Analytical Resources, LLC
Analytical Chemists and Consultants

29 November 2021

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

RE: Lower Duwamish AOC4

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

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

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

Associated Work Order(s)	Associated SDG ID(s)
21K0332	N/A

Susan Dunnihoo
Digitally signed by Susan Dunnihoo
Date: 2021.11.29 15:43:11 -08'00'

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

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

Analytical Resources, LLC

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

Susan Dunnihoo, Director, Client Services

Accredited in accordance with nelac
Cert# 100006-012

21G0080/21K0332 ARCHIVE

1 of 2

CHAIN-OF-CUSTODY/TEST REQUEST FORM

№ 4154

Project/Client Name: Duwamish AOCU
Project Number: 180067-02.02
Contact Name: Amara VandenWolf
Sampled By: Windward

Ship to: ARI
Attn: Sue Dunnihoo
Shipper: Courier
Form filled out by: Brandi Quinlisk

Shipping Date: 7/7/2021
Airbill Number: —
Turnaround requested: STD

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required): Archive							Comments / Instructions [Jar tag number(s)]
7/6/2021	15:13	LDW21-IT592B	3	Sediment	X							
		LDW21-IT592C	3		X							
		LDW21-IT592D	3		X							
		LDW21-IT592E	3		X							
		LDW21-IT592F	3		X							
	15:13	LDW21-IT592G	3		X							
	16:30	LDW21-IT604A	3		X							
		LDW21-IT604D	3		X							
		LDW21-IT604F	3		X							
	16:30	LDW21-IT604GS1	1		X							
	16:30	LDW21-IT604G	3		X							
7/6/2021	12:24	LDW21-IT543D	3	Sediment	X							
		Total Number of Containers	34	Purchase Order / Statement of Work # CLF-052021-ARI								

1) Released by:	1) Rec'd by:	2) Released by:	2) Rec'd by:
Print name: A Vandenwolf	Samantha Galon	Print name:	
Signature:	Company: ARI	Signature:	Company:
Company: Windward		Company:	
Date/Time: 7/7/21 1001	Date/Time: 7/7/21 1001	Date/Time:	Date/Time:

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

To be completed by Laboratory upon sample receipt:

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

Wind Ward environmental LLC

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

206.378.1364

2 of 2

21G0080/21K0332 ARCHIVE

CHAIN-OF-CUSTODY/TEST REQUEST FORM

№ 4158

Project/Client Name: Duwamish AOC4
Project Number: 180067-02.02
Contact Name: Amara Vanderwort
Sampled By: Windward

Ship to: ARI
Attn: Sue Dunnihoo
Shipper: Courier
Form filled out by: Brandi Quinlisk

Shipping Date: 7/7/2021
Airbill Number: —
Turnaround requested: STD

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required): ARCHIVE							Comments / Instructions [Jar tag number(s)]
7/6/2021	12:24	LDW21-IT543F	3	Sediment	X							
"	17:16	LDW21-IT637A	3		X							
"	↓	LDW21-IT637D	3		X							
"	↓	LDW21-IT637F	3		X							
"	17:16	LDW21-IT637GS2	1		X							
		Total Number of Containers		Purchase Order / Statement of Work #	CLF-052021-ARI							

1) Released by:	1) Rec'd by:	2) Released by:	2) Rec'd by:
Print name: A Vanderwort	Samantha Colson	Print name:	
Signature:	Company: ARI	Signature:	Company:
Company: Windward		Company:	
Date/Time: 7/7/21 1001	Date/Time: 7/7/21 1001	Date/Time:	Date/Time:

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

To be completed by Laboratory upon sample receipt:

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

Wind Ward environmental LLC

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

206.378.1364

Re: AOC4 Fast TAT Request

Sue Dunnihoo <limsadm@arilabs.com>

21K0332

Fri 11/19/2021 9:54 AM

To: Kelly Bottem <kelly.bottem@arilabs.com>; Shelly Fishel <shelly.fishel@arilabs.com>; **Sample Receiving <sample-receiving@arilabs.com>**

Not yet. Just got the emails. Sample receiving please find and log, thanks.

I'll be out of touch about two hours.

S

*Please note that sample receiving hours will be changed to 8-5 until further notice. Thank you for understanding. **

Sent by phone - please excuse errors

Get Outlook for iOS

From: Kelly Bottem <kelly.bottem@arilabs.com>
Sent: Friday, November 19, 2021 11:37:09 AM
To: Sue Dunnihoo <limsadm@arilabs.com>; Shelly Fishel <shelly.fishel@arilabs.com>; Sample Receiving <sample-receiving@arilabs.com>
Subject: Re: AOC4 Fast TAT Request

Sue,
Did you have it logged in?

Sent from my T-Mobile 5G Device
Get Outlook for Android

From: Sue Dunnihoo <limsadm@arilabs.com>
Sent: Friday, November 19, 2021 9:35:53 AM
To: Kelly Bottem <kelly.bottem@arilabs.com>; Shelly Fishel <shelly.fishel@arilabs.com>; Sample Receiving <sample-receiving@arilabs.com>
Subject: Re: AOC4 Fast TAT Request

Labs know about it but I didn't have access yesterday (and Cradlepoint remote still out).

*Please note that sample receiving hours will be changed to 8-5 until further notice. Thank you for understanding. **

Sent by phone - please excuse errors

Get Outlook for iOS

From: Kelly Bottem <kelly.bottem@arilabs.com>
Sent: Friday, November 19, 2021 11:33:22 AM
To: Shelly Fishel <shelly.fishel@arilabs.com>; Sample Receiving <sample-receiving@arilabs.com>
Subject: Fwd: AOC4 Fast TAT Request

Hi everyone,
Did Sue activate the analyses below?

Sent from my T-Mobile 5G Device
Get Outlook for Android

From: Amara Vandervort <amarav@windwardenv.com>
Sent: Friday, November 19, 2021 9:28:28 AM
To: Kelly Bottem <kelly.bottem@arilabs.com>
Cc: Cindy Fields <cfields@anchorqea.com>; Sue Dunnihoo <limsadm@arilabs.com>
Subject: RE: AOC4 Fast TAT Request

Hi Kelly,

I am looping you into this conversation since Sue is out. Hoping that you can have someone pull the sample listed below from the freezer so that we can get it in the queue, please. Thank you!

Amara Vandervort
Associate
Direct line: 206-812-5415
E-mail: amarav@windwardenv.com | www.windwardenv.com
200 First Avenue West, Suite 500 | Seattle, WA 98119

From: Amara Vandervort
Sent: Friday, November 19, 2021 9:21 AM
To: limsadm (limsadm@arilabs.com) <limsadm@arilabs.com>
Cc: 'Cindy Fields' <cfields@anchorqea.com>
Subject: RE: AOC4 Fast TAT Request

Please also include total solids with this. We would like to have batch QC reported if possible rather than running QC on one sample. Please let me know an estimated delivery date (we know the holiday is a factor). Thank you! -Amara

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From: Amara Vandervort
Sent: Friday, November 19, 2021 8:26 AM
To: limsadm (limsadm@arilabs.com) <limsadm@arilabs.com>
Cc: Cindy Fields <cfields@anchorqea.com>
Subject: AOC4 Fast TAT Request

Good morning,

We would like to have sample LDW21-IT637A (ARI 21G0080-14) analyzed for PCB Aroclors and TOC, on a 1 week TAT, please. Will the lab be able to accommodate the fast TAT?

The cPAH sample list should be finalized soon and I will send a final table your way later today or early next week.

Amara Vandervort
Associate
Direct line: 206-812-5415
E-mail: amarav@windwardenv.com | www.windwardenv.com

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Windward /Anchor

Project Name: Lower Duwamish AOCY

COC No(s): _____ NA

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

Assigned ARI Job No: 21G0080/21K0332

Tracking No: _____ NA

Preliminary Examination Phase:

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

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

Time 1303 5.0 4.1 5.4 ___ ___ ___

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

Temp Gun ID#: D005206

Cooler Accepted by: SC Date: 7/7/21 Time: 1001

Complete custody forms and attach all shipping documents

Log-In Phase:

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

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

~~Samples Logged by: SC Date: 7/7/21 Time: 1700 Labels checked by: SC~~

DL 11/19/21 1049

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

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

Additional Notes, Discrepancies, & Resolutions:

By: Date:

Analytical Resources, LLC
Analytical Chemists and Consultants

Anchor QEA, LLC	Project:	Lower Duwamish AOC4	
1201 3rd Ave, Suite 2600	Project Number:	180067-02.02	**Reported:**
Seattle, WA 98101	Project Manager:	Cindy Fields	11/29/2021 15:29

ANALYTICAL REPORT FOR SAMPLES

Laboratory ID	Sample ID	Matrix	Date Sampled	Date Received
21K0332-01	LDW21-IT637A	Solid	07/06/21 17:16	11/19/21 10:49

Anchor QEA, LLC	Project: Lower Duwamish AOC4	
1201 3rd Ave, Suite 2600	Project Number: 180067-02.02	**Reported:**
Seattle WA, 98101	Project Manager: Cindy Fields	29-Nov-2021 15:29

Case Narrative

PCB Aroclors - EPA Method SW8082A

The sample(s) were extracted and analyzed within the recommended holding times for samples stored frozen.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times for samples stored frozen.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

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

The matrix spike (MS) percent recoveries were within advisory control limits and the duplicate (DUP) relative percent difference (RPD) is outside of the control limits and flagged on the associated forms.

QUALIFIERS AND NOTES

Qualifier	Definition
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
*	Flagged value is not within established control limits.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Analytical Resources, LLC
Analytical Chemists and Consultants

Dual Column

LDW21-IT637A

ORGANIC ANALYSIS DATA SHEET
EPA 8082A

Laboratory:	Analytical Resources, LLC			SDG:	21K0332
Client:	Anchor QEA, LLC				
Project:	Lower Duwamish AOC4				
Matrix:	Solid	Laboratory ID:	21K0332-01 A	File ID:	11272107ECD7.D
Sampled:	07/06/21 17:16	Prepared:	11/24/21 08:25	Analyzed:	11/27/21 14:10
% Solids:	78.50	Preparation:	EPA 3546 (Microwave)	Initial/Final:	15.93 g Wet / 2.5 mL
Batch:	BJK0603	Sequence:	SJK0396	Calibration:	EK00072
Instrument:	ECD7	Column 1:	ZB5	Column 2:	ZB35

CAS NO.	COMPOUND	Col #	DILUTION	CONC. (ug/kg dry)	MDL	MRL	Q
12674-11-2	Aroclor 1016	1	1	4.0	1.6	4.0	U
11104-28-2	Aroclor 1221	1	1	4.0	1.6	4.0	U
11141-16-5	Aroclor 1232	1	1	4.0	1.6	4.0	U
53469-21-9	Aroclor 1242	1	1	4.0	1.6	4.0	U
12672-29-6	Aroclor 1248	1	1	7.4	1.6	4.0	
11097-69-1	Aroclor 1254	1	1	7.7	1.6	4.0	
11096-82-5	Aroclor 1260	1	1	5.0	0.6	4.0	

SURROGATES	Col #	ADDED (ug/kg dry)	CONC (ug/kg dry)	% REC	QC LIMITS	Q
Decachlorobiphenyl	*1*	*7.9968*	*7.88*	*98.5*	*40 - 126*	
Tetrachlorometaxylene	*1*	*7.9968*	*6.89*	*86.2*	*44 - 120*	

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211127.b/11272107ECD7.D
Data file 2: /211127.b/211127.b/11272107ECD7.D
Method: \\target\share\chem4\ecd7.i\211127.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: 21K0332-01
Client ID:
Injection Date: 27-NOV-2021 14:10
Report Date: 11/29/2021 10:56
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.945	0.002	155793	5.803	0.001	400803	34.5	36.5	5.8	Tetrachloro-m-xylene
14.039	-0.002	152961	14.260	-0.001	779968	39.4	38.5	2.4	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	340785	2.9
Hexabromobiphenyl	407599	335270	-17.7

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	864804	-3.8
Hexabromobiphenyl	1136250	1102042	-3.0

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

Aroclor	Peak#	ZB5 Col RT	Shift	Area	Amount	Peak#	ZB35 Col RT	Shift	Area	Amount
Aroclor-1016	1	7.378	-0.031	3862	29.6	1	7.381	0.001	5010	10.3
Aroclor-1016	2	7.784	-0.001	5258	11.7	2	7.967	-0.002	13455	11.9
Aroclor-1016	3	7.926	0.002	1861	10.7	3	8.169	-0.001	3137	7.1
Aroclor-1016	4	8.030	-0.000	1604	13.4	4	8.428	-0.001	13779	45.6
Total Col1Ave (4 peaks):					16.4	Total Col2Ave (4 peaks):				18.7 RPD = 13
Corrected Ave (3 peaks):					11.9	Corrected Ave (3 peaks):				9.8 RPD = 20
Aroclor-1221	1	---			0.0	1	5.054	-0.027	2012	35.7
Aroclor-1221	2	6.270	-0.003	475	9.1	2	6.438	0.018	10042	67.3
Aroclor-1221	3	6.496	-0.027	1920	15.1	3	6.757	0.012	8647	31.4
Col1Ave: <3 Quant Peaks						Col2Ave: 44.8				
Aroclor-1232	1	---			0.0	1	5.054	-0.028	2012	60.6
Aroclor-1232	2	7.784	-0.003	5258	27.6	2	7.381	-0.002	5010	21.1
Aroclor-1232	3	9.068	-0.003	7661	122.6	3	9.343	-0.002	16603	102.5
Aroclor-1232	4	9.355	-0.003	8638	128.1	4	9.687	-0.006	29814	151.9
Total Col1Ave (3 peaks):					92.8	Total Col2Ave (4 peaks):				84.0 RPD = 10
Corrected Ave: < 3 Peaks						Corrected Ave (3 peaks): 61.4				
Aroclor-1242	1	7.378	-0.033	3862	36.4	1	7.381	-0.000	5010	12.2
Aroclor-1242	2	7.784	-0.001	5258	14.6	2	7.967	-0.003	13455	14.4
Aroclor-1242	3	9.068	-0.002	7661	63.1	3	9.343	-0.001	16603	53.1
Aroclor-1242	4	9.355	-0.003	8638	66.9	4	9.687	-0.005	29814	79.9
Total Col1Ave (4 peaks):					45.3	Total Col2Ave (4 peaks):				39.9 RPD = 13
Corrected Ave (3 peaks):					38.0	Corrected Ave (3 peaks):				26.6 RPD = 36
Aroclor-1248	1	8.543	-0.001	6739	38.0	1	8.428	-0.001	13779	33.7
Aroclor-1248	2	8.713	-0.000	5958	29.1	2	8.837	-0.001	13848	28.1
Aroclor-1248	3	9.131	0.005	10619	40.3	3	9.268	0.000	21305	30.3
Aroclor-1248	4	9.355	-0.002	8638	40.6	4	9.687	-0.004	29814	44.5
Total Col1Ave (4 peaks):					37.0	Total Col2Ave (4 peaks):				34.1 RPD = 8
Corrected Ave (3 peaks):					35.8	Corrected Ave (3 peaks):				30.7 RPD = 15
Aroclor-1254	1	9.434	-0.003	10614	31.1	1	9.570	-0.001	25227	36.3
Aroclor-1254	2	9.508	-0.004	4271	38.0	2	10.033	0.031	24346	86.7
Aroclor-1254	3	9.808	0.004	11492	51.1	3	10.089	-0.003	13127	24.2
Aroclor-1254	4	9.935	-0.003	16265	38.3	4	10.237	-0.004	37334	33.2
Aroclor-1254	5	10.638	-0.003	10107	34.4	5	10.688	-0.002	32560	58.2
Total Col1Ave (5 peaks):					38.6	Total Col2Ave (5 peaks):				47.7 RPD = 21
Corrected Ave (4 peaks):					35.5	Corrected Ave (4 peaks):				38.0 RPD = 7
Aroclor-1260	1	11.183	-0.002	5818	25.1	1	11.781	-0.002	19874	25.1
Aroclor-1260	2	11.499	-0.004	4382	19.3	2	12.040	-0.003	36351	17.9
Aroclor-1260	3	11.869	-0.001	14937	26.9	3	12.627	-0.001	24965	19.2
Aroclor-1260	4	12.271	-0.002	6592	24.1	4	13.354	0.000	11965	19.4
Aroclor-1260	5	12.385	-0.002	3907	29.6	NS	---			----
Total Col1Ave (5 peaks):					25.0	Total Col2Ave (4 peaks):				20.4 RPD = 20
Corrected Ave (4 peaks):					23.9	Corrected Ave (3 peaks):				18.8 RPD = 24
Aroclor-1262	1	10.957	-0.002	16251	85.7	1	11.326	-0.004	14230	11.5
Aroclor-1262	2	12.385	-0.003	3907	14.4	2	11.781	-0.004	19874	19.5
Aroclor-1262	3	12.460	-0.002	4918	17.8	3	12.559	-0.007	21566	17.6
Aroclor-1262	4	13.123	0.004	3695	15.9	4	12.627	0.004	24965	14.3
Total Col1Ave (4 peaks):					33.4	Total Col2Ave (4 peaks):				15.7 RPD = 72*
Corrected Ave (3 peaks):					16.0	Corrected Ave (3 peaks):				14.5 RPD = 10
Aroclor-1268	1	12.385	-0.004	3907	5.4	1	12.559	-0.009	21566	7.0
Aroclor-1268	2	12.460	-0.000	4918	7.5	2	12.627	-0.006	24965	8.0
Aroclor-1268	3	12.861	0.013	2947	5.2	3	13.041	0.008	8826	3.2
Aroclor-1268	4	13.632	-0.001	1744	1.1	4	13.841	-0.010	10858	1.1
Total Col1Ave (4 peaks):					4.8	Total Col2Ave (4 peaks):				4.8 RPD = 1
Corrected Ave (3 peaks):					3.9	Corrected Ave (3 peaks):				3.8 RPD = 3

Total PCB Area Col1 (6.043 - 13.940) = 345910 Col1 Total PCB = 0.1 ppm*

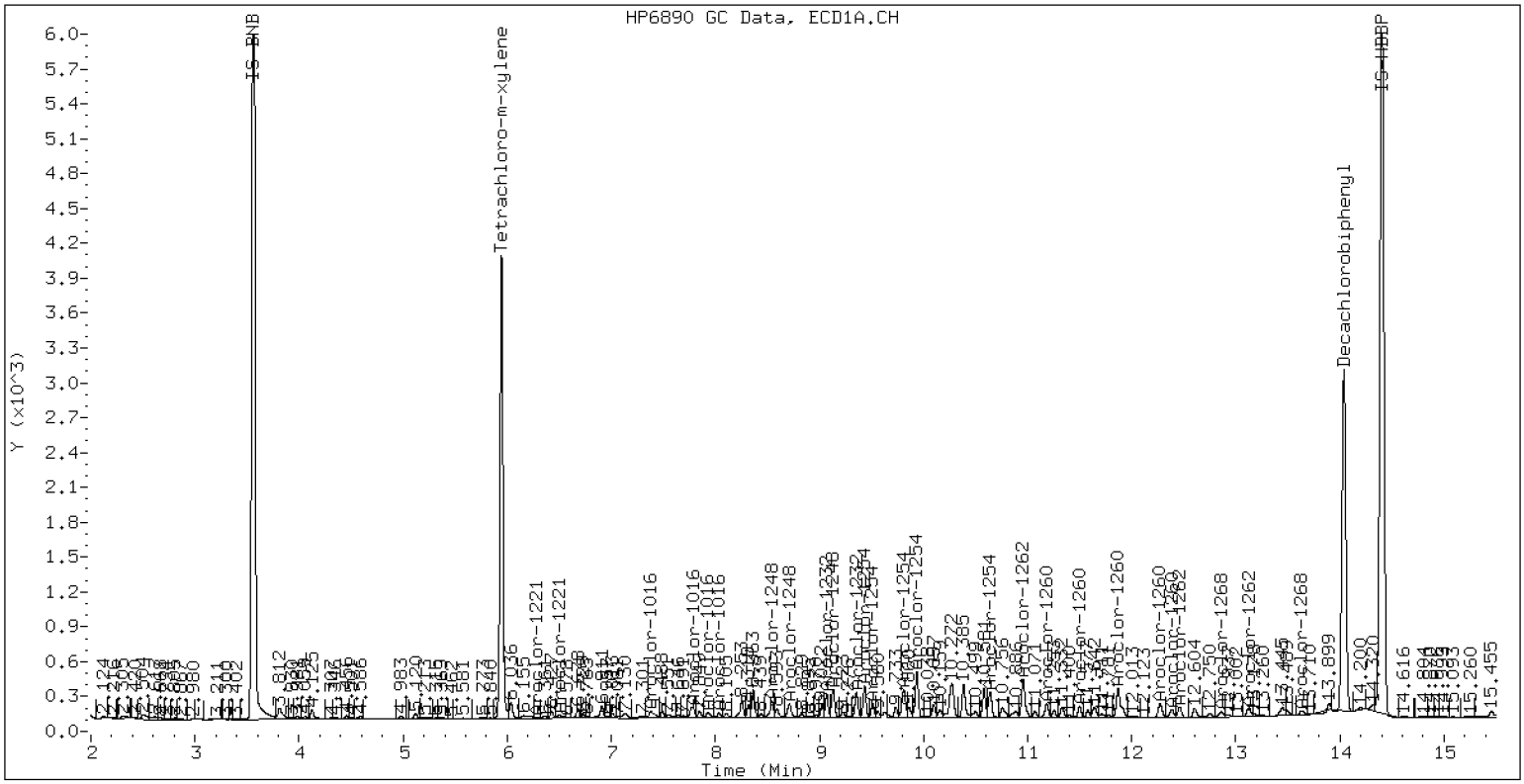
Total PCB Area Col2 (6.043 - 13.940) = 886397 Col2 Total PCB = 0.1 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

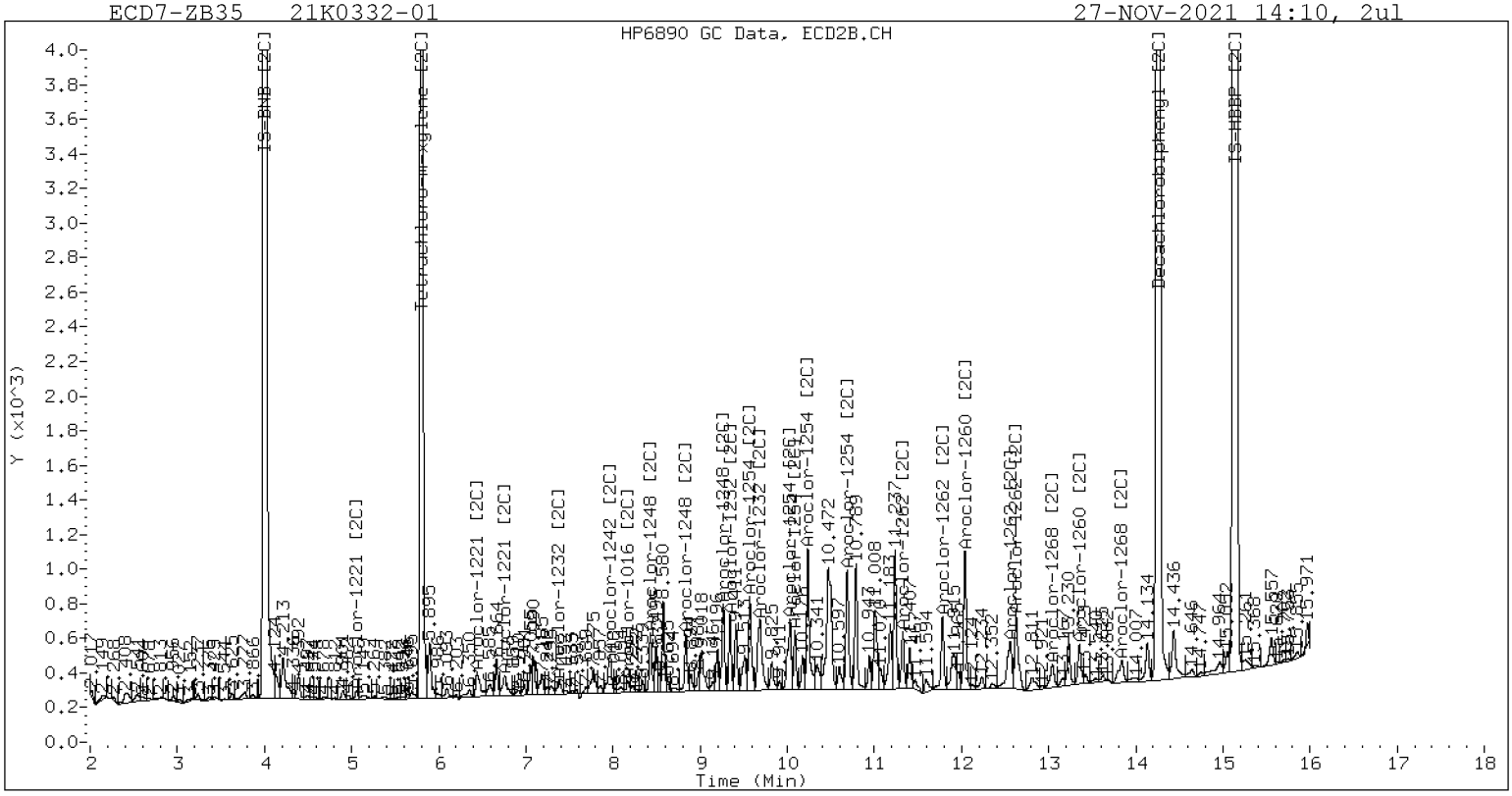
PCB Dual Column Chromatograms

ECD7-ZB5 21K0332-01 27-NOV-2021 14:10, 2ul



ZB-5 Manual Integration: YES

ECD7-ZB35 21K0332-01 27-NOV-2021 14:10, 2ul

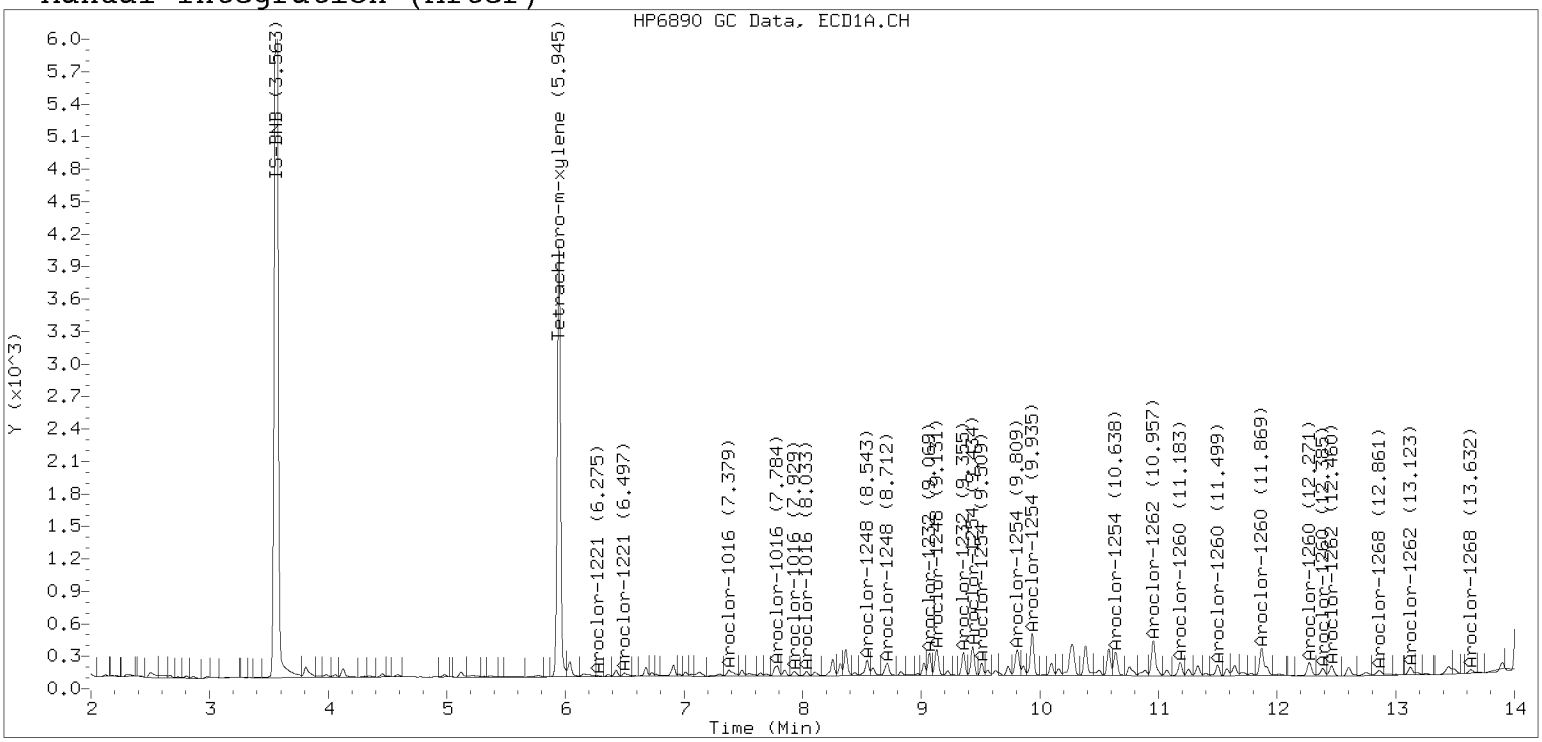


ZB-35 Manual Integration: YES

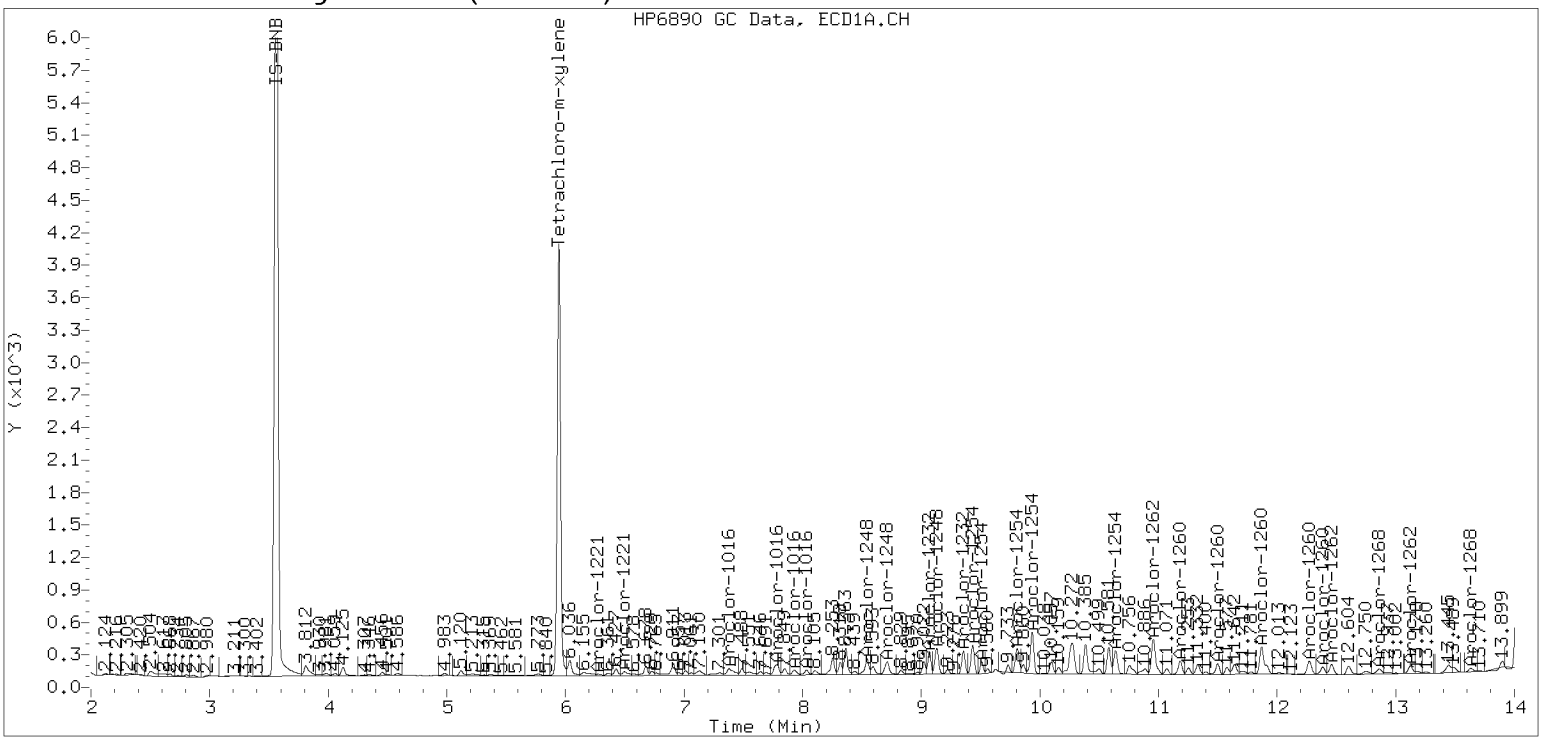
Manual Peak Adjustment, ZB-5

Datafile: ecd7.i/211127.b/11272107ECD7.D Injection Date: 27-NOV-2021 14:10

Manual Integration (After)



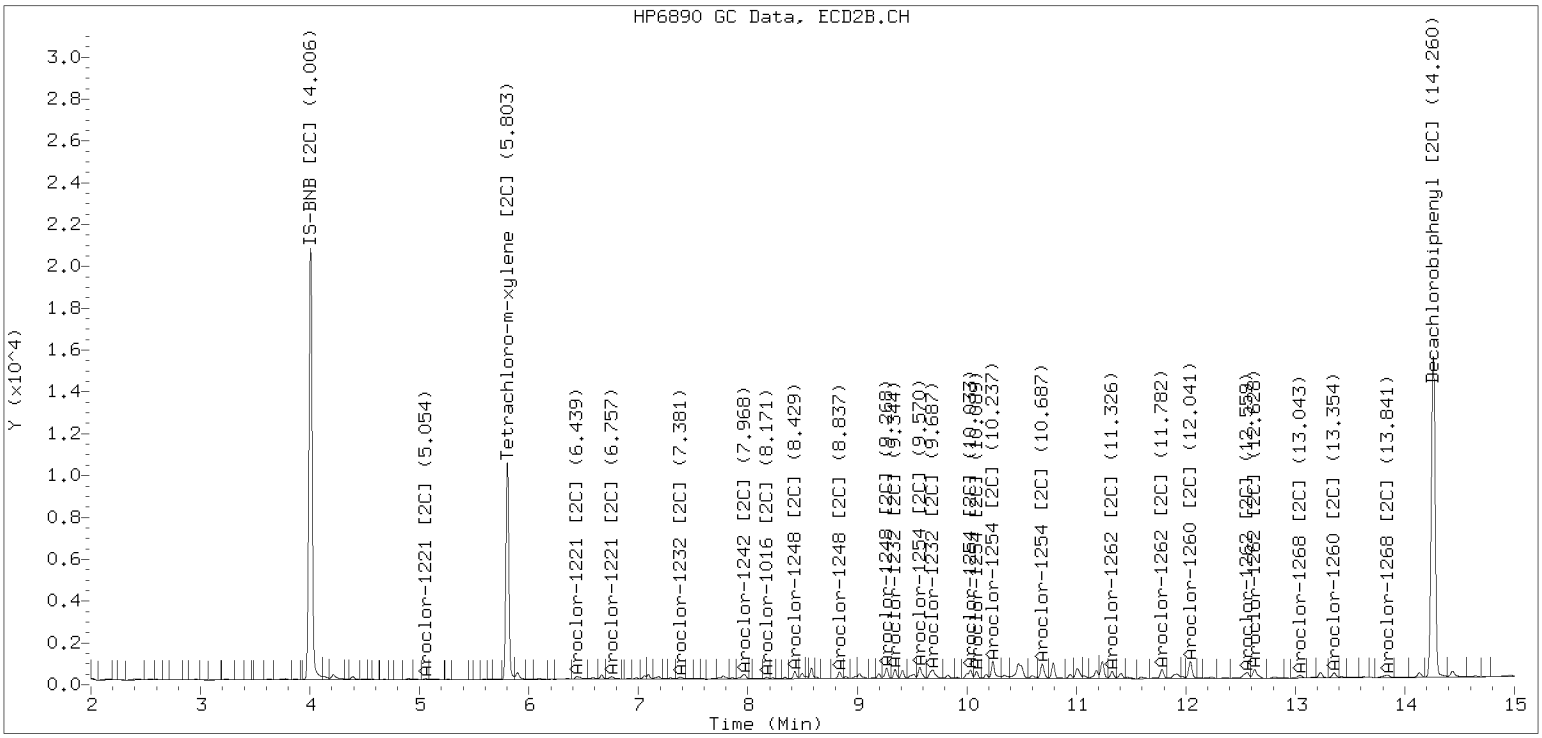
Processed Integration (Before)



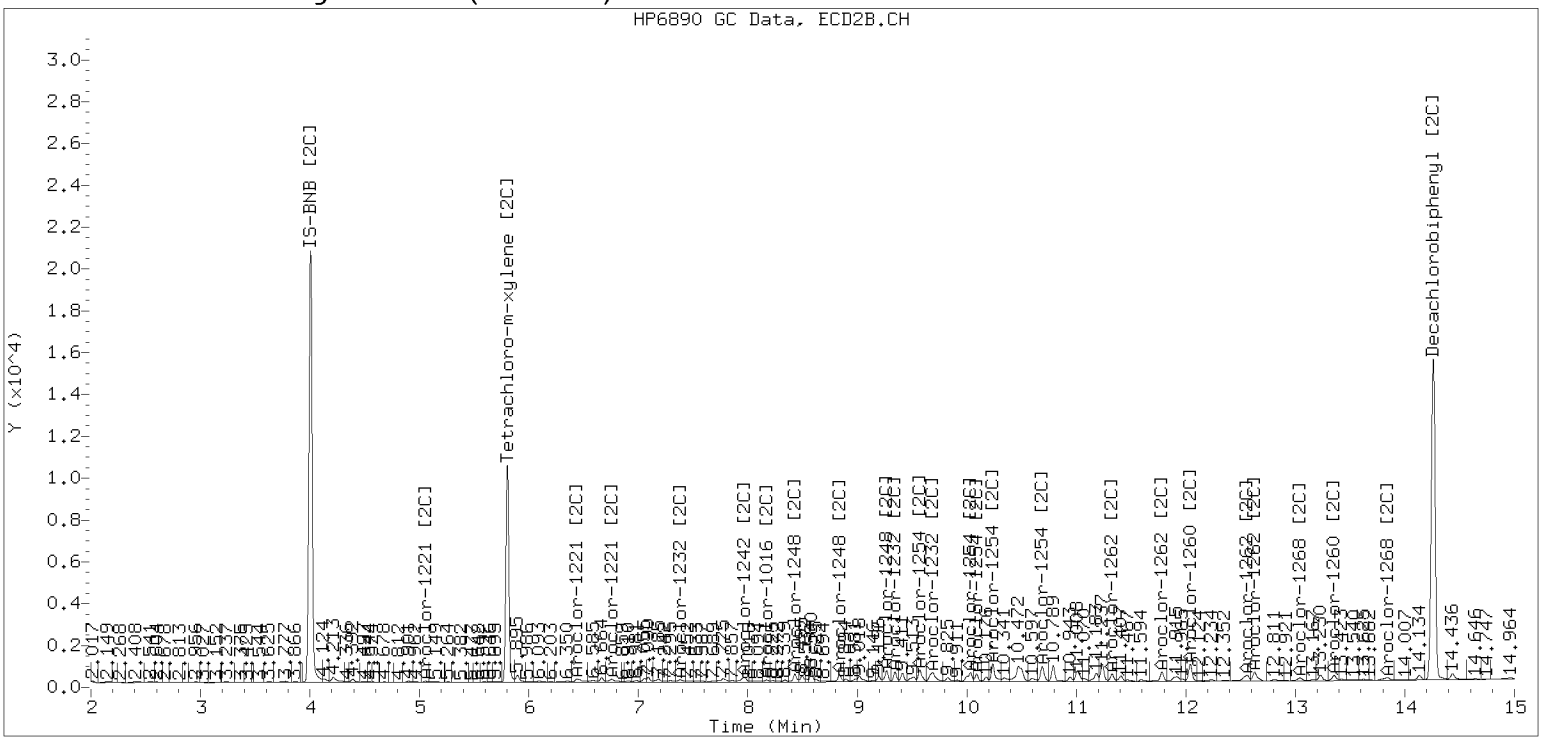
Manual Peak Adjustment, ZB-35

Datafile: ecd7.i/211127.b/211127.b/11272107ECD7.D Injection Date: 27-NOV-2021

Manual Integration (After)



Processed Integration (Before)



Analytical Resources, LLC
Analytical Chemists and Consultants

PREPARATION BATCH SUMMARY

EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Batch:	BJK0603 Batch Matrix: Solid	Preparation:	EPA 3546 (Microwave)

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
LDW21-IT637A	21K0332-01	11272107ECD7.D	11/24/21 08:25	
Blank	BJK0603-BLK1	11272104ECD7.D	11/24/21 08:25	
LCS	BJK0603-BS1	11272105ECD7.D	11/24/21 08:25	
LDW21-IT637A	BJK0603-MS1	11272108ECD7.D	11/24/21 08:25	
LDW21-IT637A	BJK0603-MSD1	11272109ECD7.D	11/24/21 08:25	
Reference	BJK0603-SRM1	11272106ECD7.D	11/24/21 08:25	

Analytical Resources, LLC
Analytical Chemists and Consultants

ORGANICS PREPARATION BENCH SHEET

Batch: BJK0603

Prepared using: EPA 3546 (Microwave)

8082A PCB Solid 4 in Solid (Version:7 Aroclors)

Matrix: Solid **Date Prepared:** 11/24/21 **Balance ID:** B14462614 **Set Up By:** 11/23/21

WO Comments

21K0332: <G> Project batch as meuh as possible </G> <C> SRM, MS, DUP</C> <M> PS, MS/MSD </M> <E>8270E RM H002055, SIM RM H010158, PCB RM J006840-43, MS/MSD </E>
<H> J006840-43, Dup </H>

The following standards may be missing from this batch!

Designator	Description
QLS 5	QLS Spike

Analysis: 8082A PCB Solid 4

Lab Number & Container	% Solids	Initial (g) Target Dry: 12.5 (Wet)	Actual	(REQ) Acid C/U (5mL)	(REQ) Sulfur C/U (5mL) 1 2 3	(REQ) Silica Gel C/U (2:5)	Final Effective Vol (mL)	Vol (mL) to Lab	Extraction Comments
21K0332-01 A	78.5	(15.92)	15.93	5mL	5mL	2mL	2.5	1.0	

Batch QC

Lab Number	% Solids	Initial (g) Target Dry: 12.5 (Wet)	Actual	(REQ) Acid C/U (5mL)	(REQ) Sulfur C/U (5mL) 1 2 3	(REQ) Silica Gel C/U (2:5)	Final Effective Vol (mL)	Vol (mL) to Lab	Extraction Comments
BJK0603-BLK1	100.0	(12.50)	12.50	5mL	5mL	2mL	2.5	1.0	(10g Actual Wt.)
BJK0603-BS1	100.0	(12.50)	12.50	5mL	5mL	2mL	2.5	1.0	(10g Actual Wt.)
BJK0603-MS1	78.5	()15.92	15.93	5mL	5mL	2mL	2.5	1.0	Use 21K0332-01
BJK0603-MSD1	78.5	() 15.92	15.92	5mL	5mL	2mL	2.5	1.0	Use 21K0332-01
BJK0603-SRM1	100.0	~~5.00~~ ~~(12.50)~~	~~5.00~~ 11/24/21	5mL	5mL	2mL	2.5	1.0	Use J007936

+1g H_2O/2.00

D weigh 2 grams 11/24/21

11/24/21 Client ID verified By Date

SA 11/26/21 Preparation Reviewed By Date

11/24/21 08:25 Extraction Date and Time

Printed: 11/23/2021 1:39:51PM

3099F
Page 1 of 2

Analytical Resources, LLC
Analytical Chemists and Consultants

ORGANICS PREPARATION BENCH SHEET

Batch: BJK0603

Prepared using: EPA 3546 (Microwave)

8082A PCB Solid 4 in Solid (Version:7 Aroclors)

WO Comments

21K0332: <G> Project batch as mcuh as possible </G> <C> SRM, MS, DUP</C> <M> PS, MS/MSD </M> <E>8270E RM H002055, SIM RM H010158, PCB RM J006840-43, MS/MSD </E>
<H> J006840-43, Dup </H>

Prep Steps

Microwave
1 2 3
11/24/21
CT Analyst/Date

KD
100°C
Hexane Exchange
(2 X 20 mL)
1 2 3 4 5 6
JJ 112621
Analyst/Date

TurboVap
Pre Cleanups
1 2 3 4 5
11/26/21
Analyst/Date

TurboVap
Post Cleanups
1 2 3 4 5
SH 11/26/21
Analyst/Date

Vialing
SH 11/26/21
Analyst/Date

Reagents Used

Station/Reagent	Standard ID
Microwave Analyst: CT Date: 11/24/21	
Anhydrous Sodium Sulfate	J012075
Neutral Glass Wool	J009627
1:1 Hexane/Acetone	J011475
Hexane	J009729
KD Analyst: JJ Date: 112621	
Hexane	J010567
Anhydrous Sodium Sulfate	N/A
Vialing Analyst: SH Date: 11/26/21	
Hexane	J010567
Concentrated Sulfuric Acid	J010125
Tetrabutylammonium hydrogensulfate (TBAS)	J011625
Sodium Sulfite	J007364 ~~J012075~~ SH 11/26/21
Silica Gel (SPE) Darts	J010275

Surrogates & Spike Standards Used

Type	Vial ID / Standard ID	Vol uL	Analyst	Witness
Surrogate 2µg/mL	N J008146 Exp: 02/07/2022	50µL	CT	
Spike 20µg/mL	1 J008330 Exp: 02/12/2022	63µL	CT	

(V) indicates a virtual standard combining two or more physical standards. In these cases the Standard ID refers to the virtual standard, not the parent standards.

If a Standard ID is missing, but should be present, check the standard definition in Element LIMS to be sure Standard Info 6 has the correct letter or number designator matching the vial designator inthe Standard ID column. If it is correct, check the batch and bench sheet in Element LIMS to be sure the correct standards are selected for surrogate(s) and spike(s).

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Organic Extractions Laboratory Analyst Notes

Extraction Parameter: pCB Extraction Batch BJK0603

Total Solids Batch: BJK0591 Work Order(s): 21K0332,353

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)= 353-01, 332-01	TW 11/22/21
☐ Rocks (%+size)?	
☐ Organics (Leaves/sticks/grass)=	
☑ Oily, obvious fuel/sulfur odors= 353-01	TW 11/22/21
☐ 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).	
☑ Share Samples Y / N 353-01	TW 11/22/21
☑ Multiple Jars Y / N	TW 11/22/21
☐ Sample Pre-Screens indicate analyte activity=	
☐ Sample weights/volumes reduced based on Pre-Screen=	

Analytical Resources, LLC
Analytical Chemists and Consultants

ORGANICS PREPARATION BENCH SHEET

Batch: BJK0603

Prepared using: EPA 3546 (Microwave)

8082A PCB Solid 4 in Solid (Version:7 Aroclors)

WO Comments

21K0332: <G> Project batch as mcuh as possible </G> <C> SRM, MS, DUP</C> <M> PS, MS/MSD </M> <E>8270E RM H002055, SIM RM H010158, PCB RM J006840-43, MS/MSD </E>
<H> J006840-43, Dup </H>

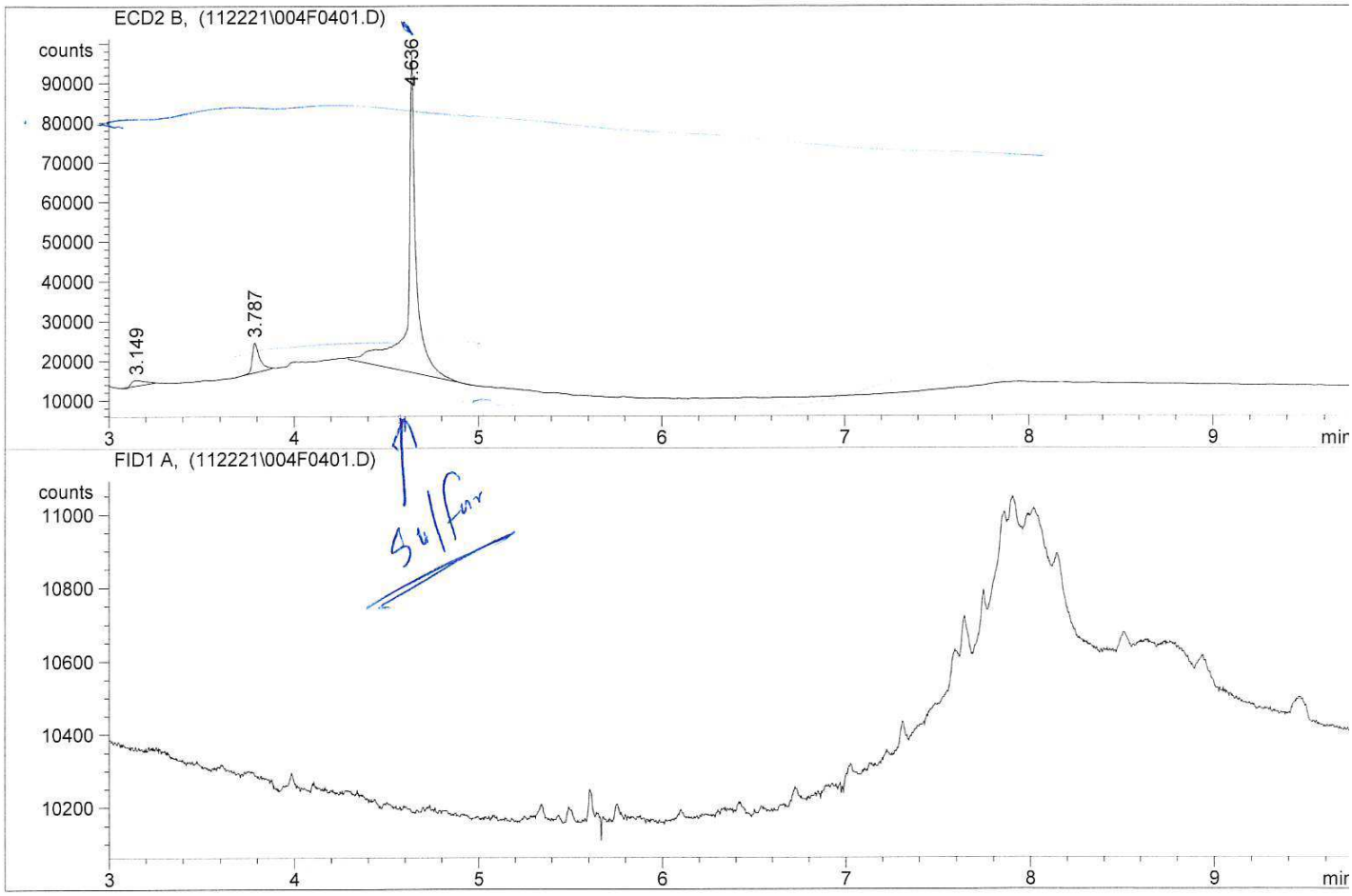
Prep Instructions	
SPECIAL INSTRUCTIONS: 1. Weigh soil/sed into beakers-lightly dry with sodium sulfate. 2. Transfer to microwave vessel(s). Note: (do not fill vessels more than 2/3rd full. Some samples may require two vessels). 3. Add 1:1 Hexane/Acetone until the solvent layer is 3 inches above the soil layer after homogenization. 4. Add surr/spike. 5. Microwave on appropriate power setting determined by # of samples. 6. After microwave-Re-homogenize while hot then cool vessels in R-05 15 minutes. Re-homogenize while cool. 7. Decant 1:1 Hex/Ace into Erlenmeyer flask with sodium sulfate in bottom and funnel with neutral glasswool plug. 8. Re-homogenize and rinse with 1:1 Hexane/Acetone. 9. Let cool and decant solvent then empty the soil into the funnel and rinse with Hexane. 10. KD on 100° bath. 11. Exchange (2 X with 20mL) Hexane. 12. TurboVap. 13. Clean-ups. 14. TurboVap. 15. Vial with Hexane. A. Need Total Solids Y [N] B. Archive/Freeze [Y] N	

Printed: 11/23/2021 12:24:31PM

3099F

Data File C:\HPCHEM\1\DATA\112221\004F0401.D Sample Name: 21K0332 01

Injection Date	: 11/22/2021 4:47:25 PM	Seq. Line :	4
Sample Name	: 21K0332 01	Location :	Vial 4
Acq. Operator	: TW	Inj :	1
		Inj Volume :	1 µl
Sequence File	: C:\HPCHEM\1\SEQUENCE\112221.S		
Method	: C:\HPCHEM\1\METHODS\SCREEN.M		
Last changed	: 7/9/2021 3:37:33 AM by TW		
SCREEN METHOD			



*** End of Report ***

59/2.5mL ≈ 72x

zero

0.5g/mL 0.5

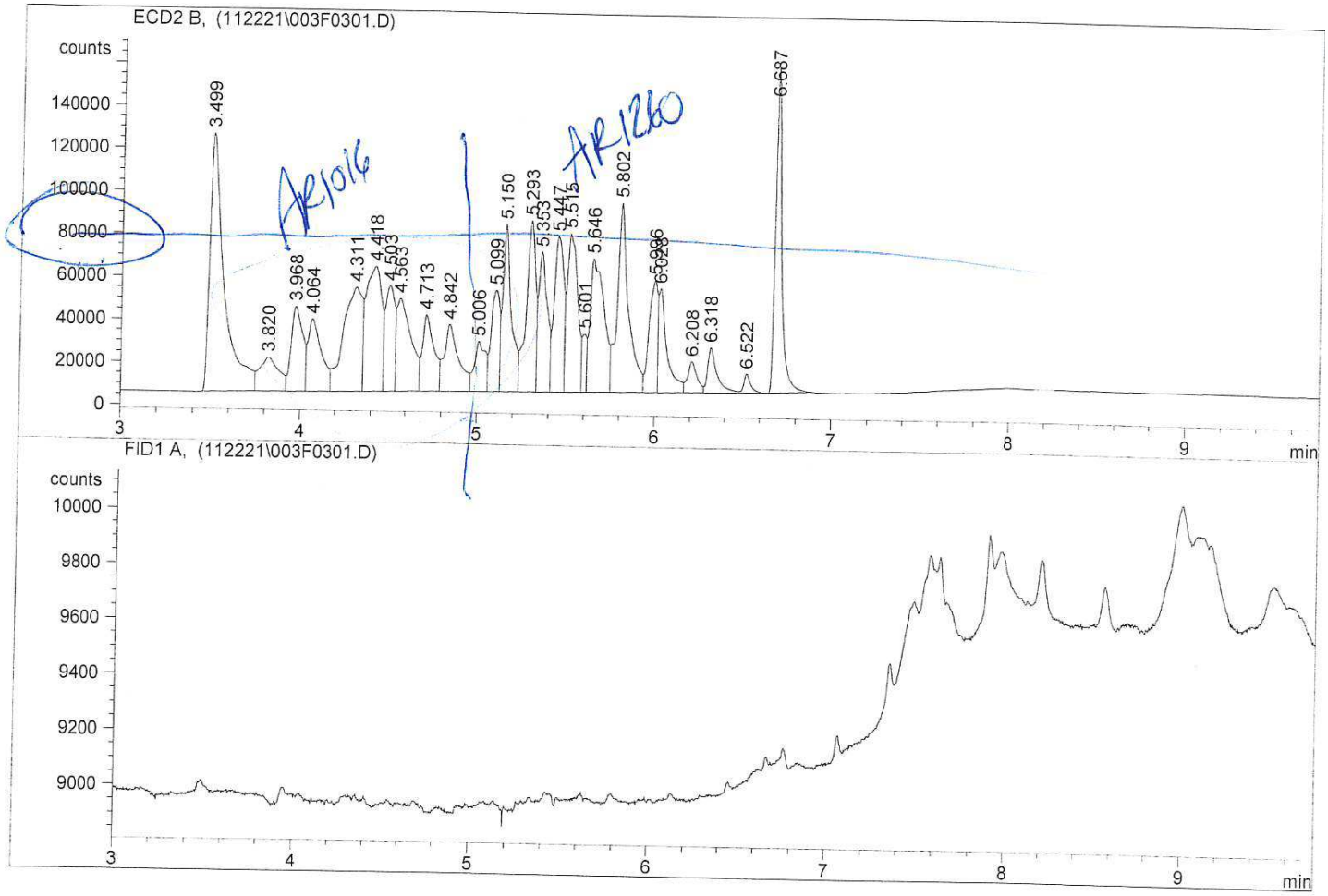
4X

Instrument 1 11/22/2021 4:57:16 PM TW Page 1 of 1

Data File C:\HPCHEM\1\DATA\112221\003F0301.D

Sample Name: AR1660 1PPM

Injection Date	: 11/22/2021 4:33:42 PM	Seq. Line :	3
Sample Name	: AR1660 1PPM	Location :	Vial 3
Acq. Operator	: TW	Inj :	1
		Inj Volume :	1 µl
Sequence File	: C:\HPCHEM\1\SEQUENCE\112221.S		
Method	: C:\HPCHEM\1\METHODS\SCREEN.M		
Last changed	: 7/9/2021 3:37:33 AM by TW		
SCREEN METHOD			



*** End of Report ***

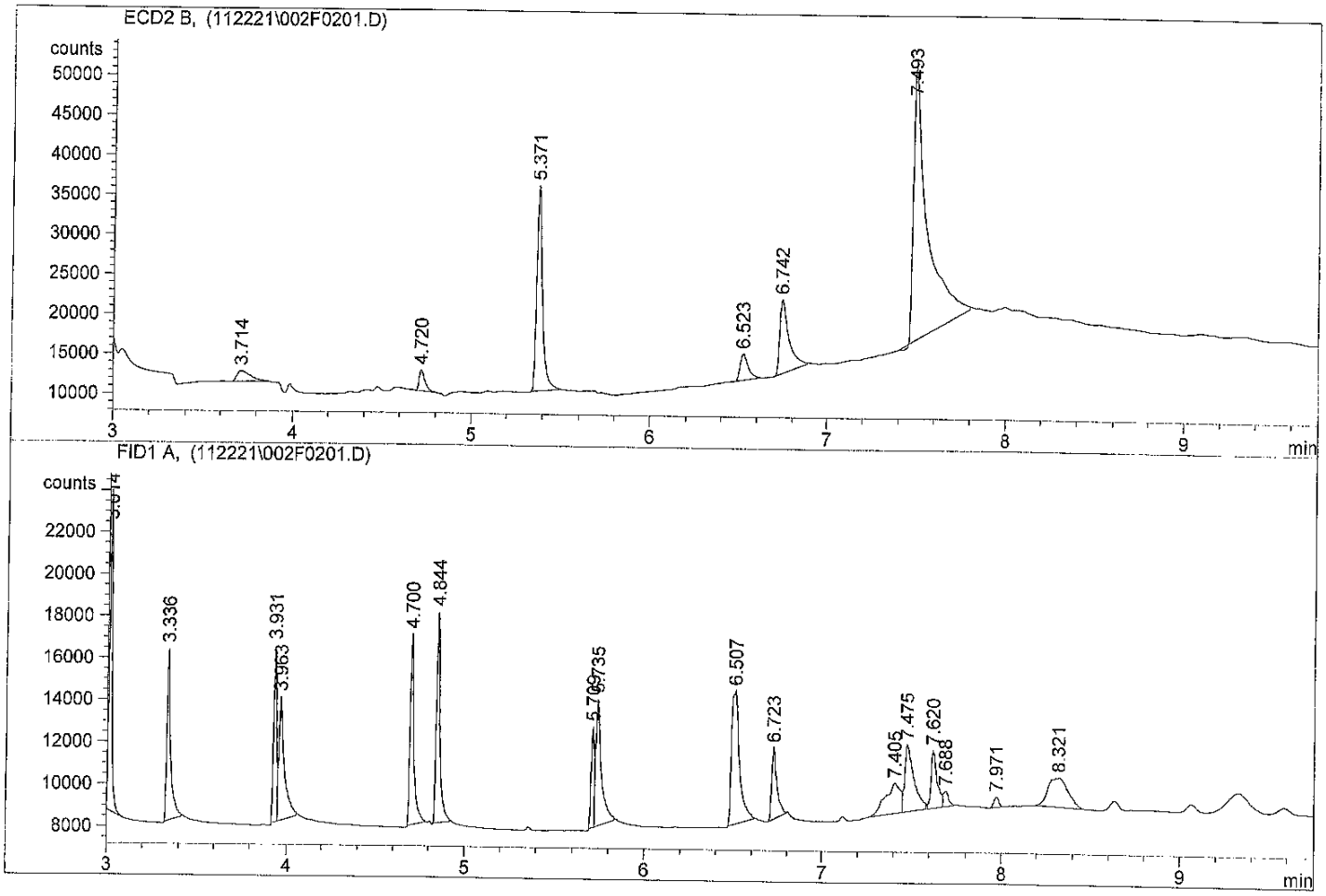
30K = 1ppm

Instrument 1 11/22/2021 4:43:33 PM TW

Data File C:\HPCHEM\1\DATA\112221\002F0201.D

Sample Name: PNA STD 10PPM

Injection Date	: 11/22/2021 4:19:17 PM	Seq. Line :	2
Sample Name	: PNA STD 10PPM	Location :	Vial 2
Acq. Operator	: TW	Inj :	1
		Inj Volume :	1 µl
Sequence File	: C:\HPCHEM\1\SEQUENCE\112221.S		
Method	: C:\HPCHEM\1\METHODS\SCREEN.M		
Last changed	: 7/9/2021 3:37:33 AM by TW		
SCREEN METHOD			

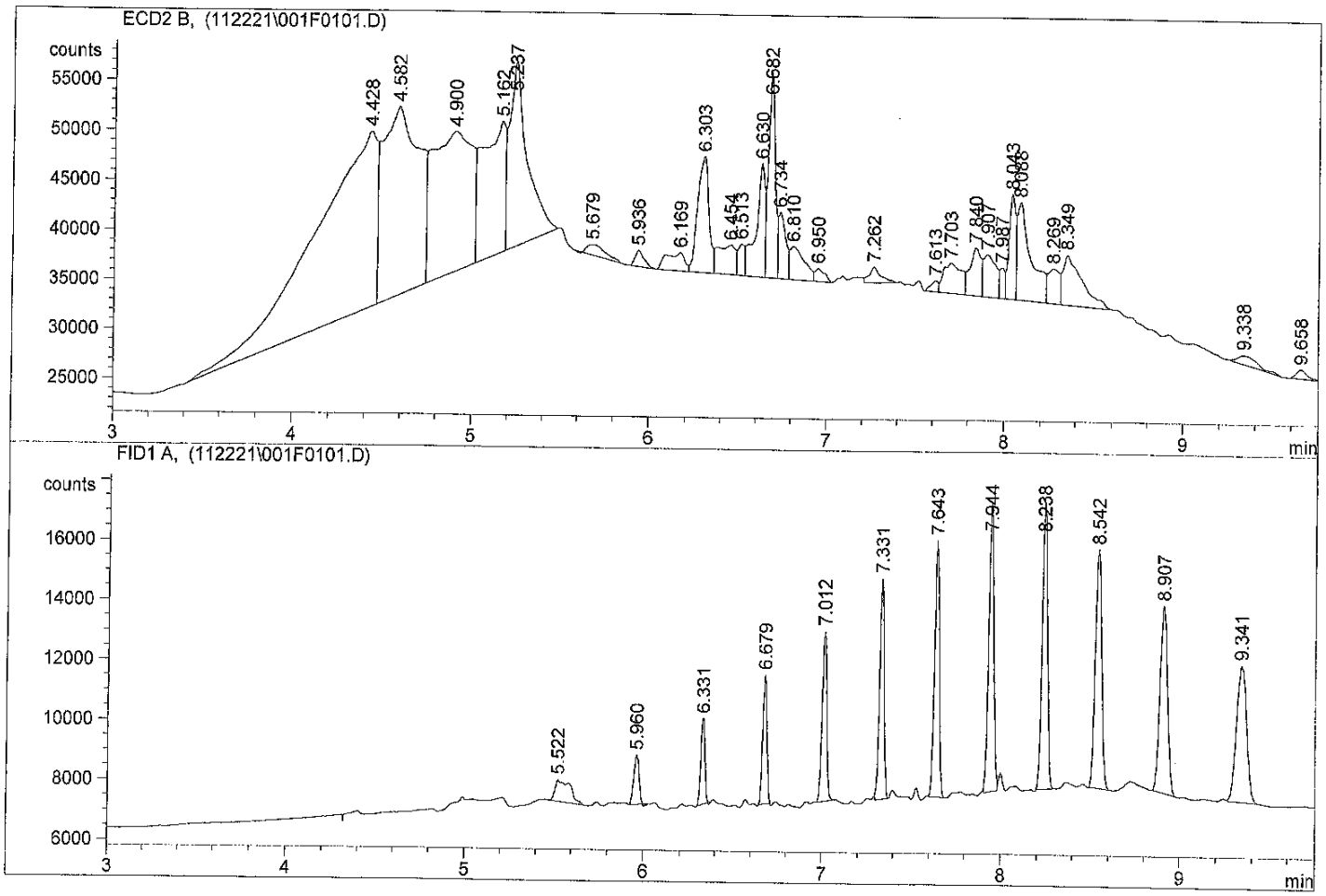


*** End of Report ***

Data File C:\HPCHEM\1\DATA\112221\001F0101.D

Sample Name: DCM RINSE

Injection Date	: 11/22/2021 4:05:13 PM	Seq. Line :	1
Sample Name	: DCM RINSE	Location :	Vial 1
Acq. Operator	: TW	Inj :	1
		Inj Volume :	1 µl
Sequence File	: C:\HPCHEM\1\SEQUENCE\112221.S		
Method	: C:\HPCHEM\1\METHODS\SCREEN.M		
Last changed	: 7/9/2021 3:37:33 AM by TW		
SCREEN METHOD			



*** End of Report ***

Analytical Resources, LLC
Analytical Chemists and Consultants

CLEANUP BATCH SUMMARY

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Cleanup Batch:	CJK0283	Cleanup Type:	Sulfuric Acid
Cleanup Method:	EPA 3665 Sulfuric Acid Cleanup - uL	Analysis:	EPA 8082A

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
LDW21-IT637A	21K0332-01	11272107ECD7.D	11/26/2021	
Matrix Spike Dup	BJK0603-MSD1	11272109ECD7.D	11/26/2021	
Matrix Spike	BJK0603-MS1	11272108ECD7.D	11/26/2021	
LCS	BJK0603-BS1	11272105ECD7.D	11/26/2021	
Blank	BJK0603-BLK1	11272104ECD7.D	11/26/2021	
Reference	BJK0603-SRM1	11272106ECD7.D	11/26/2021	

Analytical Resources, LLC
Analytical Chemists and Consultants

CLEANUP BENCH SHEET

CJK0283

Matrix: Solid **Cleanup using: Organics - EPA 3665 Sulfuric Acid Cleanup - uL** **Printed: 11/26/2021 9:48:50PM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (uL)	Final (uL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments
21K0332-01	A	LDW21-IT637A	A 01	2.5	2.5	8082A PCB Solid 4	11/26/2021	SH	
BJK0603-BLK1	-	Blank	-	2.5	2.5	-	11/26/2021	SH	
BJK0603-BS1	-	LCS	-	2.5	2.5	-	11/26/2021	SH	
BJK0603-MS1	-	Matrix Spike	-	2.5	2.5	-	11/26/2021	SH	
BJK0603-MSD1	-	Matrix Spike Dup	-	2.5	2.5	-	11/26/2021	SH	
BJK0603-SRM1	-	Reference	-	2.5	2.5	-	11/26/2021	SH	

Analytical Resources, LLC
Analytical Chemists and Consultants

CLEANUP BATCH SUMMARY

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Cleanup Batch:	CJK0284	Cleanup Type:	Sulfur
Cleanup Method:	EPA 3660B Sulfur Cleanup - uL	Analysis:	EPA 8082A

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
Blank	BJK0603-BLK1	11272104ECD7.D	11/26/2021	
Reference	BJK0603-SRM1	11272106ECD7.D	11/26/2021	
Matrix Spike Dup	BJK0603-MSD1	11272109ECD7.D	11/26/2021	
Matrix Spike	BJK0603-MS1	11272108ECD7.D	11/26/2021	
LCS	BJK0603-BS1	11272105ECD7.D	11/26/2021	
LDW21-IT637A	21K0332-01	11272107ECD7.D	11/26/2021	

Analytical Resources, LLC
Analytical Chemists and Consultants

CLEANUP BENCH SHEET

CJK0284

Matrix: Solid **Cleanup using: Organics - EPA 3660B Sulfur Cleanup - uL** **Printed: 11/26/2021 9:49:42PM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (uL)	Final (uL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments
21K0332-01	A	LDW21-IT637A	A 01	2.5	2.5	8082A PCB Solid 4	11/26/2021	SH	
BJK0603-BLK1	-	Blank	-	2.5	2.5	-	11/26/2021	SH	
BJK0603-BS1	-	LCS	-	2.5	2.5	-	11/26/2021	SH	
BJK0603-MS1	-	Matrix Spike	-	2.5	2.5	-	11/26/2021	SH	
BJK0603-MSD1	-	Matrix Spike Dup	-	2.5	2.5	-	11/26/2021	SH	
BJK0603-SRM1	-	Reference	-	2.5	2.5	-	11/26/2021	SH	

Analytical Resources, LLC
Analytical Chemists and Consultants

CLEANUP BATCH SUMMARY

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Cleanup Batch:	CJK0285	Cleanup Type:	Silica Gel
Cleanup Method:	EPA 3630C Silica Gel Cleanup	Analysis:	EPA 8082A

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
Matrix Spike Dup	BJK0603-MSD1	11272109ECD7.D	11/26/2021	
LDW21-IT637A	21K0332-01	11272107ECD7.D	11/26/2021	
Matrix Spike	BJK0603-MS1	11272108ECD7.D	11/26/2021	
LCS	BJK0603-BS1	11272105ECD7.D	11/26/2021	
Blank	BJK0603-BLK1	11272104ECD7.D	11/26/2021	
Reference	BJK0603-SRM1	11272106ECD7.D	11/26/2021	

Analytical Resources, LLC
Analytical Chemists and Consultants

CLEANUP BENCH SHEET

CJK0285

Matrix: Solid **Cleanup using: Organics - EPA 3630C Silica Gel Cleanup** **Printed: 11/26/2021 9:50:26PM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (mL)	Final (mL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments
21K0332-01	A	LDW21-IT637A	A 01	2.5	2.5	8082A PCB Solid 4	11/26/2021	SH	
BJK0603-BLK1	-	Blank	-	2.5	2.5	-	11/26/2021	SH	
BJK0603-BS1	-	LCS	-	2.5	2.5	-	11/26/2021	SH	
BJK0603-MS1	-	Matrix Spike	-	2.5	2.5	-	11/26/2021	SH	
BJK0603-MSD1	-	Matrix Spike Dup	-	2.5	2.5	-	11/26/2021	SH	
BJK0603-SRM1	-	Reference	-	2.5	2.5	-	11/26/2021	SH	

Analytical Resources, LLC
Analytical Chemists and Consultants

Form I

METHOD BLANK DATA SHEET

EPA 8082A

Blank

Laboratory:	Analytical Resources, LLC			SDG:	21K0332
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Matrix:	Solid	Laboratory ID:	BJK0603-BLK1	File ID:	11272104ECD7.D
Sampled:	N/A	Prepared:	11/24/21 08:25	Analyzed:	11/27/21 13:07
Solids:		Preparation:	EPA 3546 (Microwave)	Initial/Final:	12.5 g / 2.5 mL
Batch:	BJK0603	Sequence:	SJK0396	Calibration:	EK00072
Instrument:	ECD7	Column:	ZB5	Cleanups:	Silica Gel, Sulfur, Sulfuric Acid

CAS NO.	COMPOUND	DILUTION	CONC: (ug/kg wet)	Q	DL	RL
12674-11-2	Aroclor 1016	1	4.0	U	1.6	4.0
11104-28-2	Aroclor 1221	1	4.0	U	1.6	4.0
11141-16-5	Aroclor 1232	1	4.0	U	1.6	4.0
53469-21-9	Aroclor 1242	1	4.0	U	1.6	4.0
12672-29-6	Aroclor 1248	1	4.0	U	1.6	4.0
11097-69-1	Aroclor 1254	1	4.0	U	1.6	4.0
11096-82-5	Aroclor 1260	1	4.0	U	0.6	4.0

SURROGATES	ADDED: (ug/kg wet)	FOUND: (ug/kg wet)	% REC	QC LIMITS	Q
Decachlorobiphenyl	8.0000	8.57	107	40 - 126	
Tetrachlorometaxylene	8.0000	7.55	94.4	44 - 120	
Decachlorobiphenyl [2C]	8.0000	9.41	118	40 - 126	
Tetrachlorometaxylene [2C]	8.0000	7.47	93.3	44 - 120	

[2C] indicates second-column analyte, present if quantification on any batch samples used second column data.

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211127.b/11272104ECD7.D
Data file 2: /211127.b/211127.b/11272104ECD7.D
Method: \\target\share\chem4\ecd7.i\211127.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: BJK0603-BLK1
Client ID:
Injection Date: 27-NOV-2021 13:07
Report Date: 11/29/2021 10:56
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col			ZB35 Col			ZB5	ZB35		
RT	Shift	Response	RT	Shift	Response	on col	on col	RPD	Compound/Flag
5.946	0.003	164526	5.803	0.002	415924	37.8	37.3	1.1	Tetrachloro-m-xylene
14.040	-0.000	207505	14.262	0.001	1056412	42.8	47.0	9.4	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	328626	-0.8
Hexabromobiphenyl	407599	418576	2.7

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	878005	-2.3
Hexabromobiphenyl	1136250	1220223	7.4

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.410	0.001	113	0.9	1	7.374	-0.006	1264	2.6
Aroclor-1016	2	7.812	0.027	1501	3.5	2	7.979	0.010	854	0.7
Aroclor-1016	3	7.954	0.029	111	0.7	3	8.174	0.004	152	0.3
Aroclor-1016	4	8.020	-0.010	114	1.0	4	8.427	-0.003	1173	3.8
Total Col1Ave (4 peaks):					1.5	Total Col2Ave (4 peaks):				1.9 RPD = 21
Corrected Ave (3 peaks):					0.8	Corrected Ave (3 peaks):				1.2 RPD = 35
Aroclor-1221	1	4.852	-0.012	969	34.5	1	5.112	0.031	12	0.2
Aroclor-1221	2	6.355	0.082	658	13.1	2	6.439	0.019	4634	30.6
Aroclor-1221	3	6.429	-0.094	3220	26.2	3	6.752	0.007	1532	5.5
Total Col1Ave (3 peaks):					24.6	Total Col2Ave (3 peaks):				12.1 RPD = 68*
Corrected Ave: < 3 Peaks						Corrected Ave: < 3 Peaks				
Aroclor-1232	1	4.852	-0.015	969	58.5	1	5.112	0.030	12	0.4
Aroclor-1232	2	7.812	0.025	1501	8.2	2	7.374	-0.010	1264	5.3
Aroclor-1232	3	9.082	0.011	313	5.2	3	9.344	-0.001	950	5.8
Aroclor-1232	4	9.387	0.029	189	2.9	4	9.669	-0.023	486	2.4
Total Col1Ave (4 peaks):					18.7	Total Col2Ave (4 peaks):				3.5 RPD = 138*
Corrected Ave (3 peaks):					5.4	Corrected Ave (3 peaks):				2.7 RPD = 68*
Aroclor-1242	1	7.410	-0.001	113	1.1	1	7.374	-0.007	1264	3.0
Aroclor-1242	2	7.812	0.027	1501	4.3	2	7.979	0.009	854	0.9
Aroclor-1242	3	9.082	0.012	313	2.7	3	9.344	-0.001	950	3.0
Aroclor-1242	4	9.387	0.029	189	1.5	4	9.669	-0.022	486	1.3
Total Col1Ave (4 peaks):					2.4	Total Col2Ave (4 peaks):				2.0 RPD = 16
Corrected Ave (3 peaks):					1.8	Corrected Ave (3 peaks):				1.7 RPD = 2
Aroclor-1248	1	8.538	-0.006	262	1.5	1	8.427	-0.002	1173	2.8
Aroclor-1248	2	8.799	0.086	481	2.4	2	8.811	-0.026	1452	2.9
Aroclor-1248	3	9.082	-0.043	313	1.2	3	9.344	0.076	950	1.3
Aroclor-1248	4	9.387	0.030	189	0.9	4	9.669	-0.021	486	0.7
Total Col1Ave (4 peaks):					1.5	Total Col2Ave (4 peaks):				1.9 RPD = 24
Corrected Ave (3 peaks):					1.2	Corrected Ave (3 peaks):				1.6 RPD = 28
Aroclor-1254	1	9.387	-0.050	189	0.6	1	9.614	0.043	993	1.4
Aroclor-1254	2	---			0.0	2	9.981	-0.020	1267	4.4
Aroclor-1254	3	---			0.0	3	10.187	0.095	1667	3.0
Aroclor-1254	4	9.936	-0.002	262	0.6	4	10.272	0.031	1042	0.9
Aroclor-1254	5	10.584	-0.058	411	1.5	5	10.698	0.008	989	1.7
Total Col1Ave (3 peaks):					0.9	Total Col2Ave (5 peaks):				2.3 RPD = 89*
Corrected Ave: < 3 Peaks						Corrected Ave (4 peaks):				1.8
Aroclor-1260	1	---			0.0	1	11.790	0.008	1213	1.4
Aroclor-1260	2	11.500	-0.002	613	2.2	2	12.043	-0.000	424	0.2
Aroclor-1260	3	11.917	0.046	801	1.2	3	12.623	-0.004	315	0.2
Aroclor-1260	4	12.295	0.022	220	0.6	4	13.424	0.070	5649	8.3
Aroclor-1260	5	---			0.0	NS	---			----
Total Col1Ave (3 peaks):					1.3	Total Col2Ave (4 peaks):				2.5 RPD = 62*
Corrected Ave: < 3 Peaks						Corrected Ave (3 peaks):				0.6
Aroclor-1262	1	10.947	-0.012	519	2.2	1	11.353	0.023	962	0.7
Aroclor-1262	2	12.295	-0.094	220	0.6	2	11.790	0.006	1213	1.1
Aroclor-1262	3	---			0.0	3	12.534	-0.032	1325	1.0
Aroclor-1262	4	13.160	0.033	365	1.3	4	12.623	-0.007	315	0.2
Total Col1Ave (3 peaks):					1.4	Total Col2Ave (4 peaks):				0.7 RPD = 61*
Corrected Ave: < 3 Peaks						Corrected Ave (3 peaks):				0.6
Aroclor-1268	1	12.295	-0.094	220	0.2	1	12.534	-0.034	1325	0.4
Aroclor-1268	2	---			0.0	2	12.623	-0.010	315	0.1
Aroclor-1268	3	12.847	-0.001	1185	1.7	3	13.032	-0.000	1754	0.6
Aroclor-1268	4	13.629	-0.004	2047	1.0	4	13.840	-0.010	1470	0.1
Total Col1Ave (3 peaks):					1.0	Total Col2Ave (4 peaks):				0.3 RPD = 107*

Corrected Ave: < 3 Peaks Corrected Ave (3 peaks): 0.2

Total PCB Area Col1 (6.043 - 13.940) = 36961 Col1 Total PCB = 0.0 ppm*

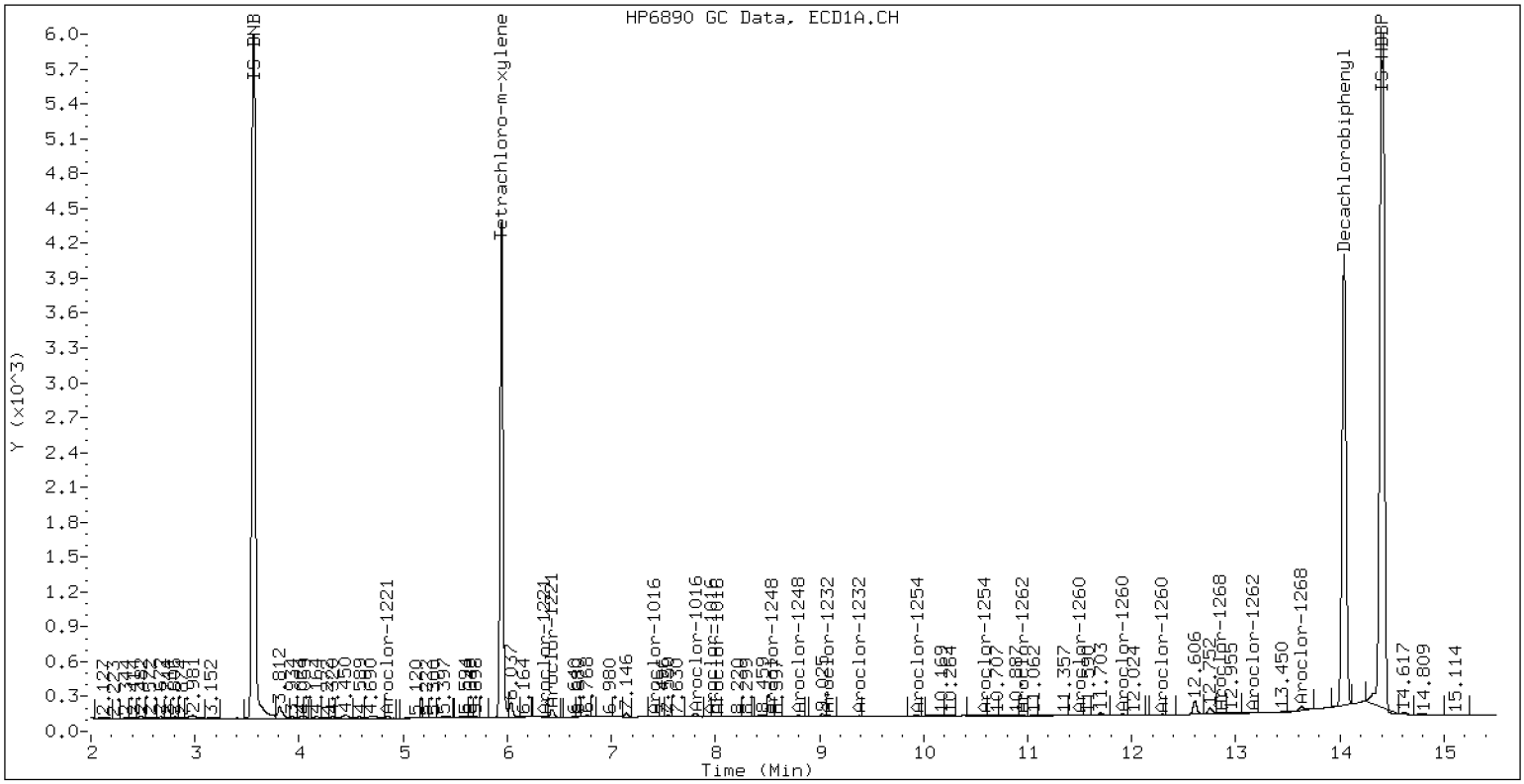
Total PCB Area Col2 (6.043 - 13.940) = 88834 Col2 Total PCB = 0.0 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

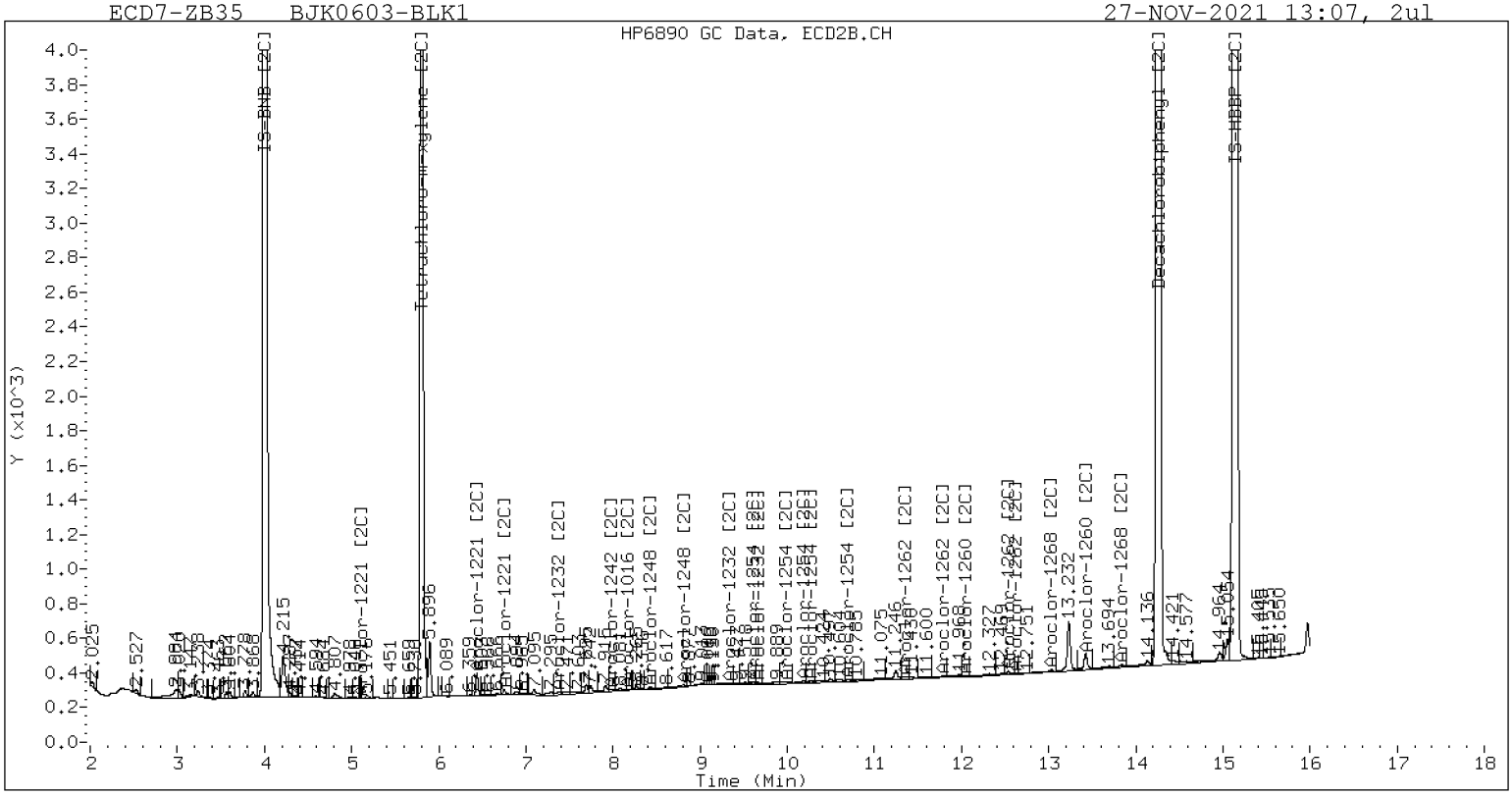
PCB Dual Column Chromatograms

ECD7-ZB5 BJK0603-BLK1 27-NOV-2021 13:07, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 BJK0603-BLK1 27-NOV-2021 13:07, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

LCS / LCS DUPLICATE RECOVERY

EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Matrix:	Solid	Analyzed:	11/27/21 13:28
Batch:	BJK0603	Laboratory ID:	BJK0603-BS1
Preparation:	EPA 3546 (Microwave)	Sequence Name:	LCS
Initial/Final:	12.5 g / 2.5 mL		

COMPOUND	SPIKE ADDED (ug/kg wet)	LCS CONCENTRATION (ug/kg wet)	Q	LCS % REC. #	QC LIMITS REC.
Aroclor 1016 [2C]	101	89.2		88.5	56 - 120
Aroclor 1260 [2C]	101	88.4		87.7	58 - 120

* Indicates values outside of QC limits

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211127.b/11272105ECD7.D
Data file 2: /211127.b/211127.b/11272105ECD7.D
Method: \\target\share\chem4\ecd7.i\211127.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: BJK0603-BS1
Client ID:
Injection Date: 27-NOV-2021 13:28
Report Date: 11/29/2021 10:56
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.943	0.001	183401	5.801	-0.000	449468	40.6	38.9	4.2	Tetrachloro-m-xylene
14.041	0.000	231555	14.262	0.001	1177841	46.0	49.7	7.7	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	340977	3.0
Hexabromobiphenyl	407599	435241	6.8

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	910537	1.3
Hexabromobiphenyl	1136250	1288853	13.4

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.410	0.000	55324	424.1	1	7.380	-0.000	219962	429.9
Aroclor-1016	2	7.784	-0.001	193804	432.4	2	7.969	-0.000	531660	445.2
Aroclor-1016	3	7.924	0.000	74602	427.7	3	8.169	-0.000	209258	451.1
Aroclor-1016	4	8.030	-0.000	52186	436.5	4	8.429	-0.000	145944	458.6
Total Col1Ave (4 peaks):				430.2		Total Col2Ave (4 peaks):			446.2	RPD = 4
Corrected Ave (3 peaks):				428.1		Corrected Ave (3 peaks):			442.1	RPD = 3
Aroclor-1221	1	4.860	-0.004	339	11.6	1	5.070	-0.011	1281	21.6
Aroclor-1221	2	6.268	-0.006	6373	122.0	2	6.418	-0.001	20398	129.8
Aroclor-1221	3	6.519	-0.004	34669	271.9	3	6.742	-0.003	86206	297.4
Total Col1Ave (3 peaks):				135.2		Total Col2Ave (3 peaks):			149.6	RPD = 10
Corrected Ave: < 3 Peaks						Corrected Ave: < 3 Peaks				
Aroclor-1232	1	4.860	-0.007	339	19.7	1	5.070	-0.012	1281	36.6
Aroclor-1232	2	7.784	-0.003	193804	1017.8	2	7.380	-0.004	219962	881.8
Aroclor-1232	3	9.070	-0.002	11158	178.5	3	9.343	-0.002	22399	131.4
Aroclor-1232	4	9.357	-0.001	8923	132.3	4	9.689	-0.003	12237	59.2
Total Col1Ave (4 peaks):				337.1		Total Col2Ave (4 peaks):			277.2	RPD = 19
Corrected Ave (3 peaks):				110.2		Corrected Ave (3 peaks):			75.7	RPD = 37
Aroclor-1242	1	7.410	-0.002	55324	521.3	1	7.380	-0.001	219962	507.4
Aroclor-1242	2	7.784	-0.001	193804	538.9	2	7.969	-0.001	531660	539.4
Aroclor-1242	3	9.070	-0.001	11158	91.8	3	9.343	-0.001	22399	68.1
Aroclor-1242	4	9.357	-0.000	8923	69.1	4	9.689	-0.002	12237	31.1
Total Col1Ave (4 peaks):				305.3		Total Col2Ave (4 peaks):			286.5	RPD = 6
Corrected Ave (3 peaks):				227.4		Corrected Ave (3 peaks):			202.2	RPD = 12
Aroclor-1248	1	8.544	-0.000	58521	329.5	1	8.429	-0.000	145944	338.7
Aroclor-1248	2	8.714	0.001	65559	320.3	2	8.837	-0.000	186421	359.2
Aroclor-1248	3	9.133	0.008	47103	178.6	3	9.264	-0.003	29821	40.3
Aroclor-1248	4	9.357	0.000	8923	41.9	4	9.689	-0.001	12237	17.3
Total Col1Ave (4 peaks):				217.6		Total Col2Ave (4 peaks):			188.9	RPD = 14
Corrected Ave (3 peaks):				180.3		Corrected Ave (3 peaks):			132.1	RPD = 31
Aroclor-1254	1	9.435	-0.002	47457	139.0	1	9.570	-0.001	124340	170.0
Aroclor-1254	2	9.509	-0.003	933	8.3	2	10.000	-0.001	4771	16.1
Aroclor-1254	3	9.801	-0.004	9581	42.6	3	10.091	-0.001	22717	39.8
Aroclor-1254	4	9.933	-0.005	49039	115.4	4	10.273	0.032	308922	260.8
Aroclor-1254	5	10.629	-0.012	49468	168.3	5	10.690	0.000	493599	837.9
Total Col1Ave (5 peaks):				94.7		Total Col2Ave (5 peaks):			264.9	RPD = 95*
Corrected Ave (4 peaks):				76.3		Corrected Ave (4 peaks):			121.7	RPD = 46*
Aroclor-1260	1	11.185	-0.001	125557	417.1	1	11.785	0.003	400637	431.9
Aroclor-1260	2	11.502	-0.000	126465	428.3	2	12.043	0.000	1035200	434.7
Aroclor-1260	3	11.871	0.000	308430	428.1	3	12.632	0.004	678961	446.1
Aroclor-1260	4	12.273	-0.000	159169	449.1	4	13.355	0.001	328503	454.6
Aroclor-1260	5	12.386	-0.001	70526	412.0	NS	---			----
Total Col1Ave (5 peaks):				426.9		Total Col2Ave (4 peaks):			441.8	RPD = 3
Corrected Ave (4 peaks):				421.4		Corrected Ave (3 peaks):			437.5	RPD = 4
Aroclor-1262	1	10.958	-0.001	215387	875.0	1	11.330	-0.000	394115	271.9
Aroclor-1262	2	12.386	-0.002	70526	199.7	2	11.785	0.001	400637	335.6
Aroclor-1262	3	12.460	-0.002	82078	228.6	3	12.566	-0.001	340171	237.2
Aroclor-1262	4	13.126	-0.001	81073	268.2	4	12.632	0.001	678961	332.4
Total Col1Ave (4 peaks):				392.9		Total Col2Ave (4 peaks):			294.3	RPD = 29
Corrected Ave (3 peaks):				232.2		Corrected Ave (3 peaks):			280.5	RPD = 19
Aroclor-1268	1	12.386	-0.002	70526	75.2	1	12.566	-0.003	340171	95.0
Aroclor-1268	2	12.460	-0.000	82078	96.5	2	12.632	-0.002	678961	187.2
Aroclor-1268	3	12.865	0.018	38294	52.4	3	13.029	-0.004	12521	3.9
Aroclor-1268	4	13.630	-0.003	21867	10.4	4	13.842	-0.008	75185	6.5
Total Col1Ave (4 peaks):				58.6		Total Col2Ave (4 peaks):			73.2	RPD = 22

Corrected Ave (3 peaks): 46.0 Corrected Ave (3 peaks): 35.1 RPD = 27

Total PCB Area Col1 (6.043 - 13.940) = 3265638 Col1 Total PCB = 0.9 ppm*

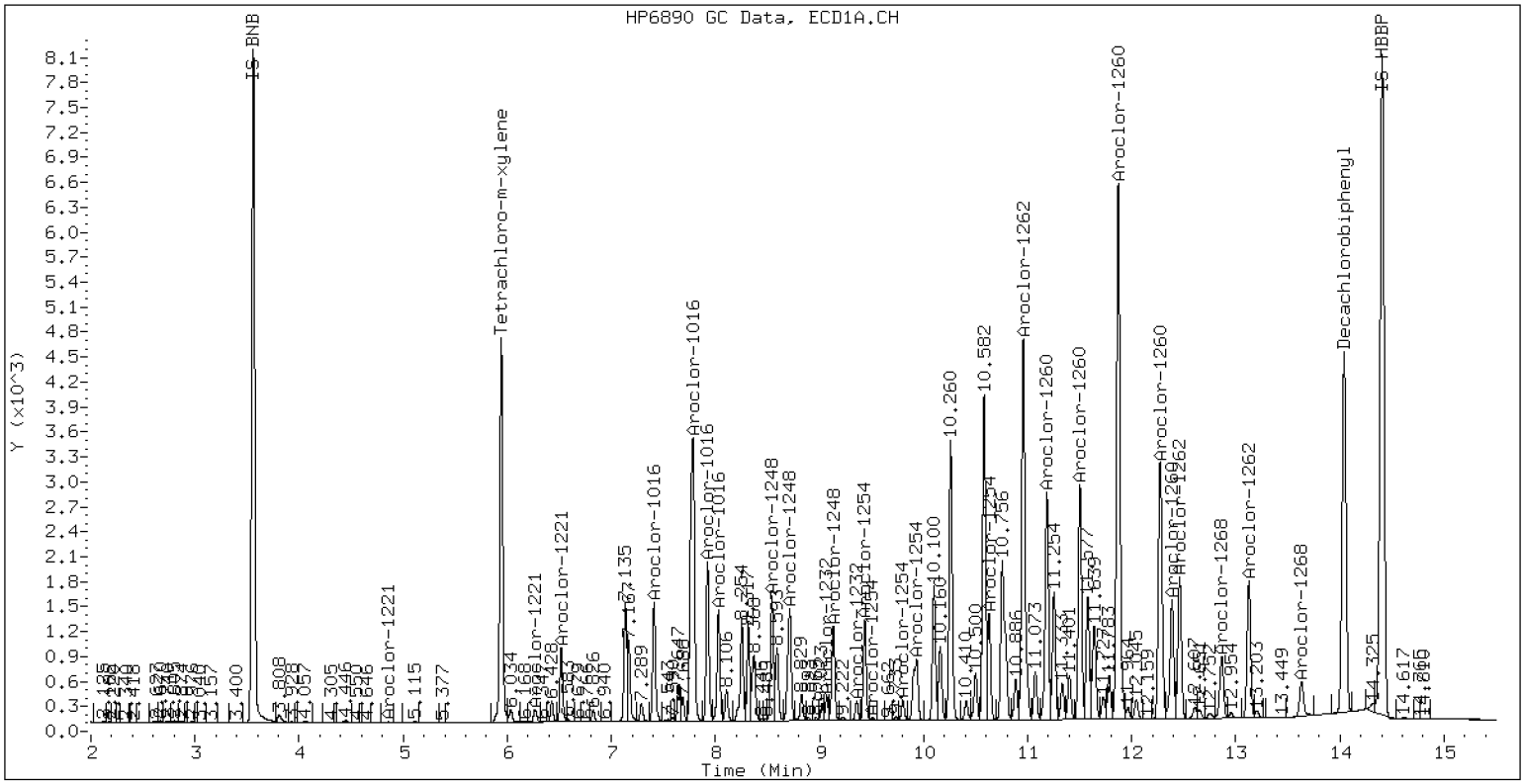
Total PCB Area Col2 (6.043 - 13.940) = 9548517 Col2 Total PCB = 1.0 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

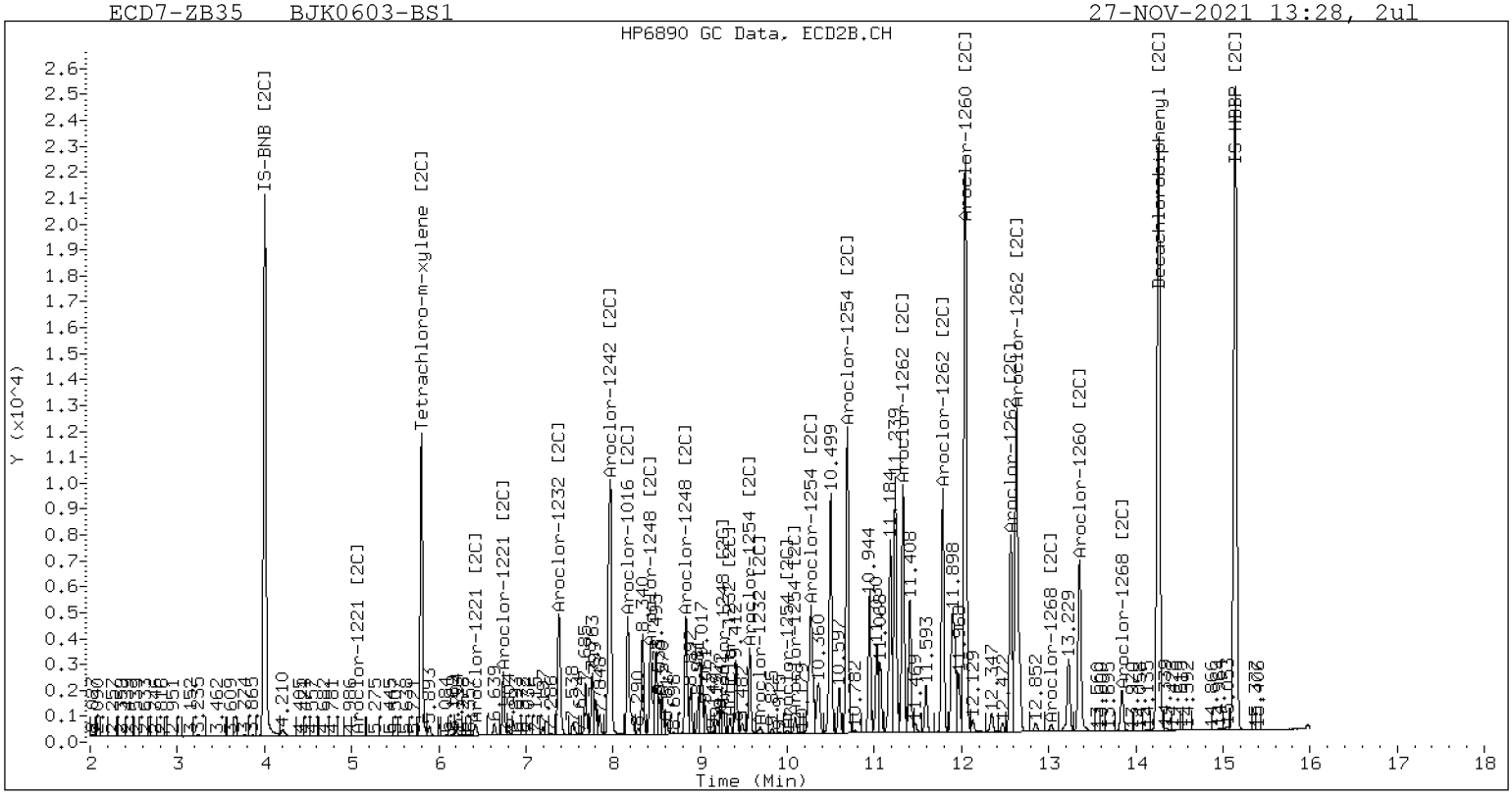
PCB Dual Column Chromatograms

ECD7-ZB5 BJK0603-BS1 27-NOV-2021 13:28, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 BJK0603-BS1 27-NOV-2021 13:28, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

LDW21-IT637A

MS / MS DUPLICATE RECOVERY
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Matrix:	Solid	Analyzed:	11/27/21 14:32
Batch:	BJK0603	Laboratory ID:	BJK0603-MS1
Preparation:	EPA 3546 (Microwave)	Sequence Name:	Matrix Spike
Initial/Final:	15.93 g / 2.5 mL	Source Sample:	LDW21-IT637A

COMPOUND	SPIKE ADDED (ug/kg dry)	SAMPLE CONCENTRATION (ug/kg dry)	Q	MS CONCENTRATION (ug/kg dry)	Q	MS % REC. #	QC LIMITS REC.
Aroclor 1016	101	ND	U	74.5		73.9	56 - 120
Aroclor 1260	101	5.0		73.8		68.1	58 - 120

* Values outside of QC limits

[2C] indicates second-column analyte, present if quantification on any batch samples used second column data.

Analytical Resources, LLC
Analytical Chemists and Consultants

LDW21-IT637A

MS / MS DUPLICATE RECOVERY
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Matrix:	Solid	Analyzed:	11/27/21 14:53
Batch:	BJK0603	Laboratory ID:	BJK0603-MSD1
Preparation:	EPA 3546 (Microwave)	Sequence Name:	Matrix Spike Dup
Initial/Final:	15.92 g / 2.5 mL	Source Sample:	LDW21-IT637A

COMPOUND	SPIKE ADDED (ug/kg dry)	MSD CONCENTRATION (ug/kg dry)	Q	MSD % REC. #	% RPD #	QC LIMITS	
						RPD	REC.
Aroclor 1016	101	71.7		71.1	3.83	30	56 - 120
Aroclor 1260	101	75.1		69.4	1.75	30	58 - 120

* Values outside of QC limits

[2C] indicates second-column analyte, present if quantification on any batch samples used second column data.

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211127.b/11272108ECD7.D
Data file 2: /211127.b/211127.b/11272108ECD7.D
Method: \\target\share\chem4\ecd7.i\211127.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: BJK0603-MS1
Client ID:
Injection Date: 27-NOV-2021 14:32
Report Date: 11/29/2021 10:56
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.945	0.002	128623	5.802	0.001	324499	29.0	30.3	4.5	Tetrachloro-m-xylene
14.038	-0.002	110937	14.260	-0.002	548059	28.1	26.9	4.2	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	334656	1.1
Hexabromobiphenyl	407599	341217	-16.3

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	843350	-6.1
Hexabromobiphenyl	1136250	1105795	-2.7

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

Aroclor	ZB5 Col Peak#	RT	Shift	Area	Amount	ZB35 Col Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.410	0.001	50294	392.8	1	7.380	-0.000	187400	395.4
Aroclor-1016	2	7.785	-0.000	167204	380.1	2	7.968	-0.001	426565	385.7
Aroclor-1016	3	7.924	0.000	62752	366.6	3	8.169	-0.001	148332	345.3
Aroclor-1016	4	8.031	0.001	41121	350.5	4	8.429	-0.000	140234	475.7
Total Col1Ave (4 peaks):				372.5		Total Col2Ave (4 peaks):			400.5	RPD = 7
Corrected Ave (3 peaks):				365.7		Corrected Ave (3 peaks):			375.4	RPD = 3
Aroclor-1221	1	4.862	-0.002	341	11.9	1	5.093	0.012	2526	45.9
Aroclor-1221	2	6.270	-0.004	8184	159.6	2	6.419	-0.000	22866	157.1
Aroclor-1221	3	6.520	-0.003	31417	251.1	3	6.746	0.001	107164	399.1
Total Col1Ave (3 peaks):				140.9		Total Col2Ave (3 peaks):			200.7	RPD = 35
Corrected Ave: < 3 Peaks						Corrected Ave: < 3 Peaks				
Aroclor-1232	1	4.862	-0.005	341	20.2	1	5.093	0.010	2526	78.0
Aroclor-1232	2	7.785	-0.003	167204	894.7	2	7.380	-0.003	187400	811.1
Aroclor-1232	3	9.070	-0.002	25627	417.6	3	9.344	-0.001	56326	356.7
Aroclor-1232	4	9.356	-0.002	24455	369.4	4	9.689	-0.004	74676	390.1
Total Col1Ave (4 peaks):				425.5		Total Col2Ave (4 peaks):			409.0	RPD = 4
Corrected Ave (3 peaks):				269.1		Corrected Ave (3 peaks):			274.9	RPD = 2
Aroclor-1242	1	7.410	-0.001	50294	482.9	1	7.380	-0.001	187400	466.7
Aroclor-1242	2	7.785	-0.001	167204	473.8	2	7.968	-0.002	426565	467.2
Aroclor-1242	3	9.070	-0.001	25627	214.9	3	9.344	-0.001	56326	184.8
Aroclor-1242	4	9.356	-0.001	24455	193.0	4	9.689	-0.003	74676	205.2
Total Col1Ave (4 peaks):				341.1		Total Col2Ave (4 peaks):			331.0	RPD = 3
Corrected Ave (3 peaks):				293.9		Corrected Ave (3 peaks):			285.6	RPD = 3
Aroclor-1248	1	8.544	-0.001	57867	332.0	1	8.429	0.000	140234	351.3
Aroclor-1248	2	8.713	0.000	61587	306.6	2	8.837	-0.000	169806	353.3
Aroclor-1248	3	9.134	0.008	48915	188.9	3	9.266	-0.001	98193	143.4
Aroclor-1248	4	9.356	-0.000	24455	117.1	4	9.689	-0.002	74676	114.2
Total Col1Ave (4 peaks):				236.1		Total Col2Ave (4 peaks):			240.6	RPD = 2
Corrected Ave (3 peaks):				204.2		Corrected Ave (3 peaks):			203.0	RPD = 1
Aroclor-1254	1	9.435	-0.002	49058	146.4	1	9.570	-0.001	123127	181.8
Aroclor-1254	2	9.508	-0.004	5940	53.8	2	10.001	-0.000	22879	83.5
Aroclor-1254	3	9.804	-0.001	22328	101.2	3	10.090	-0.002	44155	83.4
Aroclor-1254	4	9.934	-0.004	56594	135.7	4	10.240	-0.001	104420	95.2
Aroclor-1254	5	10.632	-0.010	50266	174.2	5	10.688	-0.001	369717	677.6
Total Col1Ave (5 peaks):				122.3		Total Col2Ave (5 peaks):			224.3	RPD = 59*
Corrected Ave (4 peaks):				109.3		Corrected Ave (4 peaks):			111.0	RPD = 2
Aroclor-1260	1	11.184	-0.001	86596	367.0	1	11.783	0.000	274633	345.1
Aroclor-1260	2	11.499	-0.003	82305	355.6	2	12.043	-0.000	713827	349.3
Aroclor-1260	3	11.870	-0.001	217346	384.8	3	12.628	0.000	454208	347.8
Aroclor-1260	4	12.272	-0.001	106562	383.5	4	13.354	0.000	222998	359.7
Aroclor-1260	5	12.387	-0.000	47525	354.1	NS	---			----
Total Col1Ave (5 peaks):				369.0		Total Col2Ave (4 peaks):			350.5	RPD = 5
Corrected Ave (4 peaks):				365.0		Corrected Ave (3 peaks):			347.4	RPD = 5
Aroclor-1262	1	10.958	-0.001	160673	832.6	1	11.328	-0.002	265303	213.4
Aroclor-1262	2	12.387	-0.002	47525	171.7	2	11.783	-0.002	274633	268.2
Aroclor-1262	3	12.460	-0.002	55828	198.3	3	12.565	-0.001	230821	187.6
Aroclor-1262	4	13.125	-0.002	51160	215.9	4	12.628	-0.003	454208	259.2
Total Col1Ave (4 peaks):				354.6		Total Col2Ave (4 peaks):			232.1	RPD = 42*
Corrected Ave (3 peaks):				195.3		Corrected Ave (3 peaks):			220.0	RPD = 12
Aroclor-1268	1	12.387	-0.002	47525	64.7	1	12.565	-0.004	230821	75.2
Aroclor-1268	2	12.460	-0.000	55828	83.7	2	12.628	-0.005	454208	146.0
Aroclor-1268	3	12.863	0.015	26017	45.4	3	13.034	0.002	17621	6.4
Aroclor-1268	4	13.630	-0.003	13486	8.1	4	13.841	-0.009	56965	5.7
Total Col1Ave (4 peaks):				50.5		Total Col2Ave (4 peaks):			58.3	RPD = 14

Corrected Ave (3 peaks): 39.4 Corrected Ave (3 peaks): 29.1 RPD = 30

Total PCB Area Col1 (6.043 - 13.940) = 2687823 Col1 Total PCB = 0.8 ppm*

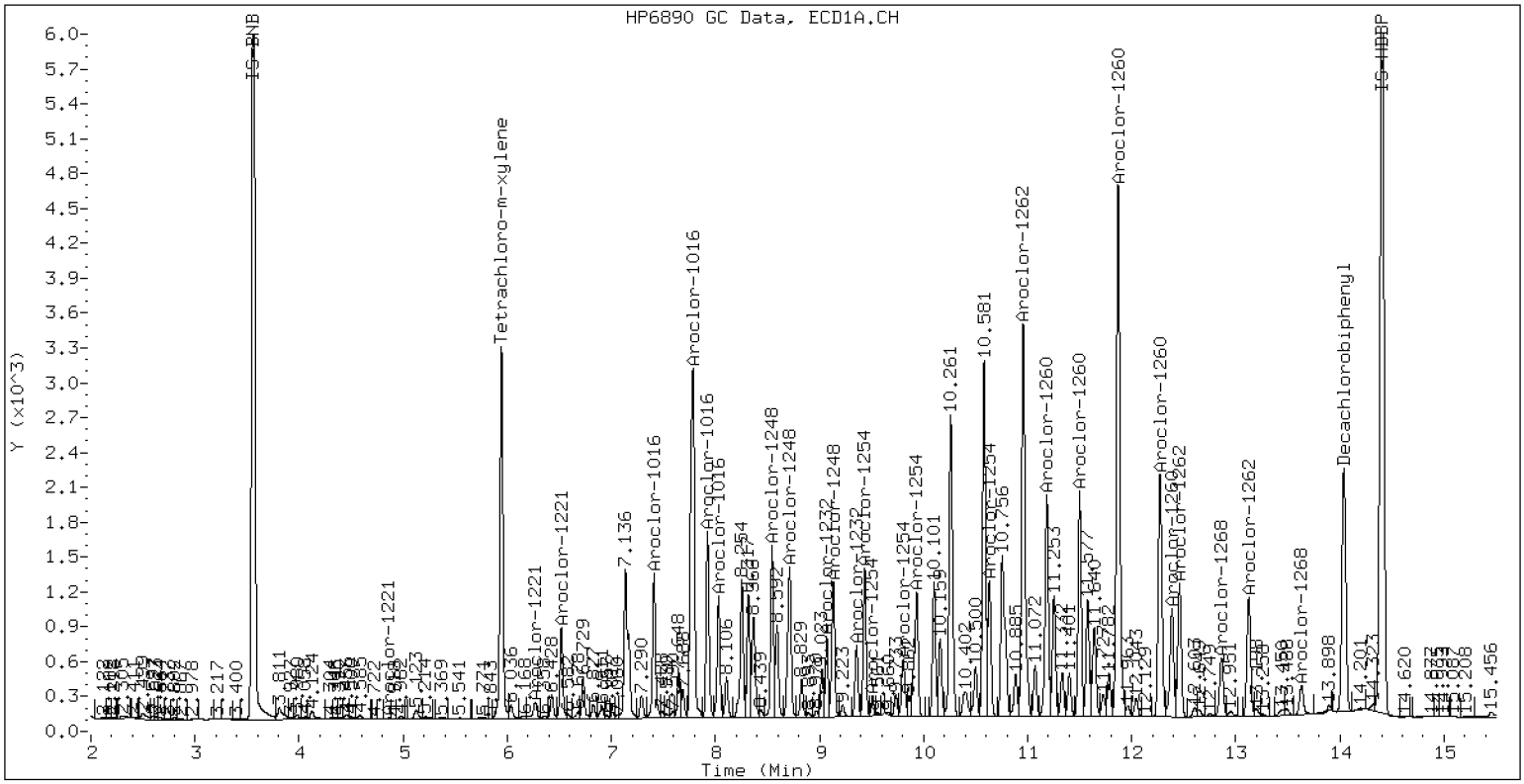
Total PCB Area Col2 (6.043 - 13.940) = 7793771 Col2 Total PCB = 0.8 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

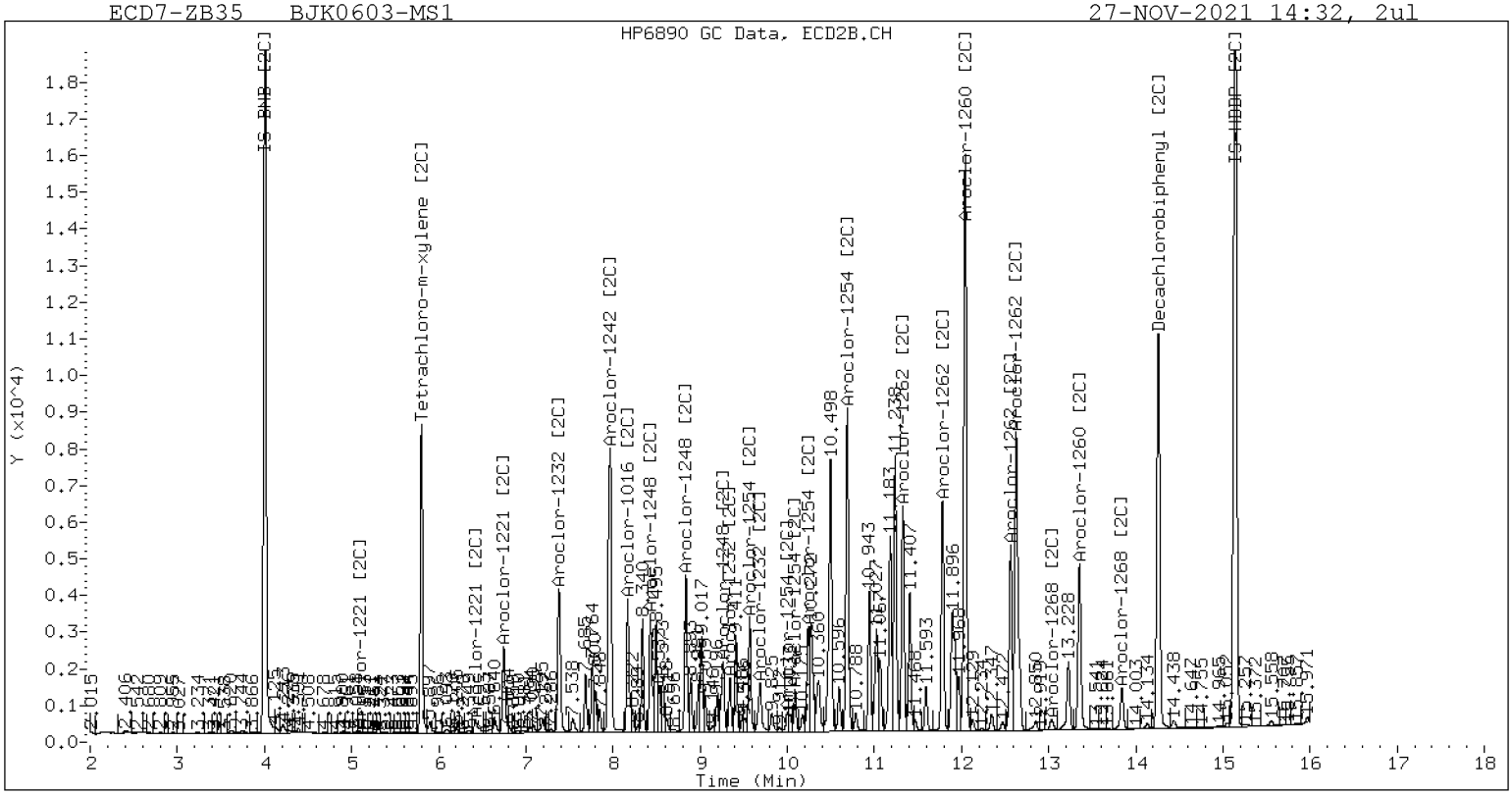
PCB Dual Column Chromatograms

ECD7-ZB5 BJK0603-MS1 27-NOV-2021 14:32, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 BJK0603-MS1 27-NOV-2021 14:32, 2ul



ZB-35 Manual Integration: NO

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211127.b/11272109ECD7.D
Data file 2: /211127.b/211127.b/11272109ECD7.D
Method: \\target\share\chem4\ecd7.i\211127.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: BJK0603-MSD1
Client ID:
Injection Date: 27-NOV-2021 14:53
Report Date: 11/29/2021 10:56
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.945	0.003	157859	5.803	0.002	389098	34.9	35.9	3.0	Tetrachloro-m-xylene
14.038	-0.002	144397	14.259	-0.002	728410	38.4	36.7	4.6	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	341475	3.1
Hexabromobiphenyl	407599	324591	-20.4

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	853588	-5.0
Hexabromobiphenyl	1136250	1078447	-5.1

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

Aroclor	Peak#	RT (ZB5 Col)	Shift	Area	Amount	Peak#	RT (ZB35 Col)	Shift	Area	Amount
Aroclor-1016	1	7.411	0.001	49519	379.1	1	7.381	0.001	182389	380.2
Aroclor-1016	2	7.785	0.000	162713	362.5	2	7.969	-0.000	412805	368.7
Aroclor-1016	3	7.924	0.000	60971	349.1	3	8.169	-0.001	158681	364.9
Aroclor-1016	4	8.031	0.001	41002	342.5	4	8.429	0.000	118472	397.1
Total Col1Ave (4 peaks):					358.3	Total Col2Ave (4 peaks):				377.7 RPD = 5
Corrected Ave (3 peaks):					351.4	Corrected Ave (3 peaks):				371.3 RPD = 6
Aroclor-1221	1	4.864	-0.000	478	16.4	1	5.056	-0.024	4447	79.9
Aroclor-1221	2	6.270	-0.003	6576	125.7	2	6.421	0.001	25630	173.9
Aroclor-1221	3	6.520	-0.002	32946	258.0	3	6.743	-0.002	78278	288.0
Total Col1Ave (3 peaks):					133.4	Total Col2Ave (3 peaks):				180.6 RPD = 30
Corrected Ave: < 3 Peaks						Corrected Ave: < 3 Peaks				
Aroclor-1232	1	4.864	-0.003	478	27.8	1	5.056	-0.026	4447	135.7
Aroclor-1232	2	7.785	-0.002	162713	853.3	2	7.381	-0.002	182389	779.9
Aroclor-1232	3	9.069	-0.003	13983	223.3	3	9.345	0.000	26205	164.0
Aroclor-1232	4	9.357	-0.002	13609	201.5	4	9.688	-0.004	40208	207.5
Total Col1Ave (4 peaks):					326.5	Total Col2Ave (4 peaks):				321.8 RPD = 1
Corrected Ave (3 peaks):					150.9	Corrected Ave (3 peaks):				169.0 RPD = 11
Aroclor-1242	1	7.411	-0.001	49519	465.9	1	7.381	-0.000	182389	448.8
Aroclor-1242	2	7.785	-0.000	162713	451.8	2	7.969	-0.001	412805	446.7
Aroclor-1242	3	9.069	-0.002	13983	114.9	3	9.345	0.001	26205	84.9
Aroclor-1242	4	9.357	-0.001	13609	105.3	4	9.688	-0.003	40208	109.2
Total Col1Ave (4 peaks):					284.5	Total Col2Ave (4 peaks):				272.4 RPD = 4
Corrected Ave (3 peaks):					224.0	Corrected Ave (3 peaks):				213.6 RPD = 5
Aroclor-1248	1	8.544	-0.001	49951	280.8	1	8.429	0.000	118472	293.3
Aroclor-1248	2	8.714	0.001	53166	259.4	2	8.837	-0.000	141148	290.1
Aroclor-1248	3	9.134	0.009	39361	149.0	3	9.265	-0.002	59931	86.5
Aroclor-1248	4	9.357	-0.000	13609	63.8	4	9.688	-0.002	40208	60.7
Total Col1Ave (4 peaks):					188.3	Total Col2Ave (4 peaks):				182.7 RPD = 3
Corrected Ave (3 peaks):					157.4	Corrected Ave (3 peaks):				145.8 RPD = 8
Aroclor-1254	1	9.434	-0.003	41442	121.2	1	9.569	-0.002	108187	157.8
Aroclor-1254	2	9.509	-0.003	3778	33.6	2	10.002	0.000	12550	45.3
Aroclor-1254	3	9.805	0.001	15145	67.2	3	10.090	-0.002	29907	55.8
Aroclor-1254	4	9.934	-0.004	47956	112.7	4	10.239	-0.001	68694	61.9
Aroclor-1254	5	10.629	-0.012	40358	137.1	5	10.688	-0.001	358135	648.5
Total Col1Ave (5 peaks):					94.4	Total Col2Ave (5 peaks):				193.9 RPD = 69*
Corrected Ave (4 peaks):					83.7	Corrected Ave (4 peaks):				80.2 RPD = 4
Aroclor-1260	1	11.184	-0.002	84489	376.4	1	11.783	0.000	266554	343.4
Aroclor-1260	2	11.500	-0.002	79487	361.0	2	12.042	-0.001	684876	343.7
Aroclor-1260	3	11.870	-0.001	211553	393.7	3	12.628	0.000	431971	339.2
Aroclor-1260	4	12.271	-0.002	102146	386.5	4	13.353	-0.001	210909	348.8
Aroclor-1260	5	12.386	-0.001	45810	358.8	NS	---			----
Total Col1Ave (5 peaks):					375.3	Total Col2Ave (4 peaks):				343.8 RPD = 9
Corrected Ave (4 peaks):					370.6	Corrected Ave (3 peaks):				342.1 RPD = 8
Aroclor-1262	1	10.958	-0.001	154701	842.7	1	11.327	-0.002	258222	212.9
Aroclor-1262	2	12.386	-0.002	45810	174.0	2	11.783	-0.002	266554	266.9
Aroclor-1262	3	12.460	-0.002	53708	200.6	3	12.563	-0.003	216033	180.1
Aroclor-1262	4	13.125	-0.002	45857	203.4	4	12.628	-0.003	431971	252.7
Total Col1Ave (4 peaks):					355.2	Total Col2Ave (4 peaks):				228.1 RPD = 44*
Corrected Ave (3 peaks):					192.6	Corrected Ave (3 peaks):				215.2 RPD = 11
Aroclor-1268	1	12.386	-0.003	45810	65.5	1	12.563	-0.005	216033	72.1
Aroclor-1268	2	12.460	-0.000	53708	84.7	2	12.628	-0.005	431971	142.3
Aroclor-1268	3	12.863	0.016	25207	46.2	3	13.033	-0.000	19953	7.4
Aroclor-1268	4	13.631	-0.002	12072	7.7	4	13.840	-0.010	54061	5.6
Total Col1Ave (4 peaks):					51.0	Total Col2Ave (4 peaks):				56.9 RPD = 11

Corrected Ave (3 peaks): 39.8 Corrected Ave (3 peaks): 28.4 RPD = 34

Total PCB Area Col1 (6.043 - 13.940) = 2495847 Col1 Total PCB = 0.7 ppm*

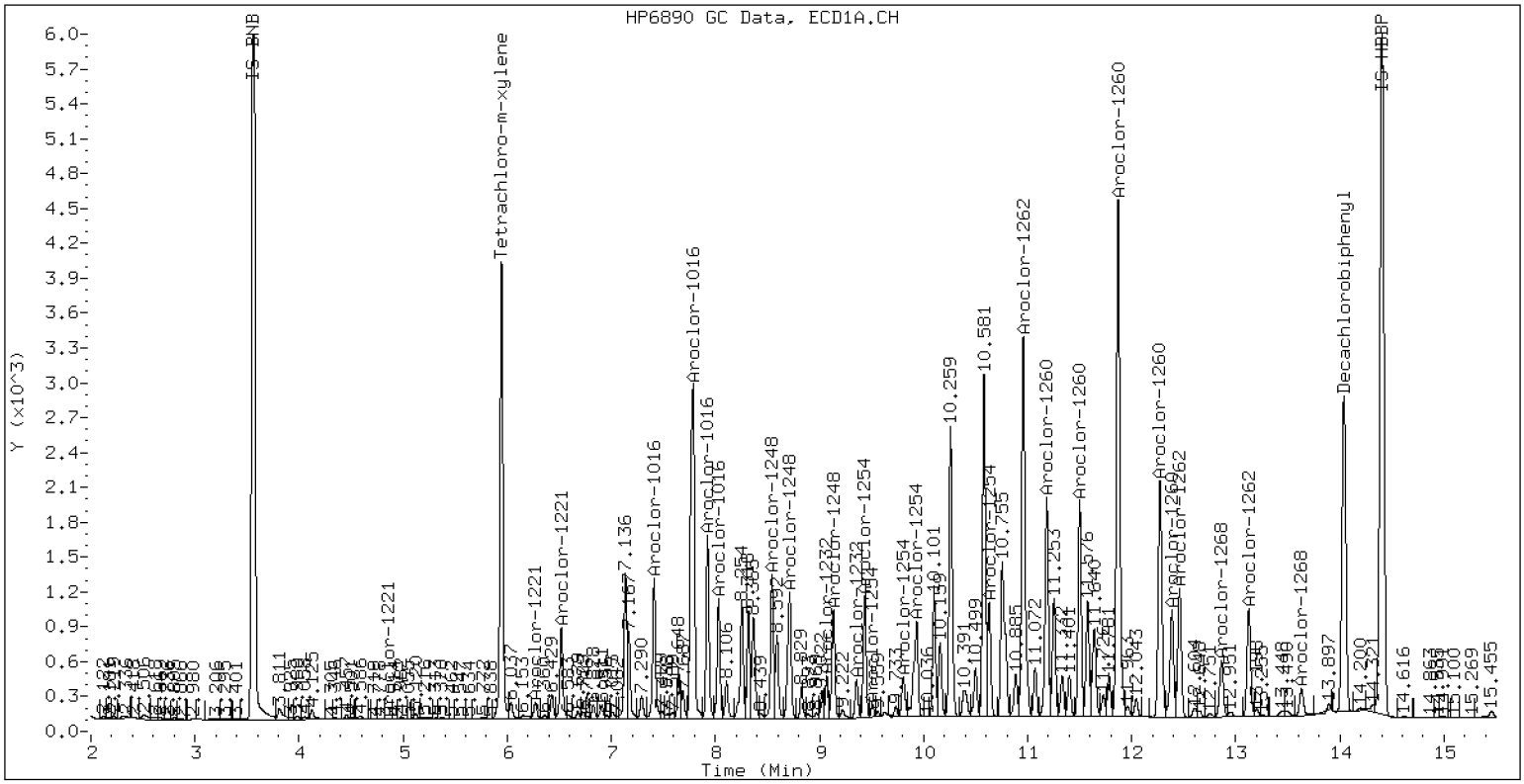
Total PCB Area Col2 (6.043 - 13.940) = 7199887 Col2 Total PCB = 0.8 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

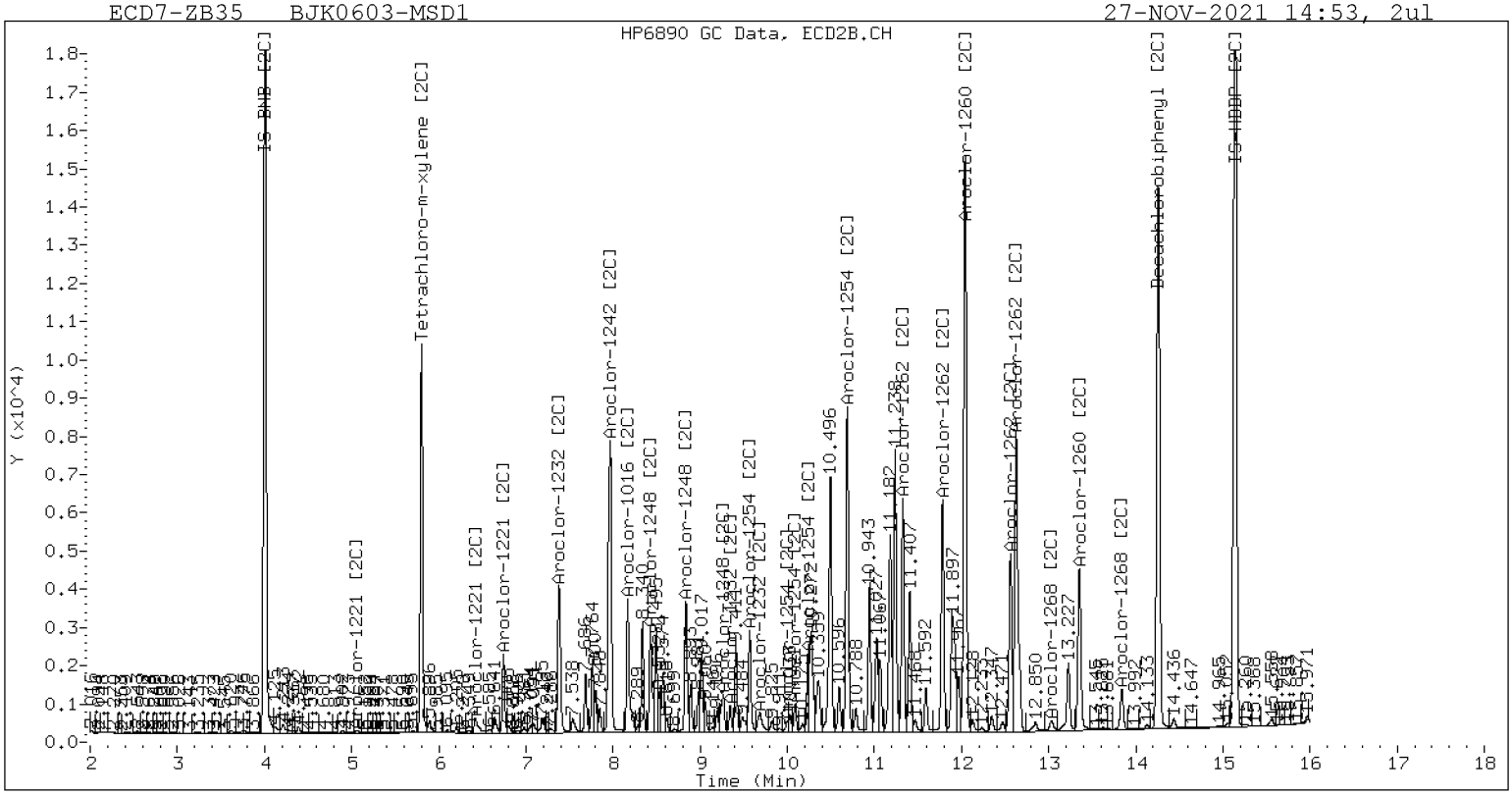
PCB Dual Column Chromatograms

ECD7-ZB5 BJK0603-MSD1 27-NOV-2021 14:53, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 BJK0603-MSD1 27-NOV-2021 14:53, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

STANDARD REFERENCE MATERIAL RECOVERY

EPA 8082A

Laboratory: Analytical Resources, LLC
SDG: 21K0332
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Matrix: Solid
Laboratory ID: BJK0603-SRM1
Batch: BJK0603
Initial/Final: 2 g / 2.5 mL
Preparation: EPA 3546 (Microwave)
Analyzed: 11/27/2021 13:49
Standard ID: J007936
Expires: 01/30/2022
Standard Lot#: PSRM0141
Description: Puget Sound reference-SRM

