LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 3

2022

Bate Stamp Numbers
01075084 – 01077056

Prepared for

Department of the Army
Longhorn Army Ammunition Plant

1976–2022

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD – CHRONOLOGICAL INDEX

VOLUME 3

2022

A.	Title:	(Cont.) Report – Appendix C Level IV DOD to Draft Final Fourth Annual Remedial Action Operation Report, LHAAP-35B (37) (Chemical Laboratory), Longhorn Army Ammunition Plant, Karnack, Texas, January 2022
	Author(s):	Department of the Army
	Recipient:	U.S. Environmental Protection Agency and Texas Commission on Environmental Quality
	Date:	January 25, 2022
	Bate Stamp:	01075084 – 01075938
B.	Title:	Letter – Request for Schedule Extension for LHAAP-47 Draft Revised ROD Response to Comments
	Author(s):	Department of the Army
	Recipient:	U.S. Environmental Protection
	Date:	January 27, 2022
	Bate Stamp:	01075939 – 01075939
C.	Title:	(Cont.) Letter – Request for Schedule Extension for LHAAP-47 Draft Revised ROD Response to Comments
	Author(s):	Department of the Army
	Recipient:	Texas Commission on Environmental Quality
	Date:	January 27, 2022
	Bate Stamp:	01075940 – 01075940
D.	Title:	Memorandum – Data Summary-Data Gap Proposed Approach from the March 3, 2021 LHAAP-29 field investigation and the Eurofins Reanalysis
	Author(s):	Department of the Army
	Recipient:	U.S. Environmental Protection Agency and Texas Commission on Environmental Quality
	Date:	January 31, 2022
	Bate Stamp:	01075941 – 01075963
E.	Title:	Report – Draft Final Seventh Annual Remedial Action Operation Report, LHAAP-46 (Plant 2 Area), Longhorn Army Ammunition Plant, Karnack, Texas
	Author(s):	Department of the Army
	Recipient:	U.S. Environmental Protection Agency and Texas Commission on Environmental Quality
	Date:	January 31, 2022
	Bate Stamp:	01075964 – 01076316

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
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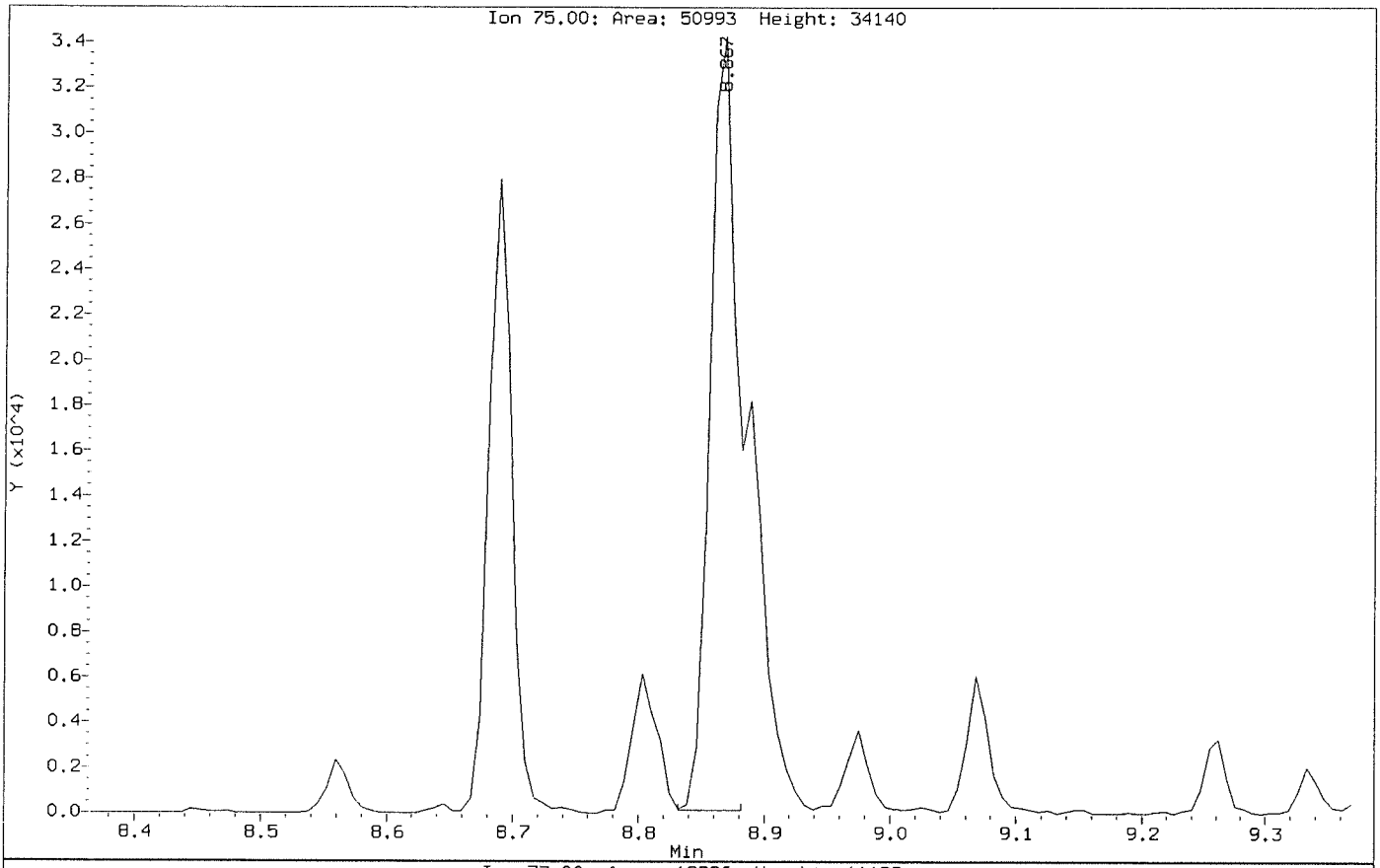
VOLUME 3 (Cont.)

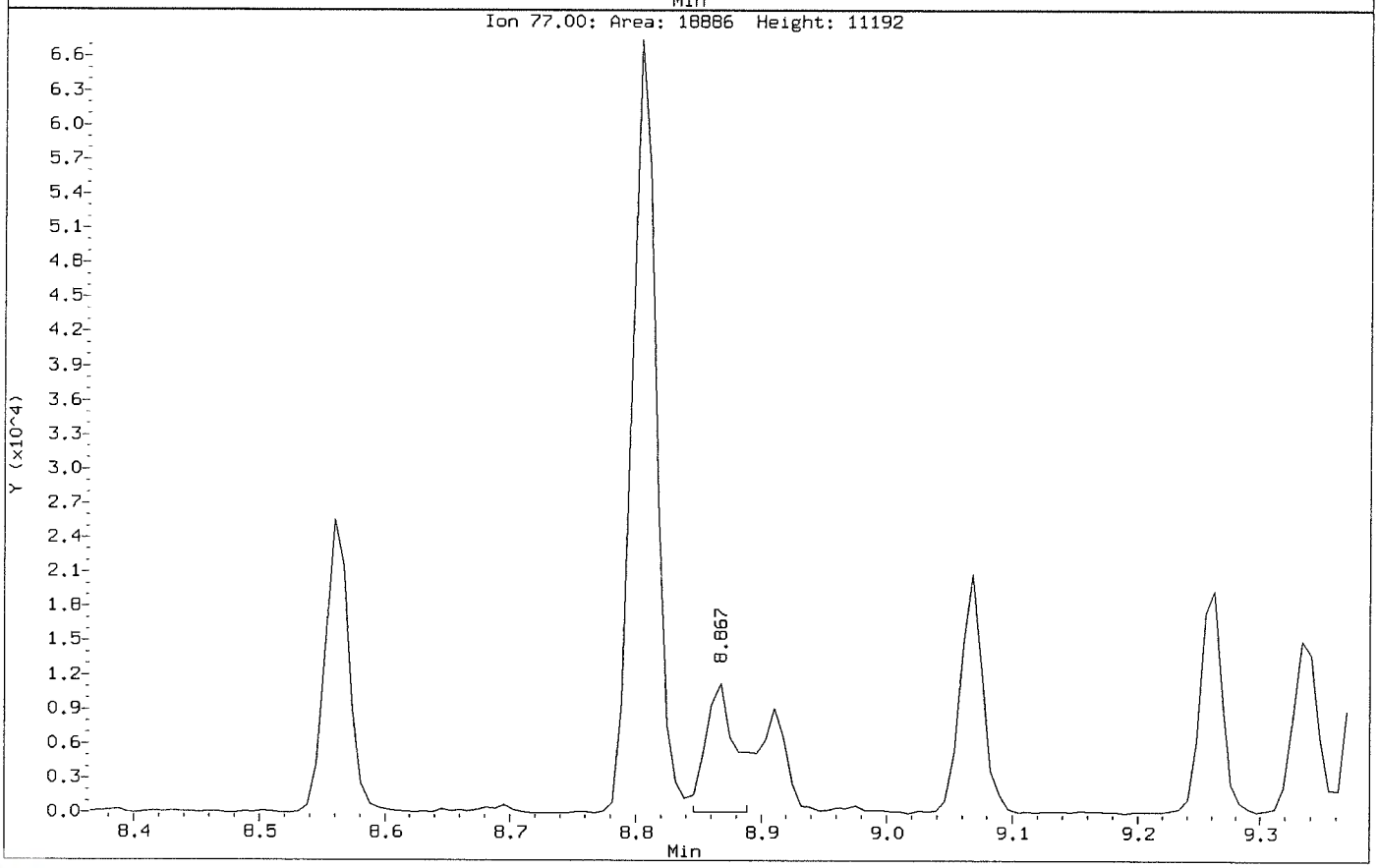
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F.	Title:	(Cont.) Report – Draft Final Seventh Annual Remedial Action Operation Report, LHAAP-46 (Plant 2 Area), Longhorn Army Ammunition Plant, Karnack, Texas
	Author(s):	Department of the Army
	Recipient:	U.S. Environmental Protection Agency and Texas Commission on Environmental Quality
	Date:	January 31, 2022
	Bate Stamp:	01076317 – 01076878
G.	Title:	Minutes – Final Monthly Managers' Meeting (MMM), Longhorn Army Ammunition Plant (LHAAP), January 19, 2022
	Author(s):	Bhate Environmental Associates, Inc.
	Recipient:	All Parties
	Date:	February 18, 2022
	Bate Stamp:	01076879 – 01076890
H.	Title:	Report – Draft Final Pre-Design Investigation Report, LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas
	Author(s):	Department of the Army
	Recipient:	U.S. Environmental Protection Agency and Texas Commission on Environmental Quality
	Date:	February 24, 2022
	Bate Stamp:	01076891 – 01077056

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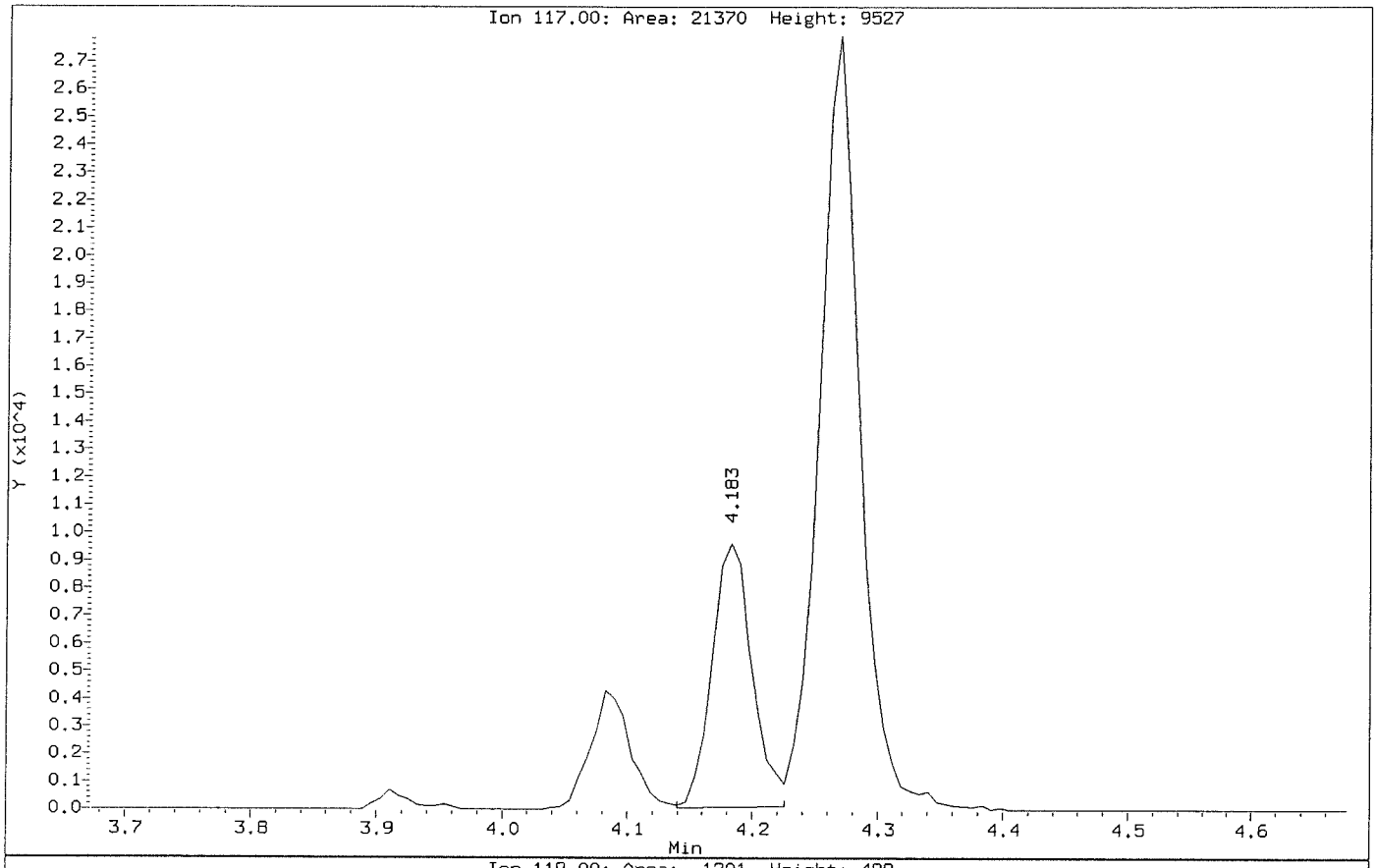
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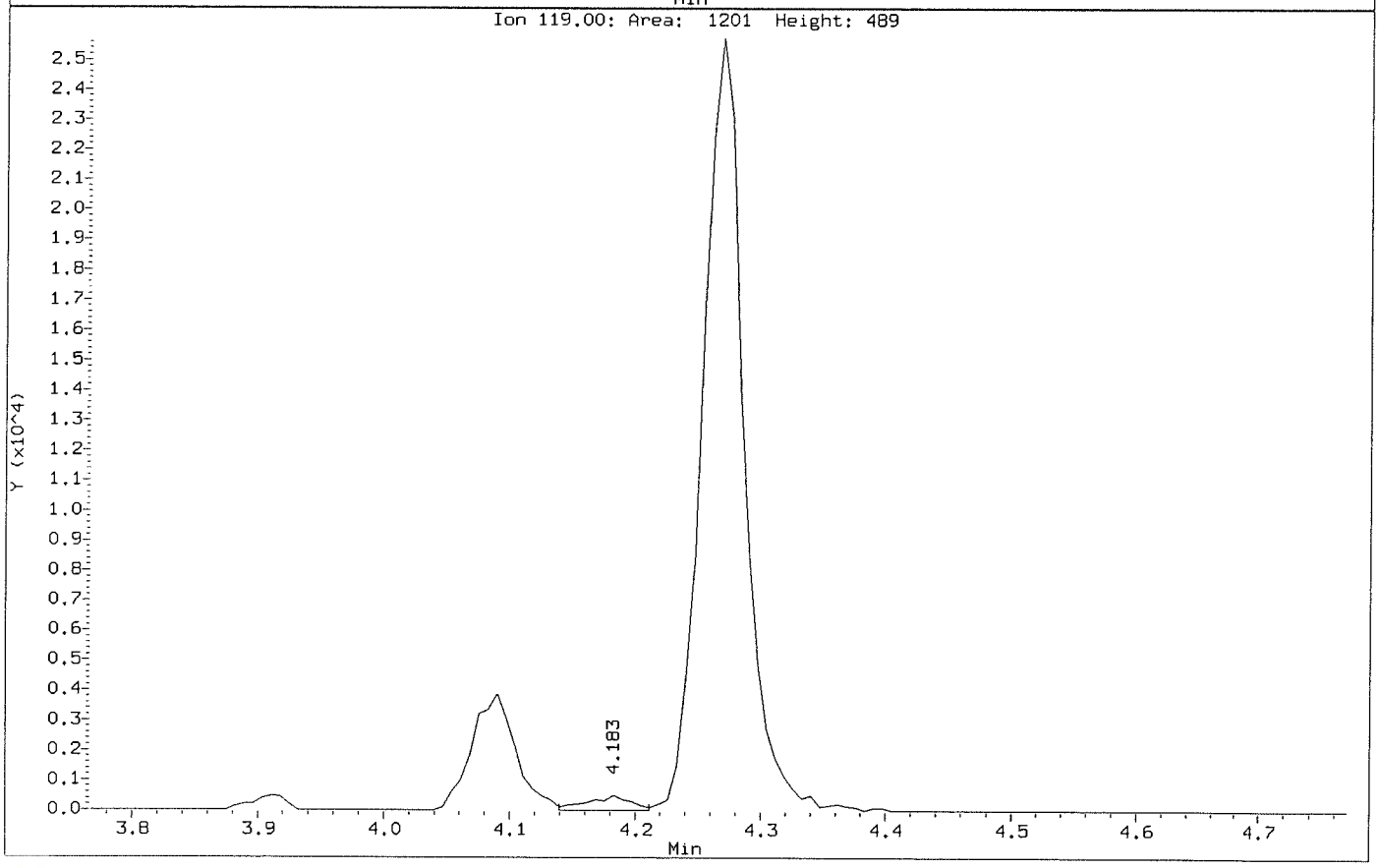




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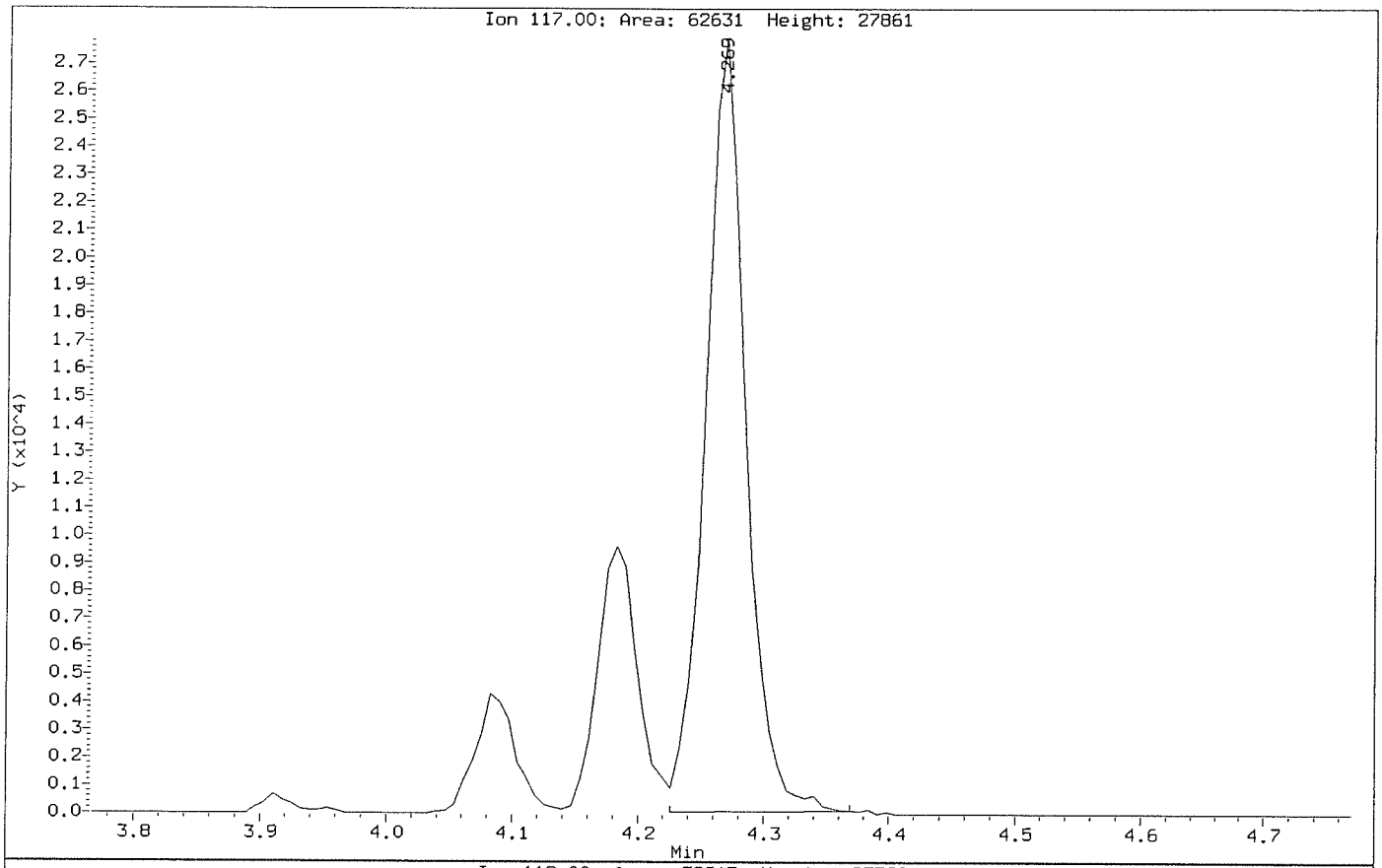
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CAS Number: 56-23-5

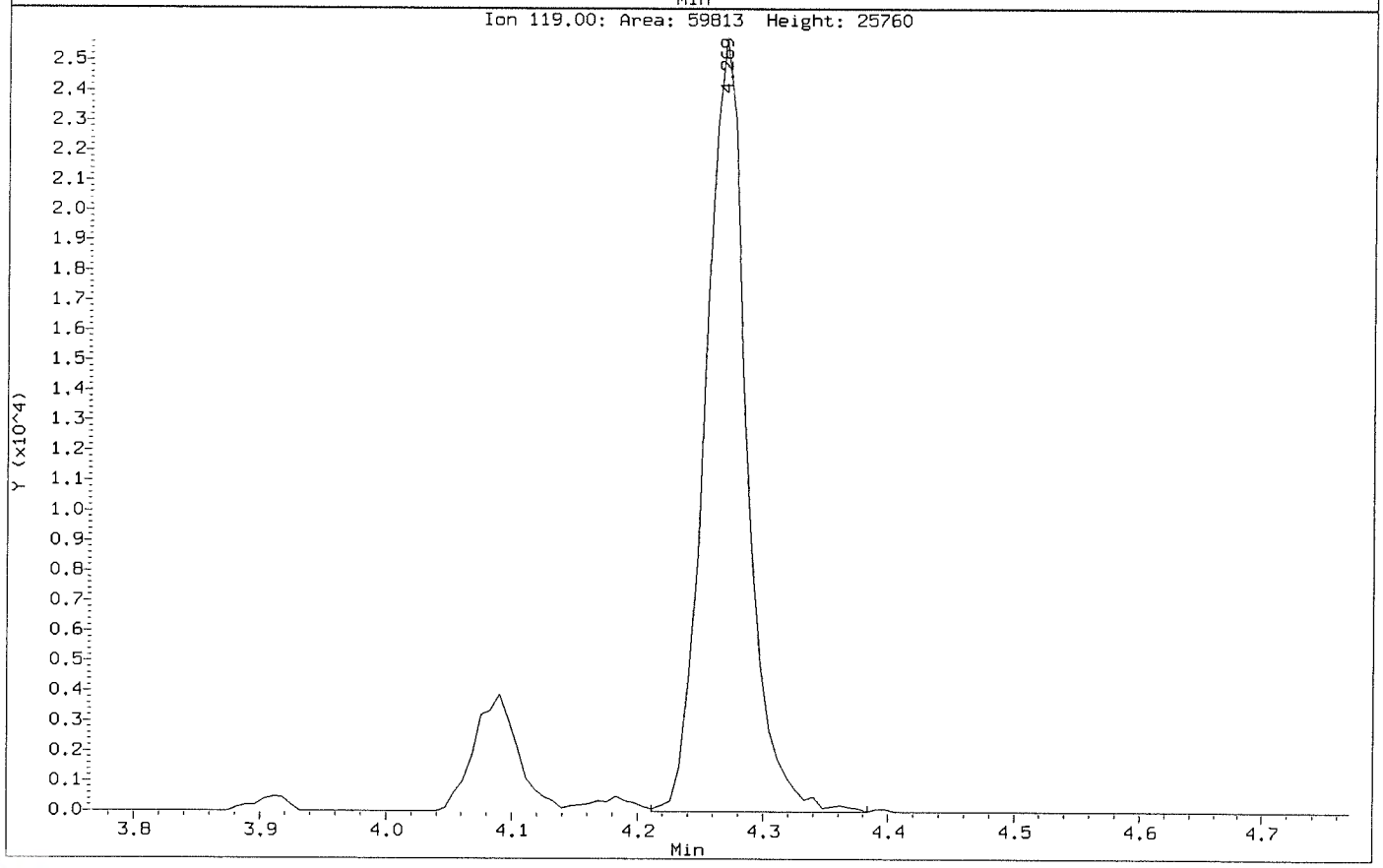




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Compound: Carbon Tetrachloride
CAS Number: 56-23-5





ALS Laboratory Group

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Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

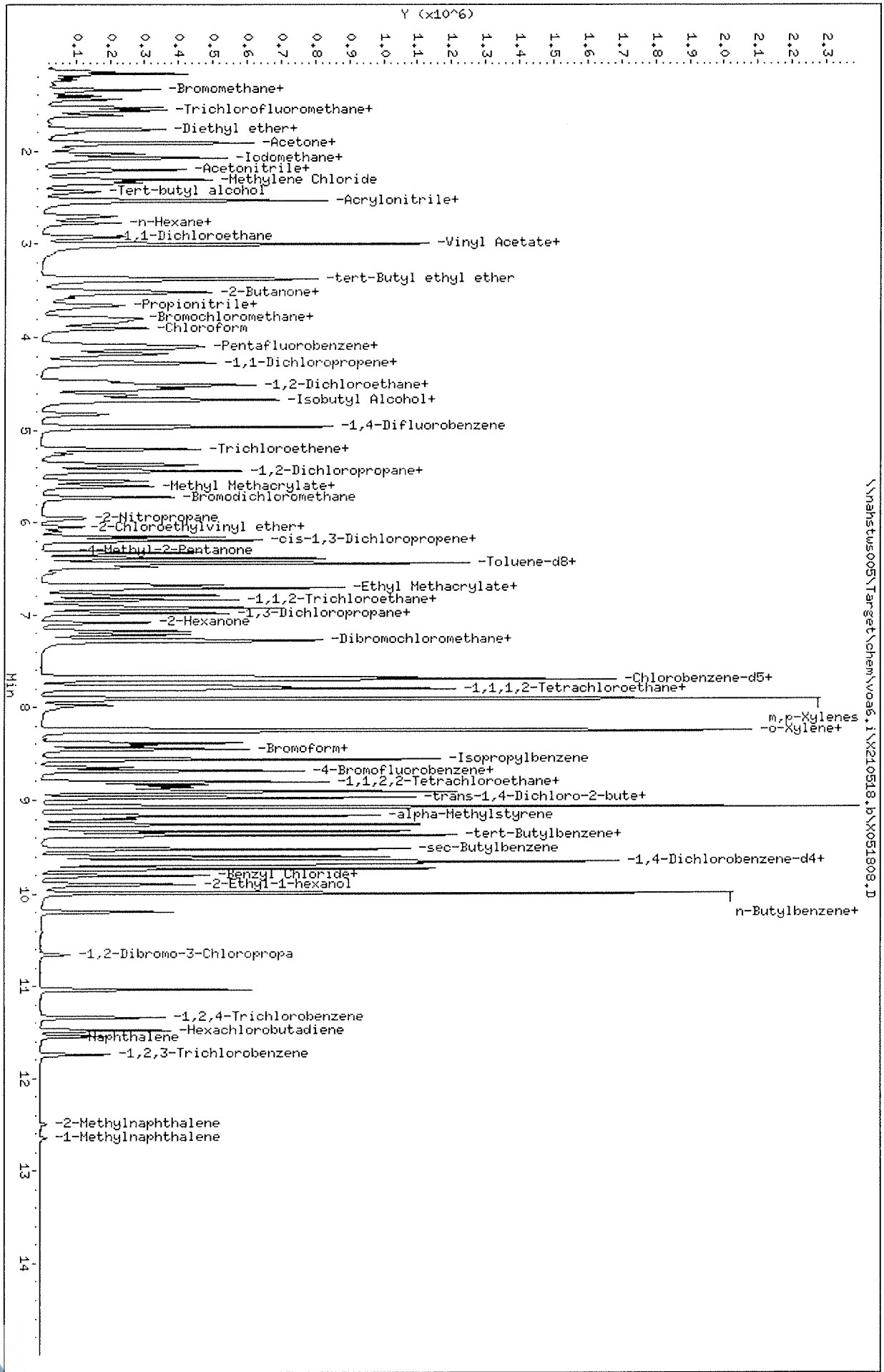
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	271623	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	462076	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	443934	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	234223	50.0000	
$	35 1,2-Dichloroethane-d4	65	4.469	4.469	(1.068)	177225	50.0000	50.15
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	197985	50.0000	47.25
$	30 Dibromofluoromethane	113	4.103	4.103	(0.981)	145001	50.0000	47.91
$	48 Toluene-d8	98	6.388	6.388	(0.833)	483036	50.0000	44.41
	60 1,1,1,2-Tetrachloroethane	131	7.771	7.771	(1.013)	158680	50.0000	49.06
	31 1,1,1-Trichloroethane	97	4.082	4.082	(0.976)	219680	50.0000	47.55
	68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	192852	50.0000	49.70
	138 Freon TF	101	1.912	1.912	(0.457)	103127	50.0000	40.01
	53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	126274	50.0000	48.96
	22 1,1-Dichloroethane	63	2.922	2.922	(0.699)	244803	50.0000	48.66
	11 1,1-Dichloroethene	96	1.919	1.919	(0.459)	113858	50.0000	41.91
	32 1,1-Dichloropropene	75	4.283	4.283	(0.863)	169476	50.0000	42.81
	93 1,2,3-Trichlorobenzene	180	11.739	11.739	(1.215)	53322	50.0000	47.87
	71 1,2,3-Trichloropropane	75	8.860	8.860	(0.917)	161438	50.0000	50.79(MH)
	90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	93881	50.0000	44.87
	79 1,2,4-Trimethylbenzene	105	9.375	9.375	(0.970)	554335	50.0000	46.53
	89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.103)	14297	50.0000	45.43
	57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	158974	50.0000	51.29

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Report Date: 22-Jun-2021 08:20

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	296098	50.0000	45.10
33	1,2-Dichloroethane	62	4.555	4.555	(0.918)	227654	50.0000	50.10
42	1,2-Dichloropropane	63	5.436	5.436	(1.095)	149596	50.0000	48.17
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	547543	50.0000	46.83
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	319195	50.0000	47.43
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	251676	50.0000	49.85
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	328636	50.0000	47.76
26	2,2-Dichloropropane	77	3.516	3.516	(0.841)	208486	50.0000	46.33
24	2-Butanone	43	3.581	3.581	(0.856)	99370	100.000	99.10
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	468855	50.0000	44.91
52	2-Hexanone	43	7.083	7.083	(0.923)	184352	100.000	97.93
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	567359	50.0000	46.61
82	p-Isopropyltoluene	119	9.648	9.648	(0.999)	521890	50.0000	45.12
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	268097	100.000	94.82
10	Acetone	43	1.976	1.976	(0.473)	67628	100.000	98.41
37	Benzene	78	4.512	4.512	(0.909)	558350	50.0000	48.84
74	Bromobenzene	156	8.802	8.802	(0.911)	182153	50.0000	46.65
29	Bromochloromethane	128	3.795	3.795	(0.908)	81173	50.0000	49.03
39	Bromodichloromethane	83	5.729	5.729	(1.154)	217522	50.0000	48.72
66	Bromoform	173	8.408	8.408	(1.096)	108857	50.0000	50.70
6	Bromomethane	94	1.339	1.339	(0.320)	137904	50.0000	48.28
19	Carbon Disulfide	76	2.069	2.069	(0.495)	618017	100.000	96.57
34	Carbon Tetrachloride	117	4.268	4.268	(0.860)	174579	50.0000	43.34(H)
59	Chlorobenzene	112	7.692	7.692	(1.003)	415148	50.0000	47.69
7	Chloroethane	64	1.403	1.403	(0.336)	91299	50.0000	44.40
28	Chloroform	83	3.910	3.910	(0.935)	276573	50.0000	47.92
3	Chloromethane	50	1.081	1.081	(0.258)	144469	50.0000	49.31
27	cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	150804	50.0000	48.17
46	cis-1,3-Dichloropropene	75	6.152	6.152	(1.240)	254601	50.0000	50.25
55	Dibromochloromethane	129	7.176	7.176	(0.936)	176711	50.0000	50.92
44	Dibromomethane	93	5.550	5.550	(1.118)	108491	50.0000	48.74
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	146727	50.0000	43.21
61	Ethylbenzene	106	7.800	7.800	(1.017)	206868	50.0000	48.08
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	54907	50.0000	39.76
67	Isopropylbenzene	105	8.559	8.559	(1.116)	617711	50.0000	46.98
62	m,p-Xylenes	106	7.907	7.907	(1.031)	542165	100.000	97.79
17	Methylene Chloride	84	2.306	2.306	(0.551)	132553	50.0000	48.66
87	n-Butylbenzene	91	9.991	9.991	(1.034)	487657	50.0000	44.33
73	n-Propylbenzene	91	8.910	8.910	(0.922)	762402	50.0000	45.95
92	Naphthalene	128	11.546	11.546	(1.195)	135654	50.0000	44.37
63	o-Xylene	106	8.244	8.244	(1.075)	260680	50.0000	48.34
81	sec-Butylbenzene	105	9.519	9.519	(0.985)	600068	50.0000	43.70
64	Styrene	104	8.258	8.258	(1.077)	468440	50.0000	46.43
78	tert-Butylbenzene	119	9.340	9.340	(0.967)	433704	50.0000	43.71
56	Tetrachloroethene	164	6.926	6.926	(0.903)	113805	50.0000	46.13
50	Toluene	91	6.446	6.446	(0.840)	631628	50.0000	49.31
20	trans-1,2-Dichloroethene	96	2.535	2.535	(0.606)	121902	50.0000	46.64
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	240773	50.0000	54.33
38	Trichloroethene	130	5.207	5.207	(1.049)	143217	50.0000	46.80
8	Trichlorofluoromethane	101	1.561	1.561	(0.373)	218785	50.0000	41.90
5	Vinyl Chloride	62	1.145	1.145	(0.274)	141344	50.0000	43.10

QC Flag Legend

M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

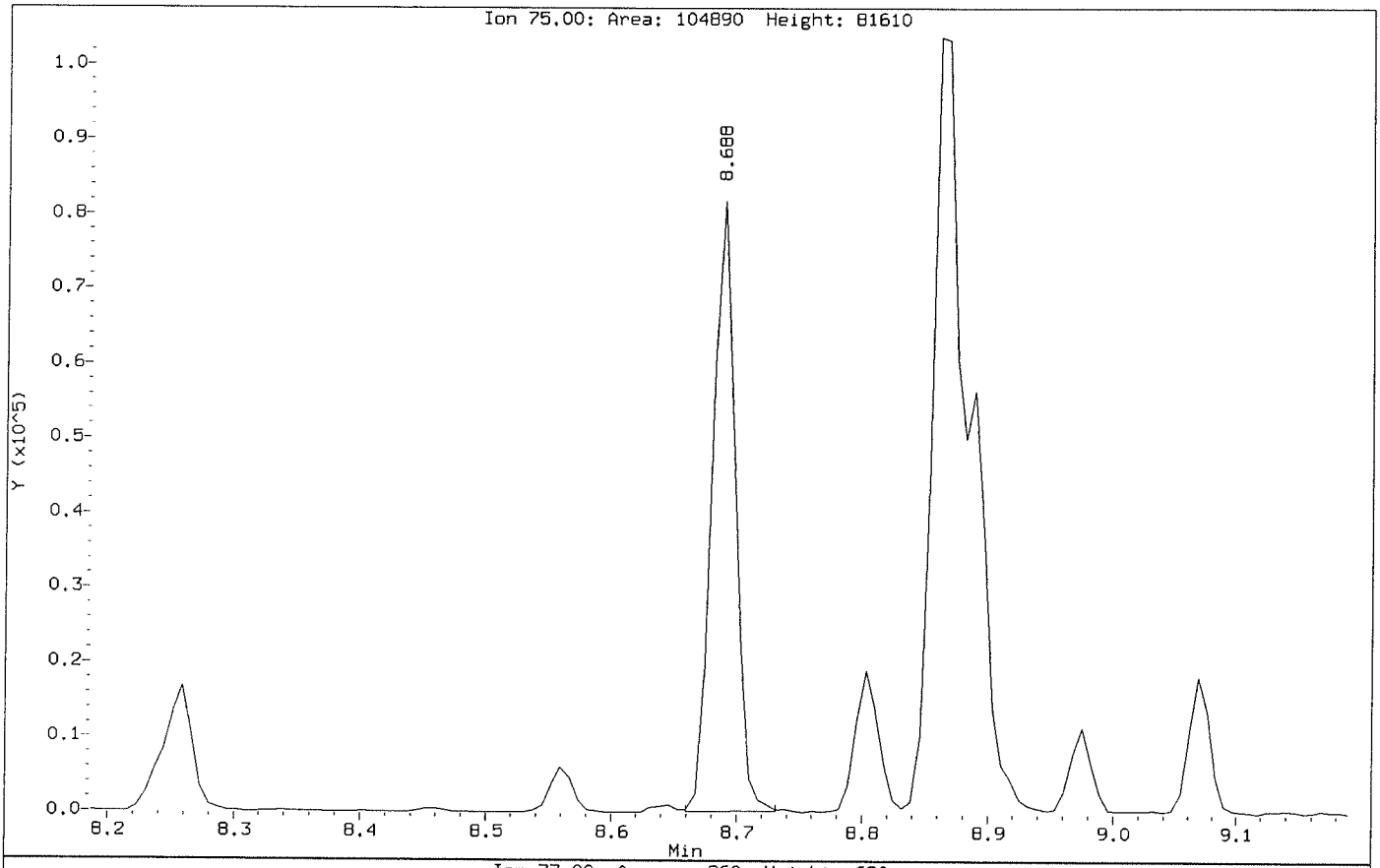


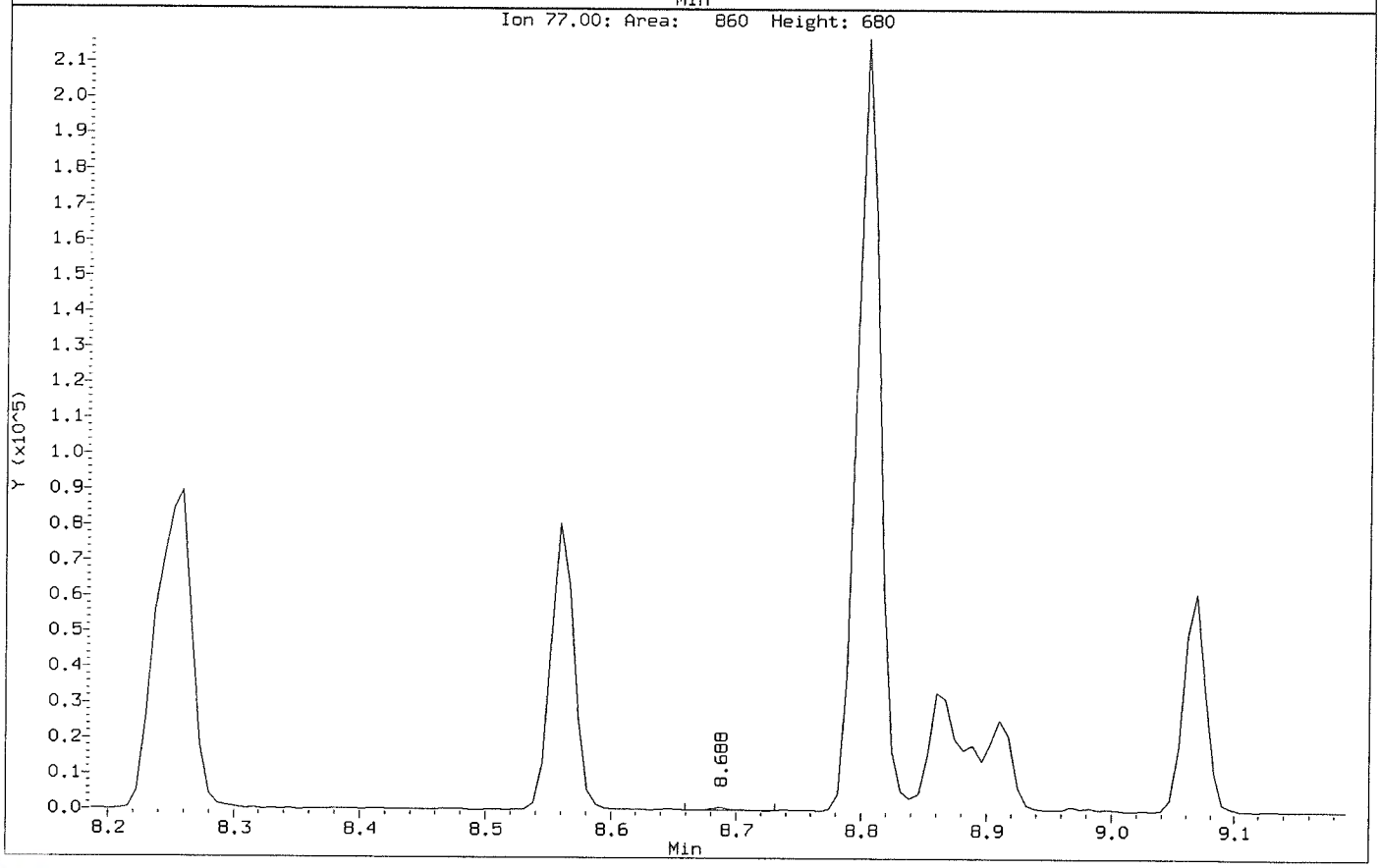
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Instrument: voa6.i
Operator: PC
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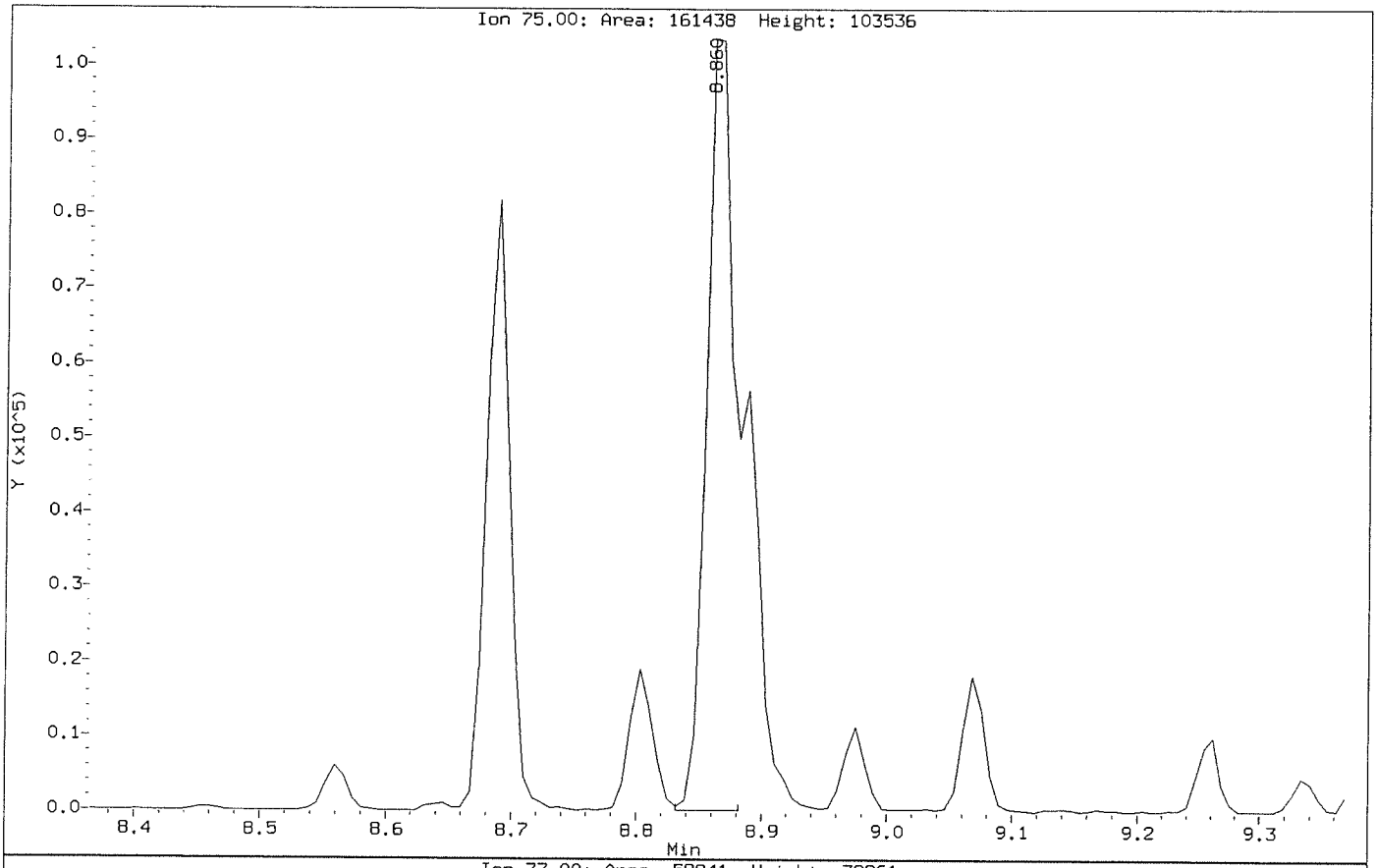
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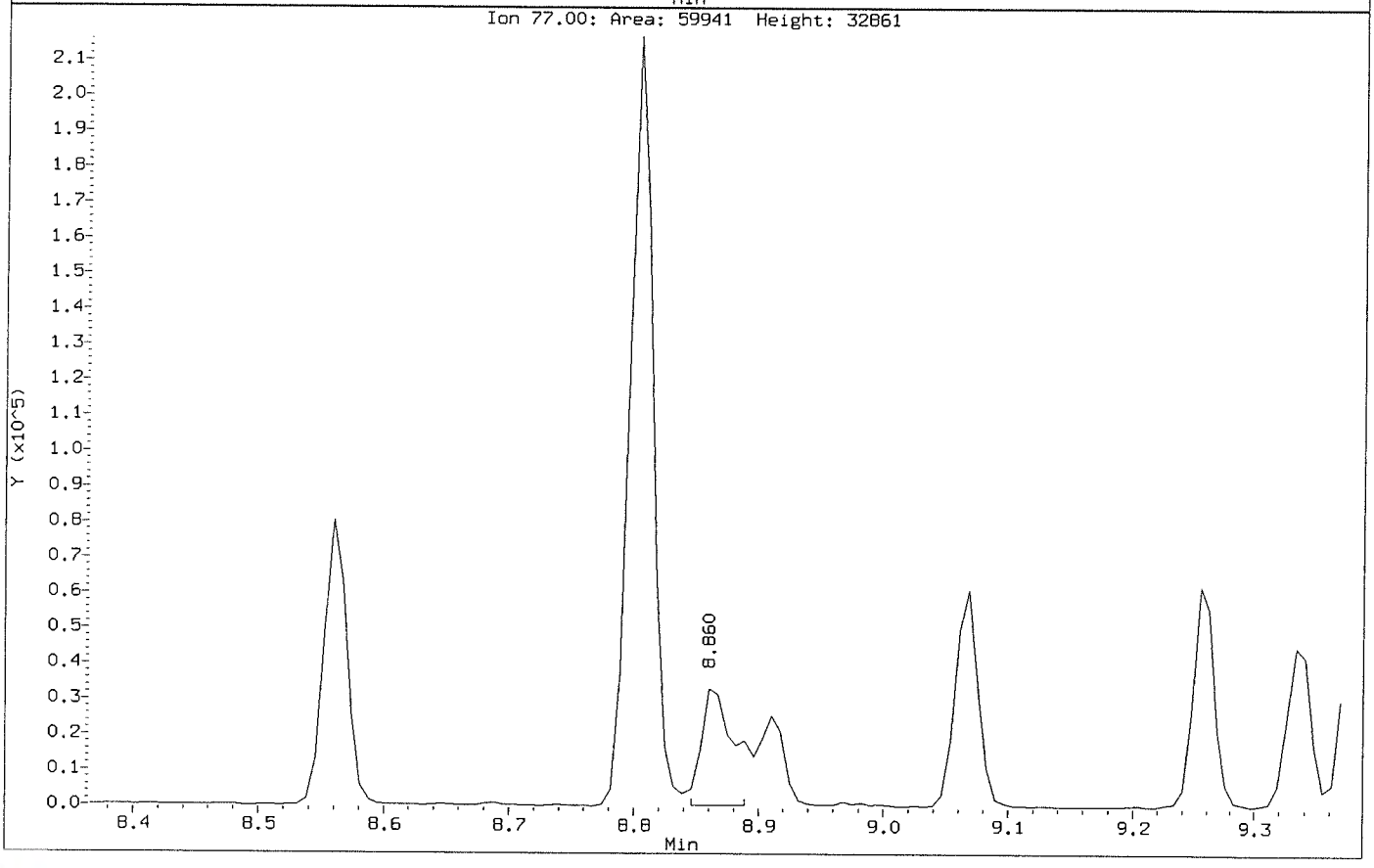




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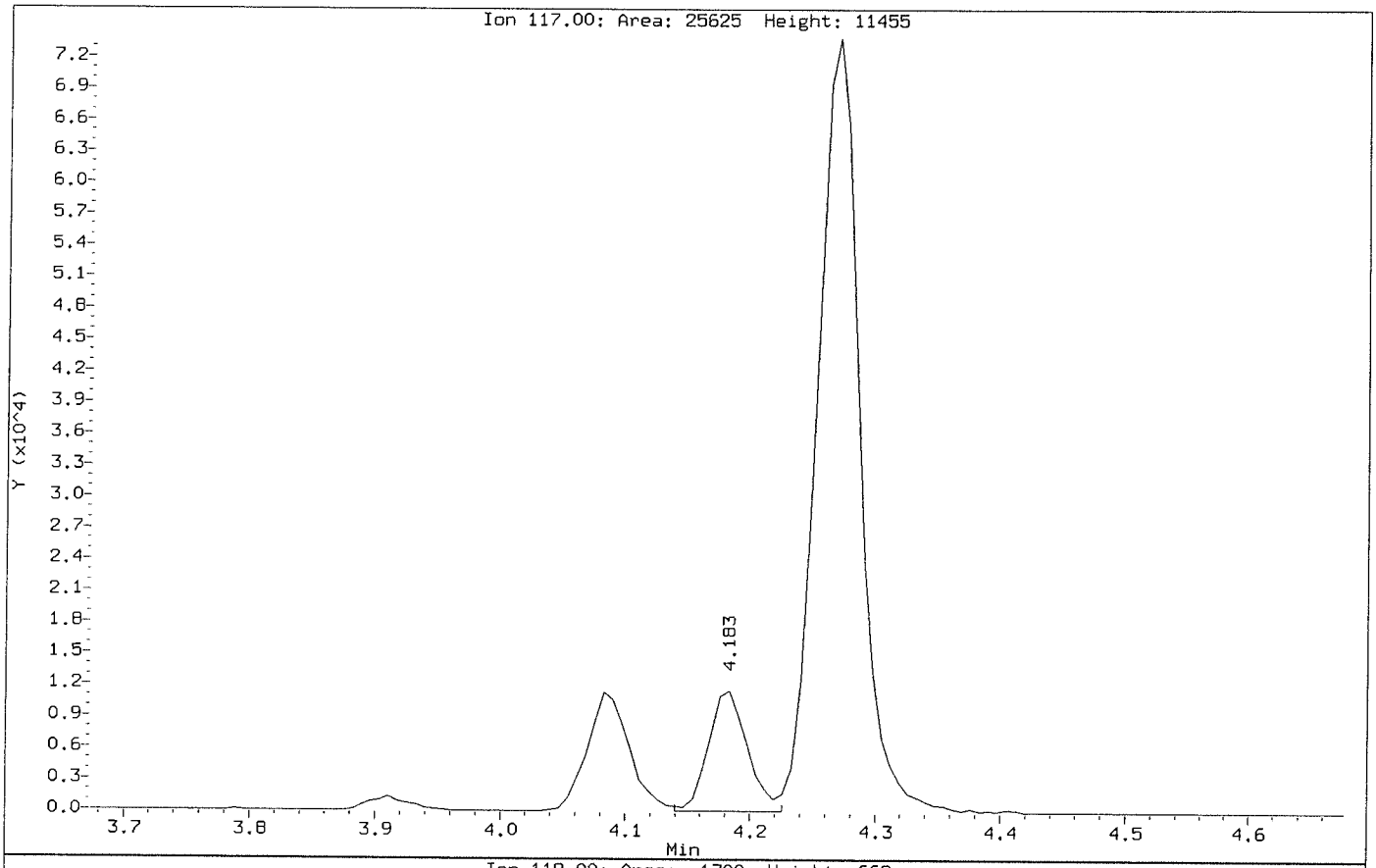
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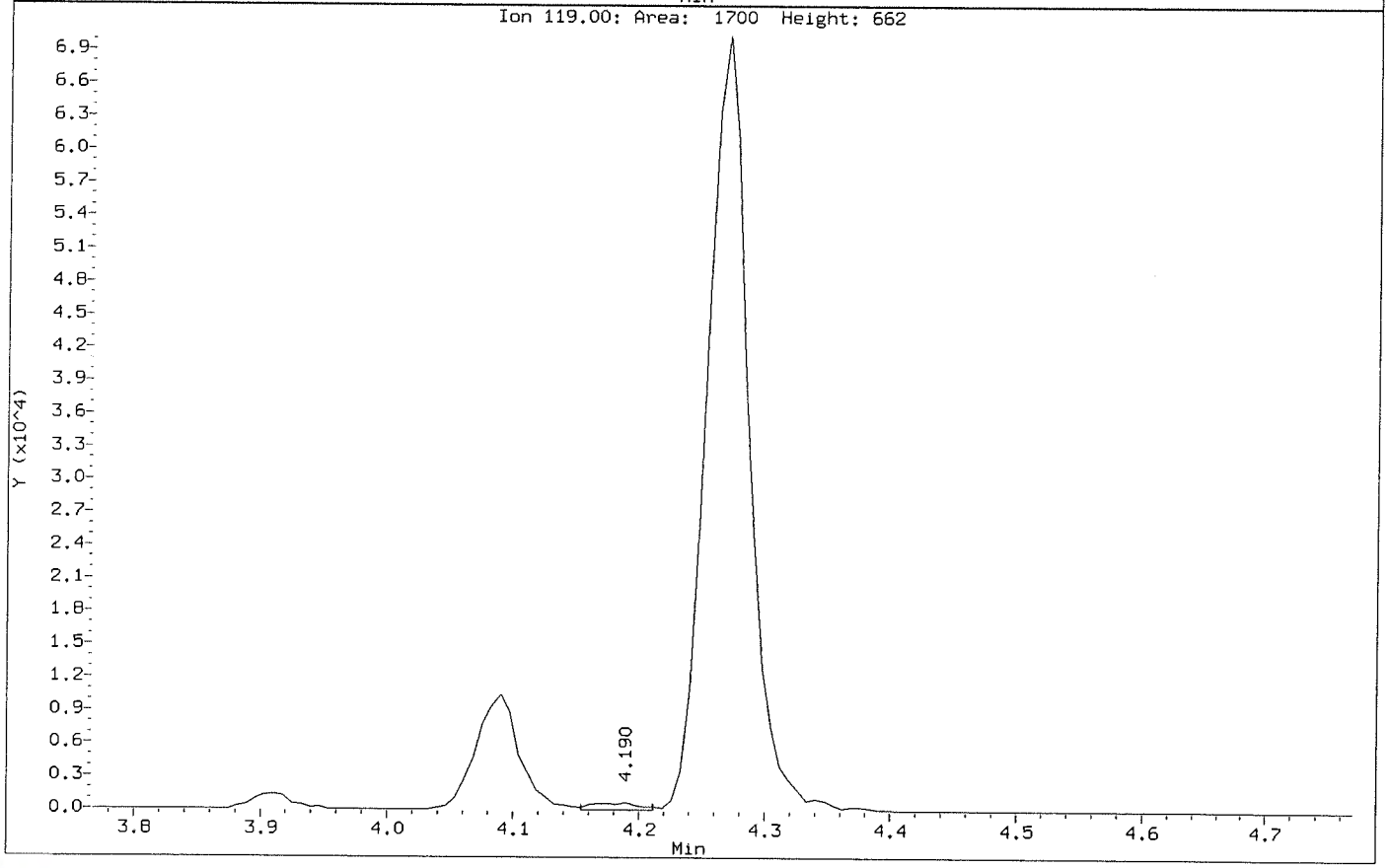




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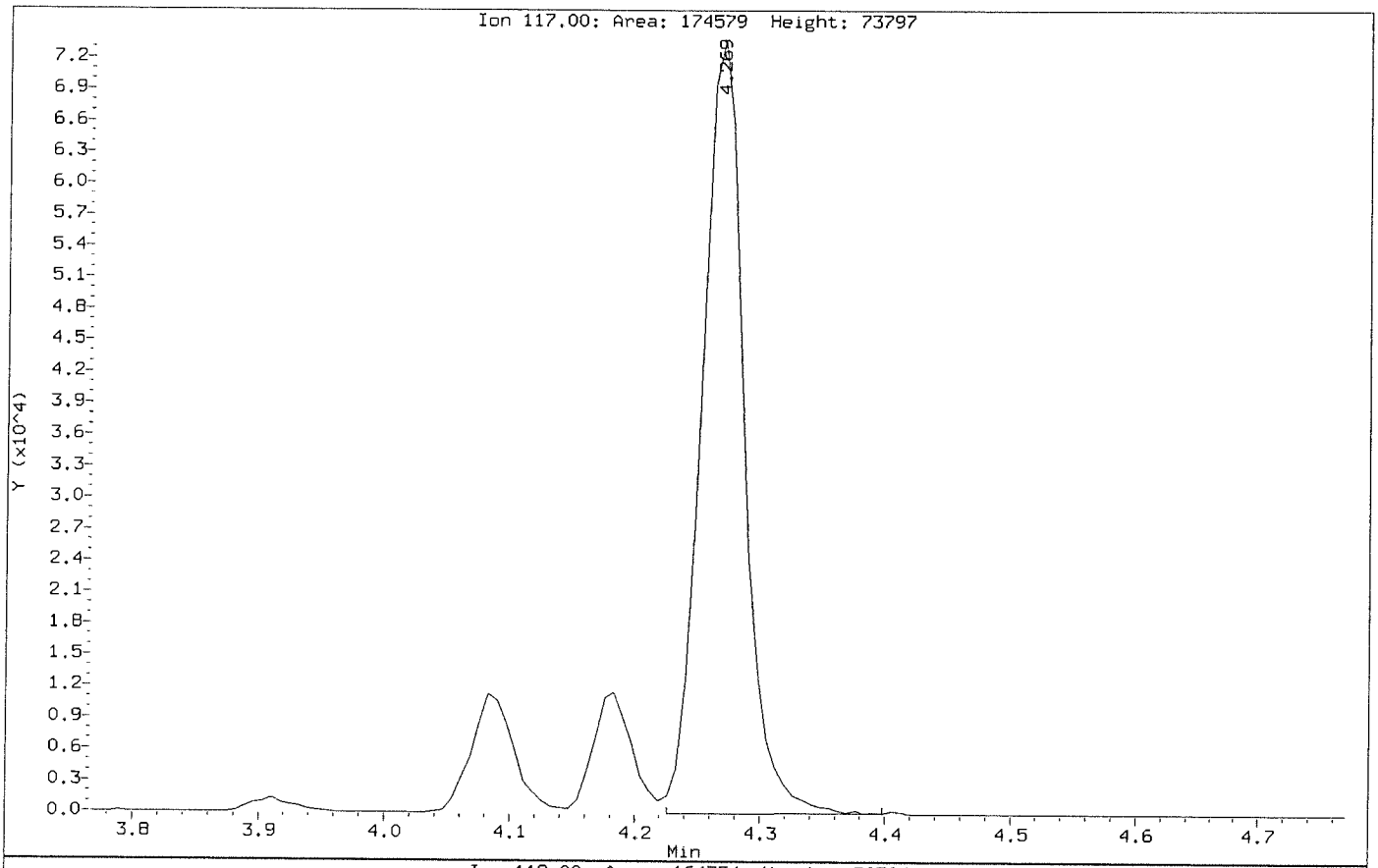
Compound: Carbon Tetrachloride
CAS Number: 56-23-5

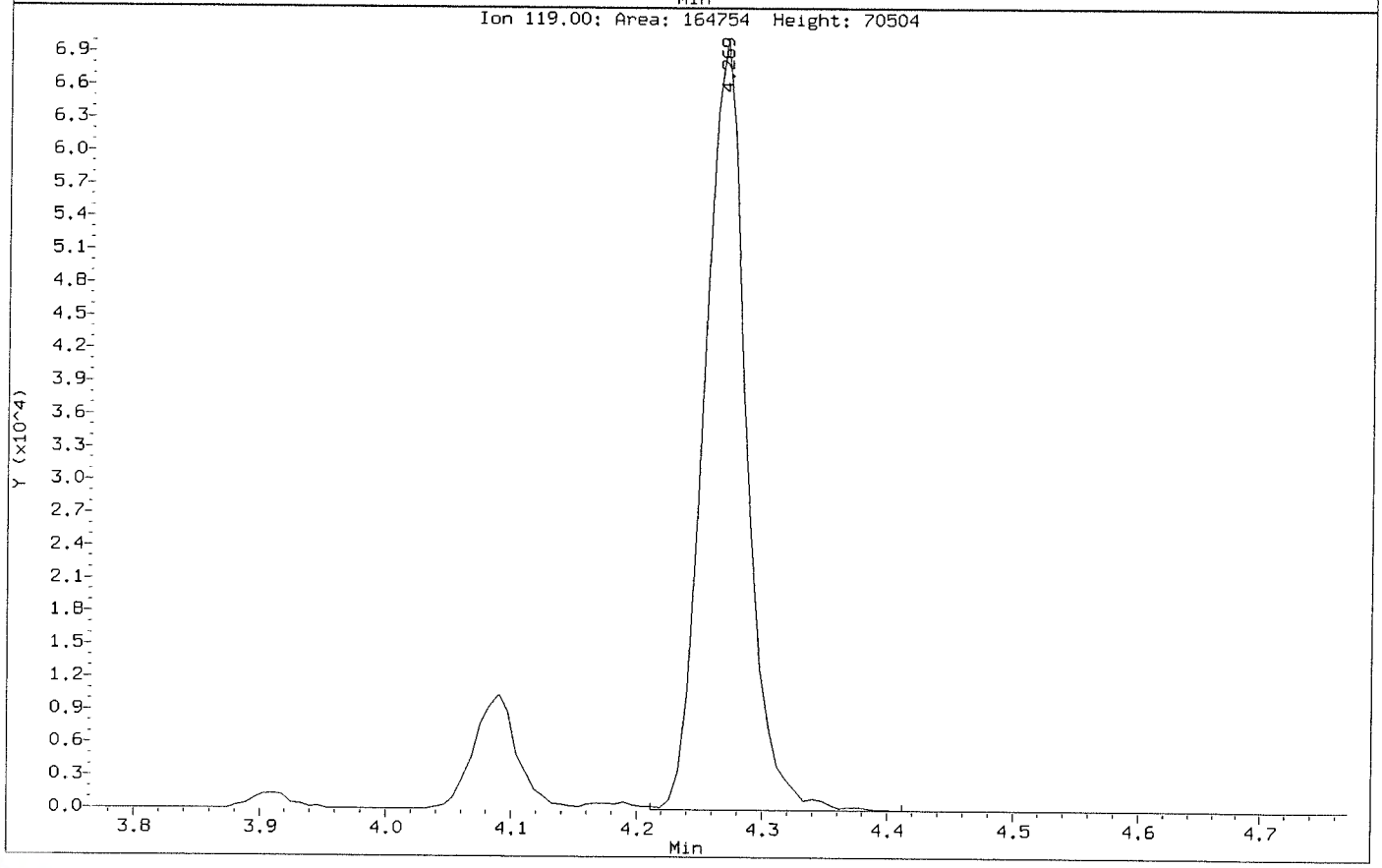




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Instrument: voa6.i
Client Sample ID: VSTD050

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





ALS Laboratory Group

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Meth Date : 22-Jun-2021 08:20 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 10 Calibration Sample, Level: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

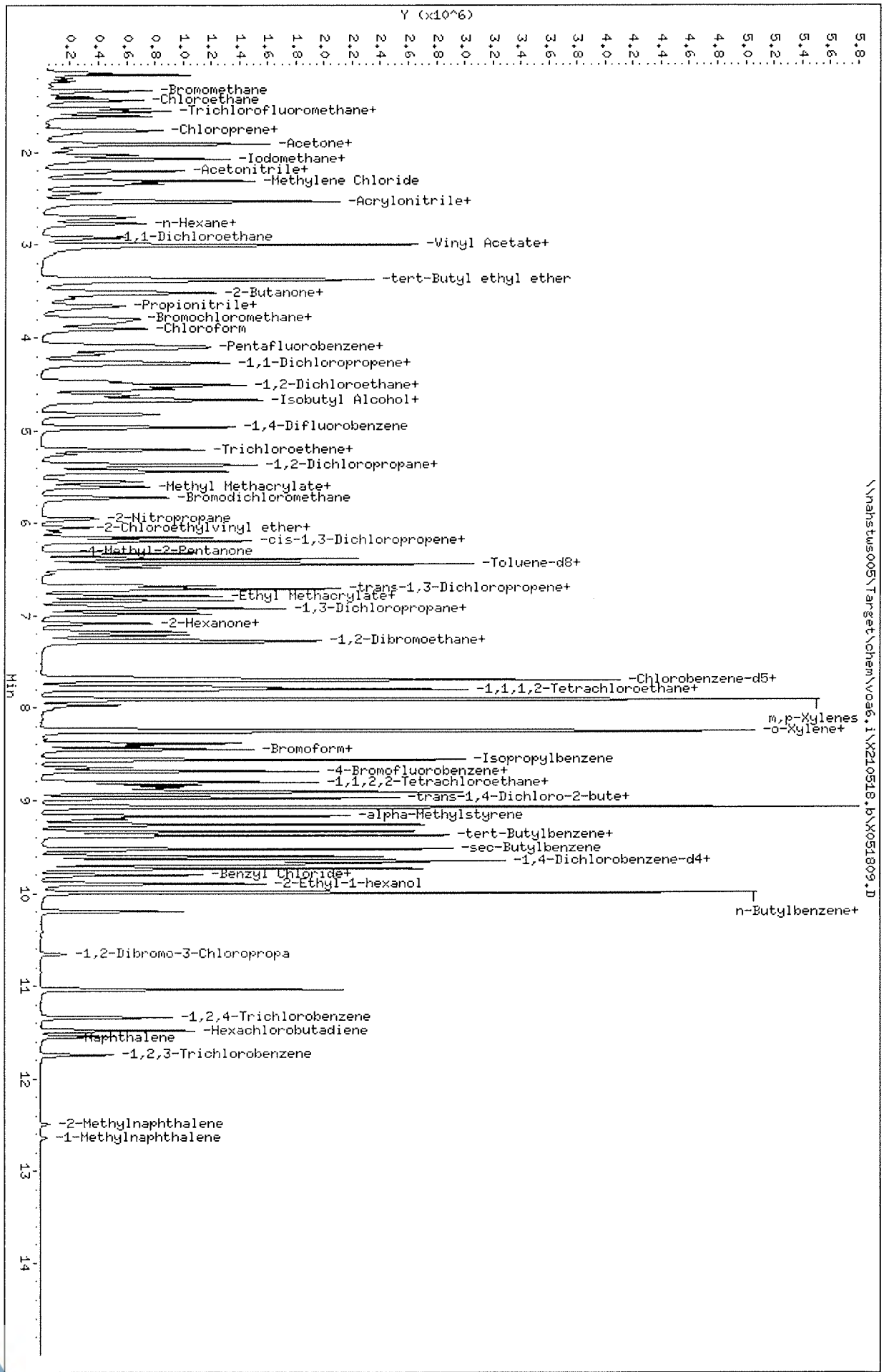
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
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68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	443127	100.000	101.99
138 Freon TF	101	1.919	1.919	(0.459)	289976	100.000	97.33
53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	297064	100.000	102.46
22 1,1-Dichloroethane	63	2.921	2.921	(0.699)	592075	100.000	101.82
11 1,1-Dichloroethene	96	1.911	1.911	(0.457)	287208	100.000	91.46
32 1,1-Dichloropropene	75	4.282	4.282	(0.863)	458513	100.000	103.77
93 1,2,3-Trichlorobenzene	180	11.739	11.739	(1.215)	129422	100.000	99.33
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	370826	100.000	104.28(MH)
90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	230076	100.000	94.78
79 1,2,4-Trimethylbenzene	105	9.375	9.375	(0.970)	1381832	100.000	103.03
89 1,2-Dibromo-3-Chloropropane	155	10.657	10.657	(1.103)	35357	100.000	97.87
57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	370175	100.000	106.24

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	710748	100.000	96.16
33	1,2-Dichloroethane	62	4.555	4.555	(0.918)	496566	100.000	97.91
42	1,2-Dichloropropane	63	5.436	5.436	(1.095)	346292	100.000	99.90
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	1375282	100.000	104.48
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	759728	100.000	100.28
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	570759	100.000	100.57
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	774191	100.000	99.68
26	2,2-Dichloropropane	77	3.509	3.509	(0.839)	542311	100.000	104.25
24	2-Butanone	43	3.580	3.580	(0.856)	243094	200.000	209.73(A)
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	1122830	100.000	95.54
52	2-Hexanone	43	7.090	7.090	(0.924)	424072	200.000	200.67(A)
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	1388921	100.000	101.35
82	p-Isopropyltoluene	119	9.647	9.647	(0.999)	1372597	100.000	105.42
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	642103	200.000	201.91(A)
10	Acetone	43	1.976	1.976	(0.473)	161640	200.000	208.98(A)
37	Benzene	78	4.512	4.512	(0.909)	1325440	100.000	103.87
74	Bromobenzene	156	8.802	8.802	(0.911)	434635	100.000	98.87
29	Bromochloromethane	128	3.795	3.795	(0.908)	192522	100.000	100.60
39	Bromodichloromethane	83	5.729	5.729	(1.154)	522723	100.000	104.89
66	Bromoform	173	8.408	8.408	(1.096)	260736	100.000	108.02
6	Bromomethane	94	1.338	1.338	(0.320)	330862	100.000	100.72
19	Carbon Disulfide	76	2.069	2.069	(0.495)	1515397	200.000	204.83(A)
34	Carbon Tetrachloride	117	4.268	4.268	(0.860)	477105	100.000	106.12(H)
59	Chlorobenzene	112	7.692	7.692	(1.003)	991098	100.000	101.27
7	Chloroethane	64	1.403	1.403	(0.336)	231805	100.000	97.52
28	Chloroform	83	3.910	3.910	(0.935)	675366	100.000	101.23
3	Chloromethane	50	1.073	1.073	(0.257)	323129	100.000	95.20
27	cis-1,2-Dichloroethene	96	3.523	3.523	(0.842)	374274	100.000	103.42
46	cis-1,3-Dichloropropene	75	6.152	6.152	(1.240)	610311	100.000	107.93
55	Dibromochloromethane	129	7.176	7.176	(0.936)	418487	100.000	107.28
44	Dibromomethane	93	5.550	5.550	(1.118)	257462	100.000	103.63
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	385804	100.000	95.65
61	Ethylbenzene	106	7.799	7.799	(1.017)	512156	100.000	105.90
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	159233	100.000	97.40
67	Isopropylbenzene	105	8.559	8.559	(1.116)	1609936	100.000	108.92
62	m,p-Xylenes	106	7.907	7.907	(1.031)	1348570	200.000	216.38(A)
17	Methylene Chloride	84	2.305	2.305	(0.551)	327997	100.000	104.16
87	n-Butylbenzene	91	9.991	9.991	(1.034)	1312086	100.000	105.96
73	n-Propylbenzene	91	8.910	8.910	(0.922)	1949961	100.000	104.41
92	Naphthalene	128	11.539	11.539	(1.194)	338098	100.000	94.47
63	o-Xylene	106	8.244	8.244	(1.075)	632124	100.000	104.28
81	sec-Butylbenzene	105	9.519	9.519	(0.985)	1619983	100.000	104.81
64	Styrene	104	8.258	8.258	(1.077)	1137742	100.000	98.28
78	tert-Butylbenzene	119	9.339	9.339	(0.967)	1137349	100.000	101.82
56	Tetrachloroethene	164	6.926	6.926	(0.903)	296905	100.000	107.06
50	Toluene	91	6.446	6.446	(0.840)	1538042	100.000	106.81
20	trans-1,2-Dichloroethene	96	2.527	2.527	(0.604)	308131	100.000	101.99
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	546481	100.000	110.47
38	Trichloroethene	130	5.206	5.206	(1.049)	347501	100.000	101.74
8	Trichlorofluoromethane	101	1.560	1.560	(0.373)	566576	100.000	93.87
5	Vinyl Chloride	62	1.145	1.145	(0.274)	347786	100.000	91.73

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

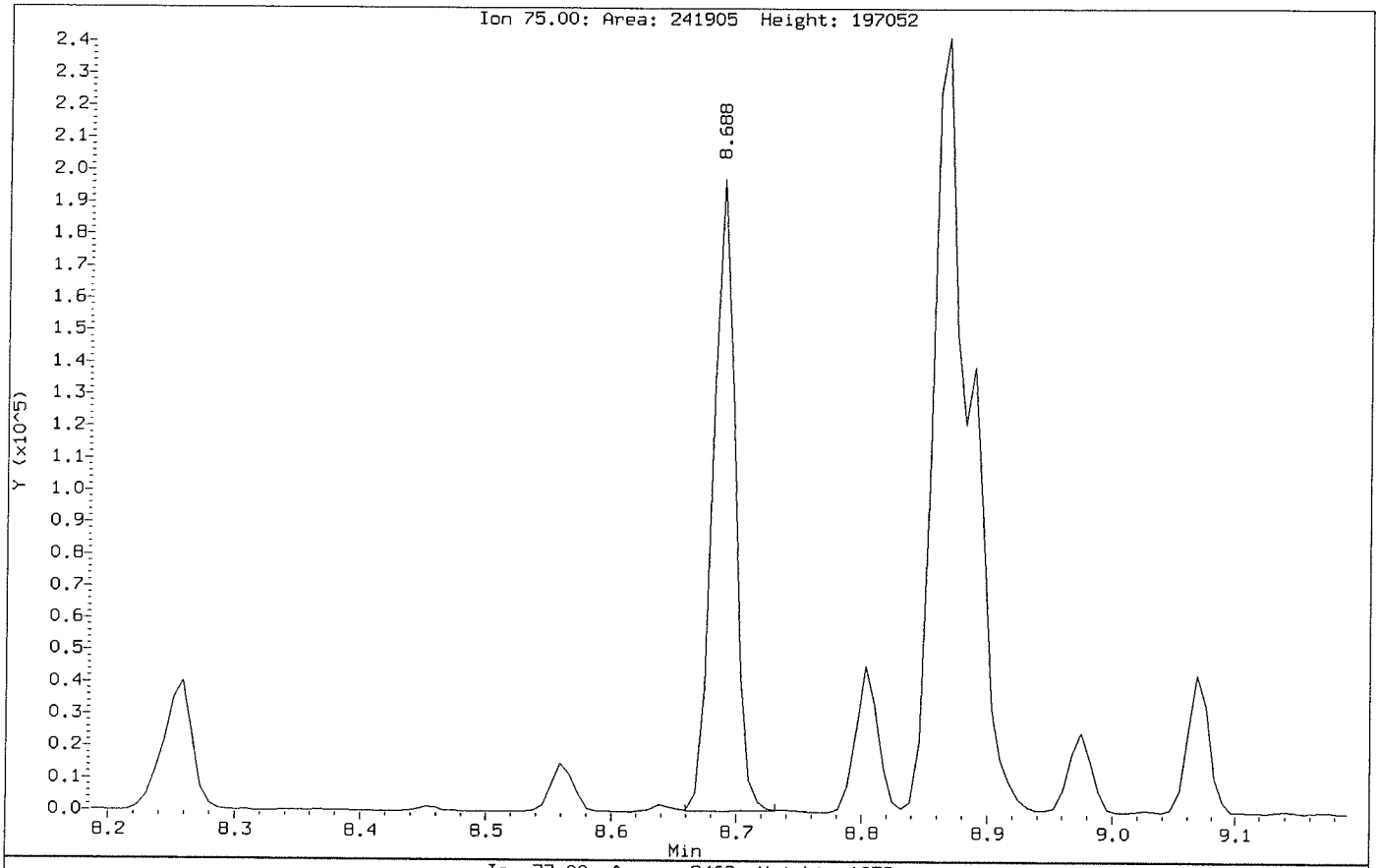


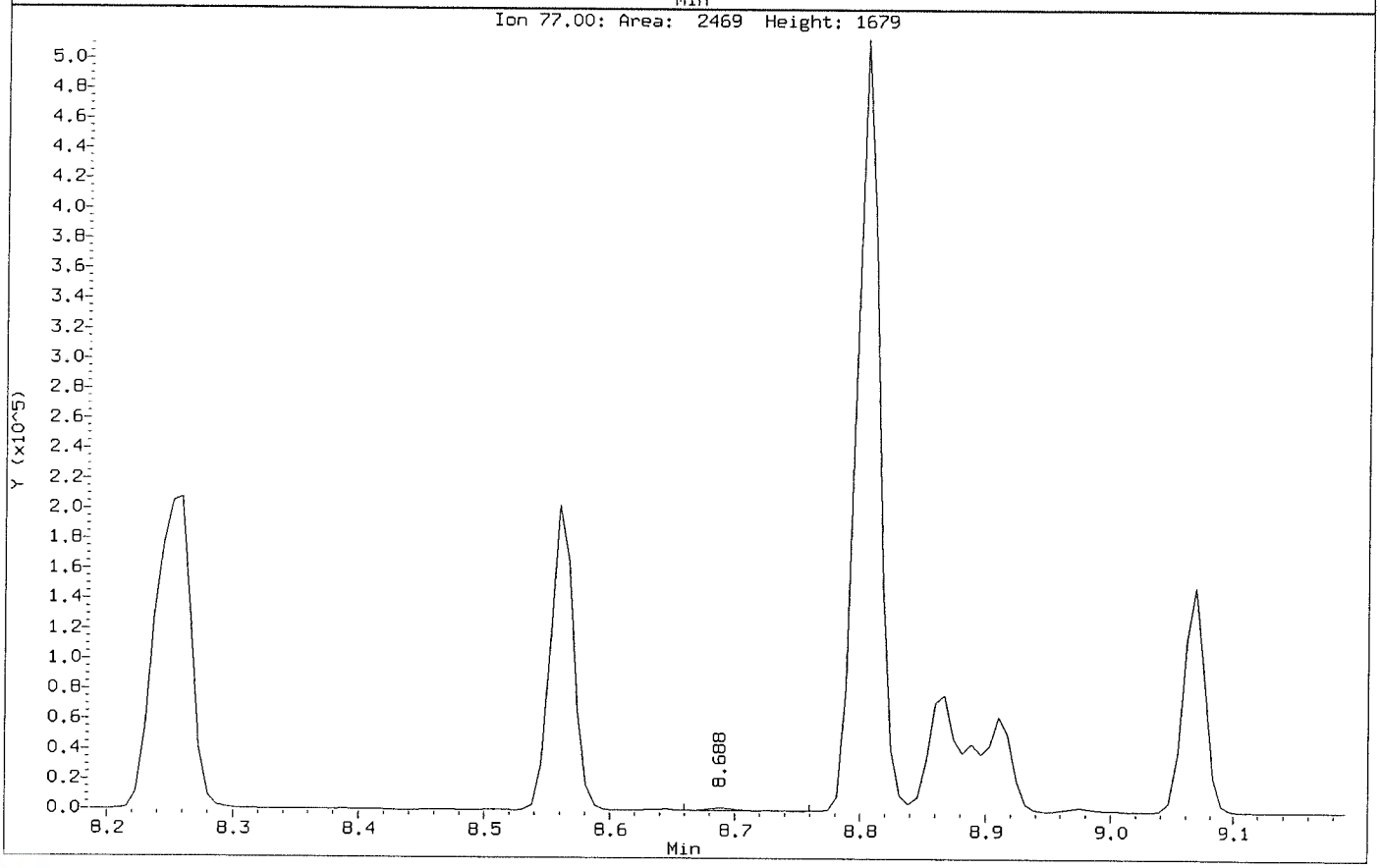
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Sample Info: VSDT100,VSTD100,1,8,,
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

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Instrument: voa6.i
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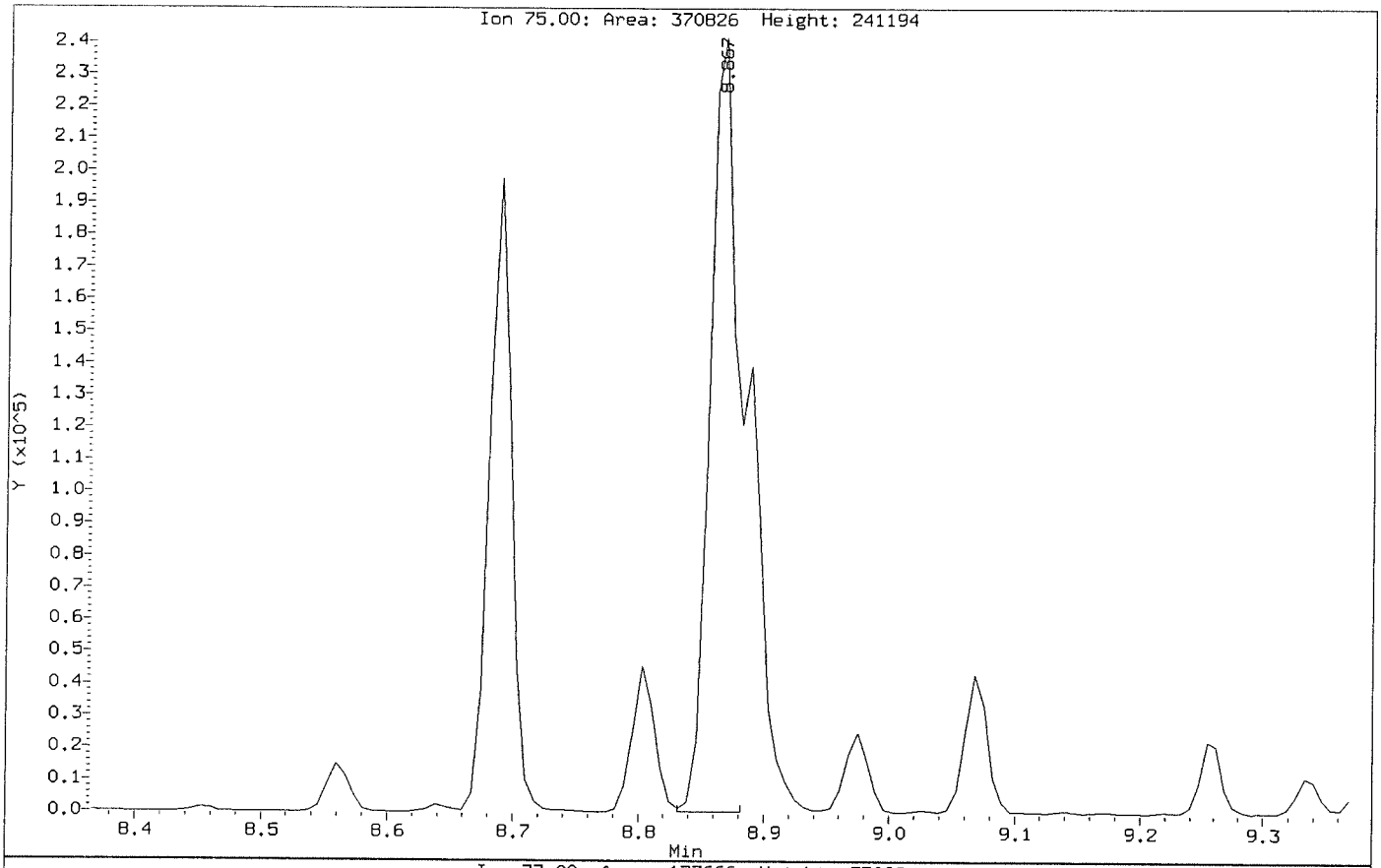
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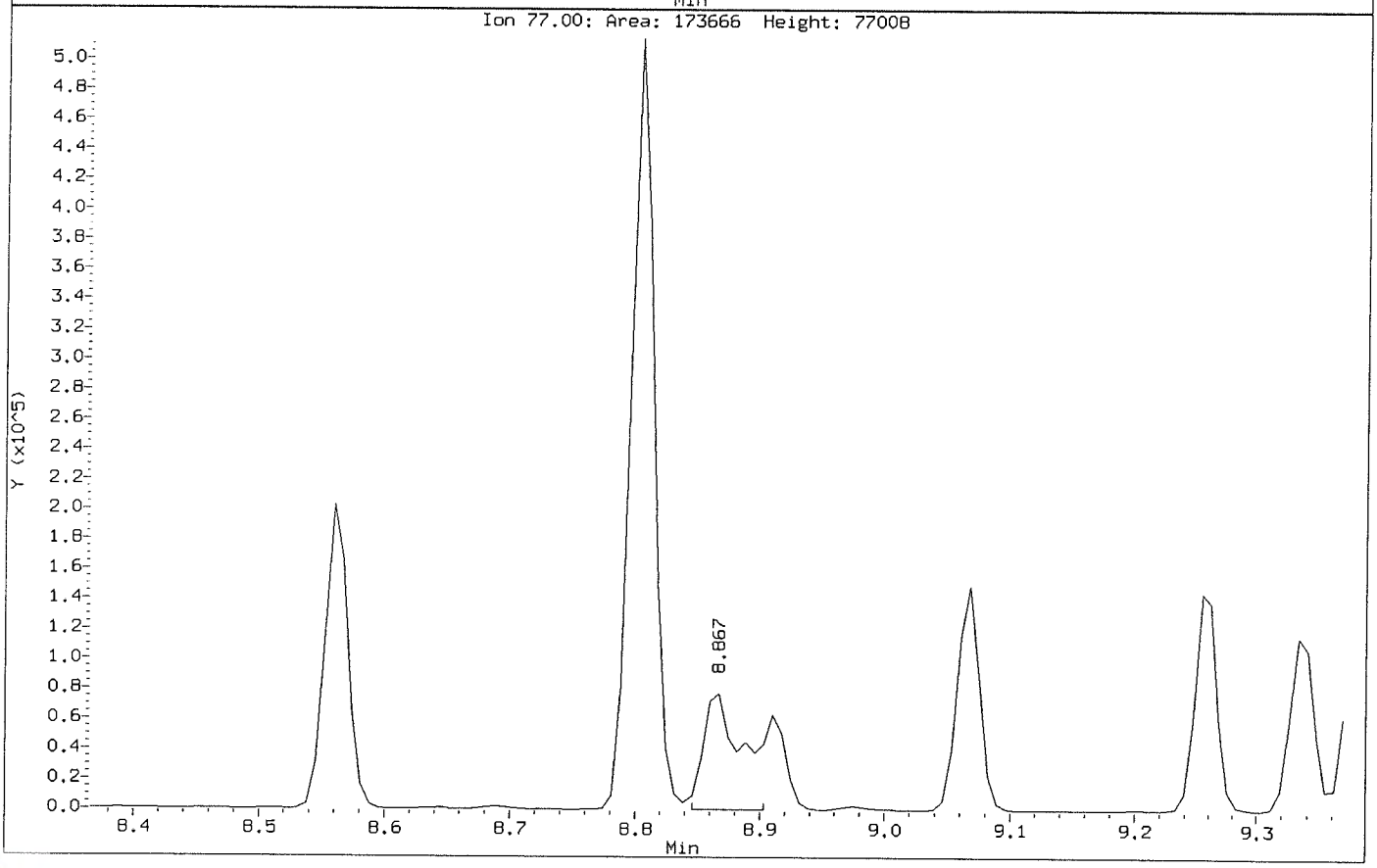




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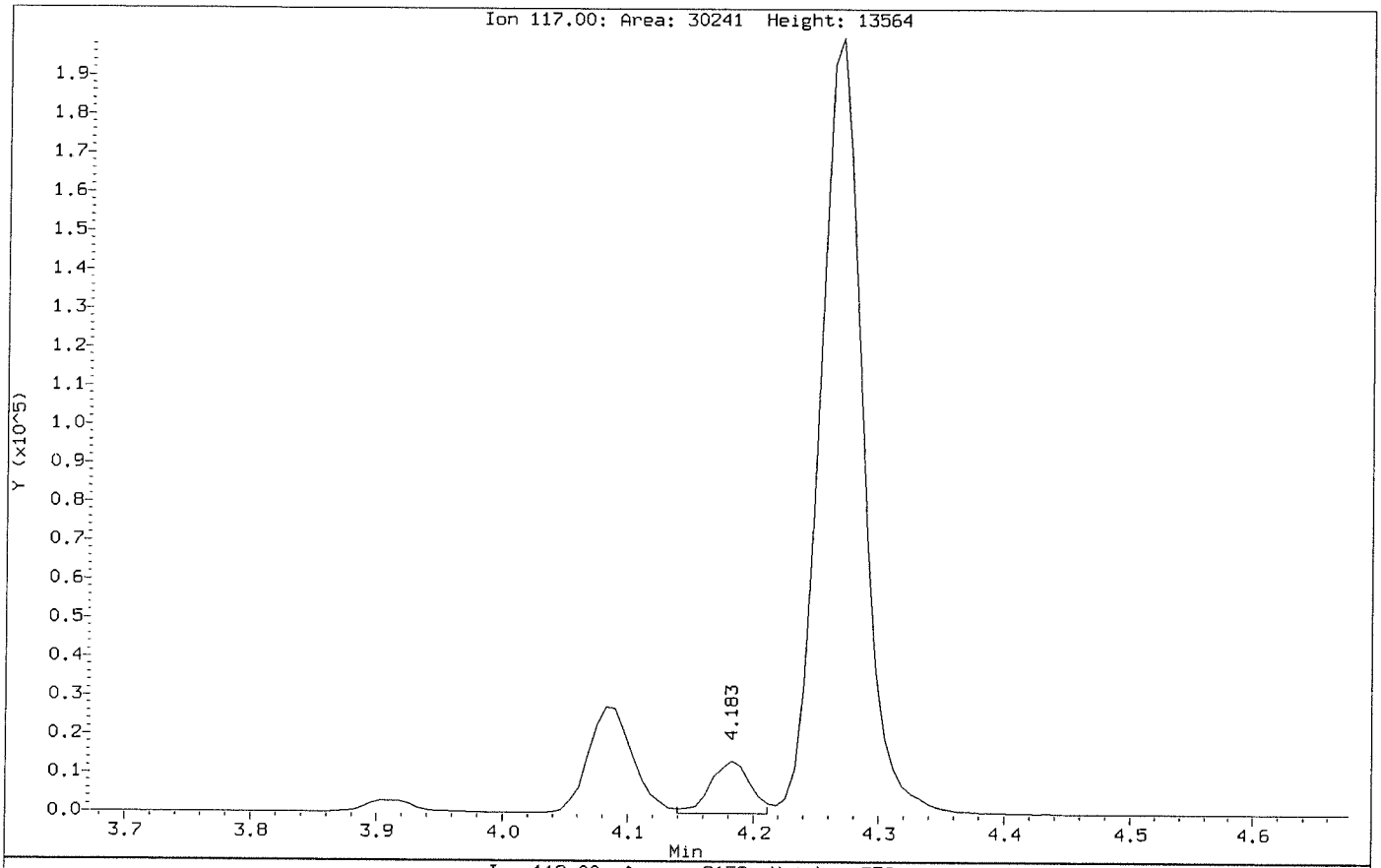
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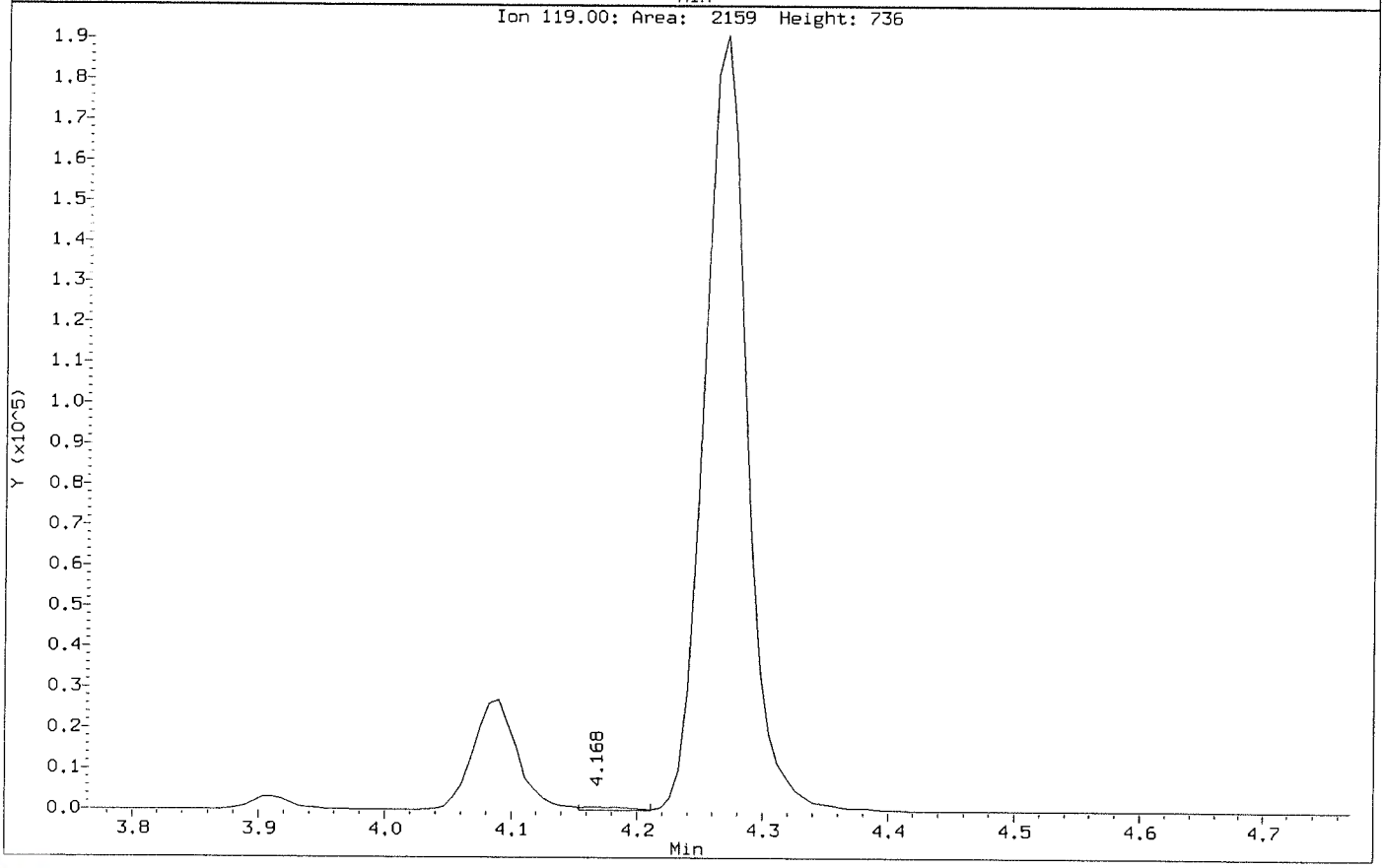




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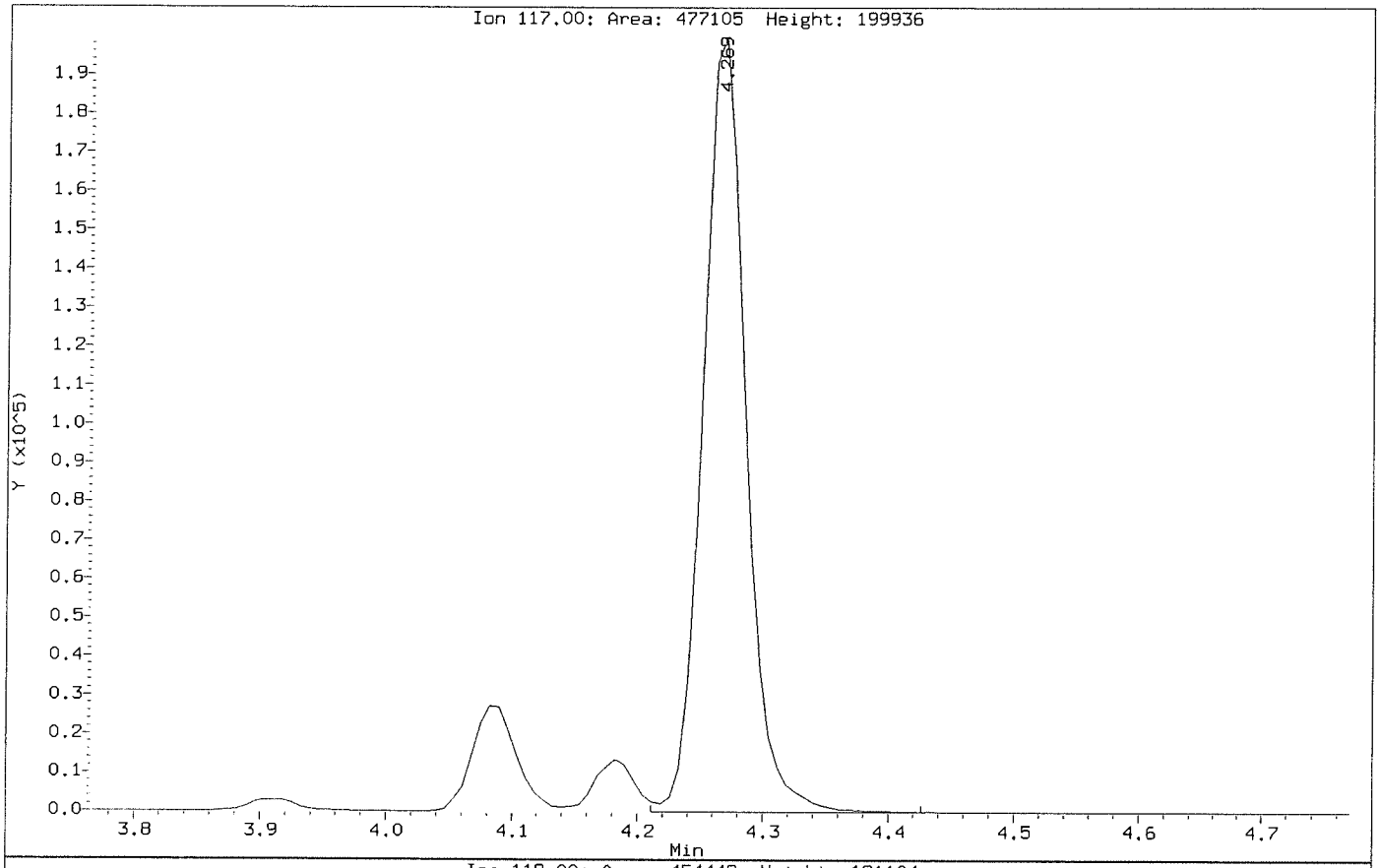
Compound: Carbon Tetrachloride
CAS Number: 56-23-5

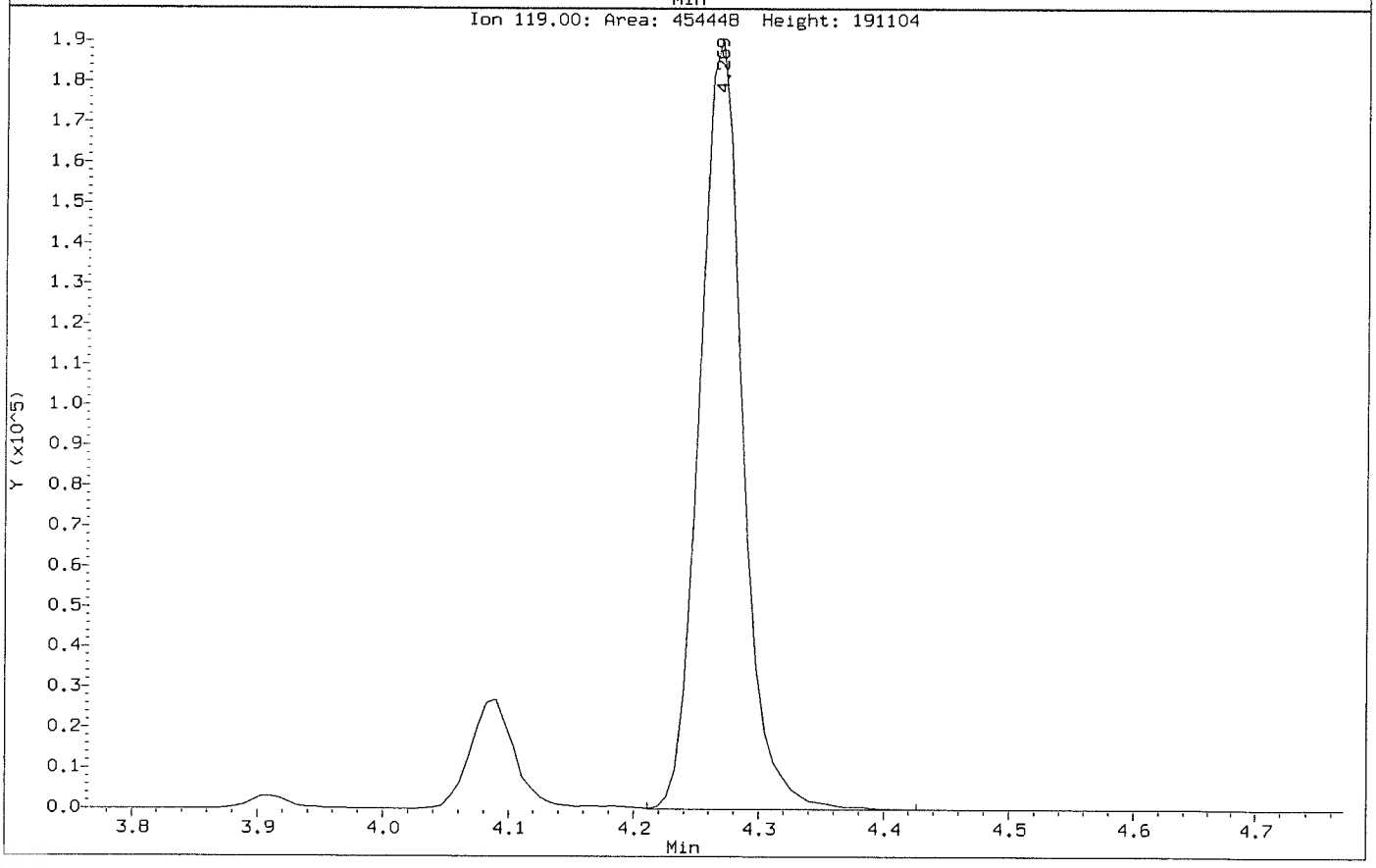




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Instrument: voa6.i
Client Sample ID: VSTD100

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051810.D Page 1
Report Date: 22-Jun-2021 08:20

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210518.b\X051810.D
Lab Smp Id: VSDT150 Client Smp ID: VSTD150
Inj Date : 18-MAY-2021 14:31
Operator : PC Inst ID: voa6.i
Smp Info : VSDT150;VSTD150;1;9;;
Misc Info : HS18090001;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X210518.b\8260W.m
Meth Date : 22-Jun-2021 08:20 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 14:10 Cal File: X051809.D
Als bottle: 11 Calibration Sample, Level: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

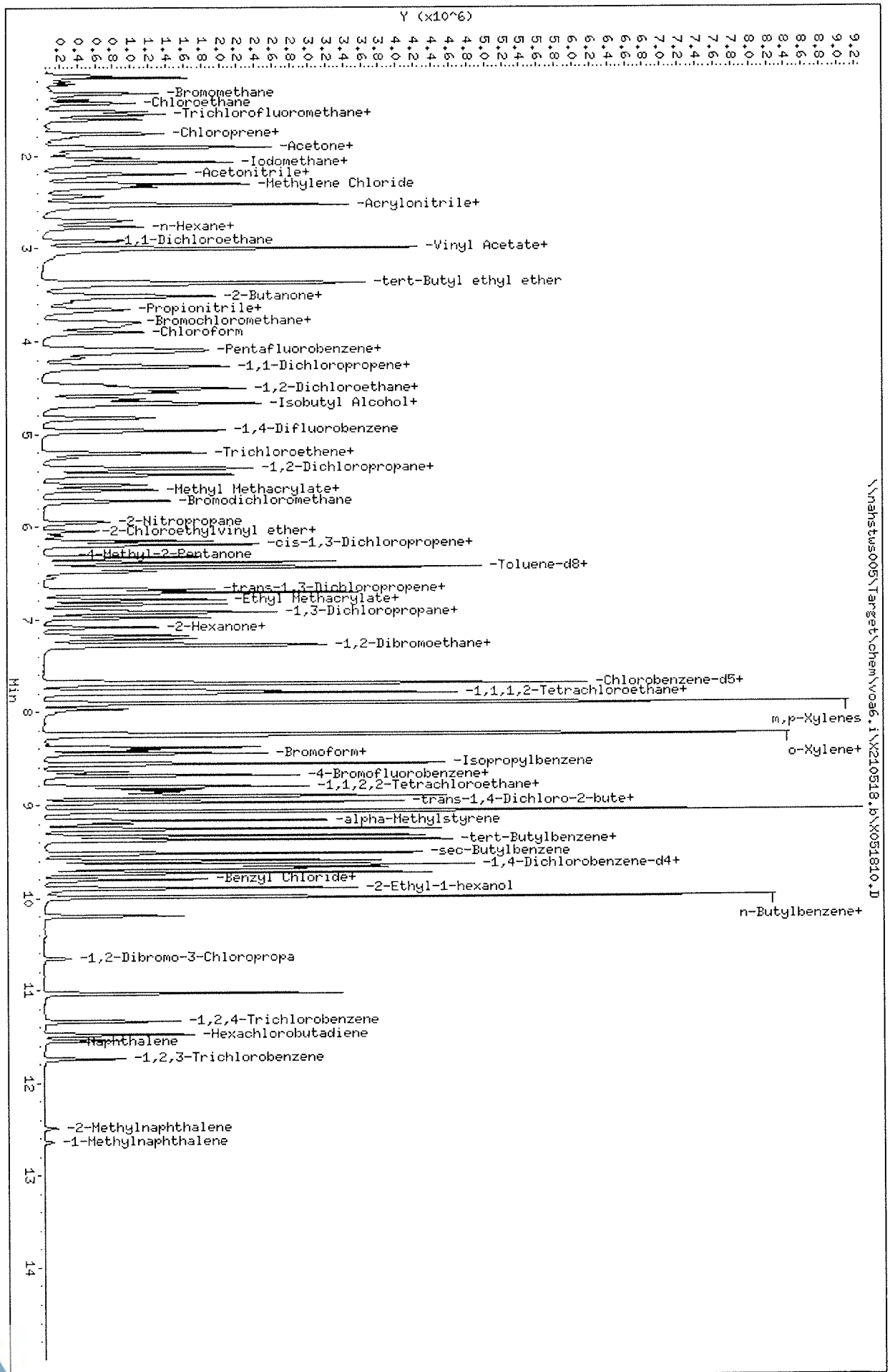
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	329109	50.0000	
*	36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	561232	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	528578	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	275715	50.0000	
$	35 1,2-Dichloroethane-d4	65	4.469	4.469	(1.069)	631492	150.000	149.95
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	751419	150.000	150.35
$	30 Dibromofluoromethane	113	4.096	4.096	(0.979)	559479	150.000	153.07
$	48 Toluene-d8	98	6.388	6.388	(0.833)	1868970	150.000	142.03
	60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	583245	150.000	151.45
	31 1,1,1-Trichloroethane	97	4.082	4.082	(0.976)	897728	150.000	160.37
	68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	690313	150.000	152.22
	138 Freon TF	101	1.911	1.911	(0.457)	467404	150.000	149.69
	53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	459596	150.000	149.68
	22 1,1-Dichloroethane	63	2.921	2.921	(0.699)	952111	150.000	156.22
	11 1,1-Dichloroethene	96	1.911	1.911	(0.457)	466111	150.000	141.61
	32 1,1-Dichloropropene	75	4.282	4.282	(0.862)	721187	150.000	150.00
	93 1,2,3-Trichlorobenzene	180	11.739	11.739	(1.215)	217046	150.000	153.02
	71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	570152	150.000	153.63(MH)
	90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	378072	150.000	147.54
	79 1,2,4-Trimethylbenzene	105	9.382	9.382	(0.971)	2166512	150.000	154.49
	89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.103)	55728	150.000	146.72
	57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	578368	150.000	156.73

Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051810.D Page 2
Report Date: 22-Jun-2021 08:20

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	1139772	150.000	147.49
33	1,2-Dichloroethane	62	4.555	4.555	(0.916)	771966	150.000	139.89
42	1,2-Dichloropropane	63	5.436	5.436	(1.094)	552978	150.000	146.61
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	2177669	150.000	158.22
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	1194968	150.000	150.85
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	901901	150.000	150.04
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	1228277	150.000	151.12
26	2,2-Dichloropropane	77	3.509	3.509	(0.839)	851542	150.000	156.19
24	2-Butanone	43	3.580	3.580	(0.856)	372510	300.000	306.63(A)
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	1760413	150.000	143.25
52	2-Hexanone	43	7.090	7.090	(0.924)	684773	300.000	306.08(A)
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	2179360	150.000	152.09
82	p-Isopropyltoluene	119	9.648	9.648	(0.999)	2130981	150.000	156.53
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	1037606	300.000	308.03(A)
10	Acetone	43	1.976	1.976	(0.473)	237075	300.000	294.50(A)
37	Benzene	78	4.512	4.512	(0.908)	2104958	150.000	151.60
74	Bromobenzene	156	8.802	8.802	(0.911)	688486	150.000	149.79
29	Bromochloromethane	128	3.795	3.795	(0.908)	308322	150.000	153.72
39	Bromodichloromethane	83	5.722	5.722	(1.151)	826506	150.000	152.41
66	Bromoform	173	8.408	8.408	(1.096)	428300	150.000	167.54
6	Bromomethane	94	1.331	1.331	(0.318)	596164	150.000	173.50
19	Carbon Disulfide	76	2.069	2.069	(0.495)	2589664	300.000	333.97(A)
34	Carbon Tetrachloride	117	4.268	4.268	(0.859)	758939	150.000	155.14
59	Chlorobenzene	112	7.692	7.692	(1.003)	1550410	150.000	149.58
7	Chloroethane	64	1.403	1.403	(0.336)	345673	150.000	138.75
28	Chloroform	83	3.910	3.910	(0.935)	1055145	150.000	150.90
3	Chloromethane	50	1.073	1.073	(0.257)	530291	150.000	148.93
27	cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	604470	150.000	159.36
46	cis-1,3-Dichloropropene	75	6.159	6.159	(1.239)	975279	150.000	158.51
55	Dibromochloromethane	129	7.176	7.176	(0.936)	660021	150.000	159.75
44	Dibromomethane	93	5.550	5.550	(1.117)	415353	150.000	153.64
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	635388	150.000	149.11
61	Ethylbenzene	106	7.799	7.799	(1.017)	794587	150.000	155.13
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	251193	150.000	145.34
67	Isopropylbenzene	105	8.559	8.559	(1.116)	2535541	150.000	161.98
62	m,p-Xylenes	106	7.907	7.907	(1.031)	2132347	300.000	323.04(A)
17	Methylene Chloride	84	2.305	2.305	(0.551)	531906	150.000	161.17
87	n-Butylbenzene	91	9.991	9.991	(1.034)	2079941	150.000	160.65
73	n-Propylbenzene	91	8.910	8.910	(0.922)	2928436	150.000	149.96
92	Naphthalene	128	11.539	11.539	(1.194)	555881	150.000	146.77
63	o-Xylene	106	8.244	8.244	(1.075)	1010780	150.000	157.44
81	sec-Butylbenzene	105	9.519	9.519	(0.985)	2534431	150.000	156.82
64	Styrene	104	8.258	8.258	(1.077)	1857964	150.000	150.58
78	tert-Butylbenzene	119	9.340	9.340	(0.967)	1789516	150.000	153.23
56	Tetrachloroethene	164	6.933	6.933	(0.904)	471649	150.000	160.58
50	Toluene	91	6.446	6.446	(0.840)	2428646	150.000	159.25
20	trans-1,2-Dichloroethene	96	2.527	2.527	(0.604)	513534	150.000	162.18
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.344)	875463	150.000	162.64
38	Trichloroethene	130	5.206	5.206	(1.048)	549218	150.000	147.78
8	Trichlorofluoromethane	101	1.560	1.560	(0.373)	898149	150.000	141.97
5	Vinyl Chloride	62	1.138	1.138	(0.272)	553097	150.000	139.19

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

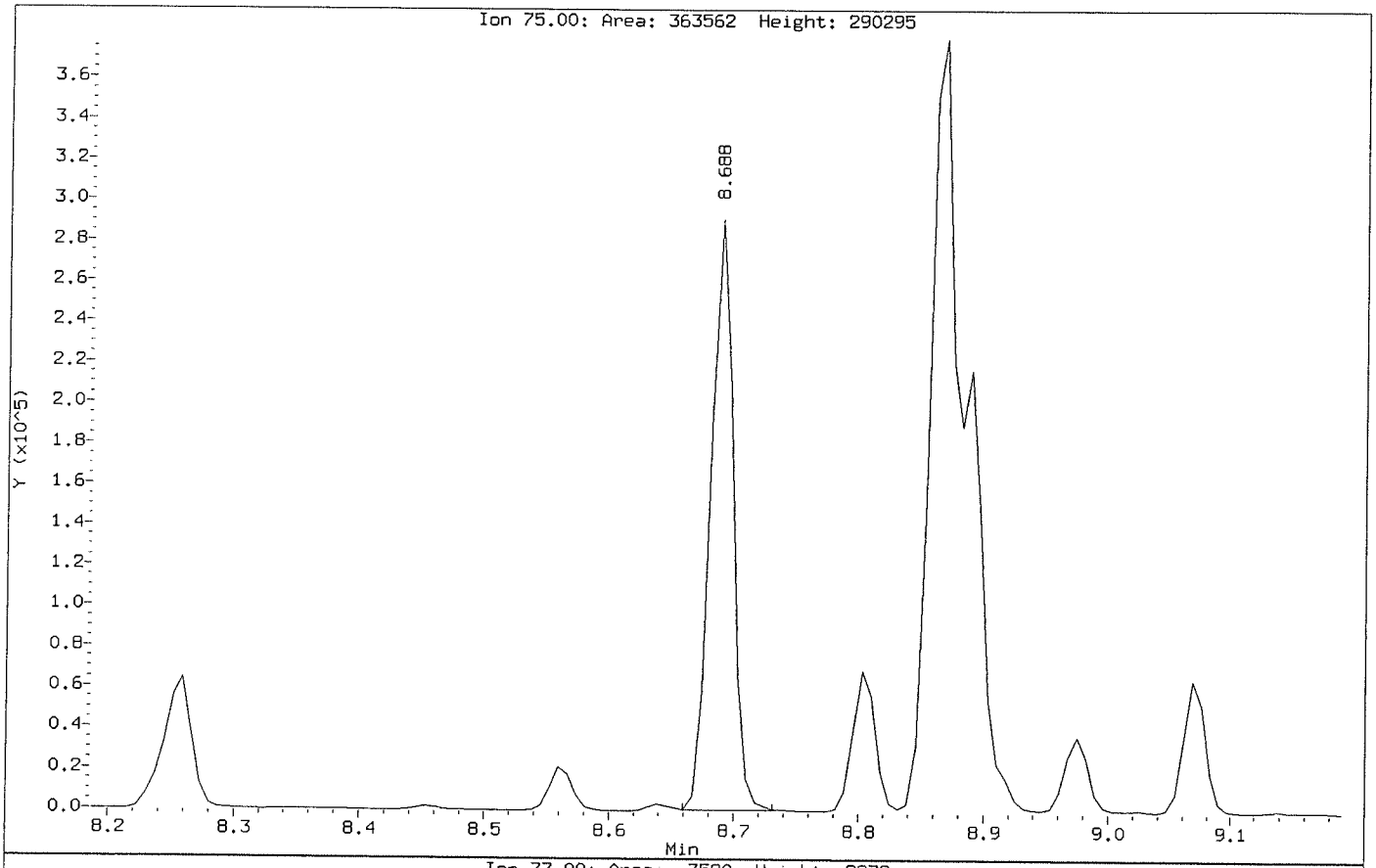


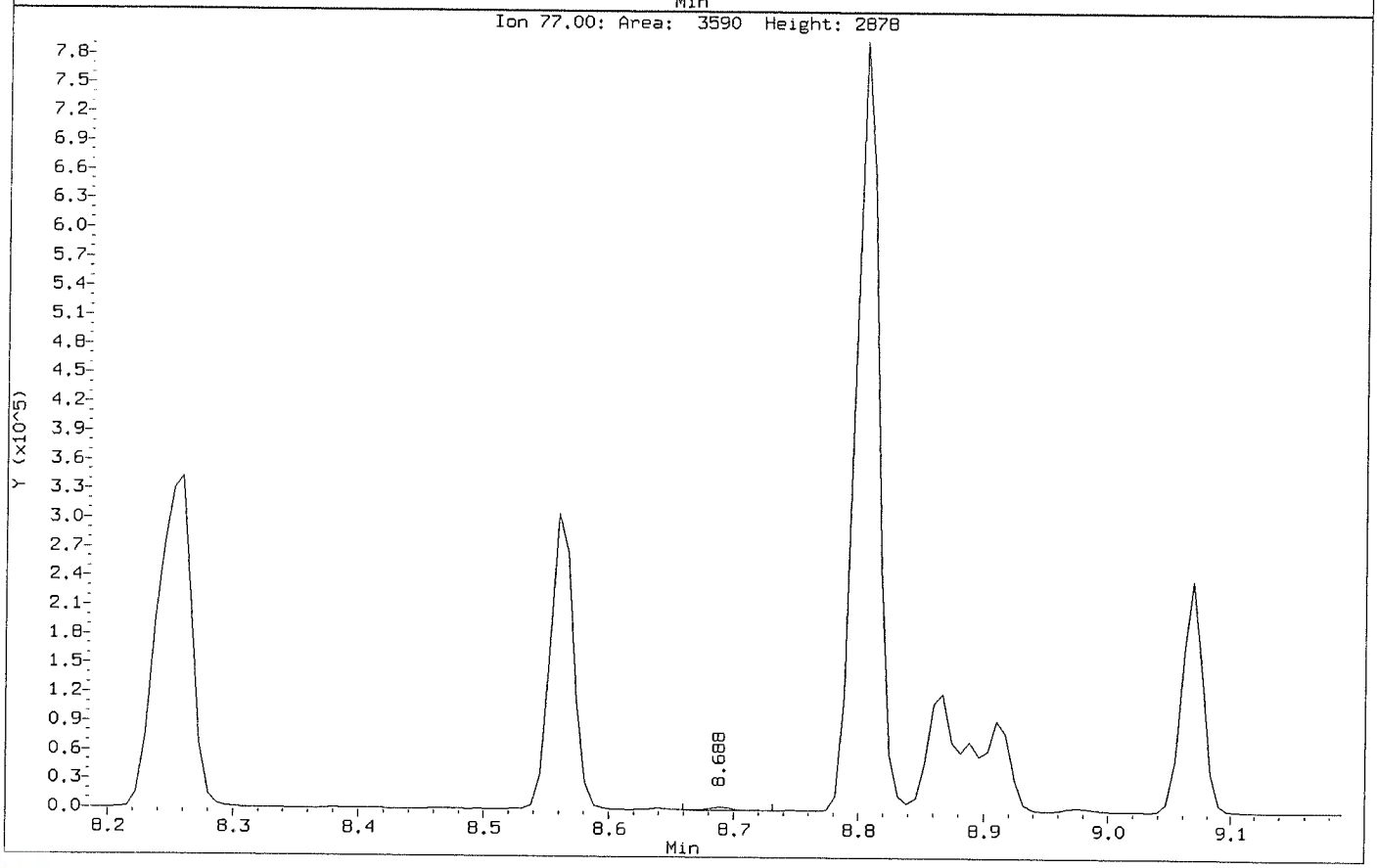
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Purge Volume: 5.0
Column phase: DB624

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Instrument: voa6.i
Operator: PC
Column diameter: 0.18

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Injection Date: 18-MAY-2021 14:31
Instrument: voa6.i
Client Sample ID: VSTD150

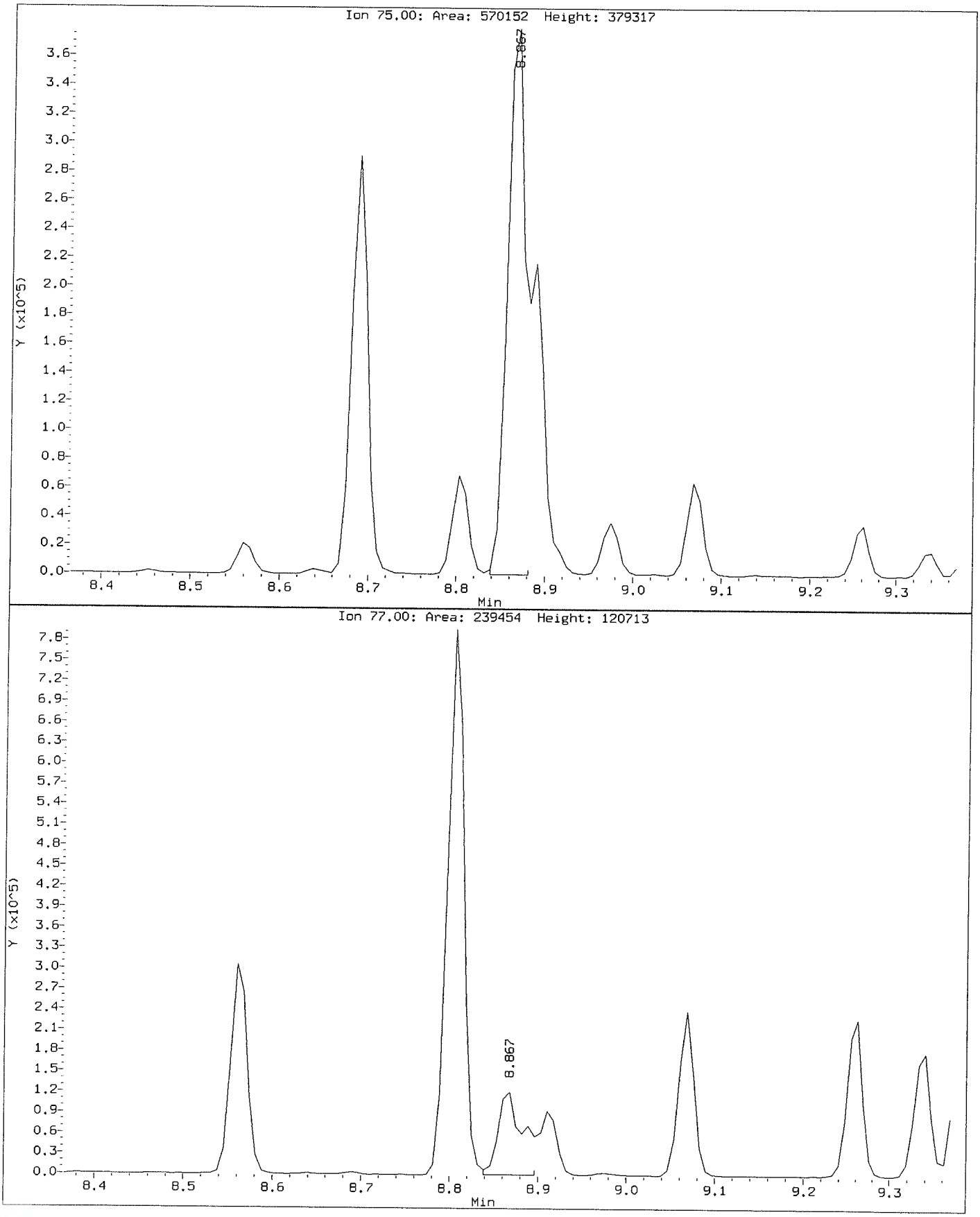
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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Injection Date: 18-MAY-2021 14:31
Instrument: voa6.i
Client Sample ID: VSTD150

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210518.b\X051811.D
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Inj Date : 18-MAY-2021 14:52
Operator : PC Inst ID: voa6.i
Smp Info : VSDT200;VSTD200;1;10;;
Misc Info : HS18090001;WATER;0;1;
Comment :
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Meth Date : 22-Jun-2021 08:20 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 14:31 Cal File: X051810.D
Als bottle: 12 Calibration Sample, Level: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

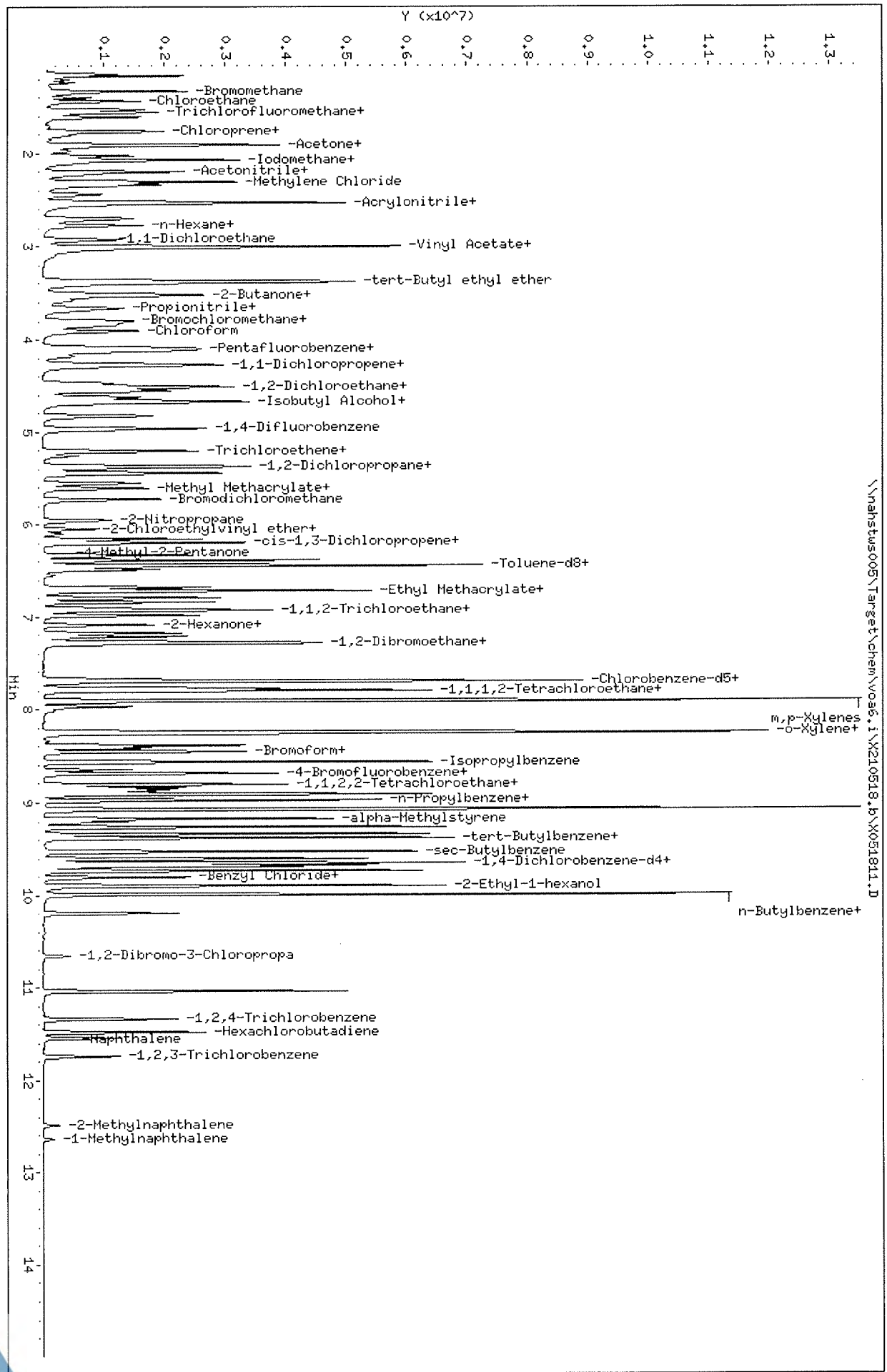
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	345916	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	588472	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	555625	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	290246	50.0000	
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	867782	200.000	196.44
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	1039902	200.000	197.91
$	30 Dibromofluoromethane	113	4.096	4.096	(0.979)	756859	200.000	197.08
$	48 Toluene-d8	98	6.388	6.388	(0.833)	2599039	200.000	187.57
	60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	817405	200.000	201.93(A)
	31 1,1,1-Trichloroethane	97	4.082	4.082	(0.976)	1267981	200.000	215.51(A)
	68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	941646	200.000	197.40
	138 Freon TF	101	1.911	1.911	(0.457)	701725	200.000	213.82(A)
	53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	644929	200.000	199.81
	22 1,1-Dichloroethane	63	2.921	2.921	(0.699)	1359241	200.000	212.18(A)
	11 1,1-Dichloroethene	96	1.911	1.911	(0.457)	685117	200.000	198.04
	32 1,1-Dichloropropene	75	4.282	4.282	(0.863)	1025250	200.000	203.38(A)
	93 1,2,3-Trichlorobenzene	180	11.739	11.739	(1.215)	307927	200.000	198.57
	71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	760241	200.000	194.77(MH)
	90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	556188	200.000	205.21(A)
	79 1,2,4-Trimethylbenzene	105	9.383	9.383	(0.971)	3046305	200.000	206.36(A)
	89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.103)	81966	200.000	204.37(A)
	57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	808859	200.000	208.52(A)

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	1637655	200.000	201.31(A)
33	1,2-Dichloroethane	62	4.555	4.555	(0.918)	1042686	200.000	180.20
42	1,2-Dichloropropane	63	5.436	5.436	(1.095)	761644	200.000	192.58
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	3139978	200.000	216.72(A)
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	1690760	200.000	202.76(A)
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	1218096	200.000	192.78
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	1710708	200.000	199.85
26	2,2-Dichloropropane	77	3.509	3.509	(0.839)	1199420	200.000	209.30(A)
24	2-Butanone	43	3.580	3.580	(0.856)	513022	400.000	401.78(A)
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	2458535	200.000	190.05
52	2-Hexanone	43	7.090	7.090	(0.924)	929961	400.000	395.53(A)
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	3087694	200.000	204.70(A)
82	p-Isopropyltoluene	119	9.655	9.655	(0.999)	3103142	200.000	216.53(A)
45	4-Methyl-2-Pentanone	43	6.331	6.331	(0.825)	1395319	400.000	394.03(A)
10	Acetone	43	1.976	1.976	(0.473)	336393	400.000	399.38(A)
37	Benzene	78	4.512	4.512	(0.909)	2912199	200.000	200.02(A)
74	Bromobenzene	156	8.809	8.809	(0.912)	960630	200.000	198.54
29	Bromochloromethane	128	3.795	3.795	(0.908)	421944	200.000	200.14(A)
39	Bromodichloromethane	83	5.722	5.722	(1.153)	1143964	200.000	201.19(A)
66	Bromoform	173	8.408	8.408	(1.096)	591908	200.000	220.27(A)
6	Bromomethane	94	1.331	1.331	(0.318)	1028472	200.000	285.09(A)
19	Carbon Disulfide	76	2.069	2.069	(0.495)	3804461	400.000	466.80(A)
34	Carbon Tetrachloride	117	4.268	4.268	(0.860)	1096156	200.000	213.70(A)
59	Chlorobenzene	112	7.692	7.692	(1.003)	2262308	200.000	207.64(A)
7	Chloroethane	64	1.396	1.396	(0.334)	499152	200.000	190.62
28	Chloroform	83	3.910	3.910	(0.935)	1481226	200.000	201.55(A)
3	Chloromethane	50	1.073	1.073	(0.257)	760194	200.000	203.04(A)
27	cis-1,2-Dichloroethene	96	3.523	3.523	(0.842)	842045	200.000	211.21(A)
46	cis-1,3-Dichloropropene	75	6.159	6.159	(1.241)	1345882	200.000	208.61(A)
55	Dibromochloromethane	129	7.176	7.176	(0.936)	936355	200.000	215.61(A)
44	Dibromomethane	93	5.550	5.550	(1.118)	570422	200.000	201.24(A)
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	916851	200.000	203.94(A)
61	Ethylbenzene	106	7.799	7.799	(1.017)	1127474	200.000	209.41(A)
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	377761	200.000	206.26(A)
67	Isopropylbenzene	105	8.566	8.566	(1.117)	3672148	200.000	223.17(A)
62	m,p-Xylenes	106	7.907	7.907	(1.031)	3061828	400.000	441.27(A)
17	Methylene Chloride	84	2.298	2.298	(0.550)	744253	200.000	214.56(A)
87	n-Butylbenzene	91	9.991	9.991	(1.034)	3008380	200.000	220.73(A)
73	n-Propylbenzene	91	8.910	8.910	(0.922)	4200522	200.000	204.34(A)
92	Naphthalene	128	11.539	11.539	(1.194)	826266	200.000	205.96(A)
63	o-Xylene	106	8.244	8.244	(1.075)	1438569	200.000	213.16(A)
81	sec-Butylbenzene	105	9.526	9.526	(0.986)	3709108	200.000	218.02(A)
64	Styrene	104	8.258	8.258	(1.077)	2618657	200.000	201.30(A)
78	tert-Butylbenzene	119	9.340	9.340	(0.967)	2556764	200.000	207.96(A)
56	Tetrachloroethene	164	6.926	6.926	(0.903)	689947	200.000	223.46(A)
50	Toluene	91	6.446	6.446	(0.840)	3431584	200.000	214.06(A)
20	trans-1,2-Dichloroethene	96	2.527	2.527	(0.604)	732798	200.000	220.19(A)
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	1193973	200.000	211.55(A)
38	Trichloroethene	130	5.206	5.206	(1.049)	782732	200.000	200.86(A)
8	Trichlorofluoromethane	101	1.560	1.560	(0.373)	1300834	200.000	195.63
5	Vinyl Chloride	62	1.138	1.138	(0.272)	806948	200.000	193.21

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051811.D

Date : 18-MAY-2021 14:52

Client ID: VSTD200

Sample Info: WSDT200;VSTD200;1;10;;

Purge Volume: 5.0

Column phase: DB624

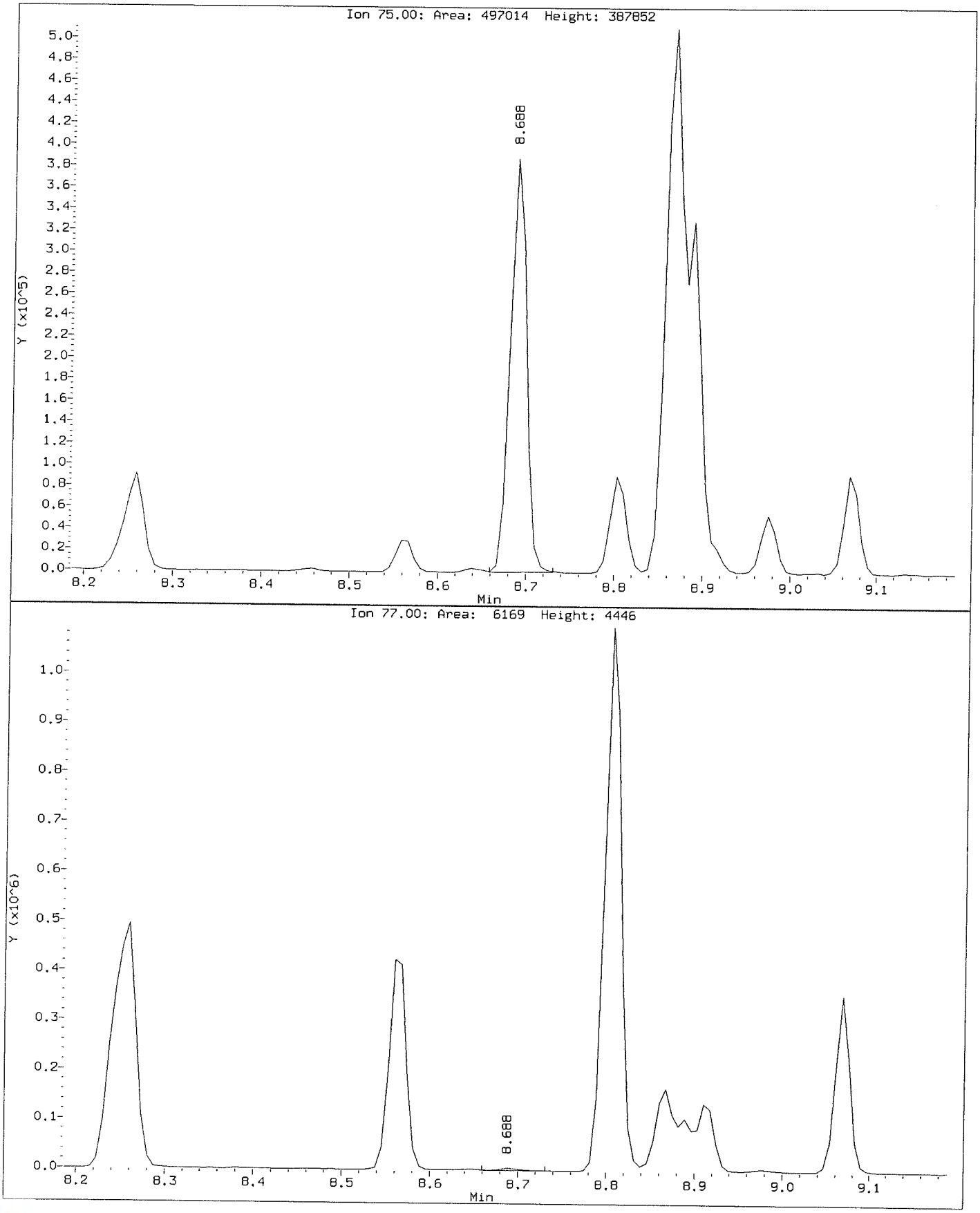
Instrument: voa6.i

Operator: PC

Column diameter: 0.18

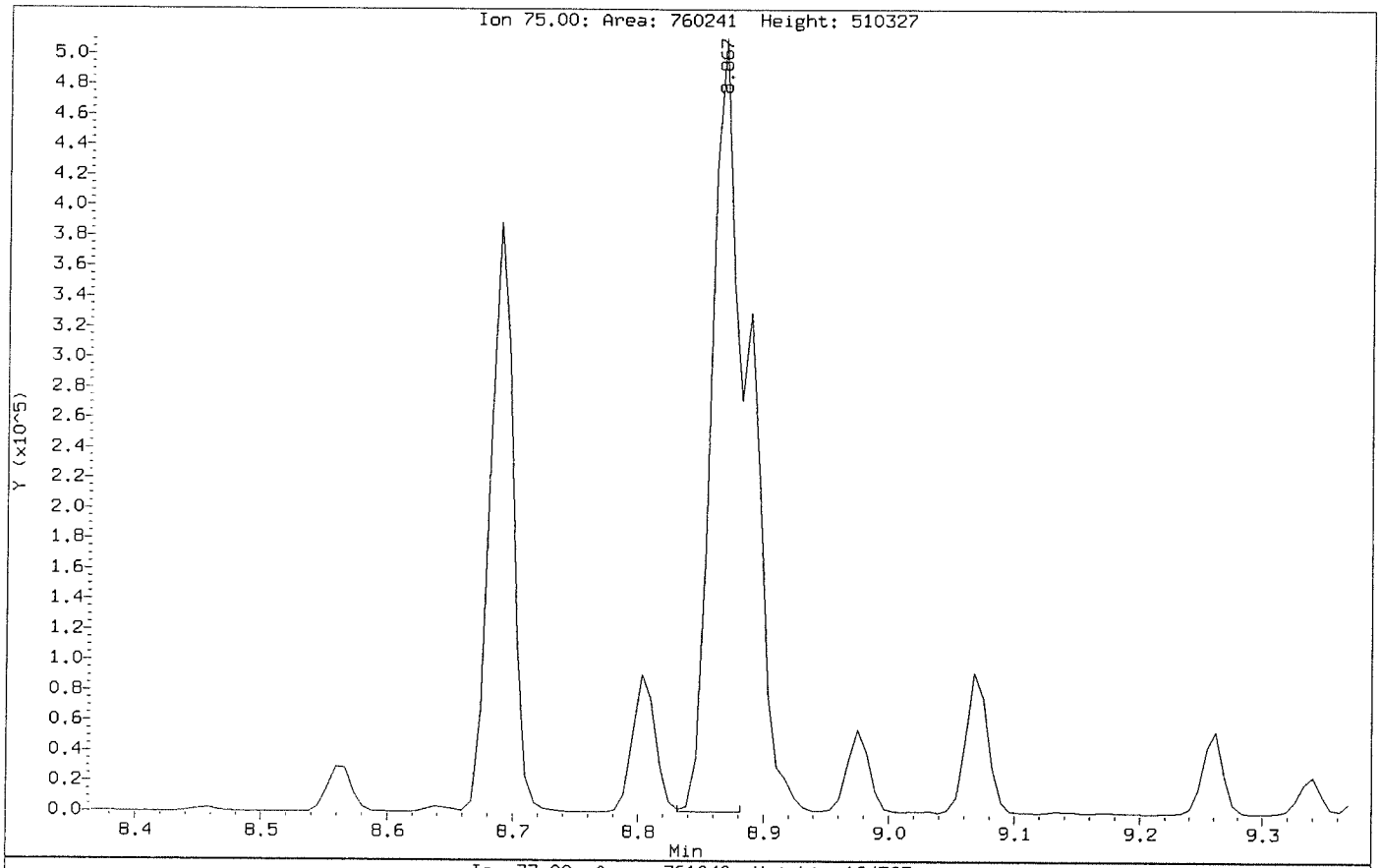
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Injection Date: 18-MAY-2021 14:52
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Client Sample ID: VSTD200

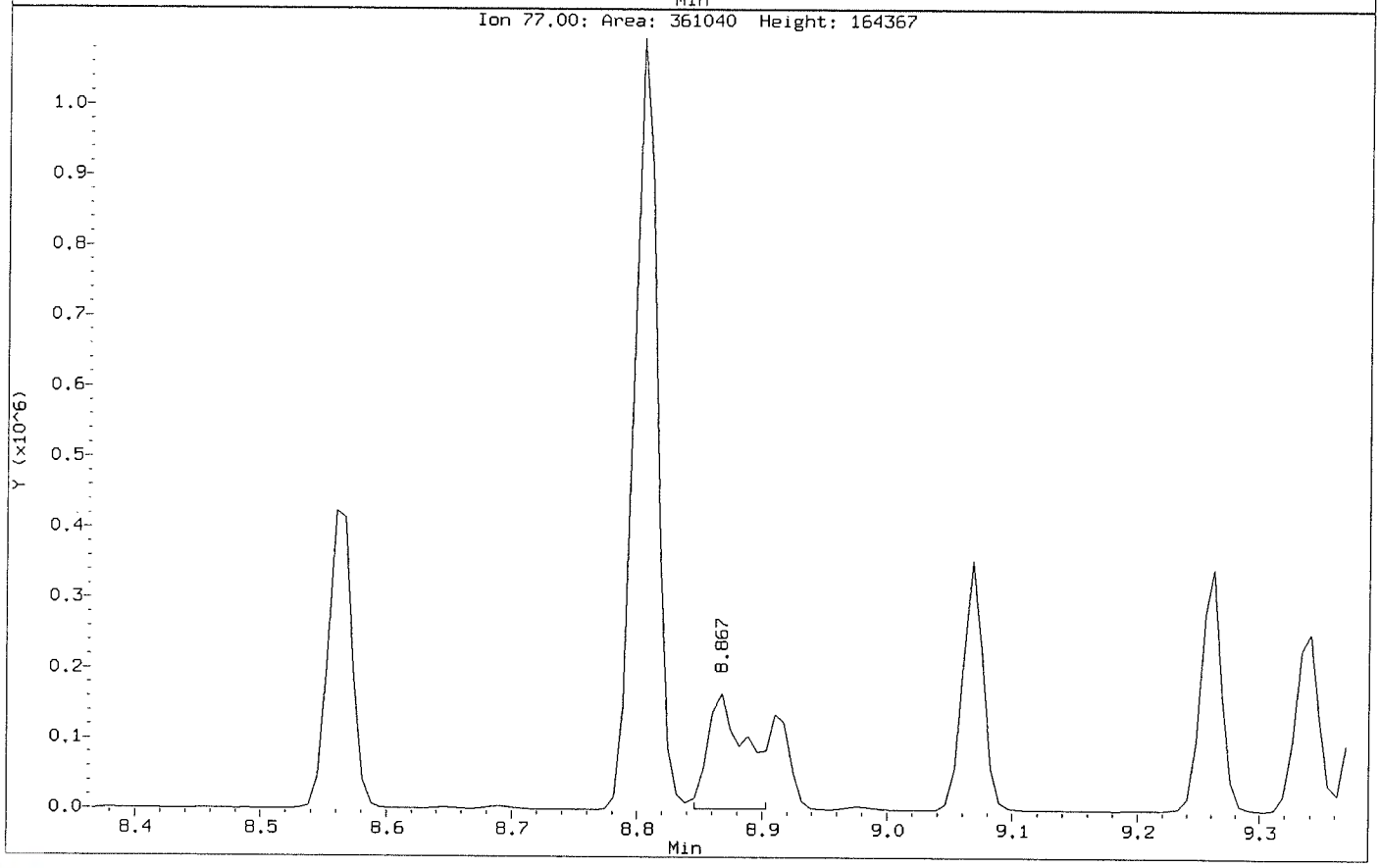
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



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Injection Date: 18-MAY-2021 14:52
Instrument: voa6.i
Client Sample ID: VSTD200

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051814.D Page 1
Report Date: 22-Jun-2021 08:20

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210518.b\X051814.D
Lab Smp Id: ICV Client Smp ID: ICV
Inj Date : 18-MAY-2021 16:04
Operator : PC Inst ID: voa6.i
Smp Info : CCV;CCV;2;;ICV
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210518.b\8260W.m
Meth Date : 22-Jun-2021 08:20 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 14:52 Cal File: X051811.D
Als bottle: 15 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

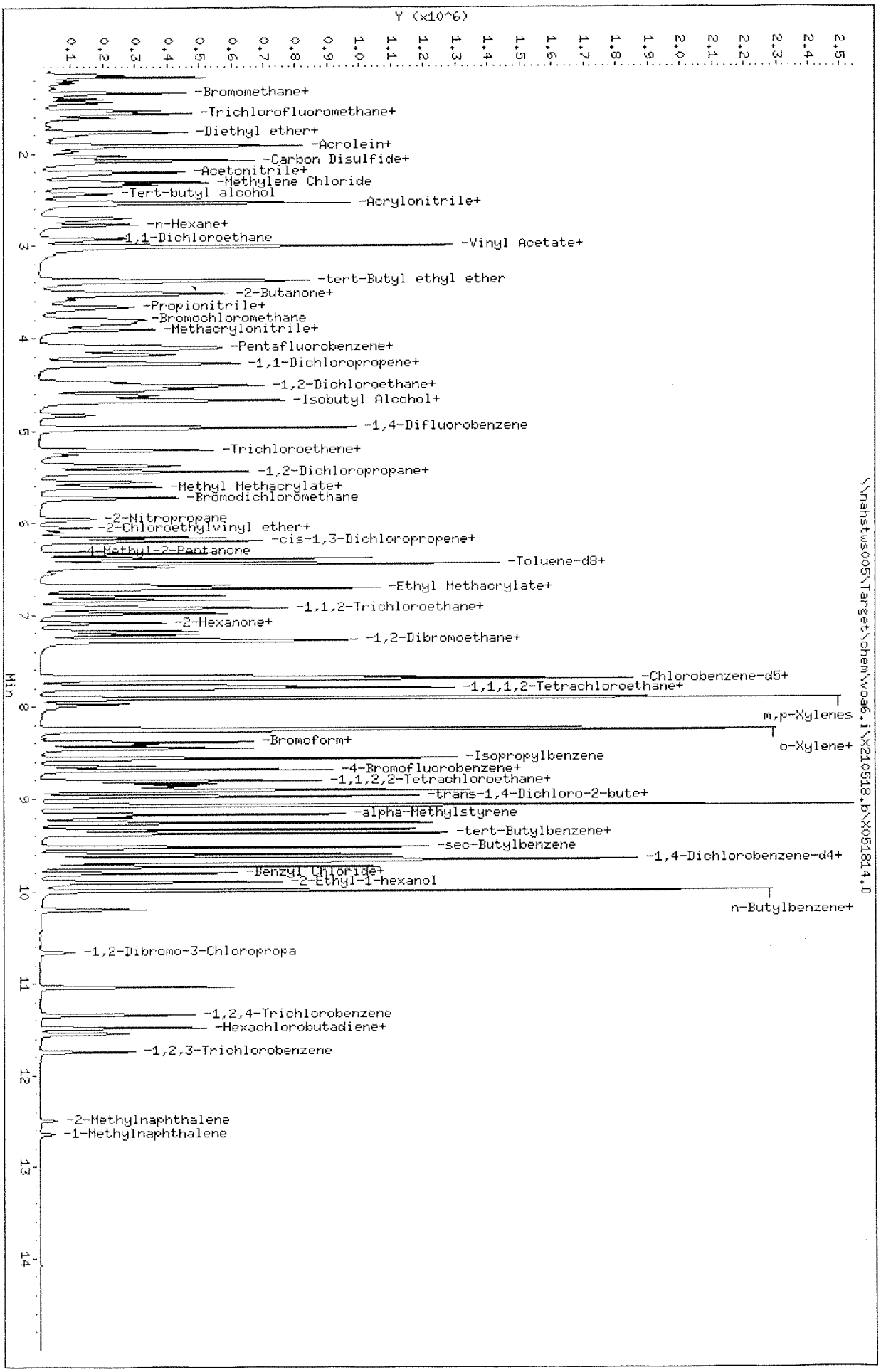
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	314020	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	520811	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.671	(1.000)	484823	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	250460	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.469	4.476	(1.069)	205067	50.1979	50.19
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	230369	50.3369	50.33
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	175772	50.2504	50.25
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	584625	49.1076	49.10
60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	170258	48.2027	48.20
31 1,1,1-Trichloroethane	97	4.082	4.082	(0.976)	270319	50.6112	50.61
68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	214655	51.7580	51.75
138 Freon TF	101	1.919	1.911	(0.459)	142176	47.7226	47.72
53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	140911	50.0345	50.03
22 1,1-Dichloroethane	63	2.921	2.921	(0.699)	274803	47.2562	47.25
11 1,1-Dichloroethene	96	1.911	1.911	(0.457)	148405	47.2568	47.25
32 1,1-Dichloropropene	75	4.282	4.282	(0.863)	215541	48.3130	48.31
93 1,2,3-Trichlorobenzene	180	11.739	11.739	(1.215)	71059	59.1408	59.14
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	180570	53.1631	53.16(M)
90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	120554	53.3923	53.39
79 1,2,4-Trimethylbenzene	105	9.382	9.383	(0.971)	597253	46.8861	46.88
89 1,2-Dibromo-3-Chloropropane	155	10.657	10.658	(1.103)	19095	56.3452	56.34
57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	175810	51.9432	51.94

Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051814.D Page 2
Report Date: 22-Jun-2021 08:20

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	329044	46.8735	46.87
33	1,2-Dichloroethane	62	4.555	4.555	(0.918)	250302	48.8804	48.88
42	1,2-Dichloropropane	63	5.436	5.436	(1.095)	167115	47.7459	47.74
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	590381	47.2215	47.22
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	343639	47.7565	47.75
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	277959	50.4174	50.41
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	352814	47.9586	47.95
26	2,2-Dichloropropane	77	3.509	3.509	(0.839)	260587	50.0938	50.09
24	2-Butanone	43	3.580	3.580	(0.856)	119740	103.302	103.30
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	510642	45.7453	45.74
52	2-Hexanone	43	7.090	7.090	(0.924)	215239	104.715	104.71
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	612096	47.0259	47.02
82	p-Isopropyltoluene	119	9.647	9.655	(0.999)	578626	46.7908	46.79
45	4-Methyl-2-Pentanone	43	6.324	6.331	(0.824)	315436	102.153	102.15
10	Acetone	43	1.976	1.976	(0.473)	92565	117.467	117.46
37	Benzene	78	4.512	4.512	(0.909)	646518	50.1763	50.17
74	Bromobenzene	156	8.802	8.809	(0.911)	196985	47.1796	47.17
29	Bromochloromethane	128	3.795	3.795	(0.908)	92140	48.1462	48.14
39	Bromodichloromethane	83	5.729	5.722	(1.154)	248409	49.3648	49.36
66	Bromoform	173	8.408	8.408	(1.096)	122293	52.1571	52.15
6	Bromomethane	94	1.338	1.331	(0.320)	187724	56.9415	56.94
19	Carbon Disulfide	76	2.069	2.069	(0.495)	792228	107.080	107.07
34	Carbon Tetrachloride	117	4.268	4.268	(0.860)	219217	48.2910	48.29
59	Chlorobenzene	112	7.692	7.692	(1.003)	455368	47.8996	47.89
7	Chloroethane	64	1.403	1.396	(0.336)	111773	47.0223	47.02
28	Chloroform	83	3.910	3.910	(0.935)	318549	47.7476	47.74
3	Chloromethane	50	1.073	1.073	(0.257)	175510	51.8144	51.81
27	cis-1,2-Dichloroethene	96	3.530	3.523	(0.844)	177242	48.9746	48.97
46	cis-1,3-Dichloropropene	75	6.152	6.159	(1.240)	286606	50.1968	50.19
55	Dibromochloromethane	129	7.176	7.176	(0.936)	198733	52.4448	52.44
44	Dibromomethane	93	5.550	5.550	(1.118)	125829	50.1588	50.15
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	202217	51.1231	51.12
61	Ethylbenzene	106	7.799	7.799	(1.017)	229958	48.9489	48.94
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	72493	48.3476	48.34
67	Isopropylbenzene	105	8.559	8.566	(1.116)	689621	48.0318	48.03
62	m,p-Xylenes	106	7.900	7.907	(1.030)	598088	98.7859	98.78
17	Methylene Chloride	84	2.305	2.298	(0.551)	155672	49.4373	49.43
87	n-Butylbenzene	91	9.991	9.991	(1.034)	559802	47.5986	47.59
73	n-Propylbenzene	91	8.910	8.910	(0.922)	842024	47.4685	47.46
92	Naphthalene	128	11.539	11.539	(1.194)	198367	59.5423	59.54 (M)
63	o-Xylene	106	8.244	8.244	(1.075)	286204	48.6033	48.60
81	sec-Butylbenzene	105	9.519	9.526	(0.985)	681120	46.3974	46.39
64	Styrene	104	8.258	8.258	(1.077)	512733	46.5385	46.53
78	tert-Butylbenzene	119	9.339	9.340	(0.967)	481642	45.4003	45.40
56	Tetrachloroethene	164	6.926	6.926	(0.903)	135210	50.1892	50.18
50	Toluene	91	6.446	6.446	(0.840)	698935	49.9665	49.96
20	trans-1,2-Dichloroethene	96	2.527	2.527	(0.604)	151505	50.1483	50.14
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	259978	52.0492	52.04
38	Trichloroethene	130	5.206	5.206	(1.049)	166097	48.1615	48.16
8	Trichlorofluoromethane	101	1.560	1.560	(0.373)	289827	48.0155	48.01
5	Vinyl Chloride	62	1.145	1.138	(0.274)	181830	47.9597	47.95

QC Flag Legend

M - Compound response manually integrated.

