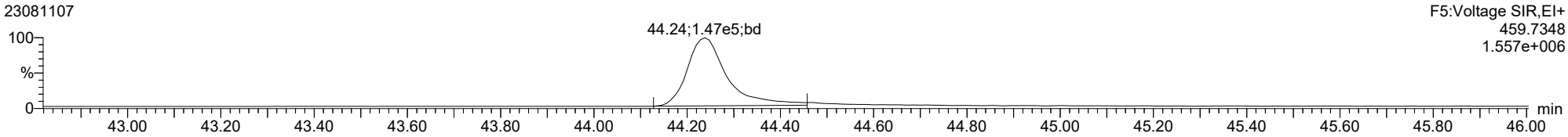


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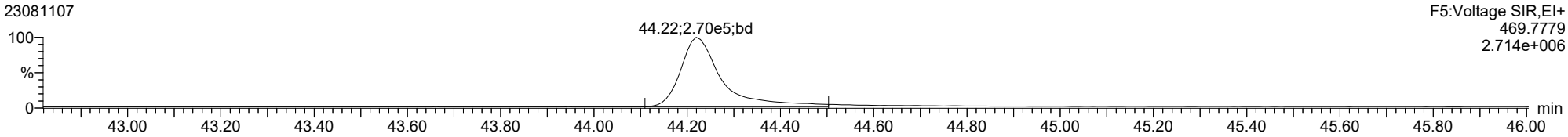
OCDD



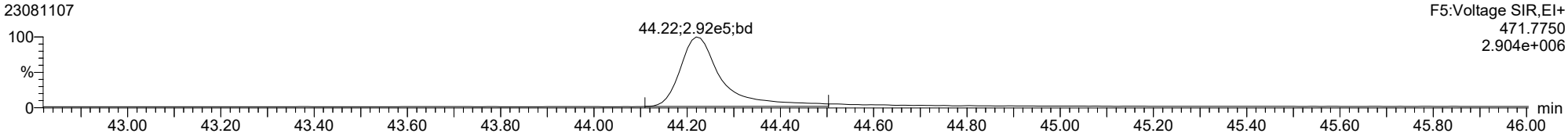
OCDD



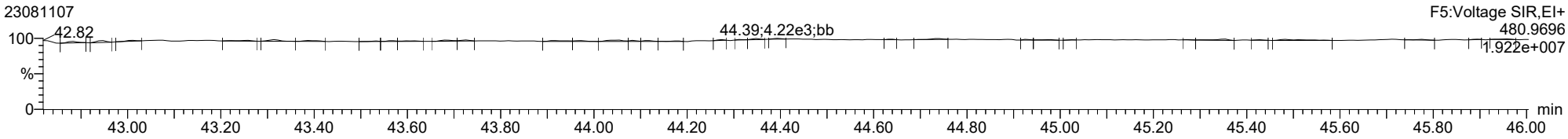
13C-OCDD



13C-OCDD

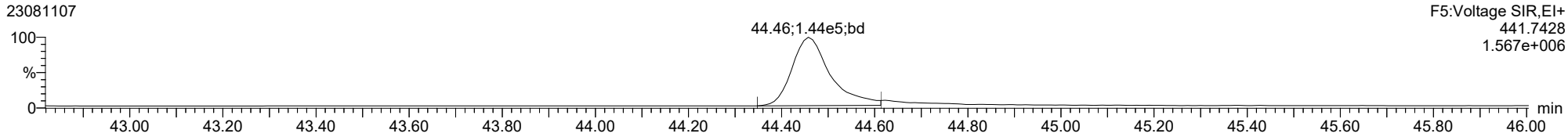


FUNCTION5 PFK

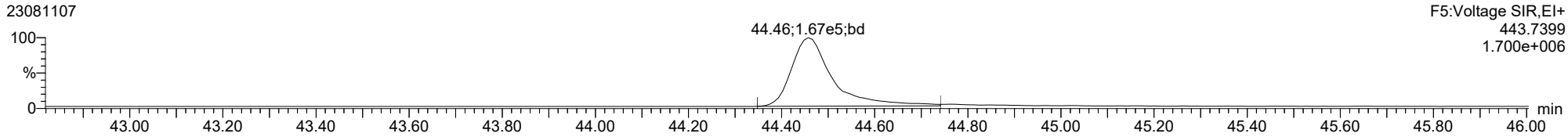


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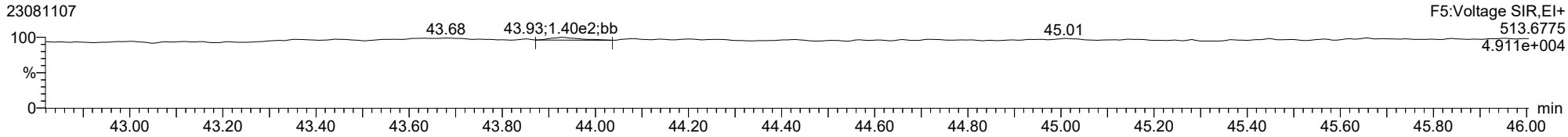
OCDF



OCDF

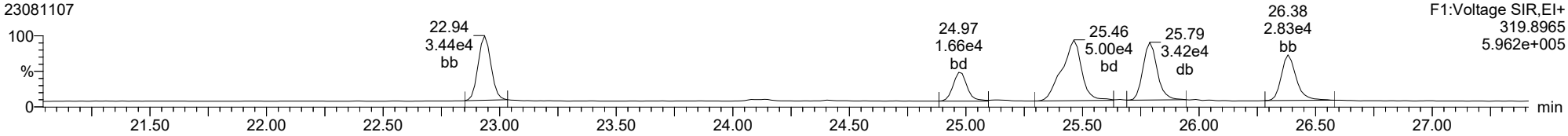


FUNCTION5 DCDPE

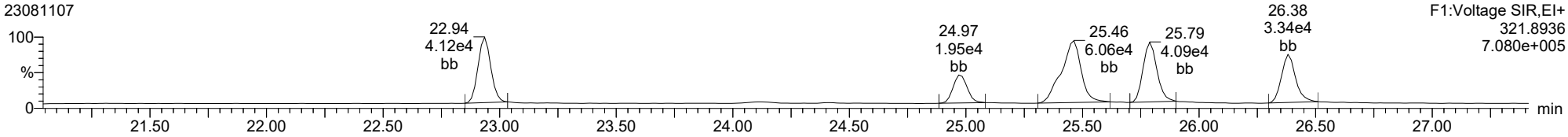


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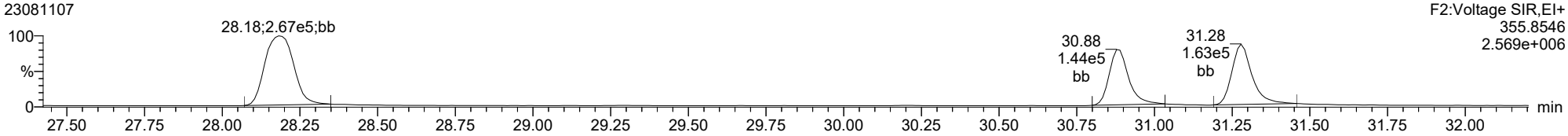
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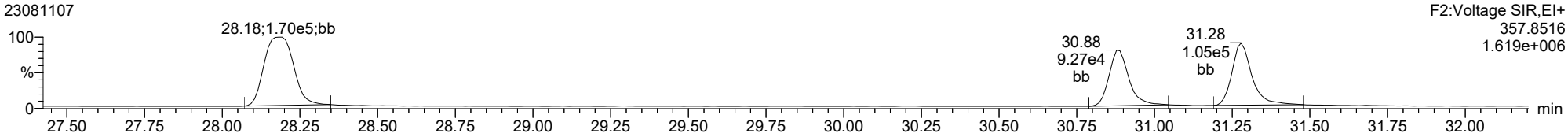
Total-tetradioxins



Total-pentadioxins

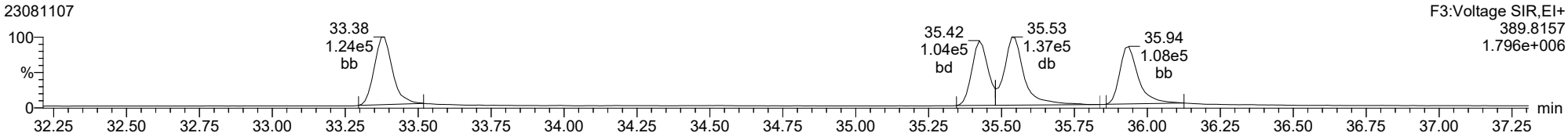


Total-pentadioxins

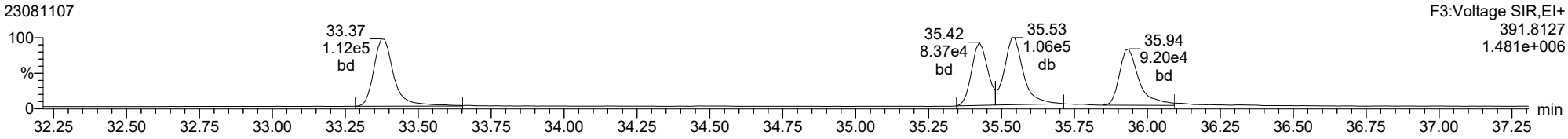


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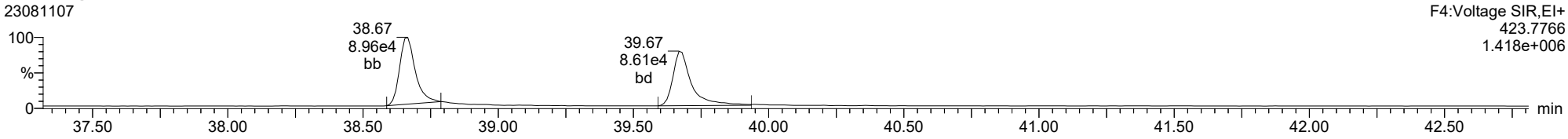
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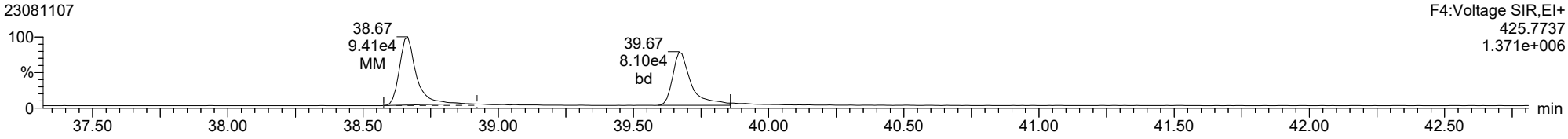
Total-hexadioxins



Total-heptadioxins

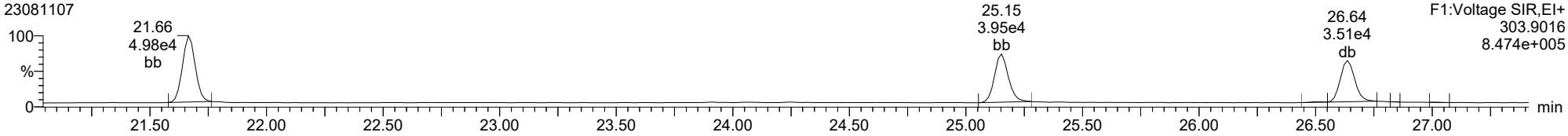


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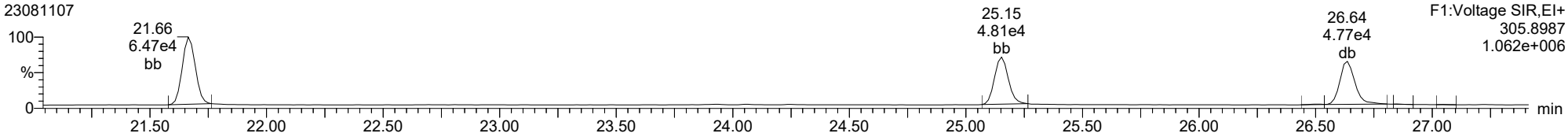


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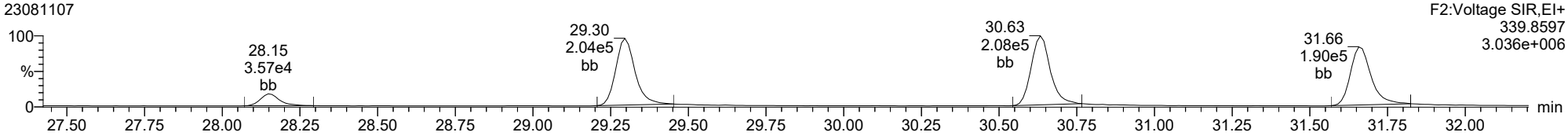
Total-tetrafurans



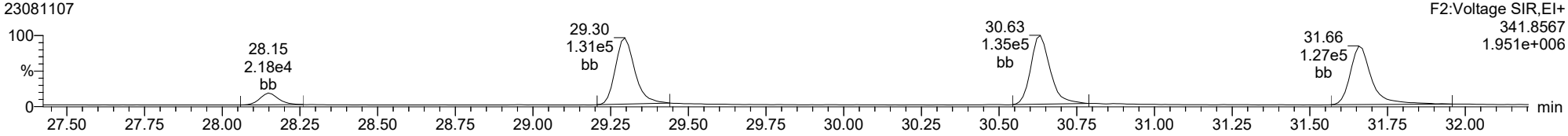
Total-tetrafurans



Total-pentafurans

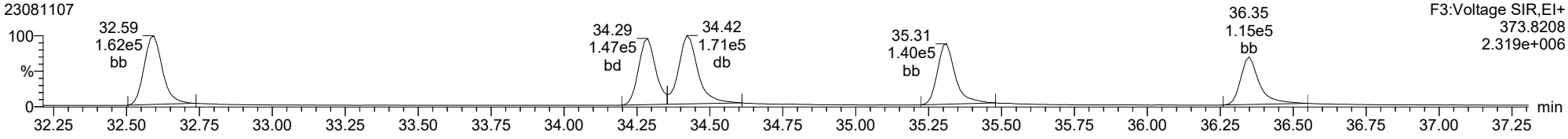


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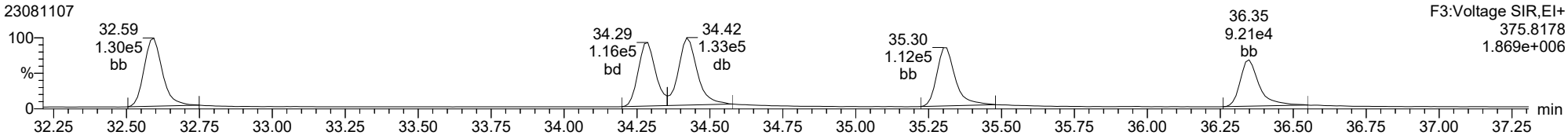


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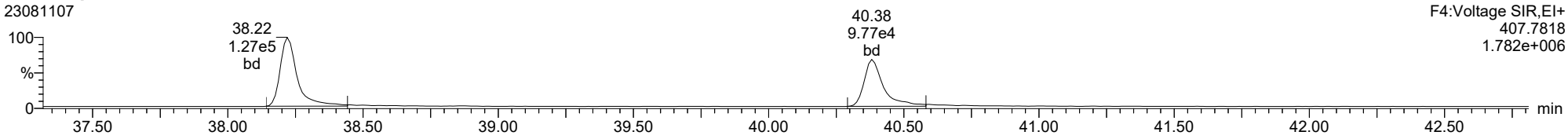
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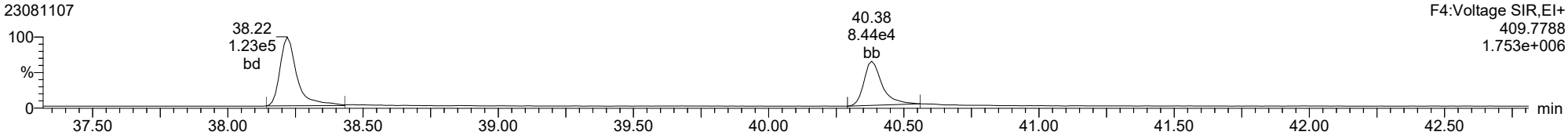
Total-hexafurans



Total-heptafurans



Total-heptafurans



Dataset: T:\Autospec\Processed Data Batch\230811ICIH.qld
Last Altered: Saturday, August 12, 2023 10:45:18 Pacific Daylight Time
Printed: Tuesday, August 15, 2023 12:24:49 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin230810.mdb 11 Aug 2023 22:18:32
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 10:45:18

ID: CS4CF, Name: 23081108, Date: 11-Aug-2023, Time: 15:40:53, 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	25.139	1.001	2.069e5	2.669e5	0.903	0.775	0.770	910	1408	2.99e6	3.87e6	3292.7	2749.1	NO	bb	bb	40.180
12378-PeCDF	29.285	1.001	1.012e6	6.469e5	0.923	1.564	1.550	3352	3597	1.46e7	9.36e6	4348.1	2602.0	NO	bb	bb	201.316
23478-PeCDF	30.622	1.000	1.053e6	6.665e5	0.991	1.580	1.550	3352	3597	1.49e7	9.38e6	4430.7	2608.4	NO	bb	bb	201.599
123478-HxCDF	34.276	1.000	7.120e5	5.688e5	1.128	1.252	1.240	2738	1665	1.05e7	8.28e6	3820.4	4974.4	NO	bd	bd	199.881
234678-HxCDF	35.301	1.000	6.633e5	5.283e5	1.081	1.255	1.240	2738	1665	9.44e6	7.56e6	3445.5	4543.2	NO	bb	bb	200.898
123678-HxCDF	34.421	1.001	7.823e5	6.275e5	1.032	1.247	1.240	2738	1665	1.03e7	8.32e6	3779.2	4995.7	NO	db	db	200.326
123789-HxCDF	36.337	1.000	5.937e5	4.227e5	0.988	1.404	1.240	2738	1665	7.36e6	5.84e6	2686.0	3510.6	NO	bd	bb	210.789
1234678-HpCDF	38.220	1.001	5.646e5	5.569e5	1.164	1.014	1.050	3806	3830	8.41e6	8.15e6	2209.9	2127.1	NO	bb	bb	199.621
1234789-HpCDF	40.381	1.001	4.624e5	4.643e5	1.104	0.996	1.050	3806	3830	5.85e6	5.57e6	1537.3	1455.3	NO	bb	bd	228.686
OCDF	44.457	1.005	6.808e5	7.439e5	1.130	0.915	0.890	3171	3847	7.41e6	7.99e6	2338.5	2077.7	NO	bb	bb	442.738
2378-TCDD	25.774	1.001	1.635e5	2.012e5	1.243	0.813	0.770	819	809	2.31e6	2.92e6	2817.9	3604.6	NO	bb	bb	39.976
12378-PeCDD	30.878	1.001	6.628e5	4.228e5	1.150	1.568	1.550	1616	1186	9.41e6	5.90e6	5824.4	4972.0	NO	bb	bb	202.257
123478-HxCDD	35.423	1.001	4.819e5	4.023e5	0.960	1.198	1.240	1711	1300	7.12e6	5.95e6	4159.0	4578.3	NO	bd	bd	194.509
123678-HxCDD	35.535	1.000	5.301e5	4.575e5	0.883	1.159	1.240	1711	1300	7.35e6	5.95e6	4295.5	4579.4	NO	db	db	202.344
123789-HxCDD	35.925	1.011	4.672e5	3.844e5	0.804	1.215	1.240	1711	1300	6.62e6	5.45e6	3870.9	4194.9	NO	bb	bb	206.440
1234678-HpCDD	39.668	1.000	3.489e5	3.316e5	1.200	1.052	1.050	3116	2211	5.04e6	4.70e6	1615.6	2124.9	NO	bb	bb	189.168
OCDD	44.229	1.000	6.082e5	6.853e5	1.059	0.888	0.890	1979	2870	6.17e6	6.99e6	3119.0	2435.1	NO	bd	bd	429.120
13C-2378-TCDF	25.125	1.007	5.832e5	7.224e5	1.835	0.807	0.770	2017	1746	8.33e6	1.05e7	4130.6	5989.0	NO	bb	bb	96.462
13C-12378-PeCDF	29.262	1.173	5.419e5	3.506e5	1.377	1.546	1.550	3777	2446	7.61e6	5.02e6	2013.6	2052.1	NO	bb	bb	87.917
13C-23478-PeCDF	30.610	1.227	5.239e5	3.372e5	1.301	1.554	1.550	3777	2446	7.19e6	4.70e6	1903.1	1920.3	NO	bb	bb	89.739
13C-123478-HxCDF	34.265	0.954	1.917e5	3.763e5	1.091	0.510	0.510	2847	1804	2.78e6	5.41e6	977.0	3000.2	NO	bd	bd	106.075
13C-123678-HxCDF	34.398	0.958	2.197e5	4.620e5	1.340	0.475	0.510	2847	1804	2.97e6	5.79e6	1044.1	3210.7	NO	db	dd	103.609
13C-234678-HxCDF	35.290	0.983	1.810e5	3.675e5	1.093	0.492	0.510	2847	1804	2.45e6	4.85e6	861.0	2686.1	NO	bb	bd	102.175
13C-123789-HxCDF	36.326	1.012	1.604e5	3.278e5	0.952	0.489	0.510	2847	1804	2.09e6	4.12e6	733.8	2283.2	NO	bb	bd	104.504
13C-1234678-HpCDF	38.197	1.064	1.579e5	3.249e5	0.985	0.486	0.440	2570	2841	2.12e6	4.70e6	824.9	1653.5	NO	bd	bb	99.843
13C-1234789-HpCDF	40.359	1.124	1.178e5	2.494e5	0.756	0.472	0.440	2570	2841	1.48e6	3.21e6	576.0	1129.9	NO	bd	bb	98.962
13C-1234-TCDD	24.941	0.000	3.250e5	4.124e5	1.000	0.788	0.770	1552	1233	4.97e6	6.31e6	3202.9	5112.0	NO	bb	bb	100.000
13C-2378-TCDD	25.760	1.033	3.273e5	4.068e5	1.110	0.804	0.770	1552	1233	4.73e6	5.93e6	3049.2	4804.6	NO	bb	bb	89.718
13C-12378-PeCDD	30.855	1.237	2.877e5	1.791e5	0.754	1.607	1.550	770	1010	4.08e6	2.49e6	5300.6	2467.8	NO	bb	bb	83.973
13C-123478-HxCDD	35.401	0.986	2.677e5	2.058e5	0.960	1.301	1.240	1608	1432	3.86e6	3.11e6	2400.4	2172.8	NO	bd	bd	100.482
13C-123678-HxCDD	35.523	0.989	3.023e5	2.506e5	1.159	1.206	1.240	1608	1432	3.93e6	3.13e6	2445.3	2184.5	NO	db	db	97.162
13C-1234678-HpCDD	39.657	1.104	1.557e5	1.442e5	0.629	1.080	1.050	2177	1424	2.06e6	1.90e6	946.2	1335.4	NO	bb	bb	97.070
13C-OCDD	44.219	1.231	2.717e5	2.978e5	0.635	0.912	0.890	2982	2292	2.88e6	3.17e6	966.9	1381.3	NO	bd	bd	182.623
13C-123789-HxCDD	35.914	0.000	2.757e5	2.153e5	1.000	1.281	1.240	1608	1432	3.82e6	3.03e6	2373.7	2113.6	NO	bb	bb	100.000
37CL-2378-TCDD	25.774	1.033	3.106e5		1.157			1063		4.48e6		4212.1			bb		36.391

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Printed: Tuesday, August 15, 2023 12:24:49 Pacific Daylight Time

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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					1.170		0.770	910	1408								
1289-TCDF					0.847		0.770	910	1408								
13468-PECDF					1.241		1.550	619	771								
12389-PECDF					0.880		1.550	3352	3597								
123468-HXCDF					1.206		1.240	2738	1665								
1368-TCDD					1.181		0.770	819	809								
1289-TCDD					0.963		0.770	819	809								
12479-PECDD					2.166		1.550	1616	1186								
12389-PECDD					1.326		1.550	1616	1186								
124679-HXCDD					1.127		1.240	1711	1300								
1234679-HPCDD					1.303		1.050	3116	2211								
Total-tetrafurans			2.089e5		0.973			910		3.02e6							40.558
Total-penta1			0.000e0					619		0.00e0							
Total-pentafurans			2.066e6		0.931			3352		2.95e7							403.174
Total-hexafurans			2.752e6		1.087			2738		3.76e7							811.982
Total-heptafurans			1.027e6		1.134			3806		1.43e7							428.307
Total-Furans			6.735e6		1.053			910		9.18e7							2126.759
Total-tetradioxins			1.677e5		1.129			819		2.35e6							41.113
Total-pentadioxins			6.628e5		1.548			1616		9.41e6							202.257
Total-hexadioxins			1.479e6		0.943			1711		2.11e7							603.293
Total-heptadioxins			3.489e5		1.251			3116		5.04e6							189.168
Total-Dioxins			3.267e6		1.182			819		4.41e7							1464.951
Total-TEQ			1.000e7					819		1.36e8							3591.710
FUNCTION1 PFK			1.203e6					375179		2.06e7							
FUNCTION2 PFK			7.156e5					281683		1.61e7							0.000
FUNCTION3 PFK			1.654e5					367932		5.05e6							0.000
FUNCTION4 PFK			0.000e0					301298		0.00e0							
FUNCTION5 PFK			9.039e4					207920		4.37e6							
FUNCTION1 HXCD...			2.747e2					499		5.63e3							0.000
FUNCTION1 HPCD...																	
FUNCTION2 HPCD...			8.897e2					444		1.57e4							0.000
FUNCTION3 OCDPE			0.000e0					373		0.00e0							
FUNCTION4 NCDPE			3.465e2					497		5.37e3							0.000
FUNCTION5 DCDPE			8.374e1					445		7.84e2							0.000

Method: T:\Autospec\Methods\Dioxin230810.mdb 11 Aug 2023 22:18:32
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 10:45:18

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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	25.14	2.069e5	2.669e5	0.903	0.78	0.77	3292.7	YES	NO	bb	bb	40.180
2	Total-tetrafurans	23.91	2.011e3	2.792e3	0.973	0.72	0.77	32.7	YES	NO	bb	bb	0.378

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	12378-PeCDF	29.28	1.012e6	6.469e5	0.923	1.56	1.55	4348.1	YES	NO	bb	bb	201.316
2	23478-PeCDF	30.62	1.053e6	6.665e5	0.991	1.58	1.55	4430.7	YES	NO	bb	bb	201.599
3	Total-pentafurans	30.49	1.202e3	9.050e2	0.931	1.33	1.55	8.8	YES	NO	bb	bb	0.258

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123678-HxCDF	34.42	7.823e5	6.275e5	1.032	1.25	1.24	3779.2	YES	NO	db	db	200.326
2	123478-HxCDF	34.28	7.120e5	5.688e5	1.128	1.25	1.24	3820.4	YES	NO	bd	bd	199.881
3	123789-HxCDF	36.34	5.937e5	4.227e5	0.988	1.40	1.24	2686.0	YES	NO	bd	bb	210.789
4	234678-HxCDF	35.30	6.633e5	5.283e5	1.081	1.26	1.24	3445.5	YES	NO	bb	bb	200.898
5	Total-hexafurans	34.77	2.884e2	2.632e2	1.087	1.10	1.24	0.0	NO	NO	bb	bb	0.089

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDF	38.22	5.646e5	5.569e5	1.164	1.01	1.05	2209.9	YES	NO	bb	bb	199.621
2	1234789-HpCDF	40.38	4.624e5	4.643e5	1.104	1.00	1.05	1537.3	YES	NO	bb	bd	228.686

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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	25.14	2.069e5	2.669e5	0.903	0.78	0.77	3292.7	YES	NO	bb	bb	40.180
2	Total-tetrafurans	23.91	2.011e3	2.792e3	0.973	0.72	0.77	32.7	YES	NO	bb	bb	0.378
3	12378-PeCDF	29.28	1.012e6	6.469e5	0.923	1.56	1.55	4348.1	YES	NO	bb	bb	201.316
4	23478-PeCDF	30.62	1.053e6	6.665e5	0.991	1.58	1.55	4430.7	YES	NO	bb	bb	201.599
5	Total-pentafurans	30.49	1.202e3	9.050e2	0.931	1.33	1.55	8.8	YES	NO	bb	bb	0.258
6	123678-HxCDF	34.42	7.823e5	6.275e5	1.032	1.25	1.24	3779.2	YES	NO	db	db	200.326
7	123478-HxCDF	34.28	7.120e5	5.688e5	1.128	1.25	1.24	3820.4	YES	NO	bd	bd	199.881
8	123789-HxCDF	36.34	5.937e5	4.227e5	0.988	1.40	1.24	2686.0	YES	NO	bd	bb	210.789
9	234678-HxCDF	35.30	6.633e5	5.283e5	1.081	1.26	1.24	3445.5	YES	NO	bb	bb	200.898
10	Total-hexafurans	34.77	2.884e2	2.632e2	1.087	1.10	1.24	0.0	NO	NO	bb	bb	0.089
11	1234678-HpCDF	38.22	5.646e5	5.569e5	1.164	1.01	1.05	2209.9	YES	NO	bb	bb	199.621
12	1234789-HpCDF	40.38	4.624e5	4.643e5	1.104	1.00	1.05	1537.3	YES	NO	bb	bd	228.686
13	OCDF	44.46	6.808e5	7.439e5	1.130	0.92	0.89	2338.5	YES	NO	bb	bb	442.738

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDD	25.77	1.635e5	2.012e5	1.243	0.81	0.77	2817.9	YES	NO	bb	bb	39.976
2	Total-tetradioxins	25.39	4.211e3	5.212e3	1.129	0.81	0.77	54.6	YES	NO	bb	bd	1.137

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12378-PeCDD	30.88	6.628e5	4.228e5	1.150	1.57	1.55	5824.4	YES	NO	bb	bb	202.257

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDD	35.92	4.672e5	3.844e5	0.804	1.22	1.24	3870.9	YES	NO	bb	bb	206.440
2	123678-HxCDD	35.53	5.301e5	4.575e5	0.883	1.16	1.24	4295.5	YES	NO	db	db	202.344
3	123478-HxCDD	35.42	4.819e5	4.023e5	0.960	1.20	1.24	4159.0	YES	NO	bd	bd	194.509

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.67	3.489e5	3.316e5	1.200	1.05	1.05	1615.6	YES	NO	bb	bb	189.168

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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	25.77	1.635e5	2.012e5	1.243	0.81	0.77	2817.9	YES	NO	bb	bb	39.976
2	Total-tetradioxins	25.39	4.211e3	5.212e3	1.129	0.81	0.77	54.6	YES	NO	bb	bd	1.137
3	12378-PeCDD	30.88	6.628e5	4.228e5	1.150	1.57	1.55	5824.4	YES	NO	bb	bb	202.257
4	123789-HxCDD	35.92	4.672e5	3.844e5	0.804	1.22	1.24	3870.9	YES	NO	bb	bb	206.440
5	123678-HxCDD	35.53	5.301e5	4.575e5	0.883	1.16	1.24	4295.5	YES	NO	db	db	202.344
6	123478-HxCDD	35.42	4.819e5	4.023e5	0.960	1.20	1.24	4159.0	YES	NO	bd	bd	194.509
7	1234678-HpCDD	39.67	3.489e5	3.316e5	1.200	1.05	1.05	1615.6	YES	NO	bb	bb	189.168
8	OCDD	44.23	6.082e5	6.853e5	1.059	0.89	0.89	3119.0	YES	NO	bd	bd	429.120

TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDF	25.14	2.069e5	2.669e5	0.903	0.78	0.77	3292.7	YES	NO	bb	bb	40.180
2	Total-tetrafurans	23.91	2.011e3	2.792e3	0.973	0.72	0.77	32.7	YES	NO	bb	bb	0.378
3	12378-PeCDF	29.28	1.012e6	6.469e5	0.923	1.56	1.55	4348.1	YES	NO	bb	bb	201.316
4	23478-PeCDF	30.62	1.053e6	6.665e5	0.991	1.58	1.55	4430.7	YES	NO	bb	bb	201.599
5	Total-pentafurans	30.49	1.202e3	9.050e2	0.931	1.33	1.55	8.8	YES	NO	bb	bb	0.258
6	123678-HxCDF	34.42	7.823e5	6.275e5	1.032	1.25	1.24	3779.2	YES	NO	db	db	200.326
7	123478-HxCDF	34.28	7.120e5	5.688e5	1.128	1.25	1.24	3820.4	YES	NO	bd	bd	199.881
8	123789-HxCDF	36.34	5.937e5	4.227e5	0.988	1.40	1.24	2686.0	YES	NO	bd	bb	210.789
9	234678-HxCDF	35.30	6.633e5	5.283e5	1.081	1.26	1.24	3445.5	YES	NO	bb	bb	200.898
10	Total-hexafurans	34.77	2.884e2	2.632e2	1.087	1.10	1.24	0.0	NO	NO	bb	bb	0.089
11	1234678-HpCDF	38.22	5.646e5	5.569e5	1.164	1.01	1.05	2209.9	YES	NO	bb	bb	199.621
12	1234789-HpCDF	40.38	4.624e5	4.643e5	1.104	1.00	1.05	1537.3	YES	NO	bb	bd	228.686
13	OCDF	44.46	6.808e5	7.439e5	1.130	0.92	0.89	2338.5	YES	NO	bb	bb	442.738
14	2378-TCDD	25.77	1.635e5	2.012e5	1.243	0.81	0.77	2817.9	YES	NO	bb	bb	39.976
15	Total-tetradioxins	25.39	4.211e3	5.212e3	1.129	0.81	0.77	54.6	YES	NO	bb	bd	1.137
16	12378-PeCDD	30.88	6.628e5	4.228e5	1.150	1.57	1.55	5824.4	YES	NO	bb	bb	202.257
17	123789-HxCDD	35.92	4.672e5	3.844e5	0.804	1.22	1.24	3870.9	YES	NO	bb	bb	206.440
18	123678-HxCDD	35.53	5.301e5	4.575e5	0.883	1.16	1.24	4295.5	YES	NO	db	db	202.344
19	123478-HxCDD	35.42	4.819e5	4.023e5	0.960	1.20	1.24	4159.0	YES	NO	bd	bd	194.509
20	1234678-HpCDD	39.67	3.489e5	3.316e5	1.200	1.05	1.05	1615.6	YES	NO	bb	bb	189.168
21	OCDD	44.23	6.082e5	6.853e5	1.059	0.89	0.89	3119.0	YES	NO	bd	bd	429.120

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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	23.51	1.636e5					3.1	YES		db		
2	FUNCTION1 PFK	23.40	8.885e4					3.5	YES		bd		
3	FUNCTION1 PFK	23.33	1.891e4					1.1	NO		bb		
4	FUNCTION1 PFK	23.19	1.938e4					1.6	NO		bb		
5	FUNCTION1 PFK	22.98	1.917e4					1.4	NO		bb		
6	FUNCTION1 PFK	22.00	9.703e3					1.0	NO		bb		
7	FUNCTION1 PFK	21.31	8.846e4					2.9	NO		db		
8	FUNCTION1 PFK	21.23	3.851e4					2.3	NO		bd		
9	FUNCTION1 PFK	21.16	6.724e3					0.8	NO		db		
10	FUNCTION1 PFK	21.11	3.691e3					0.6	NO		bd		
11	FUNCTION1 PFK	26.66	4.734e4					2.0	NO		db		
12	FUNCTION1 PFK	26.55	4.965e4					1.9	NO		bd		
13	FUNCTION1 PFK	26.24	1.589e4					1.3	NO		bb		
14	FUNCTION1 PFK	26.17	3.041e3					0.6	NO		bb		
15	FUNCTION1 PFK	26.11	9.923e3					1.2	NO		bb		
16	FUNCTION1 PFK	25.93	5.875e4					2.4	NO		bb		
17	FUNCTION1 PFK	25.79	1.786e4					1.6	NO		db		
18	FUNCTION1 PFK	25.65	8.200e4					2.7	NO		bd		
19	FUNCTION1 PFK	25.51	2.446e4					1.6	NO		db		
20	FUNCTION1 PFK	25.46	1.440e4					1.5	NO		bd		
21	FUNCTION1 PFK	25.07	2.849e4					1.4	NO		bb		
22	FUNCTION1 PFK	24.98	2.022e4					1.6	NO		db		
23	FUNCTION1 PFK	24.93	2.482e4					1.8	NO		bd		
24	FUNCTION1 PFK	24.74	1.501e4					1.3	NO		bb		
25	FUNCTION1 PFK	24.01	1.207e5					2.8	NO		db		
26	FUNCTION1 PFK	23.91	5.369e4					2.7	NO		bd		
27	FUNCTION1 PFK	27.36	1.150e4					1.0	NO		bb		
28	FUNCTION1 PFK	27.26	7.166e4					2.0	NO		db		
29	FUNCTION1 PFK	27.17	1.653e4					1.5	NO		bd		
30	FUNCTION1 PFK	26.93	3.058e4					2.2	NO		bb		
31	FUNCTION1 PFK	26.81	2.970e4					1.8	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	28.42	2.186e4					1.5	NO		bb		0.000
2	FUNCTION2 PFK	28.26	1.100e4					1.1	NO		bb		0.000
3	FUNCTION2 PFK	28.16	1.275e4					1.4	NO		db		0.000
4	FUNCTION2 PFK	28.07	2.498e4					2.4	NO		dd		0.000
5	FUNCTION2 PFK	28.03	1.292e4					1.7	NO		dd		0.000
6	FUNCTION2 PFK	27.99	3.293e3					0.8	NO		bd		0.000
7	FUNCTION2 PFK	27.91	2.012e4					1.4	NO		bb		0.000
8	FUNCTION2 PFK	27.77	1.349e5					4.5	YES		db		0.000
9	FUNCTION2 PFK	27.66	5.363e4					3.5	YES		bd		0.000
10	FUNCTION2 PFK	27.55	5.898e3					0.9	NO		bb		0.000
11	FUNCTION2 PFK	30.48	6.417e3					0.8	NO		bb		0.000
12	FUNCTION2 PFK	30.15	1.146e3					0.4	NO		bb		0.000
13	FUNCTION2 PFK	29.76	4.847e3					0.6	NO		bb		0.000
14	FUNCTION2 PFK	29.69	6.176e3					0.9	NO		db		0.000
15	FUNCTION2 PFK	29.64	7.786e3					1.1	NO		bd		0.000
16	FUNCTION2 PFK	29.49	2.327e3					0.5	NO		bb		0.000
17	FUNCTION2 PFK	29.41	2.450e3					0.5	NO		bb		0.000
18	FUNCTION2 PFK	29.31	8.292e3					0.7	NO		db		0.000
19	FUNCTION2 PFK	29.24	1.380e4					1.4	NO		dd		0.000
20	FUNCTION2 PFK	29.18	7.722e3					0.9	NO		bd		0.000
21	FUNCTION2 PFK	29.07	4.359e3					0.7	NO		bb		0.000
22	FUNCTION2 PFK	28.81	3.084e4					1.8	NO		db		0.000
23	FUNCTION2 PFK	28.77	3.219e4					2.1	NO		dd		0.000
24	FUNCTION2 PFK	28.71	2.791e4					2.6	NO		dd		0.000
25	FUNCTION2 PFK	28.66	3.309e4					3.2	YES		bd		0.000
26	FUNCTION2 PFK	28.52	1.009e4					1.1	NO		bb		0.000
27	FUNCTION2 PFK	32.06	2.803e4					1.6	NO		bb		0.000
28	FUNCTION2 PFK	31.91	4.698e3					0.8	NO		bb		0.000
29	FUNCTION2 PFK	31.74	2.099e4					2.1	NO		bb		0.000
30	FUNCTION2 PFK	31.67	1.618e4					1.5	NO		db		0.000
31	FUNCTION2 PFK	31.60	1.530e4					1.3	NO		bd		0.000
32	FUNCTION2 PFK	31.35	1.245e4					1.5	NO		bb		0.000
33	FUNCTION2 PFK	31.21	3.091e3					0.5	NO		bb		0.000
34	FUNCTION2 PFK	31.03	8.164e3					0.7	NO		db		0.000
35	FUNCTION2 PFK	31.00	6.957e3					1.1	NO		dd		0.000
36	FUNCTION2 PFK	30.97	3.081e4					1.4	NO		dd		0.000
37	FUNCTION2 PFK	30.80	3.887e4					2.2	NO		bd		0.000

ID: CS4CF, Name: 23081108, Date: 11-Aug-2023, Time: 15:40:53, Conditions: AUTOSPEC01, User: pk

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION2 PFK	30.74	9.249e3					1.3	NO		db		0.000
39	FUNCTION2 PFK	30.70	3.630e3					0.7	NO		bd		0.000
40	FUNCTION2 PFK	30.65	1.637e4					1.8	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	32.71	4.437e4					2.7	NO		bb		0.000
2	FUNCTION3 PFK	36.41	1.073e4					1.5	NO		bb		0.000
3	FUNCTION3 PFK	34.51	3.351e4					2.4	NO		bb		0.000
4	FUNCTION3 PFK	34.21	2.868e4					2.6	NO		db		0.000
5	FUNCTION3 PFK	34.16	3.198e4					2.9	NO		bd		0.000
6	FUNCTION3 PFK	34.00	1.616e4					1.7	NO		bb		0.000

PFK4

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

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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	3.745e3					1.1	NO		bb		
2	FUNCTION5 PFK	44.19	2.102e3					0.7	NO		bb		
3	FUNCTION5 PFK	44.14	3.396e3					1.0	NO		bb		
4	FUNCTION5 PFK	44.07	7.141e3					1.3	NO		bb		
5	FUNCTION5 PFK	43.48	1.067e3					0.6	NO		bb		
6	FUNCTION5 PFK	43.23	7.864e3					1.0	NO		bb		
7	FUNCTION5 PFK	43.17	8.845e3					1.9	NO		bb		
8	FUNCTION5 PFK	43.11	7.866e3					1.8	NO		bb		
9	FUNCTION5 PFK	42.93	5.675e3					1.4	NO		bb		
10	FUNCTION5 PFK	45.81	4.972e3					1.2	NO		bb		
11	FUNCTION5 PFK	45.70	3.072e3					0.9	NO		bb		
12	FUNCTION5 PFK	45.65	5.917e3					1.4	NO		bb		
13	FUNCTION5 PFK	45.47	1.270e3					0.7	NO		bb		
14	FUNCTION5 PFK	45.44	1.475e3					0.7	NO		db		
15	FUNCTION5 PFK	45.41	1.740e3					0.6	NO		bd		
16	FUNCTION5 PFK	45.35	8.796e3					1.3	NO		db		
17	FUNCTION5 PFK	45.32	1.011e4					1.8	NO		bd		
18	FUNCTION5 PFK	45.26	2.404e3					0.8	NO		bb		
19	FUNCTION5 PFK	44.77	2.934e3					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...	26.47	1.117e2					4.4	YES		bb		0.000
2	FUNCTION1 HXCD...	25.94	8.128e1					3.8	YES		bb		0.000
3	FUNCTION1 HXCD...	24.96	8.177e1					3.1	YES		bb		0.000

ETHERS2

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

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	30.48	8.897e2					35.4	YES		bb		0.000

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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	40.83	8.627e1					2.7	NO		bb		0.000
2	FUNCTION4 NCDPE	38.90	7.457e1					2.1	NO		db		0.000
3	FUNCTION4 NCDPE	38.72	1.037e2					2.9	NO		dd		0.000
4	FUNCTION4 NCDPE	38.65	8.197e1					3.1	YES		bd		0.000

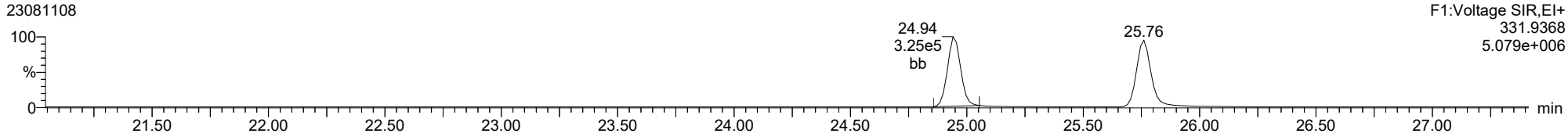
ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	45.64	8.374e1					1.8	NO		bb		0.000

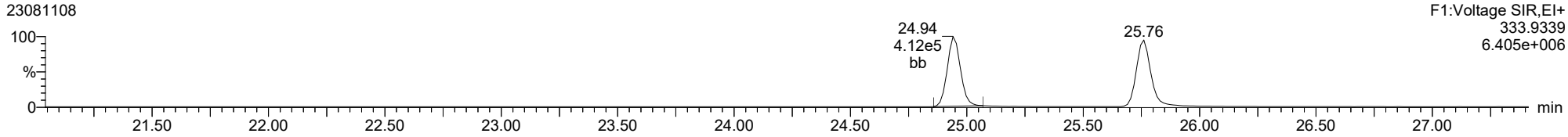
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ID: CS4CF, Name: 23081108, Date: 11-Aug-2023, Time: 15:40:53, Conditions: AUTOSPEC01, User: pk

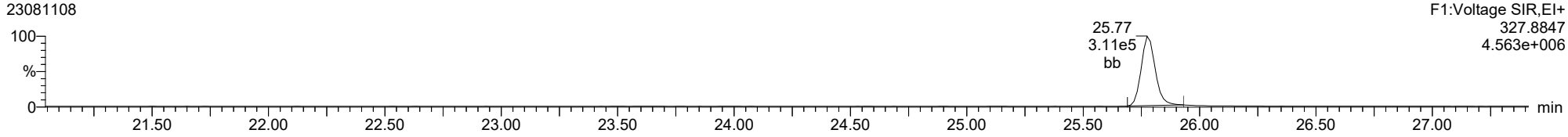
13C-1234-TCDD



13C-1234-TCDD

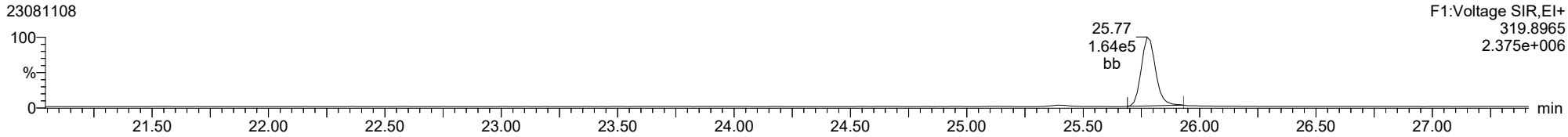


37CL-2378-TCDD

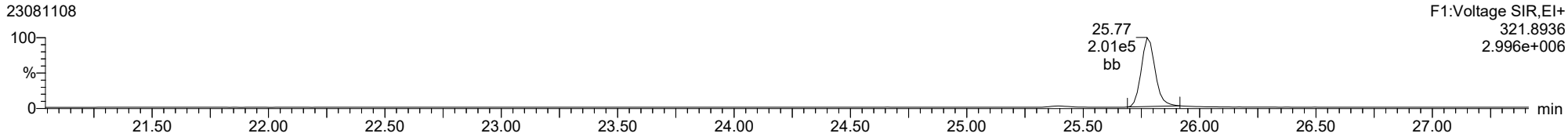


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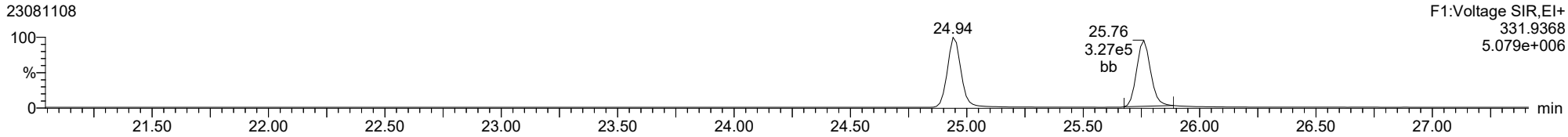
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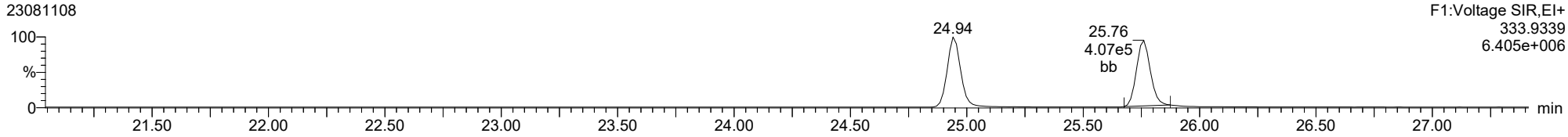
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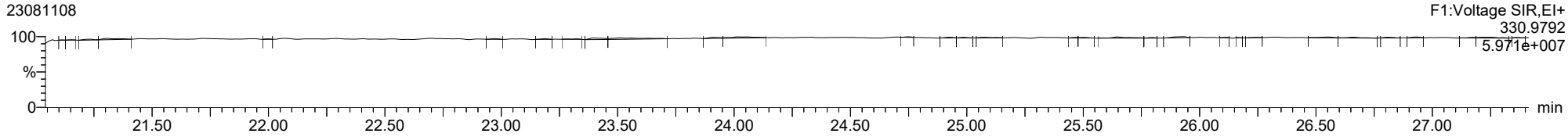
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13C-2378-TCDD

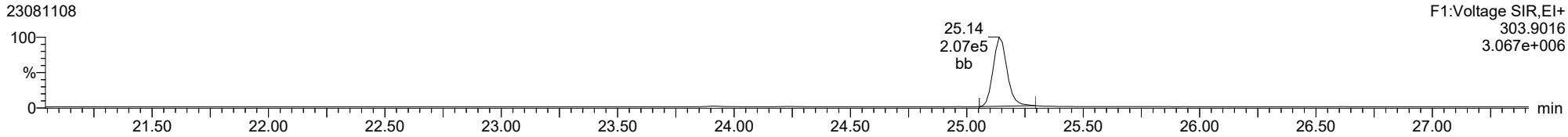


FUNCTION1 PFK

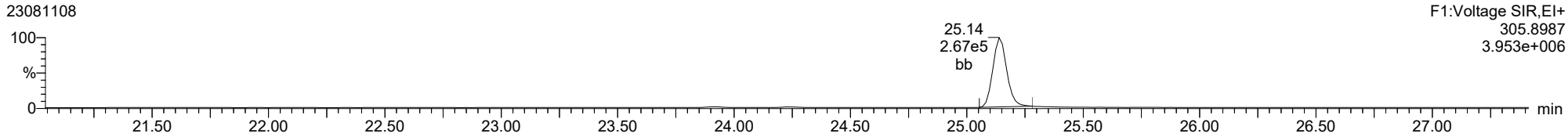


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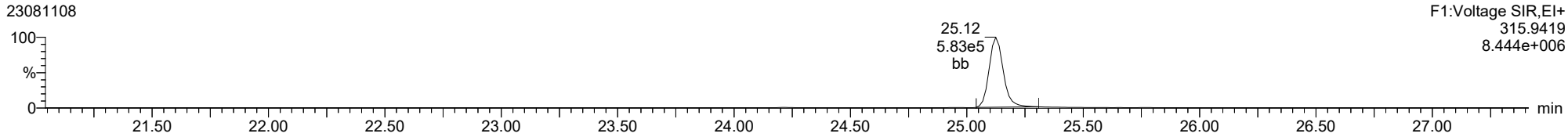
2378-TCDF



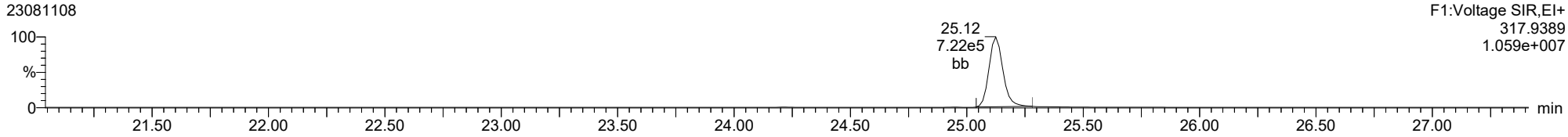
2378-TCDF



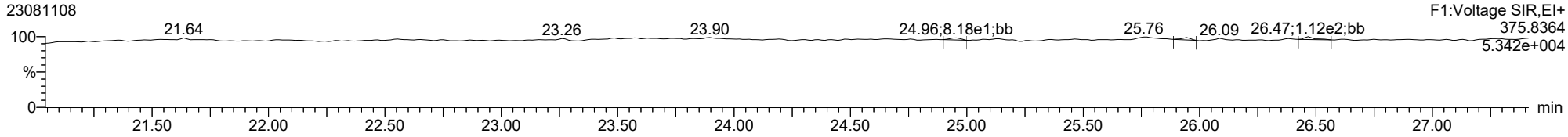
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13C-2378-TCDF

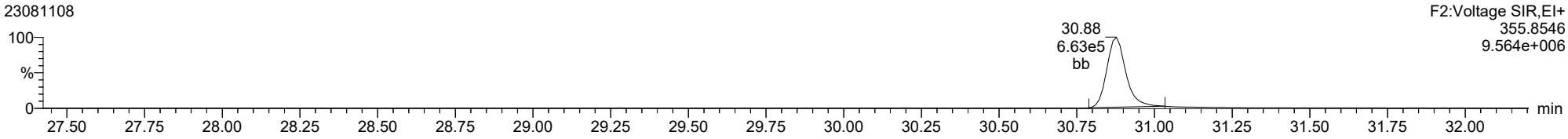


FUNCTION1 HXCDPE

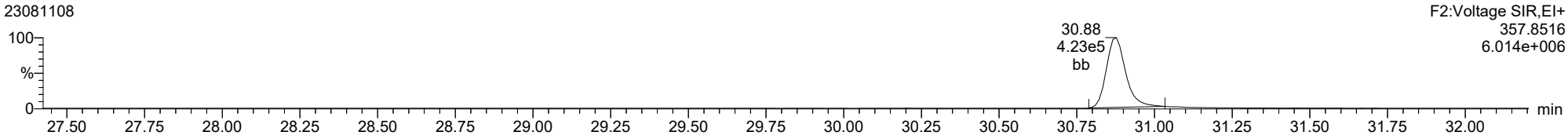


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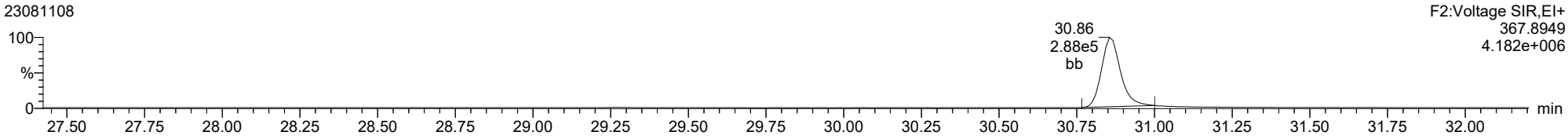
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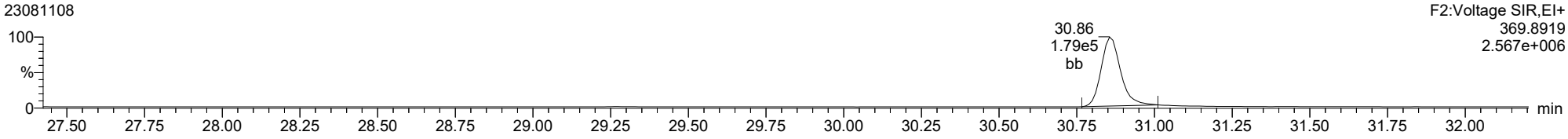
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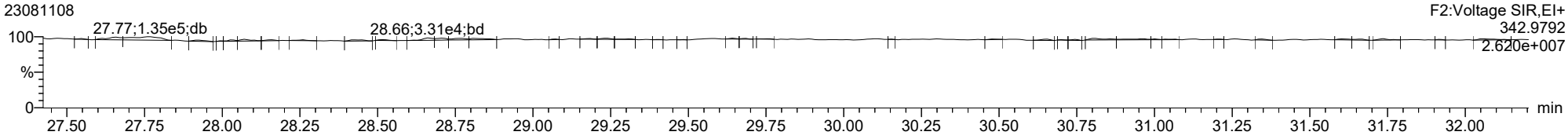
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13C-12378-PeCDD

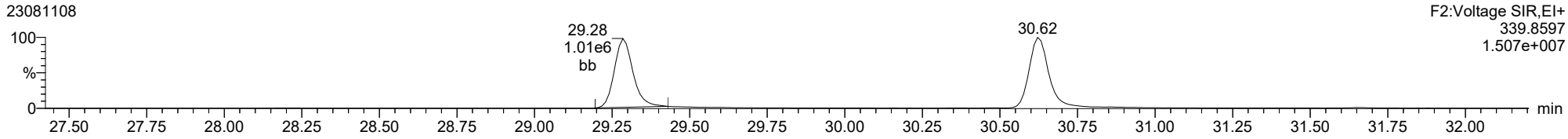


FUNCTION2 PFK

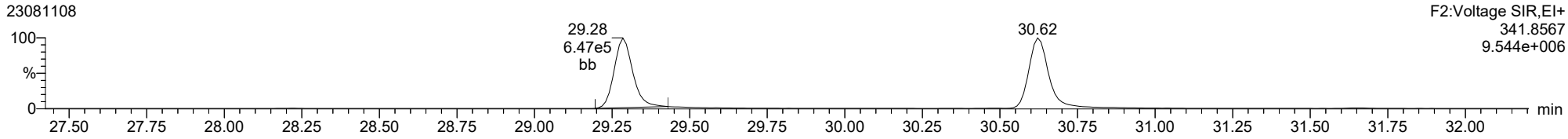


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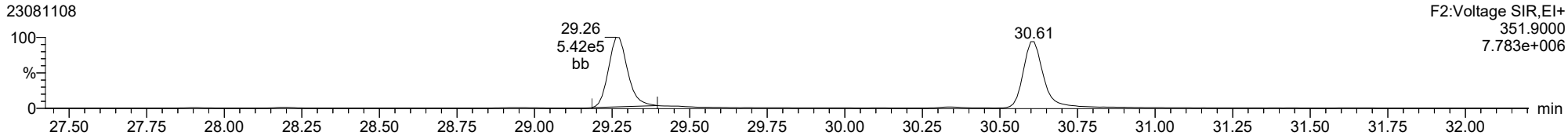
12378-PeCDF



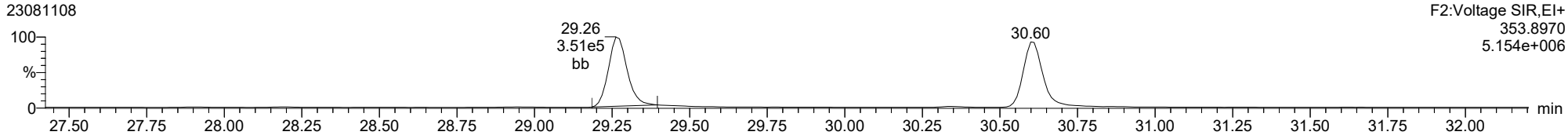
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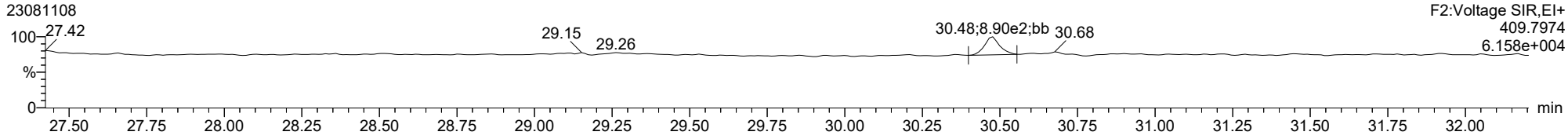
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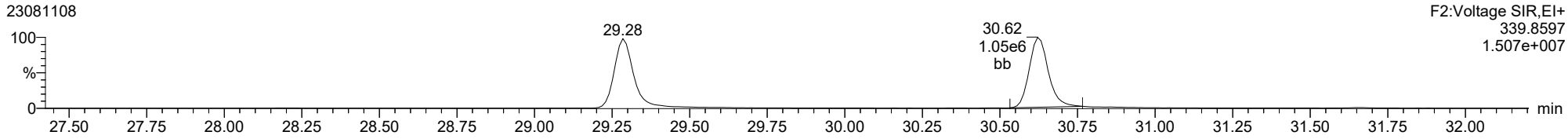


FUNCTION2 HPCDPE

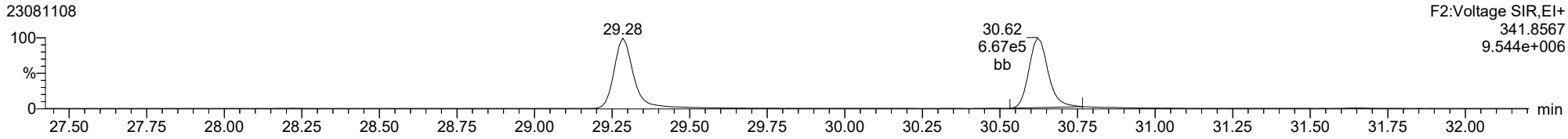


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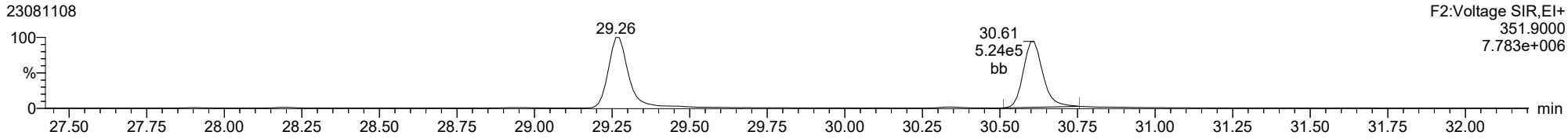
23478-PeCDF



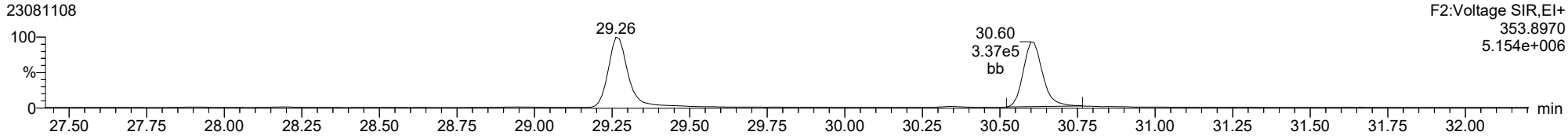
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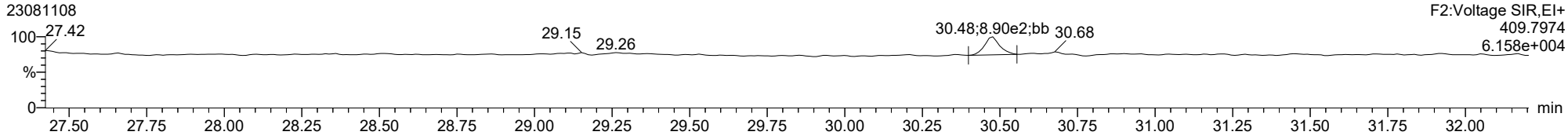
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13C-23478-PeCDF

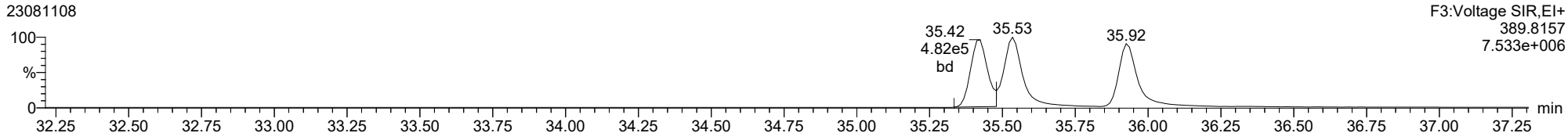


FUNCTION2 HPCDPE

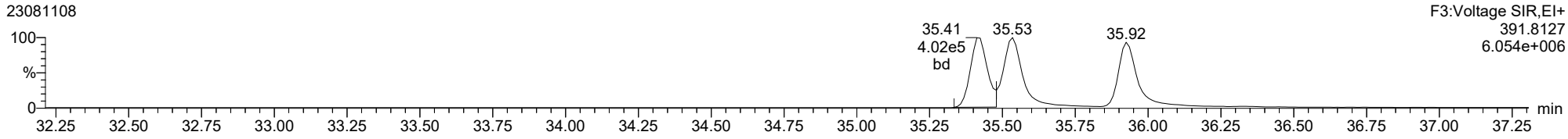


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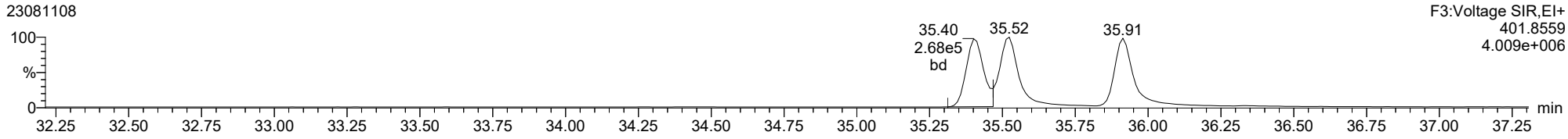
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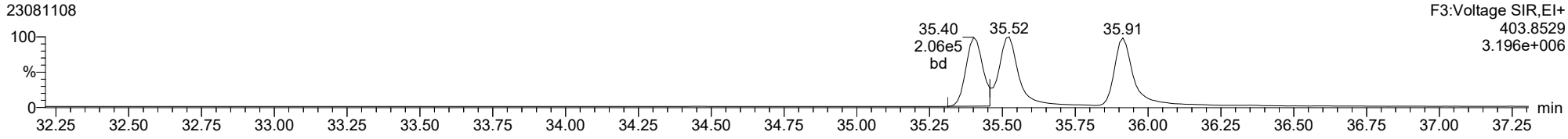
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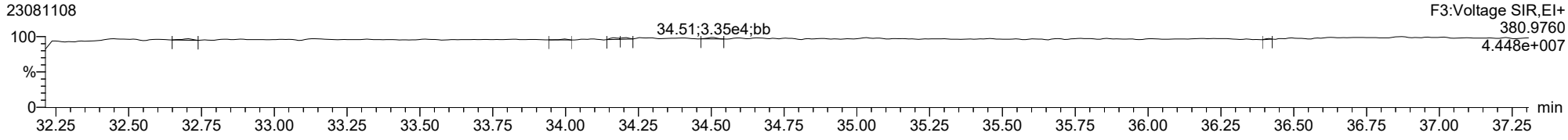
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13C-123478-HxCDD

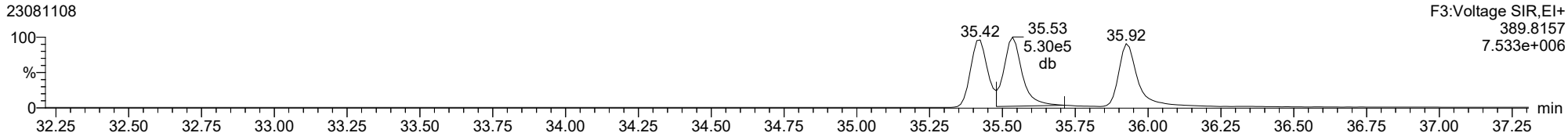


FUNCTION3 PFK

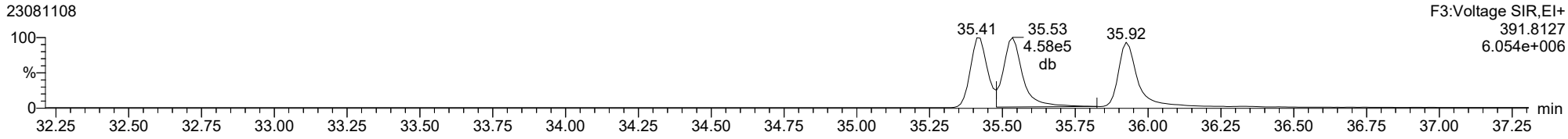


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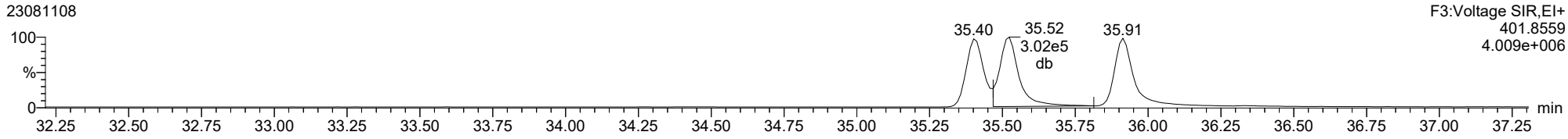
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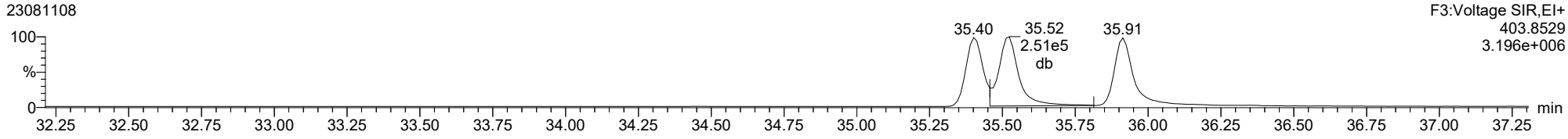
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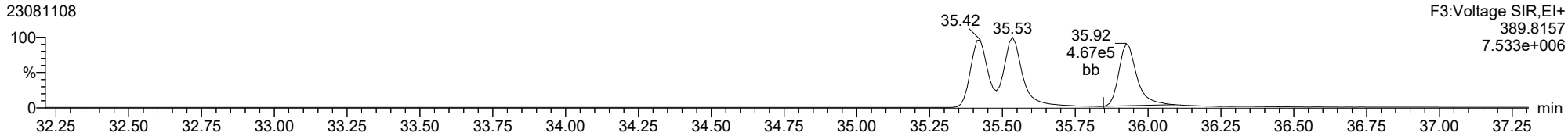


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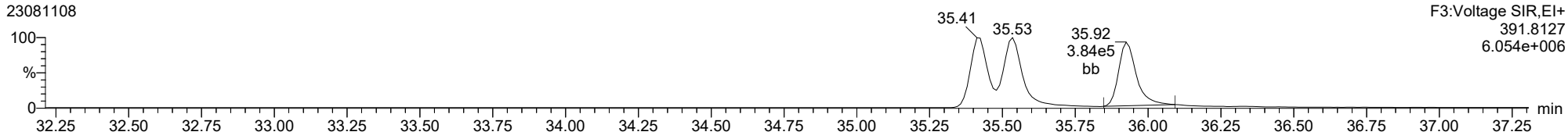


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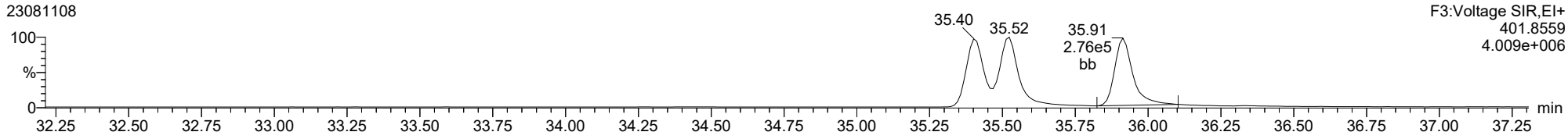
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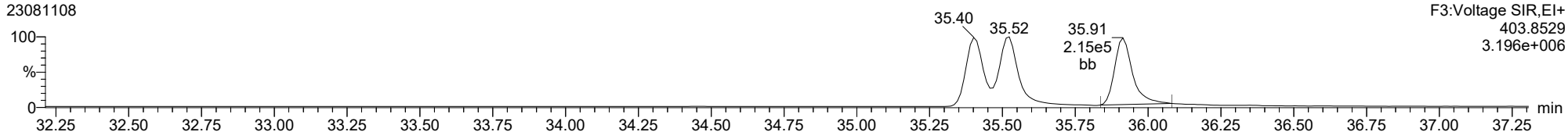
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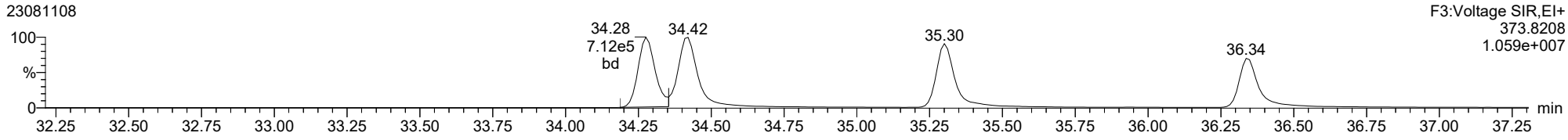


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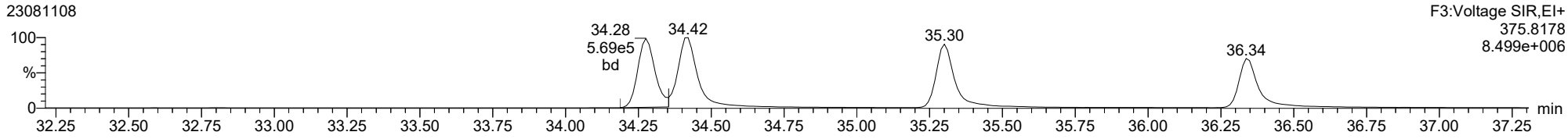


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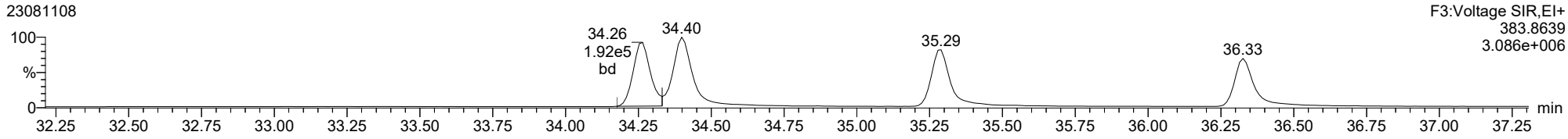
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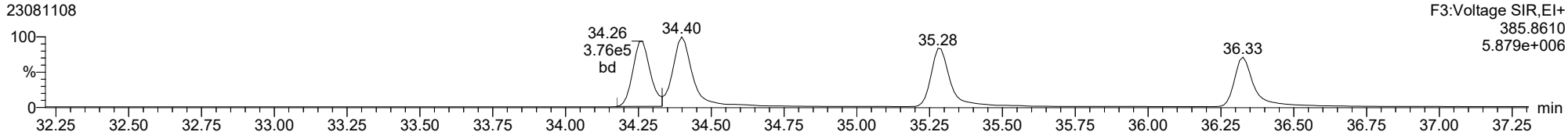
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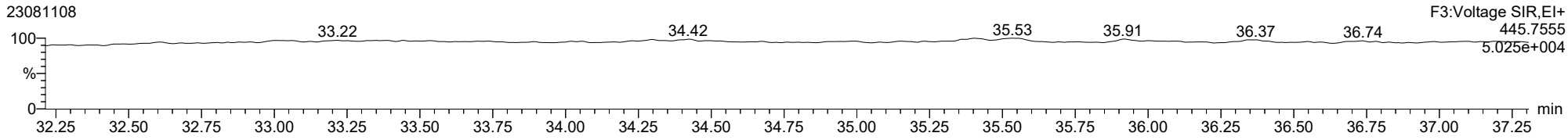
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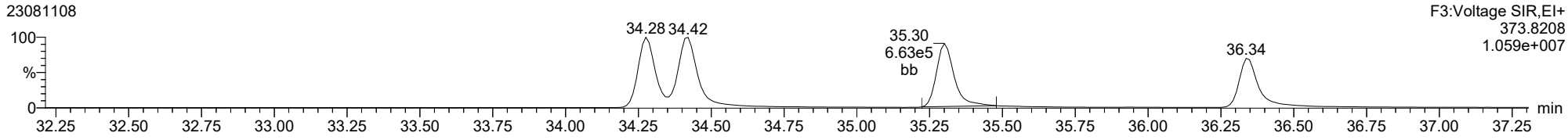


FUNCTION3 OCDPE

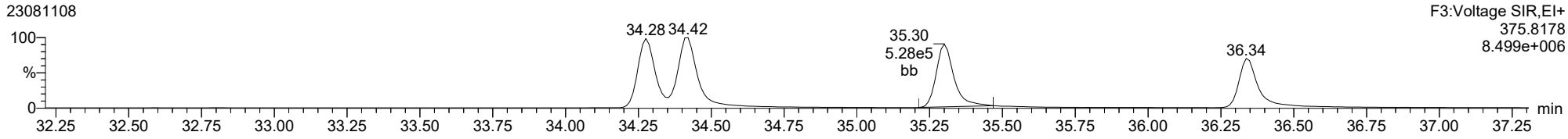


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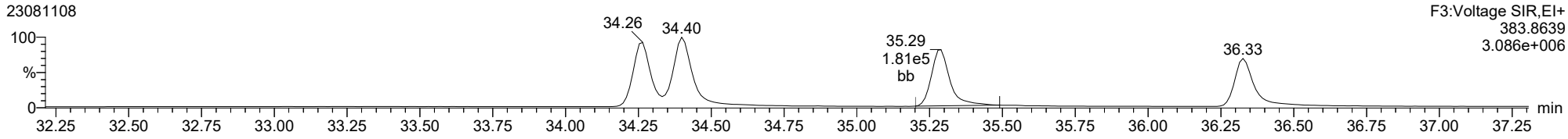
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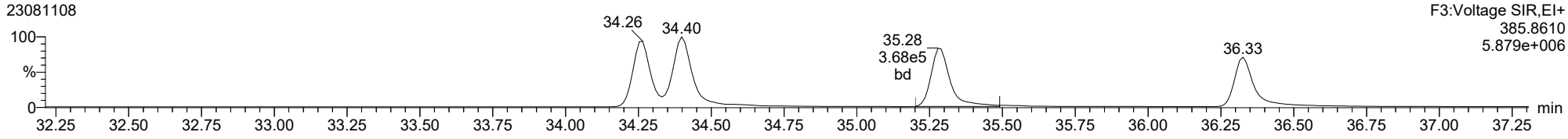
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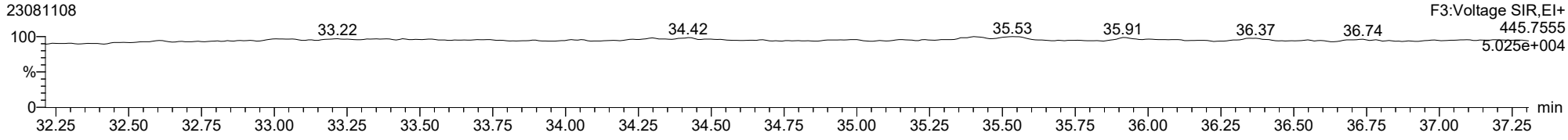
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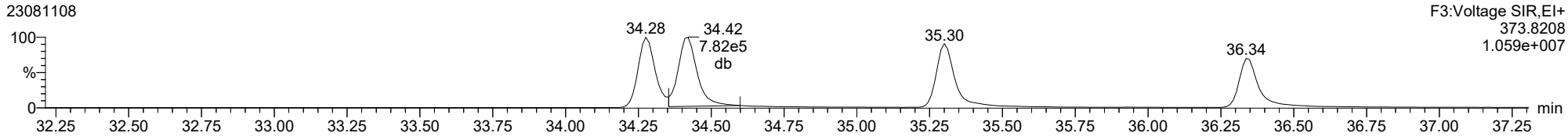


FUNCTION3 OCDPE

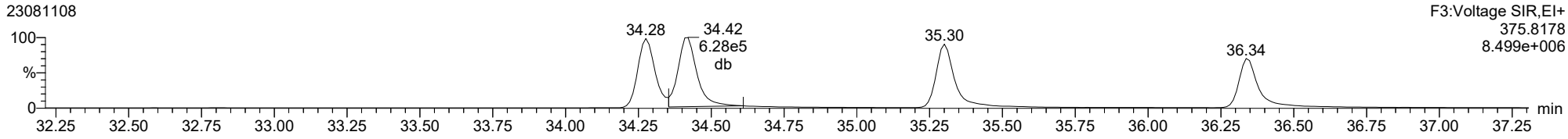


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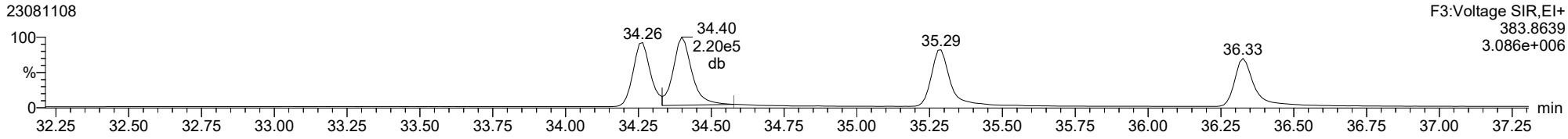
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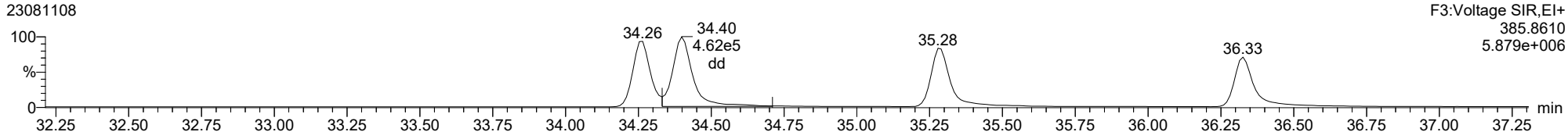
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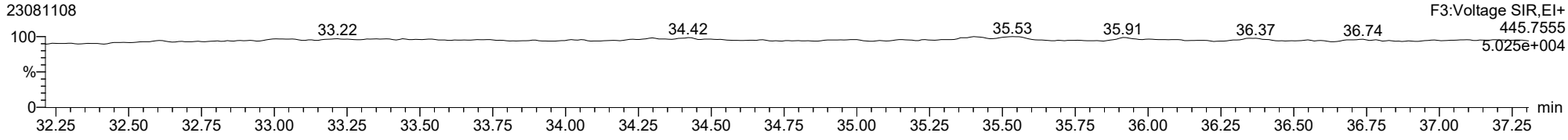
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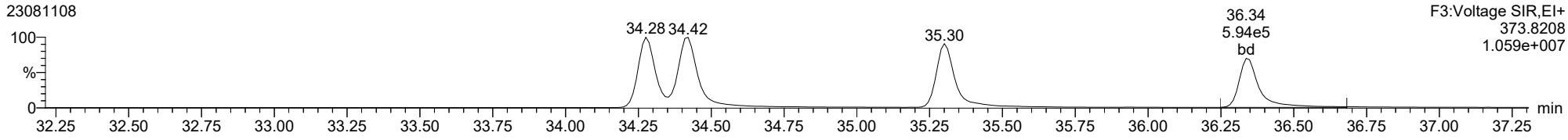


FUNCTION3 OCDPE

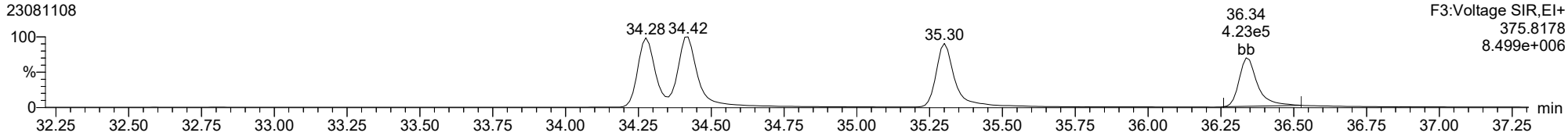


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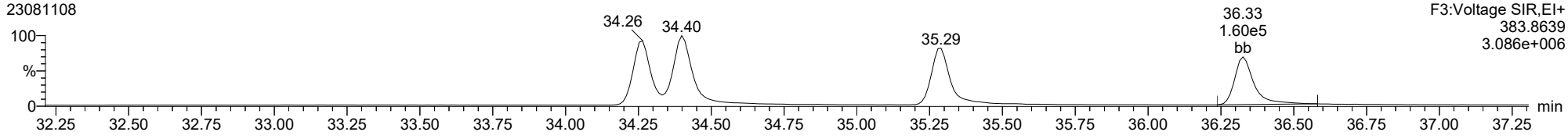
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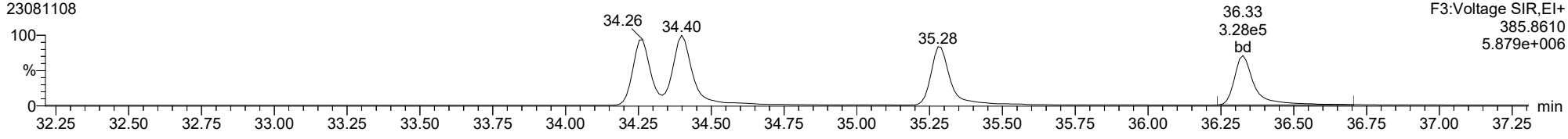
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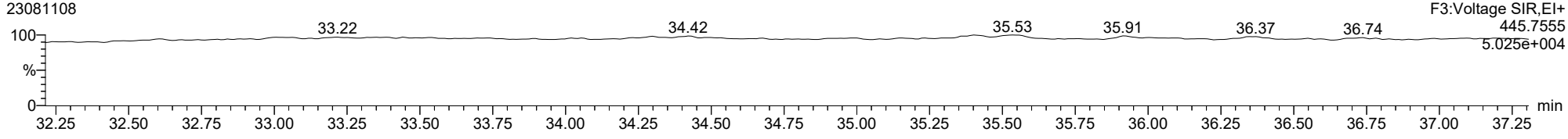
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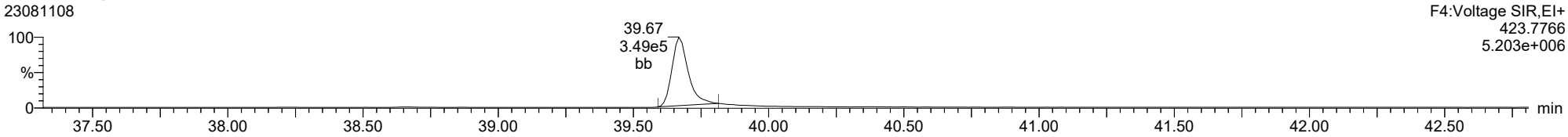


FUNCTION3 OCDPE

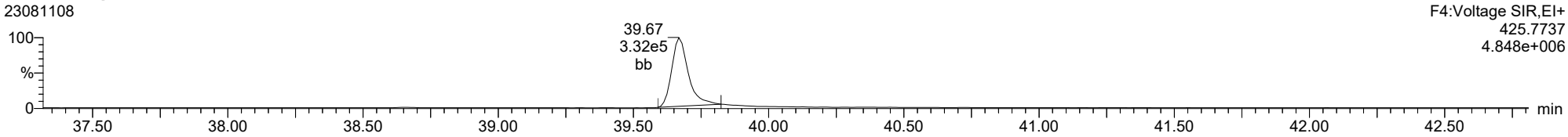


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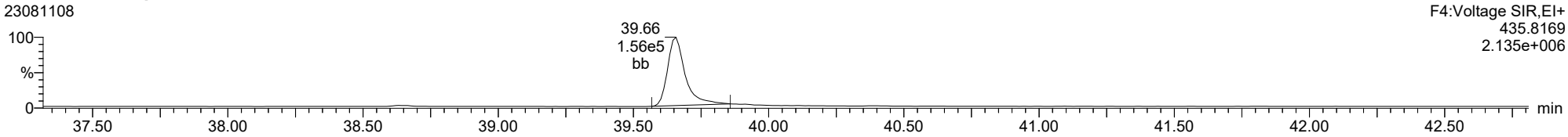
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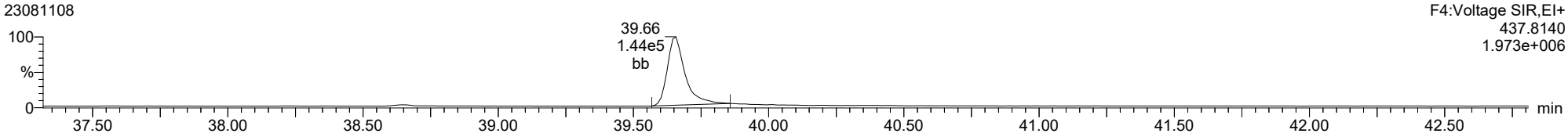
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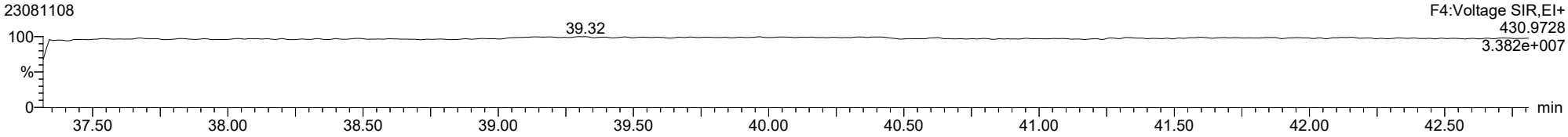
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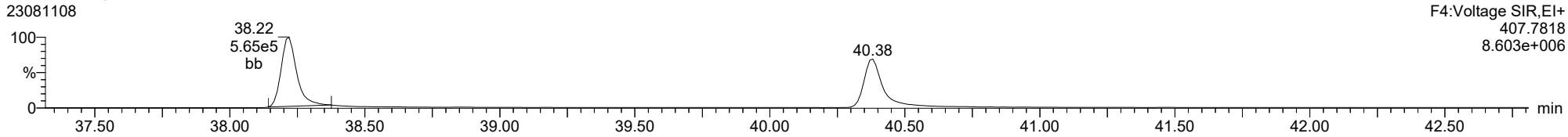


FUNCTION4 PFK

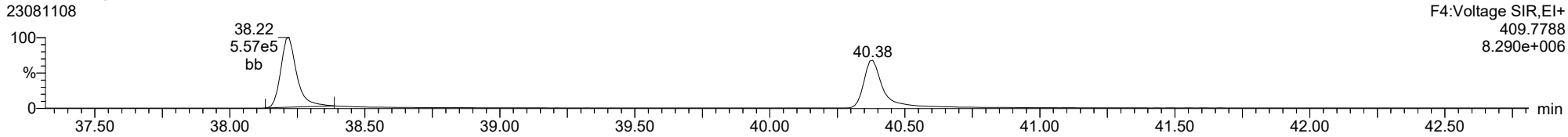


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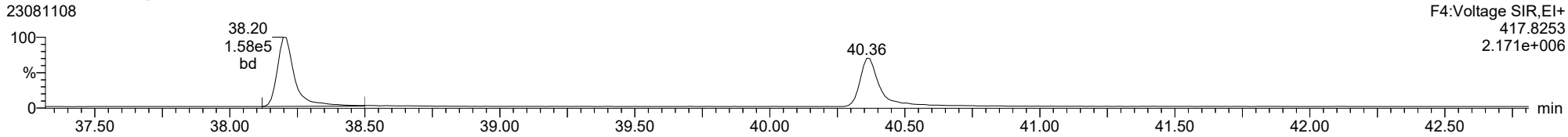
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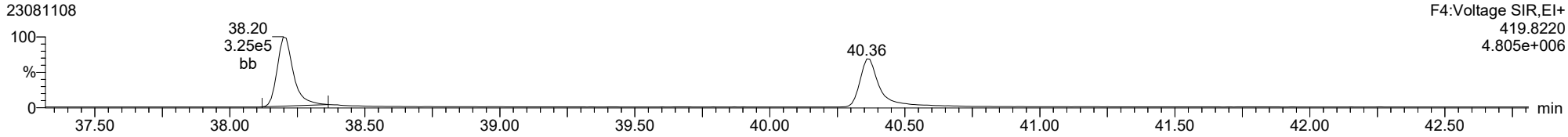
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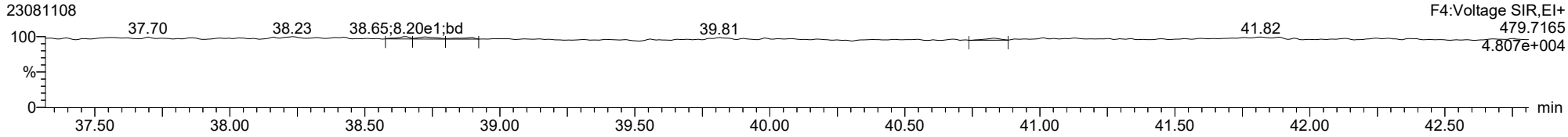
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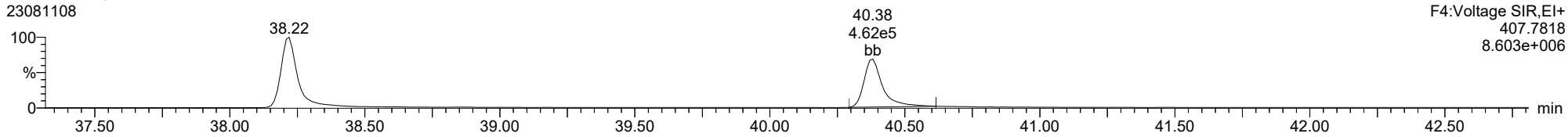


FUNCTION4 NCDPE

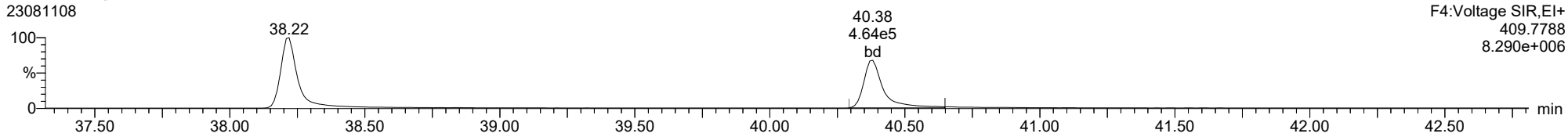


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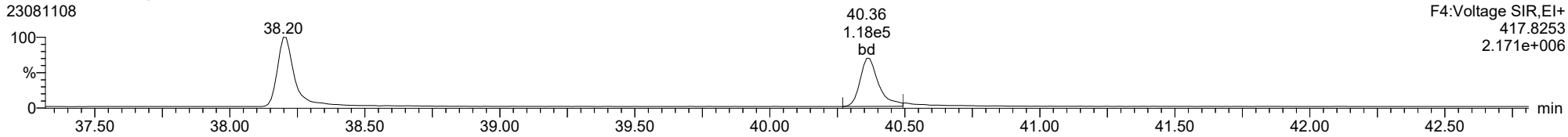
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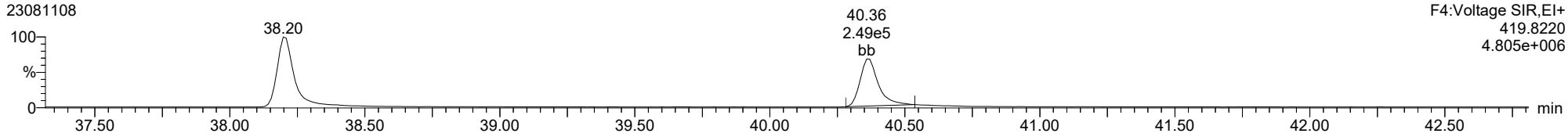
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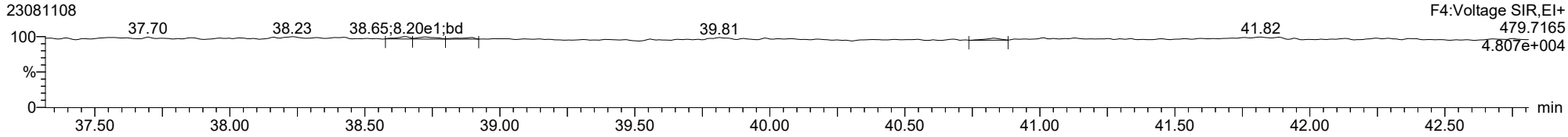
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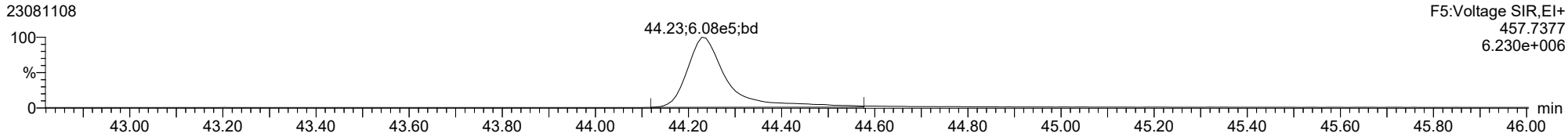


FUNCTION4 NCDPE

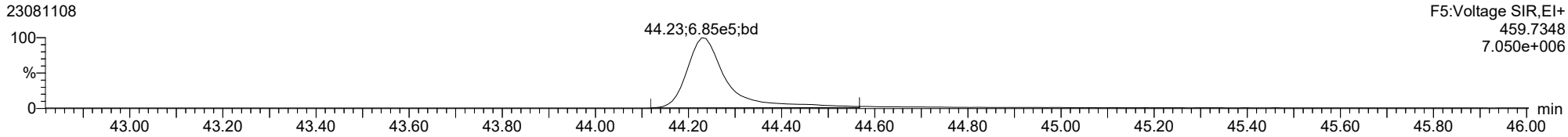


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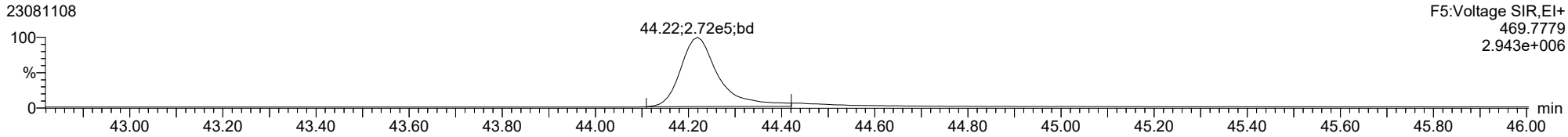
OCDD



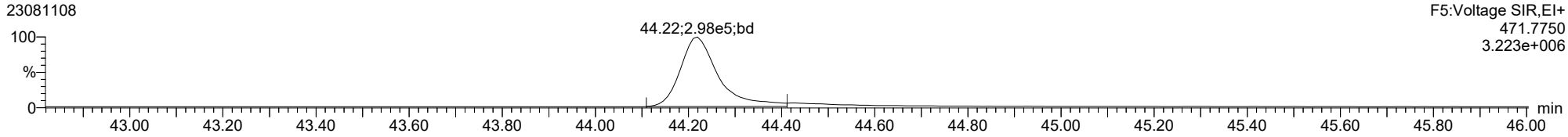
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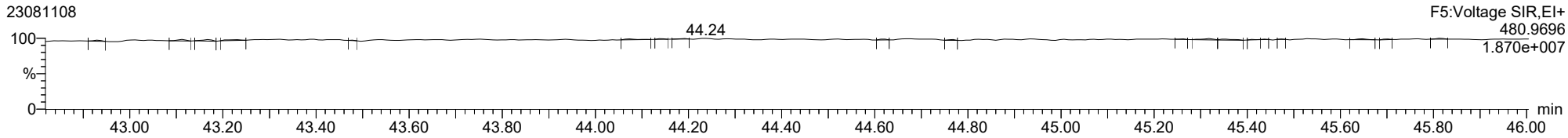
13C-OCDD



13C-OCDD

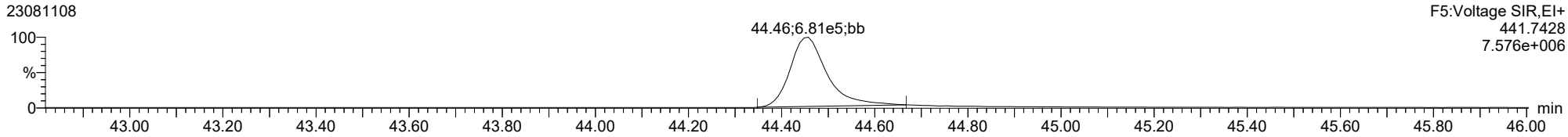


FUNCTION5 PFK

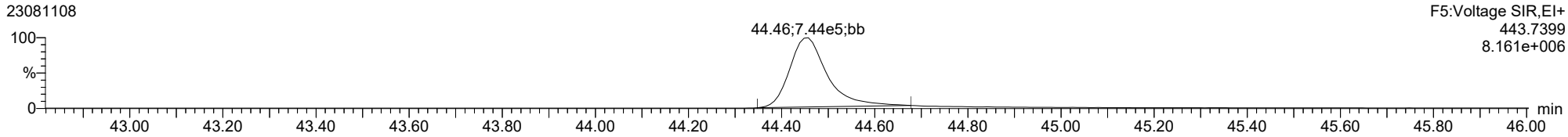


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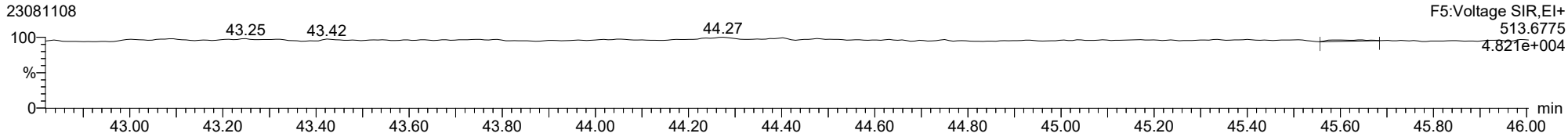
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OCDF

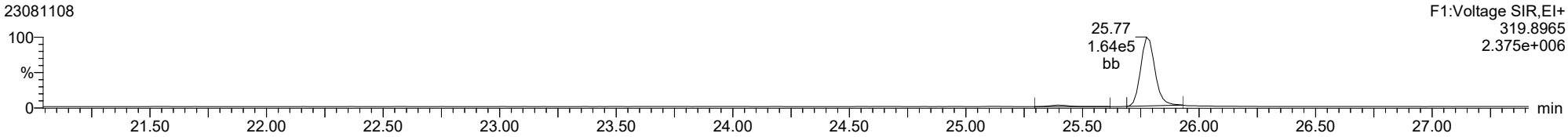


FUNCTION5 DCDPE

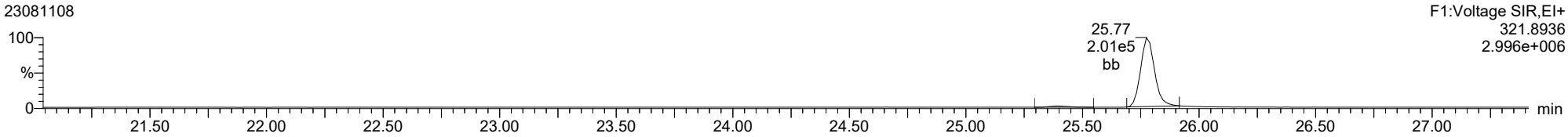


ID: CS4CF, Name: 23081108, Date: 11-Aug-2023, Time: 15:40:53, Conditions: AUTOSPEC01, User: pk

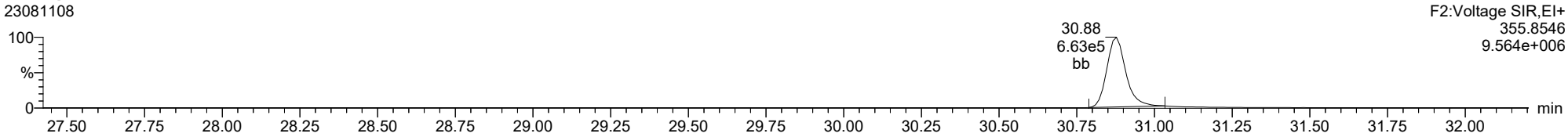
Total-tetradioxins



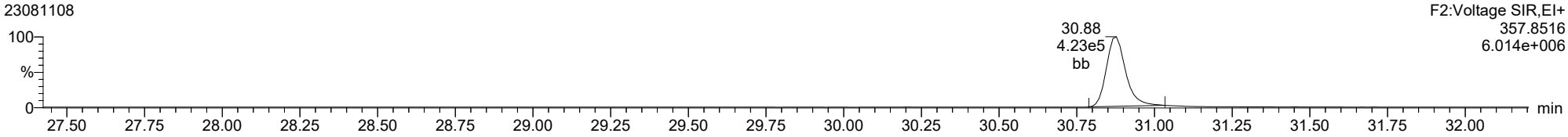
Total-tetradioxins



Total-pentadioxins

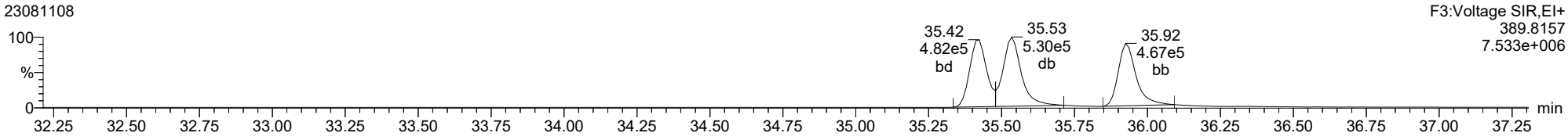


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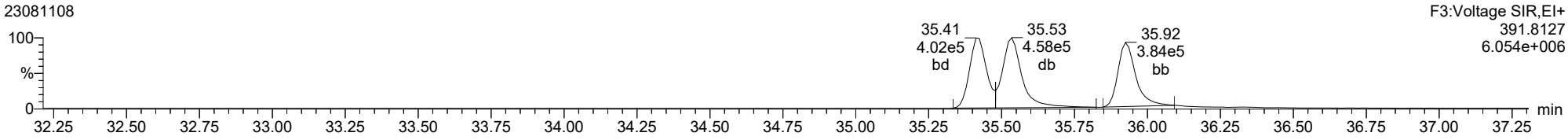


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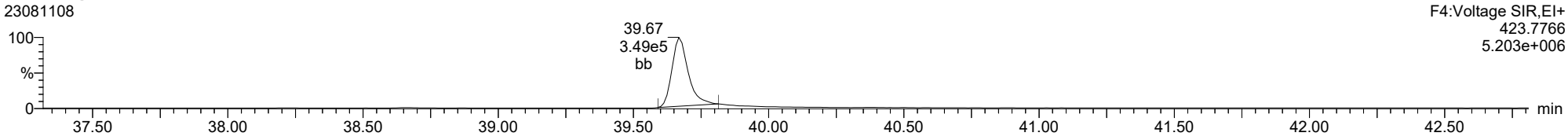
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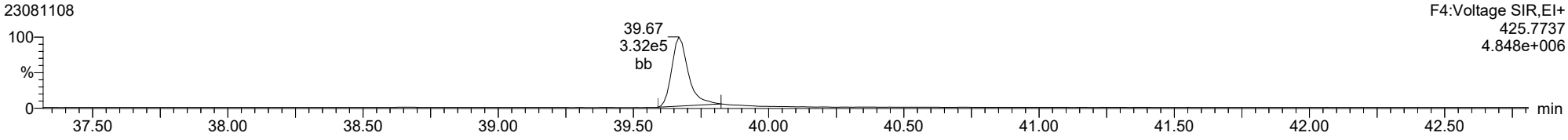
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Total-heptadioxins

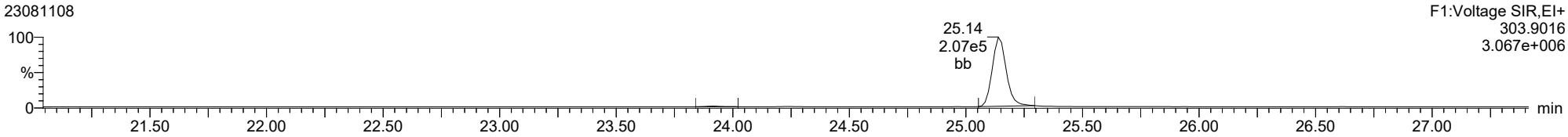


Total-heptadioxins

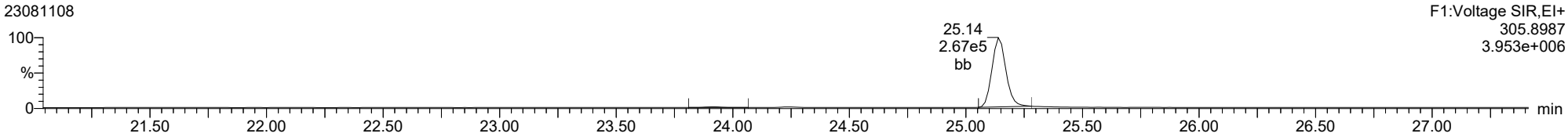


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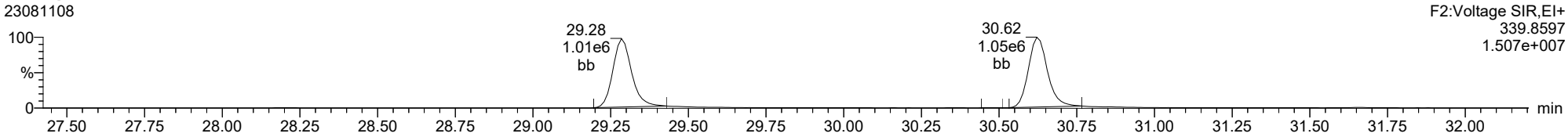
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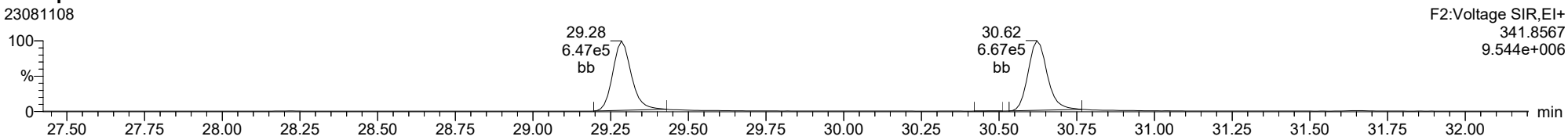
Total-tetrafurans



Total-pentafurans



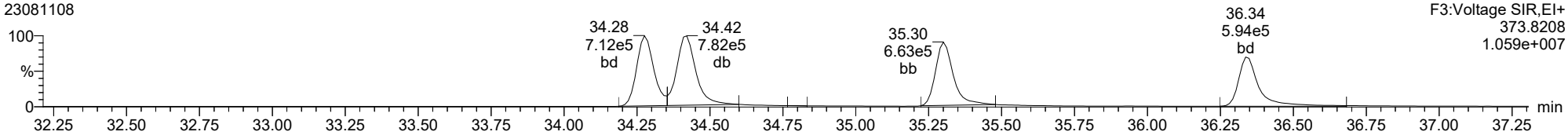
Total-pentafurans



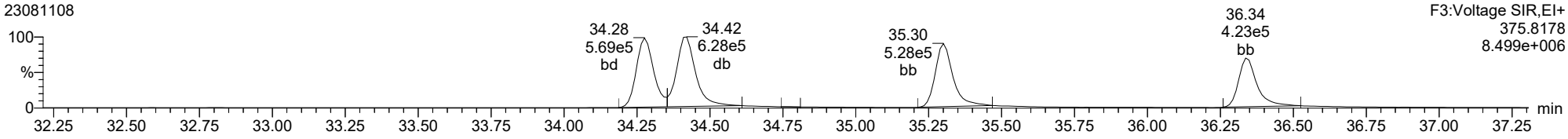
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Last Altered: Saturday, August 12, 2023 10:45:18 Pacific Daylight Time
Printed: Tuesday, August 15, 2023 12:24:49 Pacific Daylight Time

ID: CS4CF, Name: 23081108, Date: 11-Aug-2023, Time: 15:40:53, Conditions: AUTOSPEC01, User: pk

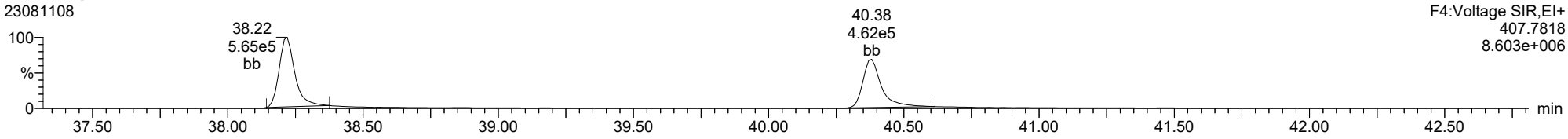
Total-hexafurans



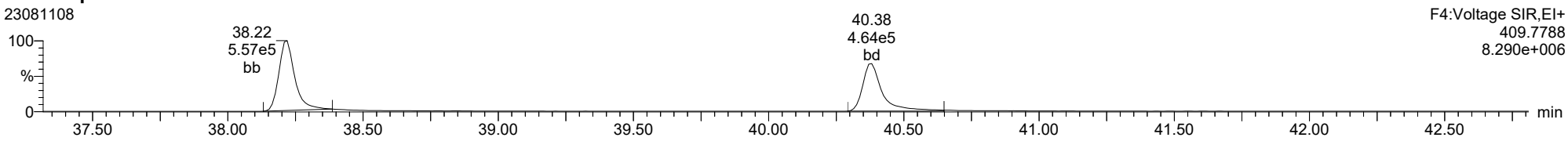
Total-hexafurans



Total-heptafurans



Total-heptafurans



Dataset: T:\Autospec\Processed Data Batch\230811ICIH.qld
Last Altered: Saturday, August 12, 2023 10:45:18 Pacific Daylight Time
Printed: Tuesday, August 15, 2023 12:25:02 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin230810.mdb 11 Aug 2023 22:18:32
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 10:45:18

ID: CS5CF, Name: 23081109, Date: 11-Aug-2023, Time: 16:29:22, 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	25.139	1.001	1.176e6	1.517e6	0.903	0.775	0.770	1838	1596	1.74e7	2.24e7	9439.9	14021.2	NO	bb	bb	200.683
12378-PeCDF	29.285	1.000	6.873e6	4.363e6	0.923	1.575	1.550	6342	5190	1.05e8	6.61e7	16593.6	12739.4	NO	bb	bb	1003.746
23478-PeCDF	30.622	1.000	7.218e6	4.643e6	0.991	1.555	1.550	6342	5190	1.13e8	7.21e7	17800.7	13902.4	NO	bb	bb	1020.400
123478-HxCDF	34.276	1.000	5.150e6	4.112e6	1.128	1.252	1.240	5119	1953	8.00e7	6.38e7	15621.4	32656.0	NO	bd	bd	1008.590
234678-HxCDF	35.301	1.000	5.220e6	4.187e6	1.081	1.247	1.240	5119	1953	7.99e7	6.42e7	15612.0	32865.0	NO	bb	bb	1036.310
123678-HxCDF	34.421	1.001	5.565e6	4.427e6	1.032	1.257	1.240	5119	1953	8.17e7	6.50e7	15950.5	33289.4	NO	db	db	1022.236
123789-HxCDF	36.337	1.000	4.314e6	3.419e6	0.988	1.262	1.240	5119	1953	6.39e7	5.10e7	12485.9	26087.4	NO	bb	bb	1056.656
1234678-HpCDF	38.220	1.000	4.651e6	4.483e6	1.164	1.037	1.050	6069	7386	7.66e7	7.36e7	12629.8	9967.1	NO	bb	bb	1032.094
1234789-HpCDF	40.381	1.000	3.737e6	3.616e6	1.104	1.033	1.050	6069	7386	5.31e7	5.10e7	8752.5	6907.0	NO	bb	bb	1044.743
OCDF	44.458	1.005	6.691e6	7.348e6	1.130	0.911	0.890	3831	4231	8.23e7	8.95e7	21469.5	21141.7	NO	bb	bb	2176.298
2378-TCDD	25.774	1.000	1.061e6	1.307e6	1.243	0.812	0.770	1257	1421	1.58e7	1.96e7	12528.1	13766.3	NO	bb	bb	205.454
12378-PeCDD	30.878	1.001	5.066e6	3.250e6	1.150	1.559	1.550	1999	1551	7.64e7	4.87e7	38189.0	31421.9	NO	bb	bb	1013.746
123478-HxCDD	35.423	1.001	4.057e6	3.319e6	0.960	1.223	1.240	1937	4756	6.49e7	5.26e7	33525.8	11070.6	NO	bd	bd	967.641
123678-HxCDD	35.535	1.000	4.425e6	3.631e6	0.883	1.219	1.240	1937	4756	6.67e7	5.48e7	34440.8	11527.4	NO	db	db	1048.787
123789-HxCDD	35.925	1.011	3.986e6	3.292e6	0.804	1.211	1.240	1937	4756	6.01e7	5.01e7	31052.7	10540.7	NO	bb	bb	1088.283
1234678-HpCDD	39.668	1.000	3.162e6	2.947e6	1.200	1.073	1.050	4823	2878	4.86e7	4.59e7	10069.1	15933.8	NO	bb	bb	982.937
OCDD	44.238	1.000	5.800e6	6.537e6	1.059	0.887	0.890	4770	6875	7.05e7	7.95e7	14784.9	11558.8	NO	bd	bd	2041.622
13C-2378-TCDF	25.125	1.007	6.605e5	8.257e5	1.835	0.800	0.770	1355	1418	9.81e6	1.21e7	7236.3	8550.4	NO	bb	bb	104.767
13C-12378-PeCDF	29.273	1.174	7.389e5	4.736e5	1.377	1.560	1.550	3865	1916	1.10e7	7.07e6	2852.7	3691.6	NO	bb	bb	113.971
13C-23478-PeCDF	30.610	1.227	7.158e5	4.576e5	1.301	1.564	1.550	3865	1916	1.08e7	6.76e6	2790.1	3529.9	NO	bb	bb	116.672
13C-123478-HxCDF	34.265	0.954	2.757e5	5.383e5	1.091	0.512	0.510	1842	2385	4.22e6	8.27e6	2289.0	3466.7	NO	bd	bd	92.231
13C-123678-HxCDF	34.398	0.958	3.323e5	6.146e5	1.340	0.541	0.510	1842	2385	4.54e6	8.80e6	2464.6	3688.5	NO	dd	db	87.307
13C-234678-HxCDF	35.290	0.983	2.846e5	5.548e5	1.093	0.513	0.510	1842	2385	4.19e6	8.16e6	2275.5	3420.3	NO	bb	bb	94.861
13C-123789-HxCDF	36.326	1.012	2.509e5	4.901e5	0.952	0.512	0.510	1842	2385	3.70e6	7.18e6	2007.2	3011.1	NO	bb	bb	96.229
13C-1234678-HpCDF	38.209	1.064	2.383e5	5.222e5	0.985	0.456	0.440	2249	3500	3.88e6	8.42e6	1723.2	2405.2	NO	bb	bb	95.414
13C-1234789-HpCDF	40.370	1.124	2.063e5	4.313e5	0.756	0.478	0.440	2249	3500	2.71e6	5.94e6	1204.3	1698.2	NO	bd	bb	104.262
13C-1234-TCDD	24.941	0.000	3.426e5	4.302e5	1.000	0.796	0.770	1437	1188	5.12e6	6.56e6	3565.4	5522.3	NO	bb	bb	100.000
13C-2378-TCDD	25.760	1.033	4.096e5	5.176e5	1.110	0.791	0.770	1437	1188	6.14e6	7.70e6	4273.1	6482.2	NO	bb	bb	108.126
13C-12378-PeCDD	30.855	1.237	4.434e5	2.699e5	0.754	1.642	1.550	1010	988	6.57e6	4.04e6	6507.7	4088.0	NO	bb	bb	122.457
13C-123478-HxCDD	35.401	0.986	4.416e5	3.523e5	0.960	1.253	1.240	1408	1550	6.91e6	5.52e6	4909.6	3563.7	NO	bd	bd	102.212
13C-123678-HxCDD	35.524	0.989	4.826e5	3.876e5	1.159	1.245	1.240	1408	1550	7.11e6	5.68e6	5046.4	3668.2	NO	db	db	92.771
13C-1234678-HpCDD	39.657	1.104	2.704e5	2.477e5	0.629	1.092	1.050	1453	1582	4.01e6	3.70e6	2762.1	2340.5	NO	bb	bb	101.737
13C-OCDD	44.229	1.232	5.451e5	5.964e5	0.635	0.914	0.890	1912	2392	6.54e6	7.08e6	3421.6	2960.5	NO	bd	bd	222.103
13C-123789-HxCDD	35.914	0.000	4.468e5	3.624e5	1.000	1.233	1.240	1408	1550	6.84e6	5.48e6	4854.1	3538.7	NO	bb	bb	100.000
37CL-2378-TCDD	25.774	1.033	2.011e6		1.157			1496		3.00e7		20074.5			bb		224.818

Dataset: T:\Autospec\Processed Data Batch\230811ICIH.qld
Last Altered: Saturday, August 12, 2023 10:45:18 Pacific Daylight Time
Printed: Tuesday, August 15, 2023 12:25:02 Pacific Daylight Time

ID: CS5CF, Name: 23081109, Date: 11-Aug-2023, Time: 16:29:22, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRF	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					1.170		0.770	1838	1596								
1289-TCDF					0.847		0.770	1838	1596								
13468-PECDF					1.241		1.550	461	712								
12389-PECDF					0.880		1.550	6342	5190								
123468-HXCDF					1.206		1.240	5119	1953								
1368-TCDD					1.181		0.770	1257	1421								
1289-TCDD					0.963		0.770	1257	1421								
12479-PECDD					2.166		1.550	1999	1551								
12389-PECDD					1.326		1.550	1999	1551								
124679-HXCDD					1.127		1.240	1937	4756								
1234679-HPCDD					1.303		1.050	4823	2878								
Total-tetrafurans			1.194e6		0.973			1838		1.76e7							203.639
Total-penta1			0.000e0					461		0.00e0							
Total-pentafurans			1.413e7		0.931			6342		2.19e8							2029.440
Total-hexafurans			2.026e7		1.087			5119		3.06e8							4125.241
Total-heptafurans			8.398e6		1.134			6069		1.30e8							2079.518
Total-Furans			5.067e7		1.053			1838		7.54e8							10614.136
Total-tetradioxins			1.084e6		1.129			1257		1.60e7							210.516
Total-pentadioxins			5.077e6		1.548			1999		7.65e7							1015.359
Total-hexadioxins			1.249e7		0.943			1937		1.92e8							3110.180
Total-heptadioxins			3.162e6		1.251			4823		4.86e7							982.937
Total-Dioxins			2.762e7		1.182			1257		4.04e8							7360.637
Total-TEQ			7.828e7					1257		1.16e9							17974.773
FUNCTION1 PFK			3.429e4					454273		8.54e5							
FUNCTION2 PFK			8.951e5					279755		2.13e7							0.000
FUNCTION3 PFK			1.396e5					359621		2.61e6							0.000
FUNCTION4 PFK			2.686e4					287176		8.56e5							
FUNCTION5 PFK			1.797e5					200045		5.77e6							
FUNCTION1 HXCD...			7.815e2					458		1.11e4							0.000
FUNCTION1 HPCD...																	
FUNCTION2 HPCD...			7.618e3					592		1.15e5							0.000
FUNCTION3 OCDPE			4.956e3					644		5.21e4							0.000
FUNCTION4 NCDPE			1.915e3					637		2.00e4							0.000
FUNCTION5 DCDPE			2.784e3					452		2.35e4							0.000

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ID: CS5CF, Name: 23081109, Date: 11-Aug-2023, Time: 16:29:22, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDF	25.14	1.176e6	1.517e6	0.903	0.78	0.77	9439.9	YES	NO	bb	bb	200.683
2	Total-tetrafurans	24.23	7.022e3	1.030e4	0.973	0.68	0.77	53.2	YES	NO	bb	db	1.197
3	Total-tetrafurans	23.91	1.051e4	1.448e4	0.973	0.73	0.77	86.3	YES	NO	bd	bd	1.727
4	Total-tetrafurans	22.68	1.913e2	2.601e2	0.973	0.74	0.77	1.9	NO	NO	bb	bb	0.031

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	12378-PeCDF	29.28	6.873e6	4.363e6	0.923	1.58	1.55	16593.6	YES	NO	bb	bb	1003.7...
2	Total-pentafurans	29.01	5.252e3	3.709e3	0.931	1.42	1.55	11.1	YES	NO	dd	db	0.807
3	Total-pentafurans	28.93	2.668e3	1.651e3	0.931	1.62	1.55	8.0	YES	NO	bd	bd	0.389
4	Total-pentafurans	28.22	2.093e4	1.283e4	0.931	1.63	1.55	39.4	YES	NO	bb	bb	3.039
5	Total-pentafurans	31.87	1.086e3	7.873e2	0.931	1.38	1.55	3.1	NO	NO	dd	db	0.169
6	23478-PeCDF	30.62	7.218e6	4.643e6	0.991	1.55	1.55	17800.7	YES	NO	bb	bb	1020.4...
7	Total-pentafurans	30.49	5.363e3	4.052e3	0.931	1.32	1.55	17.9	YES	NO	bb	bb	0.848
8	Total-pentafurans	30.20	2.868e2	1.979e2	0.931	1.45	1.55	1.7	NO	NO	bb	bb	0.044

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-hexafurans	35.82	2.293e2	1.911e2	1.087	1.20	1.24	1.9	NO	NO	bb	db	0.046
2	234678-HxCDF	35.30	5.220e6	4.187e6	1.081	1.25	1.24	15612.0	YES	NO	bb	bb	1036.3...
3	123678-HxCDF	34.42	5.565e6	4.427e6	1.032	1.26	1.24	15950.5	YES	NO	db	db	1022.2...
4	123478-HxCDF	34.28	5.150e6	4.112e6	1.128	1.25	1.24	15621.4	YES	NO	bd	bd	1008.5...
5	Total-hexafurans	34.12	3.378e3	3.099e3	1.087	1.09	1.24	11.9	YES	NO	bb	bb	0.713
6	Total-hexafurans	32.79	3.542e3	2.725e3	1.087	1.30	1.24	9.2	YES	NO	db	bb	0.690
7	123789-HxCDF	36.34	4.314e6	3.419e6	0.988	1.26	1.24	12485.9	YES	NO	bb	bb	1056.6...

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HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	40.38	3.737e6	3.616e6	1.104	1.03	1.05	8752.5	YES	NO	bb	bb	1044.7...
2	Total-heptafurans	39.67	4.922e3	4.388e3	1.134	1.12	1.05	9.6	YES	NO	bb	bb	1.175
3	Total-heptafurans	38.85	6.140e3	5.800e3	1.134	1.06	1.05	14.7	YES	NO	bb	bb	1.507
4	1234678-HpCDF	38.22	4.651e6	4.483e6	1.164	1.04	1.05	12629.8	YES	NO	bb	bb	1032.0...

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	25.14	1.176e6	1.517e6	0.903	0.78	0.77	9439.9	YES	NO	bb	bb	200.683
2	Total-tetrafurans	24.23	7.022e3	1.030e4	0.973	0.68	0.77	53.2	YES	NO	bb	db	1.197
3	Total-tetrafurans	23.91	1.051e4	1.448e4	0.973	0.73	0.77	86.3	YES	NO	bd	bd	1.727
4	Total-tetrafurans	22.68	1.913e2	2.601e2	0.973	0.74	0.77	1.9	NO	NO	bb	bb	0.031
5	12378-PeCDF	29.28	6.873e6	4.363e6	0.923	1.58	1.55	16593.6	YES	NO	bb	bb	1003.7...
6	Total-pentafurans	29.01	5.252e3	3.709e3	0.931	1.42	1.55	11.1	YES	NO	dd	db	0.807
7	Total-pentafurans	28.93	2.668e3	1.651e3	0.931	1.62	1.55	8.0	YES	NO	bd	bd	0.389
8	Total-pentafurans	28.22	2.093e4	1.283e4	0.931	1.63	1.55	39.4	YES	NO	bb	bb	3.039
9	Total-pentafurans	31.87	1.086e3	7.873e2	0.931	1.38	1.55	3.1	NO	NO	dd	db	0.169
10	23478-PeCDF	30.62	7.218e6	4.643e6	0.991	1.55	1.55	17800.7	YES	NO	bb	bb	1020.4...
11	Total-pentafurans	30.49	5.363e3	4.052e3	0.931	1.32	1.55	17.9	YES	NO	bb	bb	0.848
12	Total-pentafurans	30.20	2.868e2	1.979e2	0.931	1.45	1.55	1.7	NO	NO	bb	bb	0.044
13	Total-hexafurans	35.82	2.293e2	1.911e2	1.087	1.20	1.24	1.9	NO	NO	bb	db	0.046
14	234678-HxCDF	35.30	5.220e6	4.187e6	1.081	1.25	1.24	15612.0	YES	NO	bb	bb	1036.3...
15	123678-HxCDF	34.42	5.565e6	4.427e6	1.032	1.26	1.24	15950.5	YES	NO	db	db	1022.2...
16	123478-HxCDF	34.28	5.150e6	4.112e6	1.128	1.25	1.24	15621.4	YES	NO	bd	bd	1008.5...
17	Total-hexafurans	34.12	3.378e3	3.099e3	1.087	1.09	1.24	11.9	YES	NO	bb	bb	0.713
18	Total-hexafurans	32.79	3.542e3	2.725e3	1.087	1.30	1.24	9.2	YES	NO	db	bb	0.690
19	123789-HxCDF	36.34	4.314e6	3.419e6	0.988	1.26	1.24	12485.9	YES	NO	bb	bb	1056.6...
20	1234789-HpCDF	40.38	3.737e6	3.616e6	1.104	1.03	1.05	8752.5	YES	NO	bb	bb	1044.7...
21	Total-heptafurans	39.67	4.922e3	4.388e3	1.134	1.12	1.05	9.6	YES	NO	bb	bb	1.175
22	Total-heptafurans	38.85	6.140e3	5.800e3	1.134	1.06	1.05	14.7	YES	NO	bb	bb	1.507
23	1234678-HpCDF	38.22	4.651e6	4.483e6	1.164	1.04	1.05	12629.8	YES	NO	bb	bb	1032.0...
24	OCDF	44.46	6.691e6	7.348e6	1.130	0.91	0.89	21469.5	YES	NO	bb	bb	2176.2...

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TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDD	25.77	1.061e6	1.307e6	1.243	0.81	0.77	12528.1	YES	NO	bb	bb	205.454
2	Total-tetradioxins	25.39	2.251e4	2.836e4	1.129	0.79	0.77	203.9	YES	NO	bd	bb	4.860
3	Total-tetradioxins	24.64	9.094e2	1.193e3	1.129	0.76	0.77	10.6	YES	NO	bb	bb	0.201

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12378-PeCDD	30.88	5.066e6	3.250e6	1.150	1.56	1.55	38189.0	YES	NO	bb	bb	1013.7...
2	Total-pentadioxins	30.20	5.265e3	3.663e3	1.548	1.44	1.55	36.0	YES	NO	bb	bb	0.809
3	Total-pentadioxins	29.49	8.899e2	6.316e2	1.548	1.41	1.55	6.0	YES	NO	dd	db	0.138
4	Total-pentadioxins	29.30	4.194e3	3.163e3	1.548	1.33	1.55	26.2	YES	NO	bd	bd	0.667

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123478-HxCDD	35.42	4.057e6	3.319e6	0.960	1.22	1.24	33525.8	YES	NO	bd	bd	967.641
2	Total-hexadioxins	34.42	1.376e3	1.250e3	0.943	1.10	1.24	6.9	NO	NO	dd	dd	0.335
3	Total-hexadioxins	36.55	2.181e2	1.928e2	0.943	1.13	1.24	4.6	NO	NO	bb	bb	0.052
4	Total-hexadioxins	36.33	2.192e4	1.798e4	0.943	1.22	1.24	137.8	YES	NO	bb	bb	5.083
5	123789-HxCDD	35.92	3.986e6	3.292e6	0.804	1.21	1.24	31052.7	YES	NO	bb	bb	1088.2...
6	123678-HxCDD	35.53	4.425e6	3.631e6	0.883	1.22	1.24	34440.8	YES	NO	db	db	1048.7...

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.67	3.162e6	2.947e6	1.200	1.07	1.05	10069.1	YES	NO	bb	bb	982.937

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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	25.77	1.061e6	1.307e6	1.243	0.81	0.77	12528.1	YES	NO	bb	bb	205.454
2	Total-tetradioxins	25.39	2.251e4	2.836e4	1.129	0.79	0.77	203.9	YES	NO	bd	bb	4.860
3	Total-tetradioxins	24.64	9.094e2	1.193e3	1.129	0.76	0.77	10.6	YES	NO	bb	bb	0.201
4	Total-Dioxins	27.06	1.144e2	1.336e2	1.182	0.86	0.77	2.6	NO	NO	bb	db	0.023
5	12378-PeCDD	30.88	5.066e6	3.250e6	1.150	1.56	1.55	38189.0	YES	NO	bb	bb	1013.7...
6	Total-pentadioxins	30.20	5.265e3	3.663e3	1.548	1.44	1.55	36.0	YES	NO	bb	bb	0.809
7	Total-pentadioxins	29.49	8.899e2	6.316e2	1.548	1.41	1.55	6.0	YES	NO	dd	db	0.138
8	Total-pentadioxins	29.30	4.194e3	3.163e3	1.548	1.33	1.55	26.2	YES	NO	bd	bd	0.667
9	123478-HxCDD	35.42	4.057e6	3.319e6	0.960	1.22	1.24	33525.8	YES	NO	bd	bd	967.641
10	Total-hexadioxins	34.42	1.376e3	1.250e3	0.943	1.10	1.24	6.9	NO	NO	dd	dd	0.335
11	Total-hexadioxins	36.55	2.181e2	1.928e2	0.943	1.13	1.24	4.6	NO	NO	bb	bb	0.052
12	Total-hexadioxins	36.33	2.192e4	1.798e4	0.943	1.22	1.24	137.8	YES	NO	bb	bb	5.083
13	123789-HxCDD	35.92	3.986e6	3.292e6	0.804	1.21	1.24	31052.7	YES	NO	bb	bb	1088.2...
14	123678-HxCDD	35.53	4.425e6	3.631e6	0.883	1.22	1.24	34440.8	YES	NO	db	db	1048.7...
15	1234678-HpCDD	39.67	3.162e6	2.947e6	1.200	1.07	1.05	10069.1	YES	NO	bb	bb	982.937
16	OCDD	44.24	5.800e6	6.537e6	1.059	0.89	0.89	14784.9	YES	NO	bd	bd	2041.6...

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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	2378-TCDF	25.14	1.176e6	1.517e6	0.903	0.78	0.77	9439.9	YES	NO	bb	bb	200.683
2	Total-tetrafurans	24.23	7.022e3	1.030e4	0.973	0.68	0.77	53.2	YES	NO	bb	db	1.197
3	Total-tetrafurans	23.91	1.051e4	1.448e4	0.973	0.73	0.77	86.3	YES	NO	bd	bd	1.727
4	Total-tetrafurans	22.68	1.913e2	2.601e2	0.973	0.74	0.77	1.9	NO	NO	bb	bb	0.031
5	12378-PeCDF	29.28	6.873e6	4.363e6	0.923	1.58	1.55	16593.6	YES	NO	bb	bb	1003.7...
6	Total-pentafurans	29.01	5.252e3	3.709e3	0.931	1.42	1.55	11.1	YES	NO	dd	db	0.807
7	Total-pentafurans	28.93	2.668e3	1.651e3	0.931	1.62	1.55	8.0	YES	NO	bd	bd	0.389
8	Total-pentafurans	28.22	2.093e4	1.283e4	0.931	1.63	1.55	39.4	YES	NO	bb	bb	3.039
9	Total-pentafurans	31.87	1.086e3	7.873e2	0.931	1.38	1.55	3.1	NO	NO	dd	db	0.169
10	23478-PeCDF	30.62	7.218e6	4.643e6	0.991	1.55	1.55	17800.7	YES	NO	bb	bb	1020.4...
11	Total-pentafurans	30.49	5.363e3	4.052e3	0.931	1.32	1.55	17.9	YES	NO	bb	bb	0.848
12	Total-pentafurans	30.20	2.868e2	1.979e2	0.931	1.45	1.55	1.7	NO	NO	bb	bb	0.044
13	Total-hexafurans	35.82	2.293e2	1.911e2	1.087	1.20	1.24	1.9	NO	NO	bb	db	0.046
14	234678-HxCDF	35.30	5.220e6	4.187e6	1.081	1.25	1.24	15612.0	YES	NO	bb	bb	1036.3...
15	123678-HxCDF	34.42	5.565e6	4.427e6	1.032	1.26	1.24	15950.5	YES	NO	db	db	1022.2...
16	123478-HxCDF	34.28	5.150e6	4.112e6	1.128	1.25	1.24	15621.4	YES	NO	bd	bd	1008.5...
17	Total-hexafurans	34.12	3.378e3	3.099e3	1.087	1.09	1.24	11.9	YES	NO	bb	bb	0.713
18	Total-hexafurans	32.79	3.542e3	2.725e3	1.087	1.30	1.24	9.2	YES	NO	db	bb	0.690
19	123789-HxCDF	36.34	4.314e6	3.419e6	0.988	1.26	1.24	12485.9	YES	NO	bb	bb	1056.6...
20	1234789-HpCDF	40.38	3.737e6	3.616e6	1.104	1.03	1.05	8752.5	YES	NO	bb	bb	1044.7...
21	Total-heptafurans	39.67	4.922e3	4.388e3	1.134	1.12	1.05	9.6	YES	NO	bb	bb	1.175
22	Total-heptafurans	38.85	6.140e3	5.800e3	1.134	1.06	1.05	14.7	YES	NO	bb	bb	1.507
23	1234678-HpCDF	38.22	4.651e6	4.483e6	1.164	1.04	1.05	12629.8	YES	NO	bb	bb	1032.0...
24	OCDF	44.46	6.691e6	7.348e6	1.130	0.91	0.89	21469.5	YES	NO	bb	bb	2176.2...
25	2378-TCDD	25.77	1.061e6	1.307e6	1.243	0.81	0.77	12528.1	YES	NO	bb	bb	205.454
26	Total-tetradioxins	25.39	2.251e4	2.836e4	1.129	0.79	0.77	203.9	YES	NO	bd	bb	4.860
27	Total-tetradioxins	24.64	9.094e2	1.193e3	1.129	0.76	0.77	10.6	YES	NO	bb	bb	0.201
28	Total-Dioxins	27.06	1.144e2	1.336e2	1.182	0.86	0.77	2.6	NO	NO	bb	db	0.023
29	12378-PeCDD	30.88	5.066e6	3.250e6	1.150	1.56	1.55	38189.0	YES	NO	bb	bb	1013.7...
30	Total-pentadioxins	30.20	5.265e3	3.663e3	1.548	1.44	1.55	36.0	YES	NO	bb	bb	0.809
31	Total-pentadioxins	29.49	8.899e2	6.316e2	1.548	1.41	1.55	6.0	YES	NO	dd	db	0.138
32	Total-pentadioxins	29.30	4.194e3	3.163e3	1.548	1.33	1.55	26.2	YES	NO	bd	bd	0.667
33	123478-HxCDD	35.42	4.057e6	3.319e6	0.960	1.22	1.24	33525.8	YES	NO	bd	bd	967.641
34	Total-hexadioxins	34.42	1.376e3	1.250e3	0.943	1.10	1.24	6.9	NO	NO	dd	dd	0.335
35	Total-hexadioxins	36.55	2.181e2	1.928e2	0.943	1.13	1.24	4.6	NO	NO	bb	bb	0.052
36	Total-hexadioxins	36.33	2.192e4	1.798e4	0.943	1.22	1.24	137.8	YES	NO	bb	bb	5.083
37	123789-HxCDD	35.92	3.986e6	3.292e6	0.804	1.21	1.24	31052.7	YES	NO	bb	bb	1088.2...

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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	35.53	4.425e6	3.631e6	0.883	1.22	1.24	34440.8	YES	NO	db	db	1048.7...
39	1234678-HpCDD	39.67	3.162e6	2.947e6	1.200	1.07	1.05	10069.1	YES	NO	bb	bb	982.937
40	OCDD	44.24	5.800e6	6.537e6	1.059	0.89	0.89	14784.9	YES	NO	bd	bd	2041.6...

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	21.34	3.429e4					1.9	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	27.50	1.980e4					1.9	NO		bd		0.000
2	FUNCTION2 PFK	28.88	9.545e3					1.5	NO		db		0.000
3	FUNCTION2 PFK	28.85	1.548e4					1.5	NO		dd		0.000
4	FUNCTION2 PFK	28.78	2.633e4					1.9	NO		dd		0.000
5	FUNCTION2 PFK	28.73	2.421e4					1.5	NO		bd		0.000
6	FUNCTION2 PFK	28.58	1.529e4					1.5	NO		bb		0.000
7	FUNCTION2 PFK	28.37	3.510e4					1.6	NO		bb		0.000
8	FUNCTION2 PFK	28.26	2.659e4					1.8	NO		bb		0.000
9	FUNCTION2 PFK	28.18	1.012e4					1.4	NO		bb		0.000
10	FUNCTION2 PFK	28.10	3.736e3					0.7	NO		db		0.000
11	FUNCTION2 PFK	28.05	1.176e4					1.3	NO		bd		0.000
12	FUNCTION2 PFK	27.96	7.873e3					0.8	NO		bb		0.000
13	FUNCTION2 PFK	27.91	5.680e3					1.0	NO		bb		0.000
14	FUNCTION2 PFK	27.79	7.217e3					1.0	NO		bb		0.000
15	FUNCTION2 PFK	27.72	3.615e4					2.3	NO		db		0.000
16	FUNCTION2 PFK	27.65	1.224e4					1.7	NO		bd		0.000
17	FUNCTION2 PFK	27.58	1.907e4					1.4	NO		db		0.000
18	FUNCTION2 PFK	30.25	1.111e4					1.6	NO		dd		0.000
19	FUNCTION2 PFK	30.21	4.748e4					3.3	YES		bd		0.000
20	FUNCTION2 PFK	30.12	1.251e4					1.0	NO		db		0.000
21	FUNCTION2 PFK	30.06	2.456e4					2.2	NO		dd		0.000
22	FUNCTION2 PFK	30.02	2.395e4					2.6	NO		dd		0.000
23	FUNCTION2 PFK	29.98	2.592e4					2.3	NO		dd		0.000
24	FUNCTION2 PFK	29.92	1.037e4					1.4	NO		dd		0.000
25	FUNCTION2 PFK	29.89	1.685e4					1.7	NO		dd		0.000
26	FUNCTION2 PFK	29.82	1.201e4					1.4	NO		dd		0.000
27	FUNCTION2 PFK	29.77	2.300e4					1.9	NO		bd		0.000
28	FUNCTION2 PFK	29.61	5.897e3					0.9	NO		bb		0.000
29	FUNCTION2 PFK	29.37	2.118e4					1.1	NO		bb		0.000
30	FUNCTION2 PFK	29.30	1.346e3					0.4	NO		bb		0.000
31	FUNCTION2 PFK	29.23	2.365e4					1.9	NO		db		0.000
32	FUNCTION2 PFK	29.20	3.160e4					1.9	NO		bd		0.000
33	FUNCTION2 PFK	28.98	1.286e4					1.1	NO		bb		0.000
34	FUNCTION2 PFK	31.76	1.305e4					1.3	NO		dd		0.000
35	FUNCTION2 PFK	31.69	2.733e4					1.7	NO		dd		0.000
36	FUNCTION2 PFK	31.66	2.111e4					1.5	NO		bd		0.000
37	FUNCTION2 PFK	31.56	1.095e3					0.4	NO		bb		0.000

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PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION2 PFK	31.41	8.409e3					1.2	NO		bb		0.000
39	FUNCTION2 PFK	31.22	1.297e4					1.1	NO		bb		0.000
40	FUNCTION2 PFK	31.17	3.323e3					0.7	NO		db		0.000
41	FUNCTION2 PFK	31.12	1.285e4					1.3	NO		dd		0.000
42	FUNCTION2 PFK	31.07	1.346e4					1.6	NO		dd		0.000
43	FUNCTION2 PFK	31.02	7.621e3					0.9	NO		bd		0.000
44	FUNCTION2 PFK	30.83	1.401e4					1.5	NO		db		0.000
45	FUNCTION2 PFK	30.73	5.731e4					2.9	NO		dd		0.000
46	FUNCTION2 PFK	30.68	4.117e4					2.0	NO		bd		0.000
47	FUNCTION2 PFK	30.53	1.020e4					0.7	NO		bb		0.000
48	FUNCTION2 PFK	30.34	4.679e3					0.7	NO		db		0.000
49	FUNCTION2 PFK	30.30	9.864e3					1.1	NO		dd		0.000
50	FUNCTION2 PFK	32.06	7.490e3					1.0	NO		bb		0.000
51	FUNCTION2 PFK	31.92	2.087e4					1.3	NO		db		0.000
52	FUNCTION2 PFK	31.82	1.776e4					1.5	NO		dd		0.000

PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	36.72	3.336e4					2.4	NO		bb		0.000
2	FUNCTION3 PFK	34.54	1.062e5					4.9	YES		bb		0.000

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	37.47	2.686e4					3.0	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	44.16	1.278e4					2.4	NO		bb		
2	FUNCTION5 PFK	44.11	9.338e3					2.0	NO		db		
3	FUNCTION5 PFK	44.08	5.897e3					1.6	NO		bd		
4	FUNCTION5 PFK	43.56	8.573e3					2.1	NO		db		
5	FUNCTION5 PFK	43.51	7.267e3					1.7	NO		bd		
6	FUNCTION5 PFK	43.32	5.670e3					1.4	NO		bb		
7	FUNCTION5 PFK	42.88	4.903e3					1.1	NO		bb		
8	FUNCTION5 PFK	45.82	1.022e4					1.6	NO		bb		
9	FUNCTION5 PFK	45.72	1.632e4					1.6	NO		bb		
10	FUNCTION5 PFK	45.61	7.173e3					1.1	NO		bb		
11	FUNCTION5 PFK	45.44	4.649e3					1.2	NO		bb		
12	FUNCTION5 PFK	45.20	1.793e4					2.2	NO		bb		
13	FUNCTION5 PFK	45.08	2.833e4					2.2	NO		db		
14	FUNCTION5 PFK	44.97	2.164e4					2.6	NO		bd		
15	FUNCTION5 PFK	44.84	7.975e3					1.7	NO		db		
16	FUNCTION5 PFK	44.81	6.372e3					1.4	NO		bd		
17	FUNCTION5 PFK	44.20	4.690e3					1.0	NO		bb		

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	25.15	1.614e2					3.9	YES		bb		0.000
2	FUNCTION1 HXCD...	24.66	8.600e1					3.2	YES		bb		0.000
3	FUNCTION1 HXCD...	22.13	8.877e1					5.5	YES		db		0.000
4	FUNCTION1 HXCD...	22.07	9.027e1					3.1	YES		dd		0.000
5	FUNCTION1 HXCD...	21.95	7.917e1					2.1	NO		bd		0.000
6	FUNCTION1 HXCD...	25.77	2.758e2					6.3	YES		bb		0.000

ETHERS2

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

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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...	30.88	6.520e2					15.4	YES		bb		0.000
2	FUNCTION2 HPCD...	30.62	5.795e2					11.8	YES		bb		0.000
3	FUNCTION2 HPCD...	30.48	5.784e3					156.4	YES		bb		0.000
4	FUNCTION2 HPCD...	29.30	6.029e2					10.9	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	36.35	5.376e2					7.3	YES		bb		0.000
2	FUNCTION3 OCDPE	35.94	9.866e2					15.2	YES		bb		0.000
3	FUNCTION3 OCDPE	35.69	7.171e1					2.6	NO		db		0.000
4	FUNCTION3 OCDPE	35.53	1.024e3					16.7	YES		dd		0.000
5	FUNCTION3 OCDPE	35.42	8.579e2					15.4	YES		dd		0.000
6	FUNCTION3 OCDPE	35.32	4.169e2					8.2	YES		bd		0.000
7	FUNCTION3 OCDPE	34.43	5.647e2					8.6	YES		db		0.000
8	FUNCTION3 OCDPE	34.29	4.974e2					7.0	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	40.39	5.944e2					9.3	YES		bb		0.000
2	FUNCTION4 NCDPE	39.69	6.266e2					10.8	YES		bb		0.000
3	FUNCTION4 NCDPE	38.23	6.938e2					11.2	YES		bb		0.000

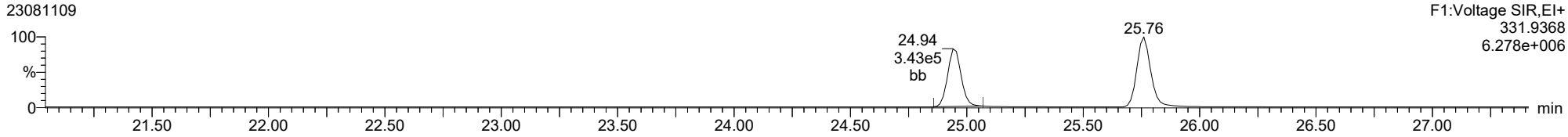
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	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	44.47	1.356e3					23.6	YES		db		0.000
2	FUNCTION5 DCDPE	44.25	1.261e3					23.3	YES		bd		0.000
3	FUNCTION5 DCDPE	43.36	1.677e2					4.9	YES		bb		0.000

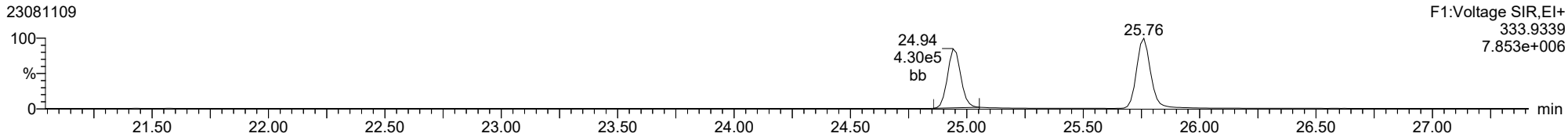
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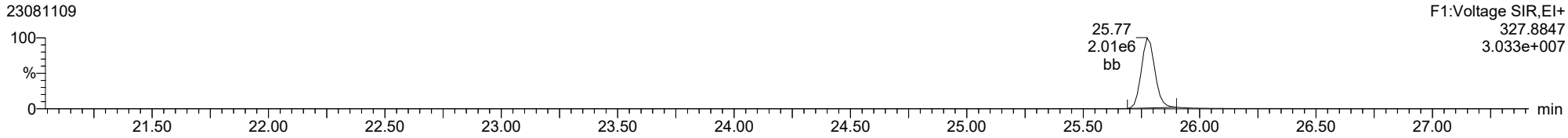
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13C-1234-TCDD

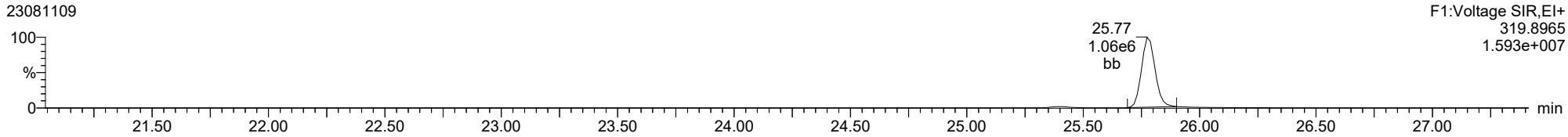


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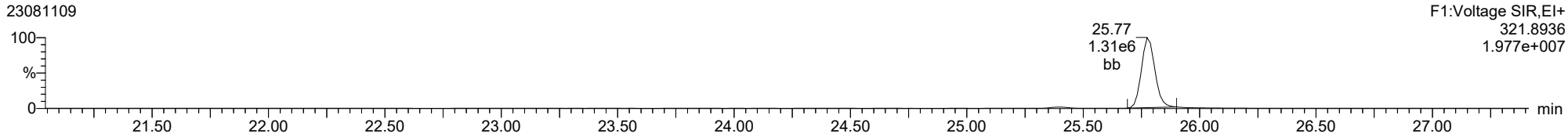


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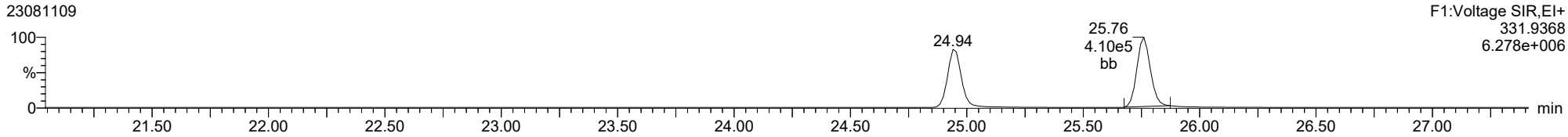
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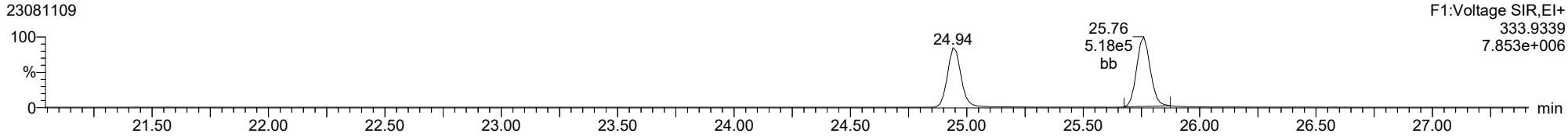
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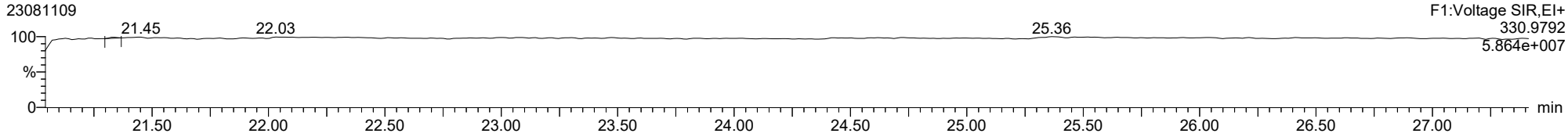
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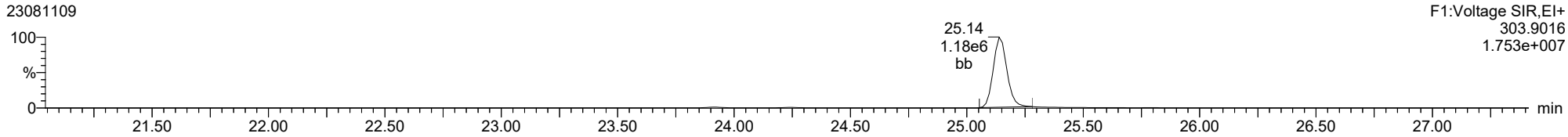


FUNCTION1 PFK

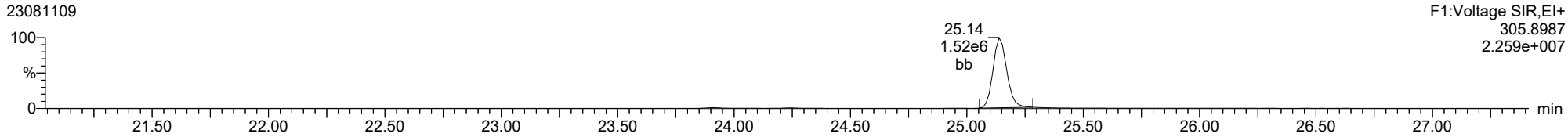


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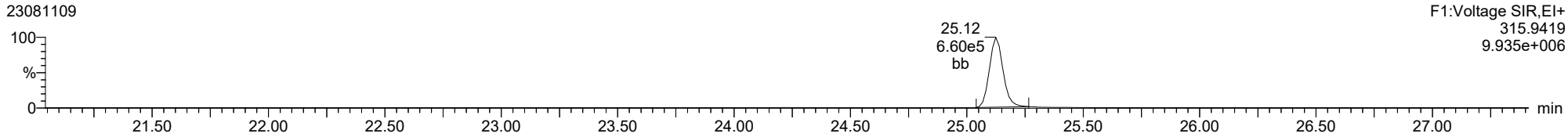
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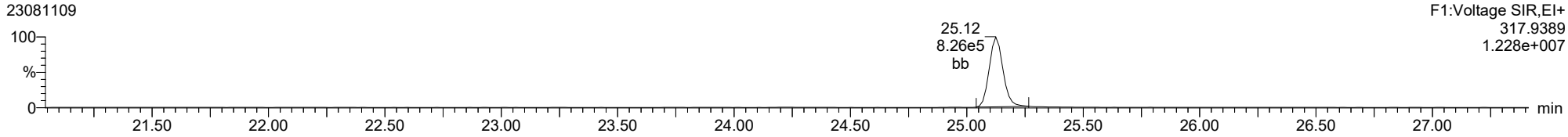
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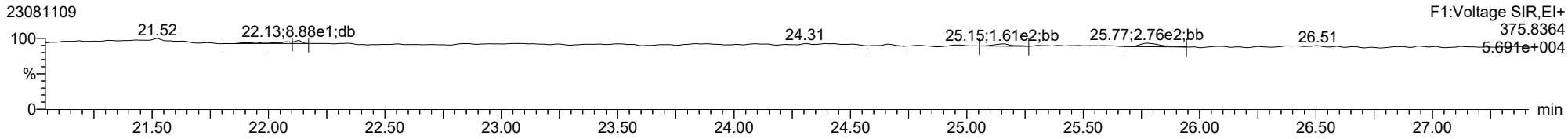
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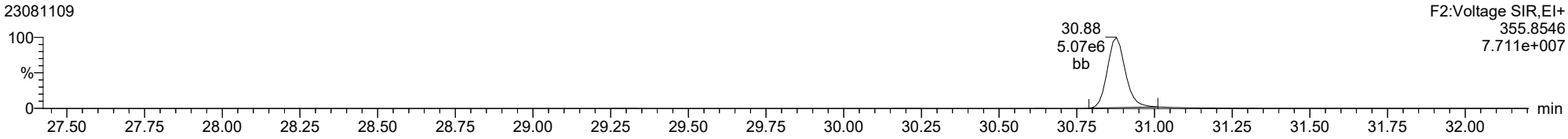


FUNCTION1 HXCDPE

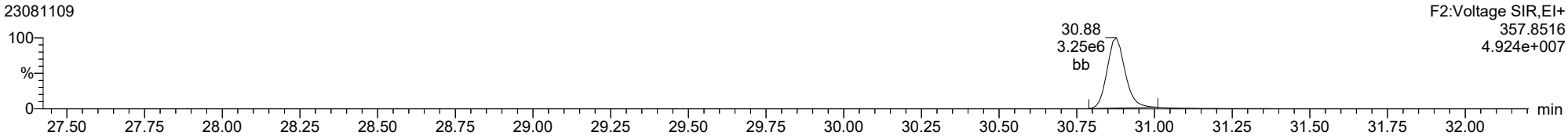


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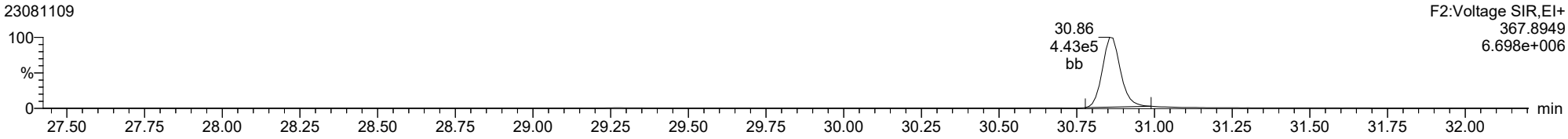
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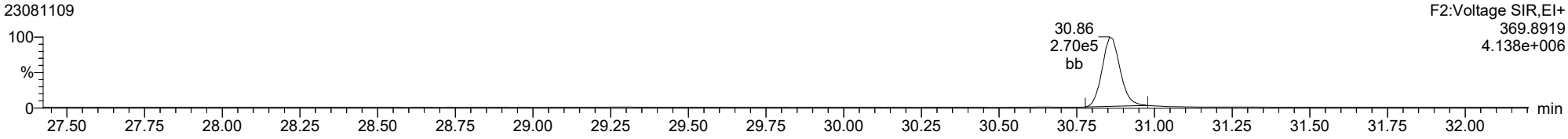
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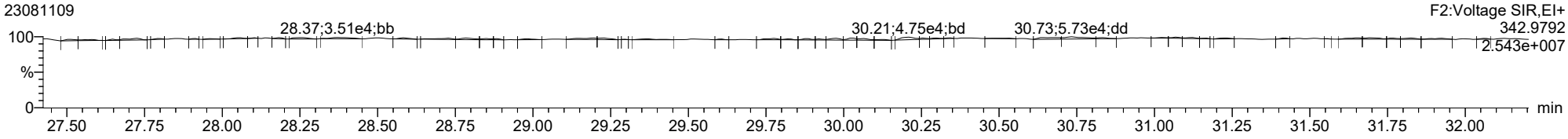
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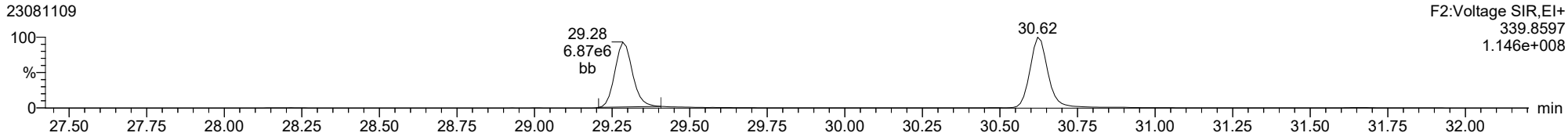


FUNCTION2 PFK

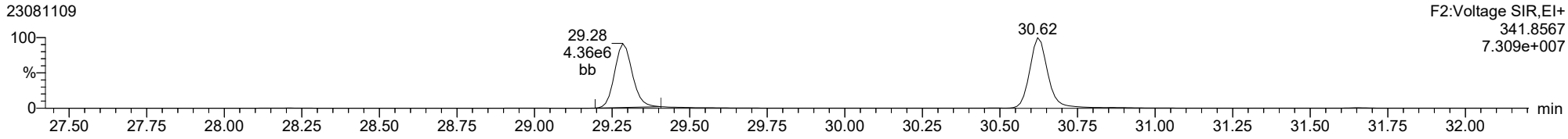


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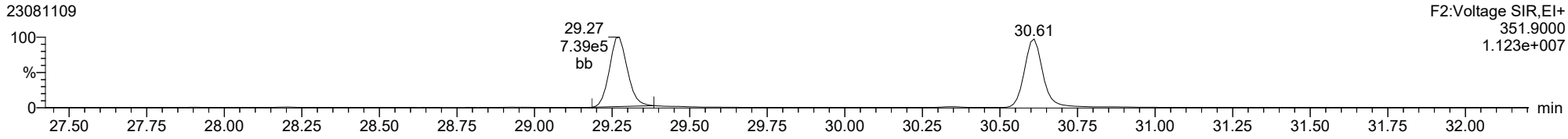
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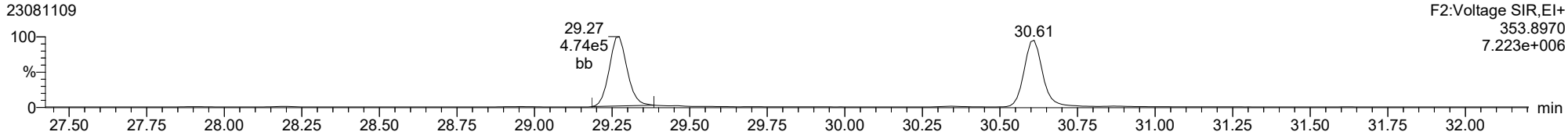
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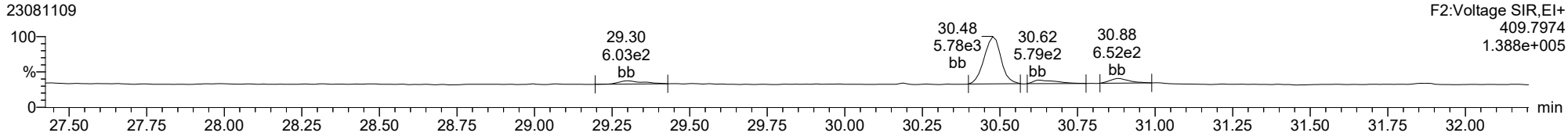
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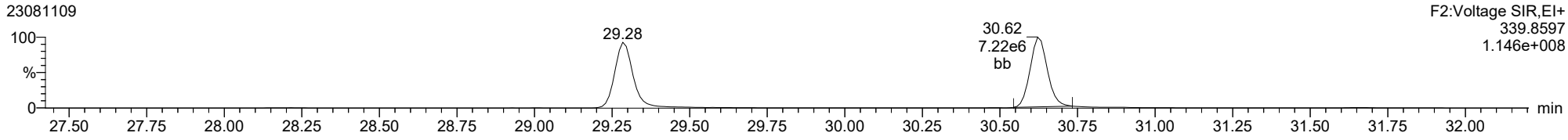


FUNCTION2 HPCDPE

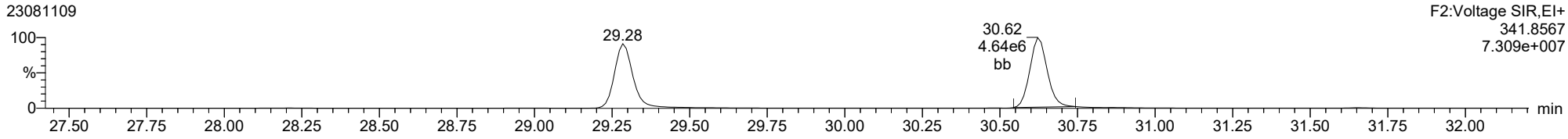


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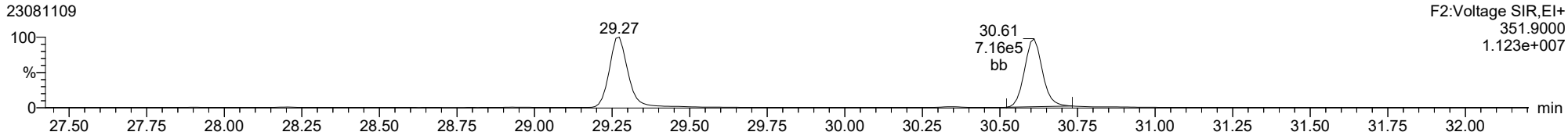
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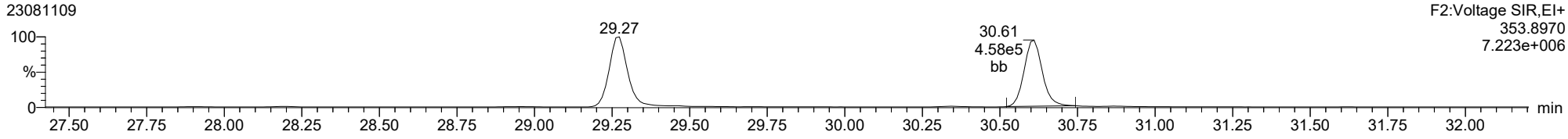
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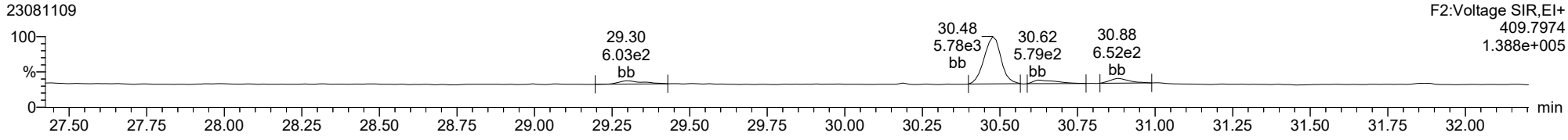
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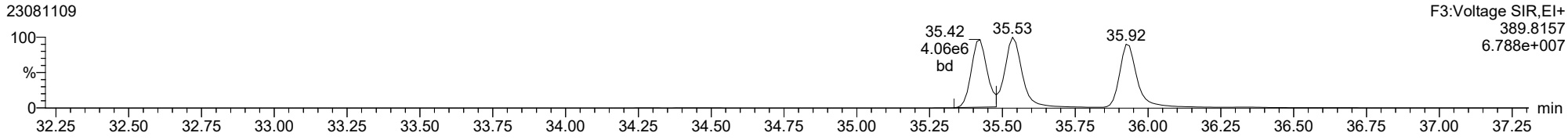


FUNCTION2 HPCDPE

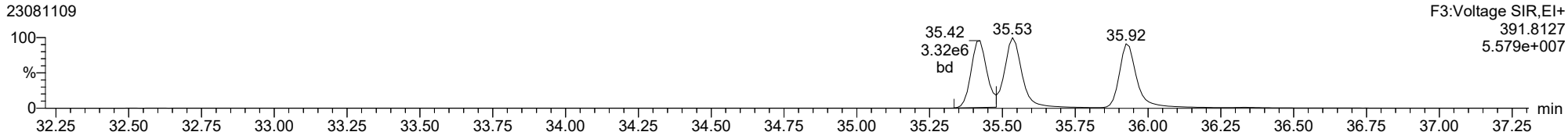


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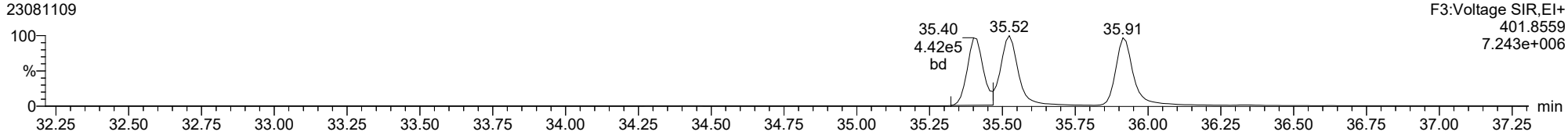
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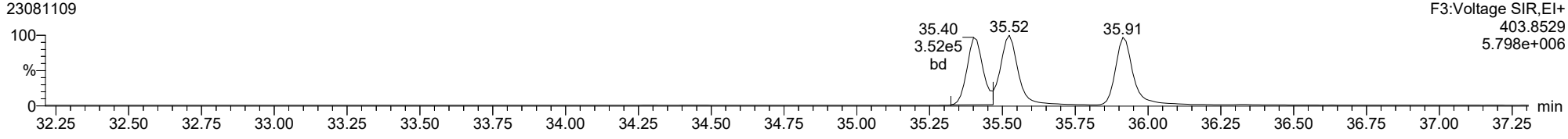
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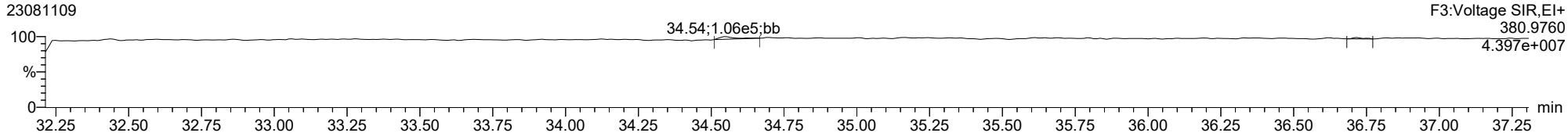
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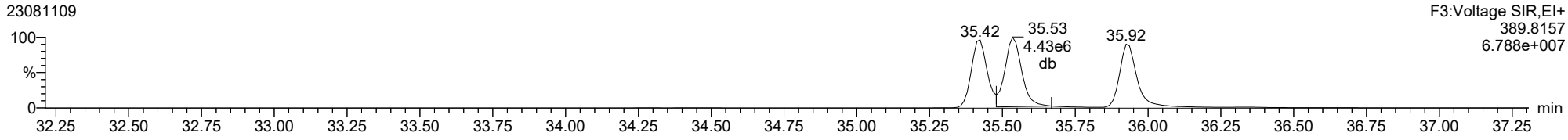


FUNCTION3 PFK

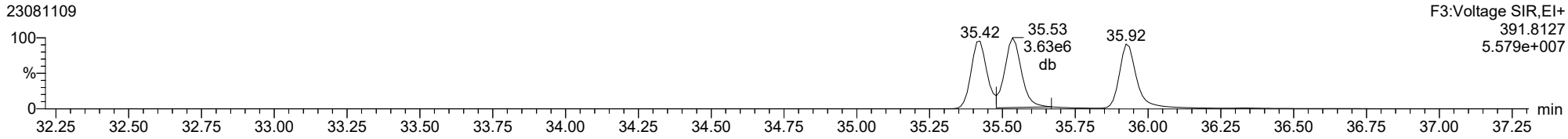


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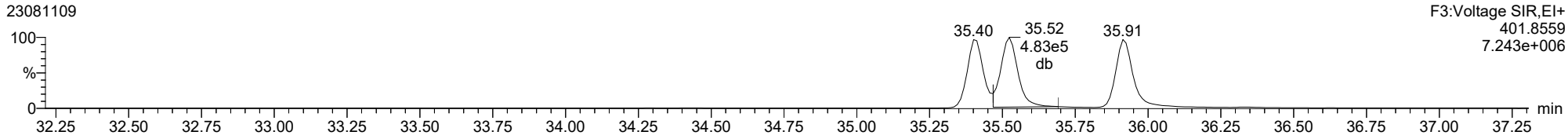
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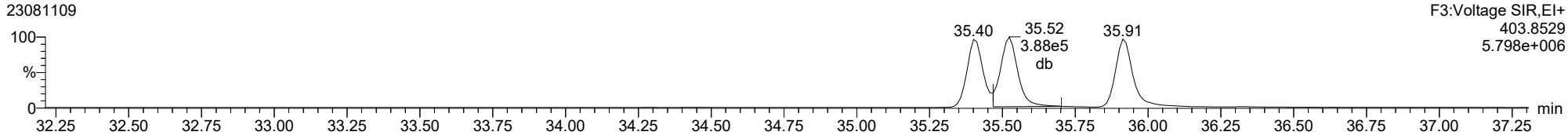
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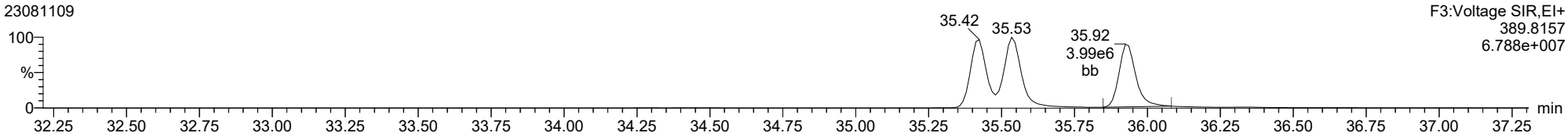


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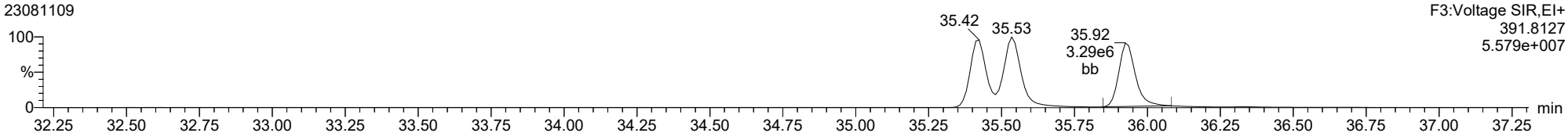


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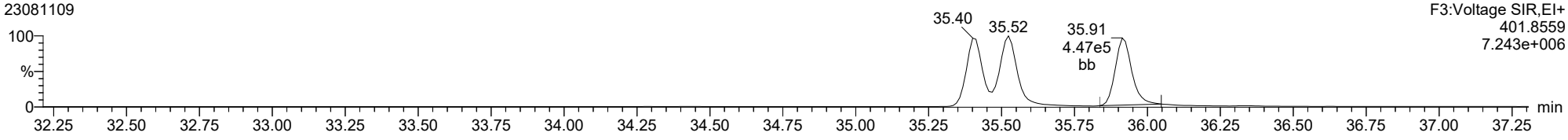
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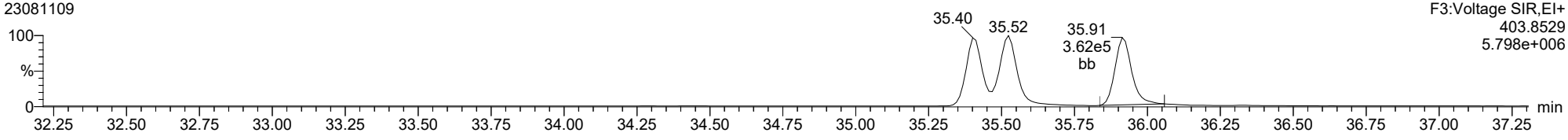
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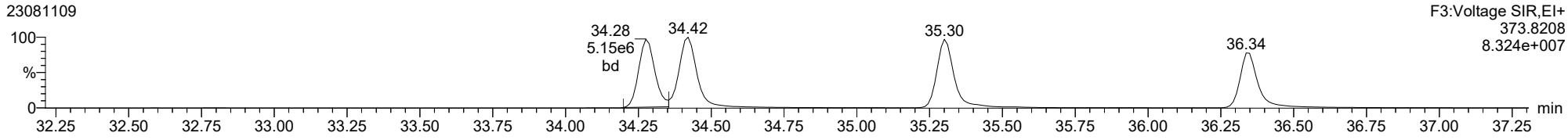


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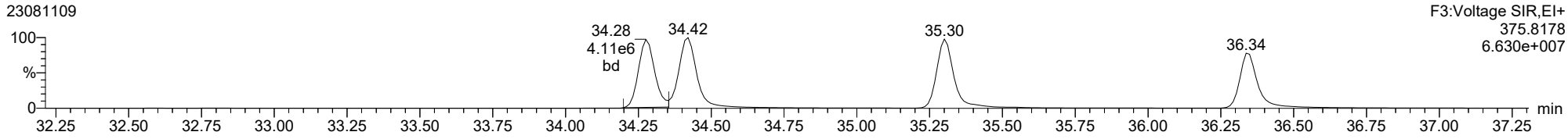


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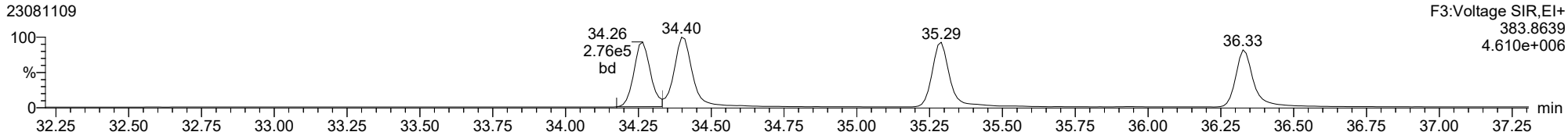
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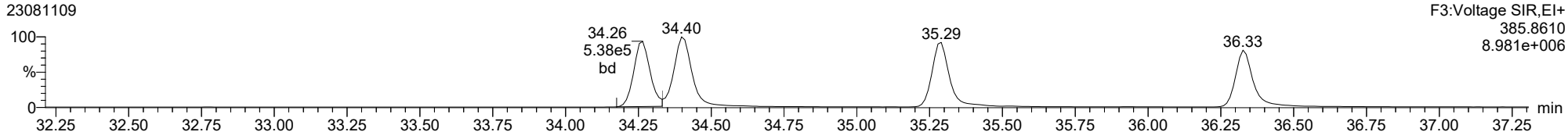
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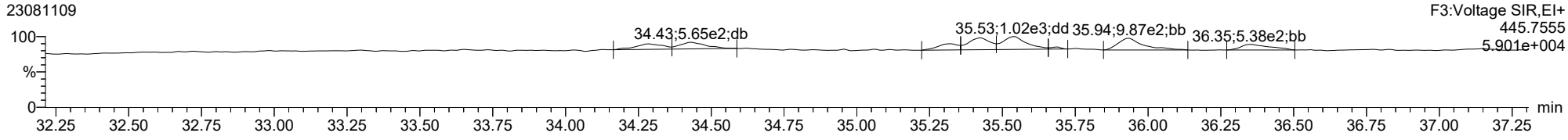
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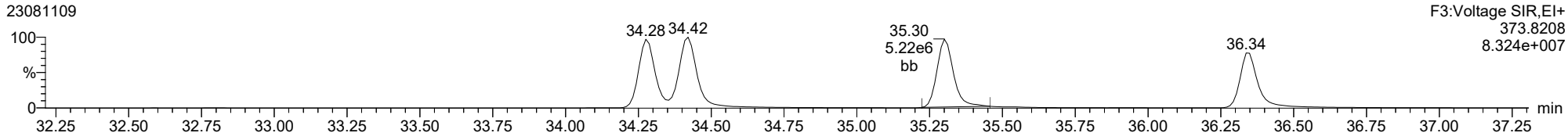


FUNCTION3 OCDPE

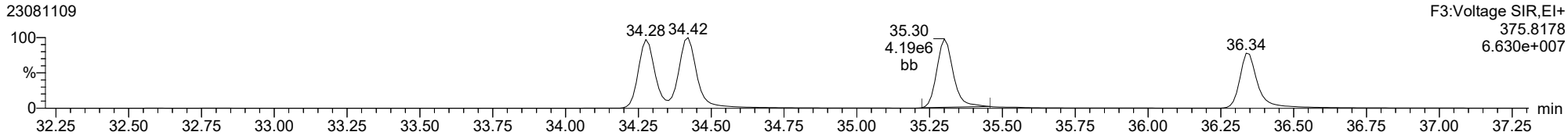


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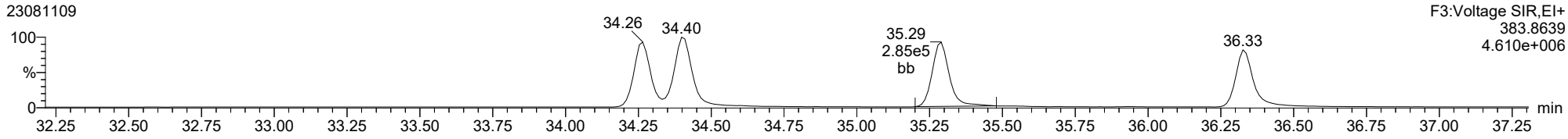
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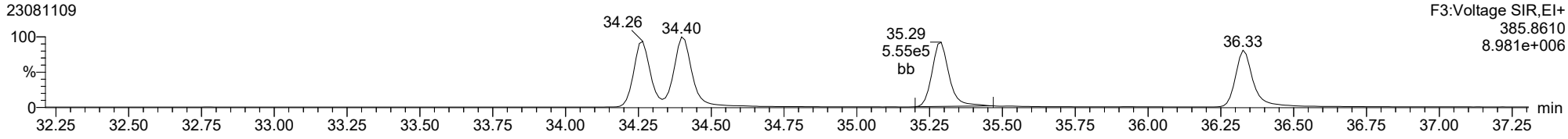
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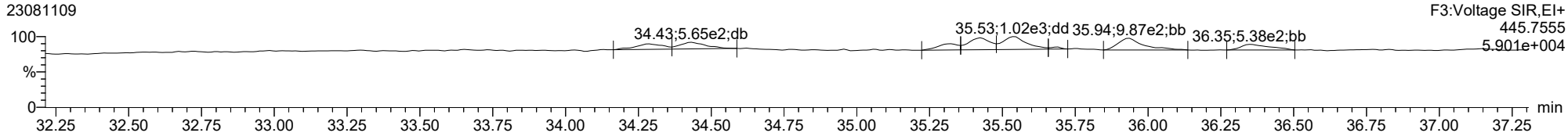
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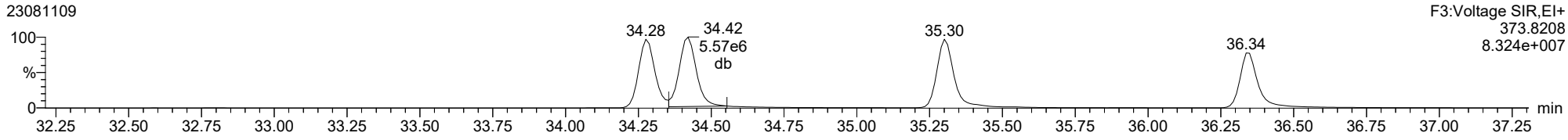


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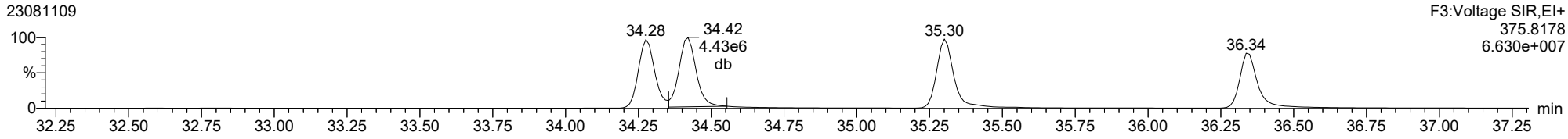


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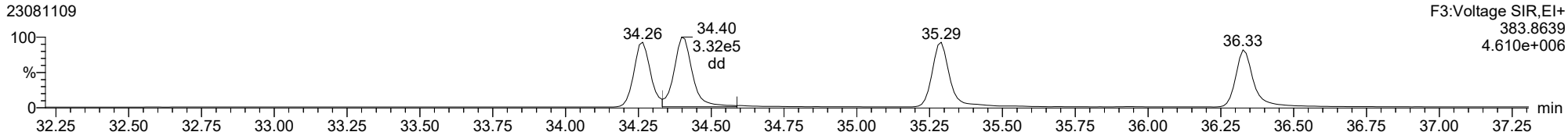
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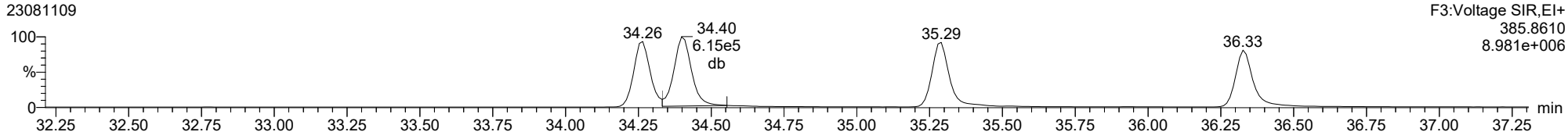
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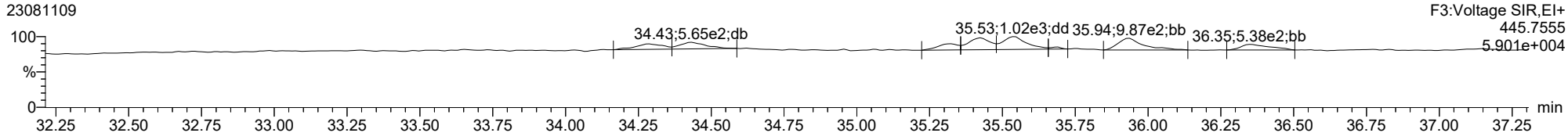
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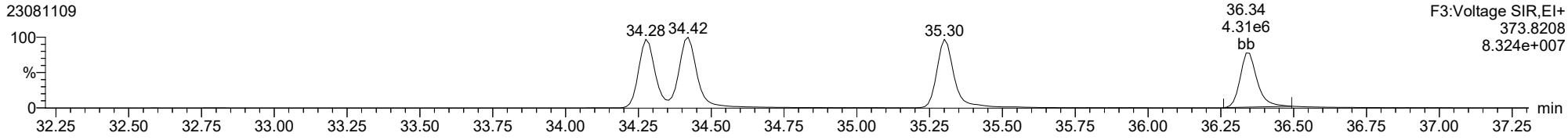


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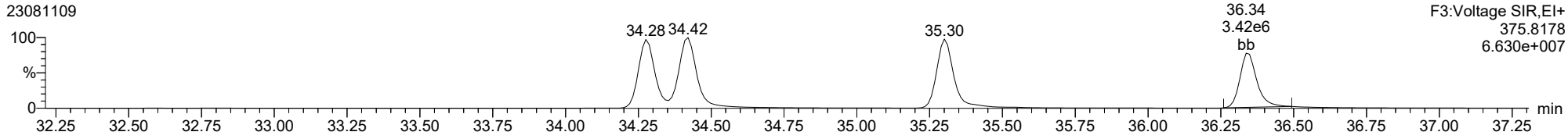


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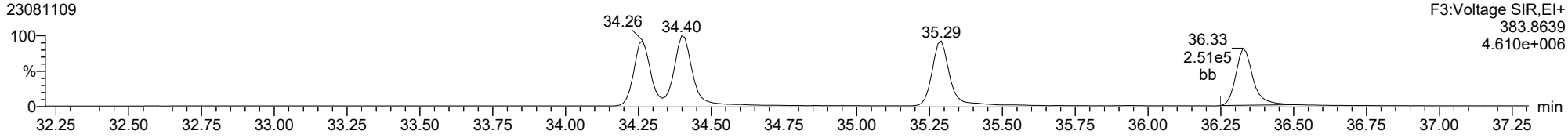
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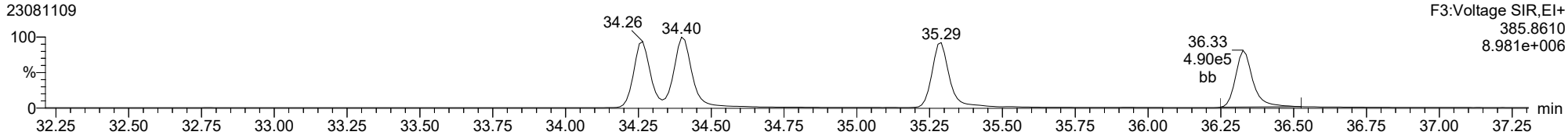
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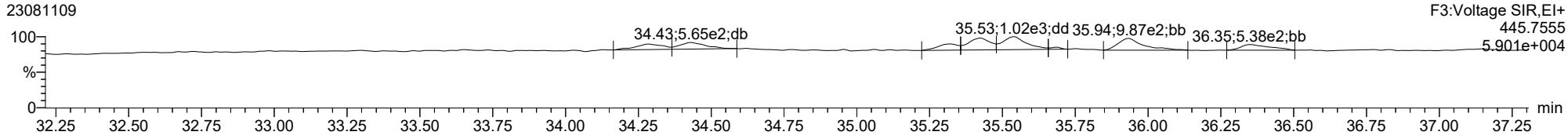
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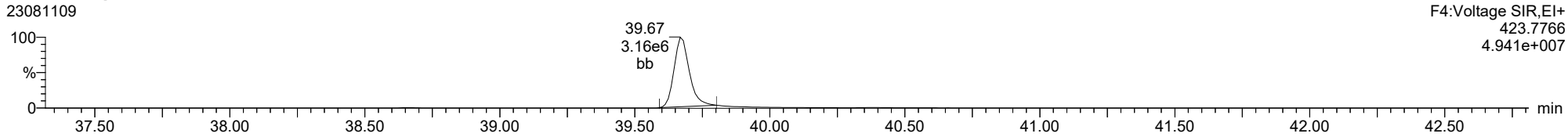


FUNCTION3 OCDPE

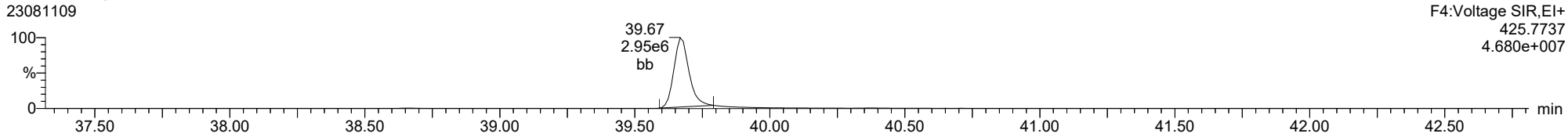


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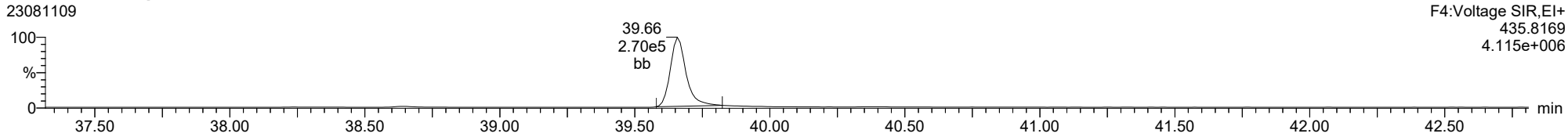
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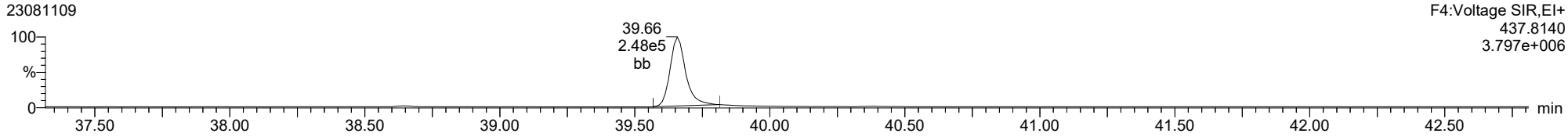
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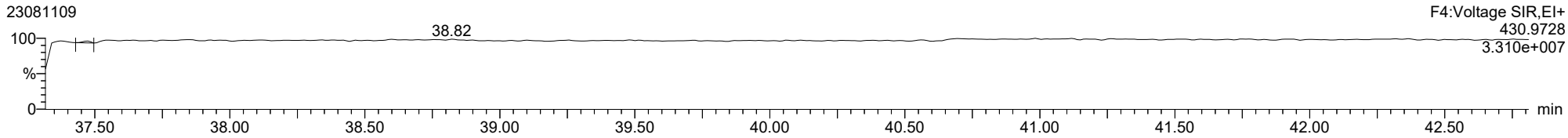
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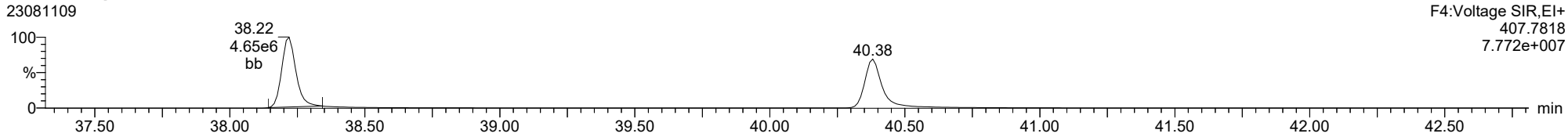


FUNCTION4 PFK

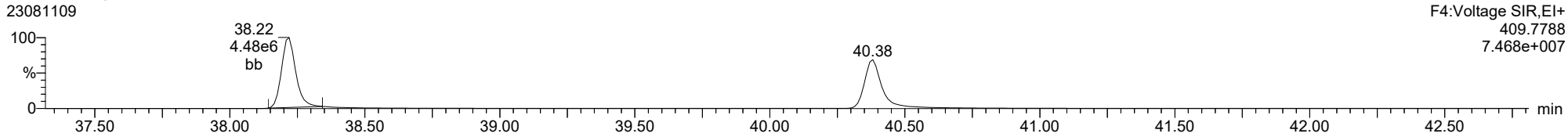


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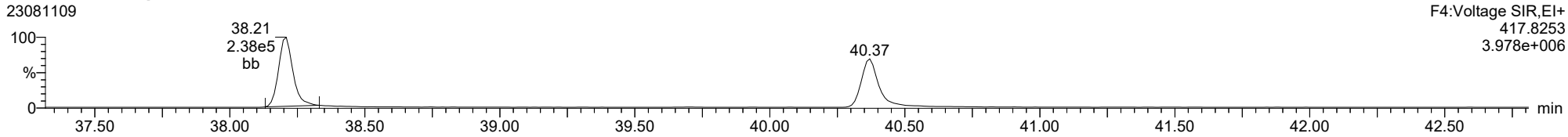
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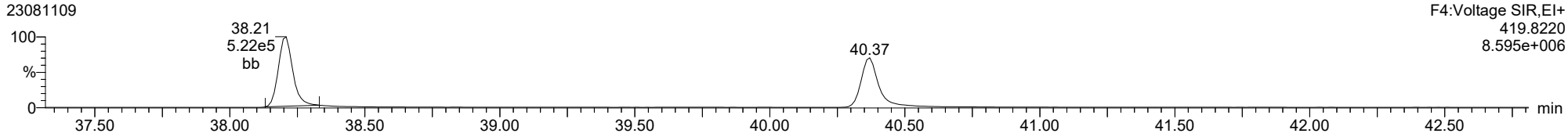
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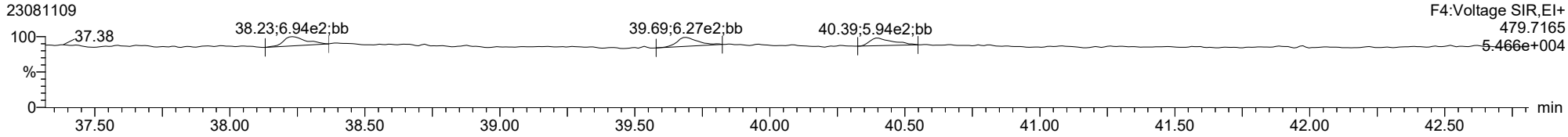
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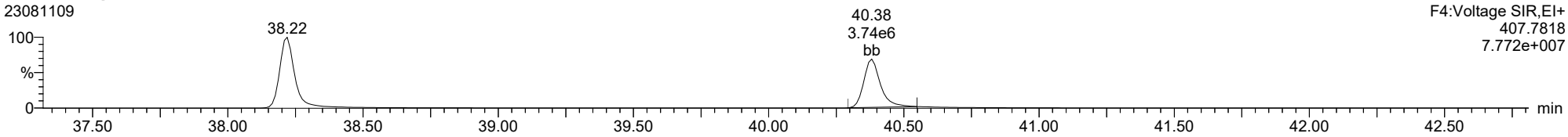


FUNCTION4 NCDPE

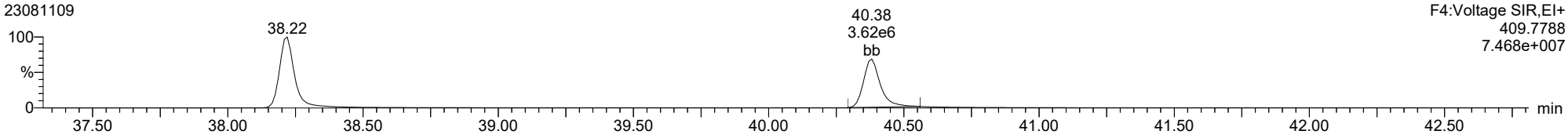


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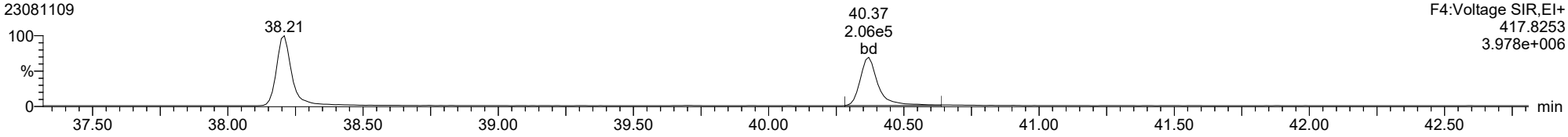
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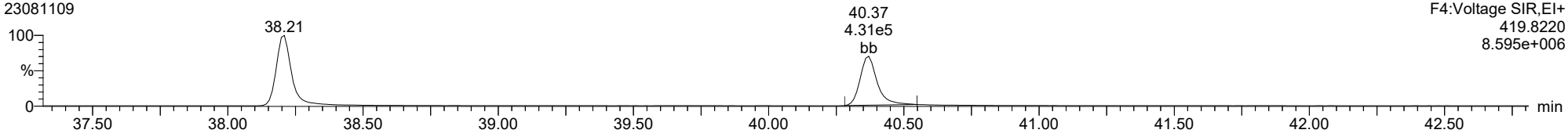
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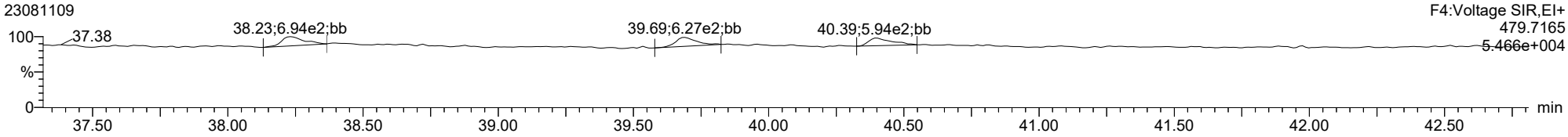
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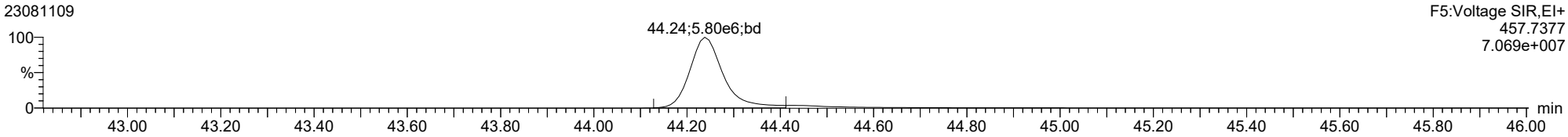


FUNCTION4 NCDPE

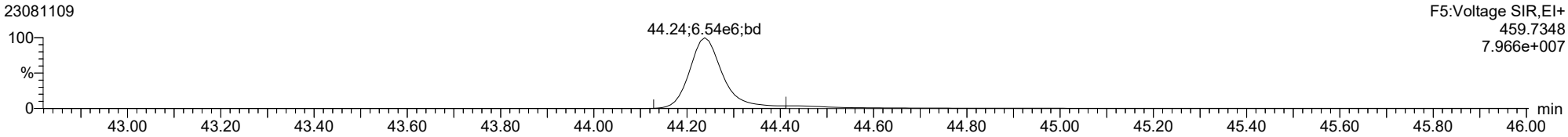


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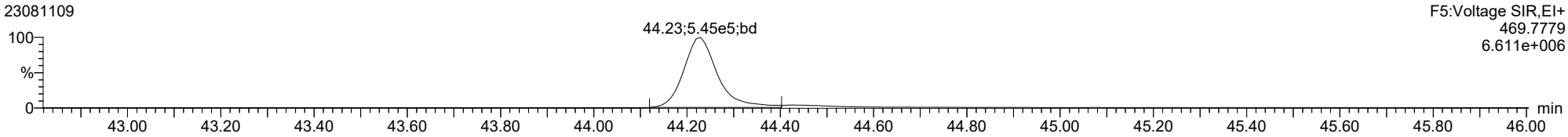
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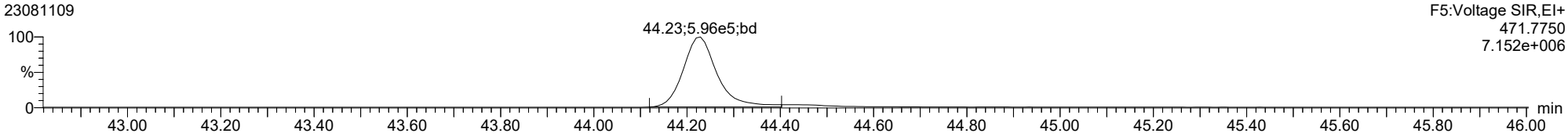
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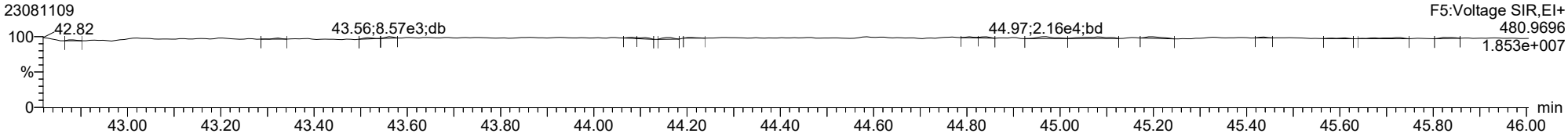
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13C-OCDD

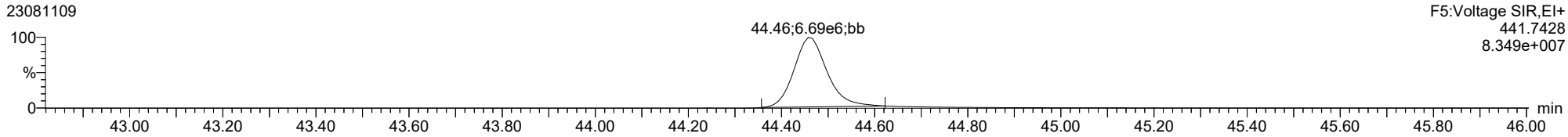


FUNCTION5 PFK

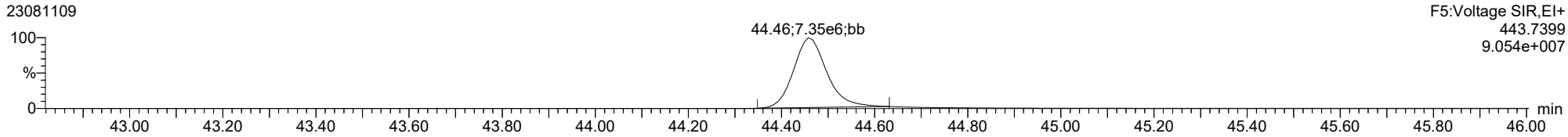


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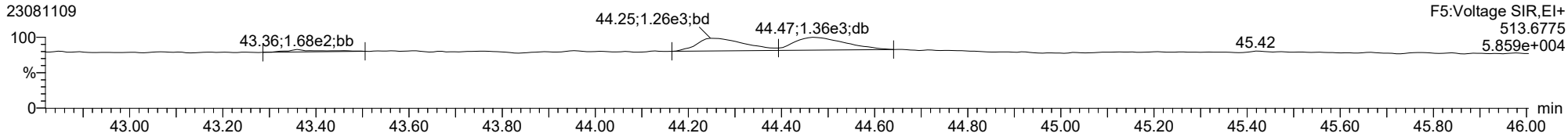
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OCDF

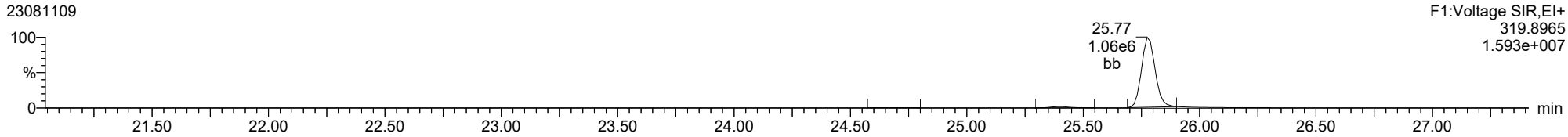


FUNCTION5 DCDPE

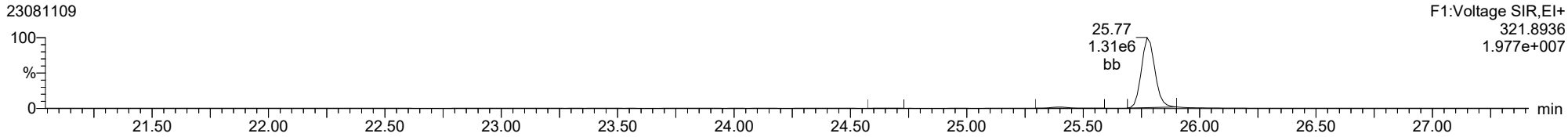


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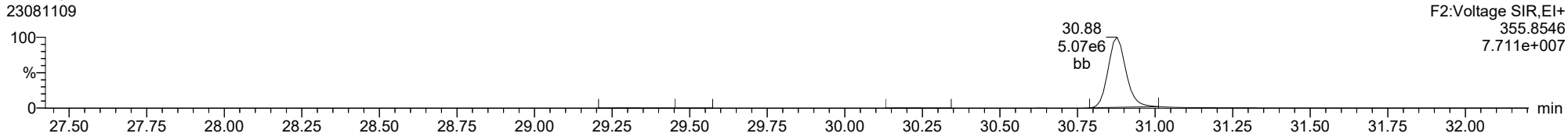
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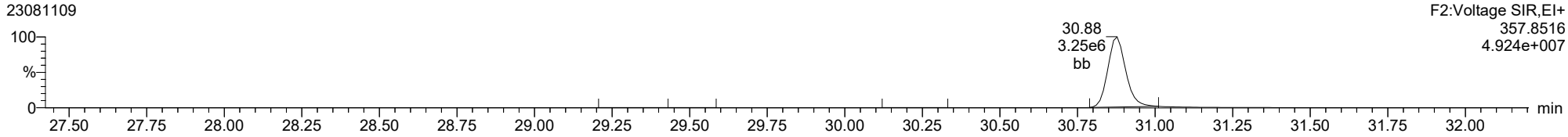
Total-tetradioxins



Total-pentadioxins

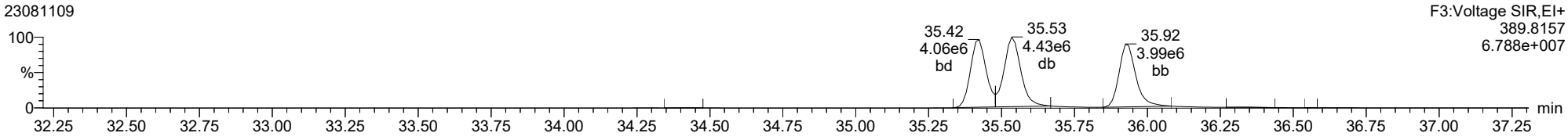


Total-pentadioxins

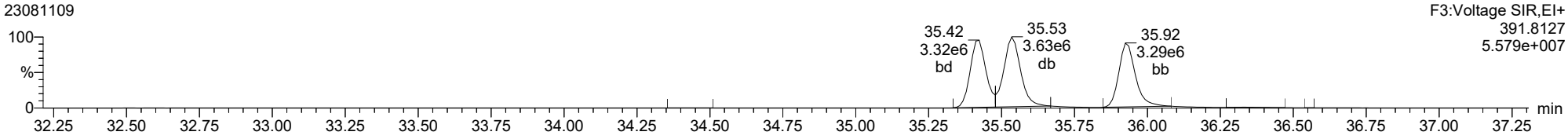


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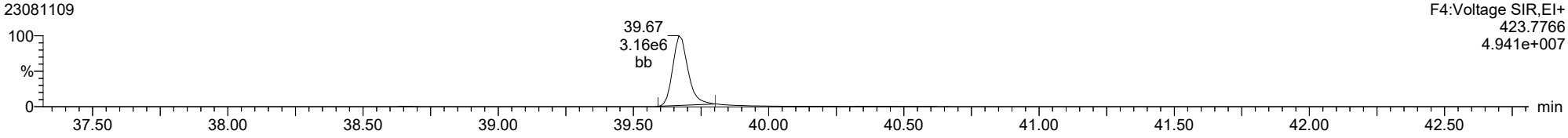
Total-hexadioxins



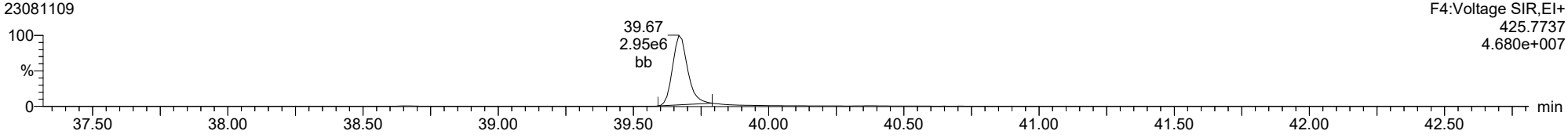
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Total-heptadioxins

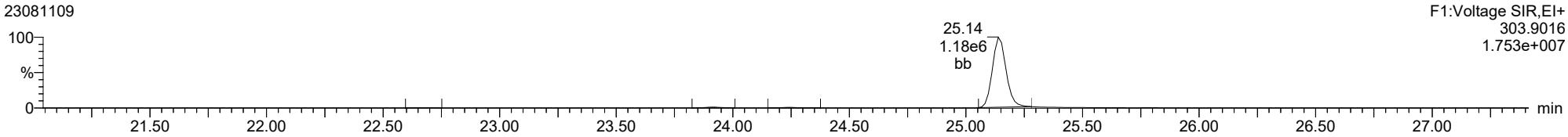


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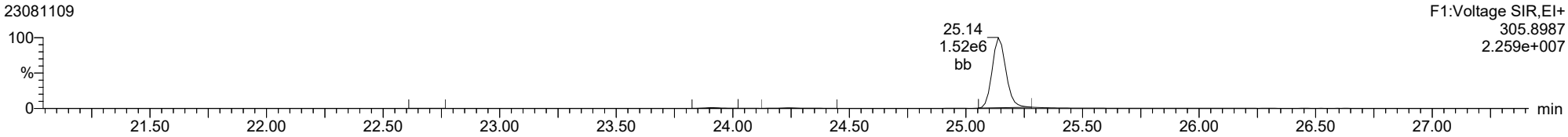


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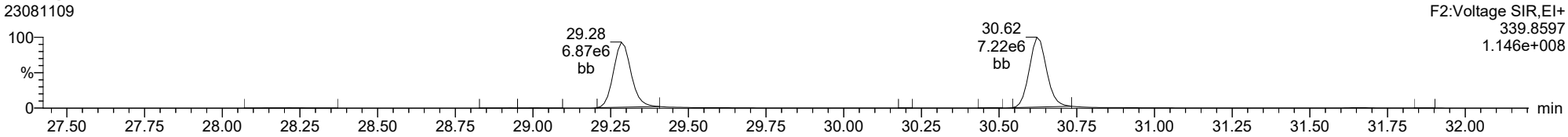
Total-tetrafurans



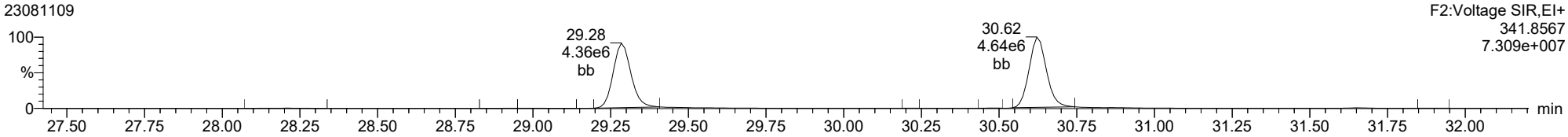
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Total-pentafurans

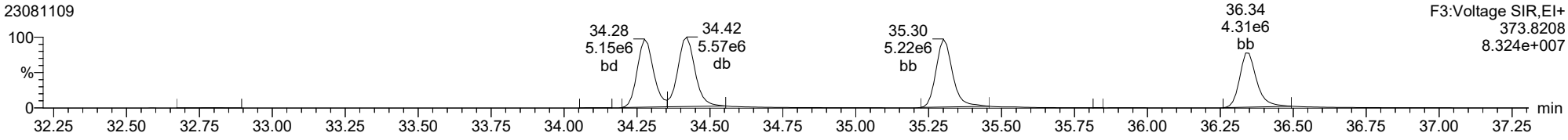


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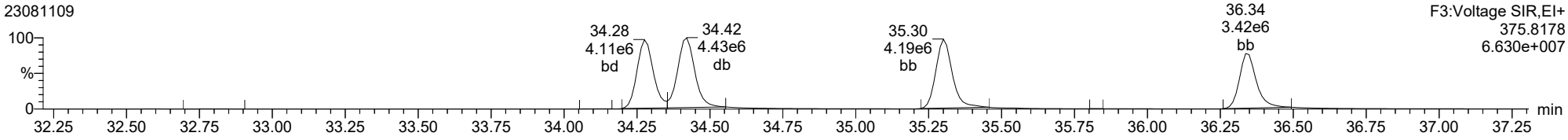


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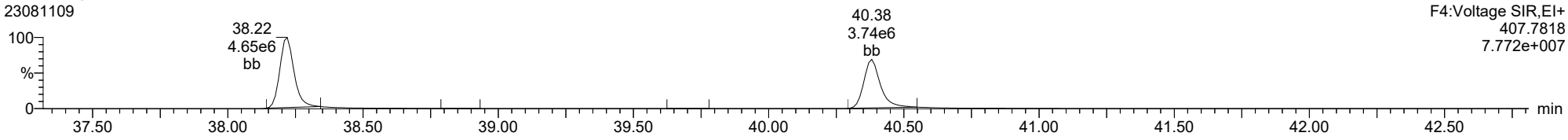
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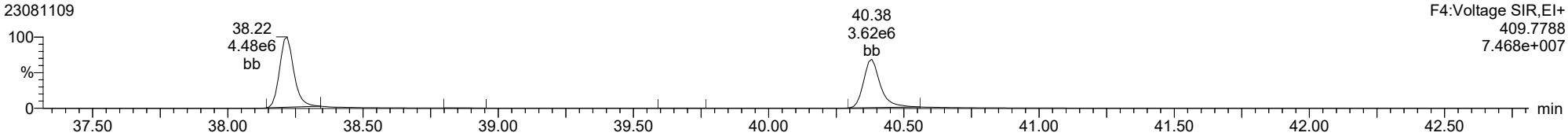
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Total-heptafurans



Total-heptafurans



Dataset: T:\Autospec\Processed Data Batch\230811CCVIH.qld
Last Altered: Tuesday, August 15, 2023 12:26:06 Pacific Daylight Time
Printed: Tuesday, August 15, 2023 12:27:04 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin230810.mdb 12 Aug 2023 10:54:09
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 10:45:18

ID: ICVCF, Name: 23081110, Date: 11-Aug-2023, Time: 17:18:02, 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	25.139	1.001	7.423e4	9.642e4	0.903	0.770	0.770	1316	1323	1.10e6	1.40e6	835.9	1058.4	NO	bb	bb	9.781
12378-PeCDF	29.285	1.000	3.963e5	2.779e5	0.923	1.426	1.550	3241	2842	5.71e6	3.77e6	1762.0	1327.2	NO	bb	bb	49.295
23478-PeCDF	30.622	1.000	4.105e5	2.654e5	0.991	1.546	1.550	3241	2842	5.92e6	3.77e6	1825.5	1327.5	NO	bb	bb	50.524
123478-HxCDF	34.276	1.000	2.923e5	2.345e5	1.128	1.246	1.240	2958	2746	4.27e6	3.49e6	1442.8	1272.0	NO	bd	bd	50.046
234678-HxCDF	35.301	1.000	2.850e5	2.420e5	1.081	1.178	1.240	2958	2746	4.13e6	3.29e6	1395.6	1199.7	NO	bb	bd	52.928
123678-HxCDF	34.421	1.001	3.263e5	2.646e5	1.032	1.233	1.240	2958	2746	4.61e6	3.73e6	1557.6	1359.8	NO	db	db	50.926
123789-HxCDF	36.348	1.001	2.398e5	1.932e5	0.988	1.242	1.240	2958	2746	3.27e6	2.65e6	1106.6	965.1	NO	bb	bb	53.421
1234678-HpCDF	38.220	1.000	2.680e5	2.533e5	1.164	1.058	1.050	2121	2525	4.11e6	3.90e6	1936.6	1543.7	NO	bb	bb	51.933
1234789-HpCDF	40.381	1.000	2.267e5	1.989e5	1.104	1.140	1.050	2121	2525	2.82e6	2.56e6	1329.2	1014.9	NO	bd	bb	56.722
OCDF	44.458	1.005	3.318e5	3.955e5	1.130	0.839	0.890	2049	2908	3.61e6	4.04e6	1762.4	1389.6	NO	bb	bd	100.341
2378-TCDD	25.788	1.001	6.359e4	7.771e4	1.243	0.818	0.770	1854	1473	9.15e5	1.10e6	493.4	748.3	NO	bb	bb	9.852
12378-PeCDD	30.878	1.001	2.960e5	1.806e5	1.150	1.639	1.550	2737	2510	4.05e6	2.54e6	1479.9	1012.5	NO	bd	bb	52.791
123478-HxCDD	35.424	1.001	2.141e5	1.779e5	0.960	1.204	1.240	2122	2186	3.33e6	2.73e6	1570.0	1248.1	NO	bd	bd	47.771
123678-HxCDD	35.535	1.000	2.527e5	2.090e5	0.883	1.209	1.240	2122	2186	3.42e6	2.81e6	1612.0	1287.4	NO	db	db	50.765
123789-HxCDD	35.925	1.011	2.356e5	1.782e5	0.804	1.322	1.240	2122	2186	3.10e6	2.53e6	1463.2	1157.3	NO	bd	bb	54.634
1234678-HpCDD	39.668	1.000	1.732e5	1.629e5	1.200	1.063	1.050	2111	2786	2.44e6	2.37e6	1157.1	850.7	NO	bb	bb	48.260
OCDD	44.229	1.000	3.183e5	3.503e5	1.059	0.909	0.890	4632	2511	3.35e6	3.71e6	723.0	1476.0	NO	bd	bd	98.465
13C-2378-TCDF	25.125	1.007	8.531e5	1.079e6	1.835	0.791	0.770	1734	1865	1.24e7	1.58e7	7147.1	8470.2	NO	bb	bb	101.247
13C-12378-PeCDF	29.274	1.174	9.269e5	5.545e5	1.377	1.672	1.550	2784	3824	1.23e7	7.86e6	4432.1	2055.6	NO	bb	bb	103.526
13C-23478-PeCDF	30.611	1.227	8.254e5	5.250e5	1.301	1.572	1.550	2784	3824	1.18e7	7.52e6	4227.8	1966.9	NO	bb	bb	99.839
13C-123478-HxCDF	34.265	0.954	3.145e5	6.185e5	1.091	0.508	0.510	2630	3620	4.61e6	9.02e6	1752.2	2492.5	NO	bd	bd	95.308
13C-123678-HxCDF	34.398	0.958	4.041e5	7.199e5	1.340	0.561	0.510	2630	3620	5.11e6	9.77e6	1944.6	2698.4	NO	dd	db	93.428
13C-234678-HxCDF	35.290	0.983	3.107e5	6.101e5	1.093	0.509	0.510	2630	3620	4.39e6	8.59e6	1669.9	2373.8	NO	bb	bb	93.815
13C-123789-HxCDF	36.326	1.011	2.796e5	5.411e5	0.952	0.517	0.510	2630	3620	3.70e6	7.29e6	1405.3	2013.9	NO	bb	bb	96.081
13C-1234678-HpCDF	38.209	1.064	2.670e5	5.956e5	0.985	0.448	0.440	3962	3758	3.99e6	8.90e6	1008.0	2367.0	NO	bb	bb	97.565
13C-1234789-HpCDF	40.370	1.124	2.132e5	4.666e5	0.756	0.457	0.440	3962	3758	2.79e6	6.08e6	702.9	1616.6	NO	bb	bb	100.207
13C-1234-TCDD	24.941	0.000	4.631e5	5.764e5	1.000	0.803	0.770	1709	1577	6.86e6	8.64e6	4013.1	5475.2	NO	bb	bb	100.000
13C-2378-TCDD	25.760	1.033	5.173e5	6.367e5	1.110	0.812	0.770	1709	1577	7.53e6	9.46e6	4405.6	5997.8	NO	bb	bb	100.045
13C-12378-PeCDD	30.855	1.237	4.863e5	2.988e5	0.754	1.628	1.550	1036	1090	6.82e6	4.17e6	6584.7	3824.7	NO	bb	bb	100.204
13C-123478-HxCDD	35.401	0.986	4.756e5	3.789e5	0.960	1.255	1.240	1331	1854	6.97e6	5.62e6	5236.7	3029.1	NO	bd	bd	99.178
13C-123678-HxCDD	35.524	0.989	5.763e5	4.540e5	1.159	1.269	1.240	1331	1854	7.56e6	6.04e6	5683.5	3256.1	NO	db	db	99.014
13C-1234678-HpCDD	39.657	1.104	3.002e5	2.803e5	0.629	1.071	1.050	1654	2361	4.12e6	3.81e6	2488.1	1614.7	NO	bb	bb	102.767
13C-OCDD	44.220	1.231	6.178e5	6.649e5	0.635	0.929	0.890	3963	2769	6.36e6	6.86e6	1605.4	2476.0	NO	bd	bd	224.998
13C-123789-HxCDD	35.914	0.000	4.983e5	3.993e5	1.000	1.248	1.240	1331	1854	6.97e6	5.63e6	5241.4	3033.7	NO	bb	bb	100.000
37CL-2378-TCDD	25.774	1.033	1.166e5		1.157			1488		1.68e6		1126.4			bb		9.694

Dataset: T:\Autospec\Processed Data Batch\230811CCVIH.qld
Last Altered: Tuesday, August 15, 2023 12:26:06 Pacific Daylight Time
Printed: Tuesday, August 15, 2023 12:27:04 Pacific Daylight Time

ID: ICVCF, Name: 23081110, Date: 11-Aug-2023, Time: 17:18:02, 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	21.664	0.862	9.752e4	1.225e5	1.170	0.796	0.770	1316	1323	1.51e6	1.89e6	1144.8	1427.5	NO	bb	bb	9.732
1289-TCDF	26.636	1.060	6.770e4	8.840e4	0.847	0.766	0.770	1316	1323	9.36e5	1.22e6	710.9	924.9	NO	db	bb	9.543
13468-PECDF	26.495	0.905	4.921e5	3.243e5	1.241	1.518	1.550	812	936	7.49e6	4.93e6	9225.9	5269.7	NO	bb	bb	44.409
12389-PECDF	31.658	1.081	3.855e5	2.595e5	0.880	1.486	1.550	3241	2842	5.21e6	3.30e6	1607.8	1162.2	NO	bb	bb	49.498
123468-HXCDF	32.583	0.951	3.185e5	2.569e5	1.206	1.240	1.240	2958	2746	4.47e6	3.54e6	1512.4	1287.4	NO	bb	bb	51.156
1368-TCDD	22.921	0.890	6.370e4	7.877e4	1.181	0.809	0.770	1854	1473	9.95e5	1.24e6	537.0	842.9	NO	bb	bb	10.456
1289-TCDD	26.382	1.024	5.199e4	6.302e4	0.963	0.825	0.770	1854	1473	7.14e5	8.77e5	385.3	595.0	NO	bb	bb	10.352
12479-PECDD	28.170	0.913	5.112e5	3.251e5	2.166	1.572	1.550	2737	2510	4.87e6	3.05e6	1779.7	1215.0	NO	bb	bb	49.173
12389-PECDD	31.279	1.014	3.184e5	2.148e5	1.326	1.482	1.550	2737	2510	4.32e6	2.75e6	1579.5	1093.9	NO	bb	bd	51.214
124679-HXCDD	33.374	0.943	2.500e5	2.168e5	1.127	1.153	1.240	2122	2186	3.56e6	2.93e6	1679.9	1340.1	NO	bb	bd	48.490
1234679-HPCDD	38.654	0.975	1.961e5	1.871e5	1.303	1.048	1.050	2111	2786	2.89e6	2.79e6	1368.8	999.6	NO	bb	bb	50.665
Total-tetrafurans			2.407e5		0.973			1316		3.56e6							29.212
Total-penta1			4.921e5					812		7.49e6							44.409
Total-pentafurans			1.261e6		0.931			3241		1.78e7							157.799
Total-hexafurans			1.462e6		1.087			2958		2.08e7							258.476
Total-heptafurans			4.947e5		1.134			2121		6.93e6							108.655
Total-Furans			4.282e6		1.053			1316		6.01e7							698.892
Total-tetradioxins			3.051e5		1.129			1854		4.05e6							52.353
Total-pentadioxins			1.128e6		1.548			2737		1.33e7							153.490
Total-hexadioxins			9.524e5		0.943			2122		1.34e7							201.659
Total-heptadioxins			3.692e5		1.251			2111		5.33e6							98.925
Total-Dioxins			3.073e6		1.182			1854		3.94e7							604.892
Total-TEQ			7.355e6					1854		9.96e7							1303.783
FUNCTION1 PFK			7.808e5					486759		1.68e7							
FUNCTION2 PFK			7.449e5					276212		1.82e7							0.000
FUNCTION3 PFK			8.836e5					361131		2.05e7							0.000
FUNCTION4 PFK			6.975e6					270910		2.31e7							
FUNCTION5 PFK			1.157e5					191309		4.19e6							
FUNCTION1 HXCD...			1.143e2					591		2.28e3							0.000
FUNCTION1 HPCD...																	
FUNCTION2 HPCD...			6.533e2					947		1.28e4							0.000
FUNCTION3 OCDPE			7.108e2					608		9.70e3							0.000
FUNCTION4 NCDPE			1.803e2					753		2.86e3							0.000
FUNCTION5 DCDPE			8.904e1					515		1.37e3							0.000

Method: T:\Autospec\Methods\Dioxin230810.mdb 12 Aug 2023 10:54:09
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 10:45:18

ID: ICVCF, Name: 23081110, Date: 11-Aug-2023, Time: 17:18:02, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	26.64	6.770e4	8.840e4	0.847	0.77	0.77	710.9	YES	NO	db	bb	9.543
2	2378-TCDF	25.14	7.423e4	9.642e4	0.903	0.77	0.77	835.9	YES	NO	bb	bb	9.781
3	Total-tetrafurans	24.07	5.766e2	7.507e2	0.973	0.77	0.77	6.9	YES	NO	db	dd	0.071
4	Total-tetrafurans	23.92	6.836e2	9.178e2	0.973	0.74	0.77	8.0	YES	NO	bd	bd	0.085
5	1368-TCDF	21.66	9.752e4	1.225e5	1.170	0.80	0.77	1144.8	YES	NO	bb	bb	9.732