ANALYTE	TRUE (ug/kg wet)	FOUND (ug/kg wet)	MDL	MRL	Q	SRM % REC.	QC LIMITS REC.
Aroclor 1260	108.00	91.4	3.7	25.0		84.7	38 - 167
Aroclor 1260 [2C]	108.00	83.3	3.7	25.0		77.1	38 - 167

* Values outside of QC limits

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211127.b/11272106ECD7.D
Data file 2: /211127.b/211127.b/11272106ECD7.D
Method: \\target\share\chem4\ecd7.i\211127.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: BJK0603-SRM1
Client ID:
Injection Date: 27-NOV-2021 13:49
Report Date: 11/29/2021 10:56
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.943	-0.000	153671	5.801	-0.001	391037	33.9	34.8	2.8	Tetrachloro-m-xylene
14.039	-0.001	174777	14.263	0.002	928761	39.4	41.4	4.8	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	342234	3.3
Hexabromobiphenyl	407599	382943	-6.0

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	885246	-1.5
Hexabromobiphenyl	1136250	1219971	7.4

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

Aroclor	ZB5 Col Peak#	RT	Shift	Area	Amount	ZB35 Col Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.407	-0.003	2403	18.4	1	7.382	0.002	7462	15.0
Aroclor-1016	2	7.784	-0.001	4625	10.3	2	7.969	0.000	11767	10.1
Aroclor-1016	3	7.927	0.002	1845	10.5	3	8.168	-0.002	2765	6.1
Aroclor-1016	4	8.030	0.000	1631	13.6	4	8.429	-0.001	11733	37.9
Total Col1Ave (4 peaks):					13.2	Total Col2Ave (4 peaks):				17.3 RPD = 27
Corrected Ave (3 peaks):					11.5	Corrected Ave (3 peaks):				10.4 RPD = 10
Aroclor-1221	1	---			0.0	1	5.051	-0.029	1164	20.2
Aroclor-1221	2	6.294	0.021	244	4.7	2	6.439	0.020	11599	75.9
Aroclor-1221	3	6.525	0.003	1139	8.9	3	6.749	0.004	7515	26.7
Col1Ave: <3 Quant Peaks						Col2Ave: 40.9				
Aroclor-1232	1	---			0.0	1	5.051	-0.031	1164	34.2
Aroclor-1232	2	7.784	-0.003	4625	24.2	2	7.382	-0.001	7462	30.8
Aroclor-1232	3	9.069	-0.003	4787	76.3	3	9.343	-0.002	8482	51.2
Aroclor-1232	4	9.356	-0.003	5279	78.0	4	9.665	-0.027	17879	89.0
Total Col1Ave (3 peaks):					59.5	Total Col2Ave (4 peaks):				51.3 RPD = 15
Corrected Ave: < 3 Peaks						Corrected Ave (3 peaks):				38.7
Aroclor-1242	1	7.407	-0.005	2403	22.6	1	7.382	0.001	7462	17.7
Aroclor-1242	2	7.784	-0.001	4625	12.8	2	7.969	-0.000	11767	12.3
Aroclor-1242	3	9.069	-0.002	4787	39.3	3	9.343	-0.002	8482	26.5
Aroclor-1242	4	9.356	-0.002	5279	40.7	4	9.665	-0.026	17879	46.8
Total Col1Ave (4 peaks):					28.8	Total Col2Ave (4 peaks):				25.8 RPD = 11
Corrected Ave (3 peaks):					24.9	Corrected Ave (3 peaks):				18.8 RPD = 28
Aroclor-1248	1	8.544	-0.001	4265	23.9	1	8.429	-0.000	11733	28.0
Aroclor-1248	2	8.711	-0.002	3261	15.9	2	8.838	0.000	9927	19.7
Aroclor-1248	3	9.133	0.008	11855	44.8	3	9.267	-0.001	12354	17.2
Aroclor-1248	4	9.356	-0.001	5279	24.7	4	9.665	-0.025	17879	26.0
Total Col1Ave (4 peaks):					27.3	Total Col2Ave (4 peaks):				22.7 RPD = 18
Corrected Ave (3 peaks):					21.5	Corrected Ave (3 peaks):				21.0 RPD = 3
Aroclor-1254	1	9.433	-0.004	15105	44.1	1	9.569	-0.001	34754	48.9
Aroclor-1254	2	9.509	-0.003	3887	34.4	2	10.000	-0.001	7497	26.1
Aroclor-1254	3	9.805	0.000	8710	38.6	3	10.089	-0.003	14607	26.3
Aroclor-1254	4	9.934	-0.004	20157	47.3	4	10.238	-0.003	69648	60.5
Aroclor-1254	5	10.632	-0.009	14554	49.3	5	10.687	-0.003	94667	165.3
Total Col1Ave (5 peaks):					42.7	Total Col2Ave (5 peaks):				65.4 RPD = 42*
Corrected Ave (4 peaks):					41.1	Corrected Ave (4 peaks):				40.4 RPD = 2
Aroclor-1260	1	11.184	-0.002	19009	71.8	1	11.782	-0.001	62845	71.6
Aroclor-1260	2	11.499	-0.004	16314	62.8	2	12.041	-0.002	152289	67.6
Aroclor-1260	3	11.869	-0.001	52085	82.2	3	12.626	-0.002	96809	67.2
Aroclor-1260	4	12.272	-0.001	25294	81.1	4	13.354	-0.000	41119	60.1
Aroclor-1260	5	12.386	-0.001	10226	67.9	NS	---			----
Total Col1Ave (5 peaks):					73.1	Total Col2Ave (4 peaks):				66.6 RPD = 9
Corrected Ave (4 peaks):					70.9	Corrected Ave (3 peaks):				65.0 RPD = 9
Aroclor-1262	1	10.957	-0.002	44241	204.3	1	11.326	-0.004	55810	40.7
Aroclor-1262	2	12.386	-0.003	10226	32.9	2	11.782	-0.003	62845	55.6
Aroclor-1262	3	12.459	-0.002	12421	39.3	3	12.563	-0.003	55036	40.5
Aroclor-1262	4	13.124	-0.003	11748	44.2	4	12.626	-0.005	96809	50.1
Total Col1Ave (4 peaks):					80.2	Total Col2Ave (4 peaks):				46.7 RPD = 53*
Corrected Ave (3 peaks):					38.8	Corrected Ave (3 peaks):				43.8 RPD = 12
Aroclor-1268	1	12.386	-0.003	10226	12.4	1	12.563	-0.006	55036	16.2
Aroclor-1268	2	12.459	-0.001	12421	16.6	2	12.626	-0.007	96809	28.2
Aroclor-1268	3	12.862	0.015	6908	10.7	3	13.027	-0.006	4310	1.4
Aroclor-1268	4	13.630	-0.004	4971	2.7	4	13.841	-0.010	15737	1.4
Total Col1Ave (4 peaks):					10.6	Total Col2Ave (4 peaks):				11.8 RPD = 11
Corrected Ave (3 peaks):					8.6	Corrected Ave (3 peaks):				6.4 RPD = 30

Total PCB Area Col1 (6.043 - 13.940) = 558048 Col1 Total PCB = 0.2 ppm*

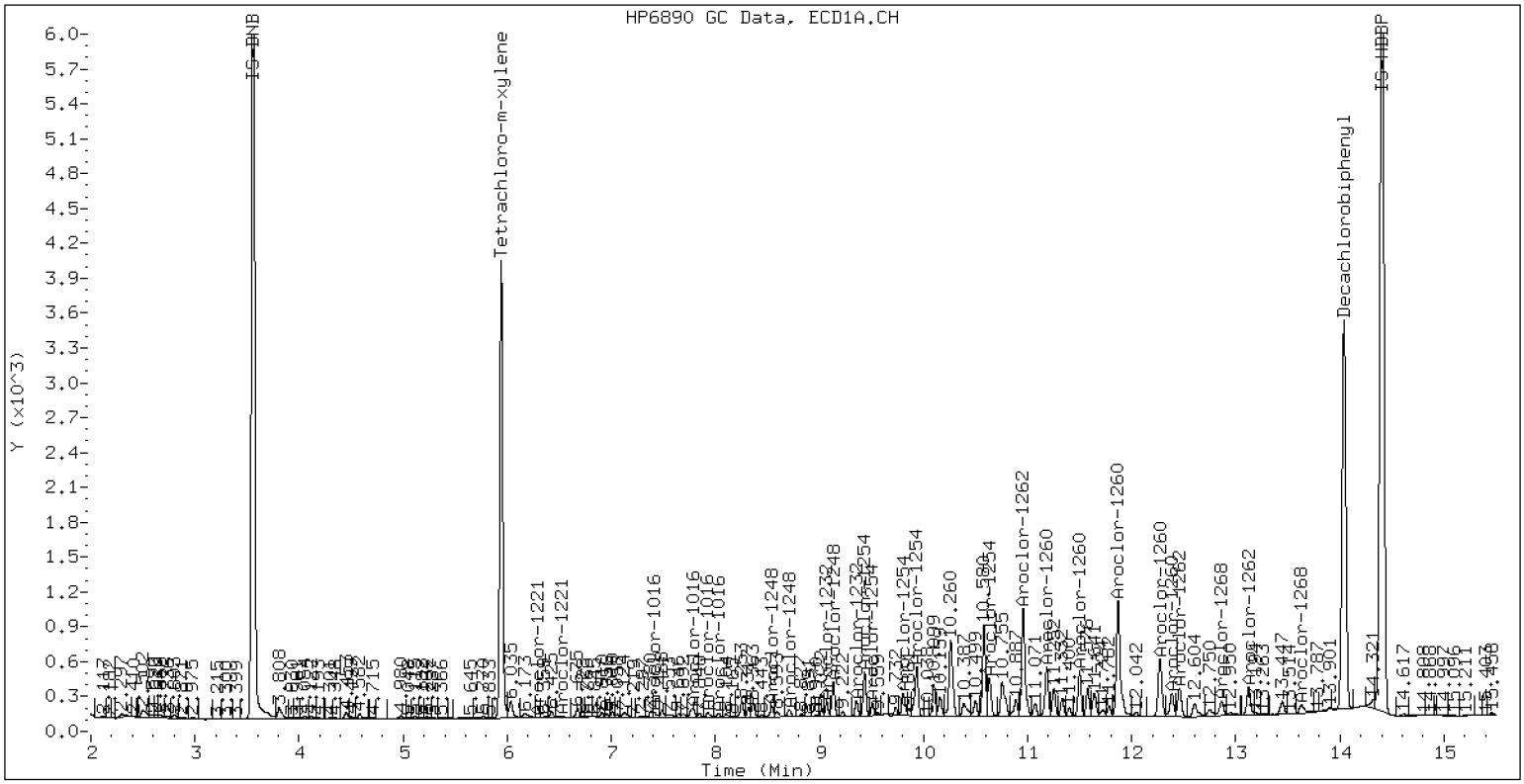
Total PCB Area Col2 (6.043 - 13.940) = 1549853 Col2 Total PCB = 0.2 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

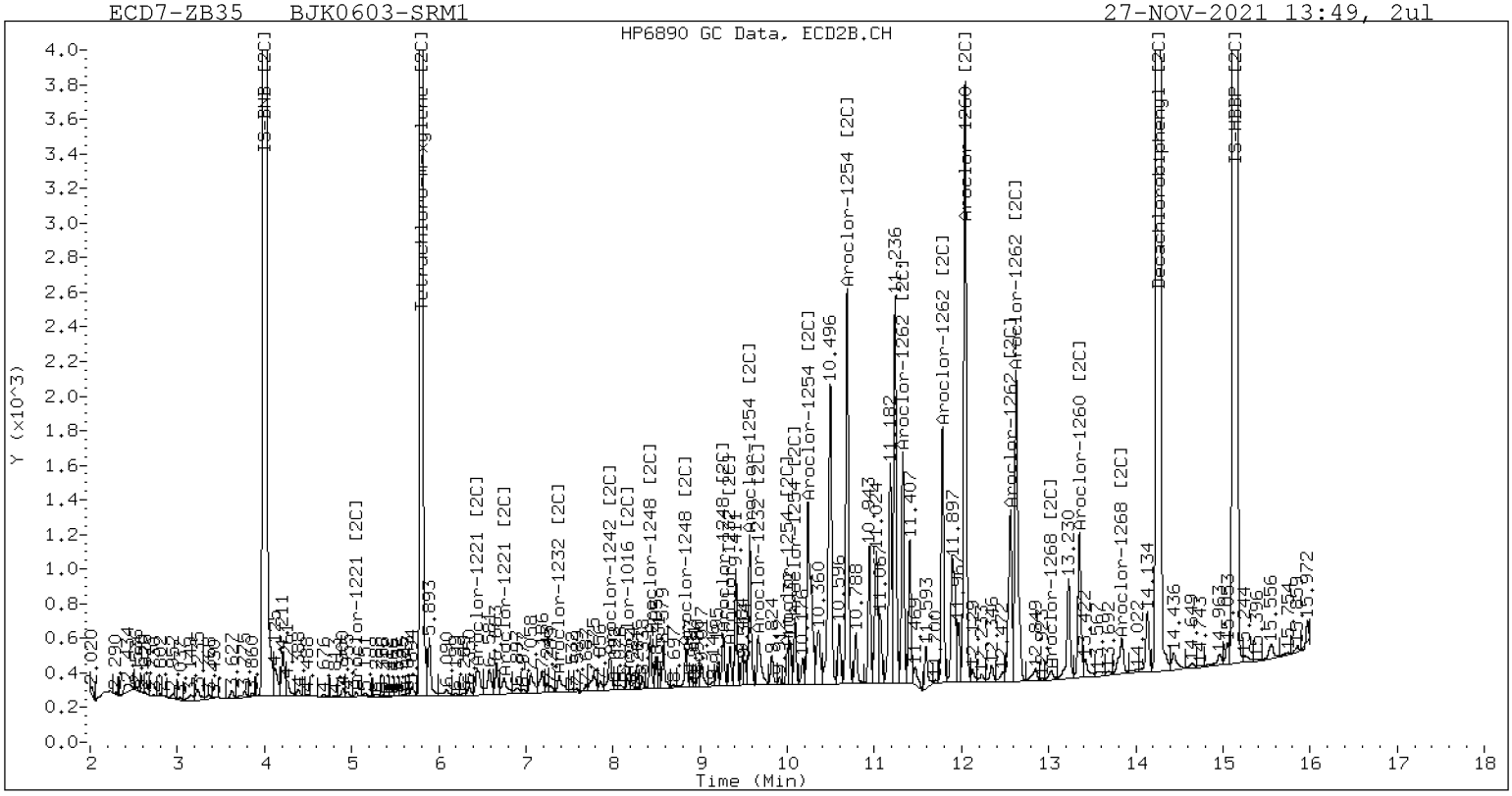
PCB Dual Column Chromatograms

ECD7-ZB5 BJK0603-SRM1 27-NOV-2021 13:49, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 BJK0603-SRM1 27-NOV-2021 13:49, 2ul

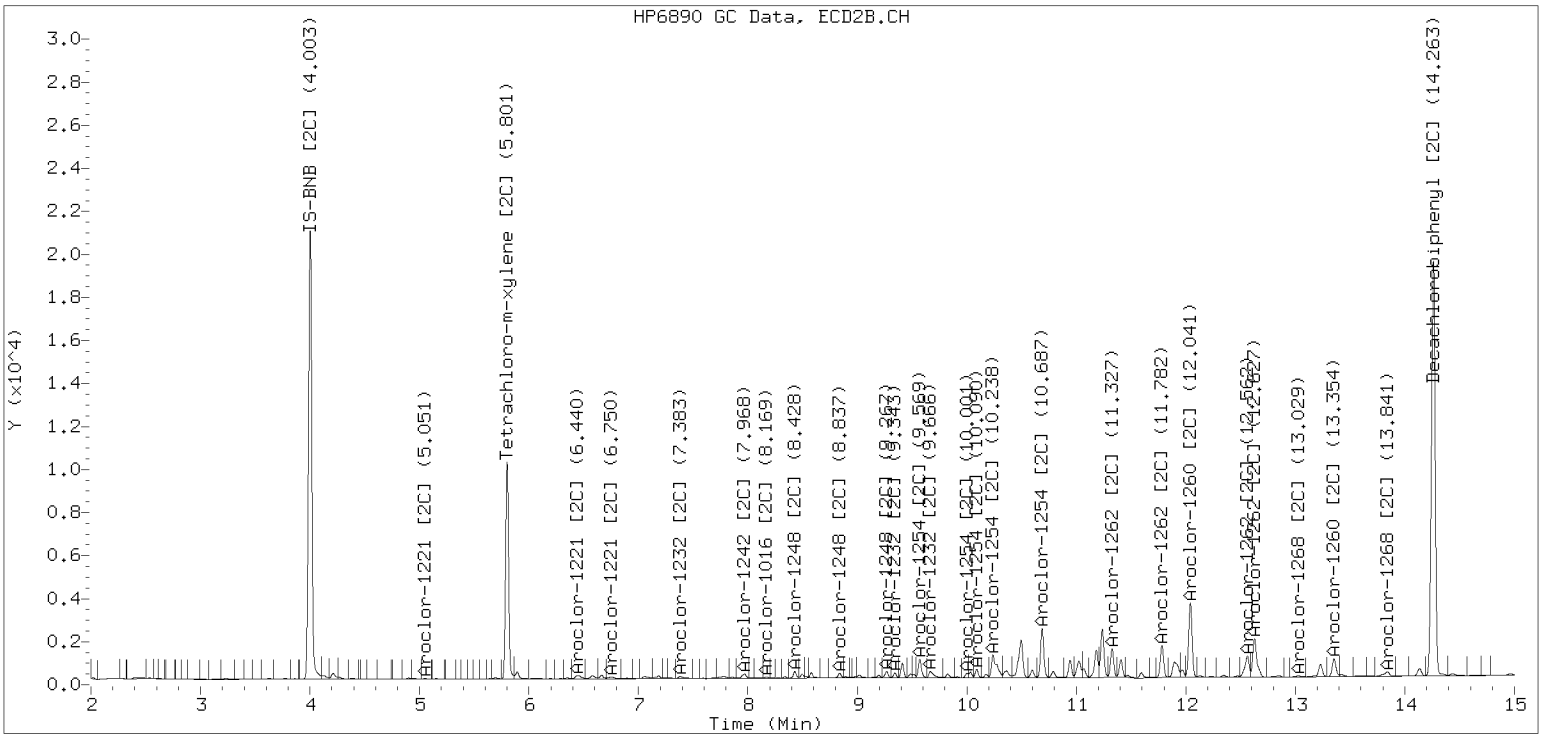


ZB-35 Manual Integration: YES

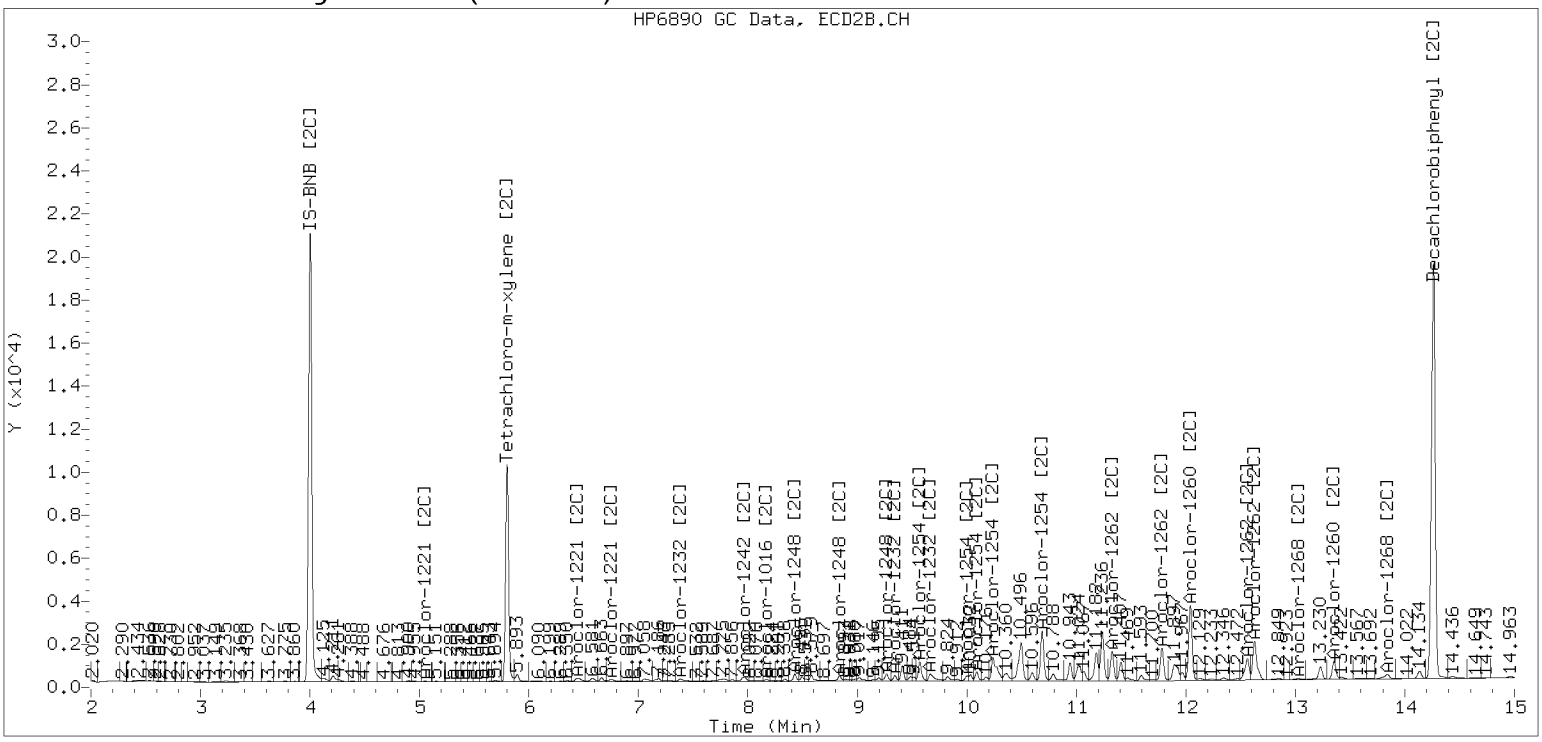
Manual Peak Adjustment, ZB-35

Datafile: ecd7.i/211127.b/211127.b/11272106ECD7.D Injection Date: 27-NOV-2021

Manual Integration (After)



Processed Integration (Before)



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INITIAL CALIBRATION DATA
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Calibration:	EK00072	Instrument:	ECD7
Calibration Date:	11/29/2021	Column (1):	ZB5

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
Aroclor 1016	250	0.050701	20	5.689019E-02	50	5.403973E-02	1000	4.499403E-02	100	5.240501E-02	500	4.805014E-02
Aroclor-1016 (1)	250	3.006218E-02	20	3.516804E-02	50	3.260061E-02	1000	2.596809E-02	100	3.170426E-02	500	2.812893E-02
Aroclor-1016 (2)	250	0.1044325	20	0.1164225	50	0.1108175	1000	9.256904E-02	100	0.1075983	500	9.904427E-02
Aroclor-1016 (3)	250	4.041372E-02	20	4.566417E-02	50	4.360947E-02	1000	3.564744E-02	100	4.199764E-02	500	3.818407E-02
Aroclor-1016 (4)	250	2.789562E-02	20	3.030605E-02	50	2.913135E-02	1000	2.579157E-02	100	2.831985E-02	500	2.684321E-02
Aroclor 1260	250	6.748484E-02	20	7.214687E-02	50	7.010315E-02	1000	6.267916E-02	100	6.882972E-02	500	0.0651309
Aroclor-1260 (1)	250	5.489003E-02	20	5.954747E-02	50	0.0579346	1000	5.038402E-02	100	5.637804E-02	500	5.282869E-02
Aroclor-1260 (2)	250	5.402565E-02	20	5.781308E-02	50	5.629898E-02	1000	5.007142E-02	100	5.515073E-02	500	5.227537E-02
Aroclor-1260 (3)	250	0.1322162	20	0.1414011	50	0.1368915	1000	0.122507	100	0.1347885	500	0.1268049
Aroclor-1260 (4)	250	6.506866E-02	20	0.0685374	50	6.686172E-02	1000	6.108632E-02	100	6.588876E-02	500	6.341709E-02
Aroclor-1260 (5)	250	3.122363E-02	20	3.343523E-02	50	3.252898E-02	1000	2.934697E-02	100	3.194265E-02	500	3.032848E-02
Decachlorobiphenyl	40	0.9143595	3.2	0.9934816	8	0.9667072	160	0.8493898	16	0.9499851	80	0.8825
Tetrachlorometaxylene	40	1.073397	3.2	1.089802	8	1.070595	160	1.01739	16	1.074359	80	1.039273

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INITIAL CALIBRATION DATA
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Calibration:	EK00072	Instrument:	ECD7
Calibration Date:	11/29/2021	Column (1):	ZB5

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	Conc	RRF	Conc	RRF	Conc	RRF	Conc	RRF	Conc	RRF	Conc	RRF
Aroclor 1242	250	0.0420152										
Aroclor-1242 (1)	250	2.489936E-02										
Aroclor-1242 (2)	250	0.0843684										
Aroclor-1242 (3)	250	2.850443E-02										
Aroclor-1242 (4)	250	0.0302886										

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INITIAL CALIBRATION DATA
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Calibration:	EK00072	Instrument:	ECD7
Calibration Date:	11/29/2021	Column (1):	ZB5

COMPOUND	Mean RRF	RRF RSD	Linear COD	Quad COD	Limit Type & Limit	Q
Aroclor 1016	5.118002E-02	8.3			RSD (20)	
Aroclor-1016 (1)	3.060535E-02	10.7			RSD (20)	
Aroclor-1016 (2)	0.1051474	8.1			RSD (20)	
Aroclor-1016 (3)	4.091942E-02	8.9			RSD (20)	
Aroclor-1016 (4)	2.804794E-02	5.7			RSD (20)	
Aroclor 1242		0.0			RSD (20)	
Aroclor-1242 (1)		0.0			RSD (20)	
Aroclor-1242 (2)		0.0			RSD (20)	
Aroclor-1242 (3)		0.0			RSD (20)	
Aroclor-1242 (4)		0.0			RSD (20)	
Aroclor 1260	6.772911E-02	5.1			RSD (20)	
Aroclor-1260 (1)	5.532714E-02	6.1			RSD (20)	
Aroclor-1260 (2)	5.427254E-02	5.2			RSD (20)	
Aroclor-1260 (3)	0.1324349	5.2			RSD (20)	
Aroclor-1260 (4)	6.514333E-02	4.0			RSD (20)	
Aroclor-1260 (5)	3.146766E-02	4.7			RSD (20)	
Decachlorobiphenyl	0.9260705	5.9			RSD (20)	
Tetrachlorometaxylene	1.060803	2.5			RSD (20)	

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INITIAL CALIBRATION DATA
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Calibration:	EK00072	Instrument:	ECD7
Calibration Date:	11/29/2021	Column (2):	ZB35

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
Aroclor 1016 [2C]	250	5.513913E-02	20	5.816812E-02	50	5.579557E-02	1000	4.934903E-02	100	5.664937E-02	500	5.279051E-02
Aroclor-1016 (1) [2C]	250	4.545684E-02	20	4.962679E-02	50	4.716669E-02	1000	3.748169E-02	100	4.745418E-02	500	4.257165E-02
Aroclor-1016 (2) [2C]	250	0.1055878	20	0.1108774	50	0.1078124	1000	9.544583E-02	100	0.1093748	500	0.1004191
Aroclor-1016 (3) [2C]	250	4.113496E-02	20	4.309309E-02	50	0.0403522	1000	3.815165E-02	100	4.139251E-02	500	0.0403911
Aroclor-1016 (4) [2C]	250	2.837696E-02	20	2.907518E-02	50	2.785101E-02	1000	2.631697E-02	100	2.837603E-02	500	2.778016E-02
Aroclor 1260 [2C]	250	8.779673E-02	20	8.351214E-02	50	8.451131E-02	1000	0.0882065	100	8.673245E-02	500	8.633688E-02
Aroclor-1260 (1) [2C]	250	5.830238E-02	20	5.927048E-02	50	5.855085E-02	1000	5.476628E-02	100	5.869047E-02	500	5.590439E-02
Aroclor-1260 (2) [2C]	250	0.1488619	20	0.1421396	50	0.1454033	1000	0.1557739	100	0.1495374	500	0.145251
Aroclor-1260 (3) [2C]	250	9.720396E-02	20	0.0914136	50	9.251061E-02	1000	9.421474E-02	100	9.525361E-02	500	9.624156E-02
Aroclor-1260 (4) [2C]	250	4.681871E-02	20	4.122486E-02	50	4.158047E-02	1000	4.807097E-02	100	4.344816E-02	500	4.795059E-02
Decachlorobiphenyl [2C]	40	1.575123	3.2	1.262886	8	1.361339			16	1.465397	80	1.695976
Tetrachlorometaxylene [2C]	40	1.007239	3.2	1.005567	8	1.026256	160	1.02822	16	1.038547	80	0.9839163

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INITIAL CALIBRATION DATA
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Calibration:	EK00072	Instrument:	ECD7
Calibration Date:	11/29/2021	Column (2):	ZB35

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	Conc	RRF	Conc	RRF	Conc	RRF	Conc	RRF	Conc	RRF	Conc	RRF
Aroclor 1242 [2C]	250	4.703193E-02										
Aroclor-1242 (1) [2C]	250	3.809012E-02										
Aroclor-1242 (2) [2C]	250	8.660312E-02										
Aroclor-1242 (3) [2C]	250	2.891536E-02										
Aroclor-1242 (4) [2C]	250	3.451913E-02										

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INITIAL CALIBRATION DATA
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Calibration:	EK00072	Instrument:	ECD7
Calibration Date:	11/29/2021	Column (2):	ZB35

COMPOUND	Mean RRF	RRF RSD	Linear COD	Quad COD	Limit Type & Limit	Q
Aroclor 1016 [2C]	5.464862E-02	5.8			RSD (20)	
Aroclor-1016 (1) [2C]	4.495964E-02	9.7			RSD (20)	
Aroclor-1016 (2) [2C]	0.1049196	5.6			RSD (20)	
Aroclor-1016 (3) [2C]	4.075258E-02	4.0			RSD (20)	
Aroclor-1016 (4) [2C]	2.796272E-02	3.3			RSD (20)	
Aroclor 1242 [2C]		0.0			RSD (20)	
Aroclor-1242 (1) [2C]		0.0			RSD (20)	
Aroclor-1242 (2) [2C]		0.0			RSD (20)	
Aroclor-1242 (3) [2C]		0.0			RSD (20)	
Aroclor-1242 (4) [2C]		0.0			RSD (20)	
Aroclor 1260 [2C]	8.618267E-02	2.1			RSD (20)	
Aroclor-1260 (1) [2C]	5.758081E-02	3.1			RSD (20)	
Aroclor-1260 (2) [2C]	0.1478278	3.2			RSD (20)	
Aroclor-1260 (3) [2C]	9.447301E-02	2.3			RSD (20)	
Aroclor-1260 (4) [2C]	4.484896E-02	7.0			RSD (20)	
Decachlorobiphenyl [2C]	1.472144	11.6			RSD (20)	
Tetrachlorometaxylene [2C]	1.014958	2.0			RSD (20)	

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Printed: 11/29/2021 8:43:04AM

ANALYSIS SEQUENCE

SJK0390

Instrument: ECD7 Element Column ID: j572i10975
Calibration ID: EK00~~065~~ 72

Lab Number	Sample Name	Analysis	Container	Order	STD ID	ISTD ID	Comments
SJK0390-CAL1	0.25PPM AR1660	QC		1	J008417	J008446	
SJK0390-CAL2	0.02PPM AR1660	QC		2	J008420	J008446	
SJK0390-CAL3	0.05PPM AR1660	QC		3	J008419	J008446	
SJK0390-CAL4	1PPM AR1660	QC		4	J008134	J008446	
SJK0390-CAL5	0.1PPM AR1660	QC		5	J008418	J008446	
SJK0390-CAL6	0.5PPM AR1660	QC		6	J008416	J008446	
SJK0390-CAL7	0.25PPM AR1242	QC		7	J008135	J008446	
SJK0390-CAL8	0.25PPM AR1248	QC		8	J008427	J008446	
SJK0390-CAL9	0.25PPM AR1254	QC		9	J008136	J008446	
SJK0390-CALA	0.25PPM AR2162	QC		10	J008137	J008446	
SJK0390-CALB	0.25PPM AR3268	QC		11	J008138	J008446	
SJK0390-SCV1	AR1660SCV1	QC		12	J008139	J008446	
SJK0390-SCV2	AR1242SCV2	QC		13	J008140	J008446	
SJK0390-SCV3	AR1248SCV3	QC		14	J008141	J008446	
SJK0390-SCV4	AR1254SCV4	QC		15	J008142	J008446	
SJK0390-SCV5	AR2162SCV5	QC		16	J008143	J008446	
SJK0390-SCV6	AR3268SCV6	QC		17	J008144	J008446	

GC LOG SUMMARY FOR DATABATCH - \\target\share\chem4\ecd7.i\211126.b

	Inject Date/Time	Filename	DF	LabID	ClientID
1	26-NOV-2021 16:05	11262101ECD7.D	1	RINSE	
2	26-NOV-2021 16:26	11262102ECD7.D	1	RINSE	
3	26-NOV-2021 16:47	11262103ECD7.D	1	RINSE	
4	26-NOV-2021 17:09	11262104ECD7.D	1	RINSE	
5	26-NOV-2021 17:30	11262105ECD7.D	1	IB	
6	26-NOV-2021 17:51	11262106ECD7.D	1	0.25PPMAR1660	
7	26-NOV-2021 18:12	11262107ECD7.D	1	0.02PPMAR1660	
8	26-NOV-2021 18:33	11262108ECD7.D	1	0.05PPMAR1660	
9	26-NOV-2021 18:55	11262109ECD7.D	1	1PPMAR1660	
10	26-NOV-2021 19:16	11262110ECD7.D	1	0.1PPMAR1660	
11	26-NOV-2021 19:37	11262111ECD7.D	1	0.5PPMAR1660	
12	26-NOV-2021 19:58	11262112ECD7.D	1	AR1242	
13	26-NOV-2021 20:19	11262113ECD7.D	1	AR1248	
14	26-NOV-2021 20:40	11262114ECD7.D	1	AR1254	
15	26-NOV-2021 21:02	11262115ECD7.D	1	AR2162	
16	26-NOV-2021 21:23	11262116ECD7.D	1	AR3268	
17	26-NOV-2021 21:44	11262117ECD7.D	1	AR1660SCV1	
18	26-NOV-2021 22:05	11262118ECD7.D	1	AR1242SCV2	
19	26-NOV-2021 22:26	11262119ECD7.D	1	AR1248SCV3	
20	26-NOV-2021 22:47	11262120ECD7.D	1	AR1254SCV4	
21	26-NOV-2021 23:08	11262121ECD7.D	1	AR2162SCV5	
22	26-NOV-2021 23:30	11262122ECD7.D	1	AR3268SCV6	
23	26-NOV-2021 23:51	11262123ECD7.D	1	0.1PPMDDTS	
24	27-NOV-2021 00:12	11262124ECD7.D	1	DDT BD	

MANUAL INTEGRATION SUMMARY FOR DATABATCH - \\target\share\chem4\ecd7.i\211126.b

ARI Job No.: RINS Method: PCB.m Instrument: ecd7.i Date: 26-NOV-2021

Time	Filename	LabID	ClientId	DF	Manually Integrated Compounds
1605	11262101ECD7.D	RINSE		1	NO MANUAL INTEGRATION
1626	11262102ECD7.D	RINSE		1	NO MANUAL INTEGRATION
1647	11262103ECD7.D	RINSE		1	NO MANUAL INTEGRATION
1709	11262104ECD7.D	RINSE		1	NO MANUAL INTEGRATION
1730	11262105ECD7.D	IB		1	NO MANUAL INTEGRATION
1751	11262106ECD7.D	0.25PPMAR1660		1	NO MANUAL INTEGRATION
1812	11262107ECD7.D	0.02PPMAR1660		1	NO MANUAL INTEGRATION
1833	11262108ECD7.D	0.05PPMAR1660		1	NO MANUAL INTEGRATION
1855	11262109ECD7.D	1PPMAR1660		1	NO MANUAL INTEGRATION
1916	11262110ECD7.D	0.1PPMAR1660		1	NO MANUAL INTEGRATION
1937	11262111ECD7.D	0.5PPMAR1660		1	NO MANUAL INTEGRATION
1958	11262112ECD7.D	AR1242		1	NO MANUAL INTEGRATION
2019	11262113ECD7.D	AR1248		1	NO MANUAL INTEGRATION
2040	11262114ECD7.D	AR1254		1	NO MANUAL INTEGRATION
2102	11262115ECD7.D	AR2162		1	NO MANUAL INTEGRATION
2123	11262116ECD7.D	AR3268		1	NO MANUAL INTEGRATION
2144	11262117ECD7.D	AR1660SCV1		1	NO MANUAL INTEGRATION

MANUAL INTEGRATION SUMMARY FOR DATABATCH - \\target\share\chem4\ecd7.i\211126.b

Time	Filename	LabID	ClientId	DF	Manually Integrated Compounds
2205	11262118ECD7.D	AR1242SCV2		1	NO MANUAL INTEGRATION
2226	11262119ECD7.D	AR1248SCV3		1	NO MANUAL INTEGRATION
2247	11262120ECD7.D	AR1254SCV4		1	NO MANUAL INTEGRATION
2308	11262121ECD7.D	AR2162SCV5		1	NO MANUAL INTEGRATION
2330	11262122ECD7.D	AR3268SCV6		1	NO MANUAL INTEGRATION
2351	11262123ECD7.D	0.1PPMDDTS		1	NO MANUAL INTEGRATION
0012	11262124ECD7.D	DDT BD		1	NO MANUAL INTEGRATION
1605	11262101ECD7.D	RINSE		1	NO MANUAL INTEGRATION
1626	11262102ECD7.D	RINSE		1	NO MANUAL INTEGRATION
1647	11262103ECD7.D	RINSE		1	NO MANUAL INTEGRATION
1709	11262104ECD7.D	RINSE		1	NO MANUAL INTEGRATION
1730	11262105ECD7.D	IB		1	NO MANUAL INTEGRATION
1751	11262106ECD7.D	0.25PPMAR1660		1	NO MANUAL INTEGRATION
1812	11262107ECD7.D	0.02PPMAR1660		1	NO MANUAL INTEGRATION
1833	11262108ECD7.D	0.05PPMAR1660		1	NO MANUAL INTEGRATION
1855	11262109ECD7.D	1PPMAR1660		1	NO MANUAL INTEGRATION
1916	11262110ECD7.D	0.1PPMAR1660		1	NO MANUAL INTEGRATION
1937	11262111ECD7.D	0.5PPMAR1660		1	NO MANUAL INTEGRATION

MANUAL INTEGRATION SUMMARY FOR DATABATCH - \\target\share\chem4\ecd7.i\211126.b\211126.b

Time	Filename	LabID	ClientId	DF	Manually Integrated Compounds
1958	11262112ECD7.D	AR1242		1	NO MANUAL INTEGRATION
2019	11262113ECD7.D	AR1248		1	NO MANUAL INTEGRATION
2040	11262114ECD7.D	AR1254		1	NO MANUAL INTEGRATION
2102	11262115ECD7.D	AR2162		1	NO MANUAL INTEGRATION
2123	11262116ECD7.D	AR3268		1	NO MANUAL INTEGRATION
2144	11262117ECD7.D	AR1660SCV1		1	NO MANUAL INTEGRATION
2205	11262118ECD7.D	AR1242SCV2		1	NO MANUAL INTEGRATION
2226	11262119ECD7.D	AR1248SCV3		1	NO MANUAL INTEGRATION
2247	11262120ECD7.D	AR1254SCV4		1	NO MANUAL INTEGRATION
2308	11262121ECD7.D	AR2162SCV5		1	NO MANUAL INTEGRATION
2330	11262122ECD7.D	AR3268SCV6		1	NO MANUAL INTEGRATION
2351	11262123ECD7.D	0.1PPMDDTS		1	NO MANUAL INTEGRATION
0012	11262124ECD7.D	DDT BD		1	NO MANUAL INTEGRATION

Security Status Report

Date: 29-Nov-2021 10:25

11262101ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262102ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262103ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262104ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262105ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262106ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262107ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262108ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262109ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262110ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262111ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262112ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262113ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262114ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262115ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262116ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262117ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262118ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262119ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262120ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262121ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262122ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262123ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262124ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25

ARI Labs, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 26-NOV-2021 17:51
End Cal Date : 26-NOV-2021 23:51
Quant Method : ISTD
Origin : Disabled
Target Version : 4.14
Integrator : HP Genie
Method file : \\target\share\chem4\ecd7.i\211126.b\PCB.m\PCB2.m
Last Edit : 27-Nov-2021 12:09 jrains
Curve Type : Average

Calibration File Names:
Level 1: \\target\share\chem4\ecd7.i\211126.b\211126.b\11262107.D
Level 2: \\target\share\chem4\ecd7.i\211126.b\211126.b\11262108.D
Level 3: \\target\share\chem4\ecd7.i\211126.b\211126.b\11262110.D
Level 4: \\target\share\chem4\ecd7.i\211126.b\211126.b\11262106.D
Level 5: \\target\share\chem4\ecd7.i\211126.b\211126.b\11262111.D
Level 6: \\target\share\chem4\ecd7.i\211126.b\211126.b\11262109.D
Level 7: \\target\share\chem4\ecd7.i\211126.b\211126.b\11262116.D
Level 8: \\target\share\chem4\ecd7.i\211126.b\211126.b\11262123.D

Compound	20.000 Level 1	50.000 Level 2	100.000 Level 3	250.000 Level 4	500.000 Level 5	1000.000 Level 6	RRF	% RSD
	250.000 Level 7	0.000e+00 Level 8						
1 Aroclor-1221 [2C](1)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.00522	+++++					0.00522	0.000
(2)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.01381	+++++					0.01381	0.000
(3)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.02547	+++++					0.02547	0.000
4 Aroclor-1232 [2C](1)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.00307	+++++					0.00307	0.000
(2)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.02192	+++++					0.02192	0.000
(3)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.01498	+++++					0.01498	0.000
(4)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.01816	+++++					0.01816	0.000
3 Aroclor-1242 [2C](1)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.03809	+++++					0.03809	0.000

ARI Labs, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 26-NOV-2021 17:51
End Cal Date : 26-NOV-2021 23:51
Quant Method : ISTD
Origin : Disabled
Target Version : 4.14
Integrator : HP Genie
Method file : \\target\share\chem4\ecd7.i\211126.b\PCB.m\PCB2.m
Last Edit : 27-Nov-2021 12:09 jrains
Curve Type : Average

Compound	20.000 Level 1	50.000 Level 2	100.000 Level 3	250.000 Level 4	500.000 Level 5	1000.000 Level 6	250.000 Level 7	0.000e+00 Level 8	___ RRF	% RSD
(2)	#####	#####	#####	#####	#####	#####				
	0.08660	#####							0.08660	0.000
(3)	#####	#####	#####	#####	#####	#####				
	0.02892	#####							0.02892	0.000
(4)	#####	#####	#####	#####	#####	#####				
	0.03452	#####							0.03452	0.000
6 Aroclor-1248 [2C](1)	#####	#####	#####	#####	#####	#####				
	0.03786	#####							0.03786	0.000
(2)	#####	#####	#####	#####	#####	#####				
	0.04559	#####							0.04559	0.000
(3)	#####	#####	#####	#####	#####	#####				
	0.06495	#####							0.06495	0.000
(4)	#####	#####	#####	#####	#####	#####				
	0.06204	#####							0.06204	0.000
7 Aroclor-1016 [2C](1)	0.04963	0.04717	0.04745	0.04546	0.04257	0.03748				
	#####	#####							0.04496	9.682
(2)	0.11088	0.10781	0.10937	0.10559	0.10042	0.09545				
	#####	#####							0.10492	5.625
(3)	0.04309	0.04035	0.04139	0.04113	0.04039	0.03815				
	#####	#####							0.04075	3.970
(4)	0.02908	0.02785	0.02838	0.02838	0.02778	0.02632				
	#####	#####							0.02796	3.330

ARI Labs, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 26-NOV-2021 17:51
End Cal Date : 26-NOV-2021 23:51
Quant Method : ISTD
Origin : Disabled
Target Version : 4.14
Integrator : HP Genie
Method file : \\target\share\chem4\ecd7.i\211126.b\PCB.m\PCB2.m
Last Edit : 27-Nov-2021 12:09 jrains
Curve Type : Average

Compound	20.000 Level 1	50.000 Level 2	100.000 Level 3	250.000 Level 4	500.000 Level 5	1000.000 Level 6	RRF	% RSD
	250.000 Level 7	0.000e+00 Level 8						
8 Aroclor-1254 [2C](1)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.06426	+++++					0.06426	0.000
(2)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.02598	+++++					0.02598	0.000
(3)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.05021	+++++					0.05021	0.000
(4)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.10406	+++++					0.10406	0.000
(5)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.05176	+++++					0.05176	0.000
10 Aroclor-1262 [2C](1)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.08996	+++++					0.08996	0.000
(2)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.07409	+++++					0.07409	0.000
(3)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.08900	+++++					0.08900	0.000
(4)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.12680	+++++					0.12680	0.000
9 Aroclor-1260 [2C](1)	0.05927	0.05855	0.05869	0.05830	0.05590	0.05477		
	+++++	+++++					0.05758	3.134
(2)	0.14214	0.14540	0.14954	0.14886	0.14525	0.15577		
	+++++	+++++					0.14783	3.202

ARI Labs, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 26-NOV-2021 17:51
End Cal Date : 26-NOV-2021 23:51
Quant Method : ISTD
Origin : Disabled
Target Version : 4.14
Integrator : HP Genie
Method file : \\target\share\chem4\ecd7.i\211126.b\PCB.m\PCB2.m
Last Edit : 27-Nov-2021 12:09 jrains
Curve Type : Average

Compound	20.000 Level 1	50.000 Level 2	100.000 Level 3	250.000 Level 4	500.000 Level 5	1000.000 Level 6	RRF	% RSD
	250.000 Level 7	0.000e+00 Level 8						
(3)	0.09141	0.09251	0.09525	0.09720	0.09624	0.09421		
	#####	#####					0.09447	2.342
(4)	0.04122	0.04158	0.04345	0.04682	0.04795	0.04807		
	#####	#####					0.04485	7.027
11 Aroclor-1268 [2C](1)	#####	#####	#####	#####	#####	#####		
	0.22215	#####					0.22215	0.000
(2)	#####	#####	#####	#####	#####	#####		
	0.22514	#####					0.22514	0.000
(3)	#####	#####	#####	#####	#####	#####		
	0.20015	#####					0.20015	0.000
(4)	#####	#####	#####	#####	#####	#####		
	0.71686	#####					0.71686	0.000
41 2,4-DDE [2C]	#####	#####	#####	#####	#####	#####		
	#####	651					651	0.000
42 2,4-DDD [2C]	#####	#####	#####	#####	#####	#####		
	#####	1271					1271	0.000
44 4,4-DDE [2C]	#####	#####	#####	#####	#####	#####		
	#####	1362					1362	0.000
45 4,4-DDD/2,4-DDT [2C]	#####	#####	#####	#####	#####	#####		
	#####	1130					1130	0.000
46 4,4-DDT [2C]	#####	#####	#####	#####	#####	#####		
	#####	1432					1432	0.000

ARI Labs, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 26-NOV-2021 17:51
End Cal Date : 26-NOV-2021 23:51
Quant Method : ISTD
Origin : Disabled
Target Version : 4.14
Integrator : HP Genie
Method file : \\target\share\chem4\ecd7.i\211126.b\PCB.m\PCB2.m
Last Edit : 27-Nov-2021 12:09 jrains
Curve Type : Average

Compound	20.000 Level 1	50.000 Level 2	100.000 Level 3	250.000 Level 4	500.000 Level 5	1000.000 Level 6	___ RRF	% RSD
	250.000 Level 7	0.000e+00 Level 8						
48 Hexachlorobutadiene	+++++	+++++	+++++	+++++	+++++	+++++		
	+++++	+++++					+++++	+++++
49 Hexachlorobenzene	+++++	+++++	+++++	+++++	+++++	+++++		
	+++++	+++++					+++++	+++++
$ 2 Tetrachloro-m-xylene [2C]	1.00557	1.02626	1.03855	1.00724	0.98392	1.02822		
	+++++	+++++					1.01496	1.956
$ 13 Decachlorobiphenyl [2C]	1.26289	1.36134	1.46540	1.57512	1.69598	+++++		
	+++++	+++++					1.47214	11.608

ARI Labs, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 22-NOV-2021 19:33
End Cal Date : 23-NOV-2021 01:35
Quant Method : ISTD
Origin : Disabled
Target Version : 4.14
Integrator : HP Genie
Method file : \\target\share\chem4\ecd7.i\211122.b\PCB.m
Last Edit : 23-Nov-2021 15:14 jrains
Curve Type : Average

Calibration File Names:
Level 1: \\target\share\chem4\ecd7.i\211122.b\11222115.D
Level 2: \\target\share\chem4\ecd7.i\211122.b\11222116.D
Level 3: \\target\share\chem4\ecd7.i\211122.b\11222118.D
Level 4: \\target\share\chem4\ecd7.i\211122.b\11222114.D
Level 5: \\target\share\chem4\ecd7.i\211122.b\11222119.D
Level 6: \\target\share\chem4\ecd7.i\211122.b\11222117.D
Level 7: \\target\share\chem4\ecd7.i\211122.b\11222124.D
Level 8: \\target\share\chem4\ecd7.i\211122.b\11222131.D

Compound	20.000 Level 1	50.000 Level 2	100.000 Level 3	250.000 Level 4	500.000 Level 5	1000.000 Level 6	___ RRF	% RSD
	250.000 Level 7	0.000e+00 Level 8						
2 Aroclor-1221(1)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.00609	+++++					0.00609	0.000
(2)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.01162	+++++					0.01162	0.000
(3)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.02879	+++++					0.02879	0.000
3 Aroclor-1242(1)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.02394	+++++					0.02394	0.000
(2)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.08306	+++++					0.08306	0.000
(3)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.02857	+++++					0.02857	0.000
(4)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.03034	+++++					0.03034	0.000
4 Aroclor-1232(1)	+++++	+++++	+++++	+++++	+++++	+++++		
	0.00369	+++++					0.00369	0.000

ARI Labs, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 22-NOV-2021 19:33
End Cal Date : 23-NOV-2021 01:35
Quant Method : ISTD
Origin : Disabled
Target Version : 4.14
Integrator : HP Genie
Method file : \\target\share\chem4\ecd7.i\211122.b\PCB.m
Last Edit : 23-Nov-2021 15:14 jrains
Curve Type : Average

Compound	20.000 Level 1	50.000 Level 2	100.000 Level 3	250.000 Level 4	500.000 Level 5	1000.000 Level 6	250.000 Level 7	0.000e+00 Level 8	___ RRF	% RSD
(2)	#####	#####	#####	#####	#####	#####				
	0.04452	#####							0.04452	0.000
(3)	#####	#####	#####	#####	#####	#####				
	0.01472	#####							0.01472	0.000
(4)	#####	#####	#####	#####	#####	#####				
	0.01586	#####							0.01586	0.000
7 Aroclor-1016(1)	0.03247	0.03163	0.03073	0.03070	0.02859	0.02623				
	#####	#####							0.03006	7.583
(2)	0.10929	0.10902	0.10817	0.10855	0.10115	0.09535				
	#####	#####							0.10526	5.455
(3)	0.04288	0.04211	0.04173	0.04186	0.03917	0.03649				
	#####	#####							0.04071	5.943
(4)	0.02924	0.02819	0.02818	0.02890	0.02780	0.02657				
	#####	#####							0.02815	3.316
6 Aroclor-1248(1)	#####	#####	#####	#####	#####	#####				
	0.04287	#####							0.04287	0.000
(2)	#####	#####	#####	#####	#####	#####				
	0.04905	#####							0.04905	0.000
(3)	#####	#####	#####	#####	#####	#####				
	0.06368	#####							0.06368	0.000
(4)	#####	#####	#####	#####	#####	#####				
	0.05132	#####							0.05132	0.000

ARI Labs, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 22-NOV-2021 19:33
End Cal Date : 23-NOV-2021 01:35
Quant Method : ISTD
Origin : Disabled
Target Version : 4.14
Integrator : HP Genie
Method file : \\target\share\chem4\ecd7.i\211122.b\PCB.m
Last Edit : 23-Nov-2021 15:14 jrains
Curve Type : Average

Compound	20.000 Level 1	50.000 Level 2	100.000 Level 3	250.000 Level 4	500.000 Level 5	1000.000 Level 6	250.000 Level 7	0.000e+00 Level 8	___ RRF	% RSD
8 Aroclor-1254(1)	#####	#####	#####	#####	#####	#####				
	0.07780	#####							0.07780	0.000
(2)	#####	#####	#####	#####	#####	#####				
	0.02537	#####							0.02537	0.000
(3)	#####	#####	#####	#####	#####	#####				
	0.05151	#####							0.05151	0.000
(4)	#####	#####	#####	#####	#####	#####				
	0.09727	#####							0.09727	0.000
(5)	#####	#####	#####	#####	#####	#####				
	0.06845	#####							0.06845	0.000
9 Aroclor-1260(1)	0.05635	0.05466	0.05005	0.05053	0.04863	0.04770				
	#####	#####							0.05132	6.696
(2)	0.05205	0.05188	0.04953	0.04980	0.04869	0.04820				
	#####	#####							0.05002	3.215
(3)	0.11525	0.14131	0.12443	0.12467	0.11893	0.13127				
	#####	#####							0.12598	7.378
(4)	0.05620	0.05952	0.05959	0.05969	0.05901	0.05885				
	#####	#####							0.05881	2.245
(5)	0.02694	0.02771	0.02790	0.02822	0.02810	0.02785				
	#####	#####							0.02779	1.627
10 Aroclor-1262(1)	#####	#####	#####	#####	#####	#####				
	0.03702	#####							0.03702	0.000

ARI Labs, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 22-NOV-2021 19:33
End Cal Date : 23-NOV-2021 01:35
Quant Method : ISTD
Origin : Disabled
Target Version : 4.14
Integrator : HP Genie
Method file : \\target\share\chem4\ecd7.i\211122.b\PCB.m
Last Edit : 23-Nov-2021 15:14 jrains
Curve Type : Average

Compound	20.000 Level 1	50.000 Level 2	100.000 Level 3	250.000 Level 4	500.000 Level 5	1000.000 Level 6	250.000 Level 7	0.000e+00 Level 8	RRF	% RSD
(2)	#####	#####	#####	#####	#####	#####				
	0.06044	#####							0.06044	0.000
(3)	#####	#####	#####	#####	#####	#####				
	0.06166	#####							0.06166	0.000
(4)	#####	#####	#####	#####	#####	#####				
	0.05209	#####							0.05209	0.000
11 Aroclor-1268(1)	#####	#####	#####	#####	#####	#####				
	0.16250	#####							0.16250	0.000
(2)	#####	#####	#####	#####	#####	#####				
	0.14793	#####							0.14793	0.000
(3)	#####	#####	#####	#####	#####	#####				
	0.12659	#####							0.12659	0.000
(4)	#####	#####	#####	#####	#####	#####				
	0.39288	#####							0.39288	0.000
42 2,4-DDE	#####	#####	#####	#####	#####	#####				
	#####	822							822	0.000
43 2,4-DDD	#####	#####	#####	#####	#####	#####				
	#####	1370							1370	0.000
44 2,4-DDT	#####	#####	#####	#####	#####	#####				
	#####	1413							1413	0.000
46 4,4-DDE	#####	#####	#####	#####	#####	#####				
	#####	2040							2040	0.000

ARI Labs, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 22-NOV-2021 19:33
End Cal Date : 23-NOV-2021 01:35
Quant Method : ISTD
Origin : Disabled
Target Version : 4.14
Integrator : HP Genie
Method file : \\target\share\chem4\ecd7.i\211122.b\PCB.m
Last Edit : 23-Nov-2021 15:14 jrains
Curve Type : Average

Compound	20.000 Level 1	50.000 Level 2	100.000 Level 3	250.000 Level 4	500.000 Level 5	1000.000 Level 6	RRF	% RSD
	250.000 Level 7	0.000e+00 Level 8						
47 4,4-DDD	+++++	+++++	+++++	+++++	+++++	+++++		
	+++++	1945					1945	0.000
48 4,4-DDT	+++++	+++++	+++++	+++++	+++++	+++++		
	+++++	1841					1841	0.000
49 Hexachlorobutadiene	+++++	+++++	+++++	+++++	+++++	+++++		
	+++++	+++++					+++++	+++++
50 Hexachlorobenzene	+++++	+++++	+++++	+++++	+++++	+++++		
	+++++	+++++					+++++	+++++
$ 1 Tetrachloro-m-xylene	1.02461	1.04094	1.05012	1.08295	1.07369	1.15290		
	+++++	+++++					1.07087	4.249
$ 13 Decachlorobiphenyl	0.94560	0.93968	0.92518	0.89604	0.89856	0.99224		
	+++++	+++++					0.93288	3.813

ARI Labs, Inc.
RETENTION TIME SUMMARY REPORT

Method File: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Batch File: \\target\share\chem4\ecd7.i\211126.b
Inst ID: ecd7.i

ID:	RT01	RT02	RT03	RT04	RT05	RT06
FILENAME:	11262106ECD7	11262107ECD7	11262108ECD7	11262109ECD7	11262110ECD7	11262111ECD7
INJ.DATE:	26-NOV-2021	26-NOV-2021	26-NOV-2021	26-NOV-2021	26-NOV-2021	26-NOV-2021
INJ.TIME:	17:51	18:12	18:33	18:55	19:16	19:37

Compound	RT01	RT02	RT03	RT04	RT05	RT06	EXPEC RT	RT WINDOW	AVG RT	STD DEV
* 41 IS-BNB	3.566	3.562	3.565	3.565	3.564	3.565	3.564	3.464-3.664	3.564	0.001
$ 1 Tetrachloro-m-xylene	5.948	5.944	5.947	5.949	5.947	5.948	5.947	5.847-6.047	5.947	0.002
2 Aroclor-1221	+++++	+++++	+++++	+++++	+++++	+++++	4.864	4.764-4.964	+++++	+++++
3 Aroclor-1242	+++++	+++++	+++++	+++++	+++++	+++++	7.413	7.313-7.513	+++++	+++++
4 Aroclor-1232	+++++	+++++	+++++	+++++	+++++	+++++	4.867	4.767-4.967	+++++	+++++
7 Aroclor-1016	7.413	7.412	7.413	7.413	7.413	7.413	7.413	7.313-7.513	7.413	0.000
6 Aroclor-1248	+++++	+++++	+++++	+++++	+++++	+++++	8.546	8.446-8.646	+++++	+++++
8 Aroclor-1254	+++++	+++++	+++++	+++++	+++++	+++++	9.436	9.336-9.536	+++++	+++++
9 Aroclor-1260	11.186	11.187	11.187	11.187	11.186	11.187	11.186	11.086-11.286	11.187	0.000
10 Aroclor-1262	+++++	+++++	+++++	+++++	+++++	+++++	10.959	10.859-11.059	+++++	+++++
11 Aroclor-1268	+++++	+++++	+++++	+++++	+++++	+++++	12.389	12.289-12.489	+++++	+++++
$ 13 Decachlorobiphenyl	14.040	14.041	14.042	14.043	14.041	14.041	14.041	13.941-14.141	14.041	0.001
* 12 IS-HBBP	14.407	14.407	14.407	14.407	14.407	14.406	14.407	14.307-14.507	14.407	0.001
42 2,4-DDE	+++++	+++++	+++++	+++++	+++++	+++++	9.405	9.355-9.455	+++++	+++++
43 2,4-DDD	+++++	+++++	+++++	+++++	+++++	+++++	9.943	9.893-9.993	+++++	+++++
44 2,4-DDT	+++++	+++++	+++++	+++++	+++++	+++++	10.443	10.393-10.493	+++++	+++++
46 4,4-DDE	+++++	+++++	+++++	+++++	+++++	+++++	9.822	9.722-9.922	+++++	+++++

Reviewer 1 _____ Date: _____
Reviewer 2 _____ Date: _____

ARI Labs, Inc.
RETENTION TIME SUMMARY REPORT

Method File: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Batch File: \\target\share\chem4\ecd7.i\211126.b
Inst ID: ecd7.i

Compound	RT01	RT02	RT03	RT04	RT05	RT06	EXPEC RT	RT WINDOW	AVG RT	STD DEV
47 4,4-DDD	+++++	+++++	+++++	+++++	+++++	+++++	10.390	10.290-10.490	+++++	+++++
48 4,4-DDT	+++++	+++++	+++++	+++++	+++++	+++++	10.897	10.797-10.997	+++++	+++++
49 Hexachlorobutadiene	+++++	+++++	+++++	+++++	+++++	+++++	1.842	1.742-1.942	+++++	+++++
50 Hexachlorobenzene	+++++	+++++	+++++	+++++	+++++	+++++	6.708	6.608-6.808	+++++	+++++

ARI Labs, Inc.
RETENTION TIME SUMMARY REPORT

Method File: \\target\share\chem4\ecd7.i\211126.b\PCB.m\PCB2.m
Batch File: \\target\share\chem4\ecd7.i\211126.b\211126.b
Inst ID: ecd7.i

ID:	RT01	RT02	RT03	RT04	RT05	RT06
FILENAME:	11262106ECD7	11262107ECD7	11262108ECD7	11262109ECD7	11262110ECD7	11262111ECD7
INJ.DATE:	26-NOV-2021	26-NOV-2021	26-NOV-2021	26-NOV-2021	26-NOV-2021	26-NOV-2021
INJ.TIME:	17:51	18:12	18:33	18:55	19:16	19:37

Compound	RT01	RT02	RT03	RT04	RT05	RT06	EXPEC RT	RT WINDOW	AVG RT	STD DEV
* 40 IS-BNB [2C]	4.009	4.005	4.008	4.008	4.007	4.009	4.009	3.909-4.109	4.008	0.001
$ 2 Tetrachloro-m-xylene [	5.807	5.802	5.804	5.809	5.804	5.807	5.807	5.707-5.907	5.806	0.002
1 Aroclor-1221 [2C]	#####	#####	#####	#####	#####	#####	5.080	4.980-5.180	#####	#####
4 Aroclor-1232 [2C]	#####	#####	#####	#####	#####	#####	5.082	4.982-5.182	#####	#####
3 Aroclor-1242 [2C]	#####	#####	#####	#####	#####	#####	7.382	7.282-7.482	#####	#####
6 Aroclor-1248 [2C]	#####	#####	#####	#####	#####	#####	8.431	8.331-8.531	#####	#####
7 Aroclor-1016 [2C]	7.382	7.382	7.382	7.383	7.382	7.383	7.383	7.283-7.483	7.382	0.001
8 Aroclor-1254 [2C]	#####	#####	#####	#####	#####	#####	9.571	9.471-9.671	#####	#####
10 Aroclor-1262 [2C]	#####	#####	#####	#####	#####	#####	11.330	11.230-11.430	#####	#####
9 Aroclor-1260 [2C]	11.785	11.783	11.785	11.788	11.784	11.785	11.785	11.685-11.885	11.785	0.002
11 Aroclor-1268 [2C]	#####	#####	#####	#####	#####	#####	12.569	12.469-12.669	#####	#####
$ 13 Decachlorobiphenyl [2C	14.265	14.261	14.261	14.277	14.262	14.264	14.264	14.164-14.364	14.265	0.006
* 12 IS-HBBP [2C]	15.142	15.143	15.144	15.144	15.143	15.143	15.143	15.043-15.243	15.143	0.001
41 2,4-DDE [2C]	#####	#####	#####	#####	#####	#####	10.036	9.986-10.086	#####	#####
42 2,4-DDD [2C]	#####	#####	#####	#####	#####	#####	9.668	9.618-9.718	#####	#####
44 4,4-DDE [2C]	#####	#####	#####	#####	#####	#####	10.341	10.241-10.441	#####	#####
45 4,4-DDD/2,4-DDT [2C]	#####	#####	#####	#####	#####	#####	10.793	10.693-10.893	#####	#####

Reviewer 1 _____ Date:_____
Reviewer 2 _____ Date:_____

ARI Labs, Inc.
RETENTION TIME SUMMARY REPORT

Method File: \\target\share\chem4\ecd7.i\211126.b\PCB.m\PCB2.m
Batch File: \\target\share\chem4\ecd7.i\211126.b\211126.b
Inst ID: ecd7.i

Compound	RT01	RT02	RT03	RT04	RT05	RT06	EXPEC RT	RT WINDOW	AVG RT	STD DEV
46 4,4-DDT [2C]	+++++	+++++	+++++	+++++	+++++	+++++	11.226	11.126-11.326	+++++	+++++
48 Hexachlorobutadiene	+++++	+++++	+++++	+++++	+++++	+++++	1.703	1.603-1.803	+++++	+++++
49 Hexachlorobenzene	+++++	+++++	+++++	+++++	+++++	+++++	7.178	7.078-7.278	+++++	+++++

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262105ECD7.D
Data file 2: /211126.b/211126.b/11262105ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: IB
Client ID:
Injection Date: 26-NOV-2021 17:30
Report Date: 11/29/2021 08:38
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.947	0.001	174918	5.806	-0.001	449070	40.7	40.3	1.0	Tetrachloro-m-xylene
14.041	-0.001	189164	14.264	-0.000	910402	40.6	44.7	9.7	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	324018	-2.2
Hexabromobiphenyl	407599	402689	-1.2

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	878551	-2.2
Hexabromobiphenyl	1136250	1106004	-2.7

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	---			0.0	1	---			0.0
Aroclor-1016	2	---			0.0	2	---			0.0
Aroclor-1016	3	---			0.0	3	---			0.0
Aroclor-1016	4	---			0.0	4	---			0.0
	Col1Ave: <3 Quant Peaks					Col2Ave: <3 Quant Peaks				
Aroclor-1221	1	---			0.0	1	---			0.0
Aroclor-1221	2	---			0.0	2	6.441	0.022	4783	31.5
Aroclor-1221	3	---			0.0	3	6.754	0.009	976	3.5
	Col1Ave: <3 Quant Peaks					Col2Ave: <3 Quant Peaks				
Aroclor-1232	1	---			0.0	1	---			0.0
Aroclor-1232	2	---			0.0	2	---			0.0
Aroclor-1232	3	---			0.0	3	9.246	-0.099	189	1.1
Aroclor-1232	4	---			0.0	4	9.704	0.011	41	0.2
	Col1Ave: <3 Quant Peaks					Col2Ave: <3 Quant Peaks				
Aroclor-1242	1	---			0.0	1	---			0.0
Aroclor-1242	2	---			0.0	2	---			0.0
Aroclor-1242	3	---			0.0	3	9.246	-0.099	189	0.6
Aroclor-1242	4	---			0.0	4	9.704	0.010	41	0.1
	Col1Ave: <3 Quant Peaks					Col2Ave: <3 Quant Peaks				
Aroclor-1248	1	8.470	-0.077	934	5.5	1	8.367	-0.064	55	0.1
Aroclor-1248	2	8.787	0.071	130	0.7	2	---			0.0
Aroclor-1248	3	---			0.0	3	9.246	-0.023	189	0.3
Aroclor-1248	4	---			0.0	4	9.704	0.011	41	0.1
	Col1Ave: <3 Quant Peaks					Col2Ave: 0.2				
Aroclor-1254	1	---			0.0	1	9.611	0.040	277	0.4
Aroclor-1254	2	---			0.0	2	10.018	0.018	1021	3.6
Aroclor-1254	3	---			0.0	3	---			0.0
Aroclor-1254	4	---			0.0	4	---			0.0
Aroclor-1254	5	---			0.0	5	10.684	-0.007	1473	2.6
	Col1Ave: <3 Quant Peaks					Col2Ave: 2.2				
Aroclor-1260	1	---			0.0	1	---			0.0
Aroclor-1260	2	---			0.0	2	11.967	-0.078	1314	0.6
Aroclor-1260	3	---			0.0	3	12.535	-0.095	33873	25.9
Aroclor-1260	4	---			0.0	4	13.427	0.070	4097	6.6
Aroclor-1260	5	---			0.0	NS	---			----
	Col1Ave: <3 Quant Peaks					Col2Ave: 11.1				
Aroclor-1262	1	10.897	-0.062	1174	5.2	1	11.345	0.015	1545	1.2
Aroclor-1262	2	---			0.0	2	---			0.0
Aroclor-1262	3	---			0.0	3	12.535	-0.031	33873	27.5
Aroclor-1262	4	13.117	-0.010	3950	14.1	4	---			0.0
	Col1Ave: <3 Quant Peaks					Col2Ave: <3 Quant Peaks				
Aroclor-1268	1	---			0.0	1	12.535	-0.033	33873	11.0
Aroclor-1268	2	---			0.0	2	---			0.0
Aroclor-1268	3	12.848	0.000	403	0.6	3	13.031	-0.002	359	0.1
Aroclor-1268	4	13.629	-0.004	1362	0.7	4	13.800	-0.050	11031	1.1
	Col1Ave: <3 Quant Peaks					Col2Ave: 4.1				

Total PCB Area Col1 (6.047 - 13.941) = 54255 Col1 Total PCB = 0.0 ppm*

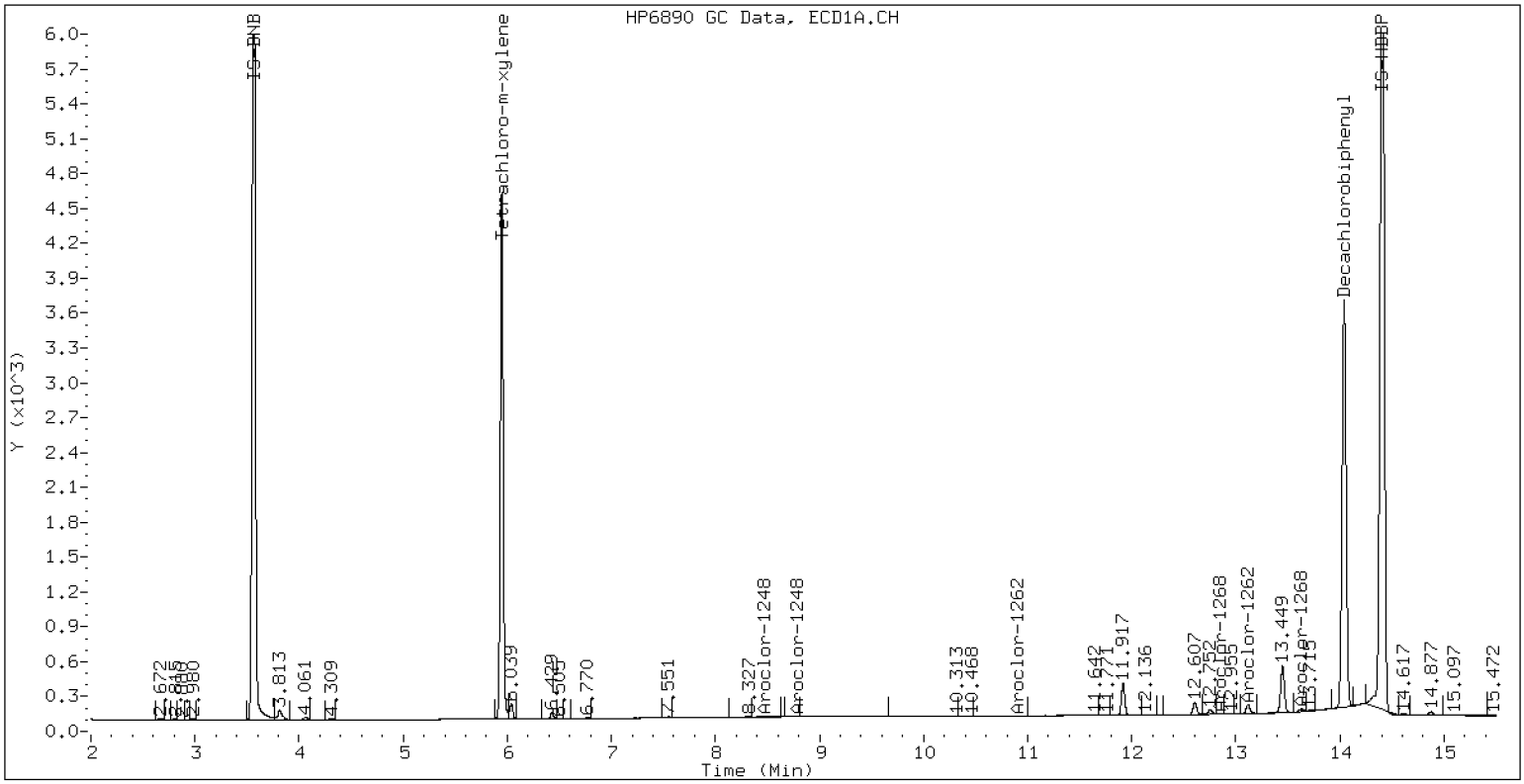
Total PCB Area Col2 (6.047 - 13.941) = 83579 Col2 Total PCB = 0.0 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

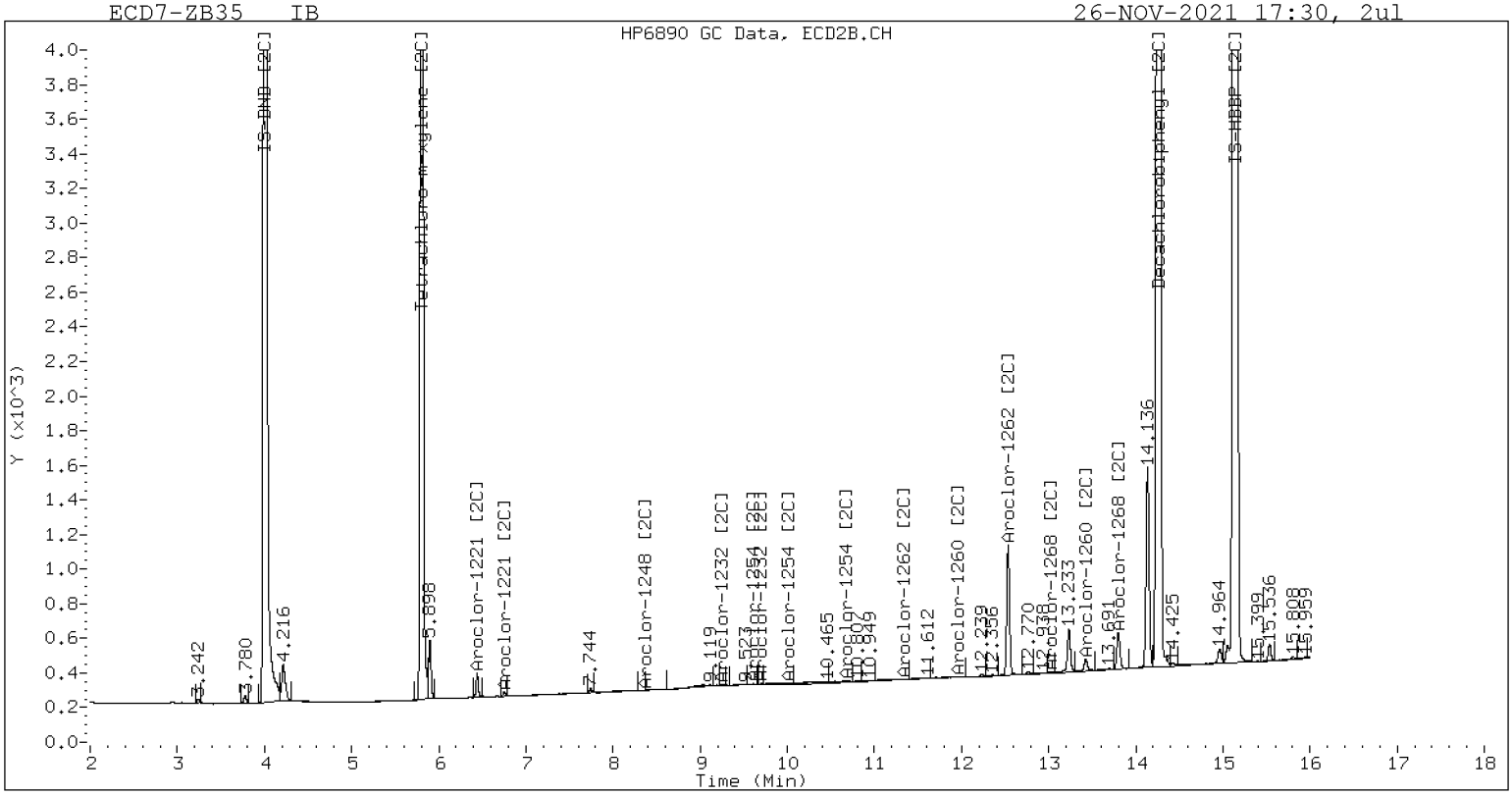
PCB Dual Column Chromatograms

ECD7-ZB5 IB 26-NOV-2021 17:30, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 IB 26-NOV-2021 17:30, 2ul



ZB-35 Manual Integration: NO

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262106ECD7.D
Data file 2: /211126.b/211126.b/11262106ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: AR1660.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: 0.25PPMAR1660
Client ID:
Injection Date: 26-NOV-2021 17:51
Report Date: 11/29/2021 08:38
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.948	0.001	177724	5.807	-0.001	452501	40.5	39.7	1.9	Tetrachloro-m-xylene
14.040	-0.001	186346	14.265	0.001	894867	39.5	42.8	8.0	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	331143	0.0
Hexabromobiphenyl	407599	407599	0.0

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	898498	0.0
Hexabromobiphenyl	1136250	1136250	0.0

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.413	0.000	31109	245.6	1	7.382	-0.000	127634	252.8
Aroclor-1016	2	7.787	0.000	108069	248.3	2	7.971	-0.000	296470	251.6
Aroclor-1016	3	7.927	0.000	41821	246.9	3	8.172	-0.000	115499	252.3
Aroclor-1016	4	8.033	0.001	28867	248.6	4	8.431	-0.001	79677	253.7

Total Col1Ave (4 peaks): 247.4 Total Col2Ave (4 peaks): 252.6 RPD = 2
Corrected Ave (3 peaks): 246.9 Corrected Ave (3 peaks): 252.2 RPD = 2

CalAmt %D: -1.1 CalAmt %D: 1.0

Aroclor-1260	1	11.186	0.000	69916	248.0	1	11.785	-0.000	207019	253.1
Aroclor-1260	2	11.503	0.000	68815	248.9	2	12.044	-0.001	528576	251.7
Aroclor-1260	3	11.872	-0.000	168410	249.6	3	12.630	-0.001	345150	257.2
Aroclor-1260	4	12.274	-0.001	82881	249.7	4	13.356	-0.001	166243	261.0
Aroclor-1260	5	12.388	-0.000	39771	248.1	NS	---			----

Total Col1Ave (5 peaks): 248.8 Total Col2Ave (4 peaks): 255.8 RPD = 3
Corrected Ave (4 peaks): 248.6 Corrected Ave (3 peaks): 254.0 RPD = 2

CalAmt %D: -0.5 CalAmt %D: 2.3

Total PCB Area Col1 (6.047 - 13.941) = 1762769 Col1 Total PCB = 0.5 ppm*

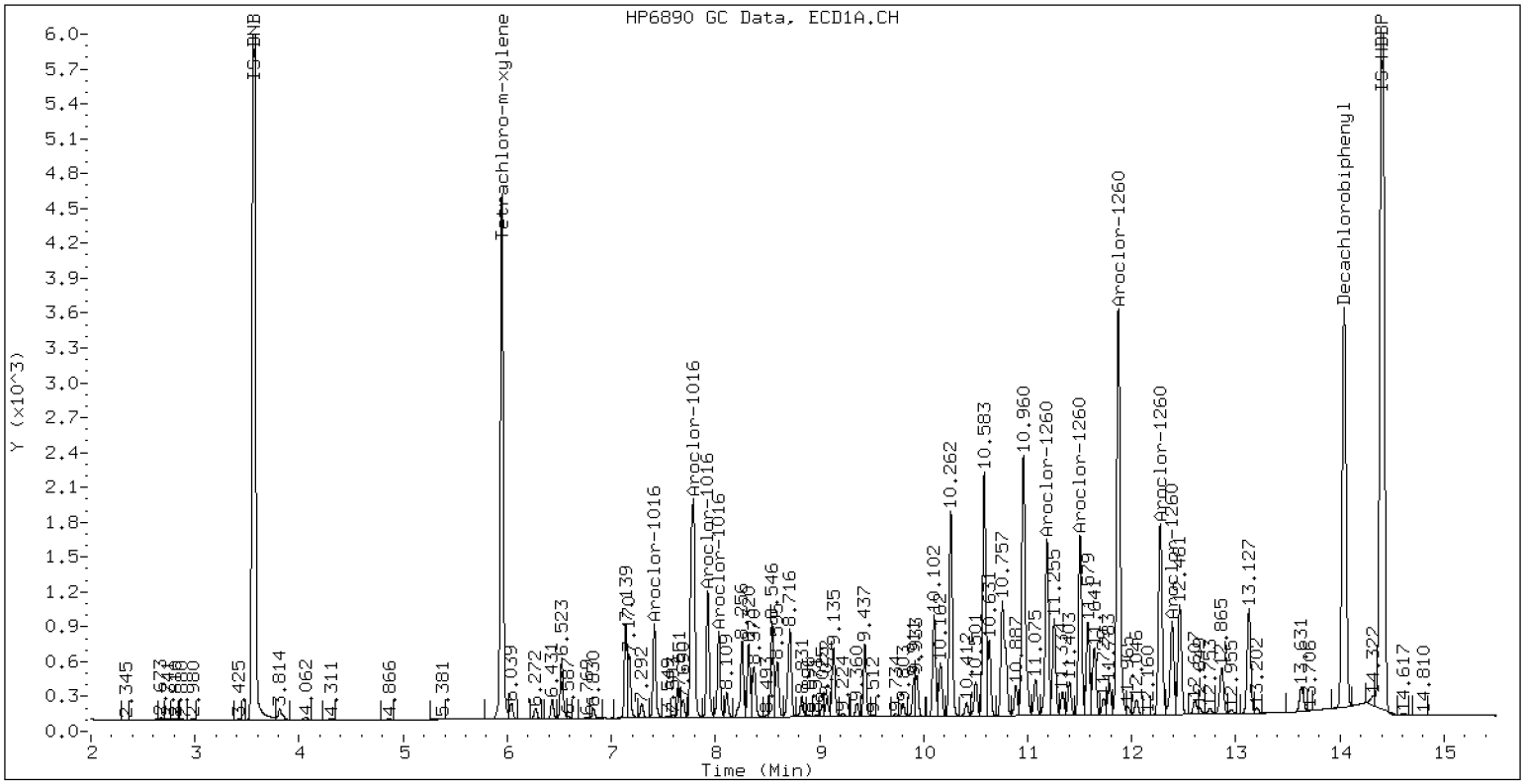
Total PCB Area Col2 (6.047 - 13.941) = 4945217 Col2 Total PCB = 0.5 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

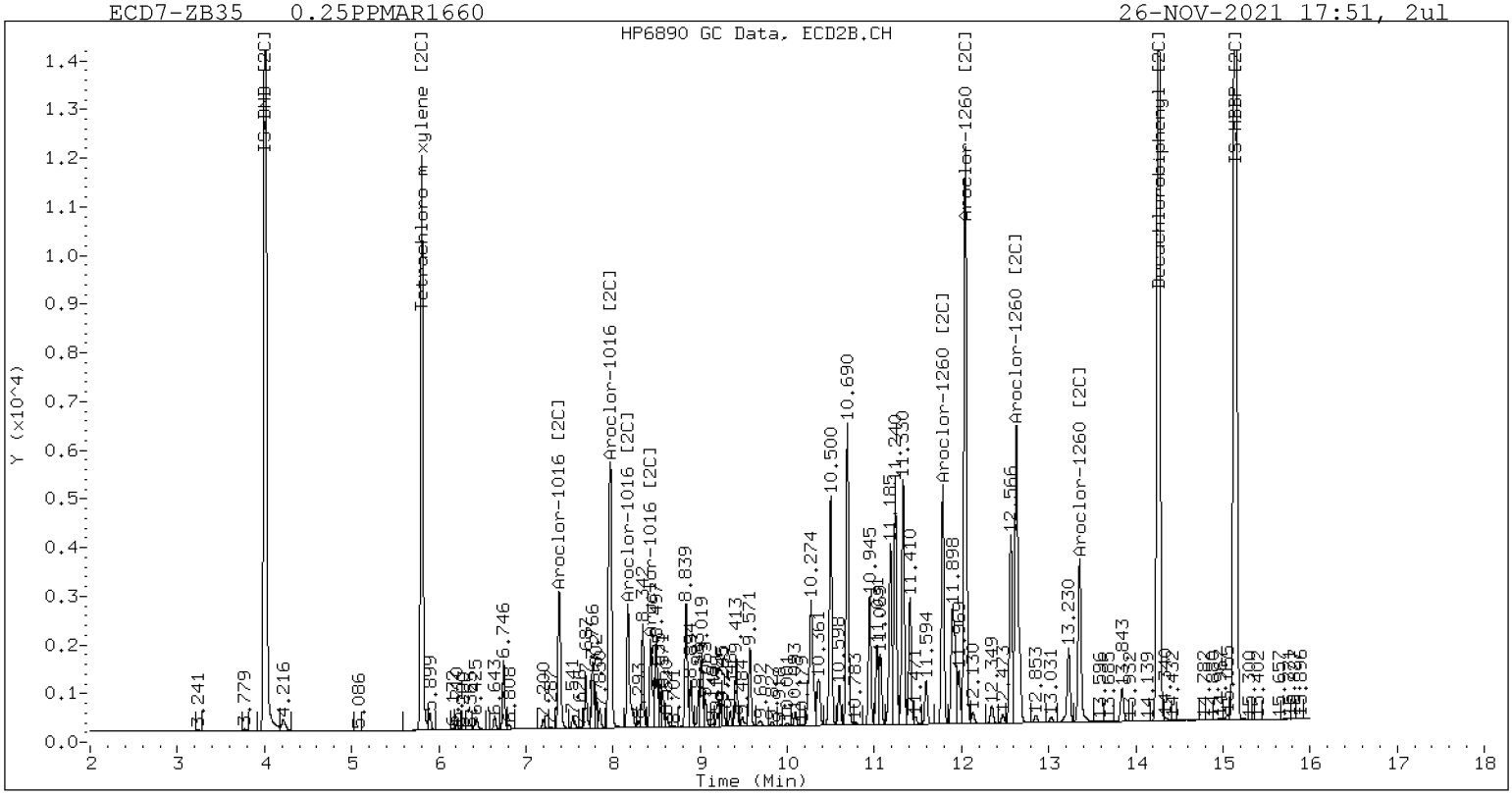
PCB Dual Column Chromatograms

ECD7-ZB5 0.25PPMAR1660 26-NOV-2021 17:51, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 0.25PPMAR1660 26-NOV-2021 17:51, 2ul



ZB-35 Manual Integration: NO

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262107ECD7.D
Data file 2: /211126.b/211126.b/11262107ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: AR1660.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: 0.02PPMAR1660
Client ID:
Injection Date: 26-NOV-2021 18:12
Report Date: 11/29/2021 08:38
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.944	-0.002	14453	5.802	-0.005	36223	3.3	3.2	3.6	Tetrachloro-m-xylene
14.041	-0.000	16497	14.261	-0.003	58293	3.4	2.7	22.3	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	331551	0.1
Hexabromobiphenyl	407599	415131	1.8

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	900562	0.2
Hexabromobiphenyl	1136250	1153964	1.6

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

Aroclor	Peak#	RT (ZB5 Col)	Shift	Area	Amount	Peak#	RT (ZB35 Col)	Shift	Area	Amount
Aroclor-1016	1	7.412	-0.001	2915	23.0	1	7.382	-0.001	11173	22.1
Aroclor-1016	2	7.786	-0.001	9650	22.1	2	7.970	-0.001	24963	21.1
Aroclor-1016	3	7.926	-0.001	3785	22.3	3	8.171	-0.000	9702	21.1
Aroclor-1016	4	8.032	-0.000	2512	21.6	4	8.431	-0.001	6546	20.8
Total Col1Ave (4 peaks):				22.3		Total Col2Ave (4 peaks):			21.3	RPD = 4
Corrected Ave (3 peaks):				22.0		Corrected Ave (3 peaks):			21.0	RPD = 5
CalAmt %D:				11.3		CalAmt %D:			6.4	
Aroclor-1260	1	11.187	0.001	6180	21.5	1	11.783	-0.002	17099	20.6
Aroclor-1260	2	11.503	0.001	6000	21.3	2	12.042	-0.003	41006	19.2
Aroclor-1260	3	11.871	-0.001	14675	21.4	3	12.628	-0.003	26372	19.4
Aroclor-1260	4	12.274	-0.001	7113	21.0	4	13.354	-0.003	11893	18.4
Aroclor-1260	5	12.387	-0.001	3470	21.3	NS	---			----
Total Col1Ave (5 peaks):				21.3		Total Col2Ave (4 peaks):			19.4	RPD = 9
Corrected Ave (4 peaks):				21.2		Corrected Ave (3 peaks):			19.0	RPD = 11
CalAmt %D:				6.5		CalAmt %D:			-3.1	

Total PCB Area Col1 (6.047 - 13.941) = 165673 Col1 Total PCB = 0.0 ppm*

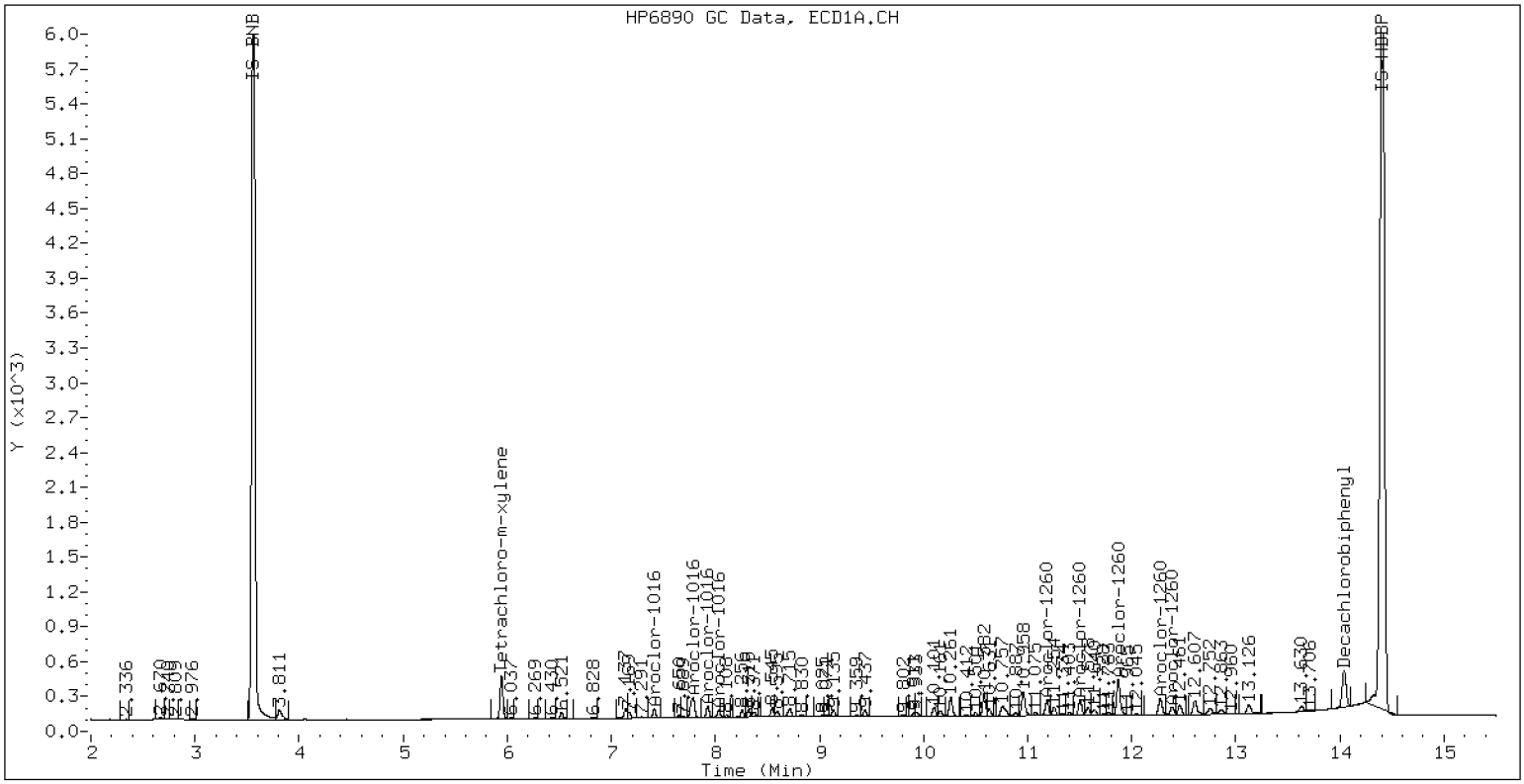
Total PCB Area Col2 (6.047 - 13.941) = 431401 Col2 Total PCB = 0.0 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

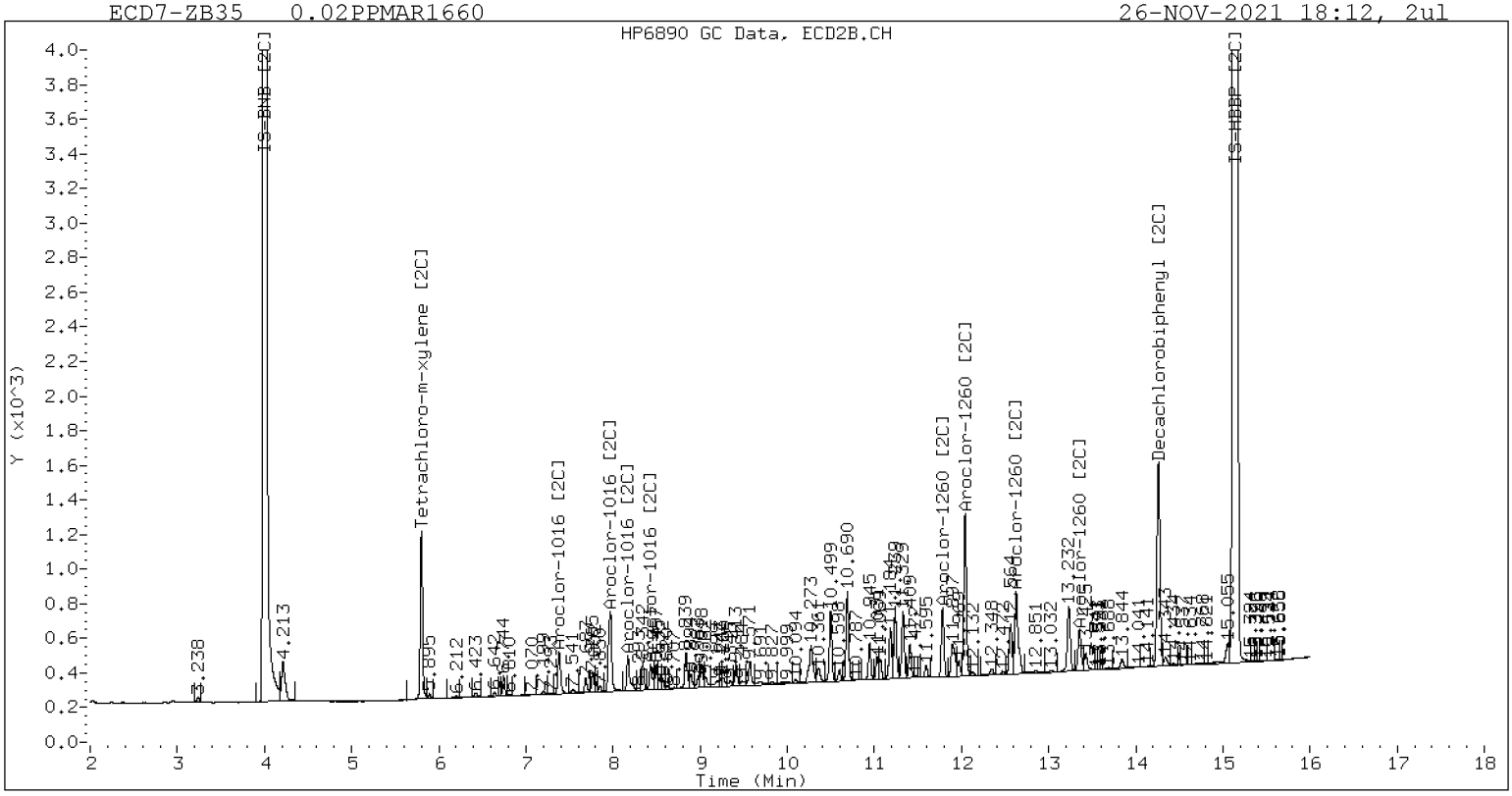
PCB Dual Column Chromatograms

ECD7-ZB5 0.02PPMAR1660 26-NOV-2021 18:12, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 0.02PPMAR1660 26-NOV-2021 18:12, 2ul



ZB-35 Manual Integration: NO

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262108ECD7.D
Data file 2: /211126.b/211126.b/11262108ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: AR1660.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: 0.05PPMAR1660
Client ID:
Injection Date: 26-NOV-2021 18:33
Report Date: 11/29/2021 08:38
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.947	0.000	36192	5.804	-0.003	93034	8.1	8.1	0.2	Tetrachloro-m-xylene
14.042	0.001	40474	14.261	-0.003	160373	8.4	7.4	12.1	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	338055	2.1
Hexabromobiphenyl	407599	418679	2.7

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	906538	0.9
Hexabromobiphenyl	1136250	1178053	3.7

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

Aroclor	Peak#	RT (ZB5 Col)	Shift	Area	Amount	Peak#	RT (ZB35 Col)	Shift	Area	Amount
Aroclor-1016	1	7.413	0.000	6888	53.3	1	7.382	-0.001	26724	52.5
Aroclor-1016	2	7.787	0.000	23414	52.7	2	7.970	-0.001	61085	51.4
Aroclor-1016	3	7.927	-0.000	9214	53.3	3	8.171	-0.001	22863	49.5
Aroclor-1016	4	8.033	0.001	6155	51.9	4	8.431	-0.001	15780	49.8
Total Col1Ave (4 peaks):				52.8		Total Col2Ave (4 peaks):			50.8	RPD = 4
Corrected Ave (3 peaks):				52.6		Corrected Ave (3 peaks):			50.2	RPD = 5
CalAmt %D:				5.6		CalAmt %D:			1.6	
Aroclor-1260	1	11.187	0.000	15160	52.4	1	11.785	-0.001	43110	50.8
Aroclor-1260	2	11.504	0.001	14732	51.9	2	12.043	-0.002	107058	49.2
Aroclor-1260	3	11.872	0.000	35821	51.7	3	12.629	-0.001	68114	49.0
Aroclor-1260	4	12.274	-0.001	17496	51.3	4	13.356	-0.001	30615	46.4
Aroclor-1260	5	12.388	-0.001	8512	51.7	NS	---			----
Total Col1Ave (5 peaks):				51.8		Total Col2Ave (4 peaks):			48.8	RPD = 6
Corrected Ave (4 peaks):				51.6		Corrected Ave (3 peaks):			48.2	RPD = 7
CalAmt %D:				3.6		CalAmt %D:			-2.3	

Total PCB Area Col1 (6.047 - 13.941) = 386715 Col1 Total PCB = 0.1 ppm*

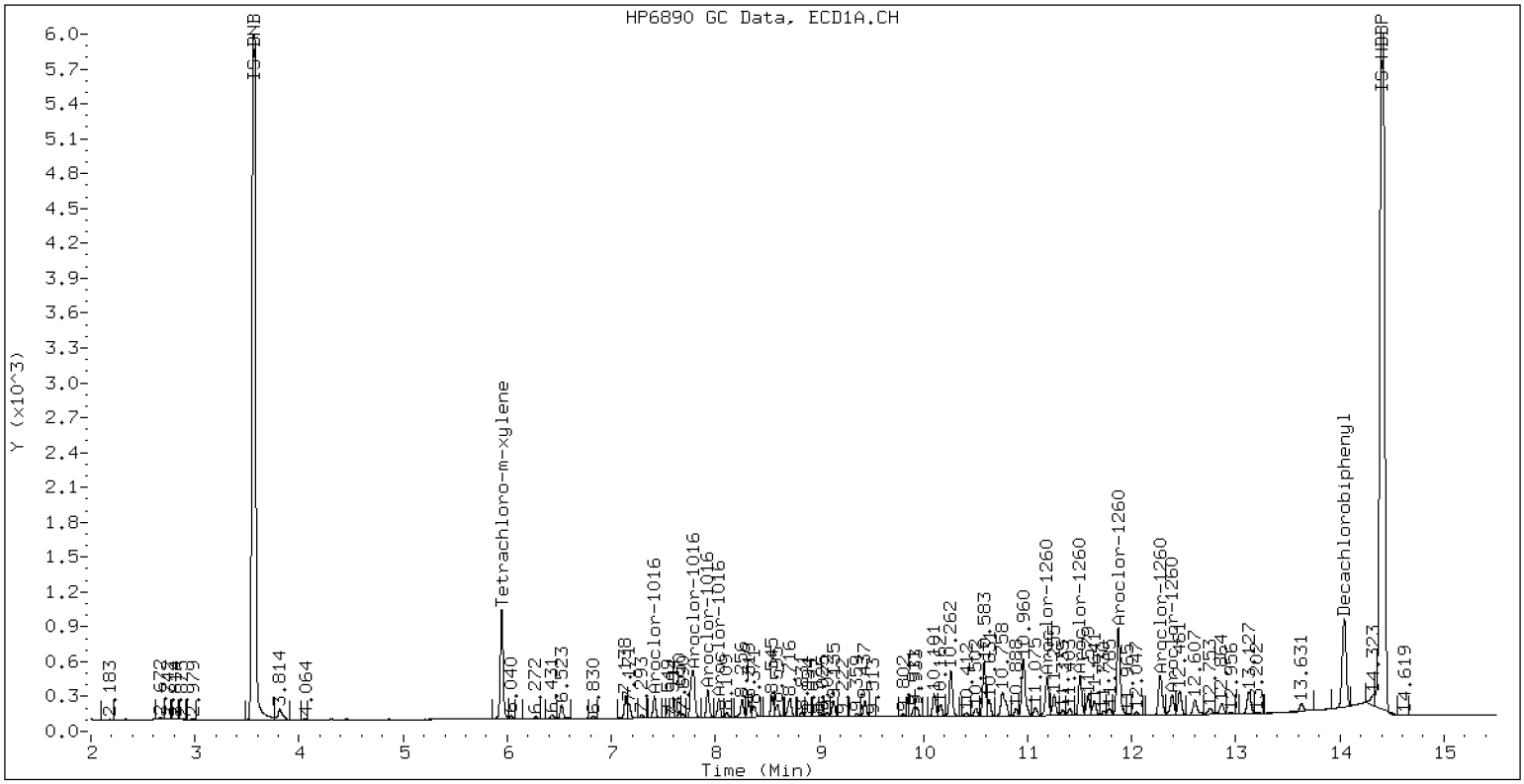
Total PCB Area Col2 (6.047 - 13.941) = 1015866 Col2 Total PCB = 0.1 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

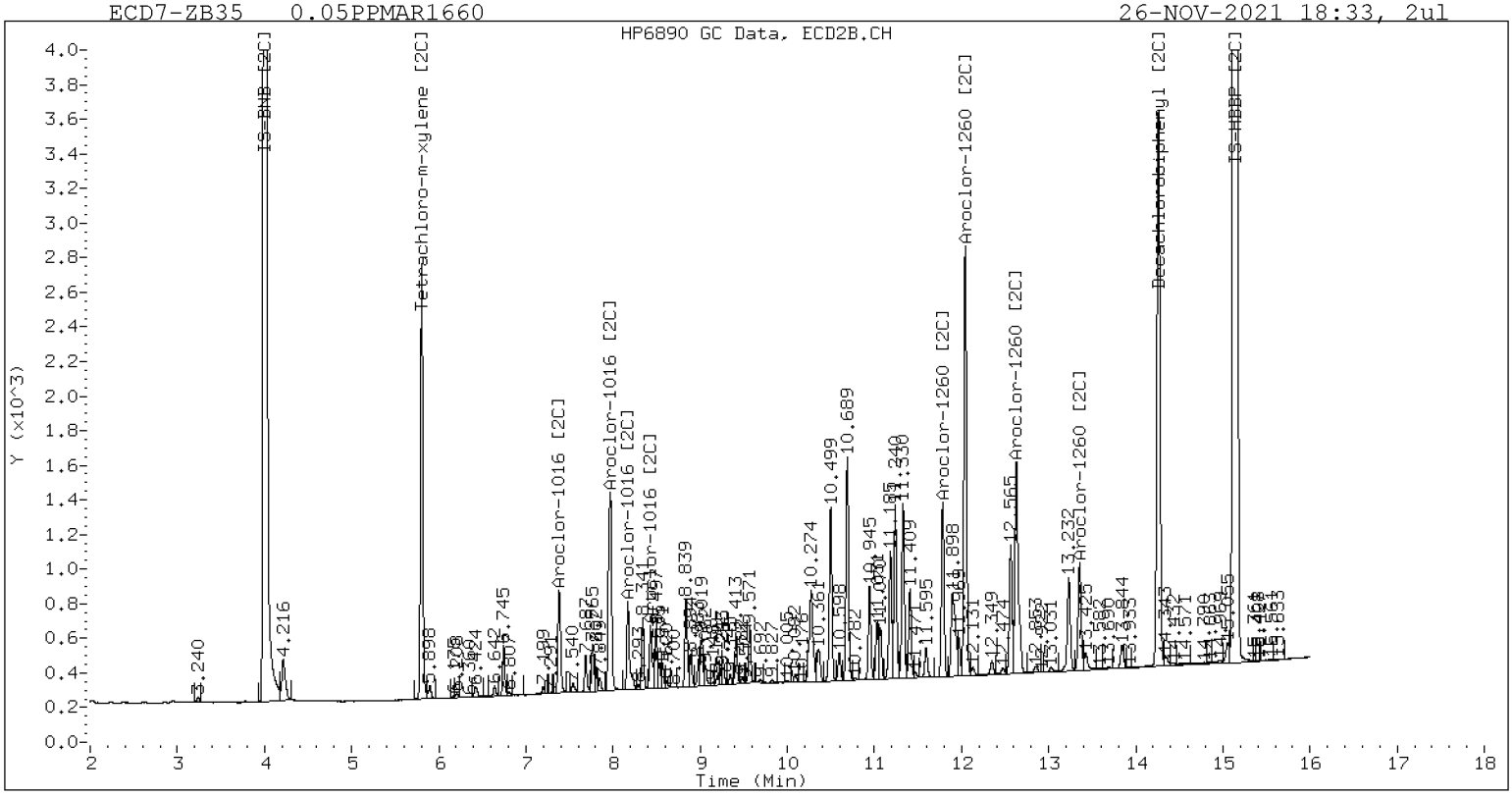
PCB Dual Column Chromatograms

ECD7-ZB5 0.05PPMAR1660 26-NOV-2021 18:33, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 0.05PPMAR1660 26-NOV-2021 18:33, 2ul



ZB-35 Manual Integration: NO

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262109ECD7.D
Data file 2: /211126.b/211126.b/11262109ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: AR1660.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: 1PPMAR1660
Client ID:
Injection Date: 26-NOV-2021 18:55
Report Date: 11/29/2021 08:38
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.949	0.002	690745	5.809	0.002	1863306	153.5	162.1	5.5	Tetrachloro-m-xylene
14.043	0.002	704737	14.277	0.012	4093706	146.8	190.9	26.1	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	339469	2.5
Hexabromobiphenyl	407599	414849	1.8

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	906083	0.8
Hexabromobiphenyl	1136250	1165545	2.6

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.413	0.000	110192	848.5	1	7.383	0.001	424519	833.7
Aroclor-1016	2	7.788	0.001	392804	880.4	2	7.972	0.001	1081023	909.7
Aroclor-1016	3	7.927	0.001	151265	871.2	3	8.173	0.001	432107	936.2
Aroclor-1016	4	8.033	0.001	109443	919.6	4	8.432	0.000	298067	941.1

Total Col1Ave (4 peaks): 879.9 Total Col2Ave (4 peaks): 905.2 RPD = 3
Corrected Ave (3 peaks): 866.7 Corrected Ave (3 peaks): 893.2 RPD = 3

CalAmt %D: -12.0 CalAmt %D: -9.5

Aroclor-1260	1	11.187	0.001	261272	910.7	1	11.788	0.003	797907	951.1
Aroclor-1260	2	11.504	0.001	259651	922.6	2	12.048	0.003	2269518	1053.8
Aroclor-1260	3	11.874	0.002	635274	925.0	3	12.631	0.001	1372644	997.3
Aroclor-1260	4	12.275	0.001	316770	937.7	4	13.357	0.000	700361	1071.8
Aroclor-1260	5	12.388	-0.000	152182	932.6	NS	---			----

Total Col1Ave (5 peaks): 925.7 Total Col2Ave (4 peaks): 1018.5 RPD = 10
Corrected Ave (4 peaks): 922.7 Corrected Ave (3 peaks): 1000.7 RPD = 8

CalAmt %D: -7.4 CalAmt %D: 1.8

Total PCB Area Col1 (6.047 - 13.941) = 6566658 Col1 Total PCB = 1.8 ppm*

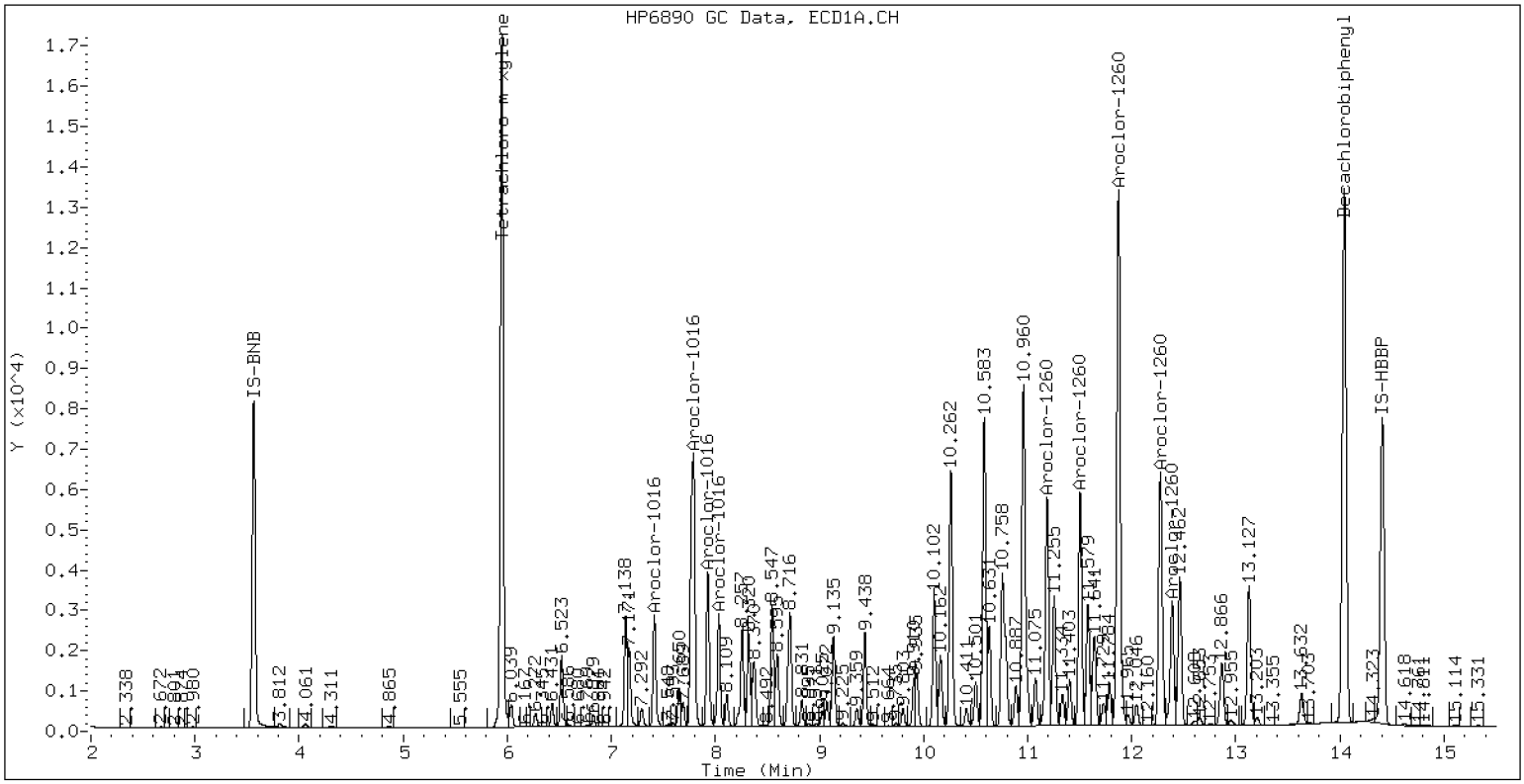
Total PCB Area Col2 (6.047 - 13.941) = 19358852 Col2 Total PCB = 1.9 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

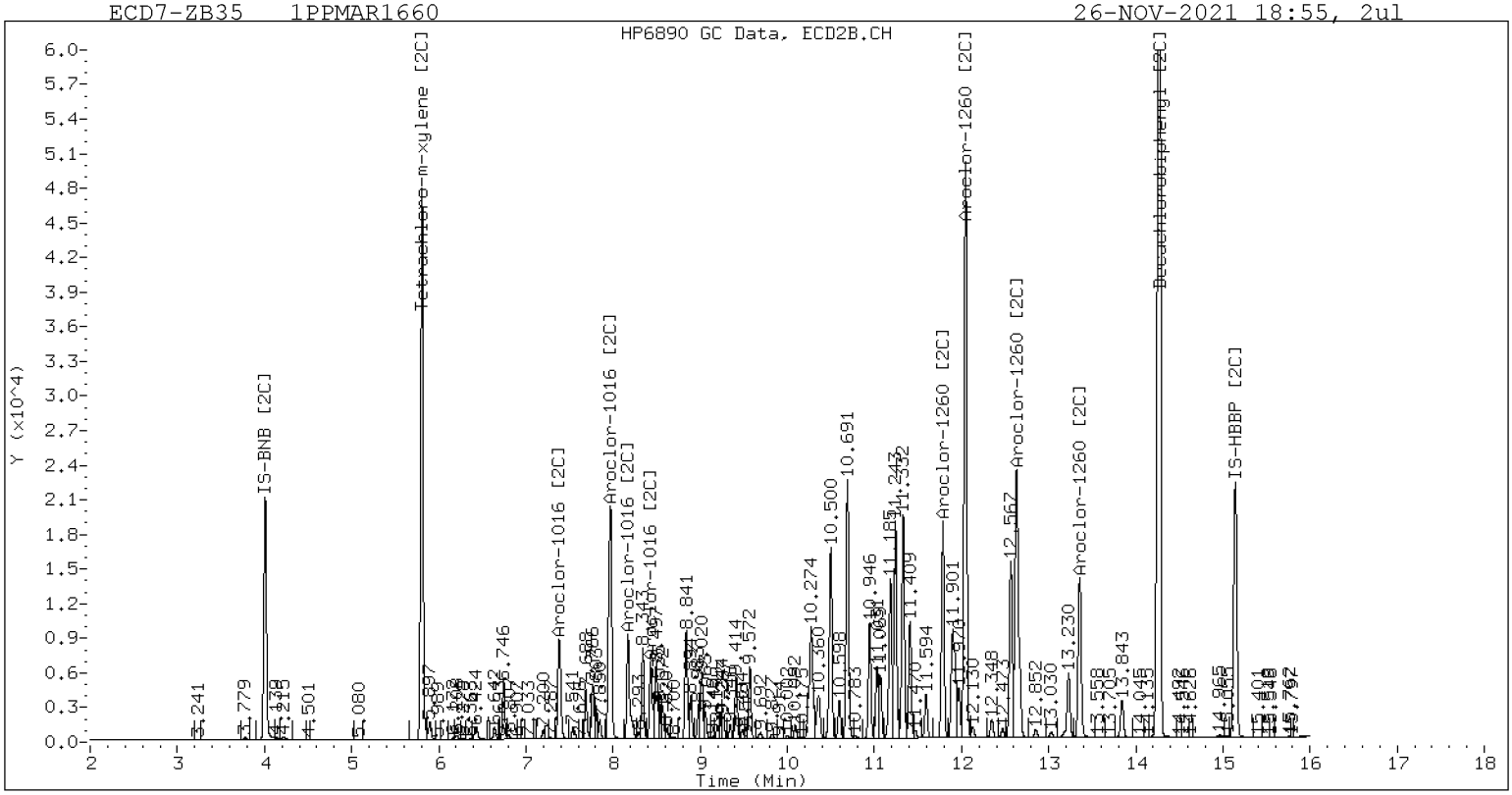
PCB Dual Column Chromatograms

ECD7-ZB5 1PPMAR1660 26-NOV-2021 18:55, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 1PPMAR1660 26-NOV-2021 18:55, 2ul



ZB-35 Manual Integration: NO

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262110ECD7.D
Data file 2: /211126.b/211126.b/11262110ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: AR1660.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: 0.1PPMAR1660
Client ID:
Injection Date: 26-NOV-2021 19:16
Report Date: 11/29/2021 08:38
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.947	0.000	72377	5.804	-0.003	187723	16.2	16.4	1.0	Tetrachloro-m-xylene
14.041	0.000	79509	14.262	-0.003	346535	16.4	15.9	3.0	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	336838	1.7
Hexabromobiphenyl	407599	418475	2.7

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	903777	0.6
Hexabromobiphenyl	1136250	1182393	4.1

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

Aroclor	Peak#	RT (ZB5 Col)	Shift	Area	Amount	Peak#	RT (ZB35 Col)	Shift	Area	Amount
Aroclor-1016	1	7.413	0.000	13349	103.6	1	7.382	-0.001	53610	105.5
Aroclor-1016	2	7.787	0.000	45304	102.3	2	7.971	0.000	123563	104.2
Aroclor-1016	3	7.927	0.000	17683	102.6	3	8.171	-0.000	46762	101.6
Aroclor-1016	4	8.032	0.000	11924	101.0	4	8.431	-0.001	32057	101.5
Total Col1Ave (4 peaks):				102.4		Total Col2Ave (4 peaks):			103.2	RPD = 1
Corrected Ave (3 peaks):				102.0		Corrected Ave (3 peaks):			102.4	RPD = 0
CalAmt %D:				2.4		CalAmt %D:			3.2	
Aroclor-1260	1	11.186	0.000	29491	101.9	1	11.784	-0.001	86744	101.9
Aroclor-1260	2	11.503	0.000	28849	101.6	2	12.044	-0.002	221015	101.2
Aroclor-1260	3	11.872	0.000	70507	101.8	3	12.629	-0.001	140784	100.8
Aroclor-1260	4	12.275	0.000	34466	101.1	4	13.355	-0.002	64216	96.9
Aroclor-1260	5	12.389	0.000	16709	101.5	NS	---			----
Total Col1Ave (5 peaks):				101.6		Total Col2Ave (4 peaks):			100.2	RPD = 1
Corrected Ave (4 peaks):				101.5		Corrected Ave (3 peaks):			99.6	RPD = 2
CalAmt %D:				1.6		CalAmt %D:			0.2	

Total PCB Area Col1 (6.047 - 13.941) = 745119 Col1 Total PCB = 0.2 ppm*

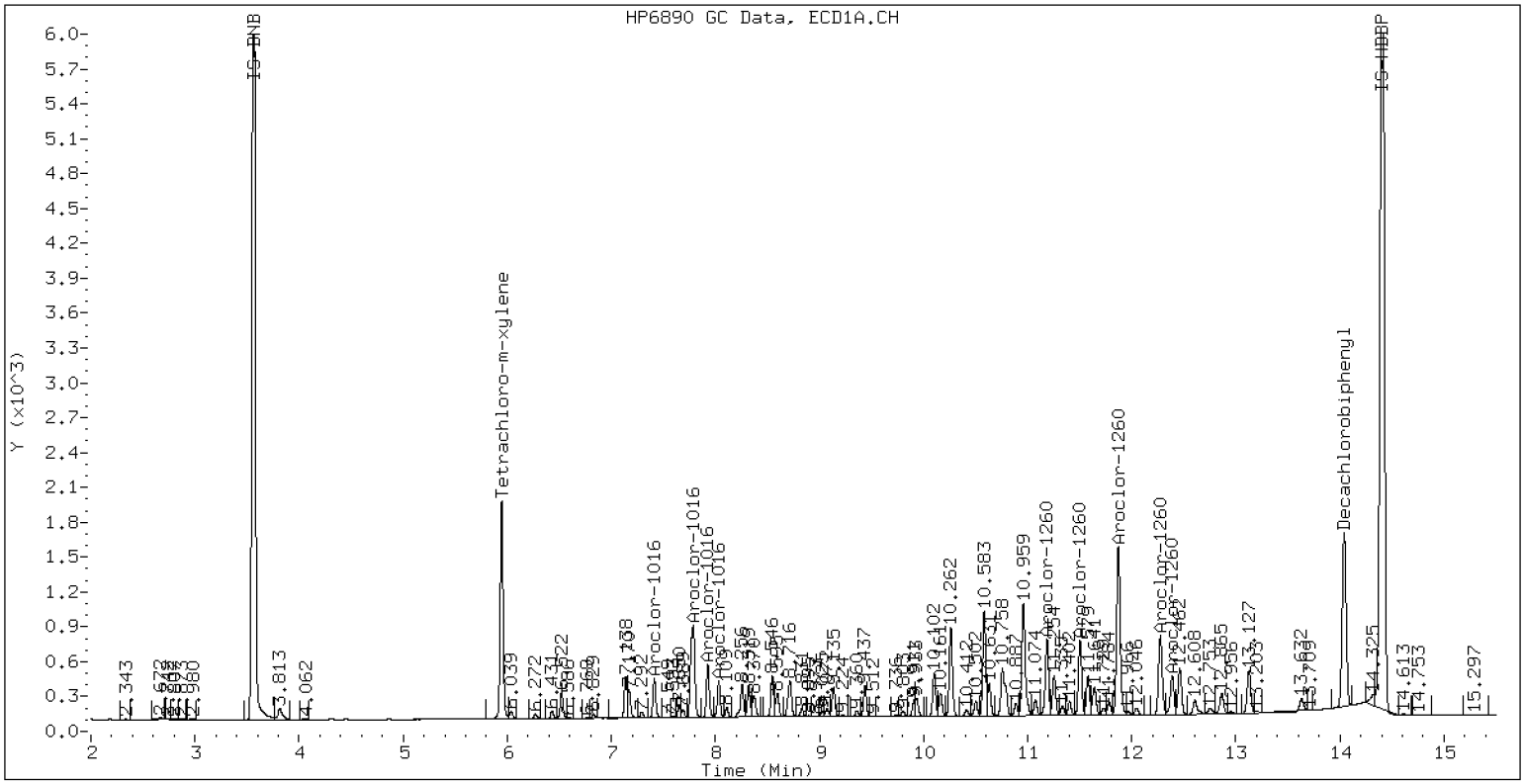
Total PCB Area Col2 (6.047 - 13.941) = 2048171 Col2 Total PCB = 0.2 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

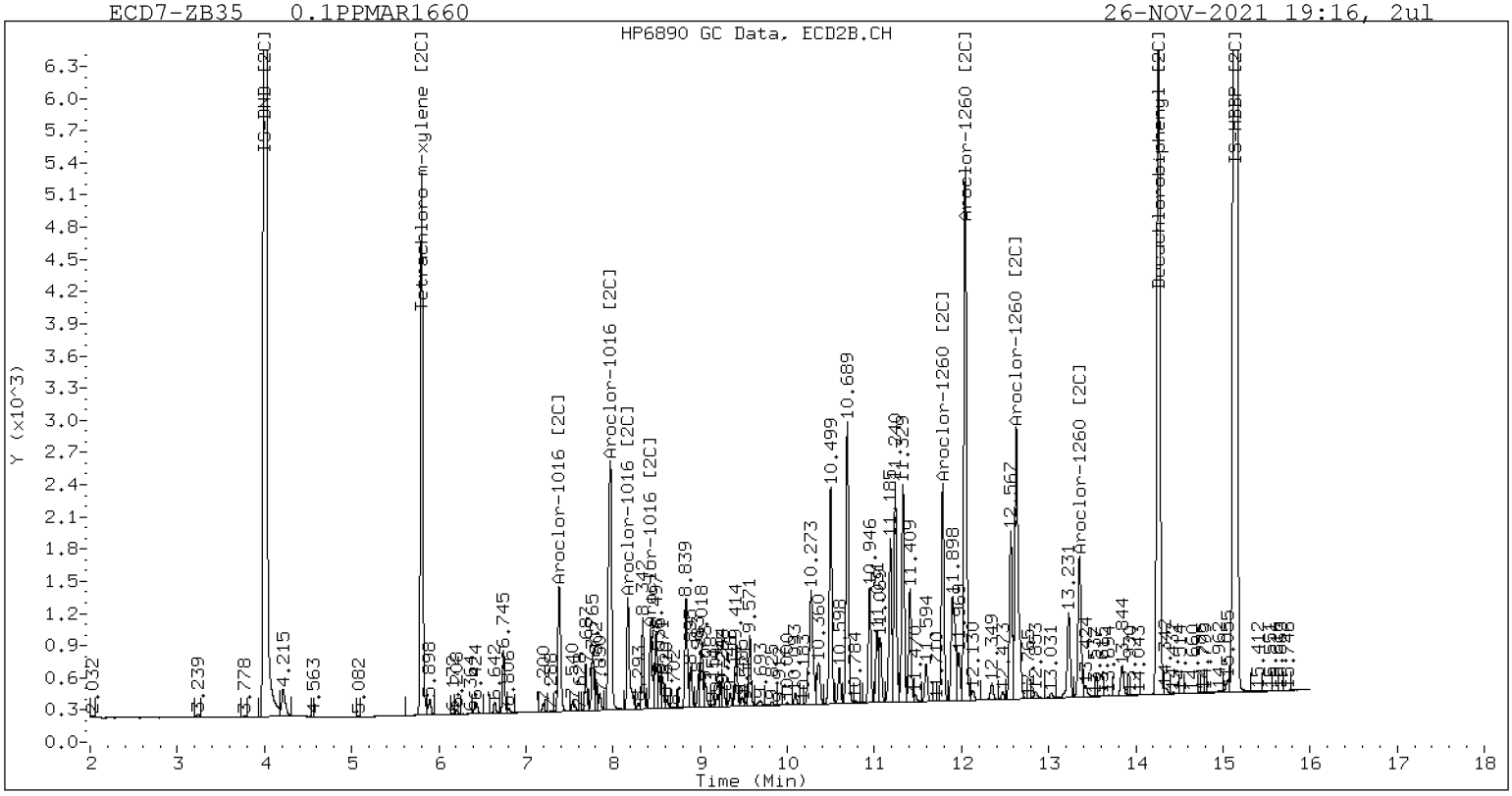
PCB Dual Column Chromatograms

ECD7-ZB5 0.1PPMAR1660 26-NOV-2021 19:16, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 0.1PPMAR1660 26-NOV-2021 19:16, 2ul



ZB-35 Manual Integration: NO

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262111ECD7.D
Data file 2: /211126.b/211126.b/11262111ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: AR1660.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: 0.5PPMAR1660
Client ID:
Injection Date: 26-NOV-2021 19:37
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	ZB5 Col Shift	ZB5 Col Response	ZB35 Col RT	ZB35 Col Shift	ZB35 Col Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.948	0.002	356823	5.807	0.000	906490	78.4	77.6	1.1	Tetrachloro-m-xylene
14.041	-0.001	371296	14.264	0.000	2045593	76.2	92.2	18.9	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	343339	3.7
Hexabromobiphenyl	407599	420732	3.2

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	921308	2.5
Hexabromobiphenyl	1136250	1206145	6.2

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

Aroclor	Peak#	RT (ZB5 Col)	Shift	Area	Amount	Peak#	RT (ZB35 Col)	Shift	Area	Amount
Aroclor-1016	1	7.413	0.000	60361	459.5	1	7.383	0.000	245135	473.4
Aroclor-1016	2	7.788	0.001	212536	471.0	2	7.971	0.000	578231	478.6
Aroclor-1016	3	7.927	0.000	81938	466.6	3	8.172	0.000	232579	495.6
Aroclor-1016	4	8.033	0.001	57602	478.5	4	8.432	0.000	159963	496.7
Total Col1Ave (4 peaks):					468.9	Total Col2Ave (4 peaks):				486.1 RPD = 4
Corrected Ave (3 peaks):					465.7	Corrected Ave (3 peaks):				482.5 RPD = 4
CalAmt %D:					-6.2	CalAmt %D:				-2.8
Aroclor-1260	1	11.187	0.000	138917	477.4	1	11.785	0.000	421430	485.4
Aroclor-1260	2	11.504	0.001	137462	481.6	2	12.045	0.000	1094961	491.3
Aroclor-1260	3	11.873	0.001	333443	478.7	3	12.631	0.000	725508	509.4
Aroclor-1260	4	12.274	-0.000	166760	486.8	4	13.356	0.000	361471	534.6
Aroclor-1260	5	12.388	-0.000	79751	481.9	NS	---			----
Total Col1Ave (5 peaks):					481.3	Total Col2Ave (4 peaks):				505.2 RPD = 5
Corrected Ave (4 peaks):					479.9	Corrected Ave (3 peaks):				495.4 RPD = 3
CalAmt %D:					-3.7	CalAmt %D:				1.0

Total PCB Area Col1 (6.047 - 13.941) = 3486404 Col1 Total PCB = 1.0 ppm*

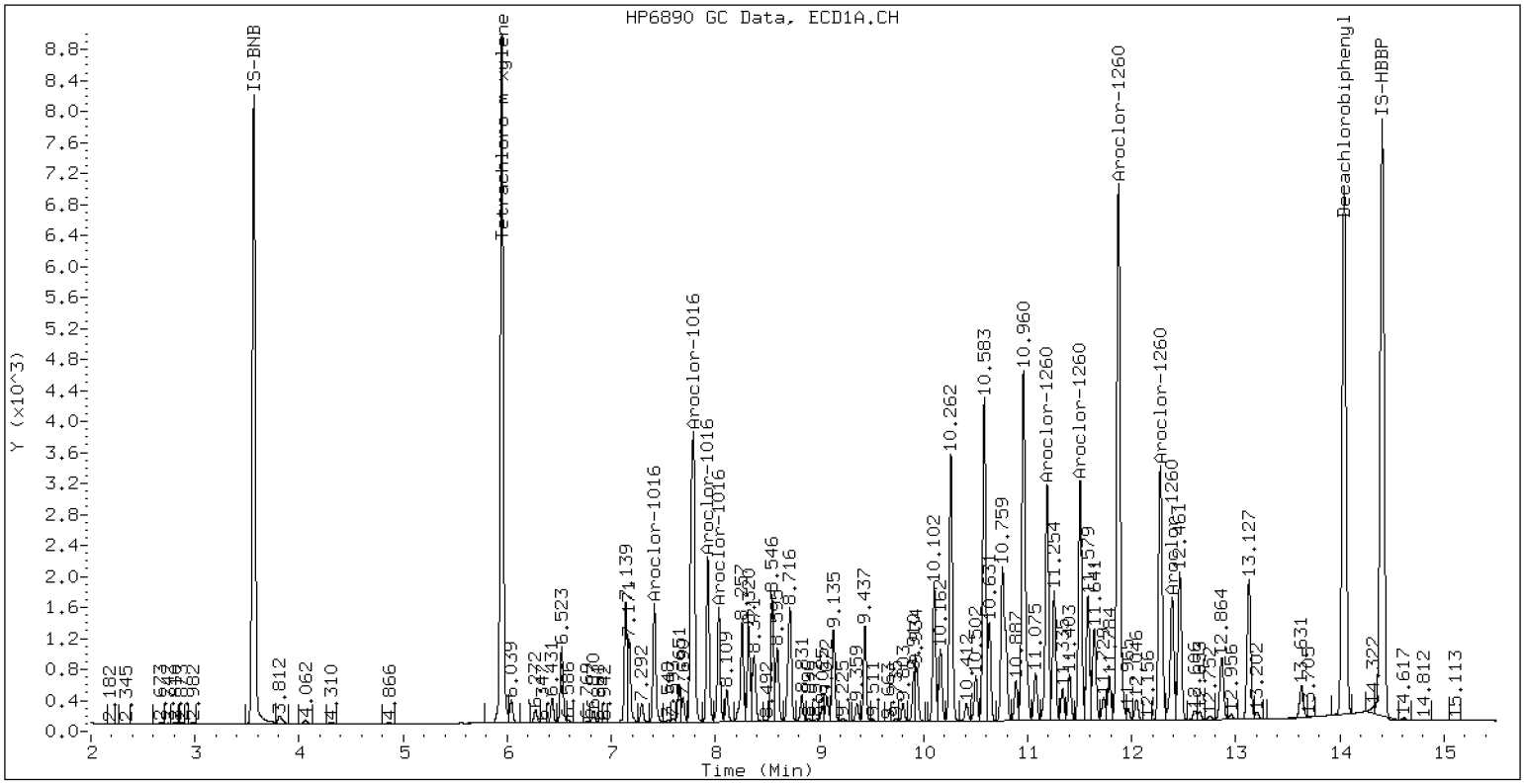
Total PCB Area Col2 (6.047 - 13.941) = 10142453 Col2 Total PCB = 1.0 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