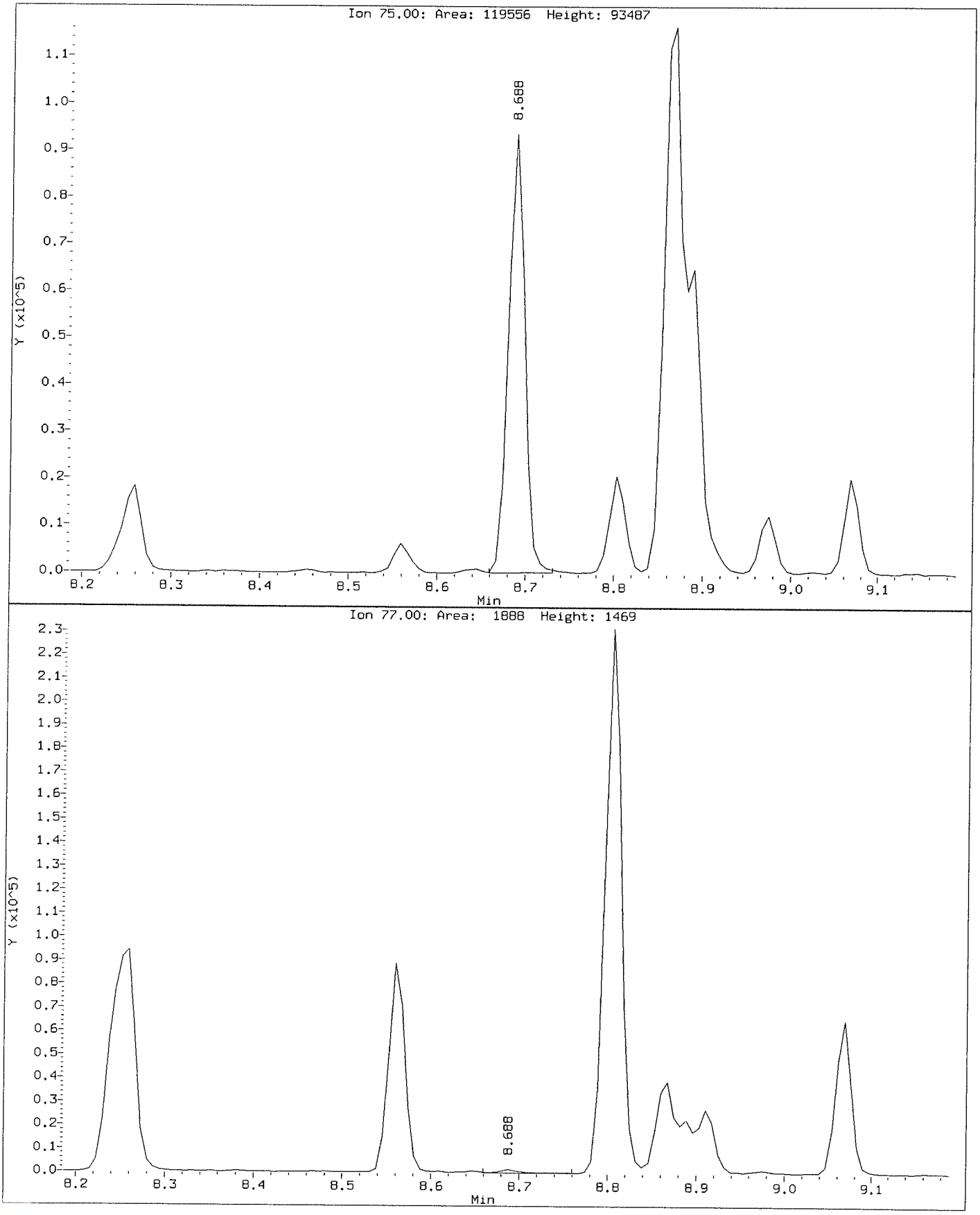


Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051814.D
Date : 18-MAY-2021 16:04
Client ID: ICV
Sample Info: CCV;CCV;2;;ICV
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

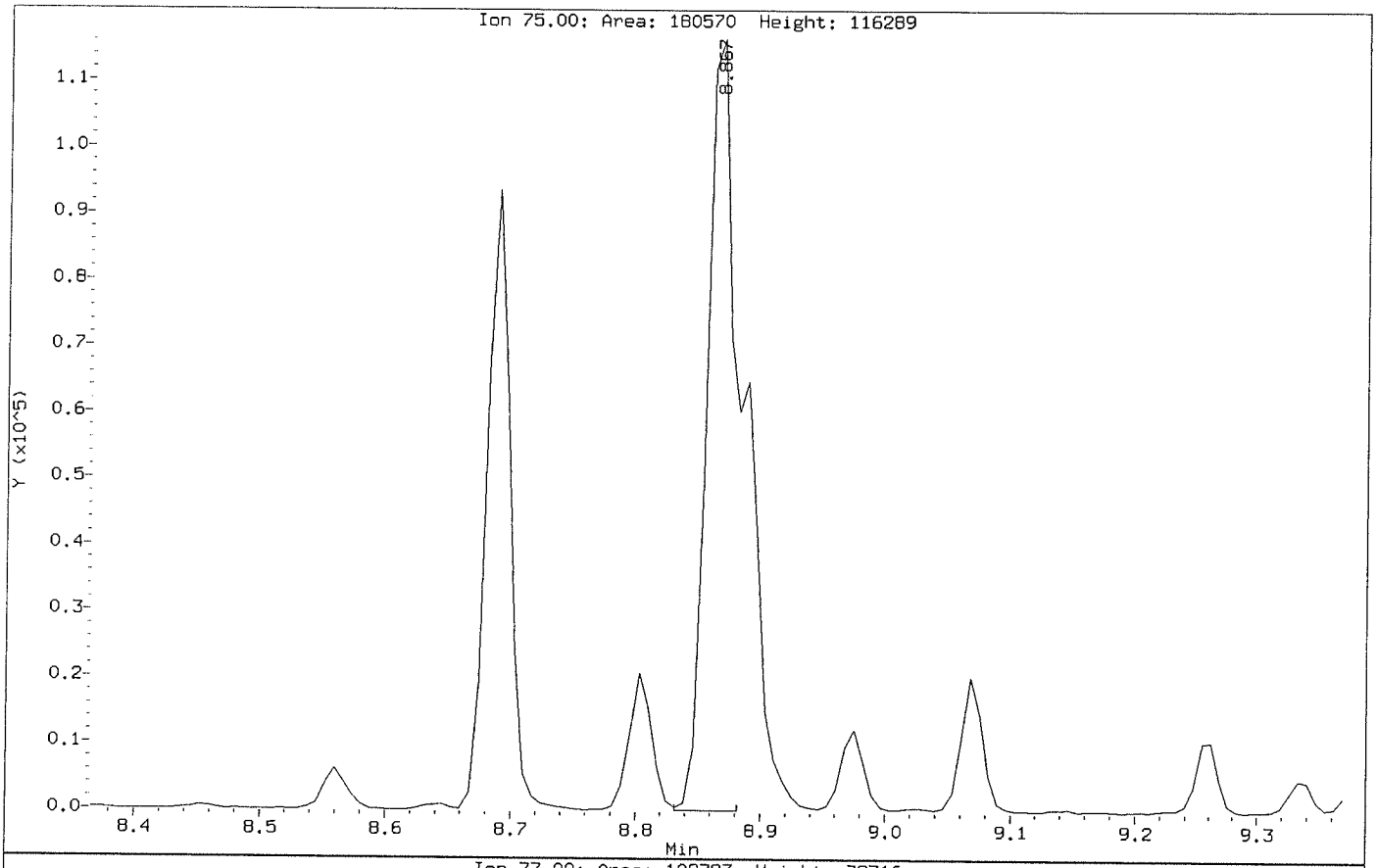
Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\Before\X051814.D
Injection Date: 18-MAY-2021 16:04
Instrument: voa6.i
Client Sample ID: ICV

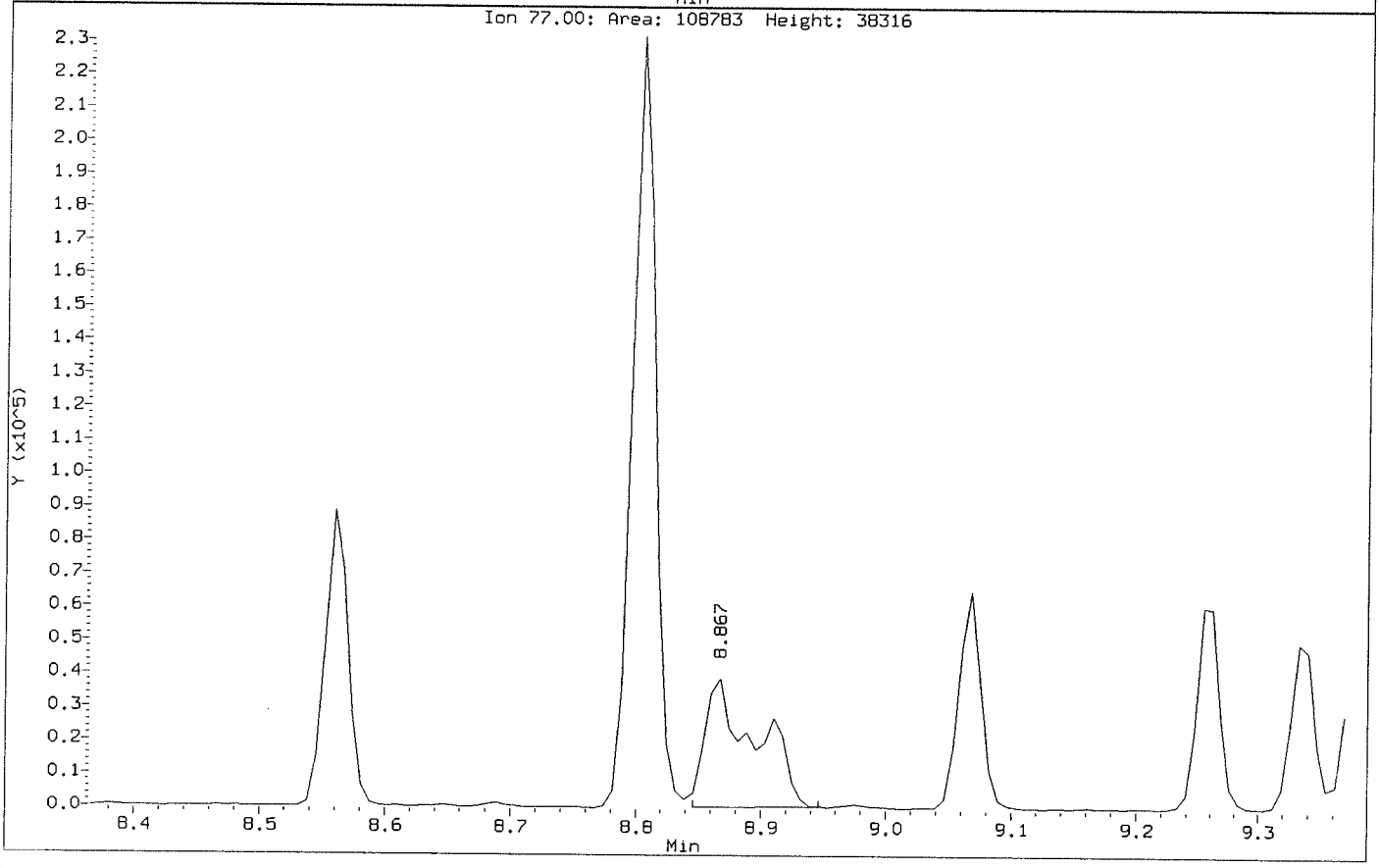
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\X051814.D
Injection Date: 18-MAY-2021 16:04
Instrument: voa6.i
Client Sample ID: ICV

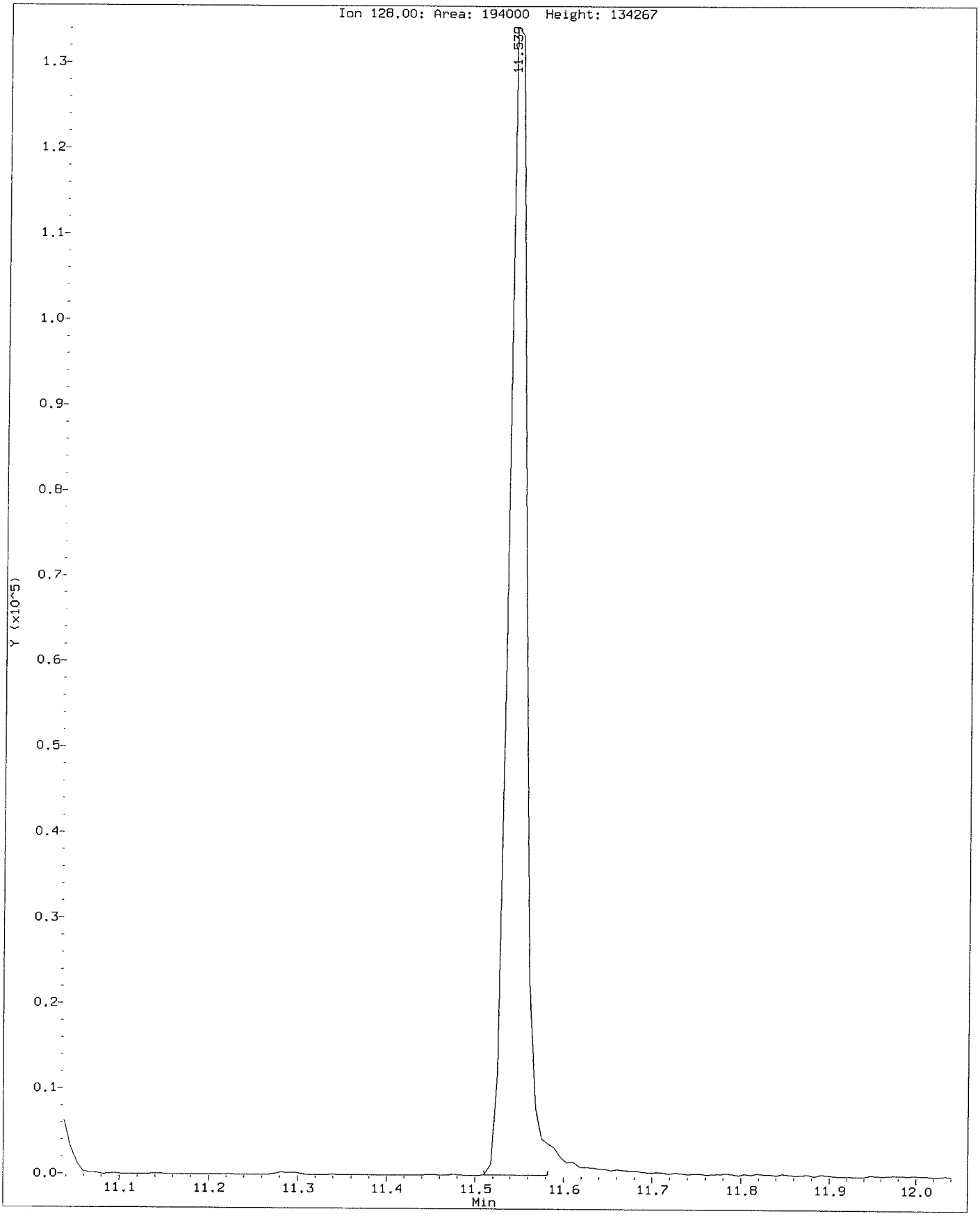
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





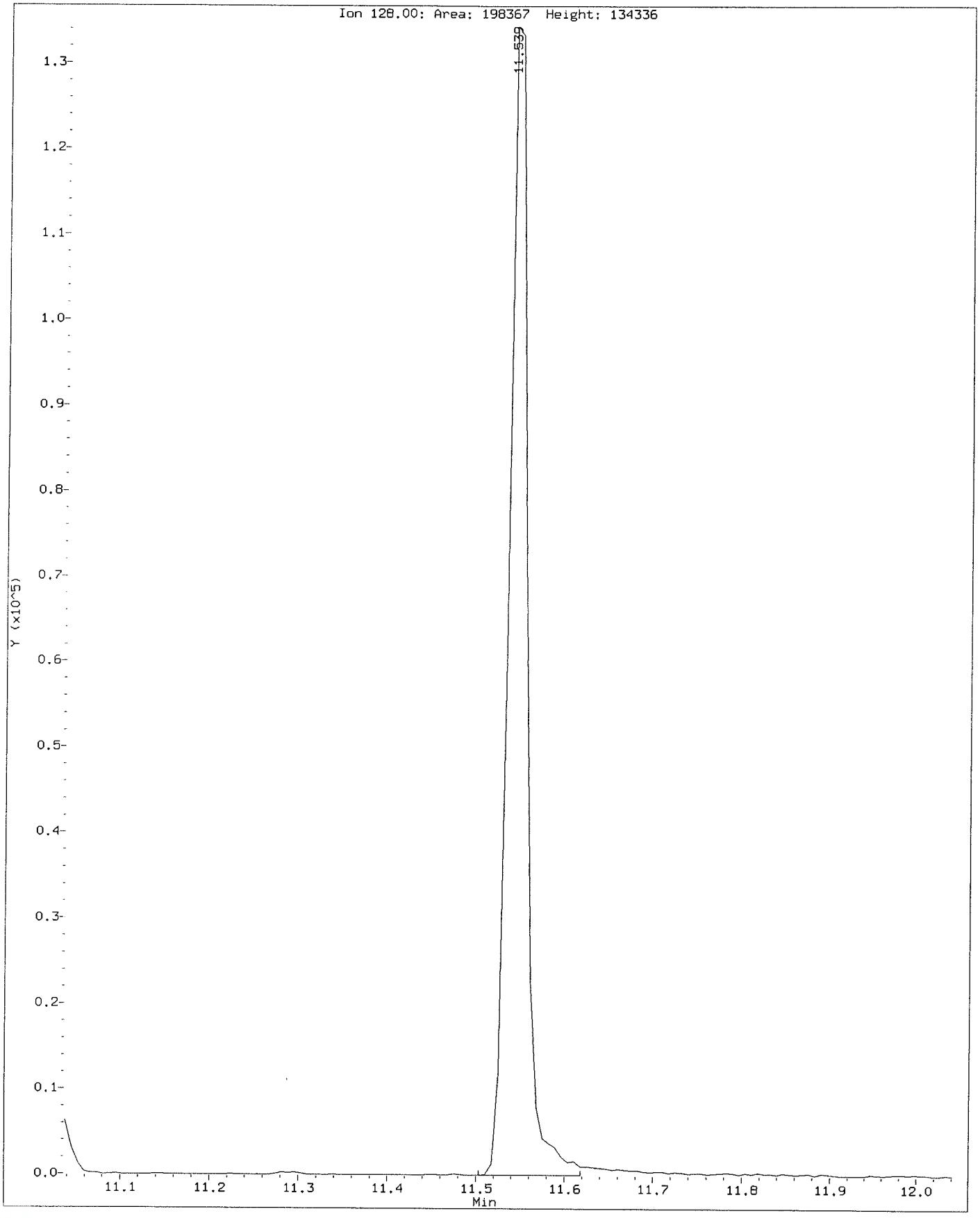
Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\Before\X051814.D
Injection Date: 18-MAY-2021 16:04
Instrument: voa6.i
Client Sample ID: ICV

Compound: Naphthalene
CAS Number: 91-20-3



Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\X051814.D
Injection Date: 18-MAY-2021 16:04
Instrument: voa6.i
Client Sample ID: ICV

Compound: Naphthalene
CAS Number: 91-20-3



MSVOA06 -Logbook

Batch: 44957 **Analyst:** Presenta Cabascango

Date: 05-19-2021 **Reviewer:**

Method: 8260 **Laboratory:** Houston

Comments:

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	05-19-2021 10:53 am	1.00	50 mL	50 mL	X051901.D	Liquid	Y	NA
2	CCV	CCV	05-19-2021 11:14 am	1.00	50 mL	50 mL	X051902a.D	Liquid	Y	NA
3	CCV	CCV	05-19-2021 11:35 am	1.00	50 mL	50 mL	X051903.D	Liquid	Y	NA
4	CCB	SAMP	05-19-2021 11:56 am	1.00	50 mL	50 mL	X051904.D	Liquid	Y	NA
5	VLCSW-210519	LCS	05-19-2021 12:17 pm	1.00	50 mL	50 mL	X051905.D	Liquid	Y	NA
6	BLANK	SAMP	05-19-2021 12:38 pm	1.00	50 mL	50 mL	X051906.D	Liquid	Y	NA
7	VBLKW-210519	MBLK	05-19-2021 12:59 pm	1.00	50 mL	50 mL	X051907.D	Liquid	Y	NA
8	HS21050697-01	SAMP	05-19-2021 01:20 pm	1.00	50 mL	50 mL	X051908.D	Liquid	Y	NA
9	HS21050697-02	SAMP	05-19-2021 01:41 pm	1.00	50 mL	50 mL	X051909.D	Liquid	Y	NA
10	HS21050697-03	SAMP	05-19-2021 02:02 pm	1.00	50 mL	50 mL	X051910.D	Liquid	Y	NA
11	HS21050697-04	SAMP	05-19-2021 02:23 pm	1.00	50 mL	50 mL	X051911.D	Liquid	Y	NA
12	HS21050697-05	SAMP	05-19-2021 02:44 pm	1.00	50 mL	50 mL	X051912.D	Liquid	Y	NA
13	HS21050697-06	SAMP	05-19-2021 03:05 pm	1.00	50 mL	50 mL	X051913.D	Liquid	Y	NA
14	HS21050697-03MS	MS	05-19-2021 03:26 pm	1.00	50 mL	50 mL	X051914.D	Liquid	Y	NA
15	HS21050697-03MSD	MSD	05-19-2021 03:48 pm	1.00	50 mL	50 mL	X051915.D	Liquid	Y	NA
16	MBLK-165777	MBLK	05-19-2021 04:09 pm	20.00	2.5 mL	50 mL	X051916.D	Liquid	Y	NA
17	HS21050517-01	SAMP	05-19-2021 04:30 pm	20.00	2.5 mL	50 mL	X051917.D	Liquid	Y	NA
18	HS21050517-02	SAMP	05-19-2021 04:51 pm	500.0(	100 µL	50 mL	X051918.D	Liquid	Y	NA
19	HS21050629-06	SAMP	05-19-2021 05:12 pm	500.0(	100 µL	50 mL	X051919.D	Liquid	Y	NA
20	HS21050629-07	SAMP	05-19-2021 05:33 pm	500.0(	100 µL	50 mL	X051920.D	Liquid	Y	NA
21	HS21050668-02	SAMP	05-19-2021 05:54 pm	500.0(	100 µL	50 mL	X051921.D	Liquid	Y	NA
22	HS21050668-09	SAMP	05-19-2021 06:15 pm	500.0(	100 µL	50 mL	X051922.D	Liquid	Y	NA
23	MBLK-165946	MBLK	05-19-2021 06:36 pm	20.00	2.5 mL	50 mL	X051923.D	Liquid	Y	NA
24	HS21050629-01	SAMP	05-19-2021 06:57 pm	50.00	1 mL	50 mL	X051924.D	Liquid	Y	NA
25	HS21050629-04	SAMP	05-19-2021 07:18 pm	50.00	1 mL	50 mL	X051925.D	Liquid	Y	NA
26	HS21050629-05	SAMP	05-19-2021 07:39 pm	20.00	2.5 mL	50 mL	X051926.D	Liquid	Y	NA
27	HS21050629-10	SAMP	05-19-2021 08:00 pm	20.00	2.5 mL	50 mL	X051927.D	Liquid	Y	NA
28	HS21050749-01	SAMP	05-19-2021 08:21 pm	20.00	2.5 mL	50 mL	X051928.D	Liquid	Y	NA
29	HS21050629-02	SAMP	05-19-2021 08:42 pm	1000.0	50 µL	50 mL	X051929.D	Liquid	Y	NA
30	HS21050629-08	SAMP	05-19-2021 09:03 pm	1000.0	50 µL	50 mL	X051930.D	Liquid	Y	NA
31	HS21050668-11	SAMP	05-19-2021 09:25 pm	1000.0	50 µL	50 mL	X051931.D	Liquid	Y	NA
32	CCV-END	CCV	05-19-2021 09:45 pm	1.00	50 mL	50 mL	X051932.D	Liquid	Y	NA
33	BLANK	SAMP	05-19-2021 10:07 pm	1.00	50 mL	50 mL	X051933.D	Liquid	Y	NA

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050697

	CLIENT SAMPLE NO.	SMC1 #	SMC2 #	SMC3 (TOL)#	OTHER (DCE)#	TOT OUT
01	VLCSW-210519	98	103	99	107	0
02	VBLKW-210519	93	92	109	94	0
03	HS21050697-01	92	91	111	93	0
04	HS21050697-02	93	91	110	94	0
05	HS21050697-03	93	90	111	92	0
06	HS21050697-04	90	92	111	94	0
07	HS21050697-05	85	90	108	92	0
08	HS21050697-06	87	91	108	92	0
09	HS21050697-03MS	98	96	106	98	0
10	HS21050697-03MSD	98	95	105	99	0
11						
12						
13						
14						
15						
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28						

		QC LIMITS
SMC1	= 4-Bromofluorobenzene	(70-130)
SMC2	= Dibromofluoromethane	(70-130)
SMC3 (TOL)	= Toluene-d8	(0-130)
OTHER(DCE)	= 1,2-Dichloroethane-d4	(0-130)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

VBLKW-210519

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050697

Lab File ID: X051907 Lab Sample ID: VBLKW-210519

Date Analyzed: 05/19/21 Time Analyzed: 1259

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA6

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VLCSW-210519	VLCSW-210519	X051905	1217
02	HS21050697-01	HS21050697-01	X051908	1320
03	HS21050697-02	HS21050697-02	X051909	1341
04	HS21050697-03	HS21050697-03	X051910	1402
05	HS21050697-04	HS21050697-04	X051911	1423
06	HS21050697-05	HS21050697-05	X051912	1444
07	HS21050697-06	HS21050697-06	X051913	1505
08	HS21050697-03MS	HS21050697-03MS	X051914	1526
09	HS21050697-03MSD	HS21050697-03MSD	X051915	1548
10				
11				
12				
13				
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30				

COMMENTS:

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050697

Lab File ID: X051901 BFB Injection Date: 05/19/21

Instrument ID: VOA6 BFB Injection Time: 1053

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.8
75	30.0 - 60.0% of mass 95	54.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.5
173	Less than 2.0% of mass 174	1.2 (1.5)1
174	Greater than 50.0% of mass 95	84.6
175	5.0 - 9.0% of mass 174	6.2 (7.3)1
176	95.0 - 101.0% of mass 174	83.3 (98.5)1
177	5.0 - 9.0% of mass 176	5.5 (6.6)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CCV	CCV	X051903	05/19/21	1135
02	VLCSW-210519	VLCSW-210519	X051905	05/19/21	1217
03	VBLKW-210519	VBLKW-210519	X051907	05/19/21	1259
04	HS21050697-01	HS21050697-01	X051908	05/19/21	1320
05	HS21050697-02	HS21050697-02	X051909	05/19/21	1341
06	HS21050697-03	HS21050697-03	X051910	05/19/21	1402
07	HS21050697-04	HS21050697-04	X051911	05/19/21	1423
08	HS21050697-05	HS21050697-05	X051912	05/19/21	1444
09	HS21050697-06	HS21050697-06	X051913	05/19/21	1505
10	HS21050697-03MS	HS21050697-03MS	X051914	05/19/21	1526
11	HS21050697-03MSD	HS21050697-03MSD	X051915	05/19/21	1548
12	CCV-END	CCV-END	X051932	05/19/21	2145
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050697

Instrument ID: VOA6 Calibration Date: 05/19/21 Time: 1135

Lab File ID: X051903 Init. Calib. Date(s): 05/18/21 05/18/21

Init. Calib. Times: 1123 1452

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
cis-1,3-Dichloropropene	0.5480000	0.5640101	0.5640101	0.2	-2.92	20.00	AVRG
trans-1,3-Dichloropropene	0.4790000	0.4980238	0.4980238	0.1	-3.97	20.00	AVRG
1,3-Dichlorobenzene	1.4360000	1.4359270	1.4359270	0.6	0.00	20.00	AVRG
2,2-Dichloropropane	0.8280000	0.8498256	0.8498256	0.1	-2.64	20.00	AVRG
1,1-Dichloropropene	0.4280000	0.4184010	0.4184010	0.1	2.24	20.00	AVRG
Dibromomethane	0.2410000	0.2328604	0.2328604	0.1	3.38	20.00	AVRG
1,2-Dibromoethane	0.3490000	0.3397443	0.3397443	0.1	2.65	20.00	AVRG
trans-1,2-Dichloroethene	0.4810000	0.4842938	0.4842938	0.1	-0.68	20.00	AVRG
1,1,1,2-Tetrachloroethane	0.3640000	0.3633001	0.3633001	0.1	0.19	20.00	AVRG
1,1,1-Trichloroethane	0.8500000	0.8669240	0.8669240	0.1	-1.99	20.00	AVRG
1,1,2,2-Tetrachloroethane	46.736305	50.000000	0.7747339	0.3	6.53	20.00	LINR
Toluene	1.4430000	1.4792507	1.4792507	0.4	-2.51	20.00	AVRG
1,1,2-Trichloroethane	0.2900000	0.2747176	0.2747176	0.1	5.27	20.00	AVRG
1,1-Dichloroethane	0.9260000	0.9165784	0.9165784	0.2	1.02	20.00	AVRG
1,1-Dichloroethene	0.5000000	0.4343552	0.4343552	0.1	13.13	20.00	AVRG
Trichlorofluoromethane	0.9610000	0.8587875	0.8587875	0.1	10.64	20.00	AVRG
1,2,3-Trichlorobenzene	40.075722	50.000000	0.1892747	0.01	19.85	20.00	2RDR
Tetrachloroethene	0.2780000	0.2872484	0.2872484	0.2	-3.33	20.00	AVRG
1,2,4-Trichlorobenzene	41.681430	50.000000	0.3706438	0.1	16.64	20.00	LINR
1,2,4-Trimethylbenzene	2.5430000	2.6376953	2.6376953	0.1	-3.72	20.00	AVRG
tert-Butylbenzene	2.1180000	2.0770215	2.0770215	0.1	1.93	20.00	AVRG
Trichloroethene	0.3310000	0.3263739	0.3263739	0.2	1.40	20.00	AVRG
1,2-Dichlorobenzene	1.4010000	1.3182532	1.3182532	0.4	5.91	20.00	AVRG
1,2-Dichloroethane	0.4910000	0.4876447	0.4876447	0.1	0.68	20.00	AVRG
1,2-Dichloropropane	0.3360000	0.3254203	0.3254203	0.1	3.15	20.00	AVRG
1,3,5-Trimethylbenzene	2.4960000	2.6013476	2.6013476	0.1	-4.22	20.00	AVRG
1,3-Dichloropropane	0.5690000	0.5477010	0.5477010	0.1	3.74	20.00	AVRG
1,4-Dichlorobenzene	51.209173	50.000000	1.5046481	0.4	-2.42	20.00	LINR
2-Butanone	0.1850000	0.1604067	0.1604067	0.1	13.29	20.00	AVRG
2-Chlorotoluene	2.2280000	2.1629871	2.1629871	0.1	2.92	20.00	AVRG
2-Hexanone	87.499555	100.00000	0.1855778	0.1	12.50	20.00	LINR
4-Chlorotoluene	2.5980000	2.6798841	2.6798841	0.1	-3.15	20.00	AVRG
Styrene	47.468082	50.000000	1.0795223	0.3	5.06	20.00	LINR
4-Methyl-2-Pentanone	86.886813	100.00000	0.2766527	0.1	13.11	20.00	LINR
Acetone	100.51205	100.00000	0.1270083	0.1	-0.51	20.00	LINR
Benzene	1.2370000	1.2532458	1.2532458	0.5	-1.31	20.00	AVRG
Bromobenzene	0.8340000	0.8336137	0.8336137	0.1	0.05	20.00	AVRG
Bromochloromethane	0.3050000	0.2982817	0.2982817	0.1	2.20	20.00	AVRG
Bromodichloromethane	0.4830000	0.4770774	0.4770774	0.2	1.23	20.00	AVRG
Bromoform	0.2420000	0.2275976	0.2275976	0.1	5.95	20.00	AVRG
Bromomethane	47.824412	50.000000	0.5028875	0.1	4.35	20.00	LINR
Carbon Disulfide	1.1780000	1.2643302	1.2643302	0.1	-7.33	20.00	AVRG

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS2105069

Instrument ID: VOA6 Calibration Date: 05/19/21 Time: 1135

Lab File ID: X051903 Init. Calib. Date(s): 05/18/21 05/18/21

Init. Calib. Times: 1123 1452

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Carbon Tetrachloride	0.4360000	0.4243908	0.4243908	0.1	2.66	20.00	AVRG
Chlorobenzene	0.9800000	0.9472264	0.9472264	0.5	3.34	20.00	AVRG
Chloroethane	0.3780000	0.3476452	0.3476452	0.1	8.03	20.00	AVRG
Chloroform	1.0620000	1.0295010	1.0295010	0.2	3.06	20.00	AVRG
Chloromethane	53.318239	50.000000	0.5752090	0.1	-6.64	20.00	LINR
cis-1,2-Dichloroethene	0.5760000	0.5670387	0.5670387	0.1	1.56	20.00	AVRG
Dibromochloromethane	0.3900000	0.3950616	0.3950616	0.1	-1.30	20.00	AVRG
Dichlorodifluoromethane	50.606127	50.000000	0.6371747	0.1	-1.21	20.00	LINR
Ethylbenzene	0.4840000	0.4801605	0.4801605	0.1	0.79	20.00	AVRG
Hexachlorobutadiene	48.542887	50.000000	0.2906910	0.1	2.91	20.00	LINR
Isopropylbenzene	1.4800000	1.5110656	1.5110656	0.1	-2.10	20.00	AVRG
m,p-Xylenes	0.6240000	0.6428799	0.6428799	0.1	-3.02	20.00	AVRG
Methylene Chloride	0.5010000	0.5008542	0.5008542	0.1	0.03	20.00	AVRG
n-Butylbenzene	2.3480000	2.4572189	2.4572189	0.5	-4.65	20.00	AVRG
n-Propylbenzene	3.5410000	3.6689657	3.6689657	0.1	-3.61	20.00	AVRG
Naphthalene	43.475572	50.000000	0.5192189	0.2	13.05	20.00	2RDR
o-Xylene	0.6070000	0.6081976	0.6081976	0.3	-0.20	20.00	AVRG
sec-Butylbenzene	2.9310000	3.0185622	3.0185622	0.1	-2.99	20.00	AVRG
Vinyl Chloride	0.6040000	0.5402510	0.5402510	0.1	10.55	20.00	AVRG
1,2,3-Trichloropropane	48.113968	50.000000	0.6532661	0.1	3.77	20.00	LINR
p-Isopropyltoluene	2.4690000	2.5889957	2.5889957	0.1	-4.86	20.00	AVRG
1,2-Dibromo-3-Chloropropane	40.894733	50.000000	5.47e-002	0.05	18.21	20.00	LINR
Freon TF	0.4740000	0.4193814	0.4193814	0.1	11.52	20.00	AVRG
4-Bromofluorobenzene	50.660754	50.000000	0.4782255	0.1	-1.32	20.00	LINR
Dibromofluoromethane	51.999224	50.000000	0.5791402	0.1	-4.00	20.00	LINR
Toluene-d8	51.040654	50.000000	1.2543207	0.1	-2.08	20.00	LINR
1,2-Dichloroethane-d4	52.333139	50.000000	0.6801305	0.1	-4.67	20.00	LINR

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050697

Instrument ID: VOA6 Calibration Date: 05/19/21 Time: 2145

Lab File ID: X051932 Init. Calib. Date(s): 05/18/21 05/18/21

Init. Calib. Times: 1123 1452

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
cis-1,3-Dichloropropene	0.5480000	0.5440933	0.5440933	0.2	0.71	50.00	AVRG
trans-1,3-Dichloropropene	0.4790000	0.4809785	0.4809785	0.1	-0.41	50.00	AVRG
1,3-Dichlorobenzene	1.4360000	1.3431265	1.3431265	0.6	6.47	50.00	AVRG
2,2-Dichloropropane	0.8280000	0.8054850	0.8054850	0.1	2.72	50.00	AVRG
1,1-Dichloropropene	0.4280000	0.4291072	0.4291072	0.1	-0.26	50.00	AVRG
Dibromomethane	0.2410000	0.2300612	0.2300612	0.1	4.54	50.00	AVRG
1,2-Dibromoethane	0.3490000	0.3349629	0.3349629	0.1	4.02	50.00	AVRG
trans-1,2-Dichloroethene	0.4810000	0.5046545	0.5046545	0.1	-4.92	50.00	AVRG
1,1,1,2-Tetrachloroethane	0.3640000	0.3476798	0.3476798	0.1	4.48	50.00	AVRG
1,1,1-Trichloroethane	0.8500000	0.8977863	0.8977863	0.1	-5.62	50.00	AVRG
1,1,2,2-Tetrachloroethane	45.849785	50.000000	0.7602033	0.3	8.30	50.00	LINR
Toluene	1.4430000	1.4808838	1.4808838	0.4	-2.62	50.00	AVRG
1,1,2-Trichloroethane	0.2900000	0.2668274	0.2668274	0.1	7.99	50.00	AVRG
1,1-Dichloroethane	0.9260000	0.9551166	0.9551166	0.2	-3.14	50.00	AVRG
1,1-Dichloroethene	0.5000000	0.4569400	0.4569400	0.1	8.61	50.00	AVRG
Trichlorofluoromethane	0.9610000	0.9045574	0.9045574	0.1	5.87	50.00	AVRG
1,2,3-Trichlorobenzene	31.817753	50.000000	0.1490600	0.01	36.36	50.00	2RDR
Tetrachloroethene	0.2780000	0.3020492	0.3020492	0.2	-8.65	50.00	AVRG
1,2,4-Trichlorobenzene	32.435920	50.000000	0.2832588	0.1	35.13	50.00	LINR
1,2,4-Trimethylbenzene	2.5430000	2.4817600	2.4817600	0.1	2.41	50.00	AVRG
tert-Butylbenzene	2.1180000	1.9646540	1.9646540	0.1	7.24	50.00	AVRG
Trichloroethene	0.3310000	0.3272092	0.3272092	0.2	1.14	50.00	AVRG
1,2-Dichlorobenzene	1.4010000	1.2142890	1.2142890	0.4	13.33	50.00	AVRG
1,2-Dichloroethane	0.4910000	0.4753934	0.4753934	0.1	3.18	50.00	AVRG
1,2-Dichloropropane	0.3360000	0.3218042	0.3218042	0.1	4.22	50.00	AVRG
1,3,5-Trimethylbenzene	2.4960000	2.4235256	2.4235256	0.1	2.90	50.00	AVRG
1,3-Dichloropropane	0.5690000	0.5339818	0.5339818	0.1	6.15	50.00	AVRG
1,4-Dichlorobenzene	47.098500	50.000000	1.3832668	0.4	5.80	50.00	LINR
2-Butanone	0.1850000	0.1676851	0.1676851	0.1	9.36	50.00	AVRG
2-Chlorotoluene	2.2280000	2.0714367	2.0714367	0.1	7.03	50.00	AVRG
2-Hexanone	85.816917	100.00000	0.1820201	0.1	14.18	50.00	LINR
4-Chlorotoluene	2.5980000	2.5539626	2.5539626	0.1	1.70	50.00	AVRG
Styrene	45.174511	50.000000	1.0253498	0.3	9.65	50.00	LINR
4-Methyl-2-Pentanone	87.497387	100.00000	0.2785988	0.1	12.50	50.00	LINR
Acetone	91.795213	100.00000	0.1165311	0.1	8.20	50.00	LINR
Benzene	1.2370000	1.2479565	1.2479565	0.5	-0.88	50.00	AVRG
Bromobenzene	0.8340000	0.8020828	0.8020828	0.1	3.83	50.00	AVRG
Bromochloromethane	0.3050000	0.3005271	0.3005271	0.1	1.47	50.00	AVRG
Bromodichloromethane	0.4830000	0.4733034	0.4733034	0.2	2.01	50.00	AVRG
Bromoform	0.2420000	0.2103144	0.2103144	0.1	13.09	50.00	AVRG
Bromomethane	49.540219	50.000000	0.5207515	0.1	0.92	50.00	LINR
Carbon Disulfide	1.1780000	1.2790005	1.2790005	0.1	-8.57	50.00	AVRG

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS2105069

Instrument ID: VOA6 Calibration Date: 05/19/21 Time: 2145

Lab File ID: X051932 Init. Calib. Date(s): 05/18/21 05/18/21

Init. Calib. Times: 1123 1452

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Carbon Tetrachloride	0.4360000	0.4357076	0.4357076	0.1	0.07	50.00	AVRG
Chlorobenzene	0.9800000	0.9314619	0.9314619	0.5	4.95	50.00	AVRG
Chloroethane	0.3780000	0.3980391	0.3980391	0.1	-5.30	50.00	AVRG
Chloroform	1.0620000	1.0617623	1.0617623	0.2	0.02	50.00	AVRG
Chloromethane	57.772303	50.000000	0.6234741	0.1	-15.54	50.00	LINR
cis-1,2-Dichloroethene	0.5760000	0.5896725	0.5896725	0.1	-2.37	50.00	AVRG
Dibromochloromethane	0.3900000	0.3726900	0.3726900	0.1	4.44	50.00	AVRG
Dichlorodifluoromethane	56.064133	50.000000	0.7088392	0.1	-12.13	50.00	LINR
Ethylbenzene	0.4840000	0.4788671	0.4788671	0.1	1.06	50.00	AVRG
Hexachlorobutadiene	37.429252	50.000000	0.2194642	0.1	25.14	50.00	LINR
Isopropylbenzene	1.4800000	1.4382281	1.4382281	0.1	2.82	50.00	AVRG
m,p-Xylenes	0.6240000	0.6192702	0.6192702	0.1	0.76	50.00	AVRG
Methylene Chloride	0.5010000	0.5191876	0.5191876	0.1	-3.63	50.00	AVRG
n-Butylbenzene	2.3480000	2.1737044	2.1737044	0.5	7.42	50.00	AVRG
n-Propylbenzene	3.5410000	3.4825343	3.4825343	0.1	1.65	50.00	AVRG
Naphthalene	32.053498	50.000000	0.3768561	0.2	35.89	50.00	2RDR
o-Xylene	0.6070000	0.5888890	0.5888890	0.3	2.98	50.00	AVRG
sec-Butylbenzene	2.9310000	2.8039954	2.8039954	0.1	4.33	50.00	AVRG
Vinyl Chloride	0.6040000	0.6685193	0.6685193	0.1	-10.68	50.00	AVRG
1,2,3-Trichloropropane	45.435820	50.000000	0.6173637	0.1	9.13	50.00	LINR
p-Isopropyltoluene	2.4690000	2.3744991	2.3744991	0.1	3.83	50.00	AVRG
1,2-Dibromo-3-Chloropropane	35.885484	50.000000	4.77e-002	0.05	28.23	50.00	LINR
Freon TF	0.4740000	0.4216048	0.4216048	0.1	11.05	50.00	AVRG
4-Bromofluorobenzene	48.551606	50.000000	0.4582677	0.1	2.90	50.00	LINR
Dibromofluoromethane	53.633816	50.000000	0.5972659	0.1	-7.27	50.00	LINR
Toluene-d8	50.252582	50.000000	1.2345615	0.1	-0.50	50.00	LINR
1,2-Dichloroethane-d4	53.434704	50.000000	0.6941072	0.1	-6.87	50.00	LINR

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050697

Lab File ID (Standard): X051903 Date Analyzed: 05/19/21

Instrument ID: VOA6 Time Analyzed: 1135

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS1(DCB) AREA #	RT #	IS2(CBZ) AREA #	RT #	IS3(DFB) AREA #	RT #
	12 HOUR STD	233000	9.66	468208	7.67	499179	4.96
	UPPER LIMIT	466000	10.16	936416	8.17	998358	5.46
	LOWER LIMIT	116500	9.16	234104	7.17	249590	4.46
	CLIENT SAMPLE NO.						
01	VLCSW-210519	204399	9.66	417981	7.67	439289	4.97
02	VBLKW-210519	173863	9.66	403669	7.67	459179	4.97
03	HS21050697-01	176805	9.66	395845	7.67	445878	4.96
04	HS21050697-02	174645	9.66	396407	7.67	444853	4.96
05	HS21050697-03	163107	9.66	378635	7.67	427451	4.96
06	HS21050697-04	166906	9.66	382705	7.67	431689	4.97
07	HS21050697-05	156944	9.66	383042	7.67	420016	4.97
08	HS21050697-06	160729	9.66	381590	7.67	418311	4.96
09	HS21050697-03MS	200185	9.66	408439	7.67	444502	4.96
10	HS21050697-03MSD	211469	9.66	424279	7.67	463948	4.96
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (CBZ) = Chlorobenzene-d5
IS3 (DFB) = 1,4-Difluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050697

Lab File ID (Standard): X051903 Date Analyzed: 05/19/21

Instrument ID: VOA6 Time Analyzed: 1135

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS4 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	295583	4.18				
	UPPER LIMIT	591166	4.68				
	LOWER LIMIT	147792	3.68				
	CLIENT SAMPLE NO.						
01	VLCSW-210519	265102	4.18				
02	VBLKW-210519	294316	4.18				
03	HS21050697-01	286406	4.18				
04	HS21050697-02	283394	4.18				
05	HS21050697-03	272202	4.18				
06	HS21050697-04	271631	4.18				
07	HS21050697-05	268603	4.18				
08	HS21050697-06	266798	4.18				
09	HS21050697-03MS	279843	4.18				
10	HS21050697-03MSD	289933	4.18				
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS4 = Pentafluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051901.D

Date : 19-MAY-2021 10:53

Client ID: BFB

Instrument: voa6.i

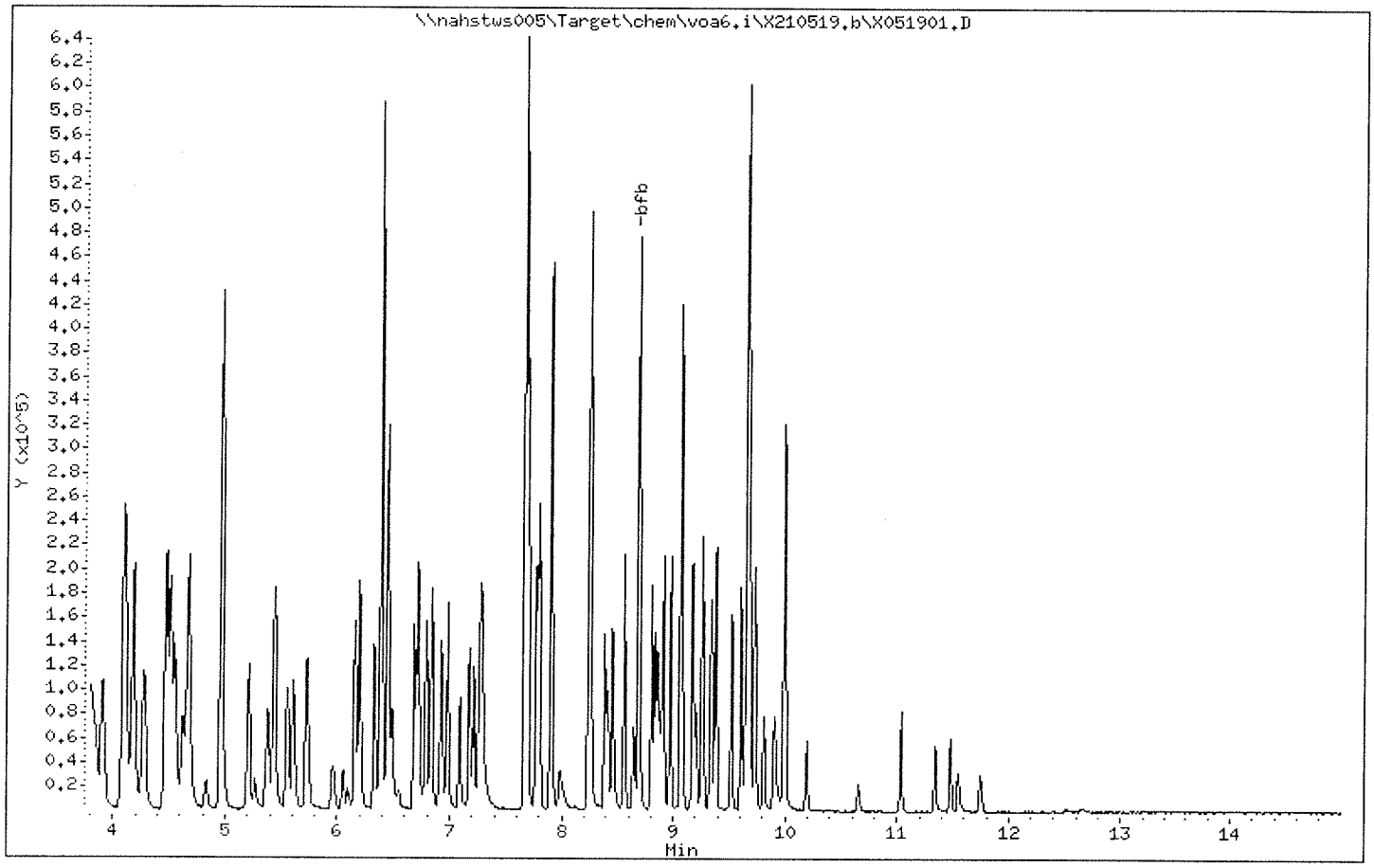
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25



Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051901.D Page 2

Date : 19-MAY-2021 10:53

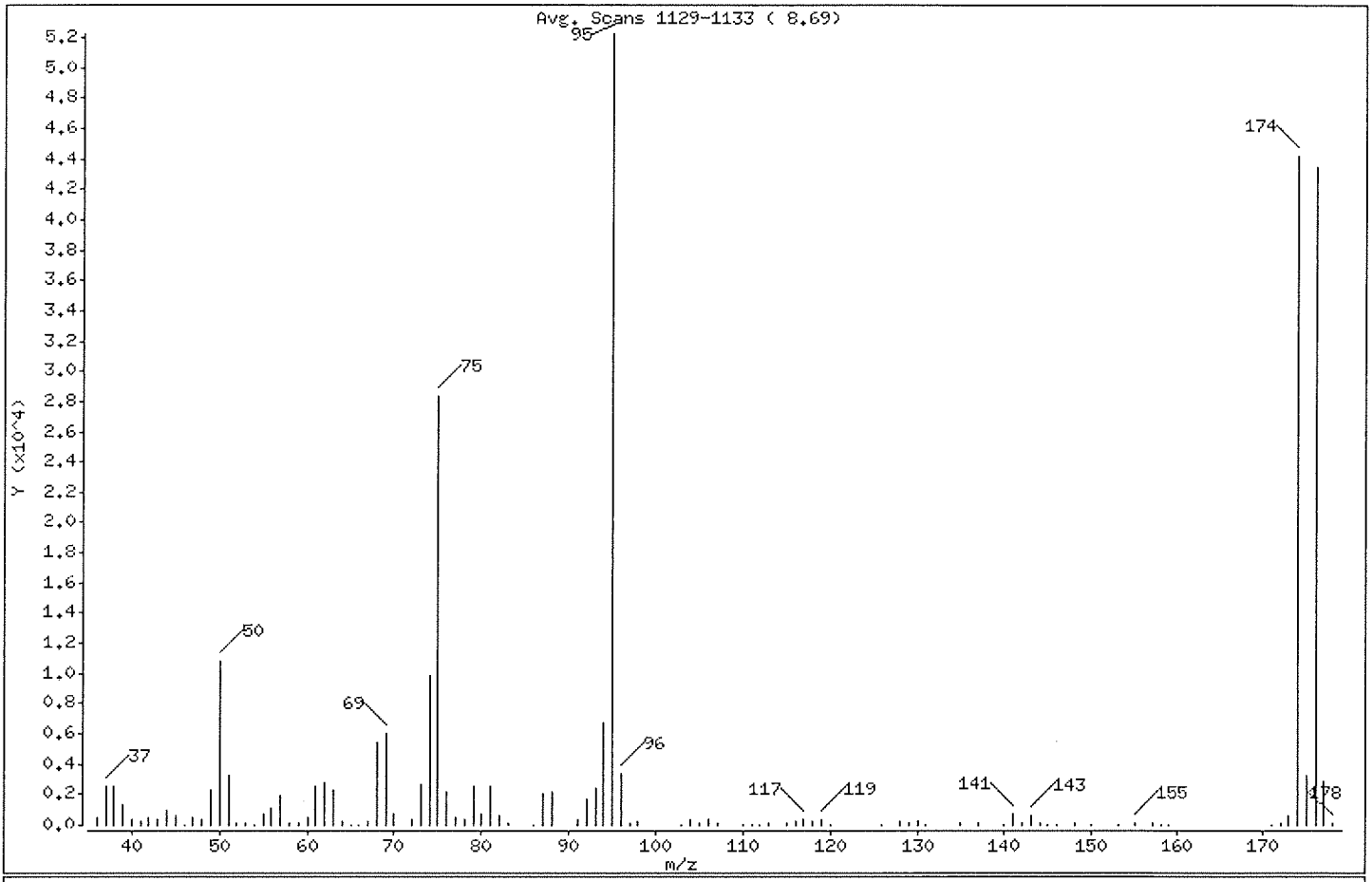
Client ID: BFB Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	20.75
75	30.00 - 60.00% of mass 95	54.22
96	5.00 - 9.00% of mass 95	6.51
173	Less than 2.00% of mass 174	1.24 (1.47)
174	Greater than 50.00% of mass 95	84.57
175	5.00 - 9.00% of mass 174	6.20 (7.34)
176	95.00 - 101.00% of mass 174	83.33 (98.53)
177	5.00 - 9.00% of mass 176	5.49 (6.59)

Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051901.D

Date : 19-MAY-2021 10:53

Client ID: BFB Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

Data File: X051901.D
Spectrum: Avg. Scans 1129-1133 (8.69)
Location of Maximum: 95.00
Number of points: 102

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	536	62.00	2776	93.00	2421	135.00	90
37.00	2537	63.00	2249	94.00	6738	137.00	82
38.00	2523	64.00	299	95.00	52248	140.00	25
39.00	1308	65.00	22	96.00	3402	141.00	775
40.00	398	66.00	55	97.00	135	142.00	93
41.00	247	67.00	193	98.00	298	143.00	591
42.00	484	68.00	5349	103.00	32	144.00	86
43.00	330	69.00	6046	104.00	410	145.00	36
44.00	901	70.00	722	105.00	143	146.00	14
45.00	546	72.00	365	106.00	314	148.00	125
46.00	11	73.00	2600	107.00	90	150.00	12
47.00	497	74.00	9820	110.00	41	153.00	13
48.00	394	75.00	28328	111.00	38	155.00	152
49.00	2276	76.00	2166	112.00	40	157.00	119
50.00	10842	77.00	509	113.00	74	158.00	48
51.00	3295	78.00	359	115.00	142	159.00	16
52.00	156	79.00	2566	116.00	203	171.00	48
53.00	63	80.00	745	117.00	362	172.00	140
54.00	49	81.00	2570	118.00	220	173.00	650
55.00	701	82.00	579	119.00	355	174.00	44184
56.00	1077	83.00	146	120.00	22	175.00	3241
57.00	1964	86.00	38	126.00	12	176.00	43536
58.00	124	87.00	2097	128.00	232	177.00	2871
59.00	78	88.00	2164	129.00	125	178.00	82
60.00	521	91.00	387	130.00	255		
61.00	2525	92.00	1645	131.00	46		

Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051903.D Page 1
Report Date: 22-Jun-2021 11:50

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210519.b\X051903.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 19-MAY-2021 11:35
Operator : PC Inst ID: voa6.i
Smp Info : CCV;CCV;2;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210519.b\8260W.m
Meth Date : 22-Jun-2021 11:50 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 3 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

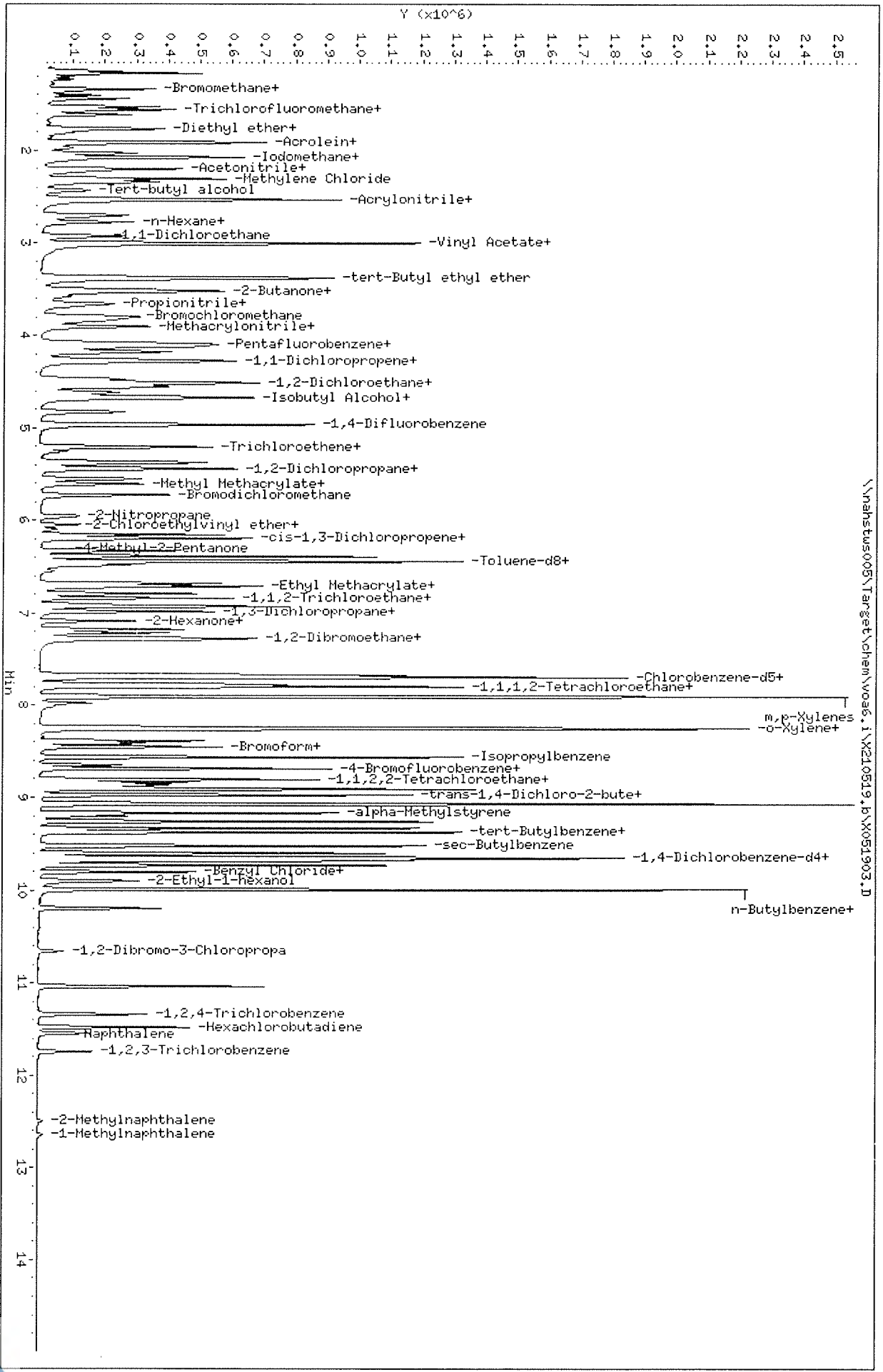
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	295583	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	499179	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	468208	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	233000	50.0000	
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	201035	50.0000	52.33
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	223909	50.0000	50.66
$	30 Dibromofluoromethane	113	4.103	4.103	(0.981)	171184	50.0000	51.99
$	48 Toluene-d8	98	6.388	6.388	(0.833)	587283	50.0000	51.04
	60 1,1,1,2-Tetrachloroethane	131	7.771	7.771	(1.013)	170100	50.0000	49.86
	31 1,1,1-Trichloroethane	97	4.089	4.089	(0.978)	256248	50.0000	50.96
	68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	180513	50.0000	46.73
	138 Freon TF	101	1.919	1.919	(0.459)	123962	50.0000	44.20
	53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	128625	50.0000	47.29
	22 1,1-Dichloroethane	63	2.922	2.922	(0.699)	270925	50.0000	49.49
	11 1,1-Dichloroethene	96	1.919	1.919	(0.459)	128388	50.0000	43.43
	32 1,1-Dichloropropene	75	4.283	4.283	(0.863)	208857	50.0000	48.84
	93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.216)	44101	50.0000	40.07
	71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	152211	50.0000	48.11(M)
	90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	86360	50.0000	41.68
	79 1,2,4-Trimethylbenzene	105	9.375	9.375	(0.970)	614583	50.0000	51.86
	89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.103)	12750	50.0000	40.89
	57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	159071	50.0000	48.66

Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051903.D Page 2
Report Date: 22-Jun-2021 11:50

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	307153	50.0000	47.03
33	1,2-Dichloroethane	62	4.555	4.555	(0.918)	243422	50.0000	49.59
42	1,2-Dichloropropane	63	5.436	5.436	(1.095)	162443	50.0000	48.42
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	606114	50.0000	52.11
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	334571	50.0000	49.98
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	256438	50.0000	48.16
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	350583	50.0000	51.20
26	2,2-Dichloropropane	77	3.509	3.509	(0.839)	251194	50.0000	51.30
24	2-Butanone	43	3.581	3.581	(0.856)	94827	100.000	86.91
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	503976	50.0000	48.53
52	2-Hexanone	43	7.090	7.090	(0.924)	173778	100.000	87.49
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	624413	50.0000	51.56
82	p-Isopropyltoluene	119	9.648	9.648	(0.999)	603236	50.0000	52.43
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	259062	100.000	86.88
10	Acetone	43	1.976	1.976	(0.473)	75083	100.000	100.51
37	Benzene	78	4.512	4.512	(0.909)	625594	50.0000	50.65
74	Bromobenzene	156	8.802	8.802	(0.911)	194232	50.0000	50.00
29	Bromochloromethane	128	3.795	3.795	(0.908)	88167	50.0000	48.94
39	Bromodichloromethane	83	5.722	5.722	(1.153)	238147	50.0000	49.37
66	Bromoform	173	8.408	8.408	(1.096)	106563	50.0000	47.06
6	Bromomethane	94	1.339	1.339	(0.320)	148645	50.0000	47.82
19	Carbon Disulfide	76	2.069	2.069	(0.495)	747429	100.000	107.32
34	Carbon Tetrachloride	117	4.268	4.268	(0.860)	211847	50.0000	48.68
59	Chlorobenzene	112	7.692	7.692	(1.003)	443499	50.0000	48.30
7	Chloroethane	64	1.403	1.403	(0.336)	102758	50.0000	45.92
28	Chloroform	83	3.910	3.910	(0.935)	304303	50.0000	48.45
3	Chloromethane	50	1.081	1.081	(0.258)	170022	50.0000	53.31
27	cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	167607	50.0000	49.20
46	cis-1,3-Dichloropropene	75	6.152	6.152	(1.240)	281542	50.0000	51.44
55	Dibromochloromethane	129	7.176	7.176	(0.936)	184971	50.0000	50.54
44	Dibromomethane	93	5.550	5.550	(1.118)	116239	50.0000	48.34
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	188338	50.0000	50.60
61	Ethylbenzene	106	7.800	7.800	(1.017)	224815	50.0000	49.55
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	67731	50.0000	48.54
67	Isopropylbenzene	105	8.559	8.559	(1.116)	707493	50.0000	51.02
62	m,p-Xylenes	106	7.907	7.907	(1.031)	602003	100.000	102.96
17	Methylene Chloride	84	2.306	2.306	(0.551)	148044	50.0000	49.94
87	n-Butylbenzene	91	9.991	9.991	(1.034)	572532	50.0000	52.32
73	n-Propylbenzene	91	8.910	8.910	(0.922)	854869	50.0000	51.80
92	Naphthalene	128	11.546	11.546	(1.195)	120978	50.0000	43.47
63	o-Xylene	106	8.244	8.244	(1.075)	284763	50.0000	50.07
81	sec-Butylbenzene	105	9.519	9.519	(0.985)	703325	50.0000	51.50
64	Styrene	104	8.258	8.258	(1.077)	505441	50.0000	47.46
78	tert-Butylbenzene	119	9.332	9.332	(0.966)	483946	50.0000	49.03
56	Tetrachloroethene	164	6.926	6.926	(0.903)	134492	50.0000	51.69
50	Toluene	91	6.446	6.446	(0.840)	692597	50.0000	51.27
20	trans-1,2-Dichloroethene	96	2.535	2.535	(0.606)	143149	50.0000	50.33
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	248603	50.0000	51.92
38	Trichloroethene	130	5.207	5.207	(1.049)	162919	50.0000	49.28
8	Trichlorofluoromethane	101	1.561	1.561	(0.373)	253843	50.0000	44.67
5	Vinyl Chloride	62	1.145	1.145	(0.274)	159689	50.0000	44.74

QC Flag Legend

M - Compound response manually integrated.

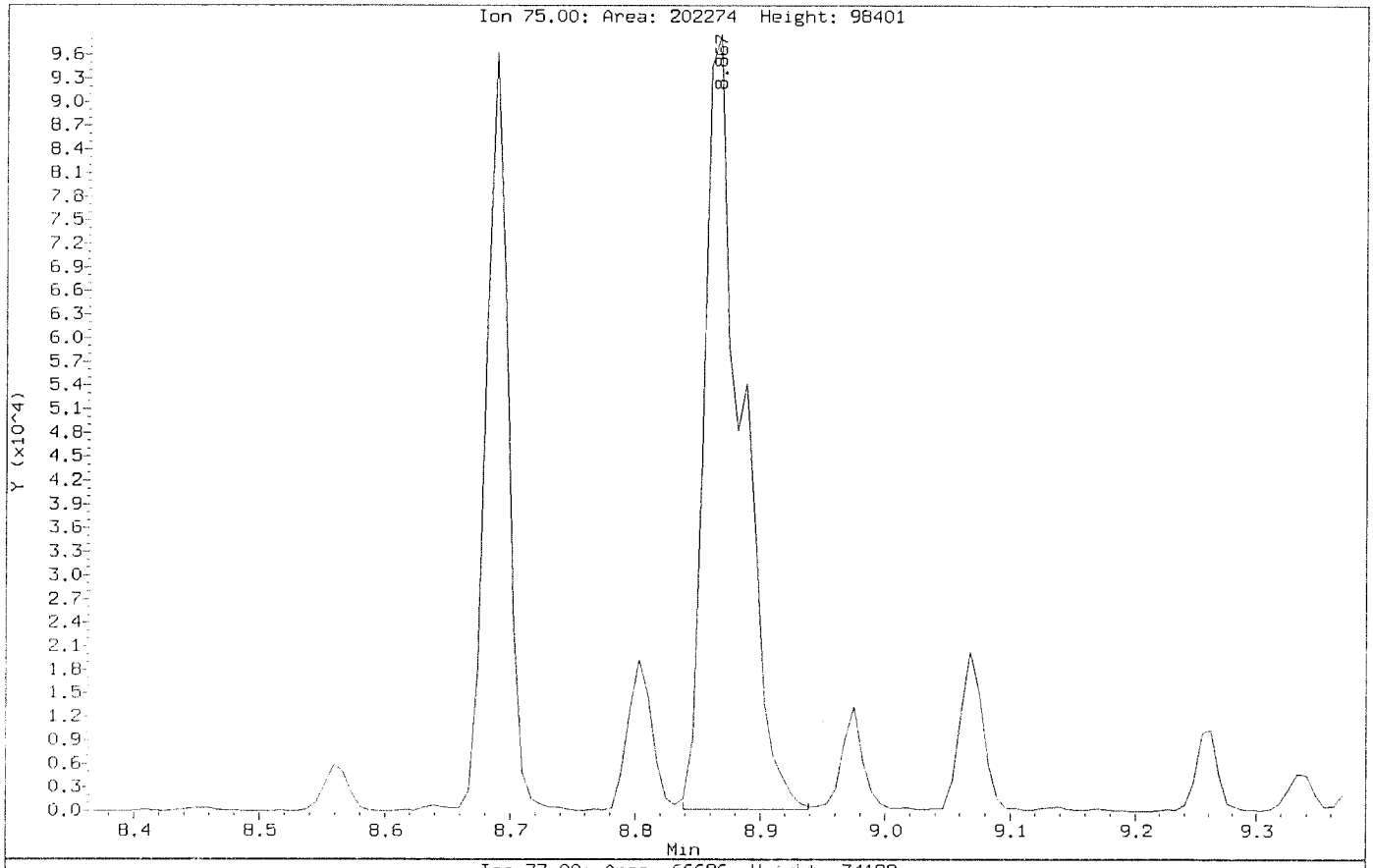


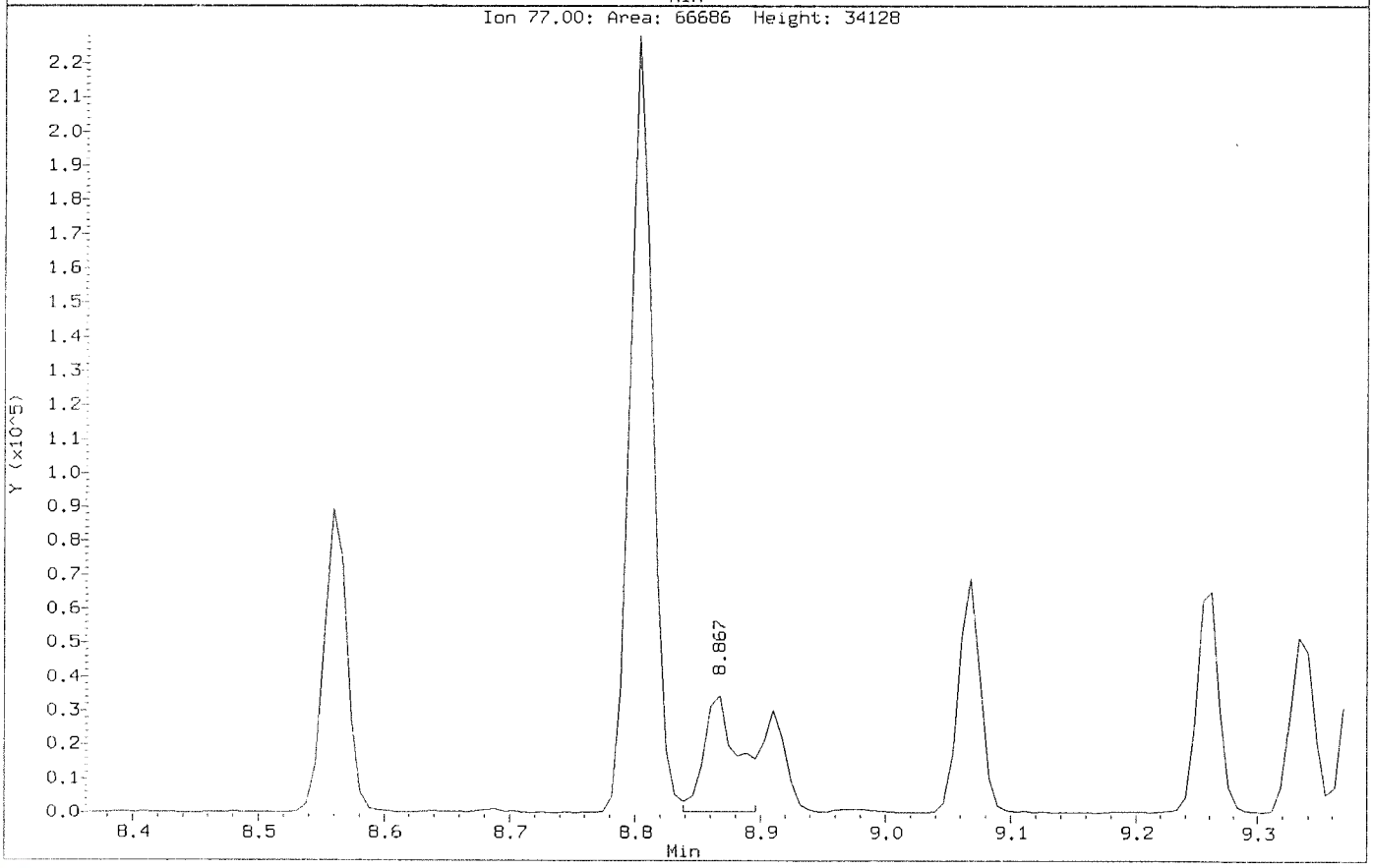
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Date : 19-MAY-2021 11:35
Client ID: CCV
Sample Info: CCV;CCV;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\Before\X051903.D
Injection Date: 19-MAY-2021 11:35
Instrument: voa6.i
Client Sample ID: CCV

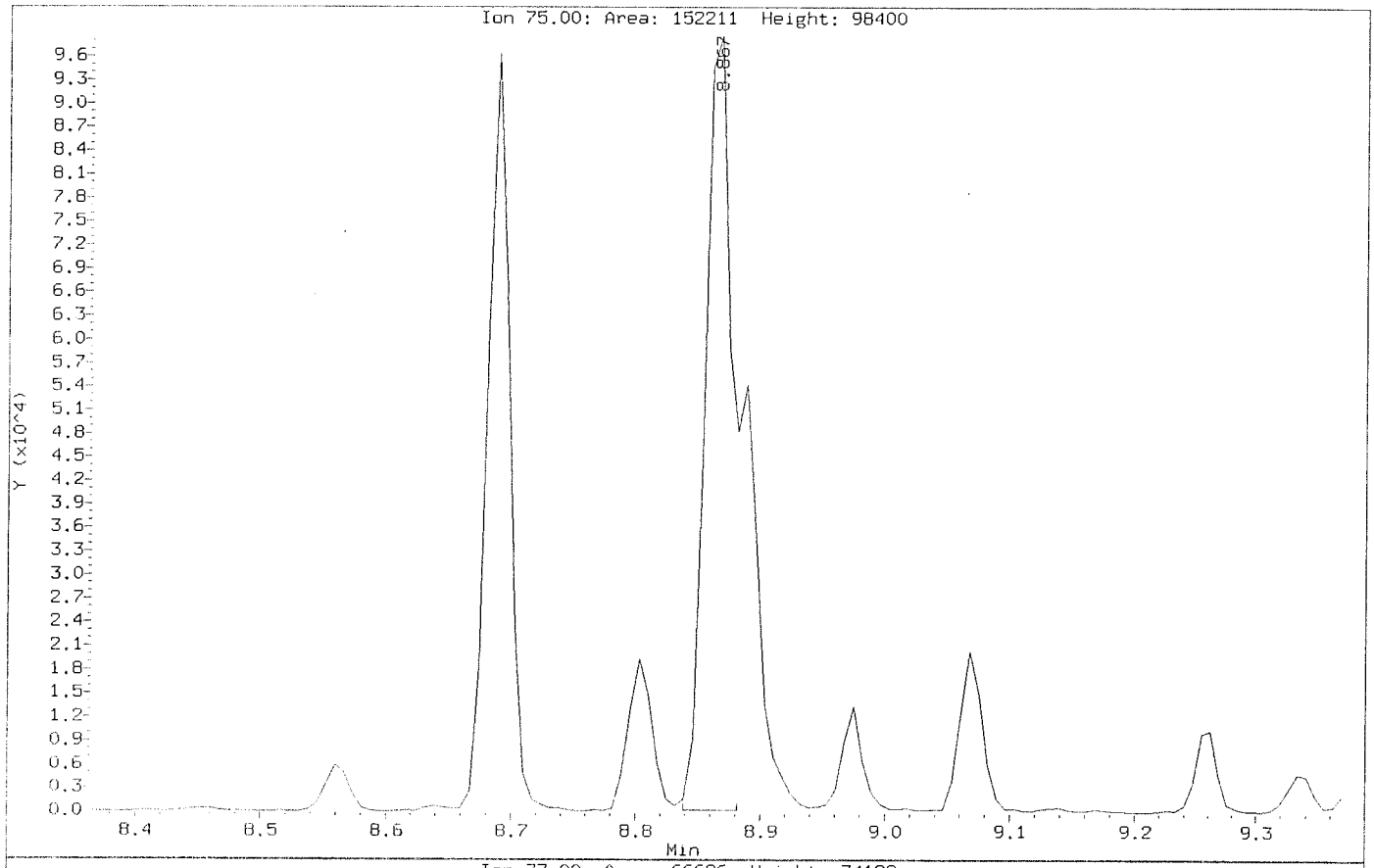
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4

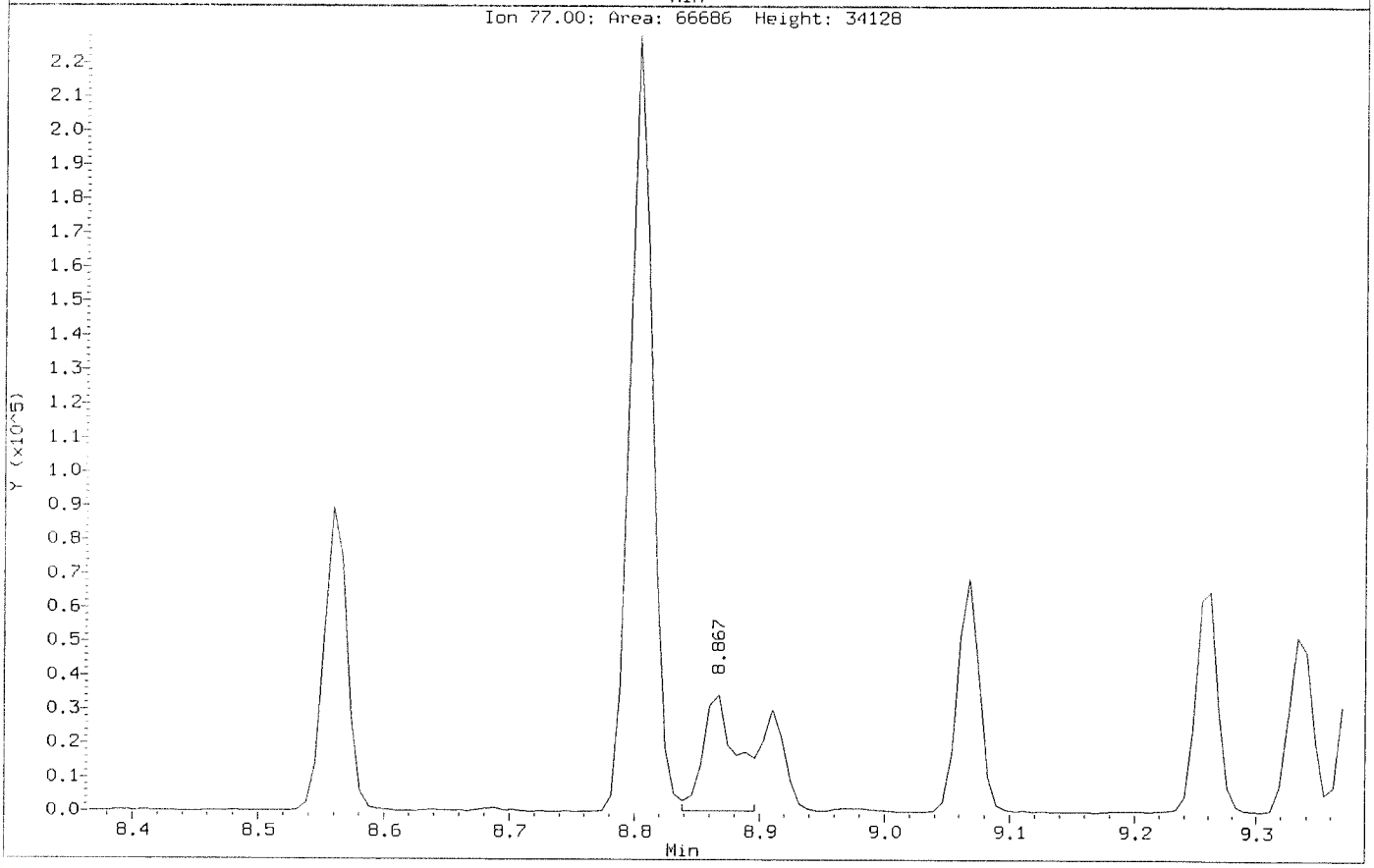




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Injection Date: 19-MAY-2021 11:35
Instrument: voa6.i
Client Sample ID: CCV

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051905.D Page 1
Report Date: 22-Jun-2021 11:54

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210519.b\X051905.D
Lab Smp Id: VLCSW-210519 Client Smp ID: VLCSW-210519
Inj Date : 19-MAY-2021 12:17
Operator : PC Inst ID: voa6.i
Smp Info : VLCSW-210519;VLCSW-210519;3;;LCS
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210519.b\8260W.m
Meth Date : 22-Jun-2021 11:53 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 5 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

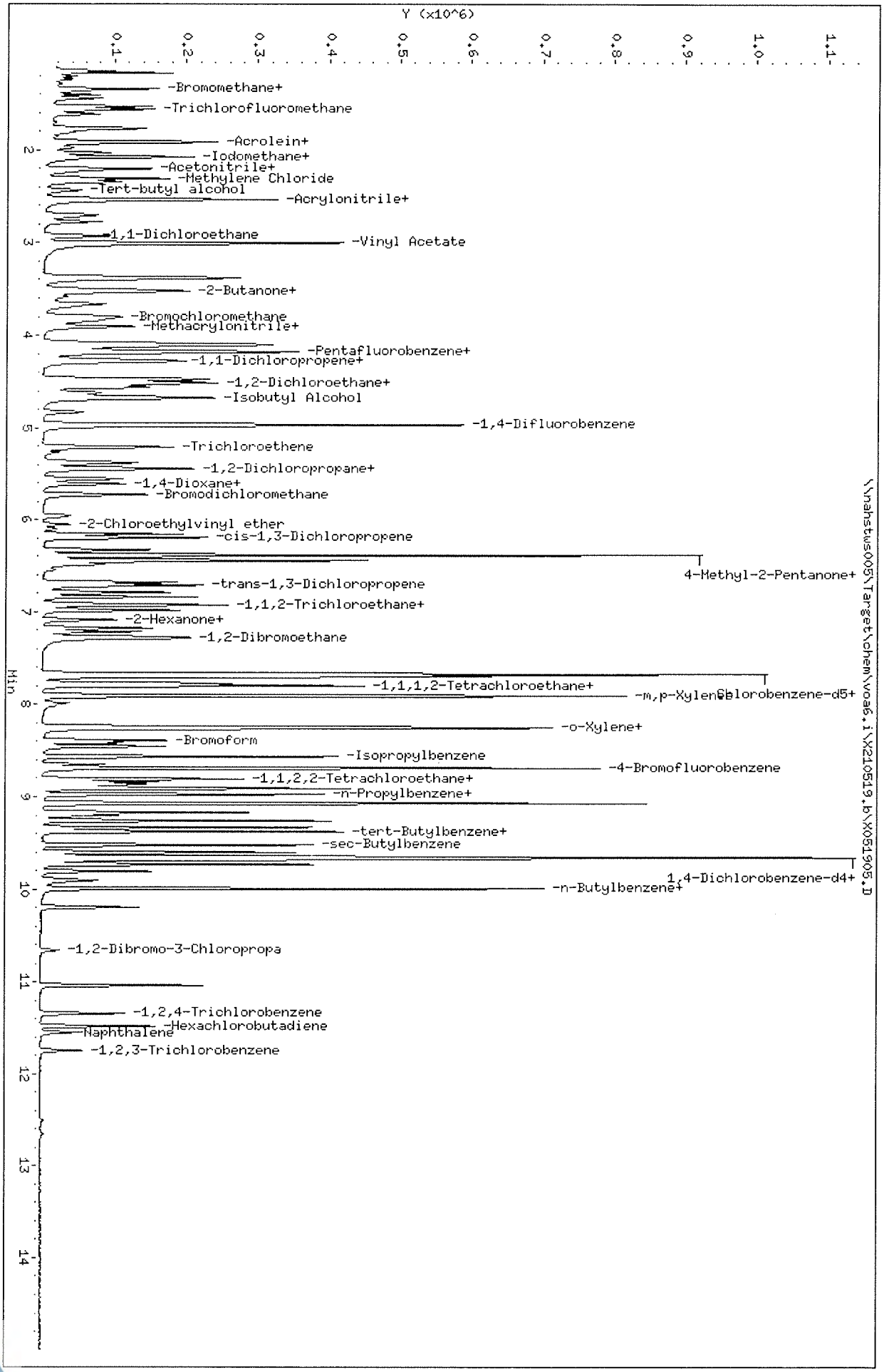
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	265102	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.963	(1.000)	439289	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	417981	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	204399	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.469	(1.070)	184865	53.6891	53.68
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	192588	48.8148	48.81
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	151558	51.3280	51.32
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	509958	49.6738	49.67
60 1,1,1,2-Tetrachloroethane	131	7.771	7.771	(1.013)	56302	18.4891	18.48
31 1,1,1-Trichloroethane	97	4.089	4.082	(0.978)	86860	19.2635	19.26
68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	60979	17.6709	17.67
138 Freon TF	101	1.919	1.919	(0.459)	37201	14.7910	14.79
53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	43961	18.1059	18.10
22 1,1-Dichloroethane	63	2.921	2.921	(0.699)	96914	19.7409	19.74
11 1,1-Dichloroethene	96	1.919	1.919	(0.459)	46265	17.4507	17.45
32 1,1-Dichloropropene	75	4.282	4.282	(0.862)	70903	18.8421	18.84
93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.216)	16240	17.3270	17.32
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	49612	17.4893	17.48 (M)
90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	30396	18.2003	18.20
79 1,2,4-Trimethylbenzene	105	9.383	9.375	(0.971)	195200	18.7770	18.77
89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.103)	4394	17.0399	17.03
57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	54316	18.6140	18.61

Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051905.D Page 2
Report Date: 22-Jun-2021 11:54

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	101441	17.7071	17.70
33	1,2-Dichloroethane	62	4.555	4.555	(0.916)	87078	20.1608	20.16
42	1,2-Dichloropropane	63	5.436	5.436	(1.094)	56887	19.2692	19.26
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	192006	18.8183	18.81
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	112310	19.1253	19.12
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	90991	19.1436	19.14
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	114611	19.2424	19.24
26	2,2-Dichloropropane	77	3.516	3.509	(0.841)	89115	20.2921	20.29
24	2-Butanone	43	3.580	3.580	(0.856)	36018	36.8071	36.80
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	169177	18.5708	18.57
52	2-Hexanone	43	7.090	7.090	(0.924)	61549	34.5510	34.55
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	205204	19.3180	19.31
82	p-Isopropyltoluene	119	9.648	9.648	(0.999)	187399	18.5691	18.56
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	95451	35.9118	35.91
10	Acetone	43	1.976	1.976	(0.473)	30334	42.4431	42.44
37	Benzene	78	4.512	4.512	(0.908)	212478	19.5507	19.55
74	Bromobenzene	156	8.802	8.802	(0.911)	66849	19.6189	19.61
29	Bromochloromethane	128	3.802	3.795	(0.909)	31213	19.3194	19.31
39	Bromodichloromethane	83	5.729	5.729	(1.153)	83452	19.6615	19.66
66	Bromoform	173	8.408	8.408	(1.096)	34253	16.9448	16.94
6	Bromomethane	94	1.338	1.338	(0.320)	62390	22.1272	22.12
19	Carbon Disulfide	76	2.069	2.069	(0.495)	244291	39.1119	39.11
34	Carbon Tetrachloride	117	4.261	4.268	(0.857)	68264	17.8284	17.82
59	Chlorobenzene	112	7.692	7.692	(1.003)	154829	18.8907	18.89
7	Chloroethane	64	1.403	1.403	(0.336)	41672	20.7661	20.76
28	Chloroform	83	3.910	3.910	(0.935)	110512	19.6213	19.62
3	Chloromethane	50	1.081	1.073	(0.258)	62429	21.9679	21.96
27	cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	59954	19.6231	19.62
46	cis-1,3-Dichloropropene	75	6.152	6.152	(1.238)	97851	20.3182	20.31
55	Dibromochloromethane	129	7.176	7.176	(0.936)	60904	18.6425	18.64
44	Dibromomethane	93	5.550	5.550	(1.117)	41959	19.8300	19.82
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	60276	19.3951	19.39
61	Ethylbenzene	106	7.799	7.800	(1.017)	75215	18.5706	18.57
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	23475	21.1060	21.10
67	Isopropylbenzene	105	8.559	8.559	(1.116)	222431	17.9697	17.96
62	m,p-Xylenes	106	7.907	7.900	(1.031)	194385	37.2408	37.24
17	Methylene Chloride	84	2.305	2.305	(0.551)	53062	19.9605	19.96
87	n-Butylbenzene	91	9.991	9.991	(1.034)	177665	18.5106	18.51
73	n-Propylbenzene	91	8.910	8.910	(0.922)	272244	18.8061	18.80
92	Naphthalene	128	11.546	11.546	(1.195)	40953	17.5931	17.59
63	o-Xylene	106	8.244	8.244	(1.075)	92666	18.2531	18.25
81	sec-Butylbenzene	105	9.519	9.519	(0.985)	214264	17.8846	17.88
64	Styrene	104	8.258	8.258	(1.077)	166532	18.6314	18.63
78	tert-Butylbenzene	119	9.340	9.332	(0.967)	149856	17.3089	17.30
56	Tetrachloroethene	164	6.926	6.926	(0.903)	44845	19.3082	19.30
50	Toluene	91	6.446	6.446	(0.840)	234982	19.4851	19.48
20	trans-1,2-Dichloroethene	96	2.527	2.528	(0.604)	51446	20.1709	20.17
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.344)	84641	20.0904	20.09
38	Trichloroethene	130	5.206	5.206	(1.048)	57338	19.7111	19.71
8	Trichlorofluoromethane	101	1.560	1.561	(0.373)	88700	17.4065	17.40
5	Vinyl Chloride	62	1.145	1.145	(0.274)	57765	18.0476	18.04

QC Flag Legend

M - Compound response manually integrated.

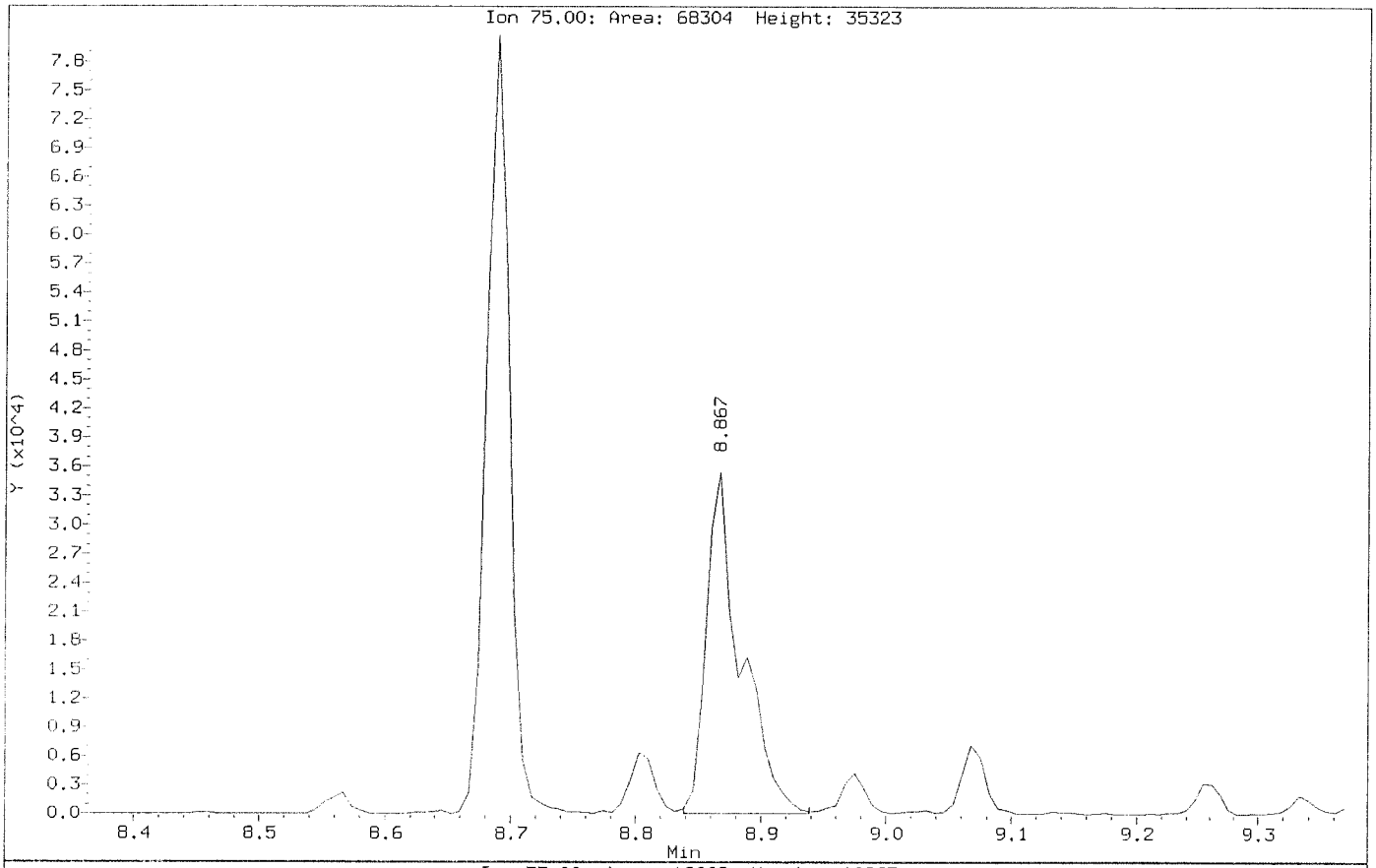


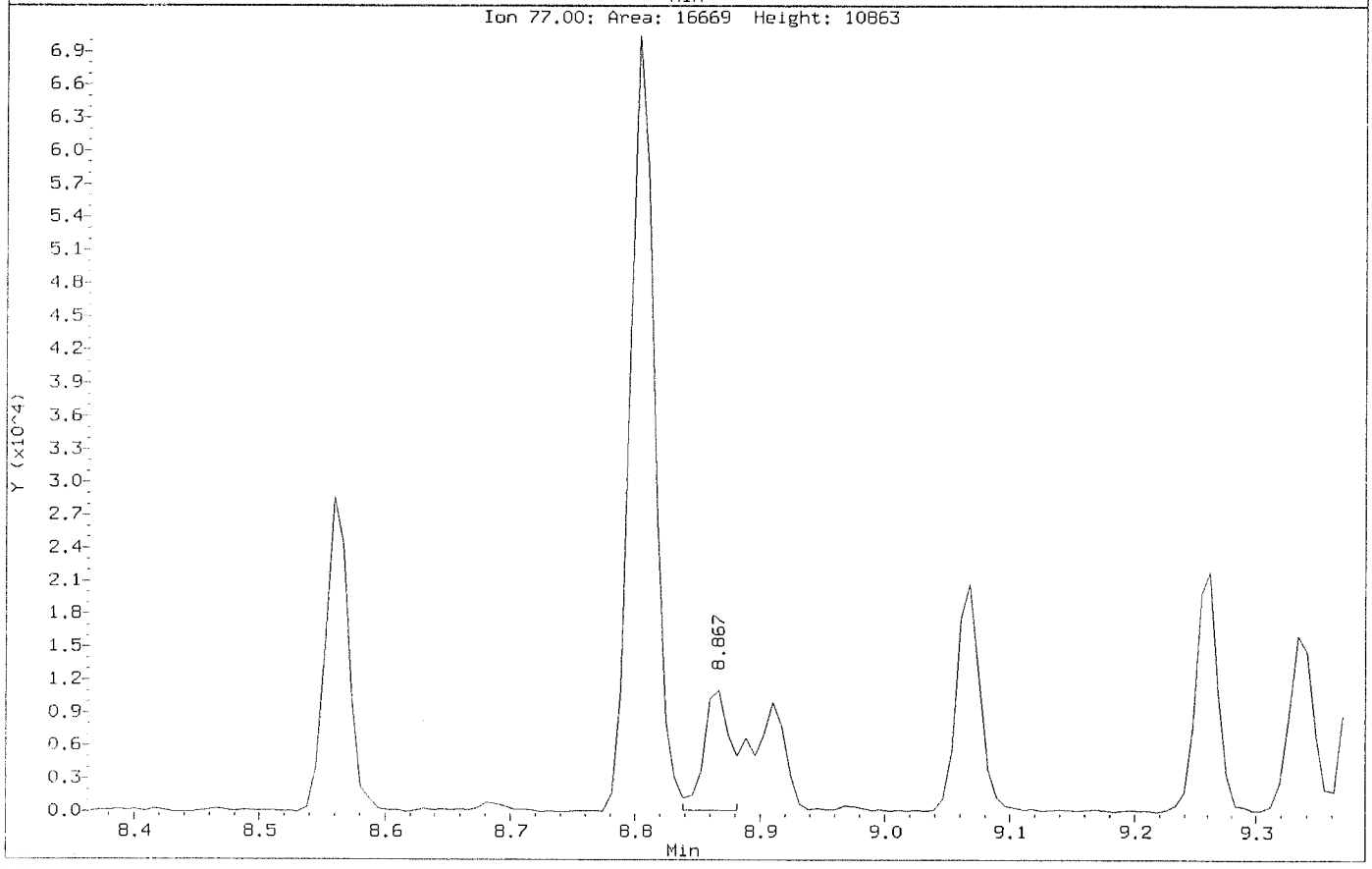
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Sample Info: WLCSW-210519;WLCSW-210519;3;;LCS
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\Before\X051905.D
Injection Date: 19-MAY-2021 12:17
Instrument: voa6.i
Client Sample ID: VLCSW-210519

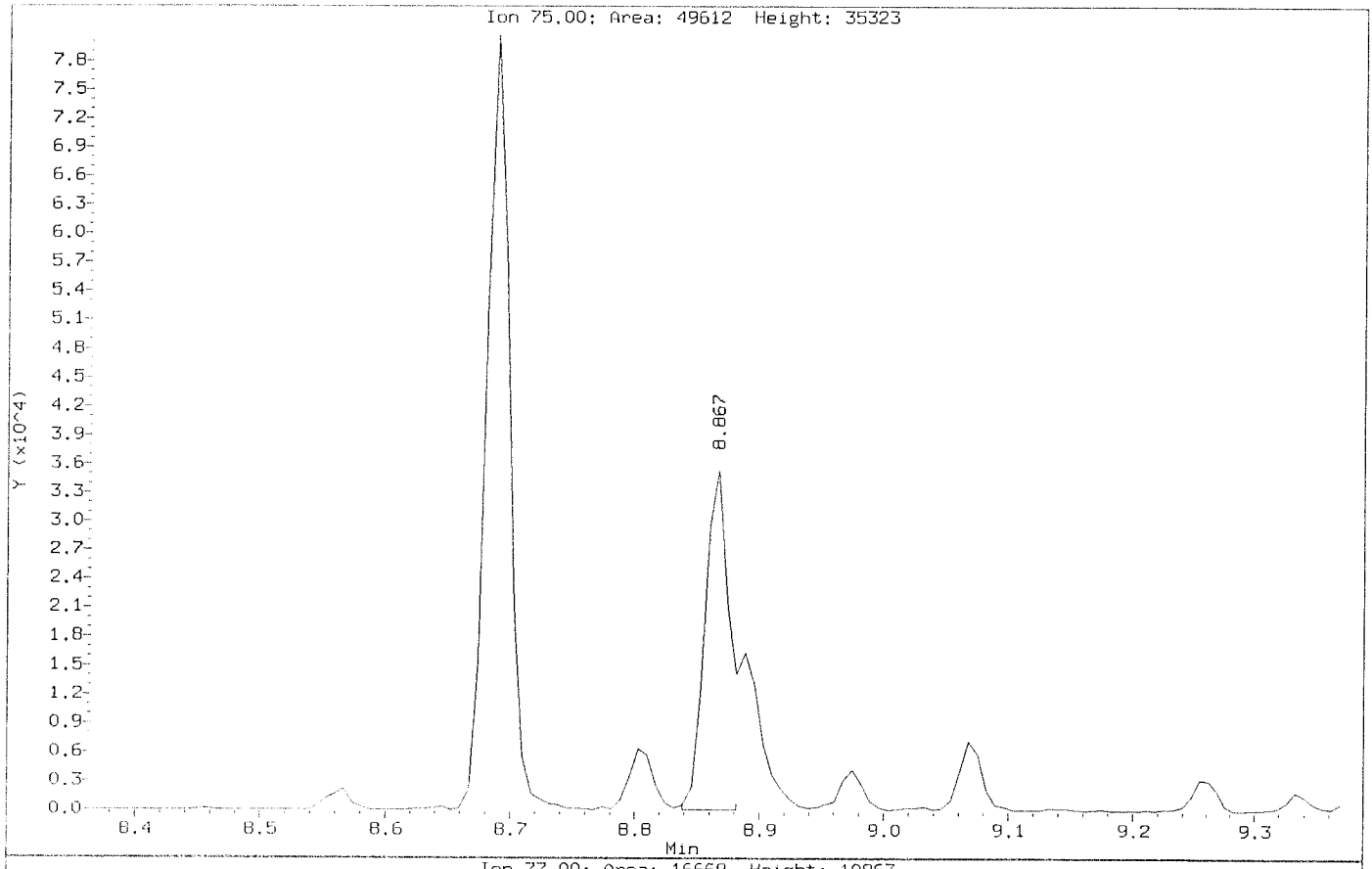
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4

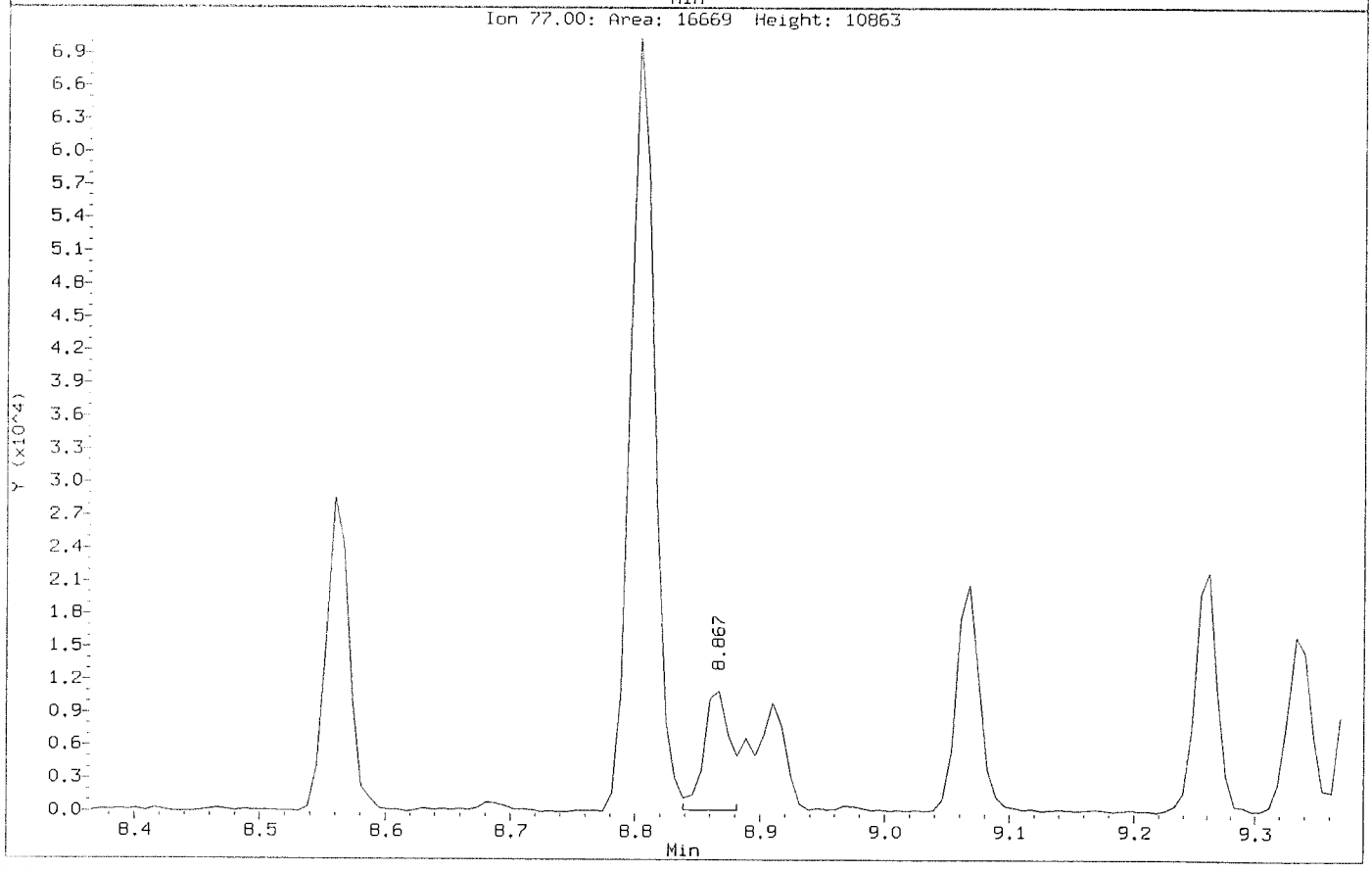




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Injection Date: 19-MAY-2021 12:17
Instrument: voa6.i
Client Sample ID: VLCSW-210519

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051907.D Page 1
Report Date: 22-Jun-2021 11:54

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210519.b\X051907.D
Lab Smp Id: VBLKW-210519 Client Smp ID: VBLKW-210519
Inj Date : 19-MAY-2021 12:59
Operator : PC Inst ID: voa6.i
Smp Info : VBLKW-210519;VBLKW-210519;3;;BLANK
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210519.b\8260W.m
Meth Date : 22-Jun-2021 11:53 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 7 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

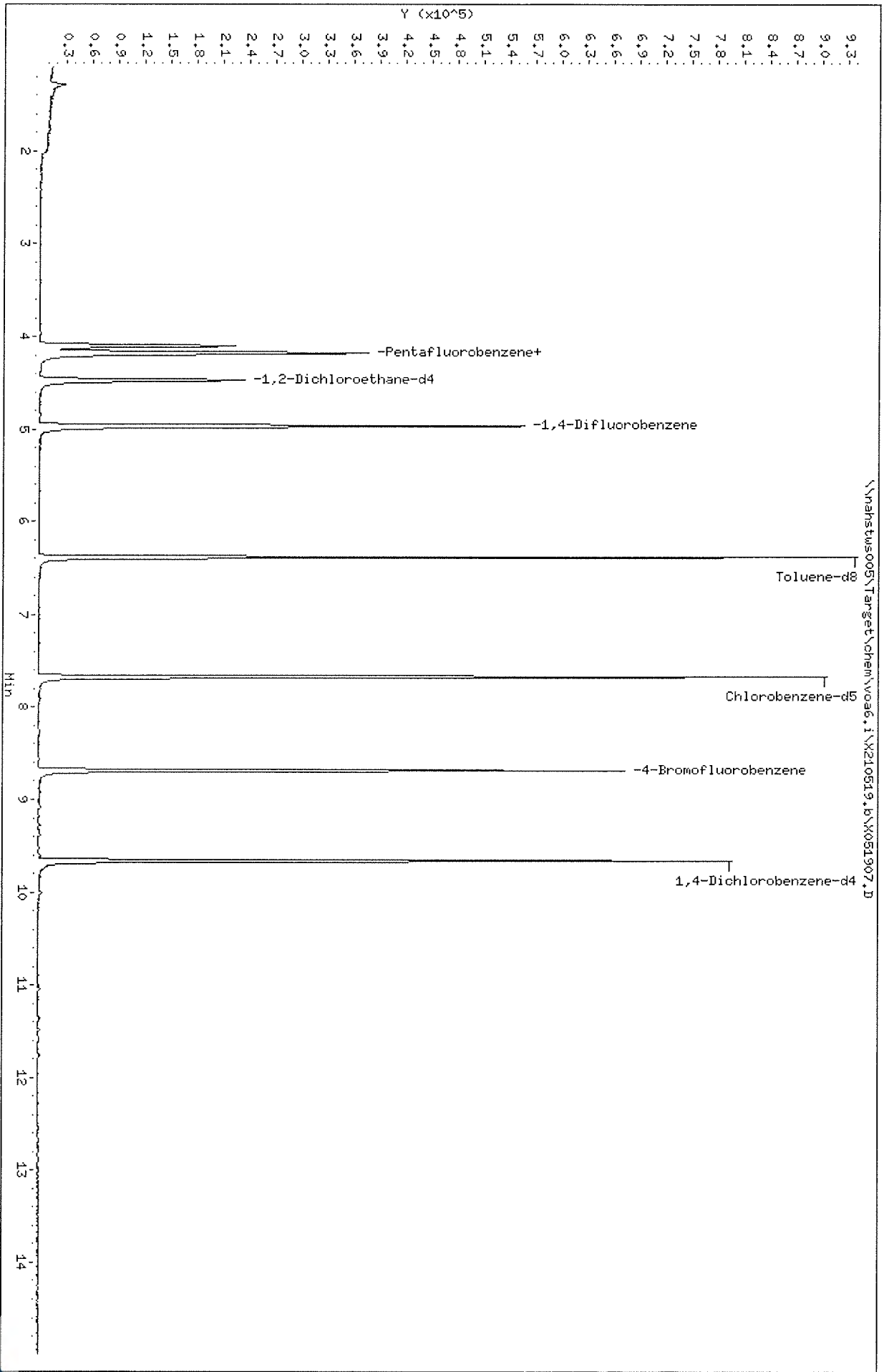
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	294316	50.0000	
*	36 1,4-Difluorobenzene	114	4.970	4.963	(1.000)	459179	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	403669	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	173863	50.0000	
$	35 1,2-Dichloroethane-d4	65	4.476	4.469	(1.070)	181305	47.2805	47.28
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	177800	46.6697	46.66
$	30 Dibromofluoromethane	113	4.103	4.103	(0.981)	150666	45.9372	45.93
$	48 Toluene-d8	98	6.388	6.388	(0.833)	543854	54.7481	54.74

Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051907.D
Date : 19-MAY-2021 12:59
Client ID: VBLKW-210519
Sample Info: VBLKW-210519;VBLKW-210519;3;;BLANK
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051908.D Page 1
Report Date: 22-Jun-2021 11:55

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210519.b\X051908.D
Lab Smp Id: HS21050697-01 Client Smp ID: HS21050697-01
Inj Date : 19-MAY-2021 13:20
Operator : PC Inst ID: voa6.i
Smp Info : HS21050697-01;HS21050697-01;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210519.b\8260W.m
Meth Date : 22-Jun-2021 11:54 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

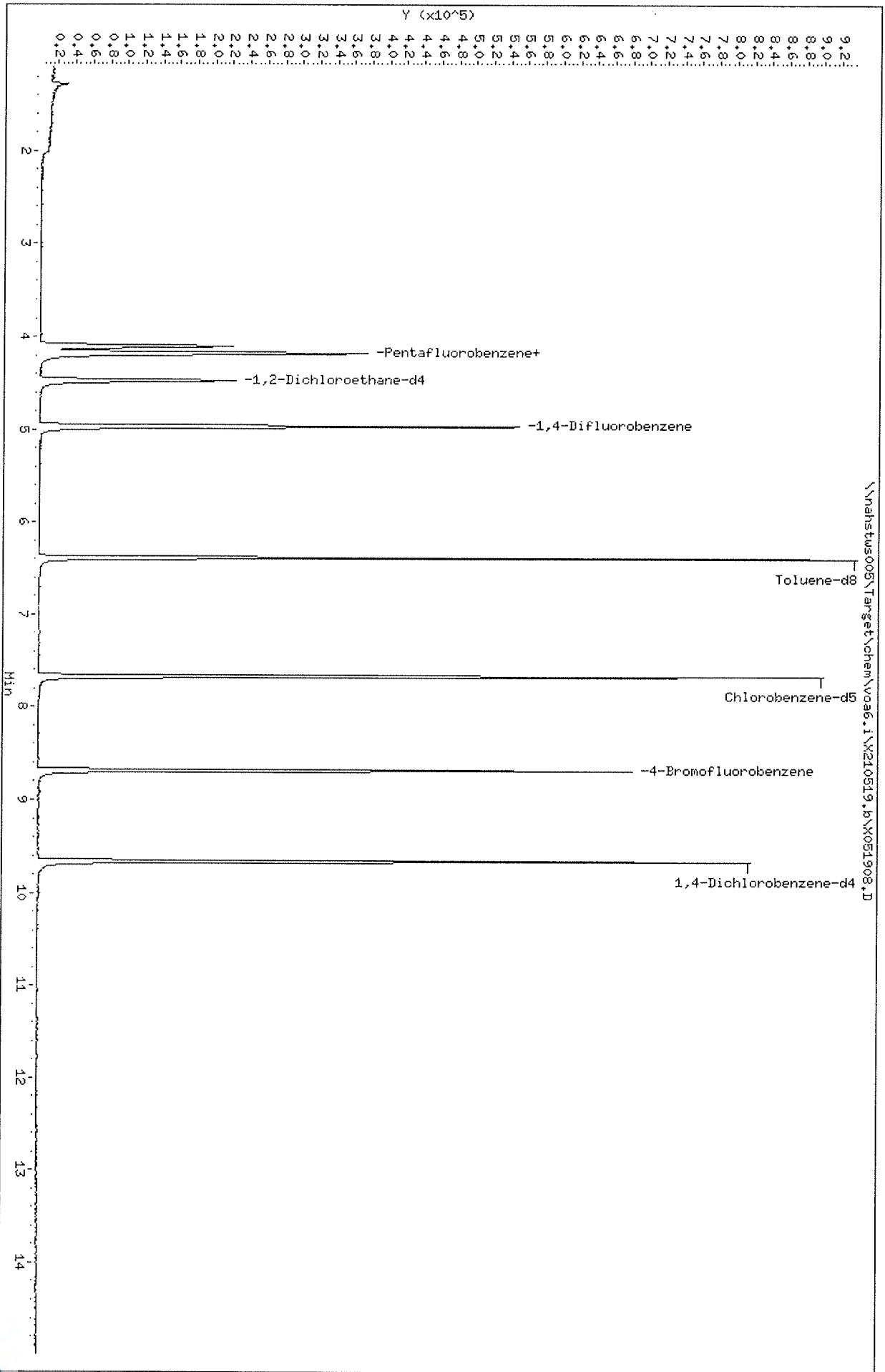
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	286406	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	445878	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	395845	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	176805	50.0000	
$	35 1,2-Dichloroethane-d4	65	4.469	4.469	(1.068)	173036	46.3459	46.34
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	172939	46.2919	46.29
$	30 Dibromofluoromethane	113	4.103	4.103	(0.981)	144761	45.3529	45.35
$	48 Toluene-d8	98	6.389	6.388	(0.833)	538881	55.3091	55.30

Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051908.D
Date : 19-MAY-2021 13:20
Client ID: HS21050697-01
Sample Info: HS21050697-01;HS21050697-01;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051909.D Page 1
Report Date: 22-Jun-2021 11:55

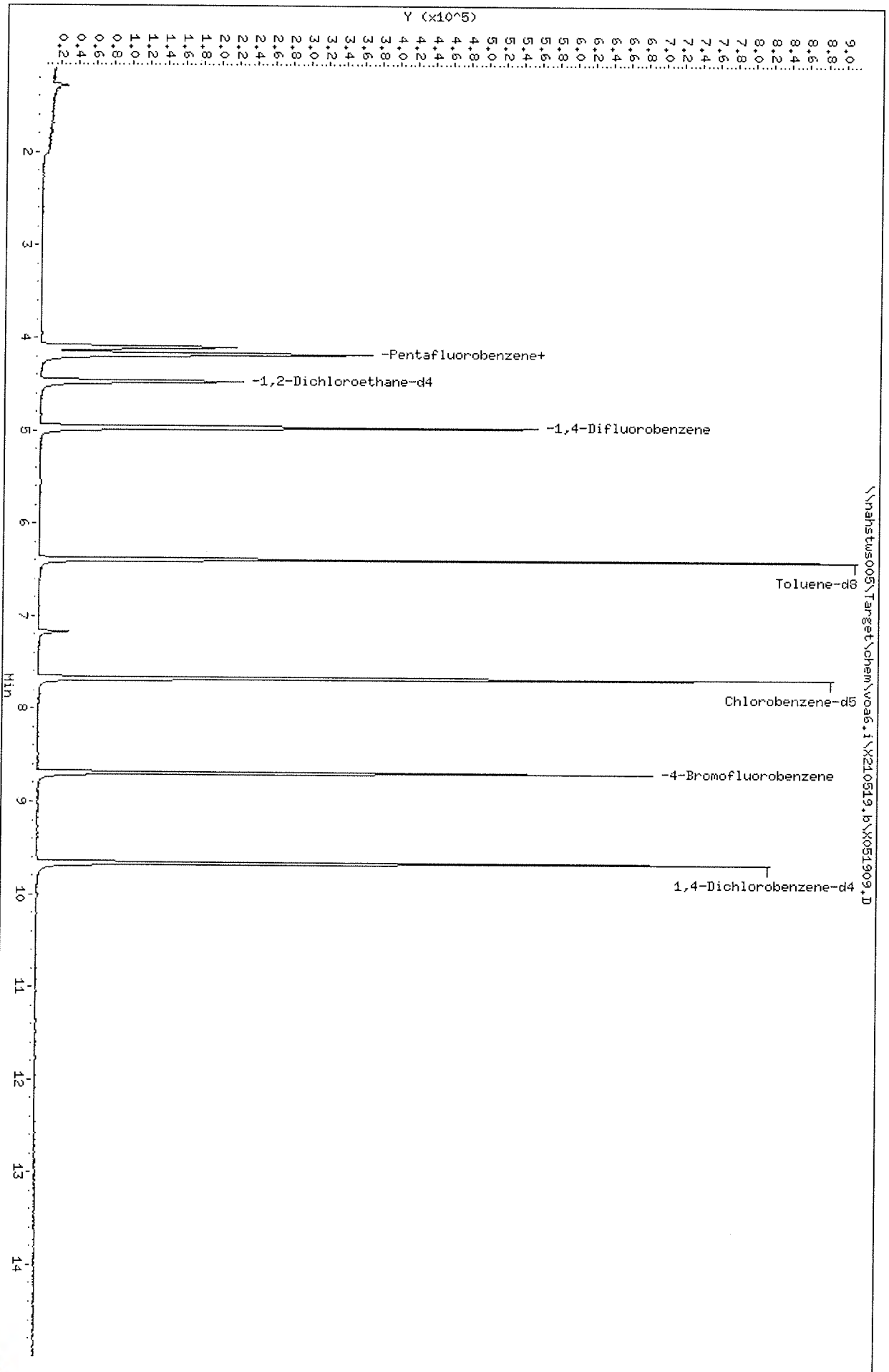
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210519.b\X051909.D
Lab Smp Id: HS21050697-02 Client Smp ID: HS21050697-02
Inj Date : 19-MAY-2021 13:41
Operator : PC Inst ID: voa6.i
Smp Info : HS21050697-02;HS21050697-02;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210519.b\8260W.m
Meth Date : 22-Jun-2021 11:54 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	283394	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	444853	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	396407	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	174645	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.469	4.469	(1.068)	172983	46.8372	46.83
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	173966	46.5003	46.50
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	143696	45.4984	45.49
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	535696	54.9117	54.91



Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051909.D
Date : 19-MAY-2021 13:41
Client ID: HS21050697-02
Sample Info: HS21050697-02;HS21050697-02;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051910.D Page 1
Report Date: 22-Jun-2021 11:56

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210519.b\X051910.D
Lab Smp Id: HS21050697-03 Client Smp ID: HS21050697-03
Inj Date : 19-MAY-2021 14:02
Operator : PC Inst ID: voa6.i
Smp Info : HS21050697-03;HS21050697-03;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210519.b\8260W.m
Meth Date : 22-Jun-2021 11:54 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

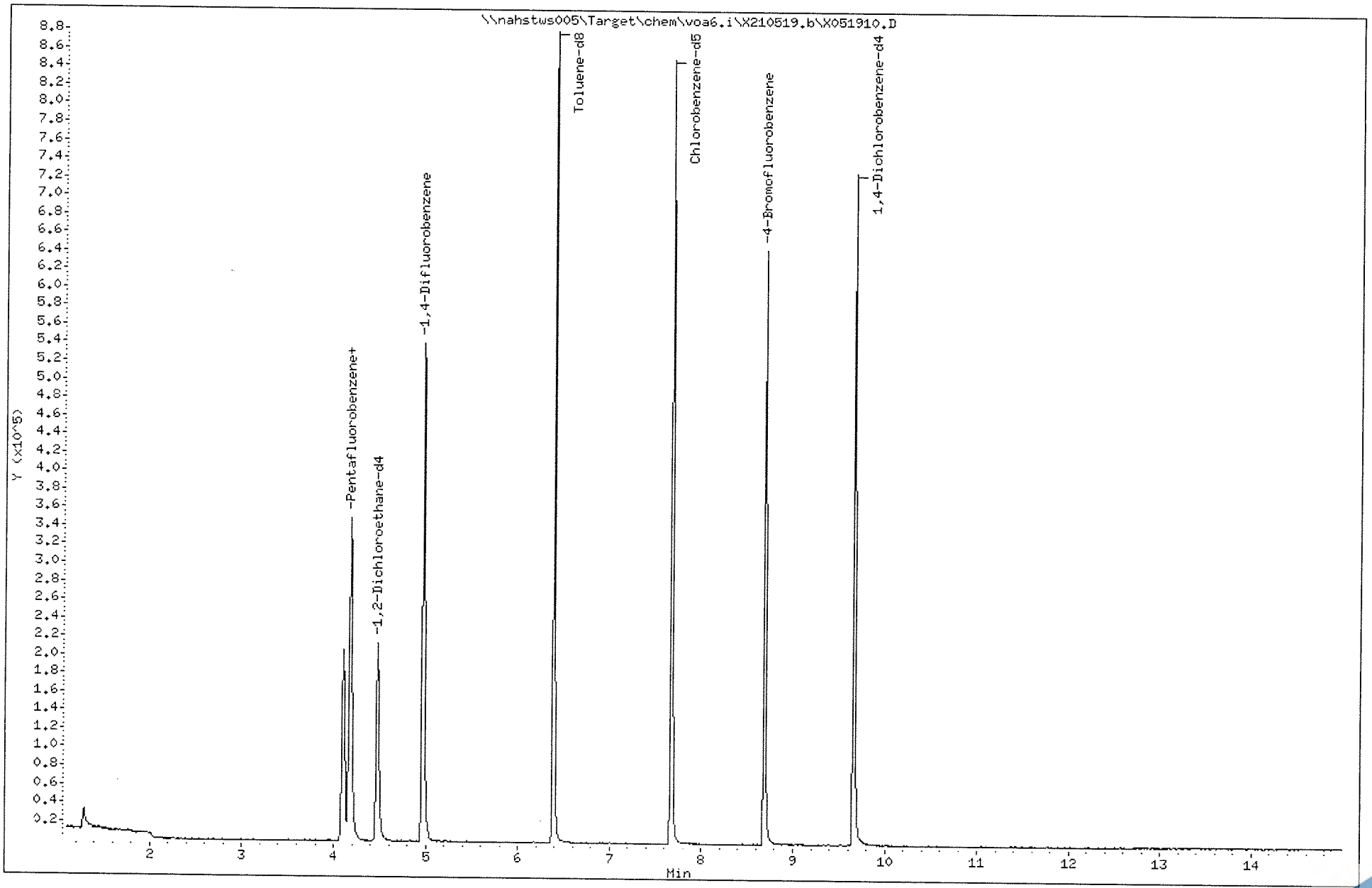
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	272202	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	427451	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	378635	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	163107	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.469	(1.070)	163961	46.2030	46.20
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	165621	46.3480	46.34
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	136330	44.9382	44.93
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	516358	55.4045	55.40

Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051910.D
Date : 19-MAY-2021 14:02
Client ID: HS21050697-03
Sample Info: HS21050697-03;HS21050697-03;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051911.D Page 1
Report Date: 22-Jun-2021 11:56

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210519.b\X051911.D
Lab Smp Id: HS21050697-04 Client Smp ID: HS21050697-04
Inj Date : 19-MAY-2021 14:23
Operator : PC Inst ID: voa6.i
Smp Info : HS21050697-04;HS21050697-04;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210519.b\8260W.m
Meth Date : 22-Jun-2021 11:54 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 11
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

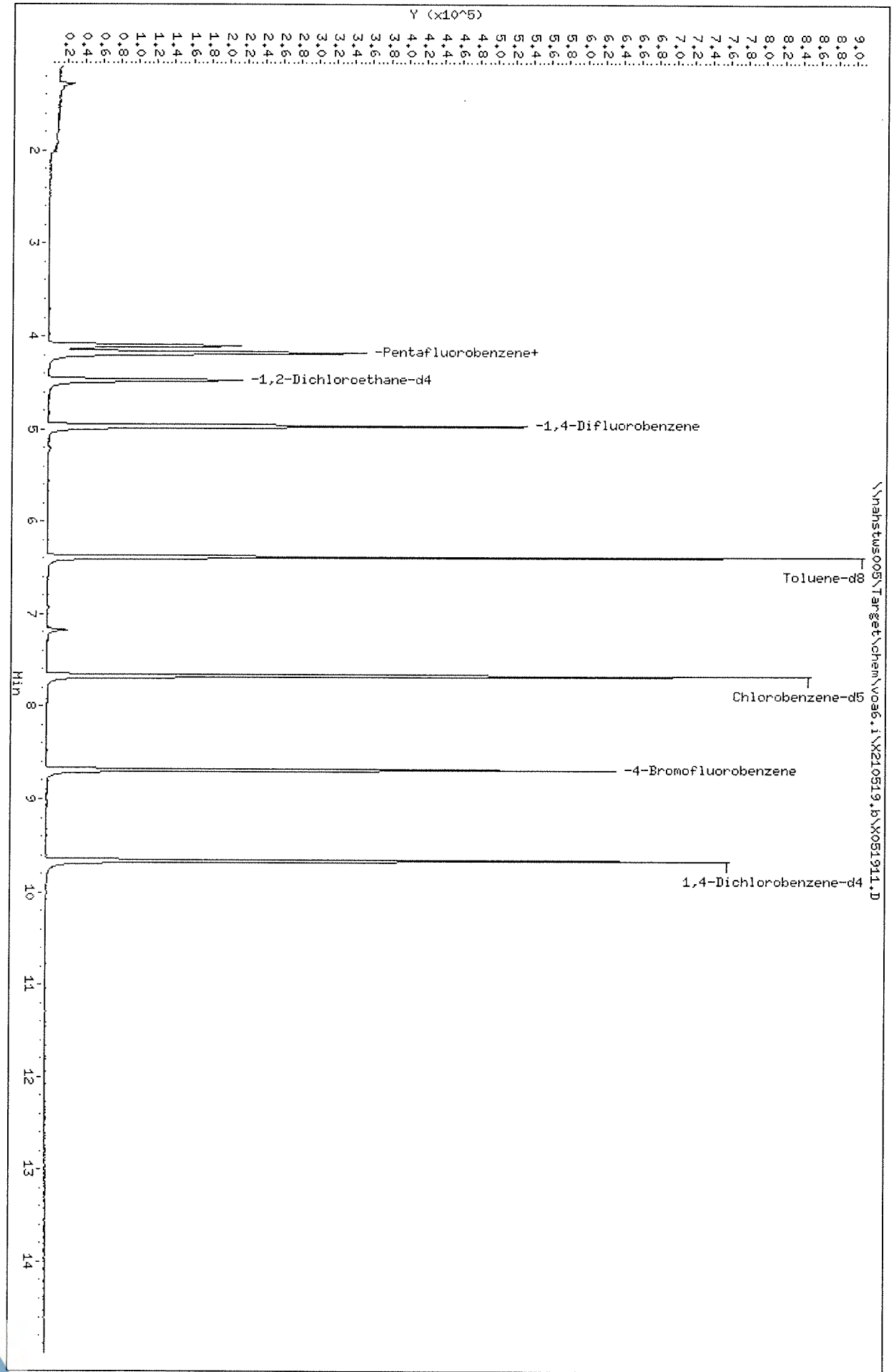
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	271631	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.963	(1.000)	431689	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	382705	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	166906	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.469	(1.070)	166113	46.9272	46.92
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	163000	45.1326	45.13
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	138938	45.8990	45.89
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	521179	55.3285	55.32

Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051911.D
Date : 19-MAY-2021 14:23
Client ID: HS21050697-04
Sample Info: HS21050697-04;HS21050697-04;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051912.D Page 1
Report Date: 22-Jun-2021 11:56

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210519.b\X051912.D
Lab Smp Id: HS21050697-05 Client Smp ID: HS21050697-05
Inj Date : 19-MAY-2021 14:44
Operator : PC Inst ID: voa6.i
Smp Info : HS21050697-05;HS21050697-05;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210519.b\8260W.m
Meth Date : 22-Jun-2021 11:54 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 12
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

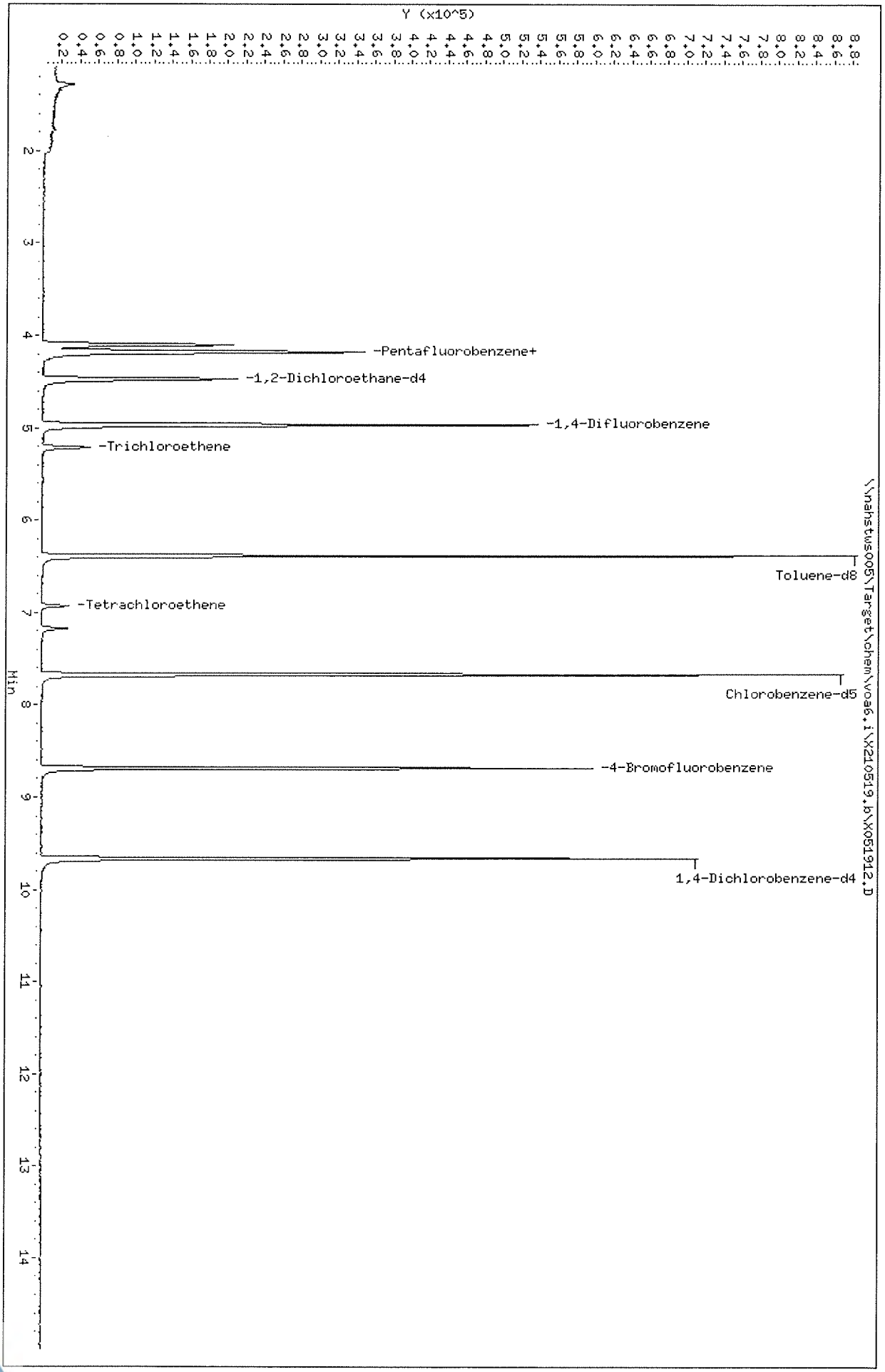
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	268603	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.963	(1.000)	420016	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.671	(1.000)	383042	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	156944	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.469	(1.070)	161867	46.2247	46.22
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	153647	42.5125	42.51
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	135510	45.2680	45.26
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	510232	54.1409	54.14
56 Tetrachloroethene	164	6.933	6.926	(0.904)	5421	2.54693	2.54(a)
38 Trichloroethene	130	5.206	5.206	(1.048)	17421	6.26362	6.26

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).



Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051912.D
Date : 19-MAY-2021 14:44
Client ID: HS21050697-05
Sample Info: HS21050697-05;HS21050697-05;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051912.D

Date : 19-MAY-2021 14:44

Client ID: HS21050697-05

Instrument: voa6.i

Sample Info: HS21050697-05;HS21050697-05;;;

Purge Volume: 5.0

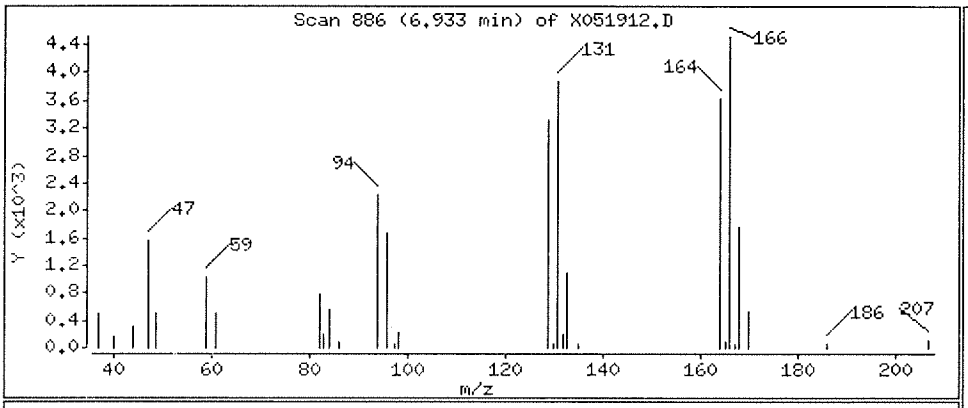
Operator: PC

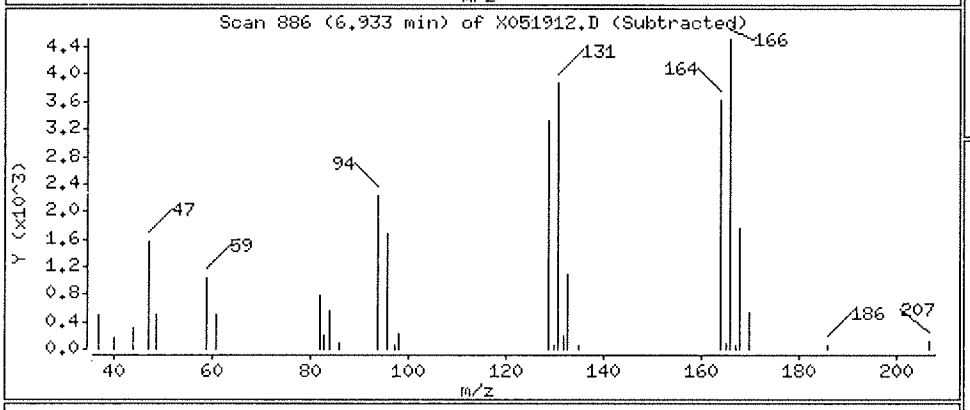
Column phase: DB624

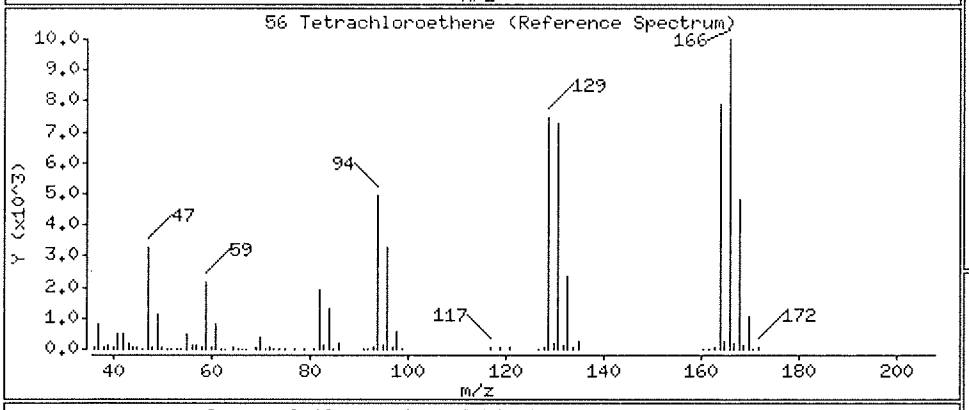
Column diameter: 0.18

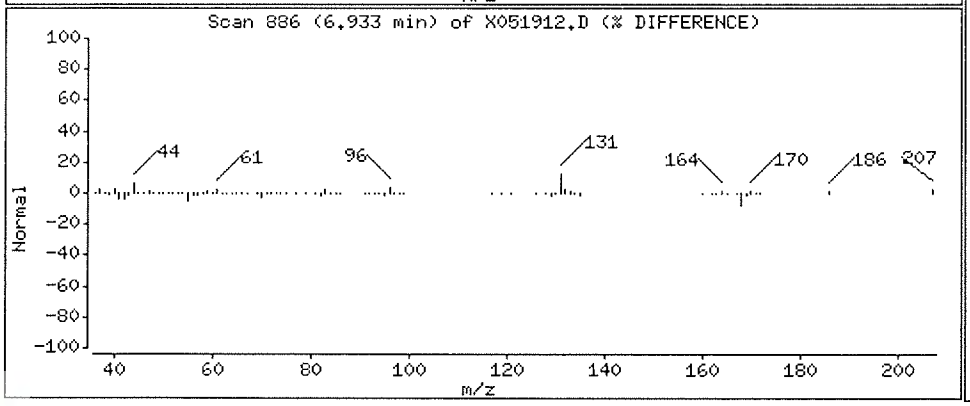
56 Tetrachloroethene

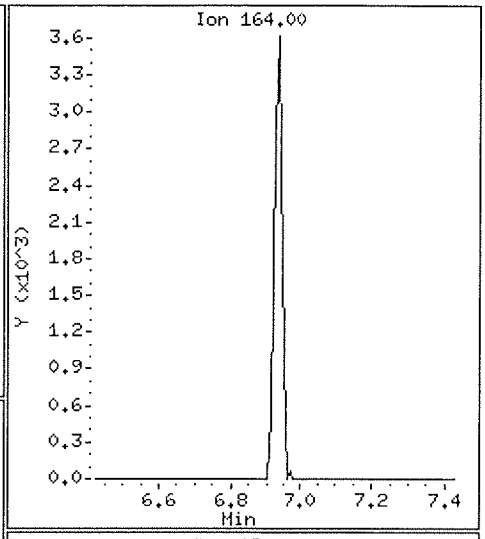
Concentration: 2.54 ug/l

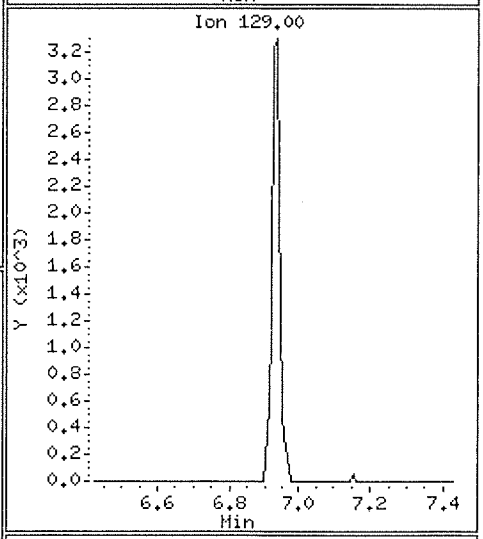


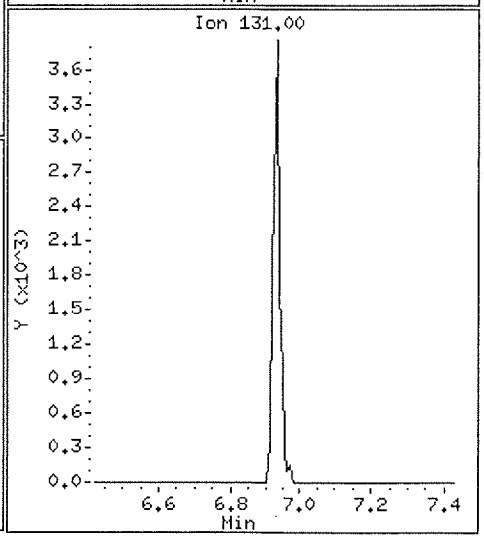












Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051912.D

Date : 19-MAY-2021 14:44

Client ID: HS21050697-05

Instrument: voa6.i

Sample Info: HS21050697-05;HS21050697-05;;;

Purge Volume: 5.0

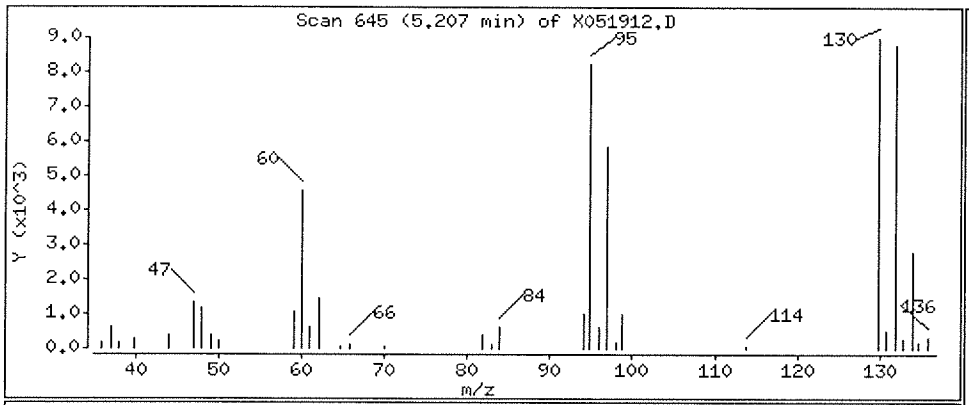
Operator: PC

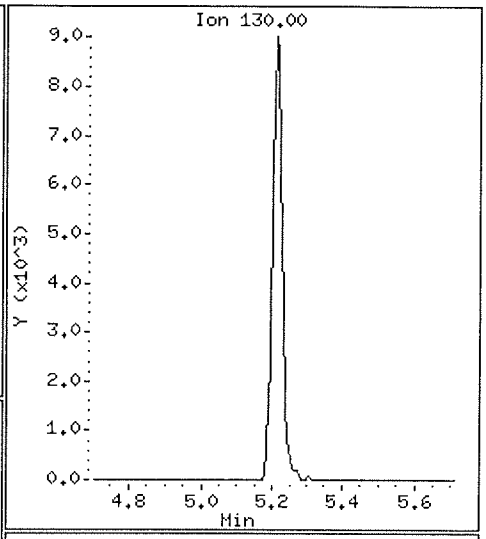
Column phase: DB624

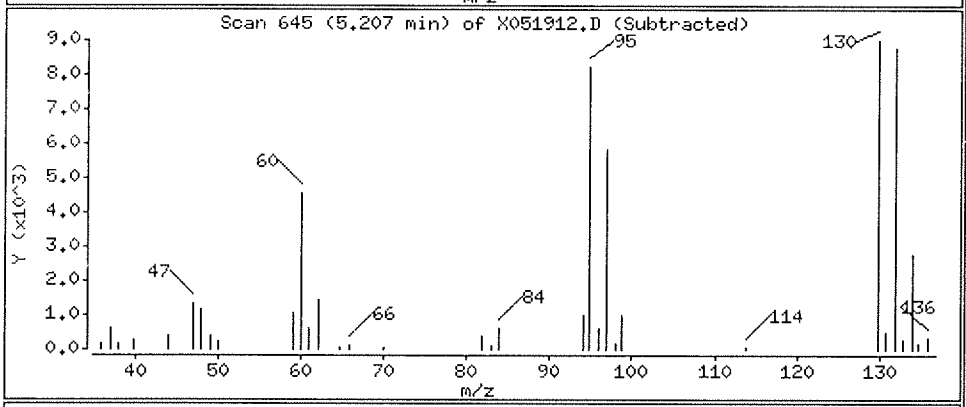
Column diameter: 0.18

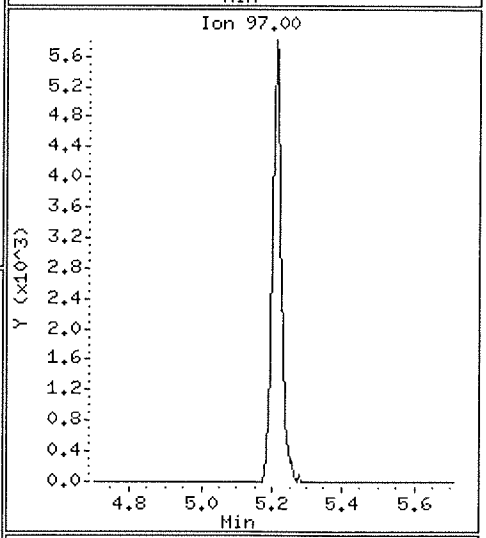
38 Trichloroethene

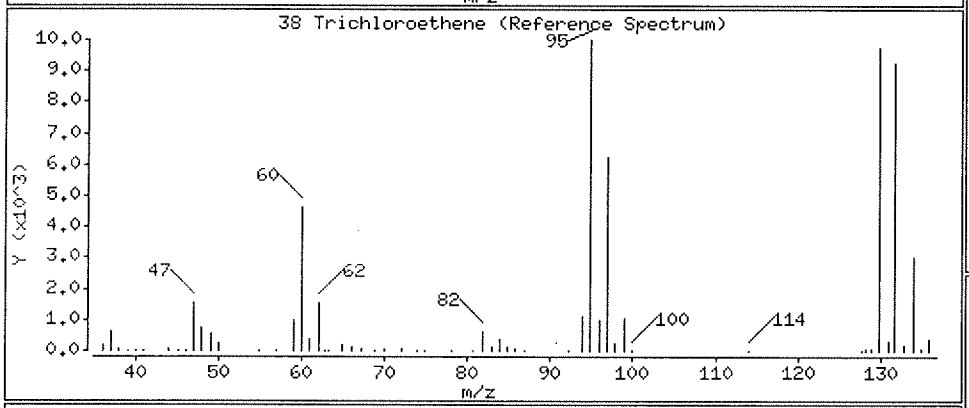
Concentration: 6.26 ug/l

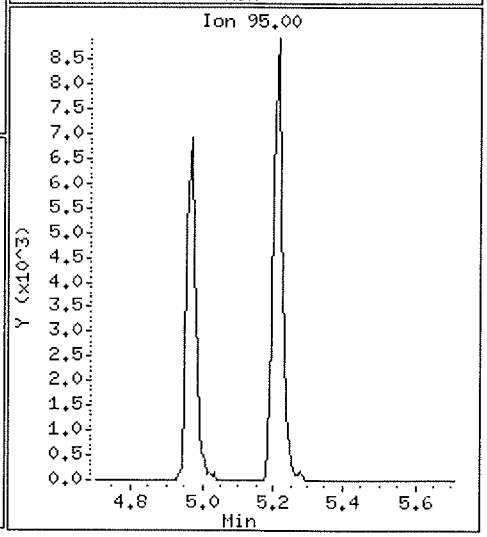


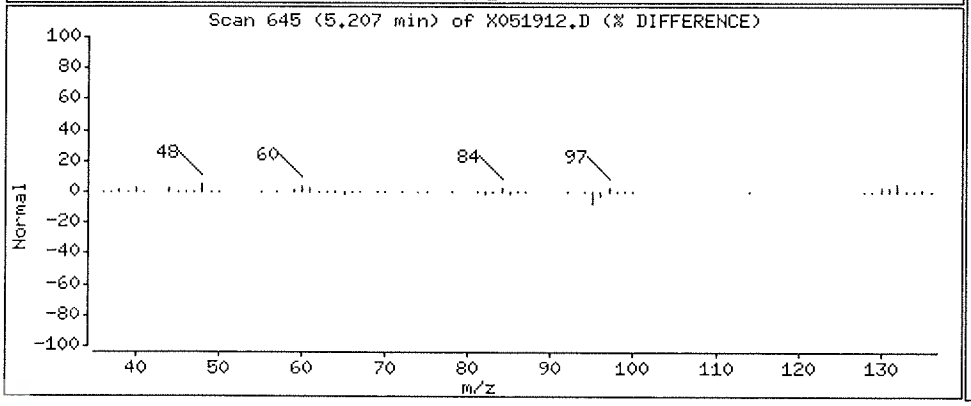












Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051913.D Page 1
Report Date: 22-Jun-2021 11:56

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210519.b\X051913.D
Lab Smp Id: HS21050697-06 Client Smp ID: HS21050697-06
Inj Date : 19-MAY-2021 15:05
Operator : PC Inst ID: voa6.i
Smp Info : HS21050697-06;HS21050697-06;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210519.b\8260W.m
Meth Date : 22-Jun-2021 11:54 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 13
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

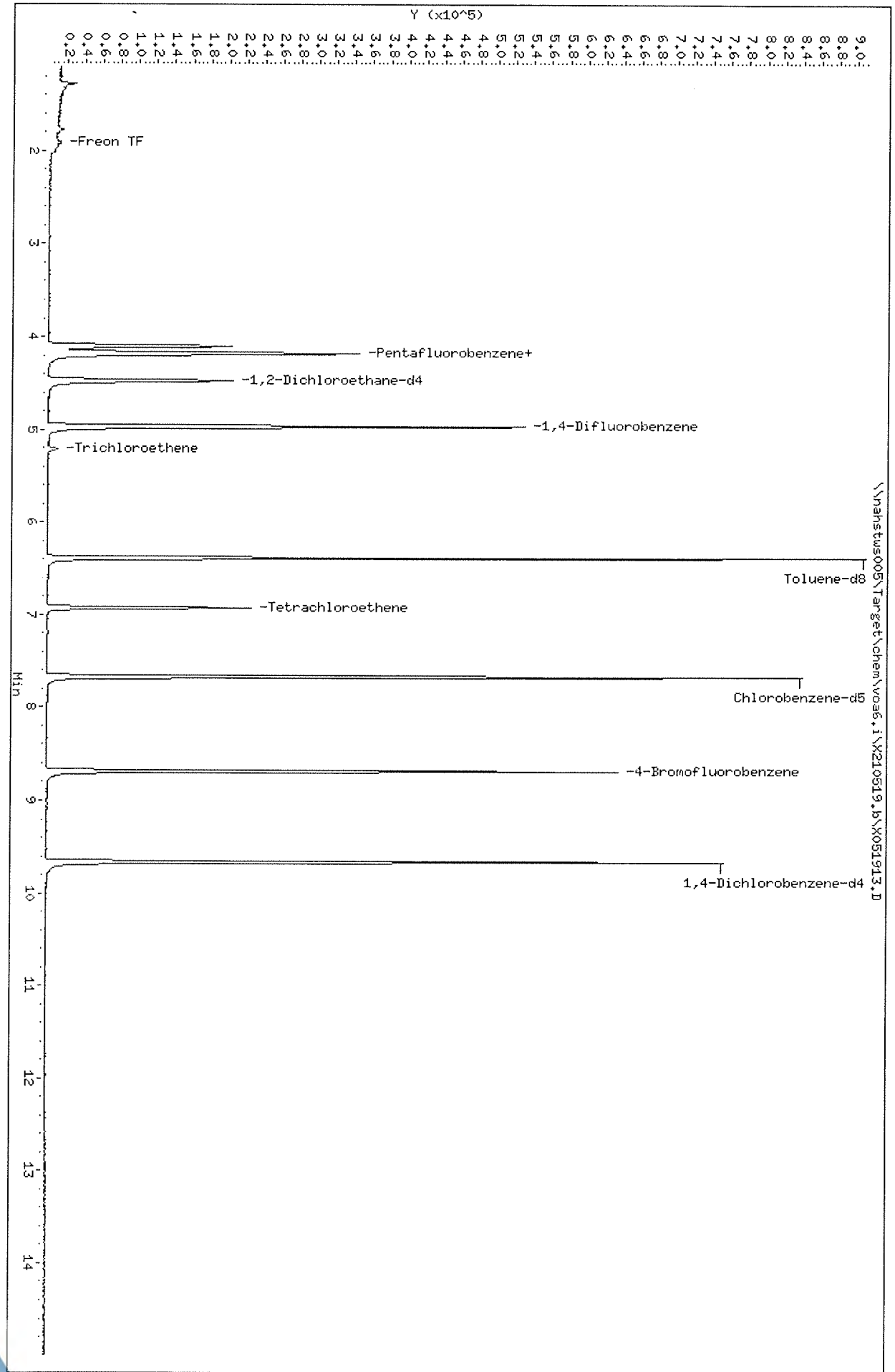
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	266798	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	418311	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	381590	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	160729	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.469	(1.070)	159215	45.7626	45.76
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	156895	43.5734	43.57
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	135985	45.7364	45.73
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	509750	54.2927	54.29
138 Freon TF	101	1.911	1.919	(0.457)	1852	0.73167	0.73(a)
56 Tetrachloroethene	164	6.926	6.926	(0.903)	41106	19.3862	19.38
38 Trichloroethene	130	5.206	5.206	(1.049)	3184	1.14945	1.14(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051913.D
Date : 19-MAY-2021 15:05
Client ID: HS21050697-06
Sample Info: HS21050697-06;HS21050697-06;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051913.D

Date : 19-MAY-2021 15:05

Client ID: HS21050697-06

Instrument: voa6.i

Sample Info: HS21050697-06;HS21050697-06;;;

Purge Volume: 5.0

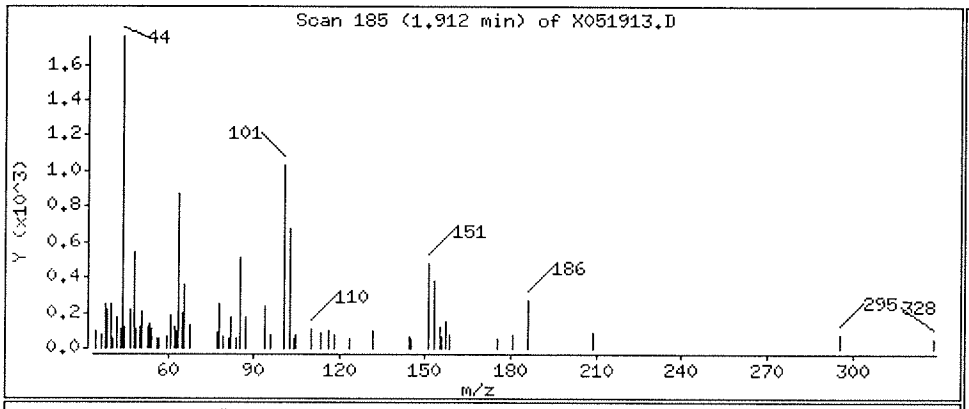
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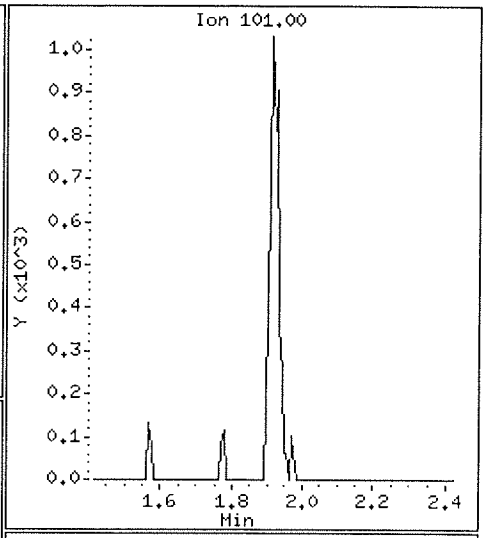
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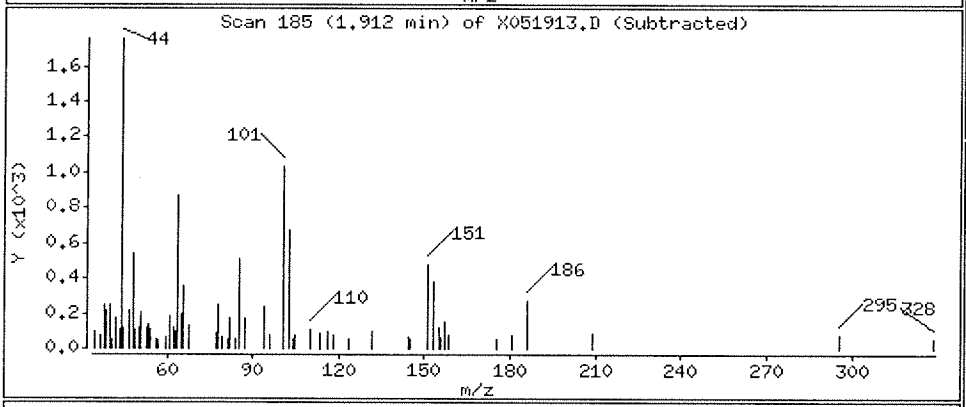
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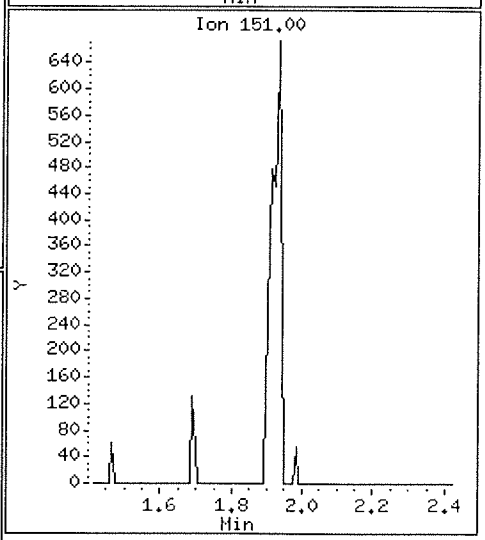
138 Freon TF

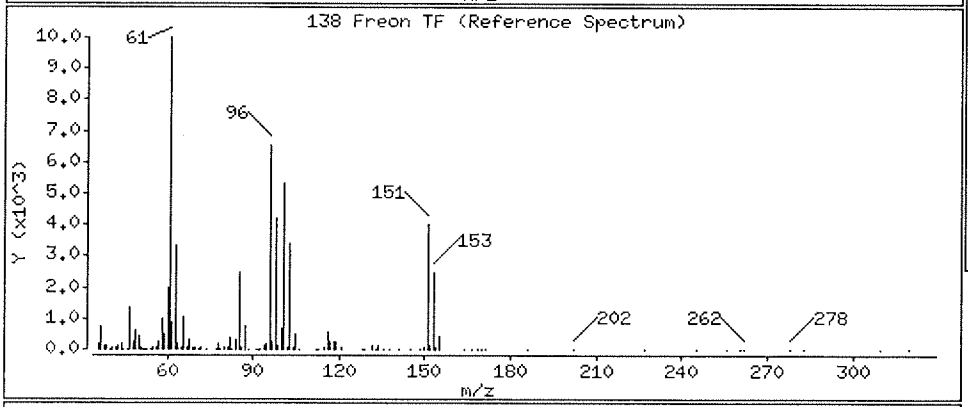
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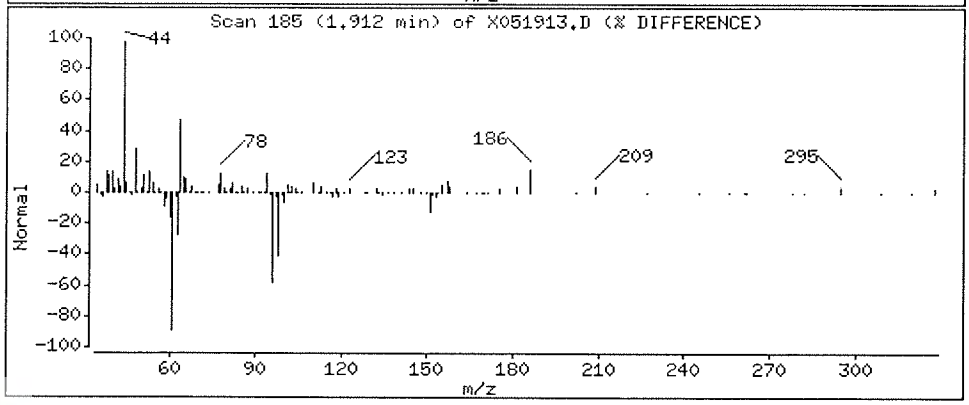












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Date : 19-MAY-2021 15:05

Client ID: HS21050697-06

Instrument: voa6.i

Sample Info: HS21050697-06;HS21050697-06;;;

Purge Volume: 5.0

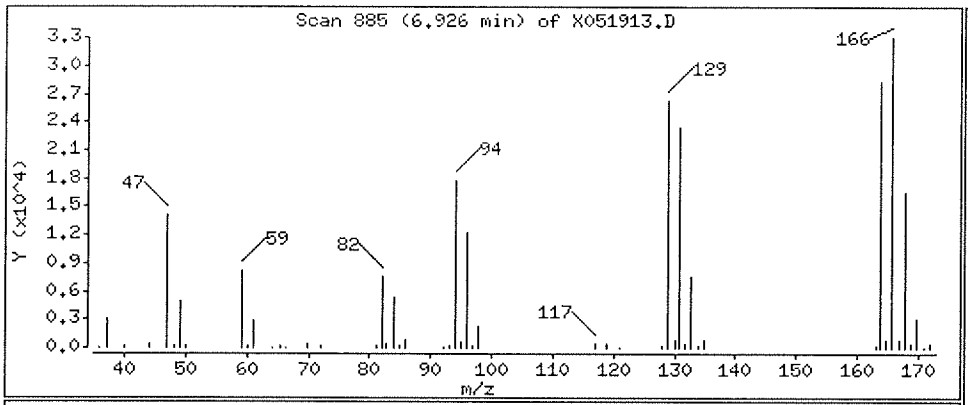
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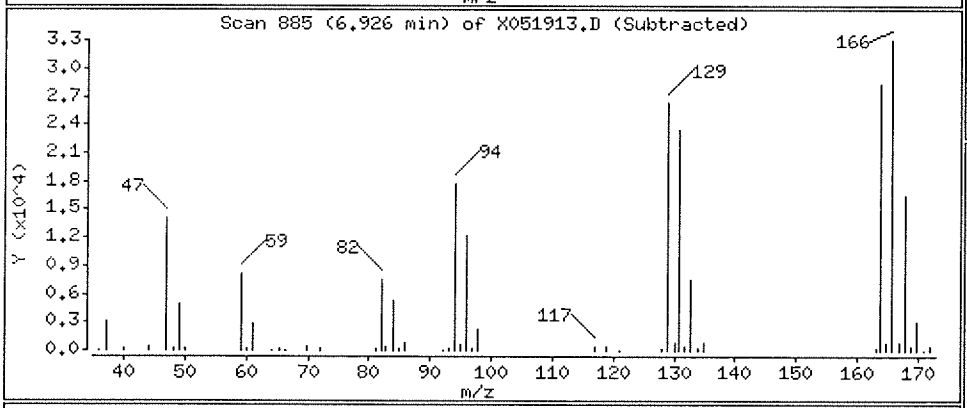
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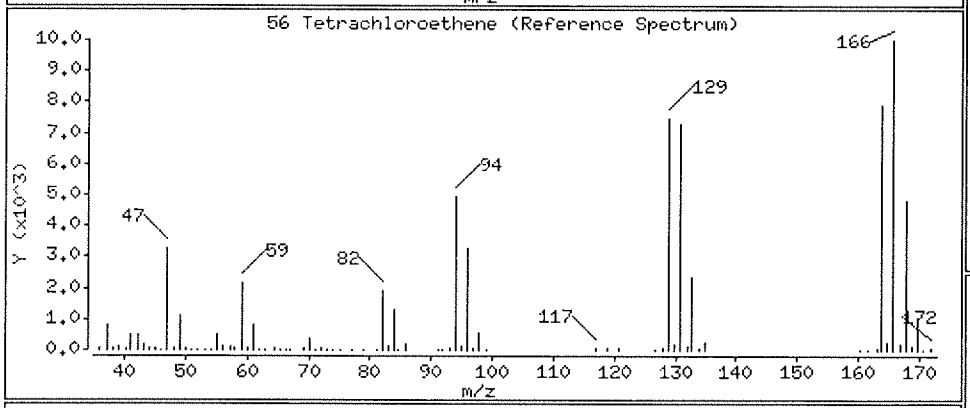
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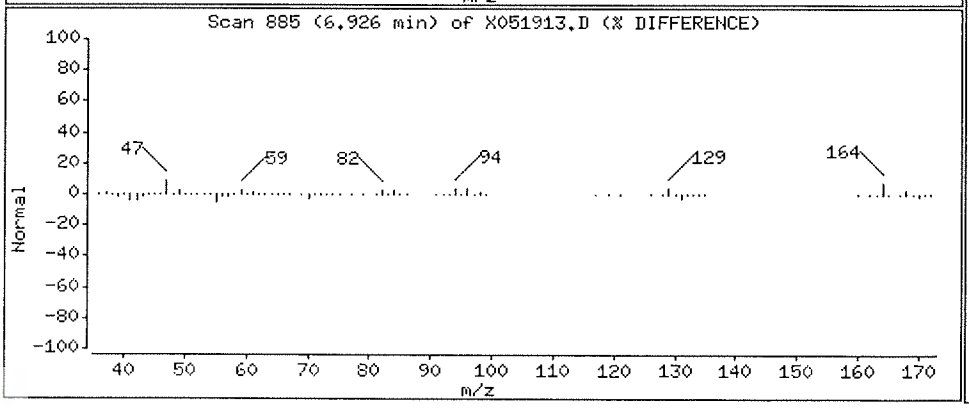
56 Tetrachloroethene

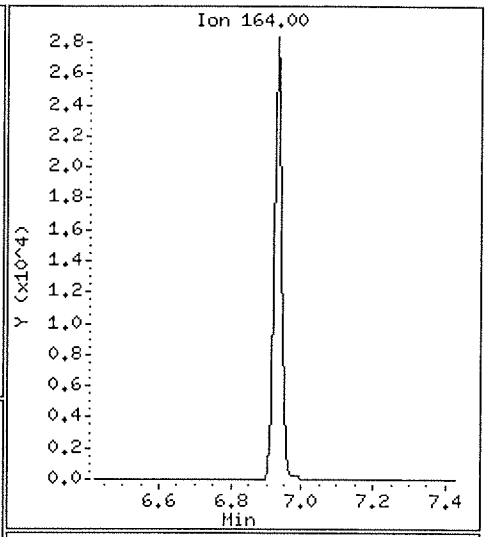
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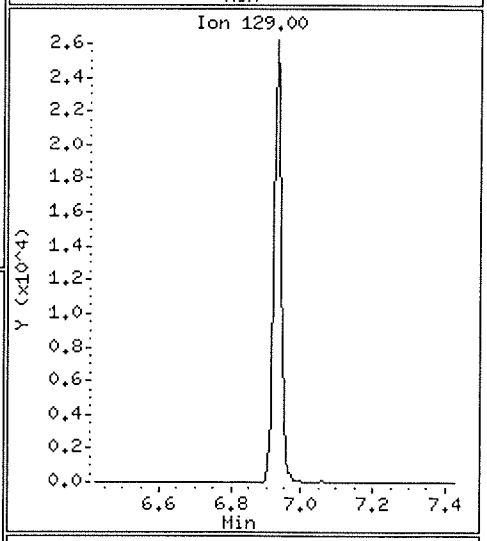


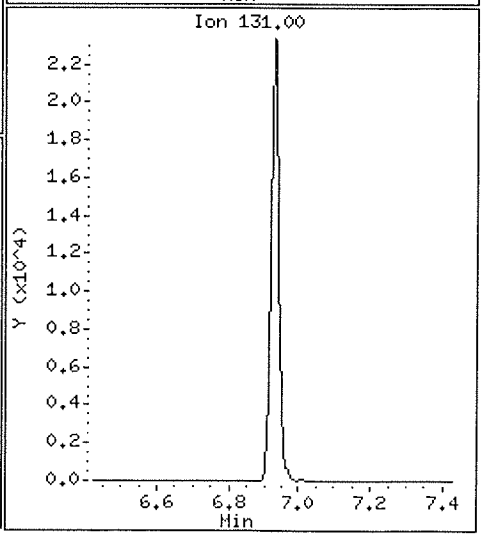












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Date : 19-MAY-2021 15:05

Client ID: HS21050697-06

Instrument: voa6.i

Sample Info: HS21050697-06;HS21050697-06;;;

Purge Volume: 5.0

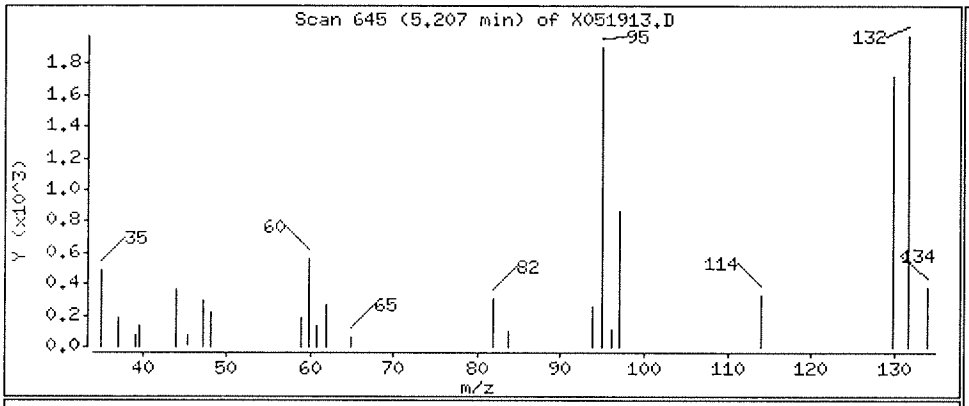
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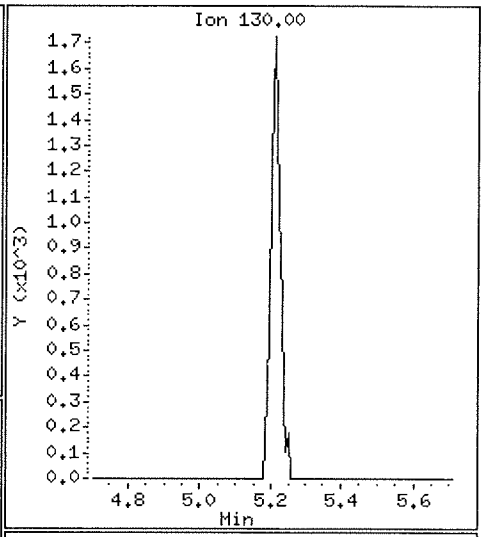
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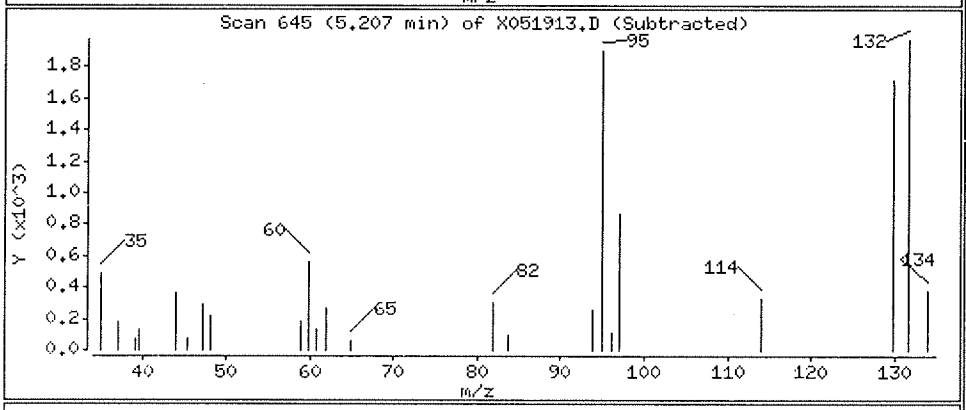
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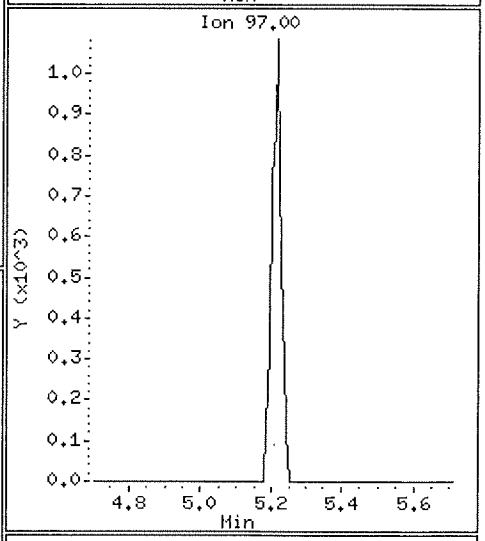
38 Trichloroethene

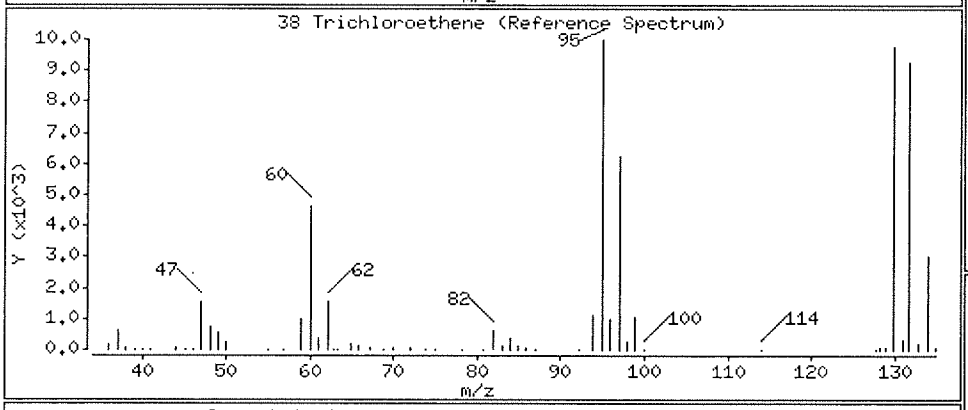
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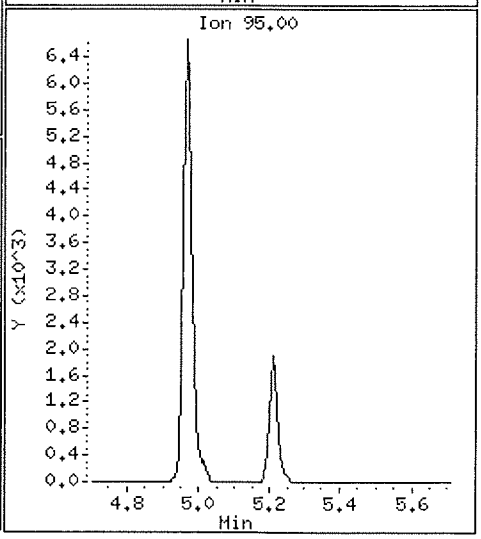


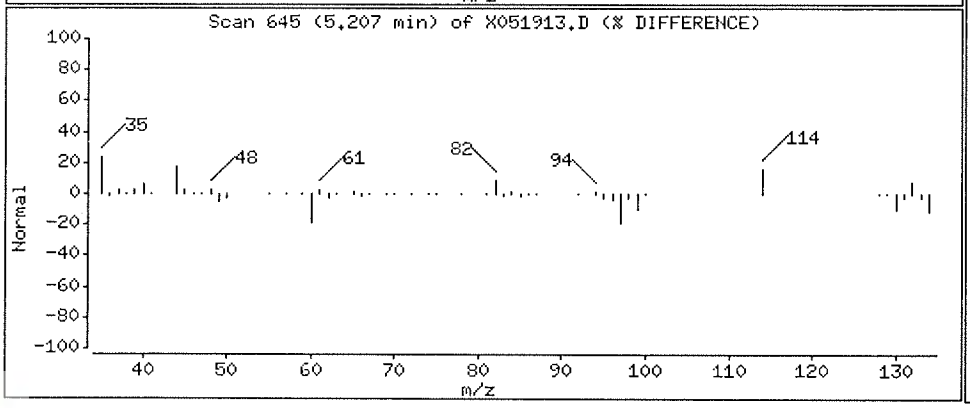












Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051914.D Page 1
Report Date: 22-Jun-2021 11:54

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210519.b\X051914.D
Lab Smp Id: HS21050697-03MS Client Smp ID: HS21050697-03MS
Inj Date : 19-MAY-2021 15:26
Operator : PC Inst ID: voa6.i
Smp Info : HS21050697-03MS;HS21050697-03MS;3;;MS
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210519.b\8260W.m
Meth Date : 22-Jun-2021 11:53 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 14 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

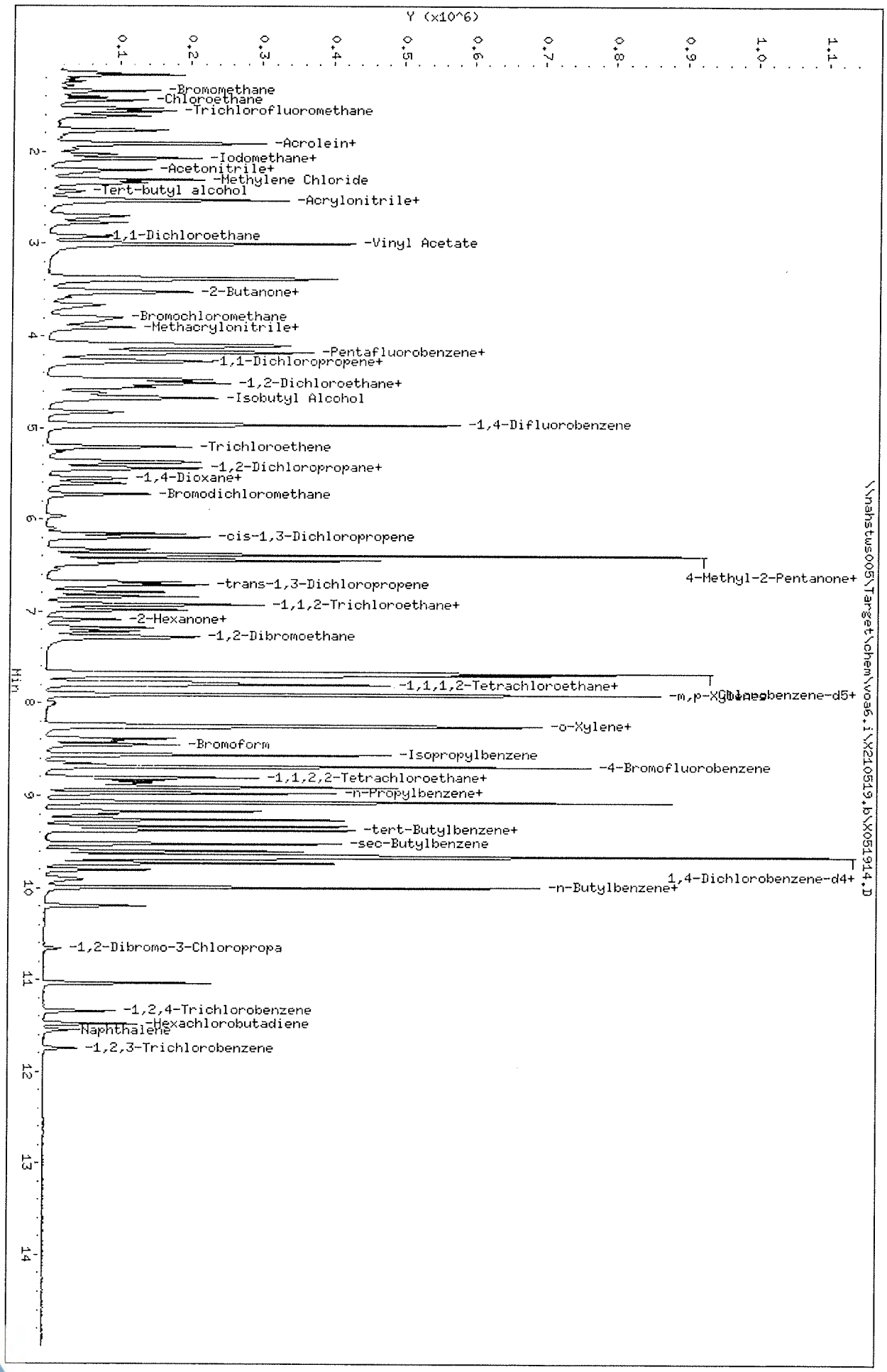
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	279843	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	444502	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	408439	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	200185	50.0000	
$	35 1,2-Dichloroethane-d4	65	4.476	4.469	(1.070)	178816	49.0904	49.09
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	188408	48.8708	48.87
$	30 Dibromofluoromethane	113	4.096	4.103	(0.979)	149361	47.9042	47.90
$	48 Toluene-d8	98	6.388	6.388	(0.833)	532720	53.0333	53.03
	60 1,1,1,2-Tetrachloroethane	131	7.771	7.771	(1.013)	56398	18.9533	18.95
	31 1,1;1-Trichloroethane	97	4.089	4.082	(0.978)	94879	19.9335	19.93
	68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	62717	18.5837	18.58
	138 Freon TF	101	1.919	1.919	(0.459)	53298	20.0748	20.07
	53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	46038	19.4043	19.40
	22 1,1-Dichloroethane	63	2.922	2.921	(0.699)	87519	16.8882	16.88
	11 1,1-Dichloroethene	96	1.919	1.919	(0.459)	50785	18.1466	18.14
	32 1,1-Dichloropropene	75	4.283	4.282	(0.863)	77572	20.3725	20.37
	93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.216)	13264	14.5522	14.55
	71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	50140	18.0672	18.06(M)
	90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	25673	16.0353	16.03
	79 1,2,4-Trimethylbenzene	105	9.375	9.375	(0.970)	200998	19.7417	19.74
	89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.103)	4295	17.0098	17.00
	57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	55659	19.5198	19.51

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	100639	17.9369	17.93
33	1,2-Dichloroethane	62	4.555	4.555	(0.918)	85626	19.5922	19.59
42	1,2-Dichloropropane	63	5.436	5.436	(1.095)	58032	19.4265	19.42
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	209177	20.9328	20.93
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	112436	19.5498	19.54
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	89836	19.3422	19.34
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	115794	19.8422	19.84
26	2,2-Dichloropropane	77	3.516	3.509	(0.841)	86194	18.5931	18.59
24	2-Butanone	43	3.581	3.580	(0.856)	29569	28.6251	28.62
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	179443	20.1124	20.11
52	2-Hexanone	43	7.090	7.090	(0.924)	60028	34.4839	34.48
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	212493	20.4253	20.42
82	p-Isopropyltoluene	119	9.648	9.648	(0.999)	203167	20.5553	20.55
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	89589	34.4972	34.49
10	Acetone	43	1.976	1.976	(0.473)	24442	31.1772	31.17
37	Benzene	78	4.512	4.512	(0.909)	217458	19.7742	19.77
74	Bromobenzene	156	8.810	8.802	(0.912)	67426	20.2048	20.20
29	Bromochloromethane	128	3.795	3.795	(0.908)	30328	17.7828	17.78
39	Bromodichloromethane	83	5.729	5.729	(1.154)	80975	18.8542	18.85
66	Bromoform	173	8.408	8.408	(1.096)	35215	17.8277	17.82
6	Bromomethane	94	1.339	1.338	(0.320)	62639	21.0219	21.02
19	Carbon Disulfide	76	2.069	2.069	(0.495)	252016	38.2233	38.22
34	Carbon Tetrachloride	117	4.268	4.268	(0.860)	78396	20.2345	20.23
59	Chlorobenzene	112	7.692	7.692	(1.003)	156809	19.5792	19.57
7	Chloroethane	64	1.403	1.403	(0.336)	43823	20.6877	20.68
28	Chloroform	83	3.910	3.910	(0.935)	104979	17.6571	17.65
3	Chloromethane	50	1.081	1.073	(0.258)	55751	18.6209	18.62
27	cis-1,2-Dichloroethene	96	3.523	3.530	(0.842)	58566	18.1590	18.15
46	cis-1,3-Dichloropropene	75	6.152	6.152	(1.240)	93258	19.1374	19.13
55	Dibromochloromethane	129	7.176	7.176	(0.936)	60605	18.9844	18.98
44	Dibromomethane	93	5.550	5.550	(1.118)	40156	18.7553	18.75
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	55178	17.0955	17.09
61	Ethylbenzene	106	7.800	7.800	(1.017)	83144	21.0078	21.00
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	17563	16.8751	16.87
67	Isopropylbenzene	105	8.559	8.559	(1.116)	253942	20.9946	20.99
62	m,p-Xylenes	106	7.907	7.900	(1.031)	208162	40.8119	40.81
17	Methylene Chloride	84	2.306	2.305	(0.551)	49065	17.4847	17.48
87	n-Butylbenzene	91	9.991	9.991	(1.034)	178583	18.9980	18.99
73	n-Propylbenzene	91	8.910	8.910	(0.922)	306000	21.5829	21.58
92	Naphthalene	128	11.546	11.546	(1.195)	32560	14.4607	14.46
63	o-Xylene	106	8.244	8.244	(1.075)	99632	20.0837	20.08
81	sec-Butylbenzene	105	9.519	9.519	(0.985)	235688	20.0870	20.08
64	Styrene	104	8.258	8.258	(1.077)	162756	18.6341	18.63
78	tert-Butylbenzene	119	9.332	9.332	(0.966)	165473	19.5150	19.51
56	Tetrachloroethene	164	6.926	6.926	(0.903)	52371	23.0754	23.07
50	Toluene	91	6.446	6.446	(0.840)	246263	20.8977	20.89
20	trans-1,2-Dichloroethene	96	2.528	2.528	(0.604)	49820	18.5044	18.50
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	81851	19.2003	19.20
38	Trichloroethene	130	5.207	5.206	(1.049)	60314	20.4910	20.49
8	Trichlorofluoromethane	101	1.561	1.561	(0.373)	105105	19.5393	19.53
5	Vinyl Chloride	62	1.145	1.145	(0.274)	61361	18.1613	18.16

QC Flag Legend

M - Compound response manually integrated.

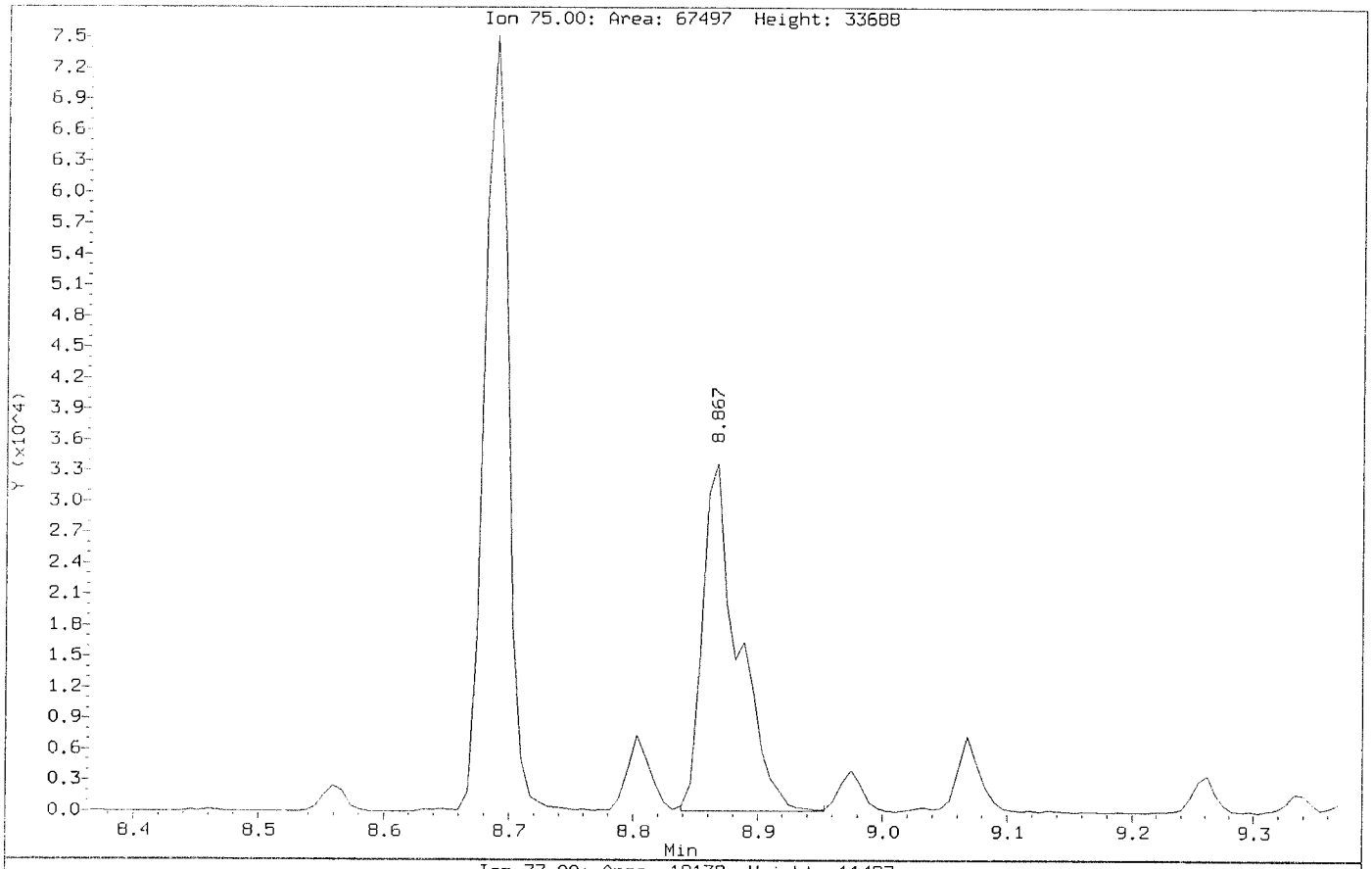


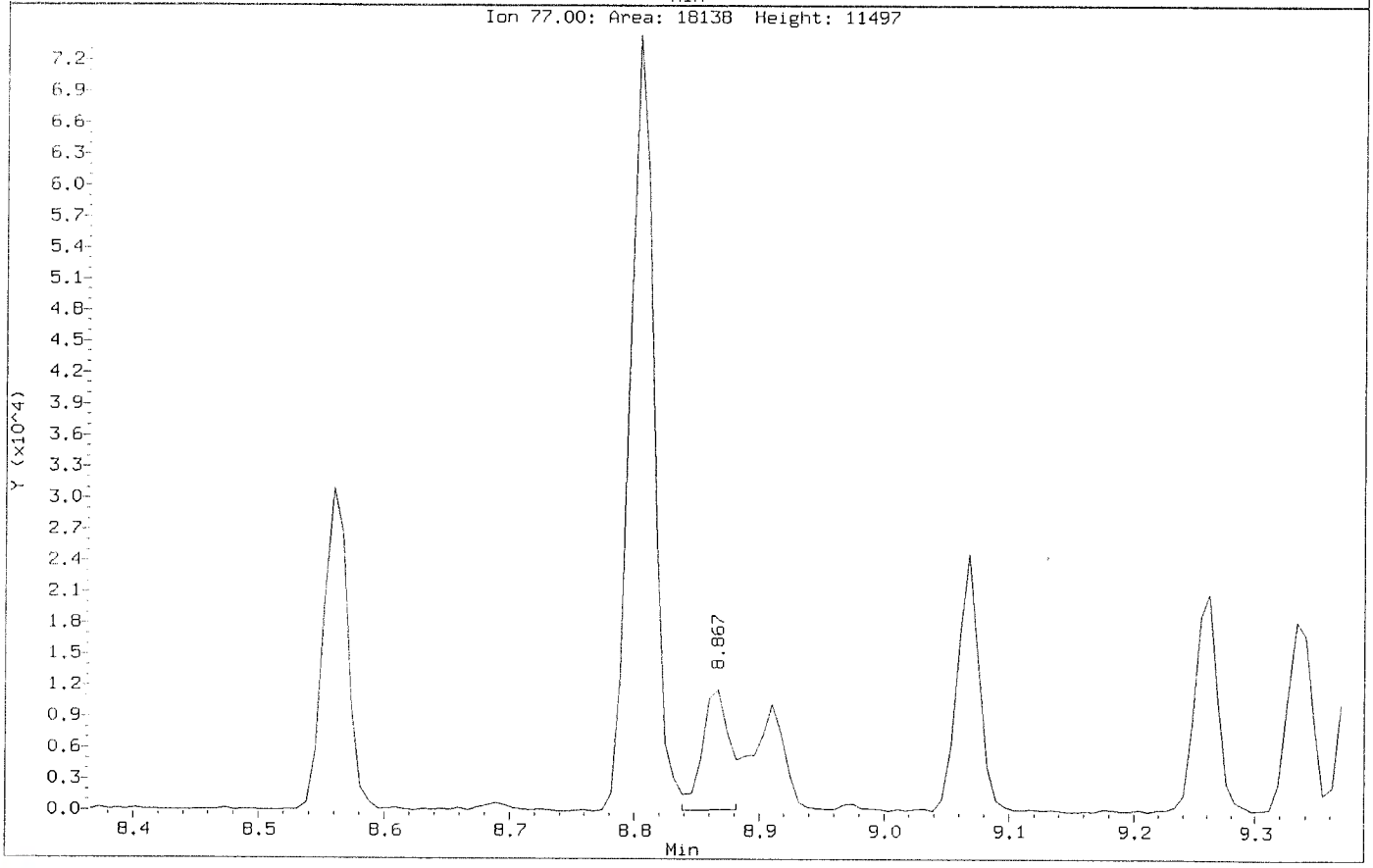
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Sample Info: HS21050697-03MS;HS21050697-03MS;3;;HS
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\Before\X051914.D
Injection Date: 19-MAY-2021 15:26
Instrument: voa6.i
Client Sample ID: HS21050697-03MS

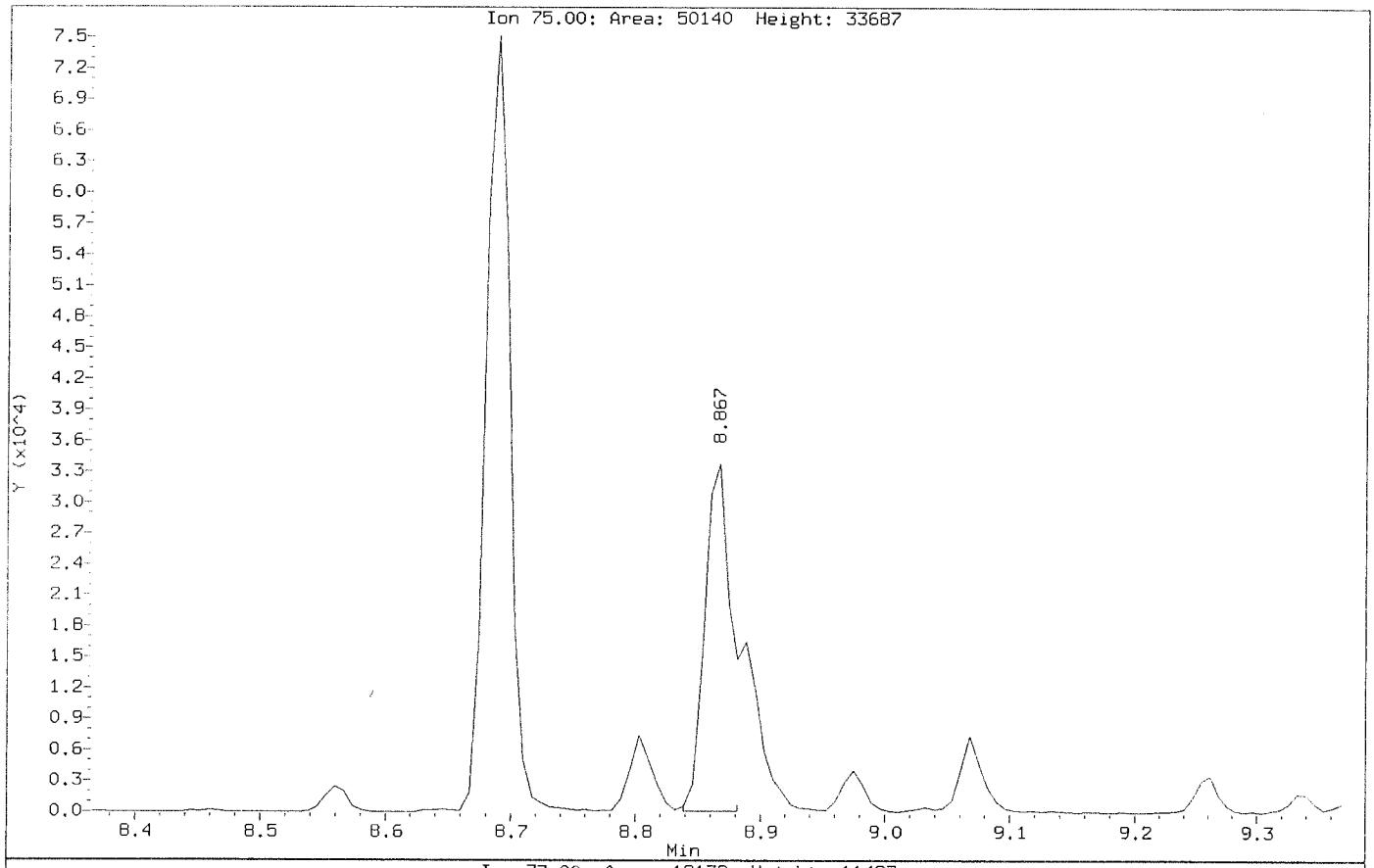
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CAS Number: 96-18-4

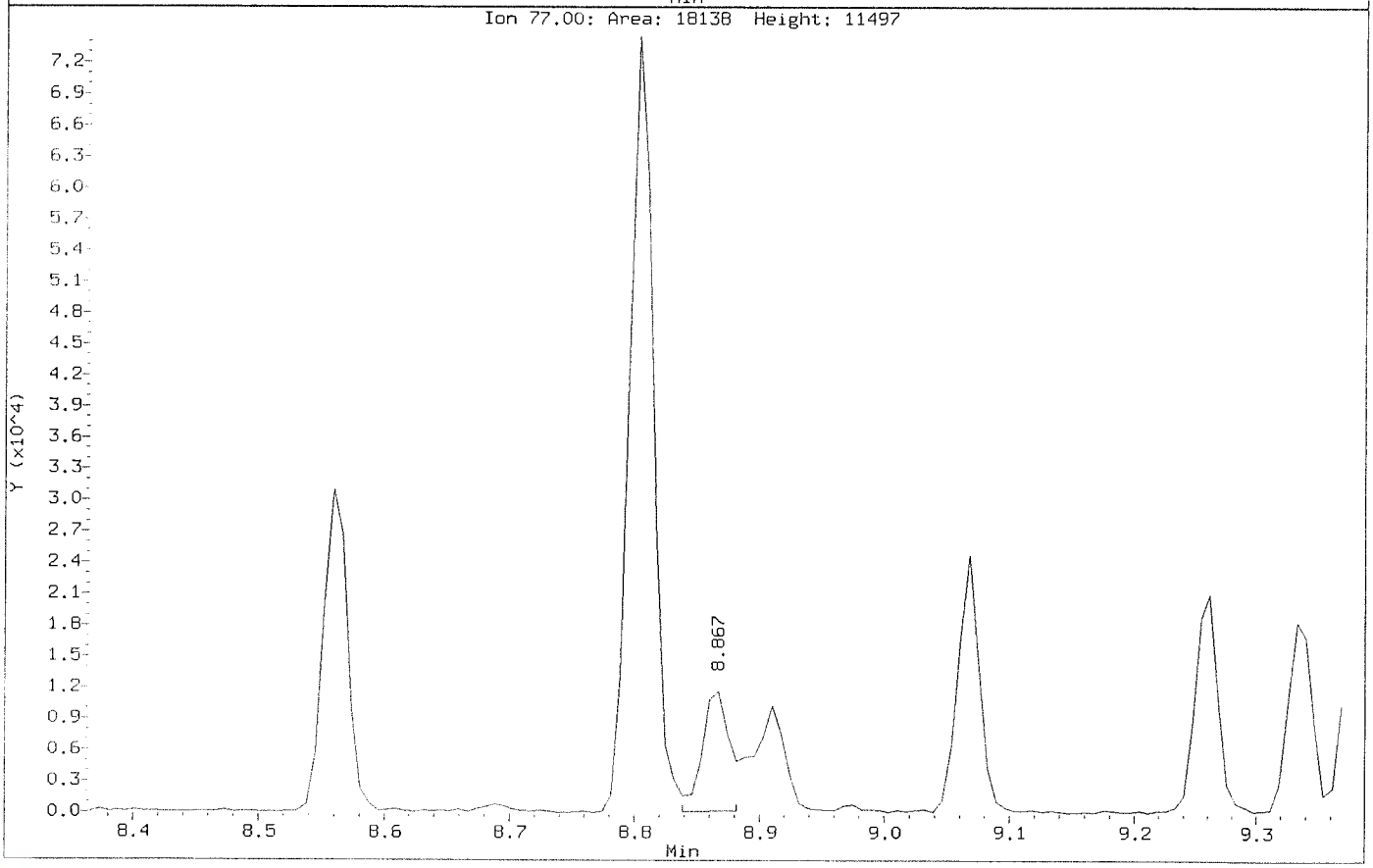




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Injection Date: 19-MAY-2021 15:26
Instrument: voa6.i
Client Sample ID: HS21050697-03MS

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051915.D Page 1
Report Date: 22-Jun-2021 11:54

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210519.b\X051915.D
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Inj Date : 19-MAY-2021 15:48
Operator : PC Inst ID: voa6.i
Smp Info : HS21050697-03MSD;HS21050697-03MSD;3;;MSD
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210519.b\8260W.m
Meth Date : 22-Jun-2021 11:53 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 14 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

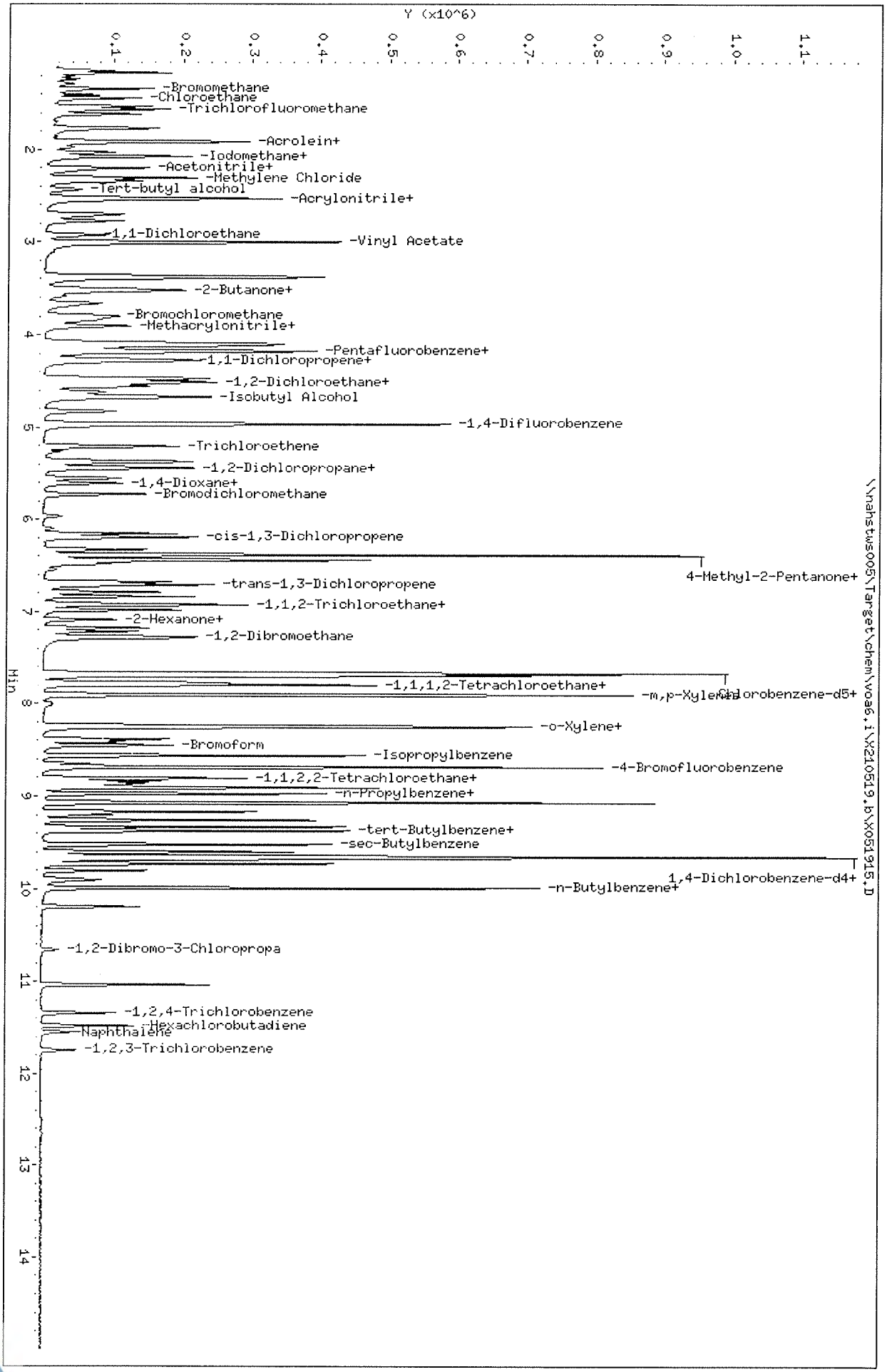
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	289933	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	463948	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	424279	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	211469	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.469	(1.070)	186690	49.4783	49.47
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	195893	48.9152	48.91
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	153904	47.6422	47.64
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	548341	52.5597	52.55
60 1,1,1,2-Tetrachloroethane	131	7.771	7.771	(1.013)	57496	18.6009	18.60
31 1,1,1-Trichloroethane	97	4.089	4.082	(0.978)	95159	19.2965	19.29
68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	65108	18.2536	18.25
138 Freon TF	101	1.919	1.919	(0.459)	54333	19.7525	19.75
53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	45756	18.5654	18.56
22 1,1-Dichloroethane	63	2.922	2.921	(0.699)	87027	16.2088	16.20
11 1,1-Dichloroethene	96	1.919	1.919	(0.459)	50437	17.3950	17.39
32 1,1-Dichloropropene	75	4.283	4.282	(0.863)	76745	19.3106	19.31
93 1,2,3-Trichlorobenzene	180	11.739	11.746	(1.215)	15128	15.6635	15.66
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	52737	17.9863	17.98(M)
90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	27881	16.4160	16.41
79 1,2,4-Trimethylbenzene	105	9.375	9.375	(0.970)	202816	18.8573	18.85
89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.103)	4452	16.7208	16.72
57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	58017	19.5872	19.58

Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051915.D Page 2
Report Date: 22-Jun-2021 11:54

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	105679	17.8301	17.83
33	1,2-Dichloroethane	62	4.555	4.555	(0.918)	88926	19.4944	19.49
42	1,2-Dichloropropane	63	5.436	5.436	(1.095)	57040	18.2941	18.29
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	205836	19.4993	19.49
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	116308	19.1439	19.14
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	89778	18.6081	18.60
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	119374	19.3703	19.37
26	2,2-Dichloropropane	77	3.509	3.509	(0.839)	88194	18.3624	18.36
24	2-Butanone	43	3.581	3.580	(0.856)	30164	28.1849	28.18
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	176993	18.7792	18.77
52	2-Hexanone	43	7.090	7.090	(0.924)	61427	33.9661	33.96
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	206307	18.7725	18.77
82	p-Isopropyltoluene	119	9.648	9.648	(0.999)	200193	19.1736	19.17
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	94420	34.9988	34.99
10	Acetone	43	1.976	1.976	(0.473)	25135	30.9071	30.90
37	Benzene	78	4.512	4.512	(0.909)	219550	19.1277	19.12
74	Bromobenzene	156	8.802	8.802	(0.911)	66519	18.8694	18.86
29	Bromochloromethane	128	3.795	3.795	(0.908)	31542	17.8510	17.85
39	Bromodichloromethane	83	5.729	5.729	(1.154)	82519	18.4083	18.40
66	Bromoform	173	8.408	8.408	(1.096)	35029	17.0715	17.07
6	Bromomethane	94	1.339	1.338	(0.320)	62266	20.1502	20.15
19	Carbon Disulfide	76	2.069	2.069	(0.495)	246320	36.0593	36.05
34	Carbon Tetrachloride	117	4.268	4.268	(0.860)	75847	18.7560	18.75
59	Chlorobenzene	112	7.692	7.692	(1.003)	157759	18.9625	18.96
7	Chloroethane	64	1.403	1.403	(0.336)	36332	16.5545	16.55
28	Chloroform	83	3.910	3.910	(0.935)	106491	17.2881	17.28
3	Chloromethane	50	1.081	1.073	(0.258)	58082	18.7230	18.72
27	cis-1,2-Dichloroethene	96	3.523	3.530	(0.842)	59348	17.7611	17.76
46	cis-1,3-Dichloropropene	75	6.159	6.152	(1.241)	93837	18.4491	18.44
55	Dibromochloromethane	129	7.176	7.176	(0.936)	61193	18.4529	18.45
44	Dibromomethane	93	5.550	5.550	(1.118)	40645	18.1880	18.18
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	57542	17.1939	17.19
61	Ethylbenzene	106	7.800	7.800	(1.017)	81567	19.8400	19.83
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	19771	17.7738	17.77
67	Isopropylbenzene	105	8.559	8.559	(1.116)	249305	19.8418	19.84
62	m,p-Xylenes	106	7.907	7.900	(1.031)	206747	39.0212	39.02
17	Methylene Chloride	84	2.306	2.305	(0.551)	49067	16.8769	16.87
87	n-Butylbenzene	91	9.991	9.991	(1.034)	185177	18.6483	18.64
73	n-Propylbenzene	91	8.910	8.910	(0.922)	300380	20.0560	20.05
92	Naphthalene	128	11.546	11.546	(1.195)	35499	14.8951	14.89
63	o-Xylene	106	8.244	8.244	(1.075)	96684	18.7619	18.76
81	sec-Butylbenzene	105	9.519	9.519	(0.985)	235913	19.0333	19.03
64	Styrene	104	8.258	8.258	(1.077)	163690	18.0974	18.09
78	tert-Butylbenzene	119	9.332	9.332	(0.966)	169257	18.8961	18.89
56	Tetrachloroethene	164	6.926	6.926	(0.903)	51132	21.6883	21.68
50	Toluene	91	6.446	6.446	(0.840)	246591	20.1443	20.14
20	trans-1,2-Dichloroethene	96	2.528	2.528	(0.604)	50398	18.0677	18.06
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	85829	19.2896	19.28
38	Trichloroethene	130	5.207	5.206	(1.049)	60087	19.5582	19.55
8	Trichlorofluoromethane	101	1.561	1.561	(0.373)	102985	18.4789	18.47
5	Vinyl Chloride	62	1.145	1.145	(0.274)	59400	16.9690	16.96

QC Flag Legend

M - Compound response manually integrated.