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	26.49	4.921e5	3.243e5	1.241	1.52	1.55	9225.9	YES	NO	bb	bb	44.409

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDF	31.66	3.855e5	2.595e5	0.880	1.49	1.55	1607.8	YES	NO	bb	bb	49.498
2	23478-PeCDF	30.62	4.105e5	2.654e5	0.991	1.55	1.55	1825.5	YES	NO	bb	bb	50.524
3	12378-PeCDF	29.28	3.963e5	2.779e5	0.923	1.43	1.55	1762.0	YES	NO	bb	bb	49.295
4	Total-pentafurans	28.15	6.847e4	4.336e4	0.931	1.58	1.55	295.6	YES	NO	bb	bb	8.482

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDF	36.35	2.398e5	1.932e5	0.988	1.24	1.24	1106.6	YES	NO	bb	bb	53.421
2	234678-HxCDF	35.30	2.850e5	2.420e5	1.081	1.18	1.24	1395.6	YES	NO	bb	bd	52.928
3	123678-HxCDF	34.42	3.263e5	2.646e5	1.032	1.23	1.24	1557.6	YES	NO	db	db	50.926
4	123478-HxCDF	34.28	2.923e5	2.345e5	1.128	1.25	1.24	1442.8	YES	NO	bd	bd	50.046
5	123468-HXCDF	32.58	3.185e5	2.569e5	1.206	1.24	1.24	1512.4	YES	NO	bb	bb	51.156

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	40.38	2.267e5	1.989e5	1.104	1.14	1.05	1329.2	YES	NO	bd	bb	56.722
2	1234678-HpCDF	38.22	2.680e5	2.533e5	1.164	1.06	1.05	1936.6	YES	NO	bb	bb	51.933

ID: ICVCF, Name: 23081110, Date: 11-Aug-2023, Time: 17:18:02, 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	26.64	6.770e4	8.840e4	0.847	0.77	0.77	710.9	YES	NO	db	bb	9.543
2	2378-TCDF	25.14	7.423e4	9.642e4	0.903	0.77	0.77	835.9	YES	NO	bb	bb	9.781
3	Total-tetrafurans	24.07	5.766e2	7.507e2	0.973	0.77	0.77	6.9	YES	NO	db	dd	0.071
4	Total-tetrafurans	23.92	6.836e2	9.178e2	0.973	0.74	0.77	8.0	YES	NO	bd	bd	0.085
5	1368-TCDF	21.66	9.752e4	1.225e5	1.170	0.80	0.77	1144.8	YES	NO	bb	bb	9.732
6	12389-PECDF	31.66	3.855e5	2.595e5	0.880	1.49	1.55	1607.8	YES	NO	bb	bb	49.498
7	23478-PeCDF	30.62	4.105e5	2.654e5	0.991	1.55	1.55	1825.5	YES	NO	bb	bb	50.524
8	12378-PeCDF	29.28	3.963e5	2.779e5	0.923	1.43	1.55	1762.0	YES	NO	bb	bb	49.295
9	Total-pentafurans	28.15	6.847e4	4.336e4	0.931	1.58	1.55	295.6	YES	NO	bb	bb	8.482
10	123789-HxCDF	36.35	2.398e5	1.932e5	0.988	1.24	1.24	1106.6	YES	NO	bb	bb	53.421
11	234678-HxCDF	35.30	2.850e5	2.420e5	1.081	1.18	1.24	1395.6	YES	NO	bb	bd	52.928
12	123678-HxCDF	34.42	3.263e5	2.646e5	1.032	1.23	1.24	1557.6	YES	NO	db	db	50.926
13	123478-HxCDF	34.28	2.923e5	2.345e5	1.128	1.25	1.24	1442.8	YES	NO	bd	bd	50.046
14	123468-HXCDF	32.58	3.185e5	2.569e5	1.206	1.24	1.24	1512.4	YES	NO	bb	bb	51.156
15	1234789-HpCDF	40.38	2.267e5	1.989e5	1.104	1.14	1.05	1329.2	YES	NO	bd	bb	56.722
16	1234678-HpCDF	38.22	2.680e5	2.533e5	1.164	1.06	1.05	1936.6	YES	NO	bb	bb	51.933
17	OCDF	44.46	3.318e5	3.955e5	1.130	0.84	0.89	1762.4	YES	NO	bb	bd	100.341
18	13468-PECDF	26.49	4.921e5	3.243e5	1.241	1.52	1.55	9225.9	YES	NO	bb	bb	44.409

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDD	26.38	5.199e4	6.302e4	0.963	0.82	0.77	385.3	YES	NO	bb	bb	10.352
2	2378-TCDD	25.79	6.359e4	7.771e4	1.243	0.82	0.77	493.4	YES	NO	bb	bb	9.852
3	Total-tetradioxins	25.45	9.235e4	1.156e5	1.129	0.80	0.77	502.7	YES	NO	bb	bb	15.965
4	Total-tetradioxins	24.97	3.090e4	3.807e4	1.129	0.81	0.77	253.5	YES	NO	bb	bb	5.294
5	Total-tetradioxins	24.12	2.526e3	3.134e3	1.129	0.81	0.77	12.9	YES	NO	bb	bb	0.435
6	1368-TCDD	22.92	6.370e4	7.877e4	1.181	0.81	0.77	537.0	YES	NO	bb	bb	10.456

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12479-PECDD	28.17	5.112e5	3.251e5	2.166	1.57	1.55	1779.7	YES	NO	bb	bb	49.173
2	12389-PECDD	31.28	3.184e5	2.148e5	1.326	1.48	1.55	1579.5	YES	NO	bb	bd	51.214
3	12378-PeCDD	30.88	2.960e5	1.806e5	1.150	1.64	1.55	1479.9	YES	NO	bd	bb	52.791
4	Total-pentadioxins	30.21	1.196e3	8.873e2	1.548	1.35	1.55	5.6	YES	NO	bb	bb	0.172
5	Total-pentadioxins	29.28	9.733e2	7.308e2	1.548	1.33	1.55	4.7	YES	NO	bb	bb	0.140

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HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123478-HxCDD	35.42	2.141e5	1.779e5	0.960	1.20	1.24	1570.0	YES	NO	bd	bd	47.771
2	124679-HXCDD	33.37	2.500e5	2.168e5	1.127	1.15	1.24	1679.9	YES	NO	bb	bd	48.490
3	123789-HxCDD	35.92	2.356e5	1.782e5	0.804	1.32	1.24	1463.2	YES	NO	bd	bb	54.634
4	123678-HxCDD	35.53	2.527e5	2.090e5	0.883	1.21	1.24	1612.0	YES	NO	db	db	50.765

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234679-HPCDD	38.65	1.961e5	1.871e5	1.303	1.05	1.05	1368.8	YES	NO	bb	bb	50.665
2	1234678-HpCDD	39.67	1.732e5	1.629e5	1.200	1.06	1.05	1157.1	YES	NO	bb	bb	48.260

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	26.38	5.199e4	6.302e4	0.963	0.82	0.77	385.3	YES	NO	bb	bb	10.352
2	2378-TCDD	25.79	6.359e4	7.771e4	1.243	0.82	0.77	493.4	YES	NO	bb	bb	9.852
3	Total-tetradioxins	25.45	9.235e4	1.156e5	1.129	0.80	0.77	502.7	YES	NO	bb	bb	15.965
4	Total-tetradioxins	24.97	3.090e4	3.807e4	1.129	0.81	0.77	253.5	YES	NO	bb	bb	5.294
5	Total-tetradioxins	24.12	2.526e3	3.134e3	1.129	0.81	0.77	12.9	YES	NO	bb	bb	0.435
6	1368-TCDD	22.92	6.370e4	7.877e4	1.181	0.81	0.77	537.0	YES	NO	bb	bb	10.456
7	12479-PECDD	28.17	5.112e5	3.251e5	2.166	1.57	1.55	1779.7	YES	NO	bb	bb	49.173
8	12389-PECDD	31.28	3.184e5	2.148e5	1.326	1.48	1.55	1579.5	YES	NO	bb	bd	51.214
9	12378-PeCDD	30.88	2.960e5	1.806e5	1.150	1.64	1.55	1479.9	YES	NO	bd	bb	52.791
10	Total-pentadioxins	30.21	1.196e3	8.873e2	1.548	1.35	1.55	5.6	YES	NO	bb	bb	0.172
11	Total-pentadioxins	29.28	9.733e2	7.308e2	1.548	1.33	1.55	4.7	YES	NO	bb	bb	0.140
12	123478-HxCDD	35.42	2.141e5	1.779e5	0.960	1.20	1.24	1570.0	YES	NO	bd	bd	47.771
13	124679-HXCDD	33.37	2.500e5	2.168e5	1.127	1.15	1.24	1679.9	YES	NO	bb	bd	48.490
14	123789-HxCDD	35.92	2.356e5	1.782e5	0.804	1.32	1.24	1463.2	YES	NO	bd	bb	54.634
15	123678-HxCDD	35.53	2.527e5	2.090e5	0.883	1.21	1.24	1612.0	YES	NO	db	db	50.765
16	1234679-HPCDD	38.65	1.961e5	1.871e5	1.303	1.05	1.05	1368.8	YES	NO	bb	bb	50.665
17	1234678-HpCDD	39.67	1.732e5	1.629e5	1.200	1.06	1.05	1157.1	YES	NO	bb	bb	48.260
18	OCDD	44.23	3.183e5	3.503e5	1.059	0.91	0.89	723.0	YES	NO	bd	bd	98.465

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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	26.64	6.770e4	8.840e4	0.847	0.77	0.77	710.9	YES	NO	db	bb	9.543
2	2378-TCDF	25.14	7.423e4	9.642e4	0.903	0.77	0.77	835.9	YES	NO	bb	bb	9.781
3	Total-tetrafurans	24.07	5.766e2	7.507e2	0.973	0.77	0.77	6.9	YES	NO	db	dd	0.071
4	Total-tetrafurans	23.92	6.836e2	9.178e2	0.973	0.74	0.77	8.0	YES	NO	bd	bd	0.085
5	1368-TCDF	21.66	9.752e4	1.225e5	1.170	0.80	0.77	1144.8	YES	NO	bb	bb	9.732
6	12389-PECDF	31.66	3.855e5	2.595e5	0.880	1.49	1.55	1607.8	YES	NO	bb	bb	49.498
7	23478-PeCDF	30.62	4.105e5	2.654e5	0.991	1.55	1.55	1825.5	YES	NO	bb	bb	50.524
8	12378-PeCDF	29.28	3.963e5	2.779e5	0.923	1.43	1.55	1762.0	YES	NO	bb	bb	49.295
9	Total-pentafurans	28.15	6.847e4	4.336e4	0.931	1.58	1.55	295.6	YES	NO	bb	bb	8.482
10	123789-HxCDF	36.35	2.398e5	1.932e5	0.988	1.24	1.24	1106.6	YES	NO	bb	bb	53.421
11	234678-HxCDF	35.30	2.850e5	2.420e5	1.081	1.18	1.24	1395.6	YES	NO	bb	bd	52.928
12	123678-HxCDF	34.42	3.263e5	2.646e5	1.032	1.23	1.24	1557.6	YES	NO	db	db	50.926
13	123478-HxCDF	34.28	2.923e5	2.345e5	1.128	1.25	1.24	1442.8	YES	NO	bd	bd	50.046
14	123468-HXCDF	32.58	3.185e5	2.569e5	1.206	1.24	1.24	1512.4	YES	NO	bb	bb	51.156
15	1234789-HpCDF	40.38	2.267e5	1.989e5	1.104	1.14	1.05	1329.2	YES	NO	bd	bb	56.722
16	1234678-HpCDF	38.22	2.680e5	2.533e5	1.164	1.06	1.05	1936.6	YES	NO	bb	bb	51.933
17	OCDF	44.46	3.318e5	3.955e5	1.130	0.84	0.89	1762.4	YES	NO	bb	bd	100.341
18	13468-PECDF	26.49	4.921e5	3.243e5	1.241	1.52	1.55	9225.9	YES	NO	bb	bb	44.409
19	1289-TCDD	26.38	5.199e4	6.302e4	0.963	0.82	0.77	385.3	YES	NO	bb	bb	10.352
20	2378-TCDD	25.79	6.359e4	7.771e4	1.243	0.82	0.77	493.4	YES	NO	bb	bb	9.852
21	Total-tetradioxins	25.45	9.235e4	1.156e5	1.129	0.80	0.77	502.7	YES	NO	bb	bb	15.965
22	Total-tetradioxins	24.97	3.090e4	3.807e4	1.129	0.81	0.77	253.5	YES	NO	bb	bb	5.294
23	Total-tetradioxins	24.12	2.526e3	3.134e3	1.129	0.81	0.77	12.9	YES	NO	bb	bb	0.435
24	1368-TCDD	22.92	6.370e4	7.877e4	1.181	0.81	0.77	537.0	YES	NO	bb	bb	10.456
25	12479-PECDD	28.17	5.112e5	3.251e5	2.166	1.57	1.55	1779.7	YES	NO	bb	bb	49.173
26	12389-PECDD	31.28	3.184e5	2.148e5	1.326	1.48	1.55	1579.5	YES	NO	bb	bd	51.214
27	12378-PeCDD	30.88	2.960e5	1.806e5	1.150	1.64	1.55	1479.9	YES	NO	bd	bb	52.791
28	Total-pentadioxins	30.21	1.196e3	8.873e2	1.548	1.35	1.55	5.6	YES	NO	bb	bb	0.172
29	Total-pentadioxins	29.28	9.733e2	7.308e2	1.548	1.33	1.55	4.7	YES	NO	bb	bb	0.140
30	123478-HxCDD	35.42	2.141e5	1.779e5	0.960	1.20	1.24	1570.0	YES	NO	bd	bd	47.771
31	124679-HXCDD	33.37	2.500e5	2.168e5	1.127	1.15	1.24	1679.9	YES	NO	bb	bd	48.490
32	123789-HxCDD	35.92	2.356e5	1.782e5	0.804	1.32	1.24	1463.2	YES	NO	bd	bb	54.634
33	123678-HxCDD	35.53	2.527e5	2.090e5	0.883	1.21	1.24	1612.0	YES	NO	db	db	50.765
34	1234679-HPCDD	38.65	1.961e5	1.871e5	1.303	1.05	1.05	1368.8	YES	NO	bb	bb	50.665
35	1234678-HpCDD	39.67	1.732e5	1.629e5	1.200	1.06	1.05	1157.1	YES	NO	bb	bb	48.260
36	OCDD	44.23	3.183e5	3.503e5	1.059	0.91	0.89	723.0	YES	NO	bd	bd	98.465

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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	21.68	1.767e4					1.1	NO		dd		
2	FUNCTION1 PFK	21.64	3.920e4					1.3	NO		bd		
3	FUNCTION1 PFK	21.35	2.555e4					1.4	NO		db		
4	FUNCTION1 PFK	21.31	1.859e4					1.2	NO		bd		
5	FUNCTION1 PFK	21.24	4.622e4					1.6	NO		db		
6	FUNCTION1 PFK	21.13	2.882e4					1.2	NO		bd		
7	FUNCTION1 PFK	26.01	2.106e4					1.1	NO		bb		
8	FUNCTION1 PFK	25.73	1.039e4					0.8	NO		bb		
9	FUNCTION1 PFK	25.51	1.076e4					0.7	NO		bb		
10	FUNCTION1 PFK	24.96	2.260e4					1.4	NO		db		
11	FUNCTION1 PFK	24.86	4.840e4					1.6	NO		bd		
12	FUNCTION1 PFK	24.46	4.994e3					0.7	NO		bb		
13	FUNCTION1 PFK	23.90	2.884e4					1.5	NO		bb		
14	FUNCTION1 PFK	23.75	1.059e4					1.0	NO		bb		
15	FUNCTION1 PFK	23.57	2.495e4					1.3	NO		bb		
16	FUNCTION1 PFK	22.55	8.571e4					1.9	NO		bb		
17	FUNCTION1 PFK	22.47	5.005e4					1.1	NO		bb		
18	FUNCTION1 PFK	22.19	9.994e3					0.8	NO		bb		
19	FUNCTION1 PFK	21.97	5.856e4					1.4	NO		bb		
20	FUNCTION1 PFK	21.83	2.649e4					1.6	NO		db		
21	FUNCTION1 PFK	21.78	2.302e4					1.3	NO		dd		
22	FUNCTION1 PFK	21.73	6.341e3					0.7	NO		dd		
23	FUNCTION1 PFK	27.24	2.681e4					1.2	NO		bb		
24	FUNCTION1 PFK	27.19	3.113e3					0.5	NO		bb		
25	FUNCTION1 PFK	27.06	7.590e3					0.6	NO		bb		
26	FUNCTION1 PFK	26.78	4.486e4					1.7	NO		bb		
27	FUNCTION1 PFK	26.66	3.174e4					1.2	NO		db		
28	FUNCTION1 PFK	26.57	3.642e4					1.7	NO		bd		
29	FUNCTION1 PFK	26.18	1.151e4					0.9	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	28.29	2.732e3					0.7	NO		db		0.000
2	FUNCTION2 PFK	28.26	6.938e3					1.0	NO		bd		0.000
3	FUNCTION2 PFK	28.20	9.092e3					1.2	NO		db		0.000
4	FUNCTION2 PFK	28.16	1.377e4					1.4	NO		bd		0.000
5	FUNCTION2 PFK	28.06	3.165e3					0.6	NO		bb		0.000
6	FUNCTION2 PFK	27.87	9.196e3					1.5	NO		bb		0.000
7	FUNCTION2 PFK	27.67	2.199e4					1.4	NO		bb		0.000
8	FUNCTION2 PFK	27.55	2.497e4					1.8	NO		bb		0.000
9	FUNCTION2 PFK	30.21	3.416e4					2.3	NO		db		0.000
10	FUNCTION2 PFK	30.12	2.705e4					1.9	NO		dd		0.000
11	FUNCTION2 PFK	30.06	1.914e4					1.9	NO		bd		0.000
12	FUNCTION2 PFK	29.99	8.490e3					1.3	NO		db		0.000
13	FUNCTION2 PFK	29.96	9.023e3					1.1	NO		bd		0.000
14	FUNCTION2 PFK	29.62	1.941e4					1.6	NO		db		0.000
15	FUNCTION2 PFK	29.50	2.598e4					1.4	NO		dd		0.000
16	FUNCTION2 PFK	29.43	1.158e4					1.2	NO		dd		0.000
17	FUNCTION2 PFK	29.36	1.815e4					1.7	NO		bd		0.000
18	FUNCTION2 PFK	29.32	1.971e4					1.0	NO		db		0.000
19	FUNCTION2 PFK	29.20	2.466e3					0.4	NO		bd		0.000
20	FUNCTION2 PFK	29.15	7.869e3					0.9	NO		bb		0.000
21	FUNCTION2 PFK	28.95	1.003e4					0.9	NO		bb		0.000
22	FUNCTION2 PFK	28.74	8.429e3					1.2	NO		bb		0.000
23	FUNCTION2 PFK	28.68	6.948e3					1.0	NO		bb		0.000
24	FUNCTION2 PFK	28.44	1.258e4					1.2	NO		bb		0.000
25	FUNCTION2 PFK	31.72	1.268e4					1.3	NO		db		0.000
26	FUNCTION2 PFK	31.68	2.085e4					1.9	NO		dd		0.000
27	FUNCTION2 PFK	31.58	2.676e4					1.9	NO		dd		0.000
28	FUNCTION2 PFK	31.50	3.605e4					2.3	NO		bd		0.000
29	FUNCTION2 PFK	31.45	1.724e4					1.1	NO		bb		0.000
30	FUNCTION2 PFK	31.31	1.869e4					2.0	NO		bb		0.000
31	FUNCTION2 PFK	31.21	1.453e4					1.0	NO		bb		0.000
32	FUNCTION2 PFK	31.09	1.215e4					1.1	NO		bb		0.000
33	FUNCTION2 PFK	30.96	2.108e4					1.4	NO		bb		0.000
34	FUNCTION2 PFK	30.69	1.684e4					1.1	NO		bb		0.000
35	FUNCTION2 PFK	30.61	2.085e3					0.5	NO		bb		0.000
36	FUNCTION2 PFK	30.53	1.995e4					1.4	NO		db		0.000
37	FUNCTION2 PFK	30.47	1.901e4					1.5	NO		dd		0.000

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PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION2 PFK	30.41	1.962e4					2.2	NO		dd		0.000
39	FUNCTION2 PFK	30.37	1.451e4					1.5	NO		dd		0.000
40	FUNCTION2 PFK	30.30	1.968e4					1.6	NO		bd		0.000
41	FUNCTION2 PFK	32.09	4.284e3					0.7	NO		bb		0.000
42	FUNCTION2 PFK	32.05	5.676e3					1.0	NO		bb		0.000
43	FUNCTION2 PFK	32.00	1.141e4					1.7	NO		db		0.000
44	FUNCTION2 PFK	31.96	1.965e4					2.7	NO		dd		0.000
45	FUNCTION2 PFK	31.90	4.123e4					2.9	NO		dd		0.000
46	FUNCTION2 PFK	31.82	3.802e4					2.4	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	2.228e4					2.1	NO		dd		0.000
2	FUNCTION3 PFK	33.20	3.060e4					2.0	NO		bd		0.000
3	FUNCTION3 PFK	33.12	9.100e3					1.1	NO		db		0.000
4	FUNCTION3 PFK	33.05	4.780e4					2.3	NO		bd		0.000
5	FUNCTION3 PFK	32.88	2.988e4					1.6	NO		bb		0.000
6	FUNCTION3 PFK	32.72	3.441e4					2.1	NO		bb		0.000
7	FUNCTION3 PFK	32.65	2.616e4					2.0	NO		db		0.000
8	FUNCTION3 PFK	32.55	2.560e4					1.0	NO		bd		0.000
9	FUNCTION3 PFK	32.43	2.575e4					1.7	NO		bb		0.000
10	FUNCTION3 PFK	35.61	3.327e3					0.8	NO		bb		0.000
11	FUNCTION3 PFK	35.33	6.250e3					0.8	NO		bb		0.000
12	FUNCTION3 PFK	35.17	3.885e4					2.3	NO		bb		0.000
13	FUNCTION3 PFK	35.09	1.757e4					1.6	NO		bb		0.000
14	FUNCTION3 PFK	34.63	4.442e4					2.3	NO		db		0.000
15	FUNCTION3 PFK	34.55	4.151e3					0.5	NO		bd		0.000
16	FUNCTION3 PFK	34.51	2.328e4					2.2	NO		bb		0.000
17	FUNCTION3 PFK	34.31	2.039e4					1.5	NO		bb		0.000
18	FUNCTION3 PFK	34.24	1.334e4					1.4	NO		bb		0.000
19	FUNCTION3 PFK	34.12	1.911e4					1.6	NO		bb		0.000
20	FUNCTION3 PFK	33.92	2.773e4					1.7	NO		bb		0.000
21	FUNCTION3 PFK	33.69	1.095e4					1.2	NO		bb		0.000
22	FUNCTION3 PFK	33.60	1.130e4					1.4	NO		db		0.000
23	FUNCTION3 PFK	33.51	4.163e4					2.1	NO		dd		0.000
24	FUNCTION3 PFK	33.41	7.814e4					2.3	NO		dd		0.000
25	FUNCTION3 PFK	33.31	2.554e4					1.7	NO		dd		0.000
26	FUNCTION3 PFK	37.26	1.448e3					0.4	NO		bb		0.000
27	FUNCTION3 PFK	36.98	1.246e4					1.1	NO		db		0.000
28	FUNCTION3 PFK	36.88	2.700e4					1.6	NO		dd		0.000
29	FUNCTION3 PFK	36.84	2.160e4					2.2	NO		dd		0.000
30	FUNCTION3 PFK	36.79	1.778e4					1.9	NO		dd		0.000
31	FUNCTION3 PFK	36.69	9.048e4					3.0	NO		bd		0.000
32	FUNCTION3 PFK	36.60	3.859e4					1.9	NO		bb		0.000
33	FUNCTION3 PFK	36.40	5.770e3					0.7	NO		bb		0.000
34	FUNCTION3 PFK	36.11	1.316e4					1.1	NO		bb		0.000
35	FUNCTION3 PFK	35.82	1.595e4					1.2	NO		bb		0.000
36	FUNCTION3 PFK	35.66	1.792e3					0.4	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	38.38	2.098e3					0.7	NO		bb		
2	FUNCTION4 PFK	38.02	6.654e5					16.6	YES		db		
3	FUNCTION4 PFK	38.01	4.385e5					16.5	YES		dd		
4	FUNCTION4 PFK	37.55	5.756e6					41.2	YES		bd		
5	FUNCTION4 PFK	42.41	8.804e3					1.1	NO		bb		
6	FUNCTION4 PFK	41.94	1.287e4					0.9	NO		bb		
7	FUNCTION4 PFK	41.29	1.609e4					2.0	NO		bb		
8	FUNCTION4 PFK	41.14	3.746e4					0.8	NO		bb		
9	FUNCTION4 PFK	40.23	6.251e3					1.1	NO		bb		
10	FUNCTION4 PFK	39.90	9.302e3					1.5	NO		bb		
11	FUNCTION4 PFK	39.84	6.715e3					1.1	NO		bb		
12	FUNCTION4 PFK	38.57	1.544e4					1.6	NO		bb		

PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	43.68	6.792e3					1.8	NO		bb		
2	FUNCTION5 PFK	43.56	4.605e3					1.0	NO		bb		
3	FUNCTION5 PFK	43.41	3.203e3					1.2	NO		bb		
4	FUNCTION5 PFK	43.17	1.090e4					1.2	NO		bb		
5	FUNCTION5 PFK	43.08	6.047e3					1.2	NO		bb		
6	FUNCTION5 PFK	43.01	1.597e4					2.4	NO		bb		
7	FUNCTION5 PFK	42.88	7.377e3					1.3	NO		bb		
8	FUNCTION5 PFK	45.80	2.543e3					0.8	NO		bb		
9	FUNCTION5 PFK	45.67	1.019e4					1.6	NO		bb		
10	FUNCTION5 PFK	45.61	1.682e4					2.4	NO		bb		
11	FUNCTION5 PFK	45.38	4.750e3					1.2	NO		bb		
12	FUNCTION5 PFK	45.35	8.909e2					0.5	NO		bb		
13	FUNCTION5 PFK	45.23	1.909e3					0.7	NO		bb		
14	FUNCTION5 PFK	44.85	8.853e3					1.5	NO		bb		
15	FUNCTION5 PFK	44.81	6.957e2					0.4	NO		bb		
16	FUNCTION5 PFK	44.59	2.188e3					0.7	NO		bb		
17	FUNCTION5 PFK	44.47	9.128e3					1.3	NO		bb		
18	FUNCTION5 PFK	43.99	2.872e3					0.8	NO		bb		

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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...	27.02	1.143e2					3.9	YES		bb		0.000

ETHERS2

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

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	30.48	4.003e2					7.5	YES		bb		0.000
2	FUNCTION2 HPCD...	28.56	7.715e1					2.2	NO		bb		0.000
3	FUNCTION2 HPCD...	31.32	8.806e1					2.4	NO		bb		0.000
4	FUNCTION2 HPCD...	30.88	8.789e1					1.4	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	35.90	1.900e2					3.9	YES		bb		0.000
2	FUNCTION3 OCDPE	35.52	2.386e2					5.5	YES		db		0.000
3	FUNCTION3 OCDPE	35.40	1.857e2					4.4	YES		bd		0.000
4	FUNCTION3 OCDPE	34.29	9.642e1					2.1	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	39.09	1.090e2					1.9	NO		bb		0.000
2	FUNCTION4 NCDPE	38.45	7.125e1					1.9	NO		bb		0.000

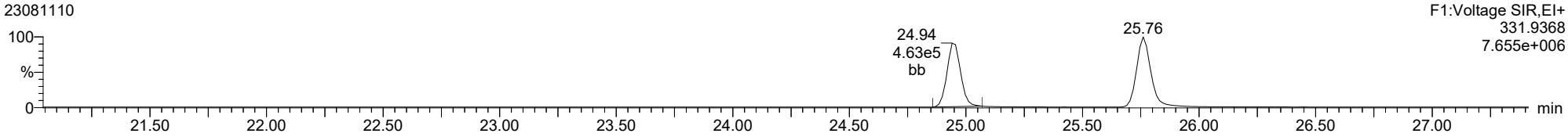
ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	44.77	8.904e1					2.7	NO		bb		0.000

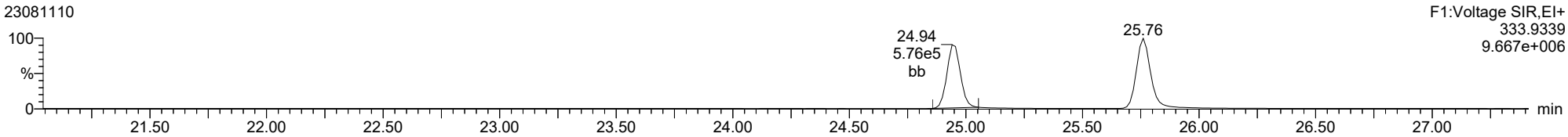
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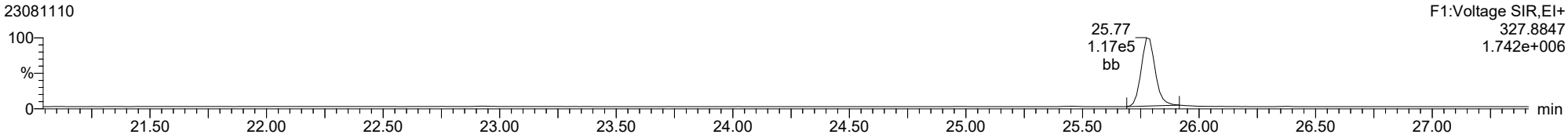
13C-1234-TCDD



13C-1234-TCDD

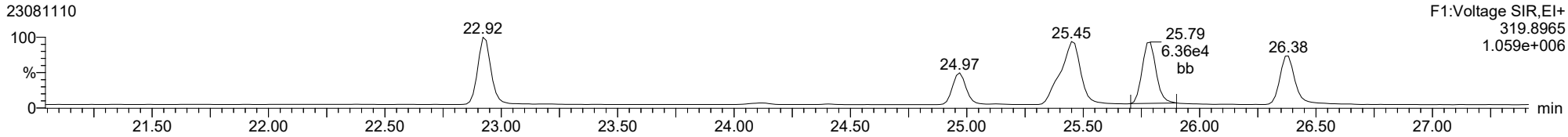


37CL-2378-TCDD

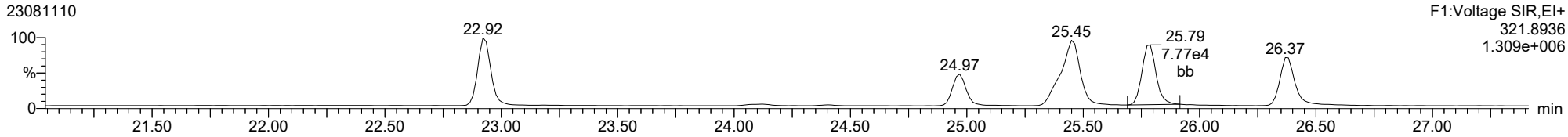


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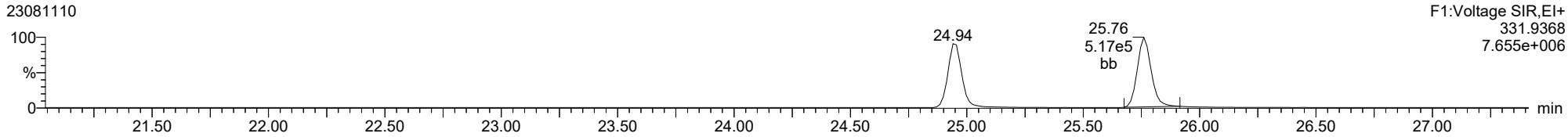
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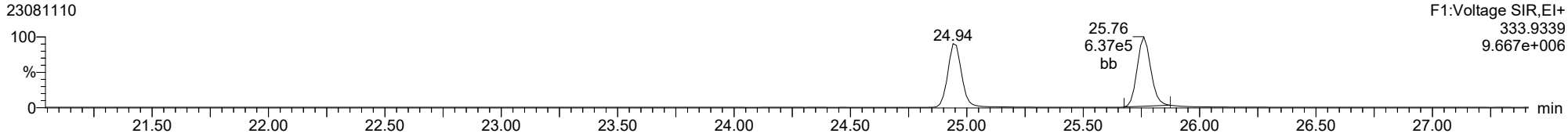
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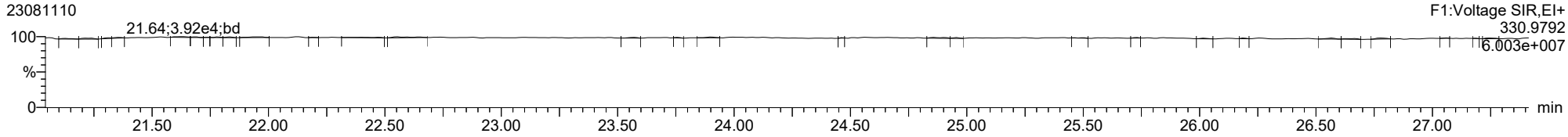
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13C-2378-TCDD

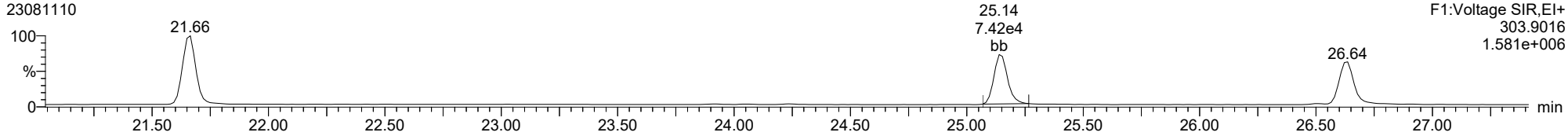


FUNCTION1 PFK

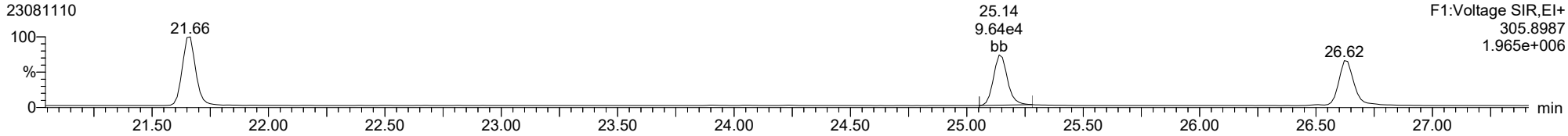


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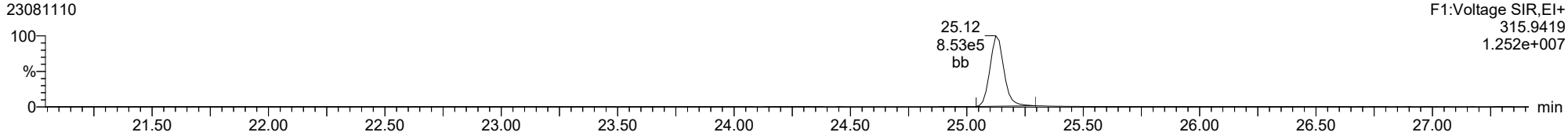
2378-TCDF



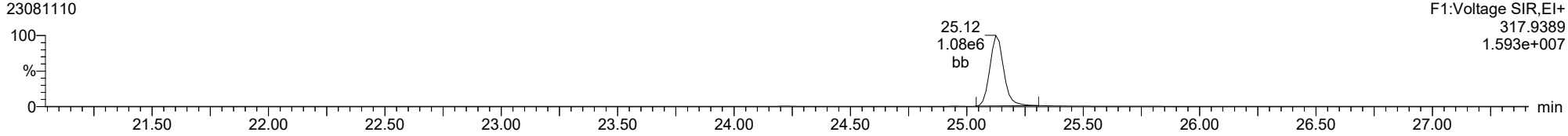
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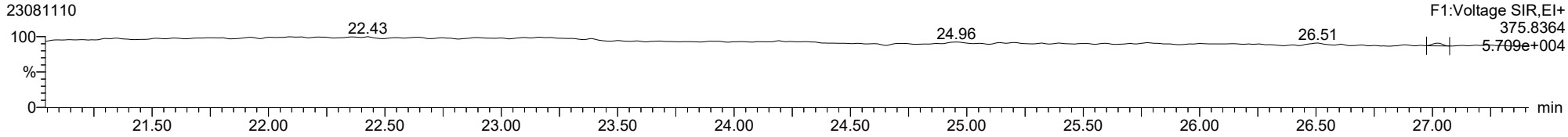
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13C-2378-TCDF

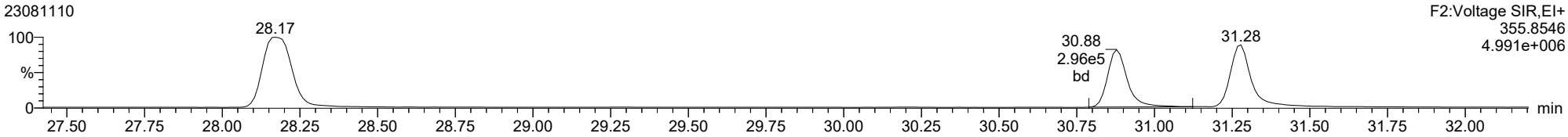


FUNCTION1 HXCDPE

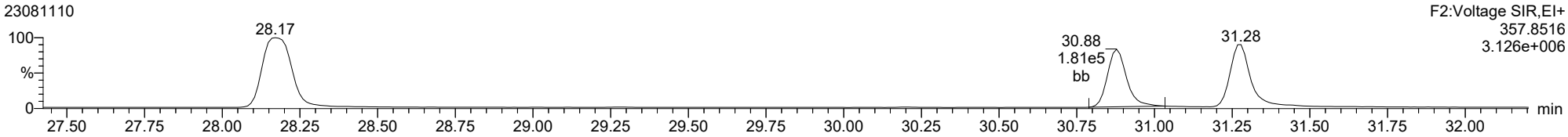


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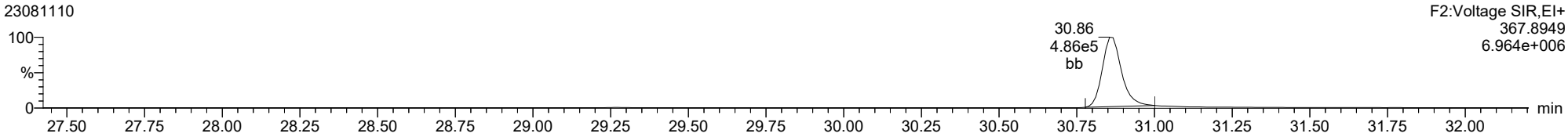
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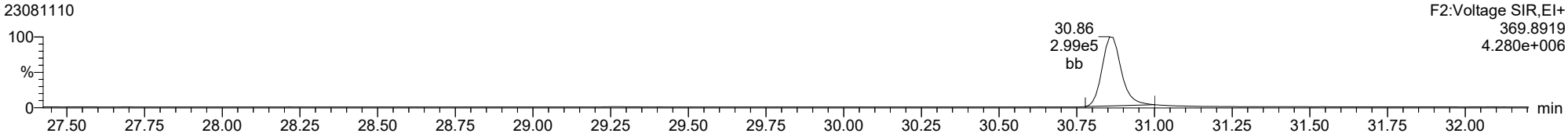
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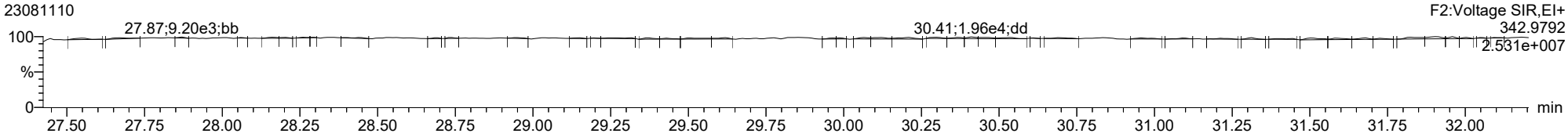
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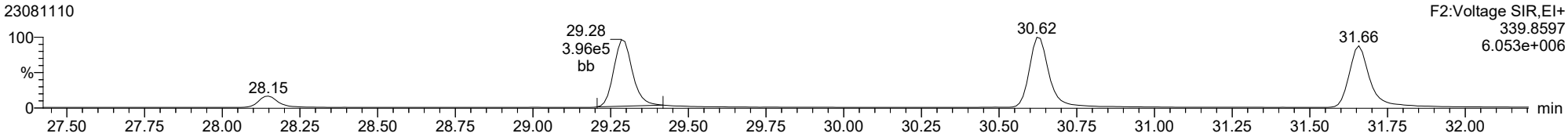


FUNCTION2 PFK

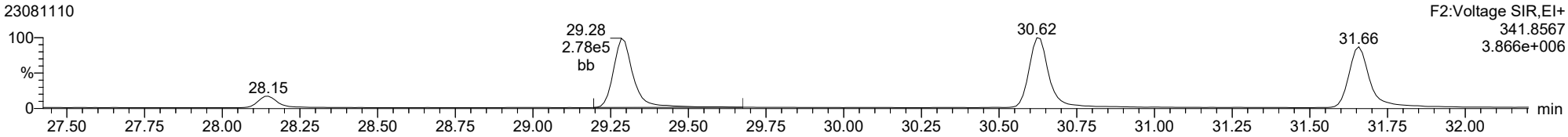


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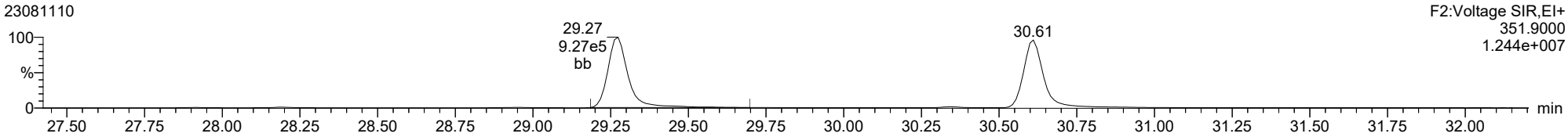
12378-PeCDF



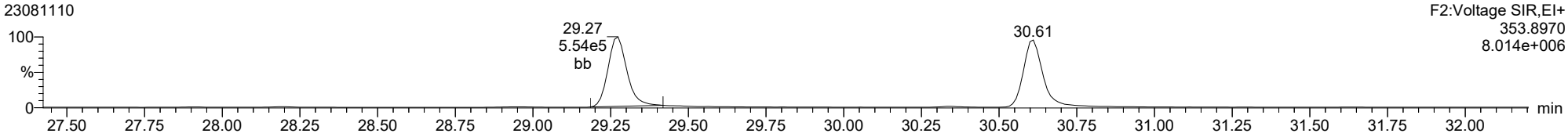
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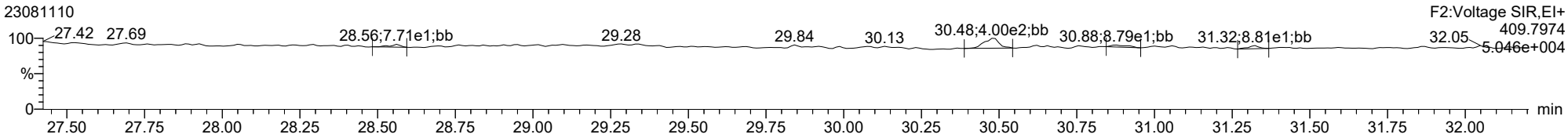
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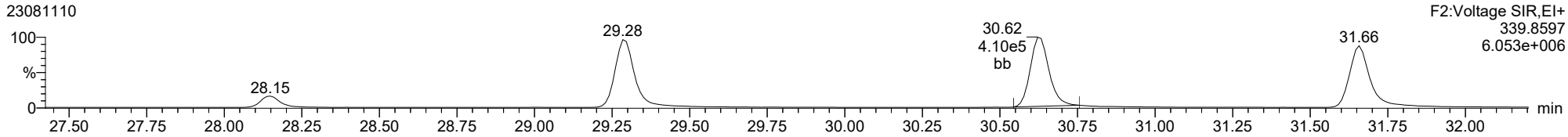


FUNCTION2 HPCDPE

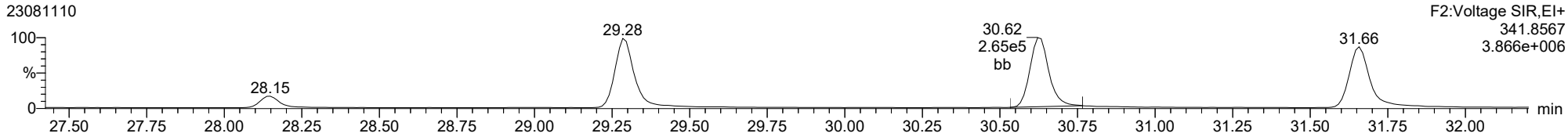


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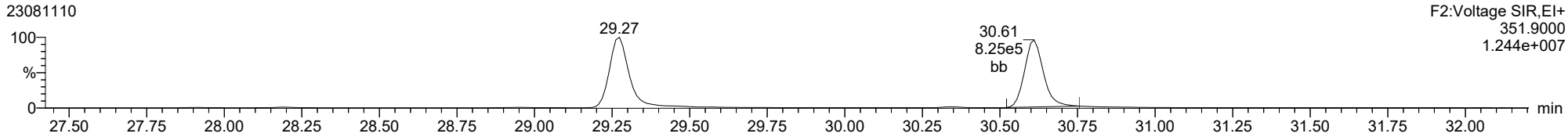
23478-PeCDF



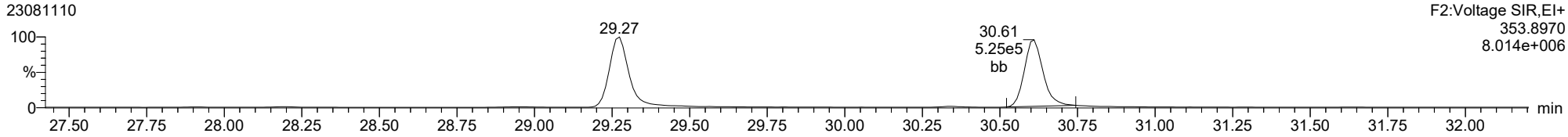
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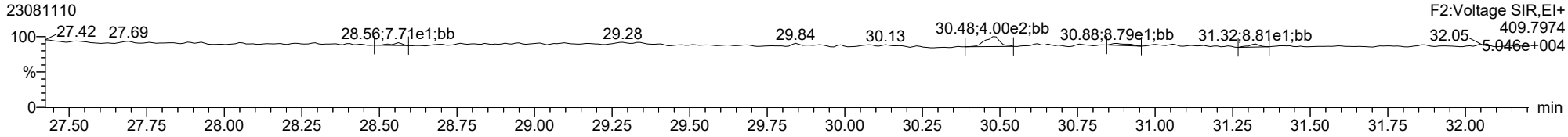
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13C-23478-PeCDF

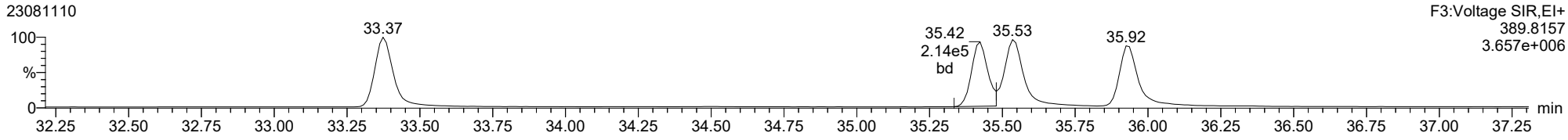


FUNCTION2 HPCDPE

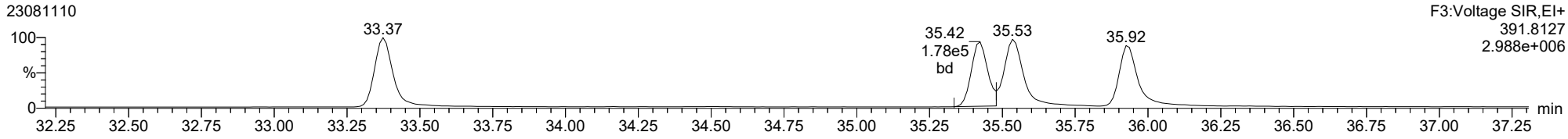


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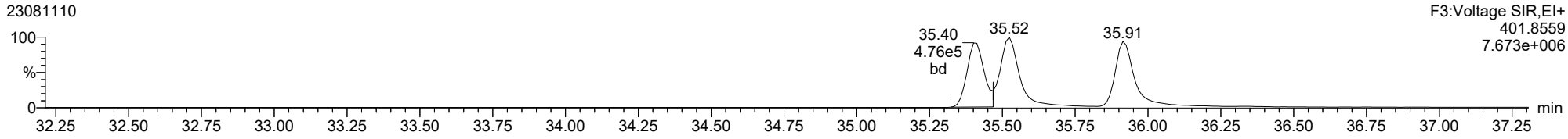
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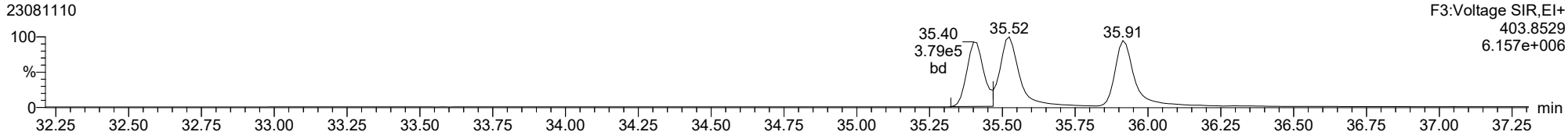
123478-HxCDD



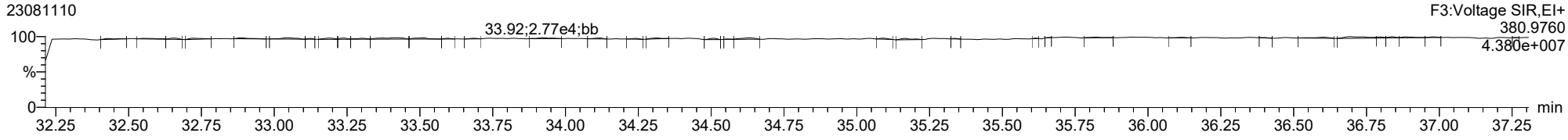
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13C-123478-HxCDD

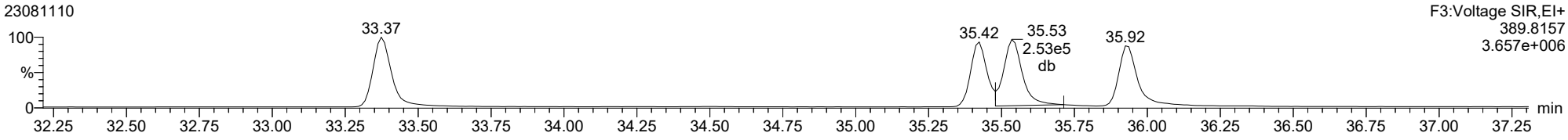


FUNCTION3 PFK

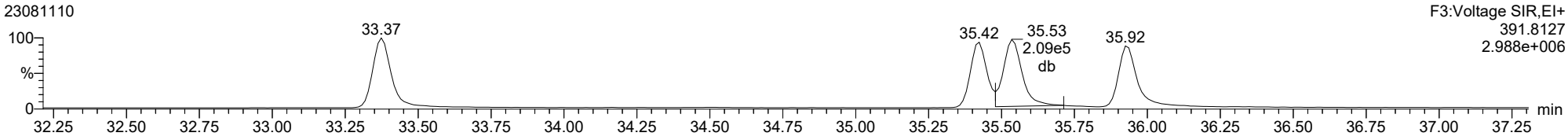


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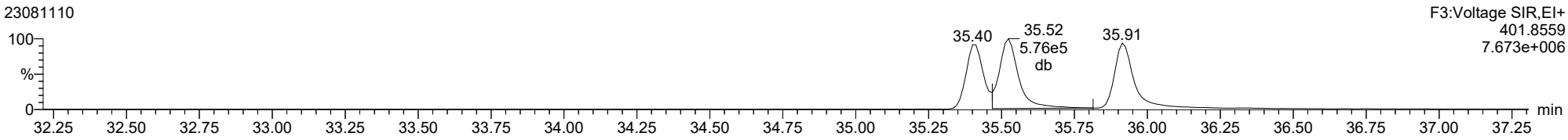
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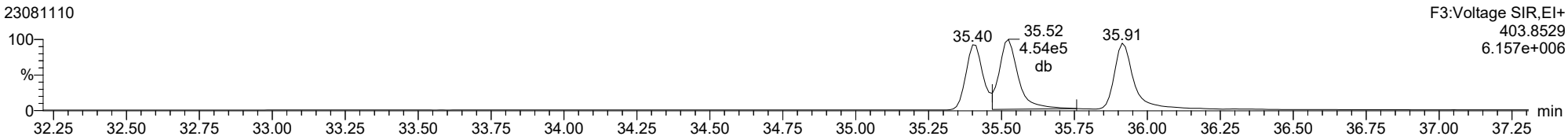
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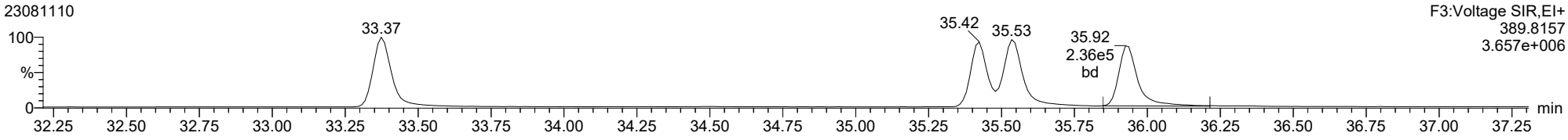


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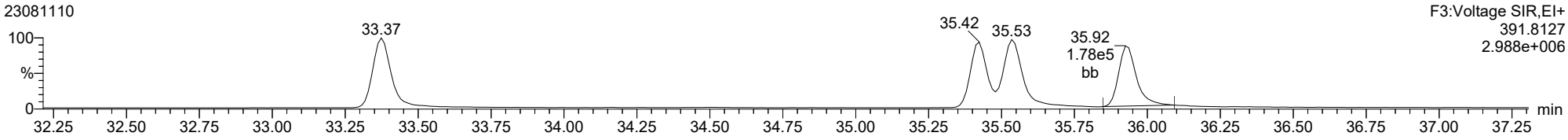


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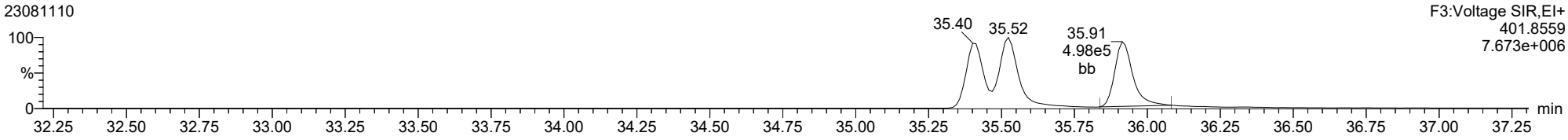
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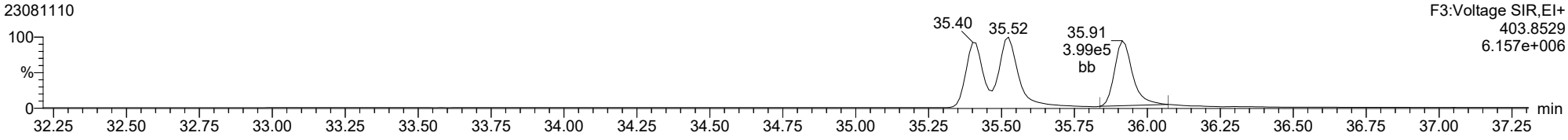
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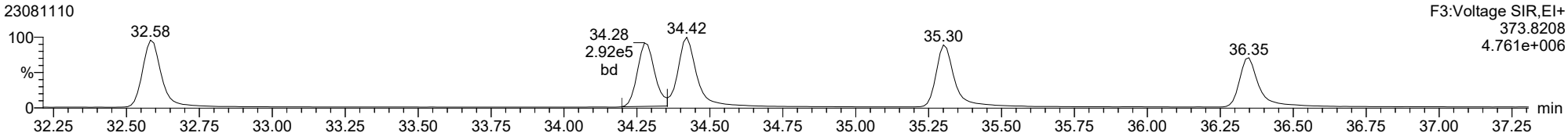


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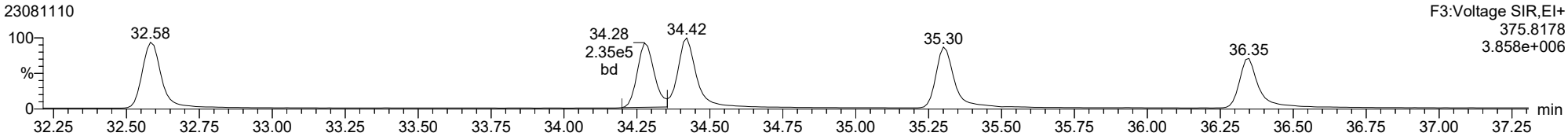


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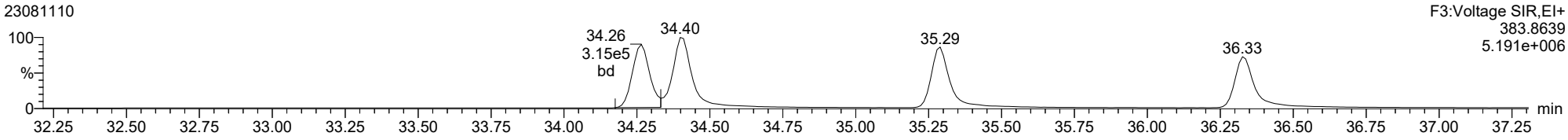
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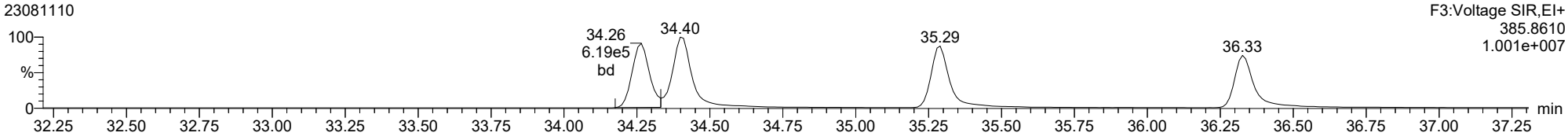
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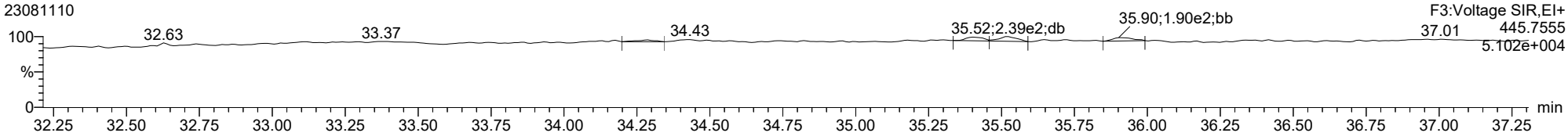
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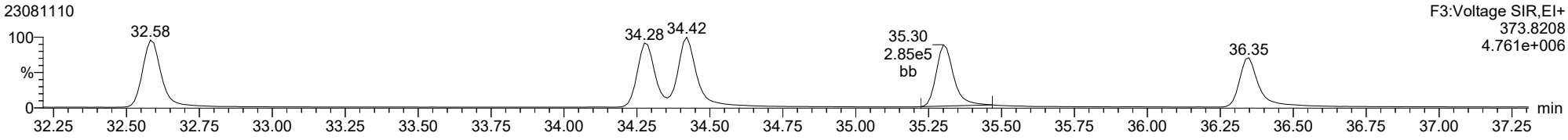


FUNCTION3 OCDPE

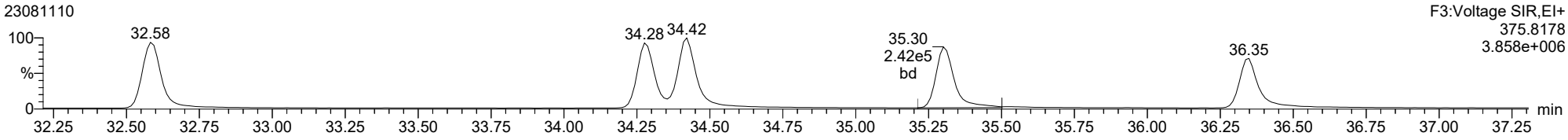


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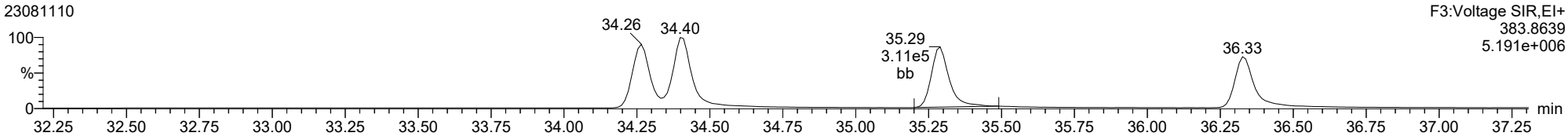
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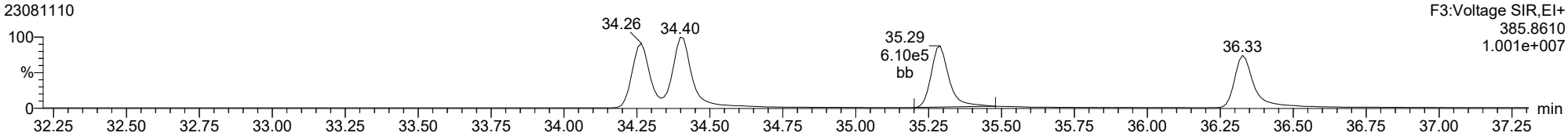
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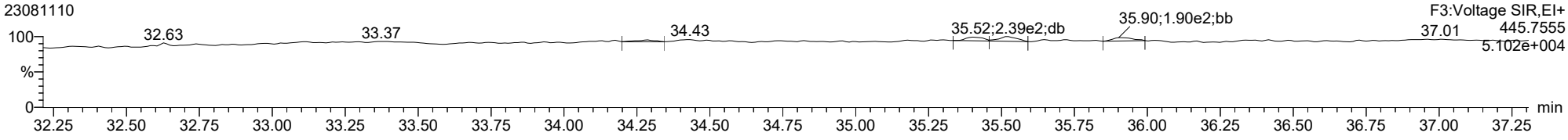
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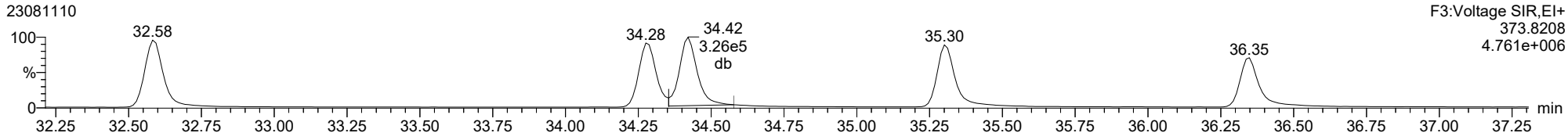


FUNCTION3 OCDPE

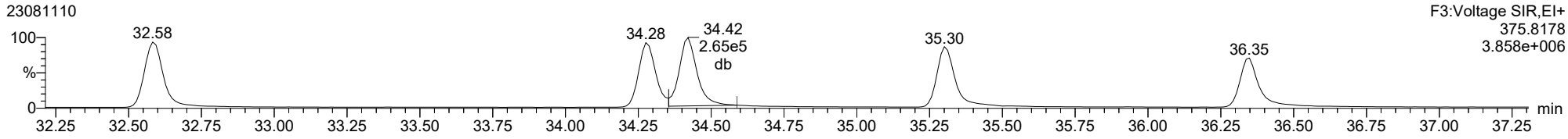


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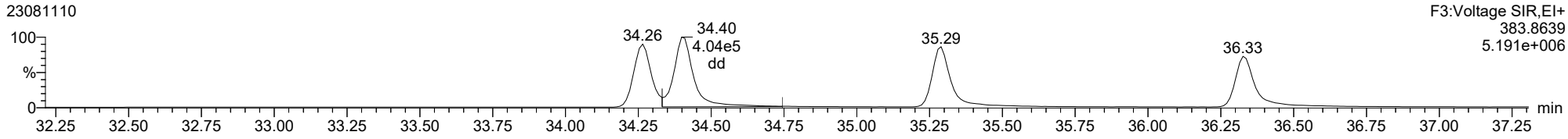
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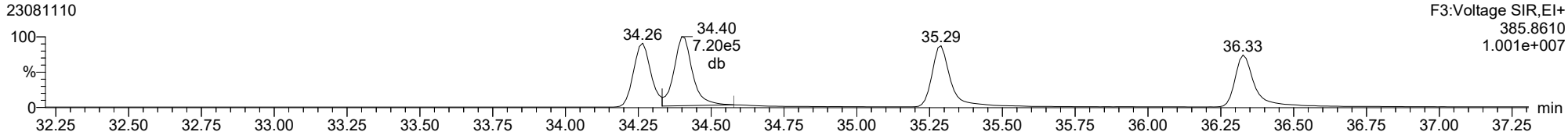
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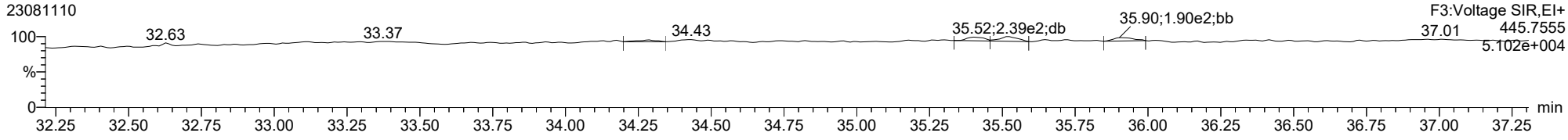
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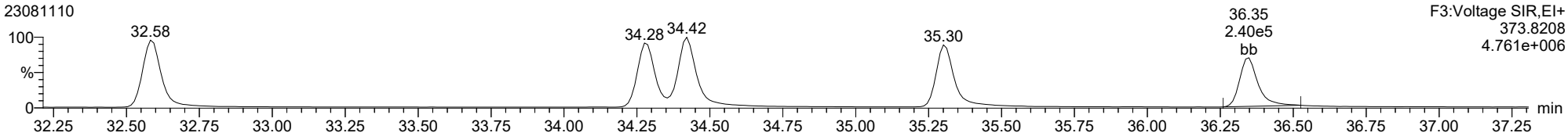


FUNCTION3 OCDPE

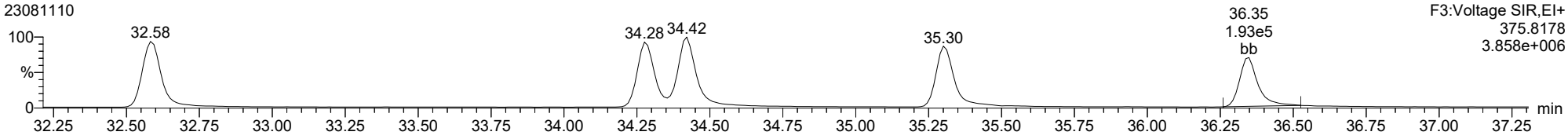


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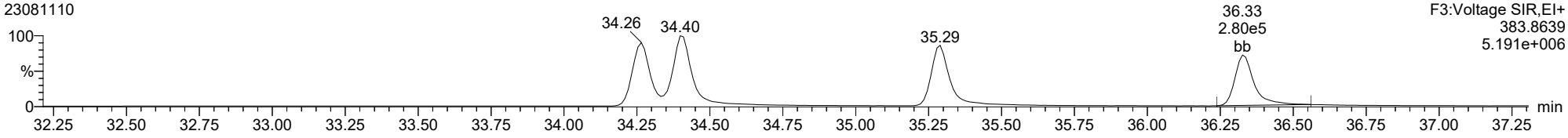
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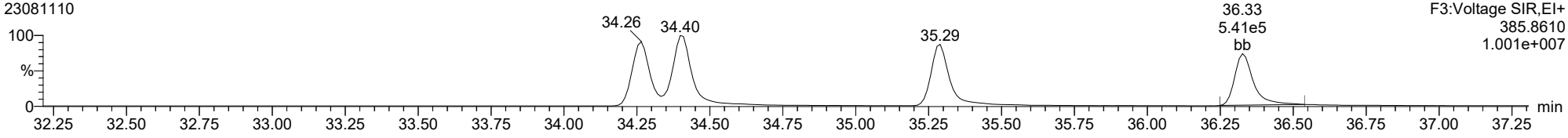
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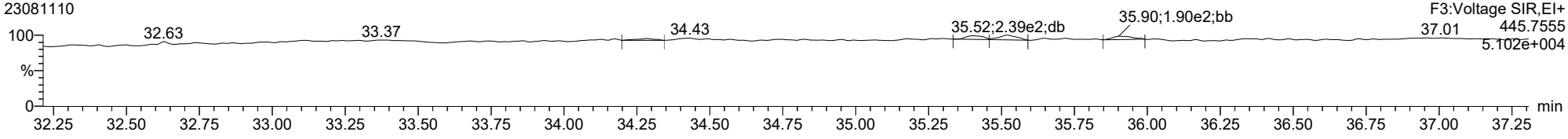
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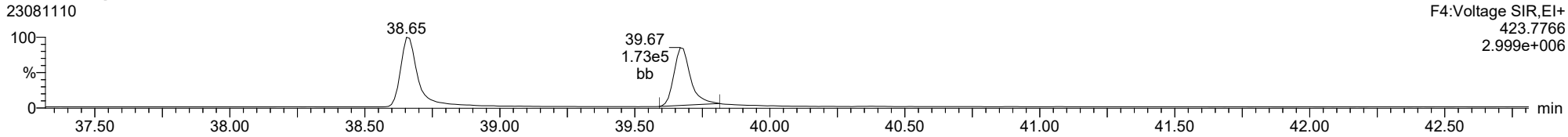


FUNCTION3 OCDPE

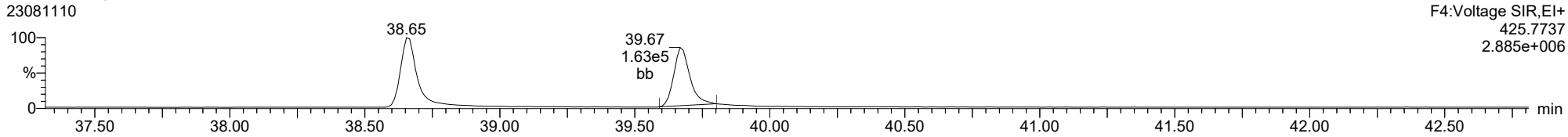


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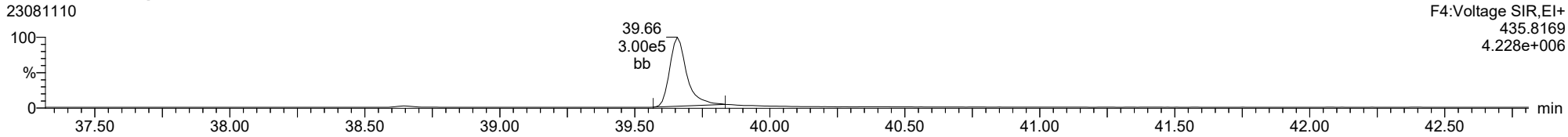
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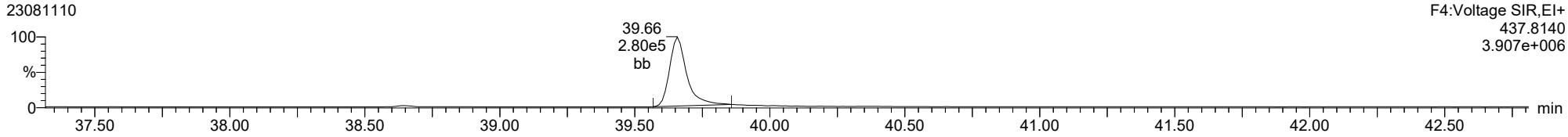
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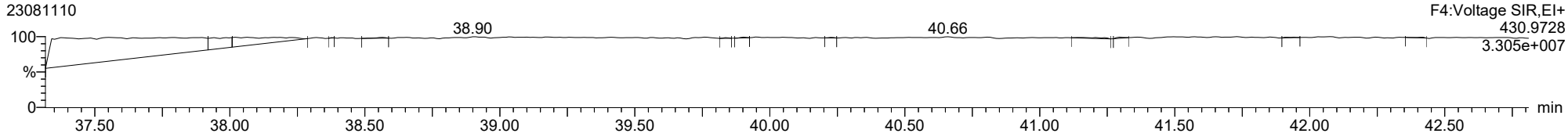
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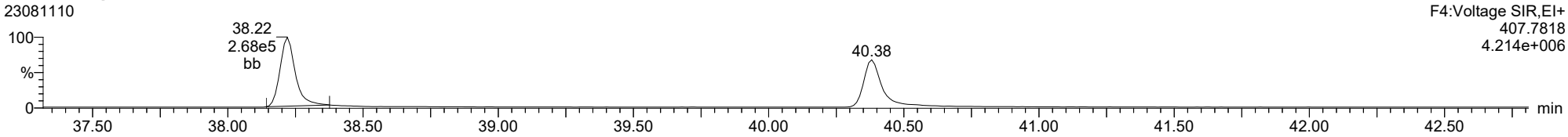


FUNCTION4 PFK

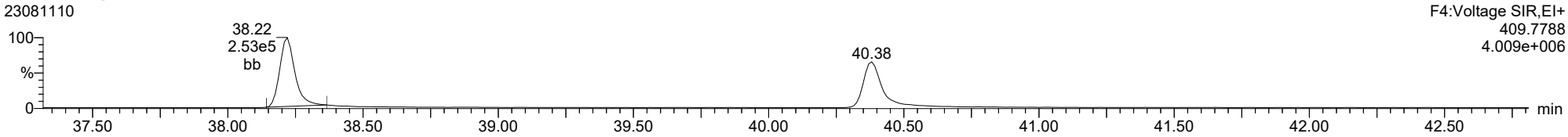


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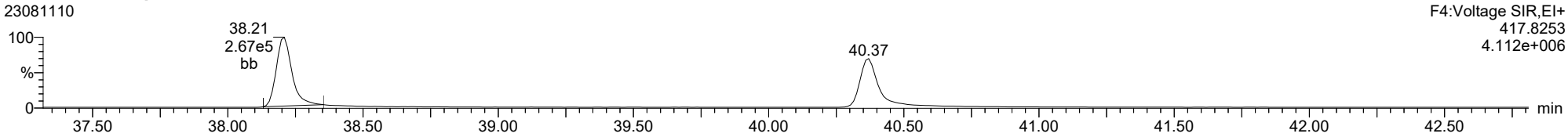
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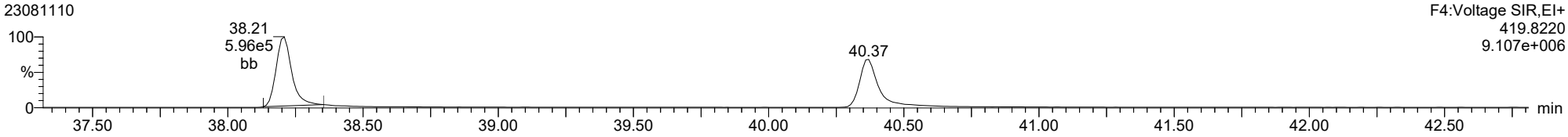
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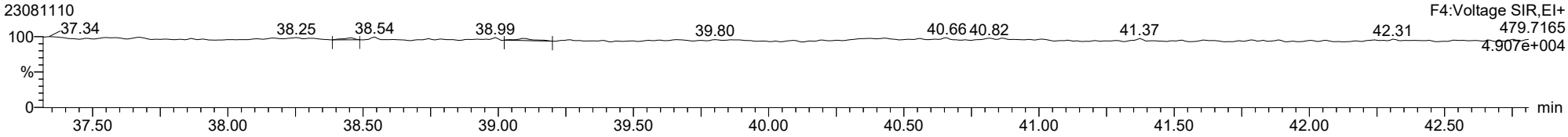
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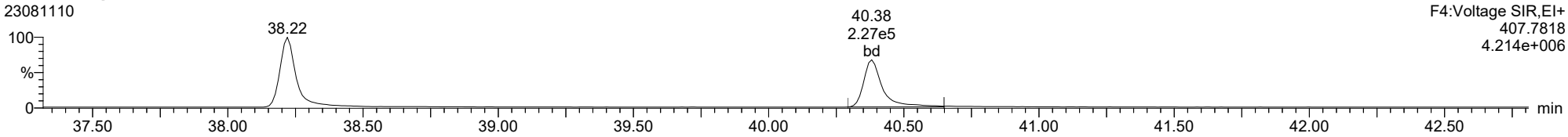


FUNCTION4 NCDPE

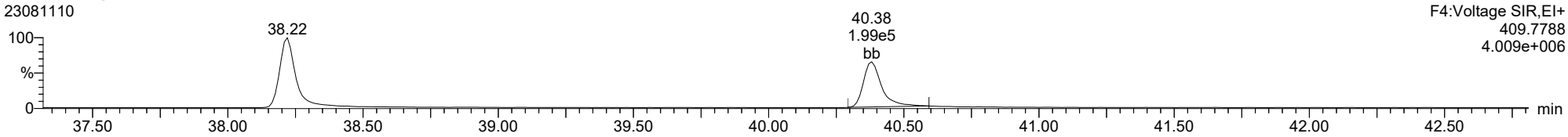


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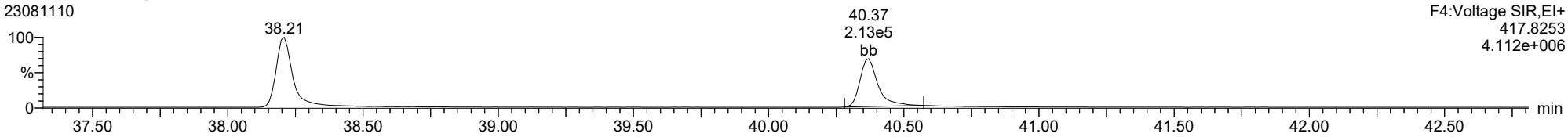
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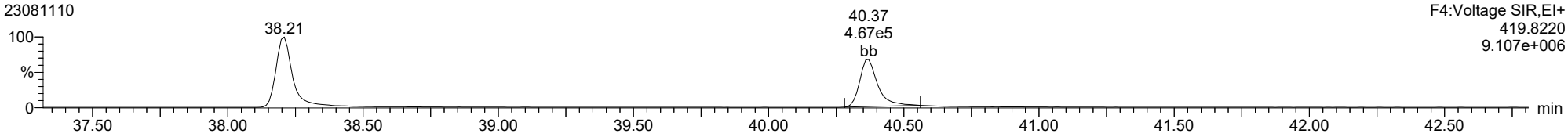
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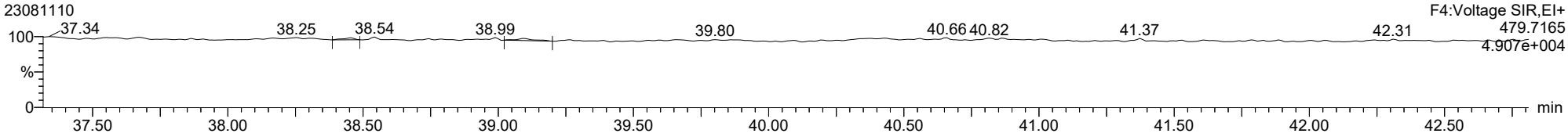
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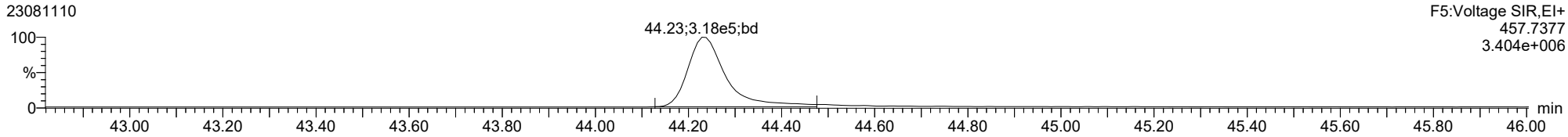


FUNCTION4 NCDPE

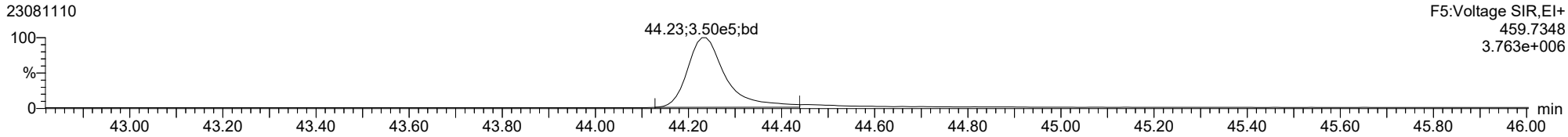


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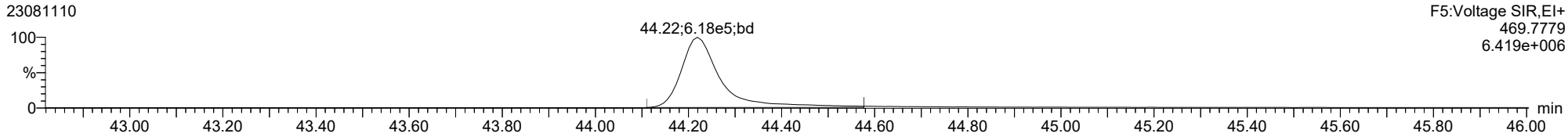
OCDD



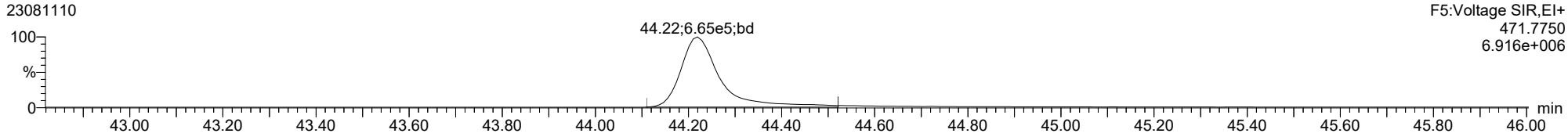
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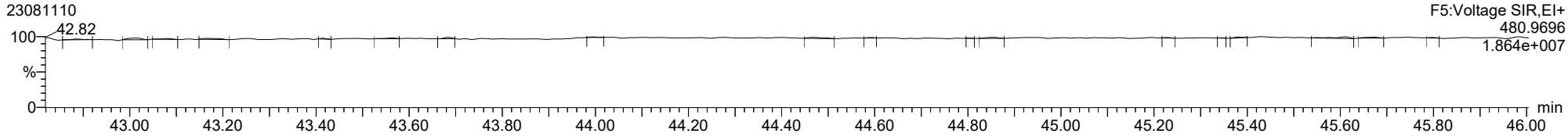
13C-OCDD



13C-OCDD

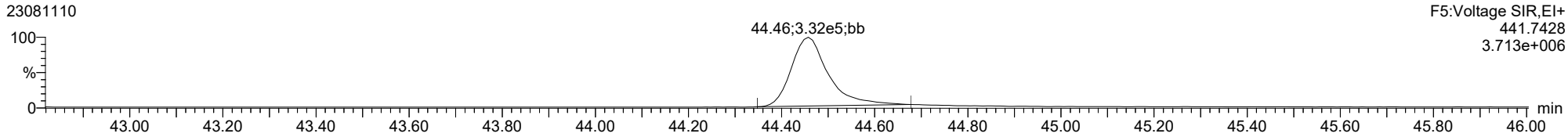


FUNCTION5 PFK

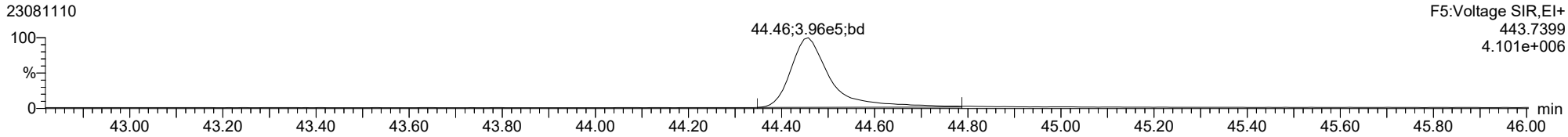


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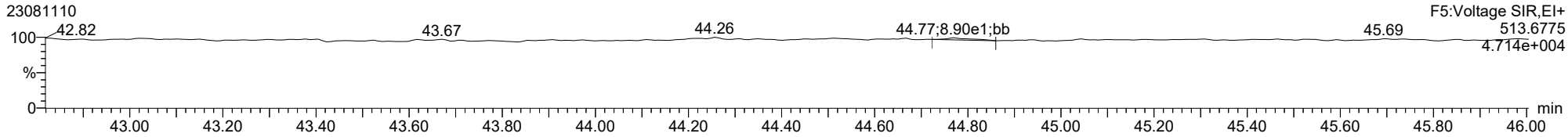
OCDF



OCDF

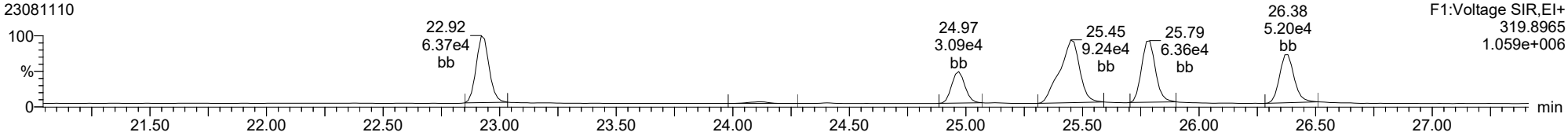


FUNCTION5 DCDPE

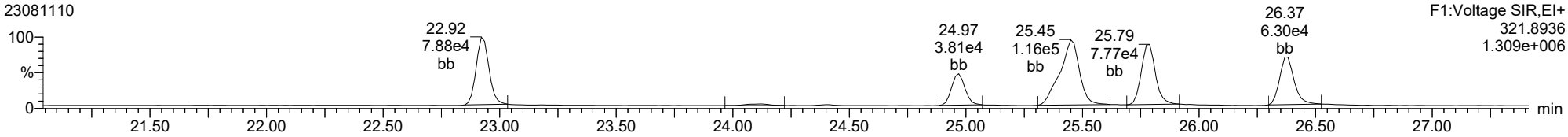


ID: ICVCF, Name: 23081110, Date: 11-Aug-2023, Time: 17:18:02, Conditions: AUTOSPEC01, User: pk

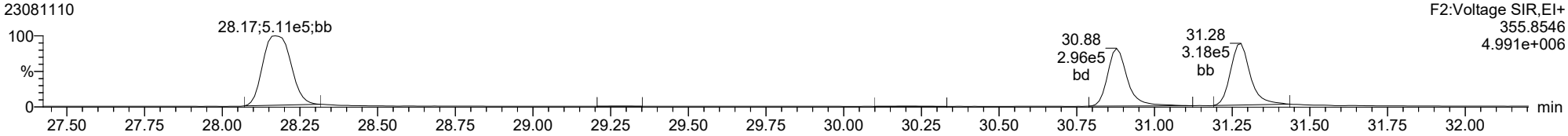
Total-tetradioxins



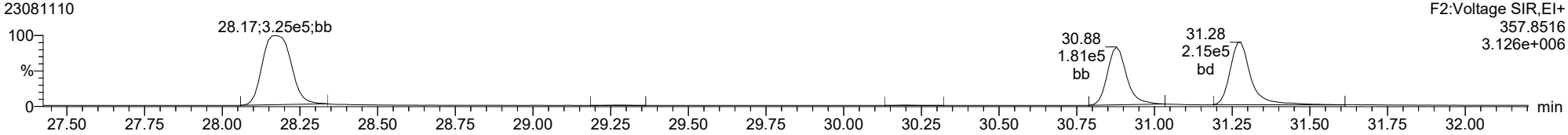
Total-tetradioxins



Total-pentadioxins

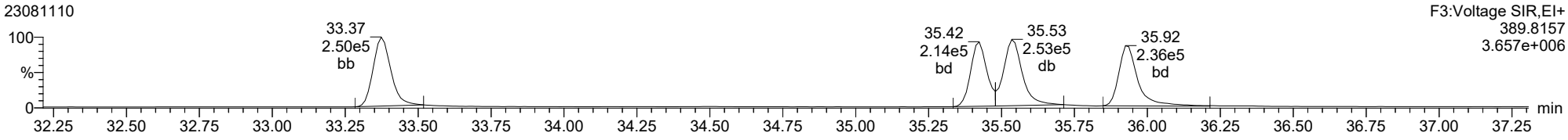


Total-pentadioxins

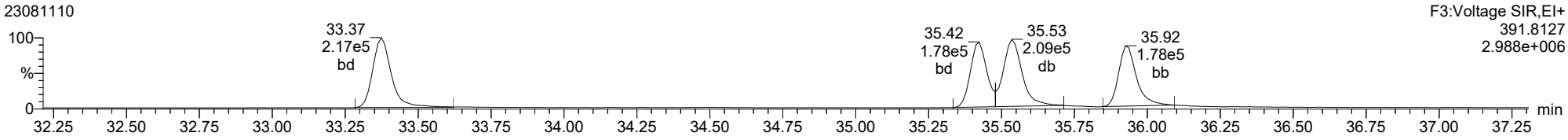


ID: ICVCF, Name: 23081110, Date: 11-Aug-2023, Time: 17:18:02, Conditions: AUTOSPEC01, User: pk

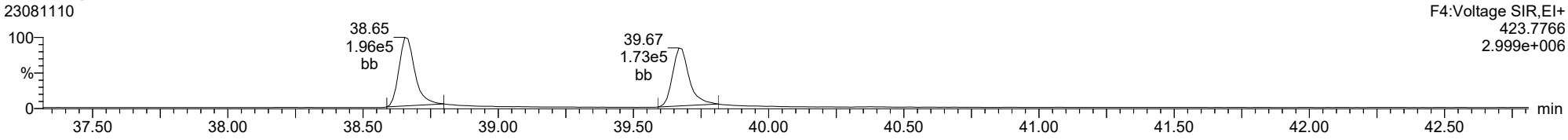
Total-hexadioxins



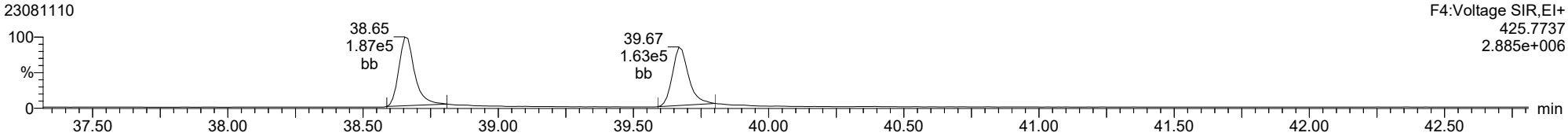
Total-hexadioxins



Total-heptadioxins

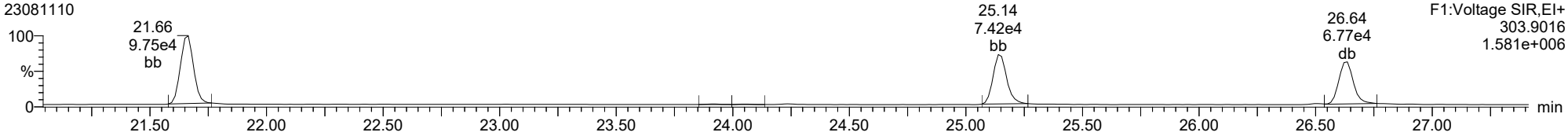


Total-heptadioxins

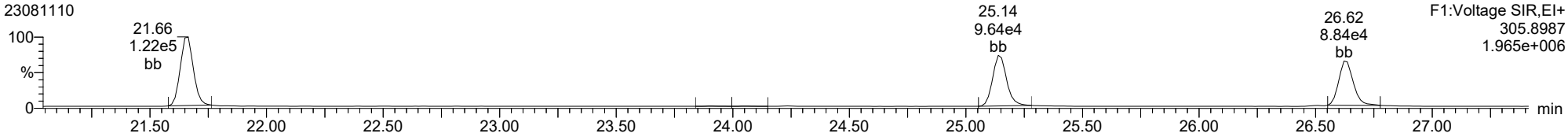


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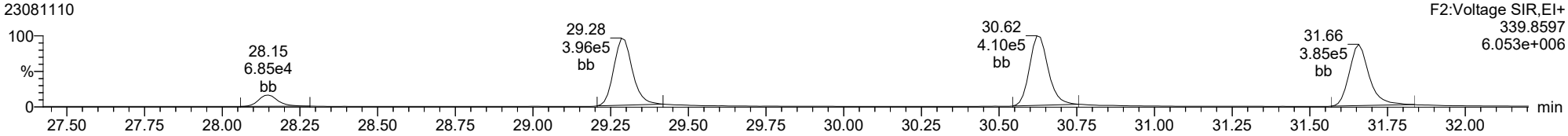
Total-tetrafurans



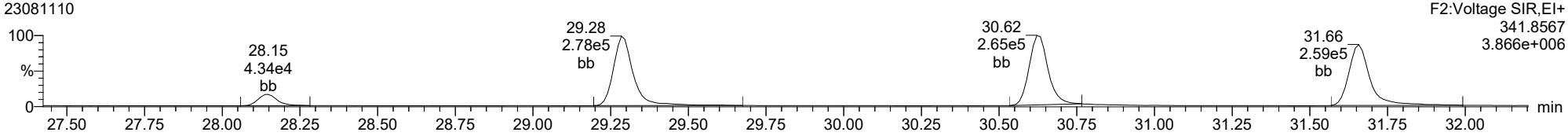
Total-tetrafurans



Total-pentafurans

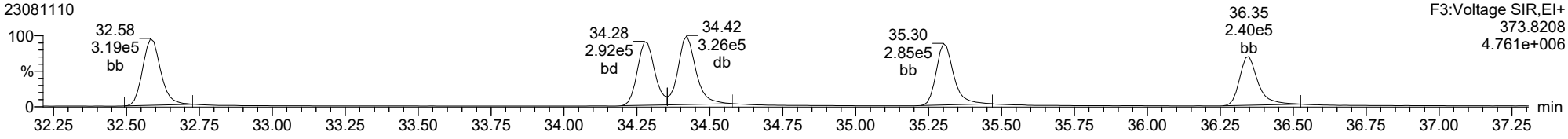


Total-pentafurans

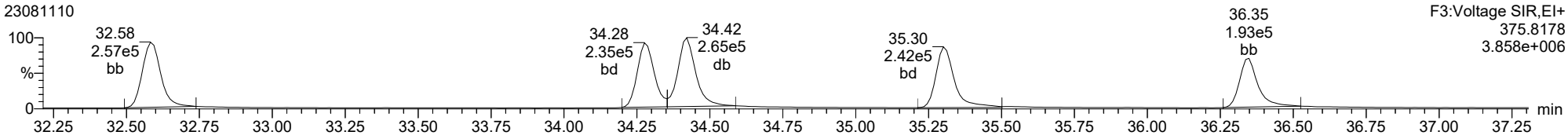


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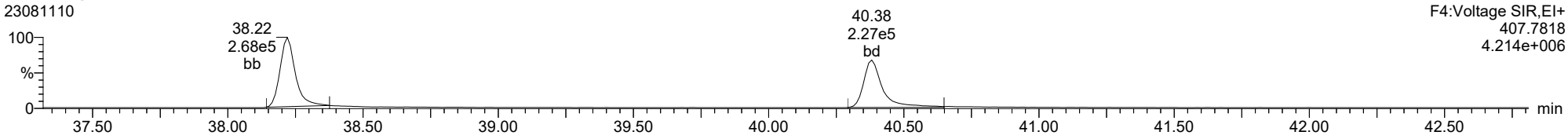
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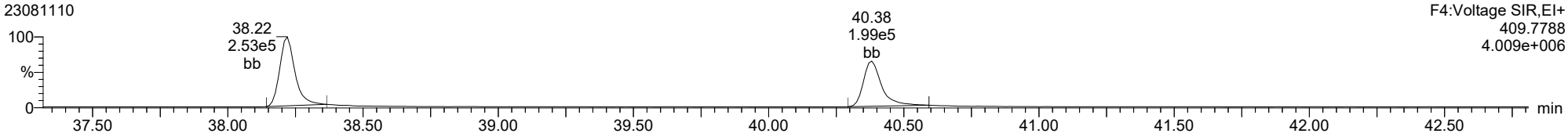
Total-hexafurans



Total-heptafurans



Total-heptafurans



Dataset: T:\Autospec\Processed Data Batch\230811CCVIH.qld
Last Altered: Tuesday, August 15, 2023 12:26:06 Pacific Daylight Time
Printed: Tuesday, August 15, 2023 12:27:19 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin230810.mdb 12 Aug 2023 10:54:09
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 10:45:18

ID: CS3F2, Name: 23081111, Date: 11-Aug-2023, Time: 18:06:32, 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	25.153	1.001	4.331e4	5.635e4	0.903	0.769	0.770	1171	1364	6.11e5	7.81e5	521.7	572.2	NO	bb	bb	9.996
12378-PeCDF	29.296	1.001	2.300e5	1.467e5	0.923	1.568	1.550	3401	1936	3.27e6	2.10e6	960.4	1084.6	NO	bb	bb	49.821
23478-PeCDF	30.632	1.001	2.358e5	1.589e5	0.991	1.484	1.550	3401	1936	3.17e6	2.12e6	932.7	1095.3	NO	bb	bd	51.473
123478-HxCDF	34.276	1.000	1.642e5	1.293e5	1.128	1.271	1.240	2851	1900	2.31e6	1.85e6	809.4	974.2	NO	bd	bd	49.185
234678-HxCDF	35.301	1.000	1.599e5	1.364e5	1.081	1.172	1.240	2851	1900	2.25e6	1.77e6	788.4	931.0	NO	bb	bd	51.332
123678-HxCDF	34.421	1.001	1.857e5	1.474e5	1.032	1.260	1.240	2851	1900	2.46e6	1.94e6	863.3	1019.3	NO	db	db	50.681
123789-HxCDF	36.348	1.001	1.261e5	1.132e5	0.988	1.114	1.240	2851	1900	1.72e6	1.35e6	603.7	712.4	NO	bb	bb	52.524
1234678-HpCDF	38.220	1.000	1.371e5	1.434e5	1.164	0.956	1.050	2040	2251	2.02e6	1.97e6	992.2	876.4	NO	bb	bd	52.328
1234789-HpCDF	40.381	1.000	1.159e5	1.068e5	1.104	1.085	1.050	2040	2251	1.40e6	1.33e6	684.8	590.1	NO	bd	bd	52.933
OCDF	44.457	1.005	1.780e5	1.904e5	1.130	0.935	0.890	2815	2741	1.73e6	1.97e6	616.0	718.6	NO	bd	bd	100.657
2378-TCDD	25.788	1.001	3.895e4	4.595e4	1.243	0.848	0.770	1258	1191	5.44e5	6.56e5	432.3	550.5	NO	bd	bb	9.467
12378-PeCDD	30.878	1.000	1.623e5	1.061e5	1.150	1.529	1.550	2088	1452	2.21e6	1.40e6	1060.9	967.0	NO	bb	bd	51.961
123478-HxCDD	35.423	1.000	1.187e5	9.517e4	0.960	1.247	1.240	1570	2286	1.79e6	1.44e6	1140.2	631.8	NO	bd	bd	47.435
123678-HxCDD	35.535	1.000	1.604e5	1.248e5	0.883	1.285	1.240	1570	2286	1.96e6	1.60e6	1245.8	698.3	NO	dd	dd	54.545
123789-HxCDD	35.936	1.012	1.323e5	9.665e4	0.804	1.369	1.240	1570	2286	1.70e6	1.32e6	1083.8	579.5	NO	dd	bb	53.651
1234678-HpCDD	39.668	1.000	1.024e5	9.440e4	1.200	1.084	1.050	1868	1943	1.23e6	1.16e6	659.7	596.5	NO	bd	bd	50.710
OCDD	44.237	1.000	1.567e5	1.831e5	1.059	0.856	0.890	3012	2068	1.61e6	1.84e6	534.1	892.0	NO	bd	bd	99.090
13C-2378-TCDF	25.125	1.007	4.876e5	6.164e5	1.835	0.791	0.770	1728	1924	6.85e6	8.67e6	3961.1	4508.9	NO	bb	bb	98.121
13C-12378-PeCDF	29.273	1.173	4.998e5	3.192e5	1.377	1.566	1.550	3166	4107	7.06e6	4.51e6	2229.7	1096.9	NO	bb	bb	97.057
13C-23478-PeCDF	30.610	1.227	4.680e5	3.061e5	1.301	1.529	1.550	3166	4107	6.60e6	4.21e6	2084.2	1024.0	NO	bb	bb	97.039
13C-123478-HxCDF	34.265	0.954	1.804e5	3.486e5	1.091	0.517	0.510	1761	2790	2.59e6	4.96e6	1471.6	1778.9	NO	bd	bd	101.993
13C-123678-HxCDF	34.398	0.958	2.248e5	4.119e5	1.340	0.546	0.510	1761	2790	2.78e6	5.32e6	1581.4	1908.5	NO	db	db	99.908
13C-234678-HxCDF	35.290	0.983	1.679e5	3.659e5	1.093	0.459	0.510	1761	2790	2.34e6	4.72e6	1329.7	1691.9	NO	bb	bb	102.658
13C-123789-HxCDF	36.326	1.011	1.540e5	3.073e5	0.952	0.501	0.510	1761	2790	1.96e6	3.85e6	1115.2	1378.3	NO	bb	bd	101.953
13C-1234678-HpCDF	38.209	1.064	1.439e5	3.165e5	0.985	0.455	0.440	2093	3817	2.12e6	4.75e6	1011.4	1244.4	NO	bb	bb	98.323
13C-1234789-HpCDF	40.370	1.124	1.103e5	2.710e5	0.756	0.407	0.440	2093	3817	1.42e6	3.20e6	676.5	837.6	NO	bb	bb	106.094
13C-1234-TCDD	24.955	0.000	2.683e5	3.447e5	1.000	0.779	0.770	1875	1074	4.01e6	5.09e6	2141.0	4737.3	NO	bb	bb	100.000
13C-2378-TCDD	25.760	1.032	3.172e5	4.043e5	1.110	0.785	0.770	1875	1074	4.57e6	5.80e6	2440.5	5394.6	NO	bb	bb	106.068
13C-12378-PeCDD	30.867	1.237	2.730e5	1.761e5	0.754	1.550	1.550	870	984	3.71e6	2.33e6	4270.3	2363.3	NO	bb	bd	97.218
13C-123478-HxCDD	35.412	0.986	2.639e5	2.057e5	0.960	1.283	1.240	1990	2235	3.83e6	3.01e6	1927.1	1344.5	NO	bd	bd	102.882
13C-123678-HxCDD	35.523	0.989	3.306e5	2.617e5	1.159	1.264	1.240	1990	2235	4.19e6	3.34e6	2104.2	1493.8	NO	db	db	107.448
13C-1234678-HpCDD	39.657	1.104	1.755e5	1.480e5	0.629	1.186	1.050	1329	1459	2.14e6	1.98e6	1613.3	1358.5	NO	bb	bb	108.104
13C-OCDD	44.219	1.231	3.081e5	3.396e5	0.635	0.907	0.890	2918	1892	3.11e6	3.46e6	1067.4	1826.4	NO	bd	bd	214.485
13C-123789-HxCDD	35.914	0.000	2.618e5	2.137e5	1.000	1.225	1.240	1990	2235	3.52e6	2.85e6	1768.8	1273.4	NO	bb	bb	100.000
37CL-2378-TCDD	25.788	1.033	7.197e4		1.157			956		1.03e6		1082.1			bb		10.144

Dataset: T:\Autospec\Processed Data Batch\230811CCVIH.qld
Last Altered: Tuesday, August 15, 2023 12:26:06 Pacific Daylight Time
Printed: Tuesday, August 15, 2023 12:27:19 Pacific Daylight Time

ID: CS3F2, Name: 23081111, Date: 11-Aug-2023, Time: 18:06:32, 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	21.664	0.862	5.587e4	7.239e4	1.170	0.772	0.770	1171	1364	8.88e5	1.11e6	758.3	815.1	NO	bb	bd	9.927
1289-TCDF	26.636	1.060	4.034e4	5.528e4	0.847	0.730	0.770	1171	1364	5.63e5	7.36e5	480.7	539.5	NO	db	db	10.229
13468-PECDF	26.495	0.905	2.957e5	1.928e5	1.241	1.534	1.550	874	914	4.38e6	2.89e6	5017.4	3159.3	NO	bb	bb	48.064
12389-PECDF	31.657	1.081	2.152e5	1.509e5	0.880	1.426	1.550	3401	1936	2.88e6	1.91e6	847.6	988.4	NO	bb	bd	50.811
123468-HXCDF	32.582	0.951	1.856e5	1.442e5	1.206	1.287	1.240	2851	1900	2.57e6	2.03e6	901.0	1070.2	NO	bb	bb	51.712
1368-TCDD	22.921	0.890	3.755e4	4.802e4	1.181	0.782	0.770	1258	1191	5.66e5	7.25e5	450.1	608.8	NO	bb	bb	10.046
1289-TCDD	26.382	1.024	2.982e4	3.935e4	0.963	0.758	0.770	1258	1191	4.24e5	5.11e5	337.3	429.0	NO	bb	bd	9.958
12479-PECDD	28.170	0.913	2.948e5	1.865e5	2.166	1.580	1.550	2088	1452	2.74e6	1.73e6	1310.2	1194.8	NO	bb	bb	49.462
12389-PECDD	31.279	1.013	1.853e5	1.220e5	1.326	1.519	1.550	2088	1452	2.47e6	1.60e6	1184.3	1101.7	NO	bb	bd	51.590
124679-HXCDD	33.373	0.942	1.421e5	1.193e5	1.127	1.191	1.240	1570	2286	2.01e6	1.64e6	1280.1	719.5	NO	bb	bb	49.407
1234679-HPCDD	38.665	0.975	1.054e5	1.006e5	1.303	1.048	1.050	1868	1943	1.56e6	1.49e6	836.7	766.1	NO	bb	bb	48.873
Total-tetrafurans			1.395e5		0.973			1171		2.06e6							30.152
Total-penta1			2.957e5					874		4.38e6							48.064
Total-pentafurans			7.213e5		0.931			3401		9.89e6							161.015
Total-hexafurans			8.216e5		1.087			2851		1.13e7							255.434
Total-heptafurans			2.571e5		1.134			2040		3.48e6							106.883
Total-Furans			2.413e6		1.053			1171		3.29e7							702.205
Total-tetradioxins			1.808e5		1.129			1258		2.36e6							49.895
Total-pentadioxins			6.424e5		1.548			2088		7.42e6							153.014
Total-hexadioxins			5.534e5		0.943			1570		7.46e6							205.039
Total-heptadioxins			2.077e5		1.251			1868		2.79e6							99.583
Total-Dioxins			1.741e6		1.182			1258		2.16e7							606.622
Total-TEQ			4.154e6					1258		5.45e7							1308.826
FUNCTION1 PFK			0.000e0					481142		0.00e0							
FUNCTION2 PFK			4.874e5					229819		1.22e7							0.000
FUNCTION3 PFK			3.763e5					413268		3.62e6							0.000
FUNCTION4 PFK			5.619e6					286001		6.99e7							
FUNCTION5 PFK			7.251e4					183835		3.22e6							
FUNCTION1 HXCD...			8.350e2					627		1.16e4							0.000
FUNCTION1 HPCD...																	
FUNCTION2 HPCD...			6.582e2					812		1.25e4							0.000
FUNCTION3 OCDPE			3.234e2					512		5.07e3							0.000
FUNCTION4 NCDPE			1.681e2					714		2.55e3							0.000
FUNCTION5 DCDPE			0.000e0					517		0.00e0							

Method: T:\Autospec\Methods\Dioxin230810.mdb 12 Aug 2023 10:54:09
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 10:45:18

ID: CS3F2, Name: 23081111, Date: 11-Aug-2023, Time: 18:06:32, 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	26.64	4.034e4	5.528e4	0.847	0.73	0.77	480.7	YES	NO	db	db	10.229
2	2378-TCDF	25.15	4.331e4	5.635e4	0.903	0.77	0.77	521.7	YES	NO	bb	bb	9.996
3	1368-TCDF	21.66	5.587e4	7.239e4	1.170	0.77	0.77	758.3	YES	NO	bb	bd	9.927

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	26.49	2.957e5	1.928e5	1.241	1.53	1.55	5017.4	YES	NO	bb	bb	48.064

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12378-PeCDF	29.30	2.300e5	1.467e5	0.923	1.57	1.55	960.4	YES	NO	bb	bb	49.821
2	Total-pentafurans	28.15	4.032e4	2.576e4	0.931	1.57	1.55	166.0	YES	NO	bb	bb	8.910
3	12389-PECDF	31.66	2.152e5	1.509e5	0.880	1.43	1.55	847.6	YES	NO	bb	bd	50.811
4	23478-PeCDF	30.63	2.358e5	1.589e5	0.991	1.48	1.55	932.7	YES	NO	bb	bd	51.473

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDF	36.35	1.261e5	1.132e5	0.988	1.11	1.24	603.7	YES	NO	bb	bb	52.524
2	234678-HxCDF	35.30	1.599e5	1.364e5	1.081	1.17	1.24	788.4	YES	NO	bb	bd	51.332
3	123678-HxCDF	34.42	1.857e5	1.474e5	1.032	1.26	1.24	863.3	YES	NO	db	db	50.681
4	123478-HxCDF	34.28	1.642e5	1.293e5	1.128	1.27	1.24	809.4	YES	NO	bd	bd	49.185
5	123468-HXCDF	32.58	1.856e5	1.442e5	1.206	1.29	1.24	901.0	YES	NO	bb	bb	51.712

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	40.38	1.159e5	1.068e5	1.104	1.09	1.05	684.8	YES	NO	bd	bd	52.933
2	1234678-HpCDF	38.22	1.371e5	1.434e5	1.164	0.96	1.05	992.2	YES	NO	bb	bd	52.328
3	Total-heptafurans	41.14	2.445e2	2.274e2	1.134	1.08	1.05	3.8	NO	NO	bd	bb	0.099
4	Total-heptafurans	40.89	3.939e2	3.374e2	1.134	1.17	1.05	4.1	YES	NO	dd	dd	0.153
5	Total-heptafurans	40.65	3.498e3	3.037e3	1.134	1.15	1.05	20.1	YES	NO	dd	dd	1.370

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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	26.64	4.034e4	5.528e4	0.847	0.73	0.77	480.7	YES	NO	db	db	10.229
2	2378-TCDF	25.15	4.331e4	5.635e4	0.903	0.77	0.77	521.7	YES	NO	bb	bb	9.996
3	1368-TCDF	21.66	5.587e4	7.239e4	1.170	0.77	0.77	758.3	YES	NO	bb	bd	9.927
4	12378-PeCDF	29.30	2.300e5	1.467e5	0.923	1.57	1.55	960.4	YES	NO	bb	bb	49.821
5	Total-pentafurans	28.15	4.032e4	2.576e4	0.931	1.57	1.55	166.0	YES	NO	bb	bb	8.910
6	12389-PECDF	31.66	2.152e5	1.509e5	0.880	1.43	1.55	847.6	YES	NO	bb	bd	50.811
7	23478-PeCDF	30.63	2.358e5	1.589e5	0.991	1.48	1.55	932.7	YES	NO	bb	bd	51.473
8	123789-HxCDF	36.35	1.261e5	1.132e5	0.988	1.11	1.24	603.7	YES	NO	bb	bb	52.524
9	234678-HxCDF	35.30	1.599e5	1.364e5	1.081	1.17	1.24	788.4	YES	NO	bb	bd	51.332
10	123678-HxCDF	34.42	1.857e5	1.474e5	1.032	1.26	1.24	863.3	YES	NO	db	db	50.681
11	123478-HxCDF	34.28	1.642e5	1.293e5	1.128	1.27	1.24	809.4	YES	NO	bd	bd	49.185
12	123468-HXCDF	32.58	1.856e5	1.442e5	1.206	1.29	1.24	901.0	YES	NO	bb	bb	51.712
13	1234789-HpCDF	40.38	1.159e5	1.068e5	1.104	1.09	1.05	684.8	YES	NO	bd	bd	52.933
14	1234678-HpCDF	38.22	1.371e5	1.434e5	1.164	0.96	1.05	992.2	YES	NO	bb	bd	52.328
15	Total-heptafurans	41.14	2.445e2	2.274e2	1.134	1.08	1.05	3.8	NO	NO	bd	bb	0.099
16	Total-heptafurans	40.89	3.939e2	3.374e2	1.134	1.17	1.05	4.1	YES	NO	dd	dd	0.153
17	Total-heptafurans	40.65	3.498e3	3.037e3	1.134	1.15	1.05	20.1	YES	NO	dd	dd	1.370
18	OCDF	44.46	1.780e5	1.904e5	1.130	0.93	0.89	616.0	YES	NO	bd	bd	100.657
19	13468-PECDF	26.49	2.957e5	1.928e5	1.241	1.53	1.55	5017.4	YES	NO	bb	bb	48.064

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	25.46	5.650e4	6.995e4	1.129	0.81	0.77	438.0	YES	NO	bb	bb	15.526
2	Total-tetradioxins	24.97	1.801e4	2.188e4	1.129	0.82	0.77	222.5	YES	NO	bb	bb	4.898
3	1368-TCDD	22.92	3.755e4	4.802e4	1.181	0.78	0.77	450.1	YES	NO	bb	bb	10.046
4	1289-TCDD	26.38	2.982e4	3.935e4	0.963	0.76	0.77	337.3	YES	NO	bb	bd	9.958
5	2378-TCDD	25.79	3.895e4	4.595e4	1.243	0.85	0.77	432.3	YES	NO	bd	bb	9.467

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDD	31.28	1.853e5	1.220e5	1.326	1.52	1.55	1184.3	YES	NO	bb	bd	51.590
2	12378-PeCDD	30.88	1.623e5	1.061e5	1.150	1.53	1.55	1060.9	YES	NO	bb	bd	51.961
3	12479-PECDD	28.17	2.948e5	1.865e5	2.166	1.58	1.55	1310.2	YES	NO	bb	bb	49.462

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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	35.94	1.323e5	9.665e4	0.804	1.37	1.24	1083.8	YES	NO	dd	bb	53.651
2	123678-HxCDD	35.53	1.604e5	1.248e5	0.883	1.28	1.24	1245.8	YES	NO	dd	dd	54.545
3	123478-HxCDD	35.42	1.187e5	9.517e4	0.960	1.25	1.24	1140.2	YES	NO	bd	bd	47.435
4	124679-HXCDD	33.37	1.421e5	1.193e5	1.127	1.19	1.24	1280.1	YES	NO	bb	bb	49.407

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.67	1.024e5	9.440e4	1.200	1.08	1.05	659.7	YES	NO	bd	bd	50.710
2	1234679-HPCDD	38.67	1.054e5	1.006e5	1.303	1.05	1.05	836.7	YES	NO	bb	bb	48.873

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	25.46	5.650e4	6.995e4	1.129	0.81	0.77	438.0	YES	NO	bb	bb	15.526
2	Total-tetradioxins	24.97	1.801e4	2.188e4	1.129	0.82	0.77	222.5	YES	NO	bb	bb	4.898
3	1368-TCDD	22.92	3.755e4	4.802e4	1.181	0.78	0.77	450.1	YES	NO	bb	bb	10.046
4	1289-TCDD	26.38	2.982e4	3.935e4	0.963	0.76	0.77	337.3	YES	NO	bb	bd	9.958
5	2378-TCDD	25.79	3.895e4	4.595e4	1.243	0.85	0.77	432.3	YES	NO	bd	bb	9.467
6	12389-PECDD	31.28	1.853e5	1.220e5	1.326	1.52	1.55	1184.3	YES	NO	bb	bd	51.590
7	12378-PeCDD	30.88	1.623e5	1.061e5	1.150	1.53	1.55	1060.9	YES	NO	bb	bd	51.961
8	12479-PECDD	28.17	2.948e5	1.865e5	2.166	1.58	1.55	1310.2	YES	NO	bb	bb	49.462
9	123789-HxCDD	35.94	1.323e5	9.665e4	0.804	1.37	1.24	1083.8	YES	NO	dd	bb	53.651
10	123678-HxCDD	35.53	1.604e5	1.248e5	0.883	1.28	1.24	1245.8	YES	NO	dd	dd	54.545
11	123478-HxCDD	35.42	1.187e5	9.517e4	0.960	1.25	1.24	1140.2	YES	NO	bd	bd	47.435
12	124679-HXCDD	33.37	1.421e5	1.193e5	1.127	1.19	1.24	1280.1	YES	NO	bb	bb	49.407
13	1234678-HpCDD	39.67	1.024e5	9.440e4	1.200	1.08	1.05	659.7	YES	NO	bd	bd	50.710
14	1234679-HPCDD	38.67	1.054e5	1.006e5	1.303	1.05	1.05	836.7	YES	NO	bb	bb	48.873
15	OCDD	44.24	1.567e5	1.831e5	1.059	0.86	0.89	534.1	YES	NO	bd	bd	99.090

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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	26.64	4.034e4	5.528e4	0.847	0.73	0.77	480.7	YES	NO	db	db	10.229
2	2378-TCDF	25.15	4.331e4	5.635e4	0.903	0.77	0.77	521.7	YES	NO	bb	bb	9.996
3	1368-TCDF	21.66	5.587e4	7.239e4	1.170	0.77	0.77	758.3	YES	NO	bb	bd	9.927
4	12378-PeCDF	29.30	2.300e5	1.467e5	0.923	1.57	1.55	960.4	YES	NO	bb	bb	49.821
5	Total-pentafurans	28.15	4.032e4	2.576e4	0.931	1.57	1.55	166.0	YES	NO	bb	bb	8.910
6	12389-PECDF	31.66	2.152e5	1.509e5	0.880	1.43	1.55	847.6	YES	NO	bb	bd	50.811
7	23478-PeCDF	30.63	2.358e5	1.589e5	0.991	1.48	1.55	932.7	YES	NO	bb	bd	51.473
8	123789-HxCDF	36.35	1.261e5	1.132e5	0.988	1.11	1.24	603.7	YES	NO	bb	bb	52.524
9	234678-HxCDF	35.30	1.599e5	1.364e5	1.081	1.17	1.24	788.4	YES	NO	bb	bd	51.332
10	123678-HxCDF	34.42	1.857e5	1.474e5	1.032	1.26	1.24	863.3	YES	NO	db	db	50.681
11	123478-HxCDF	34.28	1.642e5	1.293e5	1.128	1.27	1.24	809.4	YES	NO	bd	bd	49.185
12	123468-HXCDF	32.58	1.856e5	1.442e5	1.206	1.29	1.24	901.0	YES	NO	bb	bb	51.712
13	1234789-HpCDF	40.38	1.159e5	1.068e5	1.104	1.09	1.05	684.8	YES	NO	bd	bd	52.933
14	1234678-HpCDF	38.22	1.371e5	1.434e5	1.164	0.96	1.05	992.2	YES	NO	bb	bd	52.328
15	Total-heptafurans	41.14	2.445e2	2.274e2	1.134	1.08	1.05	3.8	NO	NO	bd	bb	0.099
16	Total-heptafurans	40.89	3.939e2	3.374e2	1.134	1.17	1.05	4.1	YES	NO	dd	dd	0.153
17	Total-heptafurans	40.65	3.498e3	3.037e3	1.134	1.15	1.05	20.1	YES	NO	dd	dd	1.370
18	OCDF	44.46	1.780e5	1.904e5	1.130	0.93	0.89	616.0	YES	NO	bd	bd	100.657
19	13468-PECDF	26.49	2.957e5	1.928e5	1.241	1.53	1.55	5017.4	YES	NO	bb	bb	48.064
20	Total-tetradioxins	25.46	5.650e4	6.995e4	1.129	0.81	0.77	438.0	YES	NO	bb	bb	15.526
21	Total-tetradioxins	24.97	1.801e4	2.188e4	1.129	0.82	0.77	222.5	YES	NO	bb	bb	4.898
22	1368-TCDD	22.92	3.755e4	4.802e4	1.181	0.78	0.77	450.1	YES	NO	bb	bb	10.046
23	1289-TCDD	26.38	2.982e4	3.935e4	0.963	0.76	0.77	337.3	YES	NO	bb	bd	9.958
24	2378-TCDD	25.79	3.895e4	4.595e4	1.243	0.85	0.77	432.3	YES	NO	bd	bb	9.467
25	12389-PECDD	31.28	1.853e5	1.220e5	1.326	1.52	1.55	1184.3	YES	NO	bb	bd	51.590
26	12378-PeCDD	30.88	1.623e5	1.061e5	1.150	1.53	1.55	1060.9	YES	NO	bb	bd	51.961
27	12479-PECDD	28.17	2.948e5	1.865e5	2.166	1.58	1.55	1310.2	YES	NO	bb	bb	49.462
28	123789-HxCDD	35.94	1.323e5	9.665e4	0.804	1.37	1.24	1083.8	YES	NO	dd	bb	53.651
29	123678-HxCDD	35.53	1.604e5	1.248e5	0.883	1.28	1.24	1245.8	YES	NO	dd	dd	54.545
30	123478-HxCDD	35.42	1.187e5	9.517e4	0.960	1.25	1.24	1140.2	YES	NO	bd	bd	47.435
31	124679-HXCDD	33.37	1.421e5	1.193e5	1.127	1.19	1.24	1280.1	YES	NO	bb	bb	49.407
32	1234678-HpCDD	39.67	1.024e5	9.440e4	1.200	1.08	1.05	659.7	YES	NO	bd	bd	50.710
33	1234679-HPCDD	38.67	1.054e5	1.006e5	1.303	1.05	1.05	836.7	YES	NO	bb	bb	48.873
34	OCDD	44.24	1.567e5	1.831e5	1.059	0.86	0.89	534.1	YES	NO	bd	bd	99.090

Dataset: T:\Autospec\Processed Data Batch\230811CCVIH.qld
Last Altered: Tuesday, August 15, 2023 12:26:06 Pacific Daylight Time
Printed: Tuesday, August 15, 2023 12:27:19 Pacific Daylight Time

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PFK1

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

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	28.97	5.006e3					0.8	NO		bb		0.000
2	FUNCTION2 PFK	28.64	1.227e3					0.5	NO		bb		0.000
3	FUNCTION2 PFK	28.59	9.247e3					1.7	NO		db		0.000
4	FUNCTION2 PFK	28.55	1.616e4					1.5	NO		dd		0.000
5	FUNCTION2 PFK	28.48	1.220e4					1.7	NO		dd		0.000
6	FUNCTION2 PFK	28.44	1.402e4					1.8	NO		bd		0.000
7	FUNCTION2 PFK	28.35	2.228e3					0.9	NO		bb		0.000
8	FUNCTION2 PFK	28.30	4.845e3					1.1	NO		bb		0.000
9	FUNCTION2 PFK	28.08	1.896e4					2.0	NO		bb		0.000
10	FUNCTION2 PFK	28.00	4.249e4					2.6	NO		db		0.000
11	FUNCTION2 PFK	27.89	2.054e4					2.4	NO		dd		0.000
12	FUNCTION2 PFK	27.84	3.689e4					4.5	YES		dd		0.000
13	FUNCTION2 PFK	27.80	5.492e4					5.0	YES		dd		0.000
14	FUNCTION2 PFK	27.72	4.091e4					2.8	NO		dd		0.000
15	FUNCTION2 PFK	27.64	1.167e4					1.8	NO		bd		0.000
16	FUNCTION2 PFK	27.57	8.795e3					1.6	NO		bb		0.000
17	FUNCTION2 PFK	31.89	9.658e3					1.4	NO		bb		0.000
18	FUNCTION2 PFK	31.40	3.647e3					0.8	NO		bb		0.000
19	FUNCTION2 PFK	31.35	4.747e4					2.1	NO		db		0.000
20	FUNCTION2 PFK	31.18	1.696e4					1.9	NO		bd		0.000
21	FUNCTION2 PFK	31.06	1.879e4					2.3	NO		bb		0.000
22	FUNCTION2 PFK	30.73	3.629e3					0.7	NO		bb		0.000
23	FUNCTION2 PFK	30.39	1.190e4					1.3	NO		bb		0.000
24	FUNCTION2 PFK	30.21	1.249e3					0.5	NO		bb		0.000
25	FUNCTION2 PFK	30.03	9.791e2					0.4	NO		bb		0.000
26	FUNCTION2 PFK	29.98	4.183e3					0.9	NO		bb		0.000
27	FUNCTION2 PFK	29.89	3.617e3					1.0	NO		bb		0.000
28	FUNCTION2 PFK	29.77	2.797e3					0.6	NO		bb		0.000
29	FUNCTION2 PFK	29.69	7.735e3					1.2	NO		bb		0.000
30	FUNCTION2 PFK	29.62	1.303e4					1.3	NO		bb		0.000
31	FUNCTION2 PFK	29.37	3.649e4					2.9	NO		bb		0.000
32	FUNCTION2 PFK	29.18	5.105e3					0.9	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	32.26	3.763e5					8.8	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	38.99	1.135e4					1.3	NO		bd		
2	FUNCTION4 PFK	38.88	5.579e3					1.1	NO		bb		
3	FUNCTION4 PFK	38.80	1.168e4					1.6	NO		bb		
4	FUNCTION4 PFK	38.69	9.737e3					1.3	NO		bb		
5	FUNCTION4 PFK	38.25	1.166e5					5.2	YES		db		
6	FUNCTION4 PFK	37.91	1.120e6					16.6	YES		dd		
7	FUNCTION4 PFK	37.84	2.215e5					18.5	YES		dd		
8	FUNCTION4 PFK	37.81	6.404e5					19.7	YES		dd		
9	FUNCTION4 PFK	37.70	2.057e5					22.0	YES		dd		
10	FUNCTION4 PFK	37.60	1.227e6					26.8	YES		dd		
11	FUNCTION4 PFK	37.48	5.511e5					29.6	YES		dd		
12	FUNCTION4 PFK	37.43	3.867e5					31.1	YES		dd		
13	FUNCTION4 PFK	37.36	7.118e5					32.6	YES		bd		
14	FUNCTION4 PFK	41.89	1.929e4					1.3	NO		bb		
15	FUNCTION4 PFK	41.74	3.622e4					1.9	NO		bb		
16	FUNCTION4 PFK	41.60	1.168e4					1.3	NO		db		
17	FUNCTION4 PFK	41.55	5.316e3					0.8	NO		bd		
18	FUNCTION4 PFK	41.50	1.097e4					1.6	NO		bb		
19	FUNCTION4 PFK	40.96	3.761e3					0.6	NO		bb		
20	FUNCTION4 PFK	40.85	1.359e3					0.4	NO		bb		
21	FUNCTION4 PFK	40.80	8.617e3					0.9	NO		bb		
22	FUNCTION4 PFK	40.60	1.895e4					1.8	NO		db		
23	FUNCTION4 PFK	40.55	2.765e4					2.2	NO		dd		
24	FUNCTION4 PFK	40.49	2.015e4					2.0	NO		dd		
25	FUNCTION4 PFK	40.45	2.099e4					2.3	NO		bd		
26	FUNCTION4 PFK	40.23	1.769e4					2.1	NO		bb		
27	FUNCTION4 PFK	39.60	3.578e4					2.8	NO		db		
28	FUNCTION4 PFK	39.55	1.128e4					1.7	NO		bd		
29	FUNCTION4 PFK	39.07	2.212e4					1.8	NO		db		
30	FUNCTION4 PFK	42.75	3.285e3					0.6	NO		bb		
31	FUNCTION4 PFK	42.70	2.754e4					1.5	NO		db		
32	FUNCTION4 PFK	42.58	1.807e4					1.7	NO		dd		
33	FUNCTION4 PFK	42.53	1.476e4					1.7	NO		dd		
34	FUNCTION4 PFK	42.46	2.480e4					2.1	NO		bd		
35	FUNCTION4 PFK	42.03	2.481e4					1.9	NO		db		
36	FUNCTION4 PFK	41.99	1.512e4					1.7	NO		bd		

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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	44.12	2.768e3					0.9	NO		bb		
2	FUNCTION5 PFK	43.91	6.915e3					1.3	NO		db		
3	FUNCTION5 PFK	43.87	7.246e3					1.9	NO		bd		
4	FUNCTION5 PFK	43.73	4.916e3					1.3	NO		bb		
5	FUNCTION5 PFK	43.40	4.518e3					1.3	NO		bb		
6	FUNCTION5 PFK	43.15	1.986e3					0.8	NO		bb		
7	FUNCTION5 PFK	43.00	1.071e4					1.7	NO		bb		
8	FUNCTION5 PFK	42.86	3.711e3					1.2	NO		bb		
9	FUNCTION5 PFK	45.91	1.126e4					2.2	NO		bb		
10	FUNCTION5 PFK	45.79	4.830e3					1.2	NO		bb		
11	FUNCTION5 PFK	45.73	1.131e3					0.7	NO		bb		
12	FUNCTION5 PFK	45.62	5.239e3					1.4	NO		bb		
13	FUNCTION5 PFK	45.12	4.609e3					1.0	NO		bb		
14	FUNCTION5 PFK	44.21	2.676e3					0.7	NO		bb		

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	26.49	1.225e2					2.9	NO		bb		0.000
2	FUNCTION1 HXCD...	25.56	8.311e1					2.6	NO		bb		0.000
3	FUNCTION1 HXCD...	25.24	1.010e2					2.0	NO		db		0.000
4	FUNCTION1 HXCD...	25.14	1.579e2					2.7	NO		dd		0.000
5	FUNCTION1 HXCD...	25.04	1.523e2					4.4	YES		bd		0.000
6	FUNCTION1 HXCD...	24.11	1.289e2					2.1	NO		bb		0.000
7	FUNCTION1 HXCD...	21.37	8.930e1					1.9	NO		bb		0.000

ETHERS2

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

ID: CS3F2, Name: 23081111, Date: 11-Aug-2023, Time: 18:06:32, 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...	30.49	3.116e2					7.1	YES		bb		0.000
2	FUNCTION2 HPCD...	32.15	1.442e2					3.3	YES		bb		0.000
3	FUNCTION2 HPCD...	31.01	8.310e1					3.1	YES		db		0.000
4	FUNCTION2 HPCD...	30.88	1.193e2					2.0	NO		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	35.95	1.152e2					3.0	NO		bb		0.000
2	FUNCTION3 OCDPE	35.41	1.159e2					4.5	YES		bb		0.000
3	FUNCTION3 OCDPE	34.62	9.236e1					2.5	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	40.66	8.194e1					2.0	NO		bb		0.000
2	FUNCTION4 NCDPE	39.66	8.616e1					1.6	NO		bb		0.000

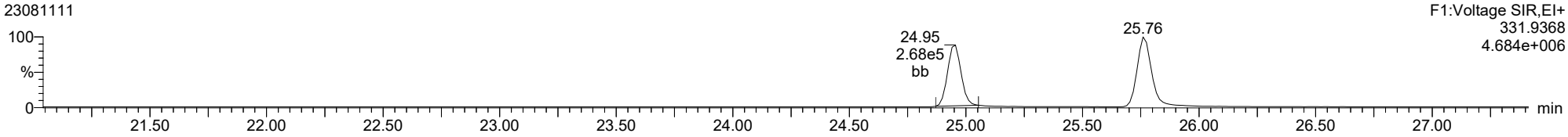
ETHERS6

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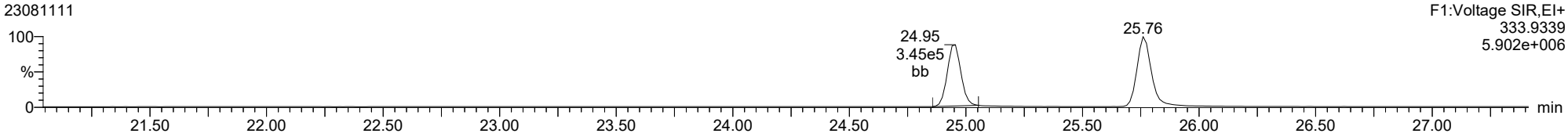
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ID: CS3F2, Name: 23081111, Date: 11-Aug-2023, Time: 18:06:32, Conditions: AUTOSPEC01, User: pk

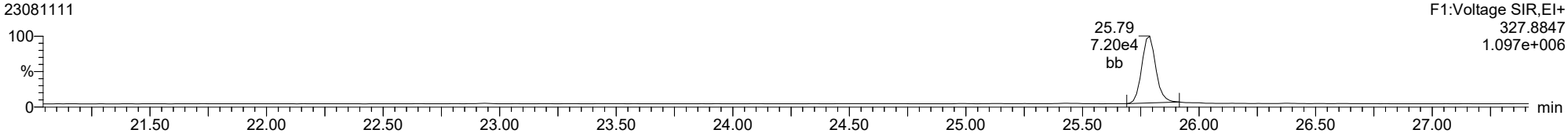
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13C-1234-TCDD

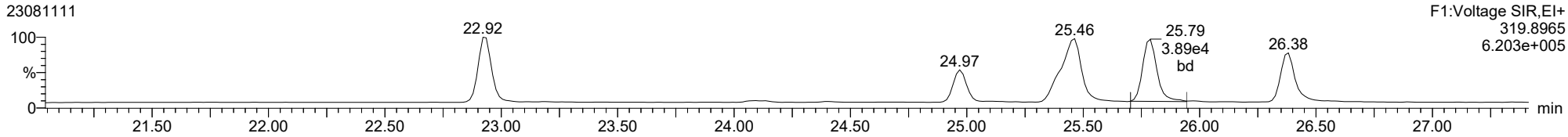


37CL-2378-TCDD

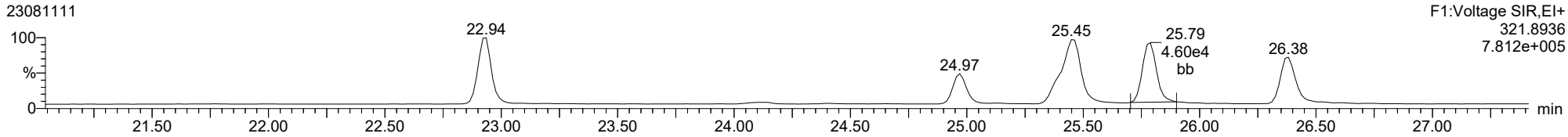


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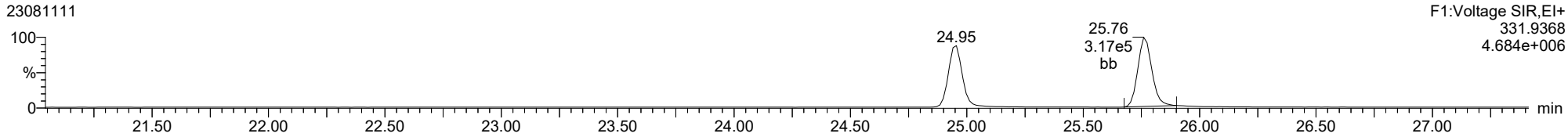
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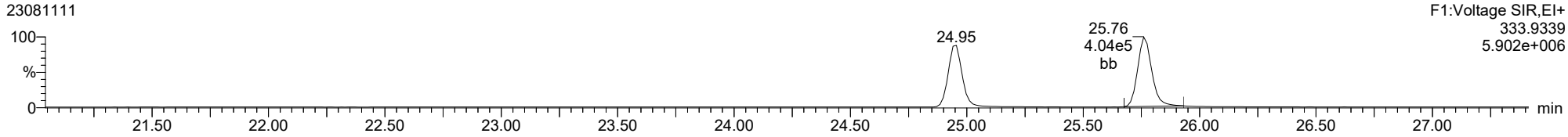
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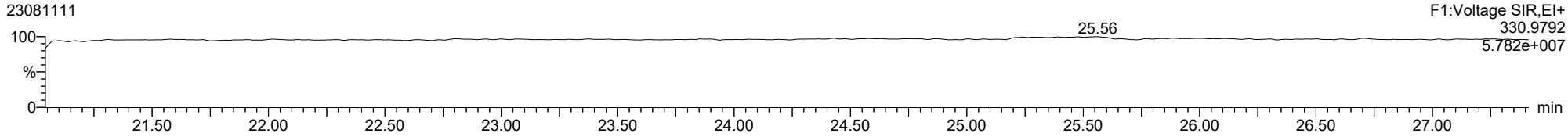
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13C-2378-TCDD

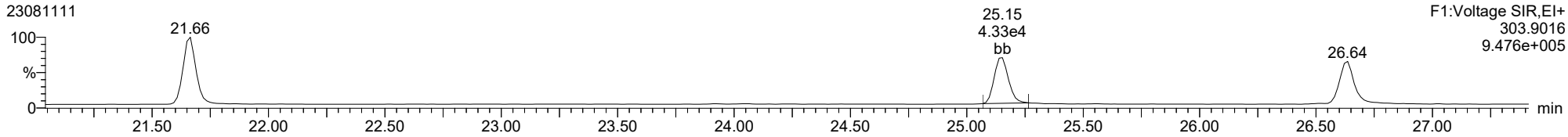


FUNCTION1 PFK

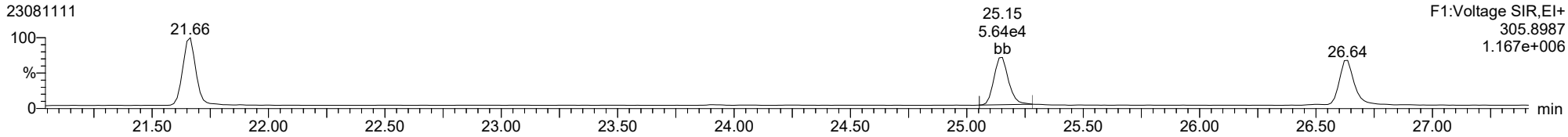


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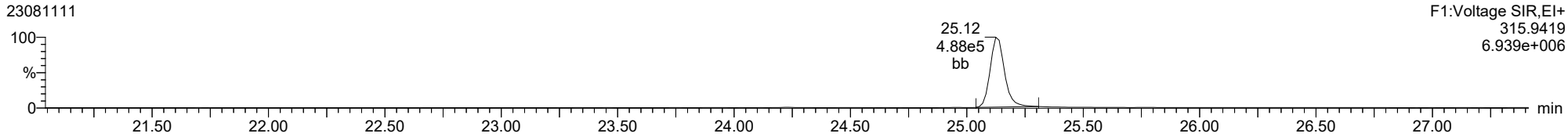
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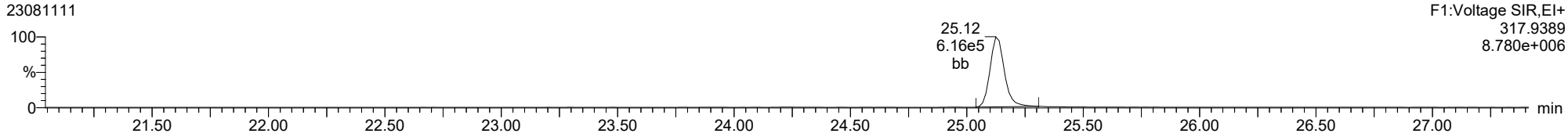
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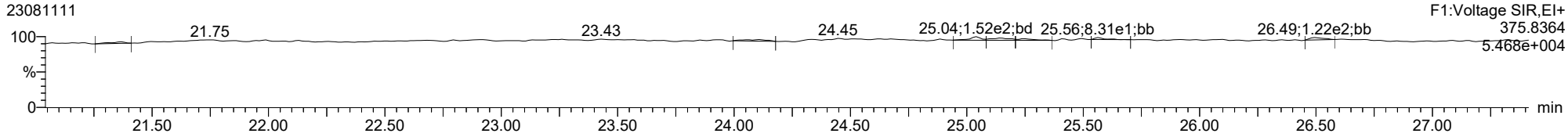
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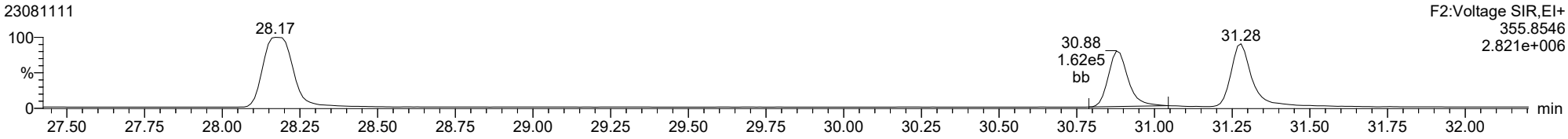


FUNCTION1 HXCDPE

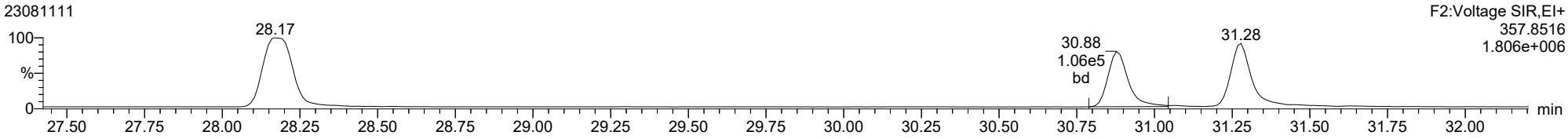


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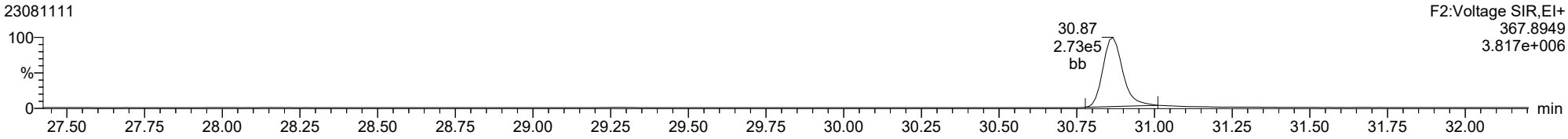
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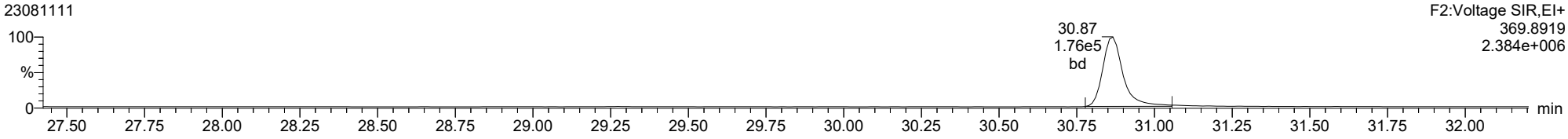
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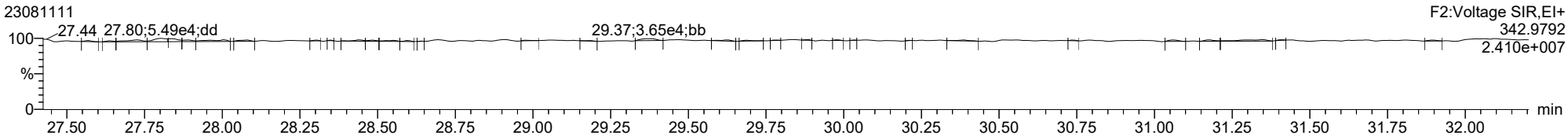
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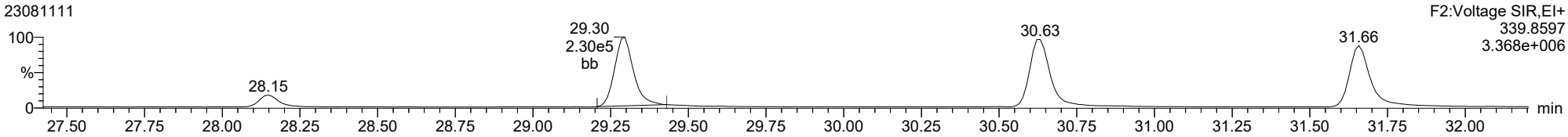


FUNCTION2 PFK

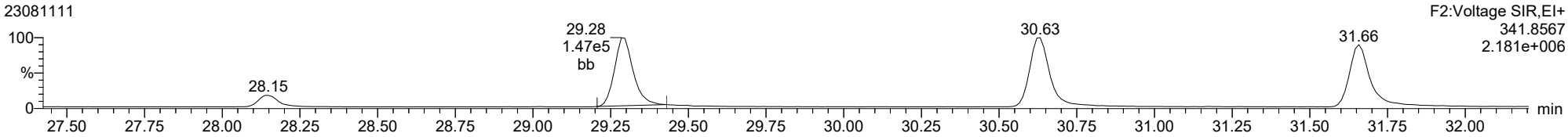


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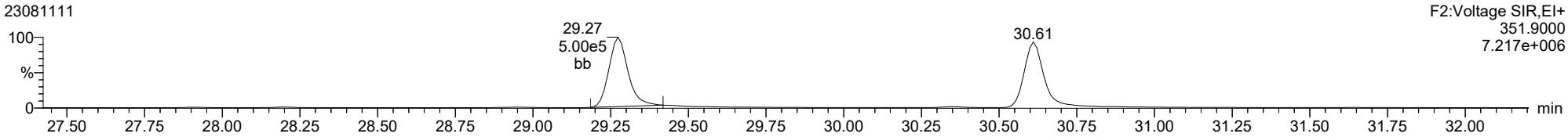
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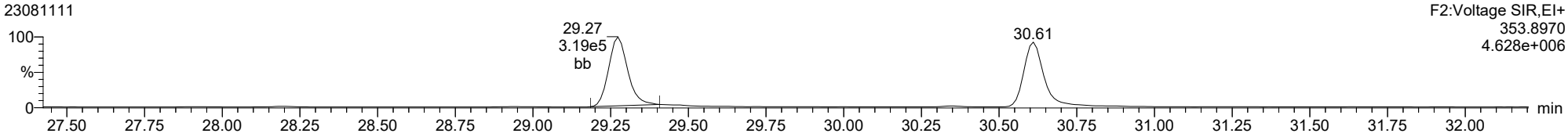
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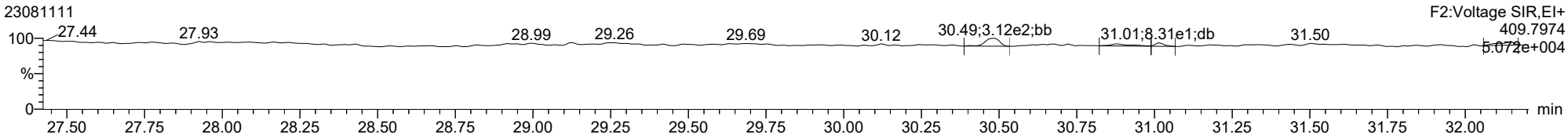
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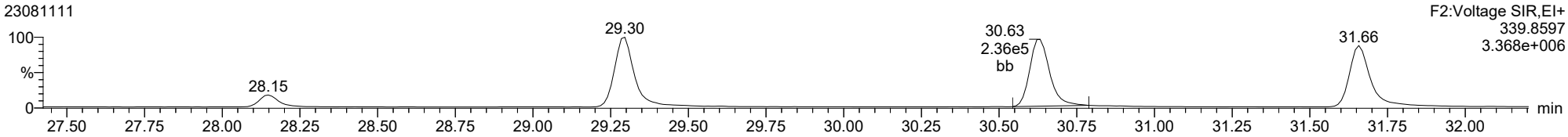


FUNCTION2 HPCDPE

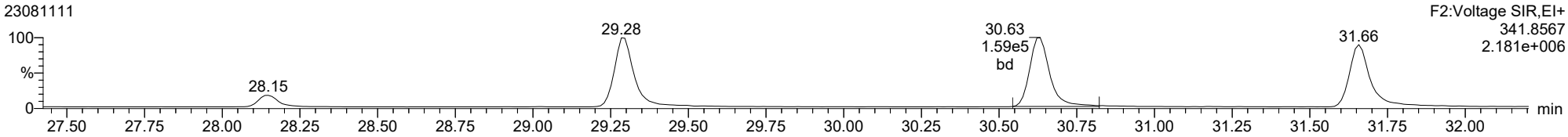


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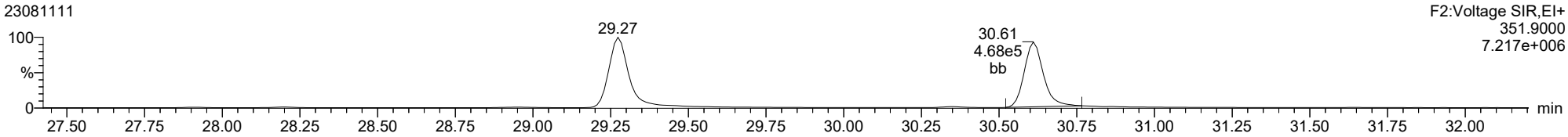
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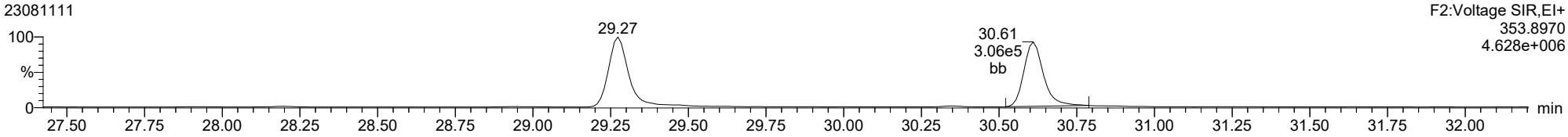
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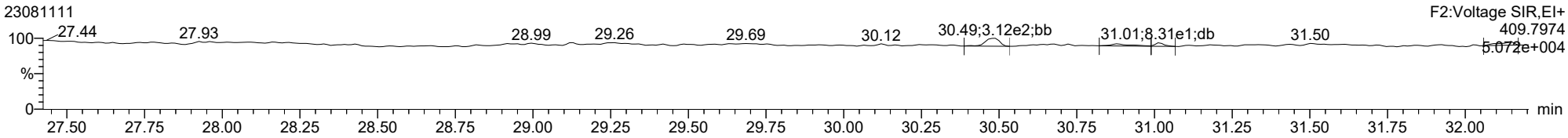
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13C-23478-PeCDF

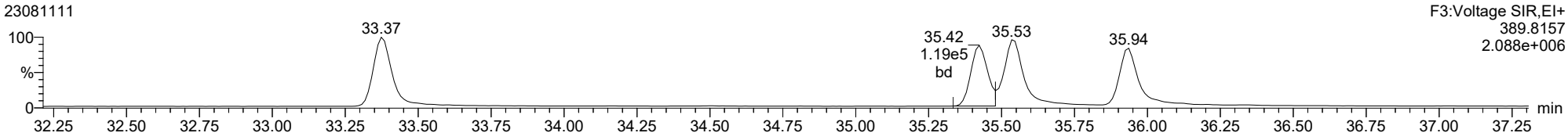


FUNCTION2 HPCDPE

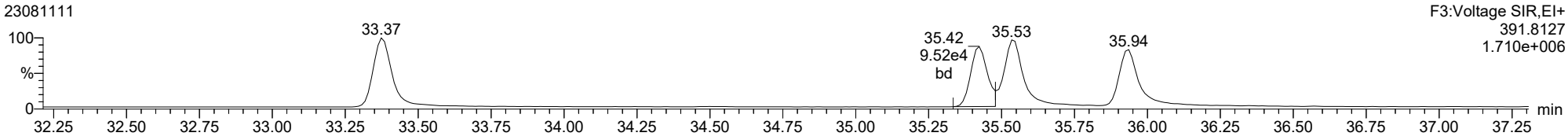


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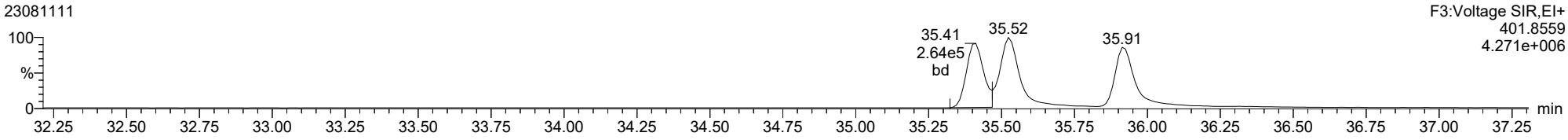
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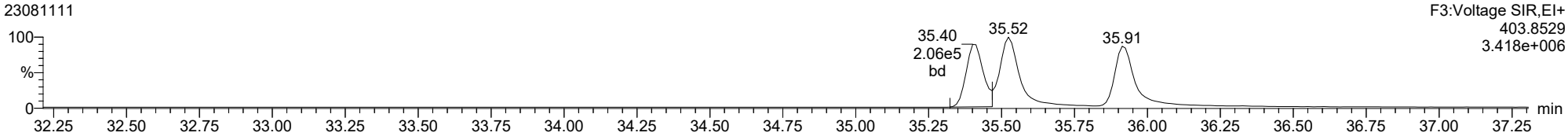
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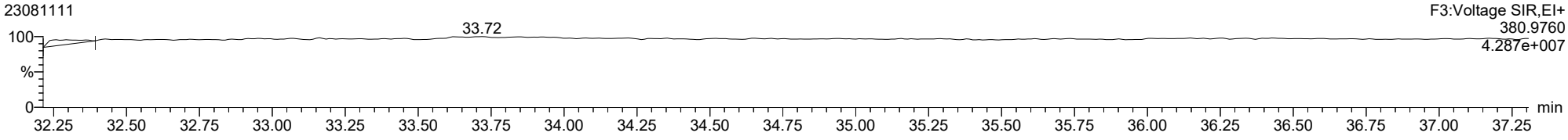
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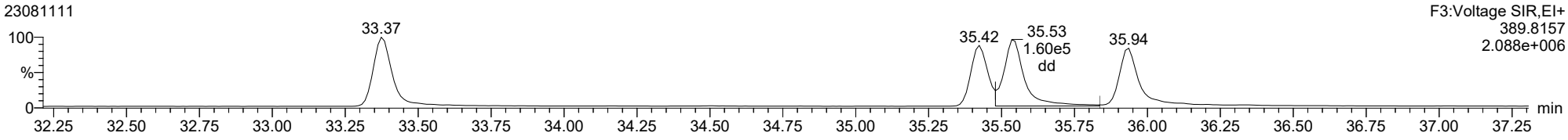
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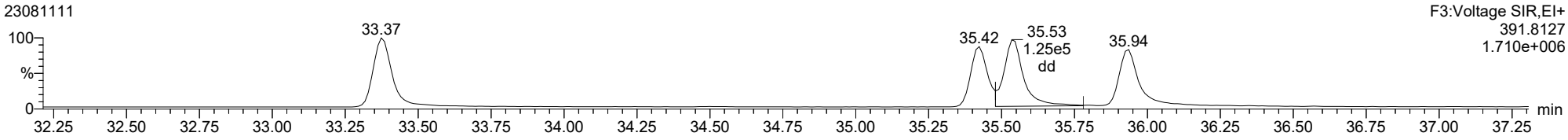
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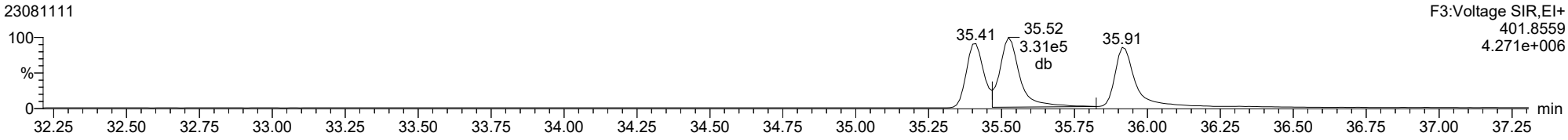
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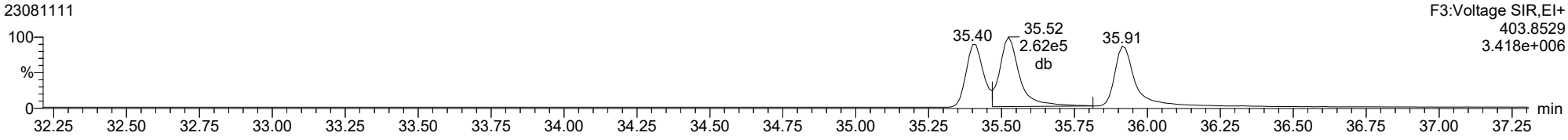
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13C-123678-HxCDD

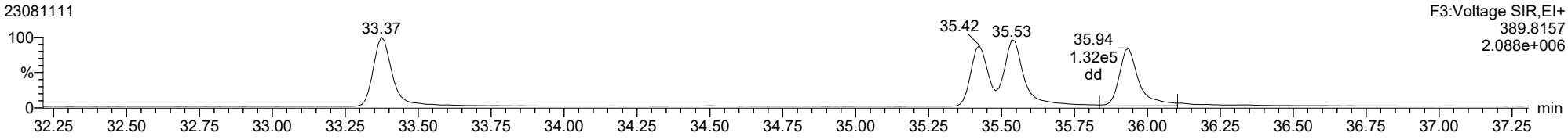


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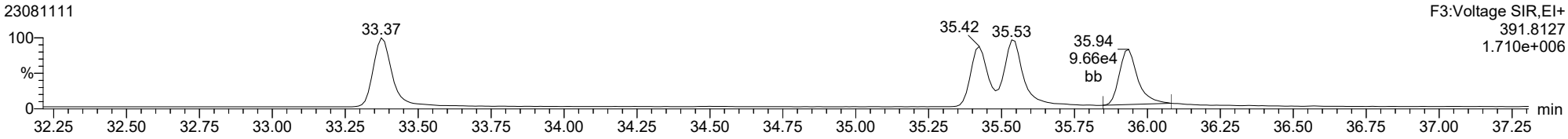


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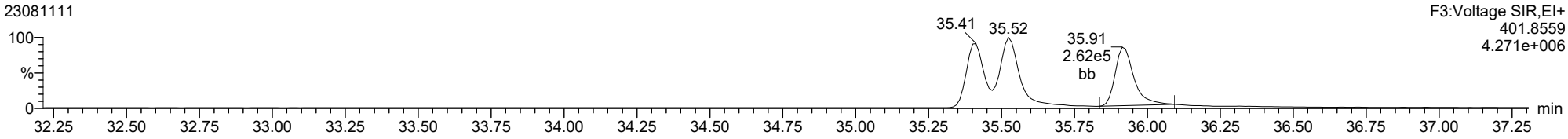
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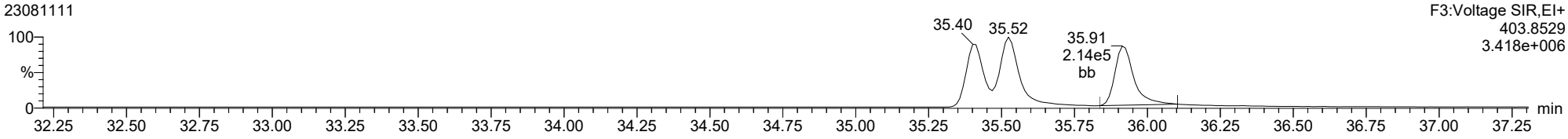
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13C-123789-HxCDD

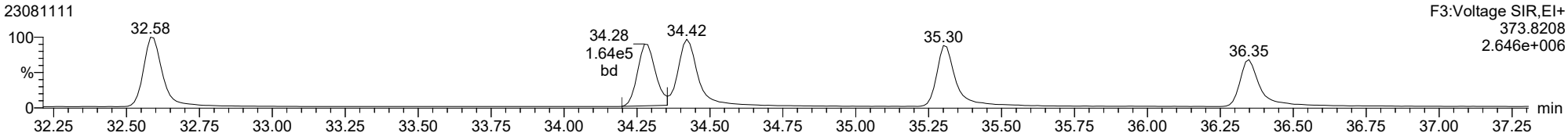


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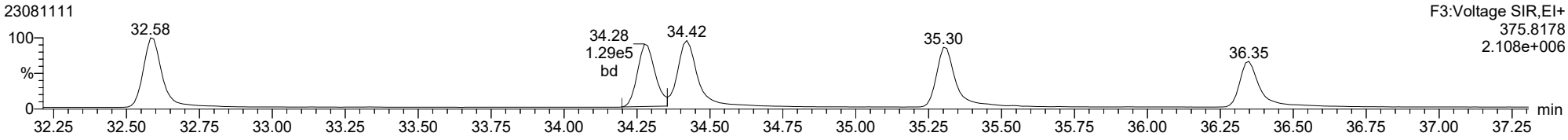


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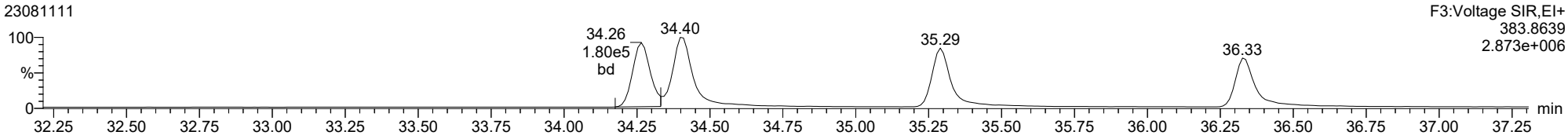
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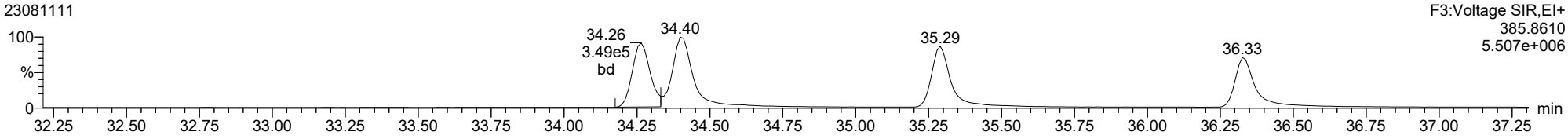
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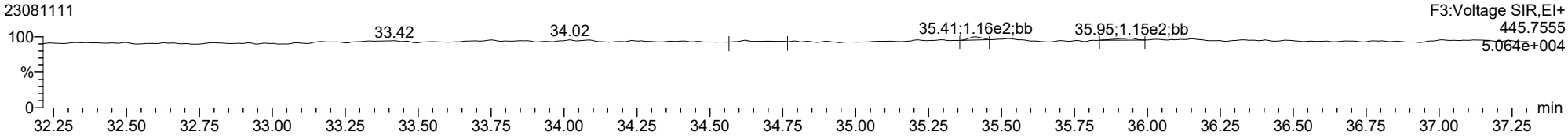
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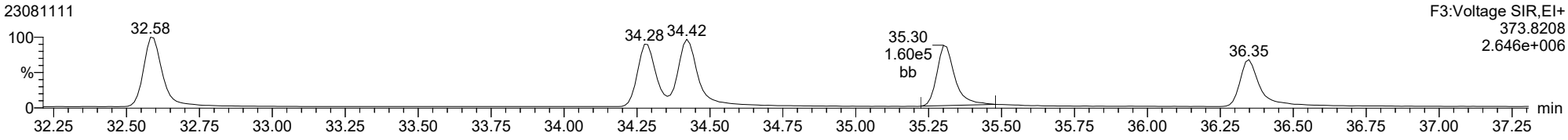


FUNCTION3 OCDPE

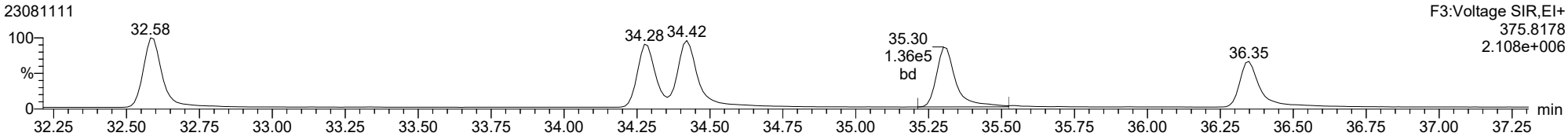


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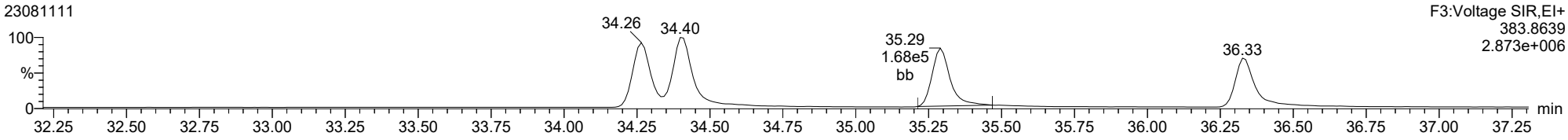
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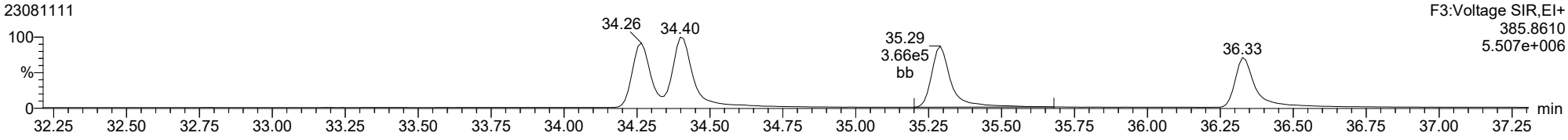
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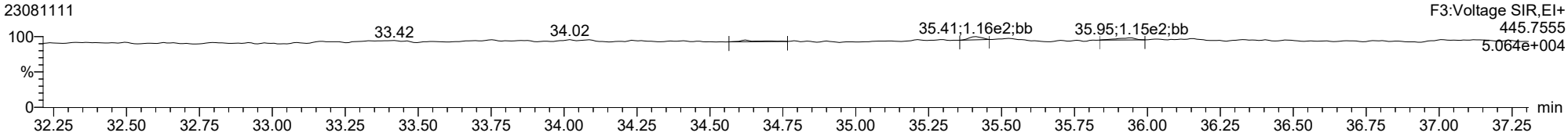
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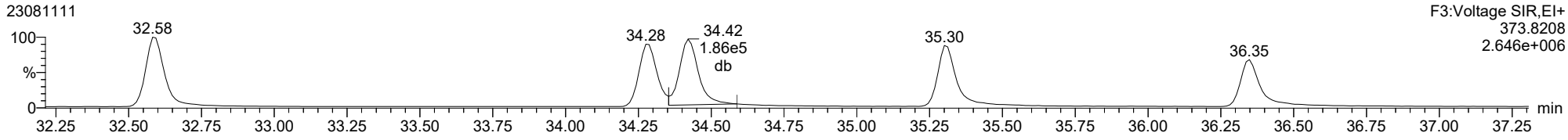


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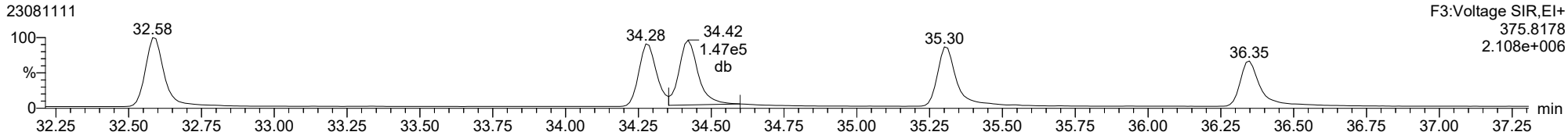


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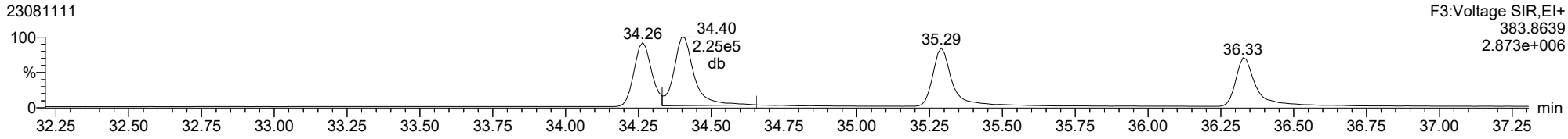
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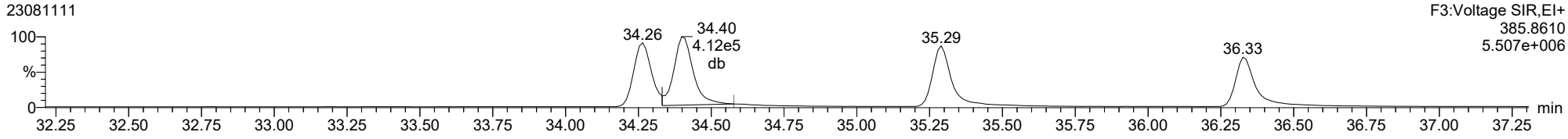
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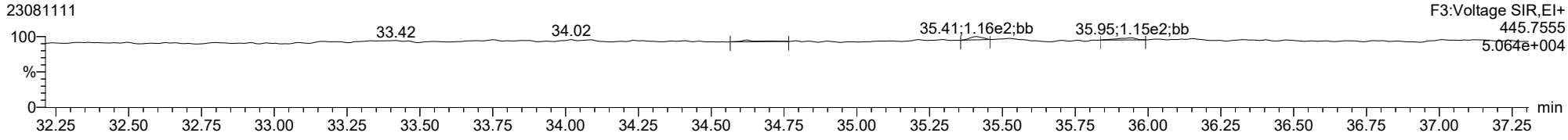
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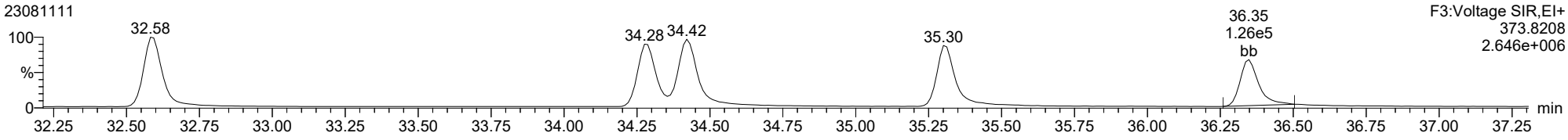


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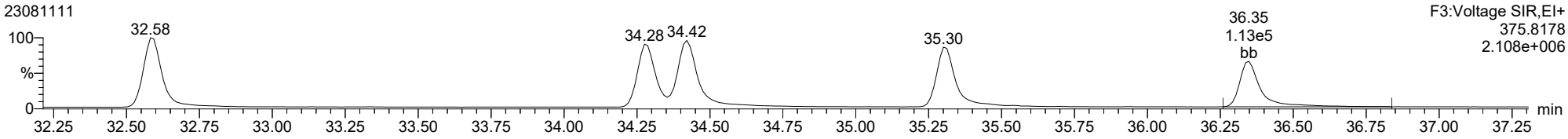


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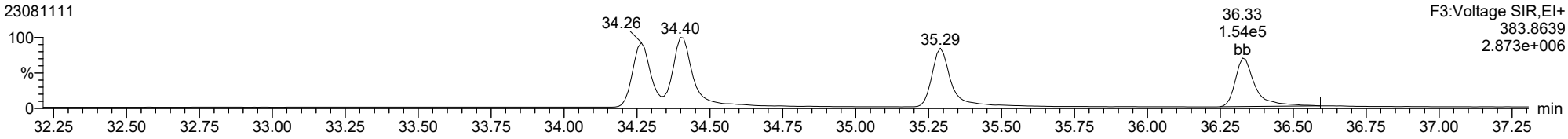
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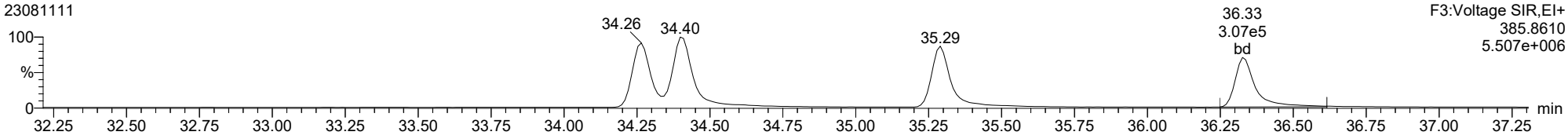
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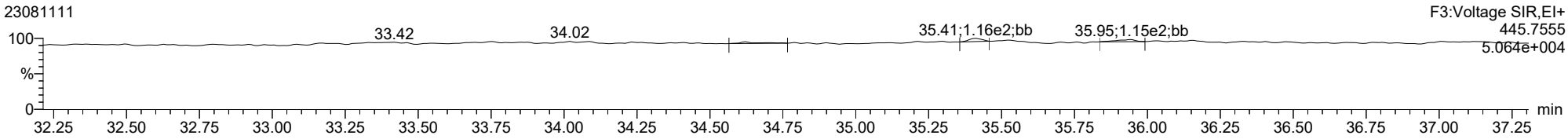
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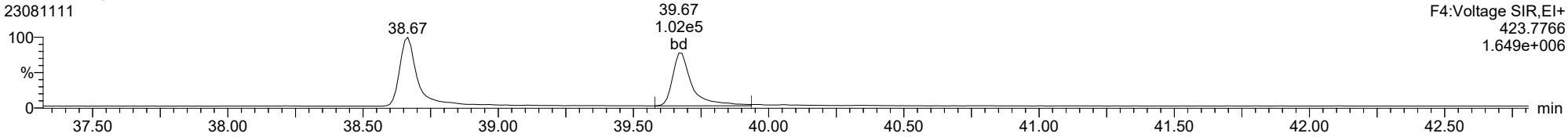


FUNCTION3 OCDPE

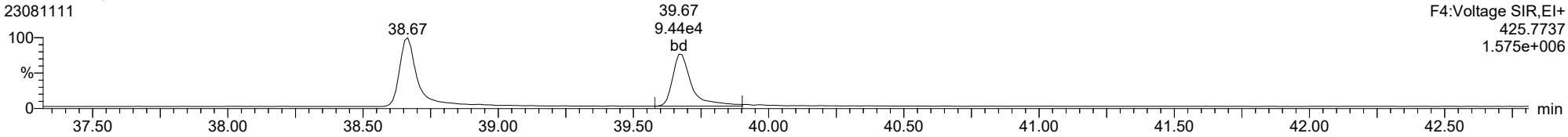


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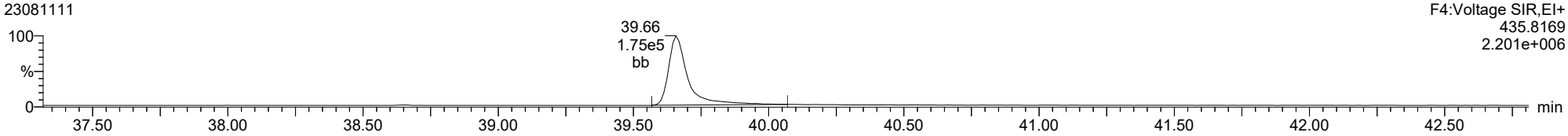
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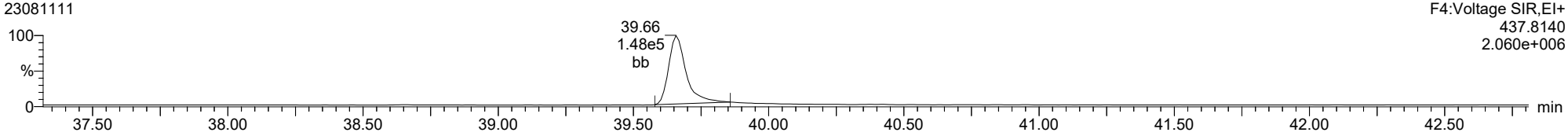
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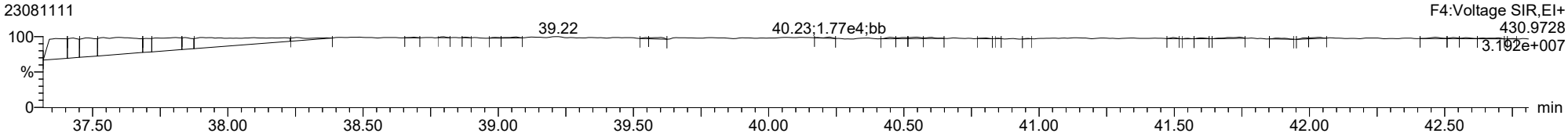
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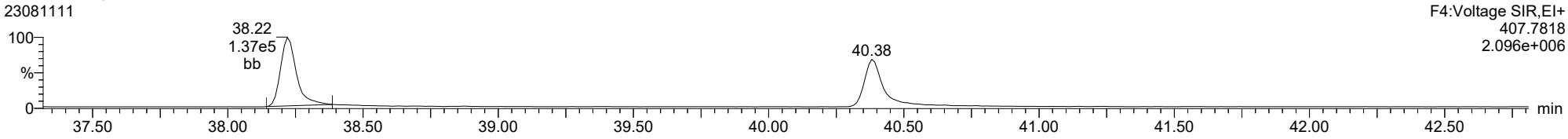


FUNCTION4 PFK

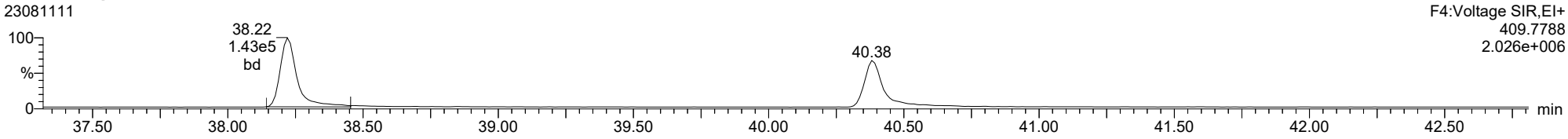


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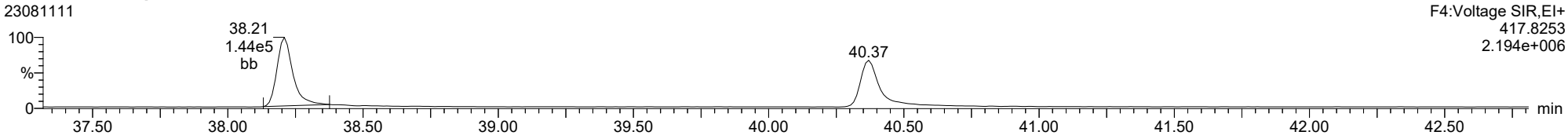
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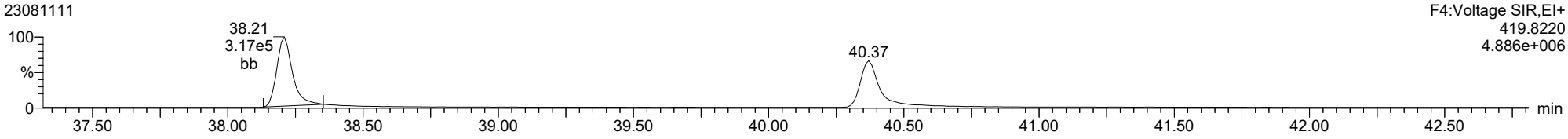
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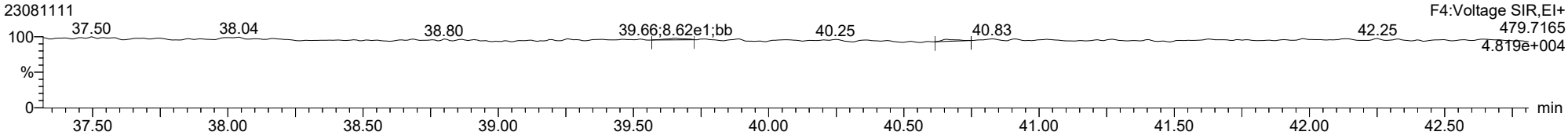
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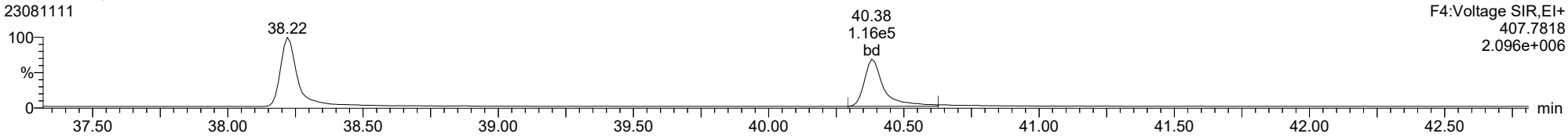


FUNCTION4 NCDPE

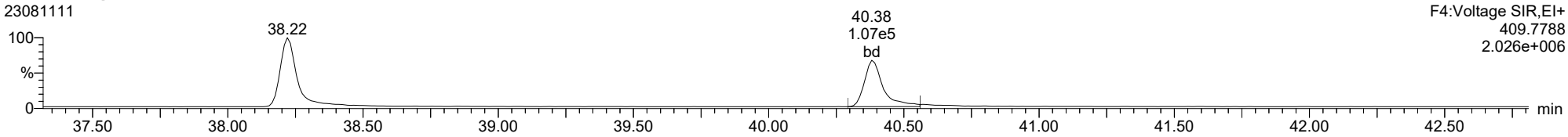


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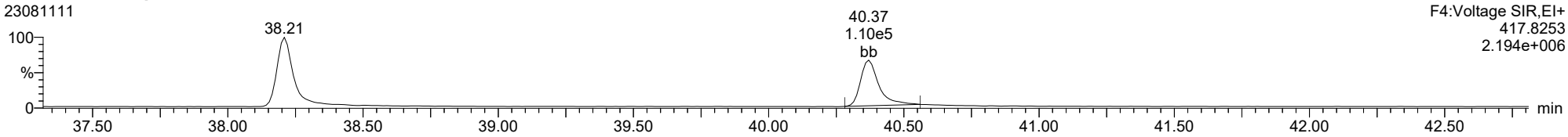
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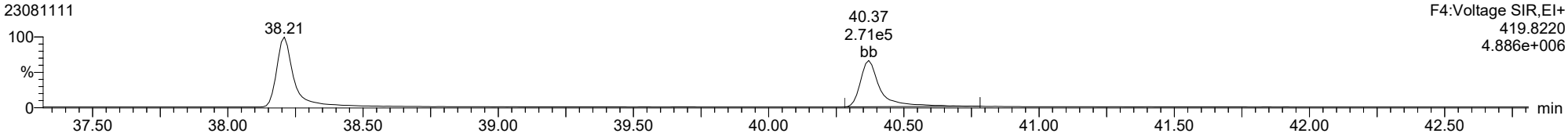
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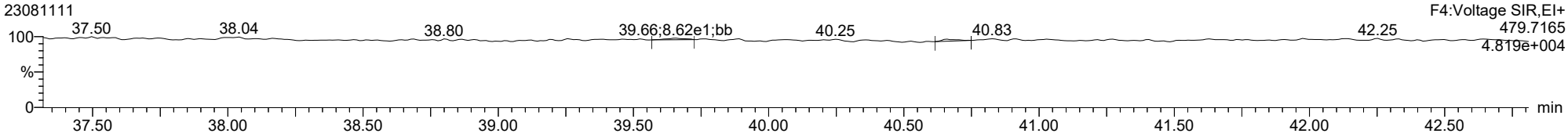
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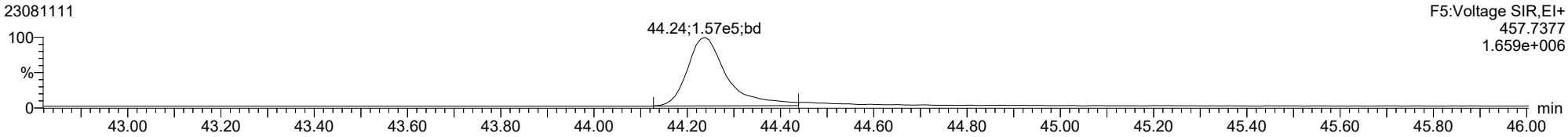


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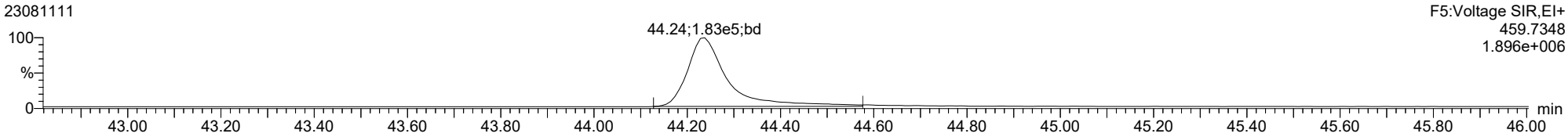


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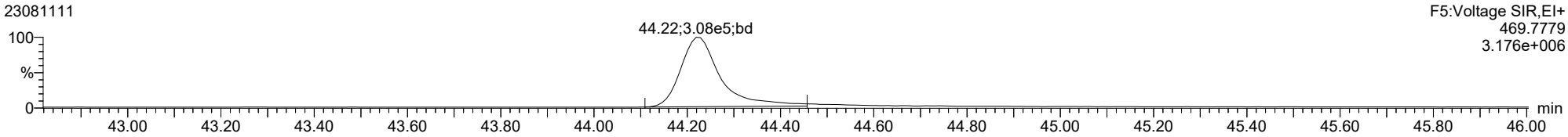
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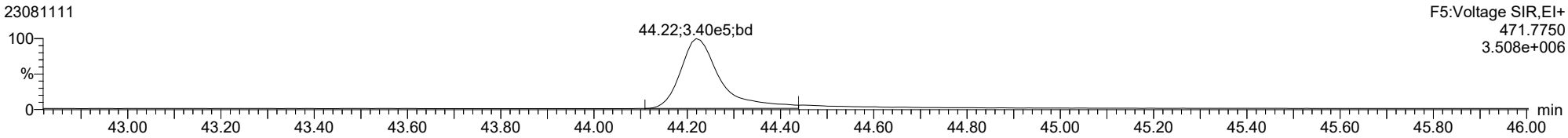
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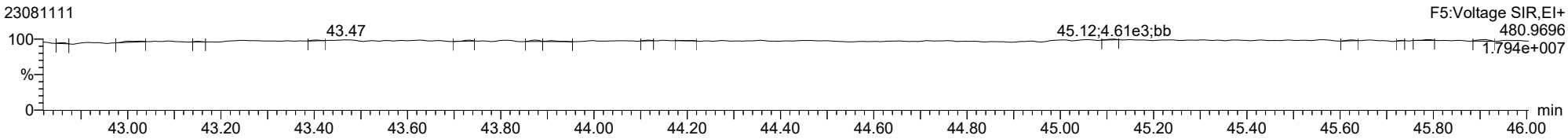
13C-OCDD



13C-OCDD

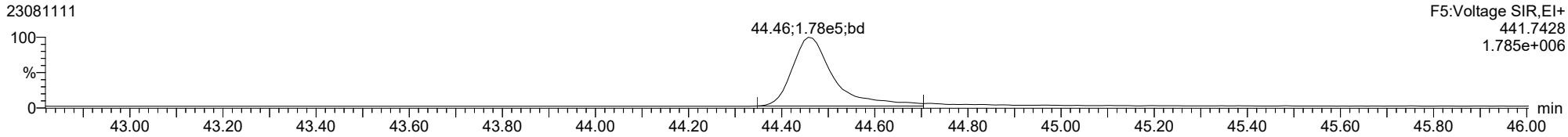


FUNCTION5 PFK

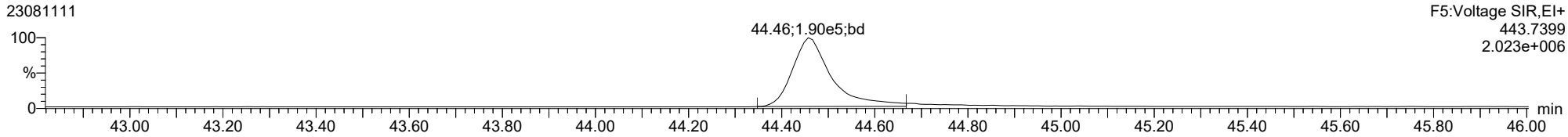


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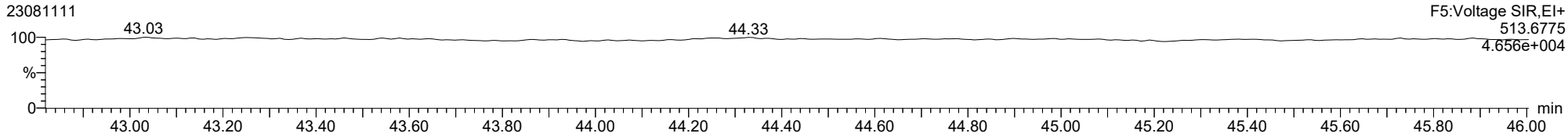
OCDF



OCDF

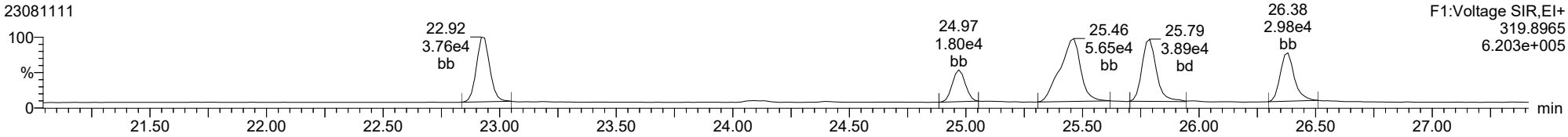


FUNCTION5 DCDPE

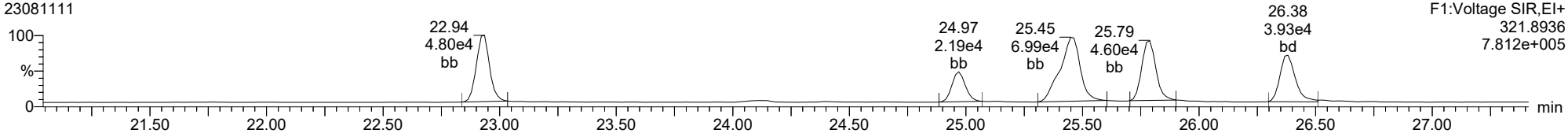


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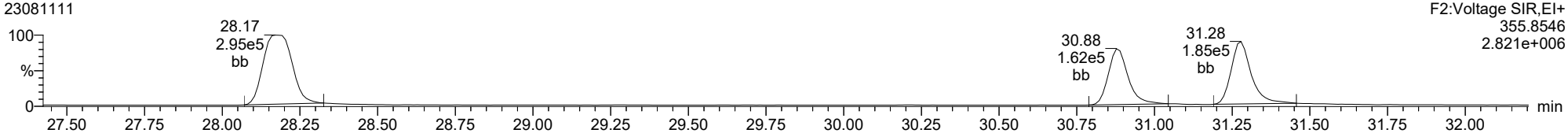
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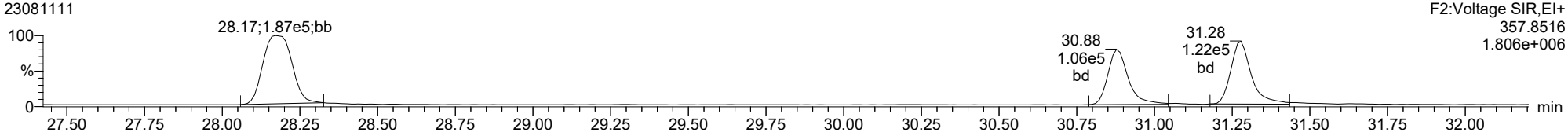
Total-tetradioxins



Total-pentadioxins

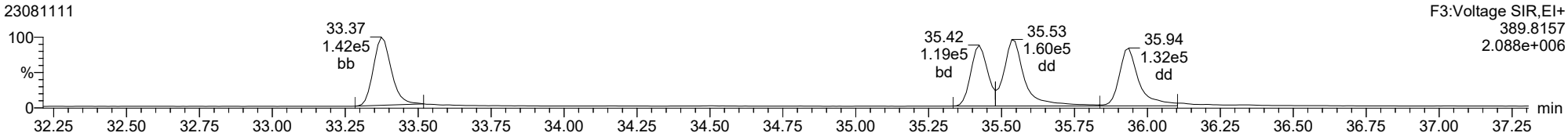


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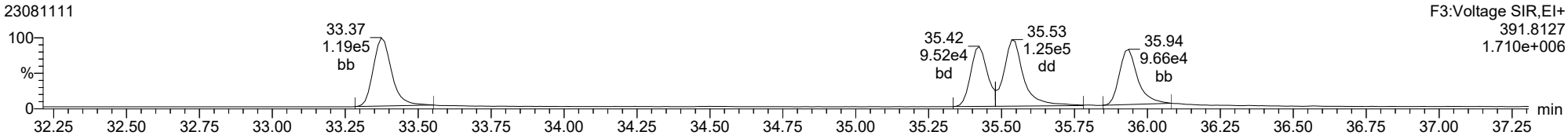


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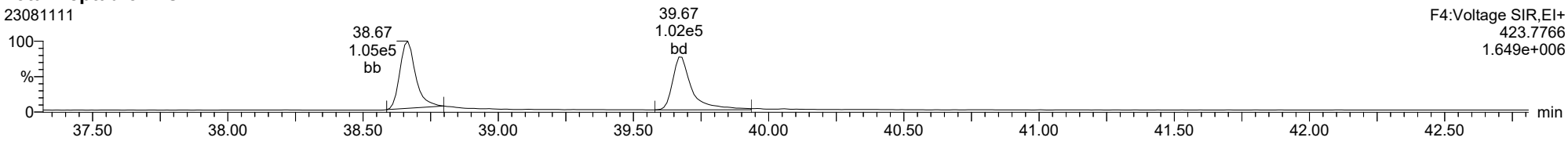
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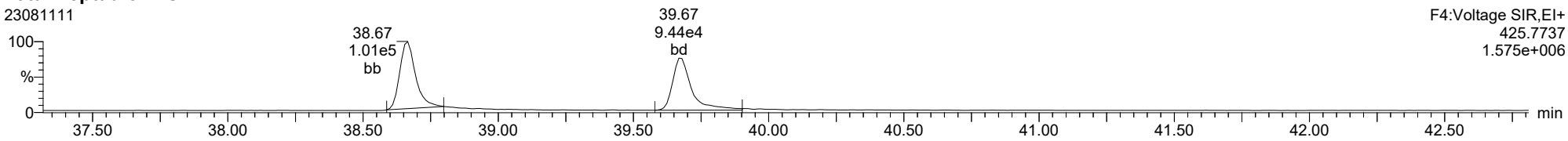
Total-hexadioxins



Total-heptadioxins

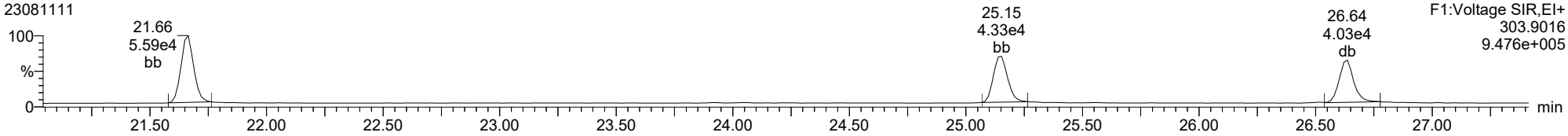


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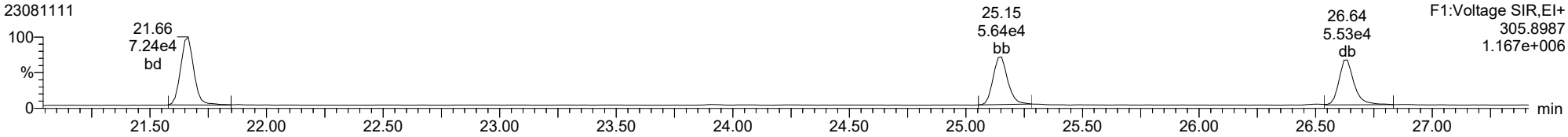


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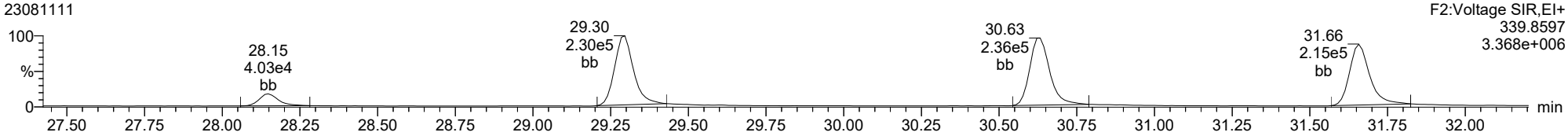
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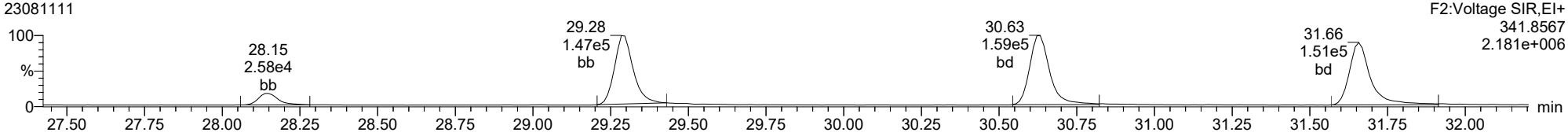
Total-tetrafurans



Total-pentafurans

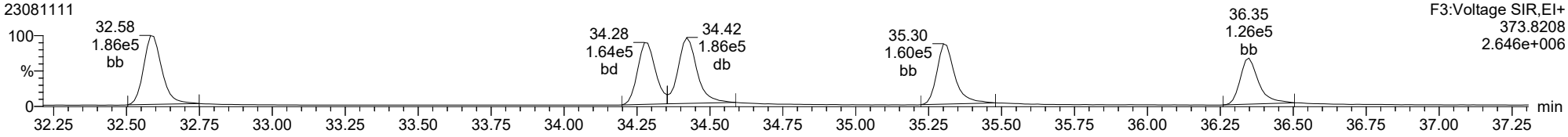


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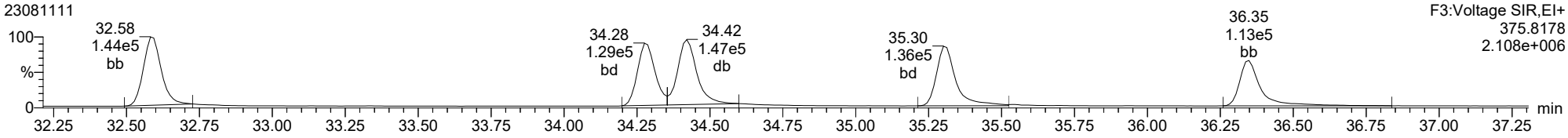


ID: CS3F2, Name: 23081111, Date: 11-Aug-2023, Time: 18:06:32, Conditions: AUTOSPEC01, User: pk

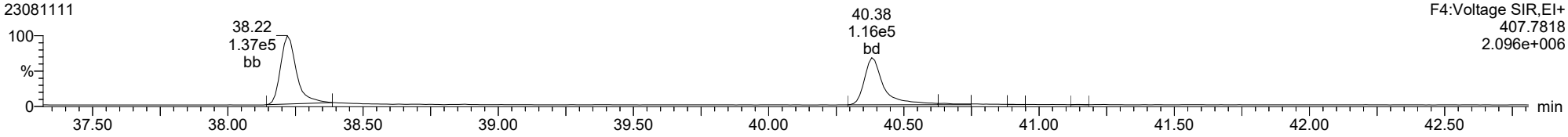
Total-hexafurans



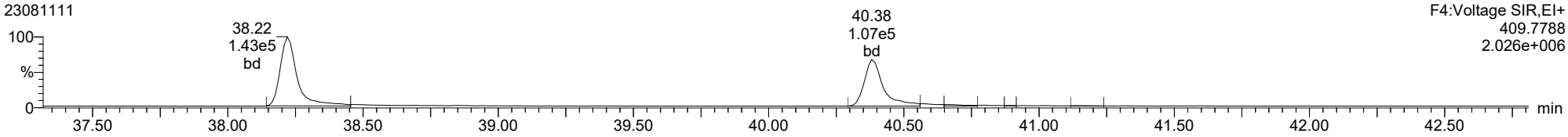
Total-hexafurans



Total-heptafurans



Total-heptafurans



SECOND-SOURCE CALIBRATION VERIFICATION

EPA 1613B

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023
Calibration: GH00041
Laboratory ID: SLH0135-SCV1
Sequence: SLH0135
Sequence Name: ICVCF
Standard ID: H008219

ANALYTE	EXPECTED (ng/mL)	FOUND (ng/mL)	% DRIFT	QC LIMIT
2,3,7,8-TCDF	10.000	9.78	-2.2	
2,3,7,8-TCDD	10.000	9.85	-1.5	
1,2,3,7,8-PeCDF	50.000	49.3	-1.4	
2,3,4,7,8-PeCDF	50.000	50.5	1.0	
1,2,3,7,8-PeCDD	50.000	52.8	5.6	
1,2,3,4,7,8-HxCDF	50.000	50.0	0.09	
1,2,3,6,7,8-HxCDF	50.000	50.9	1.9	
2,3,4,6,7,8-HxCDF	50.000	52.9	5.9	
1,2,3,7,8,9-HxCDF	50.000	53.4	6.8	
1,2,3,4,7,8-HxCDD	50.000	47.8	-4.5	
1,2,3,6,7,8-HxCDD	50.000	50.8	1.5	
1,2,3,7,8,9-HxCDD	50.000	54.6	9.3	
1,2,3,4,6,7,8-HpCDF	50.000	51.9	3.9	
1,2,3,4,7,8,9-HpCDF	50.000	56.7	13.4	
1,2,3,4,6,7,8-HpCDD	50.000	48.3	-3.5	
OCDF	100.00	100	0.3	
OCDD	100.00	98.5	-1.5	
13C12-2,3,7,8-TCDF	100.00	101	1.2	
13C12-2,3,7,8-TCDD	100.00	100	0.05	
13C12-1,2,3,7,8-PeCDF	100.00	104	3.5	
13C12-2,3,4,7,8-PeCDF	100.00	99.8	-0.2	
13C12-1,2,3,7,8-PeCDD	100.00	100	0.2	
13C12-1,2,3,4,7,8-HxCDF	100.00	95.3	-4.7	
13C12-1,2,3,6,7,8-HxCDF	100.00	93.4	-6.6	
13C12-2,3,4,6,7,8-HxCDF	100.00	93.8	-6.2	
13C12-1,2,3,7,8,9-HxCDF	100.00	96.1	-3.9	
13C12-1,2,3,4,7,8-HxCDD	100.00	99.2	-0.8	
13C12-1,2,3,6,7,8-HxCDD	100.00	99.0	-1.0	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	97.6	-2.4	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	100	0.2	
13C12-1,2,3,4,6,7,8-HpCDD	100.00	103	2.8	
13C12-OCDD	200.00	225	12.5	
37Cl4-2,3,7,8-TCDD	10.000	9.69	-3.1	

SECOND-SOURCE CALIBRATION VERIFICATION

EPA 1613B

Laboratory: Analytical Resources, LLC
Client: Leon Environmental, LLC
Calibration: GH00041
Sequence: SLH0135

SDG: 23J0690
Project: Port of Friday Harbor 2023
Laboratory ID: SLH0135-SCV1
Sequence Name: ICVCF
Standard ID: H008219

* Indicates values outside of QC limits

SECOND-SOURCE CALIBRATION VERIFICATION

EPA 1613B

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023
Calibration: GH00041
Laboratory ID: SLH0135-SCV1
Sequence: SLH0135
Standard ID: H008219

ANALYTE	EXPECTED (ng/mL)	FOUND (ng/mL)	% DRIFT	QC LIMIT
OCDF	100.00	100	0.3	
OCDD	100.00	98.5	-1.5	
13C12-2,3,7,8-TCDF	100.00	101	1.2	
13C12-2,3,7,8-TCDD	100.00	100	0.05	
13C12-1,2,3,7,8-PeCDF	100.00	104	3.5	
13C12-2,3,4,7,8-PeCDF	100.00	99.8	-0.2	
13C12-1,2,3,7,8-PeCDD	100.00	100	0.2	
13C12-1,2,3,4,7,8-HxCDF	100.00	95.3	-4.7	
13C12-1,2,3,6,7,8-HxCDF	100.00	93.4	-6.6	
13C12-2,3,4,6,7,8-HxCDF	100.00	93.8	-6.2	
13C12-1,2,3,7,8,9-HxCDF	100.00	96.1	-3.9	
13C12-1,2,3,4,7,8-HxCDD	100.00	99.2	-0.8	
13C12-1,2,3,6,7,8-HxCDD	100.00	99.0	-1.0	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	97.6	-2.4	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	100	0.2	
13C12-1,2,3,4,6,7,8-HpCDD	100.00	103	2.8	
13C12-OCDD	200.00	225	12.5	
37Cl4-2,3,7,8-TCDD	10.000	9.69	-3.1	

* Values outside of QC limits

Analytical Resources, LLC
Analytical Chemists and Consultants

INITIAL CALIBRATION CHECK
EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Instrument ID:	AUTOSPEC01	Calibration:	GH00041
Lab File ID:	23081102	Calibration Date:	08/11/2023
Sequence:	SLH0135	Injection Date:	08/11/23
Lab Sample ID:	SLH0135-ICV1	Injection Time:	10:28
Sequence Name:	CS3F1		

		CONC. (ng/mL)		RESPONSE FACTOR			% DRIFT/DIFF	
COMPOUND	TYPE	STD	ICV	ICAL	ICV	MIN	ICV	LIMIT
2,3,7,8-TCDF	A	10.000	10.0	0.9031472	0.9059610		0.3	+/-16
2,3,7,8-TCDD	A	10.000	9.13	1.2429820	1.1345020		-8.7	+/-22
1,2,3,7,8-PeCDF	A	50.000	48.6	0.9232368	0.8982768		-2.7	+/-18
2,3,4,7,8-PeCDF	A	50.000	49.0	0.9906617	0.9710105		-2.0	+/-18
1,2,3,7,8-PeCDD	A	50.000	51.4	1.1500860	1.1819810		2.8	+/-22
1,2,3,4,7,8-HxCDF	A	50.000	48.5	1.1281700	1.0949560		-2.9	+/-10
1,2,3,6,7,8-HxCDF	A	50.000	50.0	1.0323580	1.0325830		0.02	+/-12
2,3,4,6,7,8-HxCDF	A	50.000	50.5	1.0814700	1.0923240		1.0	+/-12
1,2,3,7,8,9-HxCDF	A	50.000	52.4	0.9876148	1.0355160		4.9	+/-10
1,2,3,4,7,8-HxCDD	A	50.000	47.9	0.9600870	0.9199364		-4.2	+/-22
1,2,3,6,7,8-HxCDD	A	50.000	52.4	0.8826935	0.9248387		4.8	+/-22
1,2,3,7,8,9-HxCDD	A	50.000	55.4	0.8037436	0.8904609		10.8	+/-18
1,2,3,4,6,7,8-HpCDF	A	50.000	48.4	1.1637090	1.1261300		-3.2	+/-10
1,2,3,4,7,8,9-HpCDF	A	50.000	50.9	1.1036300	1.1230980		1.8	+/-14
1,2,3,4,6,7,8-HpCDD	A	50.000	46.5	1.1996030	1.1159440		-7.0	+/-14
OCDF	A	100.00	91.3	1.1302050	1.0320320		-8.7	+/-37
OCDD	A	100.00	106	1.0586660	1.1194400		5.7	+/-21
13C12-2,3,7,8-TCDF	A	100.00	93.6	1.8353850	3.4352387		-6.4	+/-29
13C12-2,3,7,8-TCDD	A	100.00	105	1.1095460	2.3351377		5.2	+/-18
13C12-1,2,3,7,8-PeCDF	A	100.00	99.1	1.3765480	2.7291911		-0.9	+/-24
13C12-2,3,4,7,8-PeCDF	A	100.00	101	1.3012340	2.6302195		1.1	+/-23
13C12-1,2,3,7,8-PeCDD	A	100.00	101	0.7536802	1.5250051		1.2	+/-38
13C12-1,2,3,4,7,8-HxCDF	A	100.00	100	1.0906500	2.1855182		0.2	+/-24
13C12-1,2,3,6,7,8-HxCDF	A	100.00	91.4	1.3402290	2.4491907		-8.6	+/-30
13C12-2,3,4,6,7,8-HxCDF	A	100.00	93.6	1.0934470	2.0476561		-6.4	+/-27
13C12-1,2,3,7,8,9-HxCDF	A	100.00	92.8	0.9516050	1.7655840		-7.2	+/-26
13C12-1,2,3,4,7,8-HxCDD	A	100.00	102	0.9598962	1.9528365		1.7	+/-15
13C12-1,2,3,6,7,8-HxCDD	A	100.00	94.7	1.1592550	2.1961062		-5.3	+/-15
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	98.6	0.9849488	1.9418856		-1.4	+/-22
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	104	0.7558011	1.5751412		4.2	+/-23

* Values outside of QC limits

Analytical Resources, LLC
Analytical Chemists and Consultants

INITIAL CALIBRATION CHECK
EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Instrument ID:	AUTOSPEC01	Calibration:	GH00041
Lab File ID:	23081102	Calibration Date:	08/11/2023
Sequence:	SLH0135	Injection Date:	08/11/23
Lab Sample ID:	SLH0135-ICV1	Injection Time:	10:28
Sequence Name:	CS3F1		

		CONC. (ng/mL)		RESPONSE FACTOR			% DRIFT/DIFF	
COMPOUND	TYPE	STD	ICV	ICAL	ICV	MIN	ICV	LIMIT
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	107	0.6292861	1.3454333		6.9	+/-28
13C12-OCDD	A	200.00	211	0.6351422	1.3417237		5.6	+/-52
37Cl4-2,3,7,8-TCDD	A	10.000	10.2	1.1573510	2.3566221		1.8	

* Values outside of QC limits

Analytical Resources, LLC
Analytical Chemists and Consultants

INITIAL CALIBRATION CHECK
EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Instrument ID:	AUTOSPEC01	Calibration:	GH00041
Lab File ID:	23121419A	Calibration Date:	08/11/2023
Sequence:	SLL0222	Injection Date:	12/15/23
Lab Sample ID:	SLL0222-ICV1	Injection Time:	00:35
Sequence Name:	CS3J3		

		CONC. (ng/mL)		RESPONSE FACTOR			% DRIFT/DIFF		
COMPOUND	TYPE	STD	ICV	ICAL	ICV	MIN	ICV	LIMIT	
2,3,7,8-TCDF	A	10.000	9.60	0.9031472	0.8673636		-4.0	+/-16	
2,3,7,8-TCDD	A	10.000	9.16	1.2429820	1.1391550		-8.4	+/-22	
1,2,3,7,8-PeCDF	A	50.000	48.1	0.9232368	0.8878188		-3.8	+/-18	
2,3,4,7,8-PeCDF	A	50.000	52.4	0.9906617	1.0383580		4.8	+/-18	
1,2,3,7,8-PeCDD	A	50.000	46.3	1.1500860	1.0643950		-7.5	+/-22	
1,2,3,4,7,8-HxCDF	A	50.000	49.2	1.1281700	1.1110910		-1.5	+/-10	
1,2,3,6,7,8-HxCDF	A	50.000	50.2	1.0323580	1.0359630		0.3	+/-12	
2,3,4,6,7,8-HxCDF	A	50.000	54.3	1.0814700	1.1743690		8.6	+/-12	
1,2,3,7,8,9-HxCDF	A	50.000	49.3	0.9876148	0.9742539		-1.4	+/-10	
1,2,3,4,7,8-HxCDD	A	50.000	41.5	0.9600870	0.7973583		-16.9	+/-22	
1,2,3,6,7,8-HxCDD	A	50.000	48.1	0.8826935	0.8486134		-3.9	+/-22	
1,2,3,7,8,9-HxCDD	A	50.000	48.4	0.8037436	0.7777929		-3.2	+/-18	
1,2,3,4,6,7,8-HpCDF	A	50.000	49.9	1.1637090	1.1625200		-0.1	+/-10	
1,2,3,4,7,8,9-HpCDF	A	50.000	56.3	1.1036300	1.2436230		12.7	+/-14	
1,2,3,4,6,7,8-HpCDD	A	50.000	45.8	1.1996030	1.0988720		-8.4	+/-14	
OCDF	A	100.00	97.2	1.1302050	1.0988850		-2.8	+/-37	
OCDD	A	100.00	87.3	1.0586660	0.9242797		-12.7	+/-21	
13C12-2,3,7,8-TCDF	A	100.00	88.6	1.8353850	1.6258781		-11.4	+/-29	
13C12-2,3,7,8-TCDD	A	100.00	102	1.1095460	1.1290466		1.8	+/-18	
13C12-1,2,3,7,8-PeCDF	A	100.00	86.5	1.3765480	1.1905489		-13.5	+/-24	
13C12-2,3,4,7,8-PeCDF	A	100.00	84.2	1.3012340	1.0955524		-15.8	+/-23	
13C12-1,2,3,7,8-PeCDD	A	100.00	102	0.7536802	0.7690030		2.0	+/-38	
13C12-1,2,3,4,7,8-HxCDF	A	100.00	90.4	1.0906500	0.9855614		-9.6	+/-24	
13C12-1,2,3,6,7,8-HxCDF	A	100.00	87.0	1.3402290	1.1654679		-13.0	+/-30	
13C12-2,3,4,6,7,8-HxCDF	A	100.00	85.0	1.0934470	0.9294073		-15.0	+/-27	
13C12-1,2,3,7,8,9-HxCDF	A	100.00	87.0	0.9516050	0.8275265		-13.0	+/-26	
13C12-1,2,3,4,7,8-HxCDD	A	100.00	105	0.9598962	1.0117857		5.4	+/-15	
13C12-1,2,3,6,7,8-HxCDD	A	100.00	101	1.1592550	1.1706946		1.0	+/-15	
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	79.1	0.9849488	0.7795568		-20.9	+/-22	
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	74.0	0.7558011	0.5590656		-26.0	+/-23	*

* Values outside of QC limits

Analytical Resources, LLC
Analytical Chemists and Consultants

INITIAL CALIBRATION CHECK
EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Instrument ID:	AUTOSPEC01	Calibration:	GH00041
Lab File ID:	23121419A	Calibration Date:	08/11/2023
Sequence:	SLL0222	Injection Date:	12/15/23
Lab Sample ID:	SLL0222-ICV1	Injection Time:	00:35
Sequence Name:	CS3J3		

		CONC. (ng/mL)		RESPONSE FACTOR			% DRIFT/DIFF	
COMPOUND	TYPE	STD	ICV	ICAL	ICV	MIN	ICV	LIMIT
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	93.9	0.6292861	0.5906368		-6.1	+/-28
13C12-OCDD	A	200.00	154	0.6351422	0.4875327		-23.2	+/-52
37Cl4-2,3,7,8-TCDD	A	10.000	10.5	1.1573510	1.2198308		5.4	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\231214IH1.qld
Last Altered: Friday, December 15, 2023 13:51:44 Pacific Standard Time
Printed: Friday, December 15, 2023 13:54:43 Pacific Standard Time

Method: T:\Autospec\Methods\Dioxin231215.mdb 15 Dec 2023 13:28:43
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 09:45:18

ID: CS3J3, Name: 23121419, Date: 15-Dec-2023, Time: 00:35:35, 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	25.379	1.001	2.272e4	2.919e4	0.903	0.778	0.770	857	1088	3.11e5	3.90e5	362.6	358.2	NO	bb	bd	9.604
12378-PeCDF	29.515	1.000	1.189e5	7.561e4	0.923	1.573	1.550	1811	1478	1.76e6	1.09e6	971.8	738.8	NO	bb	bb	48.082
23478-PeCDF	30.864	1.001	1.283e5	8.109e4	0.991	1.582	1.550	1811	1478	1.82e6	1.14e6	1003.3	768.9	NO	bb	bb	52.407
123478-HxCDF	34.496	1.001	1.029e5	8.158e4	1.128	1.262	1.240	1967	1594	1.56e6	1.23e6	795.0	771.1	NO	bd	bd	49.243
234678-HxCDF	35.509	1.001	1.068e5	7.714e4	1.081	1.384	1.240	1967	1594	1.51e6	1.17e6	767.9	733.3	NO	bd	bb	54.295
123678-HxCDF	34.630	1.000	1.140e5	8.938e4	1.032	1.276	1.240	1967	1594	1.62e6	1.26e6	822.8	789.6	NO	db	db	50.175
123789-HxCDF	36.546	1.000	7.514e4	6.069e4	0.988	1.238	1.240	1967	1594	1.12e6	8.97e5	570.5	562.3	NO	bb	bb	49.324
1234678-HpCDF	38.395	1.000	7.790e4	7.478e4	1.164	1.042	1.050	1730	1511	1.23e6	1.14e6	708.2	755.9	NO	bb	bb	49.949
1234789-HpCDF	40.579	1.000	5.828e4	5.886e4	1.104	0.990	1.050	1730	1511	7.83e5	7.55e5	452.6	499.2	NO	bb	bd	56.342
OCDF	44.682	1.006	8.351e4	9.701e4	1.130	0.861	0.890	1205	2238	8.85e5	1.03e6	734.9	461.0	NO	bd	bd	97.229
2378-TCDD	26.014	1.001	2.098e4	2.636e4	1.243	0.796	0.770	1065	1372	2.97e5	3.66e5	279.2	266.7	NO	dd	bd	9.165
12378-PeCDD	31.109	1.000	9.035e4	6.030e4	1.150	1.498	1.550	1465	1450	1.23e6	8.43e5	840.8	581.8	NO	bd	bd	46.275
123478-HxCDD	35.632	1.001	7.457e4	6.135e4	0.960	1.215	1.240	996	1300	1.15e6	9.31e5	1157.6	715.7	NO	bd	bd	41.525
123678-HxCDD	35.743	1.000	9.245e4	7.493e4	0.883	1.234	1.240	996	1300	1.27e6	1.03e6	1273.2	794.6	NO	dd	db	48.070
123789-HxCDD	36.133	1.011	7.824e4	6.476e4	0.804	1.208	1.240	996	1300	1.08e6	8.80e5	1079.6	676.5	NO	bd	bd	48.386
1234678-HpCDD	39.854	1.000	5.471e4	5.464e4	1.200	1.001	1.050	1136	1566	7.28e5	7.02e5	640.7	448.3	NO	bd	bd	45.801
OCDD	44.444	1.000	7.274e4	7.910e4	1.059	0.920	0.890	1230	1699	7.87e5	8.92e5	639.8	525.3	NO	bd	bd	87.306
13C-2378-TCDF	25.365	1.007	2.572e5	3.413e5	1.835	0.754	0.770	846	831	3.40e6	4.49e6	4022.0	5401.9	NO	bb	bb	88.585
13C-12378-PeCDF	29.504	1.171	2.631e5	1.752e5	1.377	1.502	1.550	1795	1125	3.53e6	2.26e6	1963.8	2013.0	NO	bd	bb	86.488
13C-23478-PeCDF	30.841	1.224	2.415e5	1.618e5	1.301	1.492	1.550	1795	1125	3.31e6	2.16e6	1841.4	1916.6	NO	bb	bd	84.193
13C-123478-HxCDF	34.473	0.955	1.149e5	2.172e5	1.091	0.529	0.510	2379	1333	1.70e6	3.31e6	715.2	2481.6	NO	bd	bd	90.365
13C-123678-HxCDF	34.618	0.959	1.430e5	2.497e5	1.340	0.573	0.510	2379	1333	1.80e6	3.41e6	755.0	2560.7	NO	db	db	86.960
13C-234678-HxCDF	35.487	0.983	1.082e5	2.050e5	1.093	0.528	0.510	2379	1333	1.58e6	3.01e6	665.2	2256.5	NO	bb	bb	84.998
13C-123789-HxCDF	36.535	1.012	9.259e4	1.863e5	0.952	0.497	0.510	2379	1333	1.27e6	2.43e6	535.0	1824.5	NO	bd	bb	86.961
13C-1234678-HpCDF	38.384	1.063	7.841e4	1.843e5	0.985	0.426	0.440	1143	2241	1.18e6	2.67e6	1029.5	1190.5	NO	bb	bd	79.147
13C-1234789-HpCDF	40.568	1.123	5.786e4	1.305e5	0.756	0.443	0.440	1143	2241	7.46e5	1.65e6	652.6	738.0	NO	bb	bb	73.970
13C-1234-TCDD	25.195	0.000	1.618e5	2.063e5	1.000	0.785	0.770	1389	738	2.45e6	3.08e6	1761.4	4172.3	NO	bb	bb	100.000
13C-2378-TCDD	26.000	1.032	1.829e5	2.328e5	1.110	0.786	0.770	1389	738	2.61e6	3.29e6	1881.0	4457.2	NO	bb	bb	101.758
13C-12378-PeCDD	31.097	1.234	1.763e5	1.067e5	0.754	1.652	1.550	1316	813	2.51e6	1.52e6	1906.0	1869.2	NO	bb	bb	102.033
13C-123478-HxCDD	35.610	0.986	1.924e5	1.485e5	0.960	1.296	1.240	1106	1196	2.94e6	2.36e6	2662.5	1975.2	NO	bd	bd	105.406
13C-123678-HxCDD	35.732	0.990	2.184e5	1.760e5	1.159	1.241	1.240	1106	1196	3.09e6	2.49e6	2792.2	2082.6	NO	db	db	100.987
13C-1234678-HpCDD	39.843	1.103	1.046e5	9.447e4	0.629	1.107	1.050	1158	1170	1.56e6	1.41e6	1350.3	1209.6	NO	bb	bb	93.858
13C-OCDD	44.435	1.231	1.555e5	1.730e5	0.635	0.899	0.890	2295	1742	1.75e6	1.97e6	761.7	1130.4	NO	bb	bb	153.519
13C-123789-HxCDD	36.111	0.000	1.836e5	1.534e5	1.000	1.197	1.240	1106	1196	2.73e6	2.29e6	2469.9	1911.5	NO	bb	bb	100.000
37CL-2378-TCDD	26.014	1.033	4.490e4		1.157			945		6.21e5		657.0			bb		10.540

Dataset: T:\Autospec\Processed Data Batch\231214IH1.qld
Last Altered: Friday, December 15, 2023 13:51:44 Pacific Standard Time
Printed: Friday, December 15, 2023 13:54:43 Pacific Standard Time

ID: CS3J3, Name: 23121419, Date: 15-Dec-2023, Time: 00:35:35, 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	21.890	0.863	2.825e4	3.621e4	1.170	0.780	0.770	857	1088	4.37e5	5.51e5	510.2	506.2	NO	bb	bb	9.202
1289-TCDF	26.876	1.060	2.154e4	2.520e4	0.847	0.855	0.770	857	1088	2.92e5	3.50e5	341.0	322.2	NO	dd	bb	9.224
13468-PECDF	26.721	0.906	1.846e5	1.242e5	1.241	1.486	1.550	508	617	2.67e6	1.74e6	5263.8	2817.8	NO	bb	bb	56.768
12389-PECDF	31.900	1.081	1.143e5	7.219e4	0.880	1.583	1.550	1811	1478	1.57e6	9.93e5	864.8	672.0	NO	bb	bb	48.371
123468-HXCDF	32.802	0.952	1.146e5	9.083e4	1.206	1.262	1.240	1967	1594	1.72e6	1.35e6	875.8	845.5	NO	bb	bb	51.314
1368-TCDD	23.161	0.891	2.020e4	2.701e4	1.181	0.748	0.770	1065	1372	2.97e5	3.86e5	278.7	281.5	NO	bd	bd	9.619
1289-TCDD	26.608	1.023	1.810e4	2.317e4	0.963	0.781	0.770	1065	1372	2.23e5	2.97e5	209.3	216.4	NO	bb	bd	10.312
12479-PECDD	28.413	0.914	1.667e5	1.083e5	2.166	1.539	1.550	1465	1450	1.51e6	1.00e6	1031.0	690.7	NO	bd	bd	44.839
12389-PECDD	31.510	1.013	1.092e5	7.245e4	1.326	1.508	1.550	1465	1450	1.46e6	9.47e5	995.5	653.0	NO	bb	dd	48.396
124679-HXCDD	33.593	0.943	9.579e4	8.077e4	1.127	1.186	1.240	996	1300	1.35e6	1.14e6	1353.0	880.2	NO	bd	bb	45.967
1234679-HPCDD	38.841	0.975	7.152e4	6.905e4	1.303	1.036	1.050	1136	1566	1.03e6	1.01e6	904.8	646.2	NO	bd	bd	54.221
Total-tetrafurans			7.275e4		0.973			857		1.04e6							28.127
Total-penta1			1.846e5					508		2.67e6							56.768
Total-pentafurans			3.815e5		0.931			1811		5.45e6							157.426
Total-hexafurans			5.135e5		1.087			1967		7.54e6							254.350
Total-heptafurans			1.364e5		1.134			1730		2.01e6							106.448
Total-Furans			1.372e6		1.053			857		1.96e7							700.347
Total-tetradioxins			1.012e5		1.129			1065		1.28e6							49.229
Total-pentadioxins			3.662e5		1.548			1465		4.20e6							139.510
Total-hexadioxins			3.413e5		0.943			996		4.85e6							184.078
Total-heptadioxins			1.268e5		1.251			1136		1.77e6							100.465
Total-Dioxins			1.008e6		1.182			1065		1.29e7							560.589
Total-TEQ			2.380e6					1065		3.25e7							1260.936
FUNCTION1 PFK			4.766e5					347074		1.10e7							
FUNCTION2 PFK			1.832e5					130730		4.94e6							0.000
FUNCTION3 PFK			3.135e5					250367		7.78e6							0.000
FUNCTION4 PFK			4.563e5					200419		1.13e7							
FUNCTION5 PFK			7.257e4					126886		2.40e6							
FUNCTION1 HXCD...			2.229e2					442		3.35e3							0.000
FUNCTION1 HPCD...																	
FUNCTION2 HPCD...			7.379e1					576		2.15e3							0.000
FUNCTION3 OCDPE			0.000e0					391		0.00e0							
FUNCTION4 NCDPE			7.869e1					384		1.20e3							0.000
FUNCTION5 DCDPE			0.000e0					281		0.00e0							

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Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 09:45:18

ID: CS3J3, Name: 23121419, Date: 15-Dec-2023, Time: 00:35:35, 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	26.88	2.154e4	2.520e4	0.847	0.85	0.77	341.0	YES	NO	dd	bb	9.224
2	2378-TCDF	25.38	2.272e4	2.919e4	0.903	0.78	0.77	362.6	YES	NO	bb	bd	9.604
3	Total-tetrafurans	24.15	2.388e2	3.247e2	0.973	0.74	0.77	3.3	YES	NO	bd	bb	0.097
4	1368-TCDF	21.89	2.825e4	3.621e4	1.170	0.78	0.77	510.2	YES	NO	bb	bb	9.202

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	26.72	1.846e5	1.242e5	1.241	1.49	1.55	5263.8	YES	NO	bb	bb	56.768

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDF	31.90	1.143e5	7.219e4	0.880	1.58	1.55	864.8	YES	NO	bb	bb	48.371
2	23478-PeCDF	30.86	1.283e5	8.109e4	0.991	1.58	1.55	1003.3	YES	NO	bb	bb	52.407
3	12378-PeCDF	29.52	1.189e5	7.561e4	0.923	1.57	1.55	971.8	YES	NO	bb	bb	48.082
4	Total-pentafurans	28.38	2.003e4	1.353e4	0.931	1.48	1.55	166.6	YES	NO	bb	bb	8.566

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123678-HxCDF	34.63	1.140e5	8.938e4	1.032	1.28	1.24	822.8	YES	NO	db	db	50.175
2	123478-HxCDF	34.50	1.029e5	8.158e4	1.128	1.26	1.24	795.0	YES	NO	bd	bd	49.243
3	123468-HXCDF	32.80	1.146e5	9.083e4	1.206	1.26	1.24	875.8	YES	NO	bb	bb	51.314
4	123789-HxCDF	36.55	7.514e4	6.069e4	0.988	1.24	1.24	570.5	YES	NO	bb	bb	49.324
5	234678-HxCDF	35.51	1.068e5	7.714e4	1.081	1.38	1.24	767.9	YES	NO	bd	bb	54.295

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	40.58	5.828e4	5.886e4	1.104	0.99	1.05	452.6	YES	NO	bb	bd	56.342
2	Total-heptafurans	39.03	1.903e2	2.092e2	1.134	0.91	1.05	3.2	YES	NO	bd	bb	0.156
3	1234678-HpCDF	38.40	7.790e4	7.478e4	1.164	1.04	1.05	708.2	YES	NO	bb	bb	49.949