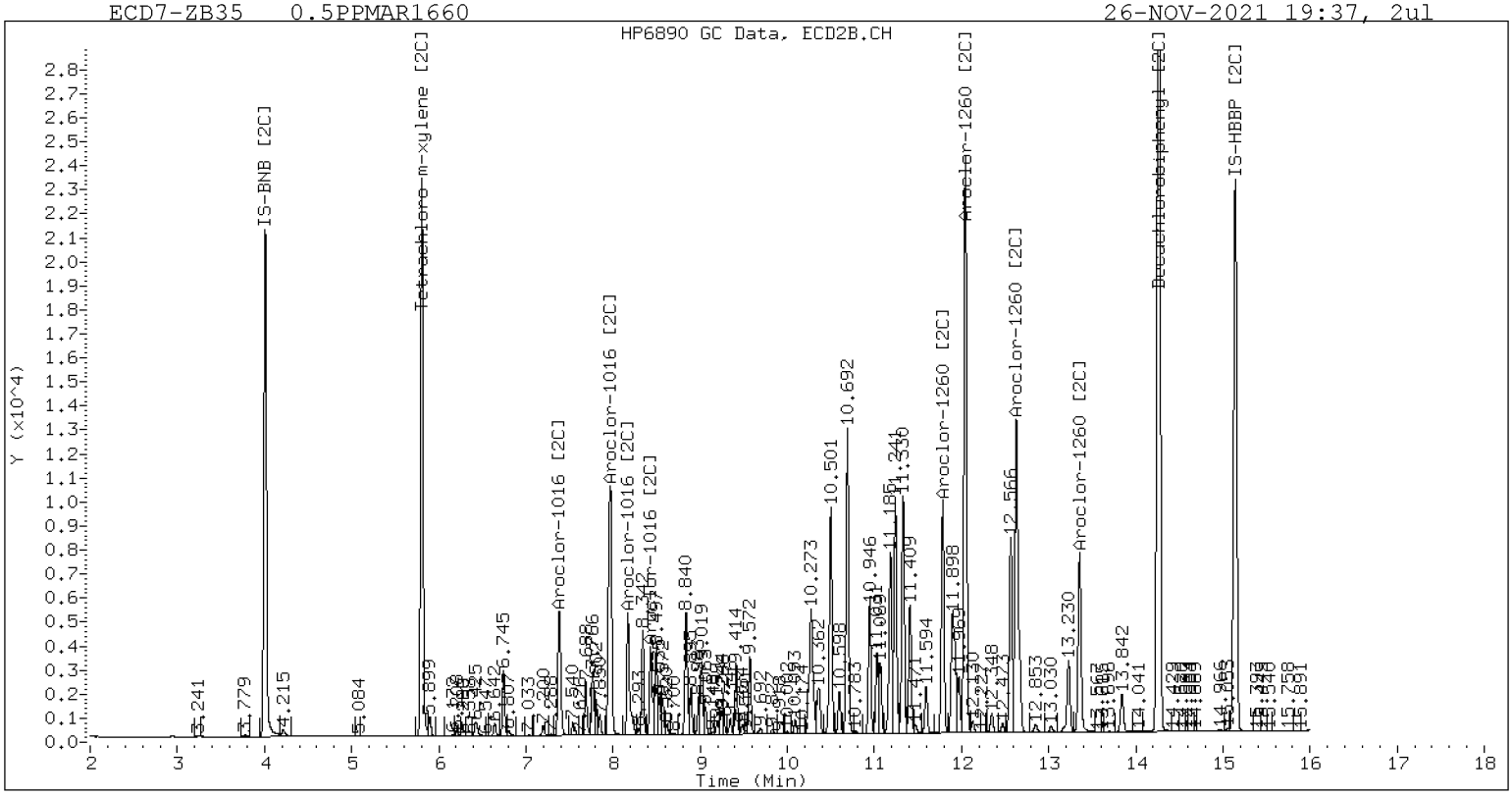
PCB Dual Column Chromatograms

ECD7-ZB5 0.5PPMAR1660 26-NOV-2021 19:37, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 0.5PPMAR1660 26-NOV-2021 19:37, 2ul



ZB-35 Manual Integration: NO

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262112ECD7.D
Data file 2: /211126.b/211126.b/11262112ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: AR1242.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1242
Client ID:
Injection Date: 26-NOV-2021 19:58
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	ZB5 Col Shift	ZB5 Col Response	ZB35 Col RT	ZB35 Col Shift	ZB35 Col Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.948	0.001	179878	5.807	-0.000	460824	39.9	39.7	0.6	Tetrachloro-m-xylene
14.042	0.001	198114	14.264	-0.000	986584	40.1	44.7	10.8	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	339877	2.6
Hexabromobiphenyl	407599	426964	4.8

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	915555	1.9
Hexabromobiphenyl	1136250	1200299	5.6

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
		ZB5 Col					ZB35 Col			
Aroclor-1242	1	7.413	0.000	26446	250.0	1	7.382	0.000	108980	250.0
Aroclor-1242	2	7.787	0.000	89609	250.0	2	7.971	0.000	247781	250.0
Aroclor-1242	3	9.071	0.000	30275	250.0	3	9.346	0.000	82730	250.0
Aroclor-1242	4	9.359	0.000	32170	250.0	4	9.694	0.000	98763	250.0

Total Col1Ave (4 peaks): 250.0 Total Col2Ave (4 peaks): 250.0 RPD = 0

Corrected Ave (3 peaks): 250.0 Corrected Ave (3 peaks): 250.0 RPD = 0

Total PCB Area Col1 (6.047 - 13.941) = 622117 Col1 Total PCB = 0.2 ppm*

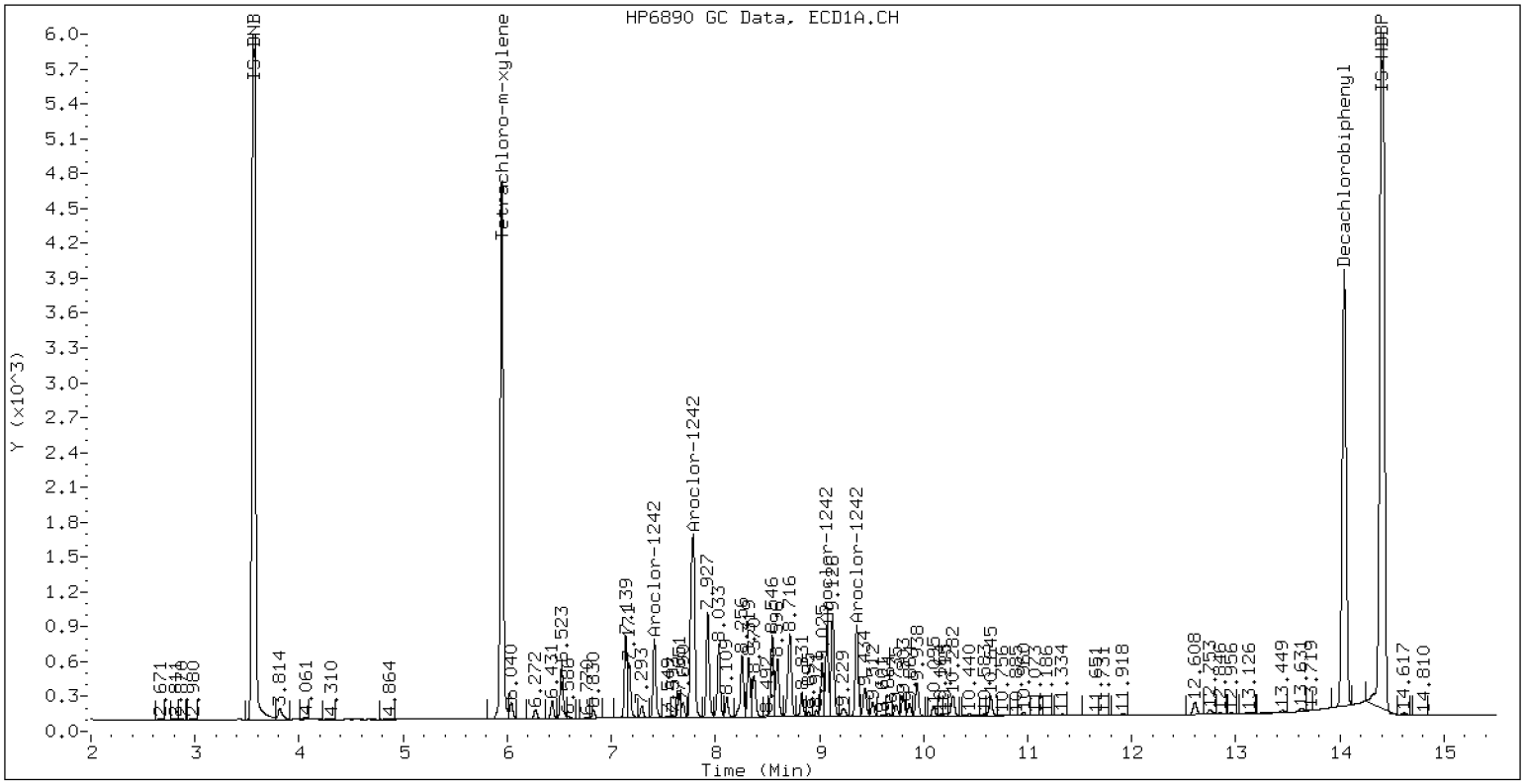
Total PCB Area Col2 (6.047 - 13.941) = 1662832 Col2 Total PCB = 0.2 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

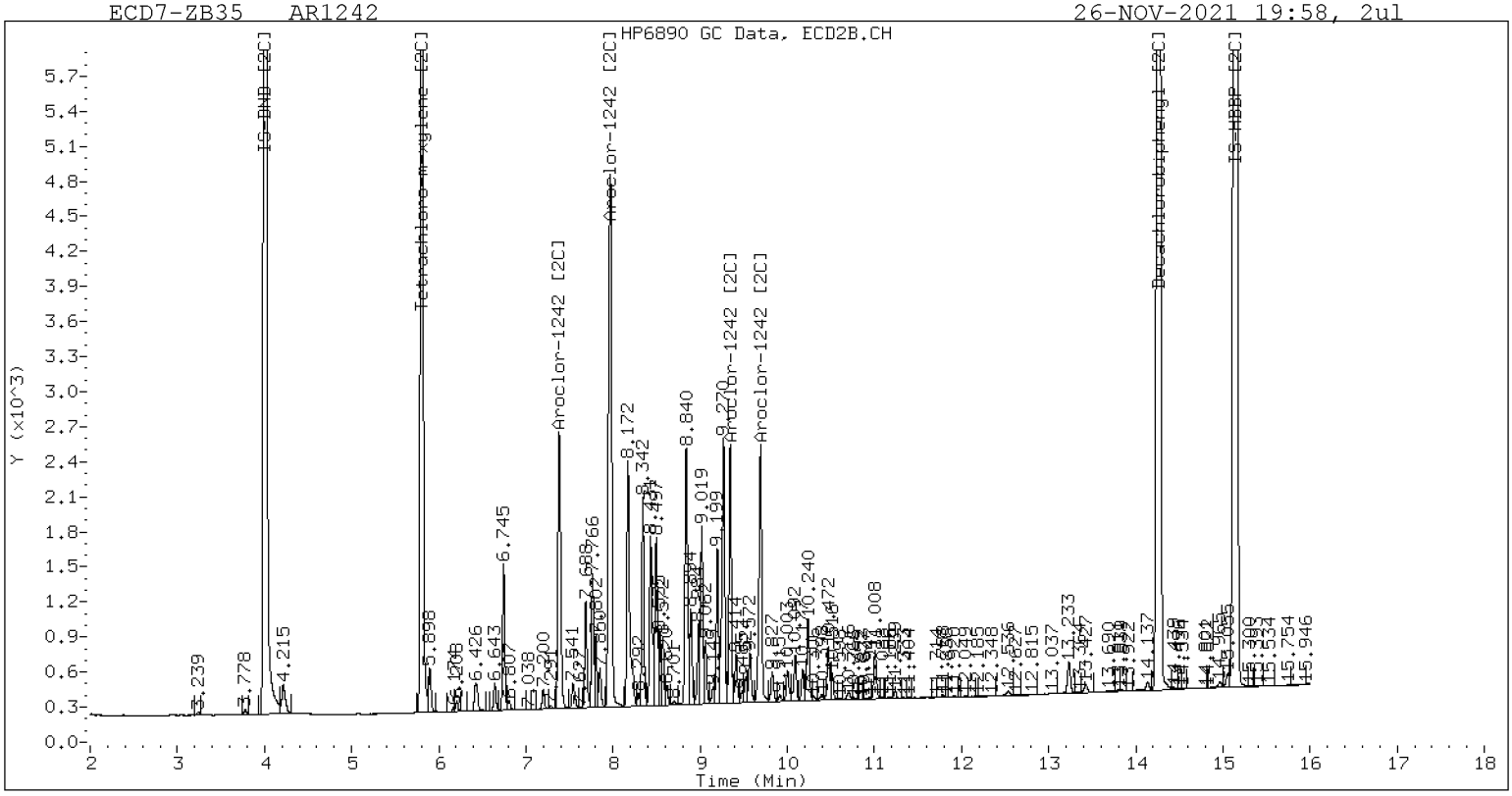
PCB Dual Column Chromatograms

ECD7-ZB5 AR1242 26-NOV-2021 19:58, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1242 26-NOV-2021 19:58, 2ul



ZB-35 Manual Integration: NO

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262113ECD7.D
Data file 2: /211126.b/211126.b/11262113ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: AR1248.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1248
Client ID:
Injection Date: 26-NOV-2021 20:19
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.947	0.000	180226	5.806	-0.001	464376	40.0	40.2	0.5	Tetrachloro-m-xylene
14.042	0.000	197495	14.264	-0.000	989650	40.4	44.4	9.3	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	340137	2.7
Hexabromobiphenyl	407599	422195	3.6

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	911034	1.4
Hexabromobiphenyl	1136250	1212345	6.7

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

Aroclor	ZB5 Col Peak#	RT	Shift	Area	Amount	ZB35 Col Peak#	RT	Shift	Area	Amount
Aroclor-1248	1	8.546	0.000	44291	250.0	1	8.431	0.000	107793	250.0
Aroclor-1248	2	8.716	0.000	51044	250.0	2	8.839	0.000	129803	250.0
Aroclor-1248	3	9.127	0.000	65781	250.0	3	9.269	0.000	184904	250.0
Aroclor-1248	4	9.358	0.000	53085	250.0	4	9.693	0.000	176635	250.0

Total Col1Ave (4 peaks): 250.0 Total Col2Ave (4 peaks): 250.0 RPD = 0

Corrected Ave (3 peaks): 250.0 Corrected Ave (3 peaks): 250.0 RPD = 0

Total PCB Area Col1 (6.047 - 13.941) = 789527 Col1 Total PCB = 0.2 ppm*

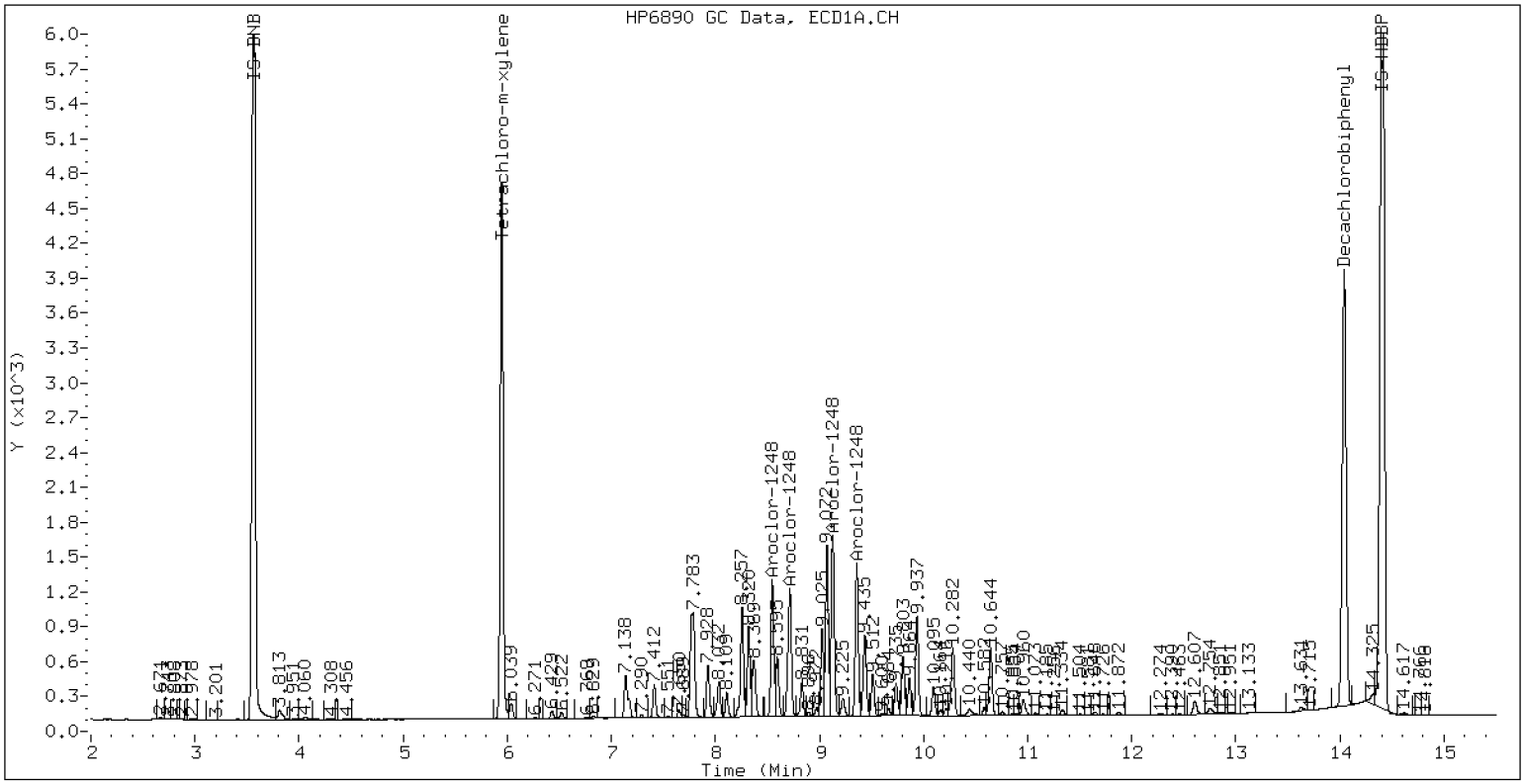
Total PCB Area Col2 (6.047 - 13.941) = 2154120 Col2 Total PCB = 0.2 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

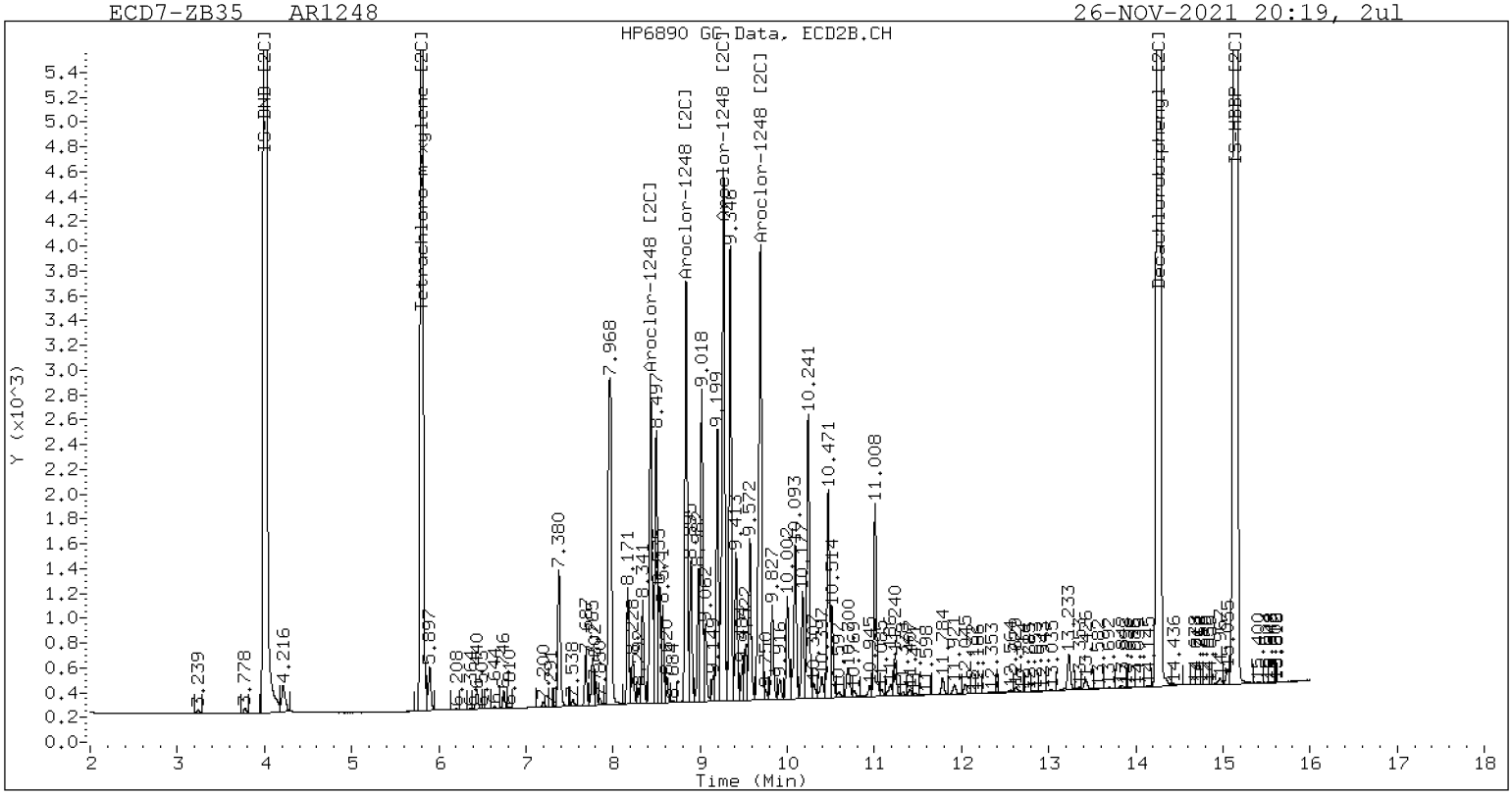
PCB Dual Column Chromatograms

ECD7-ZB5 AR1248 26-NOV-2021 20:19, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1248 26-NOV-2021 20:19, 2ul



ZB-35 Manual Integration: NO

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262114ECD7.D
Data file 2: /211126.b/211126.b/11262114ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: AR1254.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1254
Client ID:
Injection Date: 26-NOV-2021 20:40
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	ZB5 Col Shift	ZB5 Col Response	ZB35 Col RT	ZB35 Col Shift	ZB35 Col Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.947	0.001	185273	5.807	-0.001	485199	41.2	41.9	1.5	Tetrachloro-m-xylene
14.042	0.001	203439	14.264	-0.000	1019124	41.8	45.8	9.1	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	338802	2.3
Hexabromobiphenyl	407599	420743	3.2

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	913304	1.6
Hexabromobiphenyl	1136250	1210277	6.5

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

Aroclor	ZB5 Col Peak#	RT	Shift	Area	Amount	ZB35 Col Peak#	RT	Shift	Area	Amount
Aroclor-1254	1	9.436	0.000	84795	250.0	1	9.571	0.000	183411	250.0
Aroclor-1254	2	9.512	0.000	27925	250.0	2	10.001	0.000	74139	250.0
Aroclor-1254	3	9.803	0.000	55868	250.0	3	10.092	0.000	143306	250.0
Aroclor-1254	4	9.937	0.000	105558	250.0	4	10.241	0.000	296987	250.0
Aroclor-1254	5	10.641	0.000	73018	250.0	5	10.690	0.000	147721	250.0

Total Col1Ave (5 peaks): 250.0 Total Col2Ave (5 peaks): 250.0 RPD = 0
Corrected Ave (4 peaks): 250.0 Corrected Ave (4 peaks): 250.0 RPD = 0

Total PCB Area Col1 (6.047 - 13.941) = 1073367 Col1 Total PCB = 0.3 ppm*

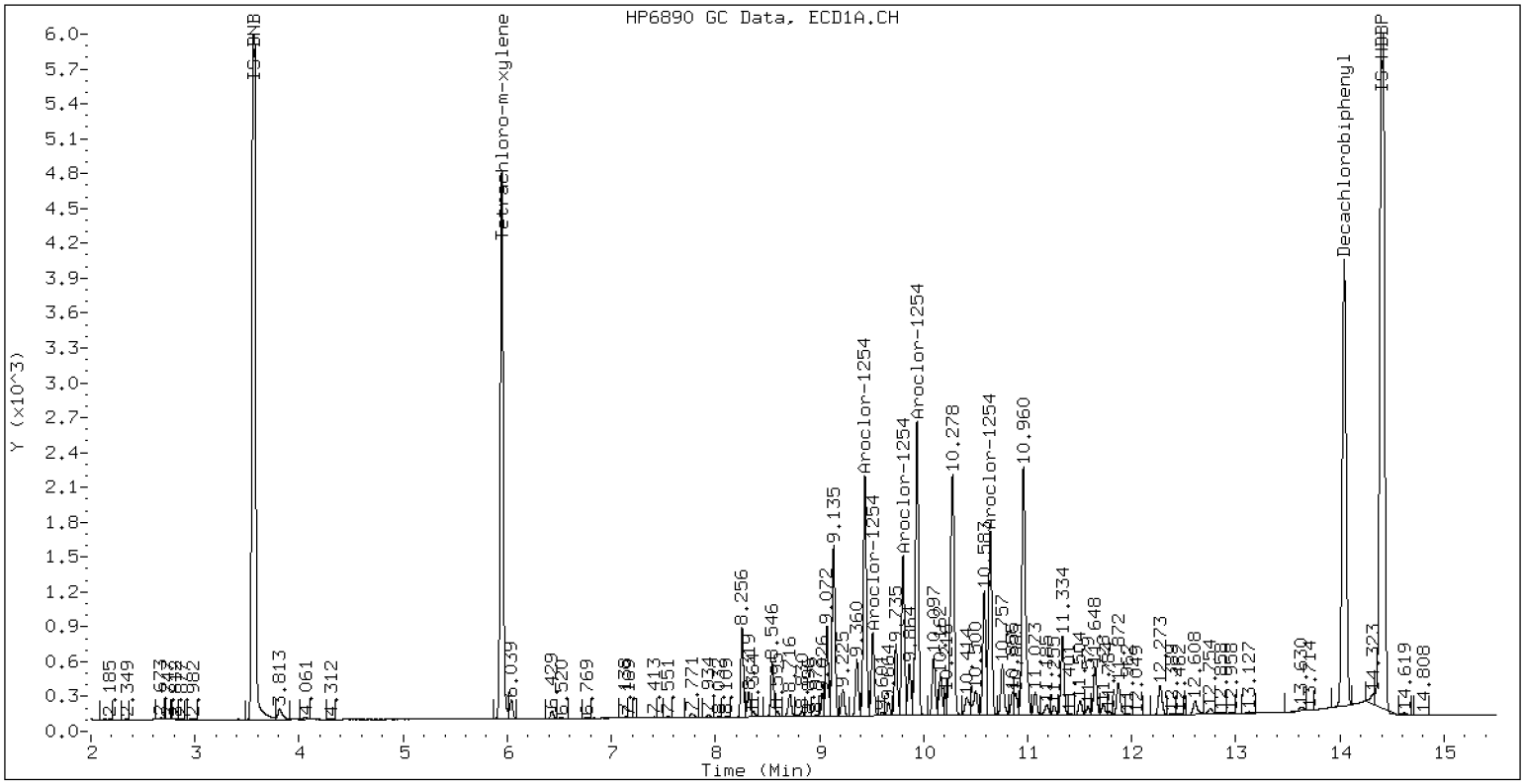
Total PCB Area Col2 (6.047 - 13.941) = 2953091 Col2 Total PCB = 0.3 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

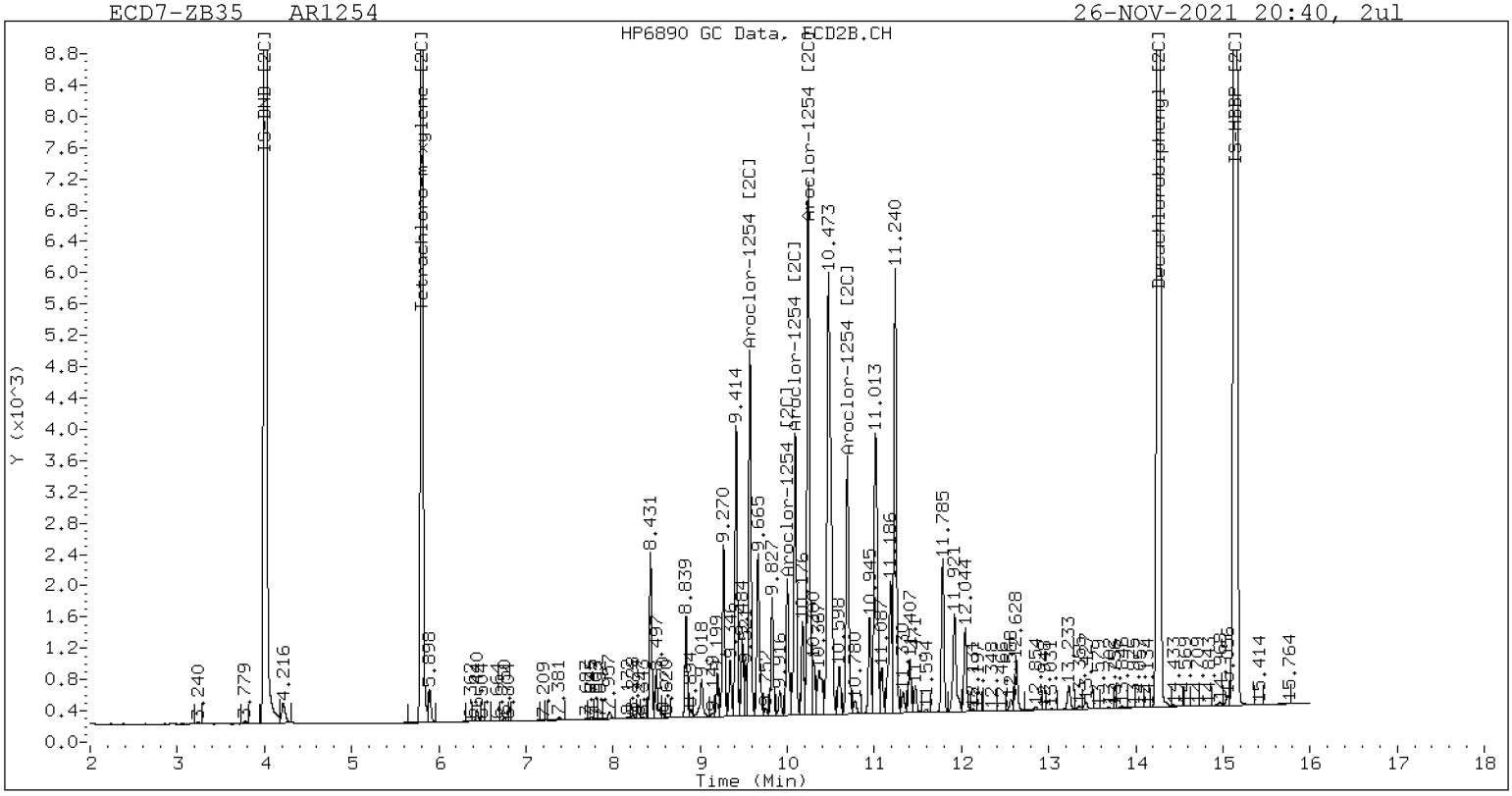
PCB Dual Column Chromatograms

ECD7-ZB5 AR1254 26-NOV-2021 20:40, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1254 26-NOV-2021 20:40, 2ul



ZB-35 Manual Integration: NO

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262115ECD7.D
Data file 2: /211126.b/211126.b/11262115ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: AR2162.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR2162
Client ID:
Injection Date: 26-NOV-2021 21:02
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	ZB5 Col Shift	ZB5 Col Response	ZB35 Col RT	ZB35 Col Shift	ZB35 Col Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.947	0.000	182824	5.805	-0.002	460039	40.3	40.0	0.6	Tetrachloro-m-xylene
14.040	-0.001	199936	14.263	-0.001	1008837	40.8	45.1	10.0	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	342406	3.4
Hexabromobiphenyl	407599	422924	3.8

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	906164	0.9
Hexabromobiphenyl	1136250	1215002	6.9

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col				ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1221	1	4.864	0.000	7317	250.0	1	5.080	0.000	14775	250.0
Aroclor-1221	2	6.274	0.000	13114	250.0	2	6.420	0.000	39107	250.0
Aroclor-1221	3	6.523	0.000	32009	250.0	3	6.745	0.000	72123	250.0

Total Col1Ave (3 peaks): 250.0 Total Col2Ave (3 peaks): 250.0 RPD = 0
Corrected Ave: < 3 Peaks Corrected Ave: < 3 Peaks

Aroclor-1262	1	10.959	0.000	59800	250.0	1	11.330	0.000	341577	250.0
Aroclor-1262	2	12.388	0.000	85775	250.0	2	11.785	0.000	281328	250.0
Aroclor-1262	3	12.462	0.000	87229	250.0	3	12.566	0.000	337941	250.0
Aroclor-1262	4	13.127	0.000	73435	250.0	4	12.631	0.000	481440	250.0

Total Col1Ave (4 peaks): 250.0 Total Col2Ave (4 peaks): 250.0 RPD = 0
Corrected Ave (3 peaks): 250.0 Corrected Ave (3 peaks): 250.0 RPD = 0

Total PCB Area Col1 (6.047 - 13.941) = 1507382 Col1 Total PCB = 0.4 ppm*

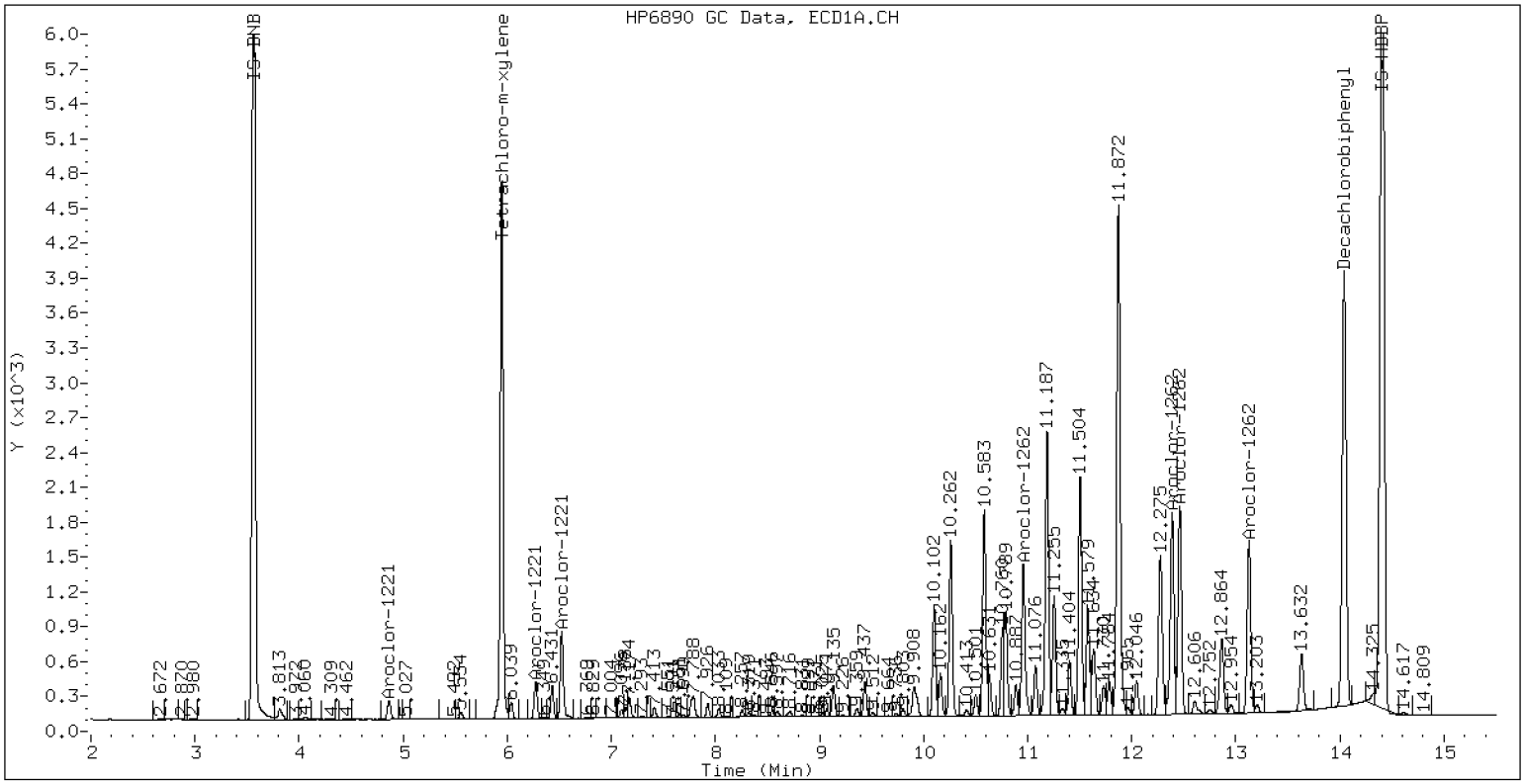
Total PCB Area Col2 (6.047 - 13.941) = 4581683 Col2 Total PCB = 0.5 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

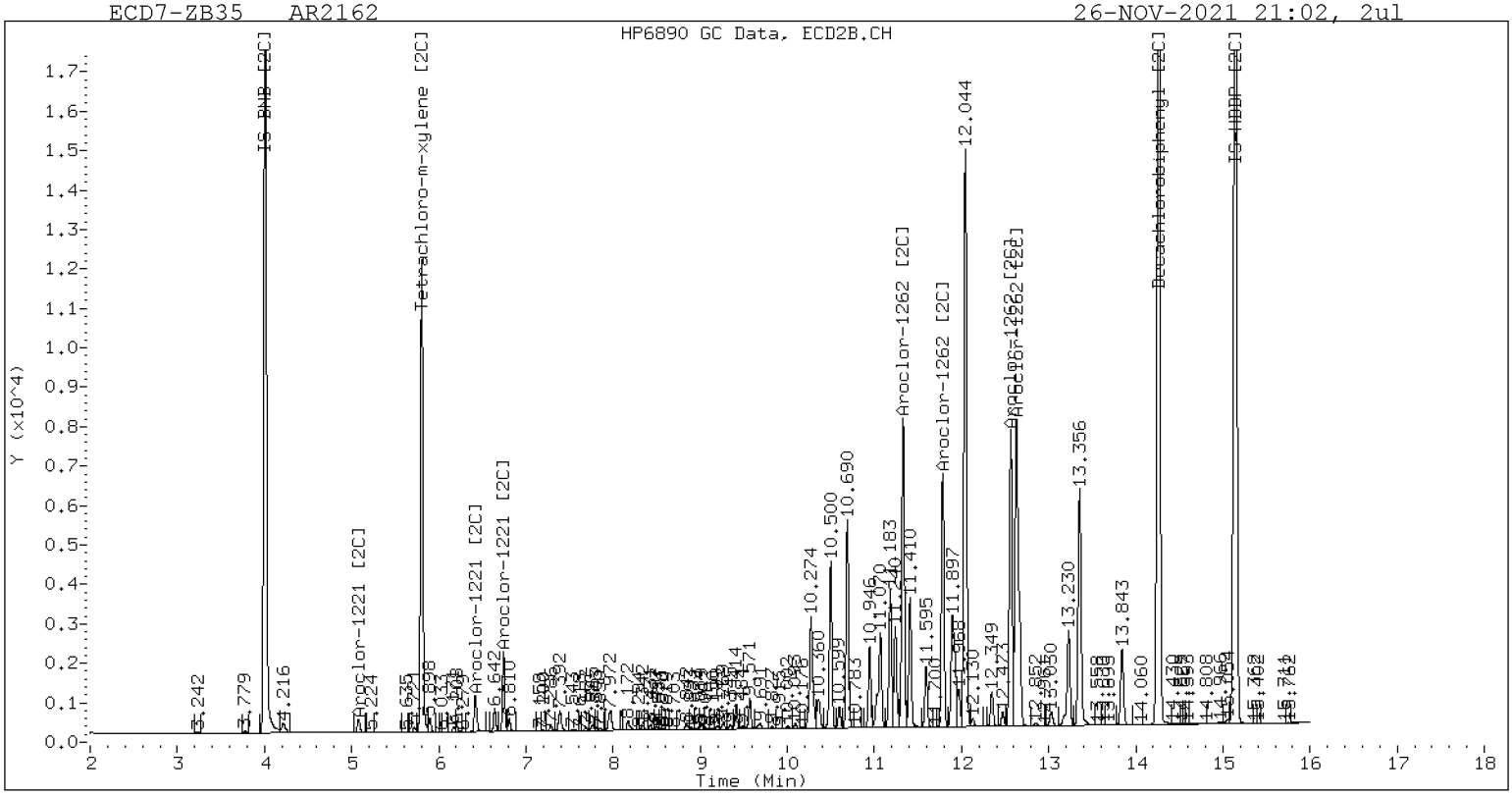
PCB Dual Column Chromatograms

ECD7-ZB5 AR2162 26-NOV-2021 21:02, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR2162 26-NOV-2021 21:02, 2ul



ZB-35 Manual Integration: NO

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262116ECD7.D
Data file 2: /211126.b/211126.b/11262116ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: AR3268.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR3268
Client ID:
Injection Date: 26-NOV-2021 21:23
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	ZB5 Col Shift	ZB5 Col Response	ZB35 Col RT	ZB35 Col Shift	ZB35 Col Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.948	0.001	184089	5.808	0.001	471193	40.3	40.5	0.5	Tetrachloro-m-xylene
14.041	-0.000	293706	14.268	0.004	1633362	59.2	72.5	20.3	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	344828	4.1
Hexabromobiphenyl	407599	428654	5.2

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	917486	2.1
Hexabromobiphenyl	1136250	1223505	7.7

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1232	1	4.867	0.000	4345	250.0	1	5.082	0.000	8809	250.0
Aroclor-1232	2	7.788	0.000	48139	250.0	2	7.383	0.000	62841	250.0
Aroclor-1232	3	9.072	0.000	15807	250.0	3	9.345	0.000	42946	250.0
Aroclor-1232	4	9.358	0.000	17054	250.0	4	9.693	0.000	52063	250.0

Total Col1Ave (4 peaks): 250.0 Total Col2Ave (4 peaks): 250.0 RPD = 0
Corrected Ave (3 peaks): 250.0 Corrected Ave (3 peaks): 250.0 RPD = 0

Aroclor-1268	1	12.389	0.000	230834	250.0	1	12.569	0.000	849377	250.0
Aroclor-1268	2	12.460	0.000	209388	250.0	2	12.633	0.000	860800	250.0
Aroclor-1268	3	12.847	0.000	179962	250.0	3	13.033	0.000	765263	250.0
Aroclor-1268	4	13.633	0.000	519689	250.0	4	13.850	0.000	2740875	250.0

Total Col1Ave (4 peaks): 250.0 Total Col2Ave (4 peaks): 250.0 RPD = 0
Corrected Ave (3 peaks): 250.0 Corrected Ave (3 peaks): 250.0 RPD = 0

Total PCB Area Col1 (6.047 - 13.941) = 1791133 Col1 Total PCB = 0.5 ppm*

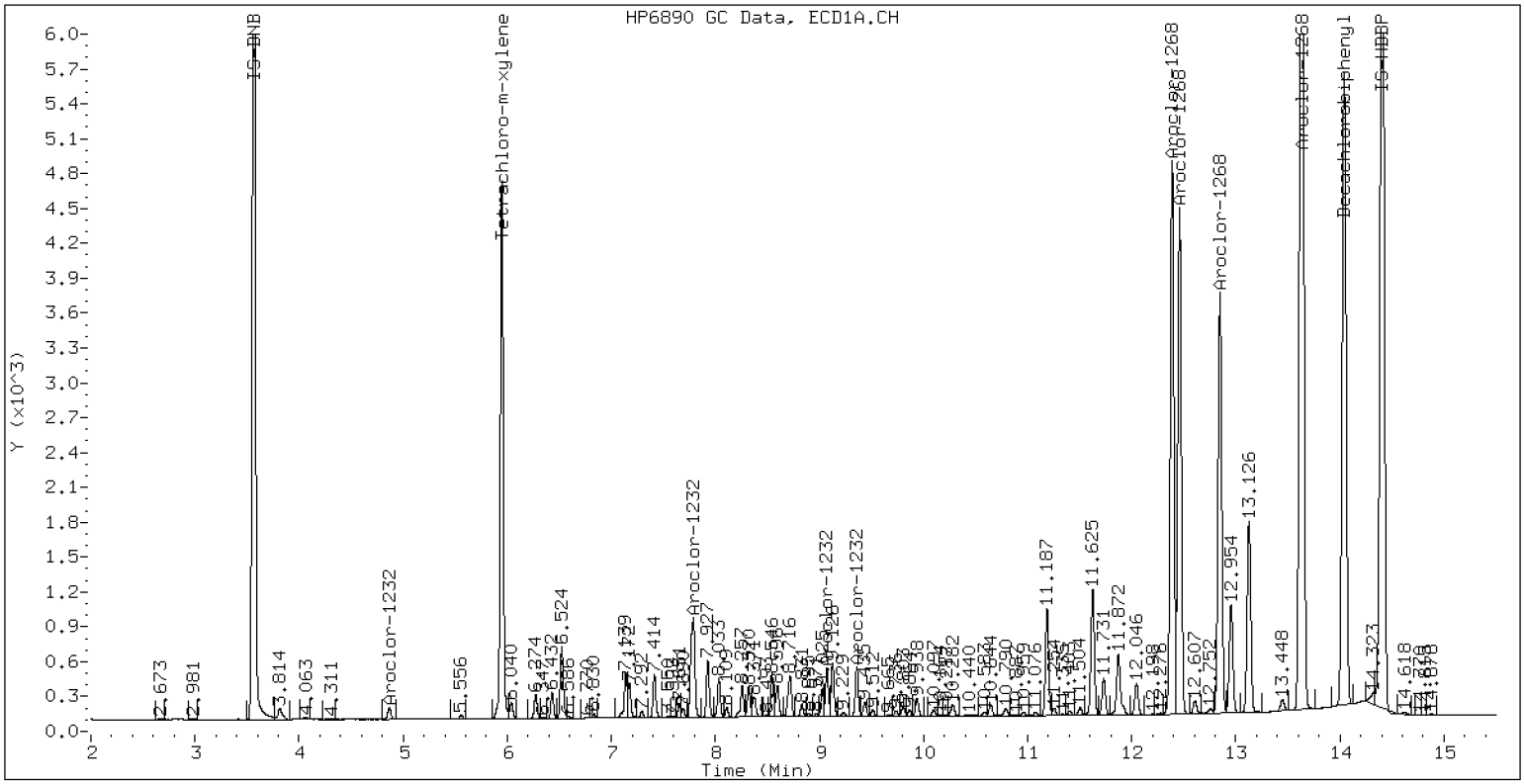
Total PCB Area Col2 (6.047 - 13.941) = 7158117 Col2 Total PCB = 0.7 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

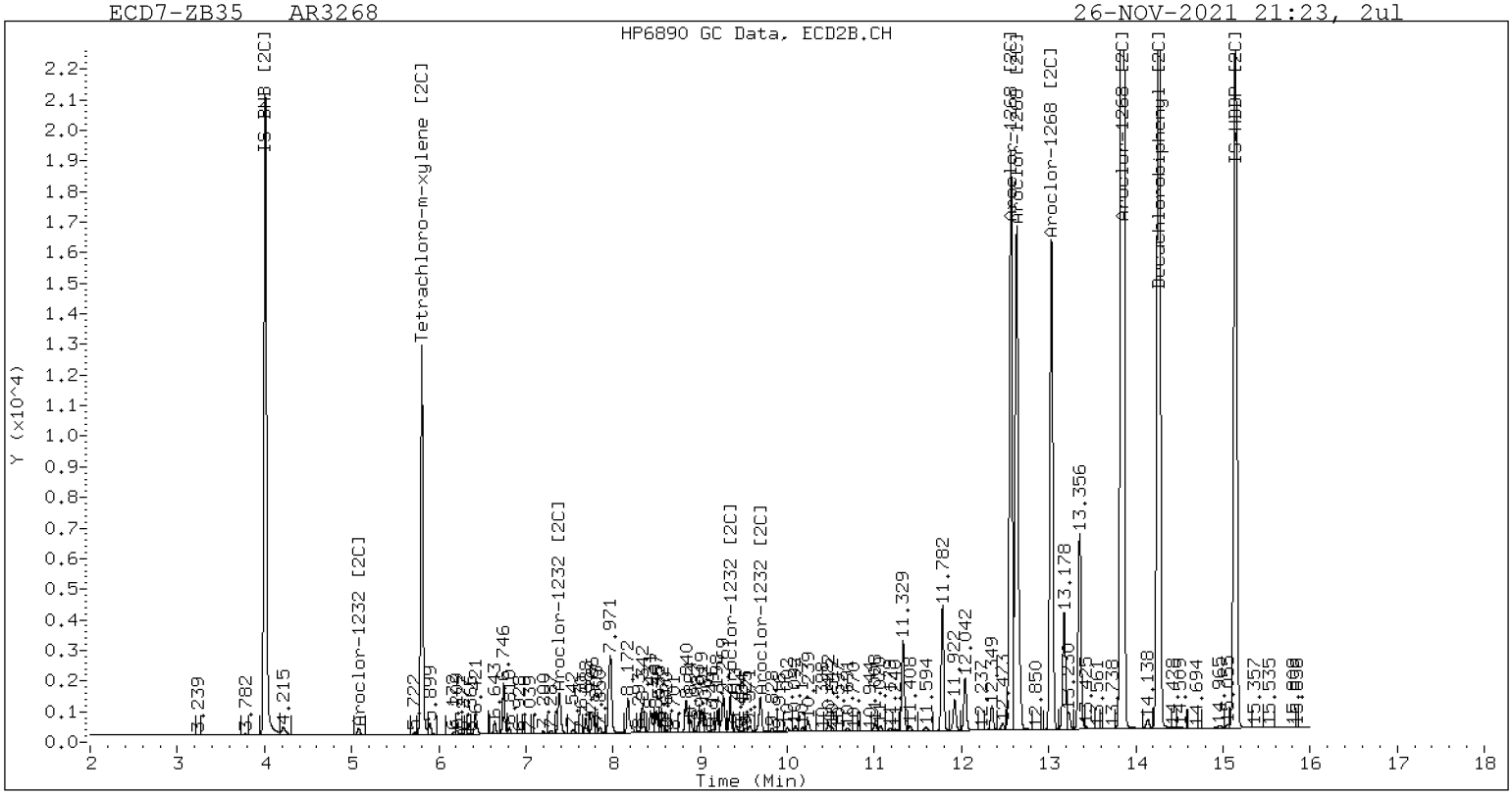
PCB Dual Column Chromatograms

ECD7-ZB5 AR3268 26-NOV-2021 21:23, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR3268 26-NOV-2021 21:23, 2ul



ZB-35 Manual Integration: NO

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262117ECD7.D
Data file 2: /211126.b/211126.b/11262117ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1660SCV1
Client ID:
Injection Date: 26-NOV-2021 21:44
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	ZB5 Col Shift	ZB5 Col Response	ZB35 Col RT	ZB35 Col Shift	ZB35 Col Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.947	0.000	183842	5.806	-0.001	466581	39.9	39.6	0.7	Tetrachloro-m-xylene
14.041	-0.000	201032	14.263	-0.001	1018569	40.3	44.9	10.8	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	347308	4.9
Hexabromobiphenyl	407599	431101	5.8

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	928169	3.3
Hexabromobiphenyl	1136250	1233073	8.5

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.413	-0.000	33347	251.0	1	7.382	-0.001	137933	264.4
Aroclor-1016	2	7.787	-0.000	115161	252.3	2	7.971	0.000	321183	263.9
Aroclor-1016	3	7.926	-0.000	44761	252.0	3	8.172	0.000	125549	265.5
Aroclor-1016	4	8.032	-0.000	30938	254.1	4	8.431	-0.000	86129	265.5
Total Col1Ave (4 peaks):				252.3		Total Col2Ave (4 peaks):			264.8	RPD = 5
Corrected Ave (3 peaks):				251.7		Corrected Ave (3 peaks):			264.6	RPD = 5
Aroclor-1221	1	4.864	0.000	238	8.0	1	---			0.0
Aroclor-1221	2	6.272	-0.002	4338	81.5	2	6.423	0.003	15936	99.5
Aroclor-1221	3	6.522	-0.001	22886	176.2	3	6.745	-0.000	56893	192.5
Total Col1Ave (3 peaks):				88.6		Col2Ave: <3 Quant Peaks				
Aroclor-1232	1	4.864	-0.002	238	13.6	1	---			0.0
Aroclor-1232	2	7.787	-0.001	115161	593.8	2	7.382	-0.002	137933	542.4
Aroclor-1232	3	9.072	0.000	7256	113.9	3	9.345	0.000	13600	78.3
Aroclor-1232	4	9.360	0.002	3702	53.9	4	9.692	-0.001	5042	23.9
Total Col1Ave (4 peaks):				193.8		Total Col2Ave (3 peaks):			214.9	RPD = 10
Corrected Ave (3 peaks):				60.5		Corrected Ave: < 3 Peaks				
Aroclor-1242	1	7.413	-0.001	33347	308.5	1	7.382	-0.000	137933	312.1
Aroclor-1242	2	7.787	-0.000	115161	314.4	2	7.971	0.000	321183	319.7
Aroclor-1242	3	9.072	0.001	7256	58.6	3	9.345	-0.000	13600	40.5
Aroclor-1242	4	9.360	0.001	3702	28.2	4	9.692	-0.002	5042	12.6
Total Col1Ave (4 peaks):				177.4		Total Col2Ave (4 peaks):			171.2	RPD = 4
Corrected Ave (3 peaks):				131.8		Corrected Ave (3 peaks):			121.7	RPD = 8
Aroclor-1248	1	8.546	-0.001	35193	194.5	1	8.431	0.000	86129	196.1
Aroclor-1248	2	8.715	-0.000	43028	206.4	2	8.839	-0.000	116360	220.0
Aroclor-1248	3	9.135	0.008	26166	97.4	3	9.264	-0.005	18404	24.4
Aroclor-1248	4	9.360	0.001	3702	17.1	4	9.692	-0.001	5042	7.0
Total Col1Ave (4 peaks):				128.8		Total Col2Ave (4 peaks):			111.9	RPD = 14
Corrected Ave (3 peaks):				103.0		Corrected Ave (3 peaks):			75.8	RPD = 30
Aroclor-1254	1	9.437	0.001	23801	68.5	1	9.571	0.000	61888	83.0
Aroclor-1254	2	9.511	-0.001	310	2.7	2	10.001	0.000	1644	5.5
Aroclor-1254	3	9.803	-0.000	3378	14.7	3	10.092	-0.000	8443	14.5
Aroclor-1254	4	9.933	-0.004	11306	26.1	4	10.274	0.032	171468	142.0
Aroclor-1254	5	10.631	-0.010	26092	87.1	5	10.690	-0.000	292094	486.4
Total Col1Ave (5 peaks):				39.8		Total Col2Ave (5 peaks):			146.3	RPD = 114*
Corrected Ave (4 peaks):				28.0		Corrected Ave (4 peaks):			61.2	RPD = 74*
Aroclor-1260	1	11.186	0.000	78868	264.5	1	11.784	-0.001	239449	269.8
Aroclor-1260	2	11.503	-0.000	79008	270.1	2	12.044	-0.001	634321	278.4
Aroclor-1260	3	11.872	-0.000	193201	270.7	3	12.630	-0.001	407941	280.2
Aroclor-1260	4	12.274	-0.000	96399	274.6	4	13.356	-0.001	191189	276.6
Aroclor-1260	5	12.388	-0.000	41839	246.7	NS	---			----
Total Col1Ave (5 peaks):				265.3		Total Col2Ave (4 peaks):			276.2	RPD = 4
Corrected Ave (4 peaks):				263.0		Corrected Ave (3 peaks):			274.9	RPD = 4
Aroclor-1262	1	10.959	0.000	120342	493.6	1	11.330	0.000	243002	175.2
Aroclor-1262	2	12.388	-0.000	41839	119.6	2	11.784	-0.000	239449	209.7
Aroclor-1262	3	12.461	-0.000	50183	141.1	3	12.565	-0.001	195284	142.3
Aroclor-1262	4	13.127	0.000	48250	161.1	4	12.630	-0.001	407941	208.7
Total Col1Ave (4 peaks):				228.9		Total Col2Ave (4 peaks):			184.0	RPD = 22
Corrected Ave (3 peaks):				140.6		Corrected Ave (3 peaks):			175.4	RPD = 22
Aroclor-1268	1	12.388	-0.000	41839	45.1	1	12.565	-0.003	195284	57.0
Aroclor-1268	2	12.461	0.001	50183	59.6	2	12.630	-0.003	407941	117.6
Aroclor-1268	3	12.866	0.018	22728	31.4	3	13.030	-0.003	4919	1.6
Aroclor-1268	4	13.632	-0.002	8617	4.1	4	13.843	-0.007	31940	2.9
Total Col1Ave (4 peaks):				35.0		Total Col2Ave (4 peaks):			44.8	RPD = 24
Corrected Ave (3 peaks):				26.9		Corrected Ave (3 peaks):			20.5	RPD = 27

Total PCB Area Col1 (6.047 - 13.941) = 1941365 Col1 Total PCB = 0.5 ppm*

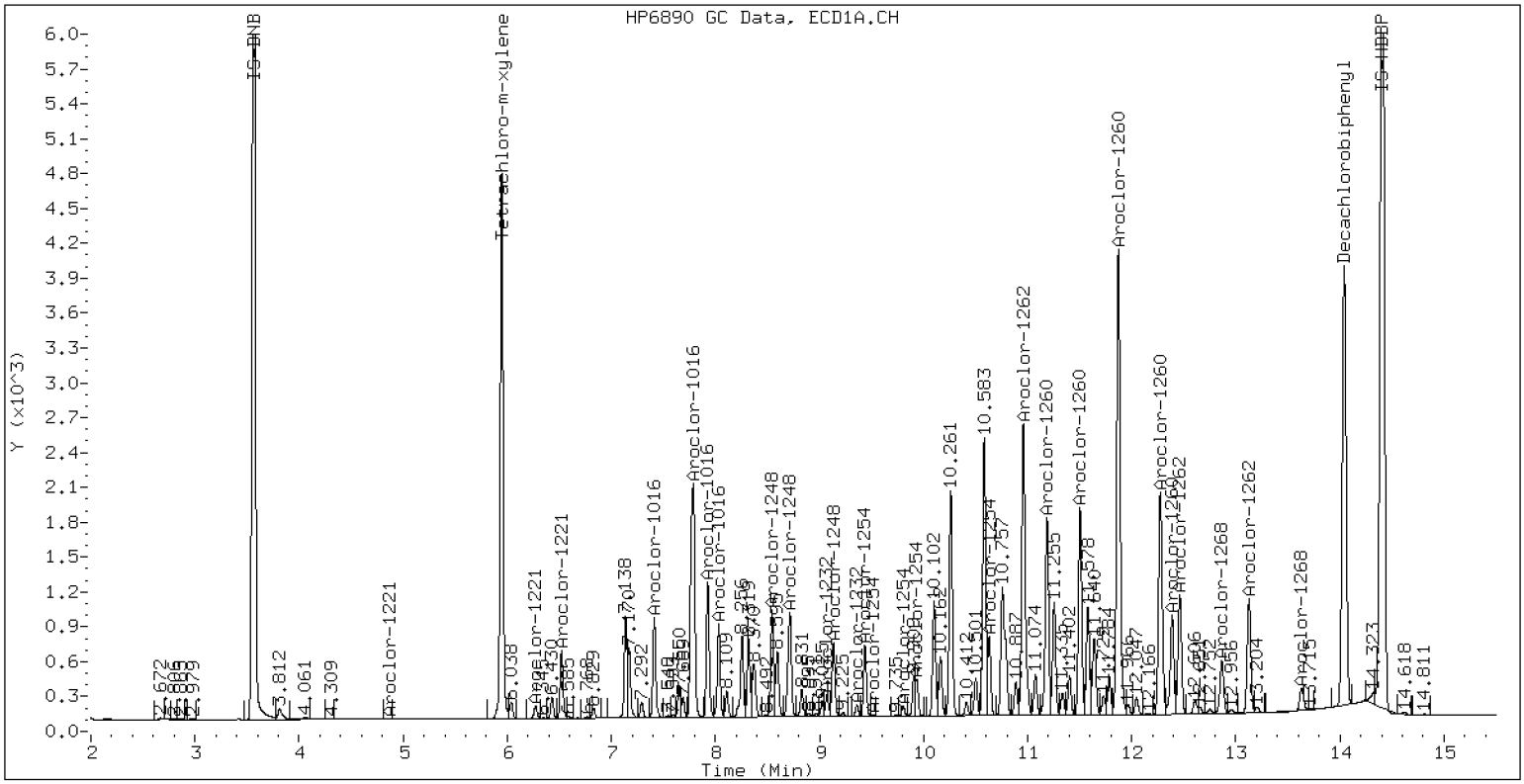
Total PCB Area Col2 (6.047 - 13.941) = 5636549 Col2 Total PCB = 0.6 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

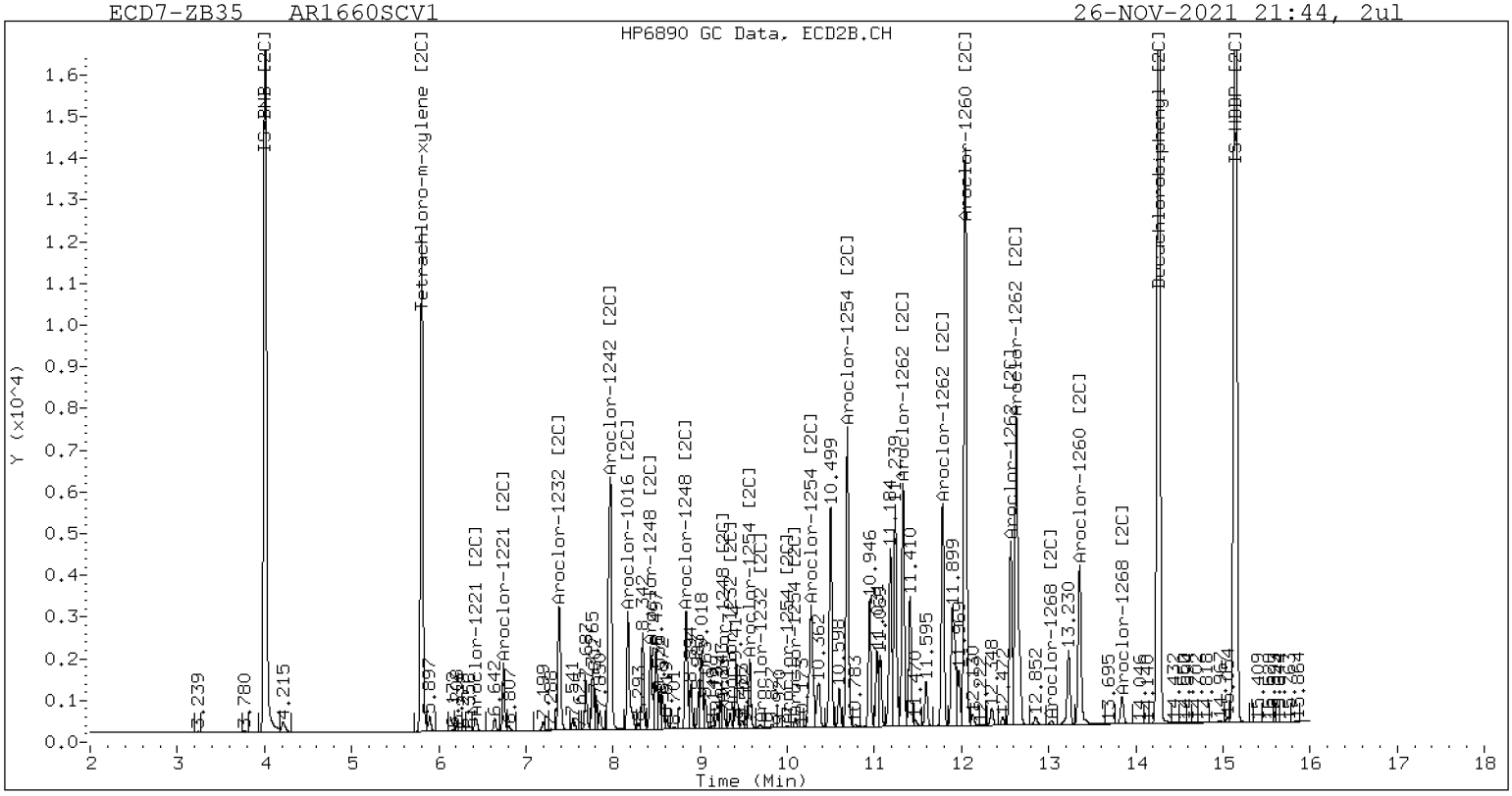
PCB Dual Column Chromatograms

ECD7-ZB5 AR1660SCV1 26-NOV-2021 21:44, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1660SCV1 26-NOV-2021 21:44, 2ul



ZB-35 Manual Integration: NO

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262118ECD7.D
Data file 2: /211126.b/211126.b/11262118ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1242SCV2
Client ID:
Injection Date: 26-NOV-2021 22:05
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.948	0.001	182706	5.807	0.000	469751	39.7	39.9	0.4	Tetrachloro-m-xylene
14.042	0.001	201815	14.263	-0.001	1022196	40.2	44.6	10.4	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	347126	4.8
Hexabromobiphenyl	407599	433407	6.3

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	928670	3.4
Hexabromobiphenyl	1136250	1244992	9.6

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col				ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.413	-0.000	25157	189.4	1	7.383	0.000	104696	200.6
Aroclor-1016	2	7.788	0.001	85960	188.4	2	7.970	-0.001	240361	197.3
Aroclor-1016	3	7.927	0.000	33603	189.3	3	8.172	-0.000	93740	198.2
Aroclor-1016	4	8.033	0.001	23081	189.7	4	8.431	-0.001	66569	205.1
Total Col1Ave (4 peaks): 189.2						Total Col2Ave (4 peaks): 200.3 RPD = 6				
Corrected Ave (3 peaks): 189.0						Corrected Ave (3 peaks): 198.7 RPD = 5				
Aroclor-1221	1	4.864	-0.000	174	5.9	1	---			0.0
Aroclor-1221	2	6.272	-0.001	3169	59.6	2	6.426	0.006	11987	74.8
Aroclor-1221	3	6.523	0.000	17219	132.7	3	6.745	0.000	42434	143.5
Total Col1Ave (3 peaks): 66.0						Col2Ave: <3 Quant Peaks				
Aroclor-1232	1	4.864	-0.003	174	9.9	1	---			0.0
Aroclor-1232	2	7.788	-0.000	85960	443.5	2	7.383	-0.001	104696	411.5
Aroclor-1232	3	9.072	-0.000	30765	483.4	3	9.345	0.000	81908	471.1
Aroclor-1232	4	9.358	-0.000	32026	466.4	4	9.692	-0.001	103595	491.5
Total Col1Ave (4 peaks): 350.8						Total Col2Ave (3 peaks): 458.0 RPD = 27				
Corrected Ave (3 peaks): 306.6						Corrected Ave: < 3 Peaks				
Aroclor-1242	1	7.413	-0.001	25157	232.8	1	7.383	0.001	104696	236.8
Aroclor-1242	2	7.788	0.001	85960	234.8	2	7.970	-0.001	240361	239.1
Aroclor-1242	3	9.072	0.000	30765	248.7	3	9.345	-0.000	81908	244.0
Aroclor-1242	4	9.358	-0.000	32026	243.7	4	9.692	-0.002	103595	258.5
Total Col1Ave (4 peaks): 240.0						Total Col2Ave (4 peaks): 244.6 RPD = 2				
Corrected Ave (3 peaks): 237.1						Corrected Ave (3 peaks): 240.0 RPD = 1				
Aroclor-1248	1	8.546	-0.000	27445	151.8	1	8.431	0.000	66569	151.5
Aroclor-1248	2	8.716	-0.000	34001	163.2	2	8.840	0.001	95323	180.1
Aroclor-1248	3	9.127	0.000	37644	140.2	3	9.269	-0.000	104598	138.7
Aroclor-1248	4	9.358	-0.000	32026	147.8	4	9.692	-0.001	103595	143.8
Total Col1Ave (4 peaks): 150.7						Total Col2Ave (4 peaks): 153.5 RPD = 2				
Corrected Ave (3 peaks): 146.6						Corrected Ave (3 peaks): 144.7 RPD = 1				
Aroclor-1254	1	9.435	-0.001	14995	43.1	1	9.571	0.000	28043	37.6
Aroclor-1254	2	9.512	-0.000	6245	54.6	2	10.002	0.001	15844	52.5
Aroclor-1254	3	9.803	0.000	10238	44.7	3	10.092	-0.001	26441	45.4
Aroclor-1254	4	9.937	-0.000	17113	39.6	4	10.240	-0.001	46700	38.7
Aroclor-1254	5	10.643	0.002	11438	38.2	5	10.692	0.002	11927	19.9
Total Col1Ave (5 peaks): 44.0						Total Col2Ave (5 peaks): 38.8 RPD = 13				
Corrected Ave (4 peaks): 41.4						Corrected Ave (4 peaks): 35.4 RPD = 16				
Aroclor-1260	1	11.185	-0.002	328	1.1	1	11.784	-0.001	5949	6.6
Aroclor-1260	2	11.505	0.002	320	1.1	2	12.044	-0.001	2811	1.2
Aroclor-1260	3	11.871	-0.001	725	1.0	3	12.628	-0.003	1827	1.2
Aroclor-1260	4	12.273	-0.002	745	2.1	4	13.346	-0.010	454	0.7
Aroclor-1260	5	12.396	0.008	113	0.7	NS	---			----
Total Col1Ave (5 peaks): 1.2						Total Col2Ave (4 peaks): 2.4 RPD = 69*				
Corrected Ave (4 peaks): 1.0						Corrected Ave (3 peaks): 1.0 RPD = 7				
Aroclor-1262	1	10.960	0.001	7525	30.7	1	11.329	-0.001	1164	0.8
Aroclor-1262	2	12.396	0.008	113	0.3	2	11.784	-0.000	5949	5.2
Aroclor-1262	3	---			0.0	3	12.571	0.005	584	0.4
Aroclor-1262	4	---			0.0	4	12.628	-0.003	1827	0.9
Col1Ave: <3 Quant Peaks						Col2Ave: 1.8				
Aroclor-1268	1	12.396	0.008	113	0.1	1	12.571	0.003	584	0.2
Aroclor-1268	2	---			0.0	2	12.628	-0.005	1827	0.5
Aroclor-1268	3	12.850	0.002	290	0.4	3	13.034	0.001	652	0.2
Aroclor-1268	4	13.708	0.075	149	0.1	4	13.844	-0.007	929	0.1
Total Col1Ave (3 peaks): 0.2						Total Col2Ave (4 peaks): 0.2 RPD = 22				
Corrected Ave: < 3 Peaks						Corrected Ave (3 peaks): 0.2				

Total PCB Area Col1 (6.047 - 13.941) = 660095 Col1 Total PCB = 0.2 ppm*

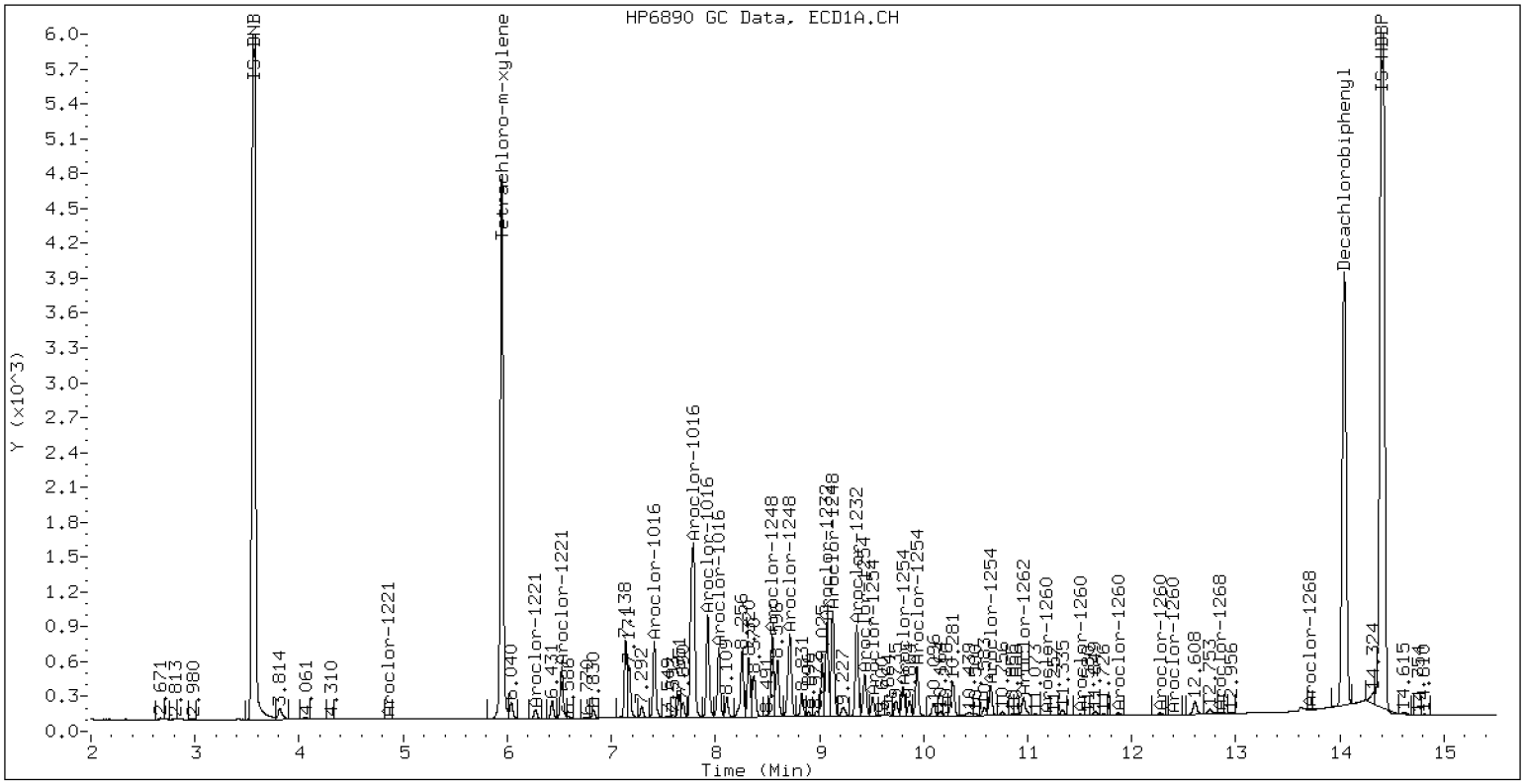
Total PCB Area Col2 (6.047 - 13.941) = 1804844 Col2 Total PCB = 0.2 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

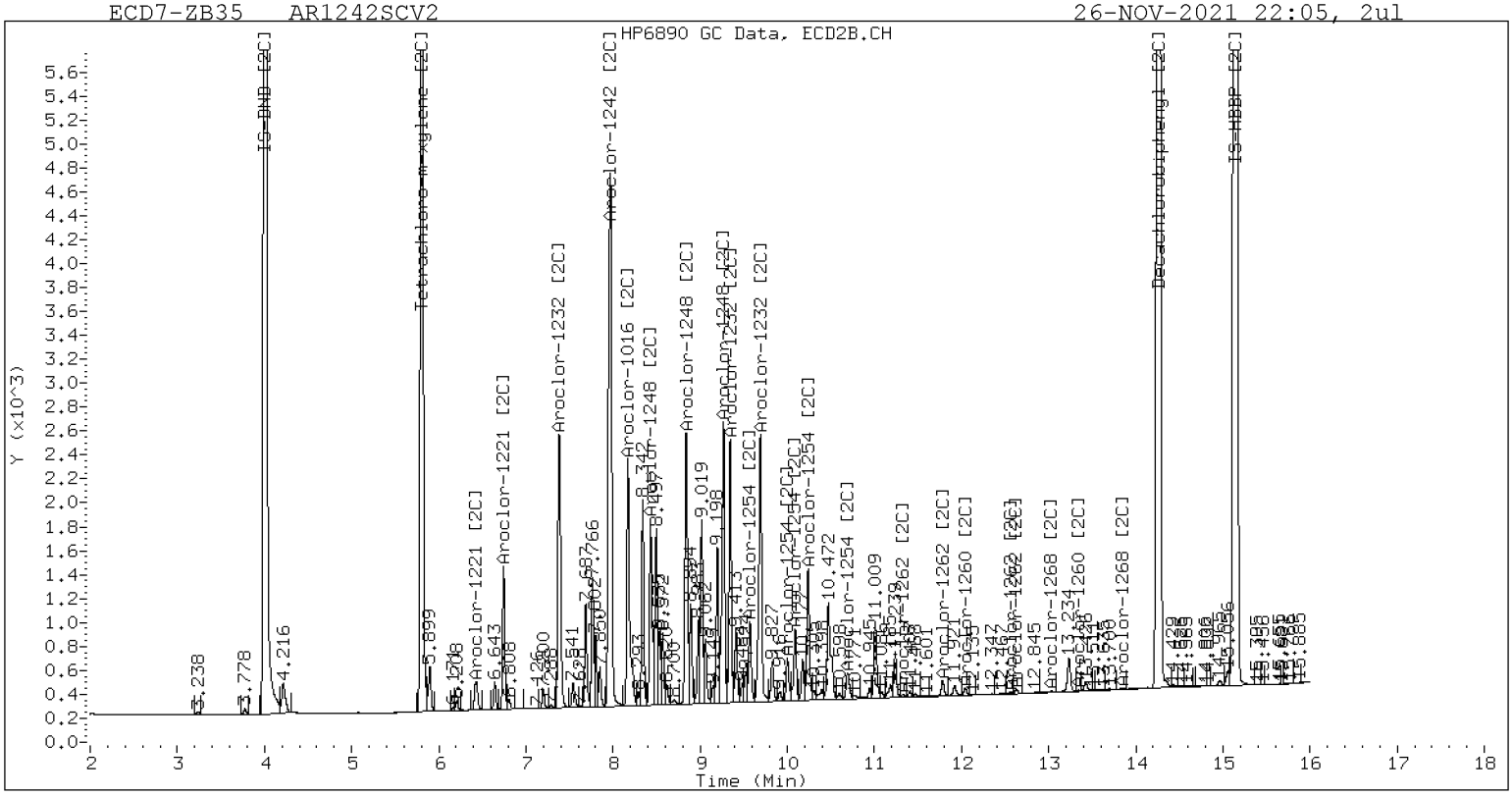
PCB Dual Column Chromatograms

ECD7-ZB5 AR1242SCV2 26-NOV-2021 22:05, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1242SCV2 26-NOV-2021 22:05, 2ul



ZB-35 Manual Integration: NO

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262119ECD7.D
Data file 2: /211126.b/211126.b/11262119ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1248SCV3
Client ID:
Injection Date: 26-NOV-2021 22:26
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.947	-0.000	182915	5.806	-0.001	470143	39.8	40.1	0.7	Tetrachloro-m-xylene
14.041	-0.001	201789	14.263	-0.001	1021839	40.3	44.6	10.1	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	346515	4.6
Hexabromobiphenyl	407599	432252	6.0

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	924205	2.9
Hexabromobiphenyl	1136250	1244332	9.5

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.413	-0.000	12999	98.1	1	7.381	-0.002	55717	107.3
Aroclor-1016	2	7.785	-0.002	59544	130.7	2	7.969	-0.002	165358	136.4
Aroclor-1016	3	7.928	0.002	20933	118.1	3	8.172	-0.000	40569	86.2
Aroclor-1016	4	8.033	0.000	14391	118.5	4	8.431	-0.000	113775	352.2
Total Col1Ave (4 peaks):					116.3	Total Col2Ave (4 peaks):				170.5 RPD = 38
Corrected Ave (3 peaks):					111.5	Corrected Ave (3 peaks):				110.0 RPD = 1
Aroclor-1221	1	---			0.0	1	---			0.0
Aroclor-1221	2	6.272	-0.002	541	10.2	2	6.439	0.020	6343	39.8
Aroclor-1221	3	6.522	-0.000	3629	28.0	3	6.746	0.001	9310	31.6
Col1Ave: <3 Quant Peaks						Col2Ave: <3 Quant Peaks				
Aroclor-1232	1	---			0.0	1	---			0.0
Aroclor-1232	2	7.785	-0.002	59544	307.7	2	7.381	-0.003	55717	220.0
Aroclor-1232	3	9.072	-0.000	57730	908.6	3	9.345	0.000	142014	820.7
Aroclor-1232	4	9.358	0.000	53739	783.9	4	9.693	-0.000	180733	861.5
Total Col1Ave (3 peaks):					666.8	Total Col2Ave (3 peaks):				634.1 RPD = 5
Corrected Ave: < 3 Peaks						Corrected Ave: < 3 Peaks				
Aroclor-1242	1	7.413	-0.001	12999	120.5	1	7.381	-0.002	55717	126.6
Aroclor-1242	2	7.785	-0.001	59544	162.9	2	7.969	-0.002	165358	165.3
Aroclor-1242	3	9.072	0.000	57730	467.6	3	9.345	-0.001	142014	425.1
Aroclor-1242	4	9.358	-0.000	53739	409.6	4	9.693	-0.001	180733	453.2
Total Col1Ave (4 peaks):					290.2	Total Col2Ave (4 peaks):				292.6 RPD = 1
Corrected Ave (3 peaks):					231.0	Corrected Ave (3 peaks):				239.0 RPD = 3
Aroclor-1248	1	8.546	-0.001	46966	260.2	1	8.431	0.000	113775	260.1
Aroclor-1248	2	8.715	-0.001	52600	252.9	2	8.839	-0.000	139569	265.0
Aroclor-1248	3	9.127	0.001	67343	251.2	3	9.268	-0.001	190581	254.0
Aroclor-1248	4	9.358	-0.000	53739	248.4	4	9.693	-0.000	180733	252.2
Total Col1Ave (4 peaks):					253.2	Total Col2Ave (4 peaks):				257.8 RPD = 2
Corrected Ave (3 peaks):					250.8	Corrected Ave (3 peaks):				255.4 RPD = 2
Aroclor-1254	1	9.435	-0.001	31227	90.0	1	9.571	-0.000	55883	75.3
Aroclor-1254	2	9.512	-0.000	14052	123.0	2	10.002	0.001	36985	123.2
Aroclor-1254	3	9.803	-0.000	21802	95.4	3	10.092	-0.000	56433	97.3
Aroclor-1254	4	9.937	0.000	35611	82.5	4	10.240	-0.001	99627	82.9
Aroclor-1254	5	10.645	0.004	24687	82.6	5	10.696	0.006	15931	26.6
Total Col1Ave (5 peaks):					94.7	Total Col2Ave (5 peaks):				81.1 RPD = 16
Corrected Ave (4 peaks):					87.6	Corrected Ave (4 peaks):				70.5 RPD = 22
Aroclor-1260	1	11.186	-0.000	1122	3.8	1	11.784	-0.001	7626	8.5
Aroclor-1260	2	11.503	0.000	884	3.0	2	12.044	-0.001	6508	2.8
Aroclor-1260	3	11.872	-0.000	2573	3.6	3	12.629	-0.002	4330	2.9
Aroclor-1260	4	12.275	0.000	936	2.7	4	13.354	-0.002	2812	4.0
Aroclor-1260	5	12.388	-0.000	827	4.9	NS	---			----
Total Col1Ave (5 peaks):					3.6	Total Col2Ave (4 peaks):				4.6 RPD = 25
Corrected Ave (4 peaks):					3.3	Corrected Ave (3 peaks):				3.3 RPD = 0
Aroclor-1262	1	10.960	0.001	7473	30.6	1	11.329	-0.001	3519	2.5
Aroclor-1262	2	12.388	-0.000	827	2.4	2	11.784	-0.000	7626	6.6
Aroclor-1262	3	12.462	0.000	852	2.4	3	12.565	-0.002	3459	2.5
Aroclor-1262	4	13.126	-0.001	794	2.6	4	12.629	-0.002	4330	2.2
Total Col1Ave (4 peaks):					9.5	Total Col2Ave (4 peaks):				3.5 RPD = 93*
Corrected Ave (3 peaks):					2.5	Corrected Ave (3 peaks):				2.4 RPD = 3
Aroclor-1268	1	12.388	-0.001	827	0.9	1	12.565	-0.004	3459	1.0
Aroclor-1268	2	12.462	0.002	852	1.0	2	12.629	-0.004	4330	1.2
Aroclor-1268	3	12.857	0.010	1058	1.5	3	13.032	-0.001	1600	0.5
Aroclor-1268	4	13.631	-0.003	1307	0.6	4	13.842	-0.008	2845	0.3
Total Col1Ave (4 peaks):					1.0	Total Col2Ave (4 peaks):				0.8 RPD = 28
Corrected Ave (3 peaks):					0.8	Corrected Ave (3 peaks):				0.6 RPD = 35

Total PCB Area Col1 (6.047 - 13.941) = 837591 Col1 Total PCB = 0.2 ppm*

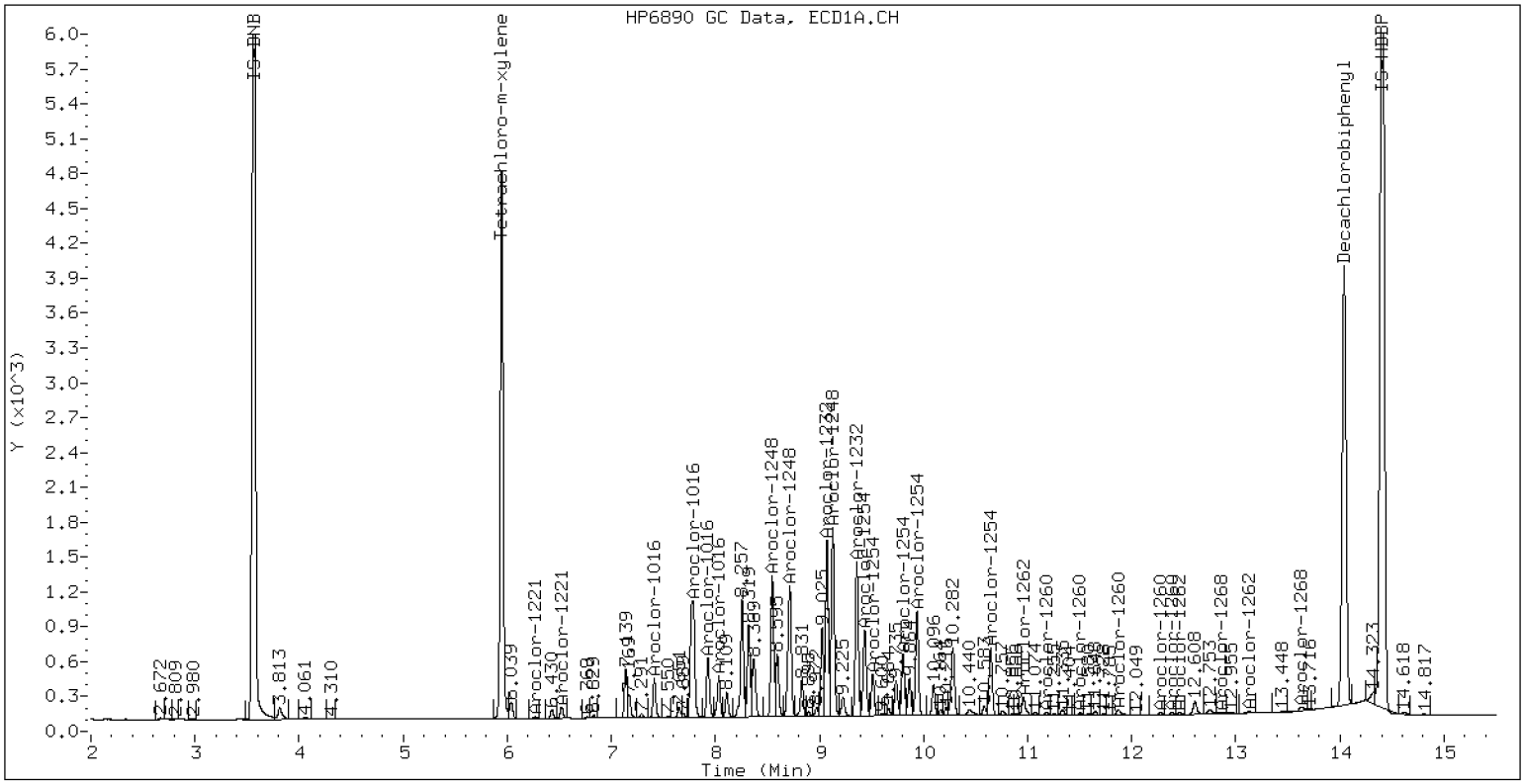
Total PCB Area Col2 (6.047 - 13.941) = 2310633 Col2 Total PCB = 0.2 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

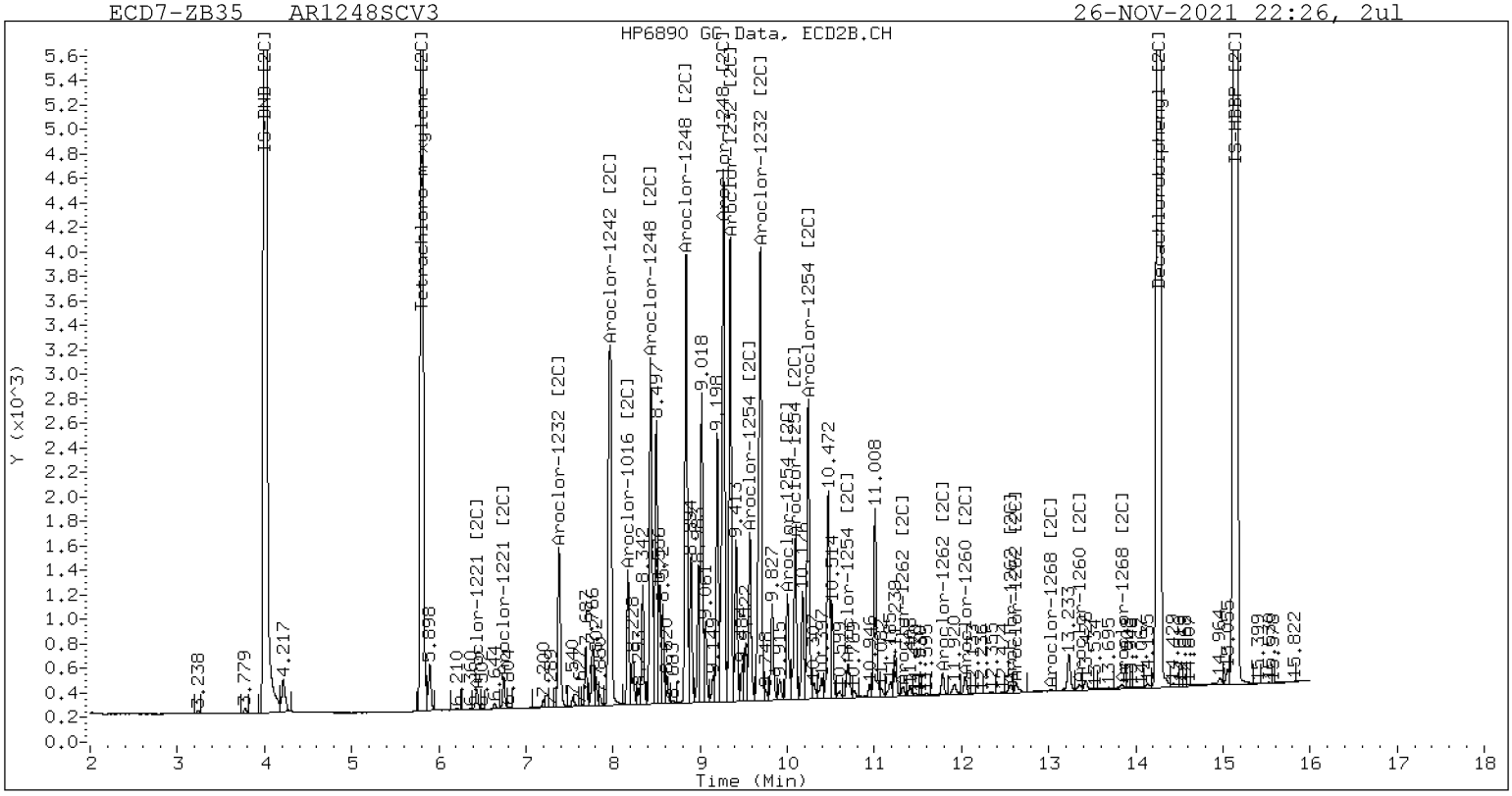
PCB Dual Column Chromatograms

ECD7-ZB5 AR1248SCV3 26-NOV-2021 22:26, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1248SCV3 26-NOV-2021 22:26, 2ul



ZB-35 Manual Integration: NO

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262120ECD7.D
Data file 2: /211126.b/211126.b/11262120ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1254SCV4
Client ID:
Injection Date: 26-NOV-2021 22:47
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.948	0.001	182205	5.807	-0.000	466134	39.8	40.0	0.4	Tetrachloro-m-xylene
14.042	0.001	199870	14.262	-0.002	1018164	40.1	44.3	10.0	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	345092	4.2
Hexabromobiphenyl	407599	430759	5.7

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	918890	2.3
Hexabromobiphenyl	1136250	1248828	9.9

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.413	0.000	382	2.9	1	7.382	-0.001	1494	2.9
Aroclor-1016	2	7.772	-0.015	1738	3.8	2	7.958	-0.013	4168	3.5
Aroclor-1016	3	7.933	0.006	971	5.5	3	8.173	0.001	828	1.8
Aroclor-1016	4	8.033	0.001	384	3.2	4	8.431	-0.000	73497	228.8
Total Col1Ave (4 peaks):					3.9	Total Col2Ave (4 peaks):				59.2 RPD = 176*
Corrected Ave (3 peaks):					3.3	Corrected Ave (3 peaks):				2.7 RPD = 20
Aroclor-1221	1	---			0.0	1	---			0.0
Aroclor-1221	2	---			0.0	2	6.442	0.022	5257	33.1
Aroclor-1221	3	---			0.0	3	6.751	0.006	1515	5.2
Col1Ave: <3 Quant Peaks						Col2Ave: <3 Quant Peaks				
Aroclor-1232	1	---			0.0	1	---			0.0
Aroclor-1232	2	7.772	-0.016	1738	9.0	2	7.382	-0.002	1494	5.9
Aroclor-1232	3	9.072	0.000	27682	437.5	3	9.345	-0.000	23888	138.8
Aroclor-1232	4	9.359	0.001	18777	275.0	4	9.665	-0.028	93470	448.1
Total Col1Ave (3 peaks):					240.5	Total Col2Ave (3 peaks):				197.6 RPD = 20
Corrected Ave: < 3 Peaks						Corrected Ave: < 3 Peaks				
Aroclor-1242	1	7.413	-0.000	382	3.6	1	7.382	-0.001	1494	3.4
Aroclor-1242	2	7.772	-0.015	1738	4.8	2	7.958	-0.013	4168	4.2
Aroclor-1242	3	9.072	0.001	27682	225.1	3	9.345	-0.001	23888	71.9
Aroclor-1242	4	9.359	0.001	18777	143.7	4	9.665	-0.029	93470	235.7
Total Col1Ave (4 peaks):					94.3	Total Col2Ave (4 peaks):				78.8 RPD = 18
Corrected Ave (3 peaks):					50.7	Corrected Ave (3 peaks):				26.5 RPD = 63*
Aroclor-1248	1	8.546	-0.001	16462	91.6	1	8.431	0.000	73497	169.0
Aroclor-1248	2	8.716	0.000	7362	35.5	2	8.839	0.000	42045	80.3
Aroclor-1248	3	9.136	0.009	59751	223.8	3	9.269	0.000	78196	104.8
Aroclor-1248	4	9.359	0.001	18777	87.2	4	9.665	-0.028	93470	131.2
Total Col1Ave (4 peaks):					109.5	Total Col2Ave (4 peaks):				121.3 RPD = 10
Corrected Ave (3 peaks):					71.4	Corrected Ave (3 peaks):				105.4 RPD = 38
Aroclor-1254	1	9.436	-0.000	87277	252.6	1	9.572	0.001	191982	260.1
Aroclor-1254	2	9.512	-0.000	29112	255.9	2	10.001	-0.000	76126	255.1
Aroclor-1254	3	9.803	0.000	57808	254.0	3	10.093	0.000	150250	260.5
Aroclor-1254	4	9.937	-0.000	106810	248.4	4	10.243	0.001	302523	253.1
Aroclor-1254	5	10.640	-0.001	74925	251.9	5	10.691	0.001	158041	265.8
Total Col1Ave (5 peaks):					252.5	Total Col2Ave (5 peaks):				258.9 RPD = 3
Corrected Ave (4 peaks):					251.7	Corrected Ave (4 peaks):				257.2 RPD = 2
Aroclor-1260	1	11.184	-0.003	5210	17.5	1	11.784	-0.001	88404	98.4
Aroclor-1260	2	11.504	0.001	6169	21.1	2	12.044	-0.001	52830	22.9
Aroclor-1260	3	11.871	-0.001	13756	19.3	3	12.628	-0.003	33063	22.4
Aroclor-1260	4	12.274	-0.001	13458	38.4	4	13.354	-0.003	1884	2.7
Aroclor-1260	5	12.389	0.000	454	2.7	NS	---			----
Total Col1Ave (5 peaks):					19.8	Total Col2Ave (4 peaks):				36.6 RPD = 60*
Corrected Ave (4 peaks):					15.1	Corrected Ave (3 peaks):				16.0 RPD = 6
Aroclor-1262	1	10.960	0.001	114541	470.1	1	11.329	-0.001	12706	9.0
Aroclor-1262	2	12.389	0.000	454	1.3	2	11.784	-0.000	88404	76.4
Aroclor-1262	3	12.461	-0.000	544	1.5	3	12.567	0.000	6638	4.8
Aroclor-1262	4	13.127	-0.000	440	1.5	4	12.628	-0.003	33063	16.7
Total Col1Ave (4 peaks):					118.6	Total Col2Ave (4 peaks):				26.7 RPD = 126*
Corrected Ave (3 peaks):					1.4	Corrected Ave (3 peaks):				10.2 RPD = 151*
Aroclor-1268	1	12.389	-0.000	454	0.5	1	12.567	-0.002	6638	1.9
Aroclor-1268	2	12.461	0.001	544	0.6	2	12.628	-0.005	33063	9.4
Aroclor-1268	3	12.860	0.013	1068	1.5	3	13.031	-0.002	615	0.2
Aroclor-1268	4	13.708	0.075	236	0.1	4	13.841	-0.009	857	0.1
Total Col1Ave (4 peaks):					0.7	Total Col2Ave (4 peaks):				2.9 RPD = 124*
Corrected Ave (3 peaks):					0.4	Corrected Ave (3 peaks):				0.7 RPD = 55*

Total PCB Area Col1 (6.047 - 13.941) = 1107221 Col1 Total PCB = 0.3 ppm*

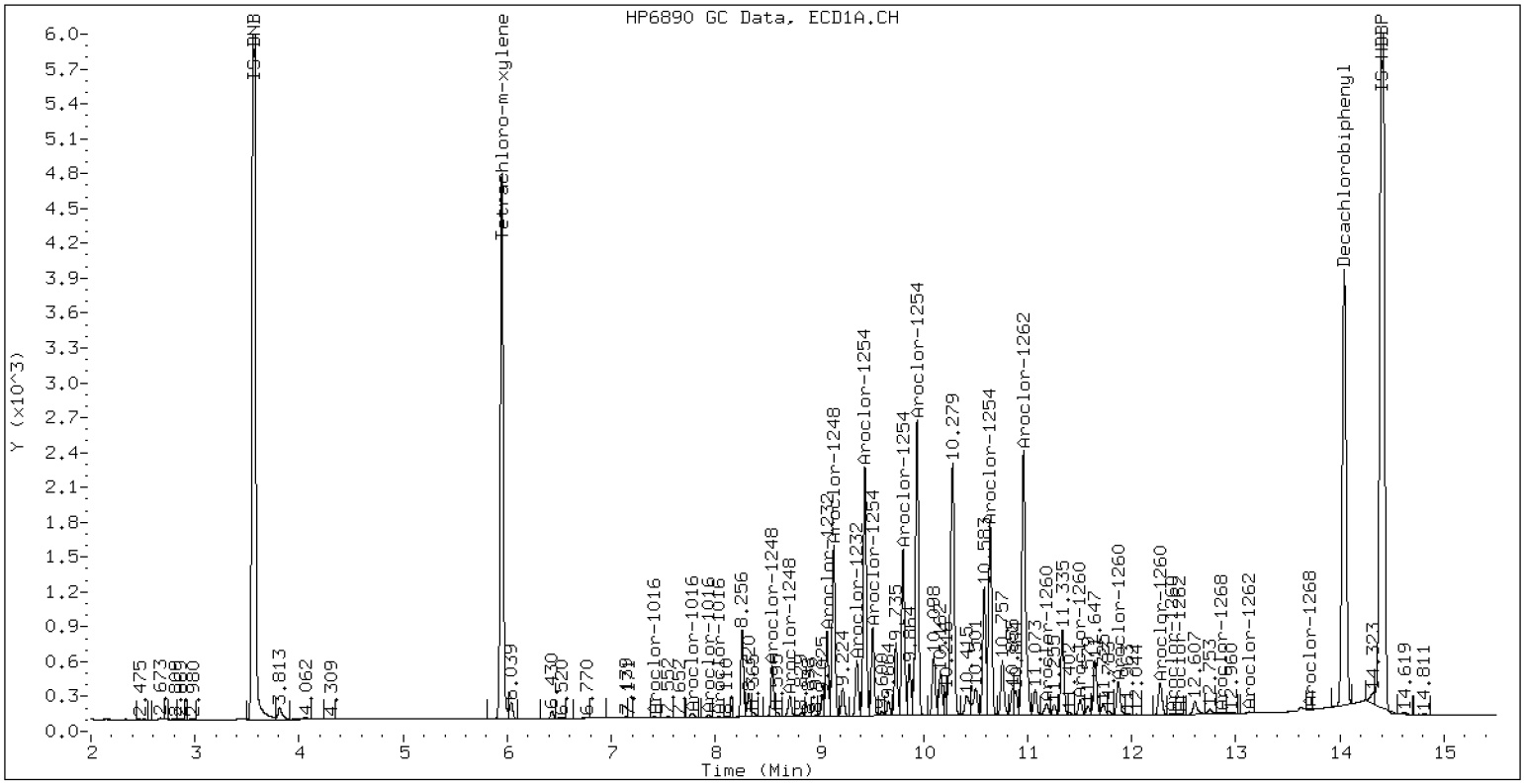
Total PCB Area Col2 (6.047 - 13.941) = 3079798 Col2 Total PCB = 0.3 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

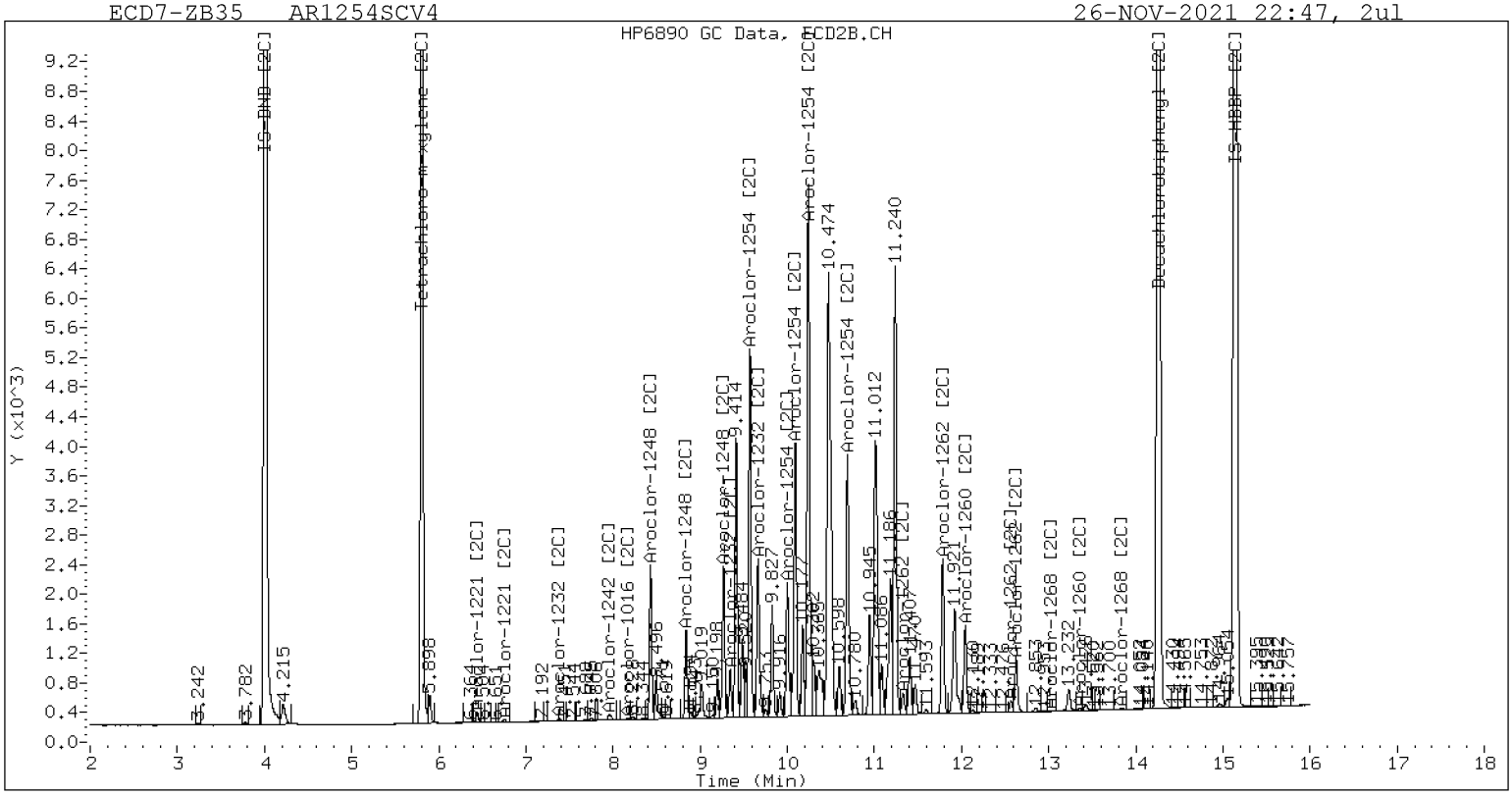
PCB Dual Column Chromatograms

ECD7-ZB5 AR1254SCV4 26-NOV-2021 22:47, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1254SCV4 26-NOV-2021 22:47, 2ul



ZB-35 Manual Integration: NO

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262121ECD7.D
Data file 2: /211126.b/211126.b/11262121ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR2162SCV5
Client ID:
Injection Date: 26-NOV-2021 23:08
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	ZB5 Col Shift	ZB5 Col Response	ZB35 Col RT	ZB35 Col Shift	ZB35 Col Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.947	0.000	184681	5.806	-0.001	462758	40.3	40.1	0.4	Tetrachloro-m-xylene
14.041	-0.000	200761	14.262	-0.002	1029177	40.2	44.6	10.3	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	345589	4.4
Hexabromobiphenyl	407599	431073	5.8

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	908918	1.2
Hexabromobiphenyl	1136250	1254165	10.4

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.413	0.000	2856	21.6	1	7.394	0.011	21318	41.7
Aroclor-1016	2	7.787	0.000	7860	17.3	2	7.971	-0.000	19978	16.8
Aroclor-1016	3	7.926	-0.001	3490	19.7	3	8.172	0.000	8826	19.1
Aroclor-1016	4	8.033	0.000	2143	17.7	4	8.430	-0.002	4599	14.5
Total Col1Ave (4 peaks):					19.1	Total Col2Ave (4 peaks):				23.0 RPD = 19
Corrected Ave (3 peaks):					18.2	Corrected Ave (3 peaks):				16.8 RPD = 8
Aroclor-1221	1	4.865	0.001	7857	266.0	1	5.080	-0.000	15959	269.2
Aroclor-1221	2	6.274	0.000	13597	256.8	2	6.420	-0.000	40386	257.4
Aroclor-1221	3	6.523	0.000	33042	255.7	3	6.745	-0.000	74421	257.2
Total Col1Ave (3 peaks):					259.5	Total Col2Ave (3 peaks):				261.3 RPD = 1
Corrected Ave: < 3 Peaks						Corrected Ave: < 3 Peaks				
Aroclor-1232	1	4.865	-0.001	7857	451.1	1	5.080	-0.002	15959	457.2
Aroclor-1232	2	7.787	-0.001	7860	40.7	2	7.394	0.010	21318	85.6
Aroclor-1232	3	9.072	-0.000	1914	30.2	3	9.346	0.001	2996	17.6
Aroclor-1232	4	9.359	0.001	2278	33.3	4	9.689	-0.004	5633	27.3
Total Col1Ave (4 peaks):					138.8	Total Col2Ave (4 peaks):				146.9 RPD = 6
Corrected Ave (3 peaks):					34.8	Corrected Ave (3 peaks):				43.5 RPD = 22
Aroclor-1242	1	7.413	-0.000	2856	26.6	1	7.394	0.012	21318	49.3
Aroclor-1242	2	7.787	0.000	7860	21.6	2	7.971	-0.000	19978	20.3
Aroclor-1242	3	9.072	0.000	1914	15.5	3	9.346	-0.000	2996	9.1
Aroclor-1242	4	9.359	0.000	2278	17.4	4	9.689	-0.005	5633	14.4
Total Col1Ave (4 peaks):					20.3	Total Col2Ave (4 peaks):				23.3 RPD = 14
Corrected Ave (3 peaks):					18.2	Corrected Ave (3 peaks):				14.6 RPD = 22
Aroclor-1248	1	8.546	-0.001	1601	8.9	1	8.430	-0.001	4599	10.7
Aroclor-1248	2	8.715	-0.001	1430	6.9	2	8.841	0.002	5162	10.0
Aroclor-1248	3	9.136	0.009	10779	40.3	3	9.269	-0.000	5122	6.9
Aroclor-1248	4	9.359	0.000	2278	10.6	4	9.689	-0.004	5633	8.0
Total Col1Ave (4 peaks):					16.7	Total Col2Ave (4 peaks):				8.9 RPD = 61*
Corrected Ave (3 peaks):					8.8	Corrected Ave (3 peaks):				8.3 RPD = 6
Aroclor-1254	1	9.437	0.000	12195	35.2	1	9.570	-0.001	29260	40.1
Aroclor-1254	2	9.512	-0.000	1007	8.8	2	10.001	-0.000	2087	7.1
Aroclor-1254	3	9.803	0.000	2308	10.1	3	10.091	-0.001	5083	8.9
Aroclor-1254	4	9.908	-0.030	16371	38.0	4	10.273	0.032	148826	125.9
Aroclor-1254	5	10.631	-0.010	13347	44.8	5	10.689	-0.001	222456	378.3
Total Col1Ave (5 peaks):					27.4	Total Col2Ave (5 peaks):				112.0 RPD = 121*
Corrected Ave (4 peaks):					23.1	Corrected Ave (4 peaks):				45.5 RPD = 65*
Aroclor-1260	1	11.187	0.000	111070	372.6	1	11.784	-0.001	287354	318.3
Aroclor-1260	2	11.504	0.001	91199	311.9	2	12.043	-0.002	686236	296.1
Aroclor-1260	3	11.873	0.001	210202	294.6	3	12.630	-0.001	490536	331.2
Aroclor-1260	4	12.275	0.000	70980	202.2	4	13.356	-0.000	301563	428.9
Aroclor-1260	5	12.389	0.000	86356	509.3	NS	---			----
Total Col1Ave (5 peaks):					338.1	Total Col2Ave (4 peaks):				343.6 RPD = 2
Corrected Ave (4 peaks):					295.3	Corrected Ave (3 peaks):				315.2 RPD = 7
Aroclor-1262	1	10.959	0.000	62979	258.3	1	11.329	-0.000	345514	245.0
Aroclor-1262	2	12.389	0.001	86356	246.9	2	11.784	-0.000	287354	247.4
Aroclor-1262	3	12.462	0.001	87943	247.3	3	12.565	-0.001	343814	246.4
Aroclor-1262	4	13.126	-0.001	74058	247.4	4	12.630	-0.000	490536	246.8
Total Col1Ave (4 peaks):					250.0	Total Col2Ave (4 peaks):				246.4 RPD = 1
Corrected Ave (3 peaks):					247.2	Corrected Ave (3 peaks):				246.1 RPD = 0
Aroclor-1268	1	12.389	0.000	86356	93.0	1	12.565	-0.003	343814	98.7
Aroclor-1268	2	12.462	0.002	87943	104.4	2	12.630	-0.003	490536	139.0
Aroclor-1268	3	12.864	0.017	34261	47.3	3	13.030	-0.003	17281	5.5
Aroclor-1268	4	13.631	-0.002	23771	11.4	4	13.842	-0.008	93848	8.4
Total Col1Ave (4 peaks):					64.0	Total Col2Ave (4 peaks):				62.9 RPD = 2

Corrected Ave (3 peaks): 50.6 Corrected Ave (3 peaks): 37.5 RPD = 30

Total PCB Area Col1 (6.047 - 13.941) = 1512904 Col1 Total PCB = 0.4 ppm*

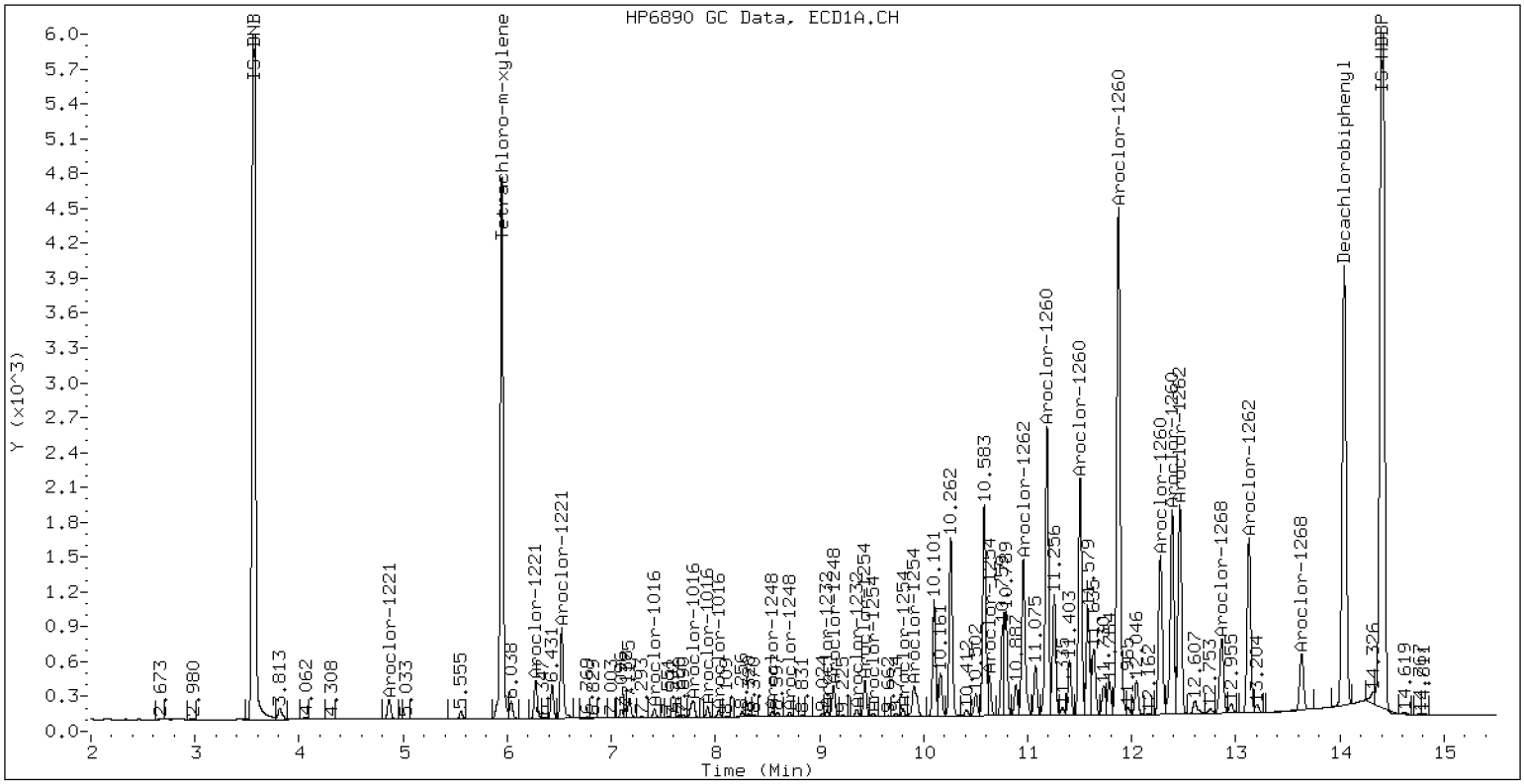
Total PCB Area Col2 (6.047 - 13.941) = 4640566 Col2 Total PCB = 0.5 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

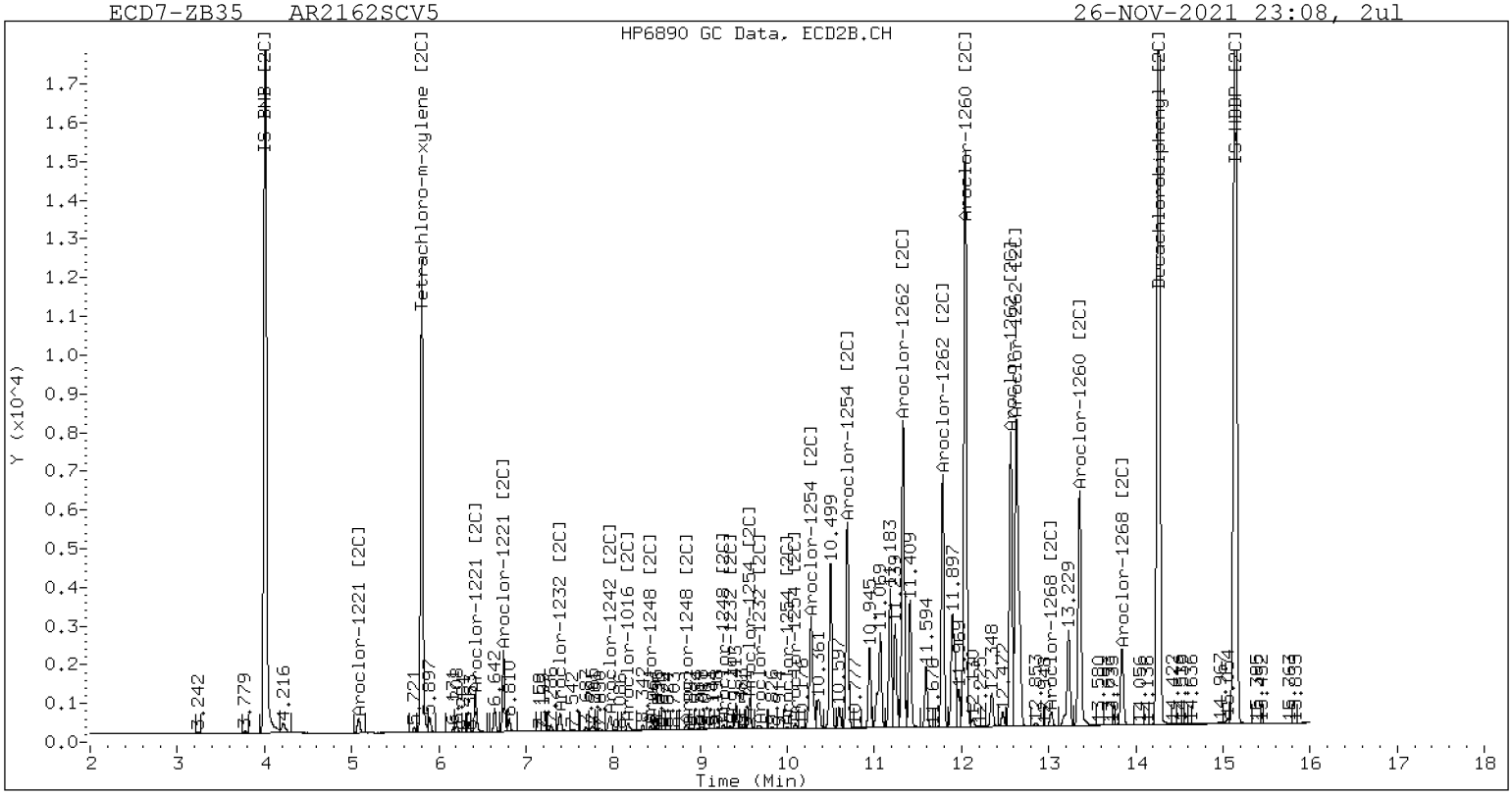
PCB Dual Column Chromatograms

ECD7-ZB5 AR2162SCV5 26-NOV-2021 23:08, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR2162SCV5 26-NOV-2021 23:08, 2ul



ZB-35 Manual Integration: NO

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262122ECD7.D
Data file 2: /211126.b/211126.b/11262122ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR3268SCV6
Client ID:
Injection Date: 26-NOV-2021 23:30
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	ZB5 Col Shift	ZB5 Col Response	ZB35 Col RT	ZB35 Col Shift	ZB35 Col Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.948	0.001	183754	5.806	-0.001	466675	40.1	40.1	0.1	Tetrachloro-m-xylene
14.042	0.000	300414	14.266	0.002	1702245	60.0	73.3	19.9	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	345640	4.4
Hexabromobiphenyl	407599	432546	6.1

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	916629	2.0
Hexabromobiphenyl	1136250	1262479	11.1

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.413	0.000	15355	116.1	1	7.382	-0.000	66208	128.5
Aroclor-1016	2	7.787	0.000	51051	112.4	2	7.970	-0.001	141589	117.8
Aroclor-1016	3	7.926	-0.000	20206	114.3	3	8.172	-0.000	54432	116.6
Aroclor-1016	4	8.033	0.000	13954	115.1	4	8.430	-0.001	33150	103.5
Total Col1Ave (4 peaks):				114.5		Total Col2Ave (4 peaks):			116.6	RPD = 2
Corrected Ave (3 peaks):				113.9		Corrected Ave (3 peaks):			112.6	RPD = 1
Aroclor-1221	1	4.865	0.001	4510	152.7	1	5.081	0.001	8948	149.7
Aroclor-1221	2	6.274	0.000	7725	145.9	2	6.421	0.001	24911	157.4
Aroclor-1221	3	6.523	0.000	24036	186.0	3	6.745	0.000	57298	196.3
Total Col1Ave (3 peaks):				161.5		Total Col2Ave (3 peaks):			167.8	RPD = 4
Corrected Ave: < 3 Peaks						Corrected Ave: < 3 Peaks				
Aroclor-1232	1	4.865	-0.001	4510	258.9	1	5.081	-0.001	8948	254.2
Aroclor-1232	2	7.787	-0.001	51051	264.5	2	7.382	-0.001	66208	263.6
Aroclor-1232	3	9.072	0.000	16927	267.1	3	9.345	0.000	45544	265.4
Aroclor-1232	4	9.358	0.000	17760	259.7	4	9.692	-0.001	54207	260.5
Total Col1Ave (4 peaks):				262.6		Total Col2Ave (4 peaks):			260.9	RPD = 1
Corrected Ave (3 peaks):				261.0		Corrected Ave (3 peaks):			259.5	RPD = 1
Aroclor-1242	1	7.413	-0.000	15355	142.7	1	7.382	0.000	66208	151.7
Aroclor-1242	2	7.787	0.000	51051	140.1	2	7.970	-0.001	141589	142.7
Aroclor-1242	3	9.072	0.000	16927	137.4	3	9.345	-0.001	45544	137.5
Aroclor-1242	4	9.358	-0.000	17760	135.7	4	9.692	-0.002	54207	137.1
Total Col1Ave (4 peaks):				139.0		Total Col2Ave (4 peaks):			142.2	RPD = 2
Corrected Ave (3 peaks):				137.7		Corrected Ave (3 peaks):			139.1	RPD = 1
Aroclor-1248	1	8.546	-0.001	15301	85.0	1	8.430	-0.001	33150	76.4
Aroclor-1248	2	8.715	-0.000	18376	88.6	2	8.840	0.001	52244	100.0
Aroclor-1248	3	9.126	-0.001	19712	73.7	3	9.268	-0.001	56881	76.4
Aroclor-1248	4	9.358	-0.000	17760	82.3	4	9.692	-0.001	54207	76.3
Total Col1Ave (4 peaks):				82.4		Total Col2Ave (4 peaks):			82.3	RPD = 0
Corrected Ave (3 peaks):				80.3		Corrected Ave (3 peaks):			76.4	RPD = 5
Aroclor-1254	1	9.435	-0.001	5233	15.1	1	9.571	-0.001	9346	12.7
Aroclor-1254	2	9.512	-0.000	2205	19.3	2	10.002	0.001	5812	19.5
Aroclor-1254	3	9.803	-0.000	3445	15.1	3	10.091	-0.001	8336	14.5
Aroclor-1254	4	9.937	-0.000	6096	14.2	4	10.239	-0.002	17852	15.0
Aroclor-1254	5	10.644	0.003	3826	12.8	5	10.690	-0.000	5138	8.7
Total Col1Ave (5 peaks):				15.3		Total Col2Ave (5 peaks):			14.1	RPD = 8
Corrected Ave (4 peaks):				14.3		Corrected Ave (4 peaks):			12.7	RPD = 12
Aroclor-1260	1	11.187	0.000	40974	137.0	1	11.782	-0.004	180143	198.2
Aroclor-1260	2	11.504	0.001	3232	11.0	2	12.042	-0.003	77621	33.3
Aroclor-1260	3	11.871	-0.000	25592	35.7	3	12.636	0.005	922264	618.6
Aroclor-1260	4	12.275	0.000	999	2.8	4	13.356	-0.001	316335	447.0
Aroclor-1260	5	12.389	0.000	236962	1392.7	NS	---			----
Total Col1Ave (5 peaks):				315.9		Total Col2Ave (4 peaks):			324.3	RPD = 3
Corrected Ave (4 peaks):				46.6		Corrected Ave (3 peaks):			226.2	RPD = 132*
Aroclor-1262	1	10.959	0.000	1736	7.1	1	11.329	-0.001	126404	89.0
Aroclor-1262	2	12.389	0.001	236962	675.3	2	11.782	-0.003	180143	154.1
Aroclor-1262	3	12.459	-0.002	213750	599.0	3	12.568	0.002	869194	618.8
Aroclor-1262	4	13.127	-0.001	82344	274.1	4	12.636	0.006	922264	460.9
Total Col1Ave (4 peaks):				388.9		Total Col2Ave (4 peaks):			330.7	RPD = 16
Corrected Ave (3 peaks):				293.4		Corrected Ave (3 peaks):			234.7	RPD = 22
Aroclor-1268	1	12.389	0.000	236962	254.3	1	12.568	-0.000	869194	247.9
Aroclor-1268	2	12.459	-0.001	213750	252.9	2	12.636	0.003	922264	259.6
Aroclor-1268	3	12.847	-0.000	185195	255.0	3	13.033	-0.000	799870	253.2
Aroclor-1268	4	13.634	0.000	536844	255.9	4	13.850	-0.000	2883202	254.9
Total Col1Ave (4 peaks):				254.5		Total Col2Ave (4 peaks):			253.9	RPD = 0

Corrected Ave (3 peaks): 254.1 Corrected Ave (3 peaks): 252.0 RPD = 1

Total PCB Area Col1 (6.047 - 13.941) = 1841096 Col1 Total PCB = 0.5 ppm*

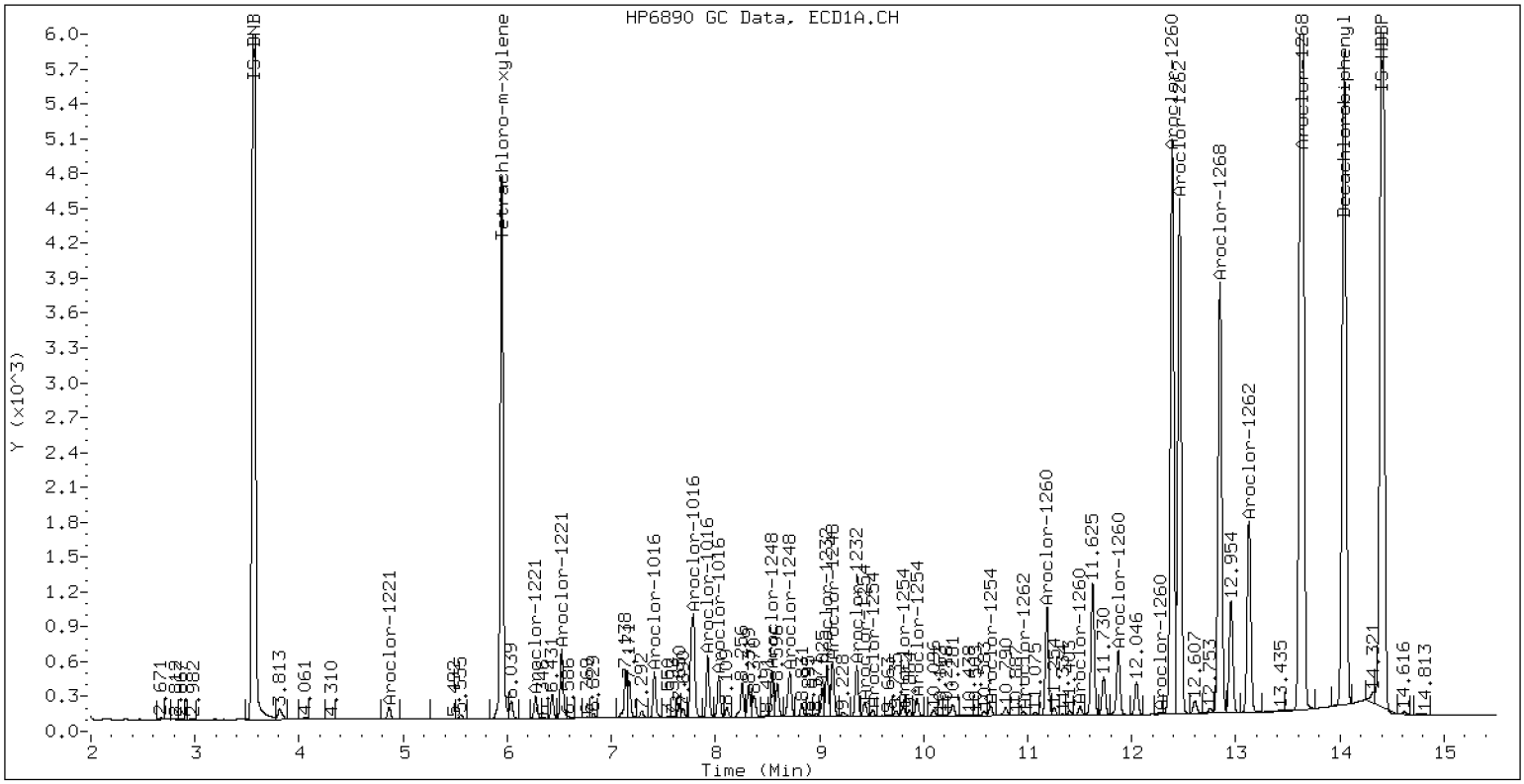
Total PCB Area Col2 (6.047 - 13.941) = 7499927 Col2 Total PCB = 0.7 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

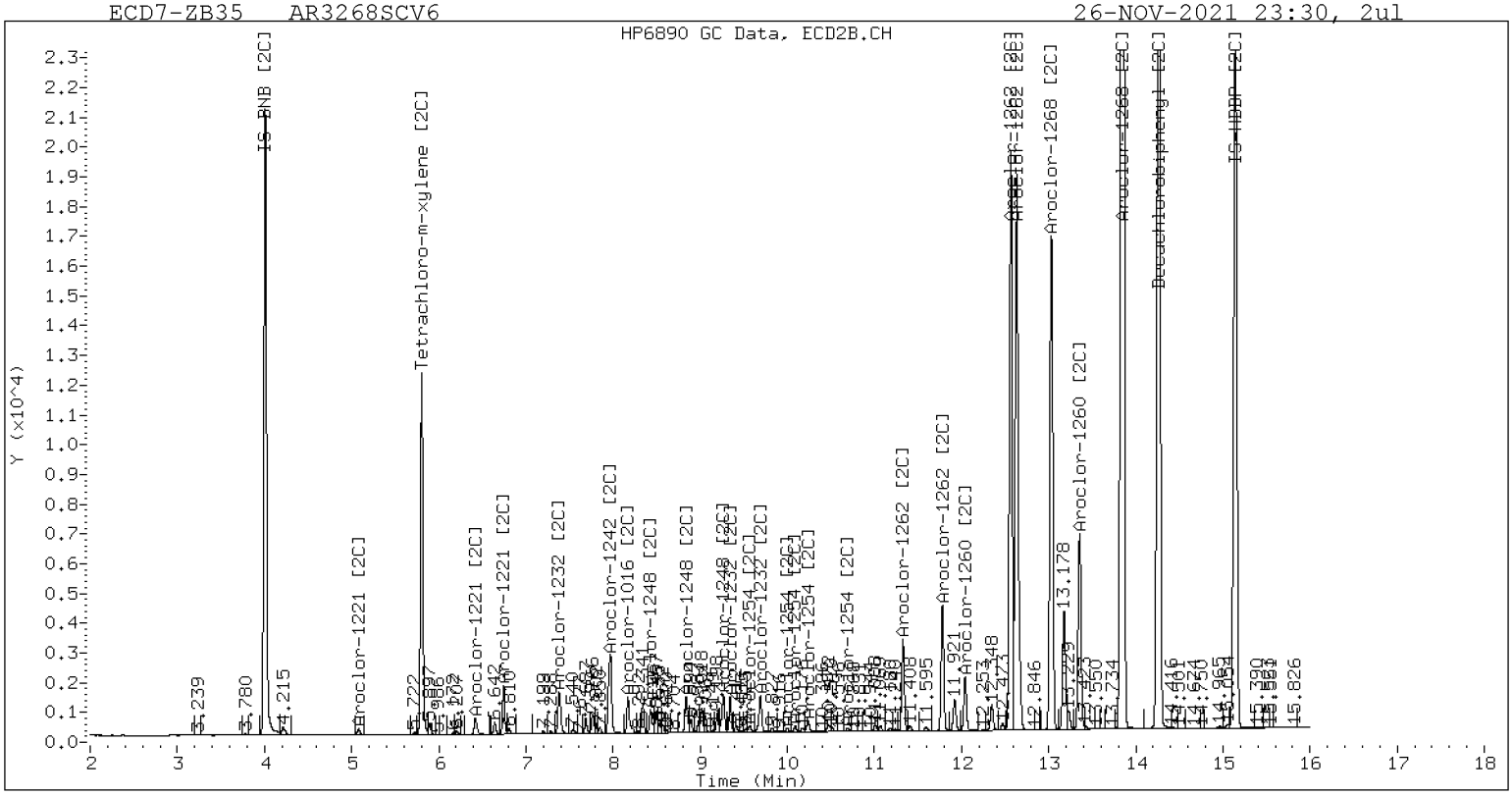
PCB Dual Column Chromatograms

ECD7-ZB5 AR3268SCV6 26-NOV-2021 23:30, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR3268SCV6 26-NOV-2021 23:30, 2ul



ZB-35 Manual Integration: NO

Analytical Resources Inc.
8082 DDT SCREEN REPORT

Data file 1: /211126.b/11262123ECD7.D ARI ID: 0.1PPMDDTS

ZB5 Col RT	ZB5 Col Shift	ZB5 Col Response	ZB35 Col RT	ZB35 Col Shift	ZB35 Col Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
9.405	0.000	226228	10.036	0.000	457952	0.100	0.100	0.0	2,4-DDE
10.443	0.000	326493	10.793	0.000	1589184	0.100	0.200#	66.7*	2,4-DDT
9.822	0.000	492443	10.341	0.000	957497	0.100	0.100	0.0	4,4-DDE
10.390	0.000	503037	10.793	0.000	1589184	0.100	0.200#	66.7*	4,4-DDD

# Indicates value is from co-eluting peaks
* Indicates RPD > 40%

Analytical Resources Inc.
8082 DDT SCREEN REPORT

Data file 1: /211126.b/11262124ECD7.D ARI ID: DDT BD

ZB5 Col RT	ZB5 Col Shift	ZB5 Col Response	ZB35 Col RT	ZB35 Col Shift	ZB35 Col Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
0.000	-9.405	0	10.034	-0.002	15629	0.000	0.002	----	2,4-DDE
0.000	-10.443	0	10.794	0.001	366996	0.000	0.030#	----	2,4-DDT
9.821	-0.001	10409	10.343	0.002	1602	0.001	0.000	169.9*	4,4-DDE
10.388	-0.002	135393	10.794	0.001	366996	0.017	0.030#	55.1*	4,4-DDD

# Indicates value is from co-eluting peaks
* Indicates RPD > 40%

Analytical Resources, LLC
Analytical Chemists and Consultants

SECOND-SOURCE CALIBRATION VERIFICATION

EPA 8082A

Laboratory: Analytical Resources, LLC
Client: Anchor QEA, LLC
Calibration: EK00072
Sequence: SJK0390

SDG: 21K0332
Project: Lower Duwamish AOC4
Laboratory ID: SJK0390-SCV1
Sequence Name: AR1660SCV1
Standard ID: J008139

ANALYTE	EXPECTED (ug/L)	FOUND (ug/L)	% DRIFT	QC LIMIT
Aroclor 1016	250.00	252	0.9	20.00
Aroclor 1016 [2C]	250.00	265	5.9	20.00
Aroclor 1260	250.00	265	6.1	20.00
Aroclor 1260 [2C]	250.00	276	10.5	20.00
Decachlorobiphenyl	40.000	40.3	0.7	20.00
Tetrachlorometaxylene	40.000	39.9	-0.2	20.00
Decachlorobiphenyl [2C]	40.000	44.9	12.2	20.00
Tetrachlorometaxylene [2C]	40.000	39.6	-0.9	20.00

* Indicates values outside of QC limits
[2C] indicates second-column analyte.