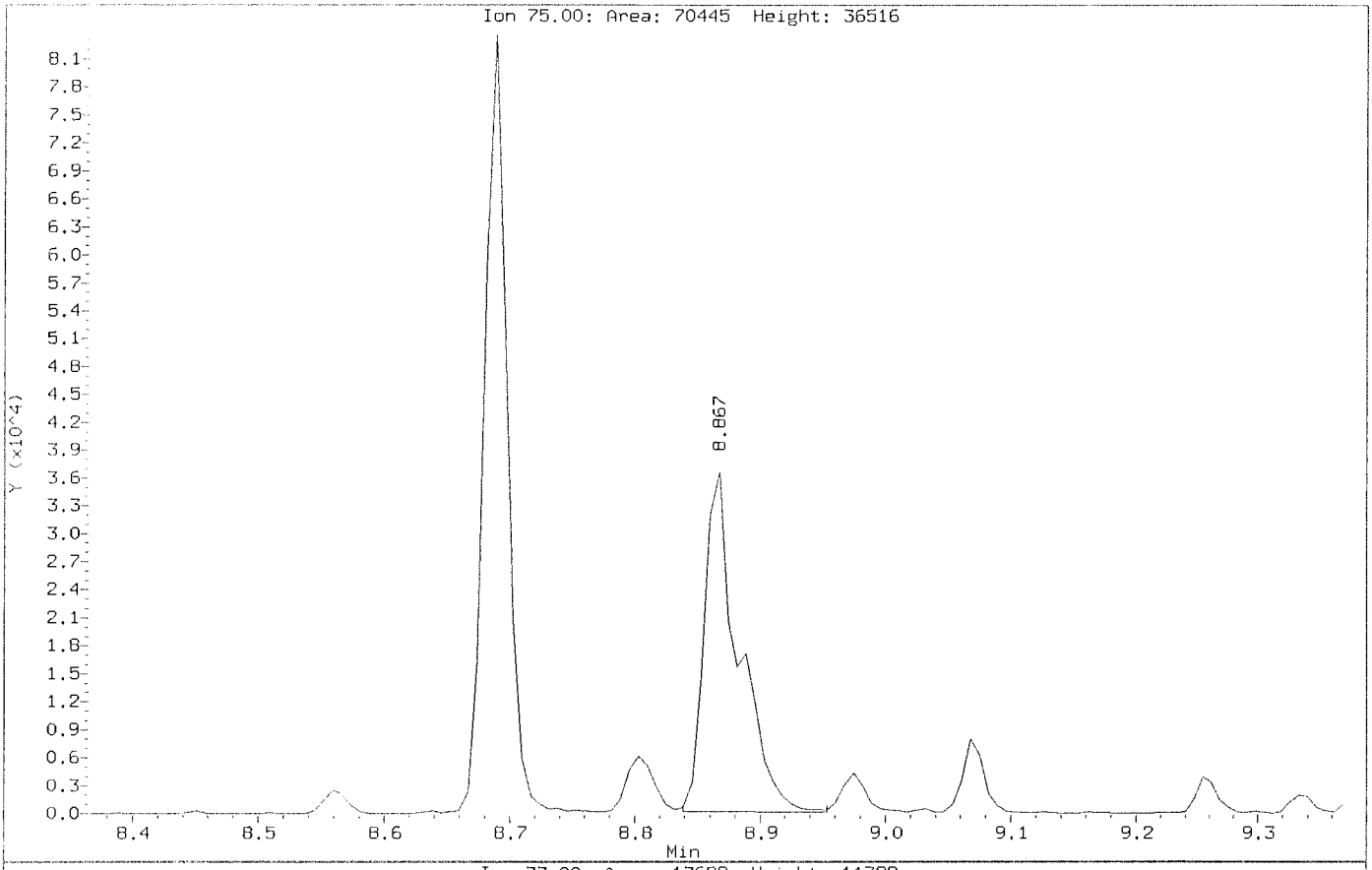


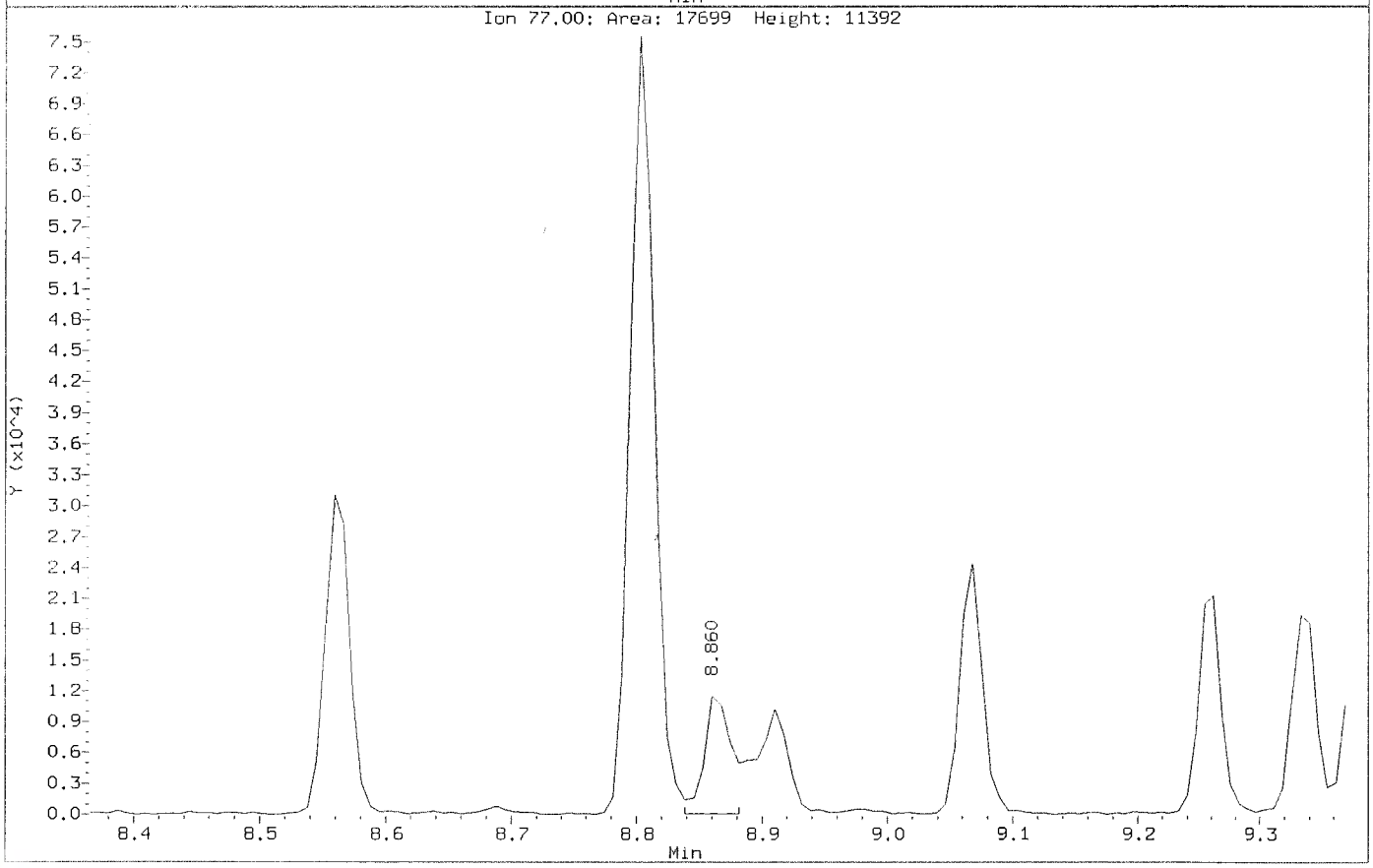
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Column phase: DB624

Instrument: voa6.i
Operator: PC
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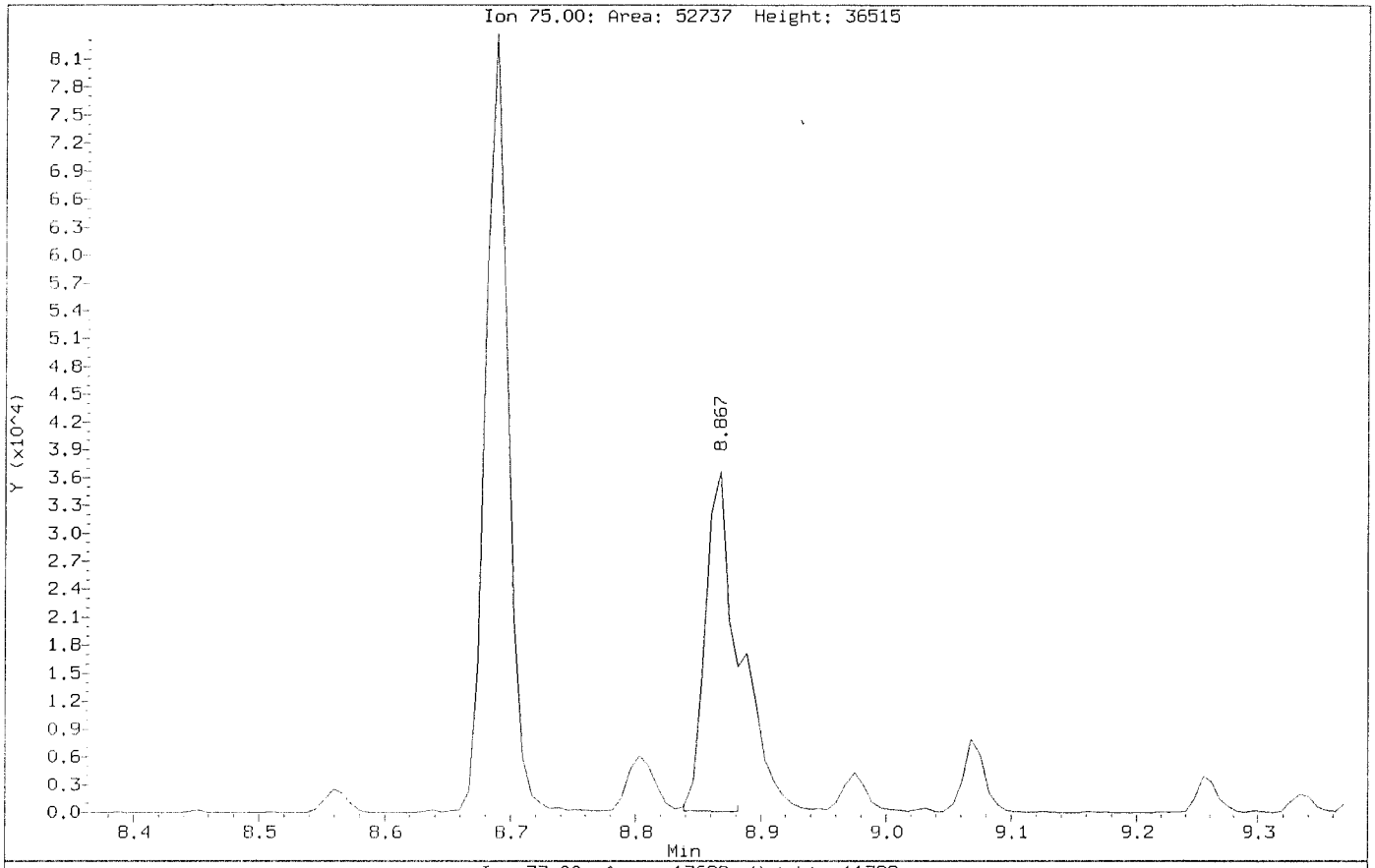
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CAS Number: 96-18-4

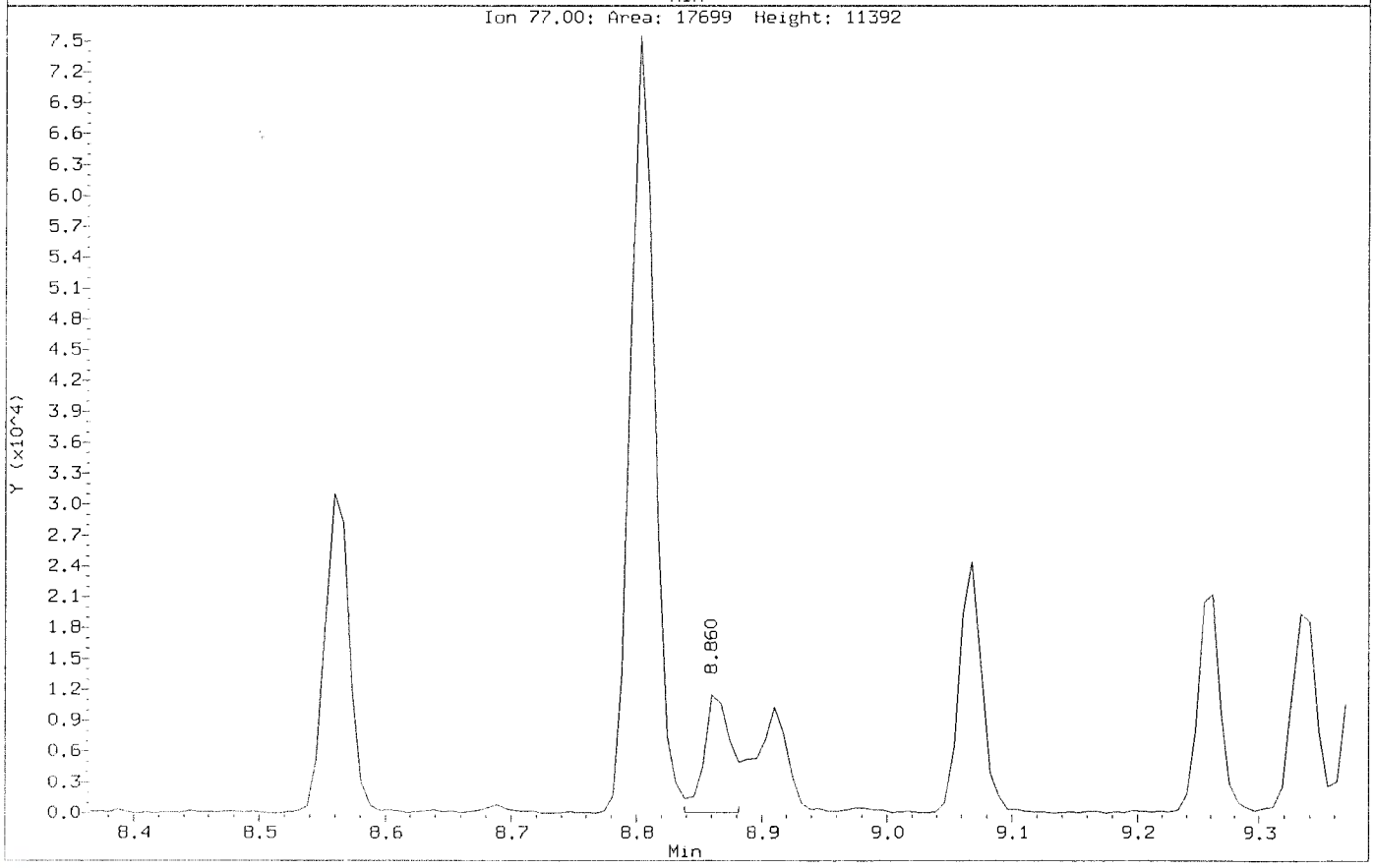




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Client Sample ID: HS21050697-03MSD

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051932.D Page 1
Report Date: 22-Jun-2021 11:52

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210519.b\X051932.D
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Inj Date : 19-MAY-2021 21:45
Operator : PC Inst ID: voa6.i
Smp Info : CCV-END;CCV-END;2;;
Misc Info : HS18090001;WATER;0;1;
Comment :
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Meth Date : 22-Jun-2021 11:52 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 31 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
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Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

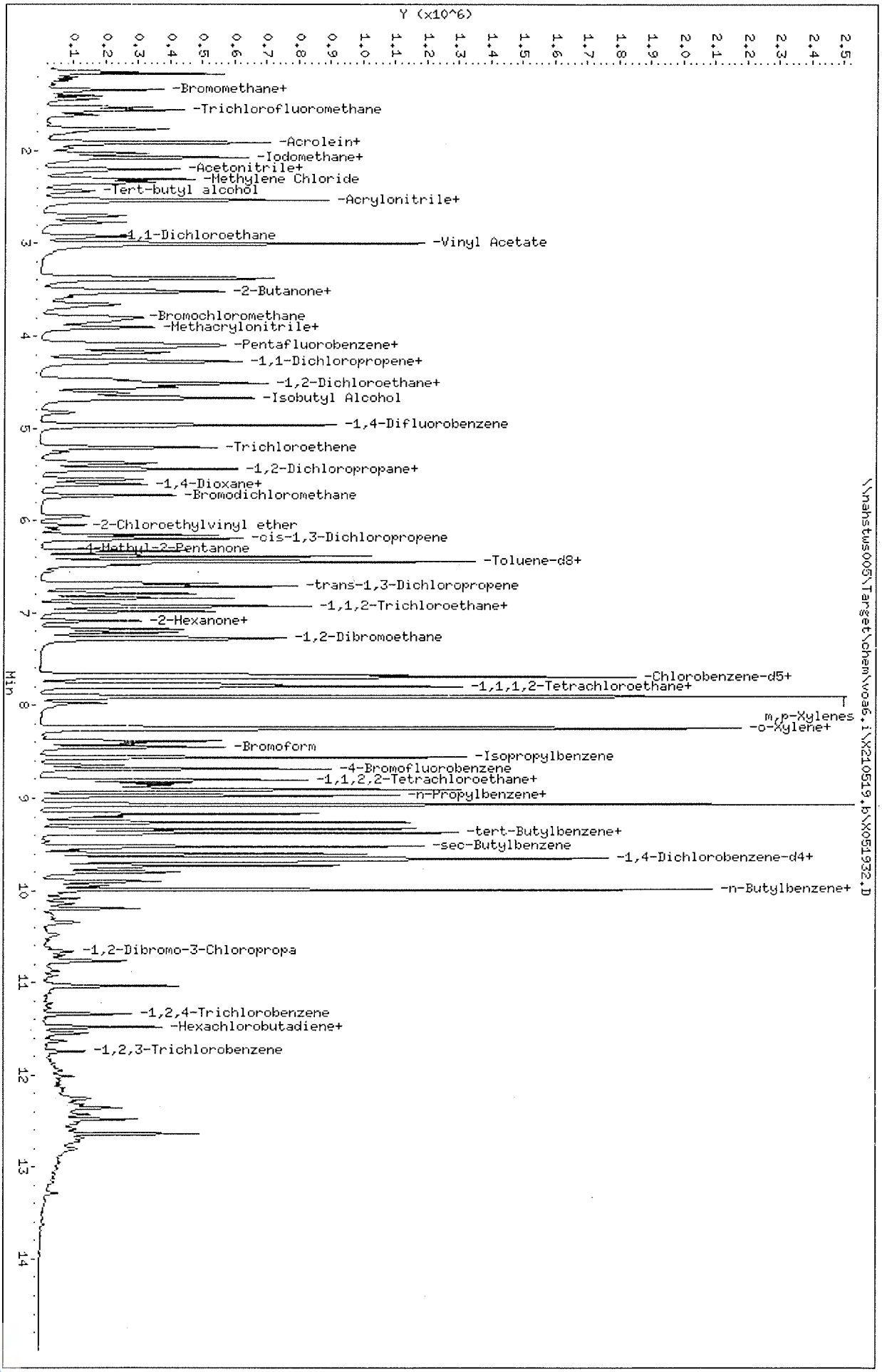
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	296702	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	505270	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	477005	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	236321	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.469	4.469	(1.069)	205943	50.0000	53.43
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	218596	50.0000	48.55
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	177210	50.0000	53.63
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	588892	50.0000	50.25
60 1,1,1,2-Tetrachloroethane	131	7.771	7.771	(1.013)	165845	50.0000	47.72
31 1,1,1-Trichloroethane	97	4.082	4.082	(0.976)	266375	50.0000	52.78
68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	179652	50.0000	45.84
138 Freon TF	101	1.919	1.919	(0.459)	125091	50.0000	44.43
53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	127278	50.0000	45.93
22 1,1-Dichloroethane	63	2.921	2.921	(0.699)	283385	50.0000	51.57
11 1,1-Dichloroethene	96	1.919	1.919	(0.459)	135575	50.0000	45.69
32 1,1-Dichloropropene	75	4.282	4.282	(0.863)	216815	50.0000	50.09
93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.216)	35226	50.0000	31.81
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	145896	50.0000	45.43(M)
90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	66940	50.0000	32.43
79 1,2,4-Trimethylbenzene	105	9.375	9.375	(0.970)	586492	50.0000	48.79
89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.103)	11283	50.0000	35.88
57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	159779	50.0000	47.98

Data File: \\nahstws005\Target\chem\voa6.i\X210519.b\X051932.D Page 2
Report Date: 22-Jun-2021 11:52

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88 1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	286962	50.0000	43.32
33 1,2-Dichloroethane	62	4.555	4.555	(0.918)	240202	50.0000	48.35
42 1,2-Dichloropropane	63	5.436	5.436	(1.095)	162598	50.0000	47.88
75 1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	572730	50.0000	48.55
83 1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	317409	50.0000	46.75
54 1,3-Dichloropropane	76	6.983	6.983	(0.910)	254712	50.0000	46.95
84 1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	326895	50.0000	47.09
26 2,2-Dichloropropane	77	3.509	3.509	(0.839)	238989	50.0000	48.62
24 2-Butanone	43	3.580	3.580	(0.856)	99505	100.000	90.85
76 2-Chlorotoluene	91	8.974	8.974	(0.929)	489524	50.0000	46.47
52 2-Hexanone	43	7.090	7.090	(0.924)	173649	100.000	85.81
77 4-Chlorotoluene	91	9.067	9.067	(0.938)	603555	50.0000	49.14
82 p-Isopropyltoluene	119	9.648	9.648	(0.999)	561144	50.0000	48.09
45 4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	265786	100.000	87.49
10 Acetone	43	1.976	1.976	(0.473)	69150	100.000	91.79
37 Benzene	78	4.512	4.512	(0.909)	630555	50.0000	50.44
74 Bromobenzene	156	8.802	8.802	(0.911)	189549	50.0000	48.11
29 Bromochloromethane	128	3.795	3.795	(0.908)	89167	50.0000	49.31
39 Bromodichloromethane	83	5.729	5.729	(1.154)	239146	50.0000	48.98
66 Bromoform	173	8.408	8.408	(1.096)	100321	50.0000	43.48
6 Bromomethane	94	1.338	1.338	(0.320)	154508	50.0000	49.54
19 Carbon Disulfide	76	2.069	2.069	(0.495)	758964	100.000	108.57
34 Carbon Tetrachloride	117	4.268	4.268	(0.860)	220150	50.0000	49.98
59 Chlorobenzene	112	7.692	7.692	(1.003)	444312	50.0000	47.50
7 Chloroethane	64	1.403	1.403	(0.336)	118099	50.0000	52.58
28 Chloroform	83	3.910	3.910	(0.935)	315027	50.0000	49.97
3 Chloromethane	50	1.073	1.073	(0.257)	184986	50.0000	57.77
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	174957	50.0000	51.16
46 cis-1,3-Dichloropropene	75	6.152	6.152	(1.240)	274914	50.0000	49.62
55 Dibromochloromethane	129	7.176	7.176	(0.936)	177775	50.0000	47.68
44 Dibromomethane	93	5.550	5.550	(1.118)	116243	50.0000	47.76
2 Dichlorodifluoromethane	85	0.973	0.973	(0.233)	210314	50.0000	56.06
61 Ethylbenzene	106	7.800	7.800	(1.017)	228422	50.0000	49.41
91 Hexachlorobutadiene	225	11.481	11.481	(1.188)	51864	50.0000	37.42
67 Isopropylbenzene	105	8.559	8.559	(1.116)	686042	50.0000	48.56
62 m,p-Xylenes	106	7.900	7.900	(1.030)	590790	100.000	99.17
17 Methylene Chloride	84	2.305	2.305	(0.551)	154044	50.0000	51.77
87 n-Butylbenzene	91	9.991	9.991	(1.034)	513692	50.0000	46.29
73 n-Propylbenzene	91	8.910	8.910	(0.922)	822996	50.0000	49.17
92 Naphthalene	128	11.546	11.546	(1.195)	89059	50.0000	32.05
63 o-Xylene	106	8.244	8.244	(1.075)	280903	50.0000	48.48
81 sec-Butylbenzene	105	9.519	9.519	(0.985)	662643	50.0000	47.83
64 Styrene	104	8.258	8.258	(1.077)	489097	50.0000	45.17
78 tert-Butylbenzene	119	9.332	9.332	(0.966)	464289	50.0000	46.38
56 Tetrachloroethene	164	6.926	6.926	(0.903)	144079	50.0000	54.35
50 Toluene	91	6.446	6.446	(0.840)	706389	50.0000	51.32
20 trans-1,2-Dichloroethene	96	2.528	2.528	(0.604)	149732	50.0000	52.45
51 trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	243024	50.0000	50.15
38 Trichloroethene	130	5.206	5.206	(1.049)	165329	50.0000	49.41
8 Trichlorofluoromethane	101	1.561	1.561	(0.373)	268384	50.0000	47.05
5 Vinyl Chloride	62	1.145	1.145	(0.274)	198351	50.0000	55.37

QC Flag Legend

M - Compound response manually integrated.

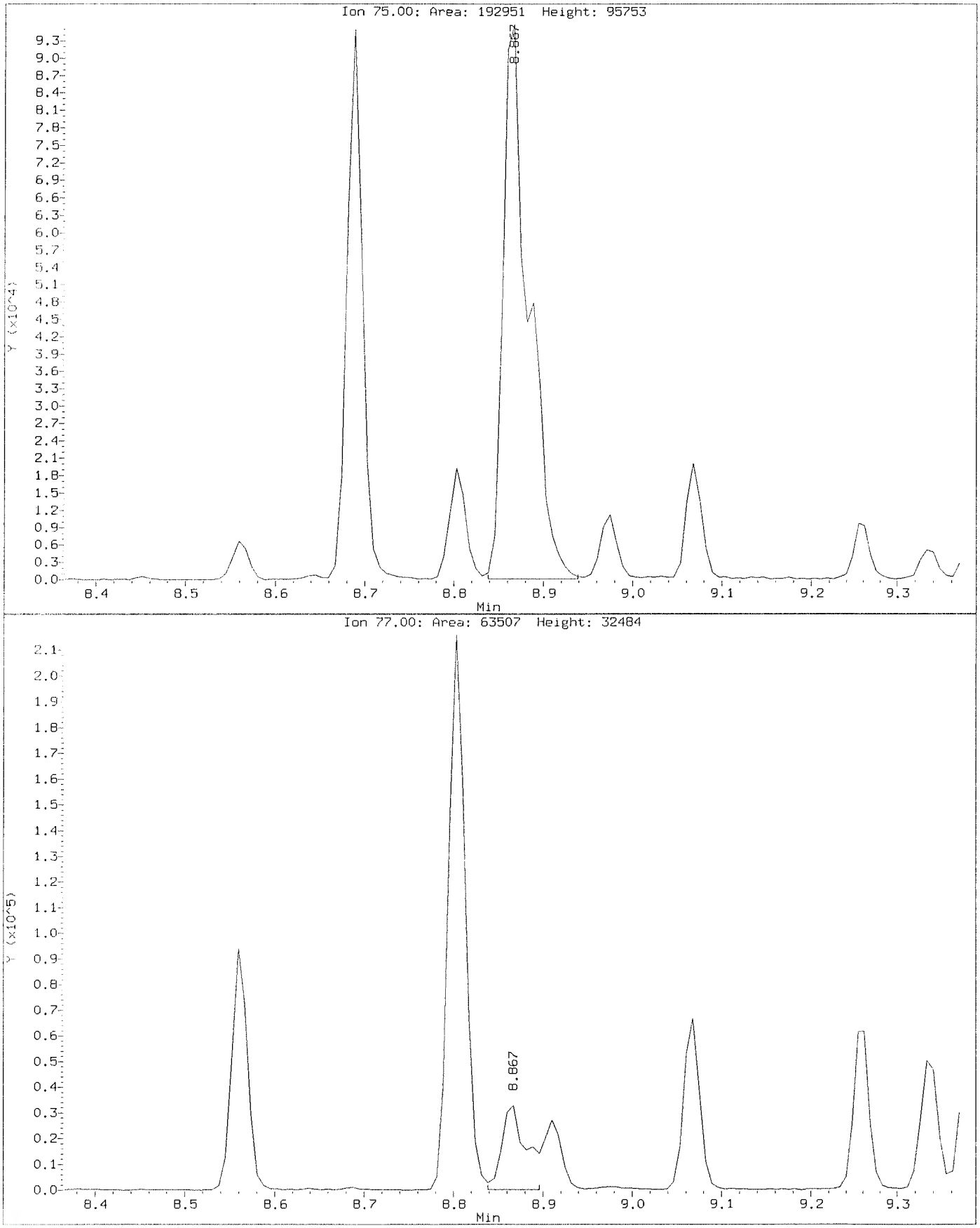


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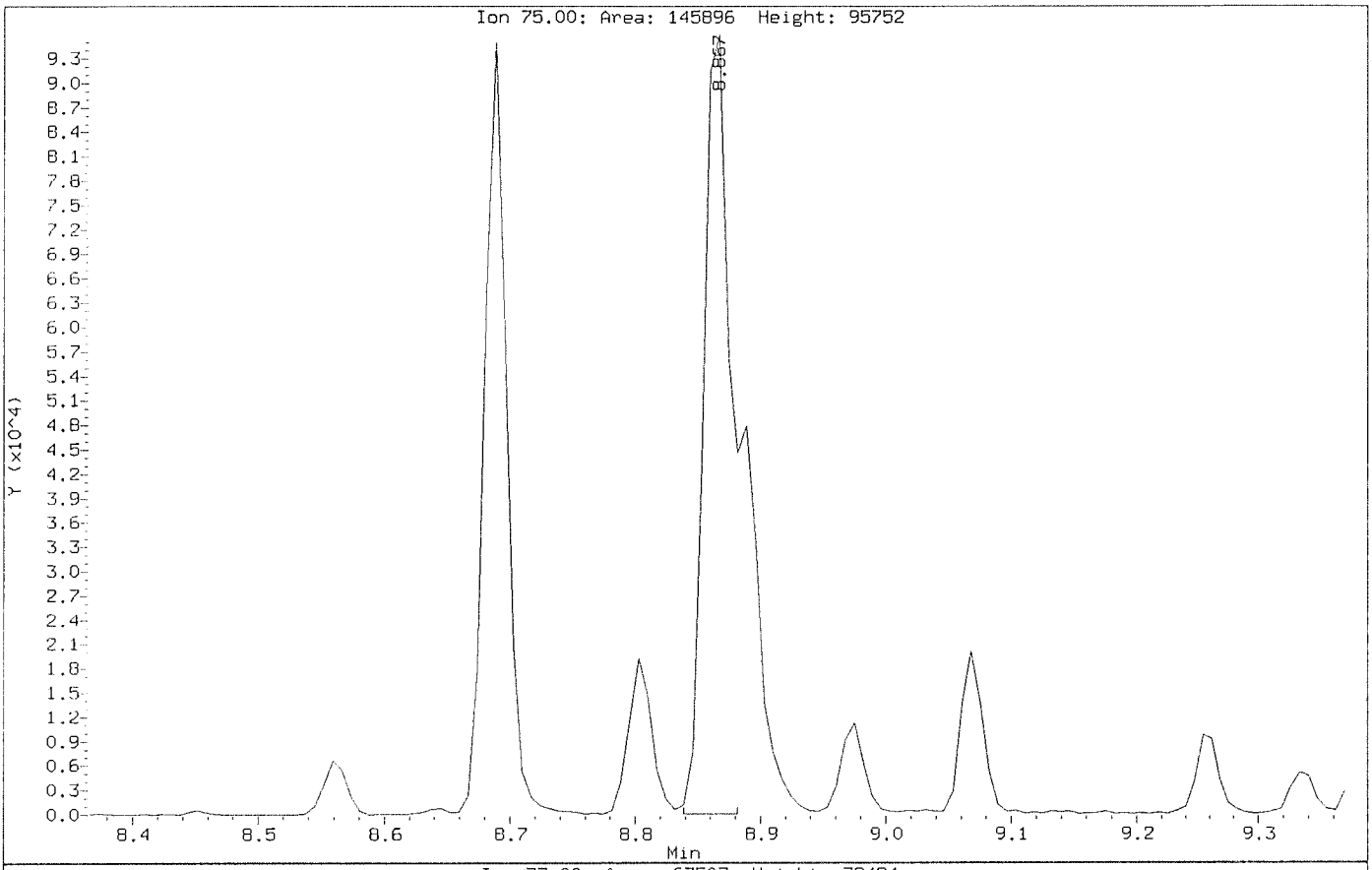
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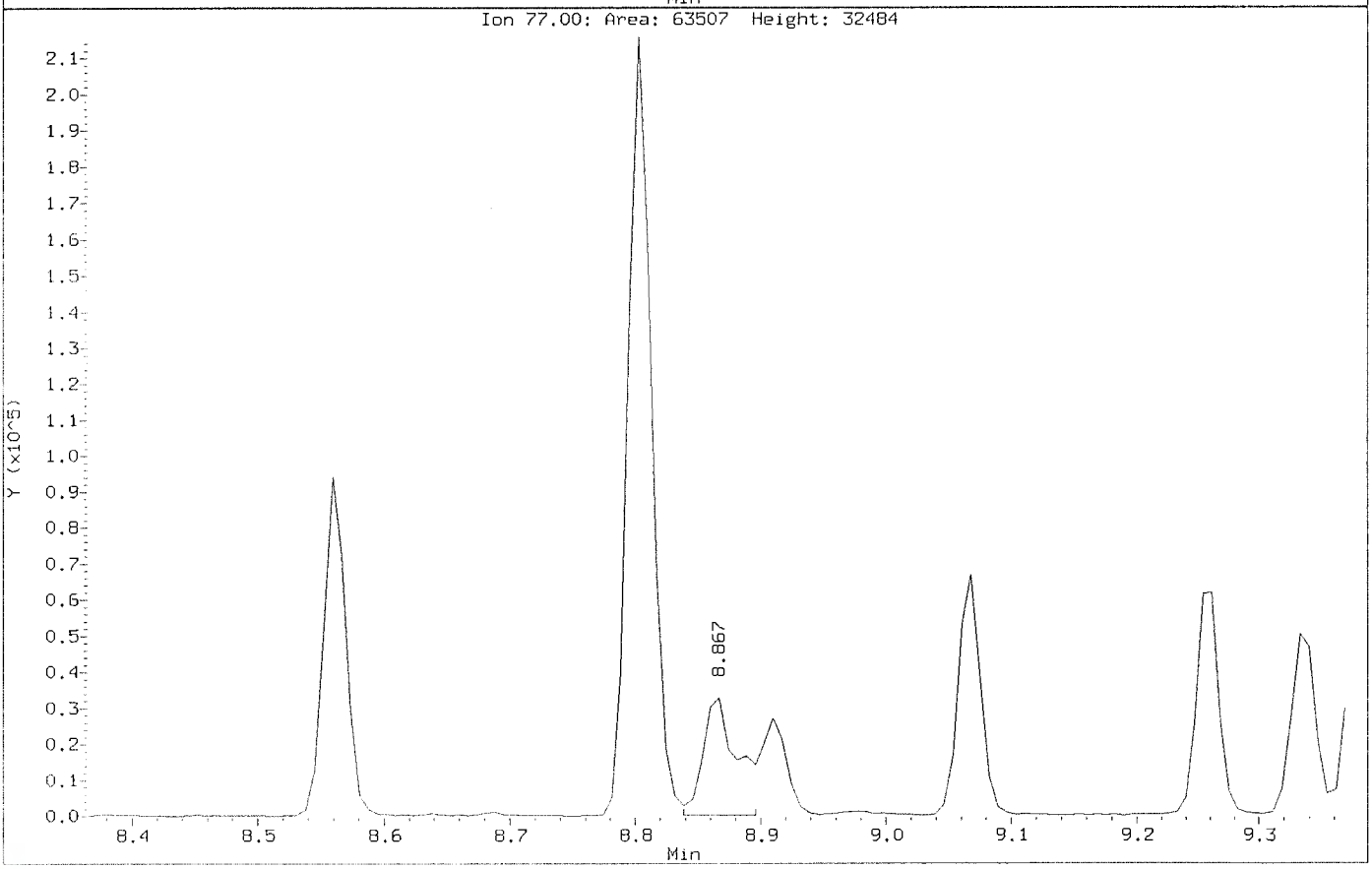
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CAS Number: 96-18-4



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Injection Date: 19-MAY-2021 21:45
Instrument: voa6.i
Client Sample ID: CCV-END

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4

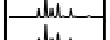




HS21050697 Wet Chem Raw Data (9056_anions_W)

ALS WO# HS21050697

Sequence: 051421
Last Update Operator: alshs.nouser

CD	Name	Comment	Type	Position	Dilution	Level	Instrument Method	Processing Method
	STD1		Calibration	BB1	1.00	1	Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	STD2		Calibration	BB2	1.00	2	Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	STD3		Calibration	BB3	1.00	3	Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	STD4		Calibration	BB4	1.00	4	Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	STD5		Calibration	BB5	1.00	5	Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	STD6		Calibration	BB6	1.00	6	Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	ICV		Unknown	BB7	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	ICB		Unknown	BB8	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	CCV		Unknown	R1	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	CCB		Unknown	R4	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	MBLK-		Unknown	R5	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	LCS-		Unknown	R2	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	CCV1		Unknown	R3	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	CCB		Unknown	R8	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	CCV		Unknown	R1	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	CCB		Unknown	R4	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	HS21050697-01		Unknown	RC6	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	HS21050697-03		Unknown	RC7	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	HS21050697-03MS		Unknown	RC8	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	HS21050697-03MSD		Unknown	RD1	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	CCV1		Unknown	R3	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	CCB		Unknown	R8	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO

Sequence: 051421
Last Update Operator: alshs.nouser

CD	Name	Volume	Status	Inject Time
	STD1	5.0	Finished	5/5/2021 6:12:32 PM -05:00
	STD2	5.0	Finished	5/5/2021 6:20:08 PM -05:00
	STD3	5.0	Finished	5/5/2021 6:27:33 PM -05:00
	STD4	5.0	Finished	5/5/2021 6:34:56 PM -05:00
	STD5	5.0	Finished	5/5/2021 6:42:20 PM -05:00
	STD6	5.0	Finished	5/5/2021 6:49:43 PM -05:00
	ICV	5.0	Finished	5/5/2021 6:57:07 PM -05:00
	ICB	5.0	Finished	5/5/2021 7:14:09 PM -05:00
	CCV	5.0	Finished	5/14/2021 9:48:52 AM -05:00
	CCB	5.0	Finished	5/14/2021 9:56:16 AM -05:00
	MBLK-	5.0	Finished	5/14/2021 10:18:45 AM -05:00
	LCS-	5.0	Finished	5/14/2021 10:26:09 AM -05:00
	CCV1	5.0	Finished	5/14/2021 11:43:42 AM -05:00
	CCB	5.0	Finished	5/14/2021 11:51:05 AM -05:00
	CCV	5.0	Finished	5/14/2021 1:06:18 PM -05:00
	CCB	5.0	Finished	5/14/2021 1:13:42 PM -05:00
	HS21050697-01	5.0	Finished	5/14/2021 2:38:48 PM -05:00
	HS21050697-03	5.0	Finished	5/14/2021 2:46:11 PM -05:00
	HS21050697-03MS	5.0	Finished	5/14/2021 2:53:34 PM -05:00
	HS21050697-03MSD	5.0	Finished	5/14/2021 3:00:57 PM -05:00
	CCV1	5.0	Finished	5/14/2021 3:08:21 PM -05:00
	CCB	5.0	Finished	5/14/2021 3:15:44 PM -05:00

Sequence: 051421
Injection #6: STD6

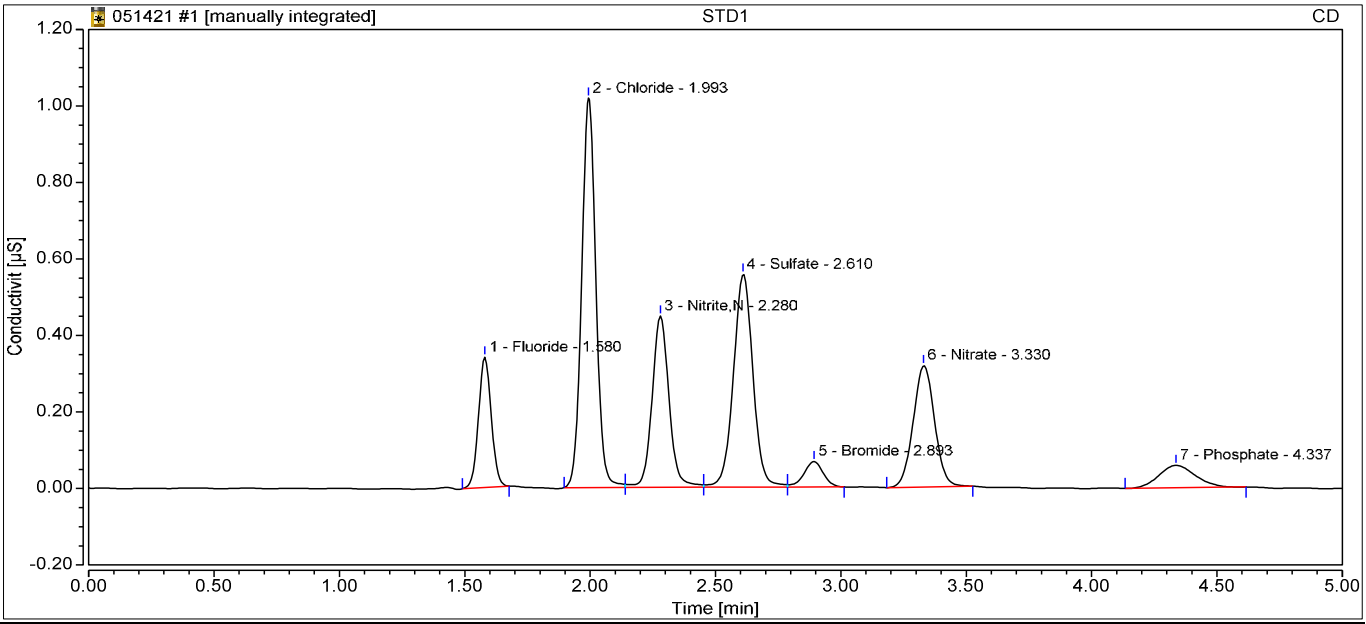
Calibration

Peak No.	Peak Name	Cal.Type	Eval.Type	Number of Points	Rel.Std.Dev. %	Coeff.of Determination	C0 (Offset)	C1 (Slope)	C2 (Curve)
1	*Fluoride*	*Lin, WithOffset, 1/*	*Area*	*6*	*26.4373*	*0.99601*	*0.0037*	*0.2049*	*0.0000*
2	Chloride	Lin, WithOffset, 1/	Area	6	0.6871	1.00000	-0.0005	0.1344	0.0000
3	Nitrite,N	Lin, WithOffset, 1/	Area	6	17.7767	0.99788	0.0149	0.2622	0.0000
4	Sulfate	Lin, WithOffset, 1/	Area	6	1.7139	0.99998	0.0010	0.0990	0.0000
5	Bromide	Lin, WithOffset, 1/	Area	6	3.9005	0.99992	0.0004	0.0565	0.0000
6	Nitrate	Lin, WithOffset, 1/	Area	6	4.7579	0.99988	-0.0013	0.3350	0.0000
7	Phosphate	Lin, WithOffset, 1/	Area	6	7.9708	0.99971	-0.0045	0.1295	0.0000
n.a.	Chlorate	Lin, WithOffset, 1/	Area	0	n.a.	n.a.	n.a.	n.a.	n.a.
Maximum					**26.4373**	1.00000			
Minimum					0.6871	**0.99601**			

1 STD1

Sample Name:	**STD1**	*Injection Volume:*	**5.00**
Vial Number:	**BB1**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/05/2021 18:12**	*Sample Weight:*	**1.0000**

Run Time:



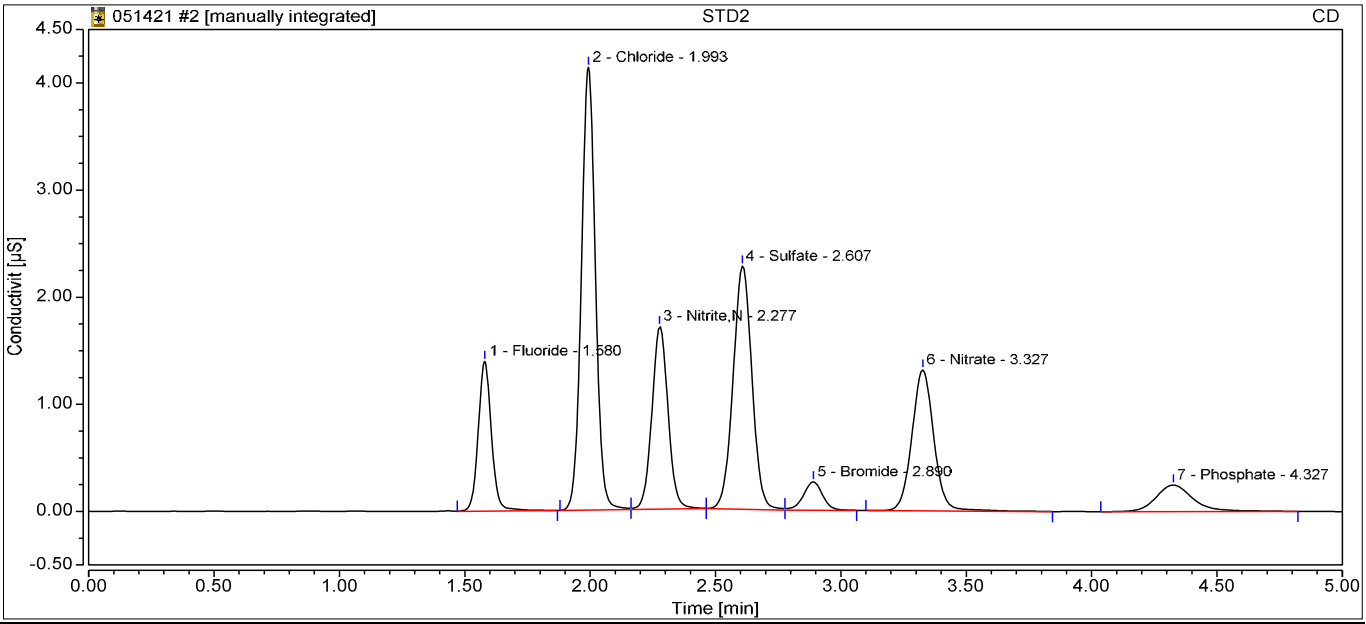
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB*	0.020	0.0804	0.0804	1.0000
2	1.99	Chloride	BM *	0.067	0.4989	0.4989	1.0000
3	2.28	Nitrite,N	M *	0.035	0.0767	0.0767	1.0000
4	2.61	Sulfate	M *	0.050	0.4965	0.4965	1.0000
5	2.89	Bromide	MB*	0.006	0.0985	0.0985	1.0000
6	3.33	Nitrate	BMB*	0.031	0.0974	0.0974	1.0000
7	4.34	Phosphate	BMB*	0.010	0.1110	0.1110	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.219**		**1.46**	

2 STD2

Sample Name:	**STD2**	*Injection Volume:*	**5.00**
Vial Number:	**BB2**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/05/2021 18:20**	*Sample Weight:*	**1.0000**

Run Time:



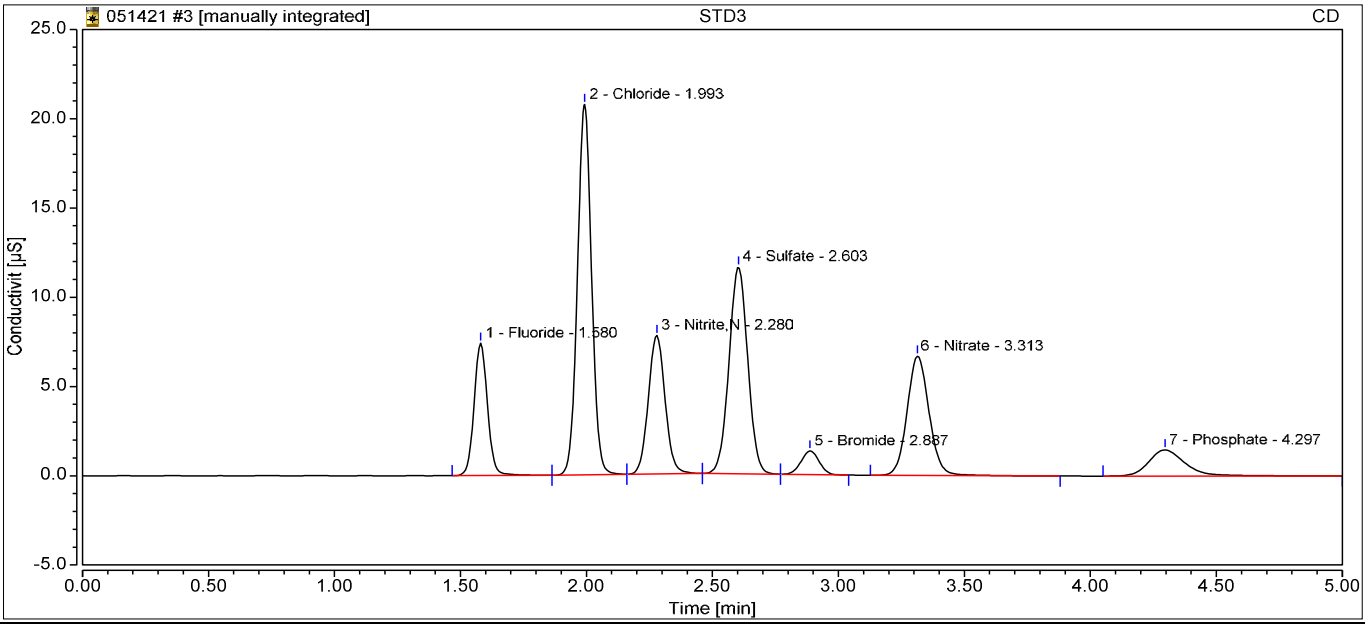
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.085	0.3985	0.3985	1.0000
2	1.99	Chloride	BM *	0.268	1.9973	1.9973	1.0000
3	2.28	Nitrite,N	Mb*	0.127	0.4273	0.4273	1.0000
4	2.61	Sulfate	bM *	0.198	1.9879	1.9879	1.0000
5	2.89	Bromide	MB*	0.024	0.4134	0.4134	1.0000
6	3.33	Nitrate	BMB	0.133	0.4017	0.4017	1.0000
7	4.33	Phosphate	BMB	0.043	0.3676	0.3676	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.878**		**5.99**	

3 STD3

Sample Name:	**STD3**	*Injection Volume:*	**5.00**
Vial Number:	**BB3**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/05/2021 18:27**	*Sample Weight:*	**1.0000**

Run Time:



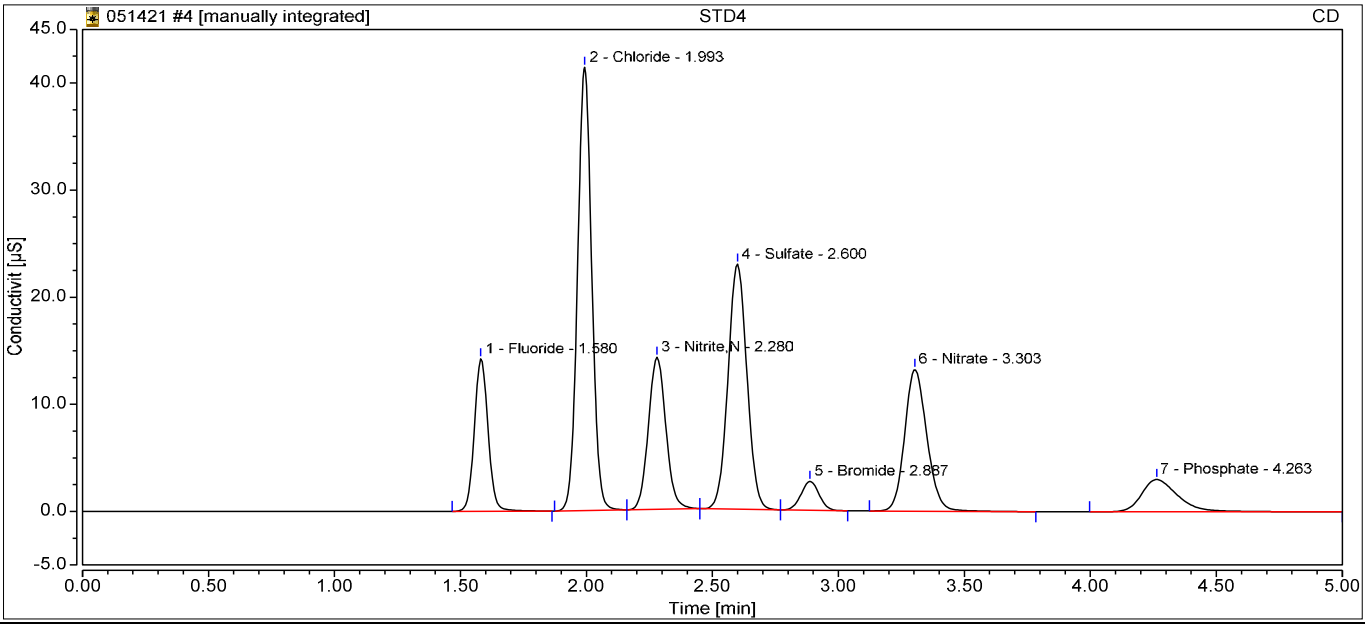
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMb*	0.459	2.2233	2.2233	1.0000
2	1.99	Chloride	bM *	1.346	10.0167	10.0167	1.0000
3	2.28	Nitrite,N	Mb*	0.600	2.2303	2.2303	1.0000
4	2.60	Sulfate	bM *	1.000	10.0941	10.0941	1.0000
5	2.89	Bromide	MB*	0.112	1.9684	1.9684	1.0000
6	3.31	Nitrate	BMB	0.675	2.0188	2.0188	1.0000
7	4.30	Phosphate	BMB	0.247	1.9396	1.9396	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**4.438**		**30.49**	

4 STD4

Sample Name:	**STD4**	*Injection Volume:*	**5.00**
Vial Number:	**BB4**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/05/2021 18:34**	*Sample Weight:*	**1.0000**

Run Time:



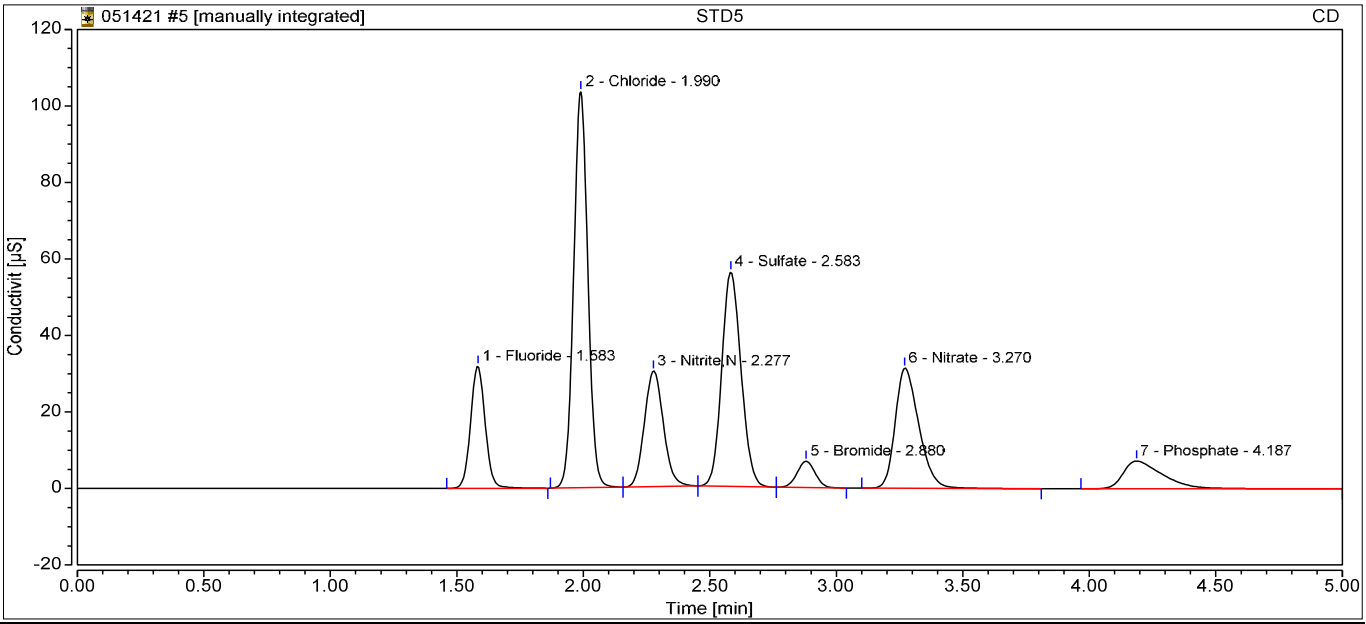
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.903	4.3869	4.3869	1.0000
2	1.99	Chloride	BM *	2.691	20.0267	20.0267	1.0000
3	2.28	Nitrite,N	Mb*	1.144	4.3066	4.3066	1.0000
4	2.60	Sulfate	bMB*	1.988	20.0727	20.0727	1.0000
5	2.89	Bromide	BMB	0.224	3.9555	3.9555	1.0000
6	3.30	Nitrate	BMB	1.350	4.0333	4.0333	1.0000
7	4.26	Phosphate	BMB	0.506	3.9429	3.9429	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**8.805**		**60.72**	

5 STD5

Sample Name:	**STD5**	*Injection Volume:*	**5.00**
Vial Number:	**BB5**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/05/2021 18:42**	*Sample Weight:*	**1.0000**

Run Time:



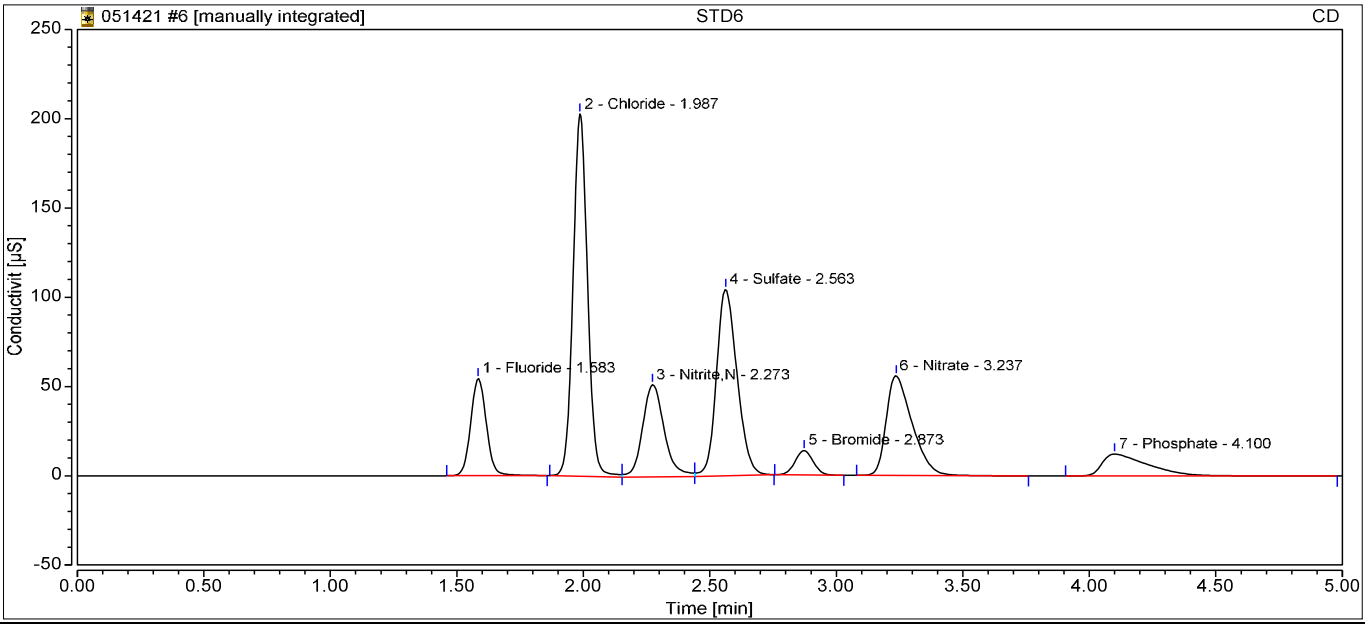
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	2.140	10.4243	10.4243	1.0000
2	1.99	Chloride	BMb*	6.732	50.0934	50.0934	1.0000
3	2.28	Nitrite,N	bMb*	2.637	9.9988	9.9988	1.0000
4	2.58	Sulfate	bMB*	4.966	50.1541	50.1541	1.0000
5	2.88	Bromide	BMB	0.571	10.1112	10.1112	1.0000
6	3.27	Nitrate	BMB	3.393	10.1328	10.1328	1.0000
7	4.19	Phosphate	BMB	1.313	10.1773	10.1773	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**21.751**		**151.09**	

6 STD6

Sample Name:	**STD6**	*Injection Volume:*	**5.00**
Vial Number:	**BB6**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/05/2021 18:49**	*Sample Weight:*	**1.0000**

Run Time:



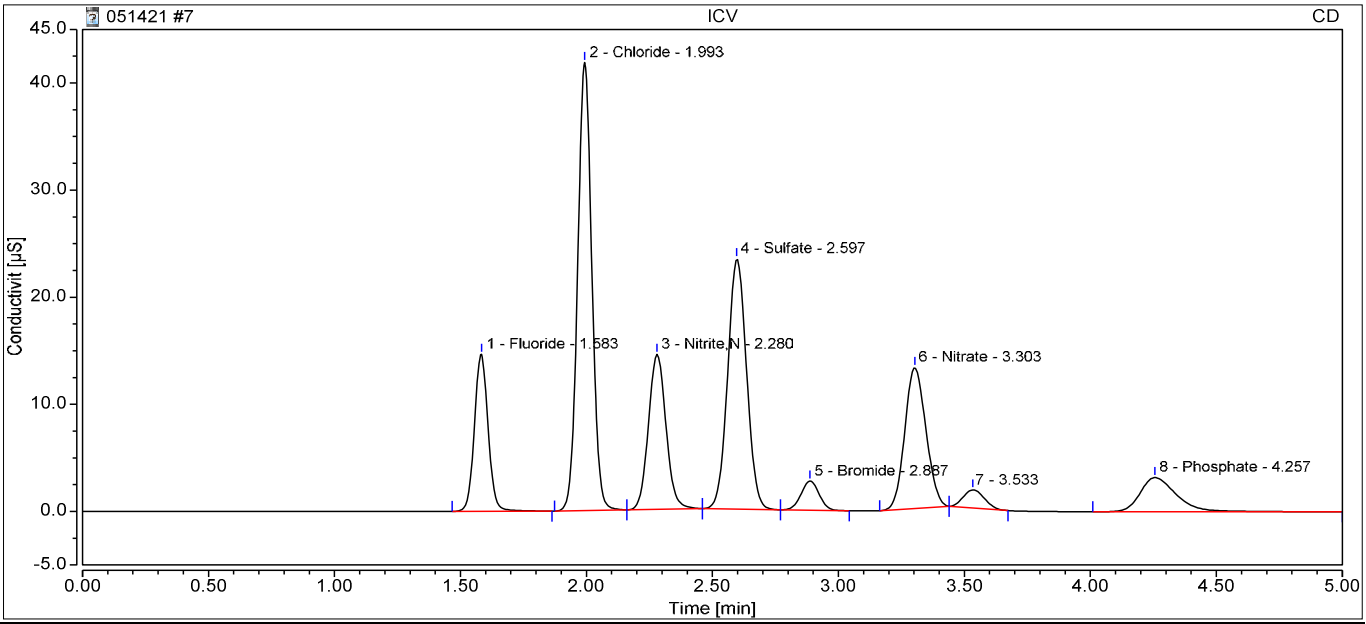
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	3.894	18.9867	18.9867	1.0000
2	1.99	Chloride	BM *	13.421	99.8669	99.8669	1.0000
3	2.27	Nitrite,N	M *	5.117	19.4604	19.4604	1.0000
4	2.56	Sulfate	MB*	9.870	99.6947	99.6947	1.0000
5	2.87	Bromide	BMB	1.127	19.9531	19.9531	1.0000
6	3.24	Nitrate	BMB	6.637	19.8160	19.8160	1.0000
7	4.10	Phosphate	BMB	2.580	19.9616	19.9616	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**42.646**		**297.74**	

7 ICV

Sample Name:	**ICV**	*Injection Volume:*	**5.00**
Vial Number:	**BB7**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/05/2021 18:57**	*Sample Weight:*	**1.0000**

Run Time:



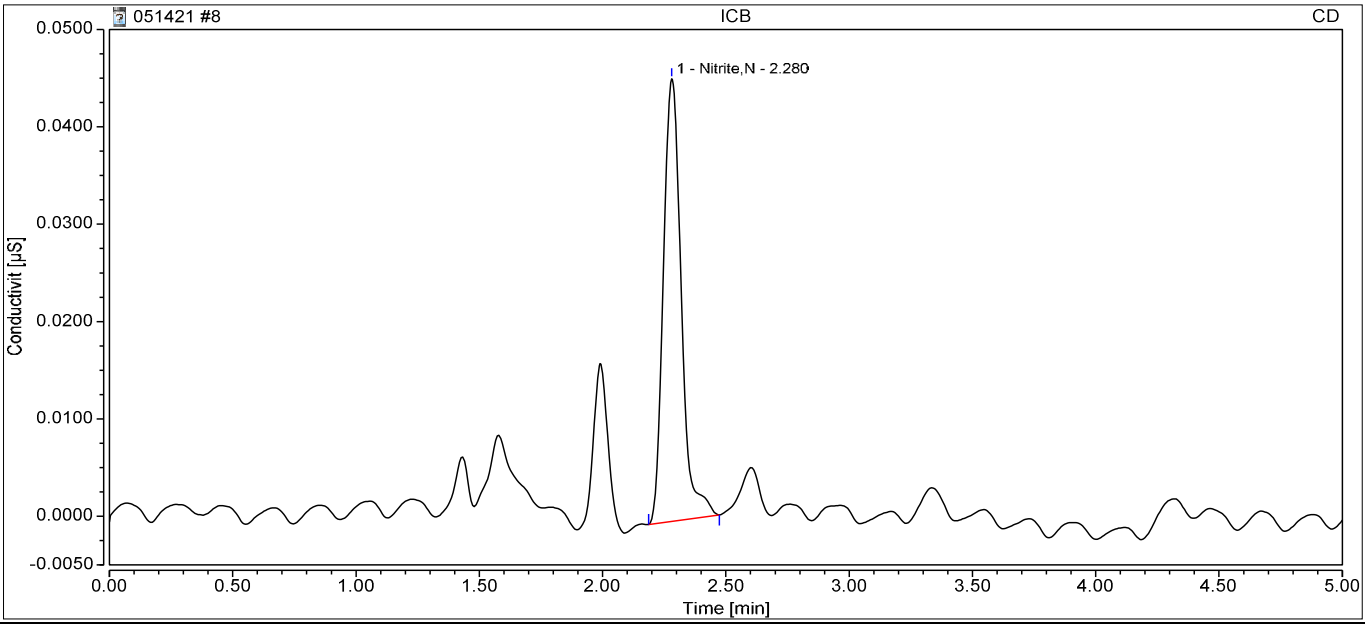
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.924	4.4936	4.4936	1.0000
2	1.99	Chloride	BMB	2.715	20.2077	20.2077	1.0000
3	2.28	Nitrite,N	BMB	1.168	4.3995	4.3995	1.0000
4	2.60	Sulfate	BMB	2.028	20.4771	20.4771	1.0000
5	2.89	Bromide	BMB	0.226	3.9960	3.9960	1.0000
6	3.30	Nitrate	BMB	1.281	3.8265	3.8265	1.0000
8	4.26	Phosphate	BMB	0.533	4.1549	4.1549	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**8.876**		**61.56**	

8 ICB

Sample Name:	**ICB**	*Injection Volume:*	**5.00**
Vial Number:	**BB8**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/05/2021 19:14**	*Sample Weight:*	**1.0000**

Run Time:

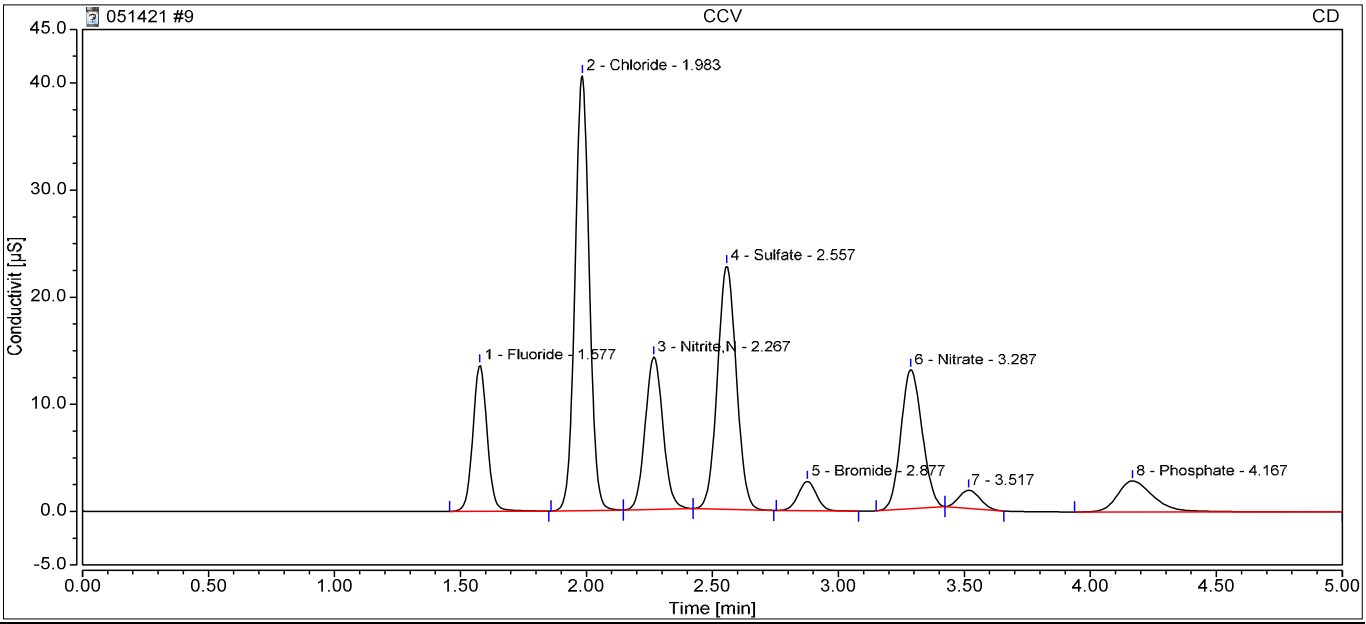


Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
1	2.28	Nitrite,N	BMB	0.004	n.a.	n.a.	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.004**		**0.00**	

9 CCV			
Sample Name:	**CCV**	*Injection Volume:*	**5.00**
Vial Number:	**R1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/14/2021 09:48**	*Sample Weight:*	**1.0000**

Run Time:



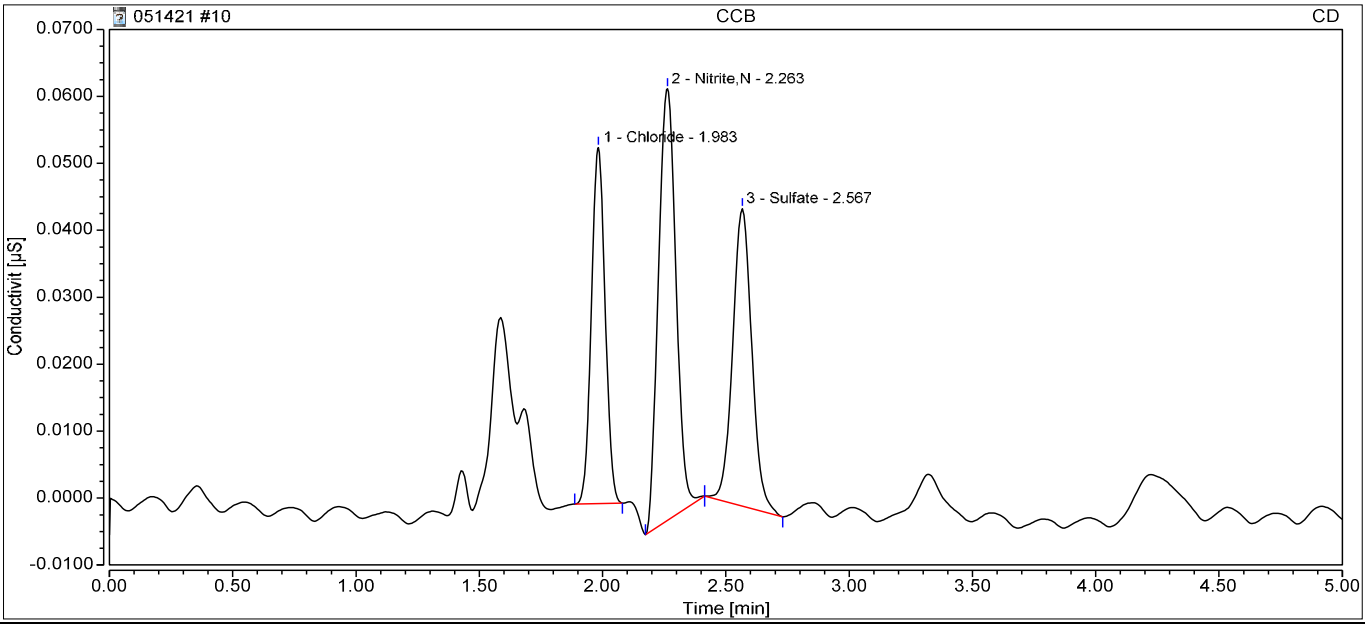
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.897	4.3578	4.3578	1.0000
2	1.98	Chloride	BMB	2.674	19.9042	19.9042	1.0000
3	2.27	Nitrite,N	BMB	1.165	4.3878	4.3878	1.0000
4	2.56	Sulfate	BMB	1.976	19.9539	19.9539	1.0000
5	2.88	Bromide	BMB	0.230	4.0678	4.0678	1.0000
6	3.29	Nitrate	BMB	1.269	3.7909	3.7909	1.0000
8	4.17	Phosphate	BMB	0.480	3.7446	3.7446	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**8.692**		**60.21**	

10 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R4**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/14/2021 09:56**	*Sample Weight:*	**1.0000**

Run Time:



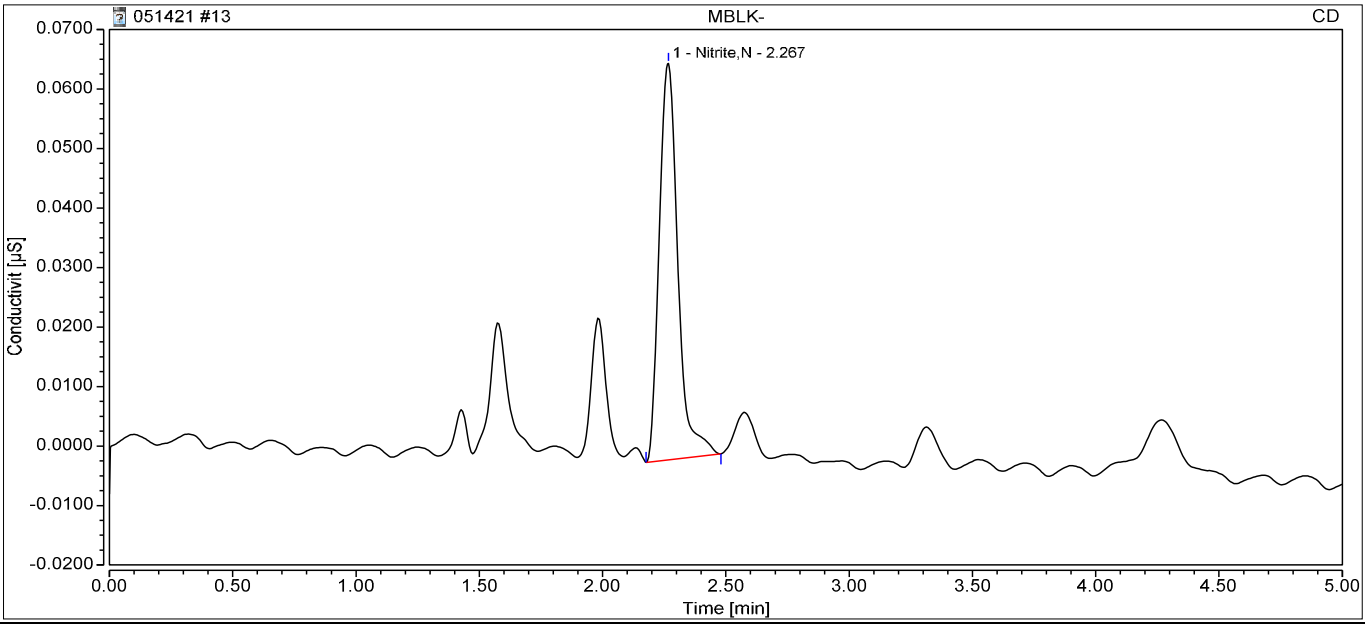
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
1	1.98	Chloride	BMB	0.003	0.0290	0.0290	1.0000
2	2.26	Nitrite,N	BMB	0.005	n.a.	n.a.	1.0000
3	2.57	Sulfate	BMB	0.004	0.0301	0.0301	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.013**		**0.06**	

13 MBLK-

Sample Name:	**MBLK-**	*Injection Volume:*	**5.00**
Vial Number:	**R5**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/14/2021 10:18**	*Sample Weight:*	**1.0000**

Run Time:



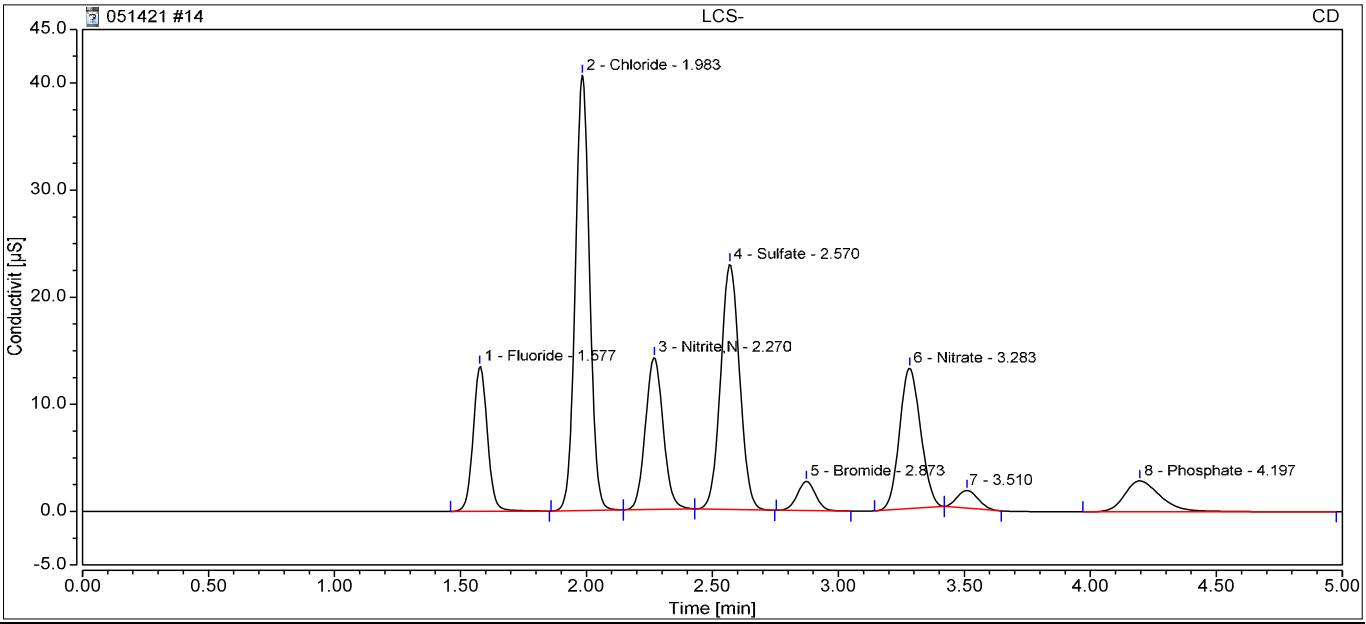
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
1	2.27	Nitrite,N	BMB	0.006	n.a.	n.a.	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.006**		**0.00**	

14 LCS-

Sample Name:	**LCS-**	*Injection Volume:*	**5.00**
Vial Number:	**R2**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/14/2021 10:26**	*Sample Weight:*	**1.0000**

Run Time:



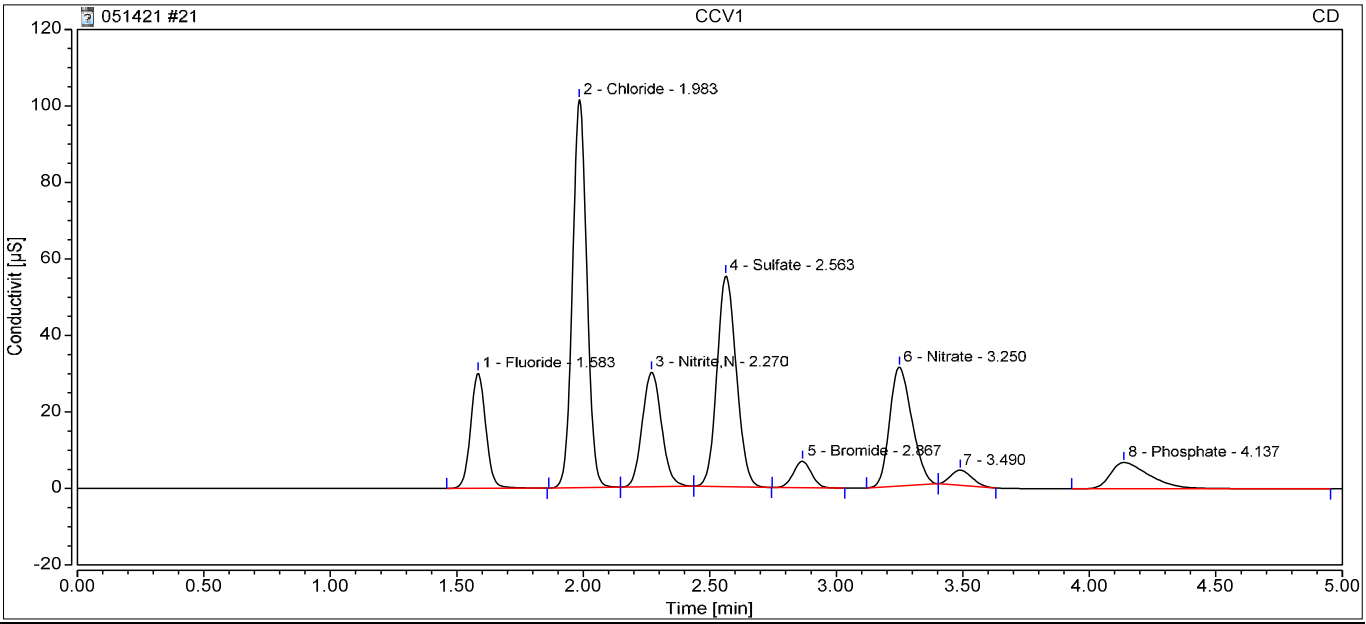
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.889	4.3215	4.3215	1.0000
2	1.98	Chloride	BMB	2.672	19.8824	19.8824	1.0000
3	2.27	Nitrite,N	BMB	1.159	4.3632	4.3632	1.0000
4	2.57	Sulfate	BMB	1.995	20.1397	20.1397	1.0000
5	2.87	Bromide	BMB	0.228	4.0270	4.0270	1.0000
6	3.28	Nitrate	BMB	1.275	3.8083	3.8083	1.0000
8	4.20	Phosphate	BMB	0.482	3.7616	3.7616	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**8.699**		**60.30**	

21 CCV1

Sample Name:	**CCV1**	*Injection Volume:*	**5.00**
Vial Number:	**R3**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/14/2021 11:43**	*Sample Weight:*	**1.0000**

Run Time:



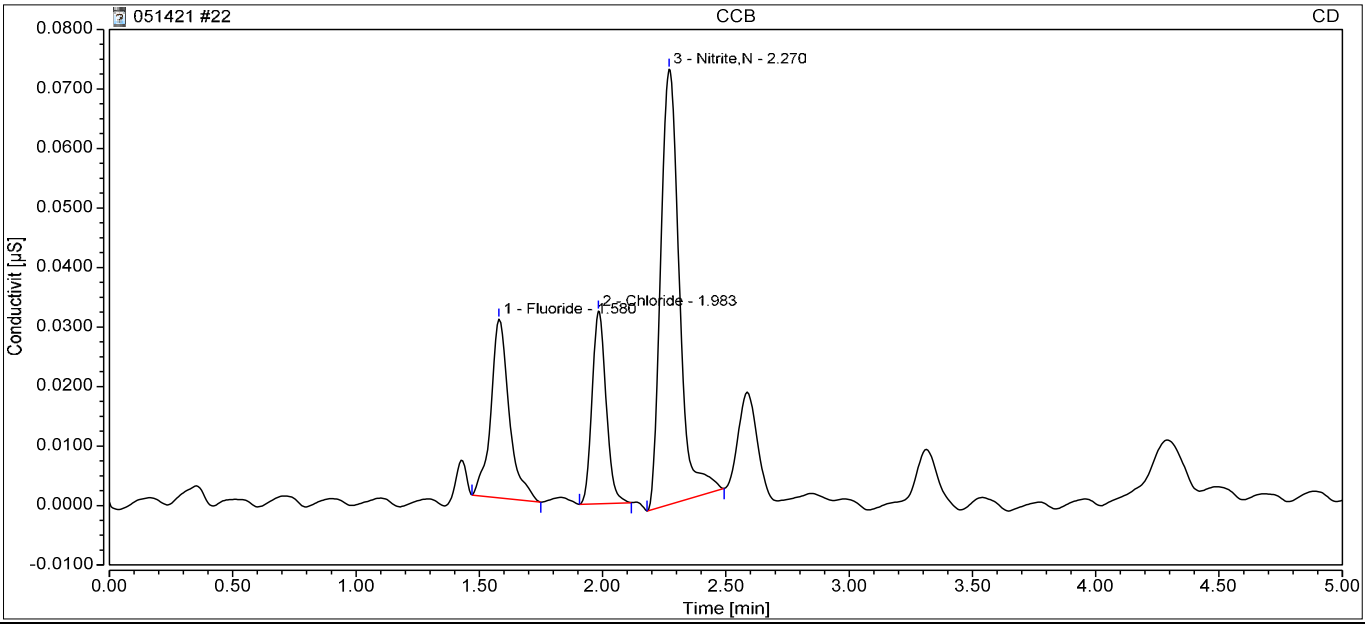
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	2.089	10.1775	10.1775	1.0000
2	1.98	Chloride	BMB	6.680	49.7063	49.7063	1.0000
3	2.27	Nitrite,N	BMB	2.642	10.0207	10.0207	1.0000
4	2.56	Sulfate	BMB	4.887	49.3569	49.3569	1.0000
5	2.87	Bromide	BMB	0.574	10.1657	10.1657	1.0000
6	3.25	Nitrate	BMB	3.167	9.4569	9.4569	1.0000
8	4.14	Phosphate	BMB	1.244	9.6437	9.6437	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**21.283**		**148.53**	

22 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R8**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/14/2021 11:51**	*Sample Weight:*	**1.0000**

Run Time:



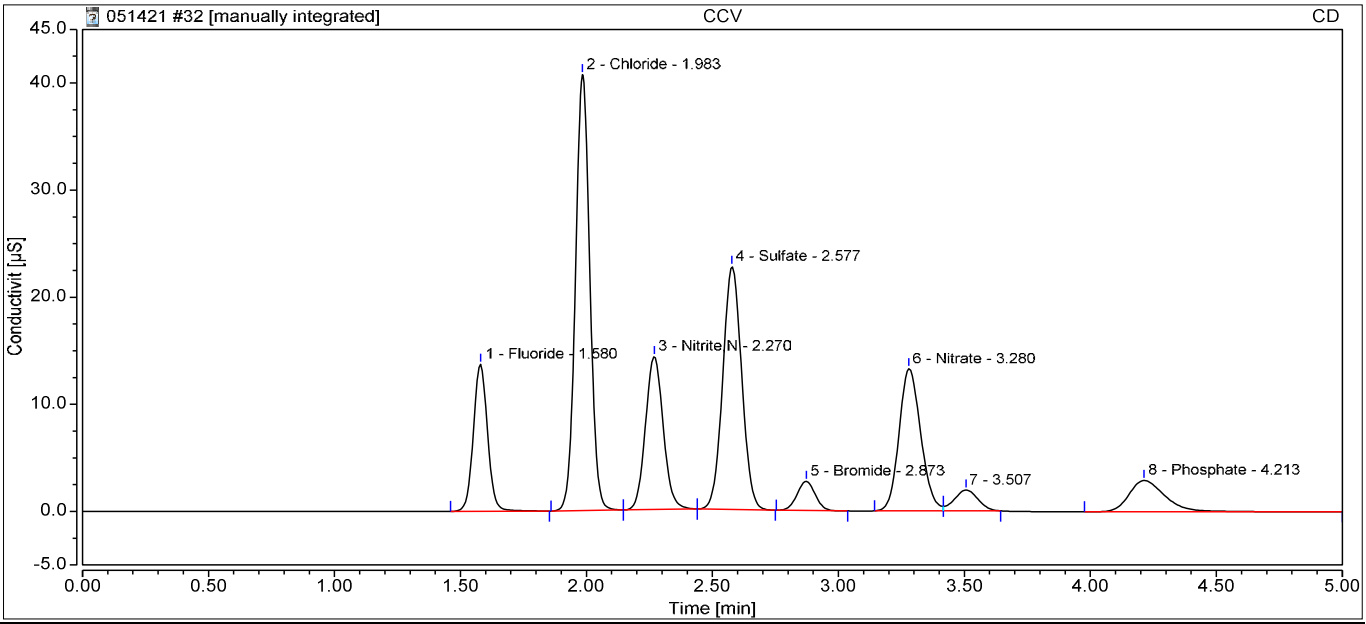
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.003	n.a.	n.a.	1.0000
2	1.98	Chloride	BMB	0.002	0.0194	0.0194	1.0000
3	2.27	Nitrite,N	BMB	0.006	n.a.	n.a.	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.011**		**0.02**	

32 CCV

Sample Name:	**CCV**	*Injection Volume:*	**5.00**
Vial Number:	**R1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/14/2021 13:06**	*Sample Weight:*	**1.0000**

Run Time:



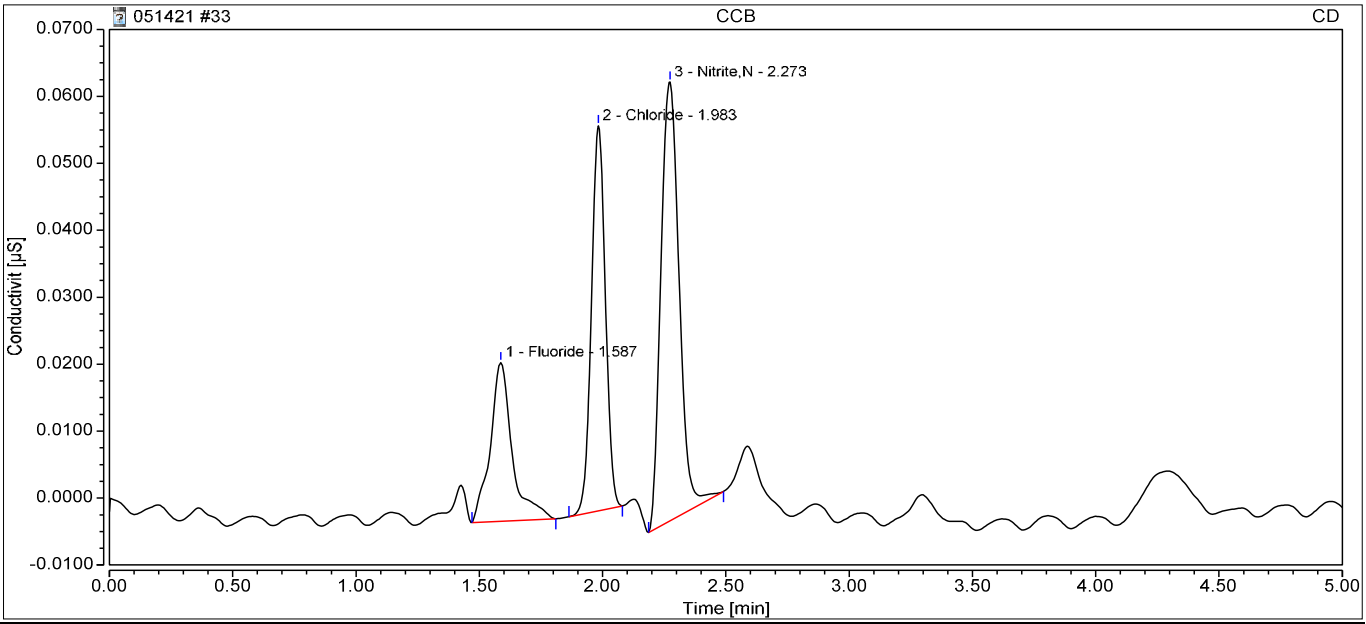
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.897	4.3609	4.3609	1.0000
2	1.98	Chloride	BMB	2.679	19.9366	19.9366	1.0000
3	2.27	Nitrite,N	BMB	1.170	4.4041	4.4041	1.0000
4	2.58	Sulfate	BMB	1.977	19.9638	19.9638	1.0000
5	2.87	Bromide	BMB	0.228	4.0259	4.0259	1.0000
6	3.28	Nitrate	BM *	1.323	3.9534	3.9534	1.0000
8	4.21	Phosphate	BMB	0.491	3.8238	3.8238	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**8.764**		**60.47**	

33 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R4**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/14/2021 13:13**	*Sample Weight:*	**1.0000**

Run Time:



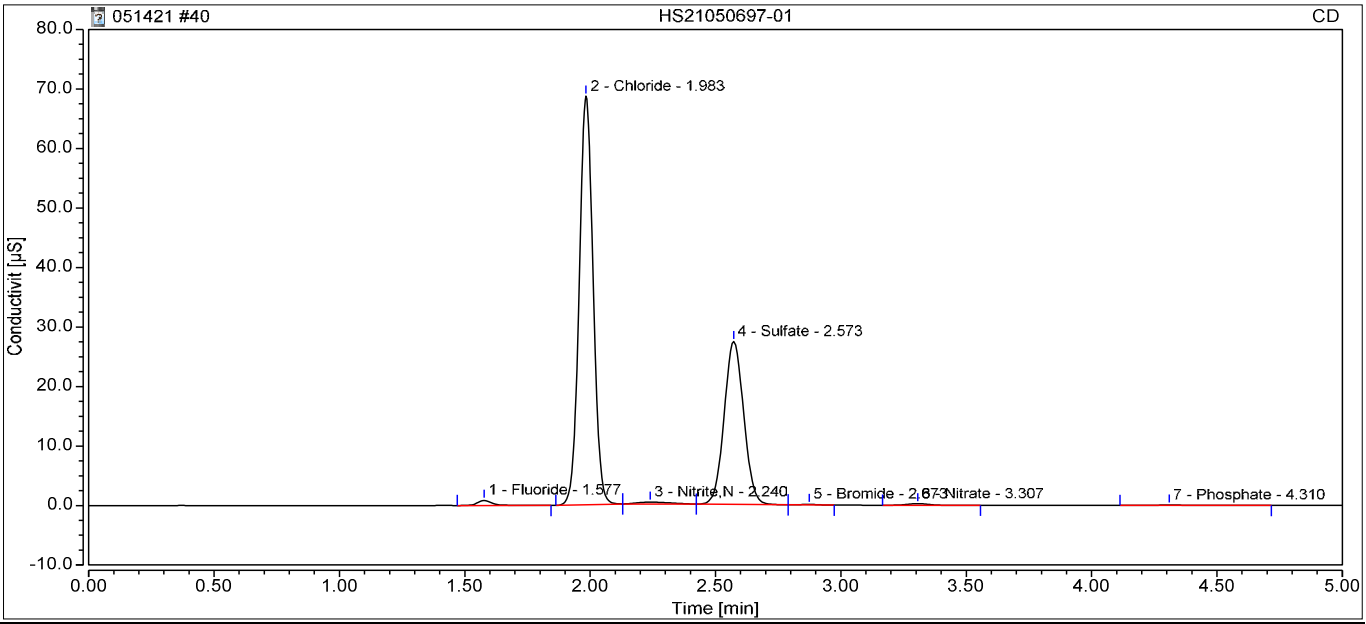
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.59	Fluoride	BMB	0.002	n.a.	n.a.	1.0000
2	1.98	Chloride	BMB	0.004	0.0315	0.0315	1.0000
3	2.27	Nitrite,N	BMB	0.006	n.a.	n.a.	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.012**		**0.03**	

40 HS21050697-01

Sample Name:	**HS21050697-01**	*Injection Volume:*	**5.00**
Vial Number:	**RC6**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/14/2021 14:38**	*Sample Weight:*	**1.0000**

Run Time:



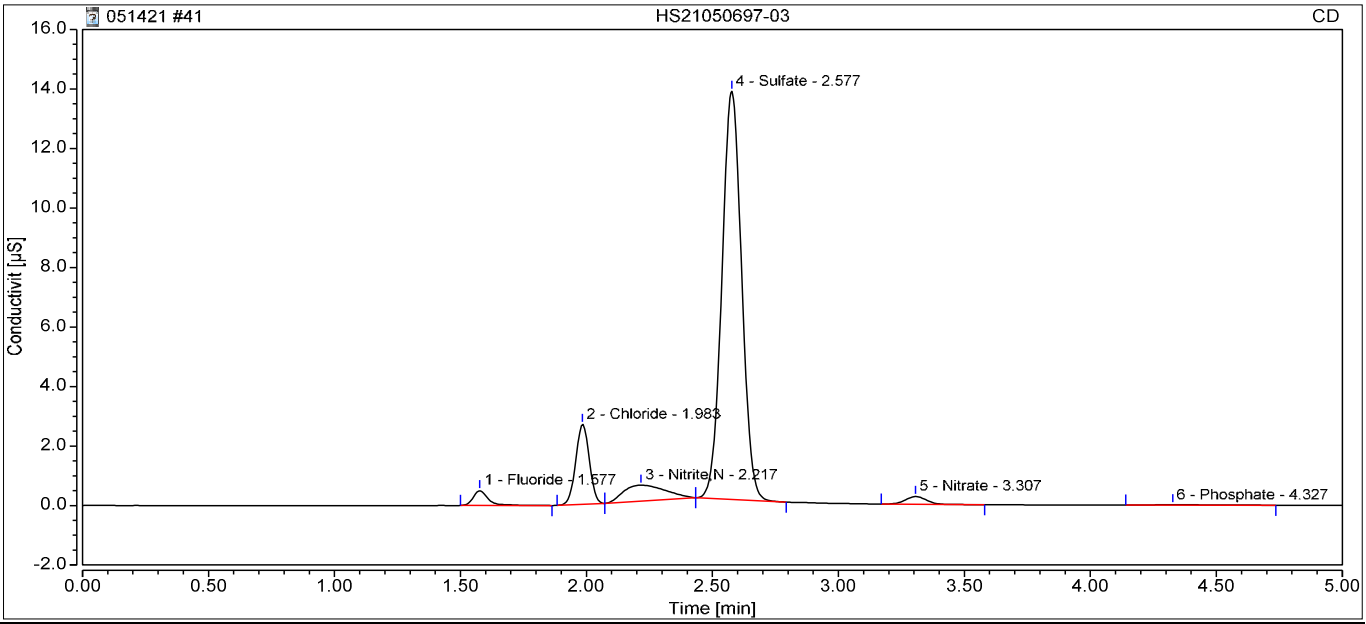
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.059	0.2700	0.2700	1.0000
2	1.98	Chloride	BMB	4.418	32.8782	32.8782	1.0000
3	2.24	Nitrite,N	BMB	0.048	0.1247	0.1247	1.0000
4	2.57	Sulfate	BMB	2.477	25.0145	25.0145	1.0000
5	2.87	Bromide	BMB	0.007	0.1108	0.1108	1.0000
6	3.31	Nitrate	BMB	0.026	0.0817	0.0817	1.0000
7	4.31	Phosphate	BMB	0.010	0.1158	0.1158	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**7.045**		**58.60**	

41 HS21050697-03

Sample Name:	**HS21050697-03**	*Injection Volume:*	**5.00**
Vial Number:	**RC7**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/14/2021 14:46**	*Sample Weight:*	**1.0000**

Run Time:



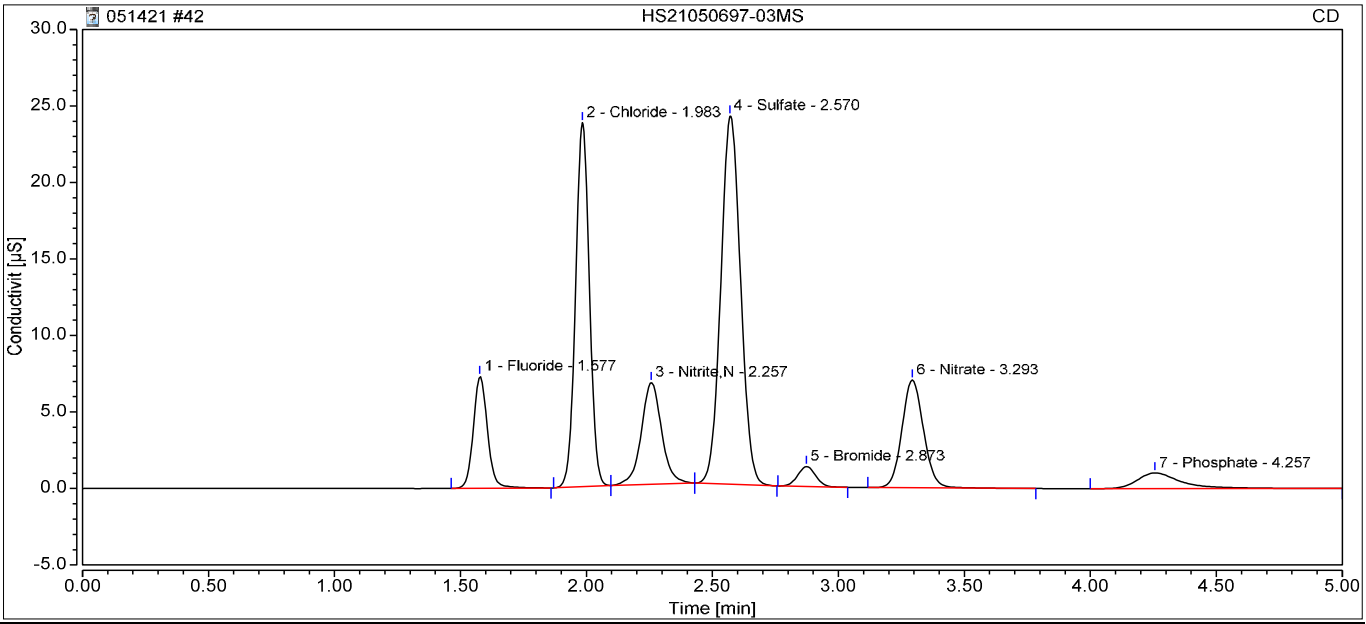
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.034	0.1500	0.1500	1.0000
2	1.98	Chloride	BMB	0.167	1.2497	1.2497	1.0000
3	2.22	Nitrite,N	BMB	0.102	0.3324	0.3324	1.0000
4	2.58	Sulfate	BMB	1.245	12.5649	12.5649	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
5	3.31	Nitrate	BMB	0.025	0.0796	0.0796	1.0000
6	4.33	Phosphate	BMB	0.004	0.0637	0.0637	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**1.578**		**14.44**	

42 HS21050697-03MS

Sample Name:	**HS21050697-03MS**	*Injection Volume:*	**5.00**
Vial Number:	**RC8**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/14/2021 14:53**	*Sample Weight:*	**1.0000**

Run Time:



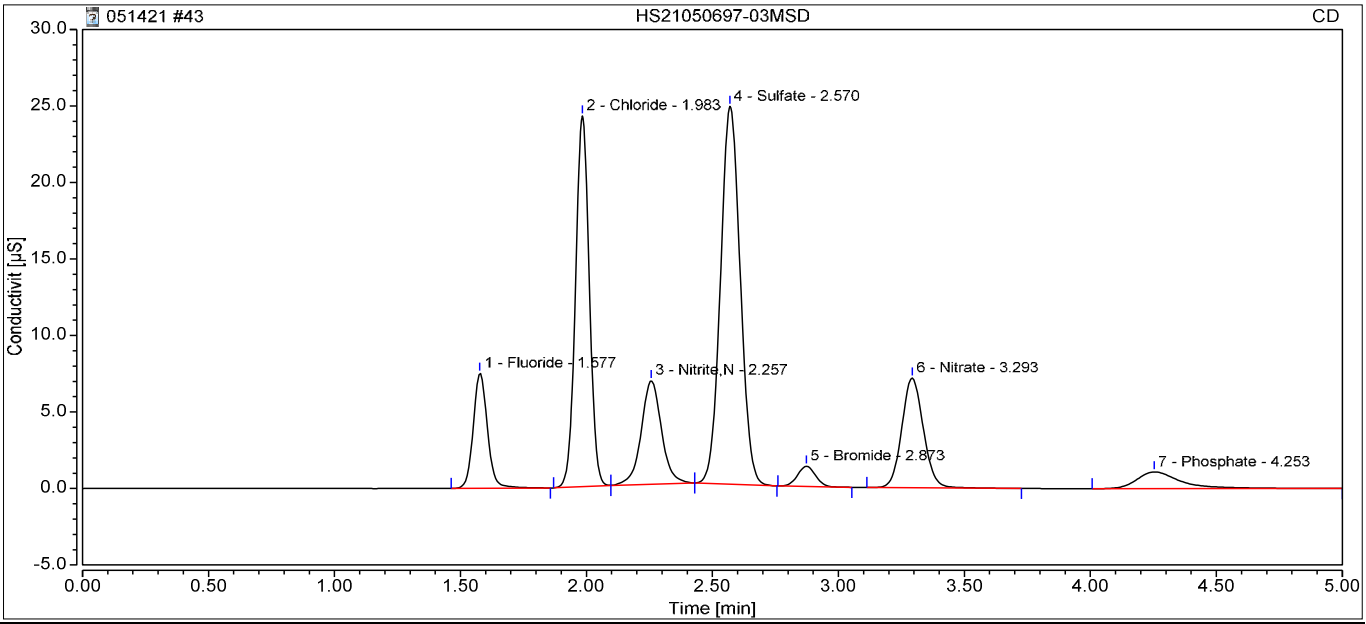
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.478	2.3167	2.3167	1.0000
2	1.98	Chloride	BMB	1.509	11.2308	11.2308	1.0000
3	2.26	Nitrite,N	BMB	0.621	2.3125	2.3125	1.0000
4	2.57	Sulfate	BMB	2.187	22.0862	22.0862	1.0000
5	2.87	Bromide	BMB	0.108	1.8993	1.8993	1.0000
6	3.29	Nitrate	BMB	0.700	2.0920	2.0920	1.0000
7	4.26	Phosphate	BMB	0.209	1.6517	1.6517	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**5.812**		**43.59**	

43 HS21050697-03MSD

Sample Name:	**HS21050697-03MSD**	*Injection Volume:*	**5.00**
Vial Number:	**RD1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/14/2021 15:00**	*Sample Weight:*	**1.0000**

Run Time:



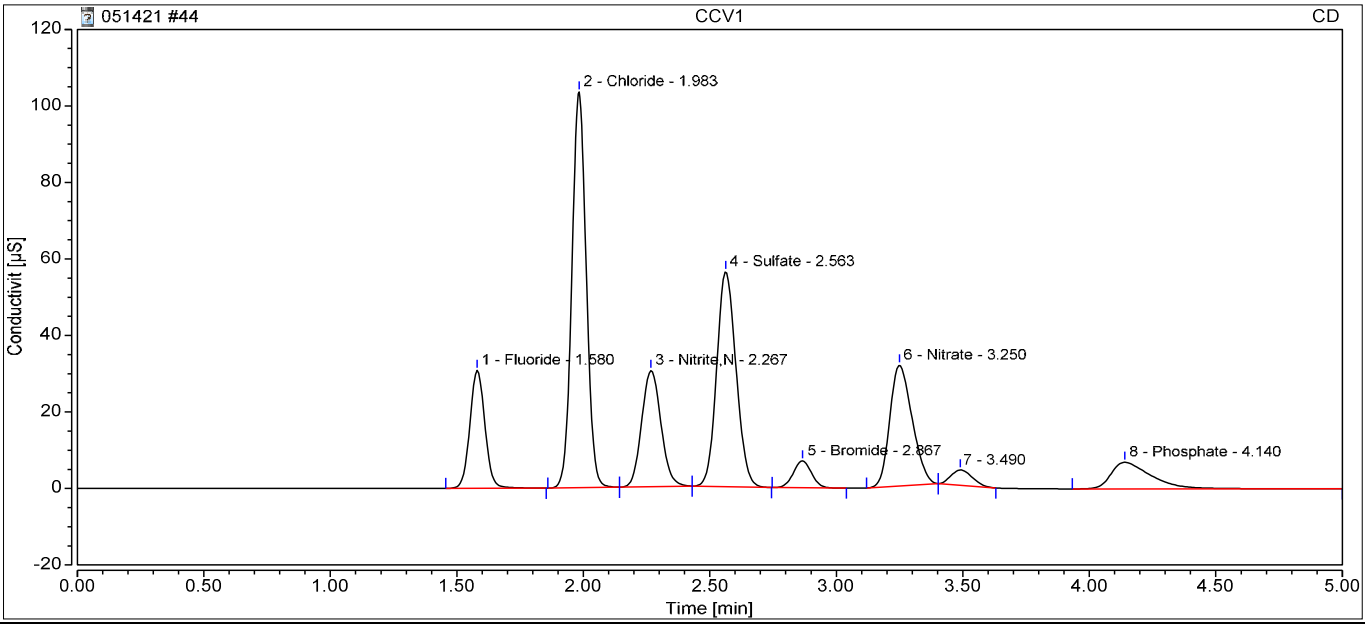
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.494	2.3909	2.3909	1.0000
2	1.98	Chloride	BMB	1.533	11.4106	11.4106	1.0000
3	2.26	Nitrite,N	BMB	0.630	2.3475	2.3475	1.0000
4	2.57	Sulfate	BMB	2.241	22.6312	22.6312	1.0000
5	2.87	Bromide	BMB	0.110	1.9319	1.9319	1.0000
6	3.29	Nitrate	BMB	0.712	2.1291	2.1291	1.0000
7	4.25	Phosphate	BMB	0.222	1.7505	1.7505	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**5.942**		**44.59**	

44 CCV1

Sample Name:	**CCV1**	*Injection Volume:*	**5.00**
Vial Number:	**R3**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/14/2021 15:08**	*Sample Weight:*	**1.0000**

Run Time:



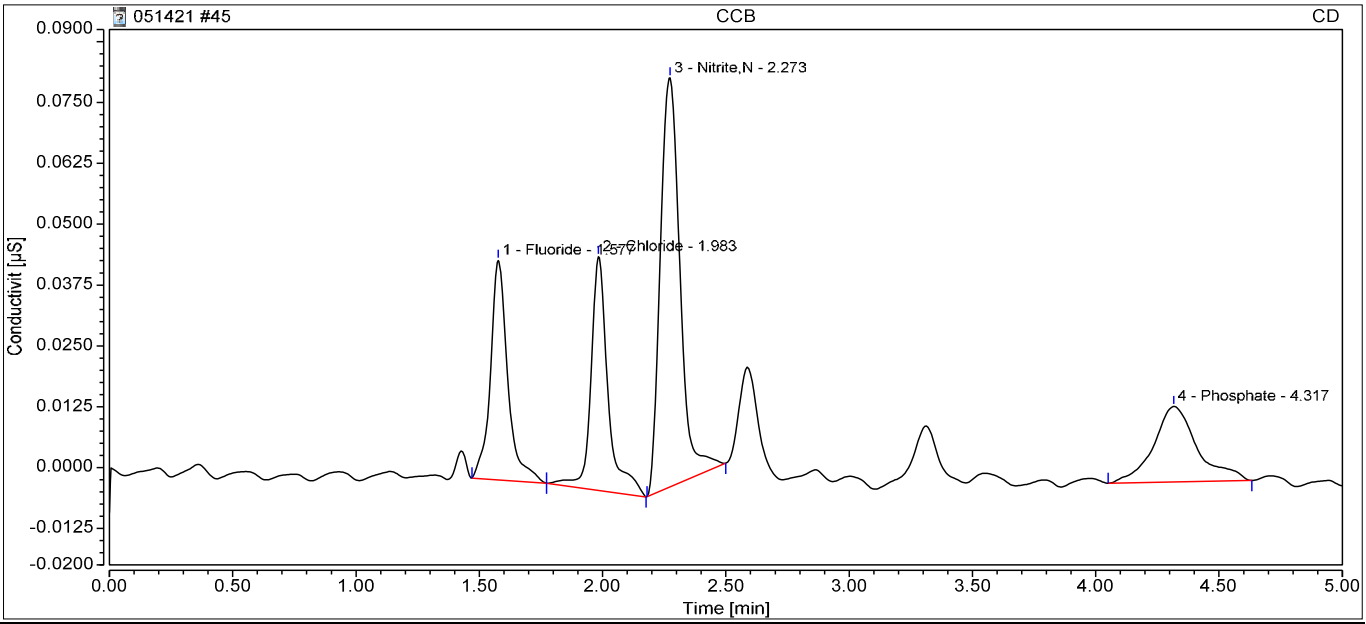
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	2.137	10.4122	10.4122	1.0000
2	1.98	Chloride	BMB	6.800	50.6041	50.6041	1.0000
3	2.27	Nitrite,N	BMB	2.688	10.1940	10.1940	1.0000
4	2.56	Sulfate	BMB	4.996	50.4642	50.4642	1.0000
5	2.87	Bromide	BMB	0.585	10.3505	10.3505	1.0000
6	3.25	Nitrate	BMB	3.234	9.6564	9.6564	1.0000
8	4.14	Phosphate	BMB	1.280	9.9244	9.9244	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**21.721**		**151.61**	

45 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R8**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/14/2021 15:15**	*Sample Weight:*	**1.0000**

Run Time:



Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.004	n.a.	n.a.	1.0000
2	1.98	Chloride	BMB	0.004	0.0322	0.0322	1.0000
3	2.27	Nitrite,N	BMB	0.008	n.a.	n.a.	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
4	4.32	Phosphate	BMB	0.003	0.0593	0.0593	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.019**		**0.09**	

HS21050697 Wet Chem Raw Data (TOC_W 5310B)

ALS WO# HS21050697

C:\TOC-L\Data\2021_02_25_001.tlx

	Type	Analysis	Sample Name	Sample ID	Origin	Result
1	Standard	NPOC	CAL	3150171(01-07)	02_25_2021_CAL.2021_02_	
2	Unknown	NPOC	ICV	315017108	02_25_2021_CAL.cal	NPOC:10.14mg/L
3	Unknown	NPOC	ICB		02_25_2021_CAL.cal	NPOC:-0.1140mg/L
4	Unknown	NPOC	CCV	315017106	02_25_2021_CAL.cal	NPOC:25.02mg/L
5	Unknown	NPOC	CCB		02_25_2021_CAL.cal	NPOC:-0.07587mg/L
6	Unknown	NPOC	MBLK-02252021		02_25_2021_CAL.cal	NPOC:-0.1214mg/L
7	Unknown	NPOC	LCS-02252021		02_25_2021_CAL.cal	NPOC:10.15mg/L
8	Unknown	NPOC	LCSD02252021		02_25_2021_CAL.cal	NPOC:10.16mg/L
9	Unknown	NPOC	HS21020689-01		02_25_2021_CAL.cal	NPOC:22.48mg/L
10	Unknown	NPOC	HS21020689-02		02_25_2021_CAL.cal	NPOC:17.34mg/L
11	Unknown	NPOC	HS21020689-02MS		02_25_2021_CAL.cal	NPOC:28.25mg/L
12	Unknown	NPOC	HS21020689-03		02_25_2021_CAL.cal	NPOC:10.22mg/L
13	Unknown	NPOC	HS21020538-01		02_25_2021_CAL.cal	NPOC:20.36mg/L
14	Unknown	NPOC	HS21020538-02		02_25_2021_CAL.cal	NPOC:4.452mg/L
15	Unknown	NPOC	HS21020793-02DF10		02_25_2021_CAL.cal	NPOC:17.50mg/L
16	Unknown	NPOC	CCV		02_25_2021_CAL.cal	NPOC:25.46mg/L
17	Unknown	NPOC	CCB		02_25_2021_CAL.cal	NPOC:0.08018mg/L

	Notes	Status	Date / Time	Vial
1		Completed	2/25/2021 1	1, 2, 3, 4, 5,
2		Completed	2/25/2021 1	8
3		Completed	2/25/2021 1	9
4		Completed	2/25/2021 1	10
5		Completed	2/25/2021 1	11
6		Completed	2/25/2021 1	12
7		Completed	2/25/2021 1	13
8		Completed	2/25/2021 1:	14
9		Completed	2/25/2021 1:	15
10		Completed	2/25/2021 1:	16
11		Completed	2/25/2021 1:	17
12		Completed	2/25/2021 2:	18
13		Completed	2/25/2021 2:	19
14		Completed	2/25/2021 2:	20
15		Completed	2/25/2021 2:	21
16		Completed	2/25/2021 3:	22
17		Completed	2/25/2021 3:	23

TOC-Control L Report

2021_02_25_001.tlx

Instr.Information

Instrument Options	TOC/ASI/IC Unit/
Catalyst	Regular Sensitivity

Cal. Curve

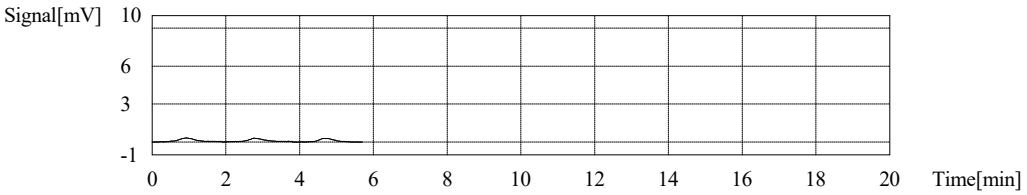
Sample Name:	CAL
Sample ID:	3150171(01-07)
Cal. Curve:	02_25_2021_CAL.2021_02_25_09_13_02.cal
Status	Completed

Type	Anal.
Standard	NPOC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	0.7577	50uL	1.000	*******		2/25/2021 9:21:39 AM
2	0.6368	50uL	1.000	*******		2/25/2021 9:23:47 AM
3	0.6500	50uL	1.000	*******		2/25/2021 9:25:55 AM

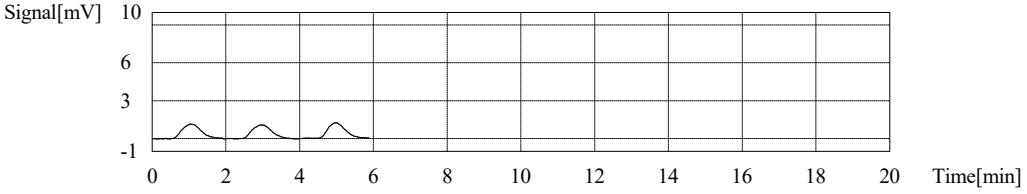
Acid Add.	0.000%
Sparge Gas Flow	80mL/min
Sp. Time	180.0sec
Mean Area	0.6815



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	4.063	50uL	1.000	*******		2/25/2021 9:34:44 AM
2	3.946	50uL	1.000	*******		2/25/2021 9:37:02 AM
3	3.886	50uL	1.000	*******		2/25/2021 9:39:10 AM

Acid Add.	0.000%
Sparge Gas Flow	80mL/min
Sp. Time	180.0sec
Mean Area	3.965

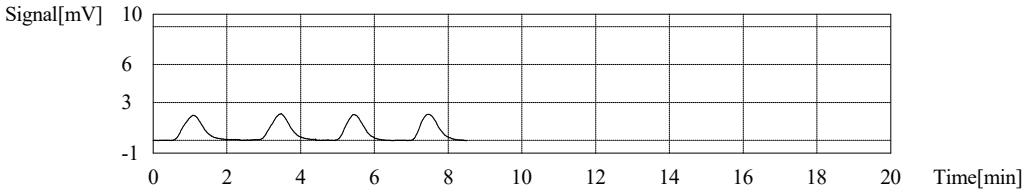


Conc: 2.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	7.014	50uL	1.000	*******		2/25/2021 9:48:25 AM
2	6.976	50uL	1.000	*******		2/25/2021 9:50:44 AM
3	6.738	50uL	1.000	*******	E	2/25/2021 9:53:02 AM
4	6.989	50uL	1.000	*******		2/25/2021 9:55:18 AM

TOC-Control L Report

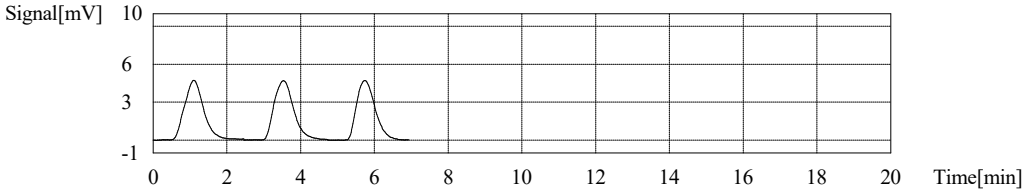
Acid Add. 0.000%
Sparge Gas Flow 80mL/min
Sp. Time 180.0sec
Mean Area 6.993



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	16.70	50uL	1.000	*******		2/25/2021 10:04:35 AM
2	16.99	50uL	1.000	*******		2/25/2021 10:07:06 AM
3	16.40	50uL	1.000	*******		2/25/2021 10:09:32 AM

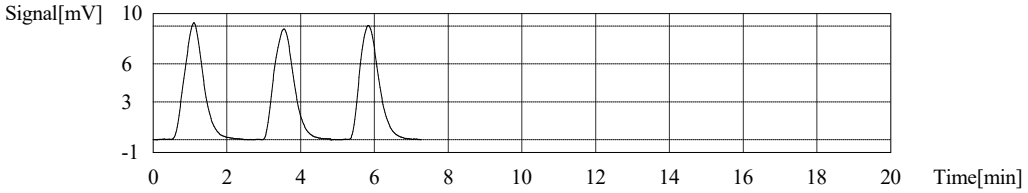
Acid Add. 0.000%
Sparge Gas Flow 80mL/min
Sp. Time 180.0sec
Mean Area 16.70



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	32.33	50uL	1.000	*******		2/25/2021 10:18:54 AM
2	32.41	50uL	1.000	*******		2/25/2021 10:21:29 AM
3	32.27	50uL	1.000	*******		2/25/2021 10:24:10 AM

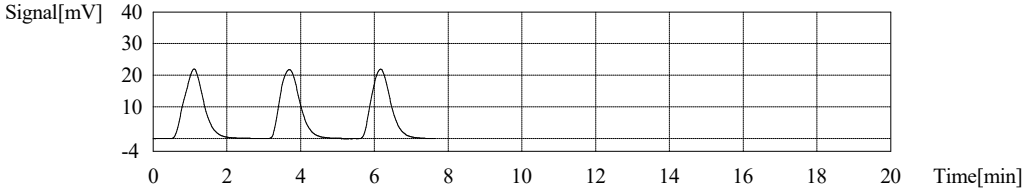
Acid Add. 0.000%
Sparge Gas Flow 80mL/min
Sp. Time 180.0sec
Mean Area 32.34



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	79.83	50uL	1.000	*******		2/25/2021 10:33:42 AM
2	80.51	50uL	1.000	*******		2/25/2021 10:36:25 AM
3	79.09	50uL	1.000	*******		2/25/2021 10:39:12 AM

Acid Add. 0.000%
Sparge Gas Flow 80mL/min
Sp. Time 180.0sec
Mean Area 79.81



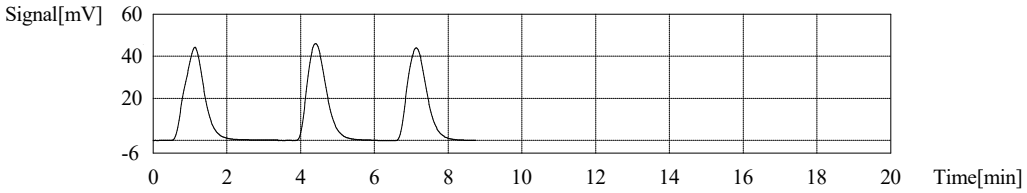
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	162.4	50uL	1.000	*******		2/25/2021 10:49:29 AM
2	163.8	50uL	1.000	*******		2/25/2021 10:52:26 AM
3	159.9	50uL	1.000	*******		2/25/2021 10:55:21 AM

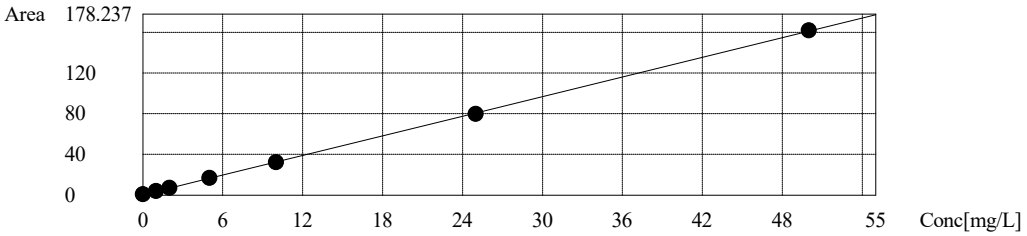
TOC-Control L Report

2021_02_25_001.tlx

Acid Add.	0.000%
Sparge Gas Flow	80mL/min
Sp. Time	180.0sec
Mean Area	162.0



Slope:	3.220
Intercept	0.4365
r^2	0.9999
r	1.0000
RSE(%)	N/A
Zero Shift	No



Sample

Sample Name:	ICV
Sample ID:	315017108
Origin:	02_25_2021_CAL.cal
Status	Completed
Chk. Result	

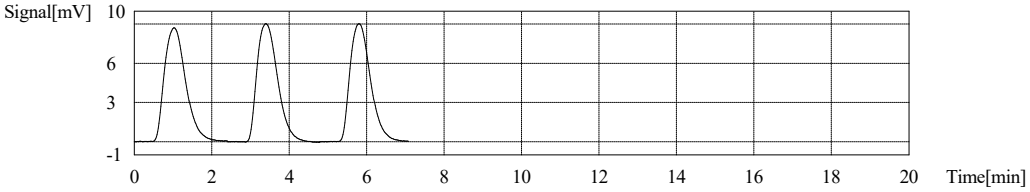
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.14mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	33.04	10.13mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:32:06 AM
2	33.24	10.19mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:34:44 AM
3	32.98	10.11mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:37:17 AM

Mean Area	33.09
Mean Conc.	10.14mg/L



Sample

Sample Name:	ICB
Sample ID:	
Origin:	02_25_2021_CAL.cal
Status	Completed
Chk. Result	

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:-0.1140mg/L

1. Det

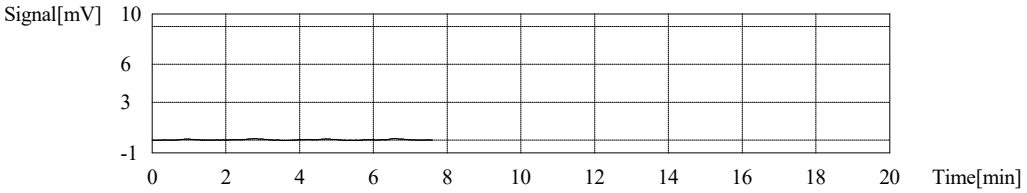
TOC-Control L Report

2021_02_25_001.tlx

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.000	-0.1356mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:46:05 AM
2	0.2080	-0.07096mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:48:13 AM
3	0.000	-0.1356mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:50:20 AM
4	0.2102	-0.07028mg/L	50uL	1.000	E	02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:52:27 AM

Mean Area 0.06933
Mean Conc. -0.1140mg/L



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	Type	Analysis	Sample Name	Sample ID	Origin	Result	Notes	Status	Date / Time
1	Unknown	NPOC	CCV	3100603915	05_10_2021	NPOC:24.2		Completed	5/19/2021 3:
2	Unknown	NPOC	CCB	TOC_W	05_10_2021	NPOC:0.14		Completed	5/19/2021 4:
3	Unknown	NPOC	MBLK-05192021	TOC_W 531	05_10_2021	NPOC:0.09		Completed	5/19/2021 4:
4	Unknown	NPOC	LCS-05192021		05_10_2021	NPOC:9.82		Completed	5/19/2021 4:
5	Unknown	NPOC	LCSD-05192021		05_10_2021	NPOC:9.64		Completed	5/19/2021 4:
6	Unknown	NPOC	HS21050897-01		05_10_2021	NPOC:2.36		Completed	5/19/2021 4:
7	Unknown	NPOC	HS21050897-01MS		05_10_2021	NPOC:12.5		Completed	5/19/2021 5:
8	Unknown	NPOC	HS21050871-01		05_10_2021	NPOC:0.15		Completed	5/19/2021 5:
9	Unknown	NPOC	HS21050888-01		05_10_2021	NPOC:4.34		Completed	5/19/2021 5:
10	Unknown	NPOC	HS21050637-11		05_10_2021	NPOC:2.50		Completed	5/19/2021 5:
11	Unknown	NPOC	HS21050637-12		05_10_2021	NPOC:2.58		Completed	5/19/2021 6:
12	Unknown	NPOC	HS21050637-13		05_10_2021	NPOC:1.03		Completed	5/19/2021 6:
13	Unknown	NPOC	CCV	3100603915	05_10_2021	NPOC:24.7		Completed	5/19/2021 6:
14	Unknown	NPOC	CCB		05_10_2021	NPOC:0.12		Completed	5/19/2021 6:
15	Unknown	NPOC	HS21050637-14		05_10_2021	NPOC:0.88		Completed	5/19/2021 6:
16	Unknown	NPOC	HS21050637-15		05_10_2021	NPOC:0.99		Completed	5/19/2021 7:
17	Unknown	NPOC	HS21050637-16		05_10_2021	NPOC:1.09		Completed	5/19/2021 7:
18	Unknown	NPOC	HS21050637-17		05_10_2021	NPOC:1.00		Completed	5/19/2021 7:
19	Unknown	NPOC	CCV	3100603915	05_10_2021	NPOC:24.1		Completed	5/19/2021 7:
20	Unknown	NPOC	CCB		05_10_2021	NPOC:0.08		Completed	5/19/2021 7:
21	Unknown	NPOC	MBLK-05192021	TOC_W 531	05_10_2021	NPOC:0.06		Completed	5/19/2021 8:
22	Unknown	NPOC	LCS-05192021		05_10_2021	NPOC:9.63		Completed	5/19/2021 8:
23	Unknown	NPOC	LCSD-05192021		05_10_2021	NPOC:9.64		Completed	5/19/2021 8:
24	Unknown	NPOC	HS21050637-18		05_10_2021	NPOC:1.00		Completed	5/19/2021 8:
25	Unknown	NPOC	HS21050637-18MS		05_10_2021	NPOC:11.0		Completed	5/19/2021 8:
26	Unknown	NPOC	HS21050637-19		05_10_2021	NPOC:2.44		Completed	5/19/2021 9:
27	Unknown	NPOC	HS21050637-20		05_10_2021	NPOC:2.51		Completed	5/19/2021 9:
28	Unknown	NPOC	HS21050637-21		05_10_2021	NPOC:2.55		Completed	5/19/2021 9:
29	Unknown	NPOC	HS21050637-22		05_10_2021	NPOC:0.36		Completed	5/19/2021 9:
30	Unknown	NPOC	HS21050637-23		05_10_2021	NPOC:0.26		Completed	5/19/2021 1
31	Unknown	NPOC	CCV	3100603915	05_10_2021	NPOC:24.1		Completed	5/19/2021 1
32	Unknown	NPOC	CCB		05_10_2021	NPOC:0.15		Completed	5/19/2021 1
33	Unknown	NPOC	HS21050830-01		05_10_2021	NPOC:0.35		Completed	5/19/2021 1
34	Unknown	NPOC	HS21050851-01		05_10_2021	NPOC:2.42		Completed	5/19/2021 1
35	Unknown	NPOC	HS21050853-01		05_10_2021	NPOC:1.83		Completed	5/19/2021 1
36	Unknown	NPOC	HS21050854-01		05_10_2021	NPOC:7.78		Completed	5/19/2021 1
37	Unknown	NPOC	CCV	3100603915	05_10_2021	NPOC:26.1		Completed	5/19/2021 1
38	Unknown	NPOC	CCB		05_10_2021	NPOC:0.15		Completed	5/19/2021 1
39	Unknown	NPOC	MBLK-05192021	TOC_W 531	05_10_2021	NPOC:0.09		Completed	5/19/2021 1
40	Unknown	NPOC	LCS-05192021		05_10_2021	NPOC:10.2		Completed	5/20/2021 1
41	Unknown	NPOC	LCSD-05192021		05_10_2021	NPOC:10.0		Completed	5/20/2021 1
42	Unknown	NPOC	HS21050689-01		05_10_2021	NPOC:0.96		Completed	5/20/2021 1
43	Unknown	NPOC	HS21050697-01		05_10_2021	NPOC:0.85		Completed	5/20/2021 1
44	Unknown	NPOC	HS21050697-03		05_10_2021	NPOC:0.92		Completed	5/20/2021 1:
45	Unknown	NPOC	HS21050697-03MS		05_10_2021	NPOC:12.3		Completed	5/20/2021 1:
46	Unknown	NPOC	HS21050782-01		05_10_2021	NPOC:17.3		Completed	5/20/2021 1:
47	Unknown	NPOC	HS21050850-01		05_10_2021	NPOC:8.04		Completed	5/20/2021 1:
48	Unknown	NPOC	HS21050850-02		05_10_2021	NPOC:7.94		Completed	5/20/2021 1:
49	Unknown	NPOC	CCV	3100603915	05_10_2021	NPOC:26.0		Completed	5/20/2021 2:
50	Unknown	NPOC	CCB		05_10_2021	NPOC:0.12		Completed	5/20/2021 2:

	Vial
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
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45	33
46	34
47	35
48	36
49	24
50	25

TOC-Control L Report

2021_05_19_001.tlx

Instr.Information

Instrument Options: TOC/ASI/IC Unit/
Catalyst: Regular Sensitivity

Sample

Sample Name: CCV
Sample ID: 3100603915
Origin: 05_10_2021A_CAL.cal
Status: Completed
Chk. Result

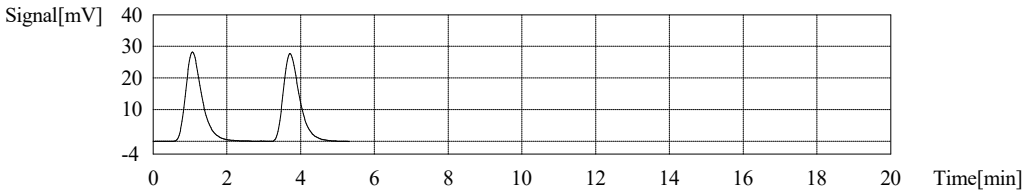
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:26.19mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	87.48	26.29mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/19/2021 11:32:52 PM
2	86.78	26.08mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/19/2021 11:35:51 PM

Mean Area: 87.13
Mean Conc.: 26.19mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: 05_10_2021A_CAL.cal
Status: Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.1535mg/L

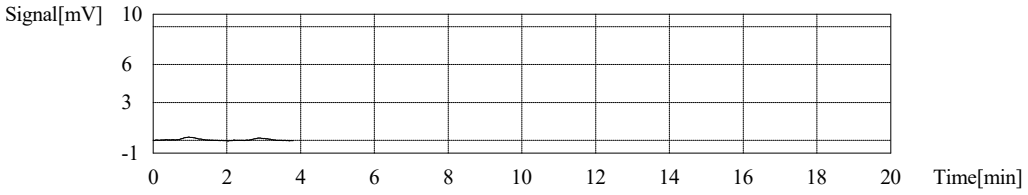
1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.5729	0.1722mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/19/2021 11:43:58 PM
2	0.4484	0.1348mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/19/2021 11:46:58 PM

TOC-Control L Report

Mean Area 0.5107
Mean Conc. 0.1535mg/L



Sample

Sample Name: MBLK-05192021
Sample ID: TOC_W 5310B
Origin: 05_10_2021A_CAL.cal
Status Completed
Chk. Result

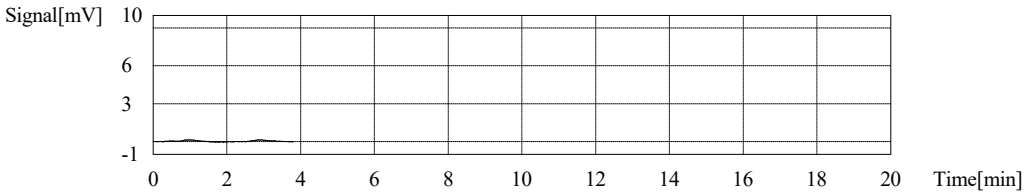
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.09995mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.3535	0.1062mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/19/2021 11:54:58 PM
2	0.3116	0.09365mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/19/2021 11:57:58 PM

Mean Area 0.3326
Mean Conc. 0.09995mg/L



Sample

Sample Name: LCS-05192021
Sample ID:
Origin: 05_10_2021A_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.21mg/L

1. Det

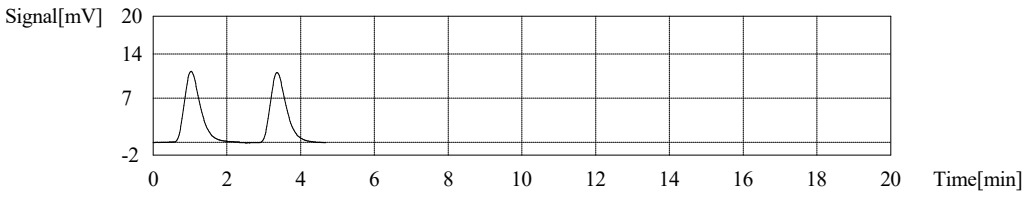
Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	33.93	10.20mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 12:06:22 AM
2	34.03	10.23mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 12:09:23 AM

TOC-Control L Report

2021_05_19_001.tlx

Mean Area 33.98
Mean Conc. 10.21mg/L



Sample

Sample Name: LCSD-05192021
Sample ID:
Origin: 05_10_2021A_CAL.cal
Status Completed
Chk. Result

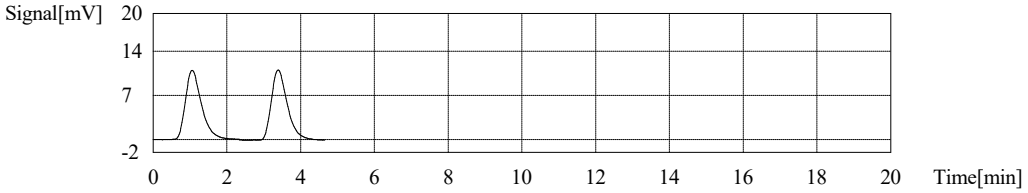
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.09mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	33.41	10.04mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 12:17:47 AM
2	33.76	10.15mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 12:20:46 AM

Mean Area 33.59
Mean Conc. 10.09mg/L



Sample

Sample Name: HS21050697-01
Sample ID:
Origin: 05_10_2021A_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.8566mg/L

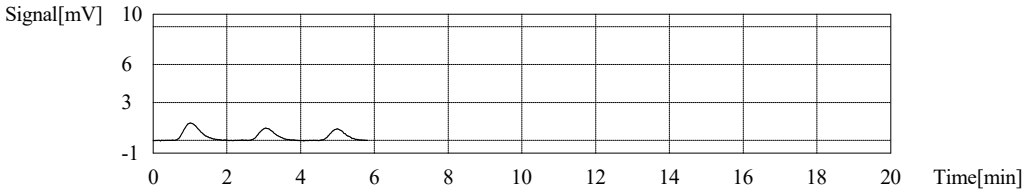
1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4.328	1.301mg/L	50uL	1.000	E	05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 12:40:13 AM
2	2.996	0.9004mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 12:43:06 AM
3	2.704	0.8127mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 12:46:06 AM

TOC-Control L Report

Mean Area 2.850
Mean Conc. 0.8566mg/L



Sample

Sample Name: HS21050697-03
Sample ID:
Origin: 05_10_2021A_CAL.cal
Status Completed
Chk. Result

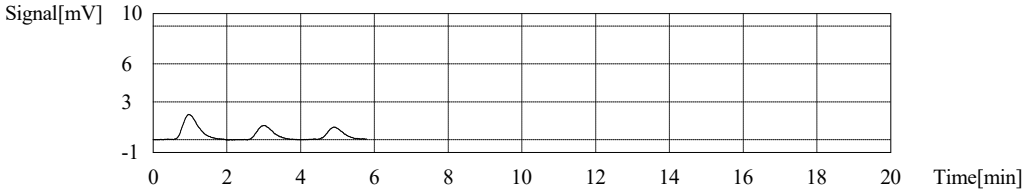
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.9276mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.842	1.756mg/L	50uL	1.000	E	05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 12:54:25 AM
2	3.376	1.015mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 12:57:20 AM
3	2.797	0.8406mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 1:00:20 AM

Mean Area 3.087
Mean Conc. 0.9276mg/L



Sample

Sample Name: HS21050697-03MS
Sample ID:
Origin: 05_10_2021A_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:12.37mg/L

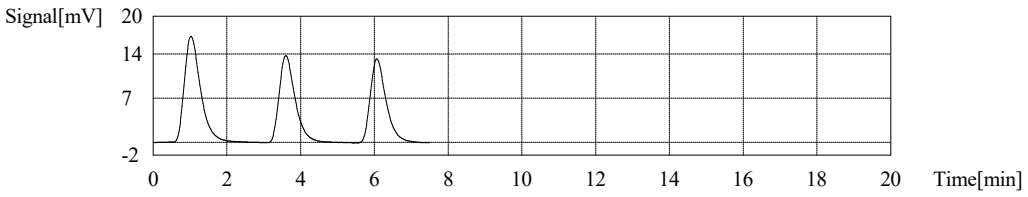
1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	51.51	15.48mg/L	50uL	1.000	E	05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 1:09:13 AM
2	42.10	12.65mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 1:12:08 AM
3	40.25	12.10mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 1:15:09 AM

TOC-Control L Report

Mean Area 41.17
Mean Conc. 12.37mg/L



Sample

Sample Name: CCV
Sample ID: 3100603915
Origin: 05_10_2021A_CAL.cal
Status Completed
Chk. Result

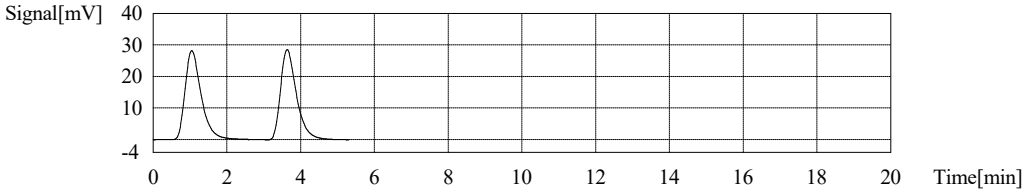
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:26.02mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	86.06	25.86mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 2:05:48 AM
2	87.12	26.18mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 2:08:58 AM

Mean Area 86.59
Mean Conc. 26.02mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: 05_10_2021A_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.1298mg/L

1. Det

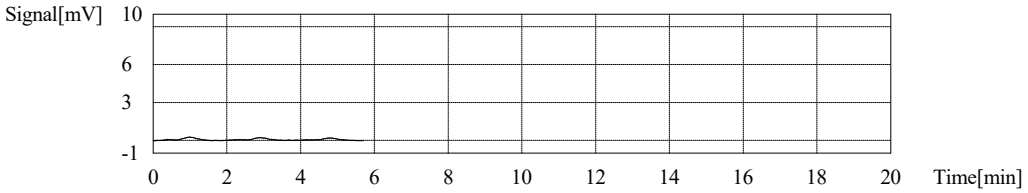
Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.7897	0.2373mg/L	50uL	1.000	E	05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 2:17:00 AM
2	0.4321	0.1299mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 2:20:00 AM
3	0.4318	0.1298mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 2:23:00 AM

TOC-Control L Report

2021_05_19_001.tlx

Mean Area	0.4320
Mean Conc.	0.1298mg/L



HS21050697 ALS Simi Valley Sub Data
P2102701 Tier IV

ALS WO# HS21050697

LABORATORY REPORT

May 28, 2021

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

RE: HS21050697

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on May 18, 2021. For your reference, these analyses have been assigned our service request number P2102701.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Hayden Akers at 2:39 pm, May 28, 2021

Hayden Akers
Project Manager

Client: ALS Laboratory Group Service Request No: P2102701
Project: HS21050697

CASE NARRATIVE

The samples were received intact under chain of custody on May 18, 2021 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

Methane, Ethene and Ethane Analysis

The samples were analyzed for methane, ethene, and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

Client: ALS Laboratory Group Service Request No: P2102701
Project: HS21050697

Manual integrations were performed on the following samples and analyte. Refer to the raw data for additional information.

Sample Identification(s)	Analyte(s)
P2102701-002msd	methane

The recovery for ethane for the matrix spike was below the DoD specified limit. However all criteria were met with the laboratory control spike and laboratory control spike duplicate.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-008
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272019-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Laboratory Group
Service Request: P2102701
Project ID: HS21050697

Date Received: 5/18/2021
Time Received: 09:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2	RSK 175 - Gases
35BWW26_210513	P2102701-001	Water	5/13/2021	07:10	X	X
35BWW08_210513	P2102701-002	Water	5/13/2021	08:45	X	X

R407701

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **16124**

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone: +1 805 526 7161

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS21050697
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS21050697-01**	**35BWW26_210513**	**Groundwater**	**13 May 2021 07:10**
	MEE + CO2. Provide DOD LV II & IV pdf separate. EDD. EQuIS 5.0 - Longhorn		Equis	28 May 2021
2.	**HS21050697-03**	**35BWW08_210513**	**Groundwater**	**13 May 2021 08:45**
	MEE + CO2. Provide DOD LV II & IV pdf separate. EDD. EQuIS 5.0 - Longhorn		Equis	28 May 2021

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

HS21050697-03 MS/MSD

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 5/17/2021 1800.

Received By: _____ Date/Time: 5-18-21 0930

Cooler ID(s): _____ Temperature(s): 4.8 WS

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P2102701

Project: HS21050697

Sample(s) received on: 5/18/21 Date opened: 5/18/21 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 4.8° C	Wet Ice		
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler lid. Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☒	☐	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2102701-001.01	40mL VOA NP		5		A	CB 5/26/21
P2102701-001.02	40mL VOA NP				A	
P2102701-001.03	40mL VOA NP				A	
P2102701-001.04	40ml VOA HCL		1		A	CB 5/25/21
P2102701-001.05	40ml VOA HCL				A	
P2102701-001.06	40ml VOA HCL				A	
P2102701-002.01	40mL VOA NP				A	
P2102701-002.02	40mL VOA NP				A	
P2102701-002.03	40mL VOA NP				A	
P2102701-002.04	40ml VOA HCL		1		A	CB 5/25/21
P2102701-002.05	40ml VOA HCL		1		A	CB 5/25/21
P2102701-002.06	40ml VOA HCL		1		A	CB 5/25/21
P2102701-002.07	40mL VOA NP				A	
P2102701-002.08	40mL VOA NP				A	
P2102701-002.09	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P2102701

Project: HS21050697

Sample(s) received on: 5/18/21 Date opened: 5/18/21 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2102701-002.10	40mL VOA NP		5		A	CB 5/26/21
P2102701-002.11	40mL VOA NP		5		A	CB 5/26/21
P2102701-002.12	40mL VOA NP		5		A	CB 5/26/21
P2102701-002.13	40ml VOA HCL				A	
P2102701-002.14	40ml VOA HCL				A	
P2102701-002.15	40ml VOA HCL				A	
P2102701-002.16	40ml VOA HCL				A	
P2102701-002.17	40ml VOA HCL				A	
P2102701-002.18	40ml VOA HCL				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW26_210513**
Client Project ID: **HS21050697**

ALS Project ID: P2102701
ALS Sample ID: P2102701-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 05/13/21
Date Received: 05/18/21
Date Analyzed: 05/25/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW08_210513**
Client Project ID: **HS21050697**

ALS Project ID: P2102701
ALS Sample ID: P2102701-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 05/13/21
Date Received: 05/18/21
Date Analyzed: 05/25/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **Method Control Sample**
Client Project ID: **HS21050697**

ALS Project ID: P2102701
ALS Sample ID: P210525-MB

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/25/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW08_210513**
Client Project ID: **HS21050697**

ALS Project ID: P2102701
ALS Sample ID: P2102701-002MS
P2102701-002DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 5/13/21
Date Received: 5/18/21
Date Analyzed: 5/25/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount MS / DMS µg/L	Sample Amount µg/L	Result MS µg/L	Result DMS µg/L	% Recovery MS	% Recovery DMS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.53	0.447	2.02	1.93	**62**	**59**	73-125	5	30	**N**
74-85-1	Ethene	4.40	ND	3.48	3.84	**79**	**87**	72-133	10	30	
74-84-0	Ethane	4.75	ND	3.42	3.64	**72**	**77**	74-131	7	30	**N**

N = The matrix spike recovery is not within control limits. See case narrative.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS21050697**

ALS Project ID: P2102701
ALS Sample ID: P210525-LCS
P210525-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/25/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.52	2.52	2.38	**100**	**94**	73-125	6	26	
74-85-1	Ethene	4.40	5.15	5.10	**117**	**116**	72-133	0.9	11	
74-84-0	Ethane	4.72	5.01	4.92	**106**	**104**	74-131	2	10	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Project ID: **HS21050697** ALS Project ID: P2102701

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Connor Barrett
Matrix: Liquid
Test Notes:

Date(s) Collected: 5/13/21
Date Received: 5/18/21
Date Analyzed: 5/26/21

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
35BWW26_210513	P2102701-001	0.10	**330,000**	1,000	860	370	
35BWW08_210513	P2102701-002	0.050	**680,000**	2,000	1,700	740	
Method Control Sample	P210526-MB	0.10	860	1,000	860	370	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW08_210513**
Client Project ID: **HS21050697**

ALS Project ID: P2102701
ALS Sample ID: P2102701-002MS
P2102701-002DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Connor Barrett
Matrix: Liquid
Test Notes:

Date Collected: 5/13/21
Date Received: 5/18/21
Date Analyzed: 5/26/21
Volume(s) Analyzed: 0.050 ml(s)

CAS #	Compound	Spike Amount MS / DMS ug/L	Sample Amount ug/L	Result MS ug/L	Result DMS ug/L	% Recovery MS	% Recovery DMS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	4,580	684,000	628,000	729,000	**0**	**983**	80-122	200	30	**N, R**

N = The matrix spike sample recovery is not within control limits. See case narrative.
R = Duplicate precision not met.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2102701
Client Project ID: **HS21050697** ALS Sample ID: P210526-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Connor Barrett Date Analyzed: 5/26/21
Matrix: Liquid Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result$_1$ LCS ug/L	Result$_1$ DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	19,200	19,200	**84**	**84**	80-122	0	12	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2021_05\25\
Data File : 05252107.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 25-May-2021, 15:57:57
Operator : CB
Sample : P2102701-001 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 13:24:38 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

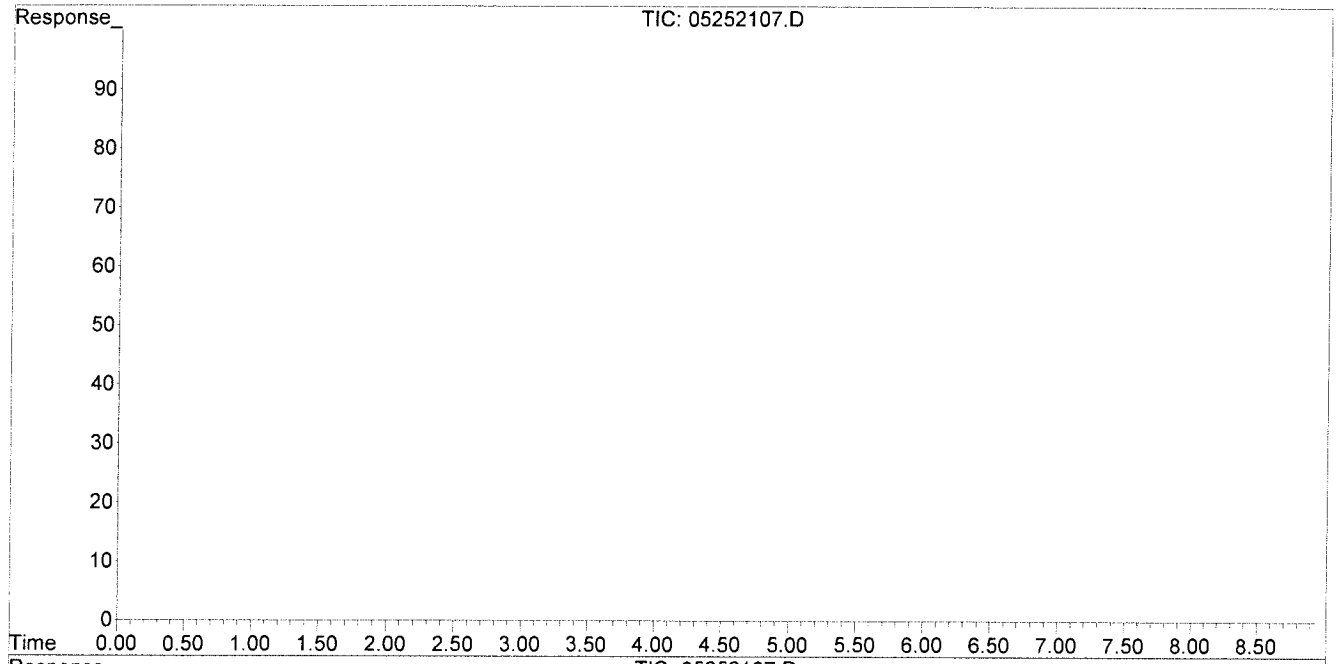
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.734	508	0.019	ppm
13)	n-Butane	6.734	508	0.019	ppm

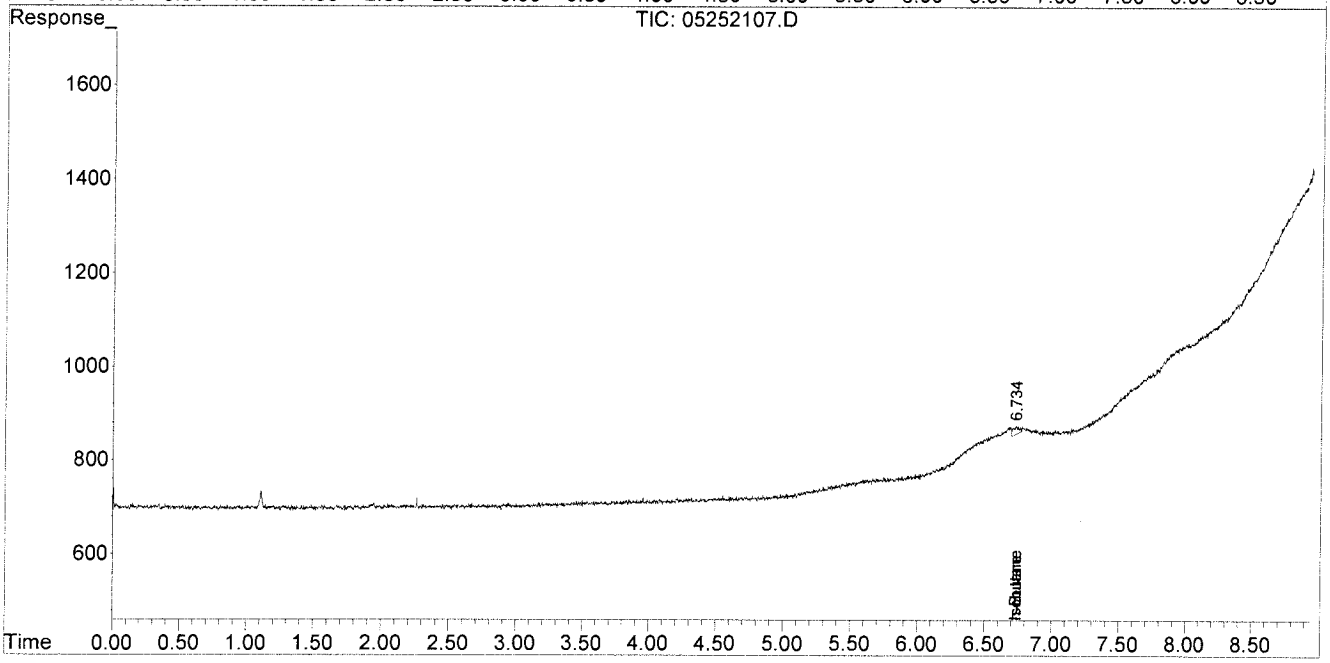
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_05\25\
Data File : 05252107.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 25-May-2021, 15:57:57
Operator : CB
Sample : P2102701-001 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 13:24:38 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2021_05\25\
Data File : 05252108.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 25-May-2021, 16:12:27
Operator : CB
Sample : P2102701-002 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 13:25:11 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

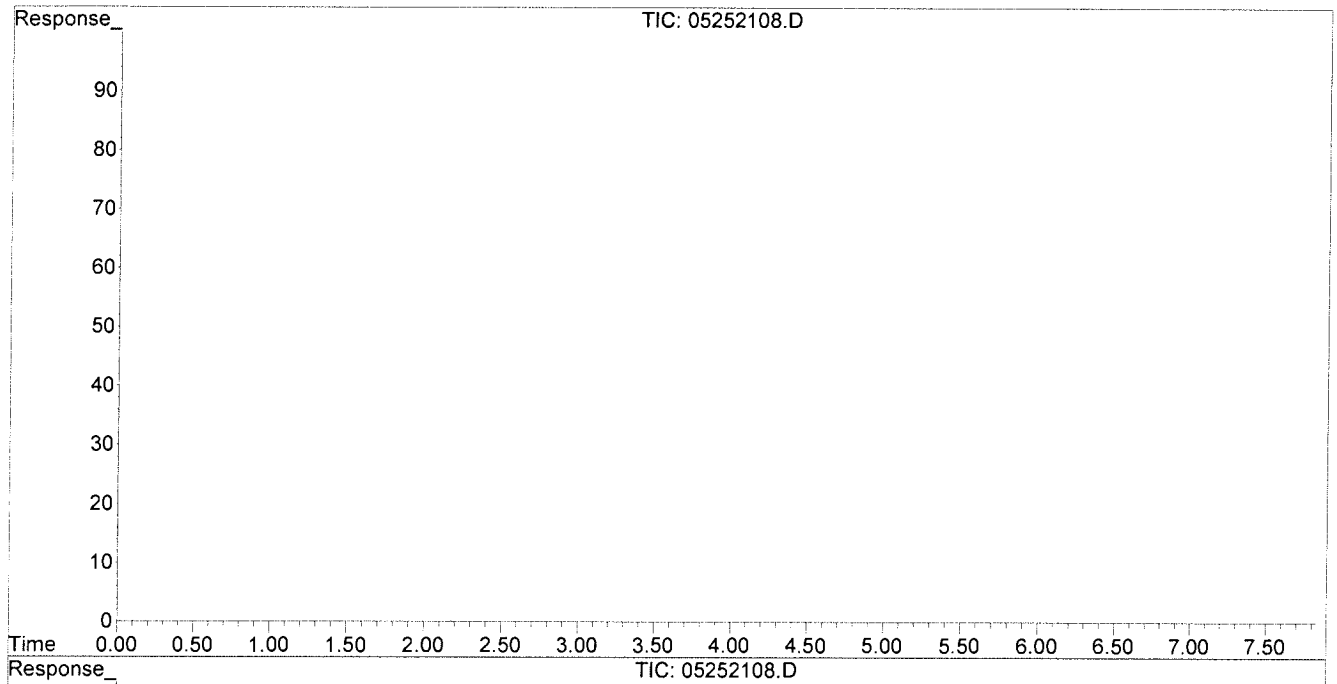
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.093	2134	0.235	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

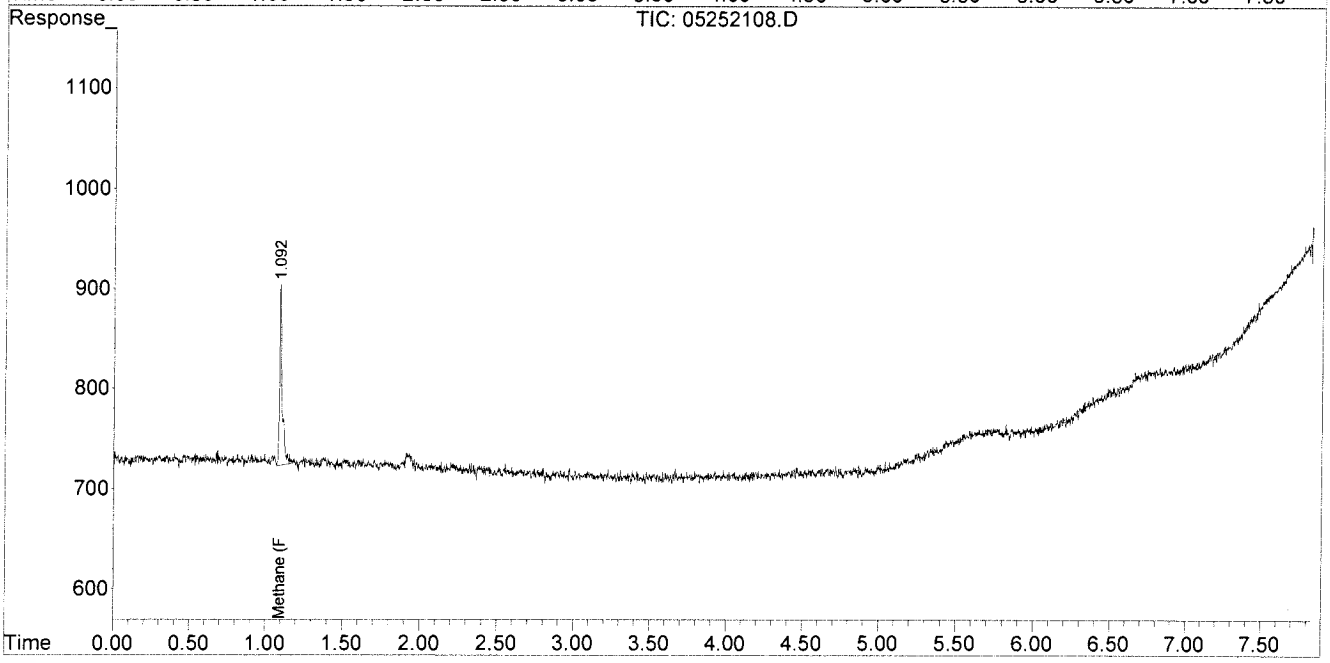
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_05\25\
Data File : 05252108.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 25-May-2021, 16:12:27
Operator : CB
Sample : P2102701-002 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 13:25:11 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2021_05\25\
Data File : 05252109.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 25-May-2021, 16:25:59
Operator : CB
Sample : P2102701-002 MS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 13:25:35 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

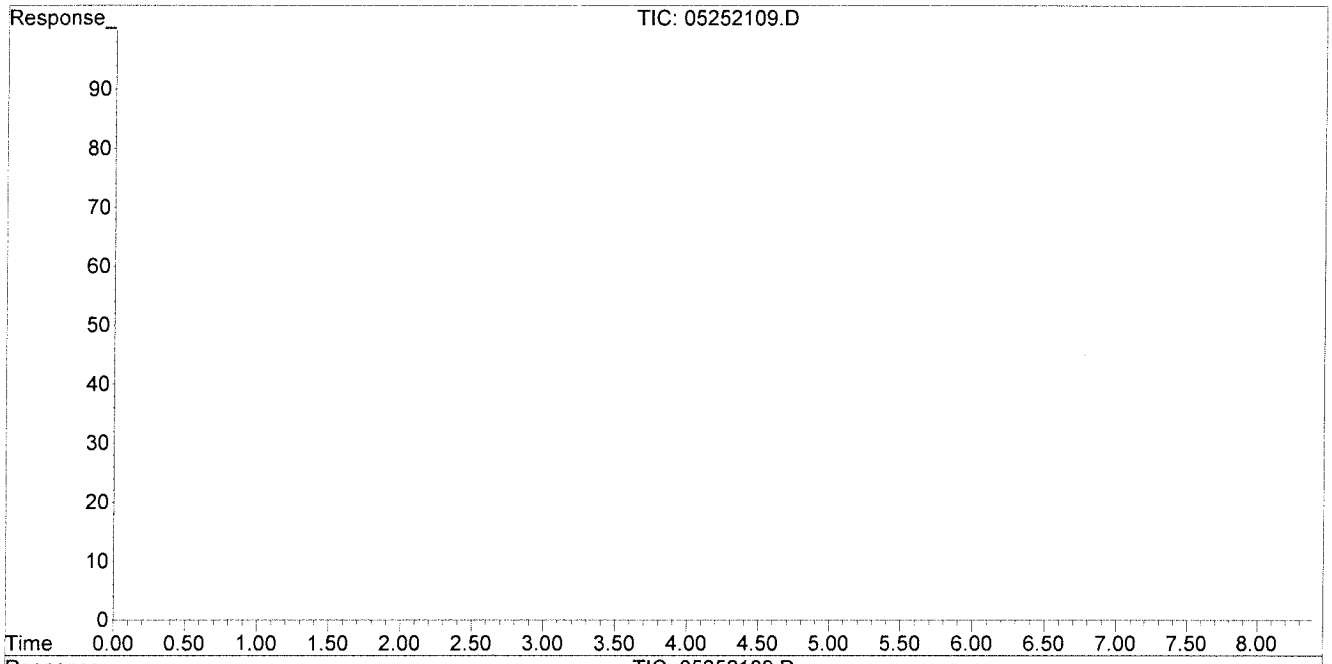
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.110	9621	1.061	ppm
7)	Ethylene	1.676	13115	0.784	ppm
8)	Ethane	1.939	15406	0.909	ppm
9)	Propylene	4.321	17725	0.756	ppm
10)	Propane	4.442	22385	0.900	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.655	29632	1.113	ppm
13)	n-Butane	6.655	29632	1.113	ppm

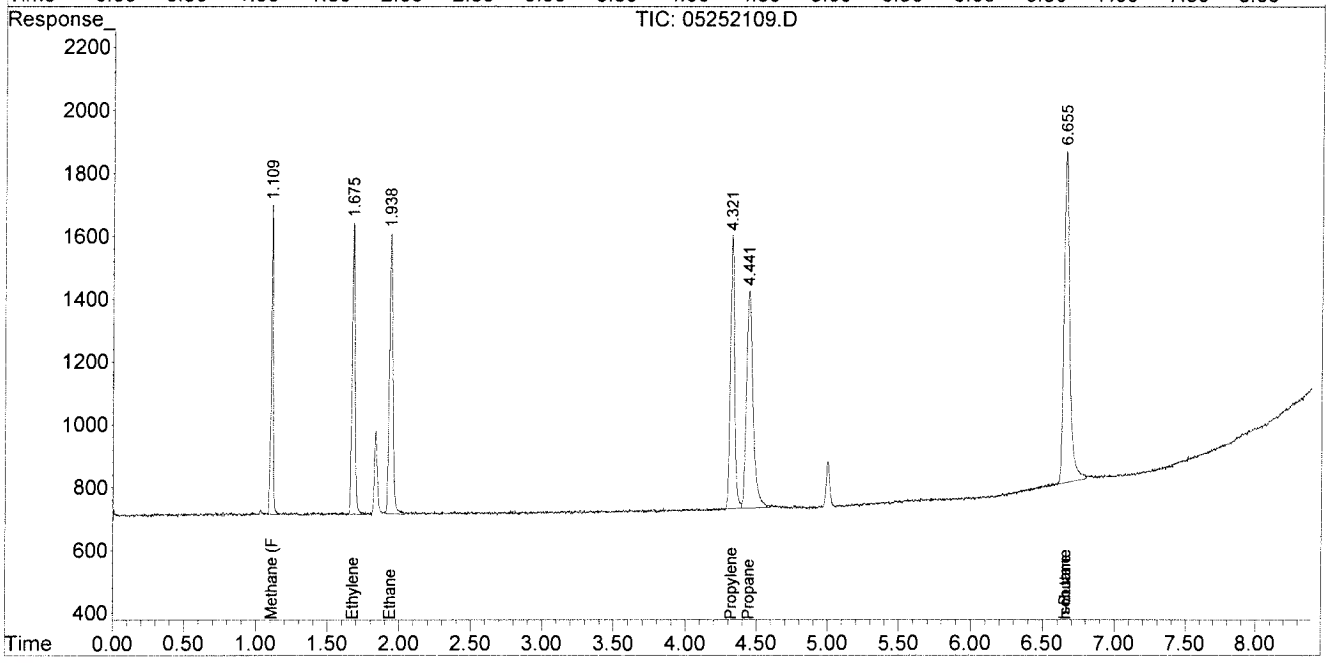
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_05\25\
Data File : 05252109.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 25-May-2021, 16:25:59
Operator : CB
Sample : P2102701-002 MS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 13:25:35 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2021_05\25\
Data File : 05252110.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 25-May-2021, 16:39:58
Operator : CB
Sample : P2102701-002 MSD 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 13:25:55 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

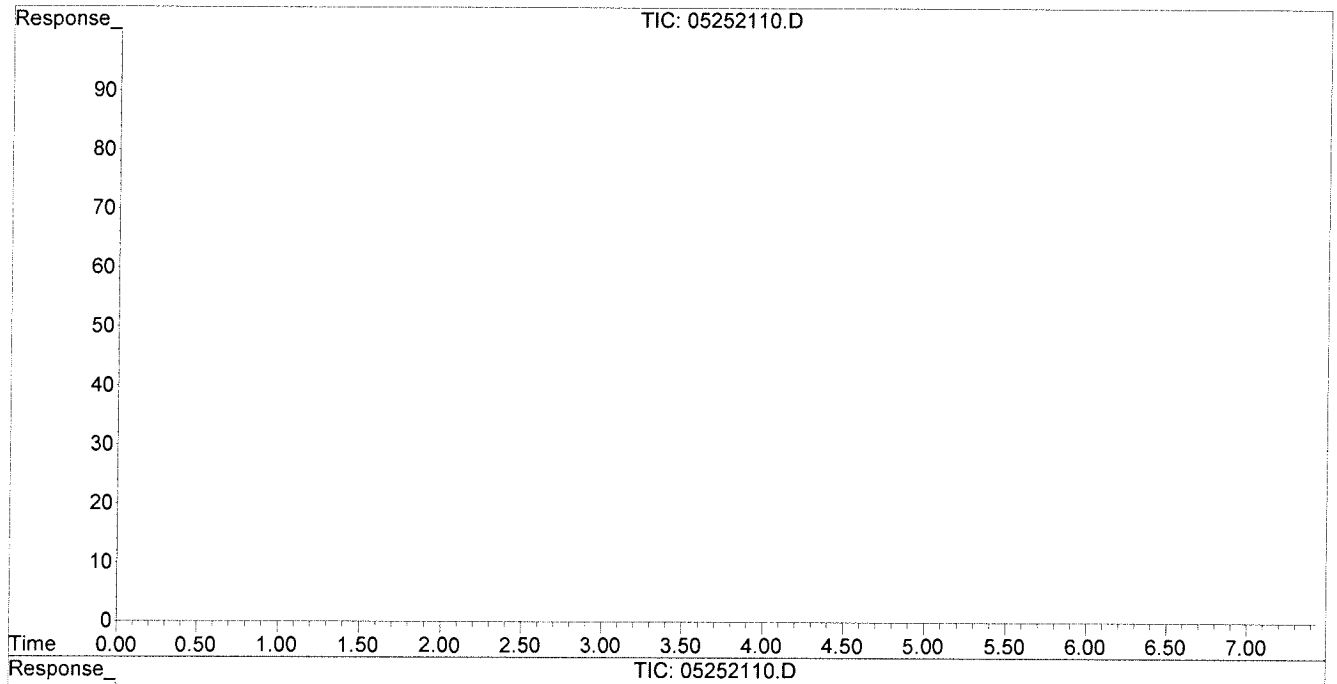
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.101	9209	1.015	ppm	m
7)	Ethylene	1.668	14474	0.865	ppm	
8)	Ethane	1.930	16406	0.968	ppm	
9)	Propylene	4.317	20731	0.885	ppm	
10)	Propane	4.437	24860	0.999	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.652	33150	1.245	ppm	
13)	n-Butane	6.652	33150	1.245	ppm	

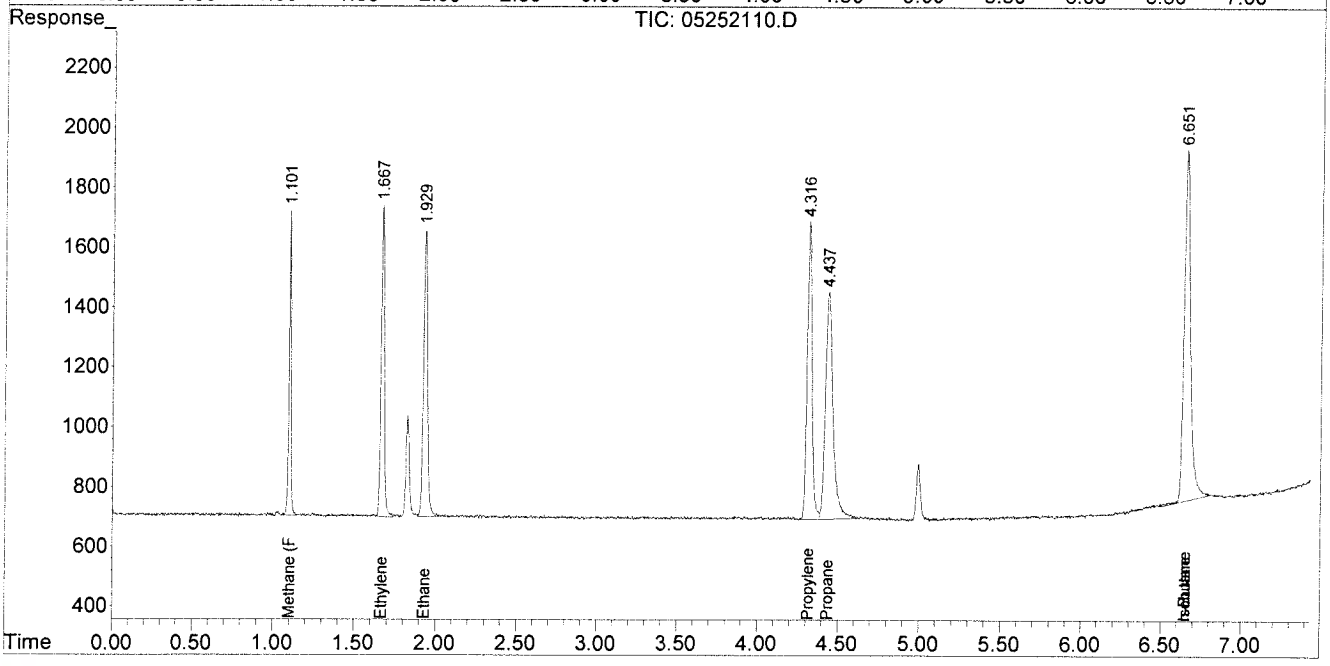
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_05\25\
Data File : 05252110.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 25-May-2021, 16:39:58
Operator : CB
Sample : P2102701-002 MSD 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 13:25:55 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



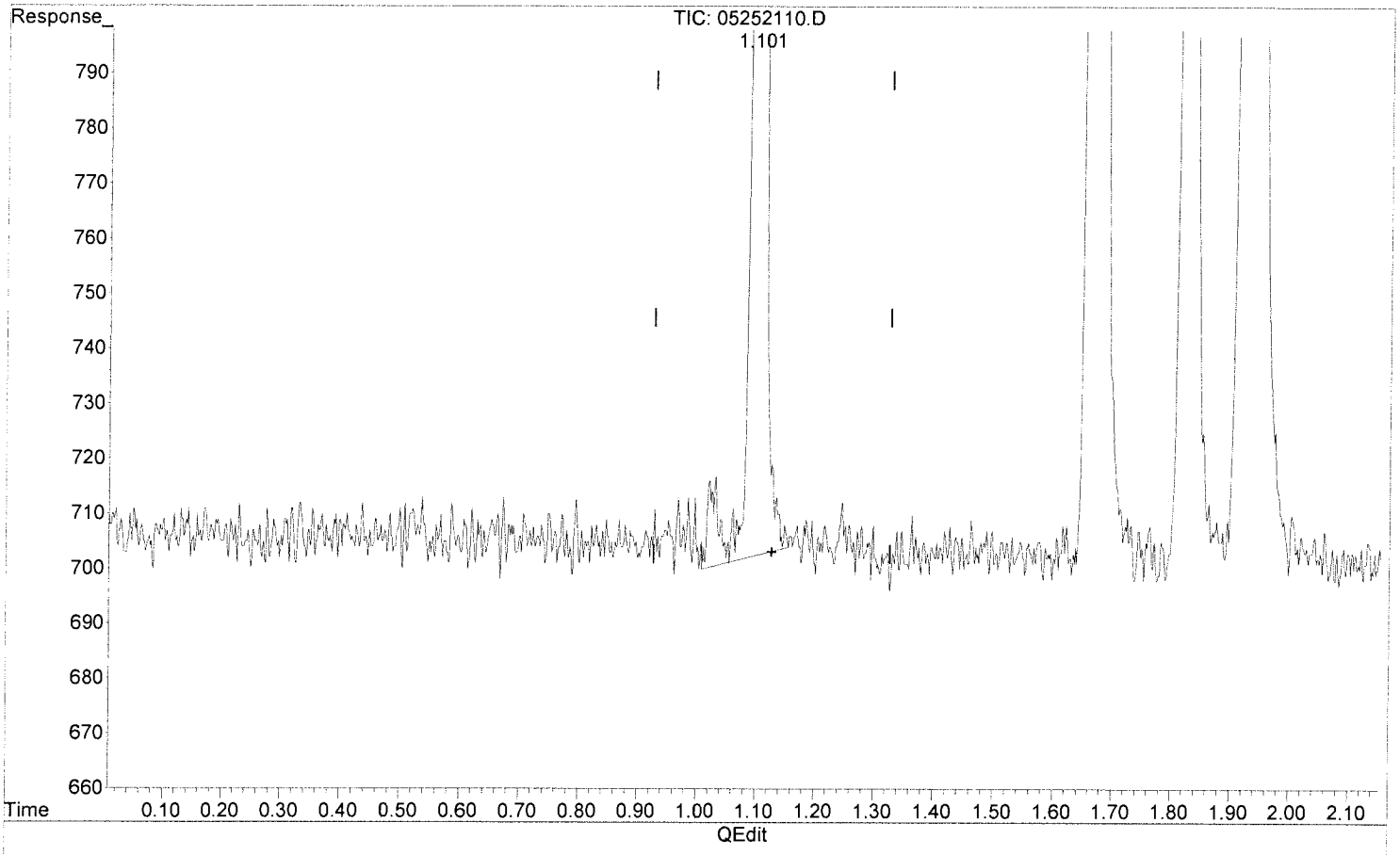


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2021_05\25\
Data File : 05252110.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 25-May-2021, 16:39:58
Operator : CB
Sample : P2102701-002 MSD 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 13:25:55 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.102min 1.045 ppm

response 9477

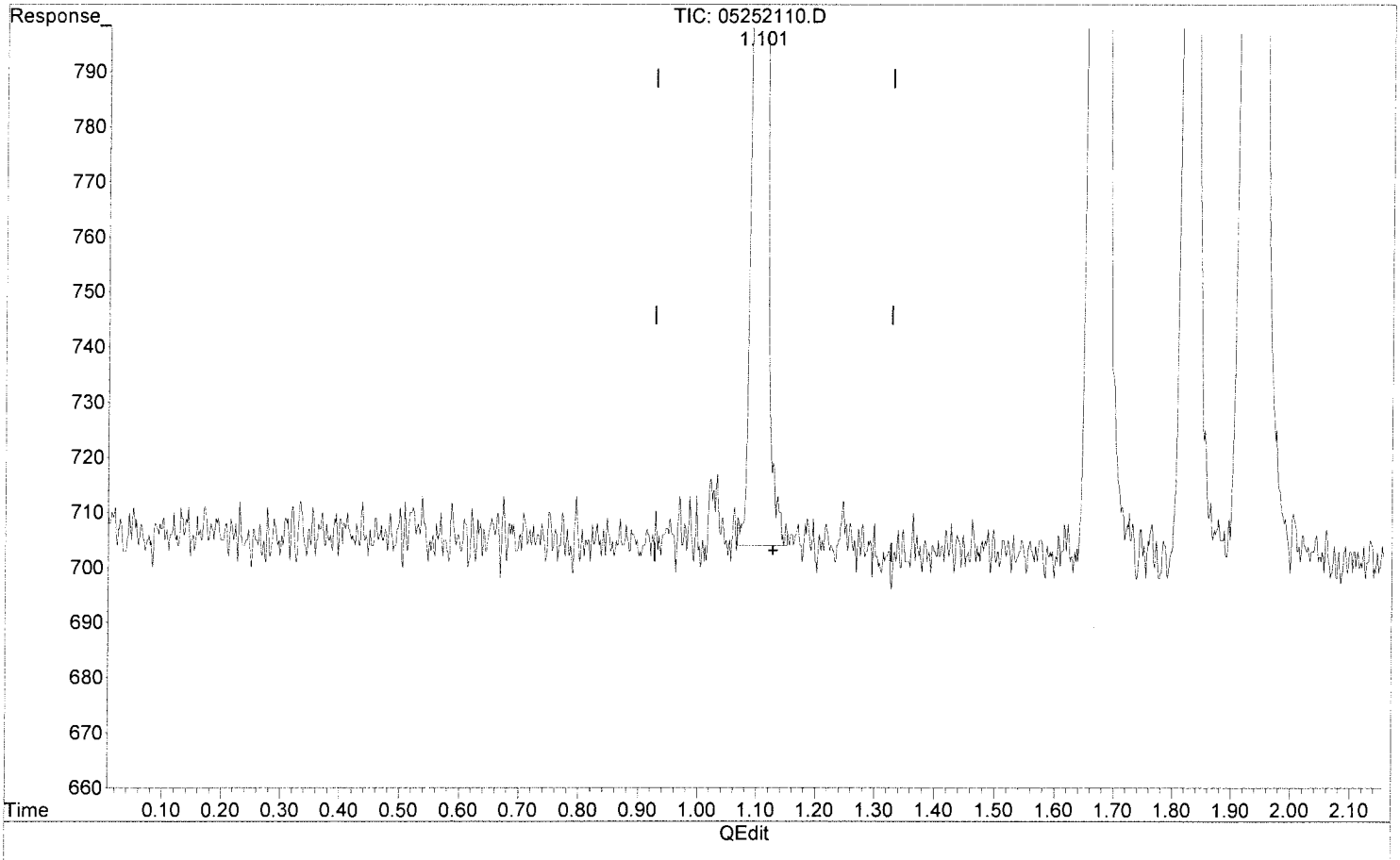
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2021_05\25\
Data File : 05252110.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 25-May-2021, 16:39:58
Operator : CB
Sample : P2102701-002 MSD 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 13:25:55 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.101min 1.015 ppm m

response 9209

CB 5/26/21

(+) = Expected Retention Time

RS091217_R.M Wed May 26 13:26:34 2021 Page: 1

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2021_05\25\
Data File : 05252104.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 25-May-2021, 15:10:43
Operator : CB
Sample : MCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 25 15:53:06 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.108	1190	0.131	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