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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	26.88	2.154e4	2.520e4	0.847	0.85	0.77	341.0	YES	NO	dd	bb	9.224
2	2378-TCDF	25.38	2.272e4	2.919e4	0.903	0.78	0.77	362.6	YES	NO	bb	bd	9.604
3	Total-tetrafurans	24.15	2.388e2	3.247e2	0.973	0.74	0.77	3.3	YES	NO	bd	bb	0.097
4	1368-TCDF	21.89	2.825e4	3.621e4	1.170	0.78	0.77	510.2	YES	NO	bb	bb	9.202
5	12389-PECDF	31.90	1.143e5	7.219e4	0.880	1.58	1.55	864.8	YES	NO	bb	bb	48.371
6	23478-PeCDF	30.86	1.283e5	8.109e4	0.991	1.58	1.55	1003.3	YES	NO	bb	bb	52.407
7	12378-PeCDF	29.52	1.189e5	7.561e4	0.923	1.57	1.55	971.8	YES	NO	bb	bb	48.082
8	Total-pentafurans	28.38	2.003e4	1.353e4	0.931	1.48	1.55	166.6	YES	NO	bb	bb	8.566
9	123678-HxCDF	34.63	1.140e5	8.938e4	1.032	1.28	1.24	822.8	YES	NO	db	db	50.175
10	123478-HxCDF	34.50	1.029e5	8.158e4	1.128	1.26	1.24	795.0	YES	NO	bd	bd	49.243
11	123468-HXCDF	32.80	1.146e5	9.083e4	1.206	1.26	1.24	875.8	YES	NO	bb	bb	51.314
12	123789-HxCDF	36.55	7.514e4	6.069e4	0.988	1.24	1.24	570.5	YES	NO	bb	bb	49.324
13	234678-HxCDF	35.51	1.068e5	7.714e4	1.081	1.38	1.24	767.9	YES	NO	bd	bb	54.295
14	1234789-HpCDF	40.58	5.828e4	5.886e4	1.104	0.99	1.05	452.6	YES	NO	bb	bd	56.342
15	Total-heptafurans	39.03	1.903e2	2.092e2	1.134	0.91	1.05	3.2	YES	NO	bd	bb	0.156
16	1234678-HpCDF	38.40	7.790e4	7.478e4	1.164	1.04	1.05	708.2	YES	NO	bb	bb	49.949
17	OCDF	44.68	8.351e4	9.701e4	1.130	0.86	0.89	734.9	YES	NO	bd	bd	97.229
18	13468-PECDF	26.72	1.846e5	1.242e5	1.241	1.49	1.55	5263.8	YES	NO	bb	bb	56.768

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1368-TCDD	23.16	2.020e4	2.701e4	1.181	0.75	0.77	278.7	YES	NO	bd	bd	9.619
2	1289-TCDD	26.61	1.810e4	2.317e4	0.963	0.78	0.77	209.3	YES	NO	bb	bd	10.312
3	2378-TCDD	26.01	2.098e4	2.636e4	1.243	0.80	0.77	279.2	YES	NO	dd	bd	9.165
4	Total-tetradioxins	25.69	3.204e4	4.003e4	1.129	0.80	0.77	293.6	YES	NO	bd	bb	15.361
5	Total-tetradioxins	25.21	9.835e3	1.256e4	1.129	0.78	0.77	138.6	YES	NO	bb	bb	4.773

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12378-PeCDD	31.11	9.035e4	6.030e4	1.150	1.50	1.55	840.8	YES	NO	bd	bd	46.275
2	12479-PECDD	28.41	1.667e5	1.083e5	2.166	1.54	1.55	1031.0	YES	NO	bd	bd	44.839
3	12389-PECDD	31.51	1.092e5	7.245e4	1.326	1.51	1.55	995.5	YES	NO	bb	dd	48.396

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HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-hexadioxins	36.40	2.520e2	2.008e2	0.943	1.26	1.24	8.8	YES	NO	db	dd	0.131
2	123789-HxCDD	36.13	7.824e4	6.476e4	0.804	1.21	1.24	1079.6	YES	NO	bd	bd	48.386
3	123678-HxCDD	35.74	9.245e4	7.493e4	0.883	1.23	1.24	1273.2	YES	NO	dd	db	48.070
4	123478-HxCDD	35.63	7.457e4	6.135e4	0.960	1.22	1.24	1157.6	YES	NO	bd	bd	41.525
5	124679-HXCDD	33.59	9.579e4	8.077e4	1.127	1.19	1.24	1353.0	YES	NO	bd	bb	45.967

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234679-HPCDD	38.84	7.152e4	6.905e4	1.303	1.04	1.05	904.8	YES	NO	bd	bd	54.221
2	Total-heptadioxins	40.28	4.878e2	4.511e2	1.251	1.08	1.05	8.5	YES	NO	dd	dd	0.377
3	1234678-HpCDD	39.85	5.471e4	5.464e4	1.200	1.00	1.05	640.7	YES	NO	bd	bd	45.801
4	Total-heptadioxins	39.40	8.681e1	7.551e1	1.251	1.15	1.05	2.0	NO	NO	bb	dd	0.065

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	23.16	2.020e4	2.701e4	1.181	0.75	0.77	278.7	YES	NO	bd	bd	9.619
2	1289-TCDD	26.61	1.810e4	2.317e4	0.963	0.78	0.77	209.3	YES	NO	bb	bd	10.312
3	2378-TCDD	26.01	2.098e4	2.636e4	1.243	0.80	0.77	279.2	YES	NO	dd	bd	9.165
4	Total-tetradioxins	25.69	3.204e4	4.003e4	1.129	0.80	0.77	293.6	YES	NO	bd	bb	15.361
5	Total-tetradioxins	25.21	9.835e3	1.256e4	1.129	0.78	0.77	138.6	YES	NO	bb	bb	4.773
6	12378-PeCDD	31.11	9.035e4	6.030e4	1.150	1.50	1.55	840.8	YES	NO	bd	bd	46.275
7	12479-PECDD	28.41	1.667e5	1.083e5	2.166	1.54	1.55	1031.0	YES	NO	bd	bd	44.839
8	12389-PECDD	31.51	1.092e5	7.245e4	1.326	1.51	1.55	995.5	YES	NO	bb	dd	48.396
9	Total-hexadioxins	36.40	2.520e2	2.008e2	0.943	1.26	1.24	8.8	YES	NO	db	dd	0.131
10	123789-HxCDD	36.13	7.824e4	6.476e4	0.804	1.21	1.24	1079.6	YES	NO	bd	bd	48.386
11	123678-HxCDD	35.74	9.245e4	7.493e4	0.883	1.23	1.24	1273.2	YES	NO	dd	db	48.070
12	123478-HxCDD	35.63	7.457e4	6.135e4	0.960	1.22	1.24	1157.6	YES	NO	bd	bd	41.525
13	124679-HXCDD	33.59	9.579e4	8.077e4	1.127	1.19	1.24	1353.0	YES	NO	bd	bb	45.967
14	1234679-HPCDD	38.84	7.152e4	6.905e4	1.303	1.04	1.05	904.8	YES	NO	bd	bd	54.221
15	Total-heptadioxins	40.28	4.878e2	4.511e2	1.251	1.08	1.05	8.5	YES	NO	dd	dd	0.377
16	1234678-HpCDD	39.85	5.471e4	5.464e4	1.200	1.00	1.05	640.7	YES	NO	bd	bd	45.801
17	Total-heptadioxins	39.40	8.681e1	7.551e1	1.251	1.15	1.05	2.0	NO	NO	bb	dd	0.065
18	OCDD	44.44	7.274e4	7.910e4	1.059	0.92	0.89	639.8	YES	NO	bd	bd	87.306

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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	26.88	2.154e4	2.520e4	0.847	0.85	0.77	341.0	YES	NO	dd	bb	9.224
2	2378-TCDF	25.38	2.272e4	2.919e4	0.903	0.78	0.77	362.6	YES	NO	bb	bd	9.604
3	Total-tetrafurans	24.15	2.388e2	3.247e2	0.973	0.74	0.77	3.3	YES	NO	bd	bb	0.097
4	1368-TCDF	21.89	2.825e4	3.621e4	1.170	0.78	0.77	510.2	YES	NO	bb	bb	9.202
5	12389-PECDF	31.90	1.143e5	7.219e4	0.880	1.58	1.55	864.8	YES	NO	bb	bb	48.371
6	23478-PeCDF	30.86	1.283e5	8.109e4	0.991	1.58	1.55	1003.3	YES	NO	bb	bb	52.407
7	12378-PeCDF	29.52	1.189e5	7.561e4	0.923	1.57	1.55	971.8	YES	NO	bb	bb	48.082
8	Total-pentafurans	28.38	2.003e4	1.353e4	0.931	1.48	1.55	166.6	YES	NO	bb	bb	8.566
9	123678-HxCDF	34.63	1.140e5	8.938e4	1.032	1.28	1.24	822.8	YES	NO	db	db	50.175
10	123478-HxCDF	34.50	1.029e5	8.158e4	1.128	1.26	1.24	795.0	YES	NO	bd	bd	49.243
11	123468-HXCDF	32.80	1.146e5	9.083e4	1.206	1.26	1.24	875.8	YES	NO	bb	bb	51.314
12	123789-HxCDF	36.55	7.514e4	6.069e4	0.988	1.24	1.24	570.5	YES	NO	bb	bb	49.324
13	234678-HxCDF	35.51	1.068e5	7.714e4	1.081	1.38	1.24	767.9	YES	NO	bd	bb	54.295
14	1234789-HpCDF	40.58	5.828e4	5.886e4	1.104	0.99	1.05	452.6	YES	NO	bb	bd	56.342
15	Total-heptafurans	39.03	1.903e2	2.092e2	1.134	0.91	1.05	3.2	YES	NO	bd	bb	0.156
16	1234678-HpCDF	38.40	7.790e4	7.478e4	1.164	1.04	1.05	708.2	YES	NO	bb	bb	49.949
17	OCDF	44.68	8.351e4	9.701e4	1.130	0.86	0.89	734.9	YES	NO	bd	bd	97.229
18	13468-PECDF	26.72	1.846e5	1.242e5	1.241	1.49	1.55	5263.8	YES	NO	bb	bb	56.768
19	1368-TCDD	23.16	2.020e4	2.701e4	1.181	0.75	0.77	278.7	YES	NO	bd	bd	9.619
20	1289-TCDD	26.61	1.810e4	2.317e4	0.963	0.78	0.77	209.3	YES	NO	bb	bd	10.312
21	2378-TCDD	26.01	2.098e4	2.636e4	1.243	0.80	0.77	279.2	YES	NO	dd	bd	9.165
22	Total-tetradioxins	25.69	3.204e4	4.003e4	1.129	0.80	0.77	293.6	YES	NO	bd	bb	15.361
23	Total-tetradioxins	25.21	9.835e3	1.256e4	1.129	0.78	0.77	138.6	YES	NO	bb	bb	4.773
24	12378-PeCDD	31.11	9.035e4	6.030e4	1.150	1.50	1.55	840.8	YES	NO	bd	bd	46.275
25	12479-PECDD	28.41	1.667e5	1.083e5	2.166	1.54	1.55	1031.0	YES	NO	bd	bd	44.839
26	12389-PECDD	31.51	1.092e5	7.245e4	1.326	1.51	1.55	995.5	YES	NO	bb	dd	48.396
27	Total-hexadioxins	36.40	2.520e2	2.008e2	0.943	1.26	1.24	8.8	YES	NO	db	dd	0.131
28	123789-HxCDD	36.13	7.824e4	6.476e4	0.804	1.21	1.24	1079.6	YES	NO	bd	bd	48.386
29	123678-HxCDD	35.74	9.245e4	7.493e4	0.883	1.23	1.24	1273.2	YES	NO	dd	db	48.070
30	123478-HxCDD	35.63	7.457e4	6.135e4	0.960	1.22	1.24	1157.6	YES	NO	bd	bd	41.525
31	124679-HXCDD	33.59	9.579e4	8.077e4	1.127	1.19	1.24	1353.0	YES	NO	bd	bb	45.967
32	1234679-HPCDD	38.84	7.152e4	6.905e4	1.303	1.04	1.05	904.8	YES	NO	bd	bd	54.221
33	Total-heptadioxins	40.28	4.878e2	4.511e2	1.251	1.08	1.05	8.5	YES	NO	dd	dd	0.377
34	1234678-HpCDD	39.85	5.471e4	5.464e4	1.200	1.00	1.05	640.7	YES	NO	bd	bd	45.801
35	Total-heptadioxins	39.40	8.681e1	7.551e1	1.251	1.15	1.05	2.0	NO	NO	bb	dd	0.065
36	OCDD	44.44	7.274e4	7.910e4	1.059	0.92	0.89	639.8	YES	NO	bd	bd	87.306

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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	21.96	5.463e3					0.7	NO		bb		
2	FUNCTION1 PFK	21.82	9.568e3					0.9	NO		bb		
3	FUNCTION1 PFK	21.38	1.232e4					1.0	NO		db		
4	FUNCTION1 PFK	21.32	2.258e4					1.2	NO		bd		
5	FUNCTION1 PFK	21.24	5.661e3					1.2	NO		bb		
6	FUNCTION1 PFK	21.18	2.315e4					1.3	NO		bb		
7	FUNCTION1 PFK	25.41	7.008e3					0.7	NO		bd		
8	FUNCTION1 PFK	25.22	1.542e4					0.9	NO		bb		
9	FUNCTION1 PFK	24.79	7.605e3					0.7	NO		bb		
10	FUNCTION1 PFK	24.55	1.270e4					1.2	NO		db		
11	FUNCTION1 PFK	24.49	1.937e4					1.5	NO		bd		
12	FUNCTION1 PFK	24.21	7.494e3					0.7	NO		db		
13	FUNCTION1 PFK	24.15	1.347e4					1.1	NO		bd		
14	FUNCTION1 PFK	23.40	1.668e4					1.4	NO		bb		
15	FUNCTION1 PFK	23.12	3.608e4					1.4	NO		bb		
16	FUNCTION1 PFK	23.03	1.118e4					1.2	NO		db		
17	FUNCTION1 PFK	22.95	3.045e4					1.3	NO		bd		
18	FUNCTION1 PFK	22.81	6.497e3					0.6	NO		bb		
19	FUNCTION1 PFK	22.75	7.902e3					0.6	NO		bb		
20	FUNCTION1 PFK	22.58	1.924e4					1.3	NO		bb		
21	FUNCTION1 PFK	22.53	1.839e3					0.4	NO		bb		
22	FUNCTION1 PFK	22.21	1.883e4					1.2	NO		bb		
23	FUNCTION1 PFK	27.44	1.440e4					1.2	NO		bb		
24	FUNCTION1 PFK	27.17	1.749e4					1.3	NO		bb		
25	FUNCTION1 PFK	26.92	2.940e4					1.5	NO		bb		
26	FUNCTION1 PFK	26.68	3.569e3					0.7	NO		bb		
27	FUNCTION1 PFK	26.62	2.920e3					0.6	NO		bb		
28	FUNCTION1 PFK	26.45	6.462e3					0.6	NO		bb		
29	FUNCTION1 PFK	26.11	5.974e3					0.6	NO		bb		
30	FUNCTION1 PFK	25.60	6.755e4					1.7	NO		bb		
31	FUNCTION1 PFK	25.49	1.832e4					1.0	NO		db		

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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	27.96	1.375e4					2.2	NO		dd		0.000
2	FUNCTION2 PFK	27.91	1.141e4					2.5	NO		dd		0.000
3	FUNCTION2 PFK	27.86	1.520e4					2.8	NO		dd		0.000
4	FUNCTION2 PFK	27.82	6.007e3					2.0	NO		bd		0.000
5	FUNCTION2 PFK	27.77	6.931e3					2.0	NO		db		0.000
6	FUNCTION2 PFK	27.72	7.121e3					0.9	NO		bd		0.000
7	FUNCTION2 PFK	31.22	1.100e4					1.9	NO		bd		0.000
8	FUNCTION2 PFK	30.95	5.359e3					1.5	NO		db		0.000
9	FUNCTION2 PFK	30.85	6.743e3					1.3	NO		bd		0.000
10	FUNCTION2 PFK	30.71	4.294e3					1.4	NO		bb		0.000
11	FUNCTION2 PFK	30.31	6.294e3					0.9	NO		bb		0.000
12	FUNCTION2 PFK	30.08	1.044e4					1.2	NO		bb		0.000
13	FUNCTION2 PFK	29.98	9.818e3					1.8	NO		bb		0.000
14	FUNCTION2 PFK	29.79	3.421e3					1.2	NO		bb		0.000
15	FUNCTION2 PFK	29.13	1.987e3					0.6	NO		bb		0.000
16	FUNCTION2 PFK	29.04	9.165e3					1.5	NO		bb		0.000
17	FUNCTION2 PFK	28.95	3.546e3					1.2	NO		bb		0.000
18	FUNCTION2 PFK	28.64	1.030e4					1.2	NO		bb		0.000
19	FUNCTION2 PFK	28.52	1.984e3					0.8	NO		bb		0.000
20	FUNCTION2 PFK	28.36	1.684e3					0.8	NO		db		0.000
21	FUNCTION2 PFK	28.32	8.550e3					1.7	NO		bd		0.000
22	FUNCTION2 PFK	28.06	5.831e3					1.6	NO		db		0.000
23	FUNCTION2 PFK	32.26	3.384e3					0.8	NO		bb		0.000
24	FUNCTION2 PFK	31.63	6.346e2					0.4	NO		bb		0.000
25	FUNCTION2 PFK	31.54	5.967e3					1.0	NO		bb		0.000
26	FUNCTION2 PFK	31.45	1.976e3					0.9	NO		bb		0.000
27	FUNCTION2 PFK	31.35	1.036e4					1.8	NO		db		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	34.04	4.052e3					0.7	NO		bb		0.000
2	FUNCTION3 PFK	33.99	1.187e3					0.4	NO		bb		0.000
3	FUNCTION3 PFK	33.92	9.878e3					1.1	NO		bb		0.000
4	FUNCTION3 PFK	33.59	4.192e3					0.8	NO		bb		0.000
5	FUNCTION3 PFK	33.20	1.855e4					1.3	NO		bb		0.000
6	FUNCTION3 PFK	32.95	1.327e4					1.5	NO		bb		0.000
7	FUNCTION3 PFK	32.71	8.984e3					1.2	NO		db		0.000
8	FUNCTION3 PFK	32.64	4.295e4					1.9	NO		bd		0.000
9	FUNCTION3 PFK	32.53	1.411e4					1.9	NO		db		0.000
10	FUNCTION3 PFK	32.49	2.297e3					0.6	NO		bd		0.000
11	FUNCTION3 PFK	37.10	1.347e4					1.4	NO		bb		0.000
12	FUNCTION3 PFK	36.84	1.007e4					1.2	NO		bb		0.000
13	FUNCTION3 PFK	36.60	1.768e4					2.0	NO		bb		0.000
14	FUNCTION3 PFK	36.42	1.073e3					0.4	NO		bb		0.000
15	FUNCTION3 PFK	36.23	9.150e3					1.3	NO		db		0.000
16	FUNCTION3 PFK	36.17	1.599e4					1.4	NO		dd		0.000
17	FUNCTION3 PFK	36.11	1.540e4					1.3	NO		bd		0.000
18	FUNCTION3 PFK	36.03	1.258e3					0.5	NO		bb		0.000
19	FUNCTION3 PFK	35.99	1.881e3					0.5	NO		bb		0.000
20	FUNCTION3 PFK	35.84	2.705e4					2.3	NO		bb		0.000
21	FUNCTION3 PFK	35.70	2.080e4					1.2	NO		bb		0.000
22	FUNCTION3 PFK	35.58	2.643e3					0.5	NO		bb		0.000
23	FUNCTION3 PFK	35.35	1.332e4					1.2	NO		bb		0.000
24	FUNCTION3 PFK	34.75	6.496e3					1.1	NO		bb		0.000
25	FUNCTION3 PFK	34.27	2.188e4					1.9	NO		bb		0.000
26	FUNCTION3 PFK	34.15	1.591e4					1.6	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	38.84	6.130e3					1.4	NO		db		
2	FUNCTION4 PFK	38.80	5.624e3					1.3	NO		dd		
3	FUNCTION4 PFK	38.76	5.537e3					1.1	NO		dd		
4	FUNCTION4 PFK	38.64	1.661e4					1.4	NO		dd		
5	FUNCTION4 PFK	38.61	7.219e3					1.4	NO		dd		
6	FUNCTION4 PFK	38.55	9.179e3					1.4	NO		bd		
7	FUNCTION4 PFK	38.48	7.317e3					0.9	NO		bb		
8	FUNCTION4 PFK	38.08	5.791e2					0.3	NO		bb		
9	FUNCTION4 PFK	38.02	8.734e3					1.2	NO		db		
10	FUNCTION4 PFK	37.96	1.188e4					2.0	NO		dd		
11	FUNCTION4 PFK	37.90	1.358e4					1.6	NO		bd		
12	FUNCTION4 PFK	37.80	2.772e4					2.1	NO		db		
13	FUNCTION4 PFK	37.73	5.361e3					1.2	NO		bd		
14	FUNCTION4 PFK	37.68	2.177e3					1.0	NO		bb		
15	FUNCTION4 PFK	37.64	5.122e3					1.0	NO		bb		
16	FUNCTION4 PFK	40.61	2.217e4					1.8	NO		bb		
17	FUNCTION4 PFK	40.42	1.805e3					0.5	NO		bb		
18	FUNCTION4 PFK	40.38	4.916e3					1.1	NO		db		
19	FUNCTION4 PFK	40.34	1.076e4					1.4	NO		dd		
20	FUNCTION4 PFK	40.24	1.632e4					1.3	NO		bd		
21	FUNCTION4 PFK	40.12	3.406e3					0.4	NO		bb		
22	FUNCTION4 PFK	40.03	7.440e3					1.2	NO		db		
23	FUNCTION4 PFK	39.95	9.004e3					1.2	NO		bd		
24	FUNCTION4 PFK	39.90	5.753e3					0.9	NO		bb		
25	FUNCTION4 PFK	39.74	6.011e3					0.6	NO		db		
26	FUNCTION4 PFK	39.63	1.261e4					1.5	NO		bd		
27	FUNCTION4 PFK	39.54	4.582e3					0.6	NO		bb		
28	FUNCTION4 PFK	39.36	1.664e4					1.4	NO		db		
29	FUNCTION4 PFK	39.29	1.485e4					1.6	NO		bd		
30	FUNCTION4 PFK	39.16	9.363e3					1.1	NO		bb		
31	FUNCTION4 PFK	39.02	1.069e4					1.5	NO		bb		
32	FUNCTION4 PFK	42.81	2.081e4					1.8	NO		dd		
33	FUNCTION4 PFK	42.73	1.839e4					1.6	NO		bd		
34	FUNCTION4 PFK	42.67	1.130e3					0.5	NO		bb		
35	FUNCTION4 PFK	42.54	1.144e4					1.5	NO		bb		
36	FUNCTION4 PFK	42.42	3.876e3					0.7	NO		bb		
37	FUNCTION4 PFK	42.33	5.336e3					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	42.23	1.005e4					1.4	NO		db		
39	FUNCTION4 PFK	42.18	3.640e3					0.7	NO		bd		
40	FUNCTION4 PFK	42.06	4.293e3					0.8	NO		bb		
41	FUNCTION4 PFK	41.85	1.744e4					1.6	NO		bb		
42	FUNCTION4 PFK	41.51	1.002e4					1.4	NO		db		
43	FUNCTION4 PFK	41.47	4.622e3					0.8	NO		bd		
44	FUNCTION4 PFK	41.31	8.041e3					0.9	NO		bb		
45	FUNCTION4 PFK	41.22	9.502e3					1.1	NO		bb		
46	FUNCTION4 PFK	40.91	2.989e4					1.6	NO		bb		
47	FUNCTION4 PFK	40.83	9.109e2					0.3	NO		bb		
48	FUNCTION4 PFK	42.92	7.800e3					1.2	NO		db		

PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	45.26	4.304e3					1.8	NO		bb		
2	FUNCTION5 PFK	45.14	8.438e2					0.5	NO		bb		
3	FUNCTION5 PFK	45.01	9.267e3					1.9	NO		bb		
4	FUNCTION5 PFK	44.96	7.328e3					2.1	NO		db		
5	FUNCTION5 PFK	44.90	4.087e3					1.2	NO		bd		
6	FUNCTION5 PFK	44.84	3.737e3					0.9	NO		bb		
7	FUNCTION5 PFK	44.62	5.129e3					0.8	NO		bb		
8	FUNCTION5 PFK	44.44	2.457e3					1.0	NO		bb		
9	FUNCTION5 PFK	44.37	1.179e3					0.6	NO		bb		
10	FUNCTION5 PFK	44.33	1.083e3					0.6	NO		bb		
11	FUNCTION5 PFK	43.62	4.075e3					1.2	NO		bb		
12	FUNCTION5 PFK	43.54	6.875e3					1.2	NO		bb		
13	FUNCTION5 PFK	43.43	8.007e3					2.3	NO		bb		
14	FUNCTION5 PFK	43.25	1.974e3					0.6	NO		bb		
15	FUNCTION5 PFK	45.73	7.939e3					1.3	NO		bb		
16	FUNCTION5 PFK	45.40	4.286e3					1.0	NO		bb		

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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...	24.35	7.414e1					2.0	NO		db		0.000
2	FUNCTION1 HXCD...	24.21	7.478e1					2.6	NO		bd		0.000
3	FUNCTION1 HXCD...	21.85	7.401e1					3.0	YES		bb		0.000

ETHERS2

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

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	30.73	7.379e1					3.7	YES		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	42.02	7.869e1					3.1	YES		bb		0.000

ETHERS6

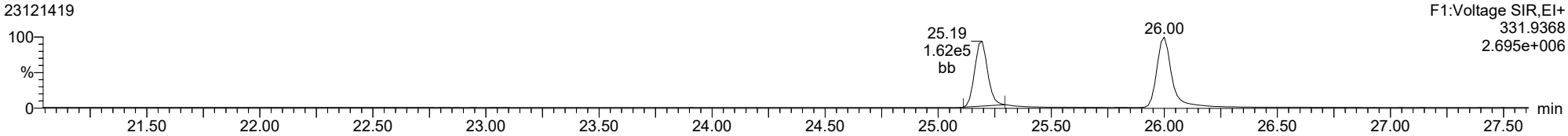
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1													

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Printed: Friday, December 15, 2023 13:54:43 Pacific Standard Time

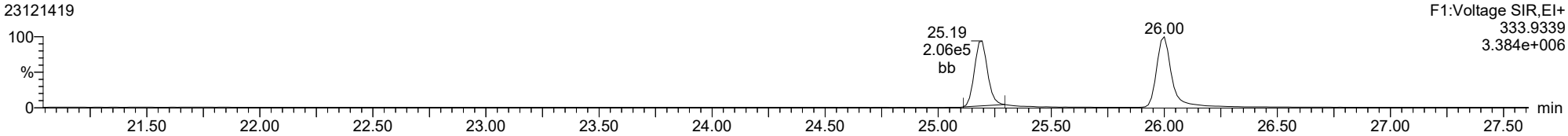
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ID: CS3J3, Name: 23121419, Date: 15-Dec-2023, Time: 00:35:35, Conditions: AUTOSPEC01, User: pk

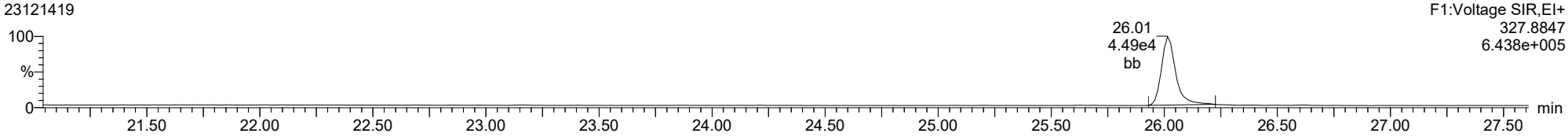
13C-1234-TCDD



13C-1234-TCDD



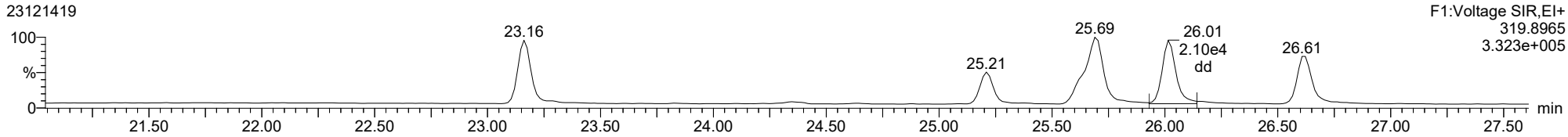
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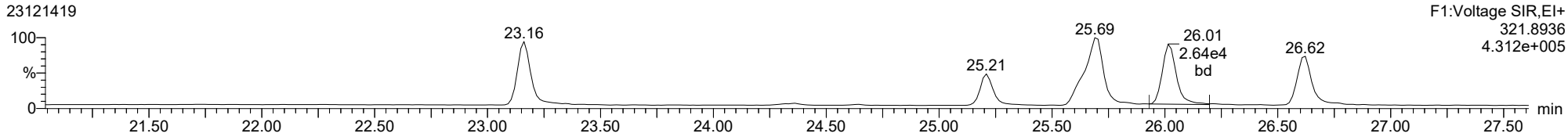
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ID: CS3J3, Name: 23121419, Date: 15-Dec-2023, Time: 00:35:35, Conditions: AUTOSPEC01, User: pk

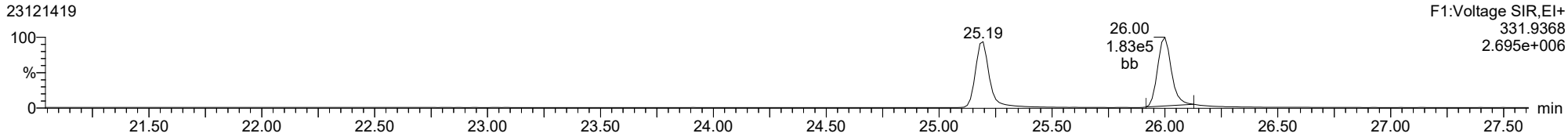
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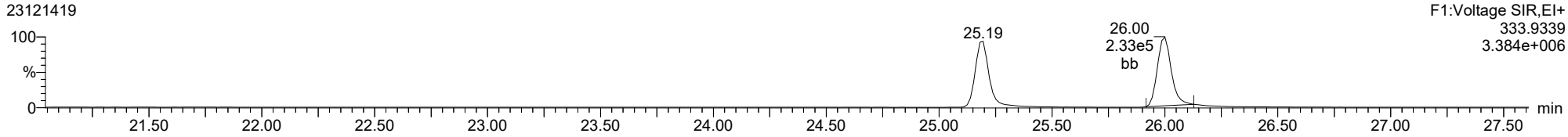
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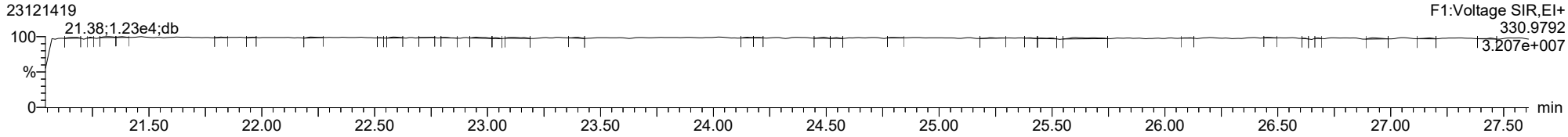
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13C-2378-TCDD

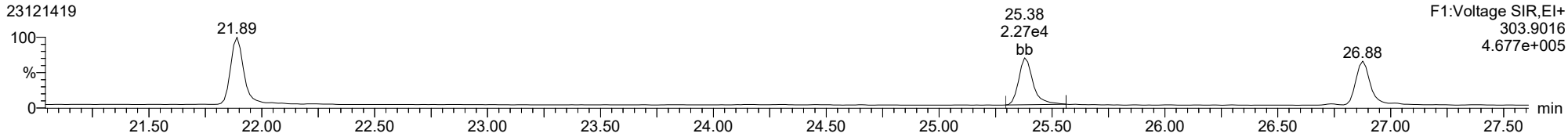


FUNCTION1 PFK

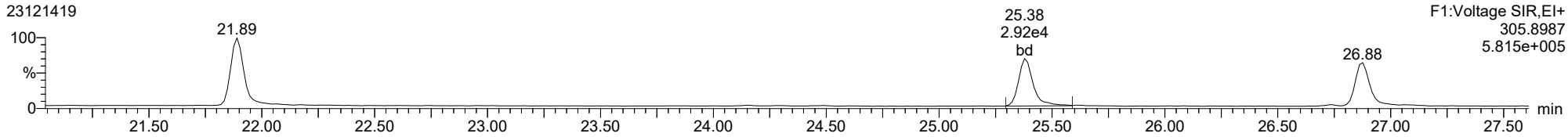


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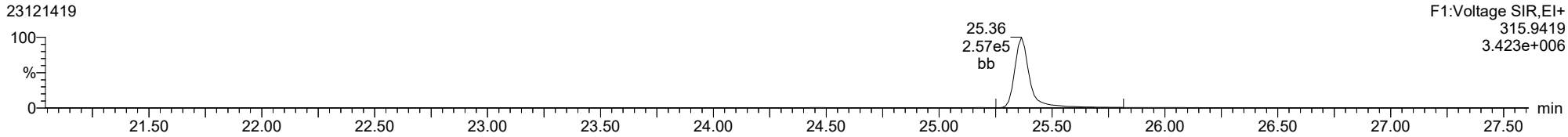
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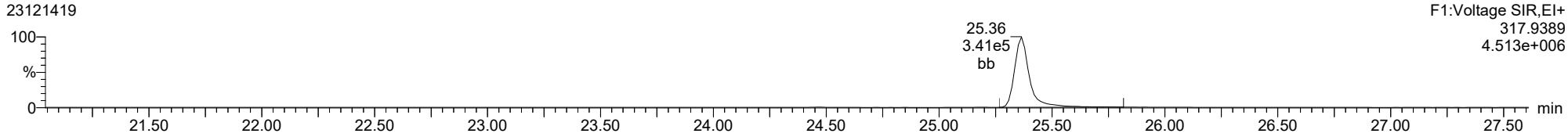
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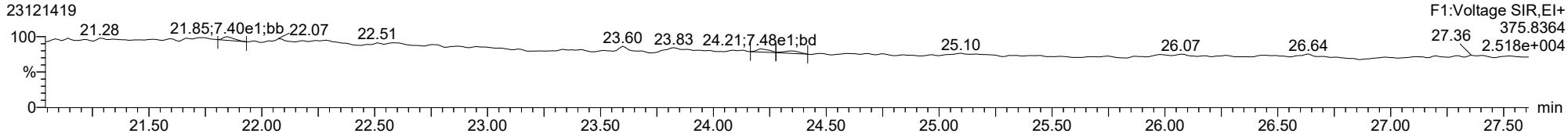
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13C-2378-TCDF

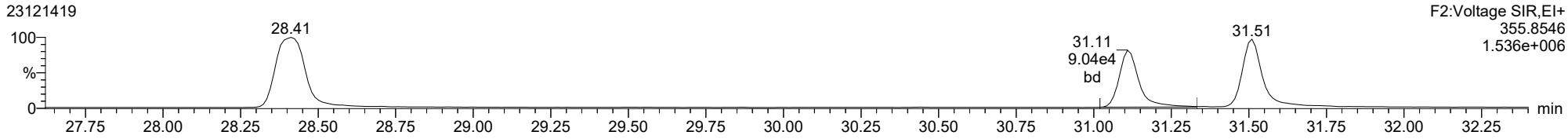


FUNCTION1 HXCDPE

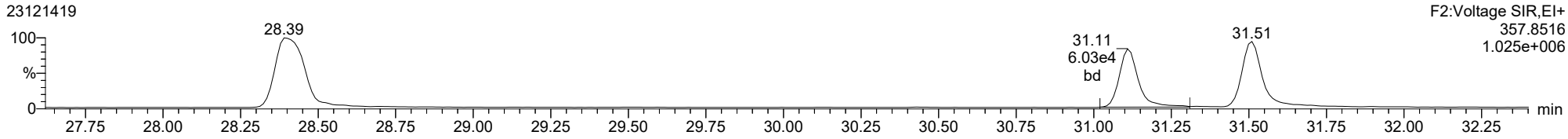


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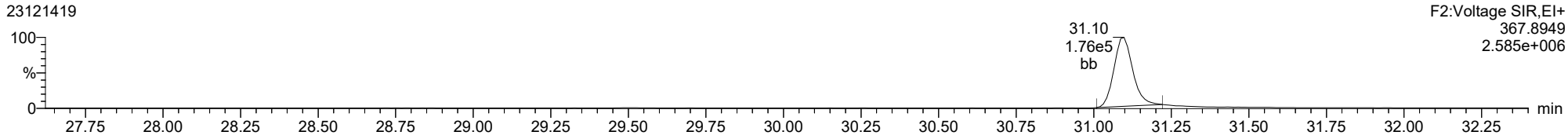
12378-PeCDD



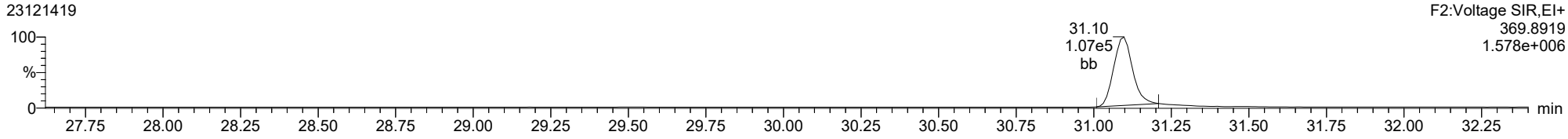
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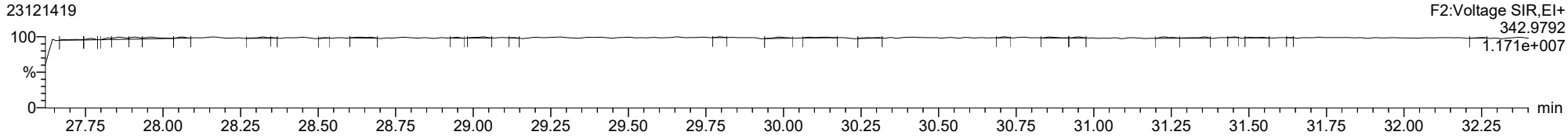
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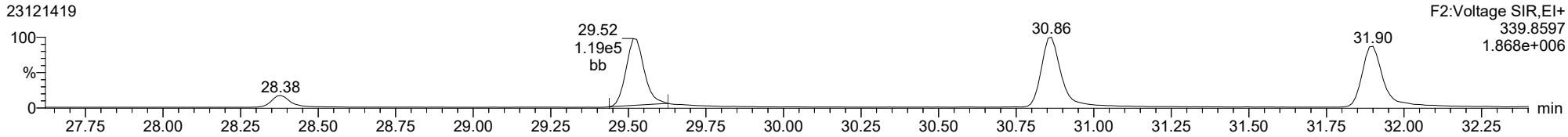


FUNCTION2 PFK

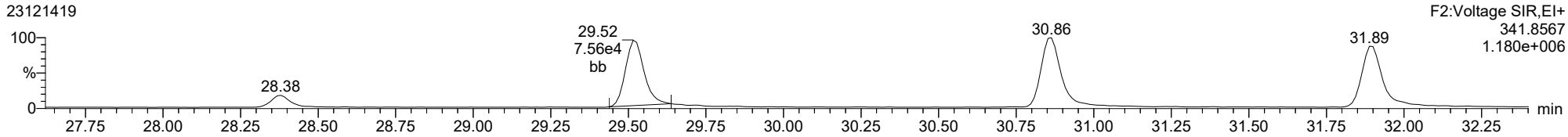


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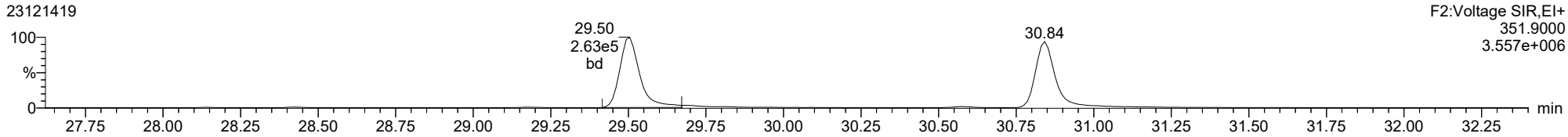
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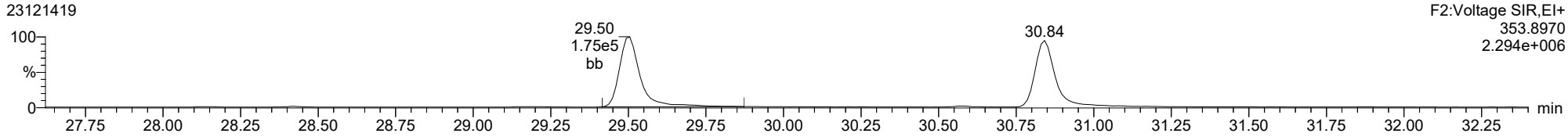
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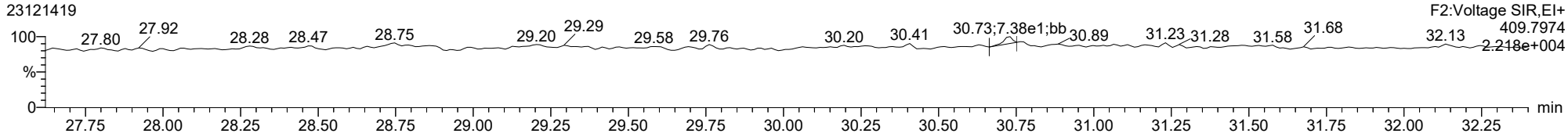
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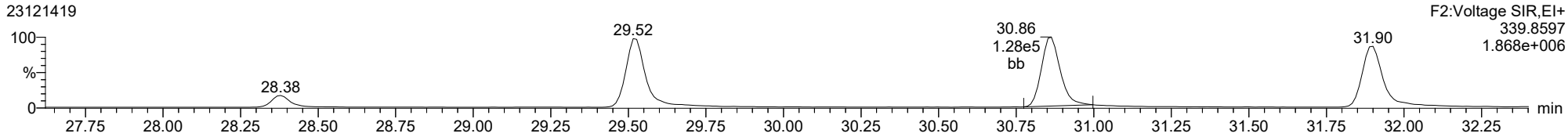


FUNCTION2 HPCDPE

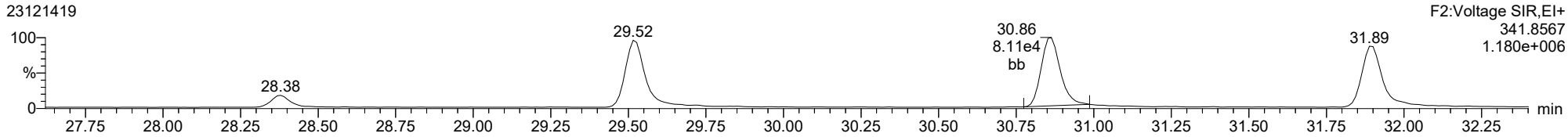


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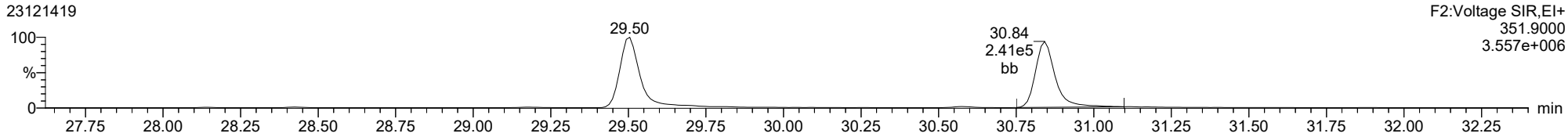
23478-PeCDF



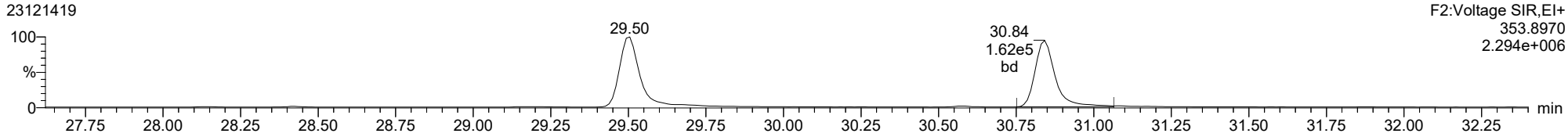
23478-PeCDF



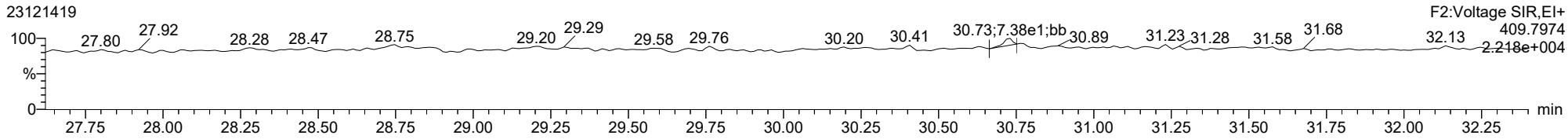
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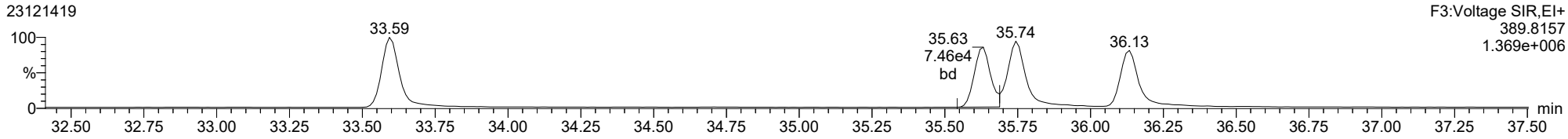


FUNCTION2 HPCDPE

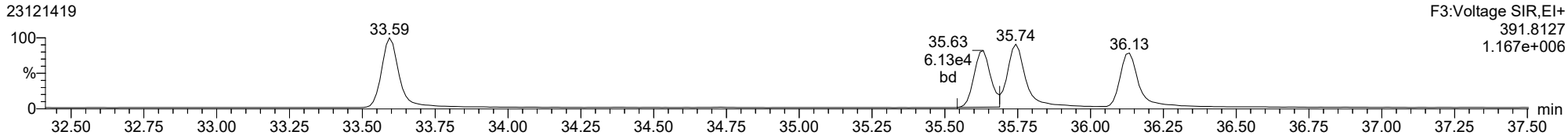


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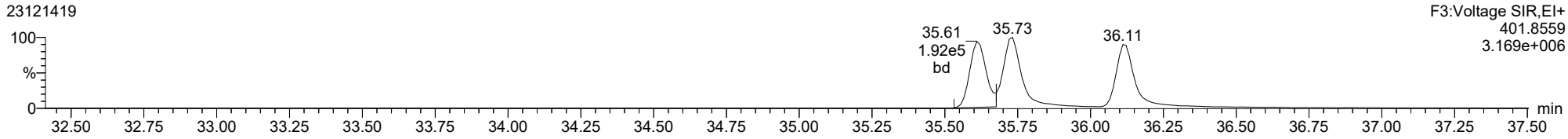
123478-HxCDD



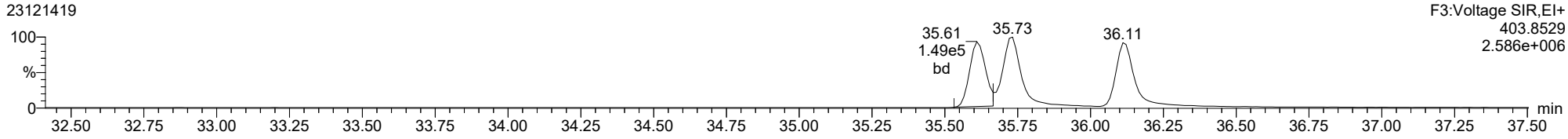
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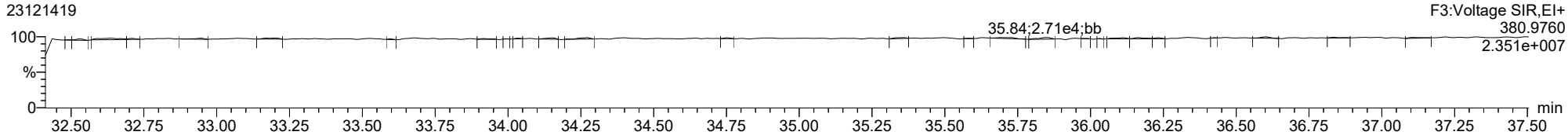
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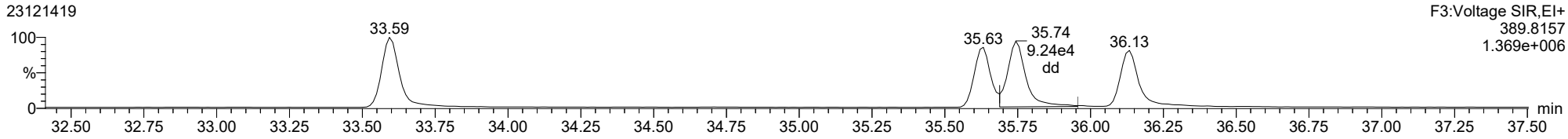
FUNCTION3 PFK



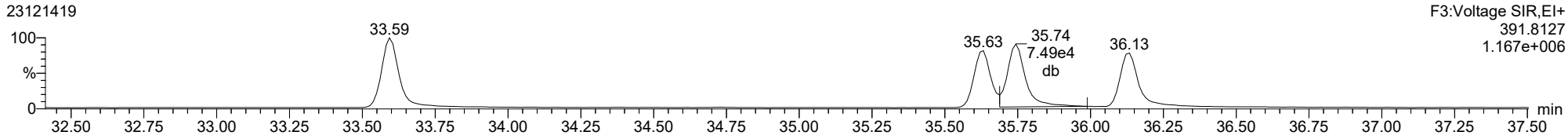
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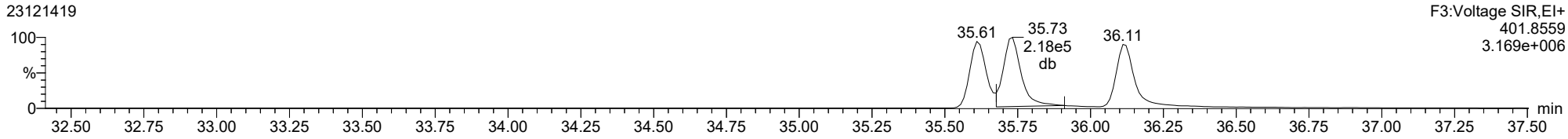
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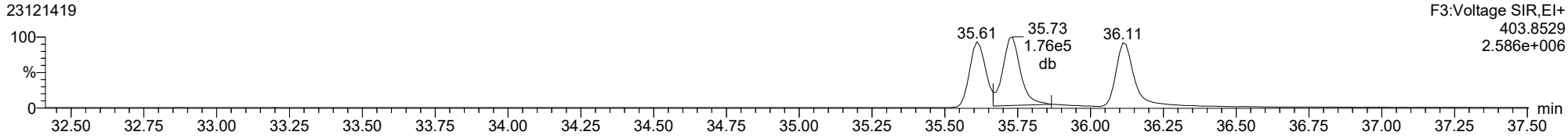
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13C-123678-HxCDD



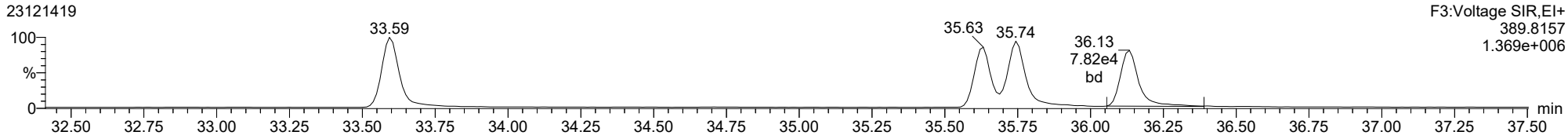
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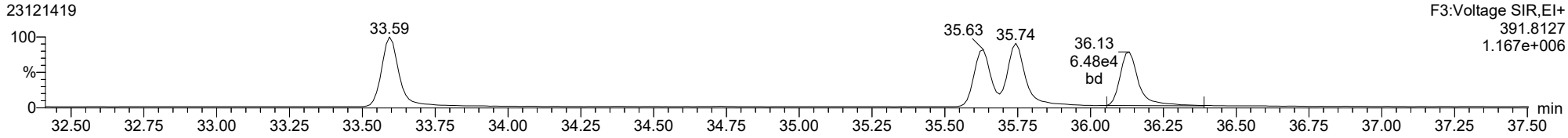
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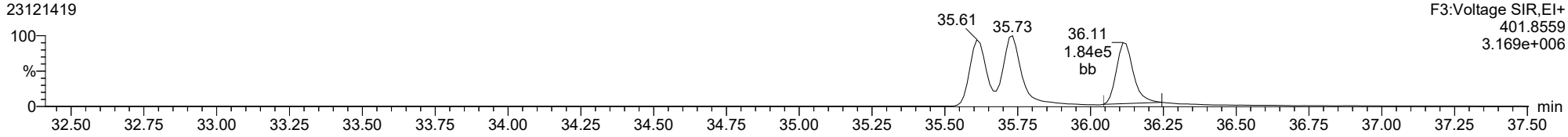
123789-HxCDD



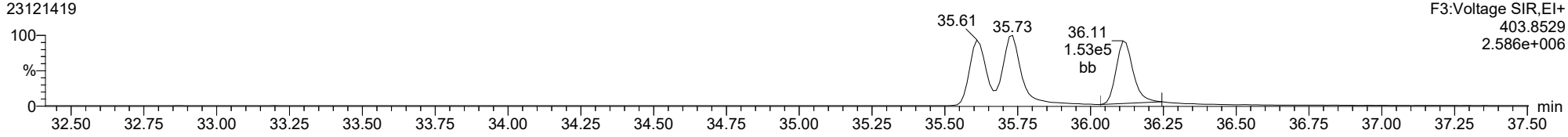
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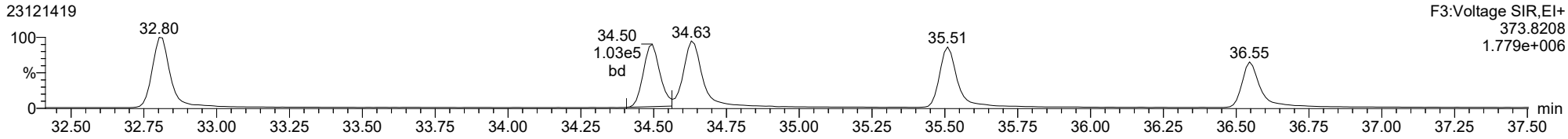


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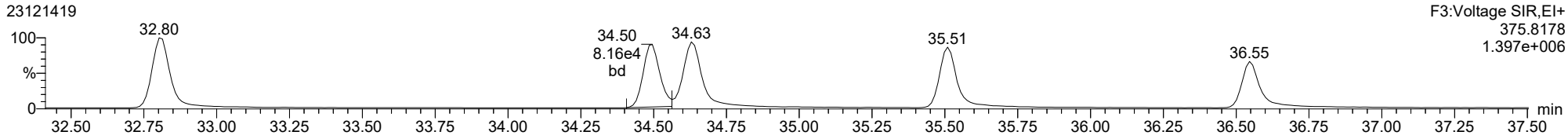


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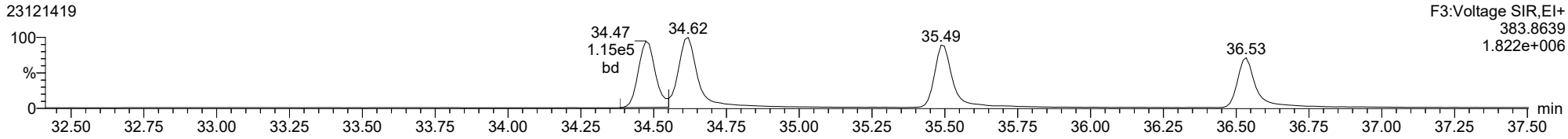
123478-HxCDF



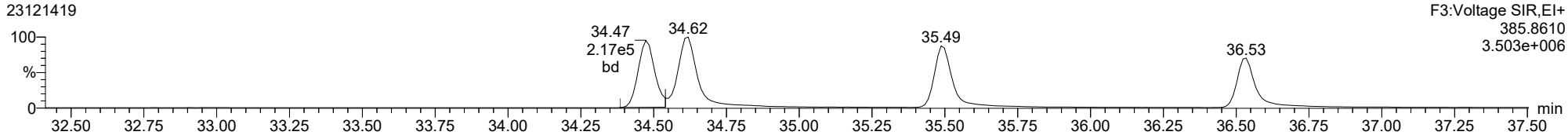
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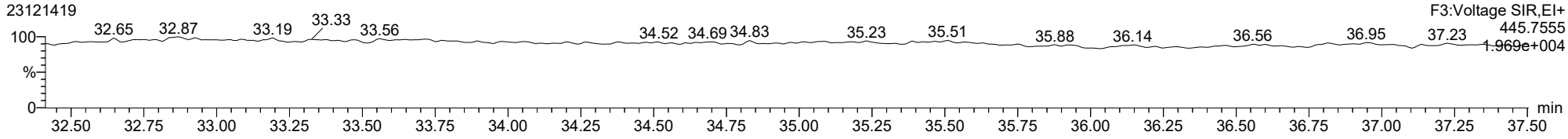
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13C-123478-HxCDF

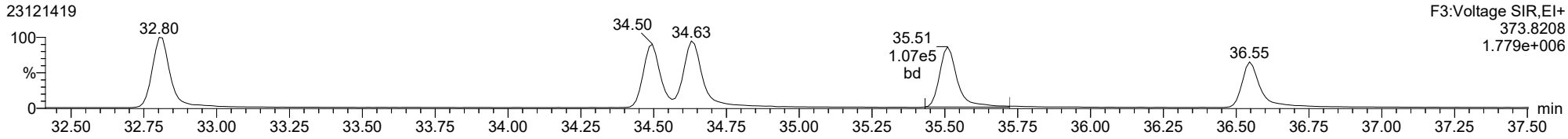


FUNCTION3 OCDPE

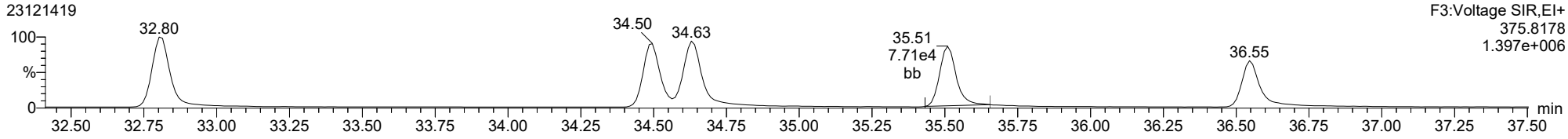


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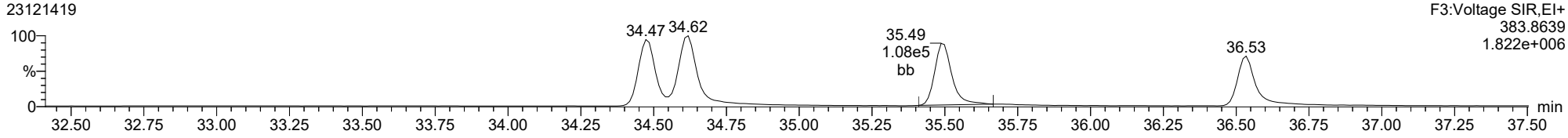
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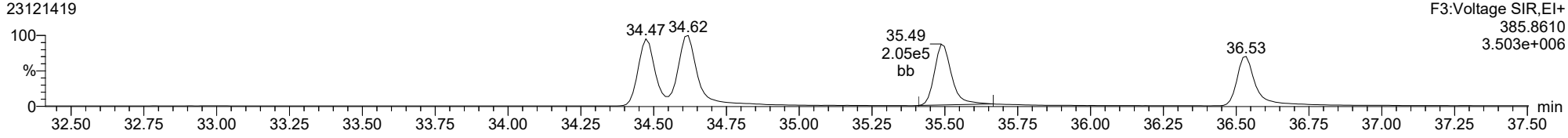
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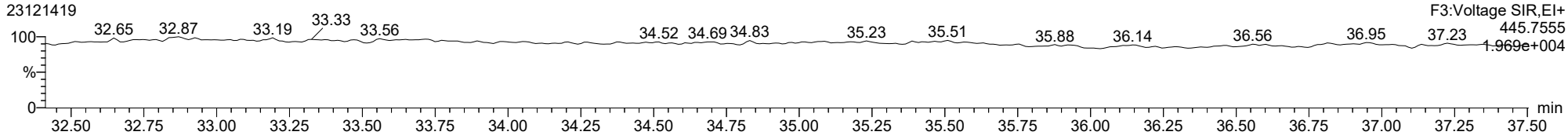
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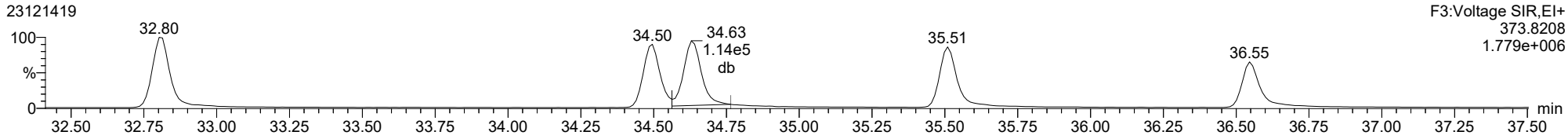


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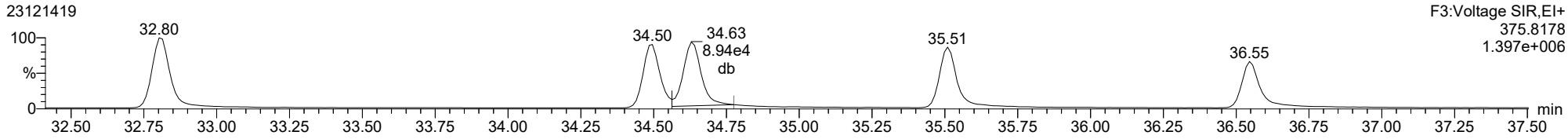


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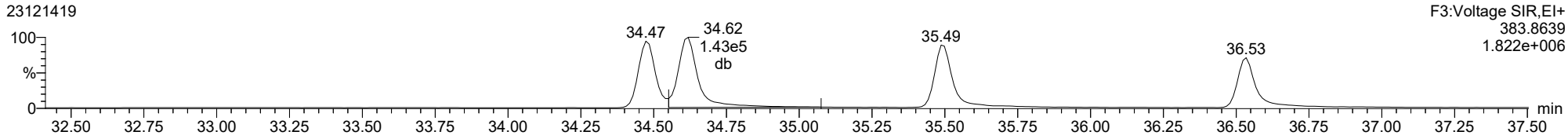
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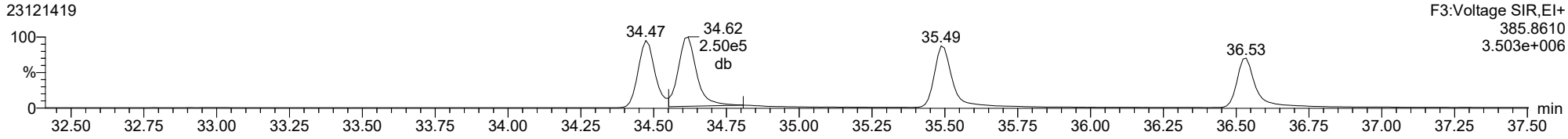
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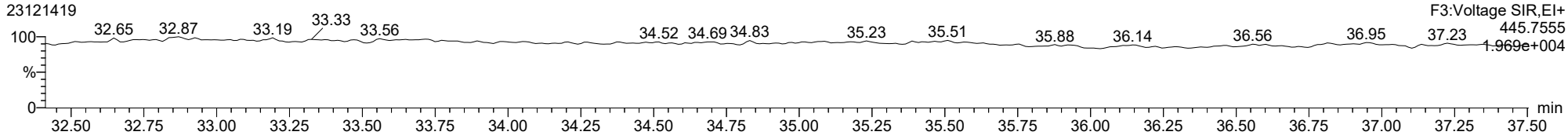
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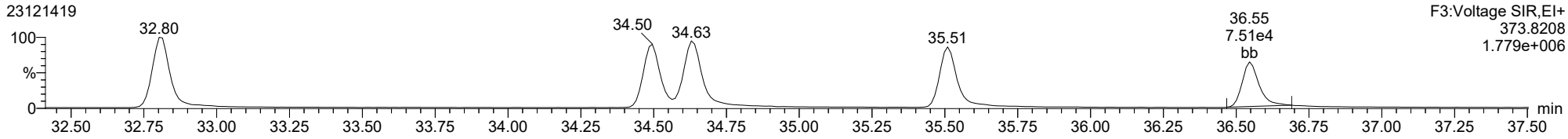


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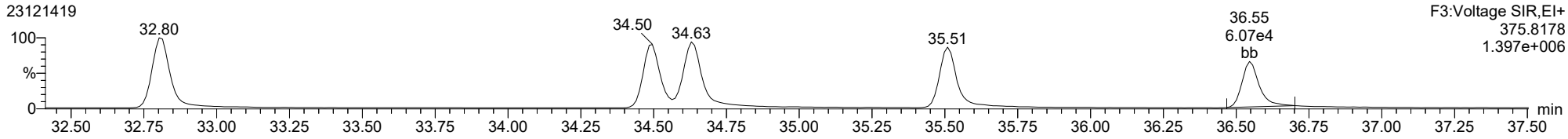


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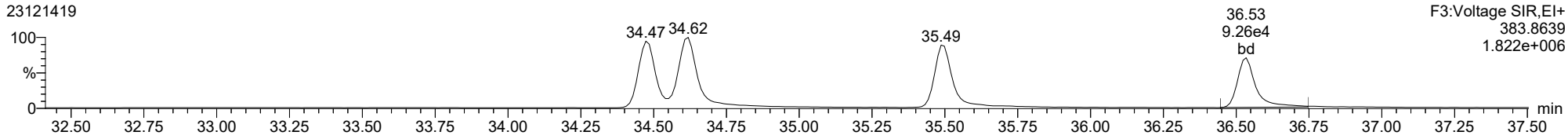
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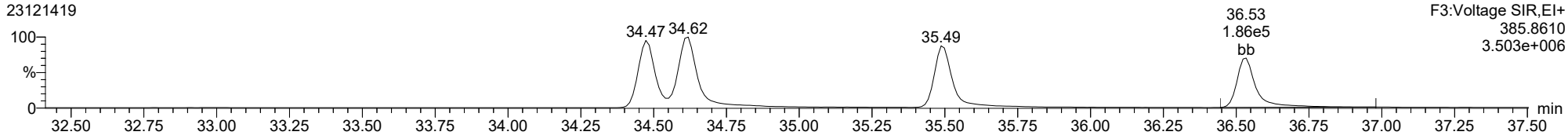
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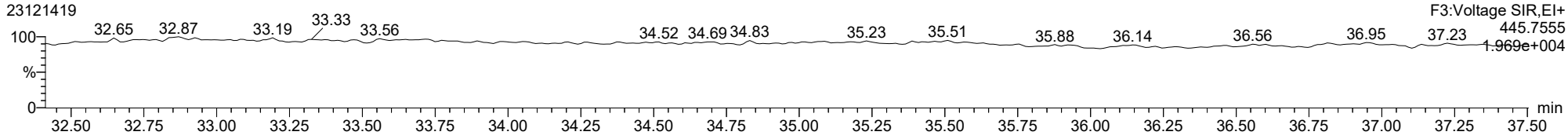
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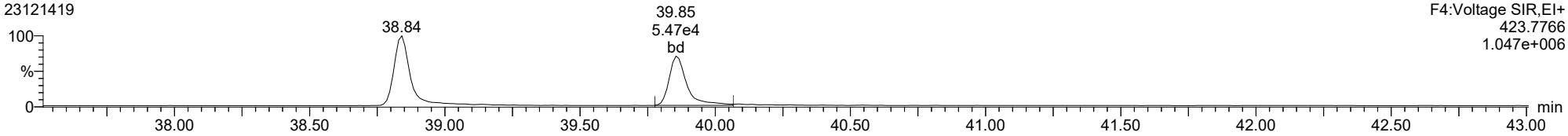


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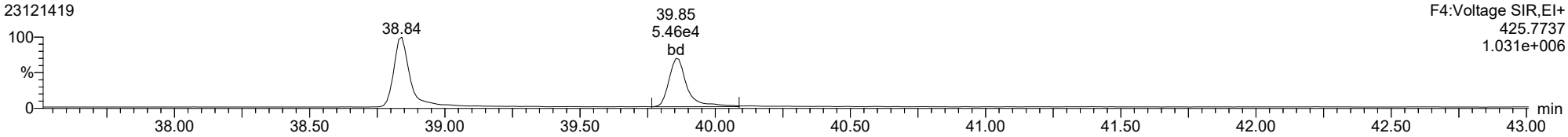


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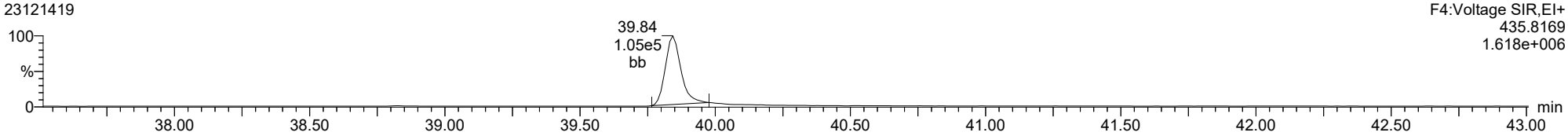
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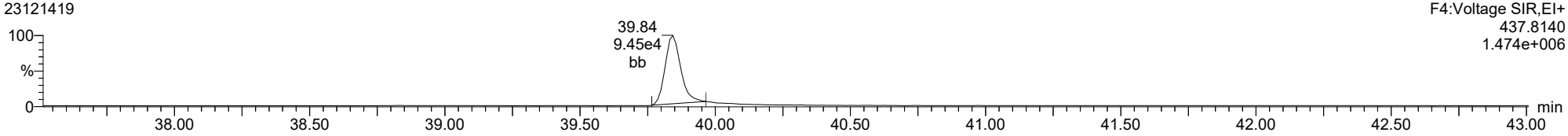
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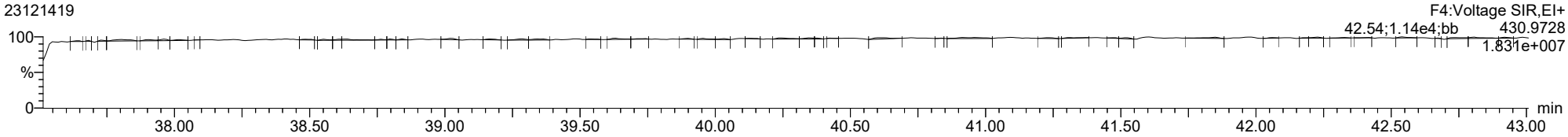
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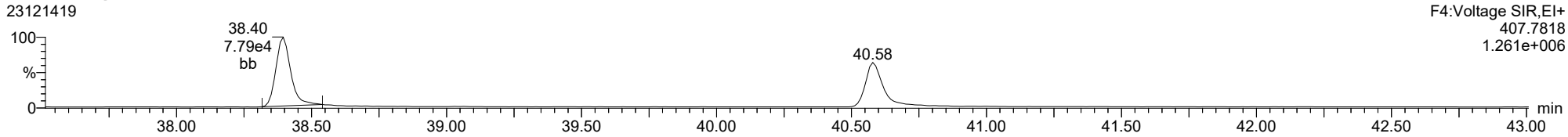


FUNCTION4 PFK

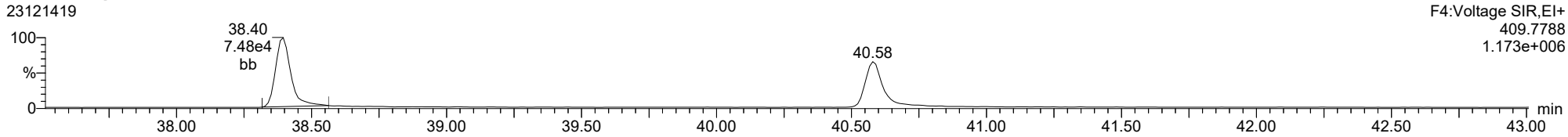


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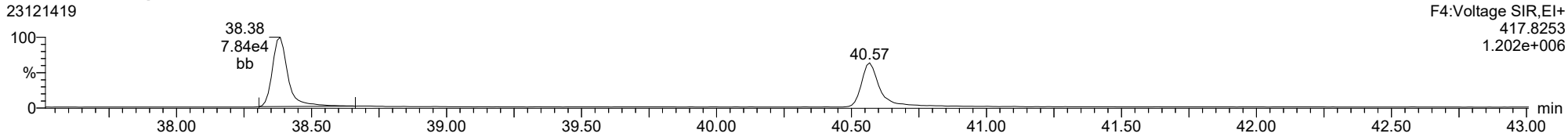
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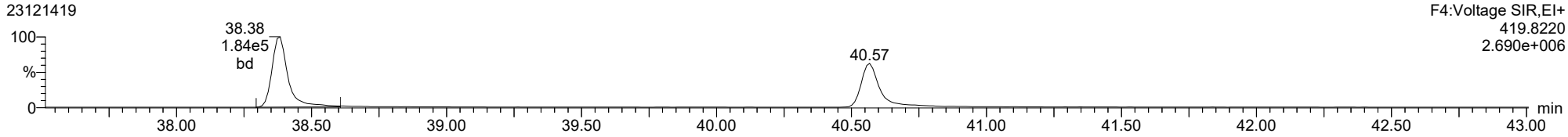
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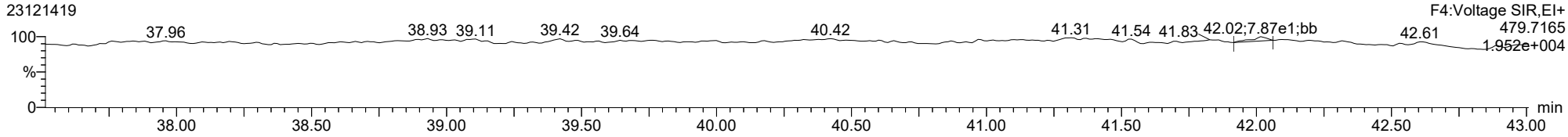
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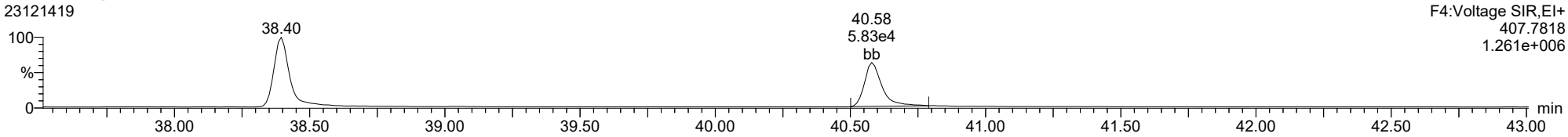
FUNCTION4 NCDPE



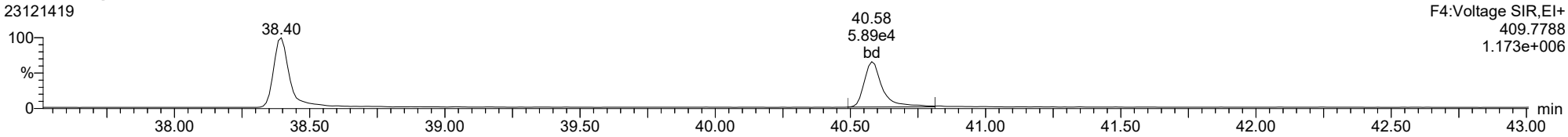
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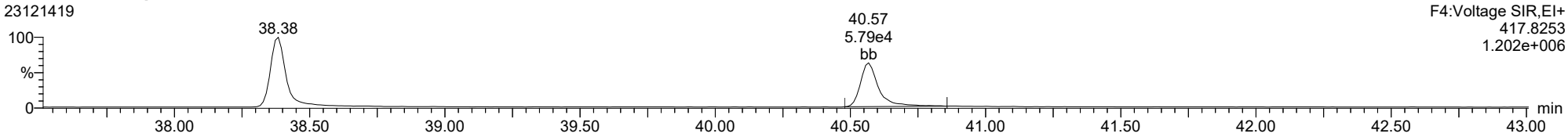
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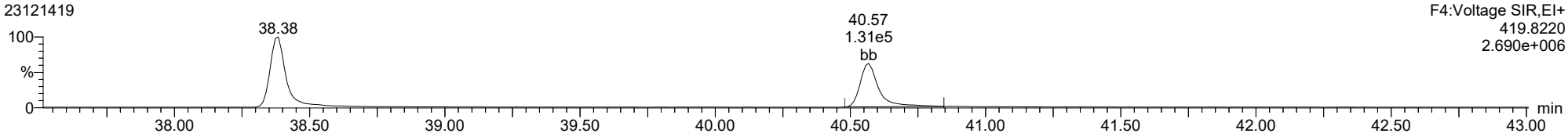
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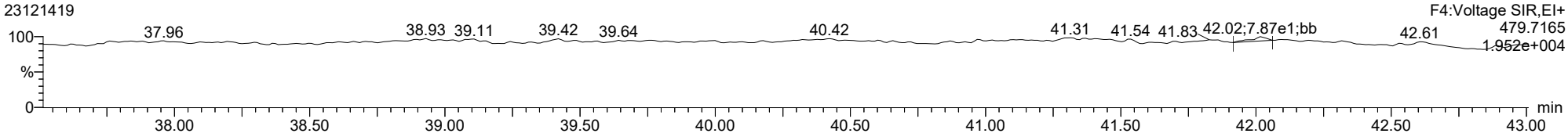
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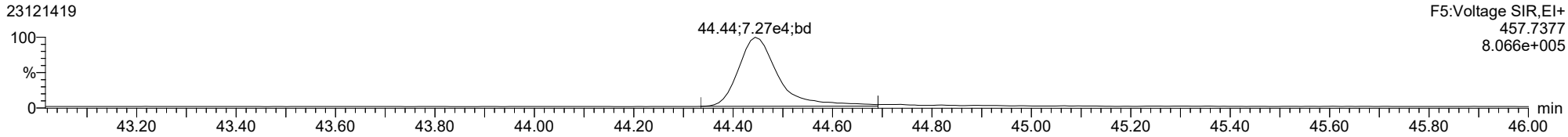
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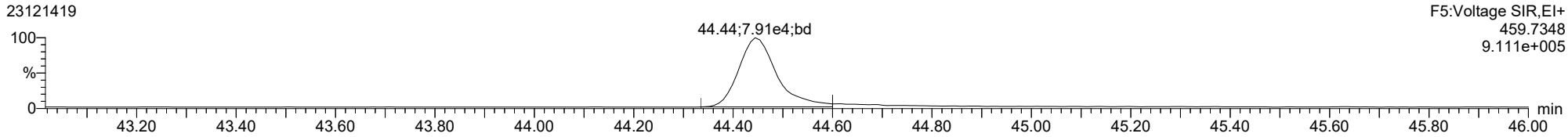
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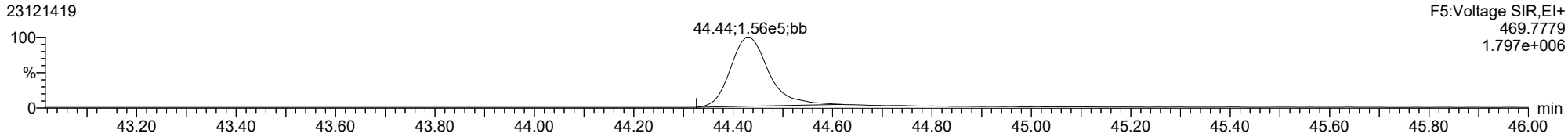
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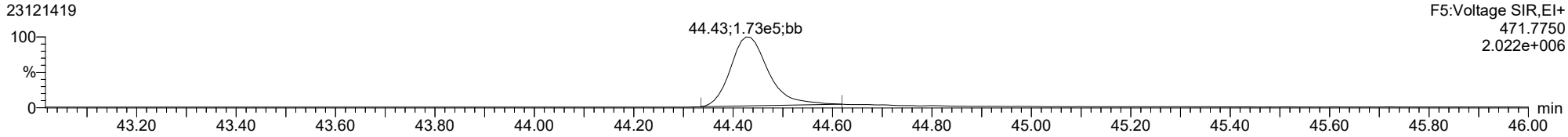
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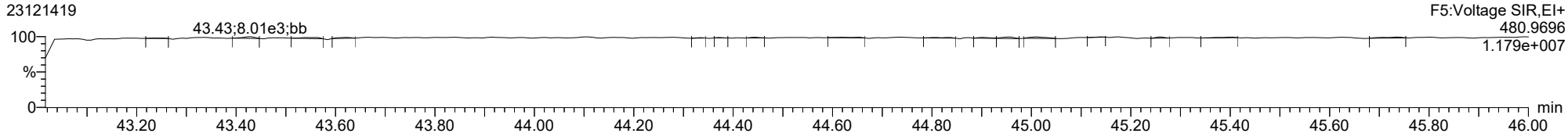
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13C-OCDD



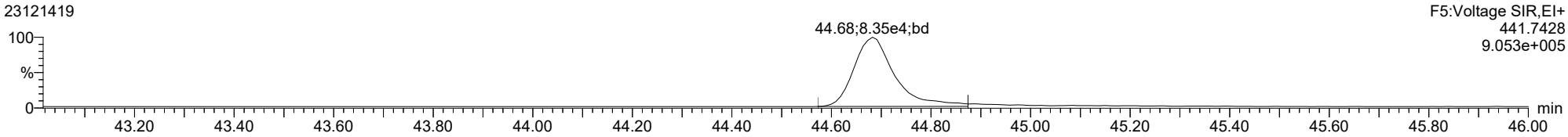
FUNCTION5 PFK



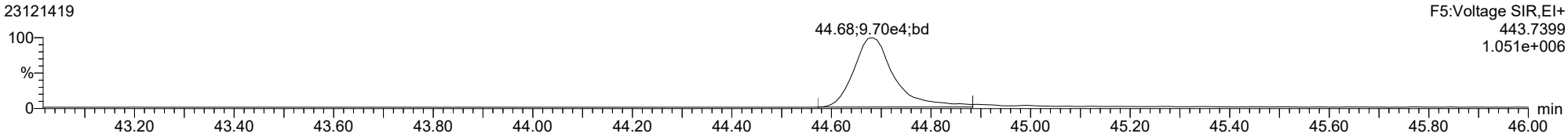
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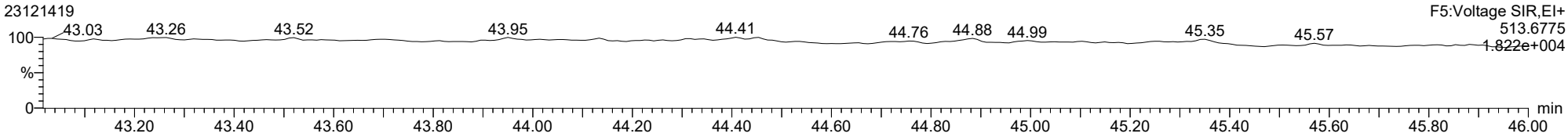
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OCDF



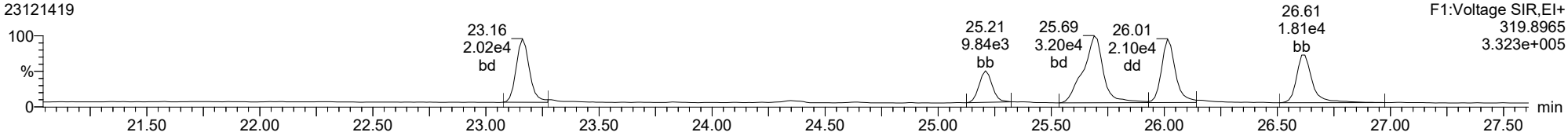
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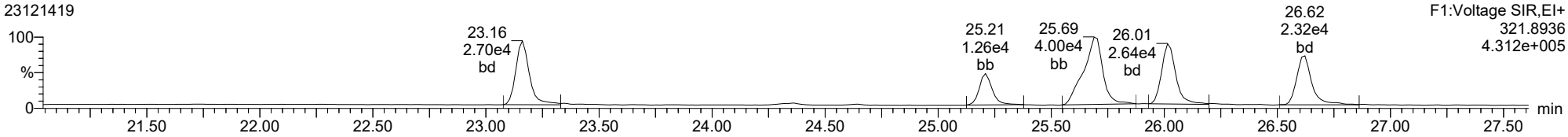
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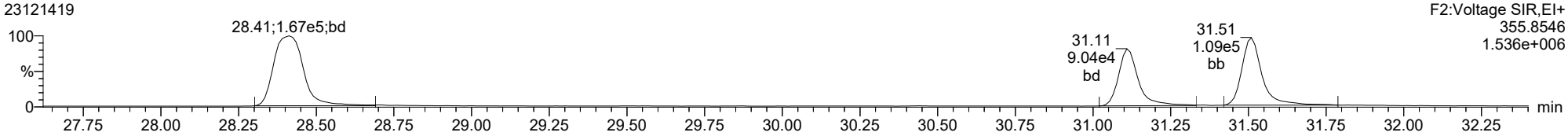
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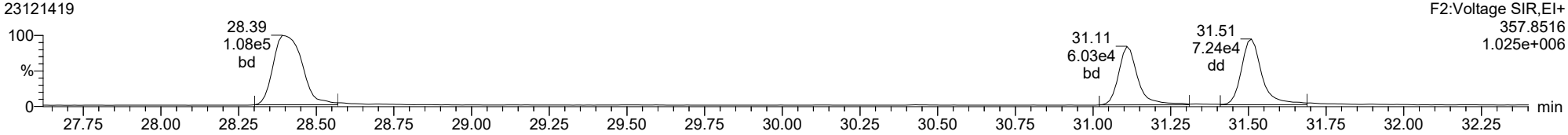
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Total-pentadioxins

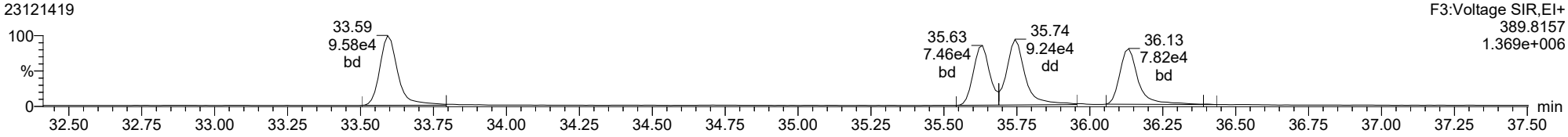


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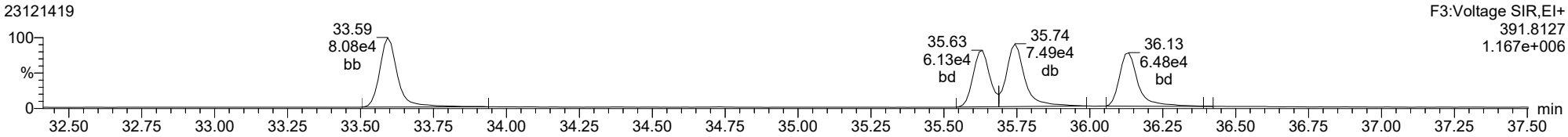


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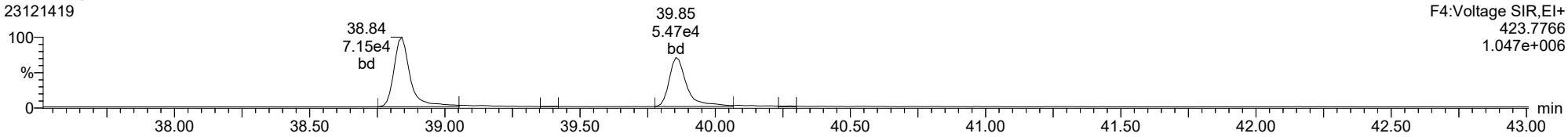
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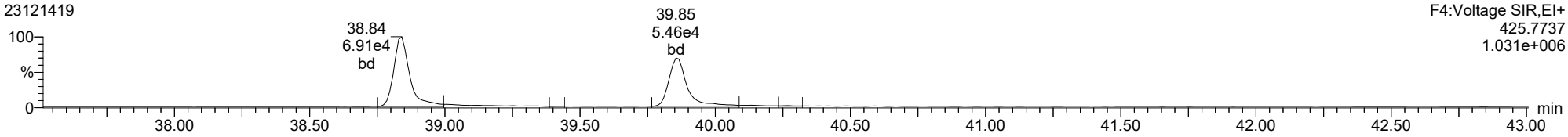
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Total-heptadioxins



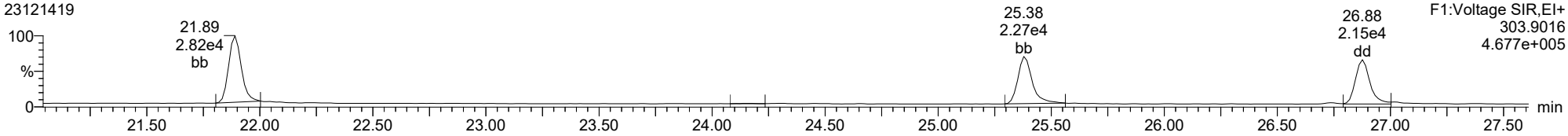
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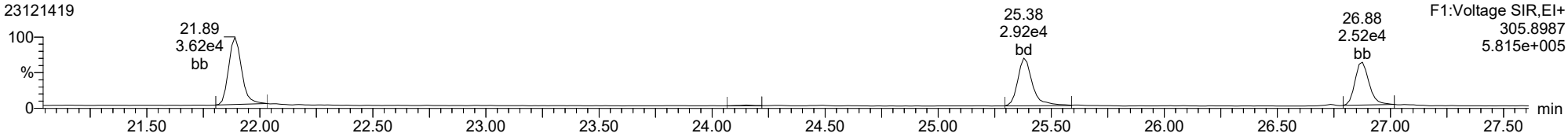
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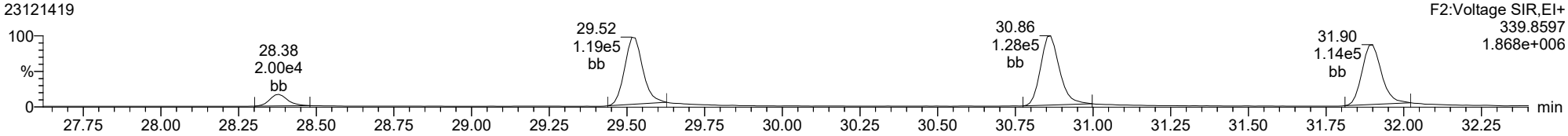
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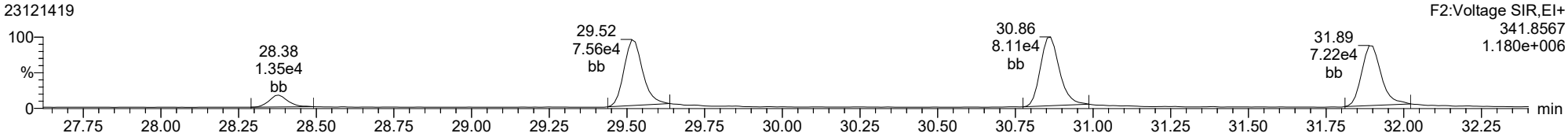
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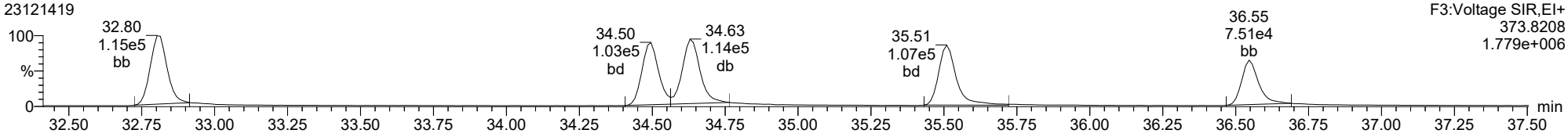
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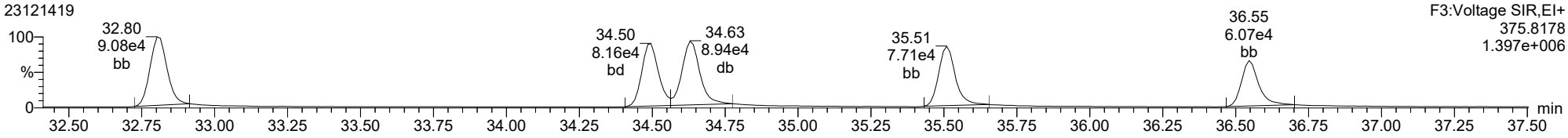
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Last Altered: Friday, December 15, 2023 13:51:44 Pacific Standard Time
Printed: Friday, December 15, 2023 13:54:43 Pacific Standard Time

ID: CS3J3, Name: 23121419, Date: 15-Dec-2023, Time: 00:35:35, Conditions: AUTOSPEC01, User: pk

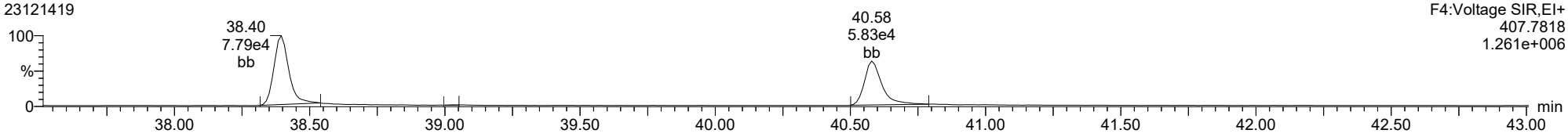
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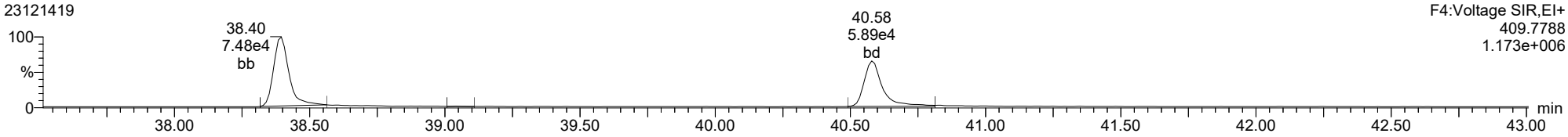
Total-hexafurans



Total-heptafurans

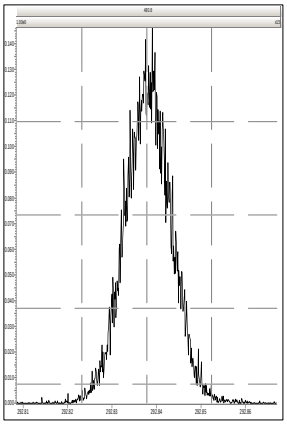


Total-heptafurans

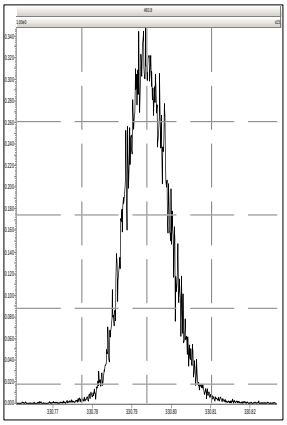


Printed: Friday, December 15, 2023 01:28:25 Pacific Standard Time

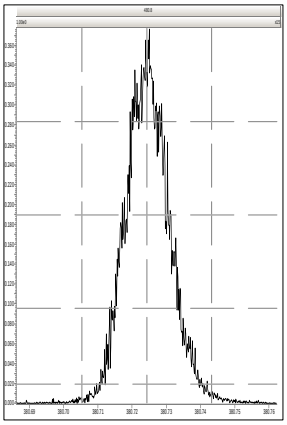
M 292.9824 R 12259



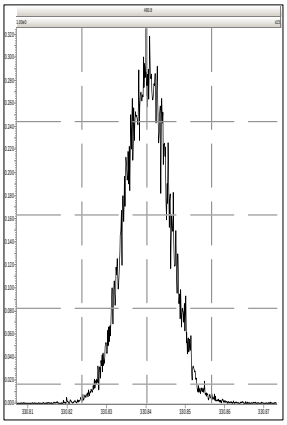
M 330.9792 R 13094



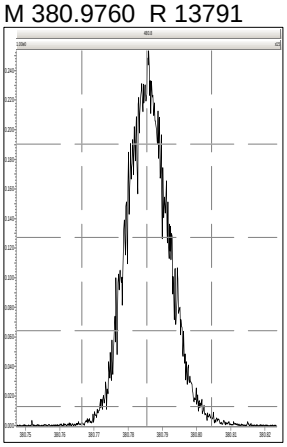
M 380.9760 R 13227



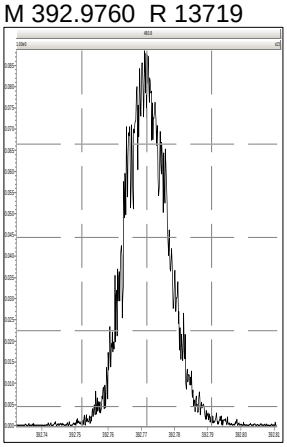
M 330.9792 R 13091



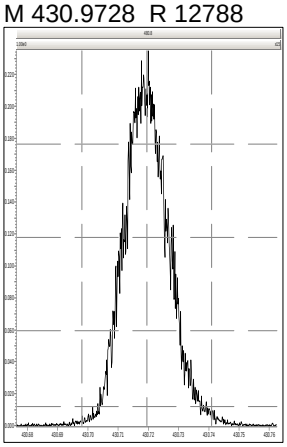
M 380.9760 R 13791



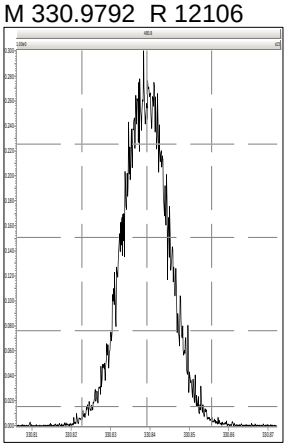
M 392.9760 R 13719



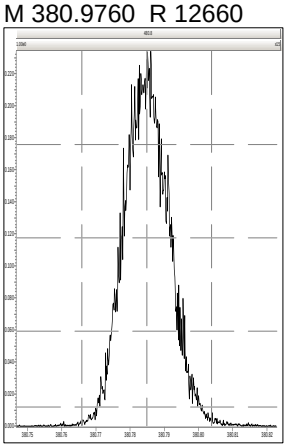
M 430.9728 R 12788



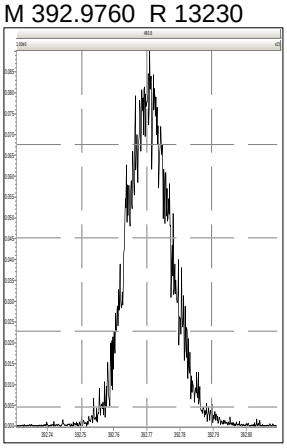
M 330.9792 R 12106



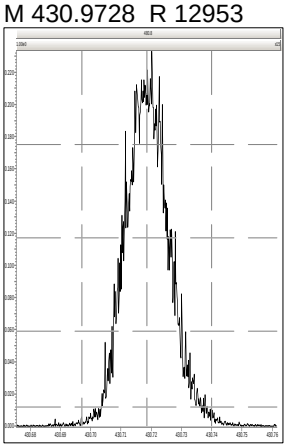
M 380.9760 R 12660



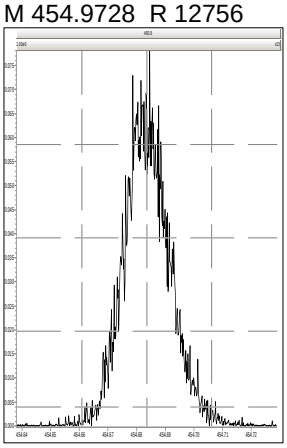
M 392.9760 R 13230



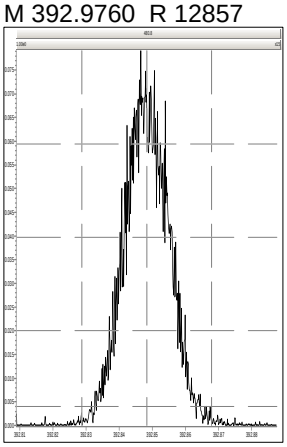
M 430.9728 R 12953



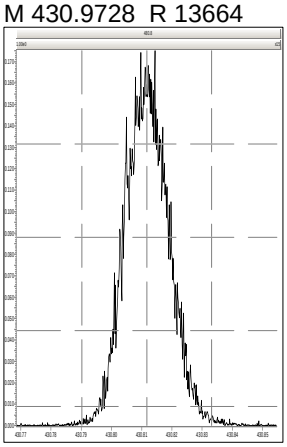
M 454.9728 R 12756



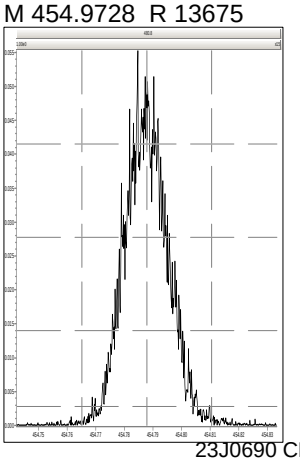
M 392.9760 R 12857



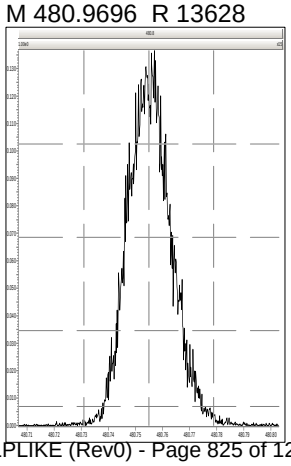
M 430.9728 R 13664



M 454.9728 R 13675

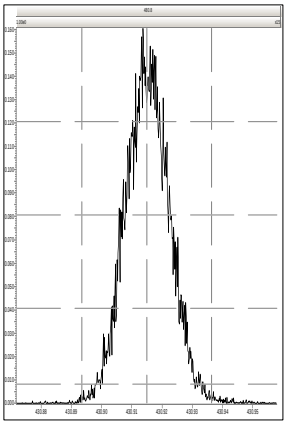


M 480.9696 R 13628

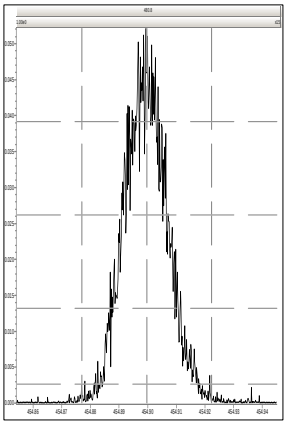


Printed: Friday, December 15, 2023 01:28:25 Pacific Standard Time

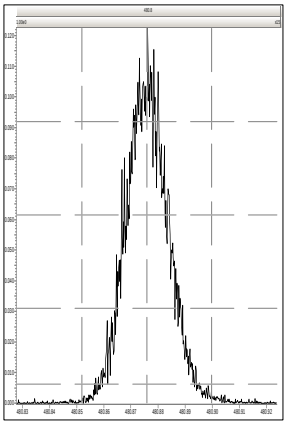
M 430.9728 R 13416



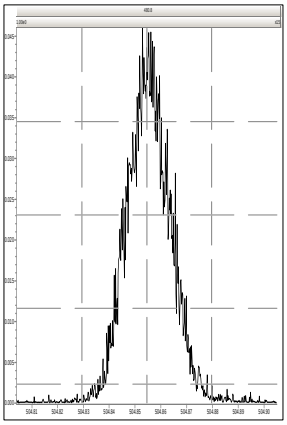
M 454.9728 R 13606



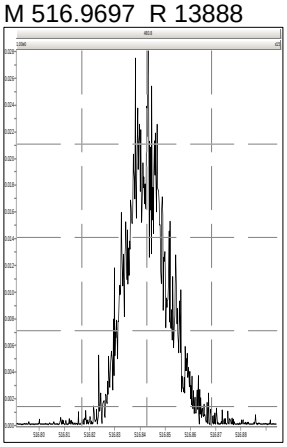
M 480.9696 R 13513

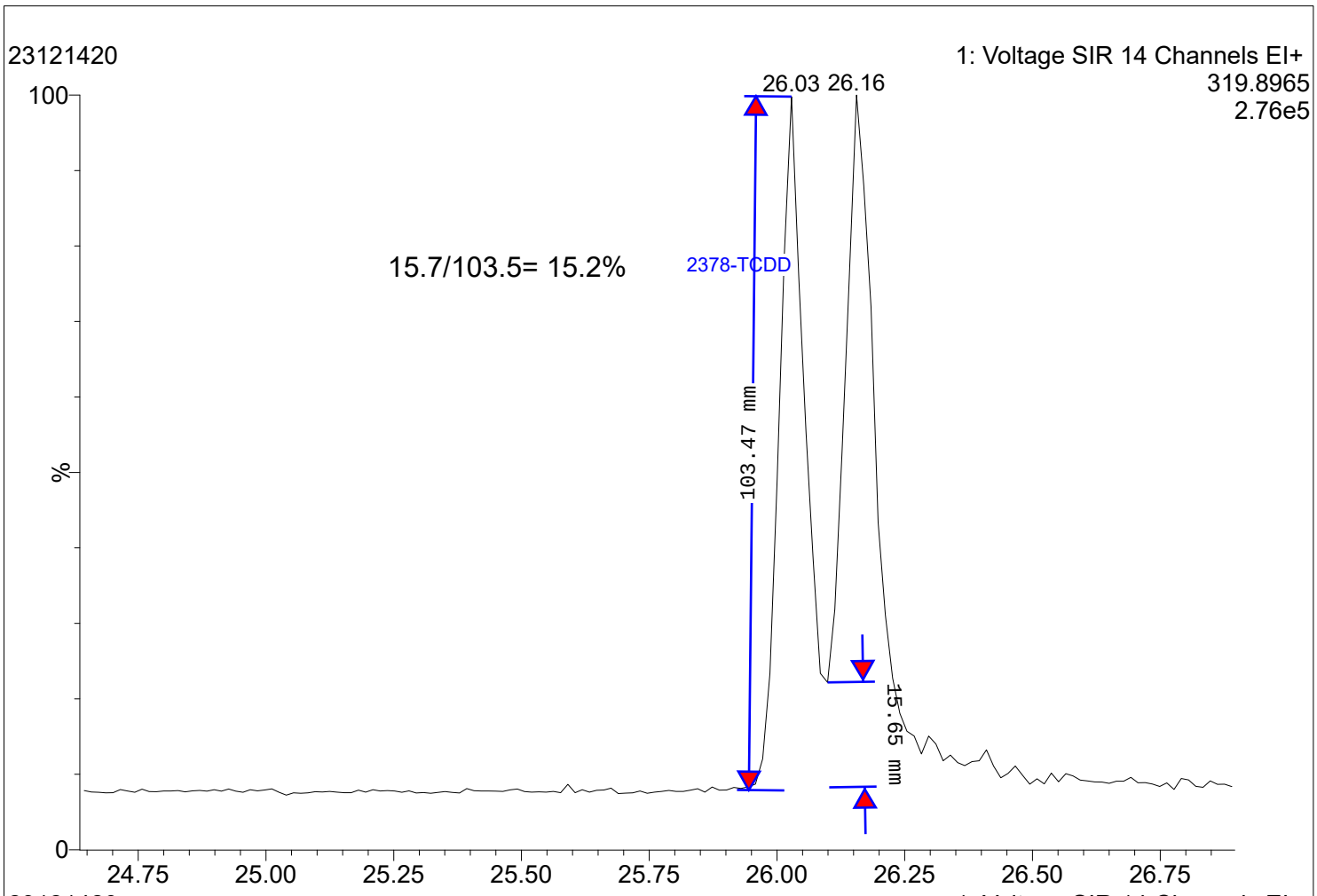


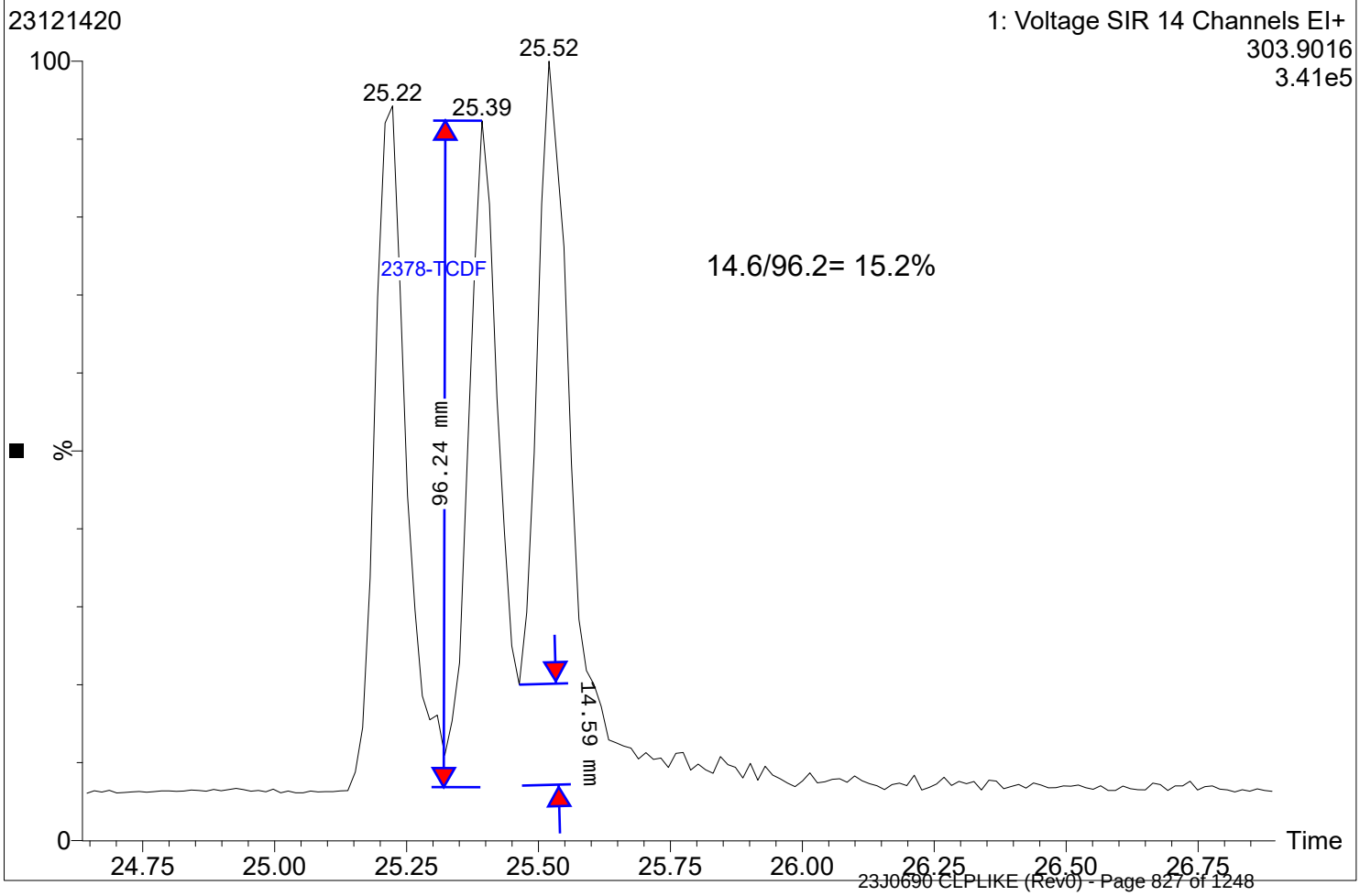
M 504.9696 R 14164



M 516.9697 R 13888




23121420
1: Voltage SIR 14 Channels EI+
319.8965
2.76e5
100
%
0
26.03
26.16
15.7/103.5= 15.2%
2378-TCDD
103.47 mm
15.65 mm
24.75
25.00
25.25
25.50
25.75
26.00
26.25
26.50
26.75


23121420
1: Voltage SIR 14 Channels EI+
303.9016
3.41e5
100
%
0
25.22
25.39
25.52
2378-TCDF
14.6/96.2= 15.2%
96.24 mm
14.59 mm
Time
24.75
25.00
25.25
25.50
25.75
26.00
26.25
26.50
26.75

CONTINUING CALIBRATION CHECK
EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Instrument ID:	AUTOSPEC01	Calibration:	GH00041
Lab File ID:	23081111	Calibration Date:	08/11/2023
Sequence:	SLH0135	Injection Date:	08/11/23
Lab Sample ID:	SLH0135-CCV1	Injection Time:	18:06
Sequence Name:	CS3F2		

		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	10.0	0.9031472	0.9028117		-0.04	+/-16
2,3,7,8-TCDD	A	10.000	9.47	1.2429820	1.1767710		-5.3	+/-22
1,2,3,7,8-PeCDF	A	50.000	49.8	0.9232368	0.9199351		-0.4	+/-18
2,3,4,7,8-PeCDF	A	50.000	51.5	0.9906617	1.0198530		2.9	+/-18
1,2,3,7,8-PeCDD	A	50.000	52.0	1.1500860	1.1952040		3.9	+/-22
1,2,3,4,7,8-HxCDF	A	50.000	49.2	1.1281700	1.1097710		-1.6	+/-10
1,2,3,6,7,8-HxCDF	A	50.000	50.7	1.0323580	1.0464250		1.4	+/-12
2,3,4,6,7,8-HxCDF	A	50.000	51.3	1.0814700	1.1102870		2.7	+/-12
1,2,3,7,8,9-HxCDF	A	50.000	52.5	0.9876148	1.0374700		5.0	+/-10
1,2,3,4,7,8-HxCDD	A	50.000	47.4	0.9600870	0.9108421		-5.1	+/-22
1,2,3,6,7,8-HxCDD	A	50.000	54.5	0.8826935	0.9629348		9.1	+/-22
1,2,3,7,8,9-HxCDD	A	50.000	53.7	0.8037436	0.8624315		7.3	+/-18
1,2,3,4,6,7,8-HpCDF	A	50.000	52.3	1.1637090	1.2179000		4.7	+/-10
1,2,3,4,7,8,9-HpCDF	A	50.000	52.9	1.1036300	1.1683710		5.9	+/-14
1,2,3,4,6,7,8-HpCDD	A	50.000	50.7	1.1996030	1.2166280		1.4	+/-14
OCDF	A	100.00	101	1.1302050	1.1376290		0.7	+/-37
OCDD	A	100.00	99.1	1.0586660	1.0490370		-0.9	+/-21
13C12-2,3,7,8-TCDF	A	100.00	98.1	1.8353850	3.6018114		-1.9	+/-29
13C12-2,3,7,8-TCDD	A	100.00	106	1.1095460	2.3537411		6.1	+/-18
13C12-1,2,3,7,8-PeCDF	A	100.00	97.1	1.3765480	2.6720608		-2.9	+/-24
13C12-2,3,4,7,8-PeCDF	A	100.00	97.0	1.3012340	2.5254151		-3.0	+/-23
13C12-1,2,3,7,8-PeCDD	A	100.00	97.2	0.7536802	1.4654207		-2.8	+/-38
13C12-1,2,3,4,7,8-HxCDF	A	100.00	102	1.0906500	2.2247706		2.0	+/-24
13C12-1,2,3,6,7,8-HxCDF	A	100.00	99.9	1.3402290	2.6779794		-0.09	+/-30
13C12-2,3,4,6,7,8-HxCDF	A	100.00	103	1.0934470	2.2450278		2.7	+/-27
13C12-1,2,3,7,8,9-HxCDF	A	100.00	102	0.9516050	1.9403754		2.0	+/-26
13C12-1,2,3,4,7,8-HxCDD	A	100.00	103	0.9598962	1.9751229		2.9	+/-15
13C12-1,2,3,6,7,8-HxCDD	A	100.00	107	1.1592550	2.4911996		7.4	+/-15
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	98.3	0.9849488	1.9368617		-1.7	+/-22
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	106	0.7558011	1.6037205		6.1	+/-23
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	108	0.6292861	1.3605682		8.1	+/-28
13C12-OCDD	A	200.00	214	0.6351422	1.3622843		7.2	+/-52
37Cl4-2,3,7,8-TCDD	A	10.000	10.1	1.1573510	2.3480535		1.4	

* Values outside of QC limits

* Values outside of QC limits

* Values outside of QC limits

Analytical Resources, LLC
Analytical Chemists and Consultants

SECOND-SOURCE
CONTINUING CALIBRATION CHECK
EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Instrument ID:	AUTOSPEC01	Calibration:	GH00041
Lab File ID:	23081110	Calibration Date:	08/11/2023
Sequence:	SLH0135	Injection Date:	08/11/23
Lab Sample ID:	SLH0135-SCV1	Injection Time:	17:18
Sequence Name:	ICVCF		

		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	9.78	0.9031472	0.8833759		-2.2	
2,3,7,8-TCDD	A	10.000	9.85	1.2429820	1.2245530		-1.5	
1,2,3,7,8-PeCDF	A	50.000	49.3	0.9232368	0.9102262		-1.4	
2,3,4,7,8-PeCDF	A	50.000	50.5	0.9906617	1.0010350		1.0	
1,2,3,7,8-PeCDD	A	50.000	52.8	1.1500860	1.2142740		5.6	
1,2,3,4,7,8-HxCDF	A	50.000	50.0	1.1281700	1.1292090		0.09	
1,2,3,6,7,8-HxCDF	A	50.000	50.9	1.0323580	1.0514700		1.9	
2,3,4,6,7,8-HxCDF	A	50.000	52.9	1.0814700	1.1447970		5.9	
1,2,3,7,8,9-HxCDF	A	50.000	53.4	0.9876148	1.0551850		6.8	
1,2,3,4,7,8-HxCDD	A	50.000	47.8	0.9600870	0.9172784		-4.5	
1,2,3,6,7,8-HxCDD	A	50.000	50.8	0.8826935	0.8962004		1.5	
1,2,3,7,8,9-HxCDD	A	50.000	54.6	0.8037436	8276.468		9.3	
1,2,3,4,6,7,8-HpCDF	A	50.000	51.9	1.1637090	1.2087070		3.9	
1,2,3,4,7,8,9-HpCDF	A	50.000	56.7	1.1036300	1.2519950		13.4	
1,2,3,4,6,7,8-HpCDD	A	50.000	48.3	1.1996030	1.1578690		-3.5	
OCDF	A	100.00	100	1.1302050	1.1340540		0.3	
OCDD	A	100.00	98.5	1.0586660	1.0424100		-1.5	
13C12-2,3,7,8-TCDF	A	100.00	101	1.8353850	1.8582685		1.2	
13C12-2,3,7,8-TCDD	A	100.00	100	1.1095460	1.1100458		0.05	
13C12-1,2,3,7,8-PeCDF	A	100.00	104	1.3765480	1.4250819		3.5	
13C12-2,3,4,7,8-PeCDF	A	100.00	99.8	1.3012340	1.2991356		-0.2	
13C12-1,2,3,7,8-PeCDD	A	100.00	100	0.7536802	0.7552167		0.2	
13C12-1,2,3,4,7,8-HxCDF	A	100.00	95.3	1.0906500	1.0394741		-4.7	
13C12-1,2,3,6,7,8-HxCDF	A	100.00	93.4	1.3402290	1.2521478		-6.6	
13C12-2,3,4,6,7,8-HxCDF	A	100.00	93.8	1.0934470	1.0258171		-6.2	
13C12-1,2,3,7,8,9-HxCDF	A	100.00	96.1	0.9516050	0.9143119		-3.9	
13C12-1,2,3,4,7,8-HxCDD	A	100.00	99.2	0.9598962	0.9520020		-0.8	
13C12-1,2,3,6,7,8-HxCDD	A	100.00	99.0	1.1592550	1.1478279		-1.0	
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	97.6	0.9849488	0.9609643		-2.4	
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	100	0.7558011	0.7573650		0.2	
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	103	0.6292861	0.6466998		2.8	
13C12-OCDD	A	200.00	225	0.6351422	0.7145283		12.5	
37Cl4-2,3,7,8-TCDD	A	10.000	9.69	1.1573510	1.1219907		-3.1	

* Values outside of QC limits

Analytical Resources, LLC
Analytical Chemists and Consultants

CONTINUING CALIBRATION CHECK
EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Instrument ID:	AUTOSPEC01	Calibration:	GH00041
Lab File ID:	23121431	Calibration Date:	08/11/2023
Sequence:	SLL0222	Injection Date:	12/15/23
Lab Sample ID:	SLL0222-CCV1	Injection Time:	15:28
Sequence Name:	CS3J4		

		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	9.39	0.9031472	0.8476850		-6.1	+/-16	
2,3,7,8-TCDD	A	10.000	9.08	1.2429820	1.1285040		-9.2	+/-22	
1,2,3,7,8-PeCDF	A	50.000	50.7	0.9232368	0.9359087		1.4	+/-18	
2,3,4,7,8-PeCDF	A	50.000	52.2	0.9906617	1.0341650		4.4	+/-18	
1,2,3,7,8-PeCDD	A	50.000	45.5	1.1500860	1.0458440		-9.1	+/-22	
1,2,3,4,7,8-HxCDF	A	50.000	50.0	1.1281700	1.1278240		-0.03	+/-10	
1,2,3,6,7,8-HxCDF	A	50.000	52.5	1.0323580	1.0837470		5.0	+/-12	
2,3,4,6,7,8-HxCDF	A	50.000	51.9	1.0814700	1.1236350		3.9	+/-12	
1,2,3,7,8,9-HxCDF	A	50.000	50.7	0.9876148	1.0015060		1.4	+/-10	
1,2,3,4,7,8-HxCDD	A	50.000	40.9	0.9600870	0.7858600		-18.1	+/-22	
1,2,3,6,7,8-HxCDD	A	50.000	48.4	0.8826935	0.8551177		-3.1	+/-22	
1,2,3,7,8,9-HxCDD	A	50.000	51.4	0.8037436	0.8260300		2.8	+/-18	
1,2,3,4,6,7,8-HpCDF	A	50.000	49.6	1.1637090	1.1546160		-0.8	+/-10	
1,2,3,4,7,8,9-HpCDF	A	50.000	54.0	1.1036300	1.1921440		8.0	+/-14	
1,2,3,4,6,7,8-HpCDD	A	50.000	44.3	1.1996030	1.0620610		-11.5	+/-14	
OCDF	A	100.00	95.6	1.1302050	1.0807330		-4.4	+/-37	
OCDD	A	100.00	87.4	1.0586660	0.9252061		-12.6	+/-21	
13C12-2,3,7,8-TCDF	A	100.00	86.3	1.8353850	1.5836615		-13.7	+/-29	
13C12-2,3,7,8-TCDD	A	100.00	105	1.1095460	1.1678214		5.3	+/-18	
13C12-1,2,3,7,8-PeCDF	A	100.00	89.6	1.3765480	1.2333030		-10.4	+/-24	
13C12-2,3,4,7,8-PeCDF	A	100.00	89.7	1.3012340	1.1675814		-10.3	+/-23	
13C12-1,2,3,7,8-PeCDD	A	100.00	111	0.7536802	0.8343501		10.7	+/-38	
13C12-1,2,3,4,7,8-HxCDF	A	100.00	85.9	1.0906500	0.9364914		-14.1	+/-24	
13C12-1,2,3,6,7,8-HxCDF	A	100.00	72.0	1.3402290	0.9643564		-28.0	+/-30	
13C12-2,3,4,6,7,8-HxCDF	A	100.00	79.7	1.0934470	0.8712097		-20.3	+/-27	
13C12-1,2,3,7,8,9-HxCDF	A	100.00	81.9	0.9516050	0.7793589		-18.1	+/-26	
13C12-1,2,3,4,7,8-HxCDD	A	100.00	103	0.9598962	0.9859687		2.7	+/-15	
13C12-1,2,3,6,7,8-HxCDD	A	100.00	88.1	1.1592550	1.0210472		-11.9	+/-15	
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	72.7	0.9849488	0.7158440		-27.3	+/-22	*
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	71.7	0.7558011	0.5419980		-28.3	+/-23	*
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	95.4	0.6292861	0.6001891		-4.6	+/-28	
13C12-OCDD	A	200.00	144	0.6351422	0.4588442		-27.8	+/-52	
37Cl4-2,3,7,8-TCDD	A	10.000	10.4	1.1573510	1.2074754		4.3		

* Values outside of QC limits

* Values outside of QC limits

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\231214IH2.qld
Last Altered: Saturday, December 16, 2023 10:26:00 Pacific Standard Time
Printed: Saturday, December 16, 2023 10:37:54 Pacific Standard Time

Method: T:\Autospec\Methods\Dioxin231215.mdb 15 Dec 2023 13:28:43
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 09:45:18

ID: CS3J4, Name: 23121431, Date: 15-Dec-2023, Time: 15:28:36, 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	25.379	1.001	2.665e4	3.566e4	0.903	0.747	0.770	752	1513	4.09e5	5.35e5	543.0	353.8	NO	bb	bb	9.386
12378-PeCDF	29.516	1.001	1.650e5	1.029e5	0.923	1.604	1.550	1780	1538	2.55e6	1.59e6	1432.7	1035.9	NO	bb	bb	50.686
23478-PeCDF	30.853	1.000	1.711e5	1.091e5	0.991	1.567	1.550	1780	1538	2.67e6	1.73e6	1497.7	1125.0	NO	bb	bb	52.196
123478-HxCDF	34.485	1.000	1.527e5	1.215e5	1.128	1.257	1.240	1200	1266	2.37e6	1.88e6	1972.4	1481.4	NO	bd	bd	49.985
234678-HxCDF	35.499	1.000	1.430e5	1.111e5	1.081	1.286	1.240	1200	1266	2.28e6	1.82e6	1903.2	1437.3	NO	bb	bb	51.949
123678-HxCDF	34.630	1.001	1.507e5	1.206e5	1.032	1.250	1.240	1200	1266	2.38e6	1.89e6	1981.7	1491.4	NO	db	db	52.489
123789-HxCDF	36.546	1.001	1.138e5	8.877e4	0.988	1.282	1.240	1200	1266	1.79e6	1.43e6	1490.0	1130.9	NO	bb	bb	50.703
1234678-HpCDF	38.384	1.000	1.104e5	1.042e5	1.164	1.059	1.050	1328	1221	1.84e6	1.81e6	1385.1	1484.1	NO	bb	bb	49.609
1234789-HpCDF	40.579	1.000	8.903e4	7.868e4	1.104	1.132	1.050	1328	1221	1.29e6	1.18e6	970.0	965.9	NO	bd	bb	54.010
OCDF	44.682	1.006	1.204e5	1.370e5	1.130	0.878	0.890	1604	1471	1.43e6	1.61e6	890.9	1096.1	NO	bd	bd	95.623
2378-TCDD	26.014	1.001	2.666e4	3.452e4	1.243	0.772	0.770	1017	1117	3.96e5	5.03e5	389.0	450.4	NO	bb	bb	9.079
12378-PeCDD	31.109	1.001	1.216e5	8.091e4	1.150	1.503	1.550	1789	1333	1.76e6	1.17e6	986.2	881.0	NO	bd	bb	45.468
123478-HxCDD	35.621	1.000	1.110e5	9.009e4	0.960	1.232	1.240	877	791	1.89e6	1.48e6	2150.8	1876.3	NO	bd	bd	40.926
123678-HxCDD	35.743	1.001	1.254e5	1.012e5	0.883	1.239	1.240	877	791	1.88e6	1.52e6	2141.0	1923.5	NO	db	dd	48.438
123789-HxCDD	36.122	1.011	1.183e5	9.680e4	0.804	1.222	1.240	877	791	1.80e6	1.50e6	2052.2	1897.1	NO	bd	bd	51.386
1234678-HpCDD	39.855	1.000	8.505e4	8.040e4	1.200	1.058	1.050	1001	1015	1.29e6	1.24e6	1286.7	1216.7	NO	bd	bd	44.267
OCDD	44.435	1.000	1.020e5	1.184e5	1.059	0.862	0.890	1356	1078	1.19e6	1.40e6	879.3	1297.5	NO	bd	bd	87.394
13C-2378-TCDF	25.365	1.007	3.152e5	4.199e5	1.835	0.751	0.770	967	1435	4.38e6	5.83e6	4532.4	4063.8	NO	bb	bb	86.285
13C-12378-PeCDF	29.493	1.171	3.448e5	2.277e5	1.377	1.514	1.550	2470	1538	5.08e6	3.34e6	2058.2	2173.7	NO	bd	bd	89.594
13C-23478-PeCDF	30.842	1.225	3.253e5	2.166e5	1.301	1.502	1.550	2470	1538	4.77e6	3.19e6	1930.7	2074.9	NO	bb	bb	89.729
13C-123478-HxCDF	34.473	0.955	1.660e5	3.201e5	1.091	0.519	0.510	1245	1527	2.55e6	4.85e6	2044.5	3178.4	NO	bd	bd	85.865
13C-123678-HxCDF	34.607	0.958	1.713e5	3.293e5	1.340	0.520	0.510	1245	1527	2.59e6	5.06e6	2081.2	3315.7	NO	db	db	71.955
13C-234678-HxCDF	35.487	0.983	1.549e5	2.974e5	1.093	0.521	0.510	1245	1527	2.53e6	4.76e6	2031.0	3118.4	NO	bb	bb	79.676
13C-123789-HxCDF	36.523	1.011	1.375e5	2.671e5	0.952	0.515	0.510	1245	1527	2.06e6	4.04e6	1656.0	2649.0	NO	bb	bb	81.899
13C-1234678-HpCDF	38.373	1.063	1.145e5	2.571e5	0.985	0.445	0.440	1063	1234	1.86e6	4.12e6	1753.5	3337.1	NO	bb	bd	72.678
13C-1234789-HpCDF	40.556	1.123	8.654e4	1.948e5	0.756	0.444	0.440	1063	1234	1.20e6	2.70e6	1127.1	2189.3	NO	bb	bb	71.712
13C-1234-TCDD	25.181	0.000	2.054e5	2.588e5	1.000	0.794	0.770	1207	894	3.17e6	4.02e6	2627.2	4493.7	NO	bb	bb	100.000
13C-2378-TCDD	25.986	1.032	2.365e5	3.055e5	1.110	0.774	0.770	1207	894	3.60e6	4.57e6	2983.2	5112.8	NO	bb	bb	105.252
13C-12378-PeCDD	31.087	1.235	2.391e5	1.482e5	0.754	1.614	1.550	845	974	3.73e6	2.35e6	4417.0	2414.5	NO	bb	bb	110.703
13C-123478-HxCDD	35.610	0.986	2.800e5	2.318e5	0.960	1.208	1.240	1173	1136	4.67e6	3.77e6	3978.7	3320.8	NO	bd	bd	102.716
13C-123678-HxCDD	35.721	0.989	2.917e5	2.383e5	1.159	1.224	1.240	1173	1136	4.65e6	3.84e6	3968.4	3376.9	NO	db	db	88.078
13C-1234678-HpCDD	39.843	1.103	1.612e5	1.504e5	0.629	1.072	1.050	985	972	2.52e6	2.39e6	2559.6	2462.5	NO	bb	bb	95.376
13C-OCDD	44.426	1.230	2.222e5	2.542e5	0.635	0.874	0.890	1144	1673	2.78e6	3.16e6	2427.5	1891.9	NO	bb	bb	144.486
13C-123789-HxCDD	36.111	0.000	2.863e5	2.328e5	1.000	1.230	1.240	1173	1136	4.61e6	3.76e6	3934.9	3305.1	NO	bb	bb	100.000
37CL-2378-TCDD	26.014	1.033	5.605e4		1.157			808		8.36e5		1034.8			bb		10.433

Dataset: T:\Autospec\Processed Data Batch\231214IH2.qld
Last Altered: Saturday, December 16, 2023 10:26:00 Pacific Standard Time
Printed: Saturday, December 16, 2023 10:37:54 Pacific Standard Time

ID: CS3J4, Name: 23121431, Date: 15-Dec-2023, Time: 15:28:36, 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	21.890	0.863	3.262e4	4.290e4	1.170	0.760	0.770	752	1513	5.08e5	6.71e5	675.5	443.7	NO	bb	bb	8.778
1289-TCDF	26.862	1.059	2.911e4	3.419e4	0.847	0.851	0.770	752	1513	4.01e5	4.86e5	532.8	321.4	NO	dd	db	10.169
13468-PECDF	26.721	0.906	2.199e5	1.438e5	1.241	1.529	1.550	554	628	3.46e6	2.26e6	6254.3	3596.5	NO	bb	bb	51.203
12389-PECDF	31.889	1.081	1.728e5	1.094e5	0.880	1.579	1.550	1780	1538	2.60e6	1.66e6	1460.3	1082.2	NO	bb	bb	56.057
123468-HXCDF	32.803	0.951	1.593e5	1.290e5	1.206	1.235	1.240	1200	1266	2.44e6	1.99e6	2036.3	1569.4	NO	bb	bb	49.197
1368-TCDD	23.161	0.891	2.489e4	3.161e4	1.181	0.787	0.770	1017	1117	3.71e5	4.78e5	364.9	428.3	NO	bd	bb	8.826
1289-TCDD	26.608	1.024	2.327e4	3.031e4	0.963	0.768	0.770	1017	1117	3.41e5	4.34e5	335.6	388.5	NO	bb	bd	10.266
12479-PECDD	28.390	0.913	2.144e5	1.419e5	2.166	1.511	1.550	1789	1333	1.99e6	1.31e6	1110.9	984.2	NO	bd	bd	42.478
12389-PECDD	31.499	1.013	1.515e5	9.919e4	1.326	1.527	1.550	1789	1333	2.17e6	1.44e6	1215.3	1080.0	NO	bd	bd	48.810
124679-HXCDD	33.593	0.943	1.302e5	1.065e5	1.127	1.222	1.240	877	791	1.98e6	1.59e6	2255.4	2015.1	NO	bd	bd	41.038
1234679-HPCDD	38.830	0.975	1.008e5	1.004e5	1.303	1.004	1.050	1001	1015	1.62e6	1.58e6	1618.1	1558.8	NO	bb	bd	49.591
Total-tetrafurans			8.863e4		0.973			752		1.32e6							28.413
Total-penta1			2.199e5					554		3.46e6							51.203
Total-pentafurans			5.360e5		0.931			1780		8.25e6							167.574
Total-hexafurans			7.195e5		1.087			1200		1.13e7							254.323
Total-heptafurans			1.999e5		1.134			1328		3.14e6							103.906
Total-Furans			1.884e6		1.053			752		2.89e7							701.041
Total-tetradioxins			1.281e5		1.129			1017		1.72e6							47.885
Total-pentadioxins			4.882e5		1.548			1789		5.93e6							136.933
Total-hexadioxins			4.851e5		0.943			877		7.54e6							181.862
Total-heptadioxins			1.859e5		1.251			1001		2.91e6							93.858
Total-Dioxins			1.389e6		1.182			1017		1.93e7							547.932
Total-TEQ			3.274e6					1017		4.82e7							1248.973
FUNCTION1 PFK			0.000e0					323820		0.00e0							
FUNCTION2 PFK			1.733e5					134633		5.49e6							0.000
FUNCTION3 PFK			4.559e4					212881		8.80e5							0.000
FUNCTION4 PFK			2.174e5					161457		5.53e6							
FUNCTION5 PFK			0.000e0					94280		0.00e0							
FUNCTION1 HXCD...			2.373e2					492		2.81e3							0.000
FUNCTION1 HPCD...																	
FUNCTION2 HPCD...			3.155e2					742		5.28e3							0.000
FUNCTION3 OCDPE			3.597e2					499		5.85e3							0.000
FUNCTION4 NCDPE			0.000e0					615		0.00e0							
FUNCTION5 DCDPE			1.041e2					590		2.67e3							0.000

Method: T:\Autospec\Methods\Dioxin231215.mdb 15 Dec 2023 13:28:43
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 09:45:18

ID: CS3J4, Name: 23121431, Date: 15-Dec-2023, Time: 15:28:36, 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	27.19	2.469e2	3.168e2	0.973	0.78	0.77	5.0	NO	NO	db	bb	0.079
2	1289-TCDF	26.86	2.911e4	3.419e4	0.847	0.85	0.77	532.8	YES	NO	dd	db	10.169
3	2378-TCDF	25.38	2.665e4	3.566e4	0.903	0.75	0.77	543.0	YES	NO	bb	bb	9.386
4	1368-TCDF	21.89	3.262e4	4.290e4	1.170	0.76	0.77	675.5	YES	NO	bb	bb	8.778

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	26.72	2.199e5	1.438e5	1.241	1.53	1.55	6254.3	YES	NO	bb	bb	51.203

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDF	31.89	1.728e5	1.094e5	0.880	1.58	1.55	1460.3	YES	NO	bb	bb	56.057
2	23478-PeCDF	30.85	1.711e5	1.091e5	0.991	1.57	1.55	1497.7	YES	NO	bb	bb	52.196
3	12378-PeCDF	29.52	1.650e5	1.029e5	0.923	1.60	1.55	1432.7	YES	NO	bb	bb	50.686
4	Total-pentafurans	28.37	2.704e4	1.776e4	0.931	1.52	1.55	245.4	YES	NO	bb	bb	8.635

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123678-HxCDF	34.63	1.507e5	1.206e5	1.032	1.25	1.24	1981.7	YES	NO	db	db	52.489
2	123478-HxCDF	34.48	1.527e5	1.215e5	1.128	1.26	1.24	1972.4	YES	NO	bd	bd	49.985
3	123468-HXCDF	32.80	1.593e5	1.290e5	1.206	1.24	1.24	2036.3	YES	NO	bb	bb	49.197
4	123789-HxCDF	36.55	1.138e5	8.877e4	0.988	1.28	1.24	1490.0	YES	NO	bb	bb	50.703
5	234678-HxCDF	35.50	1.430e5	1.111e5	1.081	1.29	1.24	1903.2	YES	NO	bb	bb	51.949

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	40.58	8.903e4	7.868e4	1.104	1.13	1.05	970.0	YES	NO	bd	bb	54.010
2	Total-heptafurans	39.03	5.640e2	4.952e2	1.134	1.14	1.05	7.5	YES	NO	db	bb	0.286
3	1234678-HpCDF	38.38	1.104e5	1.042e5	1.164	1.06	1.05	1385.1	YES	NO	bb	bb	49.609

ID: CS3J4, Name: 23121431, Date: 15-Dec-2023, Time: 15:28:36, 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	27.19	2.469e2	3.168e2	0.973	0.78	0.77	5.0	NO	NO	db	bb	0.079
2	1289-TCDF	26.86	2.911e4	3.419e4	0.847	0.85	0.77	532.8	YES	NO	dd	db	10.169
3	2378-TCDF	25.38	2.665e4	3.566e4	0.903	0.75	0.77	543.0	YES	NO	bb	bb	9.386
4	1368-TCDF	21.89	3.262e4	4.290e4	1.170	0.76	0.77	675.5	YES	NO	bb	bb	8.778
5	12389-PECDF	31.89	1.728e5	1.094e5	0.880	1.58	1.55	1460.3	YES	NO	bb	bb	56.057
6	23478-PeCDF	30.85	1.711e5	1.091e5	0.991	1.57	1.55	1497.7	YES	NO	bb	bb	52.196
7	12378-PeCDF	29.52	1.650e5	1.029e5	0.923	1.60	1.55	1432.7	YES	NO	bb	bb	50.686
8	Total-pentafurans	28.37	2.704e4	1.776e4	0.931	1.52	1.55	245.4	YES	NO	bb	bb	8.635
9	123678-HxCDF	34.63	1.507e5	1.206e5	1.032	1.25	1.24	1981.7	YES	NO	db	db	52.489
10	123478-HxCDF	34.48	1.527e5	1.215e5	1.128	1.26	1.24	1972.4	YES	NO	bd	bd	49.985
11	123468-HXCDF	32.80	1.593e5	1.290e5	1.206	1.24	1.24	2036.3	YES	NO	bb	bb	49.197
12	123789-HxCDF	36.55	1.138e5	8.877e4	0.988	1.28	1.24	1490.0	YES	NO	bb	bb	50.703
13	234678-HxCDF	35.50	1.430e5	1.111e5	1.081	1.29	1.24	1903.2	YES	NO	bb	bb	51.949
14	1234789-HpCDF	40.58	8.903e4	7.868e4	1.104	1.13	1.05	970.0	YES	NO	bd	bb	54.010
15	Total-heptafurans	39.03	5.640e2	4.952e2	1.134	1.14	1.05	7.5	YES	NO	db	bb	0.286
16	1234678-HpCDF	38.38	1.104e5	1.042e5	1.164	1.06	1.05	1385.1	YES	NO	bb	bb	49.609
17	OCDF	44.68	1.204e5	1.370e5	1.130	0.88	0.89	890.9	YES	NO	bd	bd	95.623
18	13468-PECDF	26.72	2.199e5	1.438e5	1.241	1.53	1.55	6254.3	YES	NO	bb	bb	51.203

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1368-TCDD	23.16	2.489e4	3.161e4	1.181	0.79	0.77	364.9	YES	NO	bd	bb	8.826
2	1289-TCDD	26.61	2.327e4	3.031e4	0.963	0.77	0.77	335.6	YES	NO	bb	bd	10.266
3	2378-TCDD	26.01	2.666e4	3.452e4	1.243	0.77	0.77	389.0	YES	NO	bb	bb	9.079
4	Total-tetradioxins	25.69	4.058e4	5.104e4	1.129	0.80	0.77	410.3	YES	NO	bd	bb	14.972
5	Total-tetradioxins	25.21	1.241e4	1.594e4	1.129	0.78	0.77	188.8	YES	NO	bb	bb	4.634
6	Total-tetradioxins	24.62	2.713e2	3.923e2	1.129	0.69	0.77	4.5	YES	NO	bb	bb	0.108

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12378-PeCDD	31.11	1.216e5	8.091e4	1.150	1.50	1.55	986.2	YES	NO	bd	bb	45.468
2	Total-pentadioxins	30.43	6.679e2	3.880e2	1.548	1.72	1.55	5.0	YES	NO	bb	bb	0.176
3	12479-PECDD	28.39	2.144e5	1.419e5	2.166	1.51	1.55	1110.9	YES	NO	bd	bd	42.478
4	12389-PECDD	31.50	1.515e5	9.919e4	1.326	1.53	1.55	1215.3	YES	NO	bd	bd	48.810

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HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123478-HxCDD	35.62	1.110e5	9.009e4	0.960	1.23	1.24	2150.8	YES	NO	bd	bd	40.926
2	124679-HXCDD	33.59	1.302e5	1.065e5	1.127	1.22	1.24	2255.4	YES	NO	bd	bd	41.038
3	Total-hexadioxins	36.43	2.050e2	1.530e2	0.943	1.34	1.24	5.5	YES	NO	db	db	0.073
4	123789-HxCDD	36.12	1.183e5	9.680e4	0.804	1.22	1.24	2052.2	YES	NO	bd	bd	51.386
5	123678-HxCDD	35.74	1.254e5	1.012e5	0.883	1.24	1.24	2141.0	YES	NO	db	dd	48.438

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.85	8.505e4	8.040e4	1.200	1.06	1.05	1286.7	YES	NO	bd	bd	44.267
2	1234679-HPCDD	38.83	1.008e5	1.004e5	1.303	1.00	1.05	1618.1	YES	NO	bb	bd	49.591

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	23.16	2.489e4	3.161e4	1.181	0.79	0.77	364.9	YES	NO	bd	bb	8.826
2	1289-TCDD	26.61	2.327e4	3.031e4	0.963	0.77	0.77	335.6	YES	NO	bb	bd	10.266
3	2378-TCDD	26.01	2.666e4	3.452e4	1.243	0.77	0.77	389.0	YES	NO	bb	bb	9.079
4	Total-tetradioxins	25.69	4.058e4	5.104e4	1.129	0.80	0.77	410.3	YES	NO	bd	bb	14.972
5	Total-tetradioxins	25.21	1.241e4	1.594e4	1.129	0.78	0.77	188.8	YES	NO	bb	bb	4.634
6	Total-tetradioxins	24.62	2.713e2	3.923e2	1.129	0.69	0.77	4.5	YES	NO	bb	bb	0.108
7	12378-PeCDD	31.11	1.216e5	8.091e4	1.150	1.50	1.55	986.2	YES	NO	bd	bb	45.468
8	Total-pentadioxins	30.43	6.679e2	3.880e2	1.548	1.72	1.55	5.0	YES	NO	bb	bb	0.176
9	12479-PECDD	28.39	2.144e5	1.419e5	2.166	1.51	1.55	1110.9	YES	NO	bd	bd	42.478
10	123478-HxCDD	35.62	1.110e5	9.009e4	0.960	1.23	1.24	2150.8	YES	NO	bd	bd	40.926
11	124679-HXCDD	33.59	1.302e5	1.065e5	1.127	1.22	1.24	2255.4	YES	NO	bd	bd	41.038
12	12389-PECDD	31.50	1.515e5	9.919e4	1.326	1.53	1.55	1215.3	YES	NO	bd	bd	48.810
13	Total-hexadioxins	36.43	2.050e2	1.530e2	0.943	1.34	1.24	5.5	YES	NO	db	db	0.073
14	123789-HxCDD	36.12	1.183e5	9.680e4	0.804	1.22	1.24	2052.2	YES	NO	bd	bd	51.386
15	123678-HxCDD	35.74	1.254e5	1.012e5	0.883	1.24	1.24	2141.0	YES	NO	db	dd	48.438
16	1234678-HpCDD	39.85	8.505e4	8.040e4	1.200	1.06	1.05	1286.7	YES	NO	bd	bd	44.267
17	1234679-HPCDD	38.83	1.008e5	1.004e5	1.303	1.00	1.05	1618.1	YES	NO	bb	bd	49.591
18	OCDD	44.44	1.020e5	1.184e5	1.059	0.86	0.89	879.3	YES	NO	bd	bd	87.394

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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	27.19	2.469e2	3.168e2	0.973	0.78	0.77	5.0	NO	NO	db	bb	0.079
2	1289-TCDF	26.86	2.911e4	3.419e4	0.847	0.85	0.77	532.8	YES	NO	dd	db	10.169
3	2378-TCDF	25.38	2.665e4	3.566e4	0.903	0.75	0.77	543.0	YES	NO	bb	bb	9.386
4	1368-TCDF	21.89	3.262e4	4.290e4	1.170	0.76	0.77	675.5	YES	NO	bb	bb	8.778
5	12389-PECDF	31.89	1.728e5	1.094e5	0.880	1.58	1.55	1460.3	YES	NO	bb	bb	56.057
6	23478-PeCDF	30.85	1.711e5	1.091e5	0.991	1.57	1.55	1497.7	YES	NO	bb	bb	52.196
7	12378-PeCDF	29.52	1.650e5	1.029e5	0.923	1.60	1.55	1432.7	YES	NO	bb	bb	50.686
8	Total-pentafurans	28.37	2.704e4	1.776e4	0.931	1.52	1.55	245.4	YES	NO	bb	bb	8.635
9	123678-HxCDF	34.63	1.507e5	1.206e5	1.032	1.25	1.24	1981.7	YES	NO	db	db	52.489
10	123478-HxCDF	34.48	1.527e5	1.215e5	1.128	1.26	1.24	1972.4	YES	NO	bd	bd	49.985
11	123468-HXCDF	32.80	1.593e5	1.290e5	1.206	1.24	1.24	2036.3	YES	NO	bb	bb	49.197
12	123789-HxCDF	36.55	1.138e5	8.877e4	0.988	1.28	1.24	1490.0	YES	NO	bb	bb	50.703
13	234678-HxCDF	35.50	1.430e5	1.111e5	1.081	1.29	1.24	1903.2	YES	NO	bb	bb	51.949
14	1234789-HpCDF	40.58	8.903e4	7.868e4	1.104	1.13	1.05	970.0	YES	NO	bd	bb	54.010
15	Total-heptafurans	39.03	5.640e2	4.952e2	1.134	1.14	1.05	7.5	YES	NO	db	bb	0.286
16	1234678-HpCDF	38.38	1.104e5	1.042e5	1.164	1.06	1.05	1385.1	YES	NO	bb	bb	49.609
17	OCDF	44.68	1.204e5	1.370e5	1.130	0.88	0.89	890.9	YES	NO	bd	bd	95.623
18	13468-PECDF	26.72	2.199e5	1.438e5	1.241	1.53	1.55	6254.3	YES	NO	bb	bb	51.203
19	1368-TCDD	23.16	2.489e4	3.161e4	1.181	0.79	0.77	364.9	YES	NO	bd	bb	8.826
20	1289-TCDD	26.61	2.327e4	3.031e4	0.963	0.77	0.77	335.6	YES	NO	bb	bd	10.266
21	2378-TCDD	26.01	2.666e4	3.452e4	1.243	0.77	0.77	389.0	YES	NO	bb	bb	9.079
22	Total-tetradioxins	25.69	4.058e4	5.104e4	1.129	0.80	0.77	410.3	YES	NO	bd	bb	14.972
23	Total-tetradioxins	25.21	1.241e4	1.594e4	1.129	0.78	0.77	188.8	YES	NO	bb	bb	4.634
24	Total-tetradioxins	24.62	2.713e2	3.923e2	1.129	0.69	0.77	4.5	YES	NO	bb	bb	0.108
25	12378-PeCDD	31.11	1.216e5	8.091e4	1.150	1.50	1.55	986.2	YES	NO	bd	bb	45.468
26	Total-pentadioxins	30.43	6.679e2	3.880e2	1.548	1.72	1.55	5.0	YES	NO	bb	bb	0.176
27	12479-PECDD	28.39	2.144e5	1.419e5	2.166	1.51	1.55	1110.9	YES	NO	bd	bd	42.478
28	123478-HxCDD	35.62	1.110e5	9.009e4	0.960	1.23	1.24	2150.8	YES	NO	bd	bd	40.926
29	124679-HXCDD	33.59	1.302e5	1.065e5	1.127	1.22	1.24	2255.4	YES	NO	bd	bd	41.038
30	12389-PECDD	31.50	1.515e5	9.919e4	1.326	1.53	1.55	1215.3	YES	NO	bd	bd	48.810
31	Total-hexadioxins	36.43	2.050e2	1.530e2	0.943	1.34	1.24	5.5	YES	NO	db	db	0.073
32	123789-HxCDD	36.12	1.183e5	9.680e4	0.804	1.22	1.24	2052.2	YES	NO	bd	bd	51.386
33	123678-HxCDD	35.74	1.254e5	1.012e5	0.883	1.24	1.24	2141.0	YES	NO	db	dd	48.438
34	1234678-HpCDD	39.85	8.505e4	8.040e4	1.200	1.06	1.05	1286.7	YES	NO	bd	bd	44.267
35	1234679-HPCDD	38.83	1.008e5	1.004e5	1.303	1.00	1.05	1618.1	YES	NO	bb	bd	49.591
36	OCDD	44.44	1.020e5	1.184e5	1.059	0.86	0.89	879.3	YES	NO	bd	bd	87.394

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PFK1

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

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	28.99	4.094e3					1.3	NO		bd		0.000
2	FUNCTION2 PFK	28.95	6.433e2					0.4	NO		bb		0.000
3	FUNCTION2 PFK	28.52	9.509e3					2.0	NO		db		0.000
4	FUNCTION2 PFK	28.48	8.150e3					1.7	NO		bd		0.000
5	FUNCTION2 PFK	28.08	4.104e3					0.9	NO		bb		0.000
6	FUNCTION2 PFK	27.86	1.891e4					2.7	NO		bb		0.000
7	FUNCTION2 PFK	27.80	3.858e3					1.3	NO		db		0.000
8	FUNCTION2 PFK	27.76	2.806e3					0.8	NO		dd		0.000
9	FUNCTION2 PFK	27.69	1.151e4					2.6	NO		bd		0.000
10	FUNCTION2 PFK	31.83	5.804e3					1.5	NO		db		0.000
11	FUNCTION2 PFK	31.77	1.589e3					0.7	NO		bd		0.000
12	FUNCTION2 PFK	31.72	3.667e3					1.1	NO		db		0.000
13	FUNCTION2 PFK	31.68	7.100e3					2.1	NO		bd		0.000
14	FUNCTION2 PFK	31.41	6.319e3					1.3	NO		bb		0.000
15	FUNCTION2 PFK	31.11	3.609e3					1.1	NO		bb		0.000
16	FUNCTION2 PFK	30.65	6.156e3					1.8	NO		bb		0.000
17	FUNCTION2 PFK	30.49	1.049e4					1.6	NO		bb		0.000
18	FUNCTION2 PFK	29.95	3.566e3					1.1	NO		bb		0.000
19	FUNCTION2 PFK	29.89	1.942e3					0.7	NO		bb		0.000
20	FUNCTION2 PFK	29.72	2.489e3					0.8	NO		bb		0.000
21	FUNCTION2 PFK	29.37	7.995e3					1.9	NO		db		0.000
22	FUNCTION2 PFK	29.33	1.114e4					2.1	NO		dd		0.000
23	FUNCTION2 PFK	29.24	1.196e4					2.1	NO		bd		0.000
24	FUNCTION2 PFK	29.16	1.830e3					0.7	NO		bb		0.000
25	FUNCTION2 PFK	29.06	3.403e3					0.7	NO		db		0.000
26	FUNCTION2 PFK	32.36	5.198e3					1.6	NO		bb		0.000
27	FUNCTION2 PFK	32.19	2.796e3					0.8	NO		bb		0.000
28	FUNCTION2 PFK	32.13	3.516e3					1.2	NO		db		0.000
29	FUNCTION2 PFK	32.10	7.310e3					1.5	NO		bd		0.000
30	FUNCTION2 PFK	31.98	1.879e3					0.7	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	32.47	4.559e4					4.1	YES		bb		0.000

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	38.81	8.459e3					0.8	NO		bd		
2	FUNCTION4 PFK	38.58	6.927e3					1.3	NO		bb		
3	FUNCTION4 PFK	38.25	1.492e3					0.5	NO		bb		
4	FUNCTION4 PFK	37.98	2.350e3					0.8	NO		bb		
5	FUNCTION4 PFK	37.94	2.424e3					0.7	NO		bb		
6	FUNCTION4 PFK	37.87	5.424e3					1.1	NO		db		
7	FUNCTION4 PFK	37.83	3.894e3					0.9	NO		bd		
8	FUNCTION4 PFK	37.59	1.502e4					2.2	NO		bb		
9	FUNCTION4 PFK	42.48	4.804e3					1.2	NO		bb		
10	FUNCTION4 PFK	42.33	8.786e3					1.3	NO		bb		
11	FUNCTION4 PFK	42.27	8.582e3					2.0	NO		db		
12	FUNCTION4 PFK	42.19	2.635e4					2.1	NO		dd		
13	FUNCTION4 PFK	42.07	1.071e4					1.1	NO		bd		
14	FUNCTION4 PFK	41.67	1.908e4					1.7	NO		bb		
15	FUNCTION4 PFK	41.10	1.374e4					1.8	NO		bb		
16	FUNCTION4 PFK	40.56	9.155e2					0.5	NO		bb		
17	FUNCTION4 PFK	40.50	3.823e3					1.1	NO		bb		
18	FUNCTION4 PFK	40.19	5.404e3					1.3	NO		bb		
19	FUNCTION4 PFK	40.12	8.283e3					1.3	NO		bb		
20	FUNCTION4 PFK	40.02	7.510e3					1.7	NO		bb		
21	FUNCTION4 PFK	39.43	3.423e3					0.9	NO		bb		
22	FUNCTION4 PFK	39.10	2.009e3					0.5	NO		bb		
23	FUNCTION4 PFK	38.97	3.216e3					1.0	NO		bb		
24	FUNCTION4 PFK	38.89	2.615e4					2.0	NO		db		
25	FUNCTION4 PFK	42.92	6.731e3					1.7	NO		bb		
26	FUNCTION4 PFK	42.87	1.774e3					0.6	NO		bb		
27	FUNCTION4 PFK	42.78	4.456e3					0.8	NO		bb		
28	FUNCTION4 PFK	42.63	7.901e2					0.4	NO		bb		
29	FUNCTION4 PFK	42.58	4.910e3					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													

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	26.72	1.187e2					2.8	NO		bb		0.000
2	FUNCTION1 HXCD...	25.72	1.187e2					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													

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	30.71	1.949e2					5.8	YES		bb		0.000
2	FUNCTION2 HPCD...	29.30	1.206e2					1.3	NO		bb		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	35.78	7.724e1					2.5	NO		db		0.000
2	FUNCTION3 OCDPE	35.68	9.486e1					2.6	NO		dd		0.000
3	FUNCTION3 OCDPE	35.61	9.967e1					3.6	YES		bd		0.000
4	FUNCTION3 OCDPE	37.46	8.794e1					3.0	YES		bb		0.000

ETHERS5

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

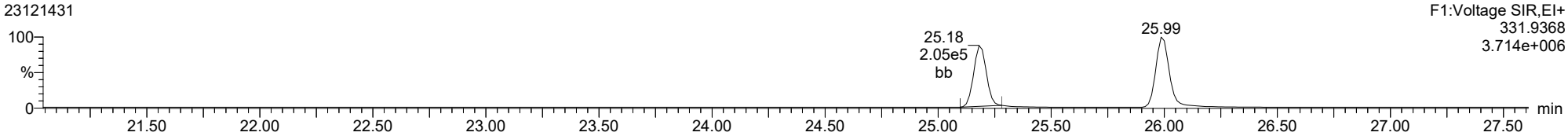
ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	43.94	1.041e2					4.5	YES		bb		0.000

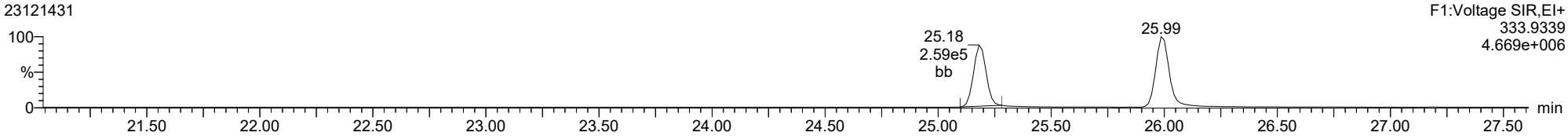
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ID: CS3J4, Name: 23121431, Date: 15-Dec-2023, Time: 15:28:36, Conditions: AUTOSPEC01, User: pk

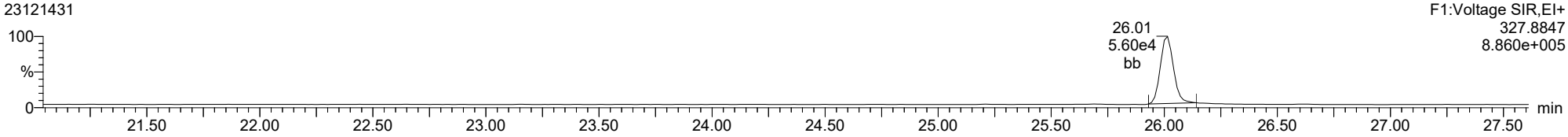
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13C-1234-TCDD

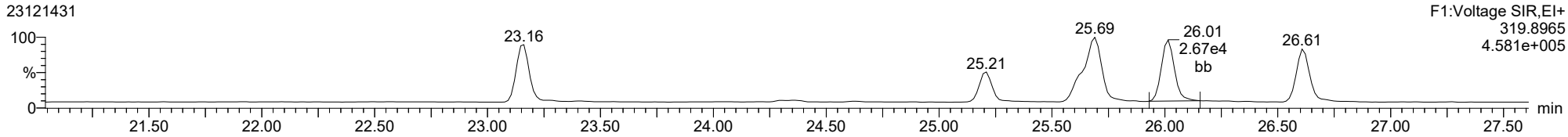


37CL-2378-TCDD

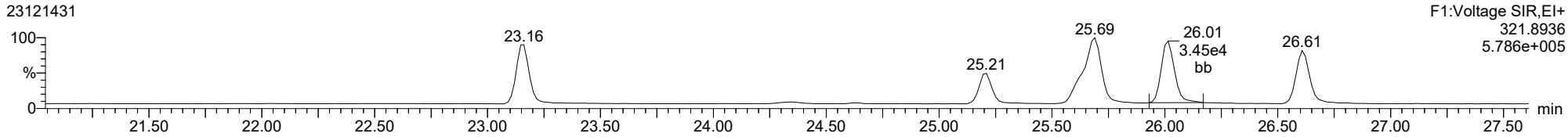


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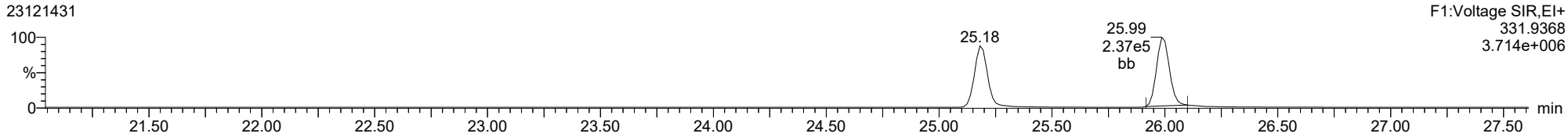
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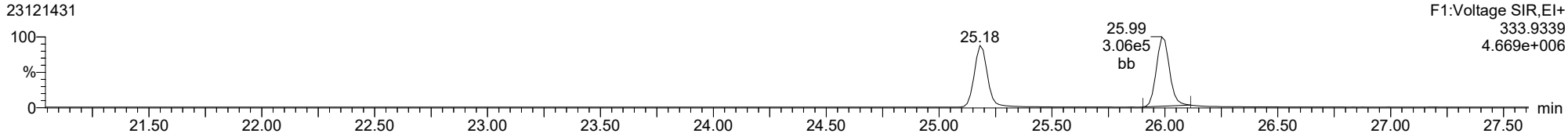
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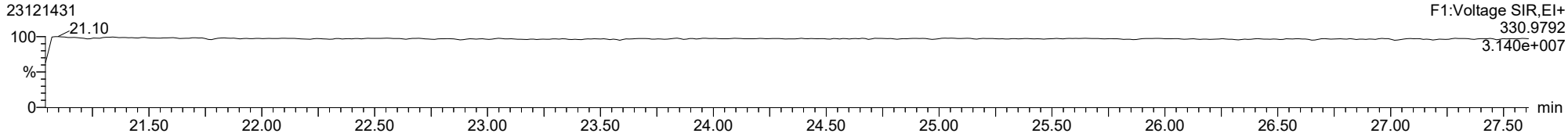
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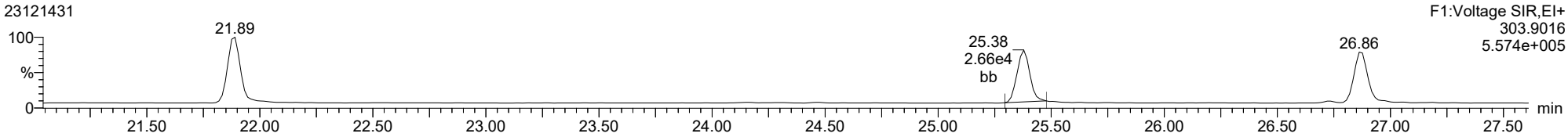


FUNCTION1 PFK

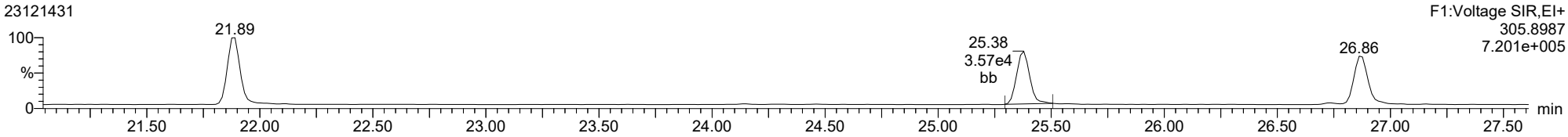


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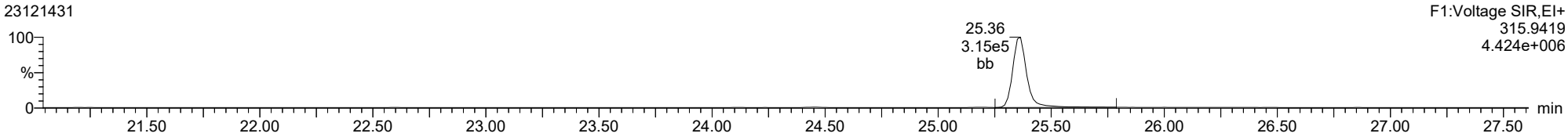
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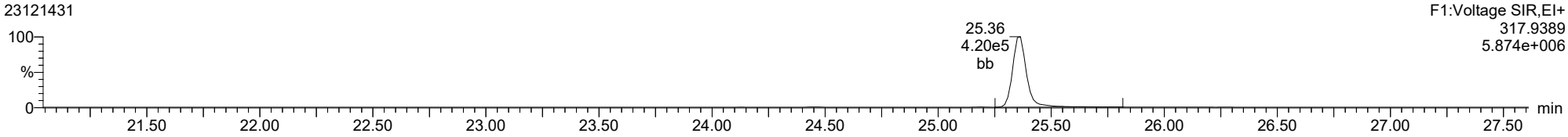
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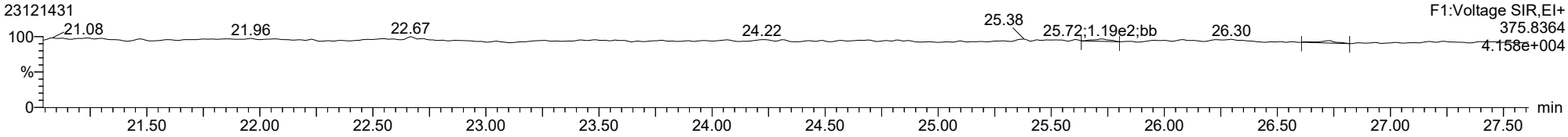
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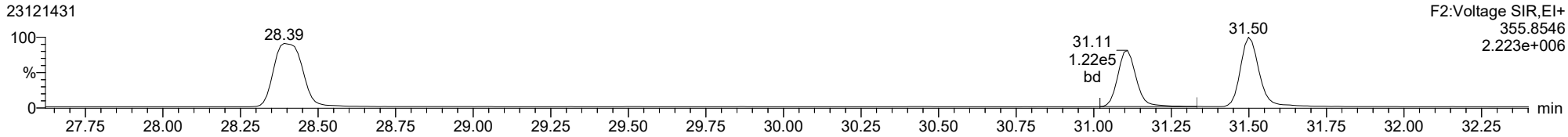


FUNCTION1 HXCDPE

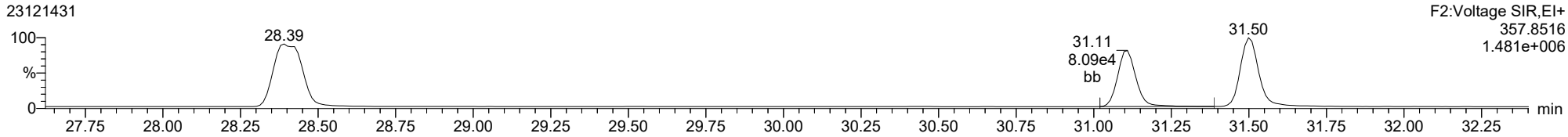


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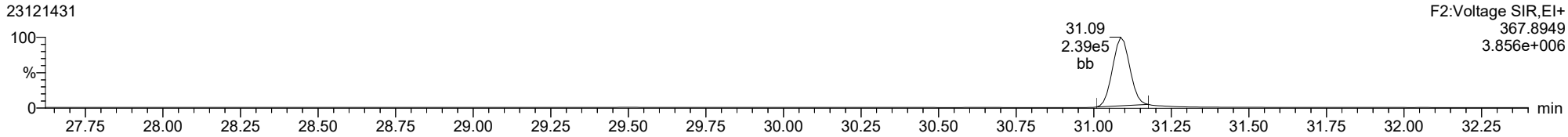
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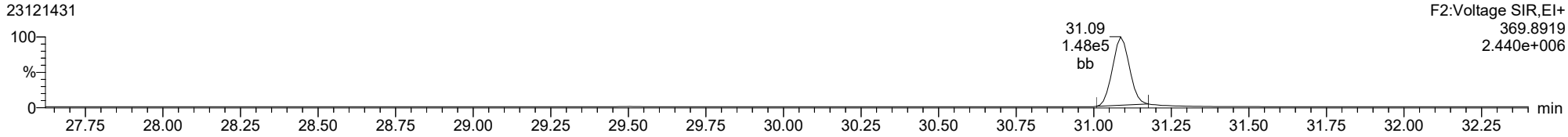
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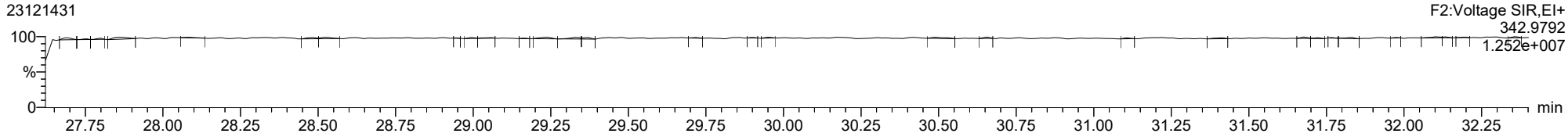
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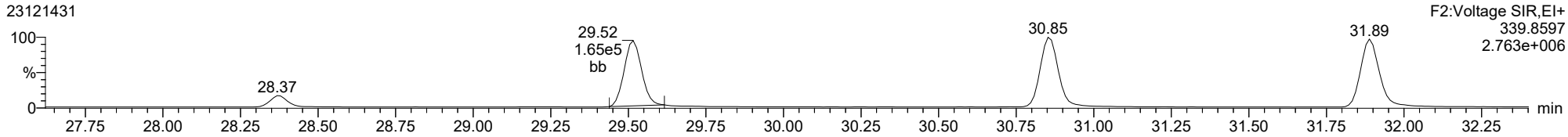


FUNCTION2 PFK

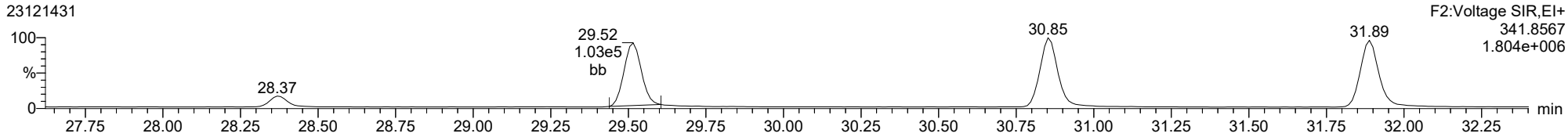


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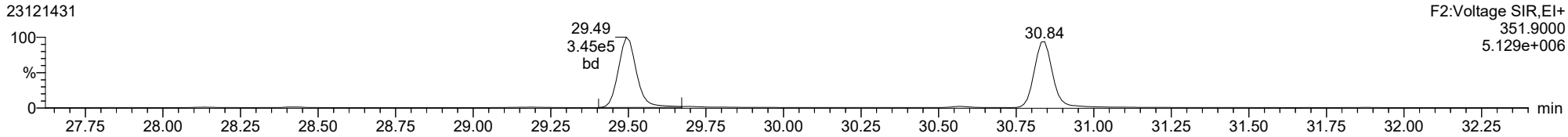
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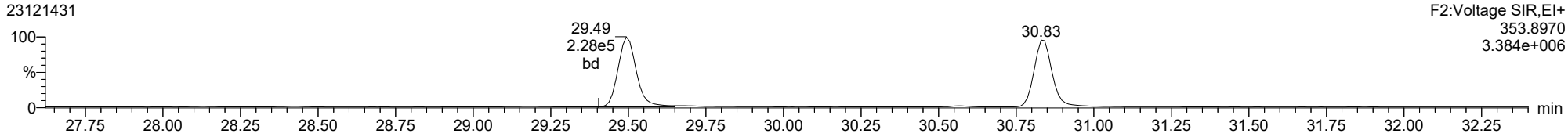
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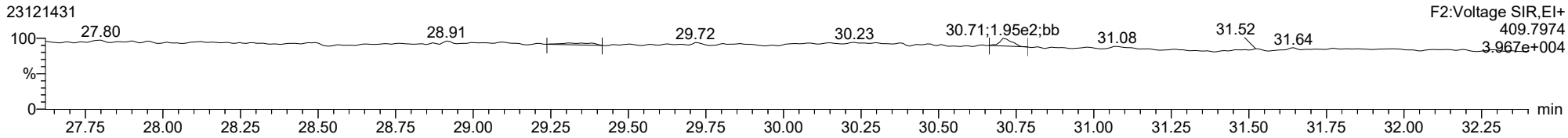
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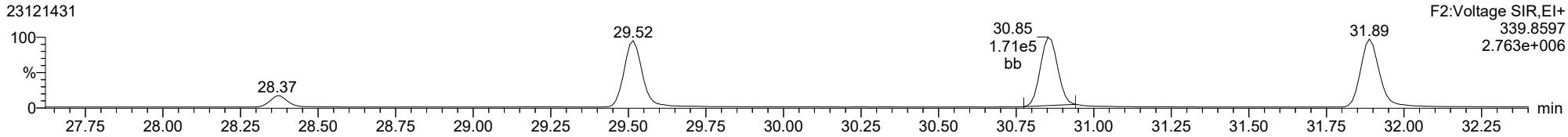


FUNCTION2 HPCDPE

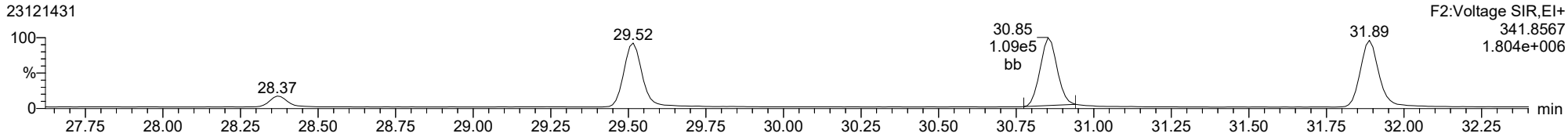


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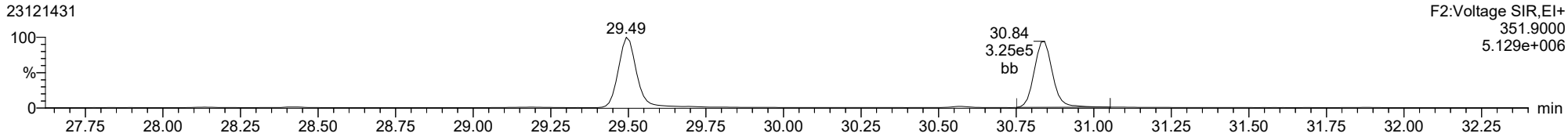
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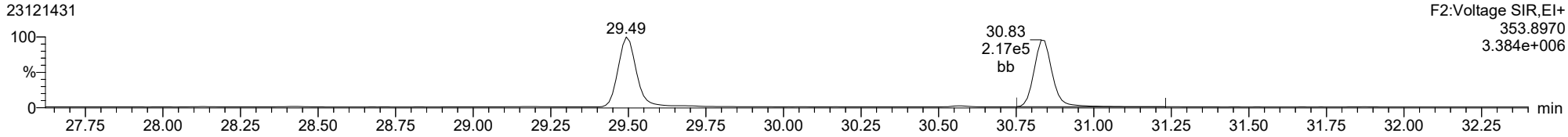
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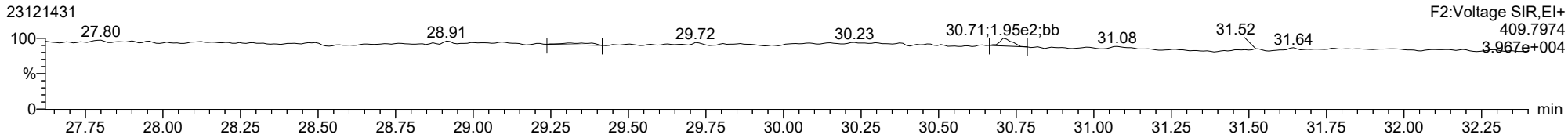
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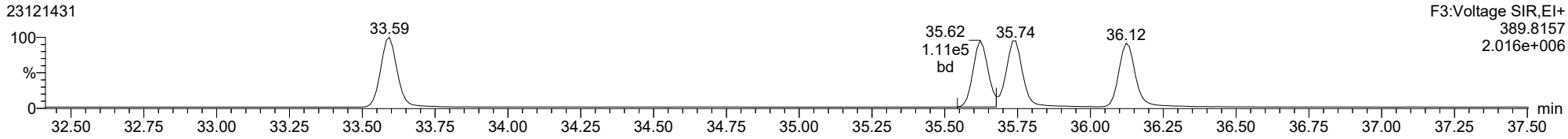


FUNCTION2 HPCDPE

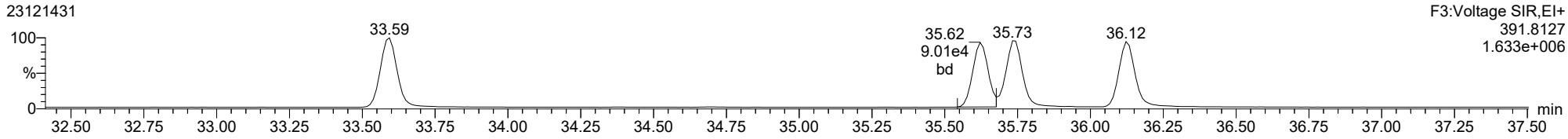


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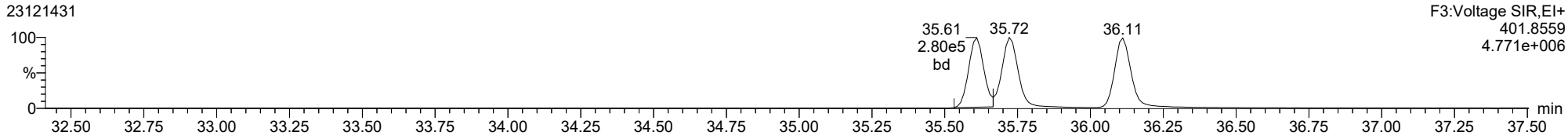
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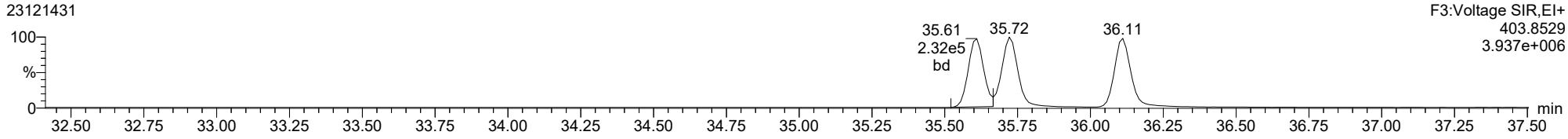
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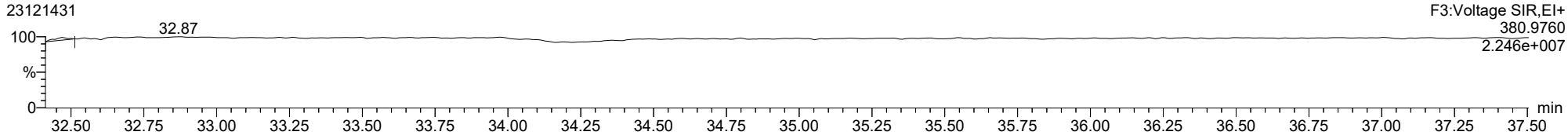
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13C-123478-HxCDD



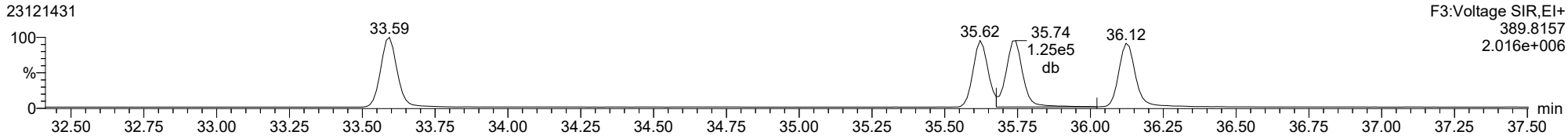
FUNCTION3 PFK



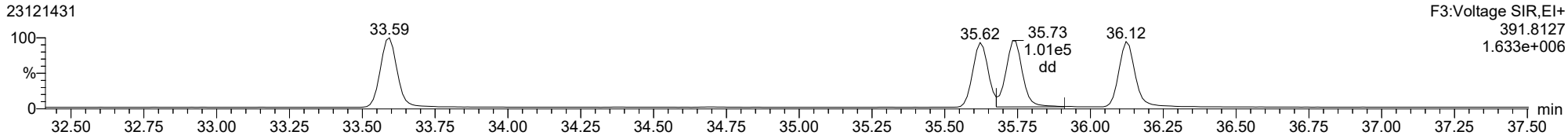
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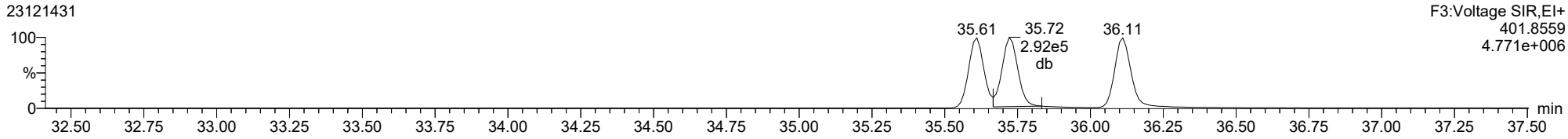
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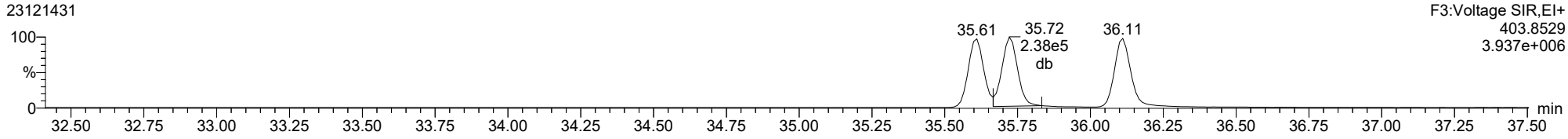
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13C-123678-HxCDD



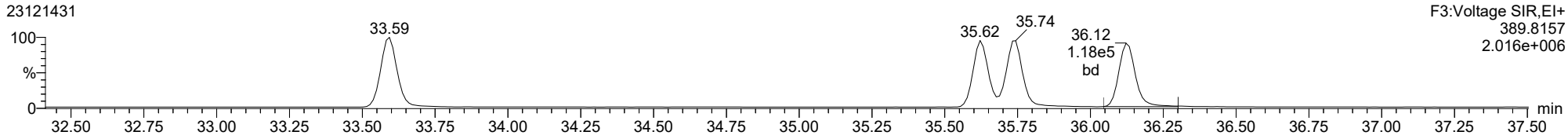
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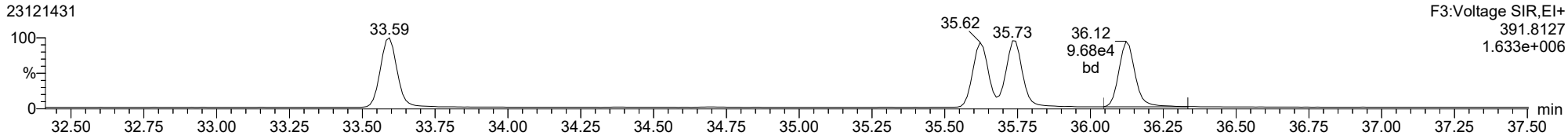
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ID: CS3J4, Name: 23121431, Date: 15-Dec-2023, Time: 15:28:36, Conditions: AUTOSPEC01, User: pk

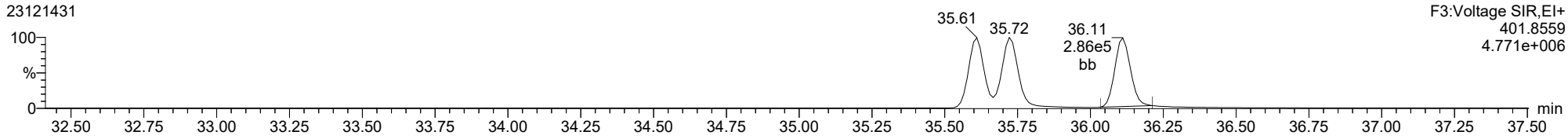
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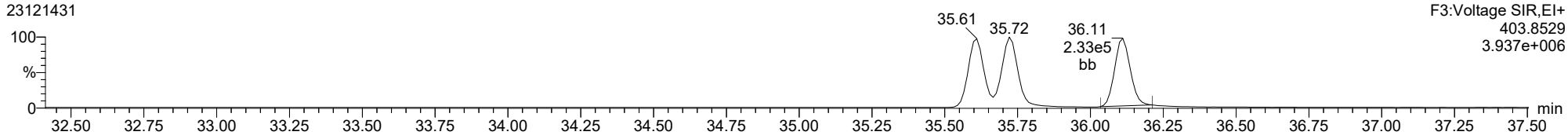
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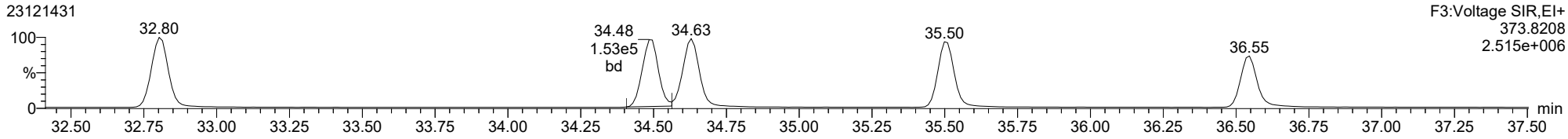


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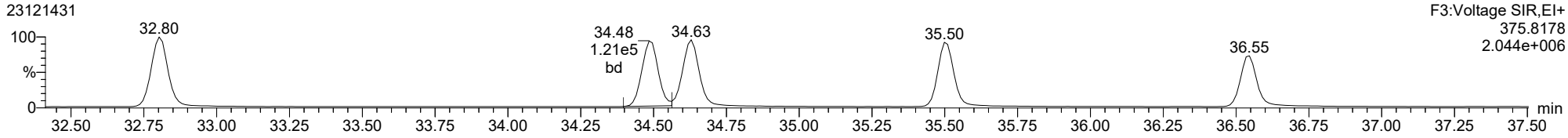


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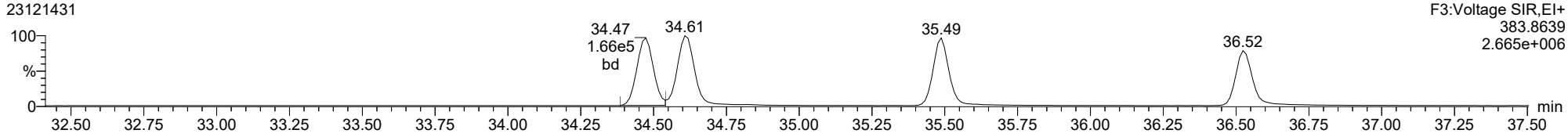
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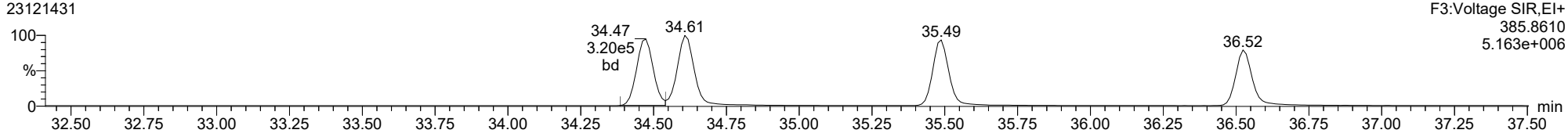
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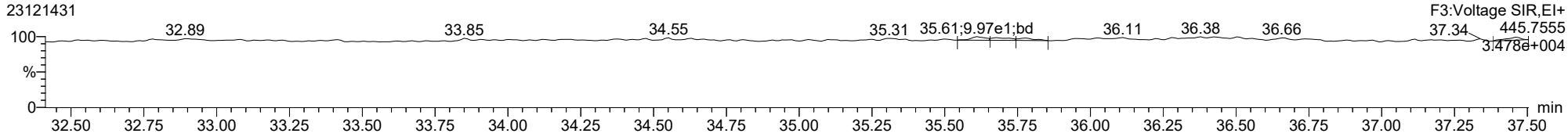
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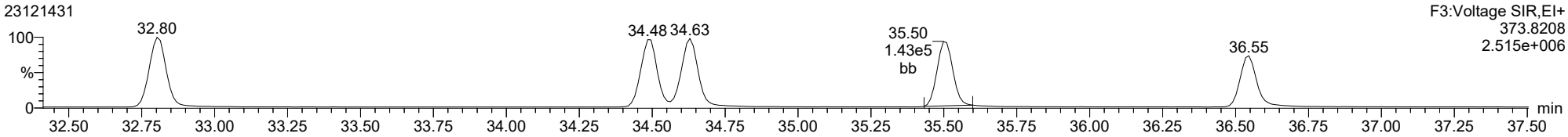


FUNCTION3 OCDPE

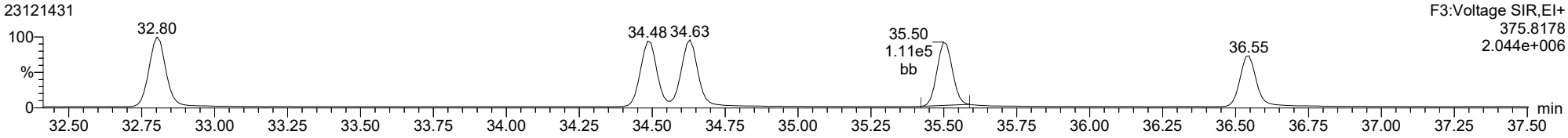


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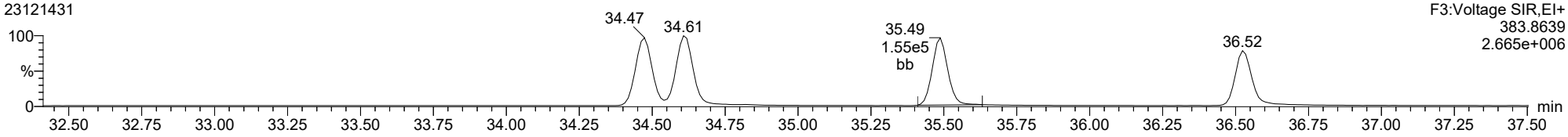
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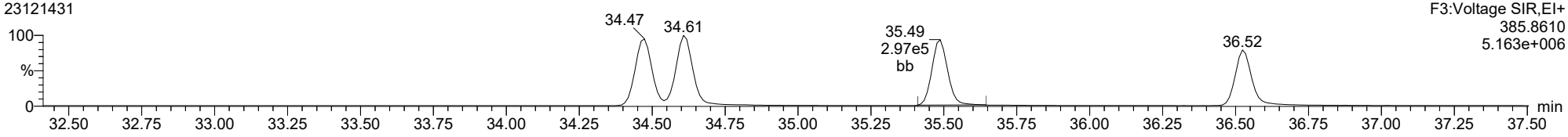
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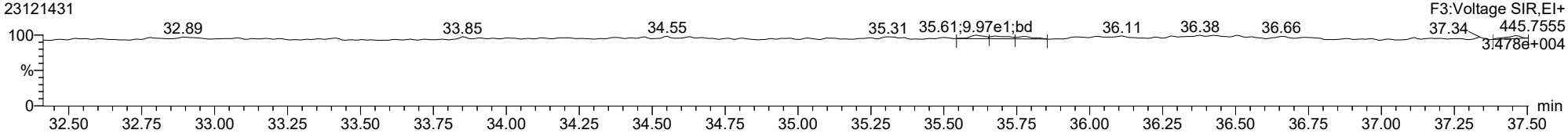
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13C-234678-HxCDF

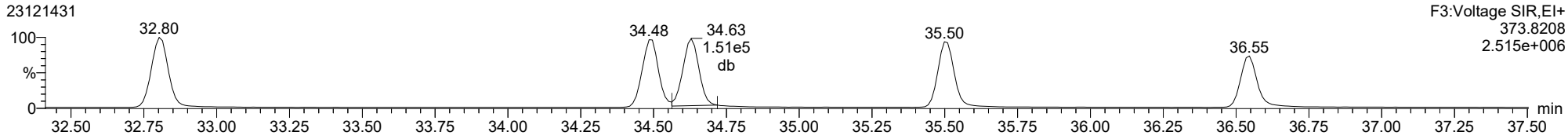


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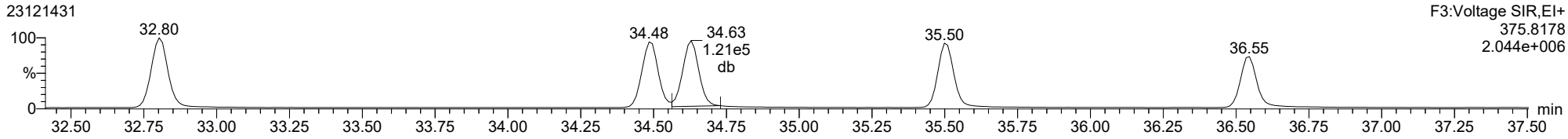


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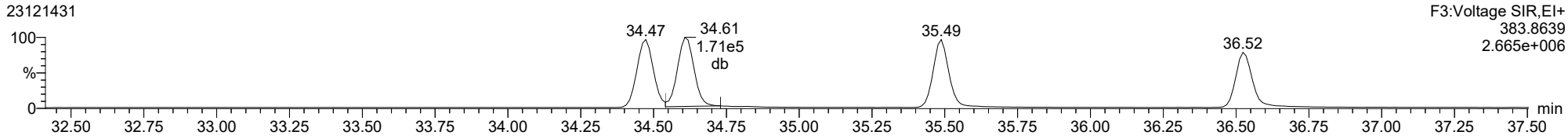
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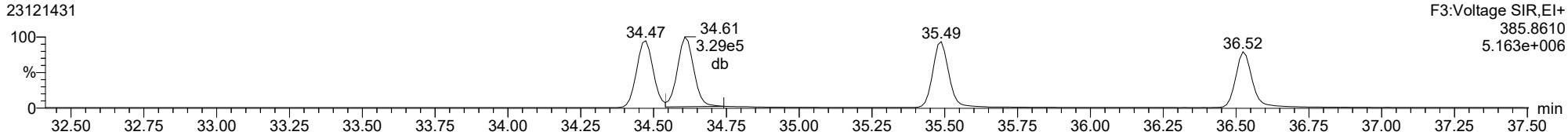
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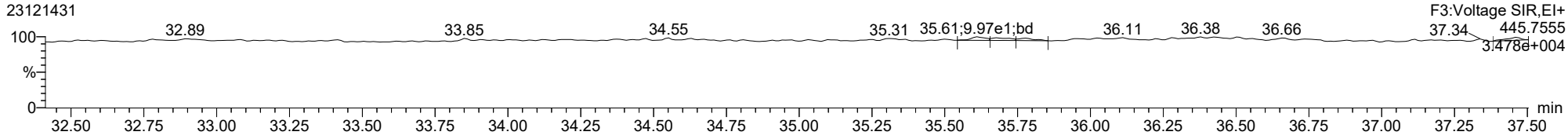
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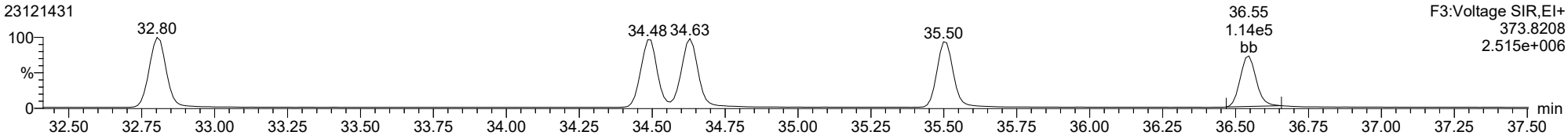


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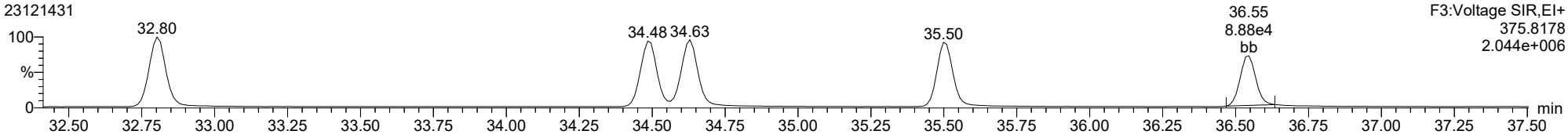


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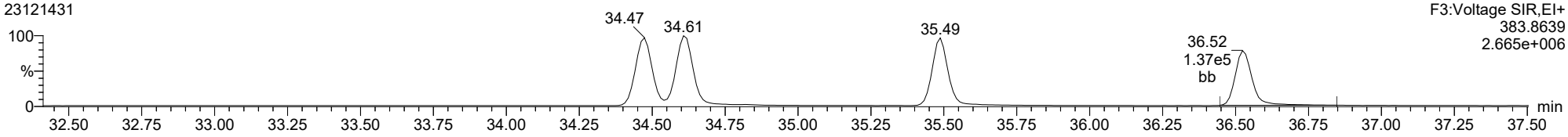
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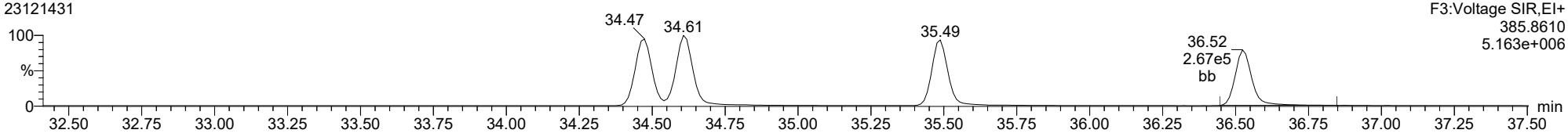
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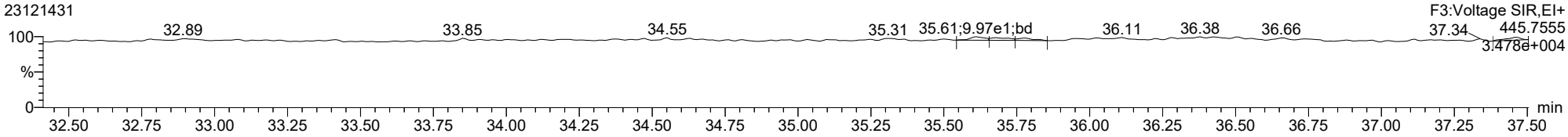
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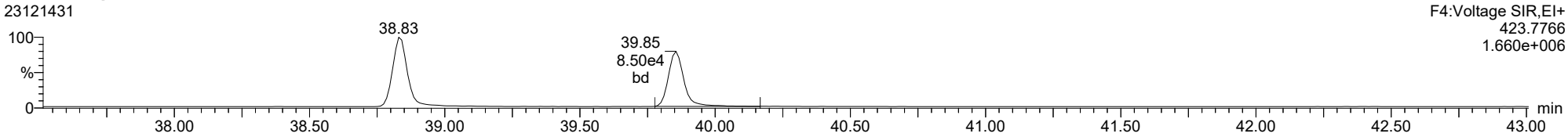


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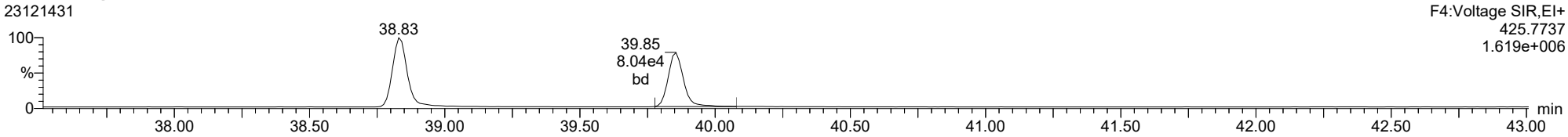


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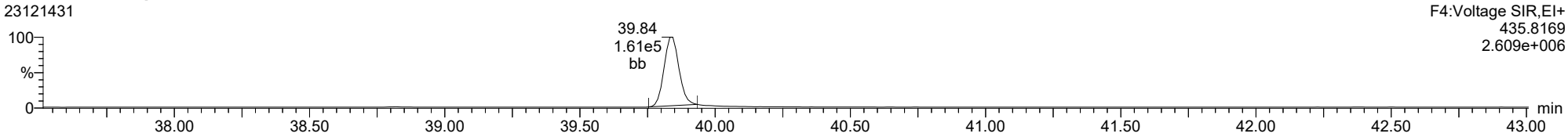
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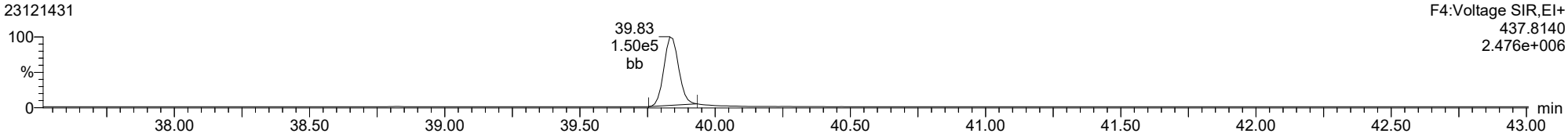
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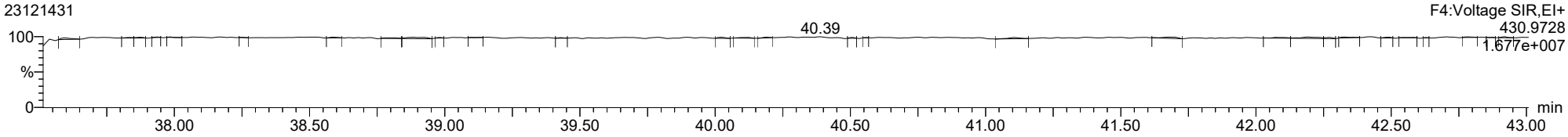
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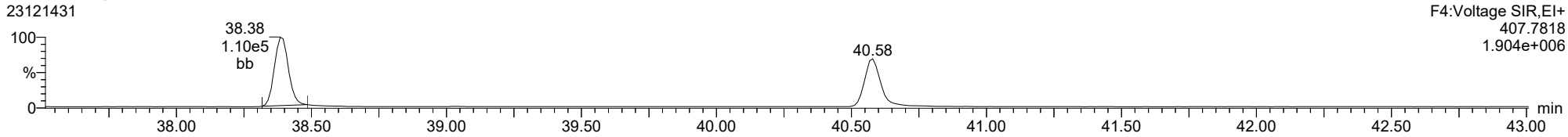


FUNCTION4 PFK

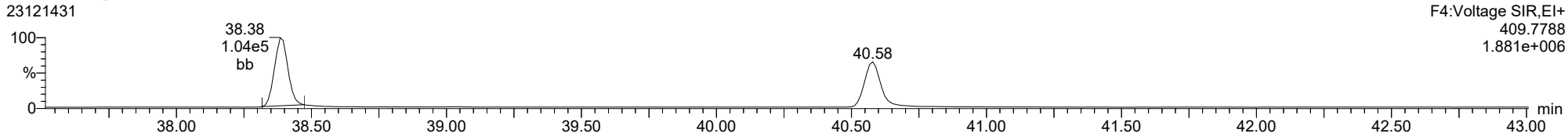


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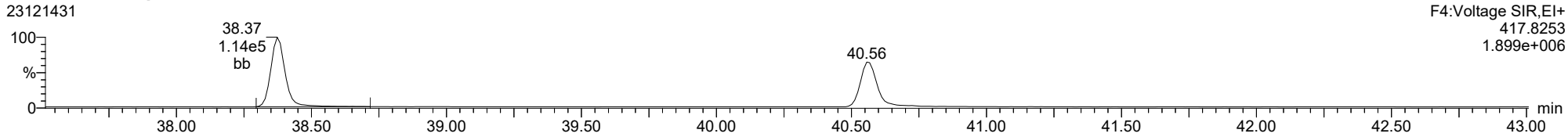
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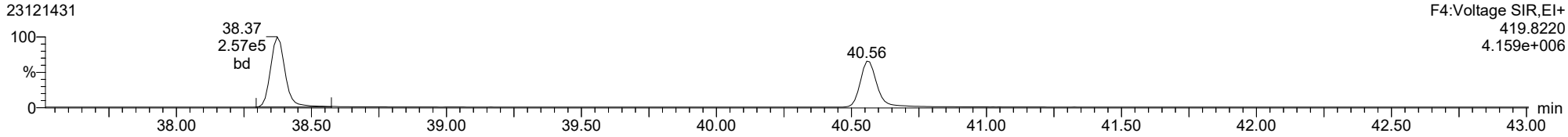
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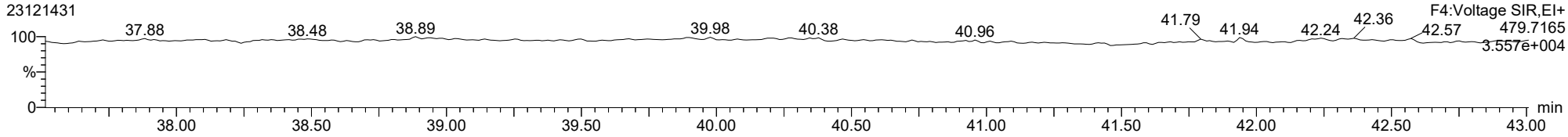
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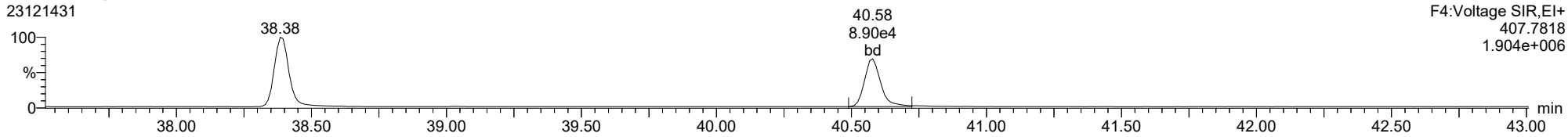


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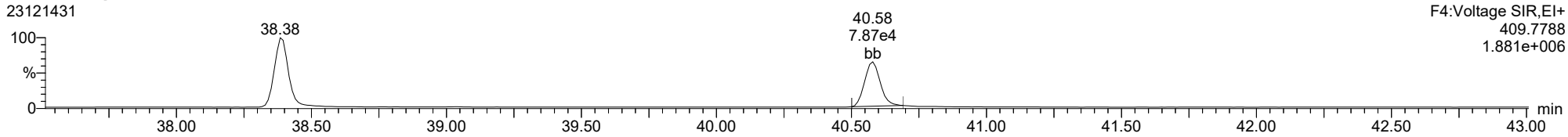


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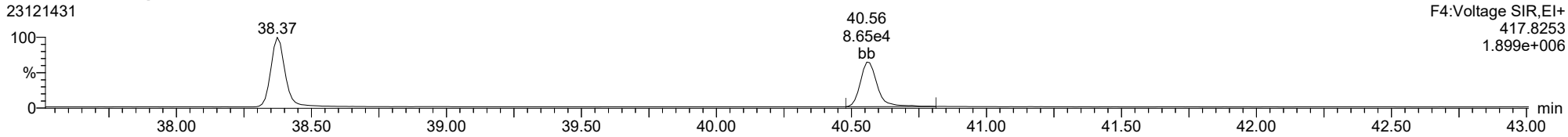
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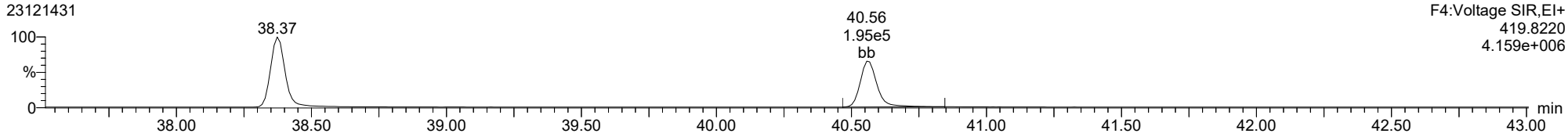
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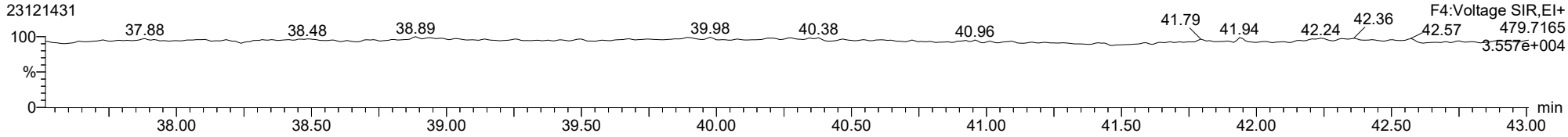
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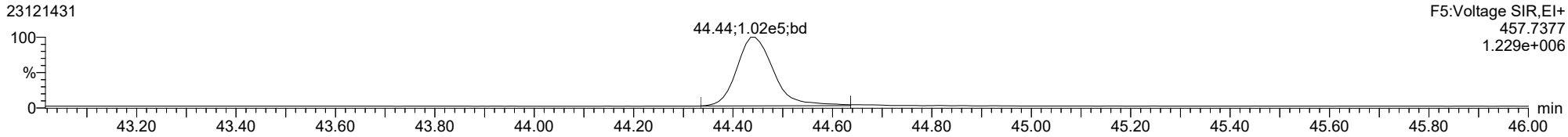


FUNCTION4 NCDPE

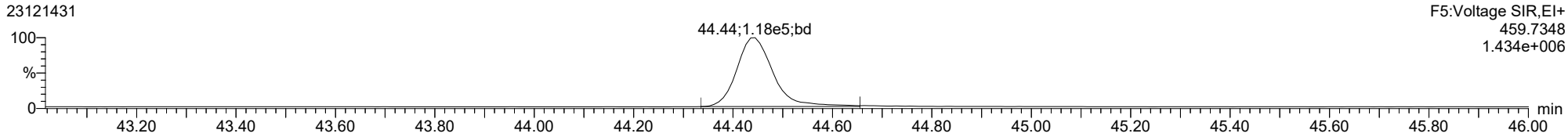


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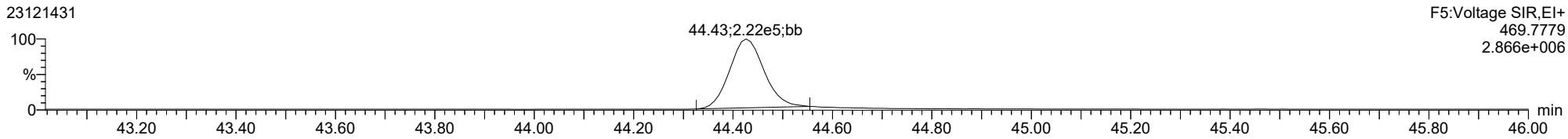
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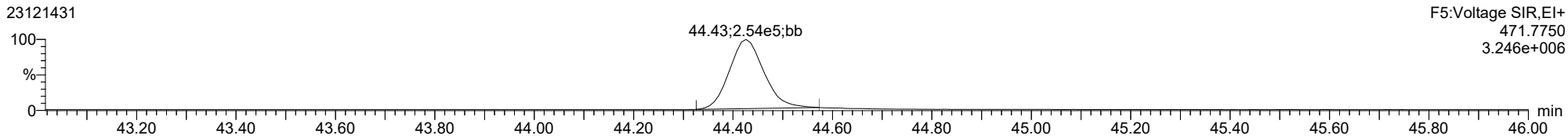
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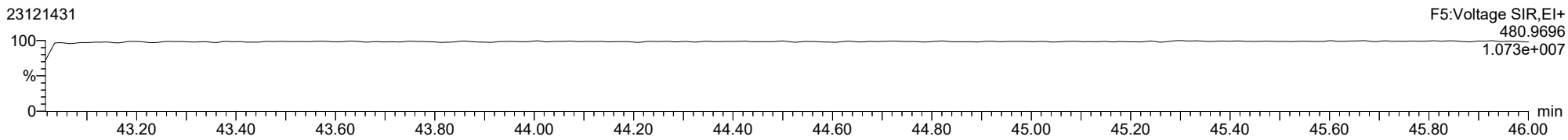
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13C-OCDD



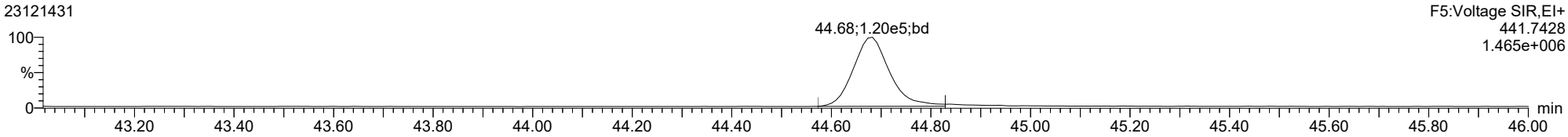
FUNCTION5 PFK



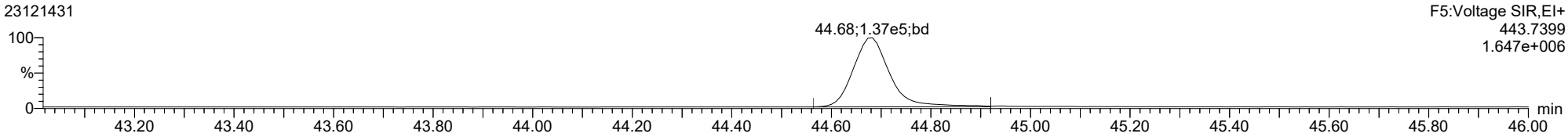
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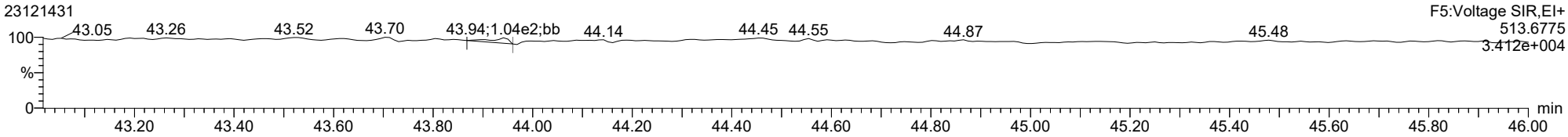
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OCDF

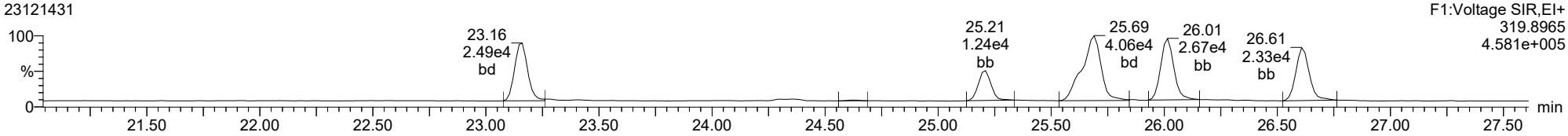


FUNCTION5 DCDPE

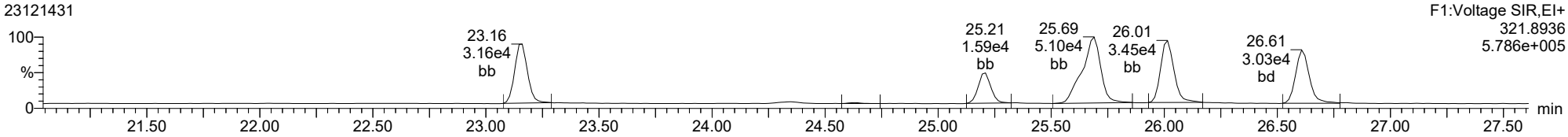


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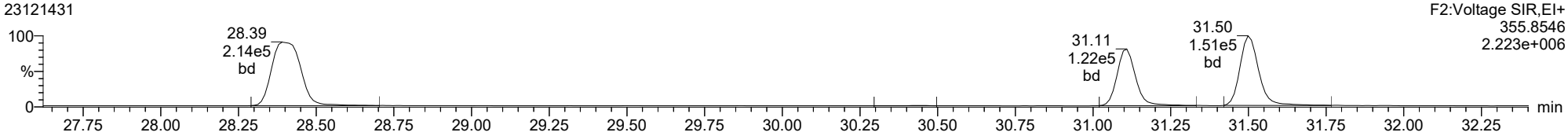
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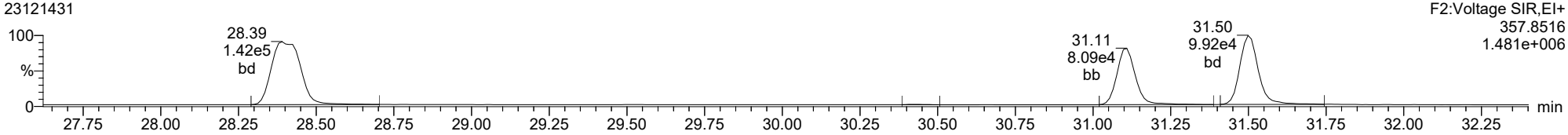
Total-tetradioxins



Total-pentadioxins

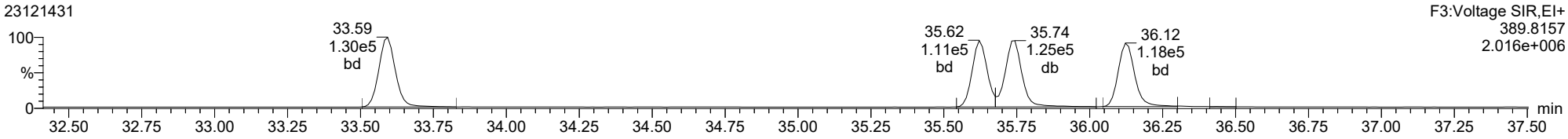


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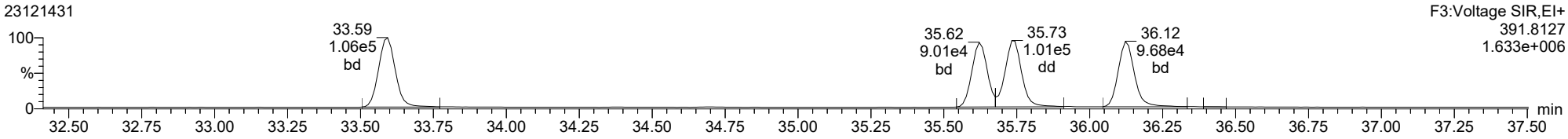


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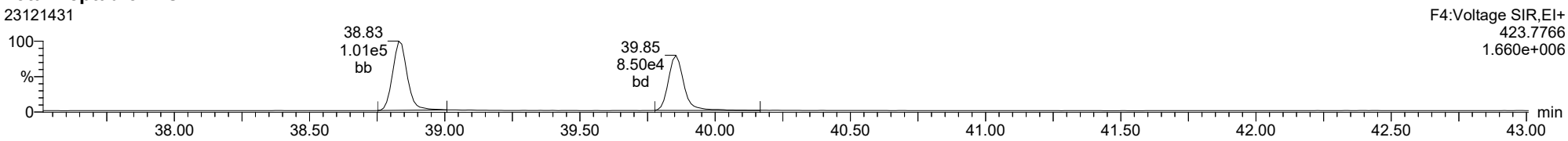
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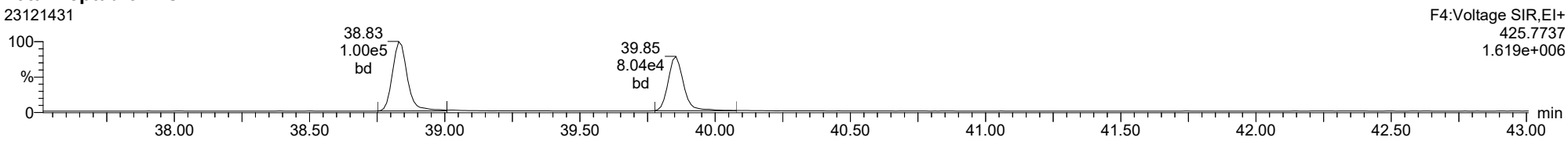
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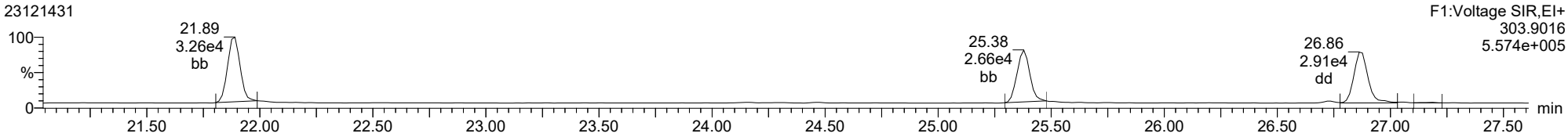


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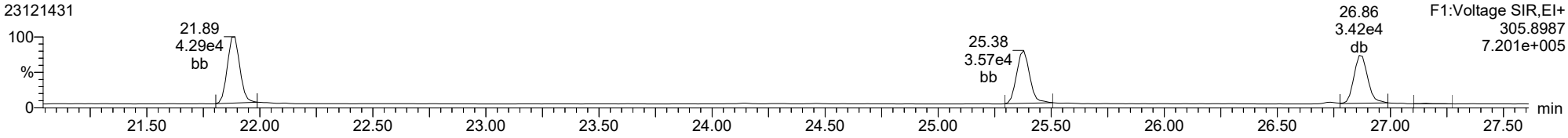


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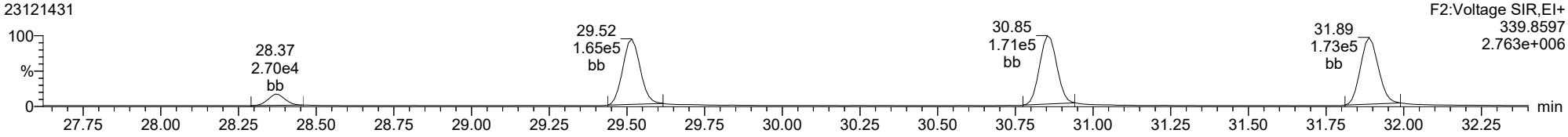
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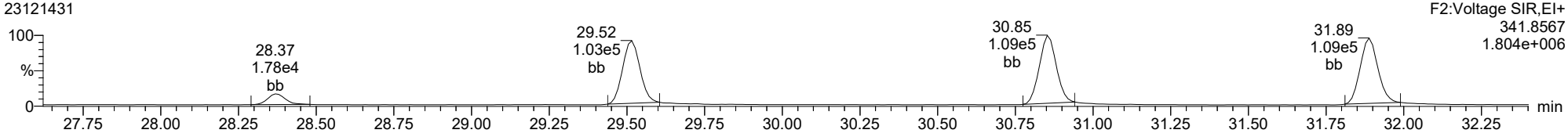
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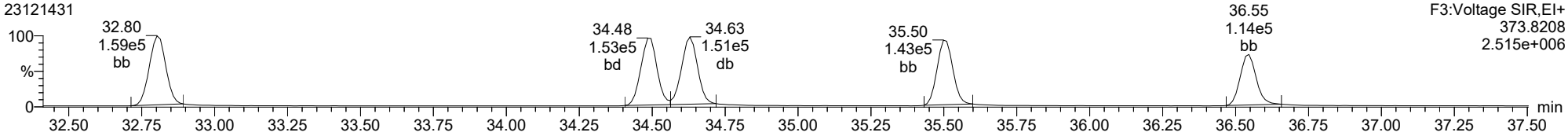


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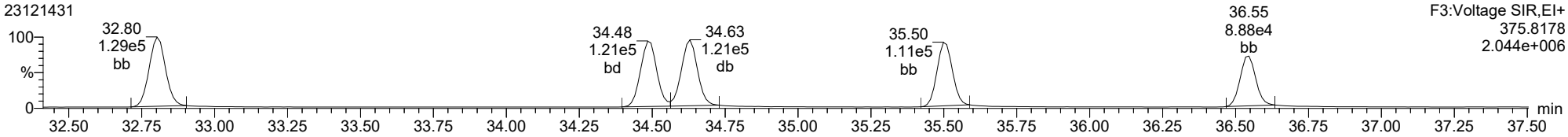


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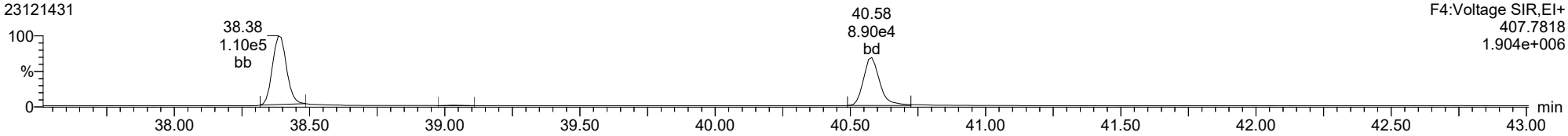
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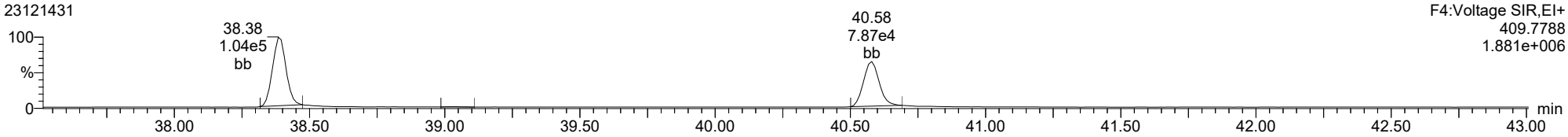
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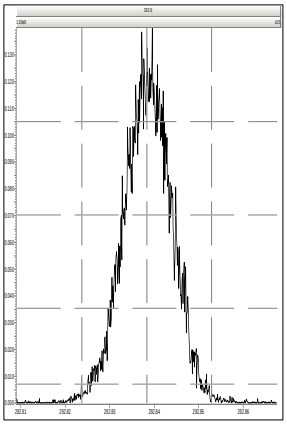


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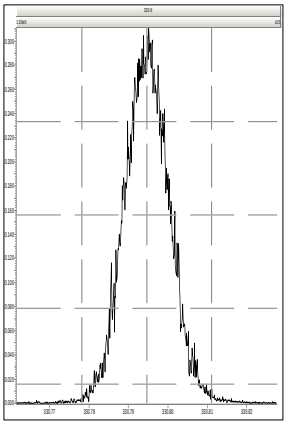


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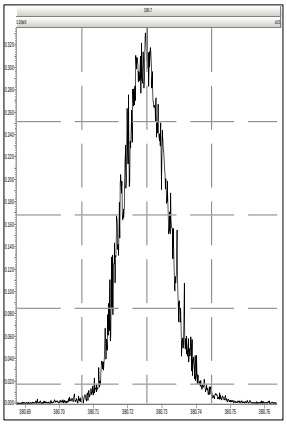
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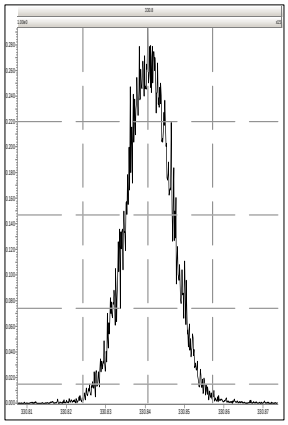
M 330.9792 R 13033