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262117ECD7.D
Data file 2: /211126.b/211126.b/11262117ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1660SCV1
Client ID:
Injection Date: 26-NOV-2021 21:44
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.947	0.000	183842	5.806	-0.001	466581	39.9	39.6	0.7	Tetrachloro-m-xylene
14.041	-0.000	201032	14.263	-0.001	1018569	40.3	44.9	10.8	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	347308	4.9
Hexabromobiphenyl	407599	431101	5.8

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	928169	3.3
Hexabromobiphenyl	1136250	1233073	8.5

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.413	-0.000	33347	251.0	1	7.382	-0.001	137933	264.4
Aroclor-1016	2	7.787	-0.000	115161	252.3	2	7.971	0.000	321183	263.9
Aroclor-1016	3	7.926	-0.000	44761	252.0	3	8.172	0.000	125549	265.5
Aroclor-1016	4	8.032	-0.000	30938	254.1	4	8.431	-0.000	86129	265.5
Total Col1Ave (4 peaks):				252.3		Total Col2Ave (4 peaks):			264.8	RPD = 5
Corrected Ave (3 peaks):				251.7		Corrected Ave (3 peaks):			264.6	RPD = 5
Aroclor-1221	1	4.864	0.000	238	8.0	1	---			0.0
Aroclor-1221	2	6.272	-0.002	4338	81.5	2	6.423	0.003	15936	99.5
Aroclor-1221	3	6.522	-0.001	22886	176.2	3	6.745	-0.000	56893	192.5
Total Col1Ave (3 peaks):				88.6		Col2Ave: <3 Quant Peaks				
Aroclor-1232	1	4.864	-0.002	238	13.6	1	---			0.0
Aroclor-1232	2	7.787	-0.001	115161	593.8	2	7.382	-0.002	137933	542.4
Aroclor-1232	3	9.072	0.000	7256	113.9	3	9.345	0.000	13600	78.3
Aroclor-1232	4	9.360	0.002	3702	53.9	4	9.692	-0.001	5042	23.9
Total Col1Ave (4 peaks):				193.8		Total Col2Ave (3 peaks):			214.9	RPD = 10
Corrected Ave (3 peaks):				60.5		Corrected Ave: < 3 Peaks				
Aroclor-1242	1	7.413	-0.001	33347	308.5	1	7.382	-0.000	137933	312.1
Aroclor-1242	2	7.787	-0.000	115161	314.4	2	7.971	0.000	321183	319.7
Aroclor-1242	3	9.072	0.001	7256	58.6	3	9.345	-0.000	13600	40.5
Aroclor-1242	4	9.360	0.001	3702	28.2	4	9.692	-0.002	5042	12.6
Total Col1Ave (4 peaks):				177.4		Total Col2Ave (4 peaks):			171.2	RPD = 4
Corrected Ave (3 peaks):				131.8		Corrected Ave (3 peaks):			121.7	RPD = 8
Aroclor-1248	1	8.546	-0.001	35193	194.5	1	8.431	0.000	86129	196.1
Aroclor-1248	2	8.715	-0.000	43028	206.4	2	8.839	-0.000	116360	220.0
Aroclor-1248	3	9.135	0.008	26166	97.4	3	9.264	-0.005	18404	24.4
Aroclor-1248	4	9.360	0.001	3702	17.1	4	9.692	-0.001	5042	7.0
Total Col1Ave (4 peaks):				128.8		Total Col2Ave (4 peaks):			111.9	RPD = 14
Corrected Ave (3 peaks):				103.0		Corrected Ave (3 peaks):			75.8	RPD = 30
Aroclor-1254	1	9.437	0.001	23801	68.5	1	9.571	0.000	61888	83.0
Aroclor-1254	2	9.511	-0.001	310	2.7	2	10.001	0.000	1644	5.5
Aroclor-1254	3	9.803	-0.000	3378	14.7	3	10.092	-0.000	8443	14.5
Aroclor-1254	4	9.933	-0.004	11306	26.1	4	10.274	0.032	171468	142.0
Aroclor-1254	5	10.631	-0.010	26092	87.1	5	10.690	-0.000	292094	486.4
Total Col1Ave (5 peaks):				39.8		Total Col2Ave (5 peaks):			146.3	RPD = 114*
Corrected Ave (4 peaks):				28.0		Corrected Ave (4 peaks):			61.2	RPD = 74*
Aroclor-1260	1	11.186	0.000	78868	264.5	1	11.784	-0.001	239449	269.8
Aroclor-1260	2	11.503	-0.000	79008	270.1	2	12.044	-0.001	634321	278.4
Aroclor-1260	3	11.872	-0.000	193201	270.7	3	12.630	-0.001	407941	280.2
Aroclor-1260	4	12.274	-0.000	96399	274.6	4	13.356	-0.001	191189	276.6
Aroclor-1260	5	12.388	-0.000	41839	246.7	NS	---			----
Total Col1Ave (5 peaks):				265.3		Total Col2Ave (4 peaks):			276.2	RPD = 4
Corrected Ave (4 peaks):				263.0		Corrected Ave (3 peaks):			274.9	RPD = 4
Aroclor-1262	1	10.959	0.000	120342	493.6	1	11.330	0.000	243002	175.2
Aroclor-1262	2	12.388	-0.000	41839	119.6	2	11.784	-0.000	239449	209.7
Aroclor-1262	3	12.461	-0.000	50183	141.1	3	12.565	-0.001	195284	142.3
Aroclor-1262	4	13.127	0.000	48250	161.1	4	12.630	-0.001	407941	208.7
Total Col1Ave (4 peaks):				228.9		Total Col2Ave (4 peaks):			184.0	RPD = 22
Corrected Ave (3 peaks):				140.6		Corrected Ave (3 peaks):			175.4	RPD = 22
Aroclor-1268	1	12.388	-0.000	41839	45.1	1	12.565	-0.003	195284	57.0
Aroclor-1268	2	12.461	0.001	50183	59.6	2	12.630	-0.003	407941	117.6
Aroclor-1268	3	12.866	0.018	22728	31.4	3	13.030	-0.003	4919	1.6
Aroclor-1268	4	13.632	-0.002	8617	4.1	4	13.843	-0.007	31940	2.9
Total Col1Ave (4 peaks):				35.0		Total Col2Ave (4 peaks):			44.8	RPD = 24
Corrected Ave (3 peaks):				26.9		Corrected Ave (3 peaks):			20.5	RPD = 27

Total PCB Area Col1 (6.047 - 13.941) = 1941365 Col1 Total PCB = 0.5 ppm*

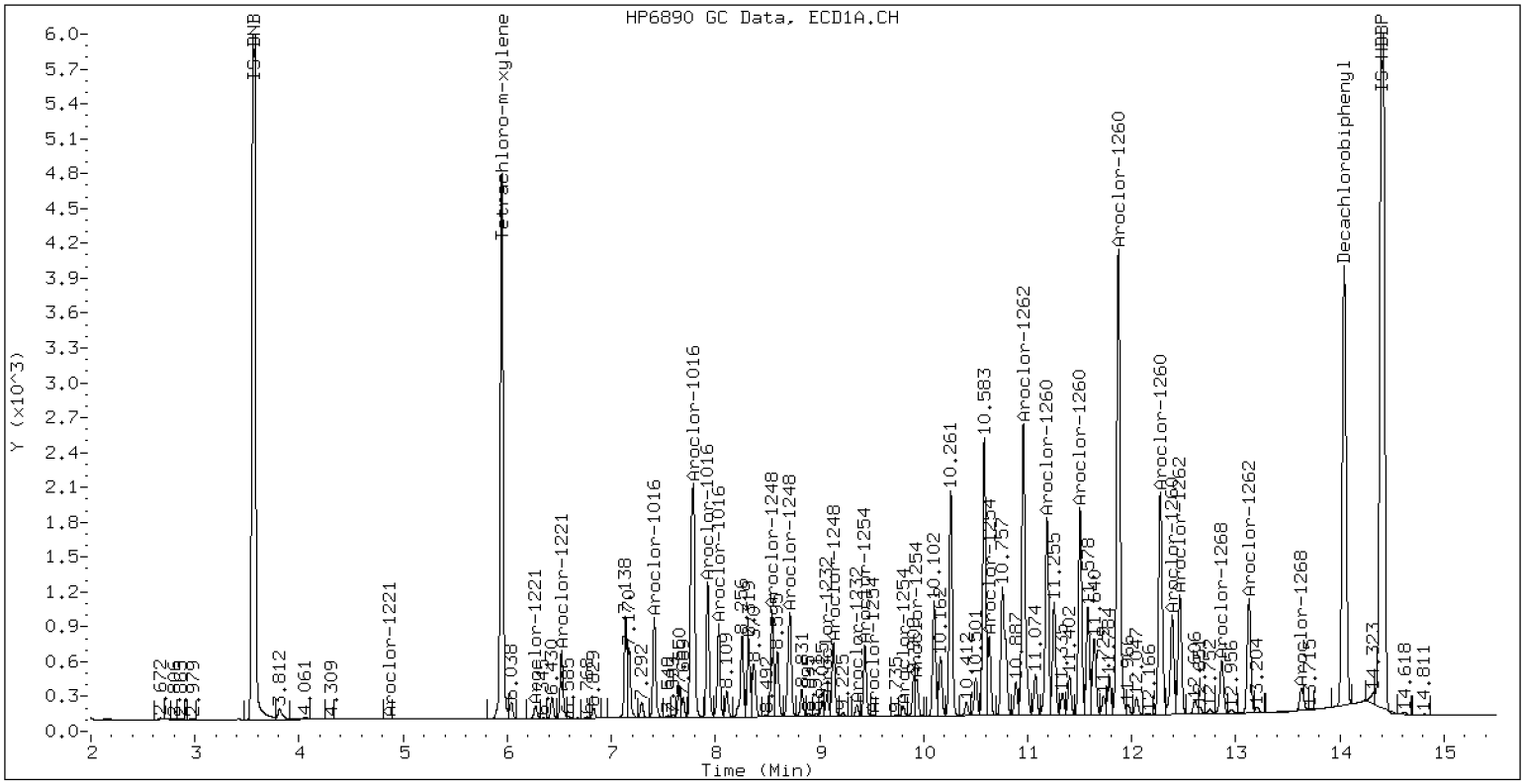
Total PCB Area Col2 (6.047 - 13.941) = 5636549 Col2 Total PCB = 0.6 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

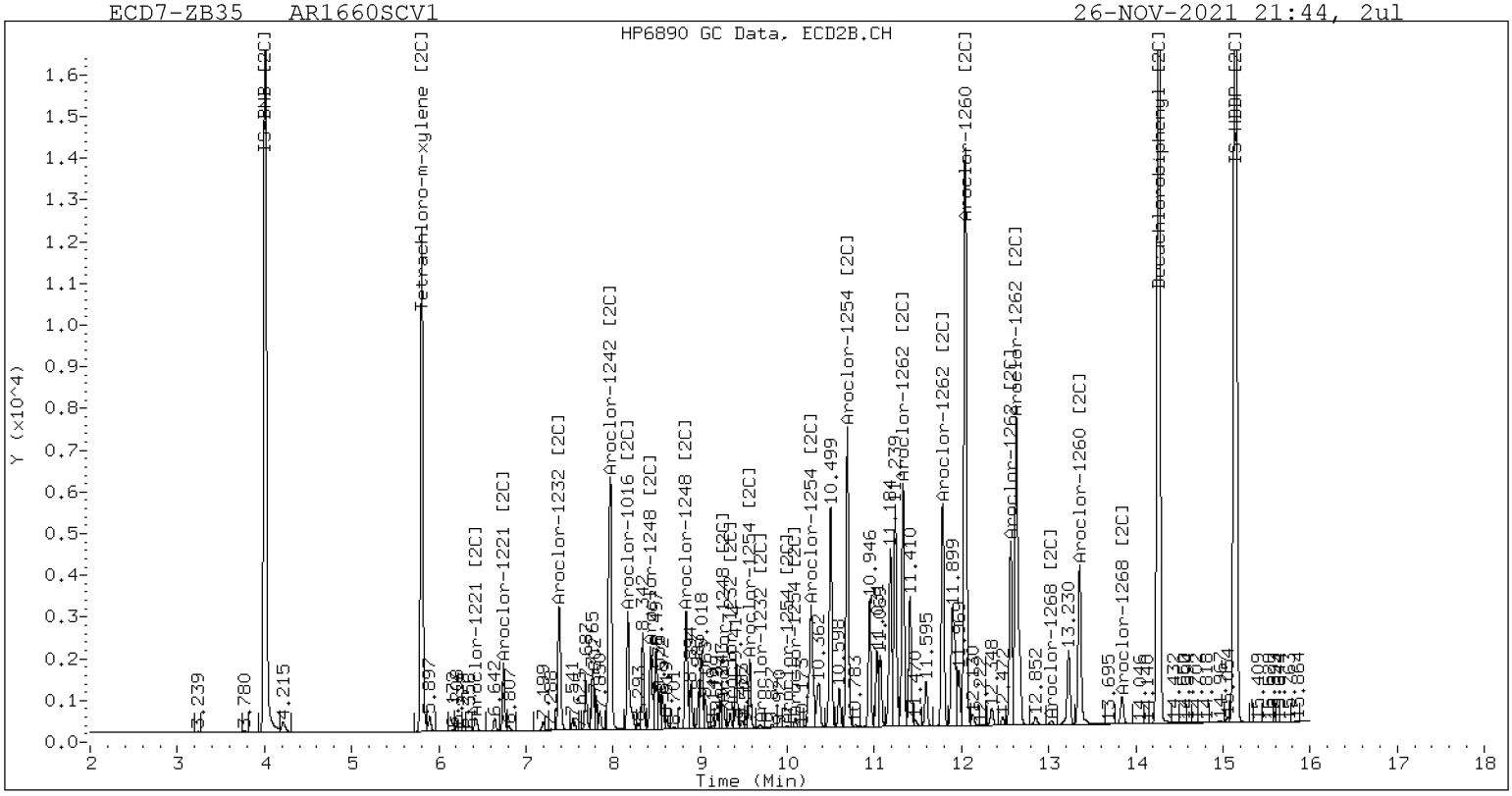
PCB Dual Column Chromatograms

ECD7-ZB5 AR1660SCV1 26-NOV-2021 21:44, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1660SCV1 26-NOV-2021 21:44, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

SECOND-SOURCE CALIBRATION VERIFICATION

EPA 8082A

Laboratory: Analytical Resources, LLC
Client: Anchor QEA, LLC
Calibration: EK00072
Sequence: SJK0390

SDG: 21K0332
Project: Lower Duwamish AOC4
Laboratory ID: SJK0390-SCV2
Sequence Name: AR1242SCV2
Standard ID: J008140

ANALYTE	EXPECTED (ug/L)	FOUND (ug/L)	% DRIFT	QC LIMIT
Aroclor 1242	250.00	240	-4.0	20.00
Aroclor 1242 [2C]	250.00	245	-2.2	20.00
Decachlorobiphenyl	40.000	40.2	0.6	20.00
Tetrachlorometaxylene	40.000	39.7	-0.8	20.00
Decachlorobiphenyl [2C]	40.000	44.6	11.5	20.00
Tetrachlorometaxylene [2C]	40.000	39.9	-0.3	20.00

* Indicates values outside of QC limits
[2C] indicates second-column analyte.

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262118ECD7.D
Data file 2: /211126.b/211126.b/11262118ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1242SCV2
Client ID:
Injection Date: 26-NOV-2021 22:05
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.948	0.001	182706	5.807	0.000	469751	39.7	39.9	0.4	Tetrachloro-m-xylene
14.042	0.001	201815	14.263	-0.001	1022196	40.2	44.6	10.4	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	347126	4.8
Hexabromobiphenyl	407599	433407	6.3

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	928670	3.4
Hexabromobiphenyl	1136250	1244992	9.6

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
		ZB5 Col					ZB35 Col			
Aroclor-1016	1	7.413	-0.000	25157	189.4	1	7.383	0.000	104696	200.6
Aroclor-1016	2	7.788	0.001	85960	188.4	2	7.970	-0.001	240361	197.3
Aroclor-1016	3	7.927	0.000	33603	189.3	3	8.172	-0.000	93740	198.2
Aroclor-1016	4	8.033	0.001	23081	189.7	4	8.431	-0.001	66569	205.1
Total Col1Ave (4 peaks):				189.2		Total Col2Ave (4 peaks):			200.3	RPD = 6
Corrected Ave (3 peaks):				189.0		Corrected Ave (3 peaks):			198.7	RPD = 5
Aroclor-1221	1	4.864	-0.000	174	5.9	1	---			0.0
Aroclor-1221	2	6.272	-0.001	3169	59.6	2	6.426	0.006	11987	74.8
Aroclor-1221	3	6.523	0.000	17219	132.7	3	6.745	0.000	42434	143.5
Total Col1Ave (3 peaks):				66.0		Col2Ave: <3 Quant Peaks				
Aroclor-1232	1	4.864	-0.003	174	9.9	1	---			0.0
Aroclor-1232	2	7.788	-0.000	85960	443.5	2	7.383	-0.001	104696	411.5
Aroclor-1232	3	9.072	-0.000	30765	483.4	3	9.345	0.000	81908	471.1
Aroclor-1232	4	9.358	-0.000	32026	466.4	4	9.692	-0.001	103595	491.5
Total Col1Ave (4 peaks):				350.8		Total Col2Ave (3 peaks):			458.0	RPD = 27
Corrected Ave (3 peaks):				306.6		Corrected Ave: < 3 Peaks				
Aroclor-1242	1	7.413	-0.001	25157	232.8	1	7.383	0.001	104696	236.8
Aroclor-1242	2	7.788	0.001	85960	234.8	2	7.970	-0.001	240361	239.1
Aroclor-1242	3	9.072	0.000	30765	248.7	3	9.345	-0.000	81908	244.0
Aroclor-1242	4	9.358	-0.000	32026	243.7	4	9.692	-0.002	103595	258.5
Total Col1Ave (4 peaks):				240.0		Total Col2Ave (4 peaks):			244.6	RPD = 2
Corrected Ave (3 peaks):				237.1		Corrected Ave (3 peaks):			240.0	RPD = 1
Aroclor-1248	1	8.546	-0.000	27445	151.8	1	8.431	0.000	66569	151.5
Aroclor-1248	2	8.716	-0.000	34001	163.2	2	8.840	0.001	95323	180.1
Aroclor-1248	3	9.127	0.000	37644	140.2	3	9.269	-0.000	104598	138.7
Aroclor-1248	4	9.358	-0.000	32026	147.8	4	9.692	-0.001	103595	143.8
Total Col1Ave (4 peaks):				150.7		Total Col2Ave (4 peaks):			153.5	RPD = 2
Corrected Ave (3 peaks):				146.6		Corrected Ave (3 peaks):			144.7	RPD = 1
Aroclor-1254	1	9.435	-0.001	14995	43.1	1	9.571	0.000	28043	37.6
Aroclor-1254	2	9.512	-0.000	6245	54.6	2	10.002	0.001	15844	52.5
Aroclor-1254	3	9.803	0.000	10238	44.7	3	10.092	-0.001	26441	45.4
Aroclor-1254	4	9.937	-0.000	17113	39.6	4	10.240	-0.001	46700	38.7
Aroclor-1254	5	10.643	0.002	11438	38.2	5	10.692	0.002	11927	19.9
Total Col1Ave (5 peaks):				44.0		Total Col2Ave (5 peaks):			38.8	RPD = 13
Corrected Ave (4 peaks):				41.4		Corrected Ave (4 peaks):			35.4	RPD = 16
Aroclor-1260	1	11.185	-0.002	328	1.1	1	11.784	-0.001	5949	6.6
Aroclor-1260	2	11.505	0.002	320	1.1	2	12.044	-0.001	2811	1.2
Aroclor-1260	3	11.871	-0.001	725	1.0	3	12.628	-0.003	1827	1.2
Aroclor-1260	4	12.273	-0.002	745	2.1	4	13.346	-0.010	454	0.7
Aroclor-1260	5	12.396	0.008	113	0.7	NS	---			----
Total Col1Ave (5 peaks):				1.2		Total Col2Ave (4 peaks):			2.4	RPD = 69*
Corrected Ave (4 peaks):				1.0		Corrected Ave (3 peaks):			1.0	RPD = 7
Aroclor-1262	1	10.960	0.001	7525	30.7	1	11.329	-0.001	1164	0.8
Aroclor-1262	2	12.396	0.008	113	0.3	2	11.784	-0.000	5949	5.2
Aroclor-1262	3	---			0.0	3	12.571	0.005	584	0.4
Aroclor-1262	4	---			0.0	4	12.628	-0.003	1827	0.9
Col1Ave: <3 Quant Peaks						Col2Ave: 1.8				
Aroclor-1268	1	12.396	0.008	113	0.1	1	12.571	0.003	584	0.2
Aroclor-1268	2	---			0.0	2	12.628	-0.005	1827	0.5
Aroclor-1268	3	12.850	0.002	290	0.4	3	13.034	0.001	652	0.2
Aroclor-1268	4	13.708	0.075	149	0.1	4	13.844	-0.007	929	0.1
Total Col1Ave (3 peaks):				0.2		Total Col2Ave (4 peaks):			0.2	RPD = 22
Corrected Ave: < 3 Peaks						Corrected Ave (3 peaks):			0.2	

Total PCB Area Col1 (6.047 - 13.941) = 660095 Col1 Total PCB = 0.2 ppm*

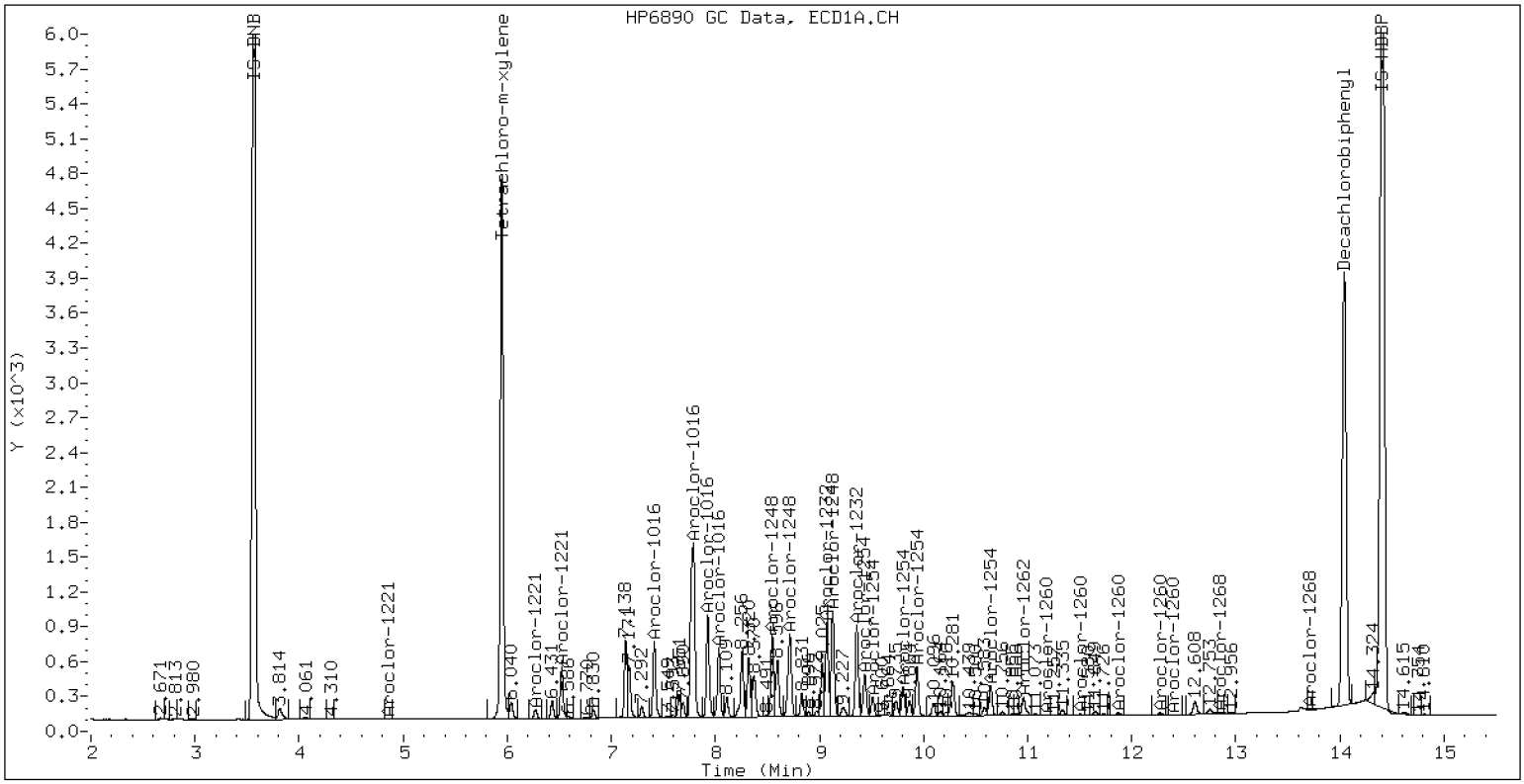
Total PCB Area Col2 (6.047 - 13.941) = 1804844 Col2 Total PCB = 0.2 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

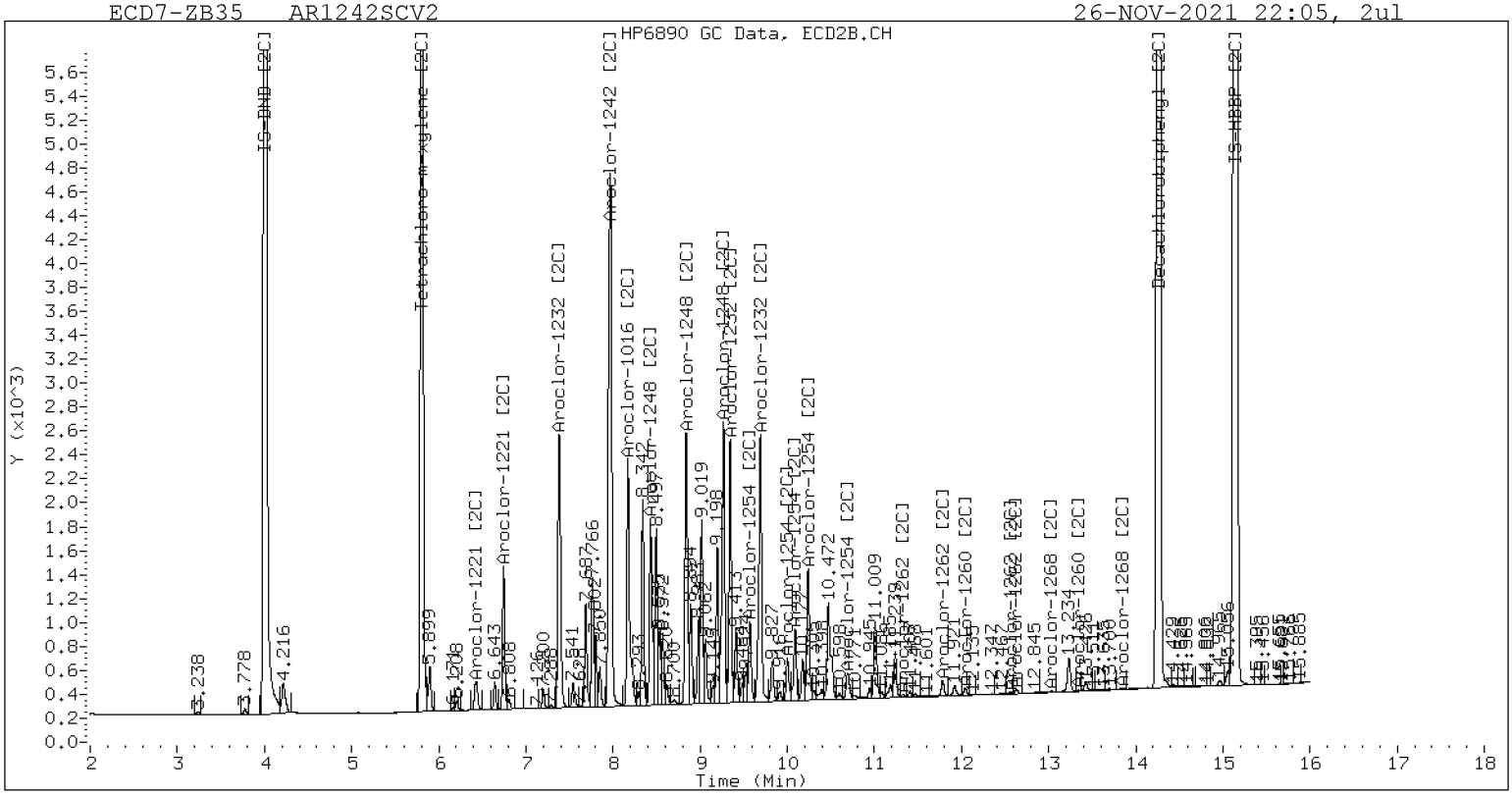
PCB Dual Column Chromatograms

ECD7-ZB5 AR1242SCV2 26-NOV-2021 22:05, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1242SCV2 26-NOV-2021 22:05, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

SECOND-SOURCE CALIBRATION VERIFICATION

EPA 8082A

Laboratory: Analytical Resources, LLC
Client: Anchor QEA, LLC
Calibration: EK00072
Sequence: SJK0390

SDG: 21K0332
Project: Lower Duwamish AOC4
Laboratory ID: SJK0390-SCV3
Sequence Name: AR1248SCV3
Standard ID: J008141

ANALYTE	EXPECTED (ug/L)	FOUND (ug/L)	% DRIFT	QC LIMIT
Aroclor 1248	250.00	253	1.3	20.00
Aroclor 1248 [2C]	250.00	258	3.1	20.00
Decachlorobiphenyl	40.000	40.3	0.8	20.00
Tetrachlorometaxylene	40.000	39.8	-0.5	20.00
Decachlorobiphenyl [2C]	40.000	44.6	11.6	20.00
Tetrachlorometaxylene [2C]	40.000	40.1	0.2	20.00

* Indicates values outside of QC limits
[2C] indicates second-column analyte.

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262119ECD7.D
Data file 2: /211126.b/211126.b/11262119ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1248SCV3
Client ID:
Injection Date: 26-NOV-2021 22:26
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.947	-0.000	182915	5.806	-0.001	470143	39.8	40.1	0.7	Tetrachloro-m-xylene
14.041	-0.001	201789	14.263	-0.001	1021839	40.3	44.6	10.1	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	346515	4.6
Hexabromobiphenyl	407599	432252	6.0

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	924205	2.9
Hexabromobiphenyl	1136250	1244332	9.5

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.413	-0.000	12999	98.1	1	7.381	-0.002	55717	107.3
Aroclor-1016	2	7.785	-0.002	59544	130.7	2	7.969	-0.002	165358	136.4
Aroclor-1016	3	7.928	0.002	20933	118.1	3	8.172	-0.000	40569	86.2
Aroclor-1016	4	8.033	0.000	14391	118.5	4	8.431	-0.000	113775	352.2
Total Col1Ave (4 peaks): 116.3						Total Col2Ave (4 peaks): 170.5				RPD = 38
Corrected Ave (3 peaks): 111.5						Corrected Ave (3 peaks): 110.0				RPD = 1
Aroclor-1221	1	---			0.0	1	---			0.0
Aroclor-1221	2	6.272	-0.002	541	10.2	2	6.439	0.020	6343	39.8
Aroclor-1221	3	6.522	-0.000	3629	28.0	3	6.746	0.001	9310	31.6
Col1Ave: <3 Quant Peaks						Col2Ave: <3 Quant Peaks				
Aroclor-1232	1	---			0.0	1	---			0.0
Aroclor-1232	2	7.785	-0.002	59544	307.7	2	7.381	-0.003	55717	220.0
Aroclor-1232	3	9.072	-0.000	57730	908.6	3	9.345	0.000	142014	820.7
Aroclor-1232	4	9.358	0.000	53739	783.9	4	9.693	-0.000	180733	861.5
Total Col1Ave (3 peaks): 666.8						Total Col2Ave (3 peaks): 634.1				RPD = 5
Corrected Ave: < 3 Peaks						Corrected Ave: < 3 Peaks				
Aroclor-1242	1	7.413	-0.001	12999	120.5	1	7.381	-0.002	55717	126.6
Aroclor-1242	2	7.785	-0.001	59544	162.9	2	7.969	-0.002	165358	165.3
Aroclor-1242	3	9.072	0.000	57730	467.6	3	9.345	-0.001	142014	425.1
Aroclor-1242	4	9.358	-0.000	53739	409.6	4	9.693	-0.001	180733	453.2
Total Col1Ave (4 peaks): 290.2						Total Col2Ave (4 peaks): 292.6				RPD = 1
Corrected Ave (3 peaks): 231.0						Corrected Ave (3 peaks): 239.0				RPD = 3
Aroclor-1248	1	8.546	-0.001	46966	260.2	1	8.431	0.000	113775	260.1
Aroclor-1248	2	8.715	-0.001	52600	252.9	2	8.839	-0.000	139569	265.0
Aroclor-1248	3	9.127	0.001	67343	251.2	3	9.268	-0.001	190581	254.0
Aroclor-1248	4	9.358	-0.000	53739	248.4	4	9.693	-0.000	180733	252.2
Total Col1Ave (4 peaks): 253.2						Total Col2Ave (4 peaks): 257.8				RPD = 2
Corrected Ave (3 peaks): 250.8						Corrected Ave (3 peaks): 255.4				RPD = 2
Aroclor-1254	1	9.435	-0.001	31227	90.0	1	9.571	-0.000	55883	75.3
Aroclor-1254	2	9.512	-0.000	14052	123.0	2	10.002	0.001	36985	123.2
Aroclor-1254	3	9.803	-0.000	21802	95.4	3	10.092	-0.000	56433	97.3
Aroclor-1254	4	9.937	0.000	35611	82.5	4	10.240	-0.001	99627	82.9
Aroclor-1254	5	10.645	0.004	24687	82.6	5	10.696	0.006	15931	26.6
Total Col1Ave (5 peaks): 94.7						Total Col2Ave (5 peaks): 81.1				RPD = 16
Corrected Ave (4 peaks): 87.6						Corrected Ave (4 peaks): 70.5				RPD = 22
Aroclor-1260	1	11.186	-0.000	1122	3.8	1	11.784	-0.001	7626	8.5
Aroclor-1260	2	11.503	0.000	884	3.0	2	12.044	-0.001	6508	2.8
Aroclor-1260	3	11.872	-0.000	2573	3.6	3	12.629	-0.002	4330	2.9
Aroclor-1260	4	12.275	0.000	936	2.7	4	13.354	-0.002	2812	4.0
Aroclor-1260	5	12.388	-0.000	827	4.9	NS	---			----
Total Col1Ave (5 peaks): 3.6						Total Col2Ave (4 peaks): 4.6				RPD = 25
Corrected Ave (4 peaks): 3.3						Corrected Ave (3 peaks): 3.3				RPD = 0
Aroclor-1262	1	10.960	0.001	7473	30.6	1	11.329	-0.001	3519	2.5
Aroclor-1262	2	12.388	-0.000	827	2.4	2	11.784	-0.000	7626	6.6
Aroclor-1262	3	12.462	0.000	852	2.4	3	12.565	-0.002	3459	2.5
Aroclor-1262	4	13.126	-0.001	794	2.6	4	12.629	-0.002	4330	2.2
Total Col1Ave (4 peaks): 9.5						Total Col2Ave (4 peaks): 3.5				RPD = 93*
Corrected Ave (3 peaks): 2.5						Corrected Ave (3 peaks): 2.4				RPD = 3
Aroclor-1268	1	12.388	-0.001	827	0.9	1	12.565	-0.004	3459	1.0
Aroclor-1268	2	12.462	0.002	852	1.0	2	12.629	-0.004	4330	1.2
Aroclor-1268	3	12.857	0.010	1058	1.5	3	13.032	-0.001	1600	0.5
Aroclor-1268	4	13.631	-0.003	1307	0.6	4	13.842	-0.008	2845	0.3
Total Col1Ave (4 peaks): 1.0						Total Col2Ave (4 peaks): 0.8				RPD = 28
Corrected Ave (3 peaks): 0.8						Corrected Ave (3 peaks): 0.6				RPD = 35

Total PCB Area Col1 (6.047 - 13.941) = 837591 Col1 Total PCB = 0.2 ppm*

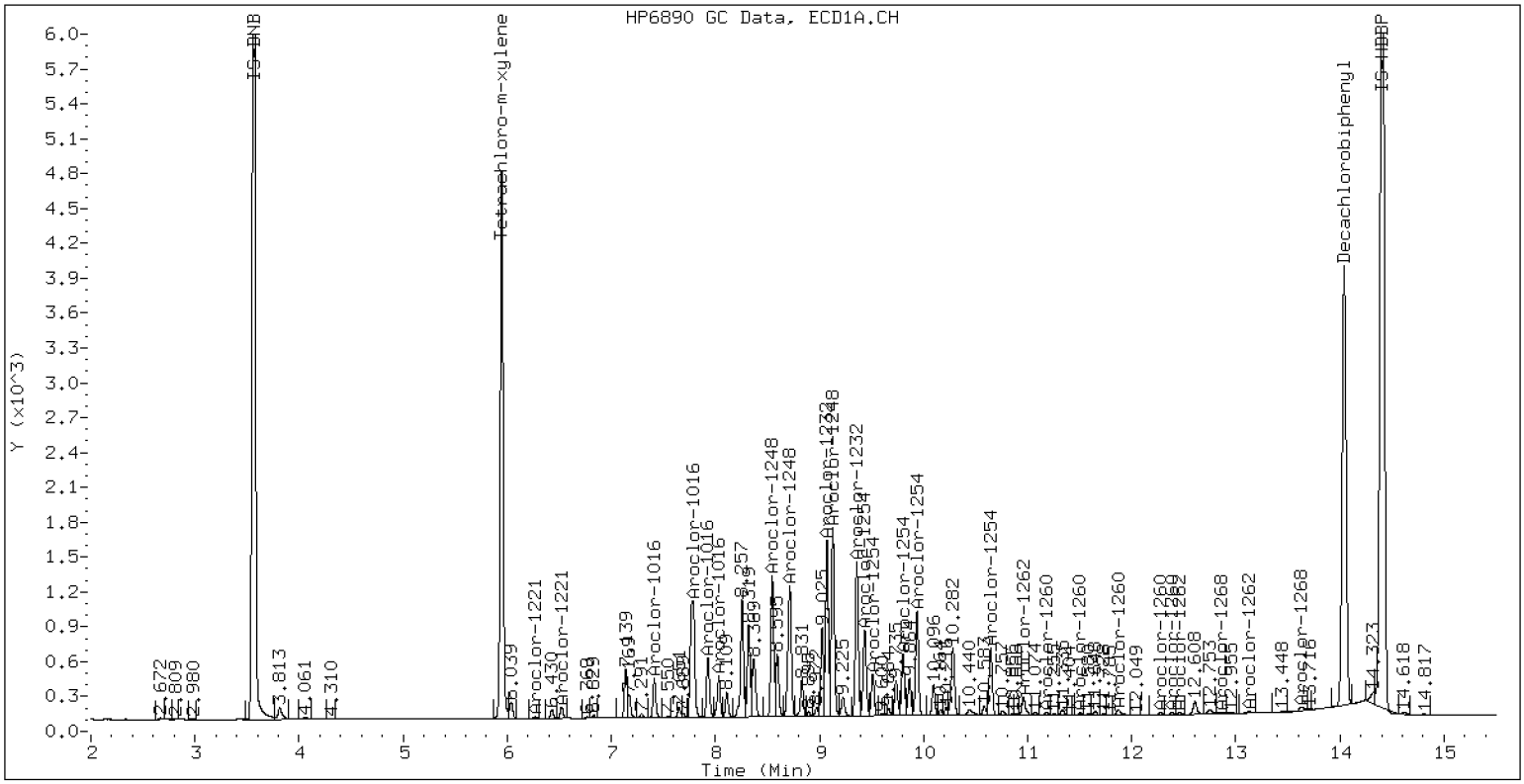
Total PCB Area Col2 (6.047 - 13.941) = 2310633 Col2 Total PCB = 0.2 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

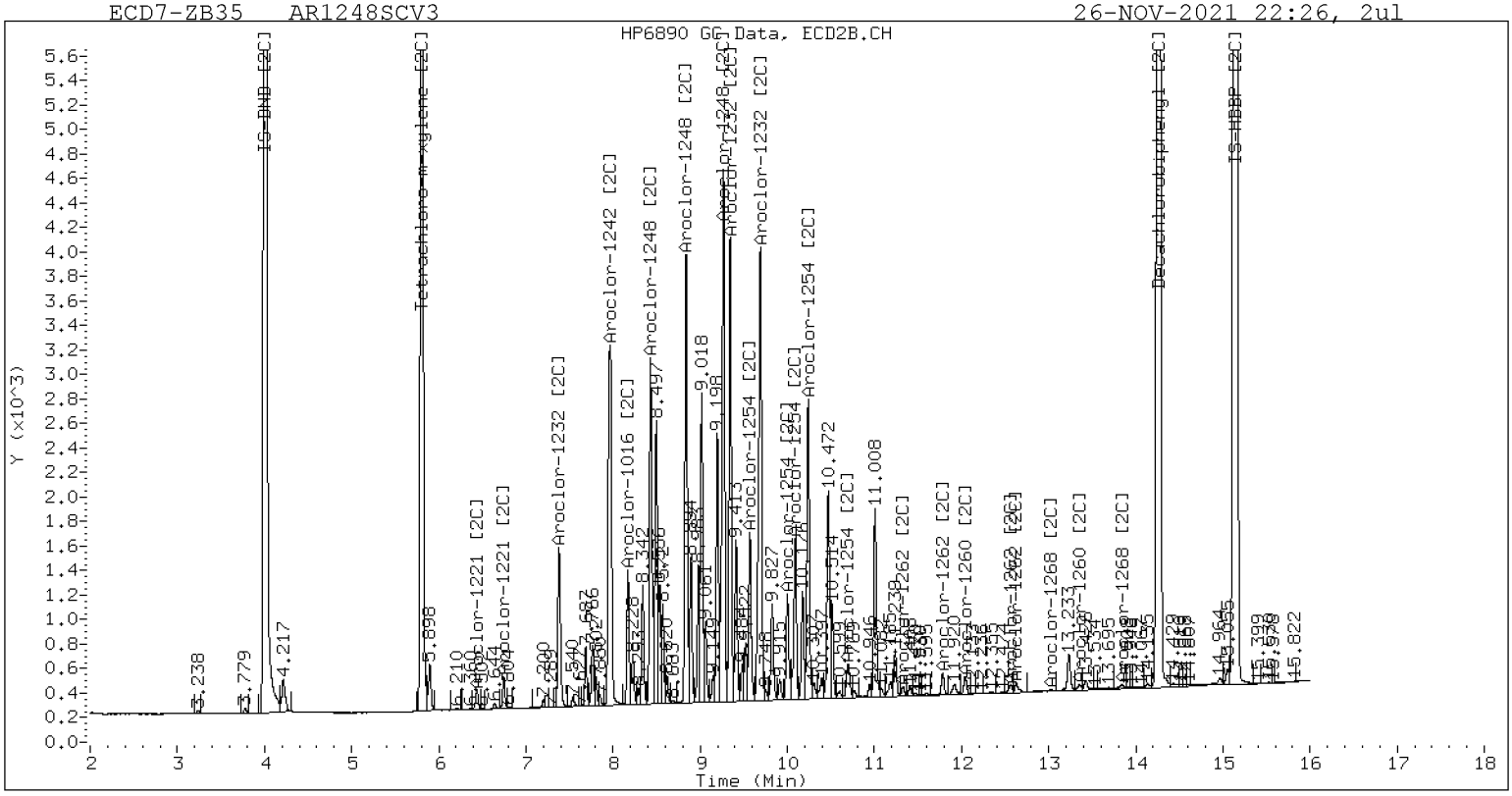
PCB Dual Column Chromatograms

ECD7-ZB5 AR1248SCV3 26-NOV-2021 22:26, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1248SCV3 26-NOV-2021 22:26, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

SECOND-SOURCE CALIBRATION VERIFICATION

EPA 8082A

Laboratory: Analytical Resources, LLC
Client: Anchor QEA, LLC
Calibration: EK00072
Sequence: SJK0390

SDG: 21K0332
Project: Lower Duwamish AOC4
Laboratory ID: SJK0390-SCV4
Sequence Name: AR1254SCV4
Standard ID: J008142

ANALYTE	EXPECTED (ug/L)	FOUND (ug/L)	% DRIFT	QC LIMIT
Aroclor 1254	250.00	253	1.0	20.00
Aroclor 1254 [2C]	250.00	259	3.6	20.00
Decachlorobiphenyl	40.000	40.1	0.2	20.00
Tetrachlorometaxylene	40.000	39.8	-0.5	20.00
Decachlorobiphenyl [2C]	40.000	44.3	10.8	20.00
Tetrachlorometaxylene [2C]	40.000	40.0	-0.04	20.00

* Indicates values outside of QC limits
[2C] indicates second-column analyte.

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262120ECD7.D
Data file 2: /211126.b/211126.b/11262120ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1254SCV4
Client ID:
Injection Date: 26-NOV-2021 22:47
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	ZB5 Col Shift	ZB5 Col Response	ZB35 Col RT	ZB35 Col Shift	ZB35 Col Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.948	0.001	182205	5.807	-0.000	466134	39.8	40.0	0.4	Tetrachloro-m-xylene
14.042	0.001	199870	14.262	-0.002	1018164	40.1	44.3	10.0	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	345092	4.2
Hexabromobiphenyl	407599	430759	5.7

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	918890	2.3
Hexabromobiphenyl	1136250	1248828	9.9

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

Aroclor	ZB5 Col Peak#	RT	Shift	Area	Amount	ZB35 Col Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.413	0.000	382	2.9	1	7.382	-0.001	1494	2.9
Aroclor-1016	2	7.772	-0.015	1738	3.8	2	7.958	-0.013	4168	3.5
Aroclor-1016	3	7.933	0.006	971	5.5	3	8.173	0.001	828	1.8
Aroclor-1016	4	8.033	0.001	384	3.2	4	8.431	-0.000	73497	228.8
Total Col1Ave (4 peaks):					3.9	Total Col2Ave (4 peaks):				59.2 RPD = 176*
Corrected Ave (3 peaks):					3.3	Corrected Ave (3 peaks):				2.7 RPD = 20
Aroclor-1221	1	---			0.0	1	---			0.0
Aroclor-1221	2	---			0.0	2	6.442	0.022	5257	33.1
Aroclor-1221	3	---			0.0	3	6.751	0.006	1515	5.2
Col1Ave: <3 Quant Peaks						Col2Ave: <3 Quant Peaks				
Aroclor-1232	1	---			0.0	1	---			0.0
Aroclor-1232	2	7.772	-0.016	1738	9.0	2	7.382	-0.002	1494	5.9
Aroclor-1232	3	9.072	0.000	27682	437.5	3	9.345	-0.000	23888	138.8
Aroclor-1232	4	9.359	0.001	18777	275.0	4	9.665	-0.028	93470	448.1
Total Col1Ave (3 peaks):					240.5	Total Col2Ave (3 peaks):				197.6 RPD = 20
Corrected Ave: < 3 Peaks						Corrected Ave: < 3 Peaks				
Aroclor-1242	1	7.413	-0.000	382	3.6	1	7.382	-0.001	1494	3.4
Aroclor-1242	2	7.772	-0.015	1738	4.8	2	7.958	-0.013	4168	4.2
Aroclor-1242	3	9.072	0.001	27682	225.1	3	9.345	-0.001	23888	71.9
Aroclor-1242	4	9.359	0.001	18777	143.7	4	9.665	-0.029	93470	235.7
Total Col1Ave (4 peaks):					94.3	Total Col2Ave (4 peaks):				78.8 RPD = 18
Corrected Ave (3 peaks):					50.7	Corrected Ave (3 peaks):				26.5 RPD = 63*
Aroclor-1248	1	8.546	-0.001	16462	91.6	1	8.431	0.000	73497	169.0
Aroclor-1248	2	8.716	0.000	7362	35.5	2	8.839	0.000	42045	80.3
Aroclor-1248	3	9.136	0.009	59751	223.8	3	9.269	0.000	78196	104.8
Aroclor-1248	4	9.359	0.001	18777	87.2	4	9.665	-0.028	93470	131.2
Total Col1Ave (4 peaks):					109.5	Total Col2Ave (4 peaks):				121.3 RPD = 10
Corrected Ave (3 peaks):					71.4	Corrected Ave (3 peaks):				105.4 RPD = 38
Aroclor-1254	1	9.436	-0.000	87277	252.6	1	9.572	0.001	191982	260.1
Aroclor-1254	2	9.512	-0.000	29112	255.9	2	10.001	-0.000	76126	255.1
Aroclor-1254	3	9.803	0.000	57808	254.0	3	10.093	0.000	150250	260.5
Aroclor-1254	4	9.937	-0.000	106810	248.4	4	10.243	0.001	302523	253.1
Aroclor-1254	5	10.640	-0.001	74925	251.9	5	10.691	0.001	158041	265.8
Total Col1Ave (5 peaks):					252.5	Total Col2Ave (5 peaks):				258.9 RPD = 3
Corrected Ave (4 peaks):					251.7	Corrected Ave (4 peaks):				257.2 RPD = 2
Aroclor-1260	1	11.184	-0.003	5210	17.5	1	11.784	-0.001	88404	98.4
Aroclor-1260	2	11.504	0.001	6169	21.1	2	12.044	-0.001	52830	22.9
Aroclor-1260	3	11.871	-0.001	13756	19.3	3	12.628	-0.003	33063	22.4
Aroclor-1260	4	12.274	-0.001	13458	38.4	4	13.354	-0.003	1884	2.7
Aroclor-1260	5	12.389	0.000	454	2.7	NS	---			----
Total Col1Ave (5 peaks):					19.8	Total Col2Ave (4 peaks):				36.6 RPD = 60*
Corrected Ave (4 peaks):					15.1	Corrected Ave (3 peaks):				16.0 RPD = 6
Aroclor-1262	1	10.960	0.001	114541	470.1	1	11.329	-0.001	12706	9.0
Aroclor-1262	2	12.389	0.000	454	1.3	2	11.784	-0.000	88404	76.4
Aroclor-1262	3	12.461	-0.000	544	1.5	3	12.567	0.000	6638	4.8
Aroclor-1262	4	13.127	-0.000	440	1.5	4	12.628	-0.003	33063	16.7
Total Col1Ave (4 peaks):					118.6	Total Col2Ave (4 peaks):				26.7 RPD = 126*
Corrected Ave (3 peaks):					1.4	Corrected Ave (3 peaks):				10.2 RPD = 151*
Aroclor-1268	1	12.389	-0.000	454	0.5	1	12.567	-0.002	6638	1.9
Aroclor-1268	2	12.461	0.001	544	0.6	2	12.628	-0.005	33063	9.4
Aroclor-1268	3	12.860	0.013	1068	1.5	3	13.031	-0.002	615	0.2
Aroclor-1268	4	13.708	0.075	236	0.1	4	13.841	-0.009	857	0.1
Total Col1Ave (4 peaks):					0.7	Total Col2Ave (4 peaks):				2.9 RPD = 124*
Corrected Ave (3 peaks):					0.4	Corrected Ave (3 peaks):				0.7 RPD = 55*

Total PCB Area Col1 (6.047 - 13.941) = 1107221 Col1 Total PCB = 0.3 ppm*

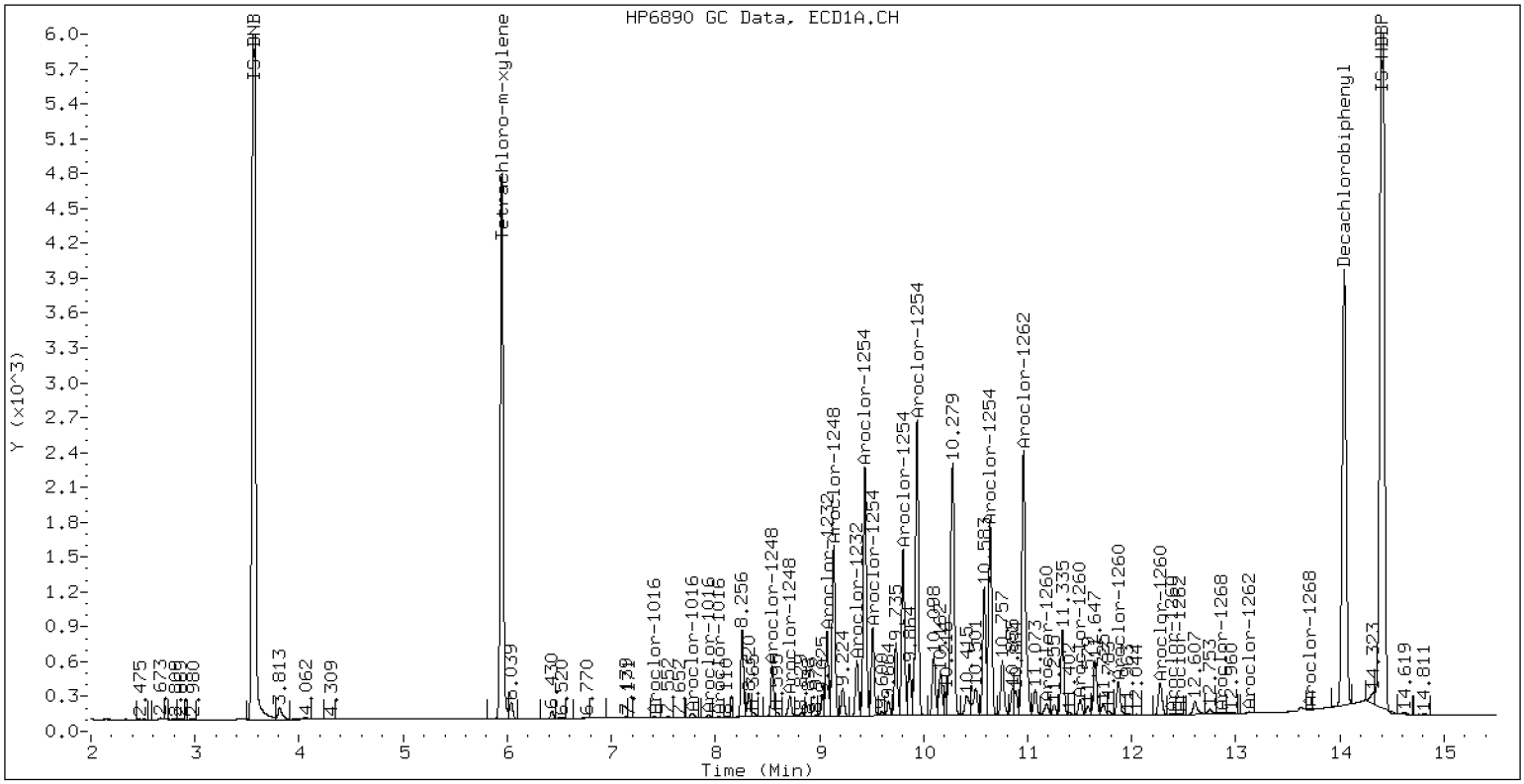
Total PCB Area Col2 (6.047 - 13.941) = 3079798 Col2 Total PCB = 0.3 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

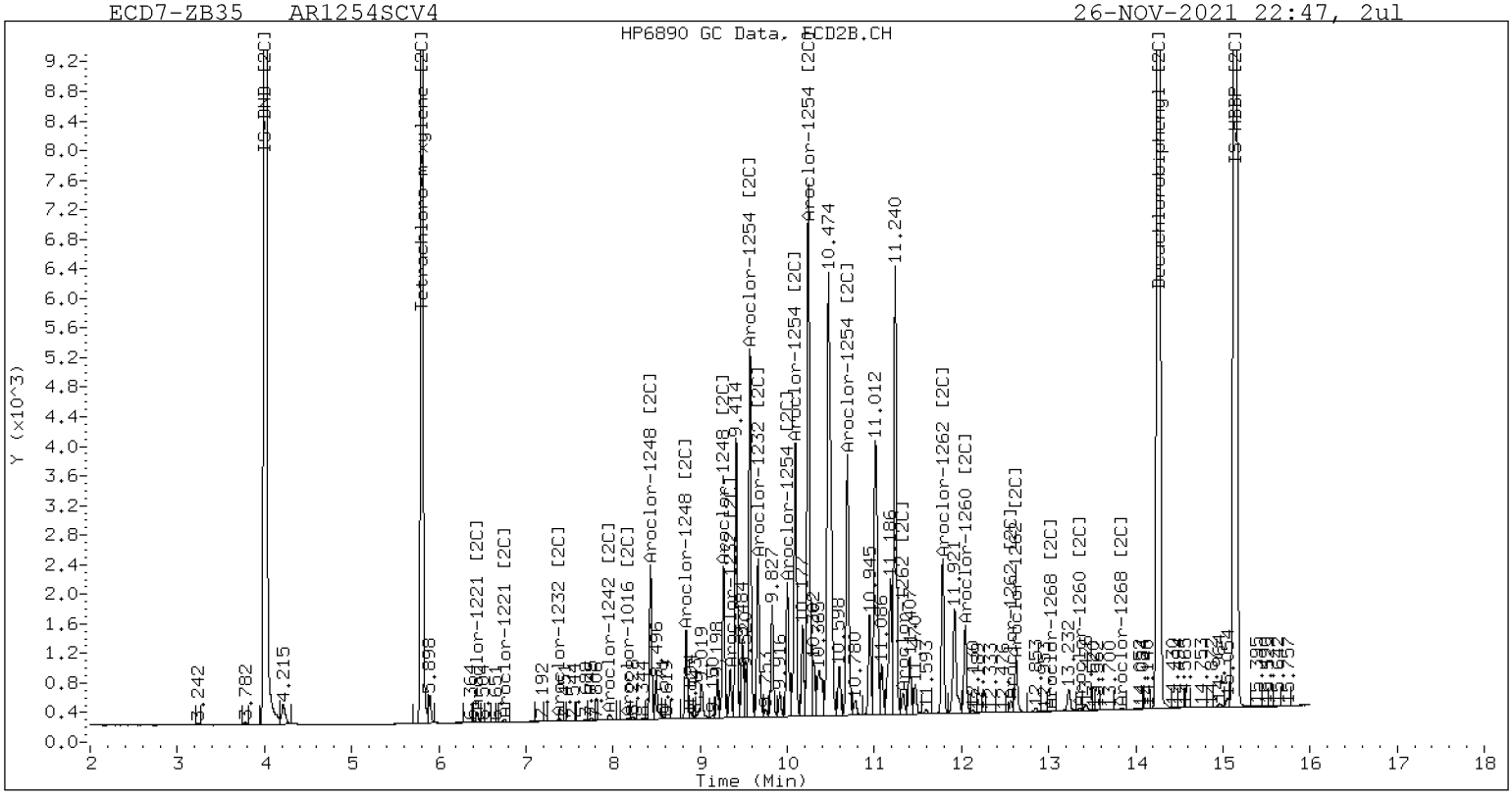
PCB Dual Column Chromatograms

ECD7-ZB5 AR1254SCV4 26-NOV-2021 22:47, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1254SCV4 26-NOV-2021 22:47, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

SECOND-SOURCE CALIBRATION VERIFICATION

EPA 8082A

Laboratory: Analytical Resources, LLC
Client: Anchor QEA, LLC
Calibration: EK00072
Sequence: SJK0390

SDG: 21K0332
Project: Lower Duwamish AOC4
Laboratory ID: SJK0390-SCV5
Sequence Name: AR2162SCV5
Standard ID: J008143

ANALYTE	EXPECTED (ug/L)	FOUND (ug/L)	% DRIFT	QC LIMIT
Aroclor 1221	250.00	259	3.8	20.00
Aroclor 1221 [2C]	250.00	261	4.5	20.00
Decachlorobiphenyl	40.000	40.2	0.6	20.00
Tetrachlorometaxylene	40.000	40.3	0.8	20.00
Decachlorobiphenyl [2C]	40.000	44.6	11.5	20.00
Tetrachlorometaxylene [2C]	40.000	40.1	0.3	20.00

* Indicates values outside of QC limits
[2C] indicates second-column analyte.

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262121ECD7.D
Data file 2: /211126.b/211126.b/11262121ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR2162SCV5
Client ID:
Injection Date: 26-NOV-2021 23:08
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.947	0.000	184681	5.806	-0.001	462758	40.3	40.1	0.4	Tetrachloro-m-xylene
14.041	-0.000	200761	14.262	-0.002	1029177	40.2	44.6	10.3	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	345589	4.4
Hexabromobiphenyl	407599	431073	5.8

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	908918	1.2
Hexabromobiphenyl	1136250	1254165	10.4

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.413	0.000	2856	21.6	1	7.394	0.011	21318	41.7
Aroclor-1016	2	7.787	0.000	7860	17.3	2	7.971	-0.000	19978	16.8
Aroclor-1016	3	7.926	-0.001	3490	19.7	3	8.172	0.000	8826	19.1
Aroclor-1016	4	8.033	0.000	2143	17.7	4	8.430	-0.002	4599	14.5
Total Col1Ave (4 peaks):					19.1	Total Col2Ave (4 peaks):				23.0 RPD = 19
Corrected Ave (3 peaks):					18.2	Corrected Ave (3 peaks):				16.8 RPD = 8
Aroclor-1221	1	4.865	0.001	7857	266.0	1	5.080	-0.000	15959	269.2
Aroclor-1221	2	6.274	0.000	13597	256.8	2	6.420	-0.000	40386	257.4
Aroclor-1221	3	6.523	0.000	33042	255.7	3	6.745	-0.000	74421	257.2
Total Col1Ave (3 peaks):					259.5	Total Col2Ave (3 peaks):				261.3 RPD = 1
Corrected Ave: < 3 Peaks						Corrected Ave: < 3 Peaks				
Aroclor-1232	1	4.865	-0.001	7857	451.1	1	5.080	-0.002	15959	457.2
Aroclor-1232	2	7.787	-0.001	7860	40.7	2	7.394	0.010	21318	85.6
Aroclor-1232	3	9.072	-0.000	1914	30.2	3	9.346	0.001	2996	17.6
Aroclor-1232	4	9.359	0.001	2278	33.3	4	9.689	-0.004	5633	27.3
Total Col1Ave (4 peaks):					138.8	Total Col2Ave (4 peaks):				146.9 RPD = 6
Corrected Ave (3 peaks):					34.8	Corrected Ave (3 peaks):				43.5 RPD = 22
Aroclor-1242	1	7.413	-0.000	2856	26.6	1	7.394	0.012	21318	49.3
Aroclor-1242	2	7.787	0.000	7860	21.6	2	7.971	-0.000	19978	20.3
Aroclor-1242	3	9.072	0.000	1914	15.5	3	9.346	-0.000	2996	9.1
Aroclor-1242	4	9.359	0.000	2278	17.4	4	9.689	-0.005	5633	14.4
Total Col1Ave (4 peaks):					20.3	Total Col2Ave (4 peaks):				23.3 RPD = 14
Corrected Ave (3 peaks):					18.2	Corrected Ave (3 peaks):				14.6 RPD = 22
Aroclor-1248	1	8.546	-0.001	1601	8.9	1	8.430	-0.001	4599	10.7
Aroclor-1248	2	8.715	-0.001	1430	6.9	2	8.841	0.002	5162	10.0
Aroclor-1248	3	9.136	0.009	10779	40.3	3	9.269	-0.000	5122	6.9
Aroclor-1248	4	9.359	0.000	2278	10.6	4	9.689	-0.004	5633	8.0
Total Col1Ave (4 peaks):					16.7	Total Col2Ave (4 peaks):				8.9 RPD = 61*
Corrected Ave (3 peaks):					8.8	Corrected Ave (3 peaks):				8.3 RPD = 6
Aroclor-1254	1	9.437	0.000	12195	35.2	1	9.570	-0.001	29260	40.1
Aroclor-1254	2	9.512	-0.000	1007	8.8	2	10.001	-0.000	2087	7.1
Aroclor-1254	3	9.803	0.000	2308	10.1	3	10.091	-0.001	5083	8.9
Aroclor-1254	4	9.908	-0.030	16371	38.0	4	10.273	0.032	148826	125.9
Aroclor-1254	5	10.631	-0.010	13347	44.8	5	10.689	-0.001	222456	378.3
Total Col1Ave (5 peaks):					27.4	Total Col2Ave (5 peaks):				112.0 RPD = 121*
Corrected Ave (4 peaks):					23.1	Corrected Ave (4 peaks):				45.5 RPD = 65*
Aroclor-1260	1	11.187	0.000	111070	372.6	1	11.784	-0.001	287354	318.3
Aroclor-1260	2	11.504	0.001	91199	311.9	2	12.043	-0.002	686236	296.1
Aroclor-1260	3	11.873	0.001	210202	294.6	3	12.630	-0.001	490536	331.2
Aroclor-1260	4	12.275	0.000	70980	202.2	4	13.356	-0.000	301563	428.9
Aroclor-1260	5	12.389	0.000	86356	509.3	NS	---			----
Total Col1Ave (5 peaks):					338.1	Total Col2Ave (4 peaks):				343.6 RPD = 2
Corrected Ave (4 peaks):					295.3	Corrected Ave (3 peaks):				315.2 RPD = 7
Aroclor-1262	1	10.959	0.000	62979	258.3	1	11.329	-0.000	345514	245.0
Aroclor-1262	2	12.389	0.001	86356	246.9	2	11.784	-0.000	287354	247.4
Aroclor-1262	3	12.462	0.001	87943	247.3	3	12.565	-0.001	343814	246.4
Aroclor-1262	4	13.126	-0.001	74058	247.4	4	12.630	-0.000	490536	246.8
Total Col1Ave (4 peaks):					250.0	Total Col2Ave (4 peaks):				246.4 RPD = 1
Corrected Ave (3 peaks):					247.2	Corrected Ave (3 peaks):				246.1 RPD = 0
Aroclor-1268	1	12.389	0.000	86356	93.0	1	12.565	-0.003	343814	98.7
Aroclor-1268	2	12.462	0.002	87943	104.4	2	12.630	-0.003	490536	139.0
Aroclor-1268	3	12.864	0.017	34261	47.3	3	13.030	-0.003	17281	5.5
Aroclor-1268	4	13.631	-0.002	23771	11.4	4	13.842	-0.008	93848	8.4
Total Col1Ave (4 peaks):					64.0	Total Col2Ave (4 peaks):				62.9 RPD = 2

Corrected Ave (3 peaks): 50.6 Corrected Ave (3 peaks): 37.5 RPD = 30

Total PCB Area Col1 (6.047 - 13.941) = 1512904 Col1 Total PCB = 0.4 ppm*

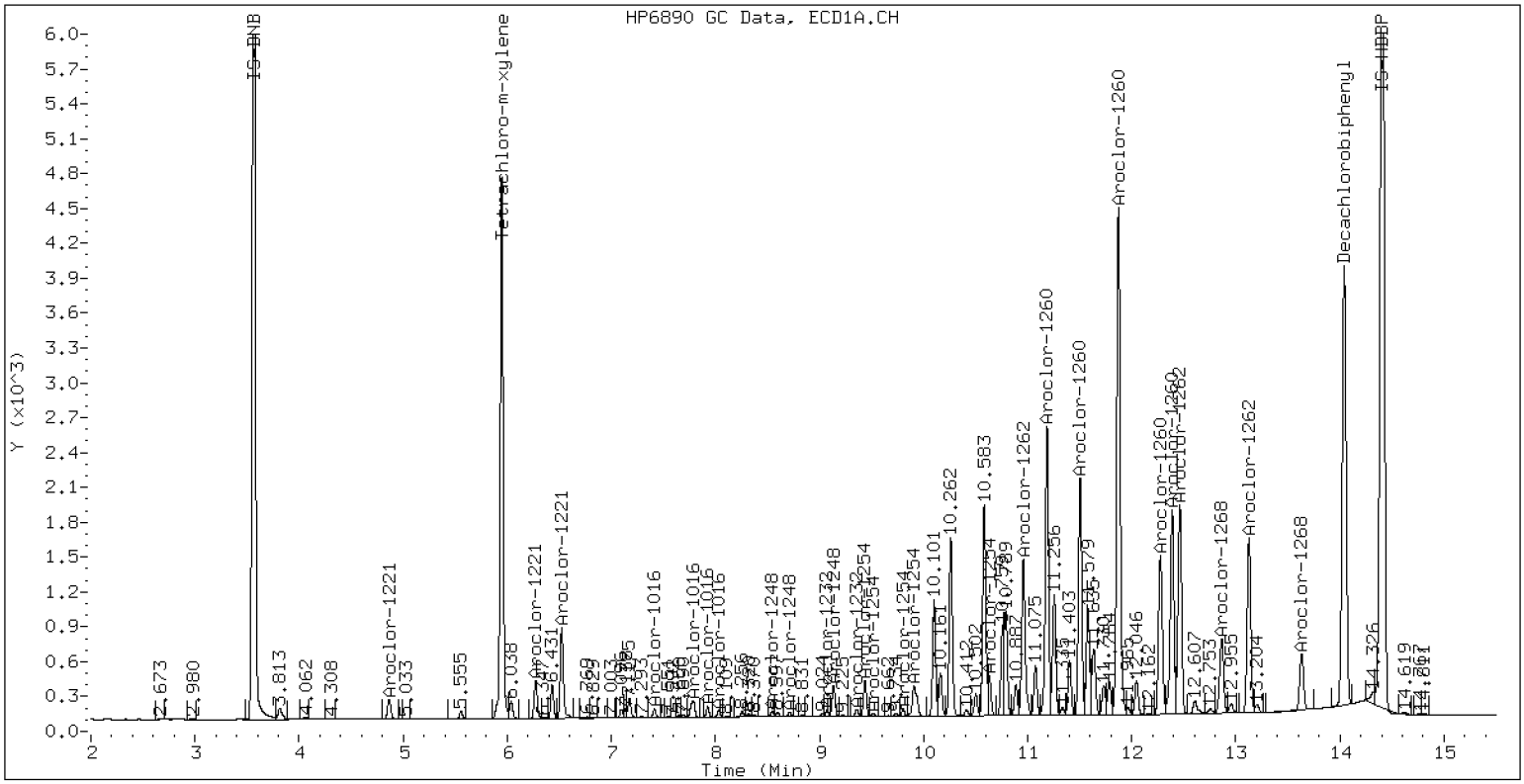
Total PCB Area Col2 (6.047 - 13.941) = 4640566 Col2 Total PCB = 0.5 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

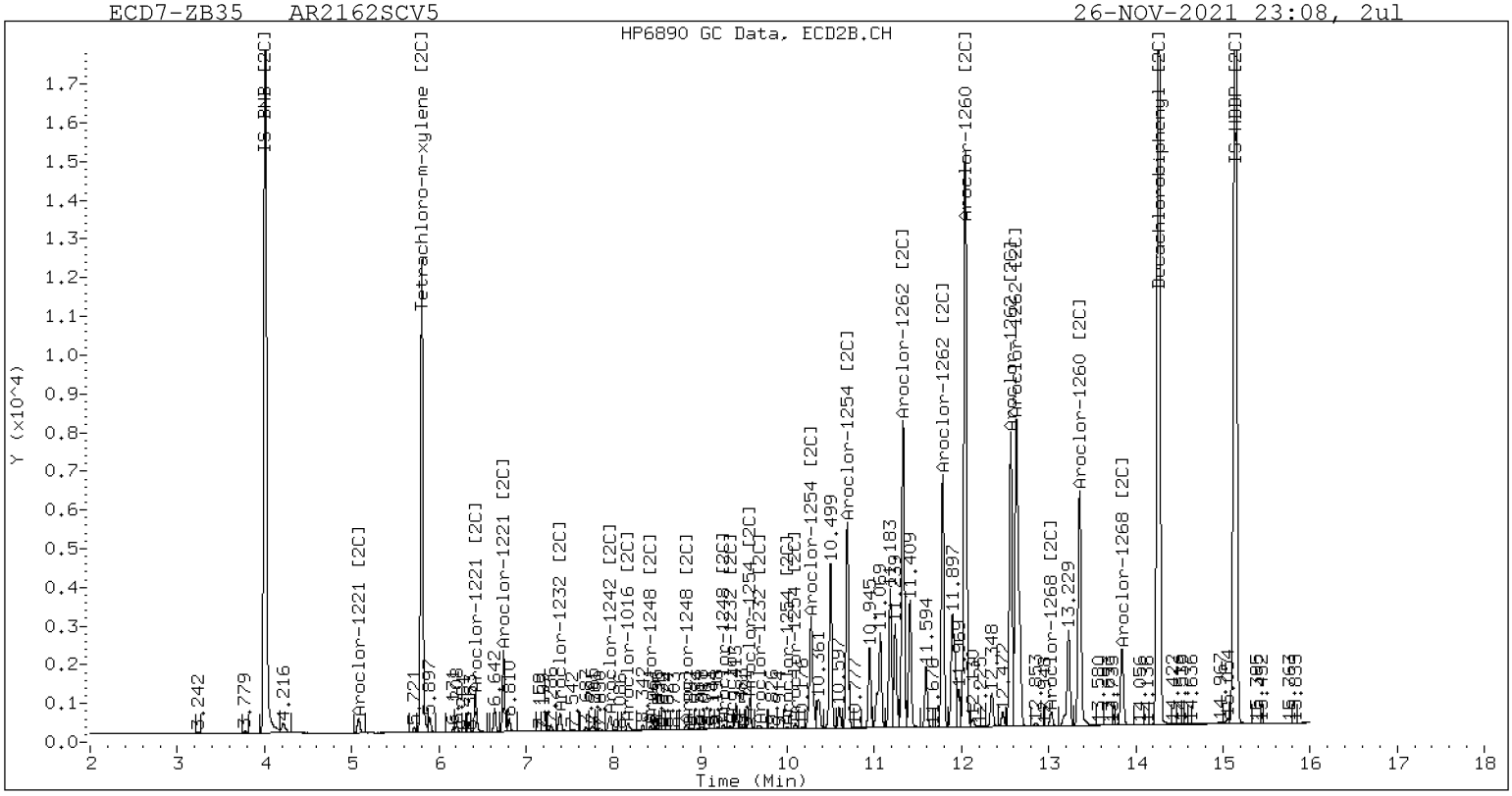
PCB Dual Column Chromatograms

ECD7-ZB5 AR2162SCV5 26-NOV-2021 23:08, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR2162SCV5 26-NOV-2021 23:08, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

SECOND-SOURCE CALIBRATION VERIFICATION

EPA 8082A

Laboratory: Analytical Resources, LLC
Client: Anchor QEA, LLC
Calibration: EK00072
Sequence: SJK0390

SDG: 21K0332
Project: Lower Duwamish AOC4
Laboratory ID: SJK0390-SCV6
Sequence Name: AR3268SCV6
Standard ID: J008144

ANALYTE	EXPECTED (ug/L)	FOUND (ug/L)	% DRIFT	QC LIMIT
Aroclor 1232	250.00	263	5.0	20.00
Aroclor 1232 [2C]	250.00	261	4.4	20.00
Decachlorobiphenyl	40.000	60.0	50.0	20.00
Tetrachlorometaxylene	40.000	40.1	0.2	20.00
Decachlorobiphenyl [2C]	40.000	73.3	83.2	20.00
Tetrachlorometaxylene [2C]	40.000	40.1	0.3	20.00

* Indicates values outside of QC limits
[2C] indicates second-column analyte.

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262122ECD7.D
Data file 2: /211126.b/211126.b/11262122ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR3268SCV6
Client ID:
Injection Date: 26-NOV-2021 23:30
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	ZB5 Col Shift	ZB5 Col Response	ZB35 Col RT	ZB35 Col Shift	ZB35 Col Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.948	0.001	183754	5.806	-0.001	466675	40.1	40.1	0.1	Tetrachloro-m-xylene
14.042	0.000	300414	14.266	0.002	1702245	60.0	73.3	19.9	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	345640	4.4
Hexabromobiphenyl	407599	432546	6.1

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	916629	2.0
Hexabromobiphenyl	1136250	1262479	11.1

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.413	0.000	15355	116.1	1	7.382	-0.000	66208	128.5
Aroclor-1016	2	7.787	0.000	51051	112.4	2	7.970	-0.001	141589	117.8
Aroclor-1016	3	7.926	-0.000	20206	114.3	3	8.172	-0.000	54432	116.6
Aroclor-1016	4	8.033	0.000	13954	115.1	4	8.430	-0.001	33150	103.5
Total Col1Ave (4 peaks):				114.5		Total Col2Ave (4 peaks):			116.6	RPD = 2
Corrected Ave (3 peaks):				113.9		Corrected Ave (3 peaks):			112.6	RPD = 1
Aroclor-1221	1	4.865	0.001	4510	152.7	1	5.081	0.001	8948	149.7
Aroclor-1221	2	6.274	0.000	7725	145.9	2	6.421	0.001	24911	157.4
Aroclor-1221	3	6.523	0.000	24036	186.0	3	6.745	0.000	57298	196.3
Total Col1Ave (3 peaks):				161.5		Total Col2Ave (3 peaks):			167.8	RPD = 4
Corrected Ave: < 3 Peaks						Corrected Ave: < 3 Peaks				
Aroclor-1232	1	4.865	-0.001	4510	258.9	1	5.081	-0.001	8948	254.2
Aroclor-1232	2	7.787	-0.001	51051	264.5	2	7.382	-0.001	66208	263.6
Aroclor-1232	3	9.072	0.000	16927	267.1	3	9.345	0.000	45544	265.4
Aroclor-1232	4	9.358	0.000	17760	259.7	4	9.692	-0.001	54207	260.5
Total Col1Ave (4 peaks):				262.6		Total Col2Ave (4 peaks):			260.9	RPD = 1
Corrected Ave (3 peaks):				261.0		Corrected Ave (3 peaks):			259.5	RPD = 1
Aroclor-1242	1	7.413	-0.000	15355	142.7	1	7.382	0.000	66208	151.7
Aroclor-1242	2	7.787	0.000	51051	140.1	2	7.970	-0.001	141589	142.7
Aroclor-1242	3	9.072	0.000	16927	137.4	3	9.345	-0.001	45544	137.5
Aroclor-1242	4	9.358	-0.000	17760	135.7	4	9.692	-0.002	54207	137.1
Total Col1Ave (4 peaks):				139.0		Total Col2Ave (4 peaks):			142.2	RPD = 2
Corrected Ave (3 peaks):				137.7		Corrected Ave (3 peaks):			139.1	RPD = 1
Aroclor-1248	1	8.546	-0.001	15301	85.0	1	8.430	-0.001	33150	76.4
Aroclor-1248	2	8.715	-0.000	18376	88.6	2	8.840	0.001	52244	100.0
Aroclor-1248	3	9.126	-0.001	19712	73.7	3	9.268	-0.001	56881	76.4
Aroclor-1248	4	9.358	-0.000	17760	82.3	4	9.692	-0.001	54207	76.3
Total Col1Ave (4 peaks):				82.4		Total Col2Ave (4 peaks):			82.3	RPD = 0
Corrected Ave (3 peaks):				80.3		Corrected Ave (3 peaks):			76.4	RPD = 5
Aroclor-1254	1	9.435	-0.001	5233	15.1	1	9.571	-0.001	9346	12.7
Aroclor-1254	2	9.512	-0.000	2205	19.3	2	10.002	0.001	5812	19.5
Aroclor-1254	3	9.803	-0.000	3445	15.1	3	10.091	-0.001	8336	14.5
Aroclor-1254	4	9.937	-0.000	6096	14.2	4	10.239	-0.002	17852	15.0
Aroclor-1254	5	10.644	0.003	3826	12.8	5	10.690	-0.000	5138	8.7
Total Col1Ave (5 peaks):				15.3		Total Col2Ave (5 peaks):			14.1	RPD = 8
Corrected Ave (4 peaks):				14.3		Corrected Ave (4 peaks):			12.7	RPD = 12
Aroclor-1260	1	11.187	0.000	40974	137.0	1	11.782	-0.004	180143	198.2
Aroclor-1260	2	11.504	0.001	3232	11.0	2	12.042	-0.003	77621	33.3
Aroclor-1260	3	11.871	-0.000	25592	35.7	3	12.636	0.005	922264	618.6
Aroclor-1260	4	12.275	0.000	999	2.8	4	13.356	-0.001	316335	447.0
Aroclor-1260	5	12.389	0.000	236962	1392.7	NS	---			----
Total Col1Ave (5 peaks):				315.9		Total Col2Ave (4 peaks):			324.3	RPD = 3
Corrected Ave (4 peaks):				46.6		Corrected Ave (3 peaks):			226.2	RPD = 132*
Aroclor-1262	1	10.959	0.000	1736	7.1	1	11.329	-0.001	126404	89.0
Aroclor-1262	2	12.389	0.001	236962	675.3	2	11.782	-0.003	180143	154.1
Aroclor-1262	3	12.459	-0.002	213750	599.0	3	12.568	0.002	869194	618.8
Aroclor-1262	4	13.127	-0.001	82344	274.1	4	12.636	0.006	922264	460.9
Total Col1Ave (4 peaks):				388.9		Total Col2Ave (4 peaks):			330.7	RPD = 16
Corrected Ave (3 peaks):				293.4		Corrected Ave (3 peaks):			234.7	RPD = 22
Aroclor-1268	1	12.389	0.000	236962	254.3	1	12.568	-0.000	869194	247.9
Aroclor-1268	2	12.459	-0.001	213750	252.9	2	12.636	0.003	922264	259.6
Aroclor-1268	3	12.847	-0.000	185195	255.0	3	13.033	-0.000	799870	253.2
Aroclor-1268	4	13.634	0.000	536844	255.9	4	13.850	-0.000	2883202	254.9
Total Col1Ave (4 peaks):				254.5		Total Col2Ave (4 peaks):			253.9	RPD = 0

Corrected Ave (3 peaks): 254.1 Corrected Ave (3 peaks): 252.0 RPD = 1

Total PCB Area Col1 (6.047 - 13.941) = 1841096 Col1 Total PCB = 0.5 ppm*

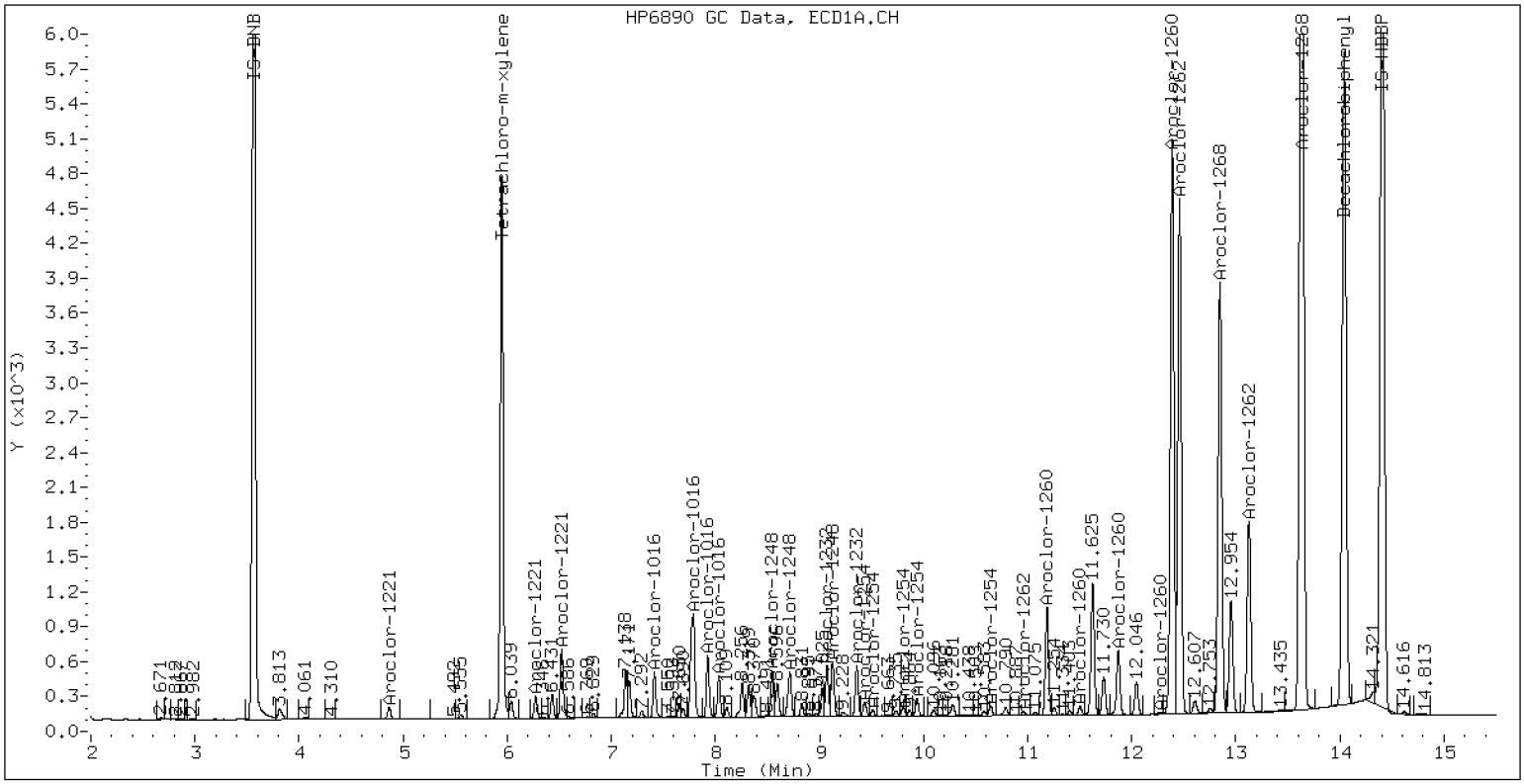
Total PCB Area Col2 (6.047 - 13.941) = 7499927 Col2 Total PCB = 0.7 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

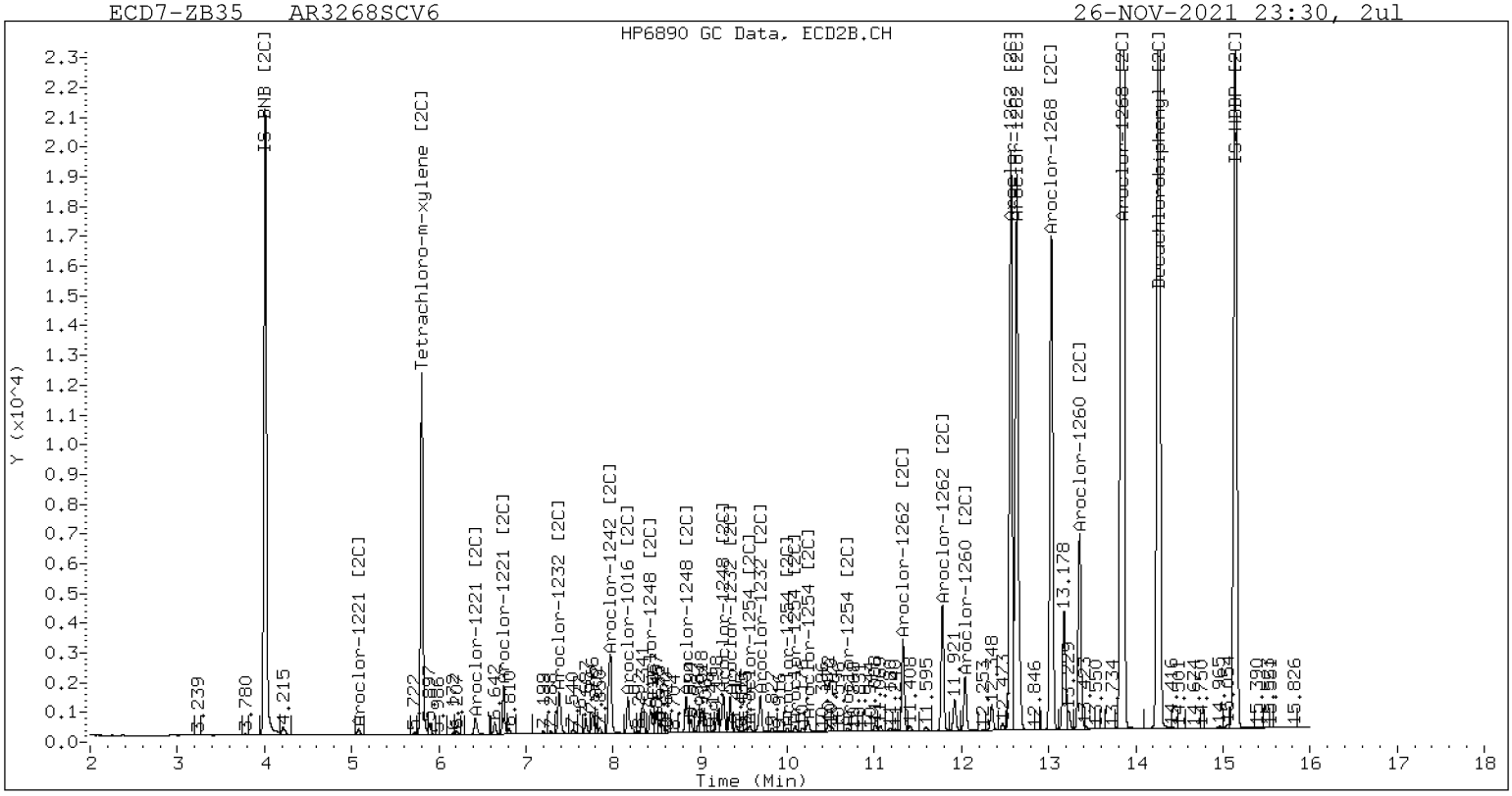
PCB Dual Column Chromatograms

ECD7-ZB5 AR3268SCV6 26-NOV-2021 23:30, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR3268SCV6 26-NOV-2021 23:30, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

INITIAL CALIBRATION CHECK
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	ECD7	Calibration:	EK00072
Lab File ID:	11272102ECD7.D	Calibration Date:	11/29/2021
Sequence:	SJK0396	Injection Date:	11/27/21
Lab Sample ID:	SJK0396-ICV1	Injection Time:	12:24
Sequence Name:	AR1254ICV1		

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DRIFT/DIFF	
		STD	ICV	ICAL	ICV	MIN	ICV	LIMIT
Decachlorobiphenyl	A	40.000	46.6	0.9260705	1.0795060		16.5	+/-20
Tetrachlorometaxylene	A	40.000	40.5	1.0608030	1.0742940		1.3	+/-20
Decachlorobiphenyl [2C]	A	40.000	45.2	1.4721440	1.6642440		13.0	+/-20
Tetrachlorometaxylene [2C]	A	40.000	40.9	1.0149580	1.0369530		2.3	+/-20

* Values outside of QC limits

* Values outside of QC limits

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211127.b/11272102ECD7.D
Data file 2: /211127.b/211127.b/11272102ECD7.D
Method: \\target\share\chem4\ecd7.i\211127.b\PCB.m
Compound Sublist: AR1254.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1254ICV1
Client ID:
Injection Date: 27-NOV-2021 12:24
Report Date: 11/29/2021 10:57
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	ZB5 Col Shift	ZB5 Col Response	ZB35 Col RT	ZB35 Col Shift	ZB35 Col Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.947	0.004	186824	5.805	0.003	474674	40.5	40.9	0.9	Tetrachloro-m-xylene
14.043	0.003	207562	14.263	0.002	1006305	46.6	45.2	3.1	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	347808	5.0
Hexabromobiphenyl	407599	384550	-5.7

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	915517	1.9
Hexabromobiphenyl	1136250	1209324	6.4

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1254	1	9.437	0.000	84886	243.8	1	9.571	0.000	175050	238.0
Aroclor-1254	2	9.513	0.000	28016	244.3	2	10.001	0.000	72032	242.3
Aroclor-1254	3	9.804	0.000	55818	243.3	3	10.092	0.000	132437	230.5
Aroclor-1254	4	9.938	0.000	105134	242.5	4	10.240	0.000	282447	237.2
Aroclor-1254	5	10.641	0.000	72587	242.1	5	10.689	0.000	140283	236.8

Total Col1Ave (5 peaks): 243.2 Total Col2Ave (5 peaks): 237.0 RPD = 3
Corrected Ave (4 peaks): 242.9 Corrected Ave (4 peaks): 235.6 RPD = 3

CalAmt %D: -2.7 CalAmt %D: -5.2

Total PCB Area Col1 (6.043 - 13.940) = 1069120 Col1 Total PCB = 0.3 ppm*

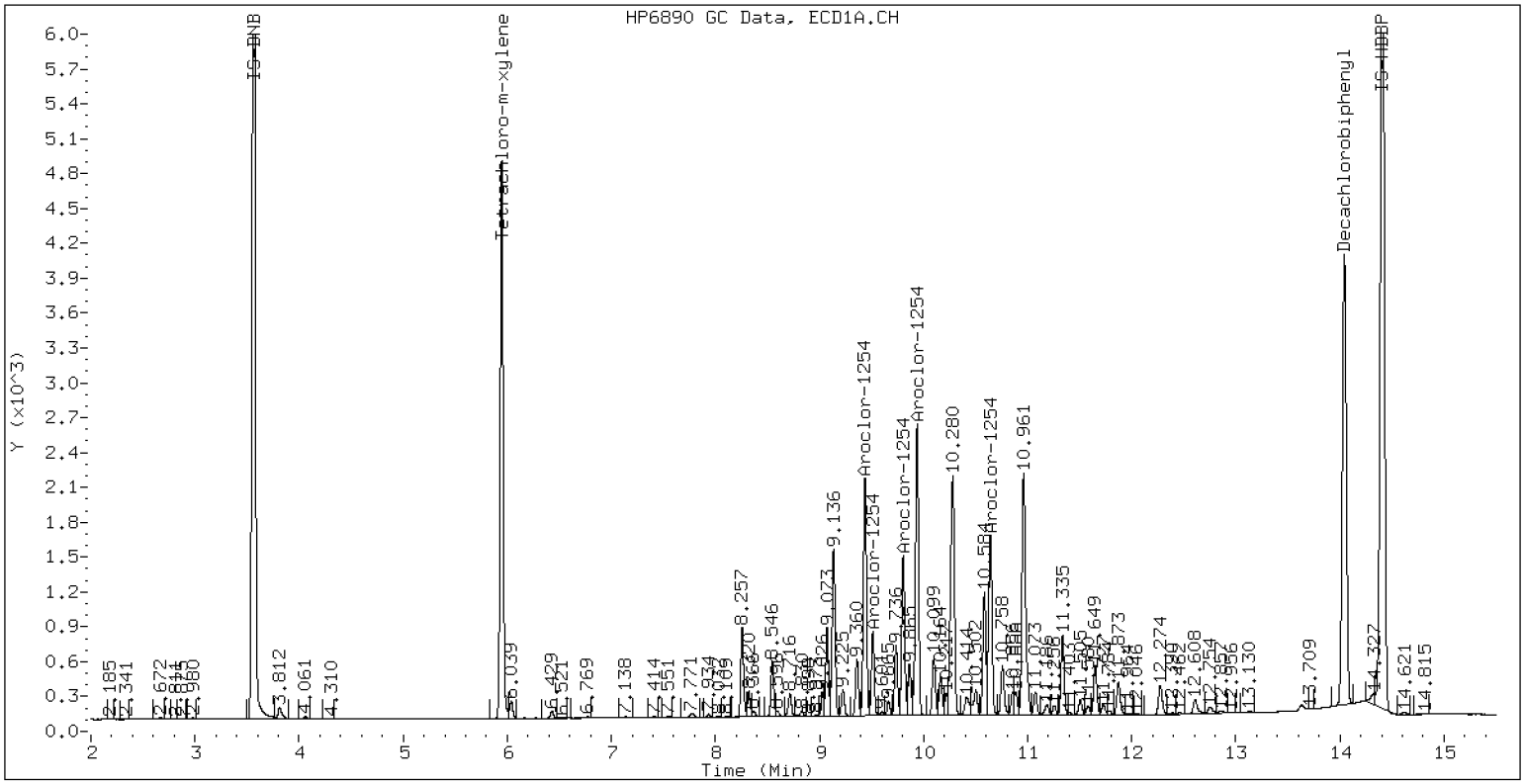
Total PCB Area Col2 (6.043 - 13.940) = 2810983 Col2 Total PCB = 0.3 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

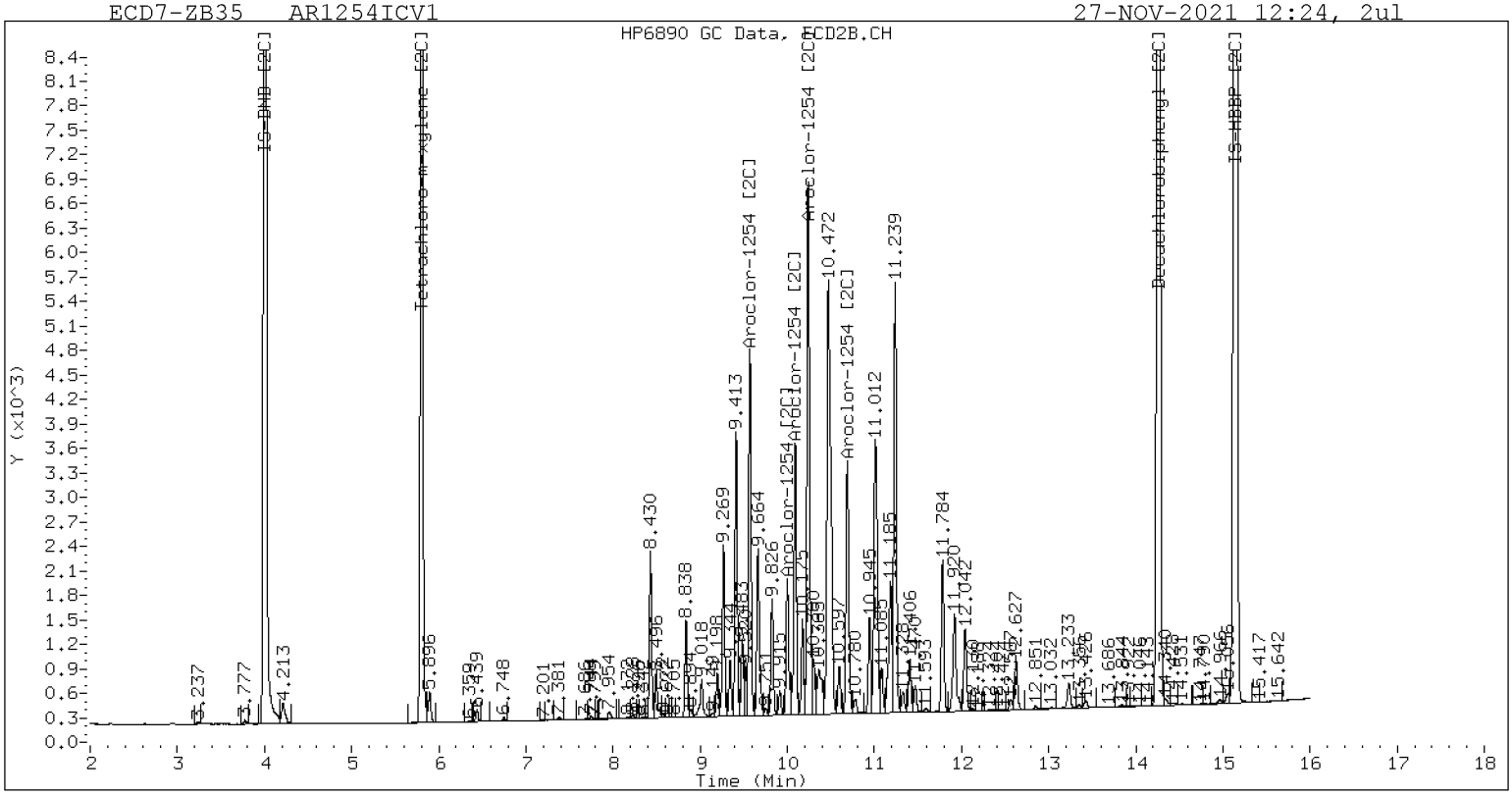
PCB Dual Column Chromatograms

ECD7-ZB5 AR1254ICV1 27-NOV-2021 12:24, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1254ICV1 27-NOV-2021 12:24, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

INITIAL CALIBRATION CHECK
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	ECD7	Calibration:	EK00072
Lab File ID:	11272103ECD7.D	Calibration Date:	11/29/2021
Sequence:	SJK0396	Injection Date:	11/27/21
Lab Sample ID:	SJK0396-ICV2	Injection Time:	12:46
Sequence Name:	AR1660ICV2		

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DRIFT/DIFF	
		STD	ICV	ICAL	ICV	MIN	ICV	LIMIT
Aroclor 1016	A	250.00	241	0.0511800	0.0493437		-3.6	+/-20
Aroclor-1016 (1)	A	250.00	240	0.0306054	0.0293875		-4.0	
Aroclor-1016 (2)	A	250.00	241	0.1051474	0.1014297		-3.6	
Aroclor-1016 (3)	A	250.00	240	0.0409194	0.0393359		-4.0	
Aroclor-1016 (4)	A	250.00	243	0.0280479	0.0272217		-2.8	
Aroclor 1016 [2C]	A	250.00	242	0.0546486	0.0531299		-3.3	+/-20
Aroclor-1016 (1) [2C]	A	250.00	249	0.0449596	0.0447350		-0.4	
Aroclor-1016 (2) [2C]	A	250.00	247	0.1049196	0.1036677		-1.2	
Aroclor-1016 (3) [2C]	A	250.00	224	0.0407526	0.0364351		-10.4	
Aroclor-1016 (4) [2C]	A	250.00	247	0.0279627	0.0276819		-1.2	
Aroclor 1260	A	250.00	239	0.0677291	0.0648511		-4.3	+/-20
Aroclor-1260 (1)	A	250.00	239	0.0553271	0.0528161		-4.4	
Aroclor-1260 (2)	A	250.00	239	0.0542725	0.0519755		-4.4	
Aroclor-1260 (3)	A	250.00	239	0.1324349	0.1268042		-4.4	
Aroclor-1260 (4)	A	250.00	240	0.0651433	0.0625324		-4.0	
Aroclor-1260 (5)	A	250.00	239	0.0314677	0.0301271		-4.4	
Aroclor 1260 [2C]	A	250.00	243	0.0861827	0.0830719		-3.0	+/-20
Aroclor-1260 (1) [2C]	A	250.00	237	0.0575808	0.0546505		-5.2	
Aroclor-1260 (2) [2C]	A	250.00	239	0.1478278	0.1411522		-4.4	
Aroclor-1260 (3) [2C]	A	250.00	242	0.0944730	0.0912693		-3.2	
Aroclor-1260 (4) [2C]	A	250.00	252	0.0448490	0.0452156		0.8	
Decachlorobiphenyl	A	40.000	39.9	0.9260705	0.9242617		-0.3	+/-20
Tetrachlorometaxylene	A	40.000	39.4	1.0608030	1.0460440		-1.5	+/-20
Decachlorobiphenyl [2C]	A	40.000	42.9	1.4721440	1.5786410		7.3	+/-20
Tetrachlorometaxylene [2C]	A	40.000	38.9	1.0149580	0.9867985		-2.8	+/-20

* Values outside of QC limits

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211127.b/11272103ECD7.D
Data file 2: /211127.b/211127.b/11272103ECD7.D
Method: \\target\share\chem4\ecd7.i\211127.b\PCB.m
Compound Sublist: AR1660.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1660ICV2
Client ID:
Injection Date: 27-NOV-2021 12:46
Report Date: 11/29/2021 10:56
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	ZB5 Col Shift	ZB5 Col Response	ZB35 Col RT	ZB35 Col Shift	ZB35 Col Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.943	0.000	182451	5.801	-0.000	456680	39.4	38.9	1.4	Tetrachloro-m-xylene
14.041	0.001	200904	14.263	0.002	994843	39.9	42.9	7.2	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	348840	5.3
Hexabromobiphenyl	407599	434734	6.7

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	925579	3.0
Hexabromobiphenyl	1136250	1260379	10.9

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

Aroclor	Peak#	RT (ZB5 Col)	Shift	Area	Amount	Peak#	RT (ZB35 Col)	Shift	Area	Amount
Aroclor-1016	1	7.411	0.001	32036	240.1	1	7.380	0.000	129393	248.8
Aroclor-1016	2	7.785	-0.000	110571	241.2	2	7.969	0.000	299852	247.0
Aroclor-1016	3	7.925	0.001	42881	240.3	3	8.170	0.000	105386	223.5
Aroclor-1016	4	8.031	0.001	29675	242.6	4	8.430	0.001	80068	247.5
Total Col1Ave (4 peaks):				241.0		Total Col2Ave (4 peaks):			241.7	RPD = 0
Corrected Ave (3 peaks):				240.5		Corrected Ave (3 peaks):			239.3	RPD = 0
CalAmt %D:				-3.6		CalAmt %D:			-3.3	
Aroclor-1260	1	11.186	0.001	71753	238.7	1	11.783	0.001	215251	237.3
Aroclor-1260	2	11.503	0.000	70611	239.4	2	12.044	0.001	555954	238.7
Aroclor-1260	3	11.872	0.001	172269	239.4	3	12.629	0.001	359481	241.5
Aroclor-1260	4	12.274	0.001	84953	240.0	4	13.356	0.002	178090	252.0
Aroclor-1260	5	12.388	0.001	40929	239.3	NS	---			----
Total Col1Ave (5 peaks):				239.4		Total Col2Ave (4 peaks):			242.4	RPD = 1
Corrected Ave (4 peaks):				239.2		Corrected Ave (3 peaks):			239.2	RPD = 0
CalAmt %D:				-4.3		CalAmt %D:			-3.0	

Total PCB Area Col1 (6.043 - 13.940) = 1816184 Col1 Total PCB = 0.5 ppm*

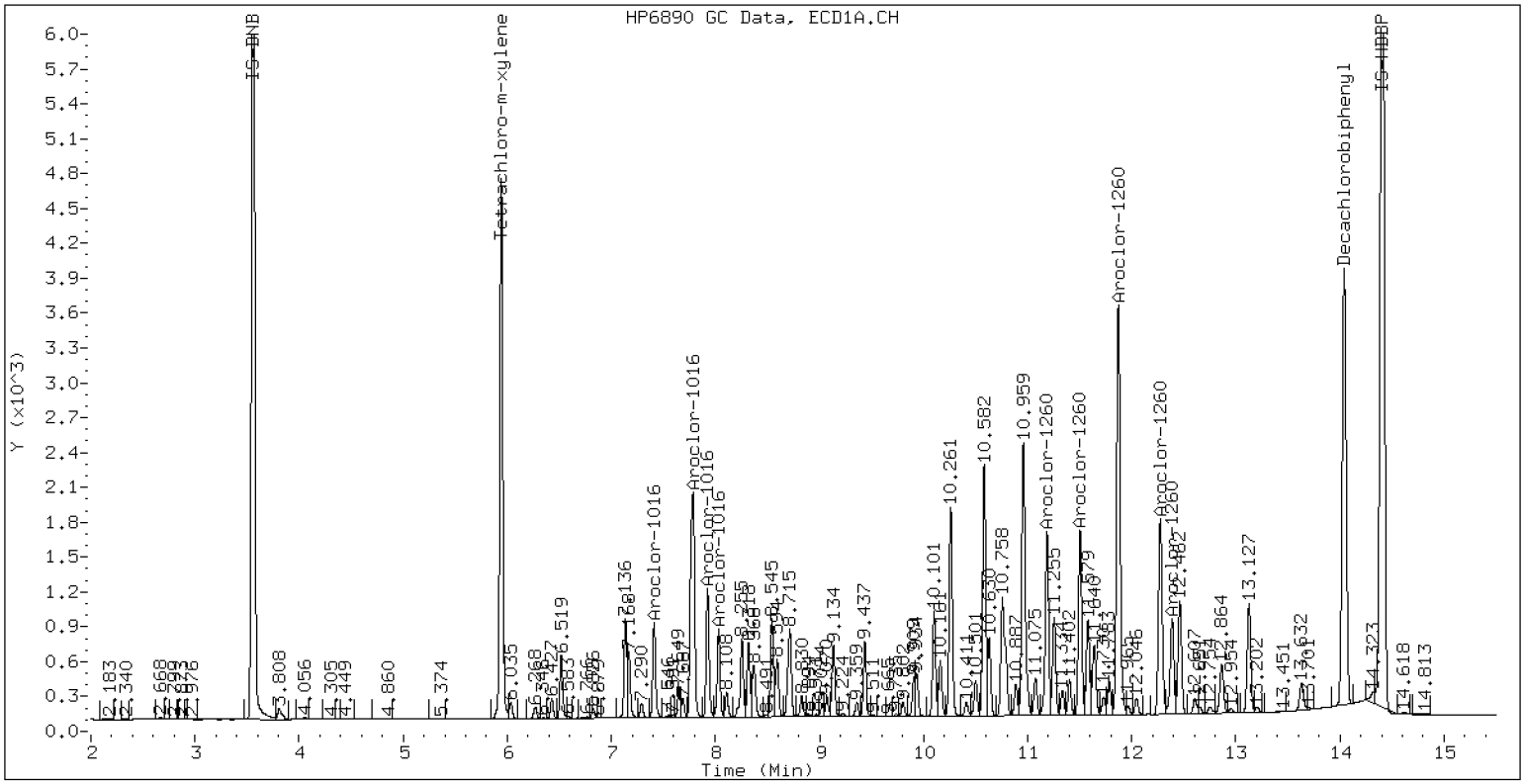
Total PCB Area Col2 (6.043 - 13.940) = 5096222 Col2 Total PCB = 0.5 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

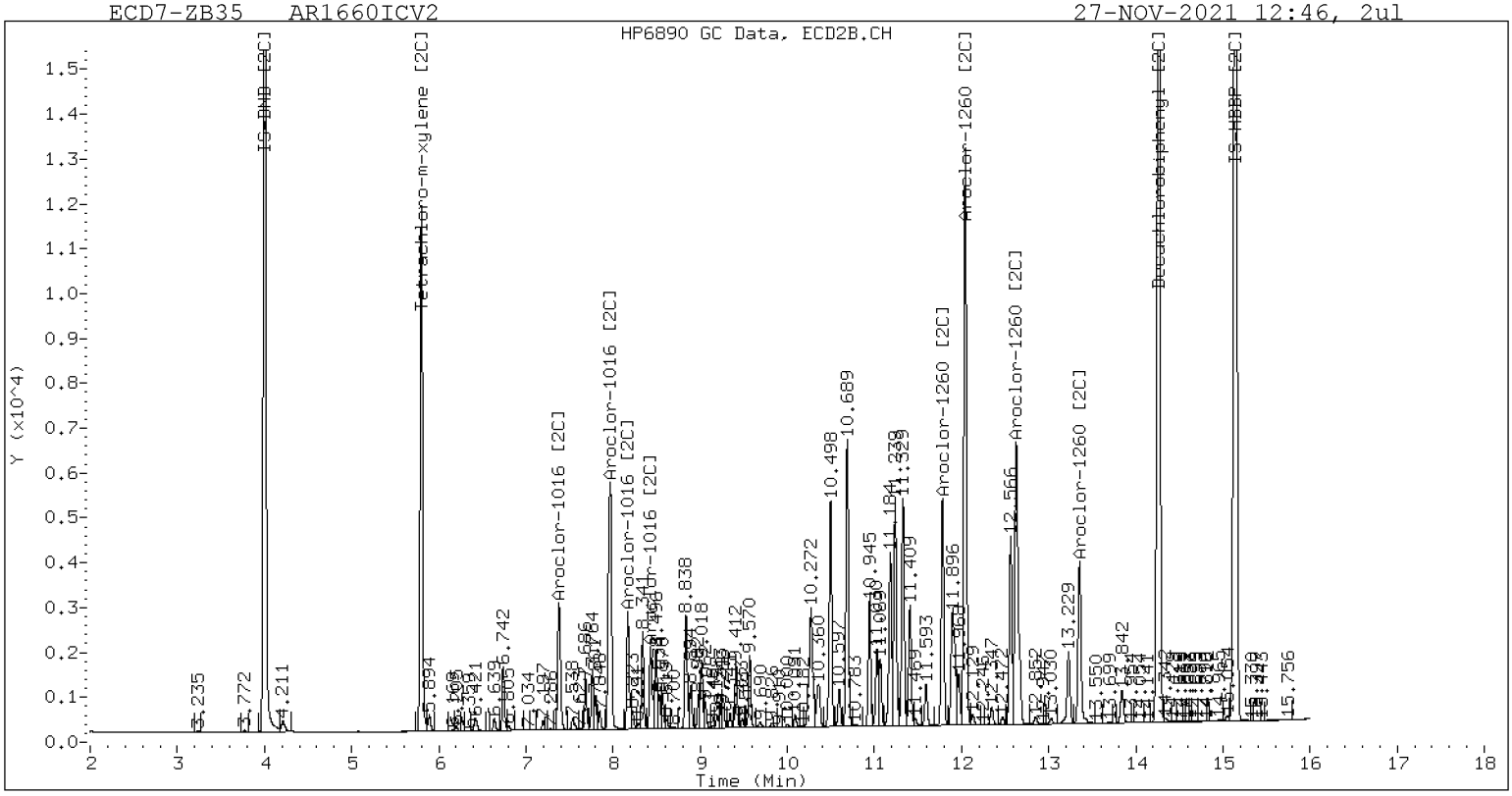
PCB Dual Column Chromatograms

ECD7-ZB5 AR1660ICV2 27-NOV-2021 12:46, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1660ICV2 27-NOV-2021 12:46, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

SECOND-SOURCE
CONTINUING CALIBRATION CHECK
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	ECD7	Calibration:	EK00072
Lab File ID:	11262117ECD7.D	Calibration Date:	11/29/2021
Sequence:	SJK0390	Injection Date:	11/26/21
Lab Sample ID:	SJK0390-SCV1	Injection Time:	21:44
Sequence Name:	AR1660SCV1		

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF	
		STD	CCV	ICAL	CCV	MIN	CCV	LIMIT
Aroclor 1016	A	250.00	252	0.0511800	0.0516445		0.9	+/-20
Aroclor 1016 [2C]	A	250.00	265	0.0546486	0.0578165		5.9	+/-20
Aroclor 1260	A	250.00	265	0.0677291	0.0726423		6.1	+/-20
Aroclor 1260 [2C]	A	250.00	276	0.0861827	0.0955596		10.5	+/-20
Decachlorobiphenyl	A	40.000	40.3	0.9260705	0.9326446		0.7	+/-20
Tetrachlorometaxylene	A	40.000	39.9	1.0608030	1.0586680		-0.2	+/-20
Decachlorobiphenyl [2C]	A	40.000	44.9	1.4721440	1.6520820		12.2	+/-20
Tetrachlorometaxylene [2C]	A	40.000	39.6	1.0149580	1.0053790		-0.9	+/-20

* Values outside of QC limits

* Values outside of QC limits

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262117ECD7.D
Data file 2: /211126.b/211126.b/11262117ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1660SCV1
Client ID:
Injection Date: 26-NOV-2021 21:44
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.947	0.000	183842	5.806	-0.001	466581	39.9	39.6	0.7	Tetrachloro-m-xylene
14.041	-0.000	201032	14.263	-0.001	1018569	40.3	44.9	10.8	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	347308	4.9
Hexabromobiphenyl	407599	431101	5.8

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	928169	3.3
Hexabromobiphenyl	1136250	1233073	8.5

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.413	-0.000	33347	251.0	1	7.382	-0.001	137933	264.4
Aroclor-1016	2	7.787	-0.000	115161	252.3	2	7.971	0.000	321183	263.9
Aroclor-1016	3	7.926	-0.000	44761	252.0	3	8.172	0.000	125549	265.5
Aroclor-1016	4	8.032	-0.000	30938	254.1	4	8.431	-0.000	86129	265.5
Total Col1Ave (4 peaks): 252.3						Total Col2Ave (4 peaks): 264.8 RPD = 5				
Corrected Ave (3 peaks): 251.7						Corrected Ave (3 peaks): 264.6 RPD = 5				
Aroclor-1221	1	4.864	0.000	238	8.0	1	---			0.0
Aroclor-1221	2	6.272	-0.002	4338	81.5	2	6.423	0.003	15936	99.5
Aroclor-1221	3	6.522	-0.001	22886	176.2	3	6.745	-0.000	56893	192.5
Total Col1Ave (3 peaks): 88.6						Col2Ave: <3 Quant Peaks				
Aroclor-1232	1	4.864	-0.002	238	13.6	1	---			0.0
Aroclor-1232	2	7.787	-0.001	115161	593.8	2	7.382	-0.002	137933	542.4
Aroclor-1232	3	9.072	0.000	7256	113.9	3	9.345	0.000	13600	78.3
Aroclor-1232	4	9.360	0.002	3702	53.9	4	9.692	-0.001	5042	23.9
Total Col1Ave (4 peaks): 193.8						Total Col2Ave (3 peaks): 214.9 RPD = 10				
Corrected Ave (3 peaks): 60.5						Corrected Ave: < 3 Peaks				
Aroclor-1242	1	7.413	-0.001	33347	308.5	1	7.382	-0.000	137933	312.1
Aroclor-1242	2	7.787	-0.000	115161	314.4	2	7.971	0.000	321183	319.7
Aroclor-1242	3	9.072	0.001	7256	58.6	3	9.345	-0.000	13600	40.5
Aroclor-1242	4	9.360	0.001	3702	28.2	4	9.692	-0.002	5042	12.6
Total Col1Ave (4 peaks): 177.4						Total Col2Ave (4 peaks): 171.2 RPD = 4				
Corrected Ave (3 peaks): 131.8						Corrected Ave (3 peaks): 121.7 RPD = 8				
Aroclor-1248	1	8.546	-0.001	35193	194.5	1	8.431	0.000	86129	196.1
Aroclor-1248	2	8.715	-0.000	43028	206.4	2	8.839	-0.000	116360	220.0
Aroclor-1248	3	9.135	0.008	26166	97.4	3	9.264	-0.005	18404	24.4
Aroclor-1248	4	9.360	0.001	3702	17.1	4	9.692	-0.001	5042	7.0
Total Col1Ave (4 peaks): 128.8						Total Col2Ave (4 peaks): 111.9 RPD = 14				
Corrected Ave (3 peaks): 103.0						Corrected Ave (3 peaks): 75.8 RPD = 30				
Aroclor-1254	1	9.437	0.001	23801	68.5	1	9.571	0.000	61888	83.0
Aroclor-1254	2	9.511	-0.001	310	2.7	2	10.001	0.000	1644	5.5
Aroclor-1254	3	9.803	-0.000	3378	14.7	3	10.092	-0.000	8443	14.5
Aroclor-1254	4	9.933	-0.004	11306	26.1	4	10.274	0.032	171468	142.0
Aroclor-1254	5	10.631	-0.010	26092	87.1	5	10.690	-0.000	292094	486.4
Total Col1Ave (5 peaks): 39.8						Total Col2Ave (5 peaks): 146.3 RPD = 114*				
Corrected Ave (4 peaks): 28.0						Corrected Ave (4 peaks): 61.2 RPD = 74*				
Aroclor-1260	1	11.186	0.000	78868	264.5	1	11.784	-0.001	239449	269.8
Aroclor-1260	2	11.503	-0.000	79008	270.1	2	12.044	-0.001	634321	278.4
Aroclor-1260	3	11.872	-0.000	193201	270.7	3	12.630	-0.001	407941	280.2
Aroclor-1260	4	12.274	-0.000	96399	274.6	4	13.356	-0.001	191189	276.6
Aroclor-1260	5	12.388	-0.000	41839	246.7	NS	---			----
Total Col1Ave (5 peaks): 265.3						Total Col2Ave (4 peaks): 276.2 RPD = 4				
Corrected Ave (4 peaks): 263.0						Corrected Ave (3 peaks): 274.9 RPD = 4				
Aroclor-1262	1	10.959	0.000	120342	493.6	1	11.330	0.000	243002	175.2
Aroclor-1262	2	12.388	-0.000	41839	119.6	2	11.784	-0.000	239449	209.7
Aroclor-1262	3	12.461	-0.000	50183	141.1	3	12.565	-0.001	195284	142.3
Aroclor-1262	4	13.127	0.000	48250	161.1	4	12.630	-0.001	407941	208.7
Total Col1Ave (4 peaks): 228.9						Total Col2Ave (4 peaks): 184.0 RPD = 22				
Corrected Ave (3 peaks): 140.6						Corrected Ave (3 peaks): 175.4 RPD = 22				
Aroclor-1268	1	12.388	-0.000	41839	45.1	1	12.565	-0.003	195284	57.0
Aroclor-1268	2	12.461	0.001	50183	59.6	2	12.630	-0.003	407941	117.6
Aroclor-1268	3	12.866	0.018	22728	31.4	3	13.030	-0.003	4919	1.6
Aroclor-1268	4	13.632	-0.002	8617	4.1	4	13.843	-0.007	31940	2.9
Total Col1Ave (4 peaks): 35.0						Total Col2Ave (4 peaks): 44.8 RPD = 24				
Corrected Ave (3 peaks): 26.9						Corrected Ave (3 peaks): 20.5 RPD = 27				

Total PCB Area Col1 (6.047 - 13.941) = 1941365 Col1 Total PCB = 0.5 ppm*

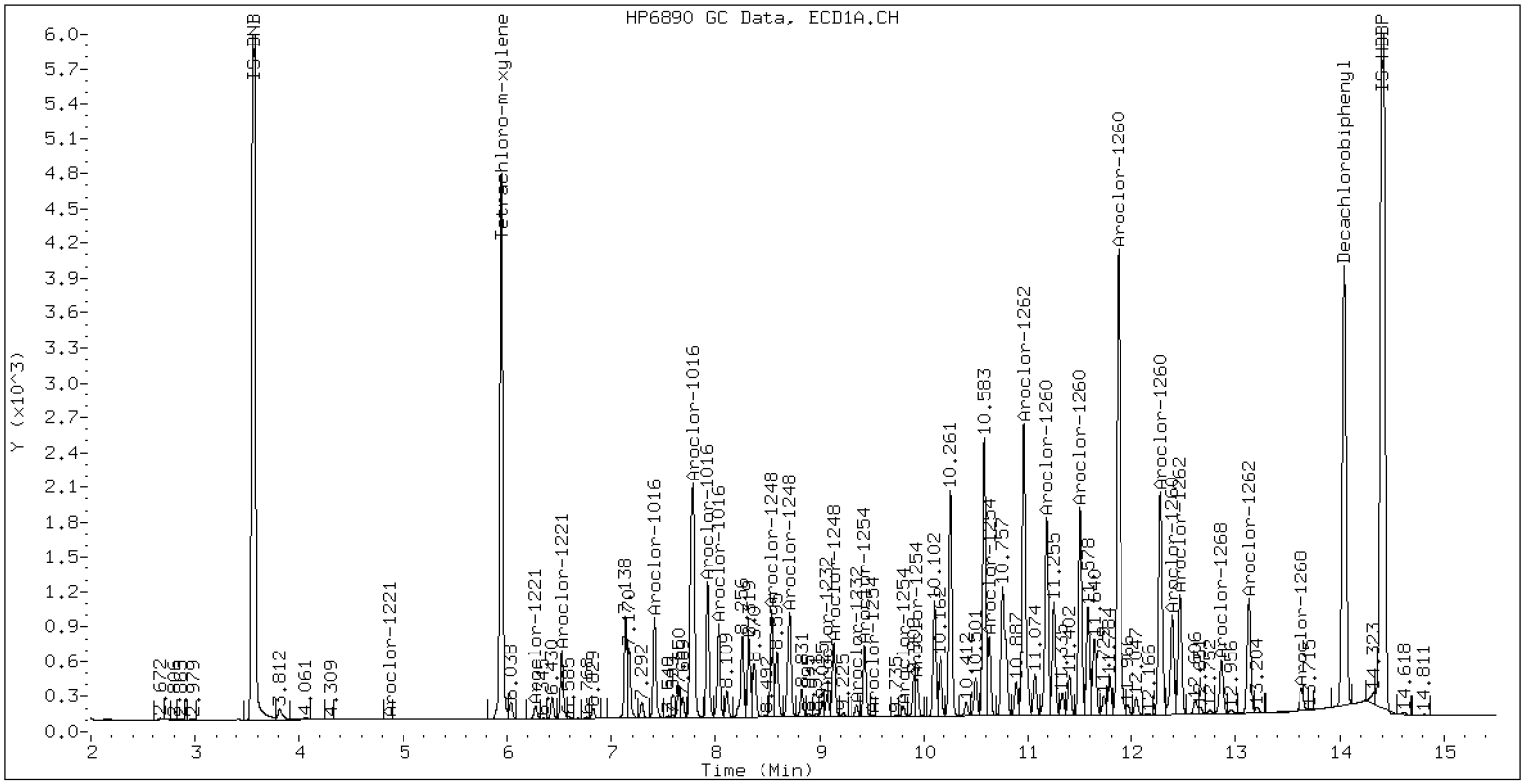
Total PCB Area Col2 (6.047 - 13.941) = 5636549 Col2 Total PCB = 0.6 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

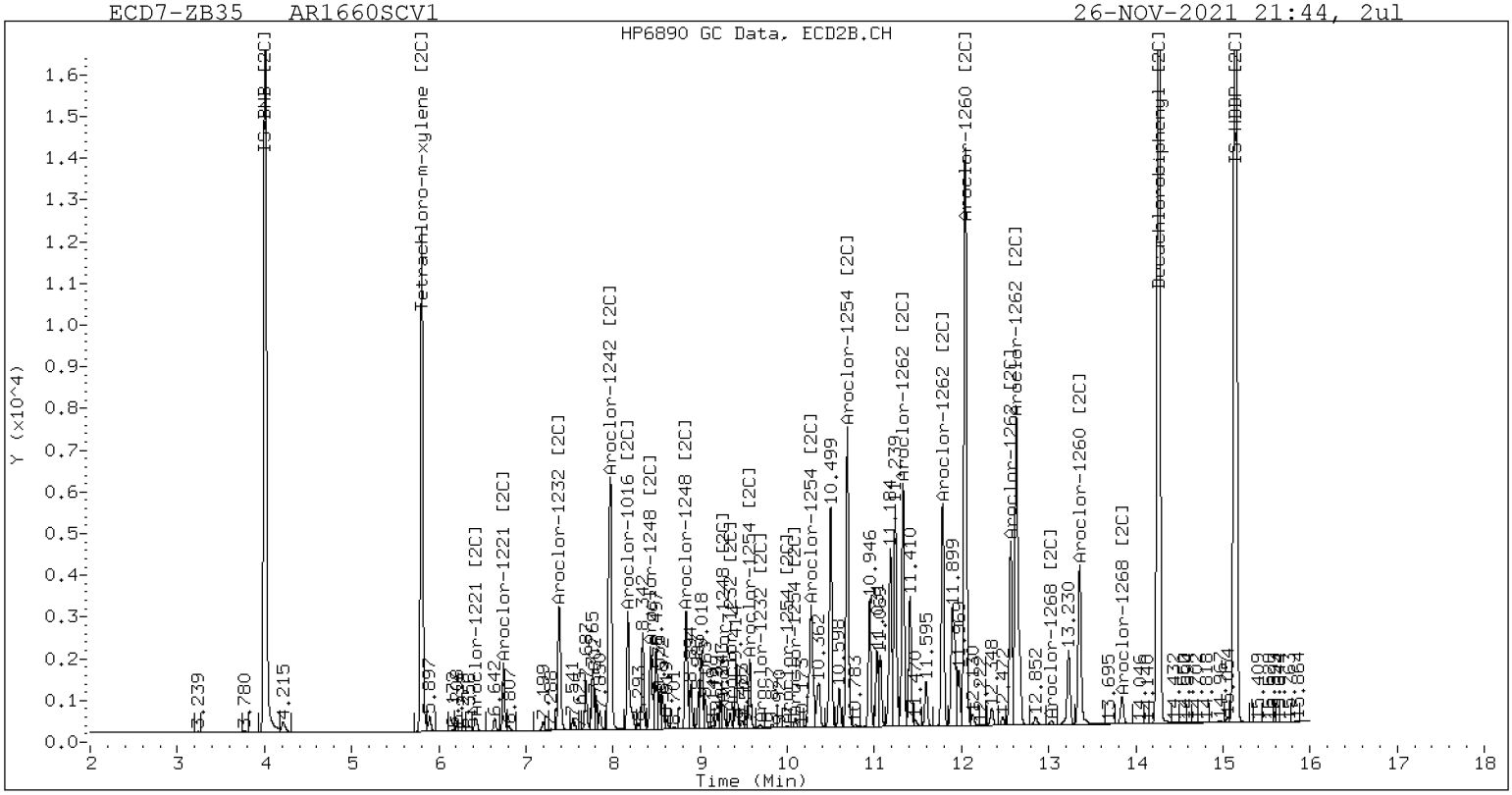
PCB Dual Column Chromatograms

ECD7-ZB5 AR1660SCV1 26-NOV-2021 21:44, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1660SCV1 26-NOV-2021 21:44, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

SECOND-SOURCE
CONTINUING CALIBRATION CHECK
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	ECD7	Calibration:	EK00072
Lab File ID:	11262118ECD7.D	Calibration Date:	11/29/2021
Sequence:	SJK0390	Injection Date:	11/26/21
Lab Sample ID:	SJK0390-SCV2	Injection Time:	22:05
Sequence Name:	AR1242SCV2		

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF	
		STD	CCV	ICAL	CCV	MIN	CCV	LIMIT
Aroclor 1242	A	250.00	240	0.0420152	0.0400795		-4.0	+/-20
Aroclor 1242 [2C]	A	250.00	245	0.0470319	0.0457049		-2.2	+/-20
Decachlorobiphenyl	A	40.000	40.2	0.9260705	0.9312955		0.6	+/-20
Tetrachlorometaxylene	A	40.000	39.7	1.0608030	1.0526780		-0.8	+/-20
Decachlorobiphenyl [2C]	A	40.000	44.6	1.4721440	1.6420920		11.5	+/-20
Tetrachlorometaxylene [2C]	A	40.000	39.9	1.0149580	1.0116640		-0.3	+/-20