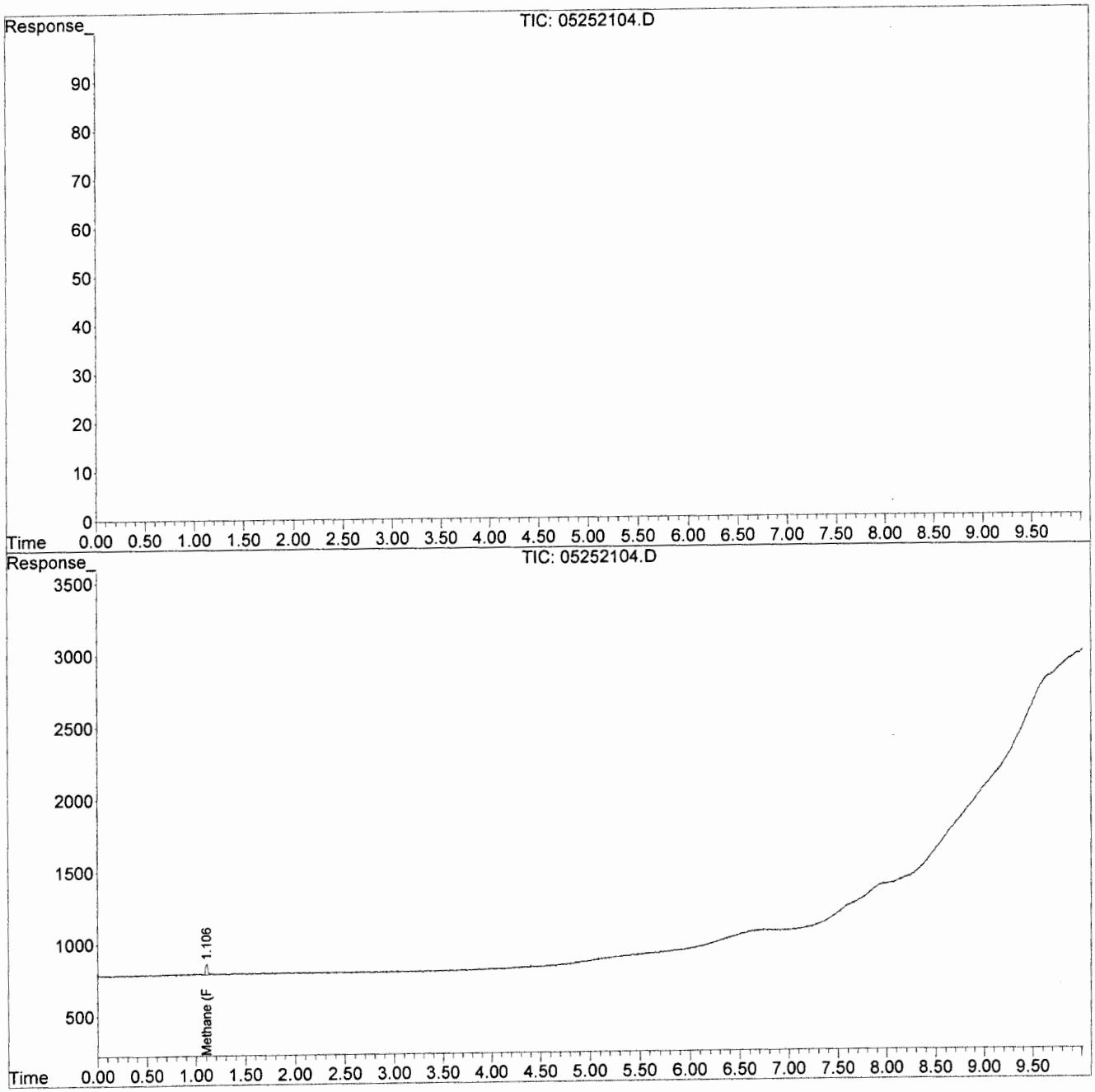
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2021_05\25\
Data File : 05252104.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 25-May-2021, 15:10:43
Operator : CB
Sample : MCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 25 15:53:06 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2021_05\25\
Data File : 05252105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 25-May-2021, 15:25:29
Operator : CB
Sample : LCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 25 15:55:08 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :

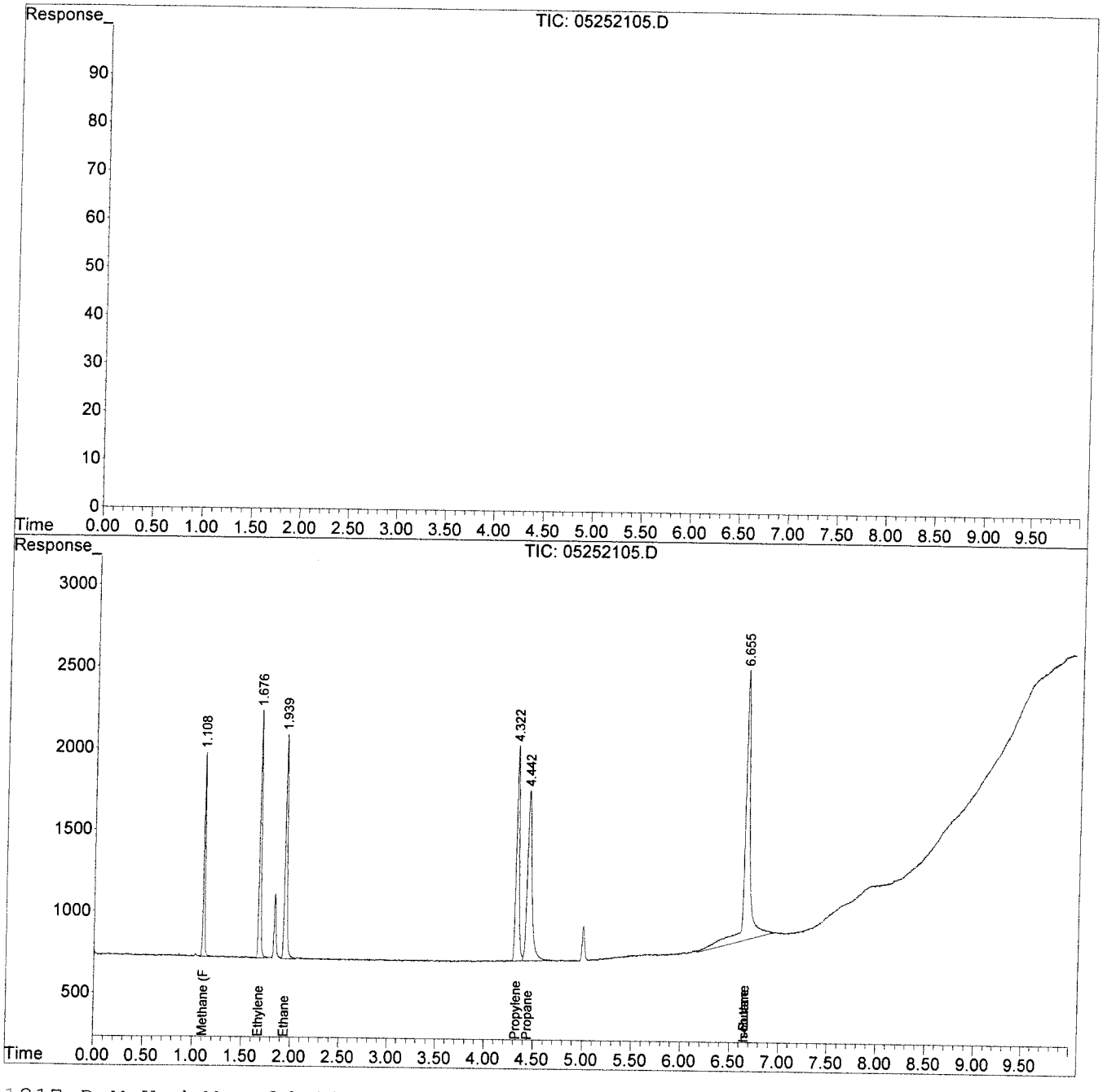
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.109	13195	1.455	ppm
7)	Ethylene	1.677	19401	1.159	ppm
8)	Ethane	1.940	22589	1.333	ppm
9)	Propylene	4.323	26959	1.151	ppm
10)	Propane	4.442	34271	1.377	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.656	61345	2.305	ppm
13)	n-Butane	6.656	61345	2.305	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_05\25\
Data File : 05252105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 25-May-2021, 15:25:29
Operator : CB
Sample : LCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 25 15:55:08 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2021_05\25\
Data File : 05252106.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 25-May-2021, 15:39:58
Operator : CB
Sample : LCSD 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 25 15:55:23 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :

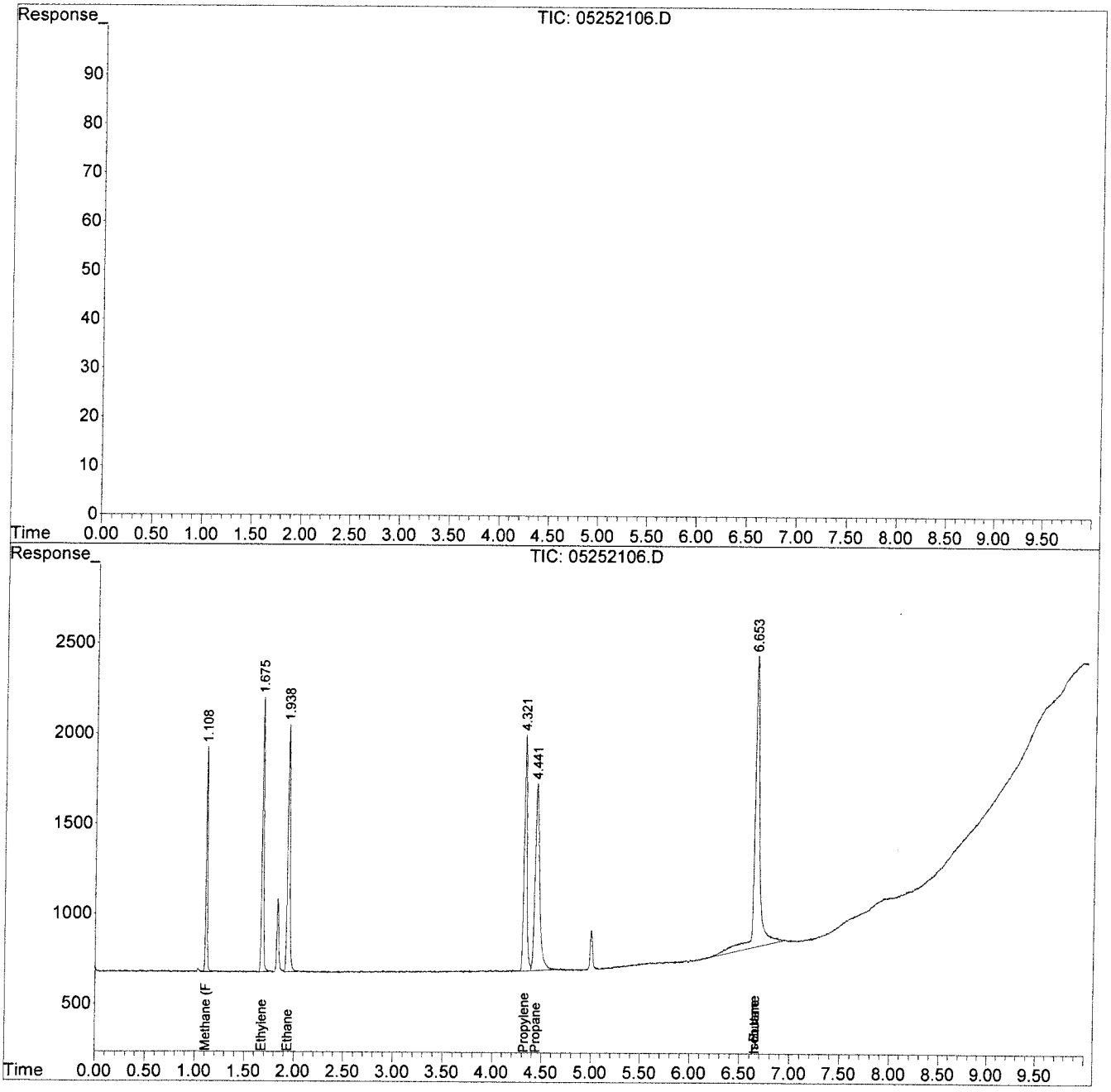
	Compound	R.T.	Response	Conc	Units
	Target Compounds				
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.109	12529	1.381	ppm
7)	Ethylene	1.676	19222	1.149	ppm
8)	Ethane	1.939	22171	1.308	ppm
9)	Propylene	4.321	26923	1.149	ppm
10)	Propane	4.441	33763	1.357	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.654	56006	2.104	ppm
13)	n-Butane	6.654	56006	2.104	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_05\25\
Data File : 05252106.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 25-May-2021, 15:39:58
Operator : CB
Sample : LCSD 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 25 15:55:23 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg	%RSD
1)	Oxygen/Argon	3.739		1.014			0.001	0.793 E6	189.17
2)	Carbon monoxide	3.739		1.014			0.001	0.594 E6	221.92
3)	Methane (TCD)						2.161	0.951 E2	106.37
4)	Carbon dioxide	2.365	2.569	2.558	2.361	2.459	2.314	2.438 E2	4.44

Signal #2 Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg	%RSD
6)	Methane (FID)		1.180	0.975	0.908	0.870	0.868	0.907 E4	11.66
7)	Ethylene	1.736	1.638	1.780	1.720	1.628	1.670	1.673 E4	3.90
8)	Ethane	1.781	1.676	1.784	1.730	1.692	1.675	1.695 E4	3.83
9)	Propylene	2.505	2.296	2.592	2.480	2.346	2.252	2.343 E4	6.56
10)	Propane	2.439	2.283	2.645	2.555	2.433	2.522	2.488 E4	4.20
11)	Isobutylene							0.652 E1	138.46
12)	Isobutane	6.058	4.793	2.214	1.553	1.353		2.662 E4	86.17
13)	n-Butane	6.058	4.793	2.214	1.553	1.353		2.662 E4	86.17

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS091217_R.M Wed Sep 13 15:11:48 2017

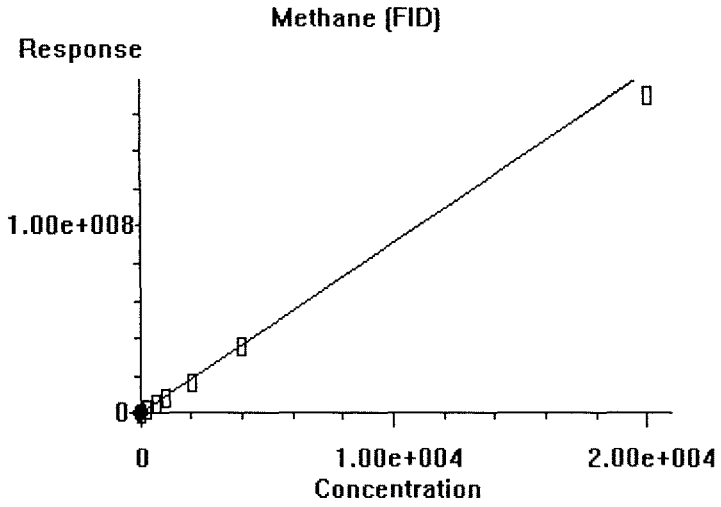
Edit Compounds -- Compound #6 -- Methane (FID)

Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response	Lvl ID	Concentration	Response
1	0.151000		11	20000.000000	169009160.49199
2	0.302000	3564.400000			
3	1.510000	14725.268625			
4	4.530000	41128.575000			
5	10.570000	91966.784531			
6	200.000000	1735997.497500			
7	600.000000	5189848.900000			
8	1000.000000	8598533.570000			
9	2000.000000	16098209.390000			
10	4000.000000	35776839.311362			



0.000e+000	Quadratic term
9.071e+003	Linear term
0.000e+000	Constant term
11.657%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #7 -- Ethylene

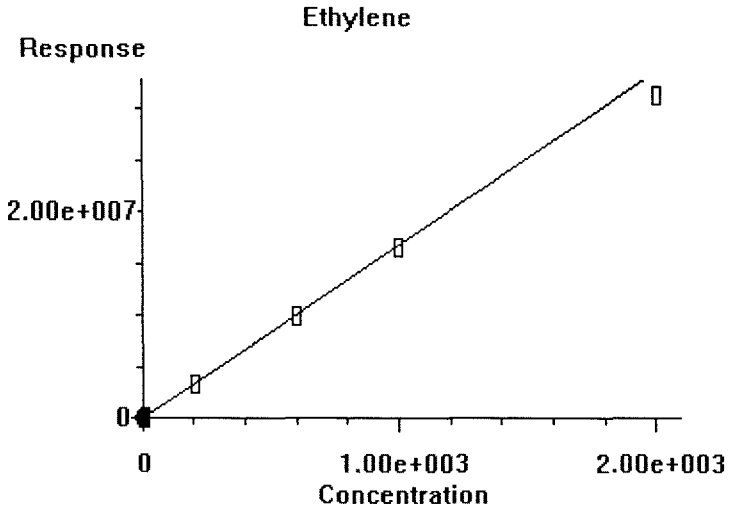
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2621.970000
2	0.302000	4946.731301
3	1.510000	26884.746847
4	4.530000	77902.721497
5	10.570000	172085.529560
6	200.000000	3339702.313219
7	600.000000	10007758.776971
8	1000.000000	16608503.805988
9	2000.000000	31192443.898600
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.673e+004	Linear term
0.000e+000	Constant term
3.897%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #8 -- Ethane

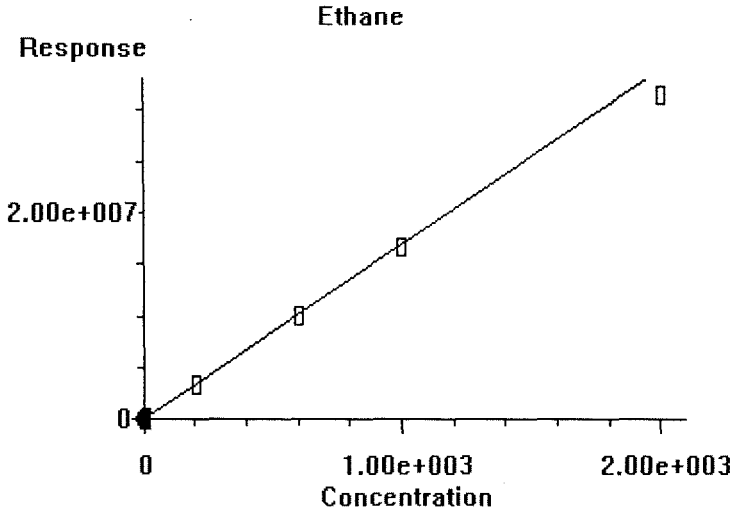
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2689.928008
2	0.302000	5060.331943
3	1.510000	26943.667500
4	4.530000	78353.525045
5	10.570000	178840.731148
6	200.000000	3350442.319129
7	600.000000	10048964.218029
8	1000.000000	16709164.879012
9	2000.000000	31424217.938900
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.695e+004	Linear term
0.000e+000	Constant term
3.831%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #9 -- Propylene

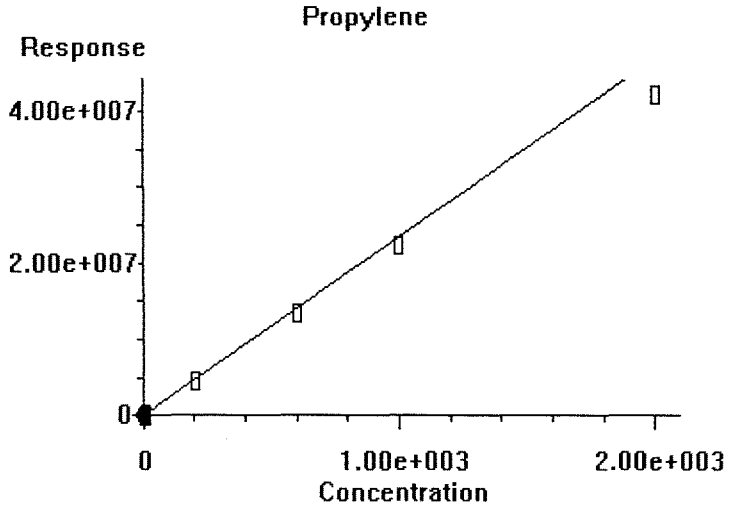
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3782.537646
2	0.302000	6933.285530
3	1.510000	39139.518208
4	4.530000	112341.896872
5	10.570000	248003.903623
6	200.000000	4504060.086084
7	600.000000	13569342.761419
8	1000.000000	22494887.720990
9	2000.000000	42124689.656800
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.343e+004	Linear term
0.000e+000	Constant term
6.559%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #10 -- Propane

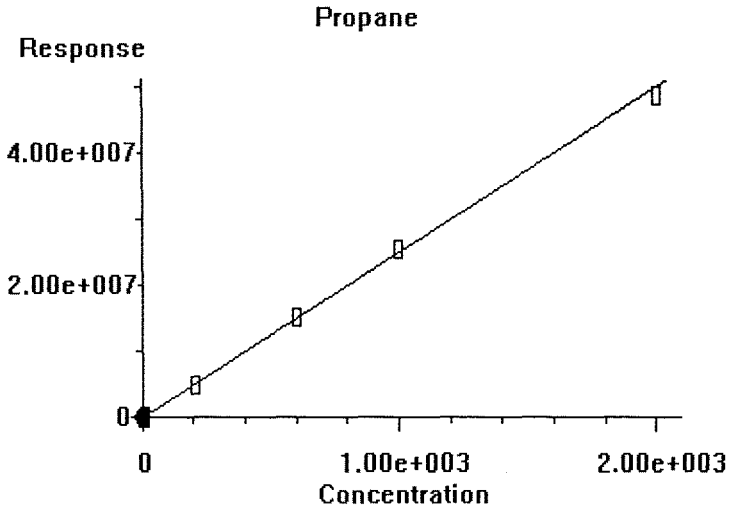
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3682.897354
2	0.302000	6894.237803
3	1.510000	39934.166792
4	4.530000	115723.428128
5	10.570000	257124.432806
6	200.000000	5043035.663916
7	600.000000	15251325.797404
8	1000.000000	25459410.657938
9	2000.000000	48583085.287451
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.488e+004	Linear term
0.000e+000	Constant term
4.200%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121702.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121703.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121704.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121705.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121706.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121707.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121711.D
11	11	20000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121712.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Sep 13 11:04 2017	Sep 12 15:03 2017	12-Sep-2017, 10:52
2	2	Sep 13 11:05 2017	Sep 13 11:05 2017	12-Sep-2017, 11:05
3	3	Sep 13 11:06 2017	Sep 13 11:05 2017	12-Sep-2017, 11:45
4	4	Sep 13 11:09 2017	Sep 13 11:06 2017	12-Sep-2017, 12:09
5	5	Sep 13 11:09 2017	Sep 13 11:09 2017	12-Sep-2017, 12:30
6	6	Sep 13 11:10 2017	Sep 13 11:10 2017	12-Sep-2017, 12:47
7	7	Sep 13 11:11 2017	Sep 13 11:10 2017	12-Sep-2017, 13:00
8	8	Sep 13 11:12 2017	Sep 13 11:11 2017	12-Sep-2017, 13:47
9	9	Sep 13 11:12 2017	Sep 13 11:12 2017	12-Sep-2017, 14:07
10	10	Sep 13 11:14 2017	Sep 13 11:13 2017	12-Sep-2017, 14:48
11	11	Sep 13 11:14 2017	Sep 13 11:14 2017	12-Sep-2017, 15:21

RS091217_R.M Wed Sep 13 15:11:22 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.767	373920	0.128	ppm	
2)	Carbon monoxide	1.767	373920	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	1.595	2622	0.156	ppm	
8)	Ethane	1.848	2690	0.156	ppm	
9)	Propylene	4.222	3783	0.154	ppm	
10)	Propane	4.348	3683	0.139	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.582f	6058	NoCal	ppm	
13)	n-Butane	6.582f	6058	NoCal	ppm	

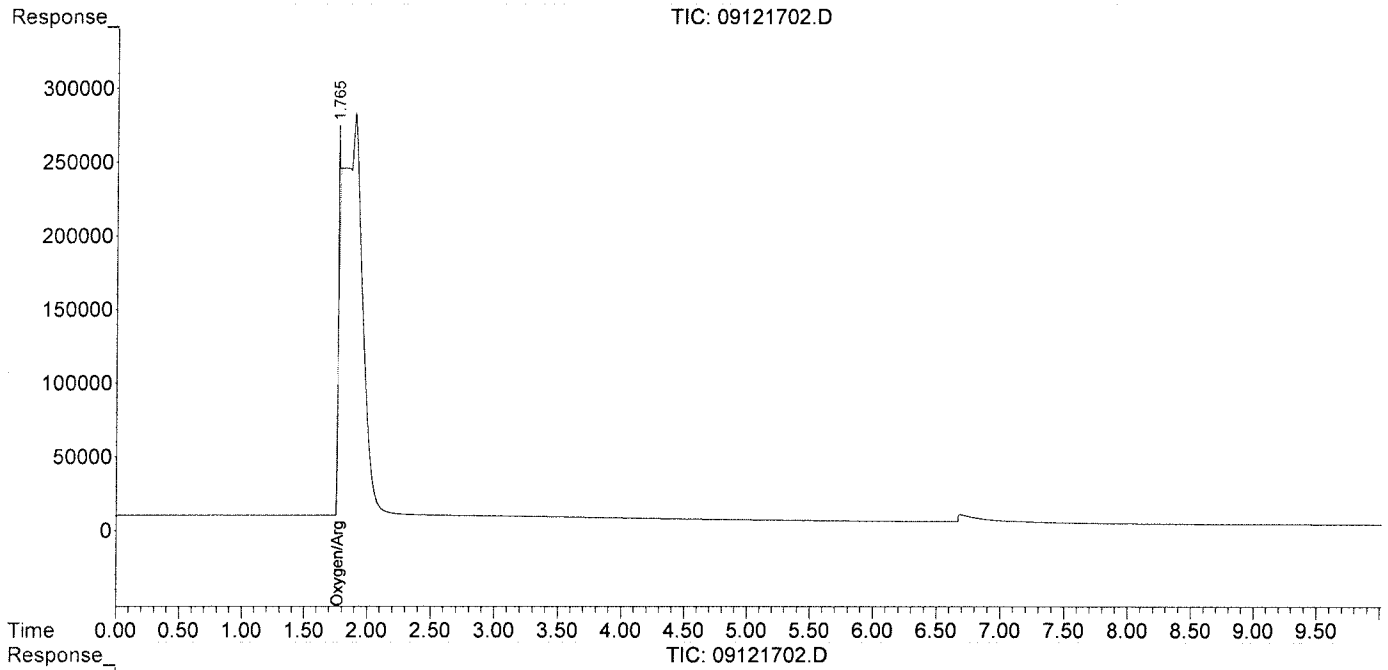
(f)=RT Delta > 1/2 Window (m)=manual int.

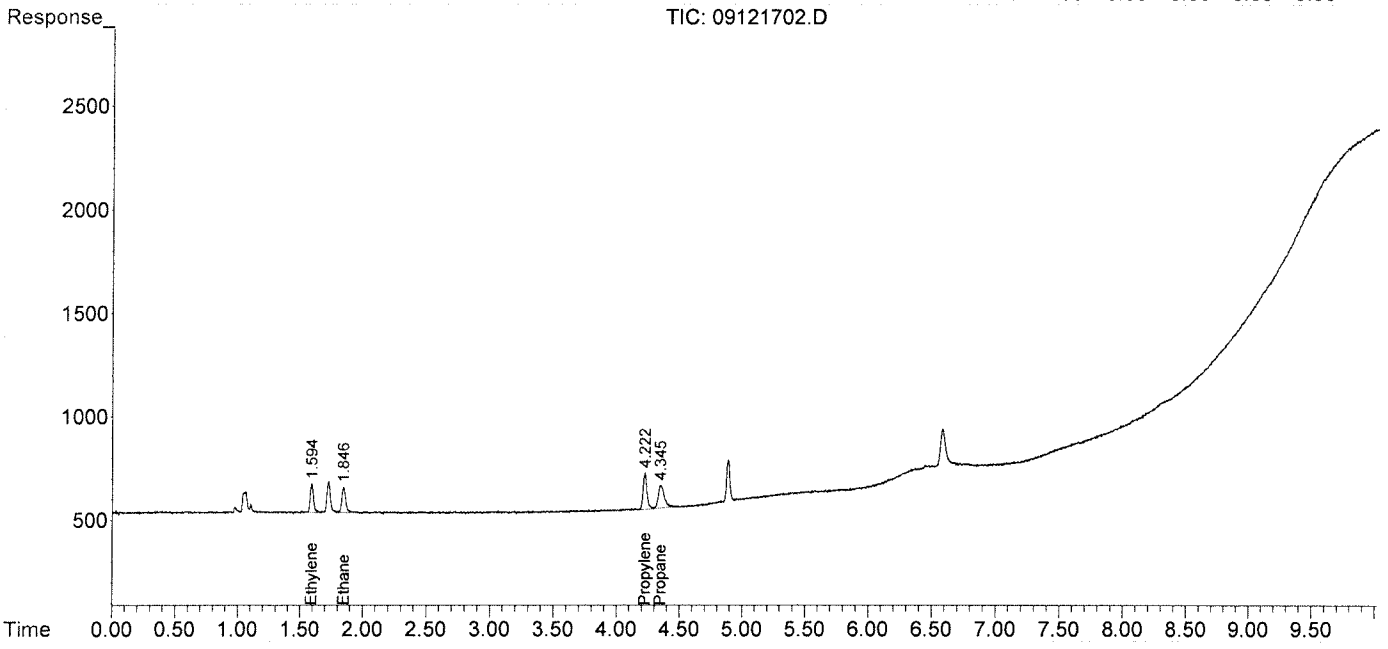
9/13/17

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

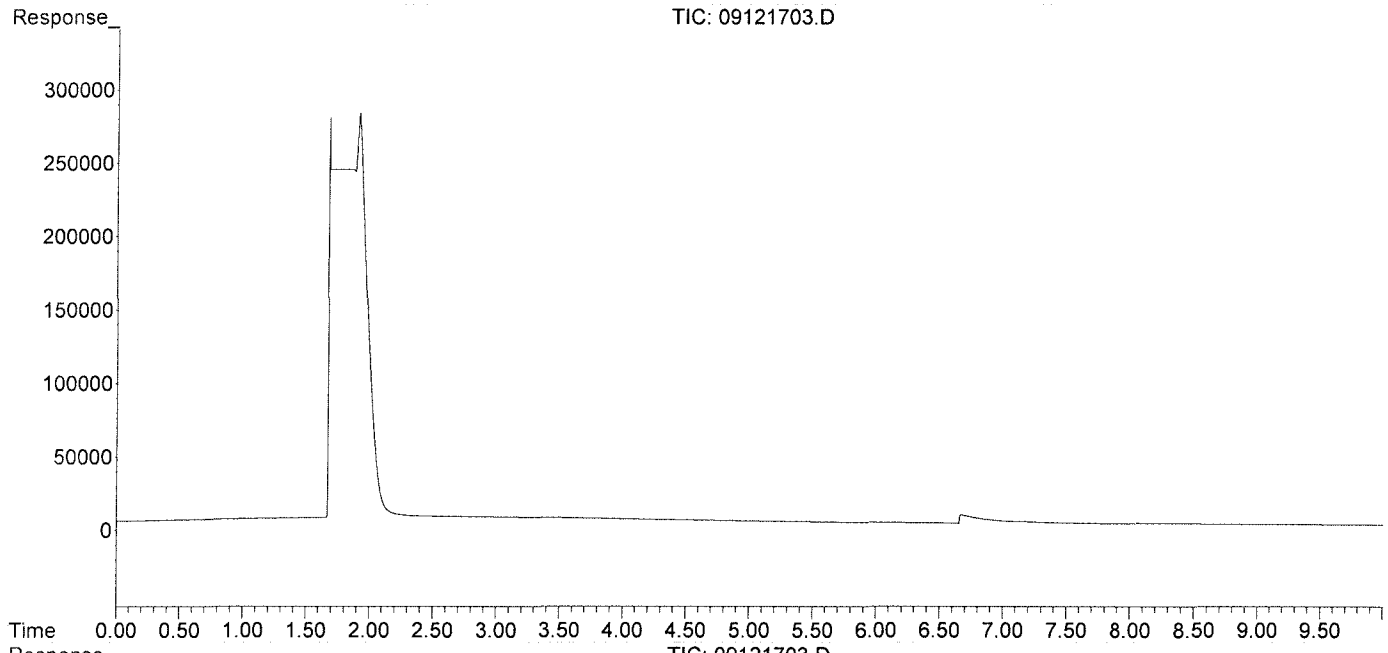
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.913f	-25181981	N.D.	ppm	
2)	Carbon monoxide	1.913f	-25181981	1.089	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.049	3564	0.391	ppm	m
7)	Ethylene	1.577	4947	0.292	ppm	
8)	Ethane	1.828	5060	0.293	ppm	
9)	Propylene	4.207	6933	0.281	ppm	
10)	Propane	4.337	6894	0.268	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	9587	0.158	ppm	
13)	n-Butane	6.579f	9587	0.158	ppm	

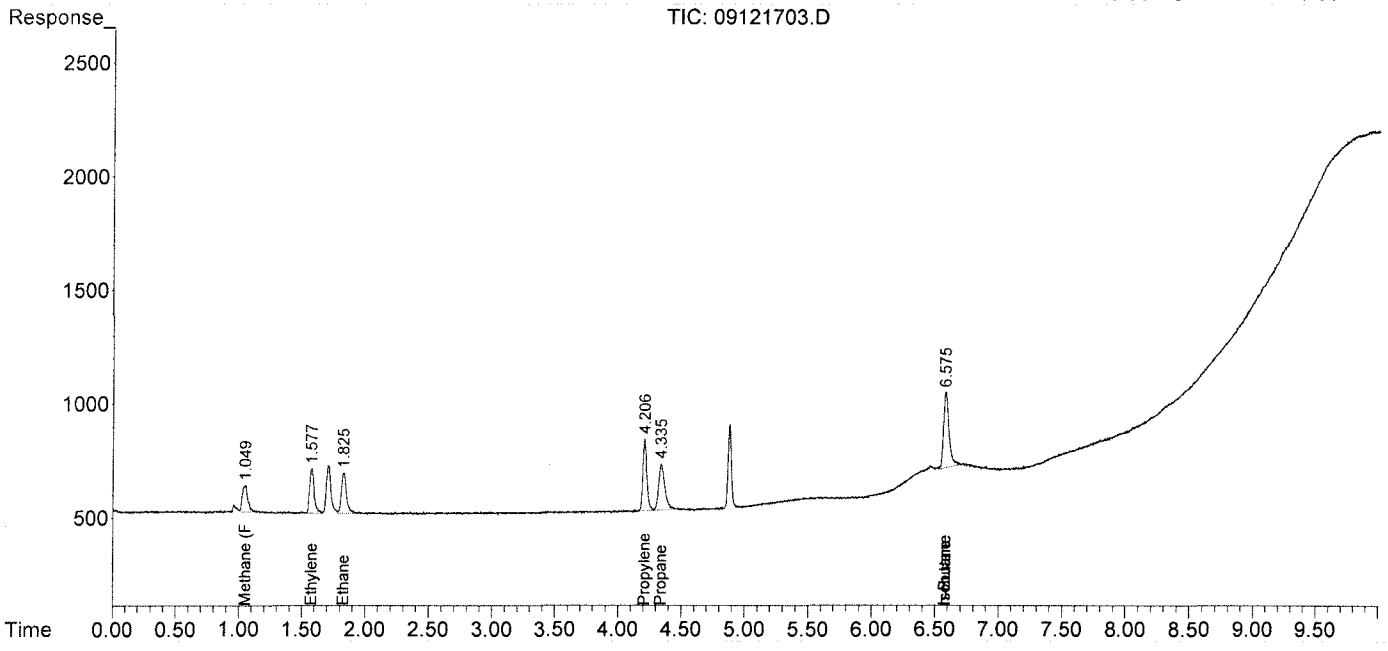
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



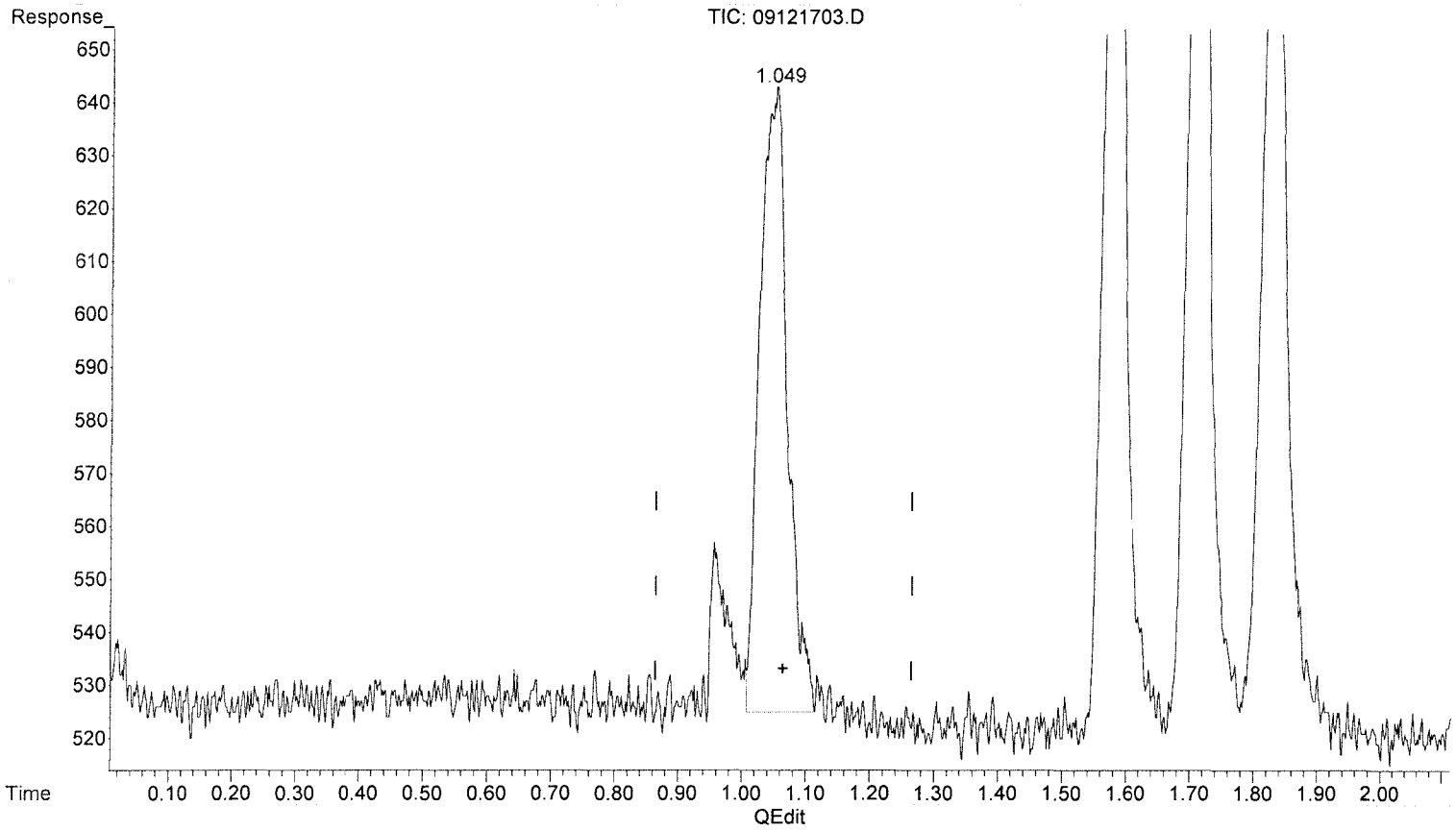


01075270

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.049min 0.391 ppm m

response 3564

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

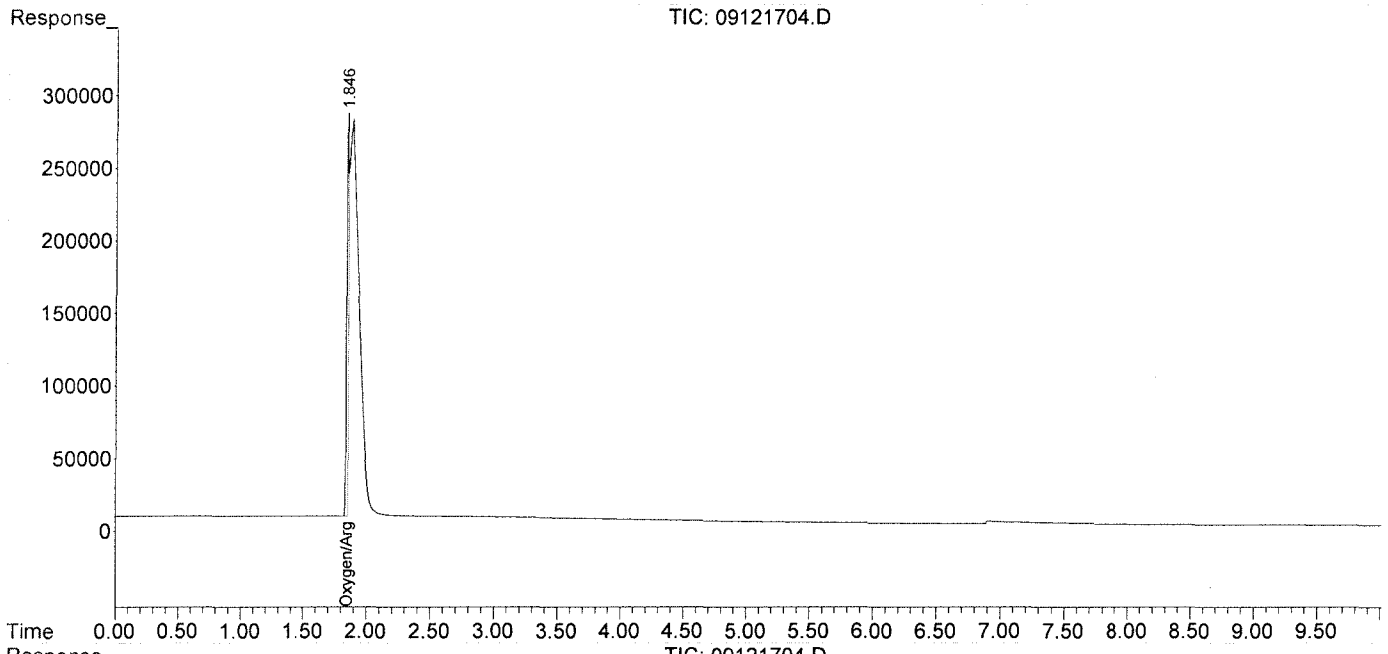
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.847	2536230	1.056	ppm
2)	Carbon monoxide	1.847	2536230	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.064	14725	1.613	ppm
7)	Ethylene	1.598	26885	1.582	ppm
8)	Ethane	1.851	26944	1.555	ppm
9)	Propylene	4.220	39140	1.589	ppm
10)	Propane	4.349	39934	1.596	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	55348	1.020	ppm
13)	n-Butane	6.578f	55348	1.020	ppm

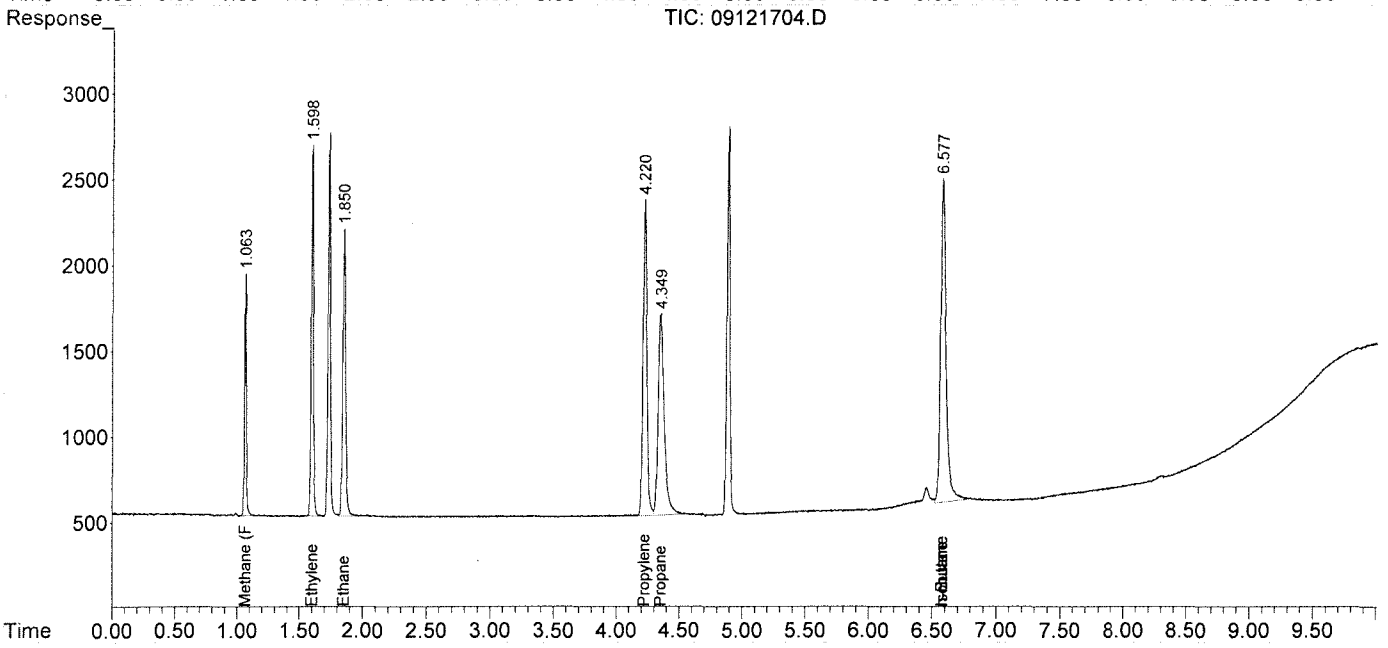
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

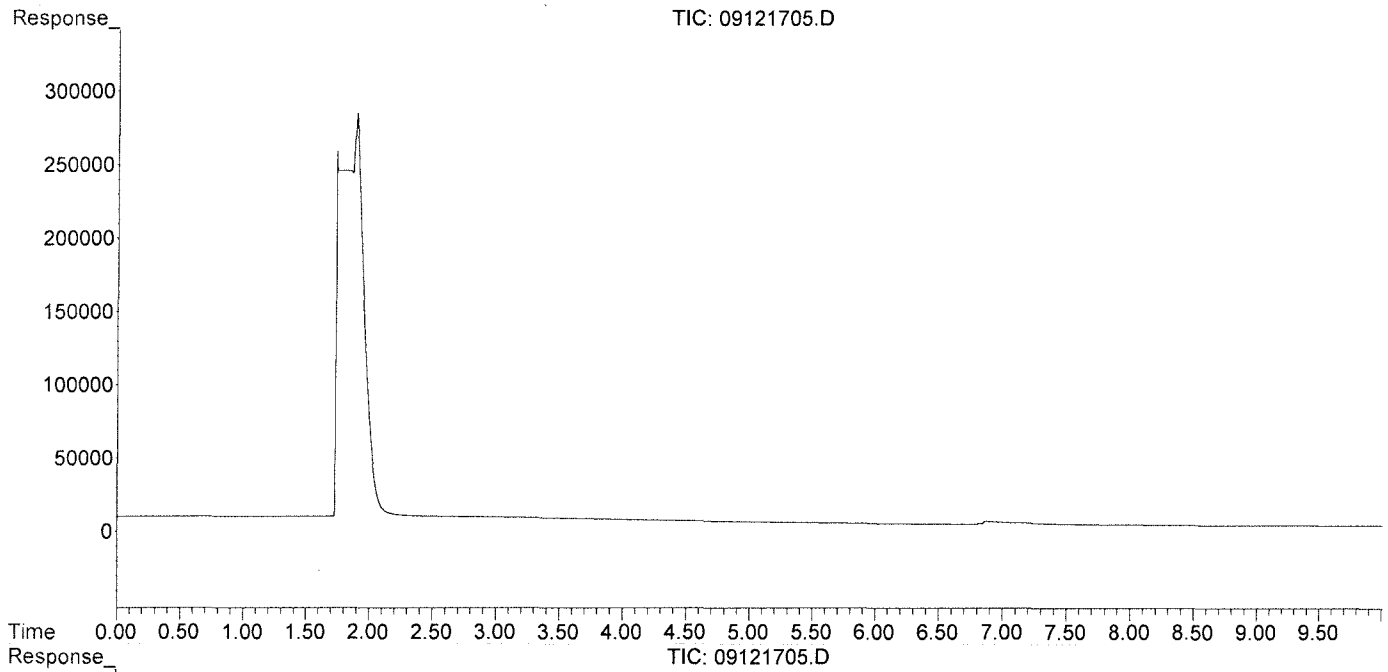
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.738	-331216	N.D.	ppm
2)	Carbon monoxide	1.738	-331216	0.019	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.052	41129	4.522	ppm
7)	Ethylene	1.586	77903	4.637	ppm
8)	Ethane	1.838	78354	4.558	ppm
9)	Propylene	4.218	112342	4.614	ppm
10)	Propane	4.347	115723	4.680	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.580f	155256	3.565	ppm
13)	n-Butane	6.580f	155256	3.565	ppm

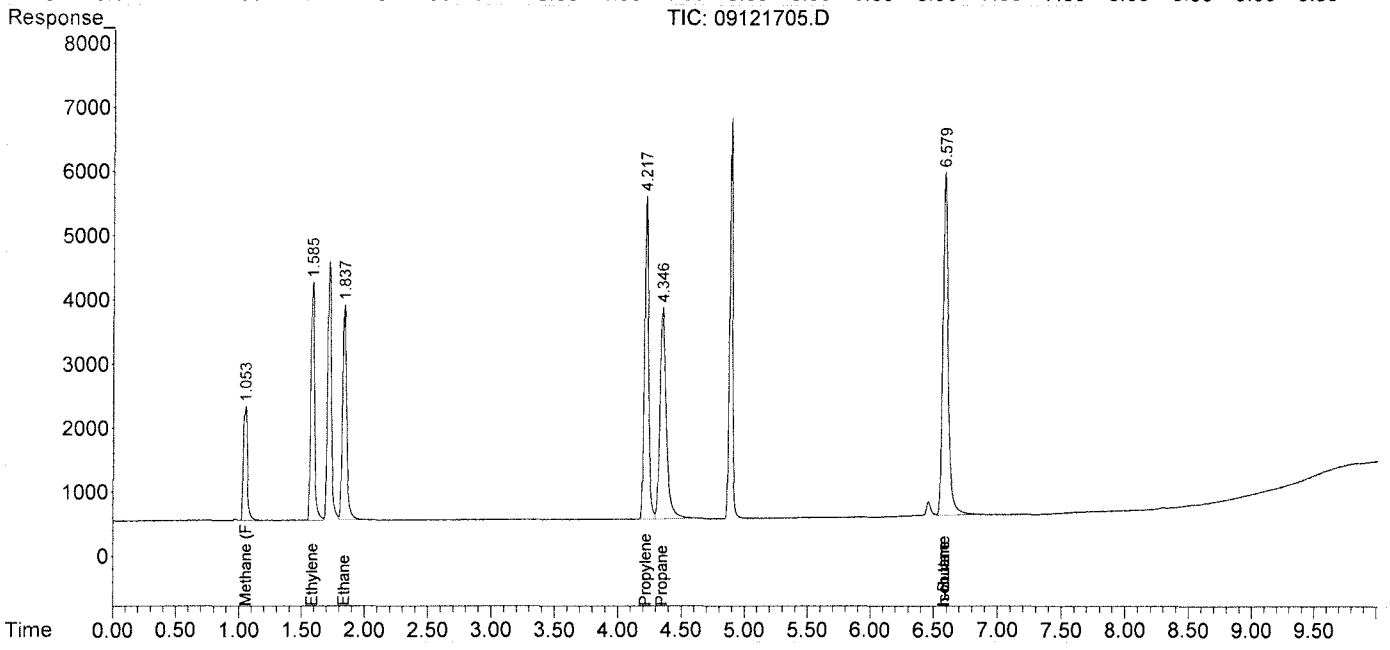
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

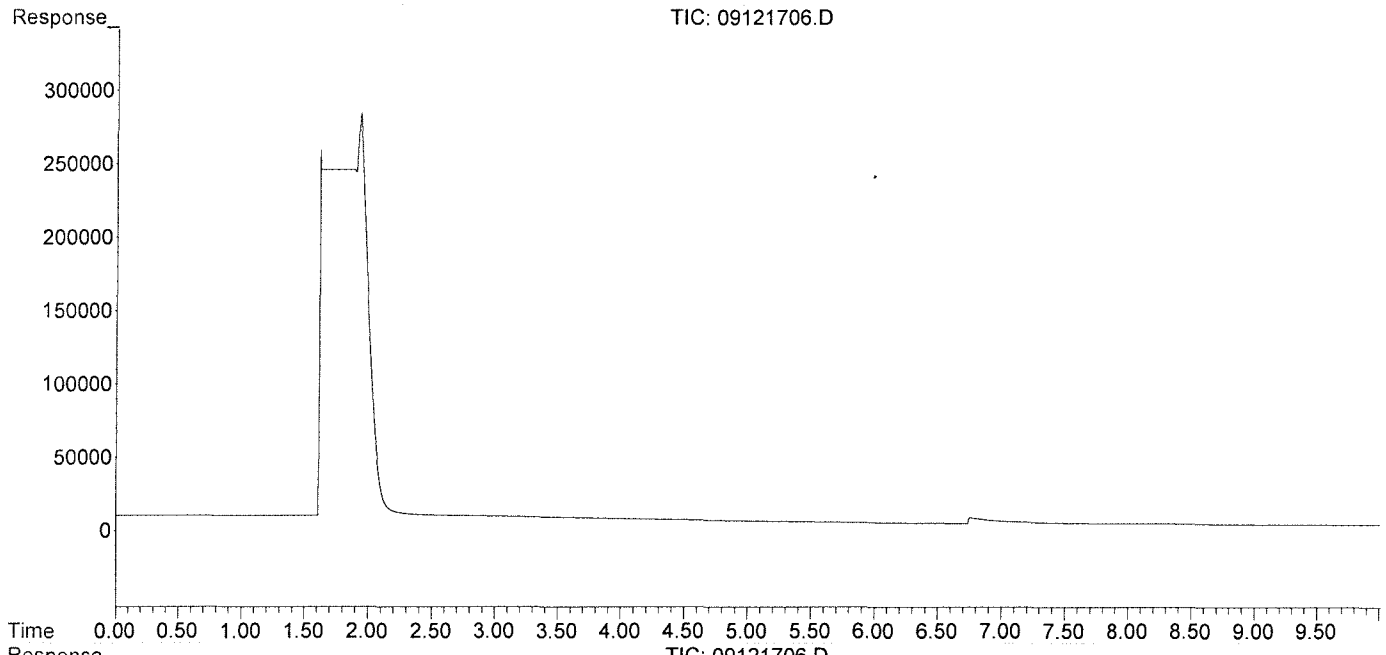
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.929f	-31871242	N.D.	ppm
2)	Carbon monoxide	1.929f	-31871242	1.818	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.025	91967	10.135	ppm
7)	Ethylene	1.568	172086	10.273	ppm
8)	Ethane	1.822	178841	10.441	ppm
9)	Propylene	4.214	248004	10.236	ppm
10)	Propane	4.344	257124	10.458	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	338181	9.254	ppm
13)	n-Butane	6.578f	338181	9.254	ppm

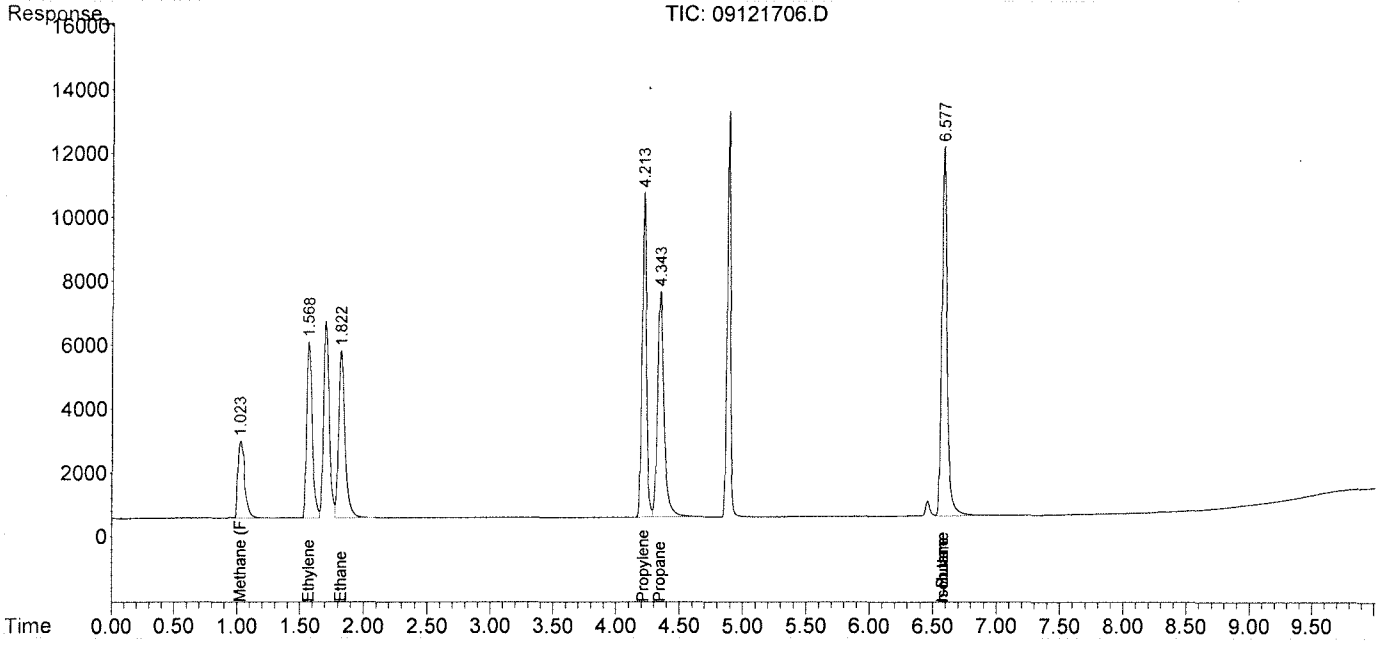
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

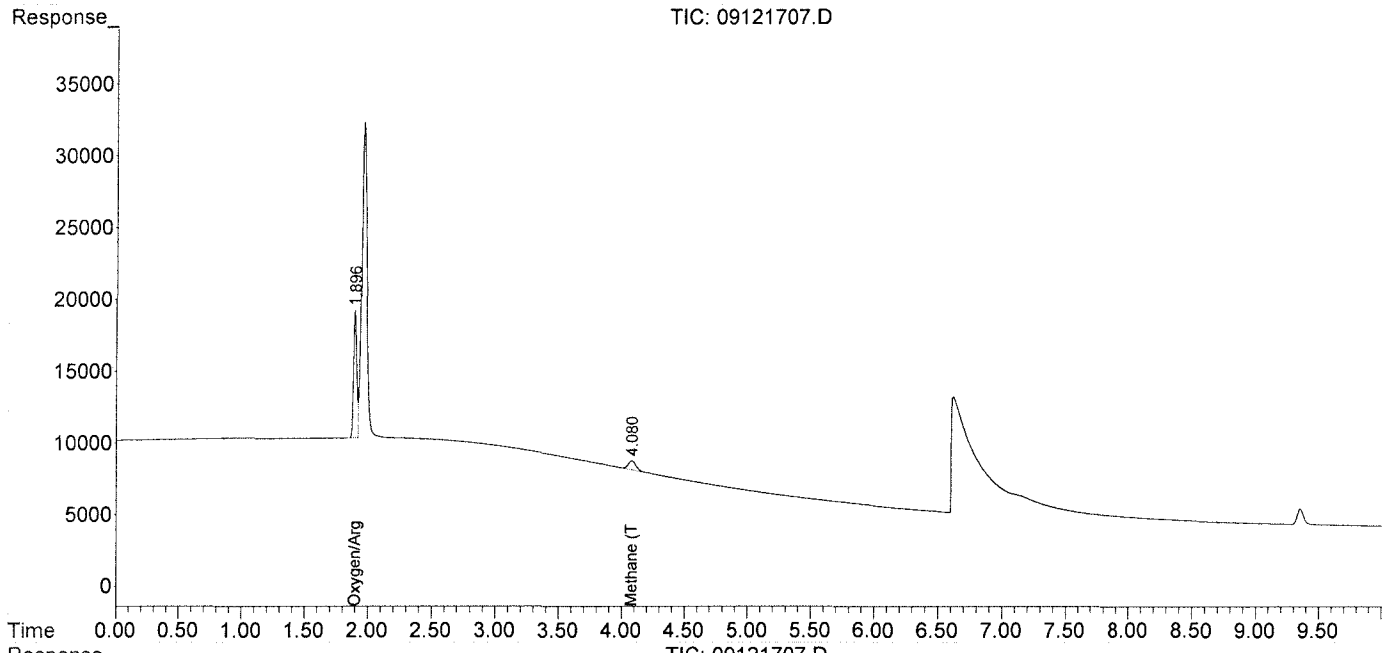
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.897	155286	0.065	ppm
2)	Carbon monoxide	1.897	155286	N.D.	ppm
3)	Methane (TCD)	4.079f	27015	2856.472	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.063	1735997	190.792	ppm
7)	Ethylene	1.597	3339702	198.758	ppm
8)	Ethane	1.849	3350442	194.597	ppm
9)	Propylene	4.201	4504060	185.706	ppm
10)	Propane	4.333	5043036	204.809	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

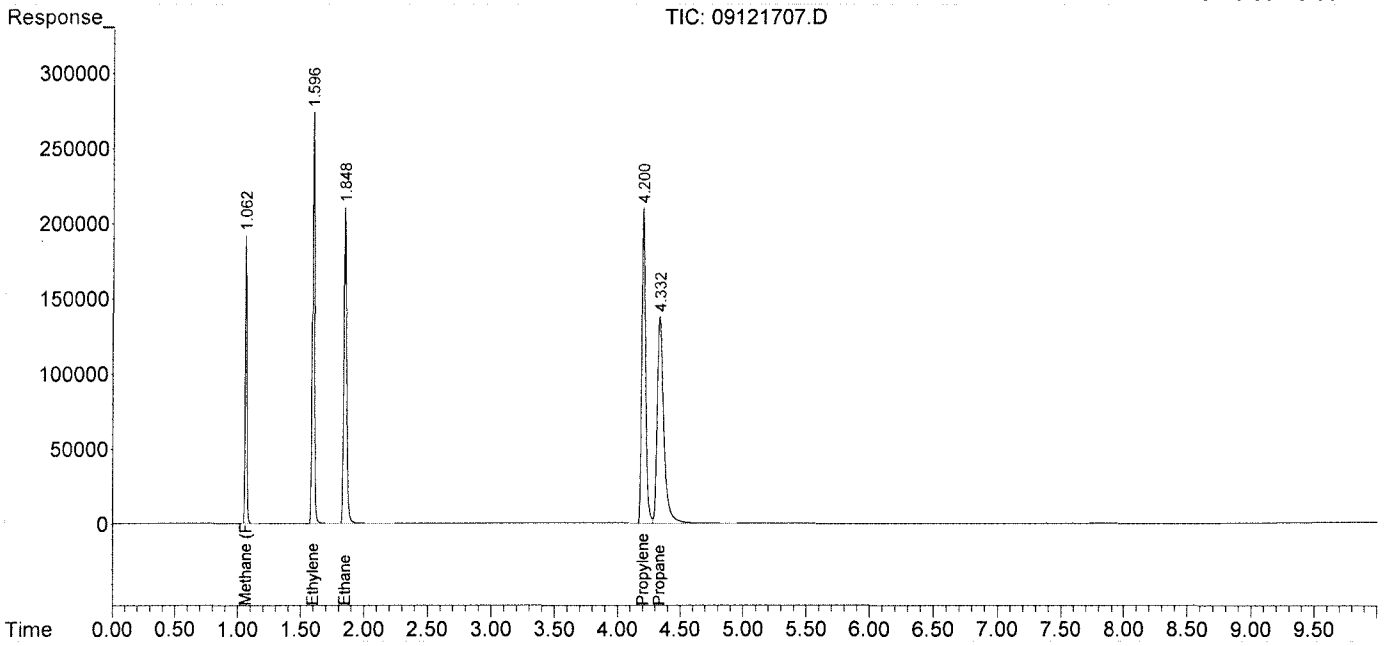
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

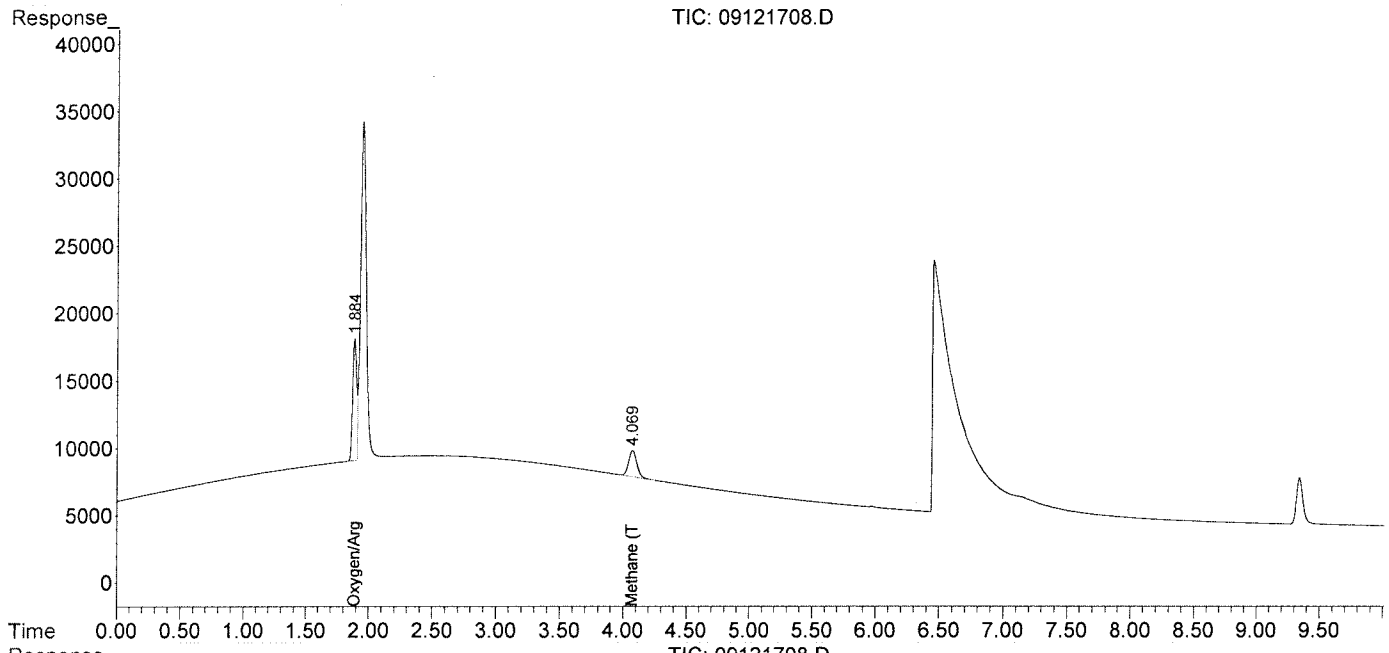
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.884	196022	0.124	ppm
2)	Carbon monoxide	1.884	196022	N.D.	ppm
3)	Methane (TCD)	4.070f	88282	782.730	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.044	5189849	539.759	ppm
7)	Ethylene	1.573	10007759	590.286	ppm
8)	Ethane	1.822	10048964	583.213	ppm
9)	Propylene	4.160	13569343	562.612	ppm
10)	Propane	4.300	15251326	615.171	ppm
11)	Isobutylene	6.143	9815	NoCal	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

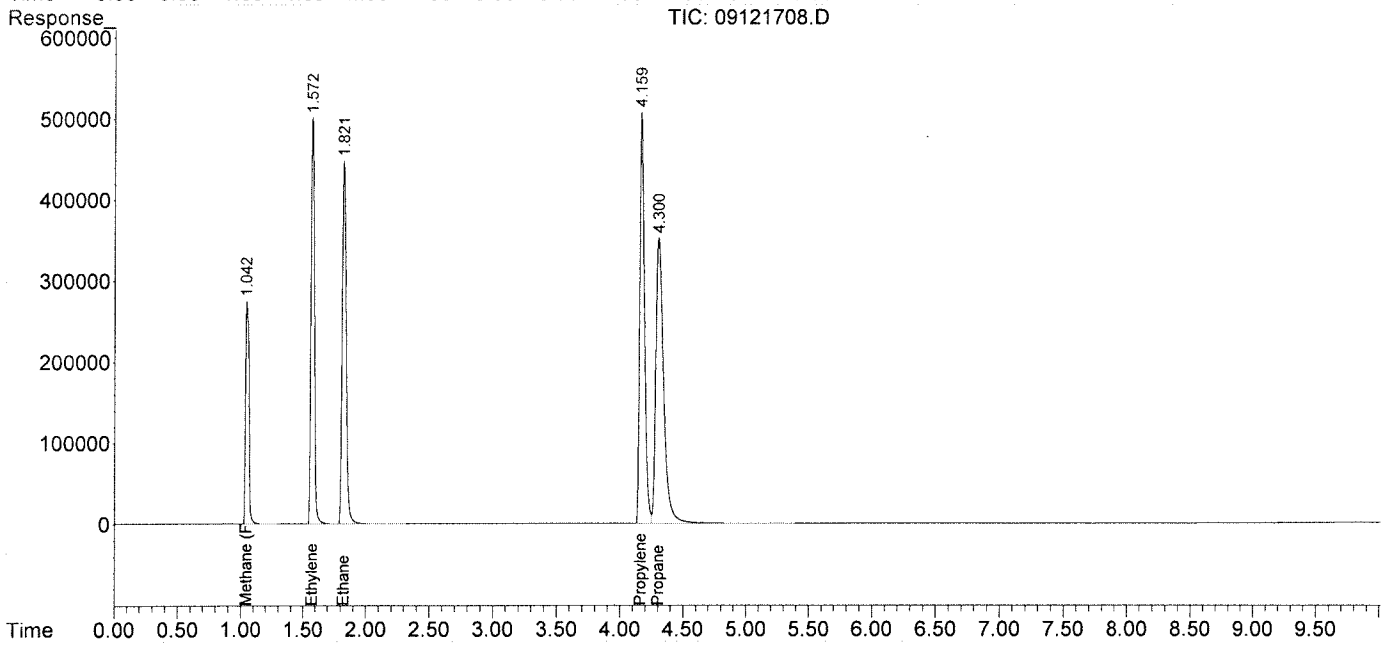
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

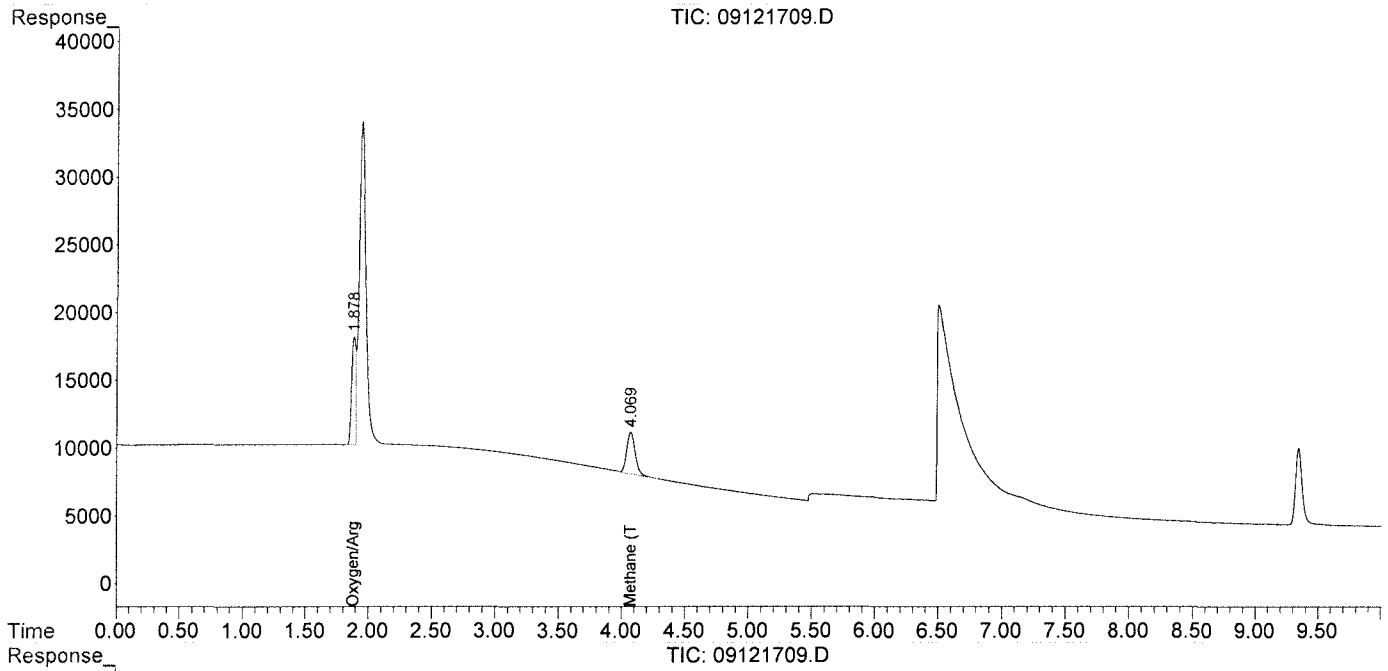
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.879	192611	0.162	ppm
2)	Carbon monoxide	1.879	192611	N.D.	ppm
3)	Methane (TCD)	4.070f	145492	1244.729	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.039	8598534	945.644	ppm
7)	Ethylene	1.576	16608504	981.887	ppm
8)	Ethane	1.827	16709165	973.644	ppm
9)	Propylene	4.161	22494888	941.060	ppm
10)	Propane	4.298	25459411	1023.223	ppm
11)	Isobutylene	6.138	16970	8645.243	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

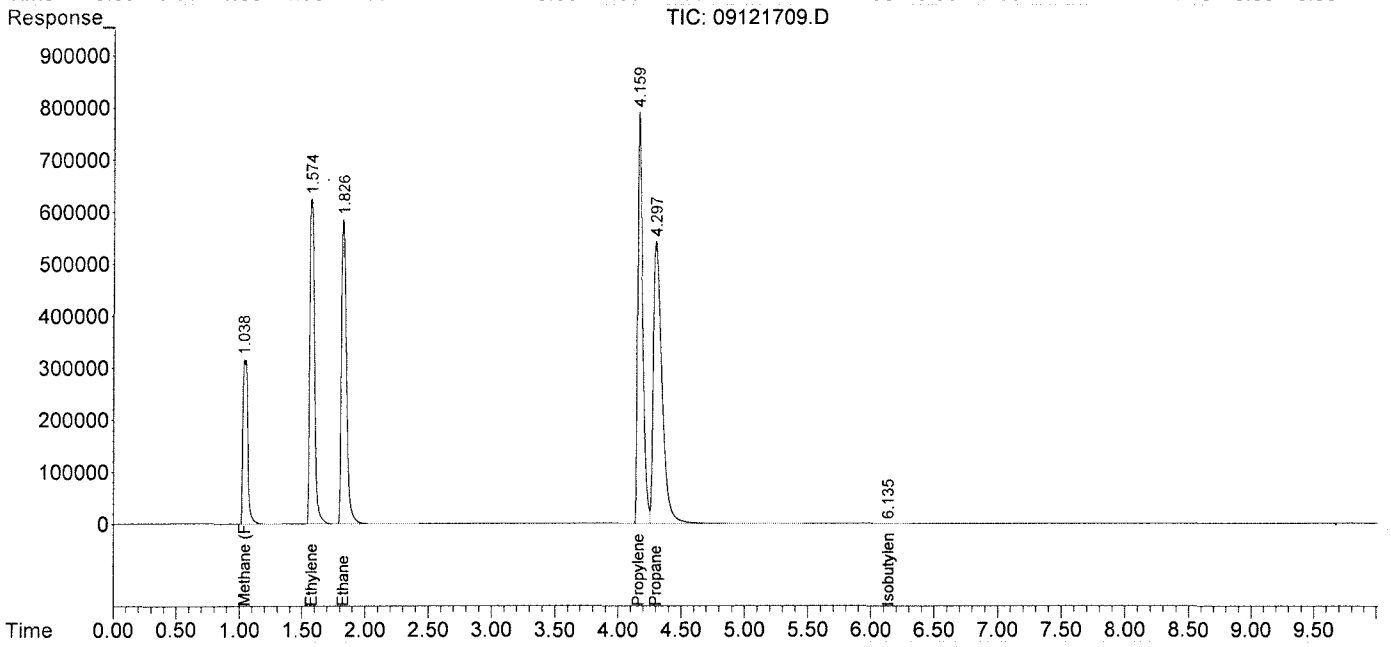
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

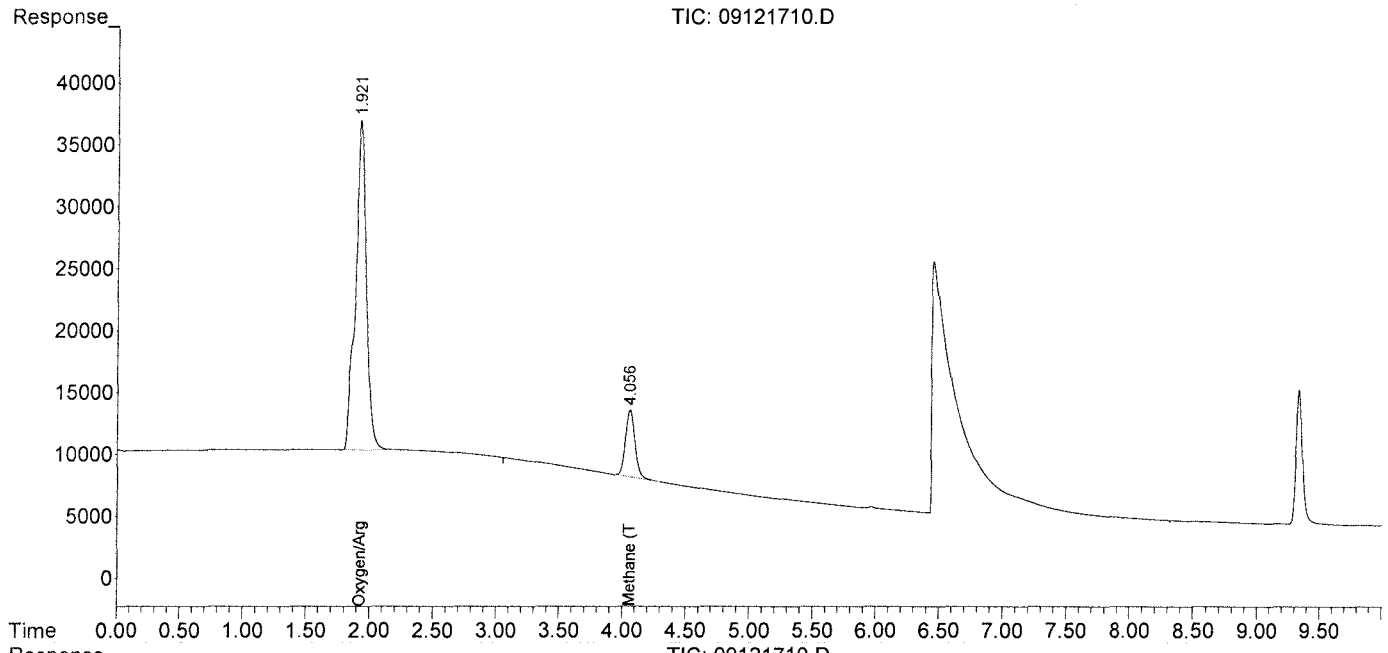
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.922f	1578147	1.659	ppm	
2)	Carbon monoxide	1.922f	1578147	N.D.	ppm	
3)	Methane (TCD)	4.057f	281651	3526.607	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.016	16098209	1763.622	ppm	
7)	Ethylene	1.552	31192444	1848.268	ppm	
8)	Ethane	1.801	31424218	1837.143	ppm	
9)	Propylene	4.129	42124690	1775.341	ppm	m
10)	Propane	4.269	48583085	1946.921	ppm	
11)	Isobutylene	6.136	33832	25613.603	ppm	
12)	Isobutane	6.576f	3845	0.120	ppm	
13)	n-Butane	6.576f	3845	0.120	ppm	

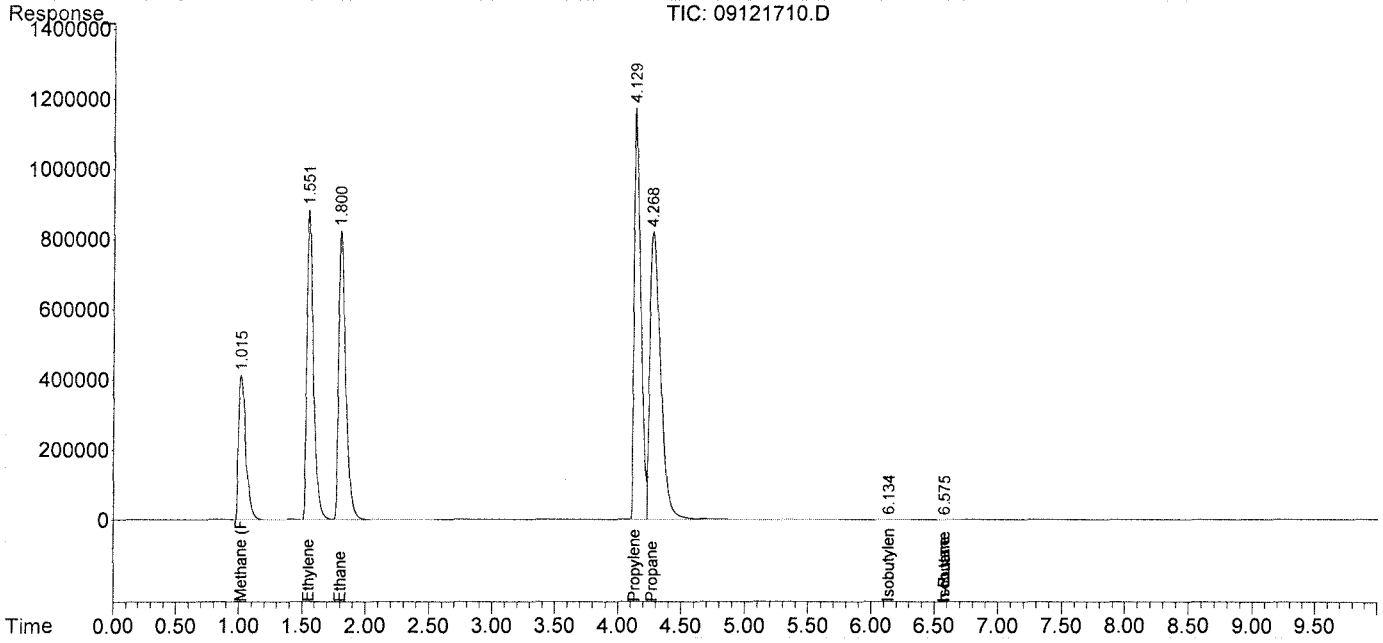
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

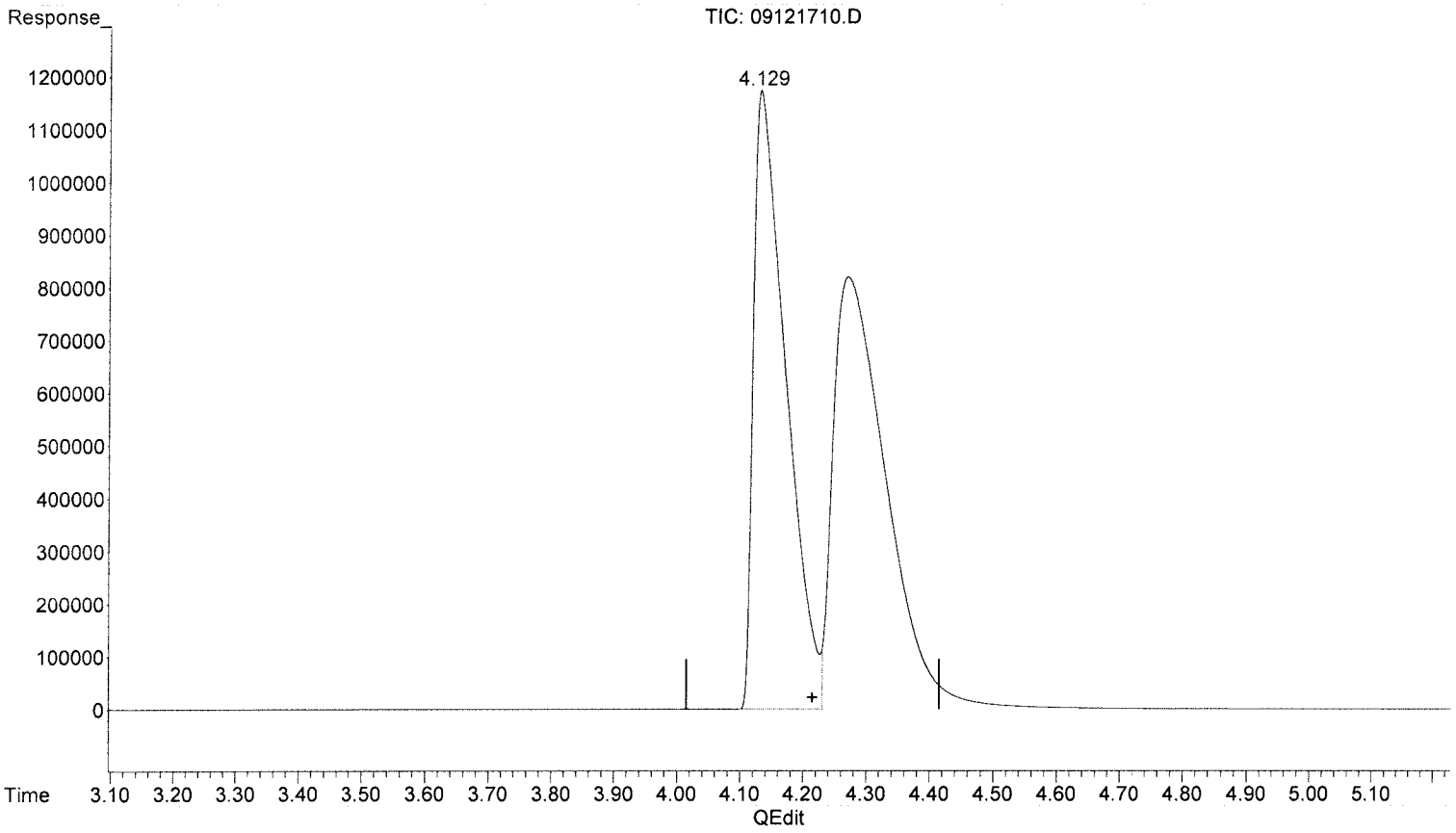




Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(9) Propylene

4.129min 1775.341 ppm m

response 42124690

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

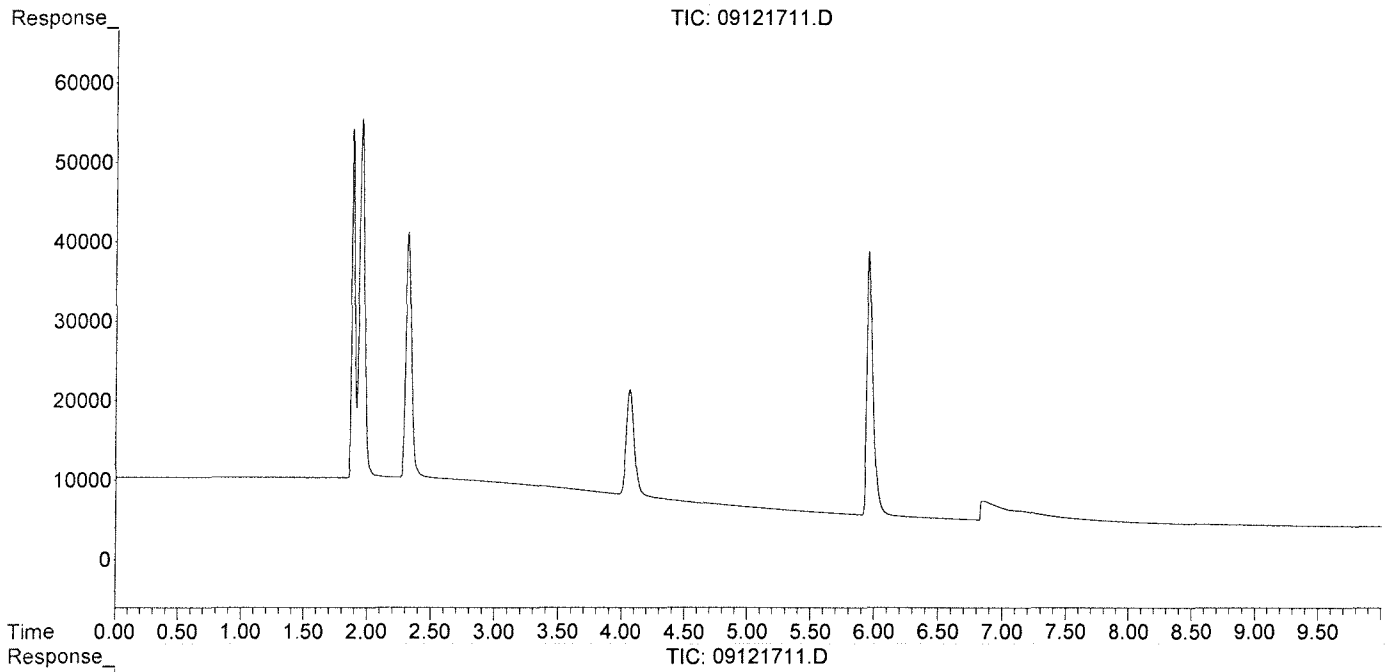
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.059	35776839	3925.122	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

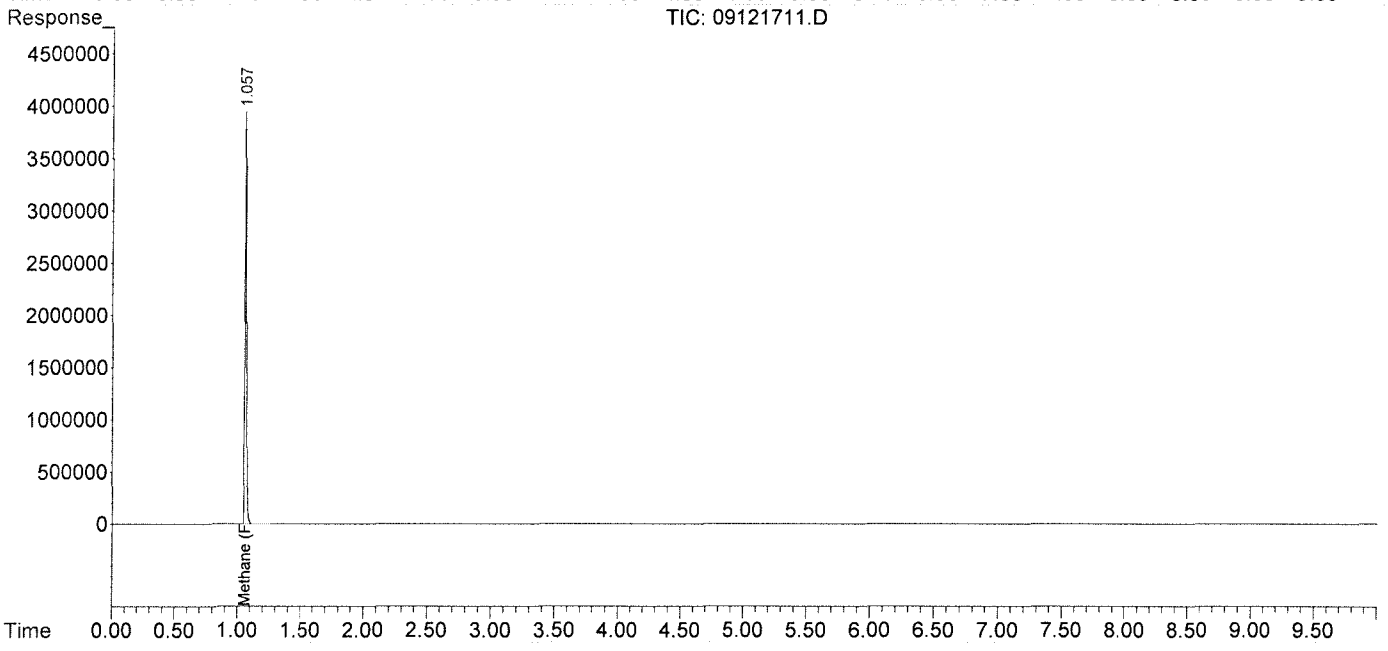
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

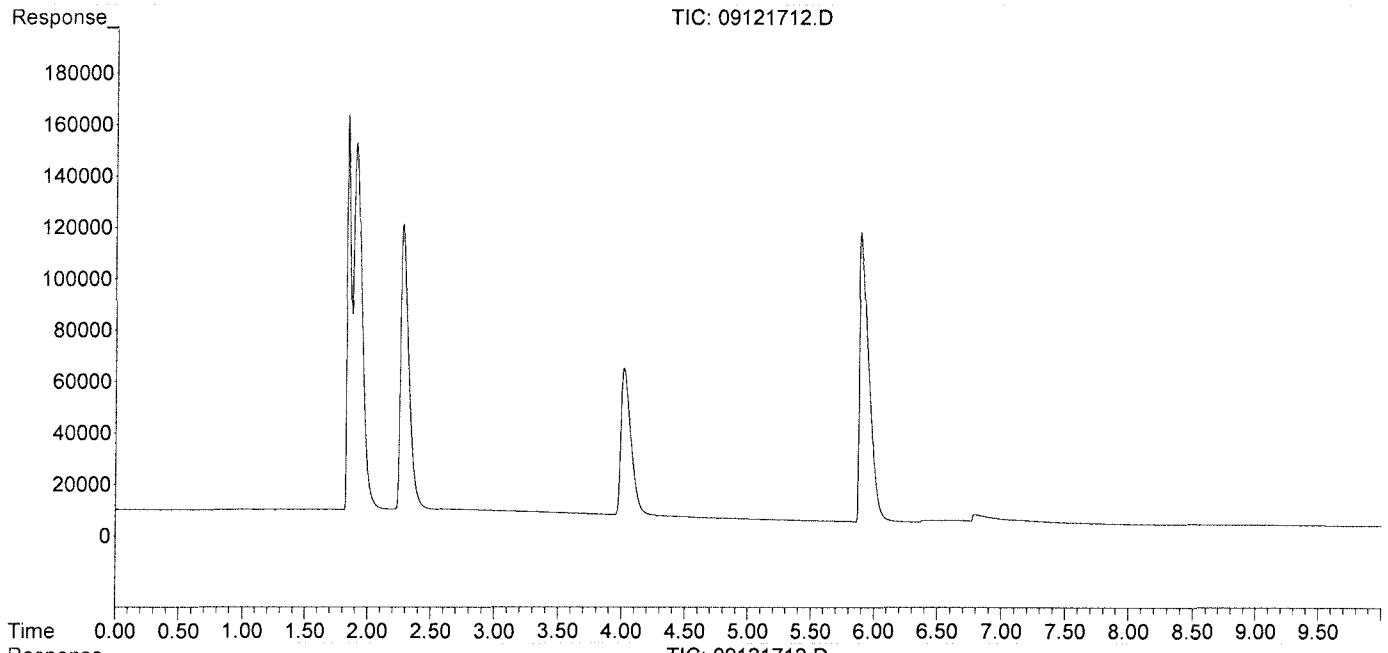
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.836	3190788	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.034	169009160	18492.064	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

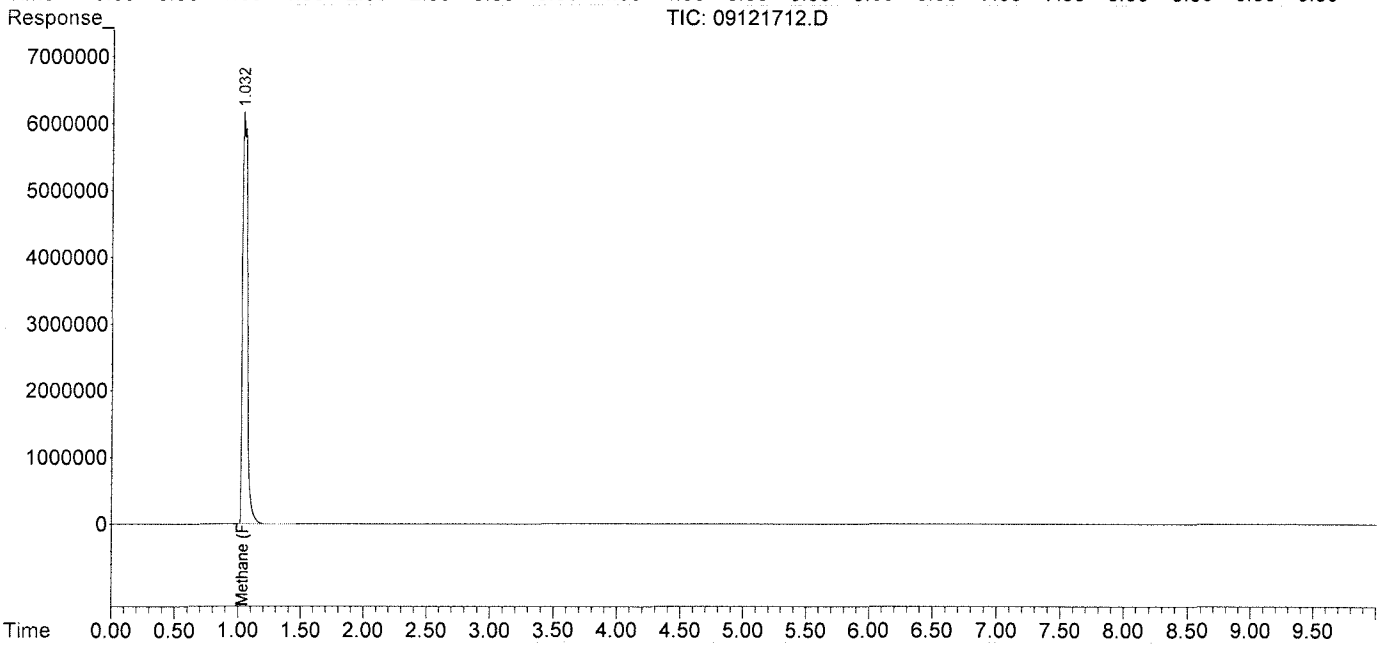
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units			
Target Compounds								
1)	Oxygen/Argon	1.843	2922459	3.687	ppm			
2)	Carbon monoxide	1.843	2922459	N.D.	ppm			
3)	Methane (TCD)	0.000	0	N.D.	ppm	actual	%	
4)	Carbon dioxide	0.000	0	N.D.	ppm			
6)	Methane (FID)	1.063	13748	1.516	ppm	~~1500~~	1.50	101.1
7)	Ethylene	1.598	24153	1.443	ppm	~~1500~~	1.50	96.2
8)	Ethane	1.850	24488	1.445	ppm	~~1500~~	1.50	96.3
9)	Propylene	4.221	36004	1.537	ppm	~~1500~~	1.50	102.5
10)	Propane	4.350	37738	1.517	ppm	~~1511~~	1.51	100.5
11)	Isobutylene	0.000	0	N.D.	ppm			
12)	Isobutane	6.579f	48019	1.804	ppm	9/14/17		
13)	n-Butane	6.579f	48019	1.804	ppm			

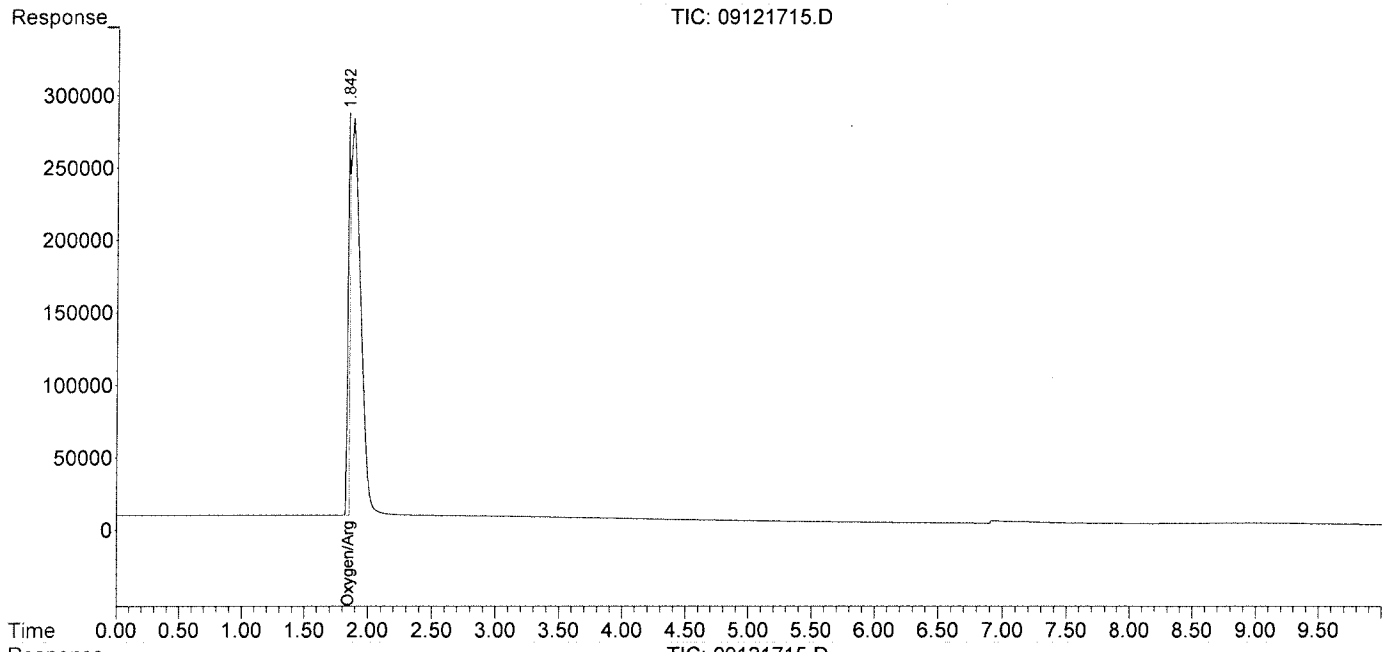
(f)=RT Delta > 1/2 Window (m)=manual int.

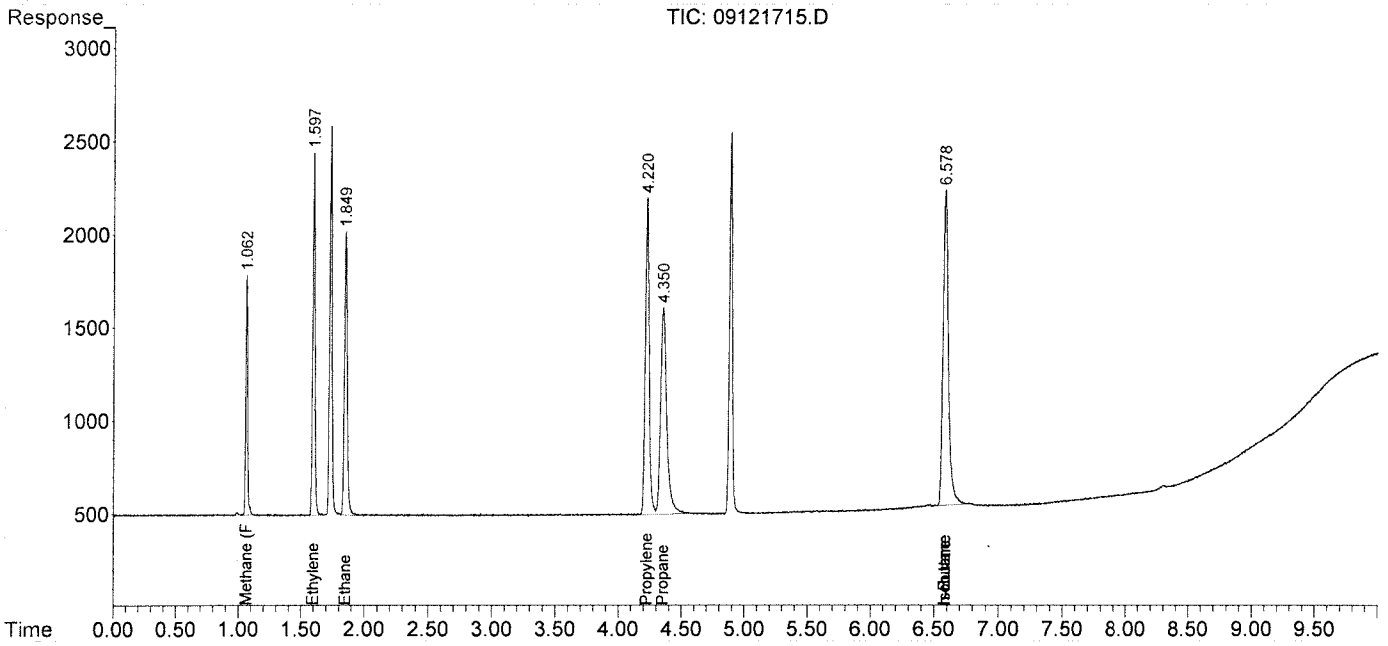
9/14/17

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Dissolved Gases by RSK175

ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P2102701
Sample Vol. (ml) : 32.00 ml
Analyst : CB
Date Analysis : 05/25/21
Head Space Vol.(ml) : 8.00 ml

Instrument : GC#10
Detector : FID#10, TCD#10
Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Methane	Ethylene	Ethane
STD S27-05301301 0.1ml	0.100	1.474	1.468	1.442
ACTUAL		1.52	1.51	1.52
%Difference		3.0%	2.8%	5.1%
MCS 0.1mL	0.100	0.131	0.000	0.000
RB 0.1mL	0.100	0.120	0.000	0.000
LCS 0.1mL	0.100	1.455	1.159	1.333
LCSD 0.1mL	0.100	1.381	1.149	1.308
P2102701-001 0.1mL	0.100	0.000	0.000	0.000
P2102701-002 0.1mL	0.100	0.235	0.000	0.000
P2102701-002 MS 0.1mL	0.100	1.061	0.784	0.909
P2102701-002 MSD 0.1m	0.100	1.015	0.865	0.968
STD S27-05301301 0.1mL		1.466	1.486	1.478
ACTUAL		1.52	1.51	1.52
%Difference		3.6%	1.6%	2.8%

FINAL HEAD SPACE RESULT (ppm)

	Methane	Ethylene	Ethane
WWt.	16.04	28.05	30.07
HENRY'S CONSTANT	3.76E+04	1.02E+04	2.63E+04
RL	1.30	1.00	0.60
MCS 0.1mL	1.310	0.000	0.000
LCS 0.1mL	14.550	11.590	13.330
LCSD 0.1mL	13.810	11.490	13.080
P2102701-001 0.1mL	0.000	0.000	0.000
P2102701-002 0.1mL	2.350	0.000	0.000
P2102701-002 MS 0.1mL	10.610	7.840	9.090
P2102701-002 MSD 0.1mL	10.150	8.650	9.680

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2021_05\25\
Data File : 05252102.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 25-May-2021, 10:28:41
Operator : CB
Sample : STD S27-05301301 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 25 15:51:34 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

CB
5/26/21

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.110	13370	1.474	ppm
7)	Ethylene	1.677	24560	1.468	ppm
8)	Ethane	1.939	24450	1.442	ppm
9)	Propylene	4.322	35798	1.528	ppm
10)	Propane	4.442	36887	1.483	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.657	73007	2.743	ppm
13)	n-Butane	6.657	73007	2.743	ppm

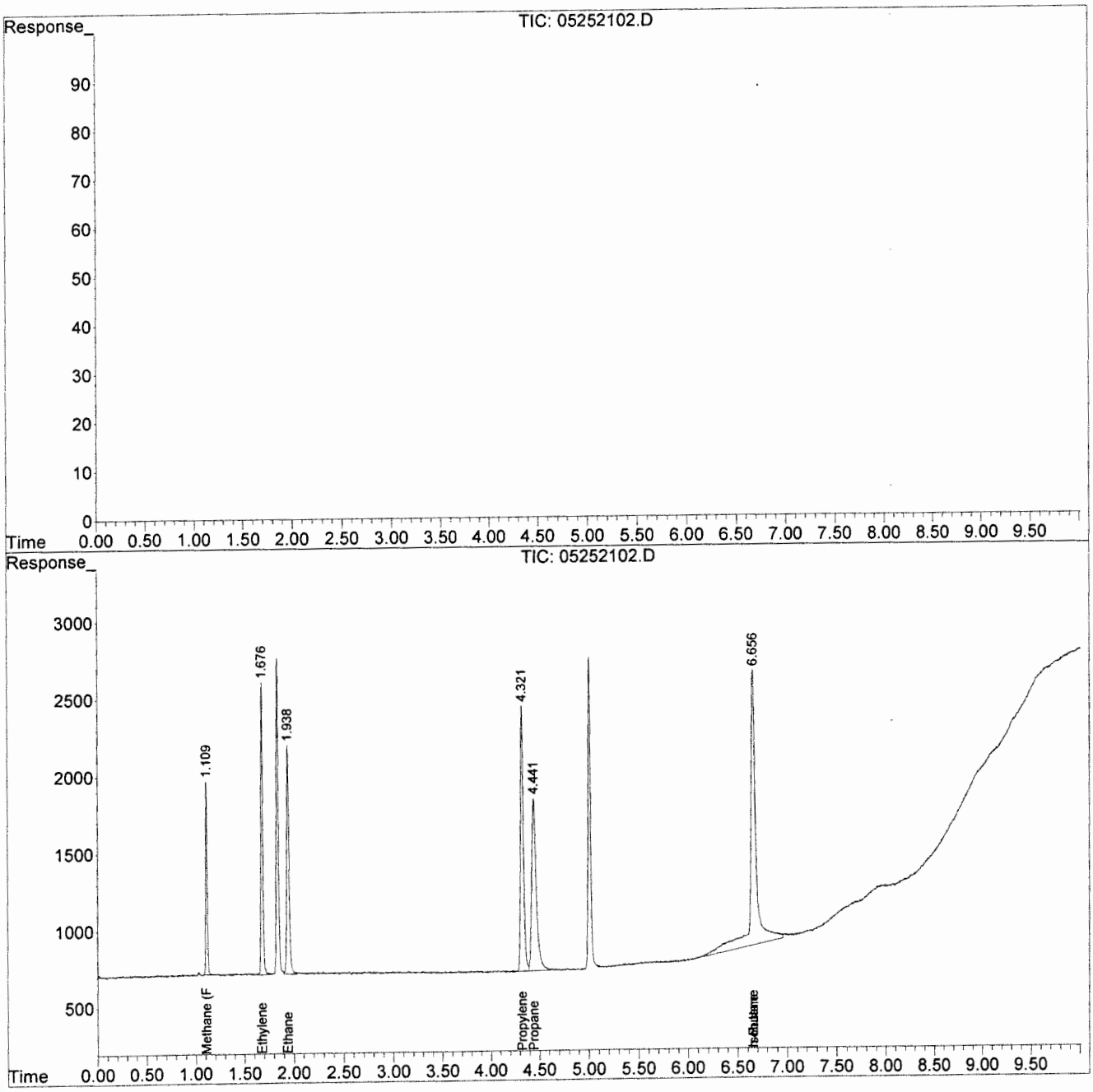
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2021_05\25\
Data File : 05252102.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 25-May-2021, 10:28:41
Operator : CB
Sample : STD S27-05301301 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 25 15:51:34 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2021_05\25\
Data File : 05252115.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 25-May-2021, 17:21:51
Operator : CB
Sample : STD S27-05301301 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 25 17:32:26 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.107	13299	1.466	ppm
7)	Ethylene	1.667	24872	1.486	ppm
8)	Ethane	1.927	25047	1.478	ppm
9)	Propylene	4.311	36298	1.549	ppm
10)	Propane	4.431	37830	1.520	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.651	50700	1.905	ppm
13)	n-Butane	6.651	50700	1.905	ppm

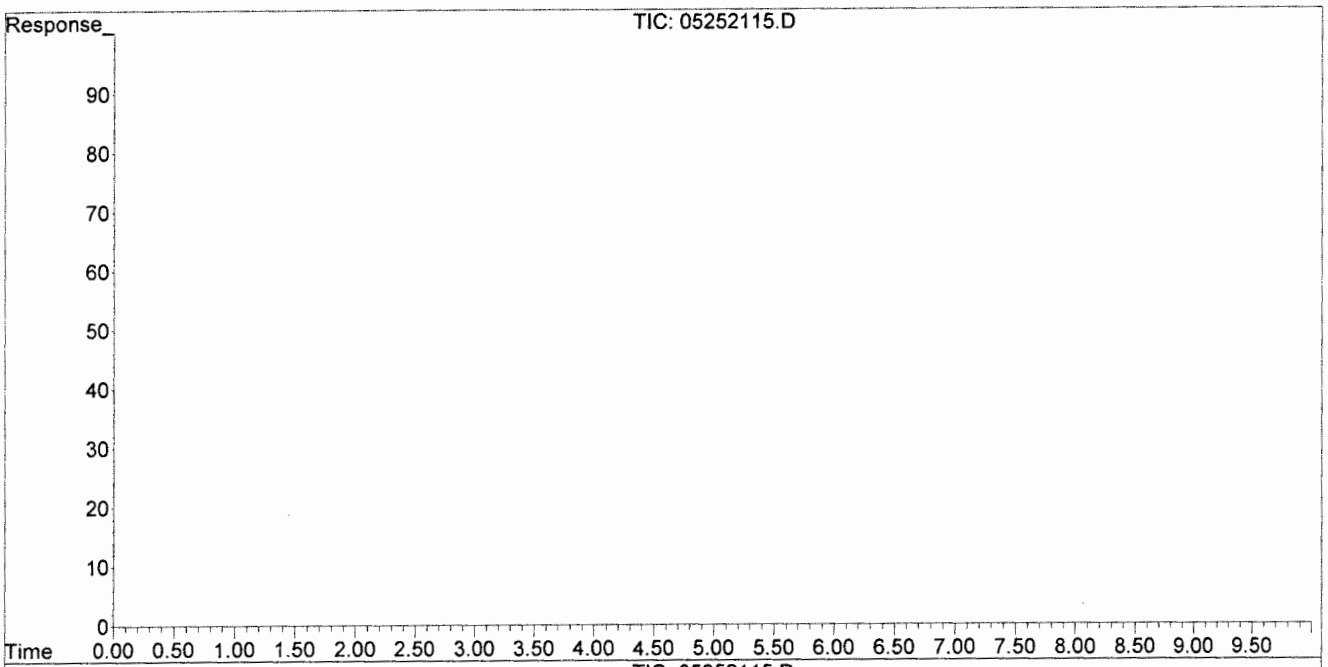
(f)=RT Delta > 1/2 Window (m)=manual int.

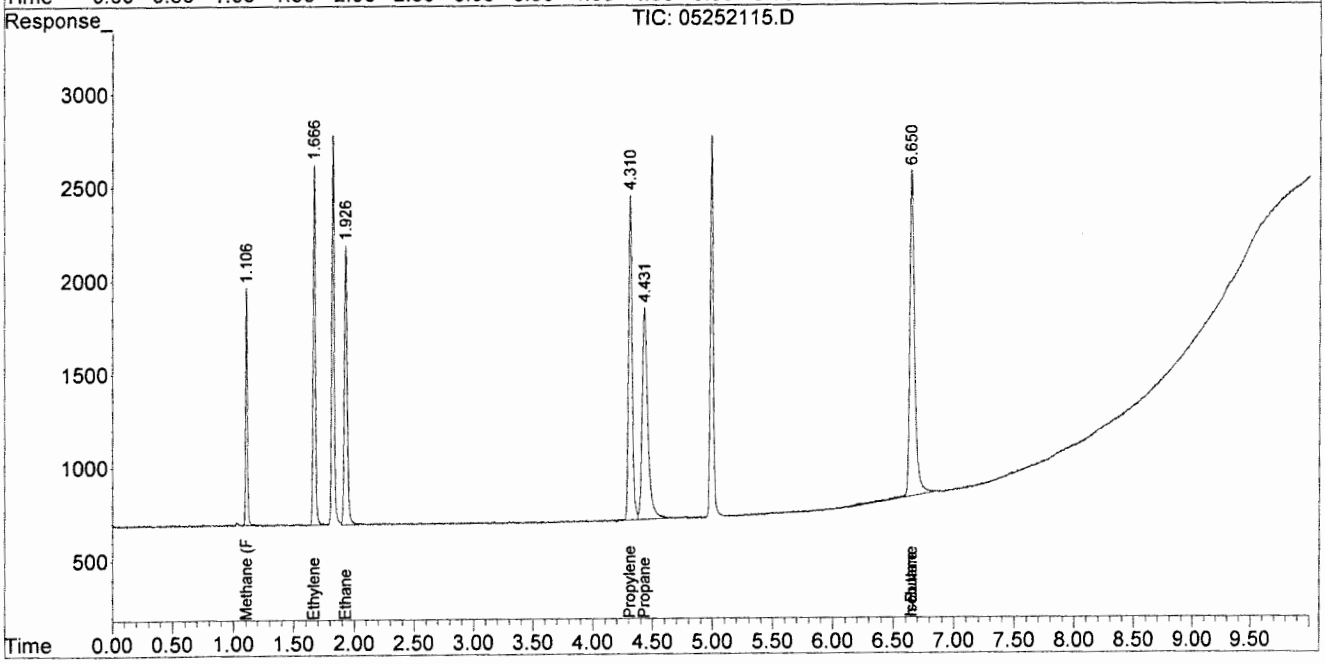
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2021_05\25\
Data File : 05252115.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 25-May-2021, 17:21:51
Operator : CB
Sample : STD S27-05301301 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 25 17:32:26 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_09\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-Sep-17, 08:38:08	09121701.D	test		MC	RSKBOTH.M	
2	12-Sep-17, 10:52:40	09121702.D	0.151ppm 0.250ml s32-09121702		MC	RSKBOTH.M	Curve
3	12-Sep-17, 11:05:49	09121703.D	0.302ppm 0.5ml s32-09121702		MC	RSKBOTH.M	Curve
4	12-Sep-17, 11:45:34	09121704.D	1.51ppm 0.1ml s32-09051701		MC	RSKBOTH.M	Curve
5	12-Sep-17, 12:09:33	09121705.D	4.53ppm 0.3ml s32-09051701		MC	RSKBOTH.M	Curve
6	12-Sep-17, 12:30:23	09121706.D	10.57ppm 0.7ml s32-09051701		MC	RSKBOTH.M	Curve
7	12-Sep-17, 12:47:18	09121707.D	200ppm 0.1ml s32-09121701		MC	RSKBOTH.M	Curve
8	12-Sep-17, 13:00:22	09121708.D	600ppm 0.3ml s32-09121701		MC	RSKBOTH.M	Curve
9	12-Sep-17, 13:47:48	09121709.D	1000ppm 0.5ml s32-09121701		MC	RSKBOTH.M	Curve
10	12-Sep-17, 14:07:58	09121710.D	2000ppm 1ml s32-09121701		MC	RSKBOTH.M	Curve
11	12-Sep-17, 14:48:48	09121711.D	4000ppm 0.1ml s32-08231701		MC	RSKBOTH.M	Curve
12	12-Sep-17, 15:21:51	09121712.D	20000ppm 0.5ml s32-08231701		MC	RSKBOTH.M	Curve
13	12-Sep-17, 15:38:59	09121713.D	mb 0.5ml		MC	RSKBOTH.M	Pass
14	12-Sep-17, 15:55:35	09121714.D	mb 0.1ml		MC	RSKBOTH.M	Pass
15	12-Sep-17, 16:15:26	09121715.D	icv s30-05241604		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2021_05\25\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	25-May-21, 09:18:45	05252100.D	purge		CB	RSKBOTH.M	
2	25-May-21, 09:44:09	05252101.D	xstd		CB	RSKBOTH.M	
3	25-May-21, 10:28:41	05252102.D	STD S27-05301301 0.1mL		CB	RSKBOTH.M	
4	25-May-21, 11:57:03	05252103.D	RB 0.1mL		CB	RSKBOTH.M	
5	25-May-21, 15:10:43	05252104.D	MCS 0.1mL		CB	RSKBOTH.M	
6	25-May-21, 15:25:29	05252105.D	LCS 0.1mL		CB	RSKBOTH.M	
7	25-May-21, 15:39:58	05252106.D	LCSD 0.1mL		CB	RSKBOTH.M	
8	25-May-21, 15:57:57	05252107.D	P2102701-001 0.1mL		CB	RSKBOTH.M	
9	25-May-21, 16:12:27	05252108.D	P2102701-002 0.1mL		CB	RSKBOTH.M	
10	25-May-21, 16:25:59	05252109.D	P2102701-002 MS 0.1mL		CB	RSKBOTH.M	
11	25-May-21, 16:39:58	05252110.D	P2102701-002 MSD 0.1mL		CB	RSKBOTH.M	
12	25-May-21, 16:50:00	05252111.D	P2102700-001 0.1mL		CB	RSKBOTH.M	
13	25-May-21, 17:02:10	05252112.D	P2102632-001 0.1mL		CB	RSKBOTH.M	
14	25-May-21, 17:09:39	05252113.D	P2102594-001 0.1mL		CB	RSKBOTH.M	
15	25-May-21, 17:15:26	05252114.D	P2102594-002 0.1mL		CB	RSKBOTH.M	
16	25-May-21, 17:21:51	05252115.D	STD S27-05301301 0.1mL		CB	RSKBOTH.M	
17	25-May-21, 17:35:12	05252116.D	K2104207-004 0.1mL		CB	RSKBOTH.M	
18	25-May-21, 17:48:56	05252117.D	K2104207-005 0.1mL		CB	RSKBOTH.M	
19	25-May-21, 18:00:31	05252118.D	K2104207-007 0.1mL		CB	RSKBOTH.M	
20	25-May-21, 18:08:53	05252119.D	STD S27-05301301 0.1mL		CB	RSKBOTH.M	

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\26\
Data File : 05262105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-May-2021, 16:45
Operator : CB
Sample : 2701-001 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 17:07:56 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

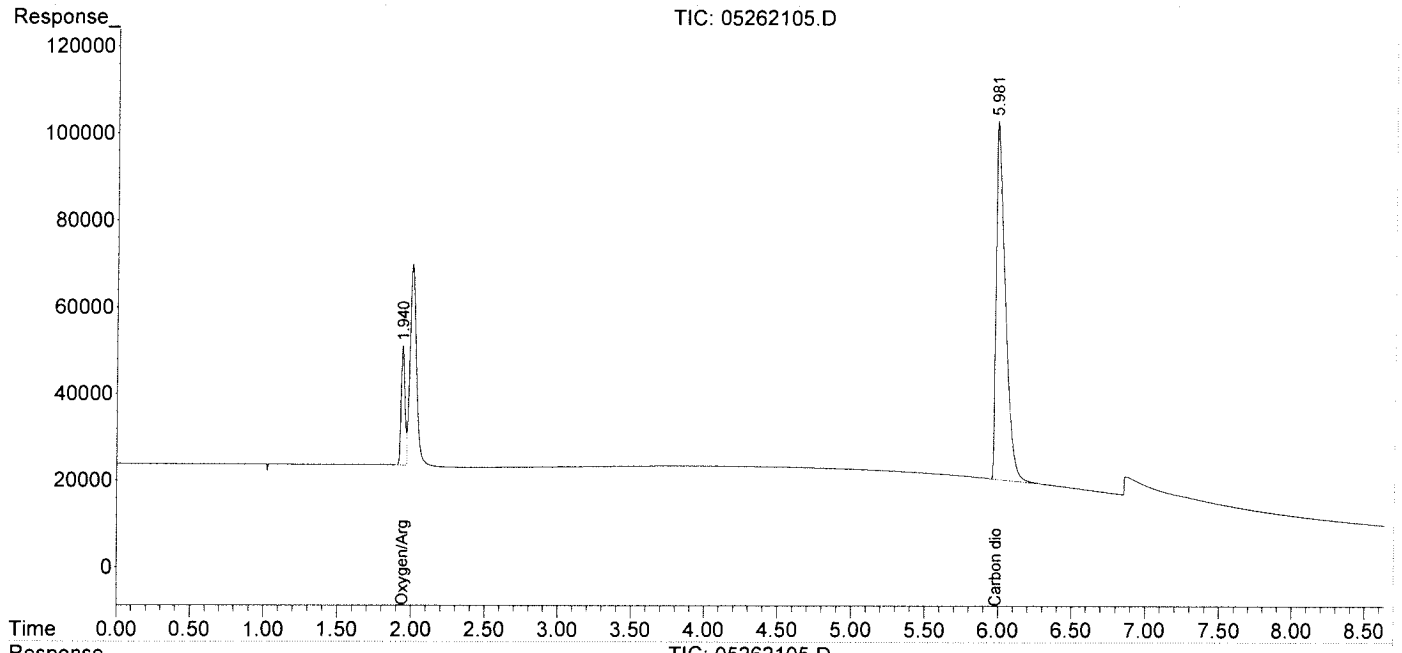
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.940f	492125	0.103	ppm
2)	Carbon monoxide	1.940f	492125	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.982	3546085	15107.132	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

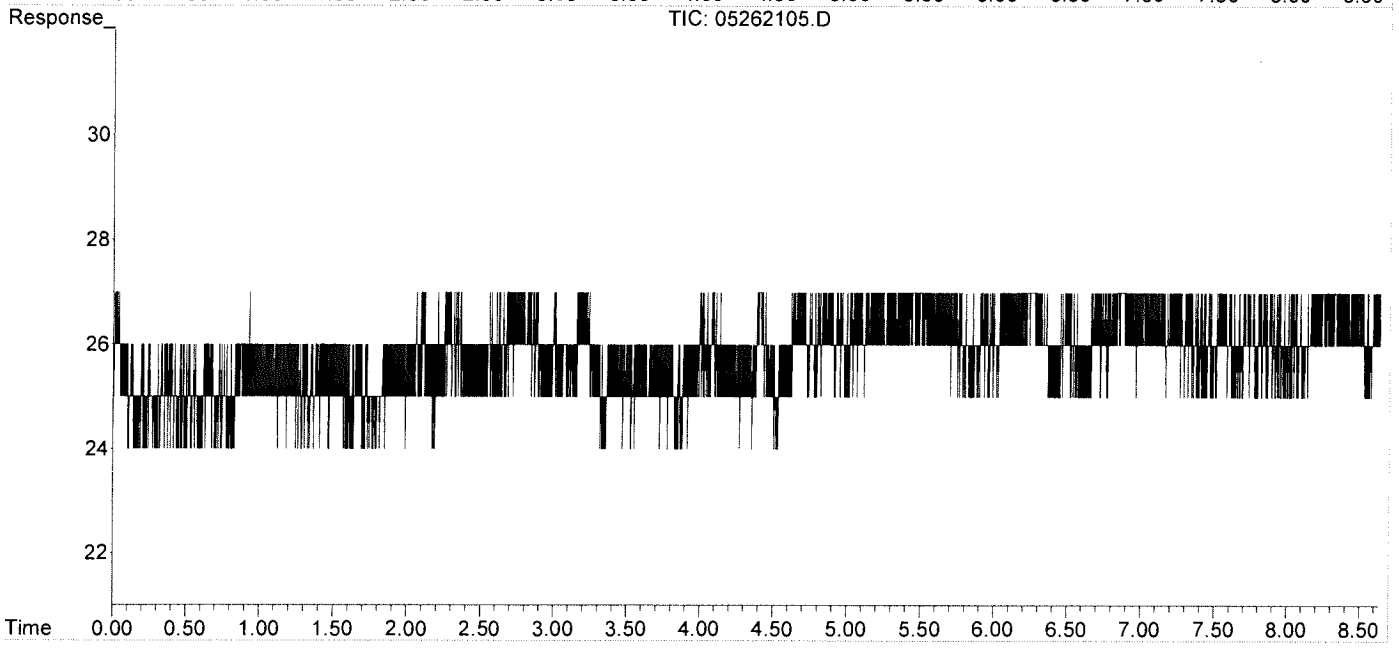
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\26\
Data File : 05262105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-May-2021, 16:45
Operator : CB
Sample : 2701-001 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 17:07:56 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2021_05\26\
Data File : 05262110.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-May-2021, 17:44
Operator : CB
Sample : 2701-002 50uL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 17:59:01 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

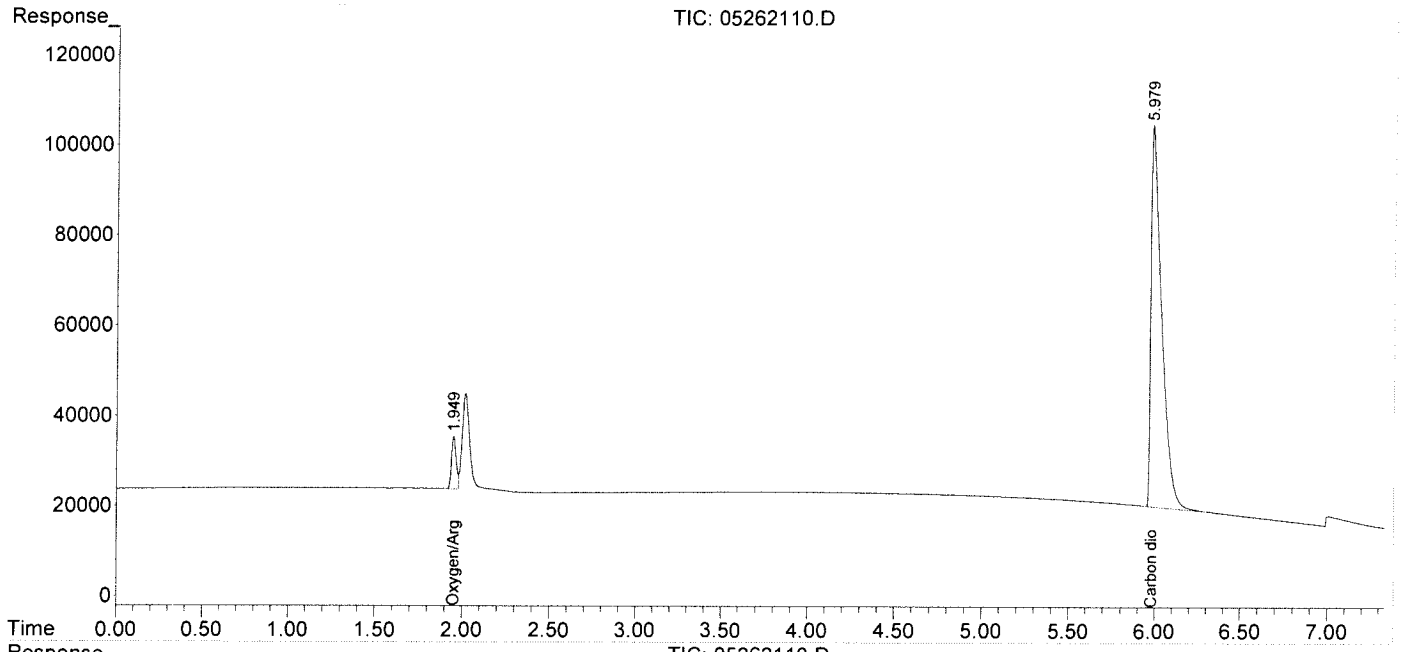
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.950f	214403	0.045	ppm
2)	Carbon monoxide	1.950f	214403	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.980	3678234	15670.117	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

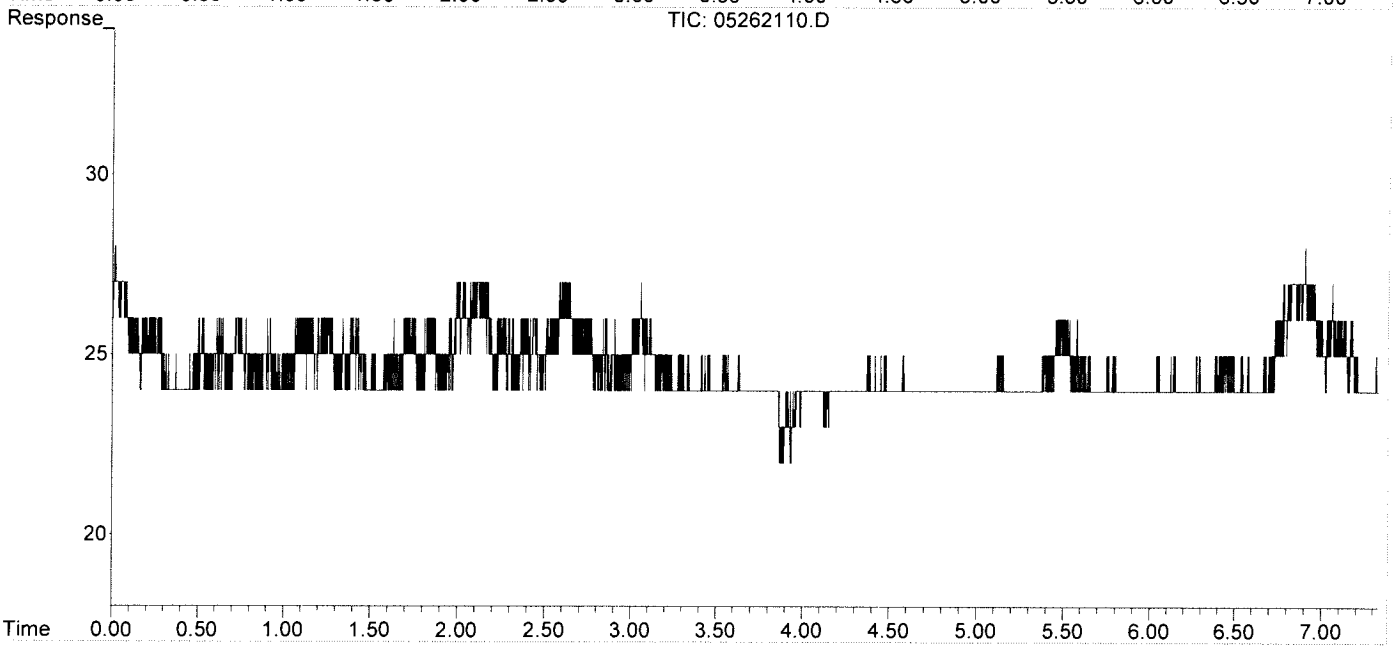
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\26\
Data File : 05262110.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-May-2021, 17:44
Operator : CB
Sample : 2701-002 50uL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 17:59:01 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2021_05\26\
Data File : 05262108.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-May-2021, 17:19
Operator : CB
Sample : 2701-002 ms 50uL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 17:28:22 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

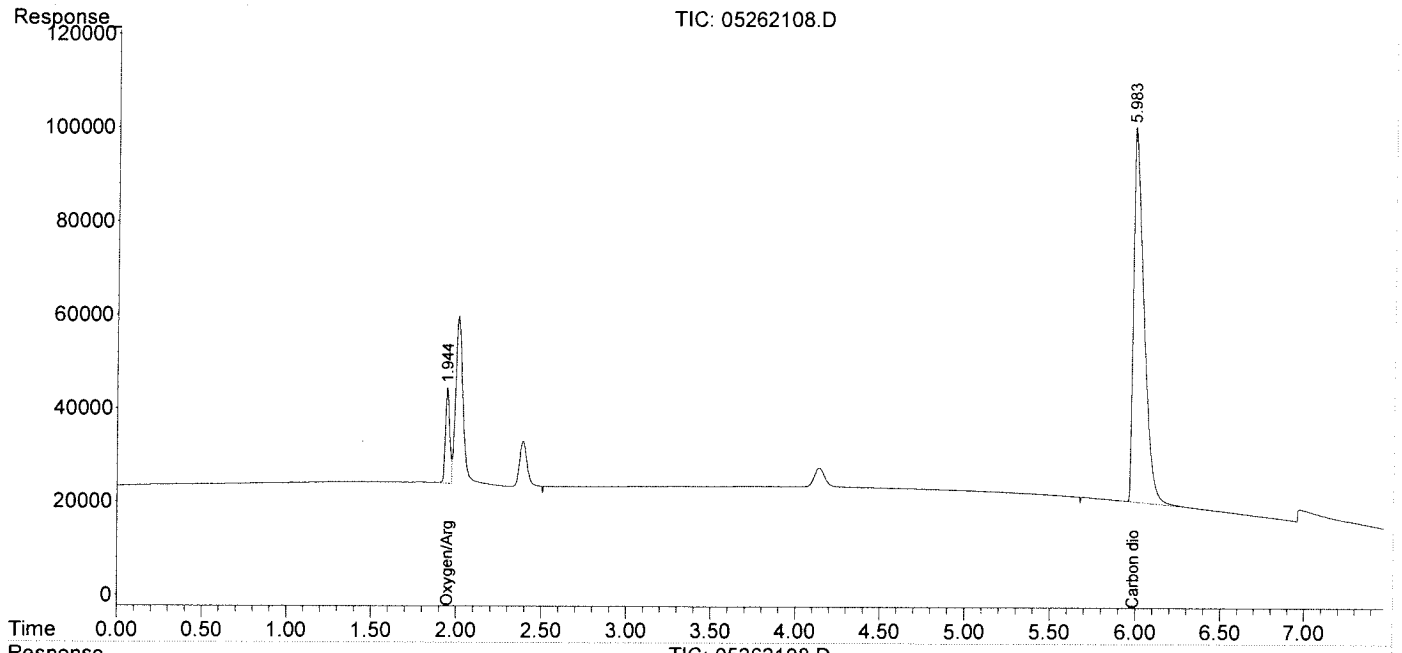
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.945f	363956	0.076	ppm
2)	Carbon monoxide	1.945f	363956	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.985	3380035	14399.720	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

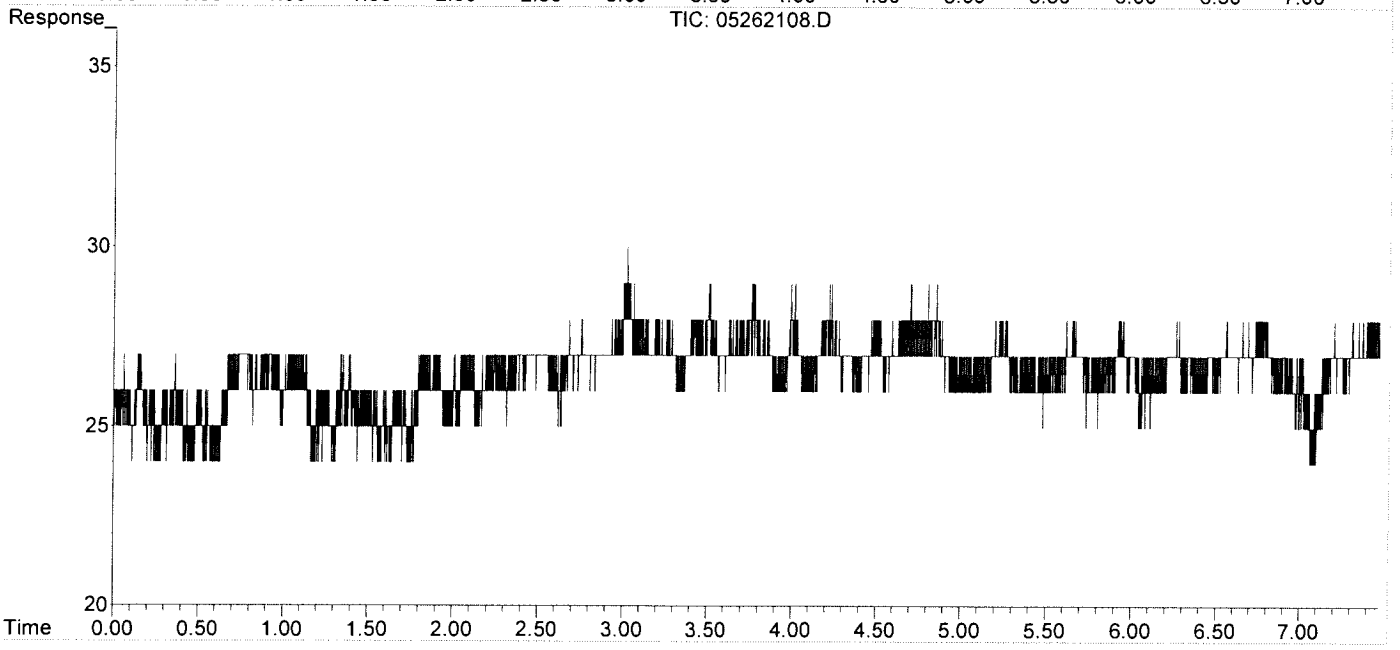
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\26\
Data File : 05262108.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-May-2021, 17:19
Operator : CB
Sample : 2701-002 ms 50uL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 17:28:22 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2021_05\26\
Data File : 05262109.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-May-2021, 17:29
Operator : CB
Sample : 2701-002 msd 50uL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 17:58:52 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

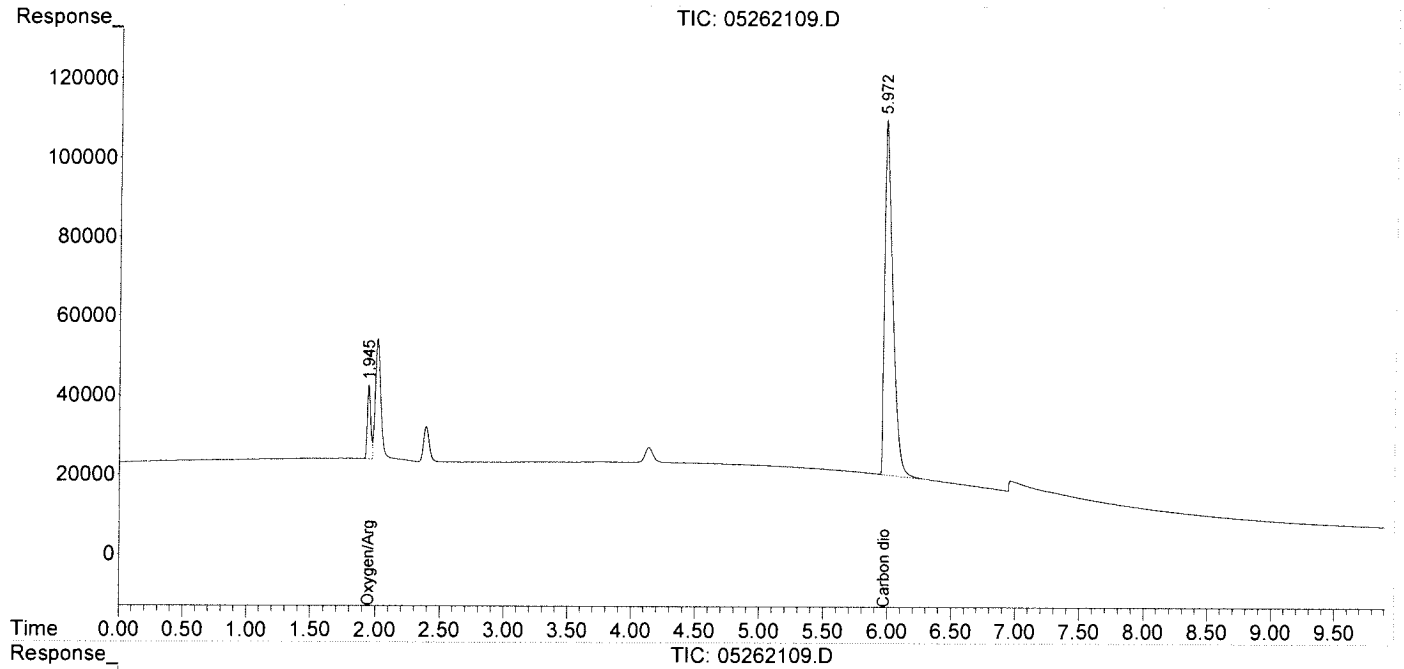
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.946f	330641	0.069	ppm
2)	Carbon monoxide	1.946f	330641	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.974	3920465	16702.079	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

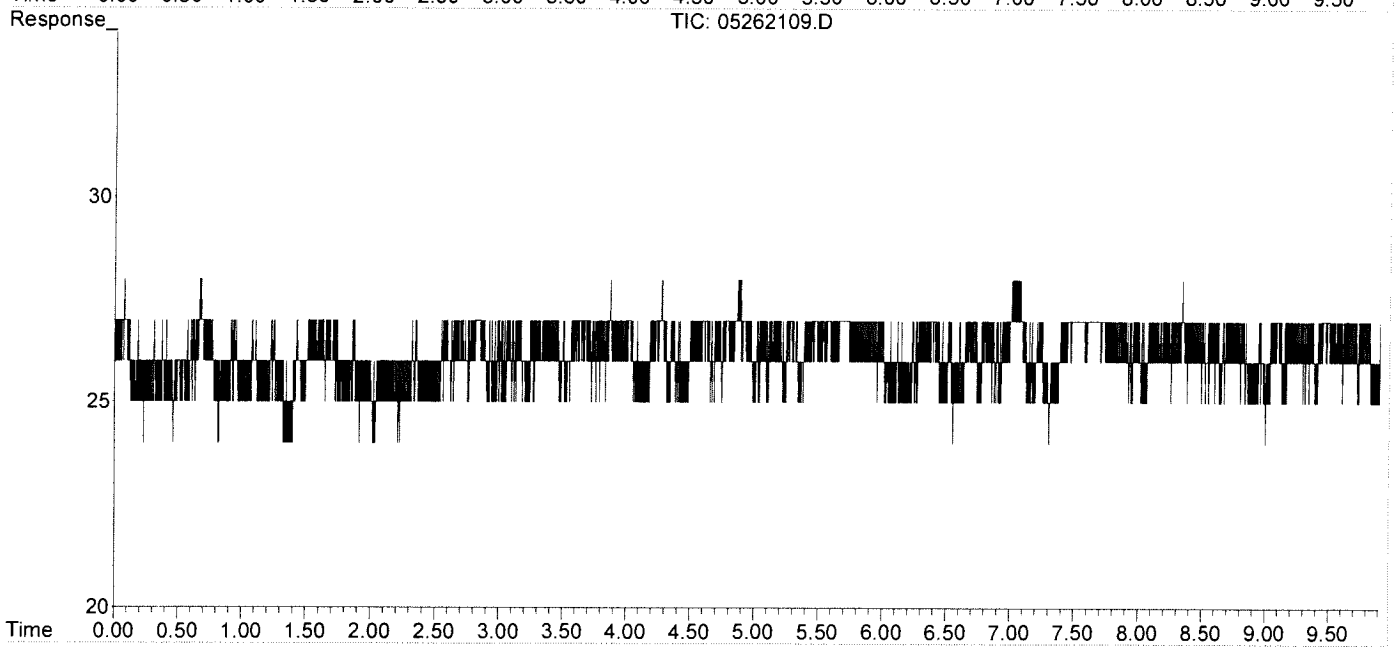
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\26\
Data File : 05262109.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-May-2021, 17:29
Operator : CB
Sample : 2701-002 msd 50uL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 17:58:52 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2021_05\26\
Data File : 05262103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-May-2021, 16:23
Operator : CB
Sample : mcs 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 27 13:10:54 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

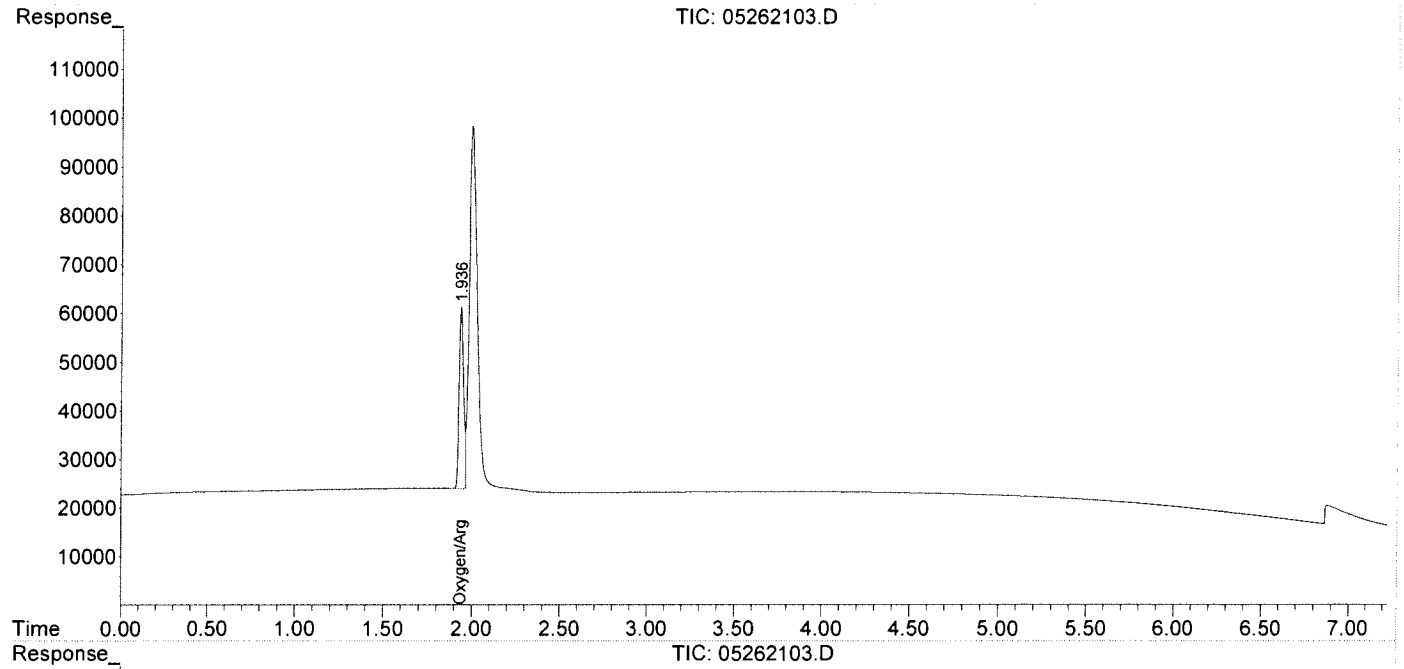
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.936f	643915	0.135	ppm
2)	Carbon monoxide	1.936f	643915	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

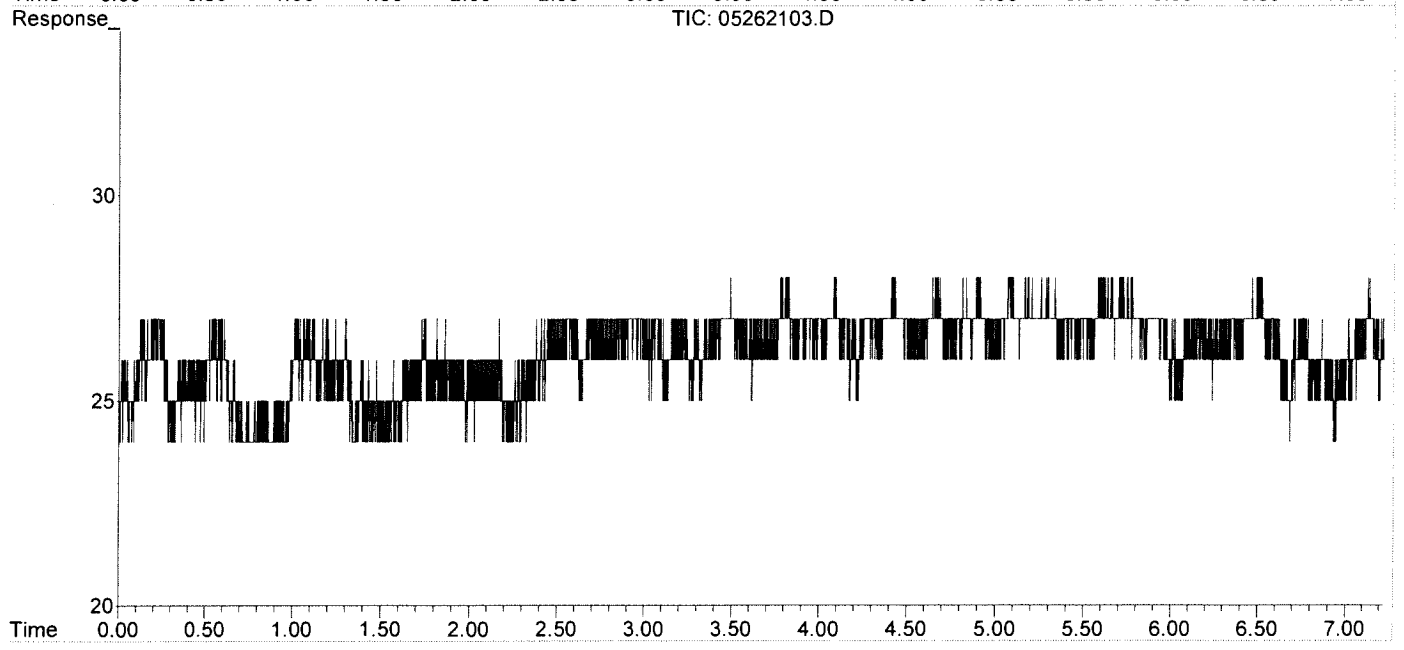
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\26\
Data File : 05262103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-May-2021, 16:23
Operator : CB
Sample : mcs 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 27 13:10:54 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2021_05\26\
Data File : 05262111.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-May-2021, 17:55
Operator : CB
Sample : lcs S32-03172101 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 18:02:54 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

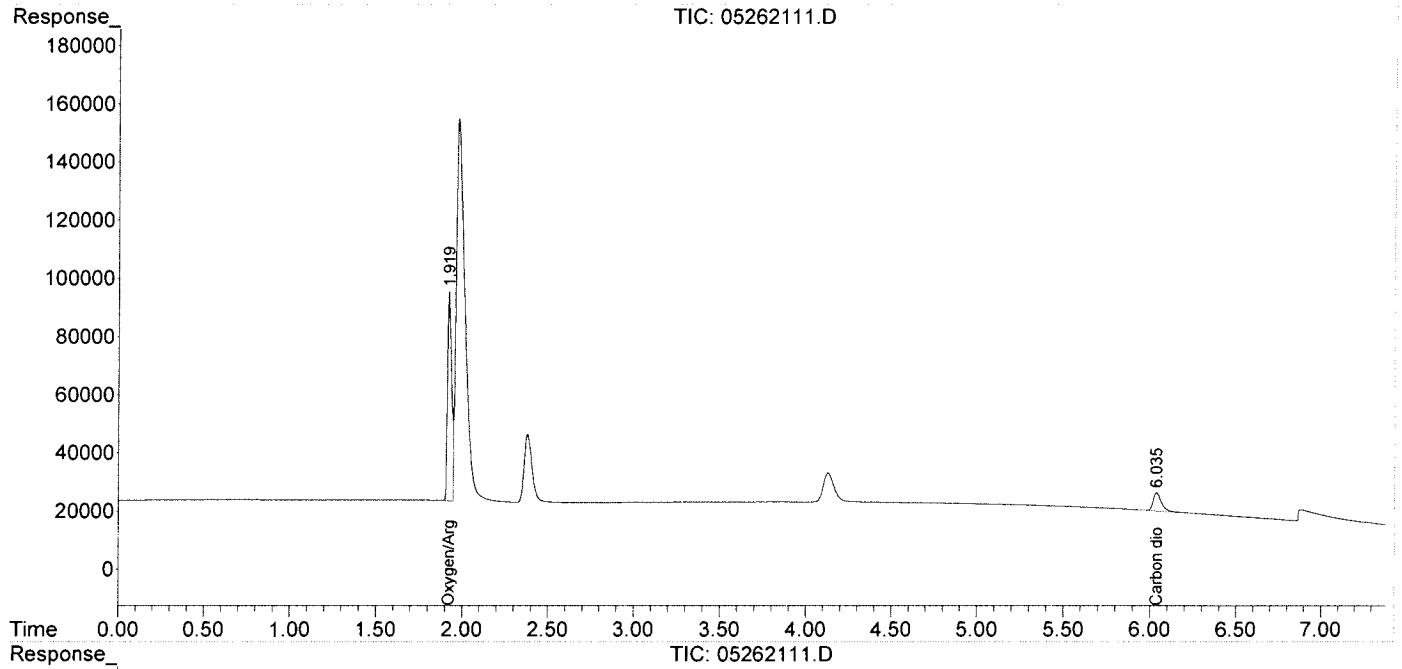
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.920f	1196499	0.251	ppm
2)	Carbon monoxide	1.920f	1196499	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.036	206282	878.809	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

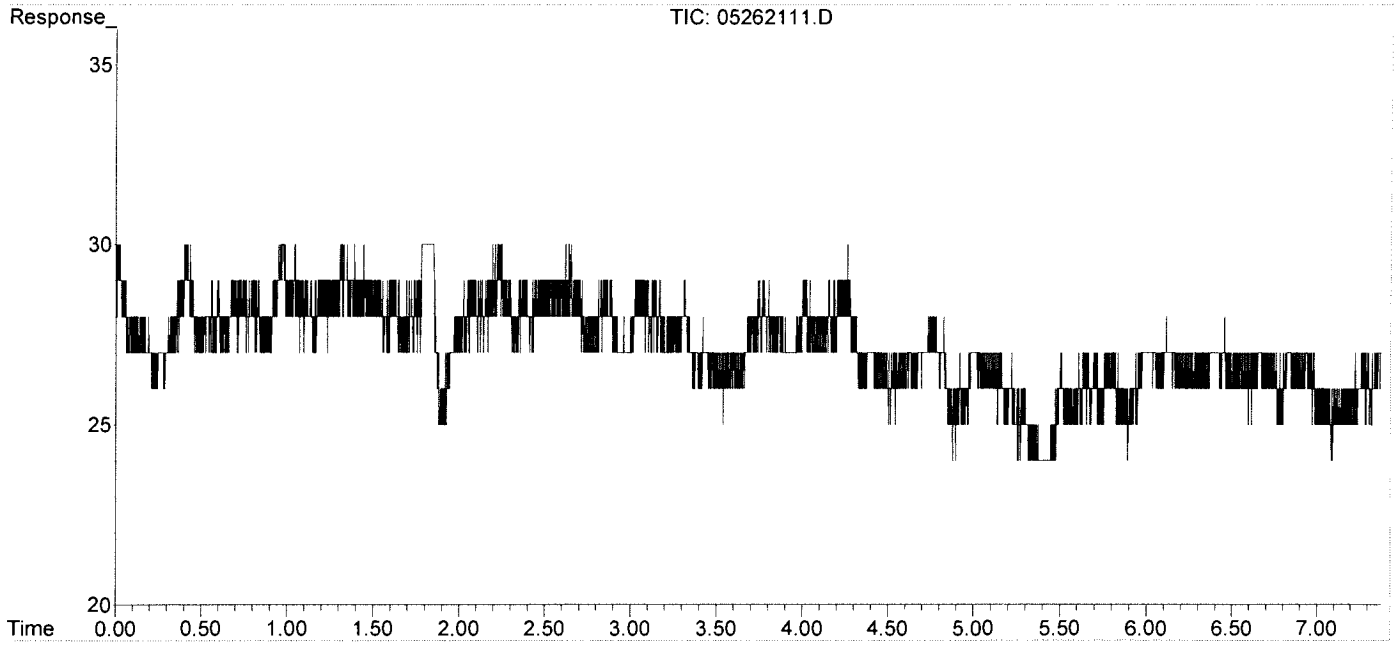
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\26\
Data File : 05262111.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-May-2021, 17:55
Operator : CB
Sample : lcs S32-03172101 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 18:02:54 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\26\
Data File : 05262112.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-May-2021, 18:05
Operator : CB
Sample : lcsd S32-03172101 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 18:12:43 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :

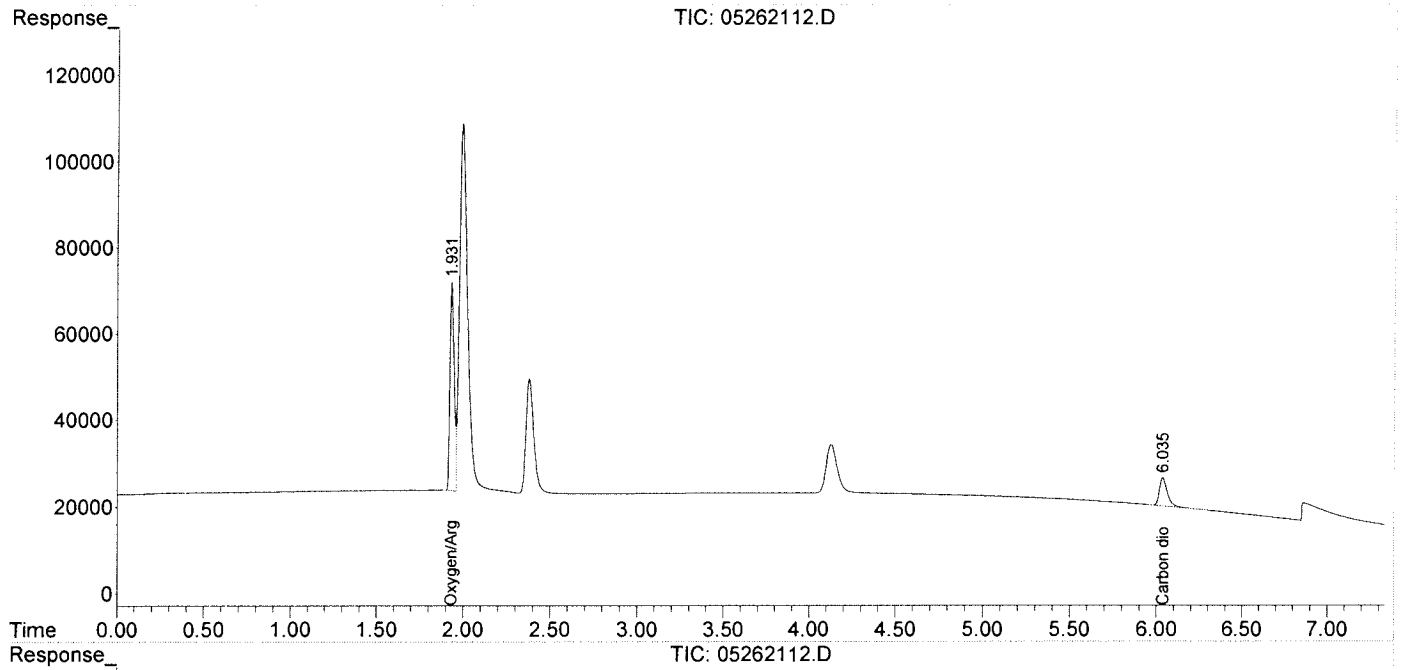
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.932f	828059	0.174	ppm
2)	Carbon monoxide	1.932f	828059	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.036	205998	877.597	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

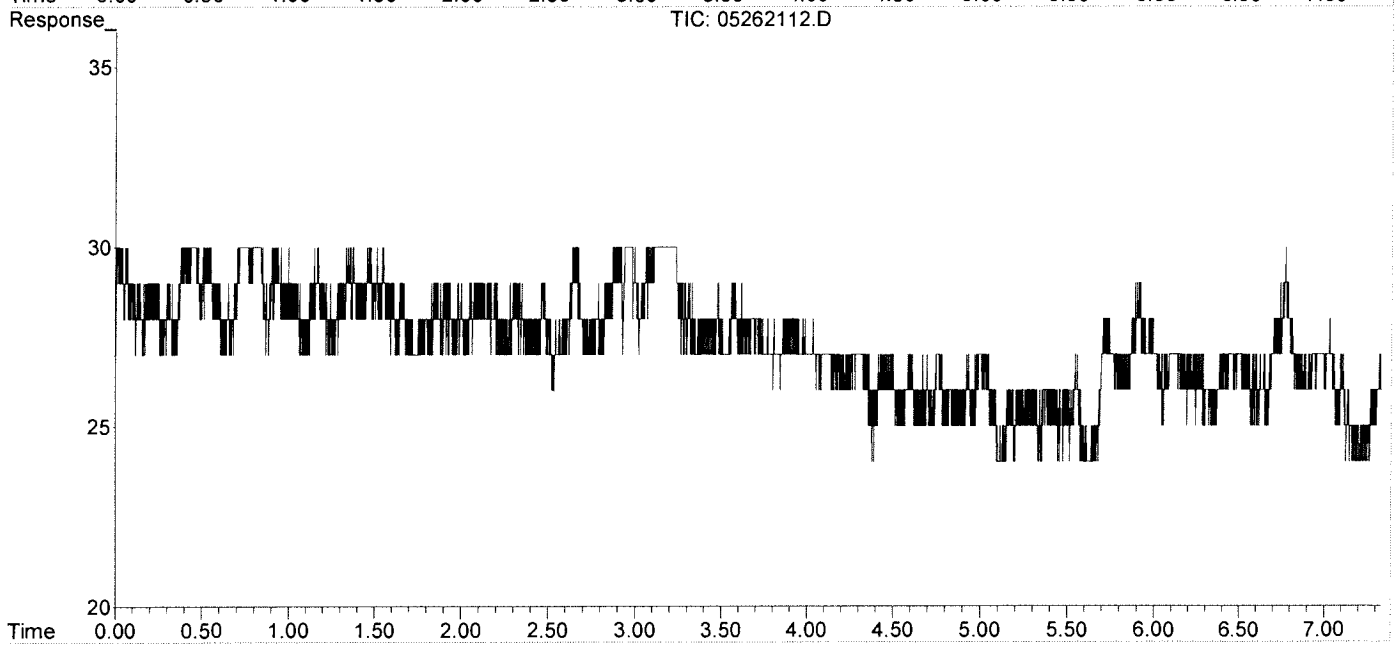
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\26\
Data File : 05262112.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-May-2021, 18:05
Operator : CB
Sample : lcsd S32-03172101 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 18:12:43 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg	%RSD
1)	Oxygen/Argon	4.760						4.760 E6	0.00
2)	Carbon monoxide	2.775		1.066	0.043	0.033	0.027	0.657 E6	170.12
3)	Methane (TCD)							9.457	0.00
4)	Carbon dioxide	2.717	2.193	2.338	2.272	2.265	2.298	2.347 E2	7.99

Signal #2 Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg	%RSD
6)	Methane (FID)	1.253	1.160	1.005	0.927	0.848	0.848	0.945 E4	15.85
7)	Ethylene	1.677	1.605	1.900	1.749	1.597	1.579	1.684 E4	7.30
8)	Ethane	1.769	1.631	1.866	1.767	1.639	1.667	1.723 E4	5.40
9)	Propylene	2.402	2.309	2.767	2.551	2.331	2.333	2.449 E4	7.32
10)	Propane	2.906	2.737	2.817	2.639	2.410	2.420	2.655 E4	7.75
11)	Isobutylene							0.000	-1.00
12)	Isobutane							0.000	-1.00
13)	n-Butane							0.000	-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS082817_CO2.M Wed Aug 30 13:24:19 2017

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291715.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291716.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291717.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291719.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291720.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291721.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241711.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Aug 29 14:21 2017	Aug 29 14:20 2017	29-Aug-2017, 14:07
2	2	Aug 29 14:52 2017	Aug 29 14:51 2017	29-Aug-2017, 14:22
3	3	Aug 29 15:04 2017	Aug 29 15:04 2017	29-Aug-2017, 14:53
4	4	Aug 29 15:36 2017	Aug 29 15:36 2017	29-Aug-2017, 15:23
5	5	Aug 29 15:57 2017	Aug 29 15:57 2017	29-Aug-2017, 15:44
6	6	Aug 29 16:13 2017	Aug 29 16:13 2017	29-Aug-2017, 16:00
7	7	Aug 25 09:05 2017	Aug 24 16:00 2017	24-Aug-2017, 15:44
8	8	Aug 25 09:06 2017	Aug 24 16:13 2017	24-Aug-2017, 16:02
9	9	Aug 25 09:06 2017	Aug 24 16:31 2017	24-Aug-2017, 16:16
10	10	Aug 25 09:07 2017	Aug 24 16:42 2017	24-Aug-2017, 16:33

RS082817_CO2.M Wed Aug 30 13:24:30 2017

dit Compounds -- Compound #4 -- Carbon dioxide

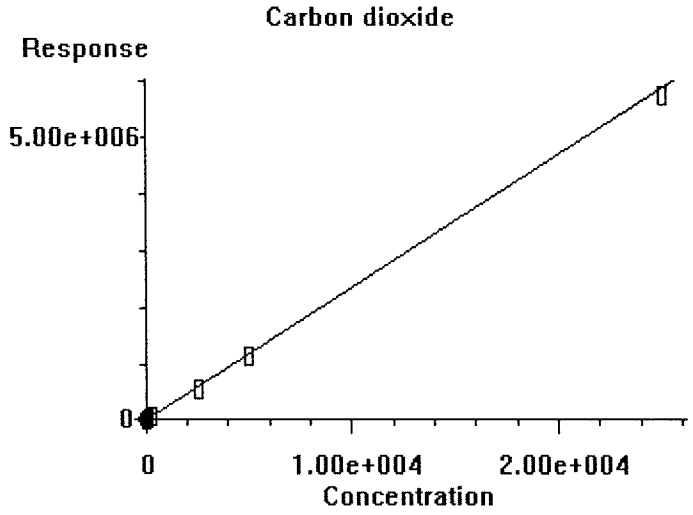
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	25.000000	6793.665186
2	100.000000	21932.418000
3	250.000000	58460.642510
4	2500.000000	568043.388750
5	5000.000000	1132363.215937
6	25000.000000	5744294.891563
7	25000.000000	
8	25000.000000	
9	2000.000000	
10	30000.000000	

Lvl ID	Concentration	Response



0.000e+000	Quadratic term
2.347e+002	Linear term
0.000e+000	Constant term
7.987%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

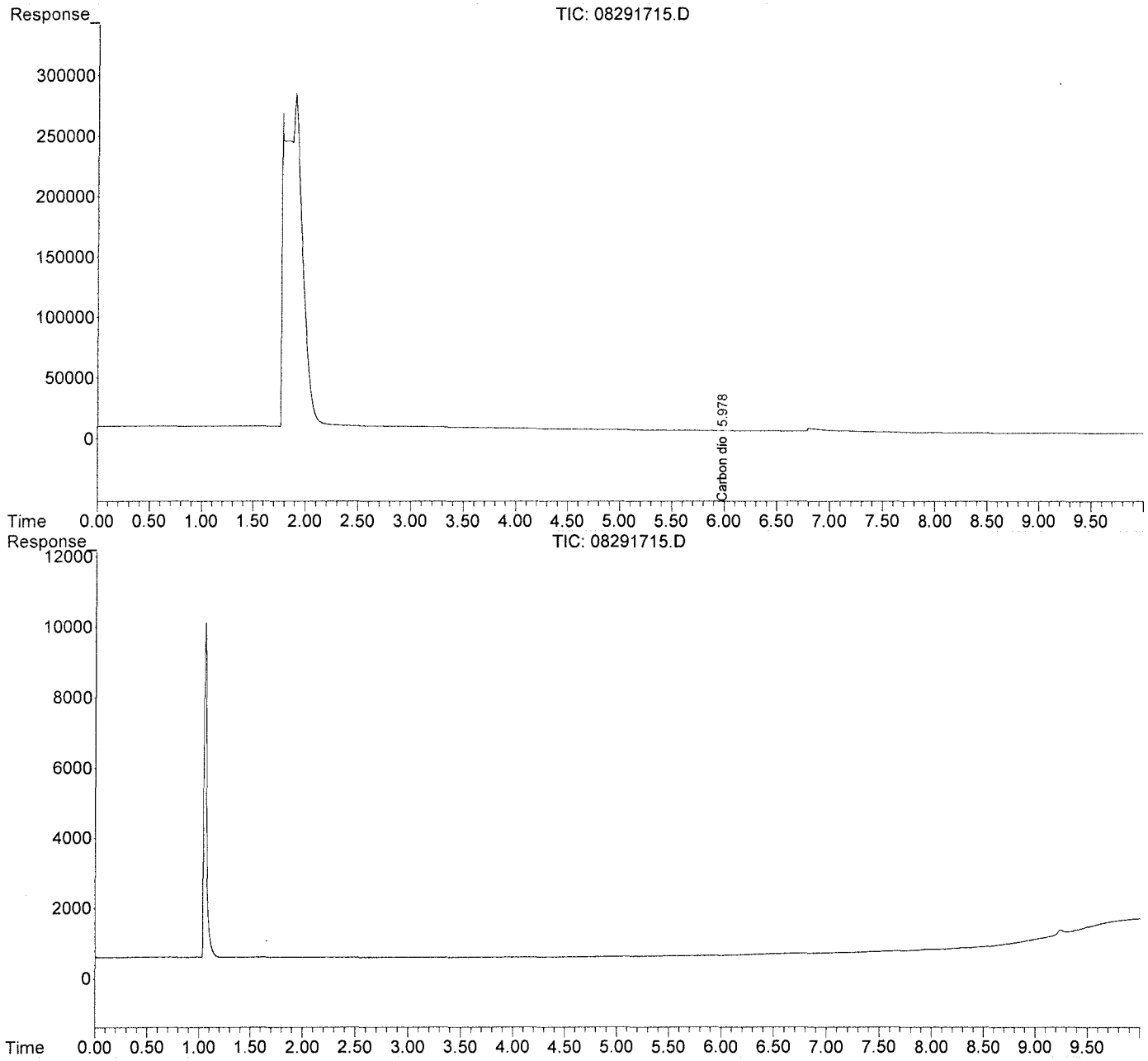
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.776	277465	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	6794	27.870	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

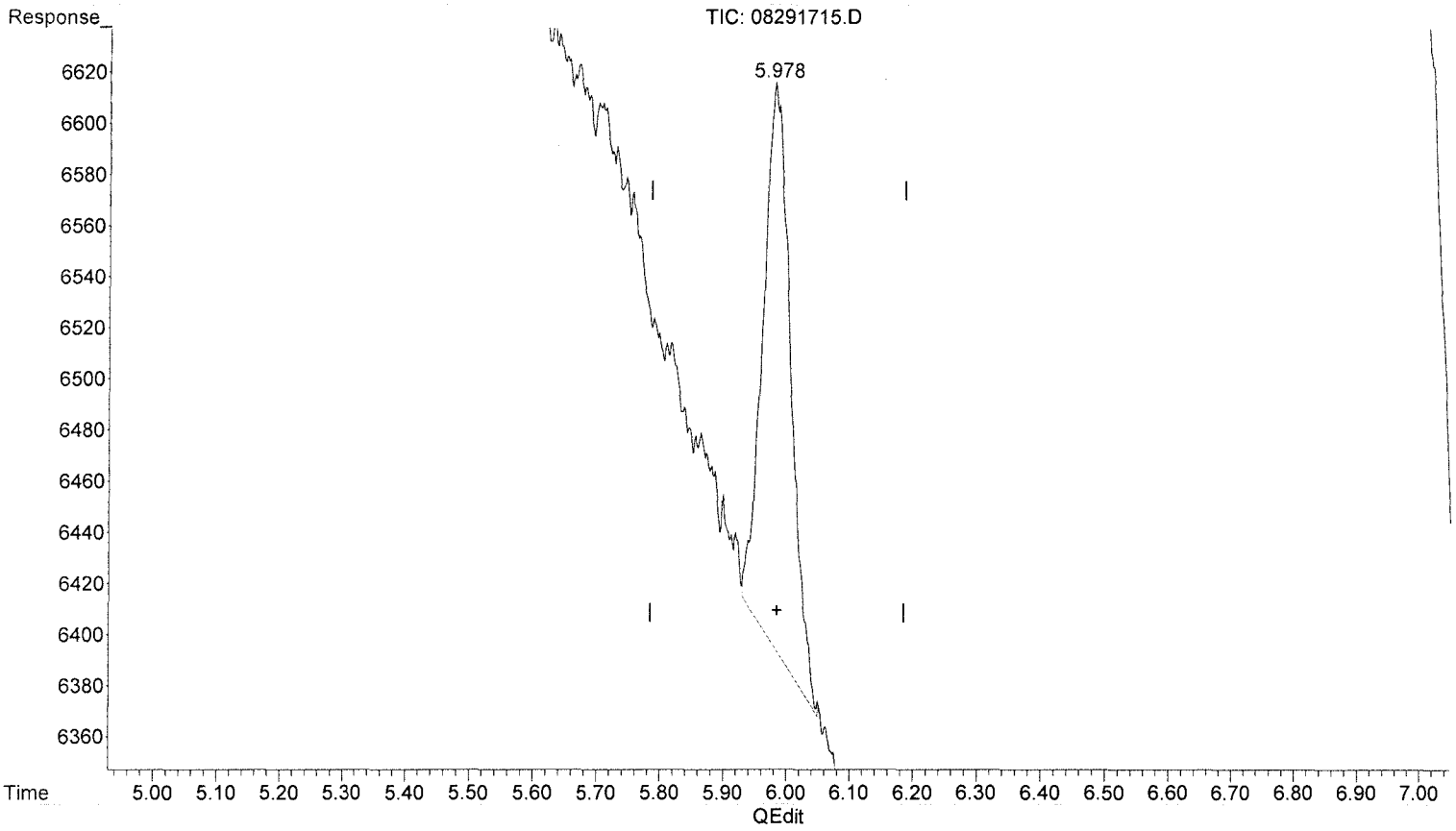
Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

5.978min 27.870 ppm m

response 6794

M 9/30/17
BLK
No
PEER REVIEW

9/4/17

(+) = Expected Retention Time

RS082817_CO2.M Wed Aug 30 13:17:47 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

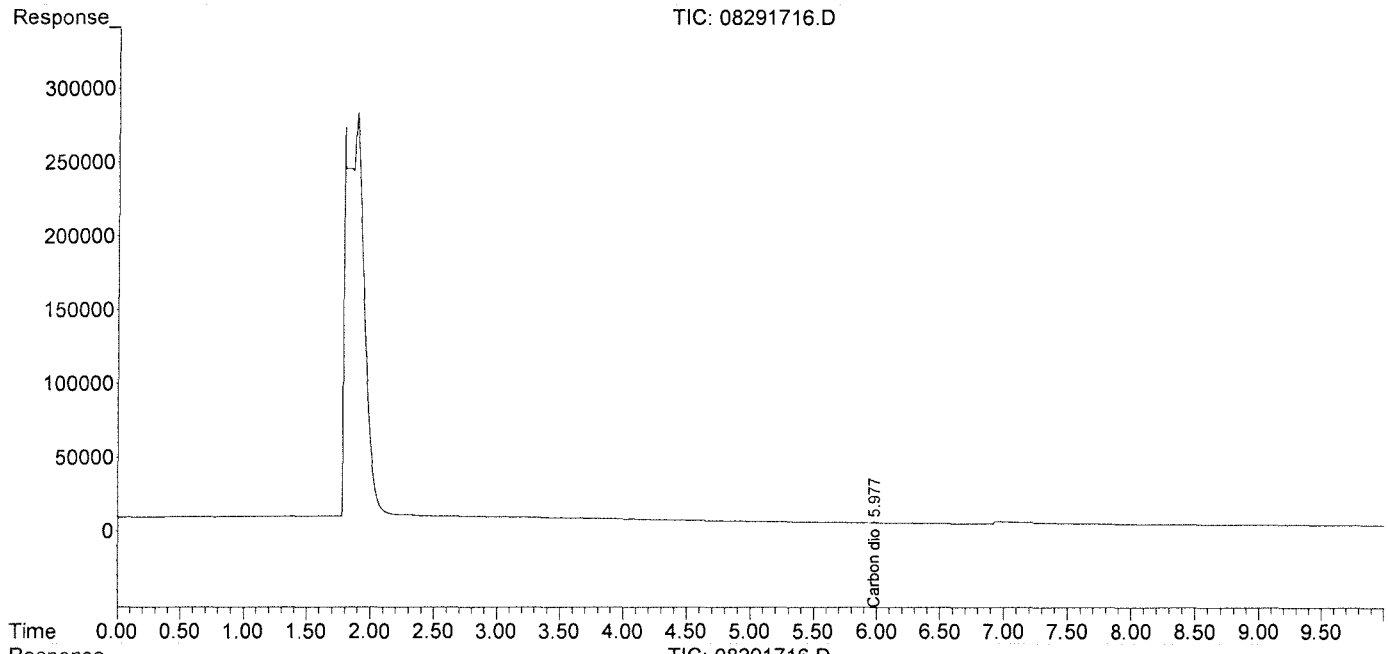
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.790	-598962	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	21932	87.858	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