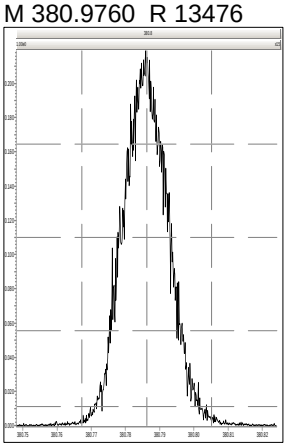
M 380.9760 R 12954



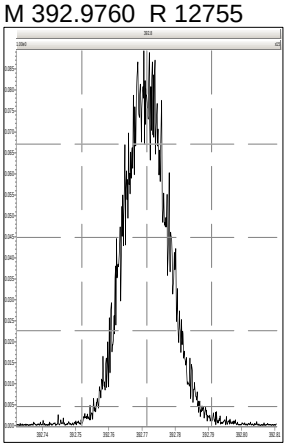
M 330.9792 R 12440



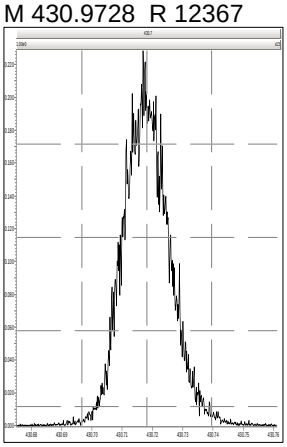
M 380.9760 R 13476



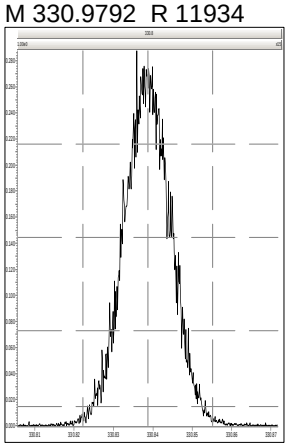
M 392.9760 R 12755



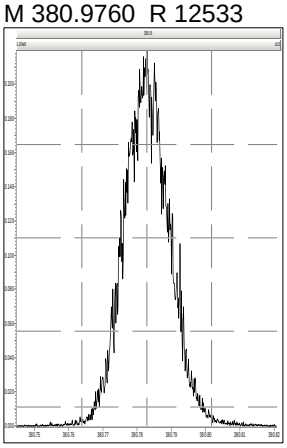
M 430.9728 R 12367



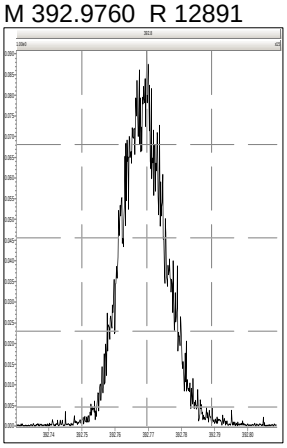
M 330.9792 R 11934



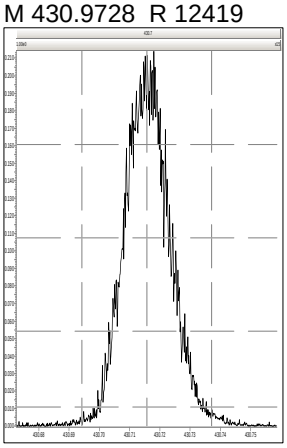
M 380.9760 R 12533



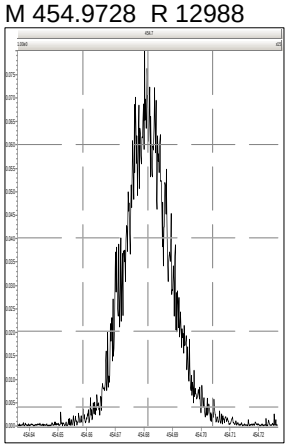
M 392.9760 R 12891



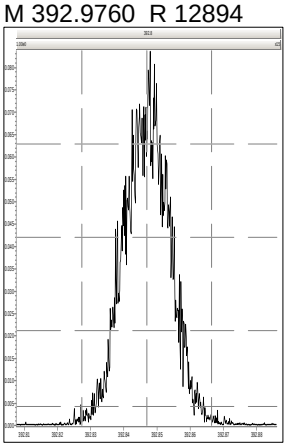
M 430.9728 R 12419



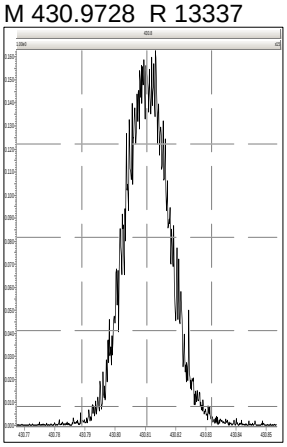
M 454.9728 R 12988



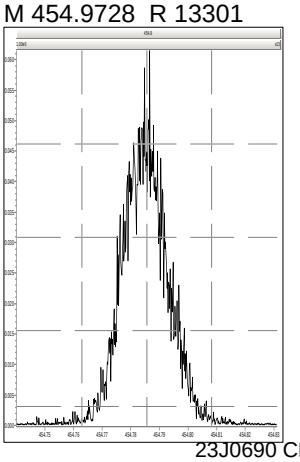
M 392.9760 R 12894



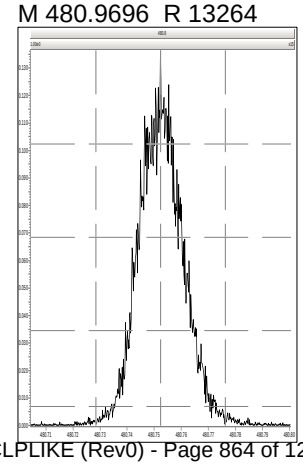
M 430.9728 R 13337



M 454.9728 R 13301

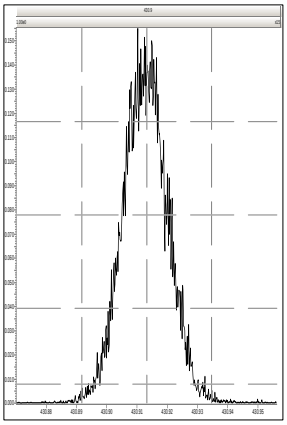


M 480.9696 R 13264

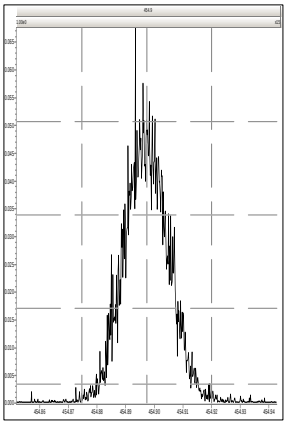


Printed: Friday, December 15, 2023 16:21:26 Pacific Standard Time

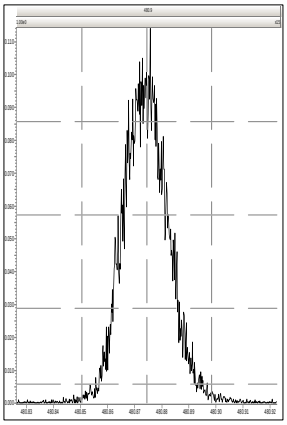
M 430.9728 R 12919



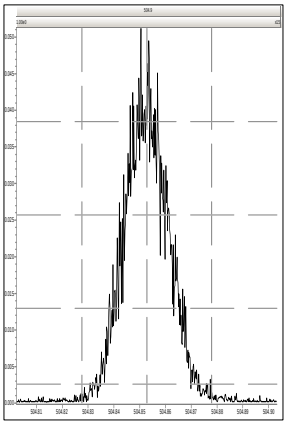
M 454.9728 R 13283



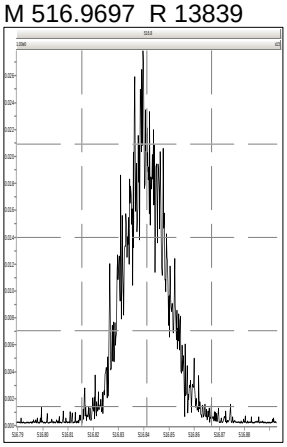
M 480.9696 R 13297

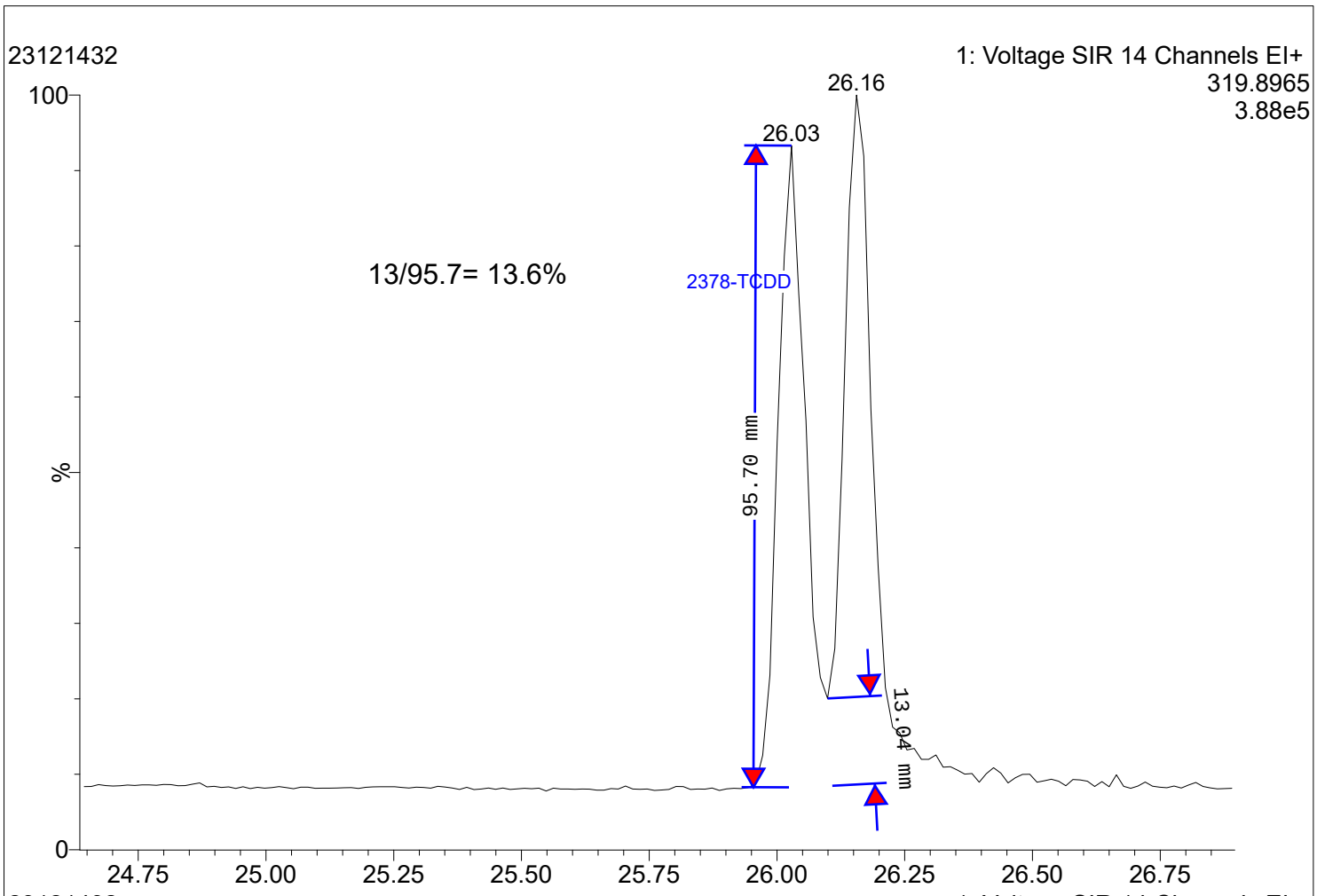


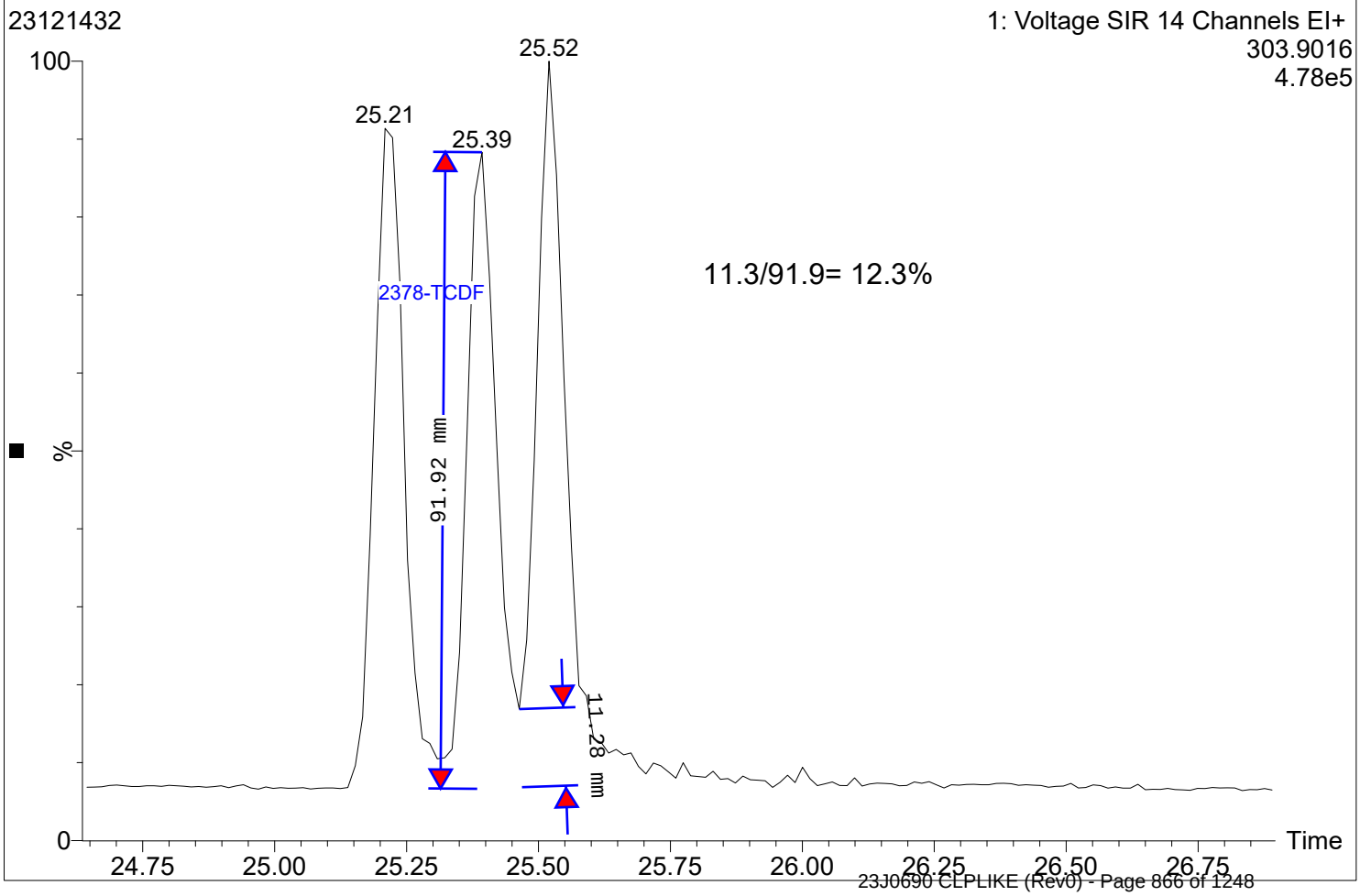
M 504.9696 R 14008



M 516.9697 R 13839




23121432
1: Voltage SIR 14 Channels EI+
319.8965
3.88e5
100
%
0
26.16
26.03
13/95.7= 13.6%
2378-TCDD
95.70 mm
13.04 mm
24.75
25.00
25.25
25.50
25.75
26.00
26.25
26.50
26.75


23121432
1: Voltage SIR 14 Channels EI+
303.9016
4.78e5
100
%
0
25.52
25.21
25.39
11.3/91.9= 12.3%
2378-TCDF
91.92 mm
11.28 mm
Time
24.75
25.00
25.25
25.50
25.75
26.00
26.25
26.50
26.75

Analytical Resources, LLC
Analytical Chemists and Consultants

CONTINUING CALIBRATION CHECK
EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Instrument ID:	AUTOSPEC01	Calibration:	GH00041
Lab File ID:	23121442	Calibration Date:	08/11/2023
Sequence:	SLL0222	Injection Date:	12/16/23
Lab Sample ID:	SLL0222-CCV2	Injection Time:	00:33
Sequence Name:	CS3J5		

		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	9.11	0.9031472	0.8223872		-8.9	+/-16
2,3,7,8-TCDD	A	10.000	9.00	1.2429820	1.1189480		-10.0	+/-22
1,2,3,7,8-PeCDF	A	50.000	49.3	0.9232368	0.9110750		-1.3	+/-18
2,3,4,7,8-PeCDF	A	50.000	51.2	0.9906617	1.0143640		2.4	+/-18
1,2,3,7,8-PeCDD	A	50.000	46.4	1.1500860	1.0662590		-7.3	+/-22
1,2,3,4,7,8-HxCDF	A	50.000	49.2	1.1281700	1.1104910		-1.6	+/-10
1,2,3,6,7,8-HxCDF	A	50.000	48.9	1.0323580	1.0092330		-2.2	+/-12
2,3,4,6,7,8-HxCDF	A	50.000	54.1	1.0814700	1.1704170		8.2	+/-12
1,2,3,7,8,9-HxCDF	A	50.000	51.1	0.9876148	1.0083560		2.1	+/-10
1,2,3,4,7,8-HxCDD	A	50.000	42.9	0.9600870	0.8241687		-14.2	+/-22
1,2,3,6,7,8-HxCDD	A	50.000	48.3	0.8826935	0.8518577		-3.5	+/-22
1,2,3,7,8,9-HxCDD	A	50.000	50.8	0.8037436	0.8160583		1.5	+/-18
1,2,3,4,6,7,8-HpCDF	A	50.000	48.4	1.1637090	1.1275170		-3.1	+/-10
1,2,3,4,7,8,9-HpCDF	A	50.000	53.2	1.1036300	1.1752190		6.5	+/-14
1,2,3,4,6,7,8-HpCDD	A	50.000	43.6	1.1996030	1.0470130		-12.7	+/-14
OCDF	A	100.00	83.6	1.1302050	0.9454002		-16.4	+/-37
OCDD	A	100.00	87.3	1.0586660	0.9244615		-12.7	+/-21
13C12-2,3,7,8-TCDF	A	100.00	88.8	1.8353850	1.6305527		-11.2	+/-29
13C12-2,3,7,8-TCDD	A	100.00	105	1.1095460	1.1641778		4.9	+/-18
13C12-1,2,3,7,8-PeCDF	A	100.00	89.5	1.3765480	1.2316863		-10.5	+/-24
13C12-2,3,4,7,8-PeCDF	A	100.00	90.2	1.3012340	1.1732374		-9.8	+/-23
13C12-1,2,3,7,8-PeCDD	A	100.00	107	0.7536802	0.8066359		7.0	+/-38
13C12-1,2,3,4,7,8-HxCDF	A	100.00	87.3	1.0906500	0.9519206		-12.7	+/-24
13C12-1,2,3,6,7,8-HxCDF	A	100.00	81.8	1.3402290	1.0964297		-18.2	+/-30
13C12-2,3,4,6,7,8-HxCDF	A	100.00	83.6	1.0934470	0.9138643		-16.4	+/-27
13C12-1,2,3,7,8,9-HxCDF	A	100.00	81.5	0.9516050	0.7760155		-18.5	+/-26
13C12-1,2,3,4,7,8-HxCDD	A	100.00	103	0.9598962	0.9857262		2.7	+/-15
13C12-1,2,3,6,7,8-HxCDD	A	100.00	95.1	1.1592550	1.1024706		-4.9	+/-15
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	75.5	0.9849488	0.7438485		-24.5	+/-22 *
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	70.1	0.7558011	0.5300777		-29.9	+/-23 *
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	94.0	0.6292861	0.5914093		-6.0	+/-28
13C12-OCDD	A	200.00	148	0.6351422	0.4702915		-26.0	+/-52
37Cl4-2,3,7,8-TCDD	A	10.000	10.0	1.1573510	1.1630174		0.5	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\231214IH2.qld
Last Altered: Saturday, December 16, 2023 10:26:00 Pacific Standard Time
Printed: Saturday, December 16, 2023 10:41:36 Pacific Standard Time

Method: T:\Autospec\Methods\Dioxin231215.mdb 15 Dec 2023 13:28:43
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 09:45:18

ID: CS3J5, Name: 23121442, Date: 16-Dec-2023, Time: 00:33:30, 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	25.379	1.001	2.491e4	3.096e4	0.903	0.805	0.770	1071	851	4.02e5	4.82e5	375.5	566.7	NO	bb	bb	9.106
12378-PeCDF	29.515	1.000	1.424e5	9.139e4	0.923	1.558	1.550	1781	2445	2.17e6	1.37e6	1215.4	561.3	NO	bb	bb	49.341
23478-PeCDF	30.864	1.001	1.523e5	9.564e4	0.991	1.592	1.550	1781	2445	2.35e6	1.43e6	1320.1	584.6	NO	bb	bb	51.196
123478-HxCDF	34.496	1.001	1.293e5	1.024e5	1.128	1.262	1.240	1623	1313	2.00e6	1.57e6	1230.3	1199.3	NO	bd	bd	49.217
234678-HxCDF	35.510	1.001	1.365e5	9.800e4	1.081	1.393	1.240	1623	1313	2.04e6	1.60e6	1255.8	1220.7	NO	bb	bb	54.112
123678-HxCDF	34.630	1.000	1.354e5	1.073e5	1.032	1.262	1.240	1623	1313	2.04e6	1.63e6	1256.1	1237.9	NO	db	db	48.880
123789-HxCDF	36.546	1.000	1.002e5	7.132e4	0.988	1.406	1.240	1623	1313	1.44e6	1.13e6	884.6	859.2	NO	bb	bb	51.050
1234678-HpCDF	38.395	1.000	9.486e4	8.902e4	1.164	1.066	1.050	1165	1674	1.57e6	1.45e6	1347.9	866.7	NO	bb	bb	48.445
1234789-HpCDF	40.579	1.000	6.687e4	6.971e4	1.104	0.959	1.050	1165	1674	9.70e5	9.33e5	833.1	557.1	NO	bb	bd	53.243
OCDF	44.683	1.006	9.090e4	1.041e5	1.130	0.874	0.890	1374	1009	1.07e6	1.22e6	782.1	1208.5	NO	bb	bd	83.649
2378-TCDD	26.014	1.000	2.264e4	3.164e4	1.243	0.716	0.770	881	987	3.47e5	4.43e5	394.1	448.5	NO	bb	dd	9.002
12378-PeCDD	31.109	1.001	1.075e5	7.169e4	1.150	1.499	1.550	1228	1343	1.54e6	1.02e6	1255.1	759.4	NO	bd	bb	46.356
123478-HxCDD	35.632	1.001	9.769e4	8.043e4	0.960	1.215	1.240	1182	1170	1.54e6	1.25e6	1303.7	1065.0	NO	bd	bd	42.922
123678-HxCDD	35.744	1.000	1.126e5	9.328e4	0.883	1.207	1.240	1182	1170	1.65e6	1.33e6	1395.4	1138.3	NO	dd	dd	48.253
123789-HxCDD	36.133	1.011	1.009e5	8.589e4	0.804	1.175	1.240	1182	1170	1.46e6	1.21e6	1238.4	1034.7	NO	bd	dd	50.766
1234678-HpCDD	39.855	1.000	6.724e4	6.852e4	1.200	0.981	1.050	1315	1543	1.02e6	9.94e5	778.4	644.0	NO	bb	bd	43.640
OCDD	44.445	1.000	8.886e4	1.018e5	1.059	0.873	0.890	730	1239	1.04e6	1.16e6	1419.0	937.3	NO	bb	bd	87.323
13C-2378-TCDF	25.365	1.007	2.943e5	3.851e5	1.835	0.764	0.770	913	1215	4.23e6	5.50e6	4635.9	4526.4	NO	bb	bb	88.840
13C-12378-PeCDF	29.504	1.172	3.099e5	2.032e5	1.377	1.525	1.550	1868	1448	4.36e6	2.89e6	2332.7	1998.7	NO	bd	bd	89.476
13C-23478-PeCDF	30.841	1.225	2.958e5	1.931e5	1.301	1.532	1.550	1868	1448	4.26e6	2.82e6	2279.6	1947.7	NO	bd	bd	90.163
13C-123478-HxCDF	34.473	0.955	1.440e5	2.734e5	1.091	0.527	0.510	1394	1809	2.15e6	4.21e6	1543.6	2329.6	NO	bd	bd	87.280
13C-123678-HxCDF	34.618	0.959	1.532e5	3.276e5	1.340	0.468	0.510	1394	1809	2.20e6	4.35e6	1580.8	2403.9	NO	db	db	81.809
13C-234678-HxCDF	35.487	0.983	1.347e5	2.660e5	1.093	0.506	0.510	1394	1809	2.04e6	4.03e6	1462.9	2227.9	NO	bb	bb	83.576
13C-123789-HxCDF	36.535	1.012	1.150e5	2.253e5	0.952	0.510	0.510	1394	1809	1.63e6	3.10e6	1170.9	1714.4	NO	bb	bb	81.548
13C-1234678-HpCDF	38.384	1.063	9.929e4	2.269e5	0.985	0.438	0.440	926	1548	1.53e6	3.46e6	1646.5	2237.9	NO	bb	bd	75.522
13C-1234789-HpCDF	40.568	1.123	7.049e4	1.619e5	0.756	0.435	0.440	926	1548	9.69e5	2.14e6	1046.5	1384.1	NO	bb	bb	70.135
13C-1234-TCDD	25.181	0.000	1.835e5	2.331e5	1.000	0.787	0.770	1123	763	2.80e6	3.61e6	2493.3	4735.7	NO	bb	bb	100.000
13C-2378-TCDD	26.000	1.033	2.150e5	2.700e5	1.110	0.796	0.770	1123	763	3.17e6	4.00e6	2825.1	5244.0	NO	bb	bb	104.924
13C-12378-PeCDD	31.087	1.235	2.071e5	1.290e5	0.754	1.605	1.550	1009	970	3.12e6	1.97e6	3094.3	2031.2	NO	bb	bb	107.026
13C-123478-HxCDD	35.610	0.986	2.393e5	1.930e5	0.960	1.240	1.240	1080	924	3.96e6	3.16e6	3667.3	3423.9	NO	bd	bd	102.691
13C-123678-HxCDD	35.732	0.989	2.682e5	2.153e5	1.159	1.246	1.240	1080	924	3.87e6	3.22e6	3580.7	3484.5	NO	db	db	95.102
13C-1234678-HpCDD	39.844	1.103	1.353e5	1.240e5	0.629	1.091	1.050	1021	978	2.07e6	1.90e6	2032.4	1943.8	NO	bb	bb	93.981
13C-OCDD	44.436	1.230	1.940e5	2.185e5	0.635	0.888	0.890	1340	1492	2.36e6	2.63e6	1759.4	1761.8	NO	bb	bb	148.090
13C-123789-HxCDD	36.111	0.000	2.401e5	1.984e5	1.000	1.210	1.240	1080	924	3.77e6	3.10e6	3487.3	3360.7	NO	bb	bb	100.000
37CL-2378-TCDD	26.014	1.033	4.846e4		1.157			1086		7.28e5		670.1			bb		10.049

Dataset: T:\Autospec\Processed Data Batch\231214IH2.qld
Last Altered: Saturday, December 16, 2023 10:26:00 Pacific Standard Time
Printed: Saturday, December 16, 2023 10:41:36 Pacific Standard Time

ID: CS3J5, Name: 23121442, Date: 16-Dec-2023, Time: 00:33:30, 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	21.890	0.863	3.036e4	3.980e4	1.170	0.763	0.770	1071	851	4.75e5	6.15e5	443.1	723.0	NO	bb	bb	8.823
1289-TCDF	26.876	1.060	2.243e4	2.880e4	0.847	0.779	0.770	1071	851	3.52e5	4.37e5	328.6	513.4	NO	bb	bb	8.906
13468-PECDF	26.721	0.906	2.075e5	1.366e5	1.241	1.518	1.550	623	637	3.18e6	2.08e6	5108.6	3256.4	NO	bb	bb	54.033
12389-PECDF	31.900	1.081	1.378e5	9.049e4	0.880	1.523	1.550	1781	2445	1.96e6	1.29e6	1102.4	528.8	NO	bb	bb	50.583
123468-HXCDF	32.802	0.951	1.382e5	1.113e5	1.206	1.242	1.240	1623	1313	2.04e6	1.63e6	1259.8	1241.3	NO	bb	bb	49.566
1368-TCDD	23.161	0.891	2.235e4	2.851e4	1.181	0.784	0.770	881	987	3.41e5	4.55e5	387.1	460.7	NO	bb	bb	8.879
1289-TCDD	26.608	1.023	2.077e4	2.479e4	0.963	0.838	0.770	881	987	2.90e5	3.58e5	328.6	362.8	NO	bb	bb	9.757
12479-PECDD	28.390	0.913	1.922e5	1.247e5	2.166	1.541	1.550	1228	1343	1.82e6	1.17e6	1482.6	873.6	NO	bb	bd	43.531
12389-PECDD	31.510	1.014	1.284e5	8.463e4	1.326	1.517	1.550	1228	1343	1.81e6	1.18e6	1471.5	880.6	NO	bd	bd	47.792
124679-HXCDD	33.593	0.943	1.145e5	9.469e4	1.127	1.209	1.240	1182	1170	1.73e6	1.44e6	1462.6	1229.2	NO	bd	bd	42.951
1234679-HPCDD	38.841	0.975	8.860e4	8.800e4	1.303	1.007	1.050	1315	1543	1.35e6	1.34e6	1023.5	867.4	NO	bd	bb	52.278
Total-tetrafurans			7.770e4		0.973			1071		1.23e6							26.836
Total-penta1			2.075e5					623		3.18e6							54.033
Total-pentafurans			4.573e5		0.931			1781		6.85e6							159.862
Total-hexafurans			6.396e5		1.087			1623		9.55e6							252.825
Total-heptafurans			1.617e5		1.134			1165		2.54e6							101.688
Total-Furans			1.635e6		1.053			1071		2.44e7							678.893
Total-tetradioxins			1.127e5		1.129			881		1.51e6							47.226
Total-pentadioxins			4.286e5		1.548			1228		5.18e6							137.846
Total-hexadioxins			4.261e5		0.943			1182		6.39e6							185.049
Total-heptadioxins			1.558e5		1.251			1315		2.37e6							95.918
Total-Dioxins			1.212e6		1.182			881		1.65e7							553.362
Total-TEQ			2.847e6					881		4.09e7							1232.255
FUNCTION1 PFK			5.169e4					238849		1.57e6							
FUNCTION2 PFK			8.340e4					79328		2.54e6							0.000
FUNCTION3 PFK			1.064e6					185397		1.88e7							0.000
FUNCTION4 PFK			1.355e5					150237		1.29e5							
FUNCTION5 PFK			2.838e4					90586		1.22e6							
FUNCTION1 HXCD...			0.000e0					464		0.00e0							
FUNCTION1 HPCD...																	
FUNCTION2 HPCD...			1.838e2					606		2.92e3							0.000
FUNCTION3 OCDPE			0.000e0					369		0.00e0							
FUNCTION4 NCDPE			0.000e0					499		0.00e0							
FUNCTION5 DCDPE			0.000e0					352		0.00e0							

Method: T:\Autospec\Methods\Dioxin231215.mdb 15 Dec 2023 13:28:43
Calibration: T:\Autospec\Curves\230811ICIH.cdb 12 Aug 2023 09:45:18

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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	26.88	2.243e4	2.880e4	0.847	0.78	0.77	328.6	YES	NO	bb	bb	8.906
2	2378-TCDF	25.38	2.491e4	3.096e4	0.903	0.80	0.77	375.5	YES	NO	bb	bb	9.106
3	1368-TCDF	21.89	3.036e4	3.980e4	1.170	0.76	0.77	443.1	YES	NO	bb	bb	8.823

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	26.72	2.075e5	1.366e5	1.241	1.52	1.55	5108.6	YES	NO	bb	bb	54.033

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDF	31.90	1.378e5	9.049e4	0.880	1.52	1.55	1102.4	YES	NO	bb	bb	50.583
2	23478-PeCDF	30.86	1.523e5	9.564e4	0.991	1.59	1.55	1320.1	YES	NO	bb	bb	51.196
3	12378-PeCDF	29.52	1.424e5	9.139e4	0.923	1.56	1.55	1215.4	YES	NO	bb	bb	49.341
4	Total-pentafurans	28.38	2.481e4	1.597e4	0.931	1.55	1.55	209.7	YES	NO	bb	bb	8.741

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDF	36.55	1.002e5	7.132e4	0.988	1.41	1.24	884.6	YES	NO	bb	bb	51.050
2	234678-HxCDF	35.51	1.365e5	9.800e4	1.081	1.39	1.24	1255.8	YES	NO	bb	bb	54.112
3	123678-HxCDF	34.63	1.354e5	1.073e5	1.032	1.26	1.24	1256.1	YES	NO	db	db	48.880
4	123478-HxCDF	34.50	1.293e5	1.024e5	1.128	1.26	1.24	1230.3	YES	NO	bd	bd	49.217
5	123468-HXCDF	32.80	1.382e5	1.113e5	1.206	1.24	1.24	1259.8	YES	NO	bb	bb	49.566

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDF	38.40	9.486e4	8.902e4	1.164	1.07	1.05	1347.9	YES	NO	bb	bb	48.445
2	1234789-HpCDF	40.58	6.687e4	6.971e4	1.104	0.96	1.05	833.1	YES	NO	bb	bd	53.243

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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	26.88	2.243e4	2.880e4	0.847	0.78	0.77	328.6	YES	NO	bb	bb	8.906
2	2378-TCDF	25.38	2.491e4	3.096e4	0.903	0.80	0.77	375.5	YES	NO	bb	bb	9.106
3	1368-TCDF	21.89	3.036e4	3.980e4	1.170	0.76	0.77	443.1	YES	NO	bb	bb	8.823
4	12389-PECDF	31.90	1.378e5	9.049e4	0.880	1.52	1.55	1102.4	YES	NO	bb	bb	50.583
5	23478-PeCDF	30.86	1.523e5	9.564e4	0.991	1.59	1.55	1320.1	YES	NO	bb	bb	51.196
6	12378-PeCDF	29.52	1.424e5	9.139e4	0.923	1.56	1.55	1215.4	YES	NO	bb	bb	49.341
7	Total-pentafurans	28.38	2.481e4	1.597e4	0.931	1.55	1.55	209.7	YES	NO	bb	bb	8.741
8	123789-HxCDF	36.55	1.002e5	7.132e4	0.988	1.41	1.24	884.6	YES	NO	bb	bb	51.050
9	234678-HxCDF	35.51	1.365e5	9.800e4	1.081	1.39	1.24	1255.8	YES	NO	bb	bb	54.112
10	123678-HxCDF	34.63	1.354e5	1.073e5	1.032	1.26	1.24	1256.1	YES	NO	db	db	48.880
11	123478-HxCDF	34.50	1.293e5	1.024e5	1.128	1.26	1.24	1230.3	YES	NO	bd	bd	49.217
12	123468-HXCDF	32.80	1.382e5	1.113e5	1.206	1.24	1.24	1259.8	YES	NO	bb	bb	49.566
13	1234678-HpCDF	38.40	9.486e4	8.902e4	1.164	1.07	1.05	1347.9	YES	NO	bb	bb	48.445
14	1234789-HpCDF	40.58	6.687e4	6.971e4	1.104	0.96	1.05	833.1	YES	NO	bb	bd	53.243
15	OCDF	44.68	9.090e4	1.041e5	1.130	0.87	0.89	782.1	YES	NO	bb	bd	83.649
16	13468-PECDF	26.72	2.075e5	1.366e5	1.241	1.52	1.55	5108.6	YES	NO	bb	bb	54.033

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDD	26.61	2.077e4	2.479e4	0.963	0.84	0.77	328.6	YES	NO	bb	bb	9.757
2	2378-TCDD	26.01	2.264e4	3.164e4	1.243	0.72	0.77	394.1	YES	NO	bb	dd	9.002
3	Total-tetradioxins	25.69	3.522e4	4.562e4	1.129	0.77	0.77	397.2	YES	NO	bb	bd	14.762
4	Total-tetradioxins	25.21	1.169e4	1.474e4	1.129	0.79	0.77	206.5	YES	NO	bd	bd	4.826
5	1368-TCDD	23.16	2.235e4	2.851e4	1.181	0.78	0.77	387.1	YES	NO	bb	bb	8.879

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDD	31.51	1.284e5	8.463e4	1.326	1.52	1.55	1471.5	YES	NO	bd	bd	47.792
2	12378-PeCDD	31.11	1.075e5	7.169e4	1.150	1.50	1.55	1255.1	YES	NO	bd	bb	46.356
3	Total-pentadioxins	30.44	5.073e2	3.582e2	1.548	1.42	1.55	6.1	YES	NO	bb	bb	0.166
4	12479-PECDD	28.39	1.922e5	1.247e5	2.166	1.54	1.55	1482.6	YES	NO	bb	bd	43.531

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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	36.13	1.009e5	8.589e4	0.804	1.17	1.24	1238.4	YES	NO	bd	dd	50.766
2	123678-HxCDD	35.74	1.126e5	9.328e4	0.883	1.21	1.24	1395.4	YES	NO	dd	dd	48.253
3	123478-HxCDD	35.63	9.769e4	8.043e4	0.960	1.21	1.24	1303.7	YES	NO	bd	bd	42.922
4	Total-hexadioxins	33.85	3.526e2	3.272e2	0.943	1.08	1.24	7.6	YES	NO	dd	dd	0.157
5	124679-HXCDD	33.59	1.145e5	9.469e4	1.127	1.21	1.24	1462.6	YES	NO	bd	bd	42.951

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.85	6.724e4	6.852e4	1.200	0.98	1.05	778.4	YES	NO	bb	bd	43.640
2	1234679-HPCDD	38.84	8.860e4	8.800e4	1.303	1.01	1.05	1023.5	YES	NO	bd	bb	52.278

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	26.61	2.077e4	2.479e4	0.963	0.84	0.77	328.6	YES	NO	bb	bb	9.757
2	2378-TCDD	26.01	2.264e4	3.164e4	1.243	0.72	0.77	394.1	YES	NO	bb	dd	9.002
3	Total-tetradioxins	25.69	3.522e4	4.562e4	1.129	0.77	0.77	397.2	YES	NO	bb	bd	14.762
4	Total-tetradioxins	25.21	1.169e4	1.474e4	1.129	0.79	0.77	206.5	YES	NO	bd	bd	4.826
5	1368-TCDD	23.16	2.235e4	2.851e4	1.181	0.78	0.77	387.1	YES	NO	bb	bb	8.879
6	12389-PECDD	31.51	1.284e5	8.463e4	1.326	1.52	1.55	1471.5	YES	NO	bd	bd	47.792
7	12378-PeCDD	31.11	1.075e5	7.169e4	1.150	1.50	1.55	1255.1	YES	NO	bd	bb	46.356
8	Total-pentadioxins	30.44	5.073e2	3.582e2	1.548	1.42	1.55	6.1	YES	NO	bb	bb	0.166
9	12479-PECDD	28.39	1.922e5	1.247e5	2.166	1.54	1.55	1482.6	YES	NO	bb	bd	43.531
10	123789-HxCDD	36.13	1.009e5	8.589e4	0.804	1.17	1.24	1238.4	YES	NO	bd	dd	50.766
11	123678-HxCDD	35.74	1.126e5	9.328e4	0.883	1.21	1.24	1395.4	YES	NO	dd	dd	48.253
12	123478-HxCDD	35.63	9.769e4	8.043e4	0.960	1.21	1.24	1303.7	YES	NO	bd	bd	42.922
13	Total-hexadioxins	33.85	3.526e2	3.272e2	0.943	1.08	1.24	7.6	YES	NO	dd	dd	0.157
14	124679-HXCDD	33.59	1.145e5	9.469e4	1.127	1.21	1.24	1462.6	YES	NO	bd	bd	42.951
15	1234678-HpCDD	39.85	6.724e4	6.852e4	1.200	0.98	1.05	778.4	YES	NO	bb	bd	43.640
16	1234679-HPCDD	38.84	8.860e4	8.800e4	1.303	1.01	1.05	1023.5	YES	NO	bd	bb	52.278
17	OCDD	44.44	8.886e4	1.018e5	1.059	0.87	0.89	1419.0	YES	NO	bb	bd	87.323

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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	26.88	2.243e4	2.880e4	0.847	0.78	0.77	328.6	YES	NO	bb	bb	8.906
2	2378-TCDF	25.38	2.491e4	3.096e4	0.903	0.80	0.77	375.5	YES	NO	bb	bb	9.106
3	1368-TCDF	21.89	3.036e4	3.980e4	1.170	0.76	0.77	443.1	YES	NO	bb	bb	8.823
4	12389-PECDF	31.90	1.378e5	9.049e4	0.880	1.52	1.55	1102.4	YES	NO	bb	bb	50.583
5	23478-PeCDF	30.86	1.523e5	9.564e4	0.991	1.59	1.55	1320.1	YES	NO	bb	bb	51.196
6	12378-PeCDF	29.52	1.424e5	9.139e4	0.923	1.56	1.55	1215.4	YES	NO	bb	bb	49.341
7	Total-pentafurans	28.38	2.481e4	1.597e4	0.931	1.55	1.55	209.7	YES	NO	bb	bb	8.741
8	123789-HxCDF	36.55	1.002e5	7.132e4	0.988	1.41	1.24	884.6	YES	NO	bb	bb	51.050
9	234678-HxCDF	35.51	1.365e5	9.800e4	1.081	1.39	1.24	1255.8	YES	NO	bb	bb	54.112
10	123678-HxCDF	34.63	1.354e5	1.073e5	1.032	1.26	1.24	1256.1	YES	NO	db	db	48.880
11	123478-HxCDF	34.50	1.293e5	1.024e5	1.128	1.26	1.24	1230.3	YES	NO	bd	bd	49.217
12	123468-HXCDF	32.80	1.382e5	1.113e5	1.206	1.24	1.24	1259.8	YES	NO	bb	bb	49.566
13	1234678-HpCDF	38.40	9.486e4	8.902e4	1.164	1.07	1.05	1347.9	YES	NO	bb	bb	48.445
14	1234789-HpCDF	40.58	6.687e4	6.971e4	1.104	0.96	1.05	833.1	YES	NO	bb	bd	53.243
15	OCDF	44.68	9.090e4	1.041e5	1.130	0.87	0.89	782.1	YES	NO	bb	bd	83.649
16	13468-PECDF	26.72	2.075e5	1.366e5	1.241	1.52	1.55	5108.6	YES	NO	bb	bb	54.033
17	1289-TCDD	26.61	2.077e4	2.479e4	0.963	0.84	0.77	328.6	YES	NO	bb	bb	9.757
18	2378-TCDD	26.01	2.264e4	3.164e4	1.243	0.72	0.77	394.1	YES	NO	bb	dd	9.002
19	Total-tetradioxins	25.69	3.522e4	4.562e4	1.129	0.77	0.77	397.2	YES	NO	bb	bd	14.762
20	Total-tetradioxins	25.21	1.169e4	1.474e4	1.129	0.79	0.77	206.5	YES	NO	bd	bd	4.826
21	1368-TCDD	23.16	2.235e4	2.851e4	1.181	0.78	0.77	387.1	YES	NO	bb	bb	8.879
22	12389-PECDD	31.51	1.284e5	8.463e4	1.326	1.52	1.55	1471.5	YES	NO	bd	bd	47.792
23	12378-PeCDD	31.11	1.075e5	7.169e4	1.150	1.50	1.55	1255.1	YES	NO	bd	bb	46.356
24	Total-pentadioxins	30.44	5.073e2	3.582e2	1.548	1.42	1.55	6.1	YES	NO	bb	bb	0.166
25	12479-PECDD	28.39	1.922e5	1.247e5	2.166	1.54	1.55	1482.6	YES	NO	bb	bd	43.531
26	123789-HxCDD	36.13	1.009e5	8.589e4	0.804	1.17	1.24	1238.4	YES	NO	bd	dd	50.766
27	123678-HxCDD	35.74	1.126e5	9.328e4	0.883	1.21	1.24	1395.4	YES	NO	dd	dd	48.253
28	123478-HxCDD	35.63	9.769e4	8.043e4	0.960	1.21	1.24	1303.7	YES	NO	bd	bd	42.922
29	Total-hexadioxins	33.85	3.526e2	3.272e2	0.943	1.08	1.24	7.6	YES	NO	dd	dd	0.157
30	124679-HXCDD	33.59	1.145e5	9.469e4	1.127	1.21	1.24	1462.6	YES	NO	bd	bd	42.951
31	1234678-HpCDD	39.85	6.724e4	6.852e4	1.200	0.98	1.05	778.4	YES	NO	bb	bd	43.640
32	1234679-HPCDD	38.84	8.860e4	8.800e4	1.303	1.01	1.05	1023.5	YES	NO	bd	bb	52.278
33	OCDD	44.44	8.886e4	1.018e5	1.059	0.87	0.89	1419.0	YES	NO	bb	bd	87.323

ID: CS3J5, Name: 23121442, Date: 16-Dec-2023, Time: 00:33:30, 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	25.62	2.077e4					1.7	NO		bb		
2	FUNCTION1 PFK	25.53	5.471e3					1.0	NO		bb		
3	FUNCTION1 PFK	22.69	2.187e3					0.6	NO		bb		
4	FUNCTION1 PFK	21.23	1.188e4					1.8	NO		db		
5	FUNCTION1 PFK	21.18	1.138e4					1.5	NO		bd		

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	29.18	5.212e3					2.1	NO		bb		0.000
2	FUNCTION2 PFK	28.89	4.794e2					0.5	NO		bb		0.000
3	FUNCTION2 PFK	28.85	2.673e3					0.8	NO		db		0.000
4	FUNCTION2 PFK	28.76	1.499e3					0.9	NO		bd		0.000
5	FUNCTION2 PFK	28.32	3.472e3					1.6	NO		bb		0.000
6	FUNCTION2 PFK	28.09	6.947e3					1.7	NO		bb		0.000
7	FUNCTION2 PFK	32.01	2.160e3					1.2	NO		bb		0.000
8	FUNCTION2 PFK	31.81	6.315e2					0.7	NO		bb		0.000
9	FUNCTION2 PFK	31.73	7.018e3					2.6	NO		bb		0.000
10	FUNCTION2 PFK	31.47	4.296e3					1.7	NO		bb		0.000
11	FUNCTION2 PFK	31.18	3.423e3					1.7	NO		bb		0.000
12	FUNCTION2 PFK	31.10	3.799e3					1.0	NO		bb		0.000
13	FUNCTION2 PFK	31.01	3.908e3					1.9	NO		bb		0.000
14	FUNCTION2 PFK	30.63	5.950e3					1.7	NO		db		0.000
15	FUNCTION2 PFK	30.51	1.030e4					2.6	NO		bd		0.000
16	FUNCTION2 PFK	30.43	1.325e3					0.6	NO		bb		0.000
17	FUNCTION2 PFK	29.96	2.969e3					1.4	NO		db		0.000
18	FUNCTION2 PFK	29.92	9.250e3					2.8	NO		bd		0.000
19	FUNCTION2 PFK	29.79	1.821e3					1.1	NO		bb		0.000
20	FUNCTION2 PFK	29.75	1.582e3					1.0	NO		bb		0.000
21	FUNCTION2 PFK	29.68	4.211e3					1.9	NO		bb		0.000
22	FUNCTION2 PFK	29.49	4.793e2					0.5	NO		bb		0.000

ID: CS3J5, Name: 23121442, Date: 16-Dec-2023, Time: 00:33:30, 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	33.60	1.195e3					0.6	NO		bb		0.000
2	FUNCTION3 PFK	33.56	1.539e4					1.3	NO		db		0.000
3	FUNCTION3 PFK	33.48	1.059e4					1.7	NO		bd		0.000
4	FUNCTION3 PFK	33.42	7.826e3					2.0	NO		db		0.000
5	FUNCTION3 PFK	33.38	1.450e4					2.0	NO		dd		0.000
6	FUNCTION3 PFK	33.34	1.338e4					2.1	NO		dd		0.000
7	FUNCTION3 PFK	33.28	2.140e3					0.5	NO		bd		0.000
8	FUNCTION3 PFK	33.09	1.898e4					2.2	NO		db		0.000
9	FUNCTION3 PFK	33.08	2.282e4					2.2	NO		dd		0.000
10	FUNCTION3 PFK	32.91	8.616e4					3.8	YES		dd		0.000
11	FUNCTION3 PFK	32.70	2.068e5					7.3	YES		dd		0.000
12	FUNCTION3 PFK	32.62	8.589e4					8.0	YES		dd		0.000
13	FUNCTION3 PFK	32.57	7.512e4					8.3	YES		dd		0.000
14	FUNCTION3 PFK	32.52	8.891e4					9.1	YES		dd		0.000
15	FUNCTION3 PFK	32.46	1.212e5					10.3	YES		bd		0.000
16	FUNCTION3 PFK	35.20	7.976e2					0.4	NO		bb		0.000
17	FUNCTION3 PFK	35.13	1.302e4					1.7	NO		db		0.000
18	FUNCTION3 PFK	35.09	3.582e3					0.8	NO		bd		0.000
19	FUNCTION3 PFK	35.00	1.506e4					1.5	NO		db		0.000
20	FUNCTION3 PFK	34.89	8.375e3					1.0	NO		bd		0.000
21	FUNCTION3 PFK	34.84	2.770e3					0.7	NO		bb		0.000
22	FUNCTION3 PFK	34.67	3.990e3					0.9	NO		bb		0.000
23	FUNCTION3 PFK	34.52	2.353e3					0.6	NO		bb		0.000
24	FUNCTION3 PFK	34.47	6.564e2					0.3	NO		bb		0.000
25	FUNCTION3 PFK	34.40	8.850e2					0.4	NO		bb		0.000
26	FUNCTION3 PFK	34.28	4.208e3					0.6	NO		bb		0.000
27	FUNCTION3 PFK	34.04	4.556e3					0.7	NO		db		0.000
28	FUNCTION3 PFK	33.96	1.069e4					1.0	NO		dd		0.000
29	FUNCTION3 PFK	33.86	1.981e4					1.6	NO		bd		0.000
30	FUNCTION3 PFK	33.76	1.438e4					1.7	NO		db		0.000
31	FUNCTION3 PFK	33.68	2.385e4					1.8	NO		bd		0.000
32	FUNCTION3 PFK	36.57	2.874e3					0.7	NO		bb		0.000
33	FUNCTION3 PFK	36.46	4.980e3					0.7	NO		bb		0.000
34	FUNCTION3 PFK	36.38	5.889e3					1.0	NO		db		0.000
35	FUNCTION3 PFK	36.33	9.112e3					1.1	NO		bd		0.000
36	FUNCTION3 PFK	36.20	1.464e4					0.9	NO		bb		0.000
37	FUNCTION3 PFK	36.07	1.002e4					1.2	NO		db		0.000

ID: CS3J5, Name: 23121442, Date: 16-Dec-2023, Time: 00:33:30, 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	36.00	8.894e3					1.5	NO		dd		0.000
39	FUNCTION3 PFK	35.93	2.647e3					0.6	NO		bd		0.000
40	FUNCTION3 PFK	35.87	8.727e3					1.1	NO		bb		0.000
41	FUNCTION3 PFK	35.77	6.111e3					1.1	NO		db		0.000
42	FUNCTION3 PFK	35.72	6.853e3					1.1	NO		bd		0.000
43	FUNCTION3 PFK	35.62	9.469e3					1.3	NO		bb		0.000
44	FUNCTION3 PFK	35.53	3.044e3					0.7	NO		bb		0.000
45	FUNCTION3 PFK	35.48	3.295e3					0.7	NO		bb		0.000
46	FUNCTION3 PFK	35.38	1.143e4					1.2	NO		bb		0.000
47	FUNCTION3 PFK	35.32	6.453e2					0.3	NO		bb		0.000
48	FUNCTION3 PFK	37.45	1.008e4					1.3	NO		bb		0.000
49	FUNCTION3 PFK	37.35	5.422e3					1.1	NO		bb		0.000
50	FUNCTION3 PFK	37.23	2.613e3					0.7	NO		bb		0.000
51	FUNCTION3 PFK	37.17	9.836e2					0.4	NO		bb		0.000
52	FUNCTION3 PFK	37.10	4.707e3					0.8	NO		bb		0.000
53	FUNCTION3 PFK	37.06	4.738e3					1.1	NO		bb		0.000
54	FUNCTION3 PFK	36.80	1.572e4					1.4	NO		db		0.000
55	FUNCTION3 PFK	36.77	4.376e3					1.0	NO		bd		0.000
56	FUNCTION3 PFK	36.71	3.333e3					0.9	NO		bb		0.000
57	FUNCTION3 PFK	36.67	3.380e3					0.9	NO		bb		0.000

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	37.72	1.355e5					0.9	NO		bb		

ID: CS3J5, Name: 23121442, Date: 16-Dec-2023, Time: 00:33:30, 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	44.27	2.798e3					1.4	NO		bb		
2	FUNCTION5 PFK	44.17	4.579e3					1.9	NO		bb		
3	FUNCTION5 PFK	43.90	3.330e3					1.3	NO		bb		
4	FUNCTION5 PFK	45.69	5.873e3					2.3	NO		bb		
5	FUNCTION5 PFK	45.42	3.184e3					1.4	NO		bb		
6	FUNCTION5 PFK	45.27	1.659e3					1.1	NO		bb		
7	FUNCTION5 PFK	44.96	1.471e3					1.0	NO		bb		
8	FUNCTION5 PFK	44.76	1.688e3					1.0	NO		bb		
9	FUNCTION5 PFK	44.64	3.337e3					1.5	NO		bb		
10	FUNCTION5 PFK	44.54	4.605e2					0.6	NO		bb		

ETHERS1

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

ETHERS2

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

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	30.71	1.838e2					4.8	YES		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													

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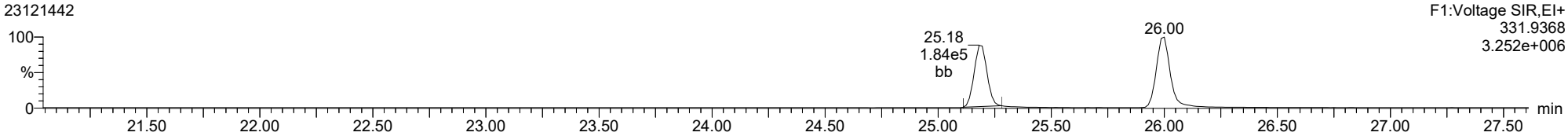
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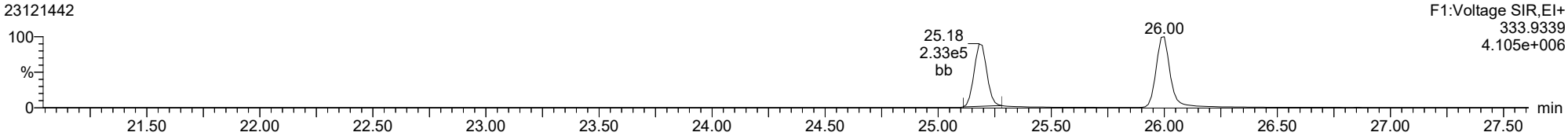
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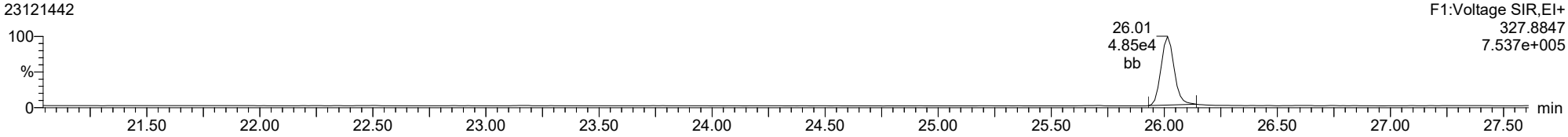
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13C-1234-TCDD



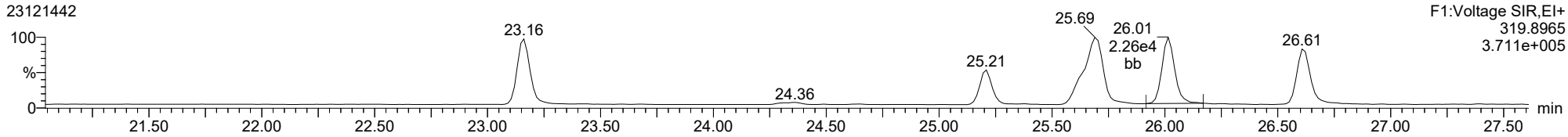
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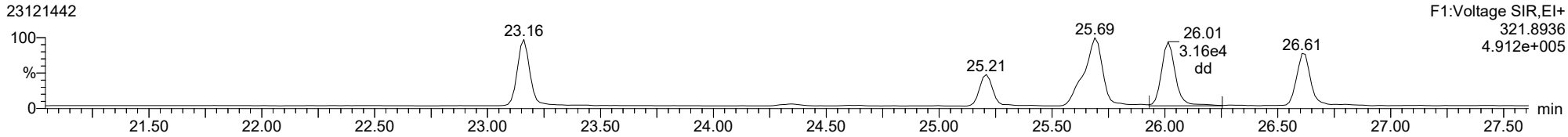
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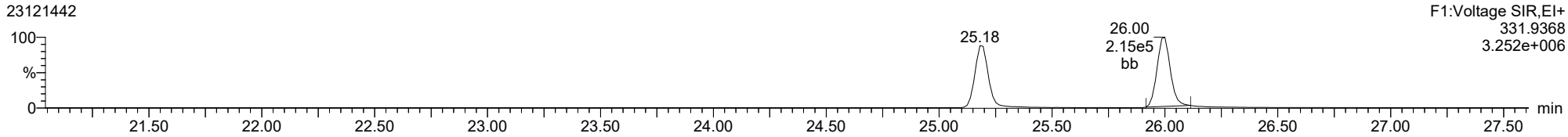
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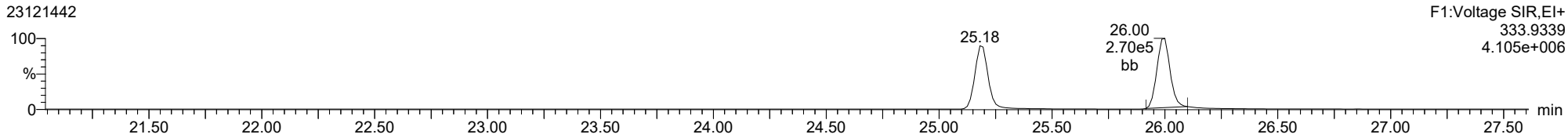
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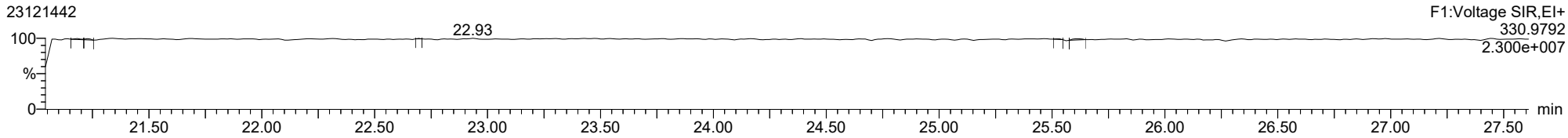
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13C-2378-TCDD



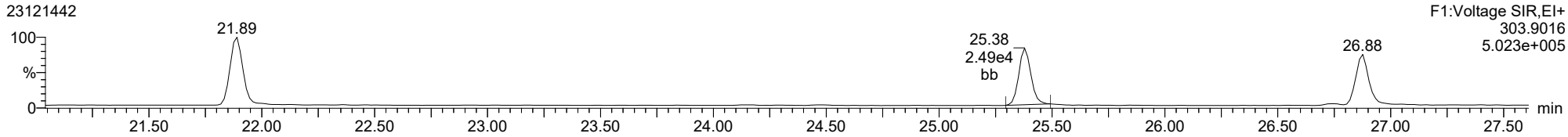
FUNCTION1 PFK



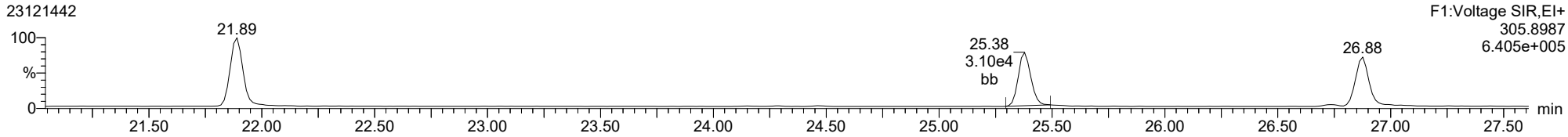
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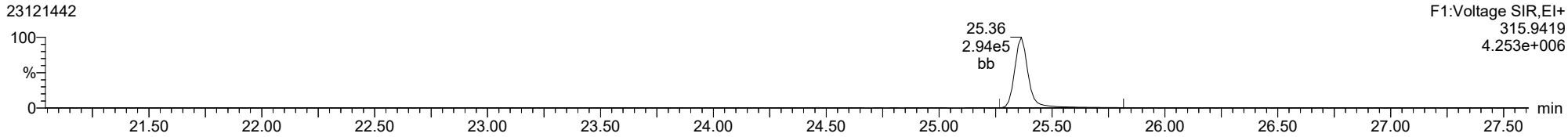
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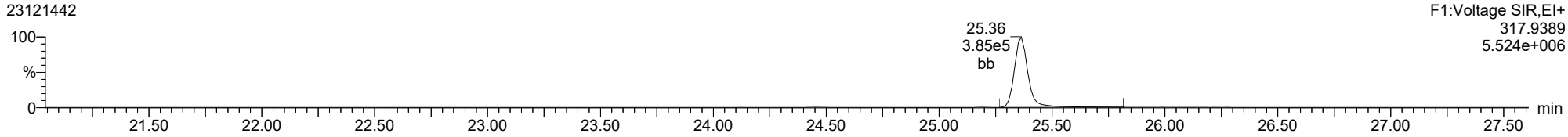
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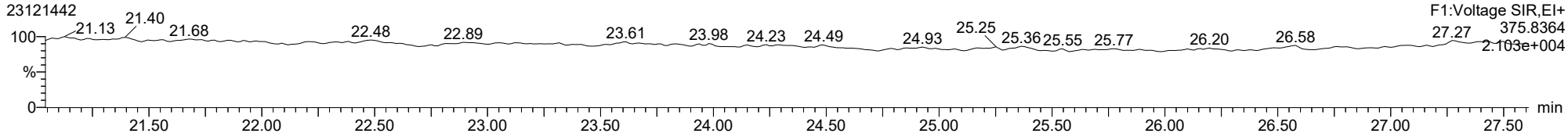
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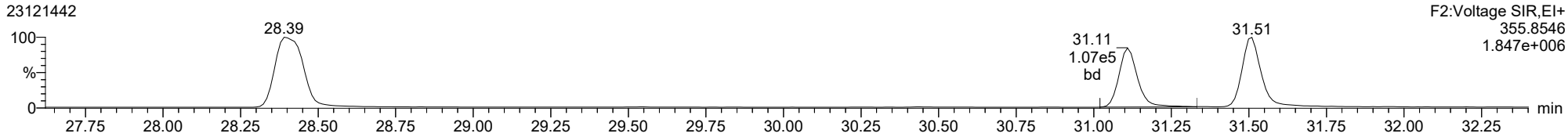


FUNCTION1 HXCDPE

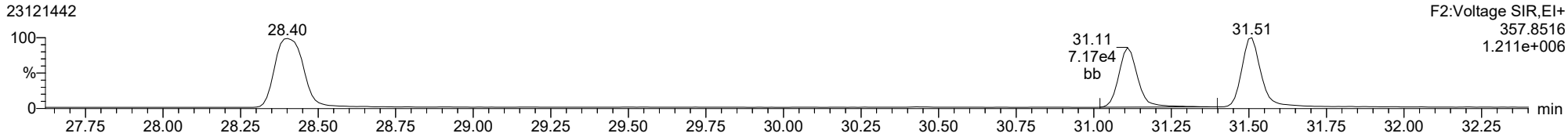


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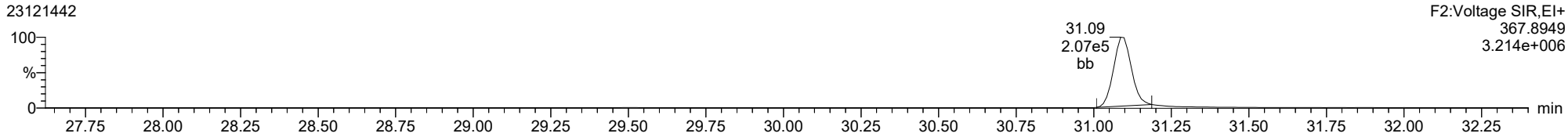
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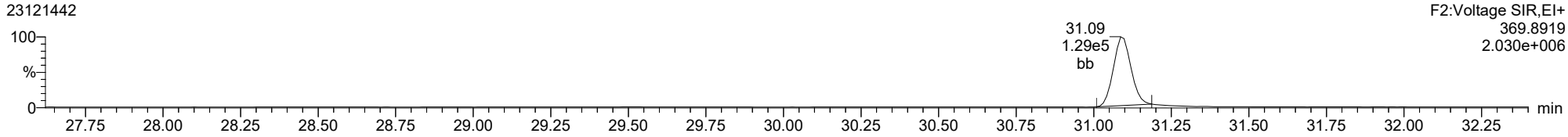
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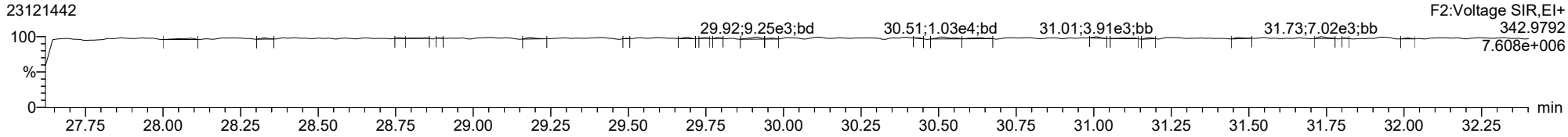
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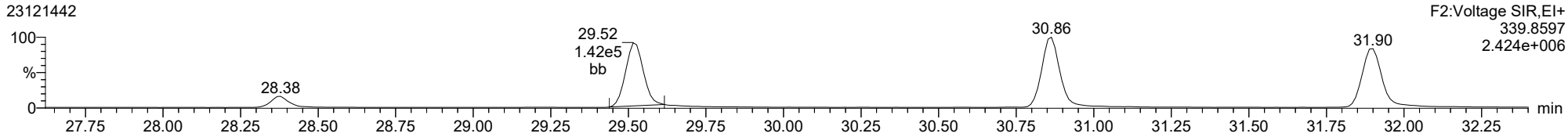


FUNCTION2 PFK

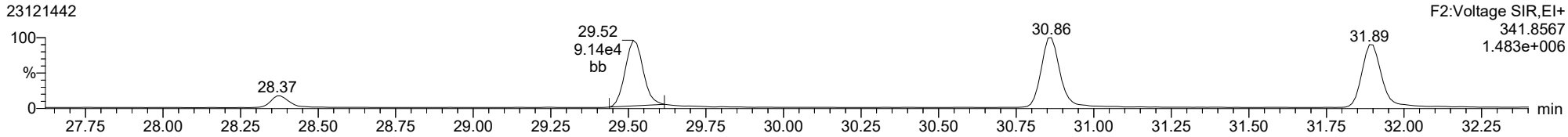


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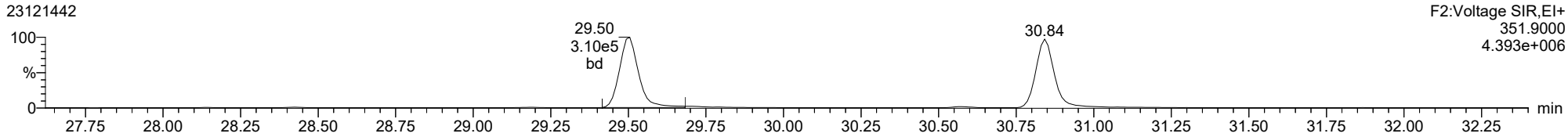
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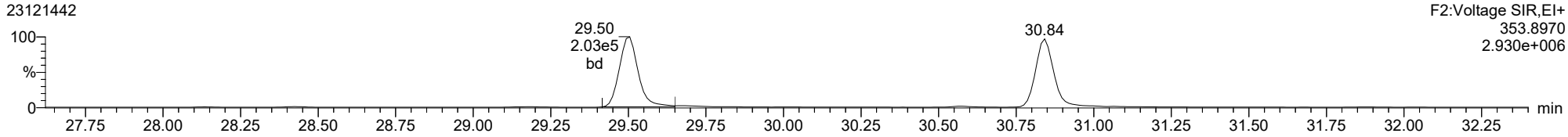
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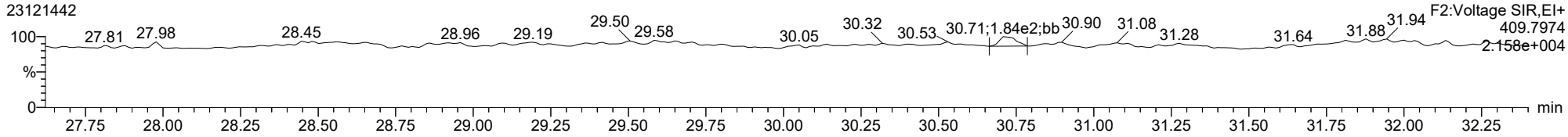
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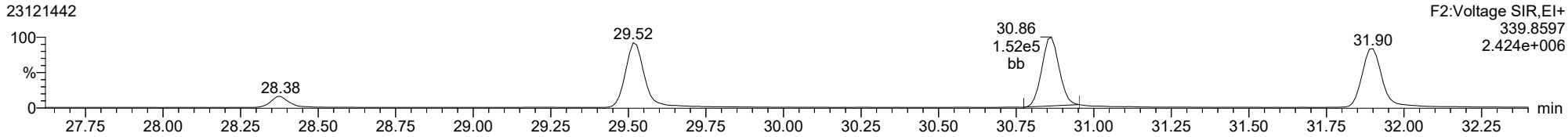


FUNCTION2 HPCDPE

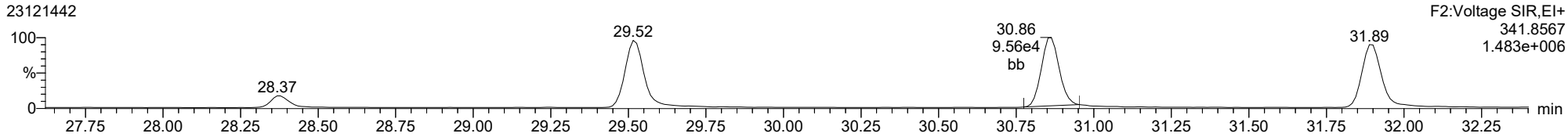


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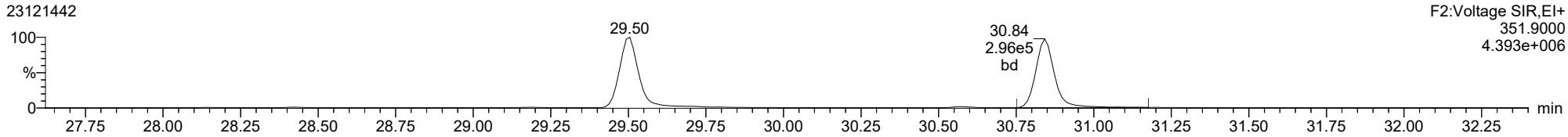
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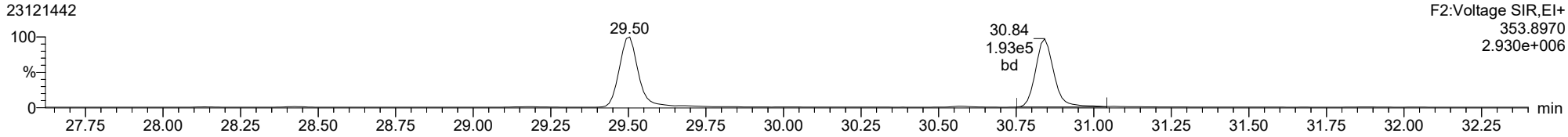
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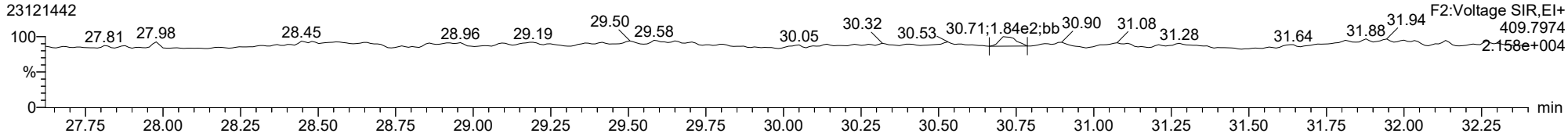
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13C-23478-PeCDF

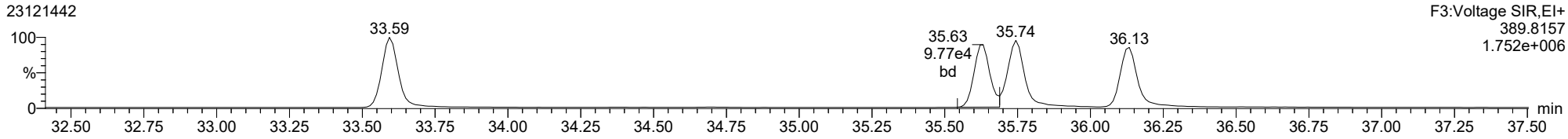


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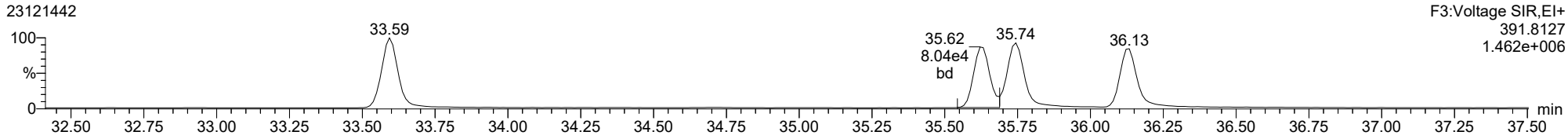


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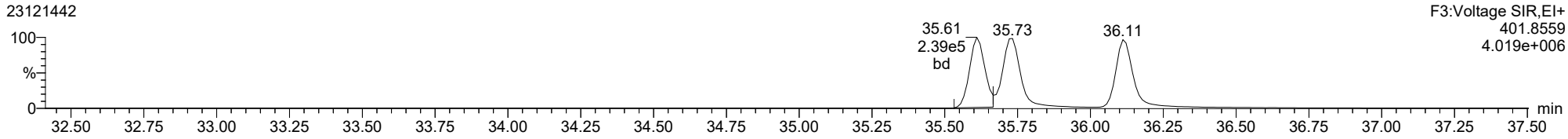
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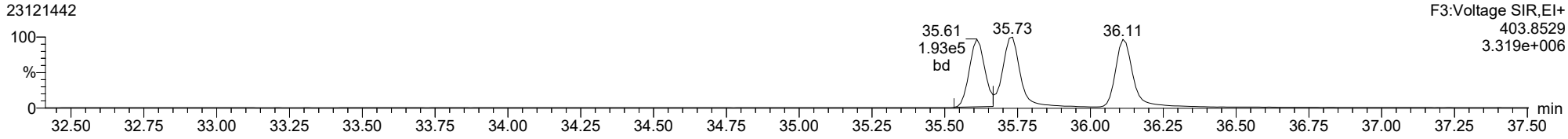
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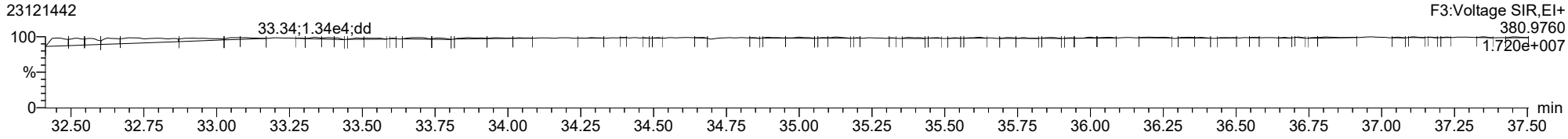
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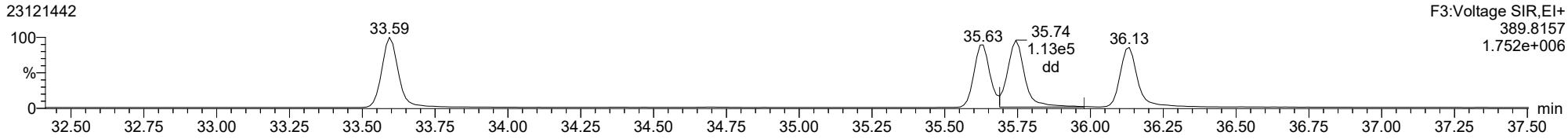
FUNCTION3 PFK



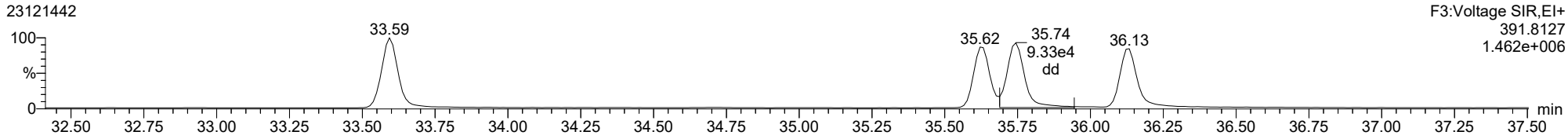
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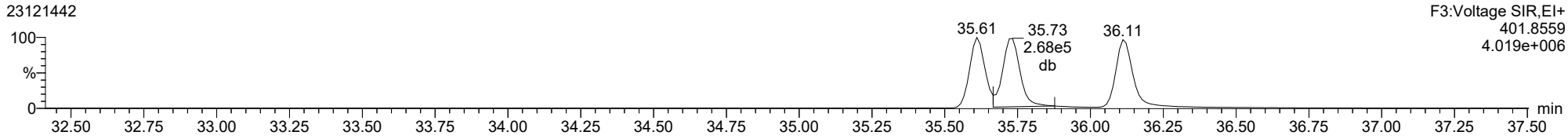
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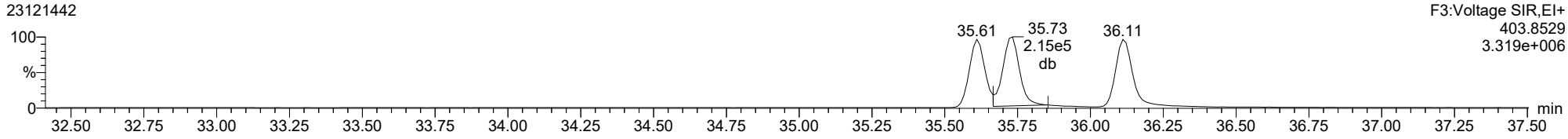
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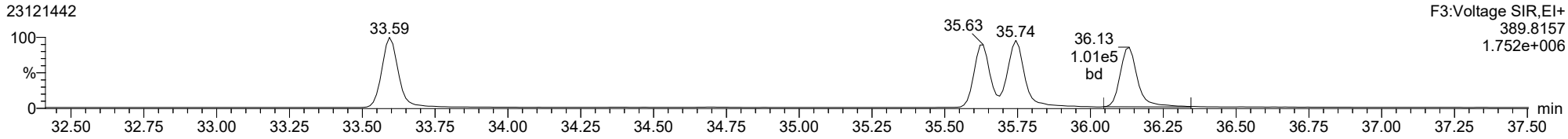
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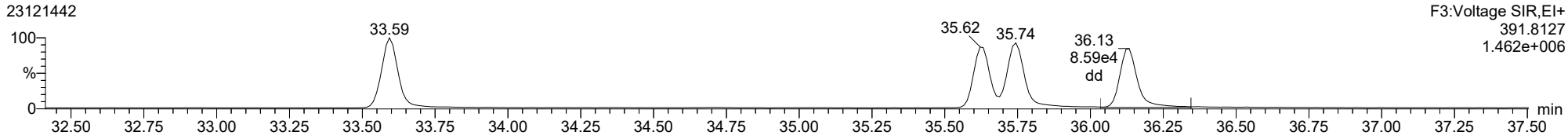
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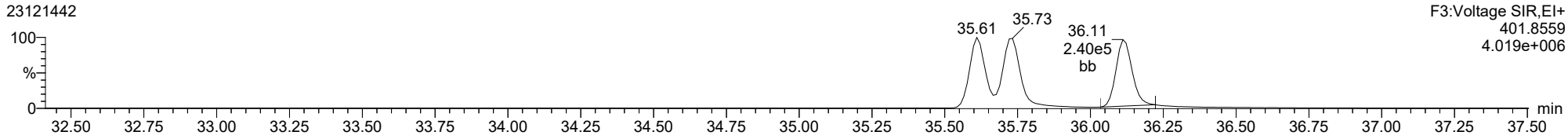
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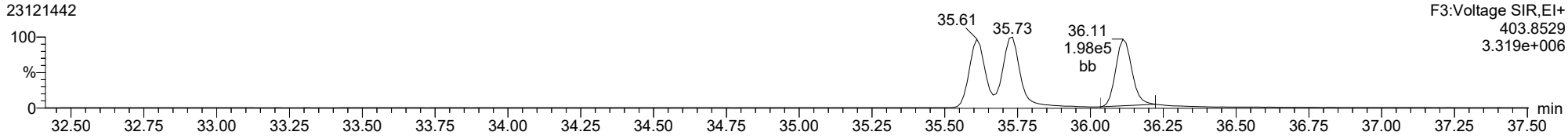
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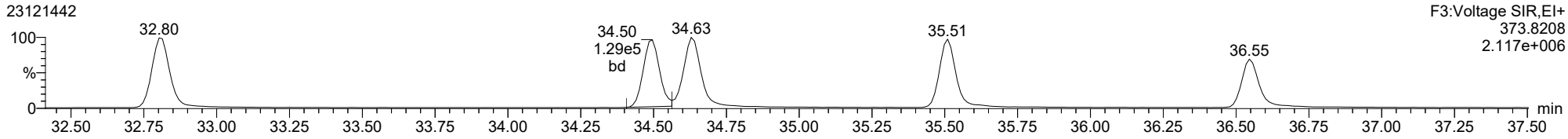


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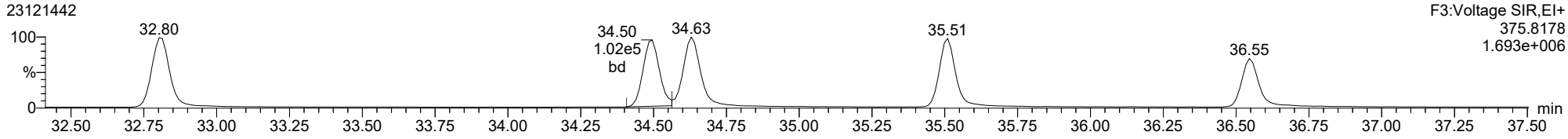


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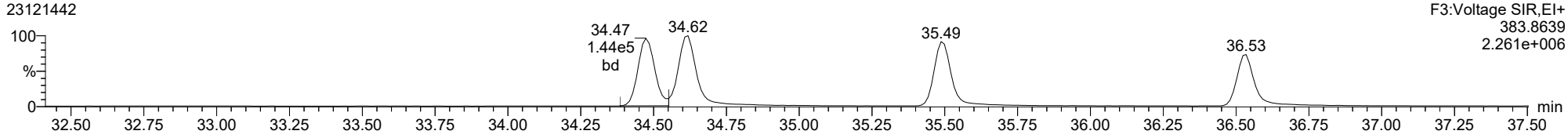
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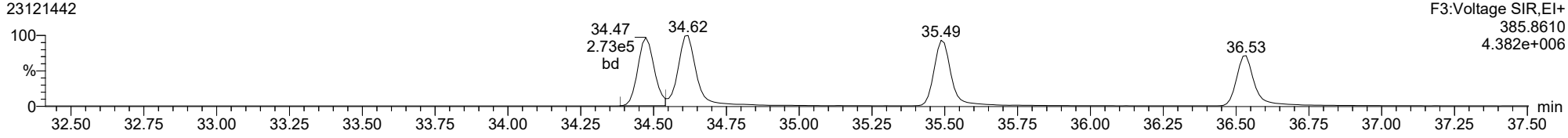
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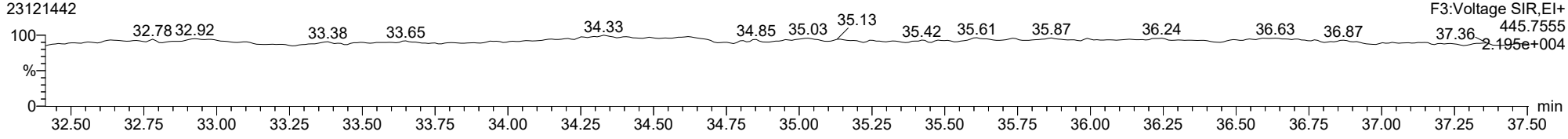
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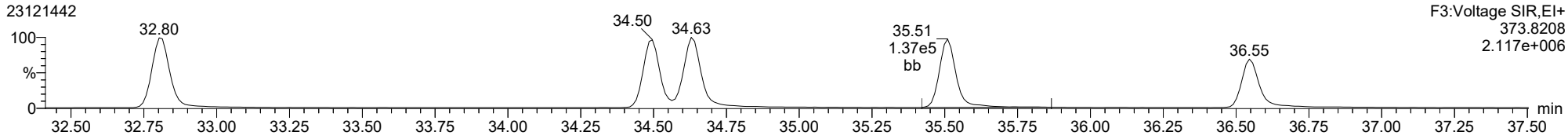


FUNCTION3 OCDPE

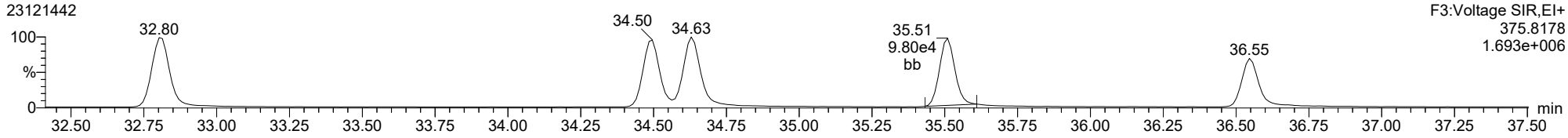


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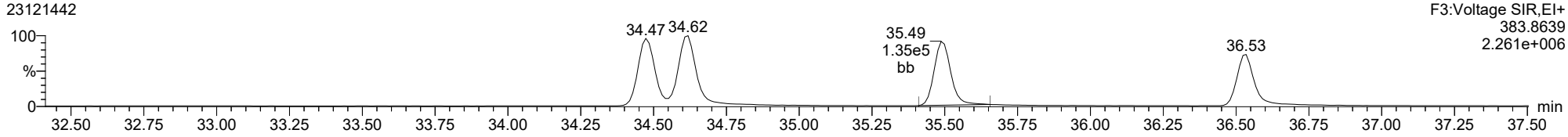
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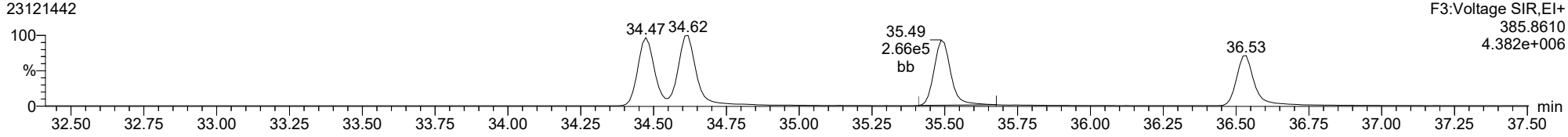
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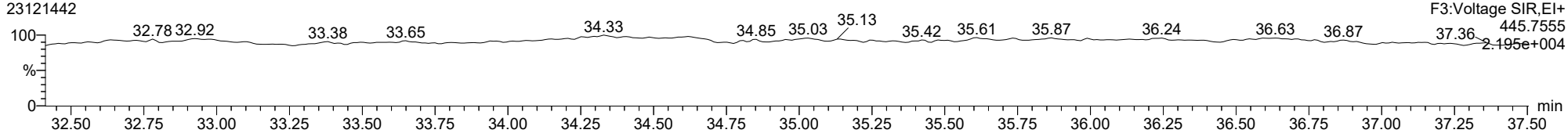
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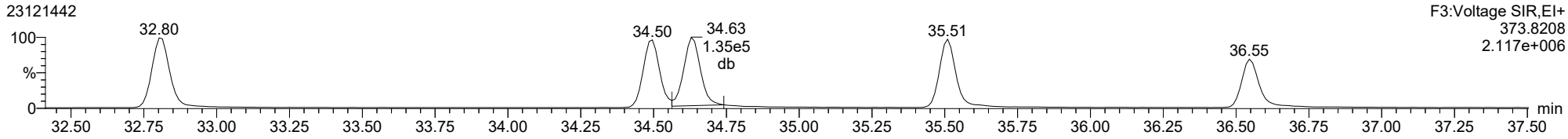


FUNCTION3 OCDPE

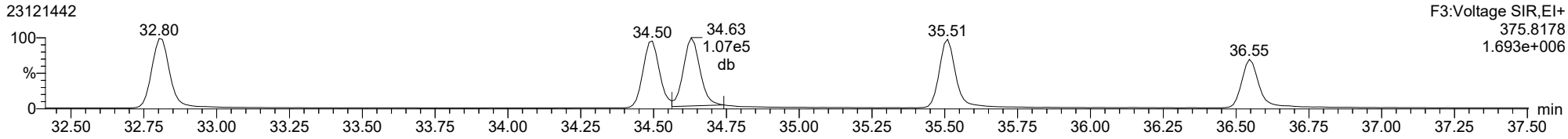


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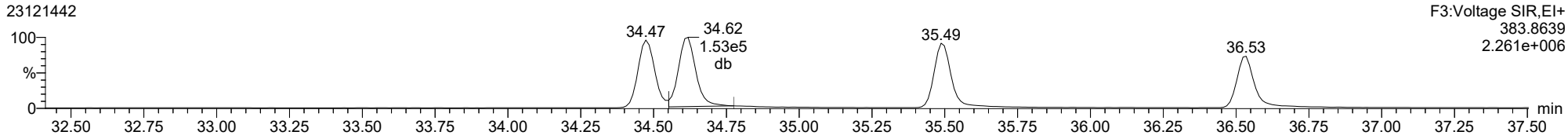
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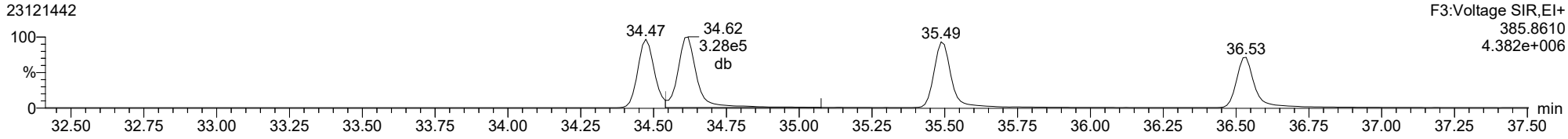
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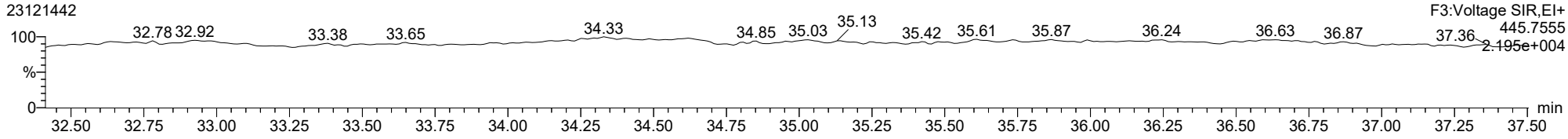
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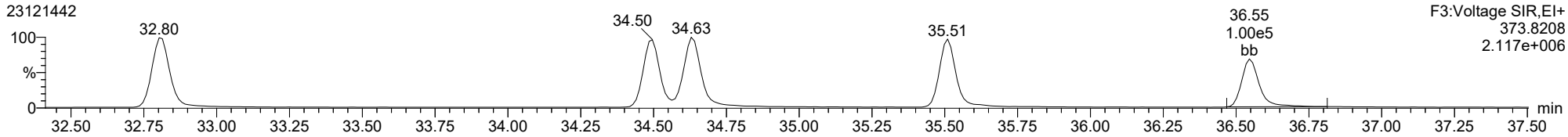


FUNCTION3 OCDPE

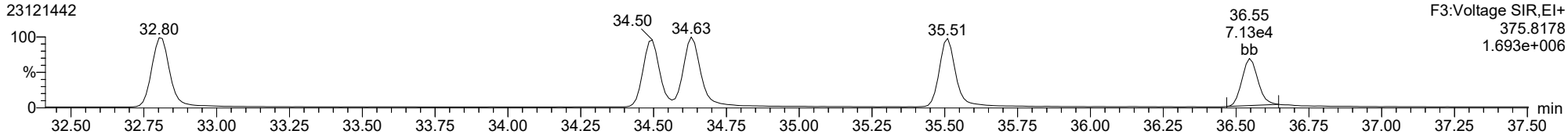


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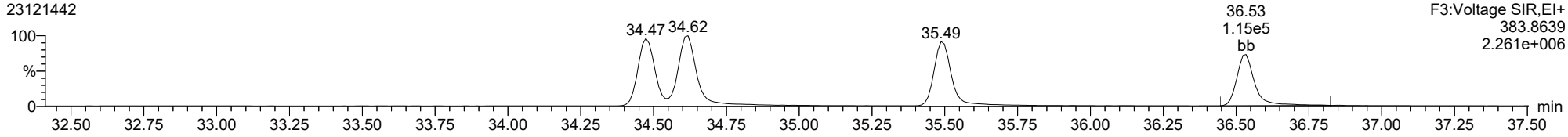
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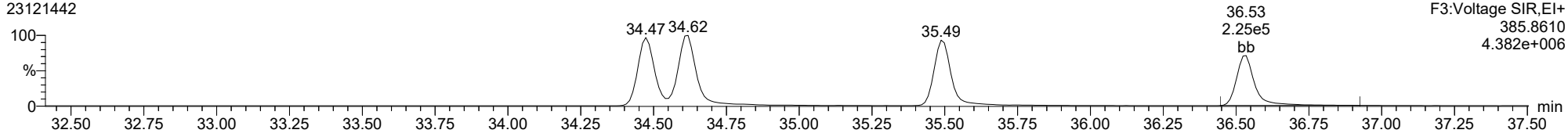
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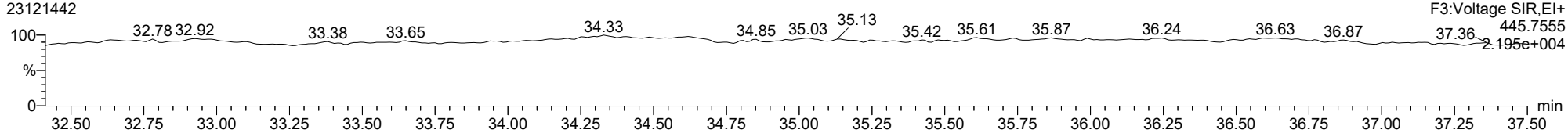
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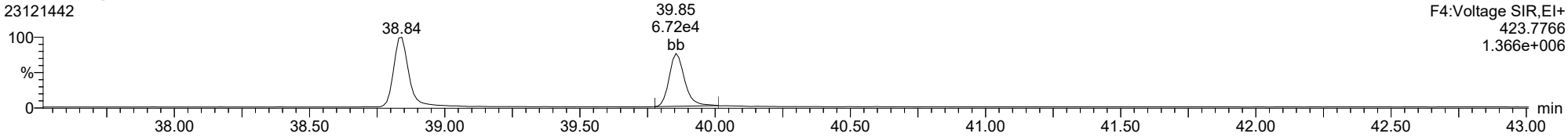


FUNCTION3 OCDPE

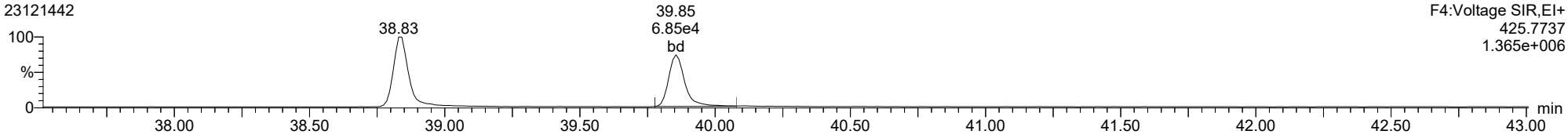


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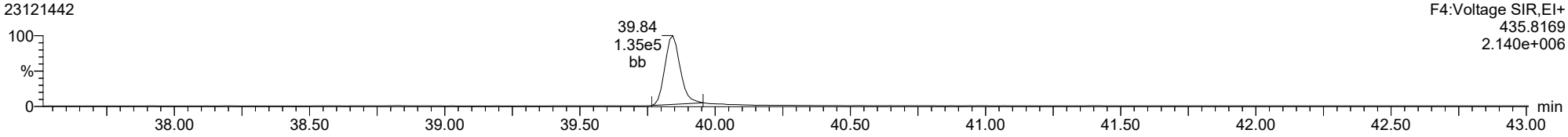
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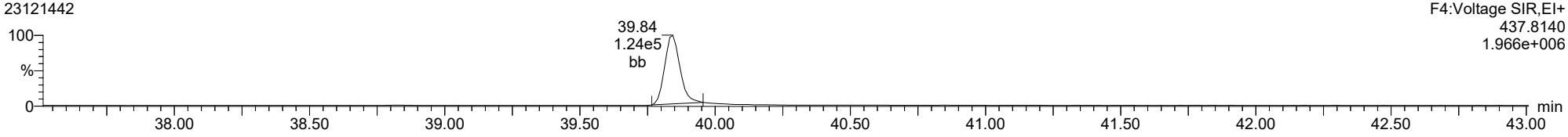
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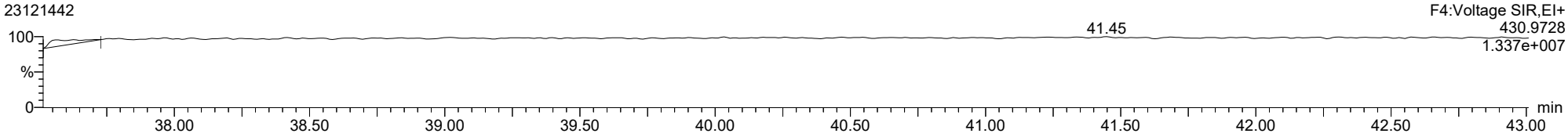
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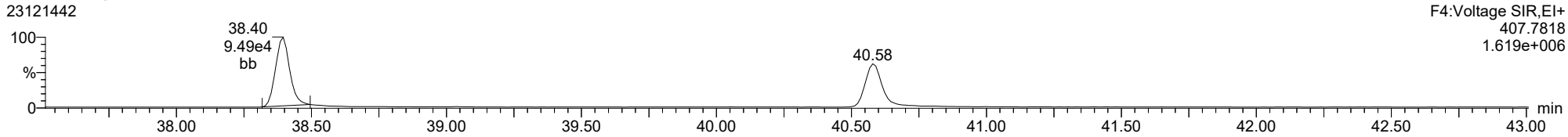


FUNCTION4 PFK

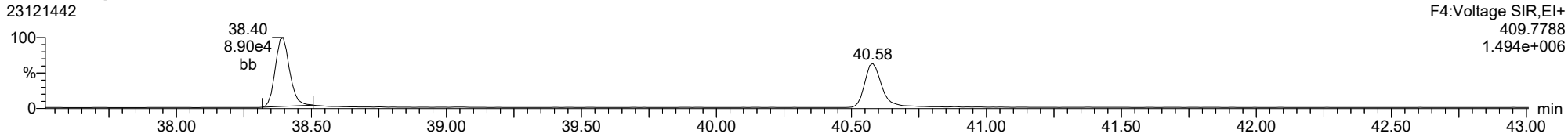


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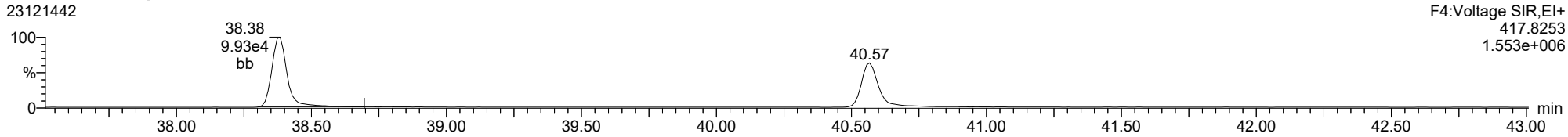
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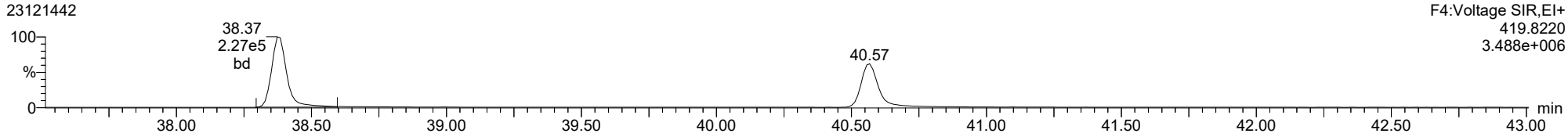
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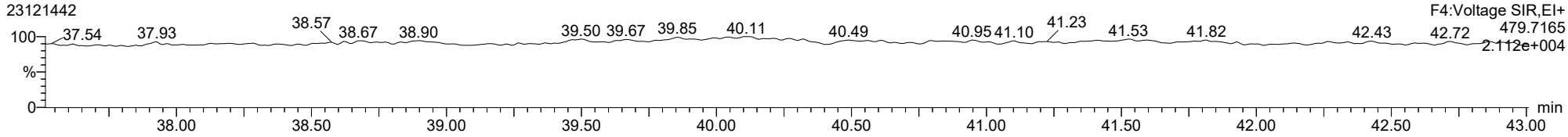
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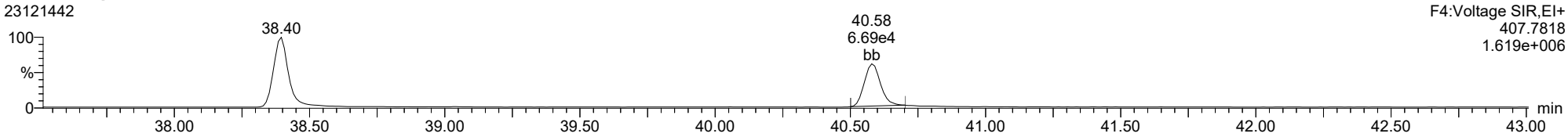


FUNCTION4 NCDPE

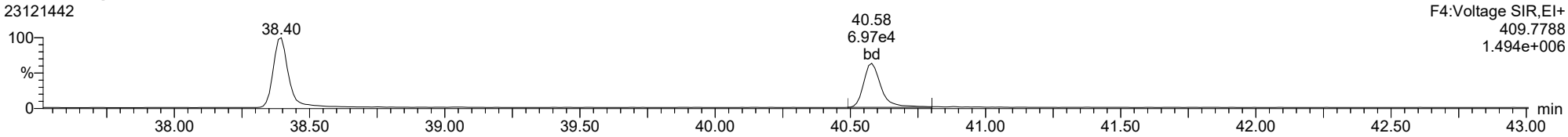


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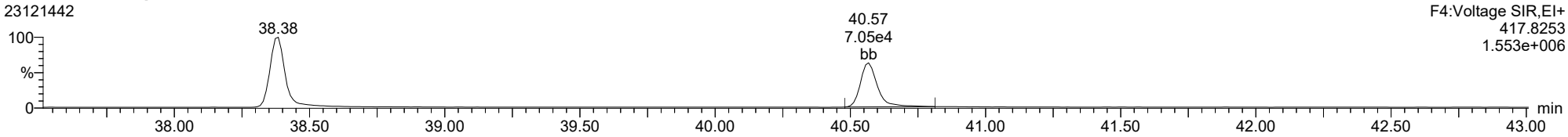
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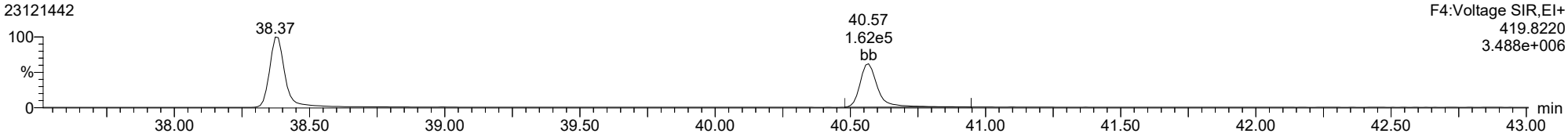
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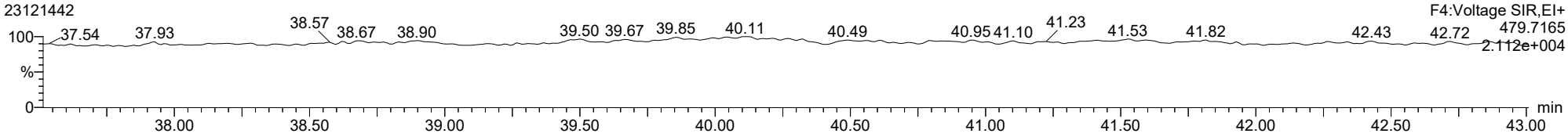
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13C-1234789-HpCDF



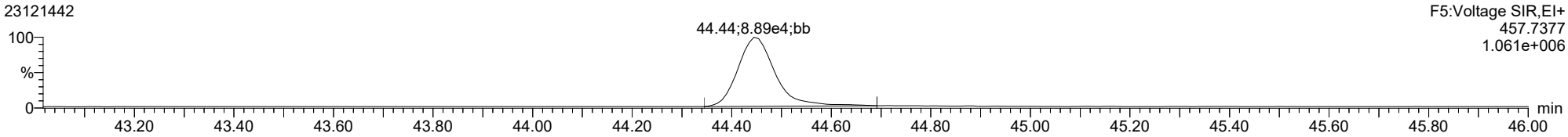
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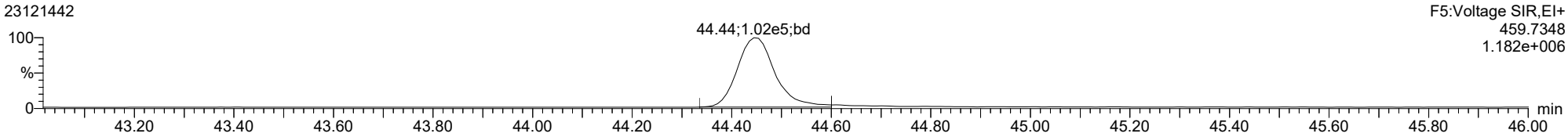
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Last Altered: Saturday, December 16, 2023 10:26:00 Pacific Standard Time
Printed: Saturday, December 16, 2023 10:41:36 Pacific Standard Time

ID: CS3J5, Name: 23121442, Date: 16-Dec-2023, Time: 00:33:30, Conditions: AUTOSPEC01, User: pk

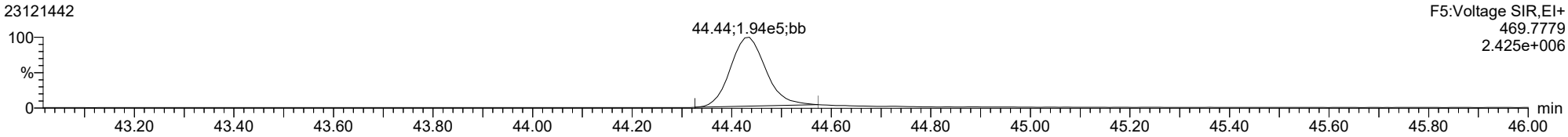
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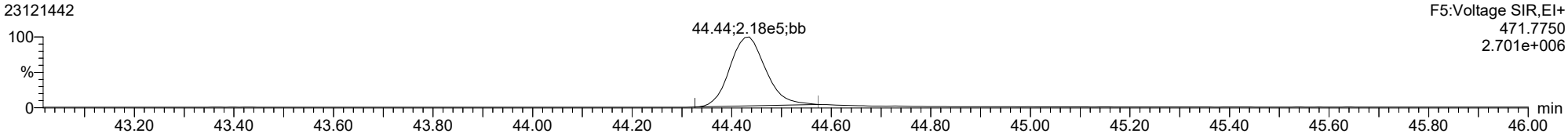
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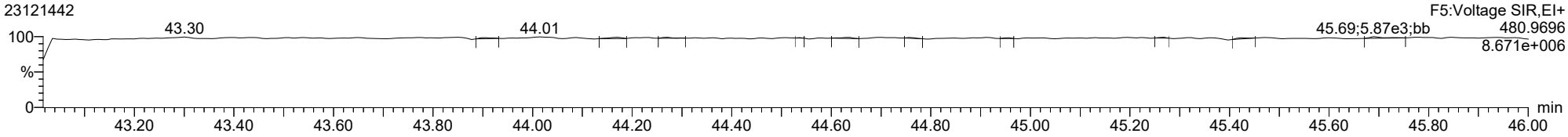
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13C-OCDD



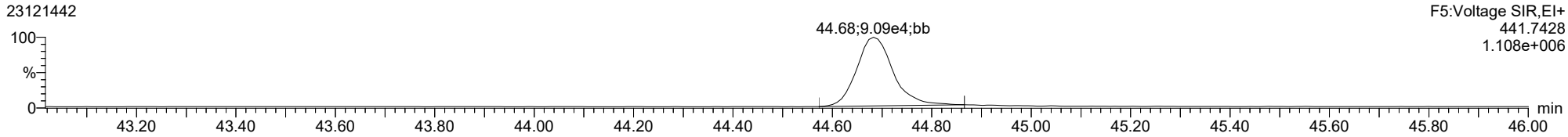
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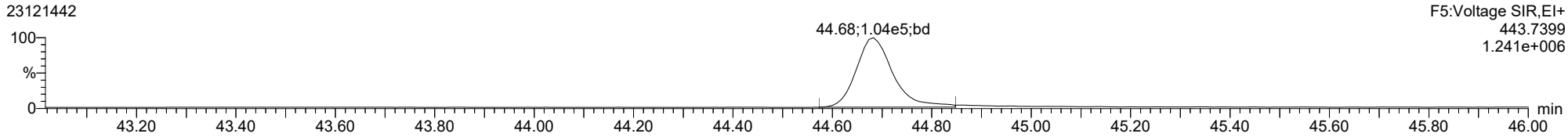
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ID: CS3J5, Name: 23121442, Date: 16-Dec-2023, Time: 00:33:30, Conditions: AUTOSPEC01, User: pk

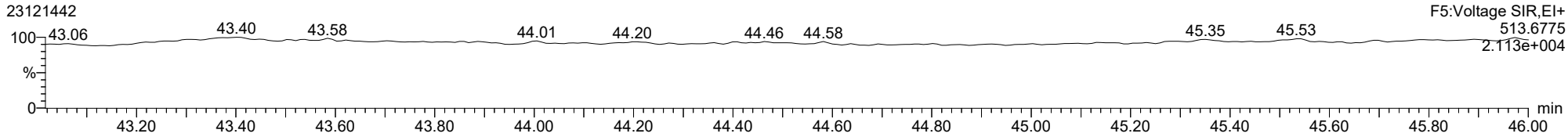
OCDF



OCDF

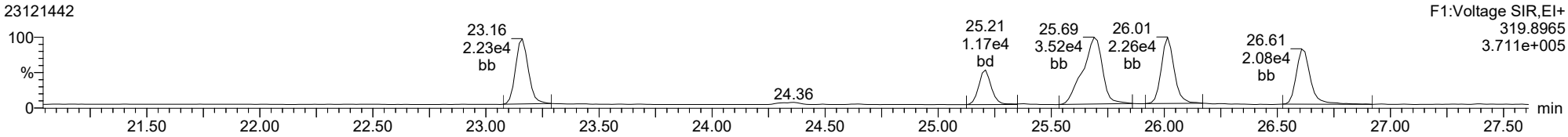


FUNCTION5 DCDPE

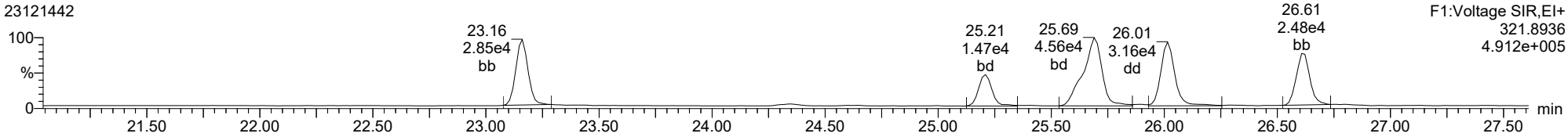


ID: CS3J5, Name: 23121442, Date: 16-Dec-2023, Time: 00:33:30, Conditions: AUTOSPEC01, User: pk

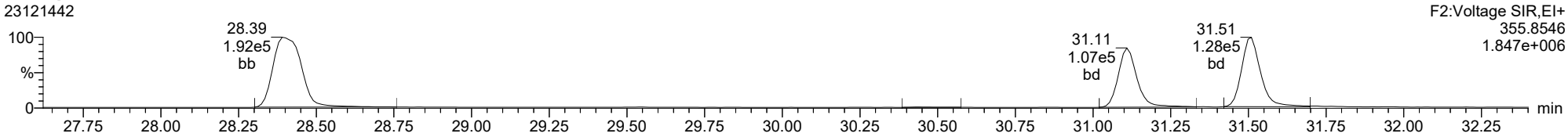
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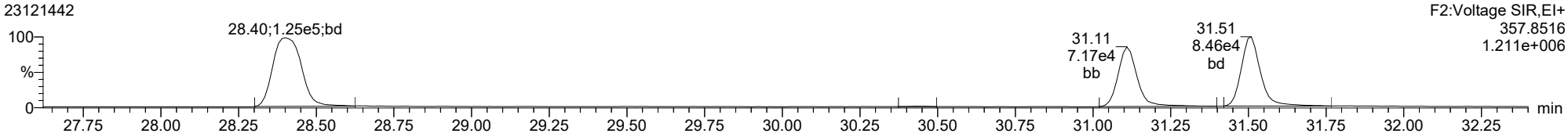
Total-tetradioxins



Total-pentadioxins

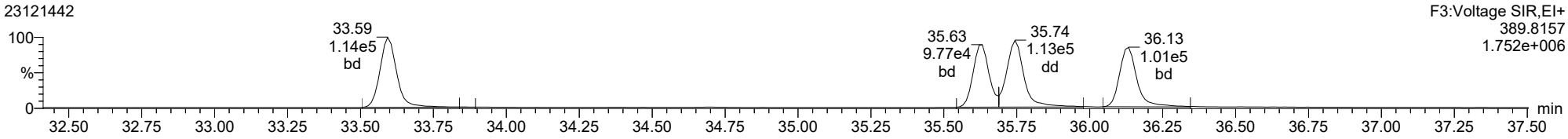


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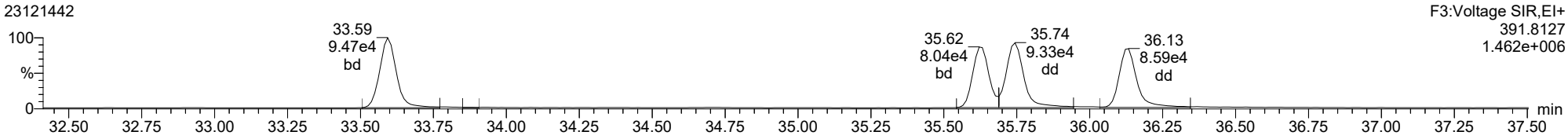


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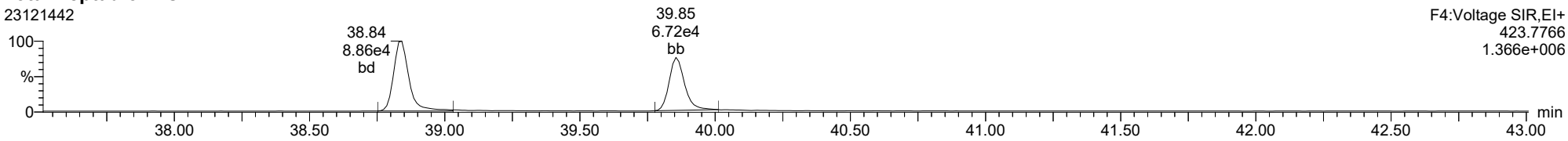
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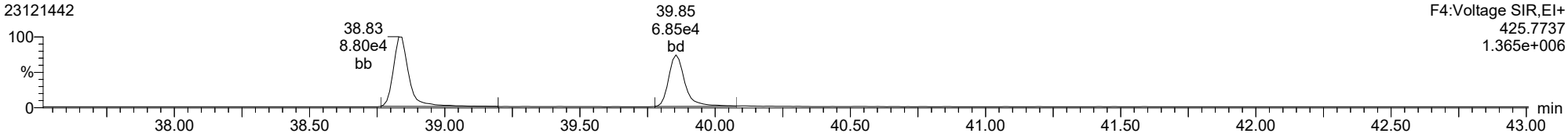
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Total-heptadioxins



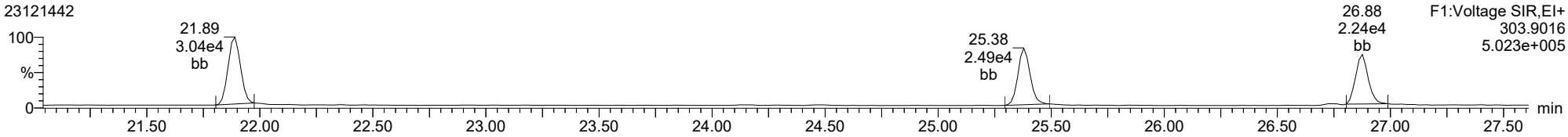
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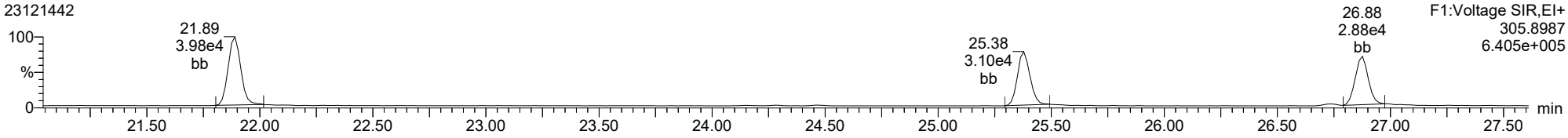
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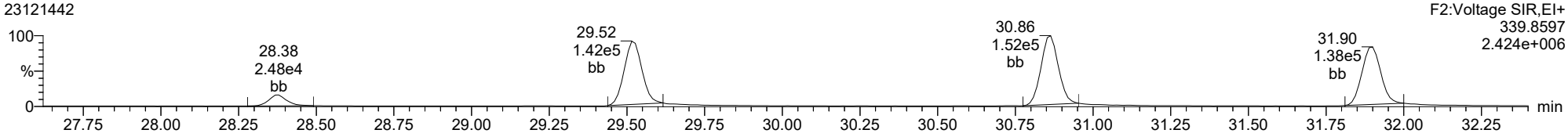
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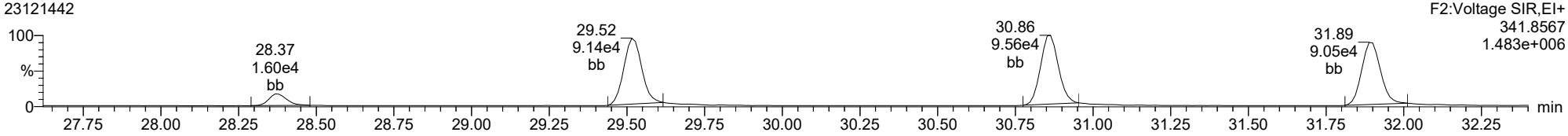
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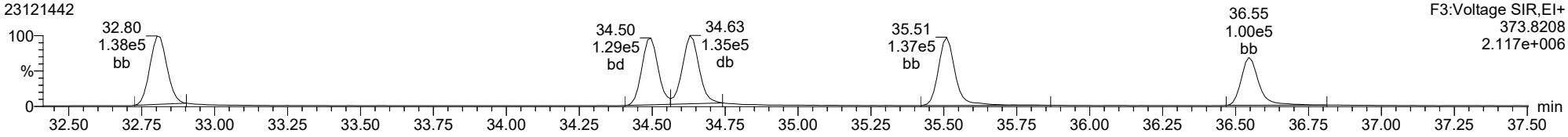


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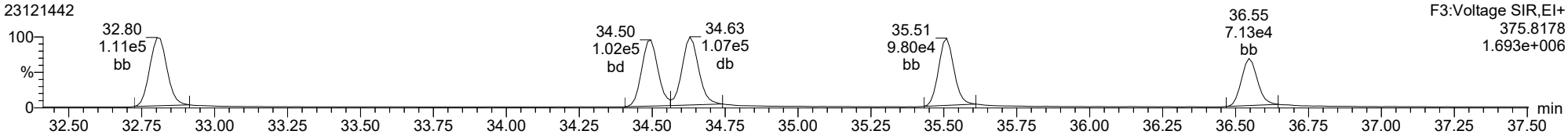


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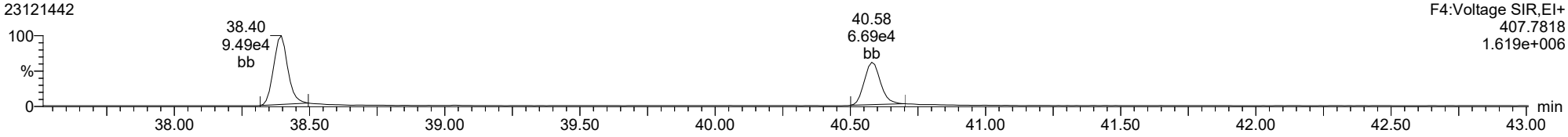
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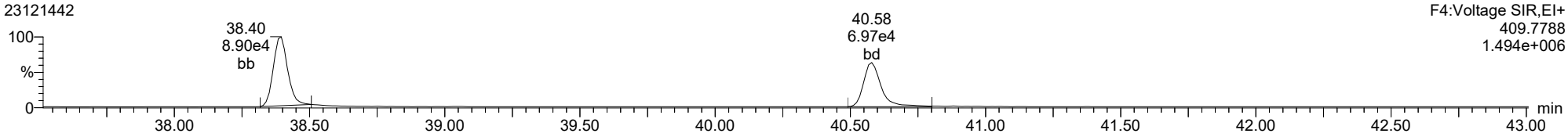
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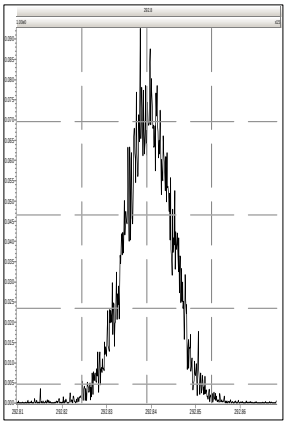


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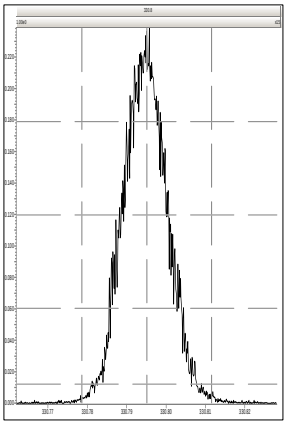


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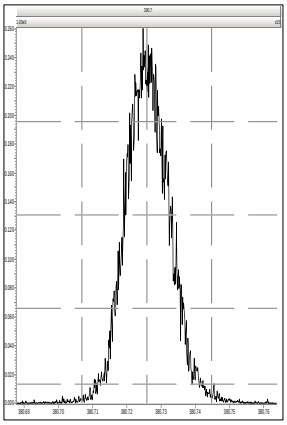
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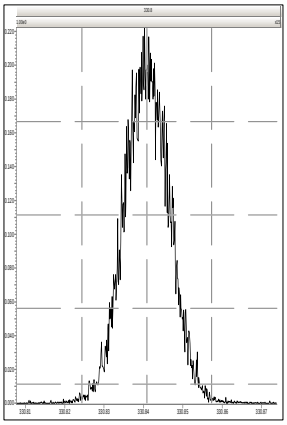
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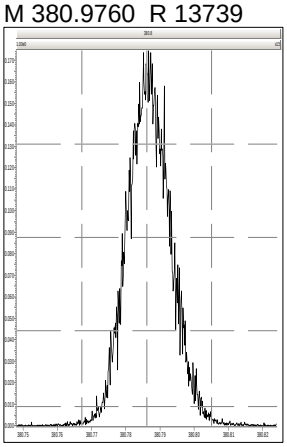
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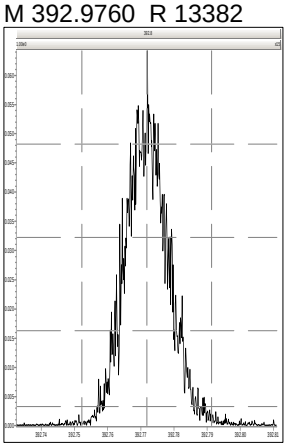
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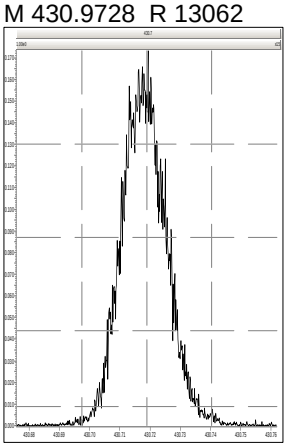
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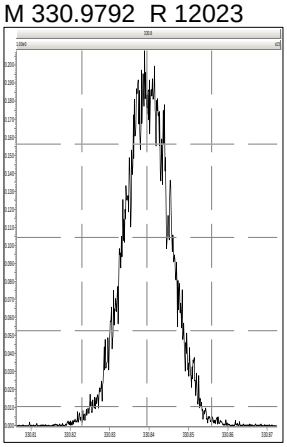
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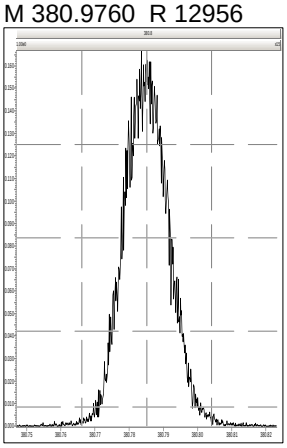
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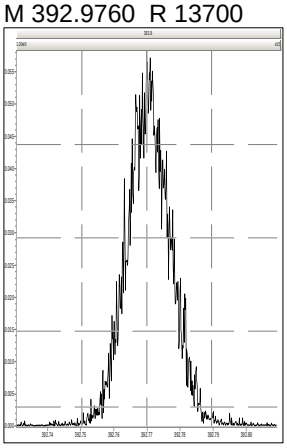
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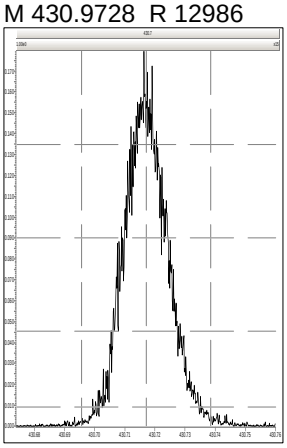
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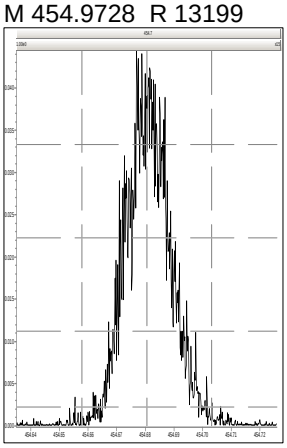
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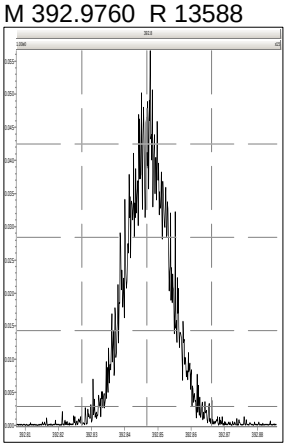
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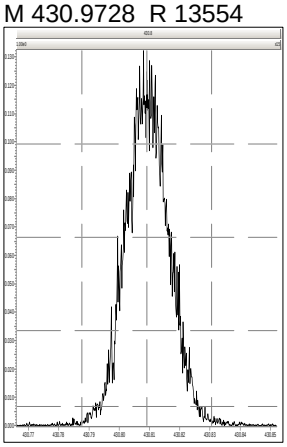
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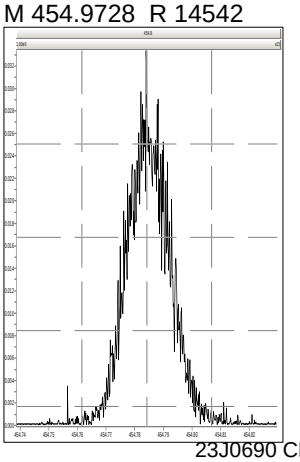
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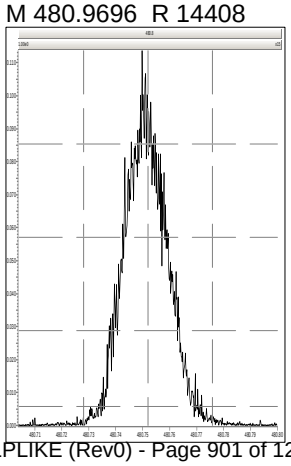
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M 454.9728 R 14542

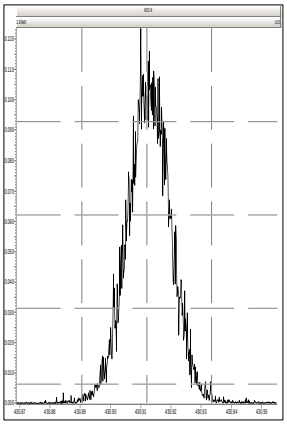


M 480.9696 R 14408

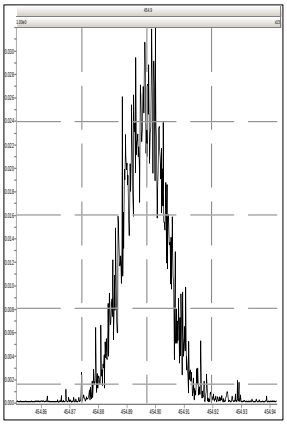


Printed: Saturday, December 16, 2023 01:26:33 Pacific Standard Time

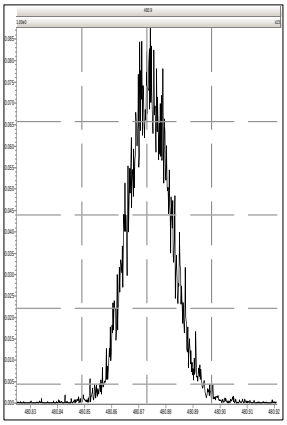
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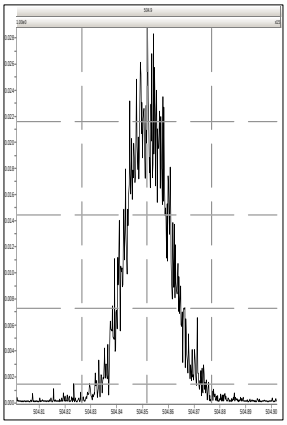
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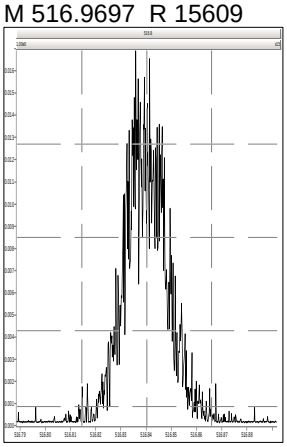
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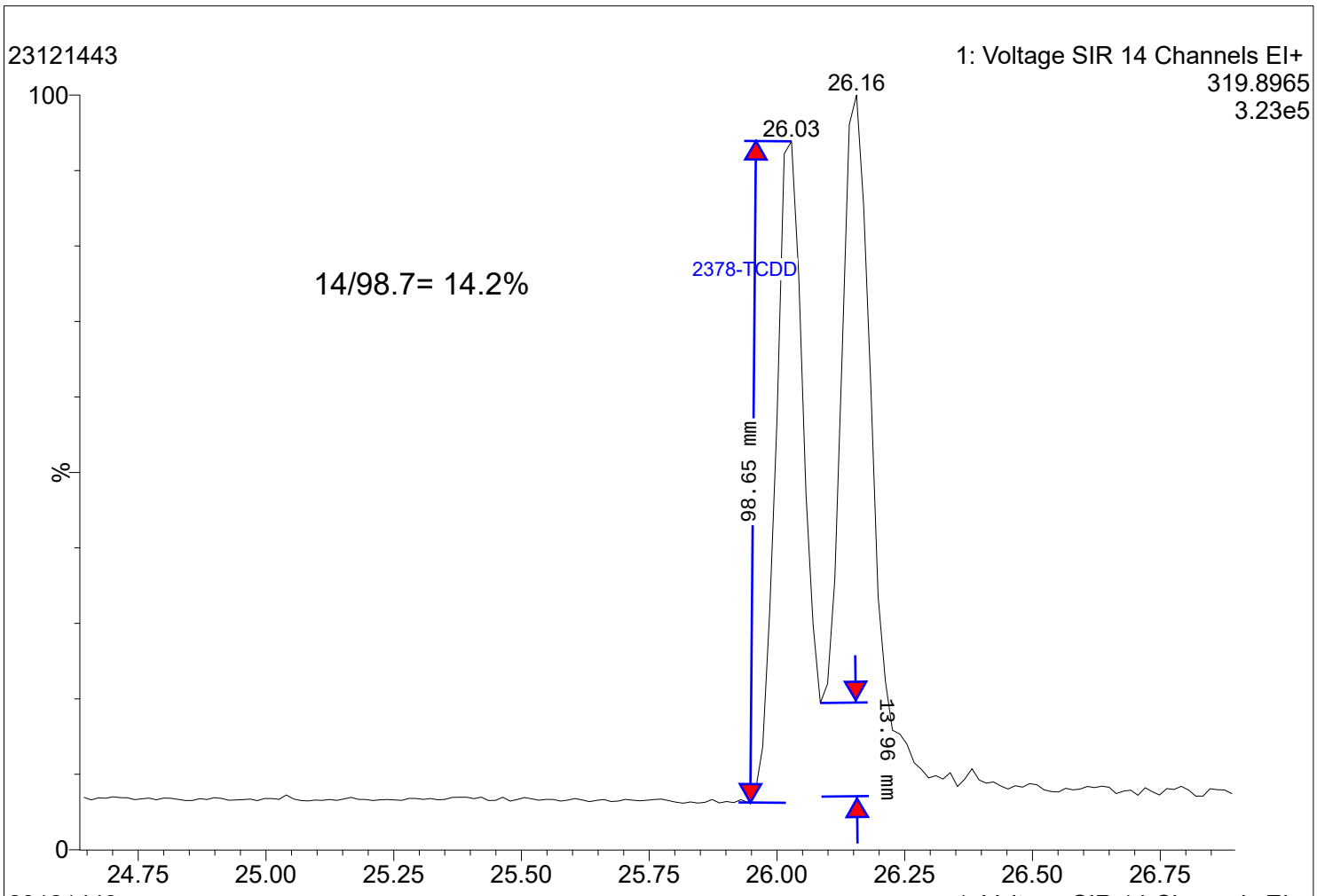


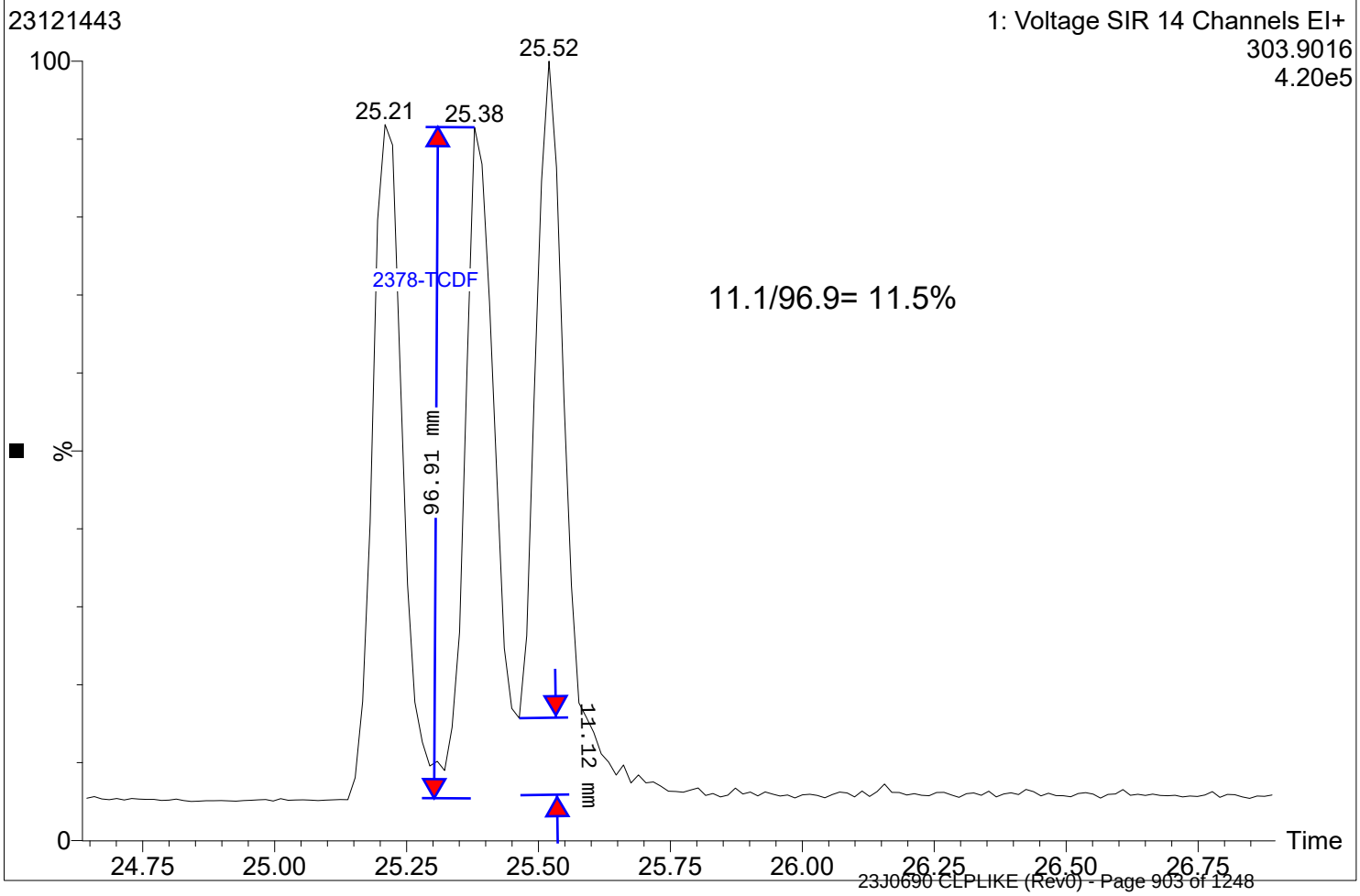
M 504.9696 R 14507



M 516.9697 R 15609




23121443
1: Voltage SIR 14 Channels EI+
319.8965
3.23e5
100
%
0
26.16
26.03
2378-TCDD
14/98.7= 14.2%
98.65 mm
13.96 mm
24.75
25.00
25.25
25.50
25.75
26.00
26.25
26.50
26.75


23121443
1: Voltage SIR 14 Channels EI+
303.9016
4.20e5
100
%
0
25.52
25.21
25.38
2378-TCDF
11.1/96.9= 11.5%
96.91 mm
11.12 mm
Time
24.75
25.00
25.25
25.50
25.75
26.00
26.25
26.50
26.75

Analytical Resources, LLC
Analytical Chemists and Consultants

CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY

EPA 1613B

Lab Name: Analytical Resources, LLC
SDG: 23J0690
Instrument .ID: AUTOSPEC01
Lab File ID: 23081103
Date Analyzed: 08/11/23
Time Analyzed: 11:19
Lab Sample ID: SLH0135-RES1
Sequence: SLH0135

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 14.9

3467-TCDF/2378-TCDF: 10.5

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SLH0135-ICV1	CS3F1	23081102	08/11/2023	10:28
SLH0135-RES1	ISCF1	23081103	08/11/2023	11:19
SLH0135-CAL1	CSLCF	23081104	08/11/2023	12:07
SLH0135-CAL2	CS1CF	23081105	08/11/2023	13:01
SLH0135-CAL3	CS2CF	23081106	08/11/2023	13:56
SLH0135-CAL4	CS3CF	23081107	08/11/2023	14:52
SLH0135-CAL5	CS4CF	23081108	08/11/2023	15:40
SLH0135-CAL6	CS5CF	23081109	08/11/2023	16:29
SLH0135-SCV1	ICVCF	23081110	08/11/2023	17:18
SLH0135-CCV1	CS3F2	23081111	08/11/2023	18:06
SLH0135-RES2	ISCF2	23081112	08/11/2023	18:59

Analytical Resources, LLC
Analytical Chemists and Consultants

CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY

EPA 1613B

Lab Name: Analytical Resources, LLC
SDG: 23J0690
Instrument .ID: AUTOSPEC01
Lab File ID: 23081112
Date Analyzed: 08/11/23
Time Analyzed: 18:59
Lab Sample ID: SLH0135-RES2
Sequence: SLH0135

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 18.4

3467-TCDF/2378-TCDF: 15.3

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SLH0135-ICV1	CS3F1	23081102	08/11/2023	10:28
SLH0135-RES1	ISCF1	23081103	08/11/2023	11:19
SLH0135-CAL1	CSLCF	23081104	08/11/2023	12:07
SLH0135-CAL2	CS1CF	23081105	08/11/2023	13:01
SLH0135-CAL3	CS2CF	23081106	08/11/2023	13:56
SLH0135-CAL4	CS3CF	23081107	08/11/2023	14:52
SLH0135-CAL5	CS4CF	23081108	08/11/2023	15:40
SLH0135-CAL6	CS5CF	23081109	08/11/2023	16:29
SLH0135-SCV1	ICVCF	23081110	08/11/2023	17:18
SLH0135-CCV1	CS3F2	23081111	08/11/2023	18:06
SLH0135-RES2	ISCF2	23081112	08/11/2023	18:59

Analytical Resources, LLC
Analytical Chemists and Consultants

CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY

EPA 1613B

Lab Name: Analytical Resources, LLC SDG: 23J0690

Instrument .ID: AUTOSPEC01 Lab File ID: 23121420

Date Analyzed: 12/15/23 Time Analyzed: 01:28

Lab Sample ID: SLL0222-RES1 Sequence: SLL0222

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 15.2

3467-TCDF/2378-TCDF: 15.2

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SLL0222-ICV1	CS3J3	23121419A	12/15/2023	00:35
SLL0222-RES1	ISCJ3	23121420	12/15/2023	01:28
BLK0112-BLK1	Blank	23121421	12/15/2023	02:20
BLK0112-BS1	LCS	23121422	12/15/2023	03:08
SLL0222-CCV1	CS3J4	23121431	12/15/2023	15:28
SLL0222-RES2	ISCJ4	23121432	12/15/2023	16:21
23J0690-01	SED-07C:0-1	23121437	12/15/2023	20:28
23J0690-02	SED-08C:1-3	23121438	12/15/2023	21:17
23J0690-04	SED-14C:0-1	23121439	12/15/2023	22:06
23J0690-06	SED-27C:0-1	23121440	12/15/2023	22:55
23J0690-07	SED-26C:1-3	23121441	12/15/2023	23:44
SLL0222-CCV2	CS3J5	23121442	12/16/2023	00:33
SLL0222-RES3	ISCJ5	23121443	12/16/2023	01:26

Analytical Resources, LLC
Analytical Chemists and Consultants

CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY

EPA 1613B

Lab Name: Analytical Resources, LLC
SDG: 23J0690
Instrument .ID: AUTOSPEC01
Lab File ID: 23121432
Date Analyzed: 12/15/23
Time Analyzed: 16:21
Lab Sample ID: SLL0222-RES2
Sequence: SLL0222

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 13.6

3467-TCDF/2378-TCDF: 12.3

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SLL0222-ICV1	CS3J3	23121419A	12/15/2023	00:35
SLL0222-RES1	ISCJ3	23121420	12/15/2023	01:28
BLK0112-BLK1	Blank	23121421	12/15/2023	02:20
BLK0112-BS1	LCS	23121422	12/15/2023	03:08
SLL0222-CCV1	CS3J4	23121431	12/15/2023	15:28
SLL0222-RES2	ISCJ4	23121432	12/15/2023	16:21
23J0690-01	SED-07C:0-1	23121437	12/15/2023	20:28
23J0690-02	SED-08C:1-3	23121438	12/15/2023	21:17
23J0690-04	SED-14C:0-1	23121439	12/15/2023	22:06
23J0690-06	SED-27C:0-1	23121440	12/15/2023	22:55
23J0690-07	SED-26C:1-3	23121441	12/15/2023	23:44
SLL0222-CCV2	CS3J5	23121442	12/16/2023	00:33
SLL0222-RES3	ISCJ5	23121443	12/16/2023	01:26

Analytical Resources, LLC
Analytical Chemists and Consultants

CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY

EPA 1613B

Lab Name: Analytical Resources, LLC
SDG: 23J0690
Instrument .ID: AUTOSPEC01
Lab File ID: 23121443
Date Analyzed: 12/16/23
Time Analyzed: 01:26
Lab Sample ID: SLL0222-RES3
Sequence: SLL0222

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 14.2

3467-TCDF/2378-TCDF: 11.5

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SLL0222-ICV1	CS3J3	23121419A	12/15/2023	00:35
SLL0222-RES1	ISCJ3	23121420	12/15/2023	01:28
BLK0112-BLK1	Blank	23121421	12/15/2023	02:20
BLK0112-BS1	LCS	23121422	12/15/2023	03:08
SLL0222-CCV1	CS3J4	23121431	12/15/2023	15:28
SLL0222-RES2	ISCJ4	23121432	12/15/2023	16:21
23J0690-01	SED-07C:0-1	23121437	12/15/2023	20:28
23J0690-02	SED-08C:1-3	23121438	12/15/2023	21:17
23J0690-04	SED-14C:0-1	23121439	12/15/2023	22:06
23J0690-06	SED-27C:0-1	23121440	12/15/2023	22:55
23J0690-07	SED-26C:1-3	23121441	12/15/2023	23:44
SLL0222-CCV2	CS3J5	23121442	12/16/2023	00:33
SLL0222-RES3	ISCJ5	23121443	12/16/2023	01:26

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 1613B

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023
Sequence: SLH0135
Instrument: AUTOSPEC01
Calibration: GH00041

Sample Name	Lab Sample ID	Lab File ID	Matrix	Analysis Date/Time
CS3F1	SLH0135-ICV1	23081102	NA	08/11/23 10:28
ISCF1	SLH0135-RES1	23081103	NA	08/11/23 11:19
CSLCF	SLH0135-CAL1	23081104	NA	08/11/23 12:07
CS1CF	SLH0135-CAL2	23081105	NA	08/11/23 13:01
CS2CF	SLH0135-CAL3	23081106	NA	08/11/23 13:56
CS3CF	SLH0135-CAL4	23081107	NA	08/11/23 14:52
CS4CF	SLH0135-CAL5	23081108	NA	08/11/23 15:40
CS5CF	SLH0135-CAL6	23081109	NA	08/11/23 16:29
ICVCF	SLH0135-SCV1	23081110	NA	08/11/23 17:18
CS3F2	SLH0135-CCV1	23081111	NA	08/11/23 18:06
ISCF2	SLH0135-RES2	23081112	NA	08/11/23 18:59

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 1613B

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023
Sequence: SLL0222
Instrument: AUTOSPEC01
Calibration: GH00041

Sample Name	Lab Sample ID	Lab File ID	Matrix	Analysis Date/Time
CS3J3	SLL0222-ICV1	23121419A	NA	12/15/23 00:35
ISCJ3	SLL0222-RES1	23121420	NA	12/15/23 01:28
Blank	BLK0112-BLK1	23121421	Solid	12/15/23 02:20
LCS	BLK0112-BS1	23121422	Solid	12/15/23 03:08
CS3J4	SLL0222-CCV1	23121431	NA	12/15/23 15:28
ISCJ4	SLL0222-RES2	23121432	NA	12/15/23 16:21
SED-07C:0-1	23J0690-01	23121437	Solid	12/15/23 20:28
SED-08C:1-3	23J0690-02	23121438	Solid	12/15/23 21:17
SED-14C:0-1	23J0690-04	23121439	Solid	12/15/23 22:06
SED-27C:0-1	23J0690-06	23121440	Solid	12/15/23 22:55
SED-26C:1-3	23J0690-07	23121441	Solid	12/15/23 23:44
CS3J5	SLL0222-CCV2	23121442	NA	12/16/23 00:33
ISCJ5	SLL0222-RES3	23121443	NA	12/16/23 01:26

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Sequence:	SLH0135	Instrument:	AUTOSPEC01
Sample ID:	SLH0135-ICV1	Calibration:	GH00041
File ID:	23081102	Analyzed:	08/11/23 10:28

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	93.6	71 - 129	25.1387	25.134	0.0047	N/A	
13C12-2,3,7,8-TCDD	100.00	105	82 - 118	25.7743	25.76963	0.0047	N/A	
13C12-1,2,3,7,8-PeCDF	100.00	99.1	76 - 124	29.2847	29.2753	0.0094	N/A	
13C12-2,3,4,7,8-PeCDF	100.00	101	77 - 123	30.6218	30.6141	0.0077	N/A	
13C12-1,2,3,7,8-PeCDD	100.00	101	62 - 138	30.878	30.86477	0.0132	N/A	
13C12-1,2,3,4,7,8-HxCDF	100.00	100	76 - 124	34.276	34.26848	0.0075	N/A	
13C12-1,2,3,6,7,8-HxCDF	100.00	91.4	70 - 130	34.4098	34.40585	0.0039	N/A	
13C12-2,3,4,6,7,8-HxCDF	100.00	93.6	73 - 127	35.3012	35.29345	0.0078	N/A	
13C12-1,2,3,7,8,9-HxCDF	100.00	92.8	74 - 126	36.3372	36.3333	0.0039	N/A	
13C12-1,2,3,4,7,8-HxCDD	100.00	102	85 - 115	35.4125	35.40857	0.0039	N/A	
13C12-1,2,3,6,7,8-HxCDD	100.00	94.7	85 - 115	35.535	35.52743	0.0076	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	98.6	78 - 122	38.22	38.21063	0.0094	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	104	77 - 123	40.3815	40.372	0.0095	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	100.00	107	72 - 128	39.6685	39.66083	0.0077	N/A	
13C12-OCDD	200.00	106	48 - 152	44.2288	44.22563	0.0032	N/A	
37Cl4-2,3,7,8-TCDD	10.000	102	0 - 200	25.7885	25.78615	0.0023	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Sequence:	SLH0135	Instrument:	AUTOSPEC01
Sample ID:	SLH0135-SCV1	Calibration:	GH00041
File ID:	23081110	Analyzed:	08/11/23 17:18

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	101	0 - 200	25.1247	25.134	-0.0093	N/A	
13C12-2,3,7,8-TCDD	100.00	100	0 - 200	25.7603	25.76963	-0.0093	N/A	
13C12-1,2,3,7,8-PeCDF	100.00	104	0 - 200	29.2735	29.2753	-0.0018	N/A	
13C12-2,3,4,7,8-PeCDF	100.00	99.8	0 - 200	30.6105	30.6141	-0.0036	N/A	
13C12-1,2,3,7,8-PeCDD	100.00	100	0 - 200	30.8555	30.86477	-0.0093	N/A	
13C12-1,2,3,4,7,8-HxCDF	100.00	95.3	0 - 200	34.2648	34.26848	-0.0037	N/A	
13C12-1,2,3,6,7,8-HxCDF	100.00	93.4	0 - 200	34.3985	34.40585	-0.0074	N/A	
13C12-2,3,4,6,7,8-HxCDF	100.00	93.8	0 - 200	35.2897	35.29345	-0.0037	N/A	
13C12-1,2,3,7,8,9-HxCDF	100.00	96.1	0 - 200	36.326	36.3333	-0.0073	N/A	
13C12-1,2,3,4,7,8-HxCDD	100.00	99.2	0 - 200	35.4012	35.40857	-0.0074	N/A	
13C12-1,2,3,6,7,8-HxCDD	100.00	99.0	0 - 200	35.5237	35.52743	-0.0037	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	97.6	0 - 200	38.2088	38.21063	-0.0018	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	100	0 - 200	40.3702	40.372	-0.0018	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	100.00	103	0 - 200	39.6572	39.66083	-0.0036	N/A	
13C12-OCDD	200.00	112	0 - 200	44.2195	44.22563	-0.0061	N/A	
37Cl4-2,3,7,8-TCDD	10.000	96.9	0 - 200	25.7743	25.78615	-0.0118	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Sequence:	SLH0135	Instrument:	AUTOSPEC01
Sample ID:	SLH0135-CCV1	Calibration:	GH00041
File ID:	23081111	Analyzed:	08/11/23 18:06

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	98.1	71 - 129	25.1245	25.134	-0.0095	N/A	
13C12-2,3,7,8-TCDD	100.00	106	82 - 118	25.7602	25.76963	-0.0094	N/A	
13C12-1,2,3,7,8-PeCDF	100.00	97.1	76 - 124	29.2733	29.2753	-0.0020	N/A	
13C12-2,3,4,7,8-PeCDF	100.00	97.0	77 - 123	30.6103	30.6141	-0.0038	N/A	
13C12-1,2,3,7,8-PeCDD	100.00	97.2	62 - 138	30.8665	30.86477	0.0017	N/A	
13C12-1,2,3,4,7,8-HxCDF	100.00	102	76 - 124	34.2647	34.26848	-0.0038	N/A	
13C12-1,2,3,6,7,8-HxCDF	100.00	99.9	70 - 130	34.3983	34.40585	-0.0076	N/A	
13C12-2,3,4,6,7,8-HxCDF	100.00	103	73 - 127	35.2897	35.29345	-0.0037	N/A	
13C12-1,2,3,7,8,9-HxCDF	100.00	102	74 - 126	36.3258	36.3333	-0.0075	N/A	
13C12-1,2,3,4,7,8-HxCDD	100.00	103	85 - 115	35.4122	35.40857	0.0036	N/A	
13C12-1,2,3,6,7,8-HxCDD	100.00	107	85 - 115	35.5235	35.52743	-0.0039	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	98.3	78 - 122	38.2087	38.21063	-0.0019	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	106	77 - 123	40.37	40.372	-0.0020	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	100.00	108	72 - 128	39.657	39.66083	-0.0038	N/A	
13C12-OCDD	200.00	107	48 - 152	44.2192	44.22563	-0.0064	N/A	
37Cl4-2,3,7,8-TCDD	10.000	101	0 - 200	25.7883	25.78615	0.0022	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Sequence:	SLL0222	Instrument:	AUTOSPEC01
Sample ID:	SLL0222-ICV1	Calibration:	GH00041
File ID:	23121419A	Analyzed:	12/15/23 00:35

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	88.6	71 - 129	25.3647	25.134	0.2307	N/A	
13C12-2,3,7,8-TCDD	100.00	102	82 - 118	26.0002	25.76963	0.2306	N/A	
13C12-1,2,3,7,8-PeCDF	100.00	86.5	76 - 124	29.5043	29.2753	0.2290	N/A	
13C12-2,3,4,7,8-PeCDF	100.00	84.2	77 - 123	30.8415	30.6141	0.2274	N/A	
13C12-1,2,3,7,8-PeCDD	100.00	102	62 - 138	31.0975	30.86477	0.2327	N/A	
13C12-1,2,3,4,7,8-HxCDF	100.00	90.4	76 - 124	34.4735	34.26848	0.2050	N/A	
13C12-1,2,3,6,7,8-HxCDF	100.00	87.0	70 - 130	34.6183	34.40585	0.2124	N/A	
13C12-2,3,4,6,7,8-HxCDF	100.00	85.0	73 - 127	35.4872	35.29345	0.1938	N/A	
13C12-1,2,3,7,8,9-HxCDF	100.00	87.0	74 - 126	36.5345	36.3333	0.2012	N/A	
13C12-1,2,3,4,7,8-HxCDD	100.00	105	85 - 115	35.6097	35.40857	0.2011	N/A	
13C12-1,2,3,6,7,8-HxCDD	100.00	101	85 - 115	35.7322	35.52743	0.2048	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	79.1	78 - 122	38.3838	38.21063	0.1732	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	74.0	77 - 123	40.5675	40.372	0.1955	N/A	*
13C12-1,2,3,4,6,7,8-HpCDD	100.00	93.9	72 - 128	39.8432	39.66083	0.1824	N/A	
13C12-OCDD	200.00	76.8	48 - 152	44.4352	44.22563	0.2096	N/A	
37Cl4-2,3,7,8-TCDD	10.000	105	0 - 200	26.0143	25.78615	0.2281	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Sequence:	SLL0222	Instrument:	AUTOSPEC01
Sample ID:	BLK0112-BLK1	Calibration:	GH00041
File ID:	23121421	Analyzed:	12/15/23 02:20

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	46.9	24 - 169	25.3503	25.134	0.2163	N/A	
13C12-2,3,7,8-TCDD	200.00	56.4	25 - 164	25.986	25.76963	0.2164	N/A	
13C12-1,2,3,7,8-PeCDF	200.00	46.1	24 - 185	29.4822	29.2753	0.2069	N/A	
13C12-2,3,4,7,8-PeCDF	200.00	46.5	21 - 178	30.8303	30.6141	0.2162	N/A	
13C12-1,2,3,7,8-PeCDD	200.00	55.4	25 - 181	31.0753	30.86477	0.2105	N/A	
13C12-1,2,3,4,7,8-HxCDF	200.00	49.8	26 - 152	34.4623	34.26848	0.1938	N/A	
13C12-1,2,3,6,7,8-HxCDF	200.00	50.1	26 - 123	34.596	34.40585	0.1901	N/A	
13C12-2,3,4,6,7,8-HxCDF	200.00	47.5	28 - 136	35.4762	35.29345	0.1827	N/A	
13C12-1,2,3,7,8,9-HxCDF	200.00	48.0	29 - 147	36.5122	36.3333	0.1789	N/A	
13C12-1,2,3,4,7,8-HxCDD	200.00	58.3	32 - 141	35.5987	35.40857	0.1901	N/A	
13C12-1,2,3,6,7,8-HxCDD	200.00	56.1	28 - 130	35.7102	35.52743	0.1828	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	200.00	41.3	28 - 143	38.3615	38.21063	0.1509	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	200.00	40.0	26 - 138	40.5565	40.372	0.1845	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	200.00	52.6	23 - 140	39.8323	39.66083	0.1715	N/A	
13C12-OCDD	400.00	43.3	17 - 157	44.4078	44.22563	0.1822	N/A	
37Cl4-2,3,7,8-TCDD	80.000	89.1	35 - 197	26.0002	25.78615	0.2141	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Sequence:	SLL0222	Instrument:	AUTOSPEC01
Sample ID:	BLK0112-BS1	Calibration:	GH00041
File ID:	23121422	Analyzed:	12/15/23 03:08

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	42.0	24 - 169	25.3645	25.134	0.2305	N/A	
13C12-2,3,7,8-TCDD	200.00	54.4	25 - 164	26.0002	25.76963	0.2306	N/A	
13C12-1,2,3,7,8-PeCDF	200.00	57.4	24 - 185	29.4933	29.2753	0.2180	N/A	
13C12-2,3,4,7,8-PeCDF	200.00	53.4	21 - 178	30.8415	30.6141	0.2274	N/A	
13C12-1,2,3,7,8-PeCDD	200.00	67.4	25 - 181	31.0865	30.86477	0.2217	N/A	
13C12-1,2,3,4,7,8-HxCDF	200.00	62.1	26 - 152	34.4623	34.26848	0.1938	N/A	
13C12-1,2,3,6,7,8-HxCDF	200.00	57.4	26 - 123	34.6073	34.40585	0.2015	N/A	
13C12-2,3,4,6,7,8-HxCDF	200.00	60.9	28 - 136	35.4873	35.29345	0.1938	N/A	
13C12-1,2,3,7,8,9-HxCDF	200.00	65.4	29 - 147	36.5235	36.3333	0.1902	N/A	
13C12-1,2,3,4,7,8-HxCDD	200.00	74.9	32 - 141	35.6098	35.40857	0.2012	N/A	
13C12-1,2,3,6,7,8-HxCDD	200.00	73.7	28 - 130	35.7213	35.52743	0.1939	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	200.00	52.1	28 - 143	38.3728	38.21063	0.1622	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	200.00	52.0	26 - 138	40.5563	40.372	0.1843	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	200.00	67.8	23 - 140	39.8323	39.66083	0.1715	N/A	
13C12-OCDD	400.00	56.7	17 - 157	44.4168	44.22563	0.1912	N/A	
37Cl4-2,3,7,8-TCDD	80.000	64.6	35 - 197	26.0143	25.78615	0.2281	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Sequence:	SLL0222	Instrument:	AUTOSPEC01
Sample ID:	SLL0222-CCV1	Calibration:	GH00041
File ID:	23121431	Analyzed:	12/15/23 15:28

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	86.3	71 - 129	25.3647	25.134	0.2307	N/A	
13C12-2,3,7,8-TCDD	100.00	105	82 - 118	25.9862	25.76963	0.2166	N/A	
13C12-1,2,3,7,8-PeCDF	100.00	89.6	76 - 124	29.4933	29.2753	0.2180	N/A	
13C12-2,3,4,7,8-PeCDF	100.00	89.7	77 - 123	30.8417	30.6141	0.2276	N/A	
13C12-1,2,3,7,8-PeCDD	100.00	111	62 - 138	31.0867	30.86477	0.2219	N/A	
13C12-1,2,3,4,7,8-HxCDF	100.00	85.9	76 - 124	34.4735	34.26848	0.2050	N/A	
13C12-1,2,3,6,7,8-HxCDF	100.00	72.0	70 - 130	34.6073	34.40585	0.2015	N/A	
13C12-2,3,4,6,7,8-HxCDF	100.00	79.7	73 - 127	35.4875	35.29345	0.1940	N/A	
13C12-1,2,3,7,8,9-HxCDF	100.00	81.9	74 - 126	36.5235	36.3333	0.1902	N/A	
13C12-1,2,3,4,7,8-HxCDD	100.00	103	85 - 115	35.61	35.40857	0.2014	N/A	
13C12-1,2,3,6,7,8-HxCDD	100.00	88.1	85 - 115	35.7213	35.52743	0.1939	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	72.7	78 - 122	38.373	38.21063	0.1624	N/A	*
13C12-1,2,3,4,7,8,9-HpCDF	100.00	71.7	77 - 123	40.5565	40.372	0.1845	N/A	*
13C12-1,2,3,4,6,7,8-HpCDD	100.00	95.4	72 - 128	39.8435	39.66083	0.1827	N/A	
13C12-OCDD	200.00	72.2	48 - 152	44.4262	44.22563	0.2006	N/A	
37Cl4-2,3,7,8-TCDD	10.000	104	0 - 200	26.0145	25.78615	0.2284	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Sequence:	SLL0222	Instrument:	AUTOSPEC01
Sample ID:	23J0690-01	Calibration:	GH00041
File ID:	23121437	Analyzed:	12/15/23 20:28

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	197.90	58.4	24 - 169	25.3645	25.134	0.2305	N/A	
13C12-2,3,7,8-TCDD	197.90	73.6	25 - 164	26	25.76963	0.2304	N/A	
13C12-1,2,3,7,8-PeCDF	197.90	60.3	24 - 185	29.5043	29.2753	0.2290	N/A	
13C12-2,3,4,7,8-PeCDF	197.90	60.4	21 - 178	30.8413	30.6141	0.2272	N/A	
13C12-1,2,3,7,8-PeCDD	197.90	76.4	25 - 181	31.0977	30.86477	0.2329	N/A	
13C12-1,2,3,4,7,8-HxCDF	197.90	64.6	26 - 152	34.4735	34.26848	0.2050	N/A	
13C12-1,2,3,6,7,8-HxCDF	197.90	55.9	26 - 123	34.6183	34.40585	0.2124	N/A	
13C12-2,3,4,6,7,8-HxCDF	197.90	58.1	28 - 136	35.4983	35.29345	0.2049	N/A	
13C12-1,2,3,7,8,9-HxCDF	197.90	59.2	29 - 147	36.5347	36.3333	0.2014	N/A	
13C12-1,2,3,4,7,8-HxCDD	197.90	77.6	32 - 141	35.621	35.40857	0.2124	N/A	
13C12-1,2,3,6,7,8-HxCDD	197.90	66.8	28 - 130	35.7323	35.52743	0.2049	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	197.90	52.8	28 - 143	38.384	38.21063	0.1734	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	197.90	52.0	26 - 138	40.5677	40.372	0.1957	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	197.90	70.6	23 - 140	39.8435	39.66083	0.1827	N/A	
13C12-OCDD	395.79	56.2	17 - 157	44.4353	44.22563	0.2097	N/A	
37Cl4-2,3,7,8-TCDD	79.159	90.9	35 - 197	26.0142	25.78615	0.2281	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Sequence:	SLL0222	Instrument:	AUTOSPEC01
Sample ID:	23J0690-02	Calibration:	GH00041
File ID:	23121438	Analyzed:	12/15/23 21:17

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	199.08	55.7	24 - 169	25.3505	25.134	0.2165	N/A	
13C12-2,3,7,8-TCDD	199.08	70.8	25 - 164	25.9862	25.76963	0.2166	N/A	
13C12-1,2,3,7,8-PeCDF	199.08	60.3	24 - 185	29.4935	29.2753	0.2182	N/A	
13C12-2,3,4,7,8-PeCDF	199.08	59.2	21 - 178	30.8305	30.6141	0.2164	N/A	
13C12-1,2,3,7,8-PeCDD	199.08	74.6	25 - 181	31.0867	30.86477	0.2219	N/A	
13C12-1,2,3,4,7,8-HxCDF	199.08	61.0	26 - 152	34.4625	34.26848	0.1940	N/A	
13C12-1,2,3,6,7,8-HxCDF	199.08	53.9	26 - 123	34.6073	34.40585	0.2015	N/A	
13C12-2,3,4,6,7,8-HxCDF	199.08	57.3	28 - 136	35.4873	35.29345	0.1938	N/A	
13C12-1,2,3,7,8,9-HxCDF	199.08	57.6	29 - 147	36.5235	36.3333	0.1902	N/A	
13C12-1,2,3,4,7,8-HxCDD	199.08	74.9	32 - 141	35.61	35.40857	0.2014	N/A	
13C12-1,2,3,6,7,8-HxCDD	199.08	64.5	28 - 130	35.7213	35.52743	0.1939	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	199.08	50.5	28 - 143	38.373	38.21063	0.1624	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	199.08	48.5	26 - 138	40.5567	40.372	0.1847	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	199.08	67.1	23 - 140	39.8325	39.66083	0.1717	N/A	
13C12-OCDD	398.17	53.3	17 - 157	44.4263	44.22563	0.2007	N/A	
37Cl4-2,3,7,8-TCDD	79.633	82.9	35 - 197	26.0003	25.78615	0.2142	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Sequence:	SLL0222	Instrument:	AUTOSPEC01
Sample ID:	23J0690-04	Calibration:	GH00041
File ID:	23121439	Analyzed:	12/15/23 22:06

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	198.49	58.5	24 - 169	25.3647	25.134	0.2307	N/A	
13C12-2,3,7,8-TCDD	198.49	74.5	25 - 164	25.9862	25.76963	0.2166	N/A	
13C12-1,2,3,7,8-PeCDF	198.49	59.3	24 - 185	29.5045	29.2753	0.2292	N/A	
13C12-2,3,4,7,8-PeCDF	198.49	59.8	21 - 178	30.8415	30.6141	0.2274	N/A	
13C12-1,2,3,7,8-PeCDD	198.49	76.6	25 - 181	31.0975	30.86477	0.2327	N/A	
13C12-1,2,3,4,7,8-HxCDF	198.49	61.7	26 - 152	34.4735	34.26848	0.2050	N/A	
13C12-1,2,3,6,7,8-HxCDF	198.49	51.9	26 - 123	34.6183	34.40585	0.2124	N/A	
13C12-2,3,4,6,7,8-HxCDF	198.49	55.4	28 - 136	35.5095	35.29345	0.2161	N/A	
13C12-1,2,3,7,8,9-HxCDF	198.49	55.9	29 - 147	36.5235	36.3333	0.1902	N/A	
13C12-1,2,3,4,7,8-HxCDD	198.49	72.4	32 - 141	35.632	35.40857	0.2234	N/A	
13C12-1,2,3,6,7,8-HxCDD	198.49	64.3	28 - 130	35.7435	35.52743	0.2161	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	198.49	48.7	28 - 143	38.384	38.21063	0.1734	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	198.49	48.1	26 - 138	40.5677	40.372	0.1957	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	198.49	66.8	23 - 140	39.8435	39.66083	0.1827	N/A	
13C12-OCDD	396.98	52.1	17 - 157	44.4353	44.22563	0.2097	N/A	
37Cl4-2,3,7,8-TCDD	79.396	89.0	35 - 197	26.0143	25.78615	0.2281	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Sequence:	SLL0222	Instrument:	AUTOSPEC01
Sample ID:	23J0690-06	Calibration:	GH00041
File ID:	23121440	Analyzed:	12/15/23 22:55

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	198.33	52.7	24 - 169	25.3645	25.134	0.2305	N/A	
13C12-2,3,7,8-TCDD	198.33	65.2	25 - 164	26.0002	25.76963	0.2306	N/A	
13C12-1,2,3,7,8-PeCDF	198.33	52.4	24 - 185	29.5045	29.2753	0.2292	N/A	
13C12-2,3,4,7,8-PeCDF	198.33	51.4	21 - 178	30.8413	30.6141	0.2272	N/A	
13C12-1,2,3,7,8-PeCDD	198.33	66.0	25 - 181	31.0977	30.86477	0.2329	N/A	
13C12-1,2,3,4,7,8-HxCDF	198.33	58.1	26 - 152	34.4733	34.26848	0.2048	N/A	
13C12-1,2,3,6,7,8-HxCDF	198.33	49.8	26 - 123	34.6182	34.40585	0.2124	N/A	
13C12-2,3,4,6,7,8-HxCDF	198.33	53.0	28 - 136	35.4983	35.29345	0.2049	N/A	
13C12-1,2,3,7,8,9-HxCDF	198.33	54.3	29 - 147	36.5343	36.3333	0.2010	N/A	
13C12-1,2,3,4,7,8-HxCDD	198.33	69.6	32 - 141	35.6208	35.40857	0.2122	N/A	
13C12-1,2,3,6,7,8-HxCDD	198.33	59.6	28 - 130	35.7322	35.52743	0.2048	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	198.33	46.4	28 - 143	38.3838	38.21063	0.1732	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	198.33	45.6	26 - 138	40.5675	40.372	0.1955	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	198.33	60.9	23 - 140	39.8433	39.66083	0.1825	N/A	
13C12-OCDD	396.66	52.7	17 - 157	44.435	44.22563	0.2094	N/A	
37Cl4-2,3,7,8-TCDD	79.333	84.5	35 - 197	26.0143	25.78615	0.2281	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Sequence:	SLL0222	Instrument:	AUTOSPEC01
Sample ID:	23J0690-07	Calibration:	GH00041
File ID:	23121441	Analyzed:	12/15/23 23:44

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	199.67	57.0	24 - 169	25.3648	25.134	0.2308	N/A	
13C12-2,3,7,8-TCDD	199.67	71.3	25 - 164	26.0005	25.76963	0.2309	N/A	
13C12-1,2,3,7,8-PeCDF	199.67	62.6	24 - 185	29.5047	29.2753	0.2294	N/A	
13C12-2,3,4,7,8-PeCDF	199.67	62.5	21 - 178	30.8417	30.6141	0.2276	N/A	
13C12-1,2,3,7,8-PeCDD	199.67	75.6	25 - 181	31.0978	30.86477	0.2330	N/A	
13C12-1,2,3,4,7,8-HxCDF	199.67	60.5	26 - 152	34.4738	34.26848	0.2053	N/A	
13C12-1,2,3,6,7,8-HxCDF	199.67	54.9	26 - 123	34.6187	34.40585	0.2128	N/A	
13C12-2,3,4,6,7,8-HxCDF	199.67	60.0	28 - 136	35.4987	35.29345	0.2052	N/A	
13C12-1,2,3,7,8,9-HxCDF	199.67	58.0	29 - 147	36.5348	36.3333	0.2015	N/A	
13C12-1,2,3,4,7,8-HxCDD	199.67	75.5	32 - 141	35.6213	35.40857	0.2127	N/A	
13C12-1,2,3,6,7,8-HxCDD	199.67	65.5	28 - 130	35.7327	35.52743	0.2053	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	199.67	49.6	28 - 143	38.3843	38.21063	0.1737	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	199.67	46.9	26 - 138	40.5682	40.372	0.1962	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	199.67	65.7	23 - 140	39.844	39.66083	0.1832	N/A	
13C12-OCDD	399.33	50.7	17 - 157	44.4358	44.22563	0.2102	N/A	
37Cl4-2,3,7,8-TCDD	79.867	91.9	35 - 197	26.0145	25.78615	0.2284	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Sequence:	SLL0222	Instrument:	AUTOSPEC01
Sample ID:	SLL0222-CCV2	Calibration:	GH00041
File ID:	23121442	Analyzed:	12/16/23 00:33

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	88.8	71 - 129	25.3645	25.134	0.2305	N/A	
13C12-2,3,7,8-TCDD	100.00	105	82 - 118	26.0002	25.76963	0.2306	N/A	
13C12-1,2,3,7,8-PeCDF	100.00	89.5	76 - 124	29.5045	29.2753	0.2292	N/A	
13C12-2,3,4,7,8-PeCDF	100.00	90.2	77 - 123	30.8415	30.6141	0.2274	N/A	
13C12-1,2,3,7,8-PeCDD	100.00	107	62 - 138	31.0867	30.86477	0.2219	N/A	
13C12-1,2,3,4,7,8-HxCDF	100.00	87.3	76 - 124	34.4735	34.26848	0.2050	N/A	
13C12-1,2,3,6,7,8-HxCDF	100.00	81.8	70 - 130	34.6183	34.40585	0.2124	N/A	
13C12-2,3,4,6,7,8-HxCDF	100.00	83.6	73 - 127	35.4873	35.29345	0.1938	N/A	
13C12-1,2,3,7,8,9-HxCDF	100.00	81.5	74 - 126	36.5347	36.3333	0.2014	N/A	
13C12-1,2,3,4,7,8-HxCDD	100.00	103	85 - 115	35.61	35.40857	0.2014	N/A	
13C12-1,2,3,6,7,8-HxCDD	100.00	95.1	85 - 115	35.7325	35.52743	0.2051	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	75.5	78 - 122	38.3842	38.21063	0.1736	N/A	*
13C12-1,2,3,4,7,8,9-HpCDF	100.00	70.1	77 - 123	40.5678	40.372	0.1958	N/A	*
13C12-1,2,3,4,6,7,8-HpCDD	100.00	94.0	72 - 128	39.8437	39.66083	0.1829	N/A	
13C12-OCDD	200.00	74.0	48 - 152	44.4355	44.22563	0.2099	N/A	
37Cl4-2,3,7,8-TCDD	10.000	100	0 - 200	26.0143	25.78615	0.2281	N/A	

* Values outside of QC limits

HOLDING TIME SUMMARY

Analysis: EPA 1613B

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023

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
SED-07C:0-1 23J0690-01	03/22/23 07:29	05/05/23 14:20	11/14/23 13:25	237	365	12/15/23 20:28	31	365	
SED-08C:1-3 23J0690-02	03/22/23 08:07	05/05/23 14:20	11/14/23 13:25	237	365	12/15/23 21:17	31	365	
SED-14C:0-1 23J0690-04	03/21/23 15:53	05/05/23 14:20	11/14/23 13:25	237	365	12/15/23 22:06	31	365	
SED-27C:0-1 23J0690-06	03/22/23 13:24	05/05/23 14:20	11/14/23 13:25	237	365	12/15/23 22:55	31	365	
SED-26C:1-3 23J0690-07	03/22/23 10:38	05/05/23 14:20	11/14/23 13:25	237	365	12/15/23 23:44	31	365	

* Indicates hold time exceedance.

METHOD DETECTION AND REPORTING LIMITS

EPA 1613B

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023
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

PRODUCT CODE:	CS3WT
LOT NUMBER:	CS3WT0918
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/24/2018
LAST TESTED: (mm/dd/yyyy)	10/29/2018
EXPIRY DATE: (mm/dd/yyyy)	10/29/2025
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: 13CS30918). 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 is to be used with the 1613 calibration solutions having the following lot numbers:

PRODUCT CODE	LOT NUMBER
EPA-1613CS1	13CS10918
EPA-1613CS2	13CS20918
EPA-1613CS3	13CS30918
EPA-1613CS4	13CS40918
EPA-1613CS5	13CS50918
EPA-1613CSL	13CSL0918
EPA-1613CS0.5	13CS0.50918

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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 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 2378-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,...x_n on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

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. 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: **CS3WT; Components and Concentrations (ng/ml, in nonane/4.5% toluene)**

QUANTITATIVE ANALYTES (ng/ml, ±5%)	
Native PCDDs & PCDFs:	
2,3,7,8-TCDD	10
2,3,7,8-TCDF	10
1,2,3,7,8-PeCDD	50
1,2,3,7,8-PeCDF	50
2,3,4,7,8-PeCDF	50
1,2,3,4,7,8-HxCDD	50
1,2,3,6,7,8-HxCDD	50
1,2,3,7,8,9-HxCDD	50
1,2,3,4,7,8-HxCDF	50
1,2,3,6,7,8-HxCDF	50
1,2,3,7,8,9-HxCDF	50
2,3,4,6,7,8-HxCDF	50
1,2,3,4,6,7,8-HpCDD *(WD)*	50
1,2,3,4,6,7,8-HpCDF *(WD)*	50
1,2,3,4,7,8,9-HpCDF *(WD)*	50
OCDD	100
OCDF	100
Labelled PCDDs & PCDFs:	
$^{13}C_{12}$-2,3,7,8-TCDD	100
$^{13}C_{12}$-2,3,7,8-TCDF	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100
$^{13}C_{12}$-OCDD	200
Cleanup Standard:	
$^{37}Cl_4$-2,3,7,8-TCDD	10
Internal Standards:	
$^{13}C_{12}$-1,2,3,4-TCDD	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100

SEMI-QUANTITATIVE ANALYTES (ng/ml, ±20%)	
Window Definers:*	
1,3,6,8-TCDD	10
1,2,8,9-TCDD	10
1,3,6,8-TCDF	10
1,2,8,9-TCDF	10
1,2,4,6,8/1,2,4,7,9-PeCDD	50
1,2,3,8,9-PeCDD	50
1,3,4,6,8-PeCDF	50
1,2,3,8,9-PeCDF	50
1,2,4,6,7,9-HxCDD	50
1,2,3,4,6,8-HxCDF	50
1,2,3,4,6,7,9-HpCDD	50
2378-TCDD Resolution Testing Isomers:	
1,2,3,4-TCDD	5
1,2,3,7/1,2,3,8-TCDD	5
1,2,3,9-TCDD	10

** 1,2,3,4,6,7-HxCDD (last eluting HxCDD) not included; coelutes with 1,2,3,7,8,9-HxCDD. Use 1,2,3,4,6,7,9-HpCDD to set window.*

** 1,2,3,4,8,9-HxCDF (last eluting HxCDF) not included; can interfere with 1,2,3,7,8,9-HxCDF. Use 1,2,3,4,6,7,8-HpCDF to set window.*

WD – Window Definer

Certified By: _____ **Date:** 10/30/2018 (mm/dd/yyyy)

B.G. Chittim, General Manager

Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**

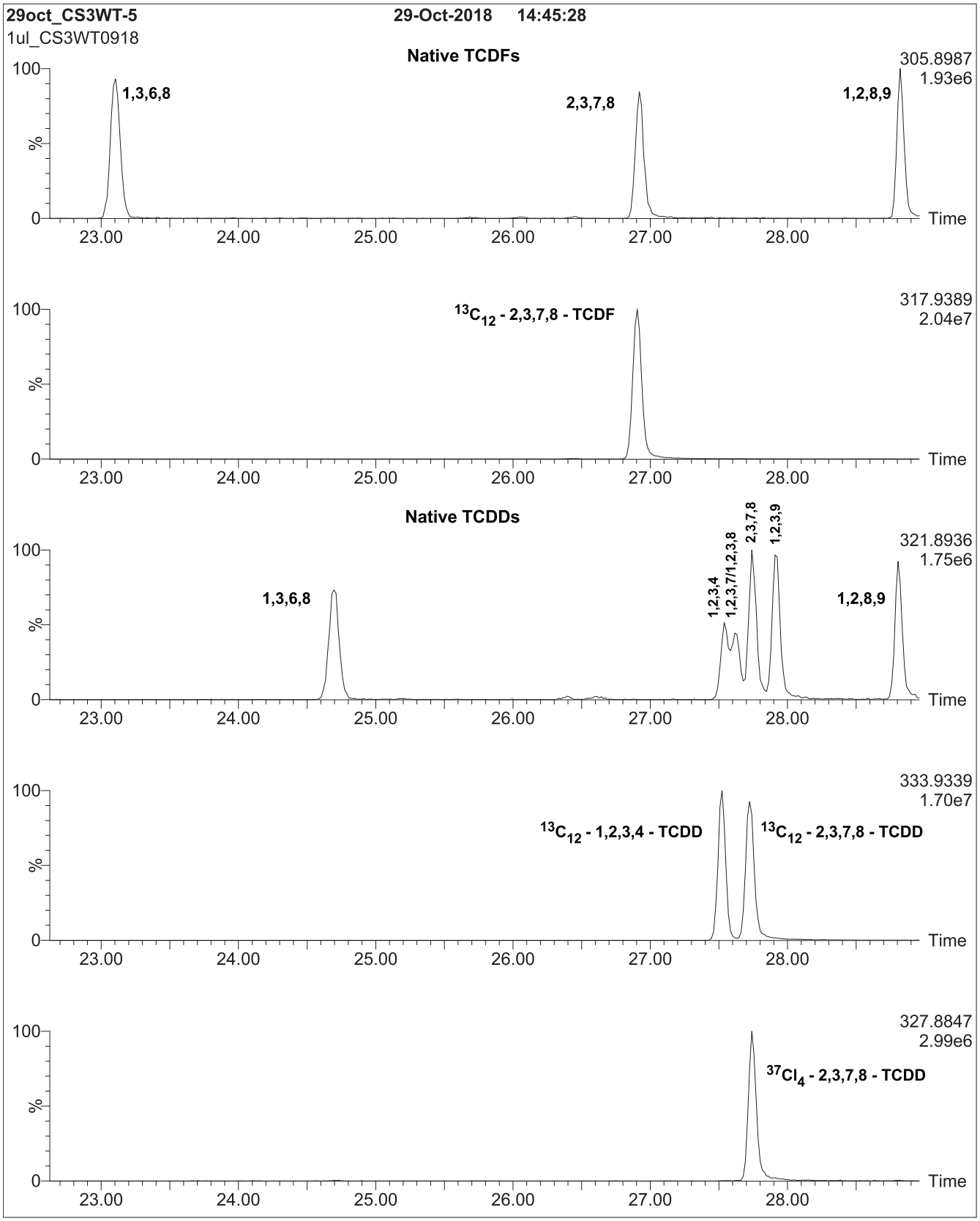


Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**

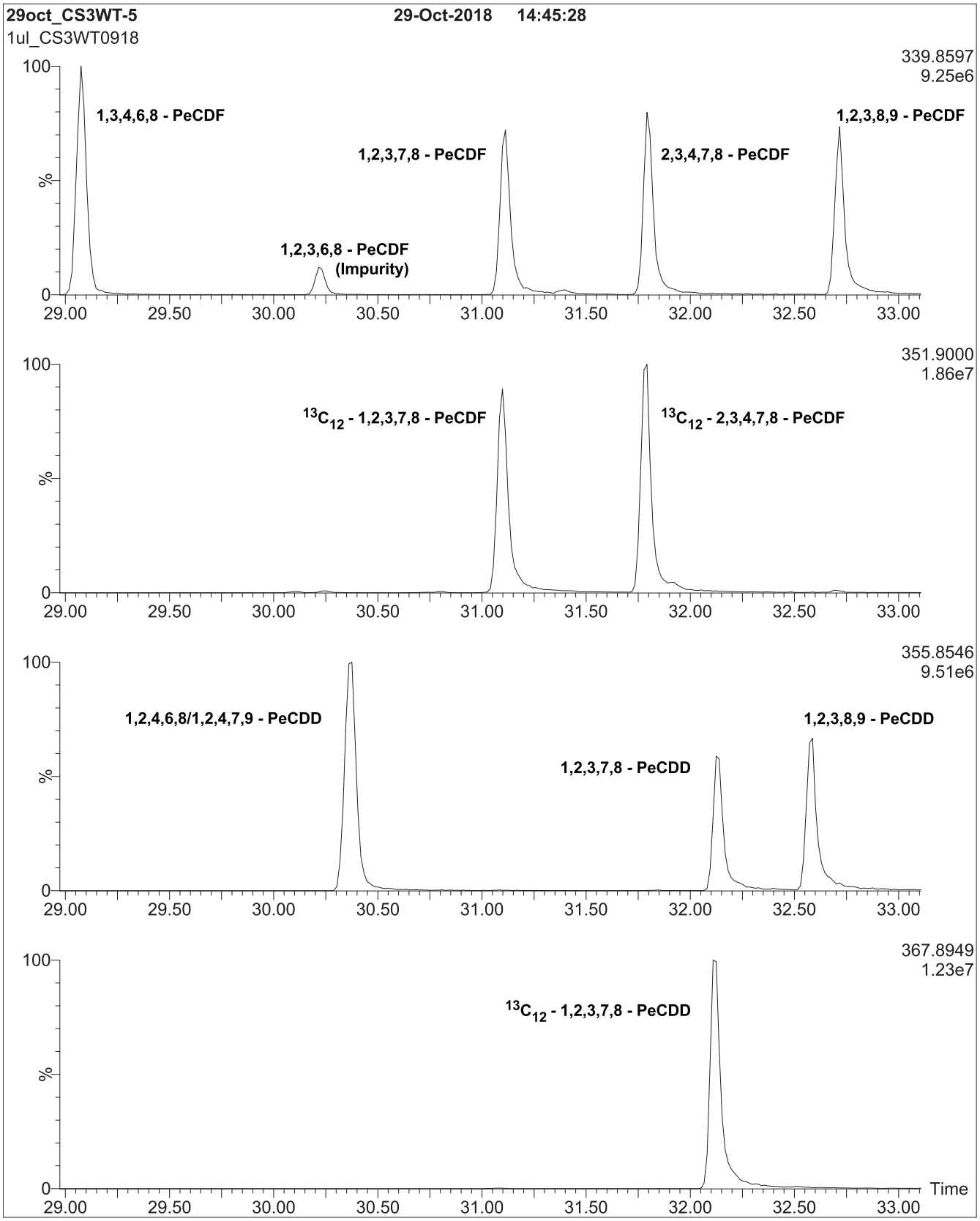


Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**

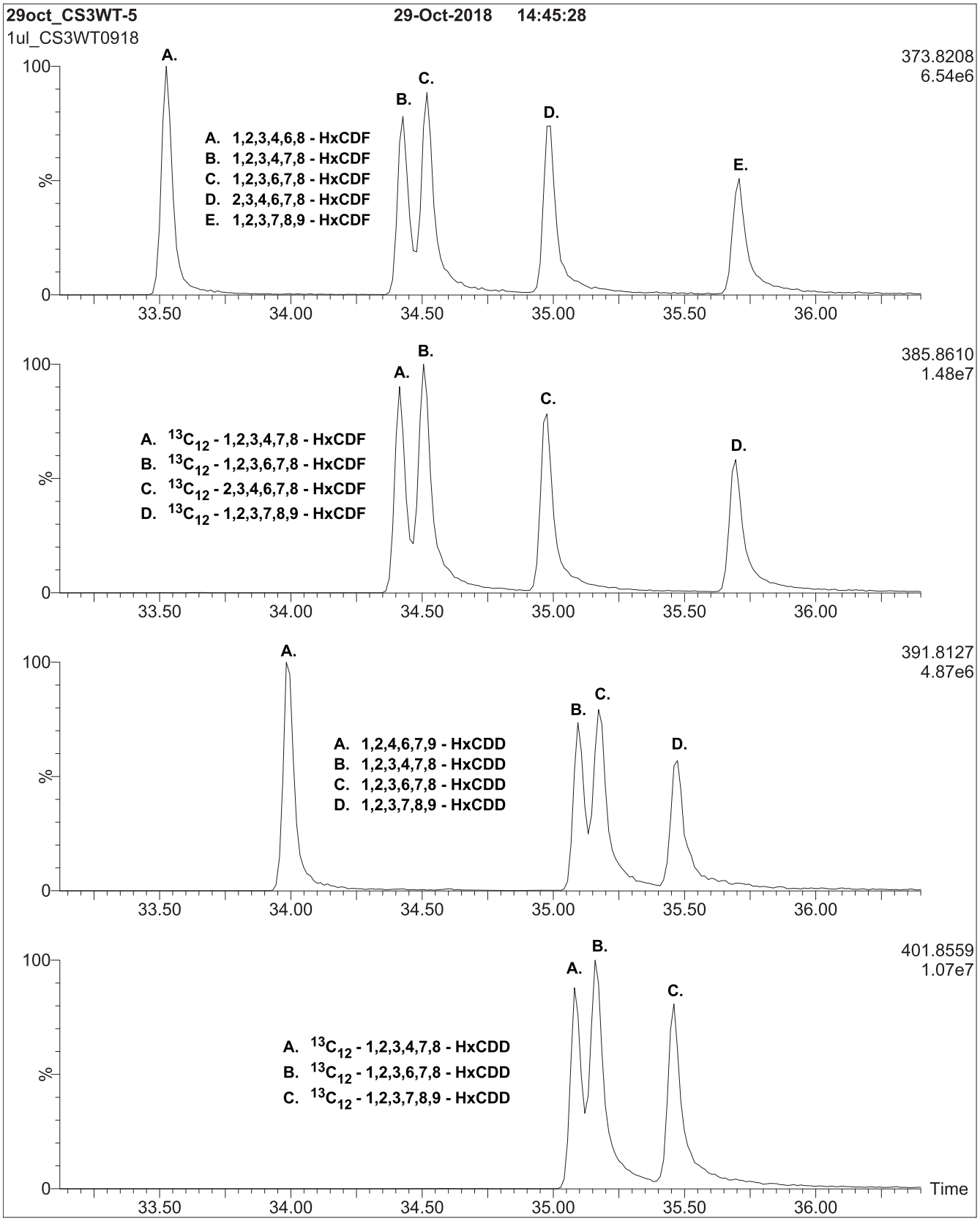


Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**

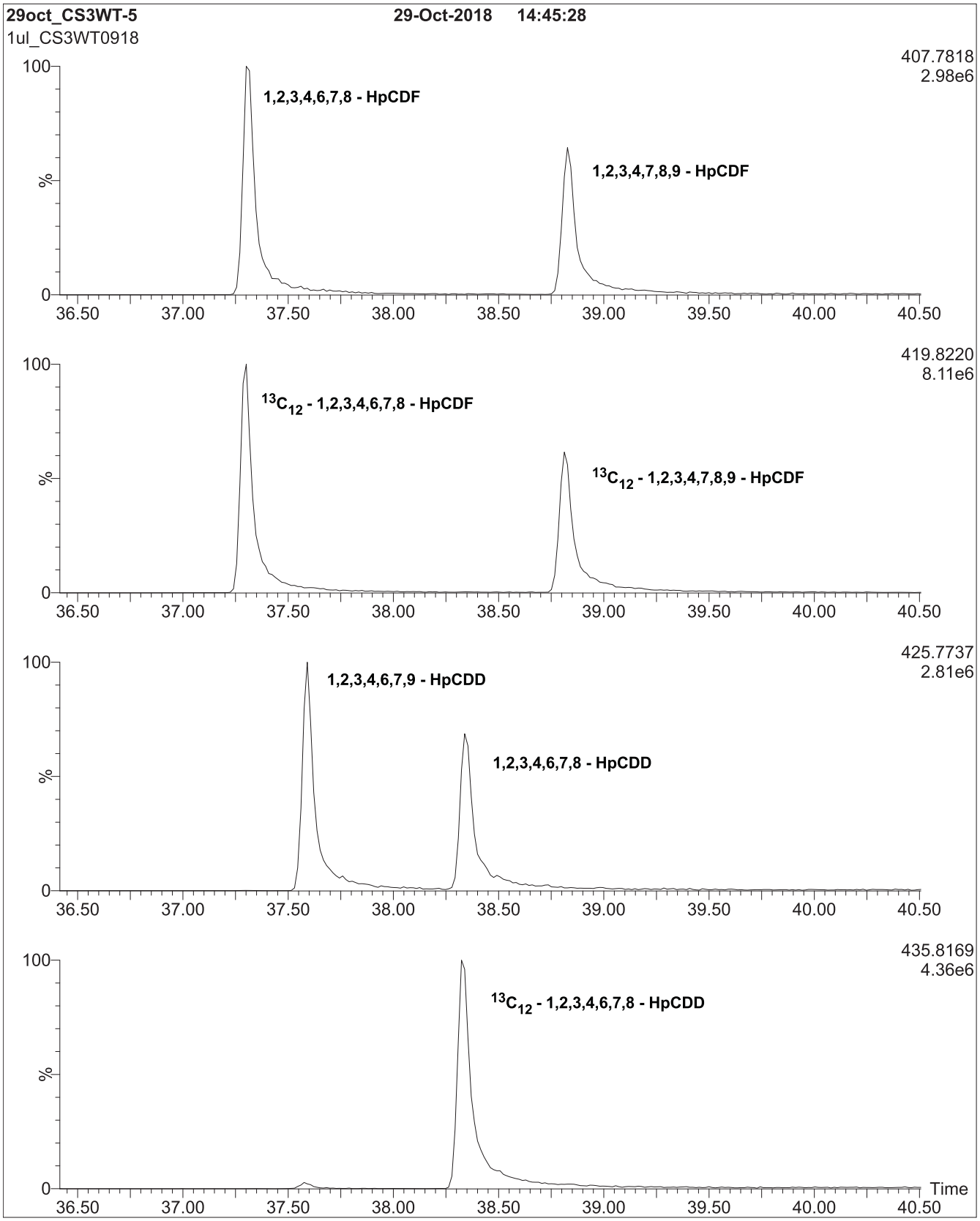
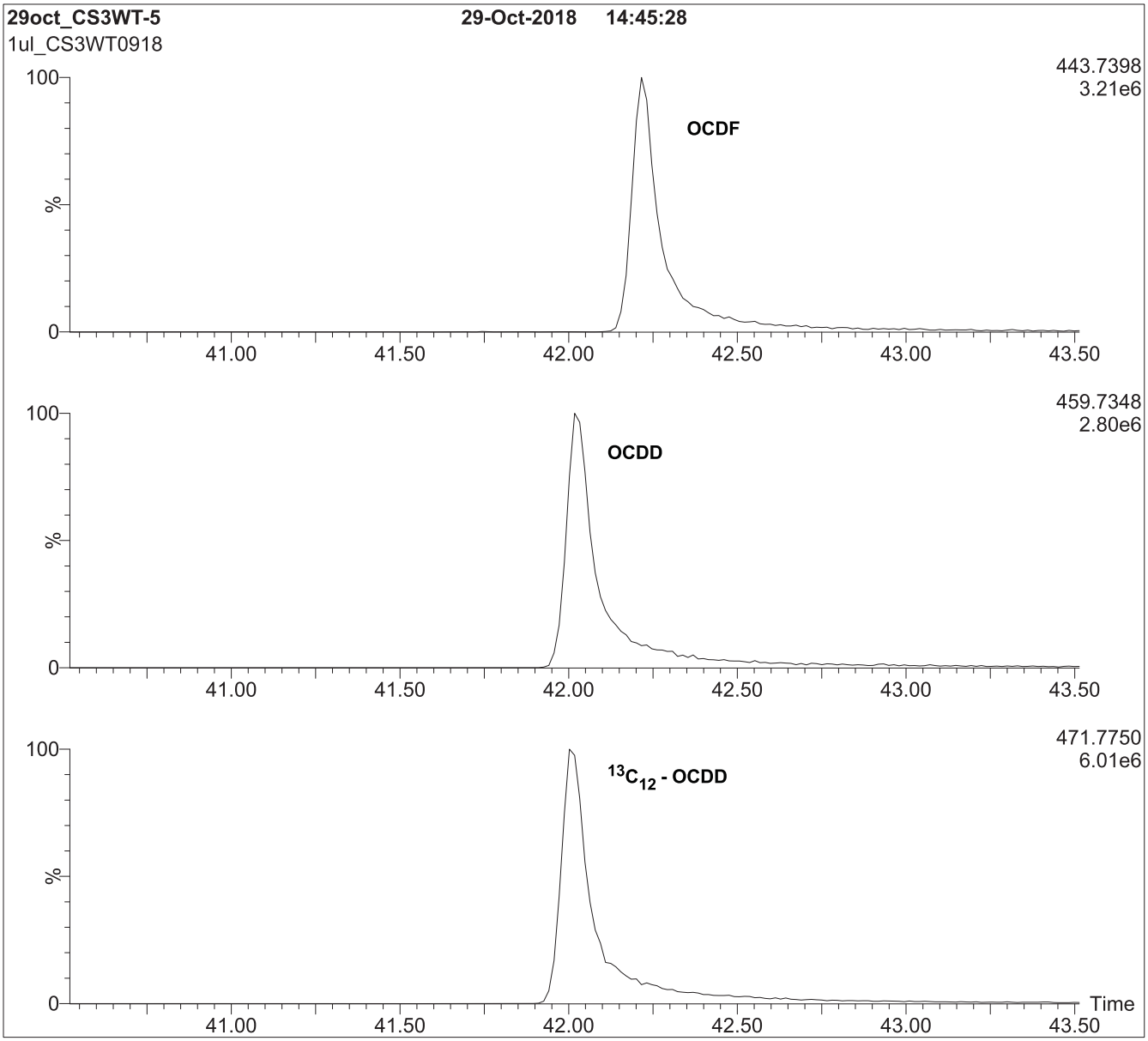


Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**



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
	EPA-1613CS2		13CS21019
	EPA-1613CS3		13CS31019
	EPA-1613CS4		13CS41019
	EPA-1613CS5		13CS51019

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
RECOMMENDED STORAGE:	Store ampoules in a cool, dark place

I005456
1613 CS1 CAL STD
Expires 10/24/2026
Prepared By Joshua Rains 6/23/2020

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, $\boldsymbol{u_c(y)}$, of a value $\boldsymbol{y}$ and the uncertainty of the independent parameters $\boldsymbol{x_1}$, $\boldsymbol{x_2}$,...$\boldsymbol{x_n}$ on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

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)**

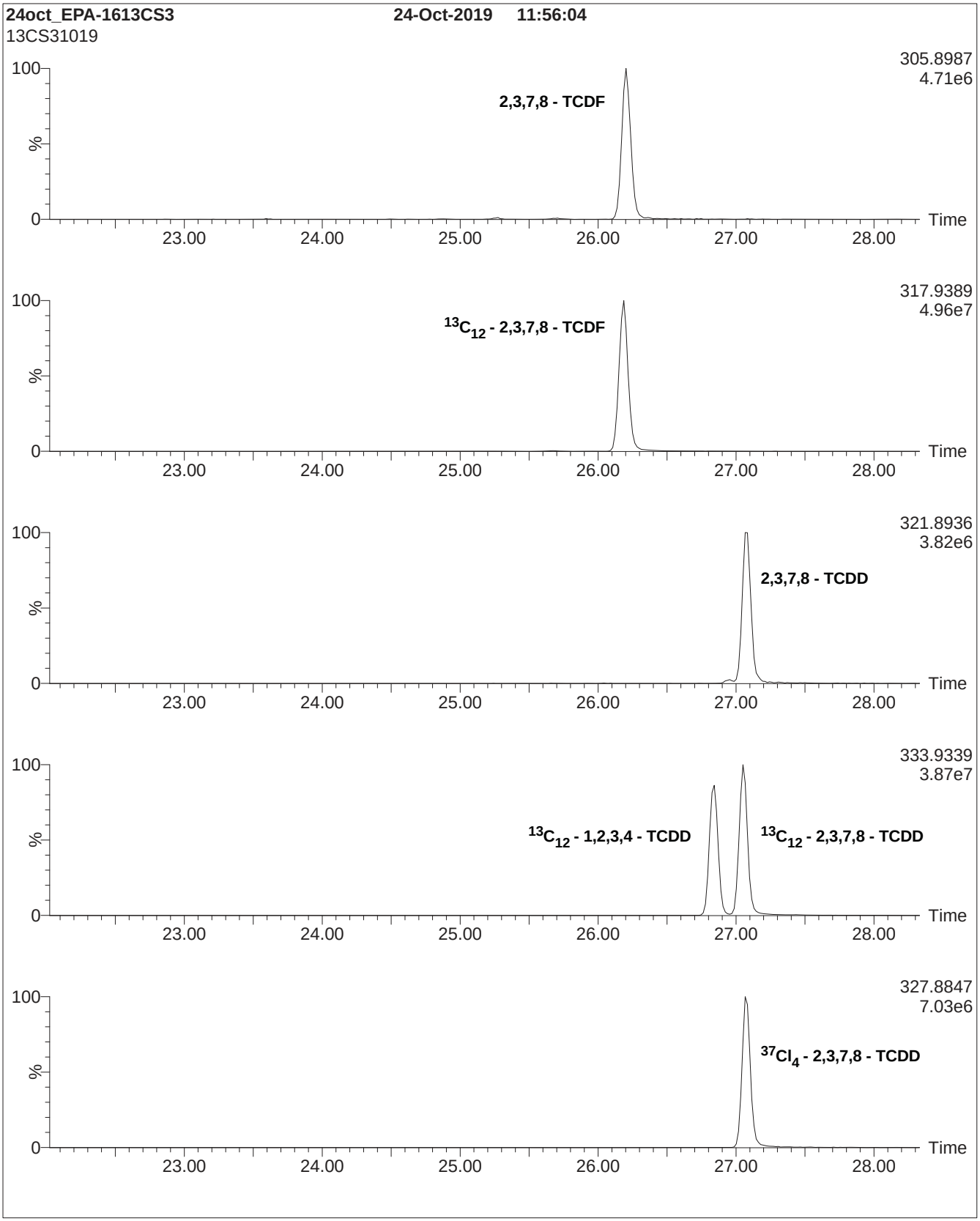


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**

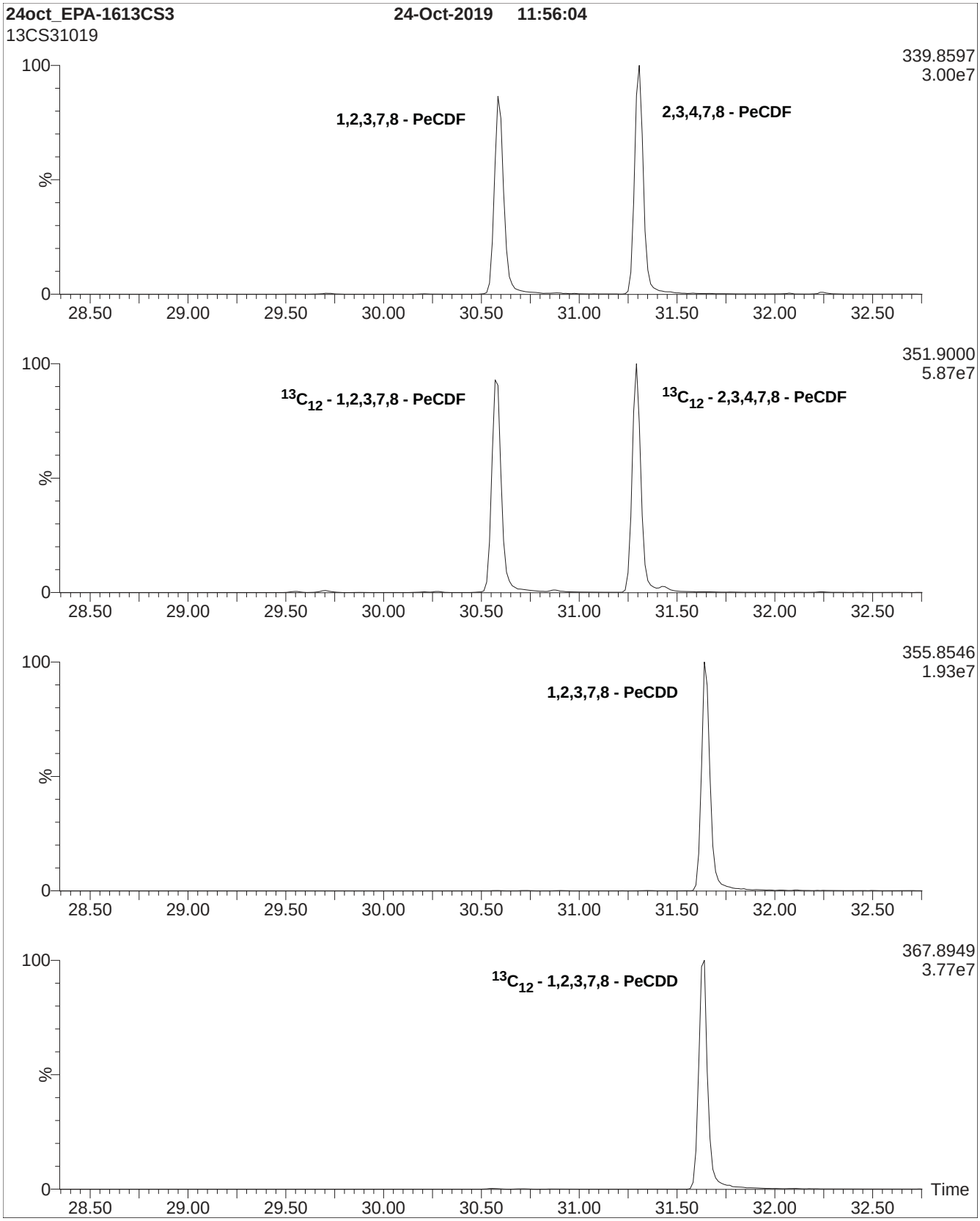


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**

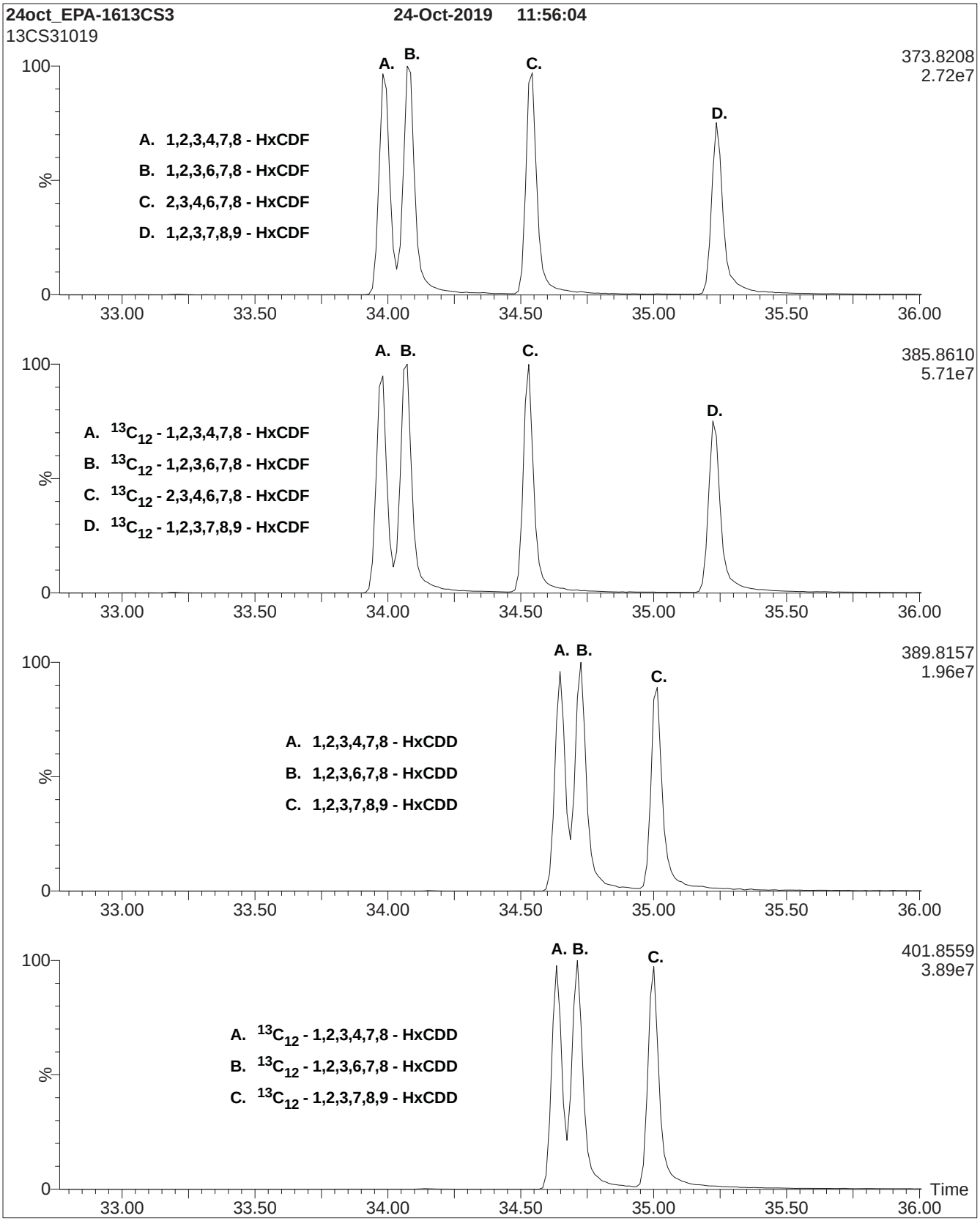


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**

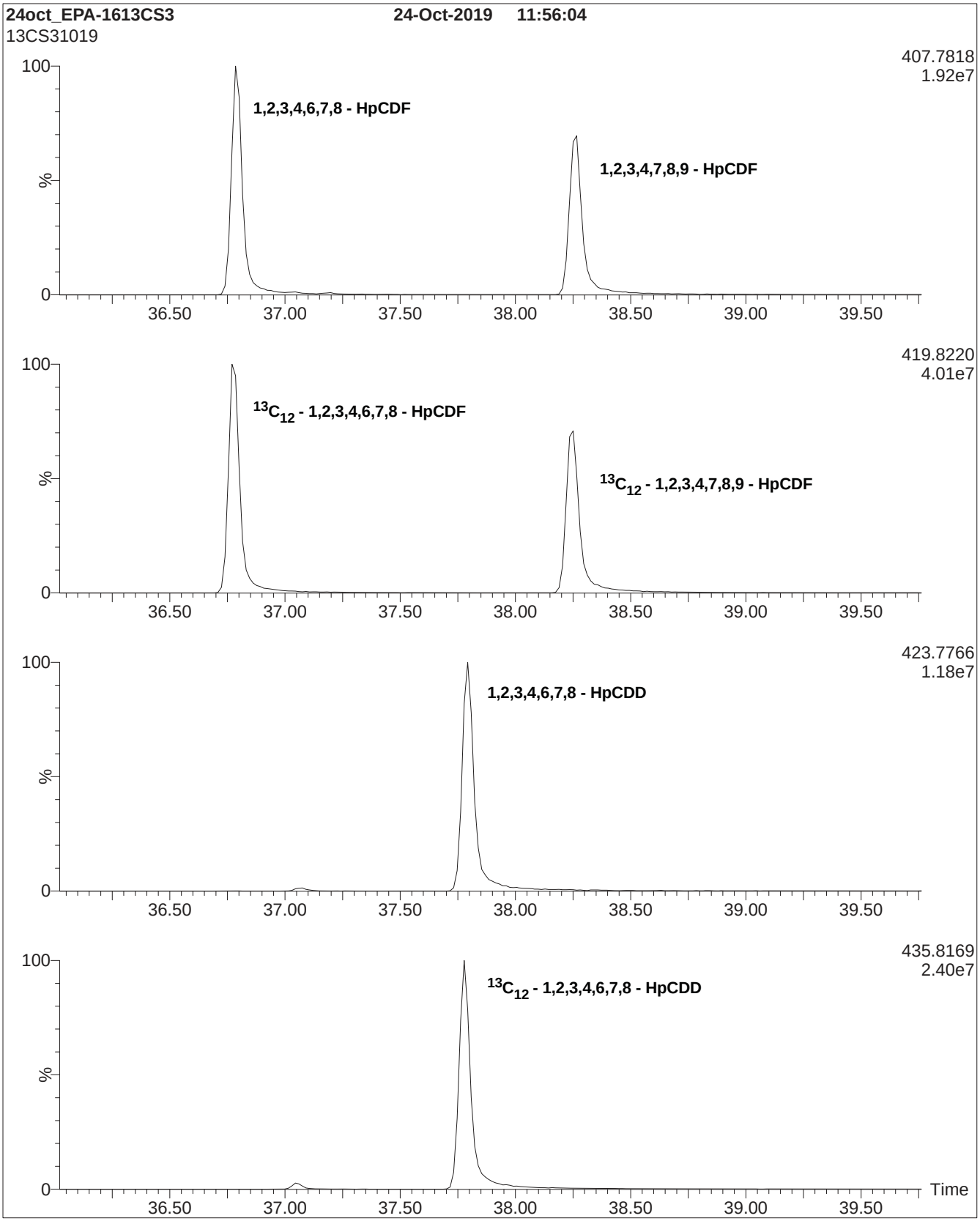
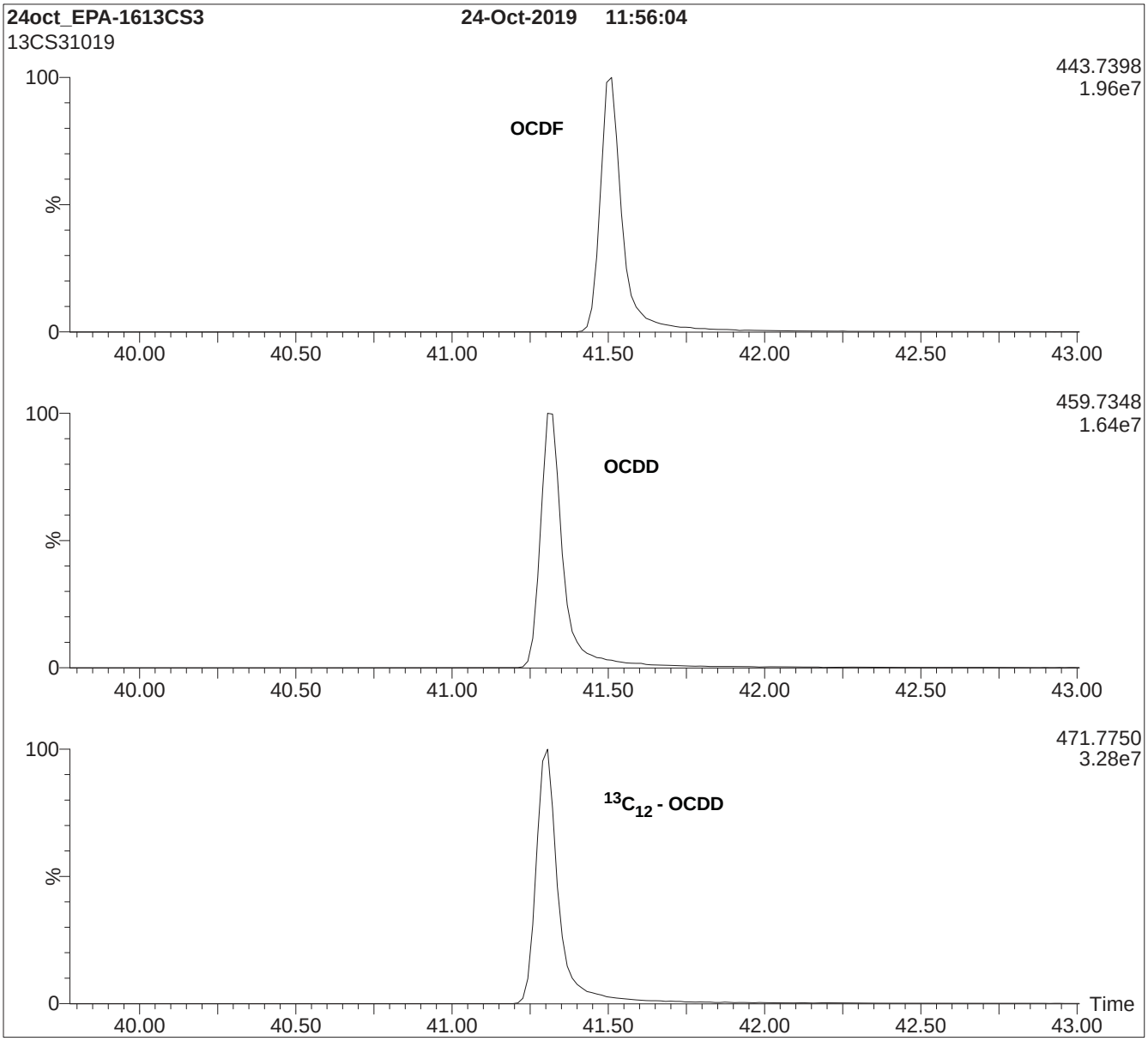


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**



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
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)

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
	EPA-1613CS2		13CS21019
	EPA-1613CS3		13CS31019
	EPA-1613CS4		13CS41019
	EPA-1613CS5		13CS51019

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
RECOMMENDED STORAGE:	Store ampoules in a cool, dark place

I005457
1613 CS2 CAL STD
Expires 10/24/2026
Prepared By Joshua Rains 6/23/2020

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, $\boldsymbol{u_c(y)}$, of a value $\boldsymbol{y}$ and the uncertainty of the independent parameters $\boldsymbol{x_1}$, $\boldsymbol{x_2}$,...$\boldsymbol{x_n}$ on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

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)**

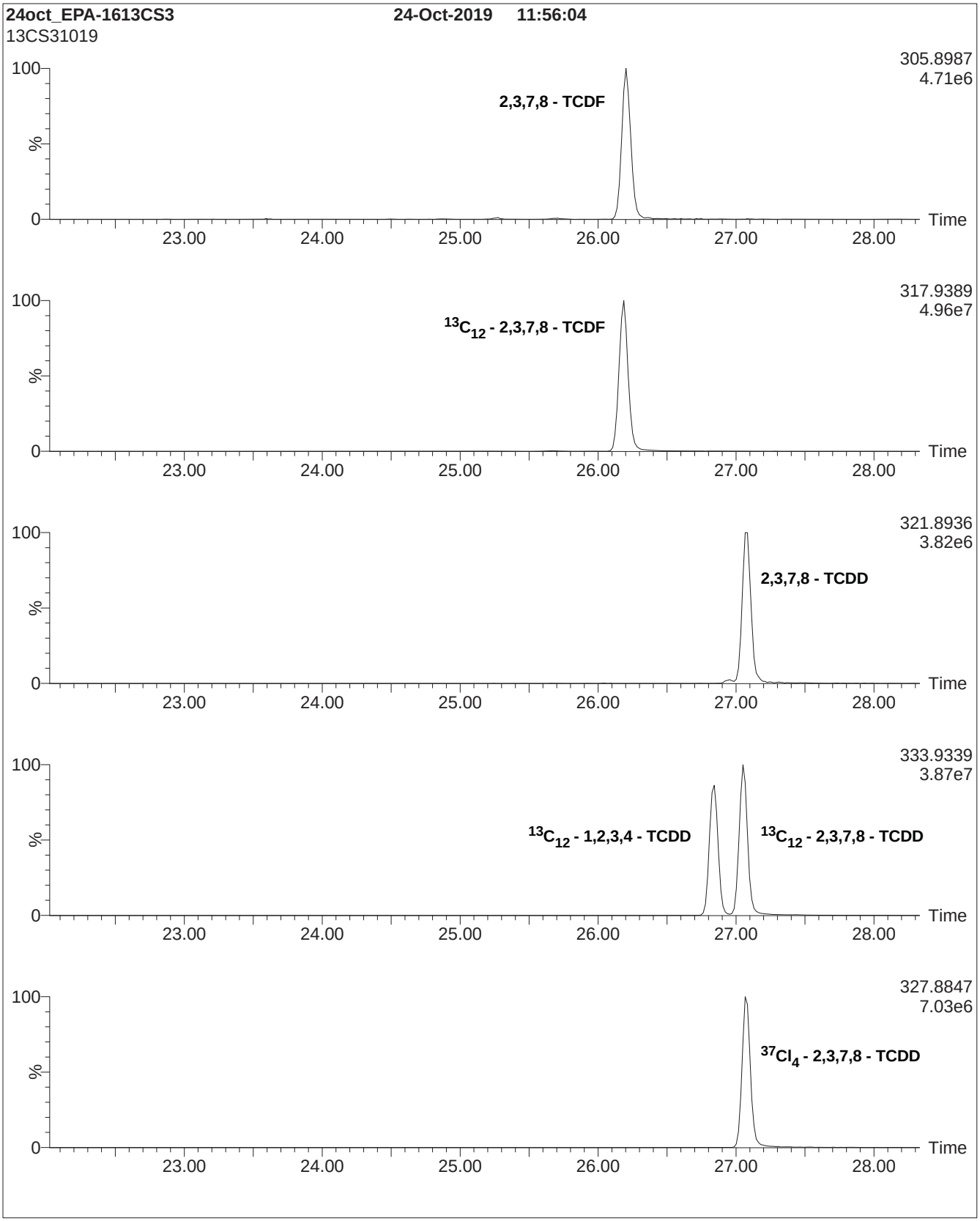


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**

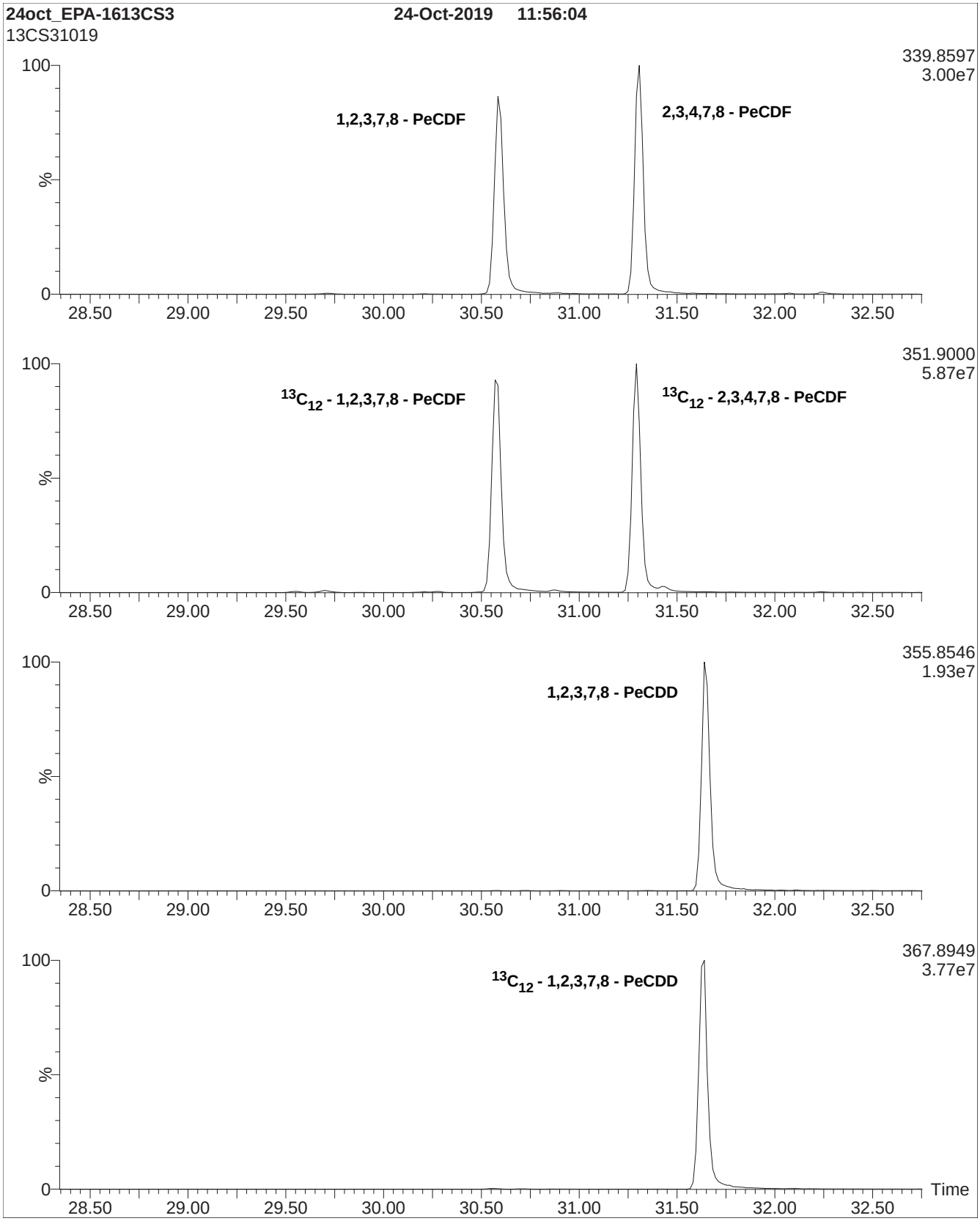


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**

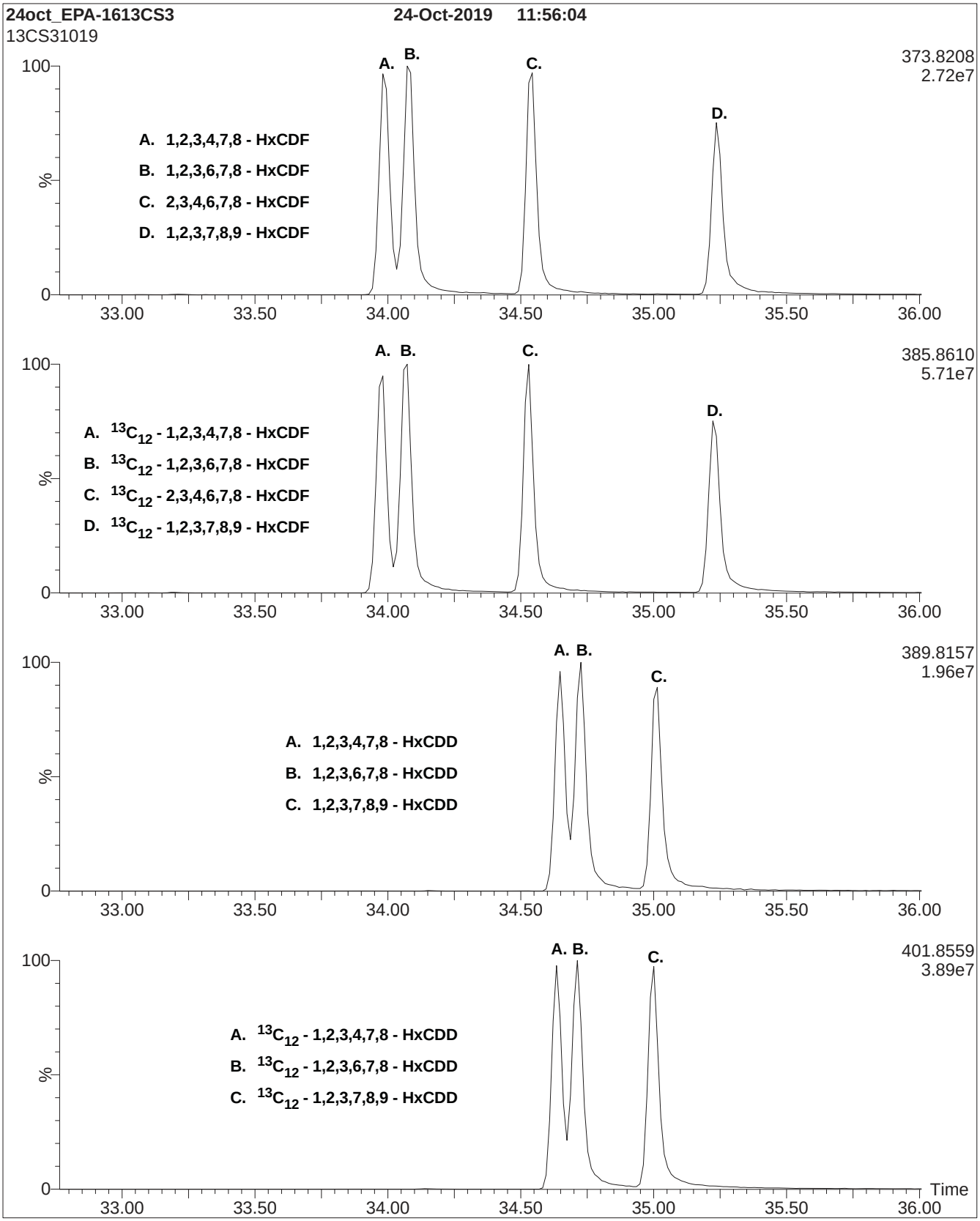


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**

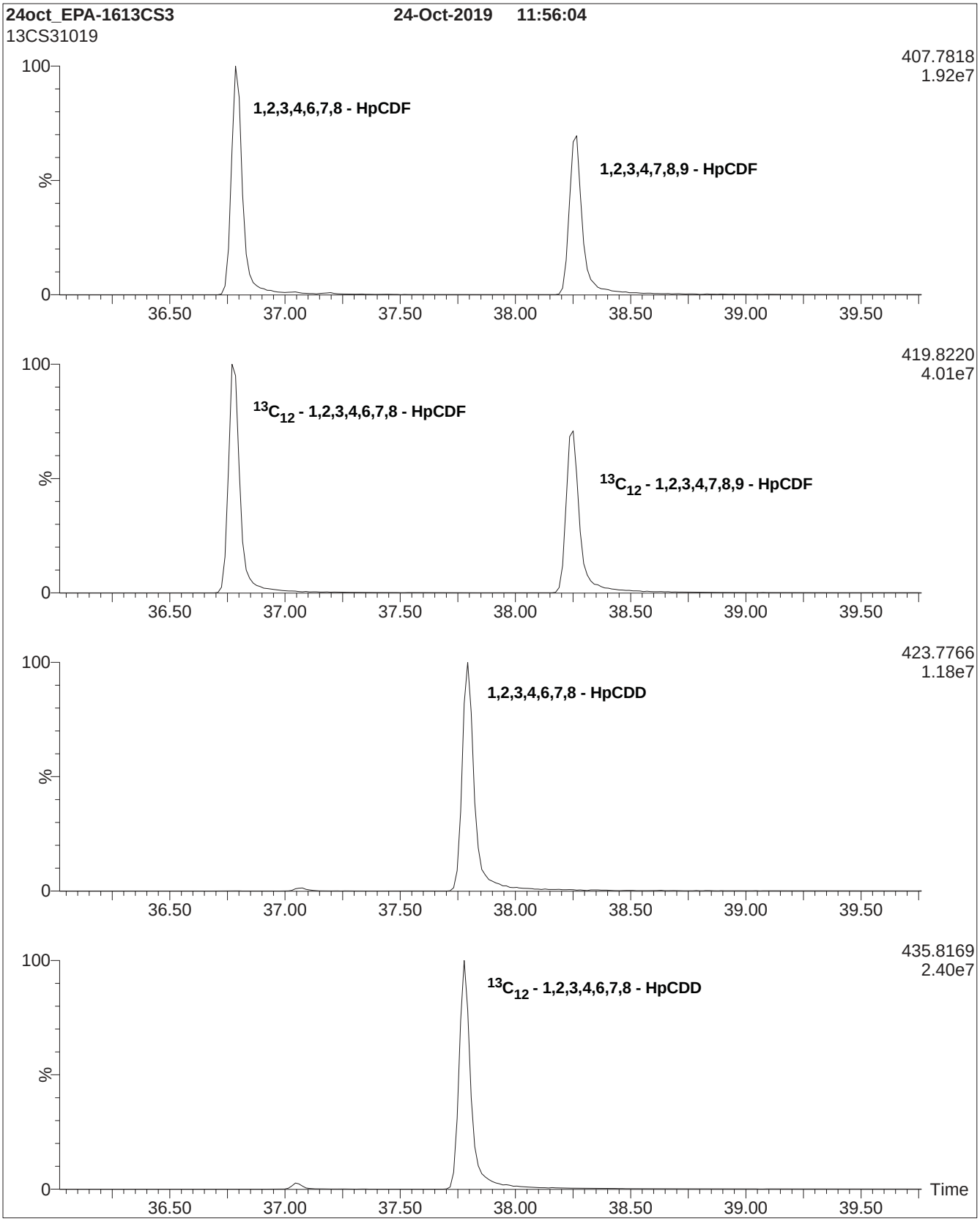
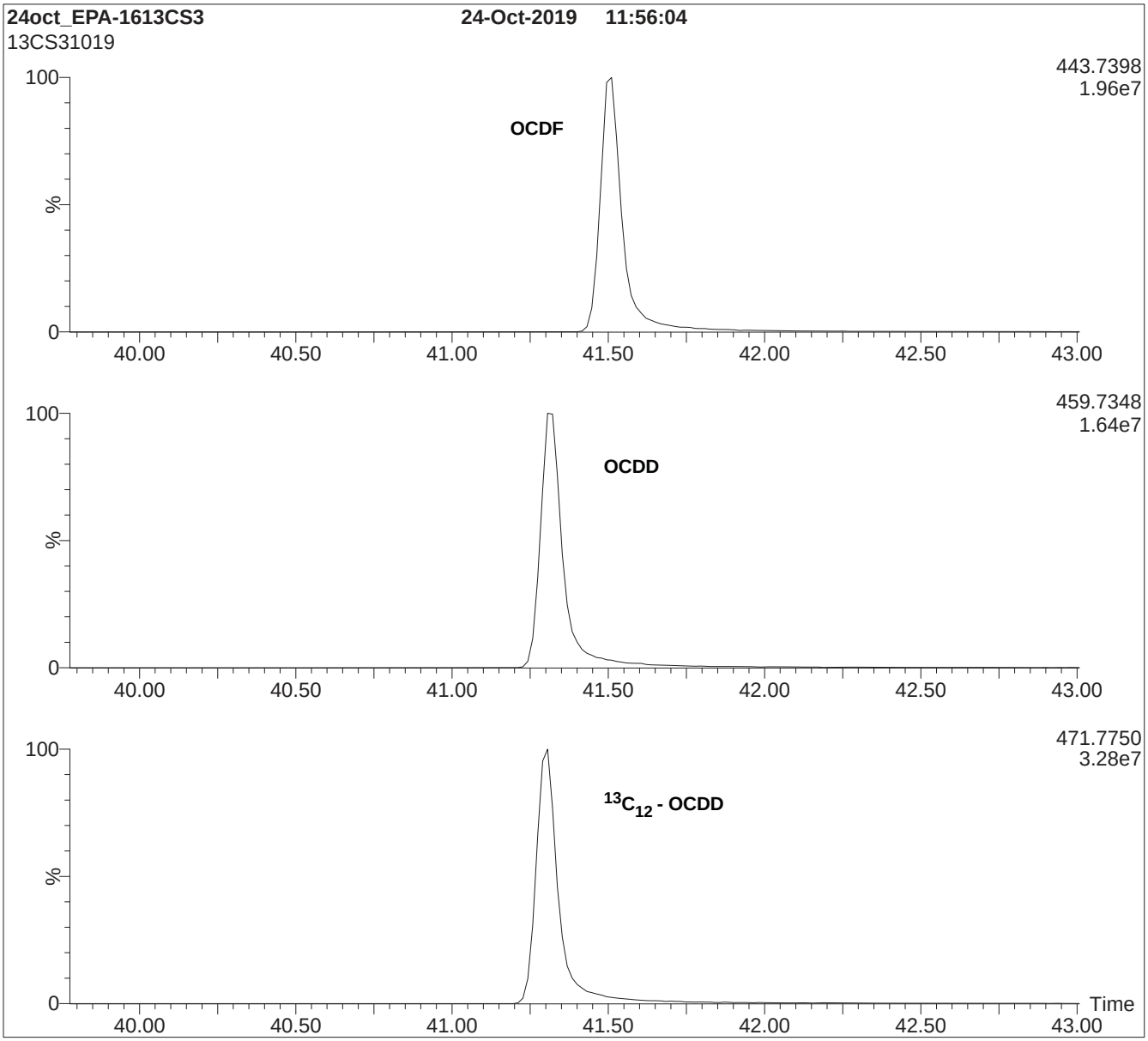