* Values outside of QC limits

* Values outside of QC limits

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262118ECD7.D
Data file 2: /211126.b/211126.b/11262118ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1242SCV2
Client ID:
Injection Date: 26-NOV-2021 22:05
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	ZB5 Col Shift	ZB5 Col Response	ZB35 Col RT	ZB35 Col Shift	ZB35 Col Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.948	0.001	182706	5.807	0.000	469751	39.7	39.9	0.4	Tetrachloro-m-xylene
14.042	0.001	201815	14.263	-0.001	1022196	40.2	44.6	10.4	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	347126	4.8
Hexabromobiphenyl	407599	433407	6.3

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	928670	3.4
Hexabromobiphenyl	1136250	1244992	9.6

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.413	-0.000	25157	189.4	1	7.383	0.000	104696	200.6
Aroclor-1016	2	7.788	0.001	85960	188.4	2	7.970	-0.001	240361	197.3
Aroclor-1016	3	7.927	0.000	33603	189.3	3	8.172	-0.000	93740	198.2
Aroclor-1016	4	8.033	0.001	23081	189.7	4	8.431	-0.001	66569	205.1
Total Col1Ave (4 peaks):				189.2		Total Col2Ave (4 peaks):			200.3	RPD = 6
Corrected Ave (3 peaks):				189.0		Corrected Ave (3 peaks):			198.7	RPD = 5
Aroclor-1221	1	4.864	-0.000	174	5.9	1	---			0.0
Aroclor-1221	2	6.272	-0.001	3169	59.6	2	6.426	0.006	11987	74.8
Aroclor-1221	3	6.523	0.000	17219	132.7	3	6.745	0.000	42434	143.5
Total Col1Ave (3 peaks):				66.0		Col2Ave: <3 Quant Peaks				
Aroclor-1232	1	4.864	-0.003	174	9.9	1	---			0.0
Aroclor-1232	2	7.788	-0.000	85960	443.5	2	7.383	-0.001	104696	411.5
Aroclor-1232	3	9.072	-0.000	30765	483.4	3	9.345	0.000	81908	471.1
Aroclor-1232	4	9.358	-0.000	32026	466.4	4	9.692	-0.001	103595	491.5
Total Col1Ave (4 peaks):				350.8		Total Col2Ave (3 peaks):			458.0	RPD = 27
Corrected Ave (3 peaks):				306.6		Corrected Ave: < 3 Peaks				
Aroclor-1242	1	7.413	-0.001	25157	232.8	1	7.383	0.001	104696	236.8
Aroclor-1242	2	7.788	0.001	85960	234.8	2	7.970	-0.001	240361	239.1
Aroclor-1242	3	9.072	0.000	30765	248.7	3	9.345	-0.000	81908	244.0
Aroclor-1242	4	9.358	-0.000	32026	243.7	4	9.692	-0.002	103595	258.5
Total Col1Ave (4 peaks):				240.0		Total Col2Ave (4 peaks):			244.6	RPD = 2
Corrected Ave (3 peaks):				237.1		Corrected Ave (3 peaks):			240.0	RPD = 1
Aroclor-1248	1	8.546	-0.000	27445	151.8	1	8.431	0.000	66569	151.5
Aroclor-1248	2	8.716	-0.000	34001	163.2	2	8.840	0.001	95323	180.1
Aroclor-1248	3	9.127	0.000	37644	140.2	3	9.269	-0.000	104598	138.7
Aroclor-1248	4	9.358	-0.000	32026	147.8	4	9.692	-0.001	103595	143.8
Total Col1Ave (4 peaks):				150.7		Total Col2Ave (4 peaks):			153.5	RPD = 2
Corrected Ave (3 peaks):				146.6		Corrected Ave (3 peaks):			144.7	RPD = 1
Aroclor-1254	1	9.435	-0.001	14995	43.1	1	9.571	0.000	28043	37.6
Aroclor-1254	2	9.512	-0.000	6245	54.6	2	10.002	0.001	15844	52.5
Aroclor-1254	3	9.803	0.000	10238	44.7	3	10.092	-0.001	26441	45.4
Aroclor-1254	4	9.937	-0.000	17113	39.6	4	10.240	-0.001	46700	38.7
Aroclor-1254	5	10.643	0.002	11438	38.2	5	10.692	0.002	11927	19.9
Total Col1Ave (5 peaks):				44.0		Total Col2Ave (5 peaks):			38.8	RPD = 13
Corrected Ave (4 peaks):				41.4		Corrected Ave (4 peaks):			35.4	RPD = 16
Aroclor-1260	1	11.185	-0.002	328	1.1	1	11.784	-0.001	5949	6.6
Aroclor-1260	2	11.505	0.002	320	1.1	2	12.044	-0.001	2811	1.2
Aroclor-1260	3	11.871	-0.001	725	1.0	3	12.628	-0.003	1827	1.2
Aroclor-1260	4	12.273	-0.002	745	2.1	4	13.346	-0.010	454	0.7
Aroclor-1260	5	12.396	0.008	113	0.7	NS	---			----
Total Col1Ave (5 peaks):				1.2		Total Col2Ave (4 peaks):			2.4	RPD = 69*
Corrected Ave (4 peaks):				1.0		Corrected Ave (3 peaks):			1.0	RPD = 7
Aroclor-1262	1	10.960	0.001	7525	30.7	1	11.329	-0.001	1164	0.8
Aroclor-1262	2	12.396	0.008	113	0.3	2	11.784	-0.000	5949	5.2
Aroclor-1262	3	---			0.0	3	12.571	0.005	584	0.4
Aroclor-1262	4	---			0.0	4	12.628	-0.003	1827	0.9
Col1Ave: <3 Quant Peaks						Col2Ave:			1.8	
Aroclor-1268	1	12.396	0.008	113	0.1	1	12.571	0.003	584	0.2
Aroclor-1268	2	---			0.0	2	12.628	-0.005	1827	0.5
Aroclor-1268	3	12.850	0.002	290	0.4	3	13.034	0.001	652	0.2
Aroclor-1268	4	13.708	0.075	149	0.1	4	13.844	-0.007	929	0.1
Total Col1Ave (3 peaks):				0.2		Total Col2Ave (4 peaks):			0.2	RPD = 22
Corrected Ave: < 3 Peaks						Corrected Ave (3 peaks):			0.2	

Total PCB Area Col1 (6.047 - 13.941) = 660095 Col1 Total PCB = 0.2 ppm*

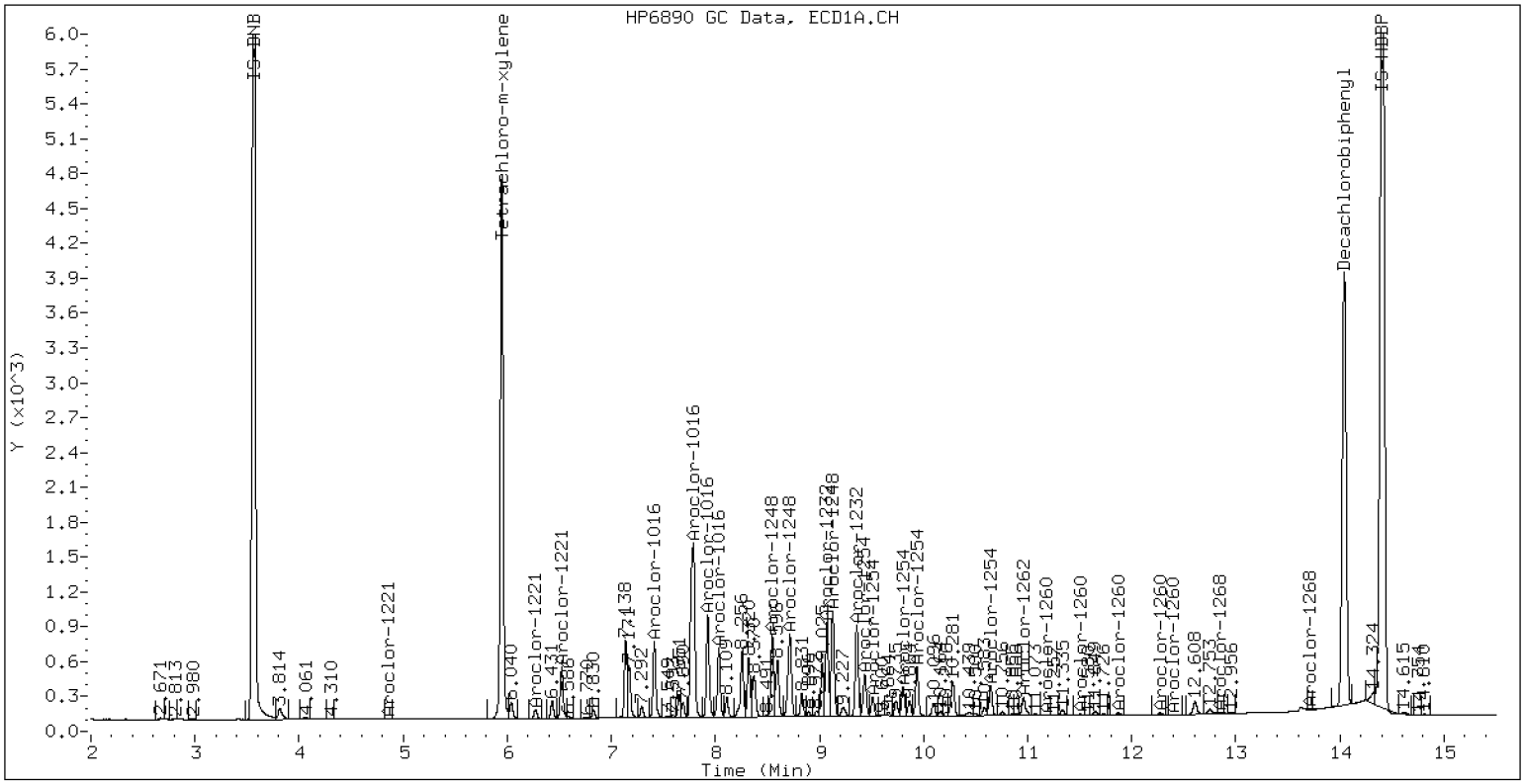
Total PCB Area Col2 (6.047 - 13.941) = 1804844 Col2 Total PCB = 0.2 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

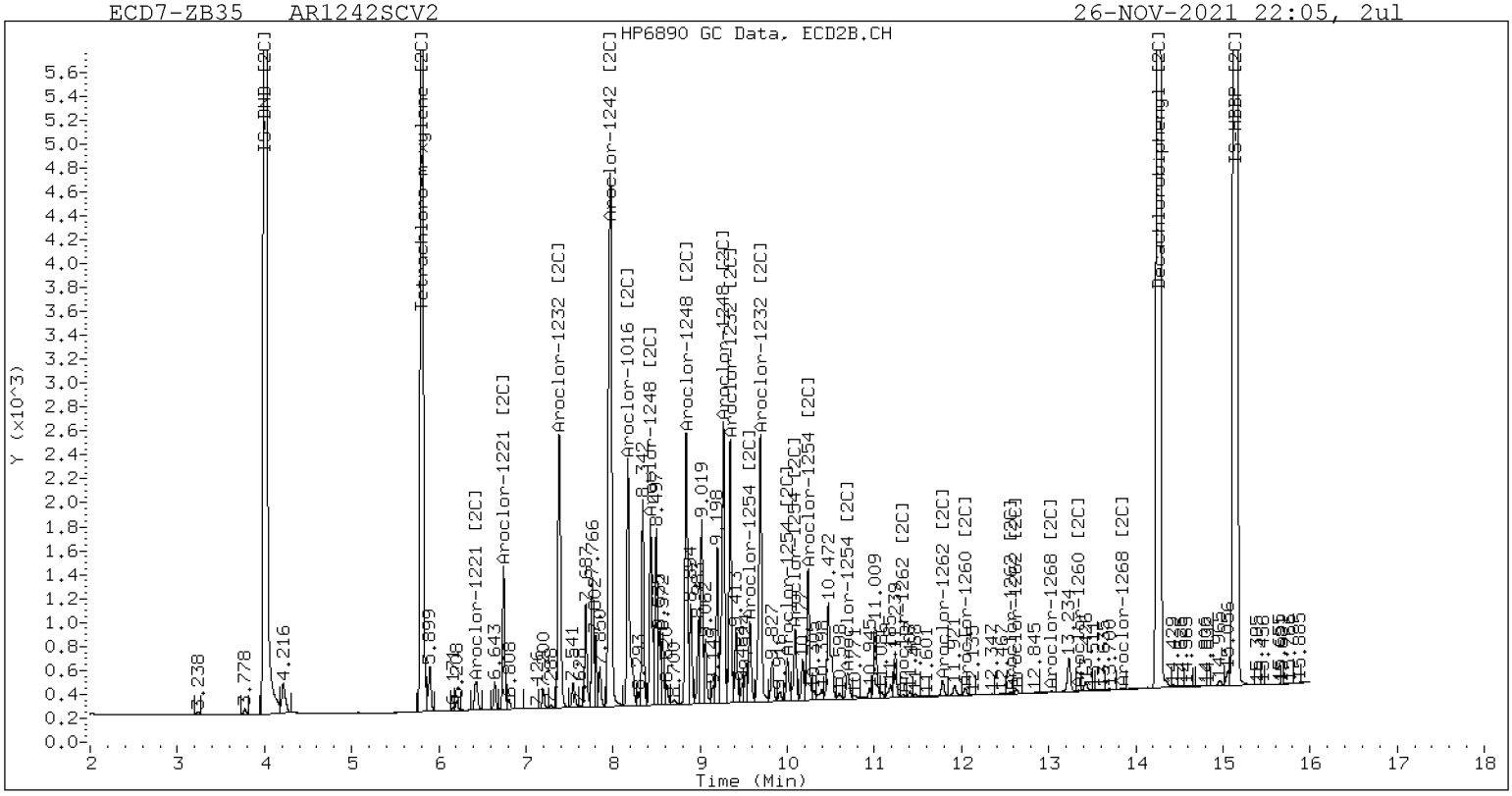
PCB Dual Column Chromatograms

ECD7-ZB5 AR1242SCV2 26-NOV-2021 22:05, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1242SCV2 26-NOV-2021 22:05, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

SECOND-SOURCE
CONTINUING CALIBRATION CHECK
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	ECD7	Calibration:	EK00072
Lab File ID:	11262119ECD7.D	Calibration Date:	11/29/2021
Sequence:	SJK0390	Injection Date:	11/26/21
Lab Sample ID:	SJK0390-SCV3	Injection Time:	22:26
Sequence Name:	AR1248SCV3		

		CONC. (ug/L)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN	CCV	LIMIT
Aroclor 1248	A	250.00	253		0.0509411			+/-20
Aroclor 1248 [2C]	A	250.00	258		0.0540710			+/-20
Decachlorobiphenyl	A	40.000	40.3	0.9260705	0.9336637		0.8	+/-20
Tetrachlorometaxylene	A	40.000	39.8	1.0608030	1.0557410		-0.5	+/-20
Decachlorobiphenyl [2C]	A	40.000	44.6	1.4721440	1.6423900		11.6	+/-20
Tetrachlorometaxylene [2C]	A	40.000	40.1	1.0149580	1.0174000		0.2	+/-20

* Values outside of QC limits

* Values outside of QC limits

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262119ECD7.D
Data file 2: /211126.b/211126.b/11262119ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1248SCV3
Client ID:
Injection Date: 26-NOV-2021 22:26
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.947	-0.000	182915	5.806	-0.001	470143	39.8	40.1	0.7	Tetrachloro-m-xylene
14.041	-0.001	201789	14.263	-0.001	1021839	40.3	44.6	10.1	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	346515	4.6
Hexabromobiphenyl	407599	432252	6.0

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	924205	2.9
Hexabromobiphenyl	1136250	1244332	9.5

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.413	-0.000	12999	98.1	1	7.381	-0.002	55717	107.3
Aroclor-1016	2	7.785	-0.002	59544	130.7	2	7.969	-0.002	165358	136.4
Aroclor-1016	3	7.928	0.002	20933	118.1	3	8.172	-0.000	40569	86.2
Aroclor-1016	4	8.033	0.000	14391	118.5	4	8.431	-0.000	113775	352.2
Total Col1Ave (4 peaks): 116.3						Total Col2Ave (4 peaks): 170.5				RPD = 38
Corrected Ave (3 peaks): 111.5						Corrected Ave (3 peaks): 110.0				RPD = 1
Aroclor-1221	1	---			0.0	1	---			0.0
Aroclor-1221	2	6.272	-0.002	541	10.2	2	6.439	0.020	6343	39.8
Aroclor-1221	3	6.522	-0.000	3629	28.0	3	6.746	0.001	9310	31.6
Col1Ave: <3 Quant Peaks						Col2Ave: <3 Quant Peaks				
Aroclor-1232	1	---			0.0	1	---			0.0
Aroclor-1232	2	7.785	-0.002	59544	307.7	2	7.381	-0.003	55717	220.0
Aroclor-1232	3	9.072	-0.000	57730	908.6	3	9.345	0.000	142014	820.7
Aroclor-1232	4	9.358	0.000	53739	783.9	4	9.693	-0.000	180733	861.5
Total Col1Ave (3 peaks): 666.8						Total Col2Ave (3 peaks): 634.1				RPD = 5
Corrected Ave: < 3 Peaks						Corrected Ave: < 3 Peaks				
Aroclor-1242	1	7.413	-0.001	12999	120.5	1	7.381	-0.002	55717	126.6
Aroclor-1242	2	7.785	-0.001	59544	162.9	2	7.969	-0.002	165358	165.3
Aroclor-1242	3	9.072	0.000	57730	467.6	3	9.345	-0.001	142014	425.1
Aroclor-1242	4	9.358	-0.000	53739	409.6	4	9.693	-0.001	180733	453.2
Total Col1Ave (4 peaks): 290.2						Total Col2Ave (4 peaks): 292.6				RPD = 1
Corrected Ave (3 peaks): 231.0						Corrected Ave (3 peaks): 239.0				RPD = 3
Aroclor-1248	1	8.546	-0.001	46966	260.2	1	8.431	0.000	113775	260.1
Aroclor-1248	2	8.715	-0.001	52600	252.9	2	8.839	-0.000	139569	265.0
Aroclor-1248	3	9.127	0.001	67343	251.2	3	9.268	-0.001	190581	254.0
Aroclor-1248	4	9.358	-0.000	53739	248.4	4	9.693	-0.000	180733	252.2
Total Col1Ave (4 peaks): 253.2						Total Col2Ave (4 peaks): 257.8				RPD = 2
Corrected Ave (3 peaks): 250.8						Corrected Ave (3 peaks): 255.4				RPD = 2
Aroclor-1254	1	9.435	-0.001	31227	90.0	1	9.571	-0.000	55883	75.3
Aroclor-1254	2	9.512	-0.000	14052	123.0	2	10.002	0.001	36985	123.2
Aroclor-1254	3	9.803	-0.000	21802	95.4	3	10.092	-0.000	56433	97.3
Aroclor-1254	4	9.937	0.000	35611	82.5	4	10.240	-0.001	99627	82.9
Aroclor-1254	5	10.645	0.004	24687	82.6	5	10.696	0.006	15931	26.6
Total Col1Ave (5 peaks): 94.7						Total Col2Ave (5 peaks): 81.1				RPD = 16
Corrected Ave (4 peaks): 87.6						Corrected Ave (4 peaks): 70.5				RPD = 22
Aroclor-1260	1	11.186	-0.000	1122	3.8	1	11.784	-0.001	7626	8.5
Aroclor-1260	2	11.503	0.000	884	3.0	2	12.044	-0.001	6508	2.8
Aroclor-1260	3	11.872	-0.000	2573	3.6	3	12.629	-0.002	4330	2.9
Aroclor-1260	4	12.275	0.000	936	2.7	4	13.354	-0.002	2812	4.0
Aroclor-1260	5	12.388	-0.000	827	4.9	NS	---			----
Total Col1Ave (5 peaks): 3.6						Total Col2Ave (4 peaks): 4.6				RPD = 25
Corrected Ave (4 peaks): 3.3						Corrected Ave (3 peaks): 3.3				RPD = 0
Aroclor-1262	1	10.960	0.001	7473	30.6	1	11.329	-0.001	3519	2.5
Aroclor-1262	2	12.388	-0.000	827	2.4	2	11.784	-0.000	7626	6.6
Aroclor-1262	3	12.462	0.000	852	2.4	3	12.565	-0.002	3459	2.5
Aroclor-1262	4	13.126	-0.001	794	2.6	4	12.629	-0.002	4330	2.2
Total Col1Ave (4 peaks): 9.5						Total Col2Ave (4 peaks): 3.5				RPD = 93*
Corrected Ave (3 peaks): 2.5						Corrected Ave (3 peaks): 2.4				RPD = 3
Aroclor-1268	1	12.388	-0.001	827	0.9	1	12.565	-0.004	3459	1.0
Aroclor-1268	2	12.462	0.002	852	1.0	2	12.629	-0.004	4330	1.2
Aroclor-1268	3	12.857	0.010	1058	1.5	3	13.032	-0.001	1600	0.5
Aroclor-1268	4	13.631	-0.003	1307	0.6	4	13.842	-0.008	2845	0.3
Total Col1Ave (4 peaks): 1.0						Total Col2Ave (4 peaks): 0.8				RPD = 28
Corrected Ave (3 peaks): 0.8						Corrected Ave (3 peaks): 0.6				RPD = 35

Total PCB Area Col1 (6.047 - 13.941) = 837591 Col1 Total PCB = 0.2 ppm*

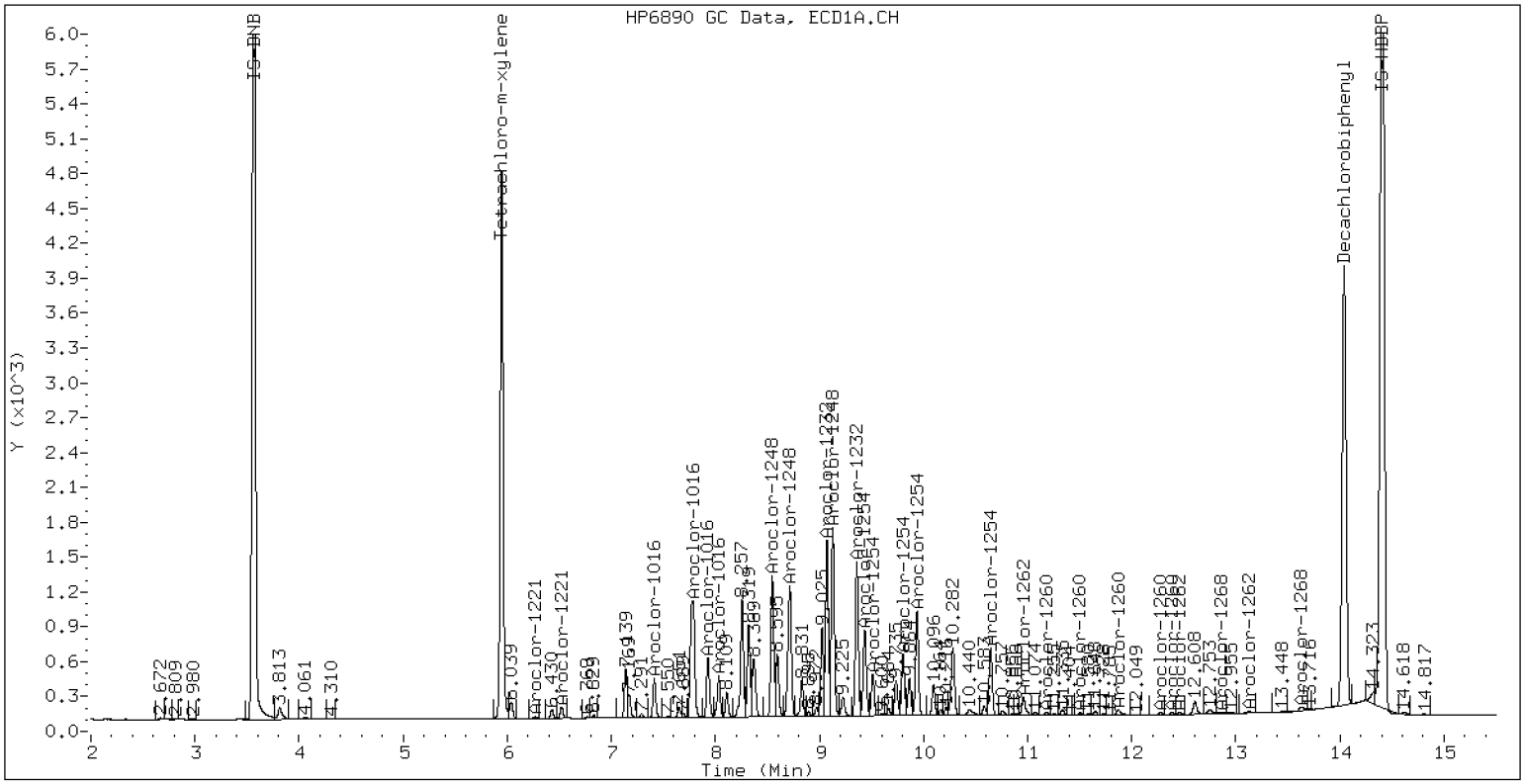
Total PCB Area Col2 (6.047 - 13.941) = 2310633 Col2 Total PCB = 0.2 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

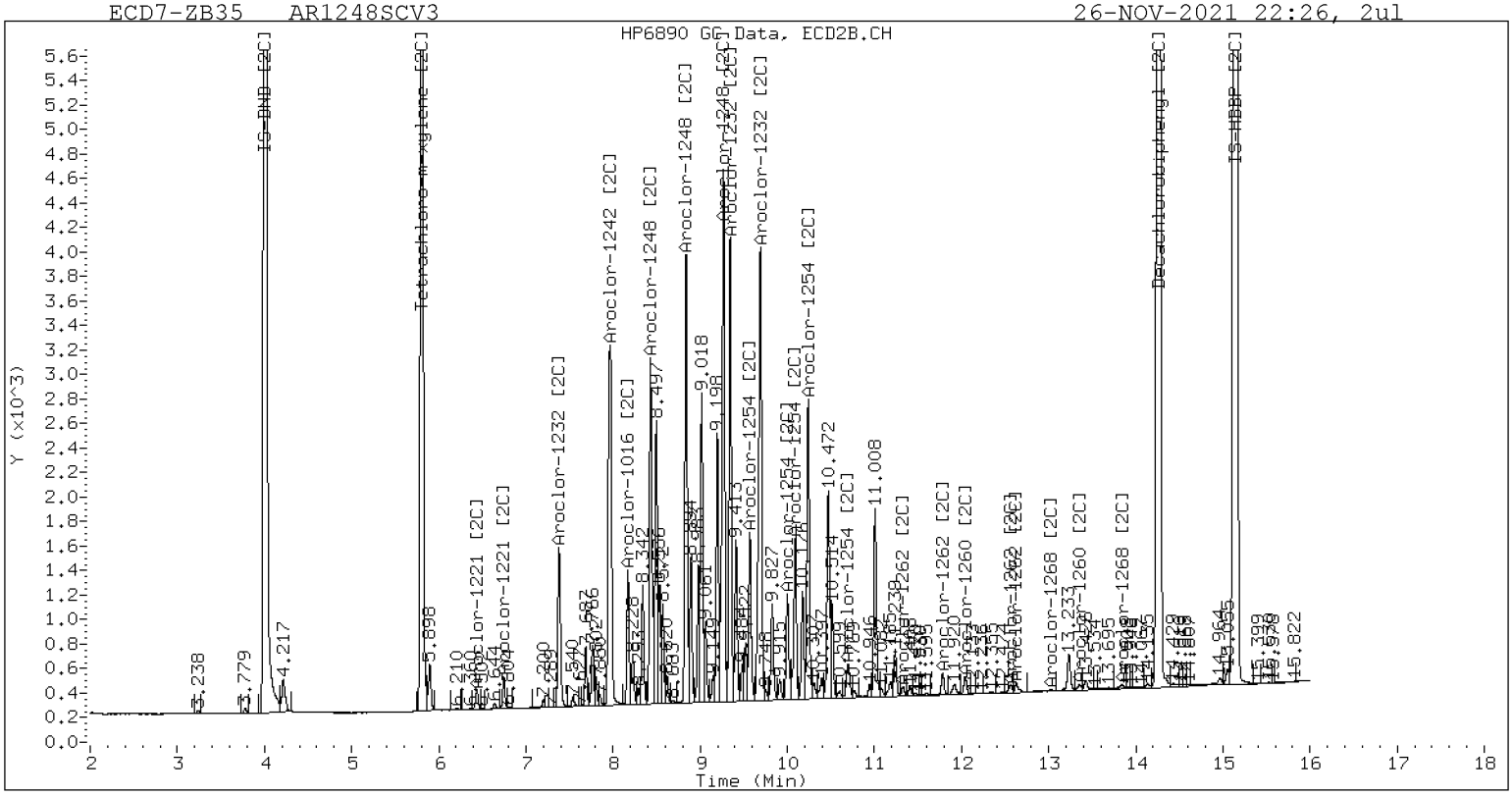
PCB Dual Column Chromatograms

ECD7-ZB5 AR1248SCV3 26-NOV-2021 22:26, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1248SCV3 26-NOV-2021 22:26, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

SECOND-SOURCE
CONTINUING CALIBRATION CHECK
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	ECD7	Calibration:	EK00072
Lab File ID:	11262120ECD7.D	Calibration Date:	11/29/2021
Sequence:	SJK0390	Injection Date:	11/26/21
Lab Sample ID:	SJK0390-SCV4	Injection Time:	22:47
Sequence Name:	AR1254SCV4		

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF	
		STD	CCV	ICAL	CCV	MIN	CCV	LIMIT
Aroclor 1254	A	250.00	253		0.0660104			+/-20
Aroclor 1254 [2C]	A	250.00	259		0.0612163			+/-20
Decachlorobiphenyl	A	40.000	40.1	0.9260705	0.9279899		0.2	+/-20
Tetrachlorometaxylene	A	40.000	39.8	1.0608030	1.0559790		-0.5	+/-20
Decachlorobiphenyl [2C]	A	40.000	44.3	1.4721440	1.6305910		10.8	+/-20
Tetrachlorometaxylene [2C]	A	40.000	40.0	1.0149580	1.0145590		-0.04	+/-20

* Values outside of QC limits

* Values outside of QC limits

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262120ECD7.D
Data file 2: /211126.b/211126.b/11262120ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1254SCV4
Client ID:
Injection Date: 26-NOV-2021 22:47
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.948	0.001	182205	5.807	-0.000	466134	39.8	40.0	0.4	Tetrachloro-m-xylene
14.042	0.001	199870	14.262	-0.002	1018164	40.1	44.3	10.0	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	345092	4.2
Hexabromobiphenyl	407599	430759	5.7

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	918890	2.3
Hexabromobiphenyl	1136250	1248828	9.9

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

Aroclor	ZB5 Col Peak#	RT	Shift	Area	Amount	ZB35 Col Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.413	0.000	382	2.9	1	7.382	-0.001	1494	2.9
Aroclor-1016	2	7.772	-0.015	1738	3.8	2	7.958	-0.013	4168	3.5
Aroclor-1016	3	7.933	0.006	971	5.5	3	8.173	0.001	828	1.8
Aroclor-1016	4	8.033	0.001	384	3.2	4	8.431	-0.000	73497	228.8
Total Col1Ave (4 peaks):					3.9	Total Col2Ave (4 peaks):				59.2 RPD = 176*
Corrected Ave (3 peaks):					3.3	Corrected Ave (3 peaks):				2.7 RPD = 20
Aroclor-1221	1	---			0.0	1	---			0.0
Aroclor-1221	2	---			0.0	2	6.442	0.022	5257	33.1
Aroclor-1221	3	---			0.0	3	6.751	0.006	1515	5.2
Col1Ave: <3 Quant Peaks						Col2Ave: <3 Quant Peaks				
Aroclor-1232	1	---			0.0	1	---			0.0
Aroclor-1232	2	7.772	-0.016	1738	9.0	2	7.382	-0.002	1494	5.9
Aroclor-1232	3	9.072	0.000	27682	437.5	3	9.345	-0.000	23888	138.8
Aroclor-1232	4	9.359	0.001	18777	275.0	4	9.665	-0.028	93470	448.1
Total Col1Ave (3 peaks):					240.5	Total Col2Ave (3 peaks):				197.6 RPD = 20
Corrected Ave: < 3 Peaks						Corrected Ave: < 3 Peaks				
Aroclor-1242	1	7.413	-0.000	382	3.6	1	7.382	-0.001	1494	3.4
Aroclor-1242	2	7.772	-0.015	1738	4.8	2	7.958	-0.013	4168	4.2
Aroclor-1242	3	9.072	0.001	27682	225.1	3	9.345	-0.001	23888	71.9
Aroclor-1242	4	9.359	0.001	18777	143.7	4	9.665	-0.029	93470	235.7
Total Col1Ave (4 peaks):					94.3	Total Col2Ave (4 peaks):				78.8 RPD = 18
Corrected Ave (3 peaks):					50.7	Corrected Ave (3 peaks):				26.5 RPD = 63*
Aroclor-1248	1	8.546	-0.001	16462	91.6	1	8.431	0.000	73497	169.0
Aroclor-1248	2	8.716	0.000	7362	35.5	2	8.839	0.000	42045	80.3
Aroclor-1248	3	9.136	0.009	59751	223.8	3	9.269	0.000	78196	104.8
Aroclor-1248	4	9.359	0.001	18777	87.2	4	9.665	-0.028	93470	131.2
Total Col1Ave (4 peaks):					109.5	Total Col2Ave (4 peaks):				121.3 RPD = 10
Corrected Ave (3 peaks):					71.4	Corrected Ave (3 peaks):				105.4 RPD = 38
Aroclor-1254	1	9.436	-0.000	87277	252.6	1	9.572	0.001	191982	260.1
Aroclor-1254	2	9.512	-0.000	29112	255.9	2	10.001	-0.000	76126	255.1
Aroclor-1254	3	9.803	0.000	57808	254.0	3	10.093	0.000	150250	260.5
Aroclor-1254	4	9.937	-0.000	106810	248.4	4	10.243	0.001	302523	253.1
Aroclor-1254	5	10.640	-0.001	74925	251.9	5	10.691	0.001	158041	265.8
Total Col1Ave (5 peaks):					252.5	Total Col2Ave (5 peaks):				258.9 RPD = 3
Corrected Ave (4 peaks):					251.7	Corrected Ave (4 peaks):				257.2 RPD = 2
Aroclor-1260	1	11.184	-0.003	5210	17.5	1	11.784	-0.001	88404	98.4
Aroclor-1260	2	11.504	0.001	6169	21.1	2	12.044	-0.001	52830	22.9
Aroclor-1260	3	11.871	-0.001	13756	19.3	3	12.628	-0.003	33063	22.4
Aroclor-1260	4	12.274	-0.001	13458	38.4	4	13.354	-0.003	1884	2.7
Aroclor-1260	5	12.389	0.000	454	2.7	NS	---			----
Total Col1Ave (5 peaks):					19.8	Total Col2Ave (4 peaks):				36.6 RPD = 60*
Corrected Ave (4 peaks):					15.1	Corrected Ave (3 peaks):				16.0 RPD = 6
Aroclor-1262	1	10.960	0.001	114541	470.1	1	11.329	-0.001	12706	9.0
Aroclor-1262	2	12.389	0.000	454	1.3	2	11.784	-0.000	88404	76.4
Aroclor-1262	3	12.461	-0.000	544	1.5	3	12.567	0.000	6638	4.8
Aroclor-1262	4	13.127	-0.000	440	1.5	4	12.628	-0.003	33063	16.7
Total Col1Ave (4 peaks):					118.6	Total Col2Ave (4 peaks):				26.7 RPD = 126*
Corrected Ave (3 peaks):					1.4	Corrected Ave (3 peaks):				10.2 RPD = 151*
Aroclor-1268	1	12.389	-0.000	454	0.5	1	12.567	-0.002	6638	1.9
Aroclor-1268	2	12.461	0.001	544	0.6	2	12.628	-0.005	33063	9.4
Aroclor-1268	3	12.860	0.013	1068	1.5	3	13.031	-0.002	615	0.2
Aroclor-1268	4	13.708	0.075	236	0.1	4	13.841	-0.009	857	0.1
Total Col1Ave (4 peaks):					0.7	Total Col2Ave (4 peaks):				2.9 RPD = 124*
Corrected Ave (3 peaks):					0.4	Corrected Ave (3 peaks):				0.7 RPD = 55*

Total PCB Area Col1 (6.047 - 13.941) = 1107221 Col1 Total PCB = 0.3 ppm*

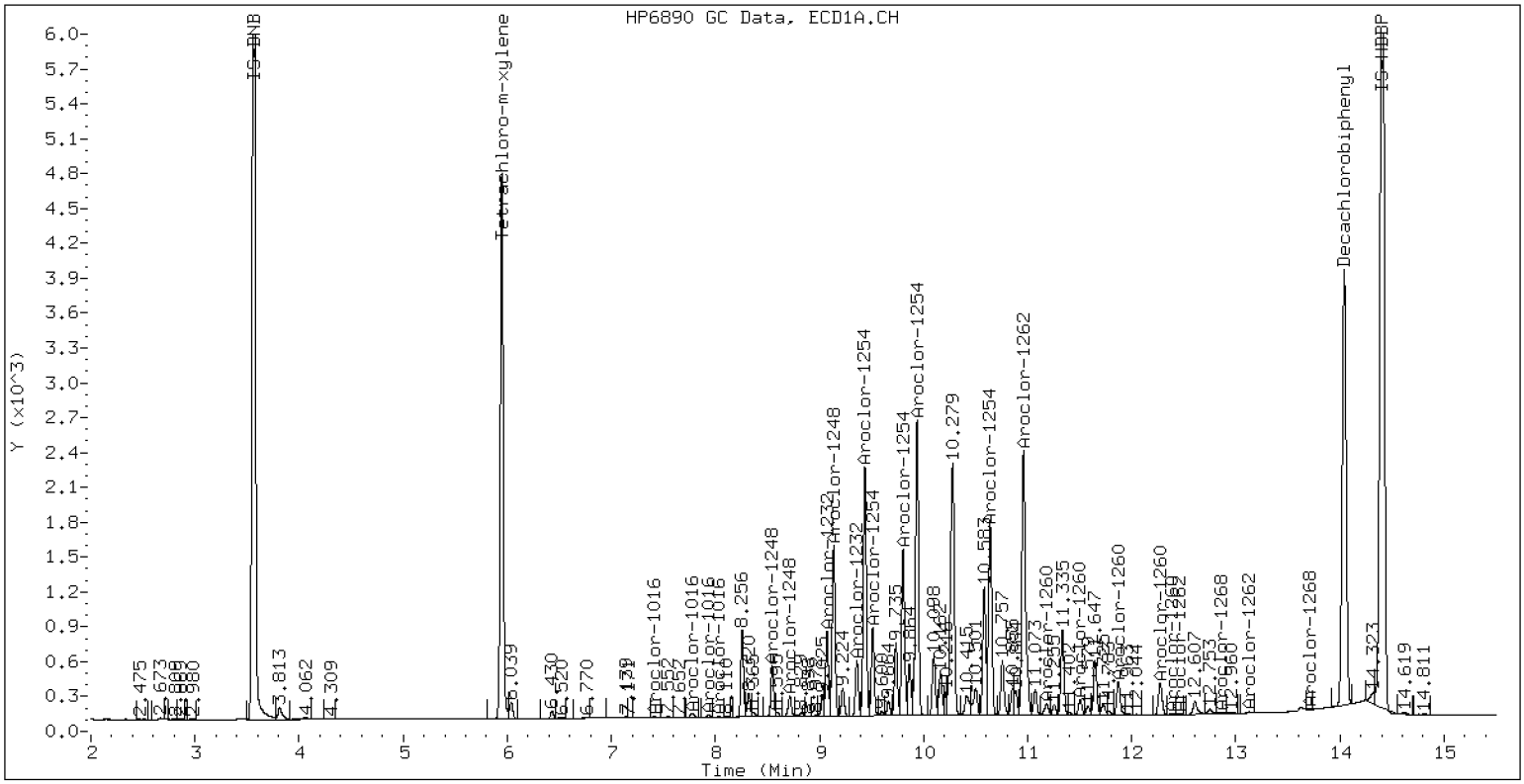
Total PCB Area Col2 (6.047 - 13.941) = 3079798 Col2 Total PCB = 0.3 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

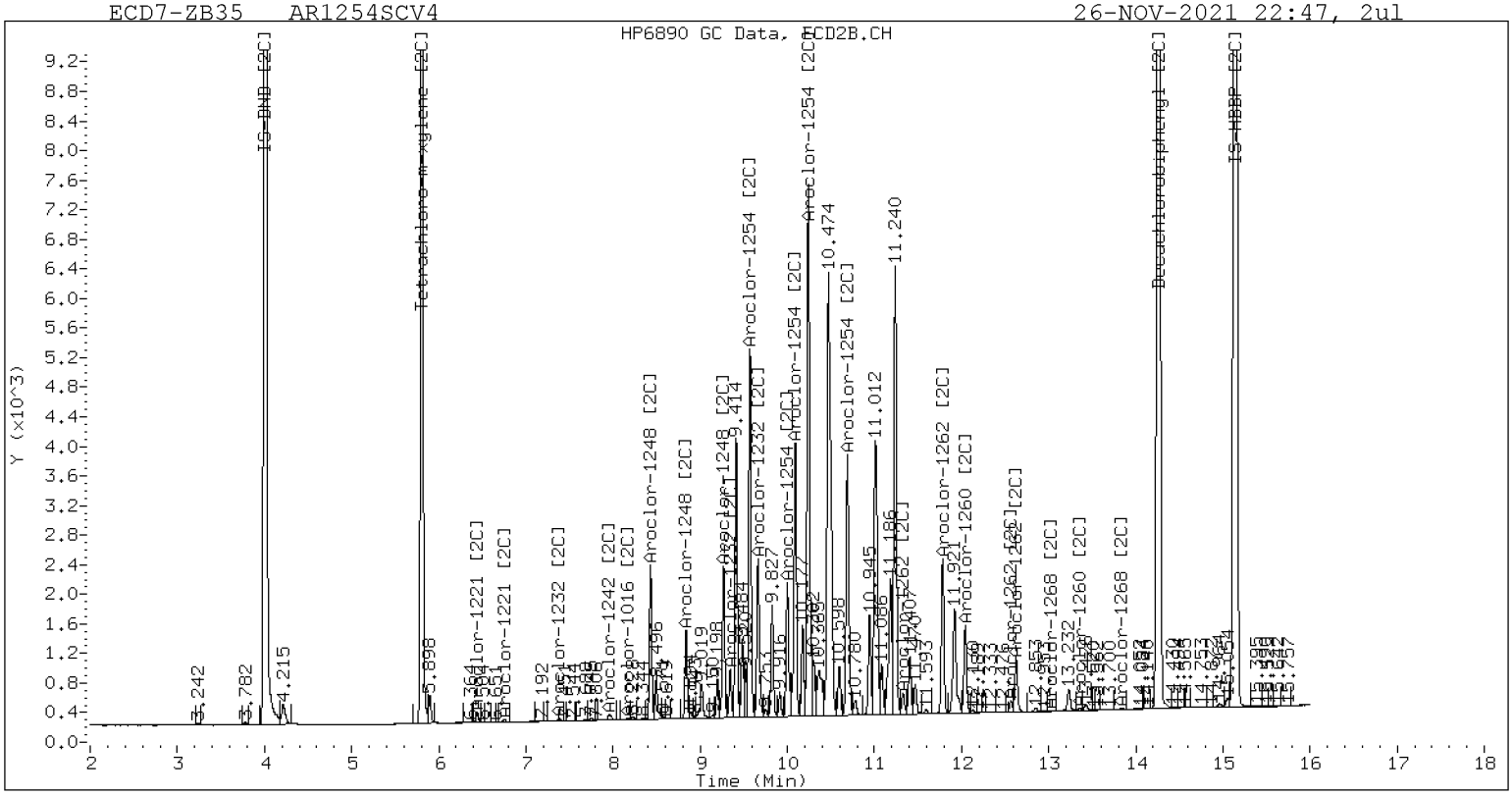
PCB Dual Column Chromatograms

ECD7-ZB5 AR1254SCV4 26-NOV-2021 22:47, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1254SCV4 26-NOV-2021 22:47, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

SECOND-SOURCE
CONTINUING CALIBRATION CHECK
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	ECD7	Calibration:	EK00072
Lab File ID:	11262121ECD7.D	Calibration Date:	11/29/2021
Sequence:	SJK0390	Injection Date:	11/26/21
Lab Sample ID:	SJK0390-SCV5	Injection Time:	23:08
Sequence Name:	AR2162SCV5		

		CONC. (ug/L)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN	CCV	LIMIT
Aroclor 1221	A	250.00	259		0.0168203			+/-20
Aroclor 1221 [2C]	A	250.00	261		0.0153461			+/-20
Decachlorobiphenyl	A	40.000	40.2	0.9260705	0.9314478		0.6	+/-20
Tetrachlorometaxylene	A	40.000	40.3	1.0608030	1.0687900		0.8	+/-20
Decachlorobiphenyl [2C]	A	40.000	44.6	1.4721440	1.6412150		11.5	+/-20
Tetrachlorometaxylene [2C]	A	40.000	40.1	1.0149580	1.0182610		0.3	+/-20

* Values outside of QC limits

* Values outside of QC limits

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262121ECD7.D
Data file 2: /211126.b/211126.b/11262121ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR2162SCV5
Client ID:
Injection Date: 26-NOV-2021 23:08
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	ZB5 Col Shift	ZB5 Col Response	ZB35 Col RT	ZB35 Col Shift	ZB35 Col Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.947	0.000	184681	5.806	-0.001	462758	40.3	40.1	0.4	Tetrachloro-m-xylene
14.041	-0.000	200761	14.262	-0.002	1029177	40.2	44.6	10.3	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	345589	4.4
Hexabromobiphenyl	407599	431073	5.8

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	908918	1.2
Hexabromobiphenyl	1136250	1254165	10.4

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.413	0.000	2856	21.6	1	7.394	0.011	21318	41.7
Aroclor-1016	2	7.787	0.000	7860	17.3	2	7.971	-0.000	19978	16.8
Aroclor-1016	3	7.926	-0.001	3490	19.7	3	8.172	0.000	8826	19.1
Aroclor-1016	4	8.033	0.000	2143	17.7	4	8.430	-0.002	4599	14.5
Total Col1Ave (4 peaks):					19.1	Total Col2Ave (4 peaks):				23.0 RPD = 19
Corrected Ave (3 peaks):					18.2	Corrected Ave (3 peaks):				16.8 RPD = 8
Aroclor-1221	1	4.865	0.001	7857	266.0	1	5.080	-0.000	15959	269.2
Aroclor-1221	2	6.274	0.000	13597	256.8	2	6.420	-0.000	40386	257.4
Aroclor-1221	3	6.523	0.000	33042	255.7	3	6.745	-0.000	74421	257.2
Total Col1Ave (3 peaks):					259.5	Total Col2Ave (3 peaks):				261.3 RPD = 1
Corrected Ave: < 3 Peaks						Corrected Ave: < 3 Peaks				
Aroclor-1232	1	4.865	-0.001	7857	451.1	1	5.080	-0.002	15959	457.2
Aroclor-1232	2	7.787	-0.001	7860	40.7	2	7.394	0.010	21318	85.6
Aroclor-1232	3	9.072	-0.000	1914	30.2	3	9.346	0.001	2996	17.6
Aroclor-1232	4	9.359	0.001	2278	33.3	4	9.689	-0.004	5633	27.3
Total Col1Ave (4 peaks):					138.8	Total Col2Ave (4 peaks):				146.9 RPD = 6
Corrected Ave (3 peaks):					34.8	Corrected Ave (3 peaks):				43.5 RPD = 22
Aroclor-1242	1	7.413	-0.000	2856	26.6	1	7.394	0.012	21318	49.3
Aroclor-1242	2	7.787	0.000	7860	21.6	2	7.971	-0.000	19978	20.3
Aroclor-1242	3	9.072	0.000	1914	15.5	3	9.346	-0.000	2996	9.1
Aroclor-1242	4	9.359	0.000	2278	17.4	4	9.689	-0.005	5633	14.4
Total Col1Ave (4 peaks):					20.3	Total Col2Ave (4 peaks):				23.3 RPD = 14
Corrected Ave (3 peaks):					18.2	Corrected Ave (3 peaks):				14.6 RPD = 22
Aroclor-1248	1	8.546	-0.001	1601	8.9	1	8.430	-0.001	4599	10.7
Aroclor-1248	2	8.715	-0.001	1430	6.9	2	8.841	0.002	5162	10.0
Aroclor-1248	3	9.136	0.009	10779	40.3	3	9.269	-0.000	5122	6.9
Aroclor-1248	4	9.359	0.000	2278	10.6	4	9.689	-0.004	5633	8.0
Total Col1Ave (4 peaks):					16.7	Total Col2Ave (4 peaks):				8.9 RPD = 61*
Corrected Ave (3 peaks):					8.8	Corrected Ave (3 peaks):				8.3 RPD = 6
Aroclor-1254	1	9.437	0.000	12195	35.2	1	9.570	-0.001	29260	40.1
Aroclor-1254	2	9.512	-0.000	1007	8.8	2	10.001	-0.000	2087	7.1
Aroclor-1254	3	9.803	0.000	2308	10.1	3	10.091	-0.001	5083	8.9
Aroclor-1254	4	9.908	-0.030	16371	38.0	4	10.273	0.032	148826	125.9
Aroclor-1254	5	10.631	-0.010	13347	44.8	5	10.689	-0.001	222456	378.3
Total Col1Ave (5 peaks):					27.4	Total Col2Ave (5 peaks):				112.0 RPD = 121*
Corrected Ave (4 peaks):					23.1	Corrected Ave (4 peaks):				45.5 RPD = 65*
Aroclor-1260	1	11.187	0.000	111070	372.6	1	11.784	-0.001	287354	318.3
Aroclor-1260	2	11.504	0.001	91199	311.9	2	12.043	-0.002	686236	296.1
Aroclor-1260	3	11.873	0.001	210202	294.6	3	12.630	-0.001	490536	331.2
Aroclor-1260	4	12.275	0.000	70980	202.2	4	13.356	-0.000	301563	428.9
Aroclor-1260	5	12.389	0.000	86356	509.3	NS	---			----
Total Col1Ave (5 peaks):					338.1	Total Col2Ave (4 peaks):				343.6 RPD = 2
Corrected Ave (4 peaks):					295.3	Corrected Ave (3 peaks):				315.2 RPD = 7
Aroclor-1262	1	10.959	0.000	62979	258.3	1	11.329	-0.000	345514	245.0
Aroclor-1262	2	12.389	0.001	86356	246.9	2	11.784	-0.000	287354	247.4
Aroclor-1262	3	12.462	0.001	87943	247.3	3	12.565	-0.001	343814	246.4
Aroclor-1262	4	13.126	-0.001	74058	247.4	4	12.630	-0.000	490536	246.8
Total Col1Ave (4 peaks):					250.0	Total Col2Ave (4 peaks):				246.4 RPD = 1
Corrected Ave (3 peaks):					247.2	Corrected Ave (3 peaks):				246.1 RPD = 0
Aroclor-1268	1	12.389	0.000	86356	93.0	1	12.565	-0.003	343814	98.7
Aroclor-1268	2	12.462	0.002	87943	104.4	2	12.630	-0.003	490536	139.0
Aroclor-1268	3	12.864	0.017	34261	47.3	3	13.030	-0.003	17281	5.5
Aroclor-1268	4	13.631	-0.002	23771	11.4	4	13.842	-0.008	93848	8.4
Total Col1Ave (4 peaks):					64.0	Total Col2Ave (4 peaks):				62.9 RPD = 2

Corrected Ave (3 peaks): 50.6 Corrected Ave (3 peaks): 37.5 RPD = 30

Total PCB Area Col1 (6.047 - 13.941) = 1512904 Col1 Total PCB = 0.4 ppm*

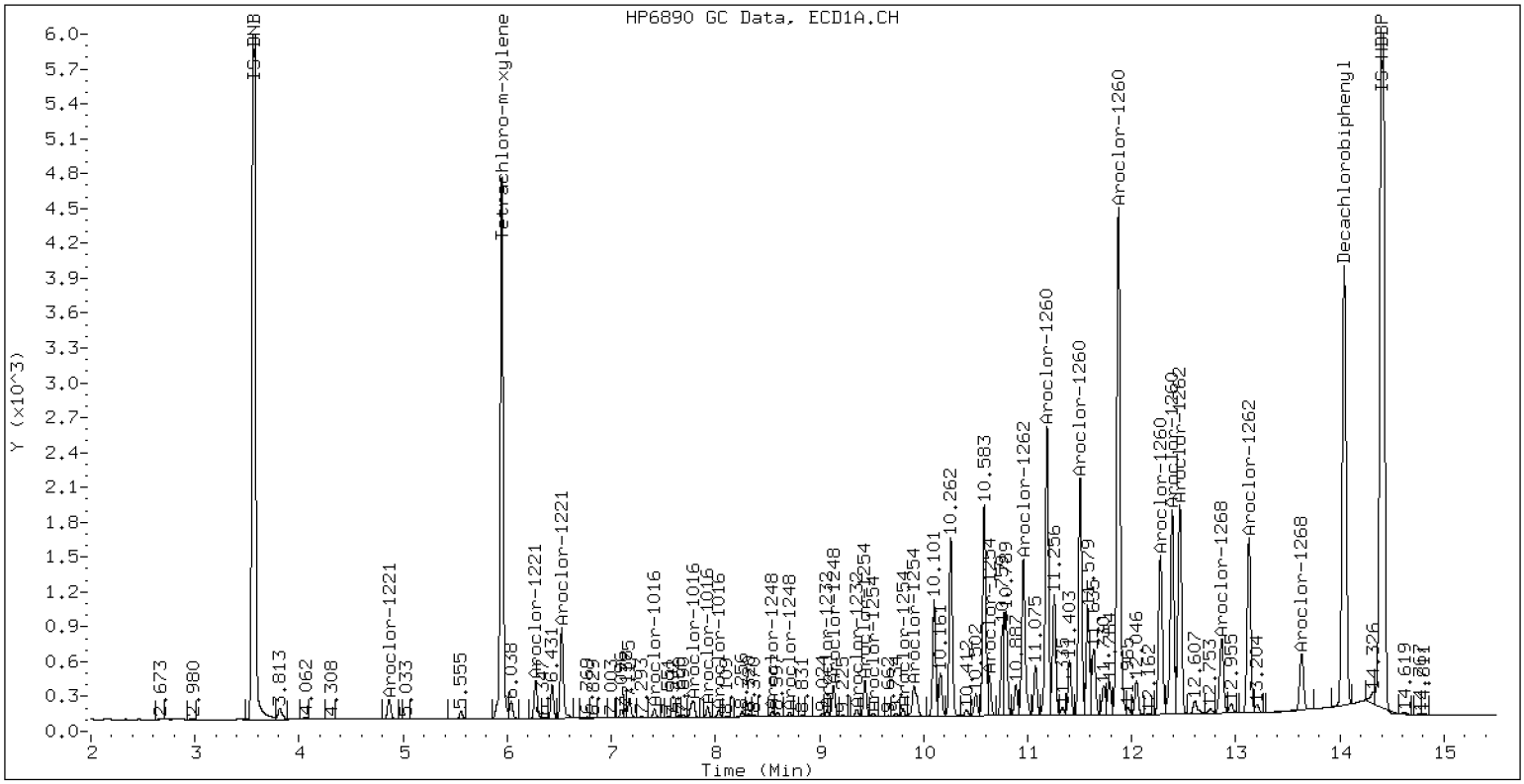
Total PCB Area Col2 (6.047 - 13.941) = 4640566 Col2 Total PCB = 0.5 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

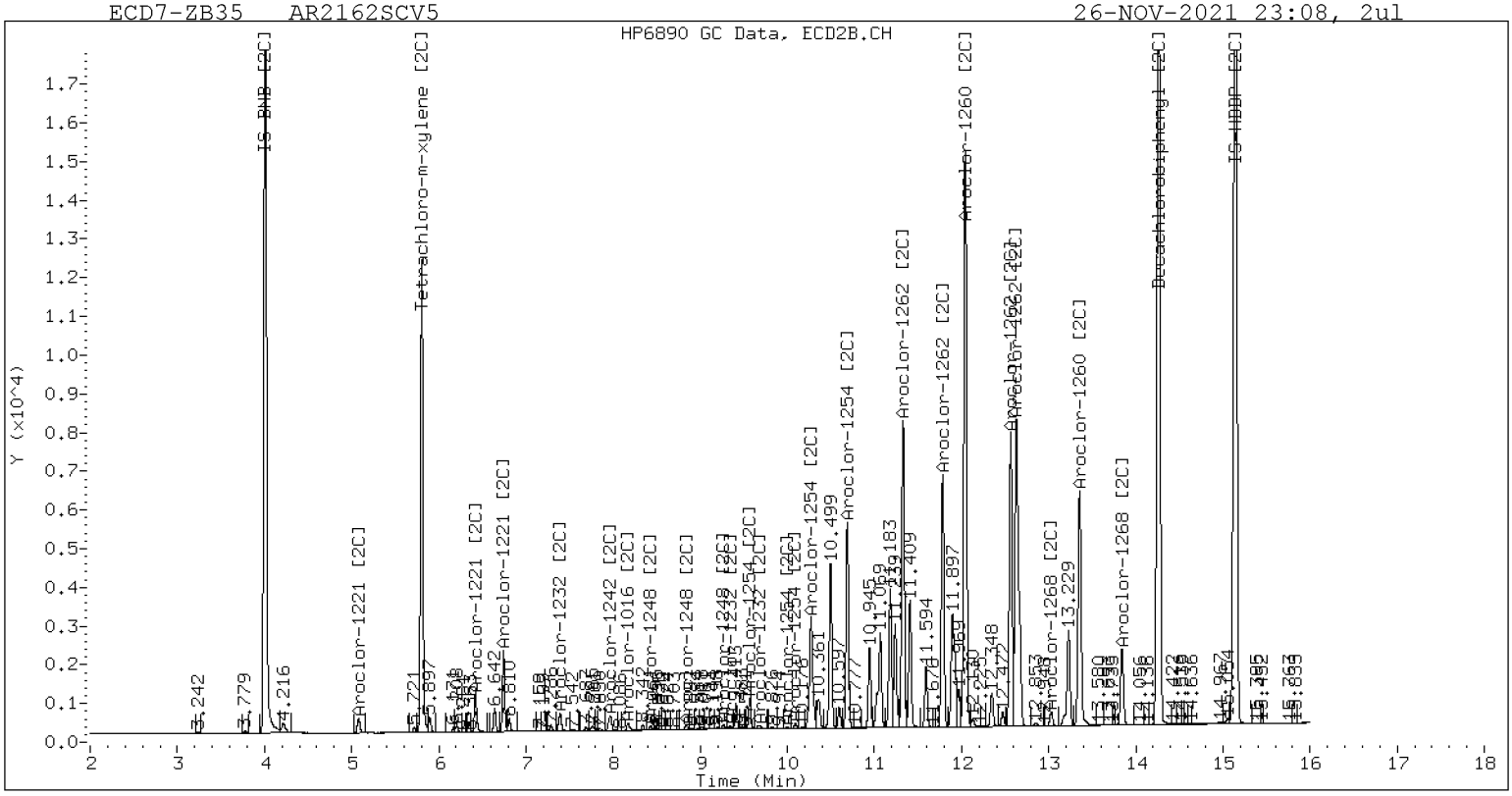
PCB Dual Column Chromatograms

ECD7-ZB5 AR2162SCV5 26-NOV-2021 23:08, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR2162SCV5 26-NOV-2021 23:08, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

SECOND-SOURCE
CONTINUING CALIBRATION CHECK
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	ECD7	Calibration:	EK00072
Lab File ID:	11262122ECD7.D	Calibration Date:	11/29/2021
Sequence:	SJK0390	Injection Date:	11/26/21
Lab Sample ID:	SJK0390-SCV6	Injection Time:	23:30
Sequence Name:	AR3268SCV6		

		CONC. (ug/L)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN	CCV	LIMIT
Aroclor 1232	A	250.00	263		0.0208883			+/-20
Aroclor 1232 [2C]	A	250.00	261		0.0152652			+/-20
Decachlorobiphenyl	A	40.000	60.0	0.9260705	1.3890500		50.0	+/-20
Tetrachlorometaxylene	A	40.000	40.1	1.0608030	1.0632680		0.2	+/-20
Decachlorobiphenyl [2C]	A	40.000	73.3	1.4721440	2.6966710		83.2	+/-20
Tetrachlorometaxylene [2C]	A	40.000	40.1	1.0149580	1.0182420		0.3	+/-20

* Values outside of QC limits

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211126.b/11262122ECD7.D
Data file 2: /211126.b/211126.b/11262122ECD7.D
Method: \\target\share\chem4\ecd7.i\211126.b\PCB.m
Compound Sublist: PCB.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR3268SCV6
Client ID:
Injection Date: 26-NOV-2021 23:30
Report Date: 11/29/2021 08:39
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	ZB5 Col Shift	ZB5 Col Response	ZB35 Col RT	ZB35 Col Shift	ZB35 Col Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.948	0.001	183754	5.806	-0.001	466675	40.1	40.1	0.1	Tetrachloro-m-xylene
14.042	0.000	300414	14.266	0.002	1702245	60.0	73.3	19.9	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	345640	4.4
Hexabromobiphenyl	407599	432546	6.1

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	916629	2.0
Hexabromobiphenyl	1136250	1262479	11.1

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

	ZB5 Col					ZB35 Col				
Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
Aroclor-1016	1	7.413	0.000	15355	116.1	1	7.382	-0.000	66208	128.5
Aroclor-1016	2	7.787	0.000	51051	112.4	2	7.970	-0.001	141589	117.8
Aroclor-1016	3	7.926	-0.000	20206	114.3	3	8.172	-0.000	54432	116.6
Aroclor-1016	4	8.033	0.000	13954	115.1	4	8.430	-0.001	33150	103.5
Total Col1Ave (4 peaks):				114.5		Total Col2Ave (4 peaks):			116.6	RPD = 2
Corrected Ave (3 peaks):				113.9		Corrected Ave (3 peaks):			112.6	RPD = 1
Aroclor-1221	1	4.865	0.001	4510	152.7	1	5.081	0.001	8948	149.7
Aroclor-1221	2	6.274	0.000	7725	145.9	2	6.421	0.001	24911	157.4
Aroclor-1221	3	6.523	0.000	24036	186.0	3	6.745	0.000	57298	196.3
Total Col1Ave (3 peaks):				161.5		Total Col2Ave (3 peaks):			167.8	RPD = 4
Corrected Ave: < 3 Peaks						Corrected Ave: < 3 Peaks				
Aroclor-1232	1	4.865	-0.001	4510	258.9	1	5.081	-0.001	8948	254.2
Aroclor-1232	2	7.787	-0.001	51051	264.5	2	7.382	-0.001	66208	263.6
Aroclor-1232	3	9.072	0.000	16927	267.1	3	9.345	0.000	45544	265.4
Aroclor-1232	4	9.358	0.000	17760	259.7	4	9.692	-0.001	54207	260.5
Total Col1Ave (4 peaks):				262.6		Total Col2Ave (4 peaks):			260.9	RPD = 1
Corrected Ave (3 peaks):				261.0		Corrected Ave (3 peaks):			259.5	RPD = 1
Aroclor-1242	1	7.413	-0.000	15355	142.7	1	7.382	0.000	66208	151.7
Aroclor-1242	2	7.787	0.000	51051	140.1	2	7.970	-0.001	141589	142.7
Aroclor-1242	3	9.072	0.000	16927	137.4	3	9.345	-0.001	45544	137.5
Aroclor-1242	4	9.358	-0.000	17760	135.7	4	9.692	-0.002	54207	137.1
Total Col1Ave (4 peaks):				139.0		Total Col2Ave (4 peaks):			142.2	RPD = 2
Corrected Ave (3 peaks):				137.7		Corrected Ave (3 peaks):			139.1	RPD = 1
Aroclor-1248	1	8.546	-0.001	15301	85.0	1	8.430	-0.001	33150	76.4
Aroclor-1248	2	8.715	-0.000	18376	88.6	2	8.840	0.001	52244	100.0
Aroclor-1248	3	9.126	-0.001	19712	73.7	3	9.268	-0.001	56881	76.4
Aroclor-1248	4	9.358	-0.000	17760	82.3	4	9.692	-0.001	54207	76.3
Total Col1Ave (4 peaks):				82.4		Total Col2Ave (4 peaks):			82.3	RPD = 0
Corrected Ave (3 peaks):				80.3		Corrected Ave (3 peaks):			76.4	RPD = 5
Aroclor-1254	1	9.435	-0.001	5233	15.1	1	9.571	-0.001	9346	12.7
Aroclor-1254	2	9.512	-0.000	2205	19.3	2	10.002	0.001	5812	19.5
Aroclor-1254	3	9.803	-0.000	3445	15.1	3	10.091	-0.001	8336	14.5
Aroclor-1254	4	9.937	-0.000	6096	14.2	4	10.239	-0.002	17852	15.0
Aroclor-1254	5	10.644	0.003	3826	12.8	5	10.690	-0.000	5138	8.7
Total Col1Ave (5 peaks):				15.3		Total Col2Ave (5 peaks):			14.1	RPD = 8
Corrected Ave (4 peaks):				14.3		Corrected Ave (4 peaks):			12.7	RPD = 12
Aroclor-1260	1	11.187	0.000	40974	137.0	1	11.782	-0.004	180143	198.2
Aroclor-1260	2	11.504	0.001	3232	11.0	2	12.042	-0.003	77621	33.3
Aroclor-1260	3	11.871	-0.000	25592	35.7	3	12.636	0.005	922264	618.6
Aroclor-1260	4	12.275	0.000	999	2.8	4	13.356	-0.001	316335	447.0
Aroclor-1260	5	12.389	0.000	236962	1392.7	NS	---			----
Total Col1Ave (5 peaks):				315.9		Total Col2Ave (4 peaks):			324.3	RPD = 3
Corrected Ave (4 peaks):				46.6		Corrected Ave (3 peaks):			226.2	RPD = 132*
Aroclor-1262	1	10.959	0.000	1736	7.1	1	11.329	-0.001	126404	89.0
Aroclor-1262	2	12.389	0.001	236962	675.3	2	11.782	-0.003	180143	154.1
Aroclor-1262	3	12.459	-0.002	213750	599.0	3	12.568	0.002	869194	618.8
Aroclor-1262	4	13.127	-0.001	82344	274.1	4	12.636	0.006	922264	460.9
Total Col1Ave (4 peaks):				388.9		Total Col2Ave (4 peaks):			330.7	RPD = 16
Corrected Ave (3 peaks):				293.4		Corrected Ave (3 peaks):			234.7	RPD = 22
Aroclor-1268	1	12.389	0.000	236962	254.3	1	12.568	-0.000	869194	247.9
Aroclor-1268	2	12.459	-0.001	213750	252.9	2	12.636	0.003	922264	259.6
Aroclor-1268	3	12.847	-0.000	185195	255.0	3	13.033	-0.000	799870	253.2
Aroclor-1268	4	13.634	0.000	536844	255.9	4	13.850	-0.000	2883202	254.9
Total Col1Ave (4 peaks):				254.5		Total Col2Ave (4 peaks):			253.9	RPD = 0

Corrected Ave (3 peaks): 254.1 Corrected Ave (3 peaks): 252.0 RPD = 1

Total PCB Area Col1 (6.047 - 13.941) = 1841096 Col1 Total PCB = 0.5 ppm*

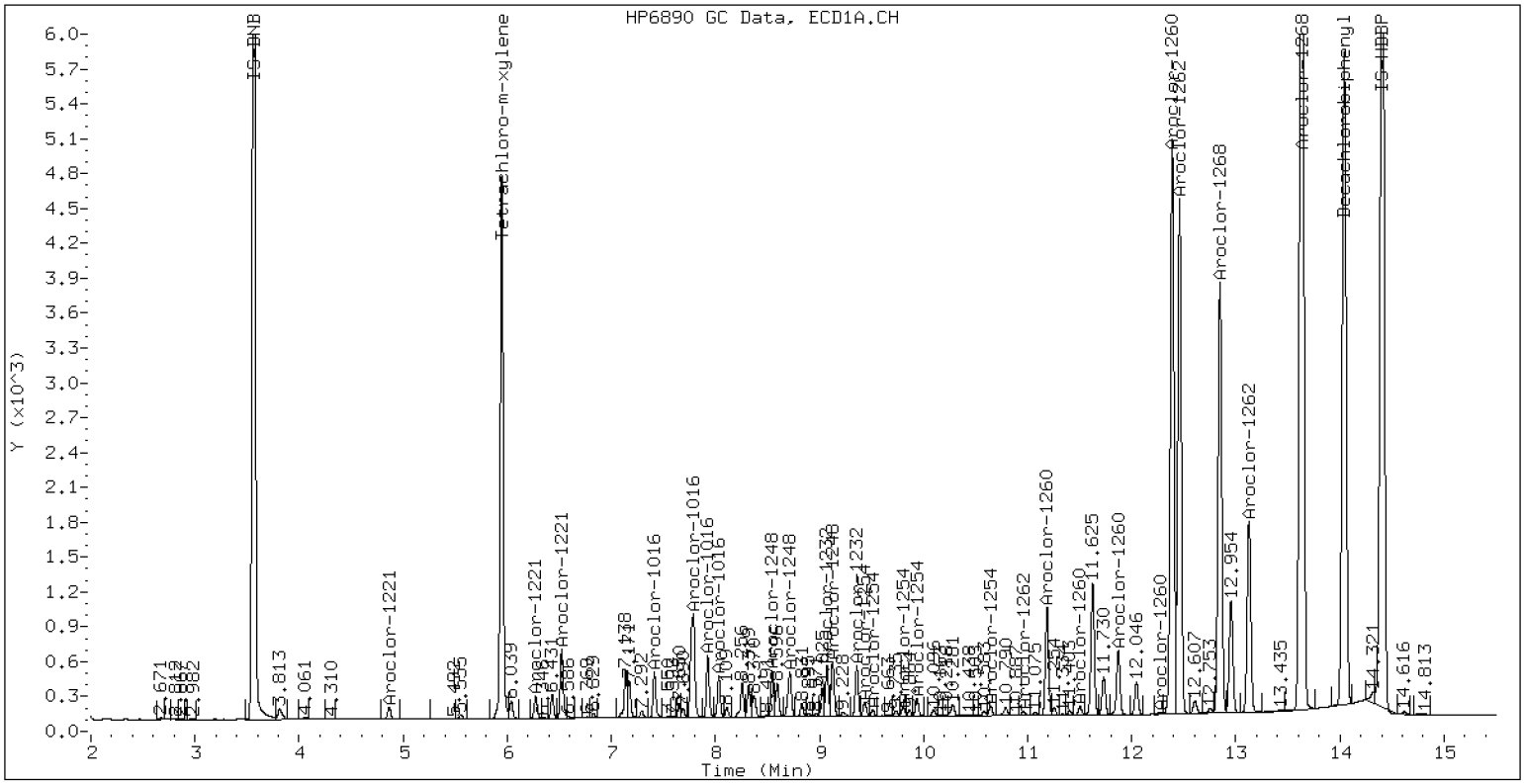
Total PCB Area Col2 (6.047 - 13.941) = 7499927 Col2 Total PCB = 0.7 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

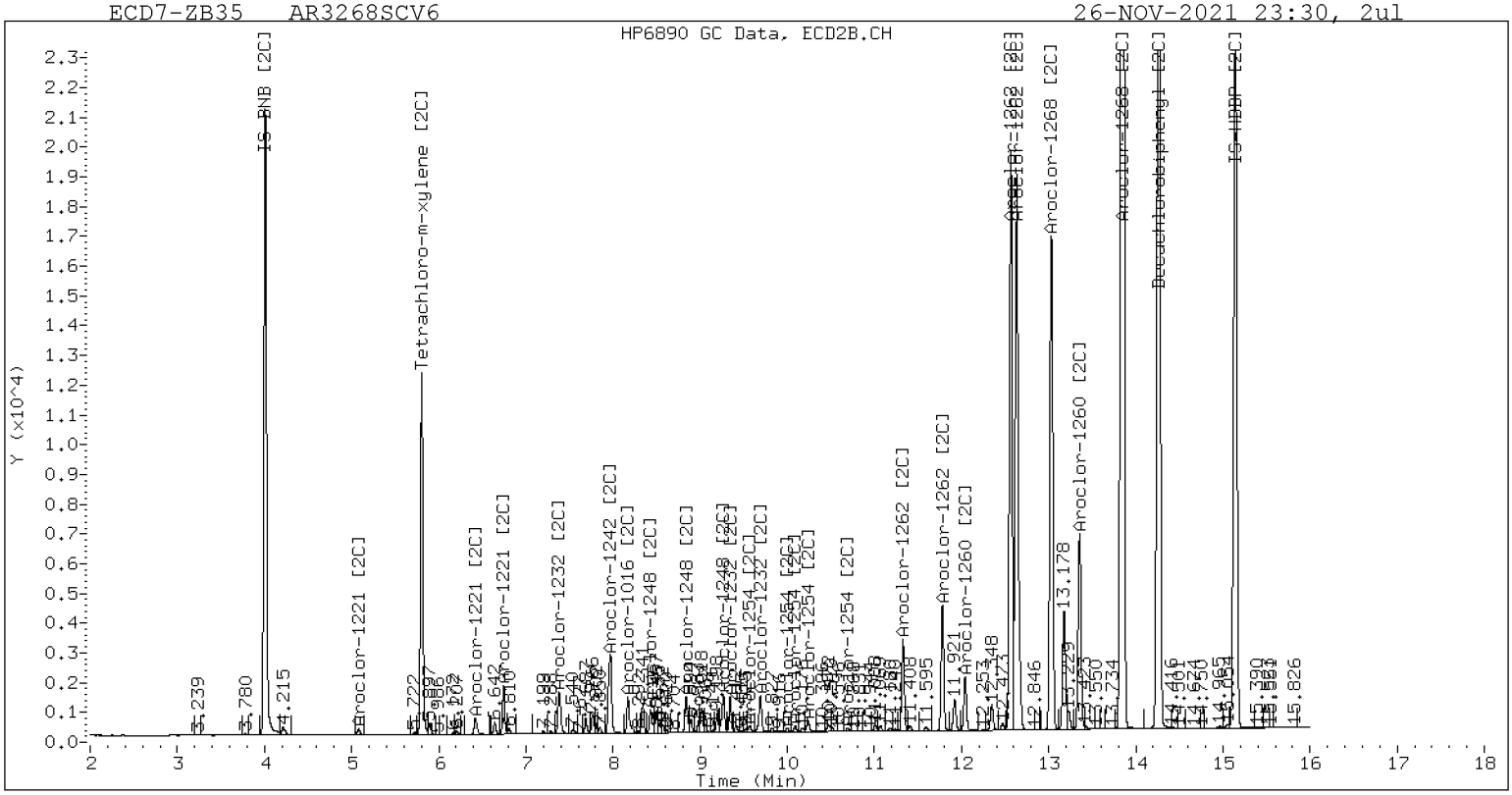
PCB Dual Column Chromatograms

ECD7-ZB5 AR3268SCV6 26-NOV-2021 23:30, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR3268SCV6 26-NOV-2021 23:30, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

CONTINUING CALIBRATION CHECK
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	ECD7	Calibration:	EK00072
Lab File ID:	11272121ECD7.D	Calibration Date:	11/29/2021
Sequence:	SJK0396	Injection Date:	11/27/21
Lab Sample ID:	SJK0396-CCV1	Injection Time:	19:08
Sequence Name:	AR1248CCV1		

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF	
		STD	CCV	ICAL	CCV	MIN	CCV	LIMIT
Aroclor 1248	A	250.00	249		0.0501126			+/-20
Aroclor-1248 (1)	A	250.00	248		0.0413608			
Aroclor-1248 (2)	A	250.00	248		0.0476987			
Aroclor-1248 (3)	A	250.00	249		0.0615574			
Aroclor-1248 (4)	A	250.00	249		0.0498335			
Aroclor 1248 [2C]	A	250.00	253		0.0533302			+/-20
Aroclor-1248 (1) [2C]	A	250.00	254		0.0384811			
Aroclor-1248 (2) [2C]	A	250.00	249		0.0454566			
Aroclor-1248 (3) [2C]	A	250.00	254		0.0659391			
Aroclor-1248 (4) [2C]	A	250.00	256		0.0634440			
Decachlorobiphenyl	A	40.000	40.2	0.9260705	0.9304436		0.5	+/-20
Tetrachlorometaxylene	A	40.000	39.6	1.0608030	1.0498600		-1.0	+/-20
Decachlorobiphenyl [2C]	A	40.000	43.1	1.4721440	1.5863310		7.8	+/-20
Tetrachlorometaxylene [2C]	A	40.000	40.1	1.0149580	1.0165870		0.3	+/-20

* Values outside of QC limits

* Values outside of QC limits

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211127.b/11272121ECD7.D
Data file 2: /211127.b/211127.b/11272121ECD7.D
Method: \\target\share\chem4\ecd7.i\211127.b\PCB.m
Compound Sublist: AR1248.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1248CCV1
Client ID:
Injection Date: 27-NOV-2021 19:08
Report Date: 11/29/2021 10:57
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.943	0.001	184041	5.802	0.001	464278	39.6	40.1	1.2	Tetrachloro-m-xylene
14.040	-0.001	209013	14.262	0.001	1073002	40.2	43.1	7.0	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	350601	5.9
Hexabromobiphenyl	407599	449276	10.2

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	913405	1.7
Hexabromobiphenyl	1136250	1352810	19.1

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
		ZB5 Col					ZB35 Col			
Aroclor-1248	1	8.544	0.000	45316	248.2	1	8.429	0.000	109840	254.1
Aroclor-1248	2	8.713	0.000	52260	248.3	2	8.838	0.000	129751	249.3
Aroclor-1248	3	9.126	0.000	67444	248.7	3	9.268	0.000	188216	253.8
Aroclor-1248	4	9.357	0.000	54599	249.5	4	9.690	0.000	181094	255.6

Total Col1Ave (4 peaks): 248.6 Total Col2Ave (4 peaks): 253.2 RPD = 2

Corrected Ave (3 peaks): 248.4 Corrected Ave (3 peaks): 252.4 RPD = 2

CalAmt %D: -0.5 CalAmt %D: 1.3

Total PCB Area Col1 (6.043 - 13.940) = 811270 Col1 Total PCB = 0.2 ppm*

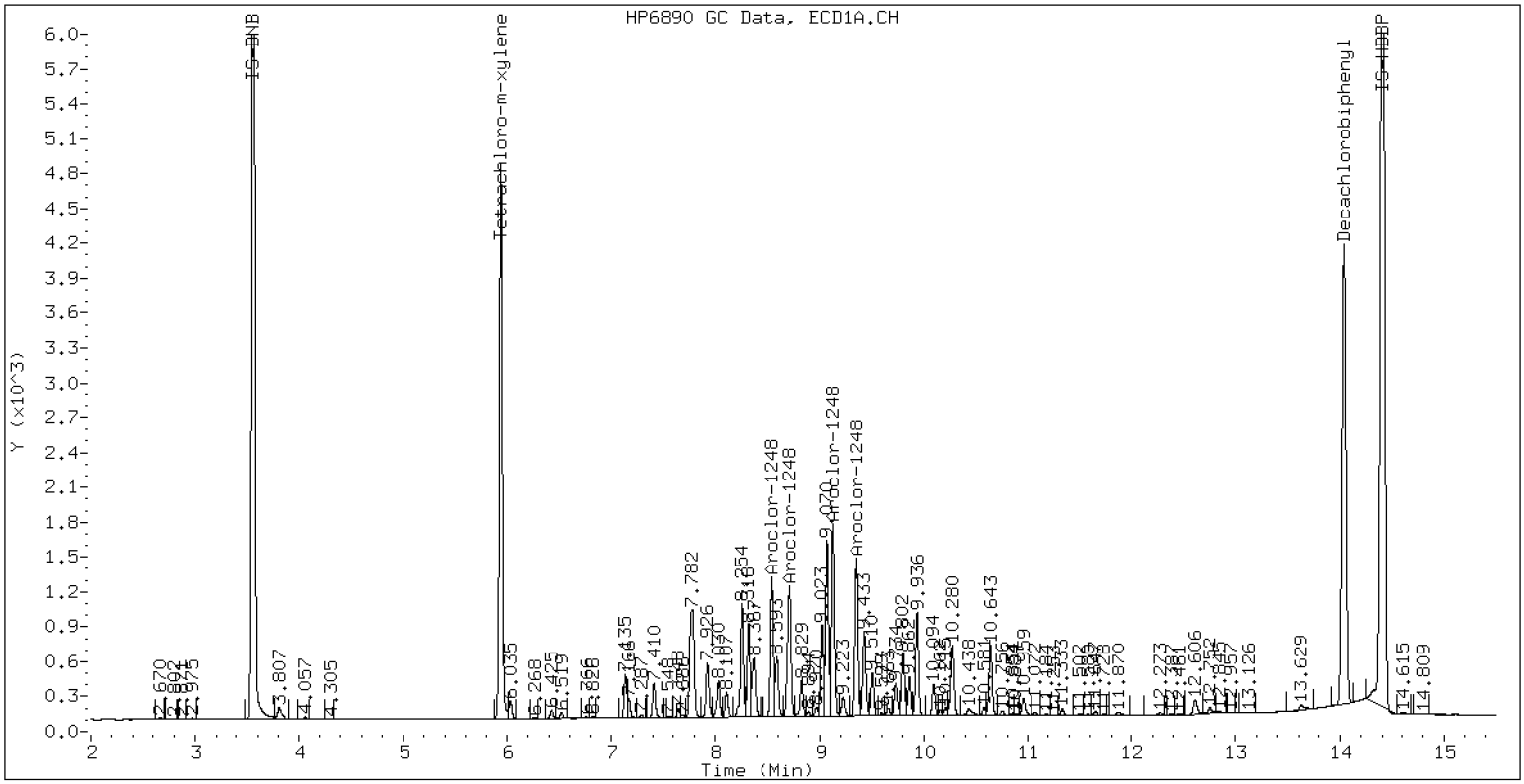
Total PCB Area Col2 (6.043 - 13.940) = 2200429 Col2 Total PCB = 0.2 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

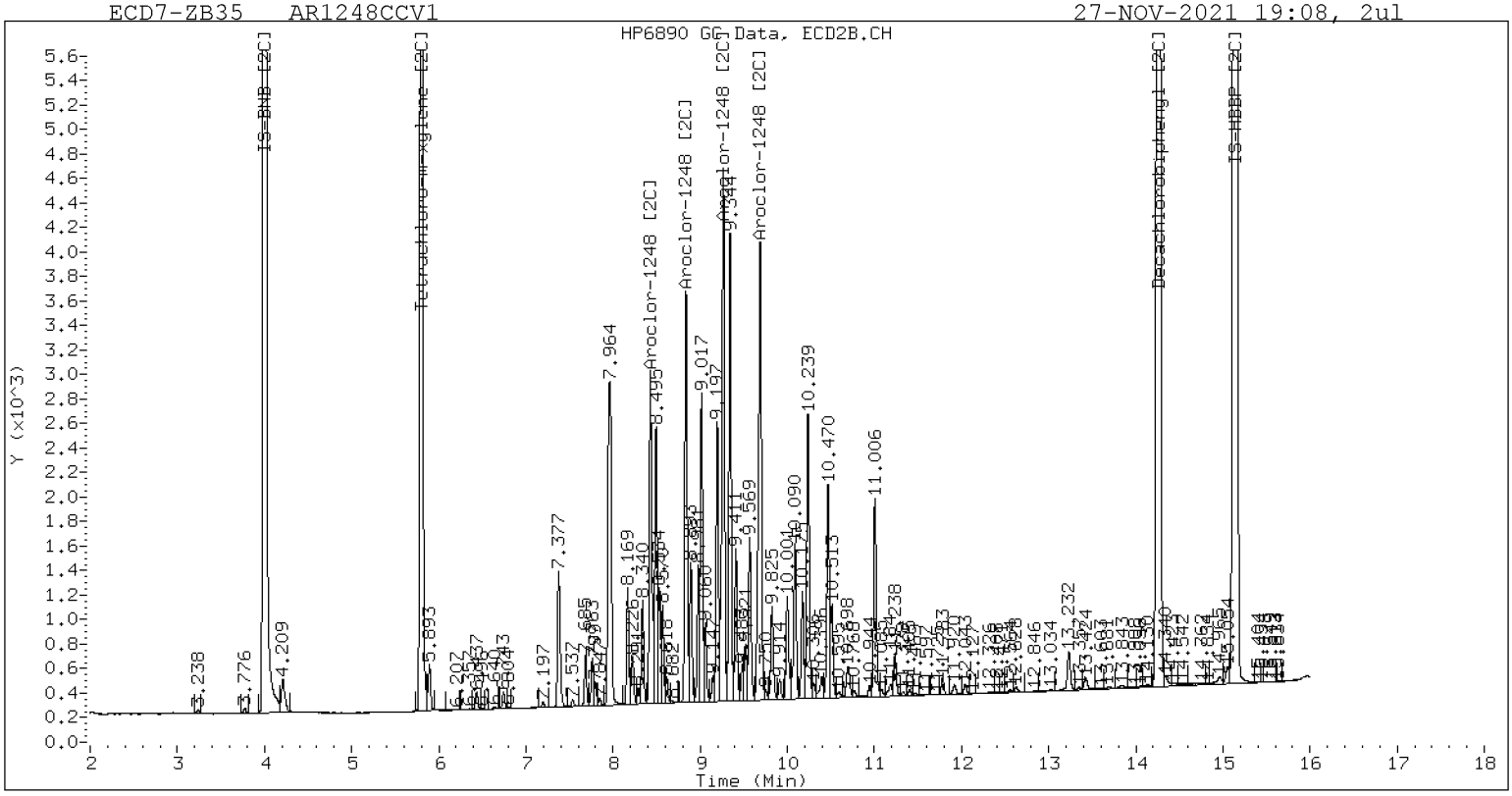
PCB Dual Column Chromatograms

ECD7-ZB5 AR1248CCV1 27-NOV-2021 19:08, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1248CCV1 27-NOV-2021 19:08, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

CONTINUING CALIBRATION CHECK
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	ECD7	Calibration:	EK00072
Lab File ID:	11272122ECD7.D	Calibration Date:	11/29/2021
Sequence:	SJK0396	Injection Date:	11/27/21
Lab Sample ID:	SJK0396-CCV2	Injection Time:	19:29
Sequence Name:	AR1660CCV2		

		CONC. (ug/L)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN	CCV	LIMIT
Aroclor 1016	A	250.00	243	0.0511800	0.0498373		-2.7	+/-20
Aroclor-1016 (1)	A	250.00	242	0.0306054	0.0295801		-3.2	
Aroclor-1016 (2)	A	250.00	244	0.1051474	0.1025925		-2.4	
Aroclor-1016 (3)	A	250.00	242	0.0409194	0.0397055		-3.2	
Aroclor-1016 (4)	A	250.00	245	0.0280479	0.0274713		-2.0	
Aroclor 1016 [2C]	A	250.00	256	0.0546486	0.0560318		2.5	+/-20
Aroclor-1016 (1) [2C]	A	250.00	255	0.0449596	0.0459259		2.0	
Aroclor-1016 (2) [2C]	A	250.00	256	0.1049196	0.1075431		2.4	
Aroclor-1016 (3) [2C]	A	250.00	257	0.0407526	0.0418667		2.8	
Aroclor-1016 (4) [2C]	A	250.00	257	0.0279627	0.0287914		2.8	
Aroclor 1260	A	250.00	239	0.0677291	0.0648249		-4.4	+/-20
Aroclor-1260 (1)	A	250.00	238	0.0553271	0.0526969		-4.8	
Aroclor-1260 (2)	A	250.00	239	0.0542725	0.0518891		-4.4	
Aroclor-1260 (3)	A	250.00	239	0.1324349	0.1268096		-4.4	
Aroclor-1260 (4)	A	250.00	240	0.0651433	0.0625992		-4.0	
Aroclor-1260 (5)	A	250.00	239	0.0314677	0.0301296		-4.4	
Aroclor 1260 [2C]	A	250.00	237	0.0861827	0.0813764		-5.2	+/-20
Aroclor-1260 (1) [2C]	A	250.00	231	0.0575808	0.0533171		-7.6	
Aroclor-1260 (2) [2C]	A	250.00	234	0.1478278	0.1384686		-6.4	
Aroclor-1260 (3) [2C]	A	250.00	237	0.0944730	0.0895533		-5.2	
Aroclor-1260 (4) [2C]	A	250.00	246	0.0448490	0.0441667		-1.6	
Decachlorobiphenyl	A	40.000	40.1	0.9260705	0.9280669		0.3	+/-20
Tetrachlorometaxylene	A	40.000	39.7	1.0608030	1.0535000		-0.8	+/-20
Decachlorobiphenyl [2C]	A	40.000	42.4	1.4721440	1.5605850		6.0	+/-20
Tetrachlorometaxylene [2C]	A	40.000	39.8	1.0149580	1.0100790		-0.5	+/-20

* Values outside of QC limits

* Values outside of QC limits

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211127.b/11272122ECD7.D
Data file 2: /211127.b/211127.b/11272122ECD7.D
Method: \\target\share\chem4\ecd7.i\211127.b\PCB.m
Compound Sublist: AR1660.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1660CCV2
Client ID:
Injection Date: 27-NOV-2021 19:29
Report Date: 11/29/2021 10:57
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	ZB5 Col Shift	ZB5 Col Response	ZB35 Col RT	ZB35 Col Shift	ZB35 Col Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.946	0.004	187199	5.806	0.004	469760	39.7	39.8	0.2	Tetrachloro-m-xylene
14.041	0.000	208274	14.260	-0.001	1075029	40.1	42.4	5.6	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	355385	7.3
Hexabromobiphenyl	407599	448834	10.1

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	930145	3.5
Hexabromobiphenyl	1136250	1377726	21.3

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

Aroclor	Peak#	ZB5 Col RT	Shift	Area	Amount	Peak#	ZB35 Col RT	Shift	Area	Amount
Aroclor-1016	1	7.412	0.002	32851	241.6	1	7.381	0.001	133493	255.4
Aroclor-1016	2	7.785	0.000	113937	243.9	2	7.970	0.001	312596	256.3
Aroclor-1016	3	7.925	0.001	44096	242.6	3	8.171	0.001	121694	256.8
Aroclor-1016	4	8.032	0.001	30509	244.9	4	8.430	0.000	83688	257.4

Total Col1Ave (4 peaks): 243.2 Total Col2Ave (4 peaks): 256.5 RPD = 5
Corrected Ave (3 peaks): 242.7 Corrected Ave (3 peaks): 256.2 RPD = 5

CalAmt %D: -2.7 CalAmt %D: 2.6

Aroclor-1260	1	11.185	-0.000	73913	238.1	1	11.783	0.000	229551	231.5
Aroclor-1260	2	11.503	0.000	72780	239.0	2	12.043	0.000	596162	234.2
Aroclor-1260	3	11.871	0.000	177864	239.4	3	12.629	0.001	385562	237.0
Aroclor-1260	4	12.272	-0.001	87802	240.2	4	13.354	0.000	190155	246.2
Aroclor-1260	5	12.386	-0.000	42260	239.4	NS	---			----

Total Col1Ave (5 peaks): 239.2 Total Col2Ave (4 peaks): 237.2 RPD = 1
Corrected Ave (4 peaks): 239.0 Corrected Ave (3 peaks): 234.2 RPD = 2

CalAmt %D: -4.3 CalAmt %D: -5.1

Total PCB Area Col1 (6.043 - 13.940) = 1866316 Col1 Total PCB = 0.5 ppm*

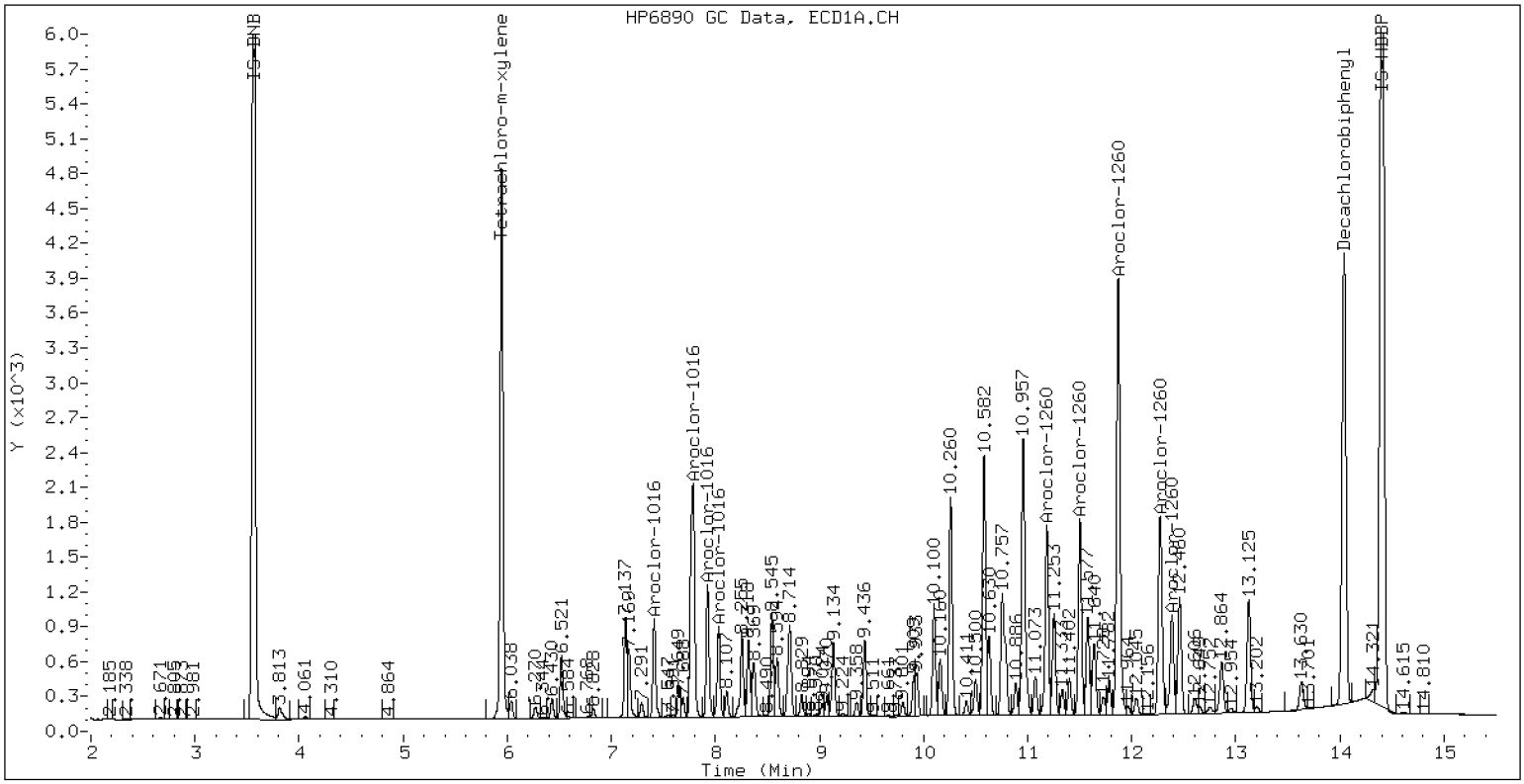
Total PCB Area Col2 (6.043 - 13.940) = 5408158 Col2 Total PCB = 0.5 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

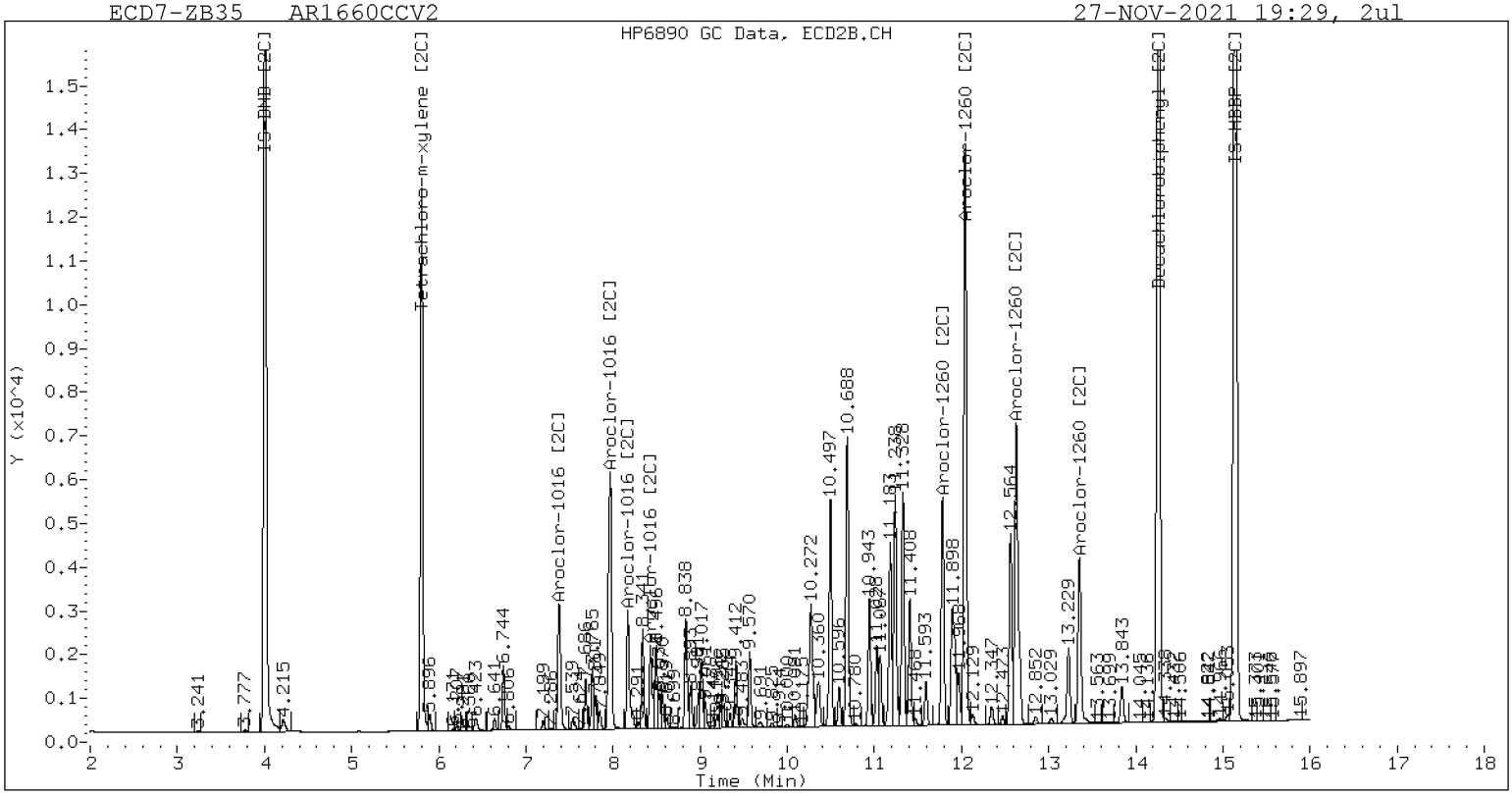
PCB Dual Column Chromatograms

ECD7-ZB5 AR1660CCV2 27-NOV-2021 19:29, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1660CCV2 27-NOV-2021 19:29, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

CONTINUING CALIBRATION CHECK
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	ECD7	Calibration:	EK00072
Lab File ID:	11272128ECD7.D	Calibration Date:	11/29/2021
Sequence:	SJK0396	Injection Date:	11/27/21
Lab Sample ID:	SJK0396-CCV3	Injection Time:	21:36
Sequence Name:	AR1242CCV3		

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF	
		STD	CCV	ICAL	CCV	MIN	CCV	LIMIT
Aroclor 1242	A	250.00	246	0.0420152	0.0412584		-1.8	+/-20
Aroclor-1242 (1)	A	250.00	246		0.0244777			
Aroclor-1242 (2)	A	250.00	246		0.0829641			
Aroclor-1242 (3)	A	250.00	245		0.0279490			
Aroclor-1242 (4)	A	250.00	245		0.0296427			
Aroclor 1242 [2C]	A	250.00	253	0.0470319	0.0474551		1.1	+/-20
Aroclor-1242 (1) [2C]	A	250.00	250		0.0380807			
Aroclor-1242 (2) [2C]	A	250.00	251		0.0869488			
Aroclor-1242 (3) [2C]	A	250.00	254		0.0293691			
Aroclor-1242 (4) [2C]	A	250.00	256		0.0354217			
Decachlorobiphenyl	A	40.000	40.8	0.9260705	0.9451623		2.0	+/-20
Tetrachlorometaxylene	A	40.000	39.5	1.0608030	1.0472930		-1.3	+/-20
Decachlorobiphenyl [2C]	A	40.000	43.2	1.4721440	1.5917970		8.0	+/-20
Tetrachlorometaxylene [2C]	A	40.000	39.3	1.0149580	0.9976720		-1.8	+/-20

* Values outside of QC limits

* Values outside of QC limits

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211127.b/11272128ECD7.D
Data file 2: /211127.b/211127.b/11272128ECD7.D
Method: \\target\share\chem4\ecd7.i\211127.b\PCB.m
Compound Sublist: AR1242.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1242CCV3
Client ID:
Injection Date: 27-NOV-2021 21:36
Report Date: 11/29/2021 10:57
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	ZB5 Col Shift	ZB5 Col Response	ZB35 Col RT	ZB35 Col Shift	ZB35 Col Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.945	0.003	185607	5.803	0.002	456846	39.5	39.3	0.4	Tetrachloro-m-xylene
14.039	-0.001	212834	14.260	-0.001	1092294	40.8	43.3	5.8	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	354451	7.0
Hexabromobiphenyl	407599	450365	10.5

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	915824	1.9
Hexabromobiphenyl	1136250	1372404	20.8

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

Aroclor	Peak#	RT	Shift	Area	Amount	Peak#	RT	Shift	Area	Amount
		ZB5 Col					ZB35 Col			
Aroclor-1242	1	7.412	0.000	27113	245.8	1	7.381	0.000	108985	249.9
Aroclor-1242	2	7.786	0.000	91896	245.8	2	7.970	0.000	248843	251.0
Aroclor-1242	3	9.071	0.000	30958	245.1	3	9.345	0.000	84053	253.9
Aroclor-1242	4	9.358	0.000	32834	244.7	4	9.691	0.000	101375	256.5

Total Col1Ave (4 peaks): 245.4 Total Col2Ave (4 peaks): 252.8 RPD = 3

Corrected Ave (3 peaks): 245.2 Corrected Ave (3 peaks): 251.6 RPD = 3

CalAmt %D: -1.9 CalAmt %D: 1.1

Total PCB Area Col1 (6.043 - 13.940) = 635267 Col1 Total PCB = 0.2 ppm*

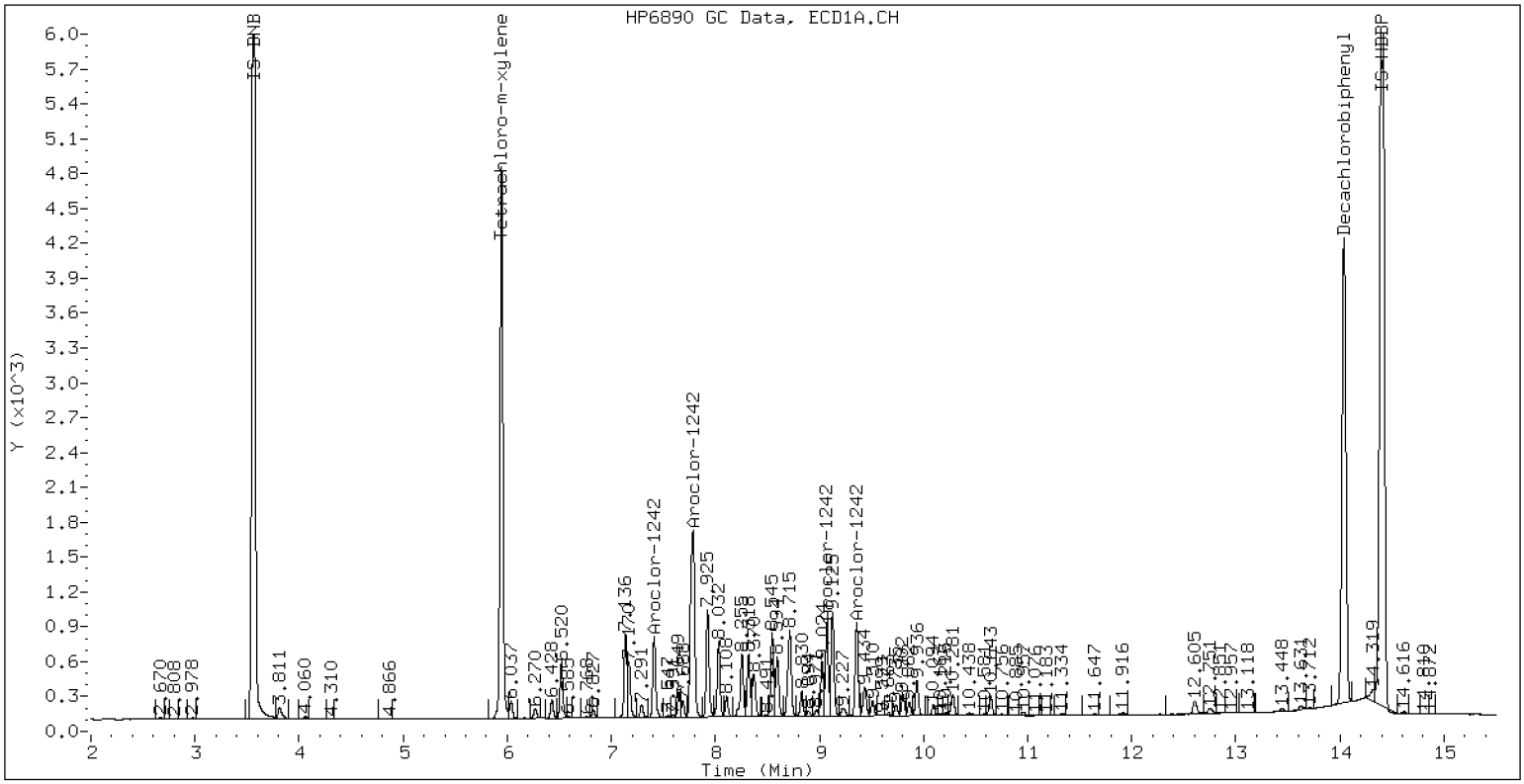
Total PCB Area Col2 (6.043 - 13.940) = 1683757 Col2 Total PCB = 0.2 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

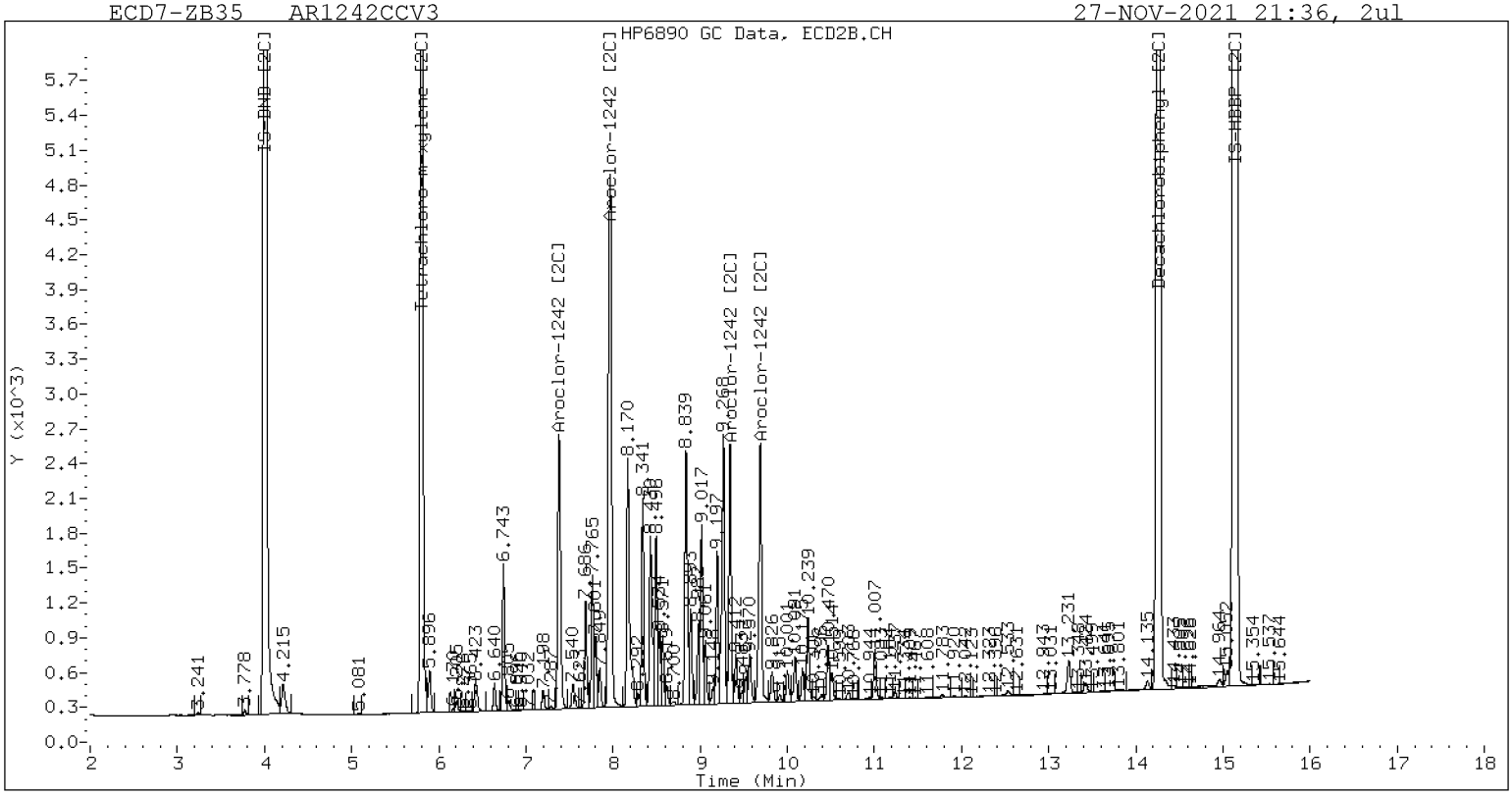
PCB Dual Column Chromatograms

ECD7-ZB5 AR1242CCV3 27-NOV-2021 21:36, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1242CCV3 27-NOV-2021 21:36, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

CONTINUING CALIBRATION CHECK
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	ECD7	Calibration:	EK00072
Lab File ID:	11272129ECD7.D	Calibration Date:	11/29/2021
Sequence:	SJK0396	Injection Date:	11/27/21
Lab Sample ID:	SJK0396-CCV4	Injection Time:	21:57
Sequence Name:	AR1660CCV4		

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF	
		STD	CCV	ICAL	CCV	MIN	CCV	LIMIT
Aroclor 1016	A	250.00	243	0.0511800	0.0497288		-2.8	+/-20
Aroclor-1016 (1)	A	250.00	242	0.0306054	0.0295912		-3.2	
Aroclor-1016 (2)	A	250.00	243	0.1051474	0.1022235		-2.8	
Aroclor-1016 (3)	A	250.00	242	0.0409194	0.0396501		-3.2	
Aroclor-1016 (4)	A	250.00	245	0.0280479	0.0274504		-2.0	
Aroclor 1016 [2C]	A	250.00	255	0.0546486	0.0556177		1.8	+/-20
Aroclor-1016 (1) [2C]	A	250.00	254	0.0449596	0.0457662		1.6	
Aroclor-1016 (2) [2C]	A	250.00	254	0.1049196	0.1065761		1.6	
Aroclor-1016 (3) [2C]	A	250.00	256	0.0407526	0.0417064		2.4	
Aroclor-1016 (4) [2C]	A	250.00	254	0.0279627	0.0284219		1.6	
Aroclor 1260	A	250.00	238	0.0677291	0.0645024		-4.9	+/-20
Aroclor-1260 (1)	A	250.00	236	0.0553271	0.0522895		-5.6	
Aroclor-1260 (2)	A	250.00	238	0.0542725	0.0516112		-4.8	
Aroclor-1260 (3)	A	250.00	238	0.1324349	0.1262907		-4.8	
Aroclor-1260 (4)	A	250.00	239	0.0651433	0.0623531		-4.4	
Aroclor-1260 (5)	A	250.00	238	0.0314677	0.0299677		-4.8	
Aroclor 1260 [2C]	A	250.00	234	0.0861827	0.0800721		-6.5	+/-20
Aroclor-1260 (1) [2C]	A	250.00	228	0.0575808	0.0525287		-8.8	
Aroclor-1260 (2) [2C]	A	250.00	229	0.1478278	0.1356447		-8.4	
Aroclor-1260 (3) [2C]	A	250.00	234	0.0944730	0.0883205		-6.4	
Aroclor-1260 (4) [2C]	A	250.00	244	0.0448490	0.0437946		-2.4	
Decachlorobiphenyl	A	40.000	40.2	0.9260705	0.9299025		0.5	+/-20
Tetrachlorometaxylene	A	40.000	39.5	1.0608030	1.0469810		-1.3	+/-20
Decachlorobiphenyl [2C]	A	40.000	42.1	1.4721440	1.5481090		5.3	+/-20
Tetrachlorometaxylene [2C]	A	40.000	39.4	1.0149580	0.9995991		-1.5	+/-20

* Values outside of QC limits

Analytical Resources Inc.
Dual Column 608/8082 PCB Quantitation Report

Data file 1: /211127.b/11272129ECD7.D
Data file 2: /211127.b/211127.b/11272129ECD7.D
Method: \\target\share\chem4\ecd7.i\211127.b\PCB.m
Compound Sublist: AR1660.sub
Instrument, Inj. Vol.: ecd7.i, 2ul
Quant Method: Internal Std

ARI ID: AR1660CCV4
Client ID:
Injection Date: 27-NOV-2021 21:57
Report Date: 11/29/2021 10:57
Matrix: NONE
Dilution Factor: 1.0

SURROGATES

ZB5 Col RT	Shift	Response	ZB35 Col RT	Shift	Response	ZB5 on col	ZB35 on col	RPD	Compound/Flag
5.943	0.000	186237	5.802	0.000	457492	39.5	39.4	0.2	Tetrachloro-m-xylene
14.040	0.000	209481	14.261	0.000	1073619	40.2	42.1	4.6	Decachlorobiphenyl

* Indicates RPD > 40%

INTERNAL STANDARD SUMMARY

Column 1

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	331143	355760	7.4
Hexabromobiphenyl	407599	450544	10.5

Column 2

Standard Cpnd	Standard Area*	Sample Area	%D
Bromo-Nitrobenzene	898498	915351	1.9
Hexabromobiphenyl	1136250	1387007	22.1

* Standard Areas taken from Initial Cal Level 3
Initial Calibration Date: 26-NOV-2021
<- Indicates standard response outside Limits (-50 to +100%)

Aroclor	Peak#	ZB5 Col RT	Shift	Area	Amount	Peak#	ZB35 Col RT	Shift	Area	Amount
Aroclor-1016	1	7.410	0.000	32898	241.7	1	7.380	0.000	130913	254.5
Aroclor-1016	2	7.785	0.000	113647	243.0	2	7.969	0.000	304858	253.9
Aroclor-1016	3	7.924	0.000	44081	242.2	3	8.170	0.000	119300	255.9
Aroclor-1016	4	8.030	0.000	30518	244.7	4	8.429	0.000	81300	254.1

Total Col1Ave (4 peaks): 242.9 Total Col2Ave (4 peaks): 254.6 RPD = 5
Corrected Ave (3 peaks): 242.3 Corrected Ave (3 peaks): 254.2 RPD = 5

CalAmt %D: -2.8 CalAmt %D: 1.8

Aroclor-1260	1	11.186	0.000	73621	236.3	1	11.783	0.000	227680	228.1
Aroclor-1260	2	11.503	0.000	72666	237.7	2	12.043	0.000	587938	229.4
Aroclor-1260	3	11.870	0.000	177811	238.4	3	12.628	0.000	382816	233.7
Aroclor-1260	4	12.273	0.000	87790	239.3	4	13.354	0.000	189823	244.1
Aroclor-1260	5	12.387	0.000	42193	238.1	NS	---			----

Total Col1Ave (5 peaks): 238.0 Total Col2Ave (4 peaks): 233.8 RPD = 2
Corrected Ave (4 peaks): 237.6 Corrected Ave (3 peaks): 230.4 RPD = 3

CalAmt %D: -4.8 CalAmt %D: -6.5

Total PCB Area Col1 (6.043 - 13.940) = 1862594 Col1 Total PCB = 0.5 ppm*

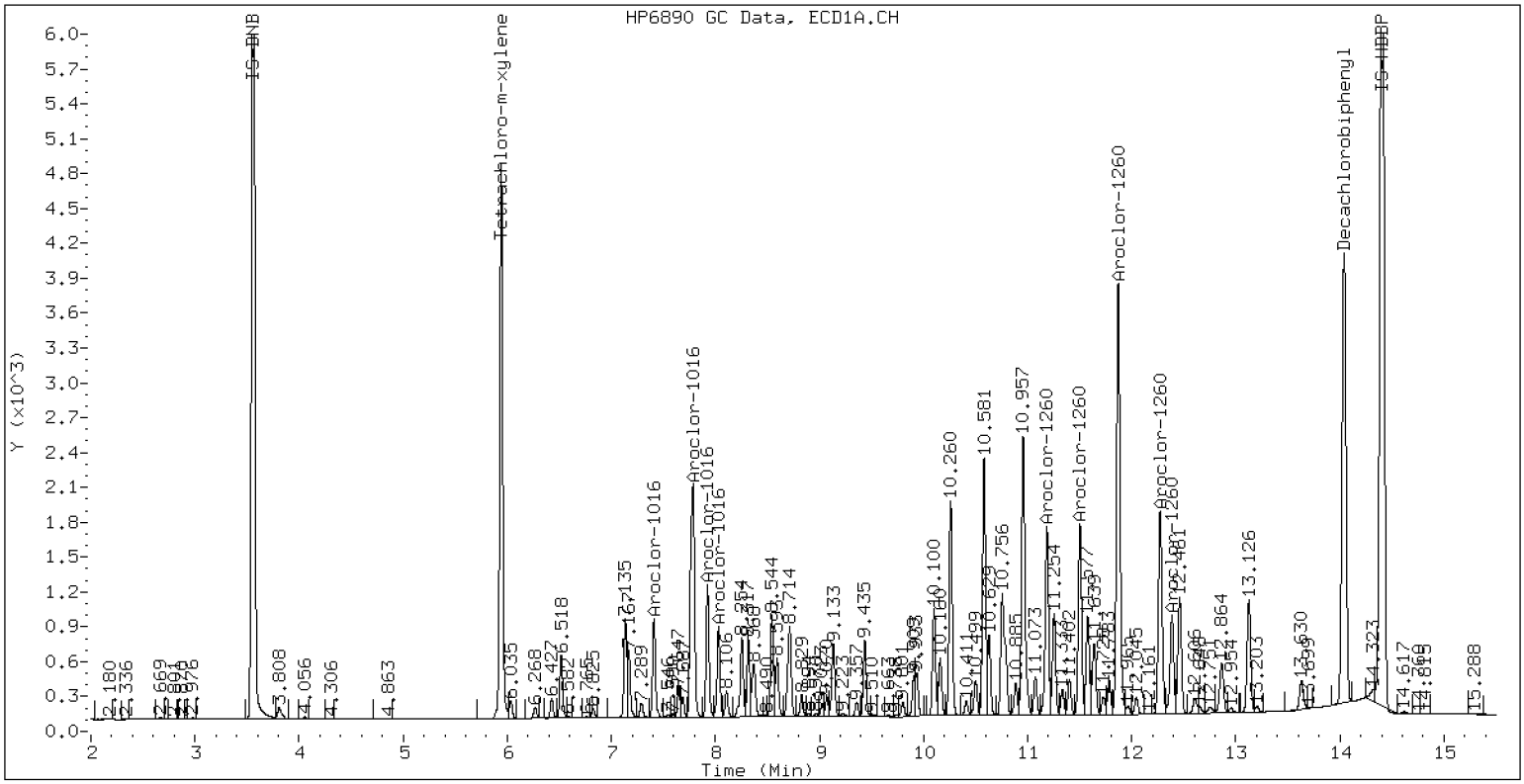
Total PCB Area Col2 (6.043 - 13.940) = 5329030 Col2 Total PCB = 0.5 ppm*

* Quantitated against AR1660 0.25ppm in Ical

PCB-Form 10 Mod.