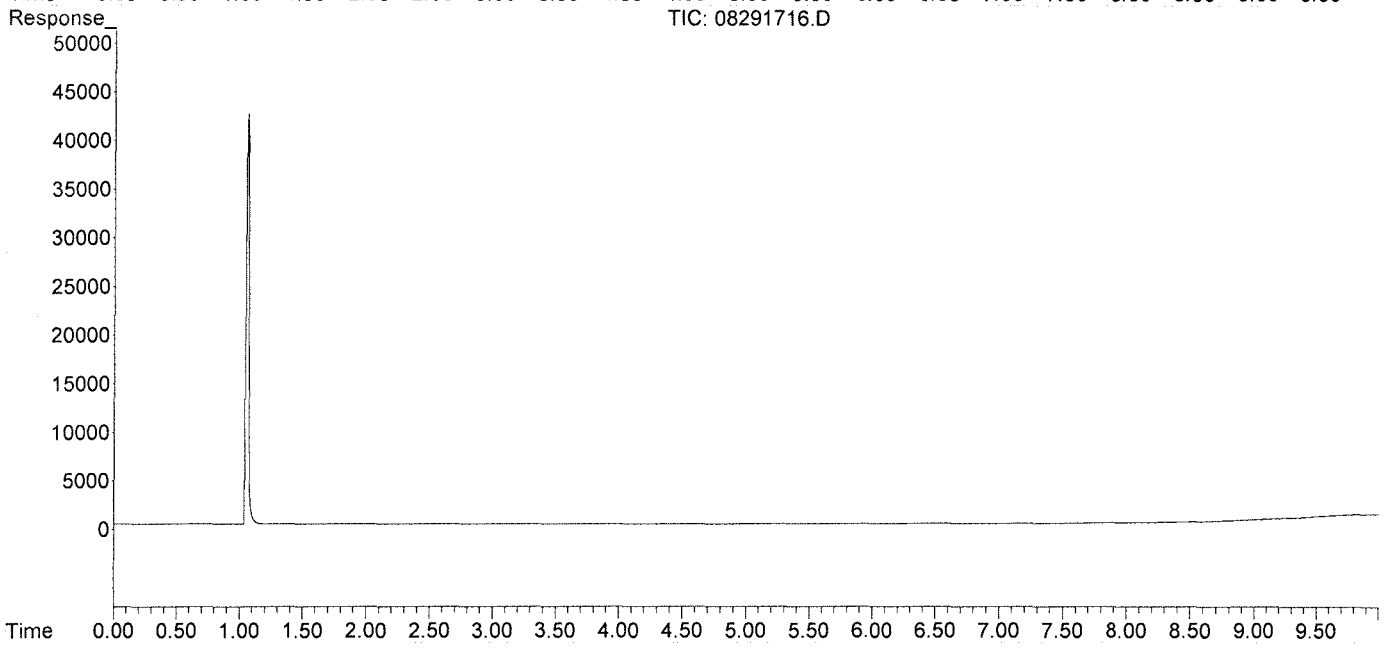
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

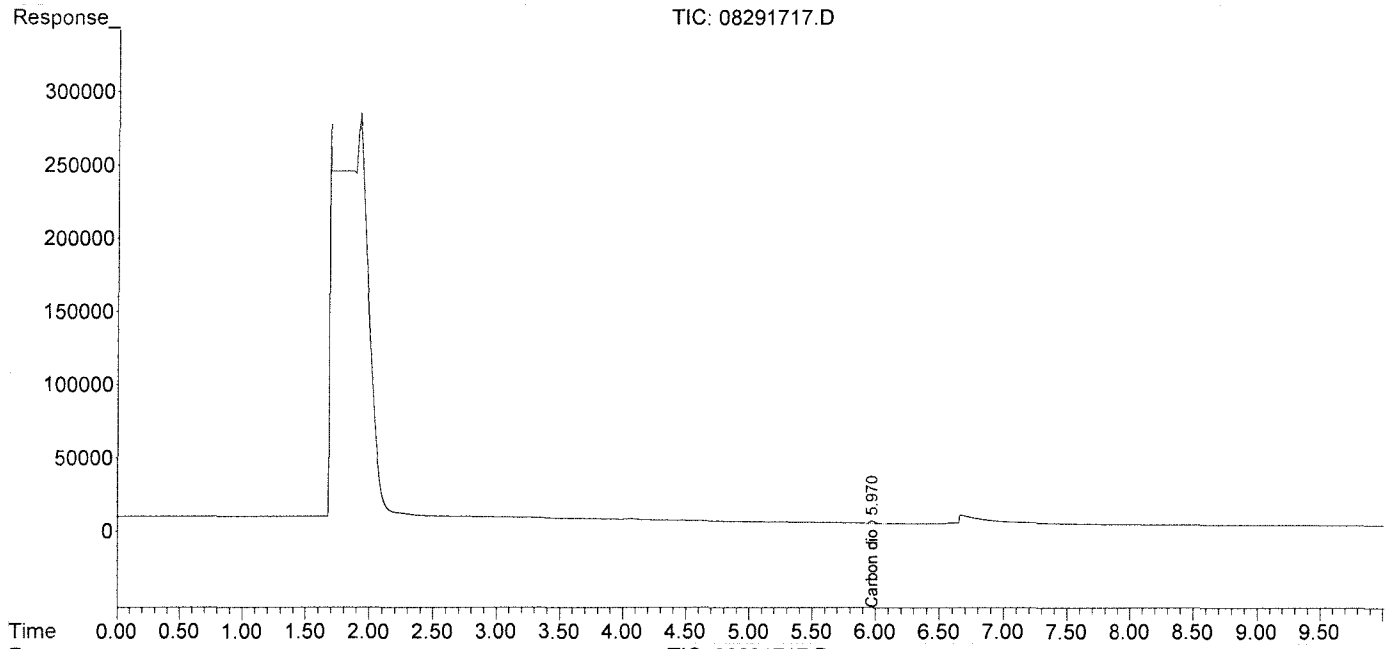
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.920f	-30716454	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.970	58461	240.204	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

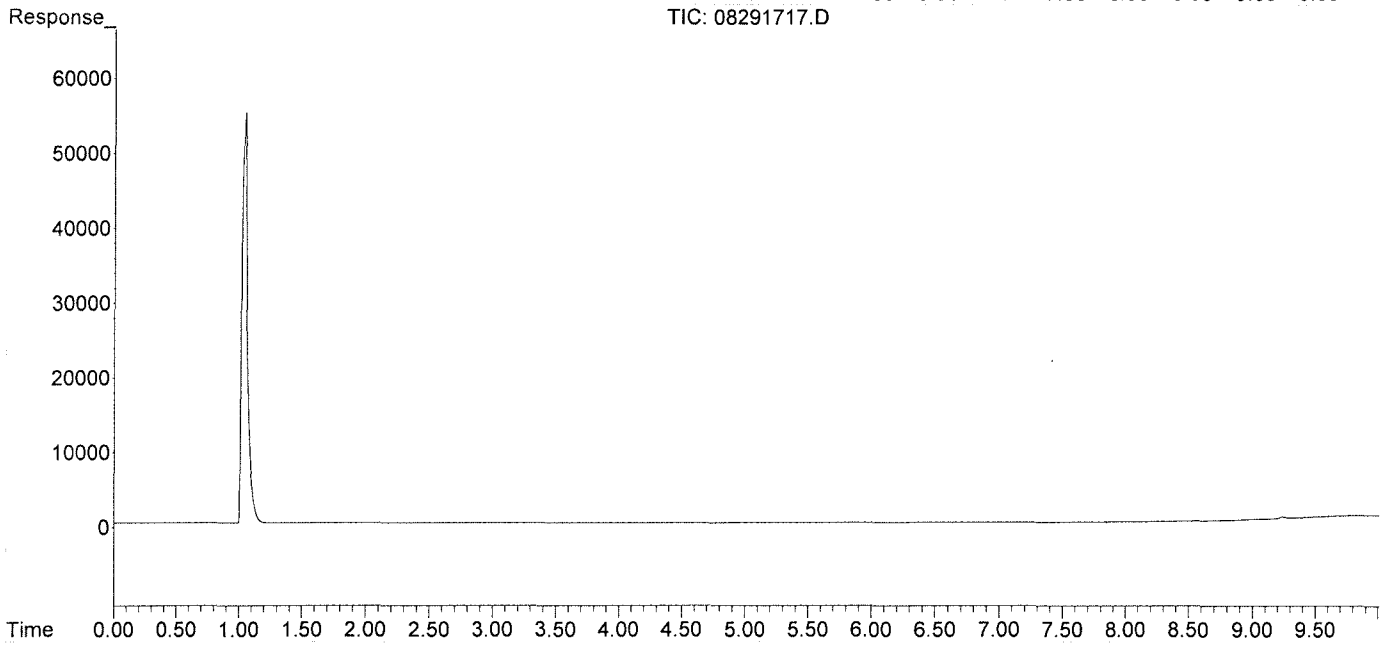
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

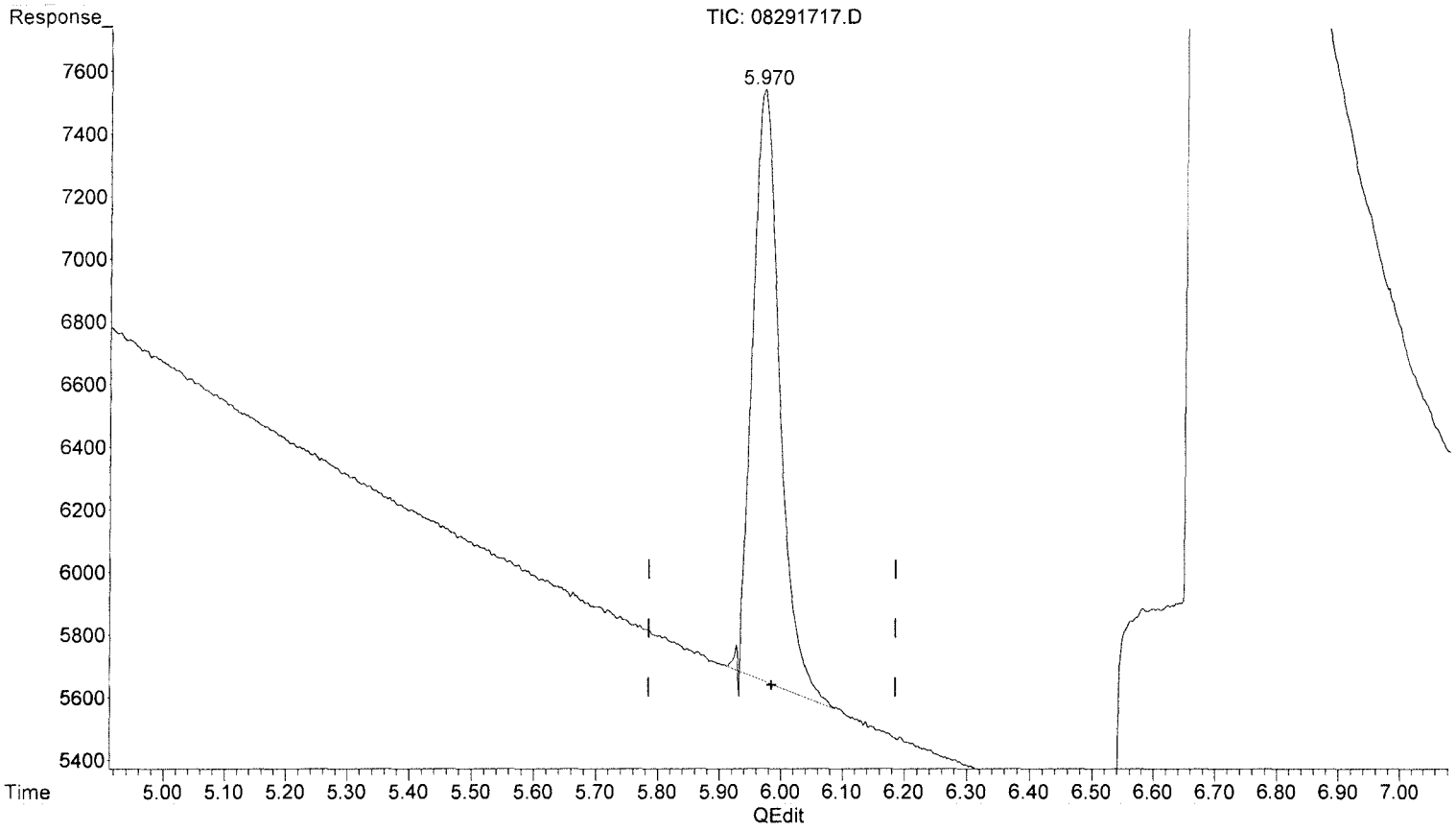




Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

5.970min 240.204 ppm m

response 58461

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

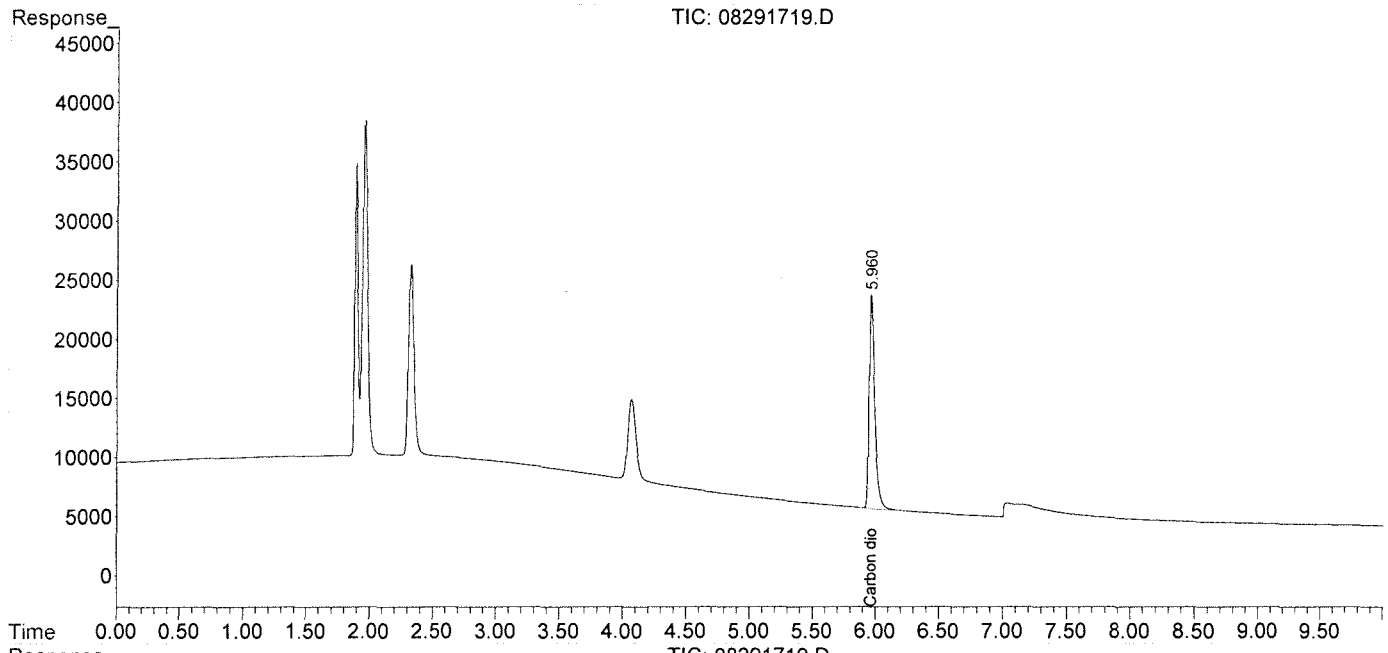
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.891	425113	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.962	568043	2369.673	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

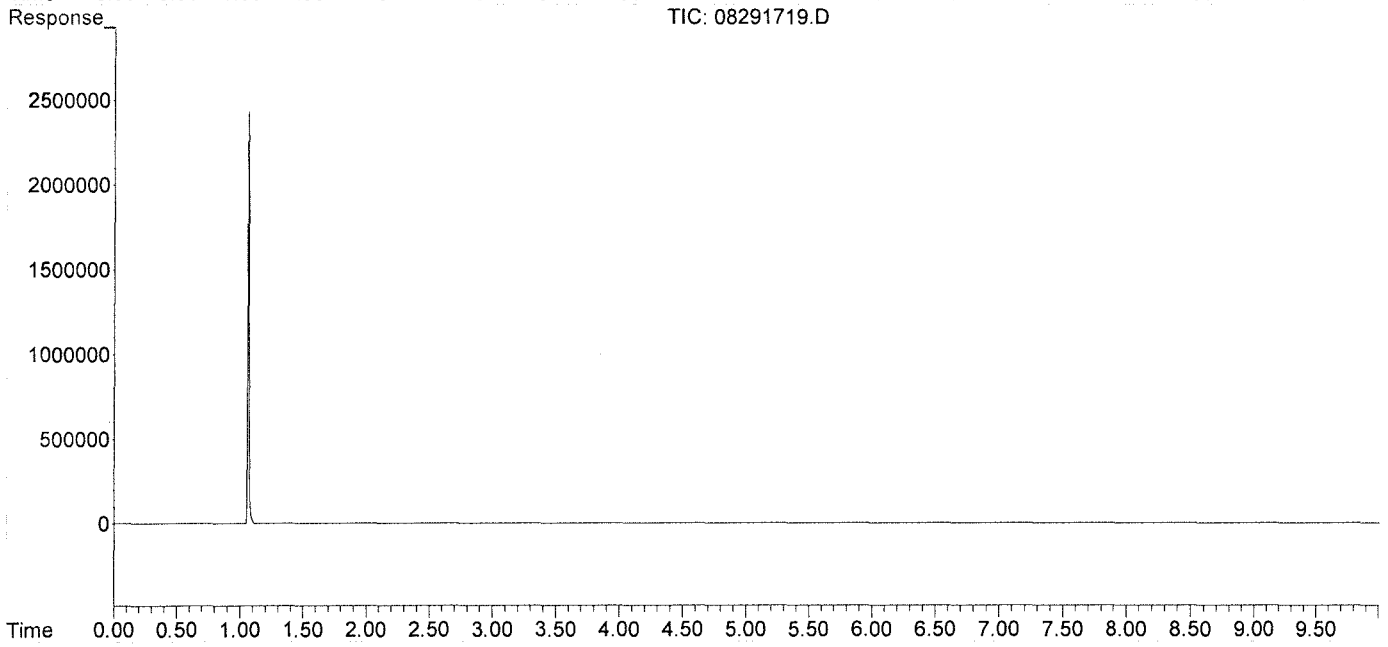
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

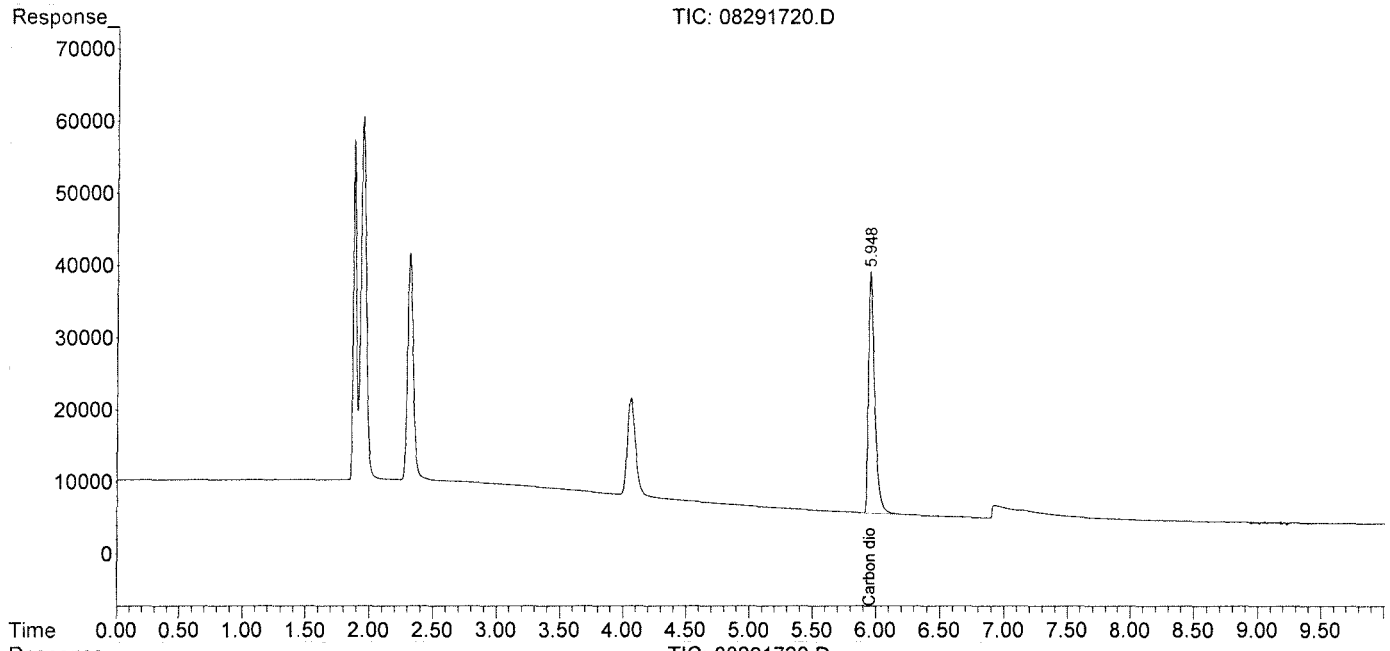
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.880	819221	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.948	1132363	4753.126	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

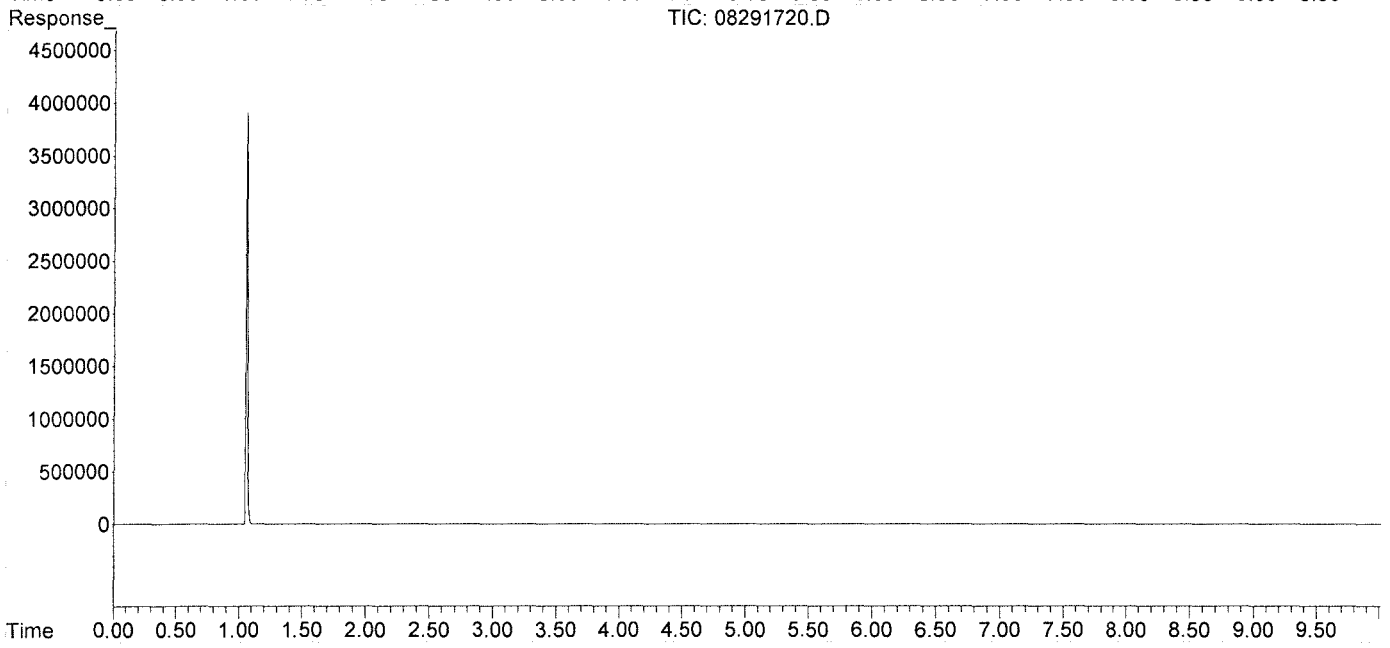
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

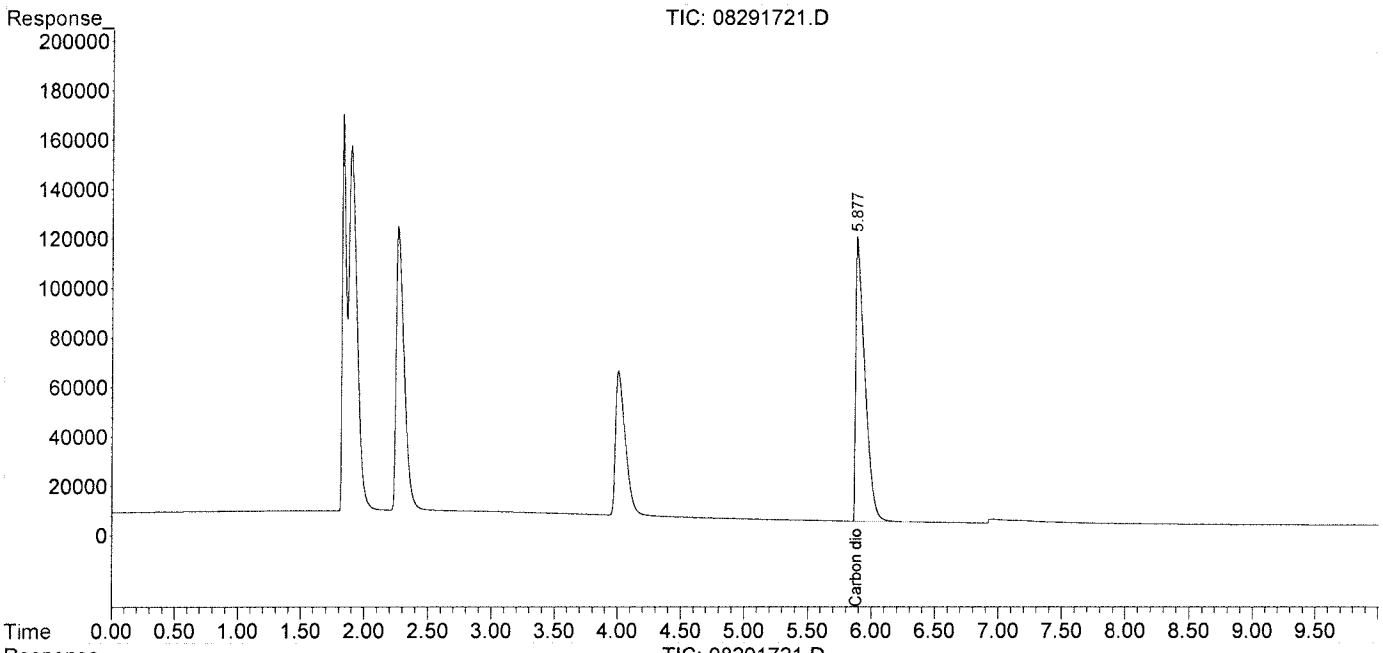
	Compound	R.T.	Response	Conc	Units	
Target	Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.827	3325463	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.879f	5744295	24443.288	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

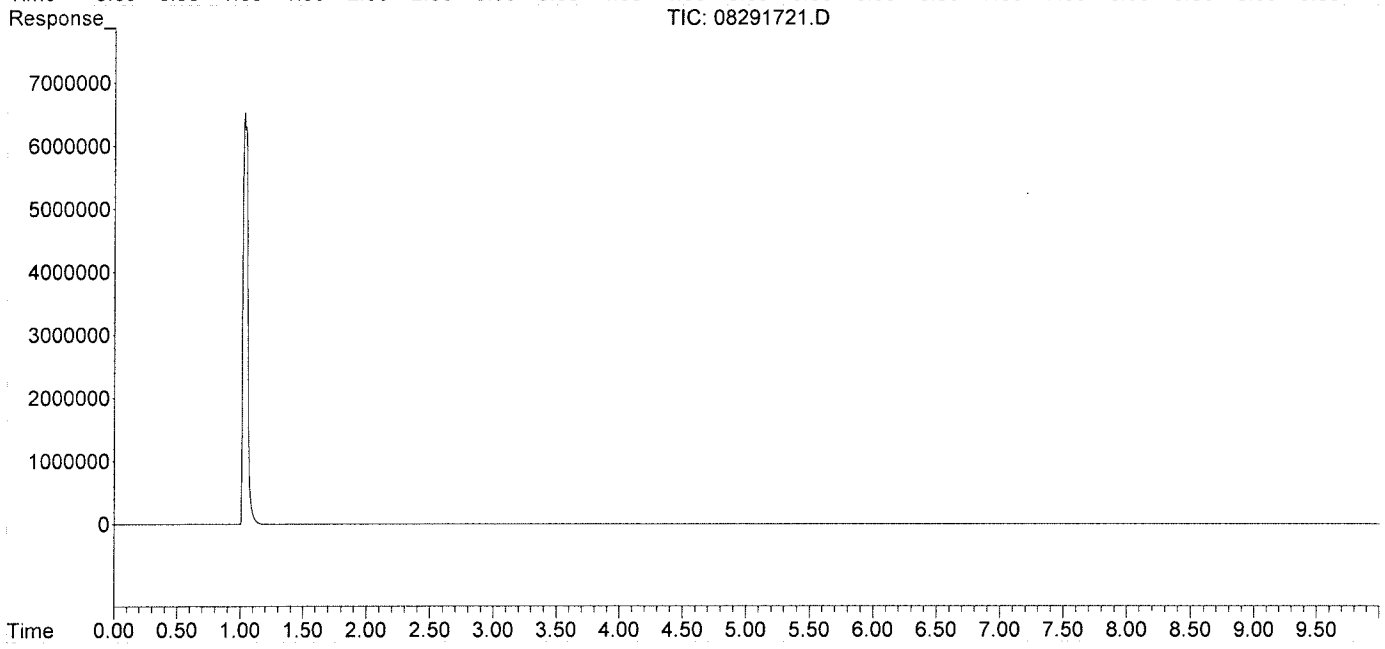
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.886	536422	0.113	ppm	actual %D
2)	Carbon monoxide	1.886	536422	N.D.	ppm	
3)	Methane (TCD)	4.059f	626500	66244.710	ppm	
4)	Carbon dioxide	5.947	1163775	4957.948	ppm	5000 99.16
6)	Methane (FID)	1.062	37290742	3947.023	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

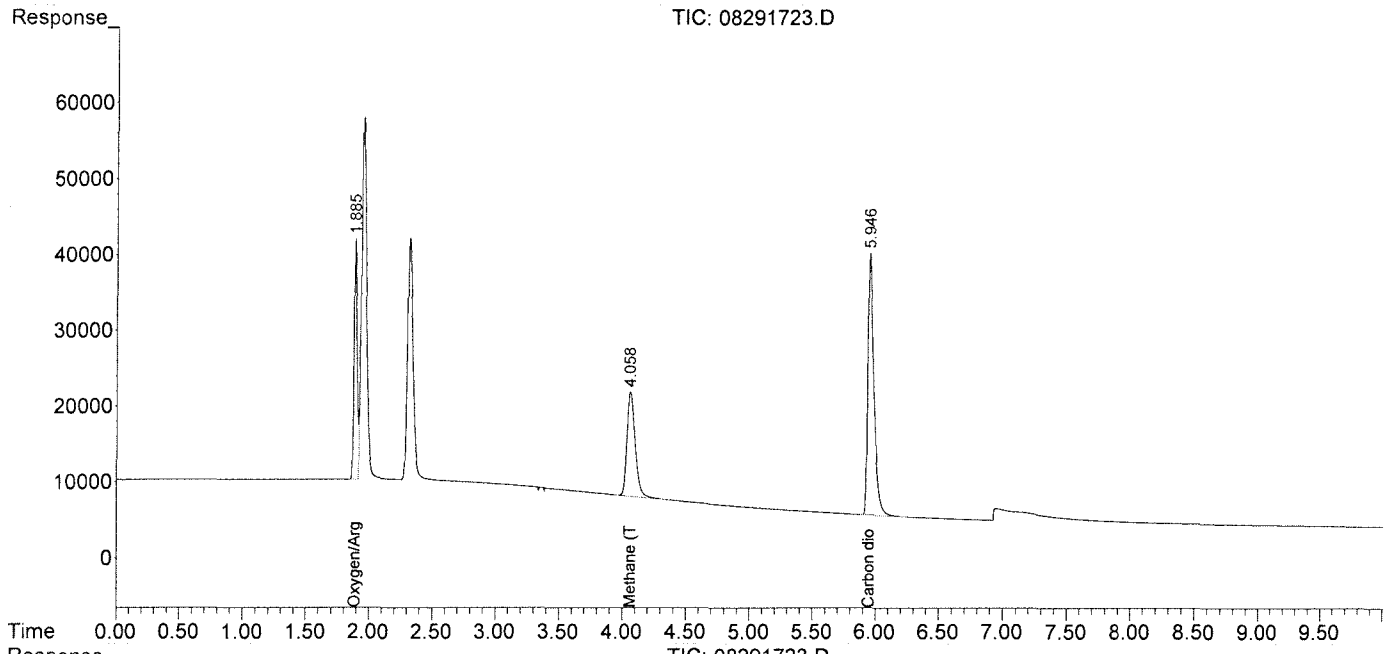
(f)=RT Delta > 1/2 Window (m)=manual int.

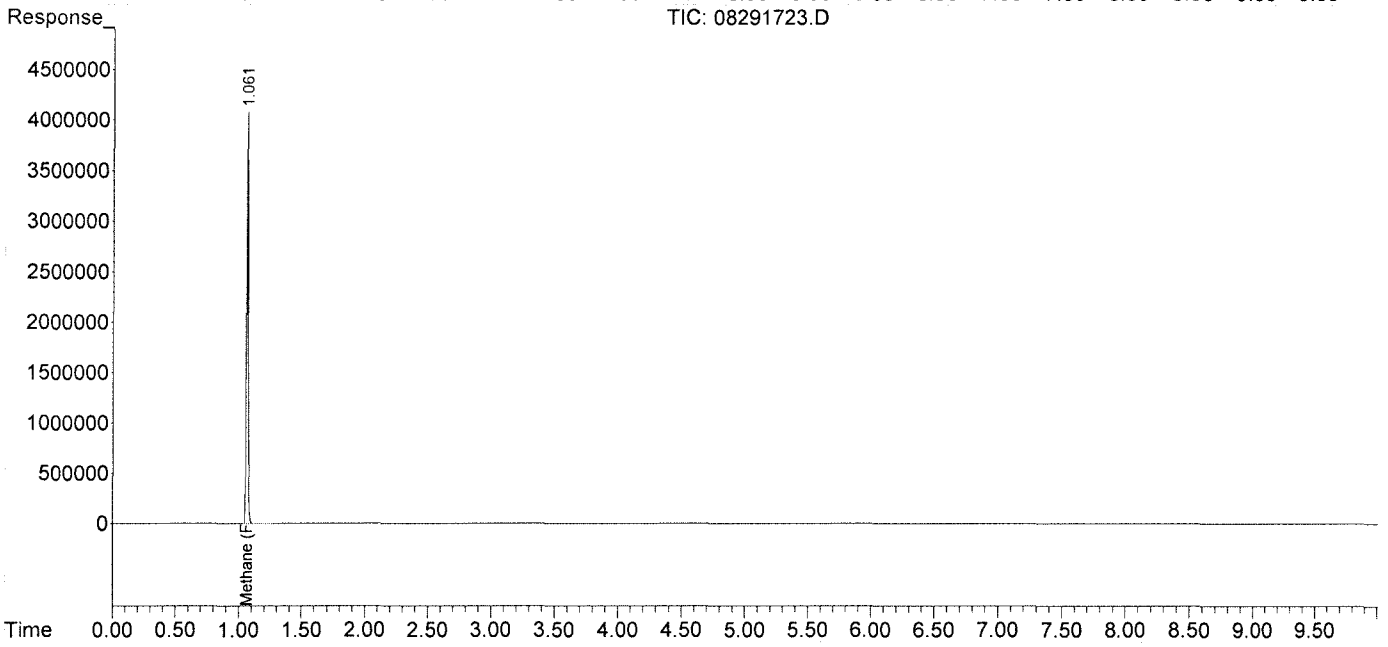
W 9/4/17

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Dissolved Gases by RSK175

ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P2102701
Sample Vol. (ml) : 32.00 ml
Analyst : CB
Date Analysis : 05/26/21
Head Space Vol.(ml) : 8.00 ml

Instrument : GC#10
Detector : FID#10, TCD#10
Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Carbon Dioxide
std 0.5mL	0.100	964.823
ACTUAL		1000.00
%Difference		3.5%
mcs 0.1mL	0.100	0.000
RB 0.1mL	0.100	0.000
lcs S32-03172101 0.1mL	0.100	878.809
lcsd S32-03172101 0.1mL	0.100	877.597
P2102701-001 0.1mL	0.100	15107.13
P2102701-002 50uL	0.050	15670.12
P2102701-002 ms 50uL	0.050	14399.72
P2102701-002 msd 50uL	0.050	16702.08
STD S32-03232001 0.5mL		987.826
ACTUAL		1000.00
%Difference		1.2%

FINAL HEAD SPACE RESULT (ppm)

	Carbon Dioxide
WWt.	44.10
HENRY'S CONSTANT	1.42E+03
RL	100.00
mcs 0.1mL	0.000
lcs S32-03172101 0.1mL	8788.090
lcsd S32-03172101 0.1mL	8775.970
P2102701-001 0.1mL	151071.32
P2102701-002 50uL	313402.34
P2102701-002 ms 50uL	287994.4
P2102701-002 msd 50uL	334041.58

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\26\
Data File : 05262101.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-May-2021, 15:48
Operator : CB
Sample : STD S32-03232001 0.5mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

CB 5/27/21

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 15:57:40 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

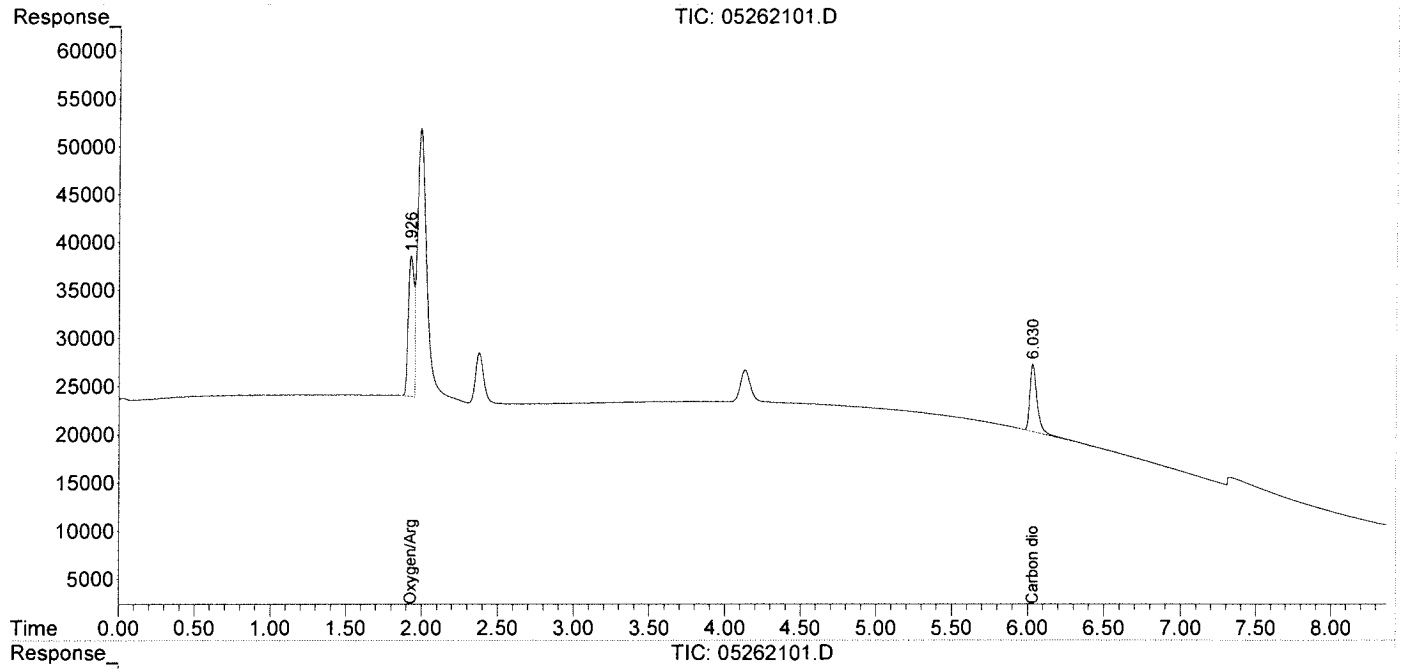
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.927f	375783	0.079	ppm
2)	Carbon monoxide	1.927f	375783	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.031	231872	987.826	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

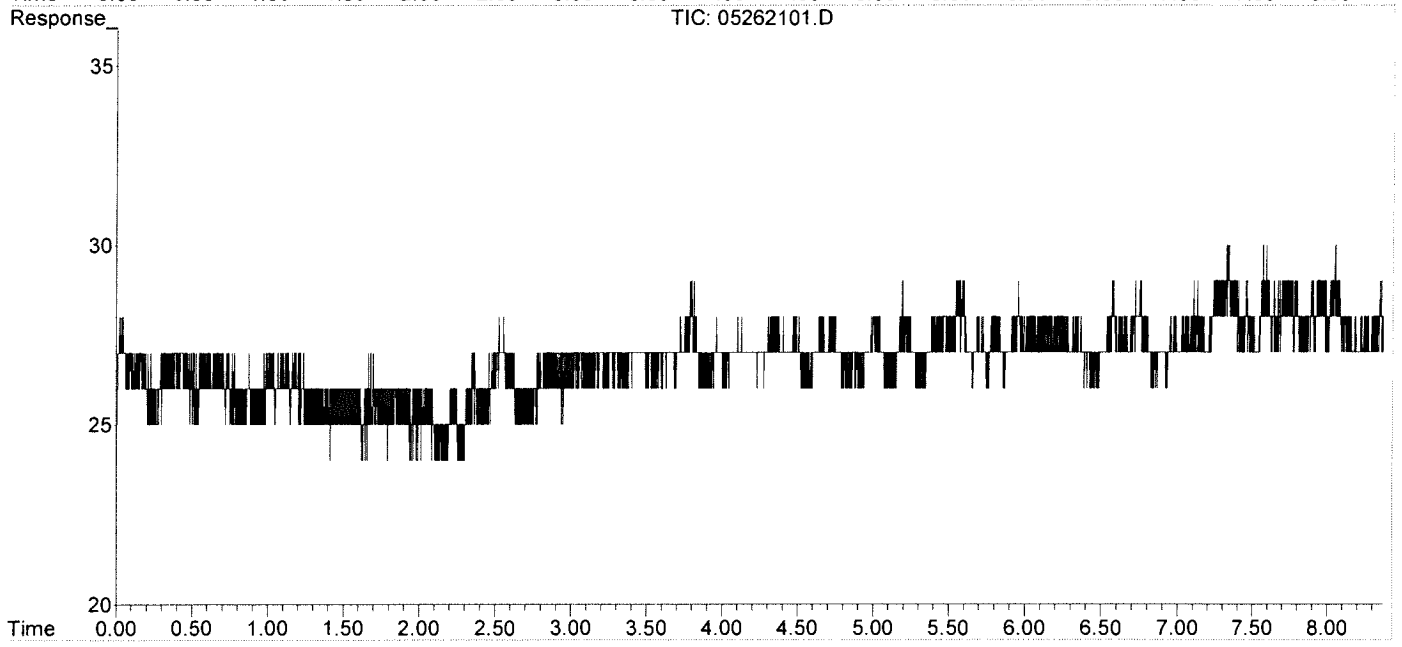
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\26\
Data File : 05262101.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-May-2021, 15:48
Operator : CB
Sample : STD S32-03232001 0.5mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 15:57:40 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2021_05\26\
Data File : 05262113.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-May-2021, 18:14
Operator : CB
Sample : std 0.5mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 18:21:26 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

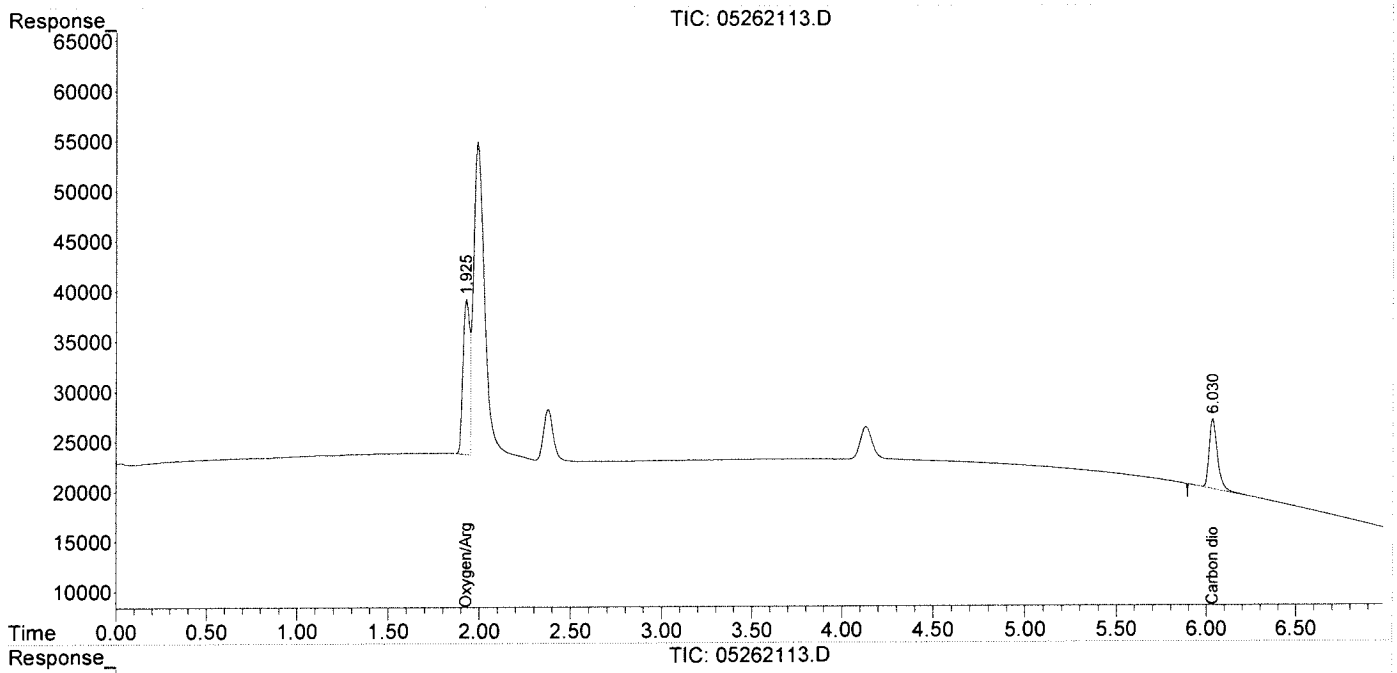
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.926f	390106	0.082	ppm
2)	Carbon monoxide	1.926f	390106	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.031	226472	964.823	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

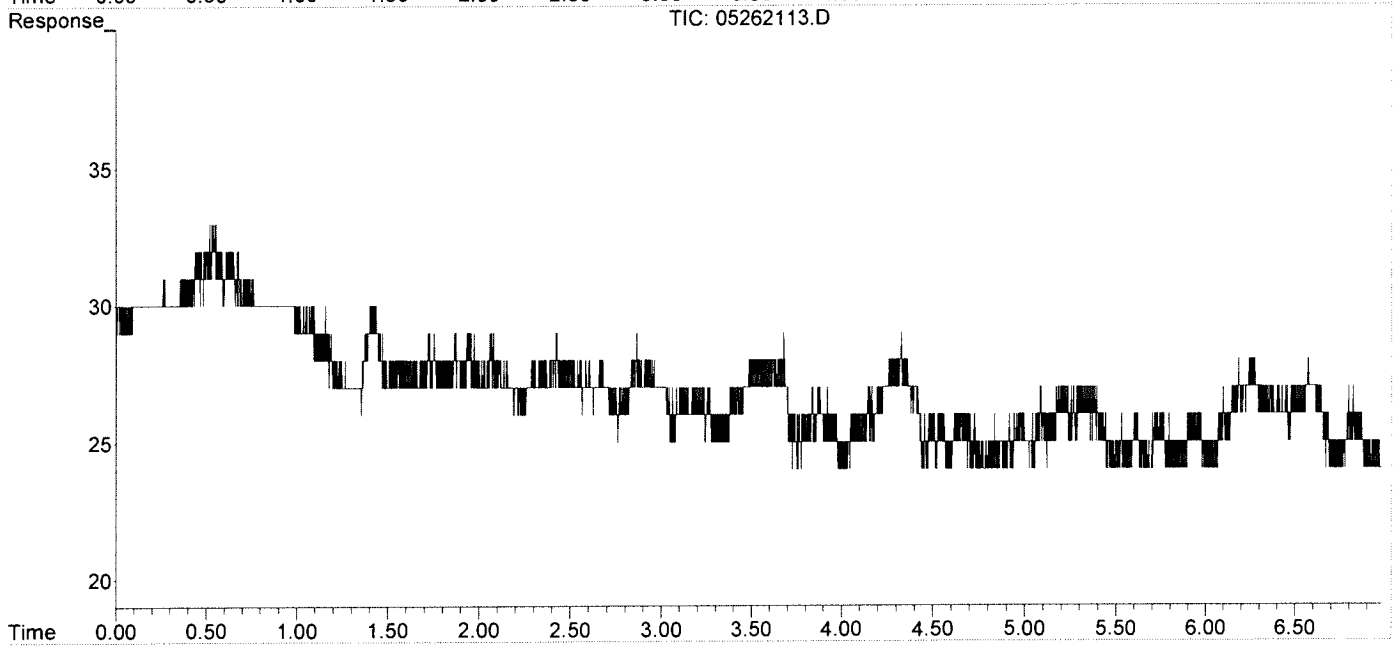
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\26\
Data File : 05262113.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-May-2021, 18:14
Operator : CB
Sample : std 0.5mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 26 18:21:26 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_08\29\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	29-Aug-17, 07:58:00	08291701.D	std s30-06161601		MC	RSKBOTH.M	Pass
2	29-Aug-17, 08:11:02	08291702.D	mb 0.5ml		MC	RSKBOTH.M	Pass
3	29-Aug-17, 08:24:13	08291703.D	4089-001 0.5ml		MC	RSKBOTH.M	
4	29-Aug-17, 08:39:29	08291704.D	4089-002 0.5ml		MC	RSKBOTH.M	
5	29-Aug-17, 08:53:38	08291705.D	4089-003 0.5ml		MC	RSKBOTH.M	
6	29-Aug-17, 09:33:52	08291706.D	4089-004 0.5ml		MC	RSKBOTH.M	
7	29-Aug-17, 09:50:51	08291707.D	4089-005 0.5ml		MC	RSKBOTH.M	
8	29-Aug-17, 10:07:54	08291708.D	4089-006 0.5ml		MC	RSKBOTH.M	
9	29-Aug-17, 10:42:34	08291709.D	4089-007 0.5ml		MC	RSKBOTH.M	
10	29-Aug-17, 11:06:01	08291710.D	4089-008 0.5ml		MC	RSKBOTH.M	
11	29-Aug-17, 11:23:53	08291711.D	4089-009 0.5ml		MC	RSKBOTH.M	
12	29-Aug-17, 11:37:17	08291712.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
13	29-Aug-17, 11:50:31	08291713.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
14	29-Aug-17, 12:29:45	08291714.D	std s30-06161601		MC	RSKBOTH.M	Pass
15	29-Aug-17, 14:07:01	08291715.D	25ppm s32-08291701 0.25ml		MC	RSKBOTH.M	Curve
16	29-Aug-17, 14:22:12	08291716.D	100ppm s32-08291702 0.2ml		MC	RSKBOTH.M	Curve
17	29-Aug-17, 14:53:00	08291717.D	250ppm s32-08291702 0.5ml		MC	RSKBOTH.M	Curve
18	29-Aug-17, 15:07:43	08291718.D	mis inject		MC	RSKBOTH.M	
19	29-Aug-17, 15:23:21	08291719.D	2500ppm s32-08231701 50ul		MC	RSKBOTH.M	Curve
20	29-Aug-17, 15:44:54	08291720.D	5000ppm s32-08231701 0.1ml		MC	RSKBOTH.M	Curve
21	29-Aug-17, 16:00:09	08291721.D	25000ppm s32-08231701 0.5ml		MC	RSKBOTH.M	Curve
22	29-Aug-17, 16:15:43	08291722.D	mb 0.1ml		MC	RSKBOTH.M	Pass
23	29-Aug-17, 16:35:37	08291723.D	icv s30-07071701		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_TCD\2021_05\26\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	26-May-21, 11:44:08	05262100.D	xSTD S32-03172101 0.1mL		CB	RSKBOTH.M	
2	26-May-21, 15:48:54	05262101.D	STD S32-03232001 0.5mL		CB	RSKBOTH.M	Pass
3	26-May-21, 16:10:51	05262102.D	RB 0.1mL		CB	RSKBOTH.M	
4	26-May-21, 16:23:14	05262103.D	mcs 0.1mL		CB	RSKBOTH.M	
5	26-May-21, 16:33:50	05262104.D	P2102700-001 0.1mL		CB	RSKBOTH.M	
6	26-May-21, 16:45:57	05262105.D	P2102701-001 0.1mL		CB	RSKBOTH.M	
7	26-May-21, 17:00:19	05262106.D	x2701-002 0.1mL		CB	RSKBOTH.M	
8	26-May-21, 17:09:56	05262107.D	x2701-002 0.05mL		CB	RSKBOTH.M	
9	26-May-21, 17:19:39	05262108.D	P2102701-002 ms 50uL		CB	RSKBOTH.M	
10	26-May-21, 17:29:38	05262109.D	P2102701-002 msd 50uL		CB	RSKBOTH.M	
11	26-May-21, 17:44:10	05262110.D	P2102701-002 50uL		CB	RSKBOTH.M	
12	26-May-21, 17:55:11	05262111.D	lcs S32-03172101 0.1mL		CB	RSKBOTH.M	Pass
13	26-May-21, 18:05:08	05262112.D	lcsd S32-03172101 0.1mL		CB	RSKBOTH.M	Pass
14	26-May-21, 18:14:58	05262113.D	std 0.5mL		CB	RSKBOTH.M	Pass

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www.alsglobal.com

WorkOrder: HS21050972

LHAAP 37 May 2021

Aptim Environmental & Infrastucture, Inc.

Vicki Graves
10333 Richmond Ave Ste 1030
Houston TX 77042

23-Jun-2021

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ALS Group USA, Corp
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HS21050972 LHAAP 37 May 2021 Final

ALS WO# HS21050972

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June 08, 2021

Vicki Graves
Aptim Environmental & Infrastucture, Inc.
10333 Richmond Ave
Ste 1030
Houston, TX 77042

Work Order: **HS21050972**

Laboratory Results for: **LHAAP 37 May 2021**

Dear Vicki Graves ,

ALS Environmental received 18 sample(s) on May 20, 2021 for the analysis presented in the following report.

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

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

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

Sincerely,

Generated By: JUMOKE.LAWAL
Ragen Giga
Project Manager

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Work Order: HS21050972

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS21050972-01	35BWW09_210517	Groundwater		17-May-2021 07:40	20-May-2021 09:50	☐
HS21050972-02	35BWW11_210517	Groundwater		17-May-2021 08:20	20-May-2021 09:50	☐
HS21050972-03	35BWW25_210517	Groundwater		17-May-2021 09:05	20-May-2021 09:50	☐
HS21050972-04	35BWW24_210517	Groundwater		17-May-2021 09:50	20-May-2021 09:50	☐
HS21050972-05	35BWW24_210517-FD	Groundwater		17-May-2021 09:50	20-May-2021 09:50	☐
HS21050972-06	35BWW07_210517	Groundwater		17-May-2021 10:30	20-May-2021 09:50	☐
HS21050972-07	35BWW13_210517	Groundwater		17-May-2021 11:55	20-May-2021 09:50	☐
HS21050972-08	35BWW12_210518	Groundwater		18-May-2021 07:40	20-May-2021 09:50	☐
HS21050972-09	35BWW12_210518-FD	Groundwater		18-May-2021 07:40	20-May-2021 09:50	☐
HS21050972-10	35BWW23_210518	Groundwater		18-May-2021 08:30	20-May-2021 09:50	☐
HS21050972-11	35BWW14_210518	Groundwater		18-May-2021 09:20	20-May-2021 09:50	☐
HS21050972-12	35BWW15_210518	Groundwater		18-May-2021 10:05	20-May-2021 09:50	☐
HS21050972-13	35BWW17_210518	Groundwater		18-May-2021 10:45	20-May-2021 09:50	☐
HS21050972-14	35BWW17_210518-FD	Groundwater		18-May-2021 10:45	20-May-2021 09:50	☐
HS21050972-15	35BWW16_210518	Groundwater		18-May-2021 11:30	20-May-2021 09:50	☐
HS21050972-16	35BWW19_210518	Groundwater		18-May-2021 12:15	20-May-2021 09:50	☐
HS21050972-17	35BWW18_210518	Groundwater		18-May-2021 13:00	20-May-2021 09:50	☐
HS21050972-18	Trip Blank-210518	Water	CG-121520-1022	18-May-2021 00:00	20-May-2021 09:50	☐

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP 37 May 2021
Work Order: HS21050972

Work Order Comments

- FEDEX Tracking # 9473 0842 9090
  Tuesday, May 18, 2021 4:27 PM LONGVIEW, TX Picked up
  Thursday, May 20, 20219:48 AM HOUSTON, TX Delivered

- Sample ID does not match, logged per Sample Label
  COC = 35BWW12-210518 Label = 35BWW12-210518-FD
  Nitrates received out of hold

Work Order Comments

- The analyses for RSK-175 CO2 was subcontracted to ALS Environmental in Simi Valley, CA. Final Report attached.

GCMS Volatiles by Method SW8260

Batch ID: R384157

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

Batch ID: R384184

Sample ID: CCV

- Acetone exceeded %D limits for CCV. Samples are ND for this compound.

Sample ID: VLCSW-210523

- Acetone is also high for LCS.

Sample ID: HS21050892-06MSD

- MS/MSD RPD was performed on unrelated sample.

WetChemistry by Method SW9056

Batch ID: R384108

Sample ID: 35BWW12_210518 (HS21050972-08)

- Sample holding time expired prior to sample receipt. It was analyzed at the request of the client. Results should be considered estimated.

Sample ID: 35BWW12_210518-FD (HS21050972-09)

- Sample holding time expired prior to sample receipt. It was analyzed at the request of the client. Results should be considered estimated.

Sample ID: 35BWW14_210518 (HS21050972-11)

- Sample holding time expired prior to sample receipt. It was analyzed at the request of the client. Results should be considered estimated.

Sample ID: 35BWW23_210518 (HS21050972-10)

- Sample holding time expired prior to sample receipt. It was analyzed at the request of the client. Results should be considered estimated.

WetChemistry by Method SM5310B

Batch ID: R384067

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Work Order: HS21050972

CASE NARRATIVE

WetChemistry by Method SM5310B

Batch ID: R384067

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW09_210517
Collection Date: 17-May-2021 07:40

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:10
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 16:10
1,1,2-Trichlor-1,2,2-trifluoroethane	**2.7**		**0.50**	**1.0**	**1.0**	**ug/L**	1	21-May-2021 16:10
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:10
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:10
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:10
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 16:10
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 16:10
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:10
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:10
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 16:10
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:10
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 16:10
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:10
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:10
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:10
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	21-May-2021 16:10
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
2-Hexanone	2.0	U	1.0	2.0	2.0	ug/L	1	21-May-2021 16:10
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:10
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	ug/L	1	21-May-2021 16:10
Acetone	2.0	U	0.40	2.0	2.0	ug/L	1	21-May-2021 16:10
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:10
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:10
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:10
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:10
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:10
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:10
Carbon disulfide	2.0	U	0.60	2.0	2.0	ug/L	1	21-May-2021 16:10
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 16:10
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW09_210517
Collection Date: 17-May-2021 07:40

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:10
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:10
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:10
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	21-May-2021 16:10
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:10
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	21-May-2021 16:10
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	21-May-2021 16:10
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	21-May-2021 16:10
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:10
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:10
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:10
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:10
Trichloroethene	**13**		**0.20**	**0.50**	**1.0**	**ug/L**	1	21-May-2021 16:10
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:10
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:10
Surr: 1,2-Dichloroethane-d4	*88.8*			**0**	*81-118*	*%REC*	*1*	*21-May-2021 16:10*
Surr: 4-Bromofluorobenzene	*86.4*			**0**	*85-114*	*%REC*	*1*	*21-May-2021 16:10*
Surr: Dibromofluoromethane	*90.7*			**0**	*80-119*	*%REC*	*1*	*21-May-2021 16:10*
Surr: Toluene-d8	*109*			**0**	*89-112*	*%REC*	*1*	*21-May-2021 16:10*

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW11_210517
Collection Date: 17-May-2021 08:20

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:31
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 16:31
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 16:31
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:31
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:31
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:31
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 16:31
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 16:31
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:31
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:31
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 16:31
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:31
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 16:31
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:31
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:31
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:31
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	21-May-2021 16:31
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
2-Hexanone	2.0	U	1.0	2.0	2.0	ug/L	1	21-May-2021 16:31
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:31
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	ug/L	1	21-May-2021 16:31
Acetone	2.0	U	0.40	2.0	2.0	ug/L	1	21-May-2021 16:31
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:31
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:31
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:31
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:31
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:31
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:31
Carbon disulfide	2.0	U	0.60	2.0	2.0	ug/L	1	21-May-2021 16:31
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 16:31
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW11_210517
Collection Date: 17-May-2021 08:20

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:31
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:31
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:31
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	21-May-2021 16:31
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:31
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	21-May-2021 16:31
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	21-May-2021 16:31
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	21-May-2021 16:31
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:31
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:31
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:31
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:31
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:31
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:31
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:31
Surr: 1,2-Dichloroethane-d4	*90.4*			**0**	*81-118*	*%REC*	*1*	*21-May-2021 16:31*
Surr: 4-Bromofluorobenzene	*89.7*			**0**	*85-114*	*%REC*	*1*	*21-May-2021 16:31*
Surr: Dibromofluoromethane	*90.4*			**0**	*80-119*	*%REC*	*1*	*21-May-2021 16:31*
Surr: Toluene-d8	*109*			**0**	*89-112*	*%REC*	*1*	*21-May-2021 16:31*

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW25_210517
Collection Date: 17-May-2021 09:05

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 13:43
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 13:43
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 13:43
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 13:43
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 13:43
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 13:43
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 13:43
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 13:43
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 13:43
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 13:43
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 13:43
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 13:43
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 13:43
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 13:43
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 13:43
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 13:43
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	21-May-2021 13:43
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
2-Hexanone	2.0	U	1.0	2.0	2.0	ug/L	1	21-May-2021 13:43
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 13:43
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	ug/L	1	21-May-2021 13:43
Acetone	2.0	U	0.40	2.0	2.0	ug/L	1	21-May-2021 13:43
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 13:43
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 13:43
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 13:43
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 13:43
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 13:43
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 13:43
Carbon disulfide	2.0	U	0.60	2.0	2.0	ug/L	1	21-May-2021 13:43
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 13:43
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW25_210517
Collection Date: 17-May-2021 09:05

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 13:43
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 13:43
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 13:43
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	21-May-2021 13:43
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 13:43
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	21-May-2021 13:43
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	21-May-2021 13:43
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	21-May-2021 13:43
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 13:43
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 13:43
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 13:43
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 13:43
Trichloroethene	**8.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	21-May-2021 13:43
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 13:43
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 13:43
Surr: 1,2-Dichloroethane-d4	*94.4*			**0**	*81-118*	*%REC*	*1*	*21-May-2021 13:43*
Surr: 4-Bromofluorobenzene	*89.8*			**0**	*85-114*	*%REC*	*1*	*21-May-2021 13:43*
Surr: Dibromofluoromethane	*93.0*			**0**	*80-119*	*%REC*	*1*	*21-May-2021 13:43*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*21-May-2021 13:43*

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW24_210517
Collection Date: 17-May-2021 09:50

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:52
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 16:52
1,1,2-Trichlor-1,2,2-trifluoroethane	**2.7**		**0.50**	**1.0**	**1.0**	**ug/L**	1	21-May-2021 16:52
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:52
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:52
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:52
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 16:52
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 16:52
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:52
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:52
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 16:52
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:52
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 16:52
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:52
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:52
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:52
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	21-May-2021 16:52
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
2-Hexanone	2.0	U	1.0	2.0	2.0	ug/L	1	21-May-2021 16:52
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:52
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	ug/L	1	21-May-2021 16:52
Acetone	2.0	U	0.40	2.0	2.0	ug/L	1	21-May-2021 16:52
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:52
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:52
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:52
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:52
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:52
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:52
Carbon disulfide	2.0	U	0.60	2.0	2.0	ug/L	1	21-May-2021 16:52
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 16:52
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW24_210517
Collection Date: 17-May-2021 09:50

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:52
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:52
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:52
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	21-May-2021 16:52
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:52
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	21-May-2021 16:52
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	21-May-2021 16:52
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	21-May-2021 16:52
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 16:52
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:52
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:52
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:52
Trichloroethene	**2.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	21-May-2021 16:52
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 16:52
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 16:52
Surr: 1,2-Dichloroethane-d4	*91.8*			**0**	*81-118*	*%REC*	*1*	*21-May-2021 16:52*
Surr: 4-Bromofluorobenzene	*85.6*			**0**	*85-114*	*%REC*	*1*	*21-May-2021 16:52*
Surr: Dibromofluoromethane	*92.6*			**0**	*80-119*	*%REC*	*1*	*21-May-2021 16:52*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*21-May-2021 16:52*

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP 37 May 2021 WorkOrder:HS21050972
Sample ID: 35BWW24_210517-FD Lab ID:HS21050972-05
Collection Date: 17-May-2021 09:50 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:13
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 17:13
1,1,2-Trichlor-1,2,2-trifluoroethane	**2.3**		**0.50**	**1.0**	**1.0**	**ug/L**	1	21-May-2021 17:13
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:13
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:13
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:13
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 17:13
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 17:13
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:13
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:13
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 17:13
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:13
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 17:13
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:13
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:13
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:13
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	21-May-2021 17:13
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
2-Hexanone	2.0	U	1.0	2.0	2.0	ug/L	1	21-May-2021 17:13
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:13
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	ug/L	1	21-May-2021 17:13
Acetone	2.0	U	0.40	2.0	2.0	ug/L	1	21-May-2021 17:13
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:13
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:13
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:13
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:13
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:13
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:13
Carbon disulfide	2.0	U	0.60	2.0	2.0	ug/L	1	21-May-2021 17:13
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 17:13
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW24_210517-FD
Collection Date: 17-May-2021 09:50

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:13
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:13
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:13
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	21-May-2021 17:13
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:13
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	21-May-2021 17:13
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	21-May-2021 17:13
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	21-May-2021 17:13
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:13
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:13
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:13
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:13
Trichloroethene	**2.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	21-May-2021 17:13
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:13
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:13
Surr: 1,2-Dichloroethane-d4	*91.0*			**0**	*81-118*	*%REC*	*1*	*21-May-2021 17:13*
Surr: 4-Bromofluorobenzene	*88.2*			**0**	*85-114*	*%REC*	*1*	*21-May-2021 17:13*
Surr: Dibromofluoromethane	*90.6*			**0**	*80-119*	*%REC*	*1*	*21-May-2021 17:13*
Surr: Toluene-d8	*109*			**0**	*89-112*	*%REC*	*1*	*21-May-2021 17:13*

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW07_210517
Collection Date: 17-May-2021 10:30

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:34
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 17:34
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 17:34
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:34
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:34
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:34
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 17:34
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 17:34
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:34
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:34
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 17:34
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:34
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 17:34
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:34
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:34
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:34
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	21-May-2021 17:34
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
2-Hexanone	2.0	U	1.0	2.0	2.0	ug/L	1	21-May-2021 17:34
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:34
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	ug/L	1	21-May-2021 17:34
Acetone	2.0	U	0.40	2.0	2.0	ug/L	1	21-May-2021 17:34
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:34
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:34
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:34
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:34
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:34
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:34
Carbon disulfide	2.0	U	0.60	2.0	2.0	ug/L	1	21-May-2021 17:34
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 17:34
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW07_210517
Collection Date: 17-May-2021 10:30

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:34
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:34
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:34
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	21-May-2021 17:34
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:34
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	21-May-2021 17:34
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	21-May-2021 17:34
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	21-May-2021 17:34
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:34
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:34
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:34
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:34
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:34
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:34
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:34
Surr: 1,2-Dichloroethane-d4	*88.6*			**0**	*81-118*	*%REC*	*1*	*21-May-2021 17:34*
Surr: 4-Bromofluorobenzene	*86.5*			**0**	*85-114*	*%REC*	*1*	*21-May-2021 17:34*
Surr: Dibromofluoromethane	*87.8*			**0**	*80-119*	*%REC*	*1*	*21-May-2021 17:34*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*21-May-2021 17:34*

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW13_210517
Collection Date: 17-May-2021 11:55

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:55
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 17:55
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 17:55
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:55
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:55
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:55
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 17:55
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 17:55
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:55
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:55
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 17:55
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:55
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 17:55
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:55
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:55
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:55
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	21-May-2021 17:55
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
2-Hexanone	2.0	U	1.0	2.0	2.0	ug/L	1	21-May-2021 17:55
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:55
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	ug/L	1	21-May-2021 17:55
Acetone	2.0	U	0.40	2.0	2.0	ug/L	1	21-May-2021 17:55
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:55
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:55
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:55
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:55
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:55
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:55
Carbon disulfide	2.0	U	0.60	2.0	2.0	ug/L	1	21-May-2021 17:55
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	21-May-2021 17:55
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW13_210517
Collection Date: 17-May-2021 11:55

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:55
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:55
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:55
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	21-May-2021 17:55
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:55
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	21-May-2021 17:55
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	21-May-2021 17:55
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	21-May-2021 17:55
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	21-May-2021 17:55
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:55
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:55
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:55
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:55
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	21-May-2021 17:55
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2021 17:55
Surr: 1,2-Dichloroethane-d4	*90.8*			**0**	*81-118*	*%REC*	*1*	*21-May-2021 17:55*
Surr: 4-Bromofluorobenzene	*87.3*			**0**	*85-114*	*%REC*	*1*	*21-May-2021 17:55*
Surr: Dibromofluoromethane	*89.4*			**0**	*80-119*	*%REC*	*1*	*21-May-2021 17:55*
Surr: Toluene-d8	*110*			**0**	*89-112*	*%REC*	*1*	*21-May-2021 17:55*

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW12_210518
Collection Date: 18-May-2021 07:40

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:07
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:07
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:07
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:07
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:07
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:07
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:07
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:07
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:07
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:07
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:07
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:07
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:07
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:07
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:07
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:07
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 18:07
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07
2-Hexanone	2.0	U	1.0	2.0	2.0	ug/L	1	23-May-2021 18:07
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:07
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	ug/L	1	23-May-2021 18:07
Acetone	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 18:07
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:07
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:07
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:07
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:07
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:07
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:07
Carbon disulfide	2.0	U	0.60	2.0	2.0	ug/L	1	23-May-2021 18:07
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:07
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW12_210518
Collection Date: 18-May-2021 07:40

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:07
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:07
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:07
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	23-May-2021 18:07
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:07
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	23-May-2021 18:07
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 18:07
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 18:07
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:07
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07
Tetrachloroethene	**3.4**		**0.30**	**1.0**	**1.0**	**ug/L**	1	23-May-2021 18:07
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:07
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:07
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:07
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:07
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:07
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:07
Surr: 1,2-Dichloroethane-d4	*91.4*			**0**	*81-118*	*%REC*	*1*	*23-May-2021 18:07*
Surr: 4-Bromofluorobenzene	*90.6*			**0**	*85-114*	*%REC*	*1*	*23-May-2021 18:07*
Surr: Dibromofluoromethane	*91.8*			**0**	*80-119*	*%REC*	*1*	*23-May-2021 18:07*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*23-May-2021 18:07*
TOTAL ORGANIC CARBON - SM5310B		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**0.981**	J	**0.500**	**0.500**	**1.00**	**mg/L**	1	20-May-2021 23:18
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**6.69**		**0.200**	**0.500**	**0.500**	**mg/L**	1	20-May-2021 14:08
Nitrogen, Nitrate (As N)	0.100	HU	0.0300	0.100	0.100	mg/L	1	20-May-2021 14:08
Sulfate	**34.2**		**0.200**	**0.500**	**0.500**	**mg/L**	1	20-May-2021 14:08
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	08-Jun-2021 09:42

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW12_210518-FD
Collection Date: 18-May-2021 07:40

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:28
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:28
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:28
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:28
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:28
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:28
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:28
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:28
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:28
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:28
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:28
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:28
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:28
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:28
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:28
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:28
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 18:28
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28
2-Hexanone	2.0	U	1.0	2.0	2.0	ug/L	1	23-May-2021 18:28
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:28
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	ug/L	1	23-May-2021 18:28
Acetone	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 18:28
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:28
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:28
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:28
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:28
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:28
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:28
Carbon disulfide	2.0	U	0.60	2.0	2.0	ug/L	1	23-May-2021 18:28
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:28
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW12_210518-FD
Collection Date: 18-May-2021 07:40

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:28
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:28
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:28
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	23-May-2021 18:28
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:28
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	23-May-2021 18:28
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 18:28
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 18:28
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:28
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28
Tetrachloroethene	**3.6**		**0.30**	**1.0**	**1.0**	**ug/L**	1	23-May-2021 18:28
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:28
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:28
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:28
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:28
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:28
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:28
Surr: 1,2-Dichloroethane-d4	*90.3*			**0**	*81-118*	*%REC*	*1*	*23-May-2021 18:28*
Surr: 4-Bromofluorobenzene	*90.6*			**0**	*85-114*	*%REC*	*1*	*23-May-2021 18:28*
Surr: Dibromofluoromethane	*89.7*			**0**	*80-119*	*%REC*	*1*	*23-May-2021 18:28*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*23-May-2021 18:28*
TOTAL ORGANIC CARBON - SM5310B		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**1.15**		**0.500**	**0.500**	**1.00**	**mg/L**	1	20-May-2021 23:33
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**6.61**		**0.200**	**0.500**	**0.500**	**mg/L**	1	20-May-2021 14:30
Nitrogen, Nitrate (As N)	0.100	HU	0.0300	0.100	0.100	mg/L	1	20-May-2021 14:30
Sulfate	**33.8**		**0.200**	**0.500**	**0.500**	**mg/L**	1	20-May-2021 14:30
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	08-Jun-2021 09:42

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW23_210518
Collection Date: 18-May-2021 08:30

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:49
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:49
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:49
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:49
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:49
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:49
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:49
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:49
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:49
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:49
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:49
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:49
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:49
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:49
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:49
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:49
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 18:49
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
2-Hexanone	2.0	U	1.0	2.0	2.0	ug/L	1	23-May-2021 18:49
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:49
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	ug/L	1	23-May-2021 18:49
Acetone	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 18:49
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:49
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:49
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:49
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:49
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:49
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:49
Carbon disulfide	2.0	U	0.60	2.0	2.0	ug/L	1	23-May-2021 18:49
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 18:49
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW23_210518
Collection Date: 18-May-2021 08:30

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:49
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:49
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:49
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	23-May-2021 18:49
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:49
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	23-May-2021 18:49
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 18:49
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 18:49
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 18:49
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:49
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:49
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:49
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:49
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 18:49
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 18:49
Surr: 1,2-Dichloroethane-d4	*90.1*			**0**	*81-118*	*%REC*	*1*	*23-May-2021 18:49*
Surr: 4-Bromofluorobenzene	*88.4*			**0**	*85-114*	*%REC*	*1*	*23-May-2021 18:49*
Surr: Dibromofluoromethane	*89.7*			**0**	*80-119*	*%REC*	*1*	*23-May-2021 18:49*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*23-May-2021 18:49*
TOTAL ORGANIC CARBON - SM5310B		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**1.37**		**0.500**	**0.500**	**1.00**	**mg/L**	1	20-May-2021 23:47
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**18.0**		**0.200**	**0.500**	**0.500**	**mg/L**	1	20-May-2021 14:37
Nitrogen, Nitrate (As N)	**0.0303**	JH	**0.0300**	**0.100**	**0.100**	**mg/L**	1	20-May-2021 14:37
Sulfate	**80.7**		**0.200**	**0.500**	**0.500**	**mg/L**	1	20-May-2021 14:37
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	08-Jun-2021 09:42

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW14_210518
Collection Date: 18-May-2021 09:20

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-11
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:10
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 19:10
1,1,2-Trichlor-1,2,2-trifluoroethane	**9.8**		**0.50**	**1.0**	**1.0**	**ug/L**	1	23-May-2021 19:10
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:10
1,1-Dichloroethene	**1.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	23-May-2021 19:10
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:10
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 19:10
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 19:10
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:10
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:10
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 19:10
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:10
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 19:10
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:10
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:10
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:10
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 19:10
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10
2-Hexanone	2.0	U	1.0	2.0	2.0	ug/L	1	23-May-2021 19:10
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:10
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	ug/L	1	23-May-2021 19:10
Acetone	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 19:10
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:10
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:10
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:10
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:10
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:10
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:10
Carbon disulfide	2.0	U	0.60	2.0	2.0	ug/L	1	23-May-2021 19:10
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 19:10
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW14_210518
Collection Date: 18-May-2021 09:20

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-11
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:10
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:10
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:10
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	23-May-2021 19:10
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:10
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	23-May-2021 19:10
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 19:10
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 19:10
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:10
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10
Tetrachloroethene	**27**		**0.30**	**1.0**	**1.0**	**ug/L**	1	23-May-2021 19:10
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:10
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:10
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:10
Trichloroethene	**6.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	23-May-2021 19:10
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:10
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:10
Surr: 1,2-Dichloroethane-d4	*91.8*			**0**	*81-118*	*%REC*	*1*	*23-May-2021 19:10*
Surr: 4-Bromofluorobenzene	*90.0*			**0**	*85-114*	*%REC*	*1*	*23-May-2021 19:10*
Surr: Dibromofluoromethane	*92.8*			**0**	*80-119*	*%REC*	*1*	*23-May-2021 19:10*
Surr: Toluene-d8	*109*			**0**	*89-112*	*%REC*	*1*	*23-May-2021 19:10*
TOTAL ORGANIC CARBON - SM5310B		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**1.49**		**0.500**	**0.500**	**1.00**	**mg/L**	1	21-May-2021 00:01
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**17.3**		**0.200**	**0.500**	**0.500**	**mg/L**	1	20-May-2021 14:45
Nitrogen, Nitrate (As N)	**0.0589**	JH	**0.0300**	**0.100**	**0.100**	**mg/L**	1	20-May-2021 14:45
Sulfate	**73.3**		**0.200**	**0.500**	**0.500**	**mg/L**	1	20-May-2021 14:45
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	08-Jun-2021 09:42

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW15_210518
Collection Date: 18-May-2021 10:05

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-12
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:31
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 19:31
1,1,2-Trichlor-1,2,2-trifluoroethane	**2.0**		**0.50**	**1.0**	**1.0**	**ug/L**	1	23-May-2021 19:31
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:31
1,1-Dichloroethene	**0.63**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	23-May-2021 19:31
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:31
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 19:31
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 19:31
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:31
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:31
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 19:31
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:31
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 19:31
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:31
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:31
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:31
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 19:31
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31
2-Hexanone	2.0	U	1.0	2.0	2.0	ug/L	1	23-May-2021 19:31
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:31
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	ug/L	1	23-May-2021 19:31
Acetone	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 19:31
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:31
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:31
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:31
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:31
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:31
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:31
Carbon disulfide	2.0	U	0.60	2.0	2.0	ug/L	1	23-May-2021 19:31
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 19:31
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW15_210518
Collection Date: 18-May-2021 10:05

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-12
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:31
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:31
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:31
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	23-May-2021 19:31
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:31
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	23-May-2021 19:31
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 19:31
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 19:31
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:31
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31
Tetrachloroethene	**14**		**0.30**	**1.0**	**1.0**	**ug/L**	1	23-May-2021 19:31
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:31
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:31
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:31
Trichloroethene	**6.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	23-May-2021 19:31
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:31
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:31
Surr: 1,2-Dichloroethane-d4	*90.0*			**0**	*81-118*	*%REC*	*1*	*23-May-2021 19:31*
Surr: 4-Bromofluorobenzene	*93.0*			**0**	*85-114*	*%REC*	*1*	*23-May-2021 19:31*
Surr: Dibromofluoromethane	*91.2*			**0**	*80-119*	*%REC*	*1*	*23-May-2021 19:31*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*23-May-2021 19:31*

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW17_210518
Collection Date: 18-May-2021 10:45

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-13
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:52
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 19:52
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 19:52
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:52
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:52
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:52
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 19:52
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 19:52
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:52
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:52
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 19:52
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:52
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 19:52
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:52
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:52
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:52
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 19:52
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
2-Hexanone	2.0	U	1.0	2.0	2.0	ug/L	1	23-May-2021 19:52
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:52
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	ug/L	1	23-May-2021 19:52
Acetone	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 19:52
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:52
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:52
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:52
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:52
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:52
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:52
Carbon disulfide	2.0	U	0.60	2.0	2.0	ug/L	1	23-May-2021 19:52
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 19:52
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW17_210518
Collection Date: 18-May-2021 10:45

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-13
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:52
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:52
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:52
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	23-May-2021 19:52
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:52
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	23-May-2021 19:52
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 19:52
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 19:52
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 19:52
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:52
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:52
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:52
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:52
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 19:52
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 19:52
Surr: 1,2-Dichloroethane-d4	*92.7*			**0**	*81-118*	*%REC*	*1*	*23-May-2021 19:52*
Surr: 4-Bromofluorobenzene	*91.3*			**0**	*85-114*	*%REC*	*1*	*23-May-2021 19:52*
Surr: Dibromofluoromethane	*92.4*			**0**	*80-119*	*%REC*	*1*	*23-May-2021 19:52*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*23-May-2021 19:52*

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW17_210518-FD
Collection Date: 18-May-2021 10:45

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-14
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:13
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 20:13
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 20:13
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:13
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:13
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:13
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 20:13
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 20:13
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:13
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:13
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 20:13
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:13
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 20:13
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:13
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:13
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:13
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 20:13
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
2-Hexanone	2.0	U	1.0	2.0	2.0	ug/L	1	23-May-2021 20:13
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:13
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	ug/L	1	23-May-2021 20:13
Acetone	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 20:13
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:13
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:13
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:13
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:13
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:13
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:13
Carbon disulfide	2.0	U	0.60	2.0	2.0	ug/L	1	23-May-2021 20:13
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 20:13
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW17_210518-FD
Collection Date: 18-May-2021 10:45

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-14
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:13
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:13
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:13
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	23-May-2021 20:13
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:13
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	23-May-2021 20:13
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 20:13
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 20:13
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:13
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:13
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:13
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:13
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:13
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:13
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:13
Surr: 1,2-Dichloroethane-d4	*94.4*			**0**	*81-118*	*%REC*	*1*	*23-May-2021 20:13*
Surr: 4-Bromofluorobenzene	*88.4*			**0**	*85-114*	*%REC*	*1*	*23-May-2021 20:13*
Surr: Dibromofluoromethane	*91.2*			**0**	*80-119*	*%REC*	*1*	*23-May-2021 20:13*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*23-May-2021 20:13*

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW16_210518
Collection Date: 18-May-2021 11:30

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-15
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:34
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 20:34
1,1,2-Trichlor-1,2,2-trifluoroethane	**3.8**		**0.50**	**1.0**	**1.0**	**ug/L**	1	23-May-2021 20:34
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:34
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:34
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:34
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 20:34
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 20:34
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:34
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:34
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 20:34
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:34
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 20:34
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:34
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:34
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:34
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 20:34
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34
2-Hexanone	2.0	U	1.0	2.0	2.0	ug/L	1	23-May-2021 20:34
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:34
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	ug/L	1	23-May-2021 20:34
Acetone	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 20:34
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:34
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:34
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:34
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:34
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:34
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:34
Carbon disulfide	2.0	U	0.60	2.0	2.0	ug/L	1	23-May-2021 20:34
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 20:34
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW16_210518
Collection Date: 18-May-2021 11:30

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-15
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:34
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:34
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:34
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	23-May-2021 20:34
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:34
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	23-May-2021 20:34
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 20:34
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 20:34
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:34
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34
Tetrachloroethene	**6.0**		**0.30**	**1.0**	**1.0**	**ug/L**	1	23-May-2021 20:34
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:34
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:34
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:34
Trichloroethene	**2.1**		**0.20**	**0.50**	**1.0**	**ug/L**	1	23-May-2021 20:34
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:34
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:34
Surr: 1,2-Dichloroethane-d4	*92.3*			**0**	*81-118*	*%REC*	*1*	*23-May-2021 20:34*
Surr: 4-Bromofluorobenzene	*90.3*			**0**	*85-114*	*%REC*	*1*	*23-May-2021 20:34*
Surr: Dibromofluoromethane	*94.0*			**0**	*80-119*	*%REC*	*1*	*23-May-2021 20:34*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*23-May-2021 20:34*

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW19_210518
Collection Date: 18-May-2021 12:15

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-16
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:55
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 20:55
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 20:55
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:55
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:55
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:55
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 20:55
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 20:55
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:55
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:55
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 20:55
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:55
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 20:55
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:55
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:55
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:55
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 20:55
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
2-Hexanone	2.0	U	1.0	2.0	2.0	ug/L	1	23-May-2021 20:55
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:55
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	ug/L	1	23-May-2021 20:55
Acetone	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 20:55
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:55
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:55
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:55
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:55
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:55
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:55
Carbon disulfide	2.0	U	0.60	2.0	2.0	ug/L	1	23-May-2021 20:55
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 20:55
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW19_210518
Collection Date: 18-May-2021 12:15

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-16
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:55
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:55
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:55
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	23-May-2021 20:55
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:55
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	23-May-2021 20:55
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 20:55
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 20:55
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 20:55
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:55
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:55
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:55
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:55
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 20:55
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 20:55
Surr: 1,2-Dichloroethane-d4	*90.8*			**0**	*81-118*	*%REC*	*1*	*23-May-2021 20:55*
Surr: 4-Bromofluorobenzene	*90.7*			**0**	*85-114*	*%REC*	*1*	*23-May-2021 20:55*
Surr: Dibromofluoromethane	*91.0*			**0**	*80-119*	*%REC*	*1*	*23-May-2021 20:55*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*23-May-2021 20:55*

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW18_210518
Collection Date: 18-May-2021 13:00

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-17
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 21:16
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 21:16
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 21:16
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 21:16
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 21:16
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 21:16
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 21:16
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 21:16
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 21:16
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 21:16
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 21:16
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 21:16
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 21:16
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 21:16
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 21:16
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 21:16
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 21:16
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
2-Hexanone	2.0	U	1.0	2.0	2.0	ug/L	1	23-May-2021 21:16
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 21:16
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	ug/L	1	23-May-2021 21:16
Acetone	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 21:16
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 21:16
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 21:16
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 21:16
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 21:16
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 21:16
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 21:16
Carbon disulfide	2.0	U	0.60	2.0	2.0	ug/L	1	23-May-2021 21:16
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 21:16
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: 35BWW18_210518
Collection Date: 18-May-2021 13:00

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-17
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 21:16
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 21:16
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 21:16
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	23-May-2021 21:16
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 21:16
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	23-May-2021 21:16
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 21:16
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 21:16
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 21:16
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 21:16
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 21:16
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 21:16
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 21:16
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 21:16
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 21:16
Surr: 1,2-Dichloroethane-d4	*91.3*			**0**	*81-118*	*%REC*	*1*	*23-May-2021 21:16*
Surr: 4-Bromofluorobenzene	*92.2*			**0**	*85-114*	*%REC*	*1*	*23-May-2021 21:16*
Surr: Dibromofluoromethane	*92.1*			**0**	*80-119*	*%REC*	*1*	*23-May-2021 21:16*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*23-May-2021 21:16*

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP 37 May 2021 WorkOrder:HS21050972
Sample ID: Trip Blank-210518 Lab ID:HS21050972-18
Collection Date: 18-May-2021 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 14:57
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 14:57
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 14:57
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 14:57
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 14:57
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 14:57
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 14:57
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 14:57
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 14:57
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 14:57
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 14:57
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 14:57
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 14:57
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 14:57
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 14:57
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 14:57
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 14:57
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
2-Hexanone	2.0	U	1.0	2.0	2.0	ug/L	1	23-May-2021 14:57
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 14:57
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	ug/L	1	23-May-2021 14:57
Acetone	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 14:57
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 14:57
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 14:57
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 14:57
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 14:57
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 14:57
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 14:57
Carbon disulfide	2.0	U	0.60	2.0	2.0	ug/L	1	23-May-2021 14:57
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	23-May-2021 14:57
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Sample ID: Trip Blank-210518
Collection Date: 18-May-2021 00:00

ANALYTICAL REPORT
WorkOrder:HS21050972
Lab ID:HS21050972-18
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 14:57
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 14:57
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 14:57
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	23-May-2021 14:57
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 14:57
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	23-May-2021 14:57
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	23-May-2021 14:57
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	23-May-2021 14:57
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	23-May-2021 14:57
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 14:57
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 14:57
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 14:57
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 14:57
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	23-May-2021 14:57
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	23-May-2021 14:57
Surr: 1,2-Dichloroethane-d4	*89.9*			**0**	*81-118*	*%REC*	*1*	*23-May-2021 14:57*
Surr: 4-Bromofluorobenzene	*89.5*			**0**	*85-114*	*%REC*	*1*	*23-May-2021 14:57*
Surr: Dibromofluoromethane	*90.5*			**0**	*80-119*	*%REC*	*1*	*23-May-2021 14:57*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*23-May-2021 14:57*

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

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R384067 (0)	**Test Name :** TOTAL ORGANIC CARBON - SM5310B				**Matrix:** Groundwater	
HS21050972-08	35BWW12_210518	18 May 2021 07:40			20 May 2021 23:18	1
HS21050972-09	35BWW12_210518-FD	18 May 2021 07:40			20 May 2021 23:33	1
HS21050972-10	35BWW23_210518	18 May 2021 08:30			20 May 2021 23:47	1
HS21050972-11	35BWW14_210518	18 May 2021 09:20			21 May 2021 00:01	1
Batch ID: R384108 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS21050972-08	35BWW12_210518	18 May 2021 07:40			20 May 2021 14:08	1
HS21050972-09	35BWW12_210518-FD	18 May 2021 07:40			20 May 2021 14:30	1
HS21050972-10	35BWW23_210518	18 May 2021 08:30			20 May 2021 14:37	1
HS21050972-11	35BWW14_210518	18 May 2021 09:20			20 May 2021 14:45	1
Batch ID: R384157 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS21050972-01	35BWW09_210517	17 May 2021 07:40			21 May 2021 16:10	1
HS21050972-02	35BWW11_210517	17 May 2021 08:20			21 May 2021 16:31	1
HS21050972-03	35BWW25_210517	17 May 2021 09:05			21 May 2021 13:43	1
HS21050972-04	35BWW24_210517	17 May 2021 09:50			21 May 2021 16:52	1
HS21050972-05	35BWW24_210517-FD	17 May 2021 09:50			21 May 2021 17:13	1
HS21050972-06	35BWW07_210517	17 May 2021 10:30			21 May 2021 17:34	1
HS21050972-07	35BWW13_210517	17 May 2021 11:55			21 May 2021 17:55	1
Batch ID: R384184 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS21050972-18	Trip Blank-210518	18 May 2021 00:00			23 May 2021 14:57	1
Batch ID: R384184 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS21050972-08	35BWW12_210518	18 May 2021 07:40			23 May 2021 18:07	1
HS21050972-09	35BWW12_210518-FD	18 May 2021 07:40			23 May 2021 18:28	1
HS21050972-10	35BWW23_210518	18 May 2021 08:30			23 May 2021 18:49	1
HS21050972-11	35BWW14_210518	18 May 2021 09:20			23 May 2021 19:10	1
HS21050972-12	35BWW15_210518	18 May 2021 10:05			23 May 2021 19:31	1
HS21050972-13	35BWW17_210518	18 May 2021 10:45			23 May 2021 19:52	1
HS21050972-14	35BWW17_210518-FD	18 May 2021 10:45			23 May 2021 20:13	1
HS21050972-15	35BWW16_210518	18 May 2021 11:30			23 May 2021 20:34	1
HS21050972-16	35BWW19_210518	18 May 2021 12:15			23 May 2021 20:55	1
HS21050972-17	35BWW18_210518	18 May 2021 13:00			23 May 2021 21:16	1
Batch ID: R385113 (0)	**Test Name :** SUBCONTRACT ANALYSIS - RSK				**Matrix:** Groundwater	
HS21050972-08	35BWW12_210518	18 May 2021 07:40			08 Jun 2021 09:42	1
HS21050972-09	35BWW12_210518-FD	18 May 2021 07:40			08 Jun 2021 09:42	1
HS21050972-10	35BWW23_210518	18 May 2021 08:30			08 Jun 2021 09:42	1
HS21050972-11	35BWW14_210518	18 May 2021 09:20			08 Jun 2021 09:42	1

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384157 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-210521** Units: **ug/L** Analysis Date: **21-May-2021 12:18**
Client ID: Run ID: **VOA6_384157** SeqNo: **6104959** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1.0	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	1.0	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	1.0								U
1,1,2-Trichloroethane	1.0	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	1.0	1.0								U
1,2,3-Trichlorobenzene	1.0	1.0								U
1,2,3-Trichloropropane	1.0	1.0								U
1,2,4-Trichlorobenzene	1.0	1.0								U
1,2,4-Trimethylbenzene	1.0	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	1.0	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	1.0	1.0								U
1,3,5-Trimethylbenzene	1.0	1.0								U
1,3-Dichlorobenzene	1.0	1.0								U
1,3-Dichloropropane	1.0	1.0								U
1,4-Dichlorobenzene	1.0	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	1.0	1.0								U
2-Hexanone	2.0	2.0								U
4-Chlorotoluene	1.0	1.0								U
4-Isopropyltoluene	1.0	1.0								U
4-Methyl-2-pentanone	2.0	2.0								U
Acetone	2.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	1.0	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	1.0	1.0								U

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384157 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-210521** Units: **ug/L** Analysis Date: **21-May-2021 12:18**
Client ID: Run ID: **VOA6_384157** SeqNo: **6104959** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	1.0	1.0								U
Carbon disulfide	2.0	2.0								U
Carbon tetrachloride	1.0	1.0								U
Chlorobenzene	1.0	1.0								U
Chloroethane	1.0	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	1.0	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	1.0	1.0								U
Ethylbenzene	1.0	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	1.0	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	2.0	2.0								U
Naphthalene	1.0	1.0								U
n-Butylbenzene	1.0	1.0								U
n-Propylbenzene	1.0	1.0								U
o-Xylene	1.0	1.0								U
sec-Butylbenzene	1.0	1.0								U
Styrene	1.0	1.0								U
tert-Butylbenzene	1.0	1.0								U
Tetrachloroethene	1.0	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	1.0	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*46.42*	*1.0*	*50*	*0*	*92.8*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*45.45*	*1.0*	*50*	*0*	*90.9*	*85 - 114*				
Surr: Dibromofluoromethane	*45.52*	*1.0*	*50*	*0*	*91.0*	*80 - 119*				

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384157 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-210521** Units: **ug/L** Analysis Date: **21-May-2021 12:18**
Client ID: Run ID: **VOA6_384157** SeqNo: **6104959** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*54.86*	*1.0*	*50*	*0*	*110*	*89 - 112*				

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384157 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-210521** Units: **ug/L** Analysis Date: **21-May-2021 11:36**
Client ID: Run ID: **VOA6_384157** SeqNo: **6104958** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.82	1.0	20	0	99.1	78 - 124				
1,1,1-Trichloroethane	19.32	1.0	20	0	96.6	74 - 131				
1,1,2,2-Tetrachloroethane	19.55	1.0	20	0	97.7	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	18.48	1.0	20	0	92.4	70 - 136				
1,1,2-Trichloroethane	19.43	1.0	20	0	97.1	80 - 119				
1,1-Dichloroethane	18.87	1.0	20	0	94.4	77 - 125				
1,1-Dichloroethene	20.04	1.0	20	0	100	71 - 131				
1,1-Dichloropropene	19.3	1.0	20	0	96.5	78 - 125				
1,2,3-Trichlorobenzene	20.02	1.0	20	0	100	69 - 129				
1,2,3-Trichloropropane	19.19	1.0	20	0	95.9	73 - 122				
1,2,4-Trichlorobenzene	20.12	1.0	20	0	101	69 - 130				
1,2,4-Trimethylbenzene	17.9	1.0	20	0	89.5	76 - 124				
1,2-Dibromo-3-chloropropane	20.26	1.0	20	0	101	62 - 128				
1,2-Dibromoethane	19.66	1.0	20	0	98.3	77 - 121				
1,2-Dichlorobenzene	18.21	1.0	20	0	91.0	80 - 119				
1,2-Dichloroethane	20.32	1.0	20	0	102	73 - 128				
1,2-Dichloropropane	18.99	1.0	20	0	94.9	78 - 122				
1,3,5-Trimethylbenzene	17.9	1.0	20	0	89.5	75 - 124				
1,3-Dichlorobenzene	18.63	1.0	20	0	93.2	80 - 119				
1,3-Dichloropropane	19.72	1.0	20	0	98.6	80 - 119				
1,4-Dichlorobenzene	19.19	1.0	20	0	96.0	79 - 118				
2,2-Dichloropropane	19.55	1.0	20	0	97.8	60 - 139				
2-Butanone	38.32	2.0	40	0	95.8	56 - 143				
2-Chlorotoluene	18.06	1.0	20	0	90.3	79 - 122				
2-Hexanone	39.83	2.0	40	0	99.6	57 - 139				
4-Chlorotoluene	18.1	1.0	20	0	90.5	78 - 122				
4-Isopropyltoluene	17.44	1.0	20	0	87.2	77 - 127				
4-Methyl-2-pentanone	38.7	2.0	40	0	96.7	67 - 130				
Acetone	49.44	2.0	40	0	124	39 - 160				
Benzene	19.83	1.0	20	0	99.1	79 - 120				
Bromobenzene	19.46	1.0	20	0	97.3	80 - 120				
Bromochloromethane	19.63	1.0	20	0	98.1	78 - 123				
Bromodichloromethane	19.28	1.0	20	0	96.4	79 - 125				
Bromoform	19.62	1.0	20	0	98.1	66 - 130				

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384157 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-210521** Units: **ug/L** Analysis Date: **21-May-2021 11:36**
Client ID: Run ID: **VOA6_384157** SeqNo: **6104958** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	24.38	1.0	20	0	122	53 - 141				
Carbon disulfide	39.99	2.0	40	0	100.0	64 - 133				
Carbon tetrachloride	18	1.0	20	0	90.0	72 - 136				
Chlorobenzene	19.56	1.0	20	0	97.8	82 - 118				
Chloroethane	23.77	1.0	20	0	119	60 - 138				
Chloroform	18.24	1.0	20	0	91.2	79 - 124				
Chloromethane	20.21	1.0	20	0	101	50 - 139				
cis-1,2-Dichloroethene	18.93	1.0	20	0	94.6	78 - 123				
cis-1,3-Dichloropropene	19.44	1.0	20	0	97.2	75 - 124				
Dibromochloromethane	19.93	1.0	20	0	99.7	74 - 126				
Dibromomethane	19.36	1.0	20	0	96.8	79 - 123				
Dichlorodifluoromethane	19.88	1.0	20	0	99.4	32 - 152				
Ethylbenzene	19.68	1.0	20	0	98.4	79 - 121				
Hexachlorobutadiene	21.28	1.0	20	0	106	66 - 134				
Isopropylbenzene	18.54	1.0	20	0	92.7	72 - 131				
m,p-Xylene	38.51	2.0	40	0	96.3	80 - 121				
Methylene chloride	18.86	2.0	20	0	94.3	74 - 124				
Naphthalene	20.47	1.0	20	0	102	61 - 128				
n-Butylbenzene	18.05	1.0	20	0	90.2	75 - 128				
n-Propylbenzene	18.35	1.0	20	0	91.8	76 - 126				
o-Xylene	19.37	1.0	20	0	96.9	78 - 122				
sec-Butylbenzene	16.82	1.0	20	0	84.1	77 - 126				
Styrene	18.93	1.0	20	0	94.6	78 - 123				
tert-Butylbenzene	16.94	1.0	20	0	84.7	78 - 124				
Tetrachloroethene	19.51	1.0	20	0	97.5	74 - 129				
Toluene	20.32	1.0	20	0	102	80 - 121				
trans-1,2-Dichloroethene	19.07	1.0	20	0	95.4	75 - 124				
trans-1,3-Dichloropropene	20.79	1.0	20	0	104	73 - 127				
Trichloroethene	19.37	1.0	20	0	96.8	79 - 123				
Trichlorofluoromethane	19.88	1.0	20	0	99.4	65 - 141				
Vinyl chloride	19.85	1.0	20	0	99.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*49.49*	*1.0*	*50*	*0*	*99.0*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.65*	*1.0*	*50*	*0*	*97.3*	*85 - 114*				
Surr: Dibromofluoromethane	*48.13*	*1.0*	*50*	*0*	*96.3*	*80 - 119*				

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384157 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-210521** Units: **ug/L** Analysis Date: **21-May-2021 11:36**
Client ID: Run ID: **VOA6_384157** SeqNo: **6104958** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*49.29*	*1.0*	*50*	*0*	*98.6*	*89 - 112*				

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384157 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS21050972-03MS** Units: **ug/L** Analysis Date: **21-May-2021 14:04**
Client ID: **35BWW25_210517** Run ID: **VOA6_384157** SeqNo: **6104964** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.19	1.0	20	0	95.9	78 - 124				
1,1,1-Trichloroethane	18.78	1.0	20	0	93.9	74 - 131				
1,1,2,2-Tetrachloroethane	19.81	1.0	20	0	99.1	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	21.82	1.0	20	0	109	70 - 136				
1,1,2-Trichloroethane	18.44	1.0	20	0	92.2	80 - 119				
1,1-Dichloroethane	16.82	1.0	20	0	84.1	77 - 125				
1,1-Dichloroethene	19.9	1.0	20	0	99.5	71 - 131				
1,1-Dichloropropene	19.92	1.0	20	0	99.6	78 - 125				
1,2,3-Trichlorobenzene	20.34	1.0	20	0	102	69 - 129				
1,2,3-Trichloropropane	19.25	1.0	20	0	96.3	73 - 122				
1,2,4-Trichlorobenzene	19.96	1.0	20	0	99.8	69 - 130				
1,2,4-Trimethylbenzene	20.69	1.0	20	0	103	76 - 124				
1,2-Dibromo-3-chloropropane	21.3	1.0	20	0	106	62 - 128				
1,2-Dibromoethane	19.68	1.0	20	0	98.4	77 - 121				
1,2-Dichlorobenzene	19.24	1.0	20	0	96.2	80 - 119				
1,2-Dichloroethane	18.82	1.0	20	0	94.1	73 - 128				
1,2-Dichloropropane	17.89	1.0	20	0	89.4	78 - 122				
1,3,5-Trimethylbenzene	20.78	1.0	20	0	104	75 - 124				
1,3-Dichlorobenzene	20.18	1.0	20	0	101	80 - 119				
1,3-Dichloropropane	18.65	1.0	20	0	93.3	80 - 119				
1,4-Dichlorobenzene	20.43	1.0	20	0	102	79 - 118				
2,2-Dichloropropane	17.47	1.0	20	0	87.4	60 - 139				
2-Butanone	33.33	2.0	40	0	83.3	56 - 143				
2-Chlorotoluene	19.94	1.0	20	0	99.7	79 - 122				
2-Hexanone	36.36	2.0	40	0	90.9	57 - 139				
4-Chlorotoluene	19.94	1.0	20	0	99.7	78 - 122				
4-Isopropyltoluene	21.84	1.0	20	0	109	77 - 127				
4-Methyl-2-pentanone	36.61	2.0	40	0	91.5	67 - 130				
Acetone	39.21	2.0	40	0	98.0	39 - 160				
Benzene	18.61	1.0	20	0	93.1	79 - 120				
Bromobenzene	19.48	1.0	20	0	97.4	80 - 120				
Bromochloromethane	17.25	1.0	20	0	86.3	78 - 123				
Bromodichloromethane	17.8	1.0	20	0	89.0	79 - 125				
Bromoform	18.84	1.0	20	0	94.2	66 - 130				

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384157 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS21050972-03MS** Units: **ug/L** Analysis Date: **21-May-2021 14:04**
Client ID: **35BWW25_210517** Run ID: **VOA6_384157** SeqNo: **6104964** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	24.68	1.0	20	0	123	53 - 141				
Carbon disulfide	38.14	2.0	40	0	95.3	64 - 133				
Carbon tetrachloride	19.22	1.0	20	0	96.1	72 - 136				
Chlorobenzene	19.32	1.0	20	0	96.6	82 - 118				
Chloroethane	23.29	1.0	20	0	116	60 - 138				
Chloroform	17.46	1.0	20	0	87.3	79 - 124				
Chloromethane	18.03	1.0	20	0	90.1	50 - 139				
cis-1,2-Dichloroethene	17.38	1.0	20	0	86.9	78 - 123				
cis-1,3-Dichloropropene	17.83	1.0	20	0	89.2	75 - 124				
Dibromochloromethane	18.33	1.0	20	0	91.6	74 - 126				
Dibromomethane	17.69	1.0	20	0	88.5	79 - 123				
Dichlorodifluoromethane	18.04	1.0	20	0	90.2	32 - 152				
Ethylbenzene	21.18	1.0	20	0	106	79 - 121				
Hexachlorobutadiene	22.37	1.0	20	0	112	66 - 134				
Isopropylbenzene	21	1.0	20	0	105	72 - 131				
m,p-Xylene	40.95	2.0	40	0	102	80 - 121				
Methylene chloride	17.18	2.0	20	0	85.9	74 - 124				
Naphthalene	18.54	1.0	20	0	92.7	61 - 128				
n-Butylbenzene	21.78	1.0	20	0	109	75 - 128				
n-Propylbenzene	21.78	1.0	20	0	109	76 - 126				
o-Xylene	19.31	1.0	20	0	96.6	78 - 122				
sec-Butylbenzene	21.74	1.0	20	0	109	77 - 126				
Styrene	19.09	1.0	20	0	95.5	78 - 123				
tert-Butylbenzene	21.33	1.0	20	0	107	78 - 124				
Tetrachloroethene	22.34	1.0	20	0	112	74 - 129				
Toluene	20.49	1.0	20	0	102	80 - 121				
trans-1,2-Dichloroethene	17.83	1.0	20	0	89.1	75 - 124				
trans-1,3-Dichloropropene	18.98	1.0	20	0	94.9	73 - 127				
Trichloroethene	28.19	1.0	20	8.49	98.5	79 - 123				
Trichlorofluoromethane	20.57	1.0	20	0	103	65 - 141				
Vinyl chloride	18.08	1.0	20	0	90.4	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.79*	*1.0*	*50*	*0*	*89.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.42*	*1.0*	*50*	*0*	*96.8*	*85 - 114*				
Surr: Dibromofluoromethane	*45.24*	*1.0*	*50*	*0*	*90.5*	*80 - 119*				

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384157 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS21050972-03MS** Units: **ug/L** Analysis Date: **21-May-2021 14:04**
Client ID: **35BWW25_210517** Run ID: **VOA6_384157** SeqNo: **6104964** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.76*	*1.0*	*50*	*0*	*104*	*89 - 112*				

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384157 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS21050972-03MSD** Units: **ug/L** Analysis Date: **21-May-2021 14:25**
Client ID: **35BWW25_210517** Run ID: **VOA6_384157** SeqNo: **6104965** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.16	1.0	20	0	95.8	78 - 124	19.19	0.156	20	
1,1,1-Trichloroethane	18.68	1.0	20	0	93.4	74 - 131	18.78	0.537	20	
1,1,2,2-Tetrachloroethane	20.31	1.0	20	0	102	71 - 121	19.81	2.46	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	21.5	1.0	20	0	108	70 - 136	21.82	1.45	20	
1,1,2-Trichloroethane	18.93	1.0	20	0	94.7	80 - 119	18.44	2.62	20	
1,1-Dichloroethane	16.82	1.0	20	0	84.1	77 - 125	16.82	0.0163	20	
1,1-Dichloroethene	19.56	1.0	20	0	97.8	71 - 131	19.9	1.71	20	
1,1-Dichloropropene	18.91	1.0	20	0	94.5	78 - 125	19.92	5.22	20	
1,2,3-Trichlorobenzene	23.45	1.0	20	0	117	69 - 129	20.34	14.2	20	
1,2,3-Trichloropropane	20.03	1.0	20	0	100	73 - 122	19.25	3.94	20	
1,2,4-Trichlorobenzene	22.45	1.0	20	0	112	69 - 130	19.96	11.8	20	
1,2,4-Trimethylbenzene	19.97	1.0	20	0	99.9	76 - 124	20.69	3.51	20	
1,2-Dibromo-3-chloropropane	21.91	1.0	20	0	110	62 - 128	21.3	2.86	20	
1,2-Dibromoethane	19.82	1.0	20	0	99.1	77 - 121	19.68	0.732	20	
1,2-Dichlorobenzene	19.17	1.0	20	0	95.8	80 - 119	19.24	0.398	20	
1,2-Dichloroethane	18.72	1.0	20	0	93.6	73 - 128	18.82	0.561	20	
1,2-Dichloropropane	18.16	1.0	20	0	90.8	78 - 122	17.89	1.5	20	
1,3,5-Trimethylbenzene	20.47	1.0	20	0	102	75 - 124	20.78	1.52	20	
1,3-Dichlorobenzene	19.22	1.0	20	0	96.1	80 - 119	20.18	4.84	20	
1,3-Dichloropropane	18.98	1.0	20	0	94.9	80 - 119	18.65	1.72	20	
1,4-Dichlorobenzene	20.32	1.0	20	0	102	79 - 118	20.43	0.525	20	
2,2-Dichloropropane	17.09	1.0	20	0	85.4	60 - 139	17.47	2.22	20	
2-Butanone	33	2.0	40	0	82.5	56 - 143	33.33	1	20	
2-Chlorotoluene	19.34	1.0	20	0	96.7	79 - 122	19.94	3.01	20	
2-Hexanone	38.01	2.0	40	0	95.0	57 - 139	36.36	4.43	20	
4-Chlorotoluene	19.9	1.0	20	0	99.5	78 - 122	19.94	0.197	20	
4-Isopropyltoluene	20.95	1.0	20	0	105	77 - 127	21.84	4.16	20	
4-Methyl-2-pentanone	38.52	2.0	40	0	96.3	67 - 130	36.61	5.08	20	
Acetone	36.26	2.0	40	0	90.6	39 - 160	39.21	7.83	20	
Benzene	18.89	1.0	20	0	94.4	79 - 120	18.61	1.48	20	
Bromobenzene	19.64	1.0	20	0	98.2	80 - 120	19.48	0.818	20	
Bromochloromethane	16.69	1.0	20	0	83.4	78 - 123	17.25	3.33	20	
Bromodichloromethane	17.75	1.0	20	0	88.7	79 - 125	17.8	0.263	20	
Bromoform	19.86	1.0	20	0	99.3	66 - 130	18.84	5.27	20	

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384157 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS21050972-03MSD** Units: **ug/L** Analysis Date: **21-May-2021 14:25**
Client ID: **35BWW25_210517** Run ID: **VOA6_384157** SeqNo: **6104965** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	22.57	1.0	20	0	113	53 - 141	24.68	8.95	20	
Carbon disulfide	37.42	2.0	40	0	93.6	64 - 133	38.14	1.9	20	
Carbon tetrachloride	18.94	1.0	20	0	94.7	72 - 136	19.22	1.42	20	
Chlorobenzene	19.19	1.0	20	0	95.9	82 - 118	19.32	0.662	20	
Chloroethane	21.61	1.0	20	0	108	60 - 138	23.29	7.45	20	
Chloroform	16.71	1.0	20	0	83.5	79 - 124	17.46	4.44	20	
Chloromethane	17.85	1.0	20	0	89.3	50 - 139	18.03	0.977	20	
cis-1,2-Dichloroethene	17.19	1.0	20	0	85.9	78 - 123	17.38	1.11	20	
cis-1,3-Dichloropropene	18.04	1.0	20	0	90.2	75 - 124	17.83	1.17	20	
Dibromochloromethane	19.45	1.0	20	0	97.3	74 - 126	18.33	5.93	20	
Dibromomethane	18.67	1.0	20	0	93.4	79 - 123	17.69	5.39	20	
Dichlorodifluoromethane	17.4	1.0	20	0	87.0	32 - 152	18.04	3.63	20	
Ethylbenzene	20.27	1.0	20	0	101	79 - 121	21.18	4.39	20	
Hexachlorobutadiene	22.39	1.0	20	0	112	66 - 134	22.37	0.108	20	
Isopropylbenzene	20.83	1.0	20	0	104	72 - 131	21	0.808	20	
m,p-Xylene	40.53	2.0	40	0	101	80 - 121	40.95	1.04	20	
Methylene chloride	17.18	2.0	20	0	85.9	74 - 124	17.18	0.0154	20	
Naphthalene	22	1.0	20	0	110	61 - 128	18.54	17.1	20	
n-Butylbenzene	21.19	1.0	20	0	106	75 - 128	21.78	2.78	20	
n-Propylbenzene	21.44	1.0	20	0	107	76 - 126	21.78	1.61	20	
o-Xylene	19.32	1.0	20	0	96.6	78 - 122	19.31	0.028	20	
sec-Butylbenzene	21.45	1.0	20	0	107	77 - 126	21.74	1.36	20	
Styrene	18.64	1.0	20	0	93.2	78 - 123	19.09	2.38	20	
tert-Butylbenzene	20.69	1.0	20	0	103	78 - 124	21.33	3.08	20	
Tetrachloroethene	21.48	1.0	20	0	107	74 - 129	22.34	3.92	20	
Toluene	20.18	1.0	20	0	101	80 - 121	20.49	1.52	20	
trans-1,2-Dichloroethene	18.23	1.0	20	0	91.2	75 - 124	17.83	2.23	20	
trans-1,3-Dichloropropene	19.54	1.0	20	0	97.7	73 - 127	18.98	2.9	20	
Trichloroethene	28.31	1.0	20	8.49	99.1	79 - 123	28.19	0.42	20	
Trichlorofluoromethane	20.38	1.0	20	0	102	65 - 141	20.57	0.927	20	
Vinyl chloride	18.25	1.0	20	0	91.2	58 - 137	18.08	0.96	20	
Surr: 1,2-Dichloroethane-d4	*47.94*	*1.0*	*50*	*0*	*95.9*	*81 - 118*	*44.79*	*6.79*	*20*	
Surr: 4-Bromofluorobenzene	*49.55*	*1.0*	*50*	*0*	*99.1*	*85 - 114*	*48.42*	*2.3*	*20*	
Surr: Dibromofluoromethane	*45.99*	*1.0*	*50*	*0*	*92.0*	*80 - 119*	*45.24*	*1.64*	*20*	

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384157 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS21050972-03MSD** Units: **ug/L** Analysis Date: **21-May-2021 14:25**
Client ID: **35BWW25_210517** Run ID: **VOA6_384157** SeqNo: **6104965** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.67*	*1.0*	*50*	*0*	*103*	*89 - 112*	*51.76*	*0.174*	*20*	

The following samples were analyzed in this batch: HS21050972-01, HS21050972-02, HS21050972-03, HS21050972-04, HS21050972-05, HS21050972-06, HS21050972-07

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384184 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-210523** Units: **ug/L** Analysis Date: **23-May-2021 13:54**
Client ID: Run ID: **VOA6_384184** SeqNo: **6105583** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1.0	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	1.0	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	1.0								U
1,1,2-Trichloroethane	1.0	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	1.0	1.0								U
1,2,3-Trichlorobenzene	1.0	1.0								U
1,2,3-Trichloropropane	1.0	1.0								U
1,2,4-Trichlorobenzene	1.0	1.0								U
1,2,4-Trimethylbenzene	1.0	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	1.0	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	1.0	1.0								U
1,3,5-Trimethylbenzene	1.0	1.0								U
1,3-Dichlorobenzene	1.0	1.0								U
1,3-Dichloropropane	1.0	1.0								U
1,4-Dichlorobenzene	1.0	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	1.0	1.0								U
2-Hexanone	2.0	2.0								U
4-Chlorotoluene	1.0	1.0								U
4-Isopropyltoluene	1.0	1.0								U
4-Methyl-2-pentanone	2.0	2.0								U
Acetone	2.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	1.0	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	1.0	1.0								U

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384184 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-210523** Units: **ug/L** Analysis Date: **23-May-2021 13:54**
Client ID: Run ID: **VOA6_384184** SeqNo: **6105583** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	1.0	1.0								U
Carbon disulfide	2.0	2.0								U
Carbon tetrachloride	1.0	1.0								U
Chlorobenzene	1.0	1.0								U
Chloroethane	1.0	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	1.0	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	1.0	1.0								U
Ethylbenzene	1.0	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	1.0	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	2.0	2.0								U
Naphthalene	1.0	1.0								U
n-Butylbenzene	1.0	1.0								U
n-Propylbenzene	1.0	1.0								U
o-Xylene	1.0	1.0								U
sec-Butylbenzene	1.0	1.0								U
Styrene	1.0	1.0								U
tert-Butylbenzene	1.0	1.0								U
Tetrachloroethene	1.0	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	1.0	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*46.06*	*1.0*	*50*	*0*	*92.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*44.16*	*1.0*	*50*	*0*	*88.3*	*85 - 114*				
Surr: Dibromofluoromethane	*43.82*	*1.0*	*50*	*0*	*87.6*	*80 - 119*				

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384184 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-210523** Units: **ug/L** Analysis Date: **23-May-2021 13:54**
Client ID: Run ID: **VOA6_384184** SeqNo: **6105583** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*55.85*	*1.0*	*50*	*0*	*112*	*89 - 112*				

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384184 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-210523** Units: **ug/L** Analysis Date: **23-May-2021 13:12**
Client ID: Run ID: **VOA6_384184** SeqNo: **6105582** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	20.28	1.0	20	0	101	78 - 124				
1,1,1-Trichloroethane	20.18	1.0	20	0	101	74 - 131				
1,1,2,2-Tetrachloroethane	20.46	1.0	20	0	102	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	16.49	1.0	20	0	82.5	70 - 136				
1,1,2-Trichloroethane	20.82	1.0	20	0	104	80 - 119				
1,1-Dichloroethane	20.21	1.0	20	0	101	77 - 125				
1,1-Dichloroethene	18.67	1.0	20	0	93.3	71 - 131				
1,1-Dichloropropene	18.79	1.0	20	0	93.9	78 - 125				
1,2,3-Trichlorobenzene	16.69	1.0	20	0	83.4	69 - 129				
1,2,3-Trichloropropane	20.18	1.0	20	0	101	73 - 122				
1,2,4-Trichlorobenzene	18.09	1.0	20	0	90.4	69 - 130				
1,2,4-Trimethylbenzene	18.95	1.0	20	0	94.8	76 - 124				
1,2-Dibromo-3-chloropropane	18.53	1.0	20	0	92.6	62 - 128				
1,2-Dibromoethane	21.4	1.0	20	0	107	77 - 121				
1,2-Dichlorobenzene	19.49	1.0	20	0	97.4	80 - 119				
1,2-Dichloroethane	22.73	1.0	20	0	114	73 - 128				
1,2-Dichloropropane	20.89	1.0	20	0	104	78 - 122				
1,3,5-Trimethylbenzene	18.57	1.0	20	0	92.8	75 - 124				
1,3-Dichlorobenzene	20.03	1.0	20	0	100	80 - 119				
1,3-Dichloropropane	21.19	1.0	20	0	106	80 - 119				
1,4-Dichlorobenzene	21.11	1.0	20	0	106	79 - 118				
2,2-Dichloropropane	20.65	1.0	20	0	103	60 - 139				
2-Butanone	40.27	2.0	40	0	101	56 - 143				
2-Chlorotoluene	18.8	1.0	20	0	94.0	79 - 122				
2-Hexanone	39.38	2.0	40	0	98.5	57 - 139				
4-Chlorotoluene	19.79	1.0	20	0	99.0	78 - 122				
4-Isopropyltoluene	18.27	1.0	20	0	91.3	77 - 127				
4-Methyl-2-pentanone	40.69	2.0	40	0	102	67 - 130				
Acetone	76.07	2.0	40	0	190	39 - 160				S
Benzene	20.99	1.0	20	0	105	79 - 120				
Bromobenzene	21	1.0	20	0	105	80 - 120				
Bromochloromethane	20.28	1.0	20	0	101	78 - 123				
Bromodichloromethane	21.28	1.0	20	0	106	79 - 125				
Bromoform	19.65	1.0	20	0	98.2	66 - 130				

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384184 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-210523** Units: **ug/L** Analysis Date: **23-May-2021 13:12**
Client ID: Run ID: **VOA6_384184** SeqNo: **6105582** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	24.93	1.0	20	0	125	53 - 141				
Carbon disulfide	38.86	2.0	40	0	97.2	64 - 133				
Carbon tetrachloride	18.76	1.0	20	0	93.8	72 - 136				
Chlorobenzene	20.15	1.0	20	0	101	82 - 118				
Chloroethane	21.51	1.0	20	0	108	60 - 138				
Chloroform	19.98	1.0	20	0	99.9	79 - 124				
Chloromethane	22.01	1.0	20	0	110	50 - 139				
cis-1,2-Dichloroethene	20.01	1.0	20	0	100	78 - 123				
cis-1,3-Dichloropropene	21.89	1.0	20	0	109	75 - 124				
Dibromochloromethane	21.23	1.0	20	0	106	74 - 126				
Dibromomethane	21.67	1.0	20	0	108	79 - 123				
Dichlorodifluoromethane	19.88	1.0	20	0	99.4	32 - 152				
Ethylbenzene	20.41	1.0	20	0	102	79 - 121				
Hexachlorobutadiene	20.87	1.0	20	0	104	66 - 134				
Isopropylbenzene	18.54	1.0	20	0	92.7	72 - 131				
m,p-Xylene	39.22	2.0	40	0	98.0	80 - 121				
Methylene chloride	20.58	2.0	20	0	103	74 - 124				
Naphthalene	17.72	1.0	20	0	88.6	61 - 128				
n-Butylbenzene	17.77	1.0	20	0	88.8	75 - 128				
n-Propylbenzene	18.73	1.0	20	0	93.7	76 - 126				
o-Xylene	19.57	1.0	20	0	97.9	78 - 122				
sec-Butylbenzene	17.39	1.0	20	0	86.9	77 - 126				
Styrene	19.56	1.0	20	0	97.8	78 - 123				
tert-Butylbenzene	16.94	1.0	20	0	84.7	78 - 124				
Tetrachloroethene	19.11	1.0	20	0	95.6	74 - 129				
Toluene	21.37	1.0	20	0	107	80 - 121				
trans-1,2-Dichloroethene	20.21	1.0	20	0	101	75 - 124				
trans-1,3-Dichloropropene	22.09	1.0	20	0	110	73 - 127				
Trichloroethene	21.01	1.0	20	0	105	79 - 123				
Trichlorofluoromethane	19.48	1.0	20	0	97.4	65 - 141				
Vinyl chloride	19.52	1.0	20	0	97.6	58 - 137				
Surr: 1,2-Dichloroethane-d4	*52.53*	*1.0*	*50*	*0*	*105*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.55*	*1.0*	*50*	*0*	*97.1*	*85 - 114*				
Surr: Dibromofluoromethane	*49.68*	*1.0*	*50*	*0*	*99.4*	*80 - 119*				

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384184 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-210523** Units: **ug/L** Analysis Date: **23-May-2021 13:12**
Client ID: Run ID: **VOA6_384184** SeqNo: **6105582** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*49.08*	*1.0*	*50*	*0*	*98.2*	*89 - 112*				

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384184 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS21050892-06MS** Units: **ug/L** Analysis Date: **23-May-2021 15:18**
Client ID: Run ID: **VOA6_384184** SeqNo: **6105586** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	411.1	20	400	0	103	78 - 124				
1,1,1-Trichloroethane	401	20	400	0	100	74 - 131				
1,1,2,2-Tetrachloroethane	373.3	20	400	0	93.3	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	421.4	20	400	0	105	70 - 136				
1,1,2-Trichloroethane	384.9	20	400	0	96.2	80 - 119				
1,1-Dichloroethane	337.7	20	400	0	84.4	77 - 125				
1,1-Dichloroethene	383.6	20	400	0	95.9	71 - 131				
1,1-Dichloropropene	419.5	20	400	0	105	78 - 125				
1,2,3-Trichlorobenzene	279	20	400	0	69.7	69 - 129				
1,2,3-Trichloropropane	363.6	20	400	0	90.9	73 - 122				
1,2,4-Trichlorobenzene	347.8	20	400	0	86.9	69 - 130				
1,2,4-Trimethylbenzene	401.7	20	400	0	100	76 - 124				
1,2-Dibromo-3-chloropropane	359.9	20	400	0	90.0	62 - 128				
1,2-Dibromoethane	411.4	20	400	0	103	77 - 121				
1,2-Dichlorobenzene	369.6	20	400	0	92.4	80 - 119				
1,2-Dichloroethane	401.8	20	400	0	100	73 - 128				
1,2-Dichloropropane	390.2	20	400	0	97.6	78 - 122				
1,3,5-Trimethylbenzene	408.8	20	400	0	102	75 - 124				
1,3-Dichlorobenzene	387	20	400	0	96.8	80 - 119				
1,3-Dichloropropane	382.8	20	400	0	95.7	80 - 119				
1,4-Dichlorobenzene	403.2	20	400	0	101	79 - 118				
2,2-Dichloropropane	381.3	20	400	0	95.3	60 - 139				
2-Butanone	615.5	40	800	0	76.9	56 - 143				
2-Chlorotoluene	388.7	20	400	0	97.2	79 - 122				
2-Hexanone	751.6	40	800	0	93.9	57 - 139				
4-Chlorotoluene	394	20	400	0	98.5	78 - 122				
4-Isopropyltoluene	423.3	20	400	0	106	77 - 127				
4-Methyl-2-pentanone	719.3	40	800	0	89.9	67 - 130				
Acetone	1200	40	800	471.9	91.0	39 - 160				
Benzene	406.7	20	400	0	102	79 - 120				
Bromobenzene	395.3	20	400	0	98.8	80 - 120				
Bromochloromethane	345.9	20	400	0	86.5	78 - 123				
Bromodichloromethane	403.2	20	400	0	101	79 - 125				
Bromoform	383.1	20	400	0	95.8	66 - 130				

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384184 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS21050892-06MS** Units: **ug/L** Analysis Date: **23-May-2021 15:18**
Client ID: Run ID: **VOA6_384184** SeqNo: **6105586** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	440.7	20	400	0	110	53 - 141				
Carbon disulfide	749.2	40	800	0	93.7	64 - 133				
Carbon tetrachloride	422.1	20	400	0	106	72 - 136				
Chlorobenzene	398.1	20	400	0	99.5	82 - 118				
Chloroethane	402.6	20	400	0	101	60 - 138				
Chloroform	362	20	400	0	90.5	79 - 124				
Chloromethane	378.3	20	400	0	94.6	50 - 139				
cis-1,2-Dichloroethene	357.8	20	400	0	89.5	78 - 123				
cis-1,3-Dichloropropene	402.5	20	400	0	101	75 - 124				
Dibromochloromethane	394.3	20	400	0	98.6	74 - 126				
Dibromomethane	375.7	20	400	0	93.9	79 - 123				
Dichlorodifluoromethane	342.4	20	400	0	85.6	32 - 152				
Ethylbenzene	428.1	20	400	0	107	79 - 121				
Hexachlorobutadiene	445.4	20	400	0	111	66 - 134				
Isopropylbenzene	430.7	20	400	0	108	72 - 131				
m,p-Xylene	829.6	40	800	0	104	80 - 121				
Methylene chloride	346.2	40	400	0	86.6	74 - 124				
Naphthalene	279.2	20	400	0	69.8	61 - 128				
n-Butylbenzene	418.9	20	400	0	105	75 - 128				
n-Propylbenzene	425.5	20	400	0	106	76 - 126				
o-Xylene	394.4	20	400	0	98.6	78 - 122				
sec-Butylbenzene	421.9	20	400	0	105	77 - 126				
Styrene	383.1	20	400	0	95.8	78 - 123				
tert-Butylbenzene	406.5	20	400	0	102	78 - 124				
Tetrachloroethene	472	20	400	0	118	74 - 129				
Toluene	421.4	20	400	0	105	80 - 121				
trans-1,2-Dichloroethene	375	20	400	0	93.7	75 - 124				
trans-1,3-Dichloropropene	409.8	20	400	0	102	73 - 127				
Trichloroethene	431.3	20	400	0	108	79 - 123				
Trichlorofluoromethane	401.8	20	400	0	100	65 - 141				
Vinyl chloride	364	20	400	0	91.0	58 - 137				
Surr: 1,2-Dichloroethane-d4	*946.9*	*20*	*1000*	*0*	*94.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*965.2*	*20*	*1000*	*0*	*96.5*	*85 - 114*				
Surr: Dibromofluoromethane	*957.5*	*20*	*1000*	*0*	*95.8*	*80 - 119*				

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384184 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS21050892-06MS** Units: **ug/L** Analysis Date: **23-May-2021 15:18**
Client ID: Run ID: **VOA6_384184** SeqNo: **6105586** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*1056*	*20*	*1000*	*0*	*106*	*89 - 112*				

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384184 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS21050892-06MSD** Units: **ug/L** Analysis Date: **23-May-2021 15:39**
Client ID: Run ID: **VOA6_384184** SeqNo: **6105587** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	387.3	20	400	0	96.8	78 - 124	411.1	5.95	20	
1,1,1-Trichloroethane	387	20	400	0	96.8	74 - 131	401	3.55	20	
1,1,2,2-Tetrachloroethane	374.8	20	400	0	93.7	71 - 121	373.3	0.421	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	400.1	20	400	0	100	70 - 136	421.4	5.19	20	
1,1,2-Trichloroethane	386.9	20	400	0	96.7	80 - 119	384.9	0.522	20	
1,1-Dichloroethane	324.9	20	400	0	81.2	77 - 125	337.7	3.87	20	
1,1-Dichloroethene	363.2	20	400	0	90.8	71 - 131	383.6	5.45	20	
1,1-Dichloropropene	419.9	20	400	0	105	78 - 125	419.5	0.101	20	
1,2,3-Trichlorobenzene	337.9	20	400	0	84.5	69 - 129	279	19.1	20	
1,2,3-Trichloropropane	372.2	20	400	0	93.0	73 - 122	363.6	2.32	20	
1,2,4-Trichlorobenzene	350.7	20	400	0	87.7	69 - 130	347.8	0.847	20	
1,2,4-Trimethylbenzene	391	20	400	0	97.7	76 - 124	401.7	2.71	20	
1,2-Dibromo-3-chloropropane	357.4	20	400	0	89.3	62 - 128	359.9	0.713	20	
1,2-Dibromoethane	408.4	20	400	0	102	77 - 121	411.4	0.716	20	
1,2-Dichlorobenzene	370.2	20	400	0	92.5	80 - 119	369.6	0.169	20	
1,2-Dichloroethane	392.4	20	400	0	98.1	73 - 128	401.8	2.38	20	
1,2-Dichloropropane	381.1	20	400	0	95.3	78 - 122	390.2	2.37	20	
1,3,5-Trimethylbenzene	403.5	20	400	0	101	75 - 124	408.8	1.3	20	
1,3-Dichlorobenzene	397.5	20	400	0	99.4	80 - 119	387	2.67	20	
1,3-Dichloropropane	383.9	20	400	0	96.0	80 - 119	382.8	0.305	20	
1,4-Dichlorobenzene	408.8	20	400	0	102	79 - 118	403.2	1.39	20	
2,2-Dichloropropane	378.3	20	400	0	94.6	60 - 139	381.3	0.78	20	
2-Butanone	693.4	40	800	0	86.7	56 - 143	615.5	11.9	20	
2-Chlorotoluene	381	20	400	0	95.2	79 - 122	388.7	1.99	20	
2-Hexanone	726.9	40	800	0	90.9	57 - 139	751.6	3.33	20	
4-Chlorotoluene	388.1	20	400	0	97.0	78 - 122	394	1.52	20	
4-Isopropyltoluene	426.9	20	400	0	107	77 - 127	423.3	0.845	20	
4-Methyl-2-pentanone	705.3	40	800	0	88.2	67 - 130	719.3	1.97	20	
Acetone	1144	40	800	471.9	84.0	39 - 160	1200	4.81	20	
Benzene	388.1	20	400	0	97.0	79 - 120	406.7	4.66	20	
Bromobenzene	393.7	20	400	0	98.4	80 - 120	395.3	0.402	20	
Bromochloromethane	344.7	20	400	0	86.2	78 - 123	345.9	0.342	20	
Bromodichloromethane	378.5	20	400	0	94.6	79 - 125	403.2	6.31	20	
Bromoform	368.8	20	400	0	92.2	66 - 130	383.1	3.82	20	

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384184 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS21050892-06MSD** Units: **ug/L** Analysis Date: **23-May-2021 15:39**
Client ID: Run ID: **VOA6_384184** SeqNo: **6105587** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	393.1	20	400	0	98.3	53 - 141	440.7	11.4	20	
Carbon disulfide	705.1	40	800	0	88.1	64 - 133	749.2	6.07	20	
Carbon tetrachloride	405.7	20	400	0	101	72 - 136	422.1	3.96	20	
Chlorobenzene	384.6	20	400	0	96.2	82 - 118	398.1	3.43	20	
Chloroethane	376.2	20	400	0	94.1	60 - 138	402.6	6.78	20	
Chloroform	348.3	20	400	0	87.1	79 - 124	362	3.86	20	
Chloromethane	365.9	20	400	0	91.5	50 - 139	378.3	3.35	20	
cis-1,2-Dichloroethene	362	20	400	0	90.5	78 - 123	357.8	1.15	20	
cis-1,3-Dichloropropene	388.3	20	400	0	97.1	75 - 124	402.5	3.59	20	
Dibromochloromethane	389	20	400	0	97.3	74 - 126	394.3	1.34	20	
Dibromomethane	380.9	20	400	0	95.2	79 - 123	375.7	1.37	20	
Dichlorodifluoromethane	350.6	20	400	0	87.7	32 - 152	342.4	2.39	20	
Ethylbenzene	412	20	400	0	103	79 - 121	428.1	3.83	20	
Hexachlorobutadiene	436.7	20	400	0	109	66 - 134	445.4	1.97	20	
Isopropylbenzene	415.6	20	400	0	104	72 - 131	430.7	3.57	20	
m,p-Xylene	826.5	40	800	0	103	80 - 121	829.6	0.374	20	
Methylene chloride	340.3	40	400	0	85.1	74 - 124	346.2	1.73	20	
Naphthalene	344.5	20	400	0	86.1	61 - 128	279.2	20.9	20	R
n-Butylbenzene	421.6	20	400	0	105	75 - 128	418.9	0.661	20	
n-Propylbenzene	421.9	20	400	0	105	76 - 126	425.5	0.841	20	
o-Xylene	387.2	20	400	0	96.8	78 - 122	394.4	1.85	20	
sec-Butylbenzene	407.8	20	400	0	102	77 - 126	421.9	3.4	20	
Styrene	380.7	20	400	0	95.2	78 - 123	383.1	0.622	20	
tert-Butylbenzene	398.6	20	400	0	99.6	78 - 124	406.5	1.98	20	
Tetrachloroethene	447	20	400	0	112	74 - 129	472	5.44	20	
Toluene	407.9	20	400	0	102	80 - 121	421.4	3.25	20	
trans-1,2-Dichloroethene	357.1	20	400	0	89.3	75 - 124	375	4.89	20	
trans-1,3-Dichloropropene	399.2	20	400	0	99.8	73 - 127	409.8	2.62	20	
Trichloroethene	408	20	400	0	102	79 - 123	431.3	5.55	20	
Trichlorofluoromethane	377.7	20	400	0	94.4	65 - 141	401.8	6.16	20	
Vinyl chloride	352.6	20	400	0	88.1	58 - 137	364	3.2	20	
Surr: 1,2-Dichloroethane-d4	*950.1*	*20*	*1000*	*0*	*95.0*	*81 - 118*	*946.9*	*0.336*	*20*	
Surr: 4-Bromofluorobenzene	*977.3*	*20*	*1000*	*0*	*97.7*	*85 - 114*	*965.2*	*1.24*	*20*	
Surr: Dibromofluoromethane	*937.4*	*20*	*1000*	*0*	*93.7*	*80 - 119*	*957.5*	*2.13*	*20*	

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384184 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS21050892-06MSD** Units: **ug/L** Analysis Date: **23-May-2021 15:39**
Client ID: Run ID: **VOA6_384184** SeqNo: **6105587** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*1049*	*20*	*1000*	*0*	*105*	*89 - 112*	*1056*	*0.637*	*20*	

The following samples were analyzed in this batch:

HS21050972-08	HS21050972-09	HS21050972-10	HS21050972-11
HS21050972-12	HS21050972-13	HS21050972-14	HS21050972-15
HS21050972-16	HS21050972-17	HS21050972-18	

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384067 (0) **Instrument: TOC_04** **Method: TOTAL ORGANIC CARBON - SM5310B**

MBLK Sample ID: **MBLK2-05202021** Units: **mg/L** Analysis Date: **20-May-2021 22:03**
Client ID: Run ID: **TOC_04_384067** SeqNo: **6102754** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	0.500	1.00								U

LCS Sample ID: **LCS2-05202021** Units: **mg/L** Analysis Date: **20-May-2021 22:15**
Client ID: Run ID: **TOC_04_384067** SeqNo: **6102755** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.2	1.00	10	0	102	85 - 115				

LCSD Sample ID: **LCSD2-05202021** Units: **mg/L** Analysis Date: **20-May-2021 22:27**
Client ID: Run ID: **TOC_04_384067** SeqNo: **6102756** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.29	1.00	10	0	103	85 - 115	10.2	0.878	20	

MS Sample ID: **HS21050905-02MS** Units: **mg/L** Analysis Date: **20-May-2021 22:52**
Client ID: Run ID: **TOC_04_384067** SeqNo: **6102758** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	11.11	1.00	10	0.559	106	80 - 120				

The following samples were analyzed in this batch: HS21050972-08 HS21050972-09 HS21050972-10 HS21050972-11

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: HS21050972

QC BATCH REPORT

Batch ID: R384108 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY SW9056A

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **20-May-2021 09:40**
Client ID: Run ID: **ICS-Integrion_384108** SeqNo: **6103777** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.500	0.500								U
Nitrogen, Nitrate (As N)	0.100	0.100								U
Sulfate	0.500	0.500								U

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **20-May-2021 09:48**
Client ID: Run ID: **ICS-Integrion_384108** SeqNo: **6103778** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.96	0.500	20	0	99.8	80 - 120				
Nitrogen, Nitrate (As N)	3.812	0.100	4	0	95.3	80 - 120				
Sulfate	20.32	0.500	20	0	102	80 - 120				

MS Sample ID: **HS21050972-08MS** Units: **mg/L** Analysis Date: **20-May-2021 14:15**
Client ID: **35BWW12_210518** Run ID: **ICS-Integrion_384108** SeqNo: **6103782** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	16.53	0.500	10	6.692	98.4	80 - 120				
Nitrogen, Nitrate (As N)	2.005	0.100	2	0.0118	99.7	80 - 120				
Sulfate	42.69	0.500	10	34.17	85.2	80 - 120				

MSD Sample ID: **HS21050972-08MSD** Units: **mg/L** Analysis Date: **20-May-2021 14:22**
Client ID: **35BWW12_210518** Run ID: **ICS-Integrion_384108** SeqNo: **6103783** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	16.71	0.500	10	6.692	100	80 - 120	16.53	1.09	20	
Nitrogen, Nitrate (As N)	2.027	0.100	2	0.0118	101	80 - 120	2.005	1.08	20	
Sulfate	43.49	0.500	10	34.17	93.2	80 - 120	42.69	1.86	20	

The following samples were analyzed in this batch: HS21050972-08 HS21050972-09 HS21050972-10 HS21050972-11

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
WorkOrder: **HS21050972**

QUALIFIERS, ACRONYMS, UNITS

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

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

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	21-022-0	26-Mar-2022
Dept of Defense	PJLA L20-507-R2	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322021-7	09-May-2022
Kansas	E-10352 2020-2021	31-Jul-2021
Kentucky	123043, 2021-2022	30-Apr-2022
Louisiana	03087, 2020-2021	30-Jun-2021
North Carolina	624-2021	31-Dec-2021
Oklahoma	2020-165	31-Aug-2021
Texas	T104704231-21-27	30-Apr-2022
Utah	TX026932021-10	31-Jul-2021

ALS Houston, US Date: 08-Jun-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 37 May 2021
Work Order: HS21050972

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS21050972-01	35BWW09_210517	Login	5/20/2021 11:35:47 AM	PJM	WET037
HS21050972-01	35BWW09_210517	Login	5/20/2021 11:35:47 AM	PJM	VOA042
HS21050972-01	35BWW09_210517	Login	5/20/2021 11:35:47 AM	PJM	WET037
HS21050972-01	35BWW09_210517	Login	5/20/2021 11:35:47 AM	PJM	Sub
HS21050972-02	35BWW11_210517	Login	5/20/2021 11:35:47 AM	PJM	VOA042
HS21050972-03	35BWW25_210517	Login	5/20/2021 11:35:47 AM	PJM	WET037
HS21050972-03	35BWW25_210517	Login	5/20/2021 11:35:47 AM	PJM	VOA042
HS21050972-03	35BWW25_210517	Login	5/20/2021 11:35:47 AM	PJM	WET037
HS21050972-03	35BWW25_210517	Login	5/20/2021 11:35:47 AM	PJM	Sub
HS21050972-04	35BWW24_210517	Login	5/20/2021 11:35:47 AM	PJM	VOA042
HS21050972-05	35BWW24_210517-FD	Login	5/20/2021 11:35:47 AM	PJM	VOA042
HS21050972-06	35BWW07_210517	Login	5/20/2021 11:35:47 AM	PJM	VOA042

ALS Houston, US Date: 08-Jun-21

Sample Receipt Checklist

Work Order ID: HS21050972 **Date/Time Received:** 20-May-2021 09:50

Client Name: CBI-Houston **Received by:** Jared R. Makan

Completed By: /S/ Pablo Marinez 20-May-2021 11:38 **Reviewed by:** /S/ Ragen Giga 22-May-2021 09:46

eSignature Date/Time eSignature Date/Time

Matrices: **WATER** Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	3 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:CLIENT
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☐	No ☑	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.8°C UC/C	IR 31
Cooler(s)/Kit(s):	44650	
Date/Time sample(s) sent to storage:	5/20/21 12:00	

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

Login Notes: ID does not match, logged per Sample Label
COC = 35BWW12-210518 Label = 35BWW12-210518-FD
Nitrates received out of hold

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281)530-5656 ATTN: R.J Modashia

Project: APTIM LONGHORN
ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: **LHAAP 37 May 2021**

Prepared By: Scott Beesinger

P.O. Number

HS21050972

Aptim Environmental & Infrastucture, Inc.
LHAAP 37 May 2021

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Anions (chloride sulfate, nitrate) by SW9056	CO2 by RSK 175	Perchlorate by SW6850	Remarks (Preservatives, etc.)	Lab I.D.#
35Bww09-210517	w6	5/17/21/0740		3	X							
35Bww11-210517	w6	5/17/21/0820		3	X							
35Bww25-210517	w6	5/17/21/0905		3	X							
35Bww25-210517-ms	w6	5/17/21/0905		3	X							
35Bww25-210517-msD	w6	5/17/21/0905		3	X							
35Bww24-210517	w6	5/17/21/0950		3	X							
35Bww24-210517-FD	w6	5/17/21/0950		3	X							
35Bww07-210517	w6	5/17/21/1030		3	X							

Additional Remarks: **Standard TAT on all parameters. Please email results to Vicki.Graves@aptim.com and invoices to fedinvoices@aptim.com**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	5/18/21	1430	FM	5/20/2021	09:50						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

44650 0.8° #31

(Word) S:\I-ces\Forms\Chain of Custody - BiWeekly

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

HS21050972

Aptim Environmental & Infrastucture, Inc.
LHAAP 37 May 2021

Project: APTIM LONGHORN
ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: **LHAAP 37 May 2021**

Prepared By: Scott Beesinger

P.O. Number

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Anions (chloride sulfate, nitrate) by SW9056	CO2 by RSK 175	Perchlorate by SW6850	Remarks (Preservatives, etc.)	Lab I.D.#
35BWW13-210517	WG	5/17/21/1155		3	X							
35BWW12-210518	WG	5/18/21/0740		12	X	X	X	X	X			
35BWW12-210518	WG	5/18/21/0740		12	X	X	X	X	X			
35BWW23-210518	WG	5/18/21/0830		12	X	X	X	X	X			
35BWW14-210518	WG	5/18/21/0920		12	X	X	X	X	X			
35BWW15-210518	WG	5/18/21/1005		3	X							
35BWW17-210518	WG	5/18/21/1045		3	X							
35BWW17-210518-FD	WG	5/18/21/1045		3	X							

Additional Remarks: **Standard TAT on all parameters. Please email results to Vicki.Graves@aptim.com and invoices to fedinvoices@aptim.com**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	5/18/21	1430		5/20/2021	09:55						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

(Word) S:\I-ces\Forms\Chain of Custody - BiWeekly

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd, Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

Project: APTIM LONGHORN
ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: LHAAP 37 May 2021

Prepared By: Scott Beesinger

P.O. Number

HS21050972

Aptim Environmental & Infrastucture, Inc.
LHAAP 37 May 2021

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Anions (chloride sulfate, nitrate) by SW9056	CO2 by RSK 175	Perchlorate by SW6850	Remarks (Preservatives, etc.)	Lab I.D.#
35BWW16-210518	WG	5/18/21/1130		3	X							
35BWW19-210518	WG	5/18/21/1215		3	X							
35BWW18-210518	WG	5/18/21/1300		3	X							
TRIPBLANK-210518	W	5/18/21		2	X							

Additional Remarks: Standard TAT on all parameters. Please email results to Vicki.Graves@aptim.com and invoices to fedinvoices@aptim.com

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	5/18/21	1730	[illegible]	5/20/2021	09:50						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

(Word) S:\All-ces\Forms\Chain of Custody - BiWeekly

ALS
10450 Stancliff Rd., Suite 21 0
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

44650

CUSTODY SEAL

Date: 5/19/21 Time: 1432
Name: Scott Bellamy
Company: HATS

Seal Broken By: PKS
Date: 5/20/21

FedEx
TRK# 0221 9473 0842 9090

WED - 19 MAY AA
PRIORITY OVERNIGHT

AB SGRA44650

77099
TX-US
IAH

FID: 3923207 18May2021 GGGA 56DG3/71DC/1B23

LABORATORY REPORT

June 7, 2021

Ragen Giga
ALS Environmental - US
10450 Stancliff Rd Suite 210
Houston, TX 77099

RE: HS21050972

Dear Ragen:

Enclosed are the results of the samples submitted to our laboratory on May 21, 2021. For your reference, these analyses have been assigned our service request number P2102781.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Hayden Akers at 8:07 pm, Jun 07, 2021

Hayden Akers
Project Manager

Client: ALS Environmental - US Service Request No: P2102781
Project: HS21050972

CASE NARRATIVE

The samples were received intact under chain of custody on May 21, 2021 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

Methane, Ethene and Ethane Analysis

The samples were analyzed for methane, ethene, and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

Manual integrations were performed on the following sample(s) and analyte(s). Refer to the raw data for additional information.

Sample Identification(s)	Analyte(s)
P2102781-001 & -003	Methane

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-008
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272019-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Environmental - US
Project ID: HS21050972
Service Request: P2102781

Date Received: 5/21/2021
Time Received: 16:49

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2	RSK 175 - Gases
35BWW12_210518	P2102781-001	Water	5/18/2021	07:40	X	X
35BWW12_210518-FD	P2102781-002	Water	5/18/2021	07:40	X	X
35BWW23_210518	P2102781-003	Water	5/18/2021	08:30	X	X
35BWW14_210518	P2102781-004	Water	5/18/2021	09:20	X	X

P2102781

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **16159**

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone: +1 805 526 7161

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	Ragen Giga
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RagenP.Giga@ALSGlobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS21050972
TSR:	Sonia West

	LAB SAMPLE ID / ANALYSIS REQUESTED	CLIENT SAMPLE ID	MATRIX	COLLECT DATE / DUE DATE
1.	**HS21050972-08**	**35BWW12_210518**	**Groundwater**	**18 May 2021 07:40**
	MEE + CO2. Provide DOD LV II & IV pdf separate. EDD. EQuIS 5.0 - Longhorn		Equis	03 Jun 2021
2.	**HS21050972-09**	**35BWW12_210518-FD**	**Groundwater**	**18 May 2021 07:40**
	MEE + CO2. Provide DOD LV II & IV pdf separate. EDD. EQuIS 5.0 - Longhorn		Equis	03 Jun 2021
3.	**HS21050972-10**	**35BWW23_210518**	**Groundwater**	**18 May 2021 08:30**
	MEE + CO2. Provide DOD LV II & IV pdf separate. EDD. EQuIS 5.0 - Longhorn		Equis	03 Jun 2021
4.	**HS21050972-11**	**35BWW14_210518**	**Groundwater**	**18 May 2021 09:20**
	MEE + CO2. Provide DOD LV II & IV pdf separate. EDD. EQuIS 5.0 - Longhorn		Equis	03 Jun 2021

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.
VOANeat for CO2 & VOAHCL for MEE

QC Level: DOD IV (DoD Data Package)

P2102781

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID: 16159**

Relinquished By: _____ Date/Time: 5/20/2021 1800.

Received By: _____ Date/Time: 5-21-21 0845

Cooler ID(s): _____ Temperature(s): 2° WET

ALS Environmental
Sample Acceptance Check Form

Client: ALS Environmental - US Work order: P2102781

Project: HS21050972

Sample(s) received on: 5/21/21 Date opened: 5/21/21 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: 2° C Blank Temperature: ° C	Wet Ic		
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler lid. Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☒	☐	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2102781-001.01	40mL VOA NP		7		A	wh 5/29/21
P2102781-001.02	40mL VOA NP				A	
P2102781-001.03	40mL VOA NP				A	
P2102781-001.04	40ml VOA HCL		1		A	CB 6/1/21
P2102781-001.05	40ml VOA HCL				A	
P2102781-001.06	40ml VOA HCL				A	
P2102781-002.01	40mL VOA NP		7		A	wh 5/29/21
P2102781-002.02	40mL VOA NP				A	
P2102781-002.03	40mL VOA NP				A	
P2102781-002.04	40ml VOA HCL		1		A	CB 6/1/21
P2102781-002.05	40ml VOA HCL				A	
P2102781-002.06	40ml VOA HCL				A	
P2102781-003.01	40mL VOA NP		7		A	wh 5/29/21
P2102781-003.02	40mL VOA NP				A	
P2102781-003.03	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: ALS Environmental - US Work order: P2102781

Project: HS21050972

Sample(s) received on: 5/21/21 Date opened: 5/21/21 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2102781-003.04	40ml VOA HCL		1		A	CB 6/1/21
P2102781-003.05	40ml VOA HCL				A	
P2102781-003.06	40ml VOA HCL				A	
P2102781-004.01	40mL VOA NP		7		A	wh 5/29/21
P2102781-004.02	40mL VOA NP				A	
P2102781-004.03	40mL VOA NP				A	
P2102781-004.04	40ml VOA HCL		1		A	CB 6/1/21
P2102781-004.05	40ml VOA HCL				A	
P2102781-004.06	40ml VOA HCL				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Environmental - US**
Client Project ID: **HS21050972** ALS Project ID: P2102781

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date(s) Collected: 5/18/21
Date Received: 5/21/21
Date Analyzed: 5/29/21

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
35BWW12_210518	P2102781-001	0.10	**480,000**	1,000	860	370	
35BWW12_210518-FD	P2102781-002	0.050	**500,000**	2,000	1,700	740	
35BWW23_210518	P2102781-003	0.050	**660,000**	2,000	1,700	740	
35BWW14_210518	P2102781-004	0.050	**320,000**	2,000	1,700	740	
Method Control Sample	P210529-MB	0.10	860	1,000	860	370	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Environmental - US**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS21050972**

ALS Project ID: P2102781
ALS Sample ID: P210529-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/29/21
Volume(s) Analyzed: NA ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result[1] LCS ug/L	Result[1] DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	19,400	19,500	**85**	**85**	80-122	0	12	

[1] = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Environmental - US**
Client Sample ID: **35BWW12_210518**
Client Project ID: **HS21050972**

ALS Project ID: P2102781
ALS Sample ID: P2102781-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 5/18/21
Date Received: 5/21/21
Date Analyzed: 6/1/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Environmental - US**
Client Sample ID: **35BWW12_210518-FD**
Client Project ID: **HS21050972**

ALS Project ID: P2102781
ALS Sample ID: P2102781-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 5/18/21
Date Received: 5/21/21
Date Analyzed: 6/1/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Environmental - US**
Client Sample ID: **35BWW23_210518**
Client Project ID: **HS21050972**

ALS Project ID: P2102781
ALS Sample ID: P2102781-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 5/18/21
Date Received: 5/21/21
Date Analyzed: 6/1/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Environmental - US**
Client Sample ID: **35BWW14_210518**
Client Project ID: **HS21050972**

ALS Project ID: P2102781
ALS Sample ID: P2102781-004

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 5/18/21
Date Received: 5/21/21
Date Analyzed: 6/1/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Environmental - US**
Client Sample ID: **Method Control Sample** ALS Project ID: P2102781
Client Project ID: **HS21050972** ALS Sample ID: P210601-MB

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Connor Barrett Date Analyzed: 6/01/21
Matrix: Water Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Environmental - US**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS21050972**

ALS Project ID: P2102781
ALS Sample ID: P210601-LCS
P210601-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 6/01/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.52	2.41	2.29	**96**	**91**	73-125	5	26	
74-85-1	Ethene	4.40	4.82	4.82	**110**	**110**	72-133	0	11	
74-84-0	Ethane	4.72	4.83	4.86	**102**	**103**	74-131	1	10	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

HS21050972 8260_W_DOD Raw Data

ALS WO# HS21050972

MSVOA06 -Logbook

Batch: 44956 **Analyst:** Presenta Cabascango

Date: 05-18-2021 **Reviewer:**

Method: 8260 **Laboratory:** Houston

Comments:

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	05-18-2021 11:02 am	1.00	50 mL	50 mL	X051801.D	Liquid	Y	NA
2	VSDT000.25	ICAL1	05-18-2021 11:23 am	1.00	50 mL	50 mL	X051802.D	Liquid	Y	NA
3	VSDT000.5	ICAL2	05-18-2021 11:43 am	1.00	50 mL	50 mL	X051803.D	Liquid	Y	NA
4	VSDT001	ICAL3	05-18-2021 12:25 pm	1.00	50 mL	50 mL	X051804.D	Liquid	Y	NA
5	VSDT002	ICAL4	05-18-2021 12:46 pm	1.00	50 mL	50 mL	X051805.D	Liquid	Y	NA
6	VSDT005	ICAL5	05-18-2021 01:07 pm	1.00	50 mL	50 mL	X051806.D	Liquid	Y	NA
7	VSDT020	ICAL6	05-18-2021 01:28 pm	1.00	50 mL	50 mL	X051807.D	Liquid	Y	NA
8	VSDT050	ICAL7	05-18-2021 01:49 pm	1.00	50 mL	50 mL	X051808.D	Liquid	Y	NA
9	VSDT100	ICAL8	05-18-2021 02:10 pm	1.00	50 mL	50 mL	X051809.D	Liquid	Y	NA
10	VSDT150	ICAL9	05-18-2021 02:31 pm	1.00	50 mL	50 mL	X051810.D	Liquid	Y	NA
11	VSDT200	ICAL	05-18-2021 02:52 pm	1.00	50 mL	50 mL	X051811.D	Liquid	Y	NA
12	BLANK	SAMP	05-18-2021 03:13 pm	1.00	50 mL	50 mL	X051812.D	Liquid	Y	NA
13	BLANK	CCV	05-18-2021 03:43 pm	1.00	50 mL	50 mL	X051813.D	Liquid	Y	NA
14	CCV	CCV	05-18-2021 04:04 pm	1.00	50 mL	50 mL	X051814.D	Liquid	Y	NA
15	BLANK	SAMP	05-18-2021 04:25 pm	1.00	50 mL	50 mL	X051815.D	Liquid	Y	NA
16	VLCSW-210518	LCS	05-18-2021 04:46 pm	1.00	50 mL	50 mL	X051816.D	Liquid	Y	NA
17	BLANK	SAMP	05-18-2021 05:07 pm	1.00	50 mL	50 mL	X051817.D	Liquid	Y	NA
18	BLANK	SAMP	05-18-2021 05:28 pm	1.00	50 mL	50 mL	X051818.D	Liquid	Y	NA
19	VBLKW-210518	MBLK	05-18-2021 05:49 pm	1.00	50 mL	50 mL	X051819.D	Liquid	Y	NA
20	HS21040303-13	SAMP	05-18-2021 06:10 pm	1.00	50 mL	50 mL	X051820.D	Liquid	Y	NA
21	HS21040303-14	SAMP	05-18-2021 06:31 pm	1.00	50 mL	50 mL	X051821.D	Liquid	Y	NA
22	HS21040303-15	SAMP	05-18-2021 06:52 pm	1.00	50 mL	50 mL	X051822.D	Liquid	Y	NA
23	HS21040303-16	SAMP	05-18-2021 07:13 pm	1.00	50 mL	50 mL	X051823.D	Liquid	Y	NA
24	HS21050689-01	SAMP	05-18-2021 07:34 pm	1.00	50 mL	50 mL	X051824.D	Liquid	Y	NA
25	HS21050689-02	SAMP	05-18-2021 07:55 pm	1.00	50 mL	50 mL	X051825.D	Liquid	Y	NA
26	HS21050553-03	SAMP	05-18-2021 08:16 pm	1.00	50 mL	50 mL	X051826.D	Liquid	Y	NA
27	HS21050553-01	SAMP	05-18-2021 08:37 pm	1.00	50 mL	50 mL	X051827.D	Liquid	Y	NA
28	HS21050689-01MS	MS	05-18-2021 08:58 pm	1.00	50 mL	50 mL	X051828.D	Liquid	Y	NA
29	HS21050689-01MSD	MSD	05-18-2021 09:19 pm	1.00	50 mL	50 mL	X051829.D	Liquid	Y	NA
30	CCV-END	CCV	05-18-2021 09:40 pm	1.00	50 mL	50 mL	X051830.D	Liquid	Y	NA
31	BLANK	SAMP	05-18-2021 10:01 pm	1.00	50 mL	50 mL	X051831.D	Liquid	Y	NA

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050972

Matrix Spike - Sample No.: ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
cis-1,3-Dichloropropene	50.00	50.19	100	80-120
trans-1,3-Dichloroprope	50.00	52.04	104	80-120
1,3-Dichlorobenzene	50.00	47.75	96	80-120
2,2-Dichloropropane	50.00	50.09	100	80-120
1,1-Dichloropropene	50.00	48.31	97	80-120
Dibromomethane	50.00	50.15	100	80-120
1,2-Dibromoethane	50.00	51.94	104	80-120
trans-1,2-Dichloroethen	50.00	50.14	100	80-120
1,1,1,2-Tetrachloroetha	50.00	48.20	96	80-120
1,1,1-Trichloroethane	50.00	50.61	101	80-120
1,1,2,2-Tetrachloroetha	50.00	51.75	104	80-120
Toluene	50.00	49.96	100	80-120
1,1,2-Trichloroethane	50.00	50.03	100	80-120
1,1-Dichloroethane	50.00	47.25	94	80-120
1,1-Dichloroethene	50.00	47.25	94	80-120
Trichlorofluoromethane	50.00	48.01	96	80-120
1,2,3-Trichlorobenzene	50.00	59.14	118	80-120
Tetrachloroethene	50.00	50.18	100	80-120
1,2,4-Trichlorobenzene	50.00	53.39	107	80-120
1,2,4-Trimethylbenzene	50.00	46.88	94	80-120
tert-Butylbenzene	50.00	45.40	91	80-120
Trichloroethene	50.00	48.16	96	80-120
1,2-Dichlorobenzene	50.00	46.87	94	80-120
1,2-Dichloroethane	50.00	48.88	98	80-120
1,2-Dichloropropane	50.00	47.74	95	80-120
1,3,5-Trimethylbenzene	50.00	47.22	94	80-120
1,3-Dichloropropane	50.00	50.41	101	80-120
1,4-Dichlorobenzene	50.00	47.95	96	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050972

Matrix Spike - Sample No.: ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
2-Butanone	100.00	103.30	103	80-120
2-Chlorotoluene	50.00	45.74	91	80-120
2-Hexanone	100.00	104.71	105	80-120
4-Chlorotoluene	50.00	47.02	94	80-120
Styrene	50.00	46.53	93	80-120
4-Methyl-2-Pentanone	100.00	102.15	102	80-120
Acetone	100.00	117.46	117	80-120
Benzene	50.00	50.17	100	80-120
Bromobenzene	50.00	47.17	94	80-120
Bromochloromethane	50.00	48.14	96	80-120
Bromodichloromethane	50.00	49.36	99	80-120
Bromoform	50.00	52.15	104	80-120
Bromomethane	50.00	56.94	114	80-120
Carbon Disulfide	100.00	107.07	107	80-120
Carbon Tetrachloride	50.00	48.29	96	80-120
Chlorobenzene	50.00	47.89	96	80-120
Chloroethane	50.00	47.02	94	80-120
Chloroform	50.00	47.74	95	80-120
Chloromethane	50.00	51.81	104	80-120
cis-1,2-Dichloroethene	50.00	48.97	98	80-120
Dibromochloromethane	50.00	52.44	105	80-120
Dichlorodifluoromethane	50.00	51.12	102	80-120
Ethylbenzene	50.00	48.94	98	80-120
Hexachlorobutadiene	50.00	48.34	97	80-120
Isopropylbenzene	50.00	48.03	96	80-120
m,p-Xylenes	100.00	98.78	99	80-120
Methylene Chloride	50.00	49.43	99	80-120
n-Butylbenzene	50.00	47.59	95	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050972

Matrix Spike - Sample No.: ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
n-Propylbenzene	50.00	47.46	95	80-120
Naphthalene	50.00	59.54	119	80-120
o-Xylene	50.00	48.60	97	80-120
sec-Butylbenzene	50.00	46.39	93	80-120
Vinyl Chloride	50.00	47.95	96	80-120
1,2,3-Trichloropropane	50.00	53.16	106	80-120
p-Isopropyltoluene	50.00	46.79	94	80-120
1,2-Dibromo-3-Chloropro	50.00	56.34	113	80-120
Freon TF	50.00	47.72	95	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM III VOA

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050972

Lab File ID: X051801 BFB Injection Date: 05/18/21

Instrument ID: VOA6 BFB Injection Time: 1102

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.6
75	30.0 - 60.0% of mass 95	54.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.2
173	Less than 2.0% of mass 174	1.3 (1.6)1
174	Greater than 50.0% of mass 95	81.7
175	5.0 - 9.0% of mass 174	6.4 (7.8)1
176	95.0 - 101.0% of mass 174	78.5 (96.1)1
177	5.0 - 9.0% of mass 176	5.1 (6.6)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD000.25	VSDT000.25	X051802	05/18/21	1123
02	VSTD000.5	VSDT000.5	X051803	05/18/21	1143
03	VSTD001	VSDT001	X051804	05/18/21	1225
04	VSTD002	VSDT002	X051805	05/18/21	1246
05	VSTD005	VSDT005	X051806	05/18/21	1307
06	VSTD020	VSDT020	X051807	05/18/21	1328
07	VSTD050	VSDT050	X051808	05/18/21	1349
08	VSTD100	VSDT100	X051809	05/18/21	1410
09	VSTD150	VSDT150	X051810	05/18/21	1431
10	VSTD200	VSDT200	X051811	05/18/21	1452
11	ICV	ICV	X051814	05/18/21	1604
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050972

Instrument ID: VOA6 Calibration Date(s): 05/18/21 05/18/21

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1123 1452

LAB FILE ID: RF0.25: X051802 RF0.5: X051803 RF1: X051804
RF2: X051805 RF5: X051806 RF20: X051807

COMPOUND	RF0.25	RF0.5	RF1	RF2	RF5	RF20
cis-1,3-Dichloropropene		0.487	0.572	0.482	0.536	0.562
trans-1,3-Dichloropropene		0.362	0.481	0.462	0.448	0.484
1,3-Dichlorobenzene		1.298	1.784	1.444	1.385	1.313
2,2-Dichloropropane		0.814	0.849	0.827	0.820	0.784
1,1-Dichloropropene		0.489	0.470	0.395	0.427	0.399
Dibromomethane		0.205	0.266	0.241	0.239	0.244
1,2-Dibromoethane		0.268	0.371	0.360	0.338	0.348
trans-1,2-Dichloroethene		0.501	0.440	0.499	0.456	0.444
1,1,1,2-Tetrachloroethane		0.339	0.370	0.394	0.369	0.343
1,1,1-Trichloroethane		0.814	0.829	0.797	0.851	0.831
1,1,2,2-Tetrachloroethane		1276	3942	6612	14932	63561
Toluene		1.254	1.468	1.434	1.426	1.362
1,1,2-Trichloroethane		0.259	0.353	0.294	0.269	0.277
1,1-Dichloroethane		0.905	1.024	0.837	0.887	0.889
1,1-Dichloroethene		0.602	0.555	0.544	0.494	0.462
Trichlorofluoromethane		1.002	1.059	1.083	1.013	0.935
1,2,3-Trichlorobenzene		298	800	1755	3826	17129
Tetrachloroethene		0.267	0.257	0.293	0.265	0.257
1,2,4-Trichlorobenzene		425	1337	2176	7168	30700
1,2,4-Trimethylbenzene		2.442	3.010	2.493	2.447	2.264
tert-Butylbenzene		2.074	2.525	2.221	2.080	1.787
Trichloroethene		0.303	0.372	0.325	0.354	0.319
1,2-Dichlorobenzene		1.324	1.811	1.406	1.370	1.301
1,2-Dichloroethane		0.502	0.549	0.494	0.503	0.500
1,2-Dichloropropane		0.369	0.354	0.317	0.336	0.337
1,3,5-Trimethylbenzene		2.332	2.757	2.552	2.314	2.225
1,3-Dichloropropane		0.491	0.653	0.571	0.580	0.567
1,4-Dichlorobenzene		2775	6628	10925	24844	112231
2-Butanone		0.208	0.199	0.150	0.167	0.187
2-Chlorotoluene		2.577	2.759	2.223	2.151	1.969
2-Hexanone		1113	4644	6265	15257	64652
4-Chlorotoluene		2.534	3.056	2.582	2.471	2.392
Styrene		2465	6890	12689	31296	151430
4-Methyl-2-Pentanone		1863	6100	9786	23491	96386
Acetone		2121	2806	4685	8158	27873
Benzene		1.285	1.241	1.192	1.243	1.191
Bromobenzene		0.727	1.032	0.792	0.881	0.809
Bromochloromethane		0.300	0.313	0.305	0.314	0.288
Bromodichloromethane		0.468	0.503	0.466	0.483	0.472
Bromoform		0.227	0.256	0.199	0.227	0.224
Bromomethane		1623	3018	5999	15785	51157
Carbon Disulfide		1.049	1.194	1.138	1.099	1.092
Carbon Tetrachloride		0.420	0.447	0.466	0.436	0.396
Chlorobenzene		0.995	1.061	0.996	0.934	0.914

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS2105097

Instrument ID: VOA6 Calibration Date(s): 05/18/21 05/18/21

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1123 1452

LAB FILE ID: RF0.25: X051802 RF0.5: X051803 RF1: X051804
RF2: X051805 RF5: X051806 RF20: X051807

COMPOUND	RF0.25	RF0.5	RF1	RF2	RF5	RF20
Chloroethane		0.482	0.365	0.357	0.373	0.414
Chloroform		1.117	1.077	0.992	1.081	1.060
Chloromethane		1464	3160	5348	14179	54108
cis-1,2-Dichloroethene		0.502	0.640	0.565	0.558	0.550
Dibromochloromethane		0.297	0.455	0.365	0.368	0.376
Dichlorodifluoromethane		1498	2403	5548	14123	57043
Ethylbenzene		0.480	0.478	0.501	0.476	0.437
Hexachlorobutadiene		285	1107	2099	4641	20104
Isopropylbenzene		1.418	1.528	1.397	1.412	1.315
m,p-Xylenes		0.569	0.620	0.605	0.597	0.581
Methylene Chloride		0.434	0.476	0.538	0.489	0.488
n-Butylbenzene		2.521	2.761	2.102	2.057	2.013
n-Propylbenzene		3.468	4.022	3.792	3.412	3.065
Naphthalene		406	1471	3094	8781	42386
o-Xylene		0.614	0.616	0.595	0.583	0.553
sec-Butylbenzene		2.812	3.226	3.184	2.734	2.527
Vinyl Chloride		0.706	0.637	0.668	0.630	0.574
1,2,3-Trichloropropane		851	3361	4744	9928	50993
p-Isopropyltoluene		2.384	2.876	2.412	2.335	2.132
1,2-Dibromo-3-Chloropropane		63	283	511	1184	4660
Freon TF		0.504	0.465	0.530	0.495	0.452
4-Bromofluorobenzene		3536	2729	7059	15616	68387
Dibromofluoromethane		1526	2671	5073	12495	55528
Toluene-d8		4554	7865	16788	42740	177650
1,2-Dichloroethane-d4		1965	3259	6073	16438	67187

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS2105097

Instrument ID: VOA6 Calibration Date(s): 05/18/21 05/18/21

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1123 1452

LAB FILE ID: RF50: X051808 RF100: X051809 RF150: X051810
RF200: X051811

COMPOUND	RF50	RF100	RF150	RF200
cis-1,3-Dichloropropene	0.551	0.592	0.579	0.572
trans-1,3-Dichloropropene	0.521	0.530	0.520	0.507
1,3-Dichlorobenzene	1.363	1.440	1.445	1.456
2,2-Dichloropropane	0.768	0.864	0.862	0.867
1,1-Dichloropropene	0.367	0.444	0.428	0.436
Dibromomethane	0.235	0.250	0.247	0.242
1,2-Dibromoethane	0.358	0.371	0.365	0.364
trans-1,2-Dichloroethene	0.449	0.491	0.520	0.530
1,1,1,2-Tetrachloroethane	0.357	0.371	0.368	0.368
1,1,1-Trichloroethane	0.809	0.898	0.909	0.916
1,1,2,2-Tetrachloroethane	192852	443127	690313	941646
Toluene	1.423	1.541	1.532	1.544
1,1,2-Trichloroethane	0.284	0.298	0.290	0.290
1,1-Dichloroethane	0.901	0.943	0.964	0.982
1,1-Dichloroethene	0.419	0.457	0.472	0.495
Trichlorofluoromethane	0.805	0.902	0.910	0.940
1,2,3-Trichlorobenzene	53322	129422	217046	307927
Tetrachloroethene	0.256	0.297	0.297	0.310
1,2,4-Trichlorobenzene	93881	230076	378072	556188
1,2,4-Trimethylbenzene	2.367	2.620	2.619	2.624
tert-Butylbenzene	1.852	2.157	2.163	2.202
Trichloroethene	0.310	0.337	0.326	0.332
1,2-Dichlorobenzene	1.264	1.348	1.378	1.410
1,2-Dichloroethane	0.493	0.481	0.458	0.443
1,2-Dichloropropane	0.324	0.336	0.328	0.324
1,3,5-Trimethylbenzene	2.338	2.608	2.633	2.704
1,3-Dichloropropane	0.567	0.572	0.569	0.548
1,4-Dichlorobenzene	328636	774191	1228277	1710708
2-Butanone	0.183	0.194	0.189	0.185
2-Chlorotoluene	2.002	2.129	2.128	2.118
2-Hexanone	184352	424072	684773	929961
4-Chlorotoluene	2.422	2.634	2.635	2.660
Styrene	468440	1137742	1857964	2618657
4-Methyl-2-Pentanone	268097	642103	1037606	1395319
Acetone	67628	161640	237075	336393
Benzene	1.208	1.285	1.250	1.237
Bromobenzene	0.778	0.824	0.832	0.827
Bromochloromethane	0.299	0.306	0.312	0.305
Bromodichloromethane	0.471	0.507	0.491	0.486
Bromoform	0.245	0.261	0.270	0.266
Bromomethane	137904	330862		
Carbon Disulfide	1.138	1.206	1.311	1.375
Carbon Tetrachloride	0.378	0.462	0.451	0.466
Chlorobenzene	0.935	0.993	0.978	1.018

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS2105097

Instrument ID: VOA6 Calibration Date(s): 05/18/21 05/18/21

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1123 1452

LAB FILE ID: RF50: X051808 RF100: X051809 RF150: X051810
RF200: X051811

COMPOUND	RF50	RF100	RF150	RF200
Chloroethane	0.336	0.369	0.350	0.361
Chloroform	1.018	1.075	1.069	1.070
Chloromethane	144469	323129	530291	760194
cis-1,2-Dichloroethene	0.555	0.596	0.612	0.608
Dibromochloromethane	0.398	0.419	0.416	0.421
Dichlorodifluoromethane	146727	385804	635388	916851
Ethylbenzene	0.466	0.513	0.501	0.507
Hexachlorobutadiene	54907	159233	251193	377761
Isopropylbenzene	1.391	1.613	1.599	1.652
m,p-Xylenes	0.611	0.676	0.672	0.689
Methylene Chloride	0.488	0.522	0.539	0.538
n-Butylbenzene	2.082	2.488	2.515	2.591
n-Propylbenzene	3.255	3.697	3.540	3.618
Naphthalene	135654	338098	555881	826266
o-Xylene	0.587	0.633	0.637	0.647
sec-Butylbenzene	2.562	3.072	3.064	3.195
Vinyl Chloride	0.520	0.554	0.560	0.583
1,2,3-Trichloropropane	161438	370826	570152	760241
p-Isopropyltoluene	2.228	2.603	2.576	2.673
1,2-Dibromo-3-Chloropropane	14297	35357	55728	81966
Freon TF	0.380	0.462	0.473	0.507
4-Bromofluorobenzene	197985	494712	751419	1039902
Dibromofluoromethane	145001	355480	559479	756859
Toluene-d8	483036	1269181		
1,2-Dichloroethane-d4	177225	428979	631492	867782

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS2105097

Instrument ID: VOA6 Calibration Date(s): 05/18/21 05/18/21

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1123 1452

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
cis-1,3-Dichloropropene	AVRG		0.54815013		7.198	15.000
trans-1,3-Dichloropropene	AVRG		0.47952641		10.867	15.000
1,3-Dichlorobenzene	AVRG		1.43648780		9.972	15.000
2,2-Dichloropropane	AVRG		0.82828869		4.331	15.000
1,1-Dichloropropene	AVRG		0.42830770		8.852	15.000
Dibromomethane	AVRG		0.24083691		6.728	15.000
1,2-Dibromoethane	AVRG		0.34906143		9.275	15.000
trans-1,2-Dichloroethene	AVRG		0.48104288		7.125	15.000
1,1,1,2-Tetrachloroethane	AVRG		0.36426927		4.529	15.000
1,1,1-Trichloroethane	AVRG		0.85043801		5.394	15.000
1,1,2,2-Tetrachloroethane	LINR	-1.06e-002	1.22020858		0.9996255	0.9900000
Toluene	AVRG		1.44259465		6.537	15.000
1,1,2-Trichloroethane	AVRG		0.29044361		9.129	15.000
1,1-Dichloroethane	AVRG		0.92592468		6.216	15.000
1,1-Dichloroethene	AVRG		0.50003055		11.379	15.000
Trichlorofluoromethane	AVRG		0.96110314		9.038	15.000
1,2,3-Trichlorobenzene	2ORDR	9.632e-003	4.28133993	-0.5154682	0.9995826	0.9900000
Tetrachloroethene	AVRG		0.27783391		7.699	15.000
1,2,4-Trichlorobenzene	LINR	4.933e-002	2.11604080		0.9976091	0.9900000
1,2,4-Trimethylbenzene	AVRG		2.54299659		8.430	15.000
tert-Butylbenzene	AVRG		2.11785900		10.166	15.000
Trichloroethene	AVRG		0.33109441		6.506	15.000
1,2-Dichlorobenzene	AVRG		1.40138714		11.491	15.000
1,2-Dichloroethane	AVRG		0.49160844		6.118	15.000
1,2-Dichloropropane	AVRG		0.33602311		4.888	15.000
1,3,5-Trimethylbenzene	AVRG		2.49588490		7.816	15.000
1,3-Dichloropropane	AVRG		0.56857427		7.291	15.000
1,4-Dichlorobenzene	LINR	5.061e-003	0.67731606		0.9998297	0.9900000
2-Butanone	AVRG		0.18456292		9.299	15.000
2-Chlorotoluene	AVRG		2.22844412		11.870	15.000
2-Hexanone	LINR	-5.43e-003	4.72960490		0.9996417	0.9900000
4-Chlorotoluene	AVRG		2.59844887		7.579	15.000
Styrene	LINR	3.526e-002	0.84676544		0.9993765	0.9900000
4-Methyl-2-Pentanone	LINR	1.757e-003	3.13747126		0.9992518	0.9900000
Acetone	LINR	-0.1031195	8.31977183		0.9992475	0.9900000
Benzene	AVRG		1.23700589		2.821	15.000
Bromobenzene	AVRG		0.83350948		10.277	15.000
Bromochloromethane	AVRG		0.30471850		2.737	15.000
Bromodichloromethane	AVRG		0.48310323		3.112	15.000
Bromoform	AVRG		0.24181056		9.935	15.000
Bromomethane	LINR	-9.54e-003	1.92097258		0.9993822	0.9900000
Carbon Disulfide	AVRG		1.17802683		9.054	15.000
Carbon Tetrachloride	AVRG		0.43581111		7.302	15.000
Chlorobenzene	AVRG		0.98043280		4.719	15.000

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS2105097

Instrument ID: VOA6 Calibration Date(s): 05/18/21 05/18/21

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1123 1452

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
Chloroethane	AVRG		0.37848234		11.670	15.000
Chloroform	AVRG		1.06227706		3.452	15.000
Chloromethane	LINR	4.72e-003	1.84566789		0.9991701	0.9900000
cis-1,2-Dichloroethene	AVRG		0.57624659		7.251	15.000
Dibromochloromethane	AVRG		0.39079995		11.706	15.000
Dichlorodifluoromethane	LINR	4.157e-002	1.52321051		0.9978249	0.9900000
Ethylbenzene	AVRG		0.48449831		4.945	15.000
Hexachlorobutadiene	LINR	6.372e-002	3.12063356		0.9952728	0.9900000
Isopropylbenzene	AVRG		1.48070600		8.062	15.000
m,p-Xylenes	AVRG		0.62439142		7.010	15.000
Methylene Chloride	AVRG		0.50138203		7.098	15.000
n-Butylbenzene	AVRG		2.34785648		12.003	15.000
n-Propylbenzene	AVRG		3.54120408		8.079	15.000
Naphthalene	LINR	6.205e-002	1.42523240		0.9969447	0.9900000
o-Xylene	AVRG		0.60729113		5.006	15.000
sec-Butylbenzene	AVRG		2.93063409		9.421	15.000
Vinyl Chloride	AVRG		0.60367291		9.968	15.000
1,2,3-Trichloropropane	LINR	-1.23e-002	1.49190380		0.9985771	0.9900000
p-Isopropyltoluene	AVRG		2.46870248		9.462	15.000
1,2-Dibromo-3-Chloropropane	LINR	3.21e-002	14.3600447		0.9984415	0.9900000
Freon TF	AVRG		0.47436754		9.201	15.000
4-Bromofluorobenzene	LINR	2.432e-003	2.11361156		0.9991459	0.9900000
Dibromofluoromethane	LINR	-4.56e-003	1.80361438		0.9994050	0.9900000
Toluene-d8	LINR	2.027e-002	0.79767420		0.9950610	0.9900000
1,2-Dichloroethane-d4	LINR	-2.54e-002	1.57628033		0.9986859	0.9900000

FORM VI VOA

Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\X051801.D

Date : 18-MAY-2021 11:02

Client ID: BFB

Instrument: voa6.i

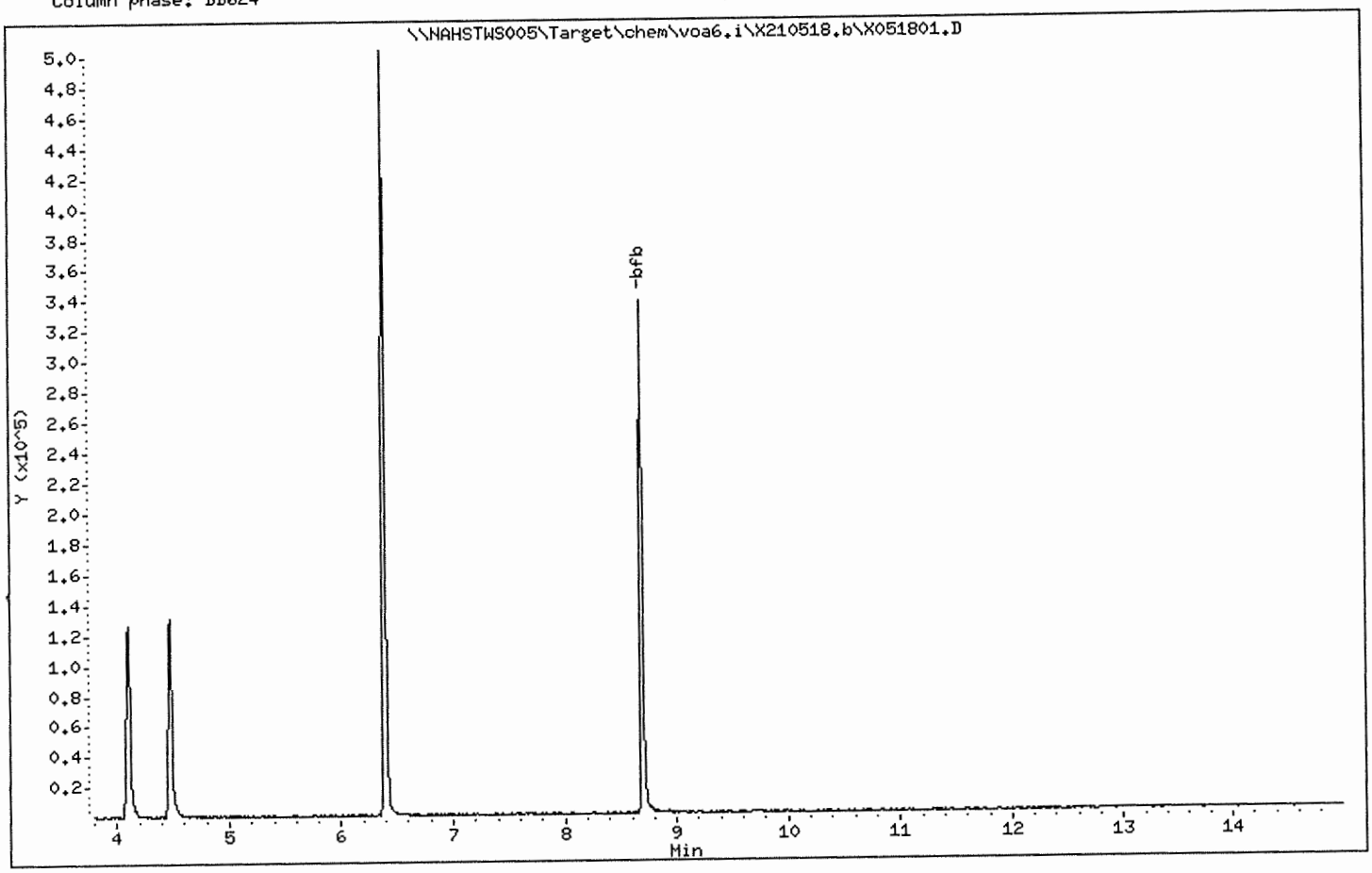
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25



Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\X051801.D

Date : 18-MAY-2021 11:02

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

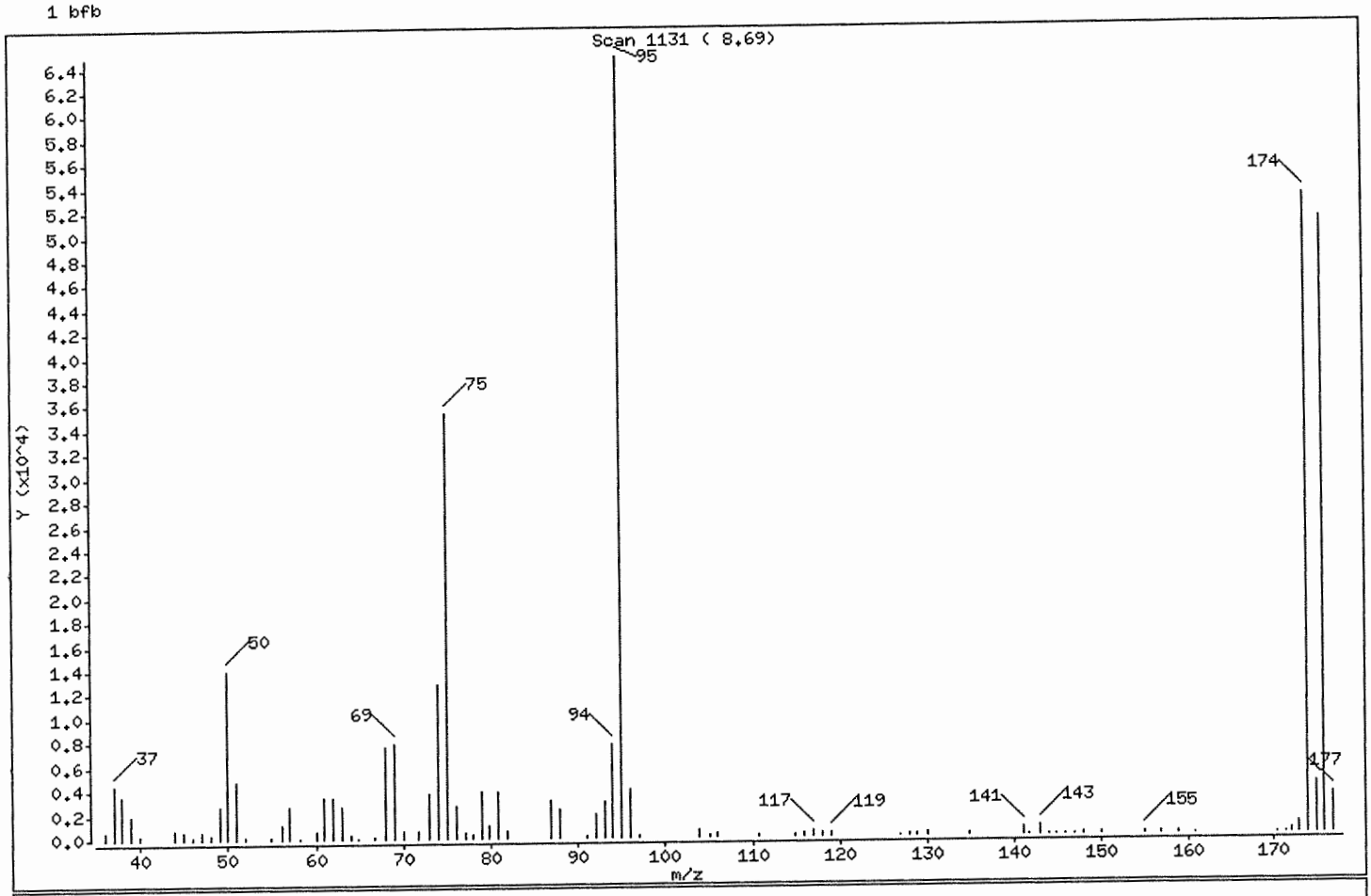
Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	21.57
75	30.00 - 60.00% of mass 95	54.58
96	5.00 - 9.00% of mass 95	6.22
173	Less than 2.00% of mass 174	1.30 (1.59)
174	Greater than 50.00% of mass 95	81.67
175	5.00 - 9.00% of mass 174	6.39 (7.82)
176	95.00 - 101.00% of mass 174	78.52 (96.15)
177	5.00 - 9.00% of mass 176	5.15 (6.56)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\X051801.D

Date : 18-MAY-2021 11:02

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

Data File: X051801.D
Spectrum: Scan 1131 (8.69)
Location of Maximum: 95.00
Number of points: 83

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	659	63.00	2721	92.00	1901	141.70	64
37.00	4492	64.00	282	93.00	2997	142.80	715
38.00	3512	64.80	58	94.00	7815	143.90	60
39.00	1875	66.80	141	95.00	64840	144.80	50
40.00	367	68.00	7559	96.00	4033	145.80	52
44.00	753	69.00	7848	97.00	80	146.80	54
45.00	666	70.10	653	103.90	627	147.90	169
46.00	85	71.80	523	105.00	166	149.90	76
47.00	657	73.00	3762	105.90	293	154.90	186
48.00	369	74.00	12856	110.80	120	156.80	95
49.00	2757	75.00	35392	114.90	109	158.80	137
50.00	13984	76.00	2705	115.90	319	160.80	61
51.00	4819	77.00	459	116.90	497	170.50	59
52.00	122	77.90	266	118.00	279	171.40	59
54.90	202	78.90	3898	118.90	355	172.10	229
56.10	1223	79.90	1045	126.90	66	172.90	844
57.00	2742	80.90	3915	128.00	208	173.90	52952
58.20	65	81.90	608	128.70	126	174.90	4142
60.00	659	86.90	3136	129.90	279	175.90	50912
61.00	3477	87.90	2433	134.80	103	176.90	3338
62.00	3463	90.90	216	140.90	646		

Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051802.D Page 1
Report Date: 22-Jun-2021 08:20

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210518.b\X051802.D
Lab Smp Id: VSDT000.25 Client Smp ID: VSTD000.25
Inj Date : 18-MAY-2021 11:23
Operator : PC Inst ID: voa6.i
Smp Info : VSDT000.25;VSTD000.25;1;1;;
Misc Info : HS18090001;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X210518.b\8260W.m
Meth Date : 22-Jun-2021 08:20 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 14:52 Cal File: X051811.D
Als bottle: 2 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

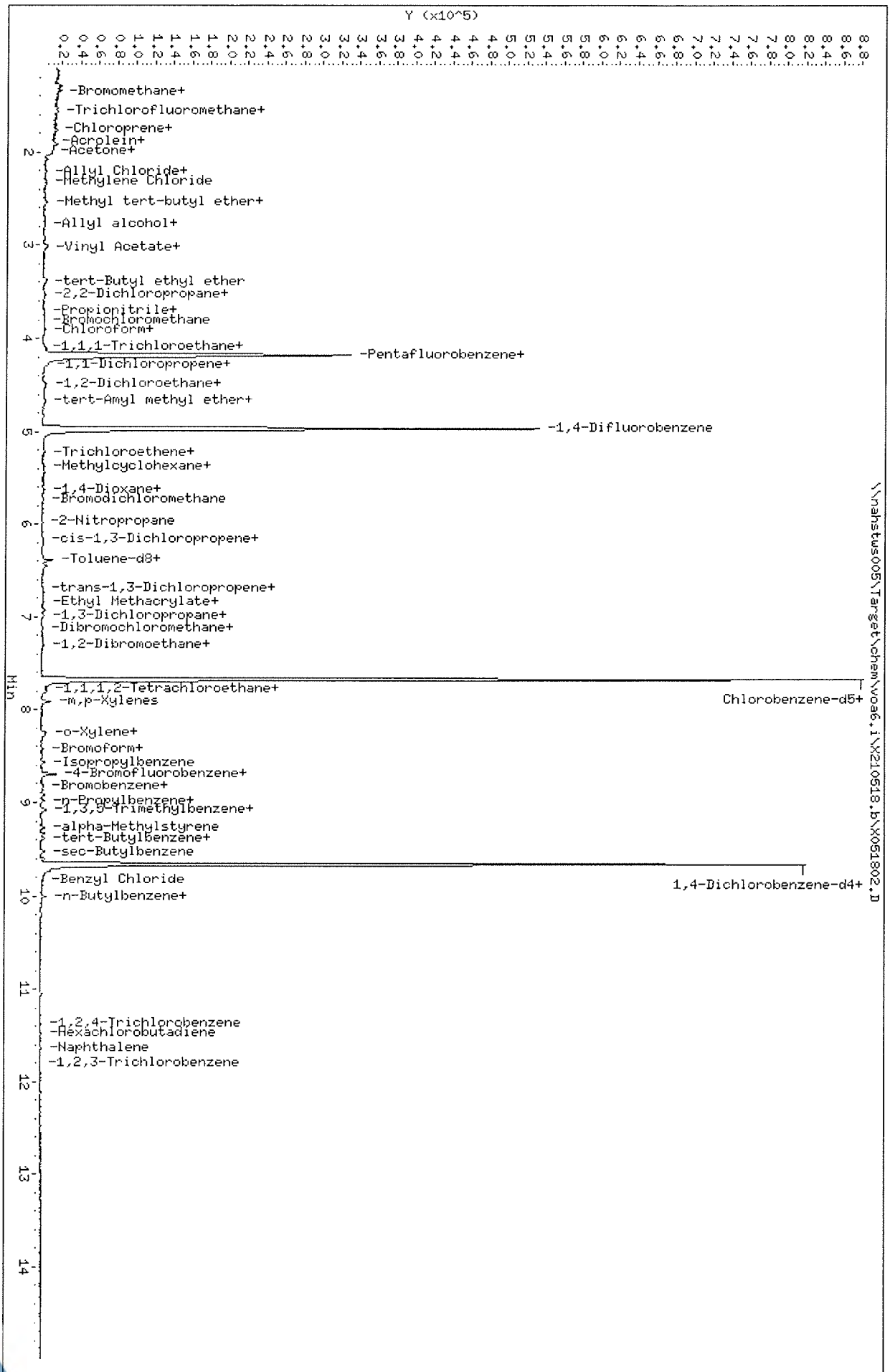
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	259430	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	431449	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.670	(1.000)	398320	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	184412	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.483	4.483	(1.072)	2365	0.25000	(Ta)
$ 69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	5204	0.25000	1.50(a)
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	1710	0.25000	0.36(a)
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	6953	0.25000	1.70(a)
60 1,1,1,2-Tetrachloroethane	131	7.771	7.771	(1.013)	675	0.25000	0.23(a)
31 1,1,1-Trichloroethane	97	4.082	4.082	(0.976)	1063	0.25000	0.24(a)
68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	589	0.25000	(aM)
138 Freon TF	101	1.926	1.926	(0.461)	574	0.25000	0.23(aM)
53 1,1,2-Trichloroethane	83	6.847	6.847	(0.893)	614	0.25000	0.26(a)
22 1,1-Dichloroethane	63	2.929	2.929	(0.700)	1620	0.25000	0.33(aM)
11 1,1-Dichloroethene	96	1.911	1.911	(0.457)	700	0.25000	0.26(aM)
32 1,1-Dichloropropene	75	4.282	4.282	(0.862)	1580	0.25000	0.42(a)
93 1,2,3-Trichlorobenzene	180	11.789	11.789	(1.220)	70	0.25000	0.56(aM)
71 1,2,3-Trichloropropane	75	8.874	8.874	(0.918)	551	0.25000	(aM)
90 1,2,4-Trichlorobenzene	180	11.374	11.374	(1.177)	245	0.25000	2.60(aM)
79 1,2,4-Trimethylbenzene	105	9.382	9.382	(0.971)	2182	0.25000	0.23(a)
57 1,2-Dibromoethane	107	7.269	7.269	(0.948)	893	0.25000	0.32(a)
88 1,2-Dichlorobenzene	146	10.006	10.006	(1.036)	1360	0.25000	0.26(a)

Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051802.D Page 2
Report Date: 22-Jun-2021 08:20

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
33	1,2-Dichloroethane	62	4.555	4.555	(0.916)	1269	0.25000	0.29(a)
42	1,2-Dichloropropane	63	5.436	5.436	(1.094)	680	0.25000	0.23(aM)
75	1,3,5-Trimethylbenzene	105	9.074	9.074	(0.939)	2277	0.25000	0.24(a)
83	1,3-Dichlorobenzene	146	9.619	9.619	(0.996)	1349	0.25000	0.25(a)
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	1203	0.25000	0.26(a)
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	1848	0.25000	0.59(a)
26	2,2-Dichloropropane	77	3.523	3.523	(0.842)	1125	0.25000	0.26(aM)
24	2-Butanone	43	3.630	3.630	(0.868)	349	0.50000	0.36(aM)
76	2-Chlorotoluene	91	8.981	8.981	(0.930)	2422	0.25000	0.29(a)
52	2-Hexanone	43	7.119	7.119	(0.928)	640	0.50000	0.10(TaM)
77	4-Chlorotoluene	91	9.082	9.082	(0.940)	2995	0.25000	0.31(a)
82	p-Isopropyltoluene	119	9.655	9.655	(0.999)	2275	0.25000	0.24(a)
45	4-Methyl-2-Pentanone	43	6.331	6.331	(0.825)	1633	0.50000	0.73(aM)
10	Acetone	43	1.983	1.983	(0.474)	1986	0.50000	(a)
37	Benzene	78	4.519	4.519	(0.909)	3242	0.25000	0.30(a)
74	Bromobenzene	156	8.817	8.817	(0.913)	788	0.25000	0.25(a)
29	Bromochloromethane	128	3.802	3.802	(0.909)	596	0.25000	0.37(aM)
39	Bromodichloromethane	83	5.729	5.729	(1.153)	1099	0.25000	0.26(aM)
66	Bromoform	173	8.415	8.415	(1.097)	229	0.25000	0.11(aM)
6	Bromomethane	94	1.345	1.345	(0.322)	1349	0.25000	0.02(aM)
19	Carbon Disulfide	76	2.069	2.069	(0.495)	3241	0.50000	0.53(aM)
34	Carbon Tetrachloride	117	4.275	4.275	(0.860)	1043	0.25000	0.27(aM)
59	Chlorobenzene	112	7.692	7.692	(1.003)	1804	0.25000	0.23(a)
7	Chloroethane	64	1.396	1.396	(0.334)	951	0.25000	0.48(aM)
28	Chloroform	83	3.917	3.917	(0.937)	1662	0.25000	0.30(a)
3	Chloromethane	50	1.080	1.080	(0.258)	1250	0.25000	0.68(aM)
27	cis-1,2-Dichloroethene	96	3.545	3.545	(0.848)	627	0.25000	0.20(aM)
46	cis-1,3-Dichloropropene	75	6.166	6.166	(1.241)	1190	0.25000	0.25(a)
55	Dibromochloromethane	129	7.176	7.176	(0.936)	804	0.25000	0.25(a)
44	Dibromomethane	93	5.550	5.550	(1.117)	644	0.25000	0.30(aM)
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	789	0.25000	2.31(aM)
61	Ethylbenzene	106	7.799	7.799	(1.017)	684	0.25000	0.17(a)
91	Hexachlorobutadiene	225	11.474	11.474	(1.188)	207	0.25000	3.36(aM)
67	Isopropylbenzene	105	8.559	8.559	(1.116)	2610	0.25000	0.22(a)
62	m,p-Xylenes	106	7.914	7.914	(1.032)	2264	0.50000	0.45(a)
17	Methylene Chloride	84	2.312	2.312	(0.553)	955	0.25000	0.36(a)
87	n-Butylbenzene	91	10.013	10.013	(1.036)	1224	0.25000	0.14(a)
73	n-Propylbenzene	91	8.924	8.924	(0.924)	3266	0.25000	0.25(a)
92	Naphthalene	128	11.639	11.639	(1.205)	140	0.25000	3.15(aM)
63	o-Xylene	106	8.243	8.243	(1.075)	1402	0.25000	0.28(a)
81	sec-Butylbenzene	105	9.526	9.526	(0.986)	2583	0.25000	0.23(a)
64	Styrene	104	8.272	8.272	(1.078)	1817	0.25000	1.95(a)
78	tert-Butylbenzene	119	9.339	9.339	(0.967)	1985	0.25000	0.25(a)
56	Tetrachloroethene	164	6.918	6.918	(0.902)	368	0.25000	0.16(aM)
50	Toluene	91	6.453	6.453	(0.841)	3453	0.25000	0.30(a)
20	trans-1,2-Dichloroethene	96	2.527	2.527	(0.604)	513	0.25000	0.20(aM)
51	trans-1,3-Dichloropropene	75	6.689	6.689	(1.346)	972	0.25000	0.23(aM)
38	Trichloroethene	130	5.221	5.221	(1.050)	865	0.25000	0.30(aM)
8	Trichlorofluoromethane	101	1.560	1.560	(0.373)	1217	0.25000	0.24(a)
5	Vinyl Chloride	62	1.145	1.145	(0.274)	1276	0.25000	0.40(a)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.