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**



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)
	EPA-1613CS1		13CS11019
	EPA-1613CS2		13CS21019
	EPA-1613CS3		13CS31019
	EPA-1613CS4		13CS41019
	EPA-1613CS5		13CS51019

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
RECOMMENDED STORAGE:	Store ampoules in a cool, dark place

I005458
1613 CS4 CAL STD
Expires 10/24/2026
Prepared By Joshua Rains 6/23/2020

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, $\boldsymbol{u_c(y)}$, of a value $\boldsymbol{y}$ and the uncertainty of the independent parameters $\boldsymbol{x_1}$, $\boldsymbol{x_2}$,...$\boldsymbol{x_n}$ on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

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)**

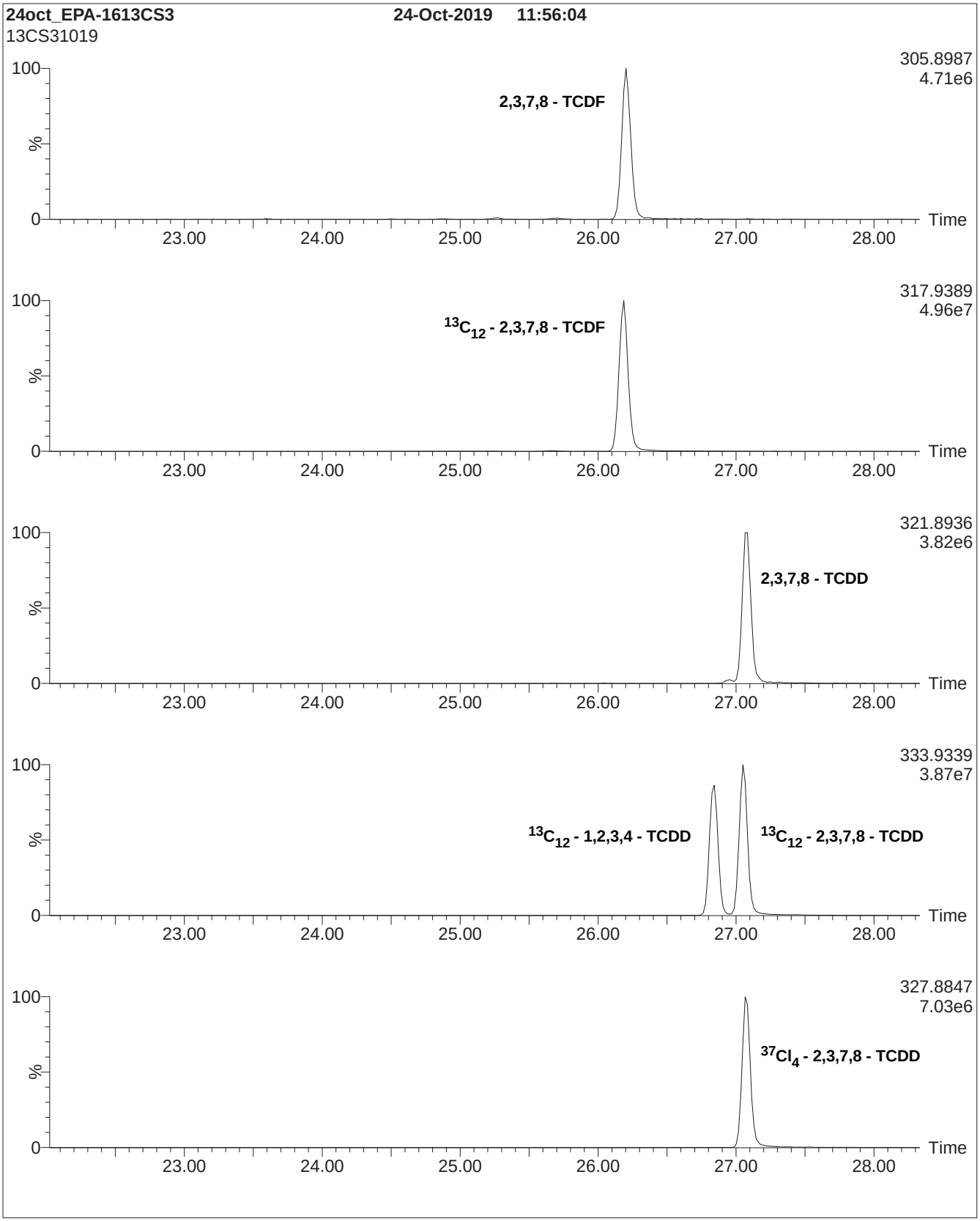


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**

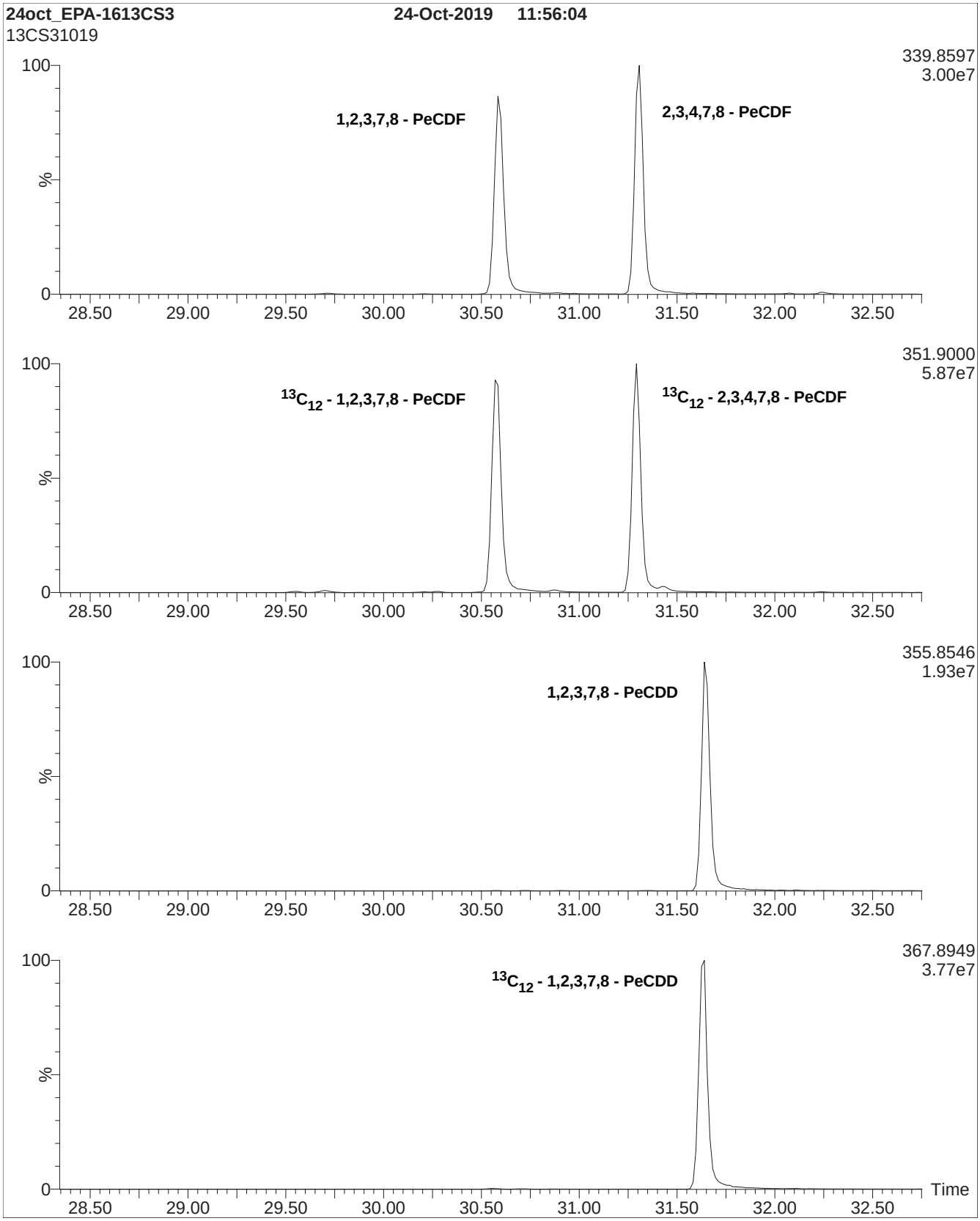


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**

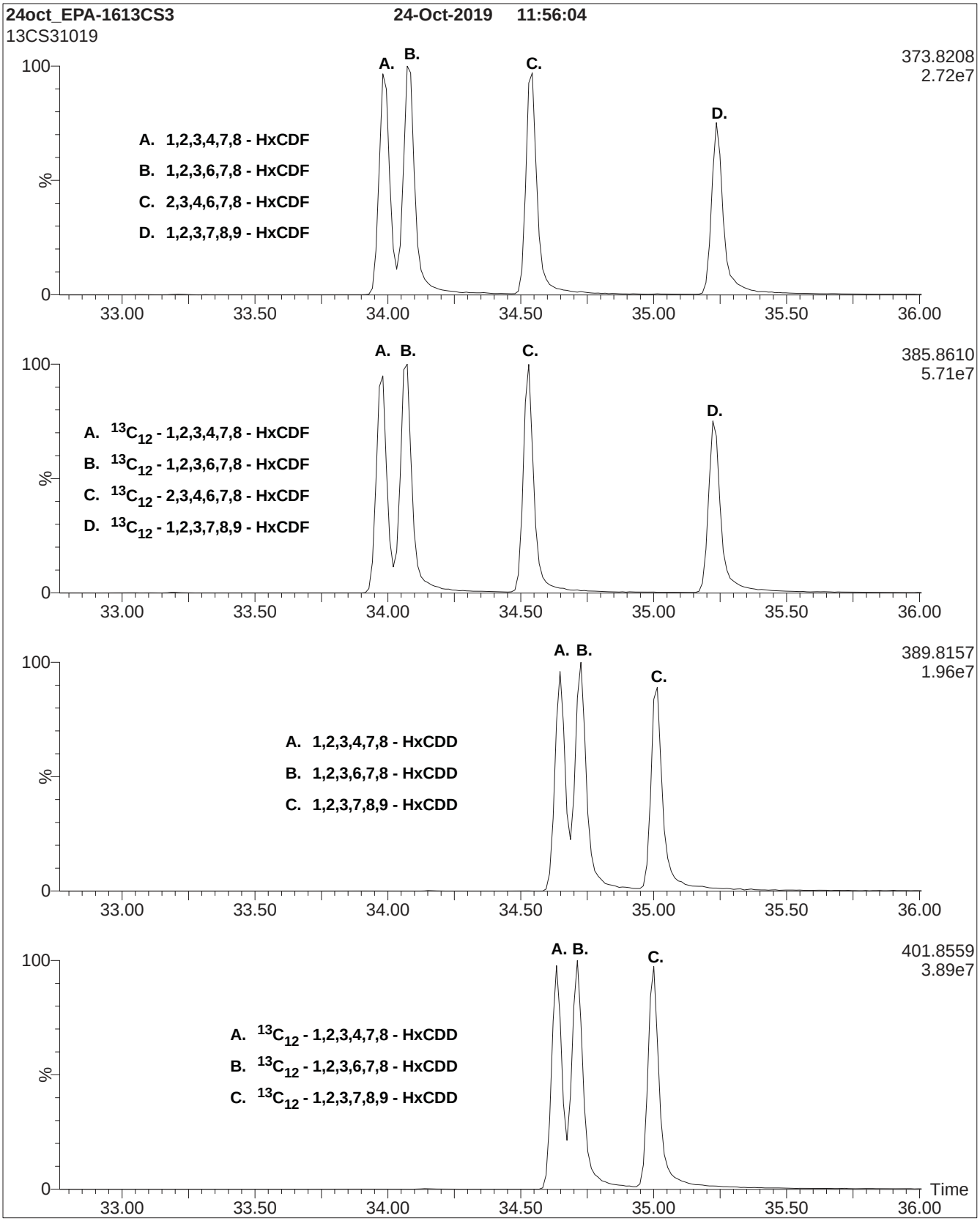


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**

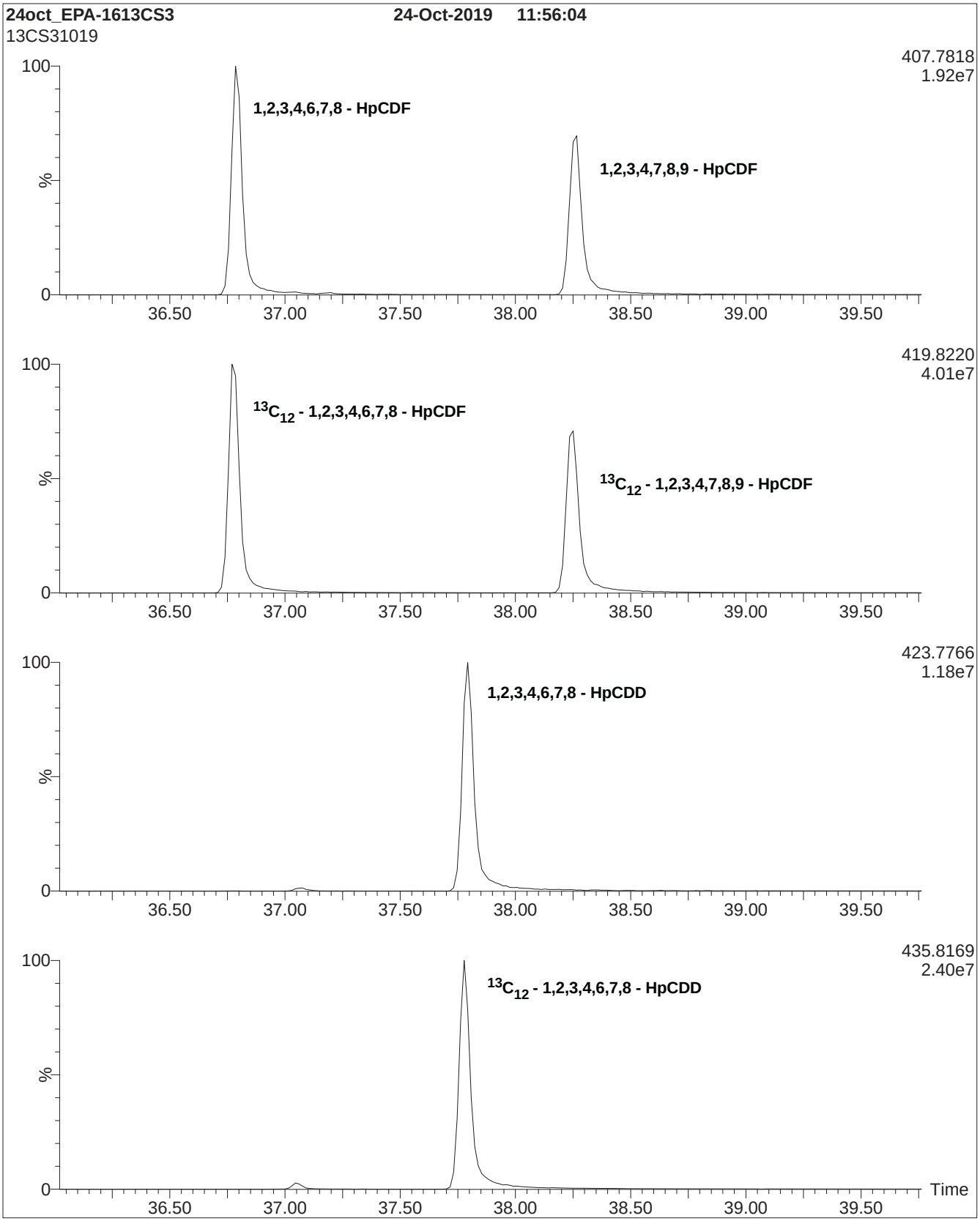
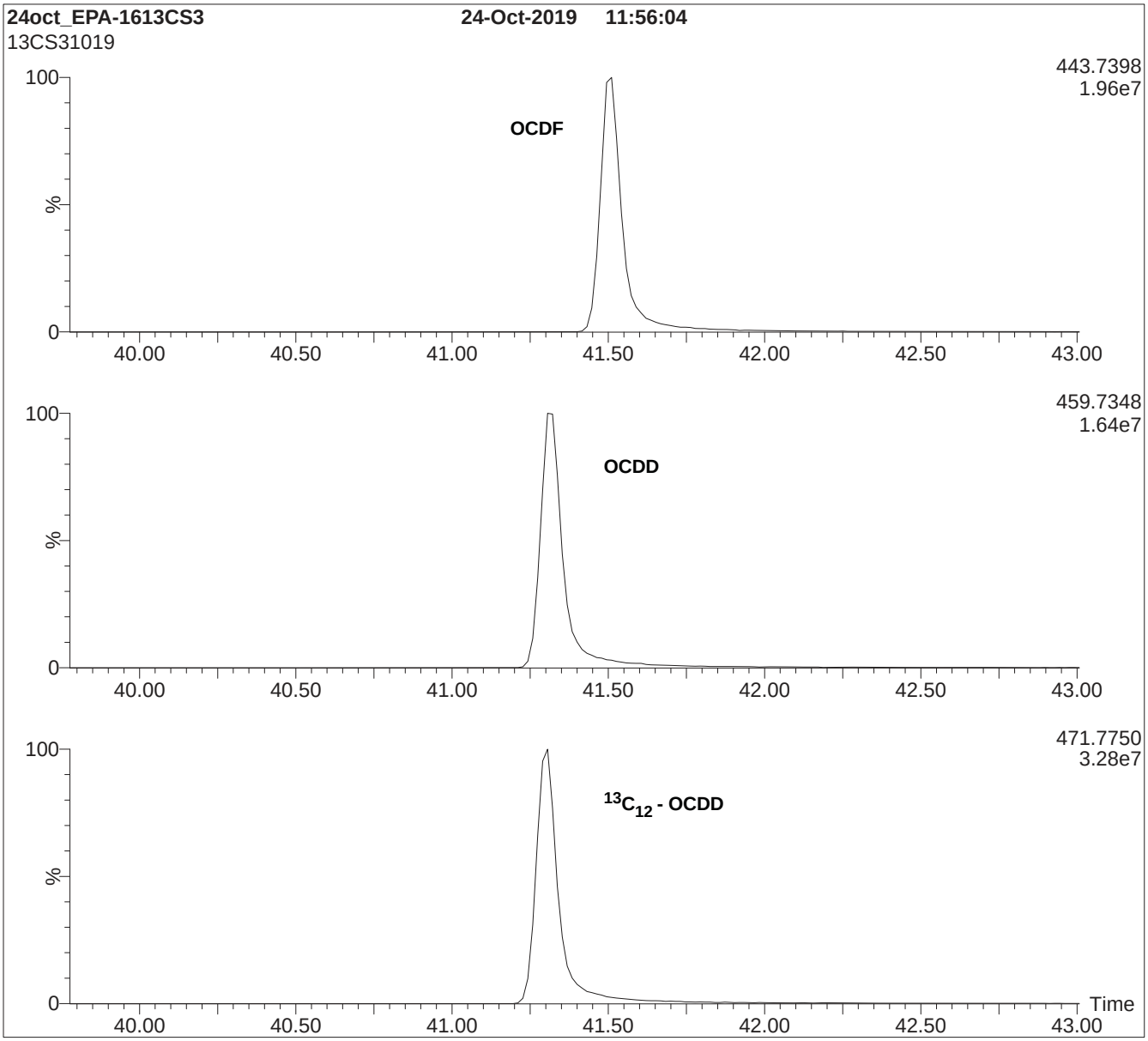


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**



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)
	EPA-1613CS1		13CS11019
	EPA-1613CS2		13CS21019
	EPA-1613CS3		13CS31019
	EPA-1613CS4		13CS41019
	EPA-1613CS5		13CS51019

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
RECOMMENDED STORAGE:	Store ampoules in a cool, dark place

I005459
1613 CS5 CAL STD
Expires 10/24/2026
Prepared By Joshua Rains 6/23/2020

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, $\boldsymbol{u_c(y)}$, of a value $\boldsymbol{y}$ and the uncertainty of the independent parameters $\boldsymbol{x_1}$, $\boldsymbol{x_2}$,...$\boldsymbol{x_n}$ on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

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)**

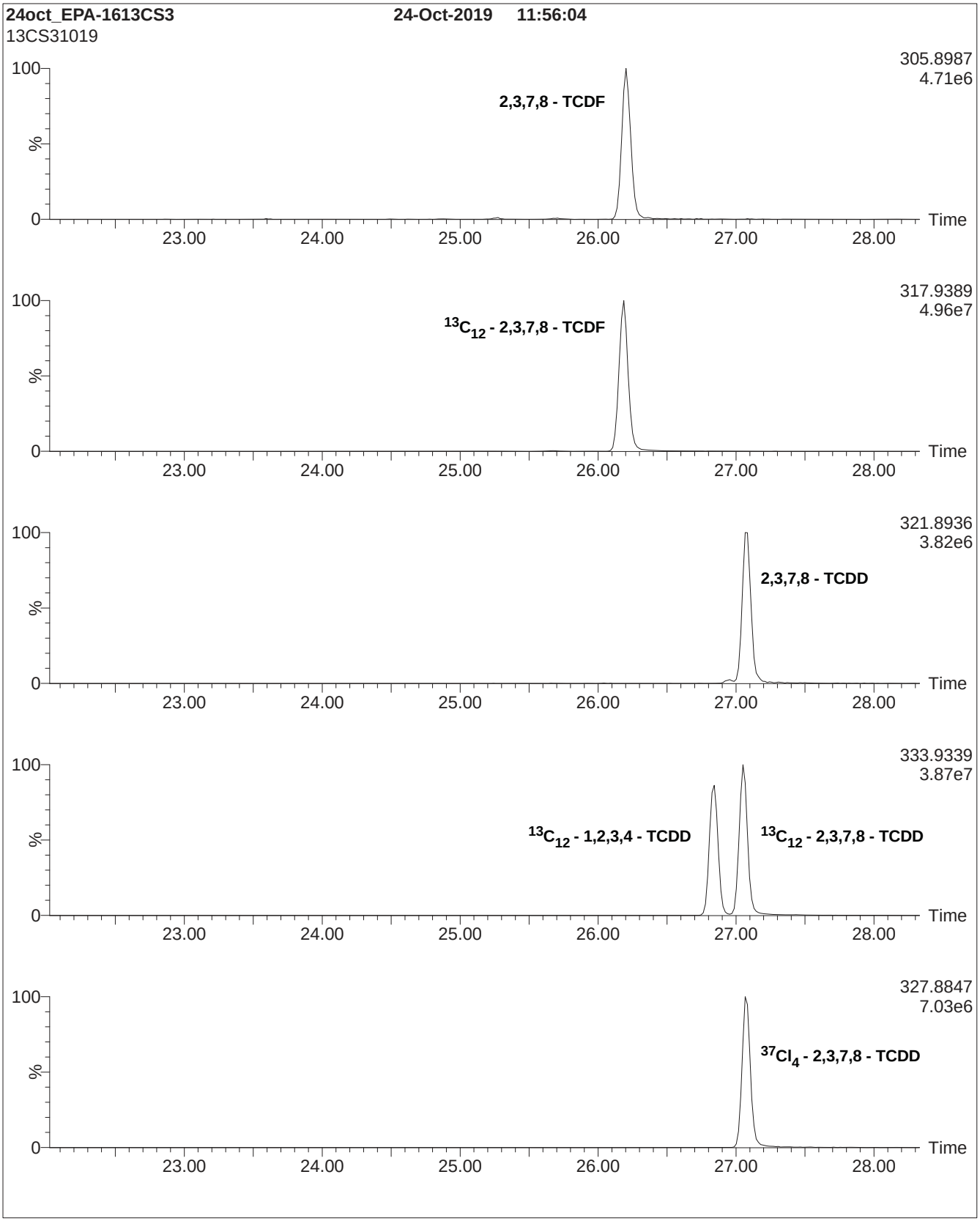


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**

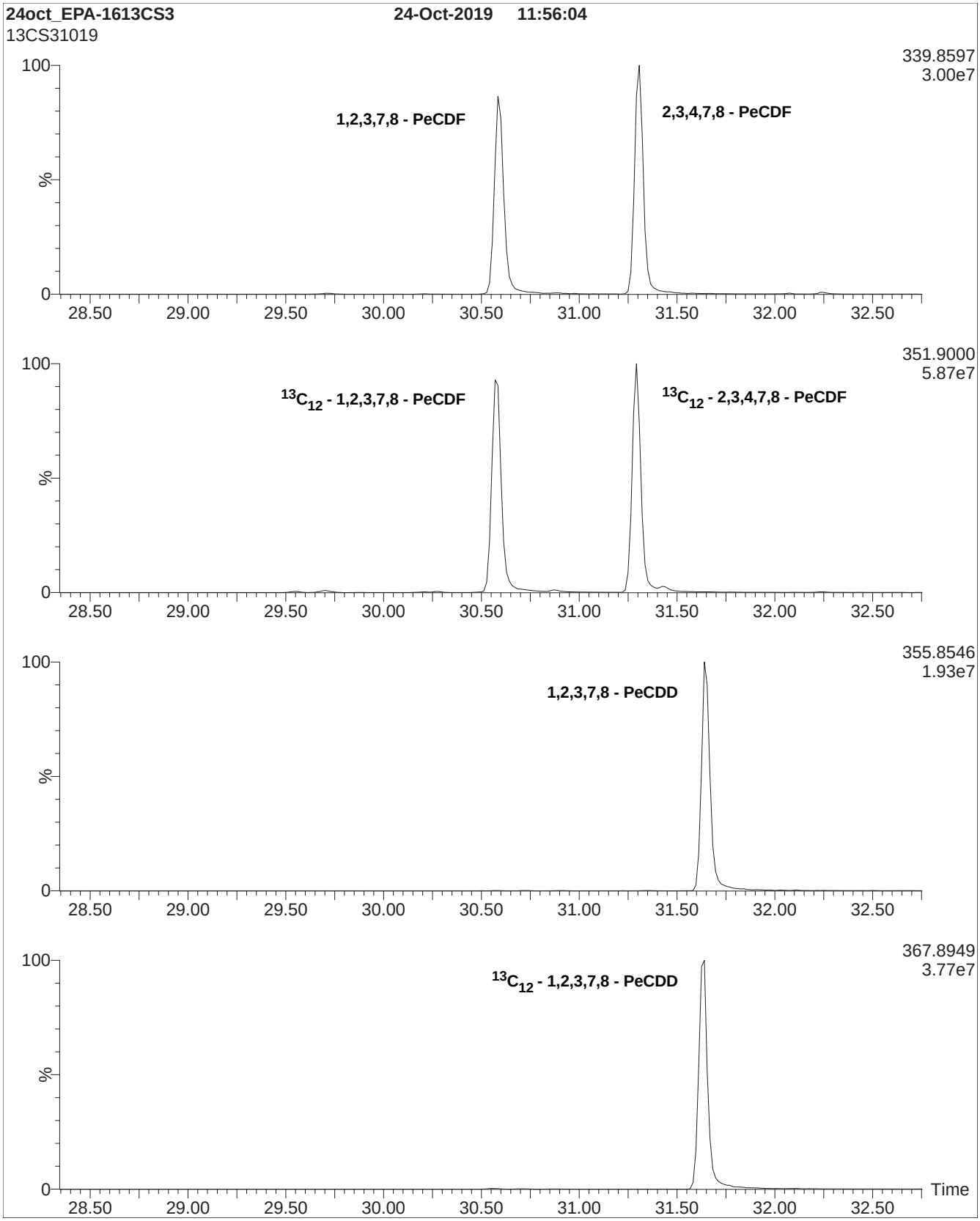


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**

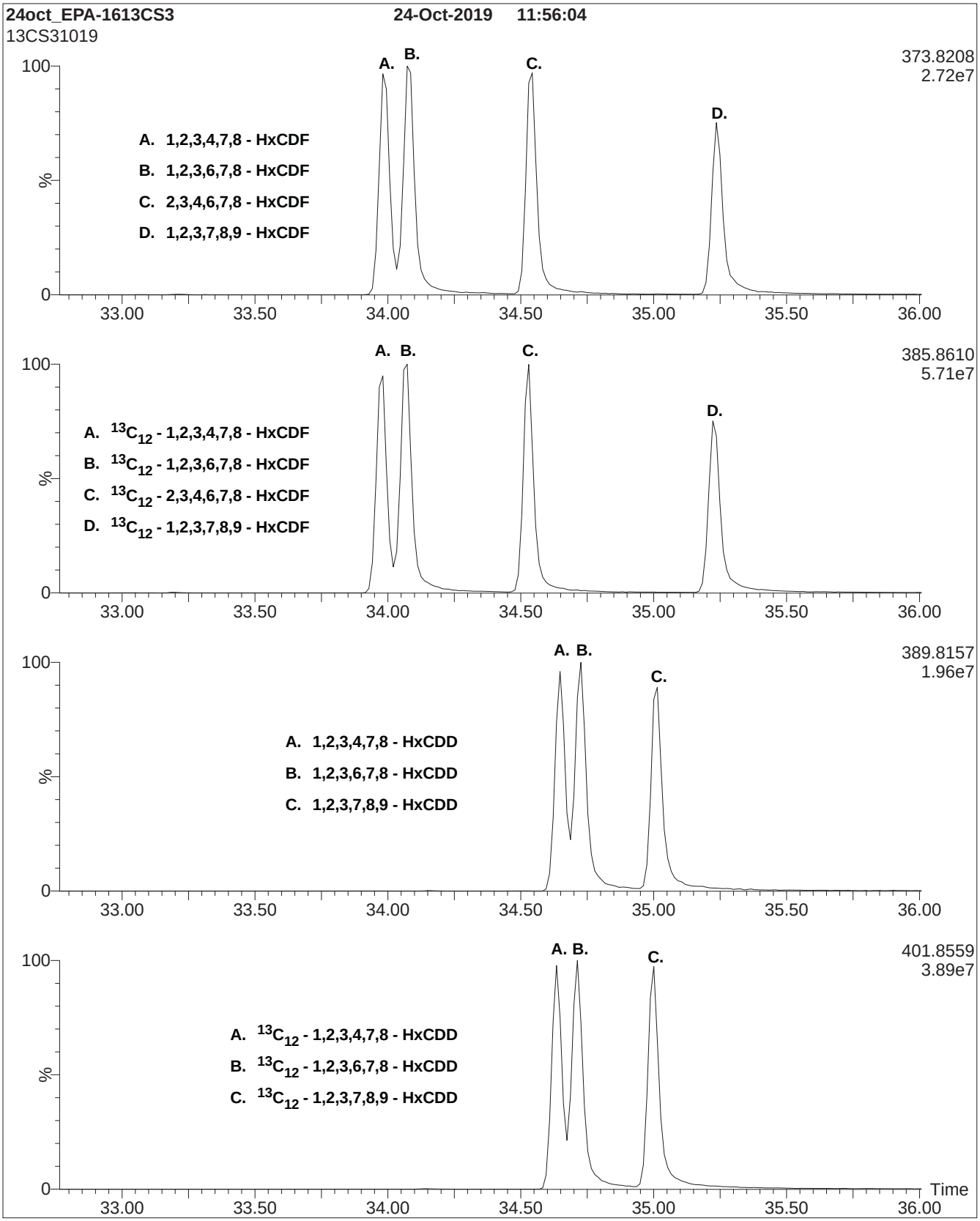


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**

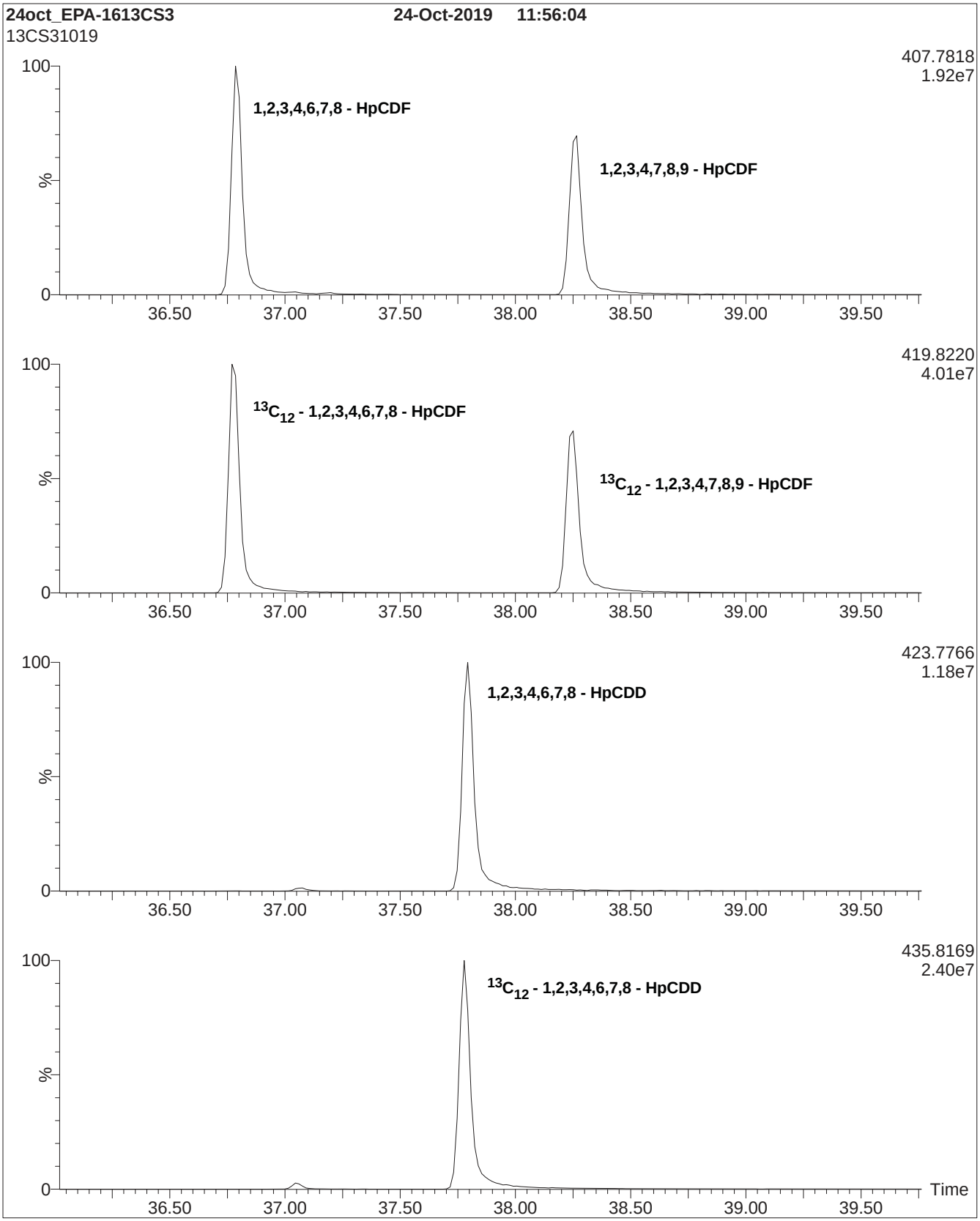
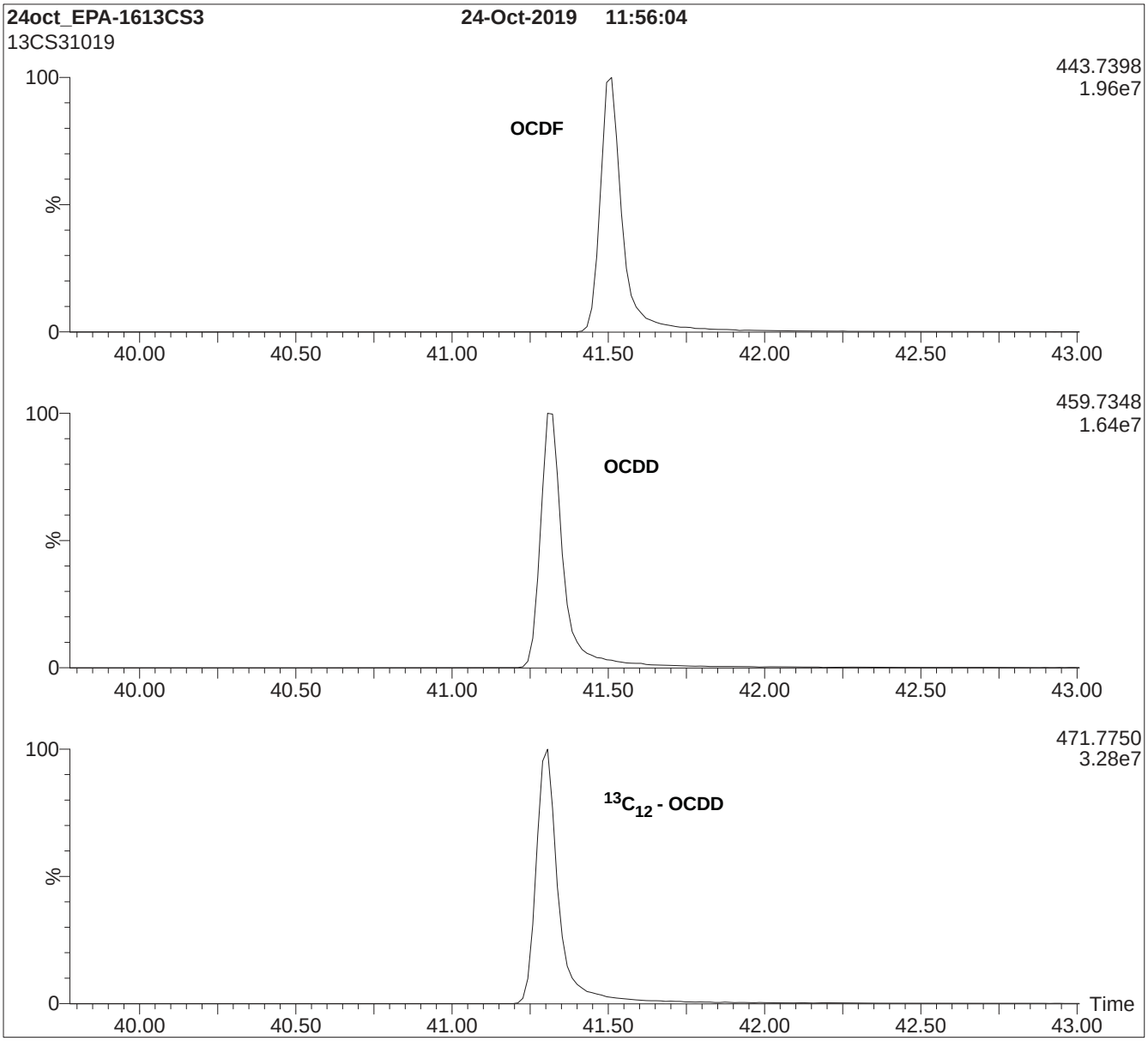


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**



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)
	EPA-1613CS1		13CS11019
	EPA-1613CS2		13CS21019
	EPA-1613CS3		13CS31019
	EPA-1613CS4		13CS41019
	EPA-1613CS5		13CS51019

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
RECOMMENDED STORAGE:	Store ampoules in a cool, dark place

I005460
1613 CSL CAL STD
Expires 10/24/2026
Prepared By Joshua Rains 6/23/2020

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, $\boldsymbol{u_c(y)}$, of a value $\boldsymbol{y}$ and the uncertainty of the independent parameters $\boldsymbol{x_1}$, $\boldsymbol{x_2}$,...$\boldsymbol{x_n}$ on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

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)**

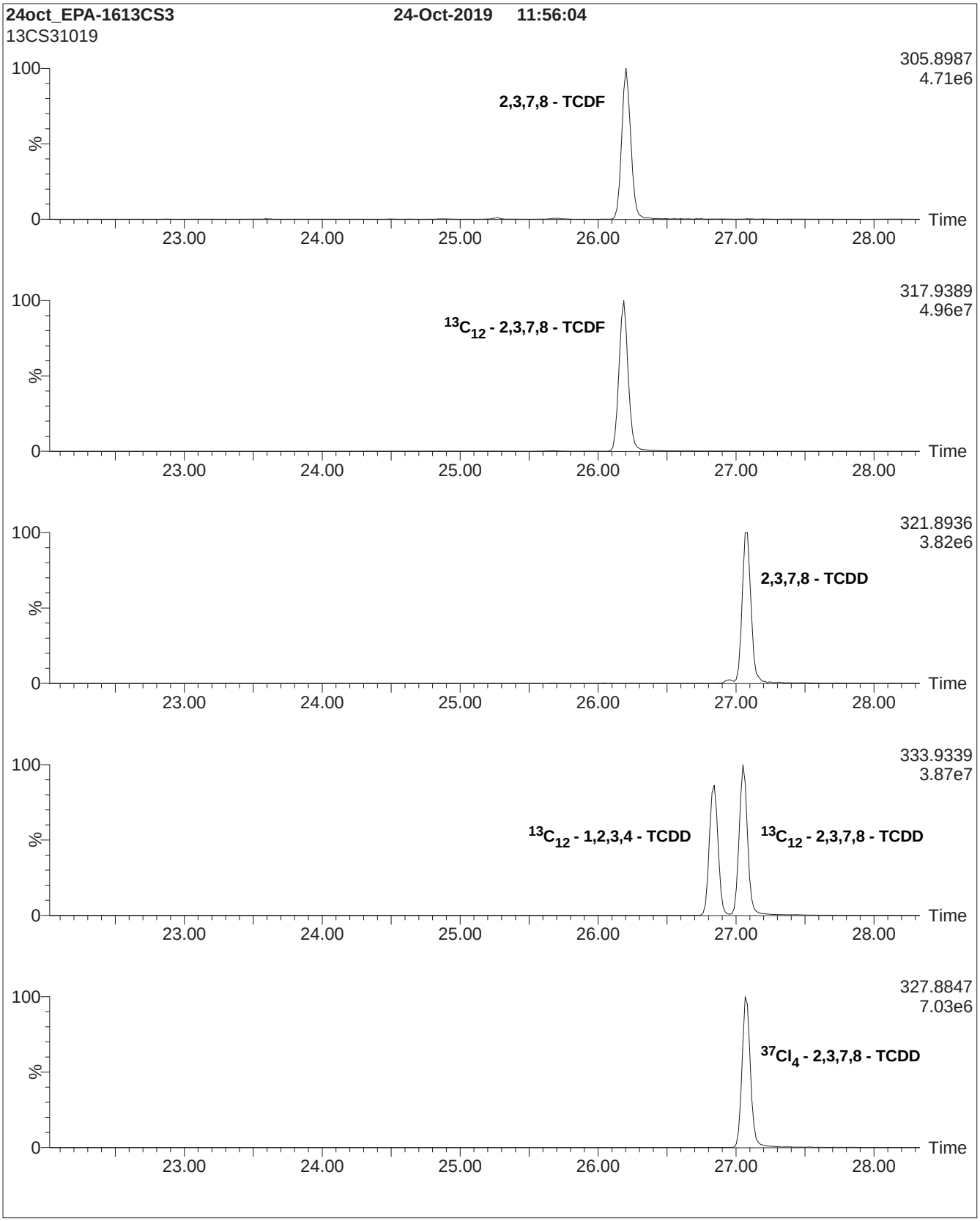


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**

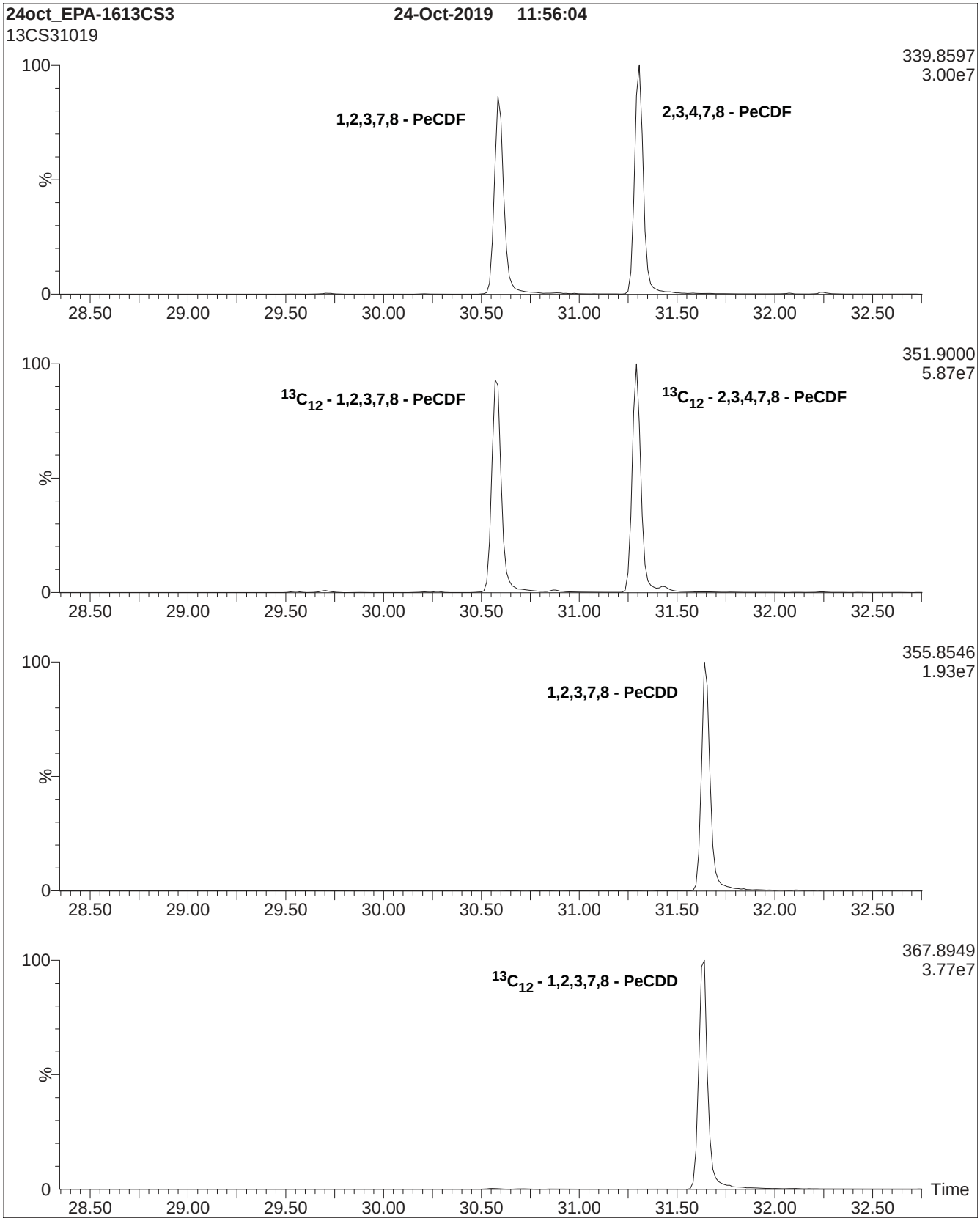


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**

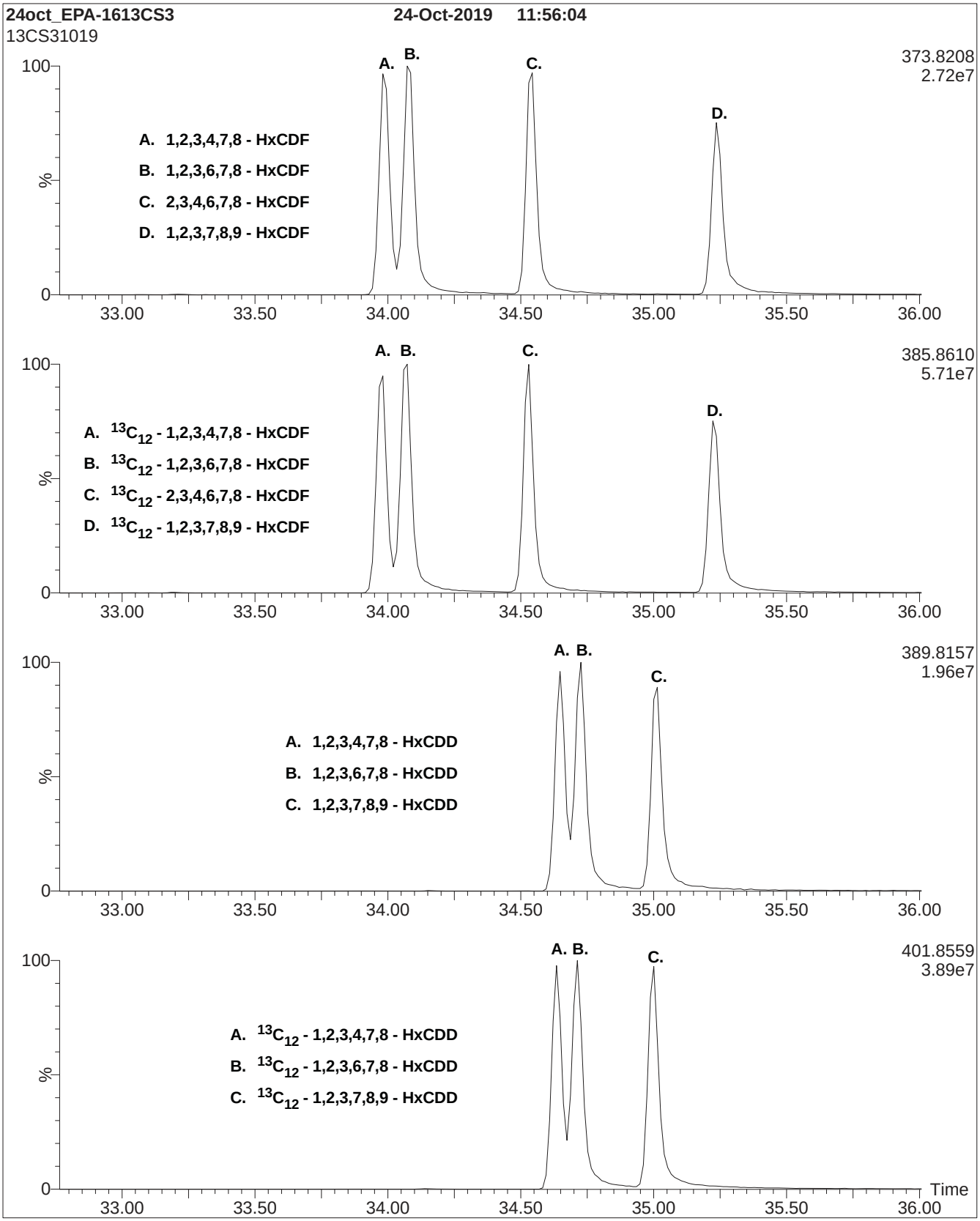


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**

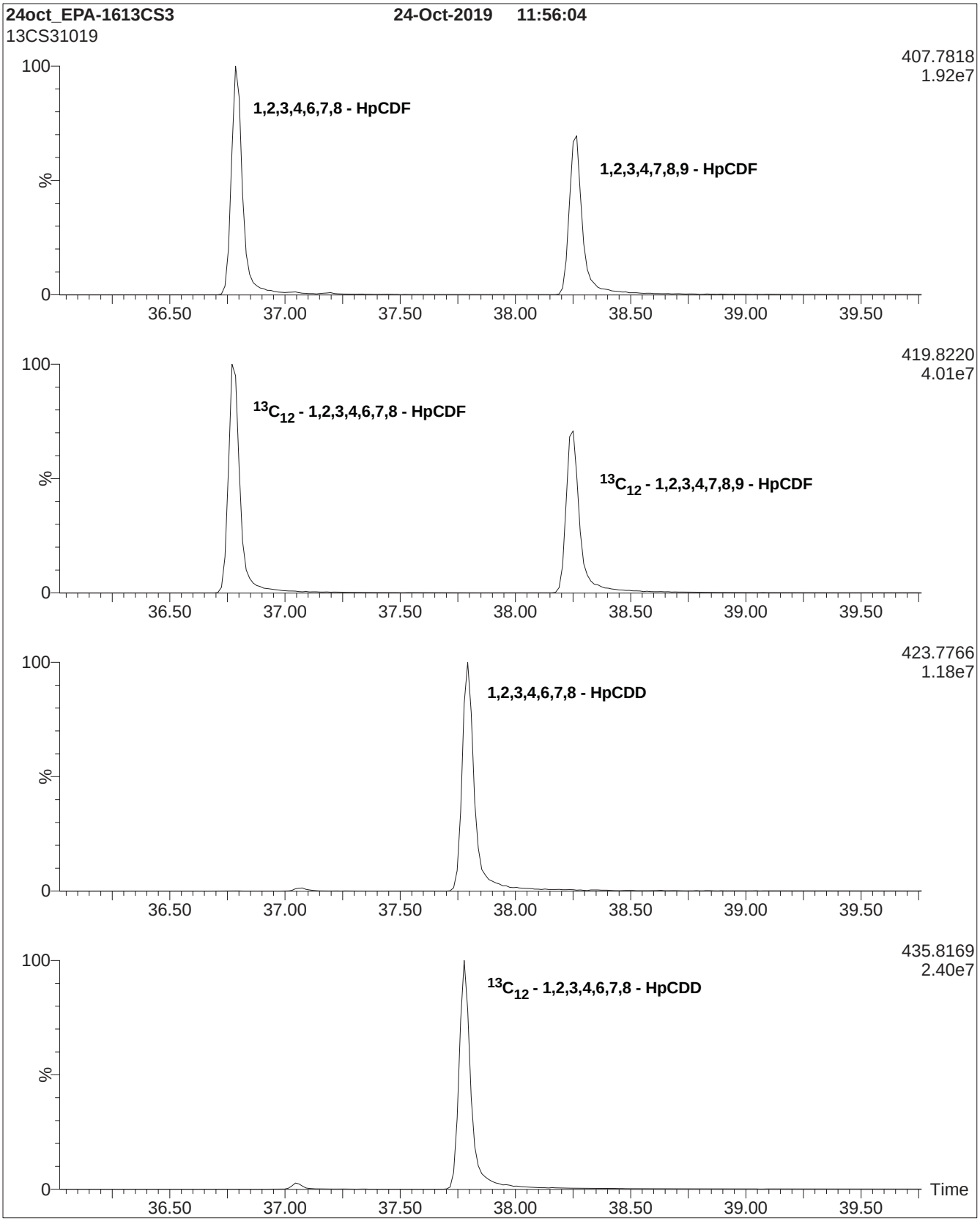
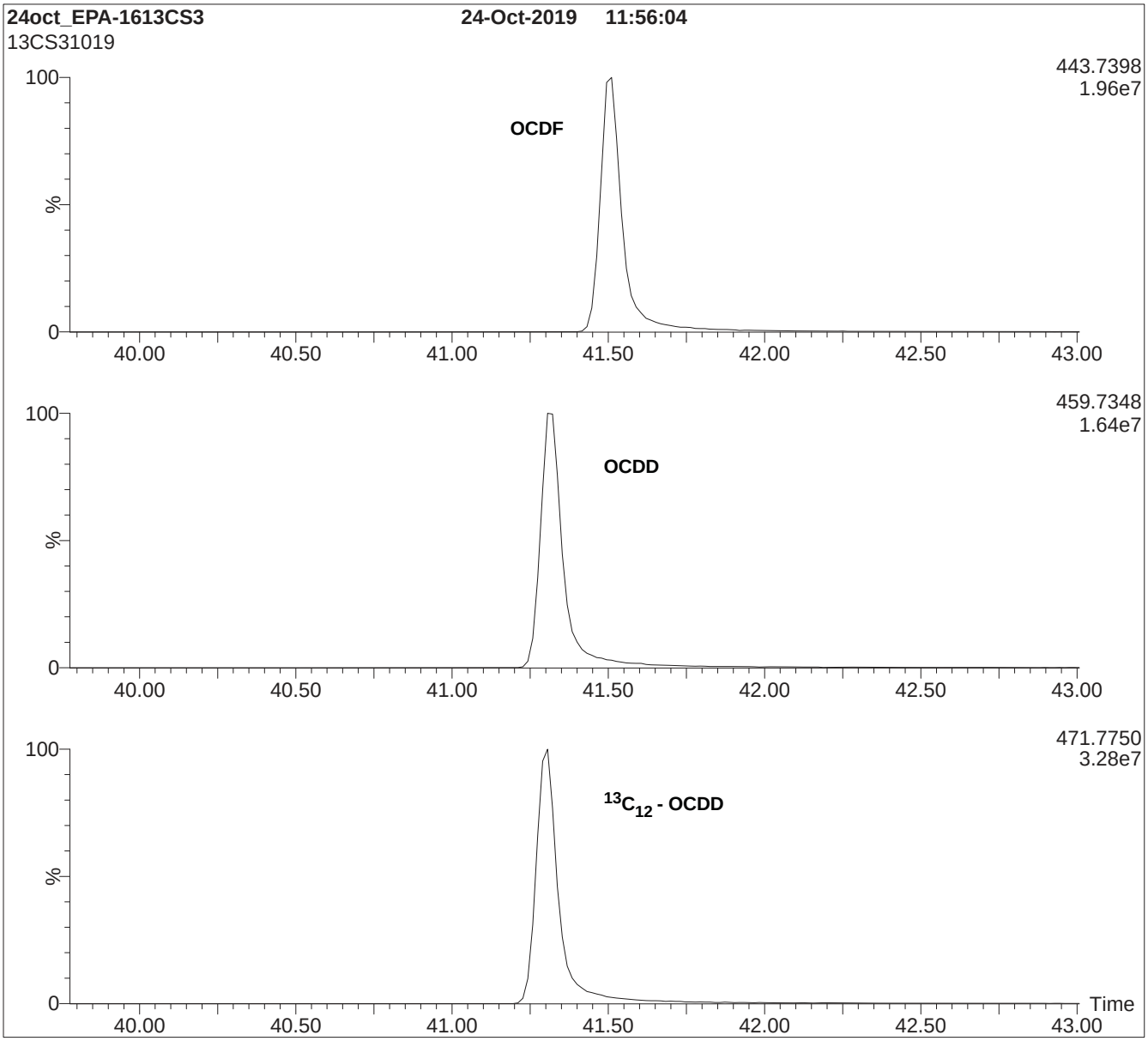


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**



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-1613PAR

U.S. EPA Method 1613 Native PCDD/PCDF
Precision and Recovery Stock Solution

PRODUCT CODE:	EPA-1613PAR
LOT NUMBER:	13PAR1021
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/25/2021
LAST TESTED: (mm/dd/yyyy)	11/03/2021
EXPIRY DATE: (mm/dd/yyyy)	11/03/2028
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

J013397
Read. JR
12/20/21

DESCRIPTION:

EPA-1613PAR is a solution/mixture of all the 2,3,7,8-substituted polychlorinated dibenzo-*p*-dioxins (PCDDs) and dibenzofurans (PCDFs). The components and their concentrations are given in Table A.

EPA-1613PAR was designed 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

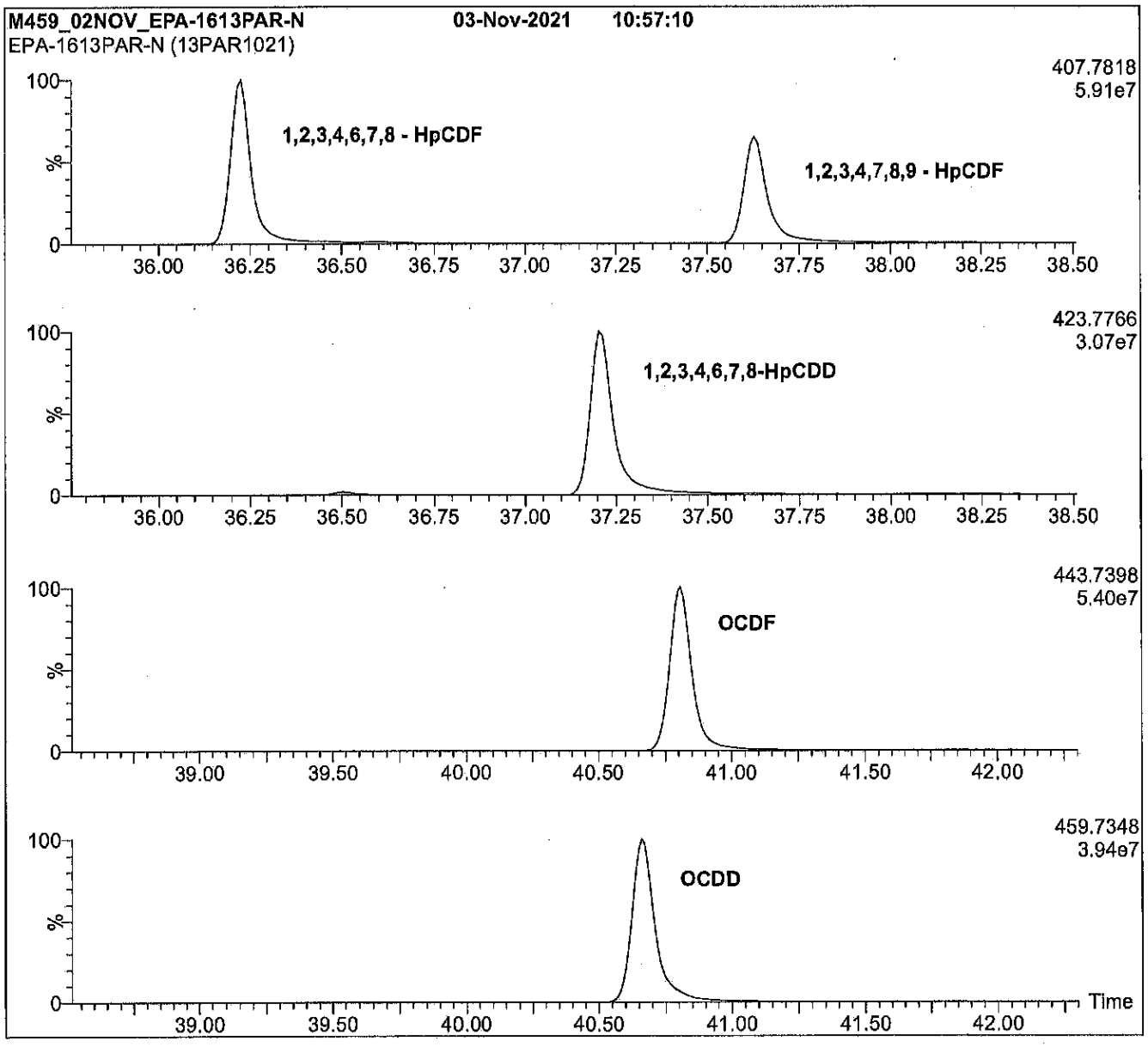
Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

Table A: **EPA-1613PAR; Components and Concentrations (ng/mL, ± 5% in nonane/2.4% toluene)**

Compound	Acronym	CAS #	Concentration (ng/mL)
PCDDs:			
2,3,7,8-Tetrachlorodibenzo-*p*-dioxin	2,3,7,8-TCDD	1746-01-6	40.0
1,2,3,7,8-Pentachlorodibenzo-*p*-dioxin	1,2,3,7,8-PeCDD	40321-76-4	200
1,2,3,4,7,8-Hexachlorodibenzo-*p*-dioxin	1,2,3,4,7,8-HxCDD	39227-28-6	200
1,2,3,6,7,8-Hexachlorodibenzo-*p*-dioxin	1,2,3,6,7,8-HxCDD	57653-85-7	200
1,2,3,7,8,9-Hexachlorodibenzo-*p*-dioxin	1,2,3,7,8,9-HxCDD	19408-74-3	200
1,2,3,4,6,7,8-Heptachlorodibenzo-*p*-dioxin	1,2,3,4,6,7,8-HpCDD	35822-46-9	200
Octachlorodibenzo-*p*-dioxin	OCDD	3268-87-9	400
PCDFs:			
2,3,7,8-Tetrachlorodibenzofuran	2,3,7,8-TCDF	51207-31-9	40.0
1,2,3,7,8-Pentachlorodibenzofuran	1,2,3,7,8-PeCDF	57117-41-6	200
2,3,4,7,8-Pentachlorodibenzofuran	2,3,4,7,8-PeCDF	57117-31-4	200
1,2,3,4,7,8-Hexachlorodibenzofuran	1,2,3,4,7,8-HxCDF	70648-26-9	200
1,2,3,6,7,8-Hexachlorodibenzofuran	1,2,3,6,7,8-HxCDF	57117-44-9	200
1,2,3,7,8,9-Hexachlorodibenzofuran	1,2,3,7,8,9-HxCDF	72918-21-9	200
2,3,4,6,7,8-Hexachlorodibenzofuran	2,3,4,6,7,8-HxCDF	60851-34-5	200
1,2,3,4,6,7,8-Heptachlorodibenzofuran	1,2,3,4,6,7,8-HpCDF	67562-39-4	200
1,2,3,4,7,8,9-Heptachlorodibenzofuran	1,2,3,4,7,8,9-HpCDF	55673-89-7	200
Octachlorodibenzofuran	OCDF	39001-02-0	400

Certified By: _____ **Date:** 11/05/2021
(mm/dd/yyyy)
B.G. Chittim, General Manager

Figure 1: **EPA-1613PAR; 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 1.4 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:	13PAR1021
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/25/2021
LAST TESTED: (mm/dd/yyyy)	11/03/2021
EXPIRY DATE: (mm/dd/yyyy)	11/03/2028
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

J013397
Recd. JR
12/20/21

DESCRIPTION:

EPA-1613PAR is a solution/mixture of all the 2,3,7,8-substituted polychlorinated dibenzo-*p*-dioxins (PCDDs) and dibenzofurans (PCDFs). The components and their concentrations are given in Table A.

EPA-1613PAR was designed 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.

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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 $x_1, x_2, ...x_n$ on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

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

Table A: **EPA-1613PAR; Components and Concentrations (ng/mL, ± 5% in nonane/2.4% toluene)**

Compound	Acronym	CAS #	Concentration (ng/mL)
PCDDs:			
2,3,7,8-Tetrachlorodibenzo-*p*-dioxin	2,3,7,8-TCDD	1746-01-6	40.0
1,2,3,7,8-Pentachlorodibenzo-*p*-dioxin	1,2,3,7,8-PeCDD	40321-76-4	200
1,2,3,4,7,8-Hexachlorodibenzo-*p*-dioxin	1,2,3,4,7,8-HxCDD	39227-28-6	200
1,2,3,6,7,8-Hexachlorodibenzo-*p*-dioxin	1,2,3,6,7,8-HxCDD	57653-85-7	200
1,2,3,7,8,9-Hexachlorodibenzo-*p*-dioxin	1,2,3,7,8,9-HxCDD	19408-74-3	200
1,2,3,4,6,7,8-Heptachlorodibenzo-*p*-dioxin	1,2,3,4,6,7,8-HpCDD	35822-46-9	200
Octachlorodibenzo-*p*-dioxin	OCDD	3268-87-9	400
PCDFs:			
2,3,7,8-Tetrachlorodibenzofuran	2,3,7,8-TCDF	51207-31-9	40.0
1,2,3,7,8-Pentachlorodibenzofuran	1,2,3,7,8-PeCDF	57117-41-6	200
2,3,4,7,8-Pentachlorodibenzofuran	2,3,4,7,8-PeCDF	57117-31-4	200
1,2,3,4,7,8-Hexachlorodibenzofuran	1,2,3,4,7,8-HxCDF	70648-26-9	200
1,2,3,6,7,8-Hexachlorodibenzofuran	1,2,3,6,7,8-HxCDF	57117-44-9	200
1,2,3,7,8,9-Hexachlorodibenzofuran	1,2,3,7,8,9-HxCDF	72918-21-9	200
2,3,4,6,7,8-Hexachlorodibenzofuran	2,3,4,6,7,8-HxCDF	60851-34-5	200
1,2,3,4,6,7,8-Heptachlorodibenzofuran	1,2,3,4,6,7,6-HpCDF	67562-39-4	200
1,2,3,4,7,8,9-Heptachlorodibenzofuran	1,2,3,4,7,8,9-HpCDF	55673-89-7	200
Octachlorodibenzofuran	OCDF	39001-02-0	400

Certified By: _____ **Date:** 11/05/2021
(mm/dd/yyyy)

B.G. Chittim, General Manager

Figure 1: **EPA-1613PAR; HRGC/HRMS Data (60 m DB-5 Column)**

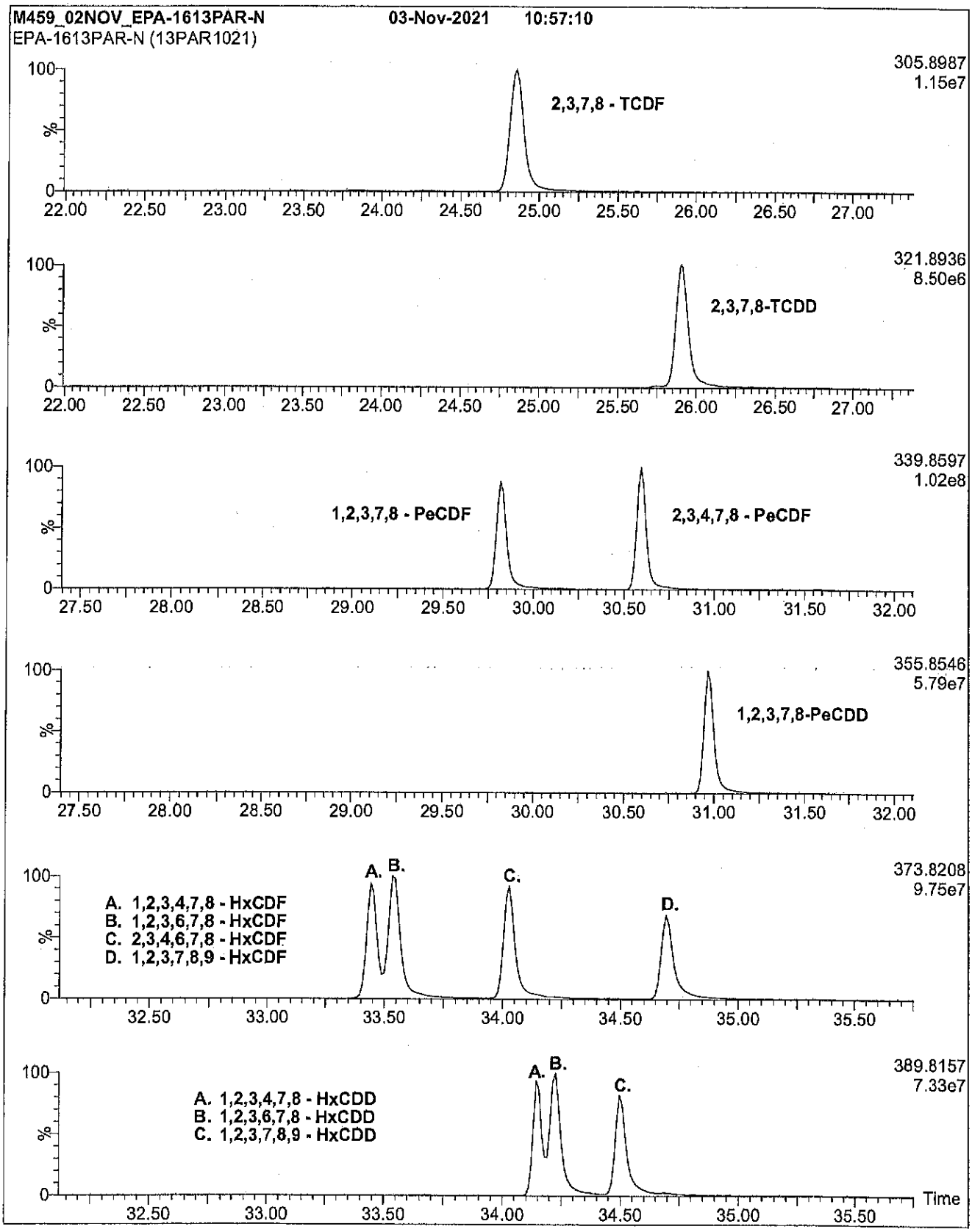
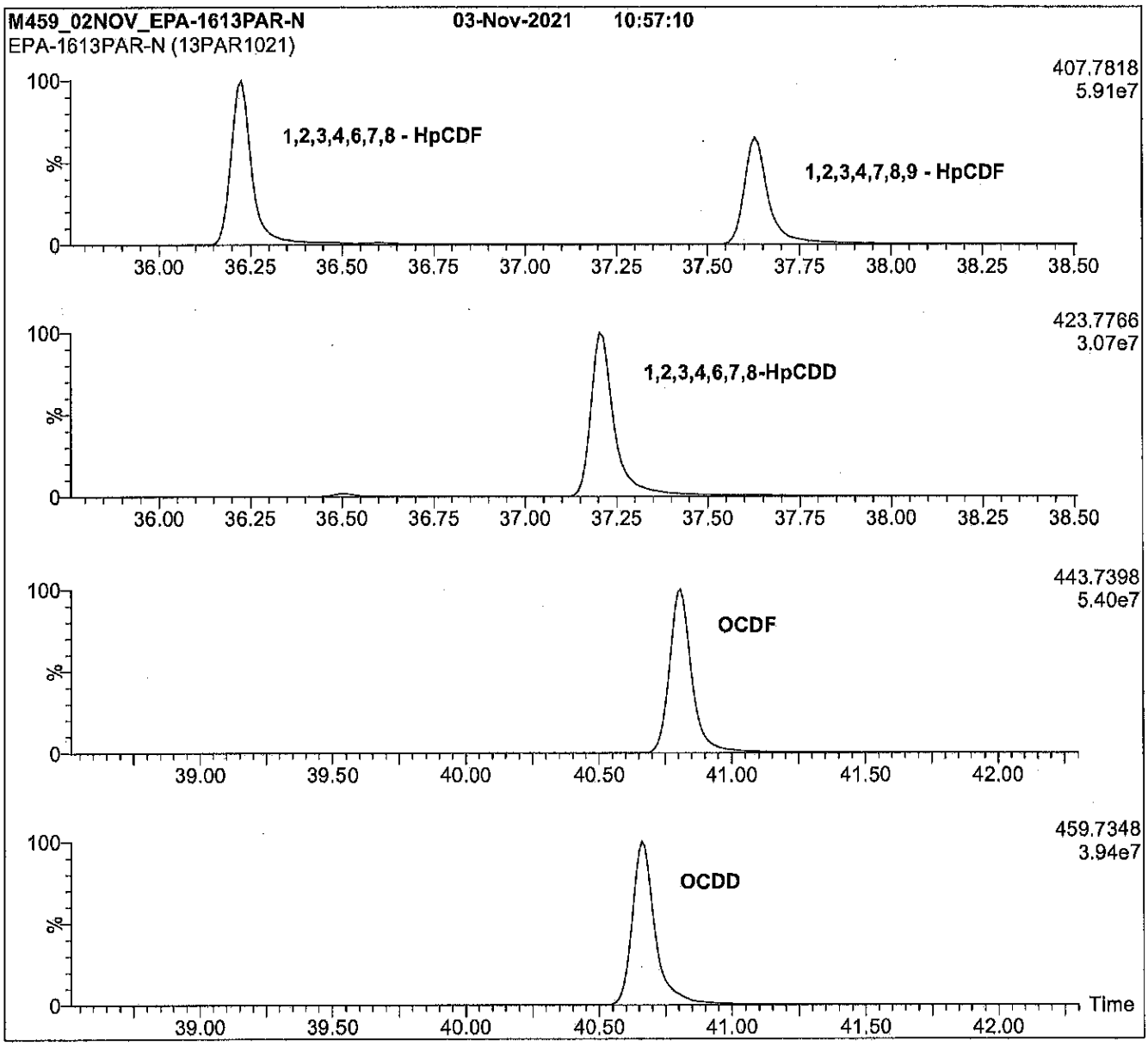


Figure 1: **EPA-1613PAR; HRGC/HRMS Data (60 m DB-5 Column)**



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 1.4 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

K9821

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:	CS3WT1021
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	11/01/2021
LAST TESTED: (mm/dd/yyyy)	11/02/2021
EXPIRY DATE: (mm/dd/yyyy)	11/02/2028
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

CS3WT is a solution/mixture of native ($^{12}C_{12}$) and mass-labelled ($^{13}C_{12}$) polychlorinated 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: 13CS31021). 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	13CS11021
EPA-1613CS2	13CS21021
EPA-1613CS3	13CS31021
EPA-1613CS4	13CS41021
EPA-1613CS5	13CS51021
EPA-1613CSL	13CSL1021
EPA-1613CS0.5	13CS0.51021

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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 ISO17034 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:** 11/05/2021 (mm/dd/yyyy)

B.G. Chittim, General Manager

Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**

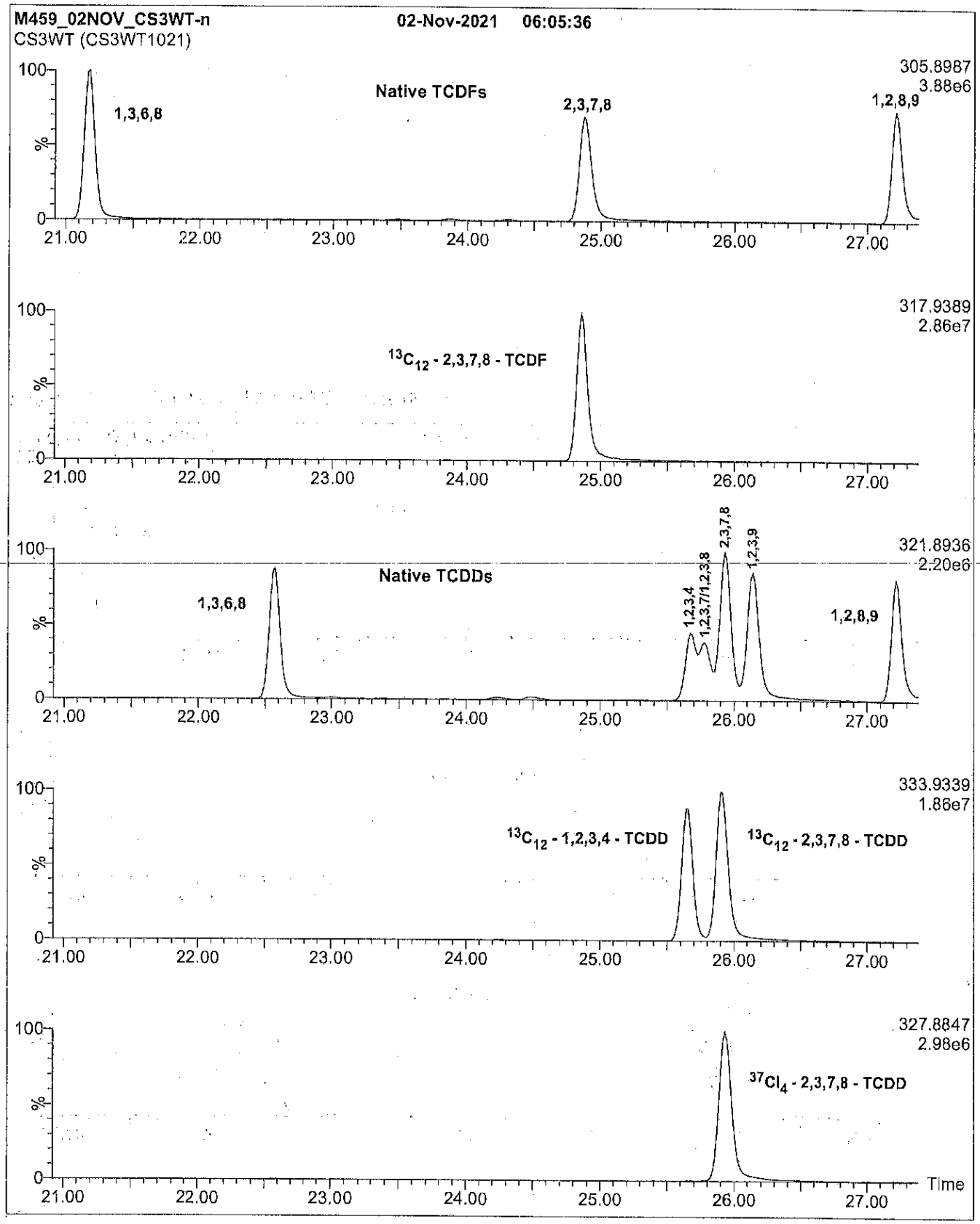


Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**

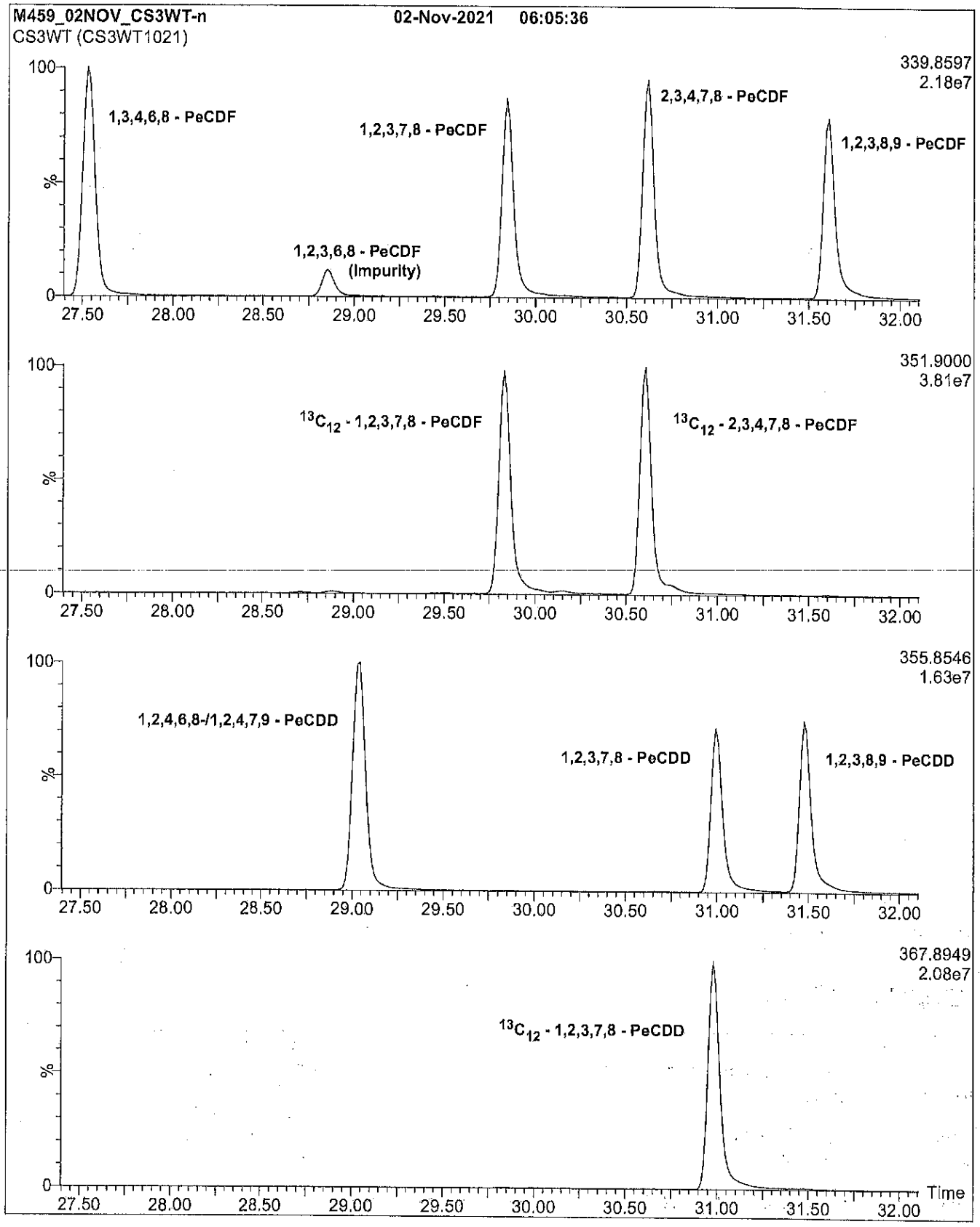


Figure 1: CS3WT; HRGC/HRMS Data (60 m DB-5 Column)

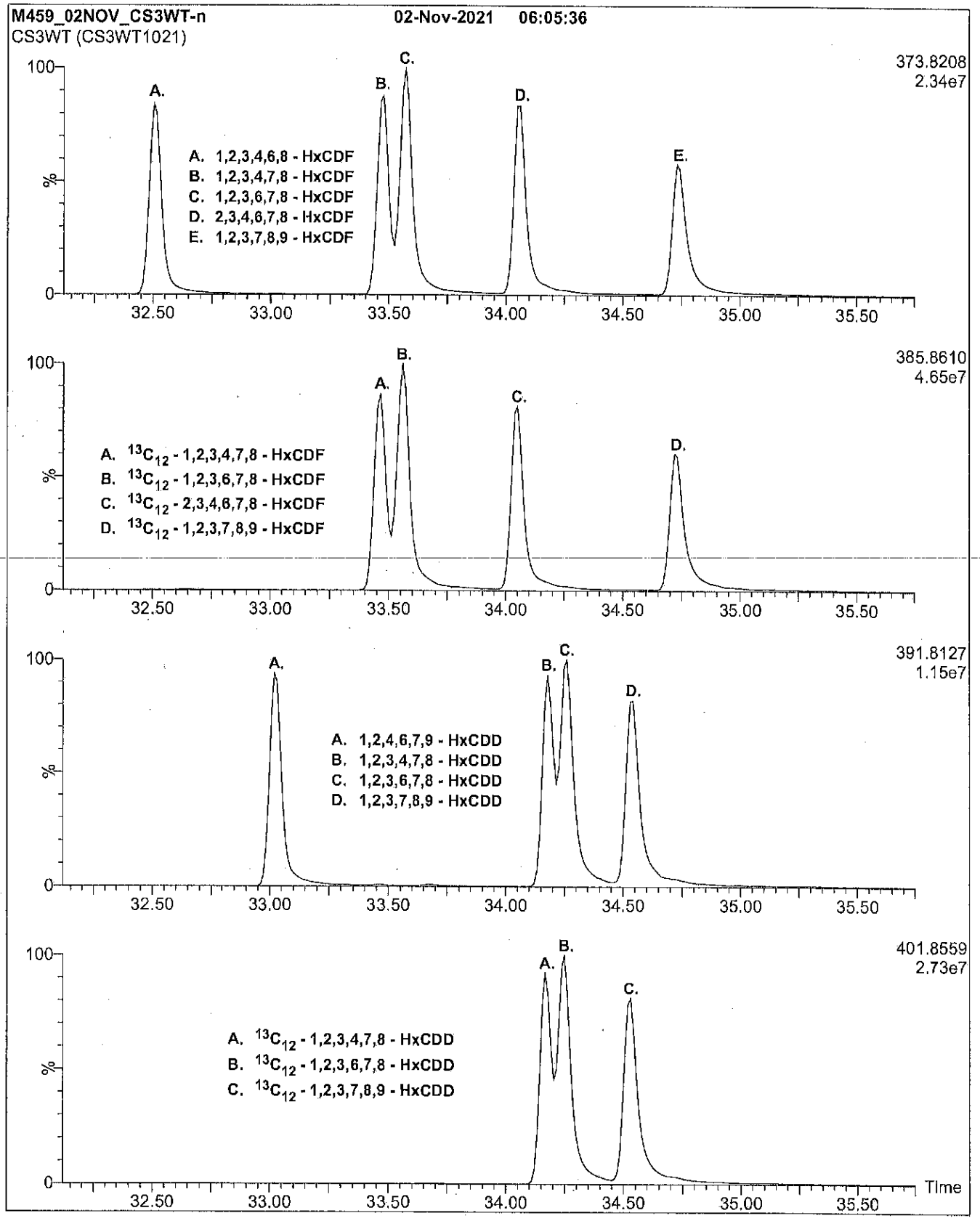


Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**

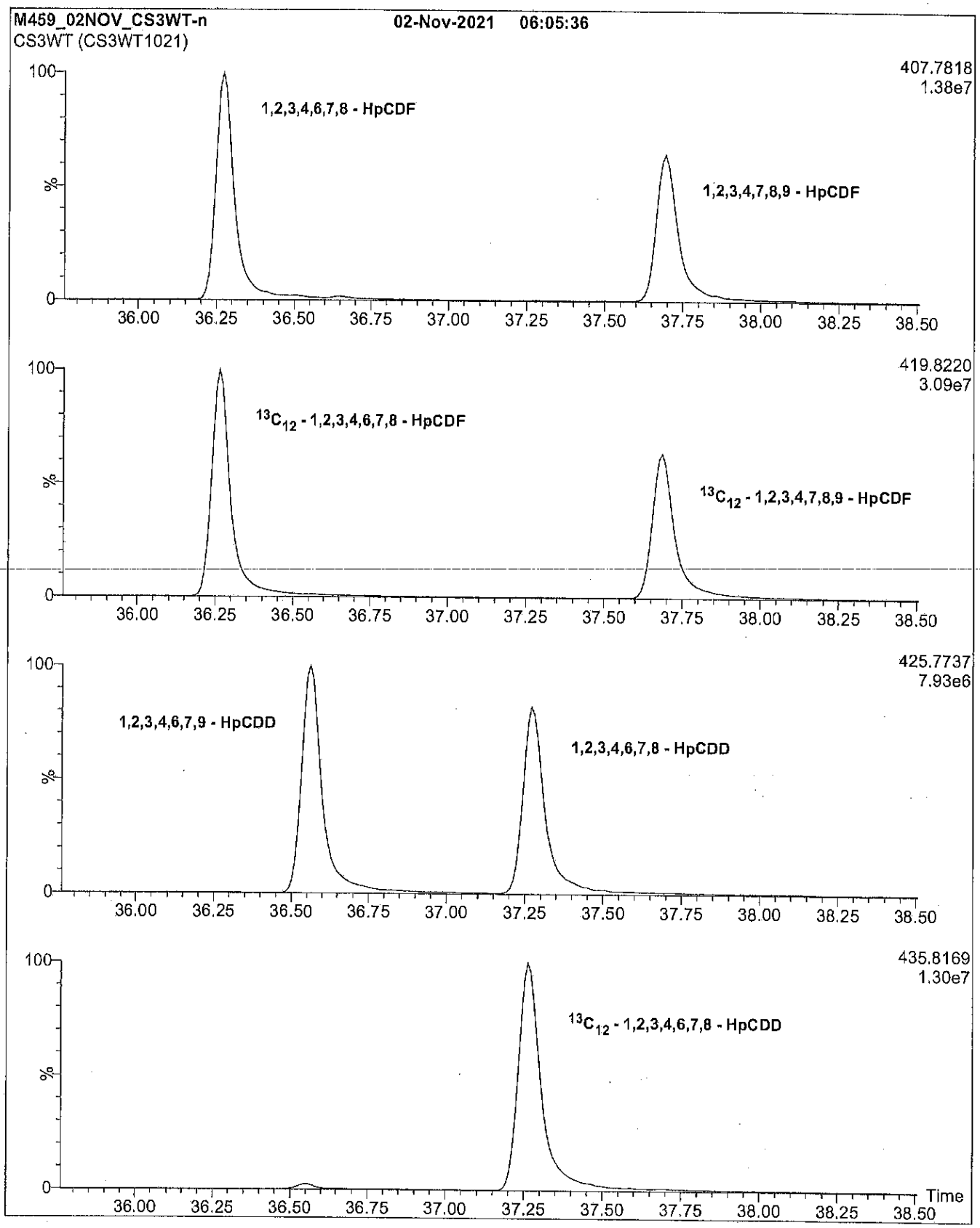
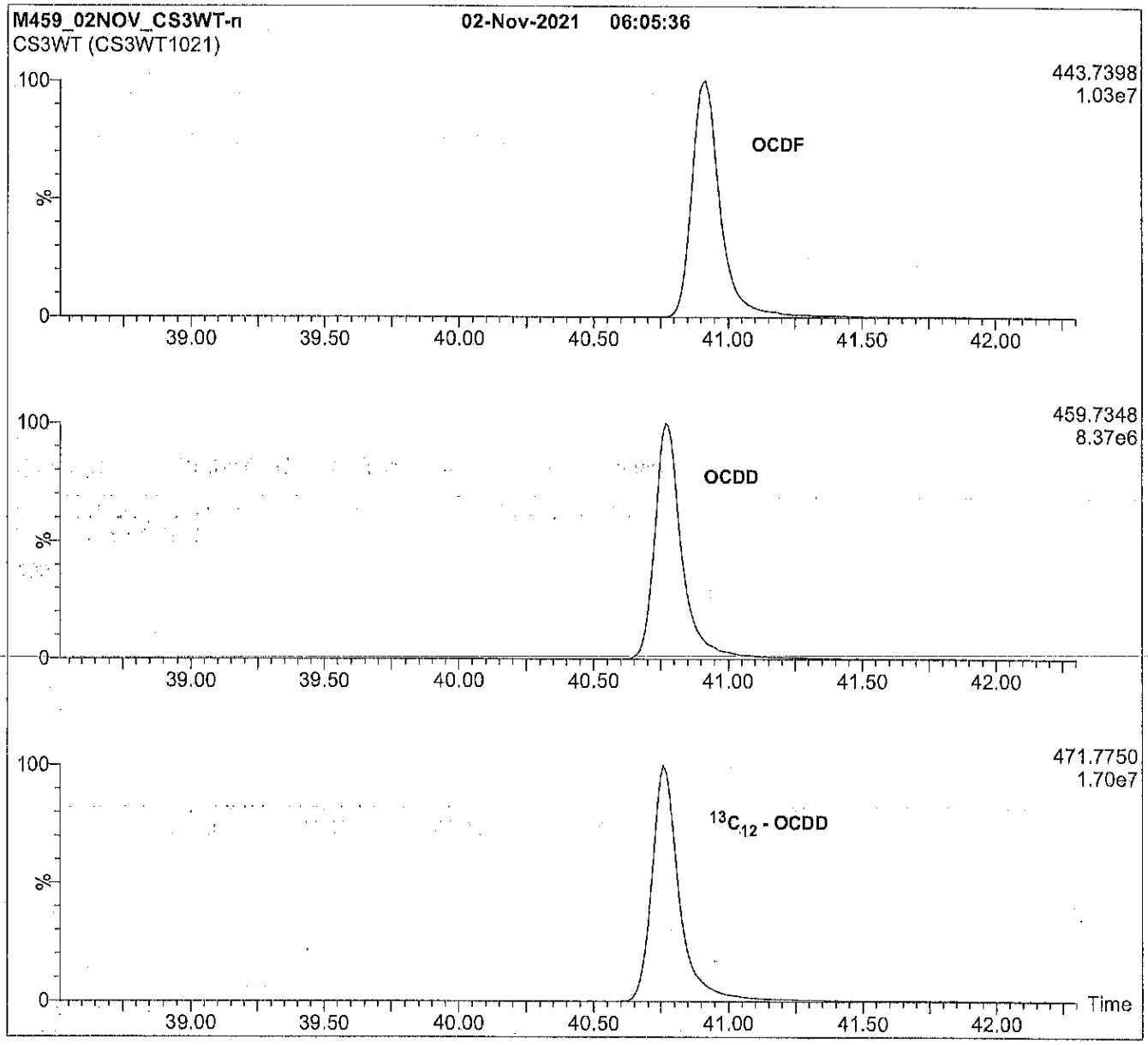


Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**



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 1.4 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)

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Standard Record

Standard ID: L002084

Printed: 3/2/2023 8:59:18AM

Description:	Dioxin ISC Mix	Expires:	24-Feb-2024
Standard Type:	Other	Prepared:	24-Feb-2023
Solvent:	Nonane	Prepared By:	Peter Kepler
Final Volume (mls):	1	Department:	HRGCMS
Vials:	1	Last Edit:	24-Feb-2023 11:19 by PK
Vendor:	NA	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.

Analyte	CAS Number	Concentration	Units
2,3,7,8-TCDF	51207-31-9	10	ug/mL
2,3,7,8-TCDD	1746-01-6	10	ug/mL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613CSS

U.S. EPA Method 1613 Cleanup Standard Spiking Solution

PRODUCT CODE:	EPA-1613CSS
LOT NUMBER:	13CSS1021
SOLVENT(S):	Nonane
DATE PREPARED: (mm/dd/yyyy)	10/29/2021
LAST TESTED: (mm/dd/yyyy)	10/31/2021
EXPIRY DATE: (mm/dd/yyyy)	10/31/2028
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

L 3420

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:** 11/05/2021 (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,...x_n on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

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:

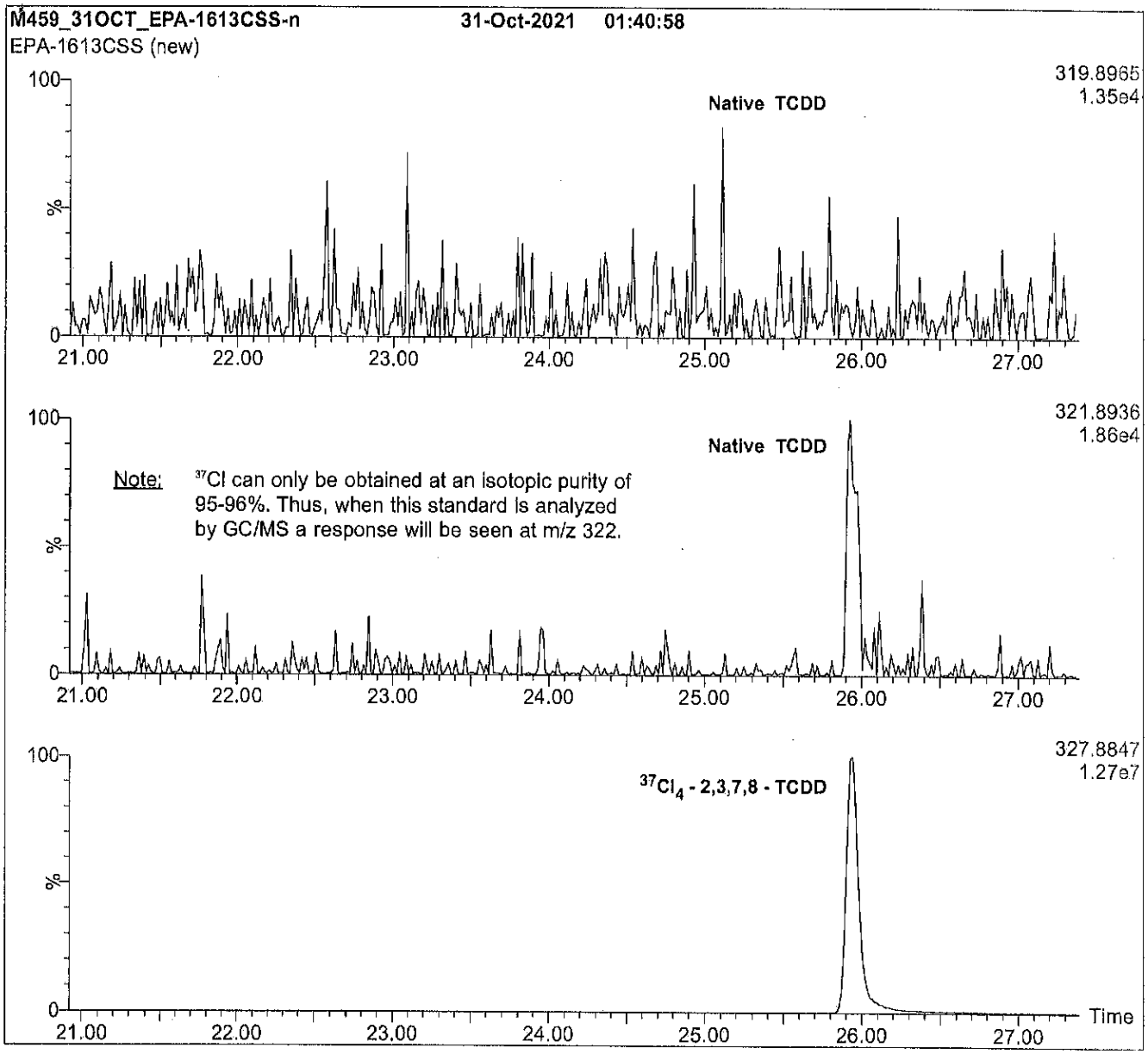
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI National Accreditation Board (ANAB; AR-1523).

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 1.4 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:	13LCS1021
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/29/2021
LAST TESTED: (mm/dd/yyyy)	10/31/2021
EXPIRY DATE: (mm/dd/yyyy)	10/31/2028
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

21
L3420
04/07/23

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:

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

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:** 11/05/2021
(mm/dd/yyyy)
B.G. Chittim, General Manager

Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)

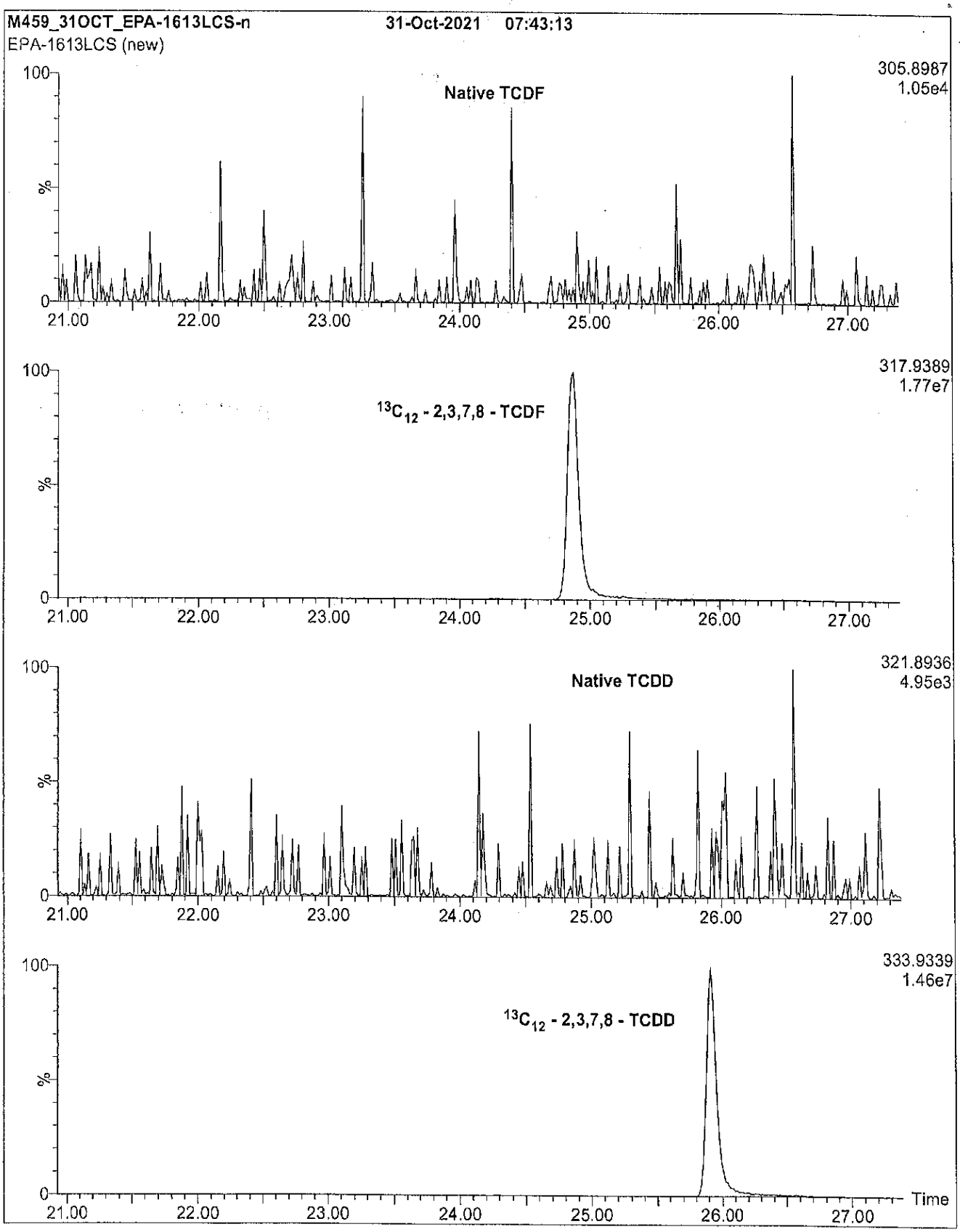


Figure 1: **EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)**

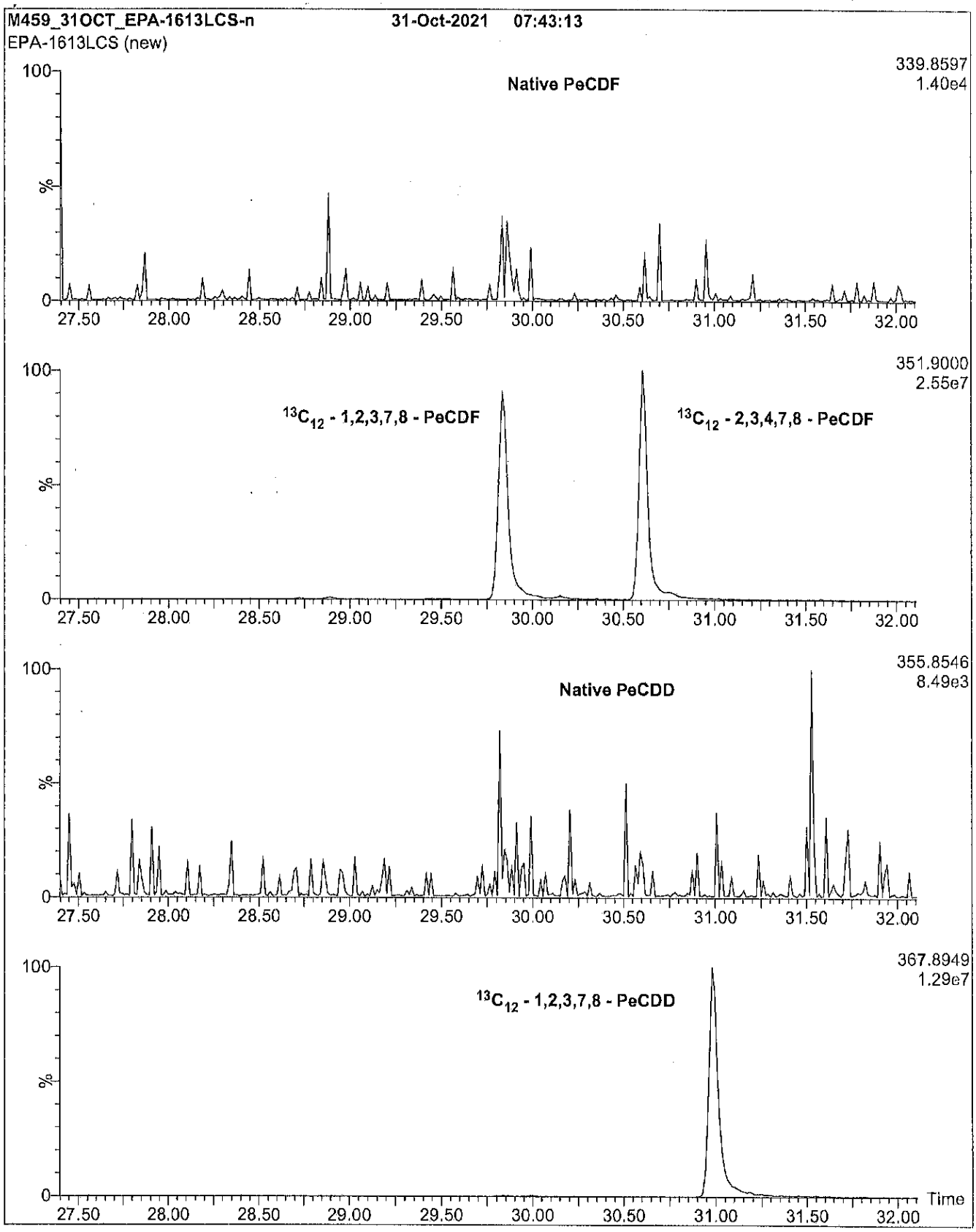


Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)

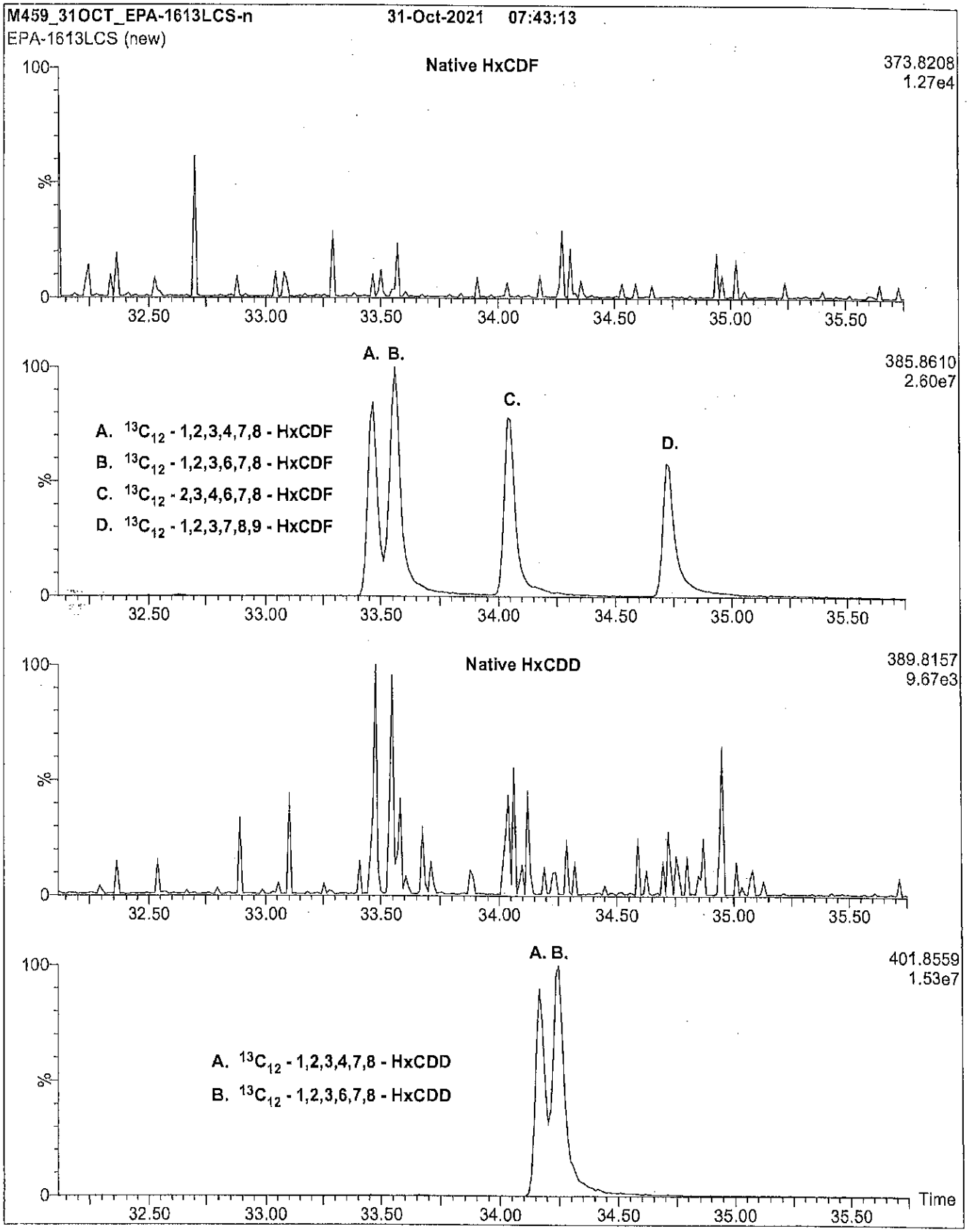


Figure 1: **EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)**

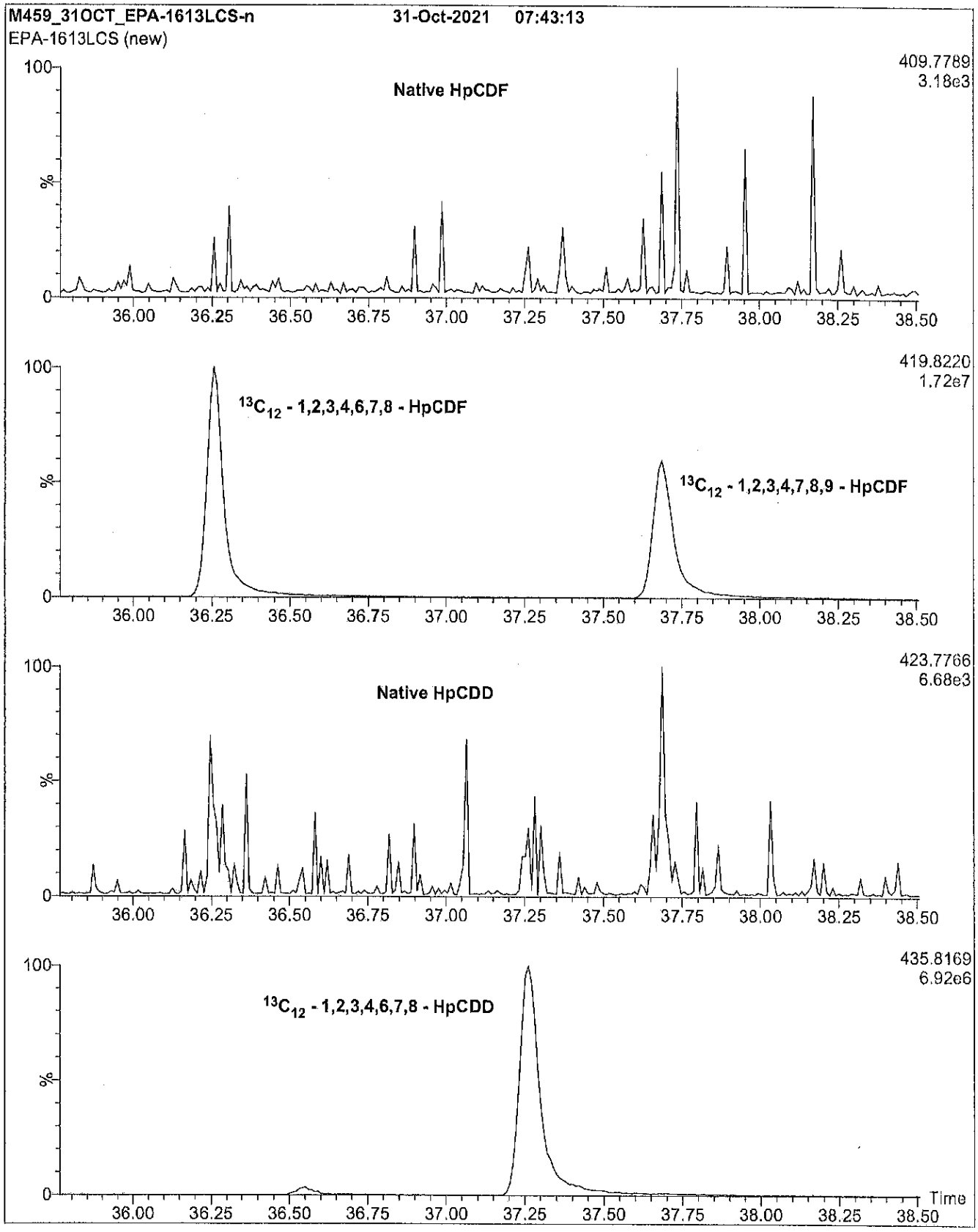
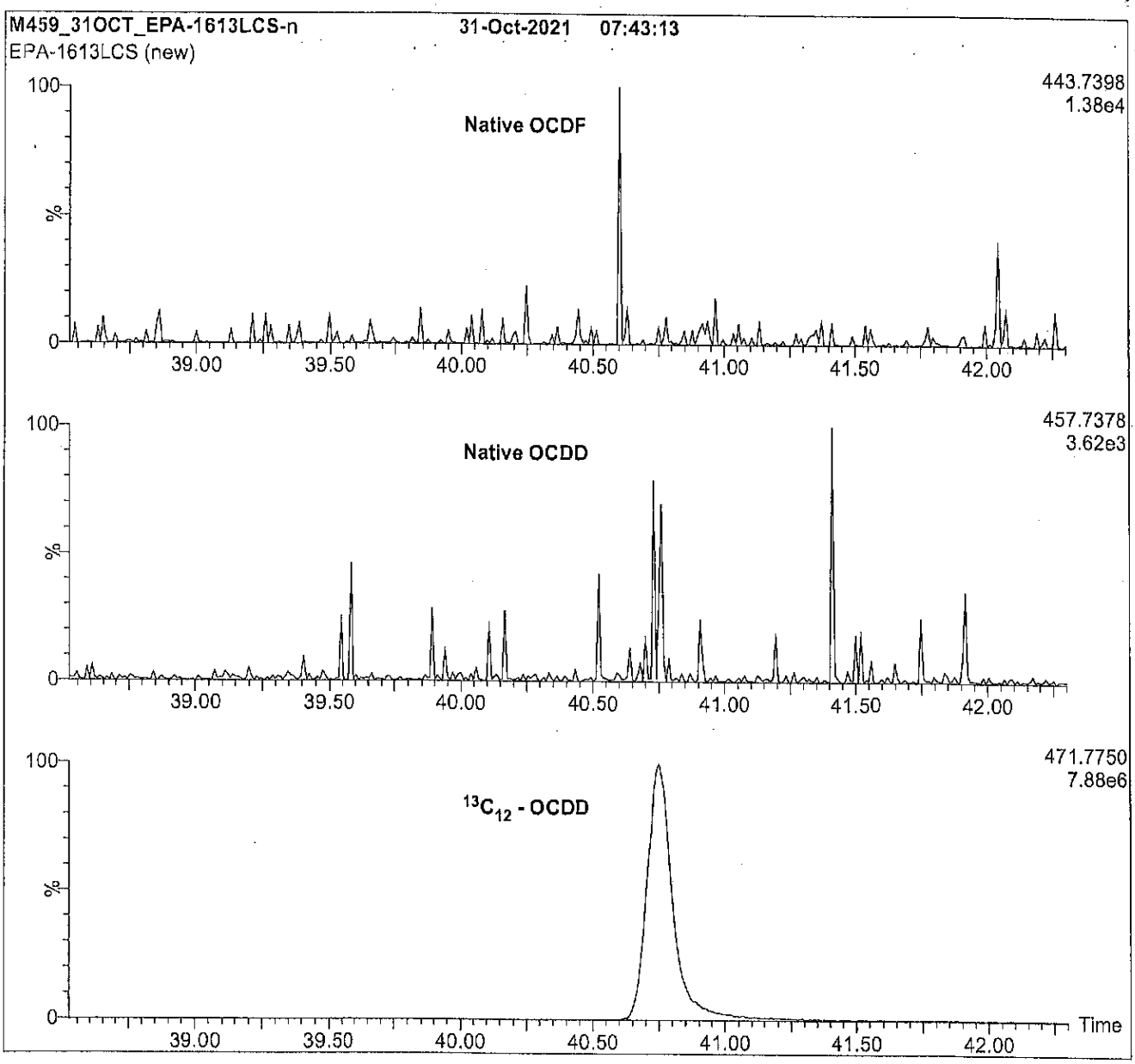


Figure 1: **EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)**



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 1.4 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

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:	CS3WT1021
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	11/01/2021
LAST TESTED: (mm/dd/yyyy)	11/02/2021
EXPIRY DATE: (mm/dd/yyyy)	11/02/2028
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

LOO 6734

DESCRIPTION:

CS3WT is a solution/mixture of native ($^{12}C_{12}$) and mass-labelled ($^{13}C_{12}$) polychlorinated 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: 13CS31021). 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	13CS11021
EPA-1613CS2	13CS21021
EPA-1613CS3	13CS31021
EPA-1613CS4	13CS41021
EPA-1613CS5	13CS51021
EPA-1613CSL	13CSL1021
EPA-1613CS0.5	13CS0.51021

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:** 11/05/2021 (mm/dd/yyyy)

B.G. Chittim, General Manager

Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**

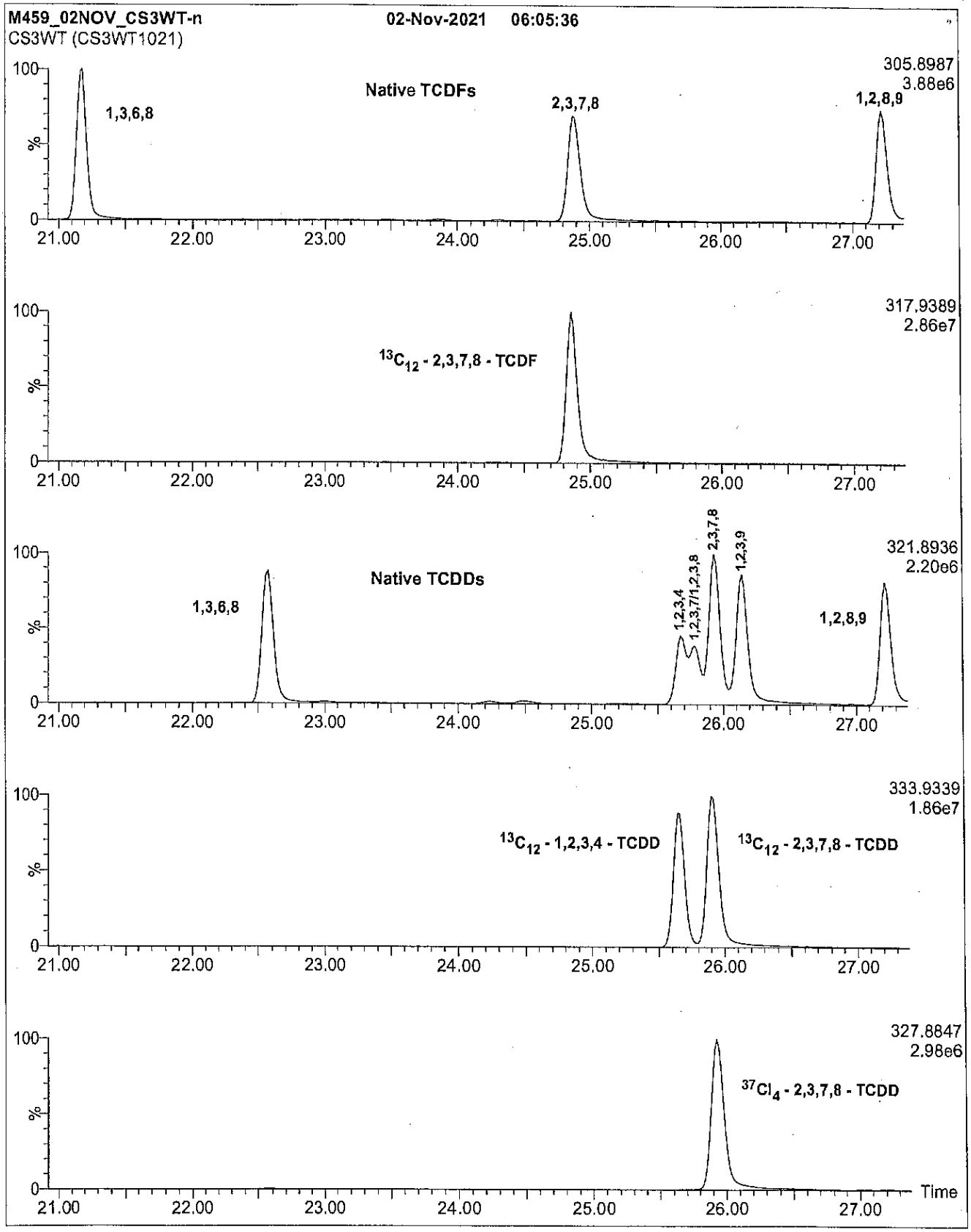


Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**

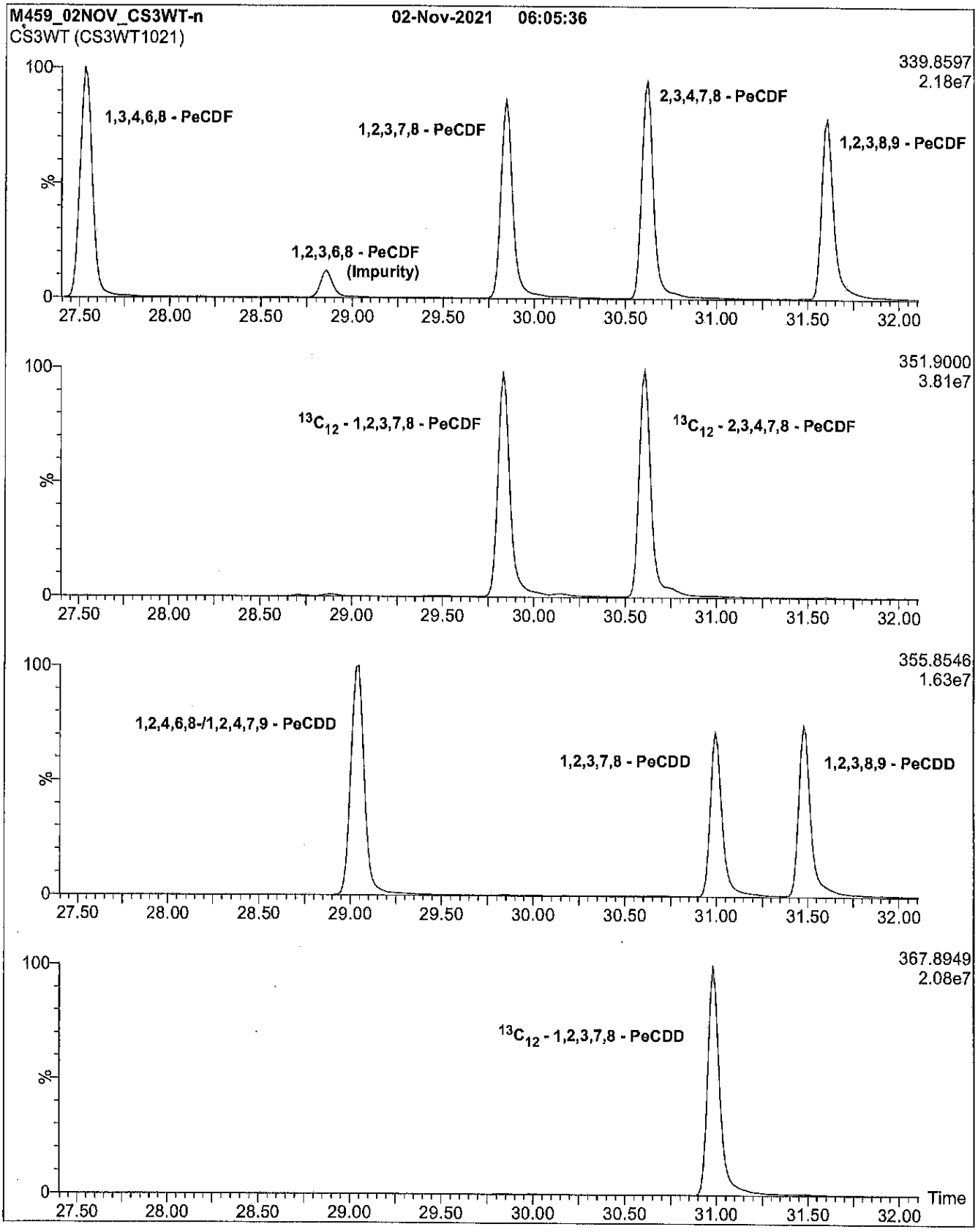


Figure 1: CS3WT; HRGC/HRMS Data (60 m DB-5 Column)

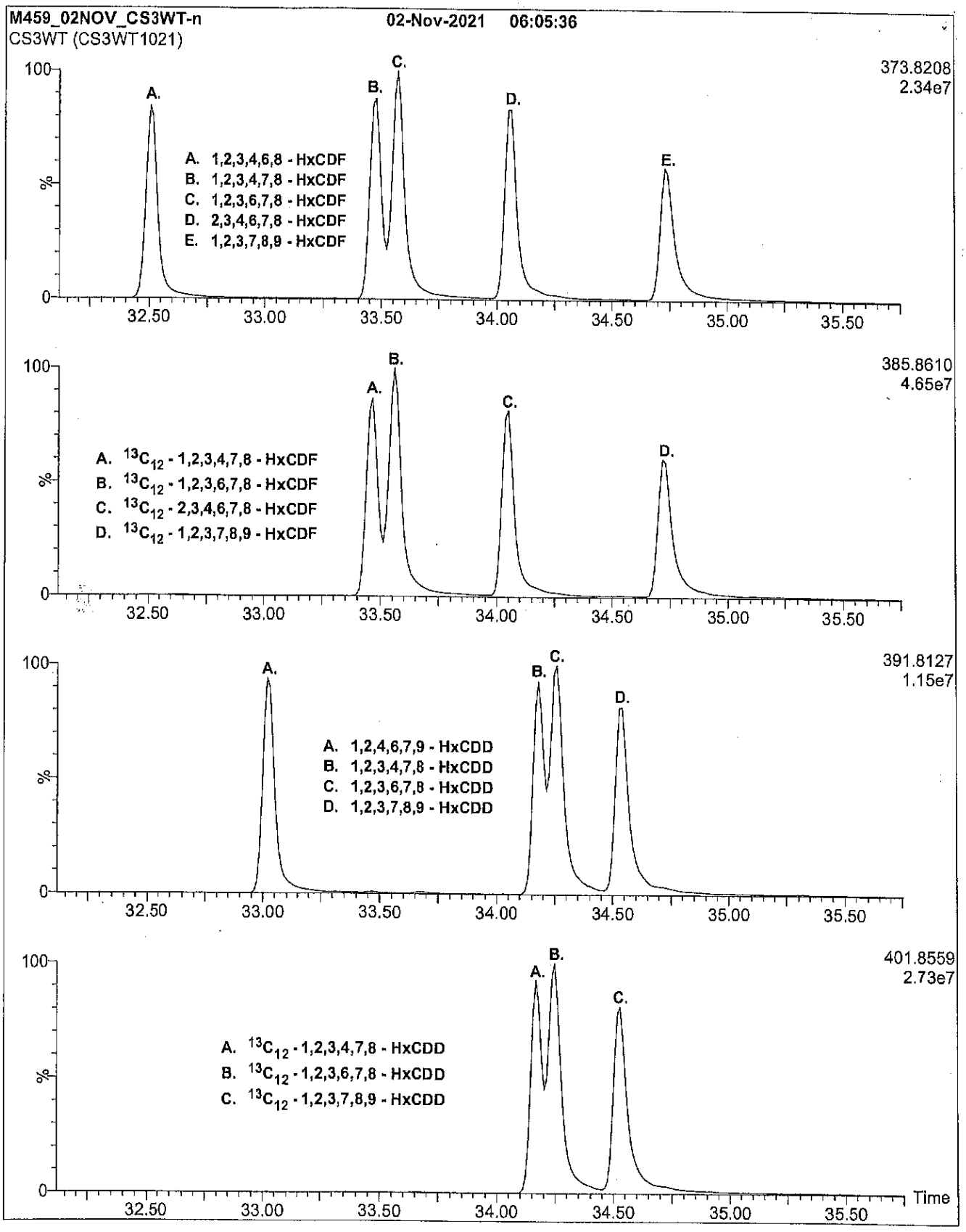


Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**

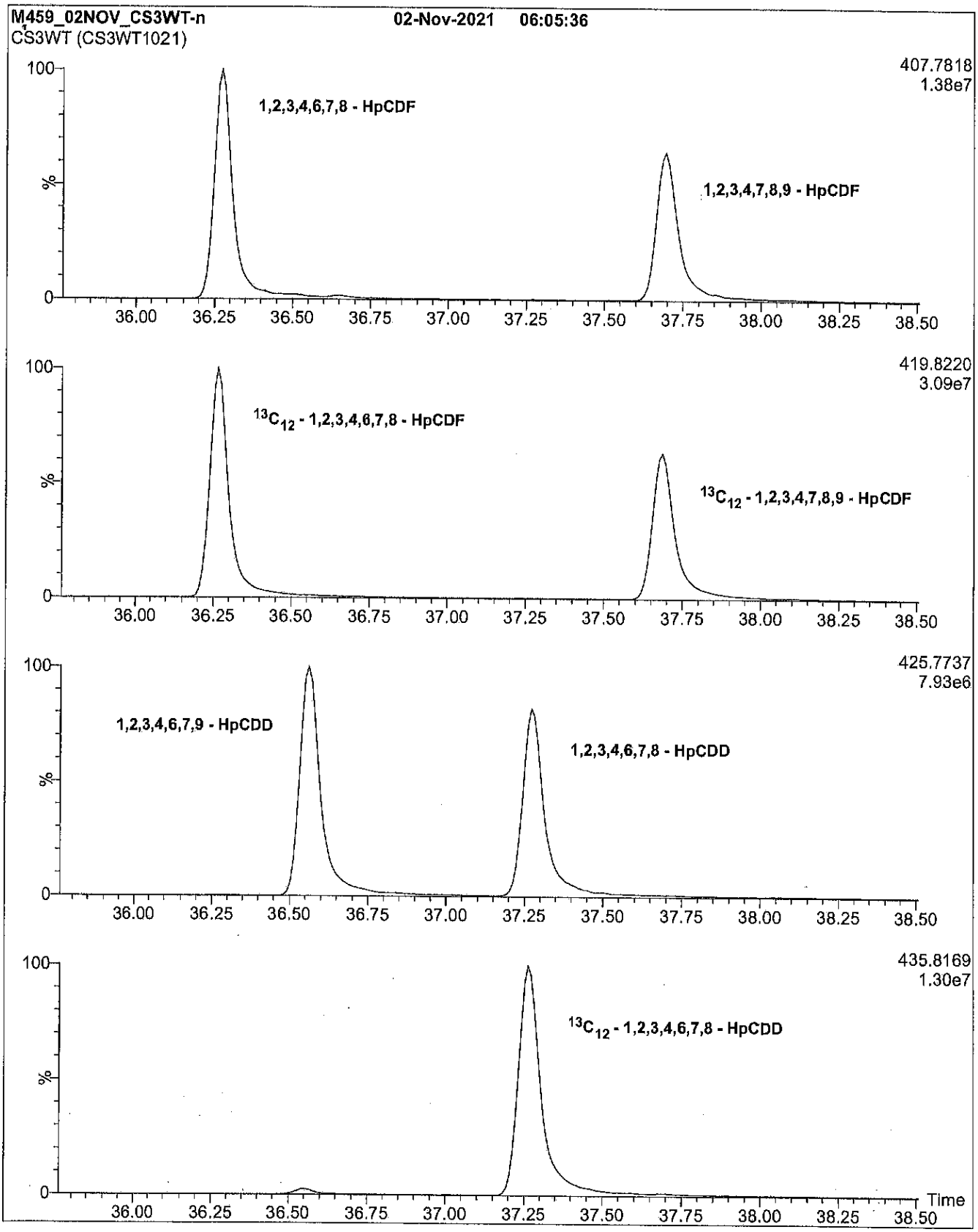
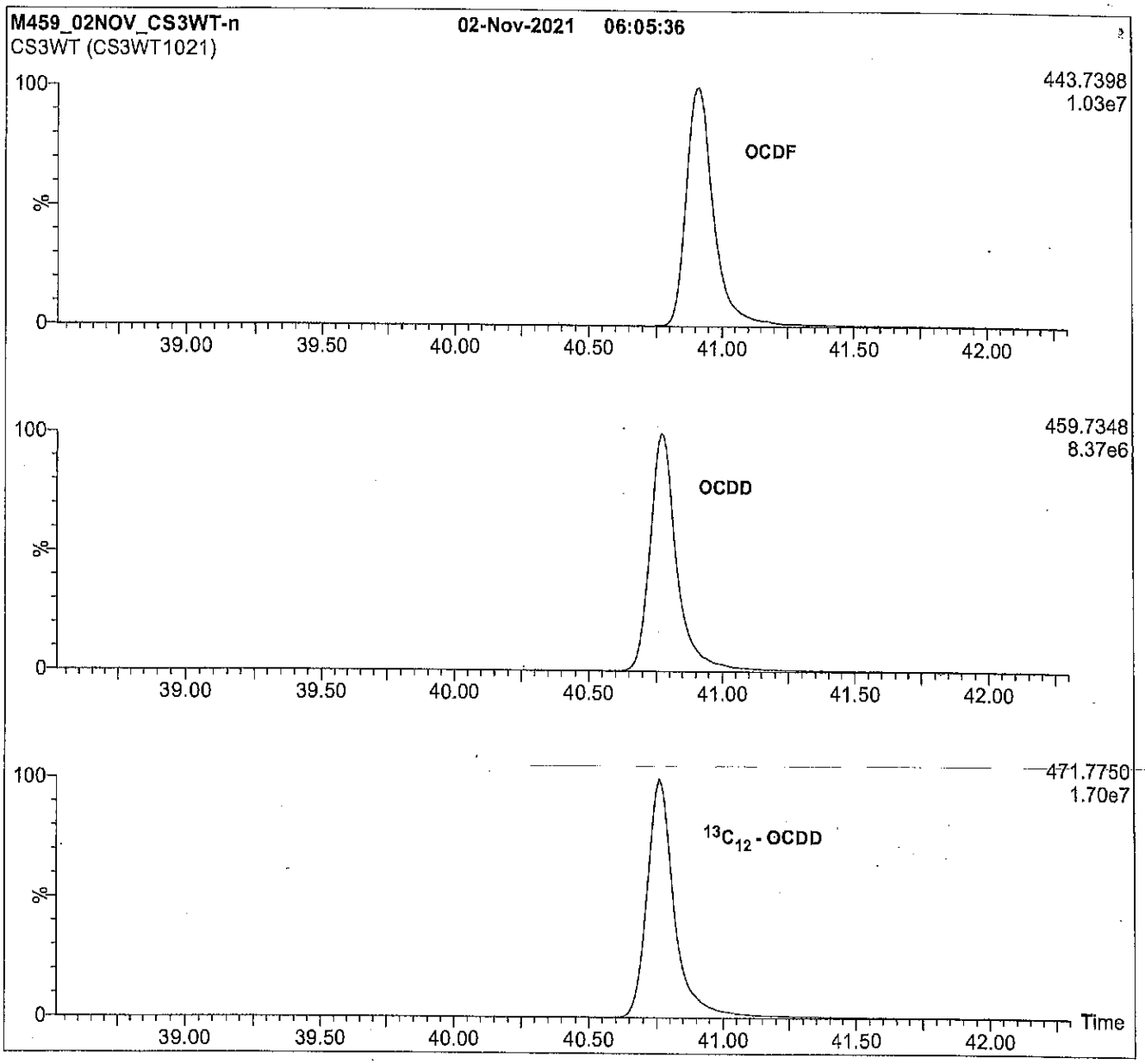


Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**



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 1.4 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)

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Standard Record

Standard ID: L013640

Printed: 1/10/2024 1:53:03PM

Description:	Dioxin ISC Mix	Expires:	27-Nov-2024
Standard Type:	Other	Prepared:	27-Nov-2023
Solvent:	Nonane	Prepared By:	Peter Kepler
Final Volume (mls):	1	Department:	HRGCMS
Vials:	1	Last Edit:	27-Nov-2023 10:51 by PK
Vendor:	NA	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.

Analyte	CAS Number	Concentration	Units
2,3,7,8-TCDF	51207-31-9	10	ug/mL
2,3,7,8-TCDD	1746-01-6	10	ug/mL

Form I
INORGANIC ANALYSIS DATA SHEET
EPA 9060A m

SED-26C:3-5

Laboratory:	Analytical Resources, LLC				
Client:	Leon Environmental, LLC				
Project:	Port of Friday Harbor 2023				
Matrix:	Sediment	Laboratory ID:	23J0690-05 A	SDG:	23J0690
Sampled:	03/22/23 10:38	Prepared:	11/30/23 15:30	File ID:	CubeData_11032023@1525-193
% Solids:	78.85	Preparation:	No Prep Wet Chem	Analyzed:	11/02/23 09:39
Batch:	BLJ0931	Sequence:	SLJ0453	Initial/Final:	0.5011 g Wet / 0.5011 mL
Instrument:	TOC Cube			Calibration:	GE00052

CAS NO.	Analyte	Concentration (% dry)	Dilution Factor	MDL	MRL	Q
	Total Organic Carbon	0.20	1	0.02	0.02	H

Form I
INORGANIC ANALYSIS DATA SHEET
EPA 9060A m

SED-27C:0-1

Laboratory:	Analytical Resources, LLC				
Client:	Leon Environmental, LLC				
Project:	Port of Friday Harbor 2023				
Matrix:	Sediment	Laboratory ID:	23J0690-06 A	SDG:	23J0690
Sampled:	03/22/23 13:24	Prepared:	11/30/23 15:30	File ID:	CubeData_11032023@1525-194
% Solids:	71.93	Preparation:	No Prep Wet Chem	Analyzed:	11/02/23 10:09
Batch:	BLJ0931	Sequence:	SLJ0453	Initial/Final:	0.5262 g Wet / 0.5262 mL
Instrument:	TOC Cube			Calibration:	GE00052

CAS NO.	Analyte	Concentration (% dry)	Dilution Factor	MDL	MRL	Q
	Total Organic Carbon	0.52	1	0.02	0.02	H

PREPARATION BATCH SUMMARY

EPA 9060A m

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023
Batch: BLJ0931 Batch Matrix: Solid
Preparation: No Prep Wet Chem

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SED-26C:3-5	23J0690-05	eData_11032023@1525-	11/30/23 15:30	
SED-27C:0-1	23J0690-06	eData_11032023@1525-	11/30/23 15:30	
Blank	BLJ0931-BLK1	eData_11032023@1525-	10/30/23 15:30	
LCS	BLJ0931-BS1	eData_11032023@1525-	10/30/23 15:30	

Form I

METHOD BLANK DATA SHEET

EPA 9060A m

TotalAnalytes

Blank

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023
Batch: BLJ0931
Laboratory ID: BLJ0931-BLK1
Prepared: 10/30/23 15:30
Matrix: Solid
Preparation: No Prep Wet Chem
Analyzed: 10/31/23 19:23
Sequence: SLJ0453
Calibration: GE00052
Instrument: TOC Cube

CAS NO.	Analyte	Concentration (% wet)	Dilution Factor	MDL	MRL	Q
	Total Organic Carbon	ND	1	0.02	0.02	U

LCS / LCS DUPLICATE RECOVERY

EPA 9060A m

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Matrix:	Solid	Analyzed:	10/31/23 20:53
Batch:	BLJ0931	Laboratory ID:	BLJ0931-BS1
Preparation:	No Prep Wet Chem	Sequence Name:	LCS
Initial/Final:	0.0221 g / 0.0221 mL		

COMPOUND	SPIKE ADDED (% wet)	LCS CONCENTRATION (% wet)	Q	LCS % REC. #	QC LIMITS REC.
Total Organic Carbon	44.4	45.7		103	80 - 120

* Indicates values outside of QC limits

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 9060A m

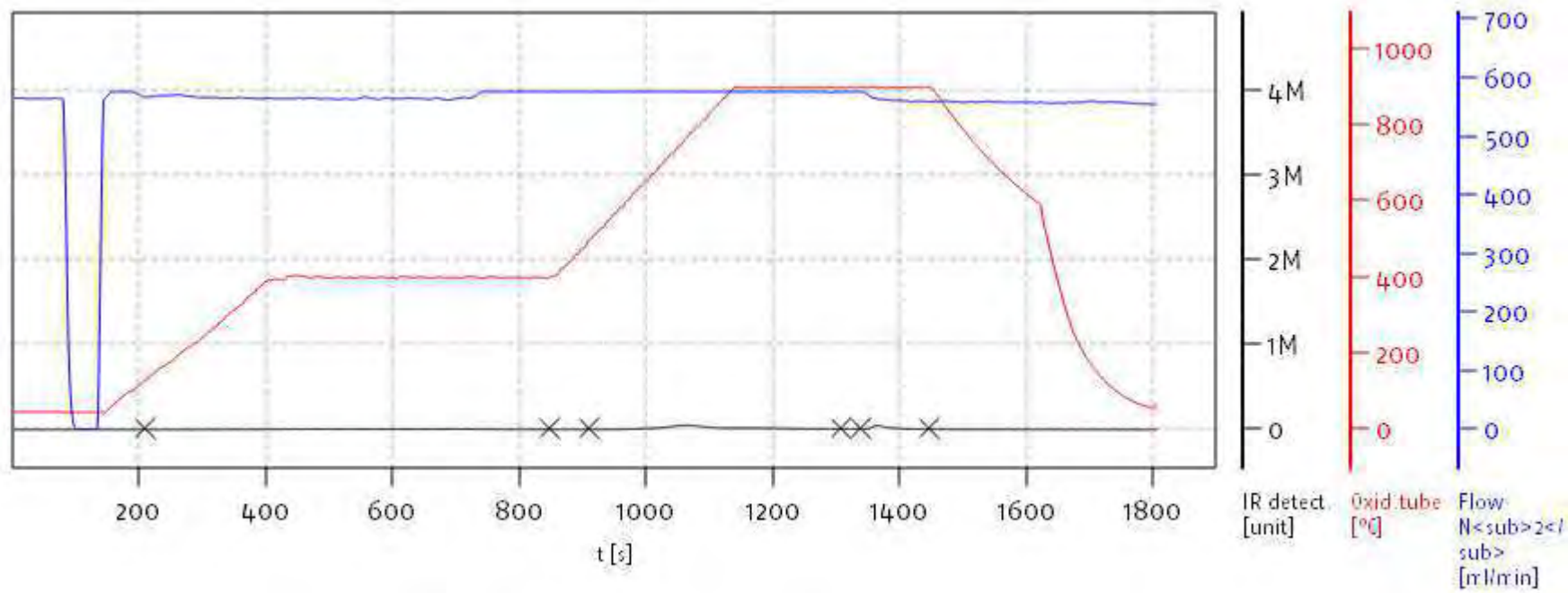
Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Sequence:	SLE0270	Instrument:	TOC Cube
		Calibration:	GE00052

Sample Name	Lab Sample ID	Lab File ID	Matrix	Analysis Date/Time
Cal Standard	SLE0270-CAL1	CubeData_05182023@1024b-101	NA	05/17/23 12:46
Cal Standard	SLE0270-CAL2	CubeData_05182023@1024b-102	NA	05/17/23 13:16
Cal Standard	SLE0270-CAL3	CubeData_05182023@1024b-103	NA	05/17/23 13:46
Cal Standard	SLE0270-CAL4	CubeData_05182023@1024b-104	NA	05/17/23 14:16
Cal Standard	SLE0270-CAL5	CubeData_05182023@1024b-105	NA	05/17/23 14:47
Cal Standard	SLE0270-CAL6	CubeData_05182023@1024b-106	NA	05/17/23 15:17
Cal Standard	SLE0270-CAL7	CubeData_05182023@1024b-107	NA	05/17/23 15:47
Cal Standard	SLE0270-CAL8	CubeData_05182023@1024b-108	NA	05/17/23 16:17
Cal Standard	SLE0270-CAL9	CubeData_05182023@1024b-109	NA	05/17/23 16:47
Cal Standard	SLE0270-CALA	CubeData_05182023@1024b-110	NA	05/17/23 17:17
Cal Standard	SLE0270-CALB	CubeData_05182023@1024b-111	NA	05/17/23 17:47
Cal Standard	SLE0270-CALC	CubeData_05182023@1024b-112	NA	05/17/23 18:18
Cal Standard	SLE0270-CALD	CubeData_05182023@1024b-113	NA	05/17/23 18:48
Cal Standard	SLE0270-CALE	CubeData_05182023@1024b-114	NA	05/17/23 19:18
Cal Standard	SLE0270-CALF	CubeData_05182023@1024b-115	NA	05/17/23 19:48
Cal Standard	SLE0270-CALG	CubeData_05182023@1024b-116	NA	05/17/23 20:18
Cal Standard	SLE0270-CALH	CubeData_05182023@1024b-117	NA	05/17/23 20:48
Cal Standard	SLE0270-CALI	CubeData_05182023@1024b-118	NA	05/17/23 21:19
Cal Standard	SLE0270-CALJ	CubeData_05182023@1024b-119	NA	05/17/23 21:49
Cal Standard	SLE0270-CALK	CubeData_05182023@1024b-120	NA	05/17/23 22:19
Initial Cal Check	SLE0270-ICV1	CubeData_05182023@1024b-128	NA	05/18/23 02:21
Initial Cal Blank	SLE0270-ICB1	CubeData_05182023@1024b-127	NA	05/18/23 02:51
Calibration Check	SLE0270-CCV1	CubeData_05182023@1024b-126	NA	05/18/23 04:21
Calibration Blank	SLE0270-CCB1	CubeData_05182023@1024b-125	NA	05/18/23 04:52
Cal Standard	SLE0270-CALL	CubeData_05182023@1024b-121	NA	05/18/23 09:47
Cal Standard	SLE0270-CALM	CubeData_05182023@1024b-122	NA	05/18/23 09:48
Cal Standard	SLE0270-CALN	CubeData_05182023@1024b-123	NA	05/18/23 09:49
Cal Standard	SLE0270-CALO	CubeData_05182023@1024b-124	NA	05/18/23 09:49

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
1	1	BLANK	1.00		CARBON	5/ 17/2023 11:46 AM	bl	0.000	83 718	0.000	0.000	65 731	251 400	0.000	0.000	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:43:39 2023

elementar
EXCELLENCE IN ELEMENTS

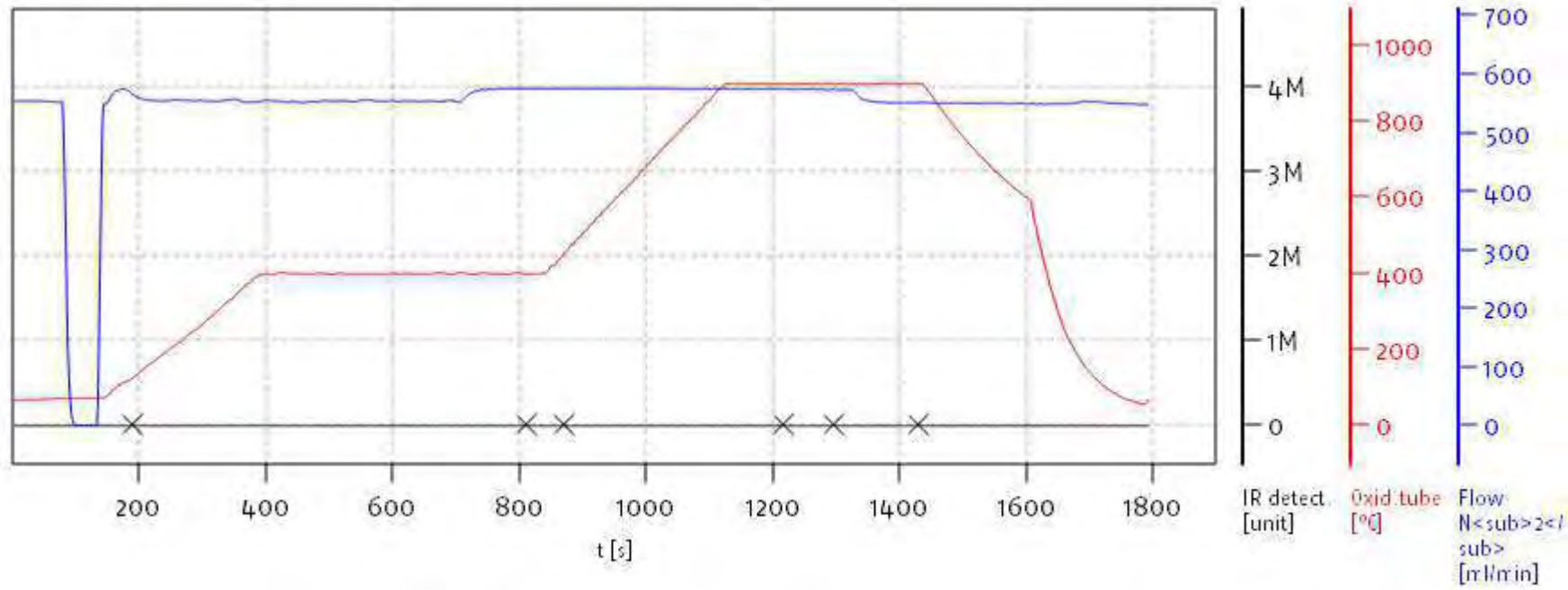
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
2	2	BLANK	1.00		CARBON	5/ 17/2023 12:16 PM	bl	0.000	3 043	0.000	0.000	273	1	0.000	0.000	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:43:39 2023

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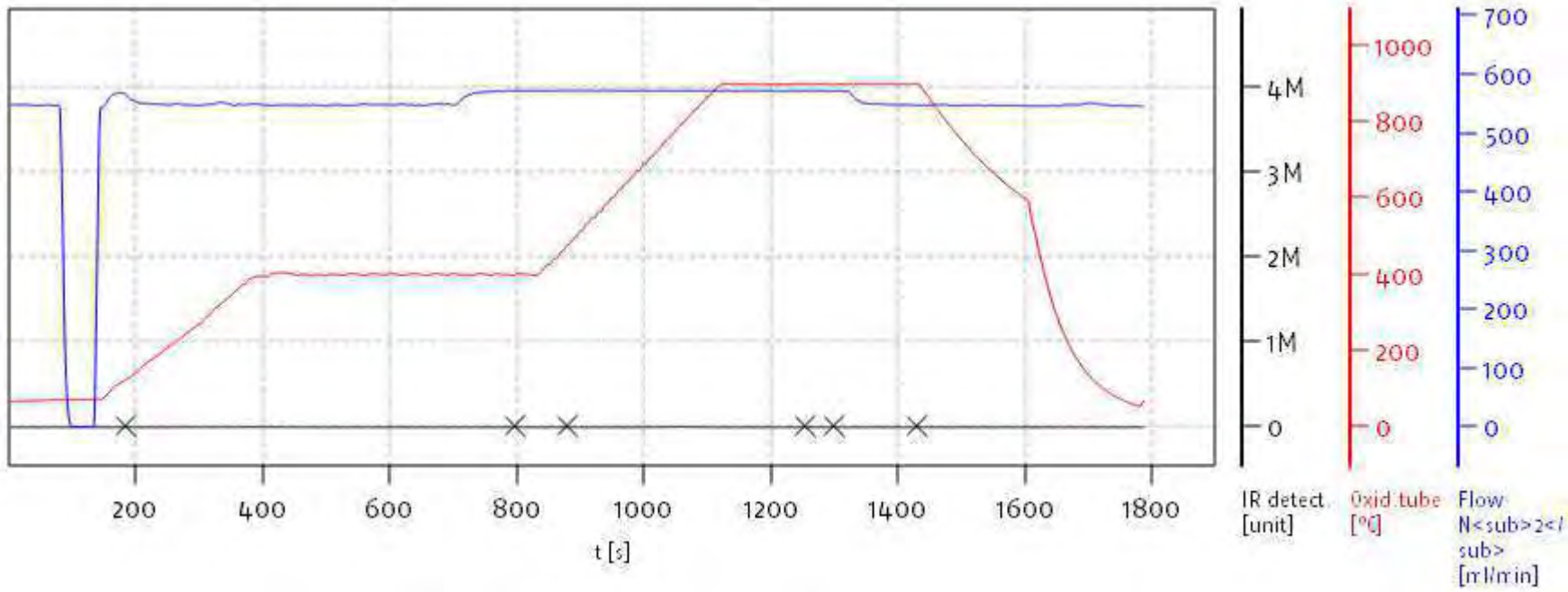
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
3	3	SLE0270-CAL1	200.00	0.0025	CARBON	5/17/2023 12:46 PM	bl,C2u	0.014	12 167	0.024	0.002	431	10 396	0.012	0.010	1.0000	1.0000



Name:

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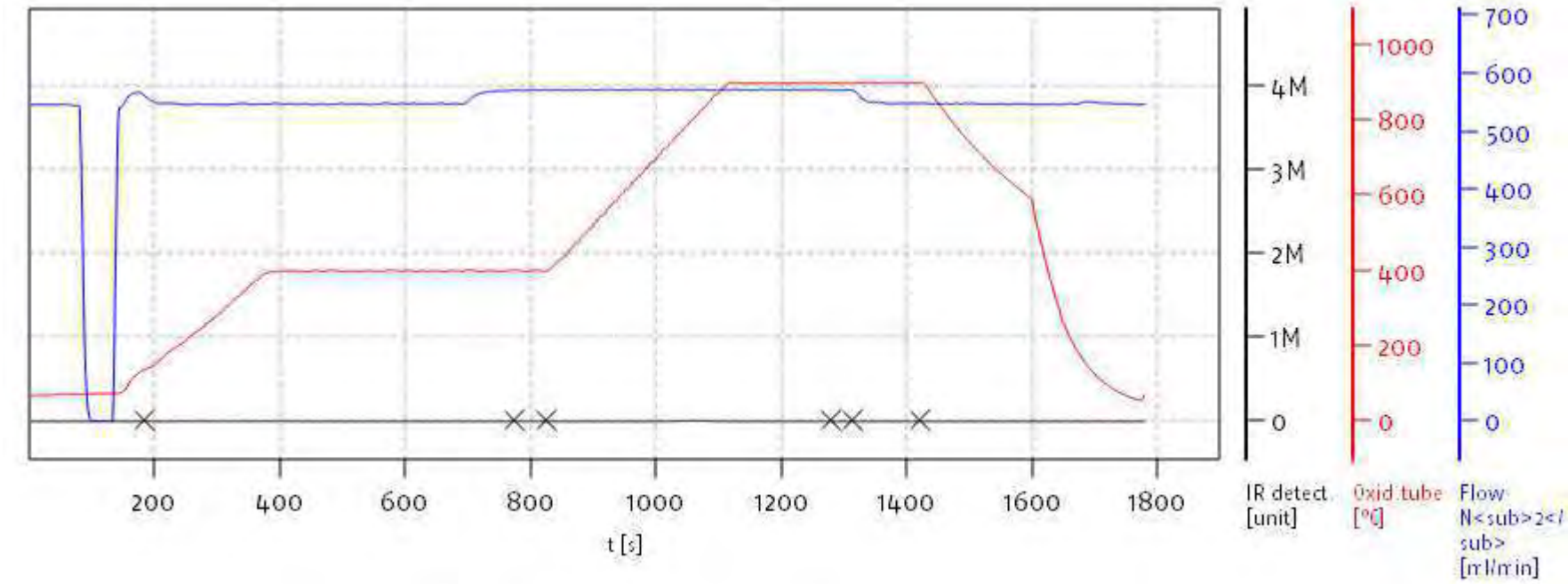
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
4	4	SLE0270-CAL2	200.00	0.0050	CARBON	5/17/2023 1:16 PM	bl,C2u	0.013	10 893	0.029	0.002	141	18 320	0.011	0.017	1.0000	1.0000



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soliTOC V2.0.2 (31015f9) 2018-11-19
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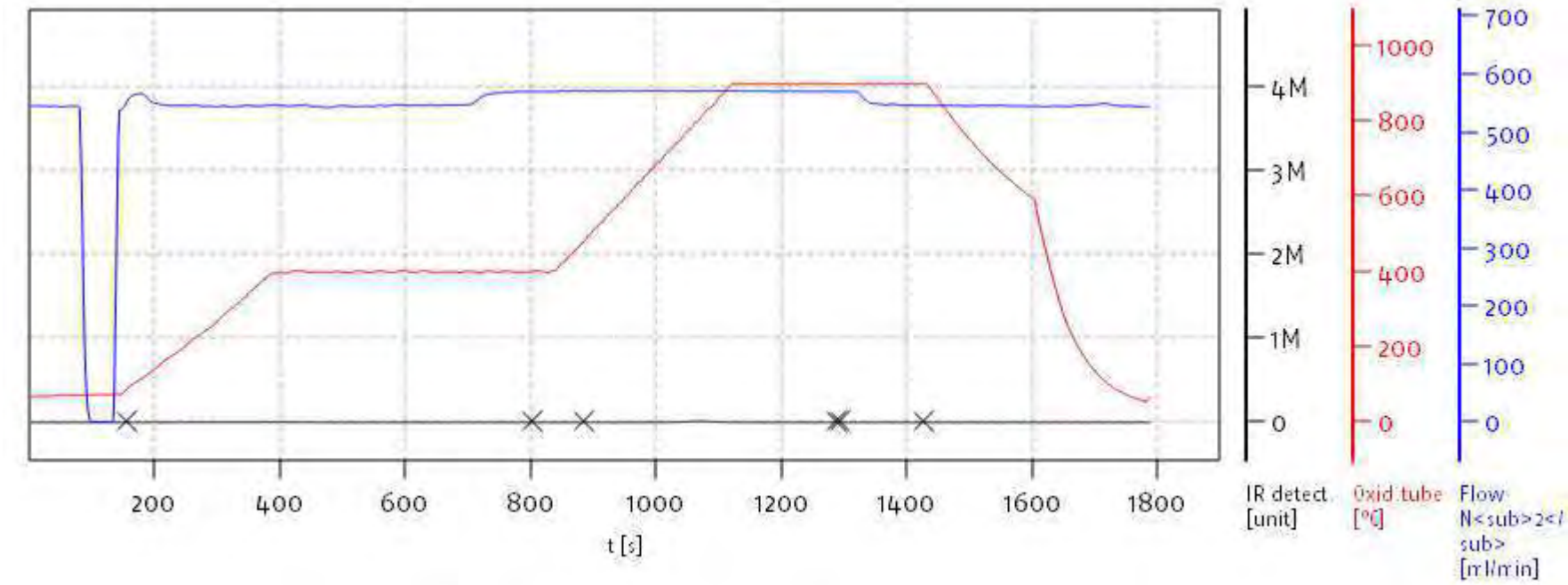
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EXCELLENCE IN ELEMENTS

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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
5	5	SLE0270-CAL3	200.00	0.0070	CARBON	5/17/2023 1:46 PM	bl,C2u	0.018	16 667	0.043	0.002	387	29 873	0.015	0.026	1.0000	1.0000



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Serial No: 0300.181017
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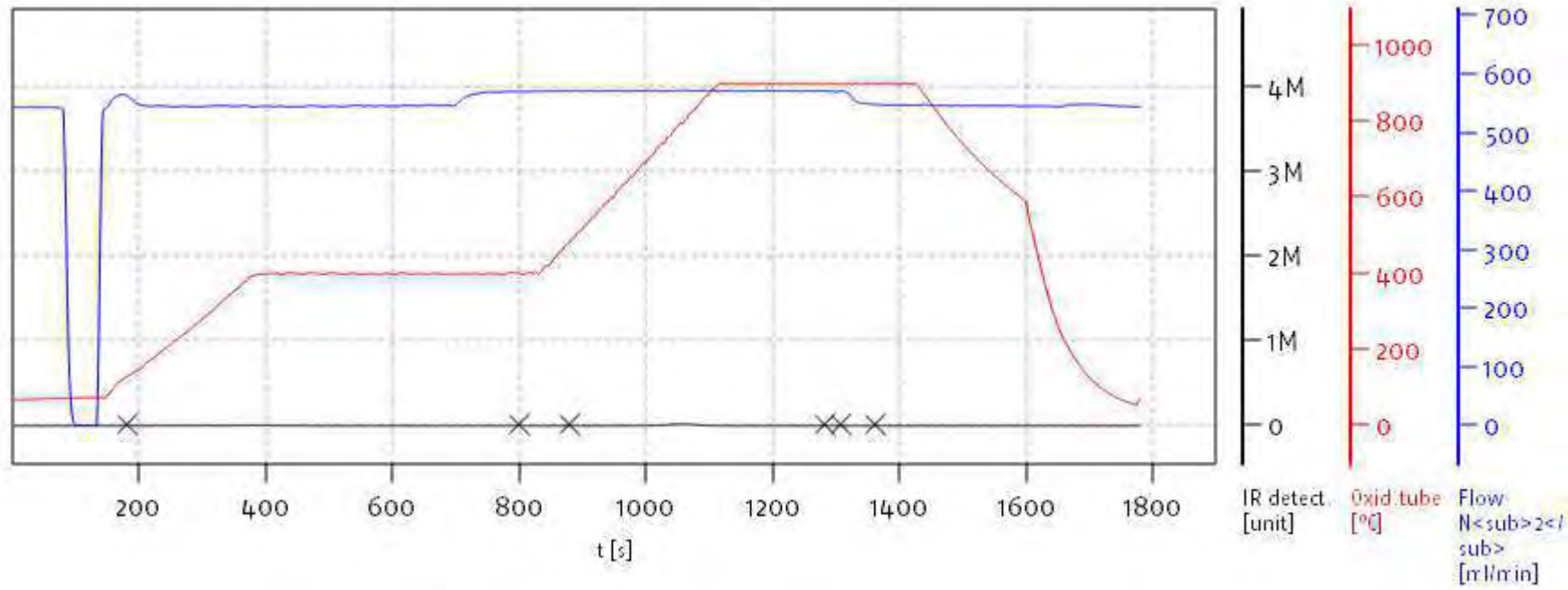
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EXCELLENCE IN ELEMENTS

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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
6	6	SLE0270-CAL4	200.00	0.0100	CARBON	5/17/2023 2:16 PM	bl,C2u	0.024	24 980	0.062	0.002	130	45 873	0.022	0.038	1.0000	1.0000



Name:

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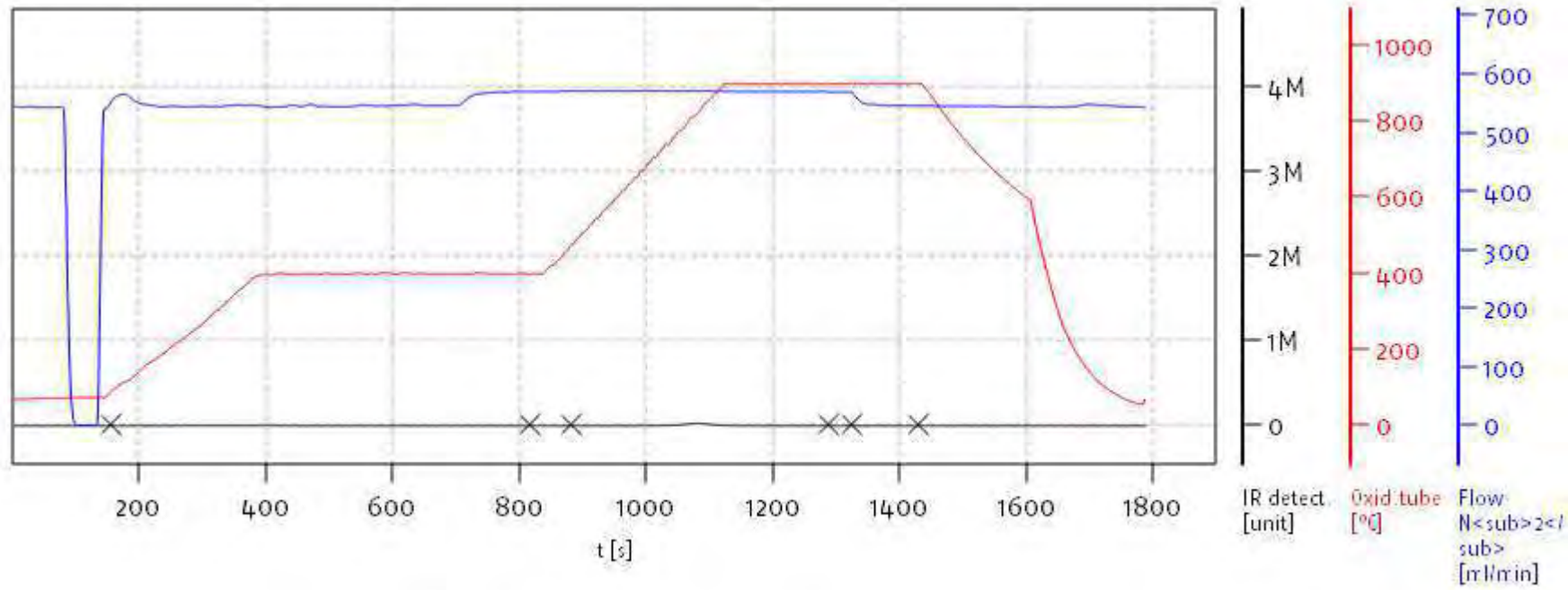
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EXCELLENCE IN ELEMENTS

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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
7	7	SLE0270-CAL5	200.00	0.0150	CARBON	5/17/2023 2:47 PM	bl,C2u	0.014	12 413	0.065	0.002	539	61 573	0.012	0.051	1.0000	1.0000



Name:

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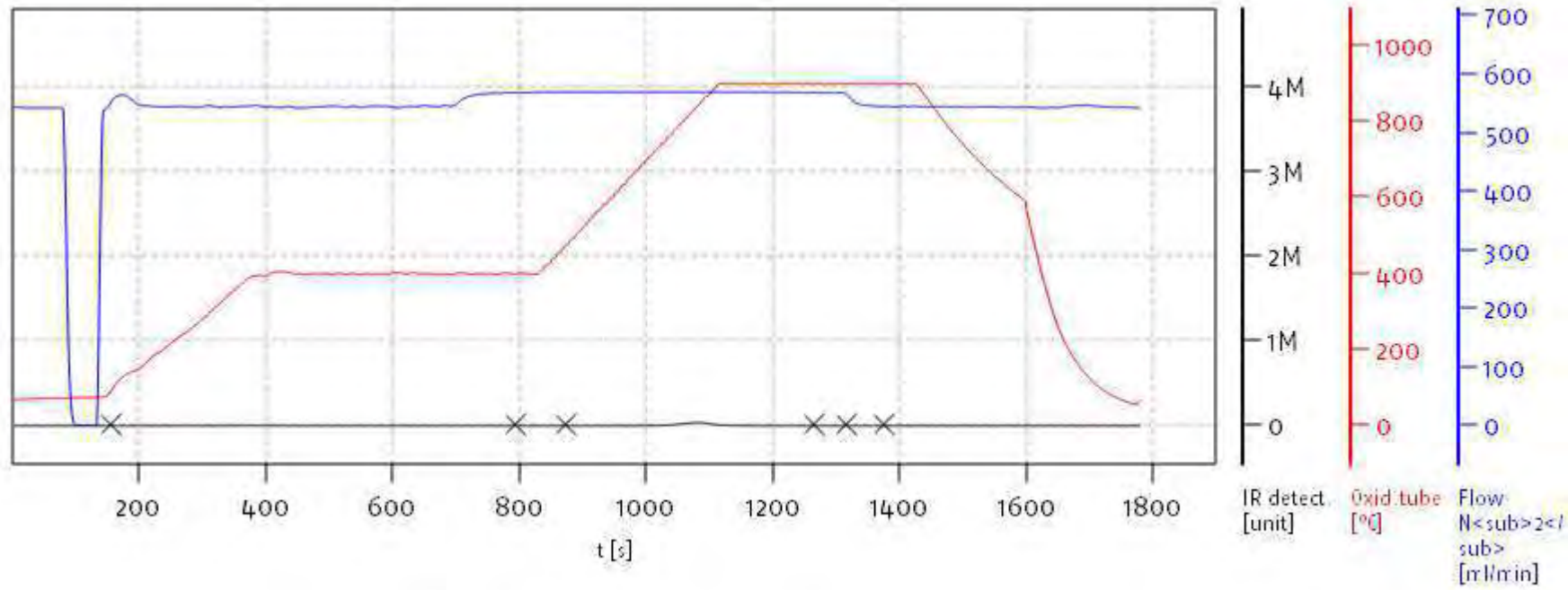
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Mode CCC

elementar
EXCELLENCE IN ELEMENTS

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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
8	8	SLE0270-CAL6	200.00	0.0200	CARBON	5/17/2023 3:17 PM	bl,C1u,C2u	0.011	7 999	0.079	0.002	170	84 086	0.008	0.068	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:43:39 2023

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Serial No: 0300.181017
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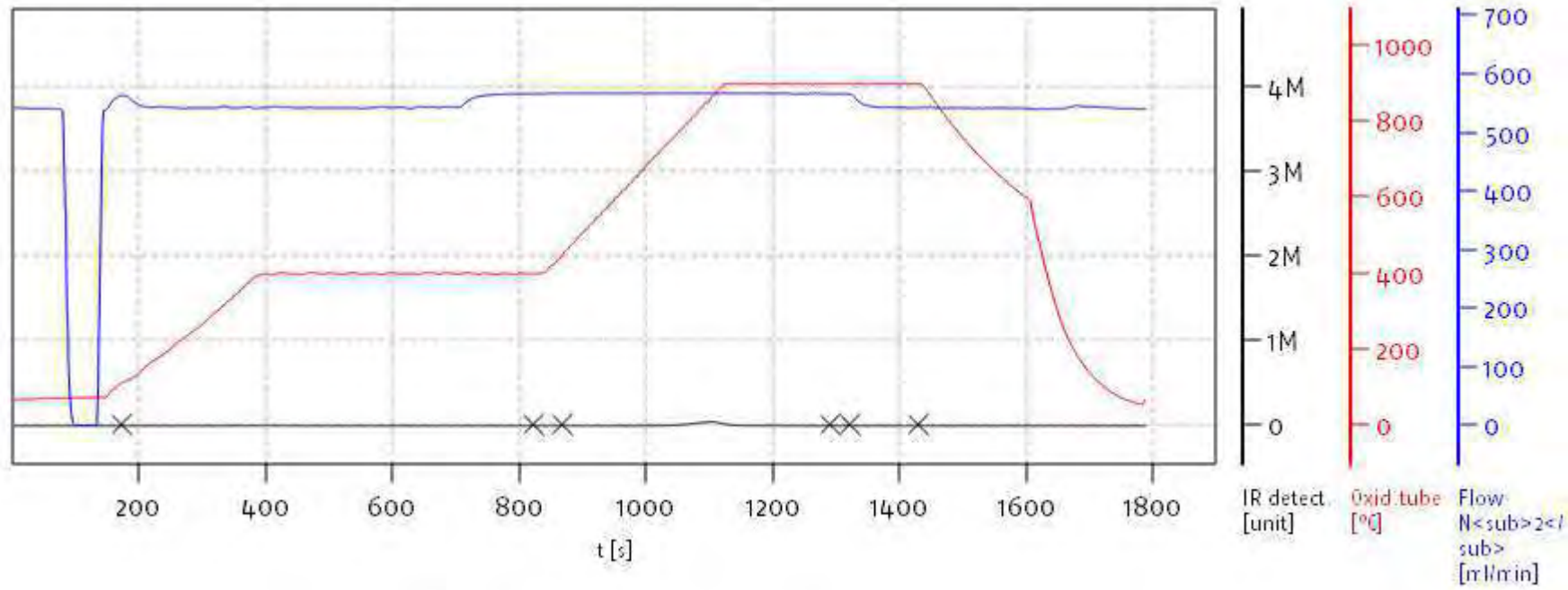
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EXCELLENCE IN ELEMENTS

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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
9	9	SLE0270-CAL7	200.00	0.0250	CARBON	5/17/2023 3:47 PM	bl,C1u,C2u	0.011	7 612	0.097	0.003	1 386	105 588	0.008	0.085	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:43:39 2023

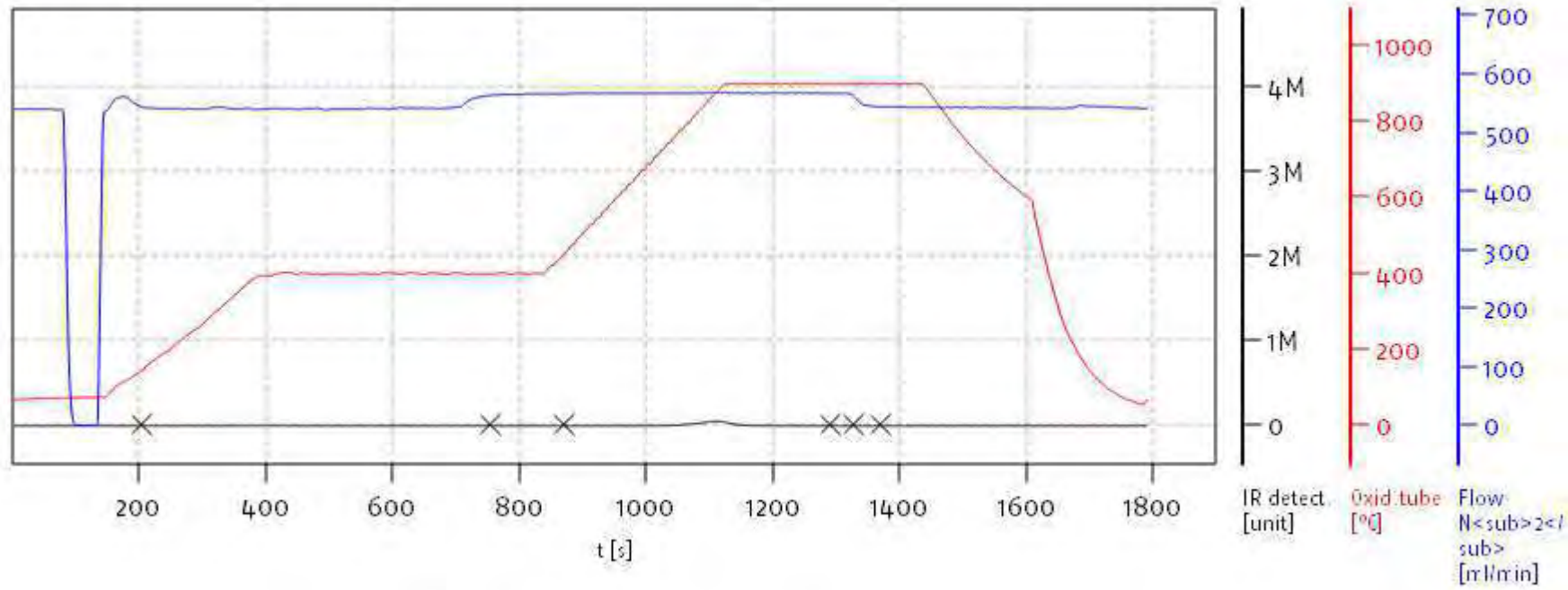
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EXCELLENCE IN ELEMENTS

soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
10	10	SLE0270-CAL8	200.00	0.0300	CARBON	5/17/2023 4:17 PM	bl,C1u,C2u	0.008	5 428	0.109	0.002	61	124 731	0.006	0.100	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:43:39 2023

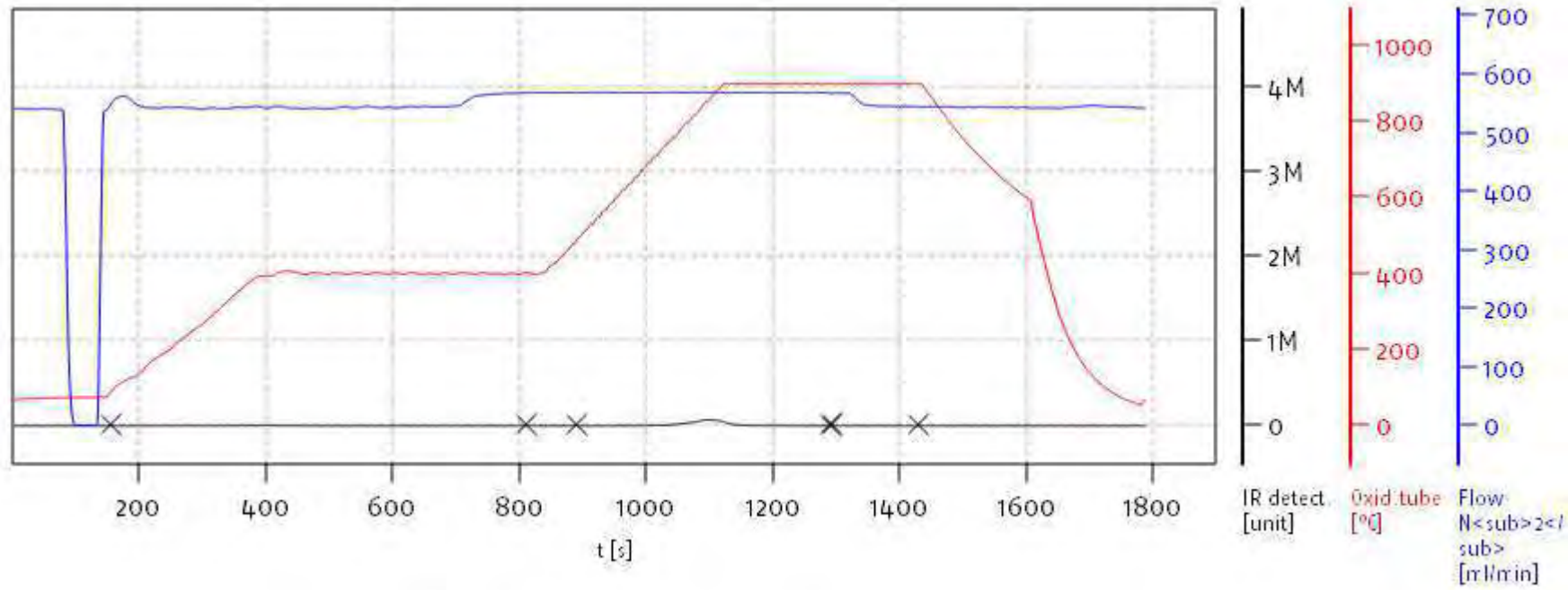
soliTOC V2.0.2 (31015f9) 2018-11-19
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Mode CCC

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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
11	11	SLE0270-CAL9	200.00	0.0400	CARBON	5/17/2023 4:47 PM	bl,C2u	0.019	17 233	0.167	0.003	1 274	185 567	0.016	0.148	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:43:39 2023

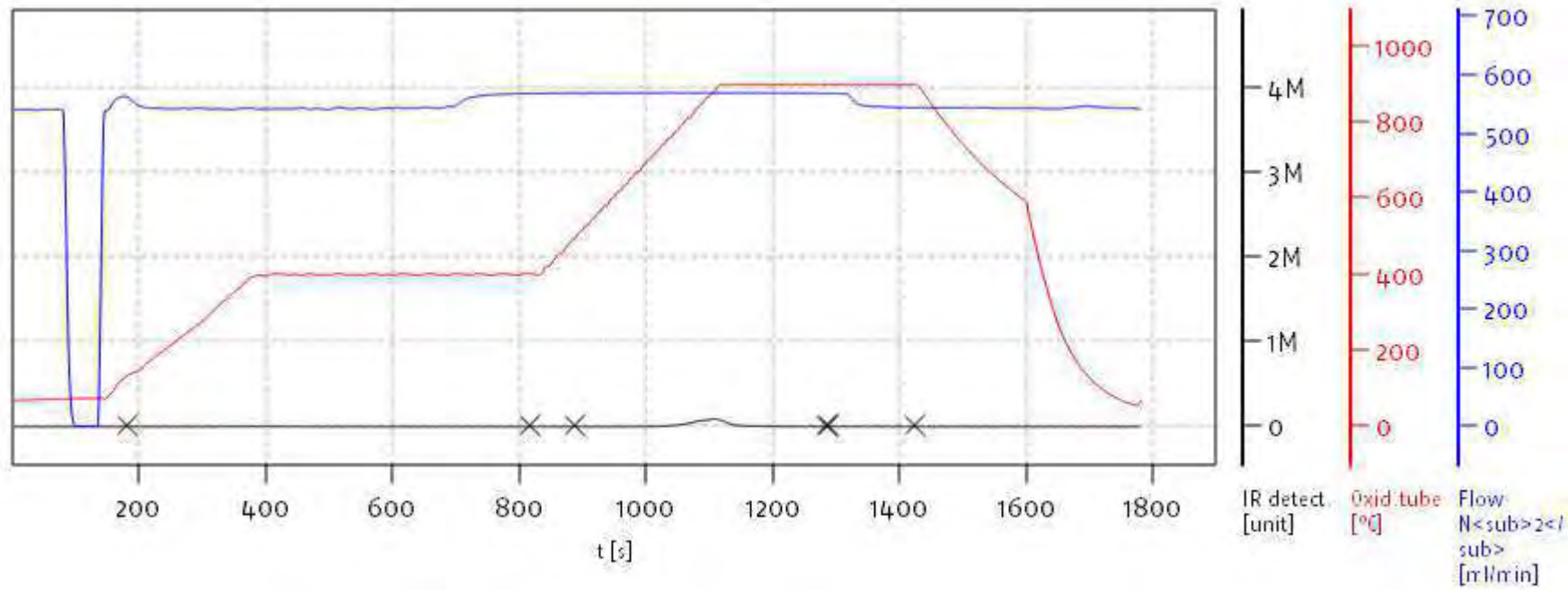
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
12	12	SLE0270-CALA	200.00	0.0500	CARBON	5/17/2023 5:17 PM	bl,C2u	0.018	11 766	0.202	0.007	6 123	230 855	0.011	0.184	1.0000	1.0000



Name:

Access: soliTOC superuser

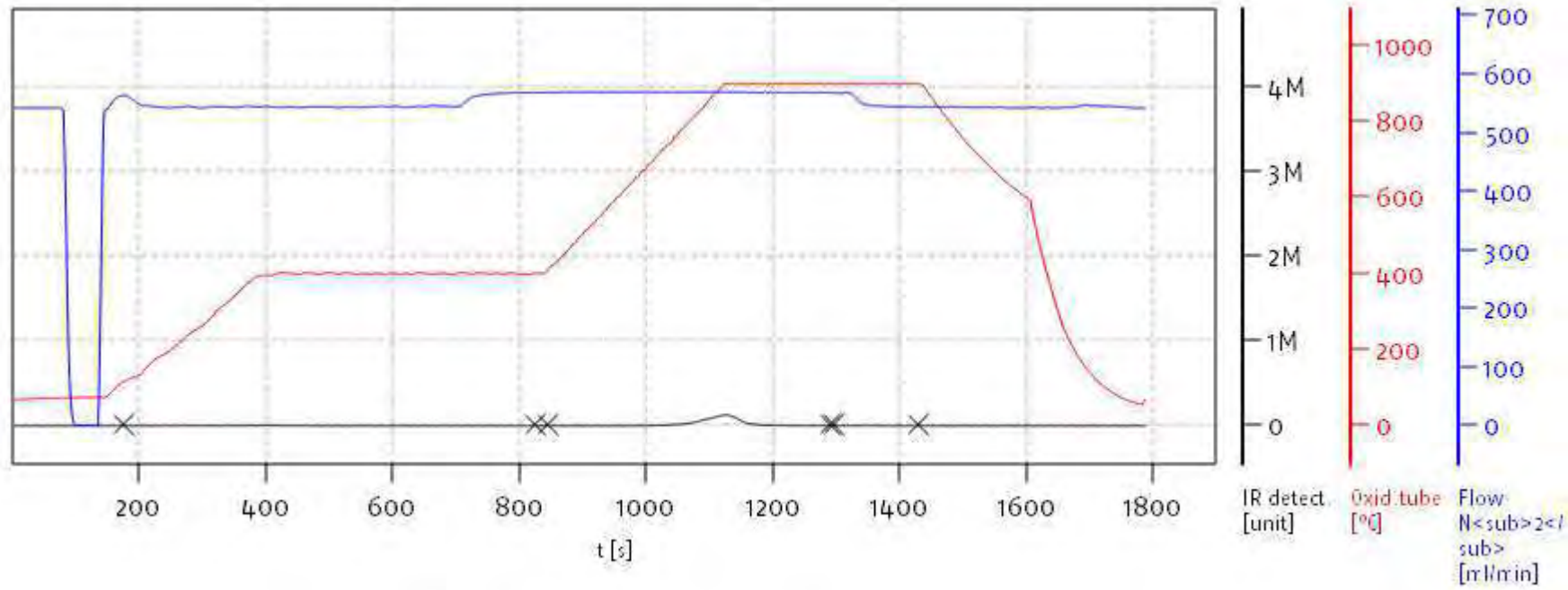
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Serial No: 0300.181017
Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
13	13	SLE0270-CALB	200.00	0.0040	CARBON	5/17/2023 5:47 PM	bl,C2u	0.022	18 635	0.291	0.005	3 969	339 170	0.017	0.269	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:43:39 2023

elementar
EXCELLENCE IN ELEMENTS

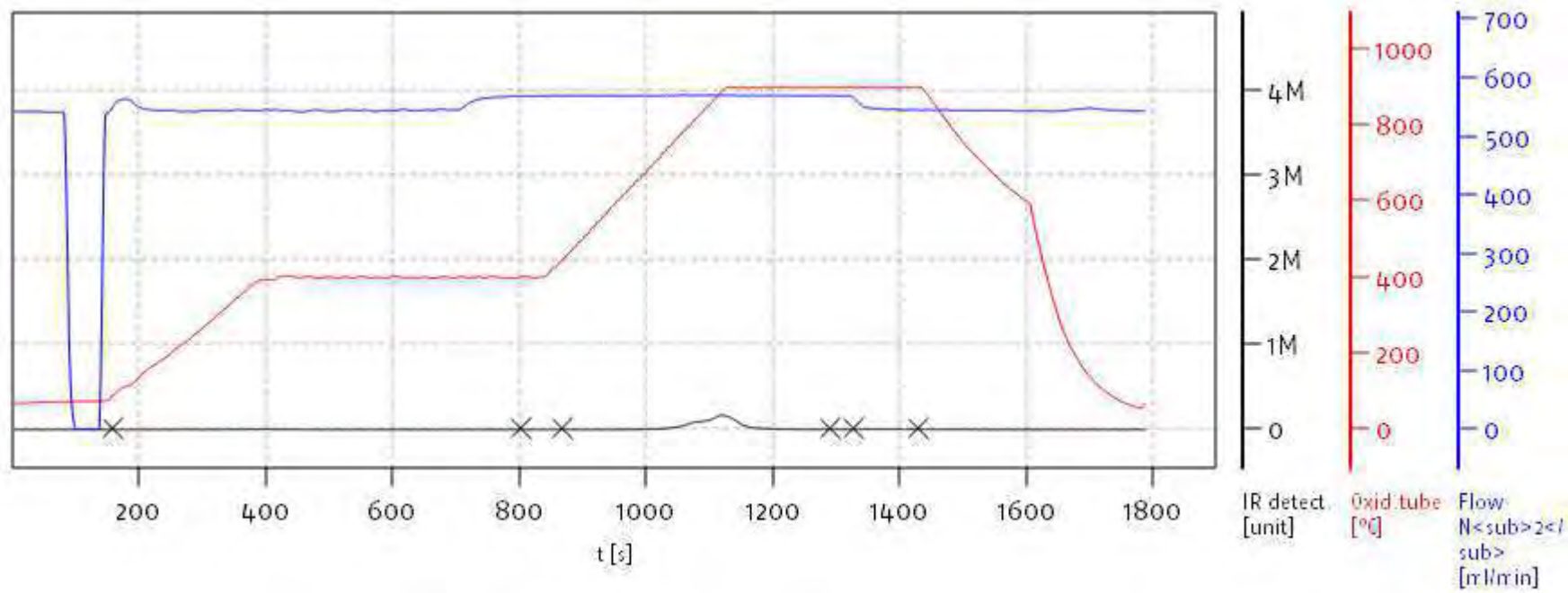
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Serial No: 0300.181017
Mode CCC

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
14	14	SLE0270-CALC	200.00	0.0050	CARBON	5/17/2023 6:18 PM	bl	0.026	14 893	0.405	0.012	12 639	478 044	0.014	0.379	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:43:39 2023

elementar
EXCELLENCE IN ELEMENTS

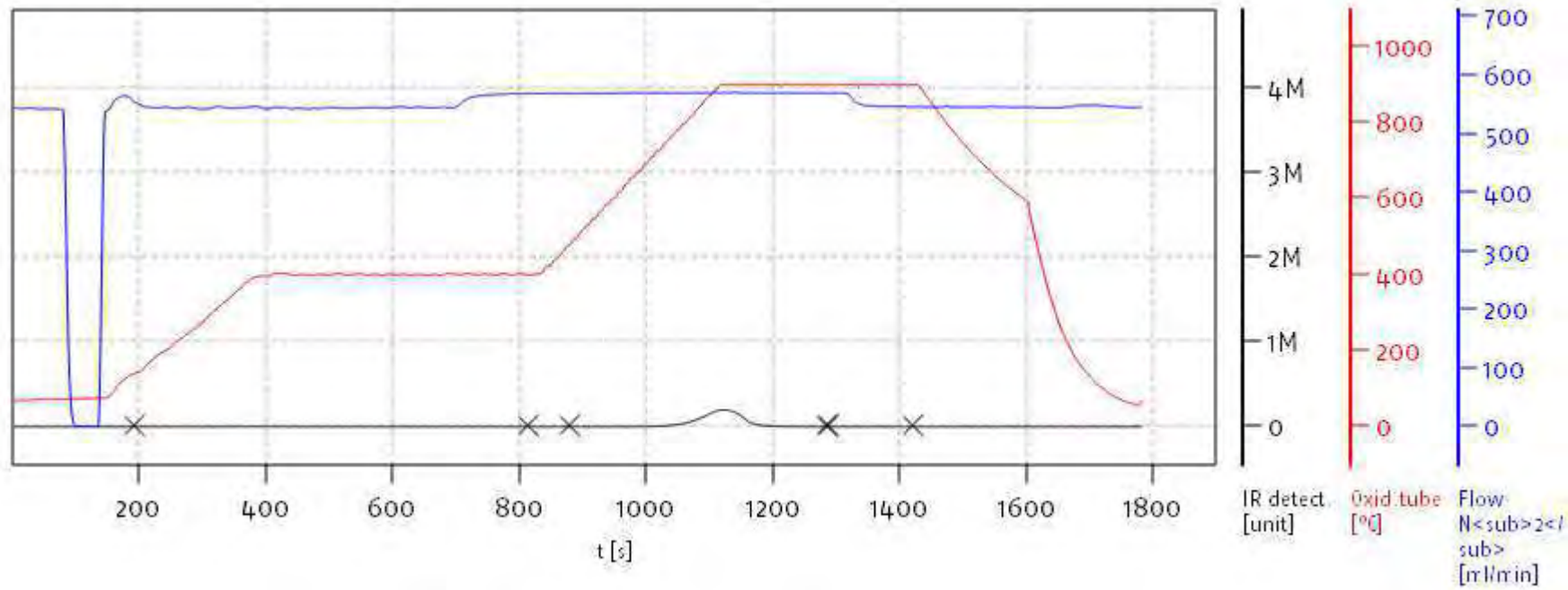
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Serial No: 0300.181017
Mode CCC

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
15	15	SLE0270-CALD	200.00	0.0070	CARBON	5/17/2023 6:48 PM	bl,C1u,C2u	0.010	6 787	0.465	0.002	420	574 876	0.007	0.455	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:43:39 2023

elementar
EXCELLENCE IN ELEMENTS

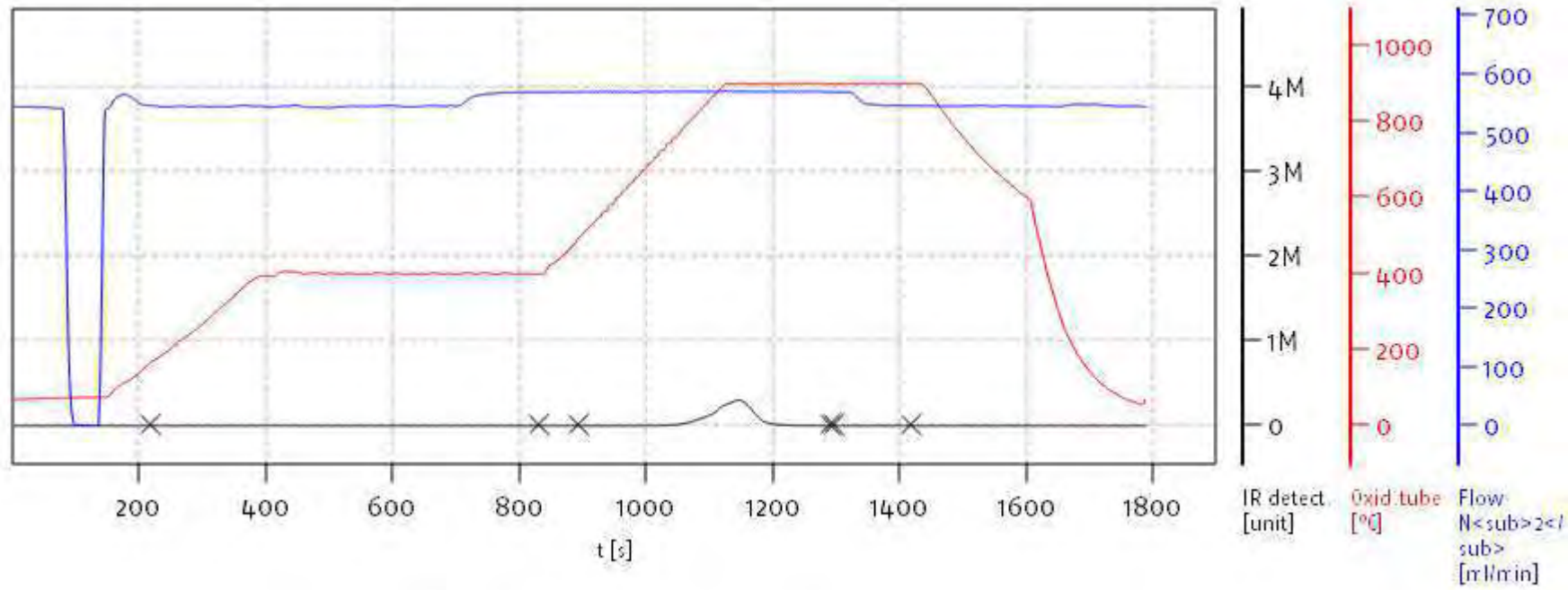
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
16	16	SLE0270-CALE	200.00	0.0100	CARBON	5/17/2023 7:18 PM	bl,C1u,C2u	0.008	4 408	0.667	0.003	771	832 670	0.006	0.658	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:43:39 2023

soliTOC V2.0.2 (31015f9) 2018-11-19
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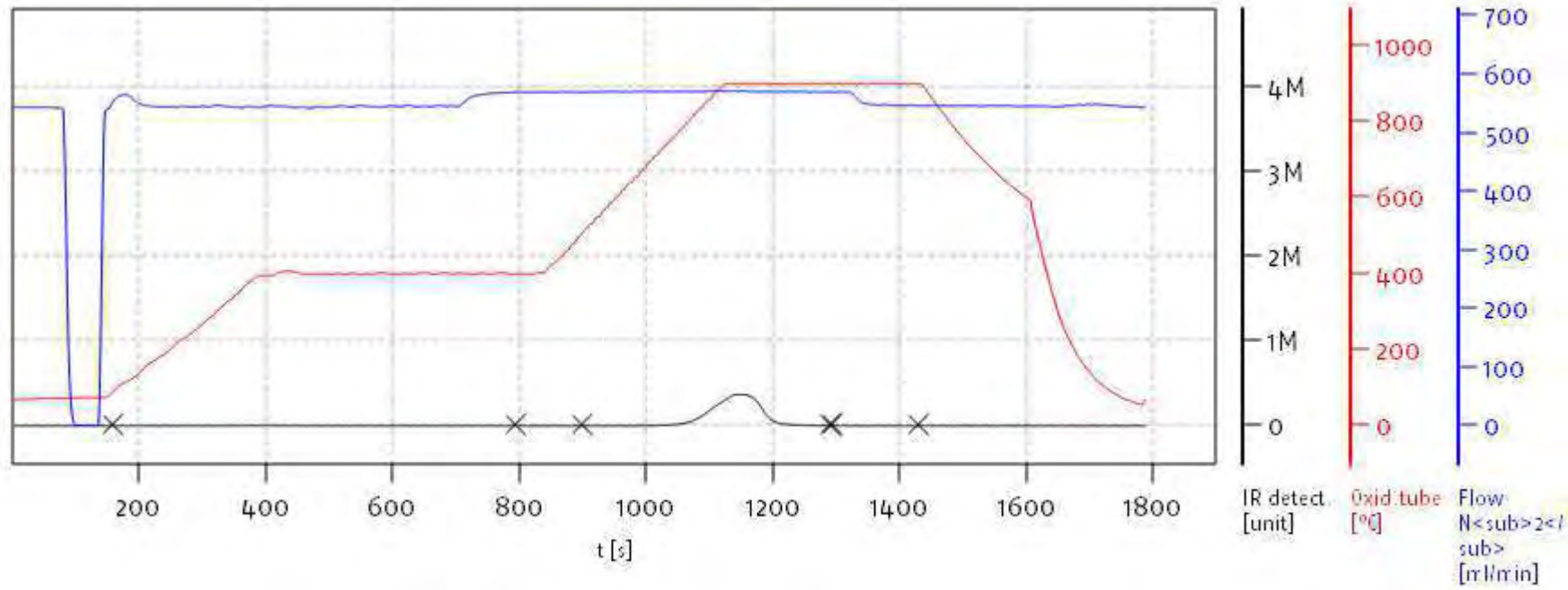
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
17	17	SLE0270-CALF	200.00	0.0150	CARBON	5/17/2023 7:48 PM	bl,C1u,C2u	0.012	8 494	0.984	0.003	1 464	1 230 304	0.009	0.972	1.0000	1.0000



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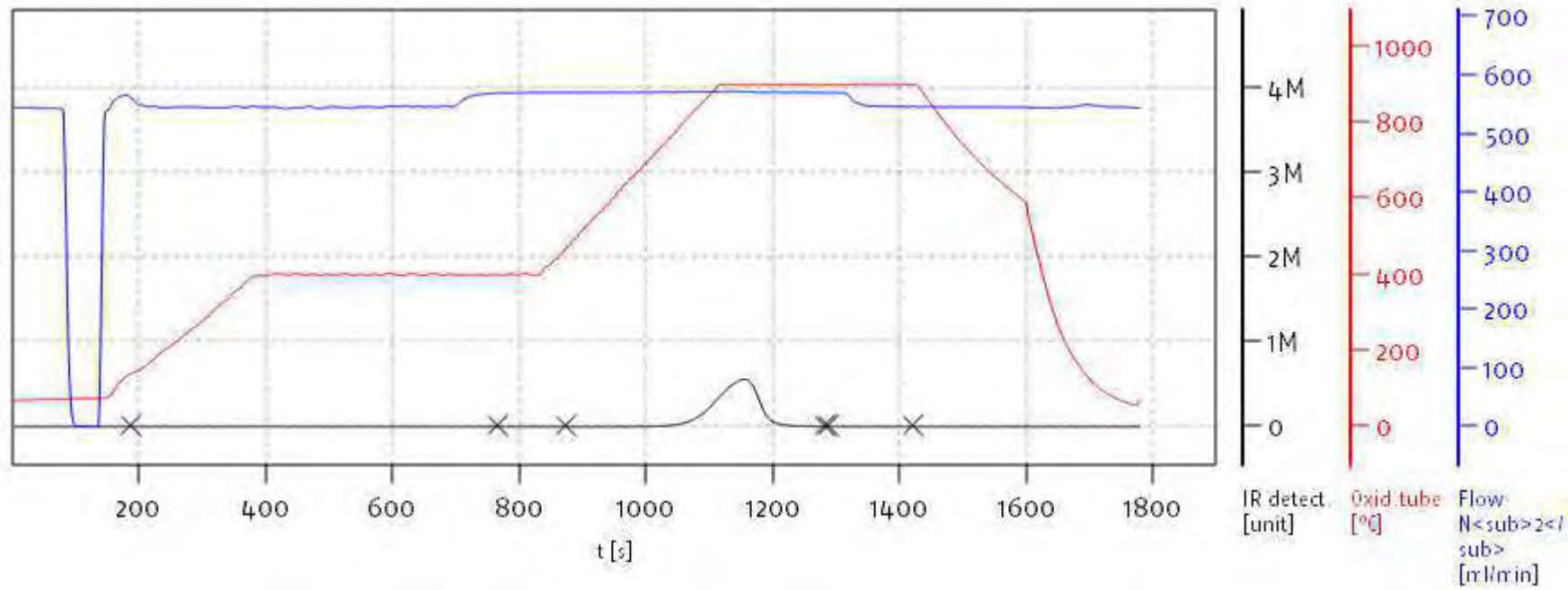
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
18	18	SLE0270-CALG	200.00	0.0200	CARBON	5/17/2023 8:18 PM	bl,C1u,C2u	0.010	5 359	1.331	0.004	1 864	1 673 425	0.006	1.321	1.0000	1.0000



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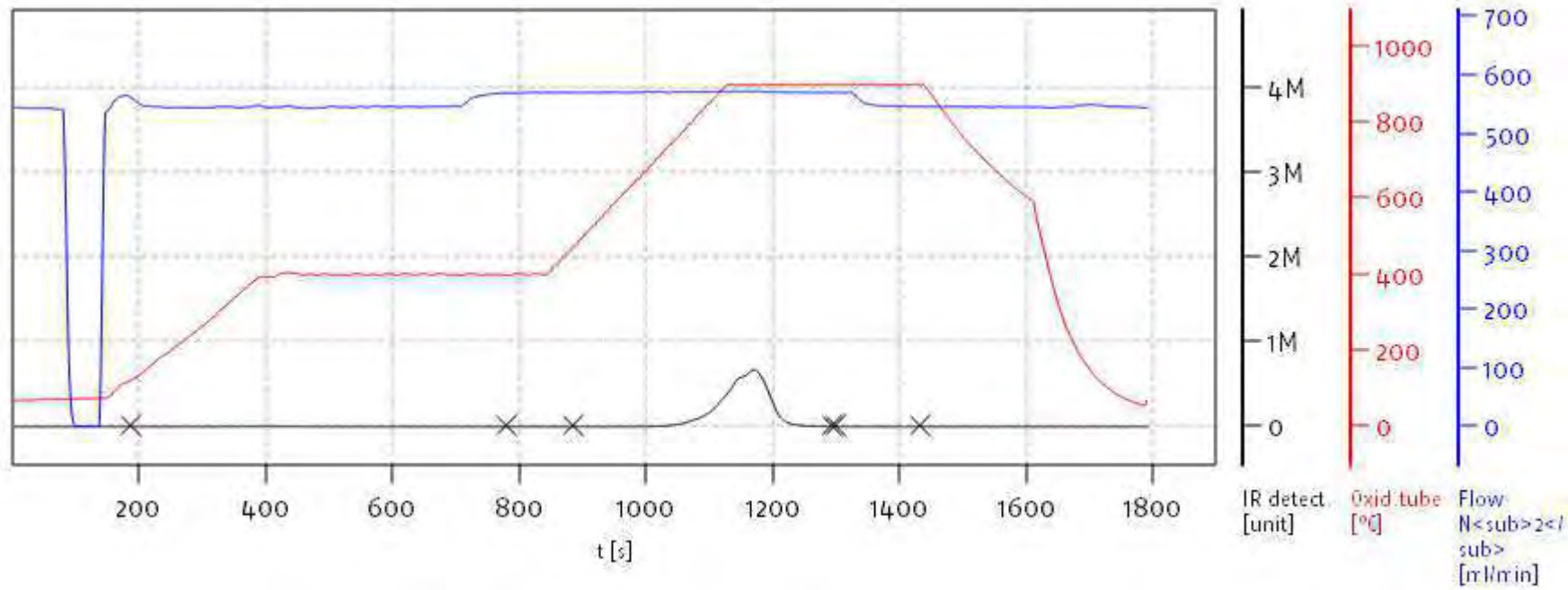
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Soli TOC Cube, Carbon
Balance: BAL3
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
19	19	SLE0270-CALH	200.00	0.0250	CARBON	5/17/2023 8:48 PM	bl,C2u	0.015	11 407	1.659	0.004	2 280	2 083 004	0.011	1.644	1.0000	1.0000



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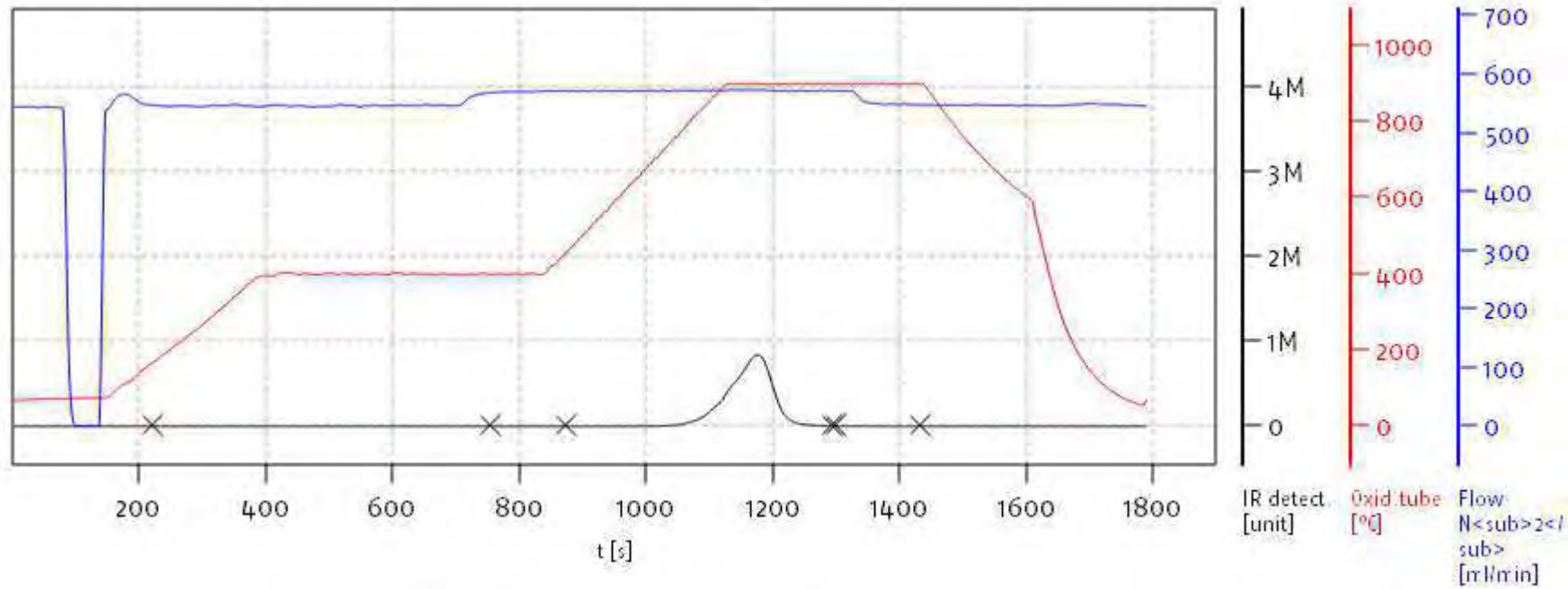
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
20	20	SLE0270-CALI	200.00	0.0300	CARBON	5/17/2023 9:19 PM	bl,C1u,C2u	0.009	2 781	1.981	0.005	3 895	2 498 427	0.004	1.971	1.0000	1.0000



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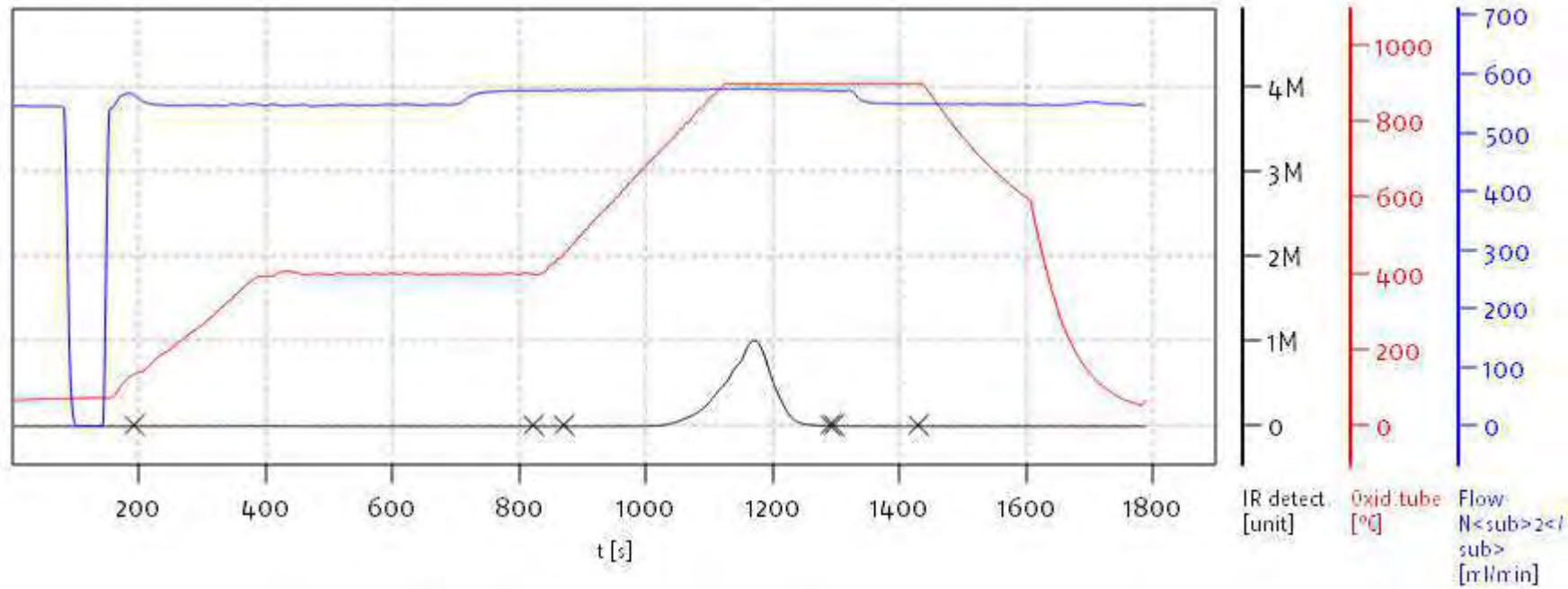
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
21	21	SLE0270-CALJ	200.00	0.0400	CARBON	5/17/2023 9:49 PM	bl,C2u	0.018	13 295	2.629	0.006	4 807	3 309 588	0.013	2.611	1.0000	1.0000



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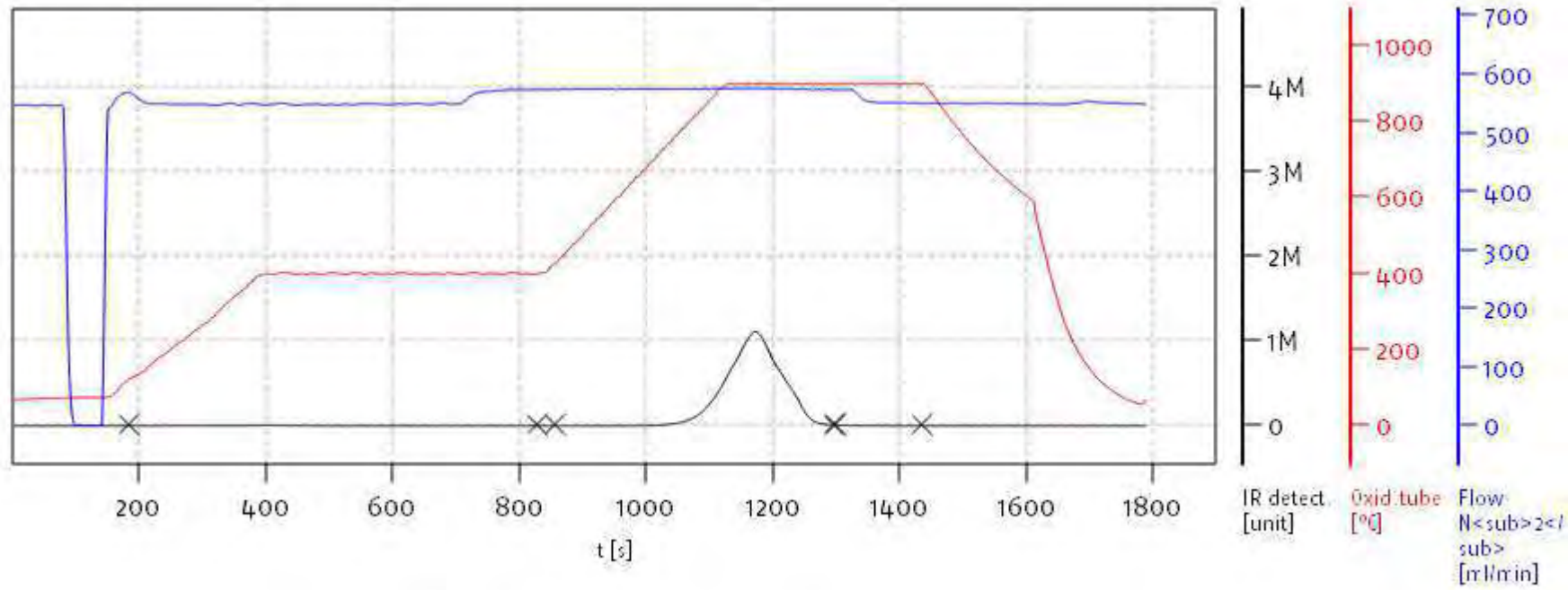
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
22	22	SLE0270-CALK	200.00	0.0500	CARBON	5/17/2023 10:19 PM	bl	0.031	25 022	3.285	0.009	9 148	4 126 050	0.022	3.254	1.0000	1.0000



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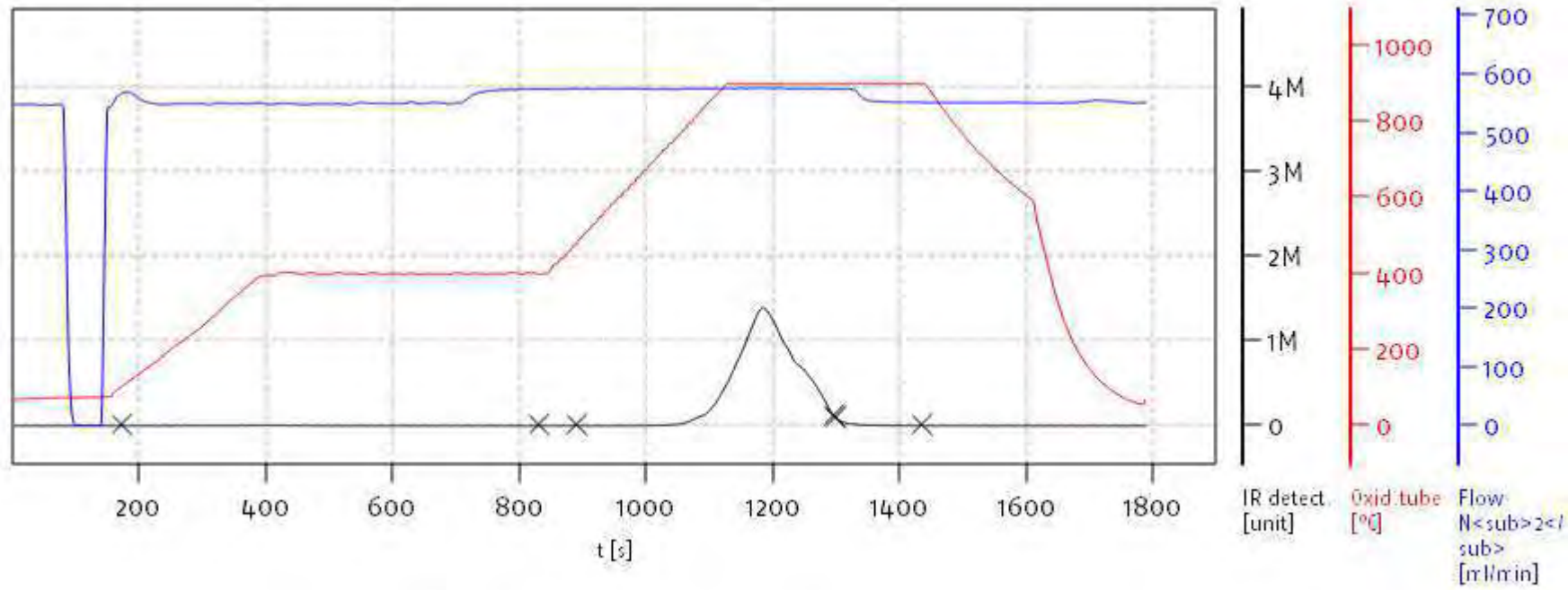
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Soli TOC Cube, Carbon
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
23	23	SLE0270-CALL	200.00	0.0700	CARBON	5/17/2023 10:49 PM	bl	0.069	21 598	4.597	0.050	60 794	5 741 652	0.019	4.528	1.0000	1.0000



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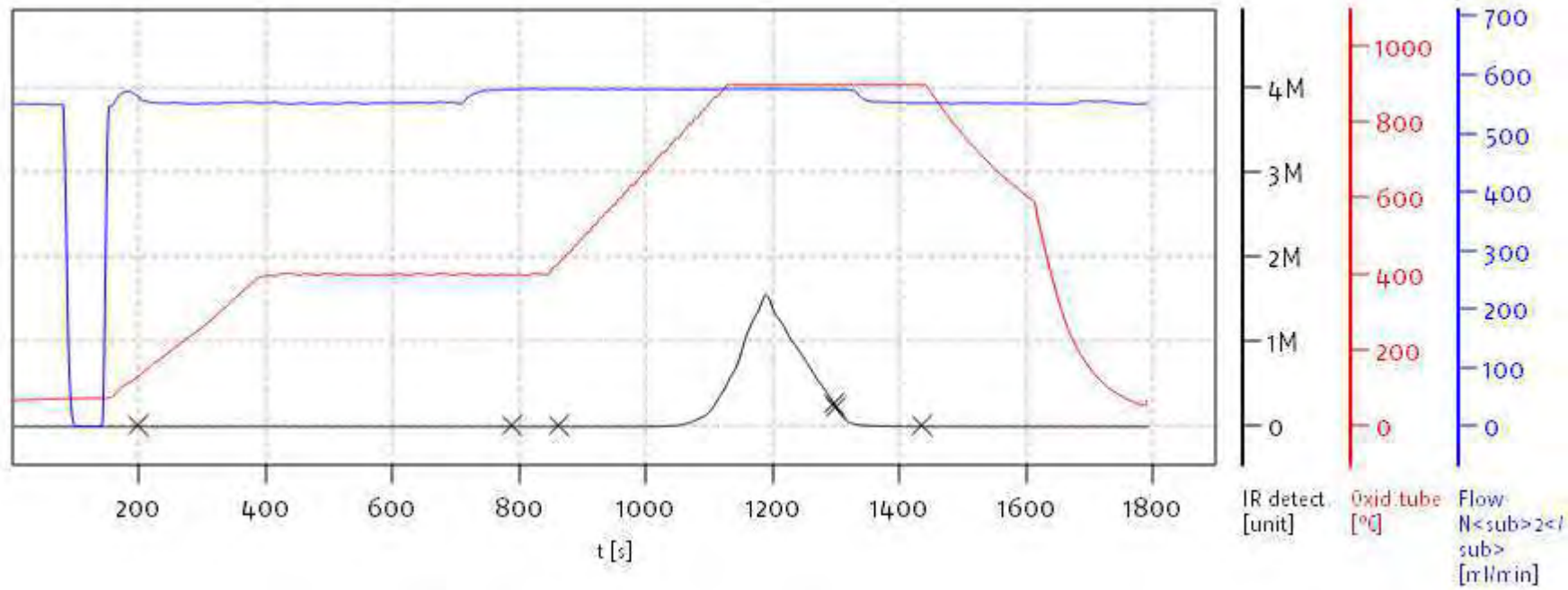
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
24	24	SLE0270-CALM	200.00	0.0800	CARBON	5/17/2023 11:19 PM	bl,C1u	0.112	5 408	5.212	0.106	131 494	6 467 914	0.006	5.100	1.0000	1.0000