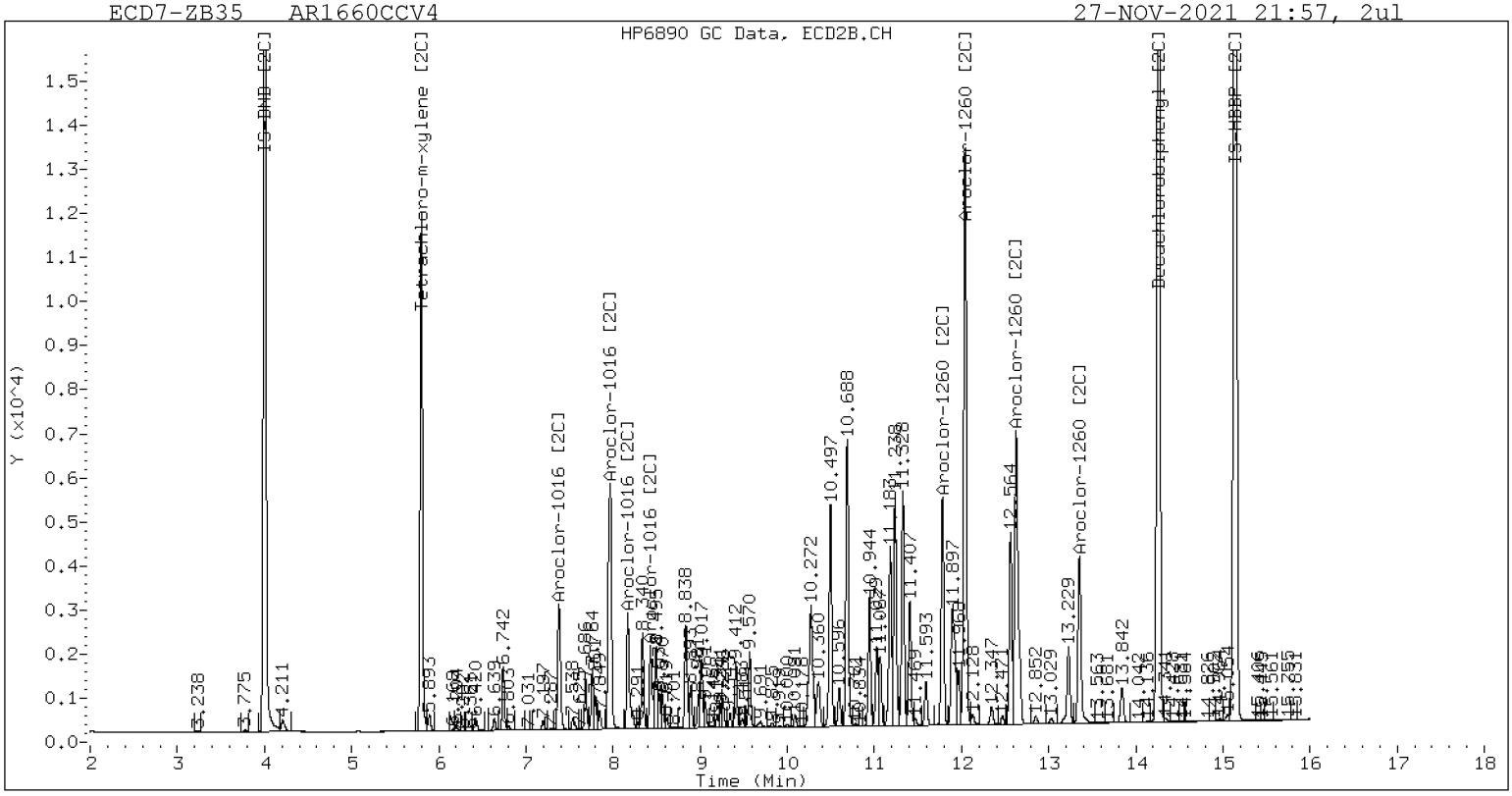
PCB Dual Column Chromatograms

ECD7-ZB5 AR1660CCV4 27-NOV-2021 21:57, 2ul



ZB-5 Manual Integration: NO

ECD7-ZB35 AR1660CCV4 27-NOV-2021 21:57, 2ul



ZB-35 Manual Integration: NO

Analytical Resources, LLC
Analytical Chemists and Consultants

Dual Column

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJK0390	Instrument:	ECD7
		Calibration:	EK00072

Sample Name	Lab Sample ID	Column 1 File ID	Column 2 File ID	Matrix	Analysis Date/Time
Cal Standard	SJK0390-CAL1	11262106ECD7.D	11262106ECD7.D	NA	11/26/21 17:51
Cal Standard	SJK0390-CAL2	11262107ECD7.D	11262107ECD7.D	NA	11/26/21 18:12
Cal Standard	SJK0390-CAL3	11262108ECD7.D	11262108ECD7.D	NA	11/26/21 18:33
Cal Standard	SJK0390-CAL4	11262109ECD7.D	11262109ECD7.D	NA	11/26/21 18:55
Cal Standard	SJK0390-CAL5	11262110ECD7.D	11262110ECD7.D	NA	11/26/21 19:16
Cal Standard	SJK0390-CAL6	11262111ECD7.D	11262111ECD7.D	NA	11/26/21 19:37
Cal Standard	SJK0390-CAL7	11262112ECD7.D	11262112ECD7.D	NA	11/26/21 19:58
Cal Standard	SJK0390-CAL8	11262113ECD7.D	11262113ECD7.D	NA	11/26/21 20:19
Cal Standard	SJK0390-CAL9	11262114ECD7.D	11262114ECD7.D	NA	11/26/21 20:40
Cal Standard	SJK0390-CALA	11262115ECD7.D	11262115ECD7.D	NA	11/26/21 21:02
Cal Standard	SJK0390-CALB	11262116ECD7.D	11262116ECD7.D	NA	11/26/21 21:23
Secondary Cal Check	SJK0390-SCV1	11262117ECD7.D	11262117ECD7.D	NA	11/26/21 21:44
Secondary Cal Check	SJK0390-SCV2	11262118ECD7.D	11262118ECD7.D	NA	11/26/21 22:05
Secondary Cal Check	SJK0390-SCV3	11262119ECD7.D	11262119ECD7.D	NA	11/26/21 22:26
Secondary Cal Check	SJK0390-SCV4	11262120ECD7.D	11262120ECD7.D	NA	11/26/21 22:47
Secondary Cal Check	SJK0390-SCV5	11262121ECD7.D	11262121ECD7.D	NA	11/26/21 23:08
Secondary Cal Check	SJK0390-SCV6	11262122ECD7.D	11262122ECD7.D	NA	11/26/21 23:30

Analytical Resources, LLC
Analytical Chemists and Consultants

Printed: 11/29/2021 8:43:04AM

ANALYSIS SEQUENCE

SJK0390

Instrument: ECD7 Element Column ID: j572i10975
Calibration ID: EK00065

Lab Number	Sample Name	Analysis	Container	Order	STD ID	ISTD ID	Comments
SJK0390-CAL1	0.25PPM AR1660	QC		1	J008417	J008446	
SJK0390-CAL2	0.02PPM AR1660	QC		2	J008420	J008446	
SJK0390-CAL3	0.05PPM AR1660	QC		3	J008419	J008446	
SJK0390-CAL4	1PPM AR1660	QC		4	J008134	J008446	
SJK0390-CAL5	0.1PPM AR1660	QC		5	J008418	J008446	
SJK0390-CAL6	0.5PPM AR1660	QC		6	J008416	J008446	
SJK0390-CAL7	0.25PPM AR1242	QC		7	J008135	J008446	
SJK0390-CAL8	0.25PPM AR1248	QC		8	J008427	J008446	
SJK0390-CAL9	0.25PPM AR1254	QC		9	J008136	J008446	
SJK0390-CALA	0.25PPM AR2162	QC		10	J008137	J008446	
SJK0390-CALB	0.25PPM AR3268	QC		11	J008138	J008446	
SJK0390-SCV1	AR1660SCV1	QC		12	J008139	J008446	
SJK0390-SCV2	AR1242SCV2	QC		13	J008140	J008446	
SJK0390-SCV3	AR1248SCV3	QC		14	J008141	J008446	
SJK0390-SCV4	AR1254SCV4	QC		15	J008142	J008446	
SJK0390-SCV5	AR2162SCV5	QC		16	J008143	J008446	
SJK0390-SCV6	AR3268SCV6	QC		17	J008144	J008446	

GC LOG SUMMARY FOR DATABATCH - \\target\share\chem4\ecd7.i\211126.b

	Inject Date/Time	Filename	DF	LabID	ClientID
1	26-NOV-2021 16:05	11262101ECD7.D	1	RINSE	
2	26-NOV-2021 16:26	11262102ECD7.D	1	RINSE	
3	26-NOV-2021 16:47	11262103ECD7.D	1	RINSE	
4	26-NOV-2021 17:09	11262104ECD7.D	1	RINSE	
5	26-NOV-2021 17:30	11262105ECD7.D	1	IB	
6	26-NOV-2021 17:51	11262106ECD7.D	1	0.25PPMAR1660	
7	26-NOV-2021 18:12	11262107ECD7.D	1	0.02PPMAR1660	
8	26-NOV-2021 18:33	11262108ECD7.D	1	0.05PPMAR1660	
9	26-NOV-2021 18:55	11262109ECD7.D	1	1PPMAR1660	
10	26-NOV-2021 19:16	11262110ECD7.D	1	0.1PPMAR1660	
11	26-NOV-2021 19:37	11262111ECD7.D	1	0.5PPMAR1660	
12	26-NOV-2021 19:58	11262112ECD7.D	1	AR1242	
13	26-NOV-2021 20:19	11262113ECD7.D	1	AR1248	
14	26-NOV-2021 20:40	11262114ECD7.D	1	AR1254	
15	26-NOV-2021 21:02	11262115ECD7.D	1	AR2162	
16	26-NOV-2021 21:23	11262116ECD7.D	1	AR3268	
17	26-NOV-2021 21:44	11262117ECD7.D	1	AR1660SCV1	
18	26-NOV-2021 22:05	11262118ECD7.D	1	AR1242SCV2	
19	26-NOV-2021 22:26	11262119ECD7.D	1	AR1248SCV3	
20	26-NOV-2021 22:47	11262120ECD7.D	1	AR1254SCV4	
21	26-NOV-2021 23:08	11262121ECD7.D	1	AR2162SCV5	
22	26-NOV-2021 23:30	11262122ECD7.D	1	AR3268SCV6	
23	26-NOV-2021 23:51	11262123ECD7.D	1	0.1PPMDDTS	
24	27-NOV-2021 00:12	11262124ECD7.D	1	DDT BD	

MANUAL INTEGRATION SUMMARY FOR DATABATCH - \\target\share\chem4\ecd7.i\211126.b

ARI Job No.: RINS Method: PCB.m Instrument: ecd7.i Date: 26-NOV-2021

Time	Filename	LabID	ClientId	DF	Manually Integrated Compounds
1605	11262101ECD7.D	RINSE		1	NO MANUAL INTEGRATION
1626	11262102ECD7.D	RINSE		1	NO MANUAL INTEGRATION
1647	11262103ECD7.D	RINSE		1	NO MANUAL INTEGRATION
1709	11262104ECD7.D	RINSE		1	NO MANUAL INTEGRATION
1730	11262105ECD7.D	IB		1	NO MANUAL INTEGRATION
1751	11262106ECD7.D	0.25PPMAR1660		1	NO MANUAL INTEGRATION
1812	11262107ECD7.D	0.02PPMAR1660		1	NO MANUAL INTEGRATION
1833	11262108ECD7.D	0.05PPMAR1660		1	NO MANUAL INTEGRATION
1855	11262109ECD7.D	1PPMAR1660		1	NO MANUAL INTEGRATION
1916	11262110ECD7.D	0.1PPMAR1660		1	NO MANUAL INTEGRATION
1937	11262111ECD7.D	0.5PPMAR1660		1	NO MANUAL INTEGRATION
1958	11262112ECD7.D	AR1242		1	NO MANUAL INTEGRATION
2019	11262113ECD7.D	AR1248		1	NO MANUAL INTEGRATION
2040	11262114ECD7.D	AR1254		1	NO MANUAL INTEGRATION
2102	11262115ECD7.D	AR2162		1	NO MANUAL INTEGRATION
2123	11262116ECD7.D	AR3268		1	NO MANUAL INTEGRATION
2144	11262117ECD7.D	AR1660SCV1		1	NO MANUAL INTEGRATION

MANUAL INTEGRATION SUMMARY FOR DATABATCH - \\target\share\chem4\ecd7.i\211126.b

Time	Filename	LabID	ClientId	DF	Manually Integrated Compounds
2205	11262118ECD7.D	AR1242SCV2		1	NO MANUAL INTEGRATION
2226	11262119ECD7.D	AR1248SCV3		1	NO MANUAL INTEGRATION
2247	11262120ECD7.D	AR1254SCV4		1	NO MANUAL INTEGRATION
2308	11262121ECD7.D	AR2162SCV5		1	NO MANUAL INTEGRATION
2330	11262122ECD7.D	AR3268SCV6		1	NO MANUAL INTEGRATION
2351	11262123ECD7.D	0.1PPMDDTS		1	NO MANUAL INTEGRATION
0012	11262124ECD7.D	DDT BD		1	NO MANUAL INTEGRATION
1605	11262101ECD7.D	RINSE		1	NO MANUAL INTEGRATION
1626	11262102ECD7.D	RINSE		1	NO MANUAL INTEGRATION
1647	11262103ECD7.D	RINSE		1	NO MANUAL INTEGRATION
1709	11262104ECD7.D	RINSE		1	NO MANUAL INTEGRATION
1730	11262105ECD7.D	IB		1	NO MANUAL INTEGRATION
1751	11262106ECD7.D	0.25PPMAR1660		1	NO MANUAL INTEGRATION
1812	11262107ECD7.D	0.02PPMAR1660		1	NO MANUAL INTEGRATION
1833	11262108ECD7.D	0.05PPMAR1660		1	NO MANUAL INTEGRATION
1855	11262109ECD7.D	1PPMAR1660		1	NO MANUAL INTEGRATION
1916	11262110ECD7.D	0.1PPMAR1660		1	NO MANUAL INTEGRATION
1937	11262111ECD7.D	0.5PPMAR1660		1	NO MANUAL INTEGRATION

MANUAL INTEGRATION SUMMARY FOR DATABATCH - \\target\share\chem4\ecd7.i\211126.b\211126.b

Time	Filename	LabID	ClientId	DF	Manually Integrated Compounds
1958	11262112ECD7.D	AR1242		1	NO MANUAL INTEGRATION
2019	11262113ECD7.D	AR1248		1	NO MANUAL INTEGRATION
2040	11262114ECD7.D	AR1254		1	NO MANUAL INTEGRATION
2102	11262115ECD7.D	AR2162		1	NO MANUAL INTEGRATION
2123	11262116ECD7.D	AR3268		1	NO MANUAL INTEGRATION
2144	11262117ECD7.D	AR1660SCV1		1	NO MANUAL INTEGRATION
2205	11262118ECD7.D	AR1242SCV2		1	NO MANUAL INTEGRATION
2226	11262119ECD7.D	AR1248SCV3		1	NO MANUAL INTEGRATION
2247	11262120ECD7.D	AR1254SCV4		1	NO MANUAL INTEGRATION
2308	11262121ECD7.D	AR2162SCV5		1	NO MANUAL INTEGRATION
2330	11262122ECD7.D	AR3268SCV6		1	NO MANUAL INTEGRATION
2351	11262123ECD7.D	0.1PPMDDTS		1	NO MANUAL INTEGRATION
0012	11262124ECD7.D	DDT BD		1	NO MANUAL INTEGRATION

Security Status Report

Date: 29-Nov-2021 10:25

11262101ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262102ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262103ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262104ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262105ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262106ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262107ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262108ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262109ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262110ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262111ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262112ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262113ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262114ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262115ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262116ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262117ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262118ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262119ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262120ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262121ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262122ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262123ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25
11262124ECD7.D	Data Locked	jrains, 29-Nov-2021 10:25

Analytical Resources, LLC
Analytical Chemists and Consultants

Dual Column

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJK0396	Instrument:	ECD7
		Calibration:	EK00072

Sample Name	Lab Sample ID	Column 1 File ID	Column 2 File ID	Matrix	Analysis Date/Time
Initial Cal Check	SJK0396-ICV1	11272102ECD7.D	11272102ECD7.D	NA	11/27/21 12:24
Initial Cal Check	SJK0396-ICV2	11272103ECD7.D	11272103ECD7.D	NA	11/27/21 12:46
Blank	BJK0603-BLK1	11272104ECD7.D	11272104ECD7.D	Solid	11/27/21 13:07
LCS	BJK0603-BS1	11272105ECD7.D	11272105ECD7.D	Solid	11/27/21 13:28
Reference	BJK0603-SRM1	11272106ECD7.D	11272106ECD7.D	Solid	11/27/21 13:49
LDW21-IT637A	21K0332-01	11272107ECD7.D	11272107ECD7.D	Solid	11/27/21 14:10
LDW21-IT637A	BJK0603-MS1	11272108ECD7.D	11272108ECD7.D	Solid	11/27/21 14:32
LDW21-IT637A	BJK0603-MSD1	11272109ECD7.D	11272109ECD7.D	Solid	11/27/21 14:53
Calibration Check	SJK0396-CCV1	11272121ECD7.D	11272121ECD7.D	NA	11/27/21 19:08
Calibration Check	SJK0396-CCV2	11272122ECD7.D	11272122ECD7.D	NA	11/27/21 19:29
Calibration Check	SJK0396-CCV3	11272128ECD7.D	11272128ECD7.D	NA	11/27/21 21:36
Calibration Check	SJK0396-CCV4	11272129ECD7.D	11272129ECD7.D	NA	11/27/21 21:57

Analytical Resources, LLC
Analytical Chemists and Consultants

Printed: 11/29/2021 11:35:09AM

ANALYSIS SEQUENCE

SJK0396

Instrument: ECD7 Element Column ID: j572i10975
Calibration ID: EK00072

Lab Number	Sample Name	Analysis	Container	Order	STD ID	ISTD ID	Comments
SJK0396-ICV1	AR1254ICV1	QC		1	J008432	J008446	
SJK0396-ICV2	AR1660ICV2	QC		2	J008417	J008446	
BJK0603-BLK1	Blank	QC		3		J008446	
BJK0603-BS1	LCS	QC		4		J008446	
BJK0603-SRM1	Reference	QC		5		J008446	
21K0332-01	LDW21-IT637A	8082A PCB Solid 4	A 01	6		J008446	
BJK0603-MS1	Matrix Spike	QC		7		J008446	
BJK0603-MSD1	Matrix Spike Dup	QC		8		J008446	
BJK0600-BLK1	Blank	QC		9		J008446	
BJK0600-BS1	LCS	QC		10		J008446	
BJK0600-BSD1	LCS Dup	QC		11		J008446	
21K0368-01	Split 21-07C	8082A PCB (20 ug/kg) or (MTCA 0.1 ug/L	C 02	12		J008446	
21K0371-01	NBF Hydroblasting Job	8082A PCB (20 ug/kg) or (MTCA 0.1 ug/L	C 02	13		J008446	
BJK0623-BLK1	Blank	QC		14		J008446	
BJK0623-BS1	LCS	QC		15		J008446	
BJK0623-BSD1	LCS Dup	QC		16		J008446	
21K0343-01	MW-23-20211911	8082A PCB Water 0.01	I 01	17		J008446	
21K0343-08	MW-47-20211911	8082A PCB Water 0.01	A 01	18		J008446	
21K0376-01	STAR.033EFF.112321	8082A PCB Water 0.01	B 01	19		J008446	
SJK0396-CCV1	AR1248CCV1	QC		20	J008427	J008446	
SJK0396-CCV2	AR1660CCV2	QC		21	J008417	J008446	
BJK0382-BLK1	Blank	QC		22		J008446	

Analytical Resources, LLC
Analytical Chemists and Consultants

Printed: 11/29/2021 11:35:09AM

ANALYSIS SEQUENCE

SJK0396

Instrument: ECD7 Element Column ID: j572i10975
Calibration ID: EK00072

Lab Number	Sample Name	Analysis	Container	Order	STD ID	ISTD ID	Comments
BJK0382-BS1	LCS	QC		23		J008446	
BJK0382-BSD1	LCS Dup	QC		24		J008446	
21K0240-09	MW-62-20211111	8082A PCB Water 0.01	A 01	25		J008446	
21K0245-03	MW-75-20211211	8082A PCB Water 0.01	A 01	26		J008446	
SJK0396-CCV3	AR1242CCV3	QC		27	J008422	J008446	
SJK0396-CCV4	AR1660CCV4	QC		28	J008417	J008446	

GC LOG SUMMARY FOR DATABATCH - \\target\share\chem4\ecd7.i\211127.b

	Inject Date/Time	Filename	DF	LabID	ClientID
1	27-NOV-2021 12:03	11272101ECD7.D	1	DDTS	
2	27-NOV-2021 12:24	11272102ECD7.D	1	AR1254ICV1	
3	27-NOV-2021 12:46	11272103ECD7.D	1	AR1660ICV2	
4	27-NOV-2021 13:07	11272104ECD7.D	1	BJK0603-BLK1	
5	27-NOV-2021 13:28	11272105ECD7.D	1	BJK0603-BS1	
6	27-NOV-2021 13:49	11272106ECD7.D	1	BJK0603-SRM1	
7	27-NOV-2021 14:10	11272107ECD7.D	1	21K0332-01	
8	27-NOV-2021 14:32	11272108ECD7.D	1	BJK0603-MS1	
9	27-NOV-2021 14:53	11272109ECD7.D	1	BJK0603-MSD1	
10	27-NOV-2021 15:14	11272110ECD7.D	1	BJK0600-BLK1	
11	27-NOV-2021 15:35	11272111ECD7.D	1	BJK0600-BS1	
12	27-NOV-2021 15:57	11272112ECD7.D	1	BJK0600-BSD1	
13	27-NOV-2021 16:18	11272113ECD7.D	1	21K0368-01	
14	27-NOV-2021 16:39	11272114ECD7.D	1	21K0371-01	
15	27-NOV-2021 17:00	11272115ECD7.D	1	BJK0623-BLK1	
16	27-NOV-2021 17:22	11272116ECD7.D	1	BJK0623-BS1	
17	27-NOV-2021 17:43	11272117ECD7.D	1	BJK06223-BSD1	
18	27-NOV-2021 18:04	11272118ECD7.D	1	21K0343-01	
19	27-NOV-2021 18:25	11272119ECD7.D	1	21K0343-08	
20	27-NOV-2021 18:46	11272120ECD7.D	1	21K0376-01	
21	27-NOV-2021 19:08	11272121ECD7.D	1	AR1248CCV1	
22	27-NOV-2021 19:29	11272122ECD7.D	1	AR1660CCV2	
23	27-NOV-2021 19:50	11272123ECD7.D	1	BJK0382-BLK1	
24	27-NOV-2021 20:11	11272124ECD7.D	1	BJK0382-BS1	
25	27-NOV-2021 20:32	11272125ECD7.D	1	BJK0382-BSD1	
26	27-NOV-2021 20:53	11272126ECD7.D	1	21K0245-03	
27	27-NOV-2021 21:15	11272127ECD7.D	1	21K0240-09	
28	27-NOV-2021 21:36	11272128ECD7.D	1	AR1242CCV3	
29	27-NOV-2021 21:57	11272129ECD7.D	1	AR1660CCV4	

MANUAL INTEGRATION SUMMARY FOR DATABATCH - \\target\share\chem4\ecd7.i\211127.b

ARI Job No.: DDTS Method: PCB.m Instrument: ecd7.i Date: 27-NOV-2021

Time	Filename	LabID	ClientId	DF	Manually Integrated Compounds
1203	11272101ECD7.D	DDTS		1	NO MANUAL INTEGRATION
1224	11272102ECD7.D	AR1254ICV1		1	NO MANUAL INTEGRATION
1246	11272103ECD7.D	AR1660ICV2		1	NO MANUAL INTEGRATION
1307	11272104ECD7.D	BJK0603-BLK1		1	NO MANUAL INTEGRATION
1328	11272105ECD7.D	BJK0603-BS1		1	NO MANUAL INTEGRATION
1349	11272106ECD7.D	BJK0603-SRM1		1	NO MANUAL INTEGRATION
1410	11272107ECD7.D	21K0332-01		1	Aroclor-1248, Aroclor-1254, Tetrachloro-m-xylene,
1432	11272108ECD7.D	BJK0603-MS1		1	NO MANUAL INTEGRATION
1453	11272109ECD7.D	BJK0603-MSD1		1	NO MANUAL INTEGRATION
1514	11272110ECD7.D	BJK0600-BLK1		1	NO MANUAL INTEGRATION
1535	11272111ECD7.D	BJK0600-BS1		1	NO MANUAL INTEGRATION
1557	11272112ECD7.D	BJK0600-BSD1		1	NO MANUAL INTEGRATION
1618	11272113ECD7.D	21K0368-01		1	NO MANUAL INTEGRATION
1639	11272114ECD7.D	21K0371-01		1	NO MANUAL INTEGRATION
1700	11272115ECD7.D	BJK0623-BLK1		1	NO MANUAL INTEGRATION
1722	11272116ECD7.D	BJK0623-BS1		1	NO MANUAL INTEGRATION
1743	11272117ECD7.D	BJK06223-BSD1		1	NO MANUAL INTEGRATION

MANUAL INTEGRATION SUMMARY FOR DATABATCH - \\target\share\chem4\ecd7.i\211127.b

Time	Filename	LabID	ClientId	DF	Manually Integrated Compounds
1804	11272118ECD7.D	21K0343-01		1	NO MANUAL INTEGRATION
1825	11272119ECD7.D	21K0343-08		1	NO MANUAL INTEGRATION
1846	11272120ECD7.D	21K0376-01		1	NO MANUAL INTEGRATION
1908	11272121ECD7.D	AR1248CCV1		1	NO MANUAL INTEGRATION
1929	11272122ECD7.D	AR1660CCV2		1	NO MANUAL INTEGRATION
1950	11272123ECD7.D	BJK0382-BLK1		1	NO MANUAL INTEGRATION
2011	11272124ECD7.D	BJK0382-BS1		1	NO MANUAL INTEGRATION
2032	11272125ECD7.D	BJK0382-BSD1		1	NO MANUAL INTEGRATION
2053	11272126ECD7.D	21K0245-03		1	NO MANUAL INTEGRATION
2115	11272127ECD7.D	21K0240-09		1	NO MANUAL INTEGRATION
2136	11272128ECD7.D	AR1242CCV3		1	NO MANUAL INTEGRATION
2157	11272129ECD7.D	AR1660CCV4		1	NO MANUAL INTEGRATION
1203	11272101ECD7.D	DDTS		1	NO MANUAL INTEGRATION
1224	11272102ECD7.D	AR1254ICV1		1	NO MANUAL INTEGRATION
1246	11272103ECD7.D	AR1660ICV2		1	NO MANUAL INTEGRATION
1307	11272104ECD7.D	BJK0603-BLK1		1	NO MANUAL INTEGRATION
1328	11272105ECD7.D	BJK0603-BS1		1	NO MANUAL INTEGRATION
1349	11272106ECD7.D	BJK0603-SRM1		1	Aroclor-1016 [2C], Aroclor-1221 [2C], Aroclor-1232 [2C], Aroclor-1242 [2C], Aroclor-1248 [2C], Aroclor-1254 [2C], Aroclor-1260 [2C], Aroclor-1262 [2C], Aroclor-1268 [2C],

MANUAL INTEGRATION SUMMARY FOR DATABATCH - \\target\share\chem4\ecd7.i\211127.b\211127.b

Time	Filename	LabID	ClientId	DF	Manually Integrated Compounds
1410	11272107ECD7.D	21K0332-01		1	Aroclor-1248 [2C], Aroclor-1254 [2C], Aroclor-1260 [2C], Tetrachloro-m-xylene [2C],
1432	11272108ECD7.D	BJK0603-MS1		1	NO MANUAL INTEGRATION
1453	11272109ECD7.D	BJK0603-MSD1		1	NO MANUAL INTEGRATION
1514	11272110ECD7.D	BJK0600-BLK1		1	NO MANUAL INTEGRATION
1535	11272111ECD7.D	BJK0600-BS1		1	NO MANUAL INTEGRATION
1557	11272112ECD7.D	BJK0600-BSD1		1	NO MANUAL INTEGRATION
1618	11272113ECD7.D	21K0368-01		1	NO MANUAL INTEGRATION
1639	11272114ECD7.D	21K0371-01		1	Tetrachloro-m-xylene [2C],
1700	11272115ECD7.D	BJK0623-BLK1		1	NO MANUAL INTEGRATION
1722	11272116ECD7.D	BJK0623-BS1		1	NO MANUAL INTEGRATION
1743	11272117ECD7.D	BJK06223-BSD1		1	NO MANUAL INTEGRATION
1804	11272118ECD7.D	21K0343-01		1	NO MANUAL INTEGRATION
1825	11272119ECD7.D	21K0343-08		1	NO MANUAL INTEGRATION
1846	11272120ECD7.D	21K0376-01		1	NO MANUAL INTEGRATION
1908	11272121ECD7.D	AR1248CCV1		1	NO MANUAL INTEGRATION
1929	11272122ECD7.D	AR1660CCV2		1	NO MANUAL INTEGRATION
1950	11272123ECD7.D	BJK0382-BLK1		1	NO MANUAL INTEGRATION
2011	11272124ECD7.D	BJK0382-BS1		1	NO MANUAL INTEGRATION

MANUAL INTEGRATION SUMMARY FOR DATABATCH - \\target\share\chem4\ecd7.i\211127.b\211127.b

Time	Filename	LabID	ClientId	DF	Manually Integrated Compounds
2032	11272125ECD7.D	BJK0382-BSD1		1	NO MANUAL INTEGRATION
2053	11272126ECD7.D	21K0245-03		1	NO MANUAL INTEGRATION
2115	11272127ECD7.D	21K0240-09		1	NO MANUAL INTEGRATION
2136	11272128ECD7.D	AR1242CCV3		1	NO MANUAL INTEGRATION
2157	11272129ECD7.D	AR1660CCV4		1	NO MANUAL INTEGRATION

Security Status Report

Date: 29-Nov-2021 11:18

11272101ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272102ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272103ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272104ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272105ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272106ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272107ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272108ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272109ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272110ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272111ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272112ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272113ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272114ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272115ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272116ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272117ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272118ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272119ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272120ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272121ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272122ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272123ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272124ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272125ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272126ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272127ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272128ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18
11272129ECD7.D	Data Locked	jrains, 29-Nov-2021 11:18

Analytical Resources, LLC
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG/WO:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJK0390	Instrument:	ECD7
Calibration:	EK00072	Calibration Date:	11/26/2021

Surrogate Compound	Spike Level ug/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
SJK0390-SCV1 (Solid)			Lab File ID: 11262117ECD7.D				Analyzed: 11/26/21 21:44	
Decachlorobiphenyl	40.000	101	80 - 120	14.041	14.04083	0.0002	N/A	
Tetrachlorometaxylene	40.000	99.8	80 - 120	5.947	5.947	0.0000	N/A	
Decachlorobiphenyl [2C]	40.000	112	80 - 120	14.262	14.262	0.0000	N/A	
Tetrachlorometaxylene [2C]	40.000	99.1	80 - 120	5.806	5.805	0.0010	N/A	
SJK0390-SCV2 (Solid)			Lab File ID: 11262118ECD7.D				Analyzed: 11/26/21 22:05	
Decachlorobiphenyl	40.000	101	80 - 120	14.042	14.04083	0.0012	N/A	
Tetrachlorometaxylene	40.000	99.2	80 - 120	5.947	5.947	0.0000	N/A	
Decachlorobiphenyl [2C]	40.000	112	80 - 120	14.263	14.262	0.0010	N/A	
Tetrachlorometaxylene [2C]	40.000	99.7	80 - 120	5.807	5.805	0.0020	N/A	
SJK0390-SCV3 (Solid)			Lab File ID: 11262119ECD7.D				Analyzed: 11/26/21 22:26	
Decachlorobiphenyl	40.000	101	80 - 120	14.04	14.04083	-0.0008	N/A	
Tetrachlorometaxylene	40.000	99.5	80 - 120	5.946	5.947	-0.0010	N/A	
Decachlorobiphenyl [2C]	40.000	112	80 - 120	14.263	14.262	0.0010	N/A	
Tetrachlorometaxylene [2C]	40.000	100	80 - 120	5.806	5.805	0.0010	N/A	
SJK0390-SCV4 (Solid)			Lab File ID: 11262120ECD7.D				Analyzed: 11/26/21 22:47	
Decachlorobiphenyl	40.000	100	80 - 120	14.041	14.04083	0.0002	N/A	
Tetrachlorometaxylene	40.000	99.5	80 - 120	5.947	5.947	0.0000	N/A	
Decachlorobiphenyl [2C]	40.000	111	80 - 120	14.262	14.262	0.0000	N/A	
Tetrachlorometaxylene [2C]	40.000	100	80 - 120	5.806	5.805	0.0010	N/A	
SJK0390-SCV5 (Solid)			Lab File ID: 11262121ECD7.D				Analyzed: 11/26/21 23:08	
Decachlorobiphenyl	40.000	101	80 - 120	14.041	14.04083	0.0002	N/A	
Tetrachlorometaxylene	40.000	101	80 - 120	5.947	5.947	0.0000	N/A	
Decachlorobiphenyl [2C]	40.000	111	80 - 120	14.262	14.262	0.0000	N/A	
Tetrachlorometaxylene [2C]	40.000	100	80 - 120	5.806	5.805	0.0010	N/A	
SJK0390-SCV6 (Solid)			Lab File ID: 11262122ECD7.D				Analyzed: 11/26/21 23:30	
Decachlorobiphenyl	40.000	150	80 - 200	14.041	14.04083	0.0002	N/A	
Tetrachlorometaxylene	40.000	100	80 - 120	5.947	5.947	0.0000	N/A	
Decachlorobiphenyl [2C]	40.000	183	80 - 200	14.266	14.262	0.0040	N/A	
Tetrachlorometaxylene [2C]	40.000	100	80 - 120	5.806	5.805	0.0010	N/A	

Analytical Resources, LLC
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG/WO:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJK0396	Instrument:	ECD7
Calibration:	EK00072	Calibration Date:	11/26/2021

Surrogate Compound	Spike Level ug/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
SJK0396-ICV1 (Solid)			Lab File ID: 11272102ECD7.D				Analyzed: 11/27/21 12:24	
Decachlorobiphenyl	40.000	117	80 - 120	14.042	14.04083	0.0012	N/A	
Tetrachlorometaxylene	40.000	101	80 - 120	5.946	5.947	-0.0010	N/A	
Decachlorobiphenyl [2C]	40.000	113	80 - 120	14.262	14.262	0.0000	N/A	
Tetrachlorometaxylene [2C]	40.000	102	80 - 120	5.805	5.805	0.0000	N/A	
SJK0396-ICV2 (Solid)			Lab File ID: 11272103ECD7.D				Analyzed: 11/27/21 12:46	
Decachlorobiphenyl	40.000	99.8	80 - 120	14.04	14.04083	-0.0008	N/A	
Tetrachlorometaxylene	40.000	98.5	80 - 120	5.943	5.947	-0.0040	N/A	
Decachlorobiphenyl [2C]	40.000	107	80 - 120	14.262	14.262	0.0000	N/A	
Tetrachlorometaxylene [2C]	40.000	97.3	80 - 120	5.801	5.805	-0.0040	N/A	
BJK0603-BLK1 (Solid)			Lab File ID: 11272104ECD7.D				Analyzed: 11/27/21 13:07	
Decachlorobiphenyl	8.0000	107	40 - 126	14.04	14.04083	-0.0008	N/A	
Tetrachlorometaxylene	8.0000	94.4	44 - 120	5.945	5.947	-0.0020	N/A	
Decachlorobiphenyl [2C]	8.0000	118	40 - 126	14.261	14.262	-0.0010	N/A	
Tetrachlorometaxylene [2C]	8.0000	93.3	44 - 120	5.803	5.805	-0.0020	N/A	
BJK0603-BS1 (Solid)			Lab File ID: 11272105ECD7.D				Analyzed: 11/27/21 13:28	
Decachlorobiphenyl	8.0000	115	40 - 126	14.04	14.04083	-0.0008	N/A	
Tetrachlorometaxylene	8.0000	101	44 - 120	5.943	5.947	-0.0040	N/A	
Decachlorobiphenyl [2C]	8.0000	124	40 - 126	14.262	14.262	0.0000	N/A	
Tetrachlorometaxylene [2C]	8.0000	97.3	44 - 120	5.801	5.805	-0.0040	N/A	
BJK0603-SRM1 (Solid)			Lab File ID: 11272106ECD7.D				Analyzed: 11/27/21 13:49	
Decachlorobiphenyl	50.000	98.6	40 - 126	14.039	14.04083	-0.0018	N/A	
Tetrachlorometaxylene	50.000	84.7	44 - 120	5.942	5.947	-0.0050	N/A	
Decachlorobiphenyl [2C]	50.000	103	40 - 126	14.262	14.262	0.0000	N/A	
Tetrachlorometaxylene [2C]	50.000	87.0	44 - 120	5.8	5.805	-0.0050	N/A	
21K0332-01 (Solid)			Lab File ID: 11272107ECD7.D				Analyzed: 11/27/21 14:10	
Decachlorobiphenyl	7.9968	98.5	40 - 126	14.038	14.04083	-0.0028	N/A	
Tetrachlorometaxylene	7.9968	86.2	44 - 120	5.945	5.947	-0.0020	N/A	
Decachlorobiphenyl [2C]	7.9968	96.2	40 - 126	14.259	14.262	-0.0030	N/A	
Tetrachlorometaxylene [2C]	7.9968	91.3	44 - 120	5.802	5.805	-0.0030	N/A	

Analytical Resources, LLC
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG/WO:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJK0396	Instrument:	ECD7
Calibration:	EK00072	Calibration Date:	11/26/2021

Surrogate Compound	Spike Level ug/kg dry	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
BJK0603-MS1 (Solid)			Lab File ID: 11272108ECD7.D				Analyzed: 11/27/21 14:32	
Decachlorobiphenyl	7.9968	70.2	40 - 126	14.037	14.04083	-0.0038	N/A	
Tetrachlorometaxylene	7.9968	72.5	44 - 120	5.944	5.947	-0.0030	N/A	
Decachlorobiphenyl [2C]	7.9968	67.3	40 - 126	14.259	14.262	-0.0030	N/A	
Tetrachlorometaxylene [2C]	7.9968	75.8	44 - 120	5.802	5.805	-0.0030	N/A	
BJK0603-MSD1 (Solid)			Lab File ID: 11272109ECD7.D				Analyzed: 11/27/21 14:53	
Decachlorobiphenyl	8.0018	96.1	40 - 126	14.038	14.04083	-0.0028	N/A	
Tetrachlorometaxylene	8.0018	87.2	44 - 120	5.945	5.947	-0.0020	N/A	
Decachlorobiphenyl [2C]	8.0018	91.8	40 - 126	14.258	14.262	-0.0040	N/A	
Tetrachlorometaxylene [2C]	8.0018	89.8	44 - 120	5.803	5.805	-0.0020	N/A	
SJK0396-CCV1 (Solid)			Lab File ID: 11272121ECD7.D				Analyzed: 11/27/21 19:08	
Decachlorobiphenyl	40.000	101	80 - 120	14.039	14.04083	-0.0018	N/A	
Tetrachlorometaxylene	40.000	99.0	80 - 120	5.943	5.947	-0.0040	N/A	
Decachlorobiphenyl [2C]	40.000	108	80 - 120	14.261	14.262	-0.0010	N/A	
Tetrachlorometaxylene [2C]	40.000	100	80 - 120	5.802	5.805	-0.0030	N/A	
SJK0396-CCV2 (Solid)			Lab File ID: 11272122ECD7.D				Analyzed: 11/27/21 19:29	
Decachlorobiphenyl	40.000	100	80 - 120	14.04	14.04083	-0.0008	N/A	
Tetrachlorometaxylene	40.000	99.3	80 - 120	5.946	5.947	-0.0010	N/A	
Decachlorobiphenyl [2C]	40.000	106	80 - 120	14.26	14.262	-0.0020	N/A	
Tetrachlorometaxylene [2C]	40.000	99.5	80 - 120	5.805	5.805	0.0000	N/A	
SJK0396-CCV3 (Solid)			Lab File ID: 11272128ECD7.D				Analyzed: 11/27/21 21:36	
Decachlorobiphenyl	40.000	102	80 - 120	14.039	14.04083	-0.0018	N/A	
Tetrachlorometaxylene	40.000	98.8	80 - 120	5.945	5.947	-0.0020	N/A	
Decachlorobiphenyl [2C]	40.000	108	80 - 120	14.26	14.262	-0.0020	N/A	
Tetrachlorometaxylene [2C]	40.000	98.3	80 - 120	5.803	5.805	-0.0020	N/A	
SJK0396-CCV4 (Solid)			Lab File ID: 11272129ECD7.D				Analyzed: 11/27/21 21:57	
Decachlorobiphenyl	40.000	101	80 - 120	14.04	14.04083	-0.0008	N/A	
Tetrachlorometaxylene	40.000	98.8	80 - 120	5.942	5.947	-0.0050	N/A	
Decachlorobiphenyl [2C]	40.000	105	80 - 120	14.261	14.262	-0.0010	N/A	
Tetrachlorometaxylene [2C]	40.000	98.5	80 - 120	5.801	5.805	-0.0040	N/A	

Analytical Resources, LLC
Analytical Chemists and Consultants

INTERNAL STANDARD AREA AND RT SUMMARY
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJK0390	Instrument:	ECD7
		Calibration:	EK00072

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Secondary Cal Check (SJK0390-SCV1)		(Solid)		Lab File ID: 11262117ECD7.D				Analyzed: 11/26/21 21:44	
1-Bromo-2-Nitrobenzene	347308	3.564	331143	3.565	105	50 - 200	-0.001	+/-0.50	
Hexabromobiphenyl	431101	14.407	407599	14.407	106	50 - 200	0.000	+/-0.50	
1-Bromo-2-Nitrobenzene [2C]	928169	4.008	898498	4.008	103	50 - 200	0.000	+/-0.50	
Hexabromobiphenyl [2C]	1233073	15.143	1136250	15.142	109	50 - 200	0.001	+/-0.50	
Secondary Cal Check (SJK0390-SCV2)		(Solid)		Lab File ID: 11262118ECD7.D				Analyzed: 11/26/21 22:05	
1-Bromo-2-Nitrobenzene	347126	3.564	331143	3.565	105	50 - 200	-0.001	+/-0.50	
Hexabromobiphenyl	433407	14.406	407599	14.407	106	50 - 200	-0.001	+/-0.50	
1-Bromo-2-Nitrobenzene [2C]	928670	4.008	898498	4.008	103	50 - 200	0.000	+/-0.50	
Hexabromobiphenyl [2C]	1244992	15.144	1136250	15.142	110	50 - 200	0.002	+/-0.50	
Secondary Cal Check (SJK0390-SCV3)		(Solid)		Lab File ID: 11262119ECD7.D				Analyzed: 11/26/21 22:26	
1-Bromo-2-Nitrobenzene	346515	3.565	331143	3.565	105	50 - 200	0.000	+/-0.50	
Hexabromobiphenyl	432252	14.406	407599	14.407	106	50 - 200	-0.001	+/-0.50	
1-Bromo-2-Nitrobenzene [2C]	924205	4.008	898498	4.008	103	50 - 200	0.000	+/-0.50	
Hexabromobiphenyl [2C]	1244332	15.144	1136250	15.142	110	50 - 200	0.002	+/-0.50	
Secondary Cal Check (SJK0390-SCV4)		(Solid)		Lab File ID: 11262120ECD7.D				Analyzed: 11/26/21 22:47	
1-Bromo-2-Nitrobenzene	345092	3.565	331143	3.565	104	50 - 200	0.000	+/-0.50	
Hexabromobiphenyl	430759	14.406	407599	14.407	106	50 - 200	-0.001	+/-0.50	
1-Bromo-2-Nitrobenzene [2C]	918890	4.008	898498	4.008	102	50 - 200	0.000	+/-0.50	
Hexabromobiphenyl [2C]	1248828	15.143	1136250	15.142	110	50 - 200	0.001	+/-0.50	
Secondary Cal Check (SJK0390-SCV5)		(Solid)		Lab File ID: 11262121ECD7.D				Analyzed: 11/26/21 23:08	
1-Bromo-2-Nitrobenzene	345589	3.565	331143	3.565	104	50 - 200	0.000	+/-0.50	
Hexabromobiphenyl	431073	14.406	407599	14.407	106	50 - 200	-0.001	+/-0.50	
1-Bromo-2-Nitrobenzene [2C]	908918	4.008	898498	4.008	101	50 - 200	0.000	+/-0.50	
Hexabromobiphenyl [2C]	1254165	15.142	1136250	15.142	110	50 - 200	0.000	+/-0.50	
Secondary Cal Check (SJK0390-SCV6)		(Solid)		Lab File ID: 11262122ECD7.D				Analyzed: 11/26/21 23:30	
1-Bromo-2-Nitrobenzene	345640	3.565	331143	3.565	104	50 - 200	0.000	+/-0.50	
Hexabromobiphenyl	432546	14.406	407599	14.407	106	50 - 200	-0.001	+/-0.50	
1-Bromo-2-Nitrobenzene [2C]	916629	4.009	898498	4.008	102	50 - 200	0.001	+/-0.50	
Hexabromobiphenyl [2C]	1262479	15.144	1136250	15.142	111	50 - 200	0.002	+/-0.50	

Analytical Resources, LLC
Analytical Chemists and Consultants

INTERNAL STANDARD AREA AND RT SUMMARY
EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJK0396	Instrument:	ECD7
		Calibration:	EK00072

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (SJK0396-ICV1)		(Solid)	Lab File ID: 11272102ECD7.D				Analyzed: 11/27/21 12:24		
1-Bromo-2-Nitrobenzene	347808	3.564	348840	3.559	100	50 - 200	0.005	+/-0.50	
Hexabromobiphenyl	384550	14.408	434734	14.406	88	50 - 200	0.002	+/-0.50	
1-Bromo-2-Nitrobenzene [2C]	915517	4.006	925579	4.003	99	50 - 200	0.003	+/-0.50	
Hexabromobiphenyl [2C]	1209324	15.143	1260379	15.142	96	50 - 200	0.001	+/-0.50	
Initial Cal Check (SJK0396-ICV2)		(Solid)	Lab File ID: 11272103ECD7.D				Analyzed: 11/27/21 12:46		
1-Bromo-2-Nitrobenzene	348840	3.559	348840	3.559	100	50 - 200	0.000	+/-0.50	
Hexabromobiphenyl	434734	14.406	434734	14.406	100	50 - 200	0.000	+/-0.50	
1-Bromo-2-Nitrobenzene [2C]	925579	4.003	925579	4.003	100	50 - 200	0.000	+/-0.50	
Hexabromobiphenyl [2C]	1260379	15.142	1260379	15.142	100	50 - 200	0.000	+/-0.50	
Blank (BJK0603-BLK1)		(Solid)	Lab File ID: 11272104ECD7.D				Analyzed: 11/27/21 13:07		
1-Bromo-2-Nitrobenzene	328626	3.564	348840	3.559	94	50 - 200	0.005	+/-0.50	
Hexabromobiphenyl	418576	14.405	434734	14.406	96	50 - 200	-0.001	+/-0.50	
1-Bromo-2-Nitrobenzene [2C]	878005	4.007	925579	4.003	95	50 - 200	0.004	+/-0.50	
Hexabromobiphenyl [2C]	1220223	15.142	1260379	15.142	97	50 - 200	0.000	+/-0.50	
LCS (BJK0603-BS1)		(Solid)	Lab File ID: 11272105ECD7.D				Analyzed: 11/27/21 13:28		
1-Bromo-2-Nitrobenzene	340977	3.56	348840	3.559	98	50 - 200	0.001	+/-0.50	
Hexabromobiphenyl	435241	14.406	434734	14.406	100	50 - 200	0.000	+/-0.50	
1-Bromo-2-Nitrobenzene [2C]	910537	4.003	925579	4.003	98	50 - 200	0.000	+/-0.50	
Hexabromobiphenyl [2C]	1288853	15.143	1260379	15.142	102	50 - 200	0.001	+/-0.50	
Reference (BJK0603-SRM1)		(Solid)	Lab File ID: 11272106ECD7.D				Analyzed: 11/27/21 13:49		
1-Bromo-2-Nitrobenzene	342234	3.559	348840	3.559	98	50 - 200	0.000	+/-0.50	
Hexabromobiphenyl	382943	14.405	434734	14.406	88	50 - 200	-0.001	+/-0.50	
1-Bromo-2-Nitrobenzene [2C]	885246	4.002	925579	4.003	96	50 - 200	-0.001	+/-0.50	
Hexabromobiphenyl [2C]	1219971	15.142	1260379	15.142	97	50 - 200	0.000	+/-0.50	
LDW21-IT637A (21K0332-01)		(Solid)	Lab File ID: 11272107ECD7.D				Analyzed: 11/27/21 14:10		
1-Bromo-2-Nitrobenzene	340785	3.562	347808	3.564	98	50 - 200	-0.002	+/-0.50	
Hexabromobiphenyl	335270	14.403	384550	14.408	87	50 - 200	-0.005	+/-0.50	
1-Bromo-2-Nitrobenzene [2C]	864804	4.005	915517	4.006	94	50 - 200	-0.001	+/-0.50	
Hexabromobiphenyl [2C]	1102042	15.14	1209324	15.143	91	50 - 200	-0.003	+/-0.50	

Analytical Resources, LLC
Analytical Chemists and Consultants

INTERNAL STANDARD AREA AND RT SUMMARY

EPA 8082A

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJK0396	Instrument:	ECD7
		Calibration:	EK00072

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike (BJK0603-MS1)		(Solid)		Lab File ID: 11272108ECD7.D				Analyzed: 11/27/21 14:32	
1-Bromo-2-Nitrobenzene	334656	3.561	348840	3.559	96	50 - 200	0.002	+/-0.50	
Hexabromobiphenyl	341217	14.405	434734	14.406	78	50 - 200	-0.001	+/-0.50	
1-Bromo-2-Nitrobenzene [2C]	843350	4.005	925579	4.003	91	50 - 200	0.002	+/-0.50	
Hexabromobiphenyl [2C]	1105795	15.14	1260379	15.142	88	50 - 200	-0.002	+/-0.50	
Matrix Spike Dup (BJK0603-MSD1)		(Solid)		Lab File ID: 11272109ECD7.D				Analyzed: 11/27/21 14:53	
1-Bromo-2-Nitrobenzene	341475	3.562	348840	3.559	98	50 - 200	0.003	+/-0.50	
Hexabromobiphenyl	324591	14.404	434734	14.406	75	50 - 200	-0.002	+/-0.50	
1-Bromo-2-Nitrobenzene [2C]	853588	4.006	925579	4.003	92	50 - 200	0.003	+/-0.50	
Hexabromobiphenyl [2C]	1078447	15.141	1260379	15.142	86	50 - 200	-0.001	+/-0.50	

Analytical Resources, LLC
Analytical Chemists and Consultants

DUAL COLUMN CONFIRMATION SUMMARY

Laboratory:	Analytical Resources, LLC			SDG:	21K0332
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Matrix:	Sediment	Laboratory ID:	21K0332-01	File ID:	11272107ECD7.D
Sampled:	07/06/21 17:16	Prepared:	11/24/21 08:25	Analyzed:	11/27/21 14:10
Solids:	78.50	Preparation:	EPA 3546 (Microwave)	Instrument:	ECD7
Batch:	BJK0603	Sequence:	SJK0396		
GC Column(1):	ZB5			GC Column(2):	ZB35

COMPOUND	COL	RT	EXP RT	RT DIFF	AREA	CONC	RPD
Aroclor 1248	* 1	8.543			7988.5	7.4	8.5
	2	8.428			19686.5	6.8	
Aroclor 1254	* 1	9.434			10549.8	7.7	1.3
	2	9.57			26518.8	7.6	
Aroclor 1260	* 1	11.183	11.18617	0.00317	7127.2	5.0	19.8
	2	11.78	11.78483	0.00483	23288.75	4.1	

* Column used for quantitation

Analytical Resources, LLC
Analytical Chemists and Consultants

HOLDING TIME SUMMARY

Analysis: EPA 8082A

Laboratory: Analytical Resources, LLC
SDG: 21K0332
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
LDW21-IT637A 21K0332-01	07/06/21 17:16	11/19/21 10:49	11/24/21 08:25	140	365	11/27/21 14:10	3	40	
Matrix Spike BJK0603-MS1	07/06/21 17:16	11/19/21 10:49	11/24/21 08:25	140	365	11/27/21 14:32	3	40	
Matrix Spike Dup BJK0603-MSD1	07/06/21 17:16	11/19/21 10:49	11/24/21 08:25	140	365	11/27/21 14:53	3	40	

* Indicates hold time exceedance.

Analytical Resources, LLC
Analytical Chemists and Consultants

METHOD DETECTION AND REPORTING LIMITS

EPA 8082A

Laboratory: Analytical Resources, LLC
SDG: 21K0332
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Matrix: Solid
Instrument: ECD7

Analyte	MDL	RL	Units
Aroclor 1016	1.6	4.0	ug/kg
Aroclor 1016 [2C]	1.6	4.0	ug/kg
Aroclor 1221	1.6	4.0	ug/kg
Aroclor 1221 [2C]	1.6	4.0	ug/kg
Aroclor 1232	1.6	4.0	ug/kg
Aroclor 1232 [2C]	1.6	4.0	ug/kg
Aroclor 1242	1.6	4.0	ug/kg
Aroclor 1242 [2C]	1.6	4.0	ug/kg
Aroclor 1248	1.6	4.0	ug/kg
Aroclor 1248 [2C]	1.6	4.0	ug/kg
Aroclor 1254	1.6	4.0	ug/kg
Aroclor 1254 [2C]	1.6	4.0	ug/kg
Aroclor 1260	0.6	4.0	ug/kg
Aroclor 1260 [2C]	0.6	4.0	ug/kg

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

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

CERTIFICATE OF ANALYSIS

Catalog No: S-279N
Description: Tetrachloro-m-xylene
Lot: 0052481B-1
Solvent: N/A
Hazards: *Refer to SDS for complete safety information*

Signal Word: Warning

Date Certified: Jul 28, 2005
Expiration: Jul 28, 2015
Sample Size: 100 mg
Components: 1
Storage Condition: Ambient (>5 °C)

Certified Reference Material

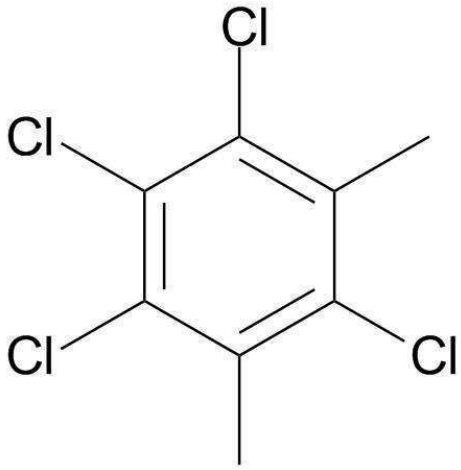
ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER AR-1463

ilac-MRA

Component	CAS #	Purity % (GC/FID)	Prepared Concentration	Certified Analyte Concentration[1]
Tetrachloro-meta-xylene	877-09-8	96.0	N/A	N/A

Identification:

Molecular formula: C8H6Cl4
Molecular weight: 243.94



C000147
tetrachlormetaxylene
Expires 1/15/2020
Prepared By Joshua Rains 1/15/2014

This Certified Reference Material was verified in accordance with ISO/IEC 17025

A product with a suffix (-1A, -2B, etc. or -01, -02, etc.) on its lot number has had its expiration date extended and is identical to the same lot number without the suffix.

[1] The Uncertainty calculated for this product is ±2.4%. These values are the expanded uncertainty and represent an estimated standard deviation equal to the positive square root of the total variation of the uncertainty of components. A normal distribution is assumed and a coverage factor of K=2 is chosen using approximately a 95% confidence level.

Labels and certificates follow U.S. Conventions in reporting numerical values: A comma (,) is used to separate units of one-thousand or greater. A period (.) is used as a decimal place marker.

Metrological traceability is established through in-house validated methods.

Purity, if stated, is equal to 100% minus found impurity components. Impurity components have not been identified.

The information on this certificate may not be reproduced without the express permission of the manufacturer. See reverse side for additional information

Hazard Information: Please refer to the SDS for information regarding the hazards associated with using this material.

This product was prepared according to in-house procedures and is guaranteed to be homogeneous.

Certified By: Larry Decker, Organic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO 17034, ISO/IEC 17025 and certified to ISO 9001:2015

QR-ORG/INO-001
Rev. 5/18

EXPIRED AccuStandard

1. **Quality Standards:**

   ISO 17034:2016 – General Requirements for the Competence of Reference Material Producers

   ISO/IEC 17025:2017 – General Requirements for the Competence of Testing And Calibration Laboratories

   ISO 9001:2015 – Quality Management System – Requirements Eagle Registrations

2. **Intended Use:** The product covered by this certificate is designed for calibration or for use in quality control procedures for the specified chemical compounds listed on the reverse side. This product can be used for quantification and/or identification. This product can also be used as a reference material to validate analytical procedures, subject to the conditions under Section 7.

3. **Manufacturing:** All balances are calibrated daily using an in-house procedure with weights that are compared annually to master weights and traceable to NIST. The balances are also calibrated annually by an ISO/IEC 17025 accredited calibration laboratory. Please refer to the NIST test number listed on the front of this certificate. Class A glassware is used in the manufacture and quality control of all standards. Good Laboratory Practices have been used throughout the preparation of this Standard.

4. **Homogeneity:** This product is sufficiently homogeneous and any sample size would be within the uncertainty budget.

5. **Stability:** The manufacturer guarantees the stability of this solution through the expiration date stated on the label when handled and stored according to the conditions stated on the label.

6. **Uncertainty:** The uncertainty values as stated on the face of this certificate have been determined using the EURACHEM/CITAC Guide. We report a combined expanded uncertainty equal to the positive square root of the total variance of the uncertainty of the components using the following formula: $u_c = \sqrt{(u(V))^2 + (u(m))^2 + (u(IV))^2 + (u(RO))^2}$. This formula represents uncertainty components from the mass, volume, short-term stability, long-term stability and homogeneity factors associated with the production of this product. The expanded uncertainty, assumes a normal distribution and a coverage factor of k=2 is chosen using approximately a 95% confidence level.

7. **Legal Notice and Limit of Liability:** This product is for routine laboratory analysis and research purposes only. The company's liability will be limited to replacement of product or refund of purchase price. Notice of claims must be made within thirty (30) days from date of delivery.

AccuStandard
125 Market Street
New Haven, CT 06513
(203) 786-5290

CERTIFICATE OF PRODUCT DATA

PRODUCT: C-209N
EXPIRATION: Jul 28, 2015
DESCRIPTION: 2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl
LOT #: 990521LB-AC
SOLVENT: N/A

This product is guaranteed accurate to ±0.5% of the Certified Analyte concentration through the Expiration Date on the Label.

Component	CAS #	Purity % (GC/MS)	Prepared Concentration[1]	Certified Analyte Concentration[2]
2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl	2051-24-3	100	N/A	N/A

2,

C000148
decachlorbiphenyl
Expires 1/15/2020
Prepared By Joshua Rains 1/15/2014

* I 1768 A

Certified by: R. Cooper

1. All weights are traceable through National Institute of Standards & Technology, Test No. 822/254480
2. Certified Analyte Concentration = Purity x Prepared Concentration. The Uncertainty calculated for this product is ±4% which is the Combined Uncertainty uc(y). It represents an estimated standard deviation equal to the positive square root of the total variance of the uncertainty of components. The Expanded Uncertainty is U which is Uc(y) *K where K is the coverage factor at the 95% confidence level (K=2).
3. A product with a suffix (-1A, -2B, etc.) on its lot# has had its expiration date extended and is identical to the same lot# without the suffix.

Please note: AccuStandard follows the U.S. conventions in reporting numerical values, on both certificates and labels.

A comma (,) is used to separate units of one-thousand or greater.
A period (.) is used as a decimal place marker.

This product was manufactured in accordance to quality system requirements of ISO 9001:2000 and ISO 17025

* Recertified 2 4-6-09 (JS)

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Analytical Standard Record

Standard ID: C000148 **Printed: 4/23/2015 11:54:44AM**

Description:	decachlorbiphenyl	Expires:	15-Jan-2020
Standard Type:	Other	Prepared:	15-Jan-2014
Solvent:	na/a	Prepared By:	Joshua Rains
Final Volume (mls):	1	Department:	Organics
Vials:	1	Last Edit:	27-Feb-2015 13:03 by JGR
Vendor:	Accustandard	Lot #:	990521lb-ac
Vendor Catalog #:			

Comments

see i1768a
SOM calibrations added 06/12/14 sdrd

Analyte	CAS Number	Concentration	Units
Decachlorobiphenyl [2C]	2051-24-3	1000000	ug/mL
Decachlorobiphenyl	2051-24-3	1000000	ug/mL
DCB 1660 [2C]	2051-24-3	1000000	ug/mL
DCB 1660	2051-24-3	1000000	ug/mL
DCB [2C]	2051-24-3	1000000	ug/mL
DCB (A) [2C]	2051-24-3	1000000	ug/mL
DCB (A)	2051-24-3	1000000	ug/mL
DCB	2051-24-3	1000000	ug/mL

Reviewed By Date

Certificate of Analysis

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Certified Reference Material

This product is included in Phenova's ISO/IEC 17025 and ISO Guide 34 Scopes of Accreditation

Catalog No.: AL0-101467
Description: Aroclor 1016
Storage: 4 °C
Provided As: 1 mL in 2 mL Ampoule in Isooctane

Lot Number: CL12908
Certification Date: November 19, 2018
Expiration Date: October 31, 2026

Andrea L Gill

Andrea Gill, Certified Reference Materials Manager

Component	CAS #	Certified Value µg/mL	Expanded Uncertainty
Aroclor 1016	12674-11-2	1000	± 0.553%

I008524
AROCLOR 1016
Expires 10/31/2026
Prepared By Joshua Rains 9/22/2020

IL11110613_us

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Reference Material Producer
Certificate No. 2427.02

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Manufactured by Phenova, Inc.
Phenova's testing and calibration results are internationally recognized through the ILAC MRA. Phenova is an accredited ISO Guide 34 Reference Material Provider and ISO/IEC 17025 accredited Chemical Testing Laboratory.

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Chemical Testing Laboratory
Certificate No. 2427.03

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1. Quality Document: This Certificate of Analysis has been created in accordance with ISO Guide 31[1] and ISO Guide 35.[2]

2. Quality Standards: Phenova is accredited by A2LA to ISO Guide 34[3] and ISO/IEC 17025[4] as a producer of Certified Reference Materials and Reference Materials. This ensures that our manufacturing processes have been accredited to and meet strict international standards.

3. Intended Use: The product is manufactured for use in the calibration and calibration verification of chromatographic instrumentation performed in routine laboratory analysis.

4. Instruction: Visually inspect the solution inside the ampoule for any un-dissolved material. If particulate is visible, sonicate the unopened ampoule until material is fully dissolved. Dilute as required, use only class A glassware and diluents compatible with all certified analytes in the mixture.

5. Hazardous Situation: The product is intended for use by experienced professional personnel. A Material Safety Data Sheet (MSDS) is available at www.phenomenex.com/mysupport.

6. Level of Homogeneity: The product has been certified to guarantee the certified values and their uncertainties at a volume of 2 µL.

7. Certified Value: Certified Value is based upon gravimetric and volumetric preparation using calibrated balances and Class A glassware.

8. Raw Materials and Purity: Phenova reference standard products are prepared from the highest quality starting materials. The purity of this material was verified using an ISO/IEC 17025 methodology.

9. Expanded Uncertainty: The expanded uncertainty (uCRM) as stated is determined in accordance with ISO/IEC Guide 98[5] and ISO Guide 35 incorporating Type A standard uncertainty at a 95% confidence level. The uncertainty contains elements of manufacturing (uM), homogeneity analysis (uH) and long-term stability testing (uLTS). The uncertainty is calculated based on the root-sum-of-squares equation times a coverage factor (k=2).

   $$uCRM = k\sqrt{uM^2 + uH^2 + uLTS^2}$$

   Transport conditions (short-term stability) have been tested such that there is no contribution to the uncertainty reported. The expanded uncertainty applies to the product as received.

10. Metrological Traceability: The property value (certified value and its uncertainty) are traceable through an unbroken chain of calibration to the SI base unit kg through a NIST traceable weight in accordance with ISO Guide 34. This is achieved through calibration of balances, verification of weights, use of national methodology for glassware calibration and product homogeneity and stability testing utilizing an ISO/IEC 17025 methodology.

11. Values Obtained During Product Testing: This product is subjected to verification, homogeneity and stability testing using an ISO/IEC 17025 chromatographic methodology. All values obtained during testing meet criteria in accordance with ISO Guide 34.

12. Period of Validity: The Certified Values and their uncertainties are guaranteed until the expiration date. This product will be monitored during the period of validity and customers notified of any significant changes in stability.

References:

[1] ISO Guide 31:2000(E) – Reference Materials – Contents of Certificates and Labels.
[2] ISO Guide 35:2006(E) – Reference Material – General and Statistical Principles for Certification.
[3] ISO Guide 34:2009(E) – General Requirements for the Competence of Reference Material Producers.
[4] ISO/IEC 17025:2005(E) – General Requirements for the Competence of Testing and Calibration Laboratories.
[5] ISO/IEC Guide 98-3:2008(E) – Uncertainty of Measurement – Part 3: Guide to Expression of Uncertainty in Measurement (GUM: 1995)

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Certificate No. 2427.02

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Certificate No. 2427.03

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Certified Reference Material

This product is included in Phenova's ISO/IEC 17025 and ISO Guide 34 Scopes of Accreditation

Catalog No.: AL0-101462
Description: Aroclor 1260
Storage: 4 °C
Provided As: 1 mL in 2 mL Ampoule in Hexane

Lot Number: CL13054
Certification Date: November 29, 2018
Expiration Date: November 30, 2026

Andrea L Gill

Andrea Gill, Certified Reference Materials Manager

Component	CAS #	Certified Value µg/mL	Expanded Uncertainty
Aroclor 1260	11096-82-5	1000	± 0.520%

I008525
AROCLOR 1260
Expires 11/30/2026
Prepared By Joshua Rains 9/22/2020

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Certificate No. 2427.02

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Access your MSDS and digital C of A at **www.phenomenex.com/mysupport. Re-order at www.phenomenex.com/standards**

1. Quality Document: This Certificate of Analysis has been created in accordance with ISO Guide 31[1] and ISO Guide 35.[2]

2. Quality Standards: Phenova is accredited by A2LA to ISO Guide 34[3] and ISO/IEC 17025[4] as a producer of Certified Reference Materials and Reference Materials. This ensures that our manufacturing processes have been accredited to and meet strict international standards.

3. Intended Use: The product is manufactured for use in the calibration and calibration verification of chromatographic instrumentation performed in routine laboratory analysis.

4. Instruction: Visually inspect the solution inside the ampoule for any un-dissolved material. If particulate is visible, sonicate the unopened ampoule until material is fully dissolved. Dilute as required, use only class A glassware and diluents compatible with all certified analytes in the mixture.

5. Hazardous Situation: The product is intended for use by experienced professional personnel. A Material Safety Data Sheet (MSDS) is available at www.phenomenex.com/mysupport.

6. Level of Homogeneity: The product has been certified to guarantee the certified values and their uncertainties at a volume of 2 µL.

7. Certified Value: Certified Value is based upon gravimetric and volumetric preparation using calibrated balances and Class A glassware.

8. Raw Materials and Purity: Phenova reference standard products are prepared from the highest quality starting materials. The purity of this material was verified using an ISO/IEC 17025 methodology.

9. Expanded Uncertainty: The expanded uncertainty (uCRM) as stated is determined in accordance with ISO/IEC Guide 98[5] and ISO Guide 35 incorporating Type A standard uncertainty at a 95% confidence level. The uncertainty contains elements of manufacturing (uM), homogeneity analysis (uH) and long-term stability testing (uLTS). The uncertainty is calculated based on the root-sum-of-squares equation times a coverage factor (k=2).

   $$uCRM = k\sqrt{uM^2 + uH^2 + uLTS^2}$$

   Transport conditions (short-term stability) have been tested such that there is no contribution to the uncertainty reported. The expanded uncertainty applies to the product as received.

10. Metrological Traceability: The property value (certified value and its uncertainty) are traceable through an unbroken chain of calibration to the SI base unit kg through a NIST traceable weight in accordance with ISO Guide 34. This is achieved through calibration of balances, verification of weights, use of national methodology for glassware calibration and product homogeneity and stability testing utilizing an ISO/IEC 17025 methodology.

11. Values Obtained During Product Testing: This product is subjected to verification, homogeneity and stability testing using an ISO/IEC 17025 chromatographic methodology. All values obtained during testing meet criteria in accordance with ISO Guide 34.

12. Period of Validity: The Certified Values and their uncertainties are guaranteed until the expiration date. This product will be monitored during the period of validity and customers notified of any significant changes in stability.

References:

[1] ISO Guide 31:2000(E) – Reference Materials – Contents of Certificates and Labels.
[2] ISO Guide 35:2006(E) – Reference Material – General and Statistical Principles for Certification.
[3] ISO Guide 34:2009(E) – General Requirements for the Competence of Reference Material Producers.
[4] ISO/IEC 17025:2005(E) – General Requirements for the Competence of Testing and Calibration Laboratories.
[5] ISO/IEC Guide 98-3:2008(E) – Uncertainty of Measurement – Part 3: Guide to Expression of Uncertainty in Measurement (GUM: 1995)

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Certificate No. 2427.03

Certificate of Analysis

Agilent

Aroclor 1016 Solution

Product Number: PP-282 **Page:** 1 of 1

Lot Number: CR-0761 **Lot Issue Date:** 28-Feb-2017 **Expiration Date:** 31-Mar-2025

This ISO Guide 34 Reference Material (RM) was manufactured and verified in accordance with ULTRA's ISO 9001 registered quality system, and the analyte concentrations were verified by our ISO 17025 accredited laboratory. The true value and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed below.

Analyte	CAS#	Analyte Lot	True Value
Aroclor 1016	012674-11-2		100.2 ± 0.5 µg/mL

Matrix: isooctane (2,2,4-trimethylpentane)

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

J000580

aroclor 1016 scv100ug/mL
Expires 3/31/2025
Prepared By Joshua Rains 1/15/2021

ULTRA uses balances calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001, and calibrated Class A glassware in the manufacturing of these standards.

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

ISO 9001
Registered
TUV USA, Inc.

John Russo
President

Monica Bourgeois
Director of QA/RA

Agilent

Certificate of Analysis

J000581

aroclor 1221 scv100ug/mL
Expires 5/31/2024
Prepared By Joshua Rains 1/15/2021

Product Name: Aroclor 1221 Standard

Product Number: PP-292-1 **Lot Issue Date:** 28-Apr-2020

Lot Number: 0006535333 **Expiration Date:** 31-May-2024

Description:

This analytical reference material (RM) was manufactured and verified in accordance with an ISO 9001 registered quality system, and analyte concentrations were verified by an ISO 17025 accredited laboratory. The concentration and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed below.

Analyte	CAS#	Analyte Lot	Concentration ± Uncertainty
Aroclor 1221	011104-28-2	RM04278	100.2 ± 0.5 µg/mL

Matrix: isooctane (2,2,4-trimethylpentane)

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

Traceability:
The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z540.3, ISO 9001, ISO 17025, and ISO 17034. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 1088.

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

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

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening the container and should be processed without delay for the certified values to be valid within the stated uncertainties.

Hazards:
Refer to the Safety Data Sheet on www.agilent.com for information regarding this RM.

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

Maintenance of Certification:
If substantive changes are noted that affect the certification before the expiration of this certificate, Agilent will notify the purchaser.

Sample lot approver:

Monica Bourgeois
QMS Representative

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

ISO 17034 Cert No.
AR-1936

RM was produced in accordance with TUV USA Inc registered ISO 9001 Quality Management System. Cert # 56 100 18560026
Page: 1 of 1

www.agilent.com/quality/
CSD-QA-015.1

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

ISO 17025 Cert
No. AT-1937

250 Smith Street North Kingstown, Rhode Island 02852 www.agilent.com/quality

Agilent

Certificate of Analysis ISO 17034

J000582

aroclor 1232 scv100ug/mL
Expires 8/31/2023
Prepared By Joshua Rains 1/15/2021

Aroclor 1232 Standard

Product Number: PP-302-1 **Page:** 1 of 1

Lot Number: CF-2197A **Lot Issue Date:** 05-Jul-2016 **Expiration Date:** 31-Aug-2023

This ISO 17034 Reference Material (RM) was manufactured and verified in accordance with Agilent's ISO 9001 registered quality system, and the analyte concentrations were verified by our ISO 17025 accredited laboratory. The true value and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed below.

Analyte	CAS#	Analyte Lot	True Value
Aroclor 1232	011141-16-5	NT01717	100.4 ± 0.5 µg/mL

Matrix: isooctane (2,2,4-trimethylpentane)

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

Agilent uses balances calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001, and calibrated Class A glassware in the manufacturing of these standards.

Monica Bourgeois
QMS Representative

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER
ISO 17034 Cert No. AR-1936

Produced in accordance with TUV USA Inc 56 100 18560026 registered ISO 9001 Quality Management System

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY
ISO17025 Cert No. AT-1937

Certificate of Analysis
ISO Guide 34

J000583
aroclor 1242 scv100ug/mL
Expires 1/31/2023
Prepared By Joshua Rains 1/15/2021

Aroclor 1242 Solution

Product Number: PP-312 **Page:** 1 of 1

Lot Number: CS-6293 **Lot Issue Date:** 04-Jan-2019 **Expiration Date:** 31-Jan-2023

This ISO Guide 34 Reference Material (RM) was manufactured and verified in accordance with Agilent's ISO 9001 registered quality system, and the analyte concentrations were verified by our ISO 17025 accredited laboratory. The true value and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed below.

Analyte	CAS#	Analyte Lot	True Value
Aroclor 1242	053469-21-9	NT01020	100.4 ± 0.5 µg/mL

Matrix: isooctane (2,2,4-trimethylpentane)

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

Agilent uses balances calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001, and calibrated Class A glassware in the manufacturing of these standards.

Monica Bourgeois
QMS Representative

ISO Guide 34 Cert No.
AR-1936

Produced in accordance with TUV USA Inc 56 100 18560026
registered ISO 9001 Quality Management System

ISO17025 Cert No.
AT-1937

Agilent

Certificate of Analysis
ISO Guide 34

J000584
aroclor 1248 scv100ug/mL
Expires 3/31/2023
Prepared By Joshua Rains 1/15/2021

Aroclor 1248 Standard

Product Number: PP-342 **Page:** 1 of 1

Lot Number: CT-0774 **Lot Issue Date:** 08-Mar-2019 **Expiration Date:** 31-Mar-2023

This ISO Guide 34 Reference Material (RM) was manufactured and verified in accordance with Agilent's ISO 9001 registered quality system, and the analyte concentrations were verified by our ISO 17025 accredited laboratory. The true value and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed below.

Analyte	CAS#	Analyte Lot	True Value
Aroclor 1248	012672-29-6	NT01718	100.3 ± 0.5 µg/mL

Matrix: isooctane (2,2,4-trimethylpentane)

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

Agilent uses balances calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001, and calibrated Class A glassware in the manufacturing of these standards.

Monica Bourgeois
QMS Representative

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER
ISO Guide 34 Cert No.
AR-1936

Produced in accordance with TUV USA Inc 56 100 18560026
registered ISO 9001 Quality Management System

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY
ISO17025 Cert No.
AT-1937

Certificate of Analysis

Agilent

Aroclor 1254 Solution

Product Number: PP-352 **Page:** 1 of 1

Lot Number: CK-4250 **Lot Issue Date:** 31-Dec-2013 **Expiration Date:** 31-Jan-2022

This certified Reference Material (RM) was manufactured and verified in accordance with ULTRA's ISO 9001 registered quality system, and the analyte concentrations were verified by our ISO 17025 accredited laboratory. The true value and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed below.

Analyte	CAS#	Analyte Lot	True Value
Aroclor 1254	011097-69-1	RM00922	100.0 ± 0.5 µg/mL

Matrix: isooctane (2,2,4-trimethylpentane)

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

J000585

aroclor 1254 scv100ug/mL
Expires 1/31/2022
Prepared By Joshua Rains 1/15/2021

ULTRA uses balances calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001, and calibrated Class A glassware in the manufacturing of these standards.

ACCREDITED

ISO 17025:2005 Accredited A2LA Cert. No. 0851-01

ISO 9001:2008 Registered TUV USA, Inc. Cert. No. 09-1009

250 Smith Street, North Kingstown, RI 02852 USA
401-294-9400 Fax: 295-2330
wwww.ultrasci.com

William J. Leary
Quality Assurance Manager

250 Smith Street North Kingstown, Rhode Island 02852 www.agilent.com/quality

Certificate of Analysis
ISO 17034

Aroclor 1262 Standard

Product Number: PP-372-1 **Page:** 1 of 1

Lot Number: 0006499800 **Lot Issue Date:** 04-Nov-2019 **Expiration Date:** 30-Nov-2023

This ISO 17034 Reference Material (RM) was manufactured and verified in accordance with Agilent Technologies ISO 9001 registered quality system. A review of the gravimetric preparation data by our ISO 17025 accredited laboratory serves to verify the concentration of each analyte. The true value and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed below.

Analyte	CAS#	Analyte Lot	True Value
Aroclor 1262	037324-23-5	RM14263	100.0 ± 0.5 µg/mL

Matrix: isooctane (2,2,4-trimethylpentane)

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

Agilent uses balances calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001, and calibrated Class A glassware in the manufacturing of these standards.

Monica Bourgeois
QMS Representative

J000587
aroclor 1262 scv100ug/mL
Expires 11/30/2023
Prepared By Joshua Rains 1/15/2021

ISO 17034 Cert No. AR-1936

Produced in accordance with TUV USA Inc 56 100 18560026 registered ISO 9001 Quality Management System

ISO 17025 Cert No. AT-1937

Certificate of Analysis
ISO 17034

Aroclor 1268 Standard

Product Number: PP-382-1 **Page:** 1 of 1

Lot Number: 0006478417 **Lot Issue Date:** 24-Jul-2019 **Expiration Date:** 31-Aug-2027

This ISO 17034 Reference Material (RM) was manufactured and verified in accordance with Agilent's ISO 9001 registered quality system, and the analyte concentrations were verified by our ISO 17025 accredited laboratory. The true value and uncertainty value at the 95% confidence level for each analyte, determined gravimetrically, is listed below.

Analyte	CAS#	Analyte Lot	True Value
Aroclor 1268	011100-14-4	RM00937	100.3 ± 0.5 µg/mL

Matrix: isooctane (2,2,4-trimethylpentane)

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

Agilent uses balances calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001, and calibrated Class A glassware in the manufacturing of these standards.

Monica Bourgeois
QMS Representative

J000588
aroclor 1268 scv100ug/mL
Expires 8/31/2027
Prepared By Joshua Rains 1/15/2021

ISO 17034 Cert No. AR-1936

Produced in accordance with TUV USA Inc 56 100 18560026
registered ISO 9001 Quality Management System

ISO 17025 Cert No. AT-1937

Recipient Copy

CHAIN-OF-CUSTODY RECORD

COC No. 15155

Order Number: CB014575 Date Shipped: 8/2/2021 AirBill No(s): 460843970024

From: QATS LABORATORY
2700 CHANDLER AVENUE, BLDG. B
LAS VEGAS, NV 89120
PHONE: 1-702-895-8712
FAX: 1-702-795-8210

To: SUE DUNNIHOO
ANALYTICAL RESOURCES INC.
4611 S. 134TH PLACE SUITE 100
TUKWILA WA 98168
250-695-6207

Sample ID	Qty	Description/Remarks	→ Catalogue Number
PSRM0140 J007935	1	PUGET SOUND SEDIMENT RM	PS-SRM
PSRM0141 J007936	1	PUGET SOUND SEDIMENT RM	PS-SRM
		DUWAMISH AOC4	

8/2/2021

Please use the enclosed Sample Preparation Instructions. If catalogue number(s) are listed at the top of the Sample Preparation Instructions use the Sample Preparation Instructions with catalogue number(s) matching the catalogue number(s) of each of the samples listed above.

Relinquished by: (Signature)	Date/Time 1400 8/2/2021	Received by: Jacob Leitte (Signature)	Date/Time 08/03/2021 1138
Custody Seal(s): Present/Absent	Remarks:		
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

Report No. 00, 9/11/2014 *SMP Version 3.3*

Analytical Resources, LLC
Analytical Chemists and Consultants

Form I
INORGANIC ANALYSIS DATA SHEET
EPA 9060A m

LDW21-IT637A

Laboratory:	Analytical Resources, LLC				
Client:	Anchor QEA, LLC				
Project:	Lower Duwamish AOC4				
Matrix:	Sediment	Laboratory ID:	21K0332-01 B	SDG:	21K0332
Sampled:	07/06/21 17:16	Prepared:	11/22/21 12:47	File ID:	CubeData_11242021@0939-011
% Solids:	76.76	Preparation:	PSEP 1986 (modified)	Analyzed:	11/23/21 16:32
Batch:	BJK0586	Sequence:	SJK0318	Initial/Final:	0.5156 g Wet / 0.5156 mL
Instrument:	TOC Cube			Calibration:	EJ00073

CAS NO.	Analyte	Concentration (% dry)	Dilution Factor	MDL	MRL	Q
	Total Organic Carbon	1.07	1	0.02	0.02	

Analytical Resources, LLC
Analytical Chemists and Consultants

PREPARATION BATCH SUMMARY

EPA 9060A m

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Batch:	BJK0586 Batch Matrix: Solid	Preparation:	PSEP 1986 (modified)

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
LDW21-IT637A	21K0332-01	eData_11242021@0939-	11/22/21 12:47	
Blank	BJK0586-BLK1	eData_11242021@0939-	11/22/21 12:47	
LCS	BJK0586-BS1	eData_11242021@0939-	11/22/21 12:47	
LDW21-IT637A	BJK0586-DUP1	eData_11242021@0939-	11/22/21 12:47	
MRL Check	BJK0586-MRL1	eData_11242021@0939-	11/22/21 12:47	
LDW21-IT637A	BJK0586-MS1	eData_11242021@0939-	11/22/21 12:47	
Reference	BJK0586-SRM1	eData_11242021@0939-	11/22/21 12:47	

Analytical Resources, LLC
Analytical Chemists and Consultants

Form I

METHOD BLANK DATA SHEET

EPA 9060A m

TotalAnalytes

Blank

Laboratory: Analytical Resources, LLC
SDG: 21K0332
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Batch: BJK0586
Laboratory ID: BJK0586-BLK1
Prepared: 11/22/21 12:47
Matrix: Solid
Preparation: PSEP 1986 (modified)
Analyzed: 11/23/21 14:03
Sequence: SJK0318
Calibration: EJ00073
Instrument: TOC Cube

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

Analytical Resources, LLC
Analytical Chemists and Consultants

LCS / LCS DUPLICATE RECOVERY

EPA 9060A m

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Matrix:	Solid	Analyzed:	11/23/21 14:33
Batch:	BJK0586	Laboratory ID:	BJK0586-BS1
Preparation:	PSEP 1986 (modified)	Sequence Name:	LCS
Initial/Final:	0.0207 g / 0.0207 mL		

COMPOUND	SPIKE ADDED (% wet)	LCS CONCENTRATION (% wet)	Q	LCS % REC. #	QC LIMITS REC.
Total Organic Carbon	44.4	45.5		102	80 - 120

* Indicates values outside of QC limits

Analytical Resources, LLC
Analytical Chemists and Consultants

LDW21-IT637A

DUPLICATES

EPA 9060A m

Laboratory: Analytical Resources, LLC
SDG: 21K0332
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Matrix: Solid
Laboratory ID: BJK0586-DUP1
Batch: BJK0586
Lab Source ID: 21K0332-01
Preparation: PSEP 1986 (modified)
Initial/Final: 0.5405 g / 0.5405 mL
Source Sample Name: LDW21-IT637A
% Solids: 76.76

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION	DUPLICATE CONCENTRATION	RPD %	Q
Total Organic Carbon	20	1.07	0.79	29.6	*

*: Values outside of QC limits
L: Analyte concentration is <=5 times the reporting limit and the replicate control limit defaults to Dup = +/- RL instead of 20% RPD

Analytical Resources, LLC
Analytical Chemists and Consultants

LDW21-IT637A

MS / MS DUPLICATE RECOVERY
EPA 9060A m

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Matrix:	Solid	Analyzed:	11/23/21 17:32
Batch:	BJK0586	Laboratory ID:	BJK0586-MS1
Preparation:	PSEP 1986 (modified)	Sequence Name:	Matrix Spike
Initial/Final:	0.5711 g / 0.5711 mL	Source Sample:	LDW21-IT637A

COMPOUND	SPIKE ADDED (% dry)	SAMPLE CONCENTRATION (% dry)	Q	MS CONCENTRATION (% dry)	Q	MS % REC. #	QC LIMITS REC.
Total Organic Carbon	0.913	1.07		1.81		81.1	75 - 125

* Values outside of QC limits

Analytical Resources, LLC
Analytical Chemists and Consultants

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 9060A m

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJJ0403	Instrument:	TOC Cube
		Calibration:	EJ00073

Sample Name	Lab Sample ID	Lab File ID	Matrix	Analysis Date/Time
Cal Standard	SJJ0403-CAL1	CubeData_10282021@1241-001	NA	10/27/21 14:06
Cal Standard	SJJ0403-CAL2	CubeData_10282021@1241-002	NA	10/27/21 14:36
Cal Standard	SJJ0403-CAL3	CubeData_10282021@1241-003	NA	10/27/21 15:06
Cal Standard	SJJ0403-CAL4	CubeData_10282021@1241-004	NA	10/27/21 15:36
Cal Standard	SJJ0403-CAL5	CubeData_10282021@1241-005	NA	10/27/21 16:06
Cal Standard	SJJ0403-CAL6	CubeData_10282021@1241-006	NA	10/27/21 16:35
Cal Standard	SJJ0403-CAL7	CubeData_10282021@1241-007	NA	10/27/21 17:05
Cal Standard	SJJ0403-CAL8	CubeData_10282021@1241-008	NA	10/27/21 17:35
Cal Standard	SJJ0403-CAL9	CubeData_10282021@1241-009	NA	10/27/21 18:05
Cal Standard	SJJ0403-CALA	CubeData_10282021@1241-010	NA	10/27/21 18:35
Cal Standard	SJJ0403-CALB	CubeData_10282021@1241-011	NA	10/27/21 19:05
Cal Standard	SJJ0403-CALC	CubeData_10282021@1241-012	NA	10/27/21 19:35
Cal Standard	SJJ0403-CALD	CubeData_10282021@1241-013	NA	10/27/21 20:05
Cal Standard	SJJ0403-CALE	CubeData_10282021@1241-014	NA	10/27/21 20:34
Cal Standard	SJJ0403-CALF	CubeData_10282021@1241-015	NA	10/27/21 21:04
Cal Standard	SJJ0403-CALG	CubeData_10282021@1241-016	NA	10/27/21 21:34
Cal Standard	SJJ0403-CALH	CubeData_10282021@1241-017	NA	10/27/21 22:04
Cal Standard	SJJ0403-CALI	CubeData_10282021@1241-018	NA	10/27/21 22:34
Cal Standard	SJJ0403-CALJ	CubeData_10282021@1241-019	NA	10/27/21 23:04
Cal Standard	SJJ0403-CALK	CubeData_10282021@1241-020	NA	10/27/21 23:34
Cal Standard	SJJ0403-CALO	CubeData_10282021@1241-024	NA	10/28/21 01:34
Initial Cal Check	SJJ0403-ICV1	CubeData_10282021@1241-027	NA	10/28/21 03:35
Initial Cal Blank	SJJ0403-ICB1	CubeData_10282021@1241-028	NA	10/28/21 04:05
Cal Standard	SJJ0403-CALL	CubeData_10282021@1241-021	NA	10/28/21 12:13
Cal Standard	SJJ0403-CALM	CubeData_10282021@1241-022	NA	10/28/21 12:14
Cal Standard	SJJ0403-CALN	CubeData_10282021@1241-023	NA	10/28/21 12:15

Analytical Resources, LLC
Analytical Chemists and Consultants

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 9060A m

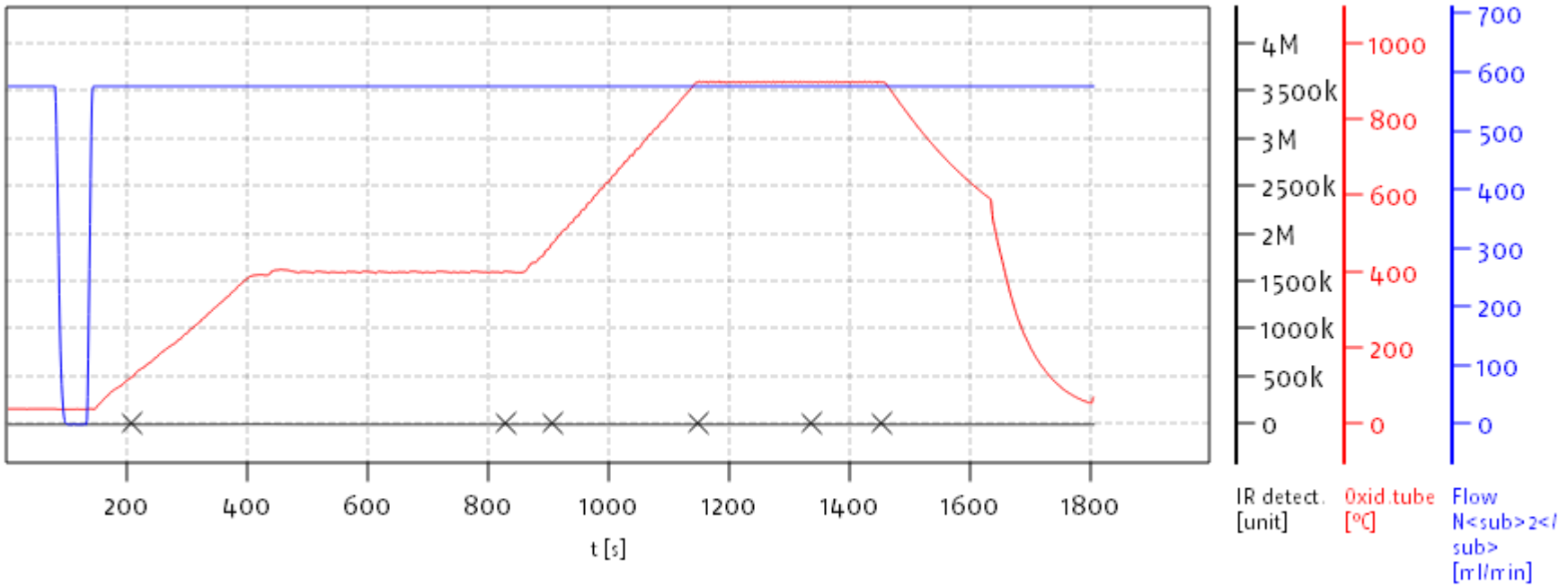
Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJK0318	Instrument:	TOC Cube
		Calibration:	EJ00073

Sample Name	Lab Sample ID	Lab File ID	Matrix	Analysis Date/Time
Initial Cal Check	SJK0318-ICV1	CubeData_11242021@0939-003	NA	11/23/21 12:33
Initial Cal Blank	SJK0318-ICB1	CubeData_11242021@0939-004	NA	11/23/21 13:03
MRL Check	BJK0586-MRL1	CubeData_11242021@0939-005	Solid	11/23/21 13:33
Blank	BJK0586-BLK1	CubeData_11242021@0939-006	Solid	11/23/21 14:03
LCS	BJK0586-BS1	CubeData_11242021@0939-007	Solid	11/23/21 14:33
Reference	BJK0586-SRM1	CubeData_11242021@0939-008	Solid	11/23/21 15:03
LDW21-IT637A	21K0332-01	CubeData_11242021@0939-011	Solid	11/23/21 16:32
LDW21-IT637A	BJK0586-DUP1	CubeData_11242021@0939-012	Solid	11/23/21 17:02
LDW21-IT637A	BJK0586-MS1	CubeData_11242021@0939-013	Solid	11/23/21 17:32
Calibration Check	SJK0318-CCV1	CubeData_11242021@0939-014	NA	11/23/21 18:02
Calibration Blank	SJK0318-CCB1	CubeData_11242021@0939-015	NA	11/23/21 18:32

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: BF

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
1	1	BLANK	1.00		1.00	CARBON	11/23/2021 11:04 AM	0.000	0.000	0.000	bl	13 768	2 857	1 388	1.0000	1.0000



Name:

Access: soliTOC superuser

Date: Wed Nov 24 09:34:34 2021

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

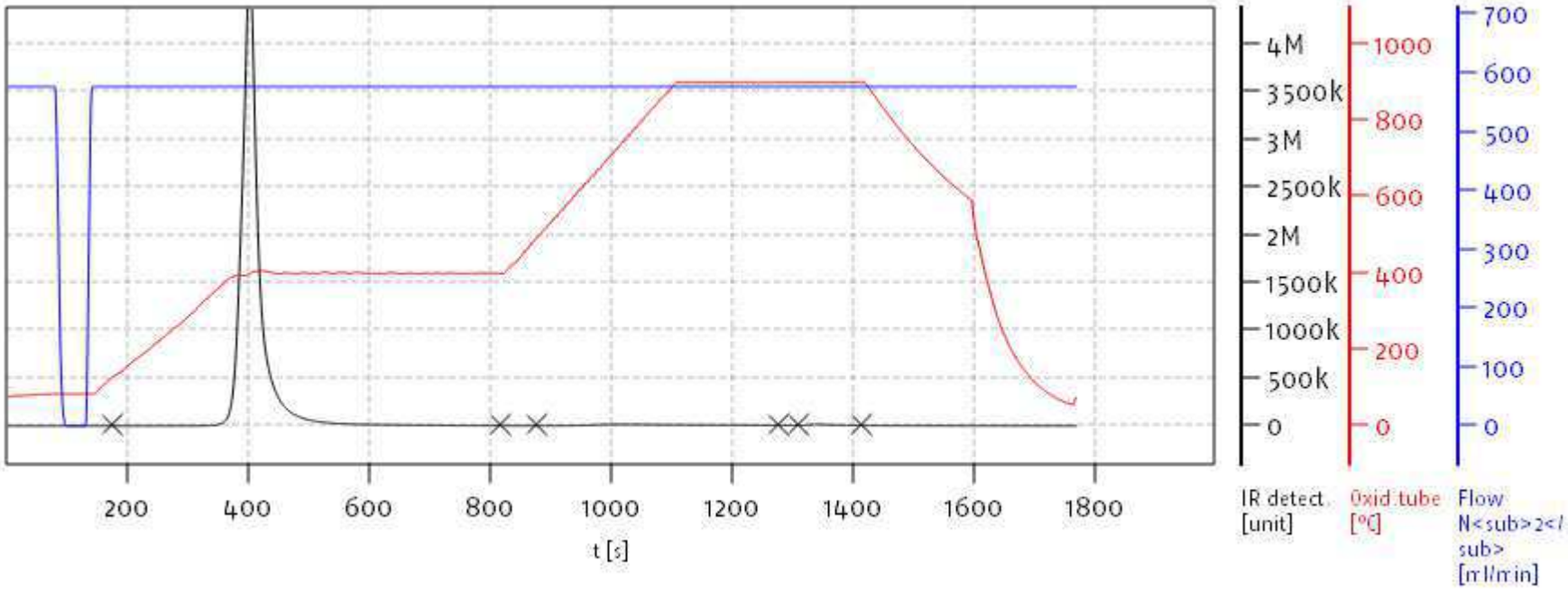
elementar
EXCELLENCE IN ELEMENTS

Document: 112221BF from: 11/24/2021 9:34 AM

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: BF

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
2	2	Dfactor	20.90		1.00	CARBON	11/23/2021 11:33 AM	44.446	0.703	45.149	bl	5 773 890	131 214	35 556	0.9817	1.0000



Name:

Access: soliTOC superuser

Date: Wed Nov 24 09:34:34 2021

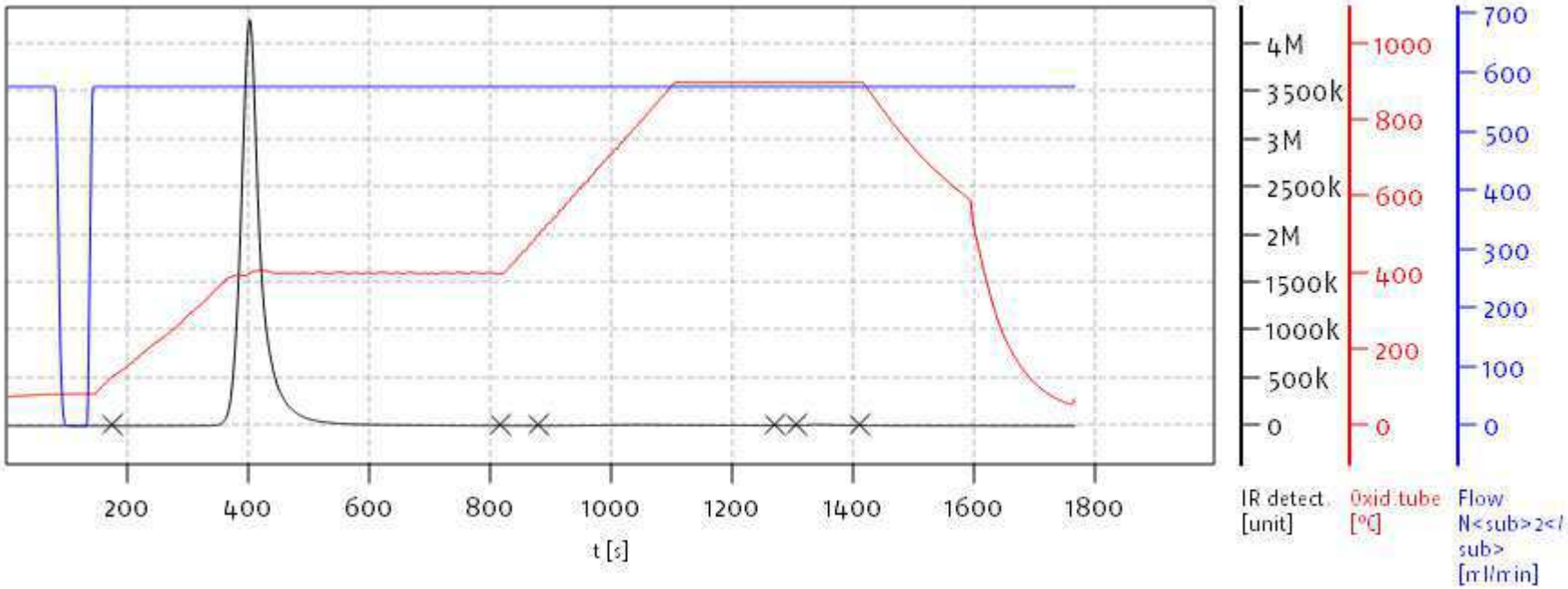
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: BF

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
3	3	Dfactor	22.30		1.00	CARBON	11/23/2021 12:03 PM	44.446	0.352	44.798	bl	6 183 601	89 743	28 650	0.9776	1.0000



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Access: soliTOC superuser

Date: Wed Nov 24 09:34:34 2021

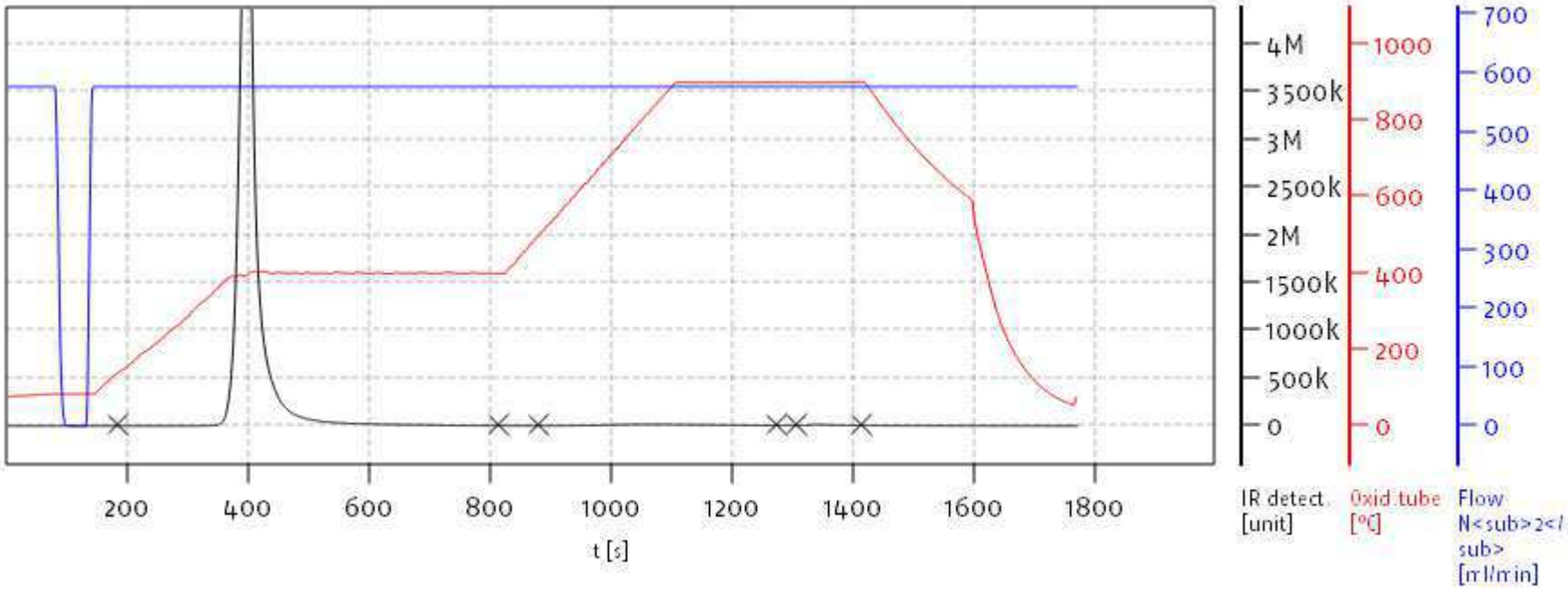
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: BF

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
4	4	SJK0318-ICV1	26.40		1.00	CARBON	11/23/2021 12:33 PM	45.388	0.530	45.918	bl	7 451 251	126 878	30 586	0.9797	1.0000



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Access: soliTOC superuser

Date: Wed Nov 24 09:34:34 2021

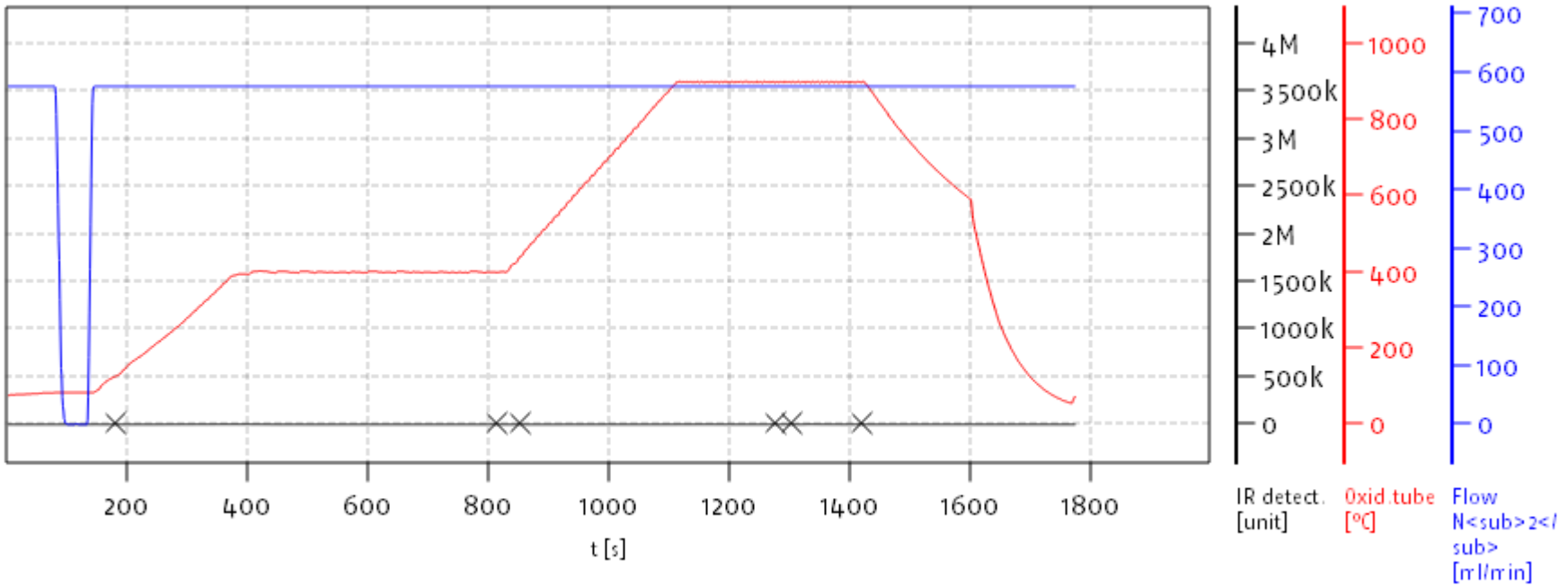
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: BF

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
5	5	SJK0318-ICB1	503.20		1.00	CARBON	11/23/2021 1:03 PM	0.000	0.000	0.000	bl,C3u,C2u	9 288	5 805	3 506	0.9797	1.0000



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Access: soliTOC superuser

Date: Wed Nov 24 09:34:34 2021

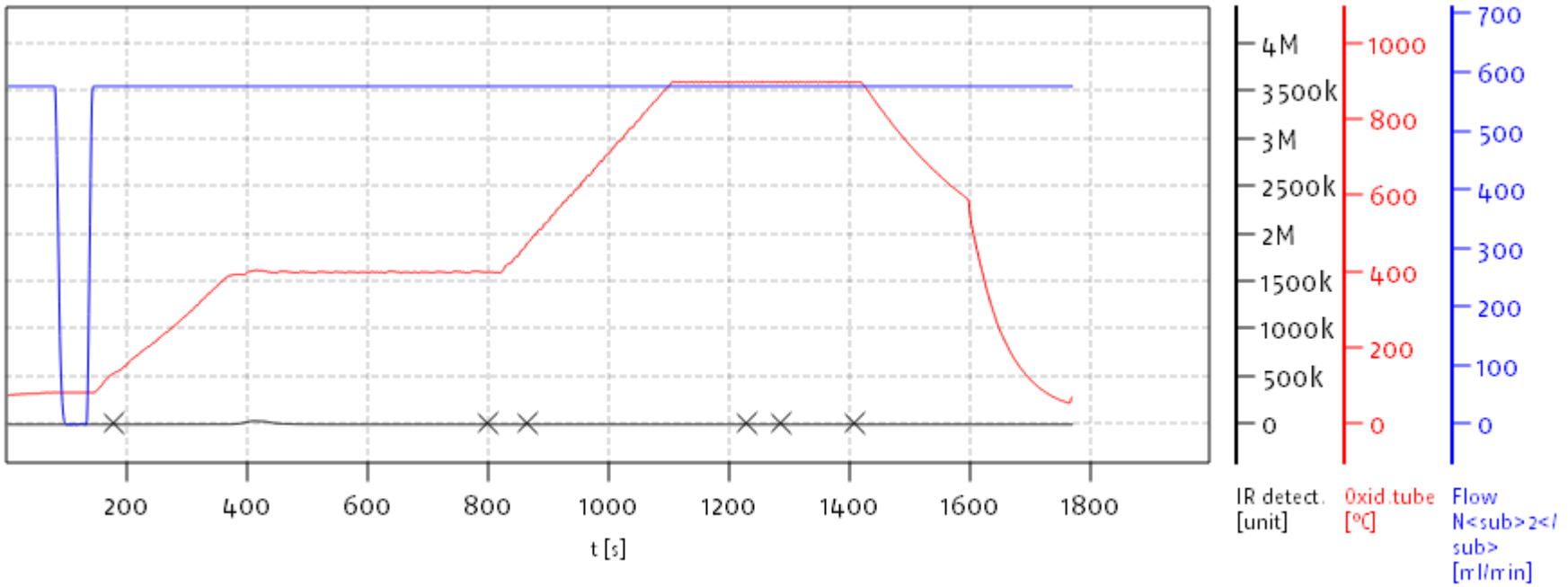
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: BF

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
6	6	BJK0586-MRL1	569.30		1.00	CARBON	11/23/2021 1:33 PM	0.011	0.000	0.011	bl,C3u,C2u	81 834	3 968	848	0.9797	1.0000



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Date: Wed Nov 24 09:34:34 2021

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

elementar
EXCELLENCE IN ELEMENTS

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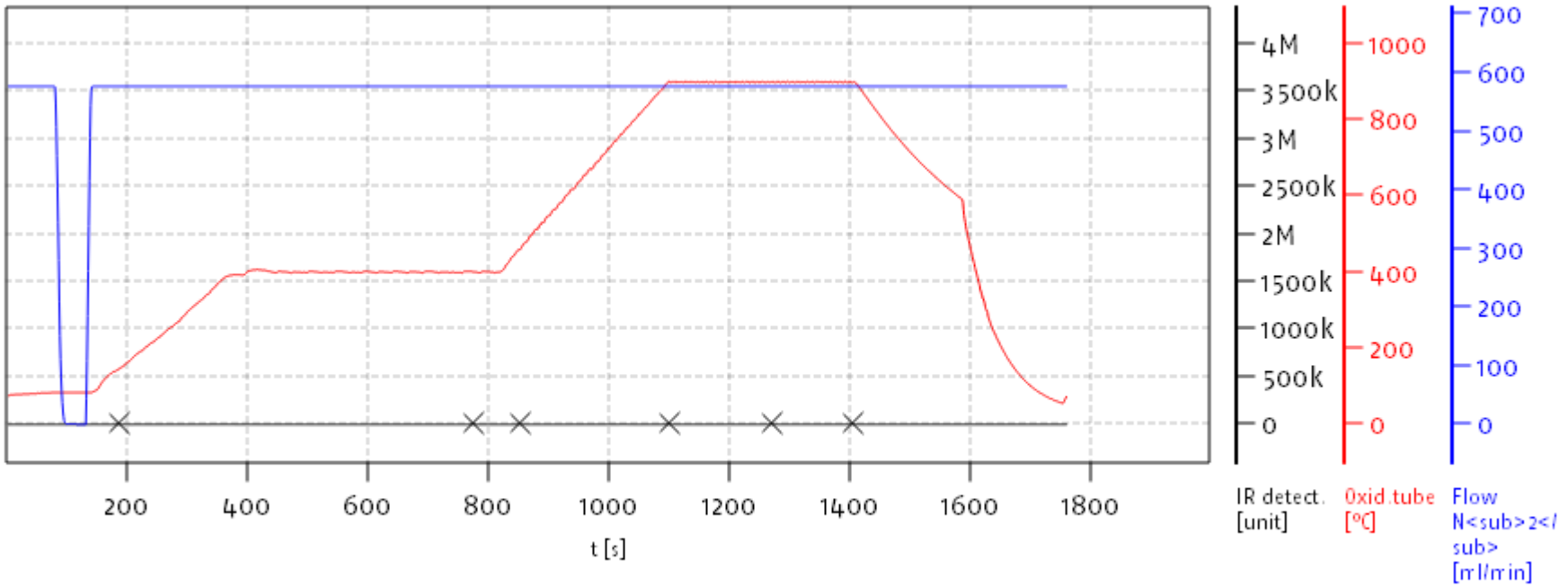
Soli TOC Cube, Carbon
Balance: BAL3
Analyst: BF

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
7	7	BJK0586-BLK1	521.00		1.00	CARBON	11/23/2021 2:03 PM	0.000	0.000	0.000	bl,C1u,C3u,C2u	2 911	1 284	550	0.9797	1.0000



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Access: soliTOC superuser

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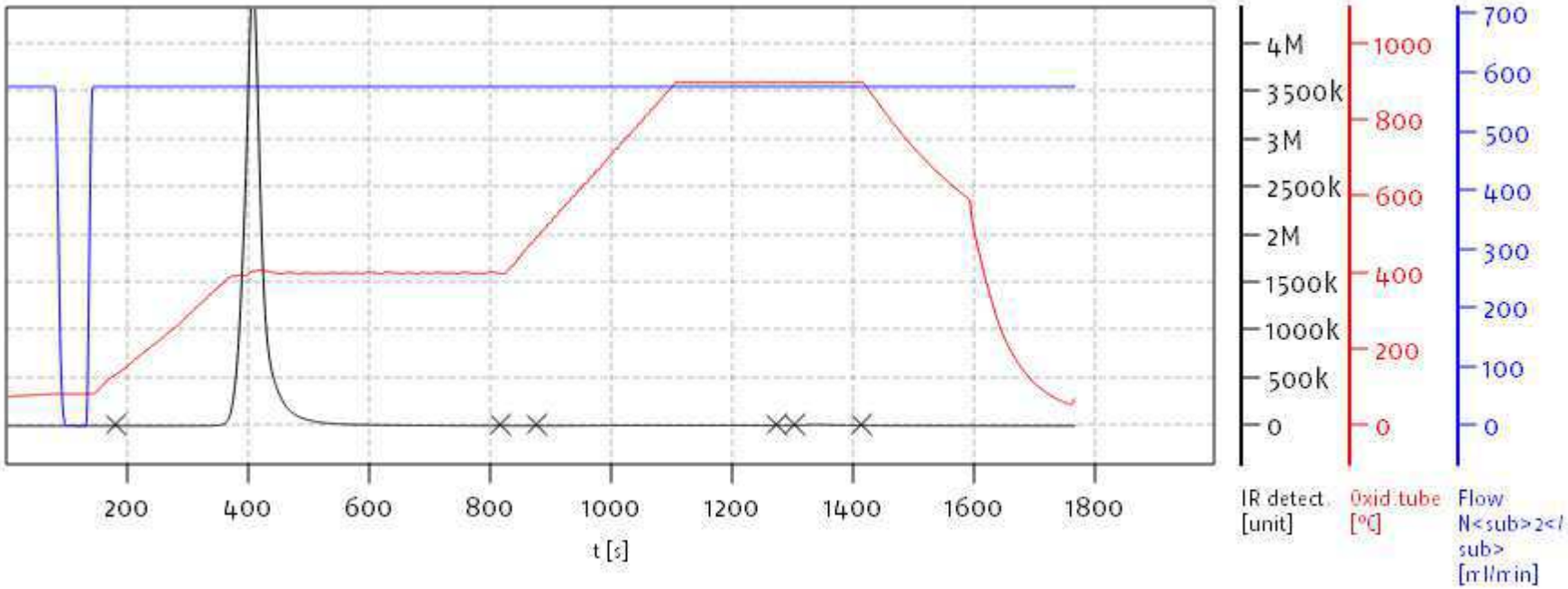
soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: BF

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
8	8	BJK0586-BS1	20.70		1.00	CARBON	11/23/2021 2:33 PM	45.510	0.179	45.688	bl	5 867 184	64 560	30 624	0.9797	1.0000



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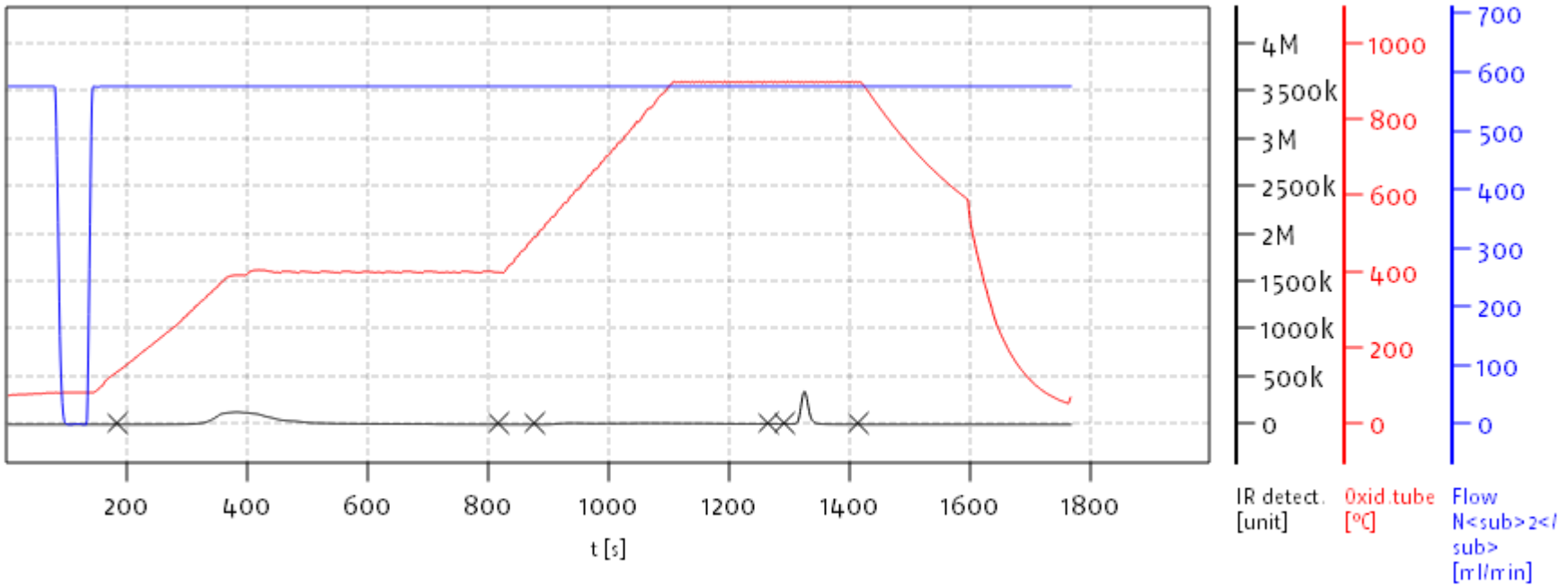
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: BF

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
9	9	BJK0586-SRM1	45.60		1.00	CARBON	11/23/2021 3:03 PM	2.433	0.310	2.742	bl	575 365	127 663	191 793	0.9797	1.0000



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Mode CCC

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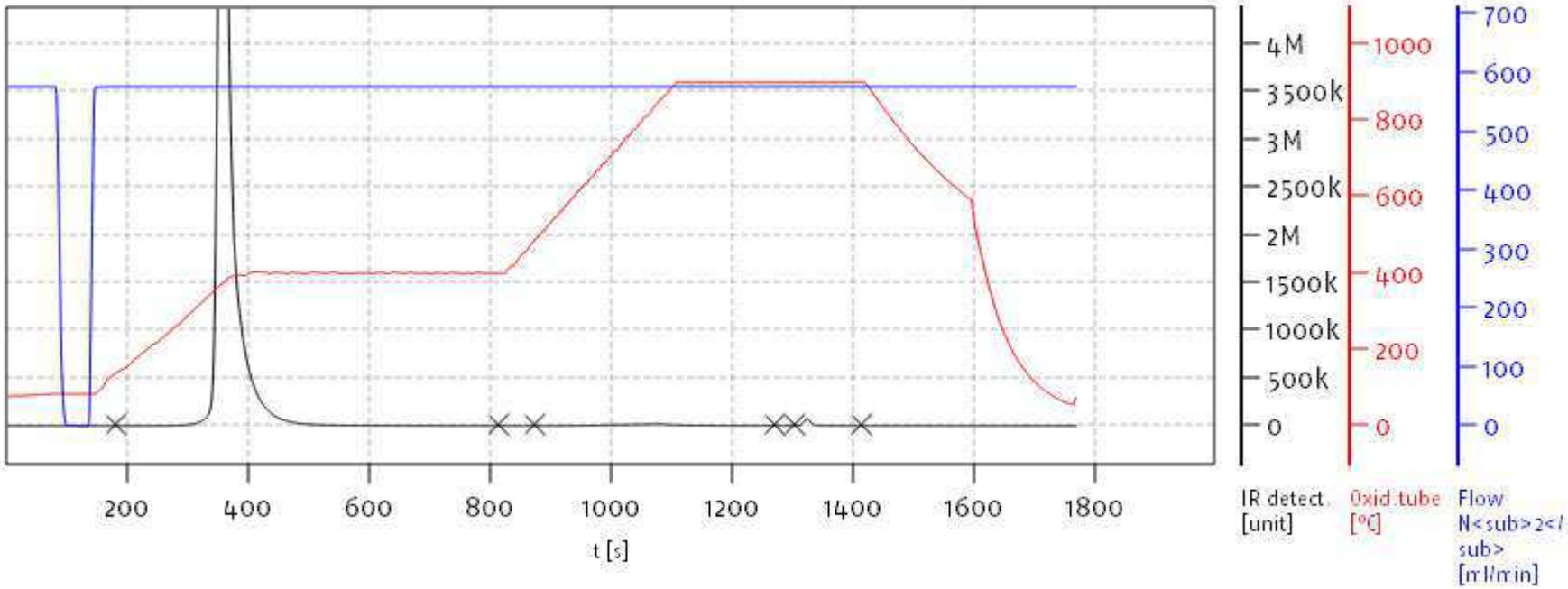
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: BF

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
10	10	21K0313-01	130.70		1.00	CARBON	11/23/2021 3:33 PM	9.708	0.067	9.775	bl	7 887 348	94 949	42 933	0.9797	1.0000



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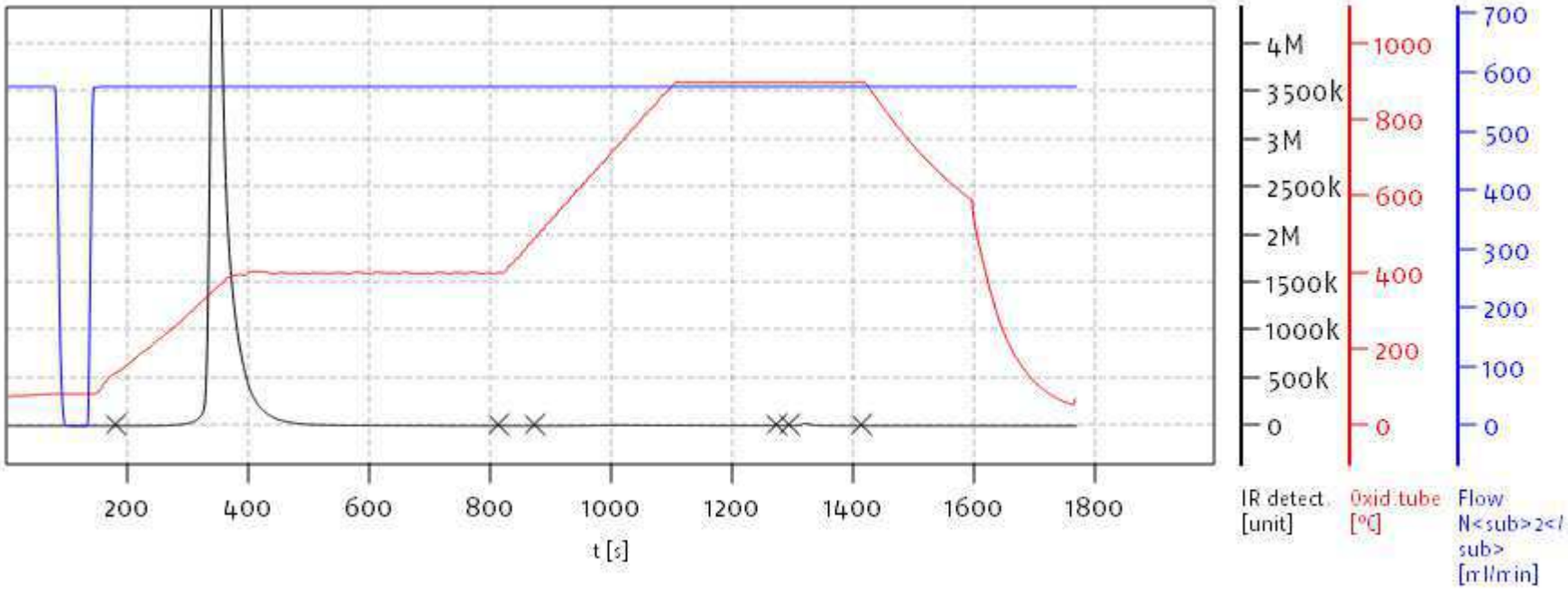
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: BF

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
11	11	21K0313-02	107.90		1.00	CARBON	11/23/2021 4:02 PM	11.368	0.021	11.389	bl	7 626 414	55 913	21 555	0.9797	1.0000



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Date: Wed Nov 24 09:34:34 2021

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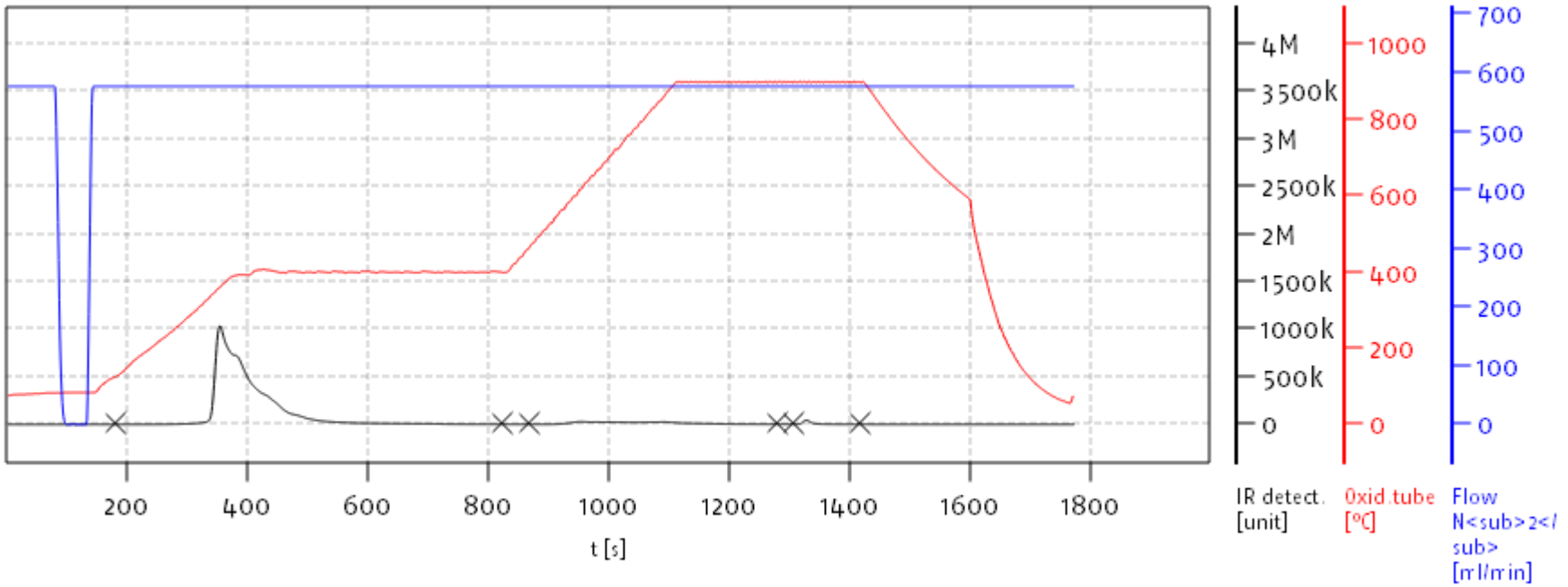
Mode CCC

elementar
EXCELLENCE IN ELEMENTS

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: BF

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
12	12	21K0332-01	515.60		1.00	CARBON	11/23/2021 4:32 PM	0.818	0.051	0.869	bl	2 651 276	201 643	29 938	0.9797	1.0000



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

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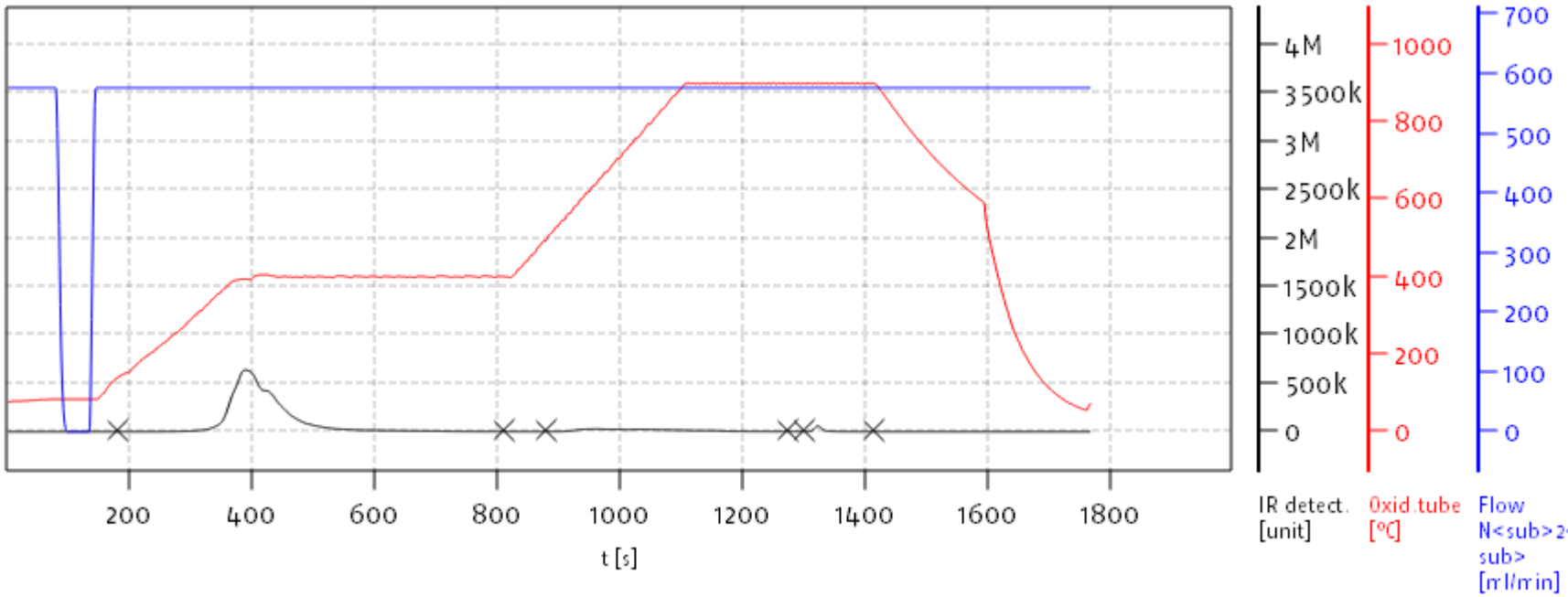
Soli TOC Cube, Carbon
Balance: BAL3
Analyst: BF

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
13	13	BJK0586-DUP1	540.50		1.00	CARBON	11/23/2021 5:02 PM	0.607	0.045	0.651	bl	2 069 653	188 243	35 182	0.9797	1.0000



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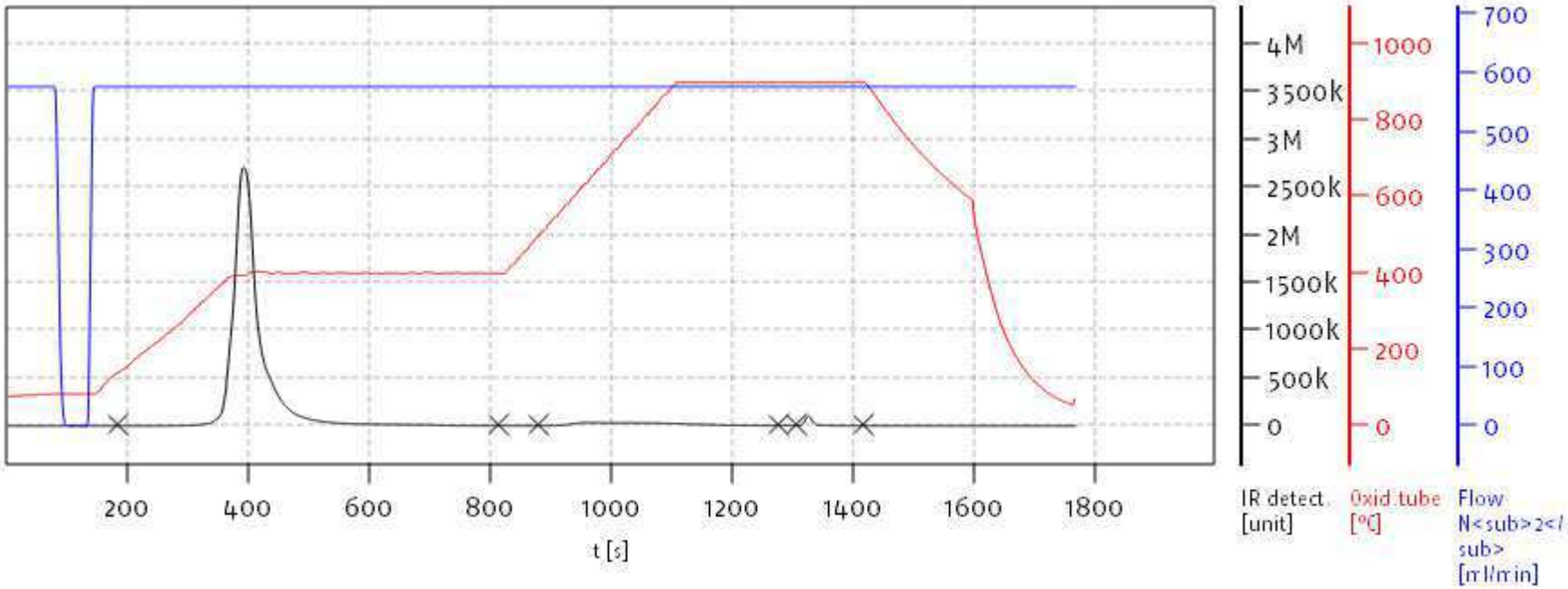
Soli TOC Cube, Carbon
Balance: BAL3
Analyst: BF

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
14	14	BJK0586-MS1	571.10	0.0090	1.00	CARBON	11/23/2021 5:32 PM	1.386	0.064	1.450	bl	4 916 700	263 545	61 548	0.9797	1.0000



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

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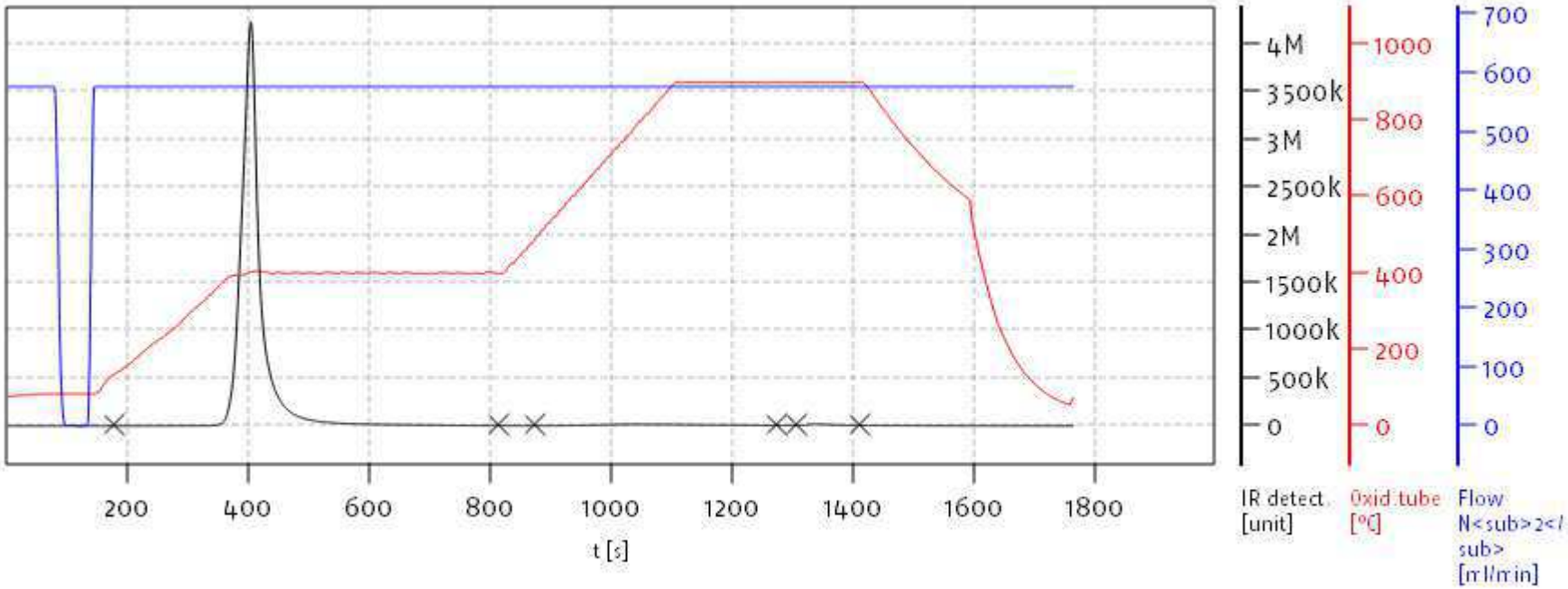
Soli TOC Cube, Carbon
Balance: BAL3
Analyst: BF

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
15	15	SJK0318-CCV1	20.70		1.00	CARBON	11/23/2021 6:02 PM	43.406	0.803	44.209	bl	5 597 968	142 843	40 500	0.9797	1.0000



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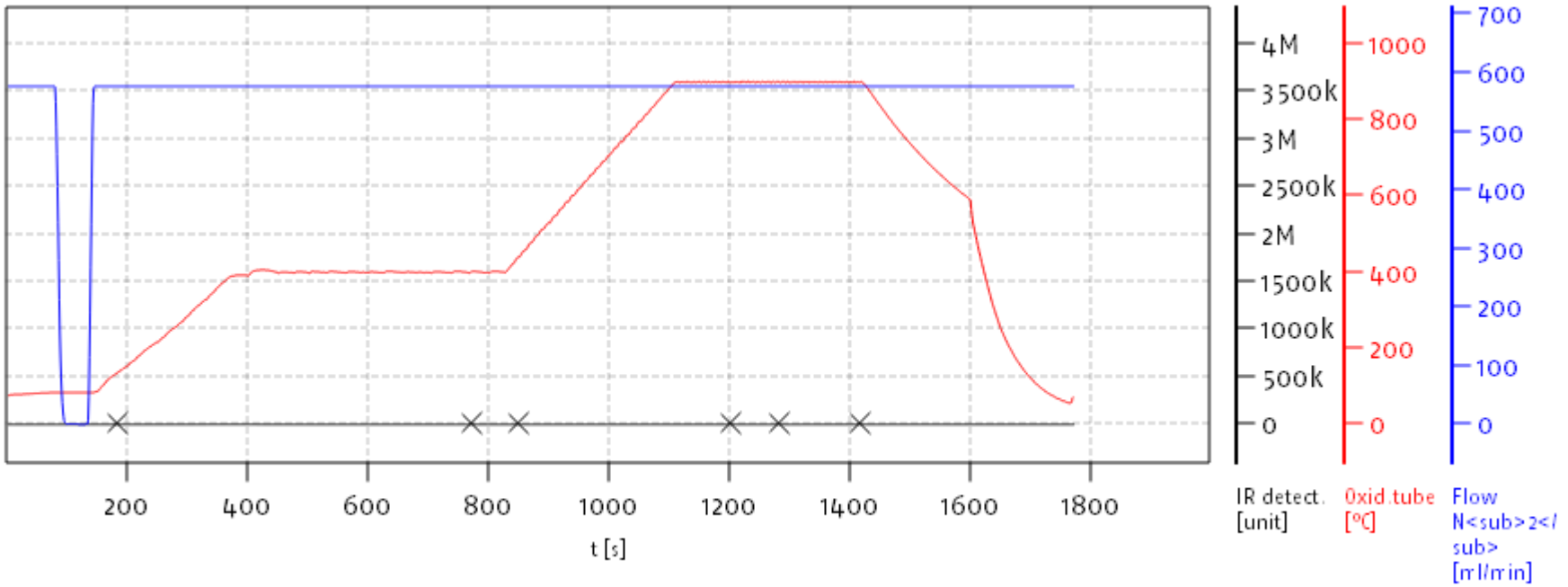
Soli TOC Cube, Carbon
Balance: BAL3
Analyst: BF

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
16	16	SJK0318-CCB1	551.30		1.00	CARBON	11/23/2021 6:32 PM	0.000	0.000	0.000	bl,C1u,C2u	2 695	0	228	0.9797	1.0000



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EXCELLENCE IN ELEMENTS

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Analytical Resources, LLC
Analytical Chemists and Consultants

INITIAL CALIBRATION DATA

EPA 9060A m

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Calibration:	EJ00073	Instrument:	TOC Cube
Calibration Date:	10/27/2021 12:35		

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	0.0078072	1197484	0.015314	1388338	0.021019	1189162	0.030328	1624703	0.045942	1393605	0.058854	1469450
Total Carbon	0.0078072	1197484	0.015314	1388338	0.021019	1189162	0.030328	1624703	0.045942	1393605	0.058854	1469450
Total Inorganic Carbon	0.0078072	1197484	0.015314	1388338	0.021019	1189162	0.030328	1624703	0.045942	1393605	0.058854	1469450
% Soot	0.0078072	1197484	0.015314	1388338	0.021019	1189162	0.030328	1624703	0.045942	1393605	0.058854	1469450

Analytical Resources, LLC
Analytical Chemists and Consultants

INITIAL CALIBRATION DATA

EPA 9060A m

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Calibration:	EJ00073	Instrument:	TOC Cube
Calibration Date:	10/27/2021 12:35		

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	0.07627	1263931	0.093986	1425063	0.12101	1426155	0.15464	1251565	0.234	1276350	0.306	1258069
Total Carbon	0.07627	1263931	0.093986	1425063	0.12101	1426155	0.15464	1251565	0.234	1276350	0.306	1258069
Total Inorganic Carbon	0.07627	1263931	0.093986	1425063	0.12101	1426155	0.15464	1251565	0.234	1276350	0.306	1258069
% Soot	0.07627	1263931	0.093986	1425063	0.12101	1426155	0.15464	1251565	0.234	1276350	0.306	1258069

Analytical Resources, LLC
Analytical Chemists and Consultants

INITIAL CALIBRATION DATA

EPA 9060A m

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Calibration:	EJ00073	Instrument:	TOC Cube
Calibration Date:	10/27/2021 12:35		

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	0.444	1291507	0.612	1300827	0.912	1293004	1.176	1293155	1.482	1306390	1.782	1284024
Total Carbon	0.444	1291507	0.612	1300827	0.912	1293004	1.176	1293155	1.482	1306390	1.782	1284024
Total Inorganic Carbon	0.444	1291507	0.612	1300827	0.912	1293004	1.176	1293155	1.482	1306390	1.782	1284024
% Soot	0.444	1291507	0.612	1300827	0.912	1293004	1.176	1293155	1.482	1306390	1.782	1284024

Analytical Resources, LLC
Analytical Chemists and Consultants

INITIAL CALIBRATION DATA

EPA 9060A m

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Calibration:	EJ00073	Instrument:	TOC Cube
Calibration Date:	10/27/2021 12:35		

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	2.448	1301340	3.018	1295779	4.242	1217352	4.8	1216290	5.424	1225037	7.296	1169836
Total Carbon	2.448	1301340	3.018	1295779	4.242	1217352	4.8	1216290	5.424	1225037	7.296	1169836
Total Inorganic Carbon	2.448	1301340	3.018	1295779	4.242	1217352	4.8	1216290	5.424	1225037	7.296	1169836
% Soot	2.448	1301340	3.018	1295779	4.242	1217352	4.8	1216290	5.424	1225037	7.296	1169836

Analytical Resources, LLC
Analytical Chemists and Consultants

INITIAL CALIBRATION DATA

EPA 9060A m

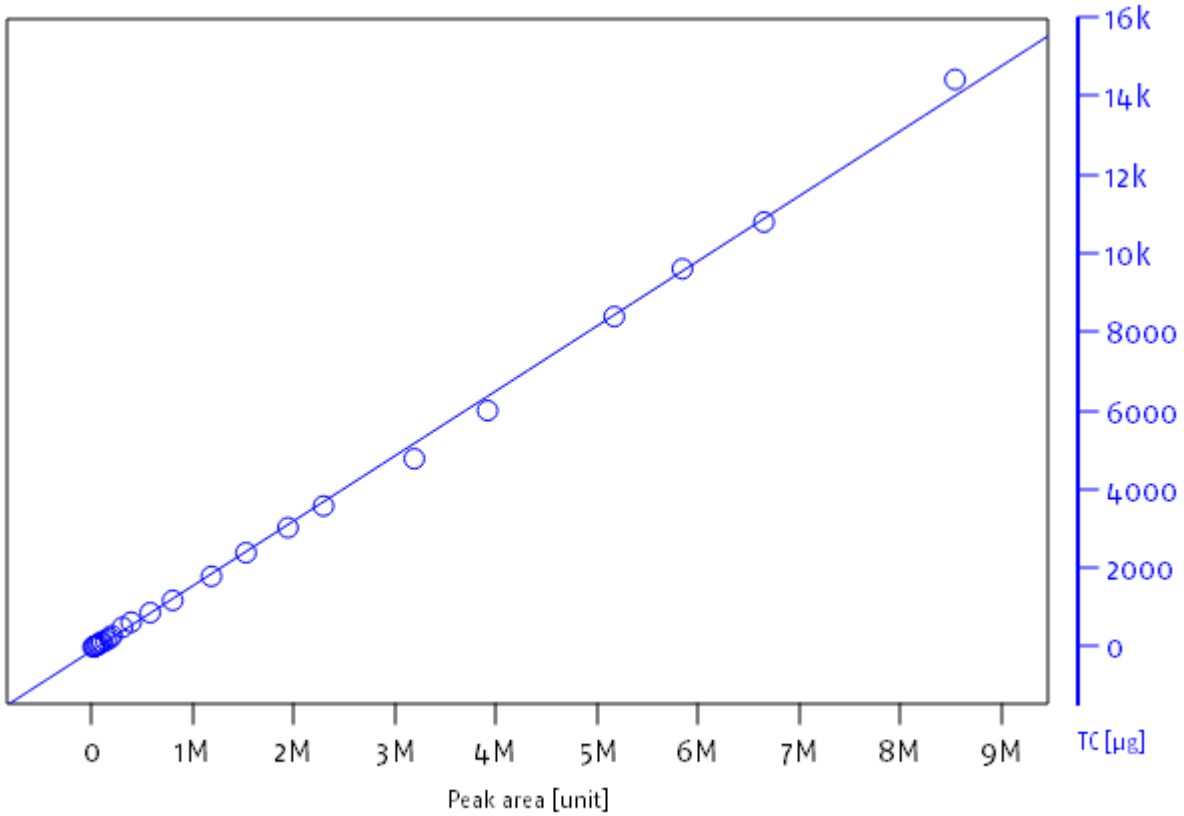
Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Calibration:	EJ00073	Instrument:	TOC Cube
Calibration Date:	10/27/2021 12:35		