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Column phase: DB624

Instrument: voa6,i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051803.D Page 1
Report Date: 22-Jun-2021 08:20

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210518.b\X051803.D
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Inj Date : 18-MAY-2021 11:43
Operator : PC Inst ID: voa6.i
Smp Info : VSDT000.5;VSTD000.5;1;2;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210518.b\8260W.m
Meth Date : 22-Jun-2021 08:20 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 11:23 Cal File: X051802.D
Als bottle: 3 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

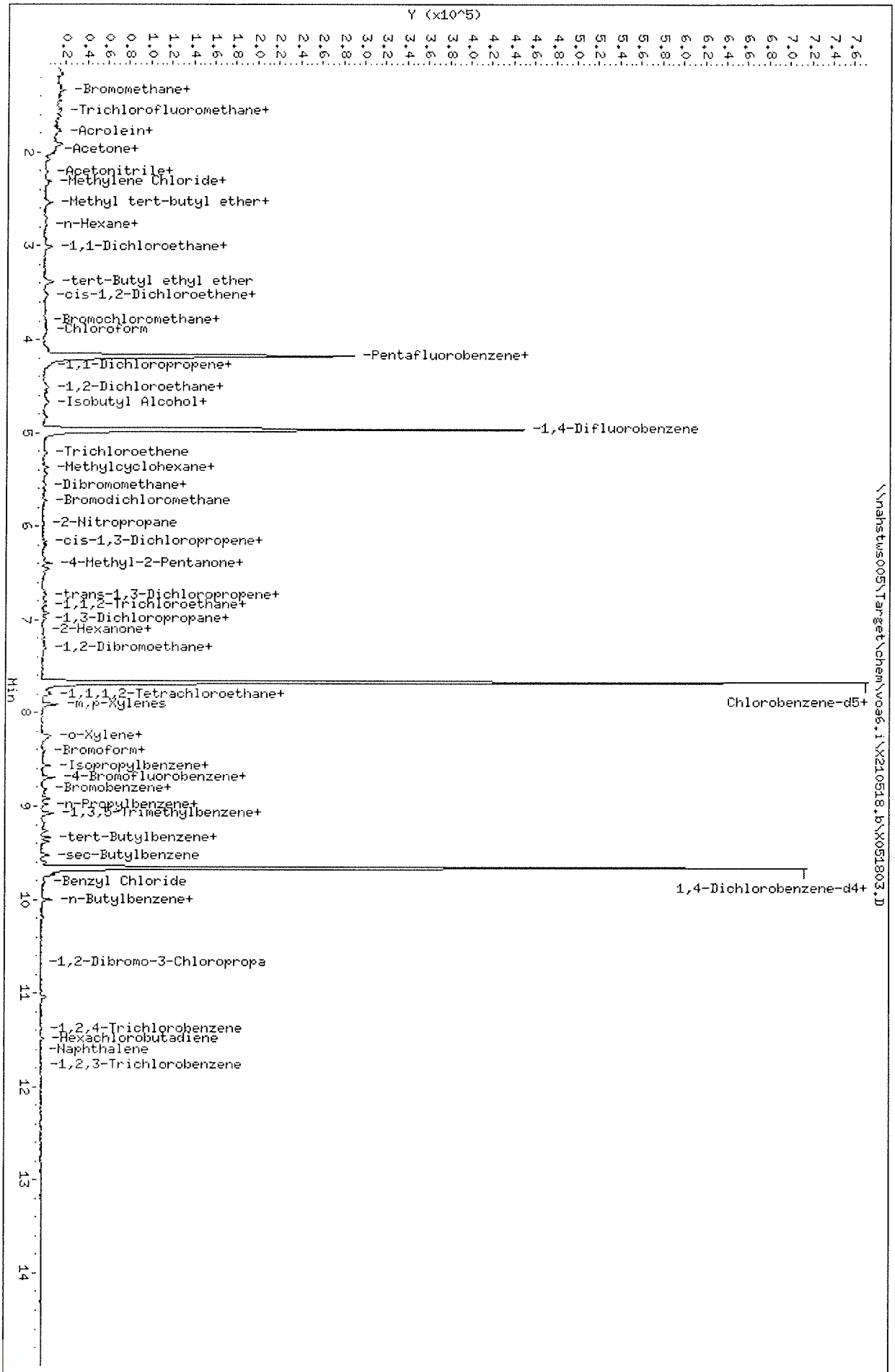
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	226673	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	364110	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	347141	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	155518	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.483	4.483	(1.072)	1965	0.50000	(Ta)
$ 69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	3536	0.50000	1.19(a)
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	1526	0.50000	0.37(aM)
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	4554	0.50000	1.53(Ta)
60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	1176	0.50000	0.46(a)
31 1,1,1-Trichloroethane	97	4.089	4.089	(0.978)	1845	0.50000	0.47(a)
68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	1276	0.50000	(aM)
138 Freon TF	101	1.912	1.912	(0.457)	1143	0.50000	0.53(a)
53 1,1,2-Trichloroethane	83	6.847	6.847	(0.893)	899	0.50000	0.44(a)
22 1,1-Dichloroethane	63	2.929	2.929	(0.700)	2051	0.50000	0.48(Ta)
11 1,1-Dichloroethene	96	1.919	1.919	(0.459)	1364	0.50000	0.60(aM)
32 1,1-Dichloropropene	75	4.282	4.282	(0.862)	1781	0.50000	0.57(a)
93 1,2,3-Trichlorobenzene	180	11.768	11.768	(1.218)	298	0.50000	0.89(aM)
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	851	0.50000	(aMH)
90 1,2,4-Trichlorobenzene	180	11.381	11.381	(1.178)	425	0.50000	2.75(aM)
79 1,2,4-Trimethylbenzene	105	9.383	9.383	(0.971)	3798	0.50000	0.48(a)
89 1,2-Dibromo-3-Chloropropane	155	10.672	10.672	(1.105)	63	0.50000	1.89(aM)
57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	929	0.50000	0.38(a)

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	9.999	9.999	(1.035)	2059	0.50000	0.47(a)
33	1,2-Dichloroethane	62	4.569	4.569	(0.919)	1830	0.50000	0.51(a)
42	1,2-Dichloropropane	63	5.443	5.443	(1.095)	1344	0.50000	0.54(aM)
75	1,3,5-Trimethylbenzene	105	9.075	9.075	(0.939)	3626	0.50000	0.46(a)
83	1,3-Dichlorobenzene	146	9.612	9.612	(0.995)	2018	0.50000	0.45(a)
54	1,3-Dichloropropane	76	6.990	6.990	(0.911)	1704	0.50000	0.43(aM)
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	2775	0.50000	0.85(a)
26	2,2-Dichloropropane	77	3.523	3.523	(0.842)	1844	0.50000	0.49(aM)
24	2-Butanone	43	3.609	3.609	(0.863)	942	1.00000	1.12(aM)
76	2-Chlorotoluene	91	8.981	8.981	(0.930)	4008	0.50000	0.57(a)
52	2-Hexanone	43	7.112	7.112	(0.927)	1113	1.00000	0.48(Ta)
77	4-Chlorotoluene	91	9.082	9.082	(0.940)	3941	0.50000	0.48(a)
82	p-Isopropyltoluene	119	9.655	9.655	(0.999)	3707	0.50000	0.48(aM)
45	4-Methyl-2-Pentanone	43	6.331	6.331	(0.825)	1863	1.00000	0.92(a)
10	Acetone	43	1.976	1.976	(0.473)	2121	1.00000	(a)
37	Benzene	78	4.519	4.519	(0.909)	4678	0.50000	0.51(a)
74	Bromobenzene	156	8.810	8.810	(0.912)	1130	0.50000	0.43(a)
29	Bromochloromethane	128	3.788	3.788	(0.906)	680	0.50000	0.49(a)
39	Bromodichloromethane	83	5.729	5.729	(1.153)	1706	0.50000	0.48(aM)
66	Bromoform	173	8.408	8.408	(1.096)	788	0.50000	0.46(aM)
6	Bromomethane	94	1.338	1.338	(0.320)	1623	0.50000	0.21(a)
19	Carbon Disulfide	76	2.069	2.069	(0.495)	4757	1.00000	0.89(aM)
34	Carbon Tetrachloride	117	4.268	4.268	(0.859)	1529	0.50000	0.48(aM)
59	Chlorobenzene	112	7.692	7.692	(1.003)	3453	0.50000	0.50(a)
7	Chloroethane	64	1.403	1.403	(0.336)	1092	0.50000	0.63(aM)
28	Chloroform	83	3.910	3.910	(0.935)	2533	0.50000	0.52(a)
3	Chloromethane	50	1.081	1.081	(0.258)	1464	0.50000	0.83(aM)
27	cis-1,2-Dichloroethene	96	3.538	3.538	(0.846)	1137	0.50000	0.43(a)
46	cis-1,3-Dichloropropene	75	6.159	6.159	(1.239)	1773	0.50000	0.44(a)
55	Dibromochloromethane	129	7.184	7.184	(0.937)	1032	0.50000	0.38(a)
44	Dibromomethane	93	5.565	5.565	(1.120)	745	0.50000	0.42(a)
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	1498	0.50000	2.58(aM)
61	Ethylbenzene	106	7.807	7.807	(1.018)	1667	0.50000	0.49(a)
91	Hexachlorobutadiene	225	11.474	11.474	(1.188)	285	0.50000	3.47(aM)
67	Isopropylbenzene	105	8.566	8.566	(1.117)	4923	0.50000	0.47(a)
62	m,p-Xylenes	106	7.907	7.907	(1.031)	3953	1.00000	0.91(a)
17	Methylene Chloride	84	2.305	2.305	(0.551)	985	0.50000	0.43(a)
87	n-Butylbenzene	91	10.006	10.006	(1.036)	3921	0.50000	0.53(a)
73	n-Propylbenzene	91	8.917	8.917	(0.923)	5394	0.50000	0.48(a)
92	Naphthalene	128	11.610	11.610	(1.202)	406	0.50000	3.28(aM)
63	o-Xylene	106	8.244	8.244	(1.075)	2130	0.50000	0.50(a)
81	sec-Butylbenzene	105	9.526	9.526	(0.986)	4374	0.50000	0.47(a)
64	Styrene	104	8.272	8.272	(1.078)	2465	0.50000	2.06(a)
78	tert-Butylbenzene	119	9.340	9.340	(0.967)	3226	0.50000	0.48(a)
56	Tetrachloroethene	164	6.926	6.926	(0.903)	928	0.50000	0.48(a)
50	Toluene	91	6.446	6.446	(0.840)	4354	0.50000	0.43(a)
20	trans-1,2-Dichloroethene	96	2.528	2.528	(0.604)	1135	0.50000	0.52(a)
51	trans-1,3-Dichloropropene	75	6.696	6.696	(1.347)	1319	0.50000	0.37(a)
38	Trichloroethene	130	5.207	5.207	(1.048)	1104	0.50000	0.45(a)
8	Trichlorofluoromethane	101	1.561	1.561	(0.373)	2271	0.50000	0.52(a)
5	Vinyl Chloride	62	1.145	1.145	(0.274)	1600	0.50000	0.58(aM)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

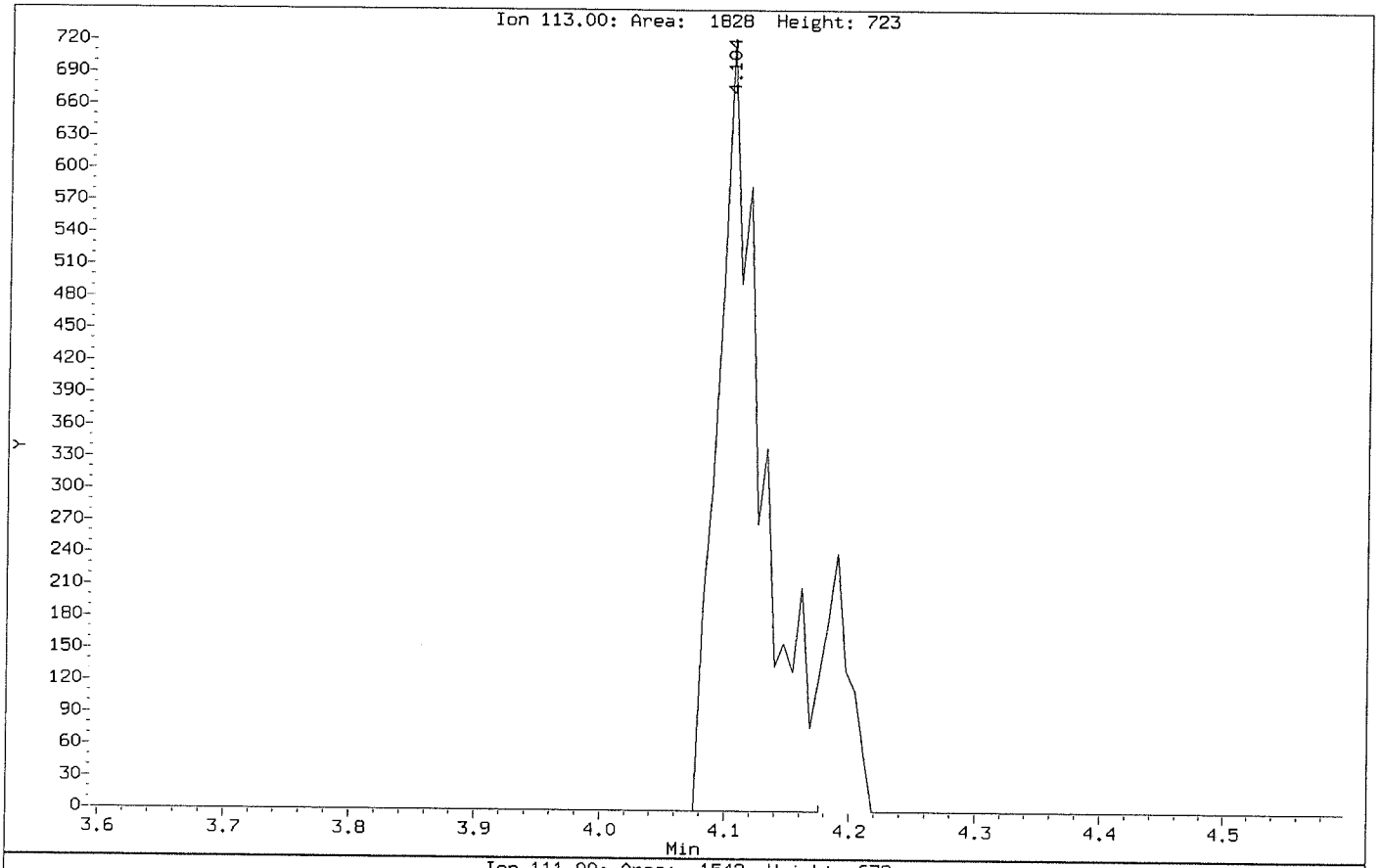


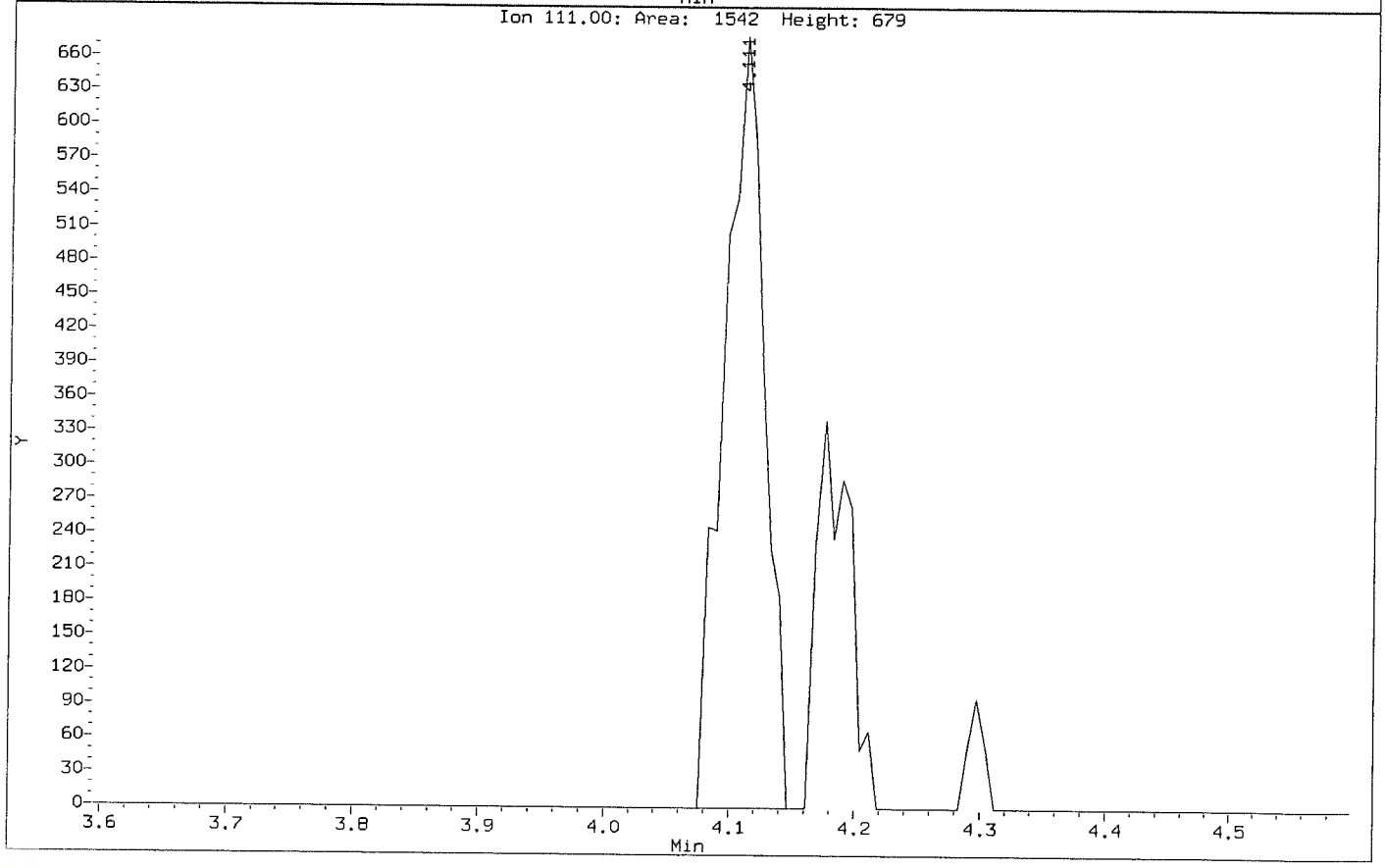
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Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\Before\X051803.D
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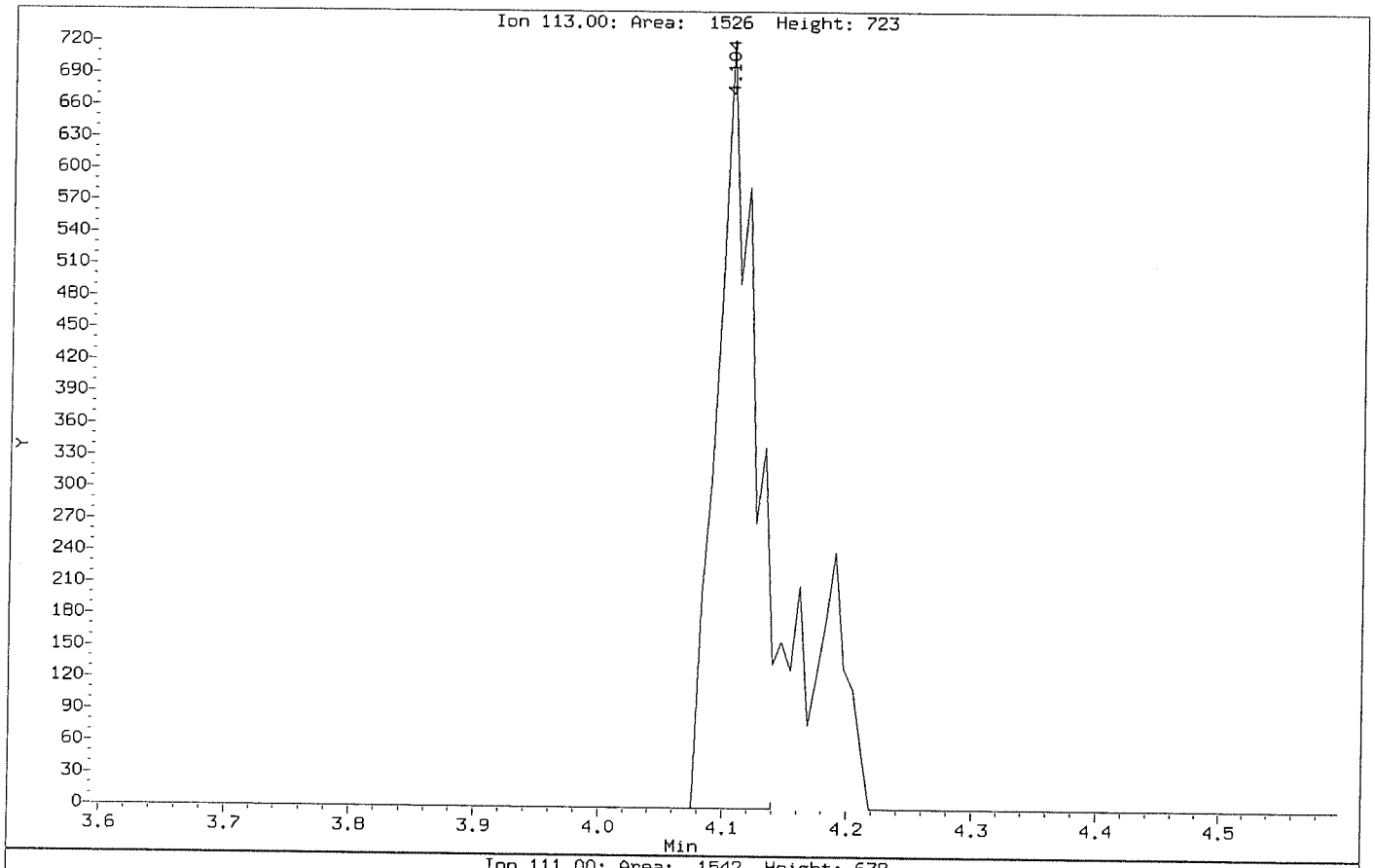
Compound: Dibromofluoromethane
CAS Number: 1868-53-7

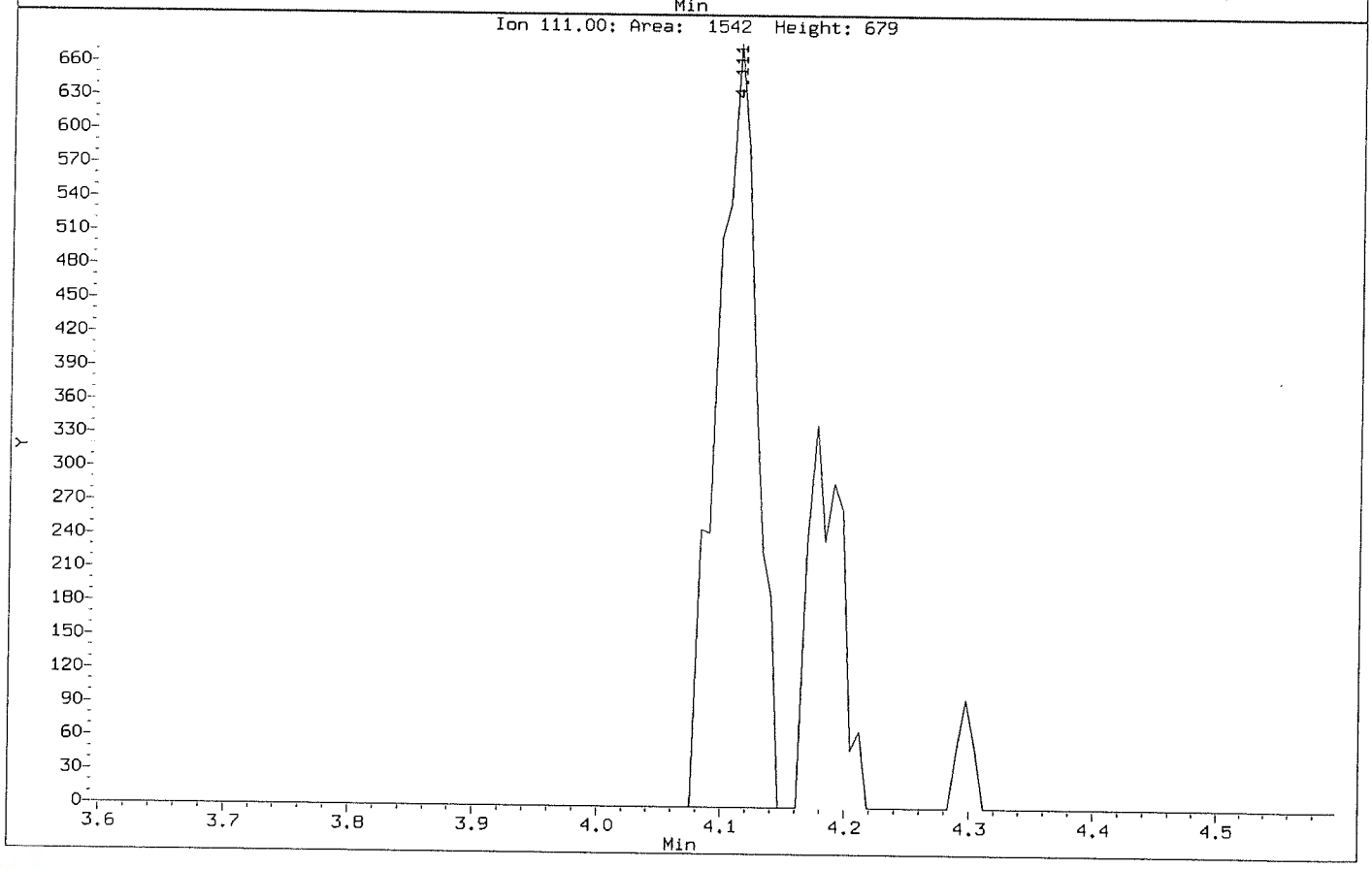




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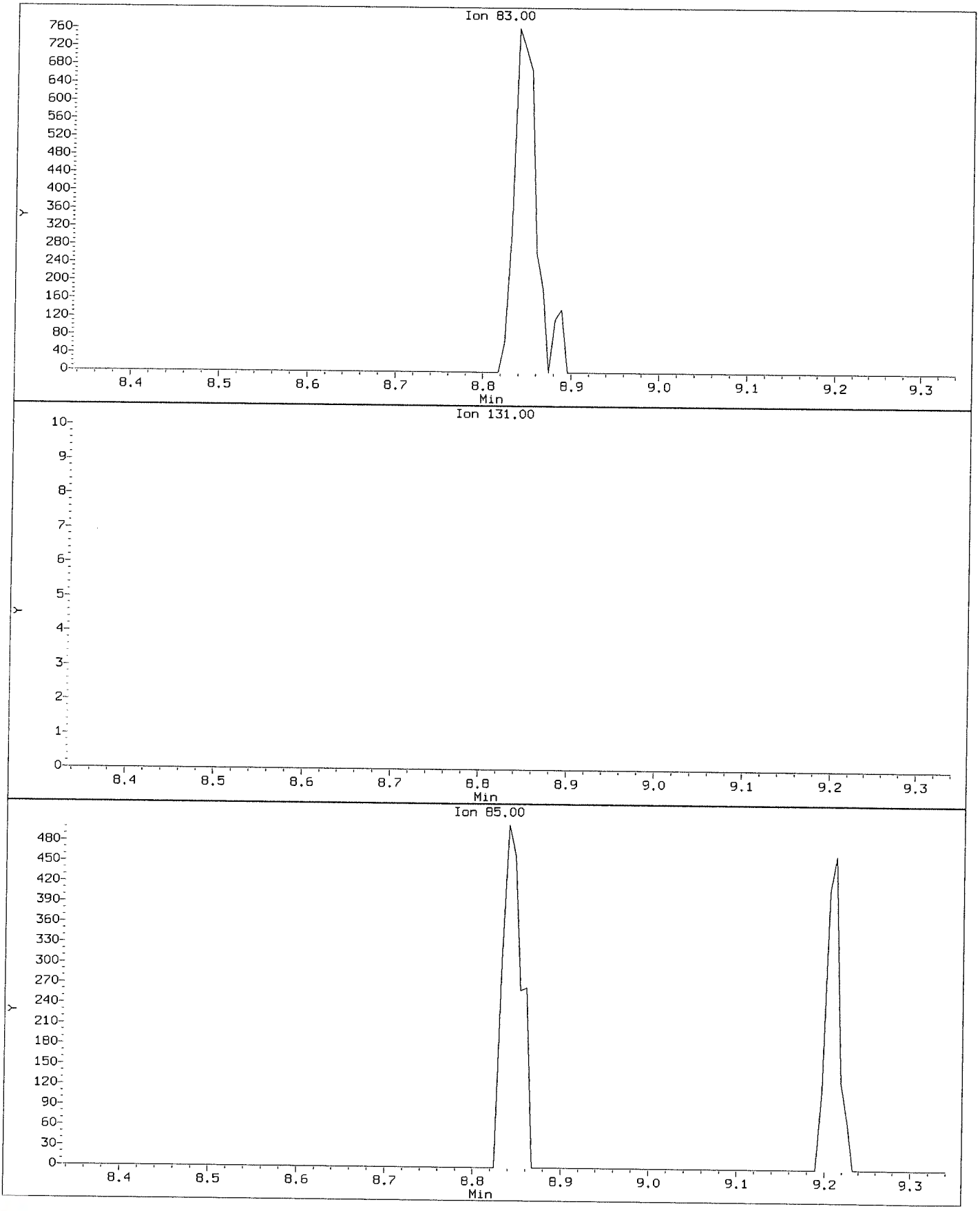
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CAS Number: 1868-53-7





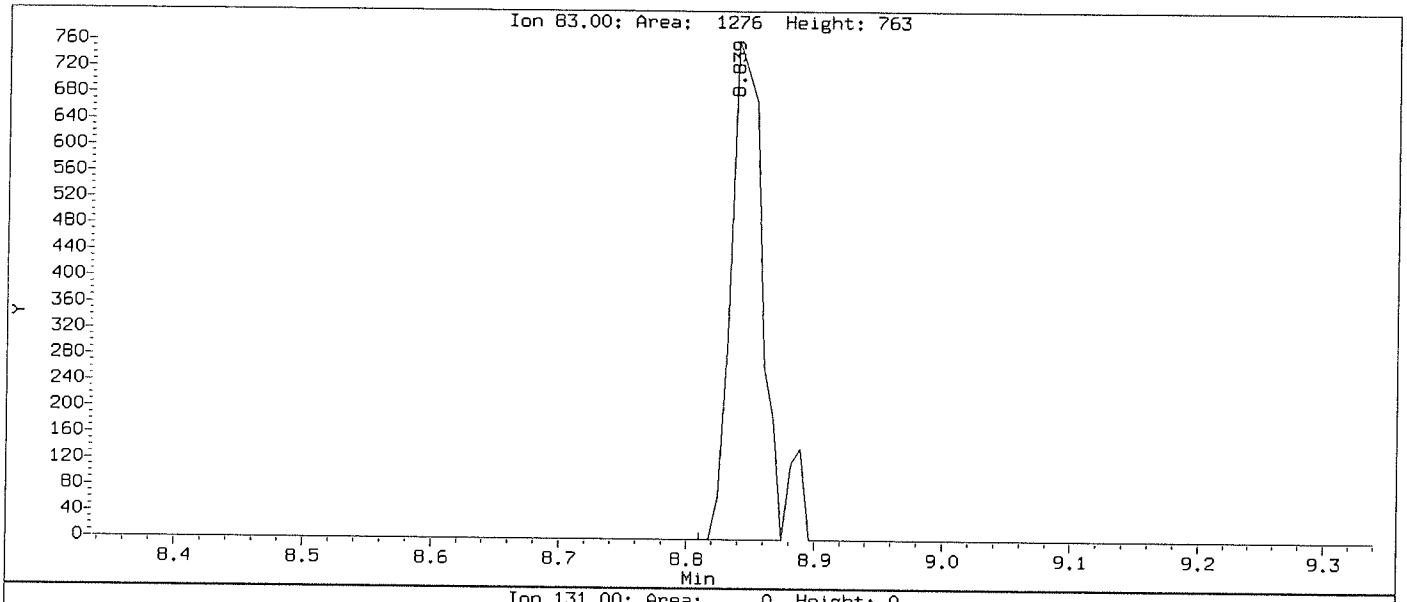
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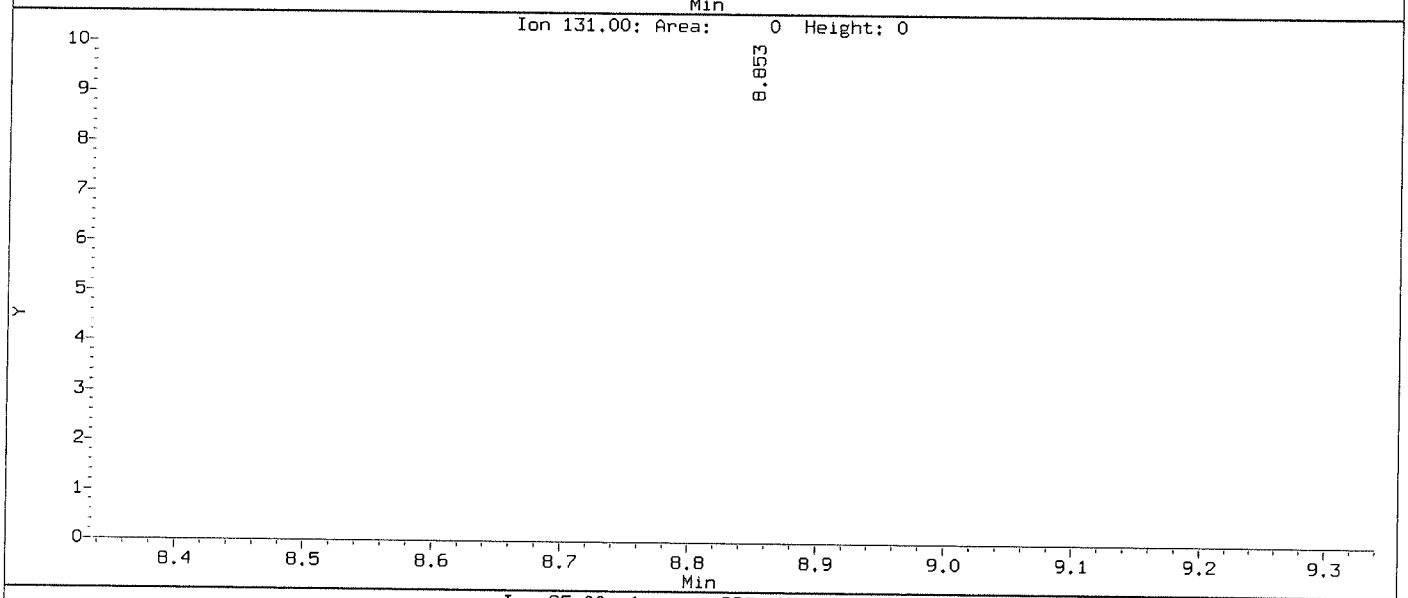
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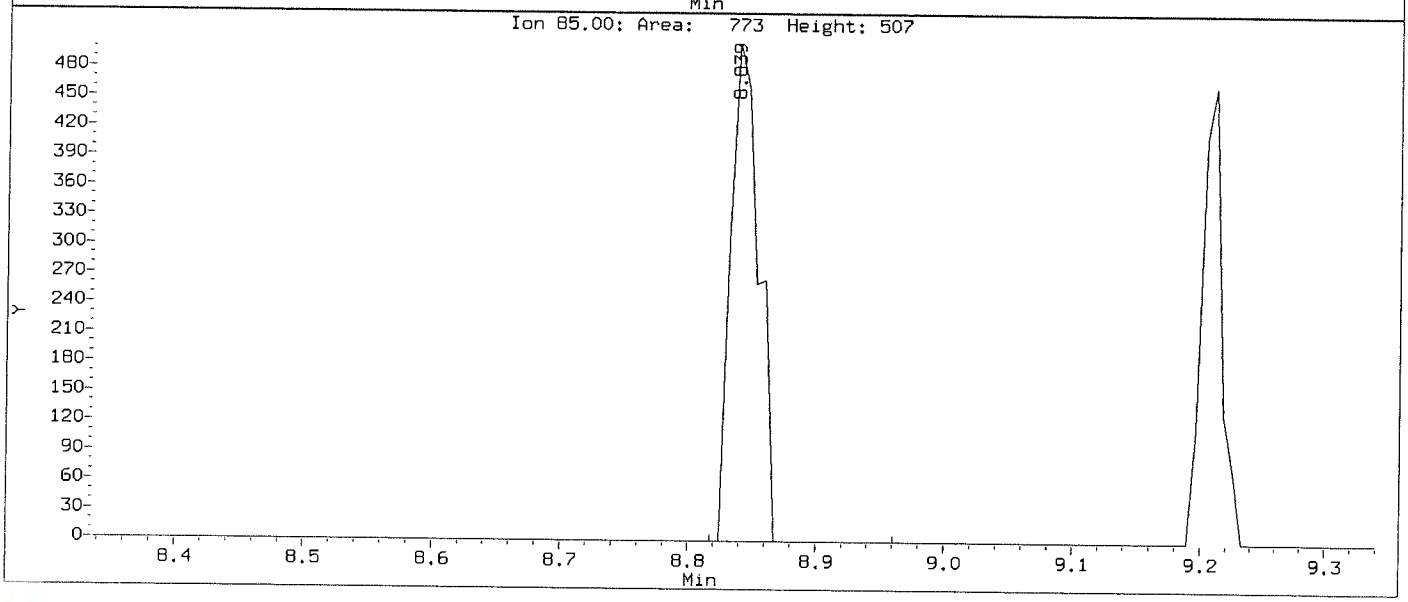


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Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,1,2,2-Tetrachloroethane
CAS Number: 79-34-5

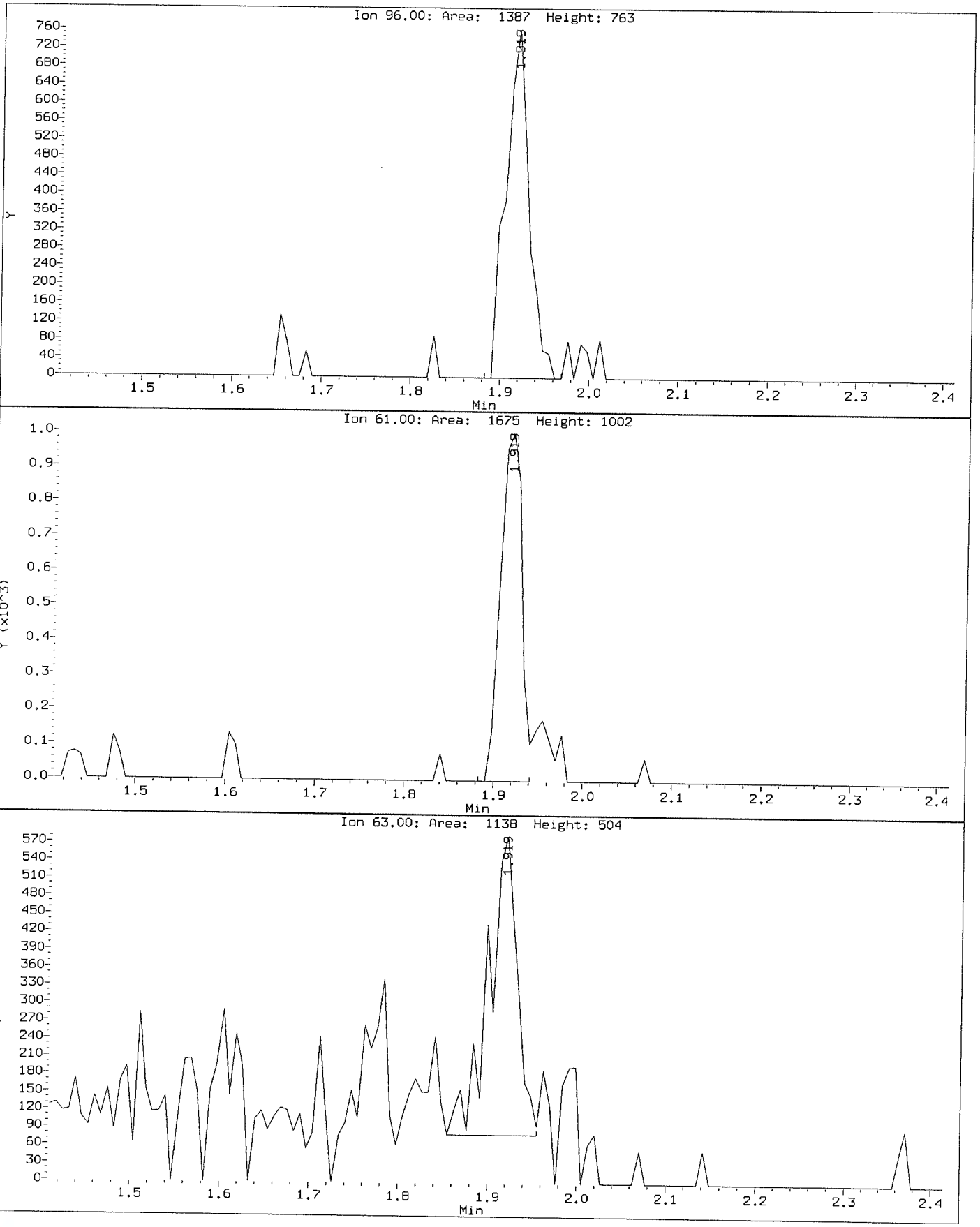






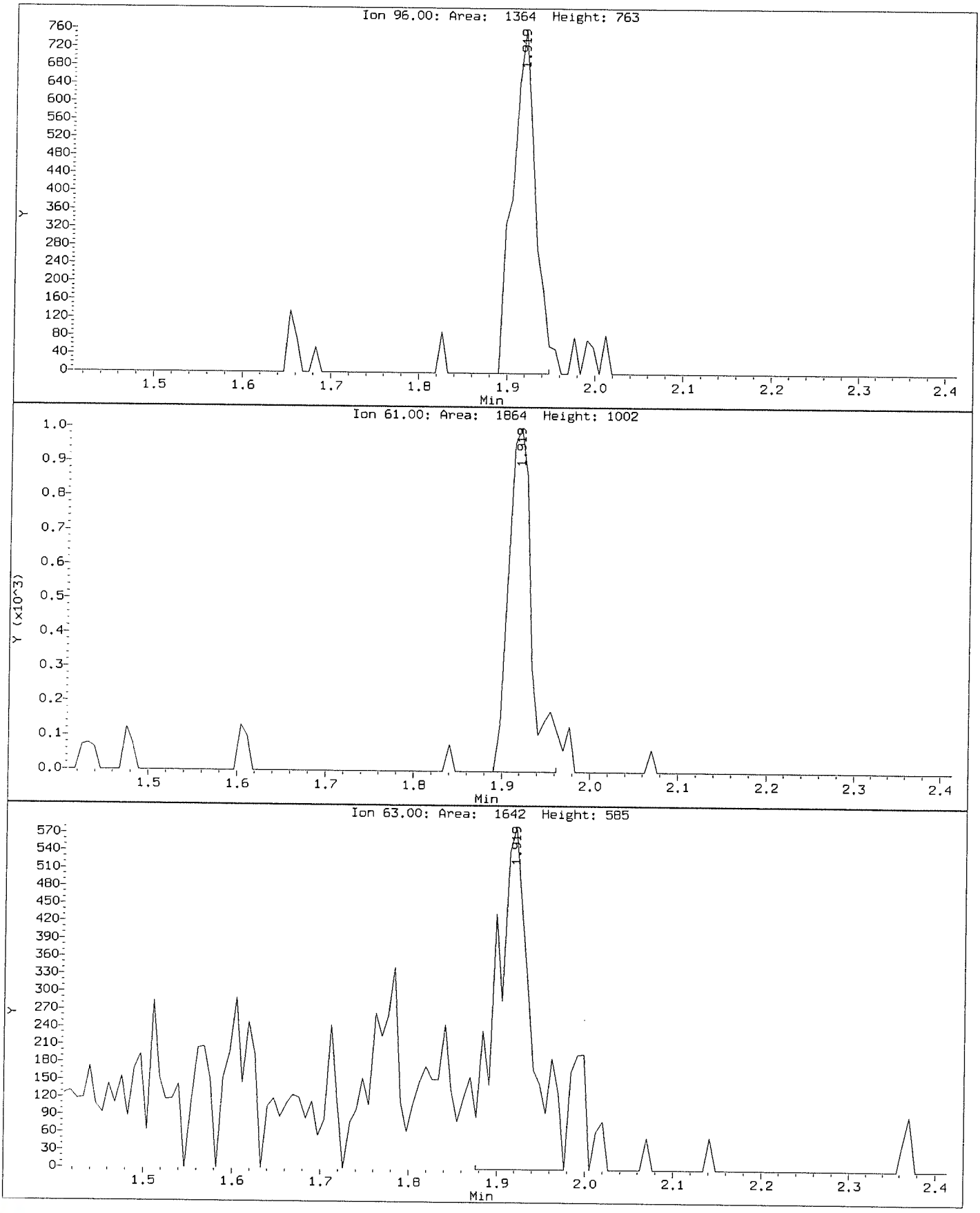
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Injection Date: 18-MAY-2021 11:43
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,1-Dichloroethene
CAS Number: 75-35-4



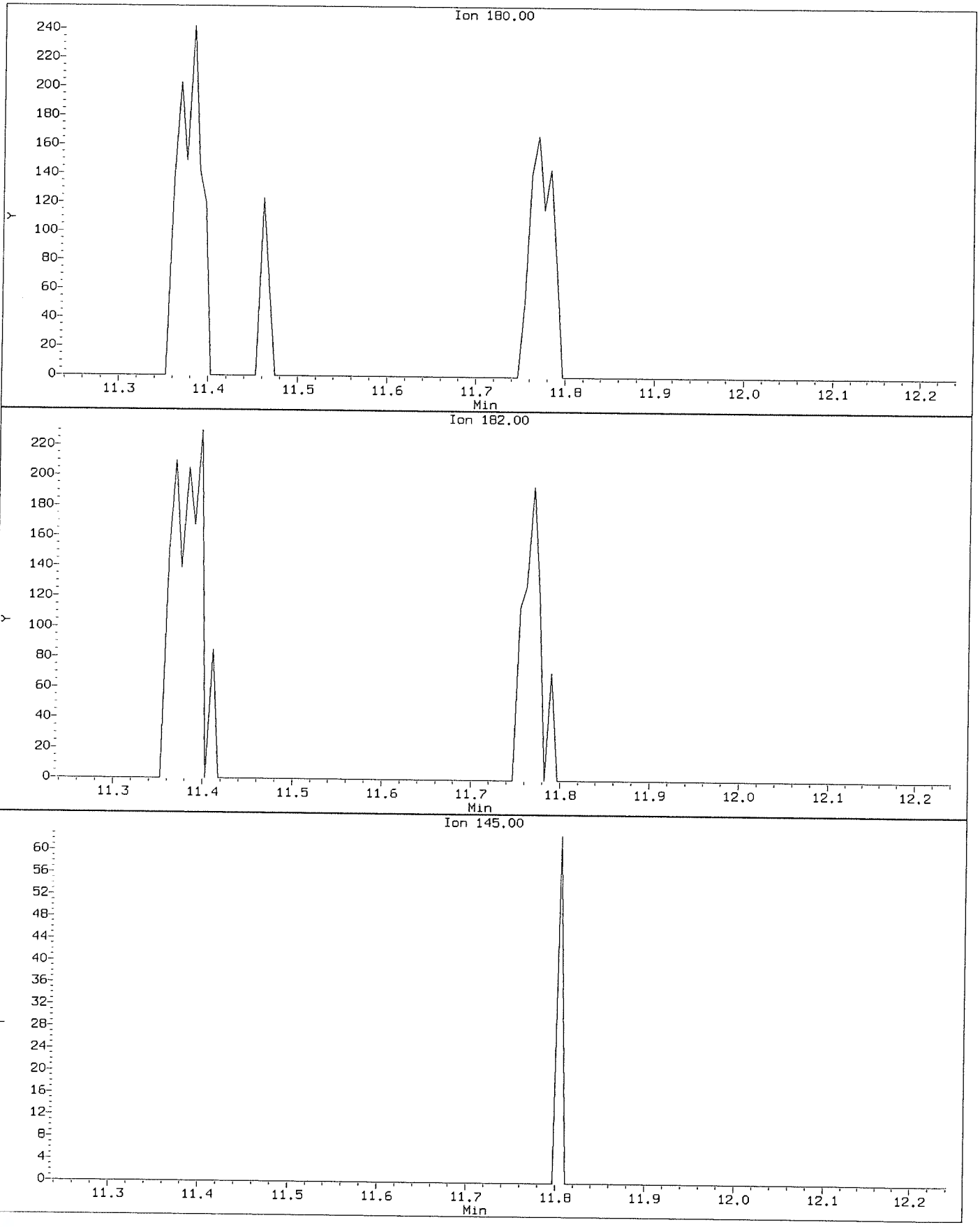
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Injection Date: 18-MAY-2021 11:43
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,1-Dichloroethene
CAS Number: 75-35-4



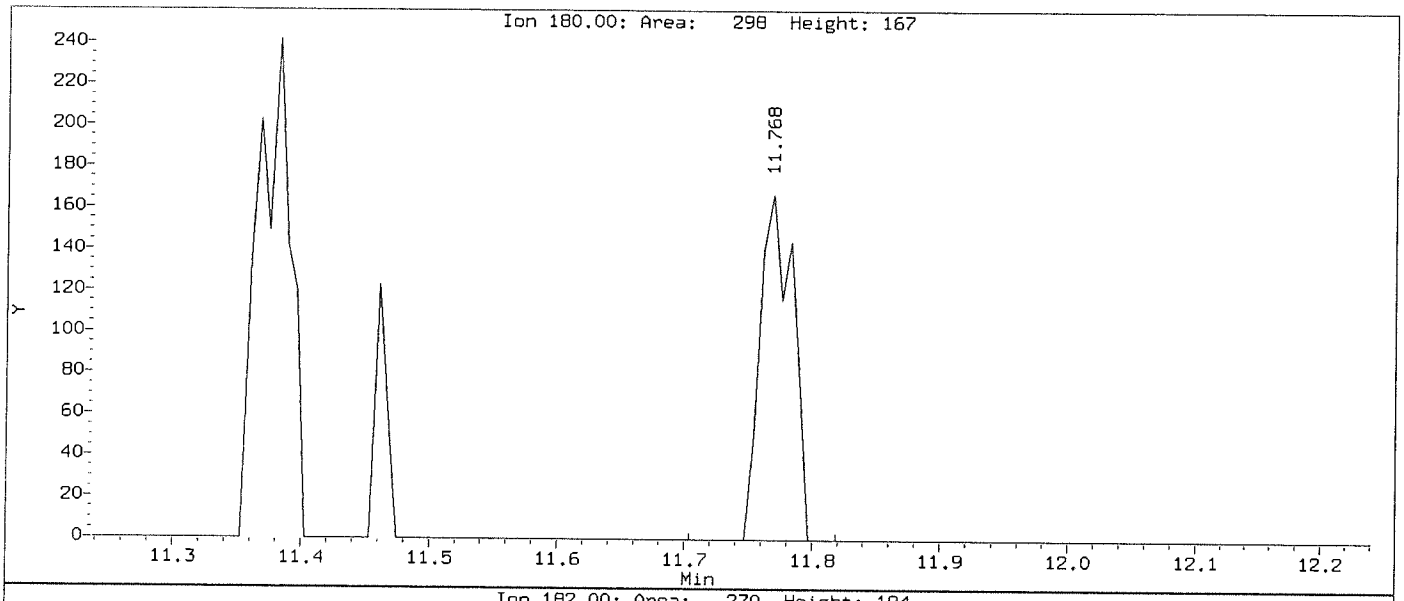
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Instrument: voa6.i
Client Sample ID: VSTD000.5

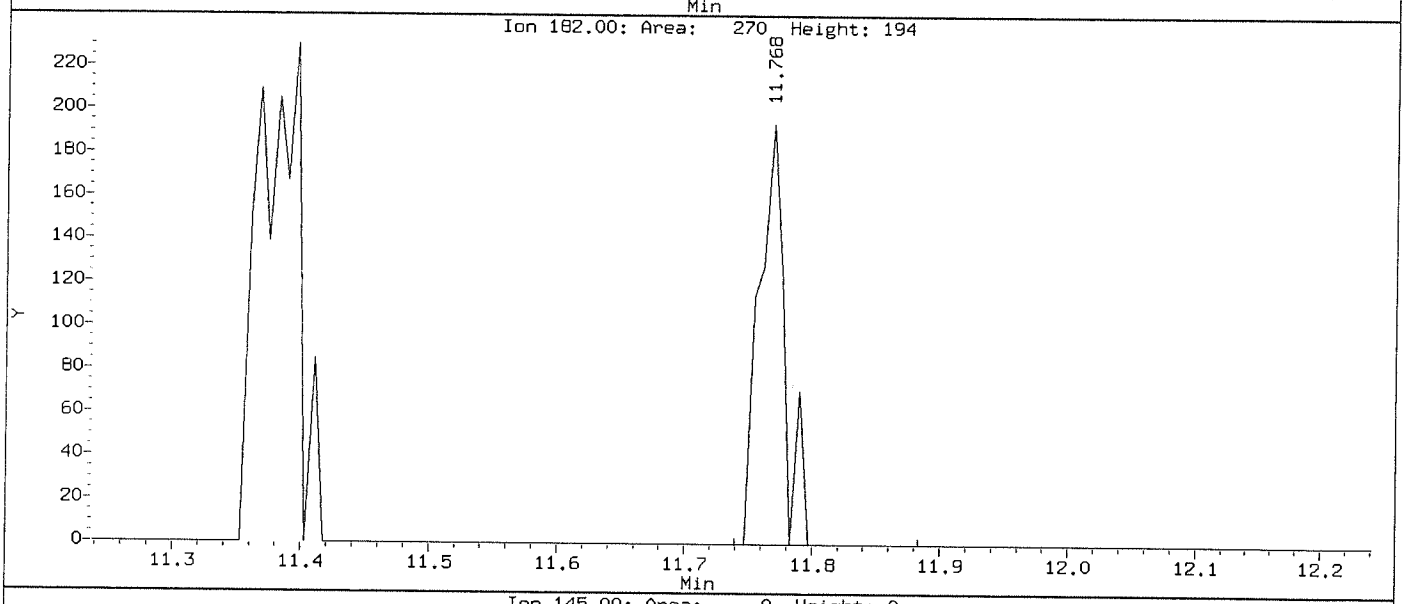
Compound: 1,2,3-Trichlorobenzene
CAS Number: 87-61-6

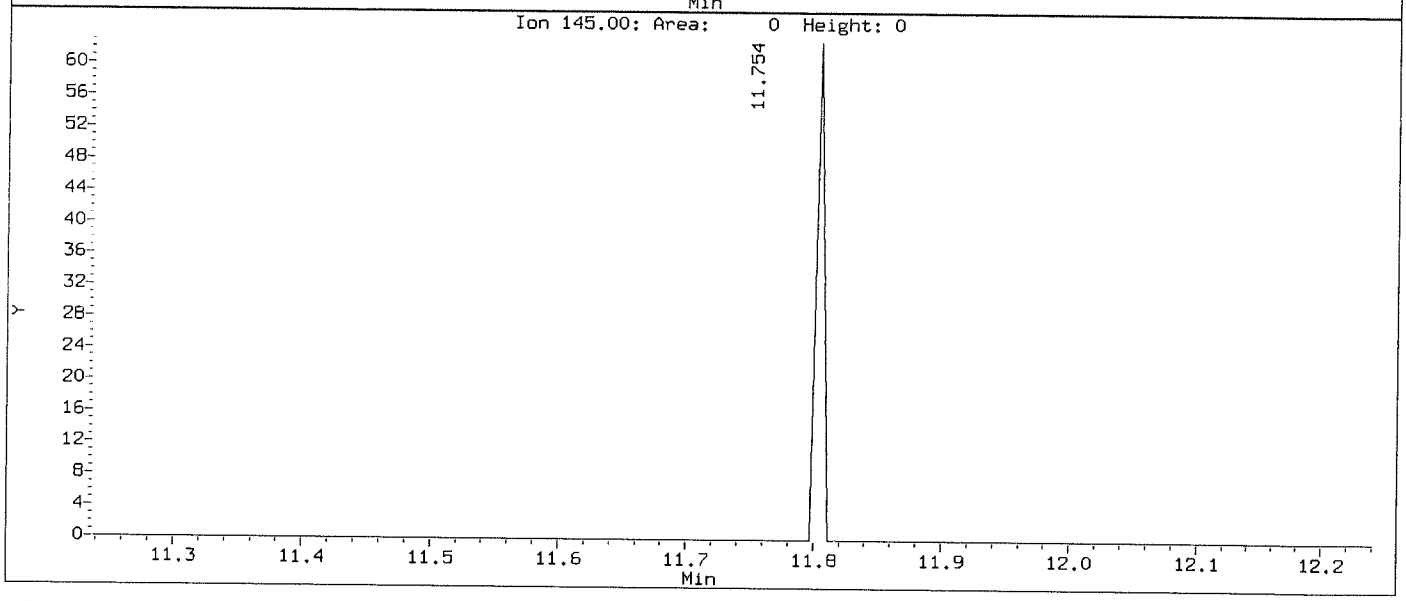


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Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2,3-Trichlorobenzene
CAS Number: 87-61-6

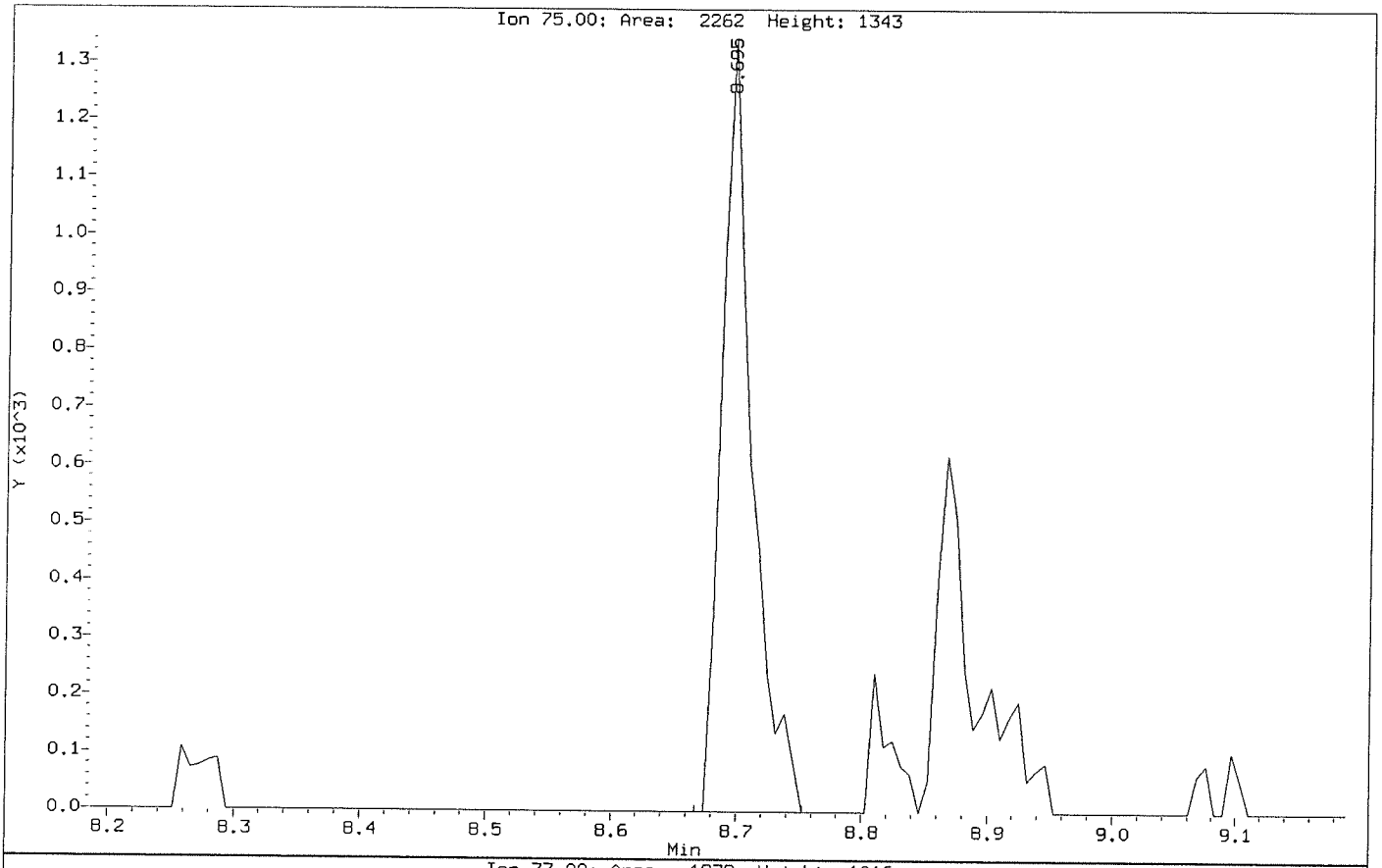


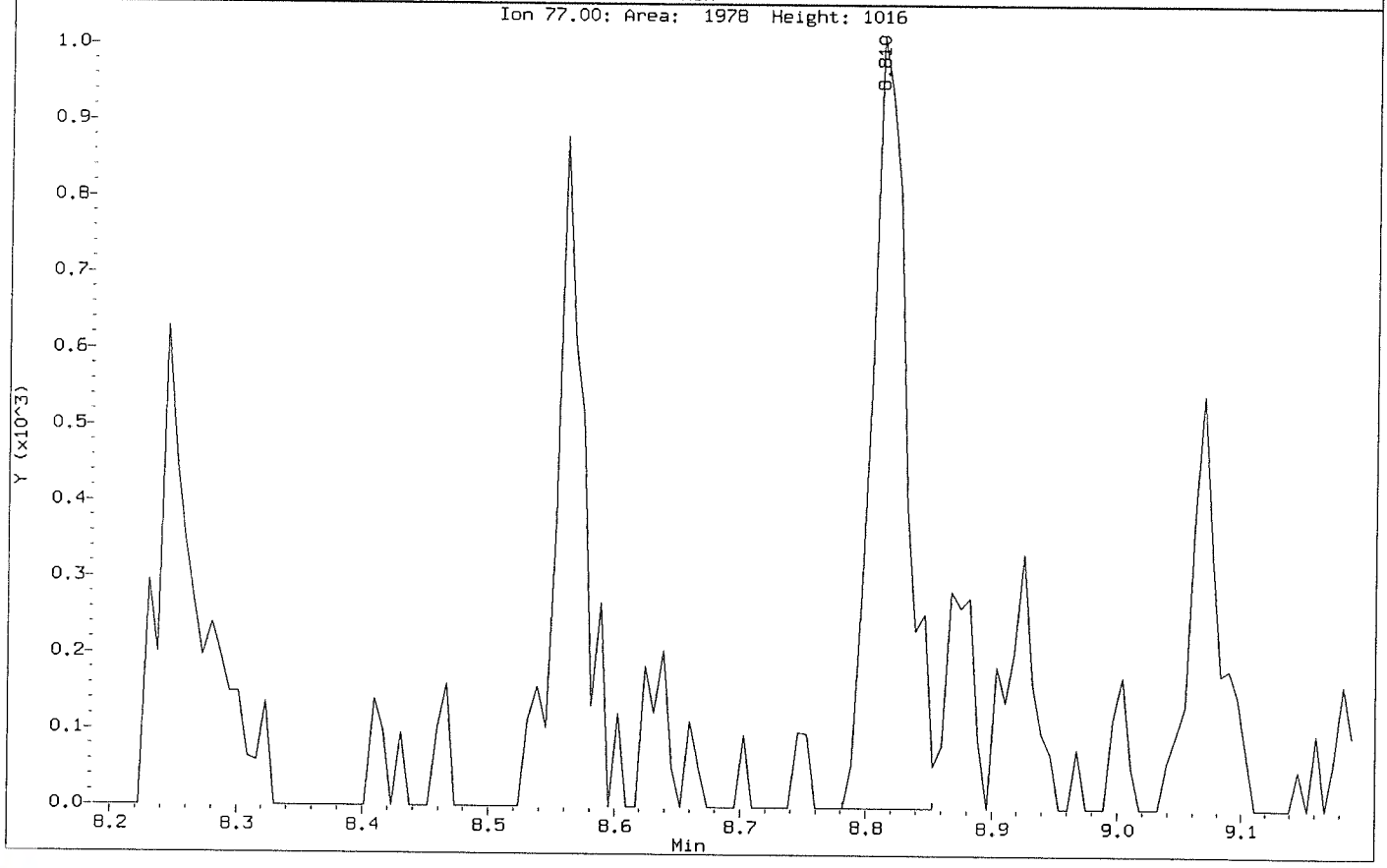




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Injection Date: 18-MAY-2021 11:43
Instrument: voa6.i
Client Sample ID: VSTD000.5

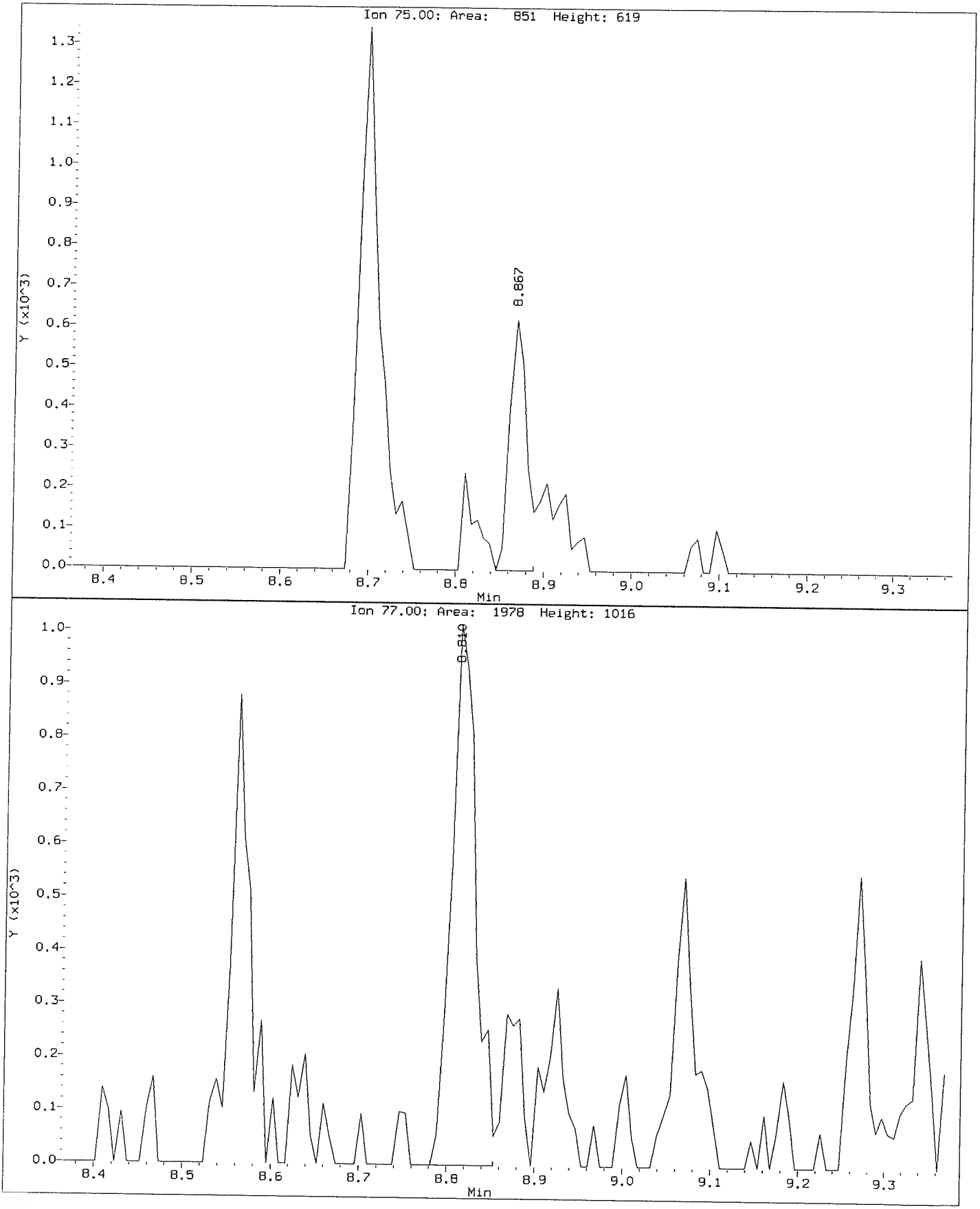
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





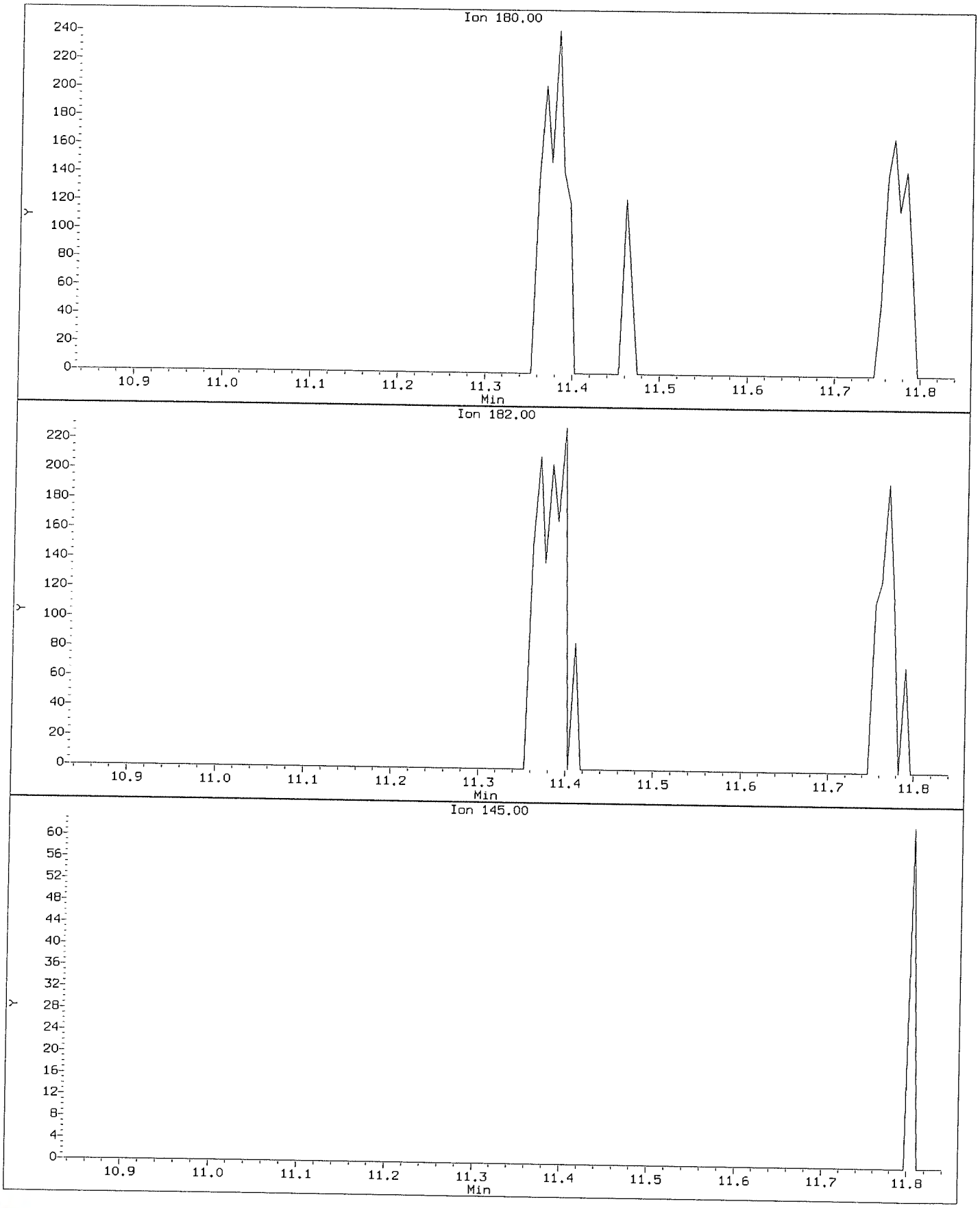
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Injection Date: 18-MAY-2021 11:43
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



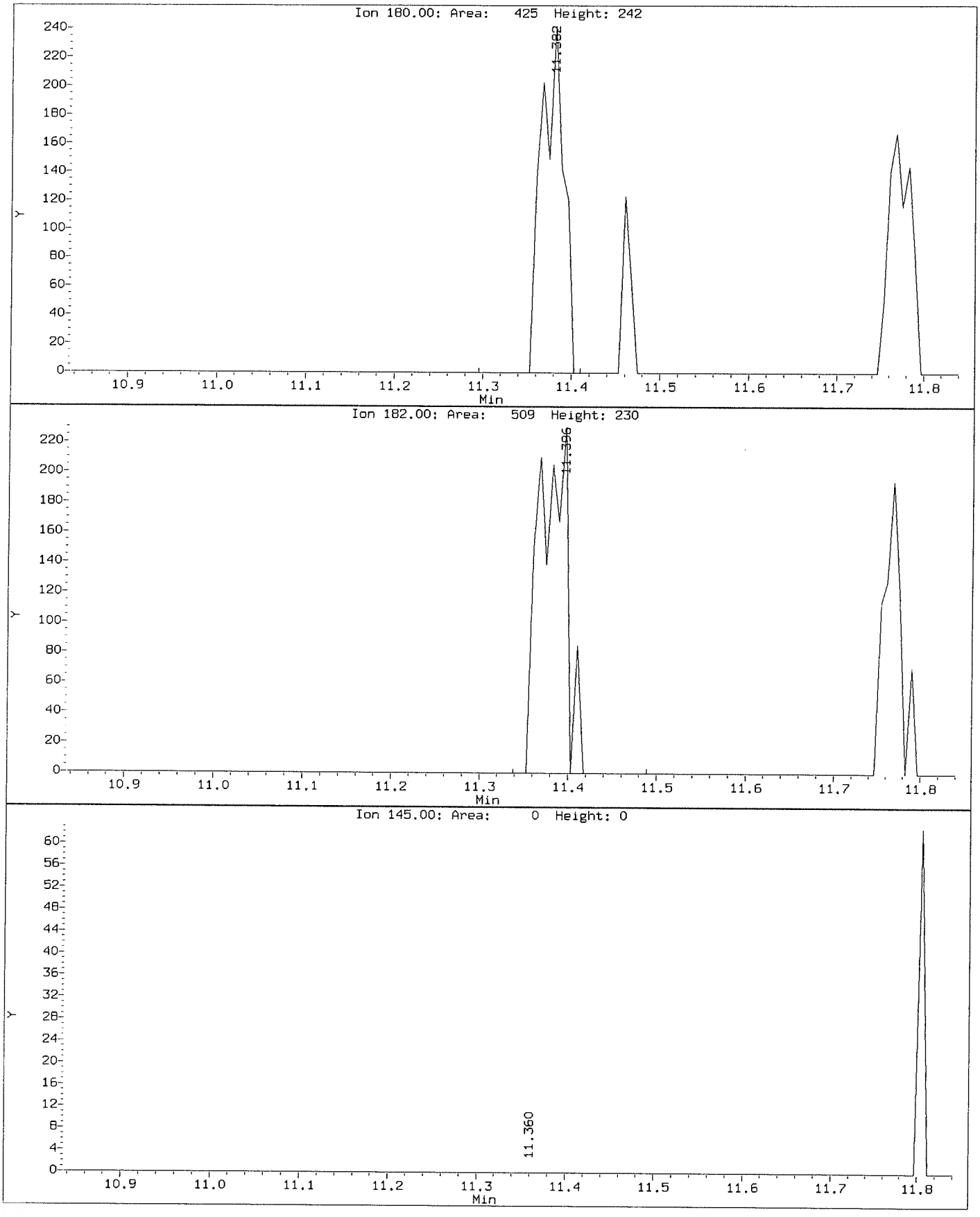
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Injection Date: 18-MAY-2021 11:43
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2,4-Trichlorobenzene
CAS Number: 120-82-1



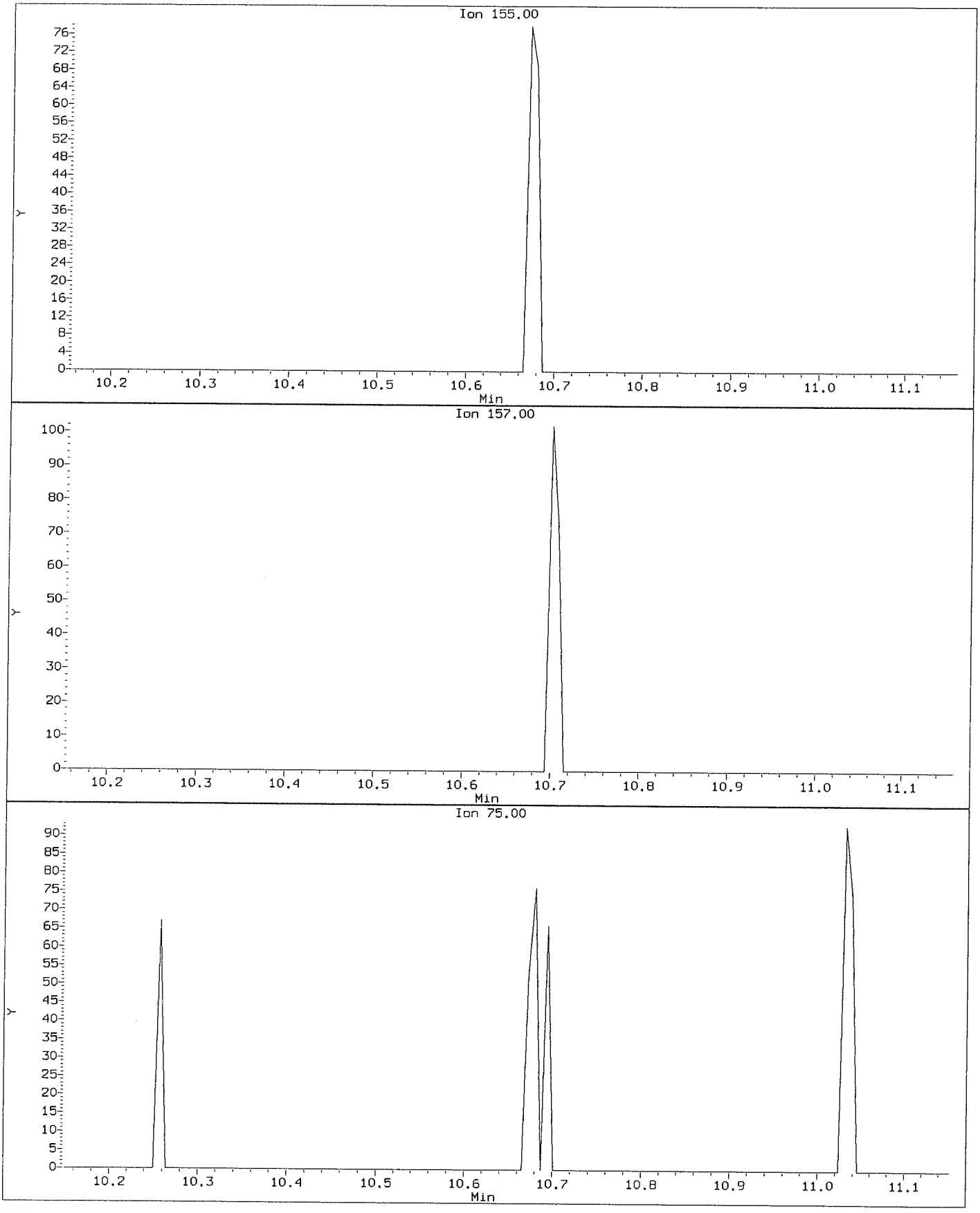
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Injection Date: 18-MAY-2021 11:43
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2,4-Trichlorobenzene
CAS Number: 120-82-1



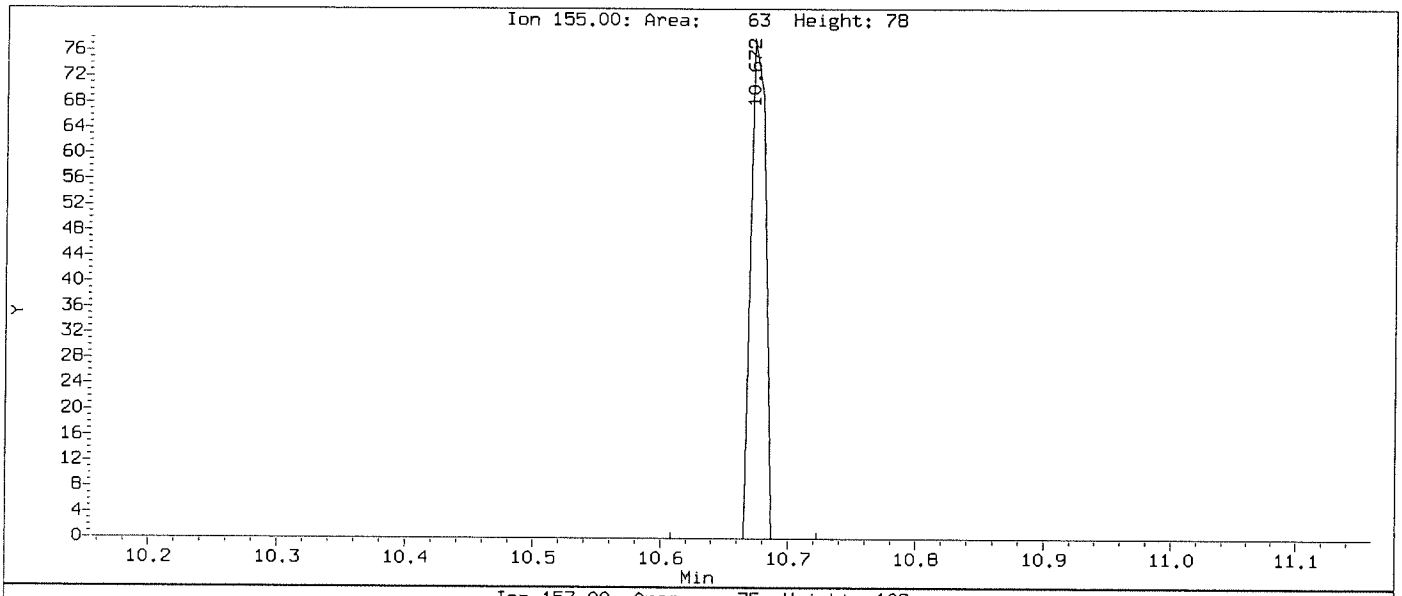
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Instrument: voa6.i
Client Sample ID: VSTD000.5

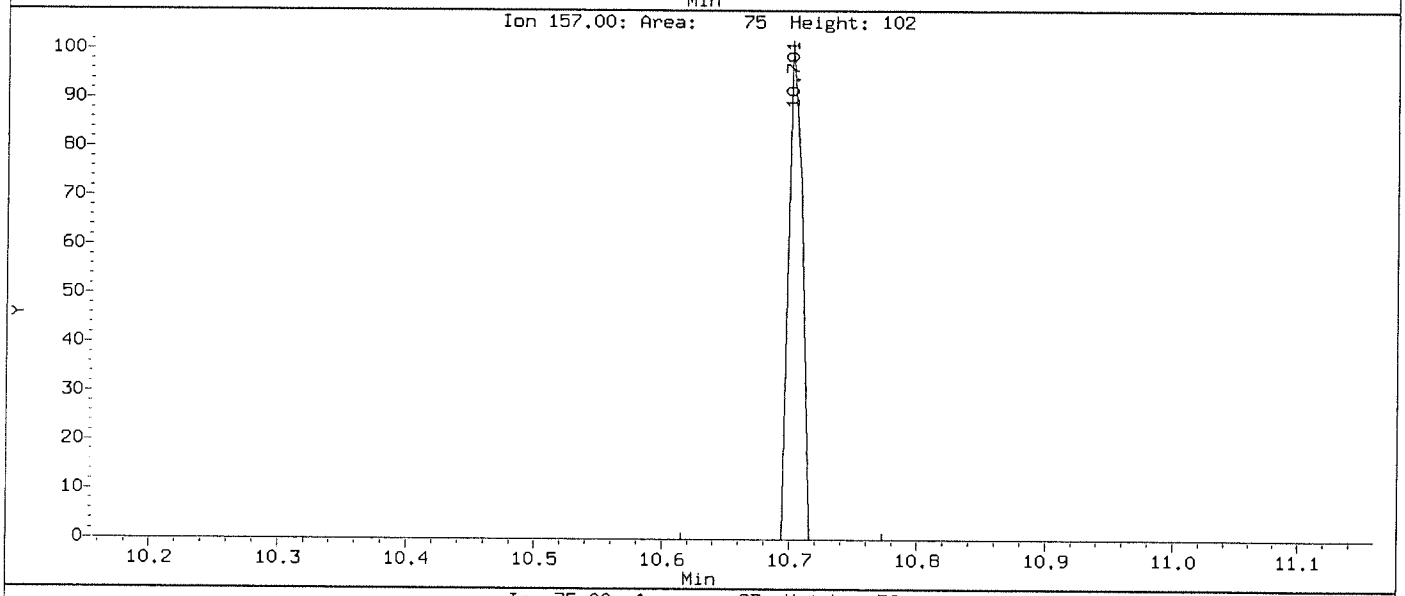
Compound: 1,2-Dibromo-3-Chloropropane
CAS Number: 96-12-8

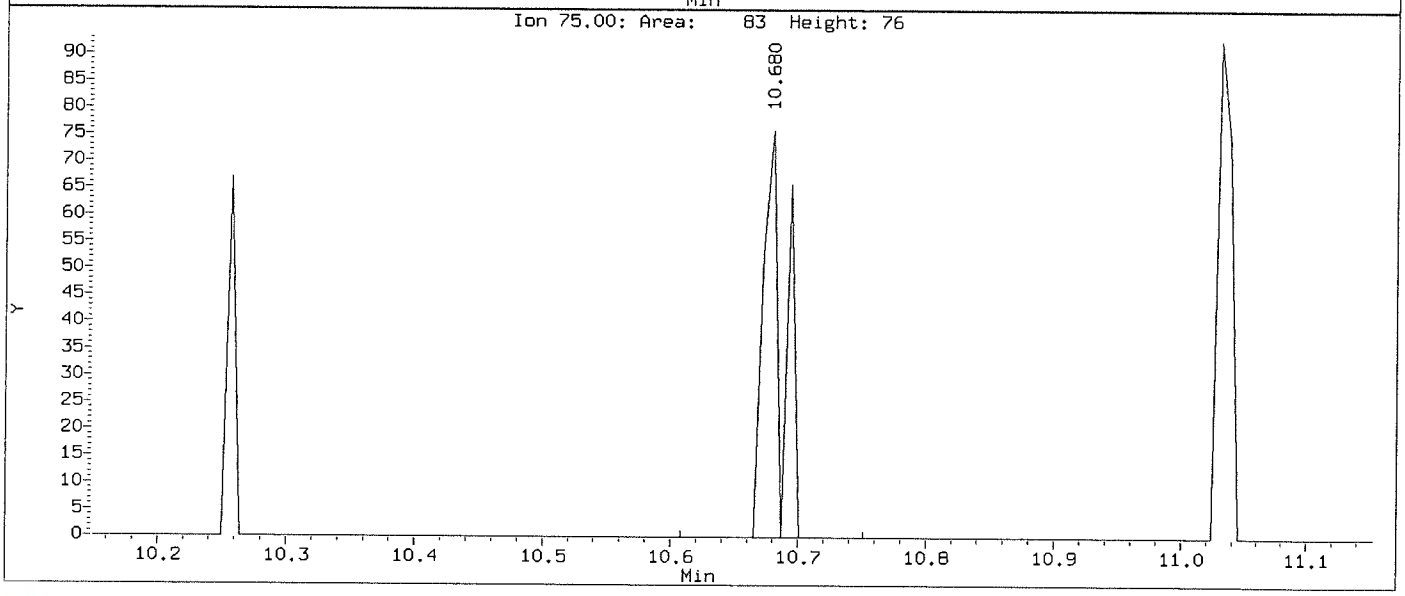


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Injection Date: 18-MAY-2021 11:43
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2-Dibromo-3-Chloropropane
CAS Number: 96-12-8

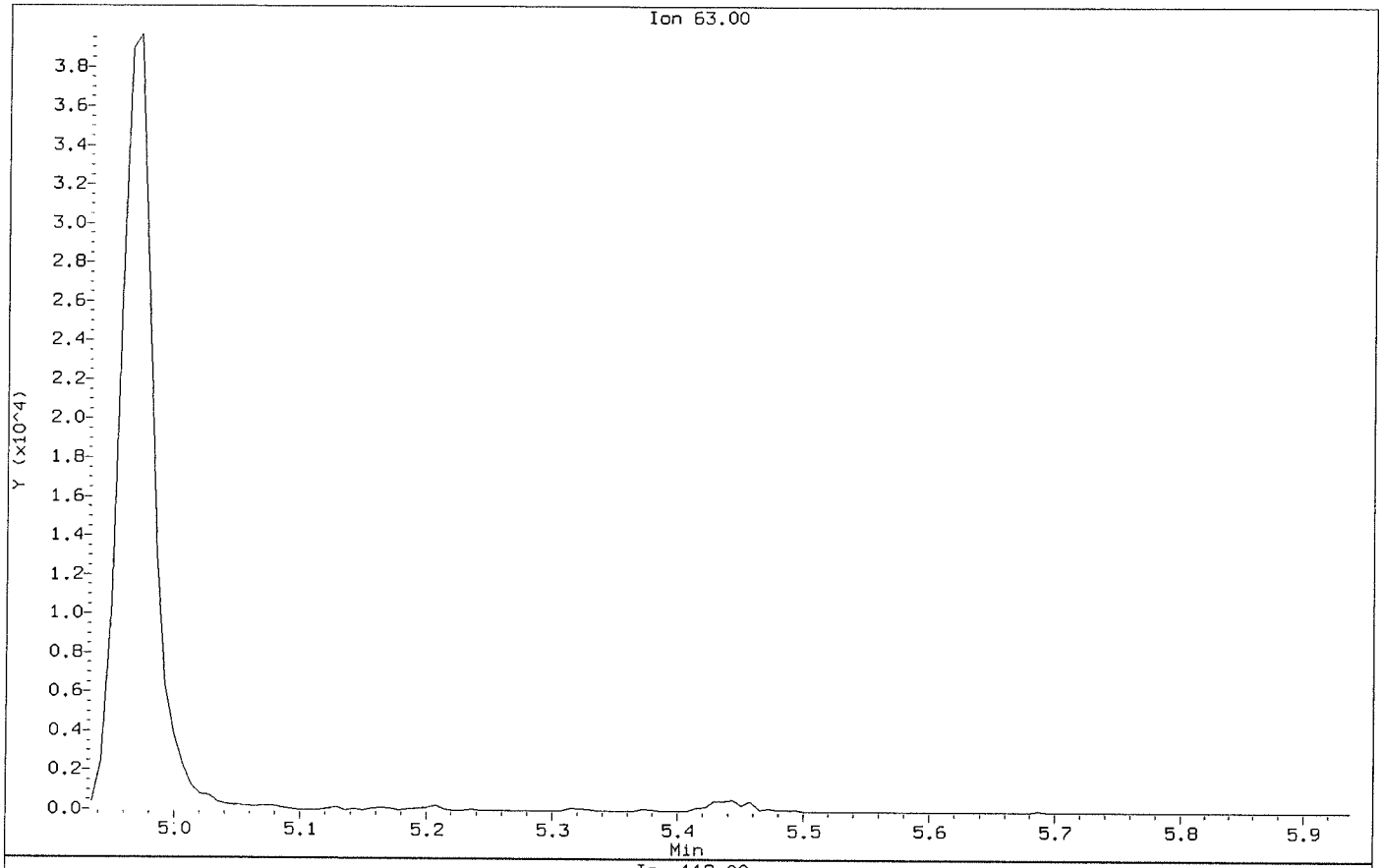


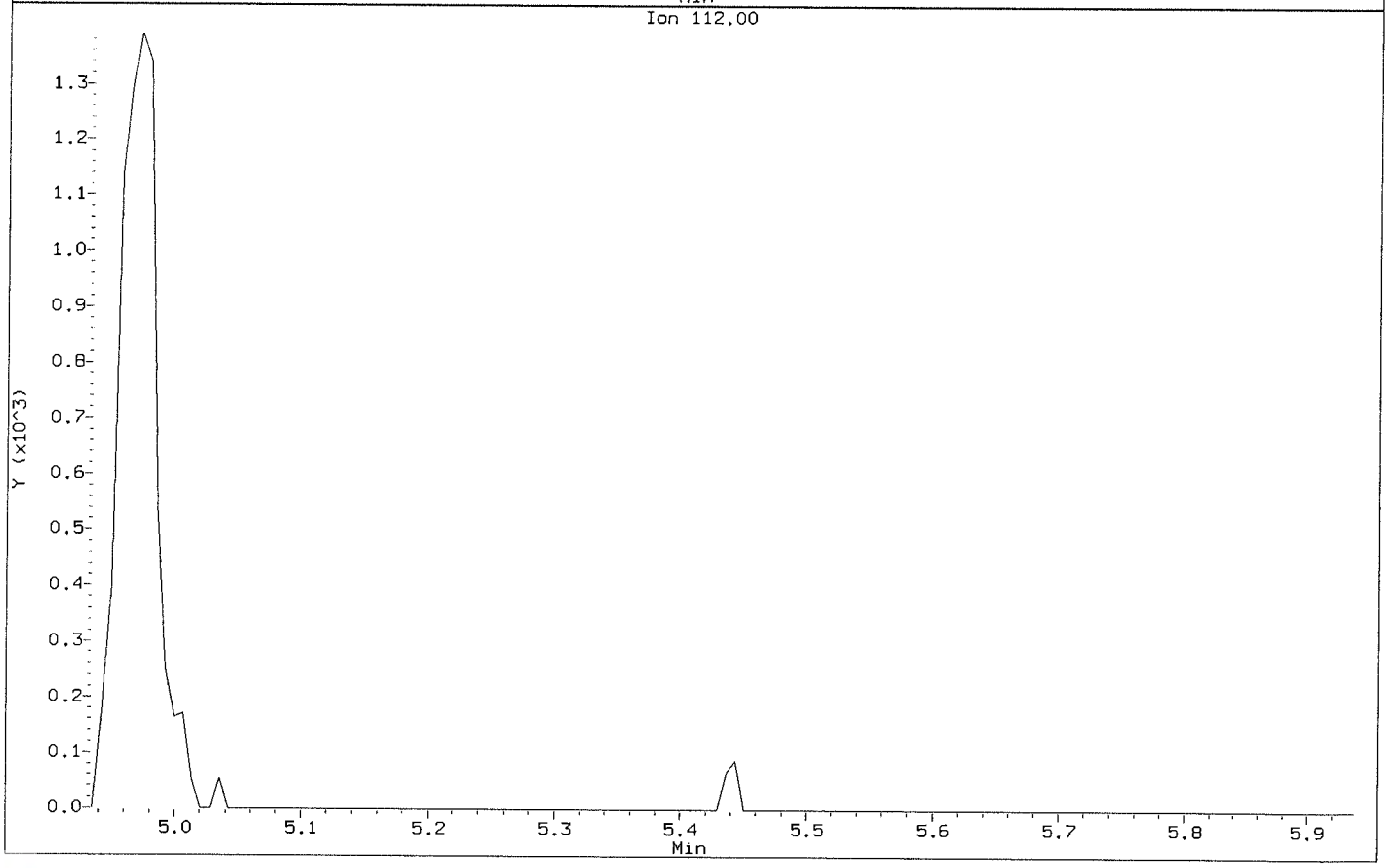




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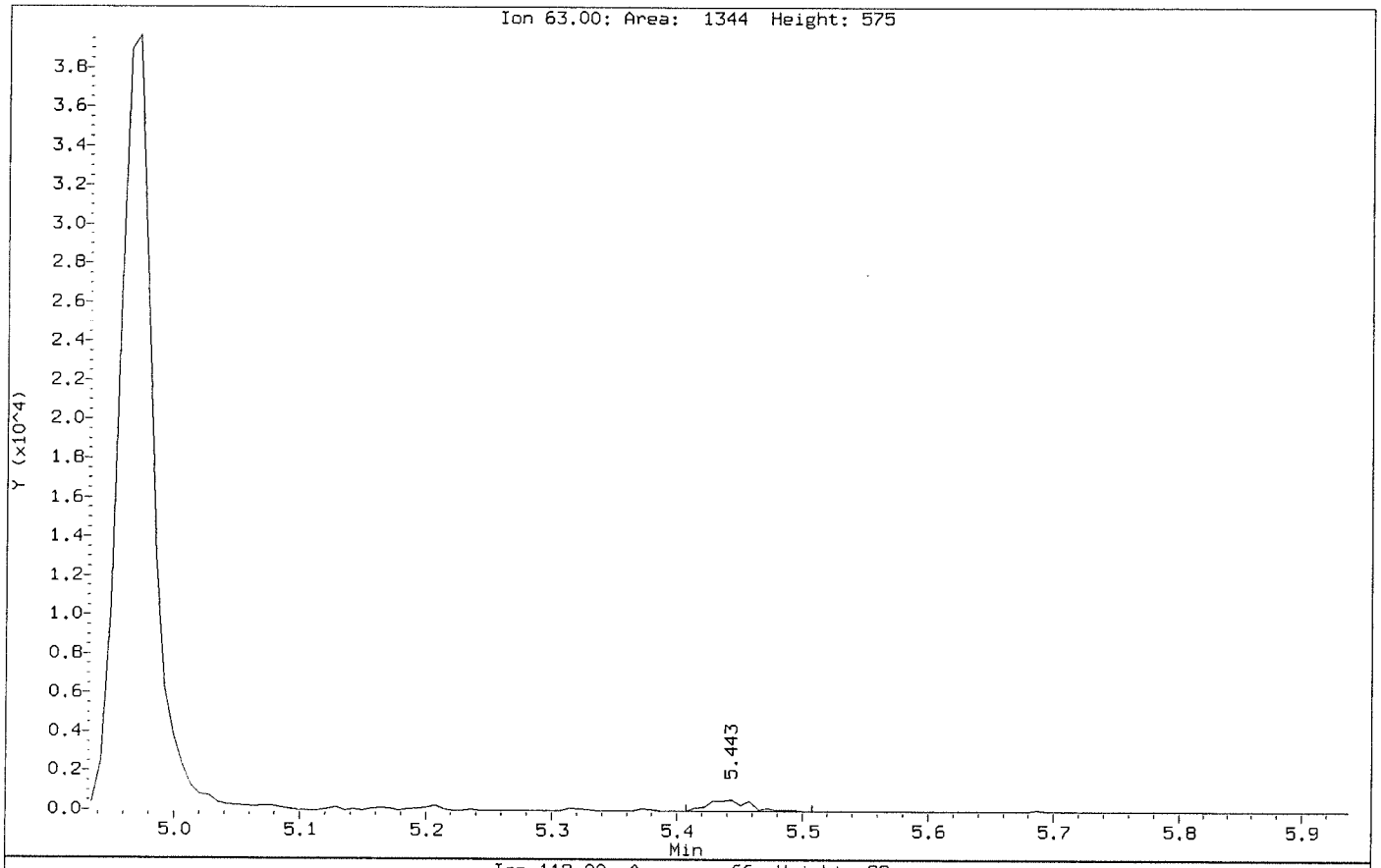
Compound: 1,2-Dichloropropane
CAS Number: 78-87-5

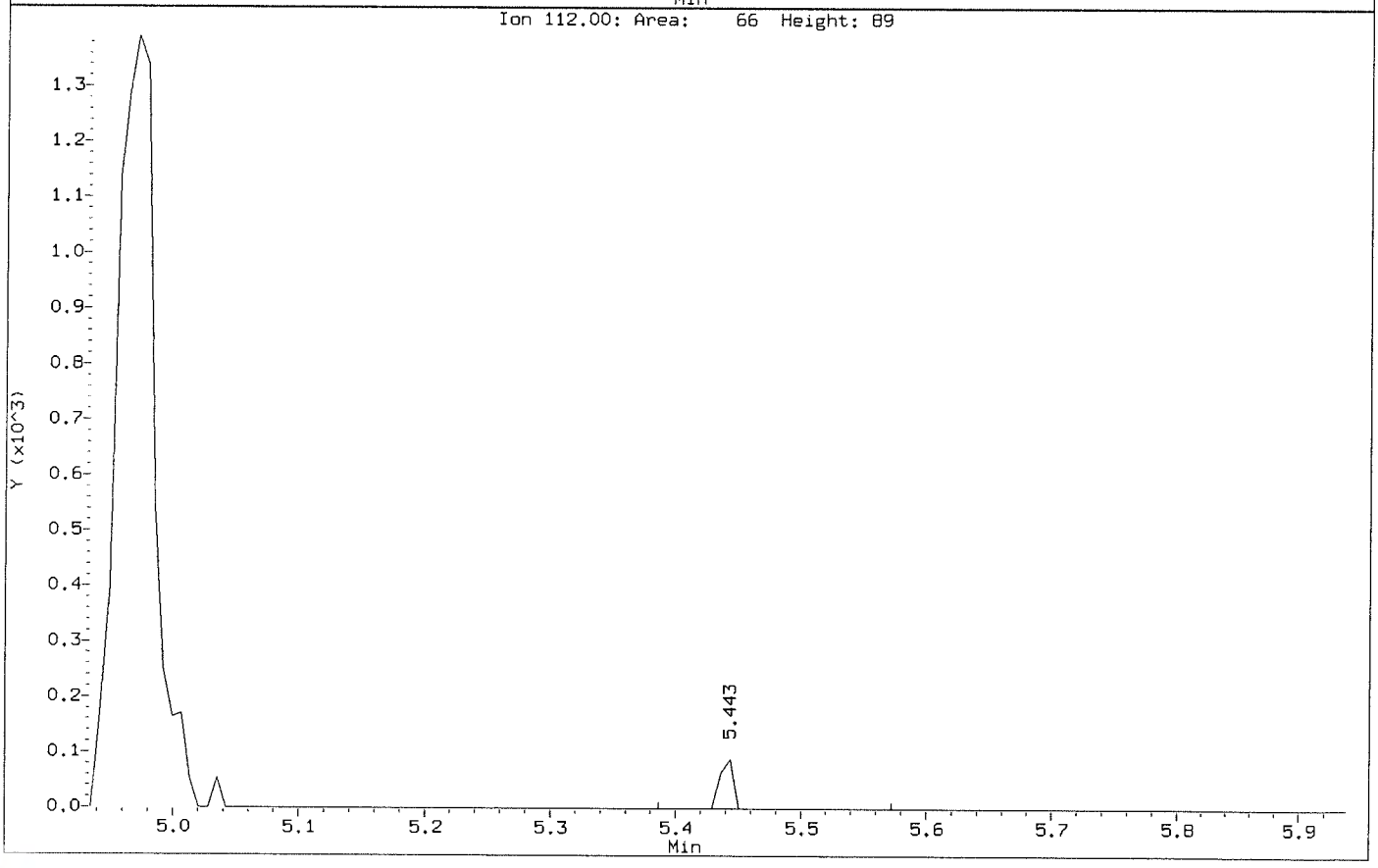




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Instrument: voa6.i
Client Sample ID: VSTD000.5

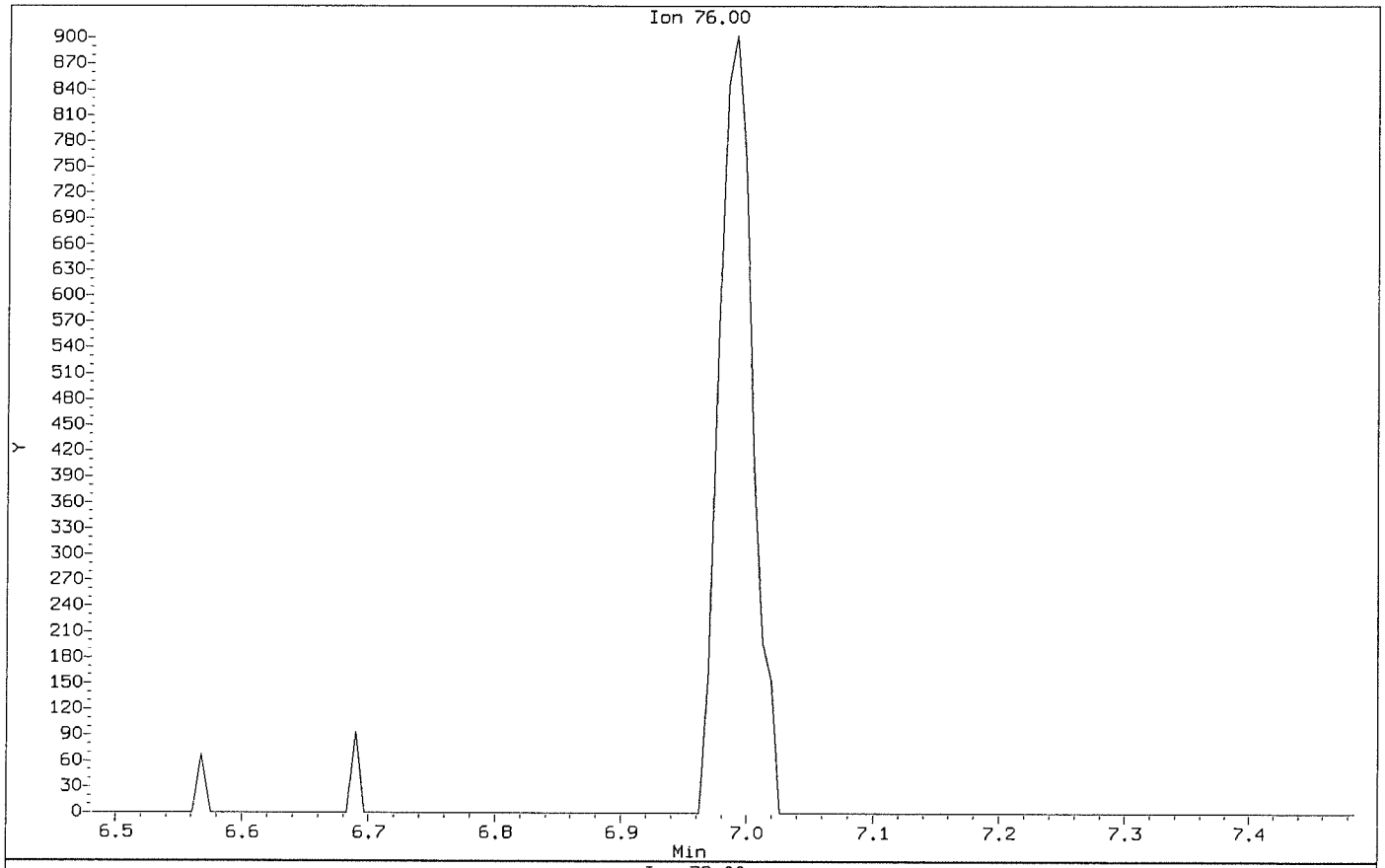
Compound: 1,2-Dichloropropane
CAS Number: 78-87-5

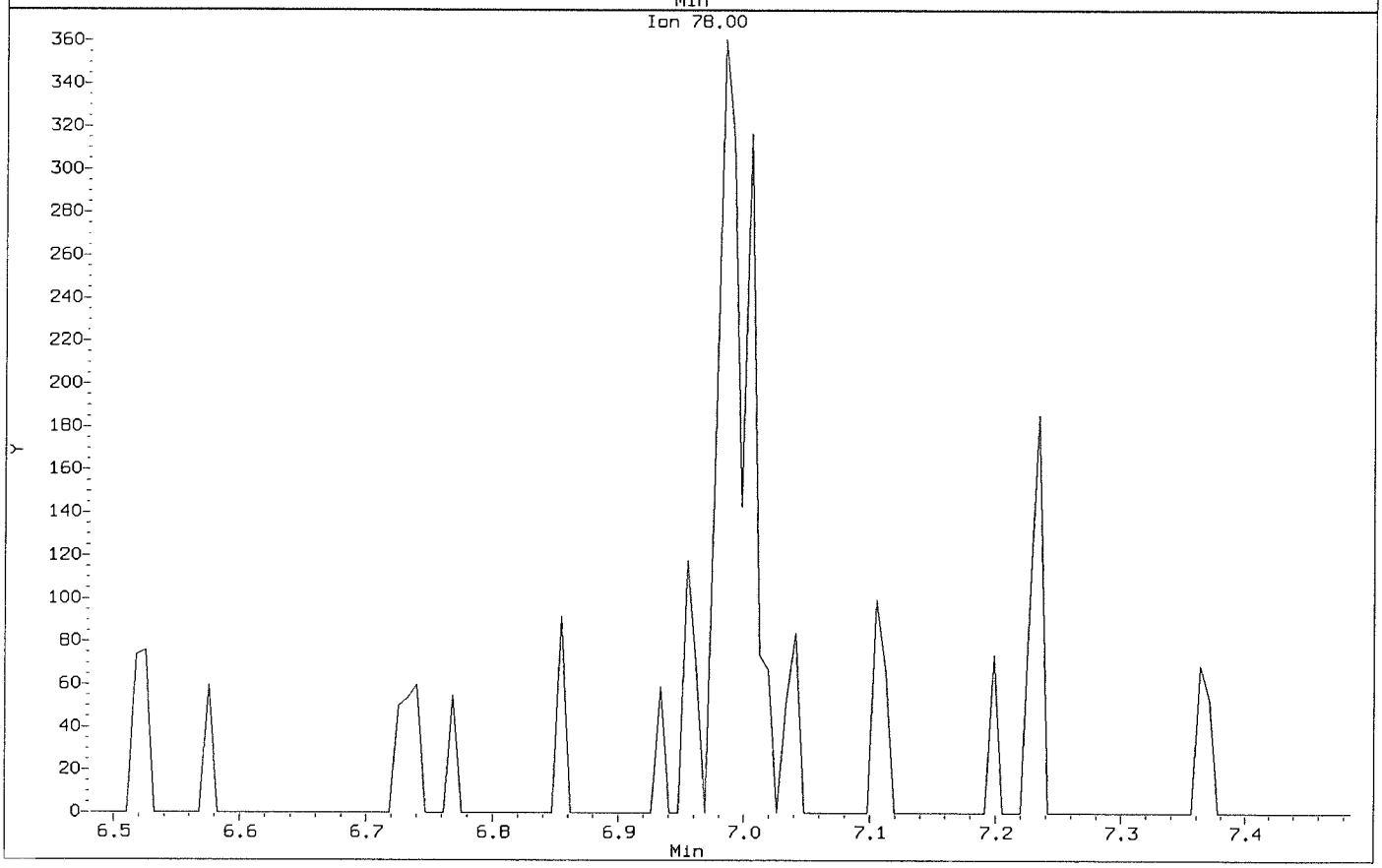




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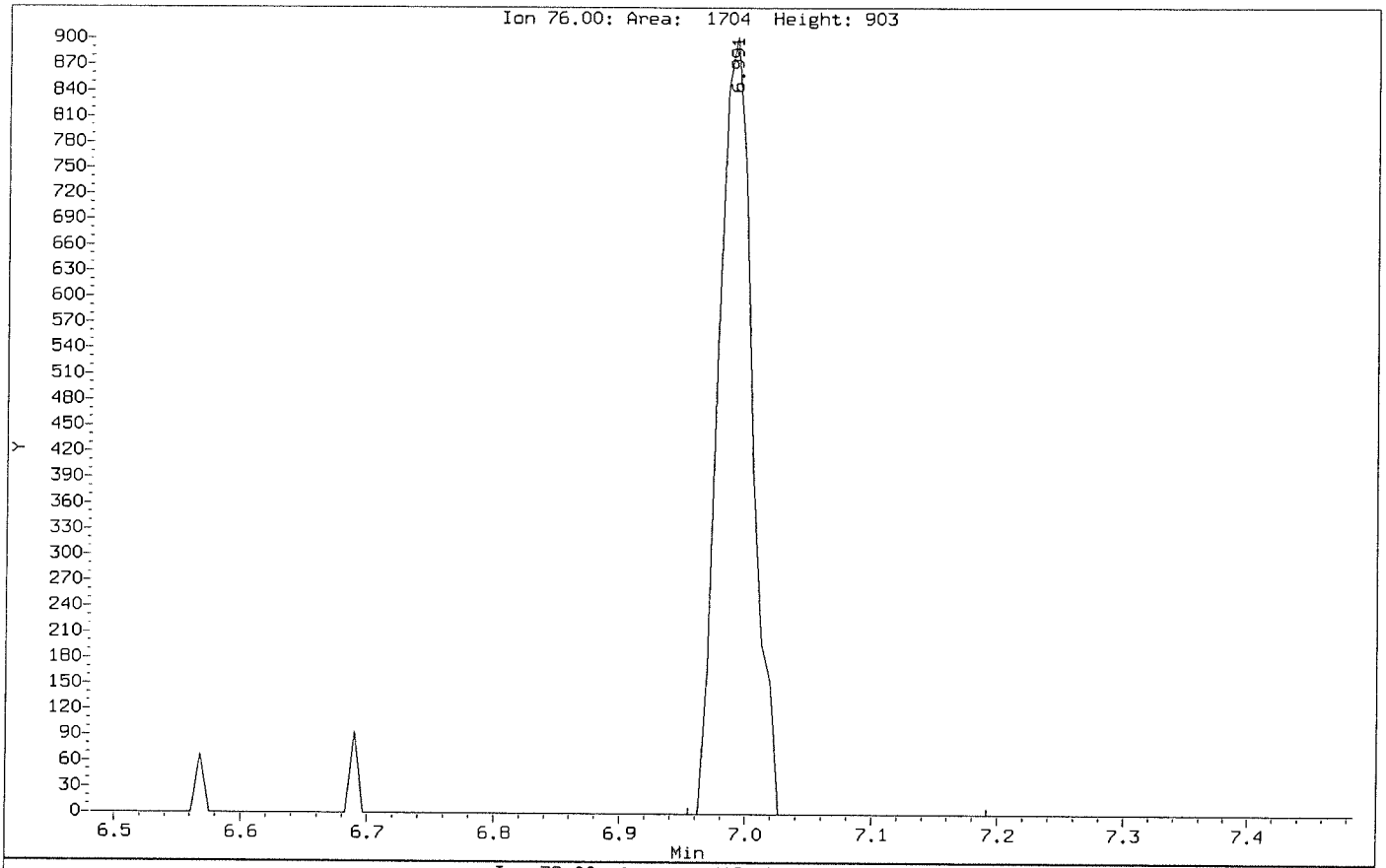
Compound: 1,3-Dichloropropane
CAS Number: 142-28-9

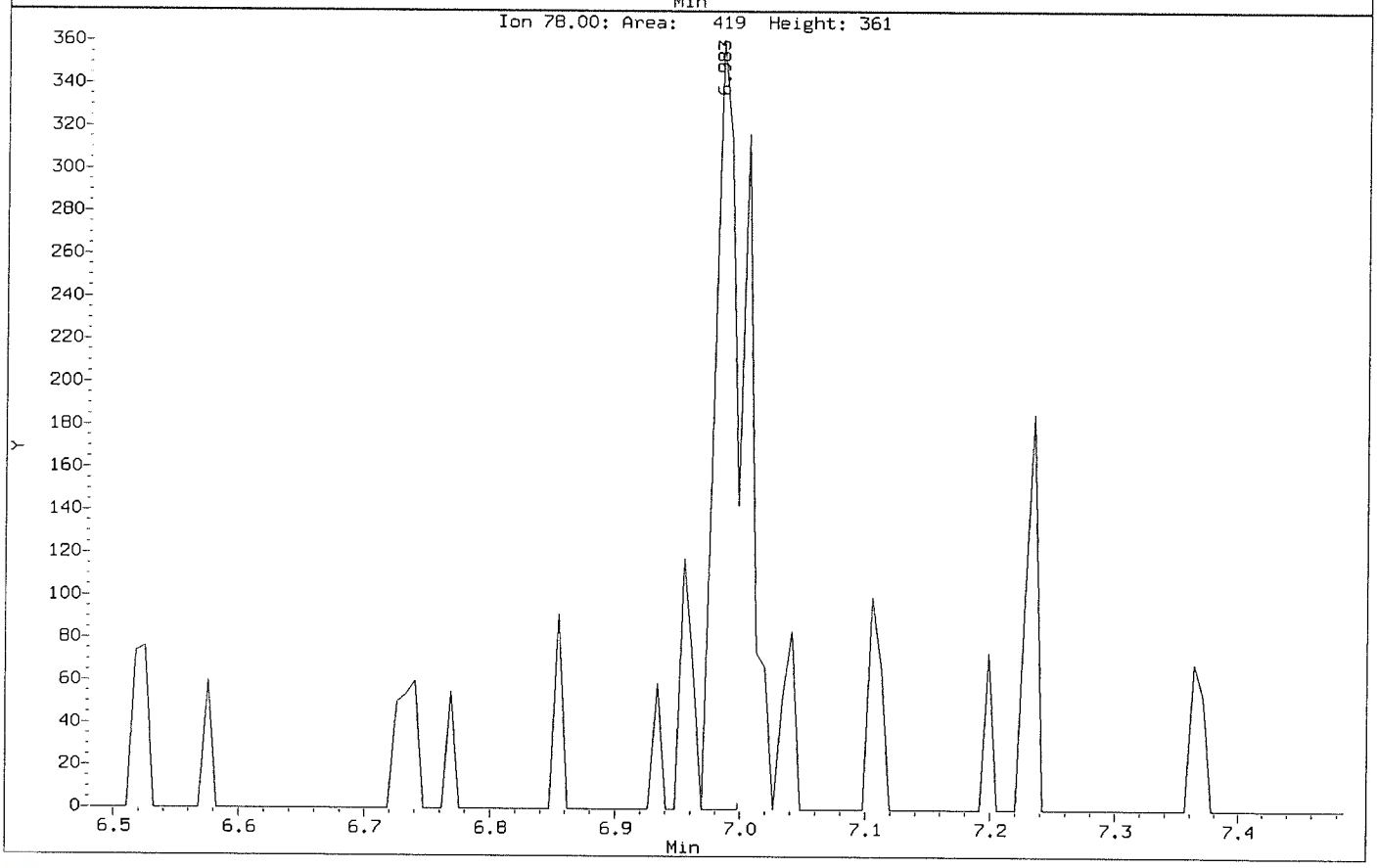




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Instrument: voa6.i
Client Sample ID: VSTD000.5

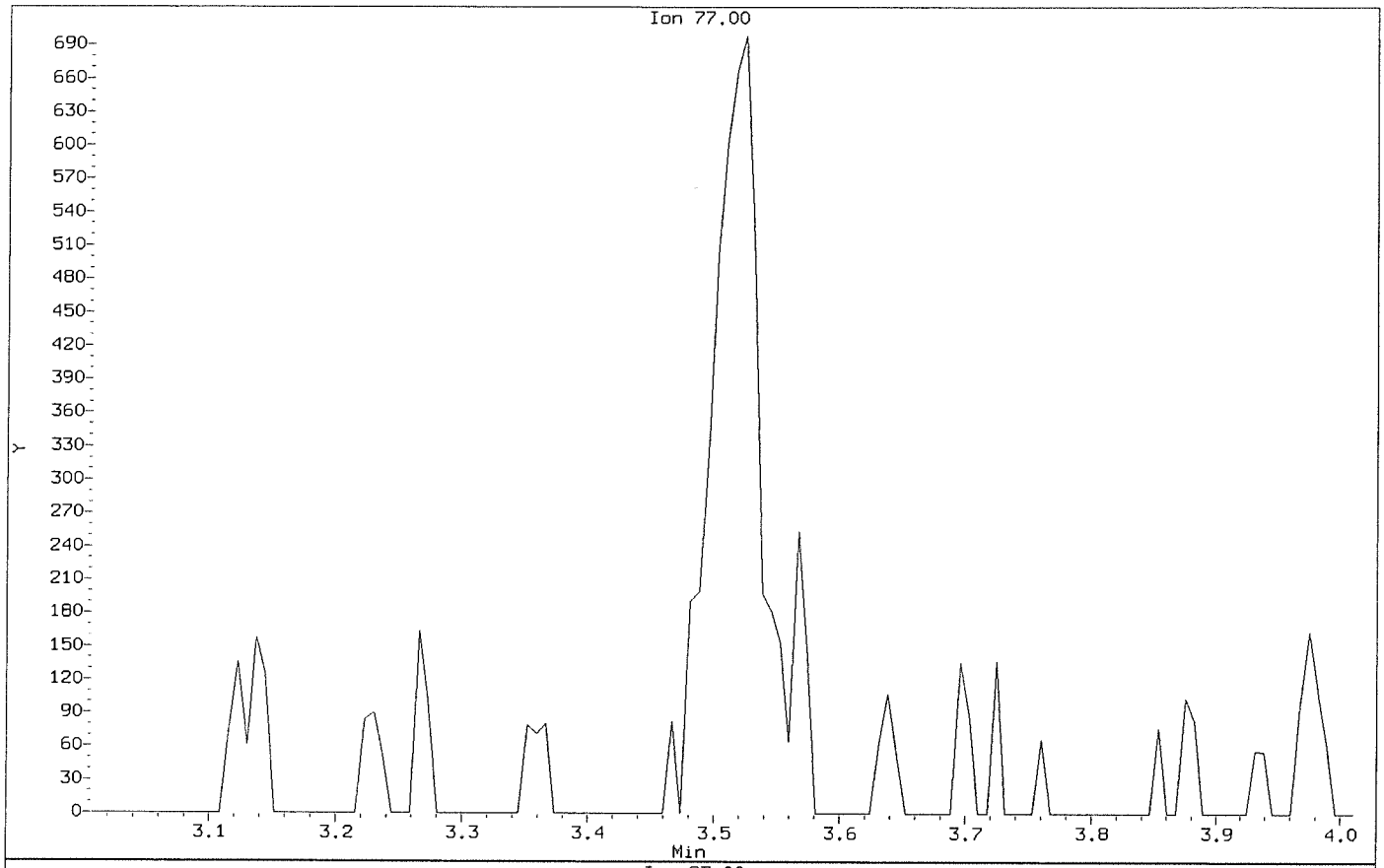
Compound: 1,3-Dichloropropane
CAS Number: 142-28-9

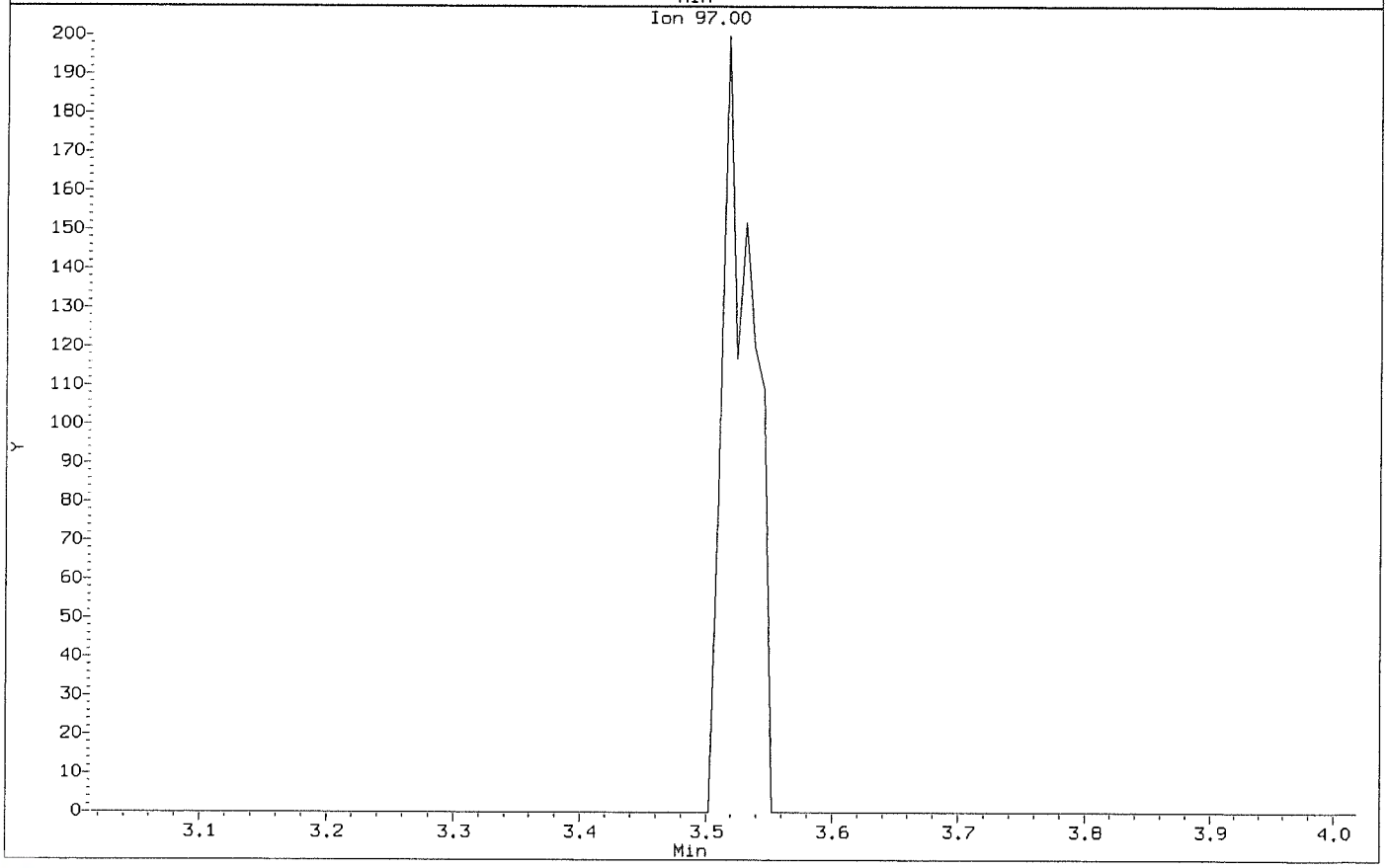




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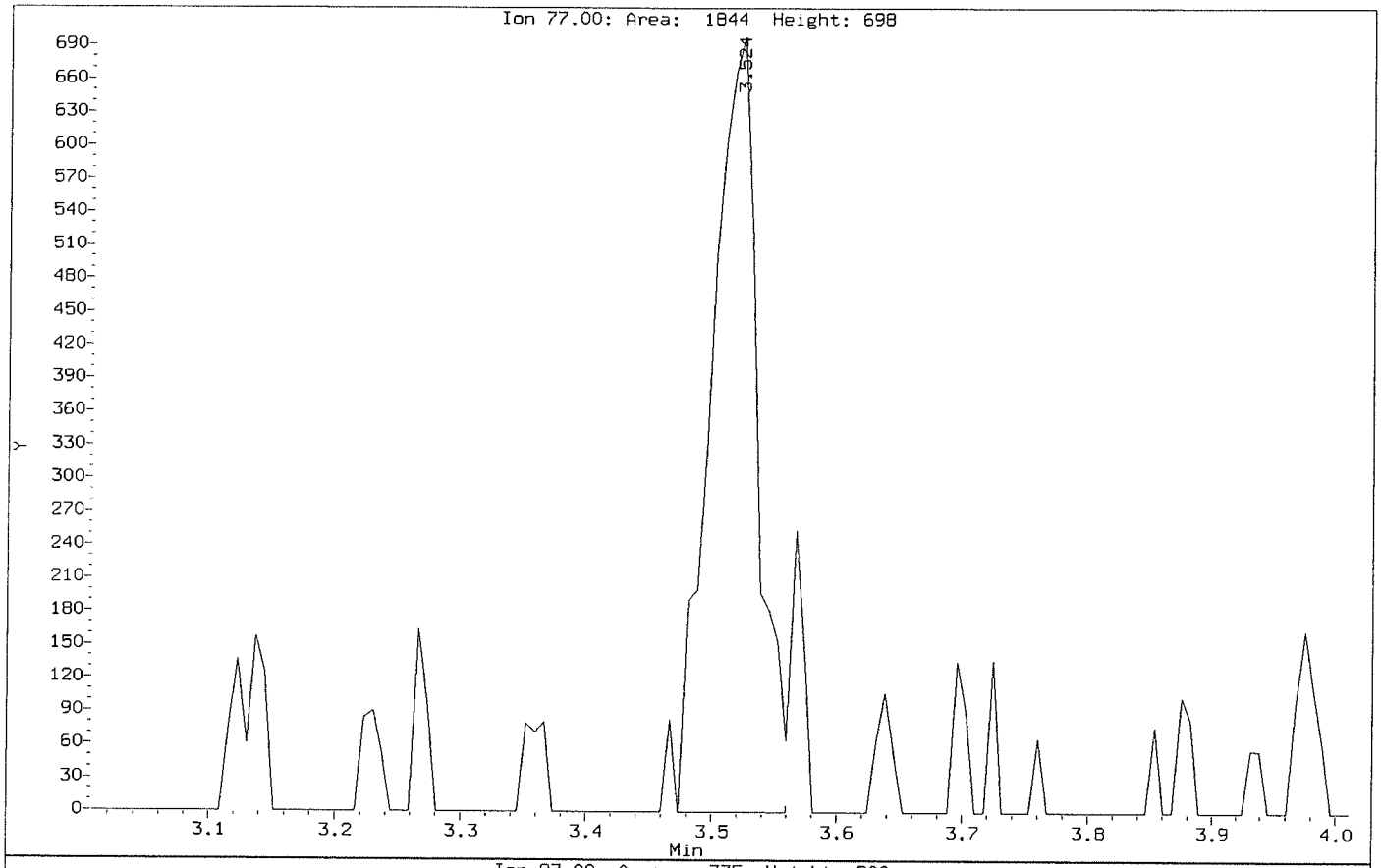
Compound: 2,2-Dichloropropane
CAS Number: 594-20-7

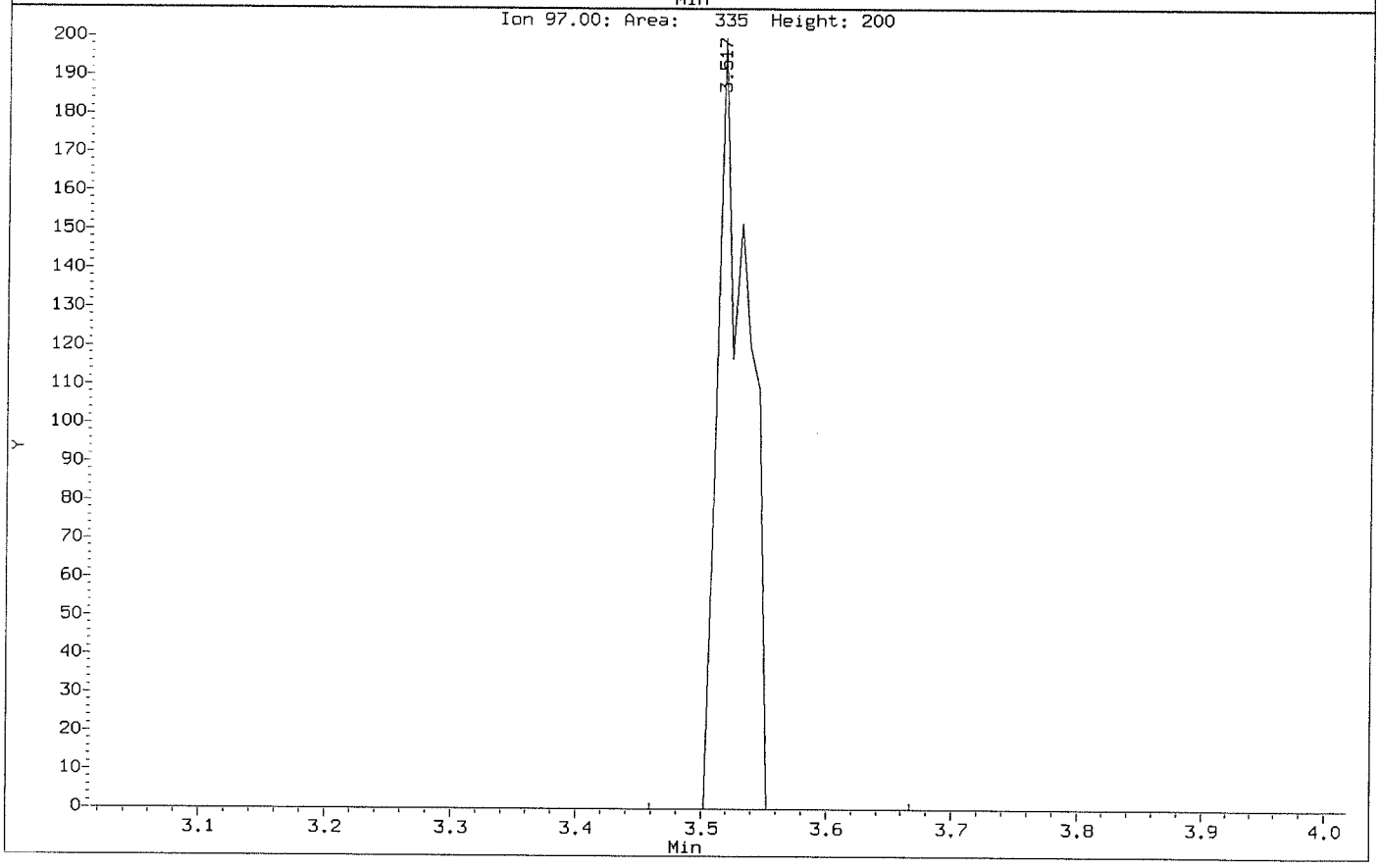




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Client Sample ID: VSTD000.5

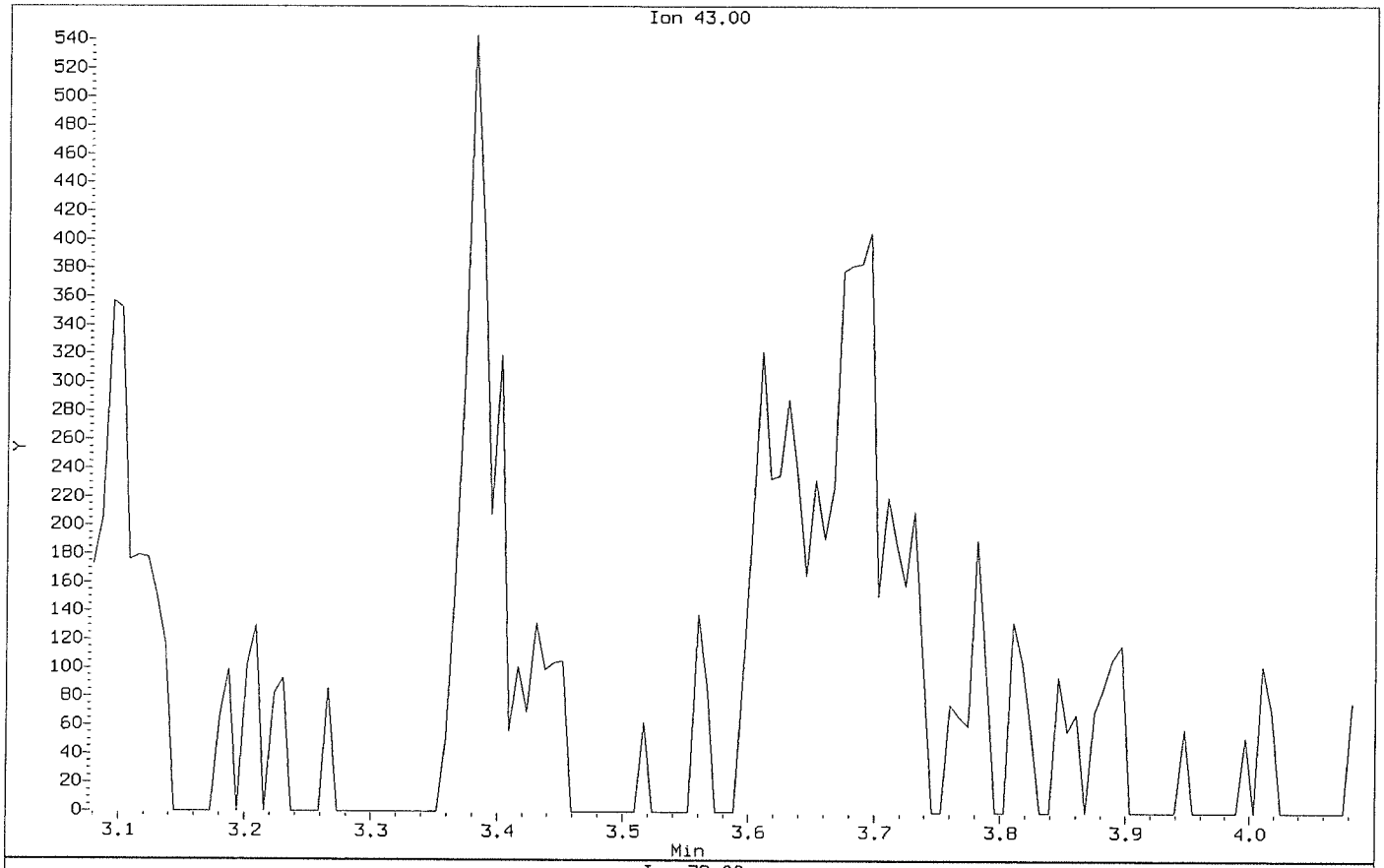
Compound: 2,2-Dichloropropane
CAS Number: 594-20-7

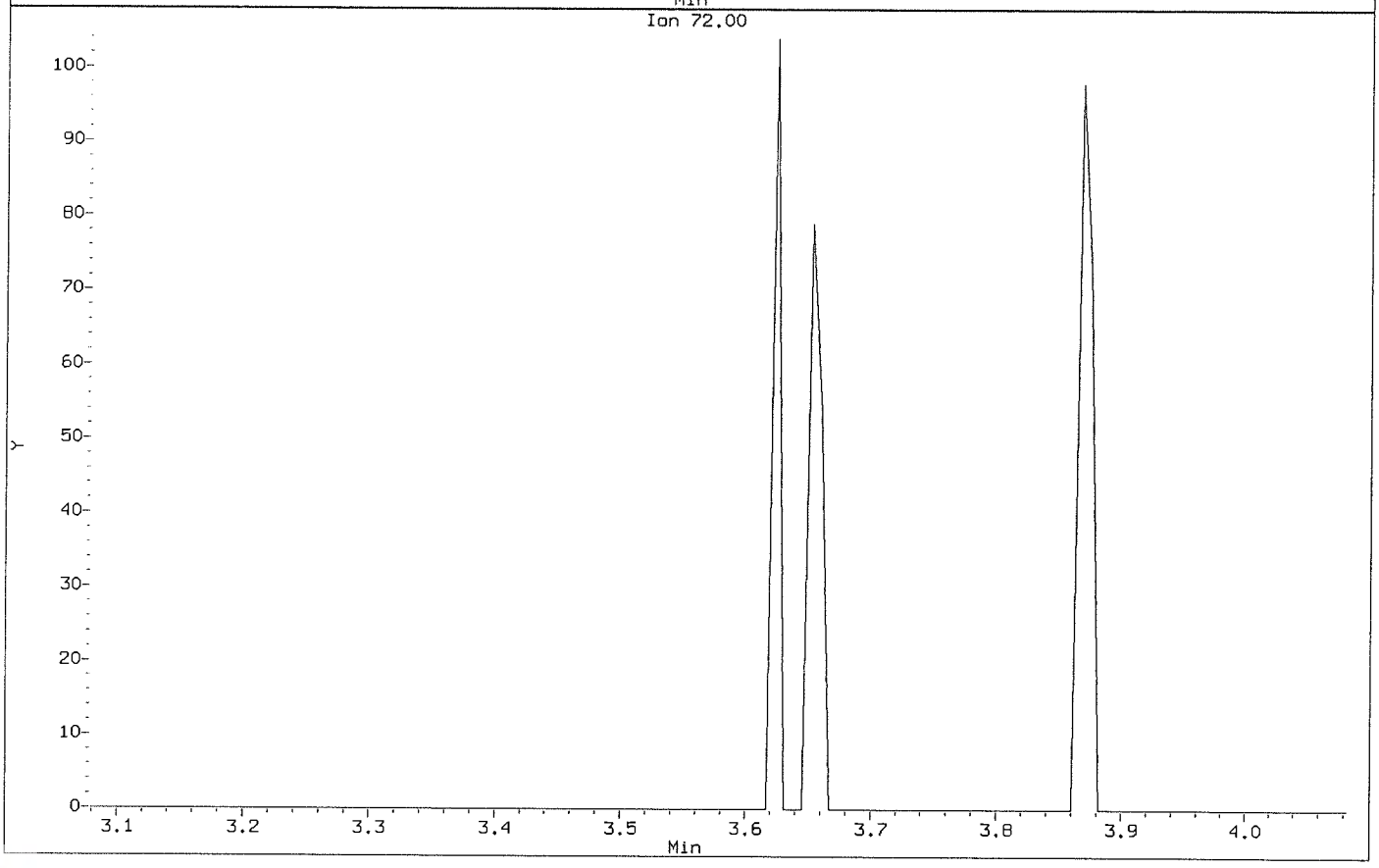




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Instrument: voa6.i
Client Sample ID: VSTD000.5

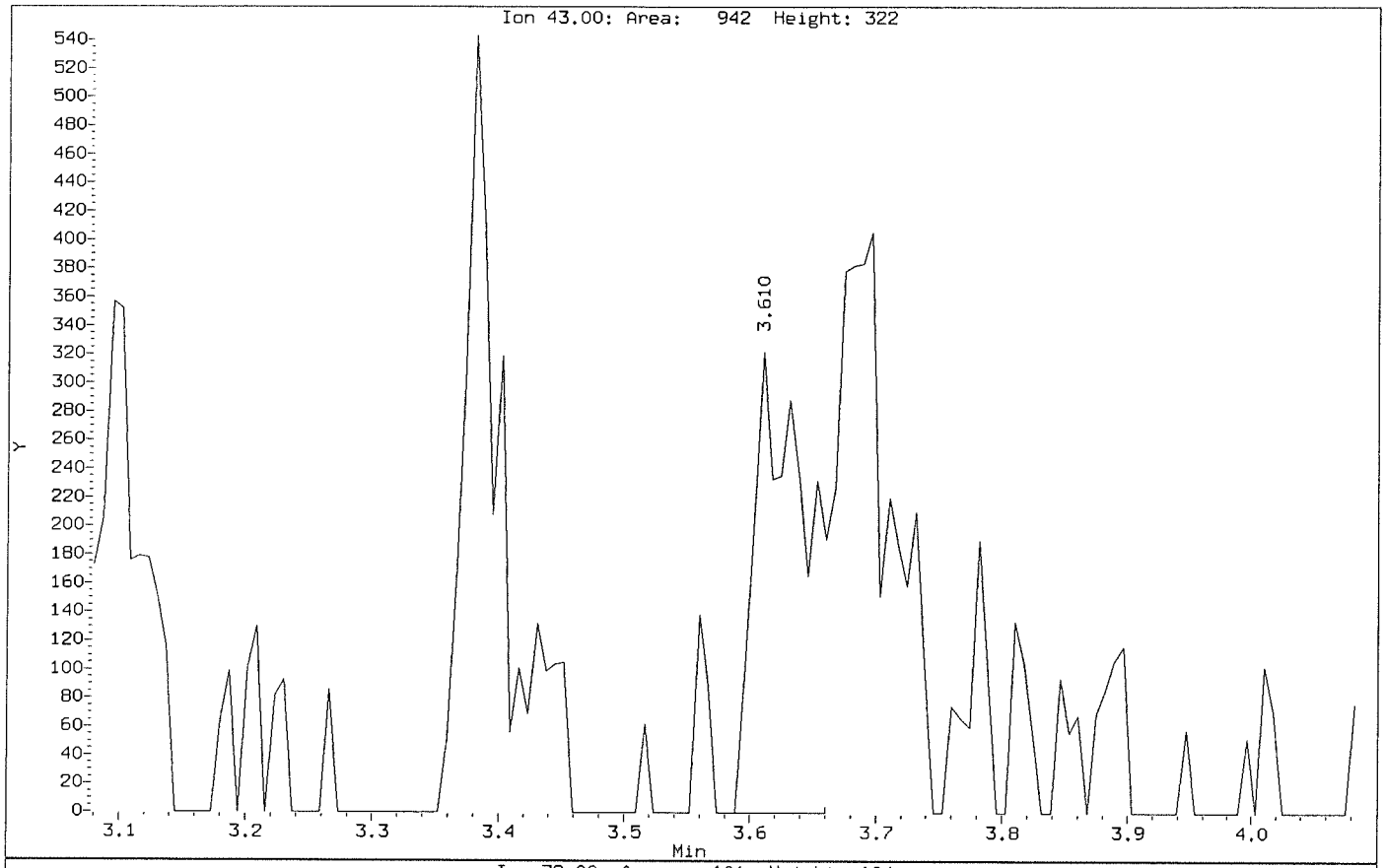
Compound: 2-Butanone
CAS Number: 78-93-3

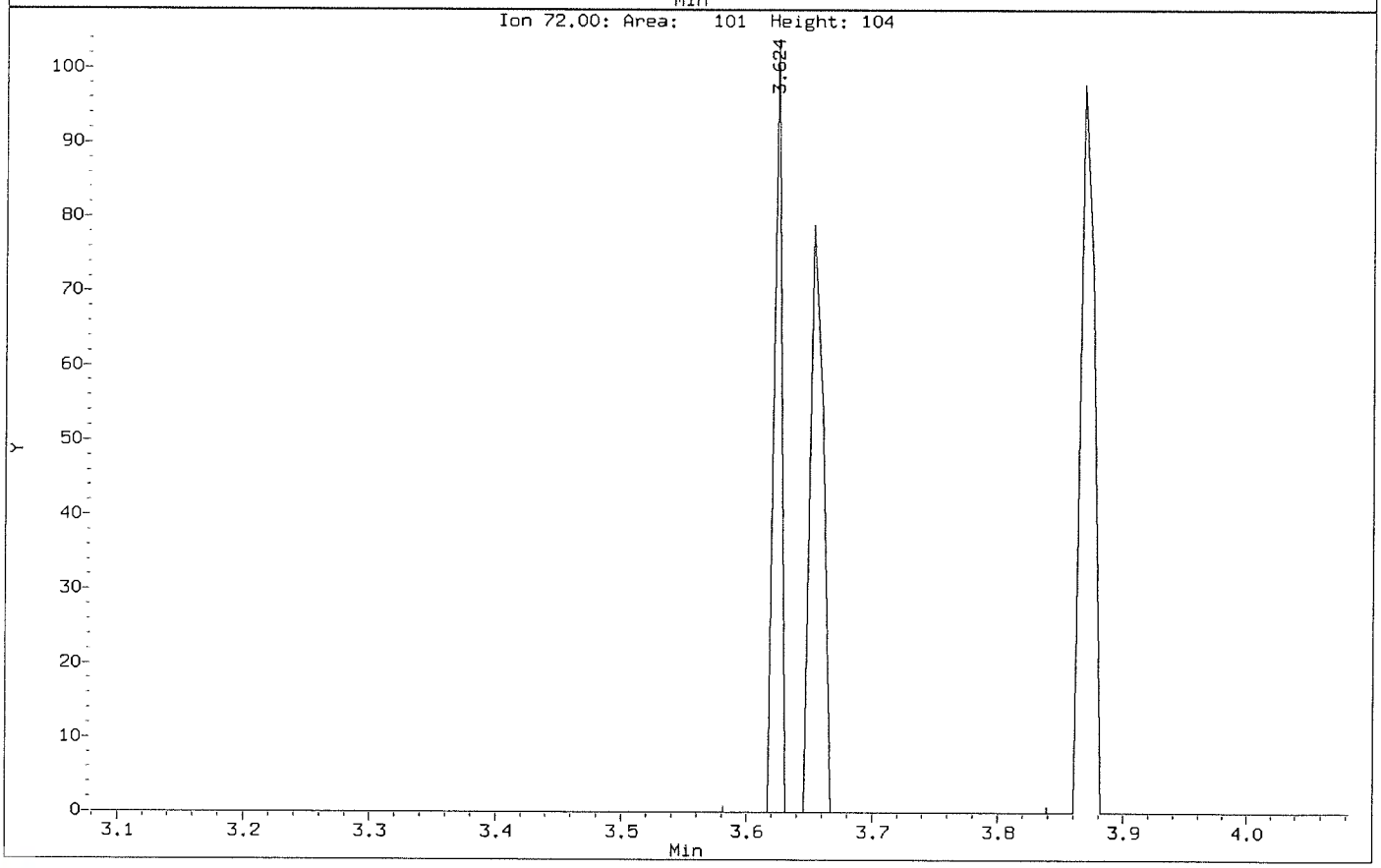




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Client Sample ID: VSTD000.5

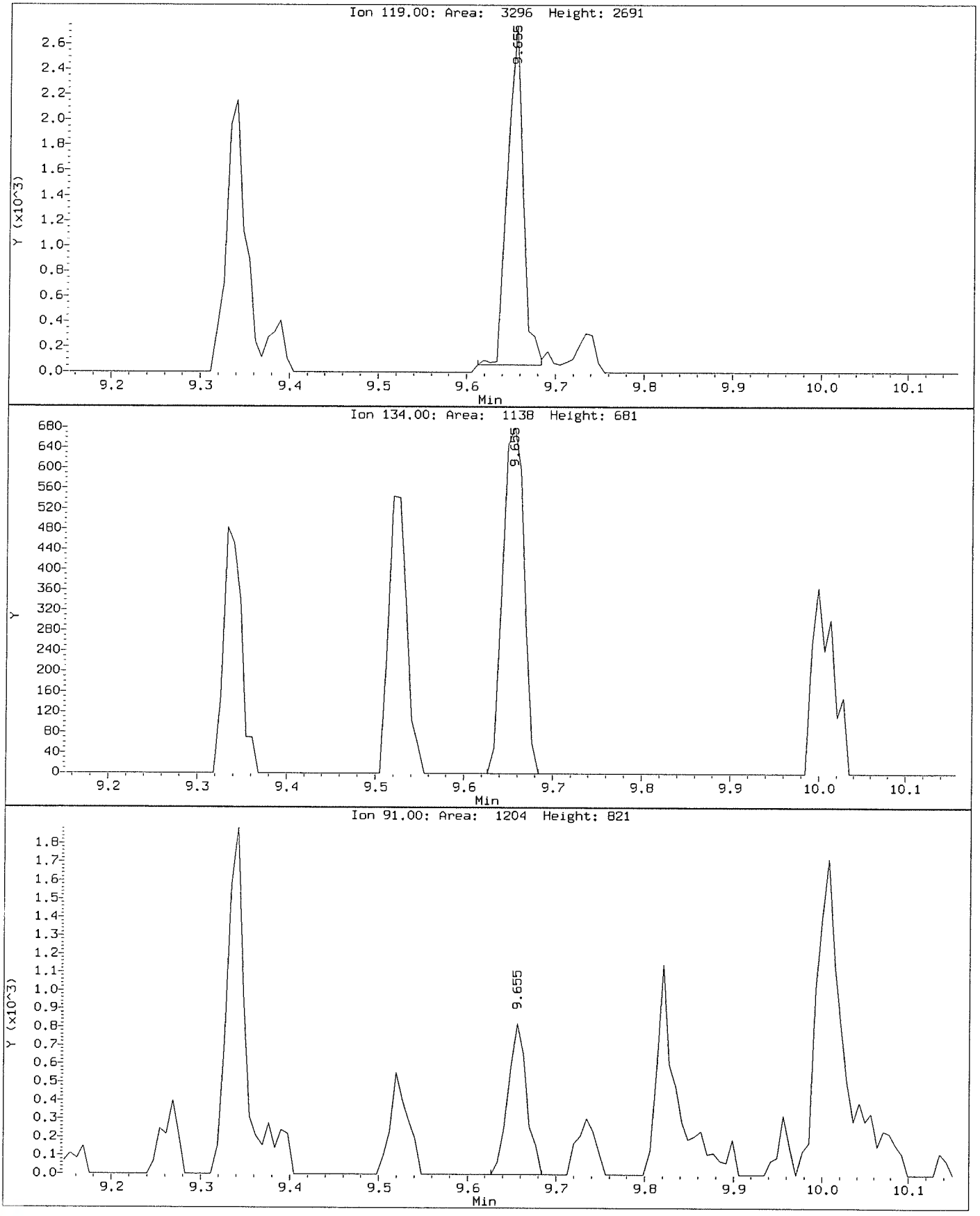
Compound: 2-Butanone
CAS Number: 78-93-3





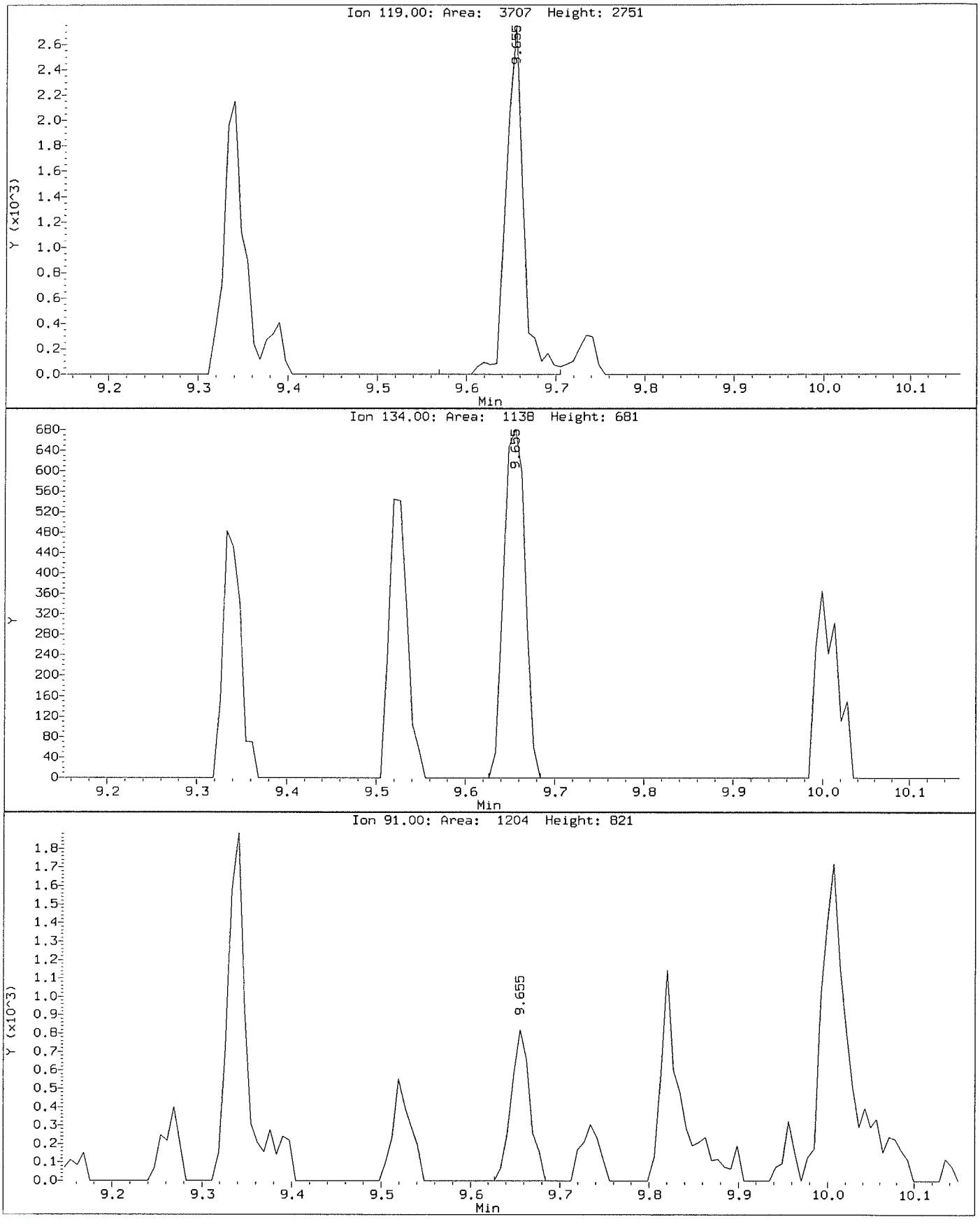
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Injection Date: 18-MAY-2021 11:43
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: p-Isopropyltoluene
CAS Number: 99-87-6



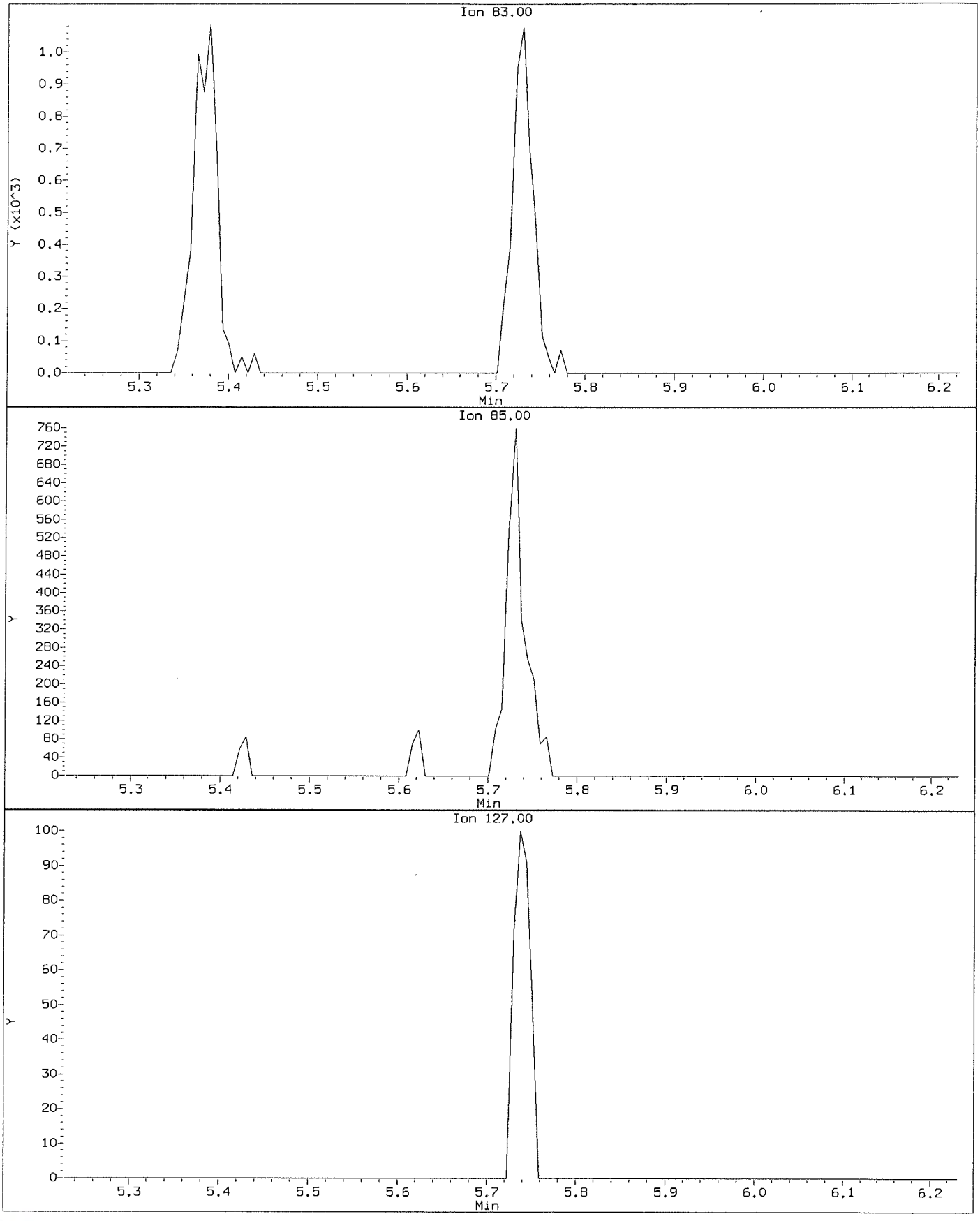
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Injection Date: 18-MAY-2021 11:43
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: p-Isopropyltoluene
CAS Number: 99-87-6



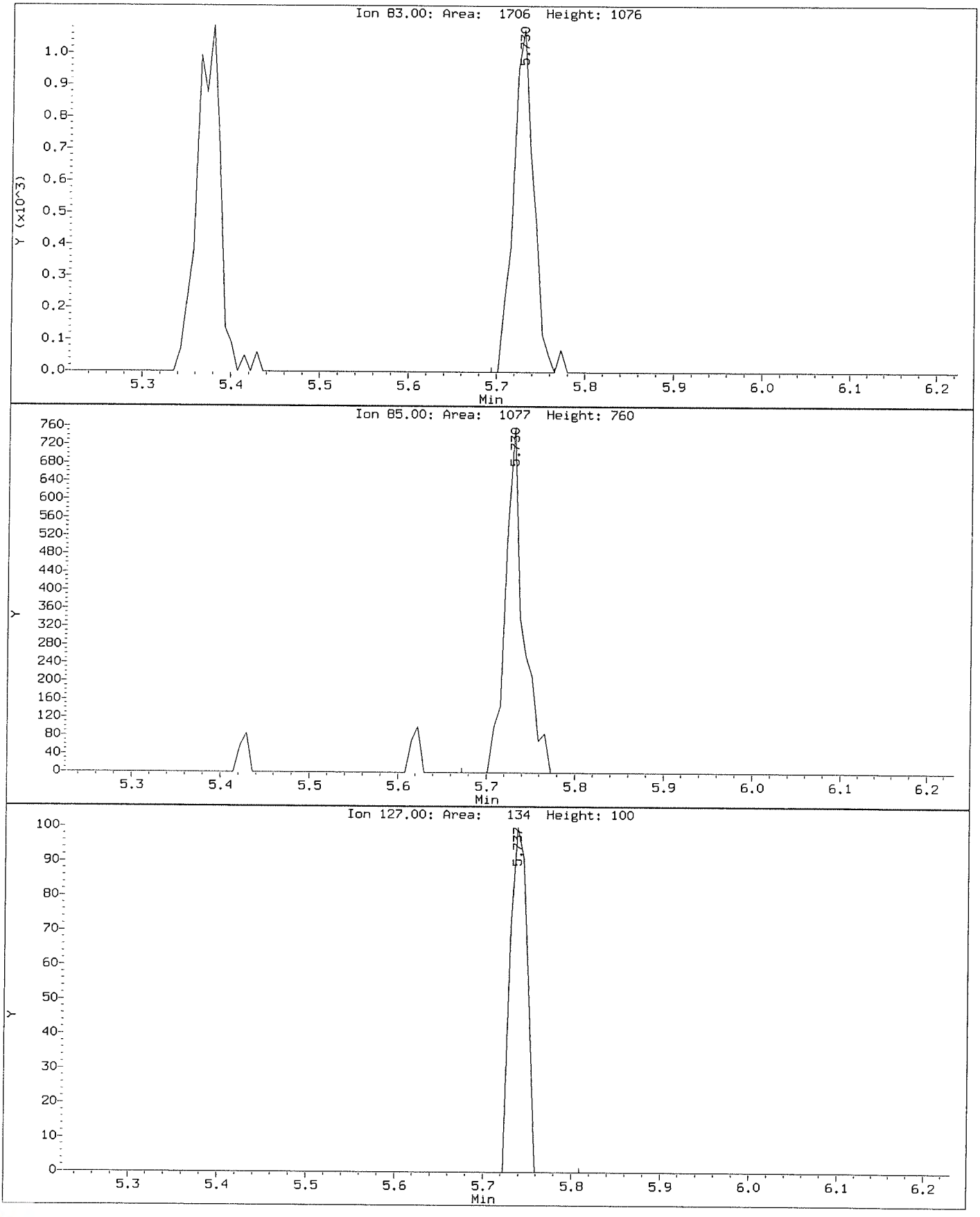
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Injection Date: 18-MAY-2021 11:43
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Bromodichloromethane
CAS Number: 75-27-4



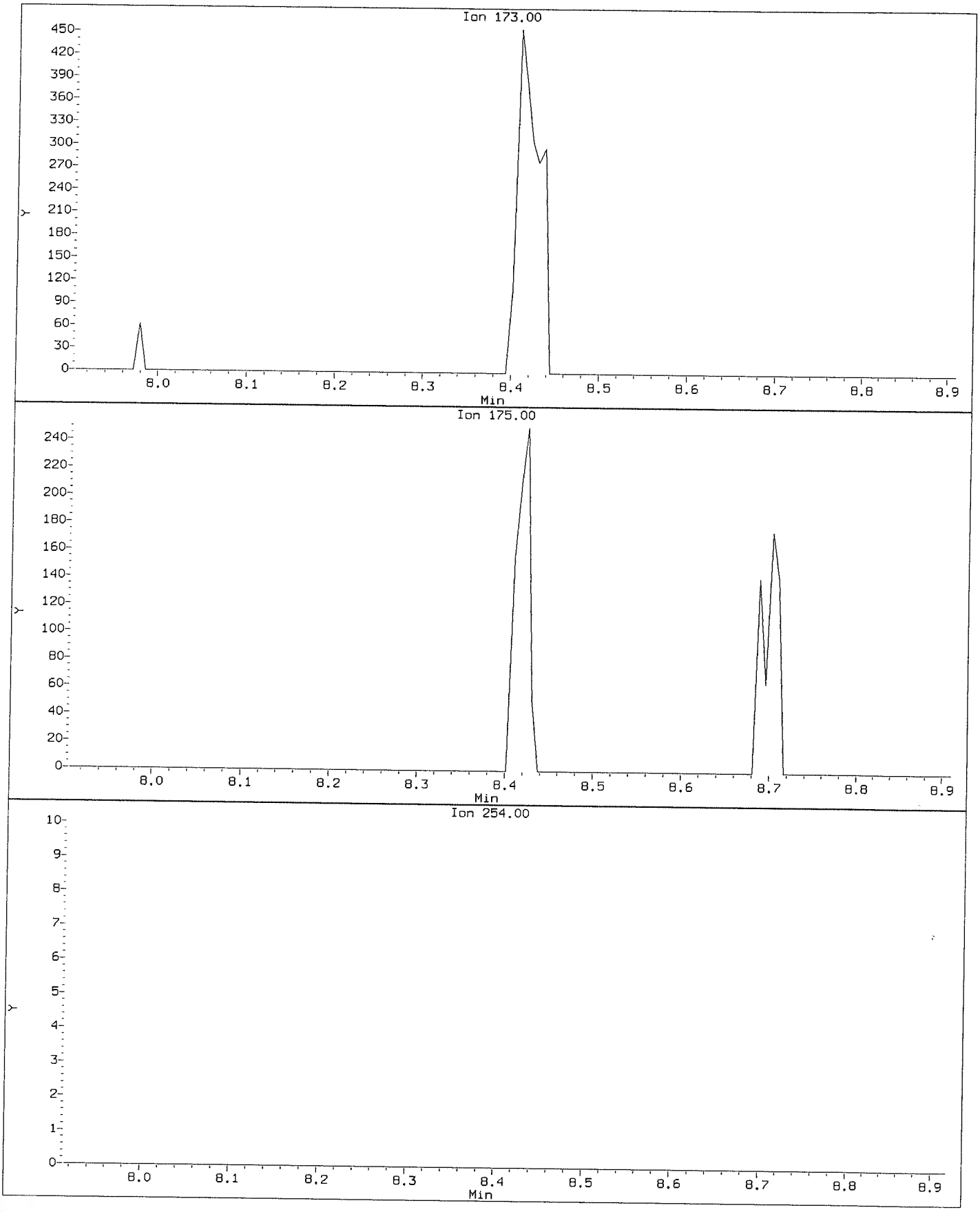
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Injection Date: 18-MAY-2021 11:43
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Bromodichloromethane
CAS Number: 75-27-4