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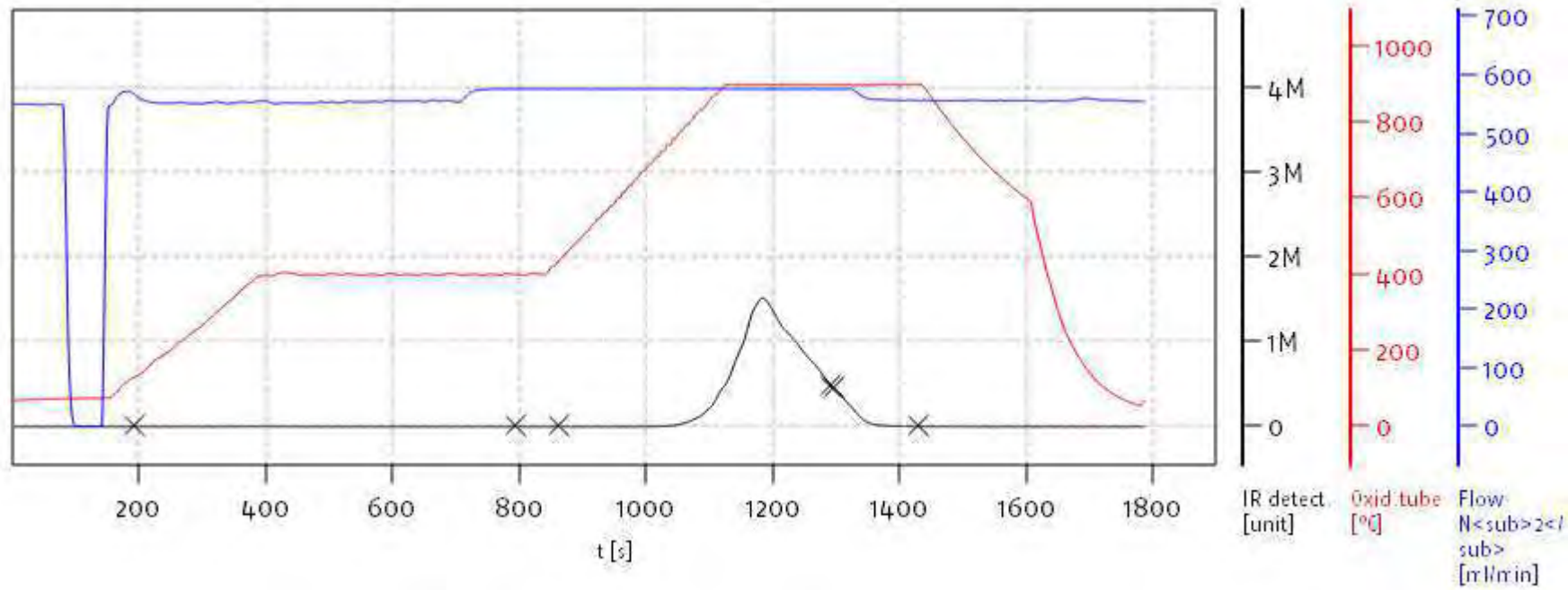
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
25	25	SLE0270-CALN	200.00	0.0900	CARBON	5/17/2023 11:50 PM	bl	0.408	8 745	5.832	0.399	503 842	6 879 212	0.009	5.424	1.0000	1.0000



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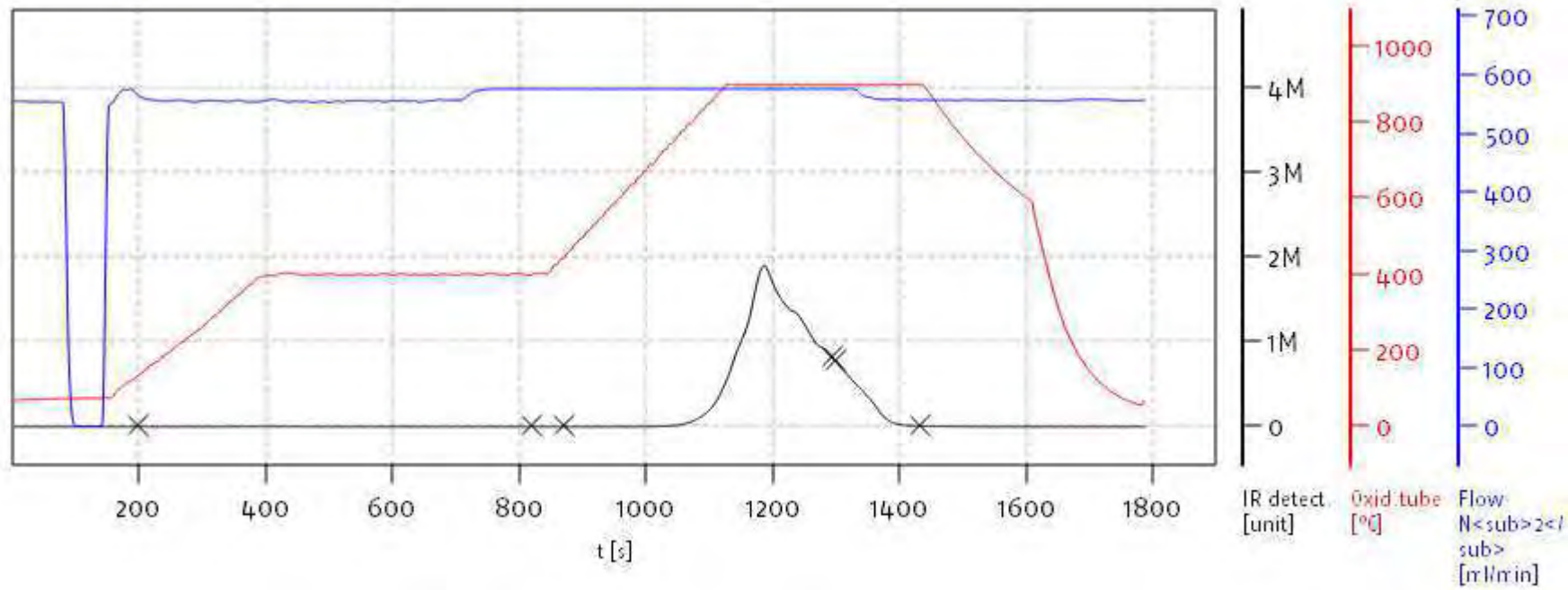
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
26	26	SLE0270-CALO	200.00	0.1200	CARBON	5/18/2023 12:20 AM	bl,C1u	1.074	6 993	7.759	1.066	1 350 231	8 478 912	0.008	6.685	1.0000	1.0000



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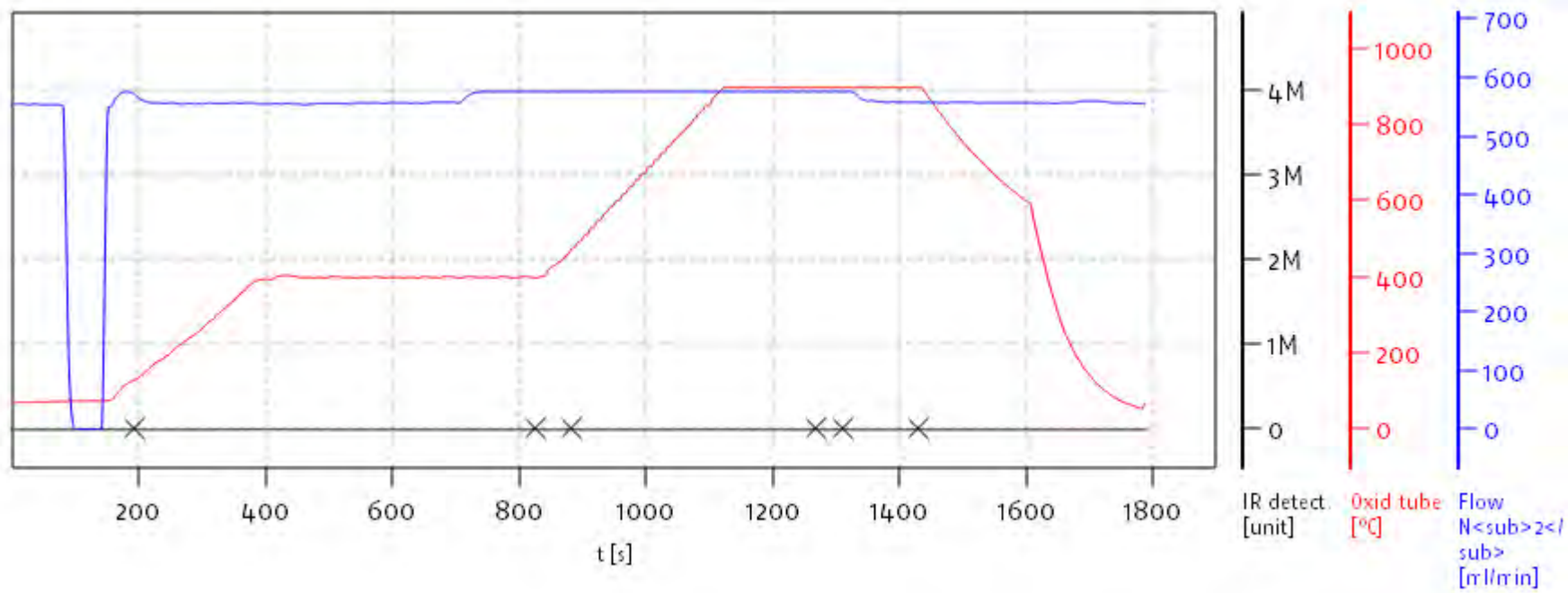
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
27	27	BLANK	1.00		CARBON	5/ 18/2023 12:50 AM	bl	0.000	5 379	0.000	0.000	0	959	0.000	0.000	1.0000	1.0000



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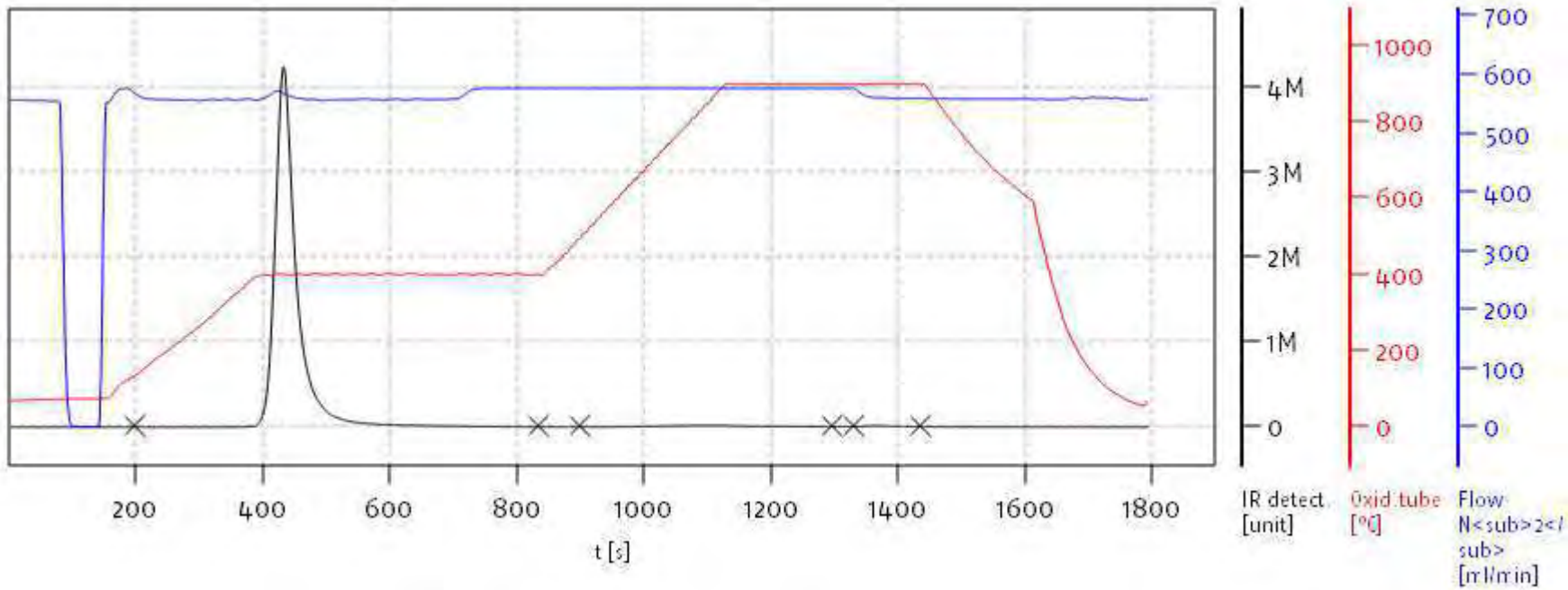
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
28	28	Dfactor	21.70		CARBON	5/18/2023 1:20 AM	bl	44.736	6 218 209	45.755	0.291	37 376	137 647	44.446	1.019	0.9835	1.0000



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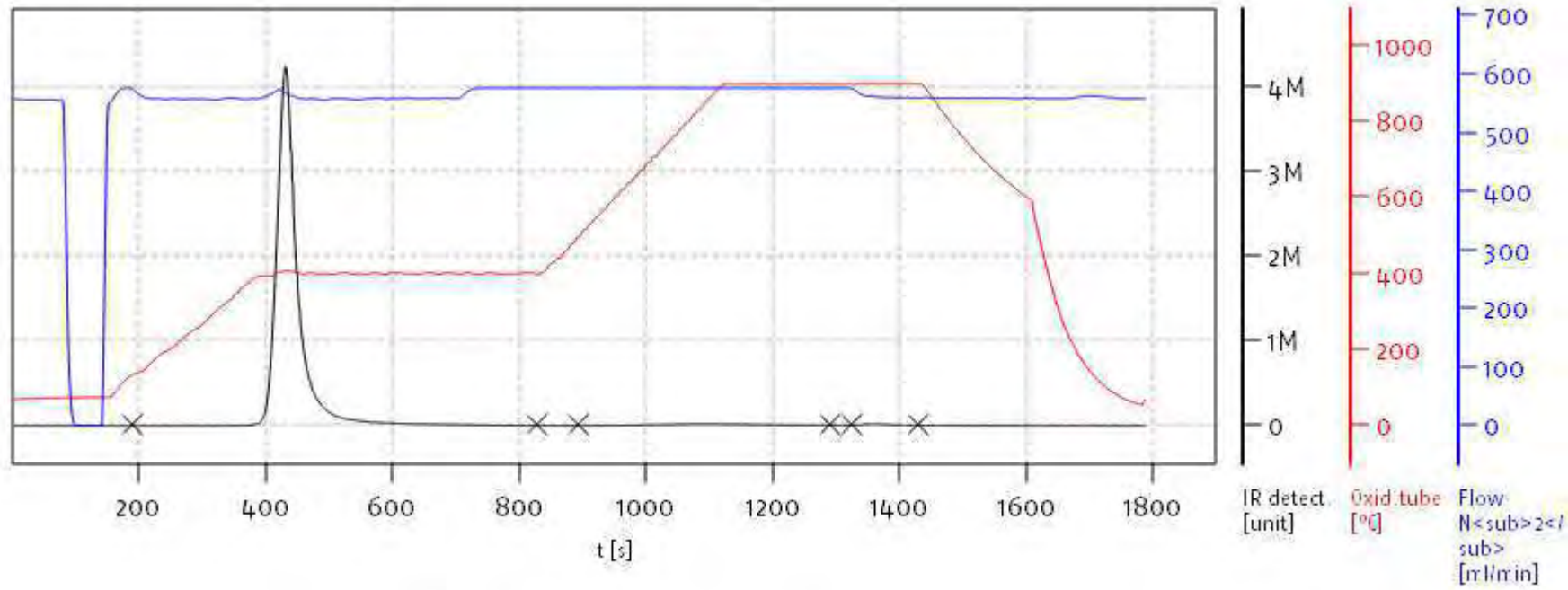
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
29	29	Dfactor	21.20		CARBON	5/18/2023 1:50 AM	bl	44.824	6 030 884	46.116	0.378	48 254	171 095	44.446	1.292	0.9907	1.0000



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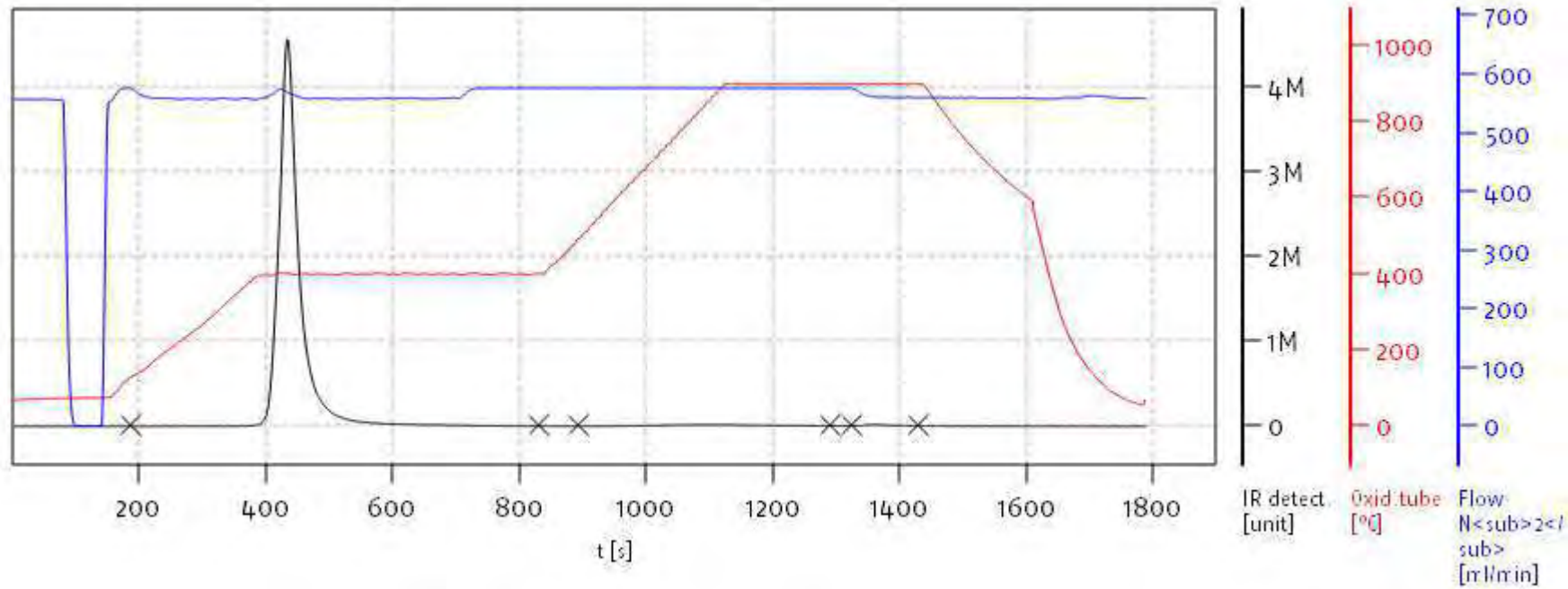
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
30	30	SLE0270-ICV1	22.30		CARBON	5/18/2023 2:21 AM	bl	44.949	6 392 325	46.022	0.327	43 597	149 127	44.622	1.073	0.9871	1.0000



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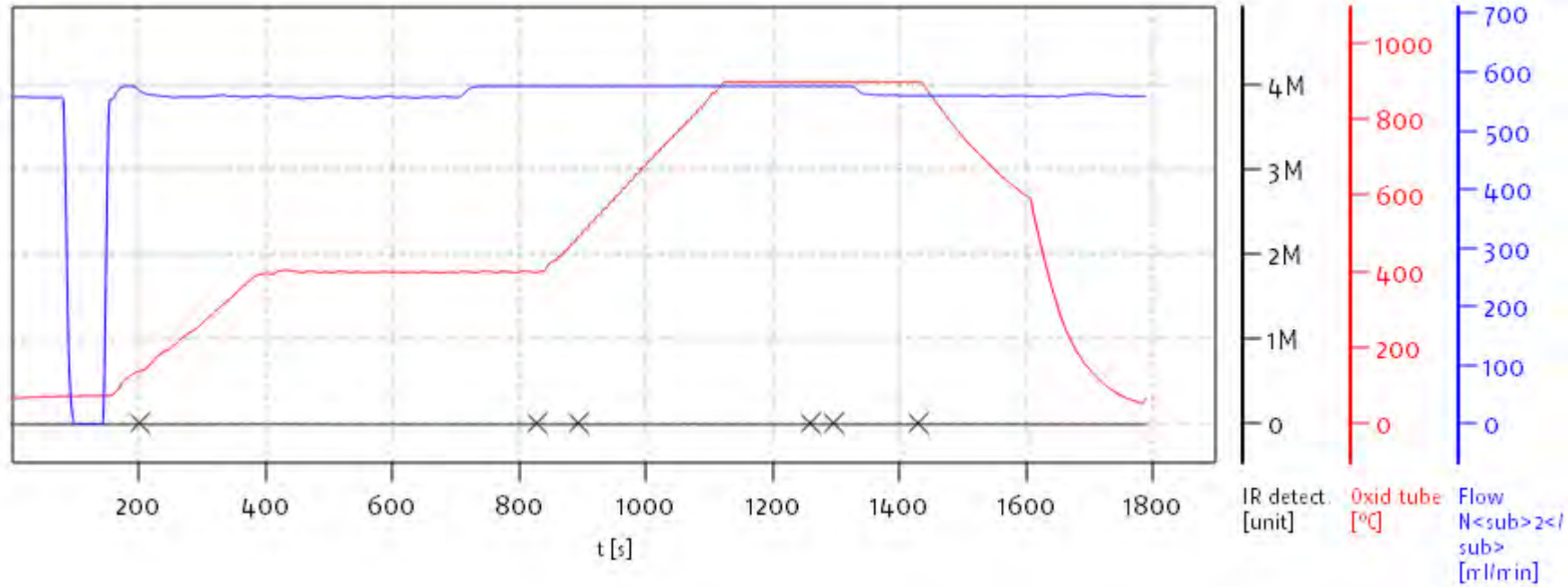
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
31	31	SLE0270-ICB1	530.50		CARBON	5/18/2023 2:51 AM	bl,C1u,C3u,C2u	0.003	6 198	0.005	0.001	198	1 900	0.003	0.001	0.9871	1.0000



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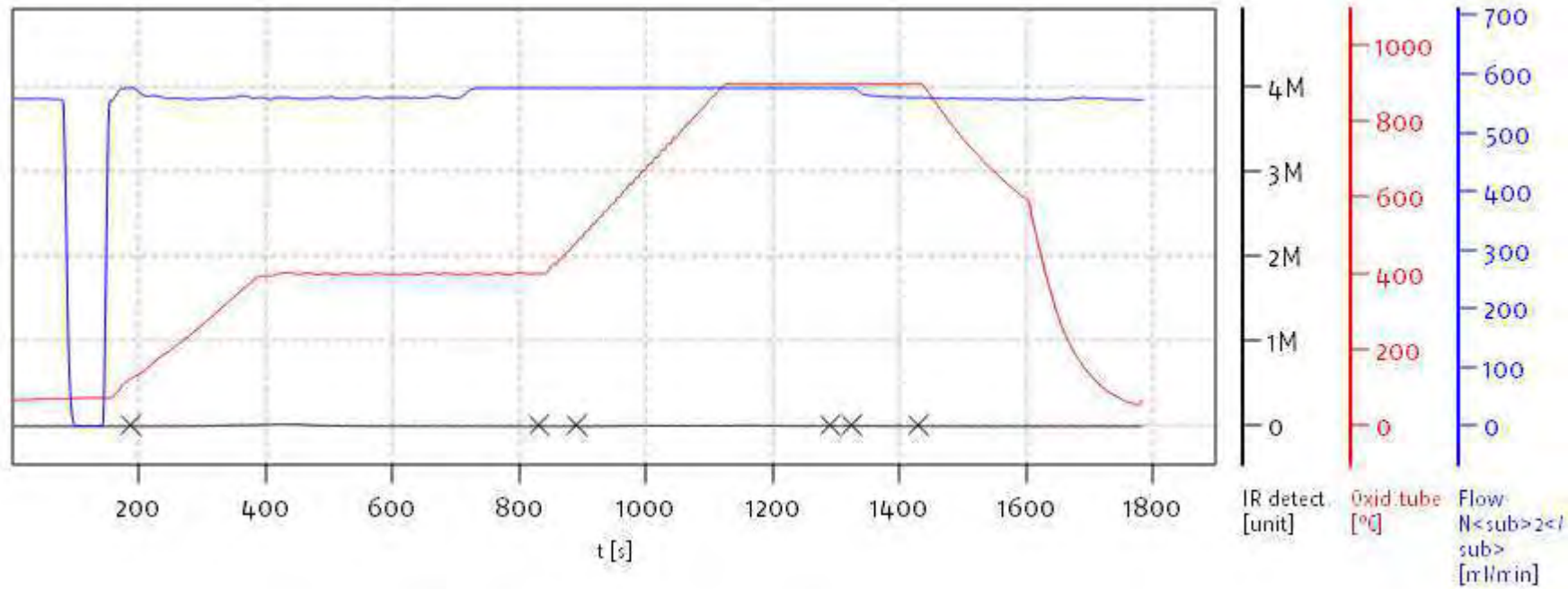
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
32	32	23D0491-10	42.50		CARBON	5/18/2023 3:21 AM	bl	0.560	138 129	0.841	0.044	9 353	73 148	0.515	0.281	0.9871	1.0000



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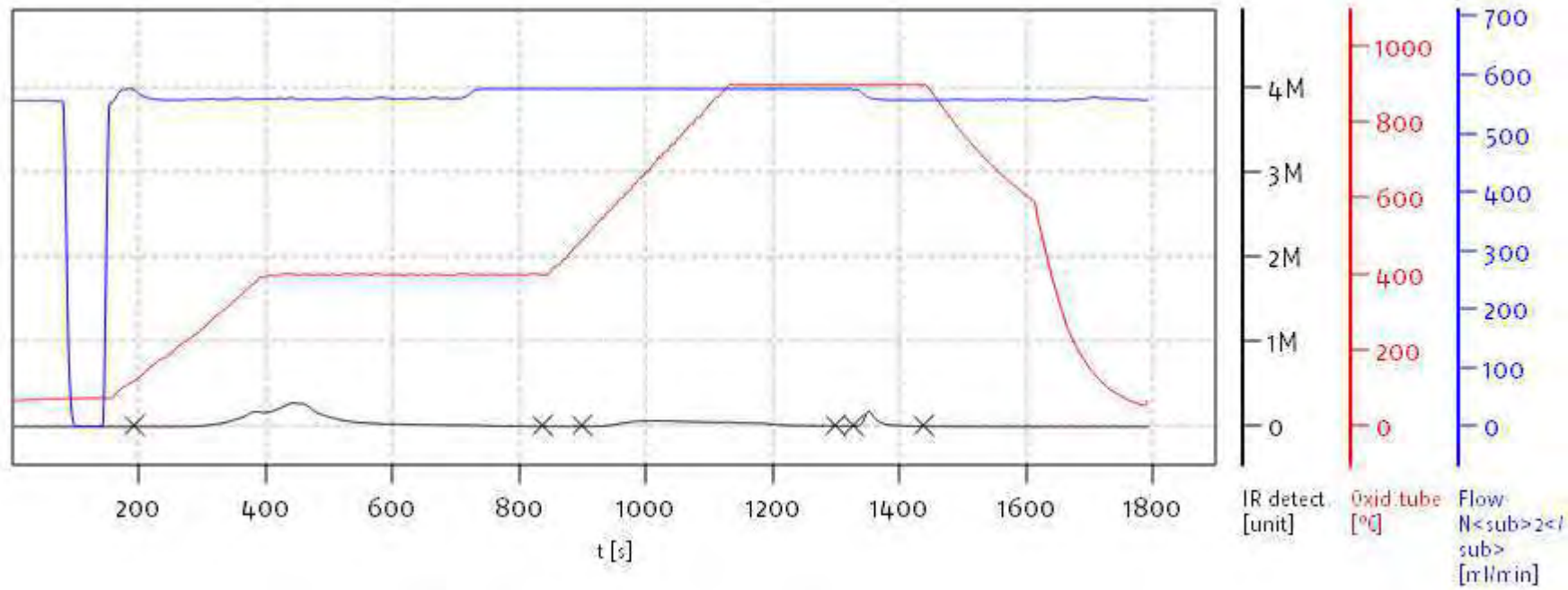
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
33	33	23D0491-10RE1	505.50		CARBON	5/18/2023 3:51 AM	bl	0.513	1 489 627	0.692	0.054	169 645	569 728	0.459	0.178	0.9871	1.0000



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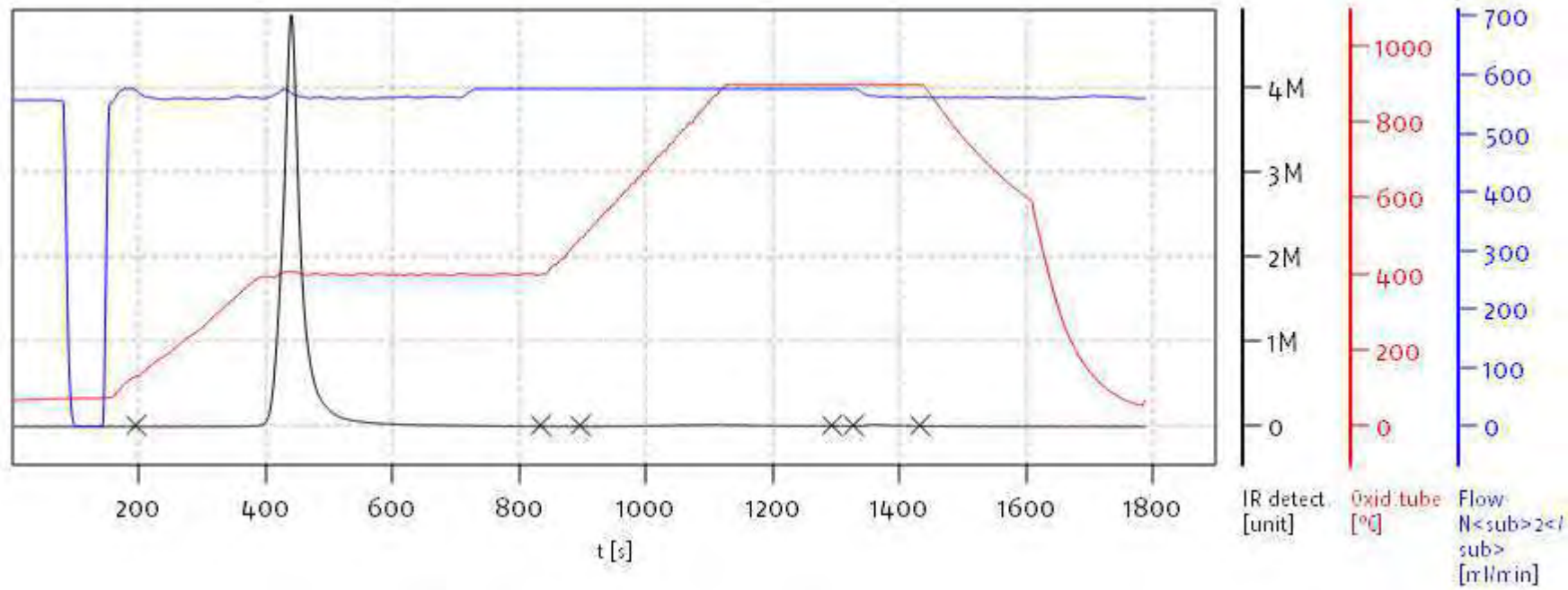
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
34	34	SLE0270-CCV1	22.20		CARBON	5/18/2023 4:21 AM	bl	44.616	6 309 271	45.769	0.375	50 146	159 806	44.241	1.153	0.9871	1.0000



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Serial No: 0300.181017
Mode CCC

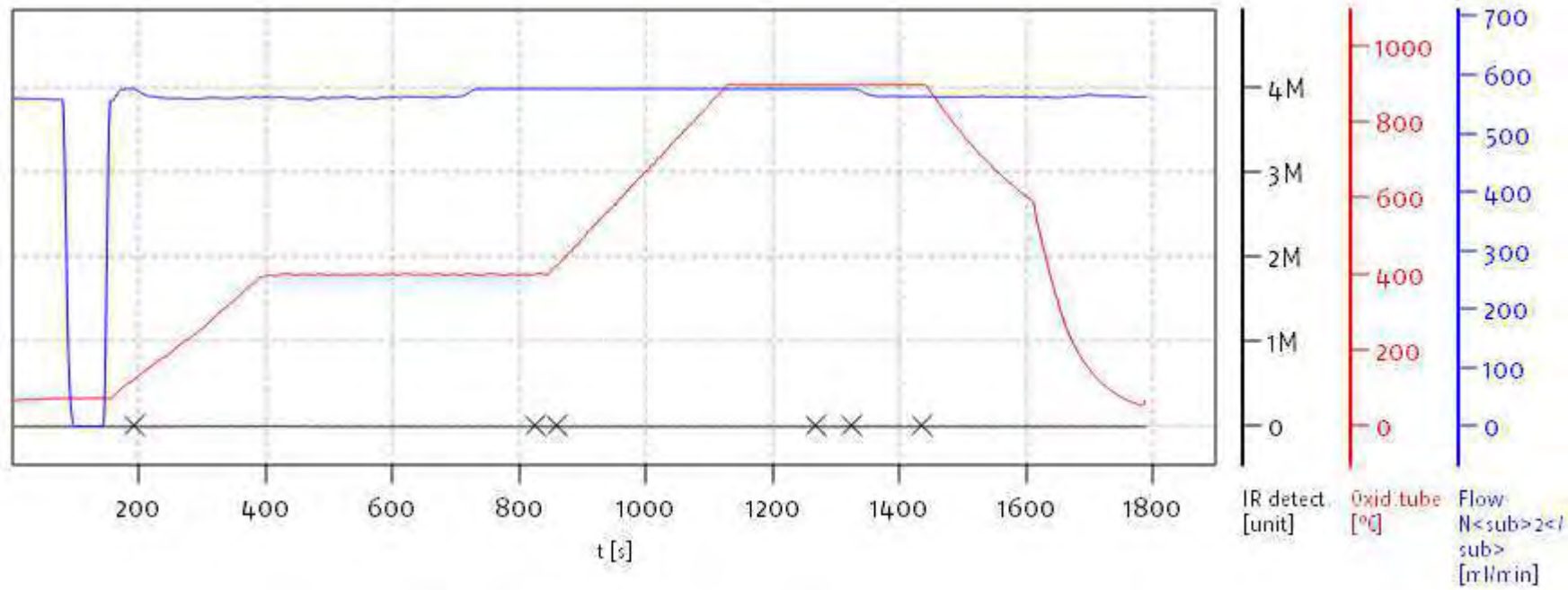
elementar
EXCELLENCE IN ELEMENTS

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
35	35	SLE0270-CCB1	523.30		CARBON	5/18/2023 4:52 AM	bl,C3u,C2u	0.009	22 128	0.010	0.001	2 335	2 184	0.007	0.001	0.9871	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:43:39 2023

elementar
EXCELLENCE IN ELEMENTS

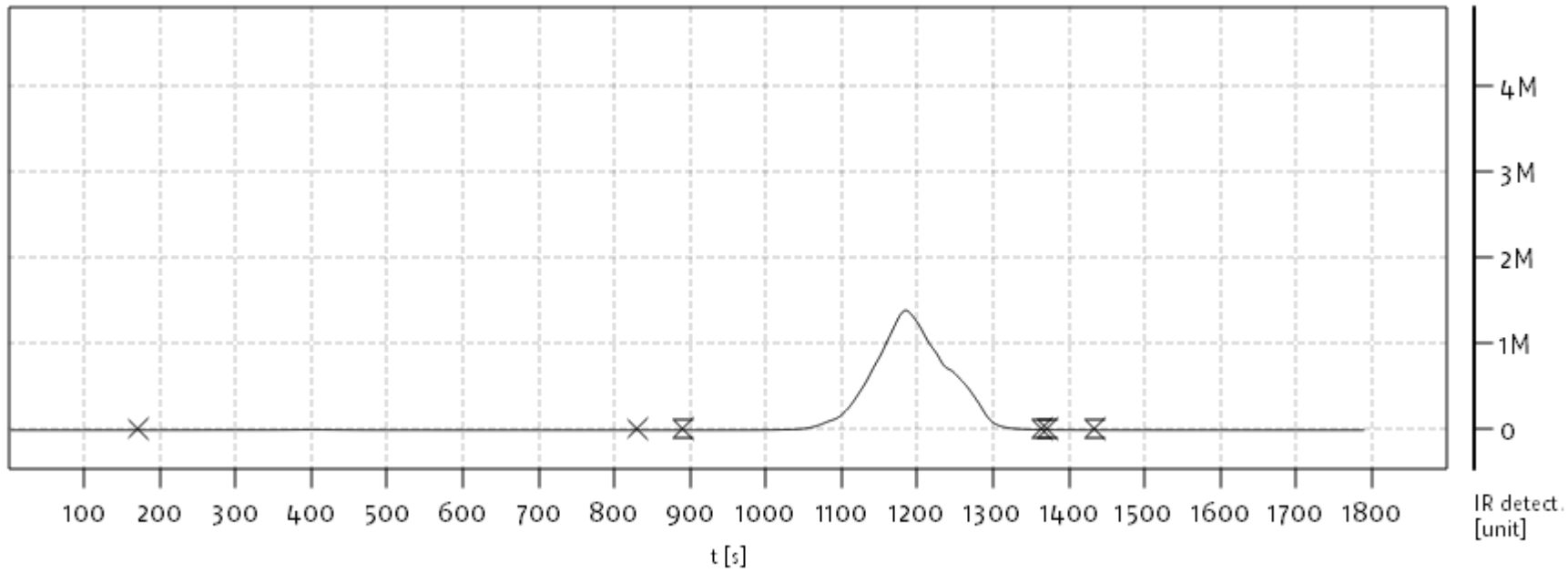
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
23	23	SLE0270-CALL	200.00	0.0700	CARBON	5/18/2023 9:47 AM	bl	0.019	21 598	4.386	0.000	**0**	**5 538 028**	0.019	4.367	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:50:12 2023

elementar
EXCELLENCE IN ELEMENTS

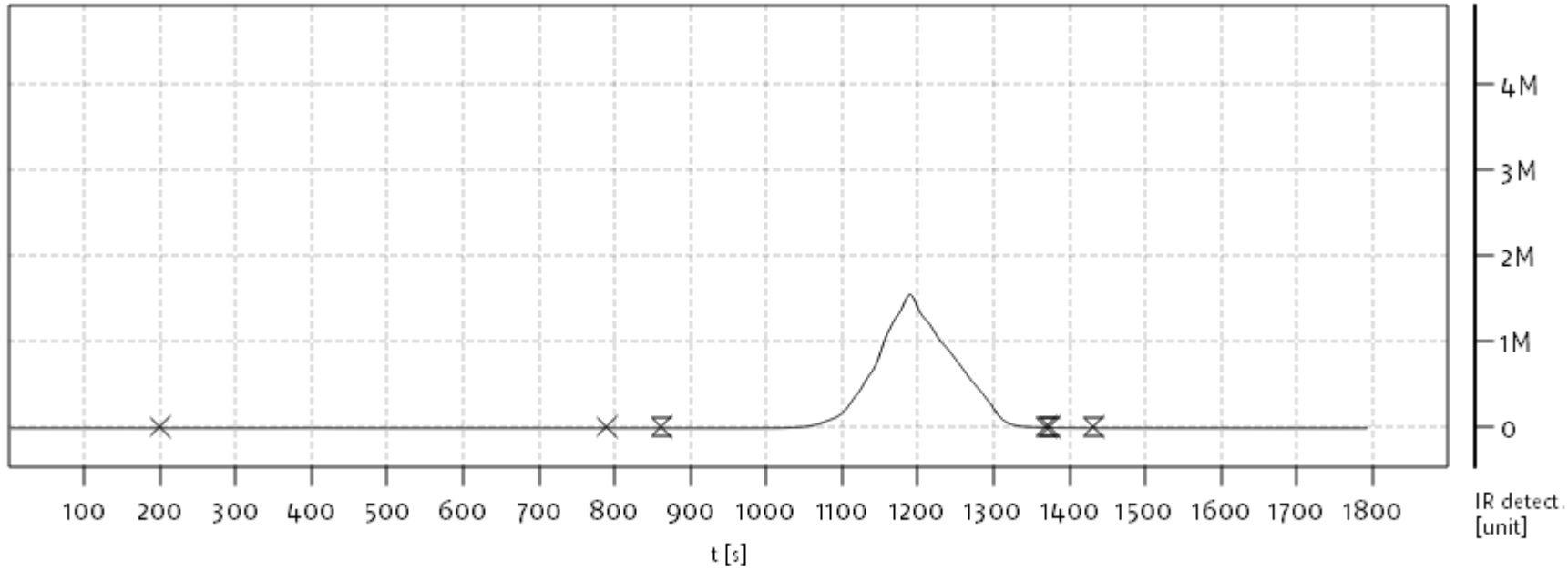
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
24	24	SLE0270-CALM	200.00	0.0800	CARBON	5/18/2023 9:48 AM	bl,C1u	0.006	5 408	4.784	0.000	**0**	**6 058 878**	0.006	4.778	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:50:12 2023

soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

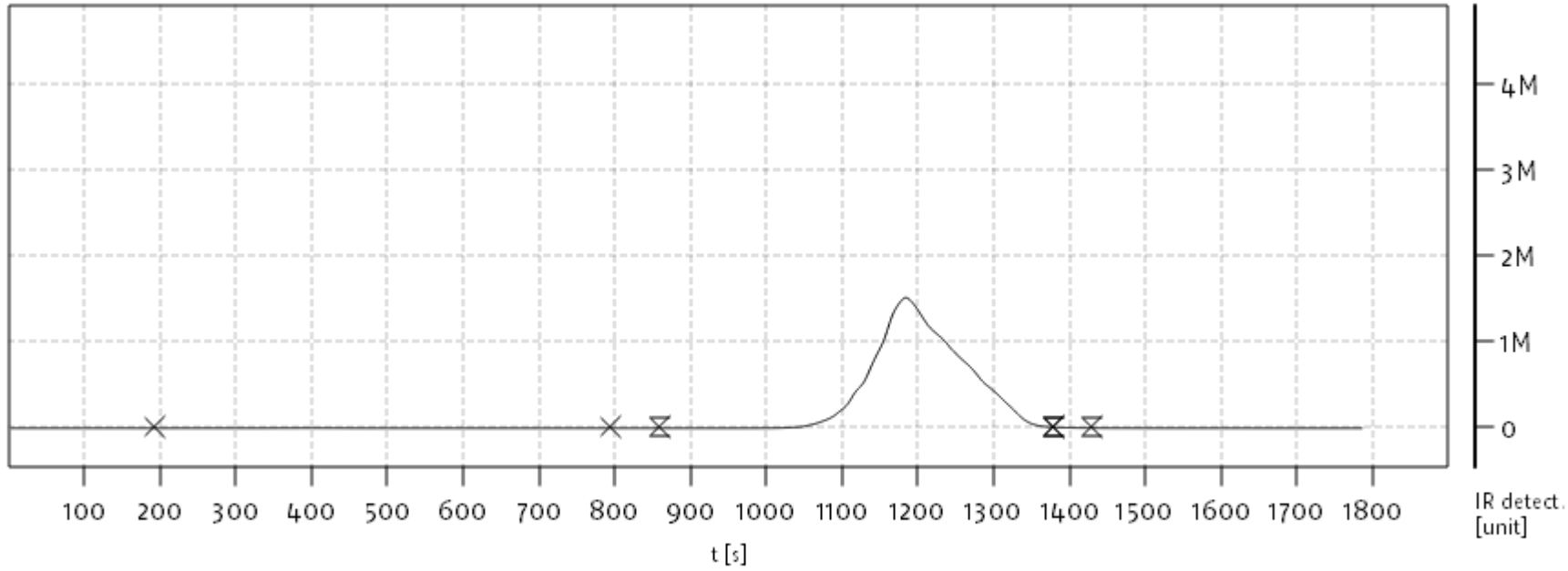
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EXCELLENCE IN ELEMENTS

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
25	25	SLE0270-CALN	200.00	0.0900	CARBON	5/18/2023 9:49 AM	bl	0.009	8 745	5.379	0.000	**0**	**6 810 985**	0.009	5.370	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:50:12 2023

elementar
EXCELLENCE IN ELEMENTS

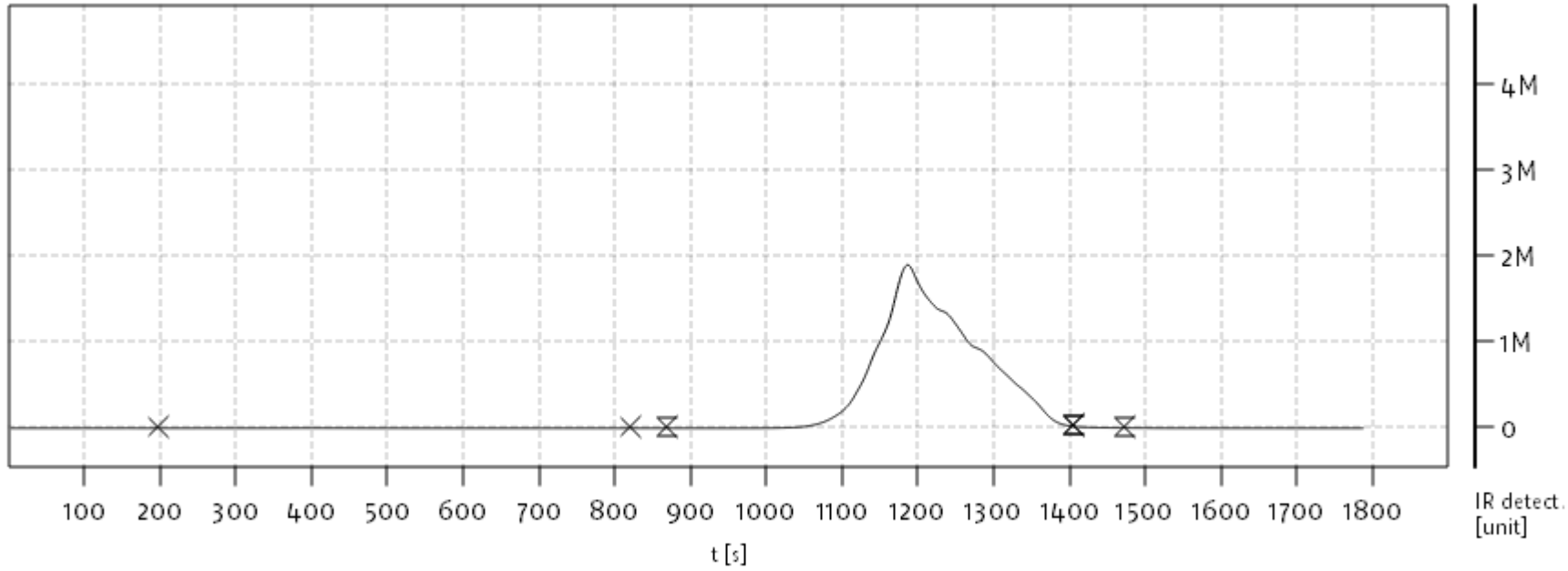
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Serial No: 0300.181017
Mode CCC

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
26	26	SLE0270-CALO	200.00	0.1200	CARBON	5/18/2023 9:49 AM	bl,C1u,C3o	0.008	6 993	7.291	0.000	0	9 238 066	0.008	7.283	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:50:12 2023

soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 9060A m

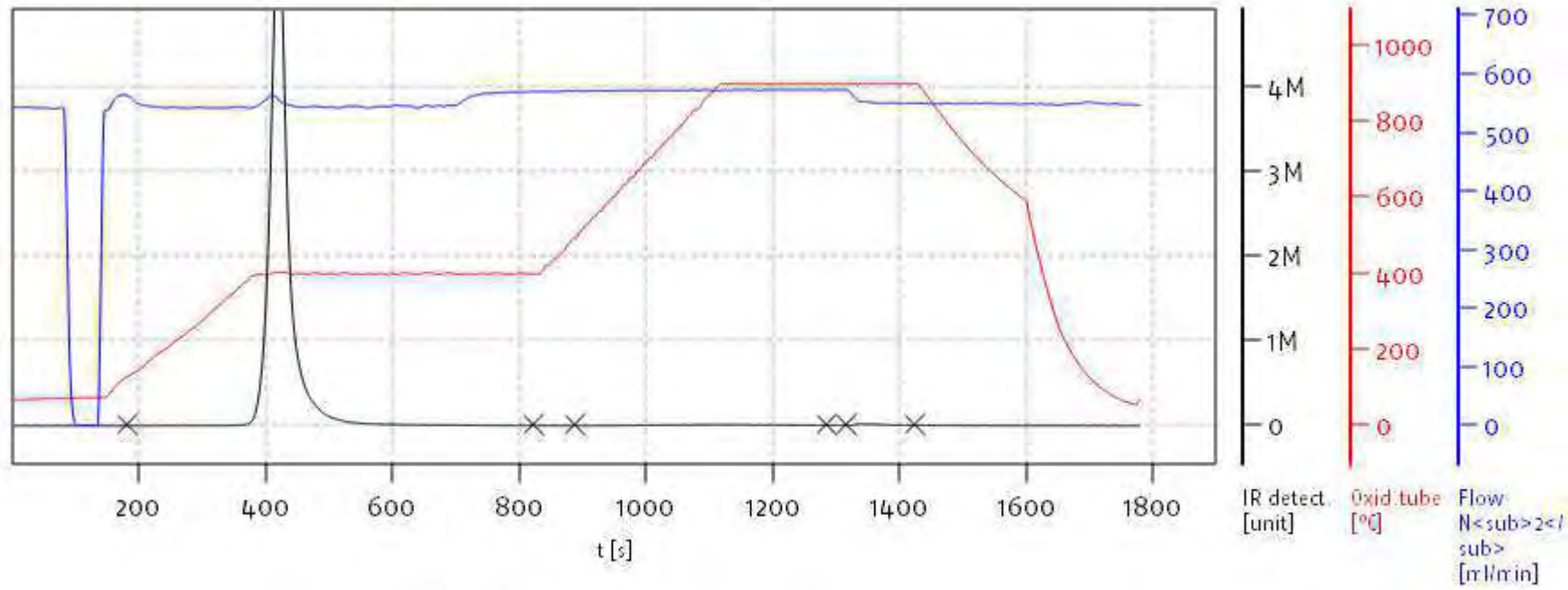
Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023
Sequence: SLJ0453
Instrument: TOC Cube
Calibration: GE00052

Sample Name	Lab Sample ID	Lab File ID	Matrix	Analysis Date/Time
Initial Cal Check	SLJ0453-ICV1	CubeData_11032023@1525-005	NA	10/31/23 17:23
Initial Cal Blank	SLJ0453-ICB1	CubeData_11032023@1525-011	NA	10/31/23 17:53
Blank	BLJ0931-BLK1	CubeData_11032023@1525-029	Solid	10/31/23 19:23
LCS	BLJ0931-BS1	CubeData_11032023@1525-049	Solid	10/31/23 20:53
Calibration Check	SLJ0453-CCV1	CubeData_11032023@1525-082	NA	10/31/23 23:23
Calibration Blank	SLJ0453-CCB1	CubeData_11032023@1525-088	NA	10/31/23 23:53
Calibration Check	SLJ0453-CCV2	CubeData_11032023@1525-138	NA	11/01/23 05:25
Calibration Blank	SLJ0453-CCB2	CubeData_11032023@1525-139	NA	11/01/23 05:55
Calibration Check	SLJ0453-CCV3	CubeData_11032023@1525-150	NA	11/01/23 11:28
Calibration Blank	SLJ0453-CCB3	CubeData_11032023@1525-151	NA	11/01/23 11:58
Calibration Check	SLJ0453-CCV4	CubeData_11032023@1525-161	NA	11/01/23 17:31
Calibration Blank	SLJ0453-CCB4	CubeData_11032023@1525-162	NA	11/01/23 18:01
Calibration Check	SLJ0453-CCV5	CubeData_11032023@1525-173	NA	11/01/23 23:33
Calibration Blank	SLJ0453-CCB5	CubeData_11032023@1525-174	NA	11/02/23 00:03
Calibration Check	SLJ0453-CCV6	CubeData_11032023@1525-185	NA	11/02/23 05:36
Calibration Blank	SLJ0453-CCB6	CubeData_11032023@1525-186	NA	11/02/23 06:07
SED-26C:3-5	23J0690-05	CubeData_11032023@1525-193	Solid	11/02/23 09:39
SED-27C:0-1	23J0690-06	CubeData_11032023@1525-194	Solid	11/02/23 10:09
Calibration Check	SLJ0453-CCV7	CubeData_11032023@1525-197	NA	11/02/23 11:40
Calibration Blank	SLJ0453-CCB7	CubeData_11032023@1525-198	NA	11/02/23 12:10
Calibration Check	SLJ0453-CCV8	CubeData_11032023@1525-048	NA	11/02/23 17:42
Calibration Blank	SLJ0453-CCB8	CubeData_11032023@1525-055	NA	11/02/23 18:12
Calibration Check	SLJ0453-CCV9	CubeData_11032023@1525-129	NA	11/02/23 23:44
Calibration Blank	SLJ0453-CCB9	CubeData_11032023@1525-133	NA	11/03/23 00:14

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
8	1	SLJ0453-ICV1	25.40		CARBON	10/31/2023 5:23 PM	bl	46.554	7 443 261	47.070	0.109	46 380	111 488	46.445	0.516	1.0031	1.0000



Name:

Access: soliTOC superuser

Date: Fri Nov 3 14:55:38 2023

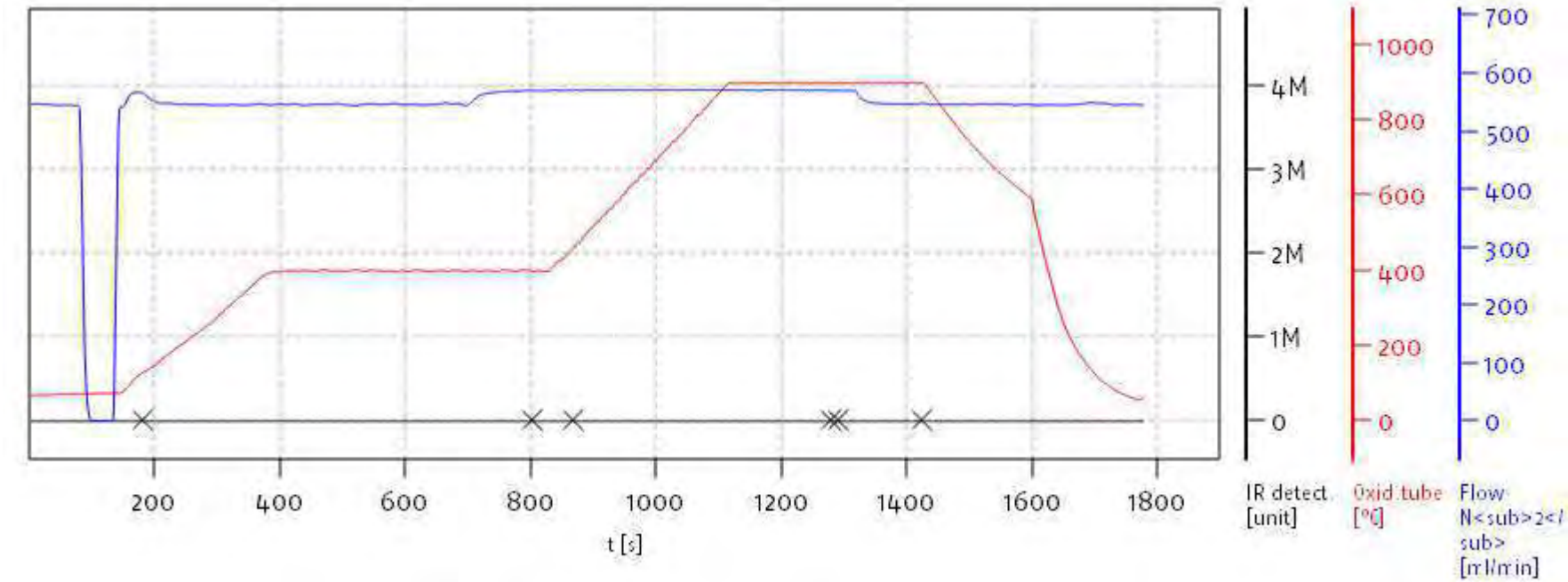
elementar
EXCELLENCE IN ELEMENTS

soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
9	2	SLJ0453-ICB1	535.50		CARBON	10/31/2023 5:53 PM	bl,C1u,C2u	0.000	4 988	0.000	0.000	341	0	0.000	0.000	1.0031	1.0000



Name:

Access: soliTOC superuser

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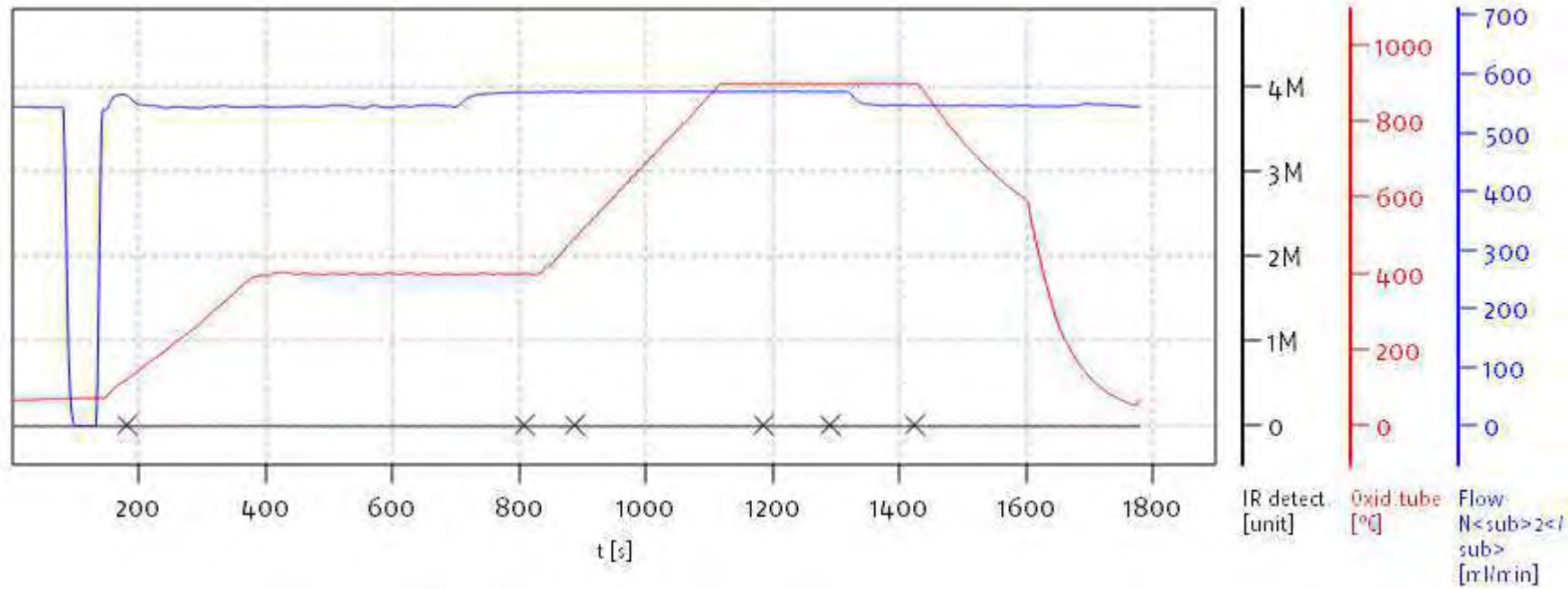
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
10	3	BLJ0928-BLK1	564.30		CARBON	10/31/2023 6:23 PM	bl,C1u,C3u,C2u	0.000	11 135	0.000	0.000	740	892	0.000	0.000	1.0031	1.0000



Name:

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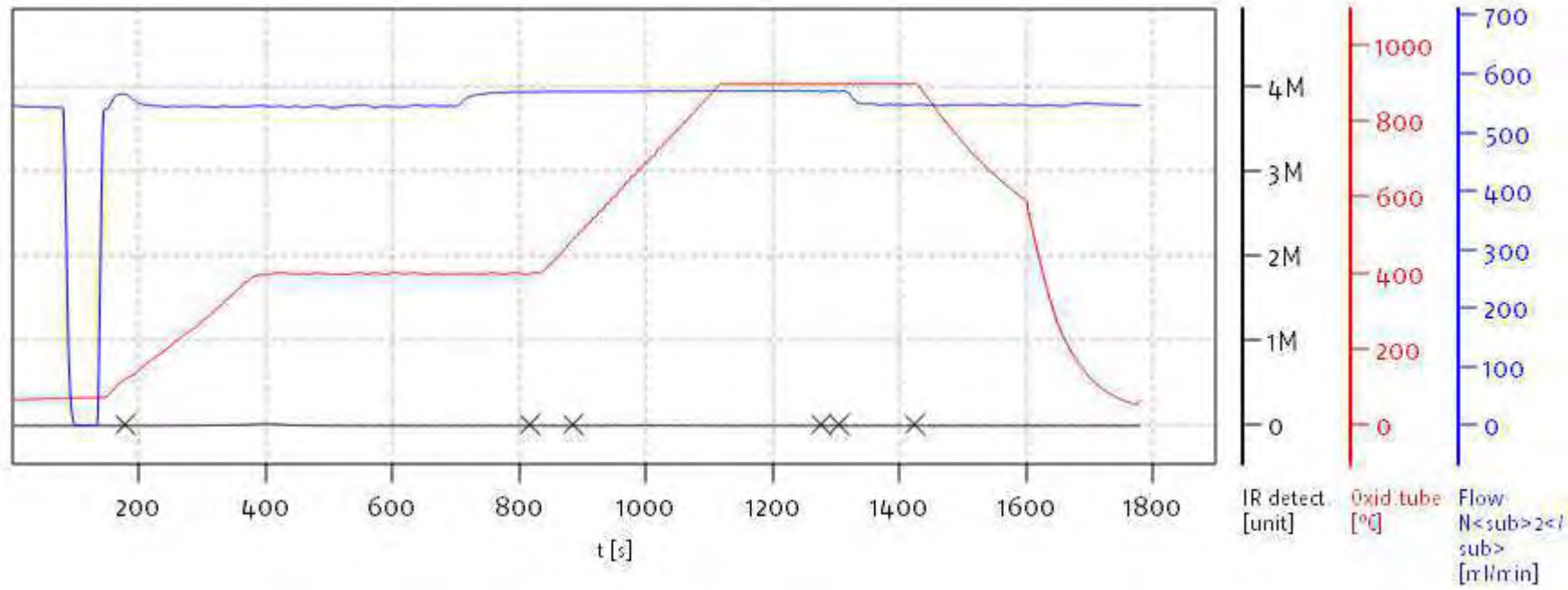
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
11	7	BLJ0929-BLK1	518.90		CARBON	10/31/2023 6:53 PM	bl,C3u,C2u	0.014	75 806	0.014	0.000	557	14 374	0.014	0.000	1.0031	1.0000



Name:

Access: soliTOC superuser

Date: Fri Nov 3 14:55:38 2023

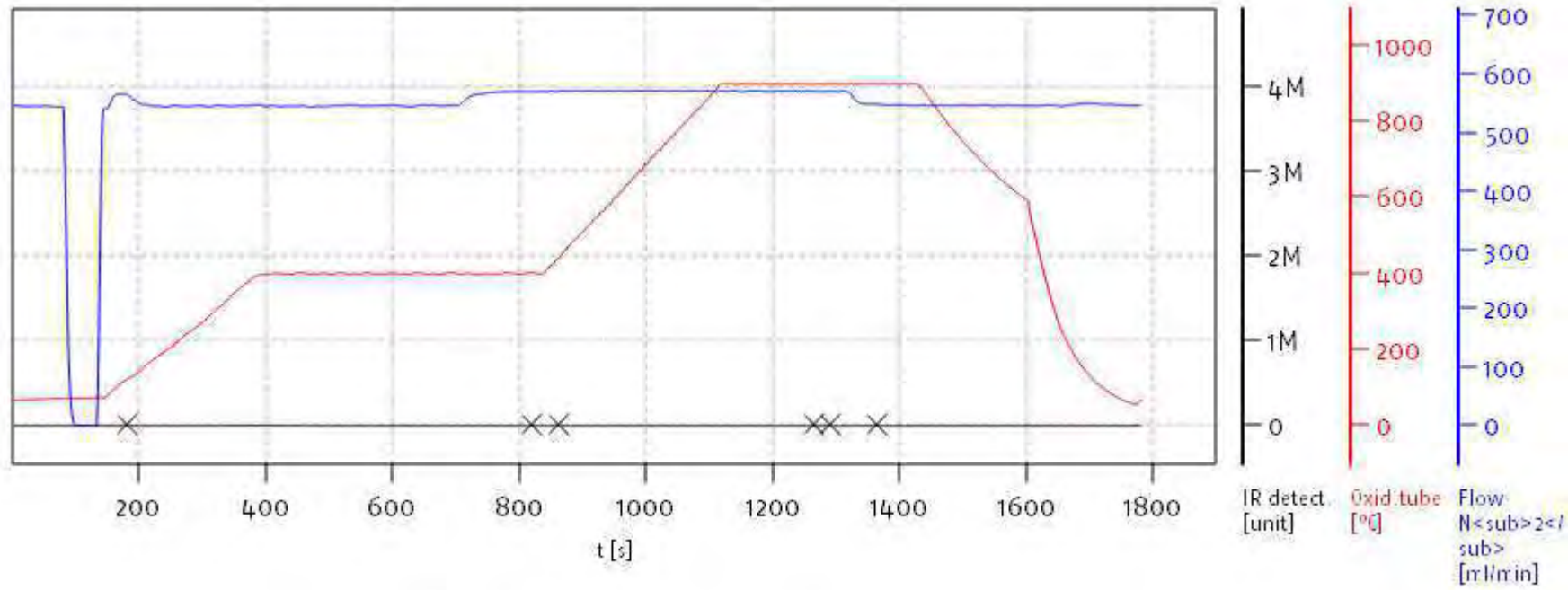
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
12	8	BLJ0931-BLK1	516.30		CARBON	10/31/2023 7:23 PM	bl,C1u,C3u,C2u	0.000	14 136	0.000	0.000	890	1 279	0.000	0.000	1.0031	1.0000



Name:

Access: soliTOC superuser

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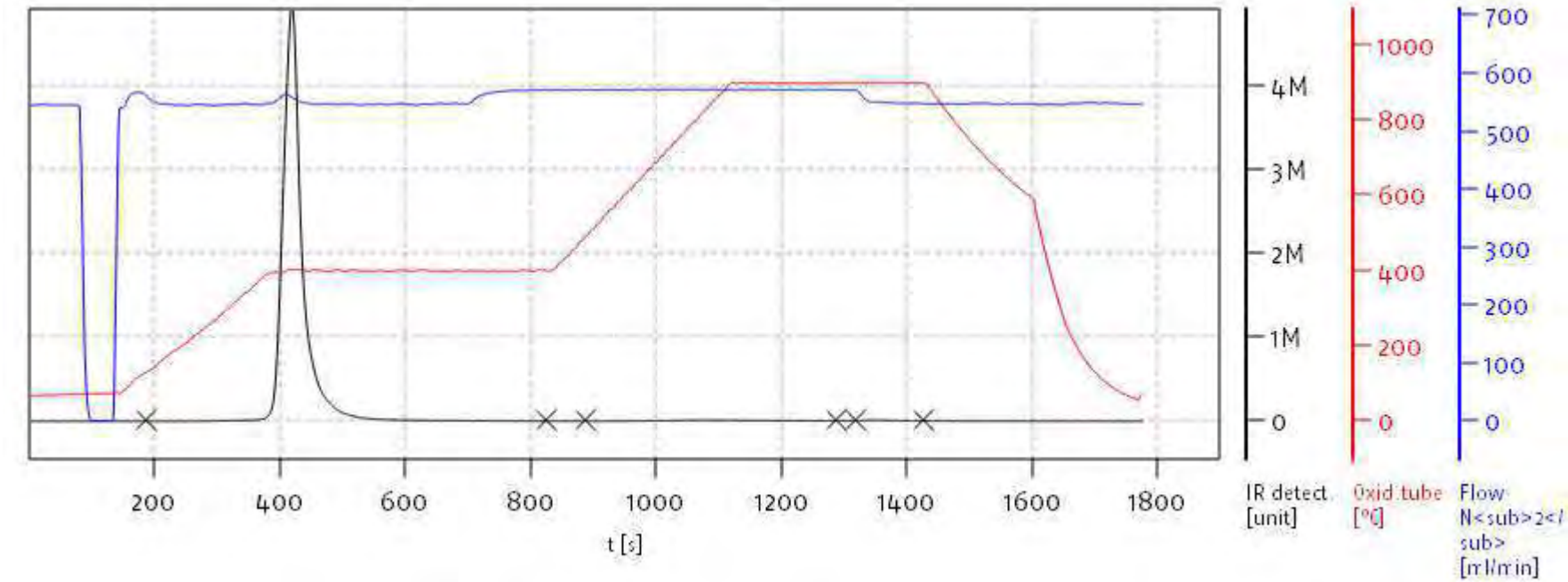
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
13	9	BLJ0928-BS1	22.30		CARBON	10/31/2023 7:53 PM	bl	47.035	6 615 948	47.583	0.036	33 971	105 855	46.999	0.548	1.0031	1.0000



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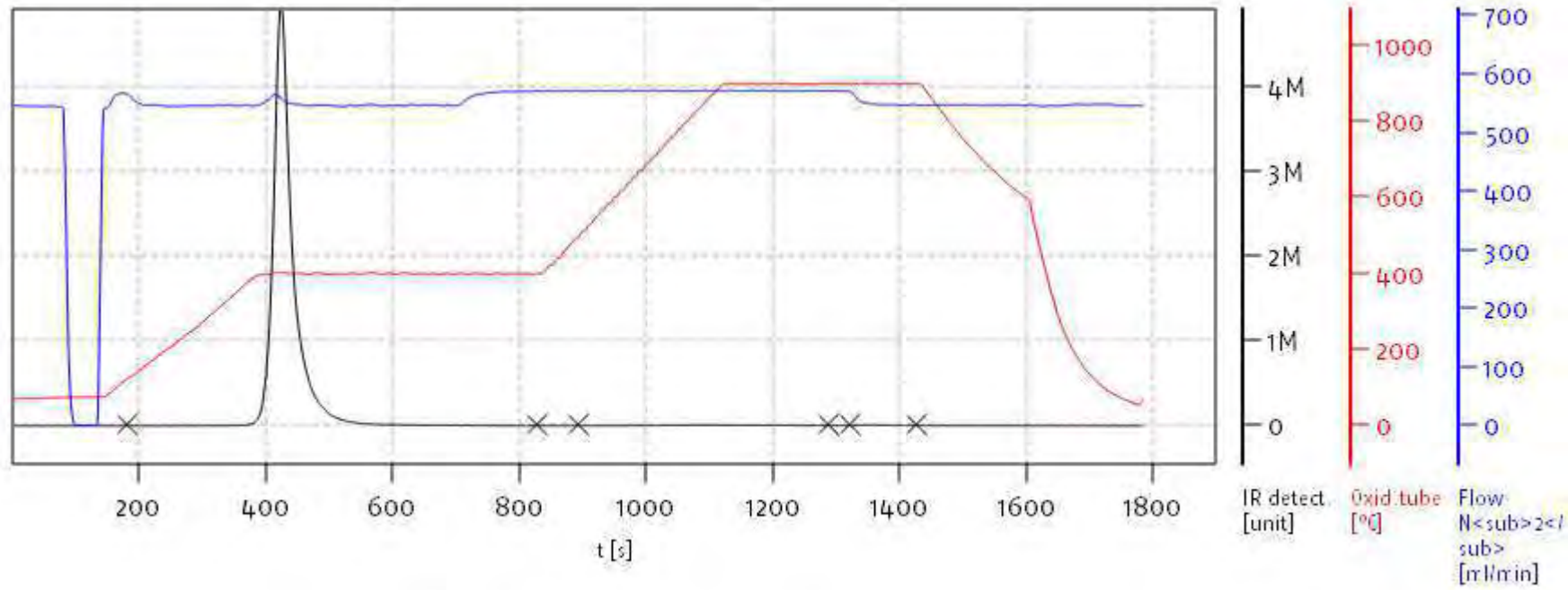
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
14	10	BLJ0929-BS1	22.30		CARBON	10/31/2023 8:23 PM	bl	46.988	6 614 473	47.283	0.000	22 392	70 279	46.988	0.295	1.0031	1.0000



Name:

Access: soliTOC superuser

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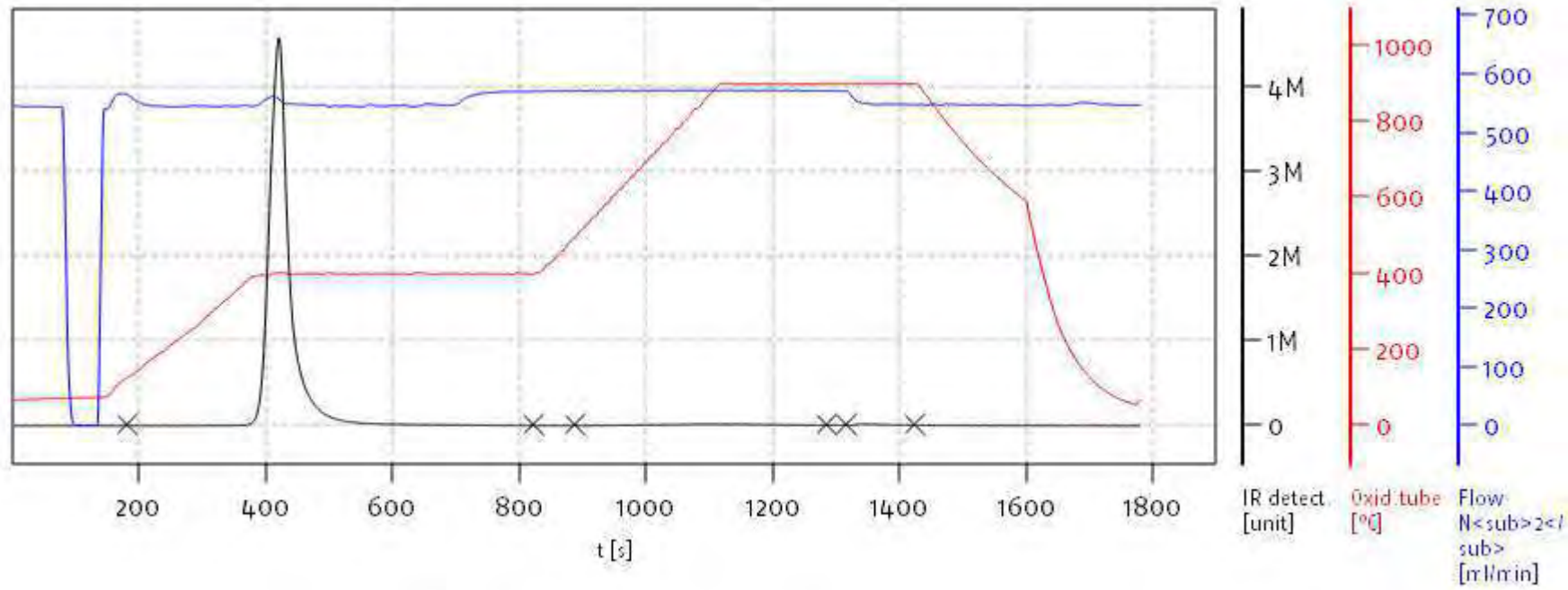
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EXCELLENCE IN ELEMENTS

soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
15	11	BLJ0931-BS1	22.10		CARBON	10/31/2023 8:53 PM	bl	45.708	6 360 241	46.614	0.125	46 227	155 112	45.583	0.906	1.0031	1.0000



Name:

Access: soliTOC superuser

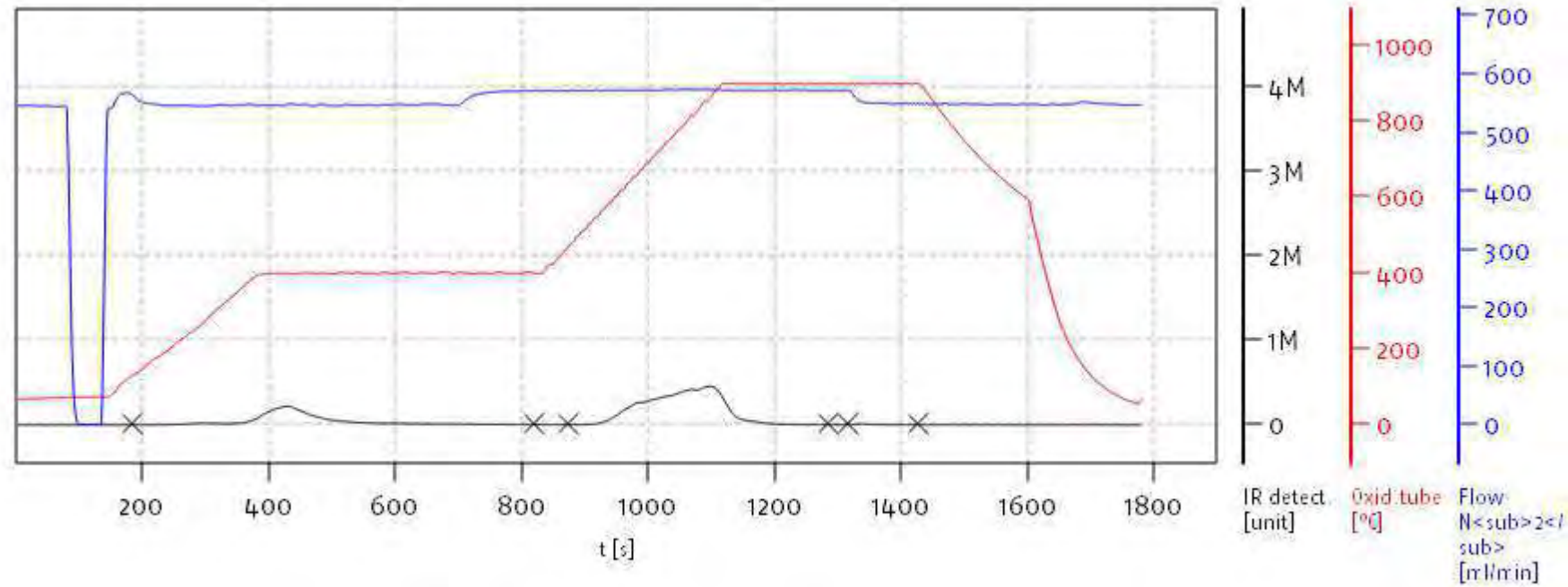
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soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
16	12	23J0566-01	601.70		CARBON	10/31/2023 9:23 PM	bl,C2u	0.241	939 057	0.875	0.000	16 063	2 433 669	0.241	0.634	1.0031	1.0000



Name:

Access: soliTOC superuser

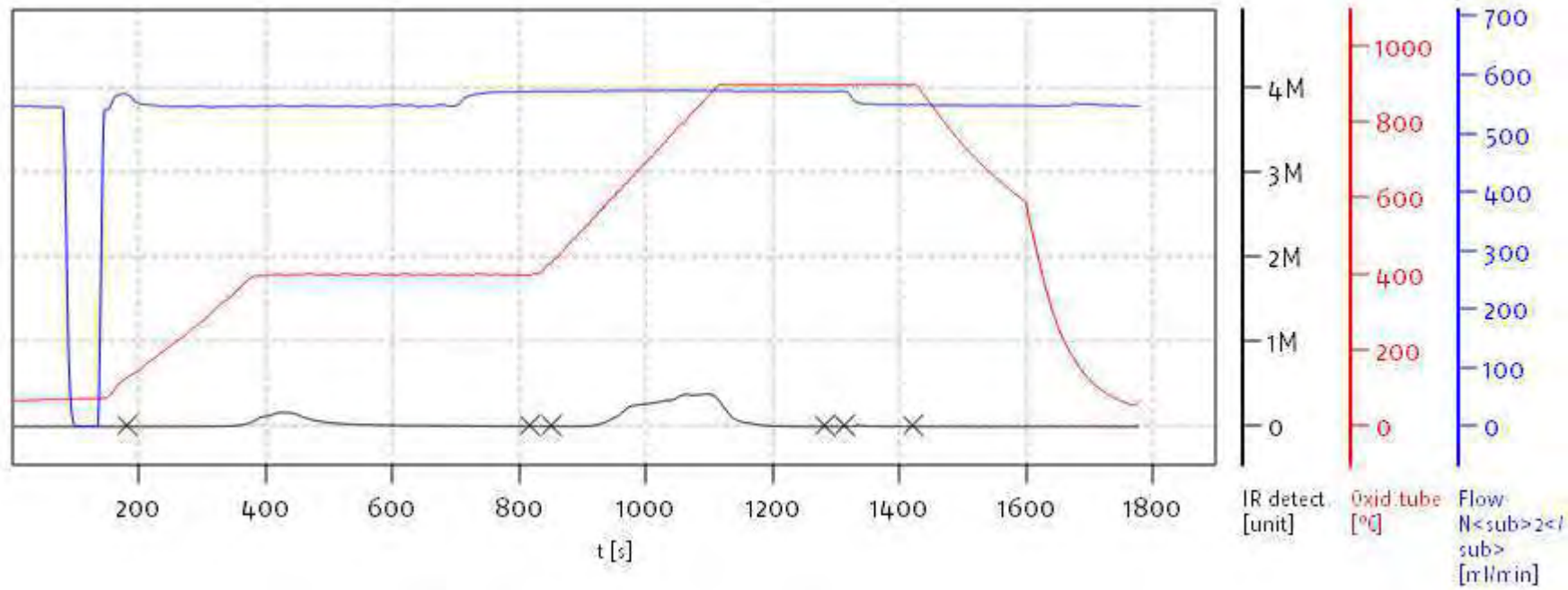
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Serial No: 0300.181017
Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
17	13	BLJ0928-DUP1	554.60		CARBON	10/31/2023 9:53 PM	bl,C2u	0.202	732 298	0.826	0.000	16 076	2 211 736	0.202	0.624	1.0031	1.0000



Name:

Access: soliTOC superuser

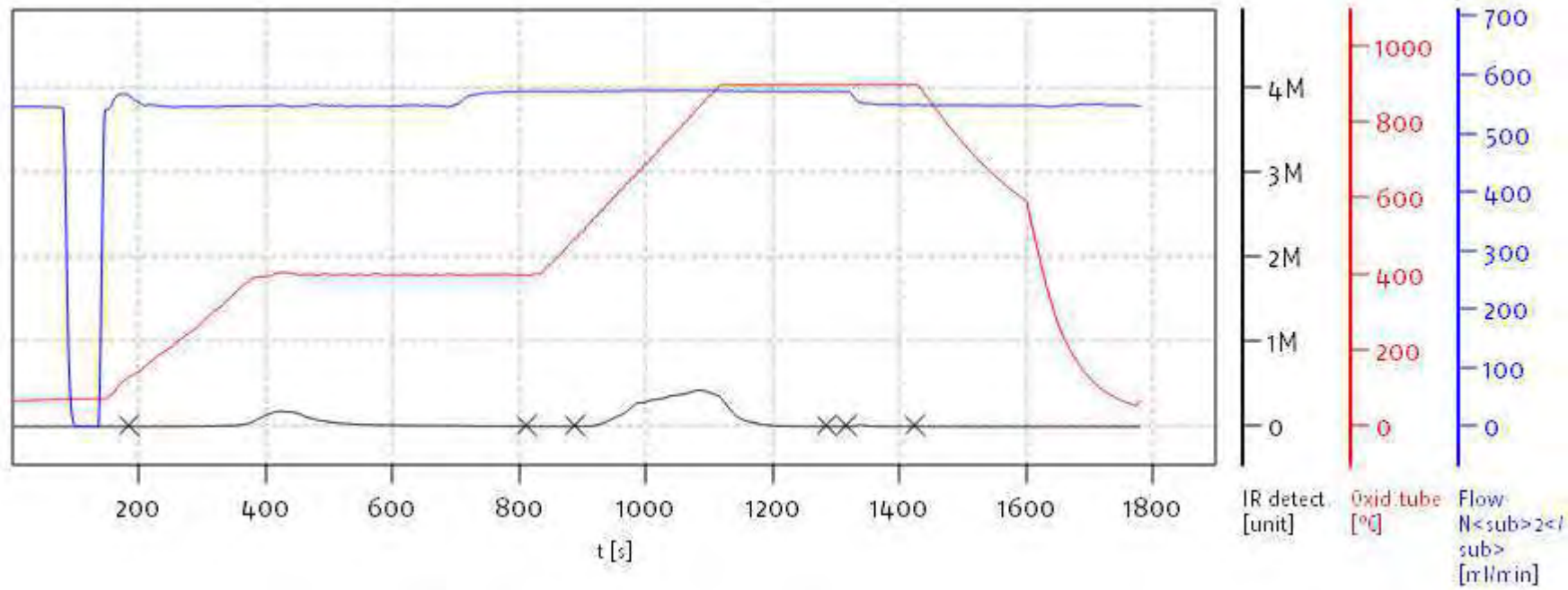
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EXCELLENCE IN ELEMENTS

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Serial No: 0300.181017
Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
18	14	BLJ0928-DUP2	592.20		CARBON	10/31/2023 10:23 PM	bl,C2u	0.210	810 846	0.858	0.000	17 261	2 447 979	0.210	0.648	1.0031	1.0000



Name:

Access: soliTOC superuser

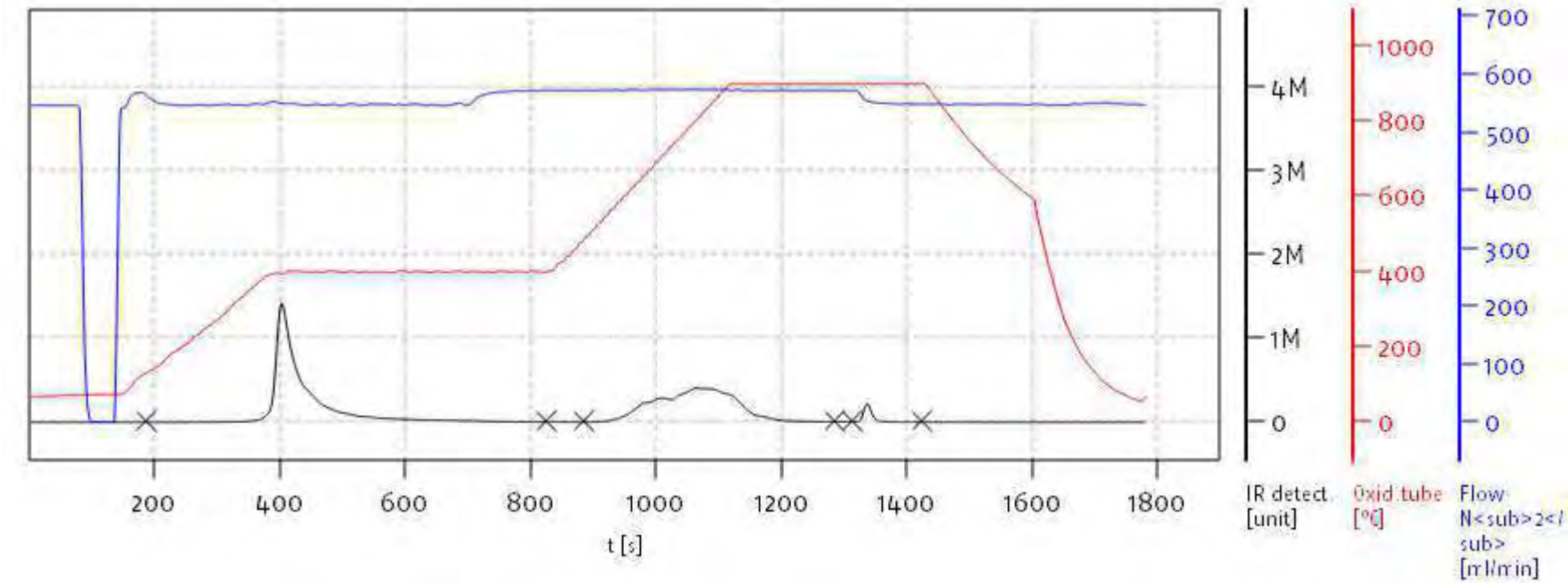
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soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
19	15	BLJ0928-MS1	540.30	0.0072	CARBON	10/31/2023 10:53 PM	bl	0.797	2 627 342	1.484	0.032	136 719	2 370 544	0.765	0.687	1.0031	1.0000



Name:

Access: soliTOC superuser

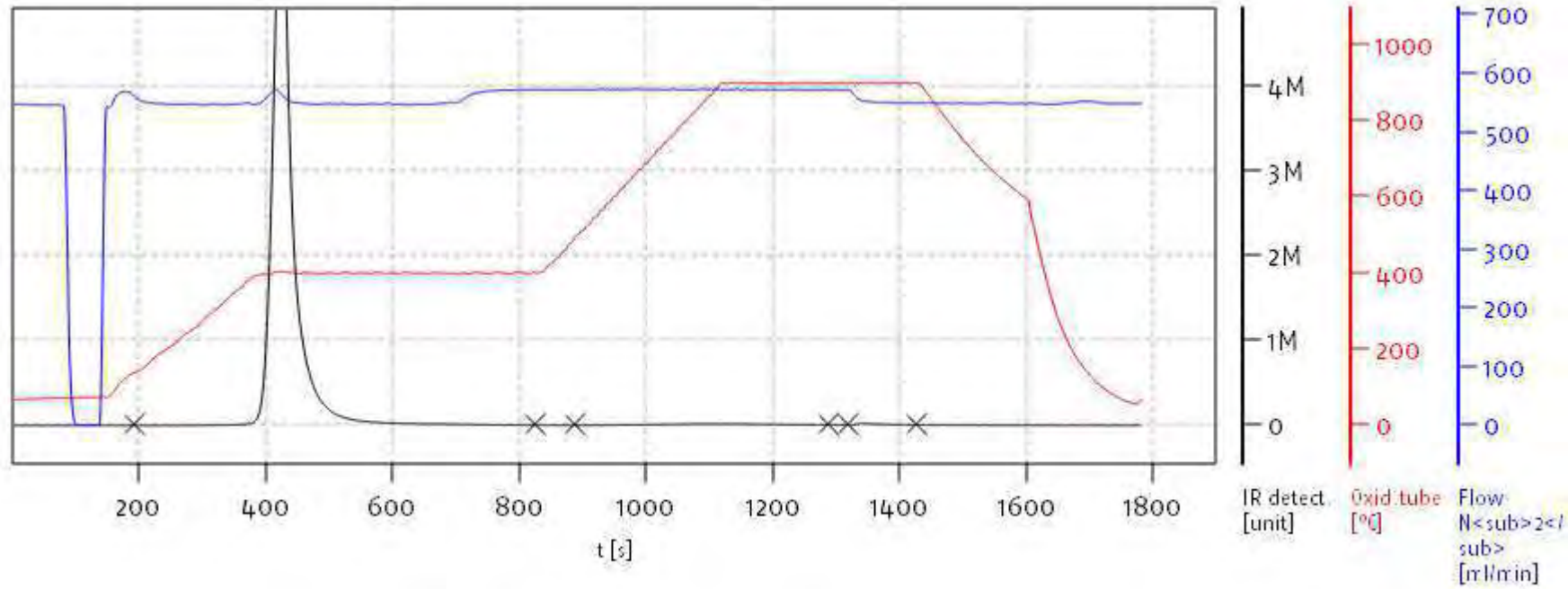
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soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
20	16	SLJ0453-CCV1	30.20		CARBON	10/31/2023 11:23 PM	bl,C1o	46.513	8 836 135	47.183	0.112	50 138	156 402	46.401	0.670	1.0031	1.0000



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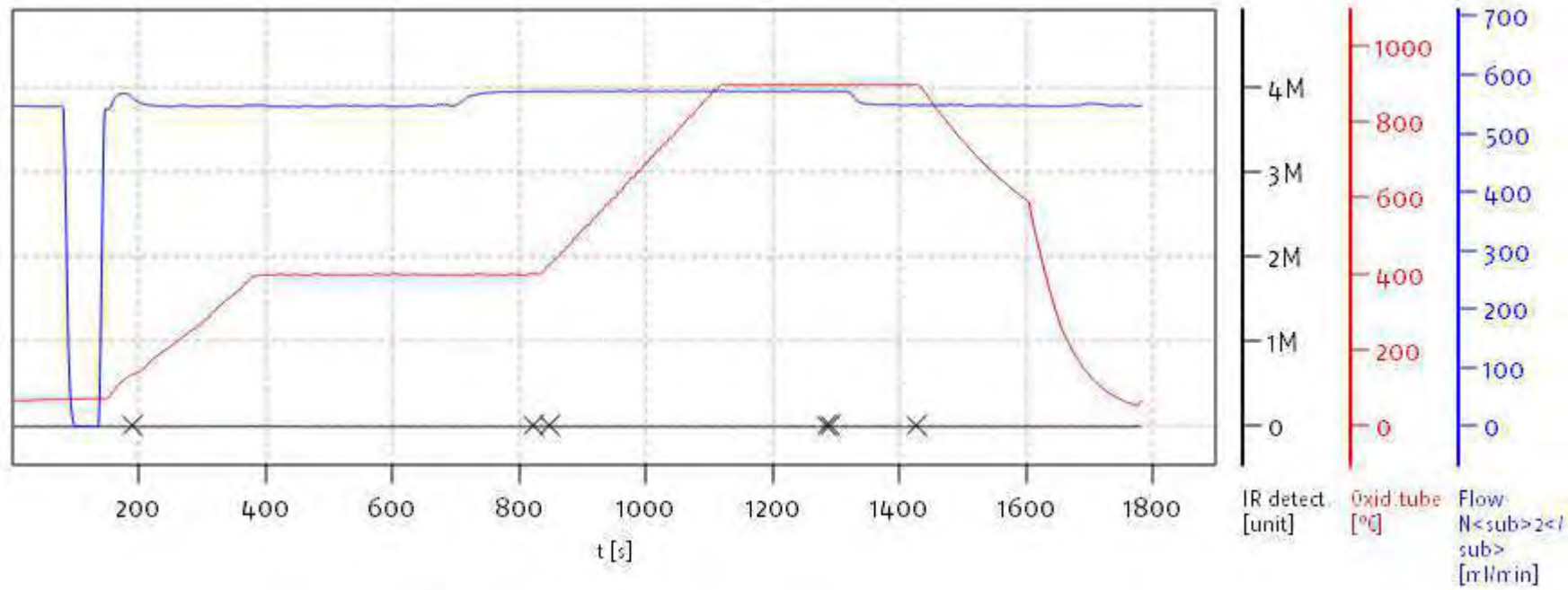
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soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
21	17	SLJ0453-CCB1	507.30		CARBON	10/31/2023 11:53 PM	bl,C1u,C3u,C2u	0.000	12 486	0.000	0.000	294	272	0.000	0.000	1.0031	1.0000



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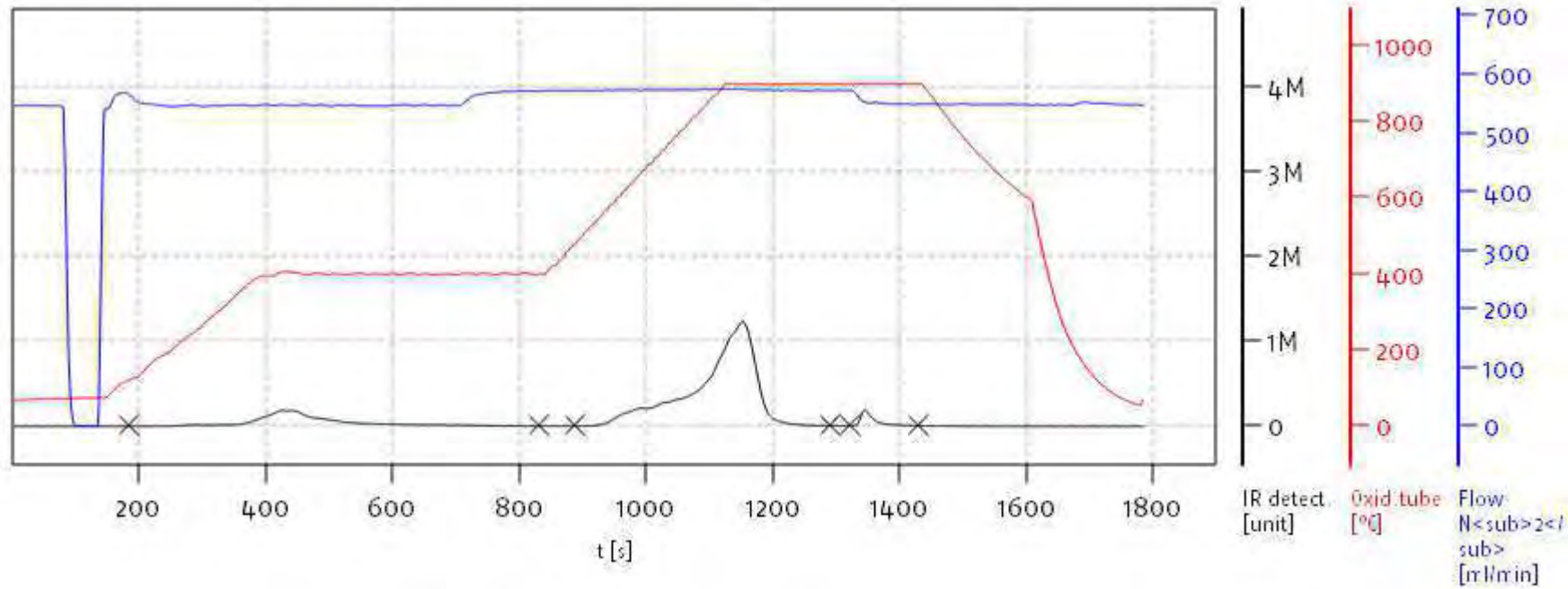
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EXCELLENCE IN ELEMENTS

soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
22	18	23J0567-06	545.50		CARBON	11/1/2023 12:23 AM	bl	0.317	953 246	1.662	0.047	191 166	4 656 106	0.270	1.345	1.0031	1.0000



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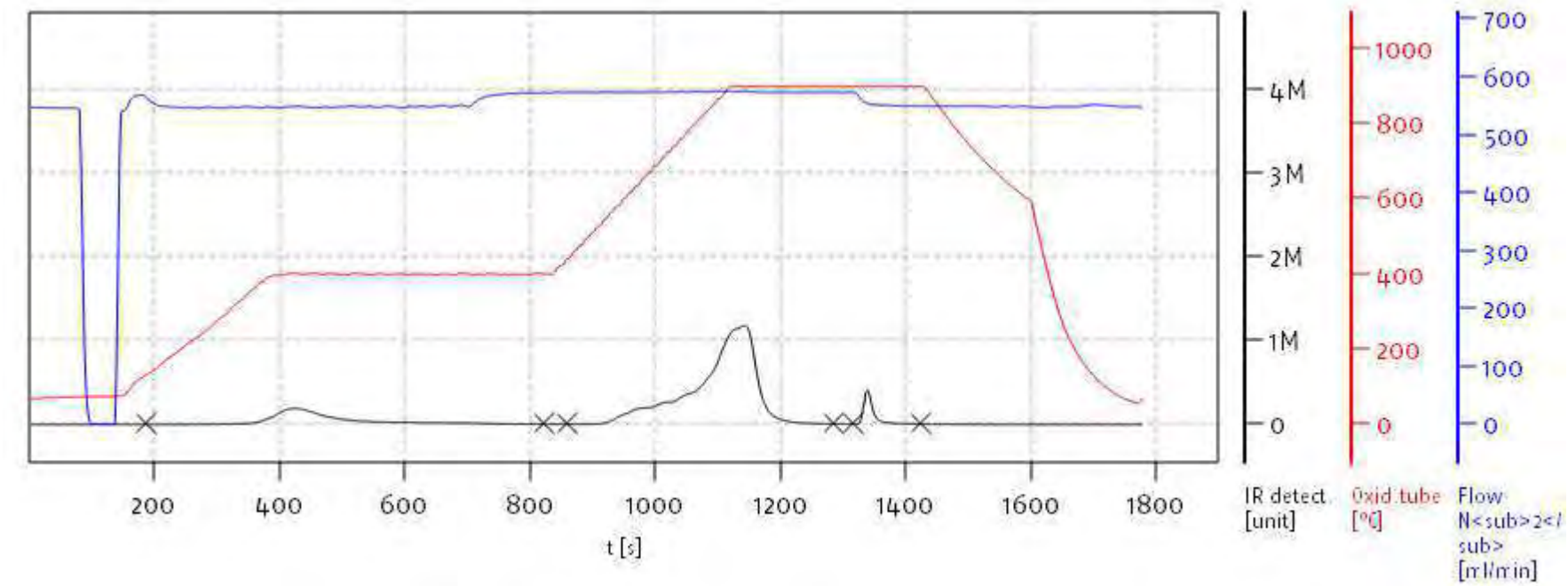
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elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
23	19	BLJ0929-DUP1	538.40		CARBON	11/1/2023 12:53 AM	bl	0.332	901 987	1.696	0.074	281 339	4 659 012	0.258	1.364	1.0031	1.0000



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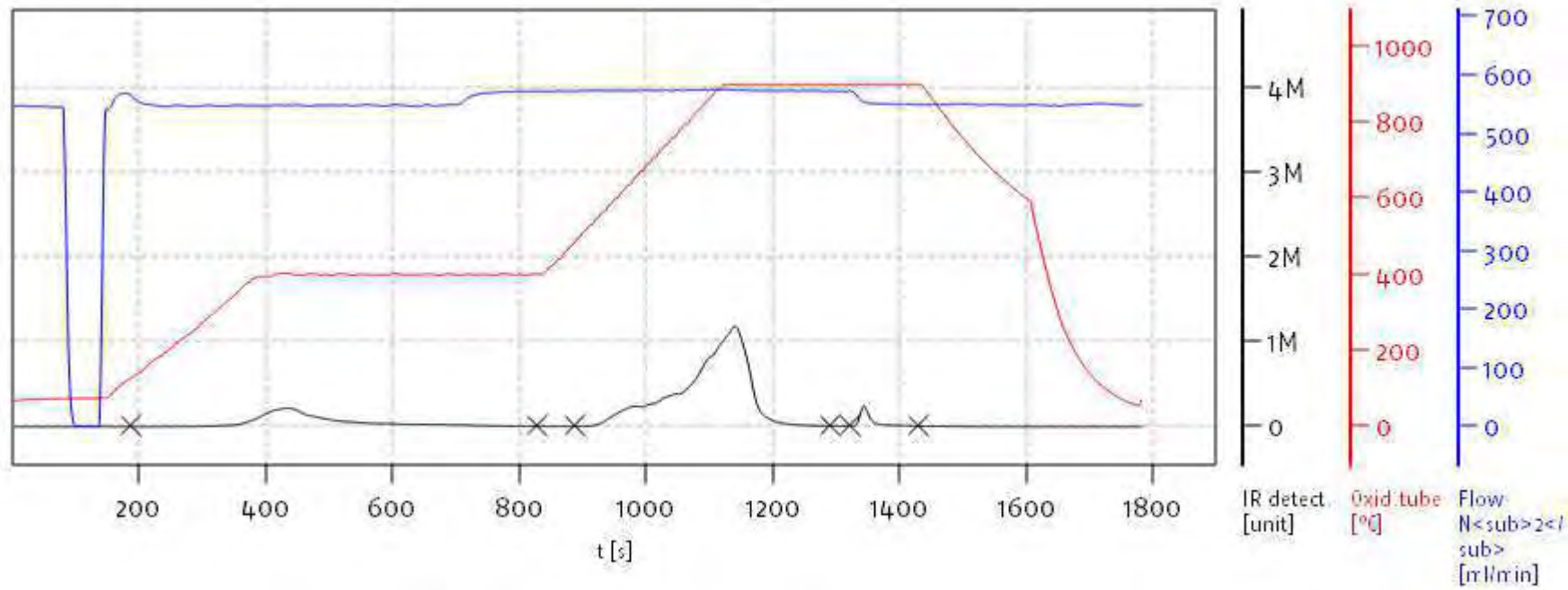
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EXCELLENCE IN ELEMENTS

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Serial No: 0300.181017
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
24	20	BLJ0929-DUP2	567.10		CARBON	11/1/2023 1:24 AM	bl	0.350	1 110 732	1.714	0.047	196 462	4 905 011	0.304	1.364	1.0031	1.0000



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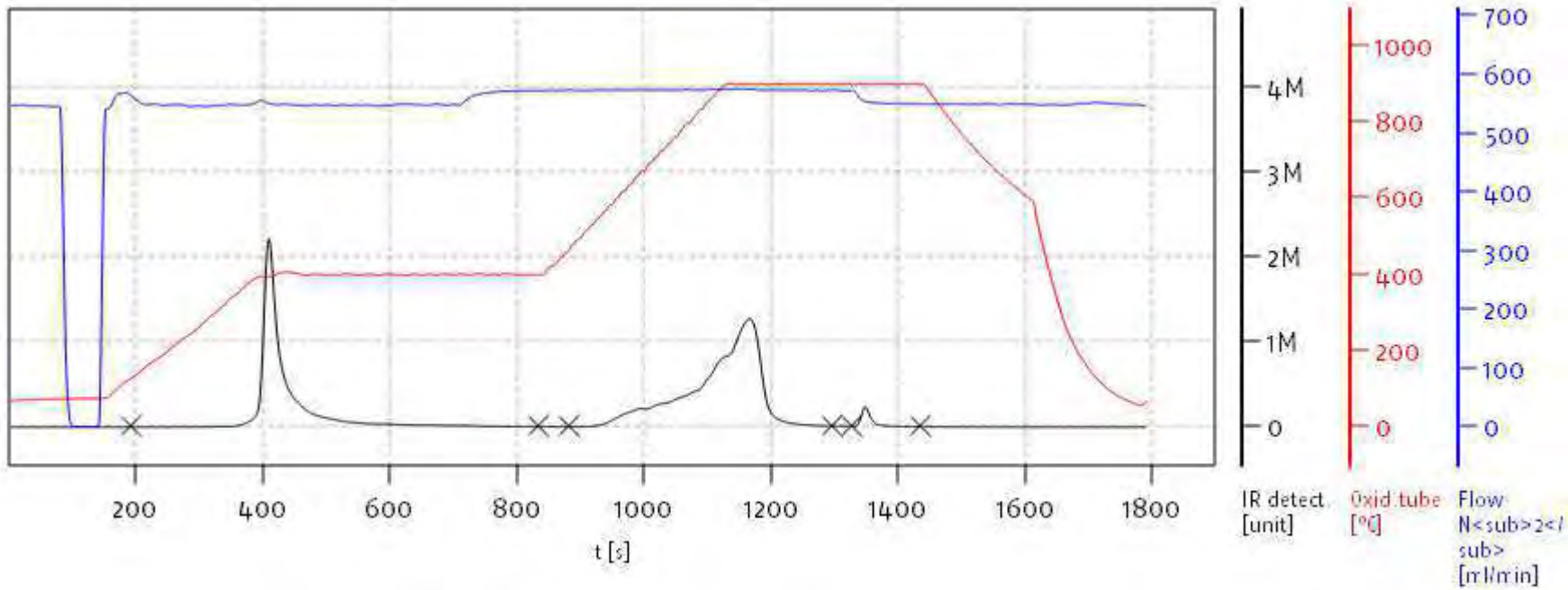
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EXCELLENCE IN ELEMENTS

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Serial No: 0300.181017
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
25	21	BLJ0929-MS1	546.60	0.0072	CARBON	11/1/2023 1:54 AM	bl	0.905	2 993 308	2.345	0.042	174 848	4 989 654	0.863	1.440	1.0031	1.0000



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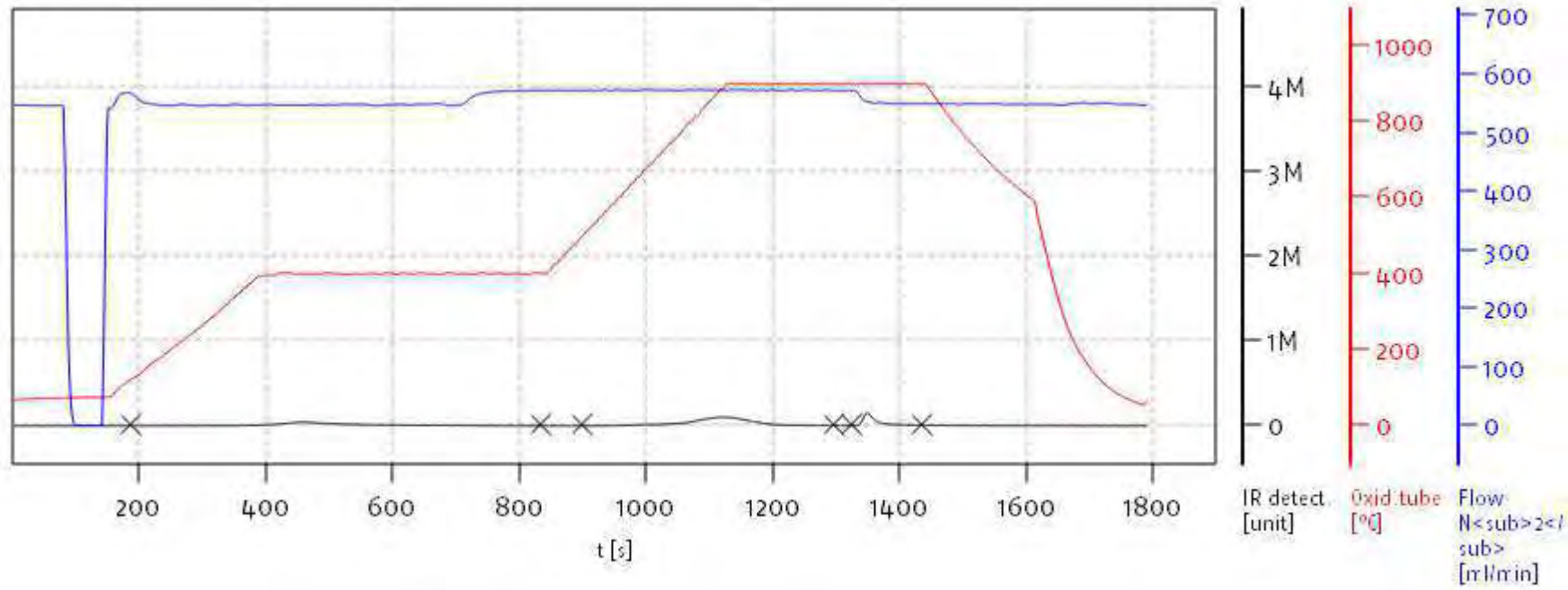
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Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
26	22	23J0505-01	519.90		CARBON	11/1/2023 2:24 AM	bl	0.093	219 185	0.217	0.035	143 491	433 963	0.058	0.124	1.0031	1.0000



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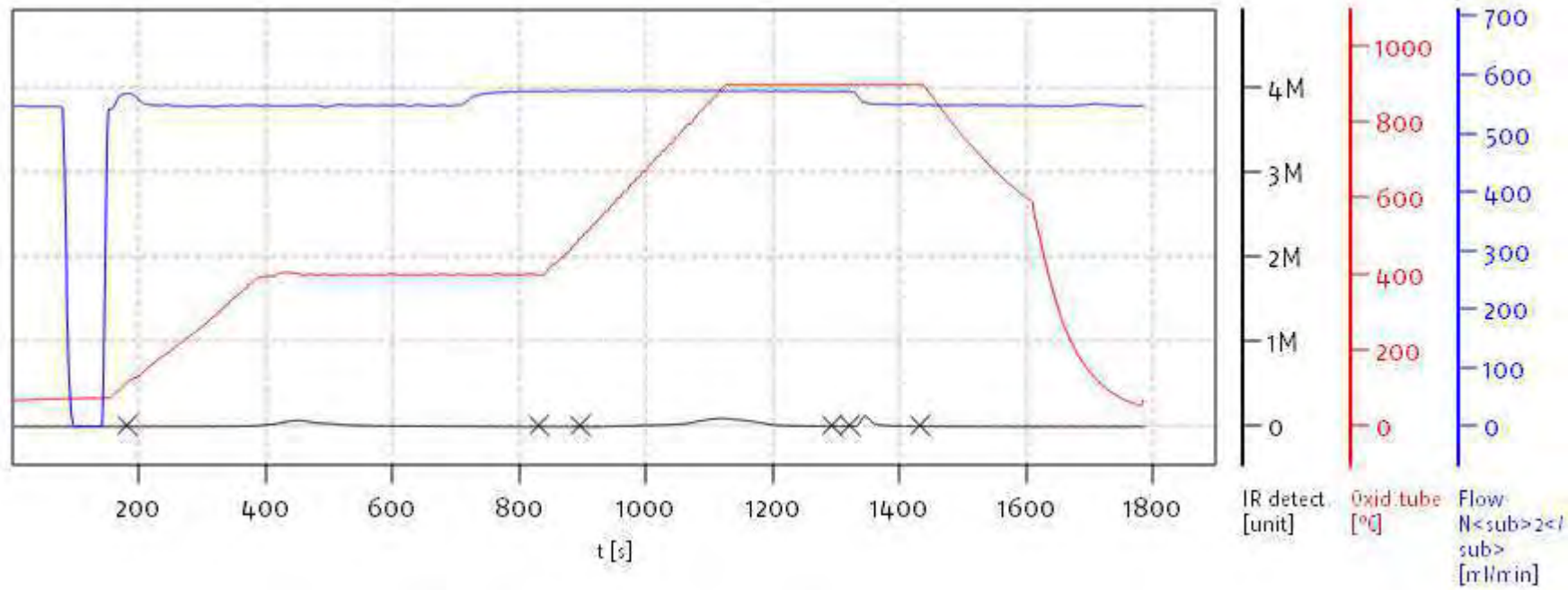
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Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
27	23	BLJ0931-DUP1	516.70		CARBON	11/1/2023 2:54 AM	bl	0.111	308 558	0.244	0.025	111 322	460 648	0.086	0.133	1.0031	1.0000



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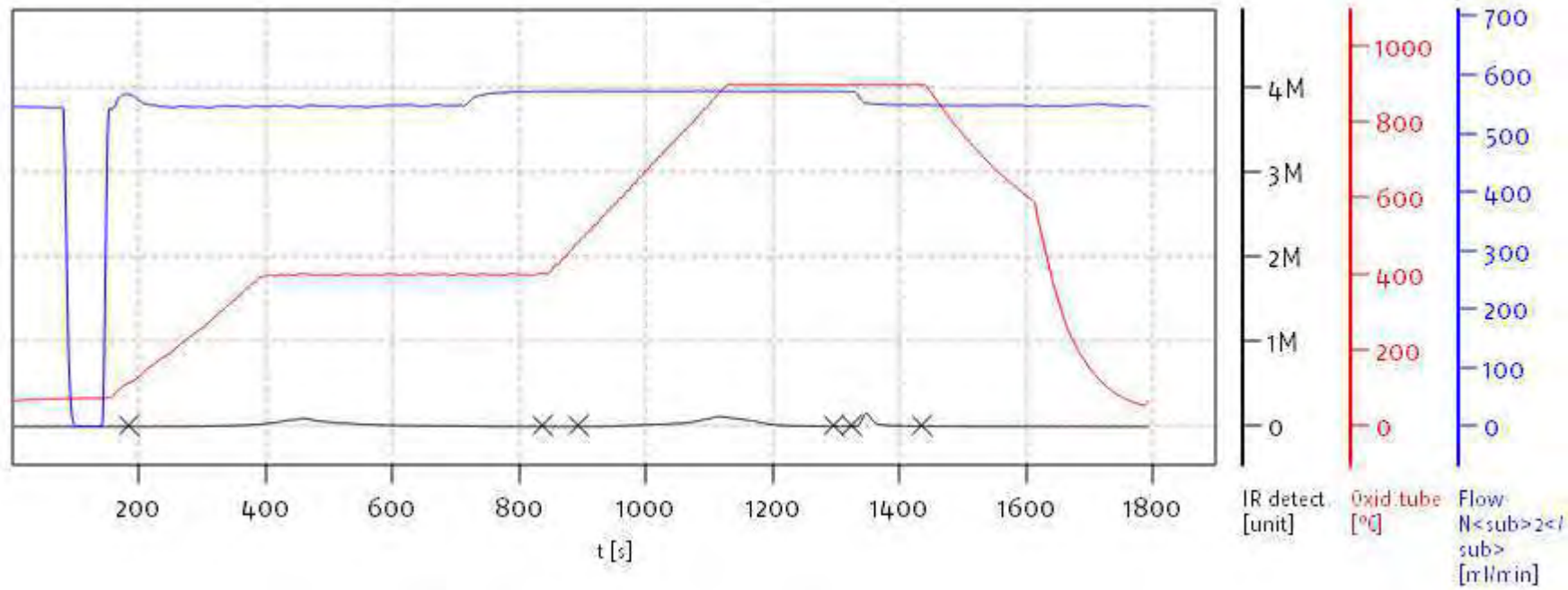
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elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
28	24	BLJ0931-DUP2	543.50		CARBON	11/1/2023 3:24 AM	bl	0.168	498 685	0.318	0.031	134 032	540 531	0.138	0.149	1.0031	1.0000



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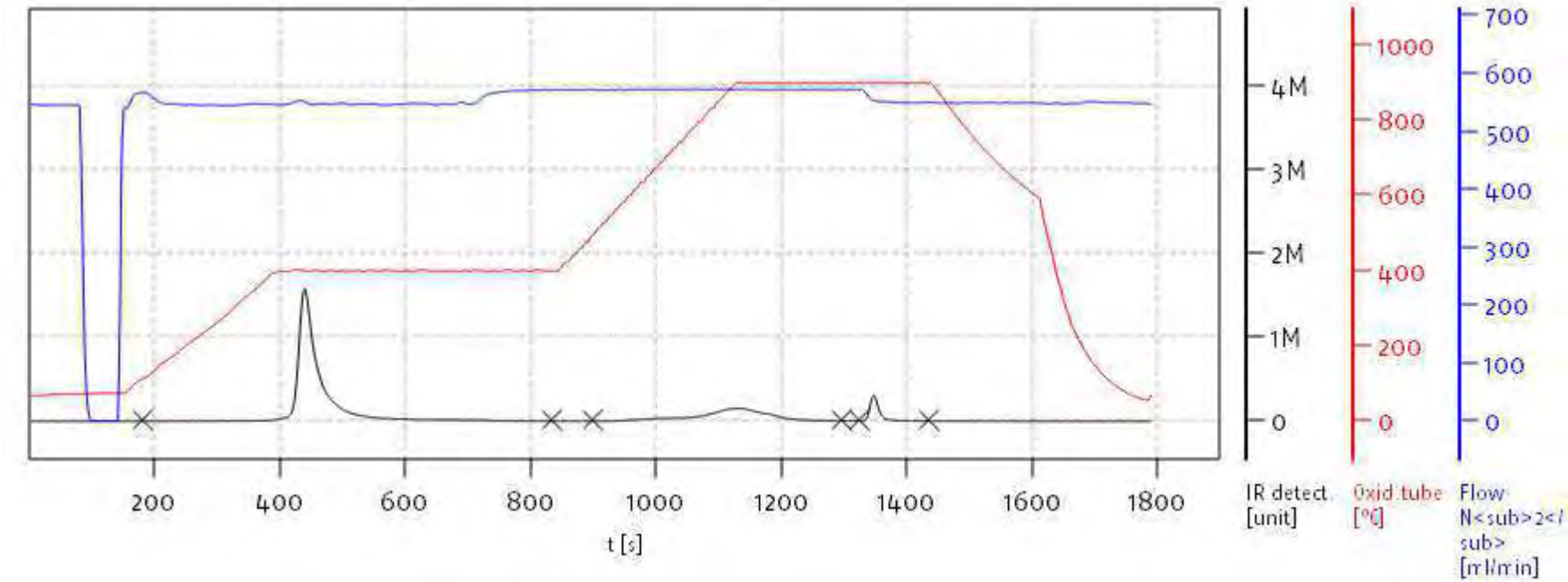
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
29	25	BLJ0931-MS1	566.40	0.0075	CARBON	11/1/2023 3:55 AM	bl	0.690	2 312 766	0.892	0.049	203 459	746 872	0.642	0.201	1.0031	1.0000



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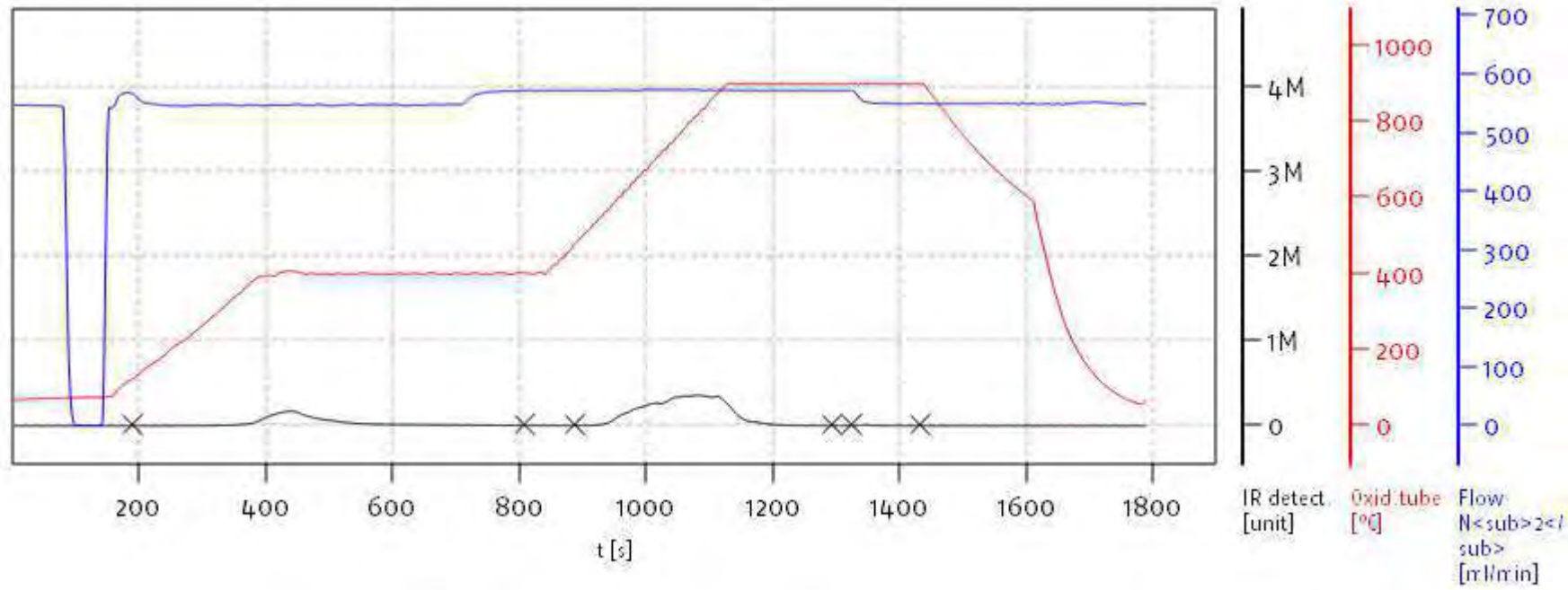
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EXCELLENCE IN ELEMENTS

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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
30	26	23J0566-02	564.90		CARBON	11/1/2023 4:25 AM	bl,C2u	0.200	737 176	0.789	0.000	11 947	2 126 607	0.200	0.589	1.0031	1.0000



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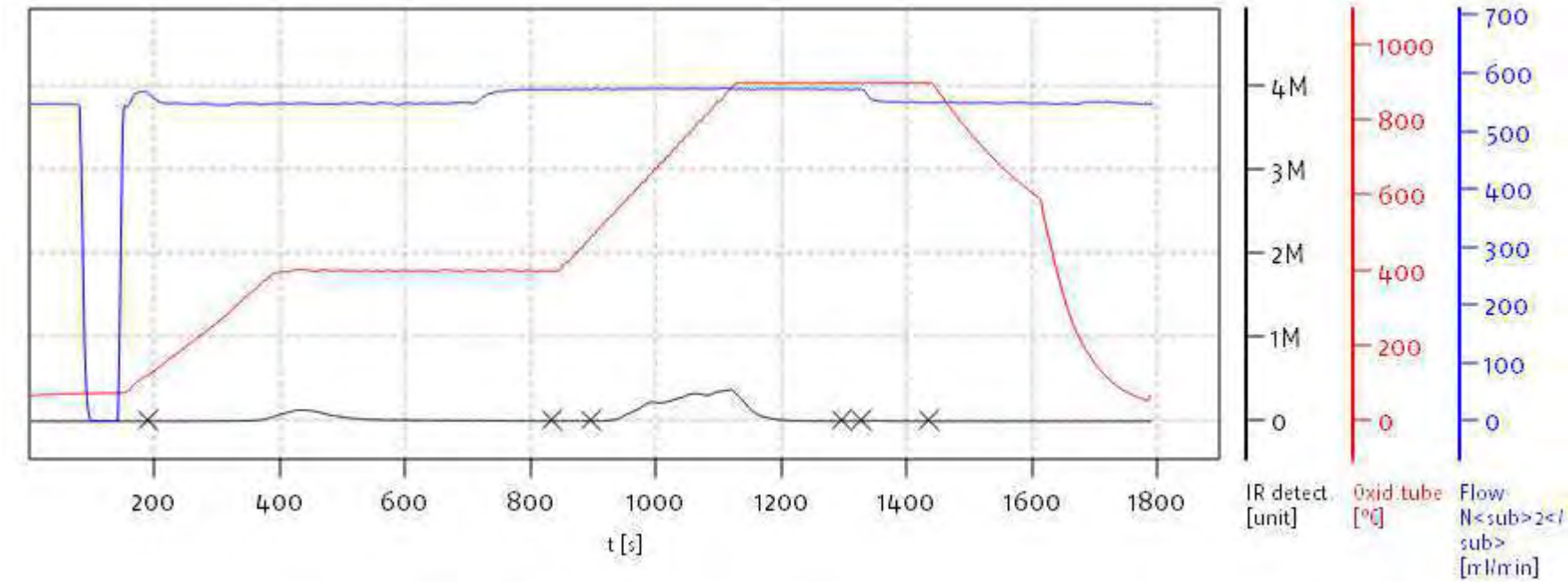
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elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
31	27	23J0566-03	516.70		CARBON	11/1/2023 4:55 AM	bl,C2u	0.180	612 107	0.825	0.000	9 955	2 131 219	0.180	0.645	1.0031	1.0000



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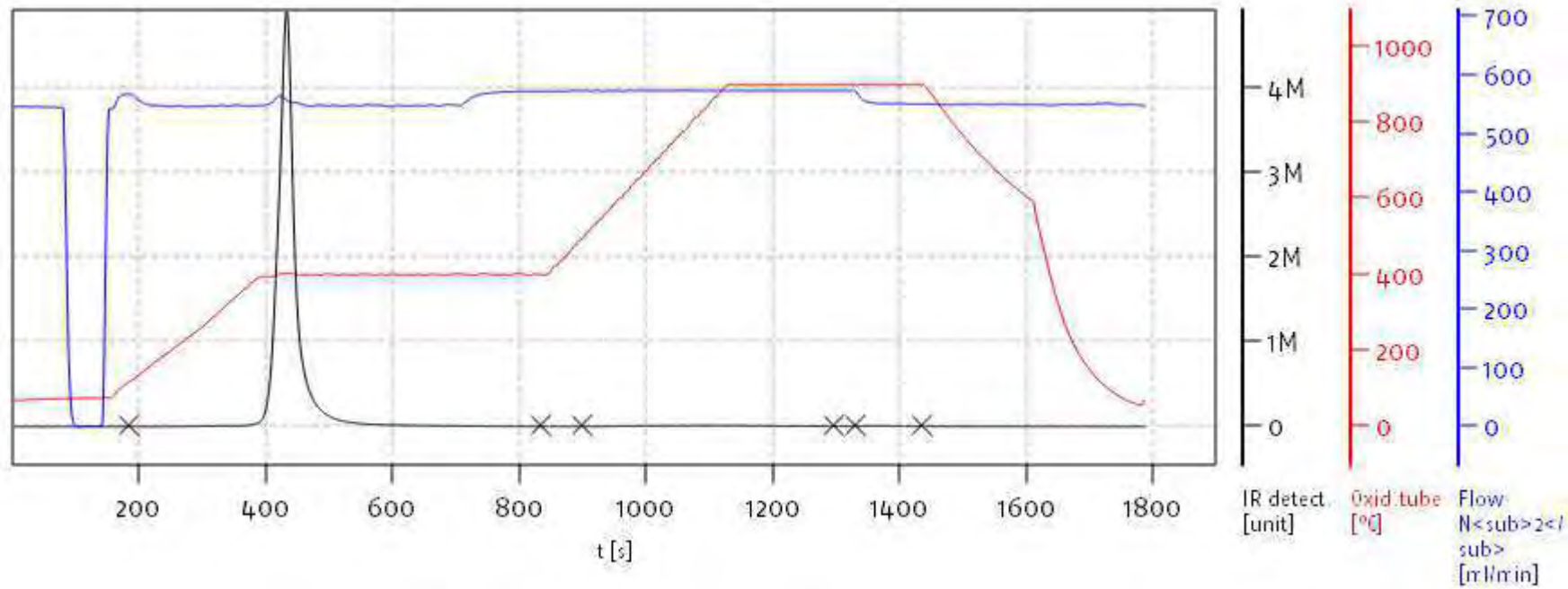
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elementar
EXCELLENCE IN ELEMENTS

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Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
32	28	SLJ0453-CCV2	20.00		CARBON	11/1/2023 5:25 AM	bl	46.424	5 864 353	47.146	0.000	23 619	119 890	46.424	0.722	1.0031	1.0000



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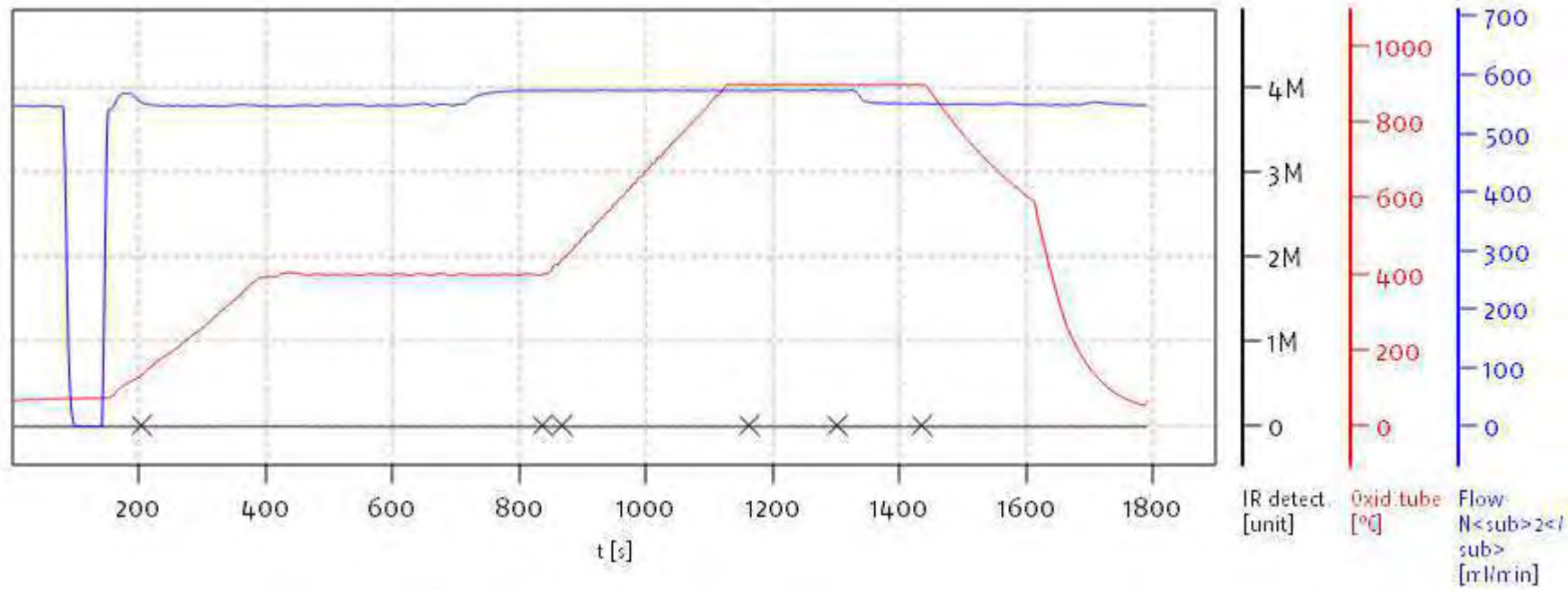
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Soli TOC Cube, Carbon
Balance: BAL3
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
33	29	SLJ0453-CCB2	518.50		CARBON	11/1/2023 5:55 AM	bl,C1u,C3u,C2u	0.000	10 362	0.000	0.000	554	713	0.000	0.000	1.0031	1.0000



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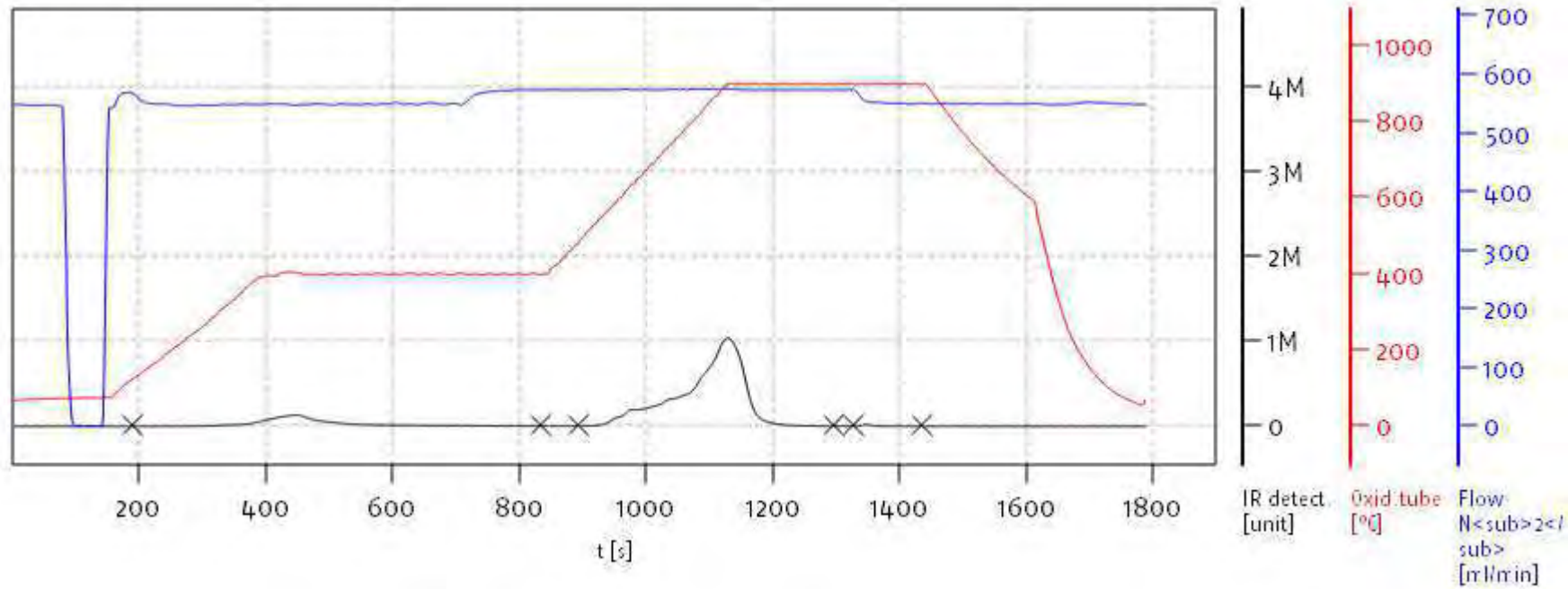
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
34	30	23J0566-04	558.80		CARBON	11/1/2023 6:26 AM	bl,C2u	0.169	623 212	1.281	0.000	18 187	3 944 388	0.169	1.111	1.0031	1.0000



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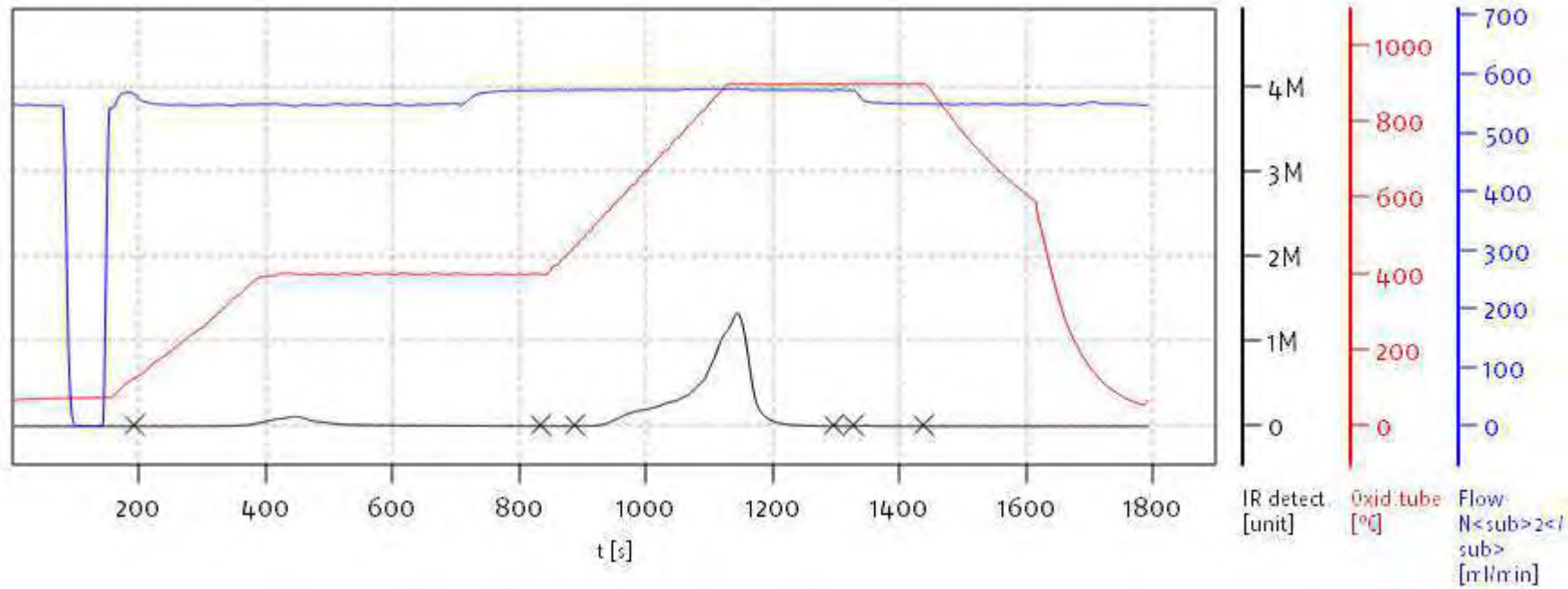
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
35	31	23J0566-05	553.60		CARBON	11/1/2023 6:56 AM	bl,C2u	0.130	481 631	1.418	0.000	9 723	4 522 792	0.130	1.288	1.0031	1.0000



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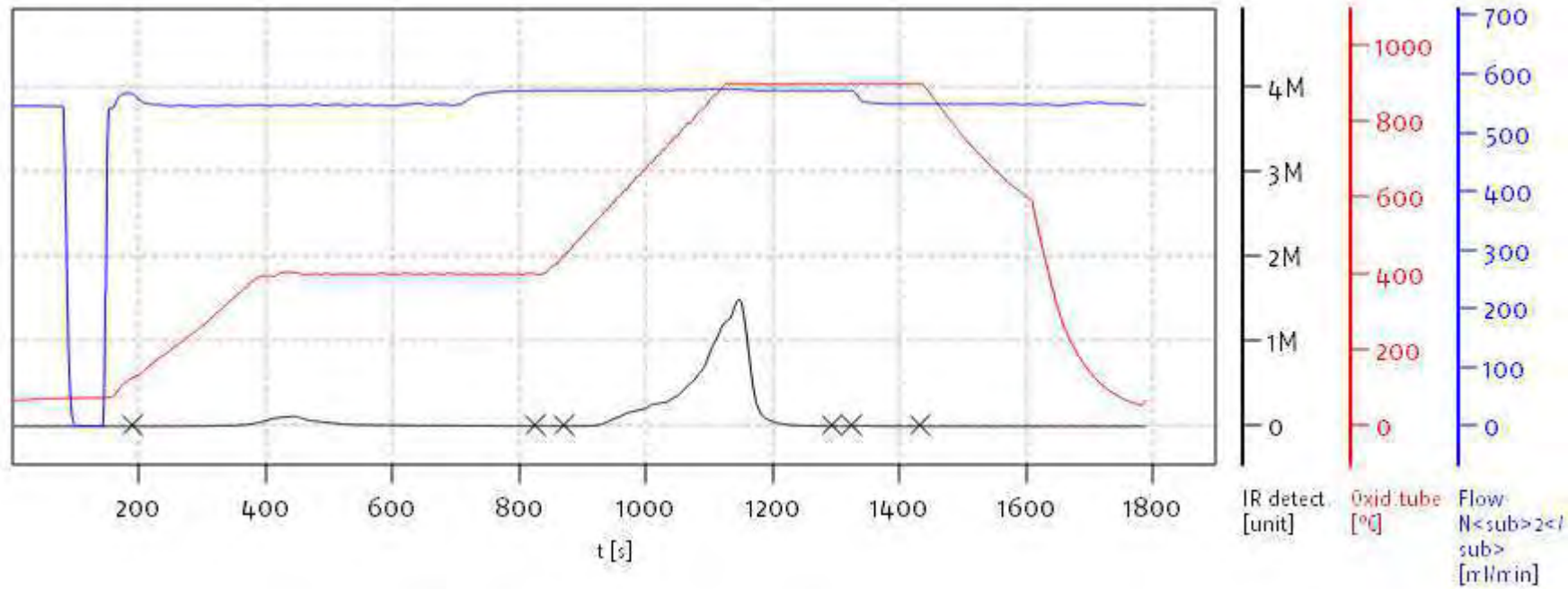
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elementar
EXCELLENCE IN ELEMENTS

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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
36	32	23J0566-06	576.10		CARBON	11/1/2023 7:26 AM	bl,C2u	0.140	535 011	1.557	0.000	9 227	5 175 468	0.140	1.417	1.0031	1.0000



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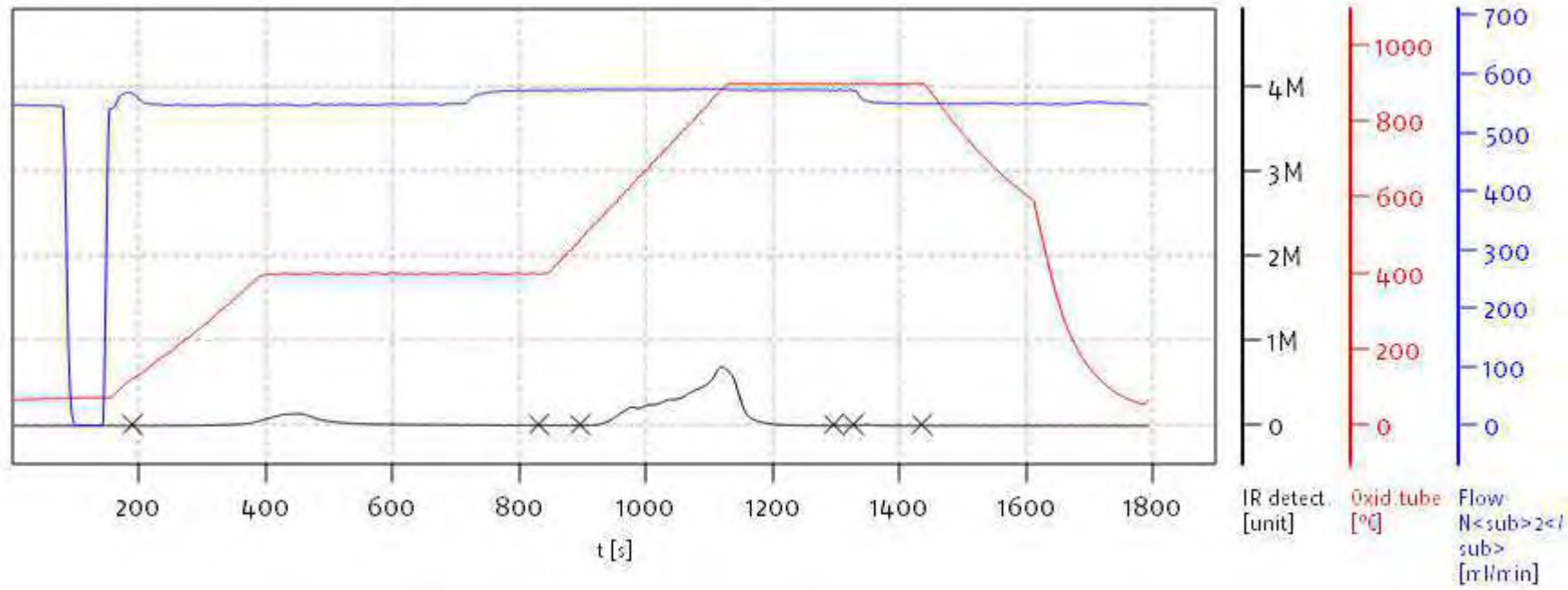
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
37	33	23J0566-07	594.30		CARBON	11/1/2023 7:56 AM	bl,C2u	0.175	683 100	0.958	0.000	12 226	2 961 304	0.175	0.783	1.0031	1.0000



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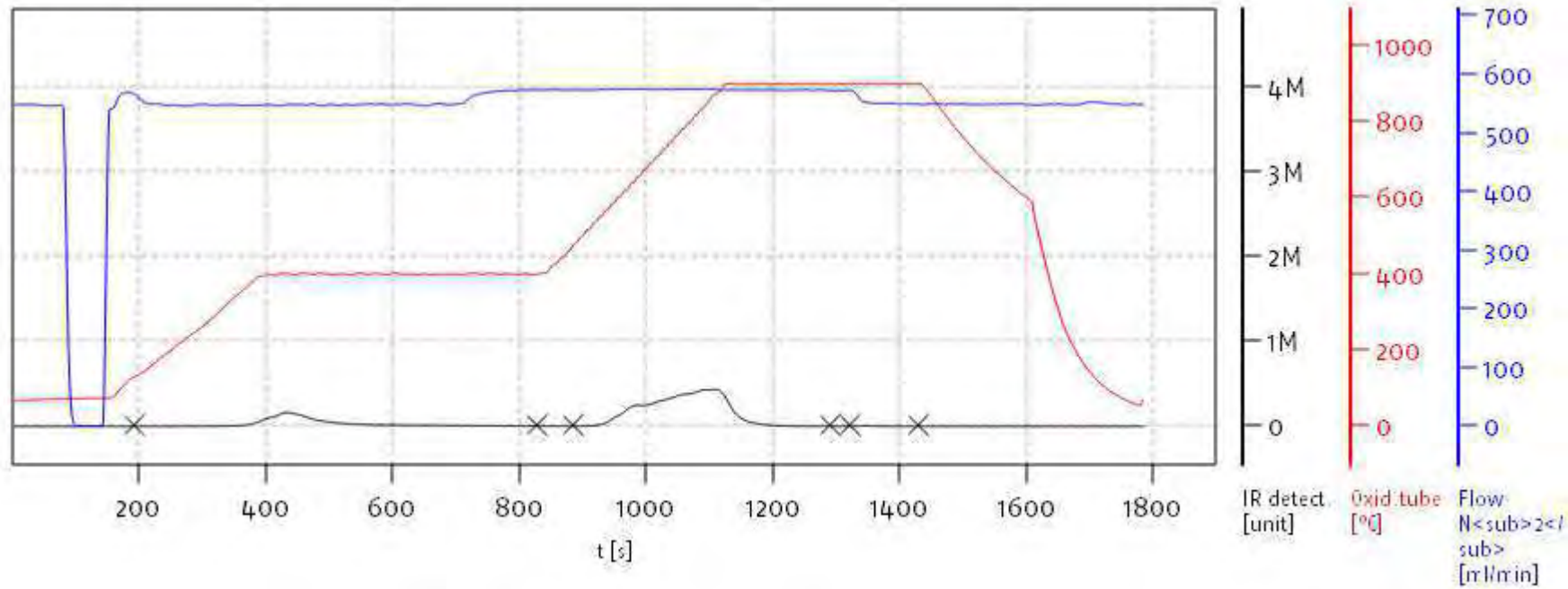
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
38	34	23J0566-08	553.50		CARBON	11/1/2023 8:26 AM	bl,C2u	0.183	664 838	0.869	0.000	8 842	2 422 481	0.183	0.686	1.0031	1.0000



Name:

Access: soliTOC superuser

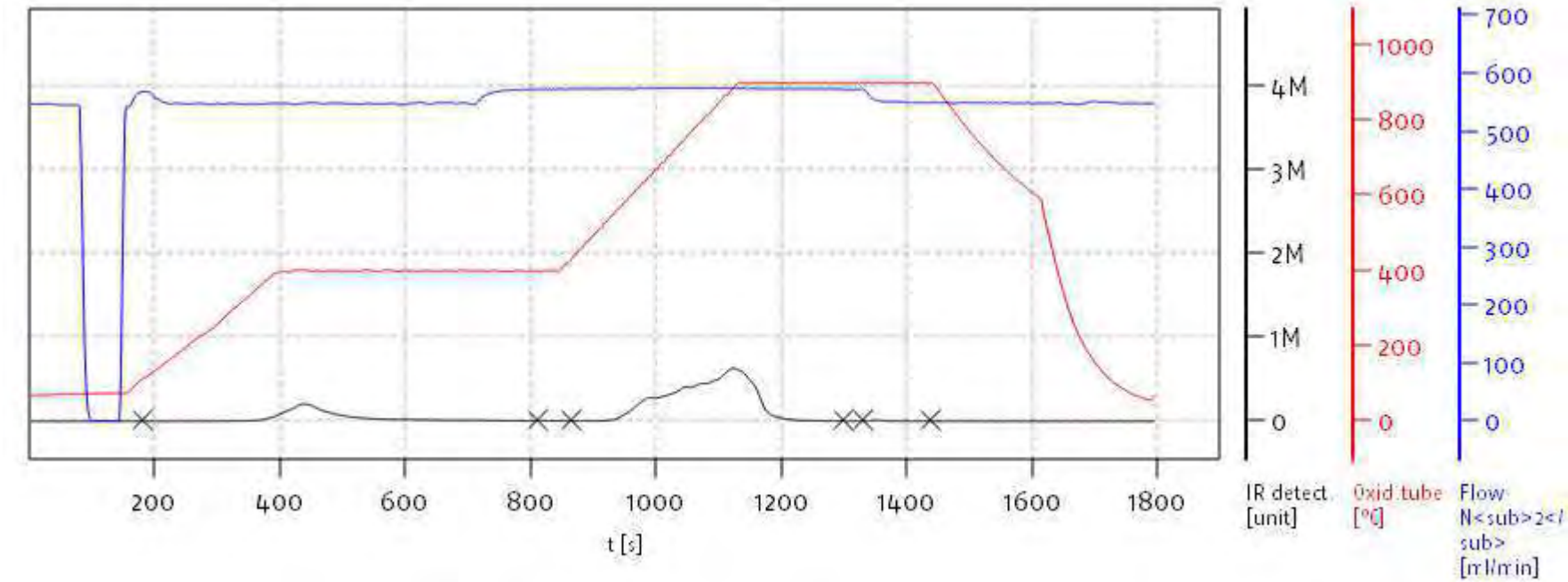
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
39	35	23J0566-09	605.70		CARBON	11/1/2023 8:57 AM	bl,C2u	0.206	813 170	1.091	0.000	14 577	3 409 475	0.206	0.885	1.0031	1.0000



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Date: Fri Nov 3 14:55:38 2023

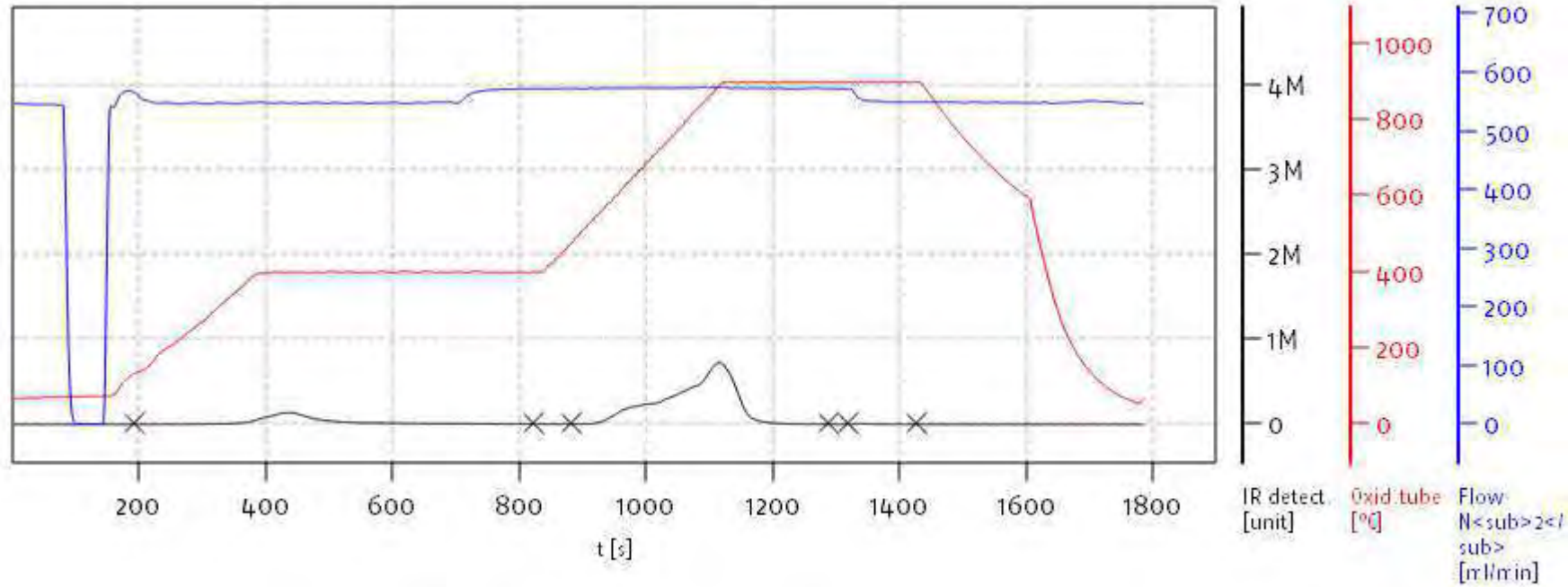
elementar
EXCELLENCE IN ELEMENTS

soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Document: 103023 AR from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
40	36	23J0566-10	544.50		CARBON	11/1/2023 9:27 AM	bl,C2u	0.169	607 585	1.061	0.000	9 758	3 090 816	0.169	0.892	1.0031	1.0000



Name:

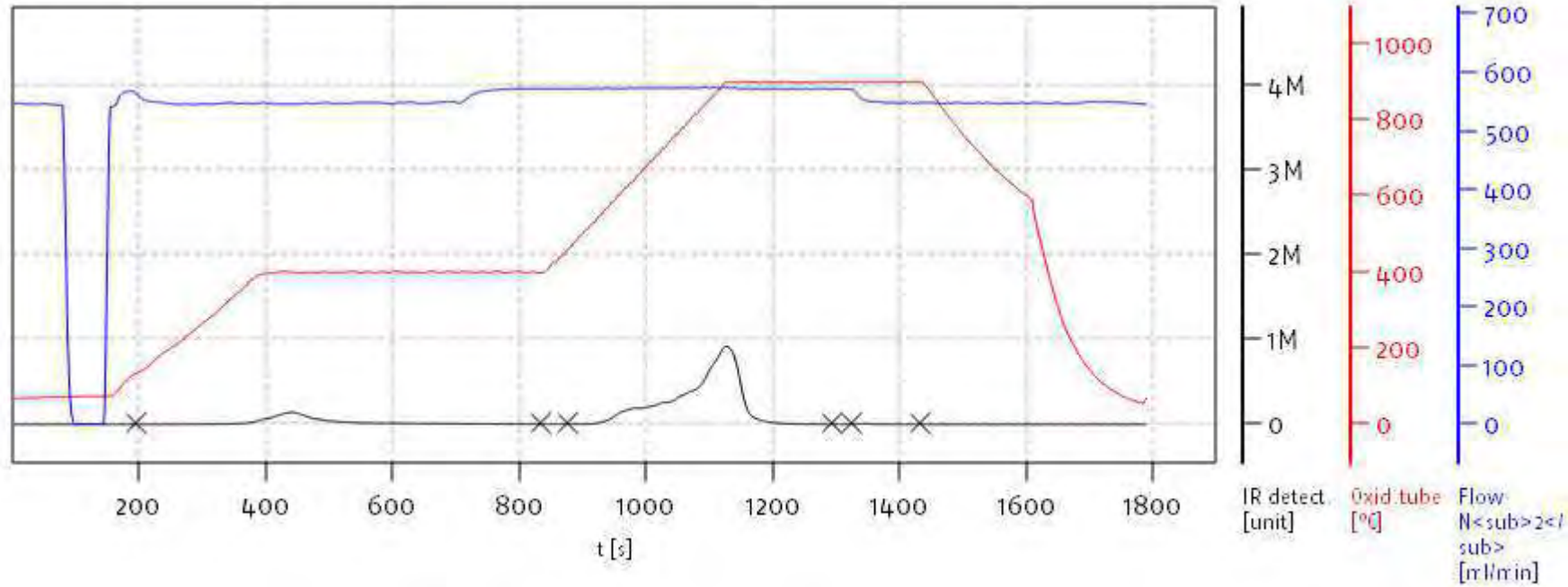
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Date: Fri Nov 3 14:55:38 2023

soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
41	37	23J0566-11	559.10		CARBON	11/1/2023 9:57 AM	bl,C2u	0.154	571 075	1.092	0.000	9 568	3 333 682	0.154	0.938	1.0031	1.0000



Name:

Access: soliTOC superuser

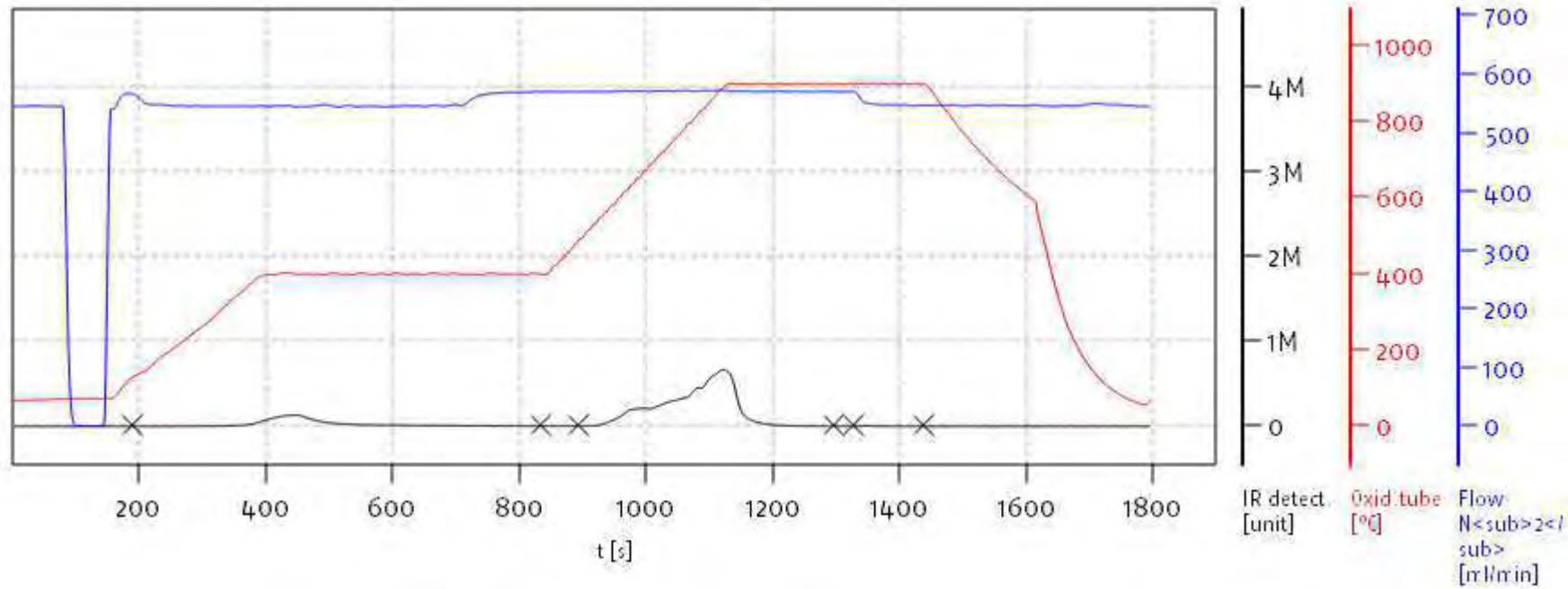
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soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
42	38	23J0566-12	509.00		CARBON	11/1/2023 10:27 AM	bl,C2u	0.174	584 795	1.036	0.000	7 612	2 795 873	0.174	0.862	1.0031	1.0000



Name:

Access: soliTOC superuser

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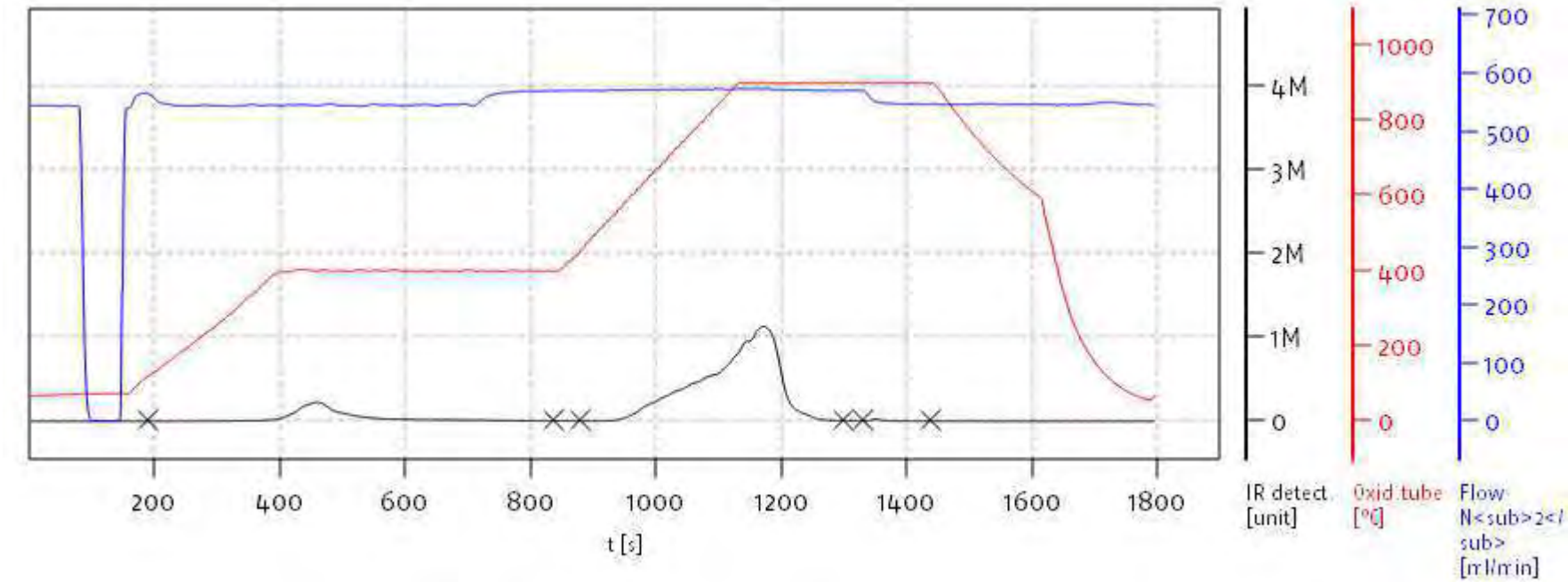
soliTOC V2.0.2 (31015f9) 2018-11-19
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Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
43	39	23J0566-13	664.00		CARBON	11/1/2023 10:58 AM	bl	0.199	860 145	1.518	0.000	23 744	5 548 593	0.199	1.319	1.0031	1.0000



Name:

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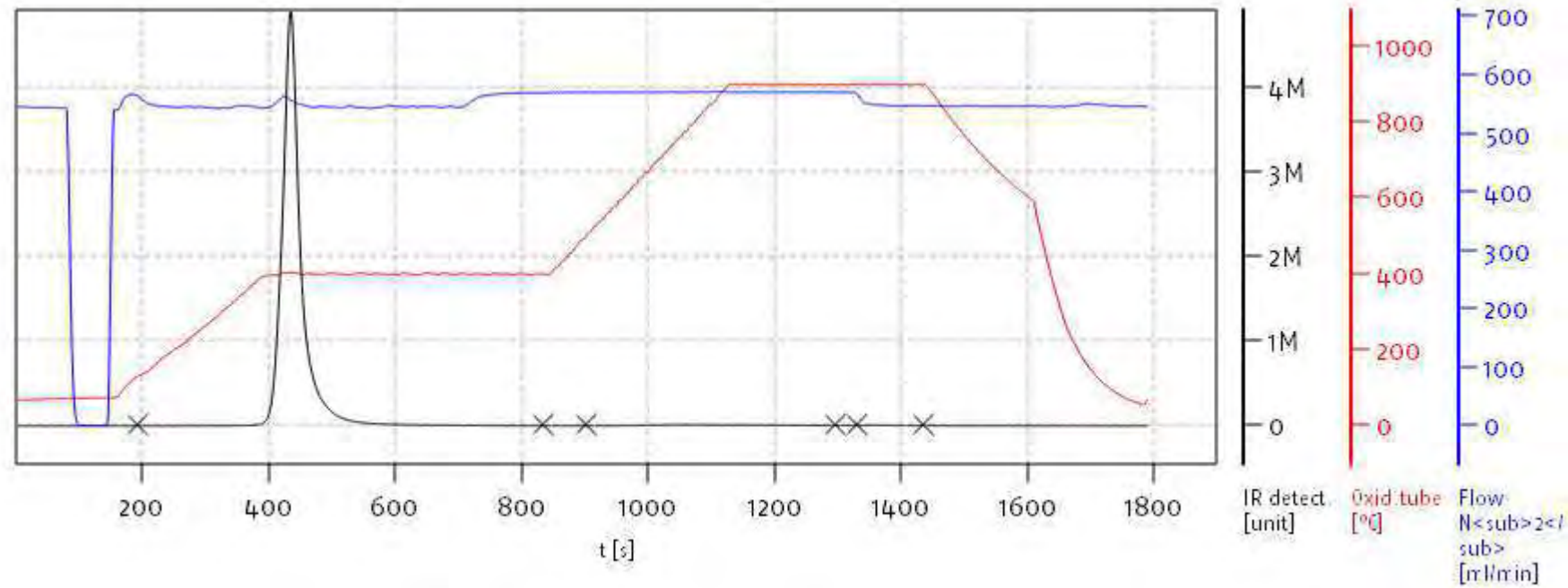
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EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
44	40	SLJ0453-CCV3	21.30		CARBON	11/1/2023 11:28 AM	bl,C2u	46.576	6 263 961	47.219	0.000	20 209	115 231	46.576	0.643	1.0031	1.0000



Name:

Access: soliTOC superuser

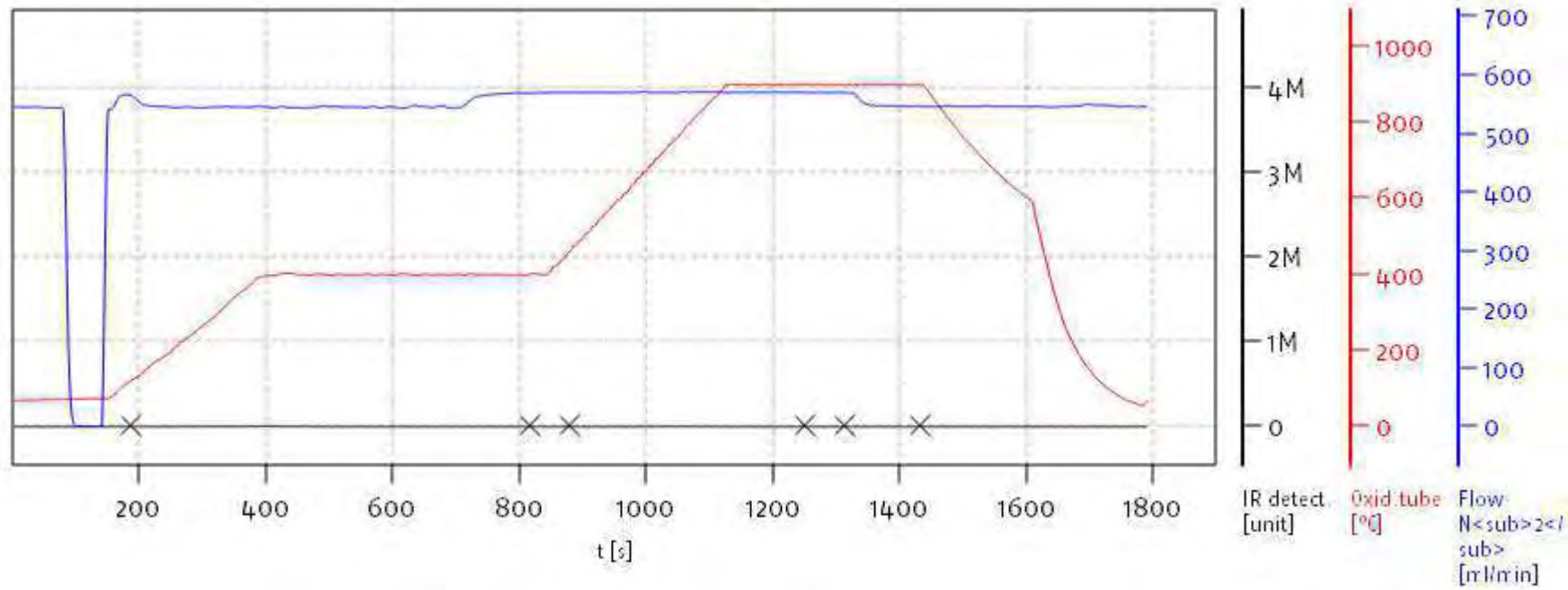
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EXCELLENCE IN ELEMENTS

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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
45	41	SLJ0453-CCB3	518.00		CARBON	11/1/2023 11:58 AM	bl,C1u,C3u,C2u	0.000	18 026	0.000	0.000	674	6 625	0.000	0.000	1.0031	1.0000



Name:

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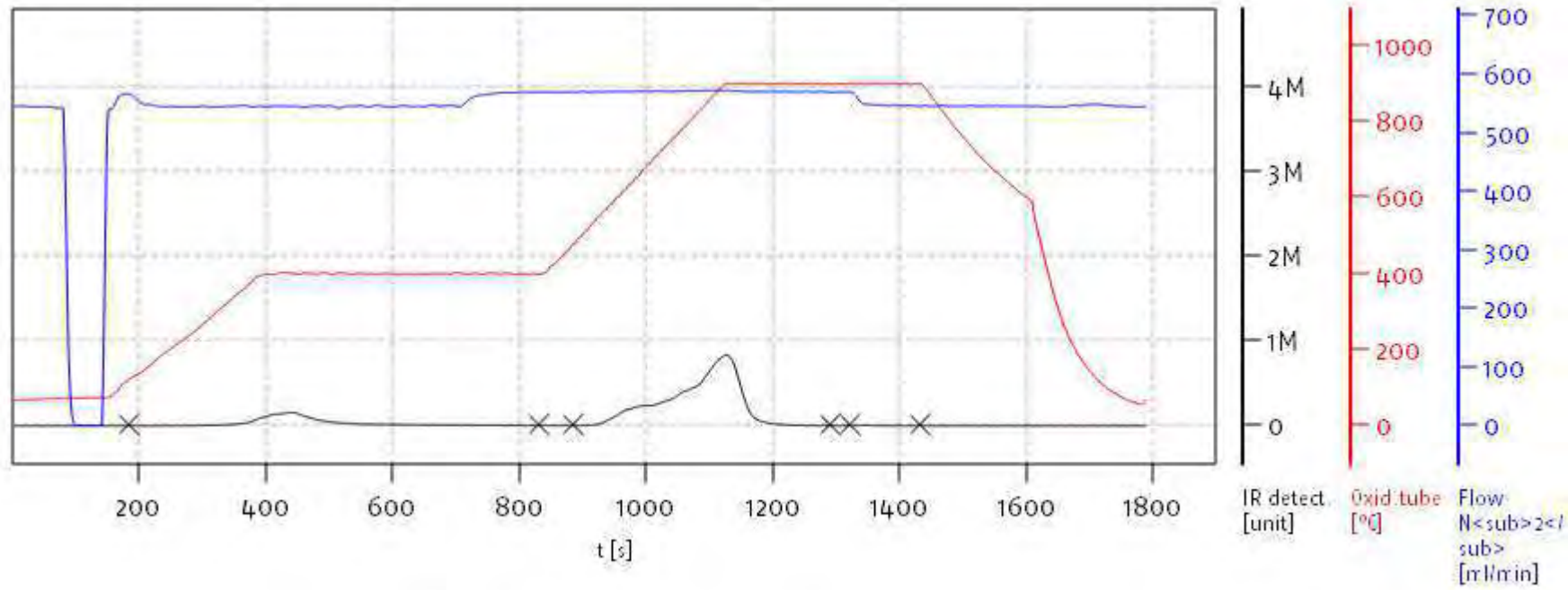
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soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
46	42	23J0566-14	540.30		CARBON	11/1/2023 12:28 PM	bl,C2u	0.201	709 873	1.210	0.000	8 992	3 465 809	0.201	1.009	1.0031	1.0000



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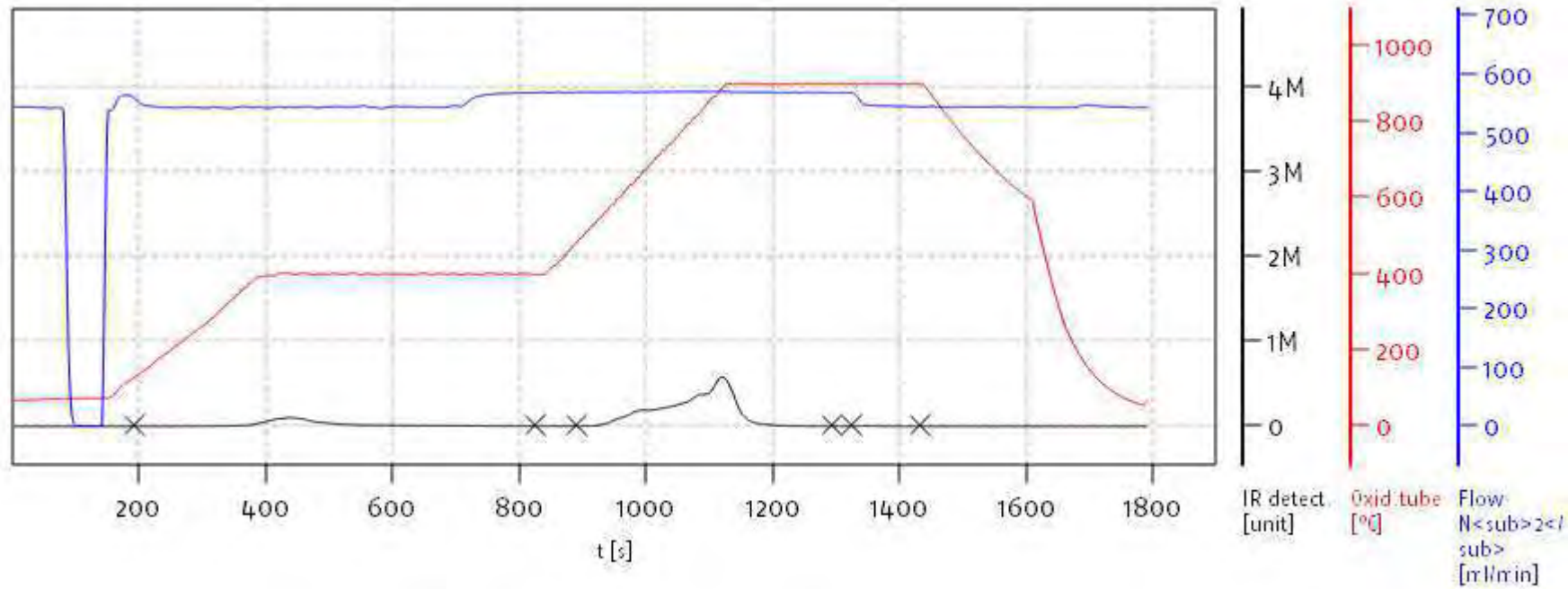
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EXCELLENCE IN ELEMENTS

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Serial No: 0300.181017
Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
47	43	23J0566-15	556.40		CARBON	11/1/2023 12:58 PM	bl,C2u	0.122	455 618	0.763	0.000	6 833	2 278 334	0.122	0.641	1.0031	1.0000



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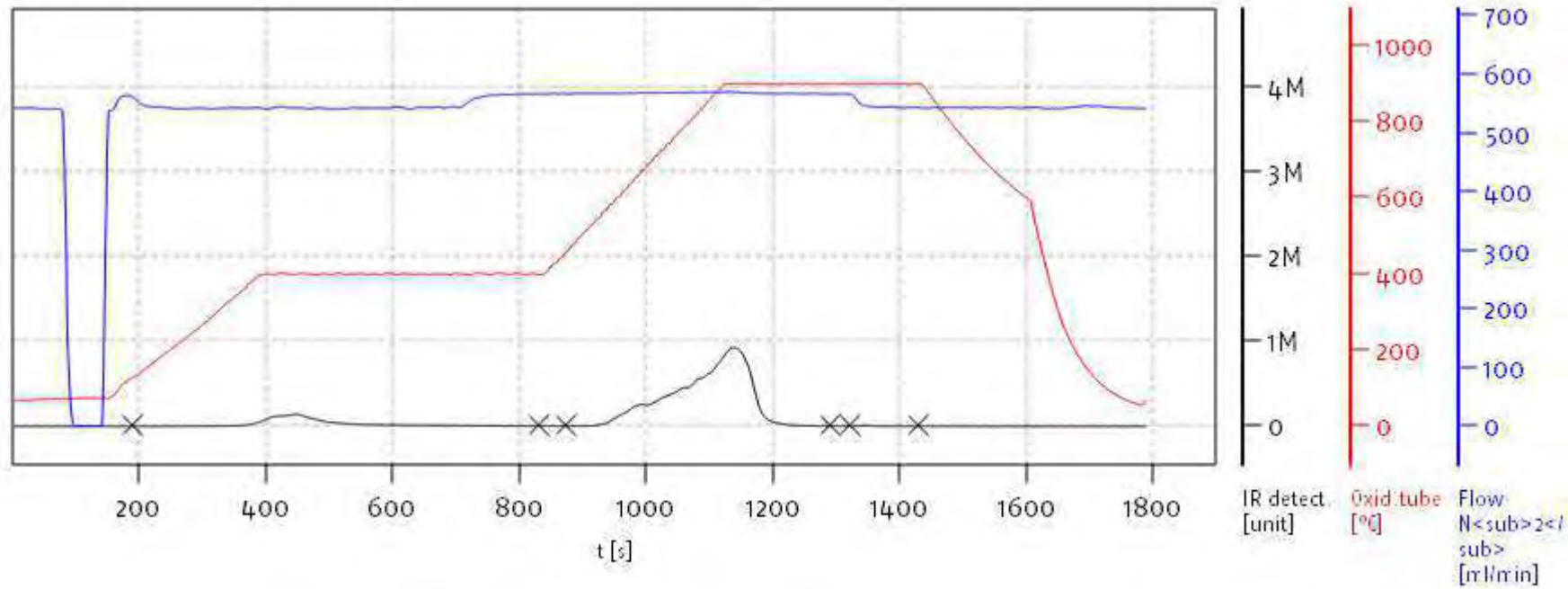
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Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
48	44	23J0567-01	530.70		CARBON	11/1/2023 1:29 PM	bl,C2u	0.183	639 767	1.466	0.000	12 770	4 320 784	0.183	1.283	1.0031	1.0000



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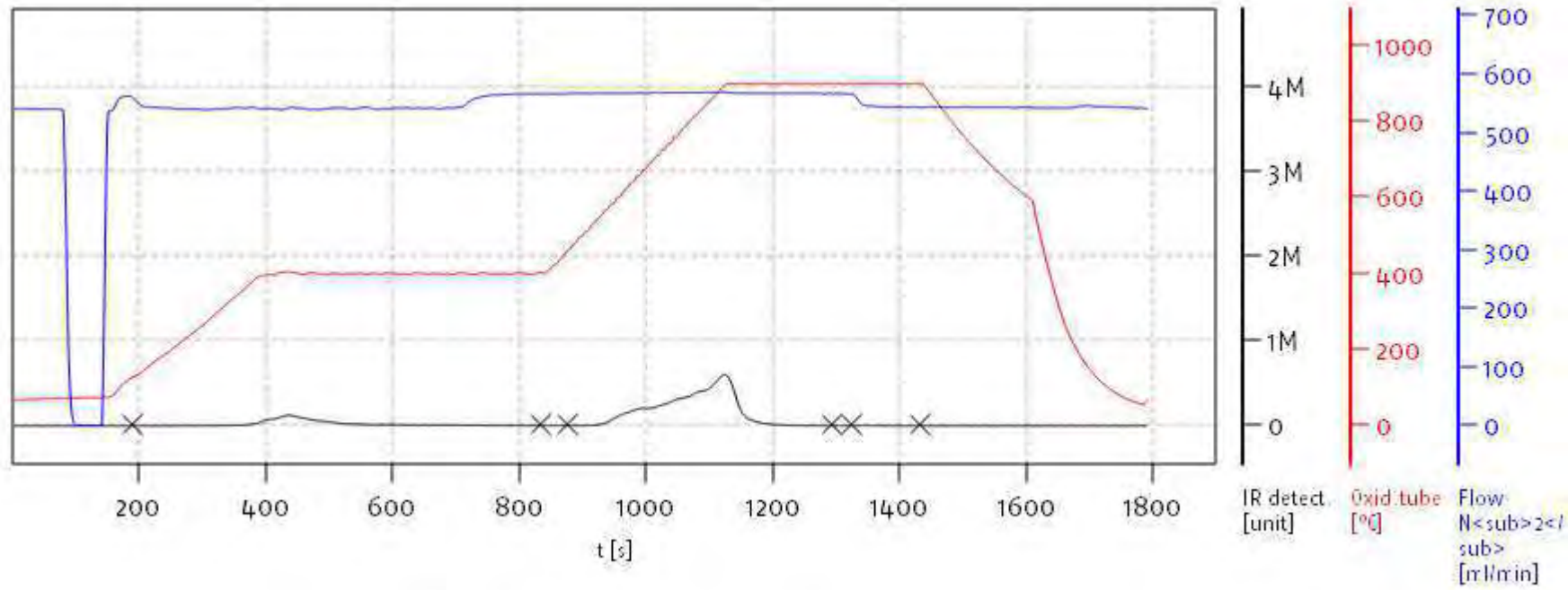
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Serial No: 0300.181017
Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
49	45	23J0567-02	530.60		CARBON	11/1/2023 1:59 PM	bl,C2u	0.144	509 050	0.896	0.000	6 121	2 546 015	0.144	0.752	1.0031	1.0000



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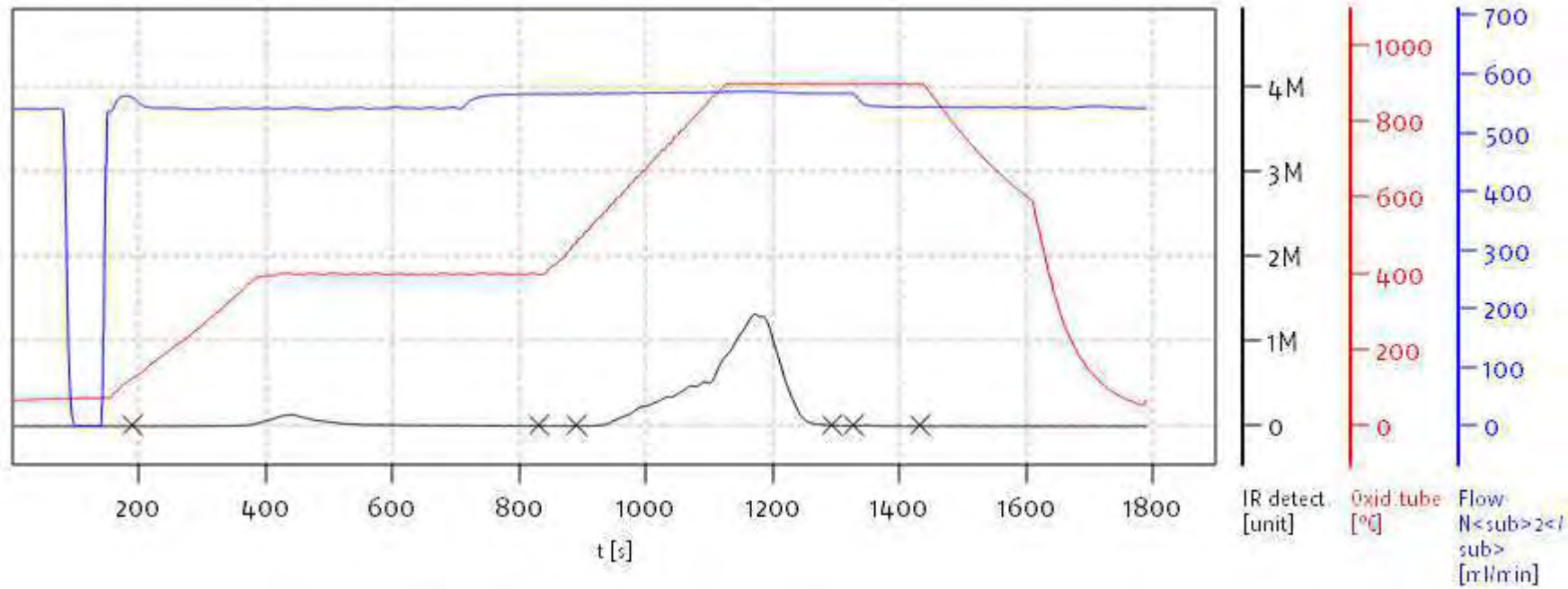
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elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
50	46	23J0567-03	534.20		CARBON	11/1/2023 2:29 PM	bl,C2u	0.167	589 904	2.109	0.000	14 781	6 569 450	0.167	1.942	1.0031	1.0000



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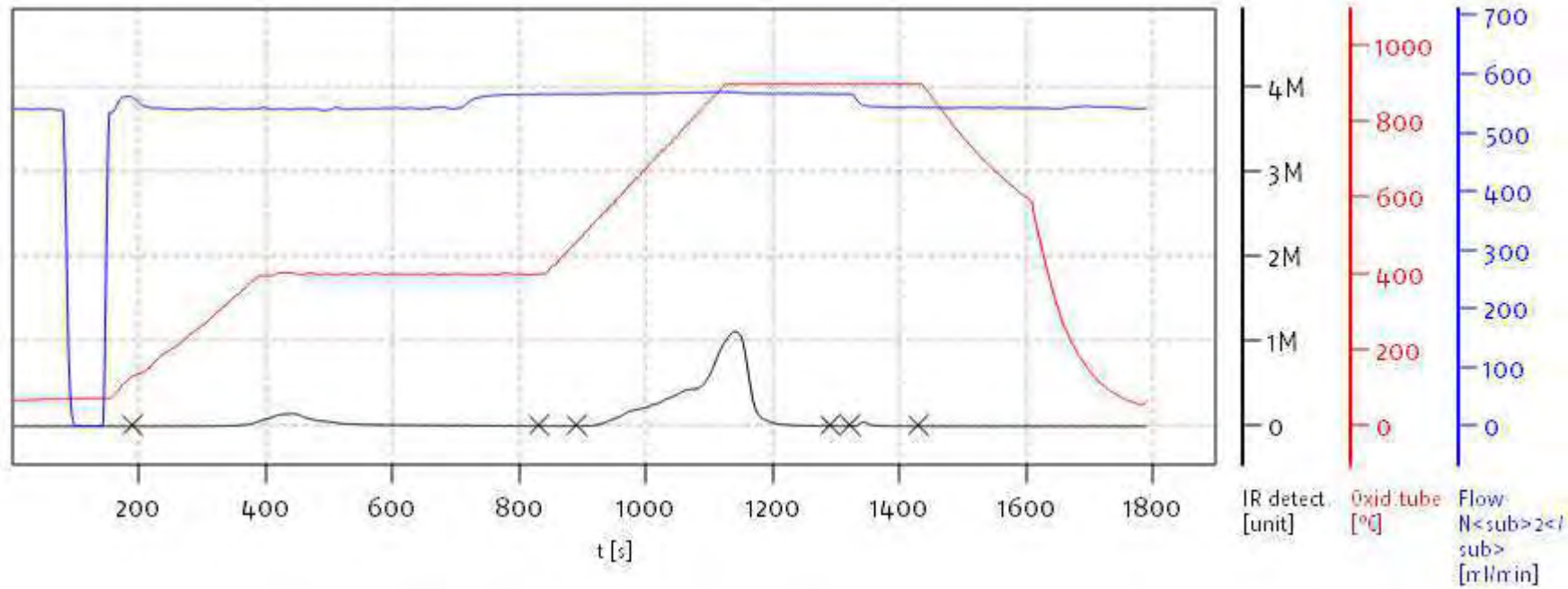
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elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
51	47	23J0567-04	531.50		CARBON	11/1/2023 2:59 PM	bl	0.190	653 628	1.448	0.003	39 801	4 244 194	0.187	1.258	1.0031	1.0000



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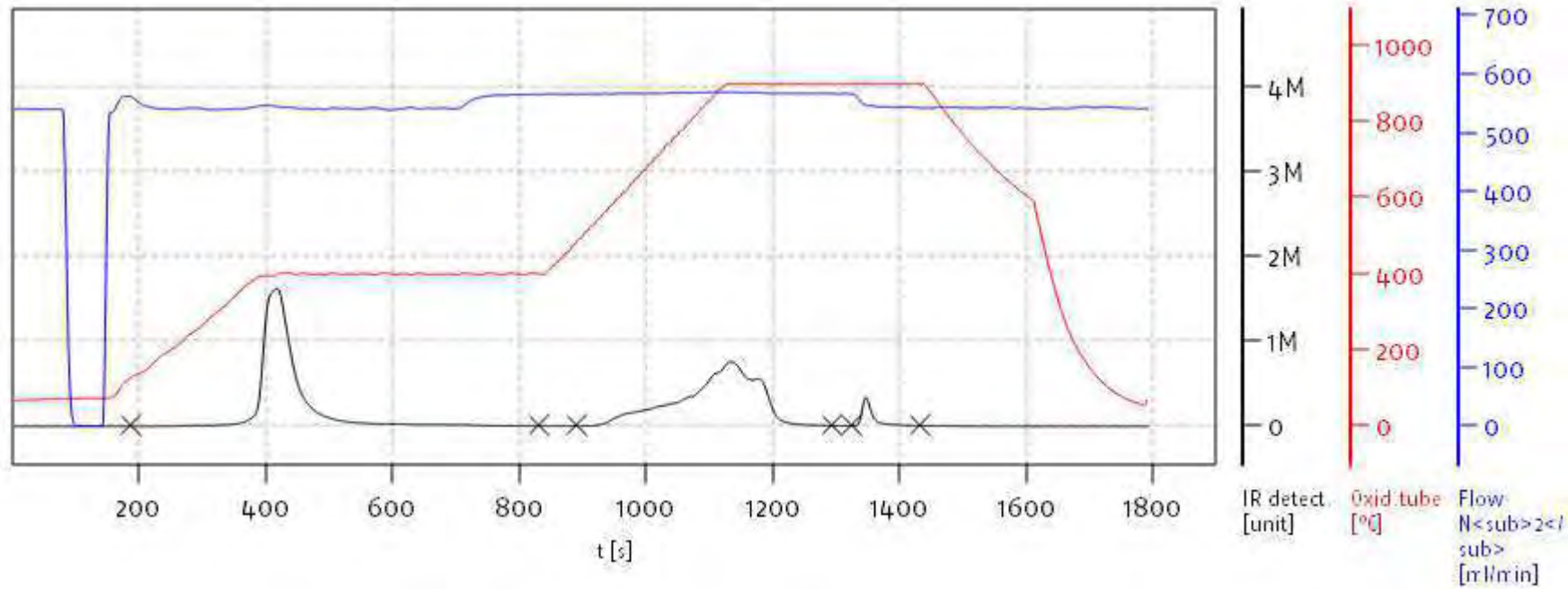
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Mode CCC

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
52	48	23J0567-05	509.70		CARBON	11/1/2023 3:30 PM	bl	1.177	3 565 684	2.372	0.073	263 639	3 867 505	1.104	1.195	1.0031	1.0000



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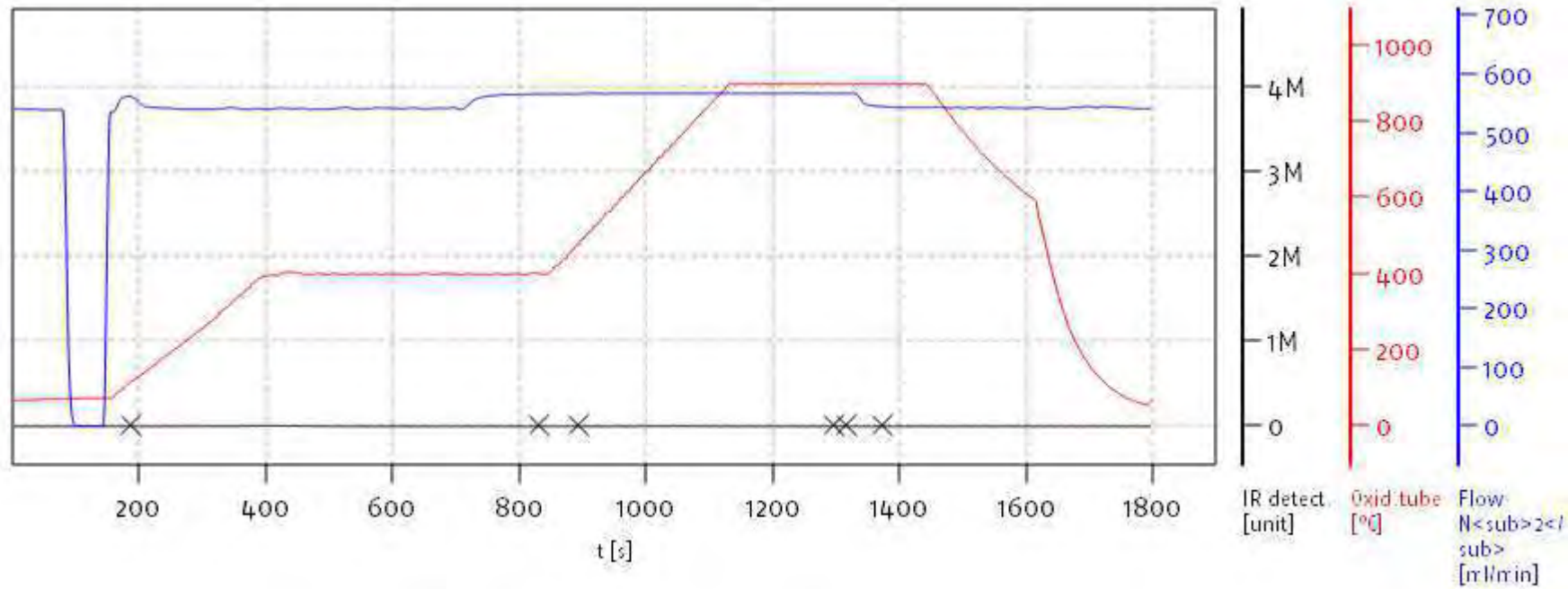
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
53	49	BLANK	1.00		CARBON	11/1/2023 4:00 PM	bl	0.000	30 709	0.000	0.000	146	10 563	0.000	0.000	1.0031	1.0000



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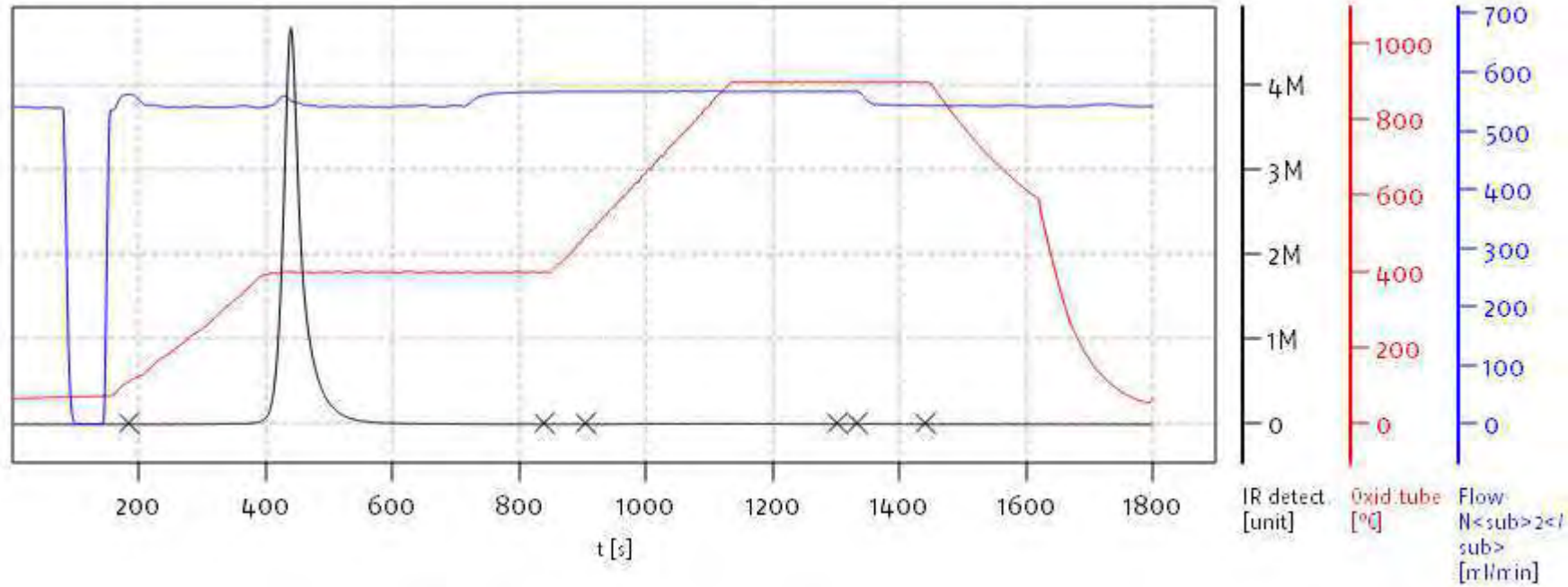
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
54	50	Dfactor	20.50		CARBON	11/1/2023 4:30 PM	bl,C2u	44.446	6 277 587	44.791	0.000	14 087	73 548	44.446	0.346	0.9193	1.0000



Name:

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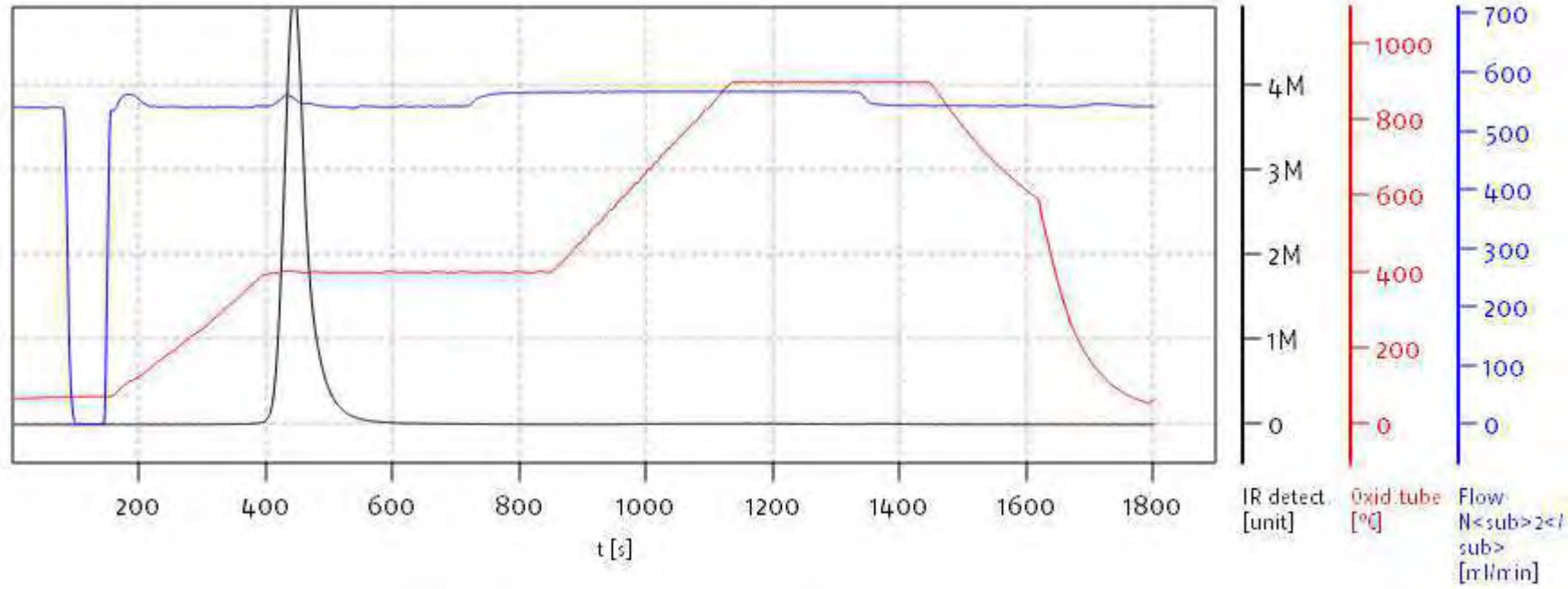
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
55	51	Dfactor	27.30		CARBON	11/1/2023 5:01 PM		0.000	0	0.000	0.000	0	0	0.000	0.000	1.0000	1.0000



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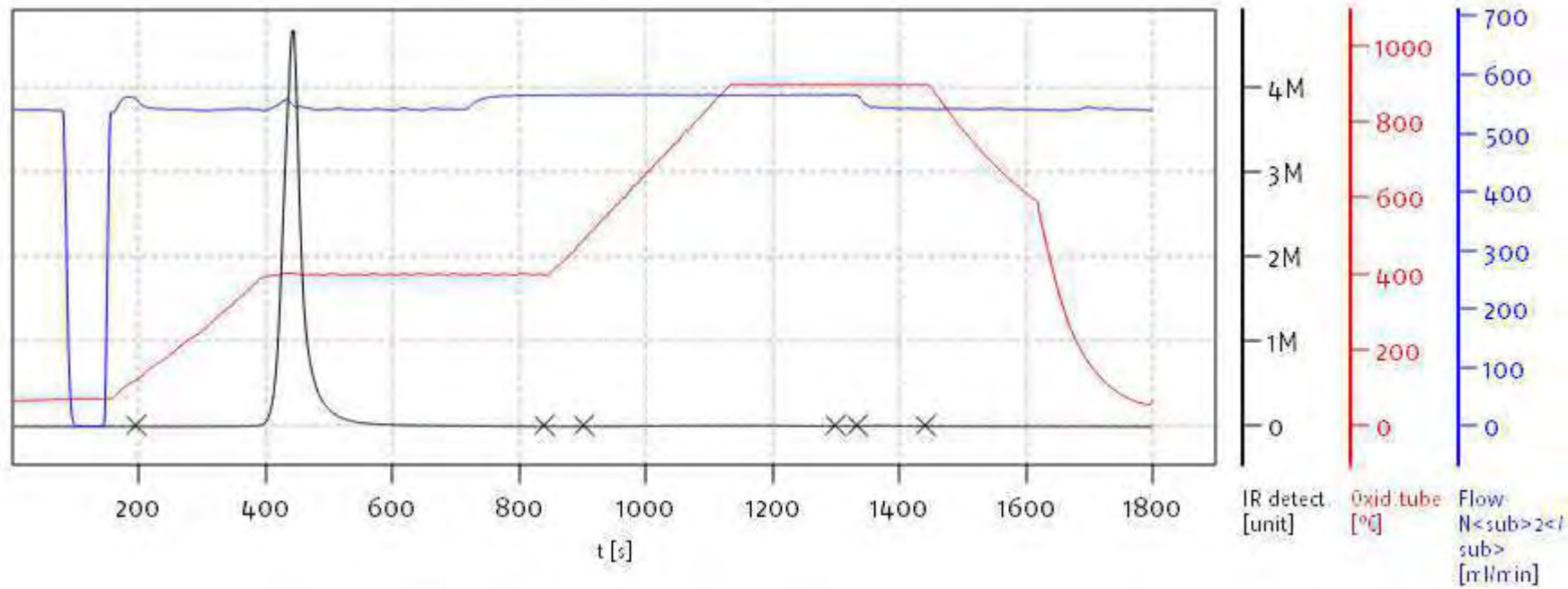
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
56	52	SLJ0453-CCV4	20.90		CARBON	11/1/2023 5:31 PM	bl	42.833	6 168 414	43.411	0.000	25 923	105 014	42.833	0.578	0.9193	1.0000



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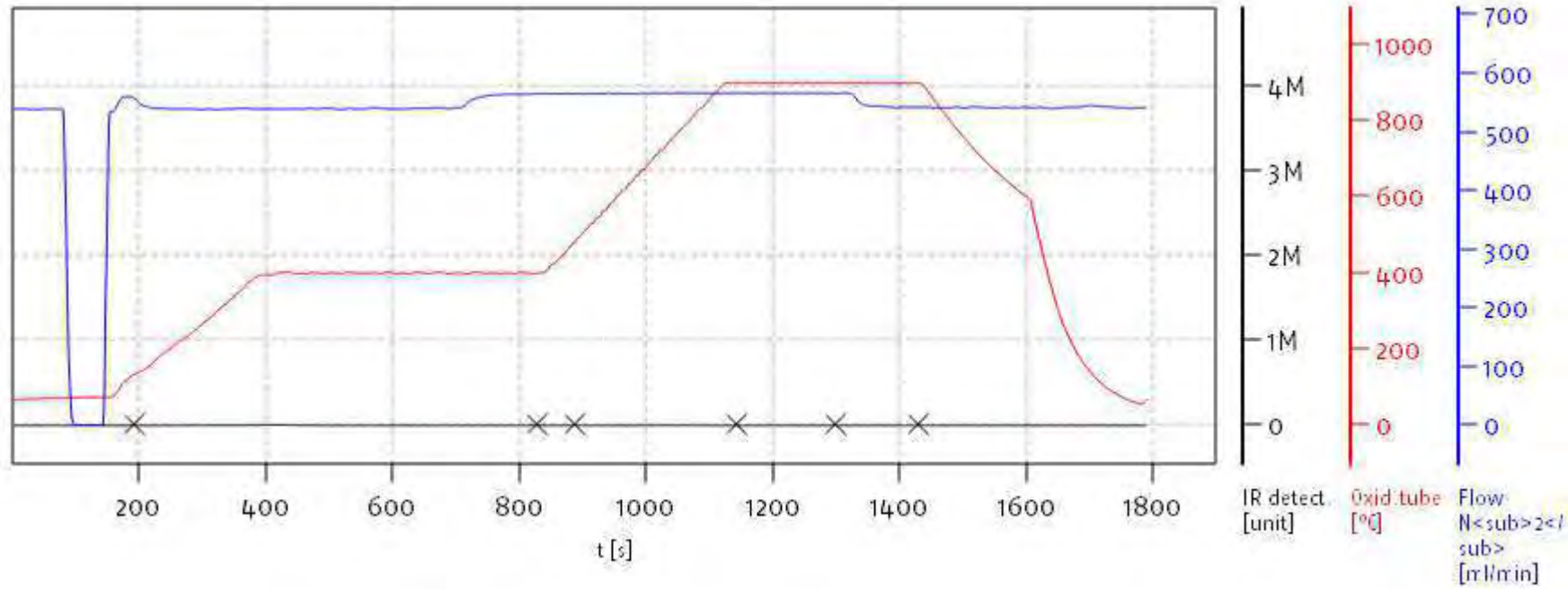
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Balance: BAL3
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
57	53	SLJ0453-CCB4	541.40		CARBON	11/1/2023 6:01 PM	bl,C3u,C2u	0.000	23 401	0.000	0.000	1 147	4 671	0.000	0.000	0.9193	1.0000



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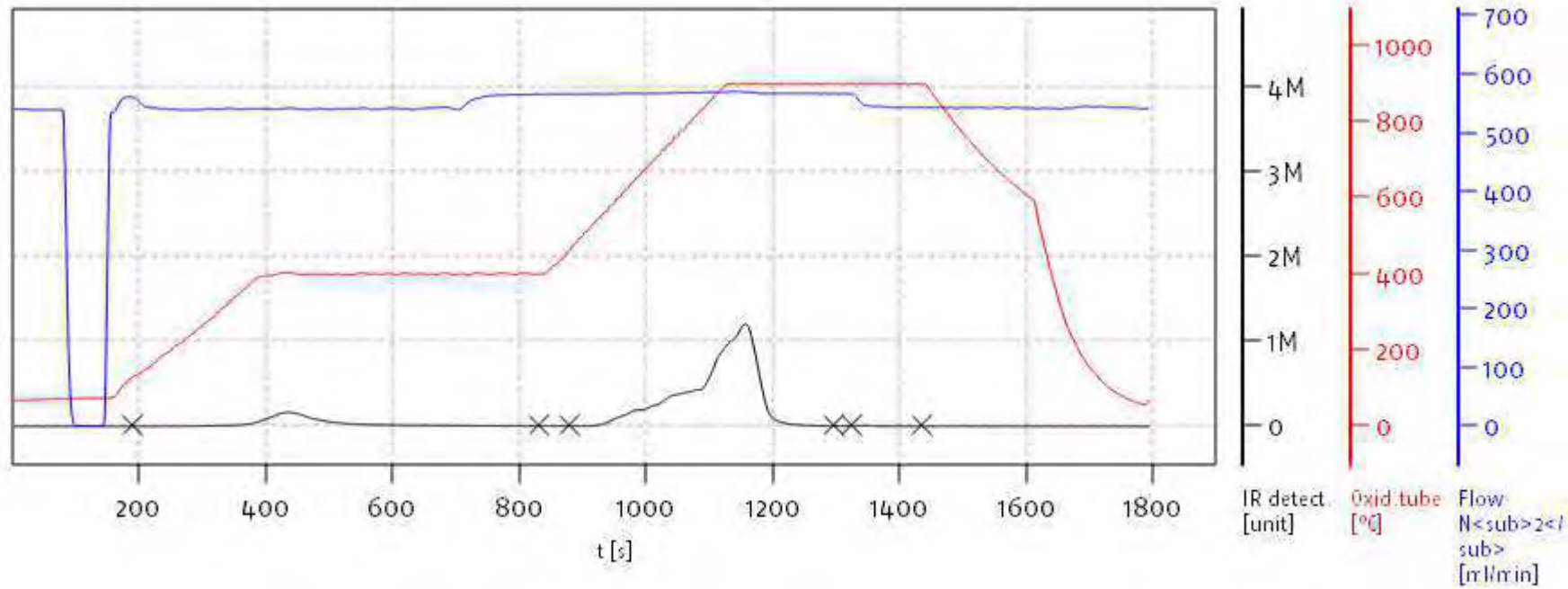
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Analyst: CDE

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Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
58	54	23J0567-07	510.40		CARBON	11/1/2023 6:31 PM	bl,C2u	0.195	710 770	1.686	0.000	12 919	4 828 828	0.195	1.492	0.9193	1.0000



Name:

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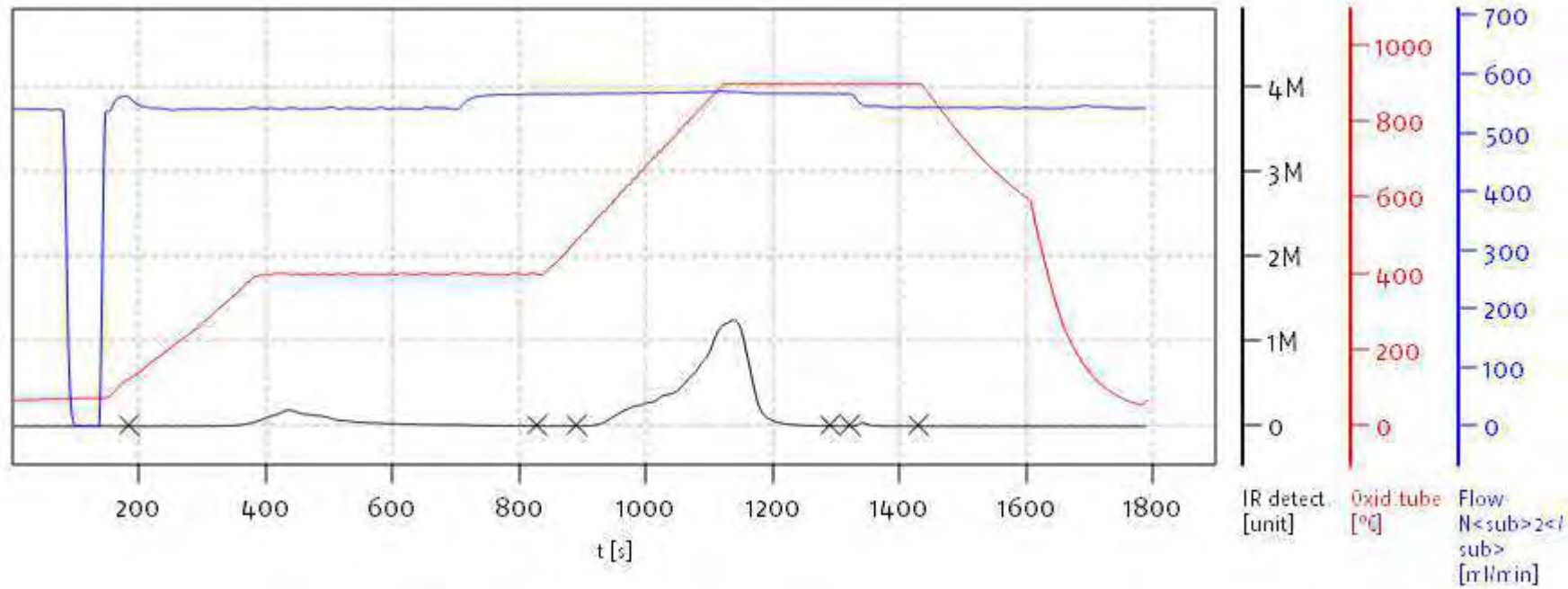
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EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
59	55	23J0567-08	571.50		CARBON	11/1/2023 7:02 PM	bl	0.237	957 694	1.712	0.000	30 358	5 342 885	0.237	1.475	0.9193	1.0000



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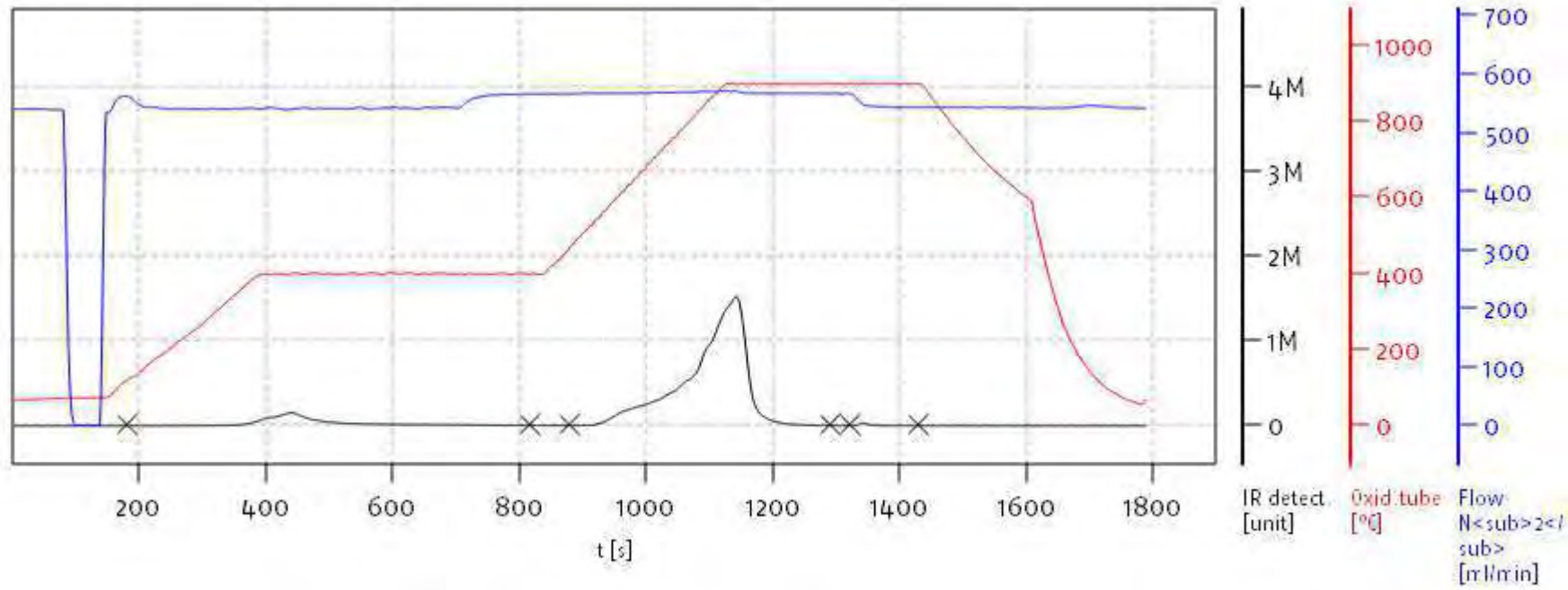
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
60	56	23J0567-09	560.10		CARBON	11/1/2023 7:32 PM	bl	0.157	632 989	1.704	0.000	25 377	5 491 508	0.157	1.547	0.9193	1.0000



Name:

Access: soliTOC superuser

Date: Fri Nov 3 14:55:38 2023

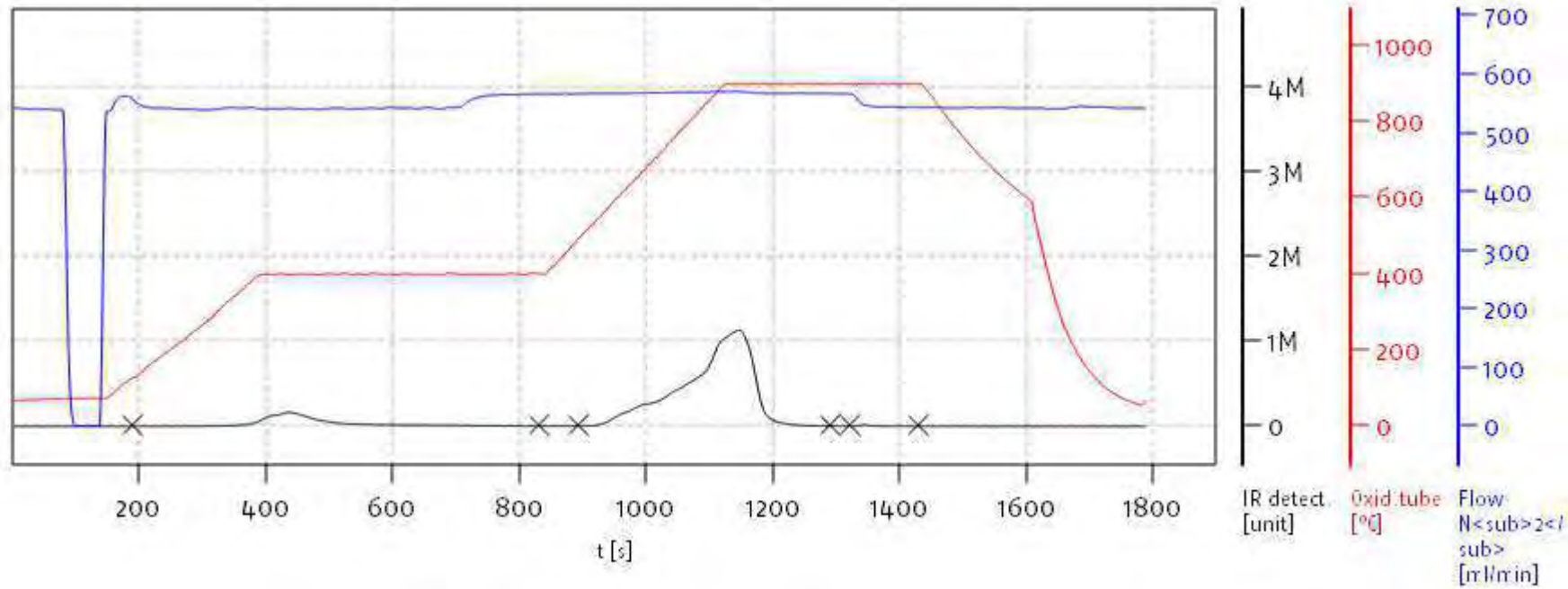
elementar
EXCELLENCE IN ELEMENTS

soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
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Document: 103023 AR from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
61	57	23J0567-10	572.40		CARBON	11/1/2023 8:02 PM	bl,C2u	0.174	713 595	1.565	0.000	16 610	5 046 361	0.174	1.390	0.9193	1.0000



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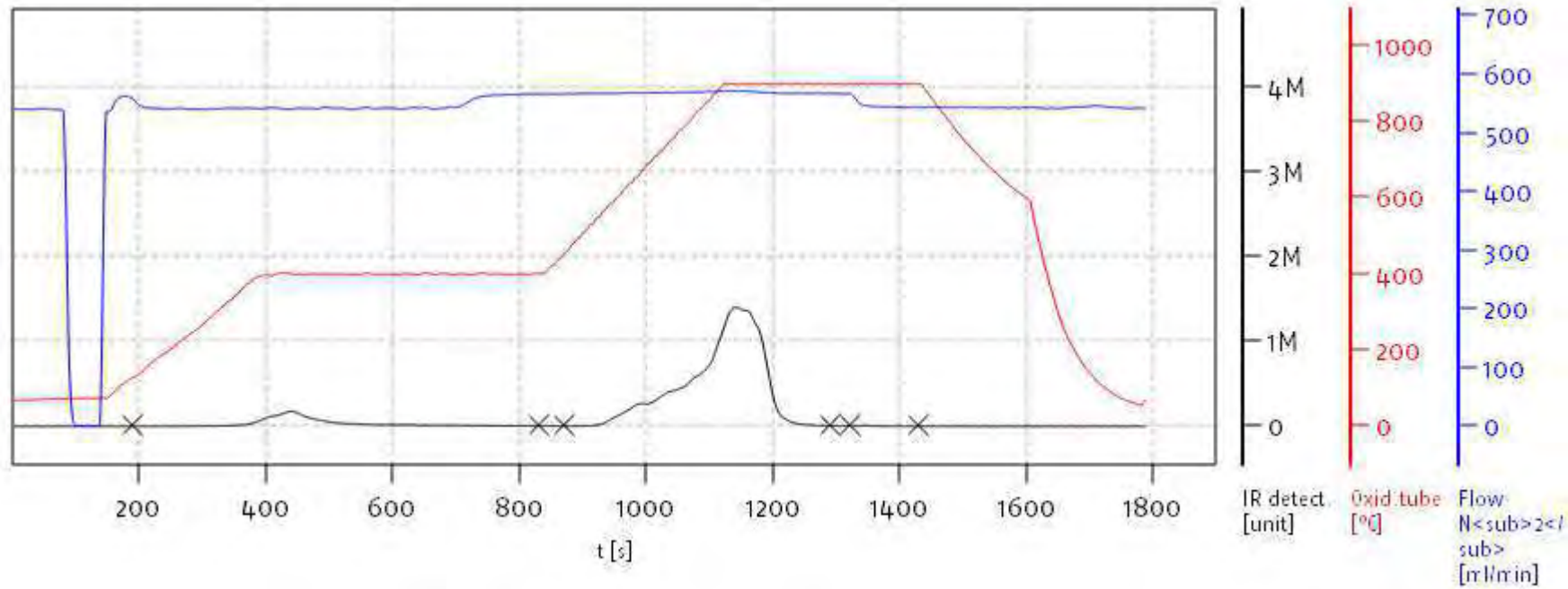
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
62	58	23J0567-11	562.90		CARBON	11/1/2023 8:32 PM	bl,C2u	0.181	729 083	2.020	0.000	13 154	6 553 147	0.181	1.838	0.9193	1.0000



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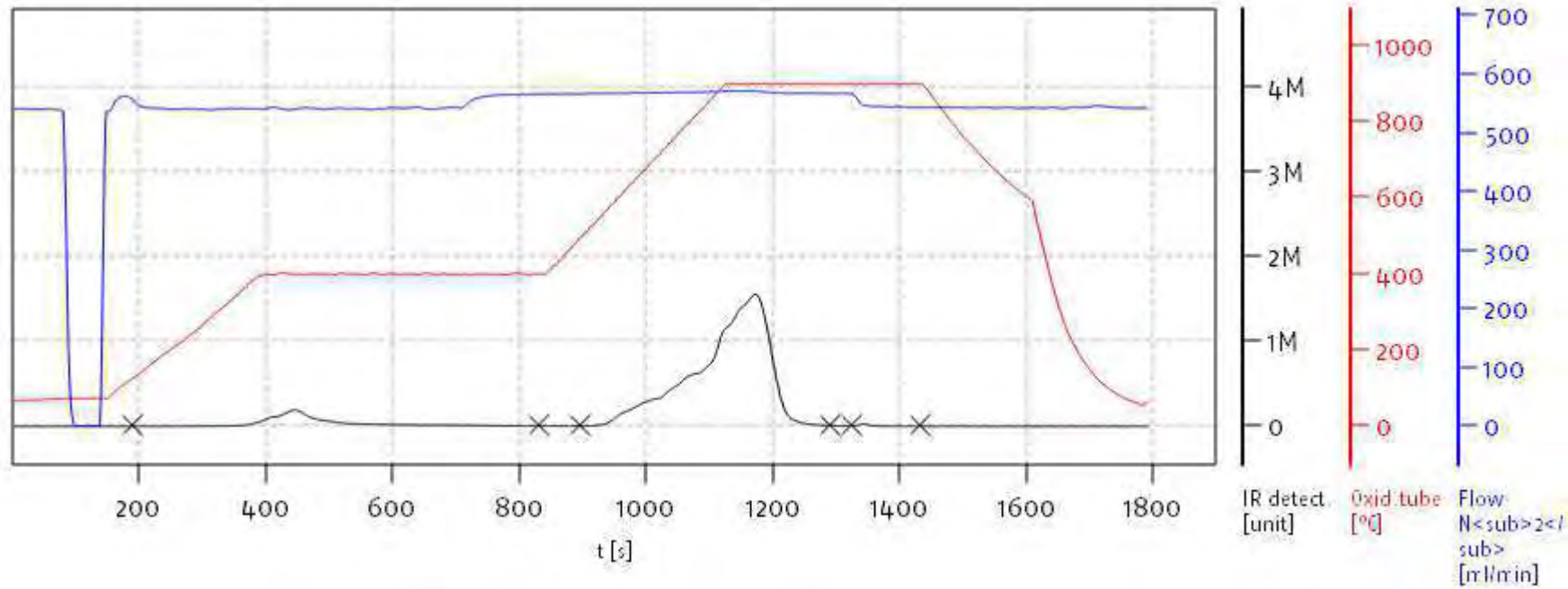
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Soli TOC Cube, Carbon
Balance: BAL3
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Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
63	59	23J0567-12	614.80		CARBON	11/1/2023 9:02 PM	bl	0.171	751 158	2.052	0.000	25 513	7 317 166	0.171	1.880	0.9193	1.0000