COMPOUND	Mean RF	RF RSD	Linear COD	Quad COD	COD Limit	Q
Total Organic Carbon	1306601	7.9	0.9984			
Total Carbon	1306601	7.9	0.9984			
Total Inorganic Carbon	1306601	7.9	0.9984			
% Soot	1306601	7.9	0.9984			

Calibration parameters TC, Whole range

a	-6.958985e-02
b	+1.650824e-06
c	+0.000000e+00
d	+0.000000e+00
e	+0.000000e+00
r	0.998588
r_old	0.998588
Proc.-SD	153.030821 µg

Calibration graph TC, Whole range



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Access: soliTOC superuser

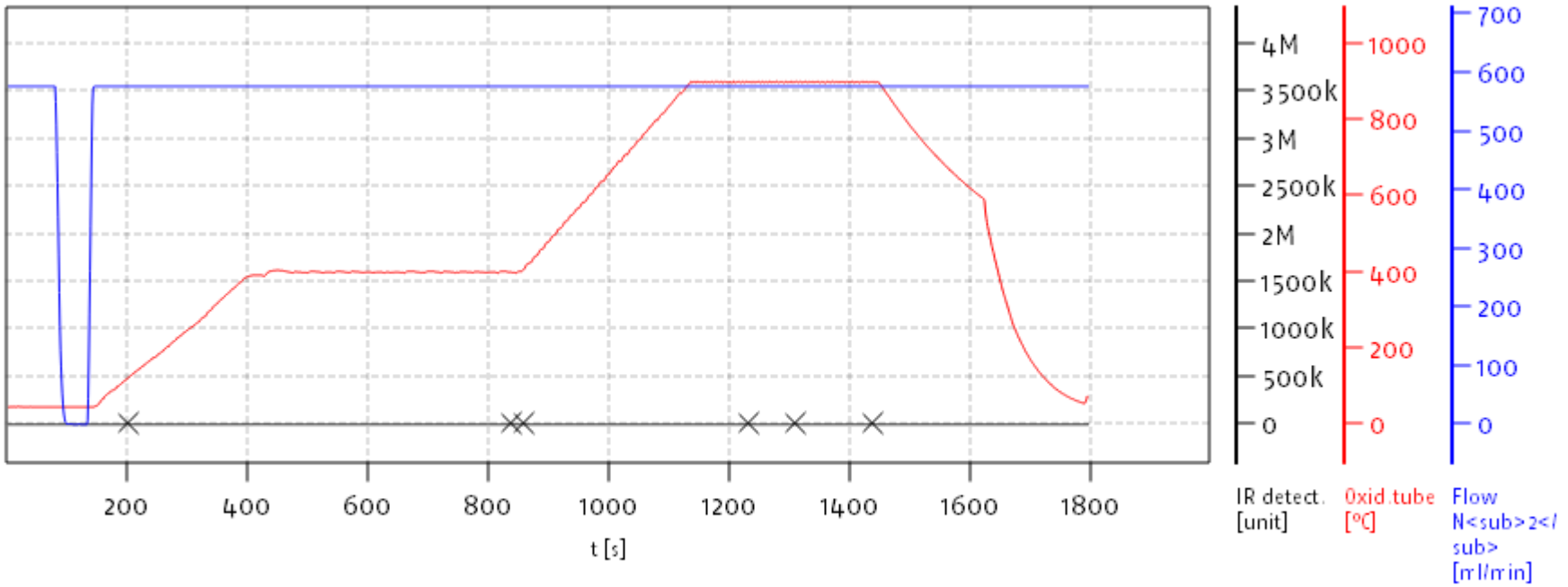
Date: Thu Oct 28 12:17:33 2021

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

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: DOE

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
1	1	BLANK	1.00		1.00	CARBON	10/27/2021 1:06 PM	0.000	0.000	0.000	bl	3 434	965	635	1.0000	1.0000



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Access: soliTOC superuser

Date: Thu Oct 28 12:15:48 2021

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

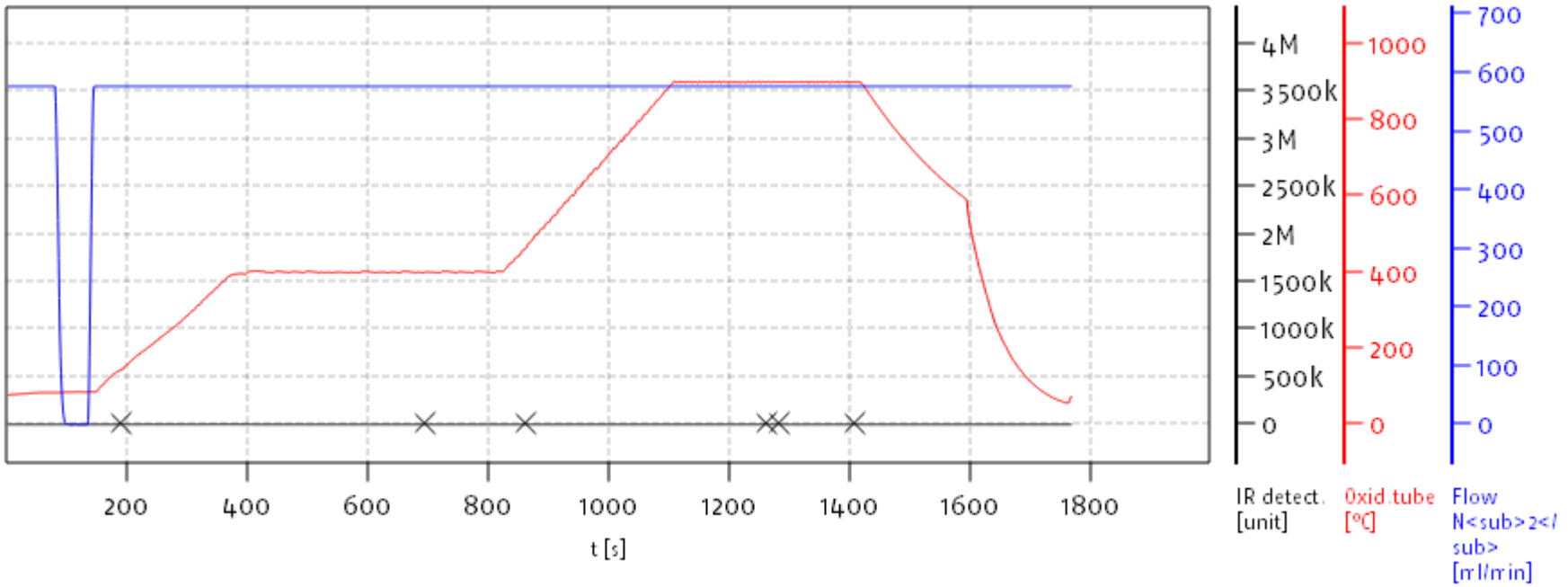
elementar
EXCELLENCE IN ELEMENTS

Document: TOC Calibration EJ00073 102721 BF reint from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: DOE

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
2	2	BLANK	1.00		1.00	CARBON	10/27/2021 1:36 PM	0.000	0.000	0.000	bl	7 652	258	0	1.0000	1.0000



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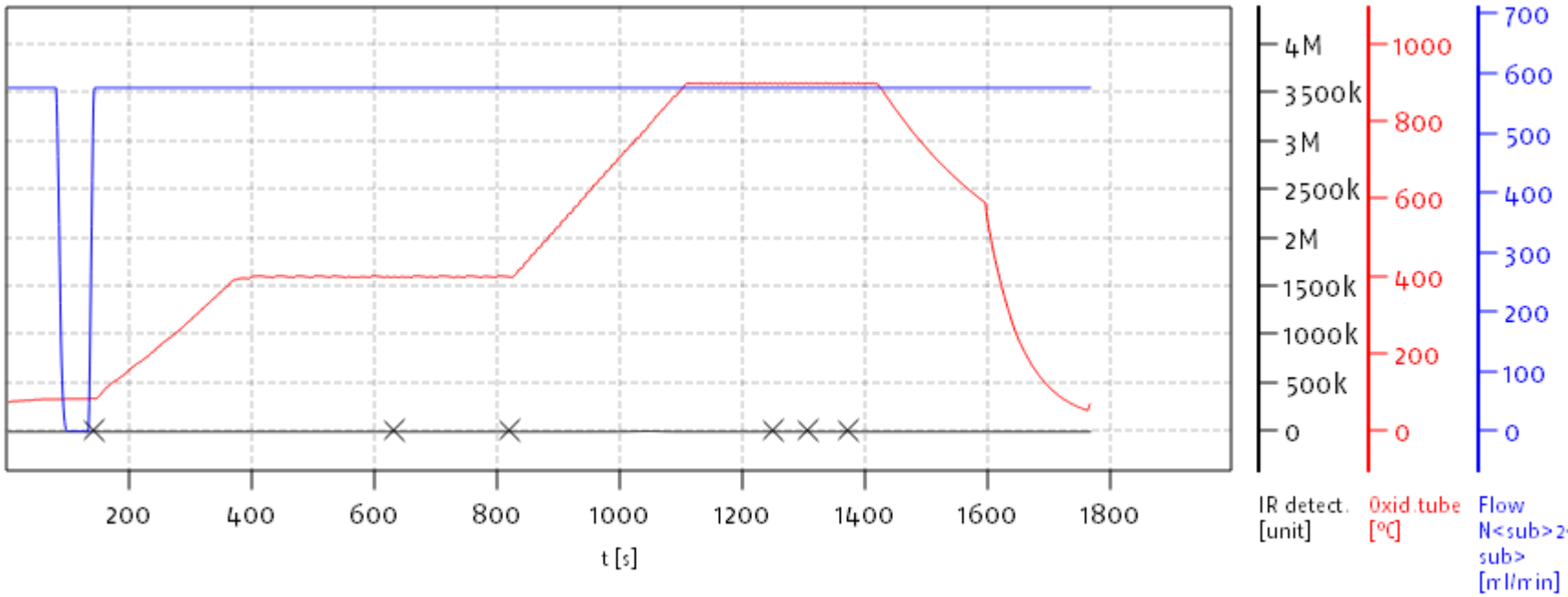
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
3	3	SEQ-CAL1	200.00	0.0026	1.00	CARBON	10/27/2021 2:06 PM	0.003	0.008	0.012	bl,C1u	1 368	9 349	0	1.0000	0.8907



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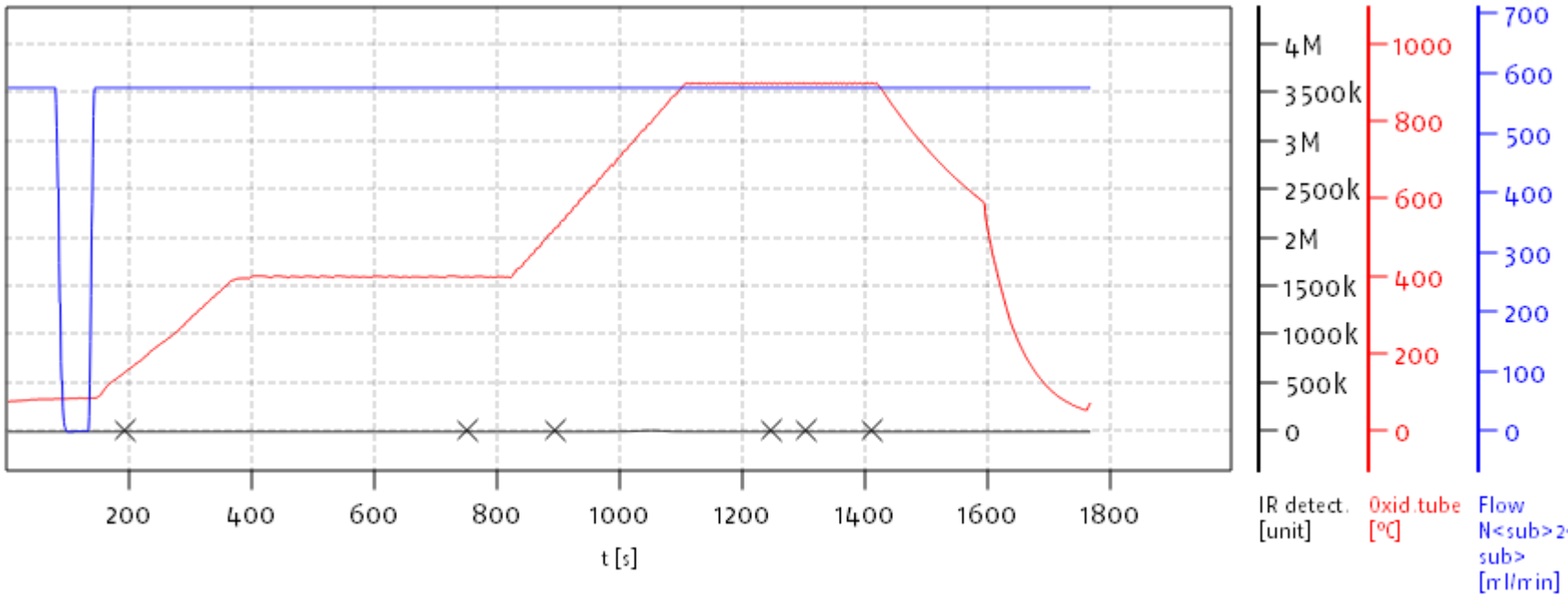
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
4	4	SEQ-CAL2	200.00	0.0051	1.00	CARBON	10/27/2021 2:36 PM	0.003	0.015	0.019	bl,C1u	1 464	21 261	0	1.0000	0.8130



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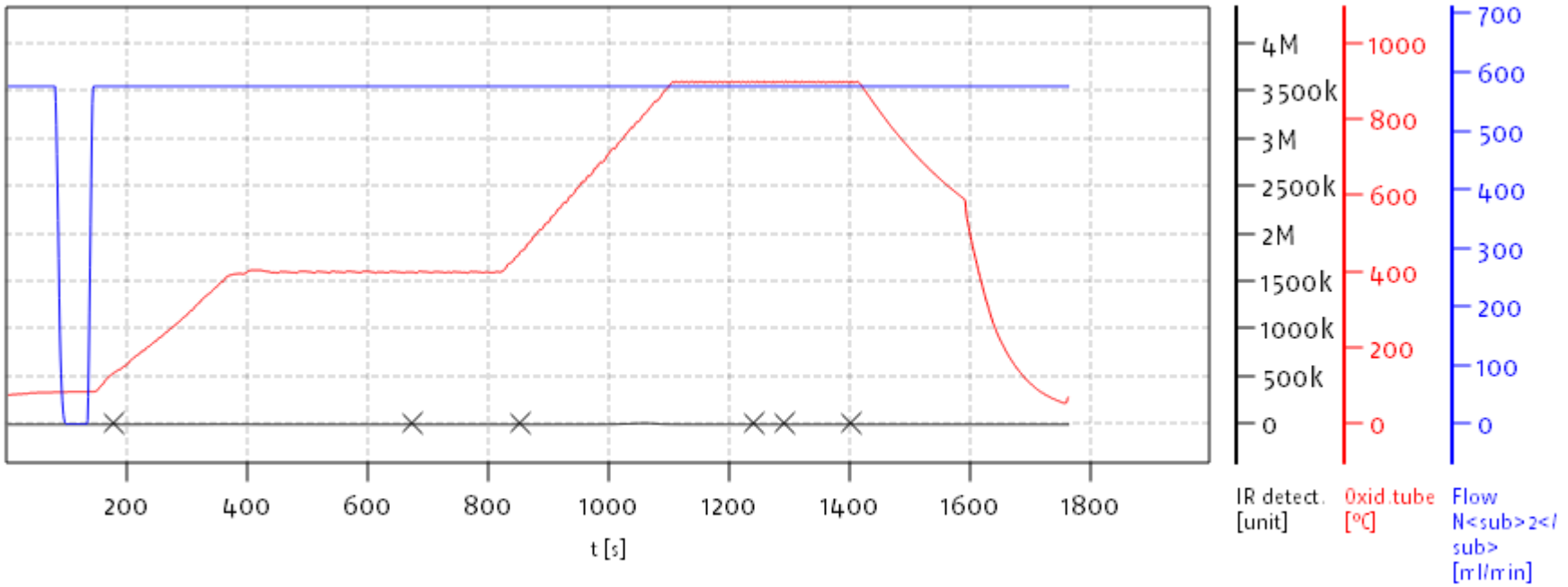
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
5	5	SEQ-CAL3	200.00	0.0070	1.00	CARBON	10/27/2021 3:06 PM	0.008	0.022	0.031	bl,C1u	8 125	24 995	0	1.0000	1.0201



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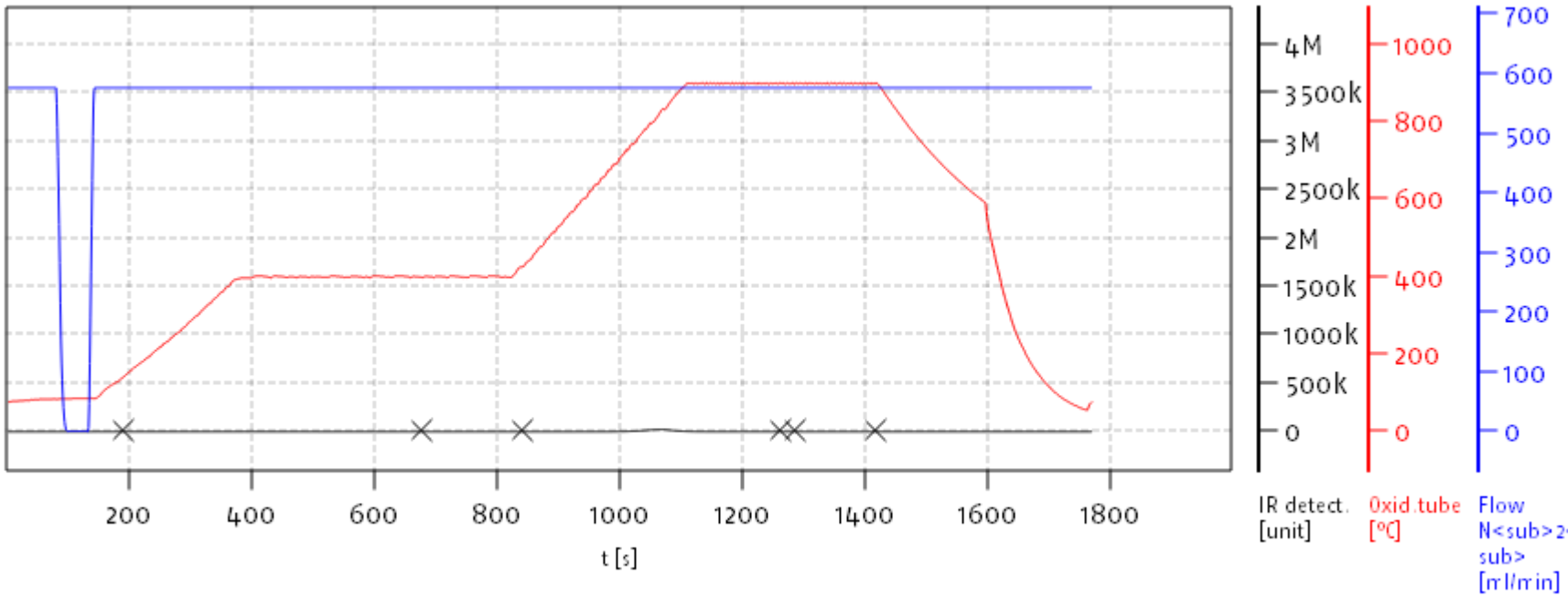
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
6	6	SEQ-CAL4	200.00	0.0101	1.00	CARBON	10/27/2021 3:36 PM	0.004	0.030	0.034	bl,C1u	1 853	49 274	0	1.0000	0.7408



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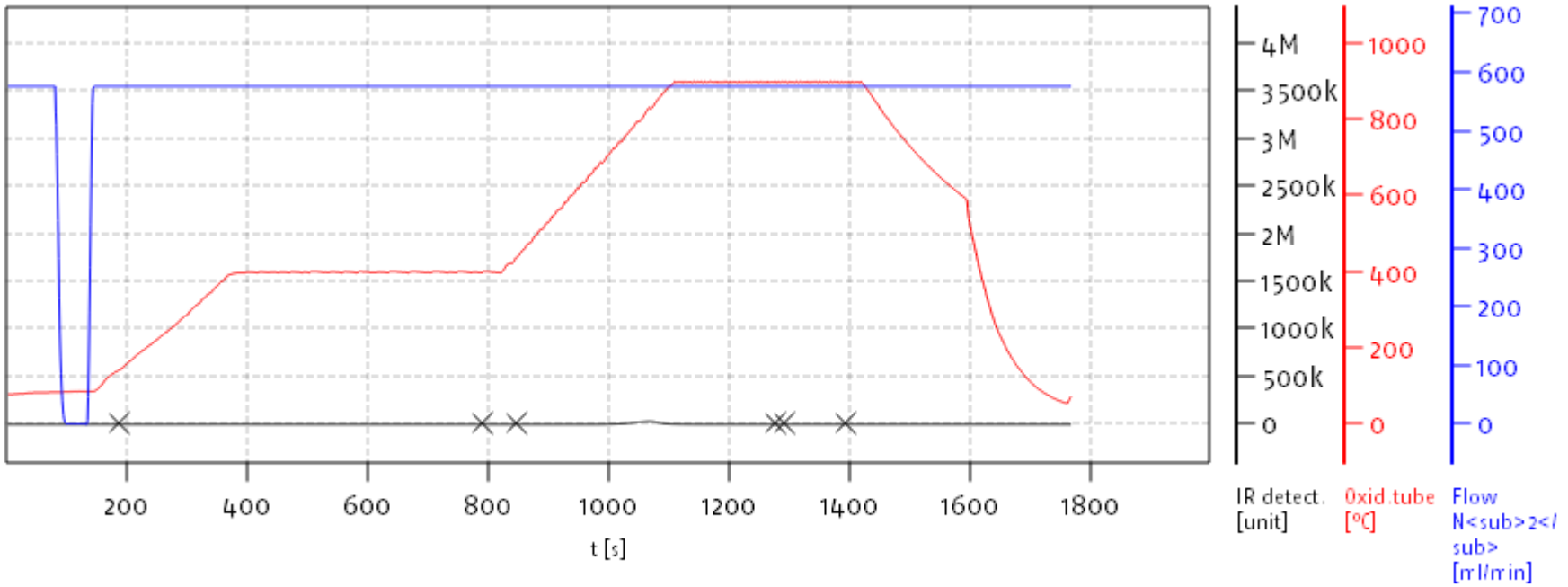
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
7	7	SEQ-CAL5	200.00	0.0153	1.00	CARBON	10/27/2021 4:06 PM	0.007	0.045	0.052	bl,C1u,C2u	3 439	64 025	112	1.0000	0.8567



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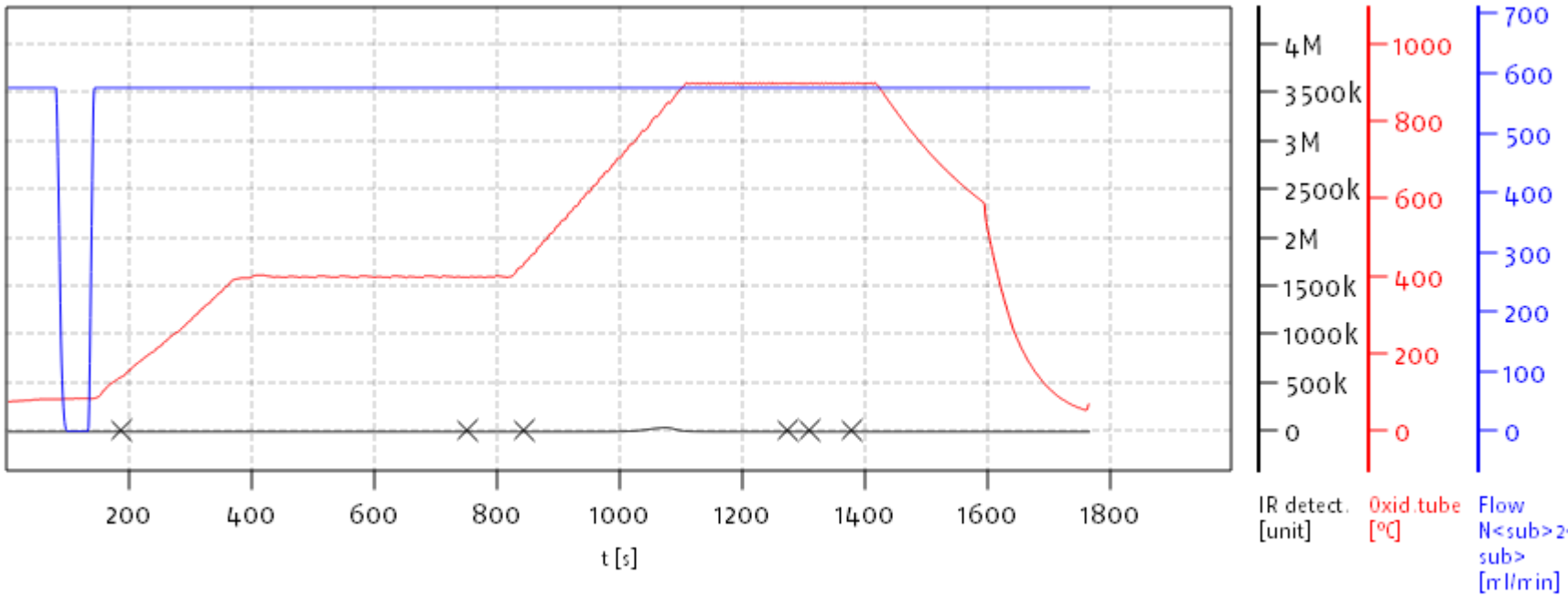
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
8	8	SEQ-CAL6	200.00	0.0196	1.00	CARBON	10/27/2021 4:35 PM	0.004	0.061	0.065	bl,C1u	1 926	86 483	0	1.0000	0.8715



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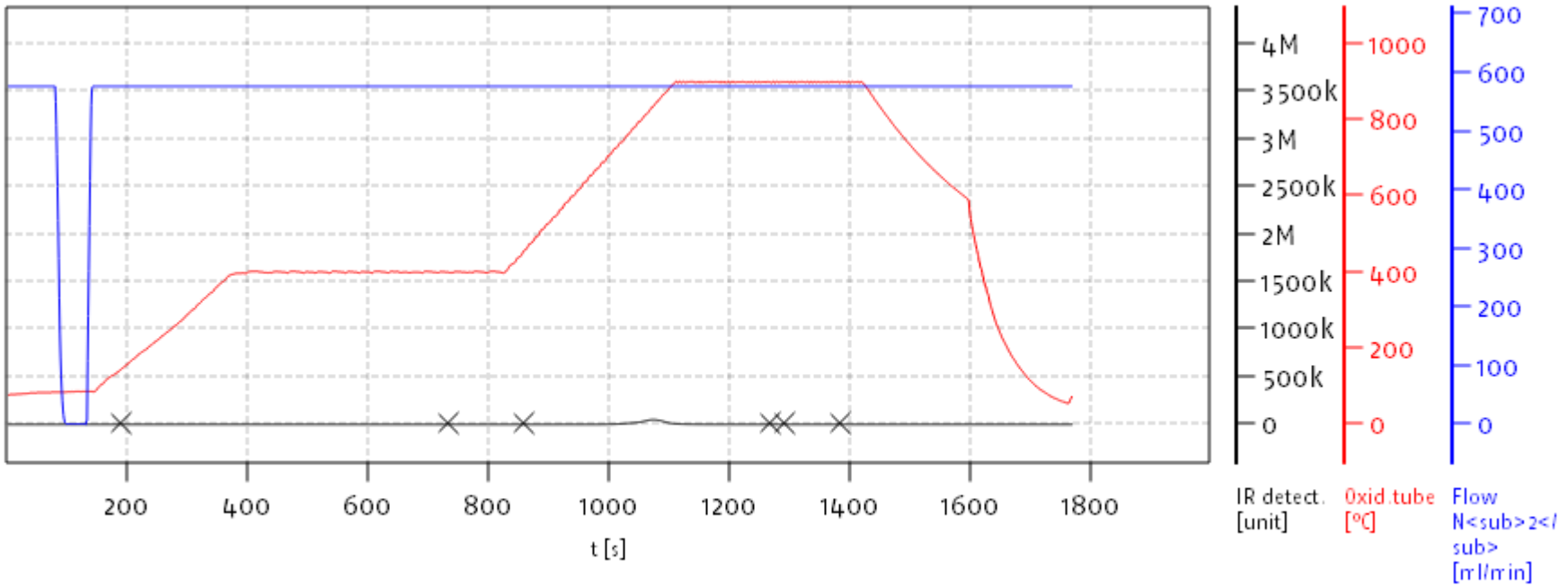
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
9	9	SEQ-CAL7	200.00	0.0254	1.00	CARBON	10/27/2021 5:05 PM	0.006	0.075	0.081	bl,C1u,C2u	2 569	96 400	9	1.0000	0.9648



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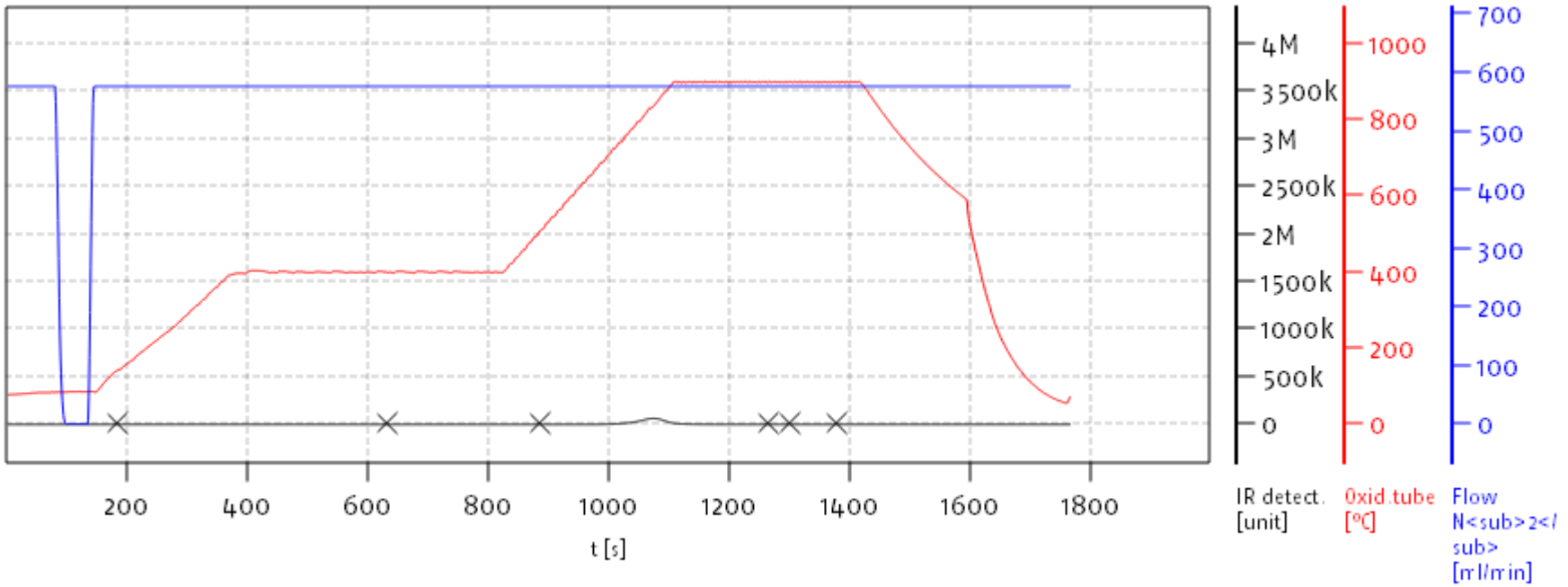
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
10	10	SEQ-CAL8	200.00	0.0313	1.00	CARBON	10/27/2021 5:35 PM	0.006	0.091	0.097	bl,C1u,C2u	2 468	133 936	2	1.0000	0.8418



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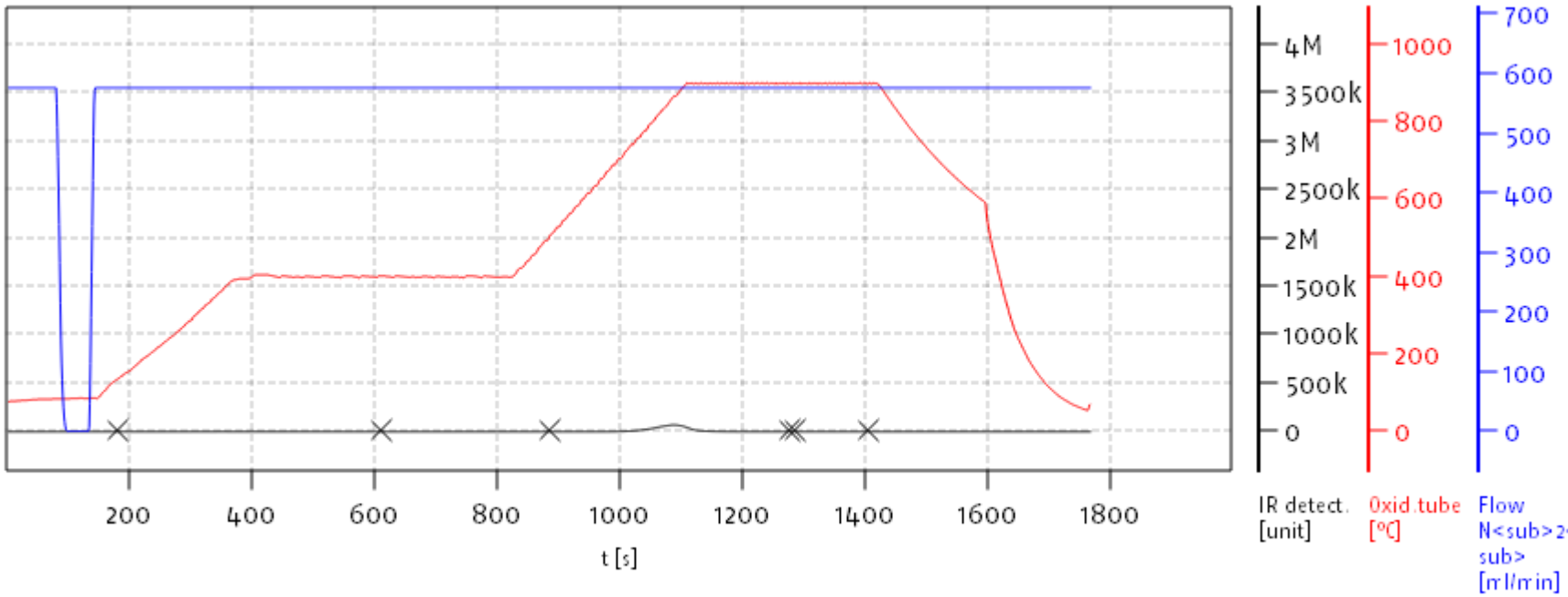
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
11	11	SEQ-CAL9	200.00	0.0403	1.00	CARBON	10/27/2021 6:05 PM	0.007	0.120	0.127	bl,C1u,C2u	3 039	172 579	64	1.0000	0.8690



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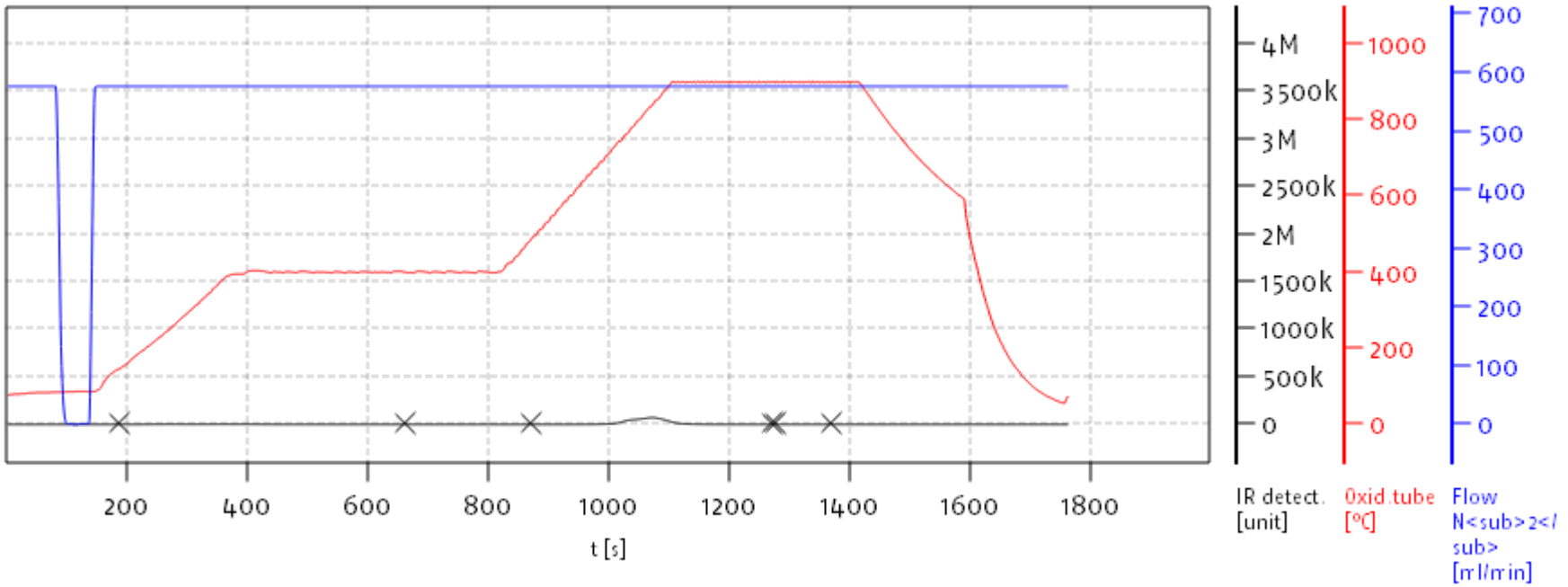
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
12	12	SEQ-CALA	200.00	0.0515	1.00	CARBON	10/27/2021 6:35 PM	0.016	0.151	0.167	bl,C2u	14 649	193 542	27	1.0000	0.9760



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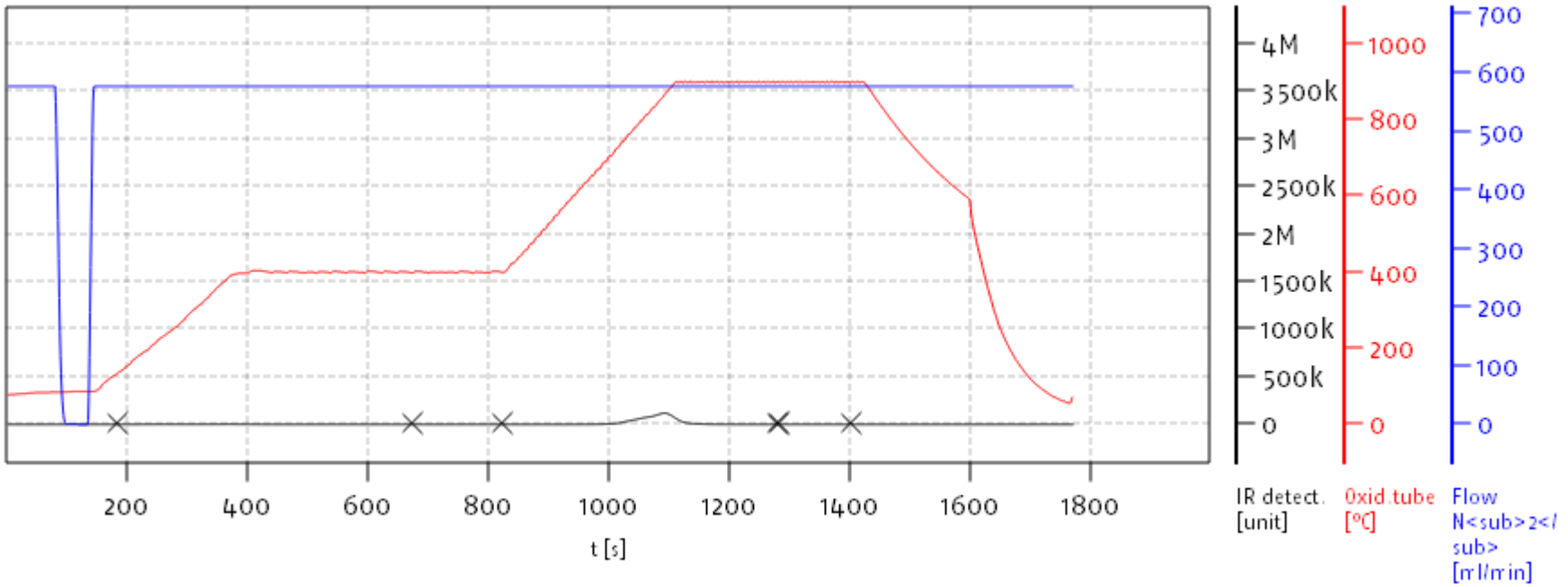
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
13	13	SEQ-CALB	200.00	0.0039	1.00	CARBON	10/27/2021 7:05 PM	0.014	0.258	0.272	bl,C2u	12 574	298 666	212	1.0000	1.0865



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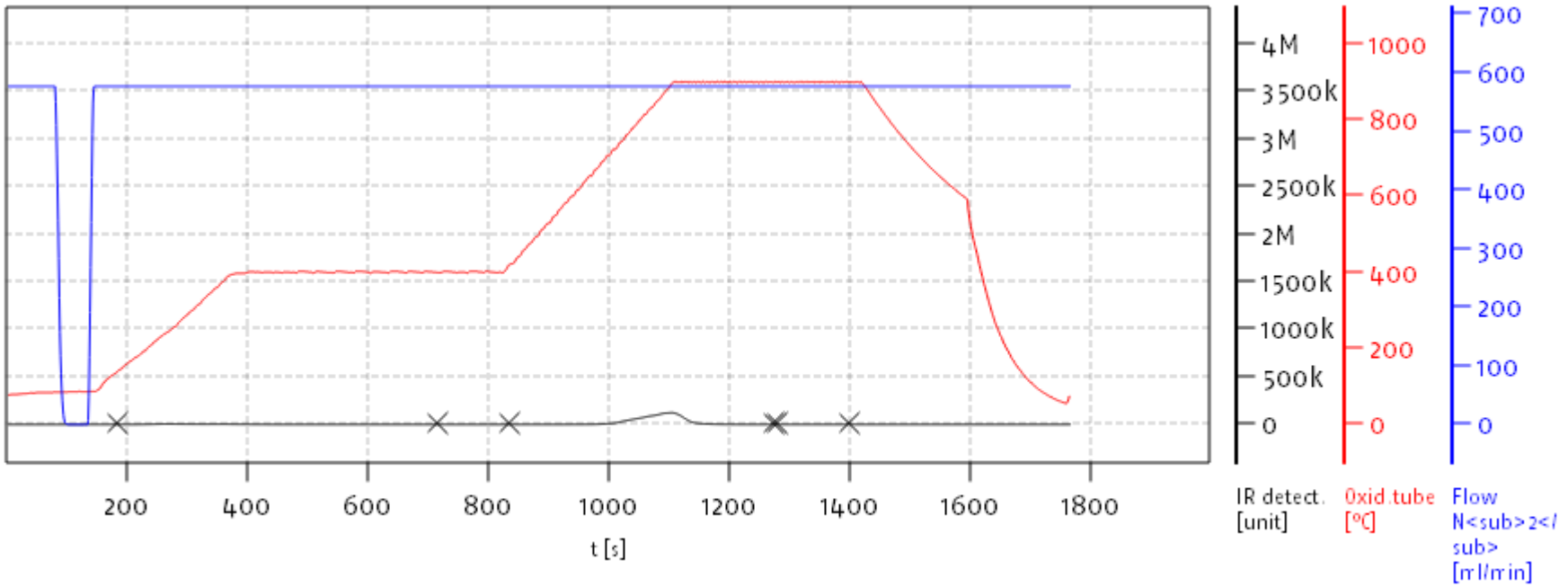
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
14	14	SEQ-CALC	200.00	0.0051	1.00	CARBON	10/27/2021 7:35 PM	0.023	0.324	0.347	bl,C2u	24 193	384 969	144	1.0000	1.0606



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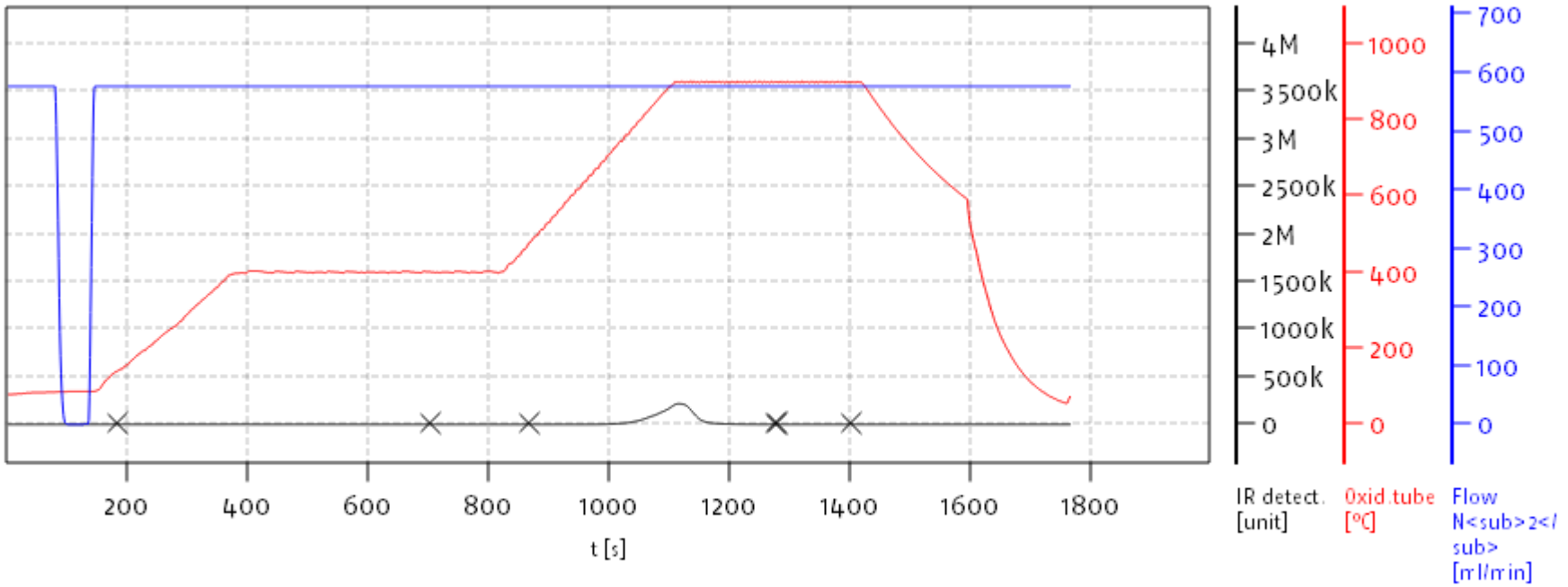
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
15	15	SEQ-CALD	200.00	0.0074	1.00	CARBON	10/27/2021 8:05 PM	0.007	0.444	0.451	bl,C1u,C2u	3 020	573 429	514	1.0000	0.9779



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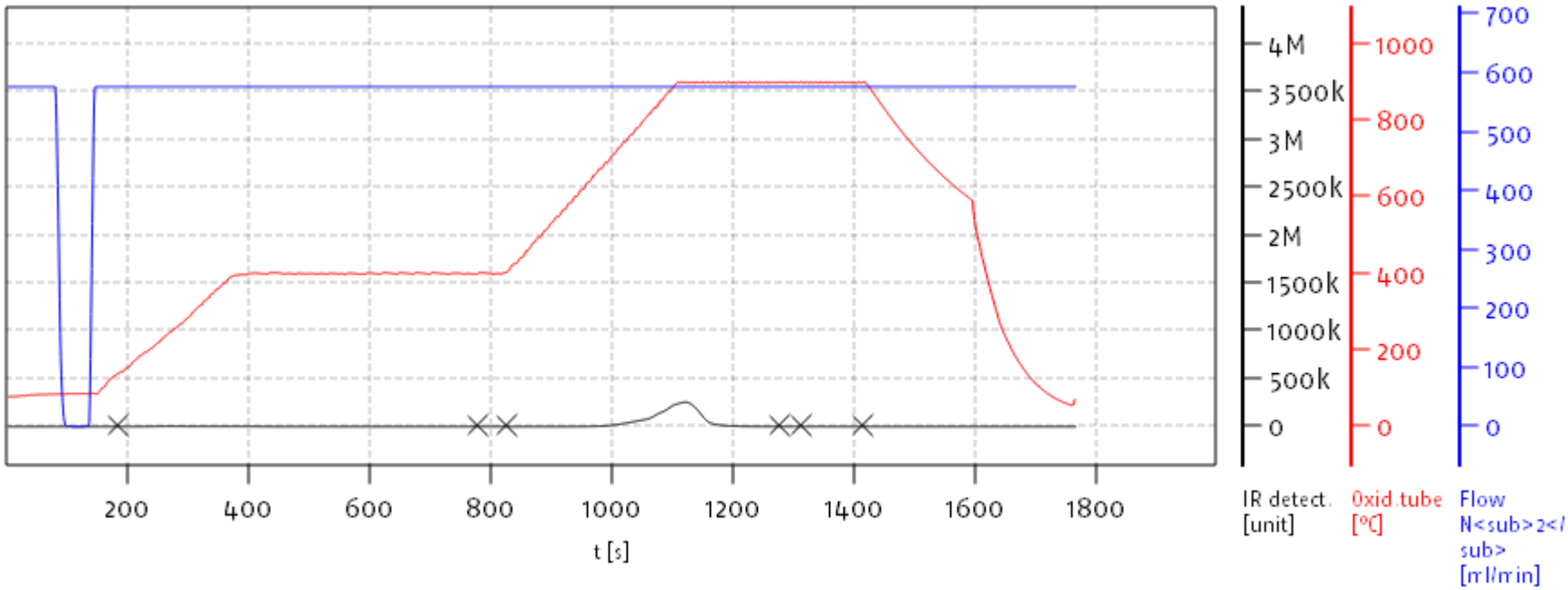
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
16	16	SEQ-CALE	200.00	0.0102	1.00	CARBON	10/27/2021 8:34 PM	0.021	0.600	0.621	bl,C2u	19 869	796 106	1 461	1.0000	0.9531



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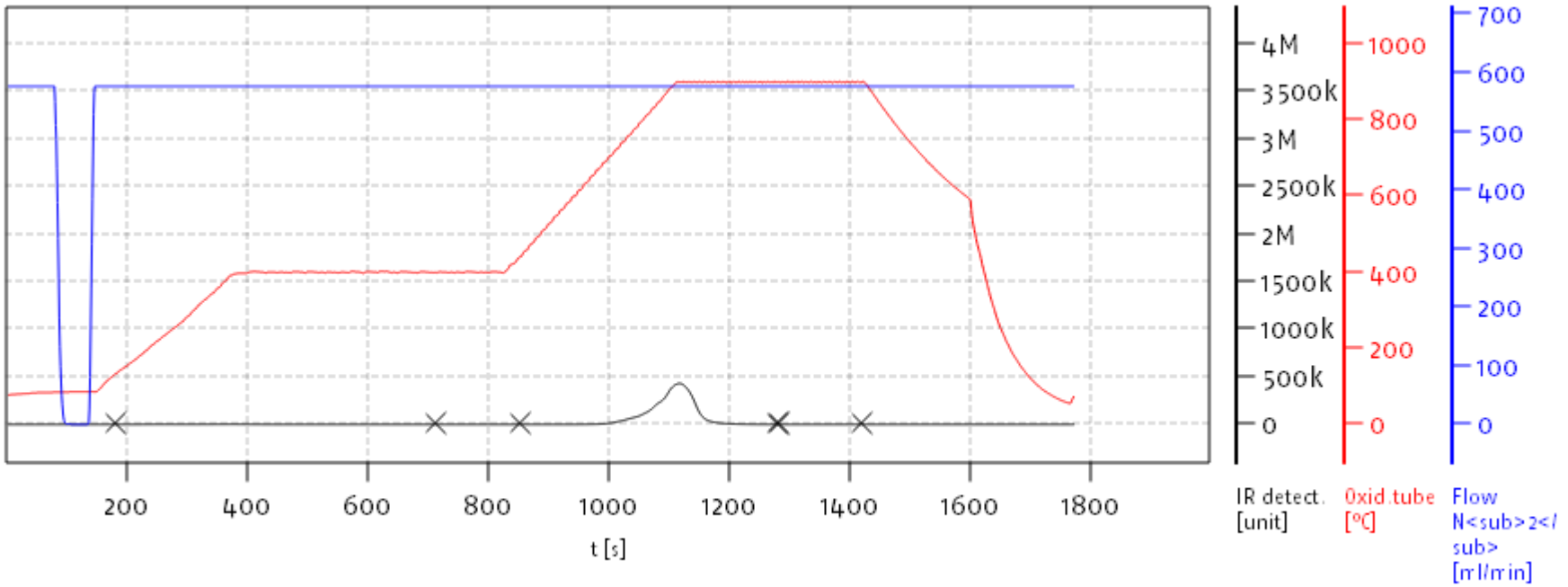
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
17	17	SEQ-CALF	200.00	0.0152	1.00	CARBON	10/27/2021 9:04 PM	0.013	0.906	0.919	bl,C2u	10 608	1 179 220	467	1.0000	0.9726



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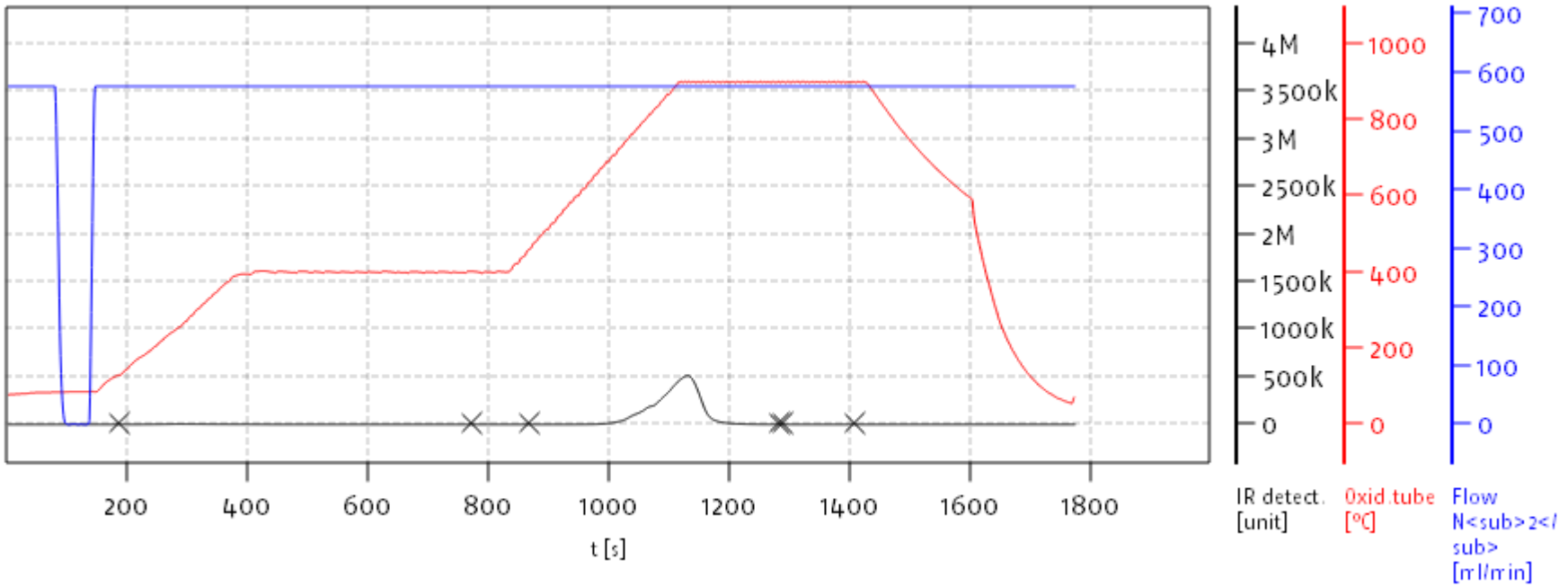
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
18	18	SEQ-CALG	200.00	0.0196	1.00	CARBON	10/27/2021 9:34 PM	0.020	1.206	1.226	bl,C2u	18 861	1 520 750	665	1.0000	1.0044



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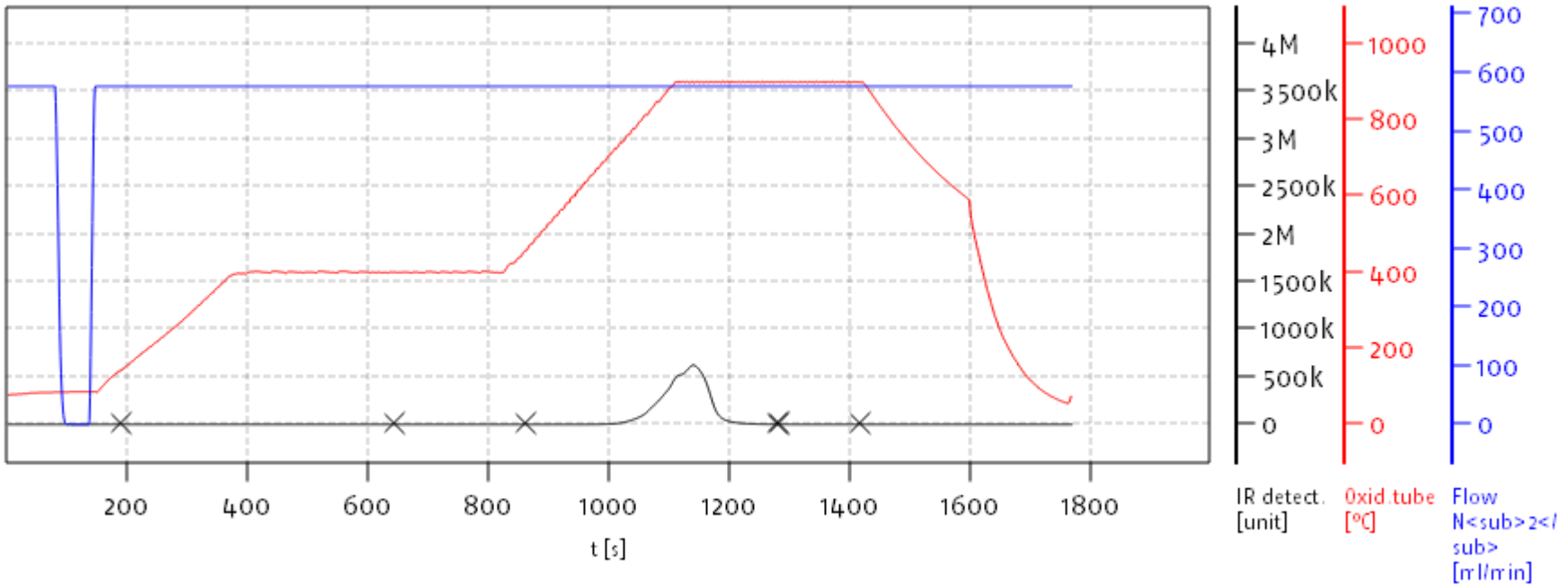
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
19	19	SEQ-CALH	200.00	0.0247	1.00	CARBON	10/27/2021 10:04 PM	0.007	1.524	1.531	bl,C1u,C2u	2 199	1 936 070	1 608	1.0000	0.9973



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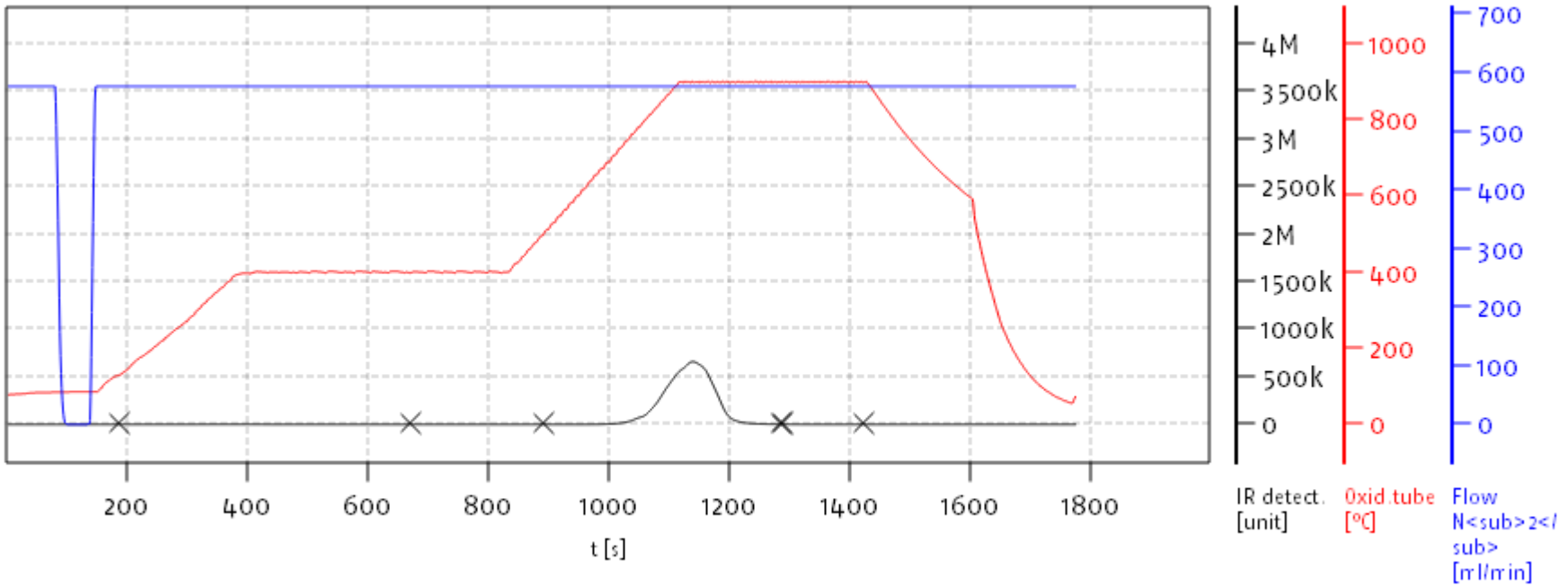
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
20	20	SEQ-CALI	200.00	0.0297	1.00	CARBON	10/27/2021 10:34 PM	0.011	1.800	1.811	bl,C1u,C2u	6 179	2 288 130	1 975	1.0000	0.9969



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Date: Thu Oct 28 12:15:48 2021

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

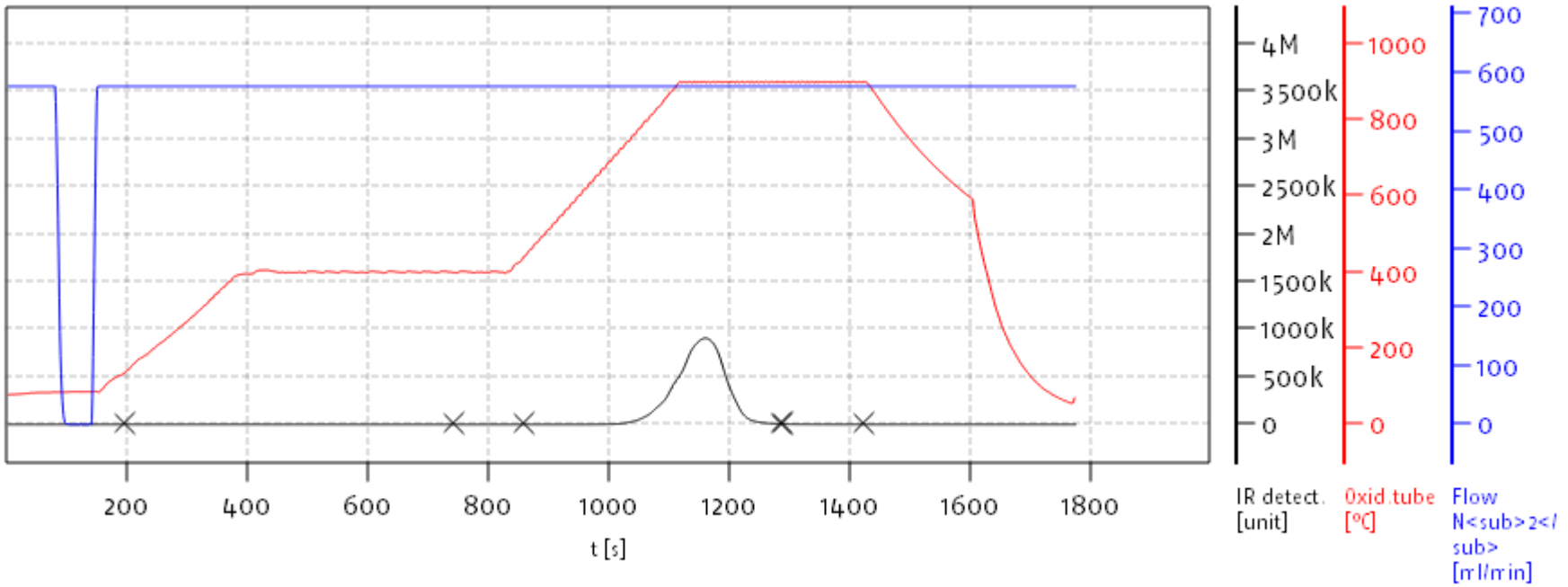
elementar
EXCELLENCE IN ELEMENTS

Document: TOC Calibration EJ00073 102721 BF reint from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: DOE

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
21	21	SEQ-CALJ	200.00	0.0408	1.00	CARBON	10/27/2021 11:04 PM	0.010	2.400	2.410	bl,C1u,C2u	2 185	3 185 680	5 286	1.0000	0.9550



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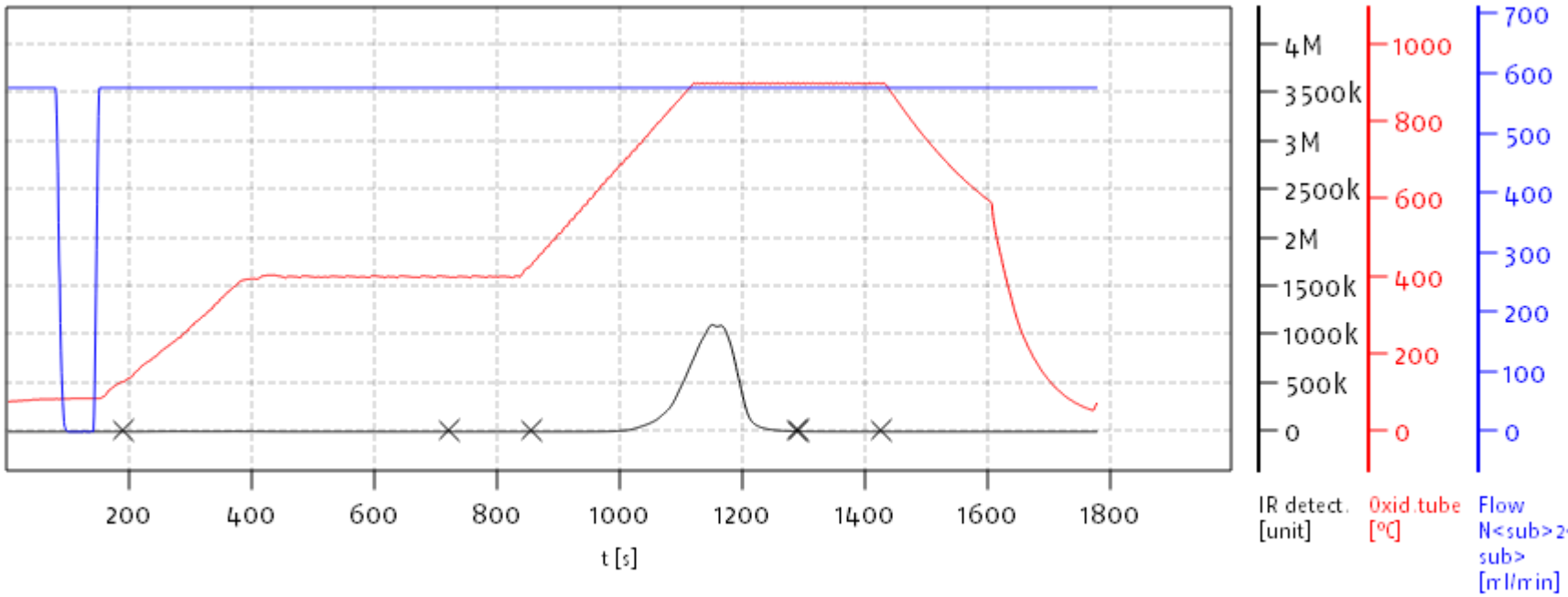
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
22	22	SEQ-CALK	200.00	0.0503	1.00	CARBON	10/27/2021 11:34 PM	0.023	3.012	3.035	bl,C2u	19 106	**3 910 660**	**4 846**	1.0000	0.9765



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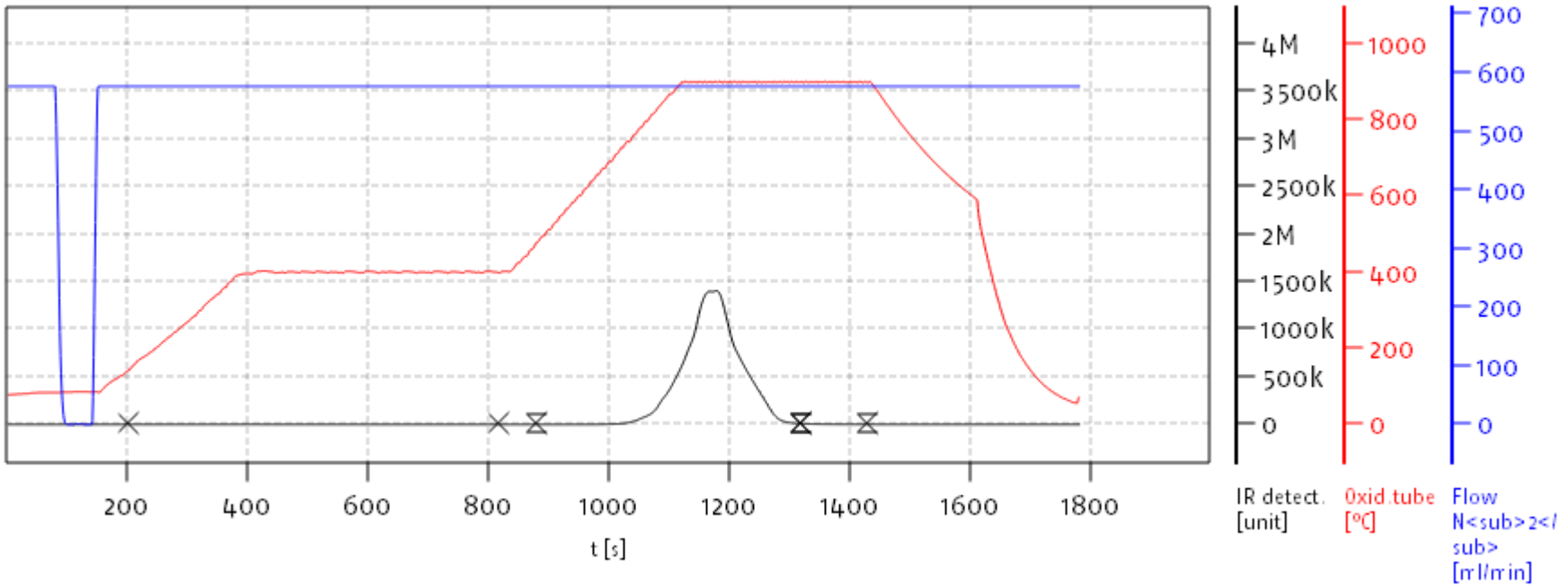
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
23	23	SEQ-CALL	200.00	0.0707	1.00	CARBON	10/28/2021 12:13 PM	0.004	3.938	3.942	bl,C1u	2 774	**5 164 005**	**0**	1.0000	0.9670



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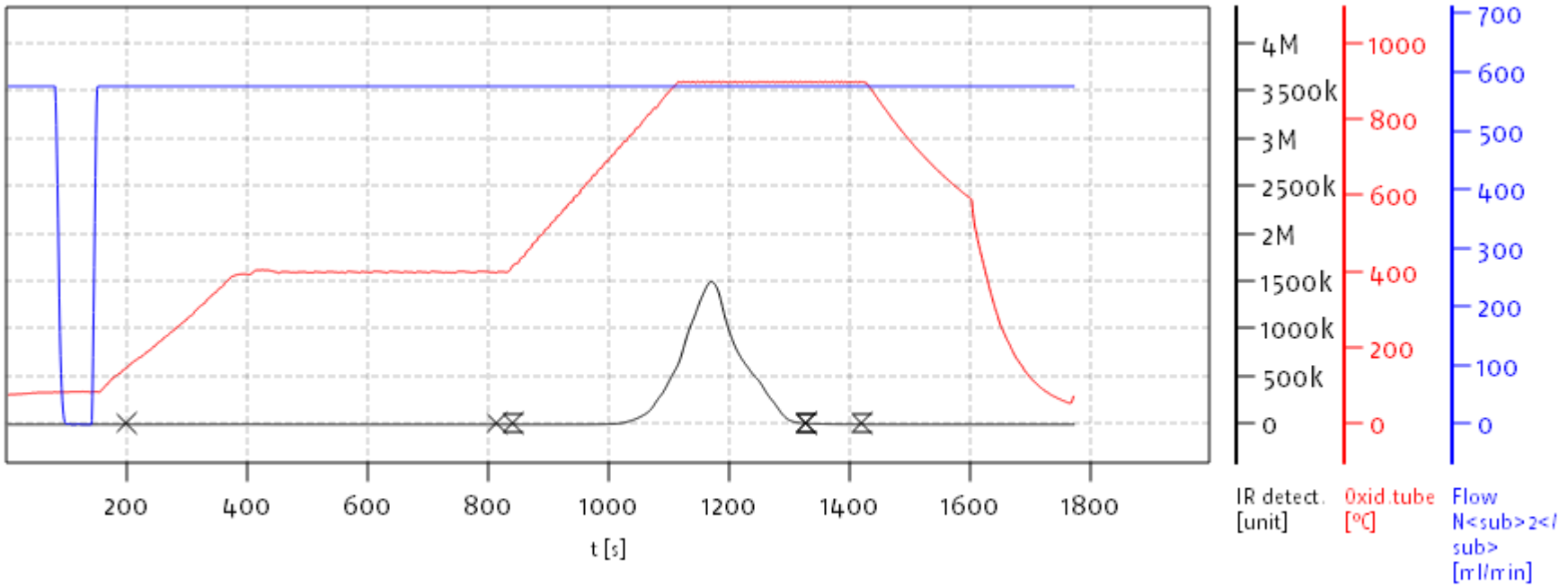
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
24	24	SEQ-CALM	200.00	0.0800	1.00	CARBON	10/28/2021 12:14 PM	0.006	4.556	4.562	bl,C1u	5 000	**5 838 194**	**0**	1.0000	0.9897



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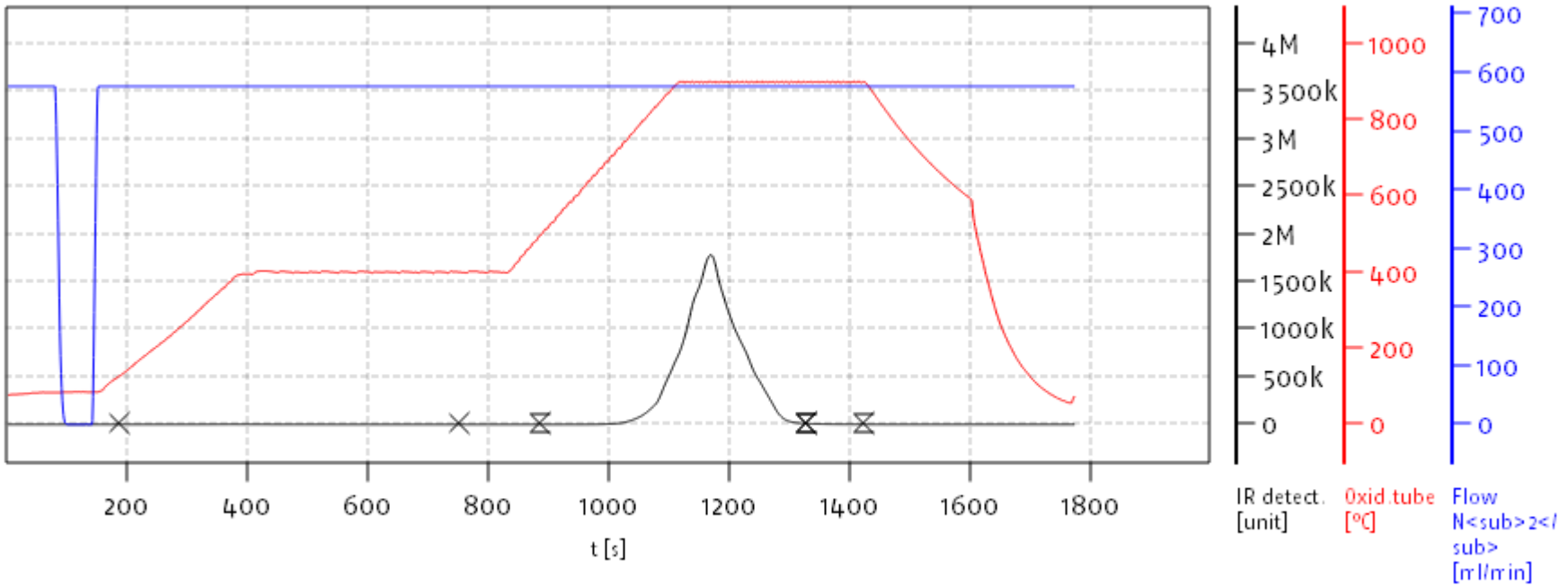
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
25	25	SEQ-CALN	200.00	0.0904	1.00	CARBON	10/28/2021 12:15 PM	0.008	5.143	5.151	bl,C1u	7 133	6 644 601	0	1.0000	0.9817



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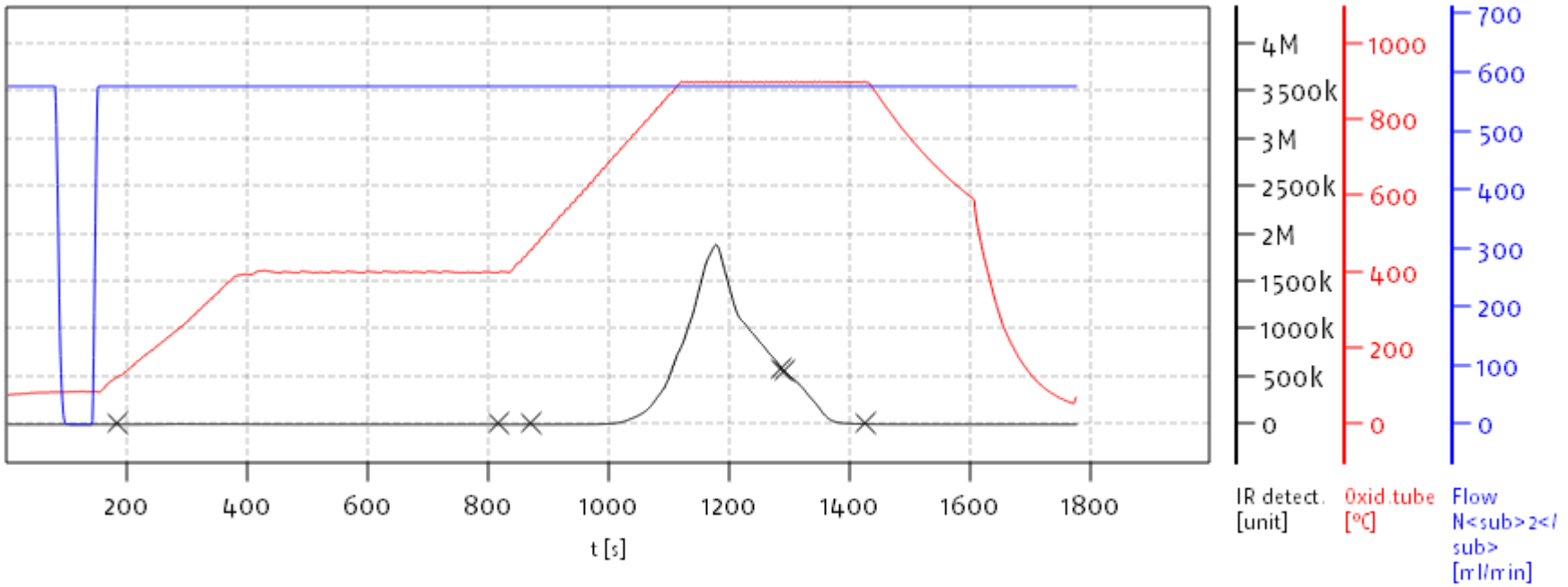
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
26	26	SEQ-CALO	200.00	0.1216	1.00	CARBON	10/28/2021 1:34 AM	0.016	7.637	7.653	bl	18 220	8 535 120	910 806	1.0000	1.0726



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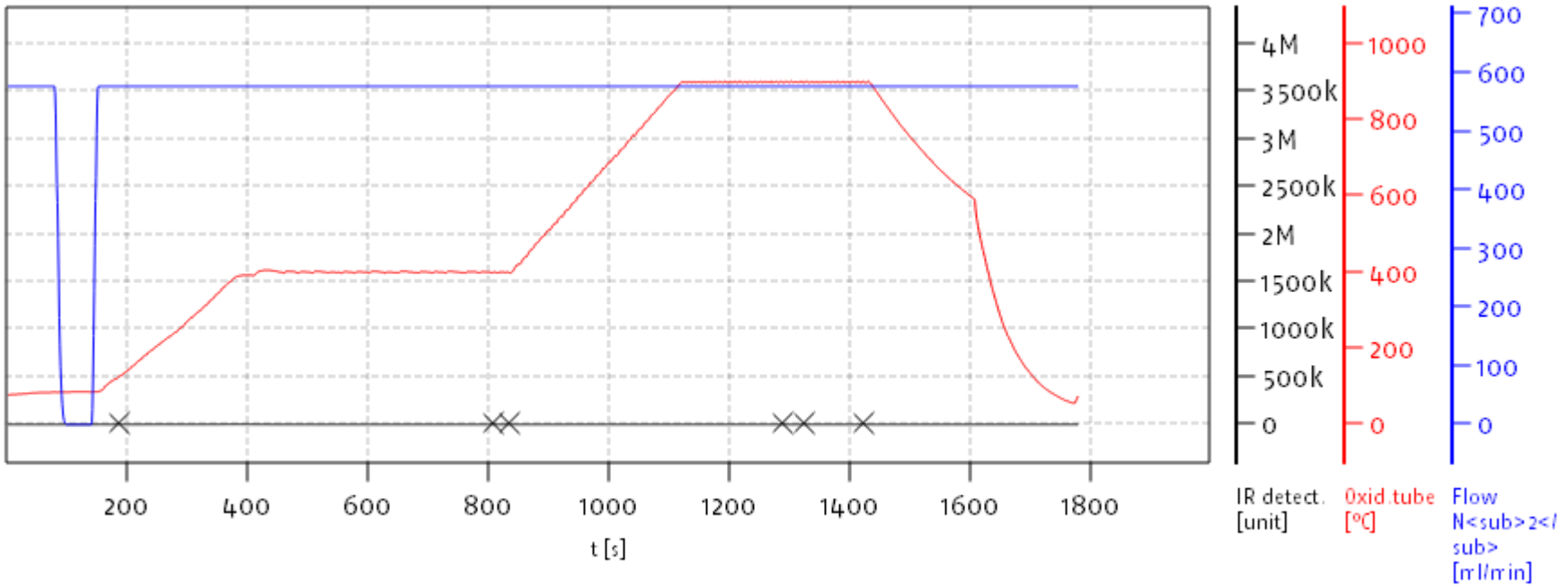
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
27	27	BLANK	1.00		1.00	CARBON	10/28/2021 2:04 AM	0.000	0.000	0.000	bl	8 798	462	69	1.0000	0.9515



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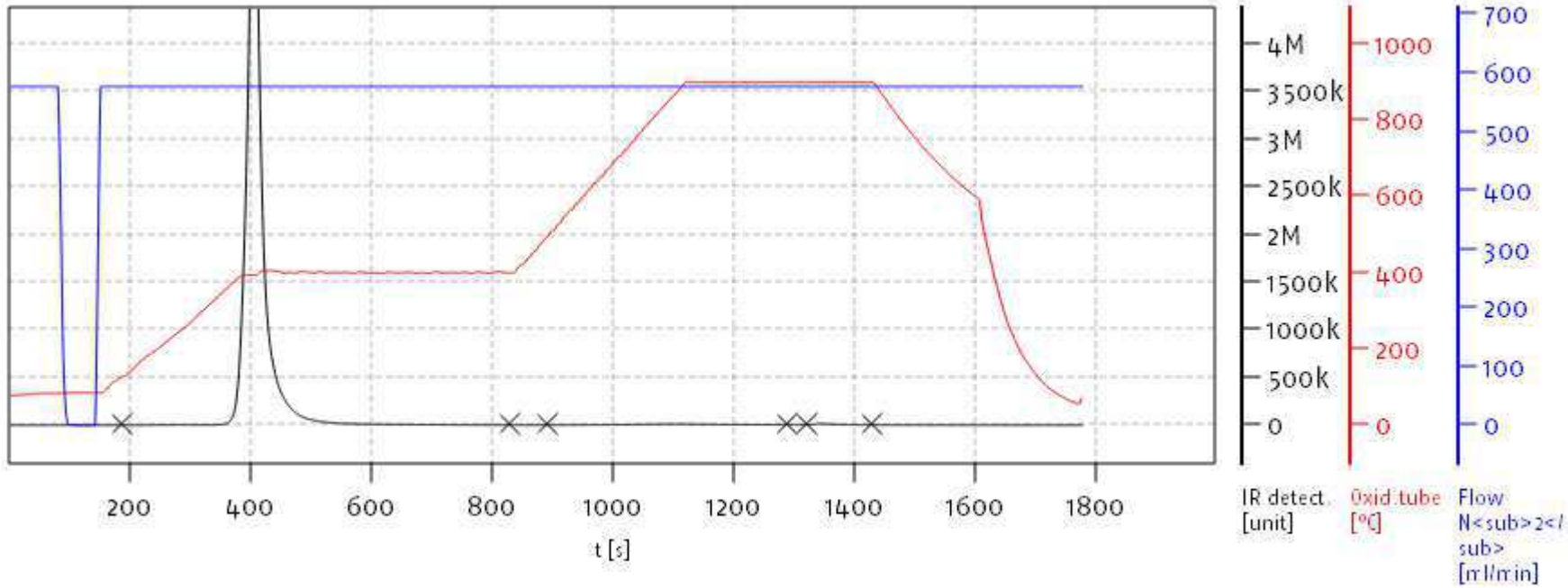
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
28	28	Dfactor	24.60		1.00	CARBON	10/28/2021 2:35 AM	44.631	0.579	45.210	bl	6 745 640	87 690	26 294	1.0278	1.0000



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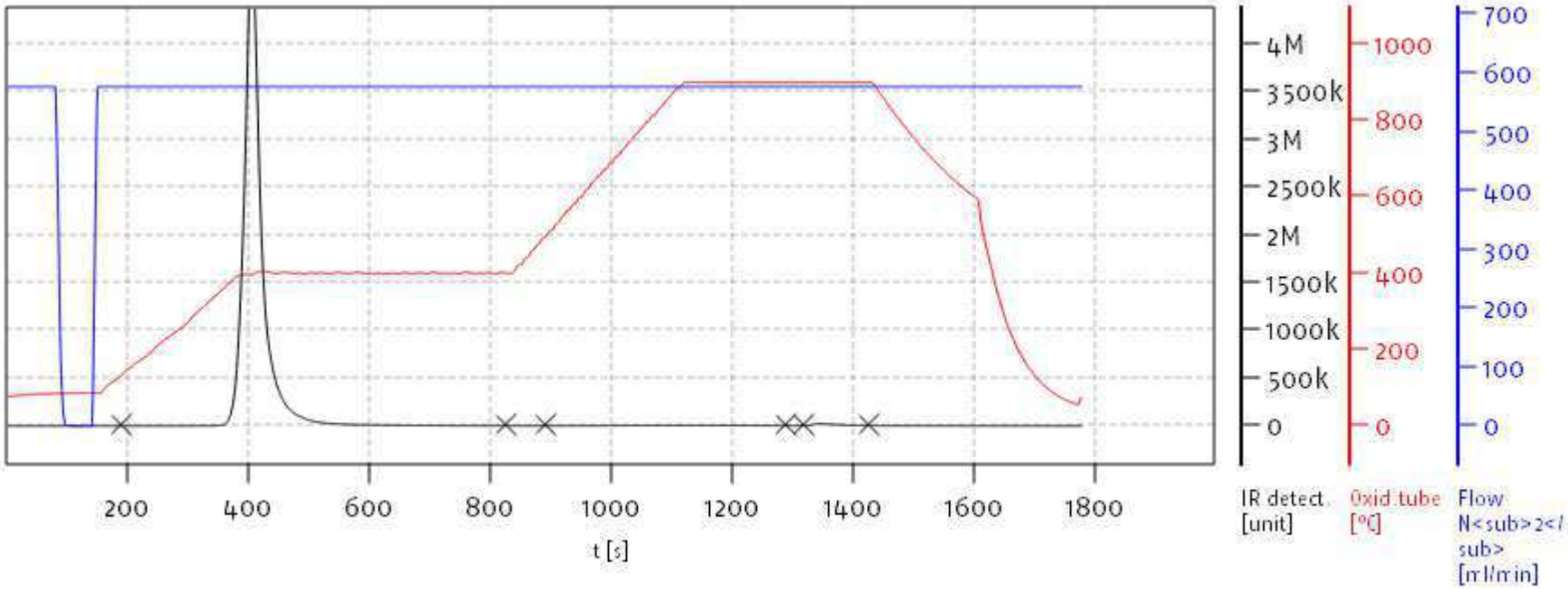
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
29	29	Dfactor	23.00		1.00	CARBON	10/28/2021 3:05 AM	44.758	0.443	45.201	bl	6 177 690	61 993	43 014	1.0493	1.0000



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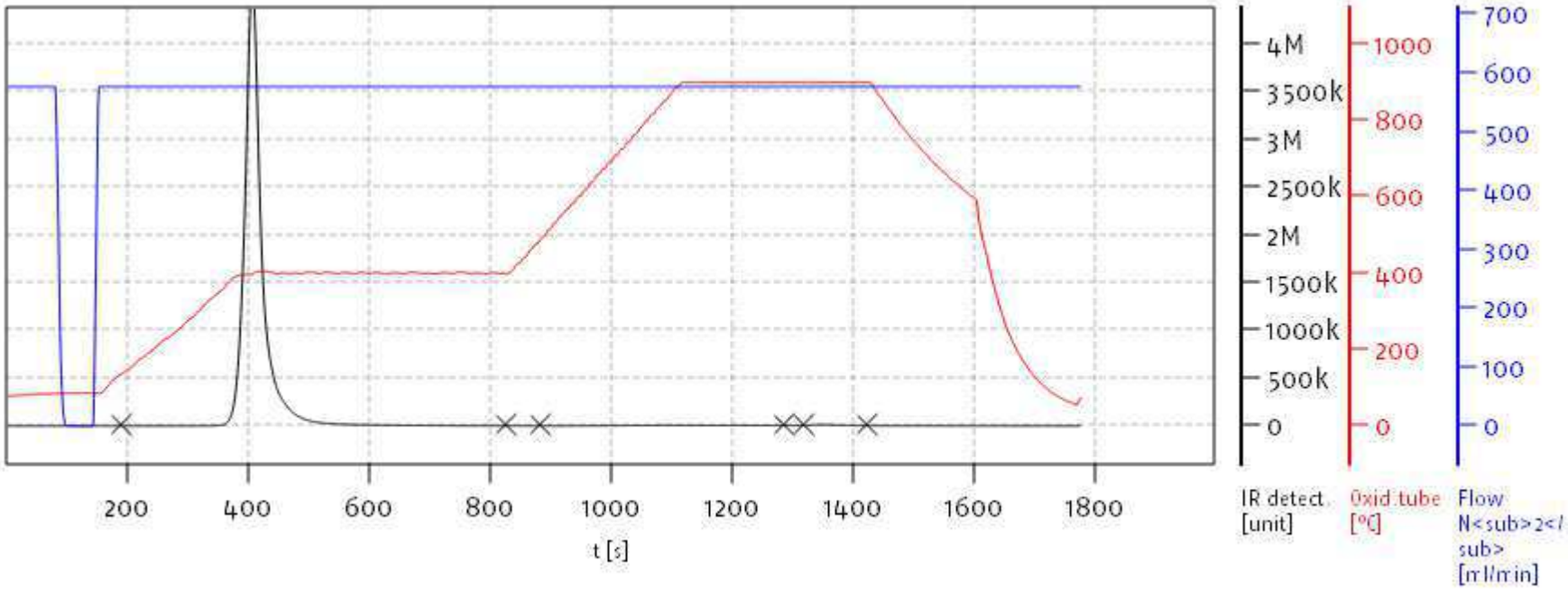
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
30	30	SEQ-ICV1	21.00		1.00	CARBON	10/28/2021 3:35 AM	44.400	0.481	44.881	bl	5 664 310	64 753	26 852	1.0385	0.9515



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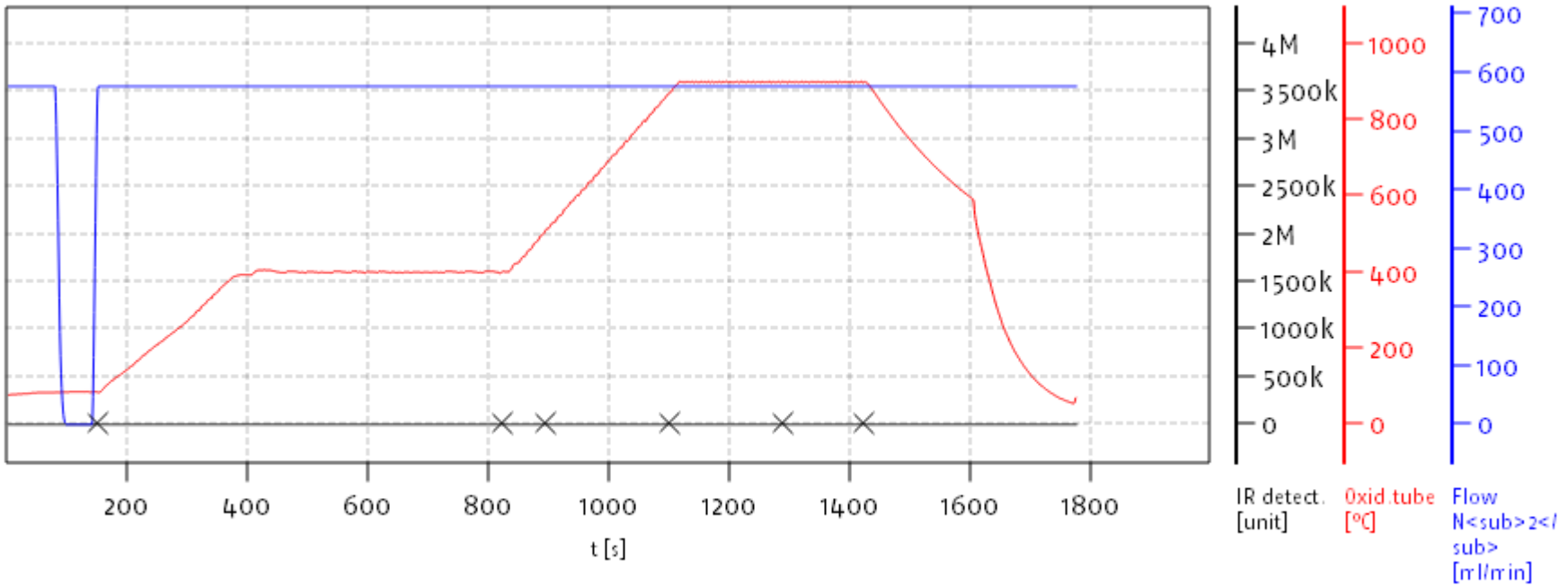
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
31	31	SEQ-ICB1	528.90		1.00	CARBON	10/28/2021 4:05 AM	0.001	0.001	0.002	bl,C1u,C3u	1 286	31	0	1.0385	0.9515



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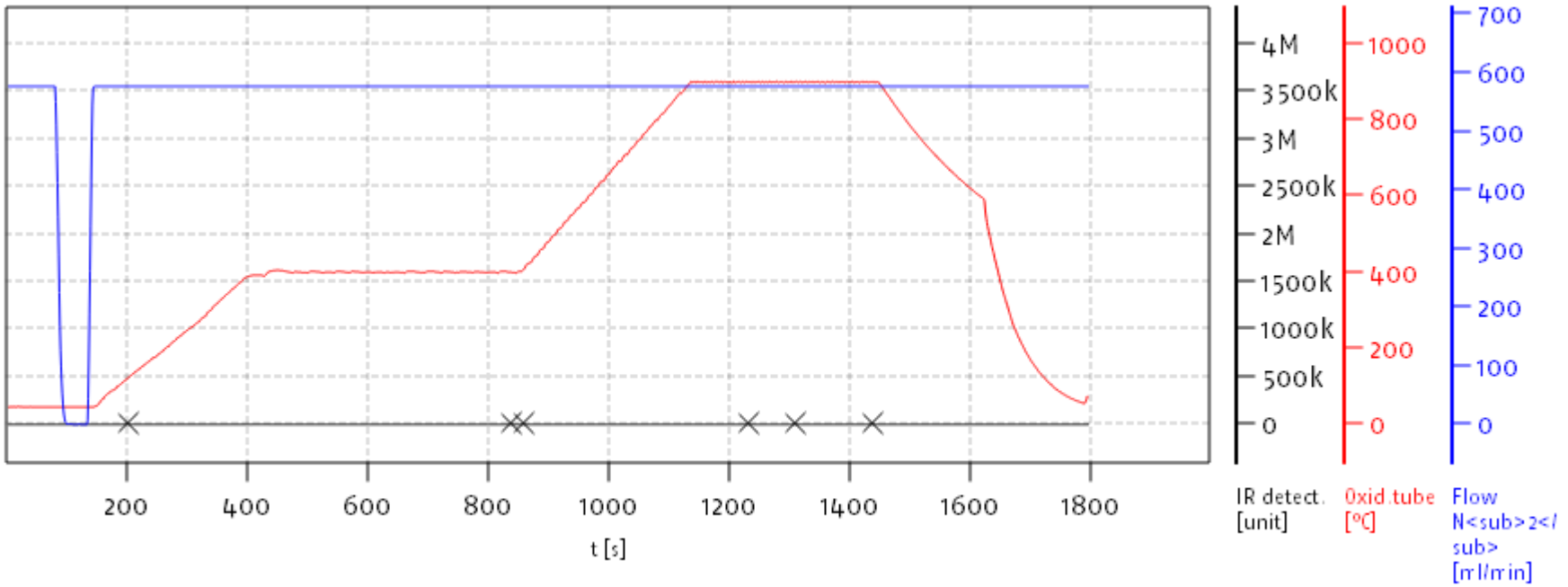
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
1	1	BLANK	1.00		1.00	CARBON	10/27/2021 1:06 PM	0.000	0.000	0.000	bl	3 434	965	635	1.0000	1.0000



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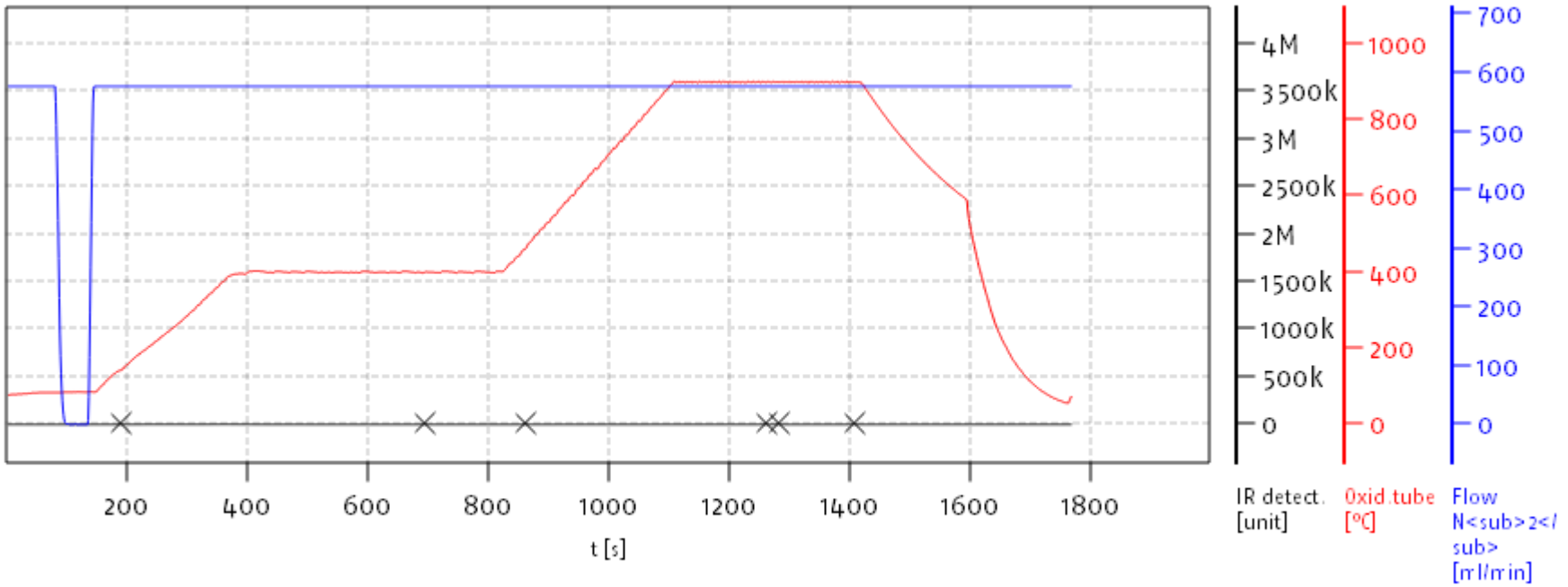
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
2	2	BLANK	1.00		1.00	CARBON	10/27/2021 1:36 PM	0.000	0.000	0.000	bl	7 652	258	0	1.0000	1.0000



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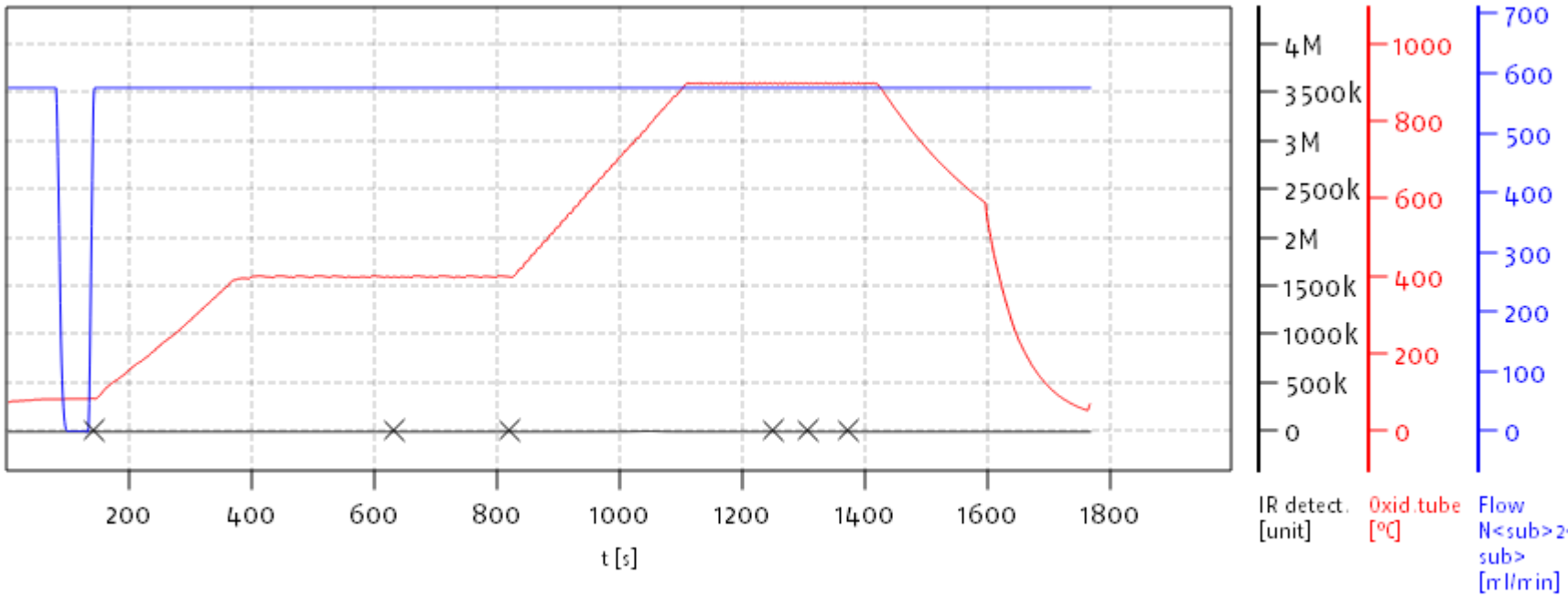
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
3	3	SEQ-CAL1	200.00	0.0026	1.00	CARBON	10/27/2021 2:06 PM	0.003	0.008	0.012	bl,C1u	1 368	9 349	0	1.0000	0.8907



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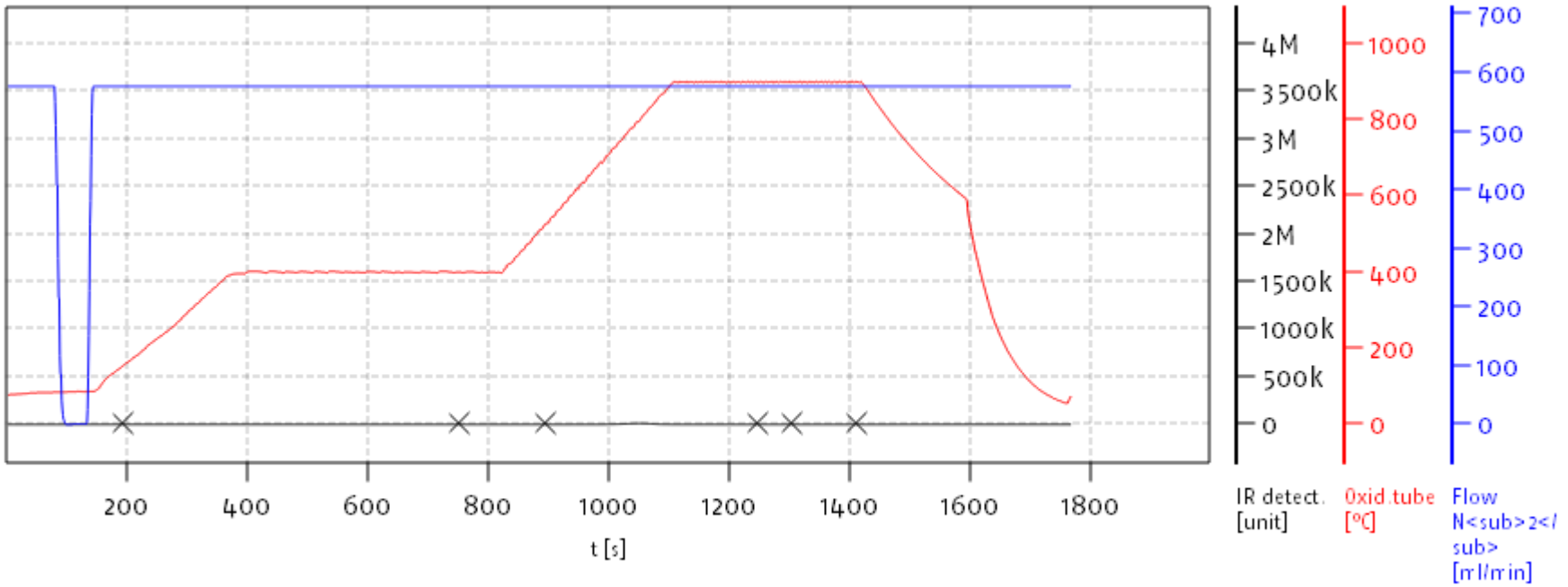
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
4	4	SEQ-CAL2	200.00	0.0051	1.00	CARBON	10/27/2021 2:36 PM	0.003	0.015	0.019	bl,C1u	1 464	21 261	0	1.0000	0.8130



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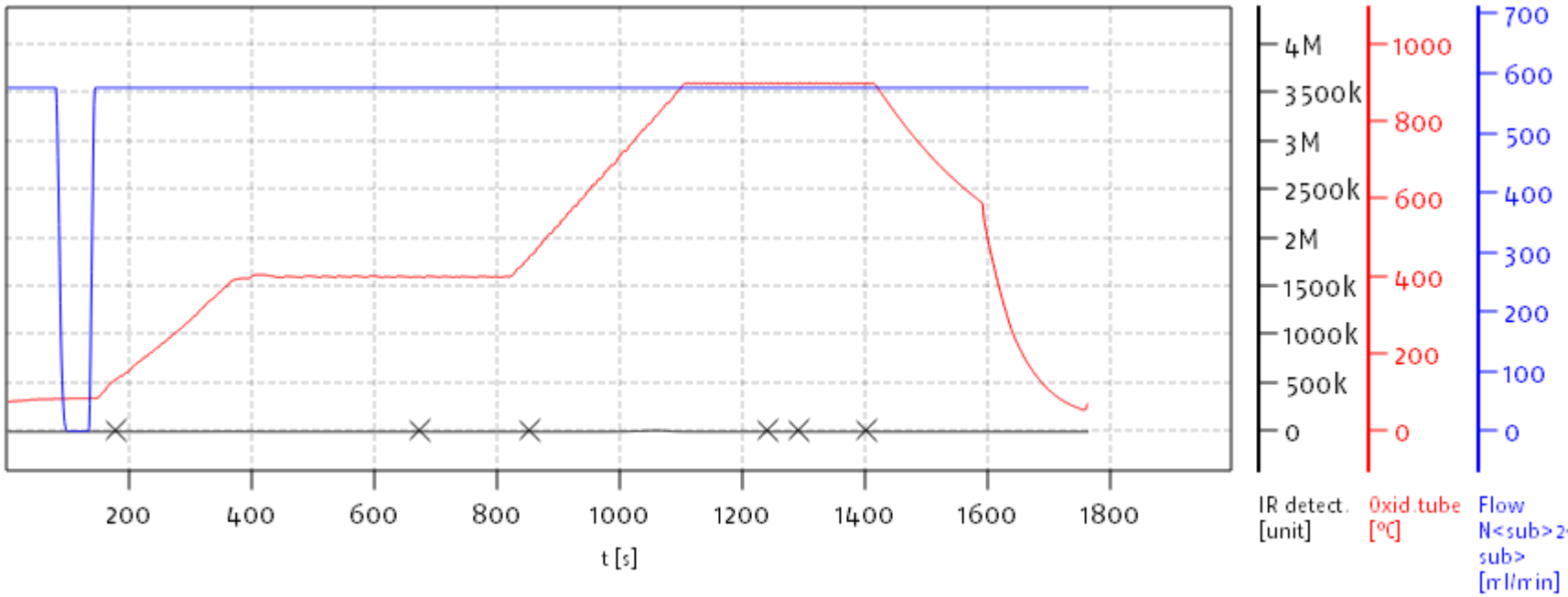
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
5	5	SEQ-CAL3	200.00	0.0070	1.00	CARBON	10/27/2021 3:06 PM	0.008	0.022	0.031	bl,C1u	8 125	24 995	0	1.0000	1.0201



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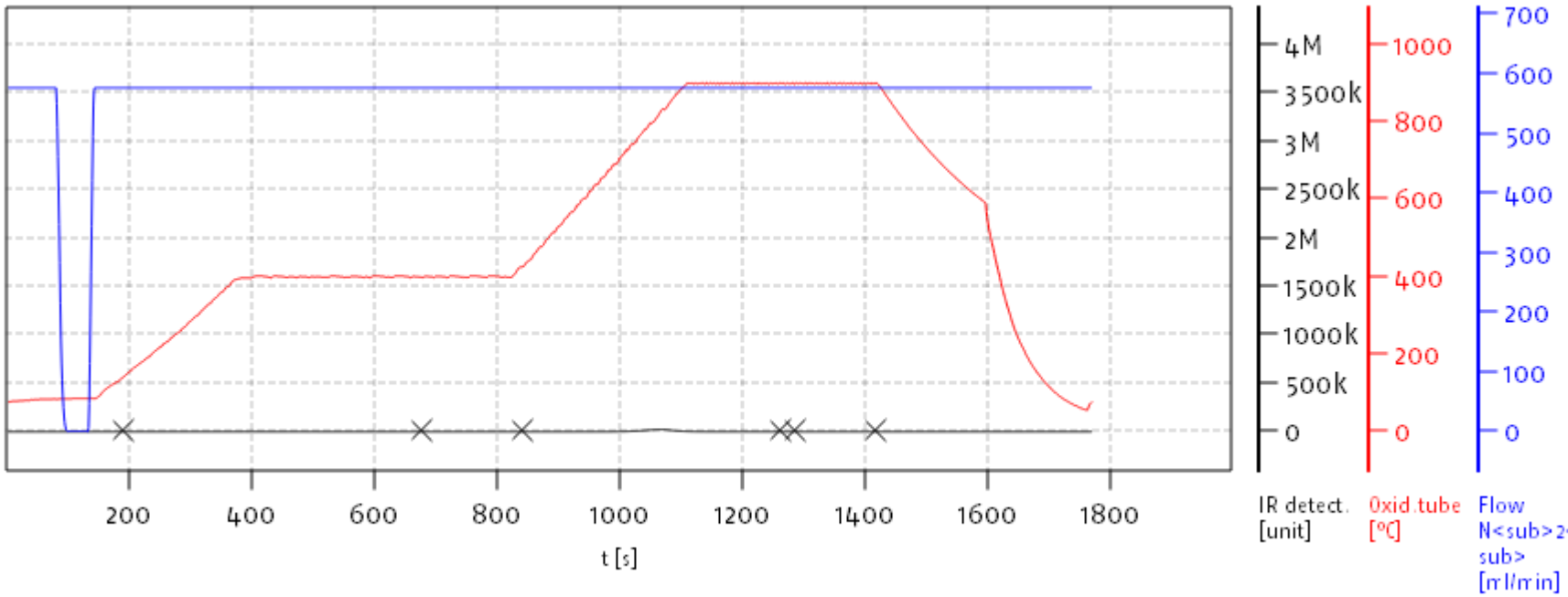
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
6	6	SEQ-CAL4	200.00	0.0101	1.00	CARBON	10/27/2021 3:36 PM	0.004	0.030	0.034	bl,C1u	1 853	49 274	0	1.0000	0.7408



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Analyst: DOE

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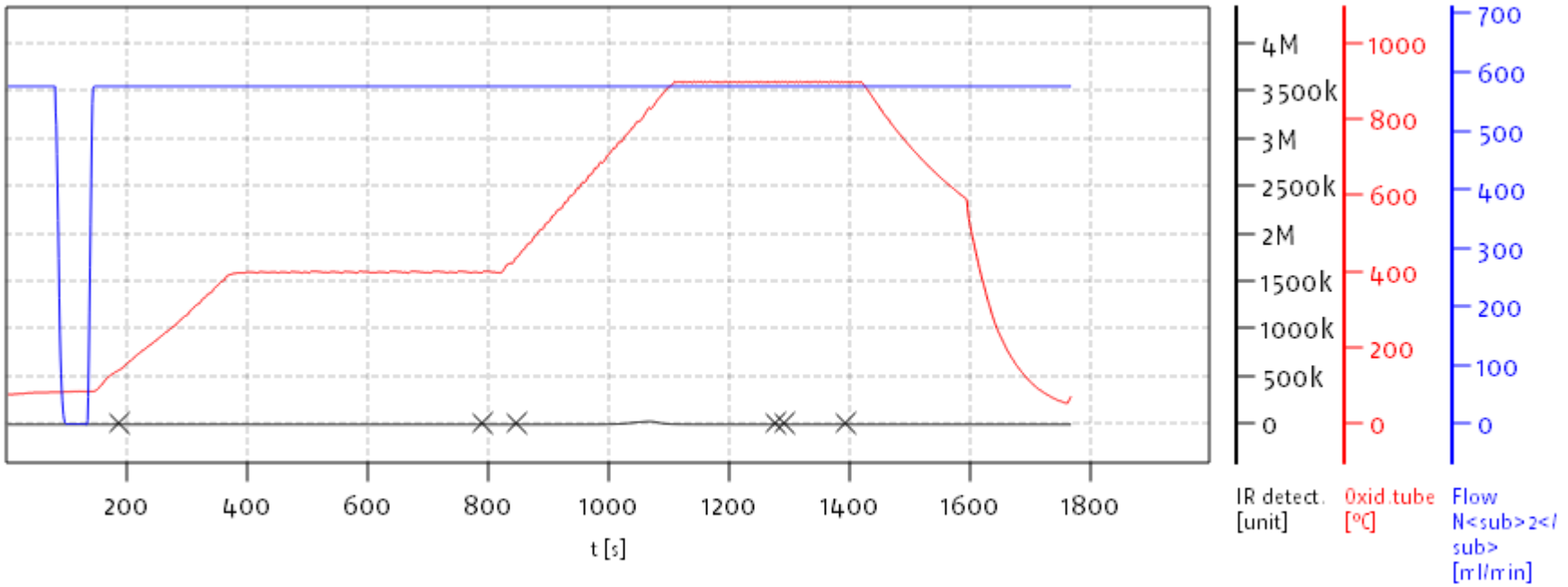
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
7	7	SEQ-CAL5	200.00	0.0153	1.00	CARBON	10/27/2021 4:06 PM	0.007	0.045	0.052	bl,C1u,C2u	3 439	64 025	112	1.0000	0.8567



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Balance: BAL3
Analyst: DOE

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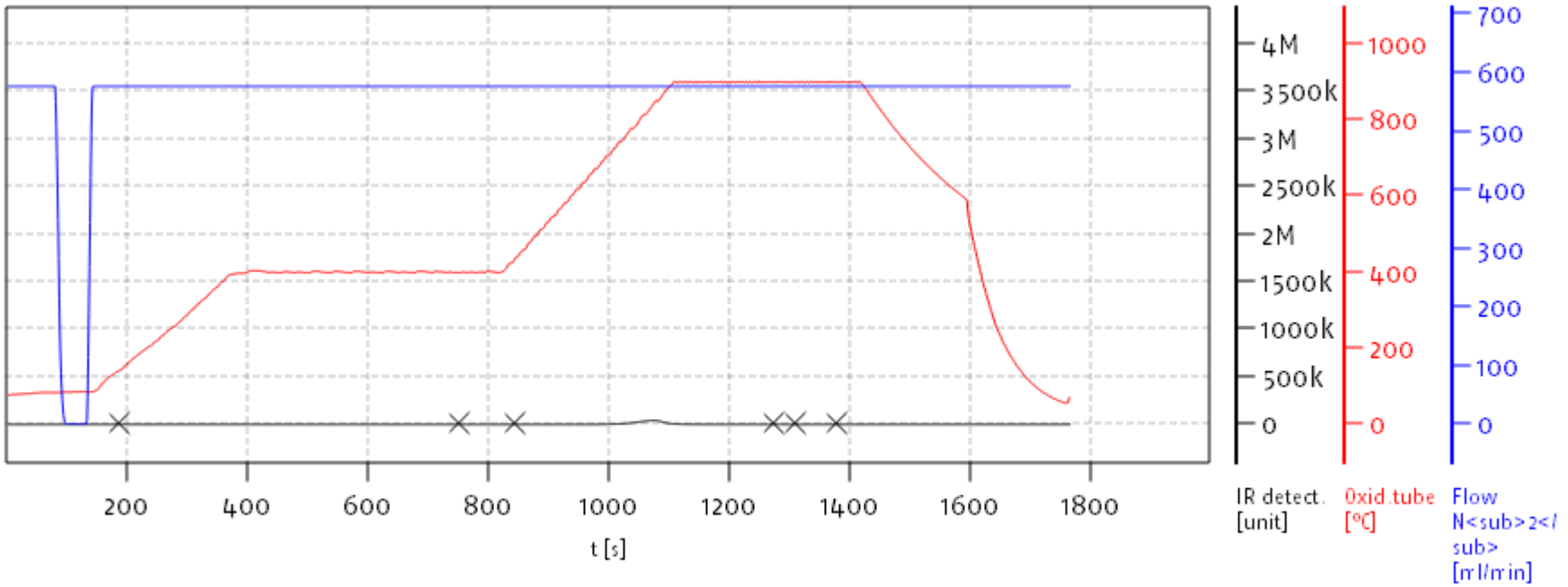
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
8	8	SEQ-CAL6	200.00	0.0196	1.00	CARBON	10/27/2021 4:35 PM	0.004	0.061	0.065	bl,C1u	1 926	86 483	0	1.0000	0.8715



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Date: Thu Oct 28 12:15:48 2021

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

elementar
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Soli TOC Cube, Carbon
Balance: BAL3
Analyst: DOE

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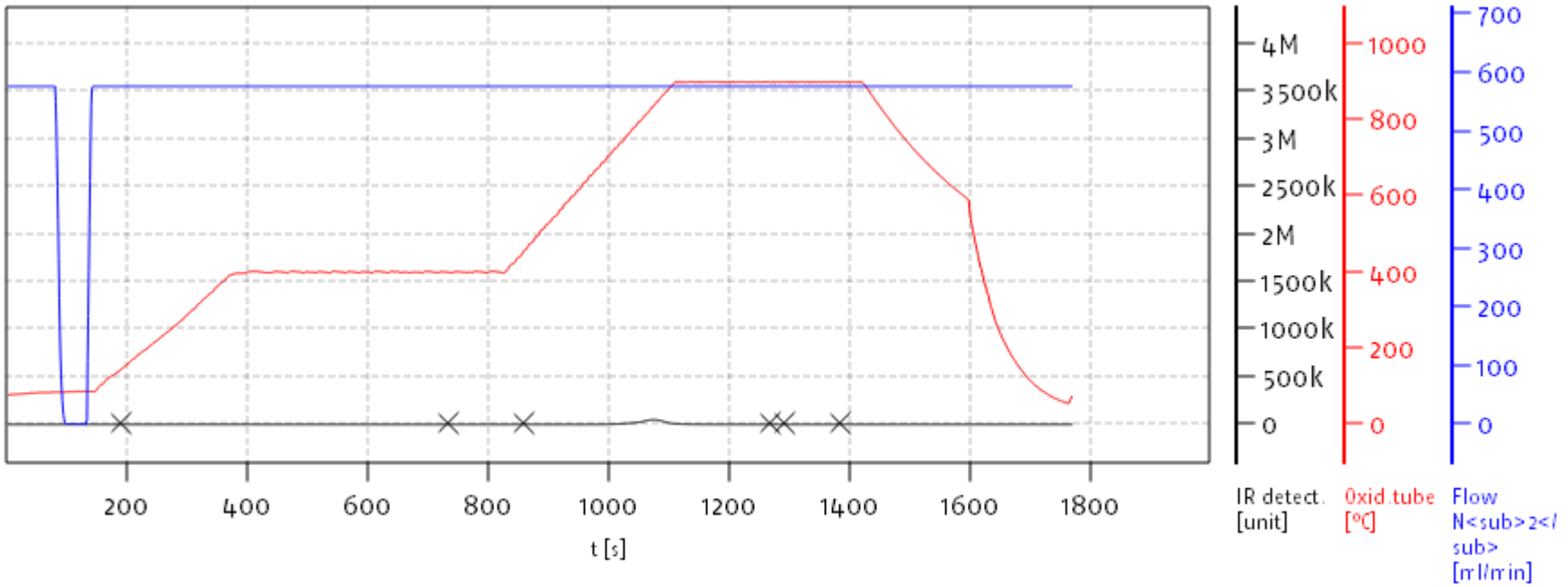
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
9	9	SEQ-CAL7	200.00	0.0254	1.00	CARBON	10/27/2021 5:05 PM	0.006	0.075	0.081	bl,C1u,C2u	2 569	96 400	9	1.0000	0.9648



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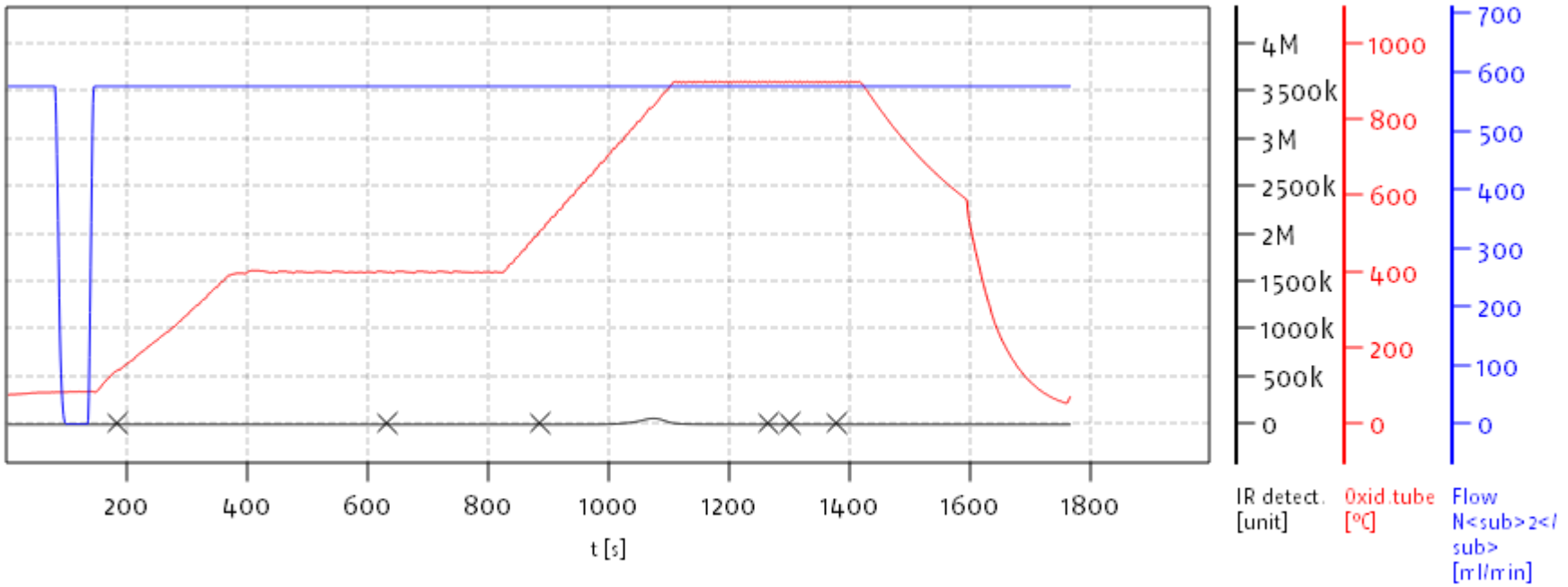
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
10	10	SEQ-CAL8	200.00	0.0313	1.00	CARBON	10/27/2021 5:35 PM	0.006	0.091	0.097	bl,C1u,C2u	2 468	133 936	2	1.0000	0.8418



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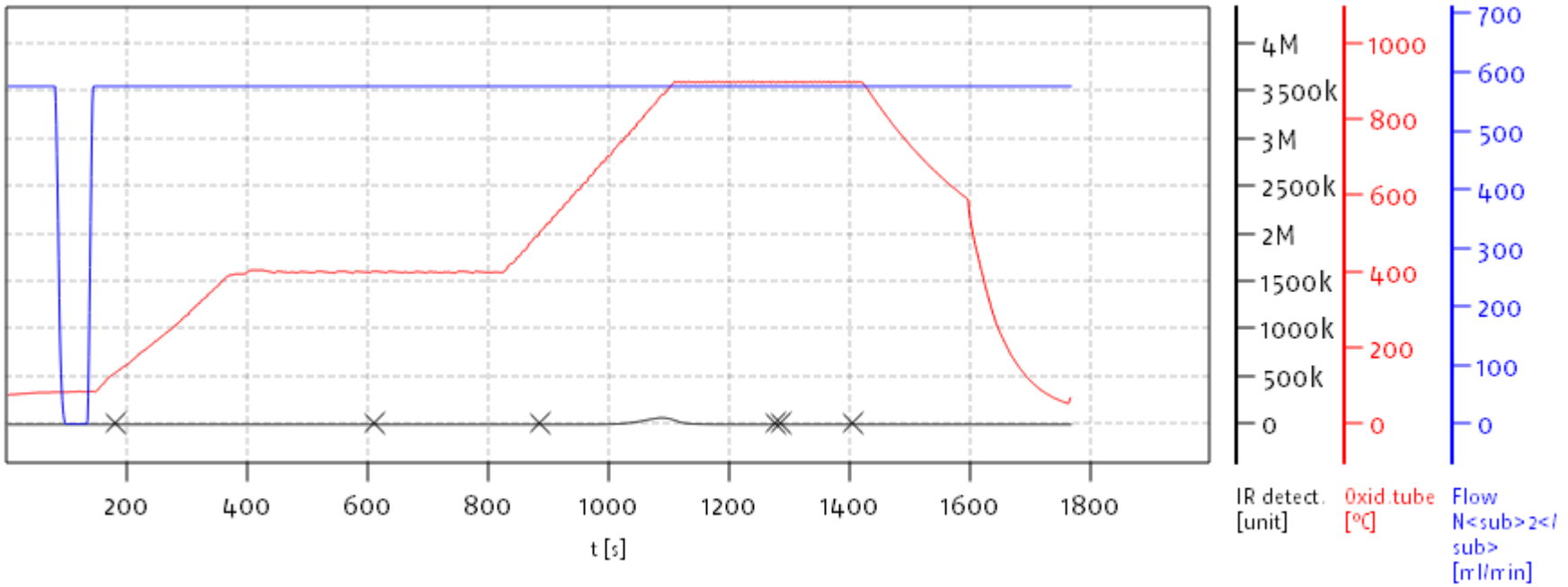
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
11	11	SEQ-CAL9	200.00	0.0403	1.00	CARBON	10/27/2021 6:05 PM	0.007	0.120	0.127	bl,C1u,C2u	3 039	172 579	64	1.0000	0.8690



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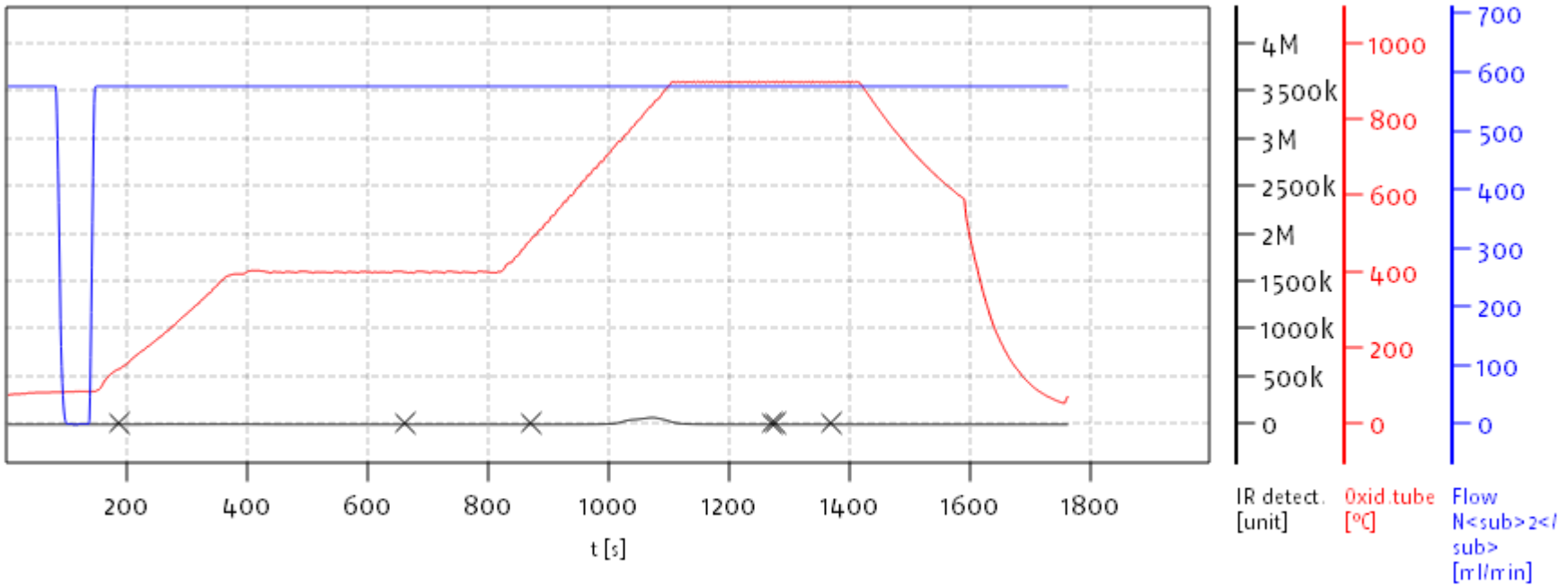
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
12	12	SEQ-CALA	200.00	0.0515	1.00	CARBON	10/27/2021 6:35 PM	0.016	0.151	0.167	bl,C2u	14 649	193 542	27	1.0000	0.9760