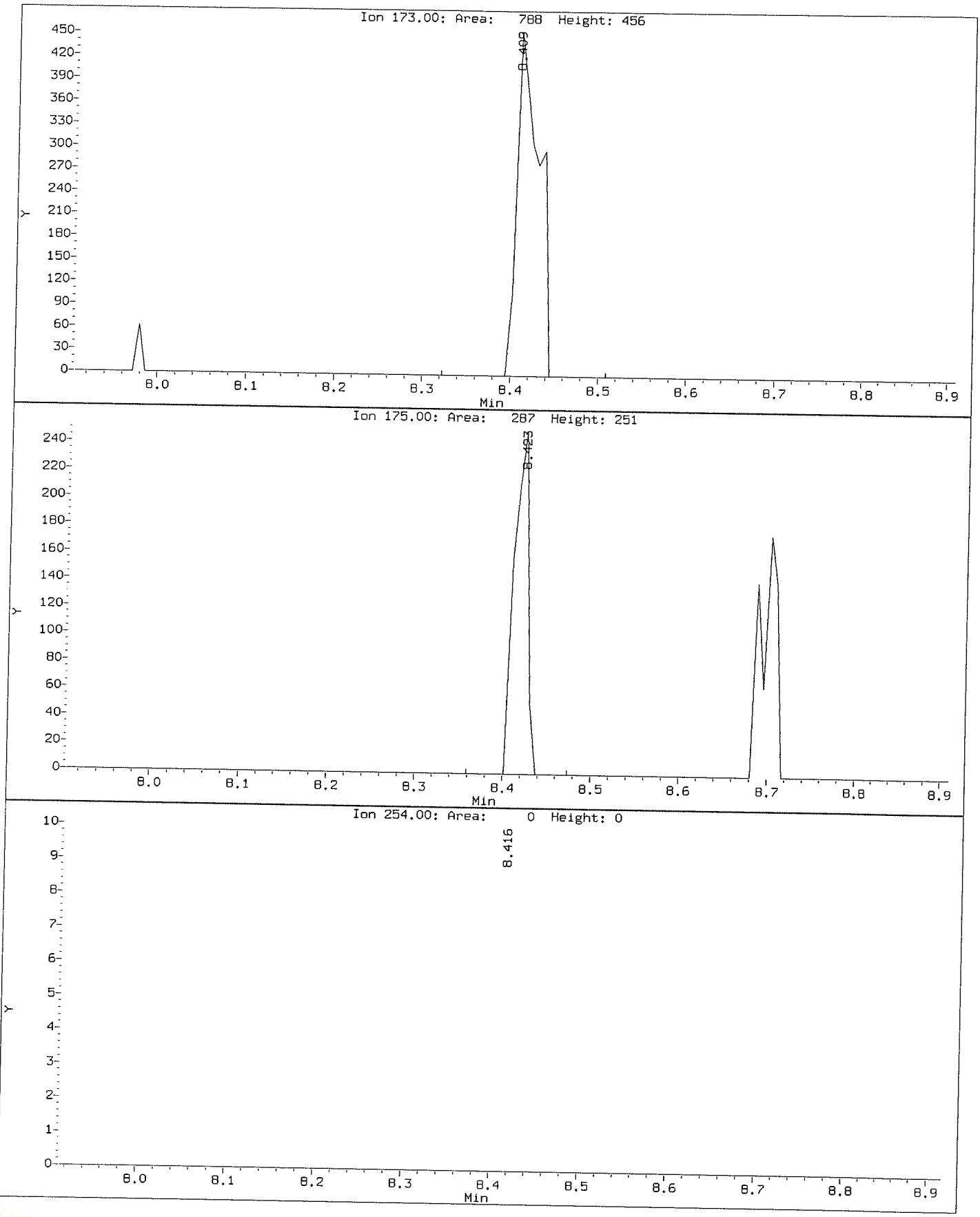
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Injection Date: 18-MAY-2021 11:43
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Bromoform
CAS Number: 75-25-2



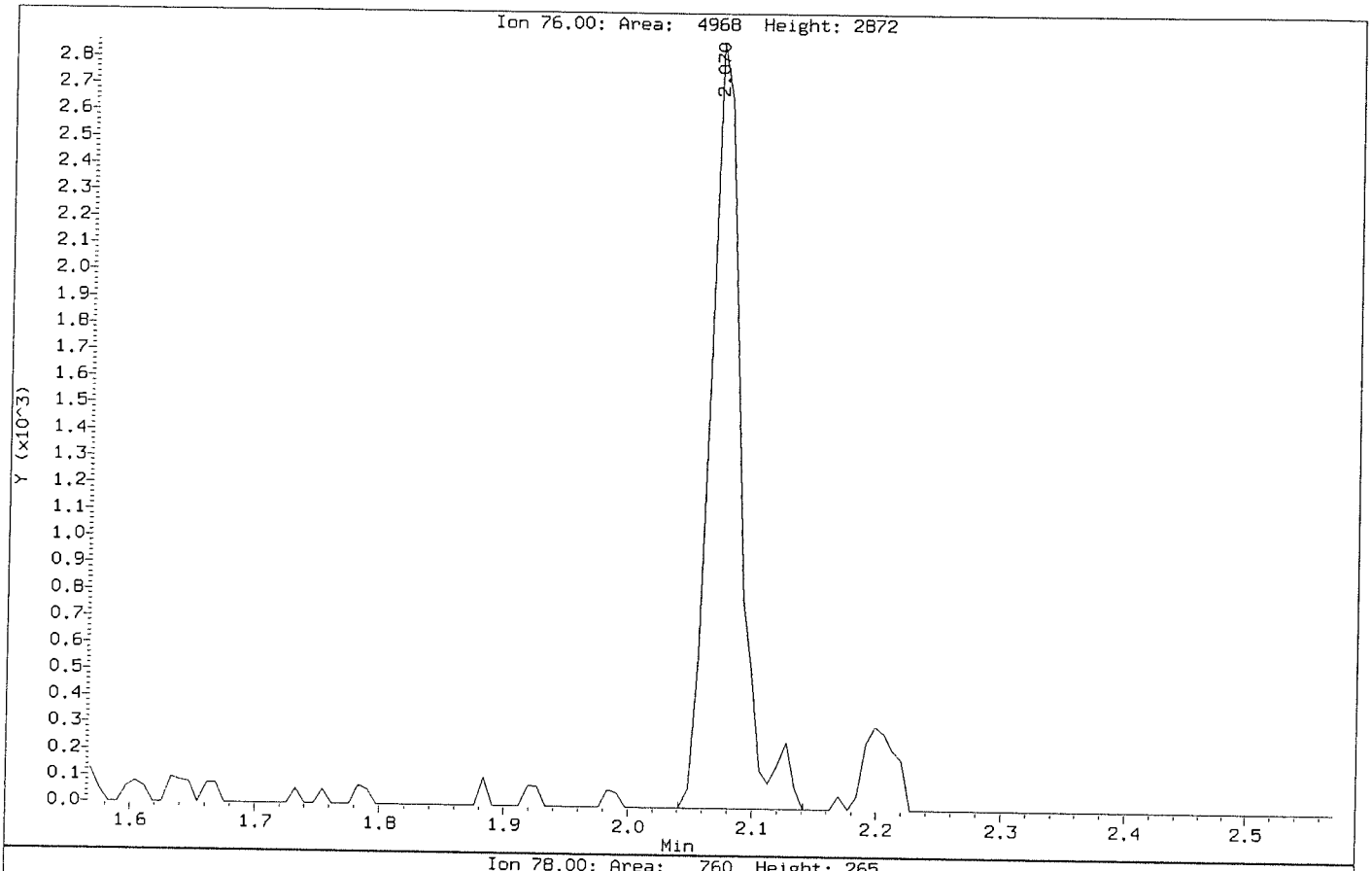
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Client Sample ID: VSTD000.5

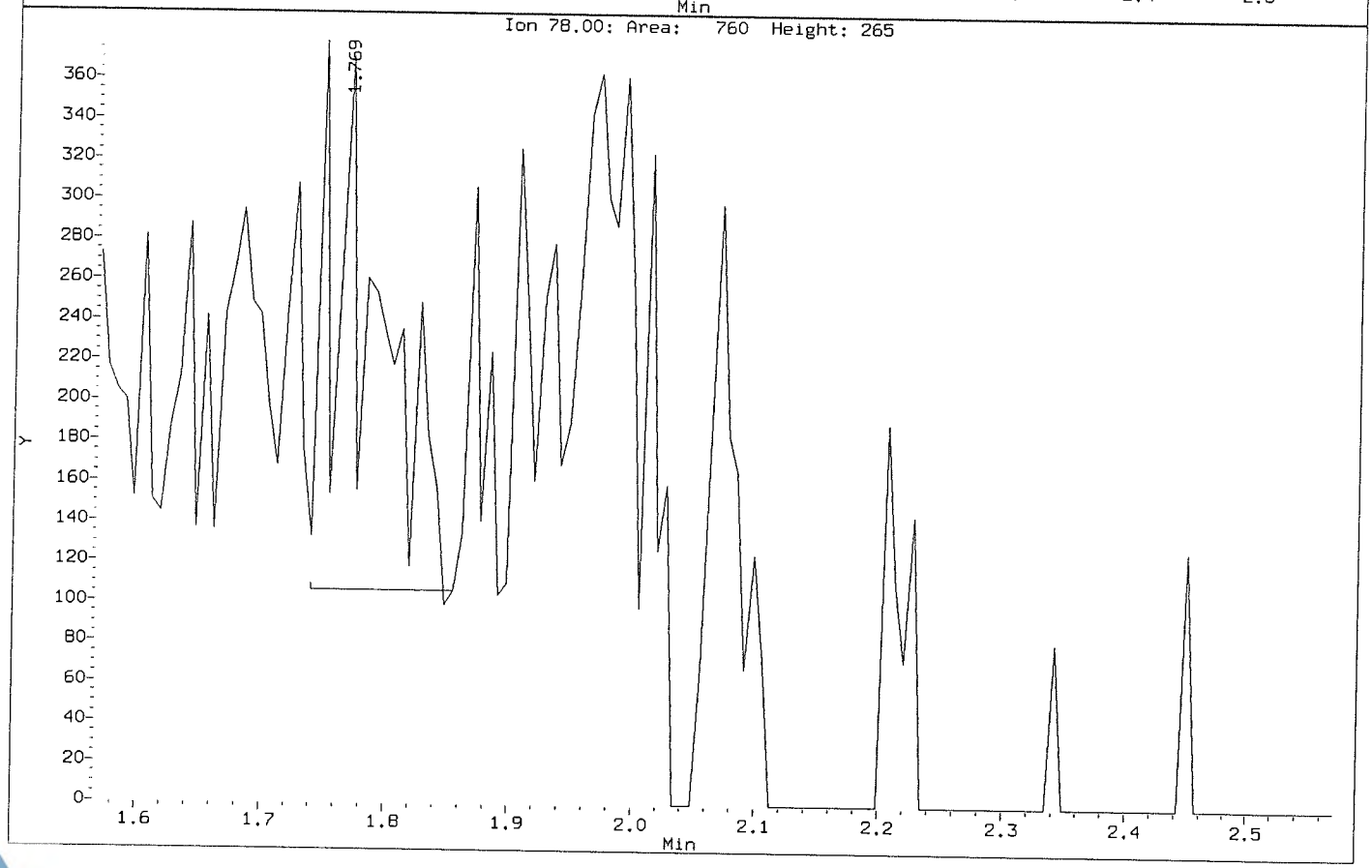
Compound: Bromoform
CAS Number: 75-25-2



Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\Before\X051803.D
Injection Date: 18-MAY-2021 11:43
Instrument: voa6.i
Client Sample ID: VSTD000.5

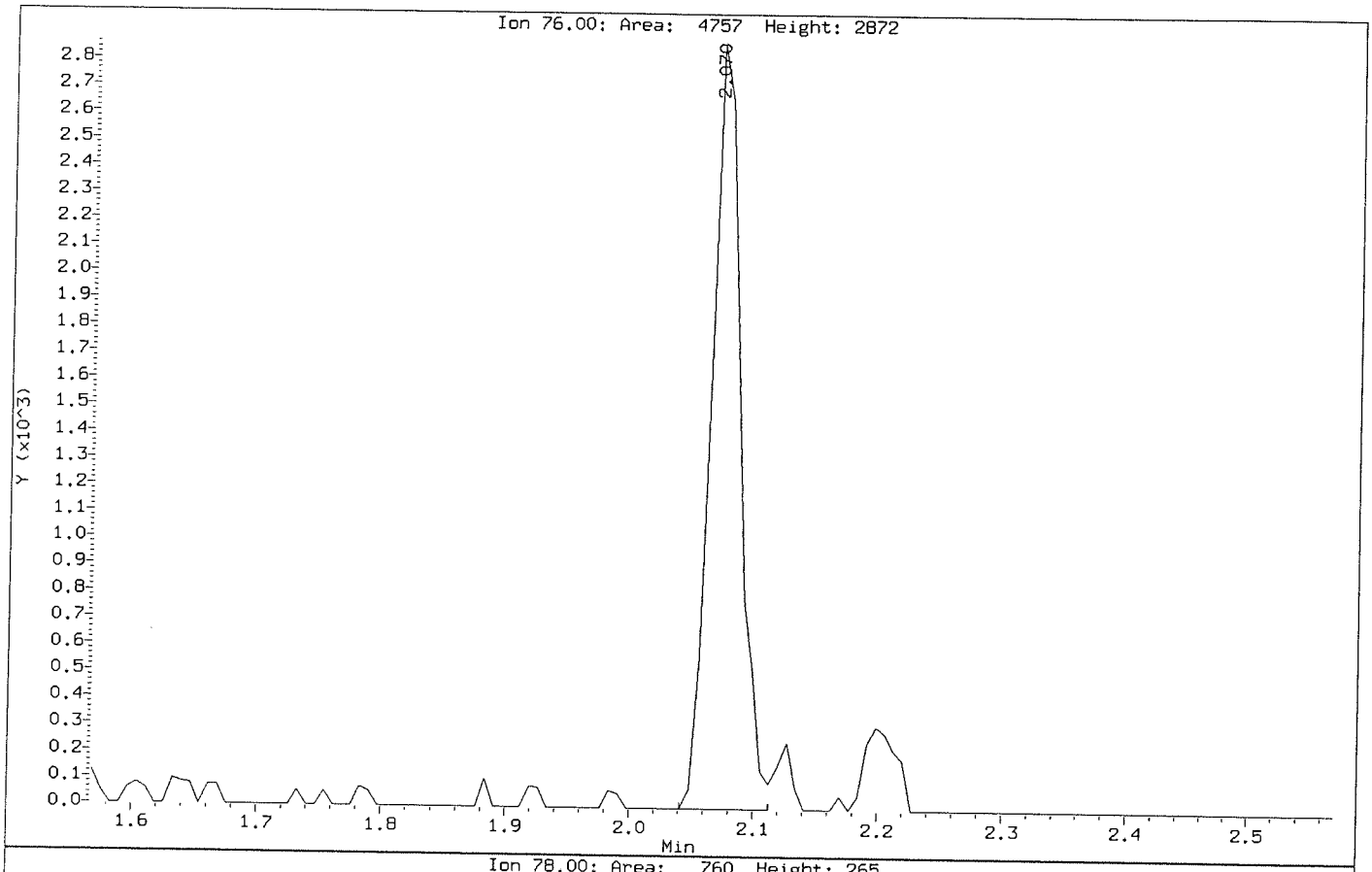
Compound: Carbon Disulfide
CAS Number: 75-15-0

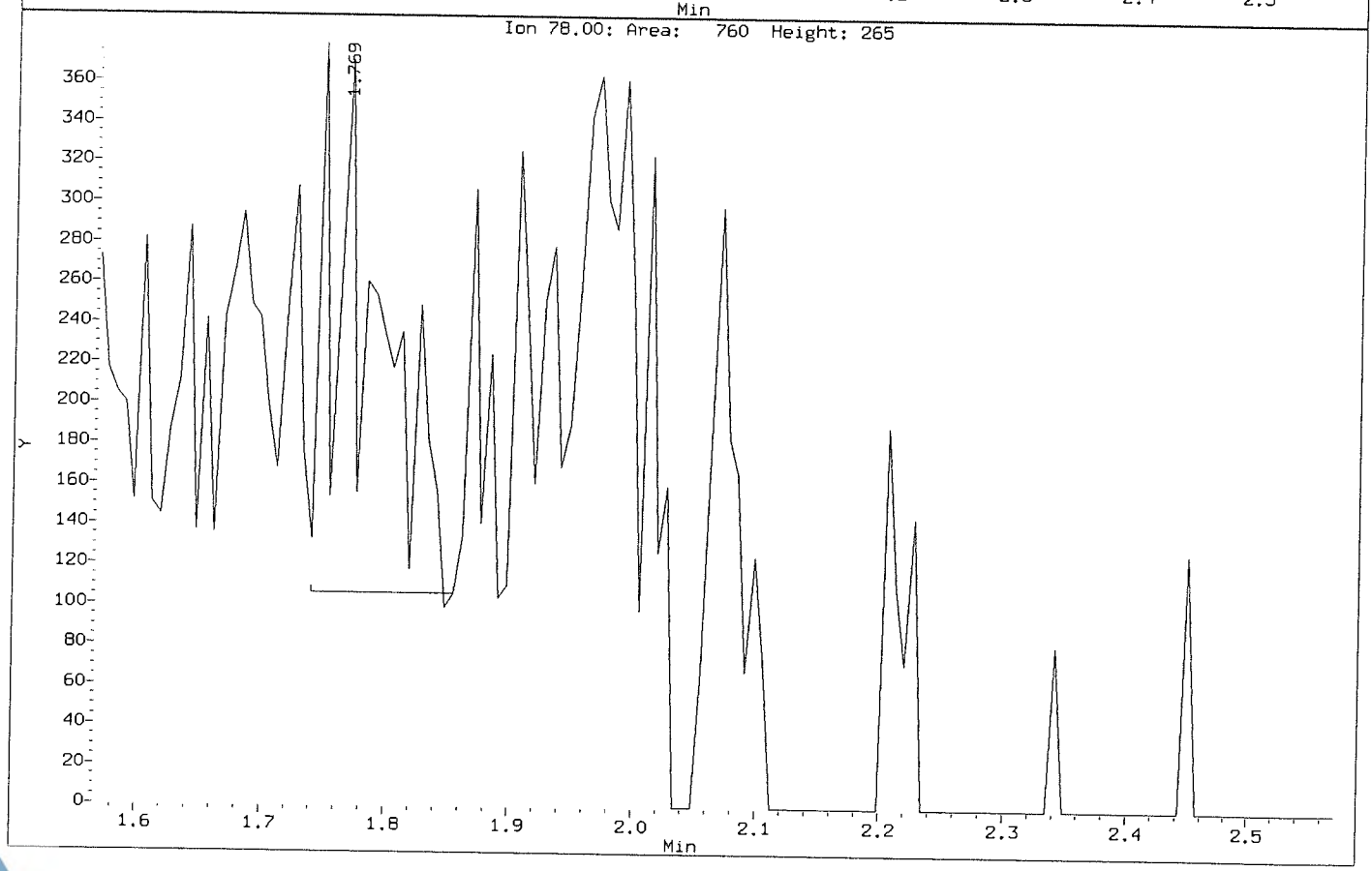




Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\X051803.D
Injection Date: 18-MAY-2021 11:43
Instrument: voa6.i
Client Sample ID: VSTD000.5

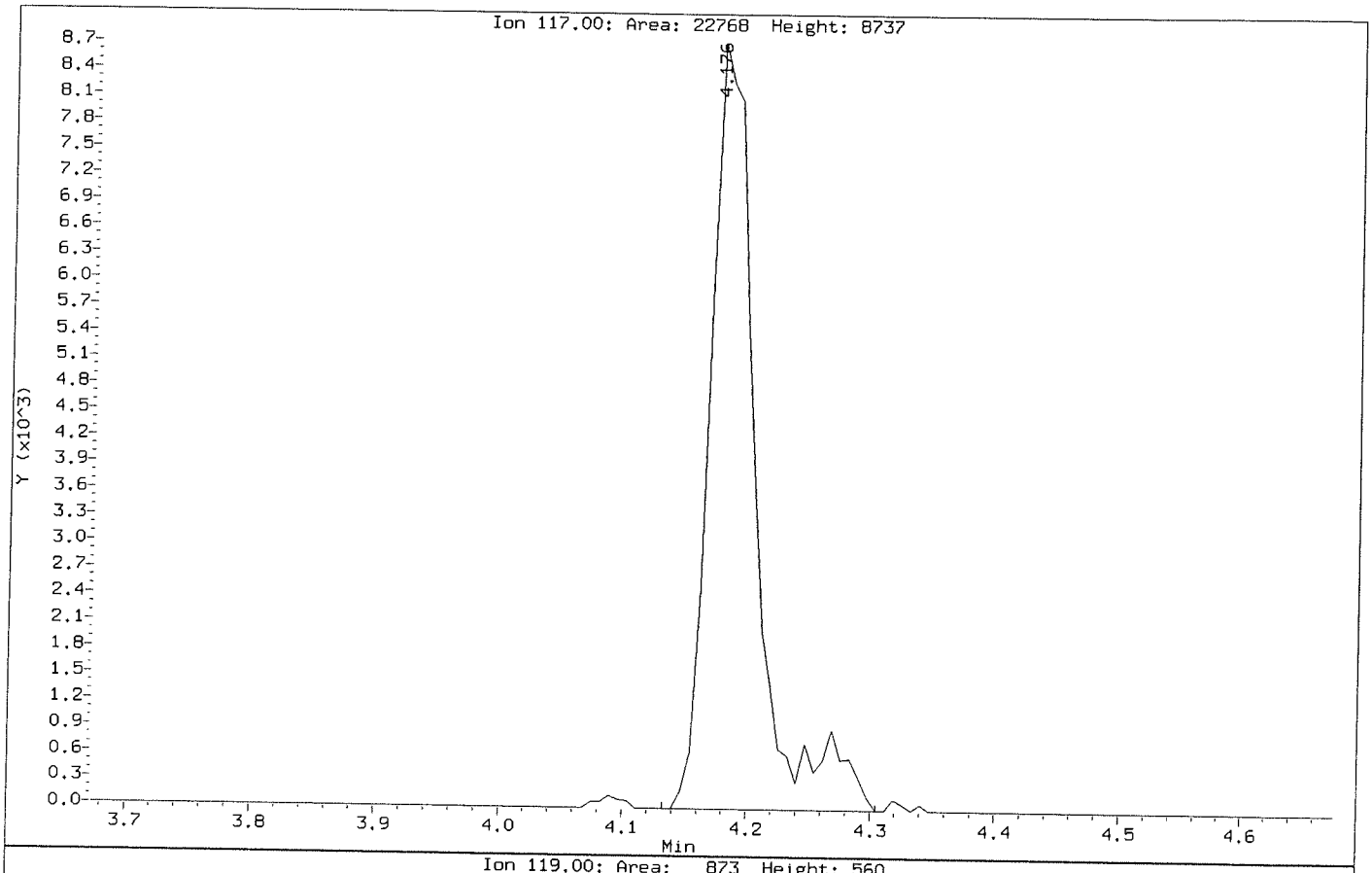
Compound: Carbon Disulfide
CAS Number: 75-15-0

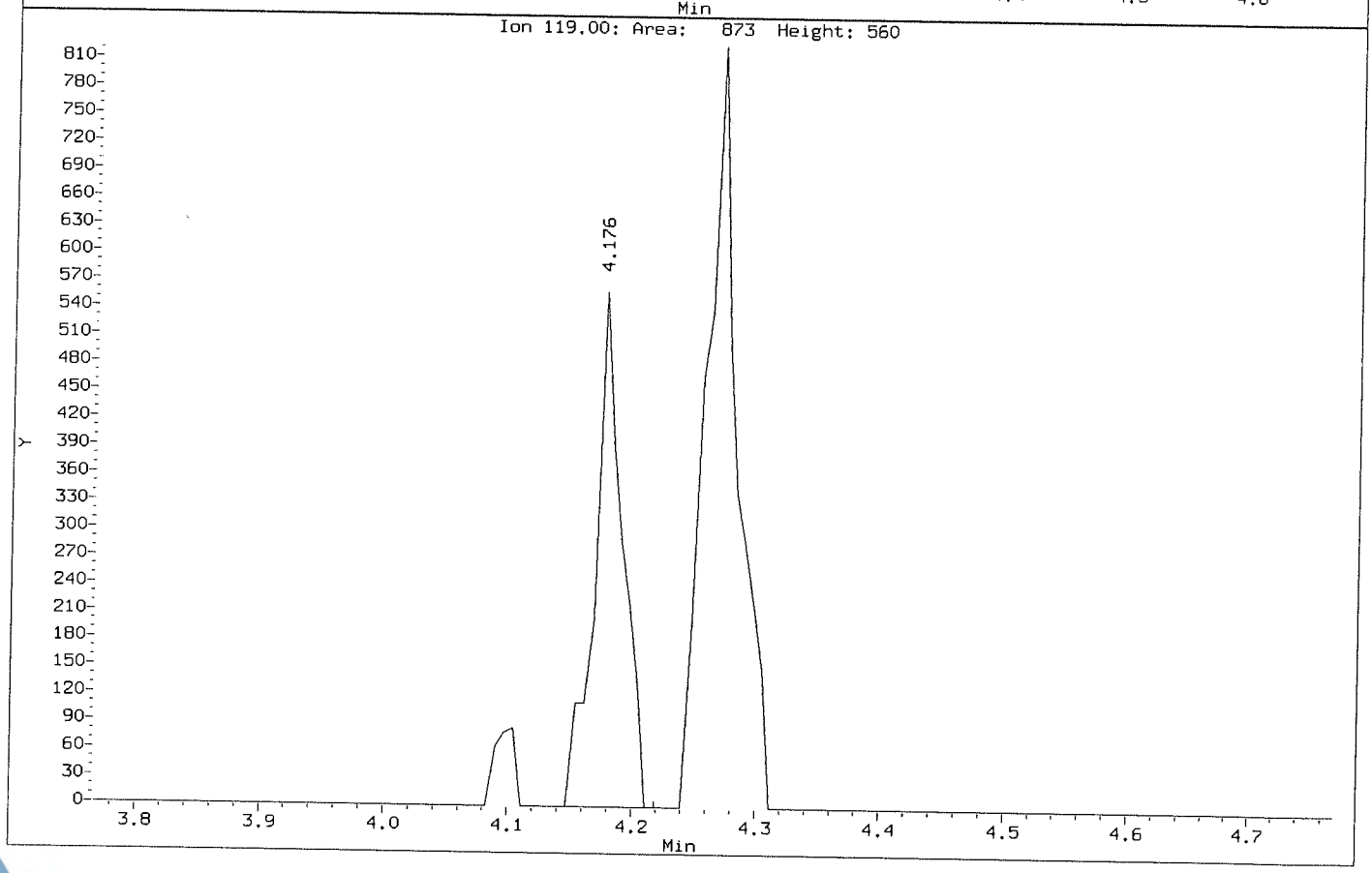




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Instrument: voa6.i
Client Sample ID: VSTD000.5

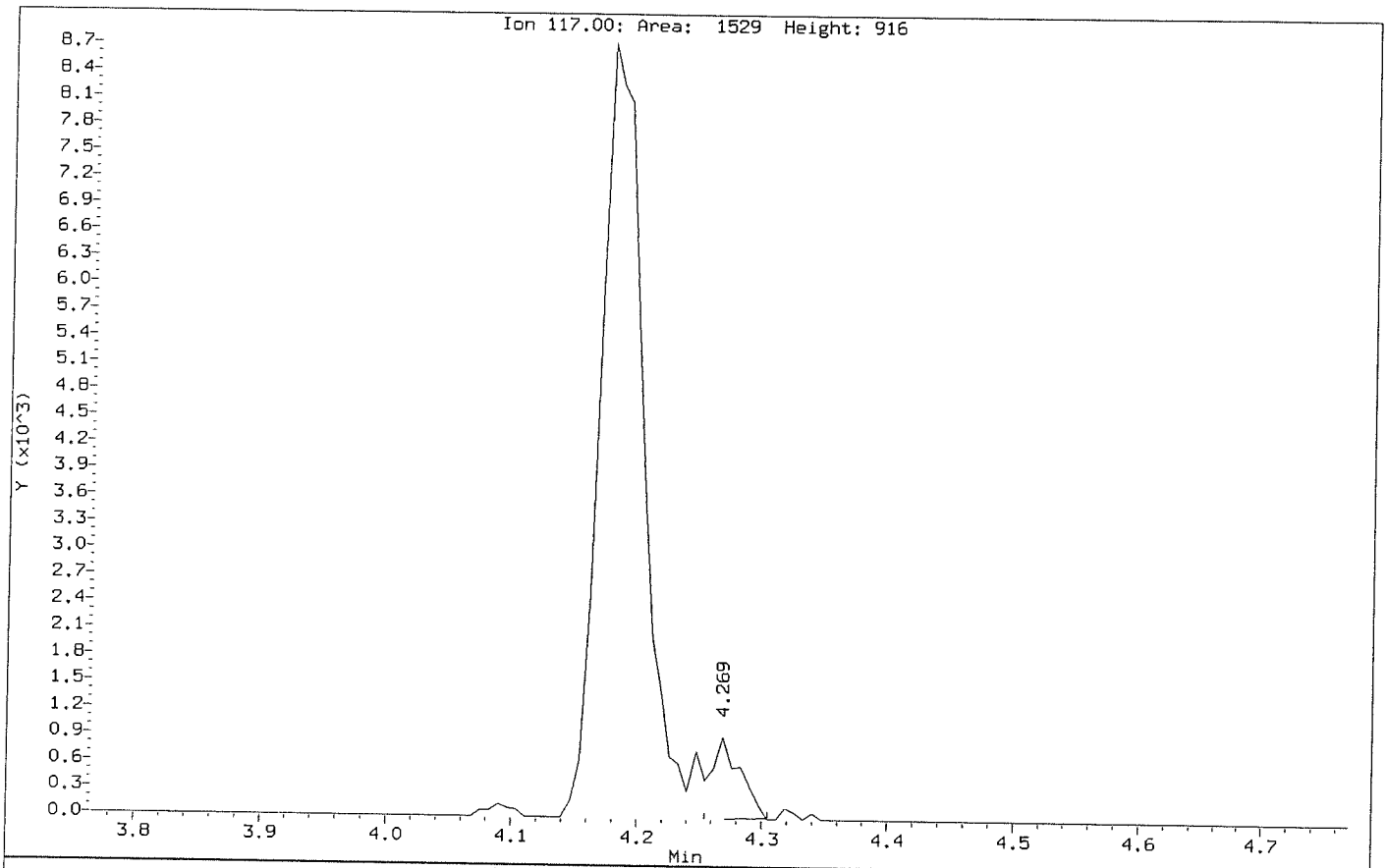
Compound: Carbon Tetrachloride
CAS Number: 56-23-5

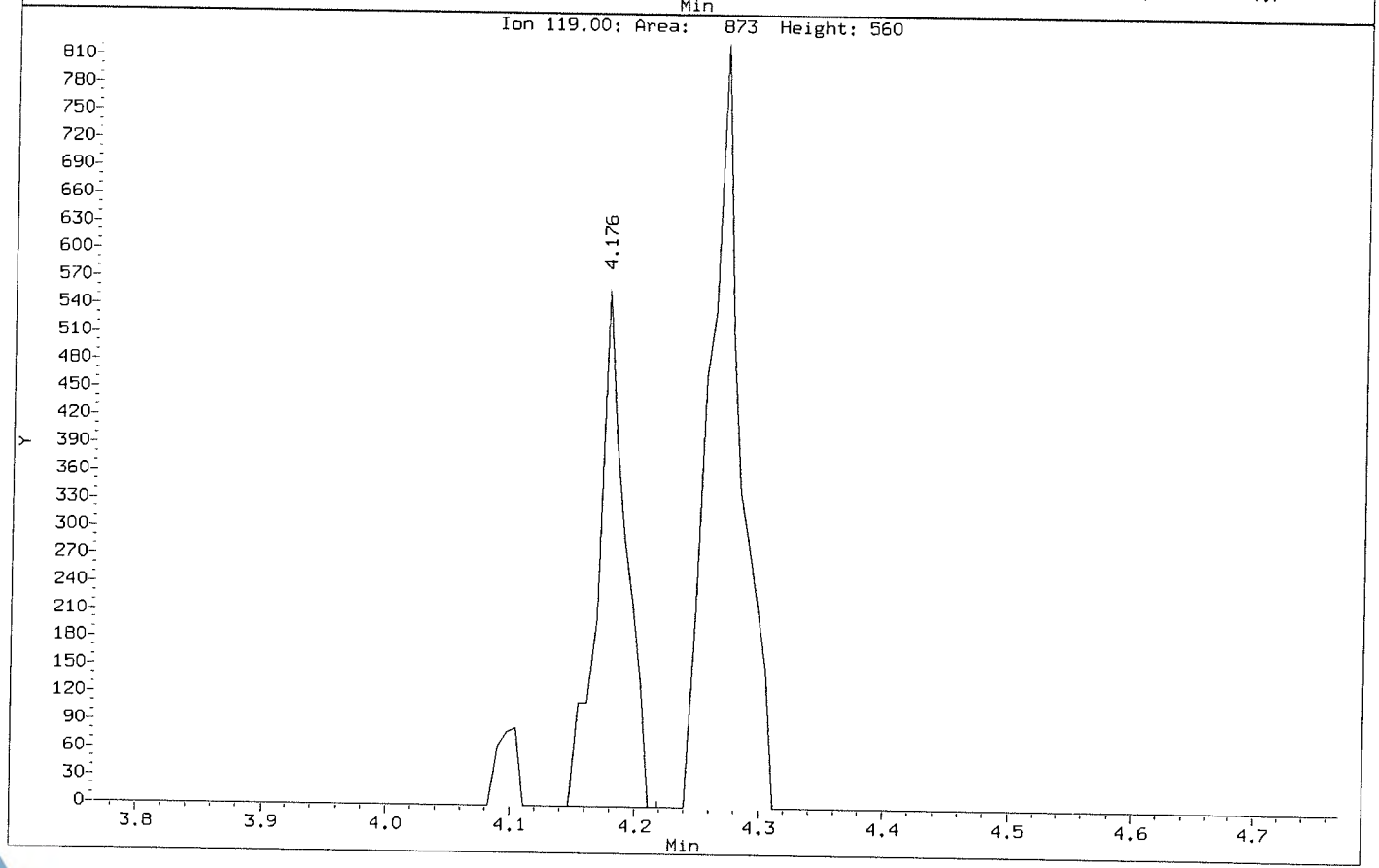




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Client Sample ID: VSTD000.5

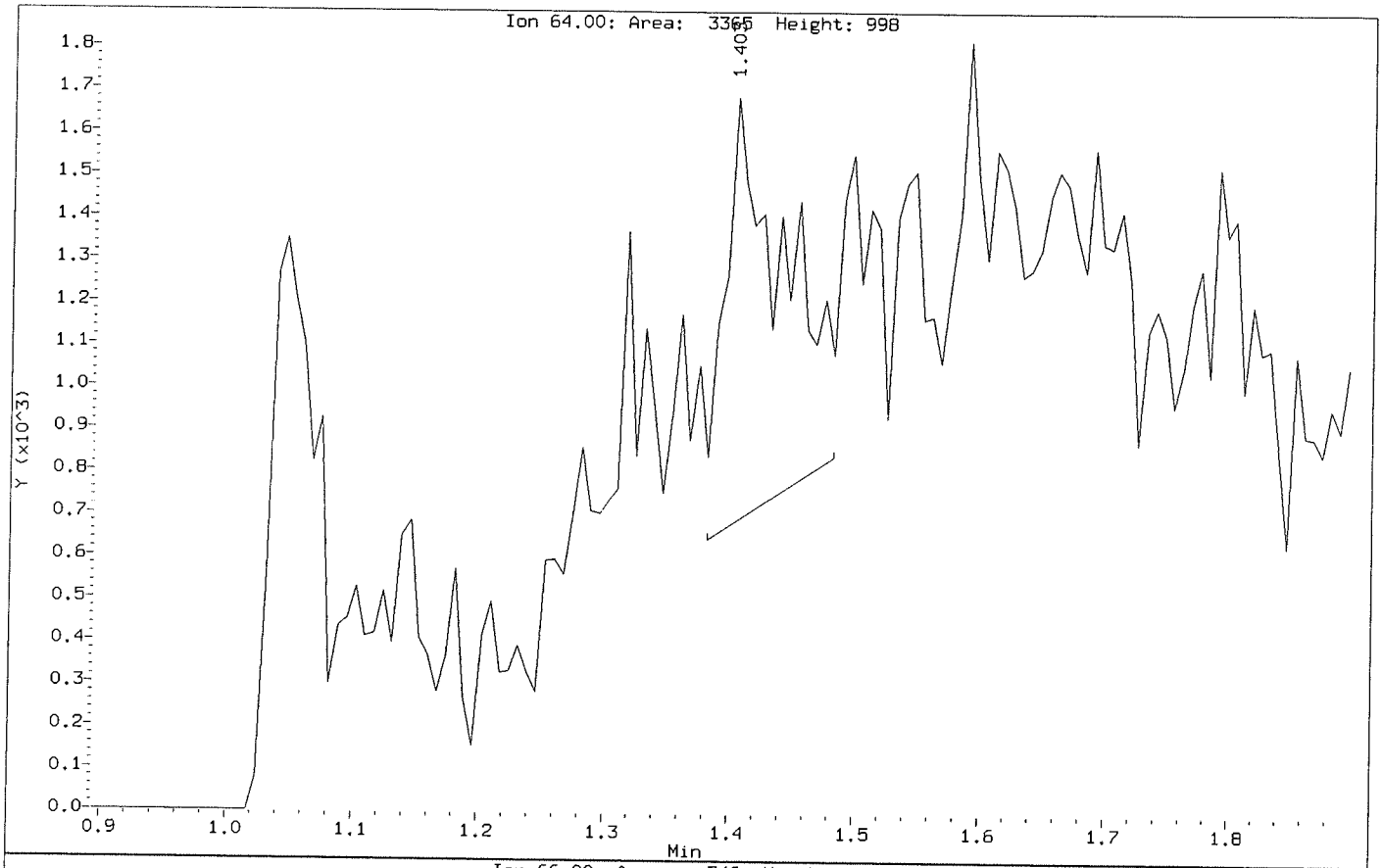
Compound: Carbon Tetrachloride
CAS Number: 56-23-5

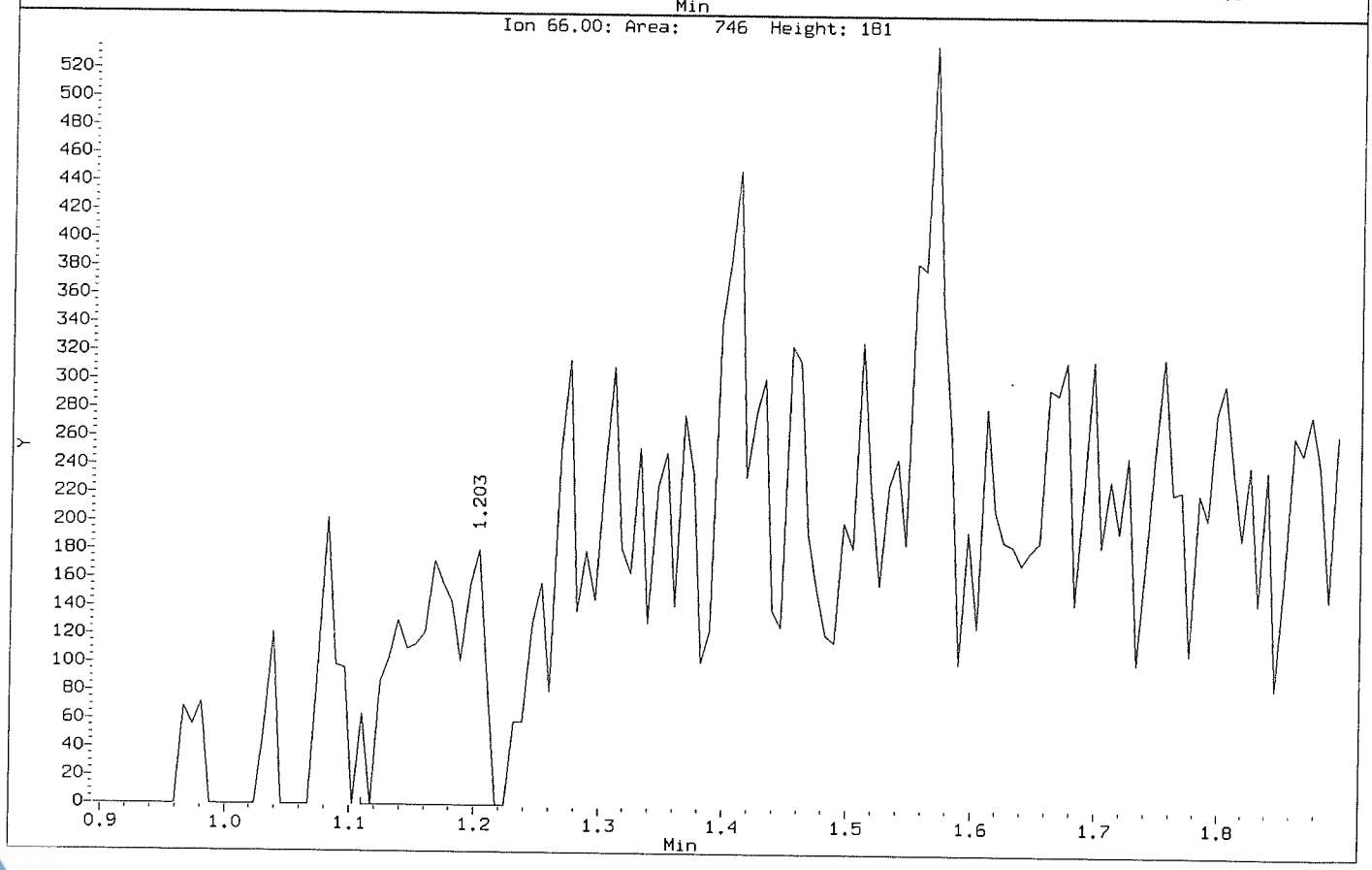




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Client Sample ID: VSTD000.5

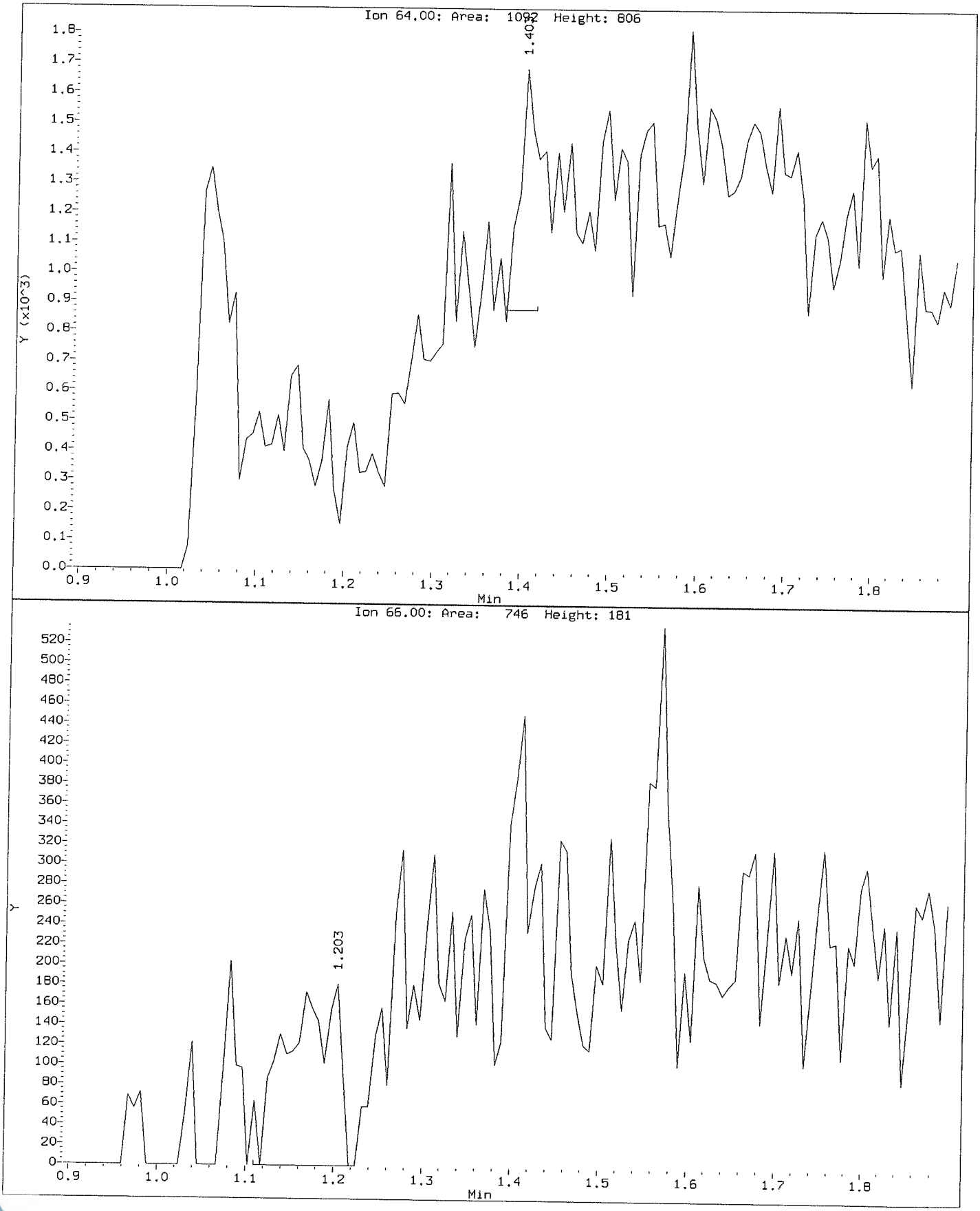
Compound: Chloroethane
CAS Number: 75-00-3





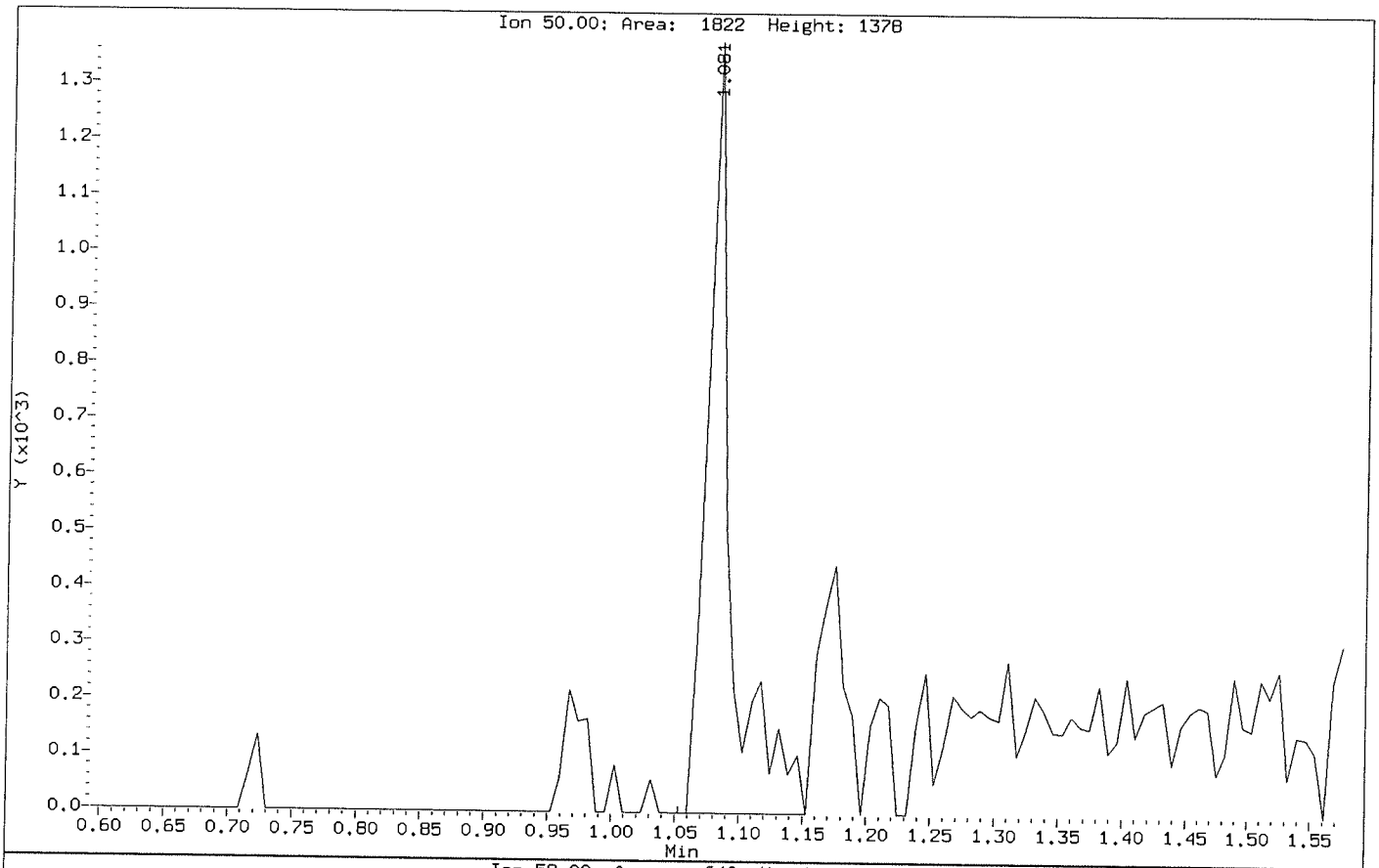
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Client Sample ID: VSTD000.5

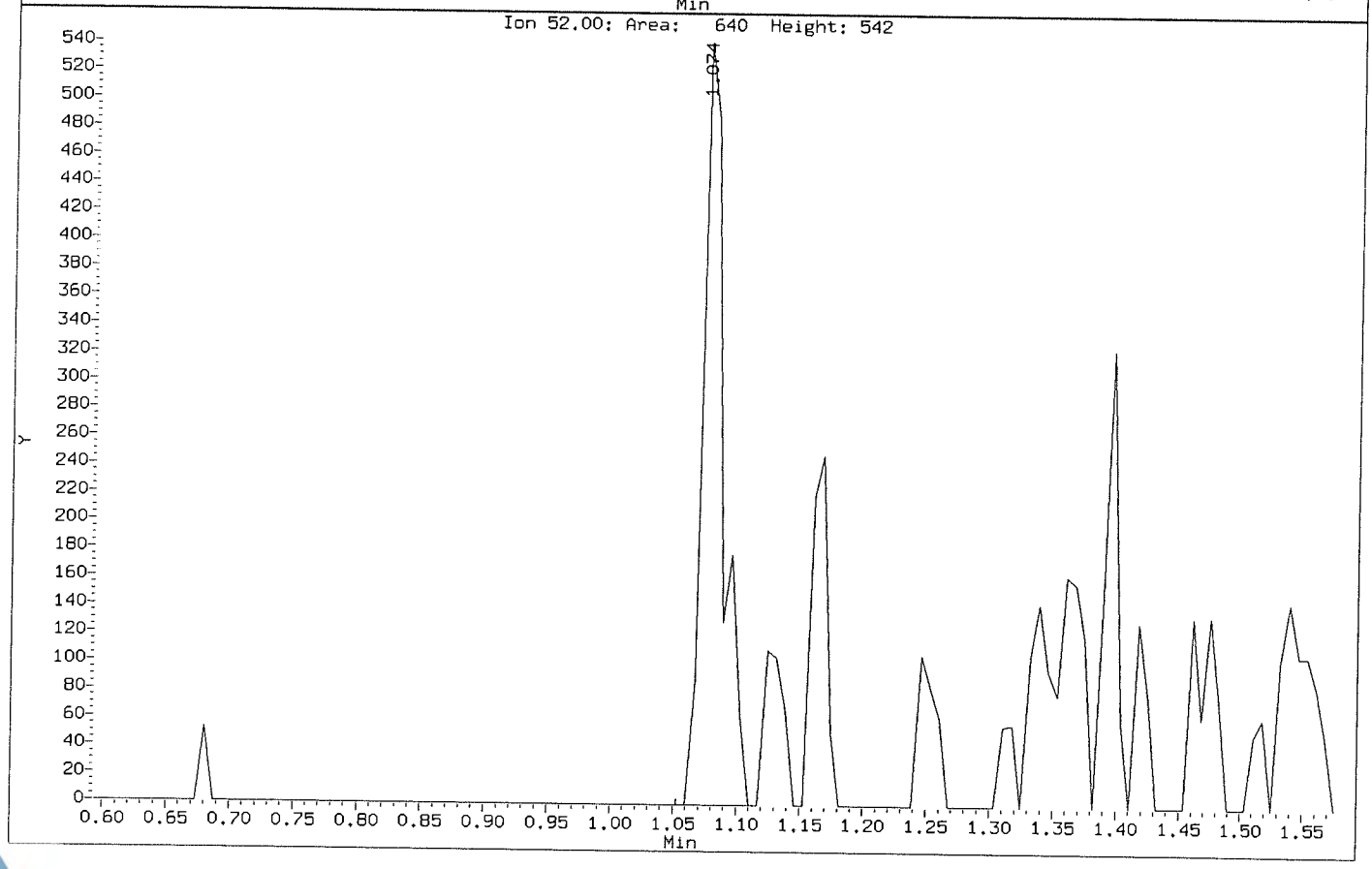
Compound: Chloroethane
CAS Number: 75-00-3



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Instrument: voa6.i
Client Sample ID: VSTD000.5

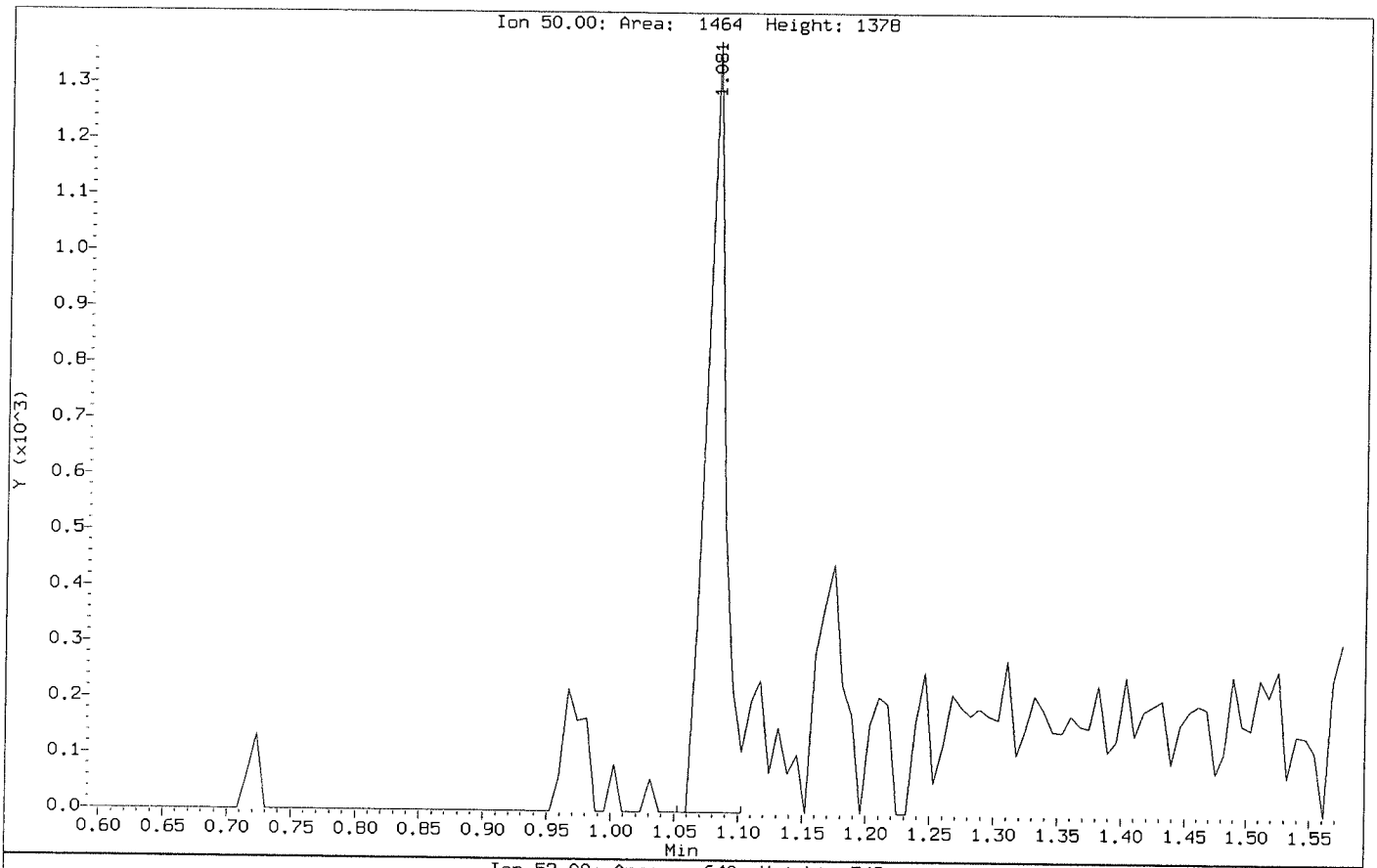
Compound: Chloromethane
CAS Number: 74-87-3

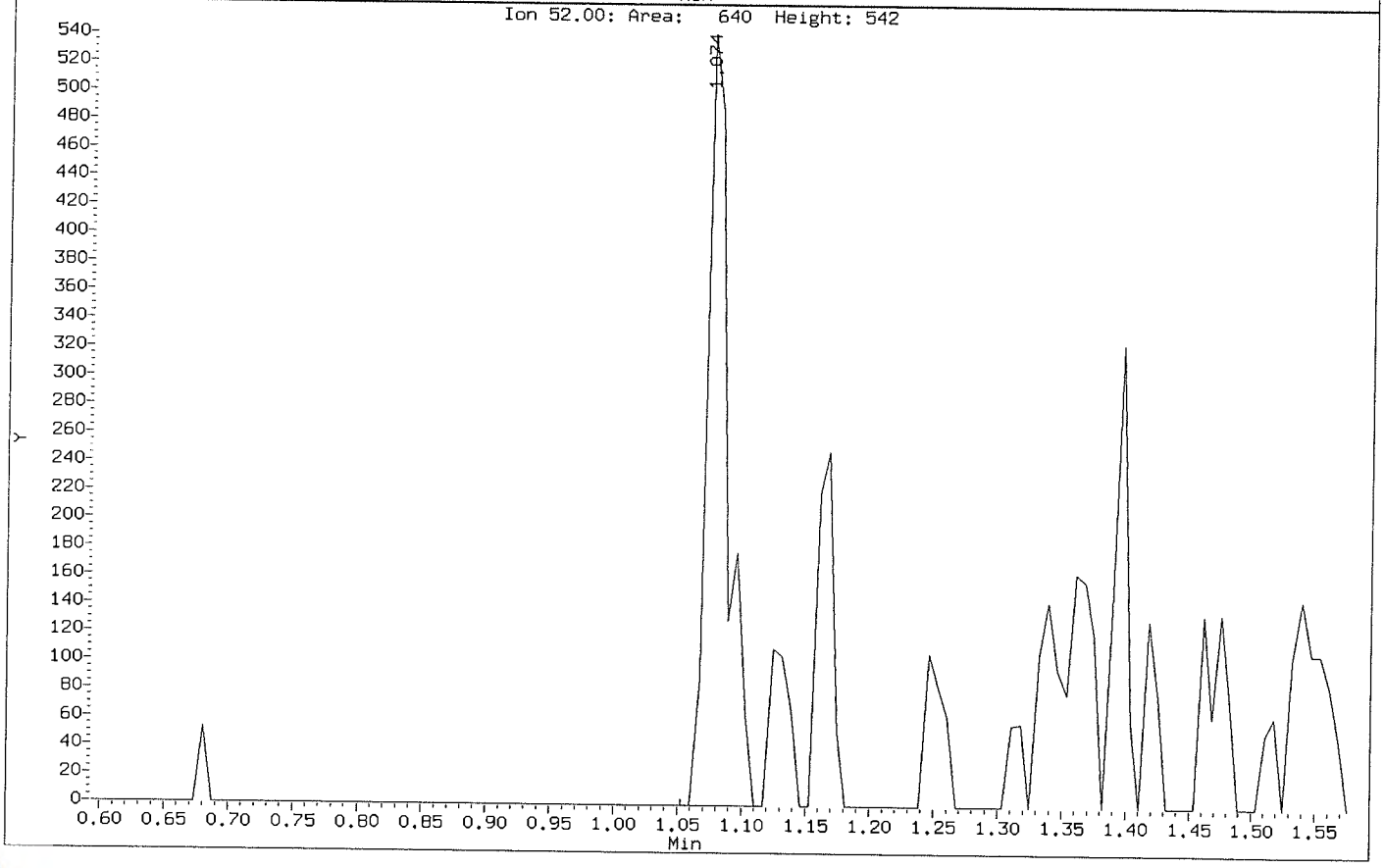




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Client Sample ID: VSTD000.5

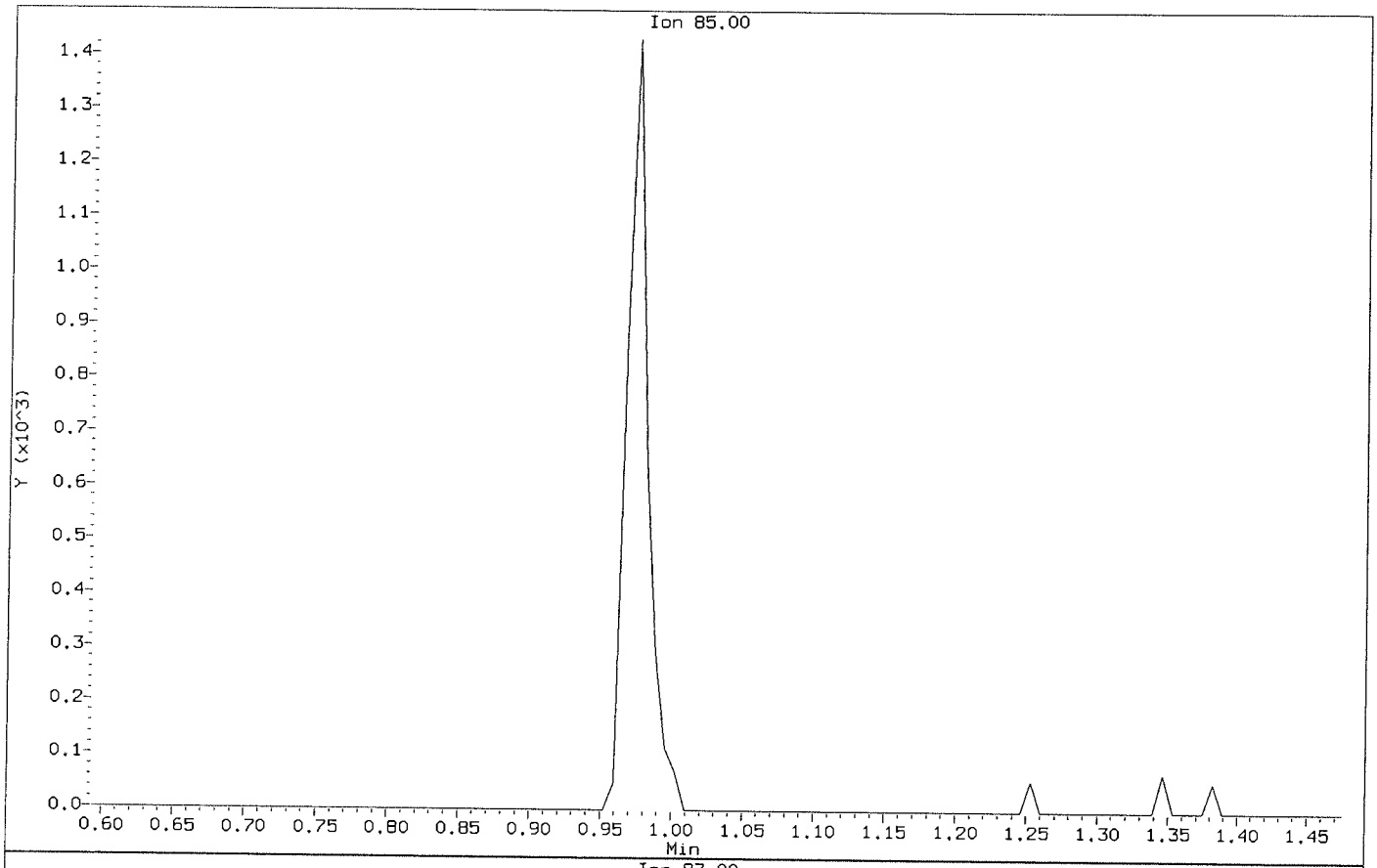
Compound: Chloromethane
CAS Number: 74-87-3

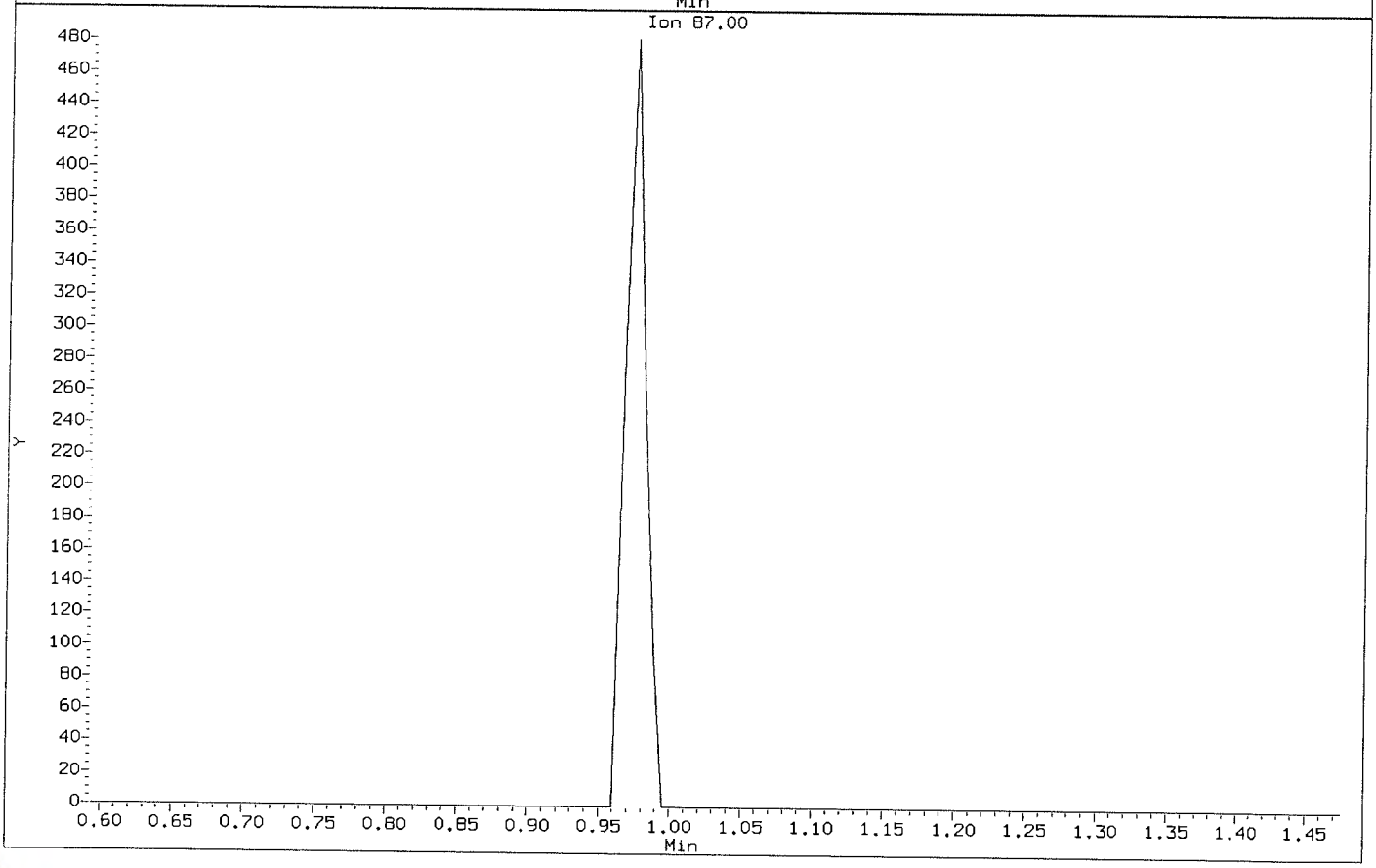




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Instrument: voa6.i
Client Sample ID: VSTD000.5

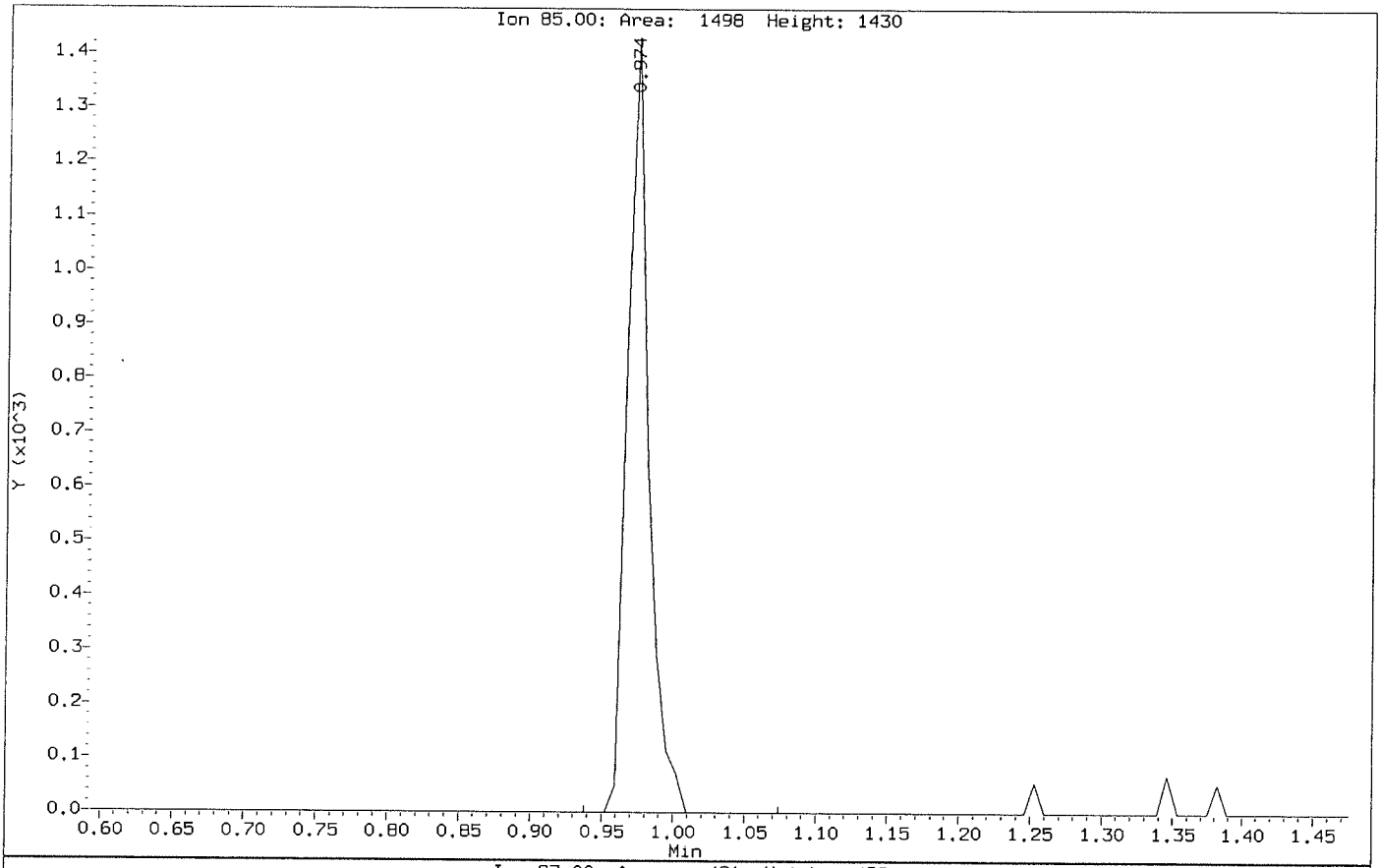
Compound: Dichlorodifluoromethane
CAS Number: 75-71-8

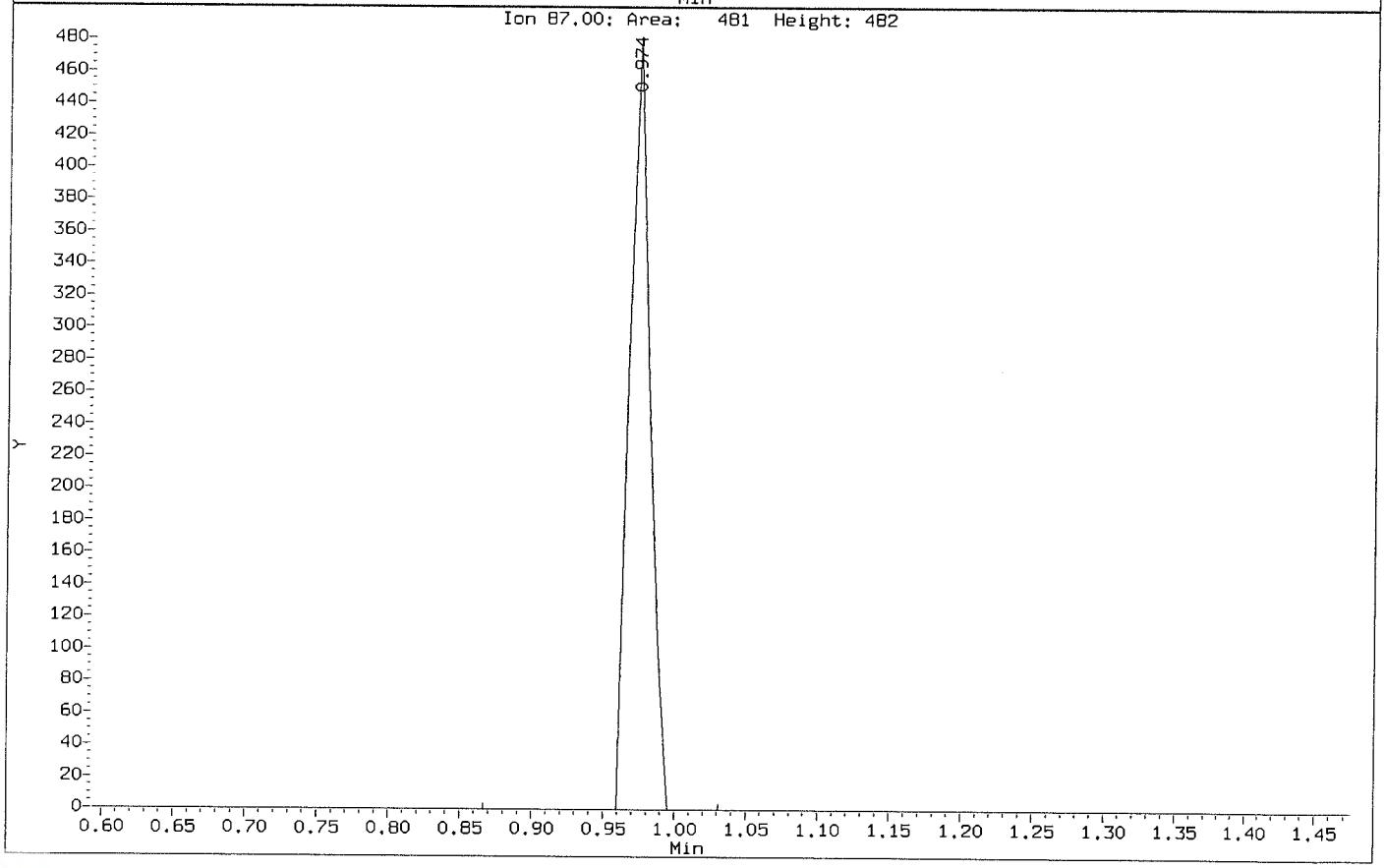




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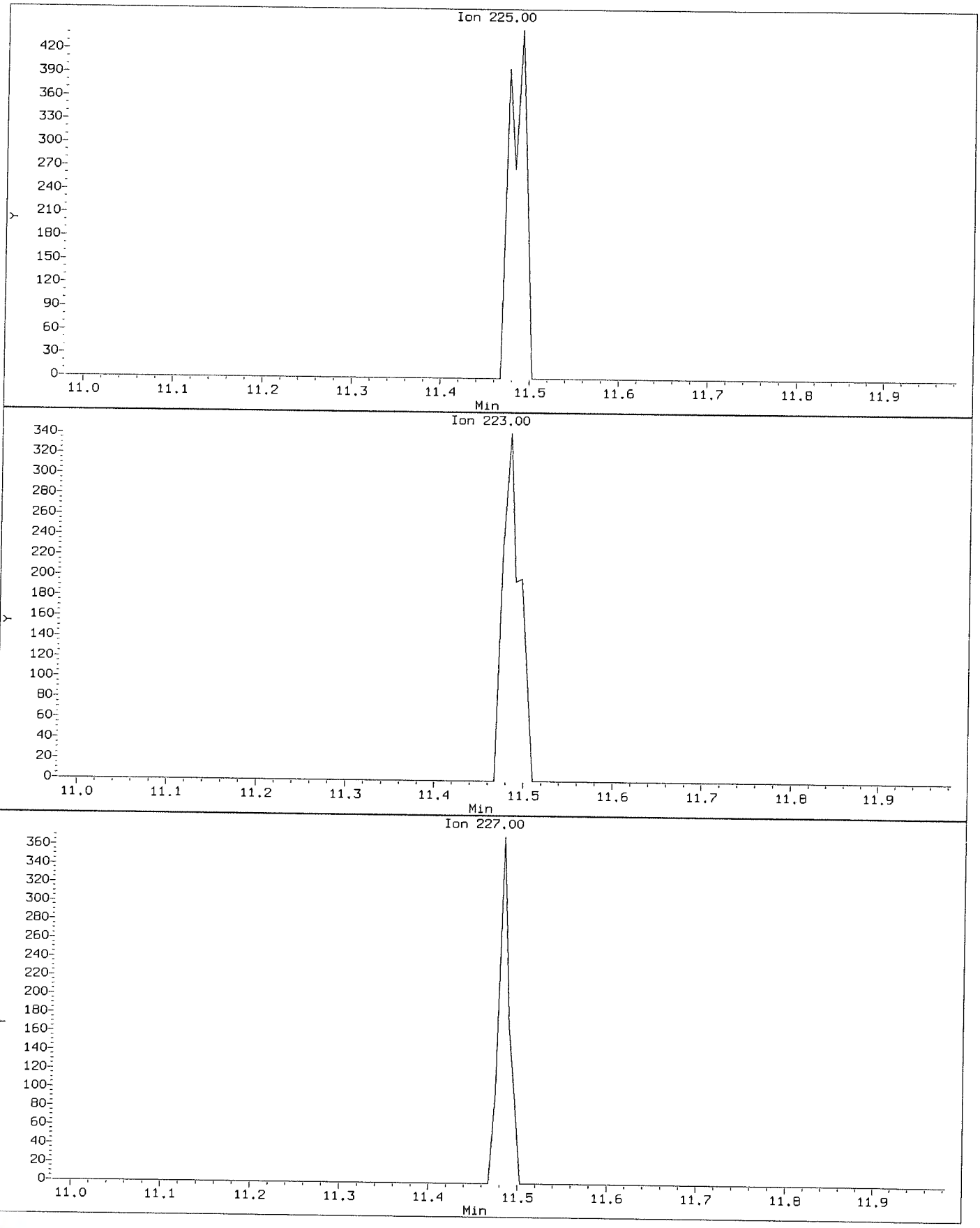
Compound: Dichlorodifluoromethane
CAS Number: 75-71-8





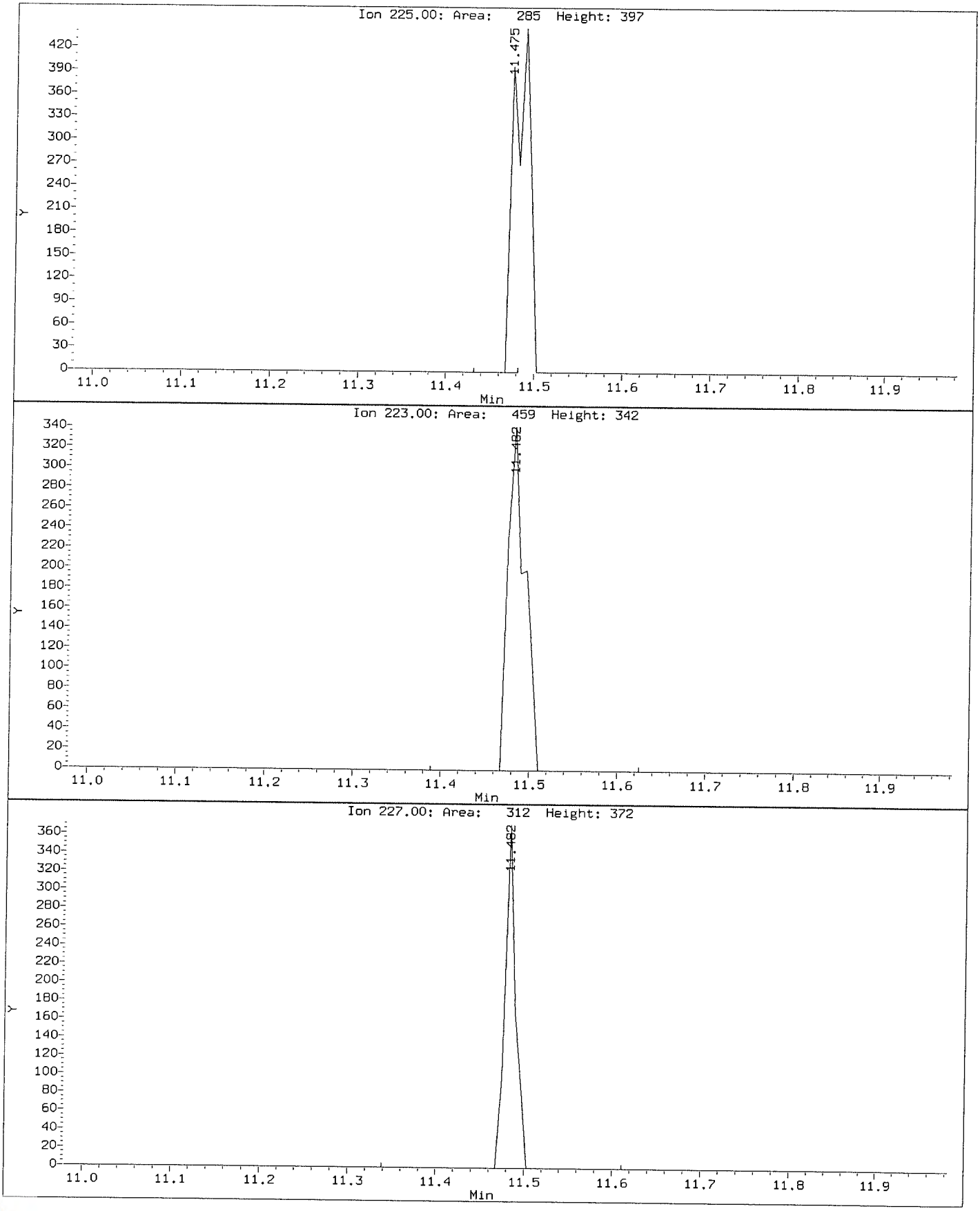
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Injection Date: 18-MAY-2021 11:43
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Hexachlorobutadiene
CAS Number: 87-68-3



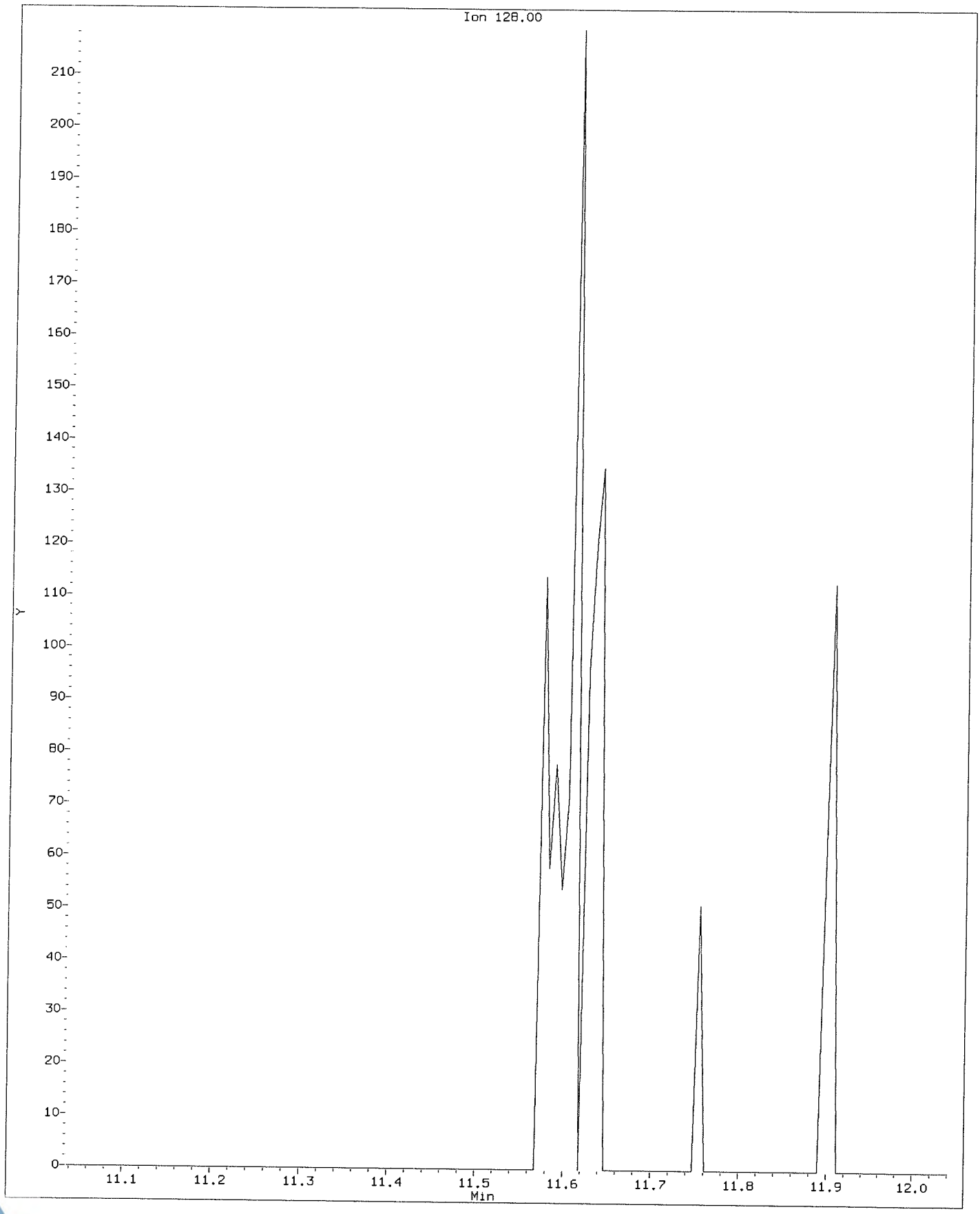
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Client Sample ID: VSTD000.5

Compound: Hexachlorobutadiene
CAS Number: 87-68-3



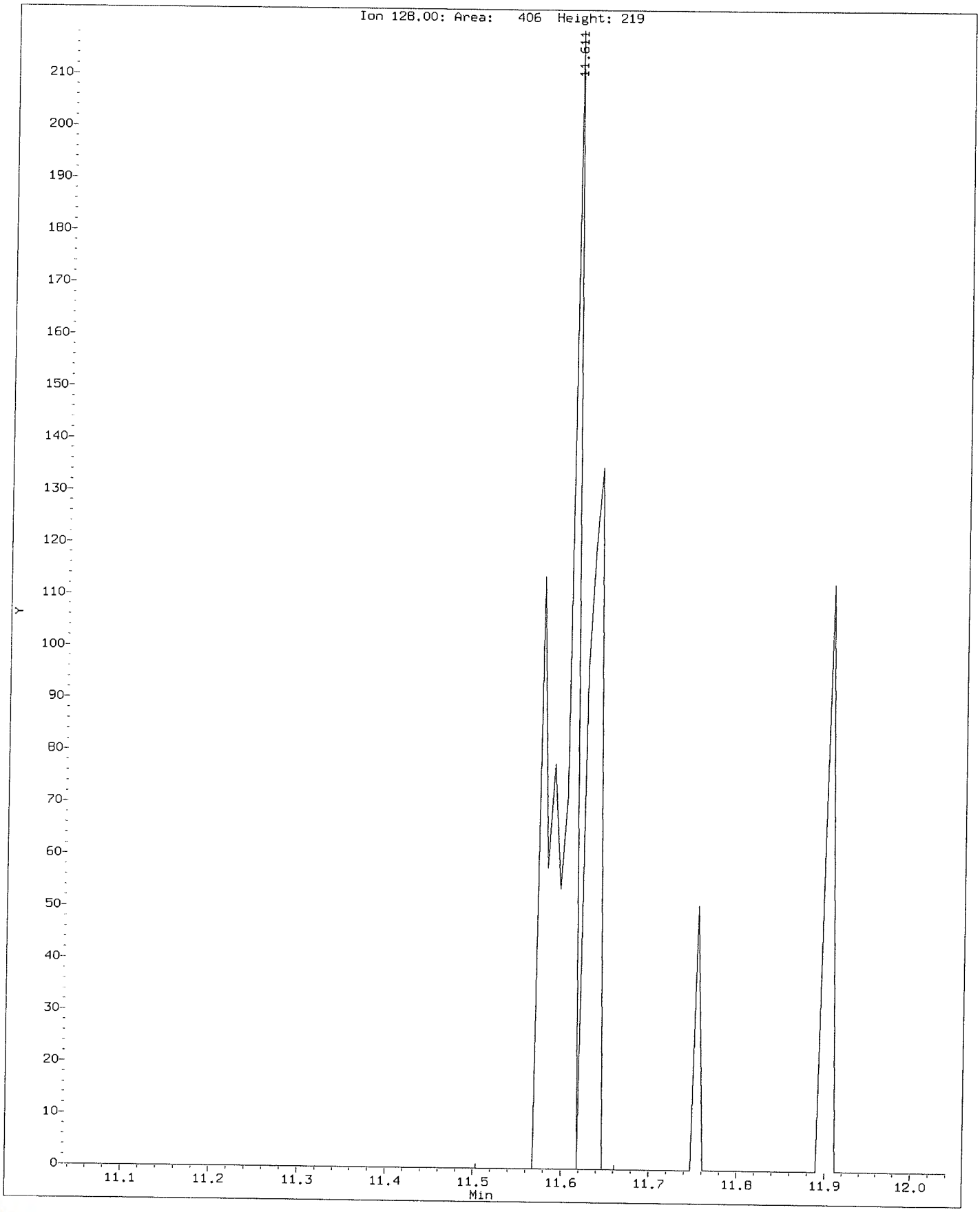
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Injection Date: 18-MAY-2021 11:43
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Naphthalene
CAS Number: 91-20-3



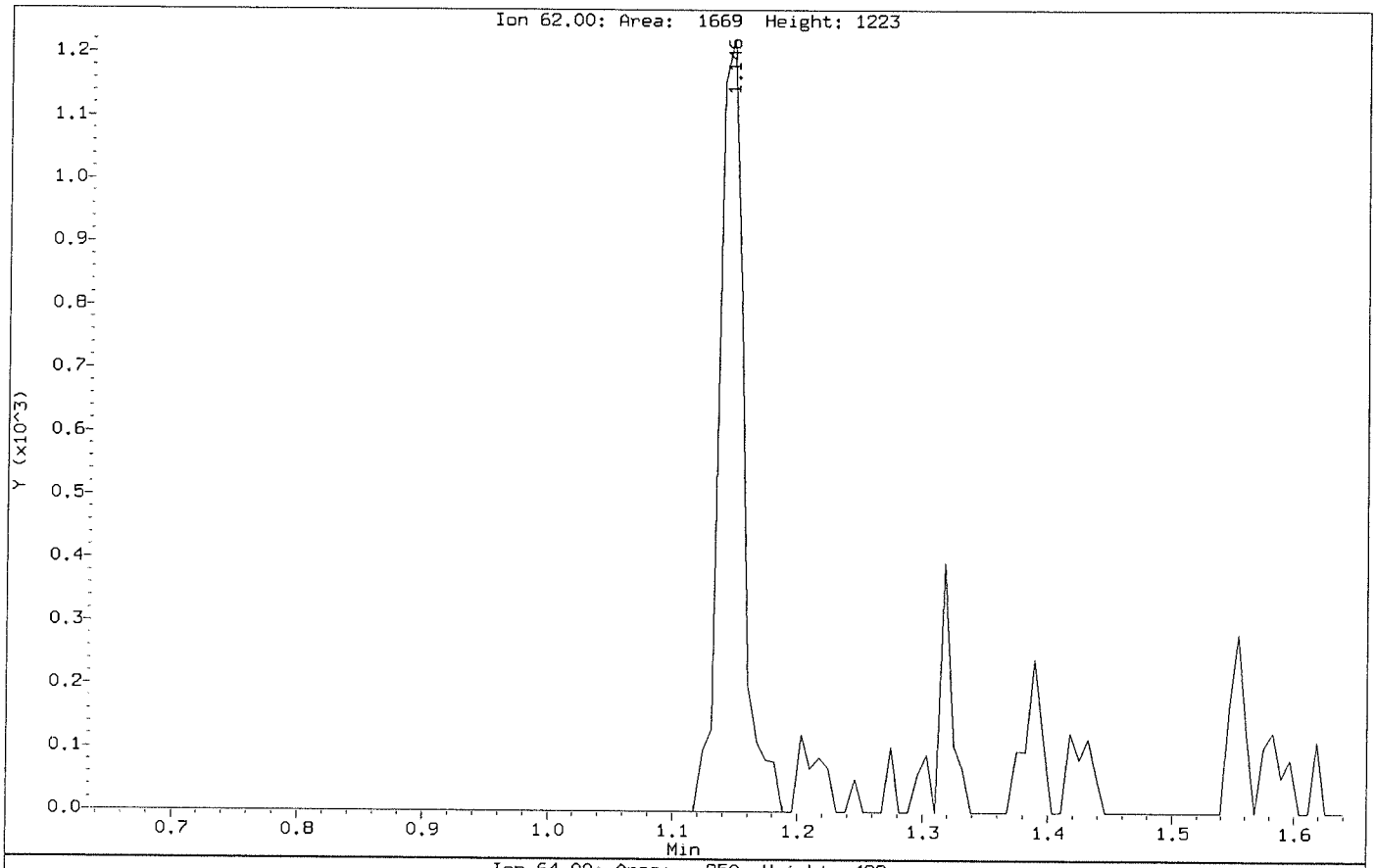
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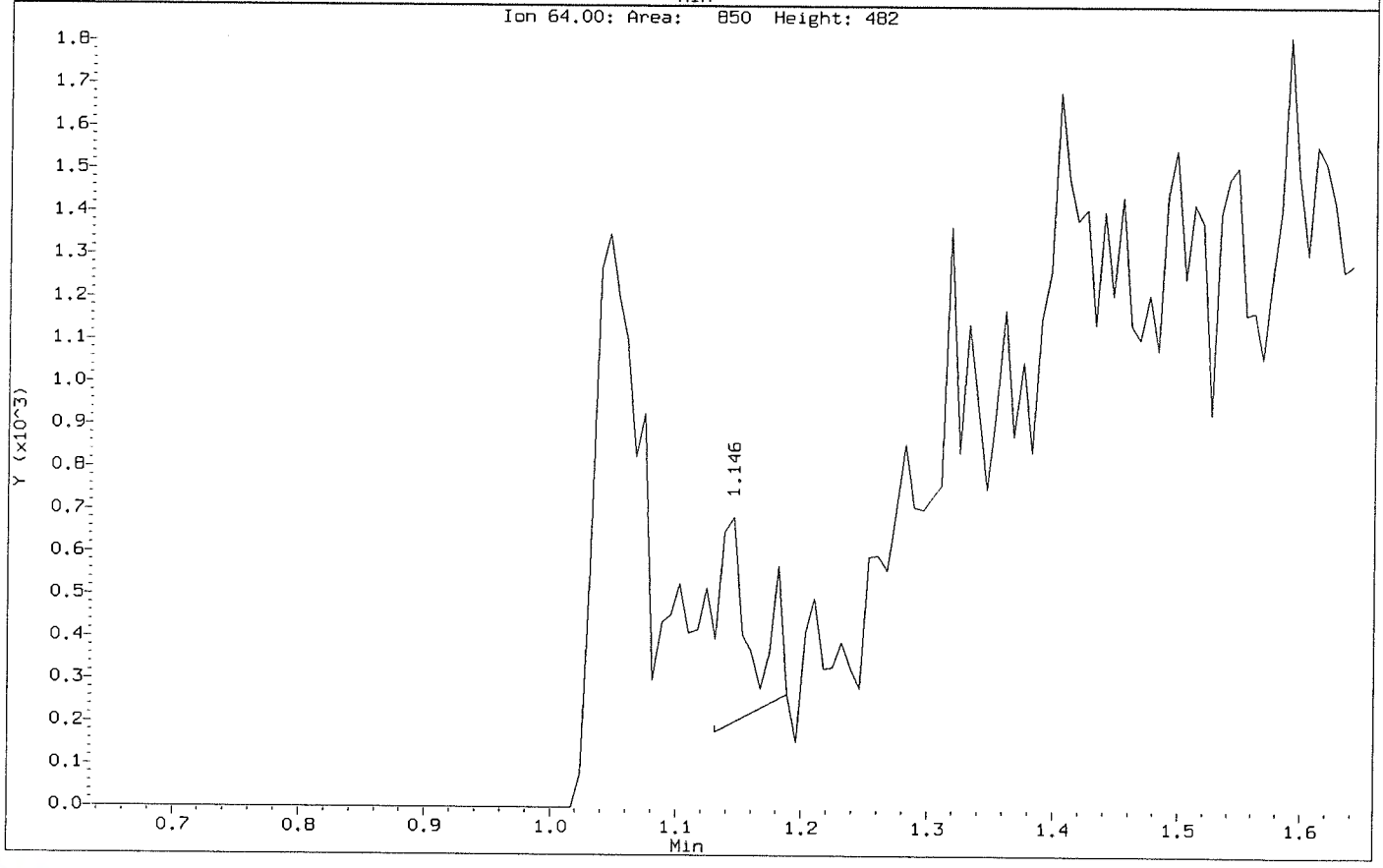
Compound: Naphthalene
CAS Number: 91-20-3



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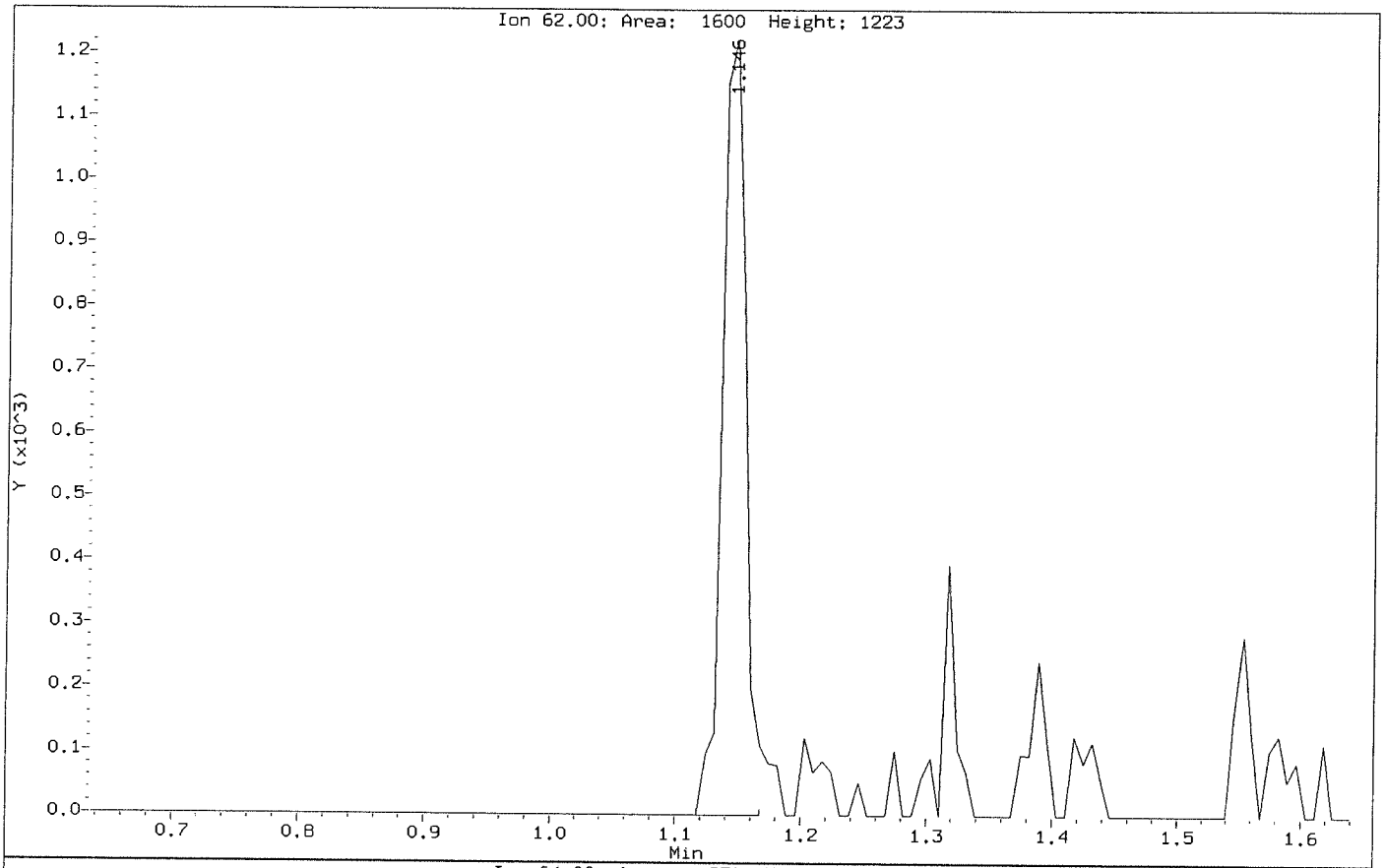
Compound: Vinyl Chloride
CAS Number: 75-01-4

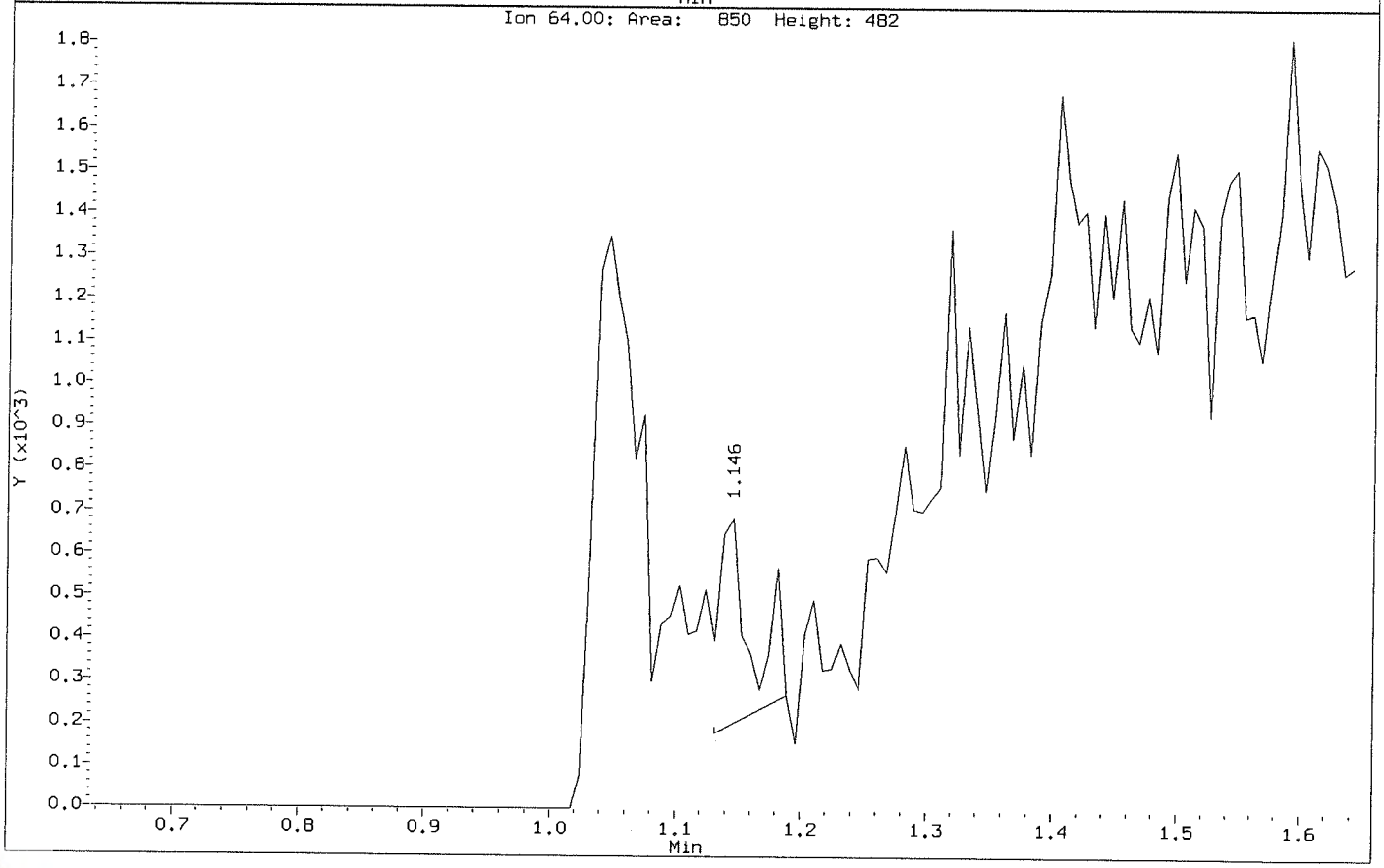




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Injection Date: 18-MAY-2021 11:43
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Vinyl Chloride
CAS Number: 75-01-4





ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210518.b\X051804.D
Lab Smp Id: VSDT001 Client Smp ID: VSTD001
Inj Date : 18-MAY-2021 12:25
Operator : PC Inst ID: voa6.i
Smp Info : VSDT001;VSTD001;1;3;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210518.b\8260W.m
Meth Date : 22-Jun-2021 08:20 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 11:43 Cal File: X051803.D
Als bottle: 5 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

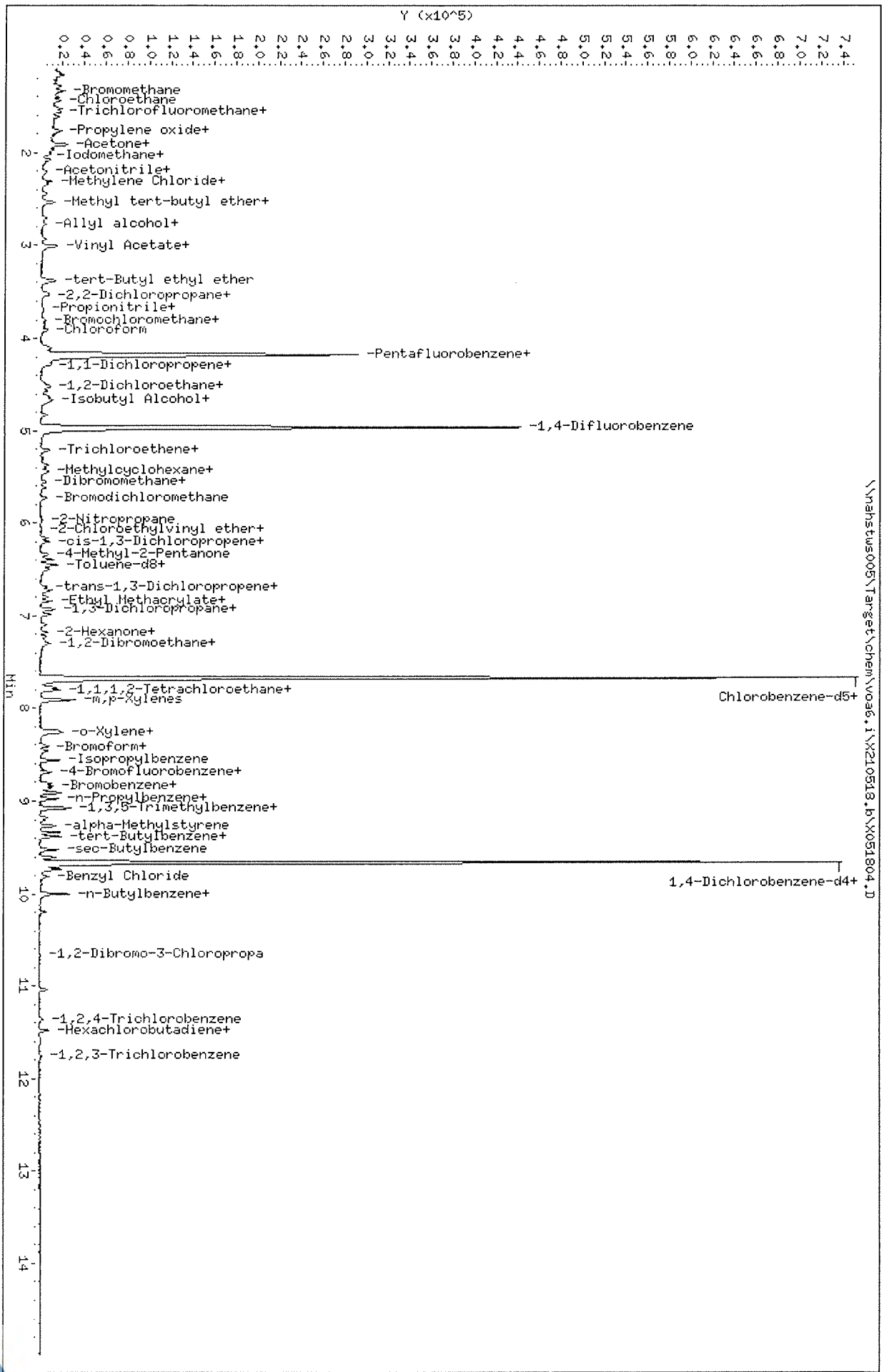
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	219851	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	365818	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	338329	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	153566	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	3259	1.00000	(Ta)
$ 69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	2729	1.00000	0.97(a)
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	2671	1.00000	0.86(a)
$ 48 Toluene-d8	98	6.396	6.396	(0.834)	7865	1.00000	1.94(a)
60 1,1,1,2-Tetrachloroethane	131	7.771	7.771	(1.013)	2501	1.00000	1.01(a)
31 1,1,1-Trichloroethane	97	4.089	4.089	(0.978)	3645	1.00000	0.97(a)
68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	3942	1.00000	1.03(aM)
138 Freon TF	101	1.926	1.926	(0.461)	2045	1.00000	0.98(a)
53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	2388	1.00000	1.21(a)
22 1,1-Dichloroethane	63	2.929	2.929	(0.700)	4505	1.00000	1.10(a)
11 1,1-Dichloroethene	96	1.912	1.912	(0.457)	2439	1.00000	1.10(a)
32 1,1-Dichloropropene	75	4.290	4.290	(0.863)	3437	1.00000	1.09(a)
93 1,2,3-Trichlorobenzene	180	11.754	11.754	(1.216)	800	1.00000	1.59(aM)
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	3361	1.00000	1.01(aMH)
90 1,2,4-Trichlorobenzene	180	11.360	11.360	(1.176)	1337	1.00000	3.38(aM)
79 1,2,4-Trimethylbenzene	105	9.383	9.383	(0.971)	9246	1.00000	1.18(a)
89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.103)	283	1.00000	2.92(aM)
57 1,2-Dibromoethane	107	7.270	7.270	(0.948)	2509	1.00000	1.06(a)

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	9.999	9.999	(1.035)	5563	1.00000	1.29(a)
33	1,2-Dichloroethane	62	4.562	4.562	(0.918)	4020	1.00000	1.11(a)
42	1,2-Dichloropropane	63	5.443	5.443	(1.095)	2590	1.00000	1.05(aM)
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	8467	1.00000	1.10(a)
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	5480	1.00000	1.24(a)
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	4419	1.00000	1.14(a)
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	6628	1.00000	1.71(a)
26	2,2-Dichloropropane	77	3.509	3.509	(0.839)	3735	1.00000	1.02(a)
24	2-Butanone	43	3.609	3.609	(0.863)	1748	2.00000	2.15(aM)
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	8473	1.00000	1.23(aM)
52	2-Hexanone	43	7.098	7.098	(0.925)	4644	2.00000	2.97(a)
77	4-Chlorotoluene	91	9.075	9.075	(0.939)	9387	1.00000	1.17(a)
82	p-Isopropyltoluene	119	9.655	9.655	(0.999)	8833	1.00000	1.16(a)
45	4-Methyl-2-Pentanone	43	6.331	6.331	(0.825)	6100	2.00000	2.91(a)
10	Acetone	43	1.976	1.976	(0.473)	2806	2.00000	0.15(a)
37	Benzene	78	4.519	4.519	(0.909)	9079	1.00000	1.00(a)
74	Bromobenzene	156	8.810	8.810	(0.912)	3170	1.00000	1.23(a)
29	Bromochloromethane	128	3.803	3.803	(0.909)	1376	1.00000	1.02(a)
39	Bromodichloromethane	83	5.729	5.729	(1.153)	3683	1.00000	1.04(aM)
66	Bromoform	173	8.416	8.416	(1.097)	1736	1.00000	1.06(Ta)
6	Bromomethane	94	1.339	1.339	(0.320)	3018	1.00000	0.84(aM)
19	Carbon Disulfide	76	2.076	2.076	(0.497)	10496	2.00000	2.02(a)
34	Carbon Tetrachloride	117	4.268	4.268	(0.859)	3274	1.00000	1.02(aH)
59	Chlorobenzene	112	7.692	7.692	(1.003)	7182	1.00000	1.08(a)
7	Chloroethane	64	1.403	1.403	(0.336)	1604	1.00000	0.96(aM)
28	Chloroform	83	3.917	3.917	(0.937)	4735	1.00000	1.01(a)
3	Chloromethane	50	1.073	1.073	(0.257)	3160	1.00000	1.56(aM)
27	cis-1,2-Dichloroethene	96	3.538	3.538	(0.846)	2814	1.00000	1.11(a)
46	cis-1,3-Dichloropropene	75	6.166	6.166	(1.241)	4187	1.00000	1.04(a)
55	Dibromochloromethane	129	7.176	7.176	(0.936)	3082	1.00000	1.16(a)
44	Dibromomethane	93	5.558	5.558	(1.118)	1945	1.00000	1.10(a)
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	2403	1.00000	2.91(a)
61	Ethylbenzene	106	7.800	7.800	(1.017)	3237	1.00000	0.98(a)
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	1107	1.00000	4.31(aM)
67	Isopropylbenzene	105	8.559	8.559	(1.116)	10338	1.00000	1.03(a)
62	m,p-Xylenes	106	7.907	7.907	(1.031)	8386	2.00000	1.98(a)
17	Methylene Chloride	84	2.306	2.306	(0.551)	2091	1.00000	0.94(a)
87	n-Butylbenzene	91	9.999	9.999	(1.035)	8481	1.00000	1.17(a)
73	n-Propylbenzene	91	8.917	8.917	(0.923)	12352	1.00000	1.13(a)
92	Naphthalene	128	11.567	11.567	(1.197)	1471	1.00000	3.78(aM)
63	o-Xylene	106	8.244	8.244	(1.075)	4167	1.00000	1.01(a)
81	sec-Butylbenzene	105	9.519	9.519	(0.985)	9907	1.00000	1.10(a)
64	Styrene	104	8.265	8.265	(1.078)	6890	1.00000	2.62(a)
78	tert-Butylbenzene	119	9.340	9.340	(0.967)	7755	1.00000	1.19(a)
56	Tetrachloroethene	164	6.933	6.933	(0.904)	1738	1.00000	0.92(a)
50	Toluene	91	6.446	6.446	(0.840)	9931	1.00000	1.01(a)
20	trans-1,2-Dichloroethene	96	2.528	2.528	(0.604)	1937	1.00000	0.91(a)
51	trans-1,3-Dichloropropene	75	6.689	6.689	(1.346)	3517	1.00000	1.00(a)
38	Trichloroethene	130	5.207	5.207	(1.048)	2724	1.00000	1.12(a)
8	Trichlorofluoromethane	101	1.561	1.561	(0.373)	4657	1.00000	1.10(a)
5	Vinyl Chloride	62	1.145	1.145	(0.274)	2800	1.00000	1.05(aM)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



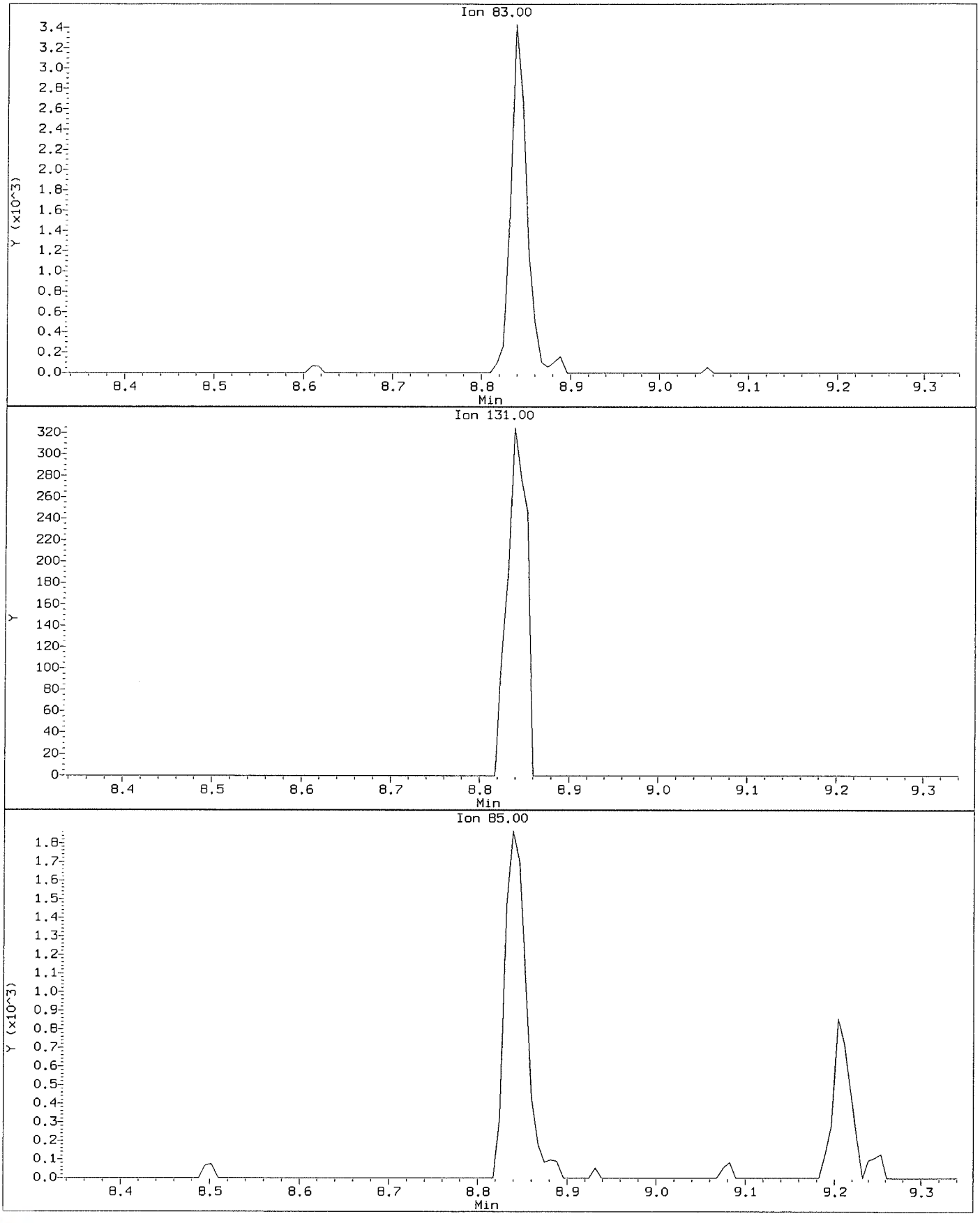
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Client ID: VSTD001
Sample Info: VSDT001,VSTD001,1,3,,
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

\\nahstws005\Target\chem\voa6.i\X210518.b\X051804.D

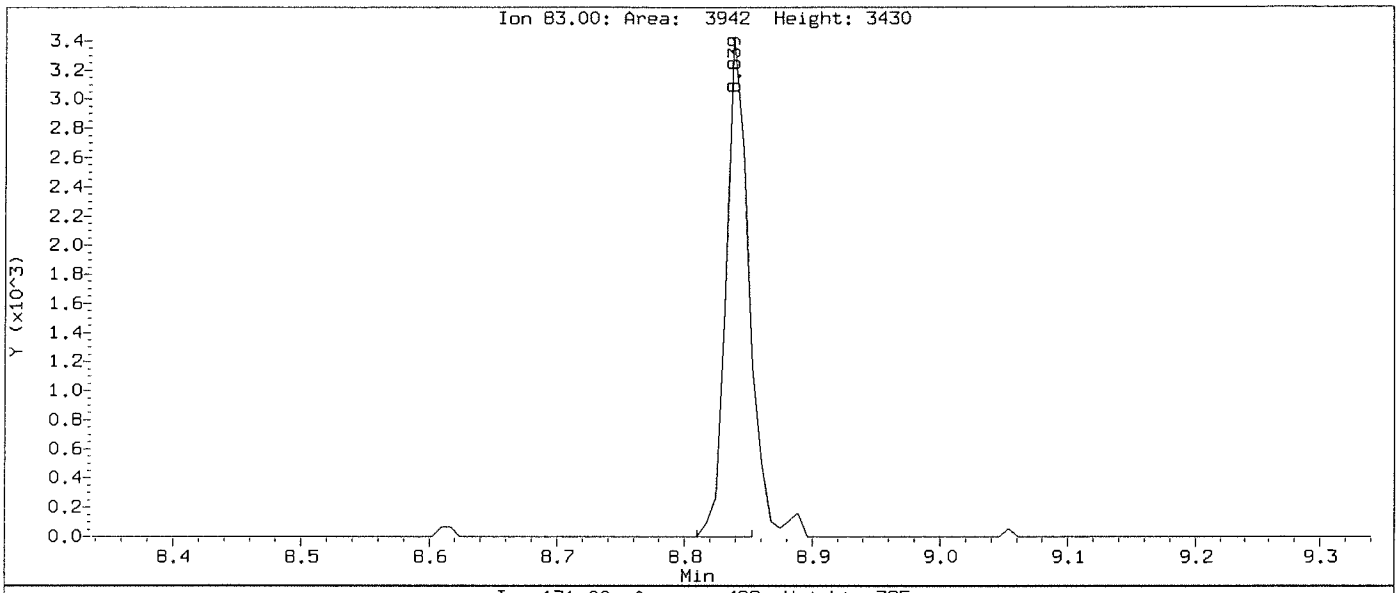
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Instrument: voa6.i
Client Sample ID: VSTD001

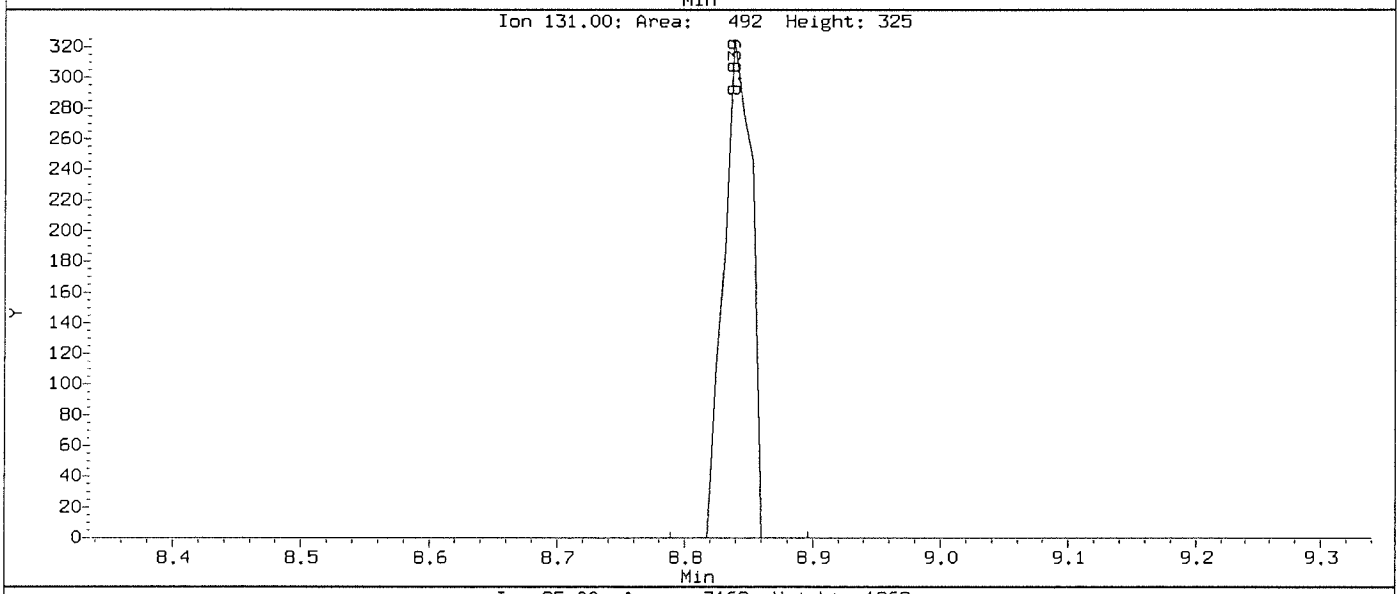
Compound: 1,1,2,2-Tetrachloroethane
CAS Number: 79-34-5

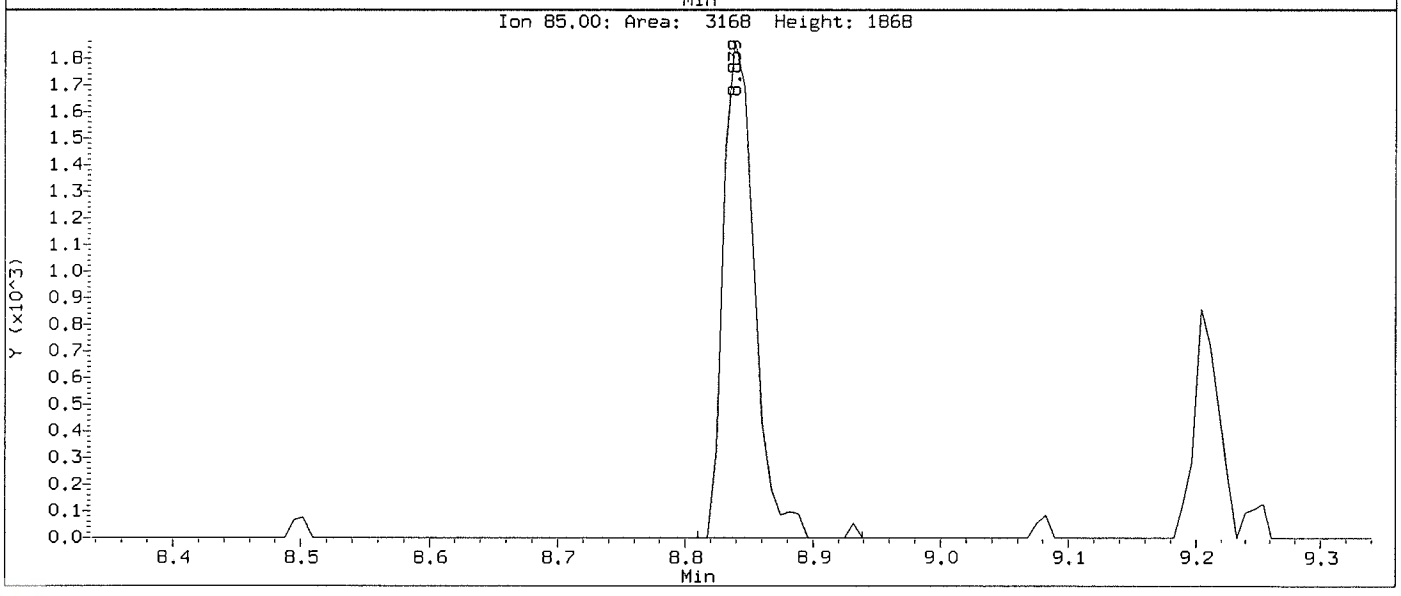


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Injection Date: 18-MAY-2021 12:25
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,1,2,2-Tetrachloroethane
CAS Number: 79-34-5

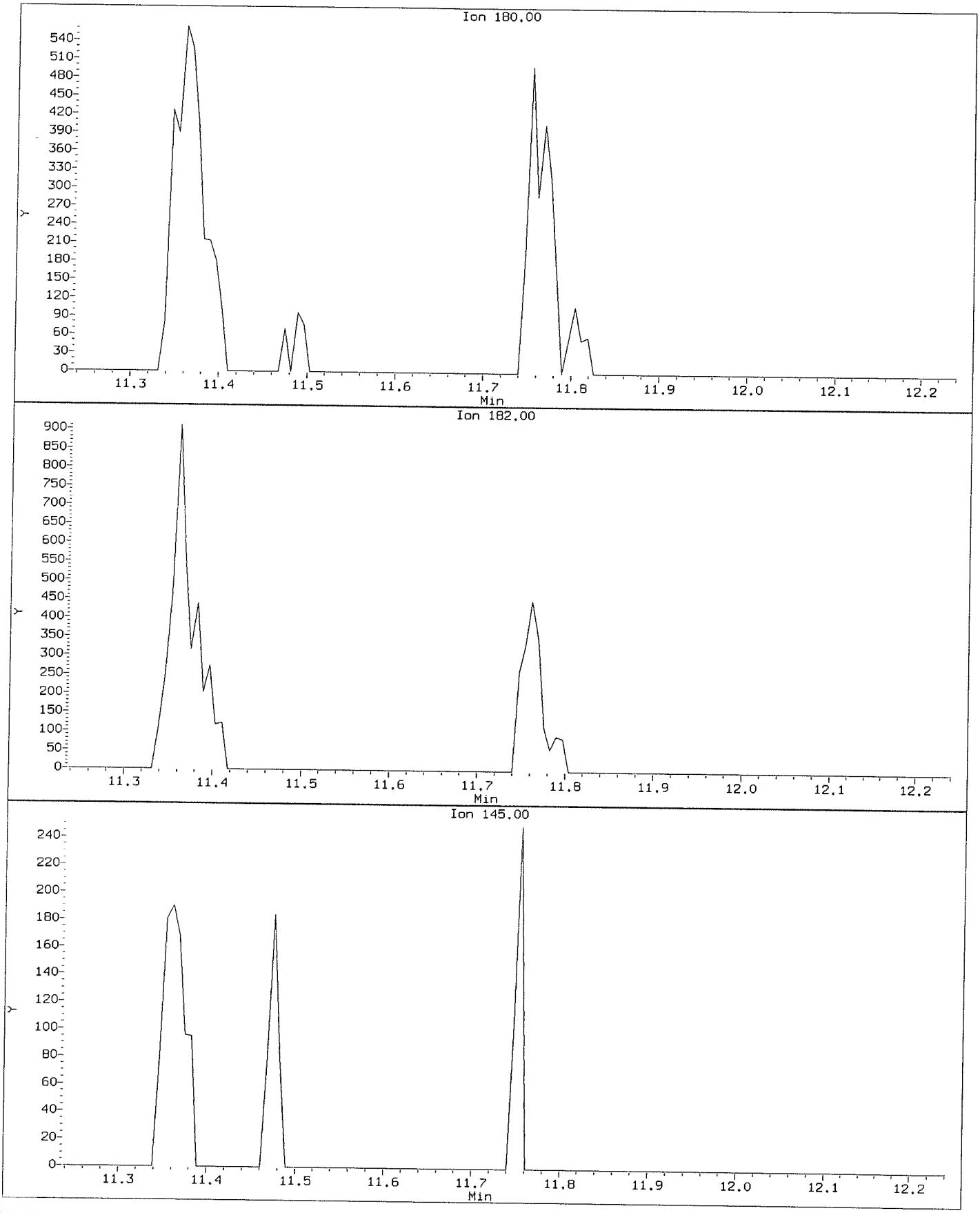






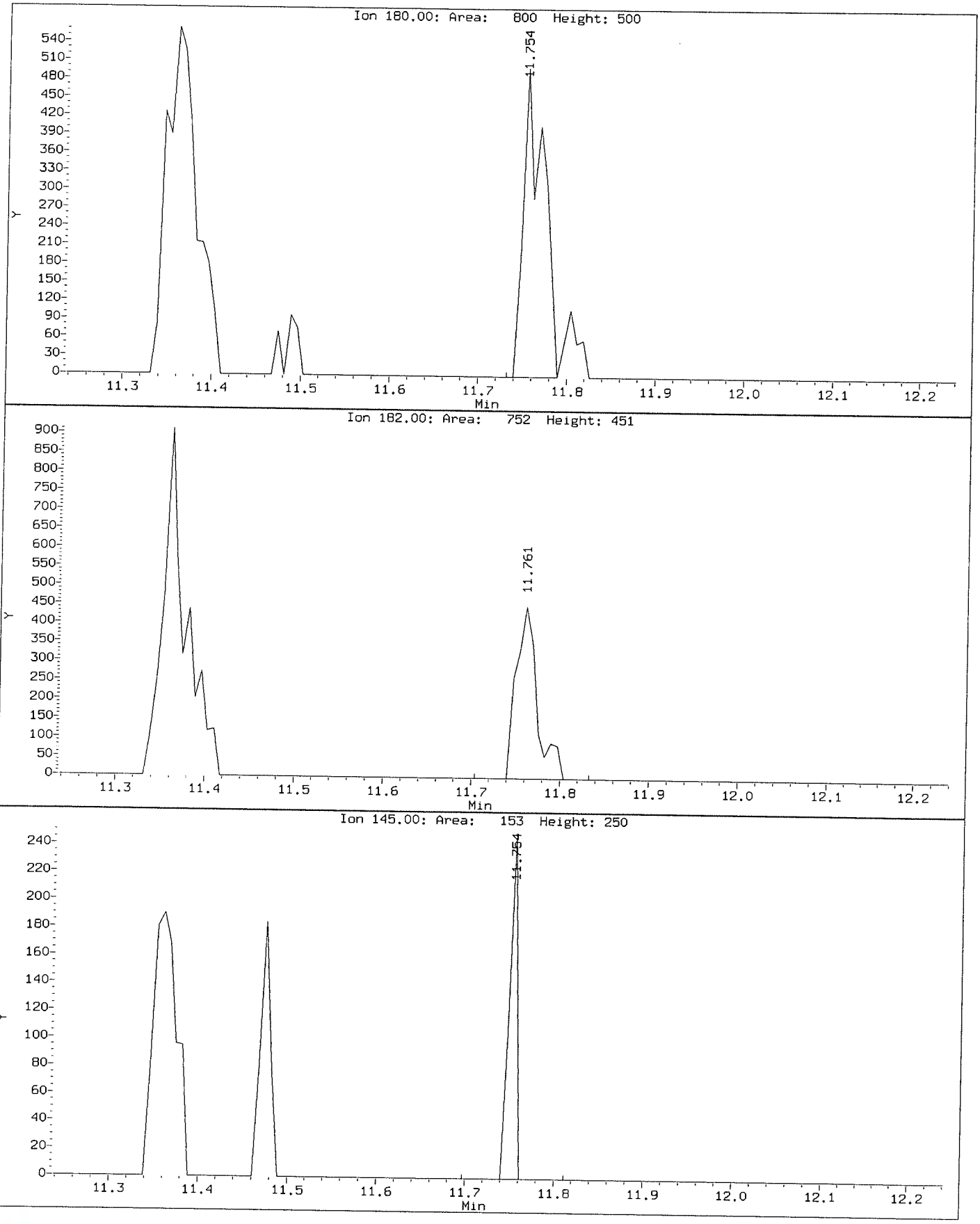
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Injection Date: 18-MAY-2021 12:25
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2,3-Trichlorobenzene
CAS Number: 87-61-6



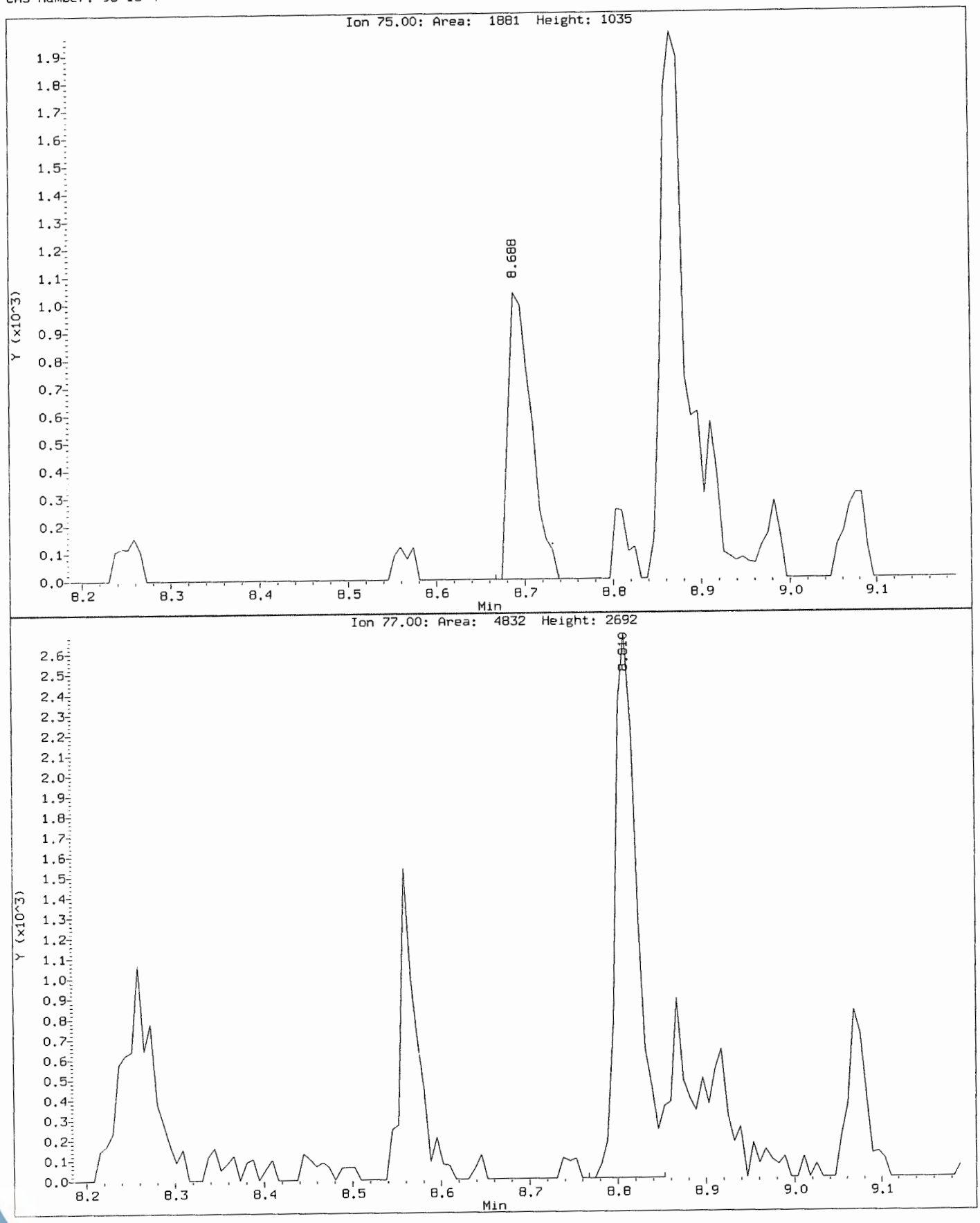
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Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2,3-Trichlorobenzene
CAS Number: 87-61-6



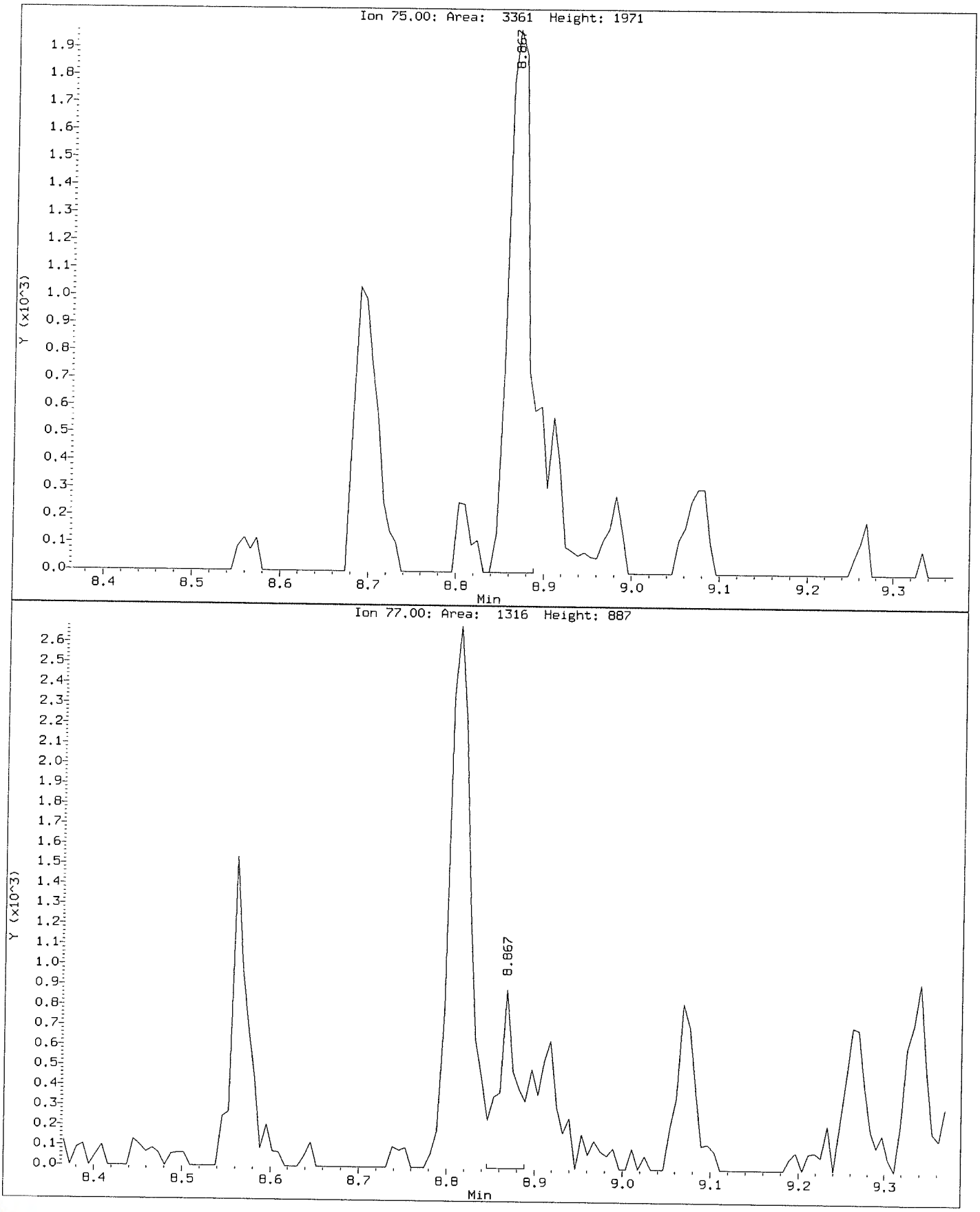
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Injection Date: 18-MAY-2021 12:25
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



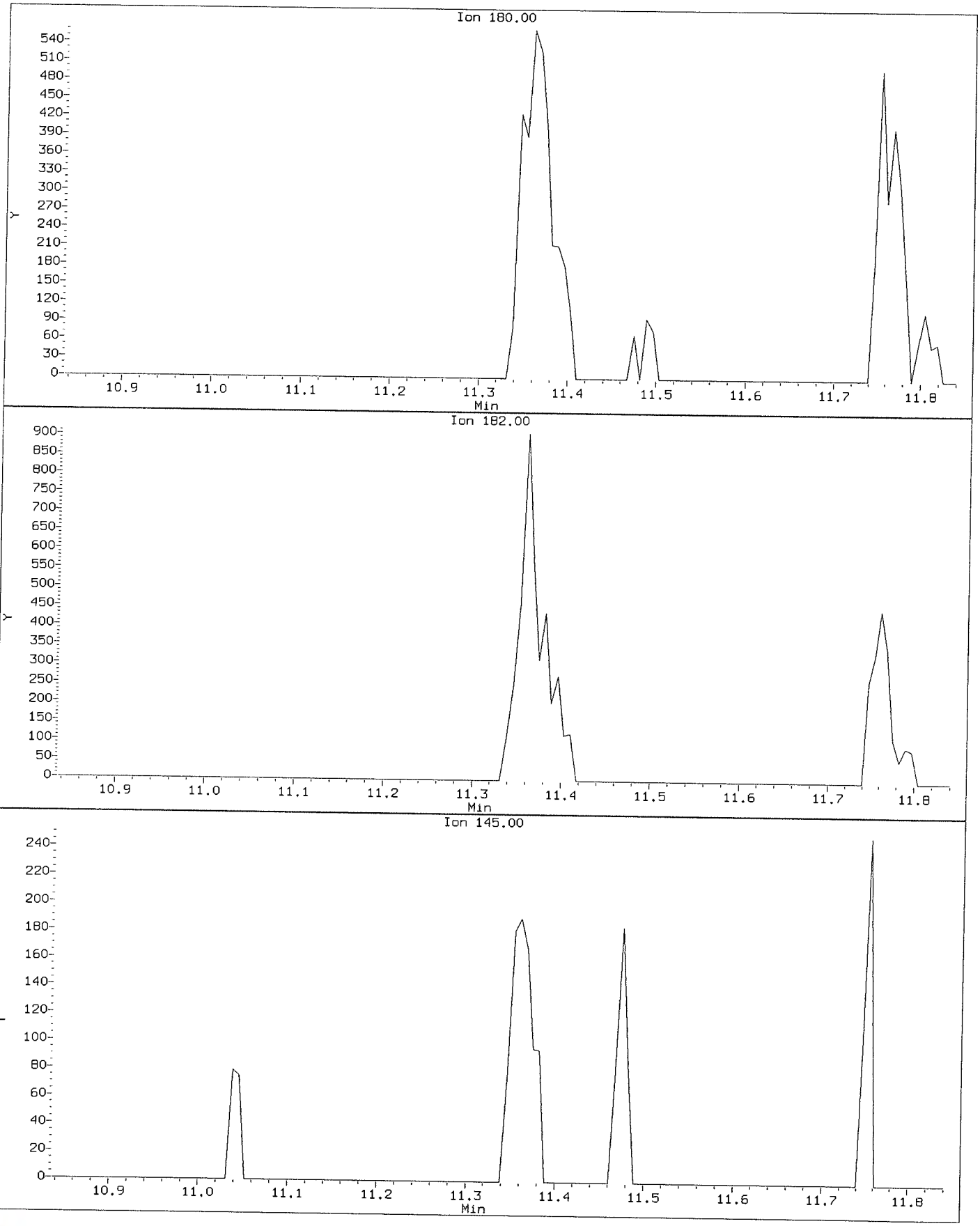
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Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



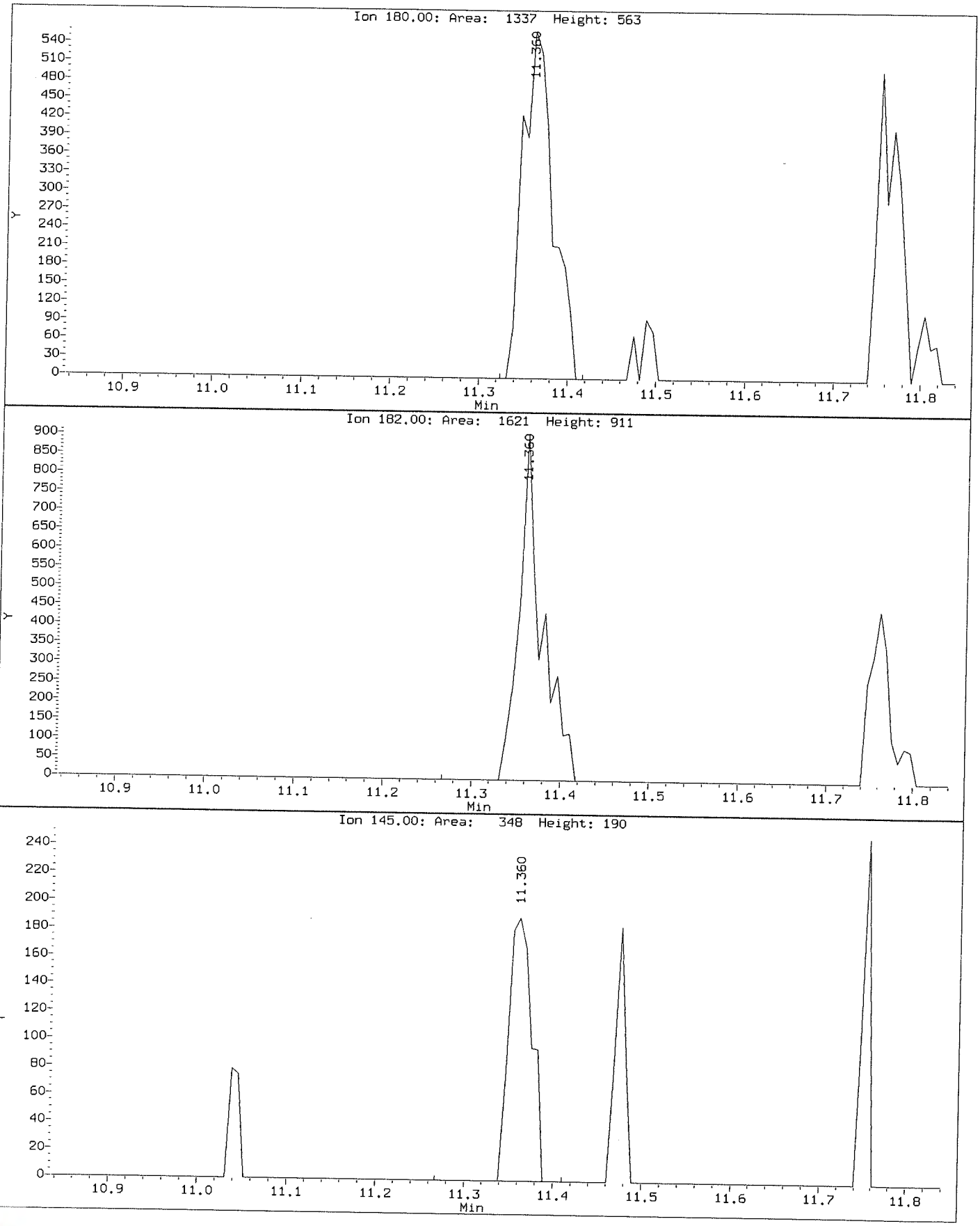
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Injection Date: 18-MAY-2021 12:25
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2,4-Trichlorobenzene
CAS Number: 120-82-1



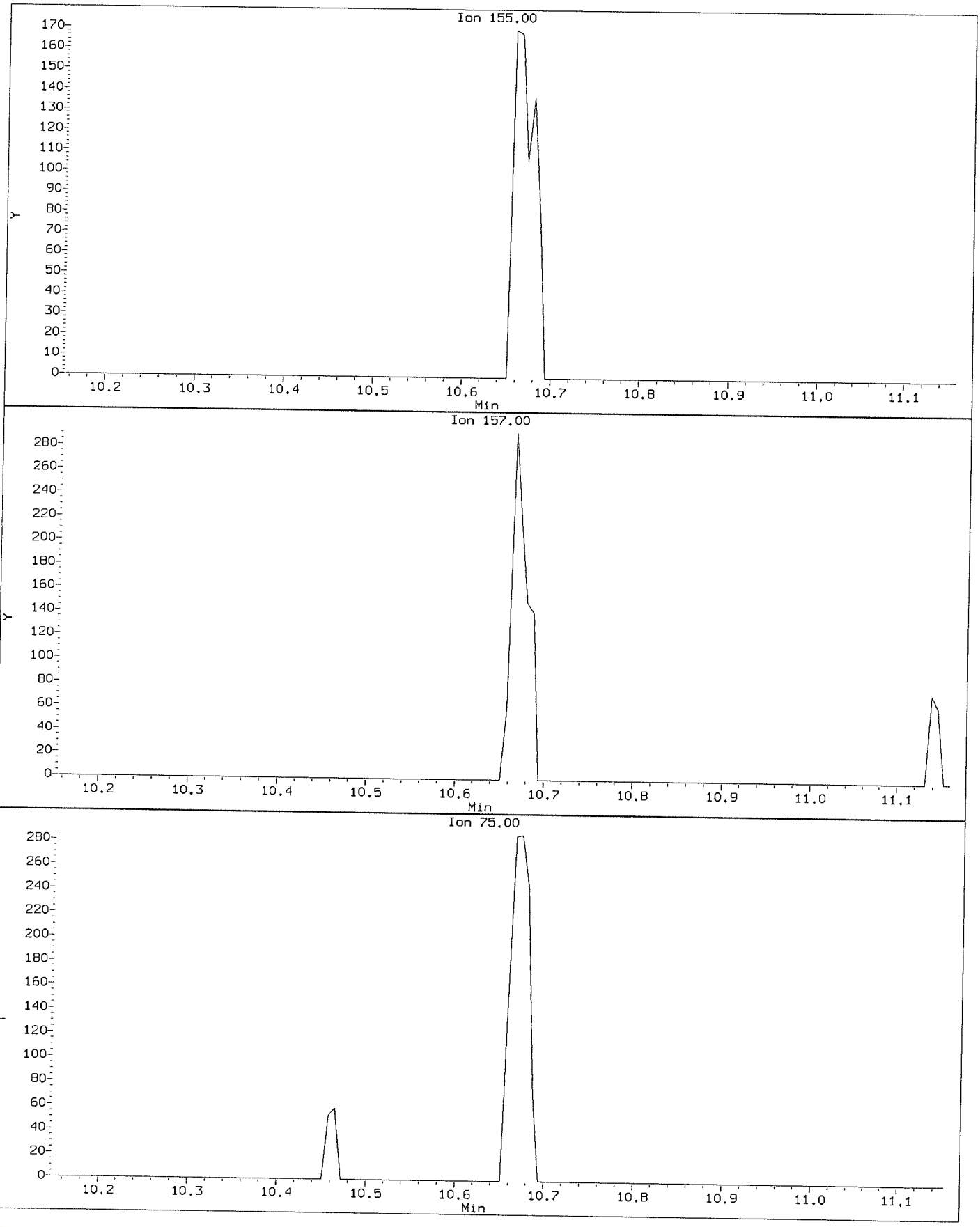
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Injection Date: 18-MAY-2021 12:25
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2,4-Trichlorobenzene
CAS Number: 120-82-1



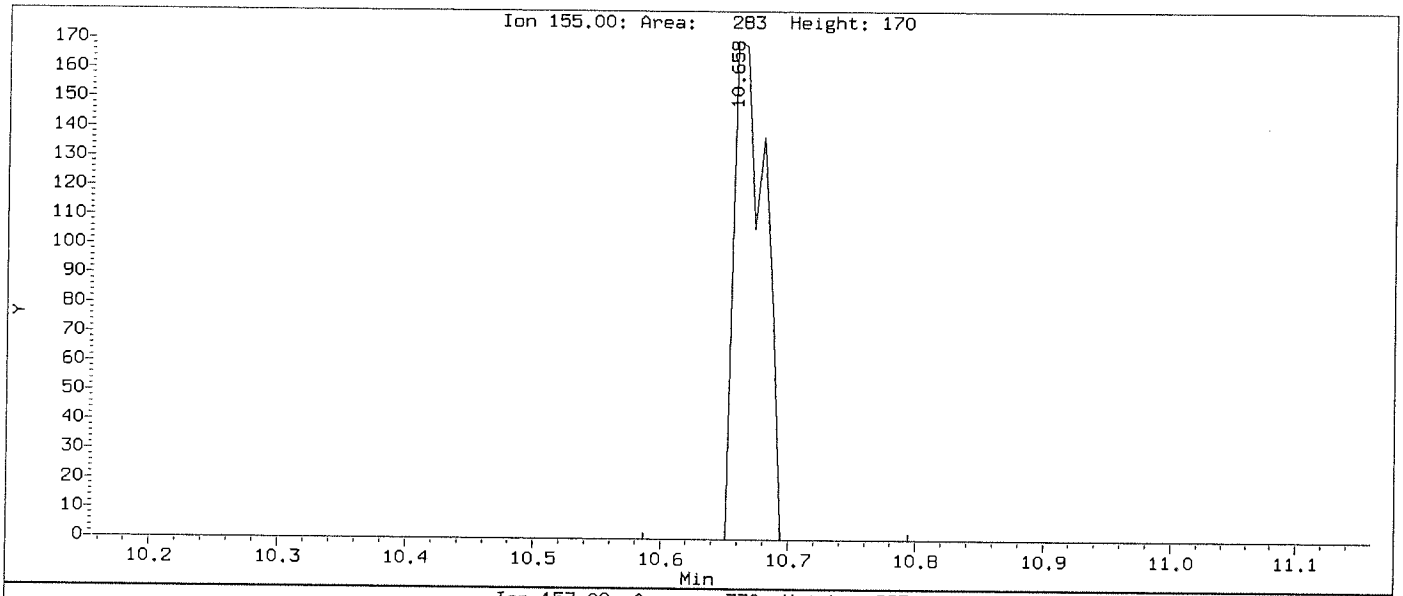
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Instrument: voa6.i
Client Sample ID: VSTD001

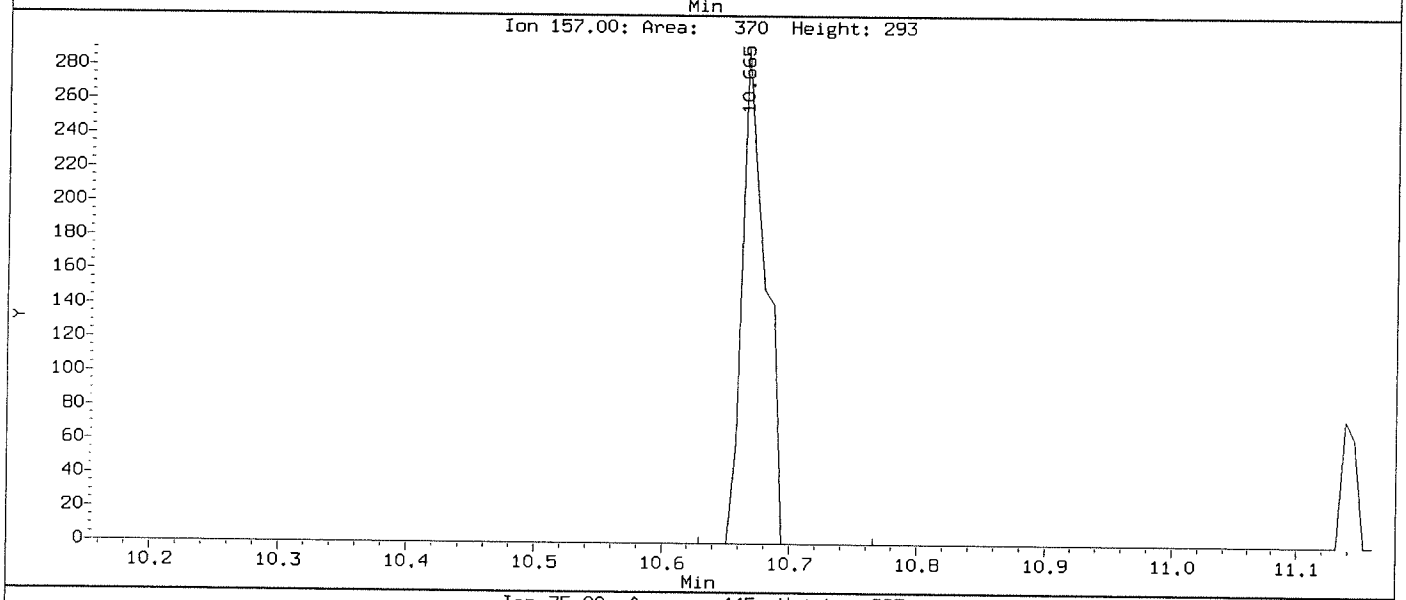
Compound: 1,2-Dibromo-3-Chloropropane
CAS Number: 96-12-8

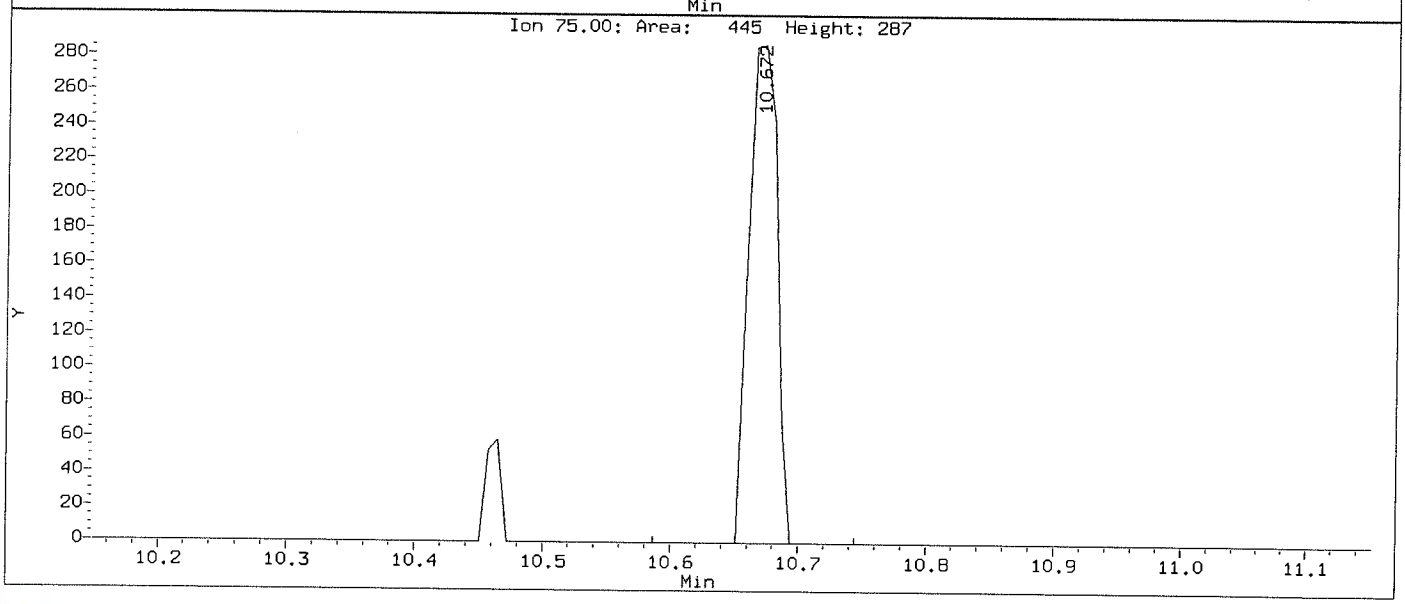


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Client Sample ID: VSTD001

Compound: 1,2-Dibromo-3-Chloropropane
CAS Number: 96-12-8

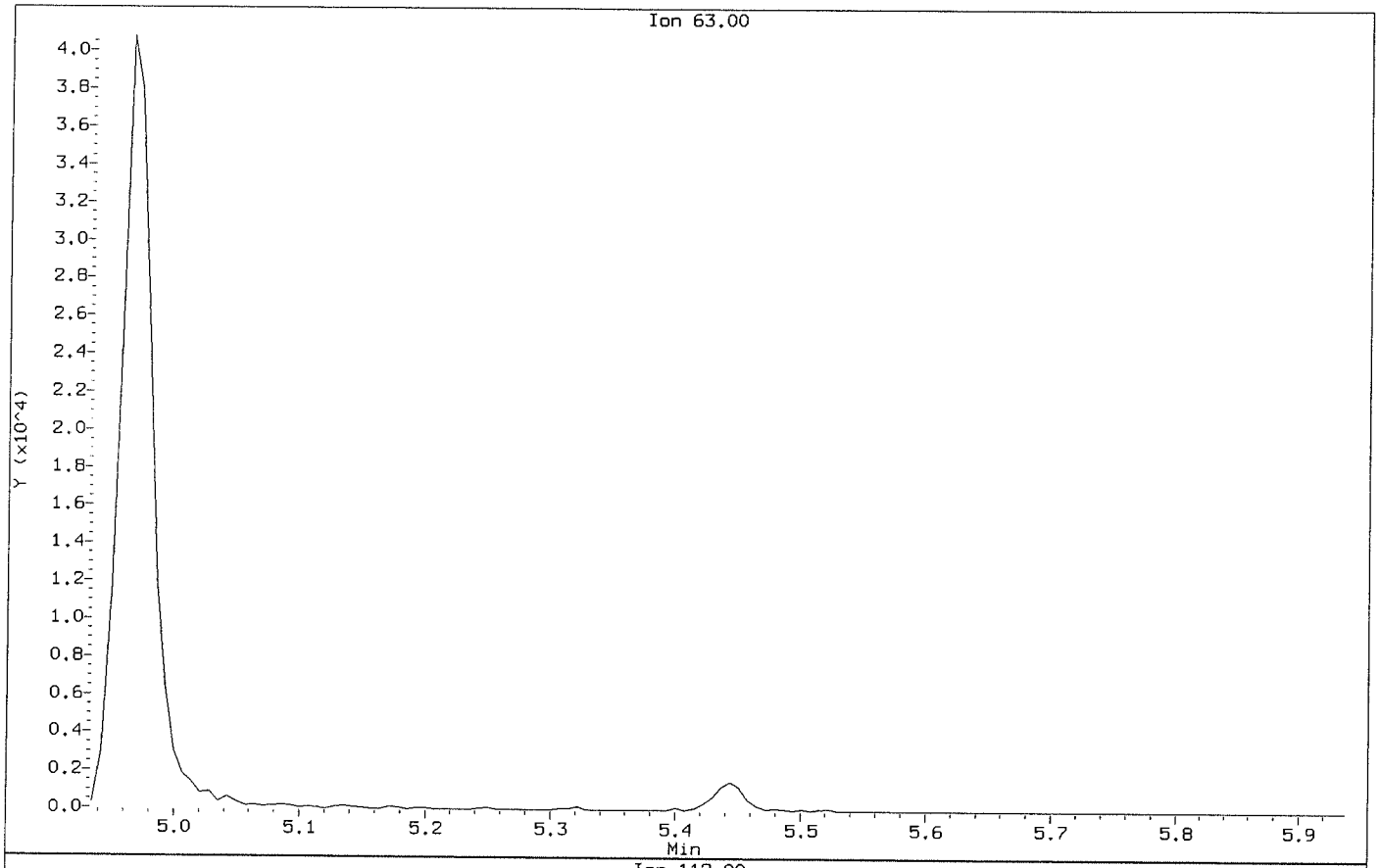


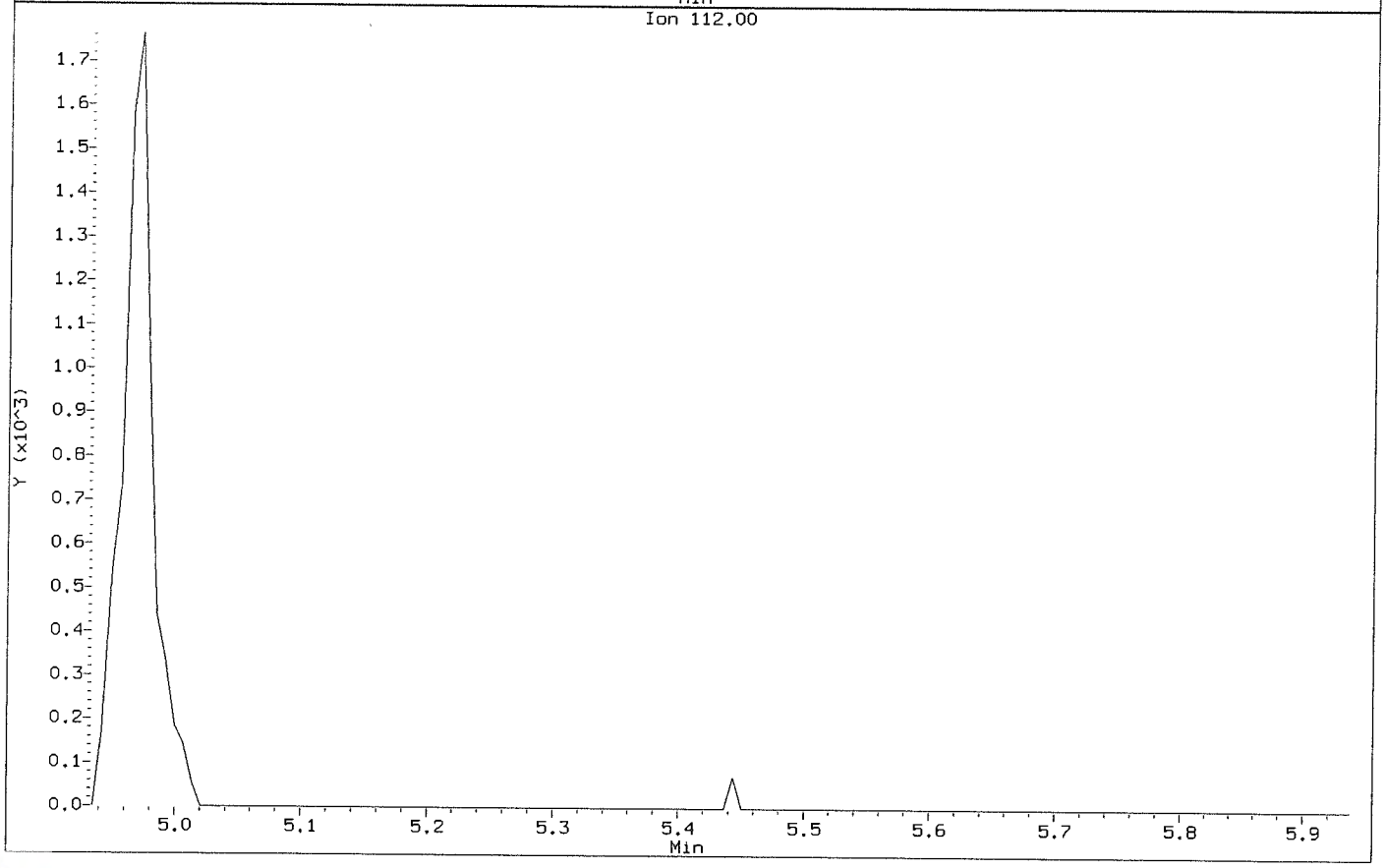




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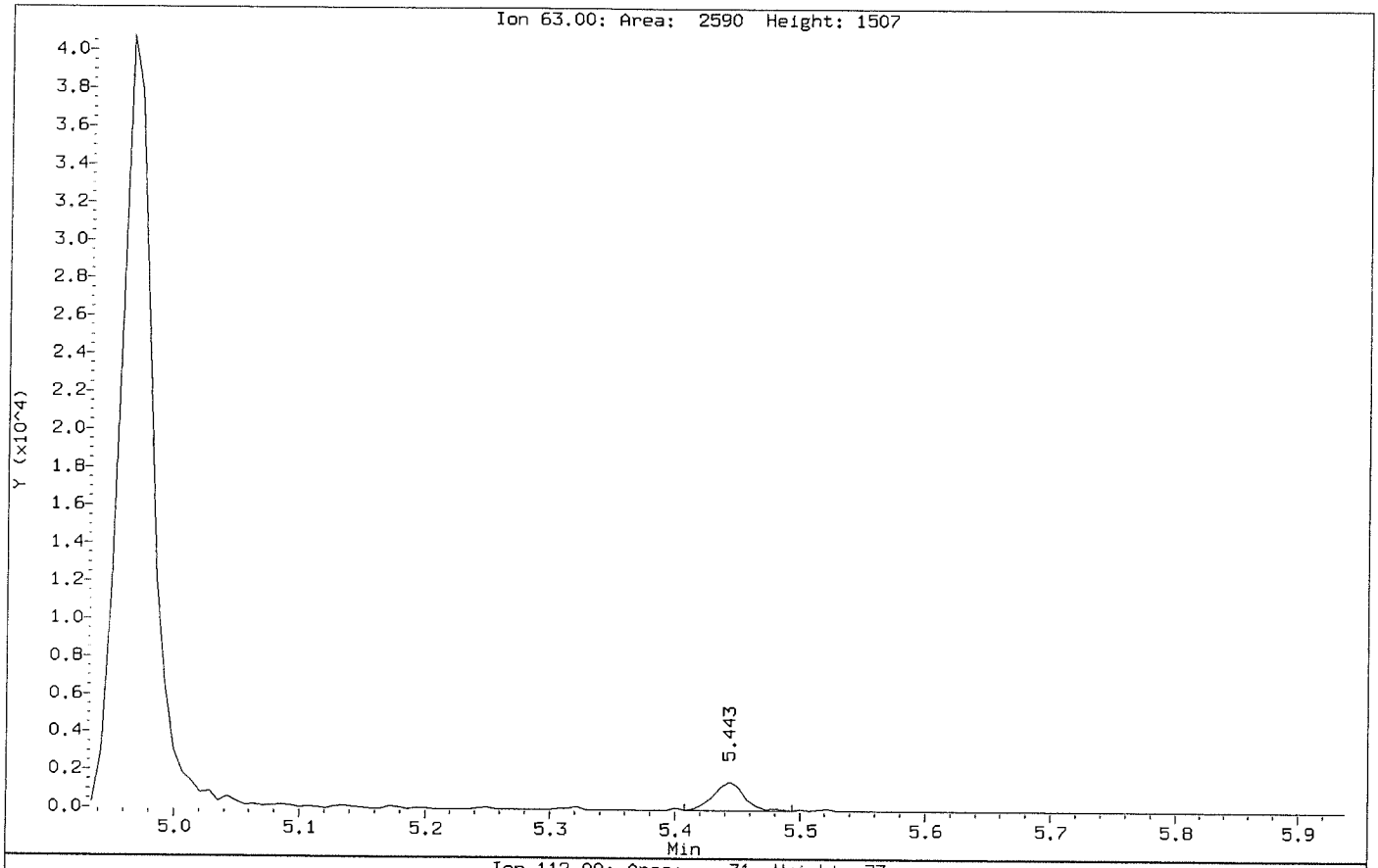
Compound: 1,2-Dichloropropane
CAS Number: 78-87-5

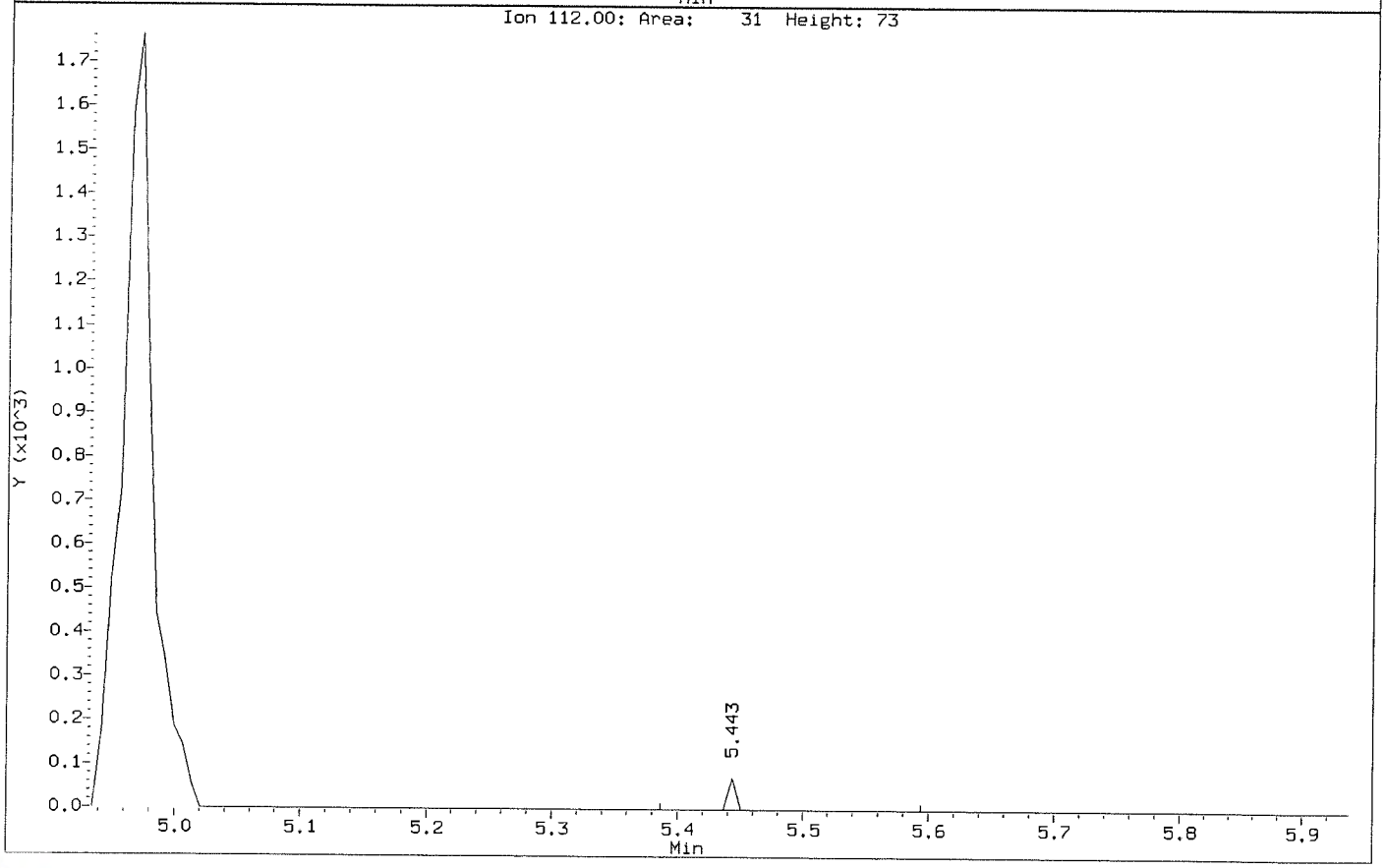




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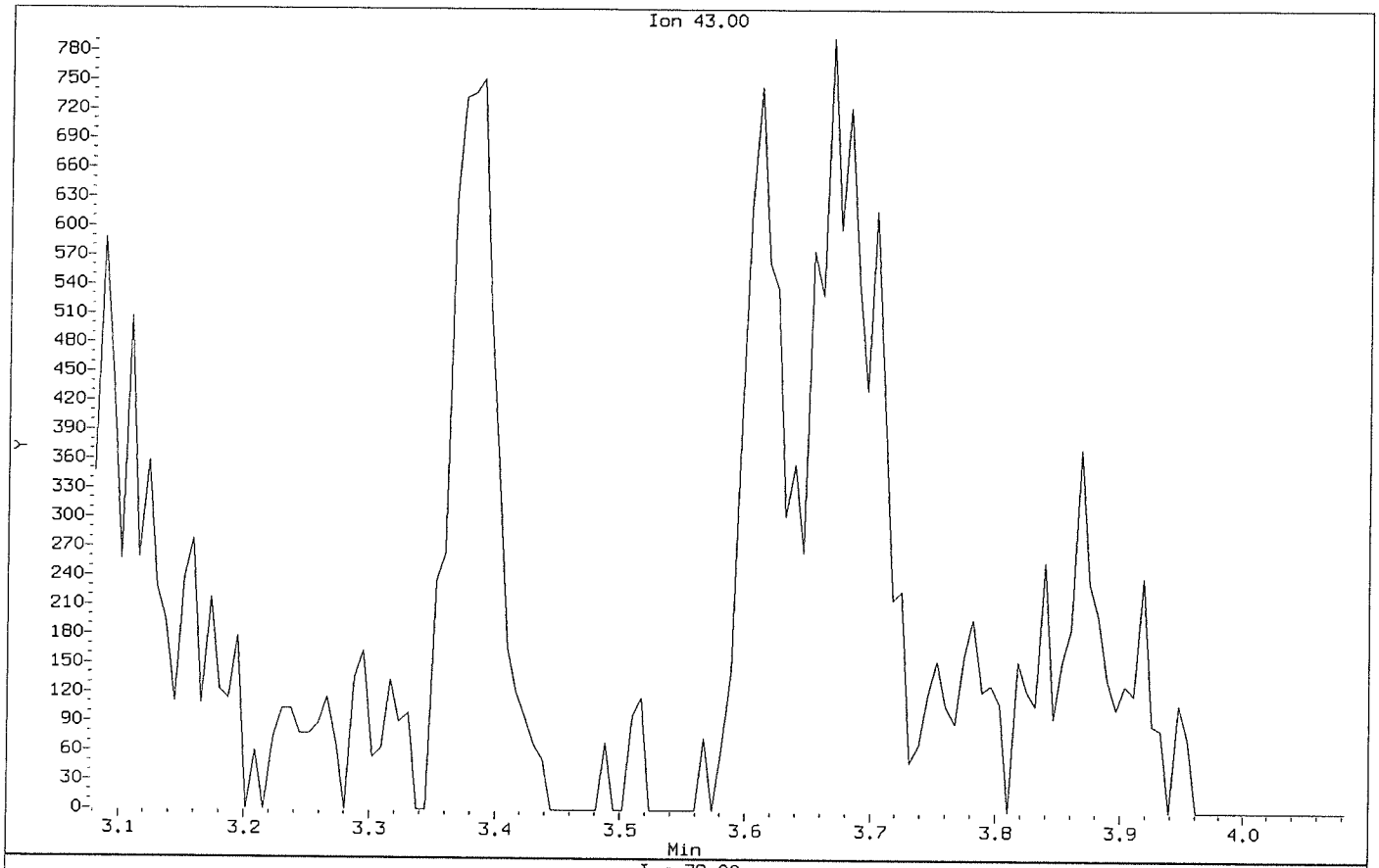
Compound: 1,2-Dichloropropane
CAS Number: 78-87-5