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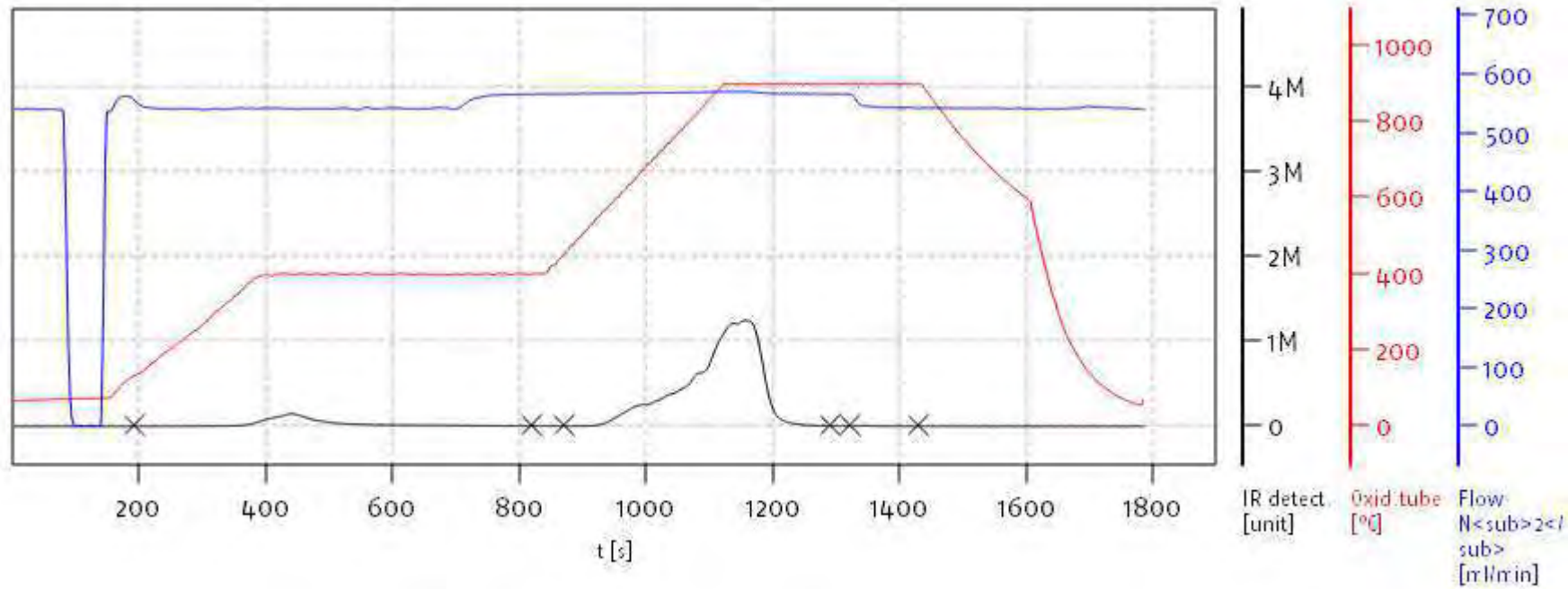
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
64	60	23J0567-13	540.50		CARBON	11/1/2023 9:33 PM	bl,C2u	0.160	622 523	1.896	0.000	11 243	5 945 793	0.160	1.736	0.9193	1.0000



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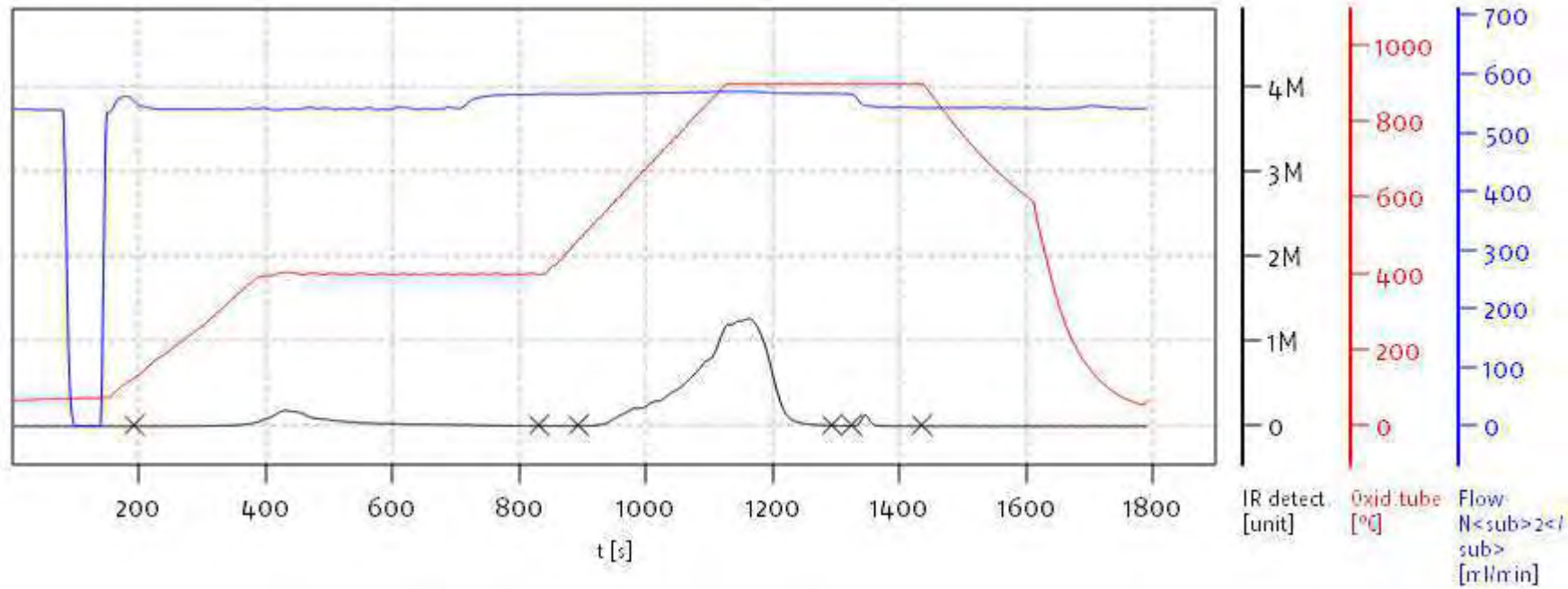
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
65	61	23J0567-14	536.60		CARBON	11/1/2023 10:03 PM	bl	0.251	893 956	2.197	0.016	83 848	6 609 888	0.235	1.945	0.9193	1.0000



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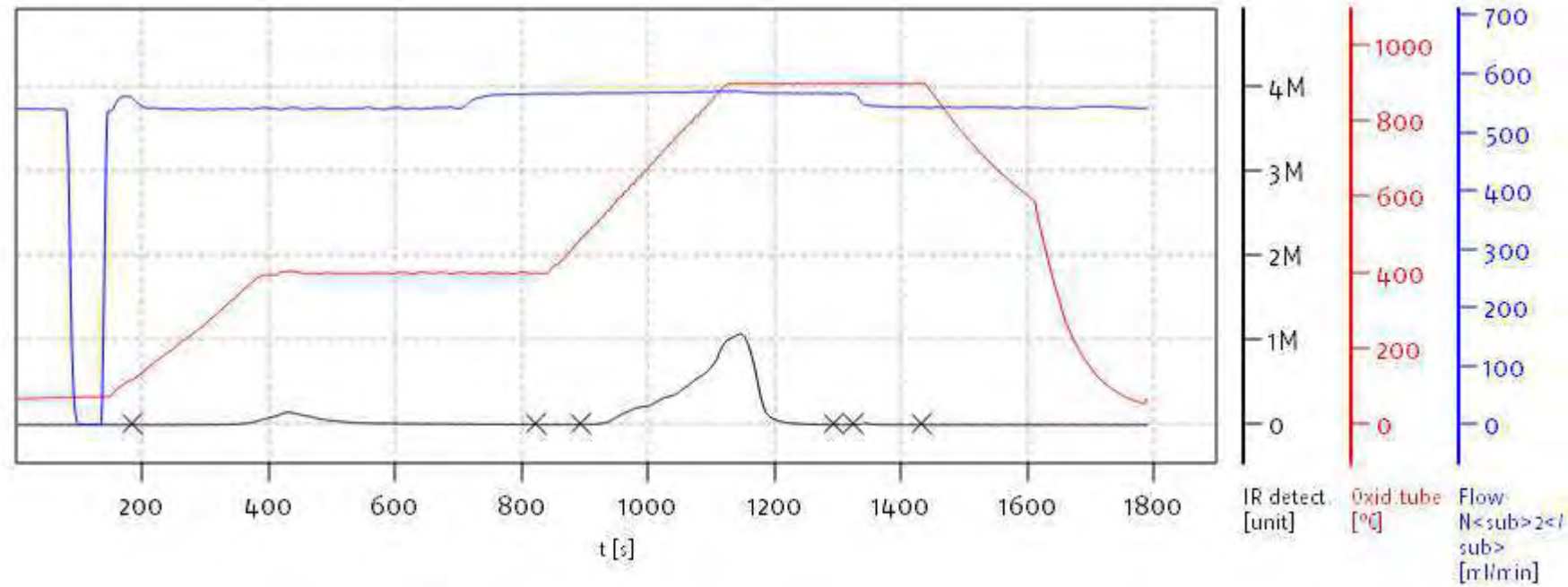
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Soli TOC Cube, Carbon
Balance: BAL3
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Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
66	62	23J0567-15	513.40		CARBON	11/1/2023 10:33 PM	bl,C2u	0.176	648 183	1.628	0.000	14 704	4 727 860	0.176	1.452	0.9193	1.0000



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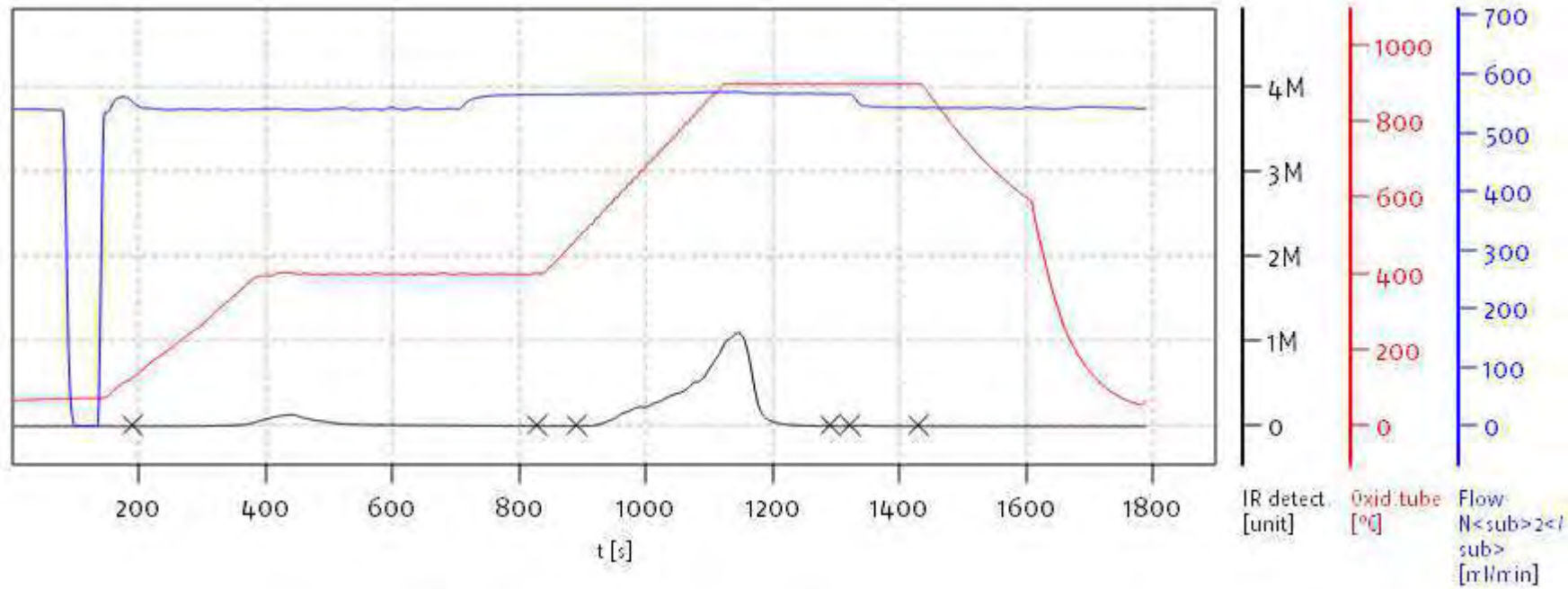
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EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

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Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
67	63	23J0567-16	509.20		CARBON	11/1/2023 11:03 PM	bl,C2u	0.172	629 686	1.596	0.000	11 793	4 599 320	0.172	1.424	0.9193	1.0000



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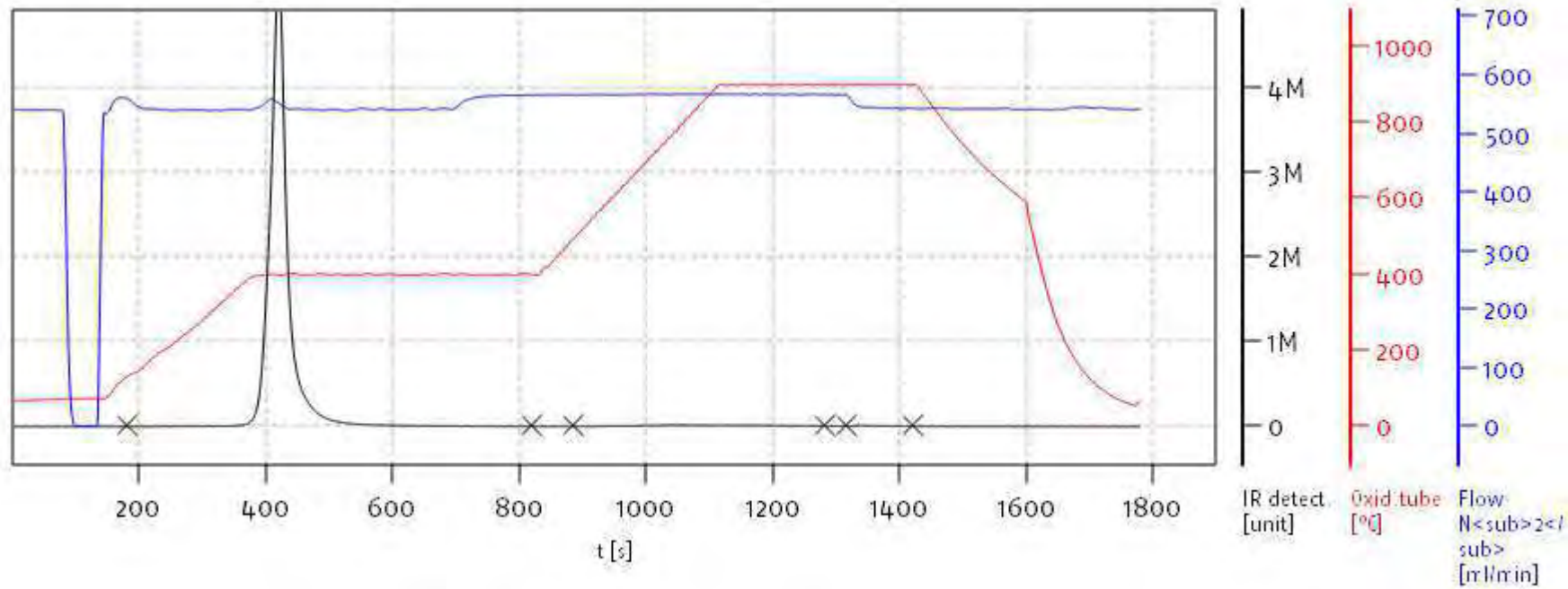
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
68	64	SLJ0453-CCV5	21.40		CARBON	11/1/2023 11:33 PM	bl	43.389	6 396 851	44.356	0.000	28 359	159 326	43.389	0.967	0.9193	1.0000



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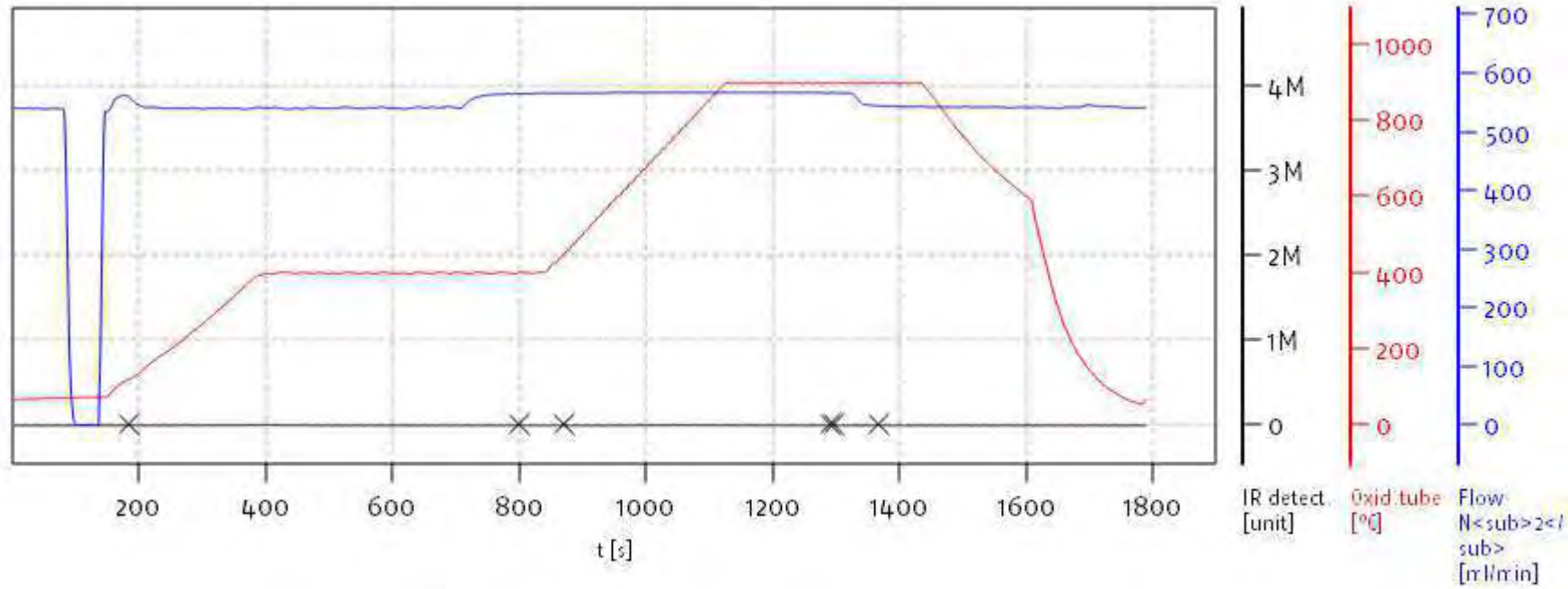
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
69	65	SLJ0453-CCB5	514.20		CARBON	11/2/2023 12:03 AM	bl,C1u,C3u,C2u	0.000	17 951	0.000	0.000	824	17 498	0.000	0.000	0.9193	1.0000



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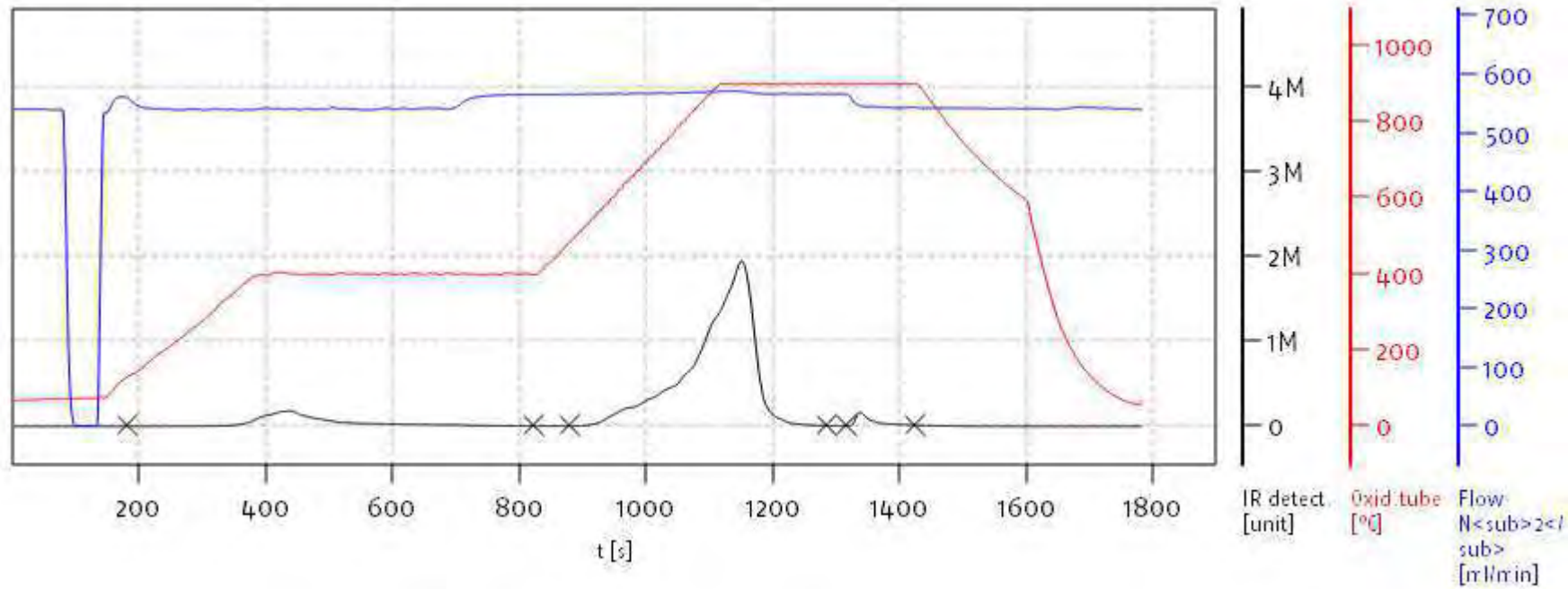
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Soli TOC Cube, Carbon
Balance: BAL3
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Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
70	66	23J0567-17	609.10		CARBON	11/2/2023 12:34 AM	bl	0.253	895 347	2.186	0.046	205 204	7 449 825	0.207	1.932	0.9193	1.0000



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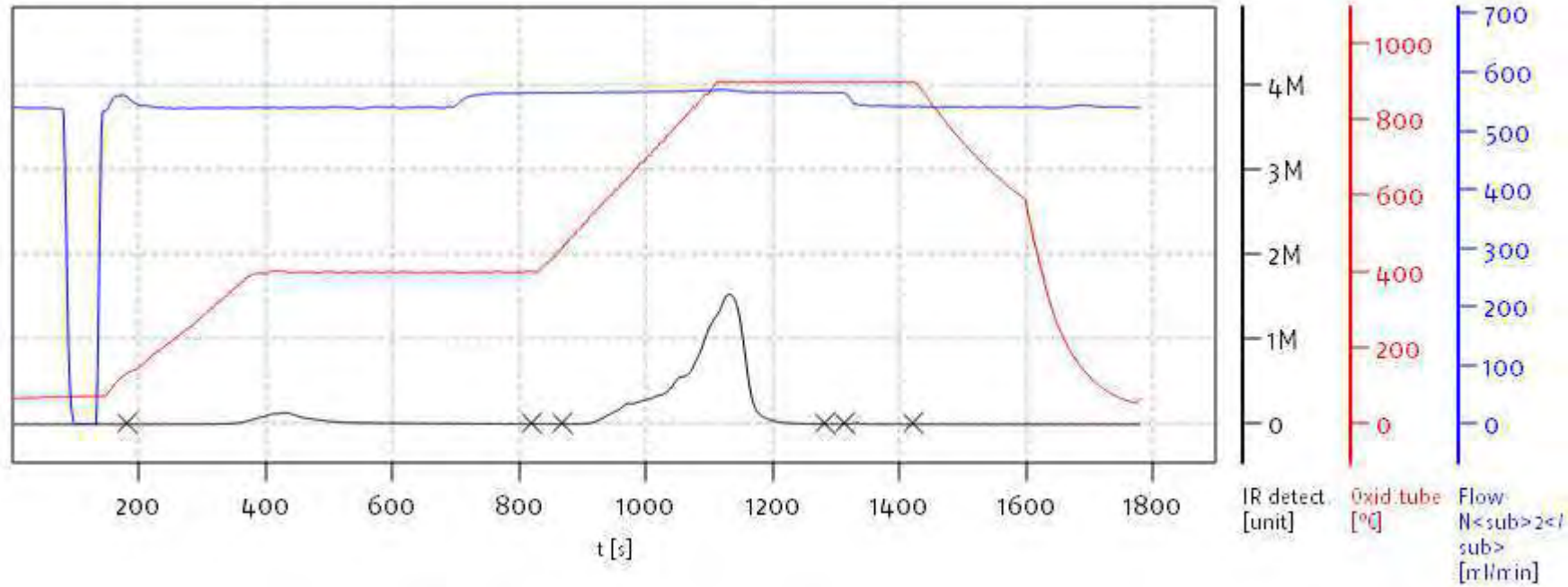
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elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
71	67	23J0567-18	561.60		CARBON	11/2/2023 1:04 AM	bl,C2u	0.150	607 709	1.804	0.000	13 752	5 882 778	0.150	1.653	0.9193	1.0000



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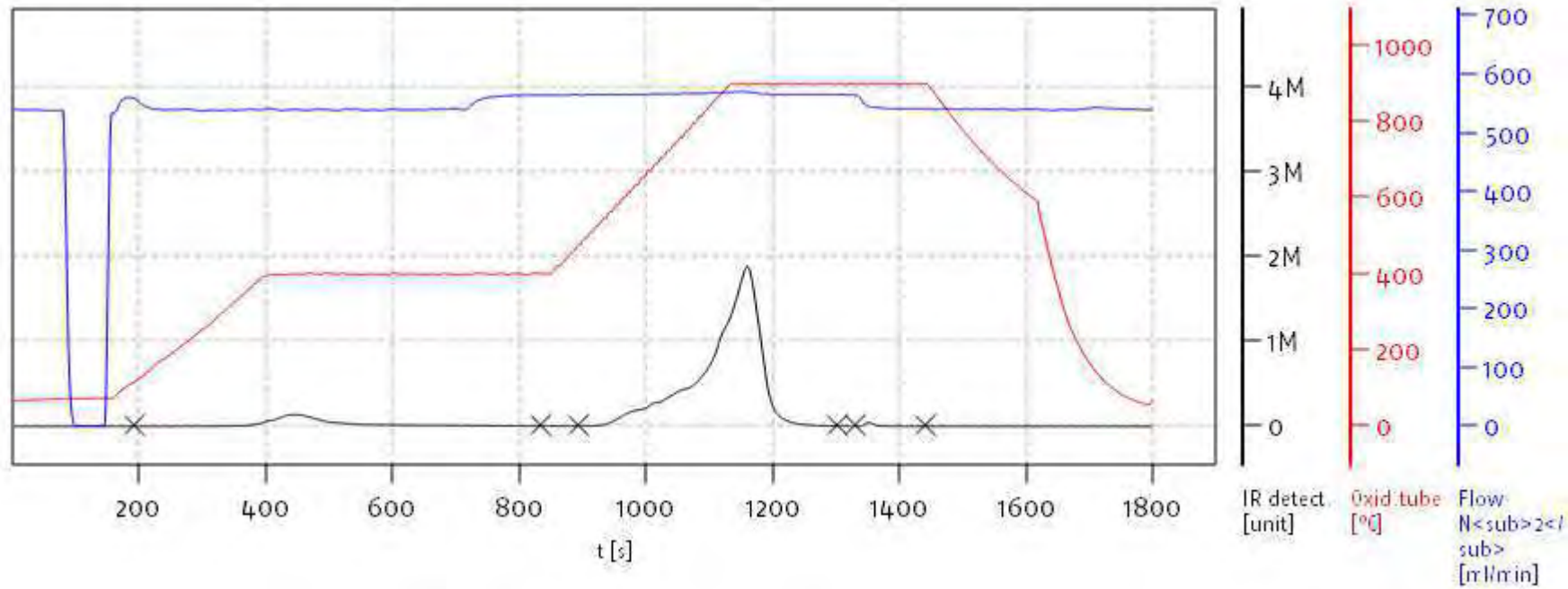
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
72	68	23J0567-19	559.40		CARBON	11/2/2023 1:34 AM	bl	0.153	611 688	1.995	0.001	32 049	6 526 662	0.152	1.842	0.9193	1.0000



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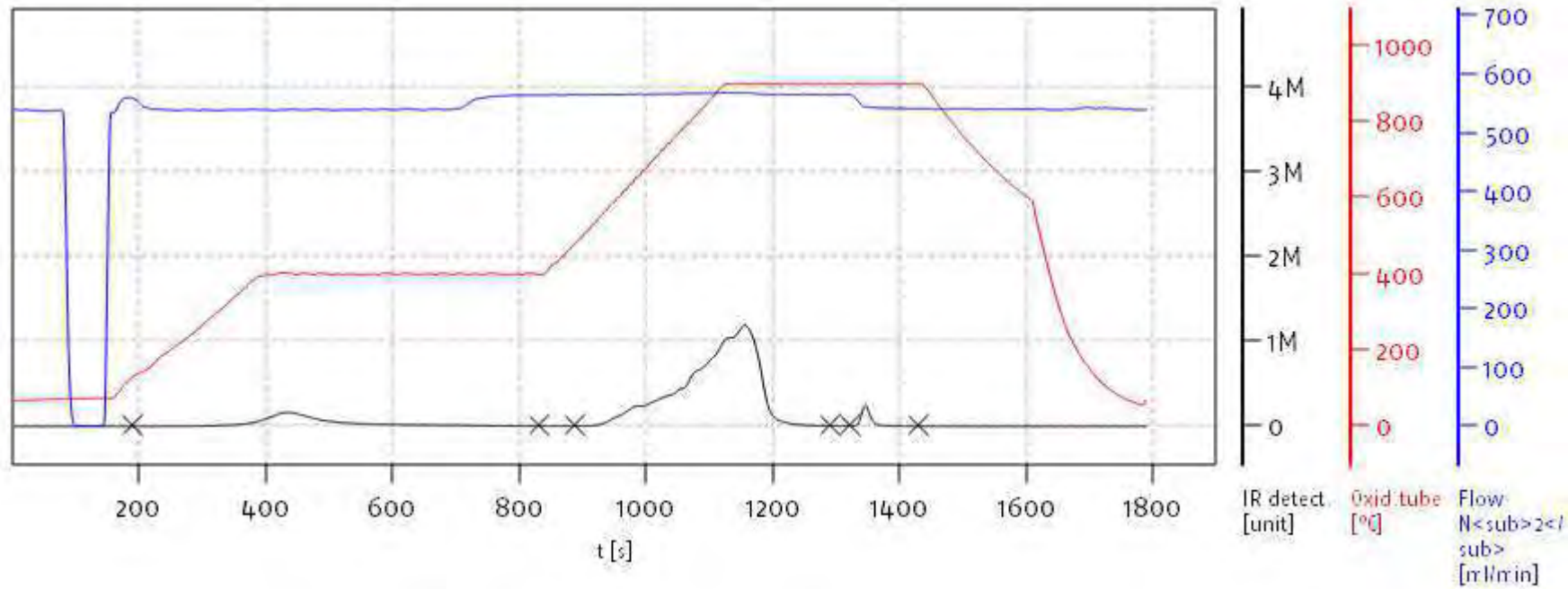
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
73	69	23J0567-20	522.50		CARBON	11/2/2023 2:04 AM	bl	0.250	781 070	1.922	0.040	159 950	5 538 542	0.210	1.673	0.9193	1.0000



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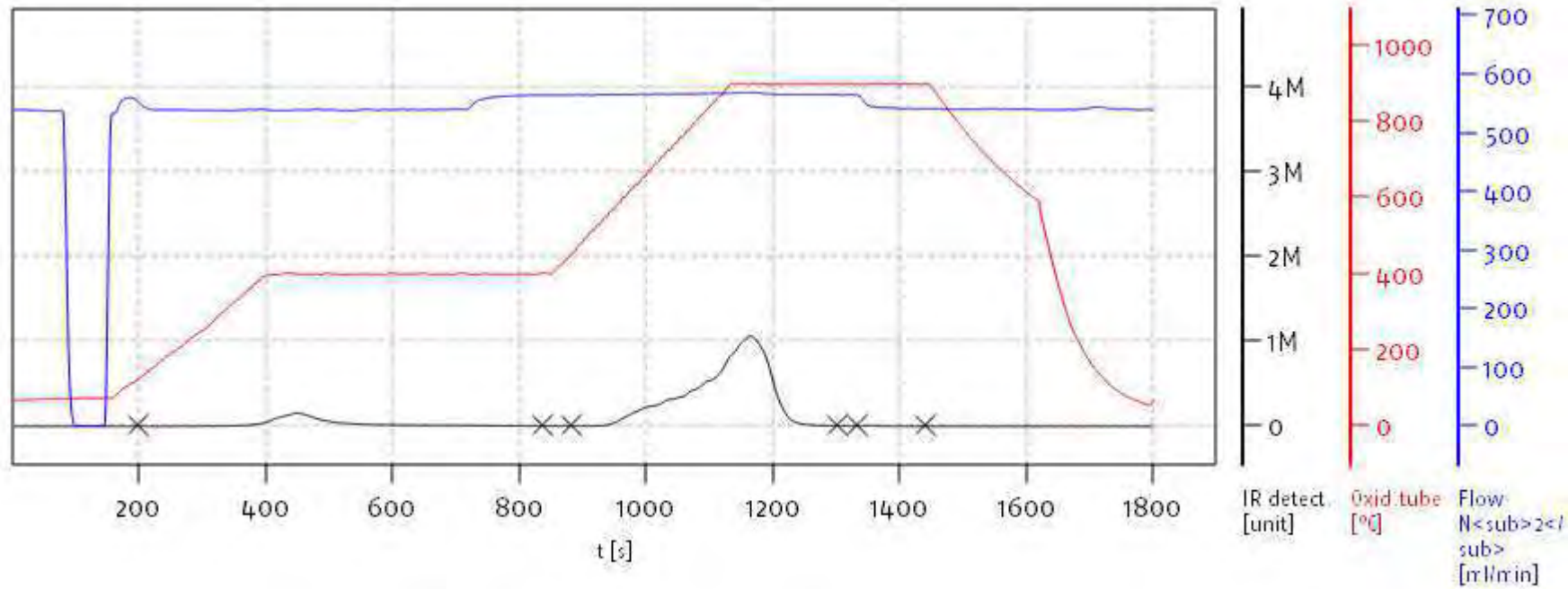
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
74	70	23J0567-21	539.30		CARBON	11/2/2023 2:35 AM	bl,C2u	0.166	643 762	1.649	0.000	11 309	5 069 293	0.166	1.482	0.9193	1.0000



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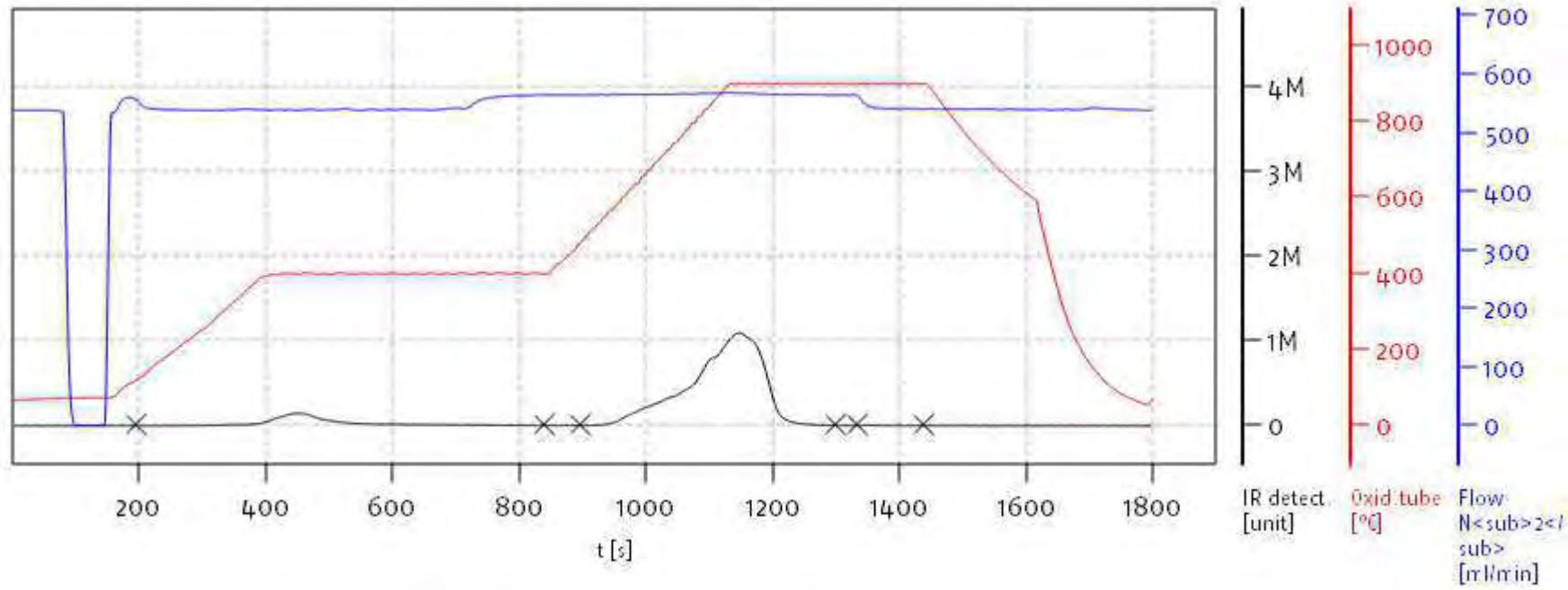
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Soli TOC Cube, Carbon
Balance: BAL3
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
75	71	23J0567-22	513.70		CARBON	11/2/2023 3:05 AM	bl,C2u	0.177	653 867	1.823	0.000	10 739	5 359 529	0.177	1.646	0.9193	1.0000



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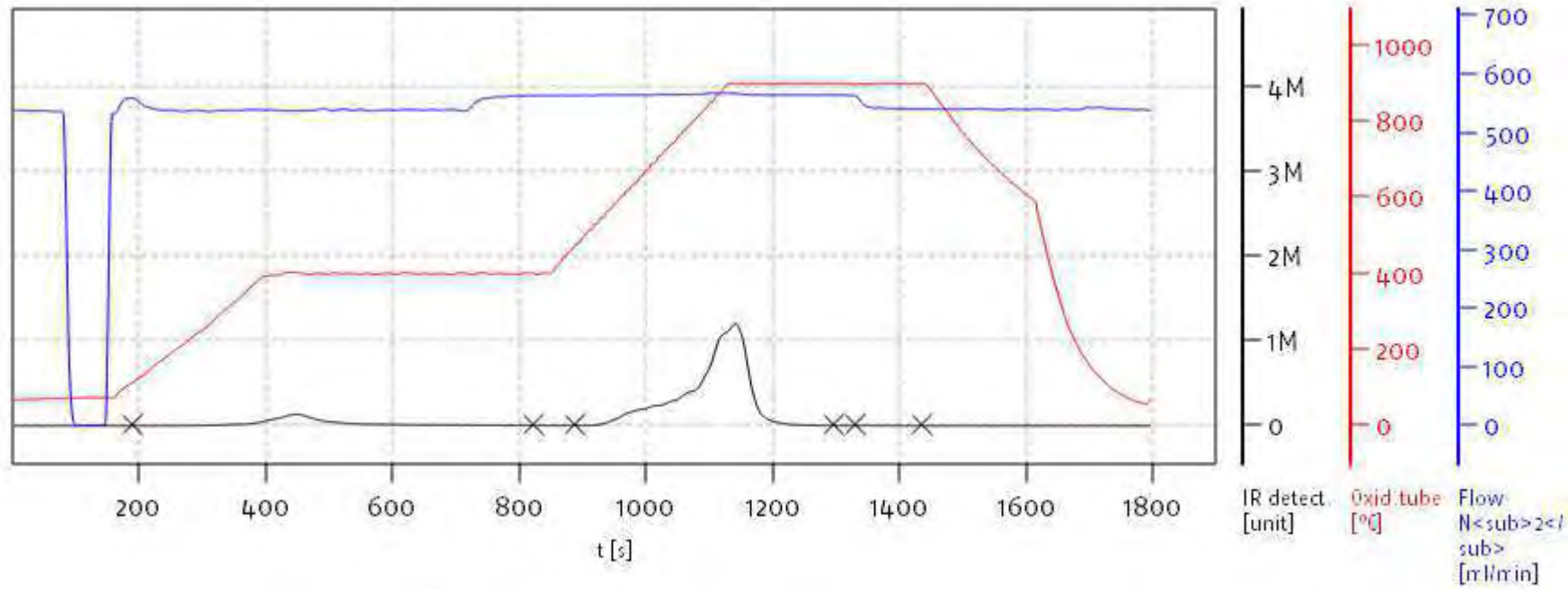
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
76	72	23J0567-23	525.50		CARBON	11/2/2023 3:35 AM	bl,C2u	0.154	585 669	1.461	0.000	5 876	4 356 972	0.154	1.306	0.9193	1.0000



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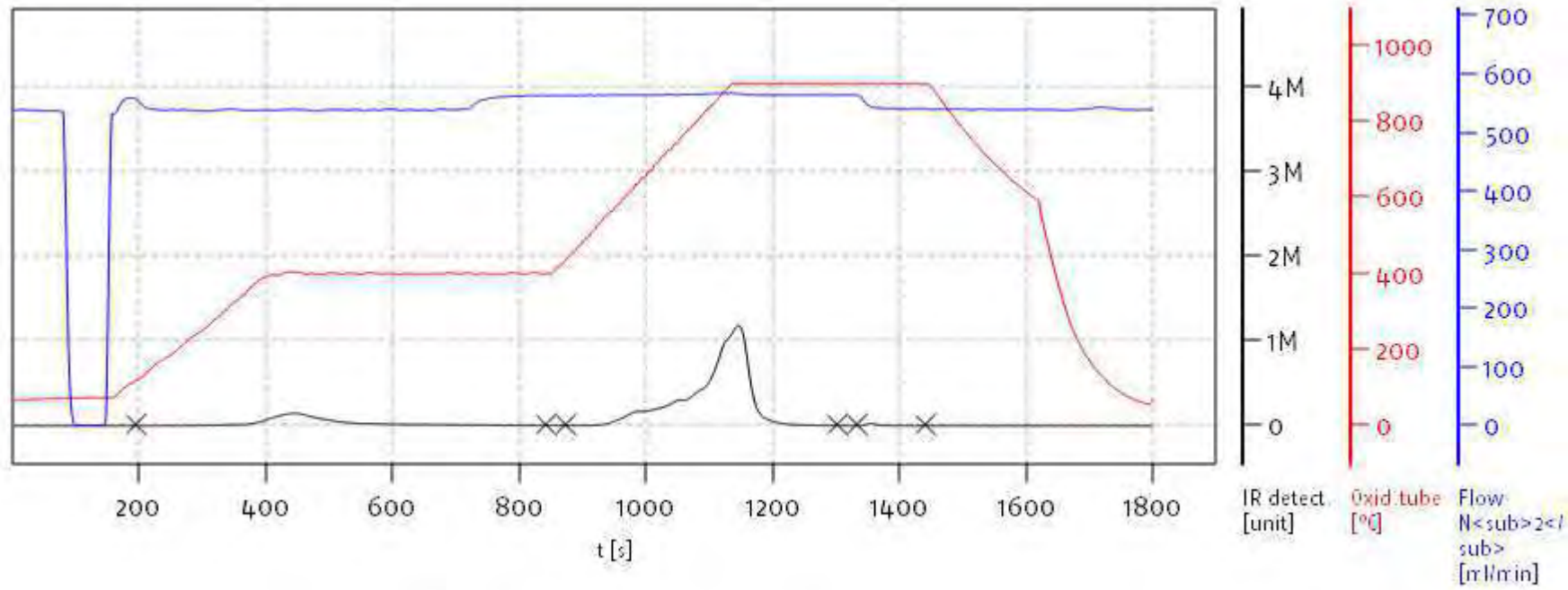
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
77	73	23J0567-24	544.80		CARBON	11/2/2023 4:06 AM	bl	0.178	692 989	1.303	0.000	21 543	3 895 008	0.178	1.126	0.9193	1.0000



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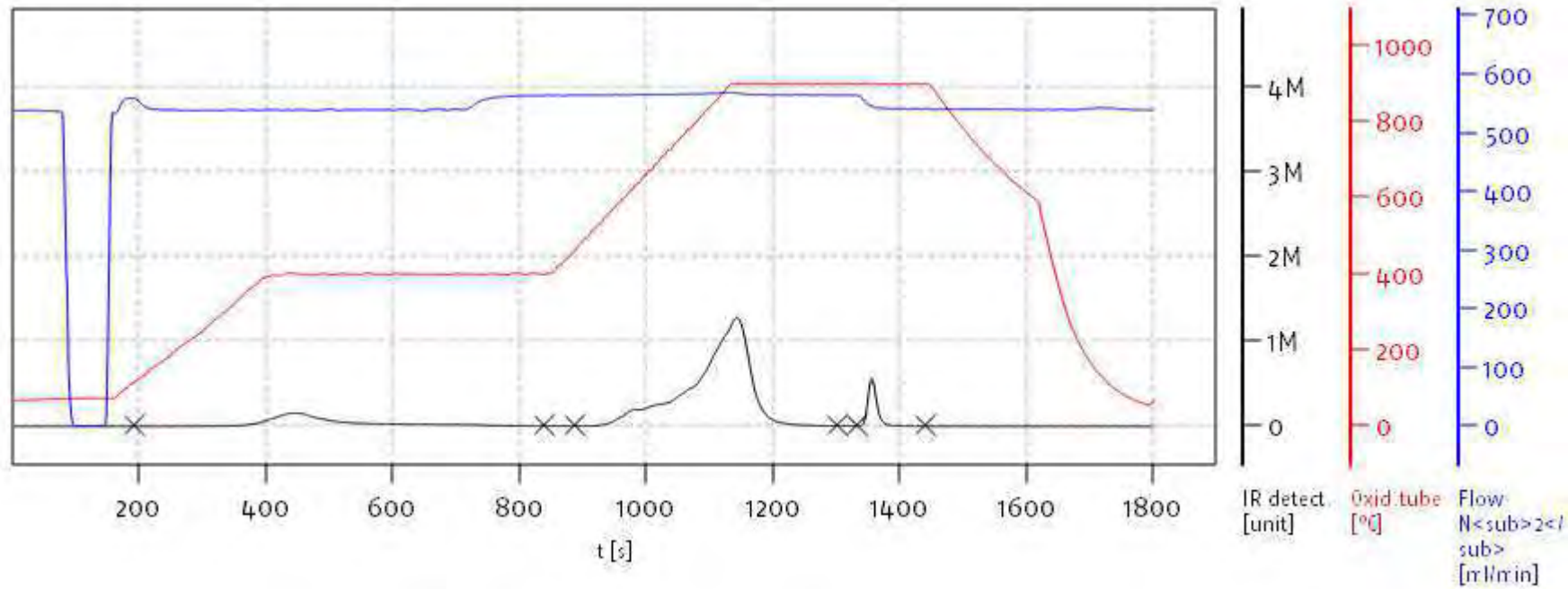
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
78	74	23J0567-25	535.10		CARBON	11/2/2023 4:36 AM	bl	0.305	795 455	1.694	0.096	354 007	4 714 471	0.209	1.389	0.9193	1.0000



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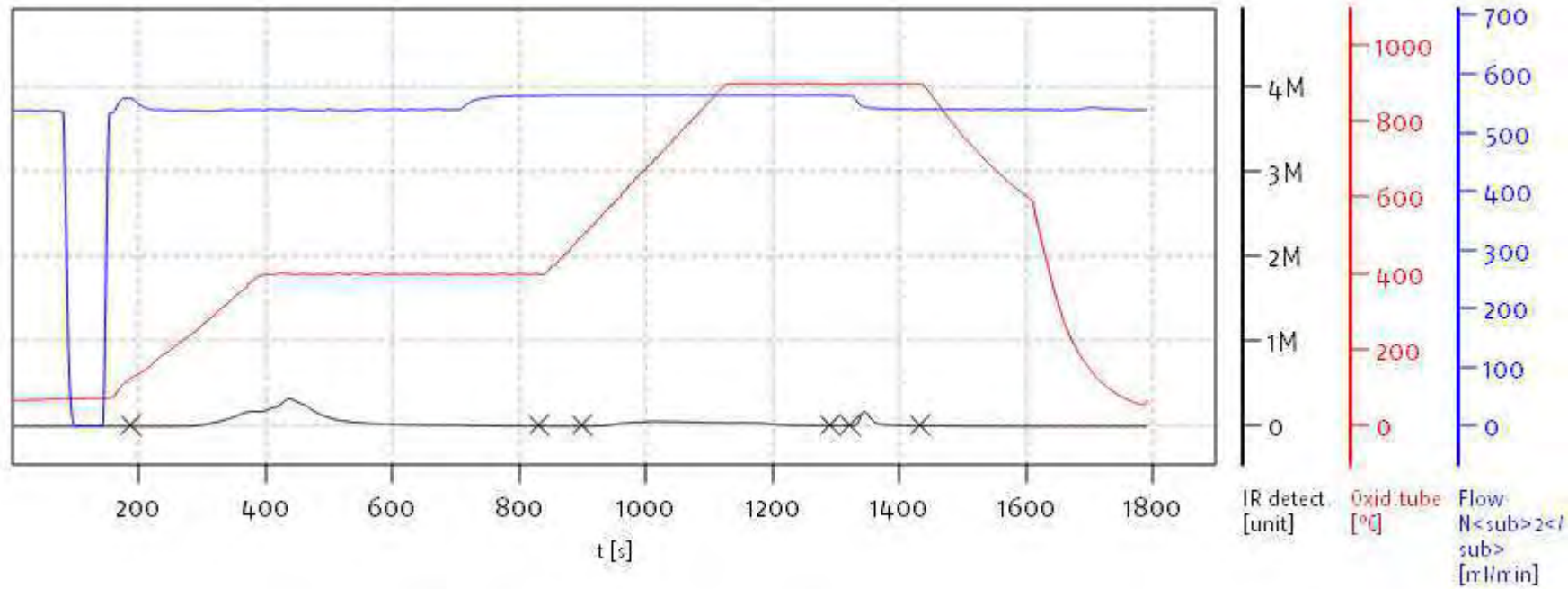
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Soli TOC Cube, Carbon
Balance: BAL3
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
79	75	23J0321-10	554.30		CARBON	11/2/2023 5:06 AM	bl	0.443	1 567 262	0.574	0.039	163 598	486 817	0.405	0.131	0.9193	1.0000



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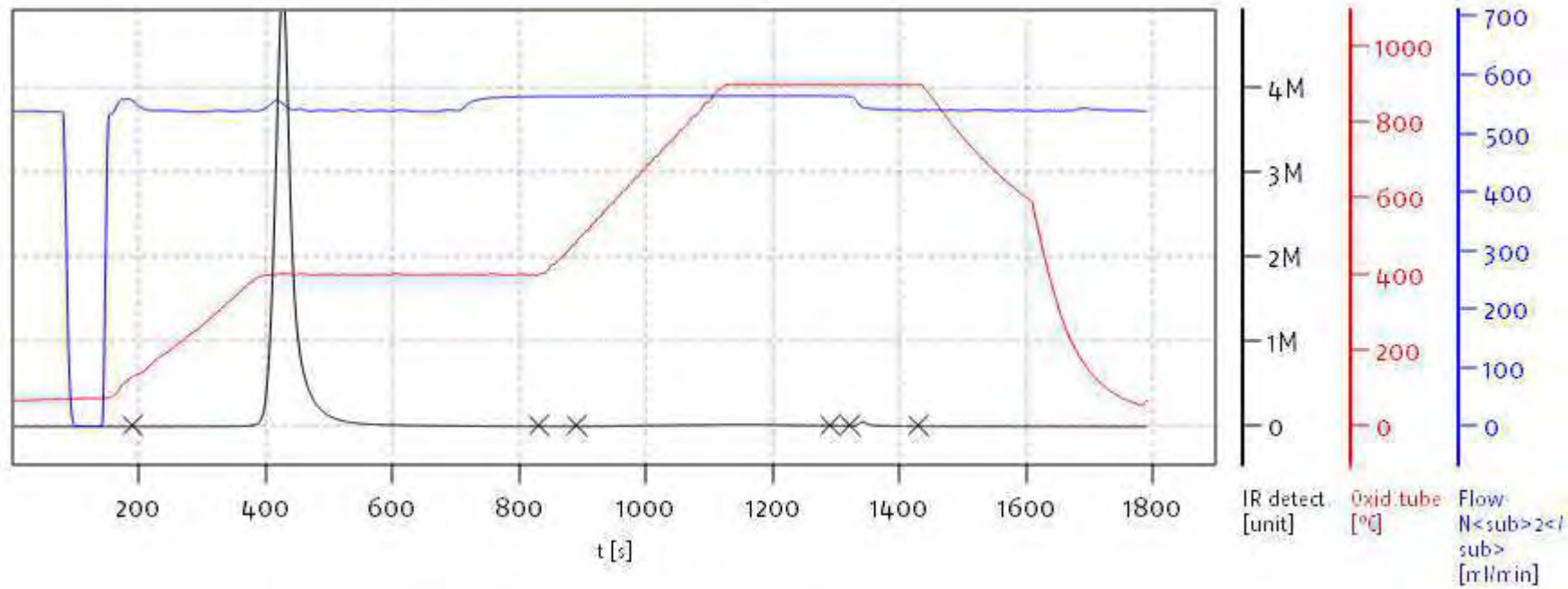
Date: Fri Nov 3 14:55:38 2023

soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
80	76	SLJ0453-CCV6	21.70		CARBON	11/2/2023 5:36 AM	bl	42.510	6 326 493	43.887	0.194	55 349	217 220	42.316	1.377	0.9193	1.0000



Name:

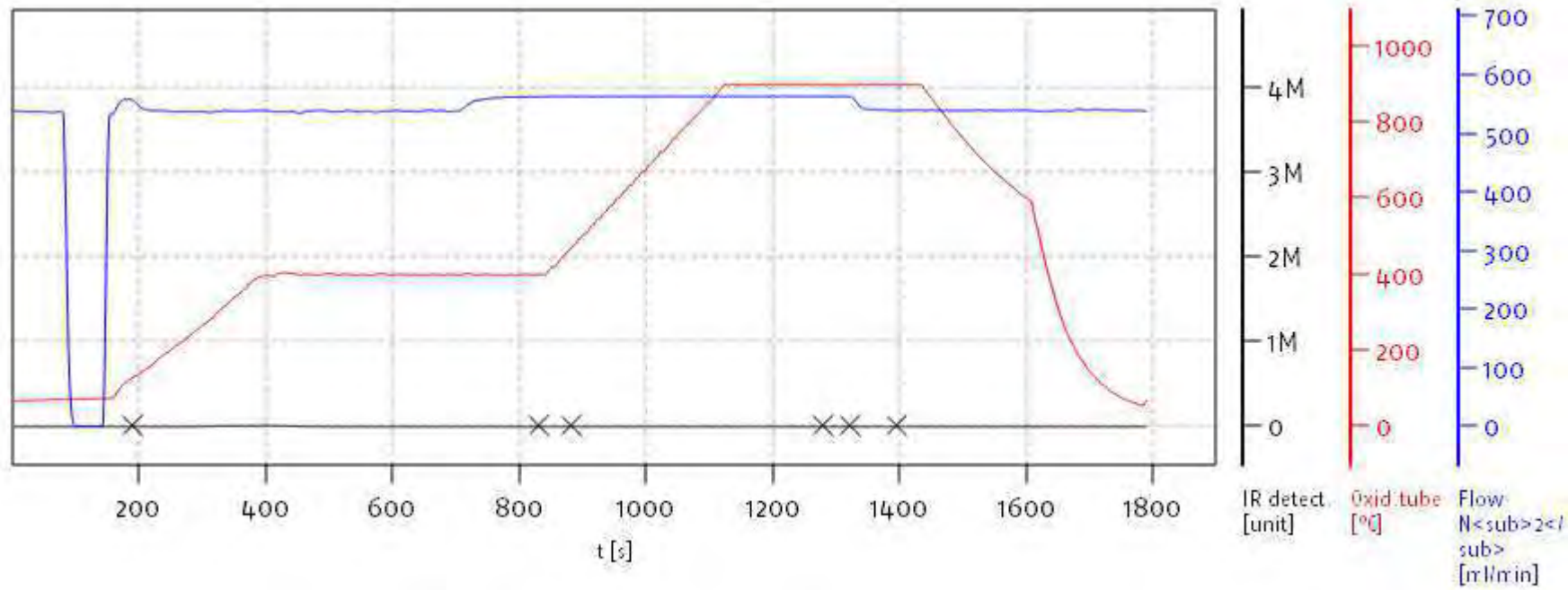
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soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
81	77	SLJ0453-CCB6	507.10		CARBON	11/2/2023 6:07 AM	bl,C3u,C2u	0.007	53 833	0.007	0.000	594	5 316	0.007	0.000	0.9193	1.0000



Name:

Access: soliTOC superuser

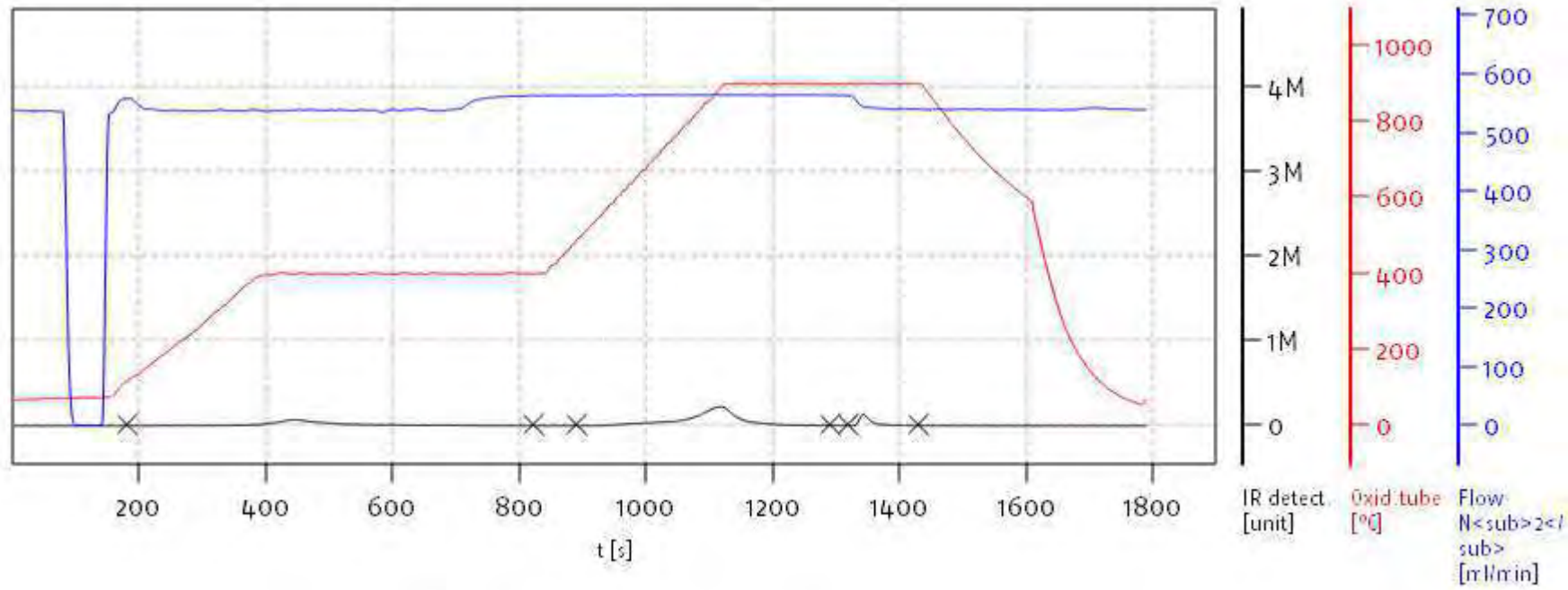
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soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
82	78	23J0505-02	512.70		CARBON	11/2/2023 6:37 AM	bl	0.107	314 653	0.332	0.025	111 215	757 350	0.081	0.225	0.9193	1.0000



Name:

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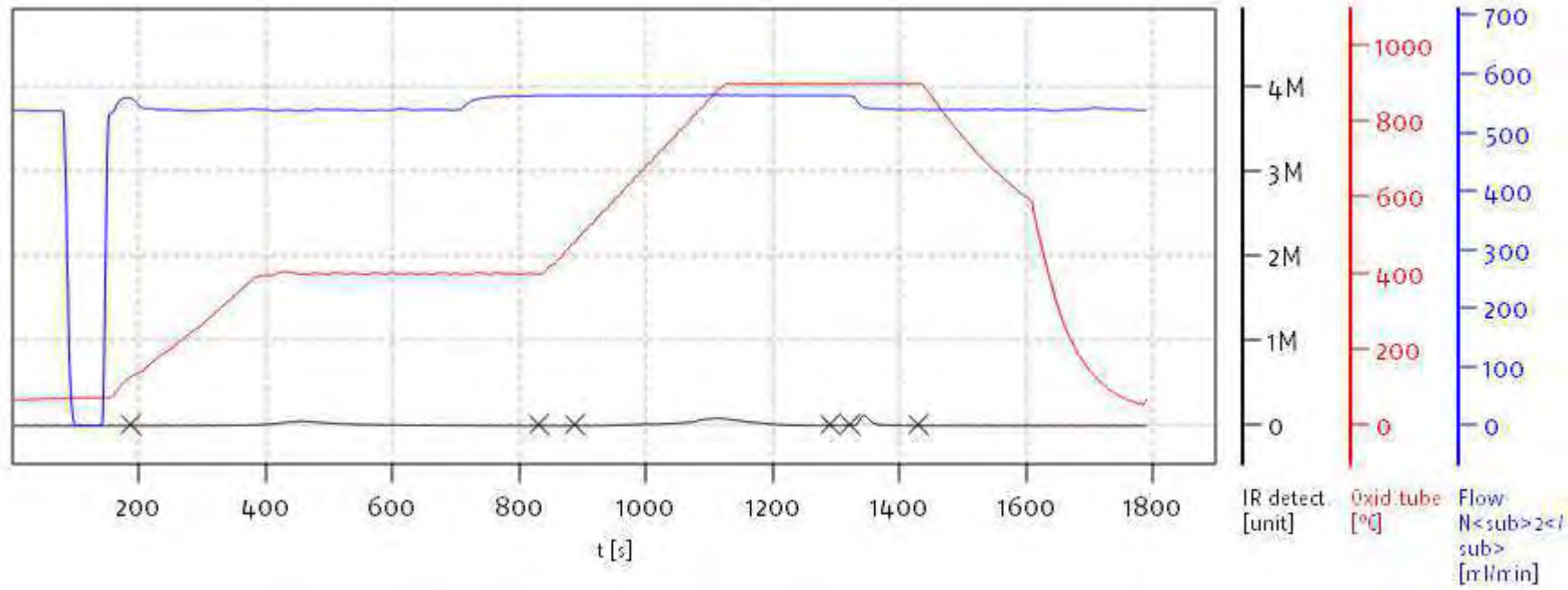
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

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Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
83	79	23J0505-03	526.10		CARBON	11/2/2023 7:07 AM	bl	0.086	266 432	0.200	0.020	96 825	404 233	0.066	0.113	0.9193	1.0000



Name:

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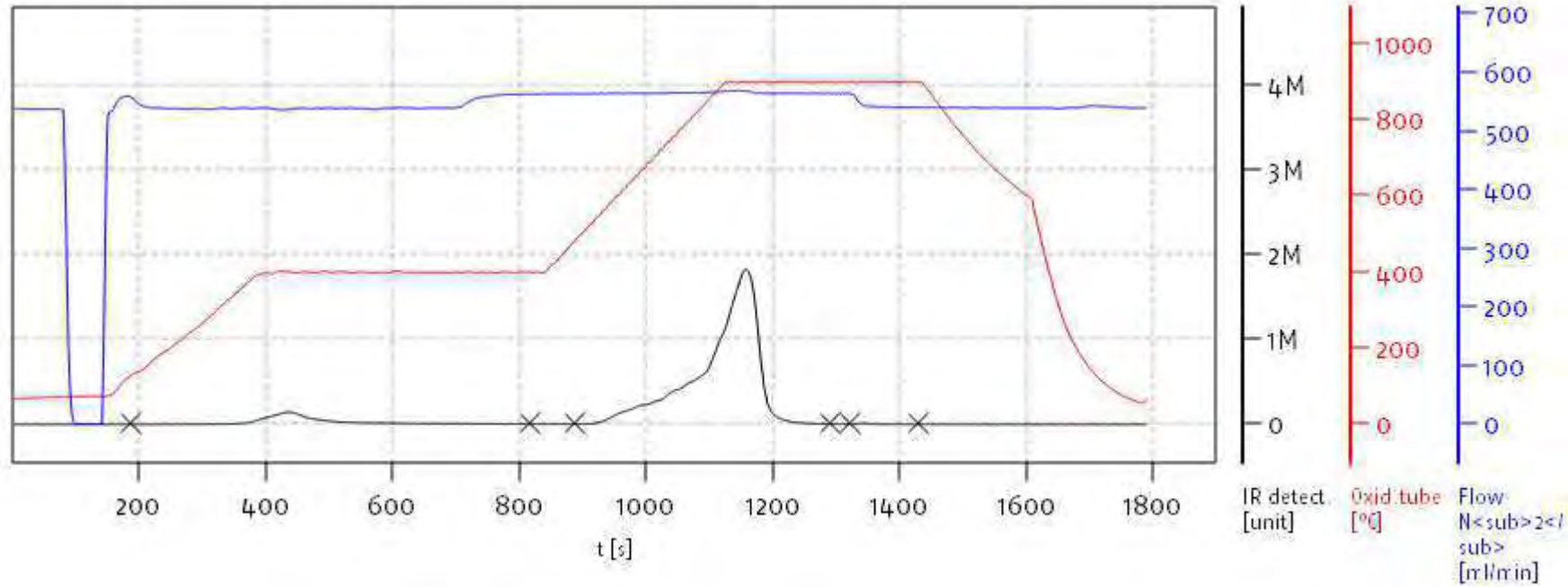
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Soli TOC Cube, Carbon
Balance: BAL3
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Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
84	80	23J0567-26	587.70		CARBON	11/2/2023 7:37 AM	bl,C2u	0.137	582 086	1.836	0.000	15 044	6 323 459	0.137	1.699	0.9193	1.0000



Name:

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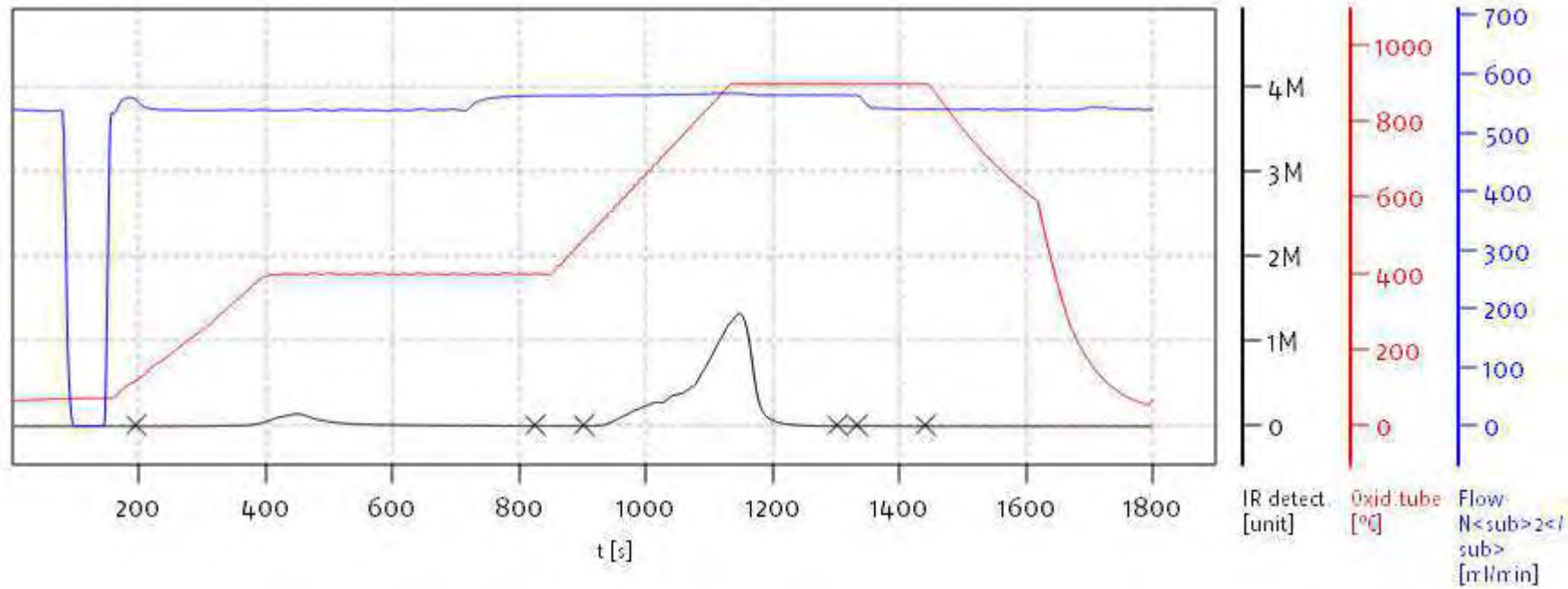
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
85	81	23J0567-27	557.10		CARBON	11/2/2023 8:08 AM	bl,C2u	0.157	629 598	1.590	0.000	7 808	5 061 606	0.157	1.433	0.9193	1.0000



Name:

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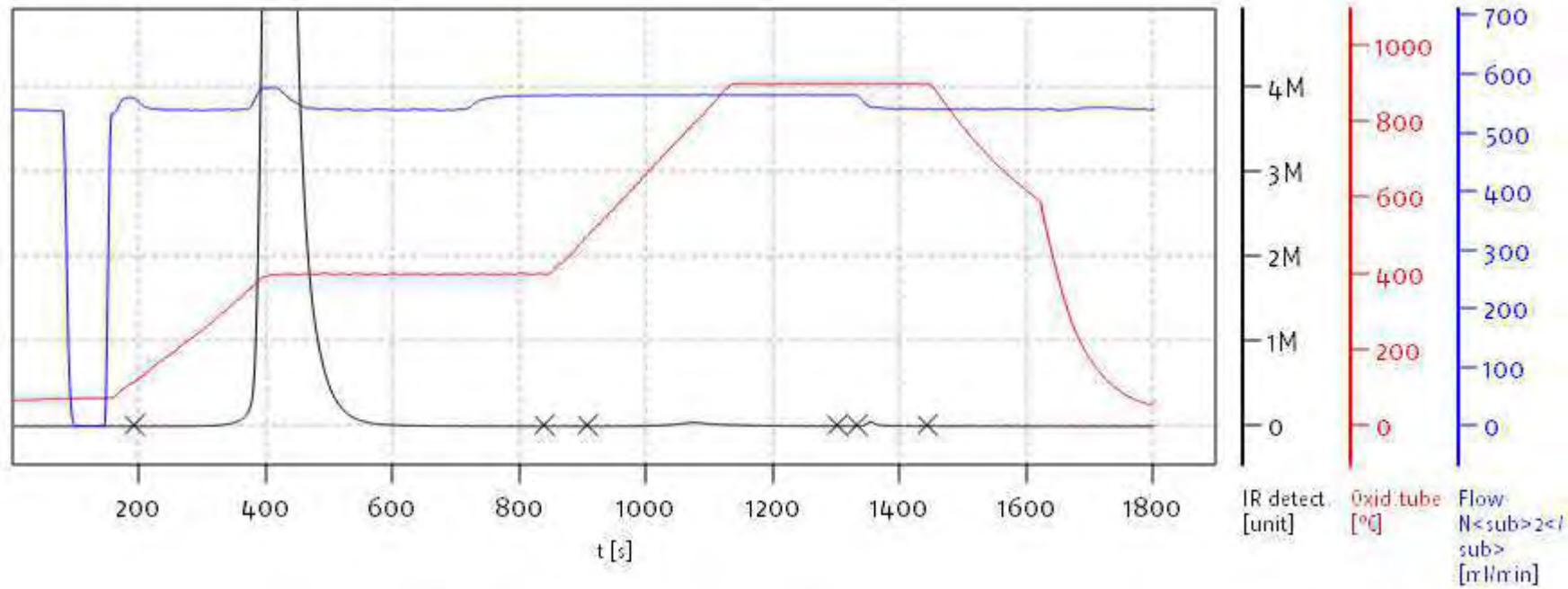
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Balance: BAL3
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Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
86	82	23J0613-01	585.00		CARBON	11/2/2023 8:38 AM	bl,C1o	6.425	25 787 124	6.463	0.005	46 395	168 535	6.420	0.038	0.9193	1.0000



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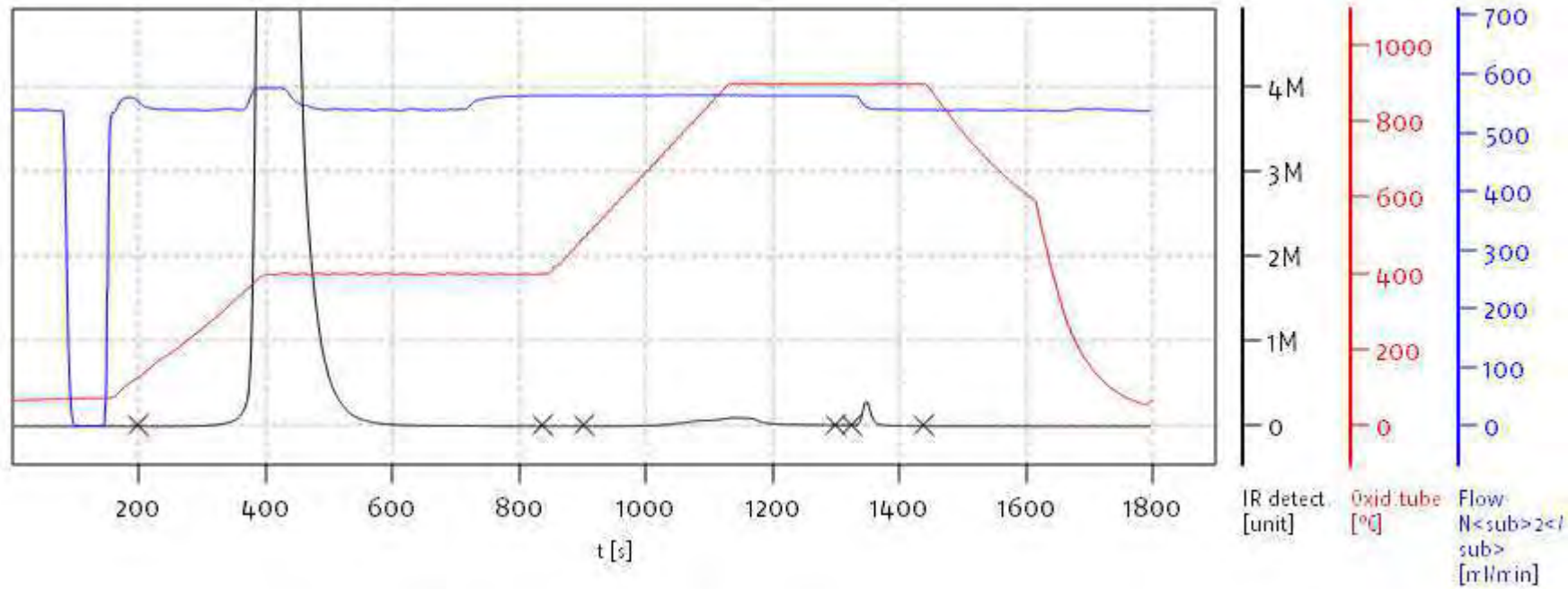
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

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Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
87	83	23J0613-02	513.90		CARBON	11/2/2023 9:08 AM	bl,C1o	9.963	34 961 552	10.114	0.051	194 438	518 364	9.912	0.151	0.9193	1.0000



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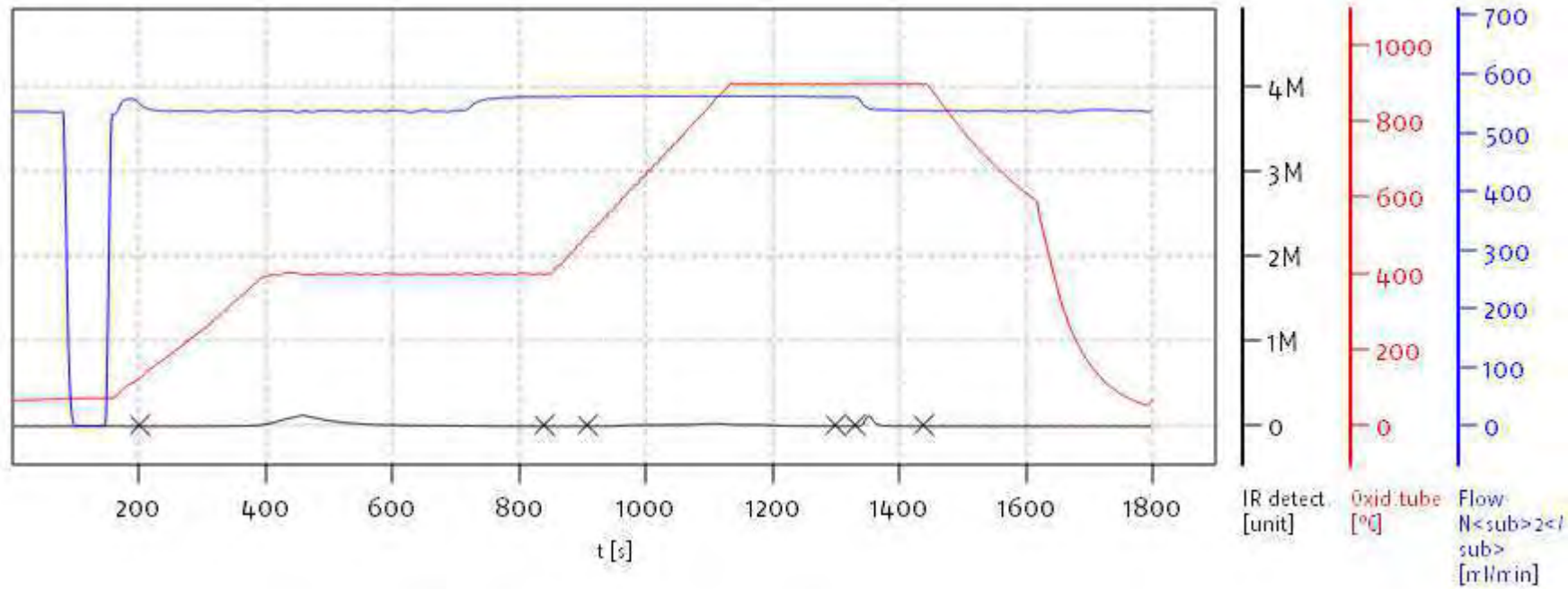
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
88	84	23J0690-05	501.10		CARBON	11/2/2023 9:39 AM	bl	0.158	517 132	0.208	0.016	78 090	186 628	0.142	0.050	0.9193	1.0000



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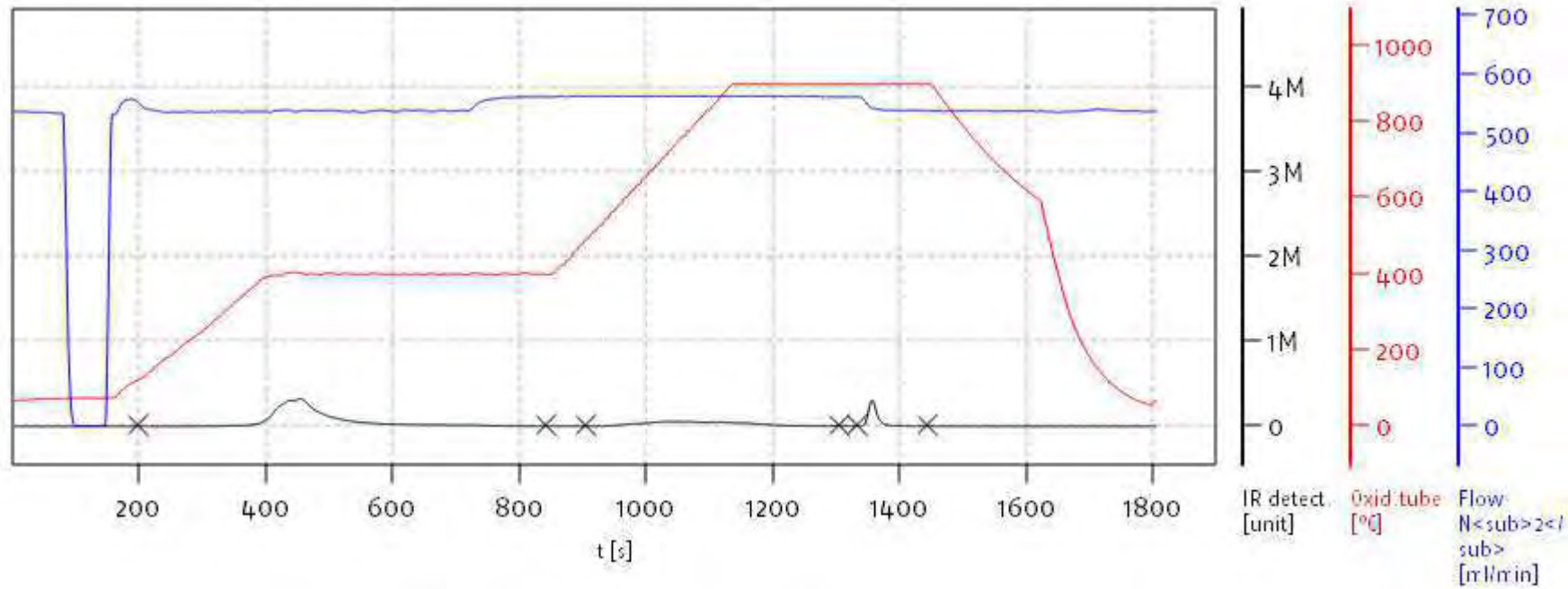
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
89	85	23J0690-06	526.20		CARBON	11/2/2023 10:09 AM	bl	0.376	1 210 902	0.492	0.049	189 957	414 625	0.328	0.116	0.9193	1.0000



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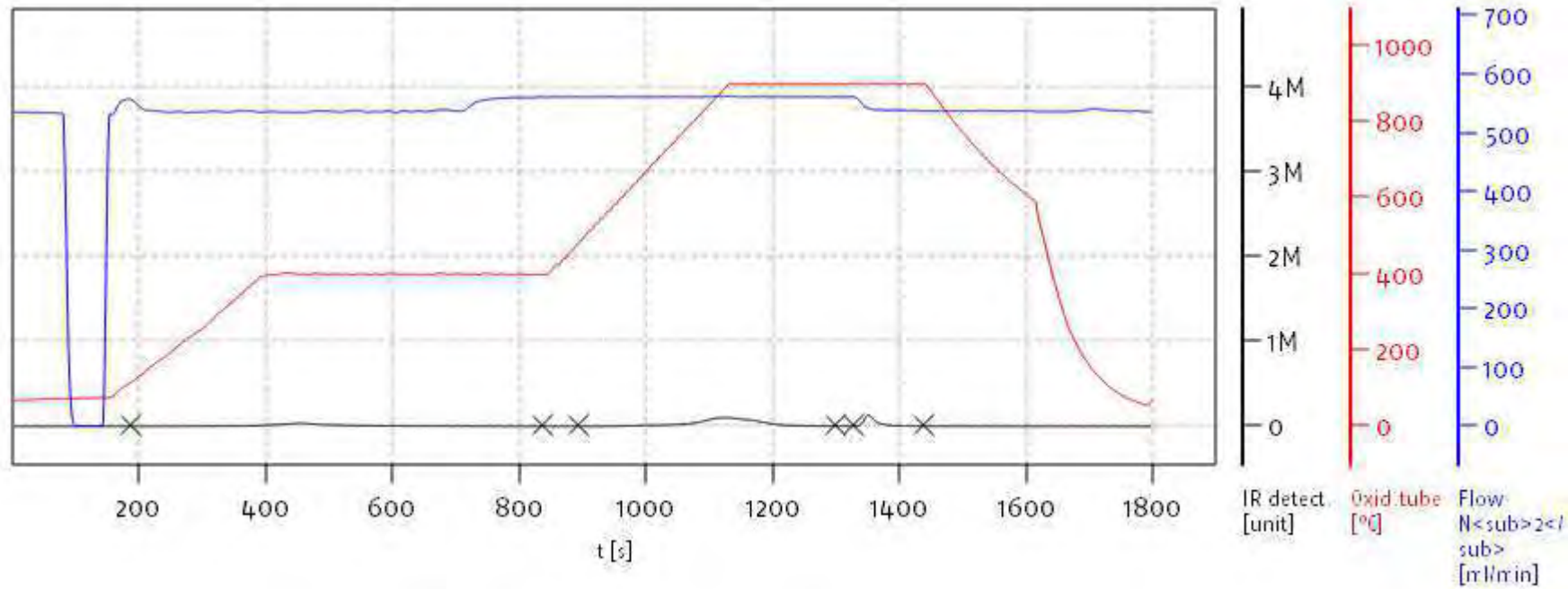
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Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
90	86	23J0698-02	538.60		CARBON	11/2/2023 10:39 AM	bl	0.066	177 614	0.189	0.025	115 252	448 328	0.040	0.124	0.9193	1.0000



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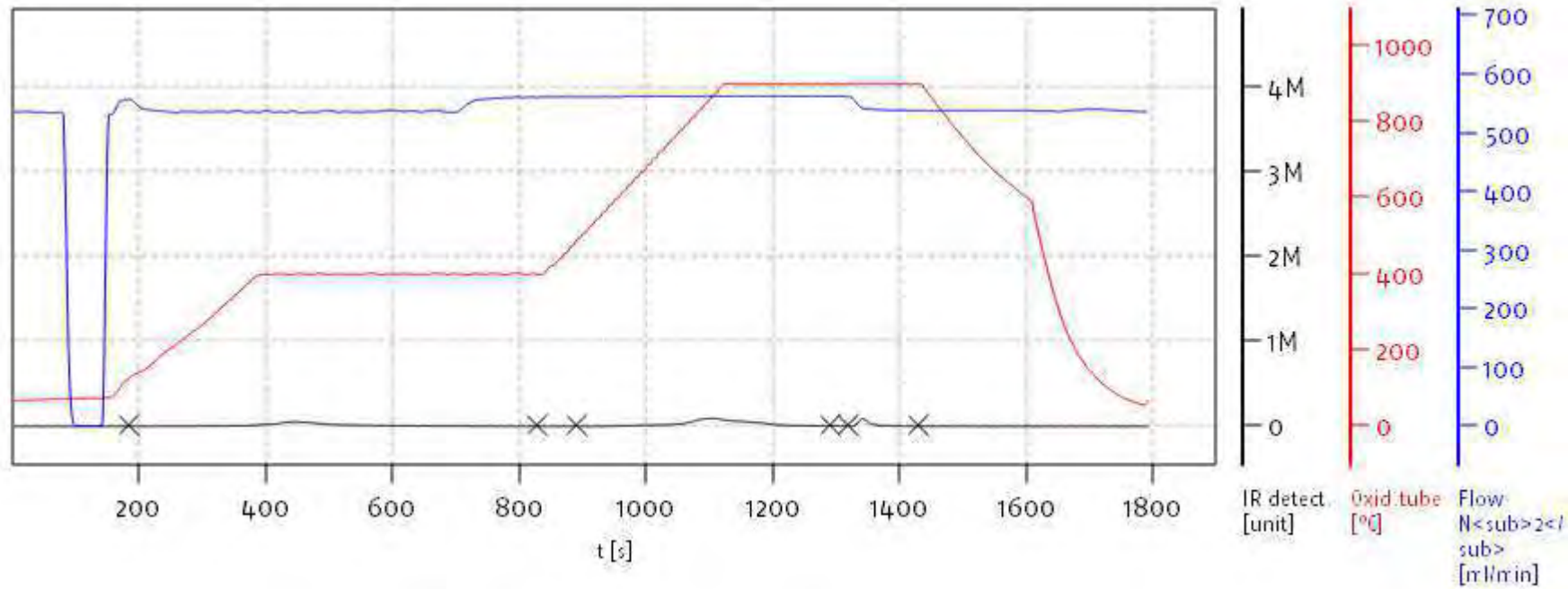
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
91	87	23J0698-06	546.90		CARBON	11/2/2023 11:10 AM	bl	0.075	258 906	0.189	0.014	75 925	421 646	0.061	0.114	0.9193	1.0000



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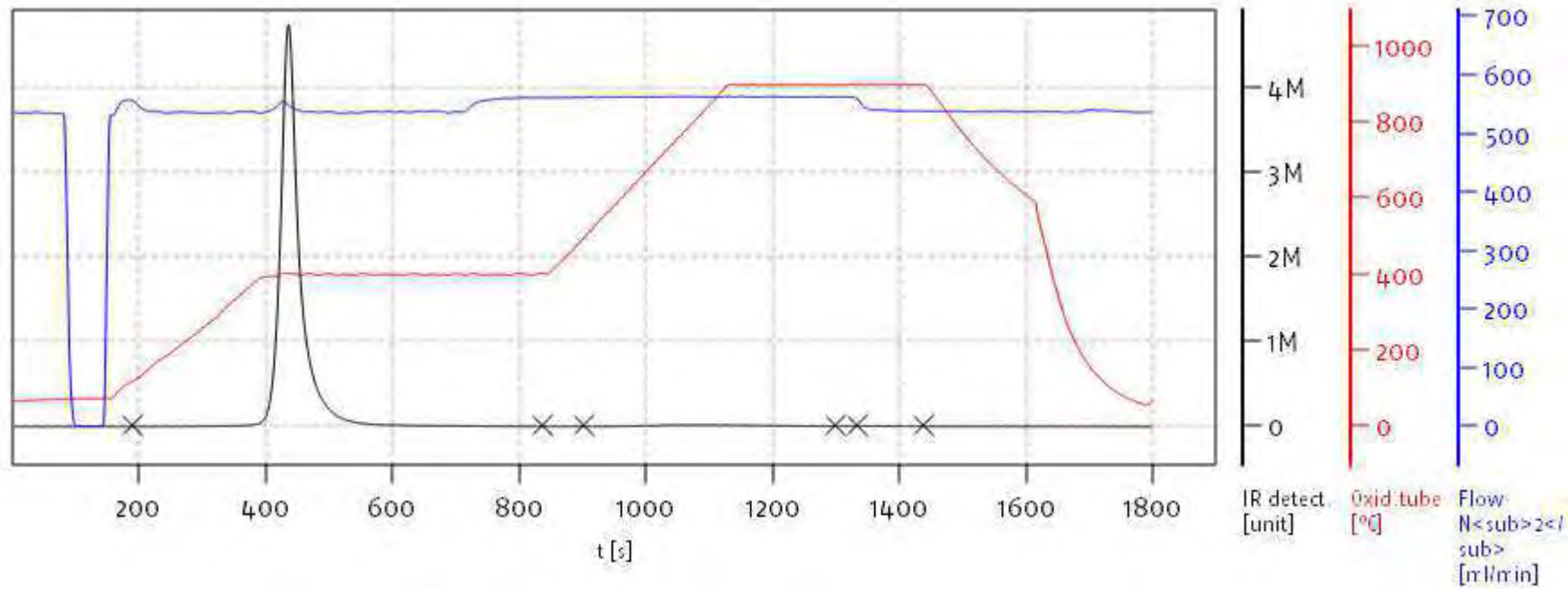
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
92	88	SLJ0453-CCV7	21.00		CARBON	11/2/2023 11:40 AM	bl,C2u	43.844	6 343 345	44.742	0.000	16 229	147 706	43.844	0.898	0.9193	1.0000



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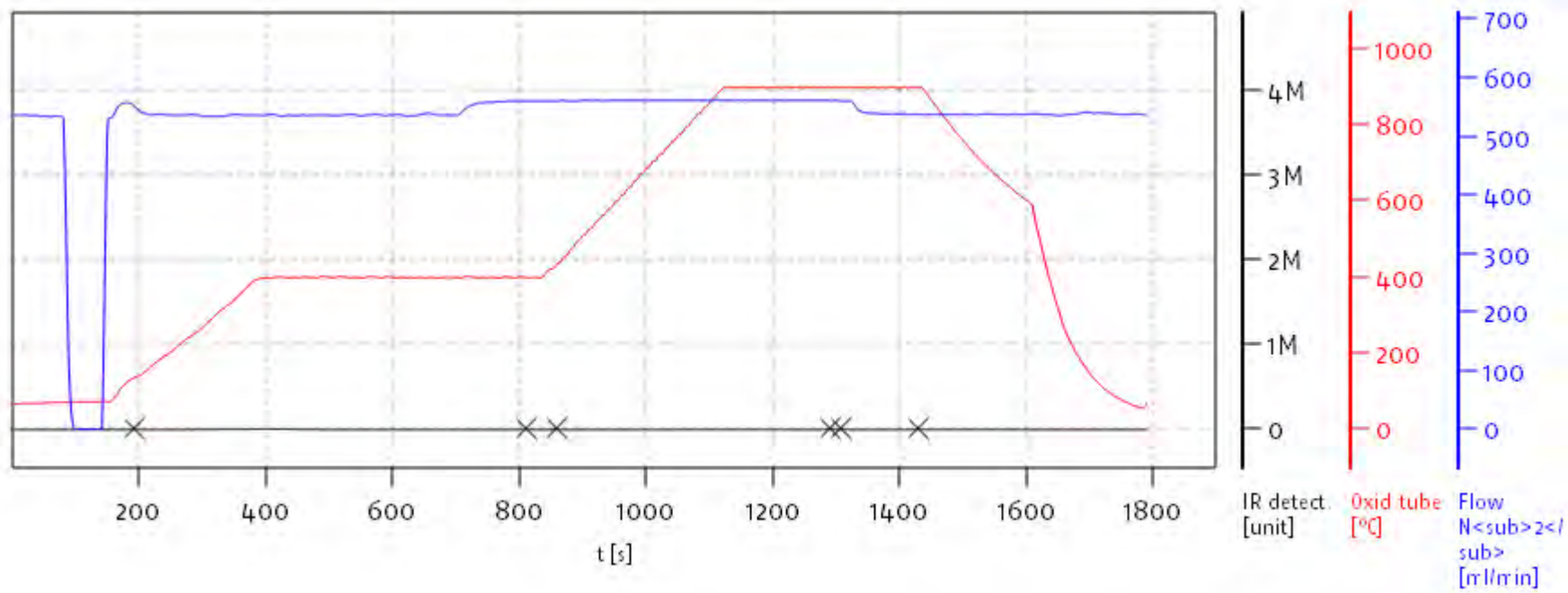
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
93	89	SLJ0453-CCB7	502.40		CARBON	11/2/2023 12:10 PM	bl,C3u,C2u	0.000	28 066	0.000	0.000	482	2 499	0.000	0.000	0.9193	1.0000



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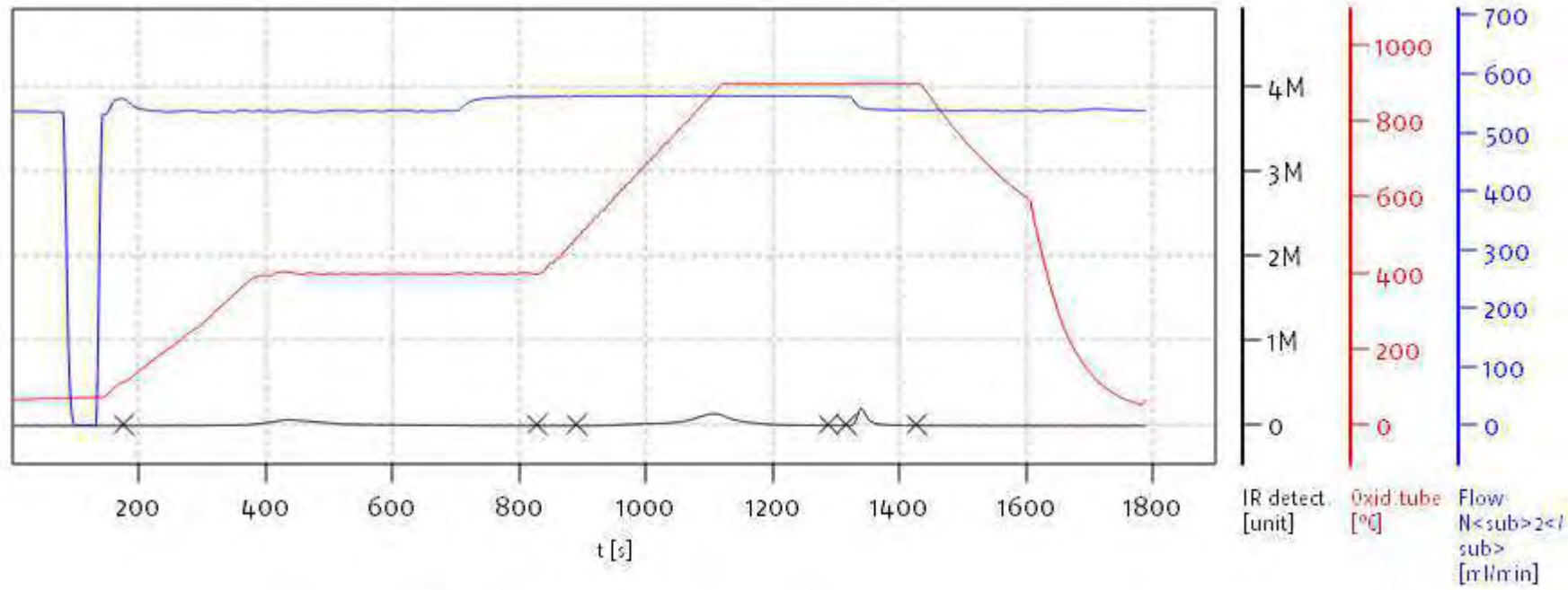
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
94	1	23J0698-10	613.90		CARBON	11/2/2023 12:40 PM	bl	0.108	346 449	0.238	0.033	155 579	531 444	0.075	0.130	0.9193	1.0000



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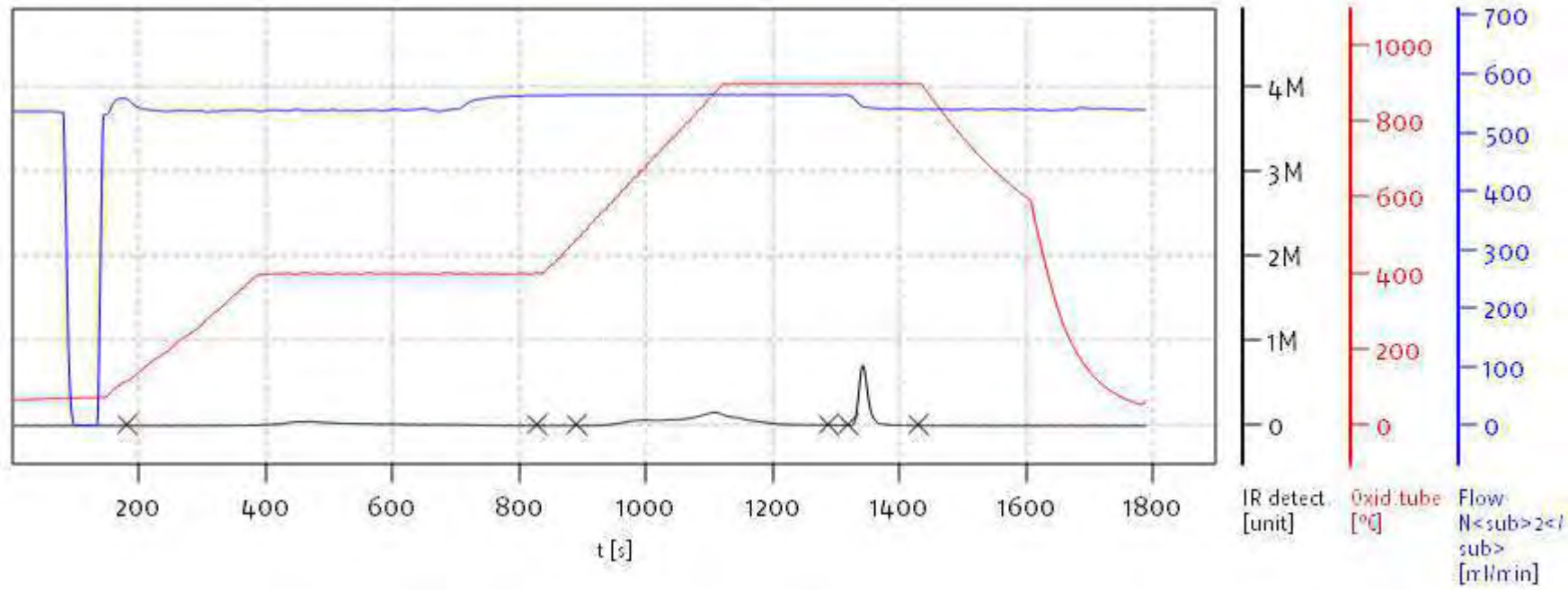
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
95	2	23J0698-11	536.50		CARBON	11/2/2023 1:11 PM	bl	0.210	323 250	0.439	0.130	467 760	805 363	0.080	0.230	0.9193	1.0000



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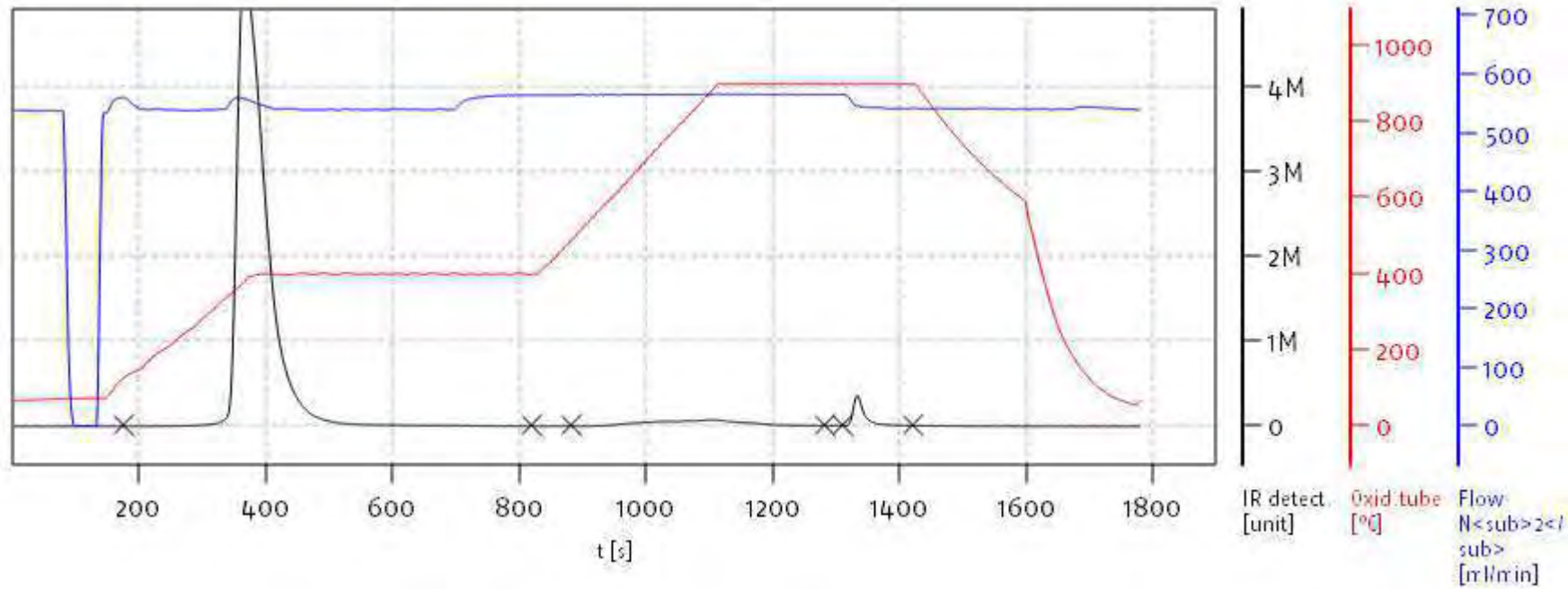
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
96	3	23J0712-01	616.60		CARBON	11/2/2023 1:41 PM	bl,C1o	2.553	10 538 104	2.681	0.068	292 427	526 000	2.485	0.128	0.9193	1.0000



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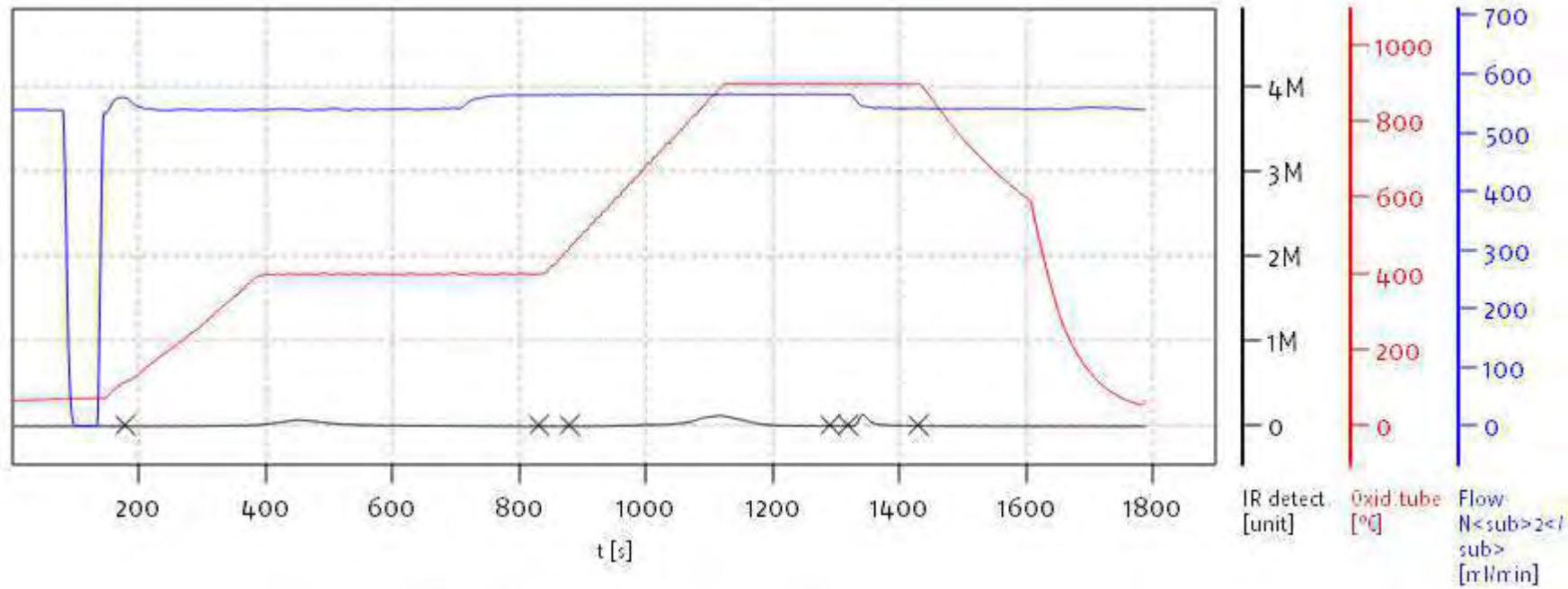
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
97	4	23J0719-04	582.30		CARBON	11/2/2023 2:11 PM	bl	0.105	345 681	0.232	0.026	123 537	493 446	0.079	0.127	0.9193	1.0000



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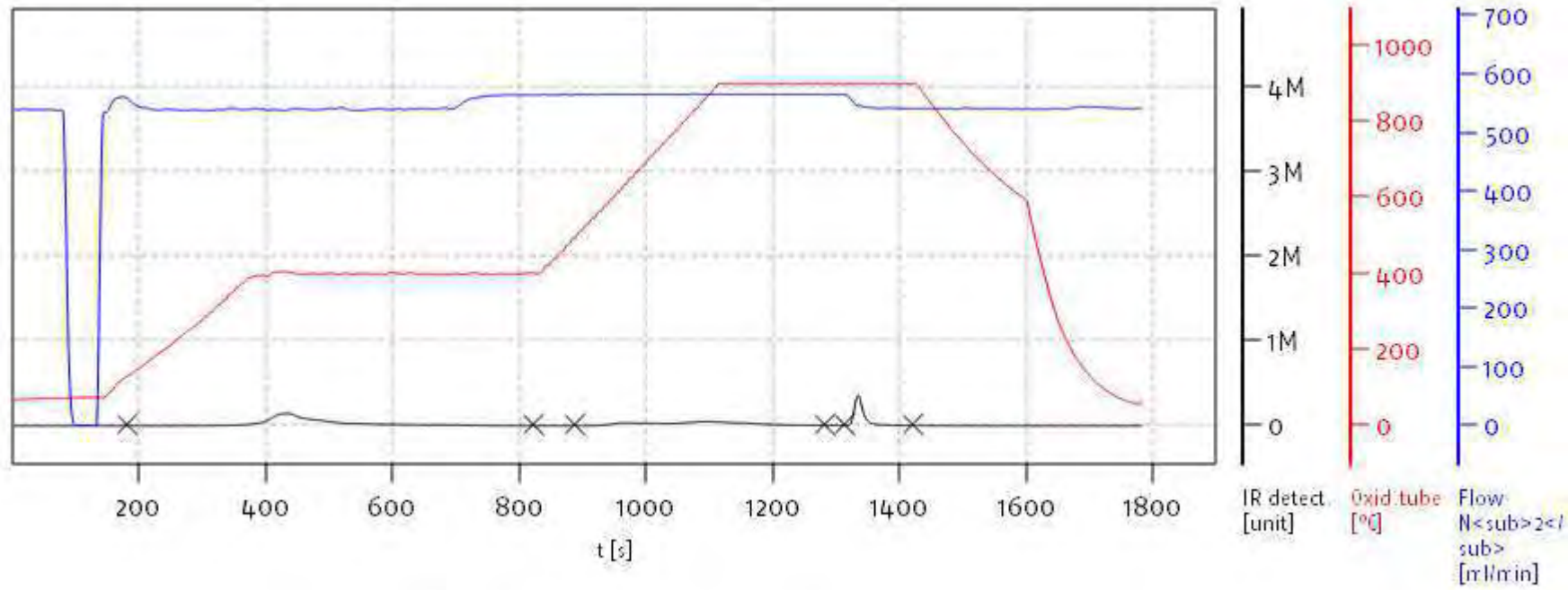
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
98	5	23J0719-09	512.80		CARBON	11/2/2023 2:41 PM	bl	0.218	570 141	0.318	0.064	234 698	354 155	0.154	0.101	0.9193	1.0000



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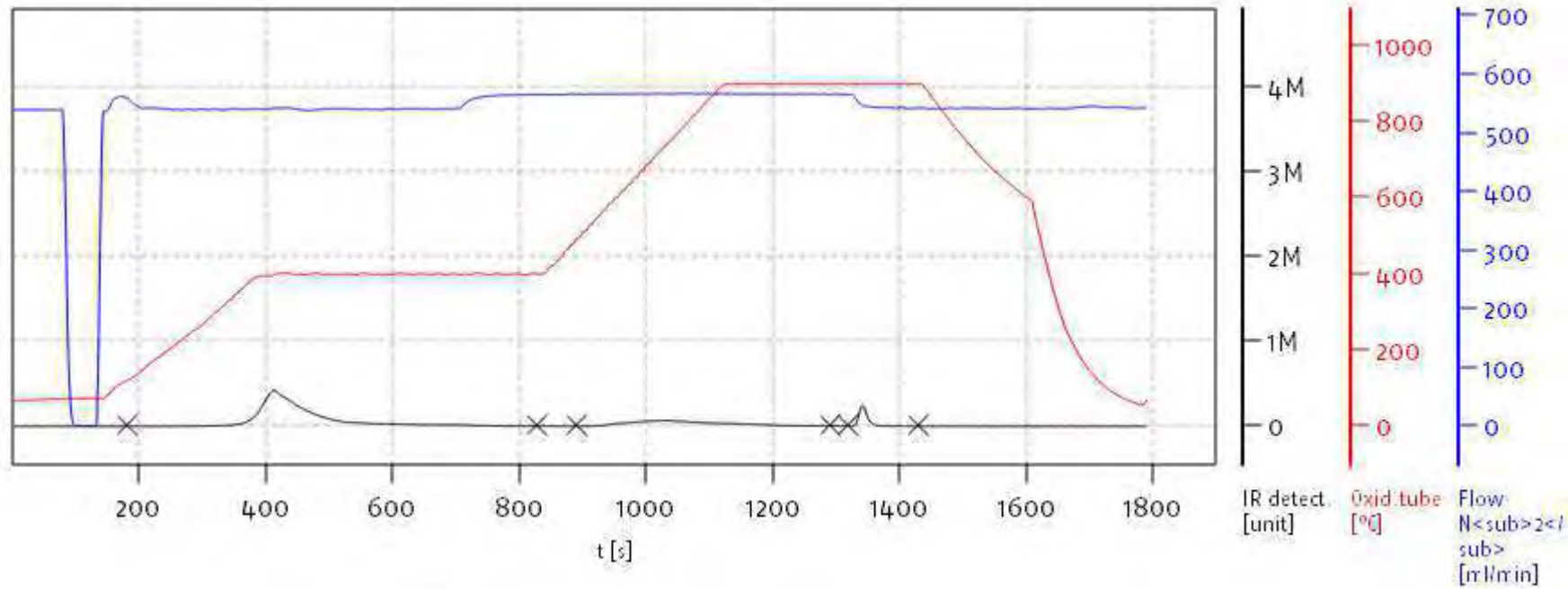
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
99	6	23J0744-01	561.90		CARBON	11/2/2023 3:11 PM	bl	0.400	1 437 883	0.519	0.034	149 853	450 001	0.366	0.119	0.9193	1.0000



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Access: soliTOC superuser

Date: Fri Nov 3 14:55:38 2023

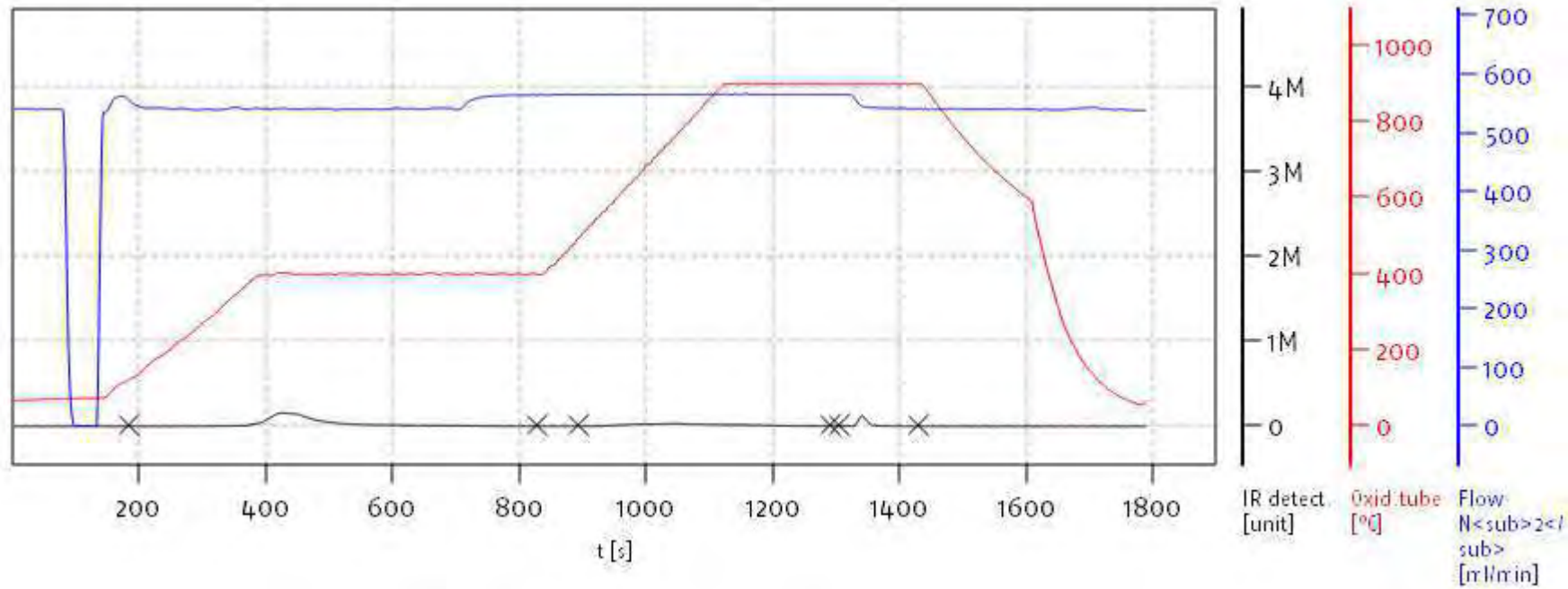
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
100	7	23J0744-02	501.70		CARBON	11/2/2023 3:41 PM	bl	0.190	625 295	0.251	0.017	81 531	221 713	0.173	0.061	0.9193	1.0000



Name:

Access: soliTOC superuser

Date: Fri Nov 3 14:55:38 2023

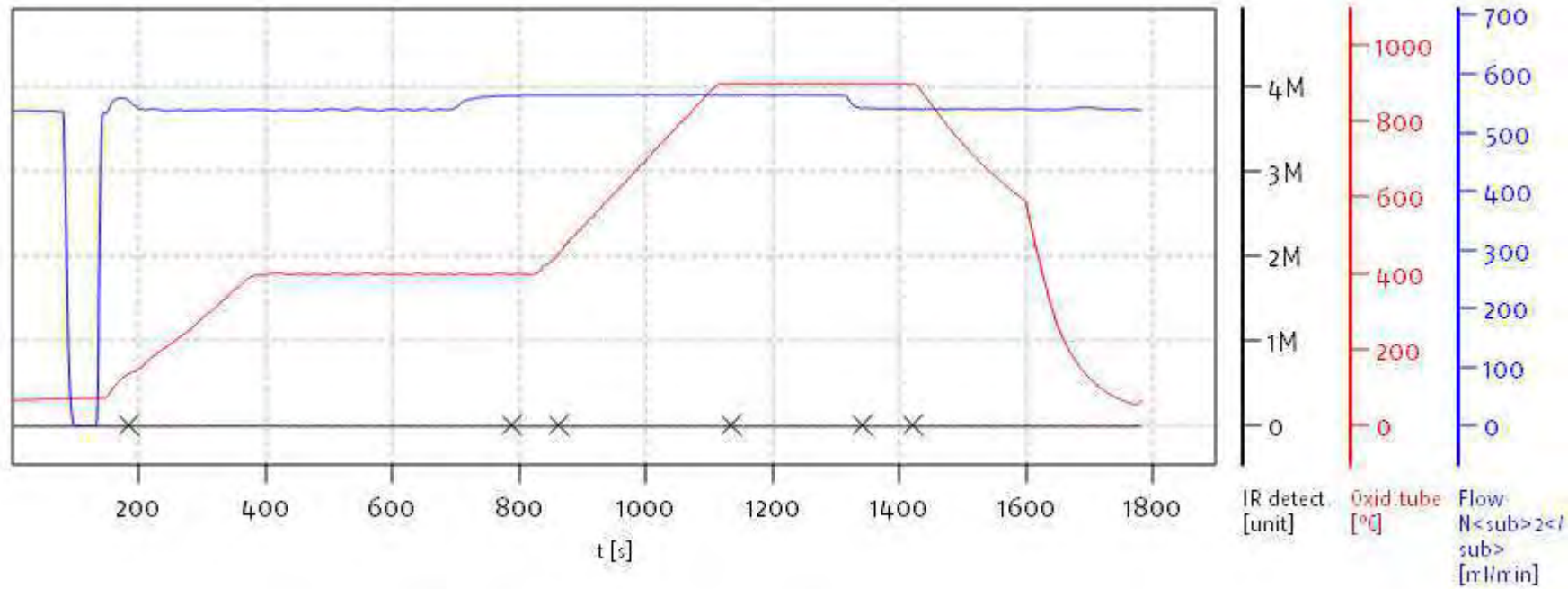
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
101	8	BLANK	1.00		CARBON	11/2/2023 4:11 PM	bl	0.000	10 813	0.000	0.000	212	837	0.000	0.000	0.9193	1.0000



Name:

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Date: Fri Nov 3 14:55:38 2023

elementar
EXCELLENCE IN ELEMENTS

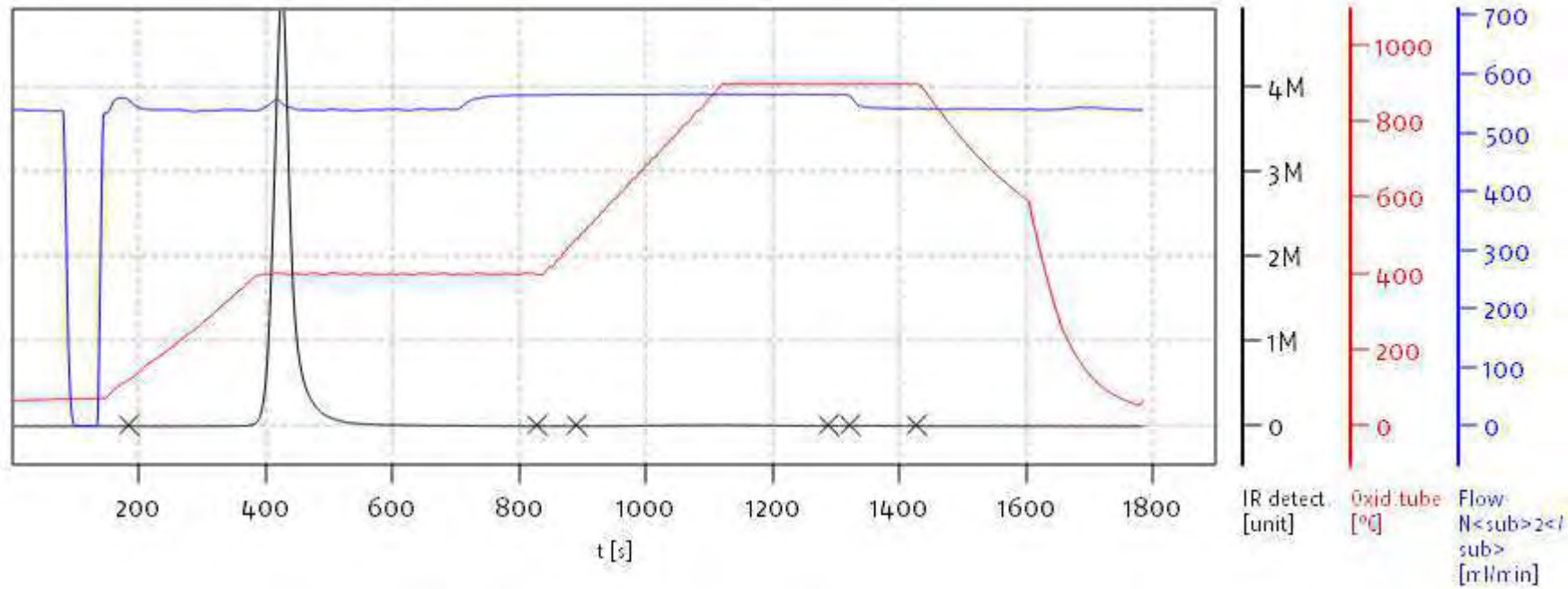
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Serial No: 0300.181017
Mode CCC

Document: 103023 AR from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
102	9	Dfactor	21.40		CARBON	11/2/2023 4:42 PM	bl,C2u	44.446	6 348 990	45.118	0.000	17 081	119 596	44.446	0.672	0.9488	1.0000



Name:

Access: soliTOC superuser

Date: Fri Nov 3 14:55:38 2023

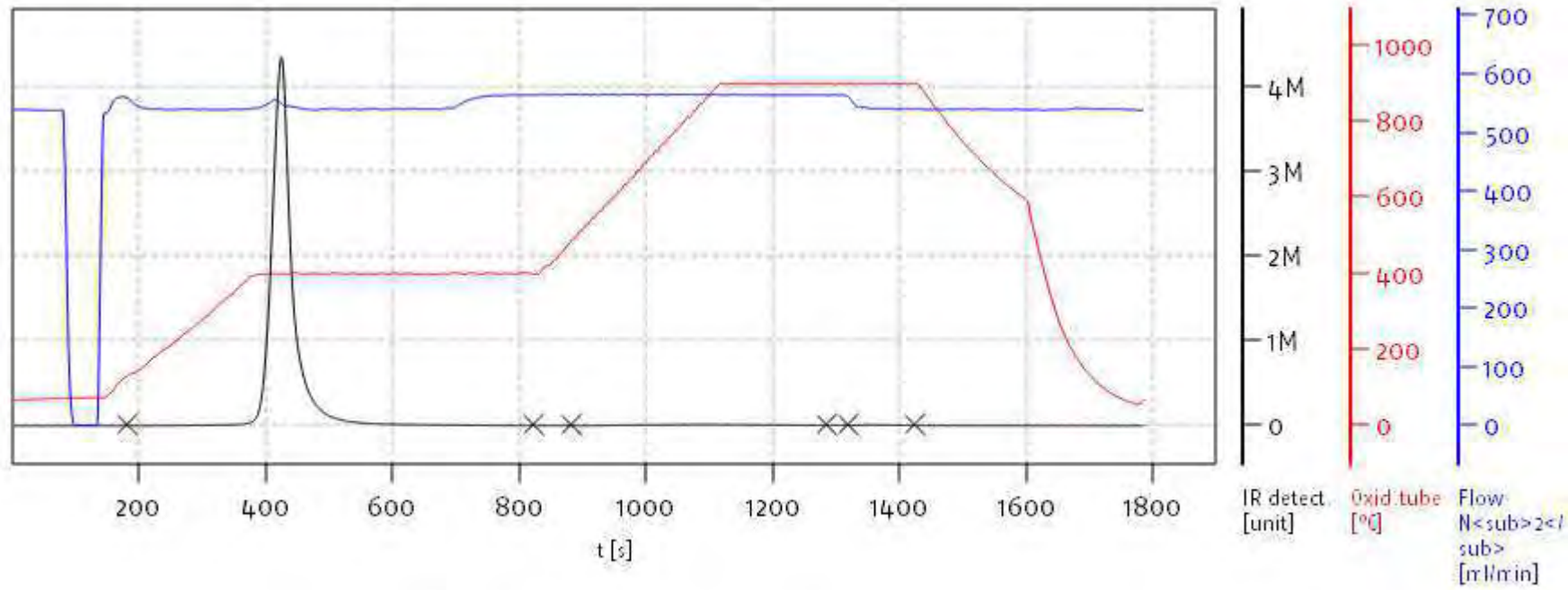
soliTOC V2.0.2 (31015f9) 2018-11-19
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elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
103	10	Dfactor	20.70		CARBON	11/2/2023 5:12 PM	bl	44.446	6 136 265	45.205	0.000	26 740	127 957	44.446	0.759	0.9497	1.0000



Name:

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elementar
EXCELLENCE IN ELEMENTS

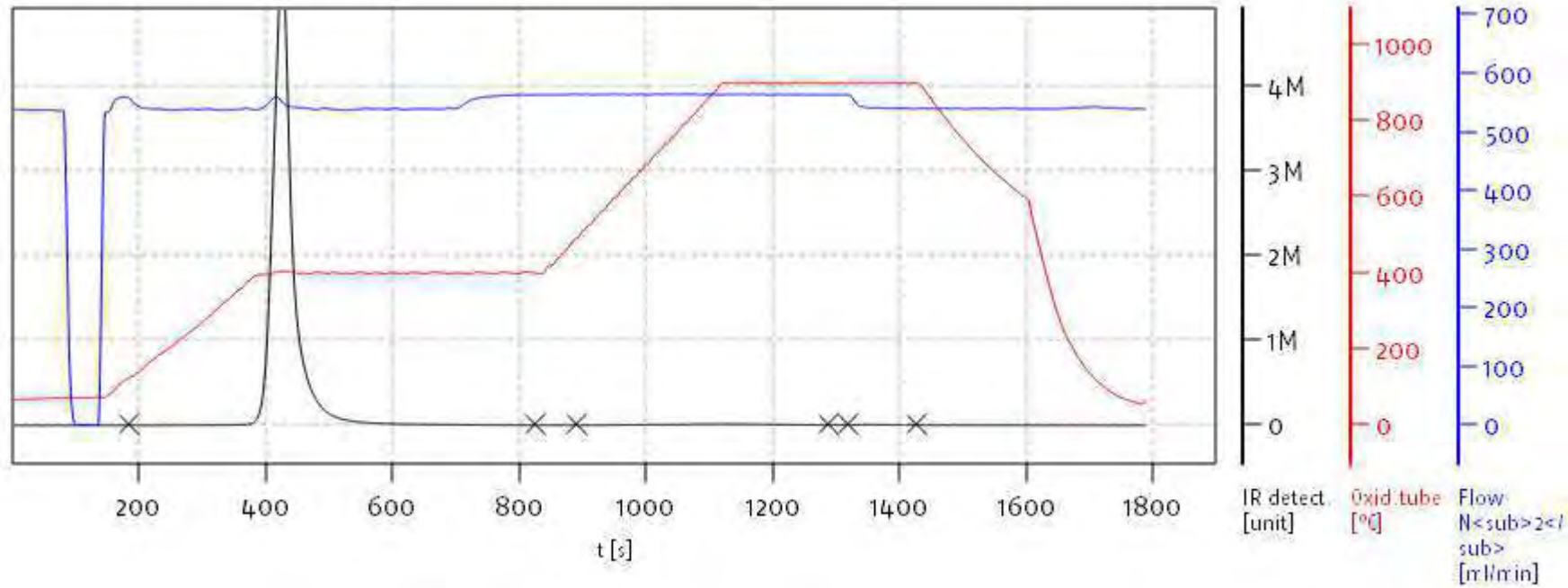
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Document: 103023 AR from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
104	11	SLJ0453-CCV8	24.30		CARBON	11/2/2023 5:42 PM	bl	45.037	7 297 459	45.672	0.000	24 442	126 072	45.037	0.634	0.9493	1.0000



Name:

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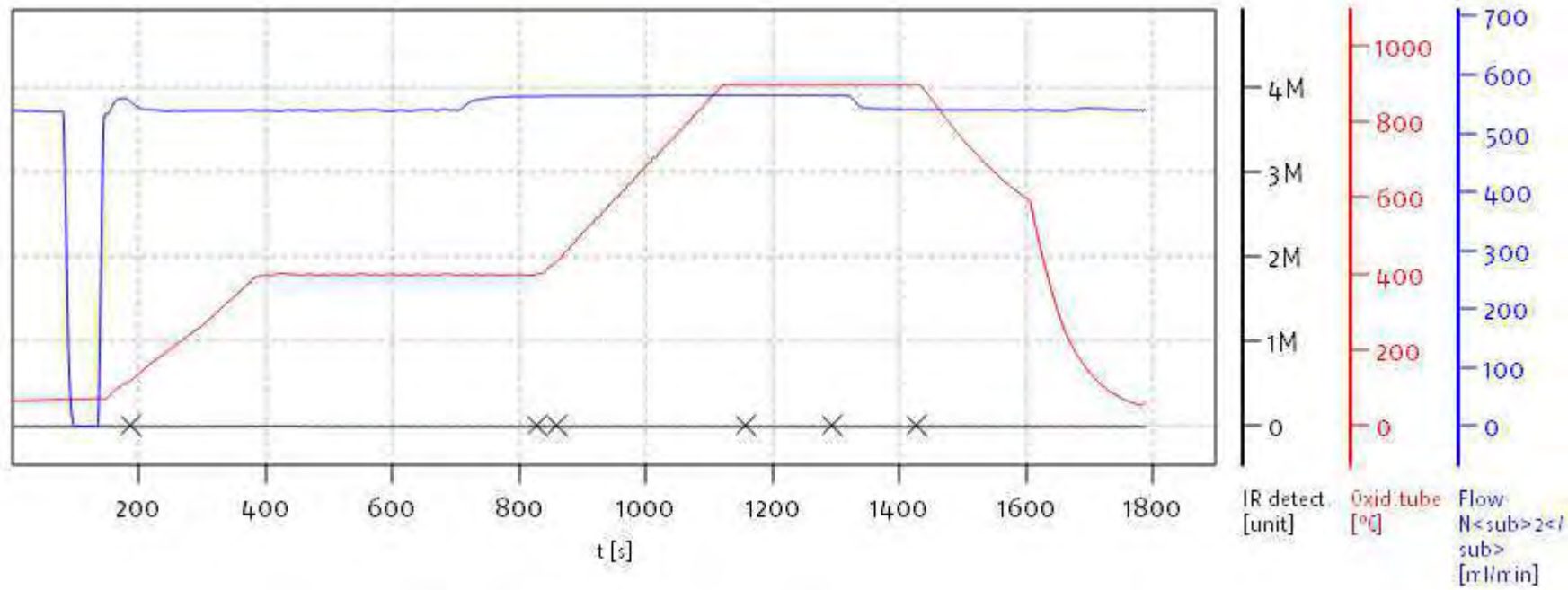
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EXCELLENCE IN ELEMENTS

soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
105	12	SLJ0453-CCB8	521.90		CARBON	11/2/2023 6:12 PM	bl,C1u,C3u,C2u	0.000	19 501	0.000	0.000	1 017	2 492	0.000	0.000	0.9493	1.0000



Name:

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Date: Fri Nov 3 14:55:38 2023

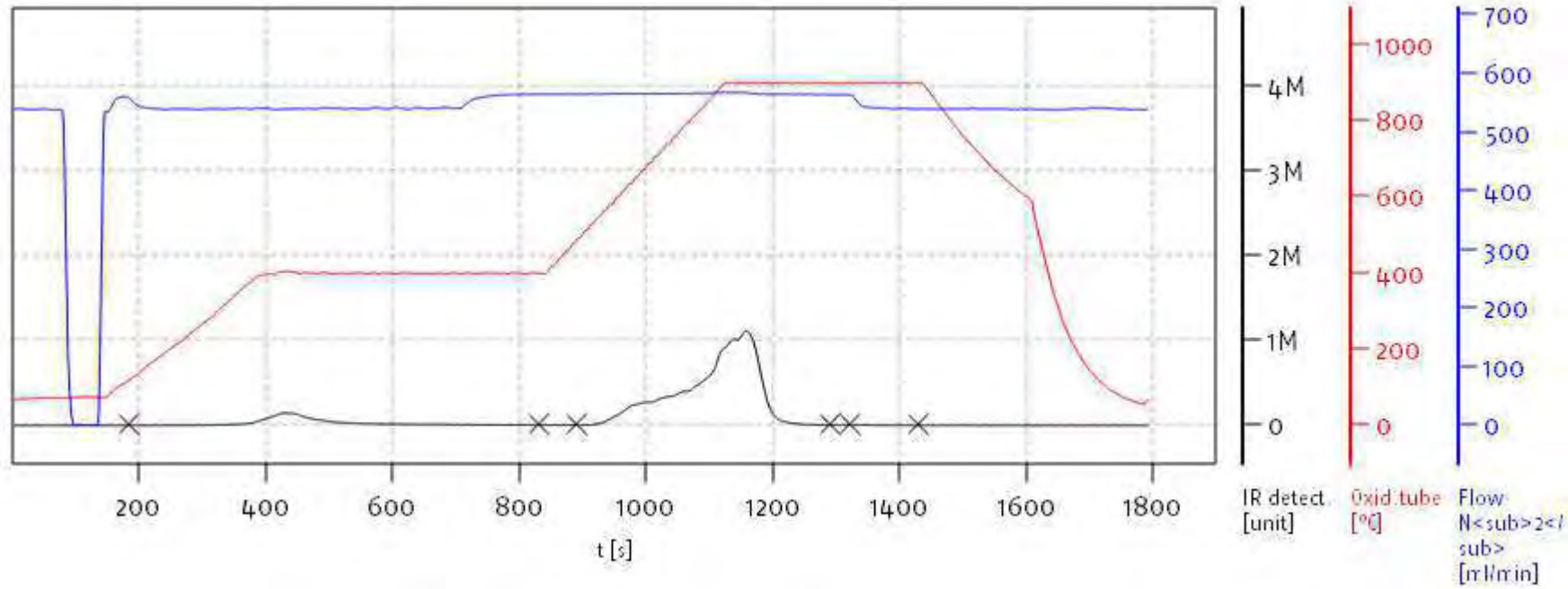
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
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elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
106	13	BLJ0931-DUP3	540.40		CARBON	11/2/2023 6:42 PM	bl,C2u	0.173	649 159	1.639	0.000	10 808	5 023 809	0.173	1.466	0.9493	1.0000



Name:

Access: soliTOC superuser

Date: Fri Nov 3 14:55:38 2023

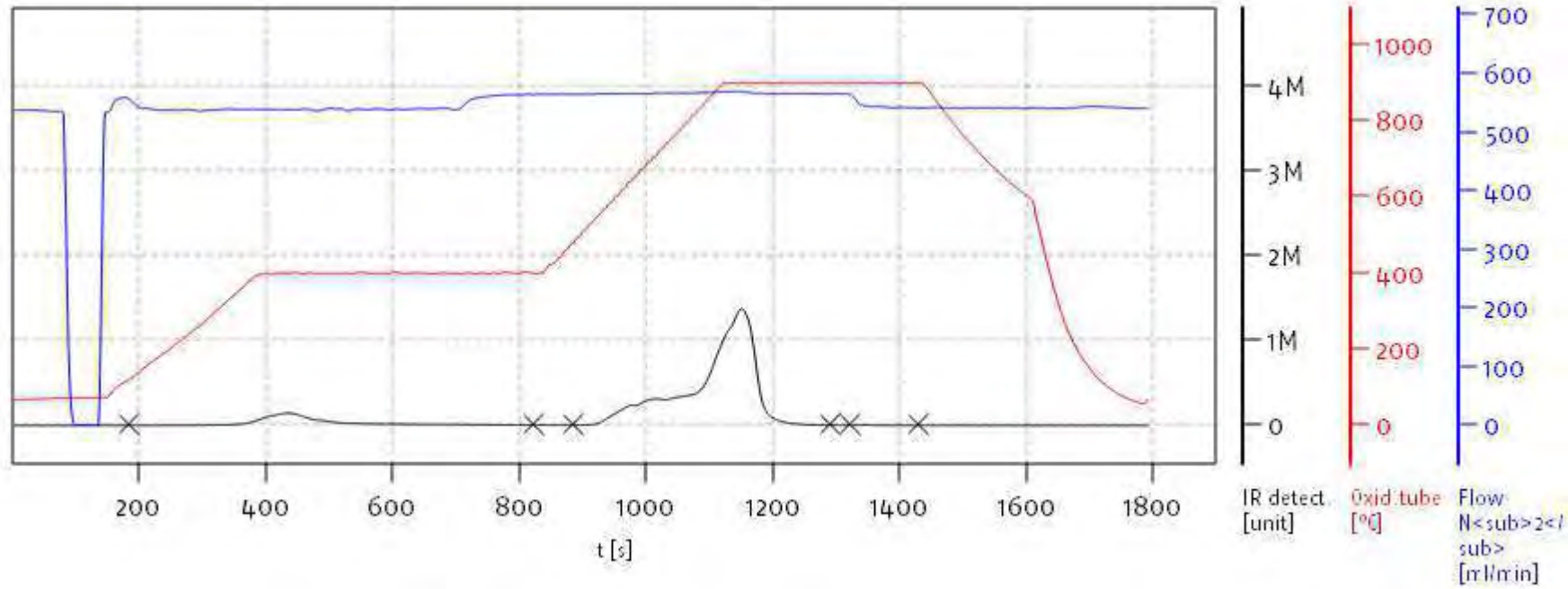
elementar
EXCELLENCE IN ELEMENTS

soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
107	14	BLJ0931-DUP4	550.70		CARBON	11/2/2023 7:13 PM	bl,C2u	0.172	659 261	1.645	0.000	10 825	5 140 668	0.172	1.472	0.9493	1.0000



Name:

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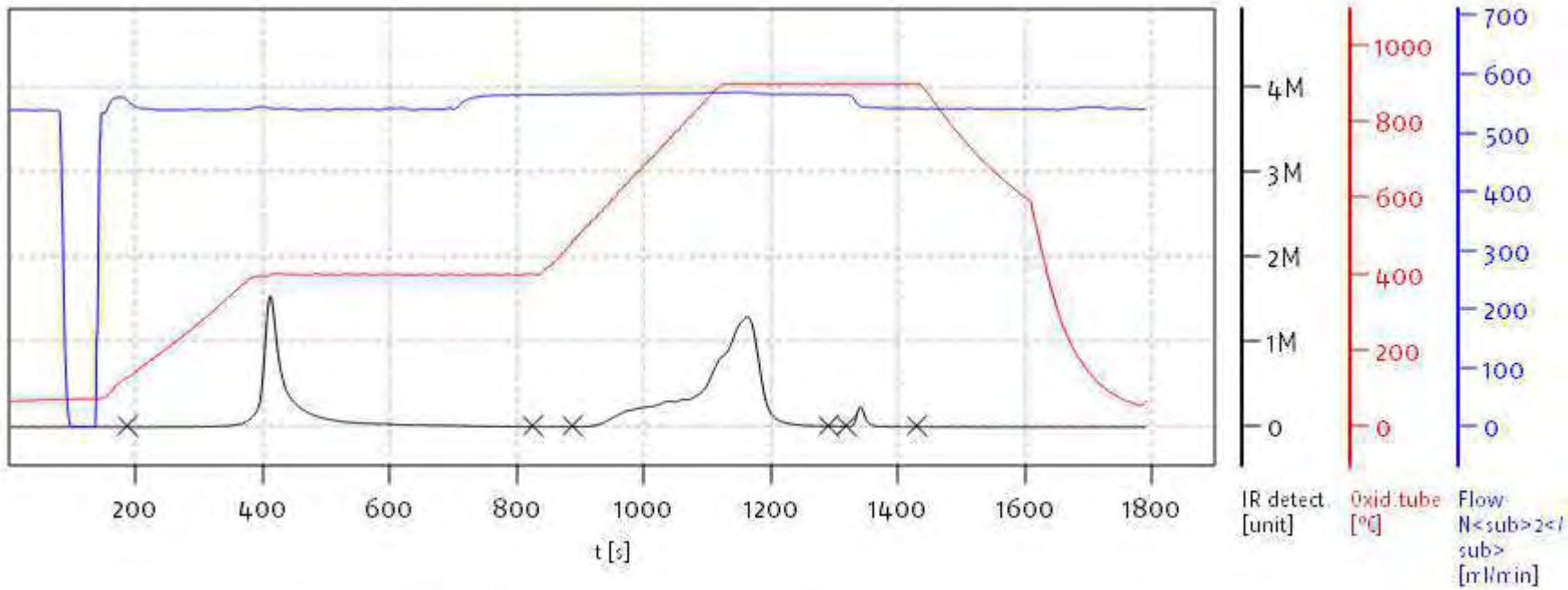
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EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
108	15	BLJ0931-MS2	517.90	0.007	CARBON	11/2/2023 7:43 PM	bl	0.739	2 442 859	2.249	0.037	150 520	4 959 813	0.702	1.510	0.9493	1.0000



Name:

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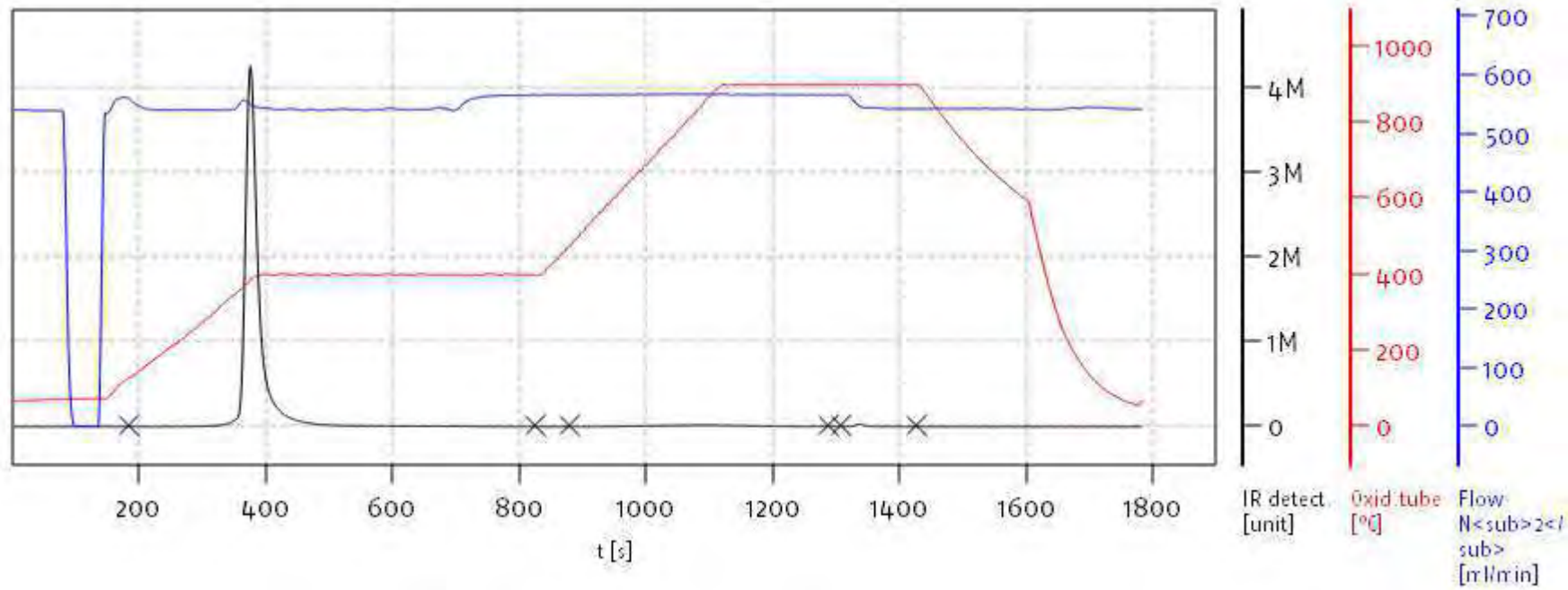
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Serial No: 0300.181017
Mode CCC

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EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
109	16	23I0459-01RE1	105.30		CARBON	11/2/2023 8:13 PM	bl,C2u	5.579	3 930 246	5.713	0.000	20 666	117 897	5.579	0.134	0.9493	1.0000



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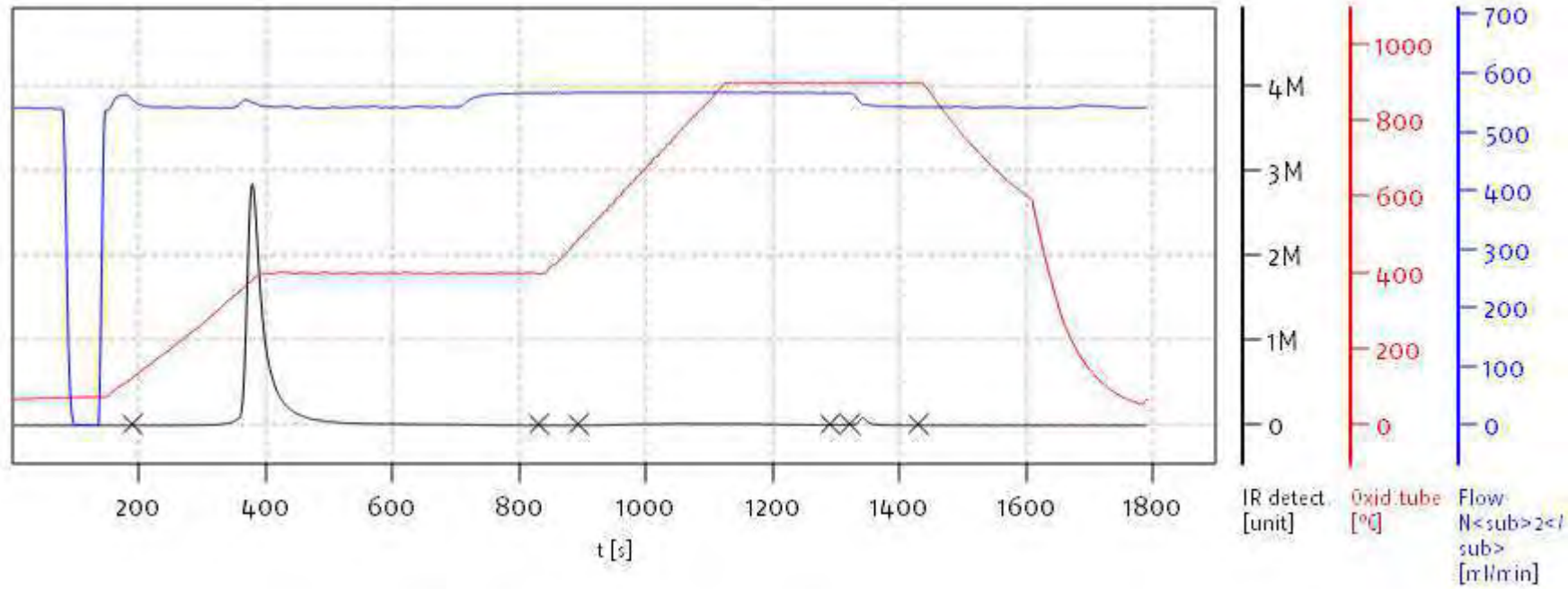
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elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
110	17	23I0459-02RE1	107.40		CARBON	11/2/2023 8:43 PM	bl	4.993	3 555 869	5.221	0.048	61 629	183 047	4.945	0.228	0.9493	1.0000



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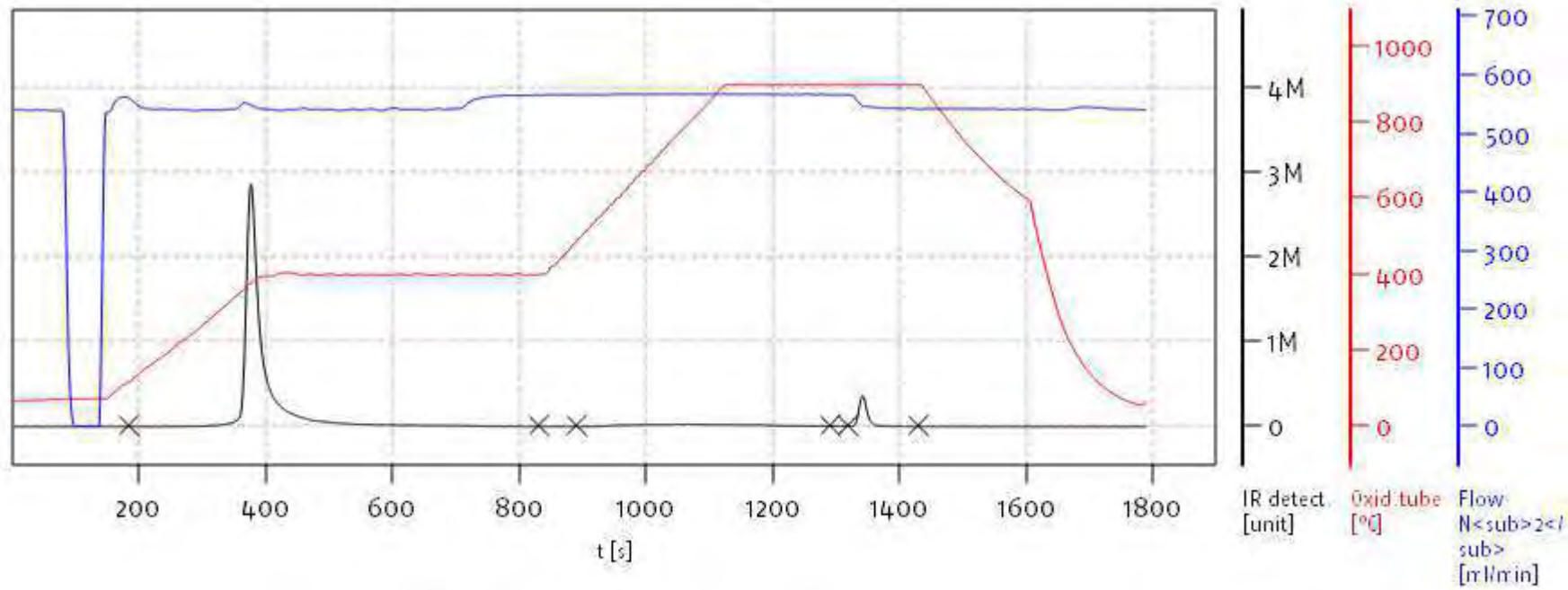
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Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
111	18	23I0459-03RE1	124.20		CARBON	11/2/2023 9:13 PM	bl	4.052	3 175 666	4.328	0.237	214 435	245 126	3.815	0.276	0.9493	1.0000



Name:

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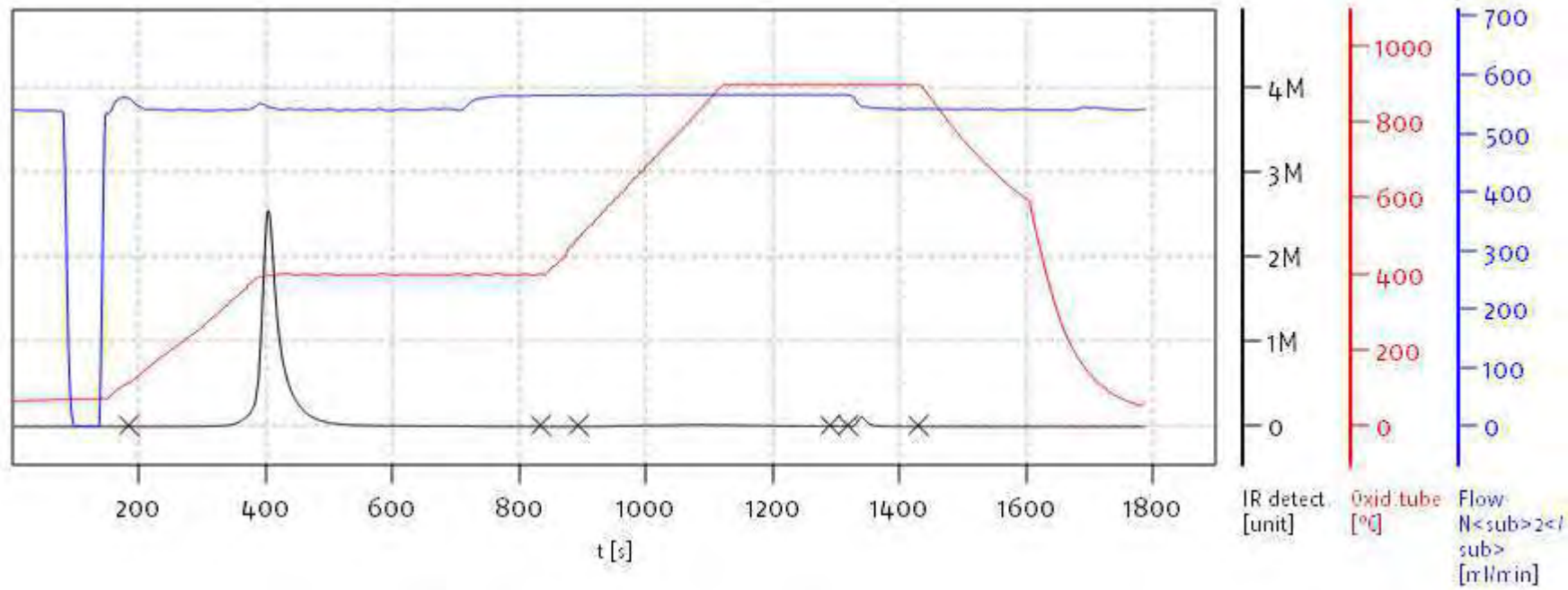
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Serial No: 0300.181017
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EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
112	19	23I0757-01RE1	163.00		CARBON	11/2/2023 9:43 PM	bl	3.134	3 369 305	3.261	0.049	78 796	159 399	3.086	0.127	0.9493	1.0000



Name:

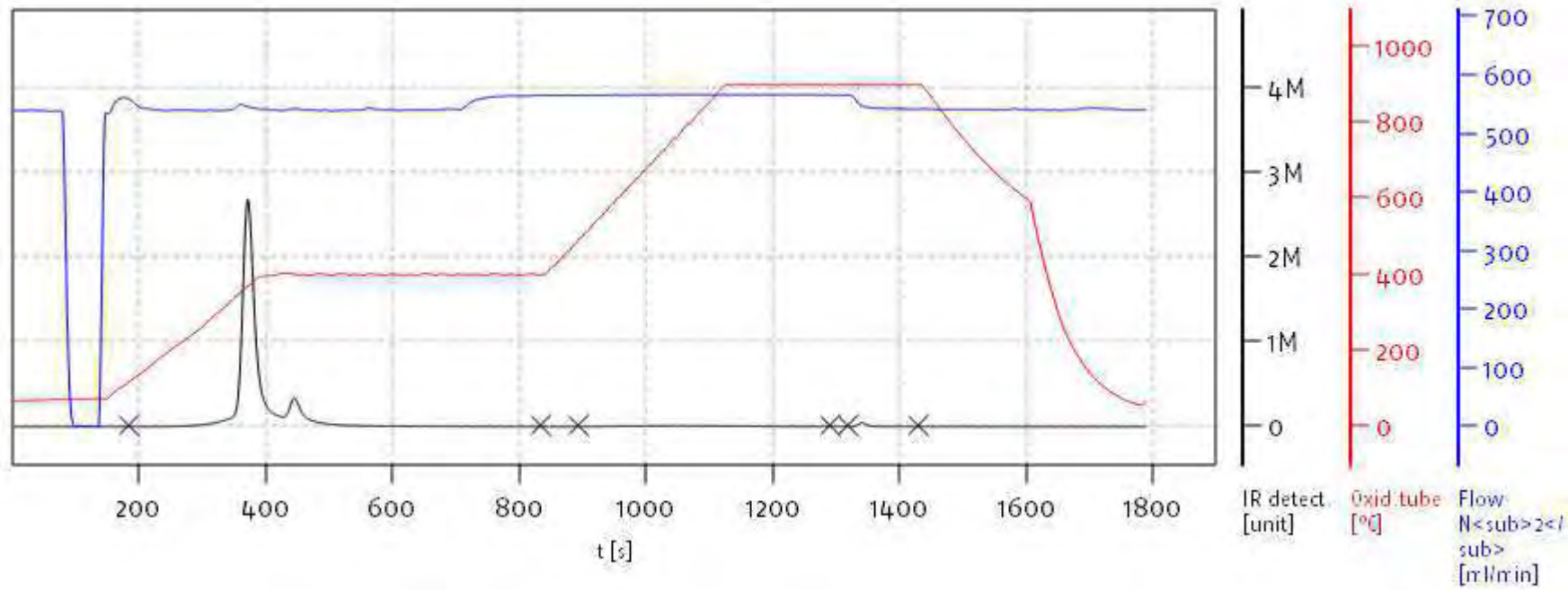
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Date: Fri Nov 3 14:55:38 2023

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Serial No: 0300.181017
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
113	20	23J0297-01RE1	103.20		CARBON	11/2/2023 10:14 PM	bl	4.260	2 946 466	4.338	0.003	30 931	79 375	4.257	0.078	0.9493	1.0000



Name:

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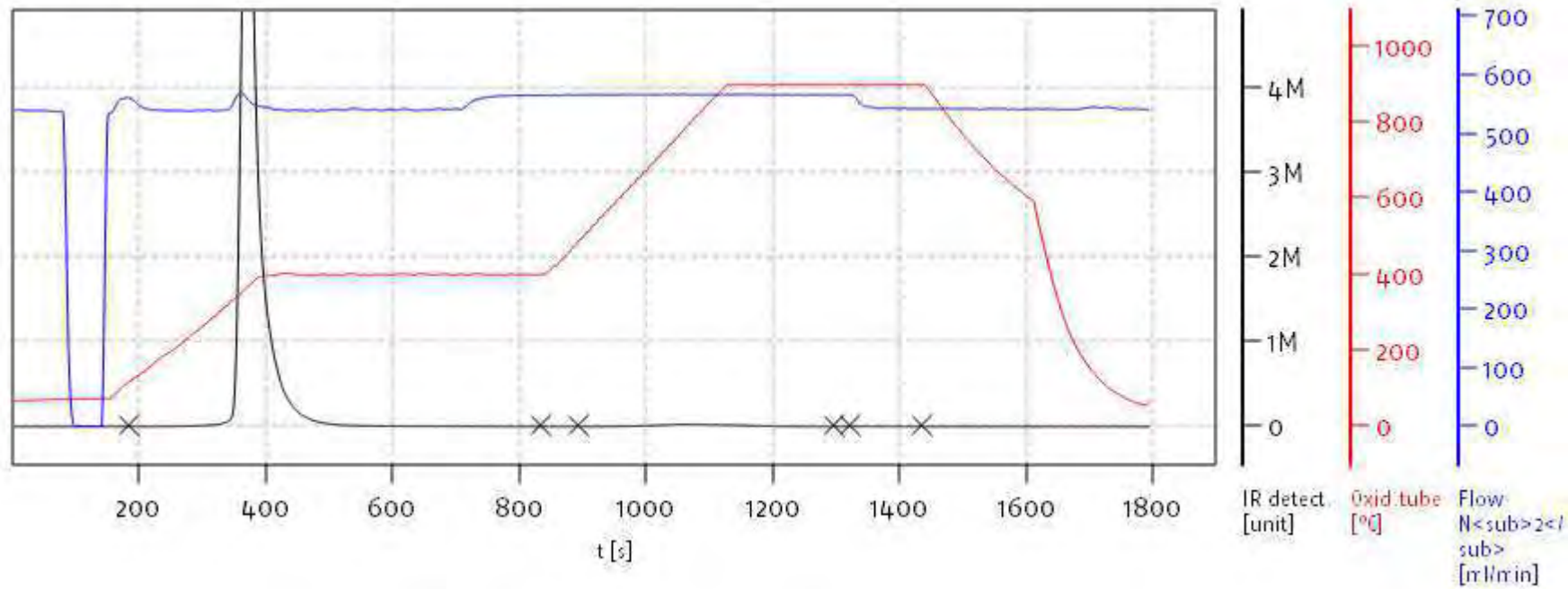
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Soli TOC Cube, Carbon
Balance: BAL3
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Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
114	21	23J0304-01RE1	59.70		CARBON	11/2/2023 10:44 PM	bl,C1o,C2u	22.566	8 976 473	22.874	0.000	4 492	144 595	22.566	0.307	0.9493	1.0000



Name:

Access: soliTOC superuser

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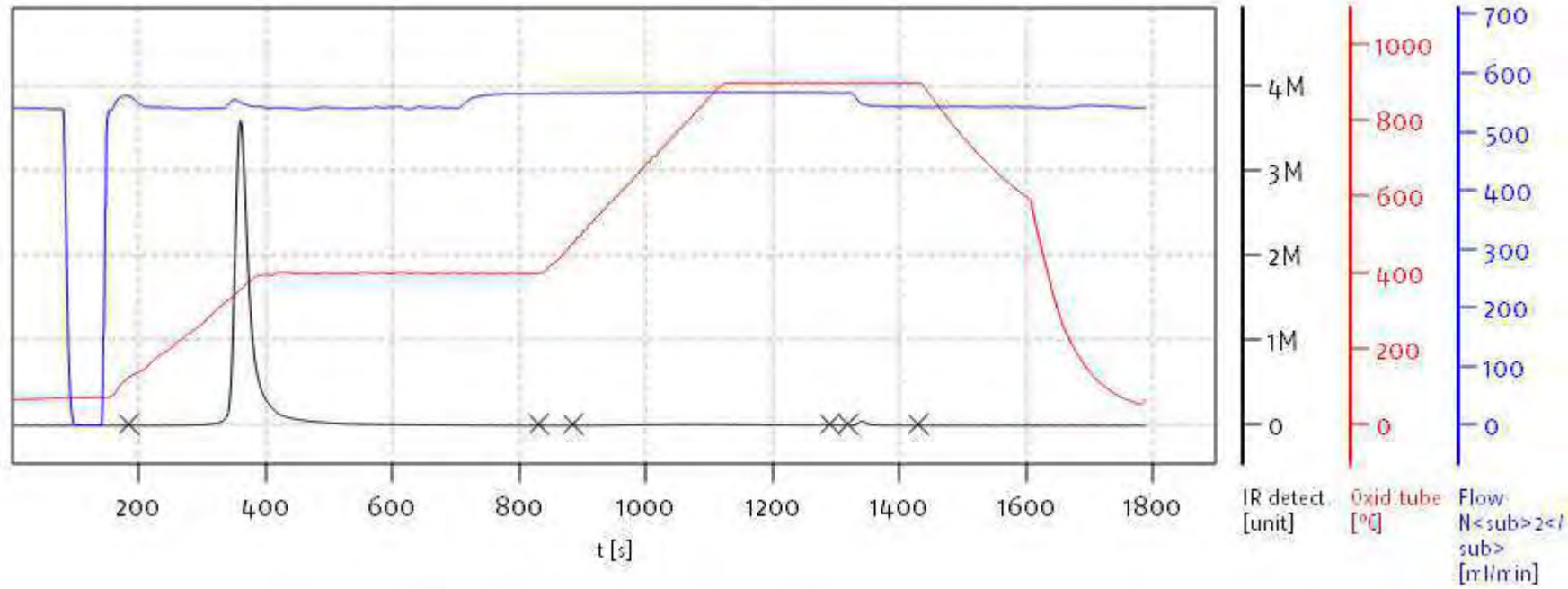
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Balance: BAL3
Analyst: CDE

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Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
115	22	23J0486-03RE1	143.40		CARBON	11/2/2023 11:14 PM	bl	4.099	3 924 942	4.187	0.008	35 933	108 367	4.091	0.088	0.9493	1.0000



Name:

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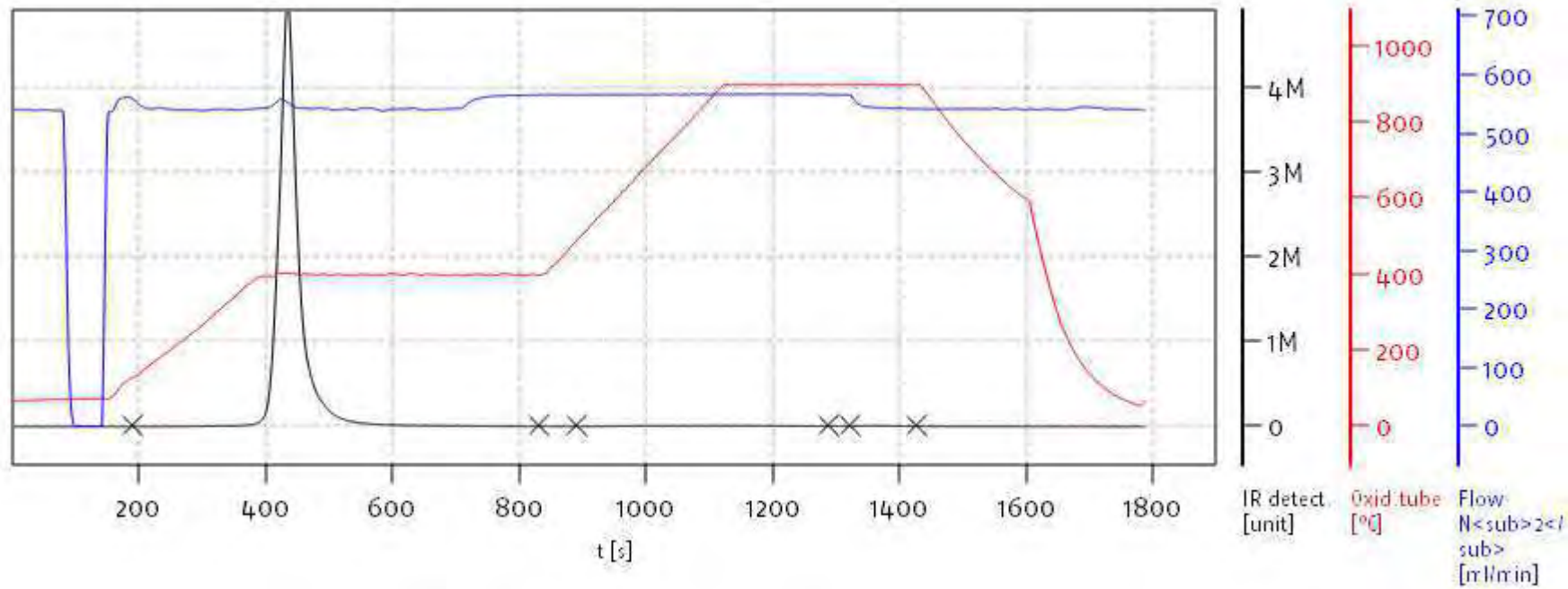
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Balance: BAL3
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
116	23	SLJ0453-CCV9	23.00		CARBON	11/2/2023 11:44 PM	bl	44.292	6 794 699	44.876	0.000	26 319	113 516	44.292	0.584	0.9493	1.0000



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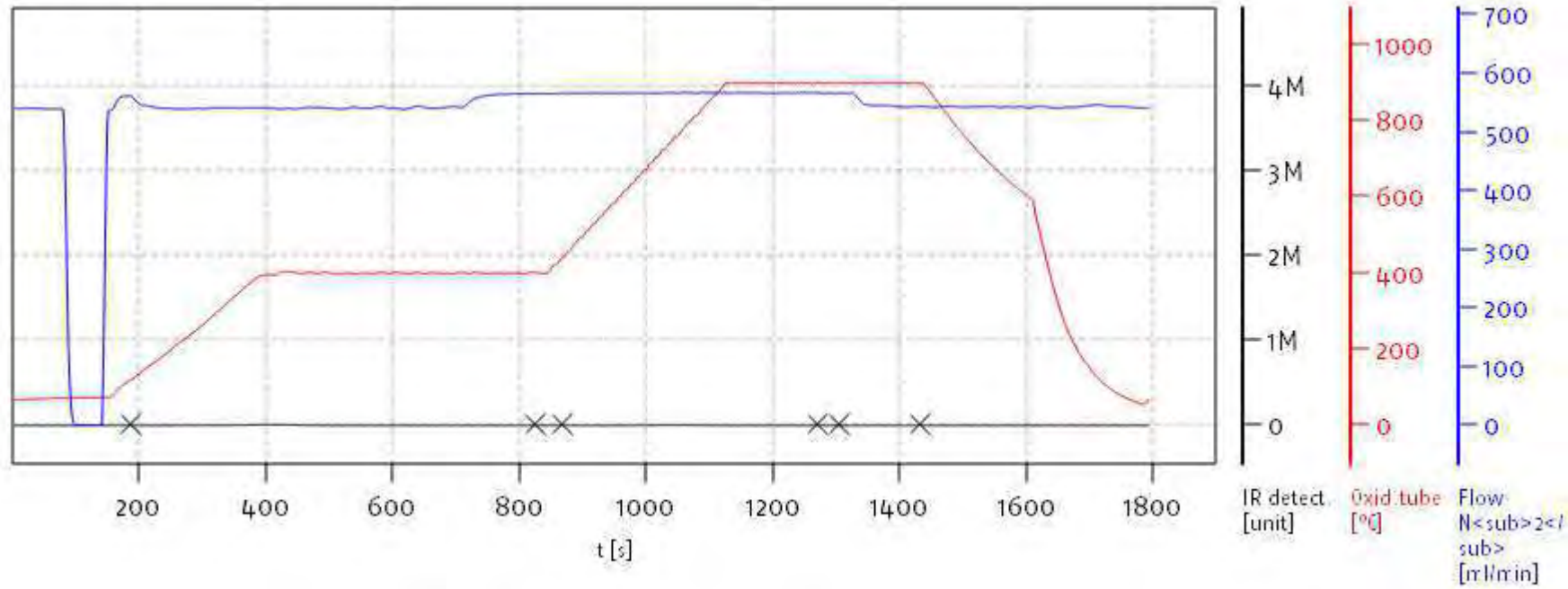
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Balance: BAL3
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Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
117	24	SLJ0453-CCB9	517.90		CARBON	11/3/2023 12:14 AM	bl,C3u,C2u	0.001	33 073	0.001	0.000	623	14 638	0.001	0.000	0.9493	1.0000



Name:

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soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

INITIAL CALIBRATION DATA

EPA 9060A m

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Calibration:	GE00052	Instrument:	TOC Cube
Calibration Date:	05/17/2023 10:07		

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	Conc	RF	Conc	RF	Conc	RF	Conc	RF	Conc	RF	Conc	RF
Total Organic Carbon	0.0081413	2824365	0.015378	1908831	0.02171	2161539	0.030153	2354094	0.04523	1647690	0.060306	1529782
Total Carbon	0.0081413	2824365	0.015378	1908831	0.02171	2161539	0.030153	2354094	0.04523	1647690	0.060306	1529782
Total Inorganic Carbon	0.0081413	2824365	0.015378	1908831	0.02171	2161539	0.030153	2354094	0.04523	1647690	0.060306	1529782
% Soot	0.0081413	2824365	0.015378	1908831	0.02171	2161539	0.030153	2354094	0.04523	1647690	0.060306	1529782

INITIAL CALIBRATION DATA

EPA 9060A m

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023
Calibration: GE00052
Instrument: TOC Cube
Calibration Date: 05/17/2023 10:07

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	Conc	RF	Conc	RF	Conc	RF	Conc	RF	Conc	RF	Conc	RF
Total Organic Carbon	0.075081	1526165	0.092268	1411324	0.12031	1696235	0.15107	1646548	0.24	1507392	0.306	1652209
Total Carbon	0.075081	1526165	0.092268	1411324	0.12031	1696235	0.15107	1646548	0.24	1507392	0.306	1652209
Total Inorganic Carbon	0.075081	1526165	0.092268	1411324	0.12031	1696235	0.15107	1646548	0.24	1507392	0.306	1652209
% Soot	0.075081	1526165	0.092268	1411324	0.12031	1696235	0.15107	1646548	0.24	1507392	0.306	1652209

INITIAL CALIBRATION DATA

EPA 9060A m

Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Calibration:	GE00052	Instrument:	TOC Cube
Calibration Date:	05/17/2023 10:07		

Compound	Level 13		Level 14		Level 15		Level 16		Level 17		Level 18	
	Conc	RF	Conc	RF	Conc	RF	Conc	RF	Conc	RF	Conc	RF
Total Organic Carbon	0.426	1366392	0.606	1382589	0.894	1387318	1.206	1393572	1.506	1392225	1.806	1387100
Total Carbon	0.426	1366392	0.606	1382589	0.894	1387318	1.206	1393572	1.506	1392225	1.806	1387100
Total Inorganic Carbon	0.426	1366392	0.606	1382589	0.894	1387318	1.206	1393572	1.506	1392225	1.806	1387100
% Soot	0.426	1366392	0.606	1382589	0.894	1387318	1.206	1393572	1.506	1392225	1.806	1387100

INITIAL CALIBRATION DATA

EPA 9060A m

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023
Calibration: GE00052
Instrument: TOC Cube
Calibration Date: 05/17/2023 10:07

Compound	Level 19		Level 20		Level 21		Level 22		Level 23		Level 24	
	Conc	RF	Conc	RF	Conc	RF	Conc	RF	Conc	RF	Conc	RF
Total Organic Carbon	2.406	1383080	2.988	1392309	4.206	1321832	4.788	1266559	5.394	1264318	7.152	1292654
Total Carbon	2.406	1383080	2.988	1392309	4.206	1321832	4.788	1266559	5.394	1264318	7.152	1292654
Total Inorganic Carbon	2.406	1383080	2.988	1392309	4.206	1321832	4.788	1266559	5.394	1264318	7.152	1292654
% Soot	2.406	1383080	2.988	1392309	4.206	1321832	4.788	1266559	5.394	1264318	7.152	1292654

INITIAL CALIBRATION DATA

EPA 9060A m

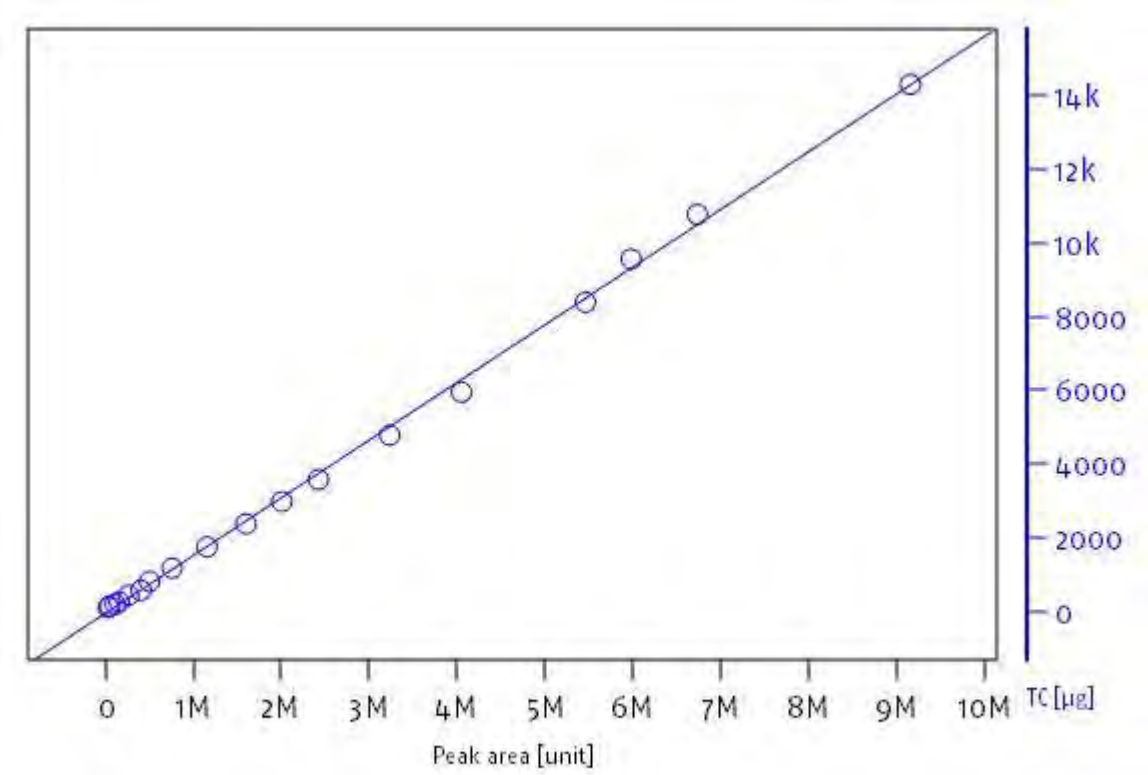
Laboratory:	Analytical Resources, LLC	SDG:	23J0690
Client:	Leon Environmental, LLC	Project:	Port of Friday Harbor 2023
Calibration:	GE00052	Instrument:	TOC Cube
Calibration Date:	05/17/2023 10:07		

COMPOUND	Mean RF	RF RSD	Linear COD	Quad COD	COD Limit	Q
Total Organic Carbon	1587338	23.9	0.9987			
Total Carbon	1587338	23.9	0.9987			
Total Inorganic Carbon	1587338	23.9	0.9987			
% Soot	1587338	23.9	0.9987			

Calibration parameters TC, Whole range

a	+9.122373e-03
b	+1.560792e-06
c	+0.000000e+00
d	+0.000000e+00
e	+0.000000e+00
r	0.998690
r_old	0.998690
Proc.-SD	155.562438 µg

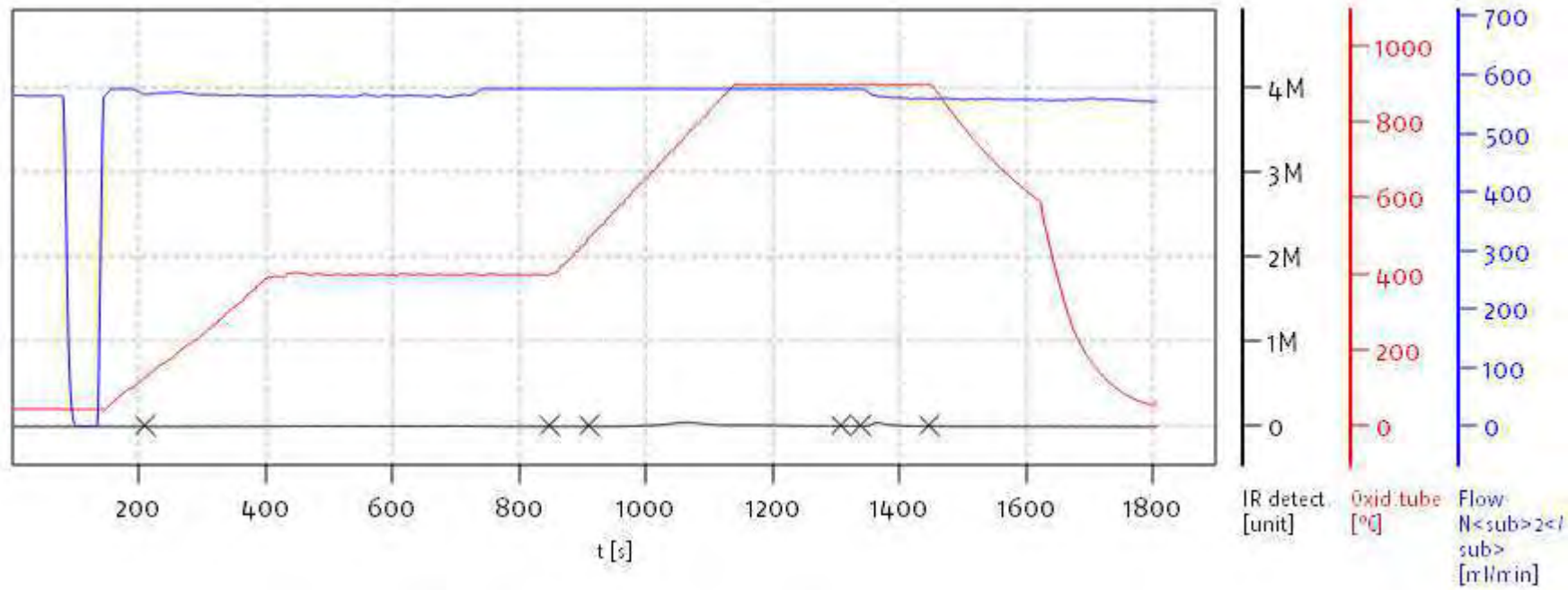
Calibration graph TC, Whole range



Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
1	1	BLANK	1.00		CARBON	5/ 17/2023 11:46 AM	bl	0.000	83 718	0.000	0.000	65 731	251 400	0.000	0.000	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:43:39 2023

elementar
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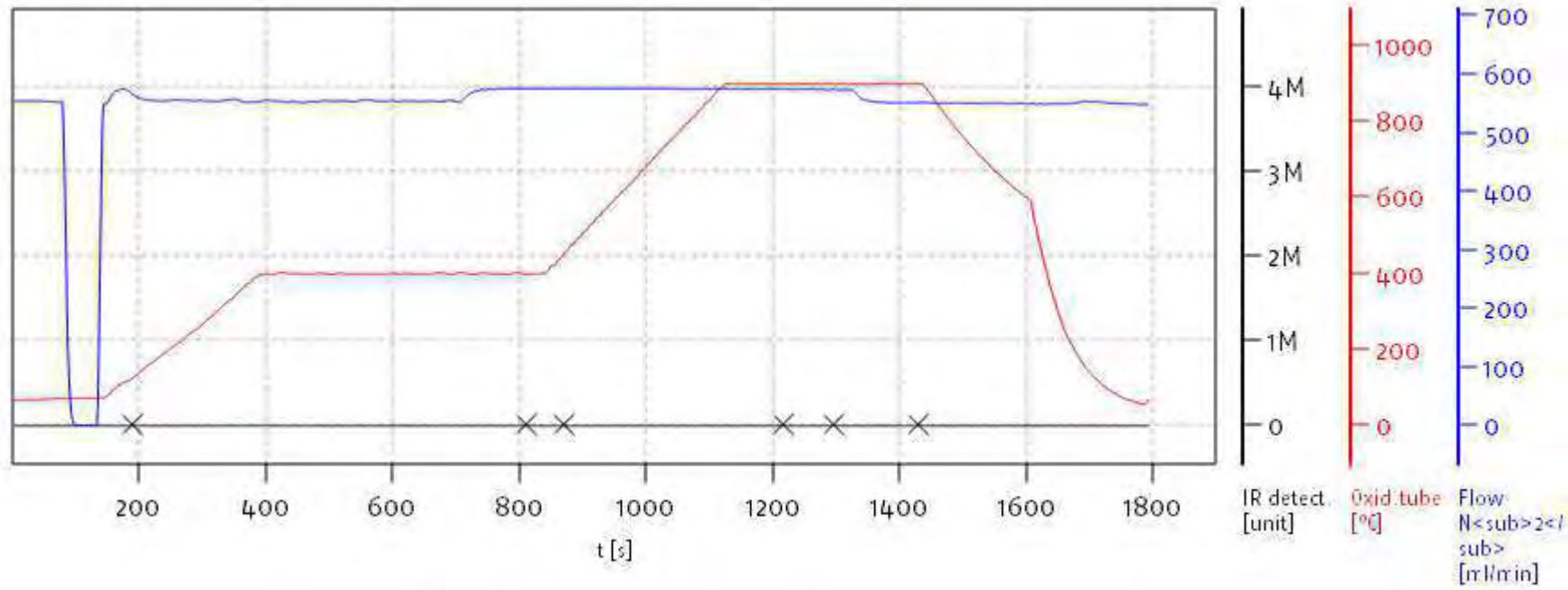
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
2	2	BLANK	1.00		CARBON	5/ 17/2023 12:16 PM	bl	0.000	3 043	0.000	0.000	273	1	0.000	0.000	1.0000	1.0000



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Access: soliTOC superuser

Date: Thu May 18 09:43:39 2023

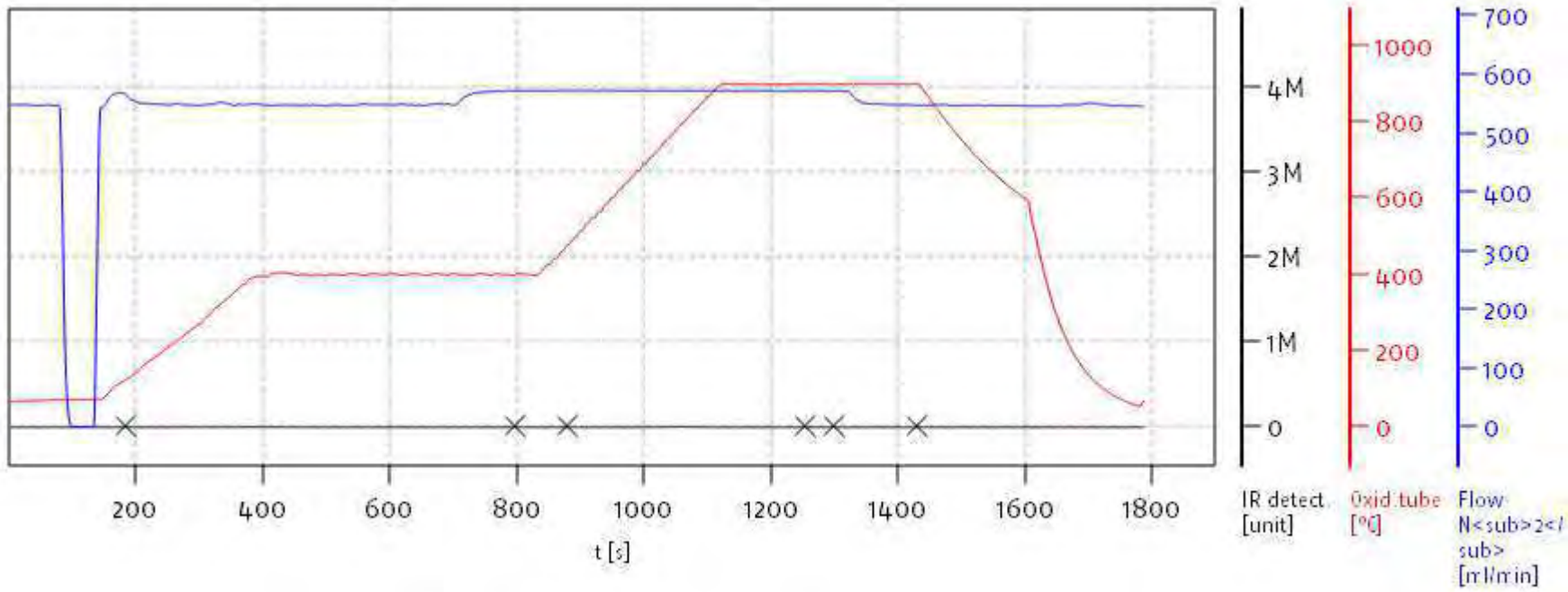
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
3	3	SLE0270-CAL1	200.00	0.0025	CARBON	5/17/2023 12:46 PM	bl,C2u	0.014	12 167	0.024	0.002	431	10 396	0.012	0.010	1.0000	1.0000



Name:

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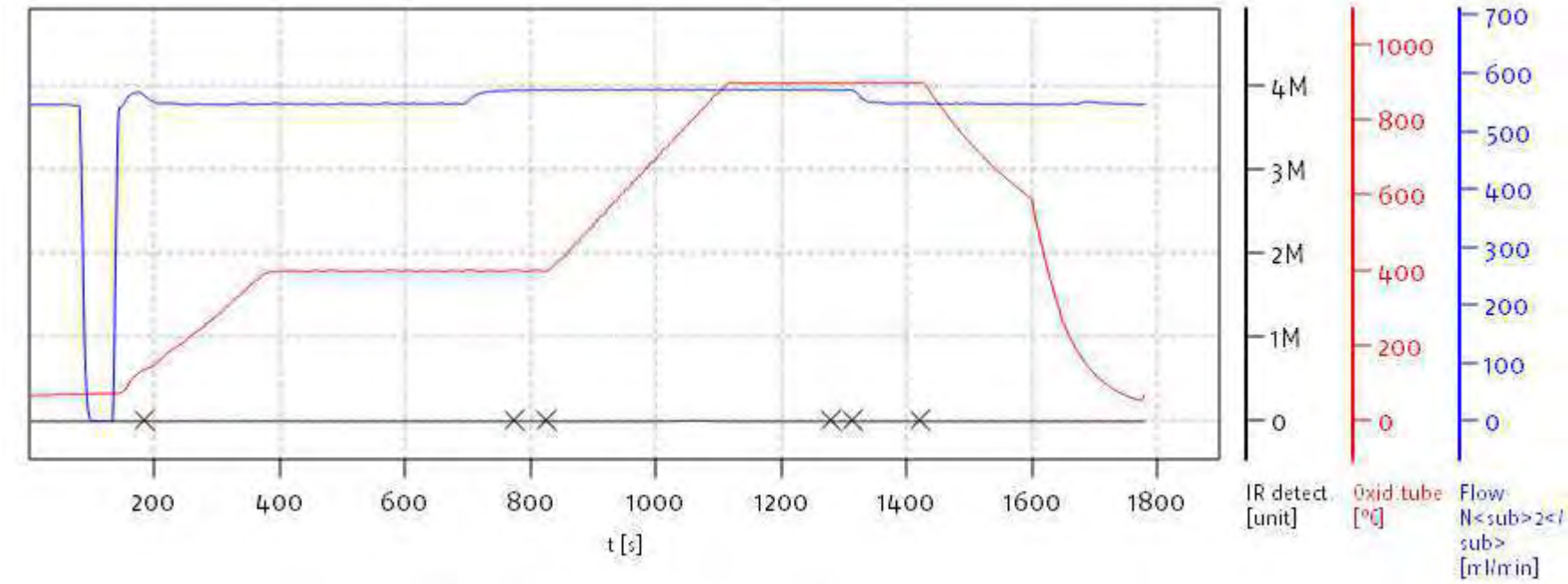
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
4	4	SLE0270-CAL2	200.00	0.0050	CARBON	5/17/2023 1:16 PM	bl,C2u	0.013	10 893	0.029	0.002	141	18 320	0.011	0.017	1.0000	1.0000



Name:

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soliTOC V2.0.2 (31015f9) 2018-11-19
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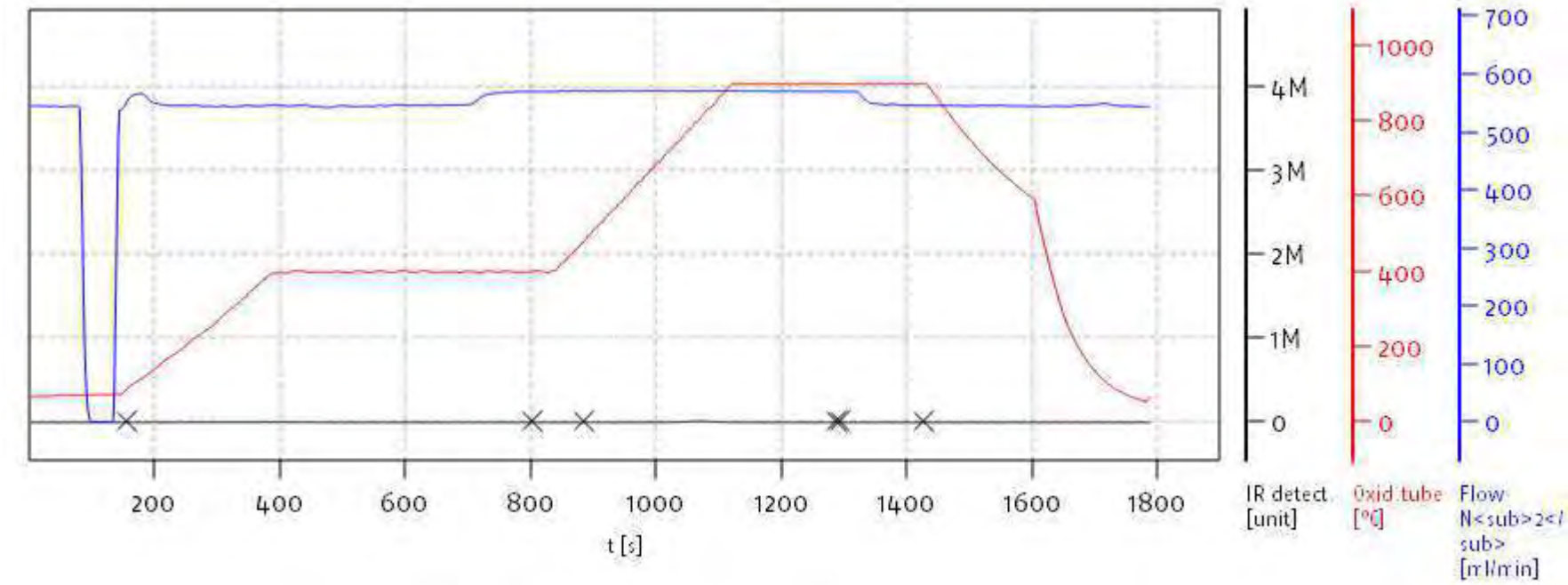
elementar
EXCELLENCE IN ELEMENTS

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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
5	5	SLE0270-CAL3	200.00	0.0070	CARBON	5/17/2023 1:46 PM	bl,C2u	0.018	16 667	0.043	0.002	387	29 873	0.015	0.026	1.0000	1.0000



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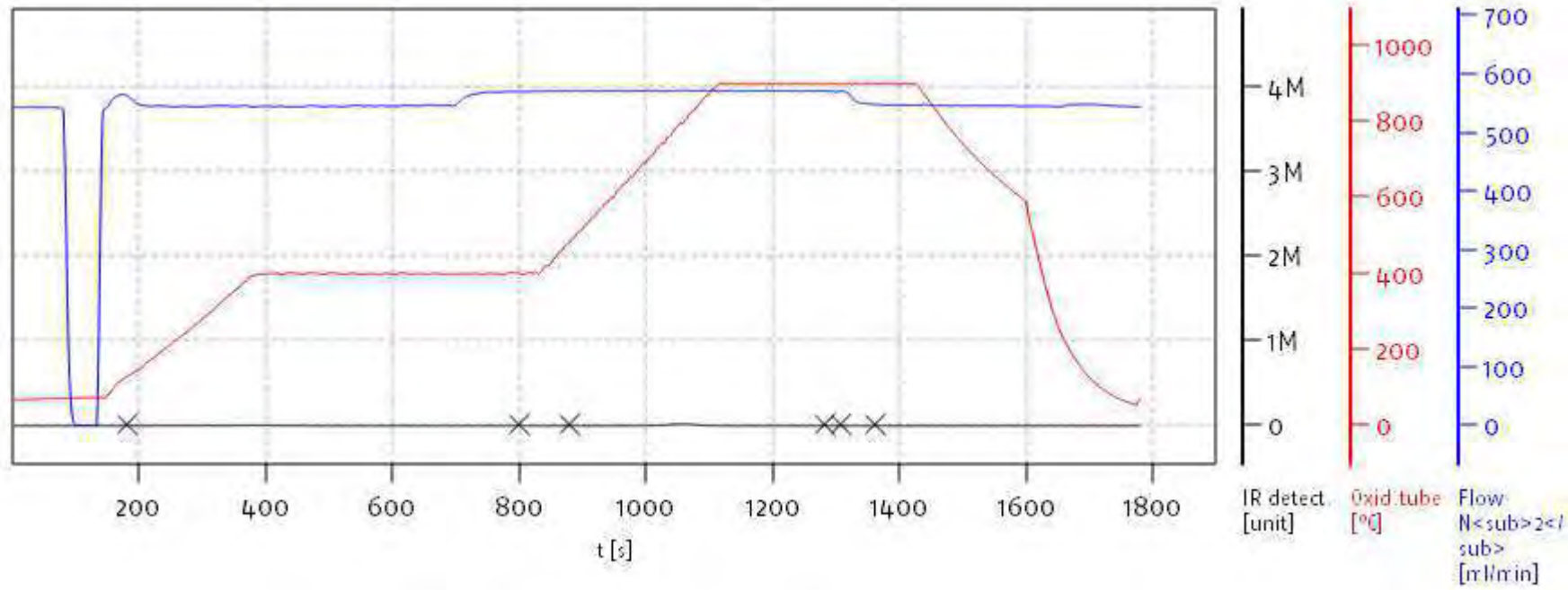
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soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
6	6	SLE0270-CAL4	200.00	0.0100	CARBON	5/17/2023 2:16 PM	bl,C2u	0.024	24 980	0.062	0.002	130	45 873	0.022	0.038	1.0000	1.0000



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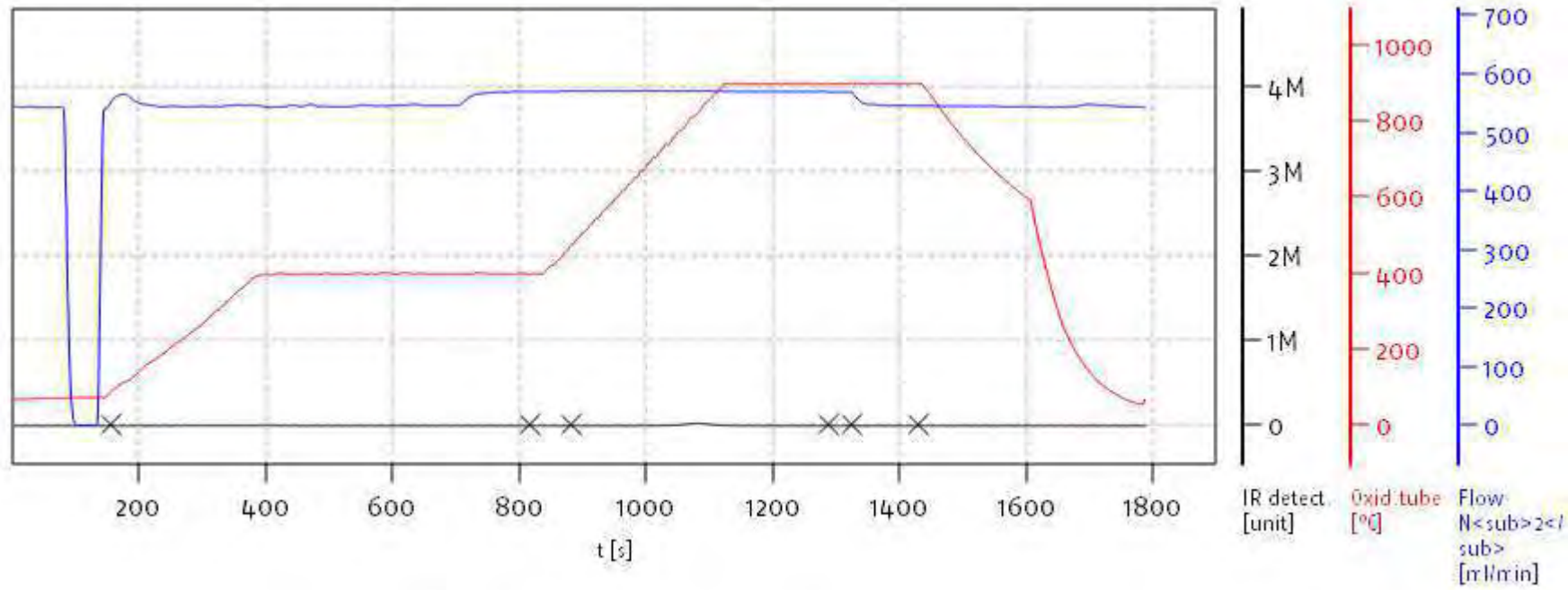
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EXCELLENCE IN ELEMENTS

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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
7	7	SLE0270-CAL5	200.00	0.0150	CARBON	5/17/2023 2:47 PM	bl,C2u	0.014	12 413	0.065	0.002	539	61 573	0.012	0.051	1.0000	1.0000



Name:

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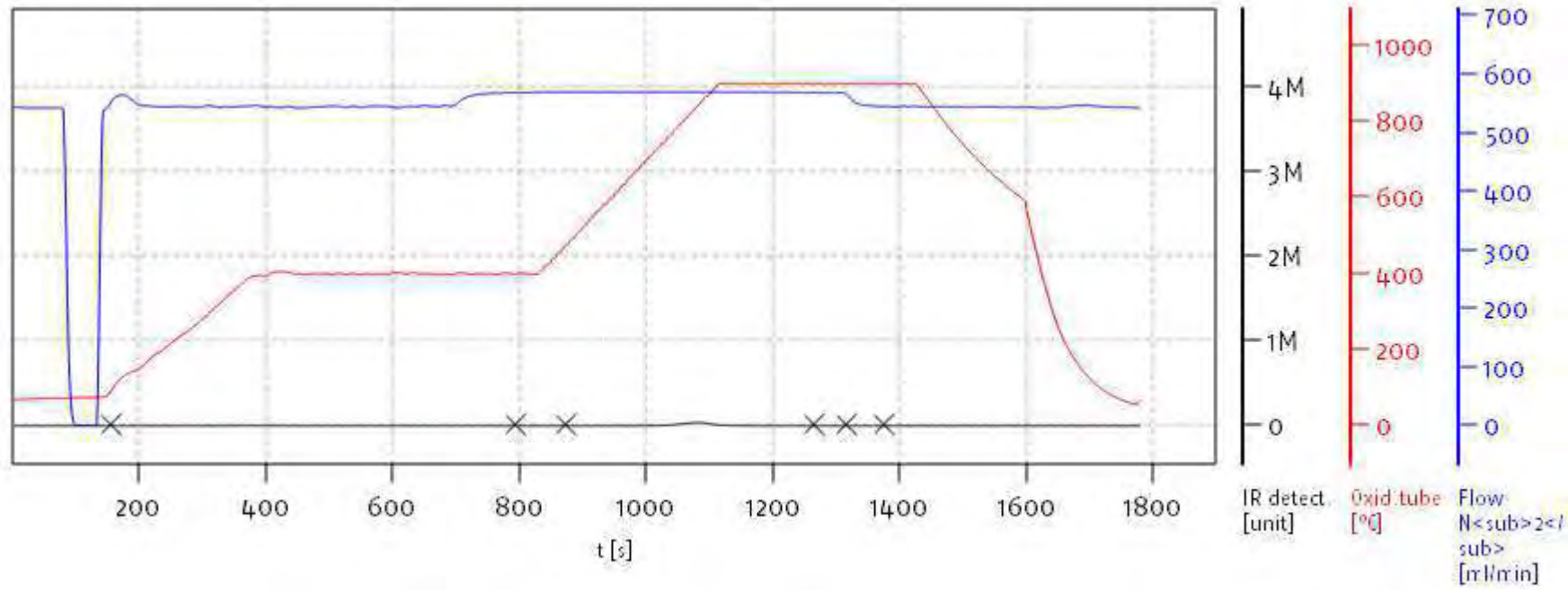
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
8	8	SLE0270-CAL6	200.00	0.0200	CARBON	5/17/2023 3:17 PM	bl,C1u,C2u	0.011	7 999	0.079	0.002	170	84 086	0.008	0.068	1.0000	1.0000



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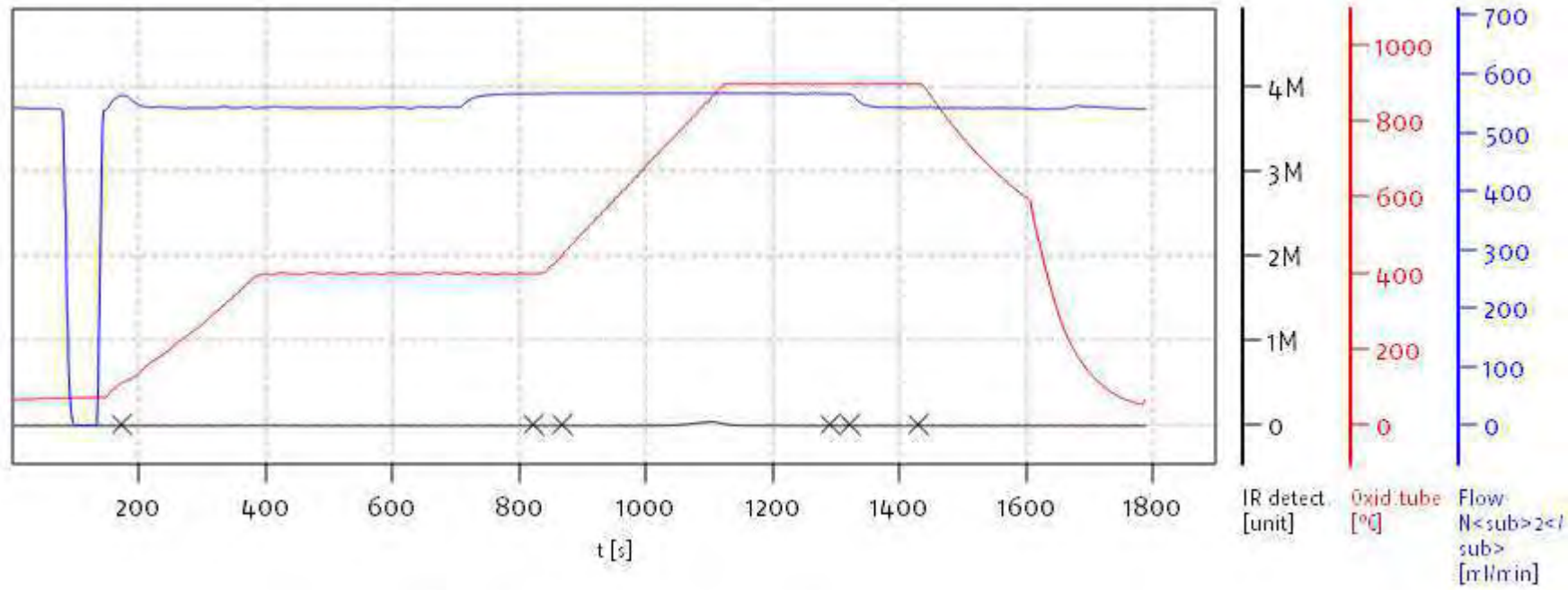
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
9	9	SLE0270-CAL7	200.00	0.0250	CARBON	5/17/2023 3:47 PM	bl,C1u,C2u	0.011	7 612	0.097	0.003	1 386	105 588	0.008	0.085	1.0000	1.0000



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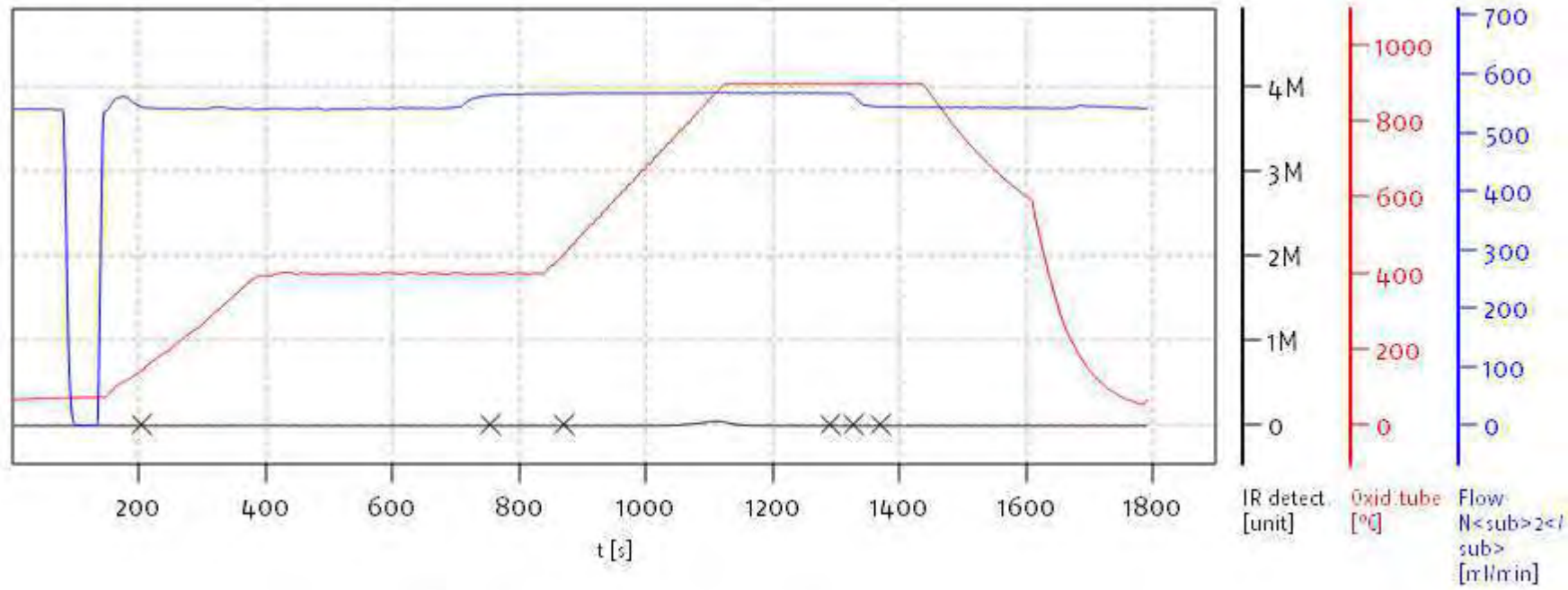
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soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
10	10	SLE0270-CAL8	200.00	0.0300	CARBON	5/17/2023 4:17 PM	bl,C1u,C2u	0.008	5 428	0.109	0.002	61	124 731	0.006	0.100	1.0000	1.0000



Name:

Access: soliTOC superuser

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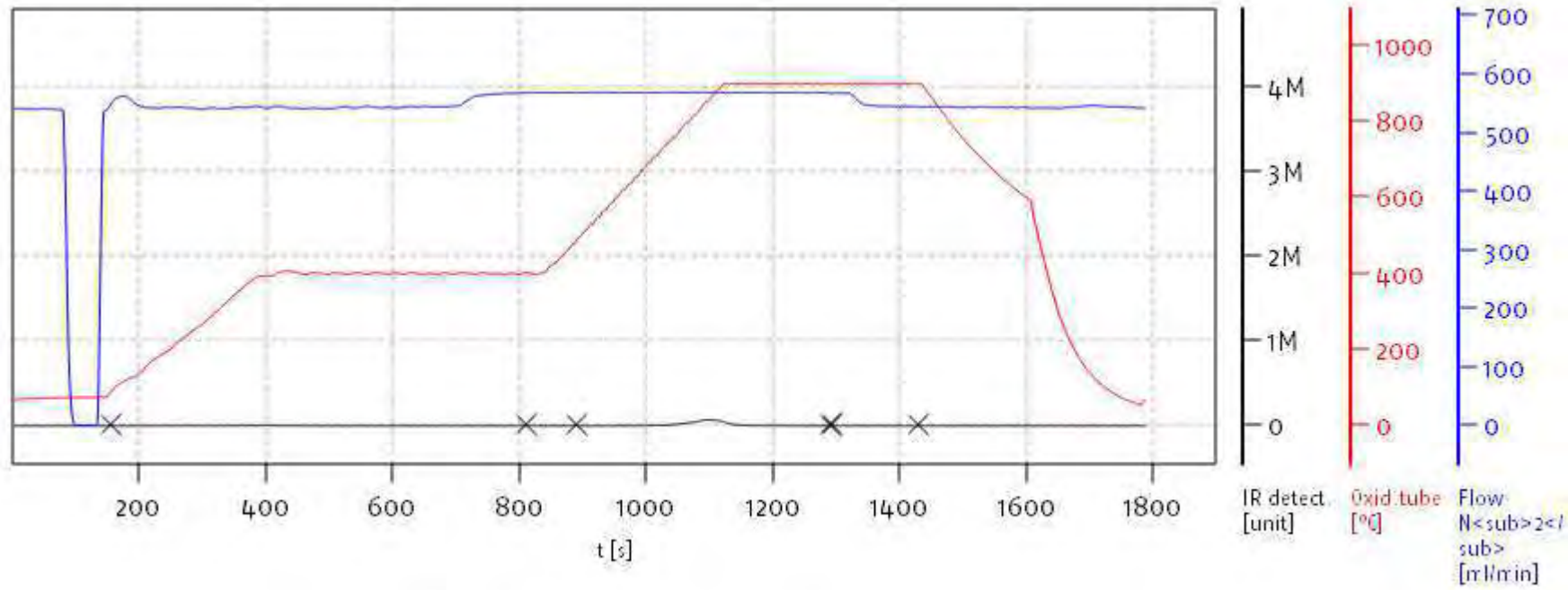
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
11	11	SLE0270-CAL9	200.00	0.0400	CARBON	5/17/2023 4:47 PM	bl,C2u	0.019	17 233	0.167	0.003	1 274	185 567	0.016	0.148	1.0000	1.0000



Name:

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soliTOC V2.0.2 (31015f9) 2018-11-19
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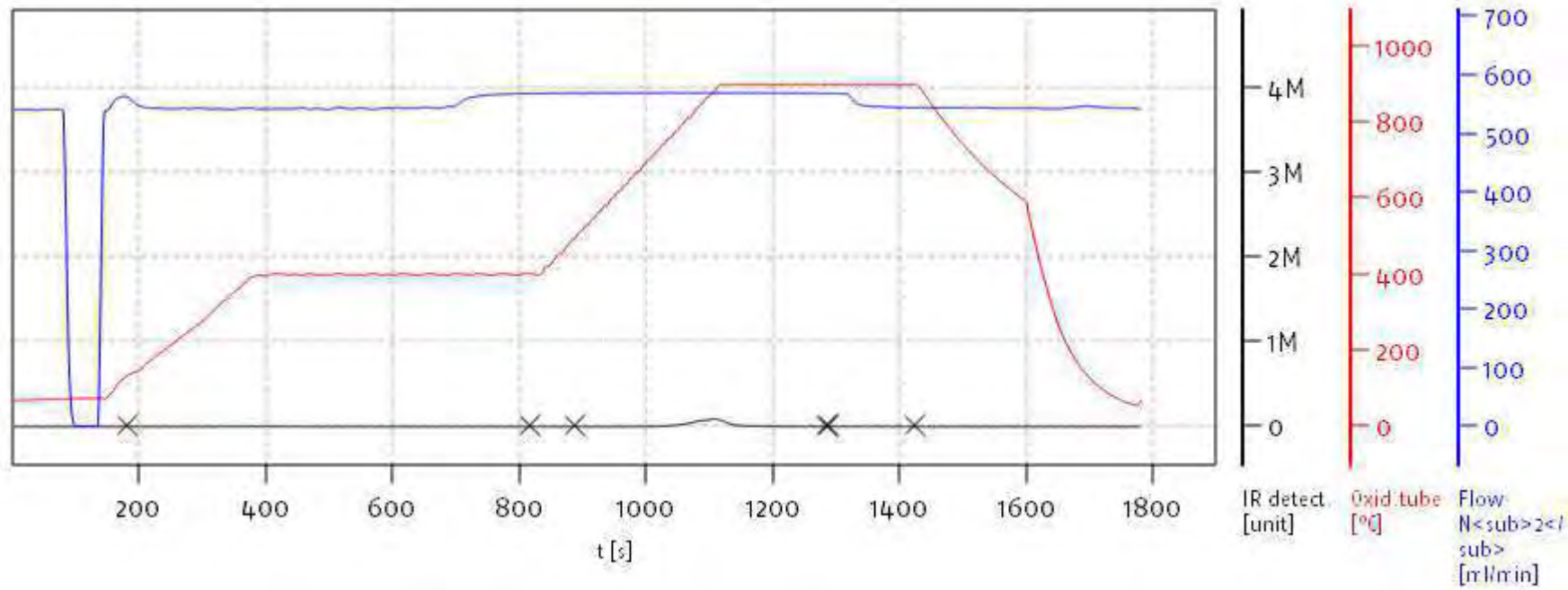
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EXCELLENCE IN ELEMENTS

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
12	12	SLE0270-CALA	200.00	0.0500	CARBON	5/17/2023 5:17 PM	bl,C2u	0.018	11 766	0.202	0.007	6 123	230 855	0.011	0.184	1.0000	1.0000



Name:

Access: soliTOC superuser

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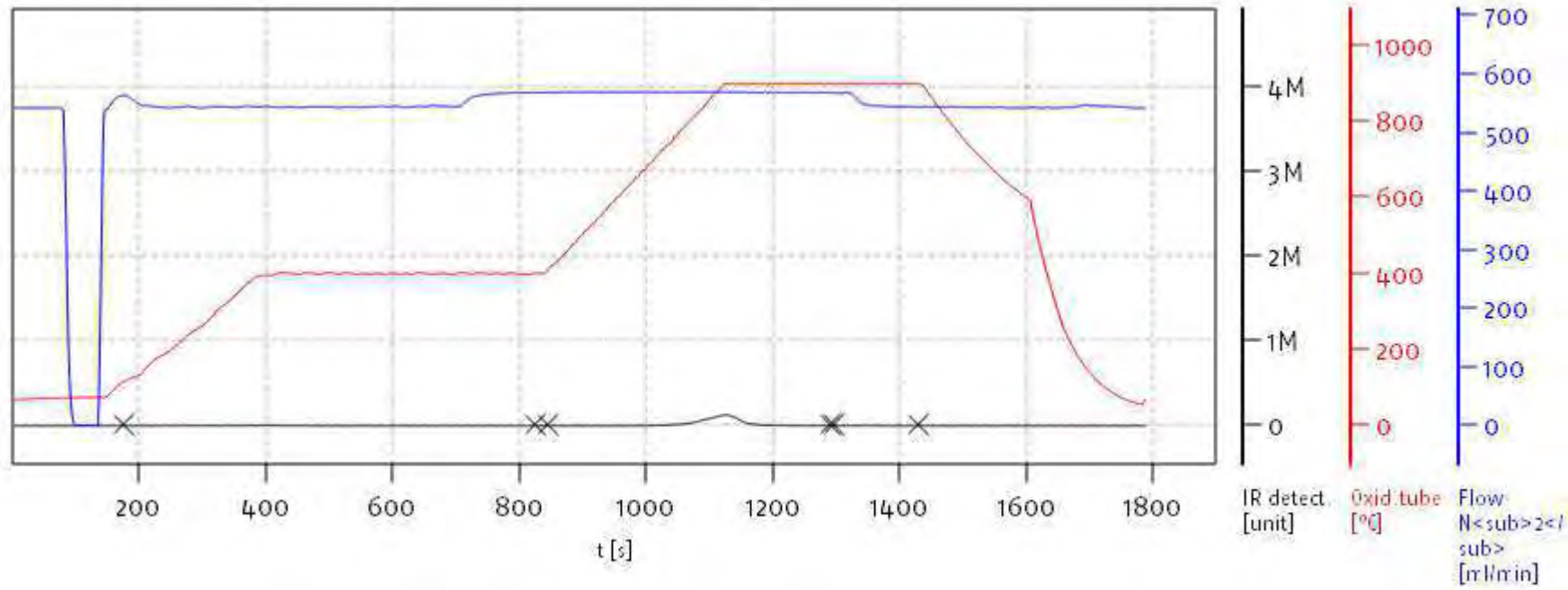
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
13	13	SLE0270-CALB	200.00	0.0040	CARBON	5/17/2023 5:47 PM	bl,C2u	0.022	18 635	0.291	0.005	3 969	339 170	0.017	0.269	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:43:39 2023

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EXCELLENCE IN ELEMENTS

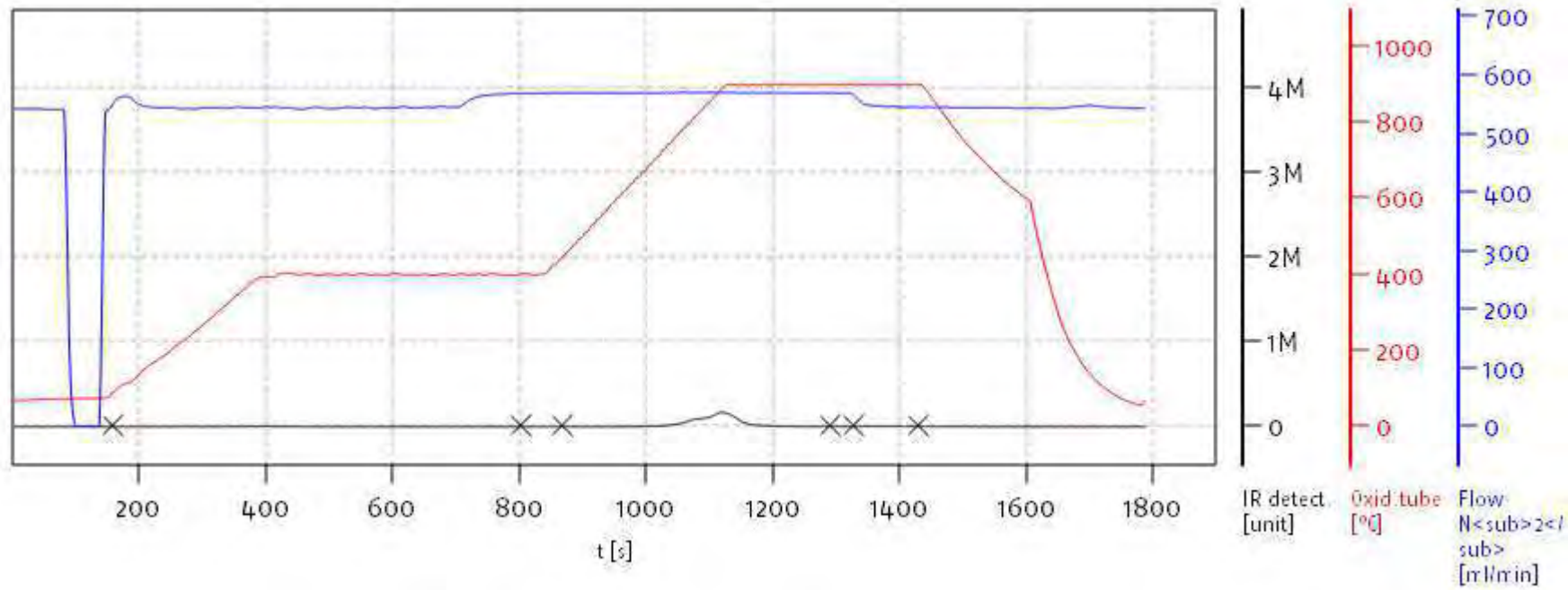
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
14	14	SLE0270-CALC	200.00	0.0050	CARBON	5/17/2023 6:18 PM	bl	0.026	14 893	0.405	0.012	12 639	478 044	0.014	0.379	1.0000	1.0000



Name:

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soliTOC V2.0.2 (31015f9) 2018-11-19
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Mode CCC

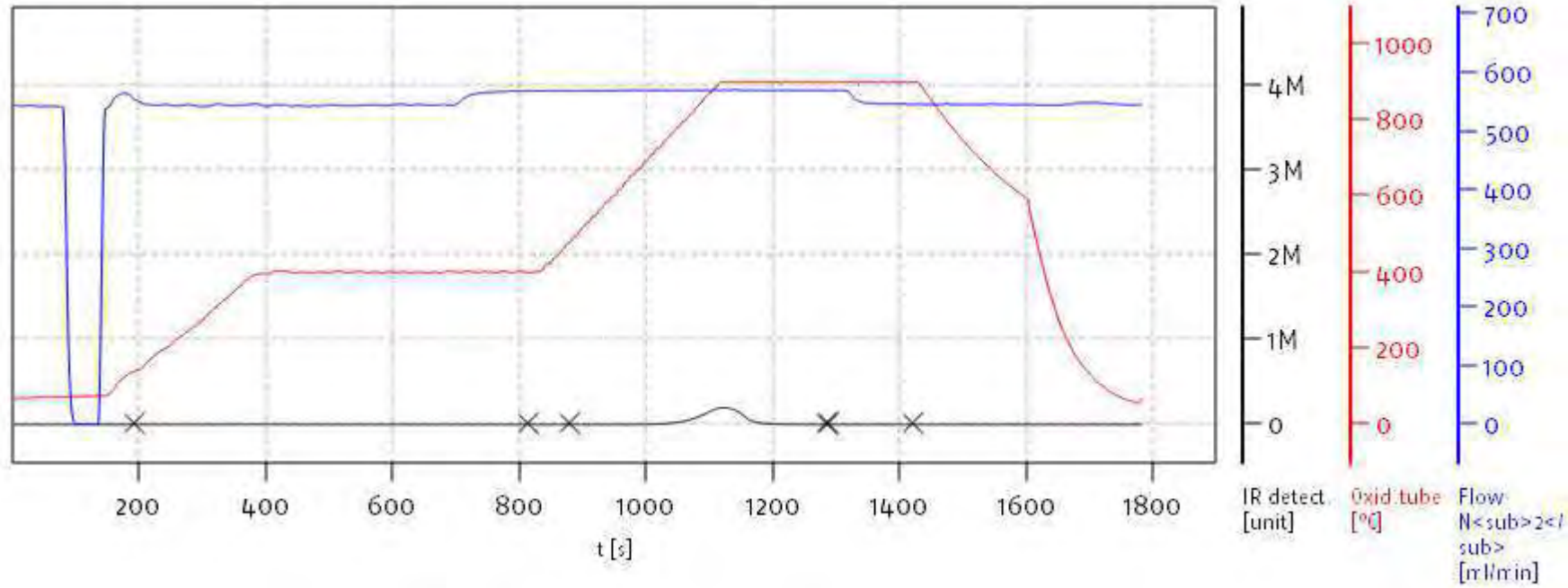
elementar
EXCELLENCE IN ELEMENTS

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
15	15	SLE0270-CALD	200.00	0.0070	CARBON	5/17/2023 6:48 PM	bl,C1u,C2u	0.010	6 787	0.465	0.002	420	574 876	0.007	0.455	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:43:39 2023

soliTOC V2.0.2 (31015f9) 2018-11-19
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Mode CCC