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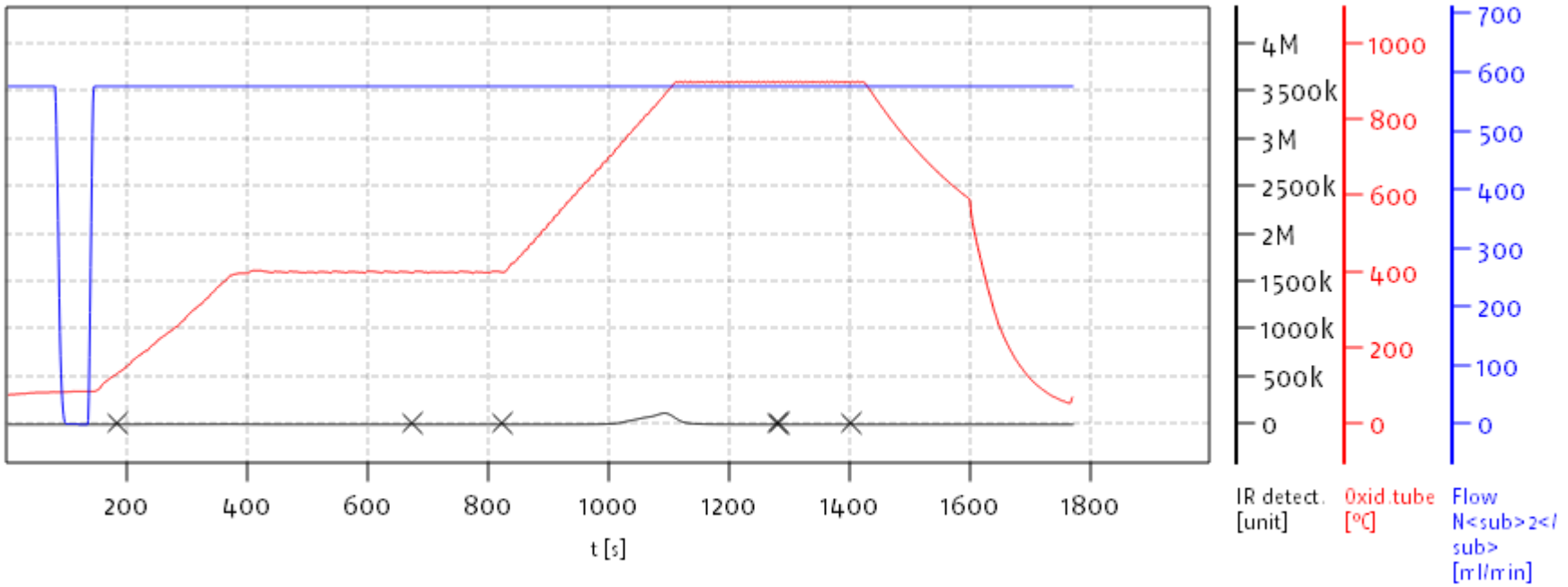
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
13	13	SEQ-CALB	200.00	0.0039	1.00	CARBON	10/27/2021 7:05 PM	0.014	0.258	0.272	bl,C2u	12 574	298 666	212	1.0000	1.0865



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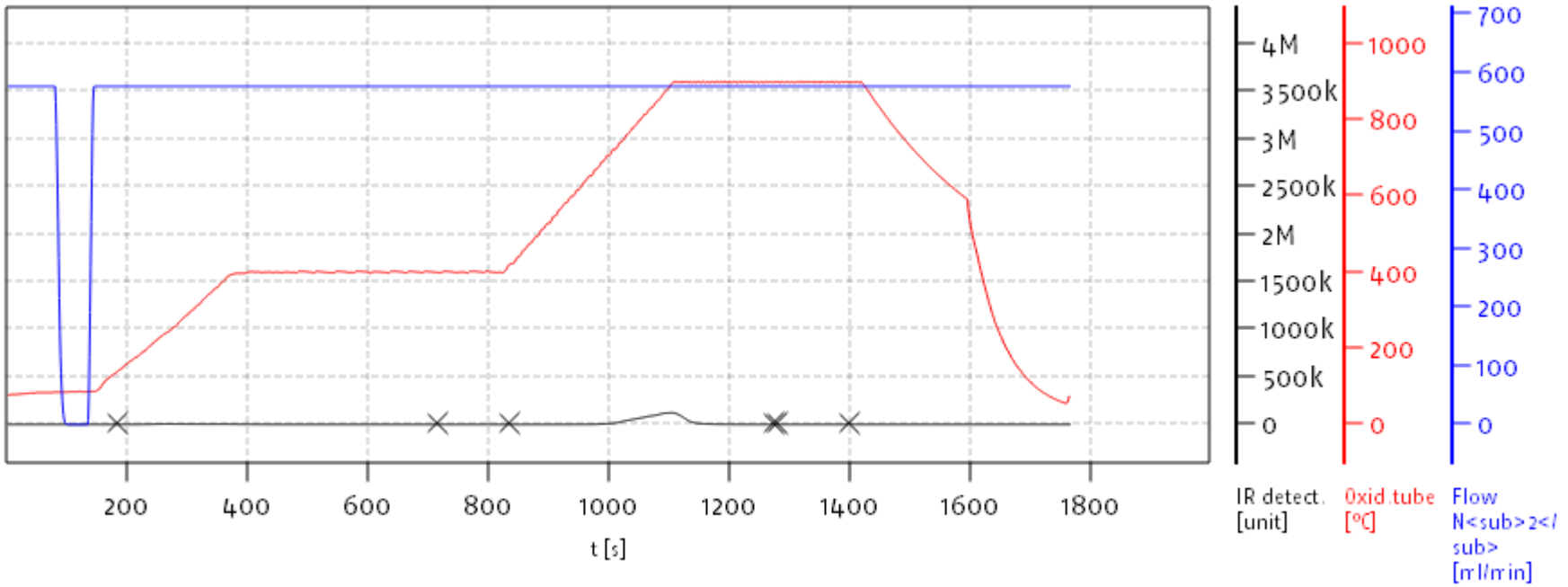
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
14	14	SEQ-CALC	200.00	0.0051	1.00	CARBON	10/27/2021 7:35 PM	0.023	0.324	0.347	bl,C2u	24 193	384 969	144	1.0000	1.0606



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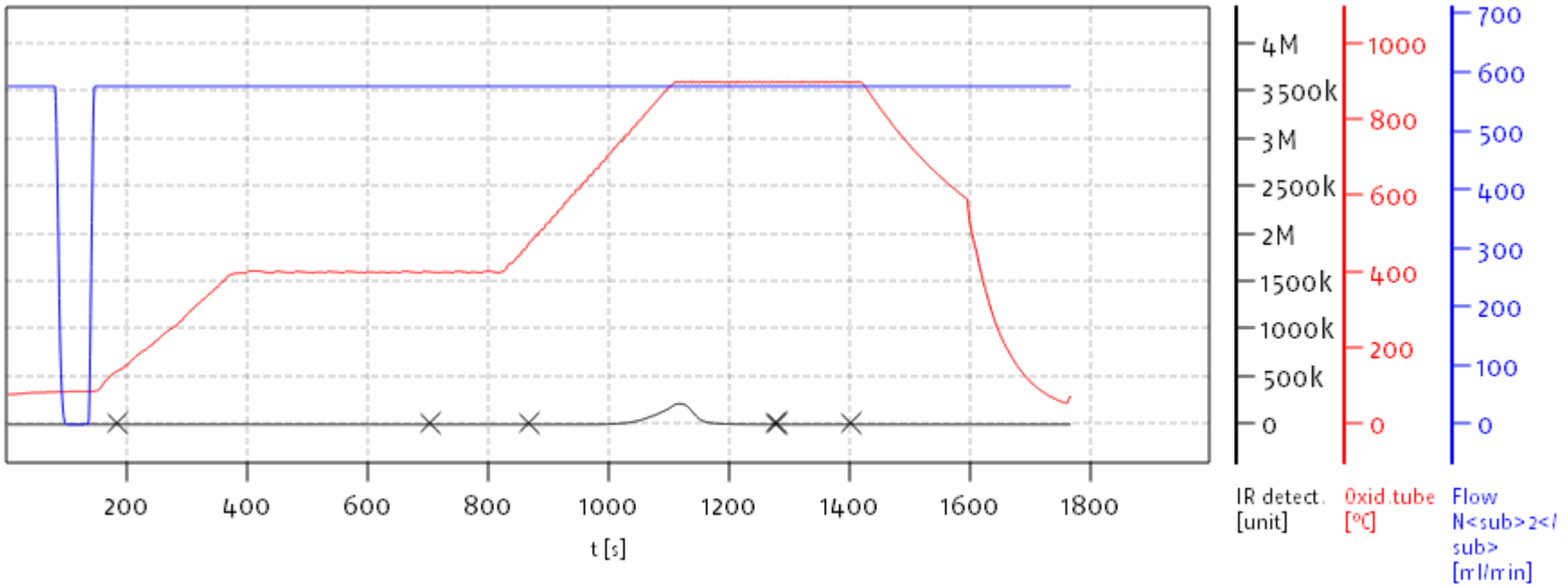
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
15	15	SEQ-CALD	200.00	0.0074	1.00	CARBON	10/27/2021 8:05 PM	0.007	0.444	0.451	bl,C1u,C2u	3 020	573 429	514	1.0000	0.9779



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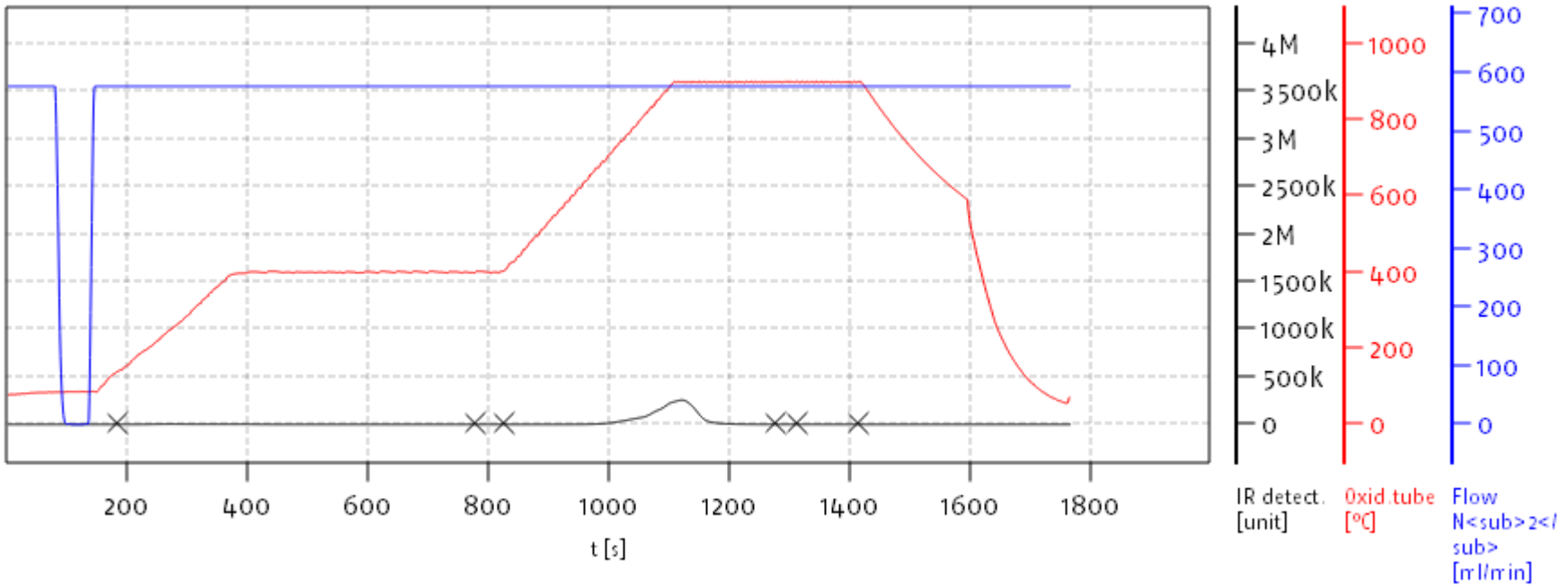
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
16	16	SEQ-CALE	200.00	0.0102	1.00	CARBON	10/27/2021 8:34 PM	0.021	0.600	0.621	bl,C2u	19 869	796 106	1 461	1.0000	0.9531



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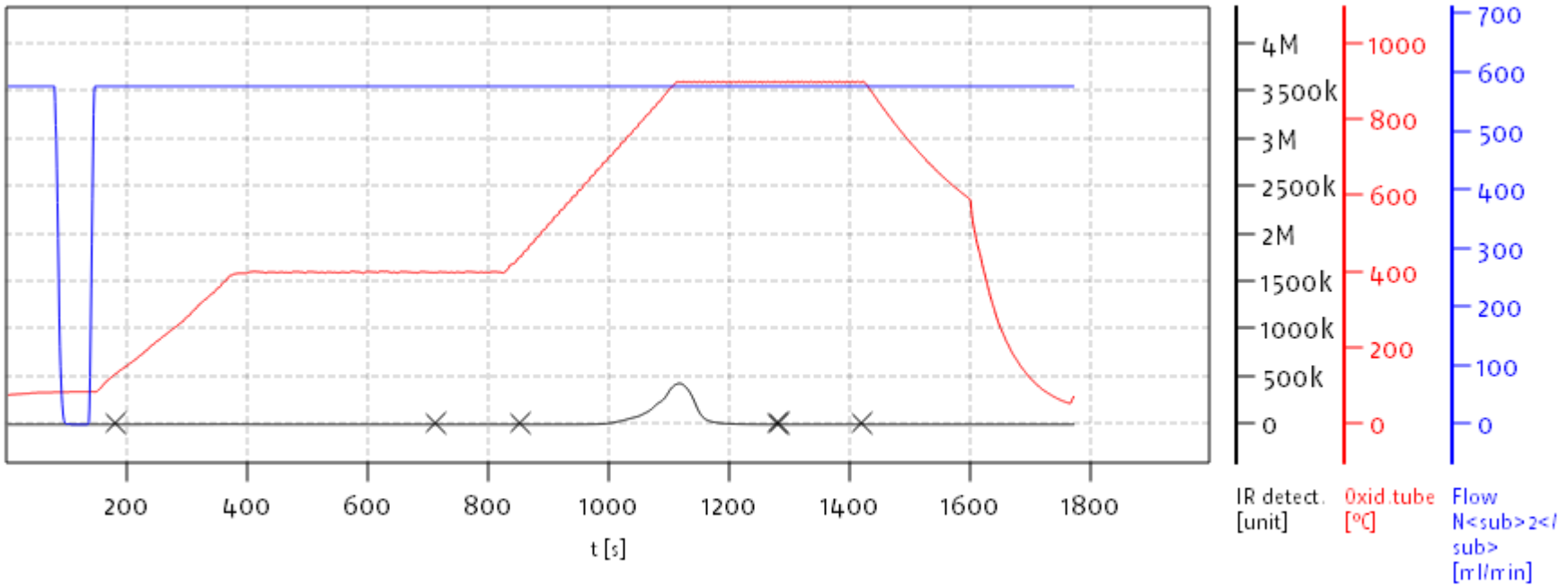
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
17	17	SEQ-CALF	200.00	0.0152	1.00	CARBON	10/27/2021 9:04 PM	0.013	0.906	0.919	bl,C2u	10 608	1 179 220	467	1.0000	0.9726



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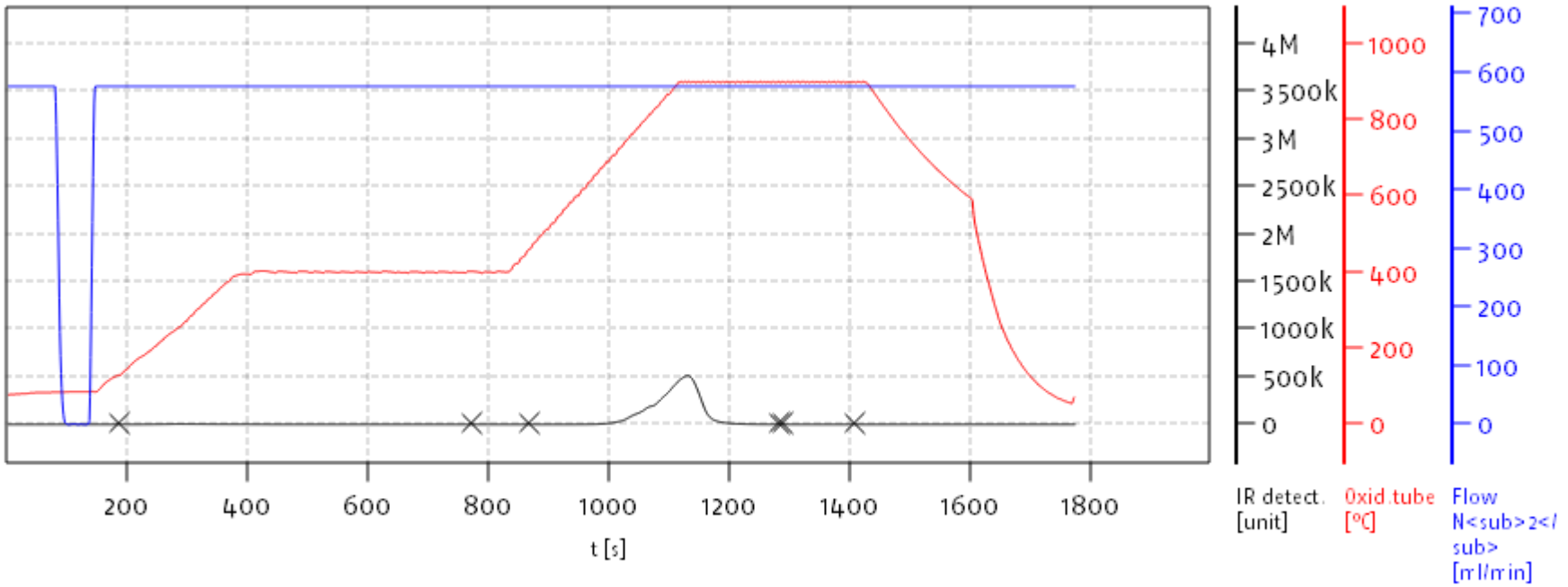
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
18	18	SEQ-CALG	200.00	0.0196	1.00	CARBON	10/27/2021 9:34 PM	0.020	1.206	1.226	bl,C2u	18 861	1 520 750	665	1.0000	1.0044



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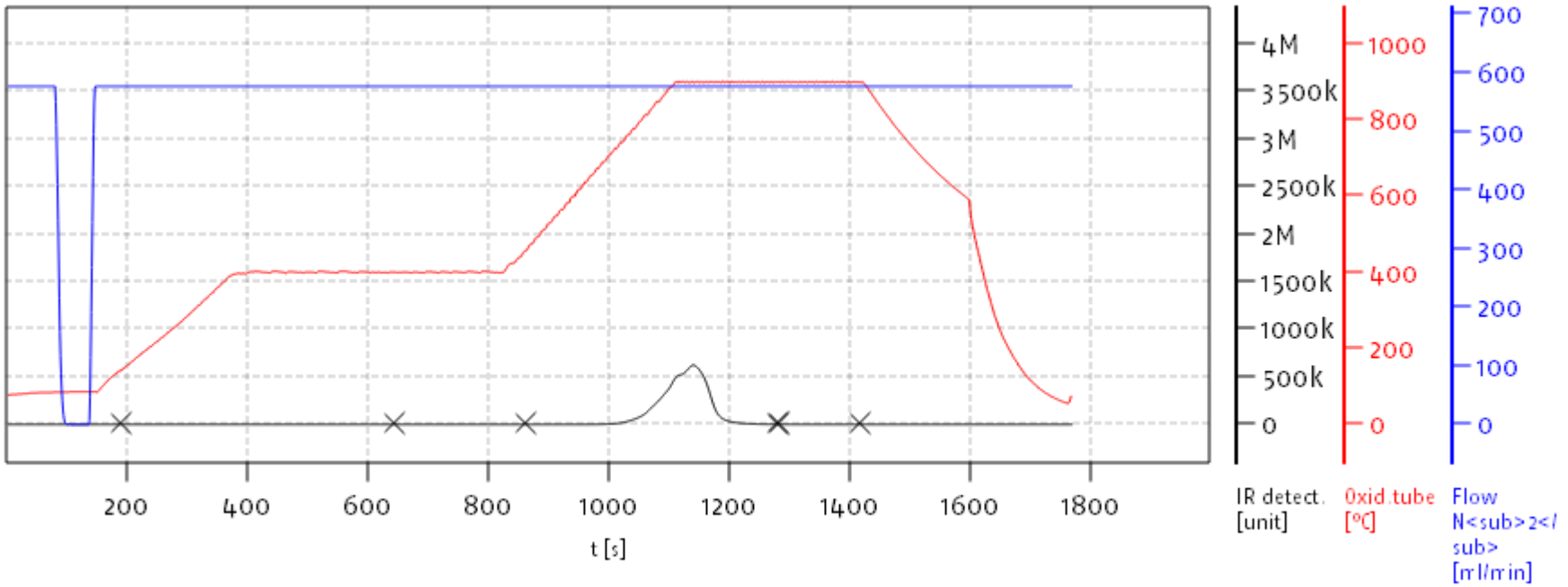
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
19	19	SEQ-CALH	200.00	0.0247	1.00	CARBON	10/27/2021 10:04 PM	0.007	1.524	1.531	bl,C1u,C2u	2 199	1 936 070	1 608	1.0000	0.9973



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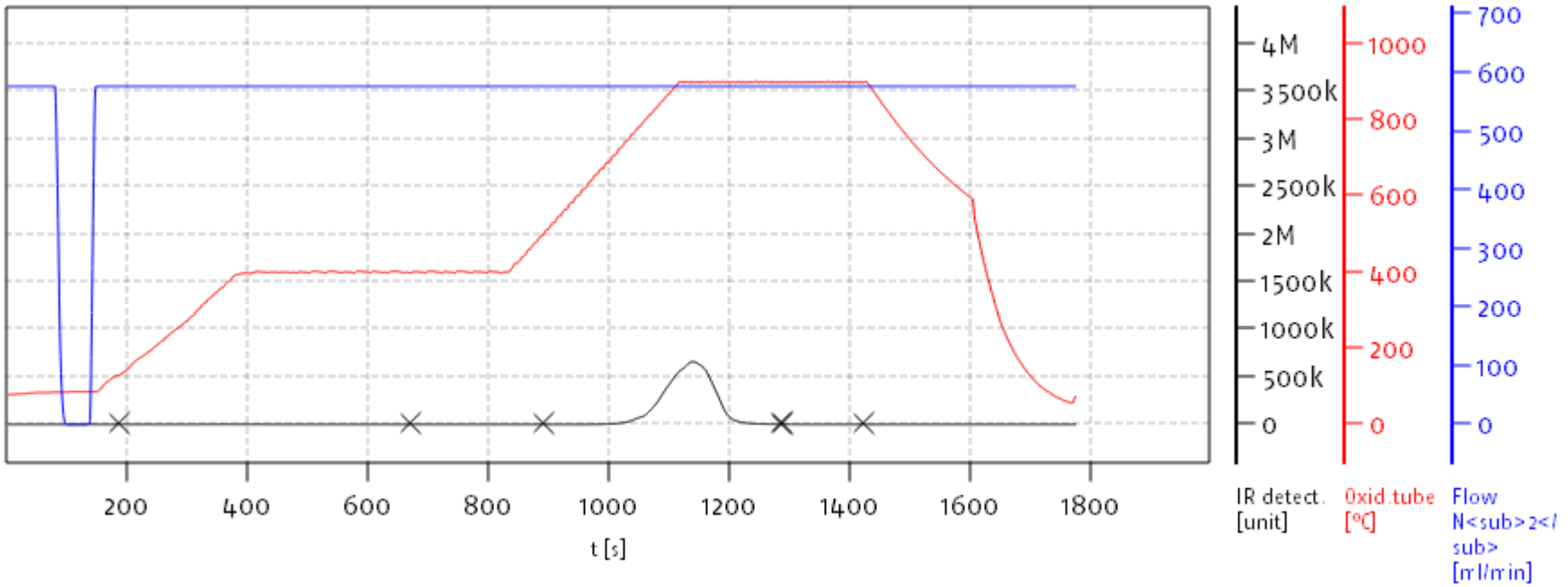
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
20	20	SEQ-CALI	200.00	0.0297	1.00	CARBON	10/27/2021 10:34 PM	0.011	1.800	1.811	bl,C1u,C2u	6 179	2 288 130	1 975	1.0000	0.9969



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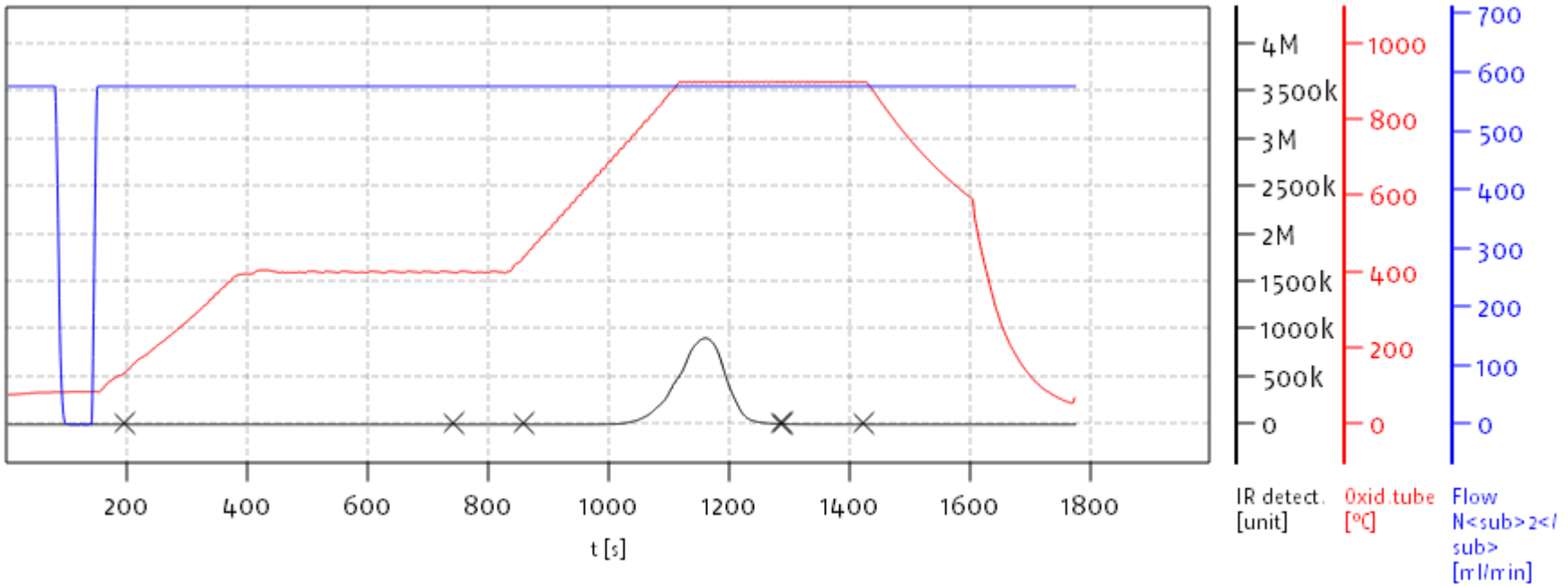
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
21	21	SEQ-CALJ	200.00	0.0408	1.00	CARBON	10/27/2021 11:04 PM	0.010	2.400	2.410	bl,C1u,C2u	2 185	3 185 680	5 286	1.0000	0.9550



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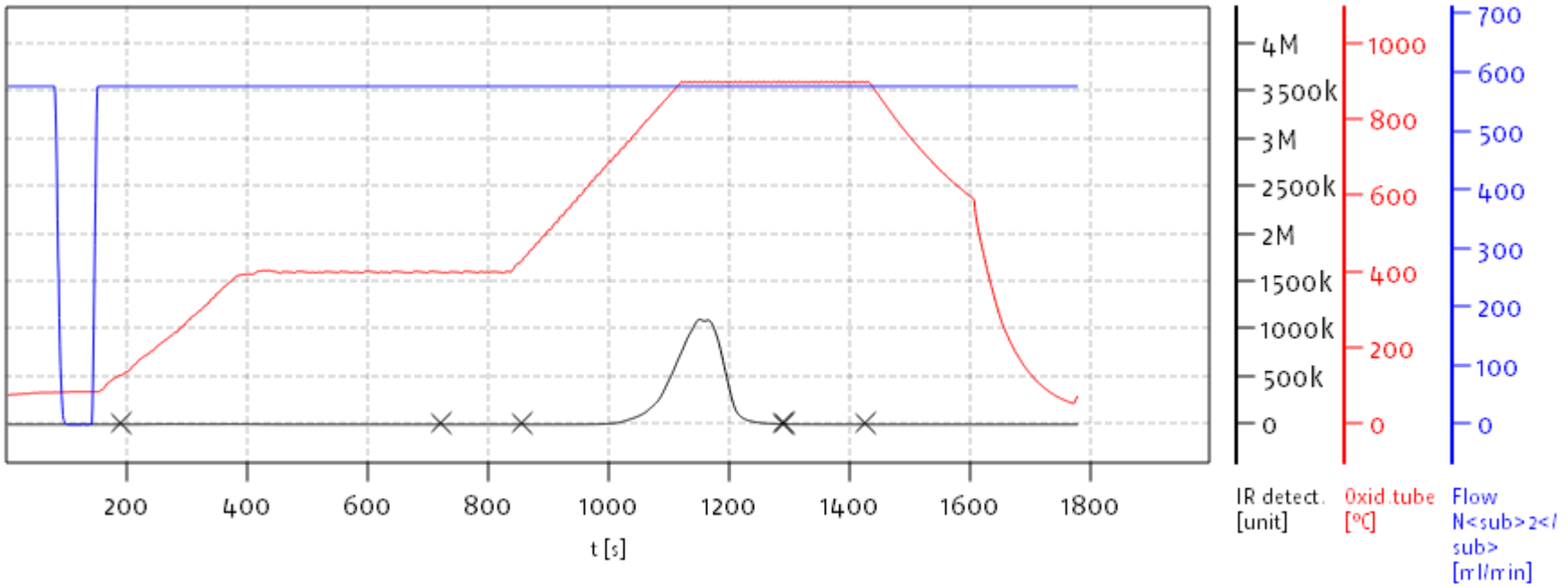
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
22	22	SEQ-CALK	200.00	0.0503	1.00	CARBON	10/27/2021 11:34 PM	0.023	3.012	3.035	bl,C2u	19 106	**3 910 660**	**4 846**	1.0000	0.9765



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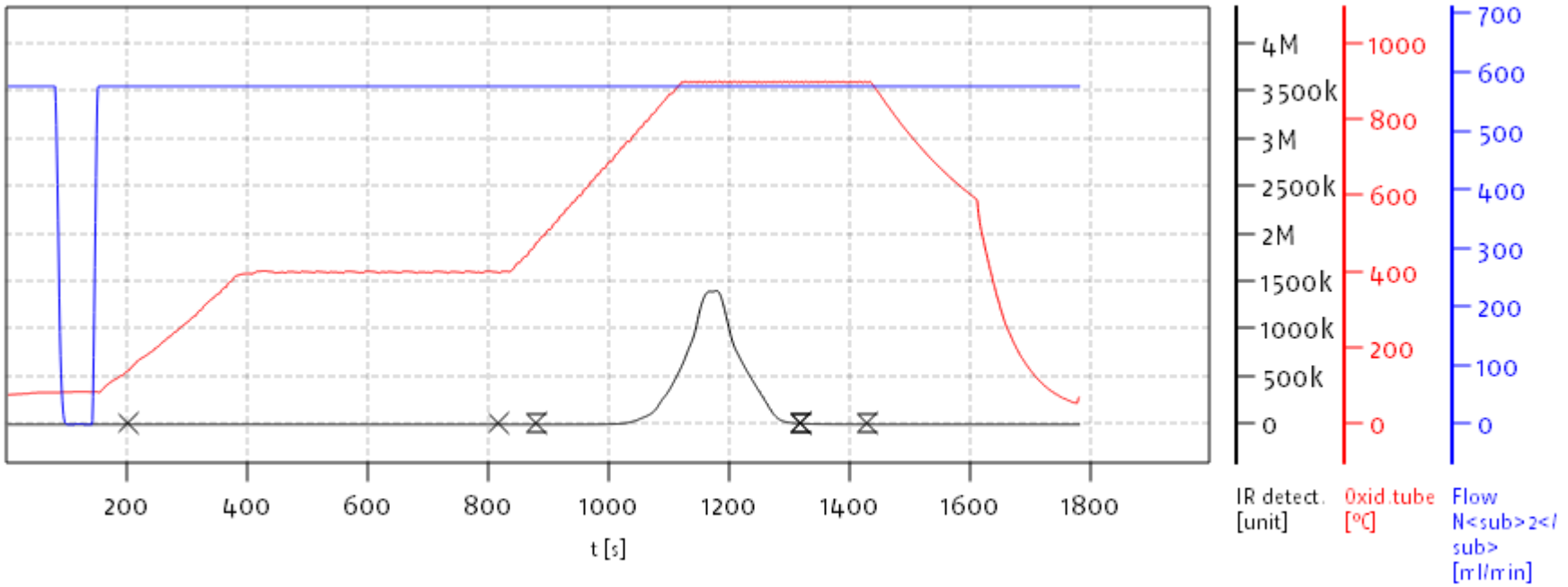
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
23	23	SEQ-CALL	200.00	0.0707	1.00	CARBON	10/28/2021 12:13 PM	0.004	3.938	3.942	bl,C1u	2 774	**5 164 005**	**0**	1.0000	0.9670



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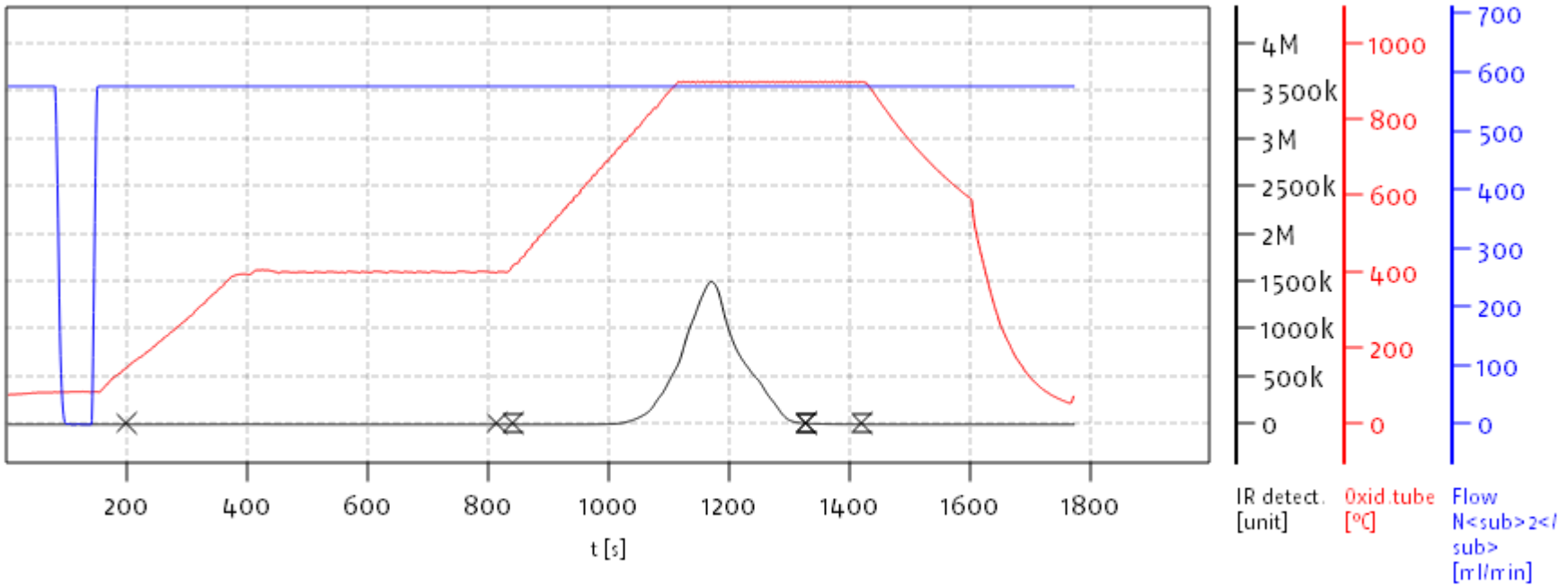
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
24	24	SEQ-CALM	200.00	0.0800	1.00	CARBON	10/28/2021 12:14 PM	0.006	4.556	4.562	bl,C1u	5 000	**5 838 194**	**0**	1.0000	0.9897



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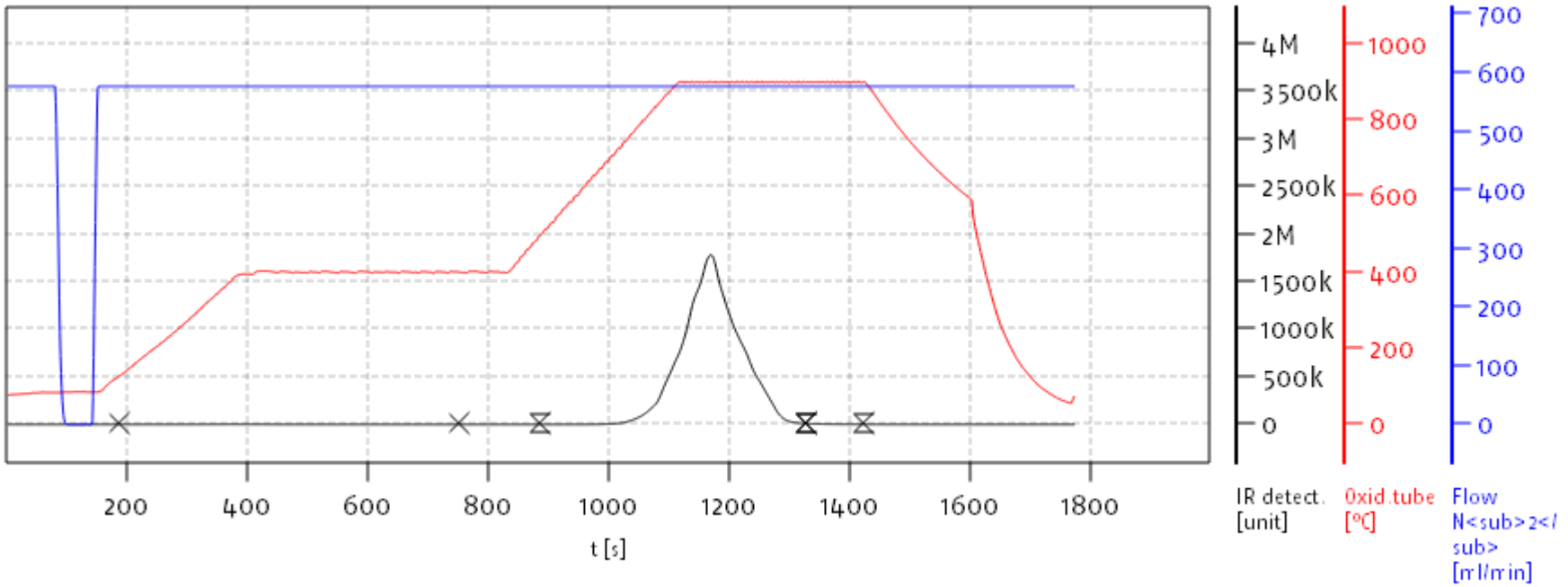
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
25	25	SEQ-CALN	200.00	0.0904	1.00	CARBON	10/28/2021 12:15 PM	0.008	5.143	5.151	bl,C1u	7 133	6 644 601	0	1.0000	0.9817



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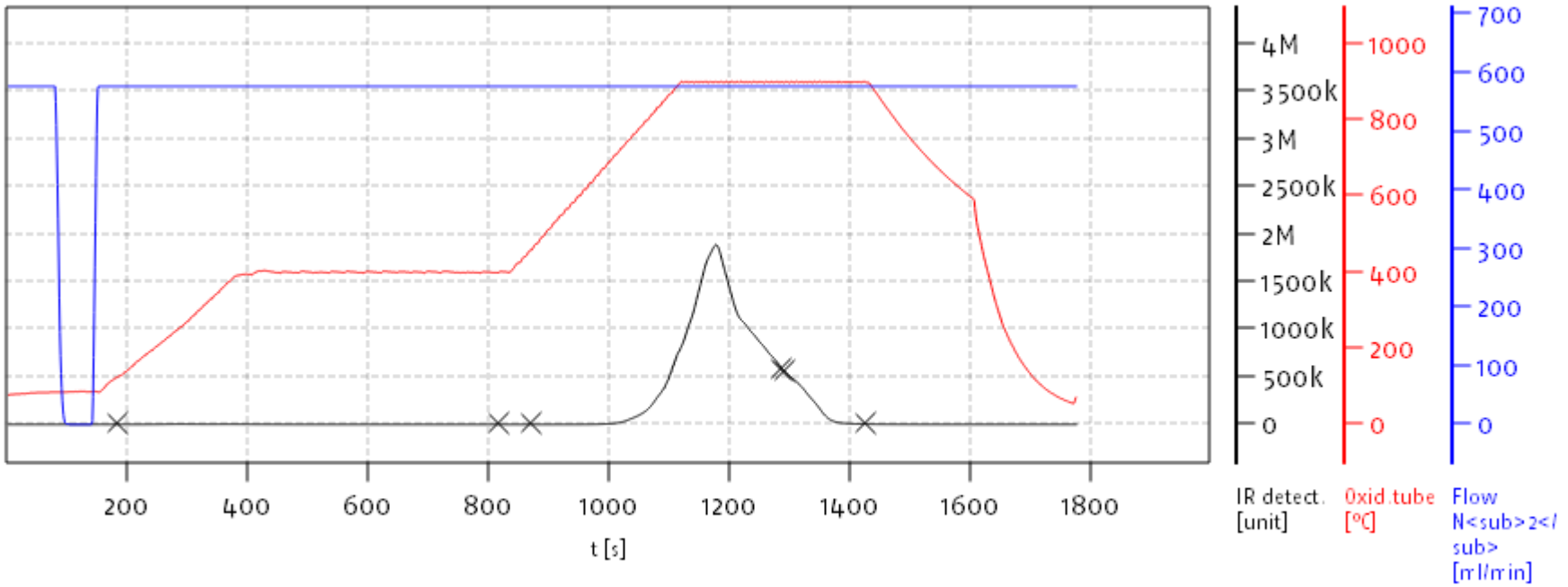
	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
26	26	SEQ-CALO	200.00	0.1216	1.00	CARBON	10/28/2021 1:34 AM	0.016	7.637	7.653	bl	18 220	8 535 120	910 806	1.0000	1.0726



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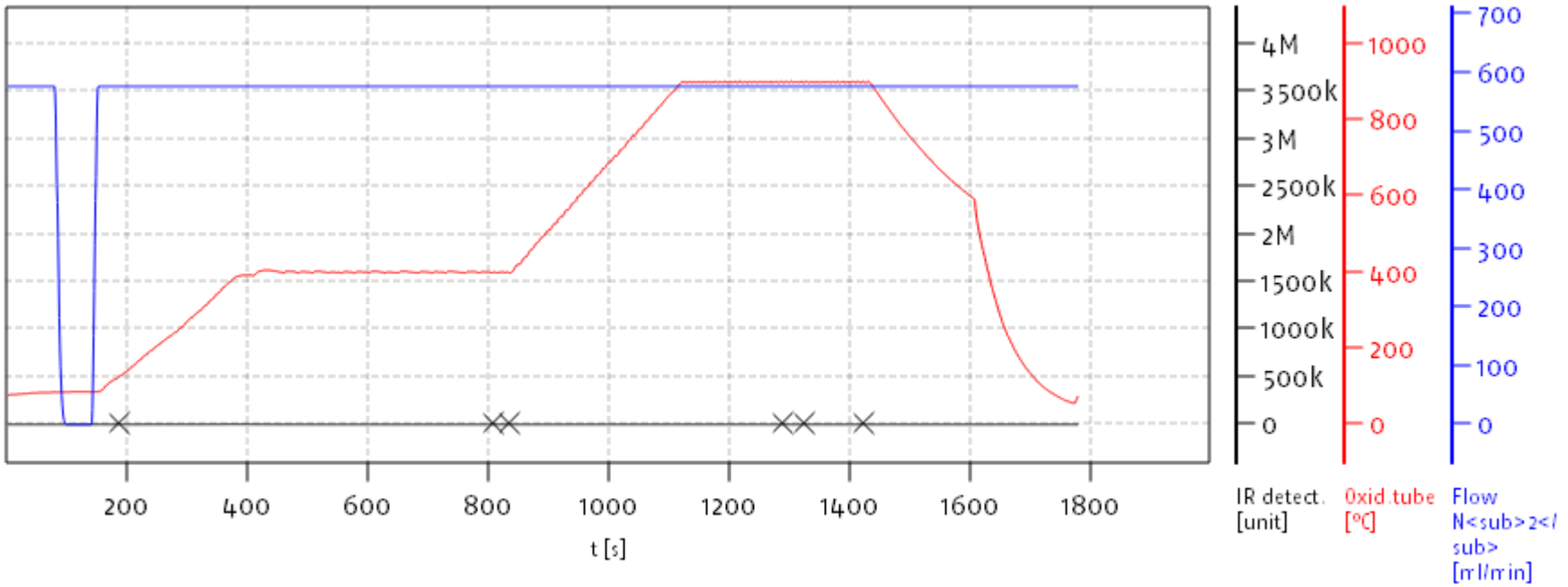
Soli TOC Cube, Carbon
Balance: BAL3
Analyst: DOE

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
27	27	BLANK	1.00		1.00	CARBON	10/28/2021 2:04 AM	0.000	0.000	0.000	bl	8 798	462	69	1.0000	0.9515



Name:

Access: soliTOC superuser

Date: Thu Oct 28 12:15:48 2021

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

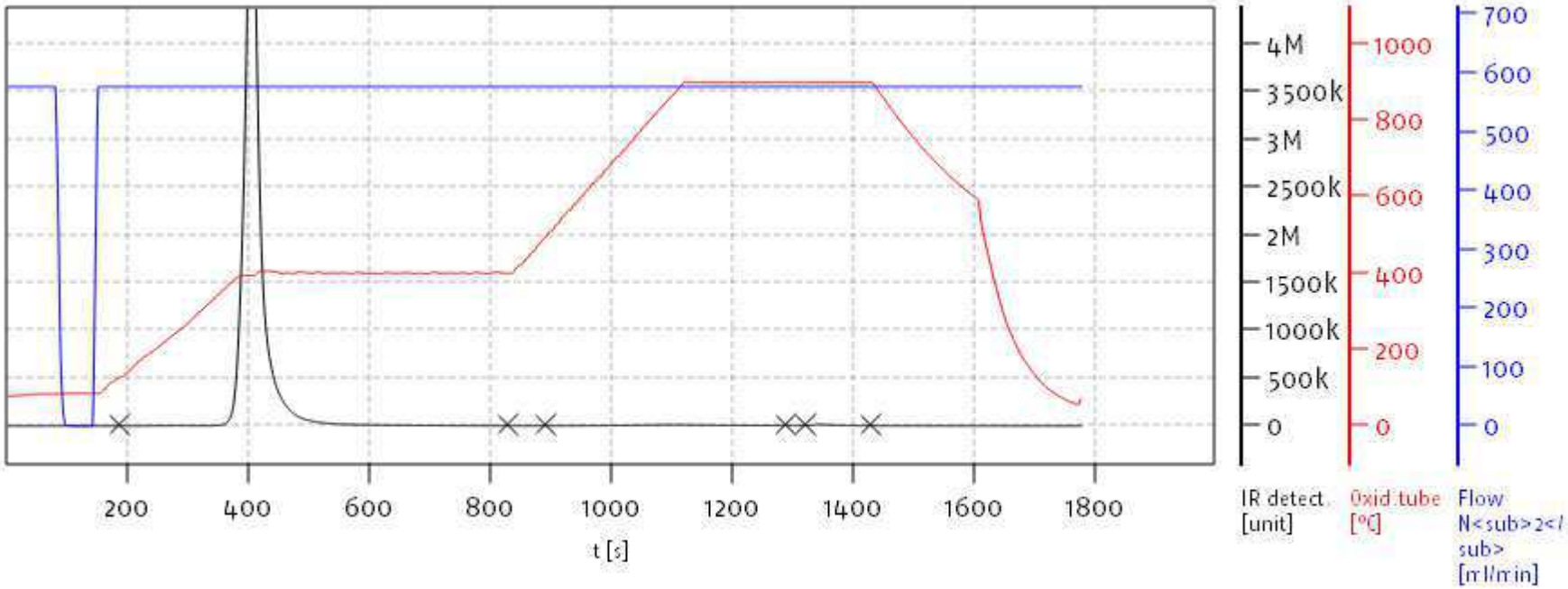
elementar
EXCELLENCE IN ELEMENTS

Document: TOC Calibration EJ00073 102721 BF reint from: --.--.-- (modified)

Soli TOC Cube, Carbon
Balance: BAL3
Analyst: DOE

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
28	28	Dfactor	24.60		1.00	CARBON	10/28/2021 2:35 AM	44.631	0.579	45.210	bl	6 745 640	87 690	26 294	1.0278	1.0000



Name:

Access: soliTOC superuser

Date: Thu Oct 28 12:15:48 2021

soliTOC V2.0.2 (31015f9) 2018-11-19
Serial No: 0300.181017
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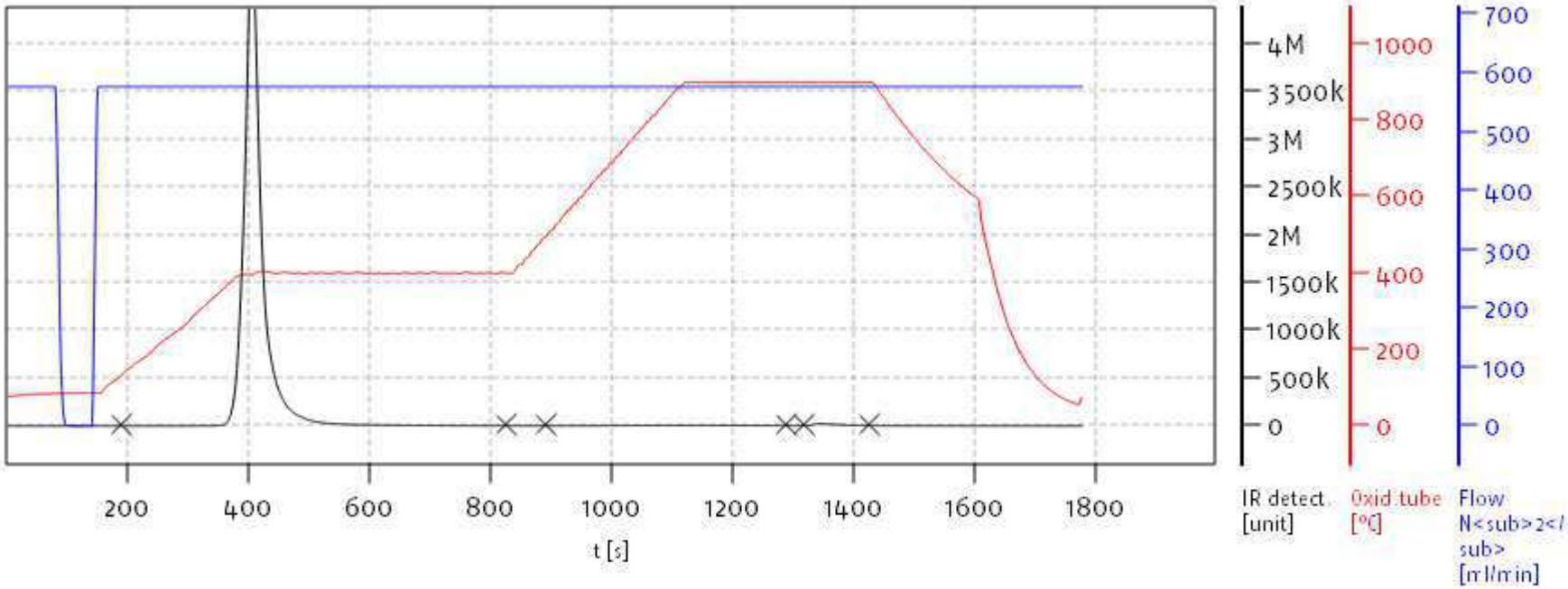
Soli TOC Cube, Carbon
Balance: BAL3
Analyst: DOE

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
29	29	Dfactor	23.00		1.00	CARBON	10/28/2021 3:05 AM	44.758	0.443	45.201	bl	6 177 690	61 993	43 014	1.0493	1.0000



Name:

Access: soliTOC superuser

Date: Thu Oct 28 12:15:48 2021

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Soli TOC Cube, Carbon
Balance: BAL3
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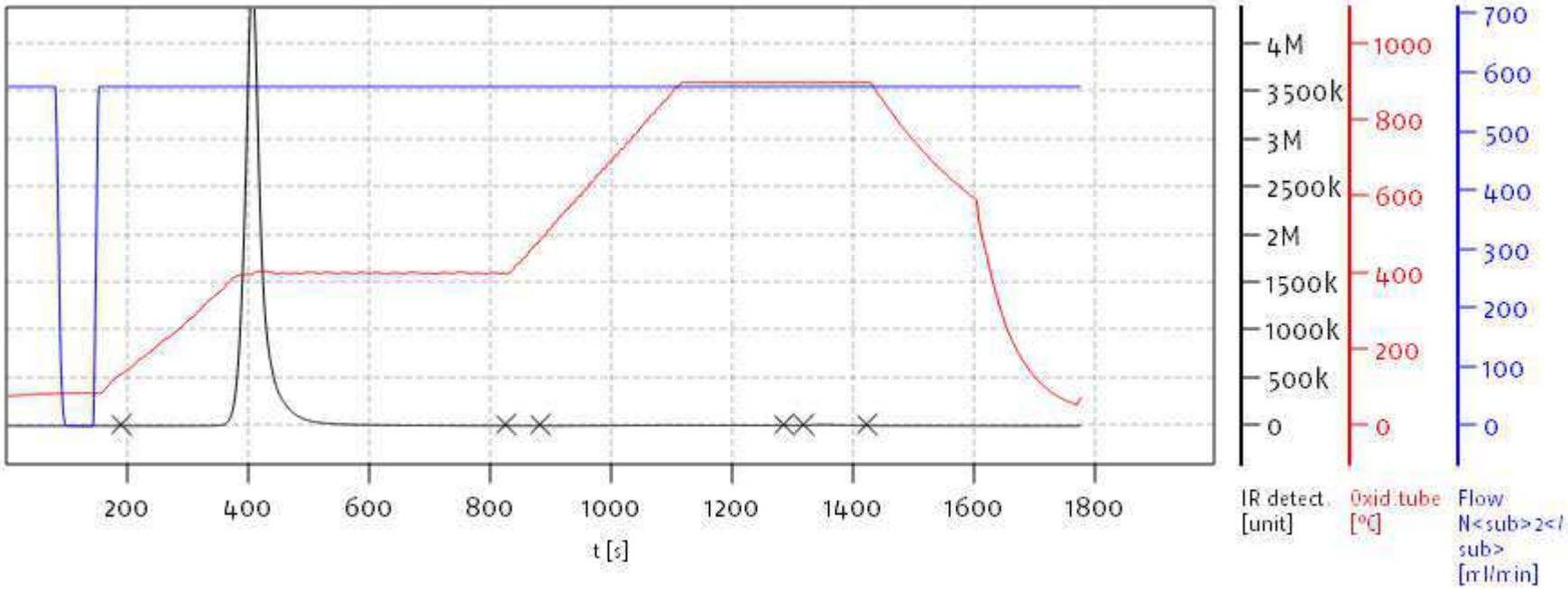
Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
30	30	SEQ-ICV1	21.00		1.00	CARBON	10/28/2021 3:35 AM	44.400	0.481	44.881	bl	5 664 310	64 753	26 852	1.0385	0.9515



Name:

Access: soliTOC superuser

Date: Thu Oct 28 12:15:48 2021

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

elementar
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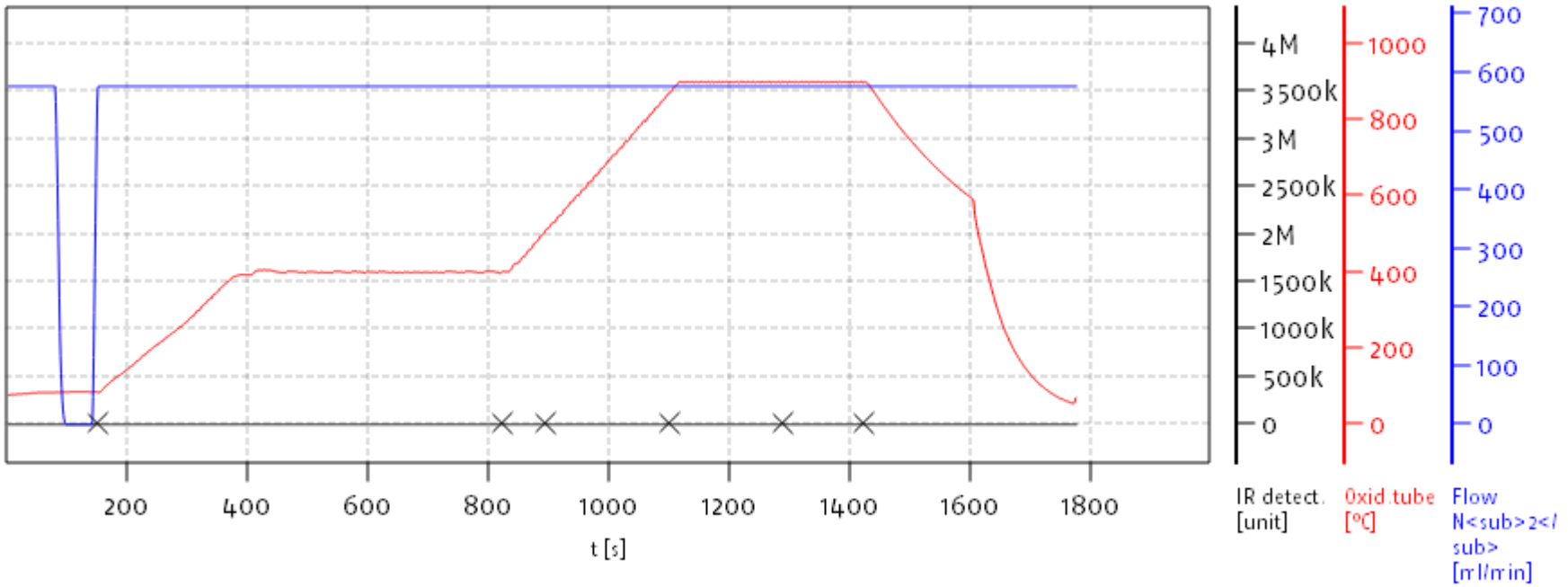
Soli TOC Cube, Carbon
Balance: BAL3
Analyst: DOE

Analytical Resources, Incorporated
Analytical Chemists and Consultants

	Pos.	Name	Weight [mg]	Memo	Dilut. Factor	Method	Date Time	TOC [%]	TIC900 [%]	TC [%]	Info	TOC400 Area	TIC900 Area	ROC Area	TOC400 Factor	TIC900 Factor
31	31	SEQ-ICB1	528.90		1.00	CARBON	10/28/2021 4:05 AM	0.001	0.001	0.002	bl,C1u,C3u	1 286	31	0	1.0385	0.9515



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Analytical Resources, LLC
Analytical Chemists and Consultants

INSTRUMENT BLANKS
EPA 9060A m

Laboratory: Analytical Resources, LLC
SDG: 21K0332
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Instrument ID: TOC Cube
Calibration: EJ00073
Sequence: SJJ0403
Date Analyzed: 10/28/21 04:05

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C
SJJ0403-ICB1	Total Organic Carbon	0.001	0.02	0.02	%	

Analytical Resources, LLC
Analytical Chemists and Consultants

INSTRUMENT BLANKS
EPA 9060A m

Laboratory: Analytical Resources, LLC
SDG: 21K0332
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Instrument ID: TOC Cube
Calibration: EJ00073
Sequence: SJK0318
Date Analyzed: 11/23/21 13:03

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C
SJK0318-ICB1	Total Organic Carbon	0.00	0.02	0.02	%	
SJK0318-CCB1	Total Organic Carbon	0.00	0.02	0.02	%	

Analytical Resources, LLC
Analytical Chemists and Consultants

INITIAL AND CONTINUING CALIBRATION CHECK

EPA 9060A m

Laboratory: Analytical Resources, LLC
SDG: 21K0332
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Instrument ID: TOC Cube
Calibration: EJ00073
Control Limt: +/- 10.00%
Sequence: SJJ0403

Lab Sample ID	Analyte	True	Found	%R	Units	Method
SJJ0403-ICV1	Total Organic Carbon	44.446	44.4	99.9	%	EPA 9060A m
	Total Carbon	44.446	44.9	101	%	EPA 9060A m
	Total Inorganic Carbon	0.0000	0.48		%	EPA 9060A m
	% Soot	0.0000	0.22		%	EPA 9060A m

* Values outside of QC limits

Analytical Resources, LLC
Analytical Chemists and Consultants

INITIAL AND CONTINUING CALIBRATION CHECK

EPA 9060A m

Laboratory: Analytical Resources, LLC
SDG: 21K0332
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Instrument ID: TOC Cube
Calibration: EJ00073
Control Limt: +/- 10.00%
Sequence: SJK0318

Lab Sample ID	Analyte	True	Found	%R	Units	Method
SJK0318-ICV1	Total Organic Carbon	44.446	45.4	102	%	EPA 9060A m
SJK0318-CCV1	Total Organic Carbon	44.446	43.4	97.7	%	EPA 9060A m

* Values outside of QC limits

Analytical Resources, LLC
Analytical Chemists and Consultants

STANDARD REFERENCE MATERIAL RECOVERY

EPA 9060A m

Laboratory: Analytical Resources, LLC
SDG: 21K0332
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Matrix: Solid
Laboratory ID: BJK0586-SRM1
Batch: BJK0586
Initial/Final: 0.0456 g / 0.0456 mL
Preparation: PSEP 1986 (modified)
Analyzed: 11/23/2021 15:03
Standard ID: J012442
Expires: 12/31/2079
Standard Lot#: NA
Description: 1941B - Organics in Marine Sediment (Conv

ANALYTE	TRUE (% wet)	FOUND (% wet)	MDL	MRL	Q	SRM % REC.	QC LIMITS REC.
Total Organic Carbon	2.9900	2.43	0.02	0.02		81.4	80 - 120

* Values outside of QC limits

Analytical Resources, LLC
Analytical Chemists and Consultants

HOLDING TIME SUMMARY

Analysis: EPA 9060A m

Laboratory: Analytical Resources, LLC
SDG: 21K0332
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
LDW21-IT637A 21K0332-01	07/06/21 17:16	11/19/21 10:49	11/22/21 12:47	138	365	11/23/21 16:32			
Duplicate BJK0586-DUP1	07/06/21 17:16	11/19/21 10:49	11/22/21 12:47	138	365	11/23/21 17:02			
Matrix Spike BJK0586-MS1	07/06/21 17:16	11/19/21 10:49	11/22/21 12:47	138	365	11/23/21 17:32			

* Indicates hold time exceedance.

Analytical Resources, LLC
Analytical Chemists and Consultants

METHOD DETECTION AND REPORTING LIMITS

EPA 9060A m

Laboratory: Analytical Resources, LLC
SDG: 21K0332
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Matrix: Solid
Instrument: TOC Cube

Analyte	MDL	RL	Units
Total Organic Carbon	0.02	0.02	%

National Institute of Standards & Technology

Certificate of Analysis

Standard Reference Material® 1941b

Organics in Marine Sediment

This Standard Reference Material (SRM) is marine sediment collected at the mouth of the Baltimore (MD) Harbor. SRM 1941b is intended for use in evaluating analytical methods for the determination of selected polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyl (PCB) congeners, and chlorinated pesticides in marine sediment and similar matrices. Information values are also provided for total organic carbon (TOC), total carbon, hydrogen, and nitrogen. All of the constituents for which certified, reference, and information values are provided in SRM 1941b were naturally present in the sediment before processing. A unit of SRM 1941b consists of a bottle containing 50 g of radiation-sterilized, freeze-dried sediment.

Certified Mass Fraction Values: Certified mass fraction values for PAHs, PCB congeners, and chlorinated pesticides are provided in Table 1 through Table 3. The certified values for the PAHs, PCB congeners, and chlorinated pesticides are based on the agreement of results obtained at NIST from two or more chemically independent analytical techniques along with results from an interlaboratory comparison study [1]. A NIST certified value is a value for which NIST has the highest confidence in its accuracy in that all known or suspected sources of bias have been investigated or taken into account [1].

Reference Mass Fraction Values: Reference mass fraction values for additional PAHs (some in combination), additional PCB congeners, and additional chlorinated pesticides are provided in Table 4 through Table 7. Reference values for alkylated PAH groups are provided in Table 8 and for selected hopanes and steranes in Table 9. A reference value for total organic carbon is provided in Table 10. Reference values are noncertified values that are the best estimate of the true value; however, the values do not meet the NIST criteria for certification and are provided with associated uncertainties that may reflect only measurement precision, may not include all sources of uncertainty, or may reflect a lack of sufficient statistical agreement among multiple analytical methods [1].

Information Mass Fraction Values: Information mass fraction values are provided in Table 11 for carbon, hydrogen, and nitrogen. An information value is considered to be a value that will be of use to the SRM user, but insufficient information is available to assess the uncertainty associated with the value [1]. Information values cannot be used to establish metrological traceability.

Expiration of Certification: The certification of **SRM 1941b** is valid, within the measurement uncertainty specified, until **01 October 2020**, provided the SRM is handled and stored in accordance with the instructions given in this certificate (see "Instructions for Handling, Storage, and Use"). This certification is nullified if the SRM is damaged, contaminated, or otherwise modified.

Maintenance of SRM Certification: NIST will monitor this SRM over the period of its certification. If substantive technical changes occur that affect the certification before the expiration of this certificate, NIST will notify the purchaser. Registration (see attached sheet or register online) will facilitate notification.

Coordination of the technical measurements leading to the certification of this material was under the leadership of M.M. Schantz and S.A. Wise of the NIST Chemical Sciences Division.

Analytical measurements for the certification of SRM 1941b were performed at NIST by J.R. Kucklick, B.J. Porter, D.L. Poster, M.M. Schantz, P. Schubert, S. Tutschku, and L.L. Yu of the NIST Chemical Sciences Division.

Carlos A. Gonzalez, Chief
Chemical Sciences Division

Robert L. Watters, Jr., Director
Office of Reference Materials

Gaithersburg, MD 20899
Certificate Issue Date: 16 January 2015

Measurements for TOC were provided by a commercial laboratory and T.L. Wade of the Geochemical and Environmental Research Group, Texas A&M University (College Station, TX). The carbon, hydrogen, and nitrogen data were provided by a commercial laboratory. Results for the PAHs, PCBs, and chlorinated pesticides from 38 laboratories (see Appendix A) that participated in an interlaboratory comparison exercise coordinated by NIST were used. Results for the alkylated PAH groups, hopanes, and steranes from 33 laboratories (see Appendix B) that participated in another interlaboratory comparison exercise coordinated by NIST were also used.

Collection and preparation of SRM 1941b were performed by M.P. Cronise and C.N. Fales of the NIST Office of Reference Materials and B.J. Porter and M.M. Schantz of the NIST Chemical Sciences Division. The sediment material was collected with the assistance of G.G. Lauenstein, J. Collier, and J. Lewis (National Oceanic and Atmospheric Administration, Silver Spring, MD).

Consultation on the statistical design of the experimental work and evaluation of the data were provided by S.D. Leigh and J.H. Yen of the NIST Statistical Engineering Division.

Support aspects involved in the issuance of this SRM were coordinated through the NIST Office of Reference Materials.

INSTRUCTIONS FOR HANDLING, STORAGE, AND USE

Handling: This material is naturally occurring marine sediment from an urban area and may contain constituents of unknown toxicities; therefore, caution and care should be exercised during its handling and use.

Storage: SRM 1941b must be stored in its original bottle at temperatures less than 30 °C and away from direct sunlight.

Use: Prior to removal of subsamples for analysis, the contents of the bottle should be mixed. The mass fractions of constituents in SRM 1941b are reported on a dry-mass basis. The SRM, as received, contains a mass fraction of approximately 2.4 % moisture (see "Conversion to Dry-Mass Basis"). The sediment sample should be dried to a constant mass before weighing for analysis; or a separate subsample of the sediment should be removed from the bottle at the time of analysis and dried to determine the mass fraction on a dry-mass basis. If the constituents of interest are volatile, then the moisture must be determined with a separate subsample.

PREPARATION AND ANALYSIS[1]

Sample Collection and Preparation: The sediment used to prepare this SRM was collected from the Chesapeake Bay at the mouth of the Baltimore (MD) Harbor near the Francis Scott Key Bridge (39°12.3'N and 76°31.4'W). This location is very near the site where SRM 1941 and SRM 1941a were collected. The sediment was collected using a Kynar-coated modified Van Veen-type grab sampler. A total of approximately 3300 kg of wet sediment was collected from the site. The sediment was freeze-dried, sieved at 150 µm (100 % passing), homogenized in a cone blender, radiation sterilized (^{60}Co), and then packaged in screw-capped amber glass bottles each containing approximately 50 g.

Conversion to Dry-Mass Basis: The results for the constituents in SRM 1941b are reported on a dry-mass basis; however, the material "as received" contains residual moisture. The amount of moisture in SRM 1941b was determined by measuring the mass loss after freeze-drying subsamples of 1.1 g to 1.3 g for four days at 1 Pa with a –10 °C shelf temperature and a –50 °C condenser temperature. The moisture content in SRM 1941b at the time of the certification analyses was 2.39 % ± 0.08 % (95 % confidence level). Analytical results for the organic constituents were determined on an as-received basis and then converted to a dry-mass basis by dividing by the conversion factor of 0.9761 (gram dry mass per gram as-received mass).

Polycyclic Aromatic Hydrocarbons: The general approach used for the value assignment of the PAHs in SRM 1941b was similar to that reported in detail elsewhere [2]. The approach consisted of combining results from analyses using various combinations of different extraction techniques and solvents, clean-up/isolation procedures, and chromatographic separation and detection techniques: Soxhlet extraction and pressurized-fluid extraction (PFE) using dichloromethane (DCM) or a hexane/acetone mixture, cleanup of the extracts using solid-phase extraction (SPE) or normal-phase liquid chromatography (LC), followed by analysis using the following techniques: (1) reversed-phase liquid chromatography with fluorescence detection (LC-FL) analysis of the total PAH fraction, (2) reversed-phase

[1] Certain commercial equipment, instruments or materials are identified in this certificate to adequately specify the experimental procedure. Such identification does not imply recommendation or endorsement by the National Institute of Standards

LC-FL analysis of isomeric PAH fractions isolated by normal-phase LC (i.e., multidimensional LC), (3) gas chromatography/mass spectrometry (GC/MS) analysis of the PAH fraction on three stationary phases of different selectivity, i.e., a 5 % (all column compositions are given as mole fractions in %) phenyl-substituted methylpolysiloxane phase, a 50 % phenyl-substituted methylpolysiloxane phase, and a relatively non-polar proprietary phase.

Three sets of GC/MS results, designated as GC/MS (I), GC/MS (II), and GC/MS (III), were obtained using three columns with different selectivities for the separation of PAHs. For GC/MS (I) analyses, duplicate subsamples of approximately 1 g from ten bottles of SRM 1941b were extracted using PFE with DCM. Copper powder was added to the extract to remove elemental sulfur. The concentrated extract was passed through an aminopropyl SPE cartridge and eluted with 2 % DCM in hexane (all solvent concentrations are given as volume fractions in %). The processed extract was then analyzed by GC/MS using a 0.25 mm i.d. × 60 m fused silica capillary column with a 5 % phenyl-substituted methylpolysiloxane phase (0.25 µm film thickness; DB-5 MS, J&W Scientific, Folsom, CA). The GC/MS (II) analyses were performed using 5 g subsamples from six bottles of SRM 1941b. These samples were extracted using PFE with DCM. The high molecular mass compounds were removed from the extracts using size exclusion chromatography (SEC) with a preparative-scale divinylbenzene-polystyrene column (10 µm particle size with 10 nm diameter pores), and the sulfur was removed from the extracts by adding copper powder. The concentrated extract was passed through an aminopropyl SPE cartridge and eluted with 10 % DCM in hexane. The analysis was by GC/MS using a 0.25 mm i.d. × 60 m fused silica capillary column with a 50 % phenyl-substituted methylpolysiloxane phase (0.25 µm film thickness; DB-17 MS, J&W Scientific). For the GC/MS (III), 9 g subsamples from six bottles of SRM 1941b were Soxhlet-extracted for 18 h with 250 mL of a mixture of 50 % hexane/50 % acetone. Copper powder was added to the extract to remove elemental sulfur, and the concentrated extract was passed through a silica SPE cartridge and eluted with 10 % DCM in hexane. The processed extract was then analyzed by GC/MS using a 0.25 mm i.d. × 60 m fused silica capillary column with a relatively non-polar proprietary phase (0.25 µm film thickness; DB-XLB, J&W Scientific).

Two sets of LC-FL results, designated as LC-FL (total) and LC-FL (isomer), were used in the certification process. For the LC-FL (total), subsamples of approximately 1 g from six bottles of SRM 1941b were extracted using PFE with a mixture of 50 % hexane/50 % acetone. The extracts were concentrated and then processed through an aminopropylsilane SPE cartridge using 2 % DCM in hexane to obtain the total PAH fraction. For the LC-FL (isomer), a 5 g subsample from the six bottles was extracted using PFE with DCM and processed through an aminopropylsilane SPE cartridge using 10 % DCM in hexane; the PAH fraction was then fractionated further on a semi-preparative aminopropylsilane column (µBondapak NH_2, 9 mm i.d. × 30 cm, Waters Associates, Milford, MA) to isolate isomeric PAH fractions as described previously [3–6]. The total PAH fraction and the isomeric PAH fractions were analyzed using a 5 µm particle-size polymeric octadecylsilane (C_{18}) column (4.6 mm i.d. × 25 cm, Hypersil-PAH, Keystone Scientific, Inc., Bellefonte, PA) with wavelength-programmed fluorescence detection [4,5].

For the GC/MS and LC-FL measurements described above, selected perdeuterated PAHs were added to the sediment prior to solvent extraction for use as internal standards for quantification purposes.

In addition to the analyses performed at NIST, SRM 1941b was used in an interlaboratory comparison exercise in 1999 as part of the NIST Intercomparison Exercise Program for Organic Contaminants in the Marine Environment [7]. Results from 38 laboratories that participated in this exercise were used as the sixth data set in the determination of the certified values for PAHs in SRM 1941b. The laboratories participating in this exercise used the analytical procedures routinely used in their laboratories to measure the analytes of interest.

Homogeneity Assessment for PAHs: The homogeneity of SRM 1941b was assessed by analyzing duplicate samples of approximately 1 g from ten bottles selected by stratified random sampling. Samples were extracted, processed, and analyzed as described above for GC/MS (I). No statistically significant differences among bottles were observed for the PAHs at this sample size.

PAH Isomers of Molecular Mass 300 and 302: For the determination of the molecular mass 300 and 302 isomers, three subsamples of approximately 5 g each were extracted using PFE with DCM. The extracts were then concentrated with a solvent change to hexane and passed through an aminopropyl SPE cartridge and eluted with 10 % DCM in hexane. The processed extract was then analyzed by GC/MS using a 0.25 mm i.d. × 60 m fused silica capillary column with a 50 % phenyl-substituted methylpolysiloxane phase (0.25 µm film thickness; DB-17MS, J&W Scientific). Perdeuterated dibenzo[*a,i*]pyrene was added to the sediment prior to extraction for use as an internal standard [8].

PCBs and Chlorinated Pesticides: The general approach used for the determination of PCBs and chlorinated pesticides in SRM 1941b consisted of combining results from analyses using various combinations of different extraction techniques and solvents, cleanup/isolation procedures, and chromatographic separation and detection techniques. Techniques and solvents included Soxhlet extraction and PFE using DCM or a hexane/acetone mixture,

clean-up/isolation using SPE or LC, followed by analysis using GC/MS and gas chromatography with electron capture detection (GC-ECD) on two columns with different selectivity for the separation of PCBs and chlorinated pesticides. The analytical methods are described in detail elsewhere [2].

Six sets of results were obtained and designated as GC-ECD (I) A and B, GC/MS (I) A and B, GC/MS (II), and Interlaboratory Comparison Exercise. For the GC-ECD (I) analyses, approximately 10 g subsamples from six bottles of SRM 1941b were extracted using PFE with DCM. Copper powder was added to the extract to remove elemental sulfur, and SEC, as described above, was used to remove the high molecular mass compounds. The concentrated extract was then fractionated on a semi-preparative aminopropylsilane column to isolate two fractions containing: (1) the PCBs and lower-polarity pesticides and (2) the more polar pesticides. GC-ECD analyses of the two fractions were performed on two columns of different selectivities for PCB separations: 0.25 mm × 60 m fused silica capillary column with a 5 % phenyl-substituted methylpolysiloxane phase (0.25 μm film thickness; DB-5, J&W Scientific), and a 0.25 mm × 60 m fused silica capillary column with a non-polar proprietary phase (0.25 μm film thickness; DB-XLB, J&W Scientific). The results from the 5 % phenyl phase are designated as GC-ECD (IA) and the results from the proprietary phase are designated as GC-ECD (IB). For the GC-ECD analyses, two PCB congeners that are not significantly present in the sediment extract (PCB 103 and PCB 198 [9,10]) and endosulfan I-d_4, 4,4'-DDE-d_8, 4,4'-DD-d_8, and 4,4'-DDT-d_8 were added to the sediment prior to extraction for use as internal standards for quantification purposes.

Two sets of results were obtained by GC/MS. For GC/MS (I), approximately 9 g subsamples from six bottles were Soxhlet- extracted with a mixture of 50 % hexane/50 % acetone for approximately 18 h. Copper powder was added to the extract to remove elemental sulfur, and the concentrated extract was passed through a silica SPE cartridge and eluted with 10 % DCM in hexane. The processed extract was then analyzed by GC/MS with two ionization modes, electron impact (EI) and negative ion chemical ionization (NICI). The GC/MS EI method, GC/MS (IA), used a 0.25 mm i.d. × 60 m fused silica capillary column with a relatively non-polar proprietary phase (0.25 μm film thickness; DB-XLB, J&W Scientific). The GC/MS NICI method, GC/MS (IB), used a 0.25 mm i.d. × 60 m fused silica capillary column with a 5 % phenyl-substituted methylpolysiloxane phase (0.25 μm film thickness; DB-5MS, J&W Scientific). The GC/MS (II) results were obtained in the same manner as the GC/MS (IA) analyses except that three subsamples were Soxhlet-extracted with DCM for approximately 18 h. For the GC/MS analyses, selected carbon-13 labeled PCB congeners and chlorinated pesticides were added to the sediment prior to extraction for use as internal standards for quantification purposes.

In addition to the analyses performed at NIST, SRM 1941b was used in an interlaboratory comparison exercise in 1999 as part of the NIST Intercomparison Exercise Program for Organic Contaminants in the Marine Environment [7]. Results from 38 laboratories that participated in this exercise were used as the sixth data set in the determination of the certified values for PCB congeners and chlorinated pesticides in SRM 1941b. The laboratories participating in this exercise used the analytical procedures routinely used in their laboratories to measure the analytes of interest.

The reference value for PCB 77 was determined from a separate fraction. The samples were extracted and processed as for GC-ECD (I) above. The first (PCB and lower-polarity pesticide) fraction from the semi-preparative aminopropylsilane column was further fractionated using a Cosmosil PYE (pyrenylethyl group bonded) column (5 μm particle size, 4.6 mm i.d. × 25 cm ; Phenomenex, Torrance, CA) [11]. Three fractions were collected: the first fraction contained the pesticides and multi-*ortho* PCBs, the second fraction contained the polychlorinated naphthalenes, non-*ortho* PCB congeners, and some mono-*ortho* PCB congeners, and the third fraction removed the residual planar compounds from the column. The second fraction was analyzed by GC/MS NICI using the same column as GC/MS (IB) above. Carbon-13 labeled PCB 77 was used as an internal standard for quantification purposes.

Alkylated PAH Groups, Hopanes, and Steranes: SRM 1941b was used in an interlaboratory comparison exercise in 2011 [12]. Results from 33 laboratories that participated in this exercise were used in the determination of the reference values for alkylated PAH groups, hopanes, and steranes in SRM 1941b. Note that not all laboratories returned data for each analyte. The laboratories participating in this exercise used the analytical procedures routinely used in their laboratories to measure the analytes of interest. For the alkylated PAHs, the majority of the laboratories (>90 %) used the parent PAH for determination of the response factor for the corresponding alkylated group.

Total Organic Carbon (TOC): Two laboratories provided results for TOC using similar procedures. Briefly, subsamples of approximately 200 mg were reacted with 6 mol/L hydrochloric acid and rinsed with deionized water prior to combustion in a gas fusion furnace. The carbon monoxide and carbon dioxide produced were measured and compared to a blank for calculation of the percent TOC. Each laboratory analyzed subsamples from three bottles of SRM 1941b. One of the laboratories also analyzed three subsamples from three bottles of SRM 1941b for carbon, hydrogen, and nitrogen.

Table 1. Certified Mass Fraction Values for PAHs in SRM 1941b

PAHs	Mass Fractions[a] (µg/kg)		
Naphthalene[b,c,d,e,f,g]	848	±	95[h]
Fluorene[b,c,d,e,f,g]	85	±	15[h]
Phenanthrene[b,c,d,e,f,g]	406	±	44[h]
Anthracene[b,c,d,e,f,g]	184	±	18[h]
3-Methylphenanthrene[b,c,d]	105	±	13[h]
2-Methylphenathrene[b,c,d]	128	±	14[h]
1-Methylphenanthrene[b,c,d,g]	73.2	±	5.9[h]
Fluoranthene[b,c,d,e,f,g]	651	±	50[h]
Pyrene[b,c,d,e,f,g]	581	±	39[h]
Benz[*a*]anthracene[b,c,d,e,f,g]	335	±	25[h]
Chrysene[d,f]	291	±	31[h]
Triphenylene[d,f]	108	±	5[i]
Benzo[*b*]fluoranthene[c,e]	453	±	21[h]
Benzo[*k*]fluoranthene[b,c,d,e]	225	±	18[h]
Benzo[*e*]pyrene[b,c,d,g]	325	±	25[h]
Benzo[*a*]pyrene[b,c,d,f,g]	358	±	17[h]
Perylene[b,c,d,f,g]	397	±	45[h]
Benzo[*ghi*]perylene[b,c,d,f,g]	307	±	45[h]
Indeno[1,2,3-*cd*]pyrene[b,c,d,f,g]	341	±	57[h]
Dibenz[*a,j*]anthracene[b,c,d,f]	48.9	±	4.6[h]
Dibenz[*a,c*]anthracene[c,f]	36.7	±	5.2[h]
Dibenz[*a,h*]anthracene[c,f]	53	±	10[h]
Benzo[*b*]chrysene[b,c,d,f]	53	±	12[h]
Picene[b,c,d]	46.6	±	4.7[h]

[a] Mass fractions reported on dry-mass basis; material as received contains approximately 2.4 % moisture.
[b] GC/MS (I) on 5 % phenyl-substituted methylpolysiloxane phase after PFE with DCM.
[c] GC/MS (II) on 50 % phenyl-substituted methylpolysiloxane phase after PFE with DCM.
[d] GC/MS (III) on a relatively non-polar proprietary phase after Soxhlet extraction with 50 % hexane/50 % acetone mixture.
[e] LC-FL (total) of total PAH fraction after PFE with DCM.
[f] LC-FL (isomer) of isomeric PAH fractions after PFE with DCM.
[g] 1999 Interlaboratory Comparison Study [7] with 21 to 29 laboratories submitting data for each PAH.
[h] Certified values are weighted means of the results from two to six analytical methods [13]. The uncertainty listed with each value is an expanded uncertainty about the mean, with coverage factor 2 (approximately 95 % confidence), calculated by combining a between-method variance incorporating inter-method bias with a pooled within-method variance following the ISO/JCGM Guide [14,15]. The measurand is the total mass fraction of the constituent listed and the values are metrologically traceable to the SI unit of mass, expressed as micrograms per kilogram on a dry-mass basis.
[i] The certified value is an unweighted mean of the results from two analytical methods. The uncertainty listed with the value is an expanded uncertainty about the mean, with coverage factor 2, calculated by combining a between-method variance [16] with a pooled, within-method variance following the ISO/JCGM Guide [14,15]. The measurand is the total mass fraction of the constituent listed and the value is metrologically traceable to the SI unit of mass, expressed as micrograms per kilogram on a dry-mass basis.

Table 2. Certified Mass Fraction Values for PCB Congeners[a] in SRM 1941b

PCB Congeners			Mass Fractions[b] (µg/kg)		
PCB	8	(2,4'-Dichlorobiphenyl)[c,d,e,f,g]	1.65	±	0.19[h]
PCB	18	(2,2',5-Trichlorobiphenyl)[c,d,e,f,g]	2.39	±	0.29[h]
PCB	28	(2,4,4'-Trichlorobiphenyl)[c,d,e,f,g]	4.52	±	0.57[h]
PCB	31	(2,4',5-Trichlorobiphenyl)[c,e,f]	3.18	±	0.41[h]
PCB	44	(2,2'3,5'-Tetrachlorobiphenyl)[c,d,e,f,g]	3.85	±	0.20[i]
PCB	49	(2,2'4,5'-Tetrachlorobiphenyl)[c,d,e,f]	4.34	±	0.28[i]
PCB	52	(2,2',5,5'-Tetrachlorobiphenyl)[c,d,e,f,g]	5.24	±	0.28[i]
PCB	66	(2,3',4,4'-Tetrachlorobiphenyl)[c,e,f,g,j]	4.96	±	0.53[i]
PCB	87	(2,2',3,4,5'-Pentachlorobiphenyl)[c,d,f,j]	1.14	±	0.16[h]
PCB	95	(2,2',3,5',6-Pentachlorobiphenyl)[c,e,f,g]	3.93	±	0.62[i]
PCB	99	(2,2',4,4',5-Pentachlorobiphenyl)[c,d,e,f,g]	2.90	±	0.36[i]
PCB	101	(2,2',4,5,5'-Pentachlorobiphenyl)[c,e,f,g,j]	5.11	±	0.34[i]
PCB	105	(2,3,3',4,4'-Pentachlorobiphenyl)[c,d,e,f,g,j]	1.43	±	0.10[i]
PCB	110	(2,3,3',4',6-Pentachlorobiphenyl)[c,e,f,j]	4.62	±	0.36[i]
PCB	118	(2,3',4,4',5-Pentachlorobiphenyl)[c,d,e,f,g,j]	4.23	±	0.19[i]
PCB	128	(2,2',3,3',4,4'-Hexachlorobiphenyl)[c,d,e,f,g,j]	0.696	±	0.044[i]
PCB	138	(2,2',3,4,4',5'-Hexachlorobiphenyl)[c,e,f,j]	3.60	±	0.28[i]
PCB	149	(2,2',3,4',5',6-Hexachlorobiphenyl)[c,d,e,j]	4.35	±	0.26[h]
PCB	153	(2,2',4,4',5,5'-Hexachlorobiphenyl)[c,d,e,f,g,j]	5.47	±	0.32[i]
PCB	156	(2,3,3',4,4',5-Hexachlorobiphenyl)[c,d,e,f,j]	0.507	±	0.090[h]
PCB	170	(2,2',3,3',4,4',5-Heptachlorobiphenyl)[c,d,e,f,g,j]	1.35	±	0.09[i]
PCB	180	(2,2',3,4,4',5,5'-Heptachlorobiphenyl)[c,d,e,f,g,j]	3.24	±	0.51[i]
PCB	183	(2,2',3,4,4',5',6-Heptachlorobiphenyl)[c,d,e,j]	0.979	±	0.087[h]
PCB	187	(2,2',3,4',5,5',6-Heptachlorobiphenyl)[c,d,e,f,g,j]	2.17	±	0.22[i]
PCB	194	(2,2',3,3',4,4',5,5'-Octachlorobiphenyl)[c,d,e,j]	1.04	±	0.06[h]
PCB	195	(2,2',3,3',4,4',5,6-Octachlorbiphenyl)[c,e,g,j]	0.645	±	0.060[i]
PCB	201	(2,2',3,3',4,5',6,6'-Octachlorobiphenyl)[c,e,j]	0.777	±	0.034[h]
PCB	206	(2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl)[c,e,f,g,j]	2.42	±	0.19[i]
PCB	209	Decachlorobiphenyl[c,d,e,f,g,j]	4.86	±	0.45[i]

[a] PCB congeners are numbered according to the scheme proposed by Ballschmiter and Zell [9] and later revised by Schulte and Malisch [10] to conform to IUPAC rules, except PCB 201. Under the Ballschmiter and Zell numbering system, the IUPAC PCB 201 is listed as PCB 200.

[b] Mass fractions reported on dry-mass basis; material as received contains approximately 2.4 % moisture.

[c] GC/MS (IA) on a relatively non-polar proprietary phase after Soxhlet extraction with 50 % hexane/50 % acetone mixture.

[d] GC-ECD (IA) on 5 % phenyl-substituted methylpolysiloxane phase after PFE extraction with DCM.

[e] GC-ECD (IB) on a relatively non-polar proprietary phase; same extracts analyzed as in GC-ECD (IA).

[f] GC/MS (II) on a relatively non-polar proprietary phase after Soxhlet extraction with DCM.

[g] 1999 Interlaboratory Comparison Study [7] with 13 to 31 laboratories submitting data for each PCB congener.

[h] Certified values are unweighted means of the results from three to five analytical methods. The uncertainty listed with each value is an expanded uncertainty about the mean, with coverage factor 2, calculated by combining a between-method variance [16] with a pooled, within method variance following the ISO/JCGM Guide [14,15]. The measurand is the total mass fraction of the constituent listed and the values are metrologically traceable to the SI unit of mass, expressed as micrograms per kilogram on a dry-mass basis.

[i] Certified values are weighted means of the results from three to six analytical methods [13]. The uncertainty listed with each value is an expanded uncertainty about the mean, with coverage factor 2 (approximately 95 % confidence), calculated by combining a between-method variance incorporating inter-method bias with a pooled within-method variance following the ISO/JCGM Guide [14,15]. The measurand is the total mass fraction of the constituent listed and the values are metrologically traceable to the SI unit of mass, expressed as micrograms per kilogram on a dry-mass basis.

[j] GC/MS (IB) on 5 % phenyl-substituted methylpolysiloxane phase; same extracts analyzed as in GC/MS (IA).

Table 3. Certified Mass Fraction Values for Chlorinated Pesticides in SRM 1941b

Chlorinated Pesticides	Mass Fractions[a] (µg/kg)
Hexachlorobenzene[b,c,d,e]	5.83 ± 0.38[f]
cis-Chlordane[b,c,d,e,g]	0.85 ± 0.11[h]
trans-Chlordane[b,c,e]	0.566 ± 0.093[f]
cis-Nonachlor[b,e,g]	0.378 ± 0.053[h]
trans-Nonachlor[b,c,d,e,g]	0.438 ± 0.073[f]
4,4'-DDE[b,d,e,g]	3.22 ± 0.28[h]
4,4'-DDD[b,d,e,g]	4.66 ± 0.46[h]

[a] Mass fractions reported on dry-mass basis; material as received contains approximately 2.4 % moisture.
[b] GC/MS (IA) on a relatively non-polar proprietary phase after Soxhlet extraction with 50 % hexane/50 % acetone mixture.
[c] GC/MS (IB) on 5 % phenyl-substituted methylpolysiloxane phase; same extracts analyzed as in GC/MS (IA).
[d] GC/MS (II) on a relatively non-polar proprietary phase after Soxhlet extraction with DCM.
[e] 1999 Interlaboratory Comparison Study [7] with 13 to 31 laboratories submitting data for each pesticide.
[f] Certified values are unweighted means of the results from three to five analytical methods. The uncertainty listed with each value is an expanded uncertainty about the mean, with coverage factor 2, calculated by combining a between-method variance [16] with a pooled, within-method variance following the ISO/JCGM Guide [14,15]. The measurand is the total mass fraction of the constituent listed and the values are metrologically traceable to the SI unit of mass, expressed as micrograms per kilogram on a dry-mass basis.
[g] GC-ECD (IA) on 5 % phenyl-substituted methylpolysiloxane phase after PFE extraction with DCM.
[h] Certified values are weighted means of the results from three to five analytical methods [13]. The uncertainty listed with each value is an expanded uncertainty about the mean, with coverage factor 2 (approximately 95 % confidence), calculated by combining a between-method variance incorporating inter-method bias with a pooled within-method variance following the ISO/JCGM Guide [14,15]. The measurand is the total mass fraction of the chlorinated pesticides listed and the values listed are metrologically traceable to the SI unit of mass, expressed as micrograms per kilogram on a dry-mass basis.

Table 4. Reference Mass Fraction Values for PAHs in SRM 1941b

PAHs	Mass Fractions[a] (µg/kg)		
1-Methylnaphthalene[b,c,d,e]	127	±	14[f]
2-Methylnaphthalene[b,c,d,e]	276	±	53[f]
2,6-Dimethylnaphthalene[b,c,d,e]	75.9	±	4.5[f]
2,3,5-Trimethylnaphthalene[b,c,d,e]	25.5	±	5.1[f]
Biphenyl[b,c,d,e]	74.0	±	8.0[f]
Acenaphthylene[b,c,d,e]	53.3	±	6.4[f]
Acenaphthene[b,c,d,e]	38.4	±	5.2[f]
9-Methylphenanthrene[c]	63.5	±	2.5[g]
4-Methylphenanthrene and 9-Methylphenanthrene[b,d]	80.1	±	4.8[f]
2-Methylanthracene[c,d]	36	±	15[f]
8-Methylfluoranthene[b]	49.5	±	2.7[g]
7-Methylfluoranthene[b]	45.4	±	1.5[g]
1-Methylfluoranthene[b]	42.4	±	2.1[g]
3-Methylfluoranthene[b]	28.8	±	1.3[g]
2-Methylpyrene[b]	78.7	±	4.0[g]
4-Methylpyrene[b]	66.4	±	2.6[g]
1-Methylpyrene[b]	52.5	±	2.3[g]
Acephenanthrene[d]	30.5	±	1.9[g]
Benzo[*c*]phenanthrene[b,c,d]	58	±	15[f]
Benzo[*a*]fluoranthene[b,c,d]	73	±	18[f]
Benzo[*j*]fluoranthene[c]	217	±	5[g]
Indeno[1,2,3-*cd*]fluoranthene[d]	9.63	±	0.34[g]
Pentaphene[d]	25.3	±	1.0[g]

[a] Mass fractions reported on dry-mass basis; material as received contains approximately 2.4 % moisture.
[b] GC/MS (I) on 5 % phenyl-substituted methylpolysiloxane phase after PFE with DCM.
[c] GC/MS (II) on 50 % phenyl-substituted methylpolysiloxane phase after PFE with DCM.
[d] GC/MS (III) on a relatively non-polar proprietary phase after Soxhlet extraction with 50 % hexane/50 % acetone mixture.
[e] 1999 Interlaboratory Comparison Study [7] with 14 to 26 laboratories submitting data for each PAH.
[f] Reference values are weighted means of the results from two to four analytical methods [13]. The uncertainty listed with each value is an expanded uncertainty about the mean, with coverage factor 2 (approximately 95 % confidence), calculated by combining a between-method variance incorporating inter-method bias with a pooled within-method variance following the ISO/JCGM Guide [14,15]. The measurand is the total mass fraction of PAHs listed as determined by the methods indicted. The values are metrologically traceable to the SI unit of mass, expressed as micrograms per kilogram on a dry-mass basis.
[g] Reference values are the means of results obtained by NIST using one analytical technique. The expanded uncertainty, U, is calculated as $U = ku_c$, where u_c is one standard deviation of the analyte mean, and the coverage factor, k, is determined from the Student's t-distribution for the associated degrees of freedom (19 for footnote b and 5 for footnotes c and d) and 95 % confidence level for each analyte. The measurand is the total mass fraction of the PAHs listed as determined by the method indicted. The values listed are metrologically traceable to the SI unit of mass, expressed as micrograms per kilogram on a dry-mass basis.

Table 5. Reference Mass Fraction Values for PAHs of Molecular Mass 300 and 302 in SRM 1941b

PAHs of Molecular Mass 300 and 302	Mass Fractions[a,b,c] (µg/kg)		
Coronene	72.6	±	4.7
Dibenzo[*b,e*]fluoranthene	10.3	±	0.3
Naphtho[1,2-*b*]fluoranthene	91.0	±	3.1
Naphtho[1,2-*k*]fluoranthene and Naphtho[2,3-*j*]fluoranthene	79.8	±	2.5
Naphtho[2,3-*b*]fluoranthene	23.5	±	0.3
Dibenzo[*b,k*]fluoranthene	95.6	±	3.1
Dibenzo[*a,k*]fluoranthene	26.6	±	0.4
Dibenzo[*j,l*]fluoranthene	63.8	±	1.8
Dibenzo[*a,l*]pyrene	11.1	±	1.0
Naphtho[2,3-*k*]fluoranthene	10.7	±	0.6
Naphtho[1,2-*a*]pyrene	16.7	±	1.4
Naphtho[2,3-*e*]pyrene	33.2	±	2.3
Dibenzo[*a,e*]pyrene	76.1	±	3.6
Naphtho[2,1-*a*]pyrene	59.2	±	1.8
Dibenzo[*e,i*]pyrene	35.0	±	2.4
Naphtho[2,3-*a*]pyrene	16.5	±	0.6
Benzo[*b*]perylene	38.2	±	1.2
Dibenzo[*a,i*]pyrene	25.5	±	1.0
Dibenzo[*a,h*]pyrene	6.94	±	0.29

[a] Mass fractions reported on dry-mass basis; material as received contains approximately 2.4 % moisture.

[b] Reference values are the means of results obtained by NIST using one analytical technique. The expanded uncertainty, U, is calculated as $U = ku_c$, where u_c is one standard deviation of the analyte mean, and the coverage factor, k, is determined from the Student's t-distribution for two degrees of freedom and 95 % confidence level for each analyte. The measurand is the total mass fraction of the constituent listed as determined by the method indicted. The values are metrologically traceable to the SI unit of mass, expressed as micrograms per kilogram on a dry-mass basis.

[c] GC/MS on 50 % phenyl-substituted methylpolysiloxane phase after PFE with DCM [8].

Table 6. Reference Mass Fraction Values for PCB Congeners[a] in SRM 1941b

PCB Congeners			Mass Fractions[b,c] (µg/kg)		
PCB	45	(2,2',3,6-Tetrachlorobiphenyl)[d,e]	0.73	±	0.12
PCB	56	(2,3,3',4'-Tetrachlorobiphenyl)[d,f,g]	1.21	±	0.11
PCB	63	(2,3,4',5-Tetrachlorobiphenyl)[e,f,g]	0.213	±	0.040
PCB	70	(2,3',4',5-Tetrachlorobiphenyl)[e,f,g]	4.99	±	0.29
PCB	74	(2,4,4',5-Tetrachlorobiphenyl)[e,f,g]	2.04	±	0.15
PCB	77	(3,3',4,4'-Tetrachlorobiphenyl)[h]	0.31	±	0.03
PCB	107	(2,3,3',4',5-Pentachlorobiphenyl)[d,e,f,g]	0.628	±	0.028
PCB	132	(2,2',3,3',4,6'-Hexachlorobiphenyl)[d,f,g]	1.28	±	0.27
PCB	146	(2,2',3,4',5,5'-Hexachlorobiphenyl)[e,f,g]	1.22	±	0.12
PCB	158	(2,3,3',4,4',6-Hexachlorobiphenyl)[d,e,f,g]	0.65	±	0.15
PCB	163	(2,3,3',4',5,6-Hexachlorobiphenyl)[e,f,g]	1.28	±	0.06
PCB	174	(2,2',3,3',4,5,6'-Heptachlorobiphenyl)[d,e,f,g]	1.51	±	0.39
PCB	193	(2,3,3',4',5,5',6-Heptachlorobiphenyl)[d,e,f,g]	0.292	±	0.075

[a] PCB congeners are numbered according to the scheme proposed by Ballschmiter and Zell [9] and later revised by Schulte and Malisch [10] to conform with IUPAC rules, except PCB 107. Under the Ballschmiter and Zell numbering system, the IUPAC PCB 107 is listed as PCB 108.

[b] Mass fractions reported on dry-mass basis; material as received contains approximately 2.4 % moisture.

[c] For these PCB congeners except PCB 77, the reference values are unweighted means of the results from two to four analytical methods. The uncertainty listed with each value is an expanded uncertainty about the mean, with coverage factor 2, calculated by combining a between-method variance [16] with a pooled within-method variance following the ISO/JCGM Guide [14,15]. For PCB 77, the reference value is the mean of results obtained by NIST using one analytical technique. The expanded uncertainty, U, is calculated as $U = ku_c$, where u_c is one standard deviation of the analyte mean, and the coverage factor, k, is determined from the Student's t-distribution corresponding to two degrees of freedom and 95 % confidence level for PCB 77. The measurand is the total mass fraction of the PCB Congeners listed as determined by the method or methods indicted. The values listed are metrologically traceable to the SI unit of mass, expressed as microgram per kilogram on a dry-mass basis.

[d] GC-ECD (IA) on 5 % phenyl-substituted methylpolysiloxane phase after PFE extraction with DCM.

[e] GC-ECD (IB) on a relatively non-polar proprietary phase; same extracts analyzed as in GC-ECD (IA).

[f] GC/MS (IA) on a relatively non-polar proprietary phase after Soxhlet extraction with 50 % hexane/50 % acetone mixture.

[g] GC/MS (IB) on 5 % phenyl-substituted methylpolysiloxane phase; same extracts analyzed as in GC/MS (IA).

[h] GC/MS NICI on a 5 % phenyl-substituted methylpolysiloxane phase; same extracts analyzed as in GC-ECD (I) fractionated using a PYE column.

Table 7. Reference Mass Fraction Values for Selected Chlorinated Pesticides in SRM 1941b

Chlorinated Pesticides	Mass Fractions[a,b] (µg/kg)		
2,4'-DDE[c,d]	0.38	±	0.12
4,4'-DDT[e,f]	1.12	±	0.42

[a] Mass Fractions reported on dry-mass basis; material as received contains approximately 2.4 % moisture.
[b] The reference values are unweighted means of the results from two analytical methods. The uncertainty listed with each value is an expanded uncertainty about the mean, with coverage factor 2, calculated by combining a between-method variance [16] with a pooled, within-method variance following the ISO/JCGM Guide [14,15]. The measurand is the total mass fraction of the chlorinated pesticides listed as determined by the methods indicted. The values listed are metrologically traceable to the SI unit of mass, expressed as micrograms per kilogram on a dry-mass basis.
[c] GC/MS (IB) on 5 % phenyl-substituted methylpolysiloxane phase; same extracts analyzed as in GC/MS (IA).
[d] GC-ECD (IB) on a relatively non-polar proprietary phase; same extracts analyzed as in GC-ECD (IA).
[e] GC/MS (II) on a relatively non-polar proprietary phase after Soxhlet extraction with DCM.
[f] 1999 Interlaboratory Comparison Study [7] with 10 laboratories submitting data for 4,4'-DDT.

Table 8. Reference Mass Fraction Values for Alkylated PAH Groups in SRM 1941b

Alkylated PAH Group	Mass Fraction[a,b] (µg/kg)		
C2-decalins	18	±	5
C4-decalins	41	±	4
C2-naphthalenes	187	±	53
C3-naphthalenes	158	±	42
C1-benzothiophenes	25	±	14
C2-benzothiophenes	20	±	11
C3-benzothiophenes	22	±	13
C4-benzothiophenes	18	±	5
C1-fluorenes	57	±	18
C2-fluorenes	122	±	43
C3-fluorenes	128	±	31
C1-phenanthrenes/anthracenes	313	±	99
C2-phenanthrenes/anthracenes	247	±	62
C3-phenanthrenes/anthracenes	165	±	46
C4-phenanthrenes/anthracenes	87	±	36
C1-dibenzothiophenes	54	±	13
C2-dibenzothiophenes	91	±	18
C3-dibenzothiophenes	84	±	15
C4-dibenzothiophenes	57	±	13
C1-fluoranthenes/pyrenes	252	±	48
C2-fluoranthenes/pyrenes	205	±	38
C3-fluoranthenes/pyrenes	102	±	22
C4-fluoranthenes/pyrenes	121	±	59
C1-benzanthraces/chrysenes/triphenylenes	208	±	43
C2-benzanthraces/chrysenes/triphenylenes	120	±	24
C3-benzanthraces/chrysenes/triphenylenes	73	±	31
C4-benzanthraces/chrysenes/triphenylenes	41	±	11

[a] The reference mass fraction value reported on a dry-mass basis is the median of results using one analytical technique. The expanded uncertainty, U, is calculated as $U = ku_c$, where u_c is one standard deviation of the median, and the coverage factor, $k = 2$. The measurand is the total mass fraction of the alkylated PAH groups listed as determined by the interlaboratory study methods. The values listed are metrologically traceable to the SI unit of mass fraction, expressed as micrograms per kilogram on a dry-mass basis.
[b] Data from the interlaboratory study [12].

Table 9. Reference Mass Fraction Values for Hopanes and Steranes in SRM 1941b

Hopane or Sterane	Mass Fraction[a,b] (µg/kg)		
17α(H)-22,29,30-Trisnorhopane	54	±	18
17α(H)-21β(H)-30-Norhopane	137	±	21
17α(H)-21β(H)-30-Hopane	215	±	44
17α(H)-21β(H)-22R-Homohopane	44	±	10
17α(H)-21β(H)-22S-Homohopane	48	±	13
5α(H)-14α(H),17α(H)-Cholestane 20R	41	±	11
5α(H)-14β(H),17β(H)-Cholestane 20R	27	±	6
5α(H)-14β(H),17β(H)-24-Methylcholestane 20R	21	±	8
5α(H)-14α(H),17α(H)-24-Ethylcholestane 20R	19	±	5
5α(H)-14β(H),17β(H)-24-Ethylcholestane 20R	41	±	9

[a] The reference mass fraction value reported on a dry-mass basis is the median of results using one analytical technique. The expanded uncertainty, U, is calculated as $U = ku_c$, where u_c is one standard deviation of the median, and the coverage factor, $k = 2$. The measurand is the total mass fraction of the constituent listed as determined by the methods used during the interlaboratory study. The values are metrologically traceable to the SI unit of mass, expressed as micrograms per kilogram on a dry-mass basis.
[b] Data from the interlaboratory study [12].

Table 10. Reference Mass Fraction Value for Total Organic Carbon in SRM 1941b

Total Organic Carbon (TOC)	2.99 % ± 0.24 %[a,b]

[a] Mass fraction is reported on a dry-mass basis; material as received contains approximately 2.4 % moisture.
[b] The reference value for total organic carbon is a weighted mean value from routine measurements made by two laboratories [21]. The uncertainty listed is an expanded uncertainty about the mean, with coverage factor 2 (approximately 95 % confidence), calculated by combining a between-method variance incorporating inter-method bias with a pooled within-method variance. The reporting follows the ISO/JCGM Guides [2]. The measurand is the total mass fraction of TOC listed as determined by the methods indicted. The values listed are metrologically traceable to the SI unit of mass, expressed as a percent on a dry-mass basis.

Table 11. Information Mass Fraction Values for Carbon, Hydrogen, and Nitrogen in SRM 1941b

Elements	Mass Fractions[a] (%)
Carbon	3.3
Hydrogen	1.2
Nitrogen	<0.5

[a] Mass fraction is reported on a dry-mass basis; material as received contains approximately 2.4 % moisture.

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Certificate Revision History: 16 January 2015 (Corrected IUPAC name for PCB-56 and PCB-107; editorial changes); 10 June 2014 (Units corrected from mg/kg to µg/kg in Tables 8 and 9; editorial changes); 10 April 2012 (Reference value added for alkylated PAH groups, hopanes, and steranes; extension of certification period; editorial changes); 16 August 2004 (Reference values for the butyl tins removed; editorial changes); 15 July 2002 (Original certificate date).

Users of this SRM should ensure that the Certificate of Analysis in their possession is current. This can be accomplished by contacting the SRM Program: telephone (301) 975-2200; fax (301) 948-3730; e-mail srminfo@nist.gov; or via the Internet at http://www.nist.gov/srm.

APPENDIX A

The laboratories listed below performed measurements that contributed to the certification of PAHs, PCBs, and chlorinated pesticides in SRM 1941b Organics in Marine Sediment.

Arthur D. Little, Inc; Cambridge, MA
Axys Analytical Services; Sidney, BC, Canada
B & B Laboratories; College Station, TX
Battelle Ocean Sciences; Duxbury, MA
Bedford Institute of Oceanography; Dartmouth, NS, Canada
California Department of Fish and Game; Rancho Cordova, CA
Central Contra Costa Sanitary District; Martinez, CA
Chesapeake Biological Laboratory; Solomons, MD
Centro de Investigacionies Energeticas Medioambientales y Tecnologicas; Madrid, Spain
City of Los Angeles Environmental Monitoring Division; Playa del Rey, CA
City of San Jose Environmental Services Department; San Jose, CA
Columbia Analytical Services; Kelso, WA
East Bay Municipal Utility District; Oakland, CA
Florida Department of Environmental Protection; Tallahassee, FL
Manchester Environmental Laboratory; Port Orchard, WA
Murray State University; Murray, KY
Massachusetts Water Resources Authority Central Lab; Winthrop, MA
National Research Council of Canada; Ottawa, Ontario, Canada
National Oceanic and Atmospheric Association (NOAA), National Marine Fisheries Service (NMFS), Auke Bay Laboratory; Juneau, AK
NOAA, National Ocean Service/Center for Coastal Environmental Health and Biomolecular Research; Charleston, SC
NOAA, NMFS, Sandy Hook Marine Laboratory; Highlands, NJ
NOAA, NMFS, Northwest Fisheries Science Center; Seattle, WA
Orange County Sanitation District; Fountain Valley, CA
Philip Analytical Services; Burlington, Ontario, Canada
Serv de Hidrografia Naval; Buenos Aires, Argentina
Skidaway Institute of Technology; Savannah, GA
Southwest Laboratory of Oklahoma; Broken Arrow, OK
Severn Trent Knoxville Laboratory; Knoxville, TN
Texas A&M University, Geochemical and Environmental Research Group; College Station, TX
Texas Parks and Wildlife Department; San Marcos, TX
University of California at Los Angeles, Institute of Geophysics and Planetary Physics; Los Angeles, CA
University of Connecticut, Environmental Research Institute; Storrs, CT
University of Rhode Island, Graduate School of Oceanography; Narragansett, RI
US Department of Agriculture, Environmental Chemistry Laboratory; Beltsville, MD
US Environmental Protection Agency, Atlantic Ecology Division; Narragansett, RI
US Geological Survey, National Water Quality Laboratory; Denver, CO
Woods Hole Group Environmental Lab; Raynham, MA
Wright State University; Dayton, OH

APPENDIX B

The laboratories listed below performed measurements that contributed to the certification of alkylated PAH groups, hopanes, and steranes in SRM 1941b Organics in Marine Sediment.

Alpha Analytical, Inc.; Mansfield, MA
Analytical Resources, Inc.; Tukwila, WA
Axys Analytical Services; Sydney, BC, Canada
Battelle Analytical & Environmental Chemistry Laboratory; Duxbury, MA
Center for Laboratory Sciences; Pasco, WA
Columbia Analytical Services; Jacksonville, FL
Columbia Analytical Services; Rochester, NY
Columbia Analytical Services, Kelso, WA
Florida Department of Environmental Protection; Tallahassee, FL
Florida International University; North Miami, FL
Michigan Department of Natural Resources and Environment; Lansing, MI
Mississippi State Chemical Laboratory; Mississippi State, MS
NIST; Charleston, SC
NIST; Gaithersburg, MD
NOAA/NCCOS/NOS; Charleston, SC
NOAA/NMFS/Alaska Fisheries Science Center; Juneau, AK
NY State Department of Health; Albany, NY
Pace Analytical Services, Inc. Minneapolis; Minneapolis, MN
RJ Lee Group, Inc; Monroeville, PA
TDI/B&B Laboratories, Inc.; College Station, TX
TestAmerica Laboratories; Mobile, AL
TestAmerica Laboratories; West Sacramento, CA
TestAmerica Laboratories; University Park, IL
TestAmerica Laboratories; Schriever, LA
TestAmerica Laboratories; Edison, NJ
TestAmerica Laboratories; Knoxville, TN
TestAmerica Laboratories; Pittsburgh, PA
TestAmerica Laboratories; South Burlington, VT
TestAmerica Laboratories; Tacoma, WA
US Army Engineer Research and Development Center; Vicksburg, MS
USGS Columbia Environmental Research Center; Columbia, MO
University of Iowa, State Hygienic Laboratory; Iowa City, IO
Washington State Public Health Laboratories; Shoreline, WA

NIST

Date of Issue:
31 March 2014

SAFETY DATA SHEET

1. Substance and Source Identification

Product Identifier

SRM Number: 1941b
SRM Name: Organics in Marine Sediment
Other Means of Identification: Not applicable.

Recommended Use of This Material and Restrictions of Use

This Standard Reference Material (SRM) is marine sediment collected at the mouth of the Baltimore (MD) Harbor. SRM 1941b is intended for use in evaluating analytical methods for the determination of selected polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyl (PCB) congeners, and chlorinated pesticides in marine sediment and similar matrices. All of the constituents for which certified, reference, and information values are provided in SRM 1941b were naturally present in the sediment before processing. A unit of SRM 1941b consists of a bottle containing 50 g of radiation-sterilized, freeze-dried sediment.

Company Information

National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2300
Gaithersburg, Maryland 20899-2300

Telephone: 301-975-2200
FAX: 301-948-3730
E-mail: SRMMSDS@nist.gov
Website: http://www.nist.gov/srm

Emergency Telephone ChemTrec:
1-800-424-9300 (North America)
+1-703-527-3887 (International)

2. Hazards Identification

Classification

Physical Hazard: Not classified.
Health Hazard: Not classified.

Label Elements
Symbol
No Symbol/Pictogram

Signal Word
Not applicable.

Hazard Statement(s): Not applicable.

Precautionary Statement(s): Not applicable.

Hazards Not Otherwise Classified: Not applicable.

Ingredients(s) with Unknown Acute Toxicity: Not applicable.

3. Composition and Information on Hazardous Ingredients

Substance: Marine sediment

Other Designations: Sediment.

This material is naturally occurring marine sediment from an urban area. The material contains trace amounts of polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyl (PCB) congeners, and should be handled with care. Components are listed in compliance with OSHA's 29 CFR 1910.1200; for the actual values see the Certificate of Analysis.

Hazardous Component(s)	CAS Number	EC Number (EINECS)	Nominal Mass Concentration (%)
Marine Sediment	Not available	Not available	100

4. First Aid Measures

Description of First Aid Measures:

Inhalation: If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration or oxygen by qualified personnel. Seek immediate medical attention.

Skin Contact: Wash skin with soap and water.

Eye Contact: Flush eyes with water for at least 15 minutes. If necessary, seek medical attention.

Ingestion: If adverse effects occur after ingestion, seek medical treatment.

Most Important Symptoms/Effects, Acute and Delayed: May cause irritation.

Indication of any immediate medical attention and special treatment needed, if necessary: If any of the above symptoms are present, seek medical attention if needed.

5. Fire Fighting Measures

Fire and Explosion Hazards: Negligible fire hazard. Avoid generating dust. See Section 9, "Physical and Chemical Properties" for flammability properties.

Extinguishing Media:
Suitable: Use extinguishing media appropriate for surrounding fire.
Unsuitable: None listed.

Specific Hazards Arising from the Chemical: None listed.

Special Protective Equipment and Precautions for Fire-Fighters: Avoid inhalation of material or combustion byproducts. Wear full protective clothing and NIOSH approved self-contained breathing apparatus (SCBA).

NFPA Ratings (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health = 1 Fire = 0 Reactivity = 0

6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures: Any accumulated material on surfaces should be removed and properly disposed of. Use suitable protective equipment; see Section 8, "Exposure Controls and Personal Protection".

Methods and Materials for Containment and Clean up: Collect spilled material in appropriate container for disposal. Keep out of water supplies and sewers. Keep unnecessary people away, isolate hazard area and deny entry.

7. Handling and Storage

Safe Handling Precautions: Minimize dust generation and accumulation on surfaces. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. See Section 8, "Exposure Controls and Personal Protection".

Storage: Store and handling in accordance with all current regulations and standards.

8. Exposure Controls and Personal Protection

Exposure Limits: No occupational exposure limits have been established for marine sediment. This material is a particulate matter and adequate inhalation/respiratory protection should be used to minimize exposure. The exposure limits for Particulates Not Otherwise Regulated (PNOR) are applicable.

OSHA (PEL): 15 mg/m^3 (TWA, total particulates not otherwise regulated)
OSHA (PEL) 5 mg/m^3 (TWA, respirable particulates not otherwise regulated)

NIOSH (REL): 10 mg/m^3 (TWA, total particulates not otherwise regulated, 8 h)
NIOSH (REL): 5 mg/m^3 (TWA, respirable particulates not otherwise regulated)

Engineering Controls: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Personal Protection: In accordance with OSHA 29 CFR 1910.132, subpart I, wear appropriate Personal Protective Equipment (PPE) to minimize exposure to this material.

Respiratory Protection: If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

Eye/Face Protection: Wear splash resistant safety goggles with a face shield. An eye wash station should be readily available near areas of use.

Skin and Body Protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Chemical-resistant gloves should be worn at all times when handling chemicals.

9. Physical and Chemical Properties

Descriptive Properties:

Appearance (physical state, color, etc.):	amorphous powder
Molecular Formula:	not applicable
Molar Mass (g/mol):	not applicable
Odor:	not available
Odor threshold:	not available
pH:	not available
Evaporation rate:	not applicable
Melting point/freezing point (°C):	not available
Specific Gravity (water=1)	not available
Vapor Pressure (mmHg):	not applicable
Vapor Density (air = 1):	not applicable
Viscosity (cP):	not applicable
Solubility(ies):	not available
Partition coefficient (n-octanol/water):	not available
Particle Size:	<150 μm

Thermal Stability Properties:

Autoignition Temperature (°C):	not available
Thermal Decomposition (°C):	not available
Initial boiling point and boiling range (°C):	not available
Explosive Limits, LEL (Volume %):	not available
Explosive Limits, UEL (Volume %):	not available
Flash Point (°C):	not available
Flammability (solid, gas):	not available

10. Stability and Reactivity

Reactivity: Stable at normal temperatures and pressure.

Stability: X Stable _____ Unstable

Possible Hazardous Reactions: None listed.

Conditions to Avoid: Avoid generating dust.

Incompatible Materials: None listed.

Fire/Explosion Information: See Section 5, "Fire Fighting Measures".

Hazardous Decomposition: Thermal decomposition will produce oxides of carbon.

Hazardous Polymerization: _____ Will Occur X Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Exposure: X Inhalation X Skin _____ Ingestion

Symptoms Related to the Physical, Chemical and Toxicological Characteristics: Generated dust may cause irritation if inhaled.

Potential Health Effects (Acute, Chronic and Delayed):

Inhalation: Generated dust may cause irritation.

Skin Contact: May cause mechanical irritation.

Eye Contact: May cause mechanical irritation.

Ingestion: No data available.

Numerical Measures of Toxicity:

Acute Toxicity: Not classified; no data available.

Skin Corrosion/Irritation: Not classified; no data available.

Serious Eye damage/ Eye irritation: Not classified; no data available.

Respiratory Sensitization: Not classified; no data available.

Skin Sensitization: Not classified; no data available.

Germ Cell Mutagenicity: Not classified; no data available.

Carcinogenicity: Not classified.

Listed as a Carcinogen/Potential Carcinogen _____ Yes X No
Marine sediment is not listed by NTP, IARC or OSHA as a carcinogen.

Reproductive Toxicity: Not classified; no data available.

Specific Target Organ Toxicity, Single Exposure: Not classified; no data available.

Specific Target Organ Toxicity, Repeated Exposure: Not classified; no data available.

Aspiration Hazard: Not classified; no data available.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data: No data available.

Persistence and Degradability: No data available.

Bioaccumulative Potential: No data available.

Mobility in Soil: No data available.

Other Adverse effects: No data available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose of waste in accordance with all applicable federal, state, and local regulations.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: Not regulated by DOT or IATA.

15. REGULATORY INFORMATION

U.S. Regulations:

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.

SARA Title III Section 302 (40 CFR 355.30): Not regulated.

SARA Title III Section 304 (40 CFR 355.40): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE HEALTH:	No.
CHRONIC HEALTH:	No.
FIRE:	No.
REACTIVE:	No.
PRESSURE:	No.

State Regulations:
California Proposition 65: Not listed.

U.S. TSCA Inventory: Not listed.

TSCA 12(b), Export Notification: Not listed.

Canadian Regulations:
WHMIS Information: Not provided for this material.

16. OTHER INFORMATION

Issue Date: 31 March 2014

Sources: 29 CFR Occupational Health and Safety Office (OSHA) 1910.1000, *Limits for Air Contaminants*, Table Z-1; available at http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9992 (accessed Mar 2014).

Center for Disease Control (CDC) NIOSH Pocket Guide to Chemical Hazards, *Particulates not otherwise regulated*; available at http://www.cdc.gov/niosh/npg/npgd0480.html (accessed Mar 2014).

Key of Acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists	NRC	Nuclear Regulatory Commission
ALI	Annual Limit on Intake	NTP	National Toxicology Program
CAS	Chemical Abstracts Service	OSHA	Occupational Safety and Health Administration
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	PEL	Permissible Exposure Limit
CFR	Code of Federal Regulations	RCRA	Resource Conservation and Recovery Act
DOT	Department of Transportation	REL	Recommended Exposure Limit
EC50	Effective Concentration, 50 %	RM	Reference Material
EINECS	European Inventory of Existing Commercial Chemical Substances	RQ	Reportable Quantity
EPCRA	Emergency Planning and Community Right-to-Know Act	RTECS	Registry of Toxic Effects of Chemical Substances
IARC	International Agency for Research on Cancer	SARA	Superfund Amendments and Reauthorization Act
IATA	International Air Transportation Agency	SCBA	Self-Contained Breathing Apparatus
IDLH	Immediately Dangerous to Life and Health	SRM	Standard Reference Material
LC50	Lethal Concentration, 50 %	STEL	Short Term Exposure Limit
LD50	Lethal Dose, 50 %	TLV	Threshold Limit Value
LEL	Lower Explosive Limit	TPQ	Threshold Planning Quantity
MSDS	Material Safety Data Sheet	TSCA	Toxic Substances Control Act
NFPA	National Fire Protection Association	TWA	Time Weighted Average
NIOSH	National Institute for Occupational Safety and Health	UEL	Upper Explosive Limit
NIST	National Institute of Standards and Technology	WHMIS	Workplace Hazardous Materials Information System

Disclaimer: Physical and chemical data contained in this SDS are provided only for use in assessing the hazardous nature of the material. The SDS was prepared carefully, using current references; however, NIST does not certify the data in the SDS. The certified values for this material are given in the NIST Certificate of Analysis.

Users of this SRM should ensure that the SDS in their possession is current. This can be accomplished by contacting the SRM Program: telephone (301) 975-2200; fax (301) 948-3730; e-mail srmmsds@nist.gov; or via the Internet at http://www.nist.gov/srm.

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Contact	DAVE MITCHELL	Pro#		Truck#	

Order discrepancies (other than back ordered items) must be reported to our Customer Relations Department at 301-975-6776 within 5 days of receipt of shipment or this order will be considered complete. NIST SRMs/RMs are generally not returnable - with the exception of defective goods or shipments made in error by NIST. To return a SRM/RM, please call for instructions and a Return SRM/RM Authorization Number before shipment. Returns WILL NOT BE ACCEPTED without prior authorization.

Order	UOM	Ship	UOM	B/O	UOM	Item	Description
1	EACH	1	EACH	0	EACH	1941B	Organics in Marine Sediment
						Total qty:	1 / EACH
							NOT FOR HUMAN CONSUMPTION, LABORATORY USE ONLY.

9/21/16
04:04 PM

Picked by	
Packed by	
# of pieces	
Weight	

1700101

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

H001823
Microcrystalline Cellulose Powder (TOC)
Expires 11/30/2022
Prepared By Casey English 2/22/2019

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

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Analytical Resources, LLC
Analytical Chemists and Consultants

Form I
INORGANIC ANALYSIS DATA SHEET
SM 2540 G-97

LDW21-IT637A

Laboratory:	Analytical Resources, LLC				
Client:	Anchor QEA, LLC				
Project:	Lower Duwamish AOC4				
Matrix:	Sediment	Laboratory ID:	21K0332-01 B	SDG:	21K0332
Sampled:	07/06/21 17:16	Prepared:	11/22/21 08:51	File ID:	
% Solids:	76.76	Preparation:	No Prep Wet Chem	Analyzed:	11/22/21 08:52
Batch:	BJK0561	Sequence:		Initial/Final:	5 g Wet / 5 g
Instrument:	BAL2			Calibration:	

CAS NO.	Analyte	Concentration (%)	Dilution Factor	MDL	MRL	Q
	Total Solids	76.76	1	0.04	0.04	

Analytical Resources, LLC
Analytical Chemists and Consultants

PREPARATION BATCH SUMMARY

SM 2540 G-97

Laboratory:	Analytical Resources, LLC	SDG:	21K0332
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Batch:	BJK0561 Batch Matrix: Solid	Preparation:	No Prep Wet Chem

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
LDW21-IT637A	21K0332-01		11/22/21 08:51	
Blank	BJK0561-BLK1		11/22/21 08:51	
LDW21-IT637A	BJK0561-DUP1		11/22/21 08:51	
LDW21-IT637A	BJK0561-DUP2		11/22/21 08:51	

TOTAL SOLIDS/VOLATILE SOLIDS (TS / TVS) BENCHSHEET for Solid samples

Method: PSEP 1986, SM2540, EPA 160.1

(dry at 104 (12-24 hr) then combust at 550 (30 min))

Batch:	BJK0561
Date:	11/22/2021 8:52
Analyst:	DOE

Instrumentation

Drying Ovens:	1	**Analytical Balance:**	BAL2
Muffle Furnace:	2		

Batch drying time				**Oven Temps, °C**	
record times as mm/dd/yy hh:mm			TS (%) calculated as:	Start Temp	103
date/time in oven:	11/22/2021 10:20		Final dry wt (g) = (Dry Wt - Tare Wt)	Dry Cycle 1	106
date/time out:	11/23/2021 7:15		TS = (Final Dry Wt)/ (grams Sample-Tare)	Dry Cycle 2	
elapsed hrs =	20.9	OK		Dry Cycle 3	

TVS (mg/kg dry wt) calculated as:
Final ash wt (g) = (min ash wt - tare wt)
TVS (mg/kg) = [(Dry wt-Ash wt)/ (dry weight)] *1,000,000
if ash wt > dry wt, "Chk for Err"
if dry wt-ash wt < 0.001 g, "< (1/dry wt)*1,000,000

Balance Calibration Check

Record weights to 4 places											
	Cal Weight ID:	CV-02	CV-02	CV-02	CV-02	CV-02		CV-02	CV-02	CV-02	
	Date & Time:	11/22/21 9:15	11/22/21 10:10	11/23/21 7:40							
Cal Wt (g):	10.0000	9.9999	9.9999	9.9999							
		Cal OK!	Cal OK!	Cal OK!							

Sample ID	**Dish #**	**Tare Wt. (g)**	**Dish & Sample (g)**	**Dry Wt 104C (grams) 1**	**2**	**3**	**dry Wt (g)**	**TS (%)**	**Notes**	**ASH WT 550C (grams) 1**	**2**	**3**	**Ash Wt (g)**	**TVS (mg/kg)**	**(%)**	**Notes**	**Fixed (%)**
BJK0561-BLK1	1	0.7864	0.0000	0.7864			0.0000	0.00%									
21K0313-01	2	0.8003	4.1361	3.0607			2.2604	67.76%									
21K0313-02	3	0.8156	4.2358	2.1384			1.3228	38.68%									
21K0332-01	4	0.8261	6.7644	5.3841			4.5580	76.76%									
BJK0561-DUP1	5	0.7851	6.7804	5.3621			4.5770	76.34%	RPD=0.5								
BJK0561-DUP2	6	0.7911	6.3848	5.1347			4.3436	77.65%	RSD=0.9								
21K0334-04	7	0.8161	5.2717	0.8397			0.0236	0.53%									

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Form I

METHOD BLANK DATA SHEET

SM 2540 G-97

TotalAnalytes

Blank

Laboratory: Analytical Resources, LLC
SDG: 21K0332
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Batch: BJK0561
Laboratory ID: BJK0561-BLK1
Prepared: 11/22/21 08:51
Matrix: Solid
Preparation: No Prep Wet Chem
Analyzed: 11/22/21 08:52
Sequence:
Calibration:
Instrument: BAL2

CAS NO.	Analyte	Concentration (%)	Dilution Factor	MDL	MRL	Q
	Total Solids	ND	1	0.04	0.04	U

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LDW21-IT637A

DUPLICATES
SM 2540 G-97

Laboratory: Analytical Resources, LLC
SDG: 21K0332
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Matrix: Solid
Laboratory ID: BJK0561-DUP1
Batch: BJK0561
Lab Source ID: 21K0332-01
Preparation: No Prep Wet Chem
Initial/Final: 5 g / 5 g
Source Sample Name: LDW21-IT637A
% Solids: 76.76

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION	DUPLICATE CONCENTRATION	RPD %	Q
Total Solids	20	76.76	76.34	0.539	

*: Values outside of QC limits
L: Analyte concentration is <=5 times the reporting limit and the replicate control limit defaults to Dup = +/- RL instead of 20% RPD

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LDW21-IT637A

DUPLICATES
SM 2540 G-97

Laboratory: Analytical Resources, LLC
SDG: 21K0332
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Matrix: Solid
Laboratory ID: BJK0561-DUP2
Batch: BJK0561
Lab Source ID: 21K0332-01
Preparation: No Prep Wet Chem
Initial/Final: 5 g / 5 g
Source Sample Name: LDW21-IT637A
% Solids: 76.76

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION	DUPLICATE CONCENTRATION	RPD %	Q
Total Solids	20	76.76	77.65	1.16	

*: Values outside of QC limits
L: Analyte concentration is <=5 times the reporting limit and the replicate control limit defaults to Dup = +/- RL instead of 20% RPD

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HOLDING TIME SUMMARY

Analysis: SM 2540 G-97

Laboratory: Analytical Resources, LLC
SDG: 21K0332
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
LDW21-IT637A 21K0332-01	07/06/21 17:16	11/19/21 10:49	11/22/21 08:51	138	365	11/22/21 08:52	139	365	
Duplicate BJK0561-DUP1	07/06/21 17:16	11/19/21 10:49	11/22/21 08:51	138	365	11/22/21 08:52	139	365	
Duplicate BJK0561-DUP2	07/06/21 17:16	11/19/21 10:49	11/22/21 08:51	138	365	11/22/21 08:52	139	365	

* Indicates hold time exceedance.

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METHOD DETECTION AND REPORTING LIMITS

SM 2540 G-97

Laboratory: Analytical Resources, LLC
SDG: 21K0332
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Matrix: Solid
Instrument:

Analyte	MDL	RL	Units
Total Solids	0.04	0.04	%

Rush

TOTAL SOLIDS BENCHSHEET	Batch:	BJK0591
Method: PSEP 1986	Date:	11/22/2021 14:34
(dry at 103-105 C)	Analyst:	TW
Instrumentation	Drying Oven:	Ø15
	Analytical Balance:	B139298 ØØ2

Batch drying time					
Record times as mm/dd/yy hh:mm			Oven Temp, C	TS (%) calculated as:	Oven Temps, °C
Date/time in oven:	11/22/21	15:48		Final dry wt (g) = (Dry Wt - Tare Wt)	Start Temp: 107
Date/time out:	11/23/21	Ø5:38		TS = (Final Dry Wt X 100)/ (sample & dish -dish tare)	End Temp: 105
Elapsed hrs:	0.0				

SAMPLE ID	Dish Tare Wt (g)	Dish with Sample (g)	Dry Wt (g)	Solids Wt (g)	TS (%)	Sample Decanted
21K0332-01 A	1.09	12.02	9.67			No
21K0353-01 A	1.10	12.07	3.34			No

T/S + screens

2 copies

TOTAL SOLIDS BENCHSHEET

Method: PSEP 1986

(dry at 103-105 C)

Batch:	BJK0591
Date:	11/22/2021 14:34
Analyst:	TW
Drying Oven:	15
Analytical Balance:	B139298002

Instrumentation

Batch drying time		
Record times as mm/dd/yy hh:mm		Oven Temp, C
Date/time in oven:	11/22/2021 15:48	
Date/time out:	11/23/2021 5:38	
Elapsed hrs:	13.8	

TS (%) calculated as:

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

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

Oven Temps, °C	
Start Temp:	107
End Temp:	105

SAMPLE ID	Dish Tare Wt (g)	Dish with Sample (g)	Dry Wt (g)	Solids Wt (g)	TS (%)	Sample Decanted
21K0332-01	1.0900	12.0200	9.6700	8.58	**78.50%**	No
21K0353-01	1.1000	12.0700	3.3400	2.24	**20.42%**	No