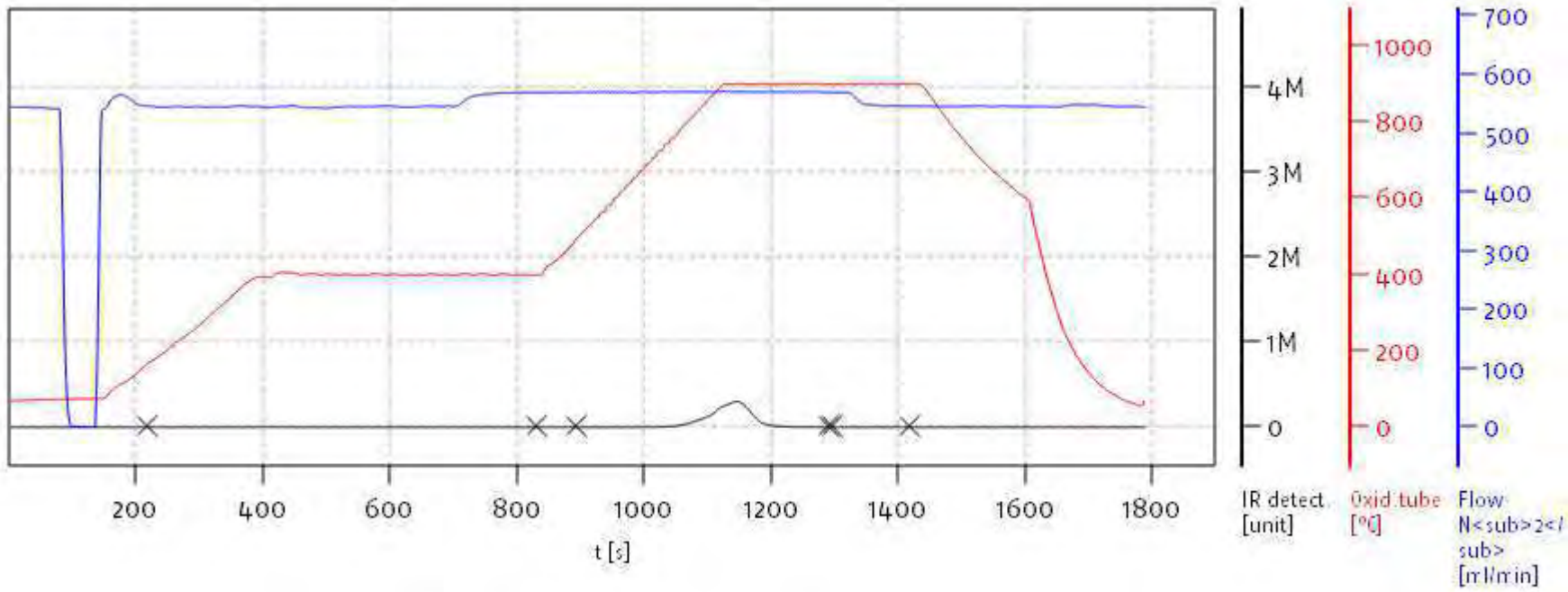
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EXCELLENCE IN ELEMENTS

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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
16	16	SLE0270-CALE	200.00	0.0100	CARBON	5/17/2023 7:18 PM	bl,C1u,C2u	0.008	4 408	0.667	0.003	771	832 670	0.006	0.658	1.0000	1.0000



Name:

Access: soliTOC superuser

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elementar
EXCELLENCE IN ELEMENTS

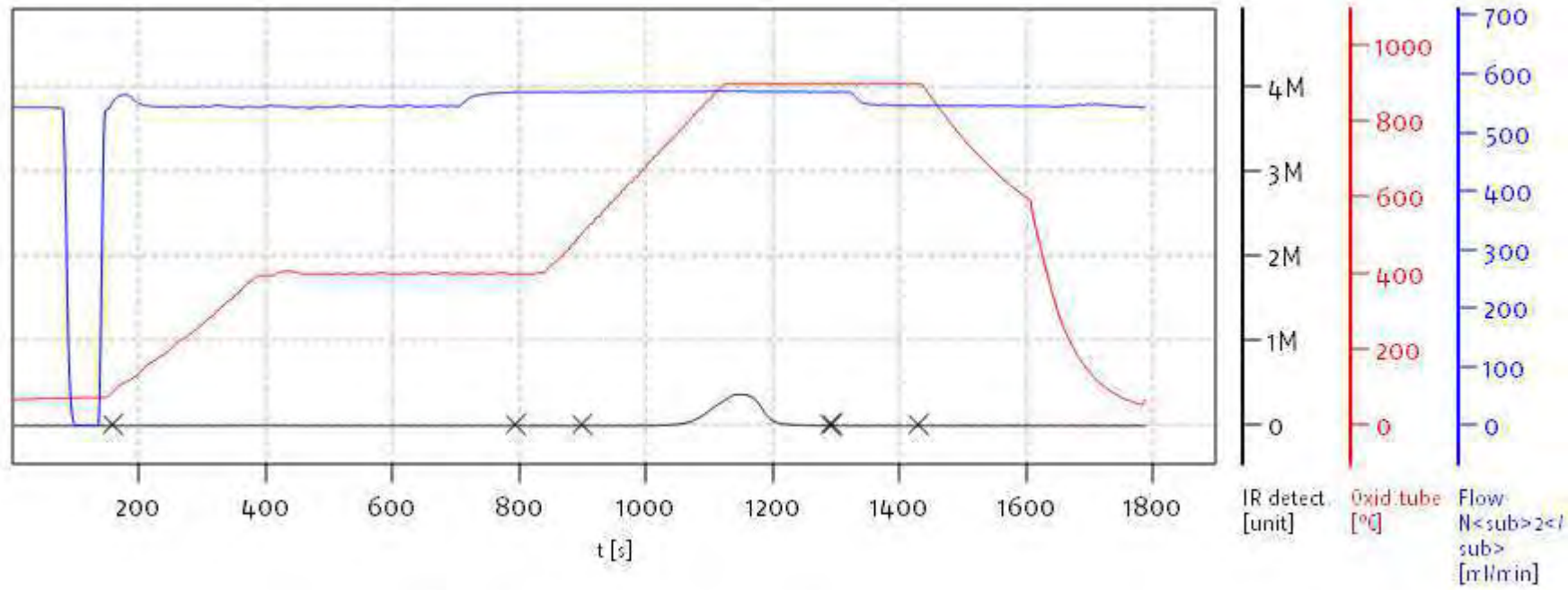
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
17	17	SLE0270-CALF	200.00	0.0150	CARBON	5/17/2023 7:48 PM	bl,C1u,C2u	0.012	8 494	0.984	0.003	1 464	1 230 304	0.009	0.972	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:43:39 2023

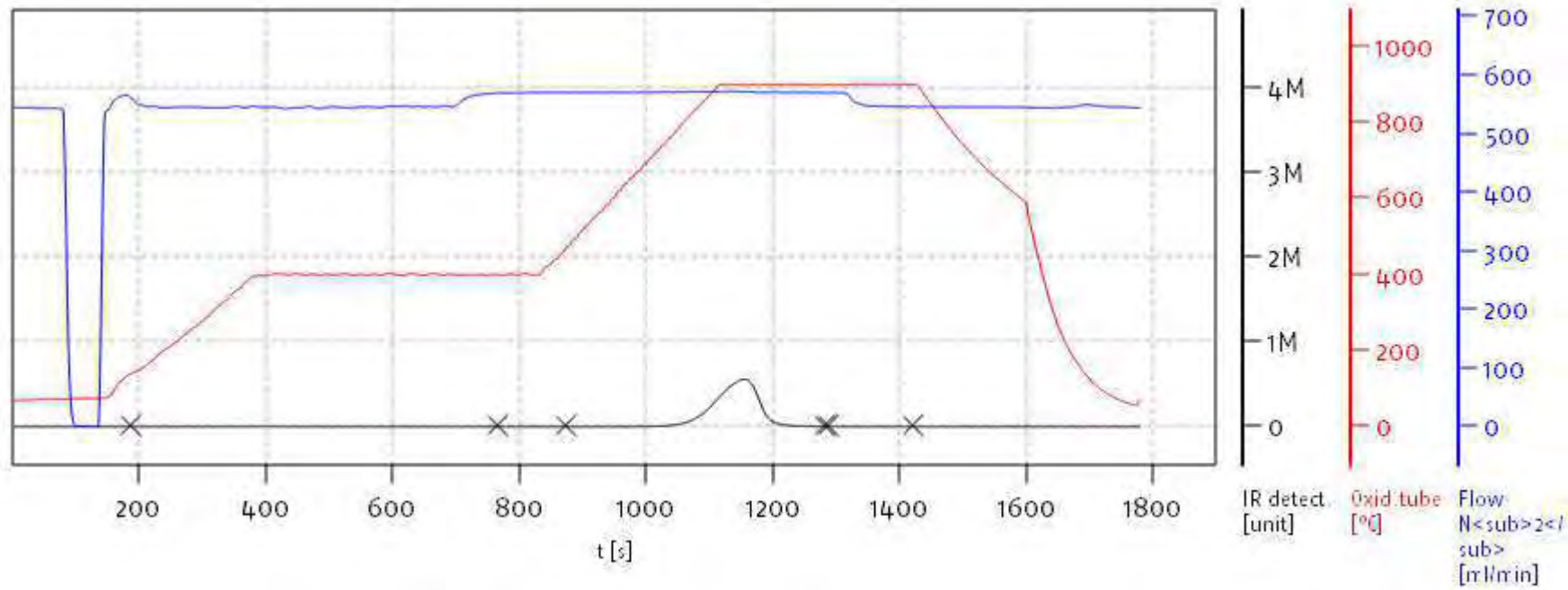
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
18	18	SLE0270-CALG	200.00	0.0200	CARBON	5/17/2023 8:18 PM	bl,C1u,C2u	0.010	5 359	1.331	0.004	1 864	1 673 425	0.006	1.321	1.0000	1.0000



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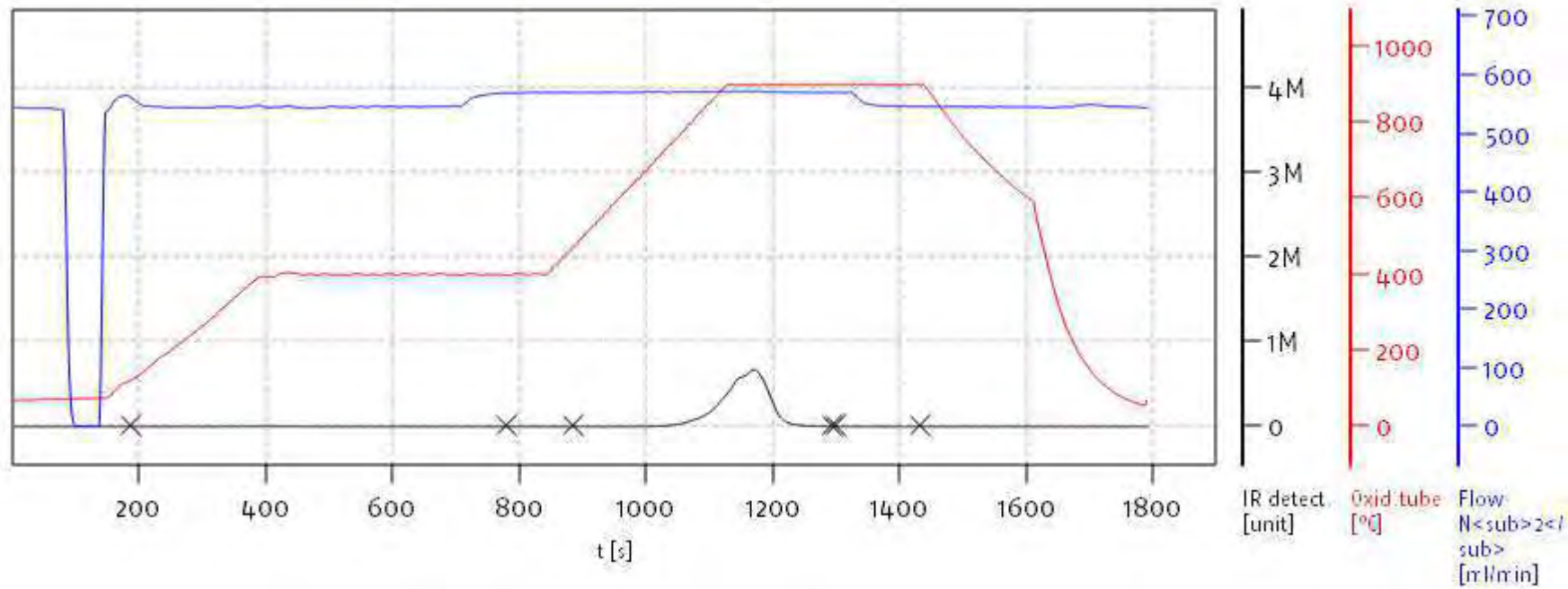
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soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
19	19	SLE0270-CALH	200.00	0.0250	CARBON	5/17/2023 8:48 PM	bl,C2u	0.015	11 407	1.659	0.004	2 280	2 083 004	0.011	1.644	1.0000	1.0000



Name:

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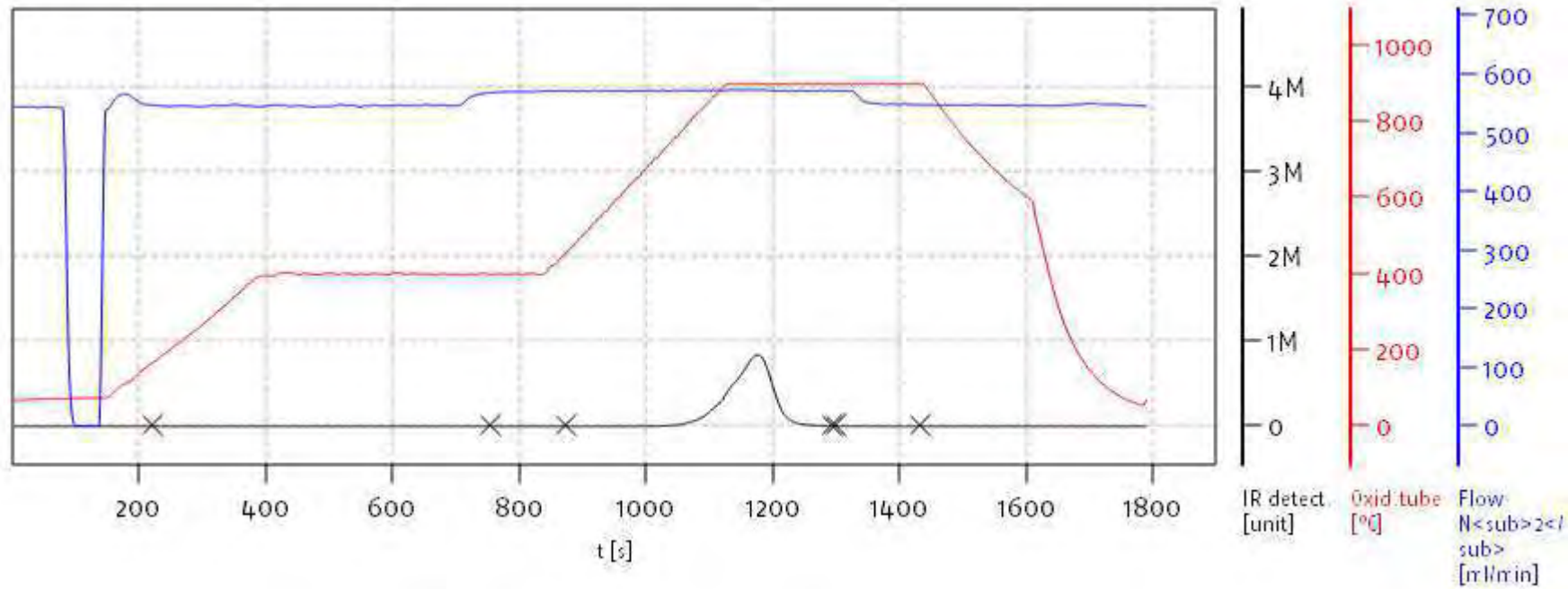
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Serial No: 0300.181017
Mode CCC

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
20	20	SLE0270-CALI	200.00	0.0300	CARBON	5/17/2023 9:19 PM	bl,C1u,C2u	0.009	2 781	1.981	0.005	3 895	2 498 427	0.004	1.971	1.0000	1.0000



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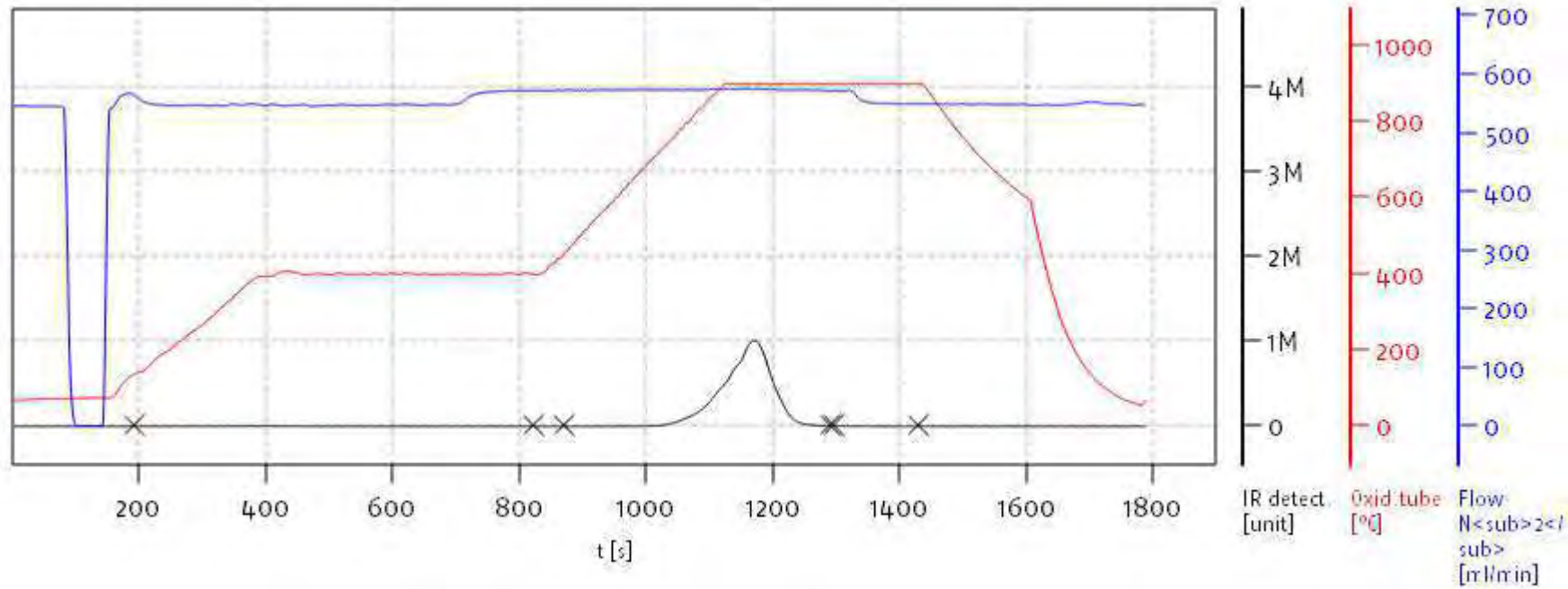
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Soli TOC Cube, Carbon
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Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
21	21	SLE0270-CALJ	200.00	0.0400	CARBON	5/17/2023 9:49 PM	bl,C2u	0.018	13 295	2.629	0.006	4 807	3 309 588	0.013	2.611	1.0000	1.0000



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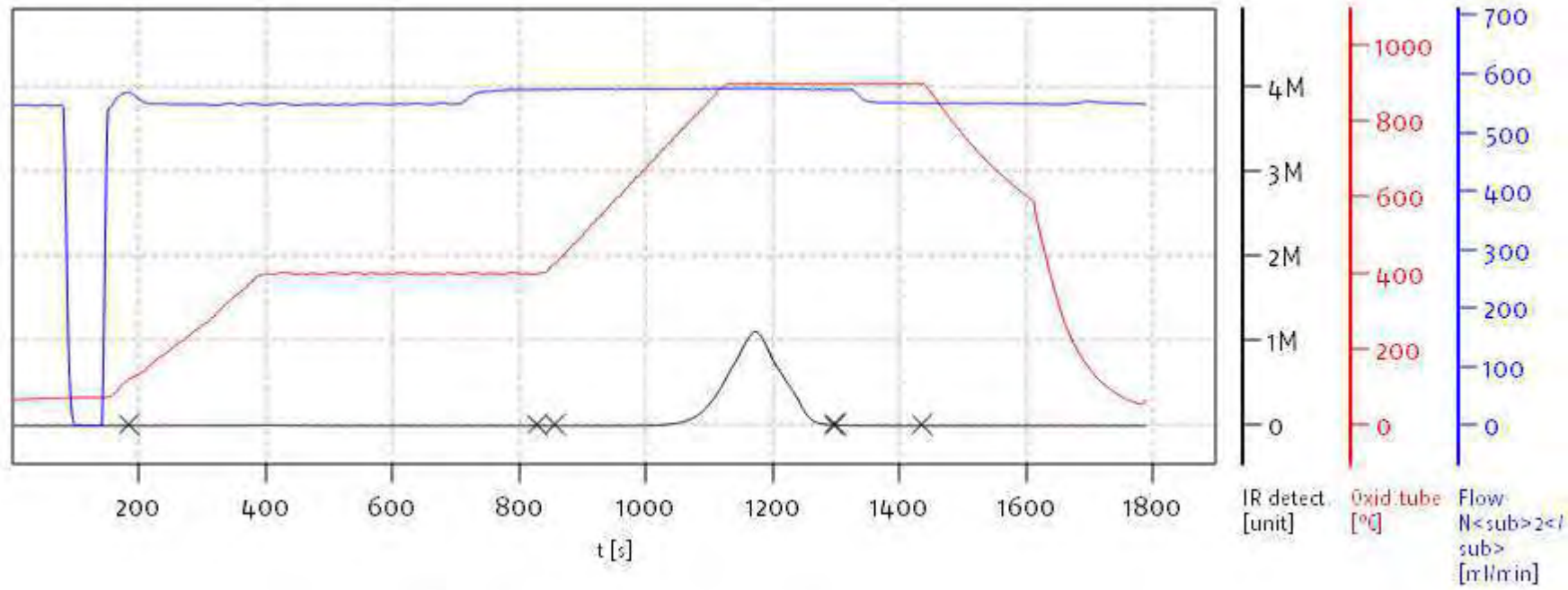
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Soli TOC Cube, Carbon
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
22	22	SLE0270-CALK	200.00	0.0500	CARBON	5/17/2023 10:19 PM	bl	0.031	25 022	3.285	0.009	9 148	4 126 050	0.022	3.254	1.0000	1.0000



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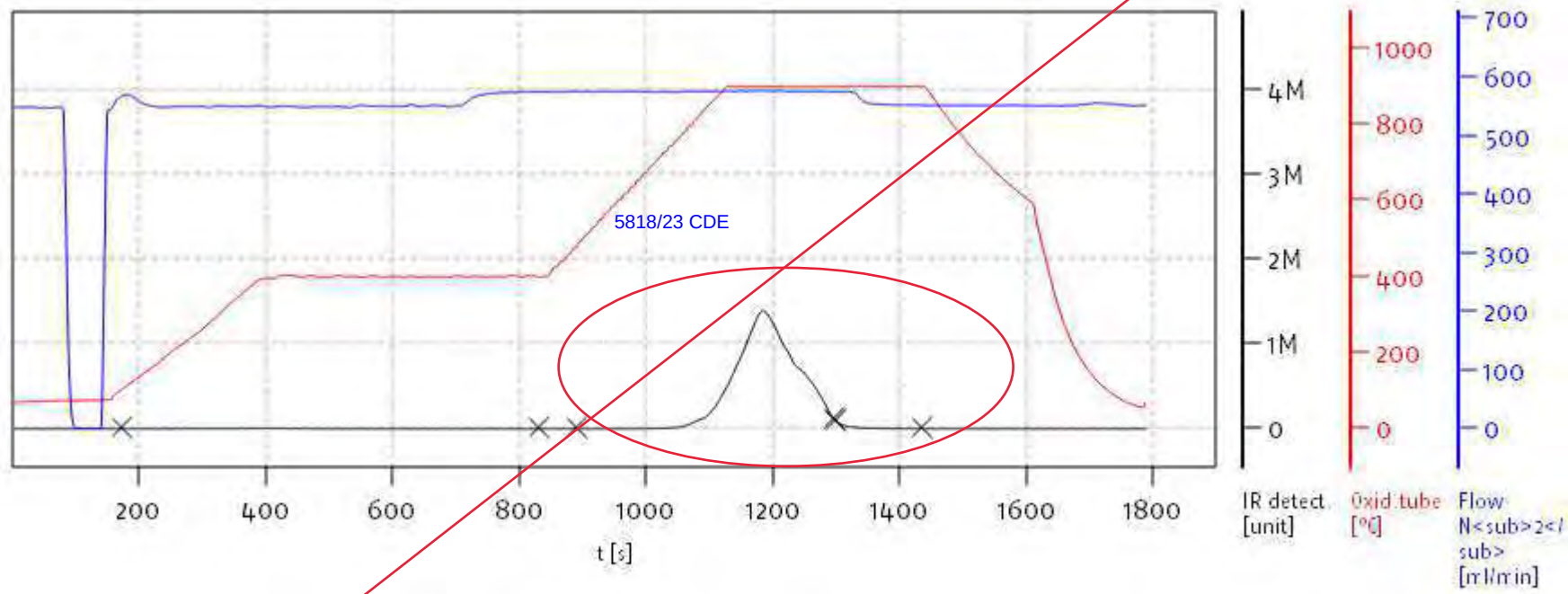
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
23	23	SLE0270-CALL	200.00	0.0700	CARBON	5/17/2023 10:49 PM	bl	0.069	21 598	4.597	0.050	60 794	5 741 652	0.019	4.528	1.0000	1.0000



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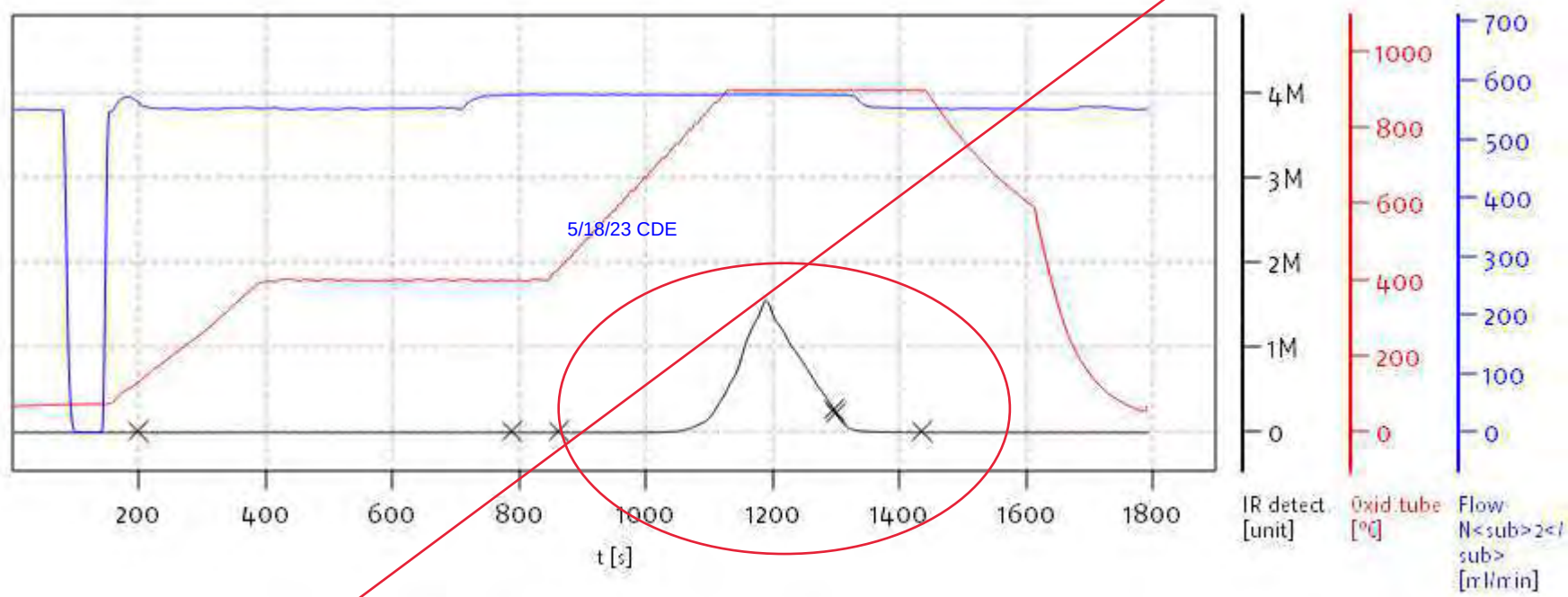
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
24	24	SLE0270-CALM	200.00	0.0800	CARBON	5/17/2023 11:19 PM	bl,C1u	0.112	5 408	5.212	0.106	131 494	6 467 914	0.006	5.100	1.0000	1.0000



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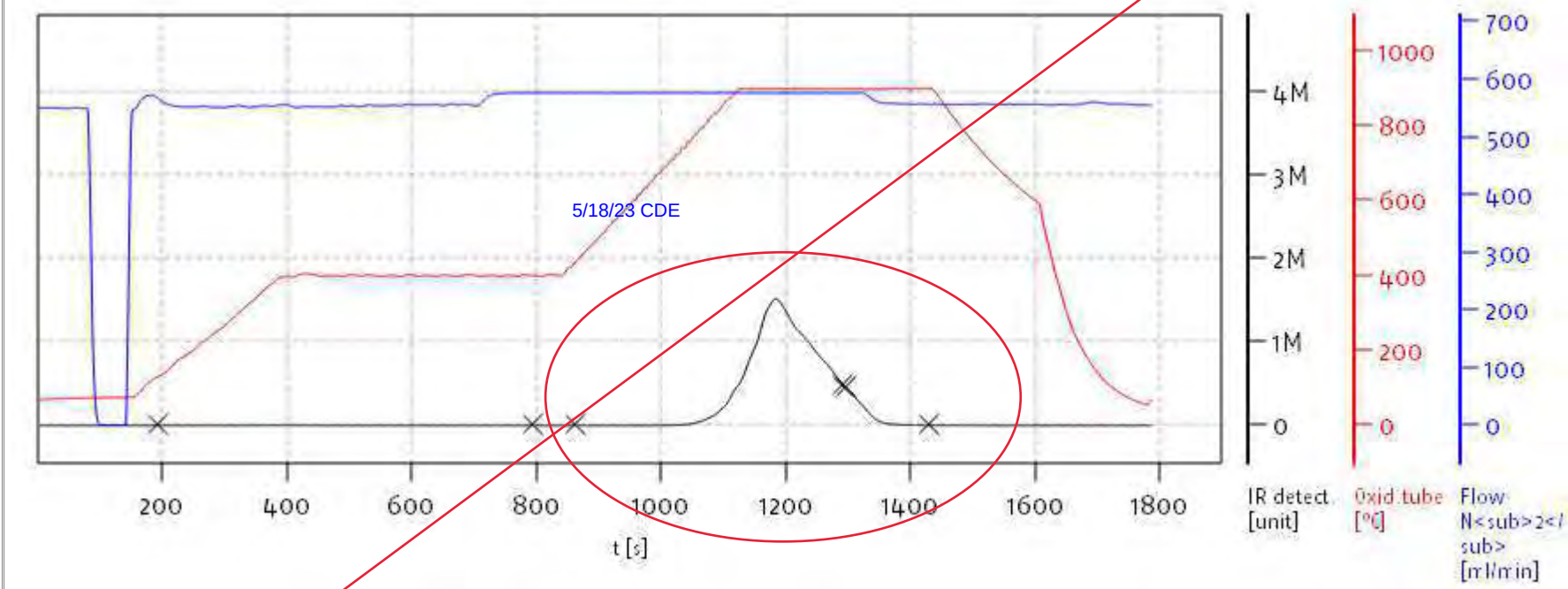
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Soli TOC Cube, Carbon
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Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
25	25	SLE0270-CALN	200.00	0.0900	CARBON	5/17/2023 11:50 PM	bl	0.408	8 745	5.832	0.399	503 842	6 879 212	0.009	5.424	1.0000	1.0000



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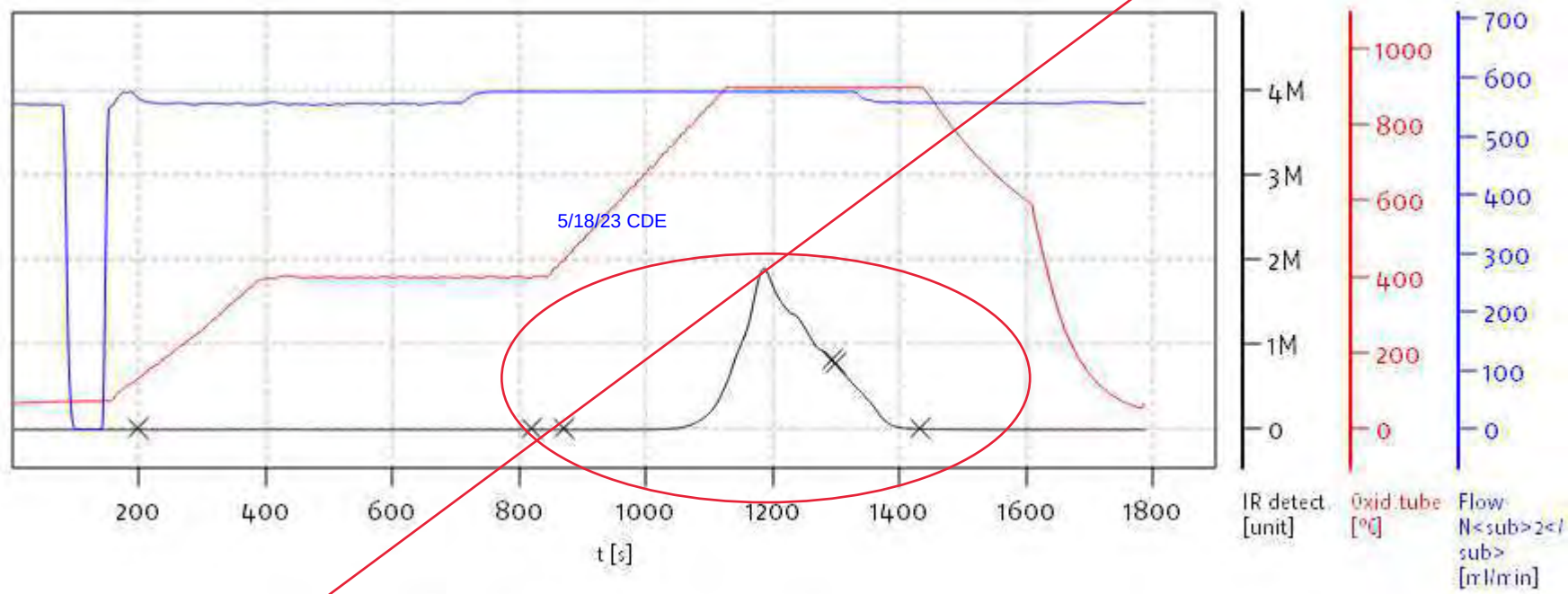
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
26	26	SLE0270-CALO	200.00	0.1200	CARBON	5/18/2023 12:20 AM	bl,C1u	1.074	6 993	7.759	1.066	1 350 231	8 478 912	0.008	6.685	1.0000	1.0000



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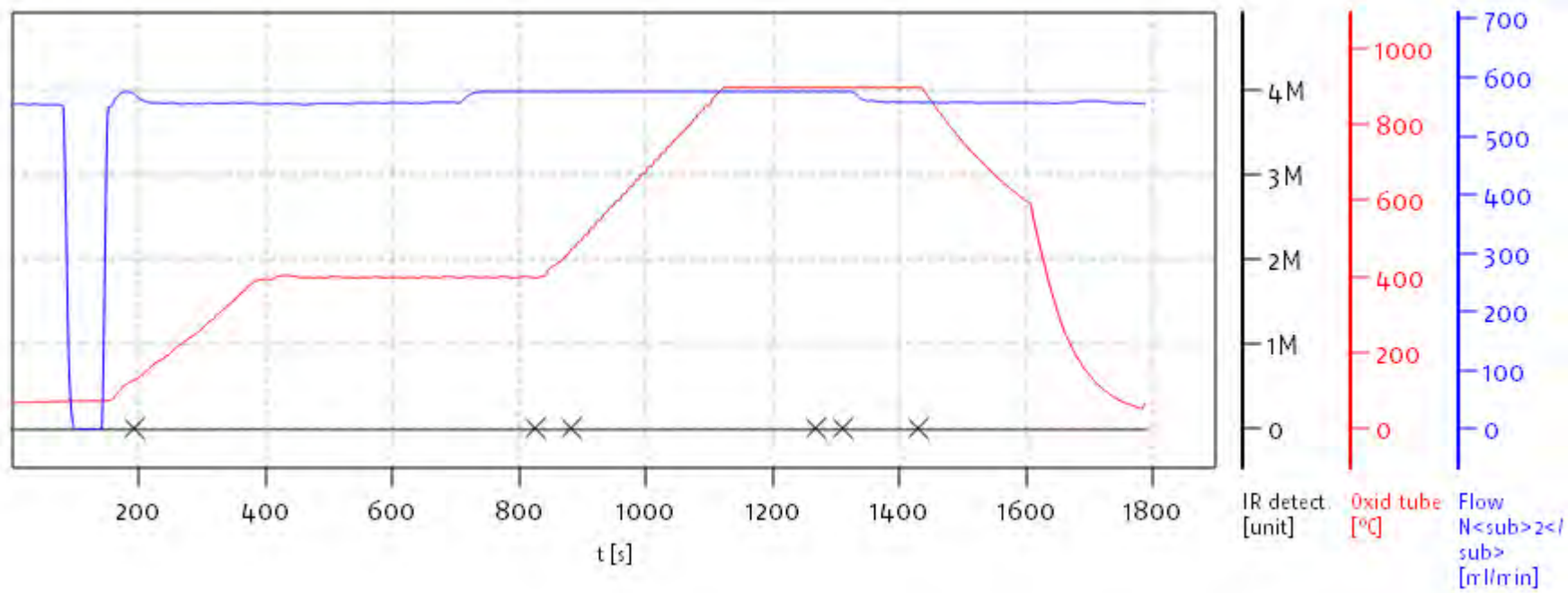
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Soli TOC Cube, Carbon
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
27	27	BLANK	1.00		CARBON	5/ 18/2023 12:50 AM	bl	0.000	5 379	0.000	0.000	0	959	0.000	0.000	1.0000	1.0000



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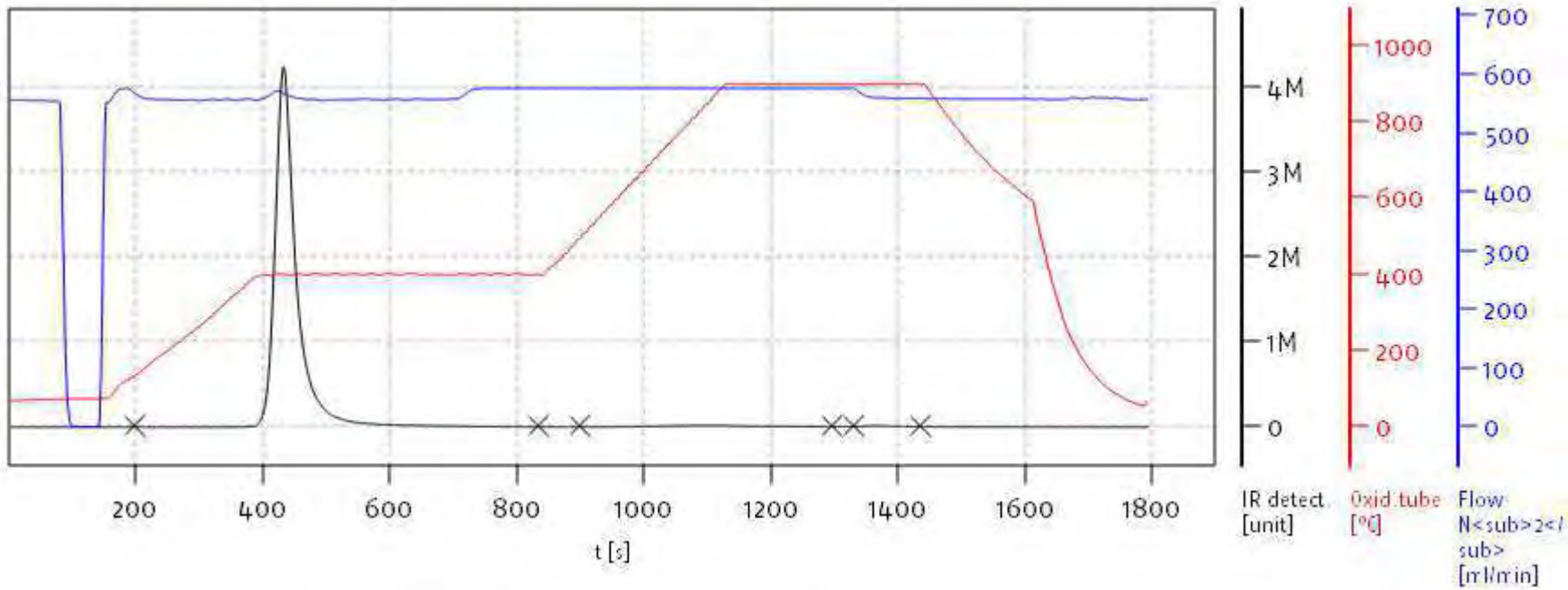
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Soli TOC Cube, Carbon
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Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
28	28	Dfactor	21.70		CARBON	5/18/2023 1:20 AM	bl	44.736	6 218 209	45.755	0.291	37 376	137 647	44.446	1.019	0.9835	1.0000



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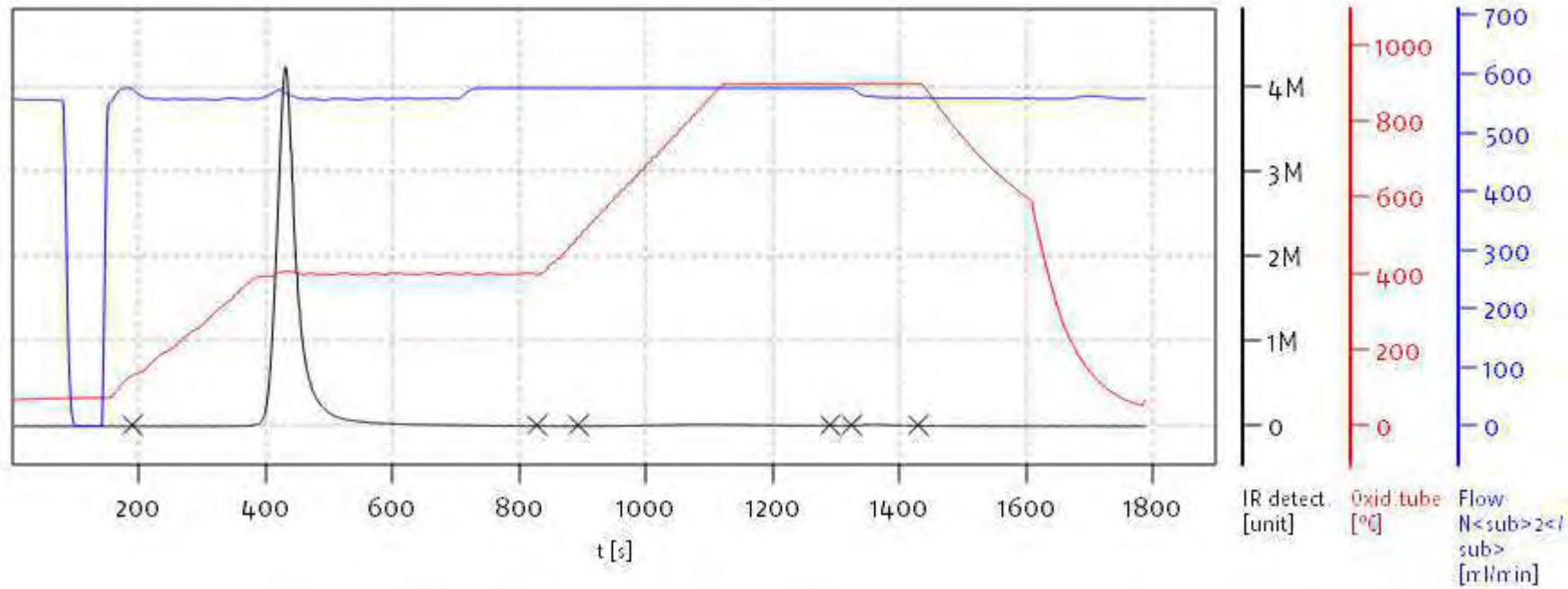
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
29	29	Dfactor	21.20		CARBON	5/18/2023 1:50 AM	bl	44.824	6 030 884	46.116	0.378	48 254	171 095	44.446	1.292	0.9907	1.0000



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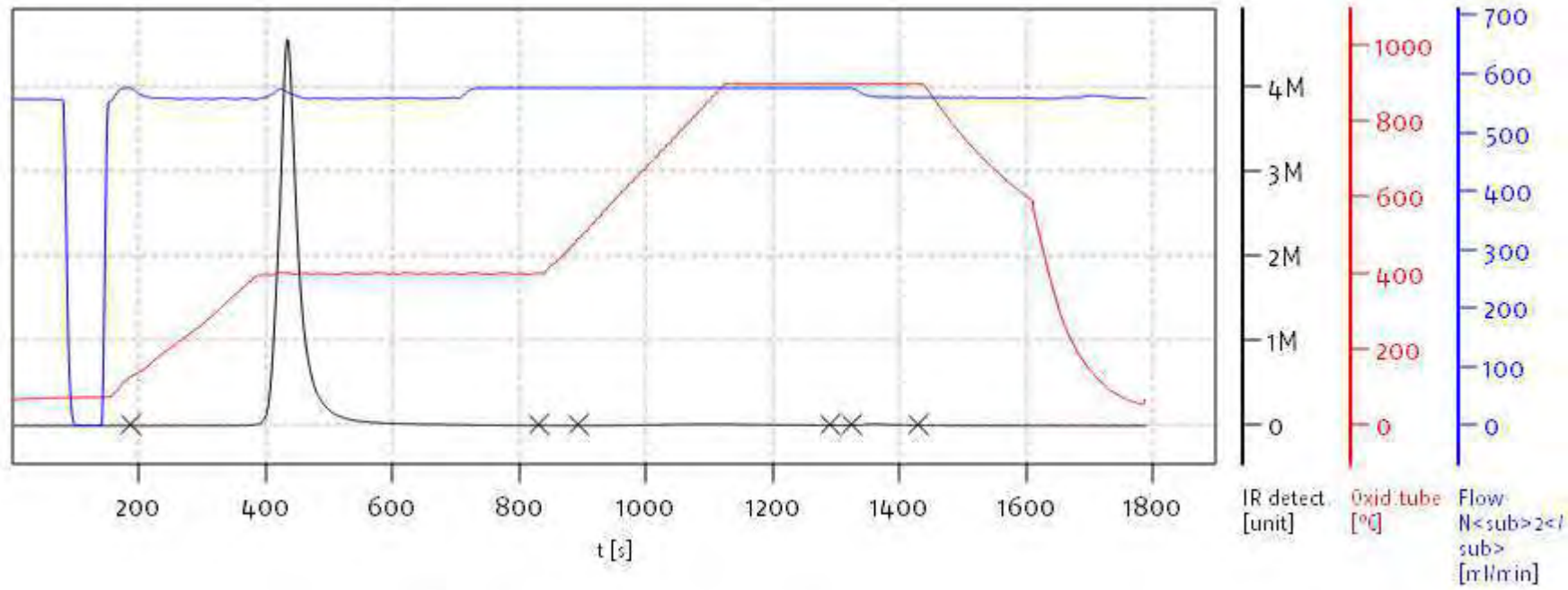
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Soli TOC Cube, Carbon
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Analytical Resources, LLC
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
30	30	SLE0270-ICV1	22.30		CARBON	5/18/2023 2:21 AM	bl	44.949	6 392 325	46.022	0.327	43 597	149 127	44.622	1.073	0.9871	1.0000



Name:

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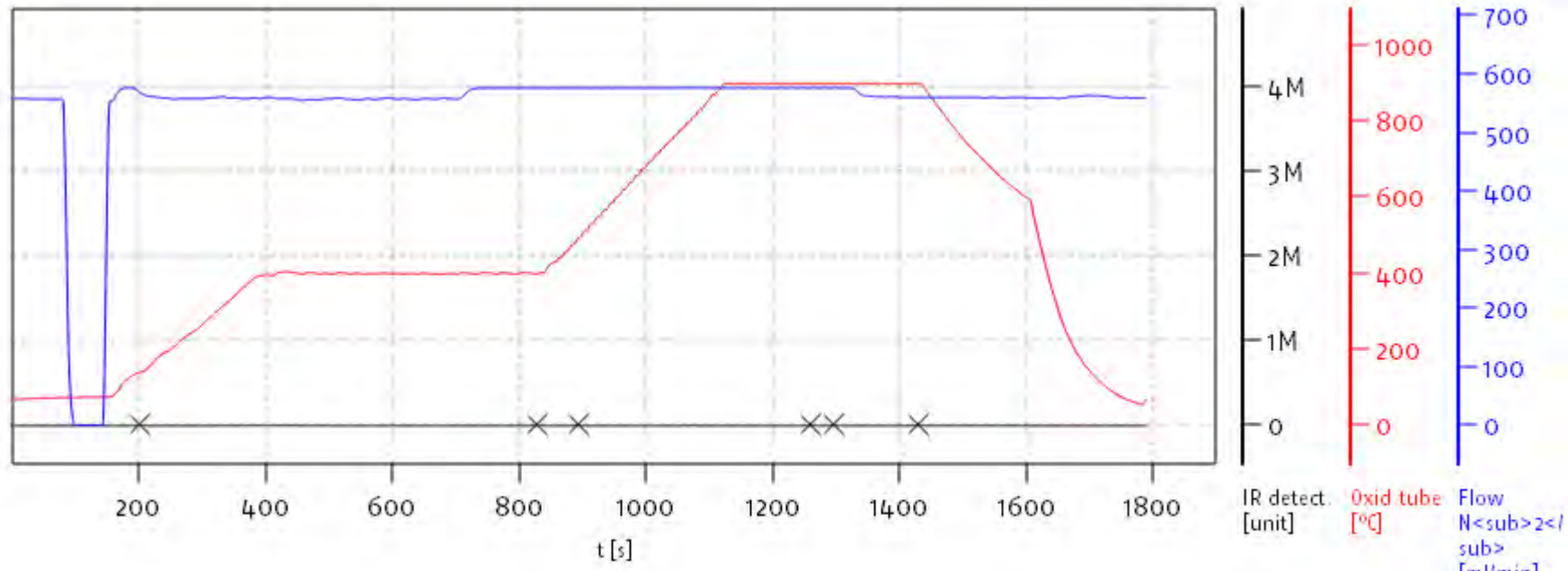
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Soli TOC Cube, Carbon
Balance: BAL3
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
31	31	SLE0270-ICB1	530.50		CARBON	5/18/2023 2:51 AM	bl,C1u,C3u,C2u	0.003	6 198	0.005	0.001	198	1 900	0.003	0.001	0.9871	1.0000



Name:

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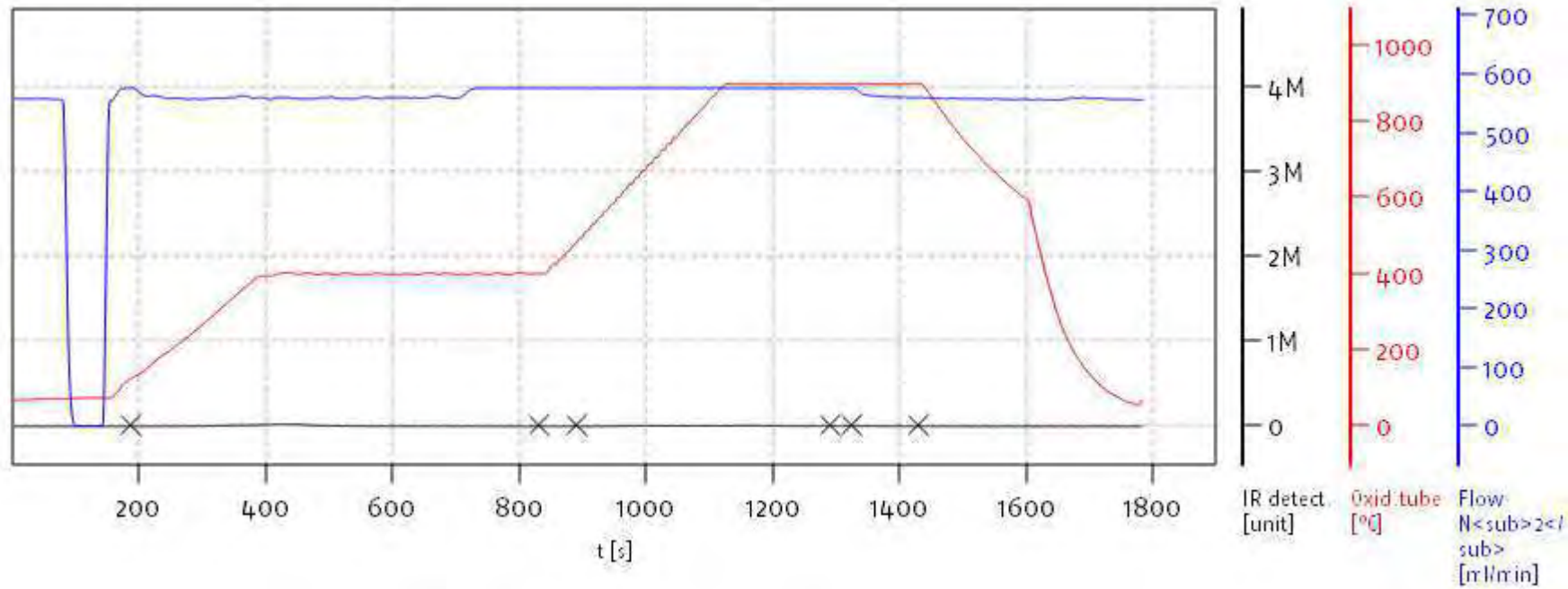
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Soli TOC Cube, Carbon
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
32	32	23D0491-10	42.50		CARBON	5/18/2023 3:21 AM	bl	0.560	138 129	0.841	0.044	9 353	73 148	0.515	0.281	0.9871	1.0000



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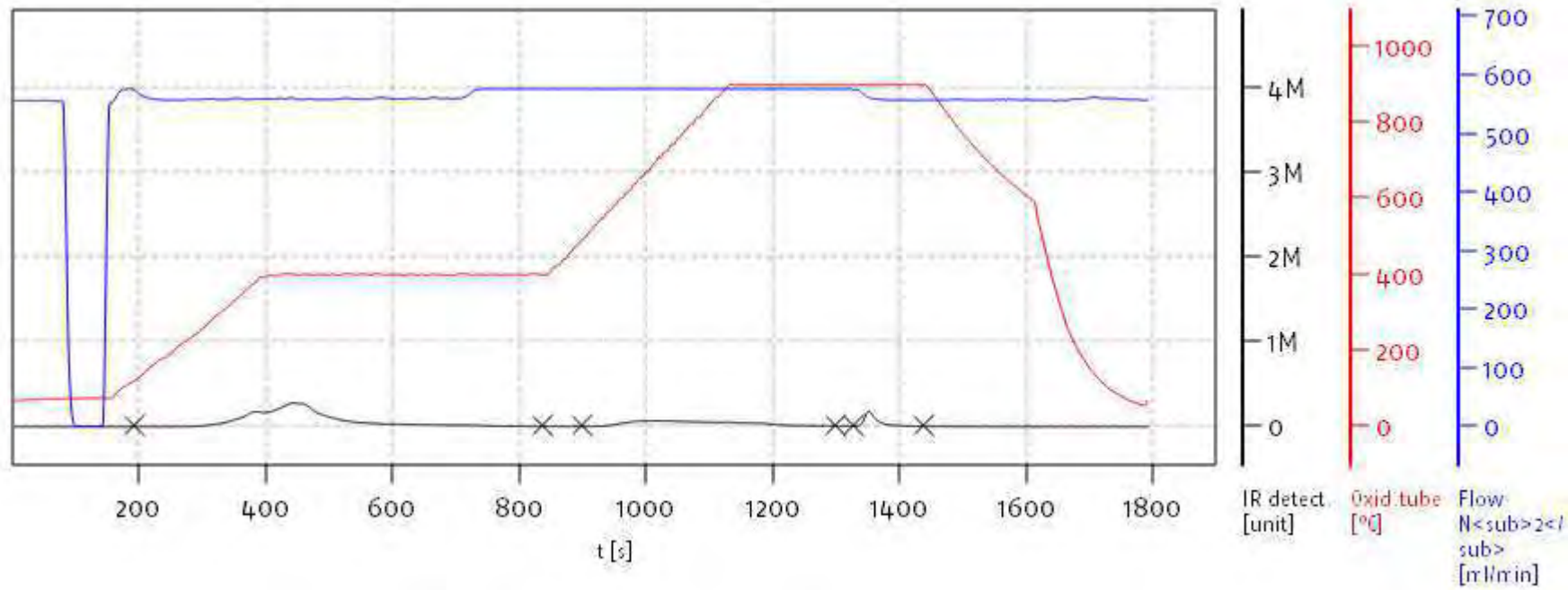
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
33	33	23D0491-10RE1	505.50		CARBON	5/18/2023 3:51 AM	bl	0.513	1 489 627	0.692	0.054	169 645	569 728	0.459	0.178	0.9871	1.0000



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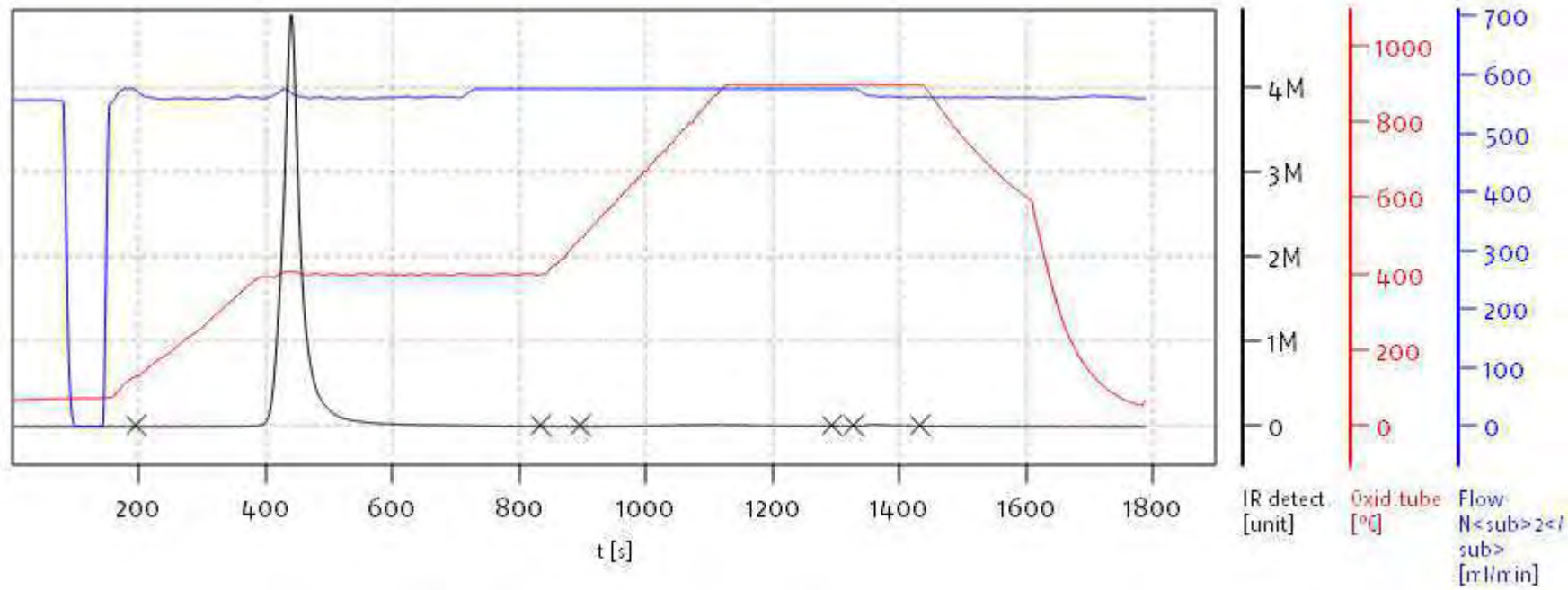
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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
34	34	SLE0270-CCV1	22.20		CARBON	5/18/2023 4:21 AM	bl	44.616	6 309 271	45.769	0.375	50 146	159 806	44.241	1.153	0.9871	1.0000



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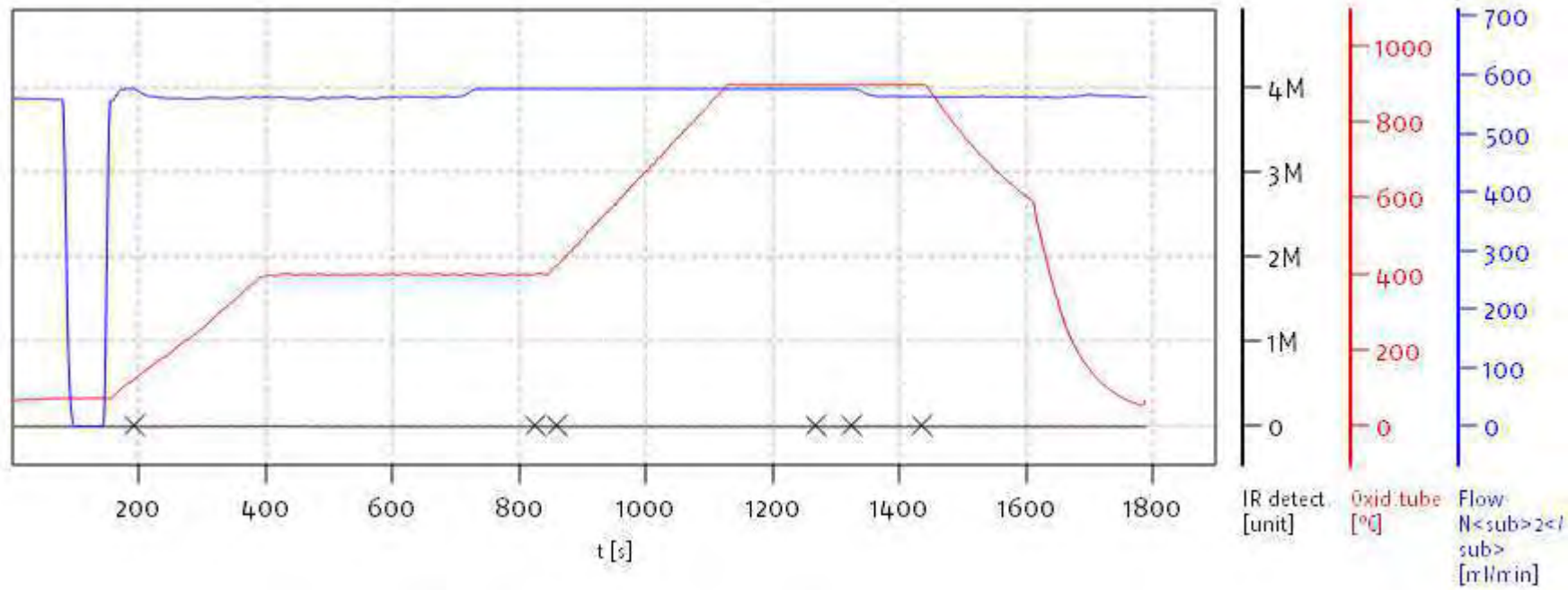
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

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	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
35	35	SLE0270-CCB1	523.30		CARBON	5/18/2023 4:52 AM	bl,C3u,C2u	0.009	22 128	0.010	0.001	2 335	2 184	0.007	0.001	0.9871	1.0000



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EXCELLENCE IN ELEMENTS

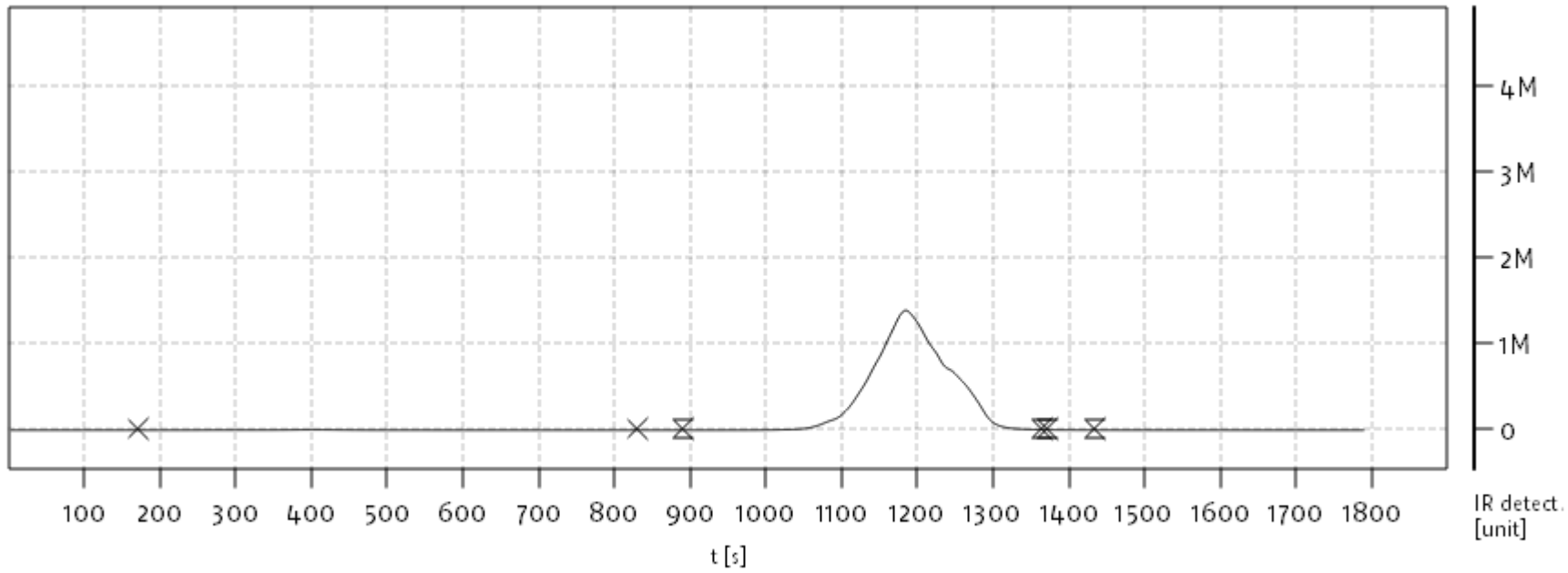
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
23	23	SLE0270-CALL	200.00	0.0700	CARBON	5/18/2023 9:47 AM	bl	0.019	21 598	4.386	0.000	**0**	**5 538 028**	0.019	4.367	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:50:12 2023

elementar
EXCELLENCE IN ELEMENTS

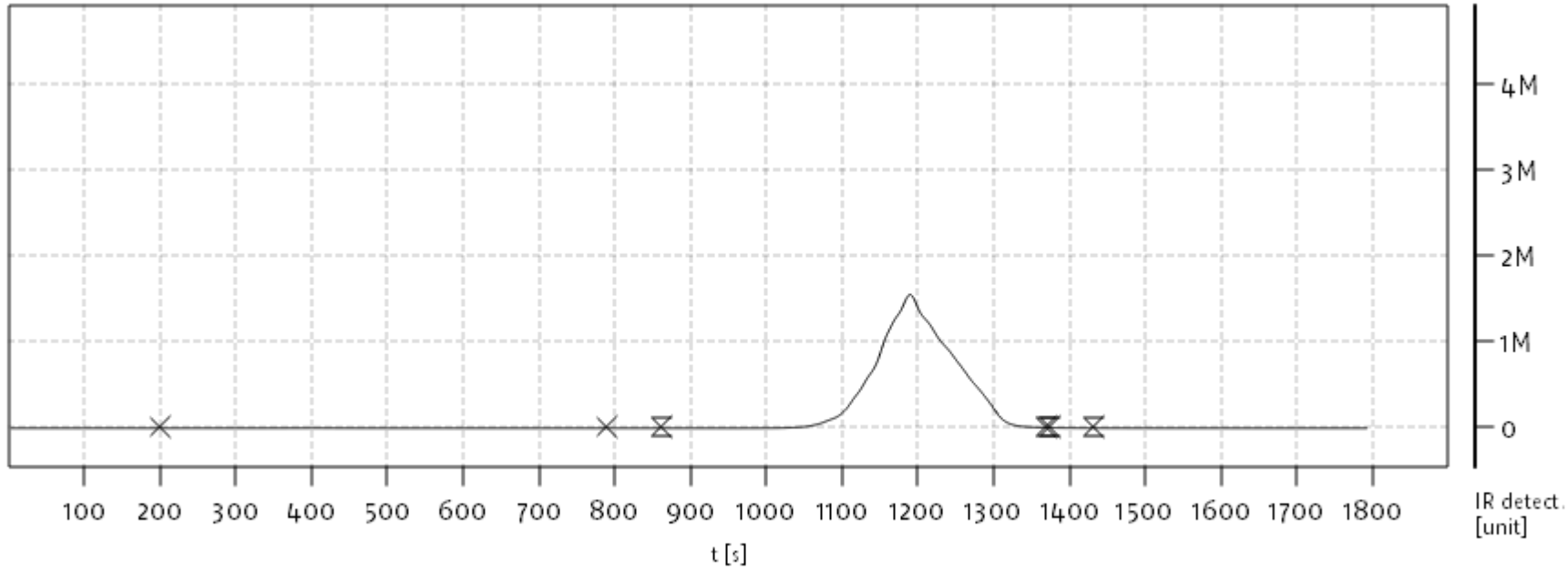
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
24	24	SLE0270-CALM	200.00	0.0800	CARBON	5/18/2023 9:48 AM	bl,C1u	0.006	5 408	4.784	0.000	**0**	**6 058 878**	0.006	4.778	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:50:12 2023

soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

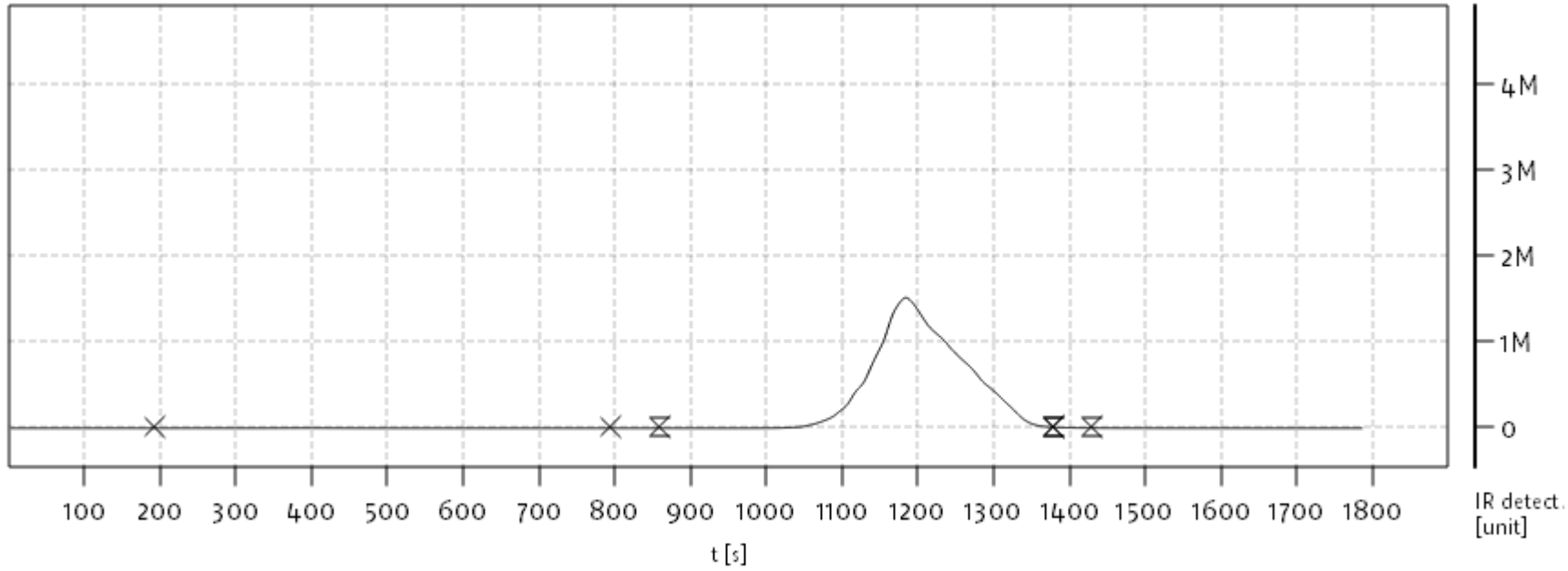
elementar
EXCELLENCE IN ELEMENTS

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
25	25	SLE0270-CALN	200.00	0.0900	CARBON	5/18/2023 9:49 AM	bl	0.009	8 745	5.379	0.000	**0**	**6 810 985**	0.009	5.370	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:50:12 2023

elementar
EXCELLENCE IN ELEMENTS

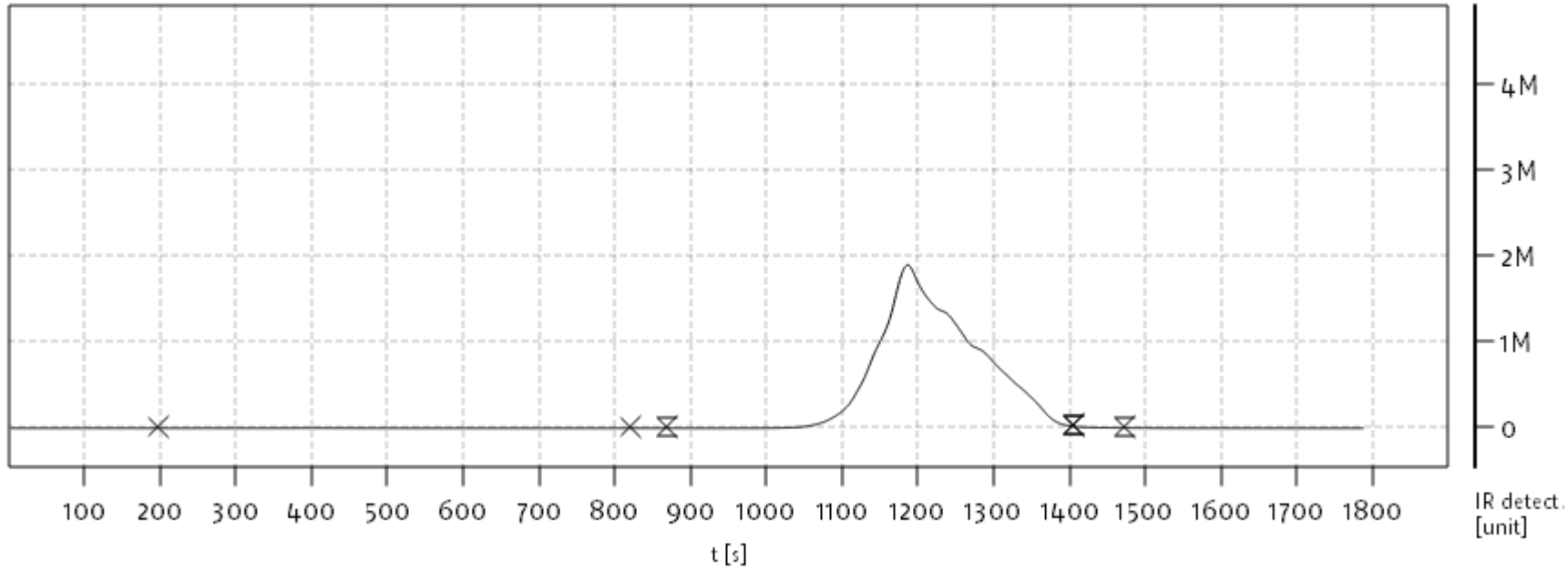
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: CDE

Analytical Resources, LLC
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Method	Date Time	Info	TOC [%]	TOC400 Area	TC [%]	ROC [%]	ROC Area	TIC900 Area	TOC400 [%]	TIC900 [%]	TOC400 Factor	TIC900 Factor
26	26	SLE0270-CALO	200.00	0.1200	CARBON	5/18/2023 9:49 AM	bl,C1u,C3o	0.008	6 993	7.291	0.000	0	9 238 066	0.008	7.283	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Thu May 18 09:50:12 2023

soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Document: 051723CDE GE00052 Calibration from: --.--.-- (modified)

INSTRUMENT BLANKS
EPA 9060A m

Laboratory: Analytical Resources, LLC
Client: Leon Environmental, LLC
Instrument ID: TOC Cube
Sequence: SLE0270

SDG: 23J0690
Project: Port of Friday Harbor 2023
Calibration: GE00052
Date Analyzed: 05/18/23 02:51

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C
SLE0270-ICB1	Total Organic Carbon	0.003	0.02	0.02	%	
SLE0270-CCB1	Total Organic Carbon	0.009	0.02	0.02	%	

INSTRUMENT BLANKS
EPA 9060A m

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023
Instrument ID: TOC Cube
Calibration: GE00052
Sequence: SLJ0453
Date Analyzed: 10/31/23 17:53

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C
SLJ0453-ICB1	Total Organic Carbon	0.00	0.02	0.02	%	
SLJ0453-CCB1	Total Organic Carbon	0.00	0.02	0.02	%	
SLJ0453-CCB2	Total Organic Carbon	0.00	0.02	0.02	%	
SLJ0453-CCB3	Total Organic Carbon	0.00	0.02	0.02	%	
SLJ0453-CCB4	Total Organic Carbon	0.00	0.02	0.02	%	
SLJ0453-CCB5	Total Organic Carbon	0.00	0.02	0.02	%	
SLJ0453-CCB6	Total Organic Carbon	0.007	0.02	0.02	%	
SLJ0453-CCB7	Total Organic Carbon	0.00	0.02	0.02	%	
SLJ0453-CCB8	Total Organic Carbon	0.00	0.02	0.02	%	
SLJ0453-CCB9	Total Organic Carbon	0.001	0.02	0.02	%	

INITIAL AND CONTINUING CALIBRATION CHECK

EPA 9060A m

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023
Instrument ID: TOC Cube
Calibration: GE00052
Control Limt: +/- 10.00%
Sequence: SLE0270

Lab Sample ID	Analyte	True	Found	%R	Units	Method
SLE0270-ICV1	Total Organic Carbon	44.446	45.4	102	%	EPA 9060A m
	Total Carbon	44.446	45.4	102	%	EPA 9060A m
	Total Inorganic Carbon	0.0000	45.4		%	EPA 9060A m
	% Soot	0.0000	45.4		%	EPA 9060A m
SLE0270-CCV1	Total Organic Carbon	44.446	45.2	102	%	EPA 9060A m
	Total Carbon	44.446	45.2	102	%	EPA 9060A m
	Total Inorganic Carbon	0.0000	45.2		%	EPA 9060A m
	% Soot	0.0000	45.2		%	EPA 9060A m

* Values outside of QC limits

INITIAL AND CONTINUING CALIBRATION CHECK

EPA 9060A m

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023
Instrument ID: TOC Cube
Calibration: GE00052
Control Limt: +/- 10.00%
Sequence: SLJ0453

Lab Sample ID	Analyte	True	Found	%R	Units	Method
SLJ0453-ICV1	Total Organic Carbon	44.446	46.6	105	%	EPA 9060A m
SLJ0453-CCV1	Total Organic Carbon	44.446	46.5	105	%	EPA 9060A m
SLJ0453-CCV2	Total Organic Carbon	44.446	46.4	104	%	EPA 9060A m
SLJ0453-CCV3	Total Organic Carbon	44.446	46.6	105	%	EPA 9060A m
SLJ0453-CCV4	Total Organic Carbon	44.446	42.8	96.4	%	EPA 9060A m
SLJ0453-CCV5	Total Organic Carbon	44.446	43.4	97.6	%	EPA 9060A m
SLJ0453-CCV6	Total Organic Carbon	44.446	42.5	95.6	%	EPA 9060A m
SLJ0453-CCV7	Total Organic Carbon	44.446	43.8	98.6	%	EPA 9060A m
SLJ0453-CCV8	Total Organic Carbon	44.446	45.0	101	%	EPA 9060A m
SLJ0453-CCV9	Total Organic Carbon	44.446	44.3	99.7	%	EPA 9060A m

* Values outside of QC limits

HOLDING TIME SUMMARY

Analysis: EPA 9060A m

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023

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
SED-26C:3-5 23J0690-05	03/22/23 10:38	05/05/23 14:20	11/30/23 15:30	253	180	11/02/23 09:39			*
SED-27C:0-1 23J0690-06	03/22/23 13:24	05/05/23 14:20	11/30/23 15:30	253	180	11/02/23 10:09			*

* Indicates hold time exceedance.

METHOD DETECTION AND REPORTING LIMITS

EPA 9060A m

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023
Matrix: Solid
Instrument: TOC Cube

Analyte	MDL	RL	Units
Total Organic Carbon	0.02	0.02	%

Analytical Standard Record

Standard ID: B000871

Printed: 5/25/2023 9:17:22AM

Description:	Calcium Carbonate 99.9% for Calibration	Expires:	31-Oct-2030
Standard Type:	Reagent	Prepared:	28-Jun-2013
Solvent:	NA/I2605	Prepared By:	Susan Dunnihoo
Final Volume (mls):	500	Department:	Conventionals
Vials:	1	Last Edit:	08-Jul-2019 12:16 by CDE
Vendor:	Mallinckrodt	Lot #:	4072 KDHD
Vendor Catalog #:	4072-03		

Comments

Analyte	CAS Number	Concentration	Units
Total Organic Carbon		120000	ppm
Total Inorganic Carbon		120000	ppm
Total Carbon		120000	ppm
Calcium carbonate	471-34-1	1000000	ppm
% Soot		120000	ppm

MP Biomedicals, LLC

29525 Fountain Parkway
Solon, Ohio 44139

Telephone: 440/337-1200
Toll Free: 800/854-0530

Fax: 440/337-1180
web: www.mpbio.com

Certificate of Analysis

Product Description: Microcrystalline Cellulose Powder
Catalog Number: 191499
Lot: Q9483

Formula: $(C_6H_{10}O_5)n$
CAS #: 9004-34-6
Physical Description: White Powder

Formula Weight: N/A
Storage: 15 - 30°C

Test	Specification	Result
Identity Test	Passes	Passes
Purity	97.0 - 102.0%	97.0 - 102.0%
Moisture	<5.0%	3.4%
Particle Size/Mesh +60 mesh +200 mesh	Wt % <8% >45%	 <1% 55%
pH	5 - 7	6.73
Residue on Ignition	<0.05%	<0.05%
Water Soluble Substances	<12.0 mg/5 g	4.5 mg/5 g
Heavy Metals	<10 ppm	<10 ppm

H001822
Microcrystalline Cellulose Powder (TOC)
Expires 12/31/2079
Prepared By Casey English 2/22/2019

H001822 Stock Standard Re-dry Record

Standard ID	Prepared	PreparedBy	Expires
H001822	02/22/2019	Casey English	12/31/2079
H001823	11/12/2019	Katrina English	11/12/2020
H011074	11/12/2019	Katrina English	11/12/2020
I010377	11/05/2020	Brandon Fisk	11/05/2021
J008174	08/09/2021	Brandon Fisk	08/09/2022
K001127	02/02/2022	Douglas Elijew	02/02/2023
K007814	08/22/2022	Douglas Elijew	08/22/2023
K011383	12/09/2022	Douglas Elijew	12/09/2023
L000298	01/11/2023	Douglas Elijew	01/11/2024
L004405	04/23/2023	Casey English	04/23/2024

Identification A & B: Passes
Bulk Density: 0.29 g/ml
Bulk Density (graduated cylinder): 0.31 g/ml
Conductivity: 18 µS/cm
Starch: Negative
Ether Soluble Substances: 0.01%
Total Aerobic microbial Count: 100 cfu/g
Total Mold and Yeast Count: 20 cfu/g
Staphylococcus aureus: Absent/1 g
Pseudomonas aeruginosa: Absent/1 g
E. coli: Absent/1 g
Salmonella: Absent/10 g
Particle size:

- 450 mesh: 77%
- d10: 37 um
- d50: 139 um
- d90: 271 um

TUP: <9/600 cm^2
Degree of brightness: >88%
Powder flow-angle of repose: <42°
Recommended Retest Date: 11/30/2022



07/26/2018 - *John Huang, PhD*
MP Biomedicals, LLC.
Quality Control Manager

This is an electronically generated document
mailto:biotech@mpbio.com
http://www.mpbio.com
Online Ordering, MSDSs, certificates of analysis and data sheets now available on our web site
Technical Service: 1-800-279-5490 (440-337-1200) Customer Service: 1-800-854-0530 (440-337-1200)

PREPARATION BATCH SUMMARY

SM 2540 G-11

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023
Batch: BLJ0876 Batch Matrix: Solid
Preparation: No Prep Wet Chem

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SED-11C:0-1	23J0690-03		10/27/23 14:55	Total solids completed on 23E0152-14
SED-26C:3-5	23J0690-05		10/27/23 14:55	Total solids completed on 23I0934-01
SED-27C:0-1	23J0690-06		10/27/23 14:55	Total solids completed on 23I0934-02

Form I
INORGANIC ANALYSIS DATA SHEET
SM 2540 G-11

SED-11C:0-1

Laboratory:	Analytical Resources, LLC				
Client:	Leon Environmental, LLC				
Project:	Port of Friday Harbor 2023				
Matrix:	Sediment	Laboratory ID:	23J0690-03 A	SDG:	23J0690
Sampled:	03/23/23 07:29	Prepared:	10/27/23 14:55	File ID:	
% Solids:	67.04	Preparation:	No Prep Wet Chem	Analyzed:	10/30/23 15:07
Batch:	BLJ0876	Sequence:		Initial/Final:	5 g Wet / 5 mL
Instrument:	Inst			Calibration:	

CAS NO.	Analyte	Concentration (%)	Dilution Factor	MDL	MRL	Q
	Total Solids	67.04	1	0.04	0.04	

Form I
INORGANIC ANALYSIS DATA SHEET
SM 2540 G-11

SED-26C:3-5

Laboratory:	Analytical Resources, LLC				
Client:	Leon Environmental, LLC				
Project:	Port of Friday Harbor 2023				
Matrix:	Sediment	Laboratory ID:	23J0690-05 A	SDG:	23J0690
Sampled:	03/22/23 10:38	Prepared:	10/27/23 14:55	File ID:	
% Solids:	78.85	Preparation:	No Prep Wet Chem	Analyzed:	10/27/23 14:55
Batch:	BLJ0876	Sequence:		Initial/Final:	5 g Wet / 5 mL
Instrument:	Inst			Calibration:	

CAS NO.	Analyte	Concentration (%)	Dilution Factor	MDL	MRL	Q
	Total Solids	78.85	1	0.04	0.04	

Form I
INORGANIC ANALYSIS DATA SHEET
SM 2540 G-11

SED-27C:0-1

Laboratory:	Analytical Resources, LLC				
Client:	Leon Environmental, LLC				
Project:	Port of Friday Harbor 2023				
Matrix:	Sediment	Laboratory ID:	23J0690-06 A	SDG:	23J0690
Sampled:	03/22/23 13:24	Prepared:	10/27/23 14:55	File ID:	
% Solids:	71.93	Preparation:	No Prep Wet Chem	Analyzed:	10/27/23 14:55
Batch:	BLJ0876	Sequence:		Initial/Final:	5 g Wet / 5 mL
Instrument:	Inst			Calibration:	

CAS NO.	Analyte	Concentration (%)	Dilution Factor	MDL	MRL	Q
	Total Solids	71.93	1	0.04	0.04	

HOLDING TIME SUMMARY

Analysis: SM 2540 G-11

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023

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
SED-11C:0-1 23J0690-03	03/23/23 07:29	05/05/23 14:20	10/27/23 14:55	218	180	10/30/23 15:07	221	180	*
SED-26C:3-5 23J0690-05	03/22/23 10:38	05/05/23 14:20	10/27/23 14:55	219	180	10/27/23 14:55	219	180	*
SED-27C:0-1 23J0690-06	03/22/23 13:24	05/05/23 14:20	10/27/23 14:55	219	180	10/27/23 14:55	219	180	*

* Indicates hold time exceedance.

METHOD DETECTION AND REPORTING LIMITS

SM 2540 G-11

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023
Matrix: Solid
Instrument:

Analyte	MDL	RL	Units
Total Solids	0.04	0.04	%

PREPARATION BATCH SUMMARY

ASTM D2216

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023
Batch: BLK0010 Batch Matrix: Solid
Preparation: No Prep-Organics

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SED-07C:0-1	23J0690-01		11/01/23 15:01	Total solids completed on 23E0152-01
SED-08C:1-3	23J0690-02		11/01/23 15:01	Total solids completed on 23E0152-04
SED-14C:0-1	23J0690-04		11/01/23 15:01	Total solids completed on 23E0148-11
SED-27C:0-1	23J0690-06		11/01/23 15:01	Total solids completed on 23I0934-02
SED-26C:1-3	23J0690-07		11/01/23 15:01	Total solids completed on 23E0152-09

HOLDING TIME SUMMARY

Analysis: ASTM D2216

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023

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
SED-07C:0-1 23J0690-01	03/22/23 07:29	05/05/23 14:20	11/01/23 15:01	224	365	11/02/23 07:40	225	365	
SED-08C:1-3 23J0690-02	03/22/23 08:07	05/05/23 14:20	11/01/23 15:01	224	365	11/02/23 07:40	225	365	
SED-14C:0-1 23J0690-04	03/21/23 15:53	05/05/23 14:20	11/01/23 15:01	224	365	11/02/23 07:40	226	365	
SED-27C:0-1 23J0690-06	03/22/23 13:24	05/05/23 14:20	11/01/23 15:01	224	365	11/02/23 07:40	225	365	
SED-26C:1-3 23J0690-07	03/22/23 10:38	05/05/23 14:20	11/01/23 15:01	224	365	11/02/23 07:40	225	365	

* Indicates hold time exceedance.

METHOD DETECTION AND REPORTING LIMITS

ASTM D2216

Laboratory: Analytical Resources, LLC
SDG: 23J0690
Client: Leon Environmental, LLC
Project: Port of Friday Harbor 2023
Matrix: Solid
Instrument:

Analyte	MDL	RL	Units
Total Solids		0.01	%

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

April 14, 2023

Peter Leon, Project Manager
Leon Environmental
8047 Burke Ave N
Seattle, WA 98103

Dear Mr Leon:

Included are the results from the testing of material submitted on March 23, 2023 from the Port of Friday Harbor (PoFH) Jensen's Marina, F&BI 303373 project. There are 70 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Grant Hainworth (Crete), Rusty Jones (Crete)
NAA0414R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

May 19, 2023

Peter Leon, Project Manager
Leon Environmental
8047 Burke Ave N
Seattle, WA 98103

Dear Mr Leon:

Included is the amended report from the testing of material submitted on March 23, 2023 from the Port of Friday Harbor (PoFH) Jensen's Marina, F&BI 303373 project. To reach the total organic carbon normalized SMS criteria, 1,2,4-trichlorobenzene, hexachlorobenzene, and butyl benzyl phthalate were lowered to the method detection limit.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Grant Hainworth (Crete), Rusty Jones (Crete)
NAA0508R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

May 8, 2023

Peter Leon, Project Manager
Leon Environmental
8047 Burke Ave N
Seattle, WA 98103

Dear Mr Leon:

Included are the additional results from the testing of material submitted on March 23, 2023 from the Port of Friday Harbor (PoFH) Jensen's Marina, F&BI 303373 project. There are 22 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Grant Hainworth (Crete), Rusty Jones (Crete)
NAA0508R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on March 23, 2023 by Friedman & Bruya, Inc. from the Leon Environmental Port of Friday Harbor (PoFH) Jensen's Marina, F&BI 303373 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Leon Environmental
303373 -01	SED-07G:0-10
303373 -02	SED-11G:0-10
303373 -03	SED-14G:0-10
303373 -04	SED-15G:0-10
303373 -05	SED-24G:0-10
303373 -06	SED-23G:0-10
303373 -07	SED-22G:0-10
303373 -08	SED-21G:0-10
303373 -09	SED-03G:0-10
303373 -10	SED-20G:0-10
303373 -11	SED-18G:0-10
303373 -12	SED-19G:0-10
303373 -13	SED-01G:0-10
303373 -14	SED-01C:0-1
303373 -15	SED-01C:1-3
303373 -16	SED-01C:3-5
303373 -17	SED-01C:5-7
303373 -18	SED-05C:0-1
303373 -19	SED-05C:1-3
303373 -20	SED-05C:3-5
303373 -21	SED-05C:5-7
303373 -22	SED-05G:0-10
303373 -23	SED-03C:0-1
303373 -24	SED-03C:1-3
303373 -25	SED-03C:3-5
303373 -26	SED-03C:5-7
303373 -27	SED-14C:0-1
303373 -28	SED-14C:1-3
303373 -29	SED-14C:3-5
303373 -30	SED-14C:5-7
303373 -31	SED-DUPC
303373 -32	SED-07C:0-1
303373 -33	SED-07C:1-3
303373 -34	SED-07C:3-5
303373 -35	SED-07C:5-7

CASE NARRATIVE

The 8270E benzoic acid calibration standard failed the acceptance criteria. The data were flagged accordingly.

An 8270E internal standard failed the acceptance criteria for sample SED-DUPC. The sample was diluted and reanalyzed with acceptable results. Both data sets were reported.

Bis(2-ethylhexyl) phthalate was detected in sample SED-14G:0-10. The result was qualified as a common laboratory and field contaminant.

An 8270E surrogate in the method blank did not pass the acceptance criteria. The affected compounds were qualified accordingly.

The 8082A matrix spike and matrix spike duplicate exceeded the acceptance criteria. The laboratory control sample passed the acceptance criteria, so the results were likely due to matrix effect.

The 8081B calibration standard failed the acceptance criteria for several pesticides. The data were flagged accordingly.

The 8081B matrix spike and matrix spike duplicate failed the relative percent difference for several compounds. The laboratory control sample passed the acceptance criteria, so the results were likely due to matrix effect.

The grain size, TBT, dioxin and furan, TOC, total solids, ammonia, and sulfides results will be issued in a separate report.

All other quality control requirements were acceptable.

CASE NARRATIVE (continued)

The 8270 samples were reanalyzed without dilution and several compounds were lowered to the project criteria.

Several 8270E compounds failed the calibration standard acceptance criteria. The affected data were flagged accordingly.

An 8270E internal standard failed the acceptance criteria for samples SED-11G:0-10, SED-05C:0-1, SED-05G:0-10, SED-03C:0-1 and SED-DUPC. The samples were diluted and reanalyzed with acceptable results. Both data sets were reported.

Bis(2-ethylhexyl) phthalate was detected in sample SED-14G:0-10. The result was qualified as a common laboratory and field contaminant.

An 8270E surrogate in the method blank did not pass the acceptance criteria. The affected compounds were qualified accordingly.

All other quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	SED-11G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303373-02
Date Analyzed:	03/24/23	Data File:	303373-02.141
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<2
Arsenic	4.16
Cadmium	0.864
Chromium	10.5
Copper	70.9
Lead	21.6
Nickel	7.75
Silver	<1
Zinc	102

Analysis For Total Metals By EPA Method 6020B

Client ID:	SED-14G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303373-03
Date Analyzed:	03/24/23	Data File:	303373-03.142
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<2
Arsenic	4.04
Cadmium	1.88
Chromium	16.5
Copper	53.2
Lead	16.4
Nickel	12.3
Silver	<1
Zinc	64.2

Analysis For Total Metals By EPA Method 6020B

Client ID:	SED-14C:0-1	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303373-27
Date Analyzed:	03/24/23	Data File:	303373-27.143
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<2
Arsenic	2.65
Cadmium	1.86
Chromium	11.8
Copper	31.4
Lead	14.2
Nickel	9.18
Silver	<1
Zinc	46.0

Analysis For Total Metals By EPA Method 6020B

Client ID:	SED-DUPC	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303373-31
Date Analyzed:	03/24/23	Data File:	303373-31.157
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<2
Arsenic	2.83
Cadmium	1.96
Chromium	11.4
Copper	66.2
Lead	13.7
Nickel	9.18
Silver	<1
Zinc	48.8

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Leon Environmental
Date Received:	Not Applicable	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	I3-227 mb
Date Analyzed:	03/24/23	Data File:	I3-227 mb.125
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<2
Arsenic	<1
Cadmium	<0.2
Chromium	<1
Copper	<5
Lead	<1
Nickel	<1
Silver	<1
Zinc	<5

Date of Report: 04/14/23
Date Received: 03/23/23
Project: Port of Friday Harbor (PoFH) Jensen's Marina, F&BI 303373
Date Extracted: 03/24/23
Date Analyzed: 03/27/23

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL MERCURY
USING EPA METHOD 1631E
Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Total Mercury
SED-11G:0-10 303373-02	0.25
SED-14G:0-10 303373-03	0.11
SED-14C:0-1 303373-27	0.093
SED-DUPC 303373-31	0.094
Method Blank i3-227 MB	<0.025

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-07G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor, F&BI 303373
Date Extracted:	03/27/23	Lab ID:	303373-01
Date Analyzed:	04/26/23	Data File:	042617.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	39	22	119
Phenol-d6	62	38	124
Nitrobenzene-d5	47	10	198
2-Fluorobiphenyl	69	45	117
2,4,6-Tribromophenol	82	11	158
Terphenyl-d14	102	50	124

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.039
2-Methylphenol	<0.063 j	Anthracene	0.015
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1 ca
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	0.21
2,4-Dimethylphenol	<0.029 j	Pyrene	0.20
Benzoic acid	<0.5	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	0.071
Naphthalene	0.0021	Chrysene	0.17
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	0.0035	Di-n-octyl phthalate	<0.1 J
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	0.065 J
Acenaphthylene	0.0029	Benzo(b)fluoranthene	0.18 J
Acenaphthene	0.0025	Benzo(k)fluoranthene	0.066 J
Dibenzofuran	<0.01	Indeno(1,2,3-cd)pyrene	0.018 J
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	0.0043 J
Fluorene	0.0045	Benzo(g,h,i)perylene	0.013 J

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-07G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor, F&BI 303373
Date Extracted:	03/27/23	Lab ID:	303373-01 1/5
Date Analyzed:	03/28/23	Data File:	032817.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	35 d	14	115
Phenol-d6	62 d	29	121
Nitrobenzene-d5	47 d	16	137
2-Fluorobiphenyl	71 d	46	122
2,4,6-Tribromophenol	99 d	17	154
Terphenyl-d14	85 d	31	167

Compounds:	Concentration mg/kg (ppm)
Di-n-octyl phthalate	<0.5
Benzo(a)pyrene	0.065
Benzo(b)fluoranthene	0.15
Benzo(k)fluoranthene	0.051
Indeno(1,2,3-cd)pyrene	0.034
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	0.027

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-11G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor, F&BI 303373
Date Extracted:	03/27/23	Lab ID:	303373-02
Date Analyzed:	04/26/23	Data File:	042618.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	43	22	119
Phenol-d6	59	38	124
Nitrobenzene-d5	53	10	198
2-Fluorobiphenyl	65	45	117
2,4,6-Tribromophenol	76	11	158
Terphenyl-d14	97	50	124

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.14
2-Methylphenol	<0.063 j	Anthracene	0.033
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1 ca
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	0.55
2,4-Dimethylphenol	<0.029 j	Pyrene	0.52
Benzoic acid	<0.5	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	0.17
Naphthalene	0.0035	Chrysene	0.32
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	0.0038	Di-n-octyl phthalate	<0.1 J
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	0.18 J
Acenaphthylene	0.0055	Benzo(b)fluoranthene	0.46 J
Acenaphthene	0.0069	Benzo(k)fluoranthene	0.15 J
Dibenzofuran	<0.01	Indeno(1,2,3-cd)pyrene	0.051 J
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	0.012 J
Fluorene	0.0091	Benzo(g,h,i)perylene	0.040 J

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-11G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor, F&BI 303373
Date Extracted:	03/27/23	Lab ID:	303373-02 1/5
Date Analyzed:	03/28/23	Data File:	032818.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	41 d	14	115
Phenol-d6	64 d	29	121
Nitrobenzene-d5	56 d	16	137
2-Fluorobiphenyl	68 d	46	122
2,4,6-Tribromophenol	94 d	17	154
Terphenyl-d14	80 d	31	167

Compounds:	Concentration mg/kg (ppm)
Di-n-octyl phthalate	<0.5
Benzo(a)pyrene	0.19
Benzo(b)fluoranthene	0.35
Benzo(k)fluoranthene	0.12
Indeno(1,2,3-cd)pyrene	0.10
Dibenz(a,h)anthracene	0.023
Benzo(g,h,i)perylene	0.087

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-14G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor, F&BI 303373
Date Extracted:	03/27/23	Lab ID:	303373-03
Date Analyzed:	03/29/23	Data File:	032921.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	31	14	115
Phenol-d6	45	29	121
Nitrobenzene-d5	40	16	137
2-Fluorobiphenyl	55	46	122
2,4,6-Tribromophenol	81	17	154
Terphenyl-d14	92	31	167

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.093
2-Methylphenol	<0.063 j	Anthracene	0.033
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	0.26
2,4-Dimethylphenol	<0.029 j	Pyrene	0.29
Benzoic acid	<0.5 ca	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	0.16
Naphthalene	0.0043	Chrysene	0.28
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	0.26 fc
2-Methylnaphthalene	0.0069	Di-n-octyl phthalate	<0.1
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	0.16
Acenaphthylene	0.0051	Benzo(b)fluoranthene	0.35
Acenaphthene	0.0054	Benzo(k)fluoranthene	0.13
Dibenzofuran	<0.01	Indeno(1,2,3-cd)pyrene	0.054
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	0.014
Fluorene	0.013	Benzo(g,h,i)perylene	0.046

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-03G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor, F&BI 303373
Date Extracted:	03/27/23	Lab ID:	303373-09
Date Analyzed:	05/05/23	Data File:	050516.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	56	22	119
Phenol-d6	70	38	124
Nitrobenzene-d5	54	10	198
2-Fluorobiphenyl	65	45	117
2,4,6-Tribromophenol	77	11	158
Terphenyl-d14	103	50	124

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	0.014	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.050
2-Methylphenol	<0.063 j	Anthracene	0.020
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	0.15
2,4-Dimethylphenol	<0.029 j	Pyrene	0.35
Benzoic acid	<0.5	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	0.087
Naphthalene	0.0050	Chrysene	0.19
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	0.18
2-Methylnaphthalene	0.0073	Di-n-octyl phthalate	<0.1
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	0.12
Acenaphthylene	0.0053	Benzo(b)fluoranthene	0.24
Acenaphthene	0.0046	Benzo(k)fluoranthene	0.081
Dibenzofuran	<0.01	Indeno(1,2,3-cd)pyrene	0.035
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	0.0088
Fluorene	0.0083	Benzo(g,h,i)perylene	0.025

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-05C:0-1	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor, F&BI 303373
Date Extracted:	03/27/23	Lab ID:	303373-18
Date Analyzed:	04/26/23	Data File:	042619.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	59	22	119
Phenol-d6	71	38	124
Nitrobenzene-d5	63	10	198
2-Fluorobiphenyl	71	45	117
2,4,6-Tribromophenol	80	11	158
Terphenyl-d14	99	50	124

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.033
2-Methylphenol	<0.063 j	Anthracene	0.014
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1 ca
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	0.12
2,4-Dimethylphenol	<0.029 j	Pyrene	0.20
Benzoic acid	<0.5	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	0.059
Naphthalene	0.0037	Chrysene	0.13
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	0.0076	Di-n-octyl phthalate	<0.1 J
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	0.066 J
Acenaphthylene	0.0033	Benzo(b)fluoranthene	0.18 J
Acenaphthene	0.0026	Benzo(k)fluoranthene	0.069 J
Dibenzofuran	<0.01	Indeno(1,2,3-cd)pyrene	0.016 J
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	0.0041 J
Fluorene	0.0065	Benzo(g,h,i)perylene	0.012 J

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-05C:0-1	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor, F&BI 303373
Date Extracted:	03/27/23	Lab ID:	303373-18 1/5
Date Analyzed:	03/28/23	Data File:	032821.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	72 d	14	115
Phenol-d6	90 d	29	121
Nitrobenzene-d5	83 d	16	137
2-Fluorobiphenyl	98 d	46	122
2,4,6-Tribromophenol	109 d	17	154
Terphenyl-d14	107 d	31	167

Compounds:	Concentration mg/kg (ppm)
Di-n-octyl phthalate	<0.5
Benzo(a)pyrene	0.084
Benzo(b)fluoranthene	0.17
Benzo(k)fluoranthene	0.056
Indeno(1,2,3-cd)pyrene	0.039
Dibenz(a,h)anthracene	0.010
Benzo(g,h,i)perylene	0.032

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-05G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor, F&BI 303373
Date Extracted:	03/27/23	Lab ID:	303373-22
Date Analyzed:	04/26/23	Data File:	042620.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	37	22	119
Phenol-d6	52	38	124
Nitrobenzene-d5	44	10	198
2-Fluorobiphenyl	54	45	117
2,4,6-Tribromophenol	67	11	158
Terphenyl-d14	84	50	124

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.063
2-Methylphenol	<0.063 j	Anthracene	0.017
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1 ca
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	0.24
2,4-Dimethylphenol	<0.029 j	Pyrene	0.31
Benzoic acid	<0.5	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	0.076
Naphthalene	0.0038	Chrysene	0.16
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	0.0061	Di-n-octyl phthalate	<0.1 J
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	0.082 J
Acenaphthylene	0.0050	Benzo(b)fluoranthene	0.26 J
Acenaphthene	0.0034	Benzo(k)fluoranthene	0.084 J
Dibenzofuran	<0.01	Indeno(1,2,3-cd)pyrene	0.021 J
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	0.0050 J
Fluorene	0.0073	Benzo(g,h,i)perylene	0.016 J

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-05G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor, F&BI 303373
Date Extracted:	03/27/23	Lab ID:	303373-22 1/5
Date Analyzed:	03/28/23	Data File:	032822.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	33 d	14	115
Phenol-d6	50 d	29	121
Nitrobenzene-d5	44 d	16	137
2-Fluorobiphenyl	56 d	46	122
2,4,6-Tribromophenol	77 d	17	154
Terphenyl-d14	67 d	31	167

Compounds:	Concentration mg/kg (ppm)
Di-n-octyl phthalate	<0.5
Benzo(a)pyrene	0.082
Benzo(b)fluoranthene	0.19
Benzo(k)fluoranthene	0.069
Indeno(1,2,3-cd)pyrene	0.033
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	0.026

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-03C:0-1	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor, F&BI 303373
Date Extracted:	03/27/23	Lab ID:	303373-23
Date Analyzed:	04/26/23	Data File:	042621.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	49	22	119
Phenol-d6	60	38	124
Nitrobenzene-d5	53	10	198
2-Fluorobiphenyl	60	45	117
2,4,6-Tribromophenol	70	11	158
Terphenyl-d14	88	50	124

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.052
2-Methylphenol	<0.063 j	Anthracene	0.028
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1 ca
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	0.21
2,4-Dimethylphenol	<0.029 j	Pyrene	0.60
Benzoic acid	<0.5	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	0.11
Naphthalene	0.0062	Chrysene	0.20
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	0.0081	Di-n-octyl phthalate	<0.1 J
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	0.16 J
Acenaphthylene	0.0061	Benzo(b)fluoranthene	0.42 J
Acenaphthene	0.0051	Benzo(k)fluoranthene	0.16 J
Dibenzofuran	<0.01	Indeno(1,2,3-cd)pyrene	0.030 J
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	0.0082 J
Fluorene	0.010	Benzo(g,h,i)perylene	0.022 J

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-03C:0-1	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor, F&BI 303373
Date Extracted:	03/27/23	Lab ID:	303373-23 1/5
Date Analyzed:	03/28/23	Data File:	032819.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	45 d	14	115
Phenol-d6	58 d	29	121
Nitrobenzene-d5	53 d	16	137
2-Fluorobiphenyl	64 d	46	122
2,4,6-Tribromophenol	81 d	17	154
Terphenyl-d14	71 d	31	167

Compounds:	Concentration mg/kg (ppm)
Di-n-octyl phthalate	<0.5
Benzo(a)pyrene	0.16
Benzo(b)fluoranthene	0.30
Benzo(k)fluoranthene	0.12
Indeno(1,2,3-cd)pyrene	0.057
Dibenz(a,h)anthracene	0.016
Benzo(g,h,i)perylene	0.045

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-14C:0-1	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor, F&BI 303373
Date Extracted:	03/27/23	Lab ID:	303373-27
Date Analyzed:	03/29/23	Data File:	032922.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	42	14	115
Phenol-d6	55	29	121
Nitrobenzene-d5	50	16	137
2-Fluorobiphenyl	60	46	122
2,4,6-Tribromophenol	71	17	154
Terphenyl-d14	77	31	167

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.087
2-Methylphenol	<0.063 j	Anthracene	0.018
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	0.22
2,4-Dimethylphenol	<0.029 j	Pyrene	0.22
Benzoic acid	<0.5 ca	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	0.065
Naphthalene	0.0029	Chrysene	0.13
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	0.0045	Di-n-octyl phthalate	<0.1
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	0.073
Acenaphthylene	0.0029	Benzo(b)fluoranthene	0.17
Acenaphthene	0.0051	Benzo(k)fluoranthene	0.053
Dibenzofuran	<0.01	Indeno(1,2,3-cd)pyrene	0.024
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	0.0060
Fluorene	0.0076	Benzo(g,h,i)perylene	0.021

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-14C:1-3	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor, F&BI 303373
Date Extracted:	03/27/23	Lab ID:	303373-28
Date Analyzed:	03/29/23	Data File:	032923.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	38	14	115
Phenol-d6	51	29	121
Nitrobenzene-d5	38	16	137
2-Fluorobiphenyl	51	46	122
2,4,6-Tribromophenol	72	17	154
Terphenyl-d14	76	31	167

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.017
2-Methylphenol	<0.063 j	Anthracene	0.0045
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	0.038
2,4-Dimethylphenol	<0.029 j	Pyrene	0.052
Benzoic acid	<0.5 ca	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	0.015
Naphthalene	0.0028	Chrysene	0.019
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	0.0045	Di-n-octyl phthalate	<0.1
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	0.017
Acenaphthylene	<0.002	Benzo(b)fluoranthene	0.038
Acenaphthene	0.0027	Benzo(k)fluoranthene	0.014
Dibenzofuran	<0.01	Indeno(1,2,3-cd)pyrene	0.0047
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	<0.002
Fluorene	0.0035	Benzo(g,h,i)perylene	0.0040

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-DUPC	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor, F&BI 303373
Date Extracted:	03/27/23	Lab ID:	303373-31
Date Analyzed:	03/29/23	Data File:	032924.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	42	14	115
Phenol-d6	58	29	121
Nitrobenzene-d5	52	16	137
2-Fluorobiphenyl	65	46	122
2,4,6-Tribromophenol	80	17	154
Terphenyl-d14	100	31	167

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.049
2-Methylphenol	<0.063 j	Anthracene	0.015
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	0.15
2,4-Dimethylphenol	<0.029 j	Pyrene	0.22
Benzoic acid	<0.5 ca	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	0.057
Naphthalene	0.0069	Chrysene	0.095
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	0.0078	Di-n-octyl phthalate	<0.1 J
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	0.068 J
Acenaphthylene	0.0033	Benzo(b)fluoranthene	0.17 J
Acenaphthene	0.019	Benzo(k)fluoranthene	0.051 J
Dibenzofuran	0.014	Indeno(1,2,3-cd)pyrene	0.022 J
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	0.0055 J
Fluorene	0.016	Benzo(g,h,i)perylene	0.018 J

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-DUPC	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor, F&BI 303373
Date Extracted:	03/27/23	Lab ID:	303373-31 1/5
Date Analyzed:	03/30/23	Data File:	033008.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	41 d	14	115
Phenol-d6	59 d	29	121
Nitrobenzene-d5	52 d	16	137
2-Fluorobiphenyl	66 d	46	122
2,4,6-Tribromophenol	81 d	17	154
Terphenyl-d14	84 d	31	167

Compounds:	Concentration mg/kg (ppm)
Di-n-octyl phthalate	<0.5
Benzo(a)pyrene	0.062
Benzo(b)fluoranthene	0.11
Benzo(k)fluoranthene	0.040
Indeno(1,2,3-cd)pyrene	0.034
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	0.031

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Leon Environmental
Date Received:	Not Applicable	Project:	Port of Friday Harbor, F&BI 303373
Date Extracted:	03/27/23	Lab ID:	03-803 mb2
Date Analyzed:	03/28/23	Data File:	032816.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	4 vo	14	115
Phenol-d6	36	29	121
Nitrobenzene-d5	21	16	137
2-Fluorobiphenyl	82	46	122
2,4,6-Tribromophenol	107	17	154
Terphenyl-d14	107	31	167

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1 js	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01 js	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01 js	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j js	Phenanthrene	<0.002
2-Methylphenol	<0.063 j js	Anthracene	<0.002
Hexachloroethane	<0.01 js	Di-n-butyl phthalate	<0.1
3-Methylphenol + 4-Methylphenol	<0.2 js	Fluoranthene	<0.002
2,4-Dimethylphenol	<0.029 j	Pyrene	<0.002
Benzoic acid	<0.5 ca	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	<0.002
Naphthalene	<0.002	Chrysene	<0.002
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	<0.002	Di-n-octyl phthalate	<0.1
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	<0.002
Acenaphthylene	<0.002	Benzo(b)fluoranthene	<0.002
Acenaphthene	<0.002	Benzo(k)fluoranthene	<0.002
Dibenzofuran	<0.01	Indeno(1,2,3-cd)pyrene	<0.002
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	<0.002
Fluorene	<0.002	Benzo(g,h,i)perylene	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-11G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303373-02 1/6
Date Analyzed:	03/27/23	Data File:	032710.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	66	11	184
Decachlorobiphenyl	63	25	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	<0.004
Aroclor 1248	<0.004
Aroclor 1254	0.033
Aroclor 1260	0.034
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-14G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303373-03 1/6
Date Analyzed:	03/27/23	Data File:	032715.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	63	11	184
Decachlorobiphenyl	72	25	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	<0.004
Aroclor 1248	<0.004
Aroclor 1254	0.013
Aroclor 1260	0.0070
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-24G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303373-05 1/6
Date Analyzed:	03/27/23	Data File:	032716.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	78	11	184
Decachlorobiphenyl	81	25	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.008
Aroclor 1232	<0.008
Aroclor 1016	<0.008
Aroclor 1242	<0.008
Aroclor 1248	<0.008
Aroclor 1254	0.013
Aroclor 1260	<0.008
Aroclor 1262	<0.008
Aroclor 1268	<0.008

Note: Reporting limits were raised due to high moisture level in the sample.

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-23G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303373-06 1/6
Date Analyzed:	03/27/23	Data File:	032720.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	78	11	184
Decachlorobiphenyl	95	25	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.008
Aroclor 1232	<0.008
Aroclor 1016	<0.008
Aroclor 1242	<0.008
Aroclor 1248	<0.008
Aroclor 1254	0.015
Aroclor 1260	0.0084
Aroclor 1262	<0.008
Aroclor 1268	<0.008

Note: Reporting limits were raised due to high moisture level in the sample.

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-14C:0-1	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303373-27 1/6
Date Analyzed:	03/27/23	Data File:	032721.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	72	11	184
Decachlorobiphenyl	78	25	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	<0.004
Aroclor 1248	<0.004
Aroclor 1254	0.013
Aroclor 1260	0.0096
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-14C:1-3	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303373-28 1/6
Date Analyzed:	03/27/23	Data File:	032723.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	75	11	184
Decachlorobiphenyl	87	25	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	<0.004
Aroclor 1248	<0.004
Aroclor 1254	0.0044
Aroclor 1260	<0.004
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-DUPC	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303373-31 1/6
Date Analyzed:	03/28/23	Data File:	032818.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	68	11	184
Decachlorobiphenyl	86	25	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	<0.004
Aroclor 1248	<0.004
Aroclor 1254	0.014
Aroclor 1260	0.0098
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Leon Environmental
Date Received:	Not Applicable	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	03-798 mb 1/2
Date Analyzed:	03/24/23	Data File:	032404.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	35	11	184
Decachlorobiphenyl	38	25	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.0013
Aroclor 1232	<0.0013
Aroclor 1016	<0.0013
Aroclor 1242	<0.0013
Aroclor 1248	<0.0013
Aroclor 1254	<0.0013
Aroclor 1260	<0.0013
Aroclor 1262	<0.0013
Aroclor 1268	<0.0013

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-11G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-02 1/15
Date Analyzed:	03/28/23	Data File:	032822A.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	69	32	117
Decachlorobiphenyl	76	32	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050
beta-BHC	<0.00050
delta-BHC	<0.00050
Heptachlor	<0.00050
Aldrin	<0.0017
Heptachlor Epoxide	<0.00050
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.012
Endrin	<0.0025
4,4'-DDD	<0.0025
Endosulfan II	<0.001
4,4'-DDT	<0.0035
Endrin Aldehyde	<0.001
Methoxychlor	<0.005
Endosulfan Sulfate	<0.001 ca
Endrin Ketone	<0.001
Toxaphene	<0.025 ca

Note: RL for dieldrin, endrin, 4,4'-DDD, and 4,4'-DDT increased due to the presence of the interfering compounds.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-14G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-03 1/15
Date Analyzed:	03/29/23	Data File:	032920.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	83	11	137
Decachlorobiphenyl	102	50	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050
beta-BHC	<0.00050
delta-BHC	<0.00050
Heptachlor	<0.00050 ca
Aldrin	<0.0017
Heptachlor Epoxide	<0.00050
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001
Endrin	<0.001
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.0012 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001
Toxaphene	<0.025 ca

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-14G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-03 1/75
Date Analyzed:	04/05/23	Data File:	040517.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	74 d	32	117
Decachlorobiphenyl	87 d	32	150

Compounds:	Concentration mg/kg (ppm)
Heptachlor	<0.0025
4,4'-DDT	<0.005 ca
Methoxychlor	<0.025 ca
Toxaphene	<0.125 ca

Note: RL for 4,4'-DDT increased due to the presence of the interfering compounds.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-24G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-05 1/15
Date Analyzed:	03/29/23	Data File:	032921.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	80	11	137
Decachlorobiphenyl	98	50	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.001
gamma-BHC (Lindane)	<0.001
beta-BHC	<0.001
delta-BHC	<0.001
Heptachlor	<0.001 ca
Aldrin	<0.0034
Heptachlor Epoxide	<0.001
trans-Chlordane	<0.0034
cis-Chlordane	<0.001
4,4'-DDE	<0.002
Endosulfan I	<0.001
Dieldrin	<0.002
Endrin	<0.002
4,4'-DDD	<0.002
Endosulfan II	<0.002
4,4'-DDT	<0.002 ca
Methoxychlor	<0.01 ca
Endosulfan Sulfate	<0.002 ca
Toxaphene	<0.05 ca

Note: Reporting limits were raised due to high moisture content in the sample.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-24G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-05 1/75
Date Analyzed:	04/05/23	Data File:	040518.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	72 d	32	117
Decachlorobiphenyl	87 d	32	150

Compounds:	Concentration mg/kg (ppm)
Heptachlor	<0.005
4,4'-DDT	<0.01 ca
Methoxychlor	<0.05 ca
Endosulfan Sulfate	<0.01
Toxaphene	<0.25 ca

Note: Reporting limits were raised due to high moisture content in the sample.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-23G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-06 1/15
Date Analyzed:	03/29/23	Data File:	032922.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	89	11	137
Decachlorobiphenyl	108	50	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.001
gamma-BHC (Lindane)	<0.001
beta-BHC	<0.001
delta-BHC	<0.001
Heptachlor	<0.001 ca
Aldrin	<0.0034
Heptachlor Epoxide	<0.001
trans-Chlordane	<0.0034
cis-Chlordane	<0.001
4,4'-DDE	<0.002
Endosulfan I	<0.001
Dieldrin	<0.002
Endrin	<0.002
4,4'-DDD	<0.002
Endosulfan II	<0.002
4,4'-DDT	<0.002 ca
Methoxychlor	<0.01 ca
Endosulfan Sulfate	<0.002 ca
Toxaphene	<0.05 ca

Note: Reporting limits were raised due to high moisture content in the sample.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-23G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-06 1/75
Date Analyzed:	04/05/23	Data File:	040519.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	85 d	32	117
Decachlorobiphenyl	96 d	32	150

Compounds:	Concentration mg/kg (ppm)
Heptachlor	<0.005
4,4'-DDT	<0.01 ca
Methoxychlor	<0.05 ca
Endosulfan Sulfate	<0.01
Toxaphene	<0.25 ca

Note: Reporting limits were raised due to high moisture content in the sample.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-22G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-07 1/15
Date Analyzed:	03/29/23	Data File:	032923.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	70	11	137
Decachlorobiphenyl	93	50	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050
beta-BHC	<0.00050
delta-BHC	<0.00050
Heptachlor	<0.00050 ca
Aldrin	<0.0017
Heptachlor Epoxide	<0.00050
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001
Endrin	<0.001
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.001 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001 ca
Toxaphene	<0.025 ca

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-21G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-08 1/15
Date Analyzed:	03/29/23	Data File:	032924.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	79	11	137
Decachlorobiphenyl	102	50	150

Compounds:	Concentration mg/kg (ppm)
Heptachlor	<0.001
4,4'-DDT	<0.002 ca
Methoxychlor	<0.01 ca
Endosulfan Sulfate	<0.002
Toxaphene	<0.05 ca

Note: Reporting limits were raised due to high moisture content in the sample.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-21G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-08 1/75
Date Analyzed:	04/05/23	Data File:	040521.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	73 d	32	117
Decachlorobiphenyl	84 d	32	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.005
gamma-BHC (Lindane)	<0.005
beta-BHC	<0.005
delta-BHC	<0.005
Heptachlor	<0.005
Aldrin	<0.017
Heptachlor Epoxide	<0.005
trans-Chlordane	<0.017
cis-Chlordane	<0.005
4,4'-DDE	<0.01
Endosulfan I	<0.005
Dieldrin	<0.01
Endrin	<0.01
4,4'-DDD	<0.01
Endosulfan II	<0.01
4,4'-DDT	<0.01 ca
Methoxychlor	<0.05 ca
Endosulfan Sulfate	<0.01
Toxaphene	<0.25 ca

Note: Reporting limits were raised due to high moisture content in the sample.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-03G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-09 1/15
Date Analyzed:	03/29/23	Data File:	032925.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	76	11	137
Decachlorobiphenyl	107	50	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050
beta-BHC	<0.00050
delta-BHC	0.00054
Heptachlor	<0.00050 ca
Aldrin	<0.0017
Heptachlor Epoxide	<0.00050
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001
Endrin	<0.001
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.001 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001 ca
Toxaphene	<0.025 ca

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-03G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-09 1/75
Date Analyzed:	04/05/23	Data File:	040522.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	69 d	32	117
Decachlorobiphenyl	87 d	32	150

Compounds:	Concentration mg/kg (ppm)
Heptachlor	<0.0025
4,4'-DDT	<0.005 ca
Methoxychlor	<0.025 ca
Endosulfan Sulfate	<0.005
Toxaphene	<0.125 ca

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-20G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-10 1/15
Date Analyzed:	03/29/23	Data File:	032926.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	64	11	137
Decachlorobiphenyl	91	50	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050
beta-BHC	<0.00050
delta-BHC	<0.00050
Heptachlor	<0.00050 ca
Aldrin	<0.0017
Heptachlor Epoxide	<0.00050
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001
Endrin	<0.001
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.001 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001 ca
Toxaphene	<0.025 ca

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-20G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-10 1/75
Date Analyzed:	04/05/23	Data File:	040523.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	57 d	32	117
Decachlorobiphenyl	74 d	32	150

Compounds:	Concentration mg/kg (ppm)
Heptachlor	<0.0025
4,4'-DDT	<0.005 ca
Methoxychlor	<0.025 ca
Endosulfan Sulfate	<0.005
Toxaphene	<0.125 ca

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-18G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-11 1/15
Date Analyzed:	03/29/23	Data File:	032927.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	45	11	137
Decachlorobiphenyl	64	50	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050
beta-BHC	<0.00050
delta-BHC	<0.00050
Heptachlor	<0.00050 ca
Aldrin	<0.0017
Heptachlor Epoxide	<0.00050
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001
Endrin	<0.001
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.001 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001 ca
Toxaphene	<0.025 ca

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-18G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-11 1/75
Date Analyzed:	04/05/23	Data File:	040524.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	42 d	32	117
Decachlorobiphenyl	48 d	32	150

Compounds:	Concentration mg/kg (ppm)
Heptachlor	<0.0025
4,4'-DDT	<0.005 ca
Methoxychlor	<0.025 ca
Endosulfan Sulfate	<0.005
Toxaphene	<0.125 ca

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-19G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-12 1/15
Date Analyzed:	04/07/23	Data File:	040712.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	49	32	117
Decachlorobiphenyl	89	32	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050
beta-BHC	<0.00050
delta-BHC	<0.00050
Heptachlor	<0.00050
Aldrin	<0.0017
Heptachlor Epoxide	<0.00050
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001
Endrin	<0.001
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.001
Endrin Aldehyde	<0.001
Methoxychlor	<0.005
Endosulfan Sulfate	<0.001
Endrin Ketone	<0.001
Toxaphene	<0.025

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-01G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-13 1/15
Date Analyzed:	03/29/23	Data File:	032932.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	79	11	137
Decachlorobiphenyl	96	50	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050 ca
beta-BHC	<0.00050 ca
delta-BHC	<0.00070
Heptachlor	<0.00050 ca
Aldrin	<0.0017
Heptachlor Epoxide	<0.00050
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001 ca
Endrin	<0.001 ca
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.001 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001 ca
Toxaphene	<0.025 ca

Note: RL for delta-BHC increased due to the presence of the interfering compounds.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-01G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-13 1/75
Date Analyzed:	04/05/23	Data File:	040526.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	71 d	32	117
Decachlorobiphenyl	81 d	32	150

Compounds:	Concentration mg/kg (ppm)
gamma-BHC (Lindane)	<0.0025
beta-BHC	<0.0025
Heptachlor	<0.0025
Dieldrin	<0.005
Endrin	<0.005
4,4'-DDT	<0.005 ca
Methoxychlor	<0.025 ca
Endosulfan Sulfate	<0.005
Toxaphene	<0.125 ca

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-01C:0-1	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-14 1/15
Date Analyzed:	03/29/23	Data File:	032933.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	87	11	137
Decachlorobiphenyl	111 ca	50	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050 ca
beta-BHC	<0.00050 ca
delta-BHC	<0.00070
Heptachlor	<0.00050 ca
Aldrin	<0.0017
Heptachlor Epoxide	<0.00050
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001 ca
Endrin	<0.001 ca
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.001 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001 ac
Toxaphene	<0.025 ca

Note: RL for delta-BHC increased due to the presence of the interfering compounds.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-01C:0-1	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-14 1/75
Date Analyzed:	04/05/23	Data File:	040527.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	75 d	32	117
Decachlorobiphenyl	96 d	32	150

Compounds:	Concentration mg/kg (ppm)
gamma-BHC (Lindane)	<0.0025
beta-BHC	<0.0025
Heptachlor	<0.0025
Dieldrin	<0.005
Endrin	<0.005
4,4'-DDT	<0.005 ca
Methoxychlor	<0.025 ca
Endosulfan Sulfate	<0.005
Toxaphene	<0.125 ca

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-05C:0-1	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-18 1/15
Date Analyzed:	03/29/23	Data File:	032934.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	85	11	137
Decachlorobiphenyl	18 ca	50	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	0.00095
gamma-BHC (Lindane)	<0.00050 ca
beta-BHC	<0.00050 ca
delta-BHC	0.00070
Heptachlor	<0.00050 ca
Aldrin	<0.0017
Heptachlor Epoxide	0.001
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001 ca
Endrin	<0.001 ca
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.001 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001 ca
Toxaphene	<0.025 ca

Note: RL for delta-BHC and heptachlor epoxide increased due to the presence of the interfering compounds.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-05C:0-1	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-18 1/75
Date Analyzed:	04/05/23	Data File:	040528.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	77 d	32	117
Decachlorobiphenyl	85 d	32	150

Compounds:	Concentration mg/kg (ppm)
gamma-BHC (Lindane)	<0.0025
beta-BHC	<0.0025
Heptachlor	<0.0025
Endosulfan I	<0.0025
Dieldrin	<0.005
Endrin	<0.005
4,4'-DDT	<0.005 ca
Methoxychlor	<0.025 ca
Endosulfan Sulfate	<0.005
Toxaphene	<0.125 ca

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-05G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-22 1/15
Date Analyzed:	03/29/23	Data File:	032935.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	83	11	137
Decachlorobiphenyl	96 ca	50	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050 ca
beta-BHC	<0.00050 ca
delta-BHC	<0.00050
Heptachlor	<0.00050 ca
Aldrin	<0.0017
Heptachlor Epoxide	<0.00050
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001 ca
Endrin	<0.001 ca
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.001 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001 ca
Toxaphene	<0.025 ca

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-05G:0-10	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-22 1/75
Date Analyzed:	04/05/23	Data File:	040532.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	74d	32	117
Decachlorobiphenyl	94 d	32	150

Compounds:	Concentration mg/kg (ppm)
gamma-BHC (Lindane)	<0.0025
beta-BHC	<0.0025
Heptachlor	<0.0025
Dieldrin	<0.005
Endrin	<0.005
4,4'-DDT	<0.005 ca
Methoxychlor	<0.025 ca
Endosulfan Sulfate	<0.005
Toxaphene	<0.125 ca

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-03C:0-1	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-23 1/15
Date Analyzed:	03/29/23	Data File:	032936.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	93	11	137
Decachlorobiphenyl	119 ca	50	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050 ca
beta-BHC	<0.00050 ca
delta-BHC	<0.00070
Heptachlor	<0.00050 ca
Aldrin	<0.0017
Heptachlor Epoxide	<0.002
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001 ca
Endrin	<0.001 ca
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	0.0017 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001 ca
Toxaphene	<0.025 ca

Note: RL for delta-BHC and heptachlor epoxide increased due to the presence of the interfering compounds.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-03C:0-1	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-23 1/75
Date Analyzed:	04/05/23	Data File:	040533.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	82 d	32	117
Decachlorobiphenyl	93 d	32	150

Compounds:	Concentration mg/kg (ppm)
gamma-BHC (Lindane)	<0.0025
beta-BHC	<0.0025
Heptachlor	<0.0025
Dieldrin	<0.005
Endrin	<0.005
4,4'-DDT	<0.005 ca
Methoxychlor	<0.025 ca
Endosulfan Sulfate	<0.005
Toxaphene	<0.125 ca

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-14C:0-1	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-27 1/15
Date Analyzed:	03/29/23	Data File:	032937.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	89	11	137
Decachlorobiphenyl	116 ca	50	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050 ca
beta-BHC	<0.00050 ca
delta-BHC	<0.00050
Heptachlor	<0.00050 ca
Aldrin	<0.0017
Heptachlor Epoxide	<0.001
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001 ca
Endrin	<0.001 ca
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.001 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001 ca
Toxaphene	<0.025 ca

Note: RL for heptachlor epoxide increased due to the presence of the interfering compounds.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-14C:0-1	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-27 1/75
Date Analyzed:	04/05/23	Data File:	040534.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	80 d	32	117
Decachlorobiphenyl	88 d	32	150

Compounds:	Concentration mg/kg (ppm)
gamma-BHC (Lindane)	<0.0025
beta-BHC	<0.0025
Heptachlor	<0.0025
Dieldrin	<0.005
Endrin	<0.005
4,4'-DDT	<0.005 ca
Methoxychlor	<0.025 ca
Endosulfan Sulfate	<0.005
Toxaphene	<0.125 ca

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-14C:1-3	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-28 1/15
Date Analyzed:	03/29/23	Data File:	032938.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	66	11	137
Decachlorobiphenyl	101 ca	50	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050 ca
beta-BHC	<0.00050 ca
delta-BHC	<0.00050
Heptachlor	<0.00050 ca
Aldrin	<0.0017
Heptachlor Epoxide	<0.001
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001 ca
Endrin	<0.001 ca
4,4'-DDD	<0.0012
Endosulfan II	<0.001
4,4'-DDT	<0.001 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001 ca
Toxaphene	<0.025 ca

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-14C:1-3	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-28 1/75
Date Analyzed:	04/05/23	Data File:	040535.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	57 d	32	117
Decachlorobiphenyl	73 d	32	150

Compounds:	Concentration mg/kg (ppm)
gamma-BHC (Lindane)	<0.0025
beta-BHC	<0.0025
Heptachlor	<0.0025
Dieldrin	<0.005
Endrin	<0.005
4,4'-DDT	<0.005 ca
Methoxychlor	<0.025 ca
Endosulfan Sulfate	<0.005
Toxaphene	<0.125 ca

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-DUPC	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-31 1/15
Date Analyzed:	03/29/23	Data File:	032939.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	78	11	137
Decachlorobiphenyl	103 ca	50	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050 ca
beta-BHC	<0.00050 ca
delta-BHC	<0.00050
Heptachlor	<0.00050 ca
Aldrin	<0.0017
Heptachlor Epoxide	<0.001
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001 ca
Endrin	<0.001ca
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.0012 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001 ca
Toxaphene	<0.025 ca

Note: RL for heptachlor epoxide and 4,4'-DDT increased due to the presence of the interfering compounds.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-DUPC	Client:	Leon Environmental
Date Received:	03/23/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	303373-31 1/75
Date Analyzed:	04/05/23	Data File:	040536.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	68 d	32	117
Decachlorobiphenyl	88 d	32	150

Compounds:	Concentration mg/kg (ppm)
gamma-BHC (Lindane)	<0.0025
beta-BHC	<0.0025
Heptachlor	<0.0025
Dieldrin	<0.005
Endrin	<0.005
4,4'-DDT	<0.005 ca
Methoxychlor	<0.025 ca
Endosulfan Sulfate	<0.005
Toxaphene	<0.125 ca

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	Method Blank	Client:	Leon Environmental
Date Received:	Not Applicable	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/27/23	Lab ID:	03-804 mb 1/15
Date Analyzed:	03/27/23	Data File:	032709.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	84	32	117
Decachlorobiphenyl	92	32	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050
beta-BHC	<0.00050
delta-BHC	<0.00050
Heptachlor	<0.00050
Aldrin	<0.0017
Heptachlor Epoxide	<0.00050
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001
Endrin	<0.001
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.001
Endrin Aldehyde	<0.001
Methoxychlor	<0.005
Endosulfan Sulfate	<0.001
Endrin Ketone	<0.001
Toxaphene	<0.025

Date of Report: 04/14/23
Date Received: 03/23/23
Project: Port of Friday Harbor (PoFH) Jensen's Marina, F&BI 303373

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 303352-10 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Antimony	mg/kg (ppm)	20	<1	82	79	75-125	4
Arsenic	mg/kg (ppm)	10	1.85	80	76	75-125	5
Cadmium	mg/kg (ppm)	10	<1	96	91	75-125	5
Chromium	mg/kg (ppm)	50	17.4	84 b	79 b	75-125	6 b
Copper	mg/kg (ppm)	50	17.7	77 b	76 b	75-125	1 b
Lead	mg/kg (ppm)	50	33.8	79 b	60 b	75-125	27 b
Nickel	mg/kg (ppm)	25	13.9	76 b	76 b	75-125	0 b
Silver	mg/kg (ppm)	10	<1	82	78	75-125	5
Zinc	mg/kg (ppm)	50	31.1	77 b	73 b	75-125	5 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Antimony	mg/kg (ppm)	20	98	80-120
Arsenic	mg/kg (ppm)	10	90	80-120
Cadmium	mg/kg (ppm)	10	92	80-120
Chromium	mg/kg (ppm)	50	97	80-120
Copper	mg/kg (ppm)	50	96	80-120
Lead	mg/kg (ppm)	50	96	80-120
Nickel	mg/kg (ppm)	25	95	80-120
Silver	mg/kg (ppm)	10	88	80-120
Zinc	mg/kg (ppm)	50	95	80-120

Date of Report: 04/14/23
Date Received: 03/23/23
Project: Port of Friday Harbor (PoFH) Jensen's Marina, F&BI 303373

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 303352-10 x10 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	ug/L (ppb)	0.01	<0.025	87	115	71-125	28 vo

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	ug/L (ppb)	0.01	107	68-125

Date of Report: 05/08/23
Date Received: 03/23/23
Project: Port of Friday Harbor (PoFH) Jensen's Marina, F&BI 303373

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 303406-02 1/5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Phenol	mg/kg (ppm)	0.83	<0.5	82	86	39-127	5
1,4-Dichlorobenzene	mg/kg (ppm)	0.83	<0.05	77	75	30-113	3
1,2-Dichlorobenzene	mg/kg (ppm)	0.83	<0.05	76	76	34-114	0
Benzyl alcohol	mg/kg (ppm)	4.2	<0.5	80	87	36-121	8
2-Methylphenol	mg/kg (ppm)	0.83	<0.5	80	86	38-120	7
Hexachloroethane	mg/kg (ppm)	0.83	<0.05	77	78	10-207	1
3-Methylphenol + 4-Methylphenol	mg/kg (ppm)	0.83	<1	82	87	39-121	6
2,4-Dimethylphenol	mg/kg (ppm)	0.83	<0.5	73	79	30-127	8
Benzoic acid	mg/kg (ppm)	2.5	<2.5	40	48	10-101	18
1,2,4-Trichlorobenzene	mg/kg (ppm)	0.83	<0.05	78	80	41-112	3
Naphthalene	mg/kg (ppm)	0.83	<0.01	78	81	28-125	4
Hexachlorobutadiene	mg/kg (ppm)	0.83	<0.05	90	92	39-112	2
2-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	86	89	10-192	3
Dimethyl phthalate	mg/kg (ppm)	0.83	<0.5	81	87	50-150	7
Acenaphthylene	mg/kg (ppm)	0.83	<0.01	86	90	45-128	5
Acenaphthene	mg/kg (ppm)	0.83	<0.01	82	86	36-125	5
Dibenzofuran	mg/kg (ppm)	0.83	<0.05	86	89	44-125	3
Diethyl phthalate	mg/kg (ppm)	0.83	<0.5	77	81	48-126	5
Fluorene	mg/kg (ppm)	0.83	<0.01	84	88	48-121	5
N-Nitrosodiphenylamine	mg/kg (ppm)	0.83	<0.05	81	85	10-190	5
Hexachlorobenzene	mg/kg (ppm)	0.83	<0.05	82	86	50-150	5
Pentachlorophenol	mg/kg (ppm)	0.83	<0.25	79	86	18-159	8
Phenanthrene	mg/kg (ppm)	0.83	<0.01	80	84	50-150	5
Anthracene	mg/kg (ppm)	0.83	<0.01	78	81	50-150	4
Di-n-butyl phthalate	mg/kg (ppm)	0.83	<0.5	73	79	43-124	8
Fluoranthene	mg/kg (ppm)	0.83	<0.01	78	81	50-150	4
Pyrene	mg/kg (ppm)	0.83	<0.01	91	93	40-134	2
Benzyl butyl phthalate	mg/kg (ppm)	0.83	<0.5	92	96	50-150	4
Benz(a)anthracene	mg/kg (ppm)	0.83	<0.01	88	92	50-150	4
Chrysene	mg/kg (ppm)	0.83	<0.01	91	95	50-150	4
Bis(2-ethylhexyl) phthalate	mg/kg (ppm)	0.83	<0.8	73	81	45-130	10
Di-n-octyl phthalate	mg/kg (ppm)	0.83	<0.5	72	77	25-161	7
Benzo(a)pyrene	mg/kg (ppm)	0.83	<0.01	76	81	50-150	6
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	<0.01	75	80	50-150	6
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	<0.01	76	80	50-150	5
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	<0.01	82	93	41-134	13
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	<0.01	79	85	44-130	7
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	<0.01	89	95	33-131	7

Date of Report: 05/08/23
Date Received: 03/23/23
Project: Port of Friday Harbor (PoFH) Jensen's Marina, F&BI 303373

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Phenol	mg/kg (ppm)	0.83	88	47-128
1,4-Dichlorobenzene	mg/kg (ppm)	0.83	81	49-108
1,2-Dichlorobenzene	mg/kg (ppm)	0.83	84	50-110
Benzyl alcohol	mg/kg (ppm)	4.2	88	36-147
2-Methylphenol	mg/kg (ppm)	0.83	88	63-112
Hexachloroethane	mg/kg (ppm)	0.83	83	46-112
3-Methylphenol + 4-Methylphenol	mg/kg (ppm)	0.83	89	67-111
2,4-Dimethylphenol	mg/kg (ppm)	0.83	80	53-119
Benzoic acid	mg/kg (ppm)	2.5	59	13-223
1,2,4-Trichlorobenzene	mg/kg (ppm)	0.83	84	58-109
Naphthalene	mg/kg (ppm)	0.83	83	58-108
Hexachlorobutadiene	mg/kg (ppm)	0.83	93	55-108
2-Methylnaphthalene	mg/kg (ppm)	0.83	90	67-109
Dimethyl phthalate	mg/kg (ppm)	0.83	84	70-130
Acenaphthylene	mg/kg (ppm)	0.83	92	70-130
Acenaphthene	mg/kg (ppm)	0.83	87	66-112
Dibenzofuran	mg/kg (ppm)	0.83	92	63-117
Diethyl phthalate	mg/kg (ppm)	0.83	79	64-120
Fluorene	mg/kg (ppm)	0.83	91	67-117
N-Nitrosodiphenylamine	mg/kg (ppm)	0.83	86	70-130
Hexachlorobenzene	mg/kg (ppm)	0.83	89	70-130
Pentachlorophenol	mg/kg (ppm)	0.83	85	60-133
Phenanthrene	mg/kg (ppm)	0.83	87	70-130
Anthracene	mg/kg (ppm)	0.83	85	70-130
Di-n-butyl phthalate	mg/kg (ppm)	0.83	79	54-127
Fluoranthene	mg/kg (ppm)	0.83	86	70-130
Pyrene	mg/kg (ppm)	0.83	94	70-130
Benzyl butyl phthalate	mg/kg (ppm)	0.83	92	65-132
Benz(a)anthracene	mg/kg (ppm)	0.83	95	70-130
Chrysene	mg/kg (ppm)	0.83	99	70-130
Bis(2-ethylhexyl) phthalate	mg/kg (ppm)	0.83	76	59-116
Di-n-octyl phthalate	mg/kg (ppm)	0.83	73	46-129
Benzo(a)pyrene	mg/kg (ppm)	0.83	83	68-120
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	81	69-125
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	83	70-130
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	94	67-129
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	90	67-128
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	101	64-127

Date of Report: 04/14/23
Date Received: 03/23/23
Project: Port of Friday Harbor (PoFH) Jensen's Marina, F&BI 303373

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 303373-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.017	<0.004	132 vo	119 vo	44-107	10
Aroclor 1260	mg/kg (ppm)	0.017	0.023	194 vo	187 vo	38-124	4

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.017	55	55-137
Aroclor 1260	mg/kg (ppm)	0.017	63	51-150

Date of Report: 04/14/23
Date Received: 03/23/23
Project: Port of Friday Harbor (PoFH) Jensen's Marina, F&BI 303373

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR ORGANOCHLORINE PESTICIDES BY EPA METHOD 8081B

Laboratory Code: 303373-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
alpha-BHC	mg/kg (ppm)	0.033	<0.0005	86	79	45-111	8
gamma-BHC (Lindane)	mg/kg (ppm)	0.033	<0.0005	82	66	50-117	22 vo
beta-BHC	mg/kg (ppm)	0.033	<0.0005	74	67	49-109	10
delta-BHC	mg/kg (ppm)	0.033	<0.0005	49	16 vo	39-114	102 vo
Heptachlor	mg/kg (ppm)	0.033	<0.0005	80	59	40-131	30 vo
Aldrin	mg/kg (ppm)	0.033	<0.0017	79	78	44-121	1
Heptachlor Epoxide	mg/kg (ppm)	0.033	<0.0005	83	83	46-122	0
trans-Chlordane	mg/kg (ppm)	0.033	<0.0017	79	84	41-129	6
cis-Chlordane	mg/kg (ppm)	0.033	<0.0005	76	69	44-120	10
4,4'-DDE	mg/kg (ppm)	0.033	<0.001	78	79	41-118	1
Endosulfan I	mg/kg (ppm)	0.033	<0.0005	70	67	45-124	4
Dieldrin	mg/kg (ppm)	0.033	<0.012	74	74	45-130	0
Endrin	mg/kg (ppm)	0.033	<0.0025	98	78	50-140	23 vo
4,4'-DDD	mg/kg (ppm)	0.033	<0.0025	85	80	26-155	6
Endosulfan II	mg/kg (ppm)	0.033	<0.001	78	84	40-135	7
4,4'-DDT	mg/kg (ppm)	0.033	<0.0035	55	16 vo	39-123	110 vo
Methoxychlor	mg/kg (ppm)	0.033	<0.005	64	14 vo	28-162	128 vo
Endosulfan Sulfate	mg/kg (ppm)	0.033	<0.001	49	19 vo	40-141	88 vo
Toxaphene	mg/kg (ppm)	1.3	<0.025	42	36	36-133	15

Date of Report: 04/14/23
Date Received: 03/23/23
Project: Port of Friday Harbor (PoFH) Jensen's Marina, F&BI 303373

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR ORGANOCHLORINE PESTICIDES BY EPA METHOD 8081B

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
alpha-BHC	mg/kg (ppm)	0.033	90	58-117
gamma-BHC (Lindane)	mg/kg (ppm)	0.033	90	60-121
beta-BHC	mg/kg (ppm)	0.033	87	66-120
delta-BHC	mg/kg (ppm)	0.033	84	67-124
Heptachlor	mg/kg (ppm)	0.033	87	58-131
Aldrin	mg/kg (ppm)	0.033	88	63-124
Heptachlor Epoxide	mg/kg (ppm)	0.033	83	67-123
trans-Chlordane	mg/kg (ppm)	0.033	86	60-123
cis-Chlordane	mg/kg (ppm)	0.033	84	70-130
4,4'-DDE	mg/kg (ppm)	0.033	86	70-130
Endosulfan I	mg/kg (ppm)	0.033	84	62-124
Dieldrin	mg/kg (ppm)	0.033	88	70-130
Endrin	mg/kg (ppm)	0.033	104	56-147
4,4'-DDD	mg/kg (ppm)	0.033	88	54-137
Endosulfan II	mg/kg (ppm)	0.033	84	42-140
4,4'-DDT	mg/kg (ppm)	0.033	91	25-169
Methoxychlor	mg/kg (ppm)	0.033	92	44-160
Endosulfan Sulfate	mg/kg (ppm)	0.033	83	39-148
Toxaphene	mg/kg (ppm)	1.3	99	56-145

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased high; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

303373

SAMPLE CHAIN OF CUSTODY 03/23/23 H5

Page # 1 of 4

Report To P. Leon / R. Jones / G. Hainsworth

Company Leon Environmental / CRETE

Address

City, State, ZIP

Phone 832.330.1359 Email

SAMPLERS (*signature*): Rusty Jones R. Jones

PROJECT NAME: Port of Friday Harbor (Path) Jensen's Marina

PO #

REMARKS: Archive for DF; Archive for SMS Pesticides (699); Project specific RLs? - Yes / No

INVOICE TO: Leon Environmental (L-E)

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	Ammonia NWTPH-Dx	Total Sulfides NWTPH-Gx	BTEX EPA 8021	Dioxins/Furans NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	TBT PCBs EPA 8082	Grain Size	TOC, Total Solids	SMS Metals, Hg	SMS SVOCs, PCBs + Pest.	* logged in under SDG 303333 NE Notes
SED-07G:0-10	01 A-F	3/20/23	1002	SOLIDS	8 (6)							X	X	X		X	SVOCs only +1 bioassay bag
SED-11G:0-10	02		0924		8 (6)								X	X	X	X	All SVOC, Pest, PCB +1 bioassay bag
SED-14G:0-10	03 A-I		1011		8 (10)							X	X	X	X	X	All SVOC, Pest, PCB +1 bioassay bag
SED-15G:0-10	04 A-C		1042		3 (3)							X	X	X			+1 bioassay bag
SED-24G:0-10	05		1106		3 (4)								X	*		X	SMS PCBs +Pest. only
SED-23G:0-10	06		1142		3 (4)								X	*		X	SMS PCBs +Pest only
SED-22G:0-10	07		1158		3 (4)								X	*		X	No SMS SVOCs, PCBs
SED-21G:0-10	08		1210		3 (4)								X	*		X	No SMS, SVOCs, PCBs
SED-03G:0-10	09 A-D		1315		4 (6)								X	X		X	SVOCs + Pest +1 bioassay bag
SED-20G:0-10	10 A-C	↓	1338	↓	4 (5)									*		X	No SMS SVOCs, PCBs

Samples received at 2 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: R. Jones	Rusty Jones	CRETE	3/22/23	2100
Received by:	Preston Martin	NewFields	3/23/23	0500
Relinquished by:	Preston Martin	NewFields	3/23/23	1200
Received by: DeeDee Webber	DeeDee Webber	F+BI	3/23/23	1200

Friedman & Bruya, Inc.
Ph. (206) 285-8282

Samples received at 2 °C

303373

SAMPLE CHAIN OF CUSTODY 03/23/23

H5

Page # 2 of 4

Report To Leon Jones Hainsworth

Company L-E CRETE

Address

City, State, ZIP

Phone 857.330.1359 Email

SAMPLERS (*signature*) Rusty Jones R. Jones

PROJECT NAME: PoFH Jensen's Marina

PO #

REMARKS: Archive for D/F, SMS Pest. (1699), others

Project specific RLs? - Yes / No

INVOICE TO: L-E

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	Ammonia	Total Sulfides	NWTPH-Dx	BTEX EPA 8021	Dioxins/Furans NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Grain Size	TOC, Total Solids	SMS Metals Hg	SMS SVOCs, PCBs + Pests	Notes
SED-18G:0-10	11 A-C	3/20/23	1408	SOLIDS	3 (4)									X	X		X	No SVOCs ORDCBs
SED-19G:0-10	12 A-D		1427		5 (4)									X	X		X	No SVOCs ORDCBs
SED-01G:0-10	13 A-F		1445		8 (6)	X	X							(X)	(X)		(X)	Pest only +1 biossay bag
SED-01C:0-1	14	3/21/23	1151	SOLIDS	6									X	X		X	SMS Pest. only
SED-01C:1-3	15 A-B		1151		2													ARCHIVE ALL
SED-01C:3-5	16		1151		2													
SED-01C:5-7	17		1151		2													
SED-05C:0-1	18 A-F		1244		6									X	X		X	No PCBs
SED-05C:1-3	19 A-B		1244		2													ARCHIVE ALL
SED-05C:3-5	20		1244		2													

Samples received at 2oC

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: R. Jones	Rusty Jones	CRETE	3/22/23	2100
Received by:	Preston Martin	NewFields	3/23/23	0500
Relinquished by:	Preston Martin	NewFields	3/23/23	1200
Received by: DeeDee Hoh	DeeDee Webster	F+BI	3/23/23	1200

Friedman & Bruya, Inc.
Ph. (206) 285-8282

303373

SAMPLE CHAIN OF CUSTODY 03/23/23

H5

Page # 3 of 4

Report To Leon/Jones/Hainsworth

Company L-E/CRETE

Address

City, State, ZIP

Phone 952.330.1359 Email

SAMPLERS (signature) Rusty Jones / K. Jones	
PROJECT NAME PoFH Jensen's Marina	PO #
REMARKS Archive for DF SMS Pest/UBM, others Project specific RLs? - Yes / No	INVOICE TO L-E

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: SMS Solids NWTPH Dx	SMS Solids NWTPH-Gx	SMS Solids BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	Amended Sulfides PAHs EPA 8270	SMS Metals, Hg PCBs EPA 8082	Grain Size	Toc Total Solids	Dioxins/Furans	TBT	Notes
SED-05C:5-7	21 A-B	3/21/23	1244	SOLIDS	2												ARCHIVE ALL
SED-05G:0-10	22 A-H		1310		8	X		X			X		X	X			+1 bioassay bag
SED-03C:0-1	23 A-F		1442		6	X		X					X	X			
SED-03C:1-3	24 A-B		1442		2												ARCHIVE ALL
SED-03C:3-5	25		1442		2												↓ ↓
SED-03C:5-7	26 ↓		1442		2												↓ ↓
SED-14C:0-1	27 A-I		1553		10	X	X	X				X	X	X	X	X	No D/F (Archive)
SED-14C:1-3	28 A B		1553		2	X	X	X					X	X	X	X	No D/F (Archive)
SED-14C:3-5	29		1553		2												ARCHIVE ALL
SED-14C:5-7	30 A B	↓	1533	↓	2												↓ ↓

Samples received at 2 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: R. Jones	Rusty Jones	CRETE	3/22/23	2100
Received by:	Preston Martin	NewFields	3/23/23	0500
Relinquished by:	Preston Martin	NewFields	3/23/23	12.00
Received by: DeeDee Webber	DeeDee Webber	F&BI	3/23/23	1200

Friedman & Bruya, Inc.
Ph. (206) 285-8282

303373

SAMPLE CHAIN OF CUSTODY

03/23/23 ~~HS~~ HS

Page # 4 of 4

Report To Leon | Jones | Hainsworth

Company L-E | CRETE

Address

City, State, ZIP

Phone 832.330.1359 Email

SAMPLERS (signature) Rusty Jones

PROJECT NAME: Pt Jensen's Marina

PO #

REMARKS: Archive for D/F, SMS Pest (1668), other

Project specific RLs? - Yes / No

INVOICE TO: L-E

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: SMS SVOCs NWTPH-Dx SIM	SMS PCBs NWTPH-Gx SIM	SMS Pesticides BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	SMS Metals Hg PCBs EPA 8082	Grain Size	TOC, Total Solids	Dioxins/Furans	TBT	Notes
SED-DUP C	~~35~~ 31 A-I	3.21.2023	1200	SOLIDS	8	X	X	X				X	X	X		X	Archive others
SED-07C:0-1	32 A-B	3.22.2023	0729		2												Archive
SED-07C:1-3	33		0729		2												Archive
SED-07C:3-5	34 A-D		0729		4												Archive all
SED-07C:5-7	35 A-D		0729		4												Archive all
~~SED-DUP2C+0-1F1~~	~~36~~	~~3/22/23~~	1200										X				~~Added at lab.~~ (NP) 3/23/23 moved to
																	SDG 303808MG
										Samples received at 2 °C							

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Rusty Jones	CRETE	3/22/23	2100
Received by:	Preston Martin	NewFields	3/23/23	0500
Relinquished by:	Preston Martin	NewFields	3/23/23	1200
Received by:	DeeDee Webber	F+BT	3/23/23	1200

Friedman & Bruya, Inc.
Ph. (206) 285-8282

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER
ARI

PROJECT NAME/NO.	PO #
303373	D-221

REMARKS

merdahl@friedmanandbruya.co

TURNAROUND TIME
☒ Standard TAT
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	TBT	TOC	Total Solids	Dioxins/Furans	Ammonia	Total Sulfides					Notes
						ANALYSES REQUESTED										
SED-07G:0-10		3/20/2023	1002	sediment		X	X	X								
SED-11G:0-10		3/20/2023	924	sediment			X	X								
SED-14G:0-10		3/20/2023	1011	sediment		X	X	X								
SED-15G:0-10		3/20/2023	1042	sediment		X	X	X								
SED-03G:0-10		3/20/2023	1315	sediment			X	X								
SED-01G:0-10		3/20/2023	1445	sediment			X	X								
SED-01C:0-1		3/21/2023	1151	sediment			X	X								
SED-05C:0-1		3/21/2023	1244	sediment			X	X								
SED-05G:0-10		3/21/2023	1310	sediment			X	X		X	X					
SED-03C:0-1		3/21/2023	1442	sediment			X	X								
SED-14C:0-1		3/21/2023	1553	sediment		X	X	X								
SED-14C:1-3		3/21/2023	1553	sediment		X	X	X								
SED-DUPC		3/21/2023	1200	sediment		X	X	X								

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	3/24/23	
Received by:					
Relinquished by:					
Received by:					

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

April 14, 2023

Peter Leon, Project Manager
Leon Environmental
8047 Burke Ave N
Seattle, WA 98103

Dear Mr Leon:

Included are the results from the testing of material submitted on March 24, 2023 from the Port of Friday Harbor Jensen's Marina, F&BI 303388 project. There are 60 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Rusty Jones, Grant Hainsworth
NAA0414R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

May 19, 2023

Peter Leon, Project Manager
Leon Environmental
8047 Burke Ave N
Seattle, WA 98103

Dear Mr Leon:

Included is the amended report from the testing of material submitted on March 24, 2023 from the Port of Friday Harbor Jensen's Marina, F&BI 303388 project. To reach the total organic carbon normalized SMS criteria, 1,2,4-trichlorobenzene, hexachlorobenzene, and butyl benzyl phthalate were lowered to the method detection limit.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Rusty Jones, Grant Hainsworth
NAA0508R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

May 8, 2023

Peter Leon, Project Manager
Leon Environmental
8047 Burke Ave N
Seattle, WA 98103

Dear Mr Leon:

Included are the additional results from the testing of material submitted on March 24, 2023 from the Port of Friday Harbor Jensen's Marina, F&BI 303388 project. There are 19 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Rusty Jones, Grant Hainsworth
NAA0508R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on March 24, 2023 by Friedman & Bruya, Inc. from the Crete Consulting Port of Friday Harbor Jensen's Marina, F&BI 303388 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Crete Consulting
303388 -01	SED-07C:0-1
303388 -02	SED-07C:1-3
303388 -03	SED-08C:0-1
303388 -04	SED-08C:1-3
303388 -05	SED-08C:3-5
303388 -06	SED-08C:5-7
303388 -07	SED-09C:0-1
303388 -08	SED-09C:1-3
303388 -09	SED-09C:3-5
303388 -10	SED-09C:5-7
303388 -11	SED-12C:0-1
303388 -12	SED-12C:1-3
303388 -13	SED-26C:0-1
303388 -14	SED-26C:1-3
303388 -15	SED-26C:3-5
303388 -16	SED-26C:5-7
303388 -17	SED-25C:0-1
303388 -18	SED-25C:1-3
303388 -19	SED-25C:3-5
303388 -20	SED-25C:5-7
303388 -21	SED-27C:0-1
303388 -22	SED-27C:1-3
303388 -23	SED-27C:3-5
303388 -24	SED-27C:5-7
303388 -25	SED-DUP2C
303388 -26	SED-10C:0-1
303388 -27	SED-10C:1-3
303388 -28	SED-10C:3-5
303388 -29	SED-10C:5-6
303388 -30	SED-11C:0-1
303388 -31	SED-11C:1-3
303388 -32	SED-11C:3-5
303388 -33	SED-27G:0-10
303388 -34	SED-DUP3C

Several 8270E compounds failed the calibration standard acceptance criteria. The affected data were flagged accordingly.

CASE NARRATIVE (continued)

Bis(2-ethylhexyl)phthalate exceeded the acceptance criteria in the 8270E laboratory control sample. The compound was not detected, therefore the data were acceptable.

The 8082A matrix spike and matrix spike duplicate exceeded the acceptance criteria. The laboratory control sample passed the acceptance criteria, so the results were likely due to matrix effect.

The 8081B calibration standard failed the acceptance criteria for several pesticides. The data were flagged accordingly.

Toxaphene in the 8081B laboratory control sample duplicate exceeded the acceptance criteria. The compound was not detected, therefore the data were acceptable.

The grain size, TBT, dioxin and furan, TOC, total solids, ammonia, and sulfides results will be issued in a separate report.

All other quality control requirements were acceptable.

CASE NARRATIVE (continued)

The 8270 samples were reanalyzed without dilution and several compounds were lowered to the project criteria.

Bis(2-ethylhexyl)phthalate exceeded the acceptance criteria in the 8270E laboratory control sample. The compound was not detected, therefore the data were acceptable.

An 8270E internal standard failed the acceptance criteria for sample SED-26C:0-1. The sample was diluted and reanalyzed with acceptable results. Both data sets were reported.

All other quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	SED-09C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-07
Date Analyzed:	03/24/23	Data File:	303388-07.080
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<2
Arsenic	3.84
Cadmium	0.848
Chromium	10.5
Copper	47.4
Lead	10.7
Nickel	7.59
Silver	<1
Zinc	76.7

Analysis For Total Metals By EPA Method 6020B

Client ID:	SED-09C:1-3	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-08
Date Analyzed:	03/24/23	Data File:	303388-08.081
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<2
Arsenic	2.57
Cadmium	0.562
Chromium	8.16
Copper	5.27
Lead	0.843
Nickel	6.22
Silver	<1
Zinc	13.6

Analysis For Total Metals By EPA Method 6020B

Client ID:	SED-26C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-13
Date Analyzed:	03/24/23	Data File:	303388-13.122
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<2
Arsenic	6.99
Cadmium	1.38
Chromium	15.0
Copper	259
Lead	27.1
Nickel	10.5
Silver	<1
Zinc	74.2

Analysis For Total Metals By EPA Method 6020B

Client ID:	SED-26C:1-3	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-14
Date Analyzed:	03/24/23	Data File:	303388-14.083
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<2
Arsenic	1.94
Cadmium	1.38
Chromium	7.29
Copper	18.3
Lead	3.58
Nickel	5.47
Silver	<1
Zinc	19.0

Analysis For Total Metals By EPA Method 6020B

Client ID:	SED-25C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-17
Date Analyzed:	03/24/23	Data File:	303388-17.084
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<2
Arsenic	2.65
Cadmium	1.34
Chromium	8.80
Copper	26.6
Lead	8.70
Nickel	7.01
Silver	<1
Zinc	30.8

Analysis For Total Metals By EPA Method 6020B

Client ID:	SED-25C:1-3	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-18
Date Analyzed:	03/24/23	Data File:	303388-18.085
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<2
Arsenic	2.03
Cadmium	1.34
Chromium	6.57
Copper	8.92
Lead	2.90
Nickel	5.62
Silver	<1
Zinc	16.6

Analysis For Total Metals By EPA Method 6020B

Client ID:	SED-10C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-26
Date Analyzed:	03/24/23	Data File:	303388-26.086
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<2
Arsenic	4.60
Cadmium	0.443
Chromium	8.92
Copper	152
Lead	26.5
Nickel	8.22
Silver	<1
Zinc	105

Analysis For Total Metals By EPA Method 6020B

Client ID:	SED-10C:1-3	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-27
Date Analyzed:	03/24/23	Data File:	303388-27.087
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<2
Arsenic	4.27
Cadmium	0.532
Chromium	7.58
Copper	24.8
Lead	15.8
Nickel	6.47
Silver	<1
Zinc	27.3

Analysis For Total Metals By EPA Method 6020B

Client ID:	SED-11C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-30
Date Analyzed:	03/24/23	Data File:	303388-30.088
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<2
Arsenic	3.70
Cadmium	0.937
Chromium	12.1
Copper	65.0
Lead	25.7
Nickel	7.94
Silver	<1
Zinc	85.2

Analysis For Total Metals By EPA Method 6020B

Client ID:	SED-11C:1-3	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-31
Date Analyzed:	03/24/23	Data File:	303388-31.089
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<2
Arsenic	2.93
Cadmium	0.688
Chromium	8.46
Copper	17.5
Lead	52.7
Nickel	6.39
Silver	<1
Zinc	31.8

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Leon Environmental
Date Received:	Not Applicable	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	I3-221 mb2
Date Analyzed:	03/24/23	Data File:	I3-221 mb2.058
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Antimony	<2
Arsenic	<0.24
Cadmium	<0.2
Chromium	<1
Copper	<1
Lead	<0.2
Nickel	<0.2
Silver	<1
Zinc	<1

Date of Report: 04/14/23
Date Received: 03/24/23
Project: Port of Friday Harbor Jensen's Marina, F&BI 303388
Date Extracted: 03/24/23
Date Analyzed: 03/27/23

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL MERCURY
USING EPA METHOD 1631E
Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Total Mercury
SED-09C:0-1 303388-07	0.10
SED-09C:1-3 303388-08	<0.025
SED-26C:0-1 303388-13	1.2
SED-26C:1-3 303388-14	0.041
SED-25C:0-1 303388-17	0.070
SED-25C:1-3 303388-18	<0.025
SED-10C:0-1 303388-26	1.1
SED-10C:1-3 303388-27	0.15
SED-11C:0-1 303388-30	0.36
SED-11C:1-3 303388-31	0.090
Method Blank I3-221 MB	<0.025

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-07C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor
Date Extracted:	03/28/23	Lab ID:	303388-01
Date Analyzed:	03/29/23	Data File:	032906.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	46	14	115
Phenol-d6	56	29	121
Nitrobenzene-d5	49	16	137
2-Fluorobiphenyl	60	46	122
2,4,6-Tribromophenol	82	17	154
Terphenyl-d14	92	31	167

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.020
2-Methylphenol	<0.063 j	Anthracene	0.0075
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	0.050
2,4-Dimethylphenol	<0.029 j	Pyrene	0.079
Benzoic acid	<0.5 ca	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	0.028
Naphthalene	0.0028	Chrysene	0.070
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	0.0024	Di-n-octyl phthalate	<0.1
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	0.12
Acenaphthylene	<0.002	Benzo(b)fluoranthene	0.23
Acenaphthene	<0.002	Benzo(k)fluoranthene	0.079
Dibenzofuran	<0.01	Indeno(1,2,3-cd)pyrene	0.059
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	0.015
Fluorene	0.0026	Benzo(g,h,i)perylene	0.050

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-08C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor
Date Extracted:	03/28/23	Lab ID:	303388-03
Date Analyzed:	04/26/23	Data File:	042615.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	64	22	119
Phenol-d6	74	38	124
Nitrobenzene-d5	63	10	198
2-Fluorobiphenyl	77	45	117
2,4,6-Tribromophenol	80	11	158
Terphenyl-d14	98	50	124

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.36
2-Methylphenol	<0.063 j	Anthracene	0.050
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1 ca
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	1.4
2,4-Dimethylphenol	<0.029 j	Pyrene	1.3
Benzoic acid	<0.5	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	0.25
Naphthalene	0.010	Chrysene	0.58
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	0.012	Di-n-octyl phthalate	<0.1
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	0.28
Acenaphthylene	0.012	Benzo(b)fluoranthene	0.64
Acenaphthene	0.019	Benzo(k)fluoranthene	0.25
Dibenzofuran	0.013	Indeno(1,2,3-cd)pyrene	0.067
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	0.015
Fluorene	0.026	Benzo(g,h,i)perylene	0.048

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-09C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor
Date Extracted:	03/28/23	Lab ID:	303388-07
Date Analyzed:	03/29/23	Data File:	032910.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	56	14	115
Phenol-d6	73	29	121
Nitrobenzene-d5	65	16	137
2-Fluorobiphenyl	79	46	122
2,4,6-Tribromophenol	90	17	154
Terphenyl-d14	104	31	167

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	0.0049 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.11
2-Methylphenol	<0.063 j	Anthracene	0.035
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	0.41
2,4-Dimethylphenol	<0.029 j	Pyrene	0.48
Benzoic acid	<0.5 ca	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.005 j	Benz(a)anthracene	0.14
Naphthalene	0.036	Chrysene	0.30
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	0.016	Di-n-octyl phthalate	<0.1
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	0.14
Acenaphthylene	0.0069	Benzo(b)fluoranthene	0.31
Acenaphthene	0.015	Benzo(k)fluoranthene	0.10
Dibenzofuran	0.011	Indeno(1,2,3-cd)pyrene	0.047
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	0.013
Fluorene	0.022	Benzo(g,h,i)perylene	0.034

Note: The 1,2,4-trichlorobenzene reporting limit was raised. The compound was observed in the blank.

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-09C:1-3	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor
Date Extracted:	03/28/23	Lab ID:	303388-08
Date Analyzed:	03/29/23	Data File:	032908.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	64	14	115
Phenol-d6	78	29	121
Nitrobenzene-d5	71	16	137
2-Fluorobiphenyl	79	46	122
2,4,6-Tribromophenol	86	17	154
Terphenyl-d14	89	31	167

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.0041
2-Methylphenol	<0.063 j	Anthracene	<0.002
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	0.0025
2,4-Dimethylphenol	<0.029 j	Pyrene	0.0029
Benzoic acid	<0.5 ca	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	<0.002
Naphthalene	<0.002	Chrysene	<0.002
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	<0.002	Di-n-octyl phthalate	<0.1
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	<0.002
Acenaphthylene	<0.002	Benzo(b)fluoranthene	<0.002
Acenaphthene	<0.002	Benzo(k)fluoranthene	<0.002
Dibenzofuran	<0.01	Indeno(1,2,3-cd)pyrene	<0.002
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	<0.002
Fluorene	0.0021	Benzo(g,h,i)perylene	<0.002

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-26C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor
Date Extracted:	03/28/23	Lab ID:	303388-13
Date Analyzed:	04/26/23	Data File:	042616.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	60	22	119
Phenol-d6	71	38	124
Nitrobenzene-d5	60	10	198
2-Fluorobiphenyl	71	45	117
2,4,6-Tribromophenol	82	11	158
Terphenyl-d14	106	50	124

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.091
2-Methylphenol	<0.063 j	Anthracene	0.028
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1 ca
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	0.47
2,4-Dimethylphenol	<0.029 j	Pyrene	0.81
Benzoic acid	<0.5	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	0.16
Naphthalene	0.015	Chrysene	0.31
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	0.0099	Di-n-octyl phthalate	<0.1 J
Dimethyl phthalate	0.071 j	Benzo(a)pyrene	0.26 J
Acenaphthylene	0.011	Benzo(b)fluoranthene	0.56 J
Acenaphthene	0.0083	Benzo(k)fluoranthene	0.20 J
Dibenzofuran	<0.01	Indeno(1,2,3-cd)pyrene	0.067 J
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	0.016 J
Fluorene	0.012	Benzo(g,h,i)perylene	0.051 J

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-26C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor
Date Extracted:	03/28/23	Lab ID:	303388-13 1/5
Date Analyzed:	03/29/23	Data File:	032909.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	54 d	14	115
Phenol-d6	68 d	29	121
Nitrobenzene-d5	62 d	16	137
2-Fluorobiphenyl	72 d	46	122
2,4,6-Tribromophenol	88 d	17	154
Terphenyl-d14	88 d	31	167

Compounds:	Concentration mg/kg (ppm)
Di-n-octyl phthalate	<0.5
Benzo(a)pyrene	0.26
Benzo(b)fluoranthene	0.46
Benzo(k)fluoranthene	0.17
Indeno(1,2,3-cd)pyrene	0.12
Dibenz(a,h)anthracene	0.030
Benzo(g,h,i)perylene	0.094

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-26C:1-3	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor
Date Extracted:	03/28/23	Lab ID:	303388-14
Date Analyzed:	03/29/23	Data File:	032911.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	68	14	115
Phenol-d6	81	29	121
Nitrobenzene-d5	74	16	137
2-Fluorobiphenyl	81	46	122
2,4,6-Tribromophenol	90	17	154
Terphenyl-d14	95	31	167

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.011
2-Methylphenol	<0.063 j	Anthracene	0.0029
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	0.049
2,4-Dimethylphenol	<0.029 j	Pyrene	0.071
Benzoic acid	<0.5 ca	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	0.014
Naphthalene	<0.002	Chrysene	0.030
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	0.0021	Di-n-octyl phthalate	<0.1
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	0.031
Acenaphthylene	<0.002	Benzo(b)fluoranthene	0.058
Acenaphthene	<0.002	Benzo(k)fluoranthene	0.019
Dibenzofuran	<0.01	Indeno(1,2,3-cd)pyrene	0.011
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	0.0028
Fluorene	<0.002	Benzo(g,h,i)perylene	0.0083

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-25C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor
Date Extracted:	03/28/23	Lab ID:	303388-17
Date Analyzed:	03/29/23	Data File:	032920.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	47	14	115
Phenol-d6	59	29	121
Nitrobenzene-d5	51	16	137
2-Fluorobiphenyl	60	46	122
2,4,6-Tribromophenol	77	17	154
Terphenyl-d14	85	31	167

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.22
2-Methylphenol	<0.063 j	Anthracene	0.051
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	0.36
2,4-Dimethylphenol	<0.029 j	Pyrene	0.45
Benzoic acid	<0.5 ca	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	0.15
Naphthalene	0.011	Chrysene	0.19
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	0.012	Di-n-octyl phthalate	<0.1
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	0.20
Acenaphthylene	0.0075	Benzo(b)fluoranthene	0.29
Acenaphthene	0.0041	Benzo(k)fluoranthene	0.099
Dibenzofuran	<0.01	Indeno(1,2,3-cd)pyrene	0.046
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	0.0089
Fluorene	0.020	Benzo(g,h,i)perylene	0.040

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-25C:1-3	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor
Date Extracted:	03/28/23	Lab ID:	303388-18
Date Analyzed:	03/29/23	Data File:	032912.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	66	14	115
Phenol-d6	80	29	121
Nitrobenzene-d5	74	16	137
2-Fluorobiphenyl	81	46	122
2,4,6-Tribromophenol	89	17	154
Terphenyl-d14	97	31	167

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.0041
2-Methylphenol	<0.063 j	Anthracene	<0.002
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	0.011
2,4-Dimethylphenol	<0.029 j	Pyrene	0.013
Benzoic acid	<0.5 ca	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	0.0051
Naphthalene	<0.002	Chrysene	0.0068
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	<0.002	Di-n-octyl phthalate	<0.1
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	0.0047
Acenaphthylene	<0.002	Benzo(b)fluoranthene	0.011
Acenaphthene	<0.002	Benzo(k)fluoranthene	0.0033
Dibenzofuran	<0.01	Indeno(1,2,3-cd)pyrene	<0.002
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	<0.002
Fluorene	<0.002	Benzo(g,h,i)perylene	<0.002

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-10C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor
Date Extracted:	03/28/23	Lab ID:	303388-26 1/20
Date Analyzed:	03/29/23	Data File:	032918.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	48 d	14	115
Phenol-d6	69 d	29	121
Nitrobenzene-d5	58 d	16	137
2-Fluorobiphenyl	72 d	46	122
2,4,6-Tribromophenol	100 d	17	154
Terphenyl-d14	88 d	31	167

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<2	N-Nitrosodiphenylamine	<0.2
1,4-Dichlorobenzene	<0.2	Hexachlorobenzene	<0.2
1,2-Dichlorobenzene	<0.2	Pentachlorophenol	<1
Benzyl alcohol	<1.1 j	Phenanthrene	0.25
2-Methylphenol	<1.3 j	Anthracene	0.067
Hexachloroethane	<0.2	Di-n-butyl phthalate	<2
3-Methylphenol + 4-Methylphenol	<4	Fluoranthene	0.54
2,4-Dimethylphenol	<0.58 j	Pyrene	0.57
Benzoic acid	<10 ca	Benzyl butyl phthalate	<1.3 j
1,2,4-Trichlorobenzene	<0.2	Benz(a)anthracene	0.22
Naphthalene	<0.04	Chrysene	0.30
Hexachlorobutadiene	<0.2	Bis(2-ethylhexyl) phthalate	<3.2
2-Methylnaphthalene	<0.04	Di-n-octyl phthalate	<2
Dimethyl phthalate	<1.4 j	Benzo(a)pyrene	0.26
Acenaphthylene	<0.04	Benzo(b)fluoranthene	0.43
Acenaphthene	<0.04	Benzo(k)fluoranthene	0.14
Dibenzofuran	<0.2	Indeno(1,2,3-cd)pyrene	0.069
Diethyl phthalate	<2	Dibenz(a,h)anthracene	<0.04
Fluorene	<0.04	Benzo(g,h,i)perylene	0.055

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-10C:1-3	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor
Date Extracted:	03/28/23	Lab ID:	303388-27
Date Analyzed:	03/29/23	Data File:	032913.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	61	14	115
Phenol-d6	78	29	121
Nitrobenzene-d5	74	16	137
2-Fluorobiphenyl	83	46	122
2,4,6-Tribromophenol	93	17	154
Terphenyl-d14	109	31	167

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.040
2-Methylphenol	<0.063 j	Anthracene	0.0081
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	0.11
2,4-Dimethylphenol	<0.029 j	Pyrene	0.14
Benzoic acid	<0.5 ca	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	0.050
Naphthalene	0.0043	Chrysene	0.059
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	0.0028	Di-n-octyl phthalate	<0.1
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	0.067
Acenaphthylene	0.0036	Benzo(b)fluoranthene	0.084
Acenaphthene	<0.002	Benzo(k)fluoranthene	0.032
Dibenzofuran	<0.01	Indeno(1,2,3-cd)pyrene	0.021
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	0.0048
Fluorene	0.0038	Benzo(g,h,i)perylene	0.018

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-11C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor
Date Extracted:	03/28/23	Lab ID:	303388-30
Date Analyzed:	03/29/23	Data File:	032919.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	43	14	115
Phenol-d6	57	29	121
Nitrobenzene-d5	48	16	137
2-Fluorobiphenyl	59	46	122
2,4,6-Tribromophenol	83	17	154
Terphenyl-d14	99	31	167

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.13
2-Methylphenol	<0.063 j	Anthracene	0.045
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	0.36
2,4-Dimethylphenol	<0.029 j	Pyrene	0.44
Benzoic acid	<0.5 ca	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	0.18
Naphthalene	0.0061	Chrysene	0.27
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	0.0074	Di-n-octyl phthalate	<0.1
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	0.22
Acenaphthylene	0.0054	Benzo(b)fluoranthene	0.46
Acenaphthene	0.013	Benzo(k)fluoranthene	0.15
Dibenzofuran	<0.01	Indeno(1,2,3-cd)pyrene	0.072
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	0.018
Fluorene	0.013	Benzo(g,h,i)perylene	0.060

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SED-11C:1-3	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor
Date Extracted:	03/28/23	Lab ID:	303388-31
Date Analyzed:	03/29/23	Data File:	032914.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	60	14	115
Phenol-d6	77	29	121
Nitrobenzene-d5	69	16	137
2-Fluorobiphenyl	78	46	122
2,4,6-Tribromophenol	82	17	154
Terphenyl-d14	100	31	167

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	0.044
2-Methylphenol	<0.063 j	Anthracene	0.013
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	0.12
2,4-Dimethylphenol	<0.029 j	Pyrene	0.16
Benzoic acid	<0.5 ca	Benzyl butyl phthalate	0.023 j
1,2,4-Trichlorobenzene	<0.005 j	Benz(a)anthracene	0.048
Naphthalene	0.0044	Chrysene	0.058
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	0.0036	Di-n-octyl phthalate	<0.1
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	0.058
Acenaphthylene	0.0033	Benzo(b)fluoranthene	0.096
Acenaphthene	0.0067	Benzo(k)fluoranthene	0.033
Dibenzofuran	<0.01	Indeno(1,2,3-cd)pyrene	0.018
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	0.0039
Fluorene	0.0067	Benzo(g,h,i)perylene	0.015

Note: The 1,2,4-trichlorobenzene reporting limit was raised. The compound was observed in the blank.

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Leon Environmental
Date Received:	Not Applicable	Project:	Port of Friday Harbor
Date Extracted:	03/28/23	Lab ID:	03-809 mb2
Date Analyzed:	03/29/23	Data File:	032905.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	67	14	115
Phenol-d6	80	29	121
Nitrobenzene-d5	74	16	137
2-Fluorobiphenyl	84	46	122
2,4,6-Tribromophenol	88	17	154
Terphenyl-d14	92	31	167

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Phenol	<0.1	N-Nitrosodiphenylamine	<0.01
1,4-Dichlorobenzene	<0.01	Hexachlorobenzene	<0.0021 j
1,2-Dichlorobenzene	<0.01	Pentachlorophenol	<0.05
Benzyl alcohol	<0.057 j	Phenanthrene	<0.002
2-Methylphenol	<0.063 j	Anthracene	<0.002
Hexachloroethane	<0.01	Di-n-butyl phthalate	<0.1
3-Methylphenol + 4-Methylphenol	<0.2	Fluoranthene	<0.002
2,4-Dimethylphenol	<0.029 j	Pyrene	<0.002
Benzoic acid	<0.5 ca	Benzyl butyl phthalate	<0.02 j
1,2,4-Trichlorobenzene	<0.004 j	Benz(a)anthracene	<0.002
Naphthalene	<0.002	Chrysene	<0.002
Hexachlorobutadiene	<0.01	Bis(2-ethylhexyl) phthalate	<0.16
2-Methylnaphthalene	<0.002	Di-n-octyl phthalate	<0.1
Dimethyl phthalate	<0.071 j	Benzo(a)pyrene	<0.002
Acenaphthylene	<0.002	Benzo(b)fluoranthene	<0.002
Acenaphthene	<0.002	Benzo(k)fluoranthene	<0.002
Dibenzofuran	<0.01	Indeno(1,2,3-cd)pyrene	<0.002
Diethyl phthalate	<0.1	Dibenz(a,h)anthracene	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-08C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-03 1/6
Date Analyzed:	03/28/23	Data File:	032820.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	57	11	184
Decachlorobiphenyl	74	25	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	0.022
Aroclor 1248	<0.004
Aroclor 1254	0.019
Aroclor 1260	0.010
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-09C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-07 1/6
Date Analyzed:	03/28/23	Data File:	032821.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	59	11	184
Decachlorobiphenyl	89	25	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	<0.004
Aroclor 1248	<0.004
Aroclor 1254	0.013
Aroclor 1260	0.0087
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-09C:1-3	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-08 1/6
Date Analyzed:	03/27/23	Data File:	032729.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	68	11	184
Decachlorobiphenyl	81	25	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	<0.004
Aroclor 1248	<0.004
Aroclor 1254	<0.004
Aroclor 1260	<0.004
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-12C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-11 1/6
Date Analyzed:	03/28/23	Data File:	032822.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	71	11	184
Decachlorobiphenyl	87	25	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	<0.004
Aroclor 1248	<0.004
Aroclor 1254	0.0047
Aroclor 1260	<0.004
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-26C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-13 1/6
Date Analyzed:	03/28/23	Data File:	032826.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	77	11	184
Decachlorobiphenyl	83	25	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	<0.004
Aroclor 1248	<0.004
Aroclor 1254	0.36 ve
Aroclor 1260	<0.004
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-26C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-13 1/120
Date Analyzed:	04/04/23	Data File:	040418.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	90 d	11	184
Decachlorobiphenyl	90 d	25	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1254	0.51

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-26C:1-3	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-14 1/6
Date Analyzed:	03/28/23	Data File:	032827.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	72	23	120
Decachlorobiphenyl	89	47	114

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	0.0040
Aroclor 1248	<0.004
Aroclor 1254	0.015
Aroclor 1260	<0.004
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-25C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-17 1/6
Date Analyzed:	03/28/23	Data File:	032828.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	53	11	184
Decachlorobiphenyl	81	25	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	<0.004
Aroclor 1248	<0.004
Aroclor 1254	0.0059
Aroclor 1260	<0.004
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-25C:1-3	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-18 1/6
Date Analyzed:	03/28/23	Data File:	032829.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	74	11	184
Decachlorobiphenyl	98	25	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	<0.004
Aroclor 1248	<0.004
Aroclor 1254	0.0044
Aroclor 1260	<0.004
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-10C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-26 1/6
Date Analyzed:	03/28/23	Data File:	032830.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	77	23	120
Decachlorobiphenyl	87	47	114

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	<0.004
Aroclor 1248	0.34 ve
Aroclor 1254	0.27 ve
Aroclor 1260	<0.004
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-10C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-26 1/60
Date Analyzed:	03/30/23	Data File:	033029.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	90 d	23	120
Decachlorobiphenyl	105 d	47	114

Compounds:	Concentration mg/kg (ppm)
Aroclor 1248	0.43
Aroclor 1254	0.26

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-10C:1-3	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-27 1/6
Date Analyzed:	03/28/23	Data File:	032831.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	69	23	120
Decachlorobiphenyl	83	47	114

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	0.014
Aroclor 1248	<0.004
Aroclor 1254	0.016
Aroclor 1260	<0.004
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-11C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-30 1/6
Date Analyzed:	03/28/23	Data File:	032832.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	69	23	120
Decachlorobiphenyl	78	47	114

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	0.018
Aroclor 1248	<0.004
Aroclor 1254	0.048
Aroclor 1260	0.036
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-11C:1-3	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	303388-31 1/6
Date Analyzed:	03/28/23	Data File:	032833.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	74	23	120
Decachlorobiphenyl	89	47	114

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	0.0046
Aroclor 1248	<0.004
Aroclor 1254	0.011
Aroclor 1260	0.0057
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Leon Environmental
Date Received:	Not Applicable	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/24/23	Lab ID:	03-798 mb 1/2
Date Analyzed:	03/24/23	Data File:	032404.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	35	11	184
Decachlorobiphenyl	38	25	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.0013
Aroclor 1232	<0.0013
Aroclor 1016	<0.0013
Aroclor 1242	<0.0013
Aroclor 1248	<0.0013
Aroclor 1254	<0.0013
Aroclor 1260	<0.0013
Aroclor 1262	<0.0013
Aroclor 1268	<0.0013

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-08C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/28/23	Lab ID:	303388-03 1/15
Date Analyzed:	03/29/23	Data File:	032916.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	80	32	117
Decachlorobiphenyl	72	32	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050
beta-BHC	<0.00050
delta-BHC	<0.00050
Heptachlor	<0.00050
Aldrin	<0.0017
Heptachlor Epoxide	<0.0015
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001
Endrin	<0.0017
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.0015 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001
Toxaphene	<0.21

Note: RL for heptachlor epoxide, 4,4'-DDT, and endrin increased due to the presence of the interfering compounds.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-09C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/28/23	Lab ID:	303388-07 1/15
Date Analyzed:	03/29/23	Data File:	032917.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	71	32	117
Decachlorobiphenyl	83	32	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050
beta-BHC	<0.00050
delta-BHC	<0.00050
Heptachlor	<0.00050
Aldrin	<0.0017
Heptachlor Epoxide	<0.0008
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001
Endrin	<0.001
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.001 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001
Toxaphene	<0.21

Note: RL for heptachlor epoxide increased due to the presence of the interfering compounds.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-09C:1-3	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/28/23	Lab ID:	303388-08 1/15
Date Analyzed:	03/29/23	Data File:	032918.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	74	32	117
Decachlorobiphenyl	86	32	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050
beta-BHC	<0.00050
delta-BHC	<0.00050
Heptachlor	<0.00050
Aldrin	<0.0017
Heptachlor Epoxide	<0.00050
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001
Endrin	<0.001
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.001 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001
Toxaphene	<0.21

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-26C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/28/23	Lab ID:	303388-13 1/15
Date Analyzed:	04/07/23	Data File:	0406035.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	81	32	117
Decachlorobiphenyl	100	32	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050
beta-BHC	<0.00050
delta-BHC	<0.00050
Heptachlor	<0.00050 ca
Aldrin	<0.0017
Heptachlor Epoxide	<0.014
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001
Endrin	0.0034
4,4'-DDD	<0.02
Endosulfan II	<0.001
4,4'-DDT	<0.02 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001
Toxaphene	<0.21 ca

Note: RL for heptachlor epoxide, 4,4'-DDT, and 4,4'-DDT increased due to the presence of the interfering compounds.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-25C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/28/23	Lab ID:	303388-17 1/15
Date Analyzed:	03/29/23	Data File:	032921.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	71	32	117
Decachlorobiphenyl	83	32	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050
beta-BHC	<0.00050
delta-BHC	<0.00050
Heptachlor	<0.00050
Aldrin	<0.0017
Heptachlor Epoxide	<0.00050
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001
Endrin	<0.001
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.001 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001
Toxaphene	<0.21

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-10C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/28/23	Lab ID:	303388-26 1/15
Date Analyzed:	03/29/23	Data File:	032922.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	82	32	117
Decachlorobiphenyl	47	32	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050
beta-BHC	<0.00050
delta-BHC	<0.00050
Heptachlor	<0.007
Aldrin	<0.0017
Heptachlor Epoxide	<0.00050
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001
Endrin	0.0012
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.006 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001
Toxaphene	<0.21

Note: RL for heptachlor epoxide, 4,4'-DDT, and 4,4'-DDT increased due to the presence of the interfering compounds.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-10C:1-3	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/28/23	Lab ID:	303388-27 1/15
Date Analyzed:	03/29/23	Data File:	032923.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	75	32	117
Decachlorobiphenyl	87	32	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050
beta-BHC	<0.00050
delta-BHC	<0.00050
Heptachlor	<0.00050 ca
Aldrin	<0.0017
Heptachlor Epoxide	<0.0015
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001
Endrin	<0.001
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.001 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001
Toxaphene	<0.21 ca

Note: RL for heptachlor epoxide increased due to the presence of the interfering compounds.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-11C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/28/23	Lab ID:	303388-30 1/15
Date Analyzed:	04/06/23	Data File:	0406028.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	80	32	117
Decachlorobiphenyl	96	32	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050
beta-BHC	<0.00050
delta-BHC	<0.00050
Heptachlor	<0.00050 ca
Aldrin	<0.0017
Heptachlor Epoxide	<0.003
trans-Chlordane	0.0025
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001
Endrin	<0.0015
4,4'-DDD	<0.005
Endosulfan II	<0.001
4,4'-DDT	<0.0015 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001
Toxaphene	<0.21 ca

Note: RL for heptachlor epoxide, endrin, 4,4'-DDT, and 4,4'-DDT increased due to the presence of the interfering compounds.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-11C:1-3	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/28/23	Lab ID:	303388-31 1/15
Date Analyzed:	03/29/23	Data File:	032929.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	64	32	117
Decachlorobiphenyl	76	32	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050
beta-BHC	<0.00050
delta-BHC	<0.00050
Heptachlor	<0.00050 ca
Aldrin	<0.0017
Heptachlor Epoxide	<0.0006
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001
Endrin	<0.001
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.001 ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001
Toxaphene	<0.21 ca

Note: RL for heptachlor epoxide increased due to the presence of the interfering compounds.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	SED-DUP3C	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/28/23	Lab ID:	303388-34 1/15
Date Analyzed:	03/29/23	Data File:	032930.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	77	32	117
Decachlorobiphenyl	93	32	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050
beta-BHC	<0.00050
delta-BHC	<0.00050
Heptachlor	<0.00050 ca
Aldrin	<0.0017
Heptachlor Epoxide	<0.0006
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001
Endrin	<0.001
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.001ca
Methoxychlor	<0.005 ca
Endosulfan Sulfate	<0.001
Toxaphene	<0.21 ca

Note: RL for heptachlor epoxide, increased due to the presence of the interfering compounds.

Analysis For Organochlorine Pesticides By EPA Method 8081B

Client Sample ID:	Method Blank	Client:	Leon Environmental
Date Received:	Not Applicable	Project:	Port of Friday Harbor Jensen's Marina
Date Extracted:	03/28/23	Lab ID:	03-813 mb2 1/15
Date Analyzed:	03/29/23	Data File:	032912.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	100	11	137
Decachlorobiphenyl	120	50	150

Compounds:	Concentration mg/kg (ppm)
alpha-BHC	<0.00050
gamma-BHC (Lindane)	<0.00050
beta-BHC	<0.00050
delta-BHC	<0.00050
Heptachlor	<0.00050
Aldrin	<0.0017
Heptachlor Epoxide	<0.00050
trans-Chlordane	<0.0017
cis-Chlordane	<0.00050
4,4'-DDE	<0.001
Endosulfan I	<0.00050
Dieldrin	<0.001
Endrin	<0.001
4,4'-DDD	<0.001
Endosulfan II	<0.001
4,4'-DDT	<0.001
Methoxychlor	<0.005
Endosulfan Sulfate	<0.001
Toxaphene	<0.21

Date of Report: 04/14/23
Date Received: 03/24/23
Project: Port of Friday Harbor Jensen's Marina, F&BI 303388

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 303371-01 x5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Antimony	mg/kg (ppm)	20	<5	88	92	75-125	4
Arsenic	mg/kg (ppm)	10	<5	92	97	75-125	5
Cadmium	mg/kg (ppm)	10	<5	92	97	75-125	5
Chromium	mg/kg (ppm)	50	20.6	91 b	98 b	75-125	7 b
Copper	mg/kg (ppm)	50	<25	100	105	75-125	5
Lead	mg/kg (ppm)	50	6.16	96	100	75-125	4
Nickel	mg/kg (ppm)	25	23.6	95 b	105 b	75-125	10 b
Silver	mg/kg (ppm)	10	<5	91	96	75-125	5
Zinc	mg/kg (ppm)	50	36.5	95 b	104 b	75-125	9 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Antimony	mg/kg (ppm)	20	103	80-120
Arsenic	mg/kg (ppm)	10	98	80-120
Cadmium	mg/kg (ppm)	10	99	80-120
Chromium	mg/kg (ppm)	50	105	80-120
Copper	mg/kg (ppm)	50	104	80-120
Lead	mg/kg (ppm)	50	100	80-120
Nickel	mg/kg (ppm)	25	106	80-120
Silver	mg/kg (ppm)	10	99	80-120
Zinc	mg/kg (ppm)	50	103	80-120

Date of Report: 04/14/23
Date Received: 03/24/23
Project: Port of Friday Harbor Jensen's Marina, F&BI 303388

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 303371-01 x10 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	ug/L (ppb)	0.01	<0.025	94	109	71-125	15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	ug/L (ppb)	0.01	108	68-125

Date of Report: 05/08/23
Date Received: 03/24/23
Project: Port of Friday Harbor Jensen's Marina, F&BI 303388

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 303433-04 1/25 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Phenol	mg/kg (ppm)	4.2	<2.5	90	98	50-150	9
1,4-Dichlorobenzene	mg/kg (ppm)	4.2	<0.25	83	84	50-150	1
1,2-Dichlorobenzene	mg/kg (ppm)	4.2	<0.25	83	85	50-150	2
Benzyl alcohol	mg/kg (ppm)	21	<2.5	88	89	50-150	1
2-Methylphenol	mg/kg (ppm)	4.2	<2.5	91	93	50-150	2
Hexachloroethane	mg/kg (ppm)	4.2	<0.25	83	85	50-150	2
3-Methylphenol + 4-Methylphenol	mg/kg (ppm)	4.2	<5	94	95	50-150	1
2,4-Dimethylphenol	mg/kg (ppm)	4.2	<2.5	88	92	35-117	4
Benzoic acid	mg/kg (ppm)	13	<12	36	32	10-105	12
1,2,4-Trichlorobenzene	mg/kg (ppm)	4.2	<0.25	87	91	50-150	4
Naphthalene	mg/kg (ppm)	4.2	<0.05	85	87	50-150	2
Hexachlorobutadiene	mg/kg (ppm)	4.2	<0.25	85	92	50-150	8
2-Methylnaphthalene	mg/kg (ppm)	4.2	<0.05	91	88	50-150	3
Dimethyl phthalate	mg/kg (ppm)	4.2	<2.5	97	99	50-150	2
Acenaphthylene	mg/kg (ppm)	4.2	<0.05	98	98	50-150	0
Acenaphthene	mg/kg (ppm)	4.2	<0.05	94	95	50-150	1
Dibenzofuran	mg/kg (ppm)	4.2	<0.25	89	88	50-150	1
Diethyl phthalate	mg/kg (ppm)	4.2	<2.5	100	97	50-150	3
Fluorene	mg/kg (ppm)	4.2	<0.05	98	96	50-150	2
N-Nitrosodiphenylamine	mg/kg (ppm)	4.2	<0.25	96	97	50-150	1
Hexachlorobenzene	mg/kg (ppm)	4.2	<0.25	91	94	50-150	3
Pentachlorophenol	mg/kg (ppm)	4.2	<1.2	105	99	15-159	6
Phenanthrene	mg/kg (ppm)	4.2	<0.05	94	94	10-170	0
Anthracene	mg/kg (ppm)	4.2	<0.05	95	94	50-150	1
Di-n-butyl phthalate	mg/kg (ppm)	4.2	<2.5	105	102	50-150	3
Fluoranthene	mg/kg (ppm)	4.2	<0.05	99	97	10-203	2
Pyrene	mg/kg (ppm)	4.2	<0.05	96	98	10-208	2
Benzyl butyl phthalate	mg/kg (ppm)	4.2	<2.5	90	90	50-150	0
Benz(a)anthracene	mg/kg (ppm)	4.2	<0.05	98	98	37-146	0
Chrysene	mg/kg (ppm)	4.2	<0.05	97	98	36-144	1
Bis(2-ethylhexyl) phthalate	mg/kg (ppm)	4.2	<4	94	94	50-150	0
Di-n-octyl phthalate	mg/kg (ppm)	4.2	<2.5	81	76	10-243	6
Benzo(a)pyrene	mg/kg (ppm)	4.2	<0.05	96	95	40-150	1
Benzo(b)fluoranthene	mg/kg (ppm)	4.2	<0.05	93	92	45-157	1
Benzo(k)fluoranthene	mg/kg (ppm)	4.2	<0.05	97	94	50-150	3
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	4.2	<0.05	97	100	24-145	3
Dibenz(a,h)anthracene	mg/kg (ppm)	4.2	<0.05	97	100	31-137	3
Benzo(g,h,i)perylene	mg/kg (ppm)	4.2	<0.05	96	99	14-141	3

Date of Report: 05/08/23
Date Received: 03/24/23
Project: Port of Friday Harbor Jensen's Marina, F&BI 303388

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Phenol	mg/kg (ppm)	0.83	91	64-106
1,4-Dichlorobenzene	mg/kg (ppm)	0.83	84	49-108
1,2-Dichlorobenzene	mg/kg (ppm)	0.83	85	50-110
Benzyl alcohol	mg/kg (ppm)	4.2	88	36-147
2-Methylphenol	mg/kg (ppm)	0.83	91	63-112
Hexachloroethane	mg/kg (ppm)	0.83	83	46-112
3-Methylphenol + 4-Methylphenol	mg/kg (ppm)	0.83	94	67-111
2,4-Dimethylphenol	mg/kg (ppm)	0.83	90	53-119
Benzoic acid	mg/kg (ppm)	2.5	60	13-223
1,2,4-Trichlorobenzene	mg/kg (ppm)	0.83	89	58-109
Naphthalene	mg/kg (ppm)	0.83	85	58-108
Hexachlorobutadiene	mg/kg (ppm)	0.83	88	55-108
2-Methylnaphthalene	mg/kg (ppm)	0.83	90	67-109
Dimethyl phthalate	mg/kg (ppm)	0.83	92	70-130
Acenaphthylene	mg/kg (ppm)	0.83	95	70-130
Acenaphthene	mg/kg (ppm)	0.83	91	66-112
Dibenzofuran	mg/kg (ppm)	0.83	85	63-117
Diethyl phthalate	mg/kg (ppm)	0.83	91	64-120
Fluorene	mg/kg (ppm)	0.83	93	67-117
N-Nitrosodiphenylamine	mg/kg (ppm)	0.83	96	70-130
Hexachlorobenzene	mg/kg (ppm)	0.83	91	70-130
Pentachlorophenol	mg/kg (ppm)	0.83	106	60-133
Phenanthrene	mg/kg (ppm)	0.83	95	70-130
Anthracene	mg/kg (ppm)	0.83	96	70-130
Di-n-butyl phthalate	mg/kg (ppm)	0.83	90	54-127
Fluoranthene	mg/kg (ppm)	0.83	97	70-130
Pyrene	mg/kg (ppm)	0.83	101	70-130
Benzyl butyl phthalate	mg/kg (ppm)	0.83	90	65-132
Benz(a)anthracene	mg/kg (ppm)	0.83	98	70-130
Chrysene	mg/kg (ppm)	0.83	97	70-130
Bis(2-ethylhexyl) phthalate	mg/kg (ppm)	0.83	241 vo	59-116
Di-n-octyl phthalate	mg/kg (ppm)	0.83	75	46-129
Benzo(a)pyrene	mg/kg (ppm)	0.83	96	68-120
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	92	69-125
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	91	70-130
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	99	67-129
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	96	67-128
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	94	67-127

Date of Report: 04/14/23
Date Received: 03/24/23
Project: Port of Friday Harbor Jensen's Marina, F&BI 303388

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 303373-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.017	<0.004	132 vo	119 vo	44-107	10
Aroclor 1260	mg/kg (ppm)	0.017	0.023	194 vo	187 vo	38-124	4

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.017	55	55-137
Aroclor 1260	mg/kg (ppm)	0.017	63	51-150

Date of Report: 04/14/23
Date Received: 03/24/23
Project: Port of Friday Harbor Jensen's Marina, F&BI 303388

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR ORGANOCHLORINE PESTICIDES BY EPA METHOD 8081B

Laboratory Code: Laboratory Control Sample 1/15

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
alpha-BHC	mg/kg (ppm)	0.1	90	88	57-116	2
gamma-BHC (Lindane)	mg/kg (ppm)	0.1	95	94	59-118	1
beta-BHC	mg/kg (ppm)	0.1	95	94	63-113	1
delta-BHC	mg/kg (ppm)	0.1	96	95	58-124	1
Heptachlor	mg/kg (ppm)	0.1	91	89	60-117	2
Aldrin	mg/kg (ppm)	0.1	91	89	63-113	2
Heptachlor Epoxide	mg/kg (ppm)	0.1	99	96	70-130	3
trans-Chlordane	mg/kg (ppm)	0.1	98	96	70-130	2
cis-Chlordane	mg/kg (ppm)	0.1	102	100	70-130	2
4,4'-DDE	mg/kg (ppm)	0.1	95	92	69-121	3
Endosulfan I	mg/kg (ppm)	0.1	95	93	70-130	2
Dieldrin	mg/kg (ppm)	0.1	99	96	70-130	3
Endrin	mg/kg (ppm)	0.1	110	106	65-140	4
4,4'-DDD	mg/kg (ppm)	0.1	102	99	70-130	3
Endosulfan II	mg/kg (ppm)	0.1	103	100	70-130	3
4,4'-DDT	mg/kg (ppm)	0.1	98	95	57-135	3
Methoxychlor	mg/kg (ppm)	0.1	98	95	57-147	3
Endosulfan Sulfate	mg/kg (ppm)	0.1	100	97	70-130	3
Toxaphene	mg/kg (ppm)	4	119	140 vo	58-137	16

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased high; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

303388

SAMPLE CHAIN OF CUSTODY 03/24/23 #3/#4

Page # 1 of 4

Report To Leon Jones Hainsworth

Company LE CRETE

Address

City, State, ZIP

Phone 832.330.1359 Email

SAMPLERS (signature): Rusty Jones R. Jones

PROJECT NAME: Port of Friday Harbor Jensen's Marina

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO: L-E

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: Dioxins/Furans NWTPH-Dx SGC	NWTPH-Dx TBT	Total Sulfides BTEX EPA 8021B	Ammonia NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Grain Size	TOC, Total Solids	SMS Metals, Hg	SMS SVOCs, PCBs, SMS Pest.	Notes
SED-07C:0-1	01 A-F	3/22/2023	0729	SOLIDS	7		X						X	X		X	SMS SVOCs only D/F Archive
SED-07C:1-3	02 A-C		0729		3		X						X	X			
SED-08C:0-1	03 A-I		0807		9	X	X						X	X		(X)	per Appendix ME
SED-08C:1-3	04 A-G		0807		7		X						X	X		X	Hold SMS SVOCs, PCBs, SMS Pest. D/F Archive
SED-08C:3-5	05 A-D		0807		4												Archive All D/F Archive
SED-08C:5-7	06 A-D		0807		4												Archive All D/F Archive
SED-09C:0-1	07 A-H		0833		8	X	X						X	X	X	X	
SED-09C:1-3	08 A-J		0833		8	X	X						X	X	X	X	
SED-09C:3-5	09 A-D		0833		4												Archive All D/F Archive
SED-09C:5-7	10 A-D	↓	0833	↓	4												Archive All D/F Archive

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: R. Jones	Rusty Jones	CRETE	3/24/23	0809
Received by: [signature]	Nhan Phan	FedEx	3/24/23	0808
Relinquished by:		Samples received at 0 °C		
Received by:				

Friedman & Bruya, Inc.
Ph. (206) 285-8282

303388

SAMPLE CHAIN OF CUSTODY 03/24/23

H3/H4

Page # 2 of 4

Report To Leon Jones Hainsworth

Company L-E/CRETE

Address

City, State, ZIP

Phone 832.330.1359 Email

SAMPLERS (signature) Rusty Jones R. Jones

PROJECT NAME: Port of Friday Harbor, Jensen's Marina

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO: L-E

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	Dioxins/Furans NWTPH-Dx	TBT NWTPH-Dx	Total Sulfides BTEX EPA 8021B	SMS SVOCs NWTPH-HCID	PCB Aroclors VOCs EPA 8000	SMS Pesticides EAHs EPA 8270	PCBs EPA 8082	Grain Size	TOC, Total Solids	SMS Metals, Hg	D/F Archive	Notes
SED-12C:0-1	11 A-H	3/22/2023	0925	SOLIDS	8	X				X			X	X			
SED-12C:1-3	12 A-D		0925		4											X	Archive All
SED-26C:0-1	13 A-H		1038		8	X	X		X	X	X		X	X	X	X	
SED-26C:1-3	14 A-I		1038		10		X		X	X			X	X	X	X	
SED-26C:3-5	15 A-D		1038		4											X	Archive All
SED-26C:5-7	16 A-D		1038		4											X	Archive All
SED-25C:0-1	17 A-H		1119		8	X	X		X	X	X		X	X	X		
SED-25C:1-3	18 A-I		1119		10		X		X	X			X	X	X		D/F Archive
SED-25C:3-5	19 A-D		1119		4											X	Archive All
SED-25C:5-7	20 A-D	↓	1119	↓	4											X	Archive All

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: R. Jones	Rusty Jones	CRETE	3/24/23	0805
Received by:	Nhan Phan	FEBI	3/24/23	0808
Relinquished by:		Samples received at 0°C		
Received by:				

Friedman & Bruya, Inc.
Ph. (206) 285-8282

303384

SAMPLE CHAIN OF CUSTODY 03/24/23 #3/#4

Page # 3 of 4

Report To Leon/Jones/Hainsworth

Company L-E/CRETE

Address

City, State, ZIP

Phone 832.330.1359 Email

SAMPLERS (signature) R. Jones Rusty Jones

PROJECT NAME: Port of Friday Harbor, Jensen's Marina

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO: L-E

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: Dioxins/Furans EPA 8290A/1613B (HOLD)	Dioxins/Furans EPA 8290A/1613B (TEF)	NWTPH-Gx/BTEX EPA 8021B (Total Surface Sed)	NWTPH-Dx (HOLD)	SVOCs EPA 8270E SIM (HOLD)	VOCs EPA 8260	SVOCs EPA 8270E SIM (Polars)	PCBs EPA 8082	Grain Size	TOC, Total Solids	SVOCs, Metals, Hg	D/F Archive	Notes
SED-27C:0-1	21 A-E	3/22/2023	1324	SOLIDS	5													Archive All
SED-27C:1-3	22 A-F		1324		6													Archive All
SED-27C:3-5	23 A-D		1324		4													Archive All
SED-27C:5-7	24 A-D	↓	1324	↓	4													Archive All
~~DS~~ SED-DUP2C	25	3/22/2023	1200	SOLIDS	1									X				
SED-10C:0-1	26 A-H	3/23/23	0817	SOLIDS	(8)	X	X		X		X		X	X	X	X	X	
SED-10C:1-3	27 A-I		0817		9	X	X		X		X		X	X	X	X	X	
SED-10C:3-5	28 A-D		0817		4													Archive All D/F Archive
SED-10C:5-6	29 A-D		0817		4													Archive All D/F Archive
SED-11C:0-1	30 A-G	↓	0842	↓	7	X			X			X	X	X	X	X		

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: R. Jones	Rusty Jones	CRETE	3/24/23	0808
Received by:	Nham Pham	FCBI	3/24/23	0808
Relinquished by:		Samples received at 0°C		
Received by:				

Friedman & Bruya, Inc.
Ph. (206) 285-8282

SAMPLE CHAIN OF CUSTODY 03/24/23 #3/#4

303388

Report To Leon Jones Hainsworth

Company L-E/CRETE

Address

City, State, ZIP

Phone 832.330.1359 Email

SAMPLERS (*signature*) Rusty Jones R Jones

PROJECT NAME: Port of Friday Harbor

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO: L-E

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: Biaxins/Furans NWTPH-DX HCID	TBT NWTPH-Gx/BTEX	Total Sulfides BTEX EPA 8021B	Ammonia NWTPH-HCID	SMS SVOCs EPA 8270D	SMS Pesticides, PAHs EPA 8270	PCBs EPA 8082	Grain Size	TOC, Total Solids	SMS Metals Hg	DIF Archive	Notes
SED-11C: 1-3	31 A-I	3/23/2023	0842	SOLIDS	9	X				X	X	X	X	X	X		Hg Metal only
SED-11C: 3-5	32 A-D	↓	0842	↓	4											X	Archive All
SED-27G: 0-10	33 A-H	↓	1017	↓	8			X	X								+1 biossay bag
SED-DUP3C	34 A-B	↓	1200	↓	2						X		X	X			SMS Pesticides if volume permit

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: R. Jones	Rusty Jones	CRETE	3/24/23	0805
Received by:	Nhan Phan	FCBI	3/24/23	0808
Relinquished by:		Samples received at 0°C		
Received by:				

Friedman & Bruya, Inc.
Ph. (206) 285-8282

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER ARI	
PROJECT NAME/NO. 303333	PO # D-221
REMARKS EIM EDD	

TURNAROUND TIME

☒ Standard TAT

RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

Dispose after 30 days

Return samples

Will call with instructions

						ANALYSES REQUESTED										
Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	Total Sulfides	Ammonia	Total Organic Carbon	Total Solids							Notes
SED-07G:0-10		3/20/2023	810	solids	2	x	x									
SED-11G:0-10		3/20/2023	924	solids	2	x	x									
SED-14G:0-10		3/20/2023	1011	solids	2	x	x									
SED-15G:0-10		3/20/2023	1042	solids	2	x	x									
SED-24G:0-10		3/20/2023	1106	solids	1		x	x	x							hold ammonia
SED-23G:0-10		3/20/2023	1142	solids	1		x	x	x							↓
SED-22G:0-10		3/20/2023	1158	solids	1		x	x	x							↓
SED-21G:0-10		3/20/2023	1216	solids	1		x	x	x							↓
SED-03G:0-10		3/20/2023	1315	solids	2	x	x									
SED-20G:0-10		3/20/2023	1338	solids	1		x	x	x							hold ammonia
SED-18G:0-10		3/20/2023	1408	solids	1		x	x	x							↓
SED-19G:0-10		3/20/2023	1427	solids	1		x	x	x							↓
SED-01G:0-10		3/20/2023	1445	solids	2	x	x									

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	03/22/23	08:20
Received by:					
Relinquished by:					
Received by:					

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

October 17, 2023

Peter Leon, Project Manager
Leon Environmental
8047 Burke Ave N
Seattle, WA 98103

Dear Mr Leon:

Included are the additional results from the testing of material submitted on March 24, 2023 from the Port of Friday Harbor Jensen's Marina, F&BI 303388 project. There are 7 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Peter Leon, Grant Hainsworth
LNV1017R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on March 24, 2023 by Friedman & Bruya, Inc. from the Crete Consulting Port of Friday Harbor Jensen's Marina, F&BI 303388 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Crete Consulting
303388 -01	SED-07C:0-1
303388 -02	SED-07C:1-3
303388 -03	SED-08C:0-1
303388 -04	SED-08C:1-3
303388 -05	SED-08C:3-5
303388 -06	SED-08C:5-7
303388 -07	SED-09C:0-1
303388 -08	SED-09C:1-3
303388 -09	SED-09C:3-5
303388 -10	SED-09C:5-7
303388 -11	SED-12C:0-1
303388 -12	SED-12C:1-3
303388 -13	SED-26C:0-1
303388 -14	SED-26C:1-3
303388 -15	SED-26C:3-5
303388 -16	SED-26C:5-7
303388 -17	SED-25C:0-1
303388 -18	SED-25C:1-3
303388 -19	SED-25C:3-5
303388 -20	SED-25C:5-7
303388 -21	SED-27C:0-1
303388 -22	SED-27C:1-3
303388 -23	SED-27C:3-5
303388 -24	SED-27C:5-7
303388 -25	SED-DUP2C
303388 -26	SED-10C:0-1
303388 -27	SED-10C:1-3
303388 -28	SED-10C:3-5
303388 -29	SED-10C:5-6
303388 -30	SED-11C:0-1
303388 -31	SED-11C:1-3
303388 -32	SED-11C:3-5
303388 -33	SED-27G:0-10
303388 -34	SED-DUP3C

Samples SED-26C:3-5 and SED-27C:0-1 were sent to Fremont Analytical for grain size analysis. The report is enclosed.

All quality control requirements were acceptable.

Date of Report: 10/17/23
Date Received: 03/24/23
Project: Port of Friday Harbor Jensen's Marina, F&BI 303388
Date Extracted: 09/28/23
Date Analyzed: 09/28/23

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL MERCURY
USING EPA METHOD 1631E
Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Total Mercury
SED-27C:0-1 303388-21	0.12
Method Blank i3-756 MB	<0.025

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SED-27C:0-1	Client:	Leon Environmental
Date Received:	03/24/23	Project:	Port of Friday Harbor
Date Extracted:	10/02/23	Lab ID:	303388-21 1/5
Date Analyzed:	10/02/23	Data File:	100212.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	61	11	162
Decachlorobiphenyl	69	11	152

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	<0.004
Aroclor 1248	<0.004
Aroclor 1254	0.015
Aroclor 1260	0.0082
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Leon Environmental
Date Received:	Not Applicable	Project:	Port of Friday Harbor
Date Extracted:	10/02/23	Lab ID:	03-2354 mb2 1/5
Date Analyzed:	10/02/23	Data File:	100211.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	73	11	162
Decachlorobiphenyl	92	11	152

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	<0.004
Aroclor 1248	<0.004
Aroclor 1254	<0.004
Aroclor 1260	<0.004
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Date of Report: 10/17/23
Date Received: 03/24/23
Project: Port of Friday Harbor Jensen's Marina, F&BI 303388

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 309439-01 x10 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	mg/kg (ppm)	5	<0.025	105	106	71-125	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	mg/kg (ppm)	5	111	68-143

Date of Report: 10/17/23
Date Received: 03/24/23
Project: Port of Friday Harbor Jensen's Marina, F&BI 303388

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 309533-01 1/30 (Matrix Spike) 1/30

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.25	<0.02	86	85	29-125	1
Aroclor 1260	mg/kg (ppm)	0.25	<0.02	86	85	12-177	1

Laboratory Code: Laboratory Control Sample 1/30

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.25	94	55-137
Aroclor 1260	mg/kg (ppm)	0.25	98	51-150

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

303388

SAMPLE CHAIN OF CUSTODY 03/24/23 #3/#4

Page # 1 of 4

Report To Leon / Jones / Hainsworth

Company L-E / CRETE

Address

City, State, ZIP

Phone 832.330.1359 Email

SAMPLERS (signature) Rusty Jones R. Jones

PROJECT NAME Port of Friday Harbor Jensen's Marina

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO L-E

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	Dioxins/Furans NWTPH-Dx(F)	HCID NWTPH-Dx(F)	Total Sulfides BTEX EPA 8021	Arsenic NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Grain Size	TOC Total Solids SMS Metals, Hg	SMS SVOCs PCBs, SMS Pest.	Notes
						ANALYSES REQUESTED										● PC PL 9/26/23 ME
SED-07C:0-1	01 A-F	3/22/2023	0729	SOLIDS	7		X						X	X	X	SMS SVOCs only D/F Archive
SED-07C:1-3	02 A-L		0729		3		X						X	X		D/F Archive
SED-08C:0-1	03 A-I		0807		9	X	X						X	X	Ⓧ	@per Appendix ME
SED-08C:1-3	04 A-G		0807		7		X						X	X	X	Hold SMS SVOC, PCB, pest D/F Archive
SED-08C:3-5	05 A-D		0807		4											Archive All D/F Archive
SED-08C:5-7	06 A-D		0807		4											Archive All D/F Archive
SED-09C:0-1	07 A-H		0833		8	X	X						X	X	X	X	
SED-09C:1-3	08 A-J		0833		8	X	X						X	X	X	X	
SED-09C:3-5	09 A-D		0833		4											Archive All D/F Archive
SED-09C:5-7	10 A-D	↓	0833	↓	4											Archive All D/F Archive

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: R. Jones	Rusty Jones	CRETE	3/24/23	0808
Received by: [signature]	Khan Phan	FedEx	3/24/23	0808
Relinquished by:		Samples received at 0 °C		
Received by:				

Friedman & Bruya, Inc.
Ph. (206) 285-8282

303388

SAMPLE CHAIN OF CUSTODY 03/24/23

H3/H4

Page # 2 of 4

Report To Leon Jones Hainsworth

Company L-E/CRETE

Address

City, State, ZIP

Phone 832-330-1359 Email

SAMPLERS (signature) Rusty Jones R. Jones

PROJECT NAME Port of Friday Harbor, Jensen's Marina

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO L-E

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: Dioxins/Furans NWTPH-Dx*	TBT NWTPH-Dx*	Total Sulfides BTEX EPA 8021B	SMS SVOCs NWTPH-HCID*	PCB Aroclors VOCs EPA 8000	SMS Pesticides EAHs EPA 8270D	PCBs EPA 8082	Grain Size	TOC, Total Solids	SMS Metals, Hg	D/F Archive	Notes
SED-12C:0-1	11 A-H	3/22/2023	0925	SOLIDS	8	X				X			X	X			
SED-12C:1-3	12 A-D		0925		4											X	Archive All
SED-26C:0-1	13 A-H		1038		8	X	X		X	X	X		X	X	X	X	
SED-26C:1-3	14 A-I		1038		10		X		X	X			X	X	4	X	
SED-26C:3-5	15 A-D		1038		4								●	●		X	Grain size & Total Solids ONLY Archive All
SED-26C:5-7	16 A-D		1038		4											X	Archive All
SED-25C:0-1	17 A-H		1119		8	X	X		X	X	X		X	X	X		
SED-25C:1-3	18 A-I		1119		10		X		X	X	X		X	X	X		D/F Archive
SED-25C:3-5	19 A-D		1119		4					X						X	Archive All
SED-25C:5-7	20 A-D	↓	1119	↓	4											X	Archive All

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: R. Jones	Rusty Jones	CRETE	3/24/23	0805
Received by:	Nhan Phan	FEBT	3/24/23	0808
Relinquished by:		Samples received at 0°C		
Received by:				

Friedman & Bruya, Inc.
Ph. (206) 285-8282

303384

SAMPLE CHAIN OF CUSTODY 03/24/23 #3/#4

Page # 3 of 4

Report To Leon/Jones/Hainsworth

Company L-E/CRETE

Address

City, State, ZIP

Phone 832.330.1359 Email

SAMPLERS (signature) R. Jones Rusty Jones

PROJECT NAME: Port of Friday Harbor, Jensen's Marina

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO: L-E

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: Dioxins/furans ANWTH-Dxnf	TBT ANWTH-OTC	Total Sulfides BTEX EPA 8021B	SVOCs ANWTH-HCBD	PCB Aroclors VOCs EPA 8260	SVOCs PAHs EPA 8270C	PCBs EPA 8082	Grain Size	TOC, Total Solids	SVOCs, Metals, Hg	D/F Archive	Notes
SED-27C:0-1	21 A-E	3/22/2023	1324	SOLIDS	5							●	●	●	●		Archive All
SED-27C:1-3	22 A-F	↓	1324	↓	6												Archive All
SED-27C:3-5	23 A-D		1324		4												Archive All
SED-27C:5-7	24 A-D		1324		4												Archive All
SED-DUP2C	25	3/22/2023	1200	SOLIDS	1								X				
SED-10C:0-1	26 A-H	3/23/23	0817	SOLIDS	(8)	X	X		X		X	X	X	X	X		
SED-10C:1-3	27 A-I		0817		9	X	X		X		X	X	X	X	X		
SED-10C:3-5	28 A-D		0817		4												Archive All D/F Archive
SED-10C:5-6	29 A-D		0817		4												Archive All D/F Archive
SED-11C:0-1	30 A-G	↓	0842	↓	7	X			X		X	X	X	X	X		

● PCBs, grain size, Total Solids + Hg only ne

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: R. Jones	Rusty Jones	CRETE	3/24/23	0806
Received by:	Nham Pham	FEBI	3/24/23	0808
Relinquished by:		Samples received at 0°C		
Received by:				

Friedman & Bruya, Inc.
Ph. (206) 285-8282

SAMPLE CHAIN OF CUSTODY 03/24/23 H3/H4

303388

Report To Leon / Jones / Harnsworth

Company L-E / CRETE

Address

City, State, ZIP

Phone 832.330.1359 Email

SAMPLERS (signature) Rusty Jones R. Jones

PROJECT NAME: Port of Friday Harbor

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO: L-E

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: Dioxins/Furans EPA 8290A	TBT NWTPH-Dx	Total Sulfides BTEX EPA 8021B	Ammonia NWTPH-HCID	SMS SVOCs EPA 8270D	SMS Pesticides EPA 8270D	PCBs EPA 8082	Grain Size	TOC, Total Solids	SMS Metals Hg	D/F Archive	Notes
SED-11C: 1-3	31 A-I	3/23/2023	0842	SOLIDS	9	X				X	X	X	X	X	X		Hg Metal only
SED-11C: 3-5	32 A-D	↓	0842	↓	4											X	Archive All
SED-27G: 0-10	33 A-H		1017		8			X	X								+1 bioassay bag
SED-DUP3C	34 A-B	↓	1200	↓	2						X		X	X			SMS Pesticides if volume permit

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: R. Jones	Rusty Jones	CRETE	3/24/23	0805
Received by:	Nhan Phan	FLBI	3/24/23	0808
Relinquished by:		Samples received at 0°C		
Received by:				

Friedman & Bruya, Inc.
Ph. (206) 285-8282

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Friedman & Bruya
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

RE: 303388
Work Order Number: 2309507

October 12, 2023

Attention Michael Erdahl:

Fremont Analytical, Inc. received 2 sample(s) on 9/28/2023 for the analyses presented in the following report.

Grain Size by ASTM D422

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,



Brianna Barnes
Project Manager

Date: *10/12/2023*

CLIENT: Friedman & Bruya
Project: 303388
Work Order: 2309507

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2309507-001	SED-26C:1-3	03/22/2023 10:38 AM	09/28/2023 2:32 PM
2309507-002	SED-27C:0-1	03/22/2023 1:24 PM	09/28/2023 2:32 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **2309507**

Date: **10/12/2023**

CLIENT: Friedman & Bruya
Project: 303388

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

3600 Fremont Ave. N
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178
Email: info@fremontanalytical.com

Grain Size by ASTM D422

Project:	**303388**
Client:	**Friedman & Bruya**
Lab Project #:	**2309507**

Percent Finer (Passing) than the Indicated Size

UOM = Percent

Grain Size Classification	*Gravel*						*Coarse Sand*	*Medium Sand*		*Fine Sand*			*Silt*		
Sieve Size	**3"**	**2"**	**1 1/2"**	**1"**	**3/4"**	**3/8"**	**#4**	**#10**	**#20**	**#40**	**#60**	**#140**	**#230**	**#325**	**#450**
Particle Size (Microns)	**76200**	**50800**	**38100**	**25400**	**19050**	**9525**	**4750**	**2000**	**850**	**425**	**250**	**106**	**62.5**	**45**	**34**
Sample ID															
SED-26C:1-3	100%	100%	100%	100%	100%	98.9%	96.5%	94.6%	93.3%	92.1%	87.6%	43.5%	13.0%	9.31%	4.46%
SED-27C:0-1	100%	100%	100%	100%	98.6%	94.4%	87.6%	84.6%	83.7%	80.8%	76.0%	38.5%	15.5%	10.7%	4.21%

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Seattle, WA 98103
Tel: 206-352-3790
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Grain Size by ASTM D422

Project:	**303388**
Client:	**Friedman & Bruya**
Lab Project #:	**2309507**

Percent Retained in Each Size Fraction

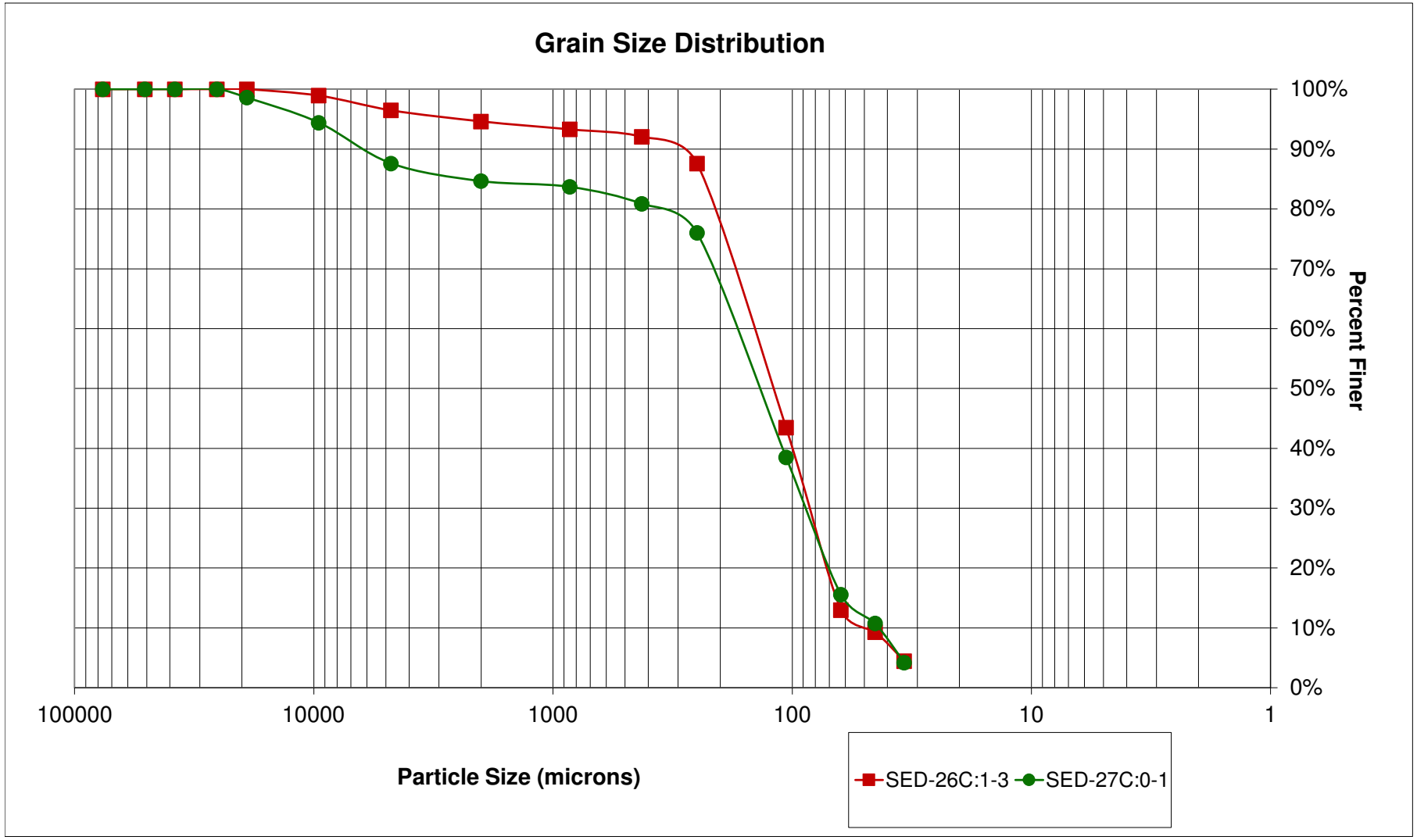
UOM = Percent

Grain Size Classification	*Gravel*							*Coarse Sand*	*Medium Sand*		*Fine Sand*			*Silt*		
Sieves Size	**3"**	**2"**	**1 1/2"**	**1"**	**3/4"**	**3/8"**	**#4**	**#10**	**#20**	**#40**	**#60**	**#140**	**#230**	**#325**	**#450**	
Particle Size (Microns)	**>76200**	**76200-50800**	**50800-38100**	**38100-25400**	**25400-19000**	**19050-9525**	**9525-4750**	**4750-2000**	**2000-850**	**850-425**	**425-250**	**250-106**	**106-62.5**	**62.5-45**	**45-34**	**<34**
Sample ID																
SED-26C:1-3	0.00%	0.00%	0.00%	0.00%	0.00%	1.07%	2.46%	1.85%	1.33%	1.24%	4.47%	44.1%	30.5%	3.66%	4.85%	4.46%
SED-27C:0-1	0.00%	0.00%	0.00%	0.00%	1.40%	4.20%	6.82%	2.95%	0.945%	2.85%	4.85%	37.5%	23.0%	4.79%	6.54%	4.21%

3600 Fremont Ave. N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178
Email: info@fremontanalytical.com

Grain Size by ASTM D422

Project: 303388
Client: Friedman & Bruya
Lab Project #: 2309507



Fremont Analytical
An Alliance Technical Group Company

Sample Log-In Check List

Client Name:	FB	Work Order Number:	2309507
Logged by:	Lyann Rivera	Date Received:	9/28/2023 2:32:00 PM

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	Client		

Log In

3.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Present ☑
4.	Was an attempt made to cool the samples?	Yes ☐	No ☑	NA ☐
		Unknown Prior to Receipt		
5.	Were all items received at a temperature of >2°C to 6°C *	Yes ☐	No ☐	NA ☑
6.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
7.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8.	Are samples properly preserved?	Yes ☑	No ☐	
9.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
11.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
12.	Does paperwork match bottle labels?	Yes ☑	No ☐	
13.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14.	Is it clear what analyses were requested?	Yes ☑	No ☐	
15.	Were all hold times (except field parameters, pH e.g.) able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

17. Additional remarks:

Item Information

Item #	Temp °C
Sample	17.9

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 5500 4th Ave S

City, State, ZIP Seattle, WA 98108

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER
Fremont

PROJECT NAME/NO.	PO #
303388	D-466

REMARKS

Samples Frozen--EIM EDD

TURNAROUND TIME

☒ Standard TAT

RUSH 2309507

Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: grain size	Total Solids									Notes
SED-26C:1-3		3/22/2023	1038	sediment	1	x										
SED-27C:0-1		3/22/2023	1324	sediment	1	x										

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	9/28/23	1000
Received by:		Brittan Stone	FAI	9/28/23	14:32
Relinquished by:					
Received by:					