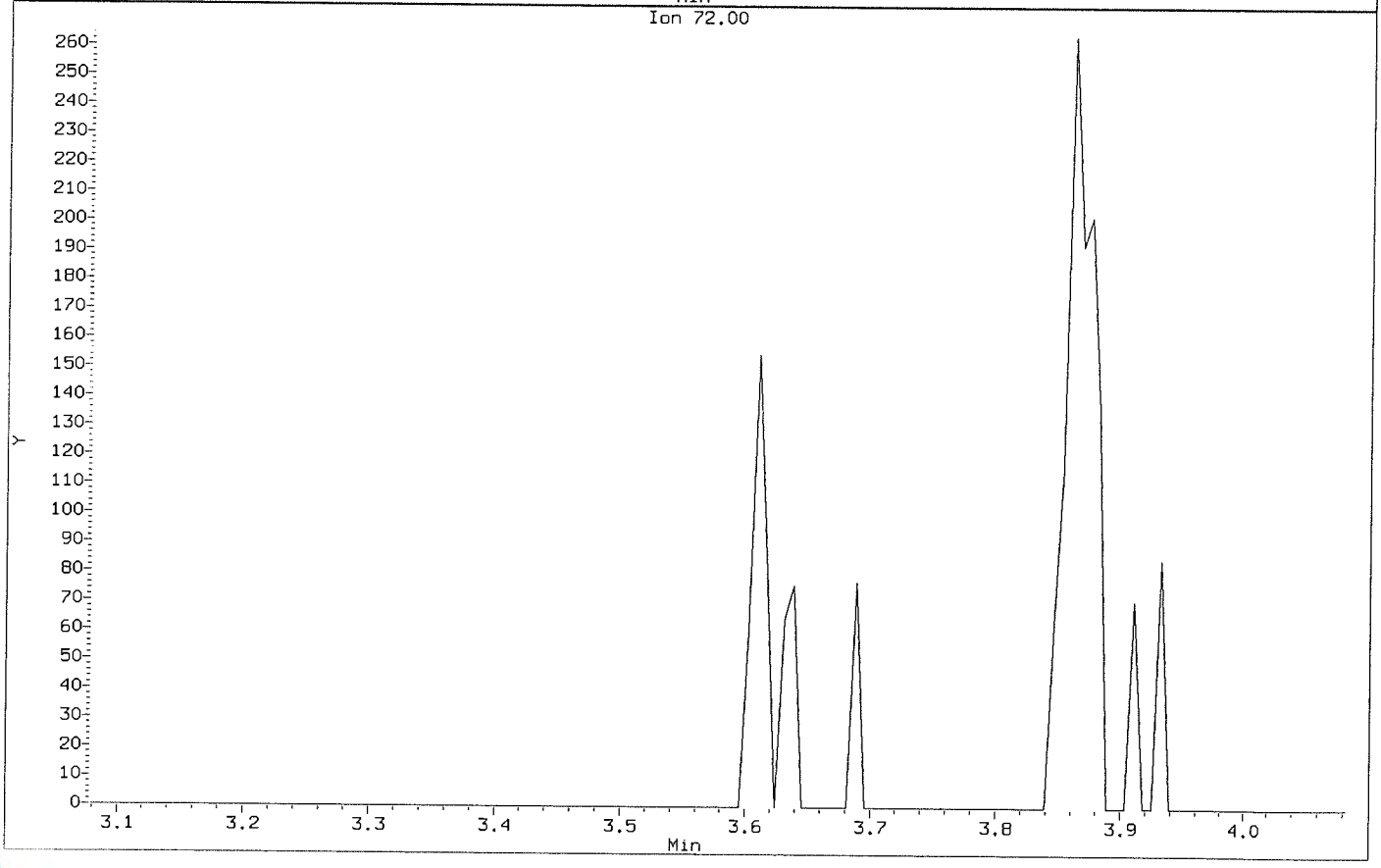




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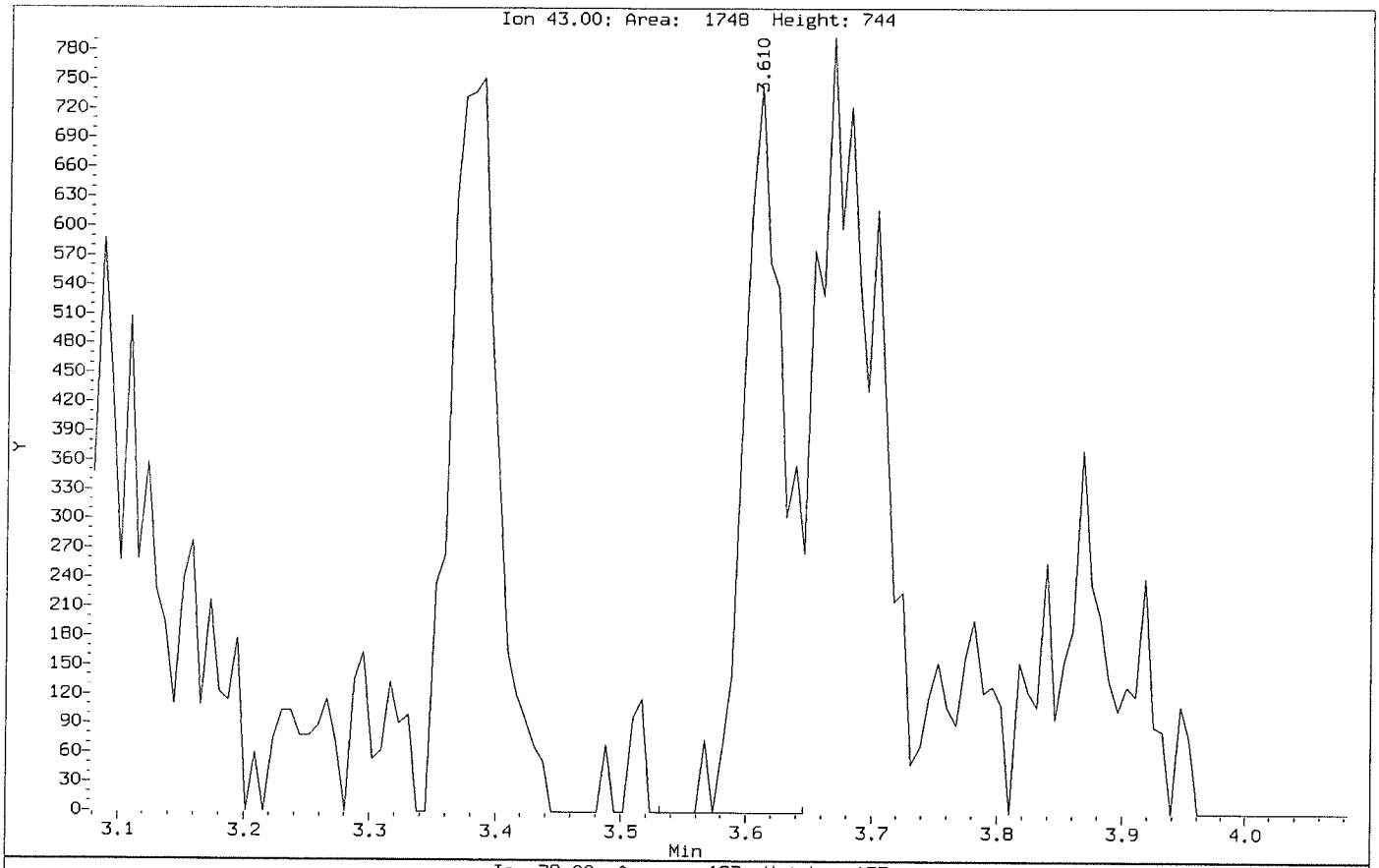
Compound: 2-Butanone
CAS Number: 78-93-3

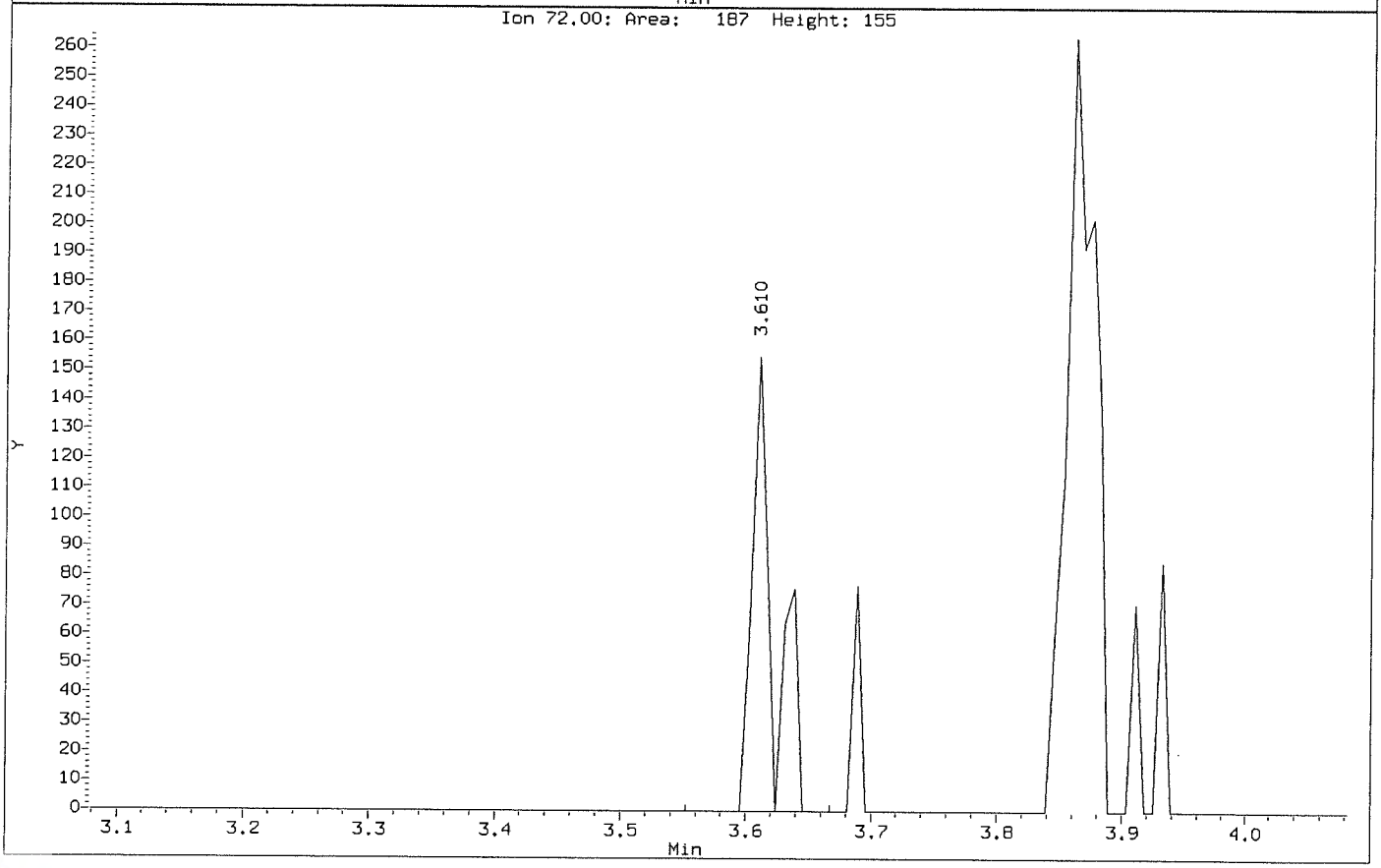




Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\X051804.D
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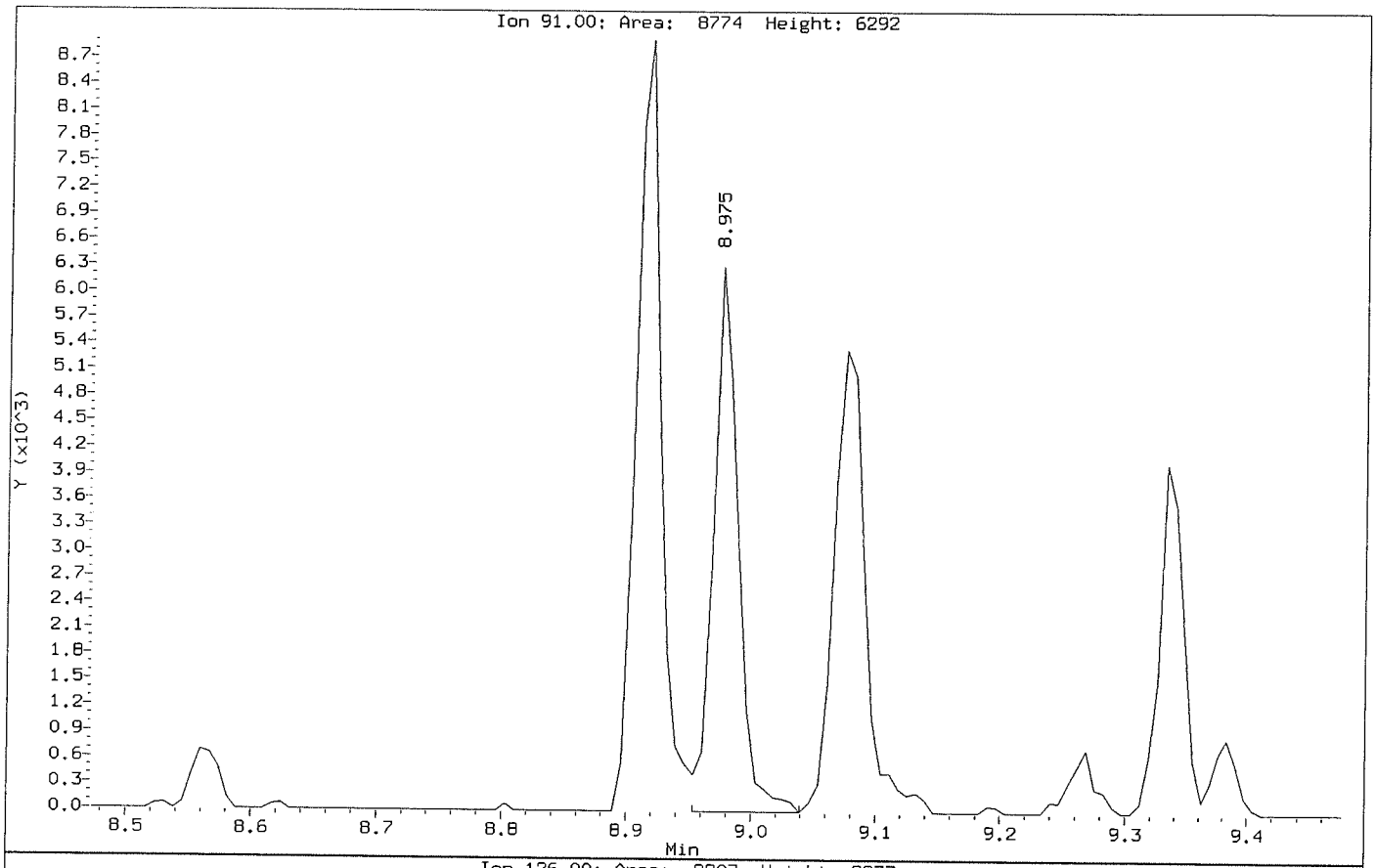
Compound: 2-Butanone
CAS Number: 78-93-3

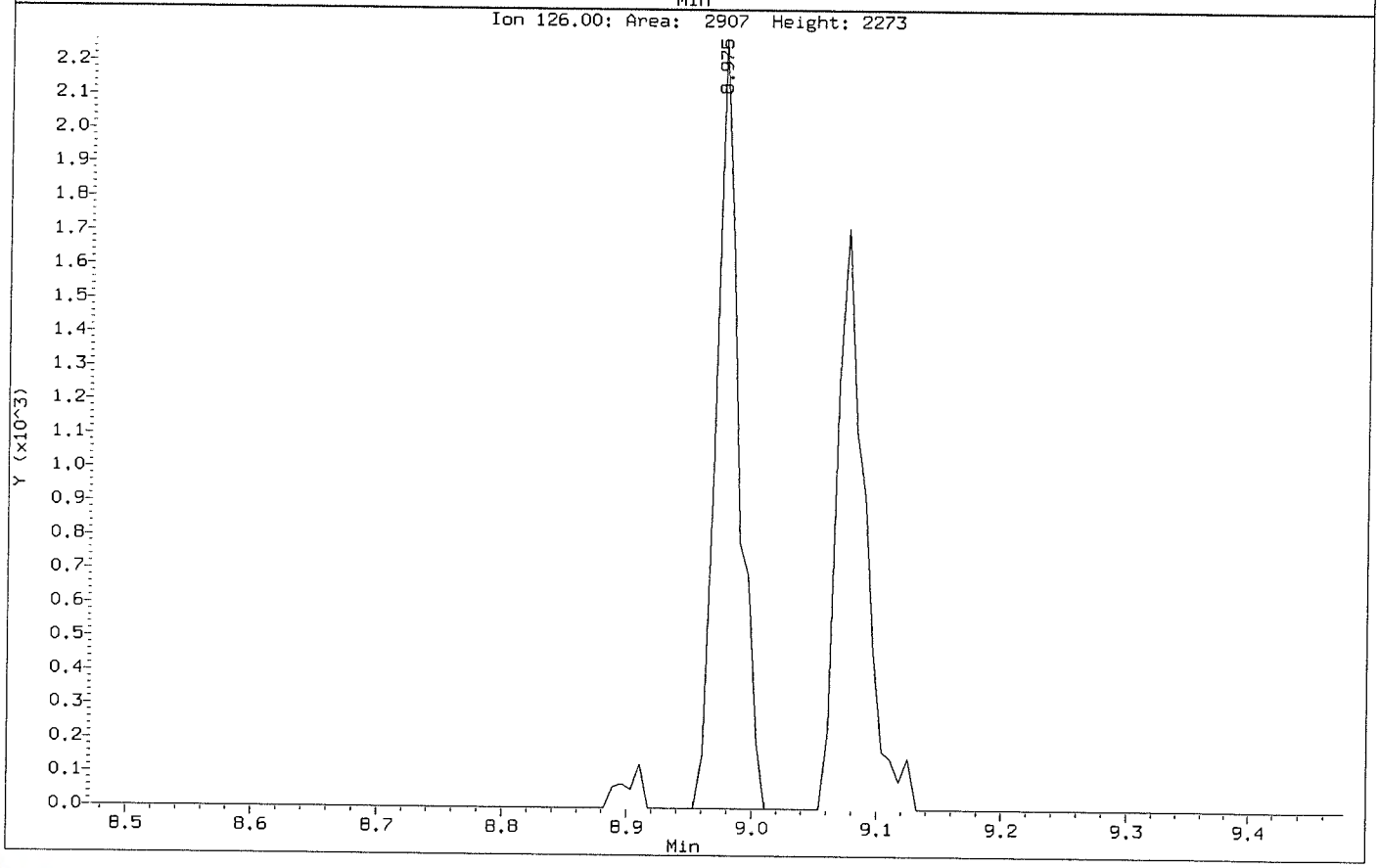




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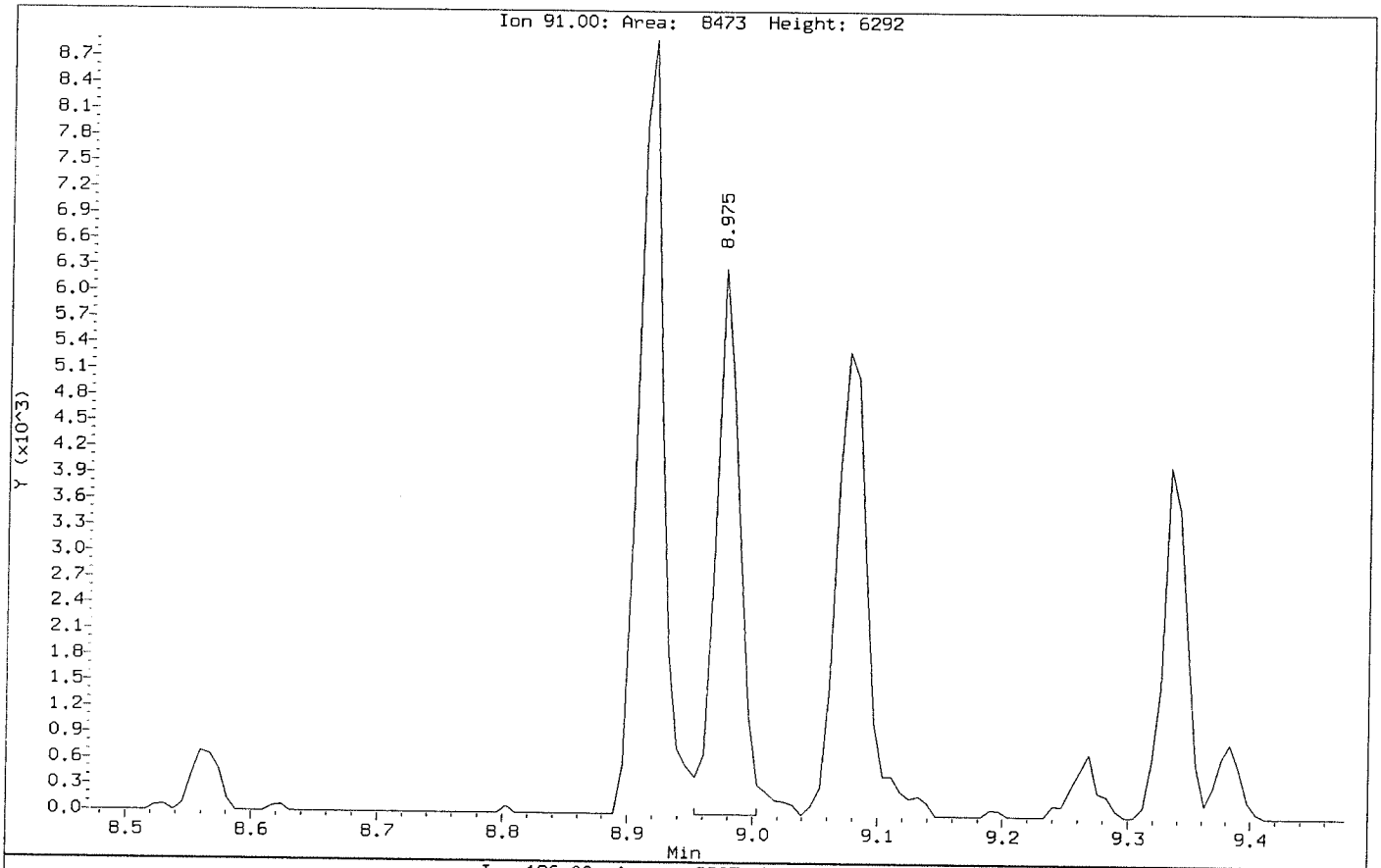
Compound: 2-Chlorotoluene
CAS Number: 95-49-8

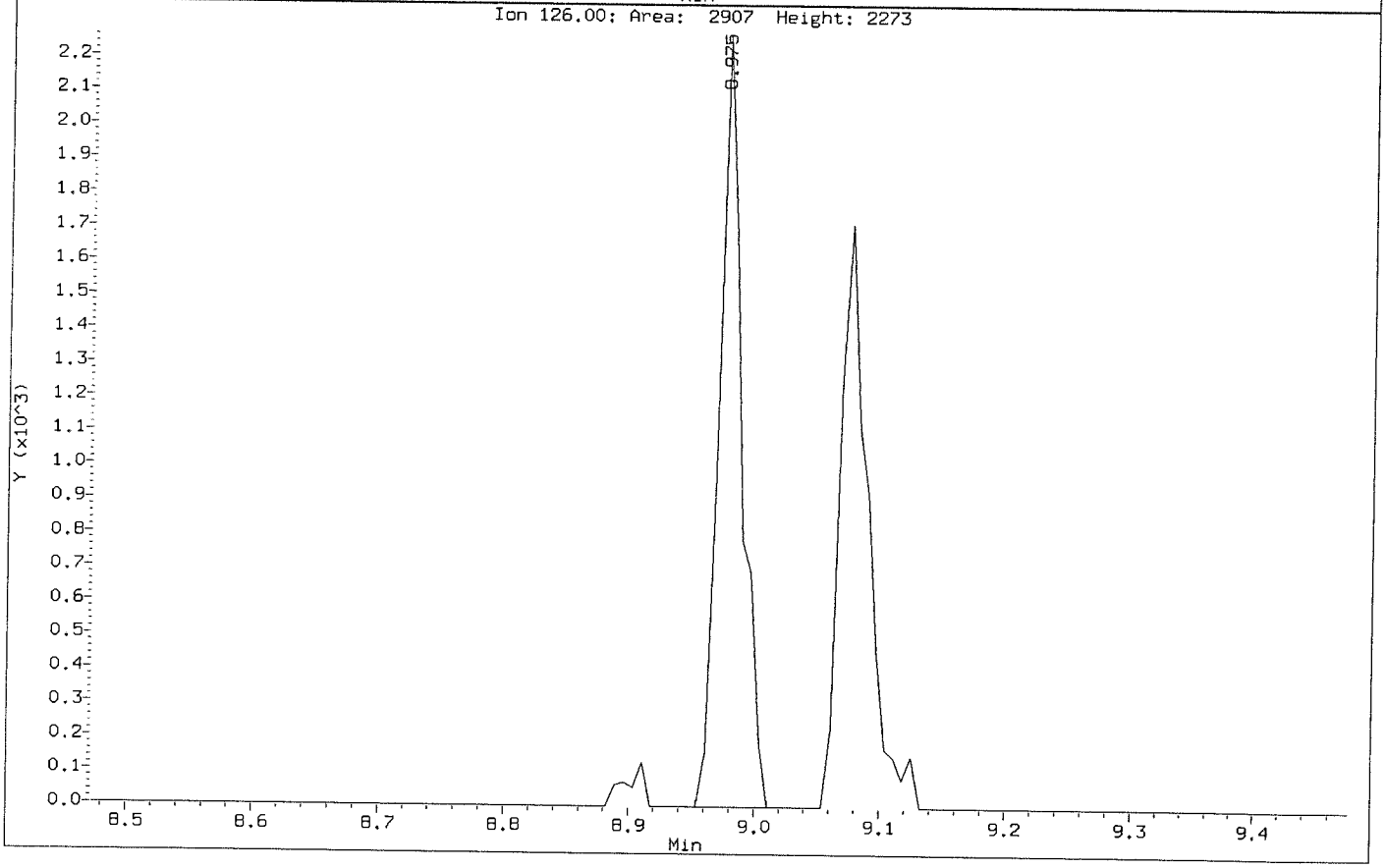




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Instrument: voa6.i
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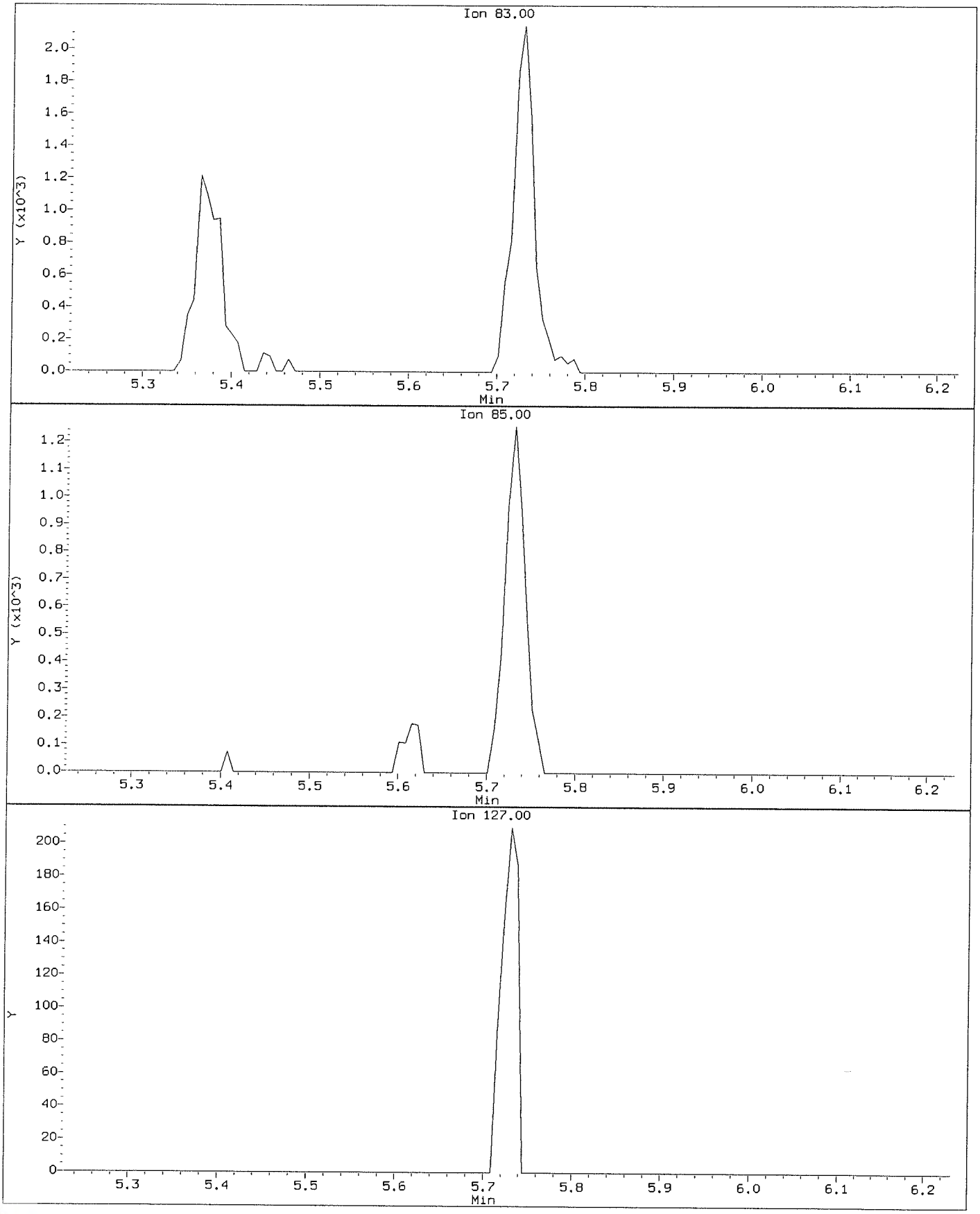
Compound: 2-Chlorotoluene
CAS Number: 95-49-8





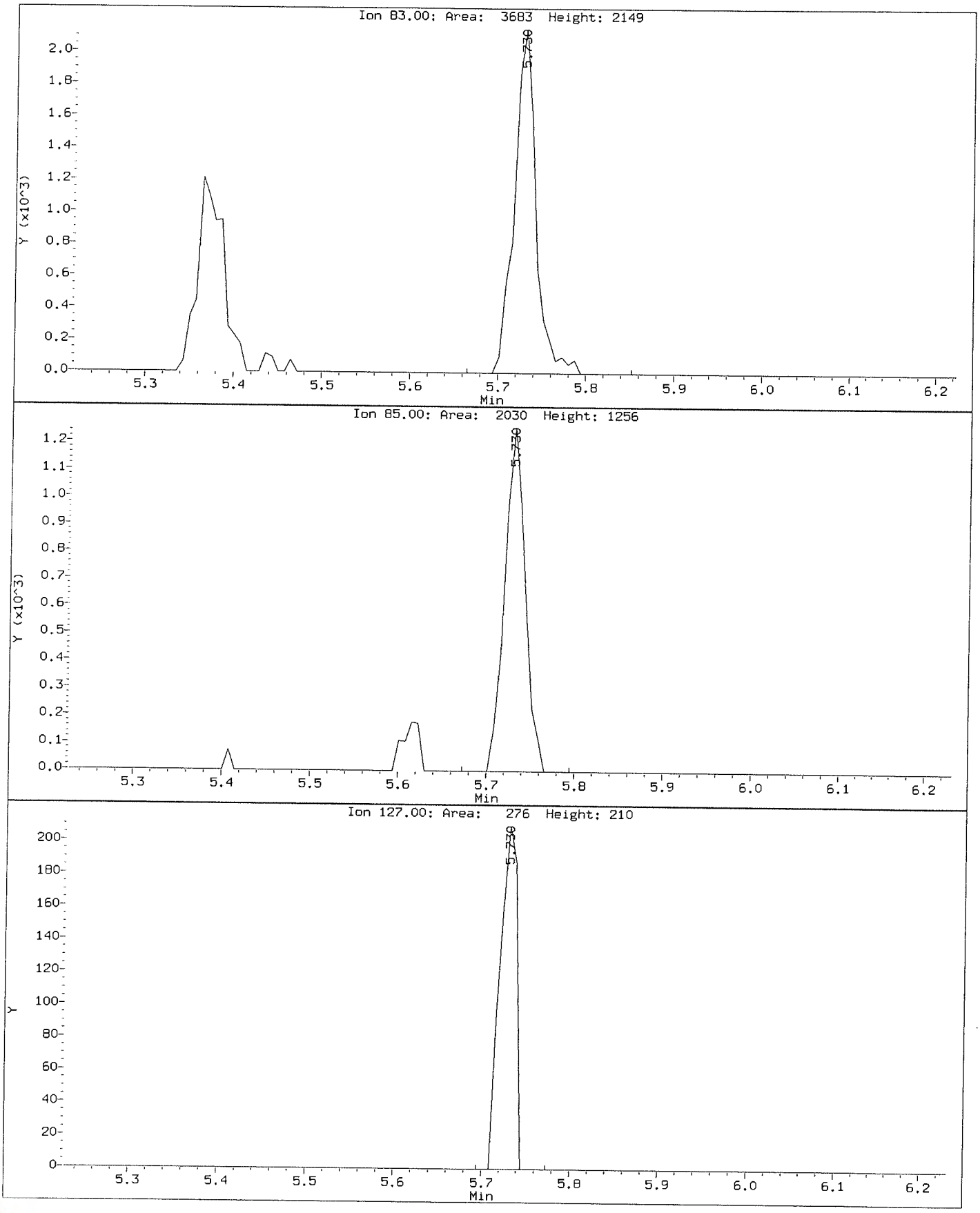
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Injection Date: 18-MAY-2021 12:25
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: Bromodichloromethane
CAS Number: 75-27-4



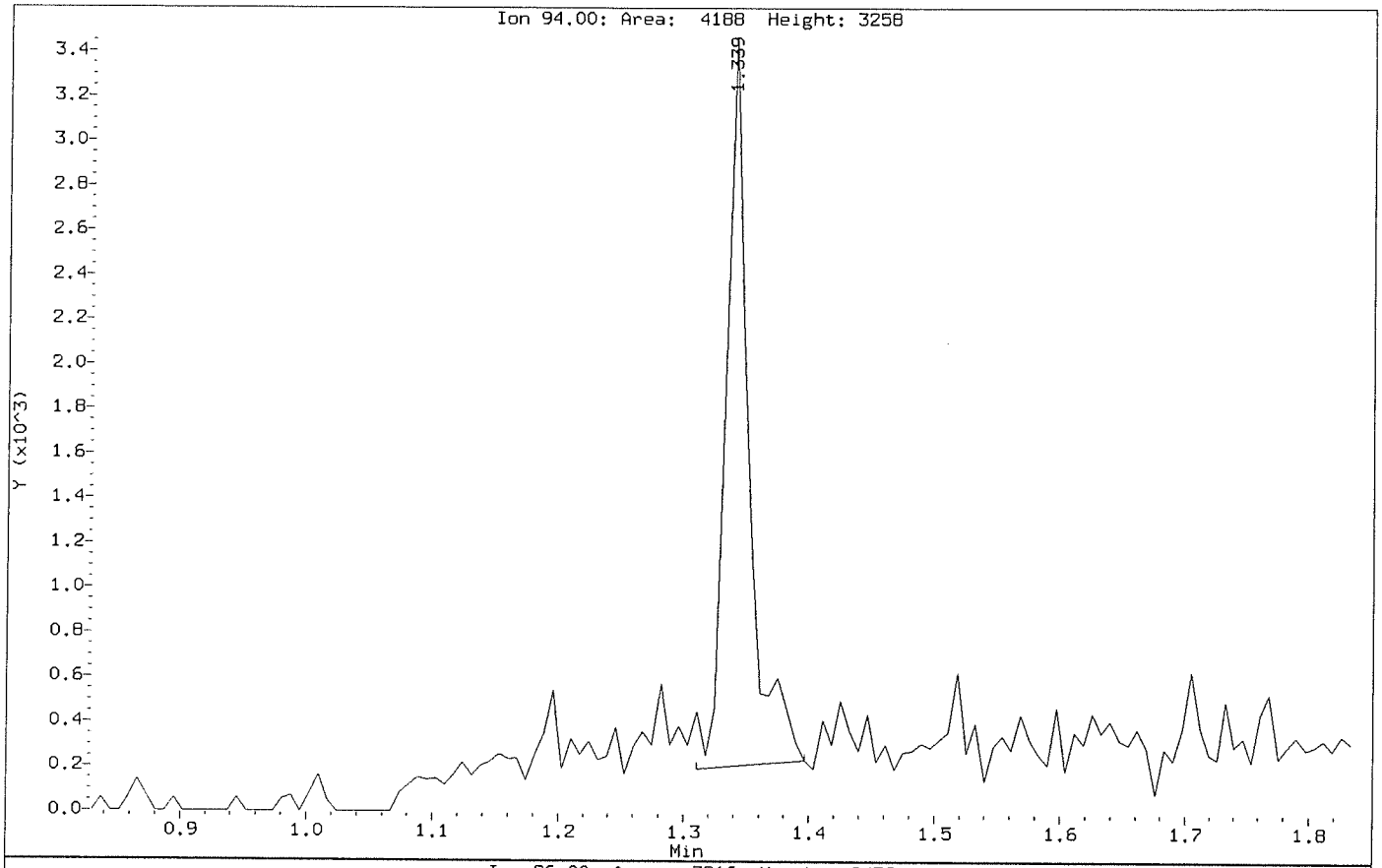
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Instrument: voa6.i
Client Sample ID: VSTD001

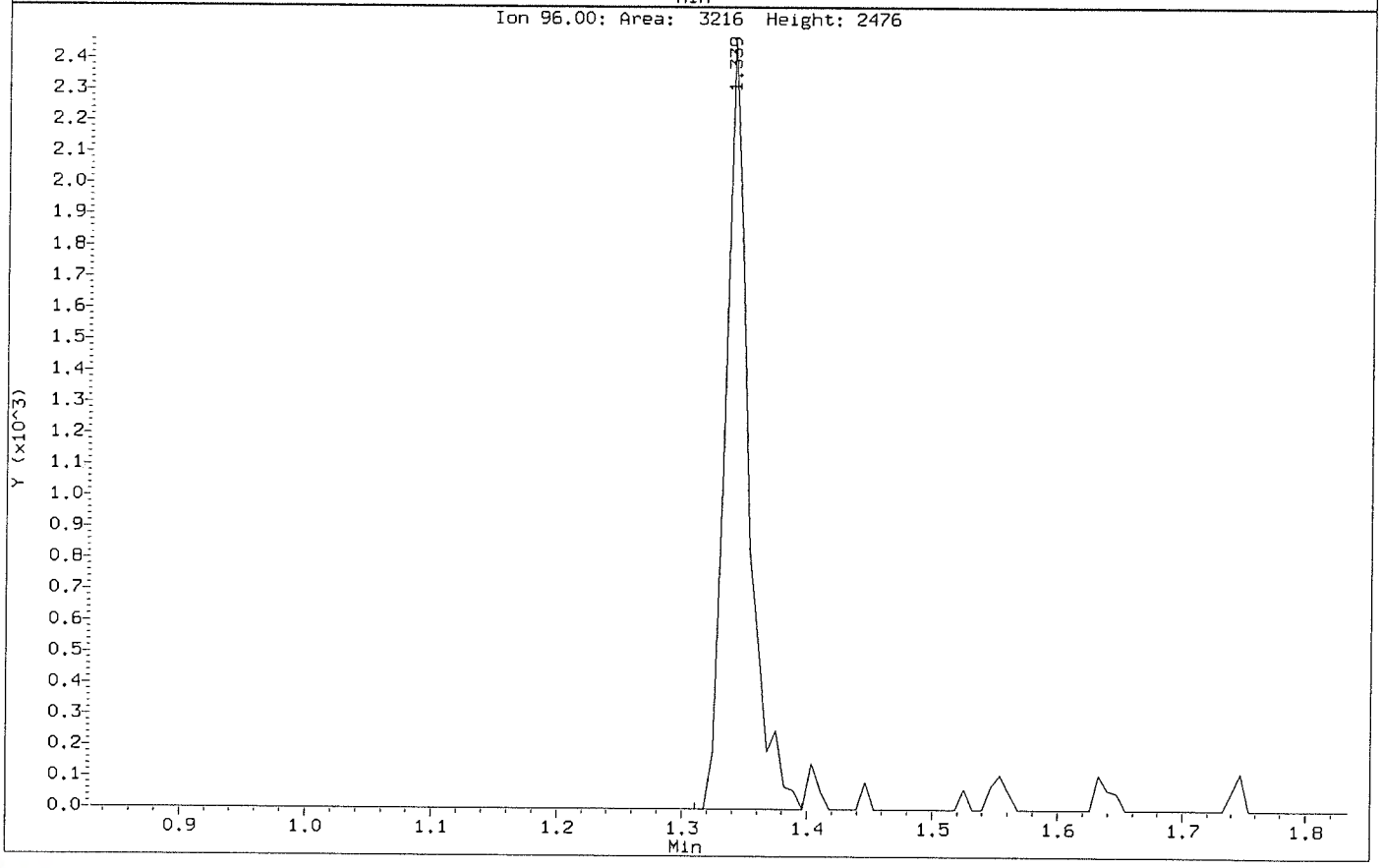
Compound: Bromodichloromethane
CAS Number: 75-27-4



Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\Before\X051804.D
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Instrument: voa6.i
Client Sample ID: VSTD001

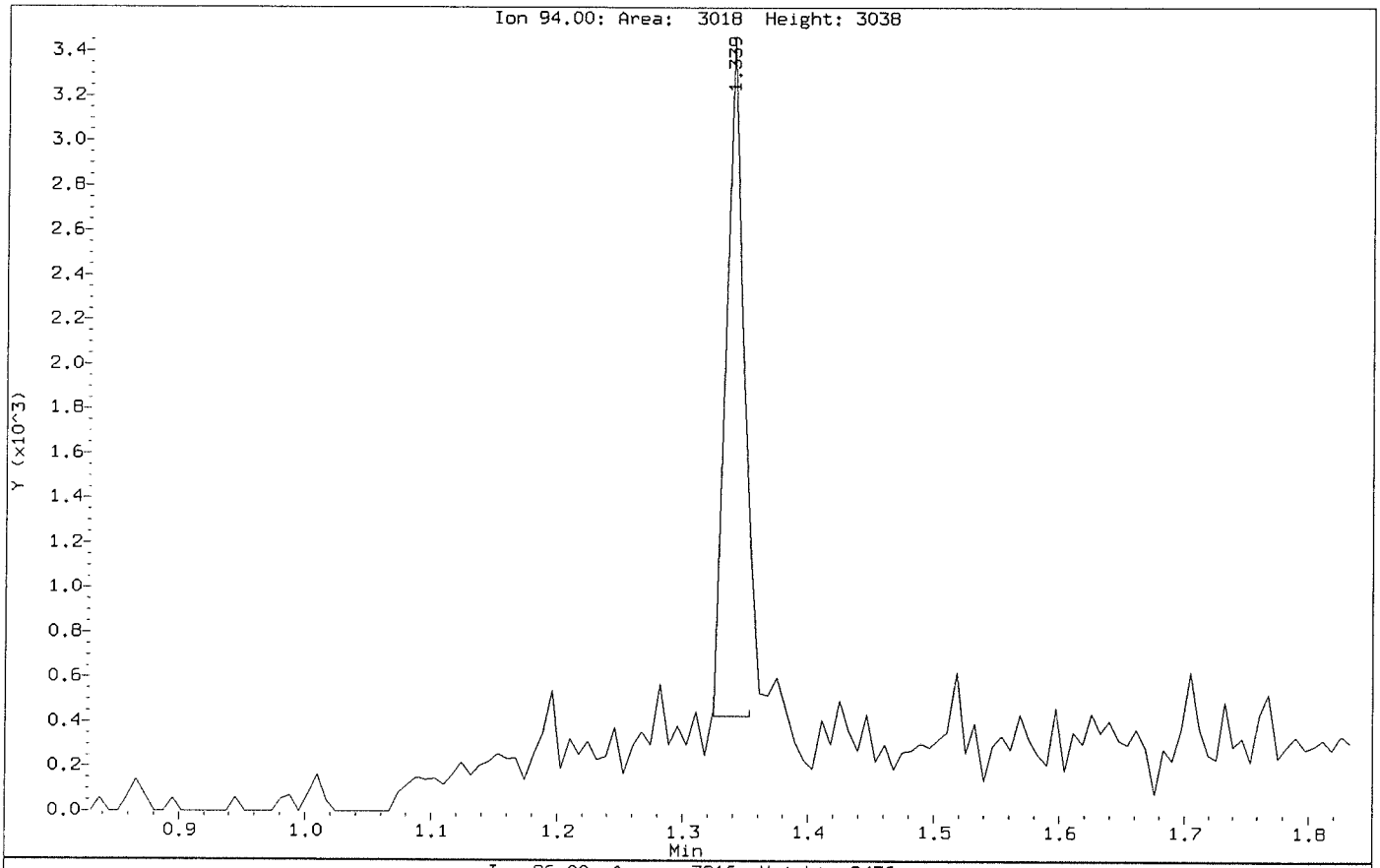
Compound: Bromomethane
CAS Number: 74-83-9

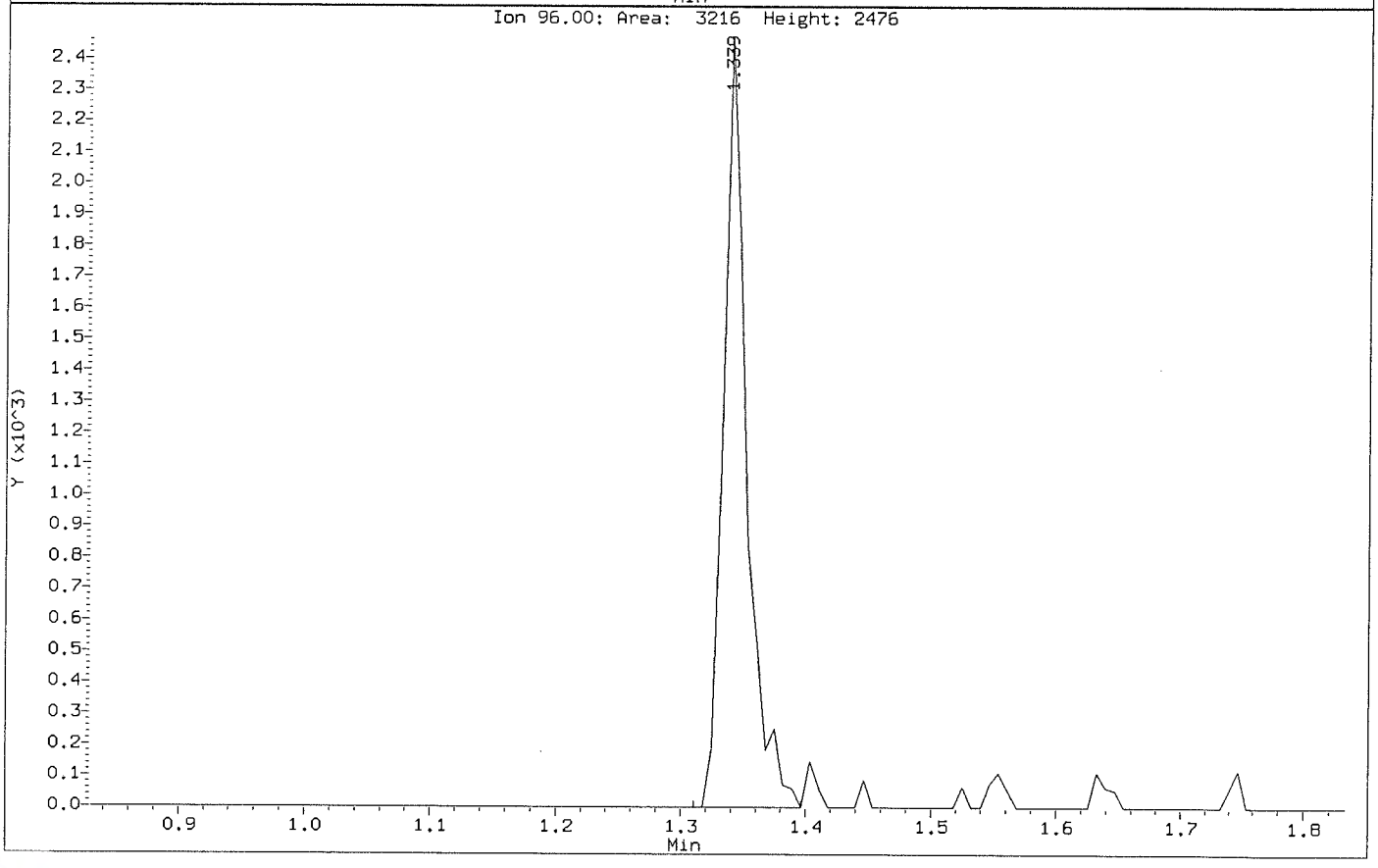




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Instrument: voa6.i
Client Sample ID: VSTD001

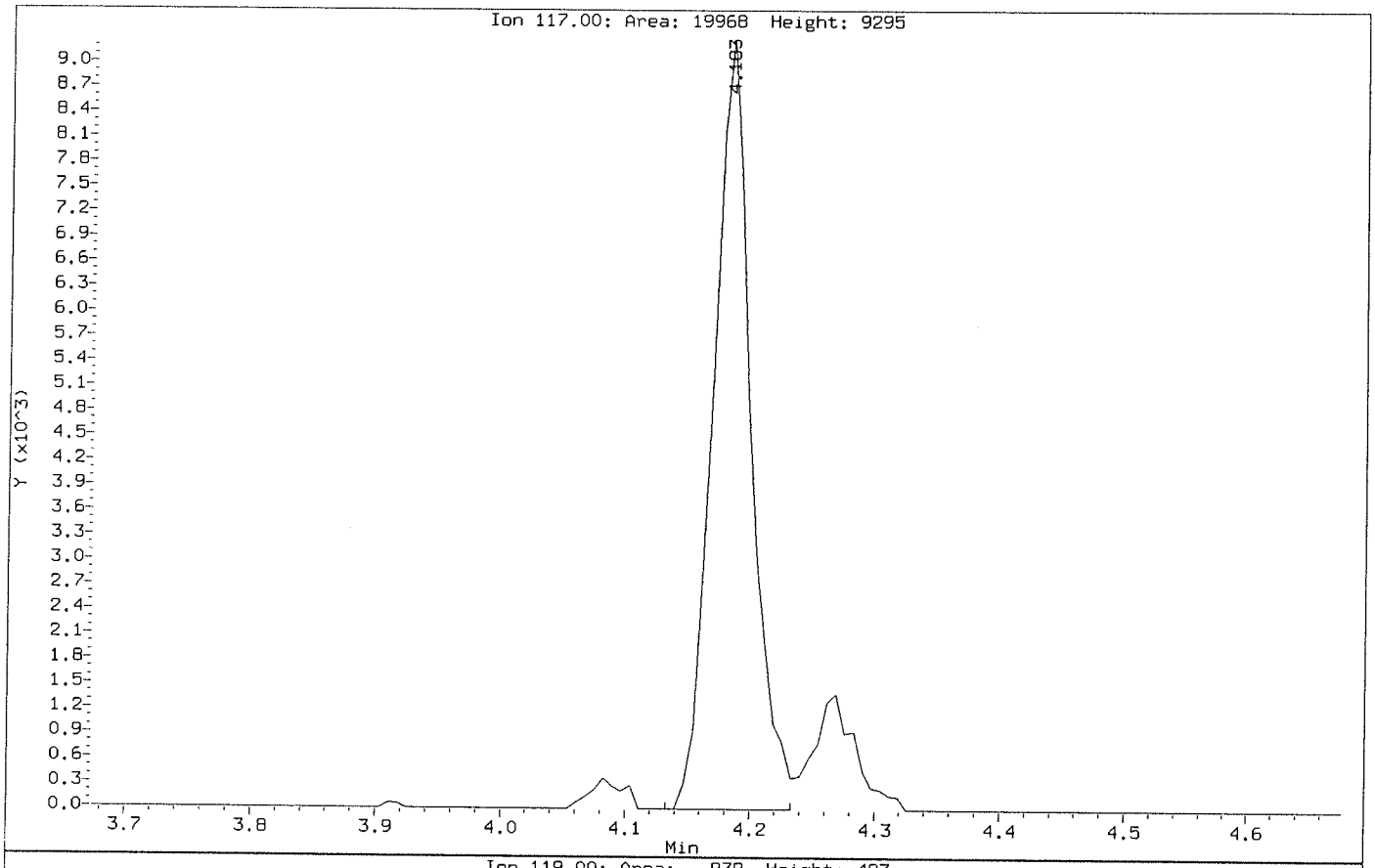
Compound: Bromomethane
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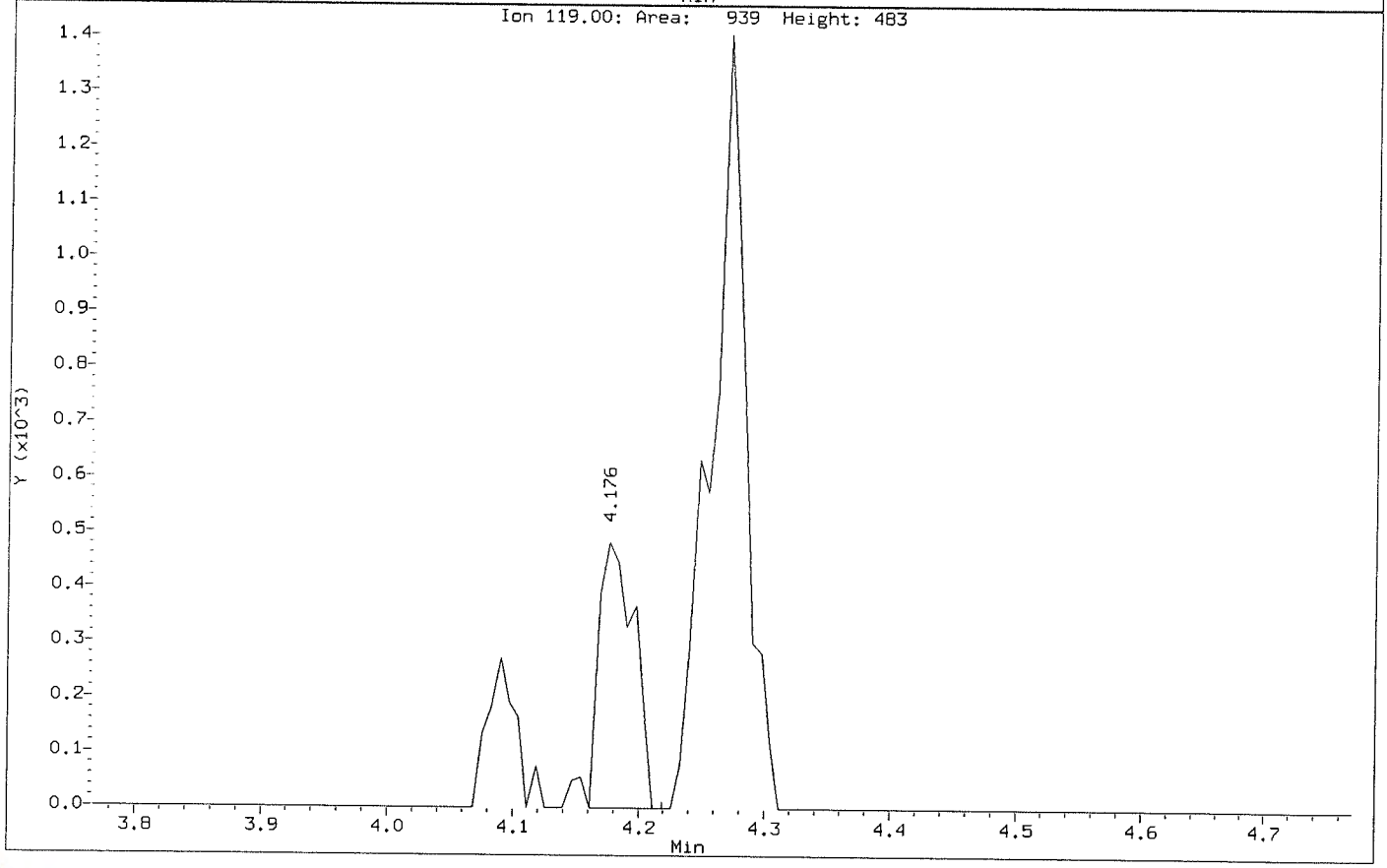




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Instrument: voa6.i
Client Sample ID: VSTD001

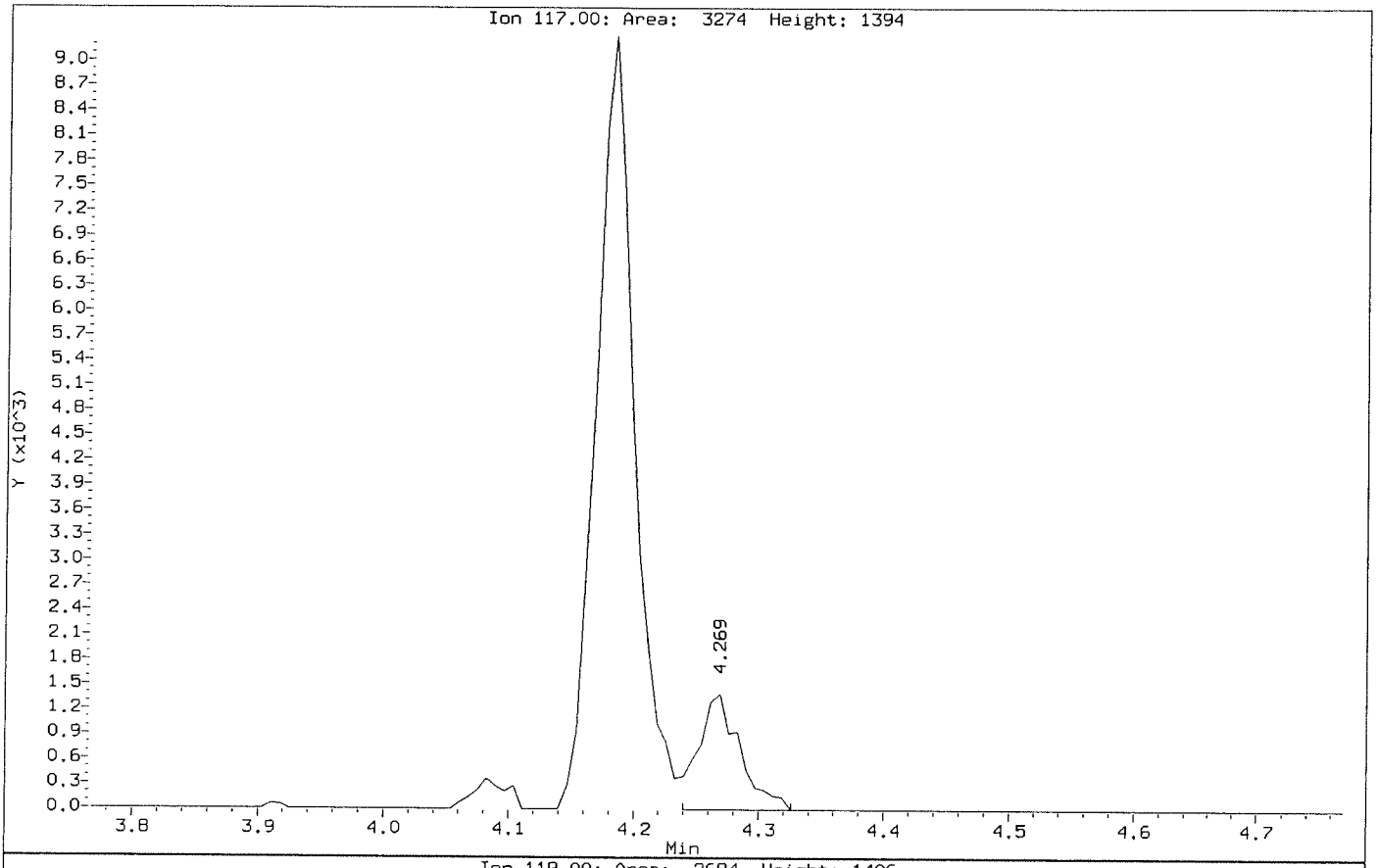
Compound: Carbon Tetrachloride
CAS Number: 56-23-5

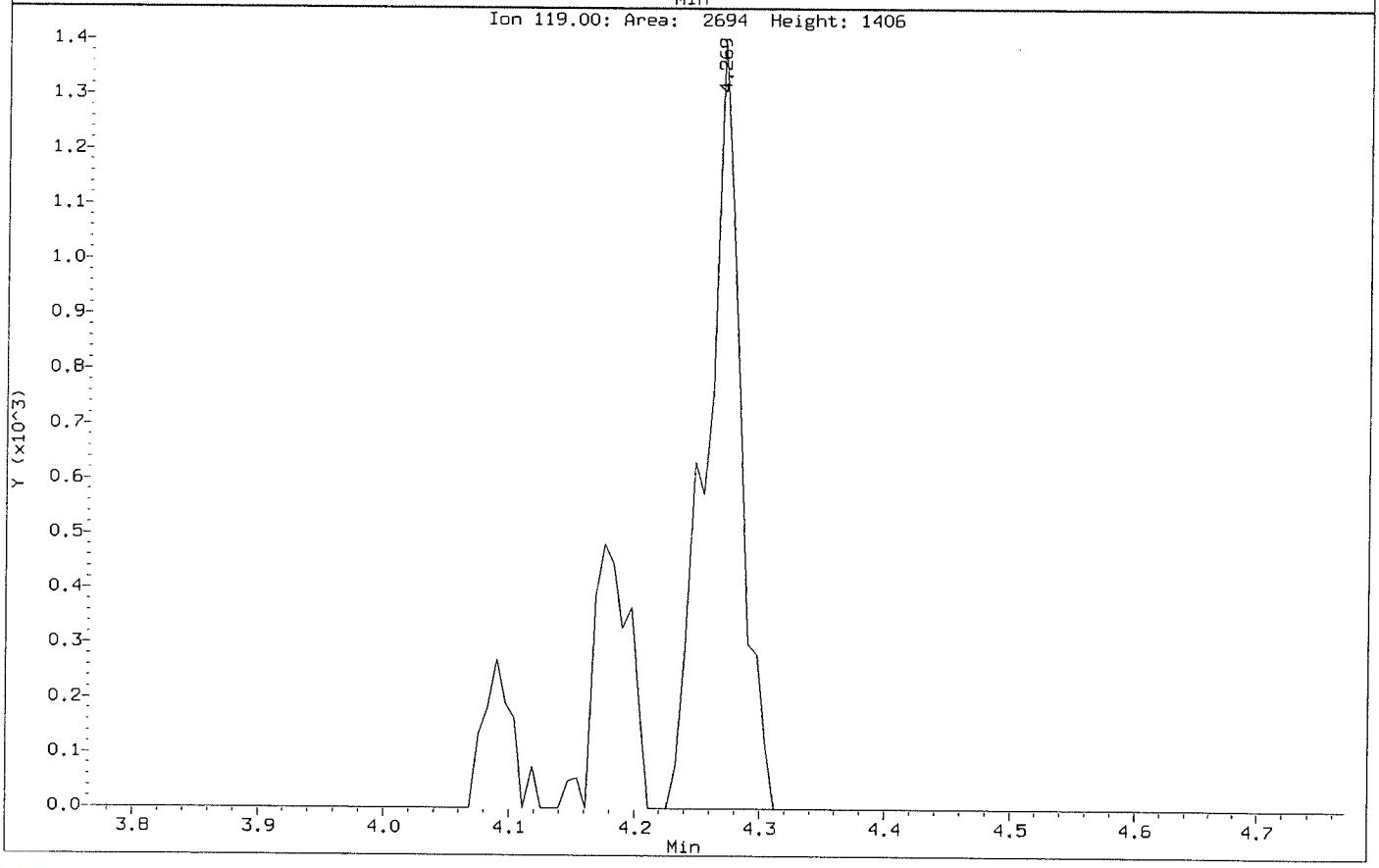




Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\X051804.D
Injection Date: 18-MAY-2021 12:25
Instrument: voa6.i
Client Sample ID: VSTD001

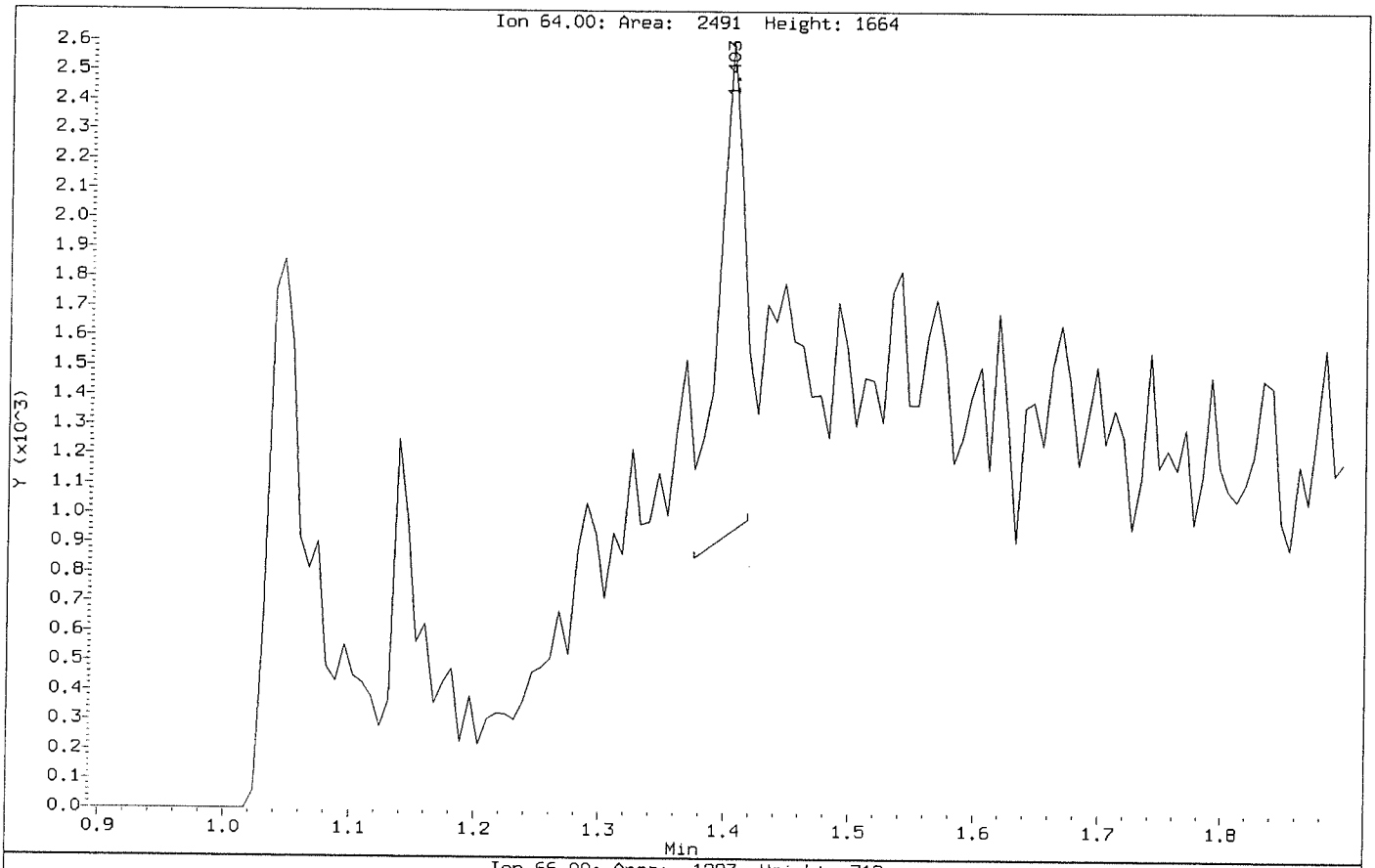
Compound: Carbon Tetrachloride
CAS Number: 56-23-5

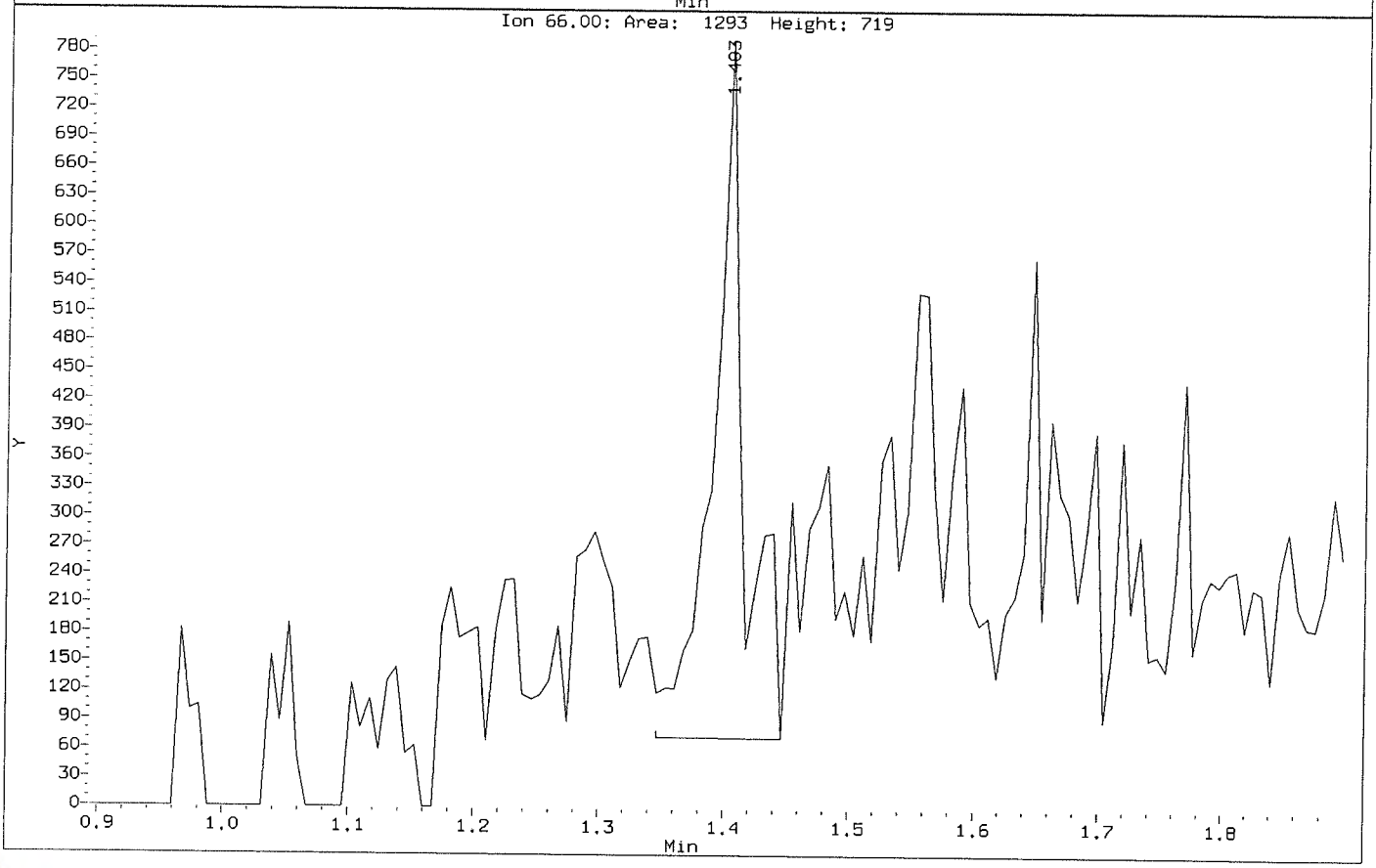




Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\Before\X051804.D
Injection Date: 18-MAY-2021 12:25
Instrument: voa6.i
Client Sample ID: VSTD001

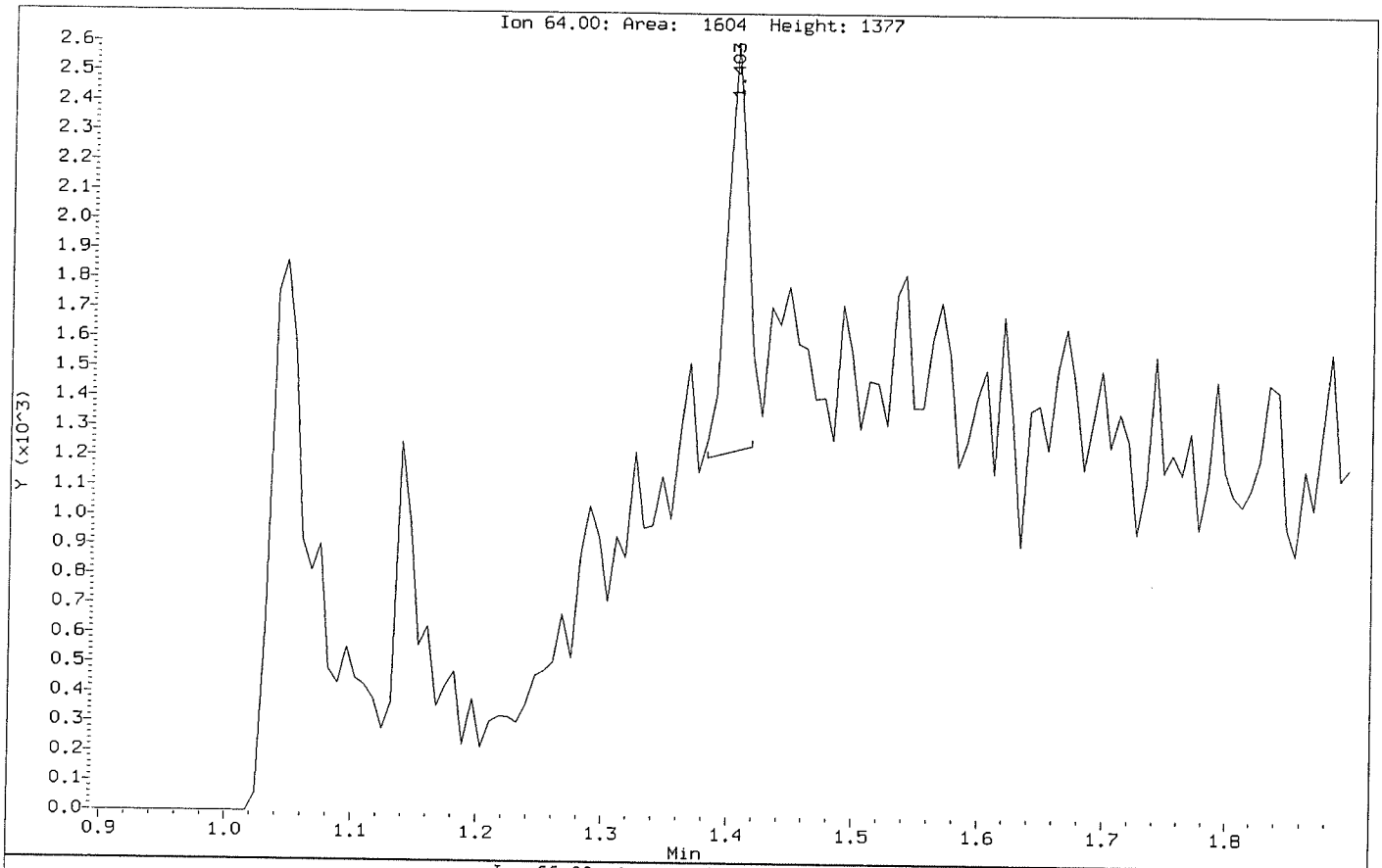
Compound: Chloroethane
CAS Number: 75-00-3

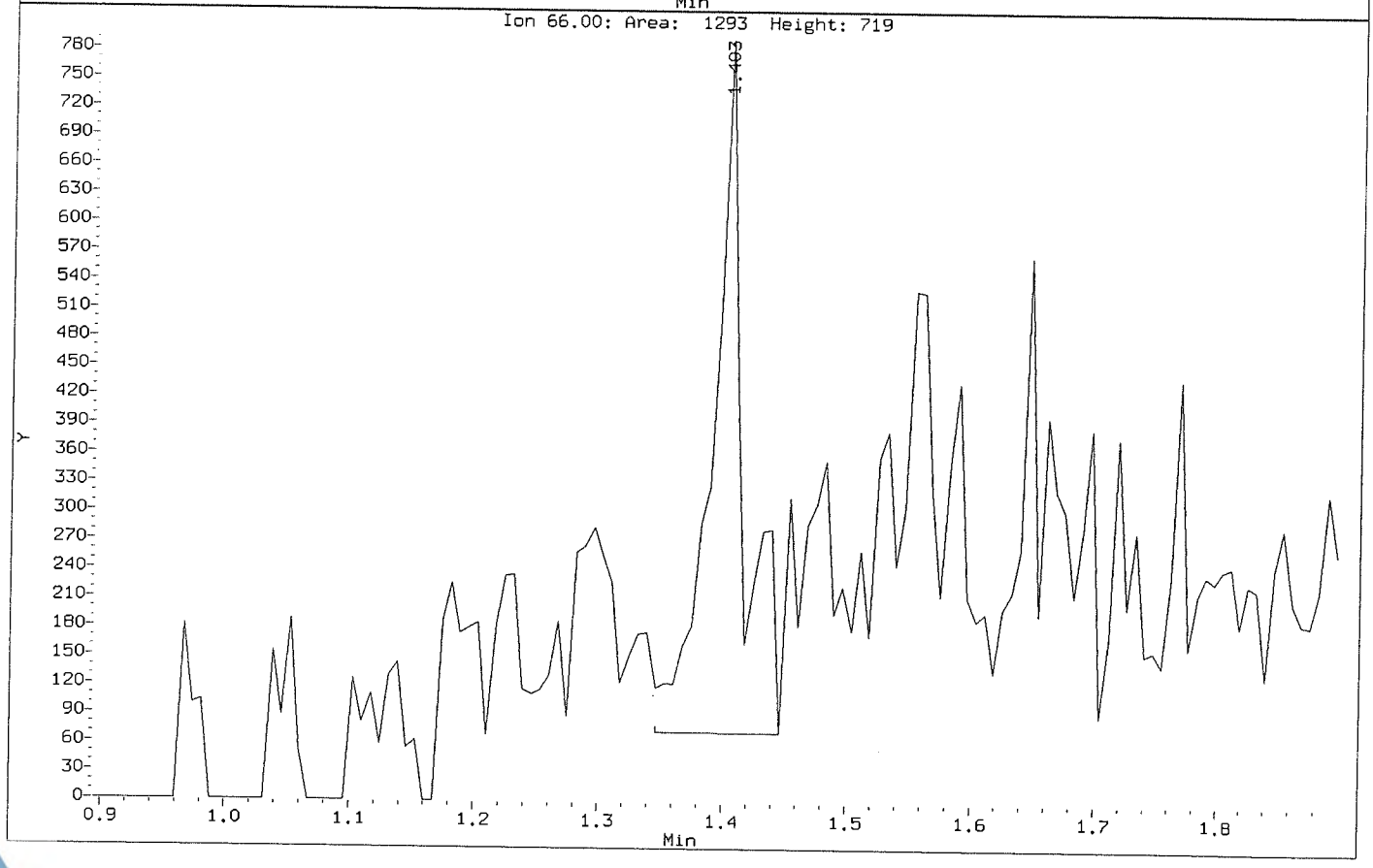




Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\X051804.D
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Instrument: voa6.i
Client Sample ID: VSTD001

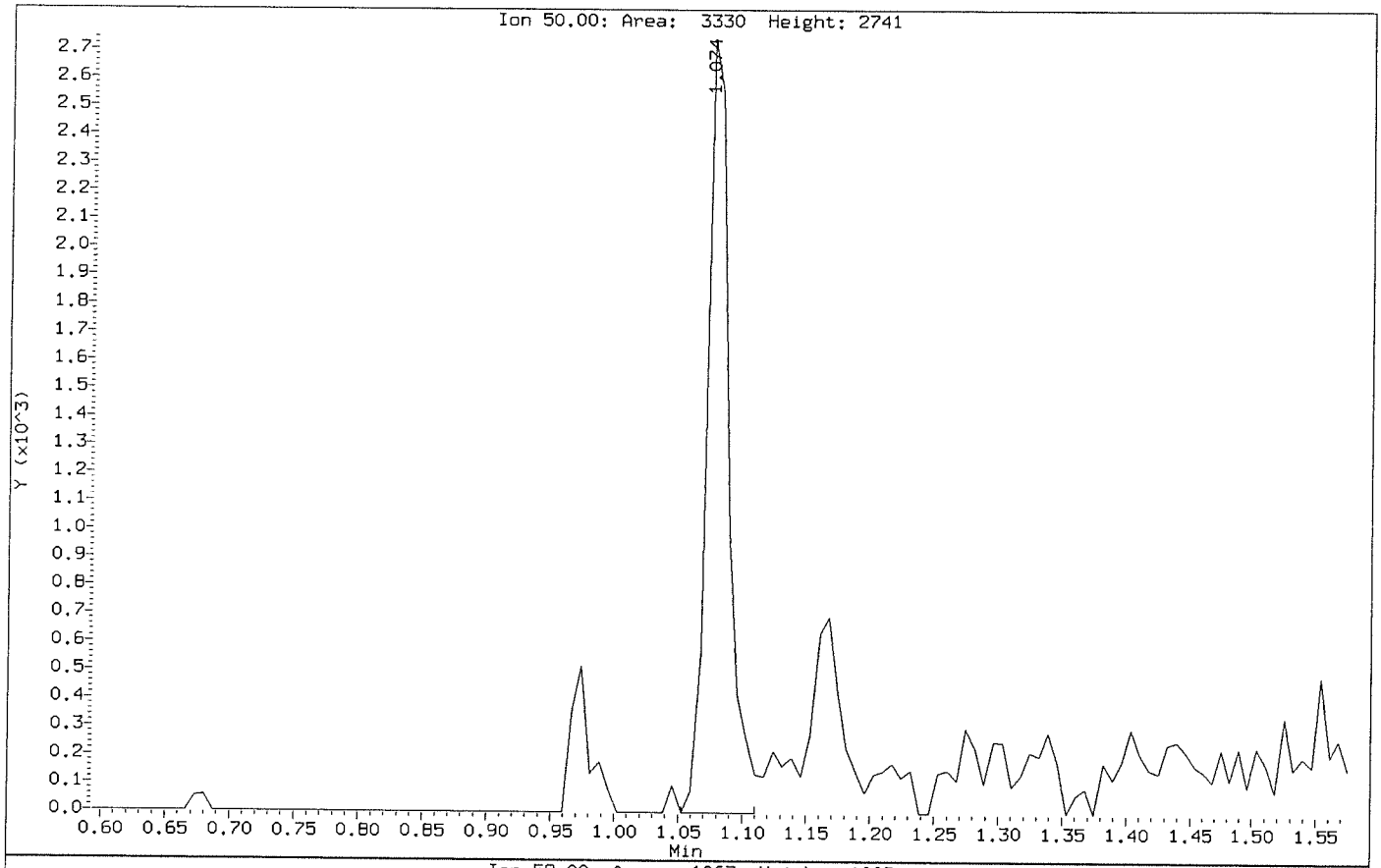
Compound: Chloroethane
CAS Number: 75-00-3

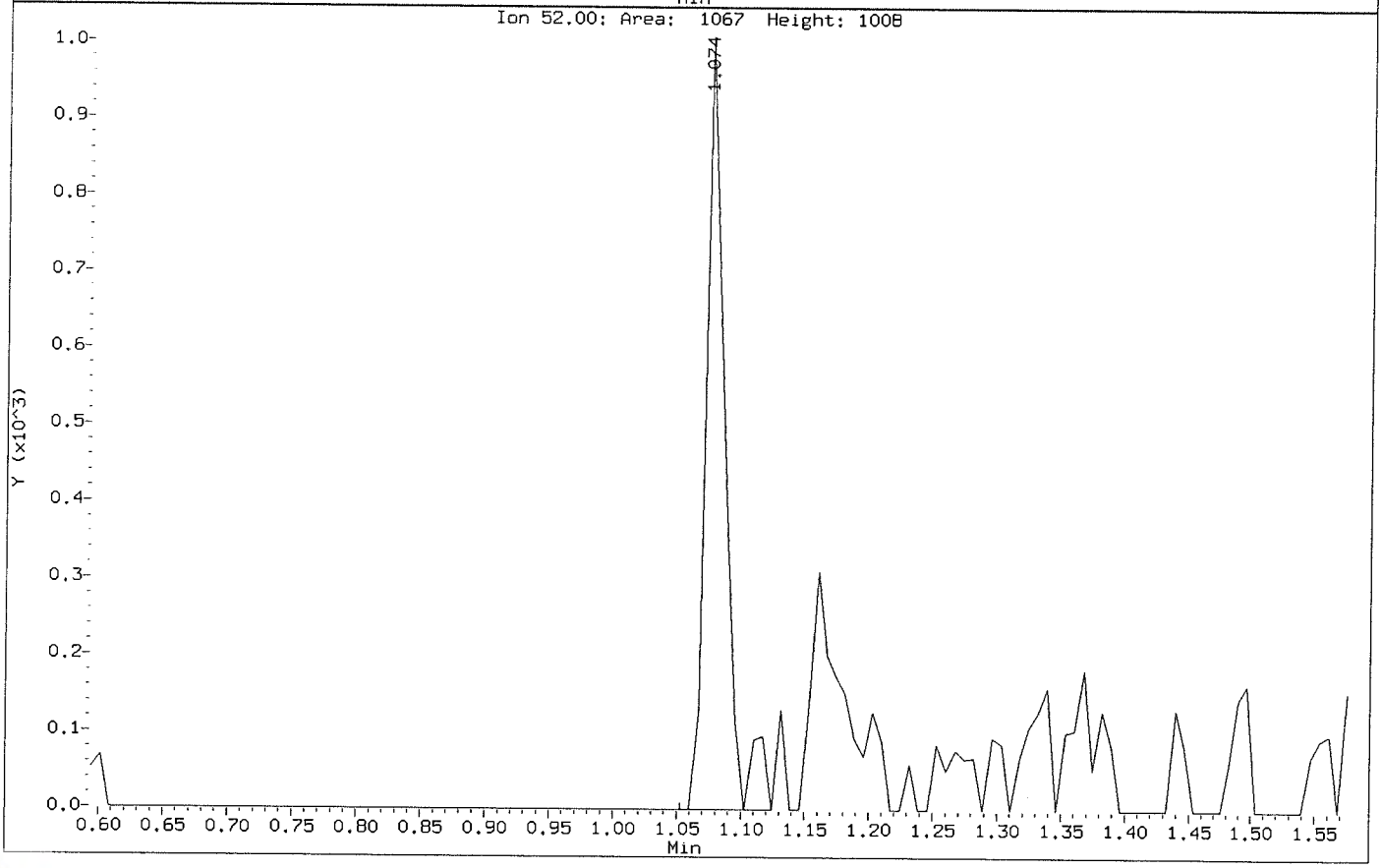




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Injection Date: 18-MAY-2021 12:25
Instrument: voa6.i
Client Sample ID: VSTD001

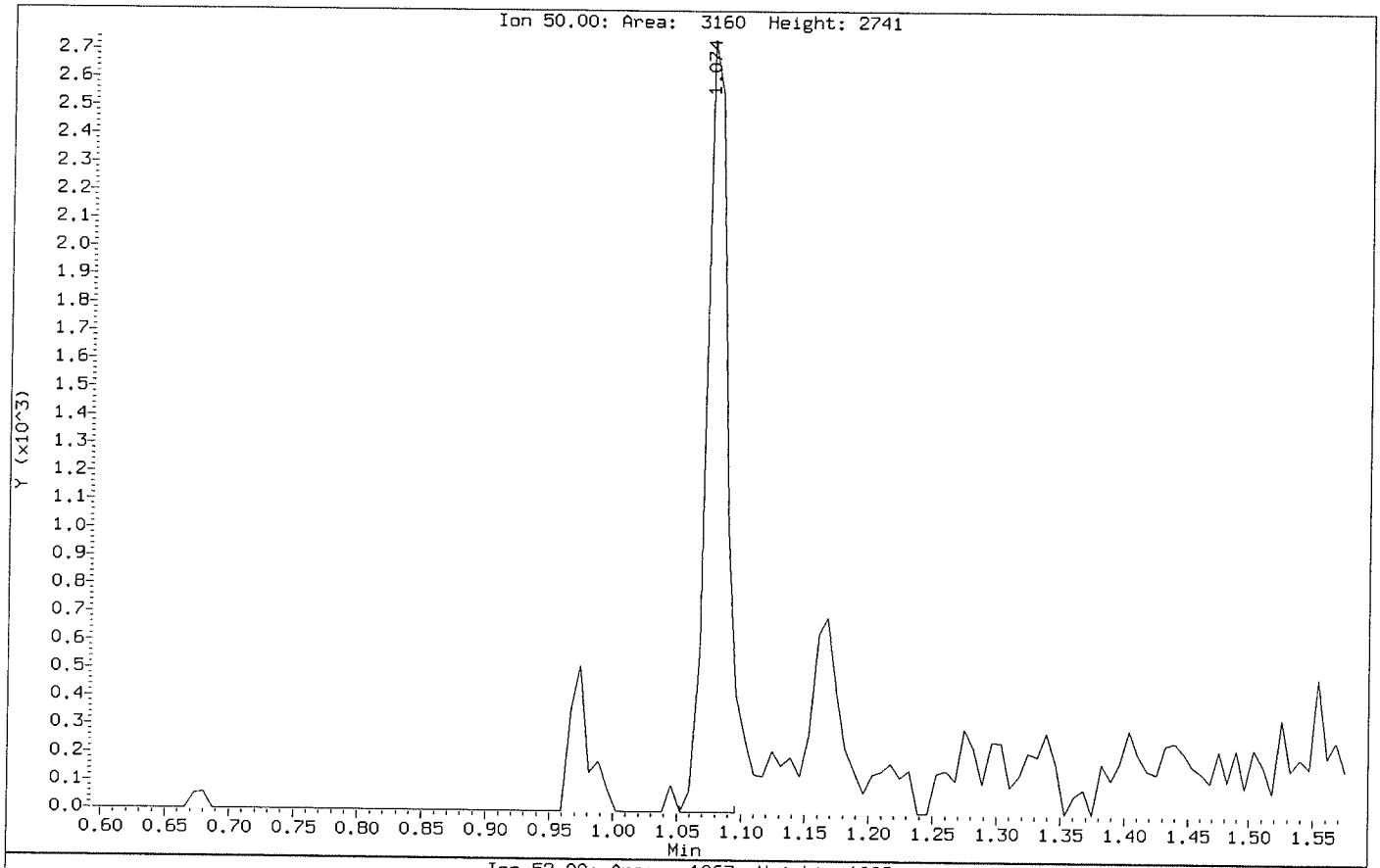
Compound: Chloromethane
CAS Number: 74-87-3

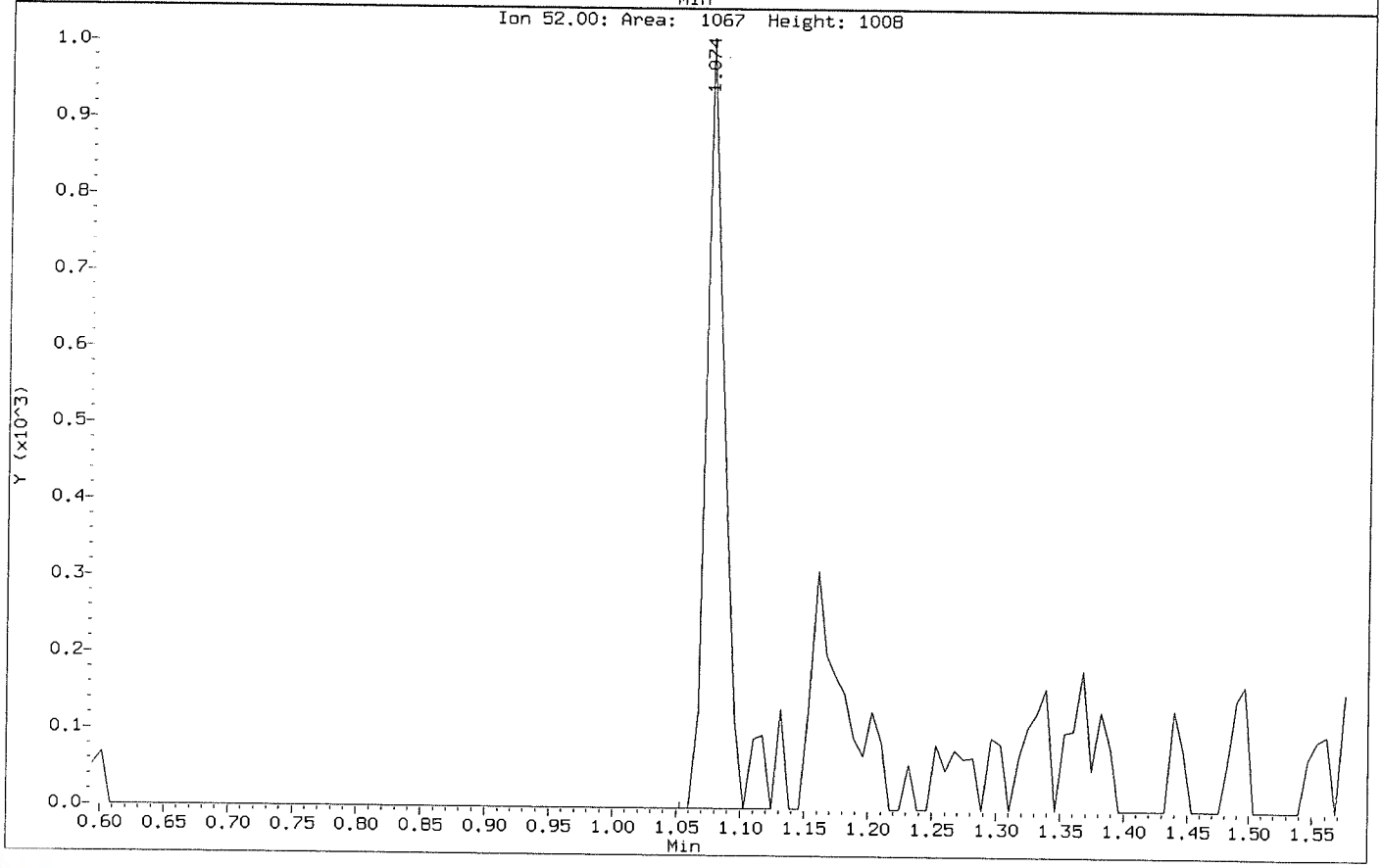




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Instrument: voa6.i
Client Sample ID: VSTD001

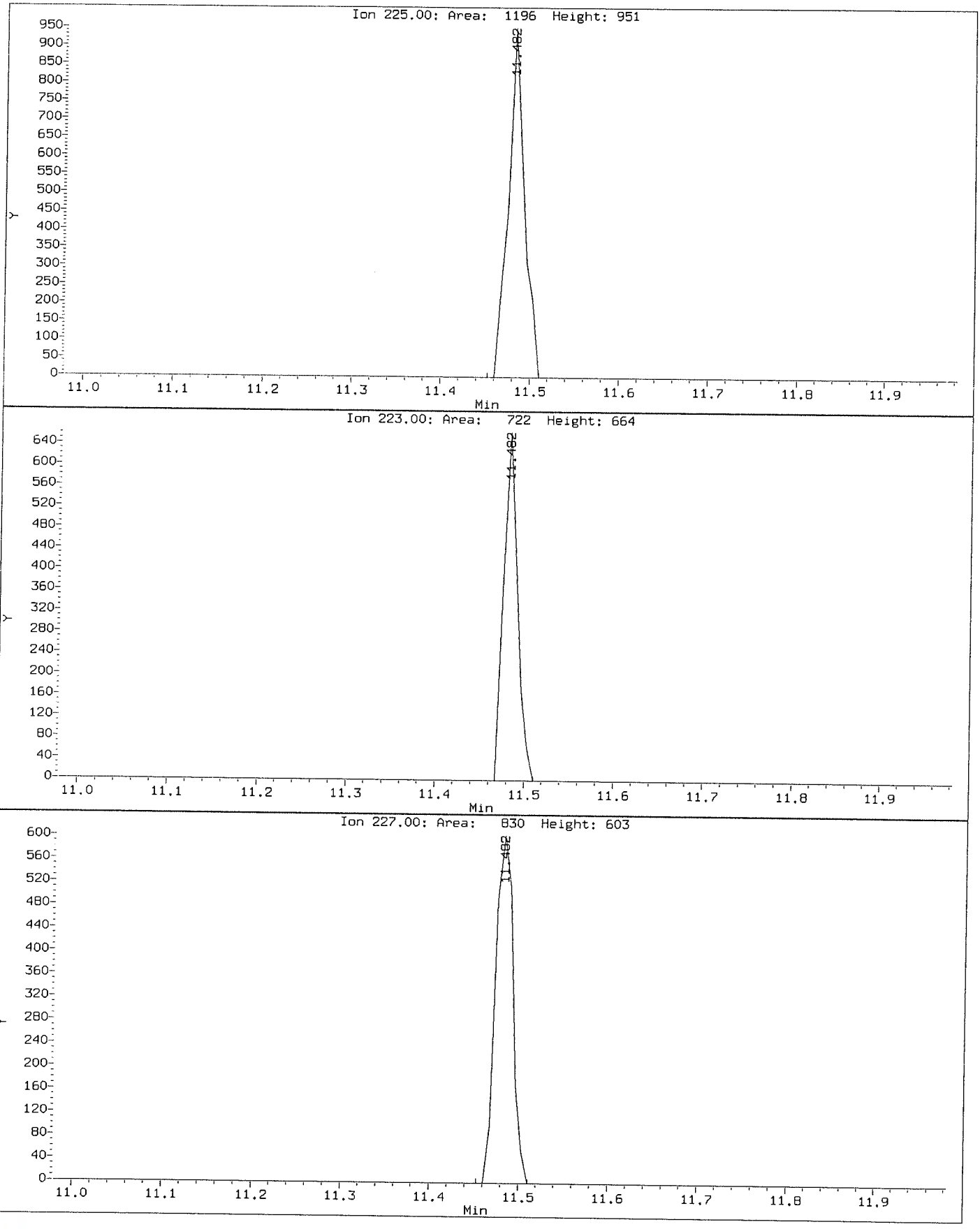
Compound: Chloromethane
CAS Number: 74-87-3





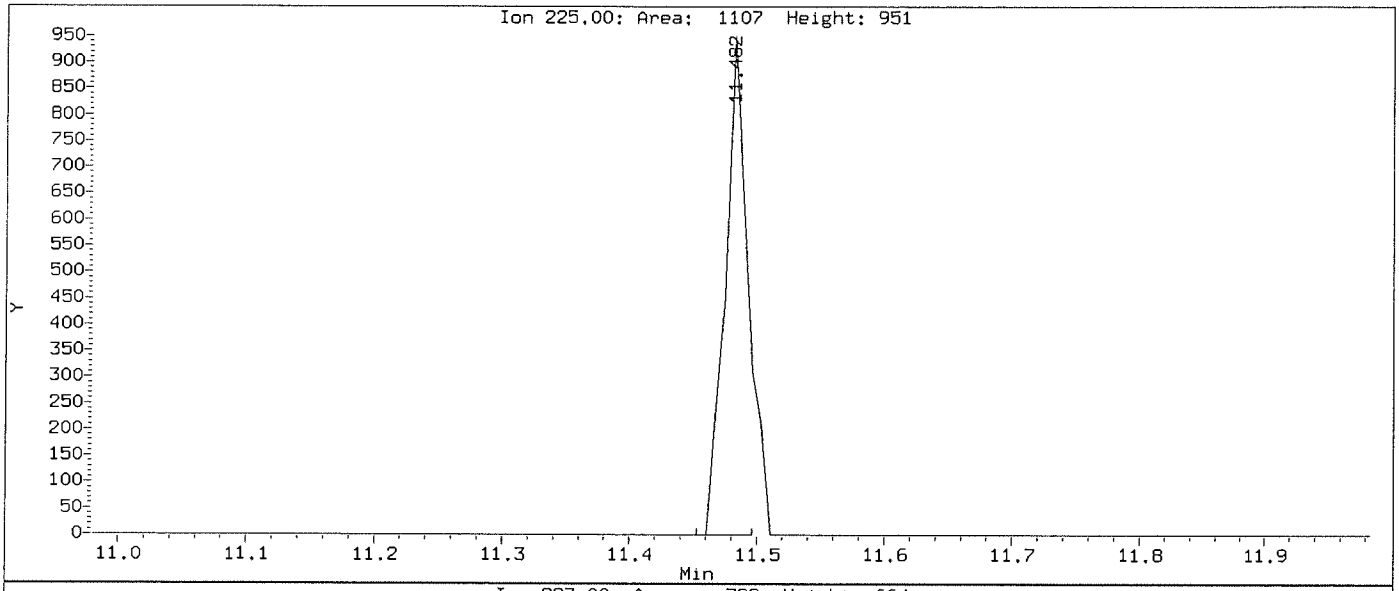
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Instrument: voa6.i
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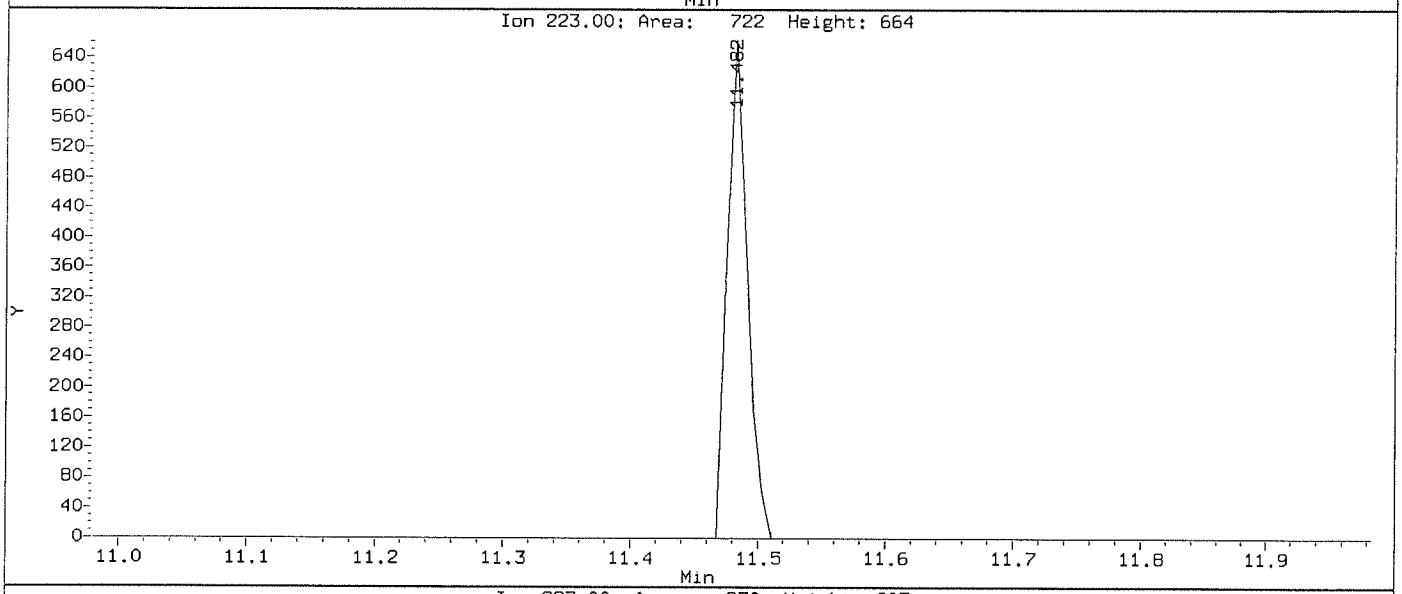
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CAS Number: 87-68-3

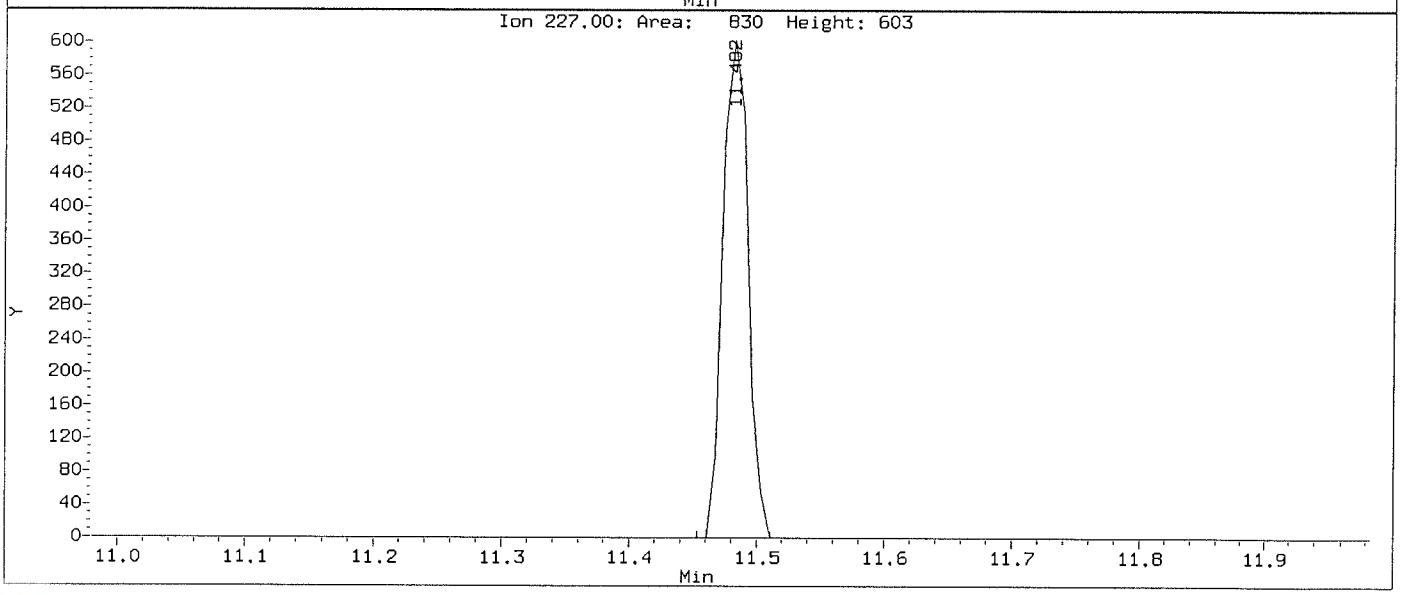


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Client Sample ID: VSTD001

Compound: Hexachlorobutadiene
CAS Number: 87-68-3

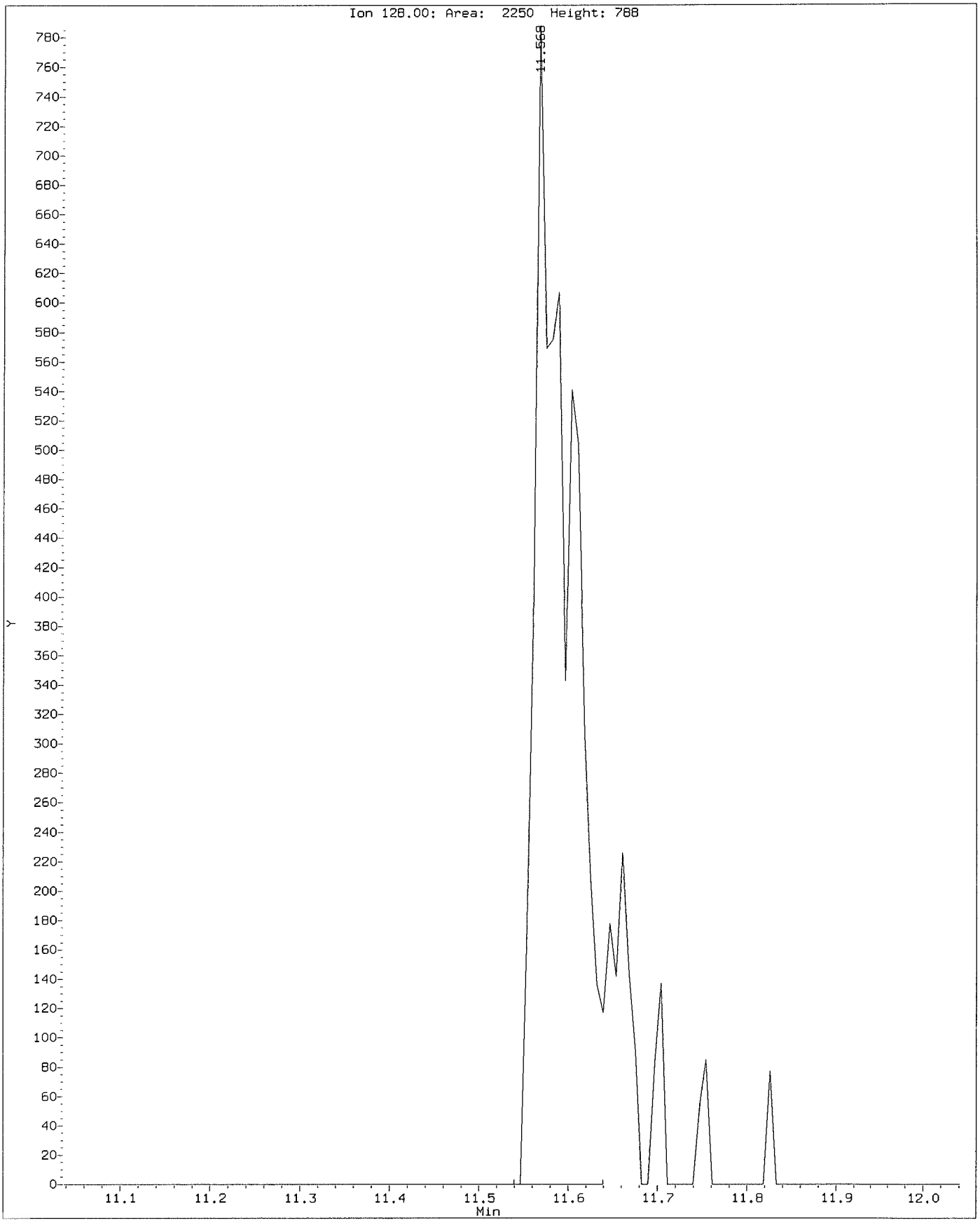






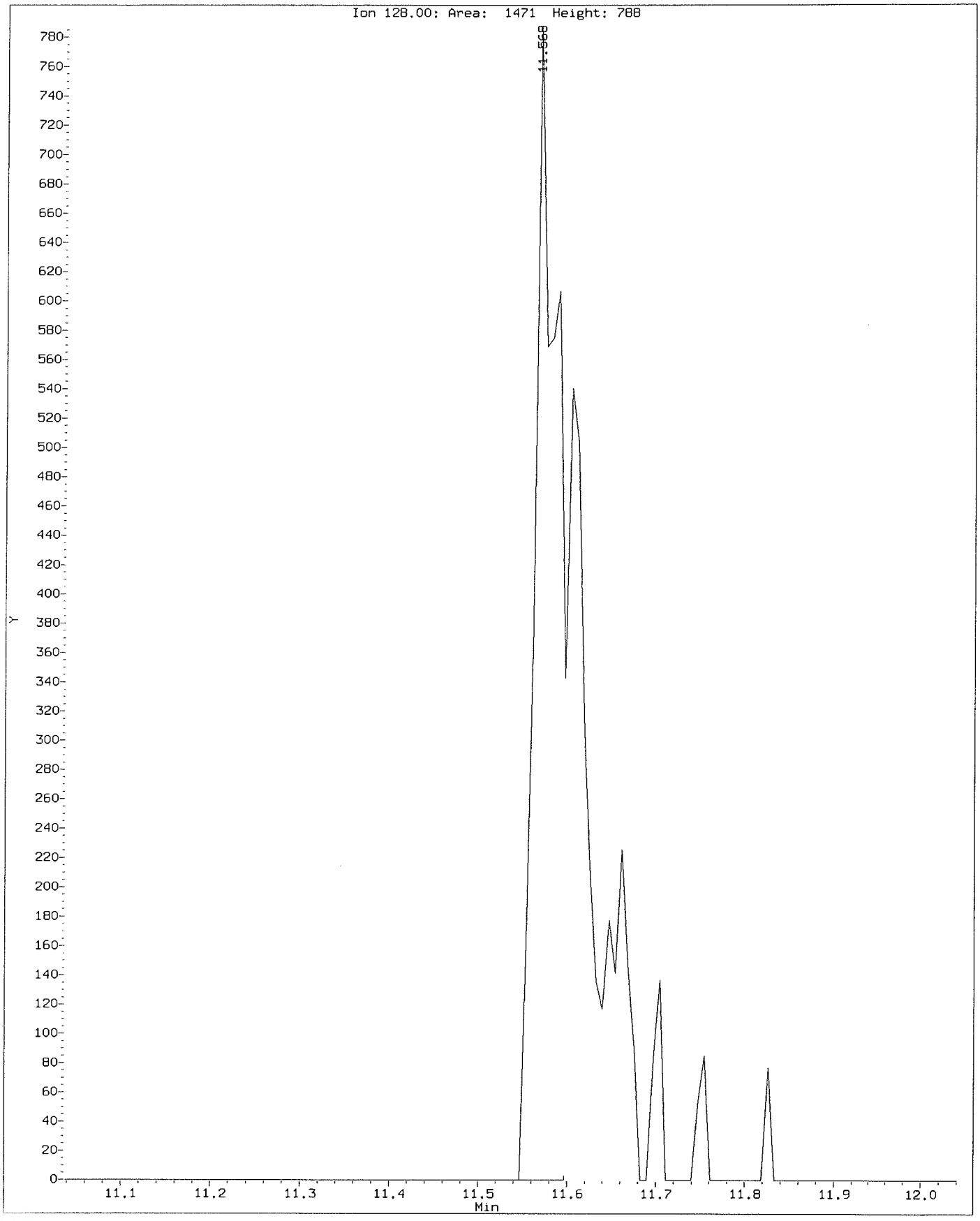
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Instrument: voa6.i
Client Sample ID: VSTD001

Compound: Naphthalene
CAS Number: 91-20-3



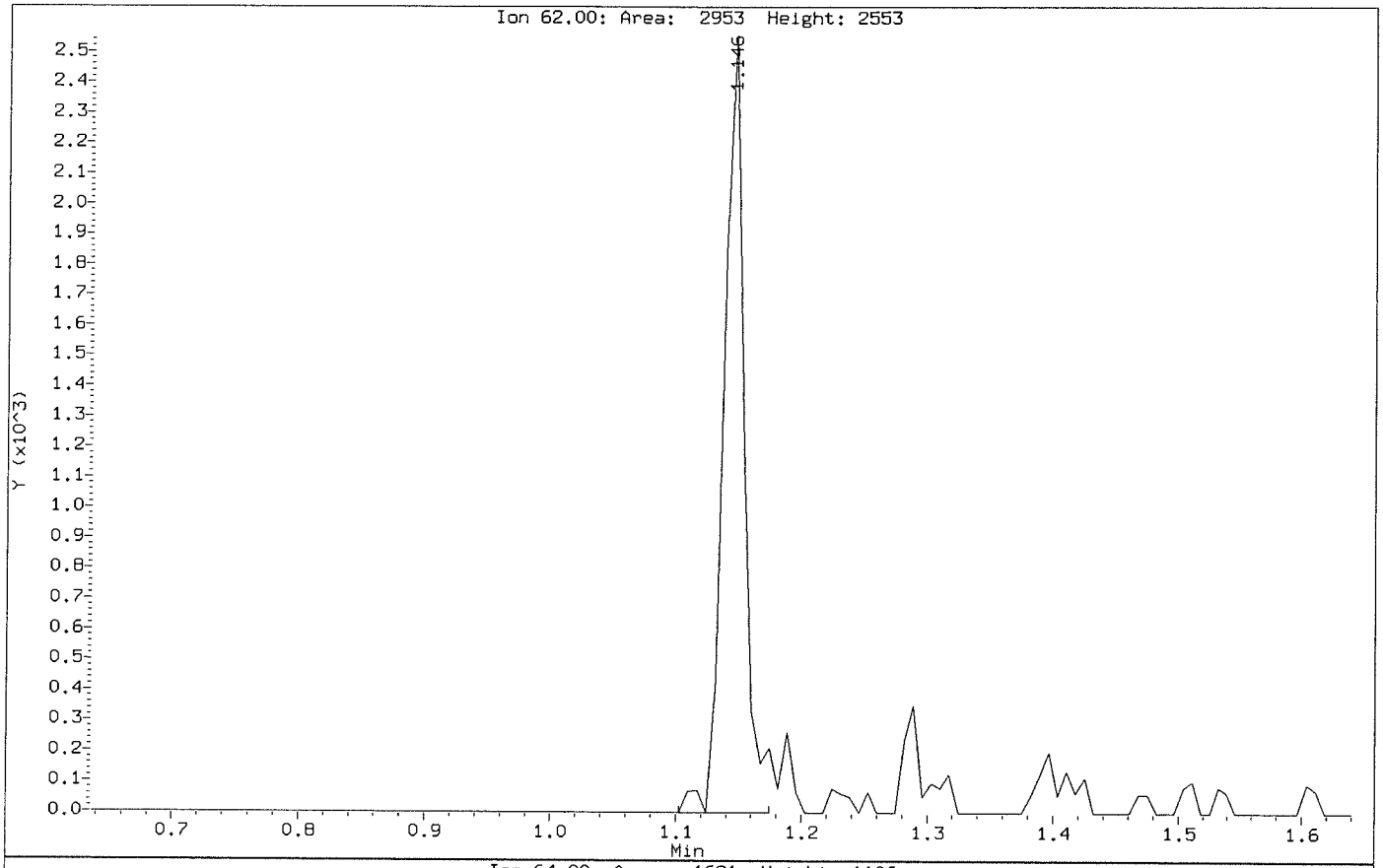
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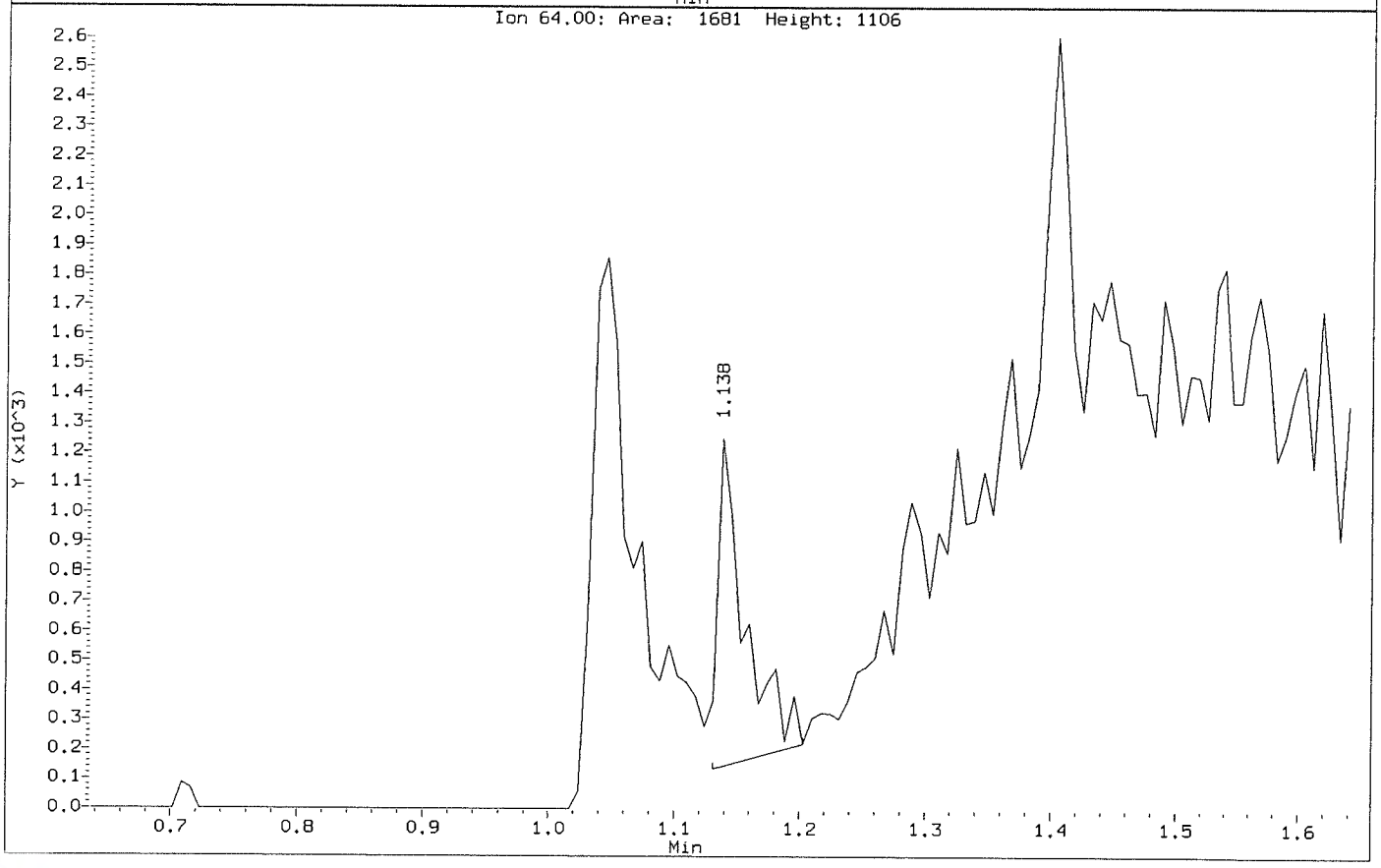
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CAS Number: 91-20-3



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Client Sample ID: VSTD001

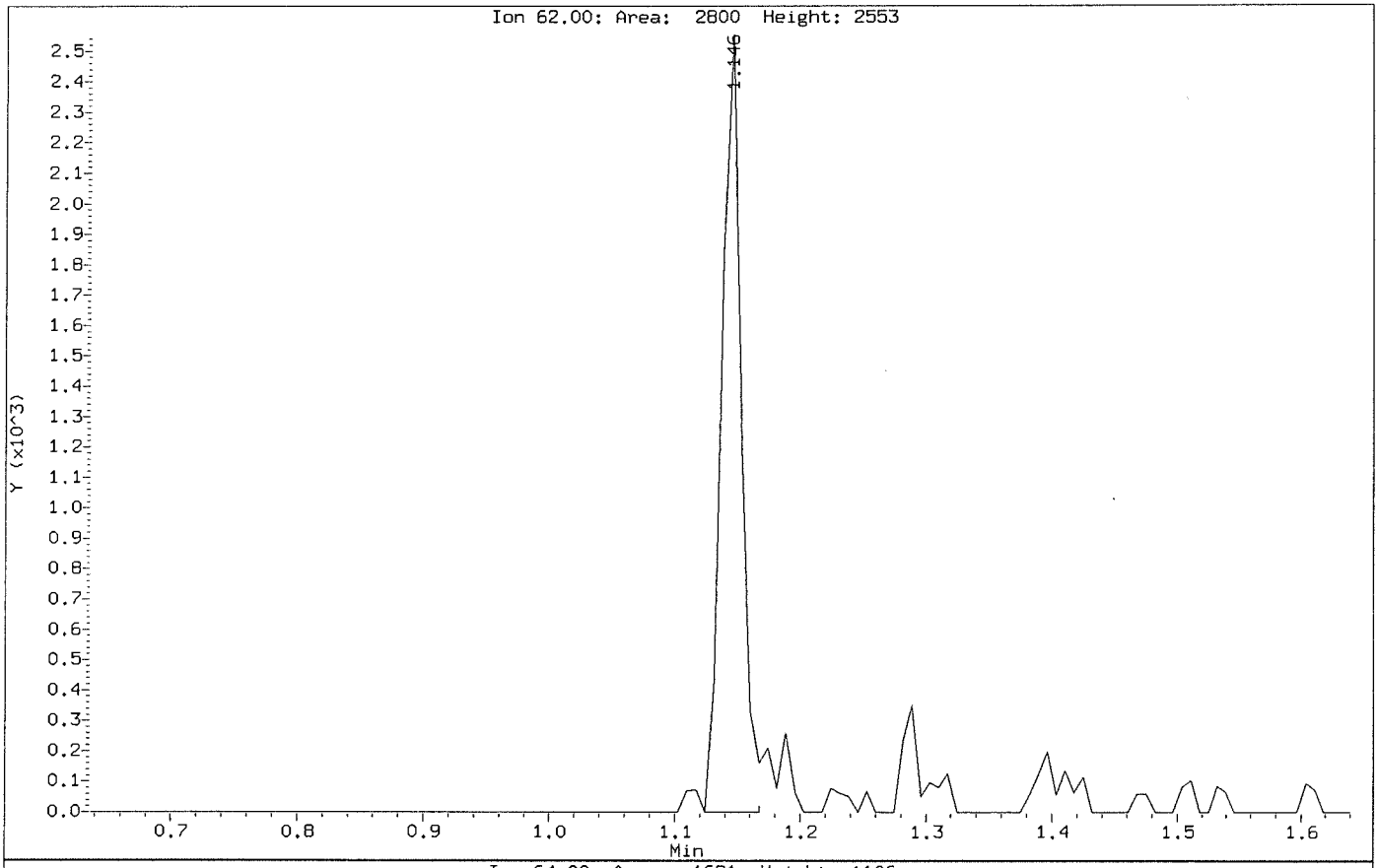
Compound: Vinyl Chloride
CAS Number: 75-01-4

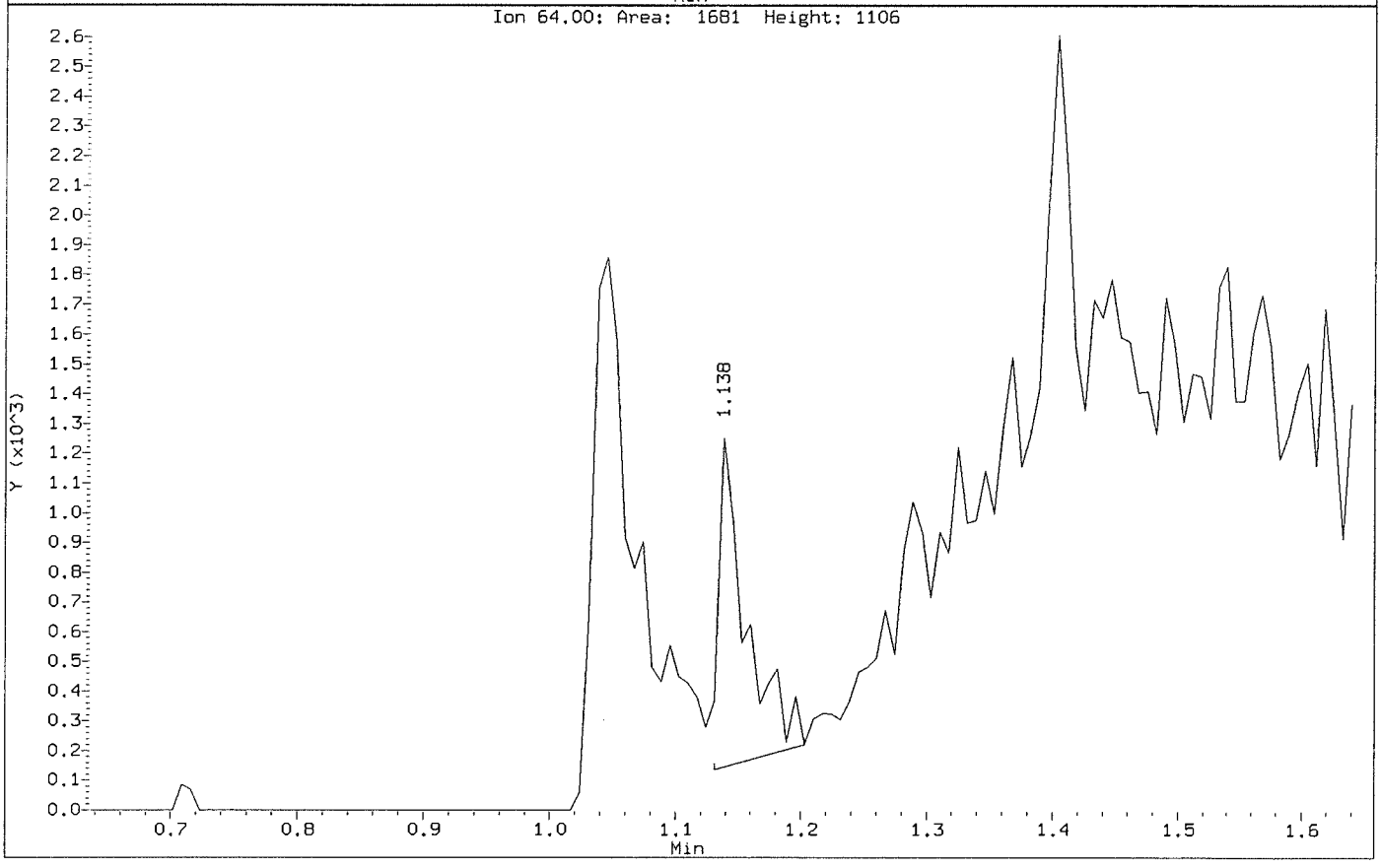




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Instrument: voa6.i
Client Sample ID: VSTD001

Compound: Vinyl Chloride
CAS Number: 75-01-4





Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051805.D Page 1
Report Date: 22-Jun-2021 08:20

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210518.b\X051805.D
Lab Smp Id: VSDT002 Client Smp ID: VSTD002
Inj Date : 18-MAY-2021 12:46
Operator : PC Inst ID: voa6.i
Smp Info : VSDT002;VSTD002;1;4;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210518.b\8260W.m
Meth Date : 22-Jun-2021 08:20 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 12:25 Cal File: X051804.D
Als bottle: 6 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

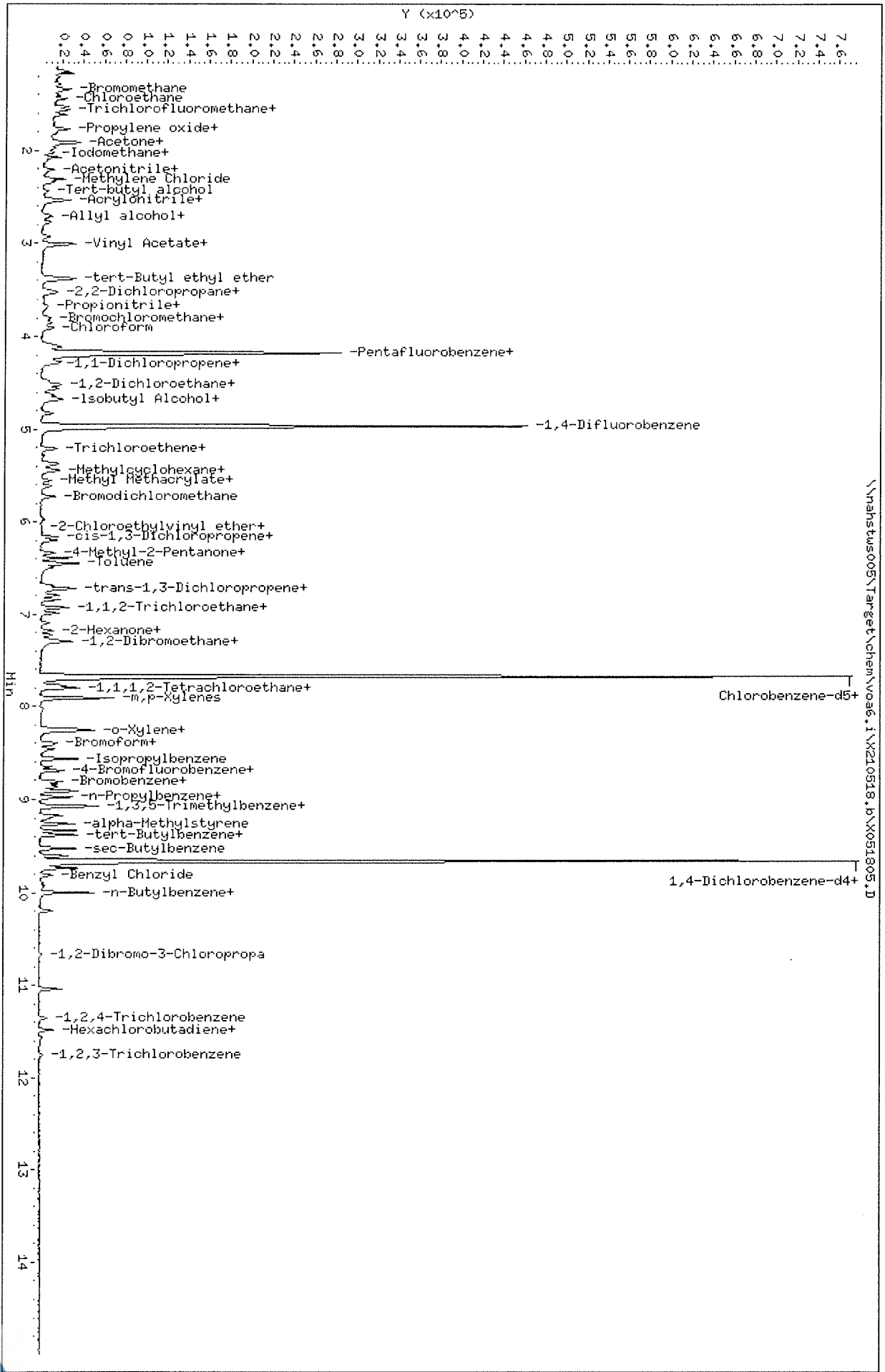
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	223222	50.0000	
*	36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	372877	50.0000	
*	47 Chlorobenzene-d5	117	7.670	7.670	(1.000)	342499	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	158694	50.0000	
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	6073	2.00000	0.87(a)
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	7059	2.00000	2.29(a)
$	30 Dibromofluoromethane	113	4.103	4.103	(0.981)	5073	2.00000	1.82(a)
$	48 Toluene-d8	98	6.388	6.388	(0.833)	16788	2.00000	2.96(a)
	60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	5404	2.00000	2.16(a)
	31 1,1,1-Trichloroethane	97	4.089	4.089	(0.978)	7117	2.00000	1.87(a)
	68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	6612	2.00000	2.01(aM)
	138 Freon TF	101	1.919	1.919	(0.459)	4737	2.00000	2.23(aM)
	53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	4027	2.00000	2.02(a)
	22 1,1-Dichloroethane	63	2.929	2.929	(0.700)	7473	2.00000	1.80(a)
	11 1,1-Dichloroethene	96	1.919	1.919	(0.459)	4857	2.00000	2.17(a)
	32 1,1-Dichloropropene	75	4.289	4.289	(0.863)	5889	2.00000	1.84(a)
	93 1,2,3-Trichlorobenzene	180	11.753	11.753	(1.216)	1755	2.00000	2.84(a)
	71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	4744	2.00000	1.61(aMH)
	90 1,2,4-Trichlorobenzene	180	11.352	11.352	(1.175)	2176	2.00000	3.91(a)
	79 1,2,4-Trimethylbenzene	105	9.382	9.382	(0.971)	15828	2.00000	1.96(a)
	89 1,2-Dibromo-3-Chloropropane	155	10.665	10.665	(1.104)	511	2.00000	3.91(aM)
	57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	4934	2.00000	2.06(a)

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	9.998	9.998	(1.035)	8926	2.00000	2.00(a)
33	1,2-Dichloroethane	62	4.562	4.562	(0.918)	7371	2.00000	2.01(a)
42	1,2-Dichloropropane	63	5.436	5.436	(1.094)	4723	2.00000	1.88(aM)
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	16203	2.00000	2.04(a)
83	1,3-Dichlorobenzene	146	9.612	9.612	(0.995)	9167	2.00000	2.01(a)
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	7822	2.00000	2.00(a)
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	10925	2.00000	2.58(a)
26	2,2-Dichloropropane	77	3.516	3.516	(0.841)	7384	2.00000	1.99(a)
24	2-Butanone	43	3.609	3.609	(0.863)	2680	4.00000	3.25(aM)
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	14113	2.00000	1.99(a)
52	2-Hexanone	43	7.090	7.090	(0.924)	6265	4.00000	4.05(a)
77	4-Chlorotoluene	91	9.074	9.074	(0.939)	16392	2.00000	1.98(a)
82	p-Isopropyltoluene	119	9.647	9.647	(0.999)	15308	2.00000	1.95(a)
45	4-Methyl-2-Pentanone	43	6.331	6.331	(0.825)	9786	4.00000	4.57(a)
10	Acetone	43	1.976	1.976	(0.473)	4685	4.00000	3.57(a)
37	Benzene	78	4.519	4.519	(0.909)	17777	2.00000	1.92(a)
74	Bromobenzene	156	8.809	8.809	(0.912)	5025	2.00000	1.89(a)
29	Bromochloromethane	128	3.802	3.802	(0.909)	2725	2.00000	2.00(a)
39	Bromodichloromethane	83	5.729	5.729	(1.153)	6957	2.00000	1.93(aM)
66	Bromoform	173	8.415	8.415	(1.097)	2721	2.00000	1.64(Ta)
6	Bromomethane	94	1.338	1.338	(0.320)	5999	2.00000	2.10(aM)
19	Carbon Disulfide	76	2.069	2.069	(0.495)	20321	4.00000	3.86(a)
34	Carbon Tetrachloride	117	4.254	4.254	(0.856)	6956	2.00000	2.14(aH)
59	Chlorobenzene	112	7.692	7.692	(1.003)	13639	2.00000	2.03(a)
7	Chloroethane	64	1.403	1.403	(0.336)	3185	2.00000	1.88(aM)
28	Chloroform	83	3.917	3.917	(0.937)	8858	2.00000	1.86(a)
3	Chloromethane	50	1.080	1.080	(0.258)	5348	2.00000	2.44(a)
27	cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	5045	2.00000	1.96(a)
46	cis-1,3-Dichloropropene	75	6.159	6.159	(1.239)	7191	2.00000	1.75(a)
55	Dibromochloromethane	129	7.176	7.176	(0.936)	5007	2.00000	1.87(a)
44	Dibromomethane	93	5.557	5.557	(1.118)	3596	2.00000	2.00(a)
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	5548	2.00000	3.97(a)
61	Ethylbenzene	106	7.799	7.799	(1.017)	6867	2.00000	2.06(a)
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	2099	2.00000	5.24(M)
67	Isopropylbenzene	105	8.566	8.566	(1.117)	19138	2.00000	1.88(a)
62	m,p-Xylenes	106	7.907	7.907	(1.031)	16590	4.00000	3.87(a)
17	Methylene Chloride	84	2.305	2.305	(0.551)	4803	2.00000	2.14(a)
87	n-Butylbenzene	91	9.998	9.998	(1.035)	13346	2.00000	1.79(a)
73	n-Propylbenzene	91	8.917	8.917	(0.923)	24073	2.00000	2.14(a)
92	Naphthalene	128	11.553	11.553	(1.196)	3094	2.00000	4.49(aM)
63	o-Xylene	106	8.243	8.243	(1.075)	8148	2.00000	1.95(a)
81	sec-Butylbenzene	105	9.526	9.526	(0.986)	20210	2.00000	2.17(a)
64	Styrene	104	8.265	8.265	(1.078)	12689	2.00000	3.33(a)
78	tert-Butylbenzene	119	9.339	9.339	(0.967)	14096	2.00000	2.09(a)
56	Tetrachloroethene	164	6.933	6.933	(0.904)	4009	2.00000	2.10(a)
50	Toluene	91	6.446	6.446	(0.840)	19645	2.00000	1.98(a)
20	trans-1,2-Dichloroethene	96	2.535	2.535	(0.606)	4458	2.00000	2.07(a)
51	trans-1,3-Dichloropropene	75	6.689	6.689	(1.346)	6893	2.00000	1.92(a)
38	Trichloroethene	130	5.206	5.206	(1.048)	4850	2.00000	1.96(a)
8	Trichlorofluoromethane	101	1.560	1.560	(0.373)	9673	2.00000	2.25(a)
5	Vinyl Chloride	62	1.145	1.145	(0.274)	5963	2.00000	2.21(a)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

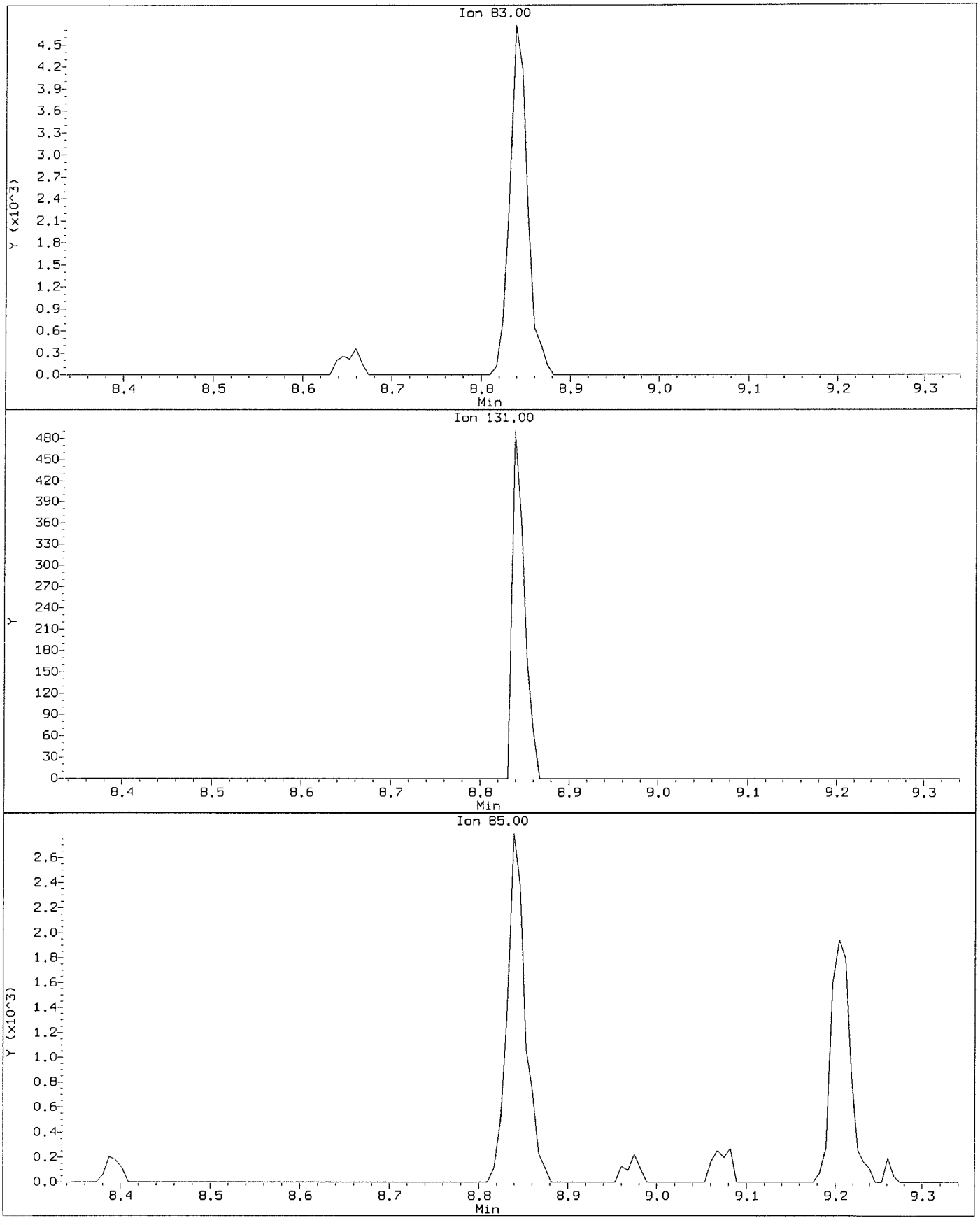


Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051805.D
Date : 18-MAY-2021 12:46
Client ID: VSTD002
Sample Info: VSDT002;VSTD002;1;4;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

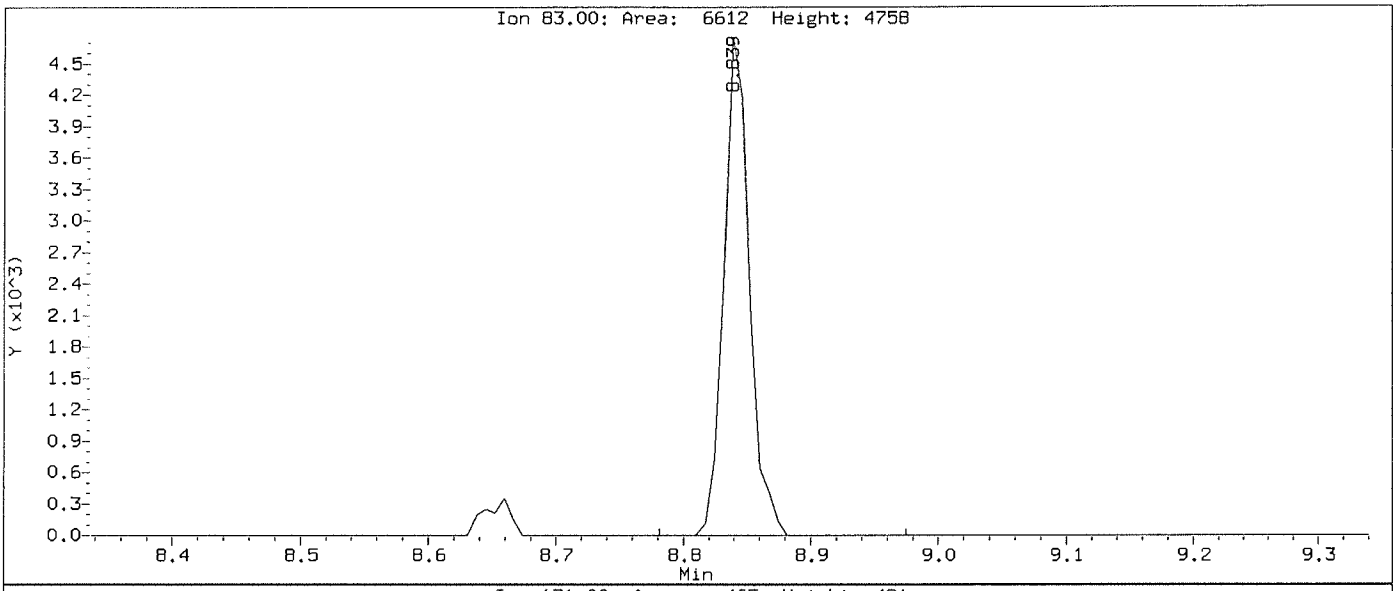
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Injection Date: 18-MAY-2021 12:46
Instrument: voa6.i
Client Sample ID: VSTD002

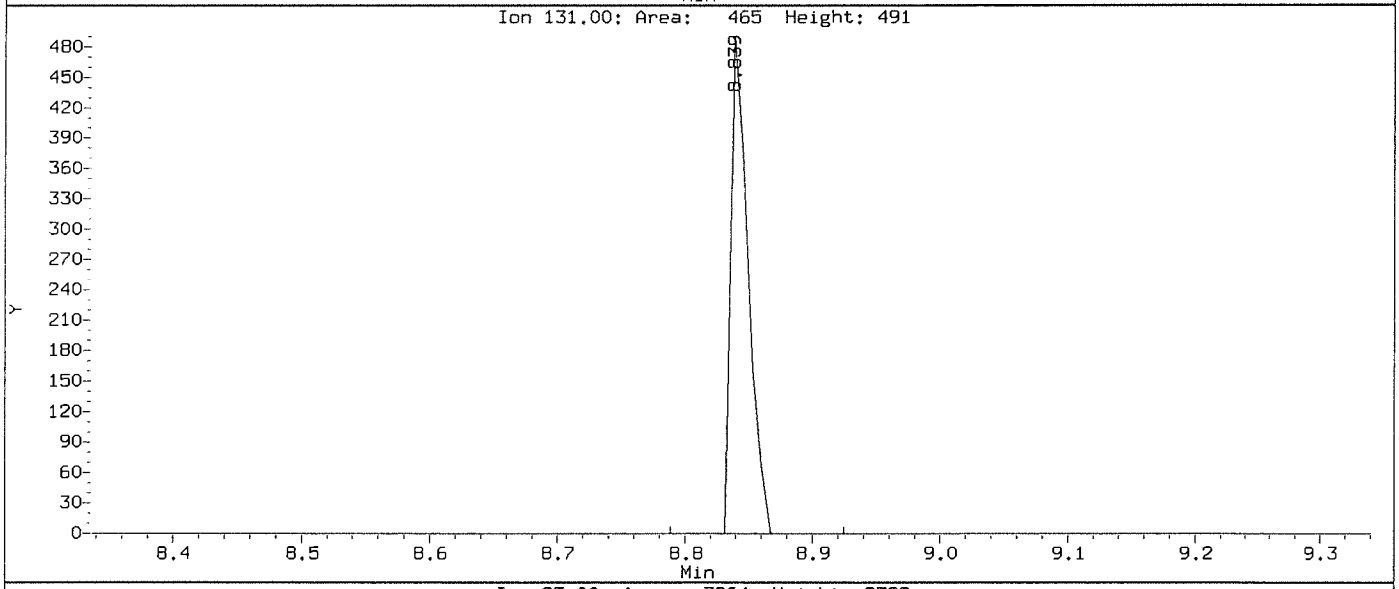
Compound: 1,1,2,2-Tetrachloroethane
CAS Number: 79-34-5

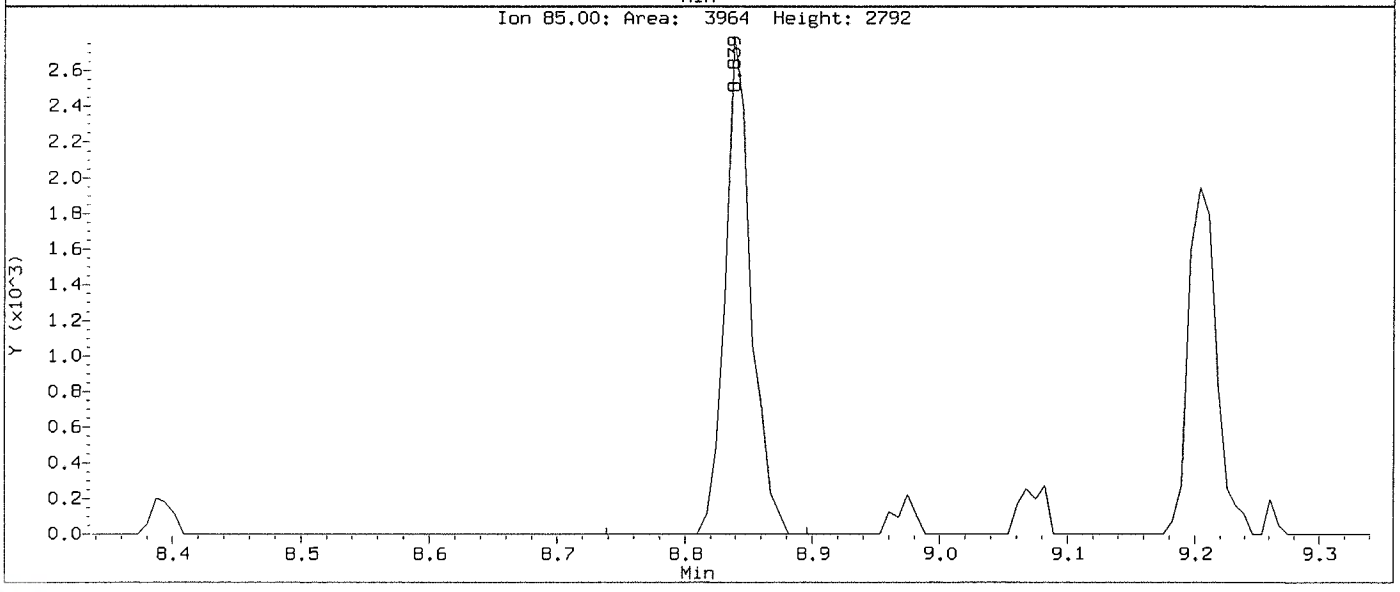


Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\X051805.D
Injection Date: 18-MAY-2021 12:46
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: 1,1,2,2-Tetrachloroethane
CAS Number: 79-34-5

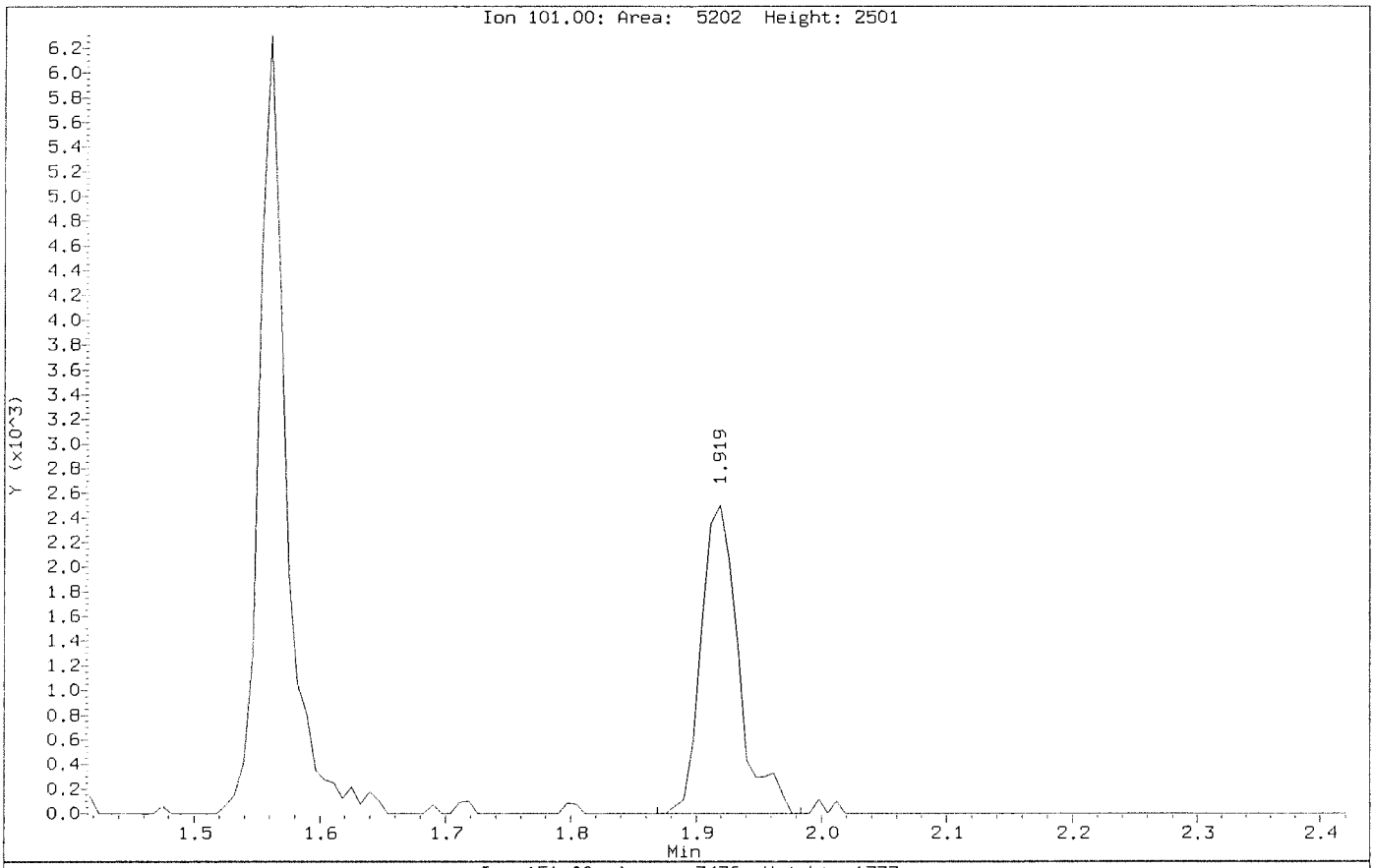


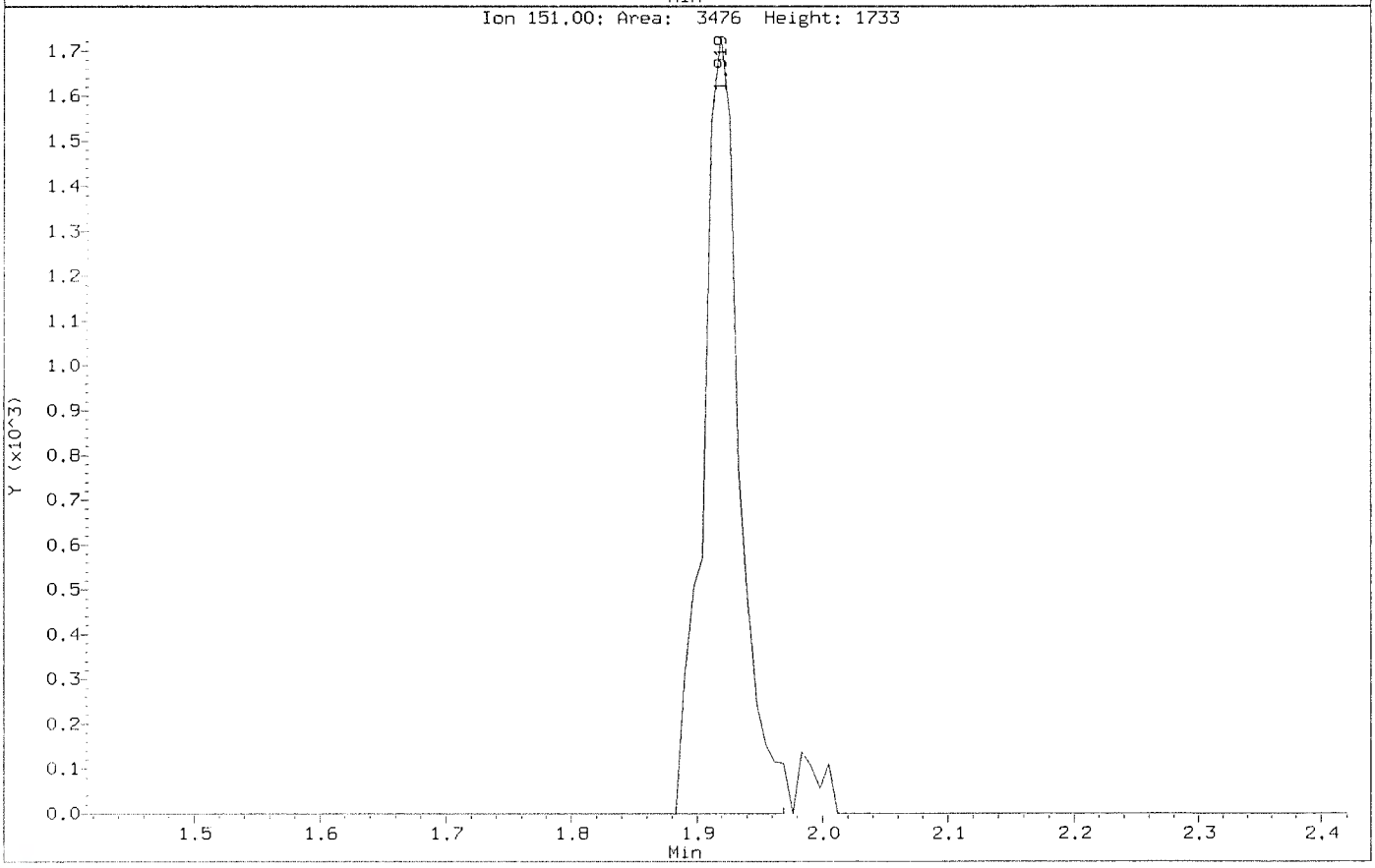




Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\Before3\X051805.D
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Instrument: voa6.i
Client Sample ID: VSTD002

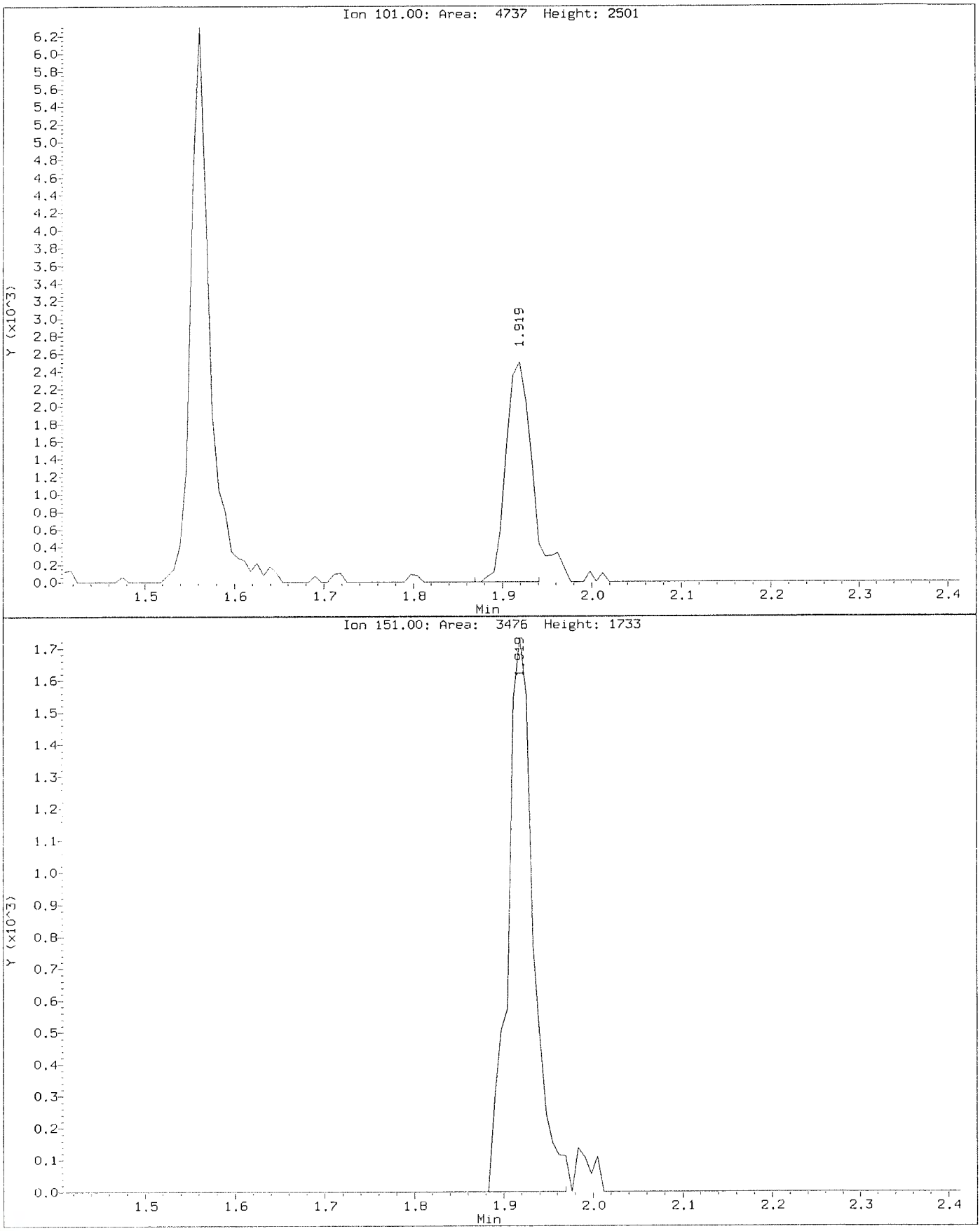
Compound: Freon TF
CAS Number: 76-13-1





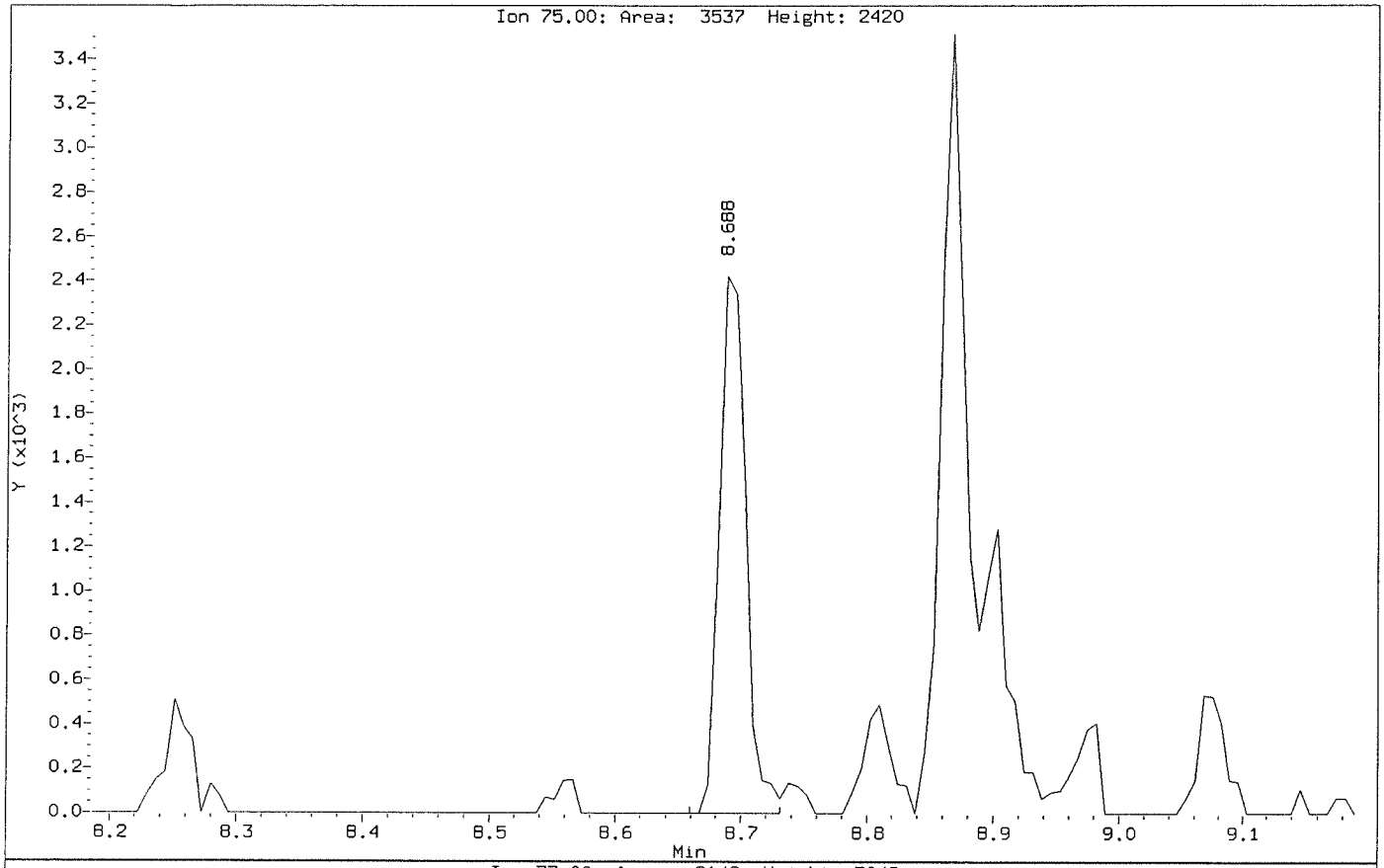
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Injection Date: 18-MAY-2021 12:46
Instrument: voa6.i
Client Sample ID: VSTD002

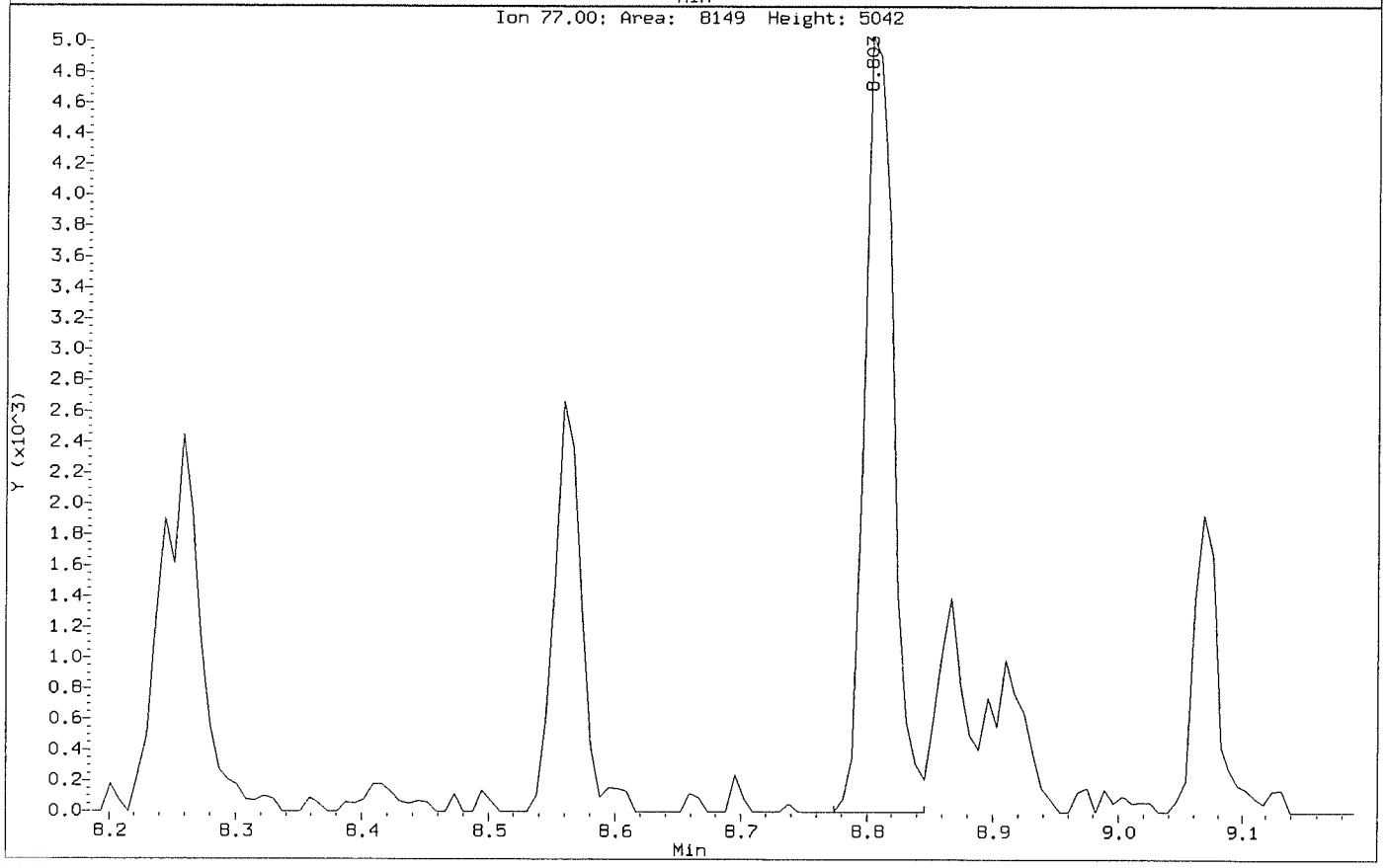
Compound: Freon TF
CAS Number: 76-13-1



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Instrument: voa6.i
Client Sample ID: VSTD002

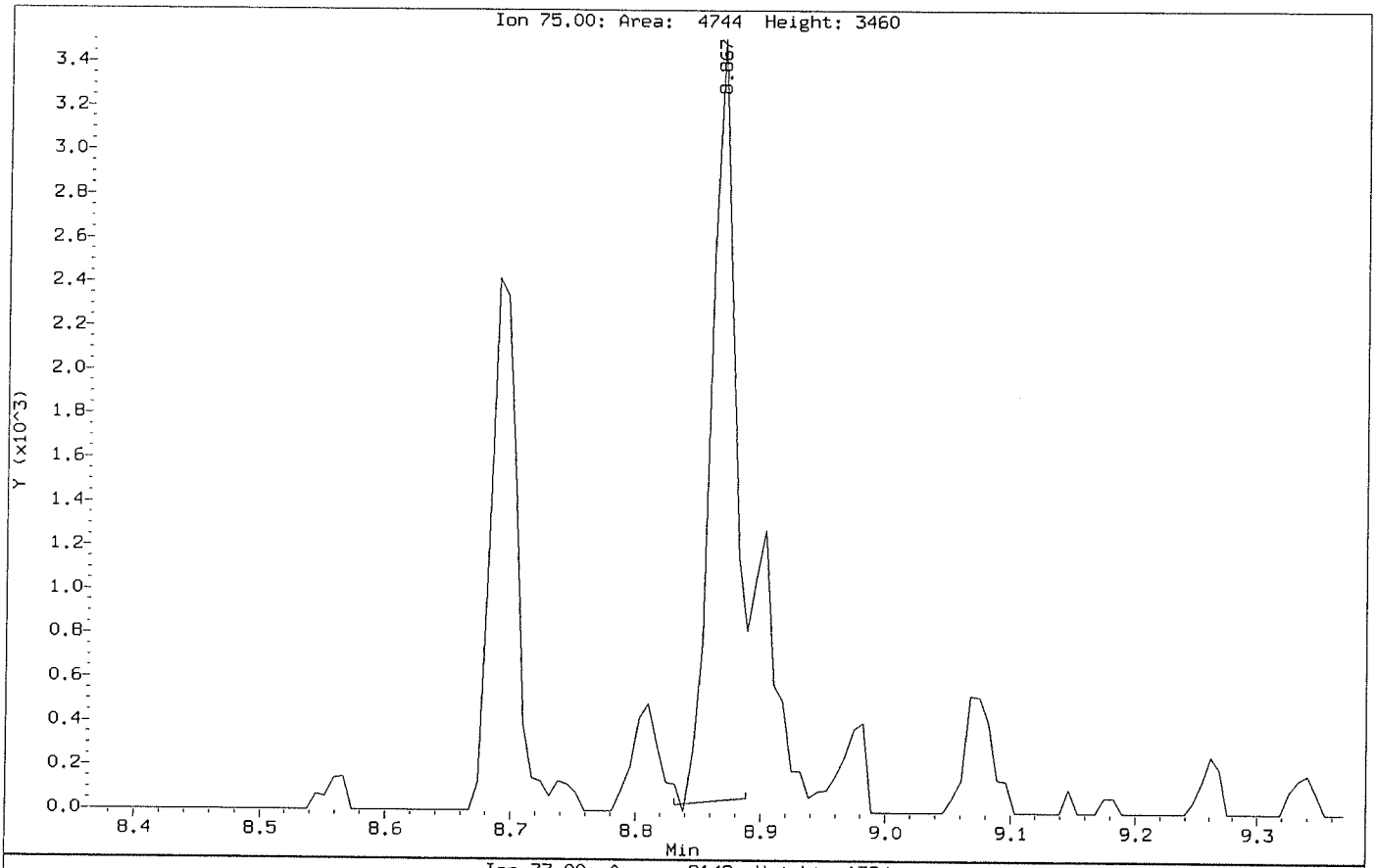
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4

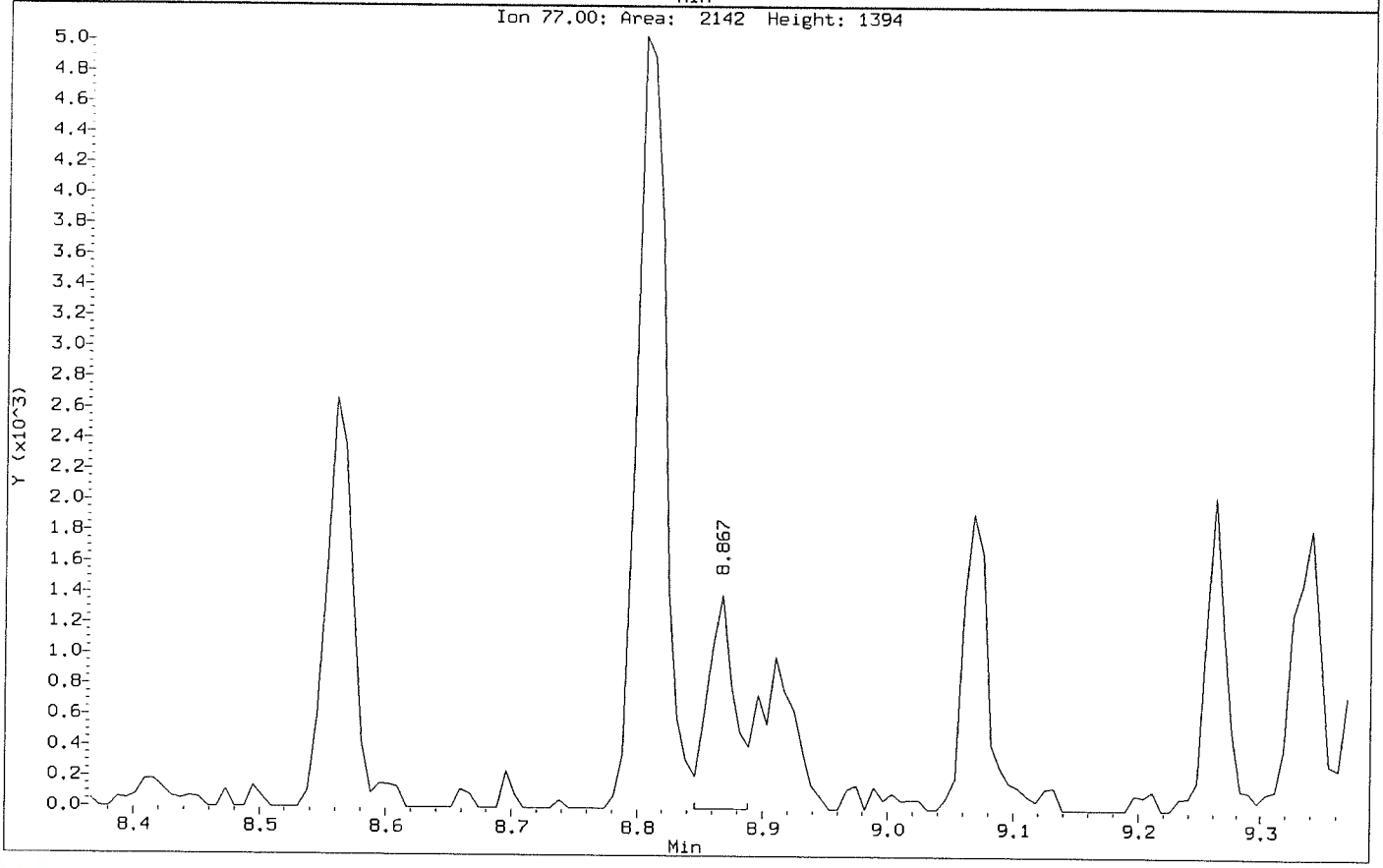




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Instrument: voa6.i
Client Sample ID: VSTD002

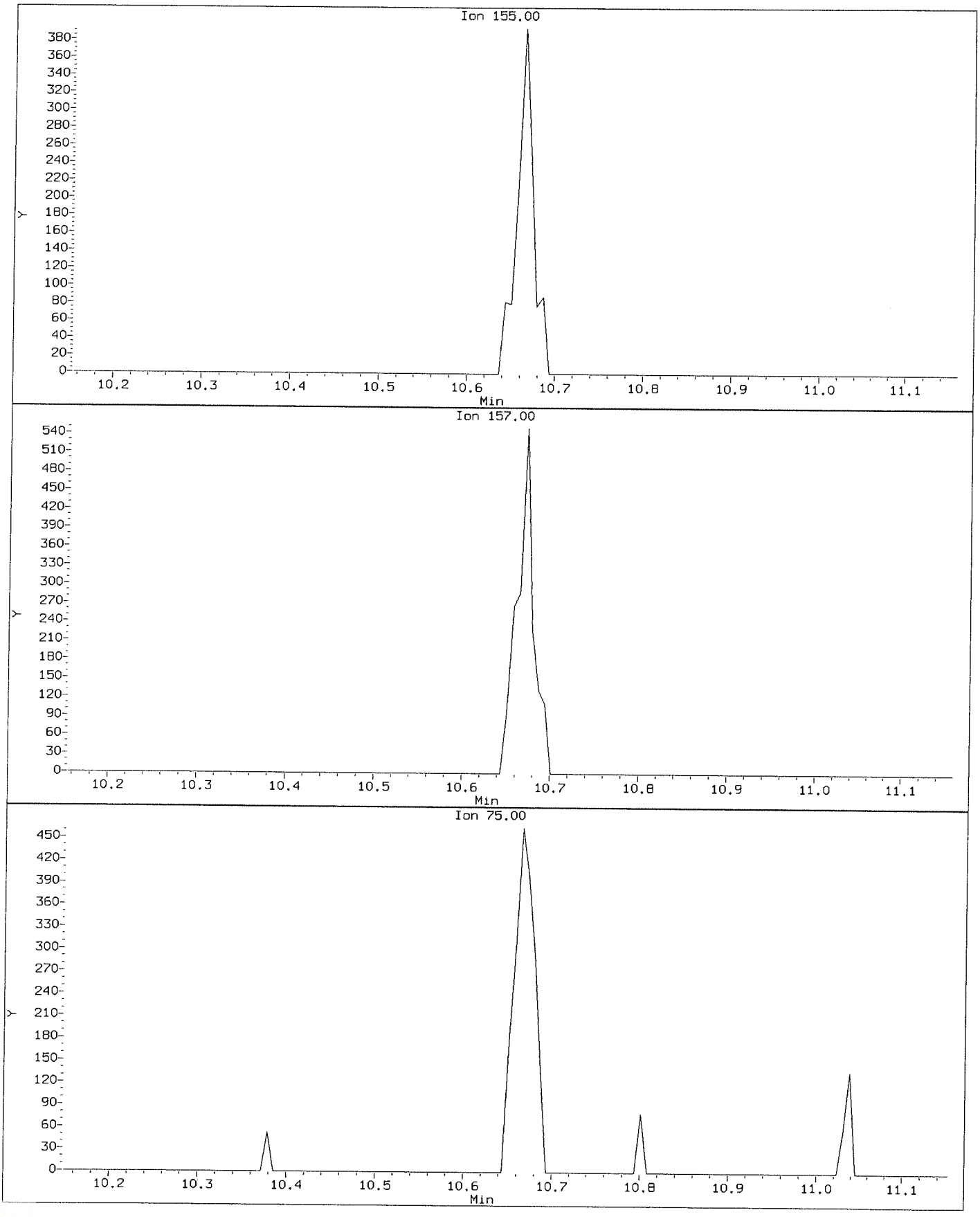
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





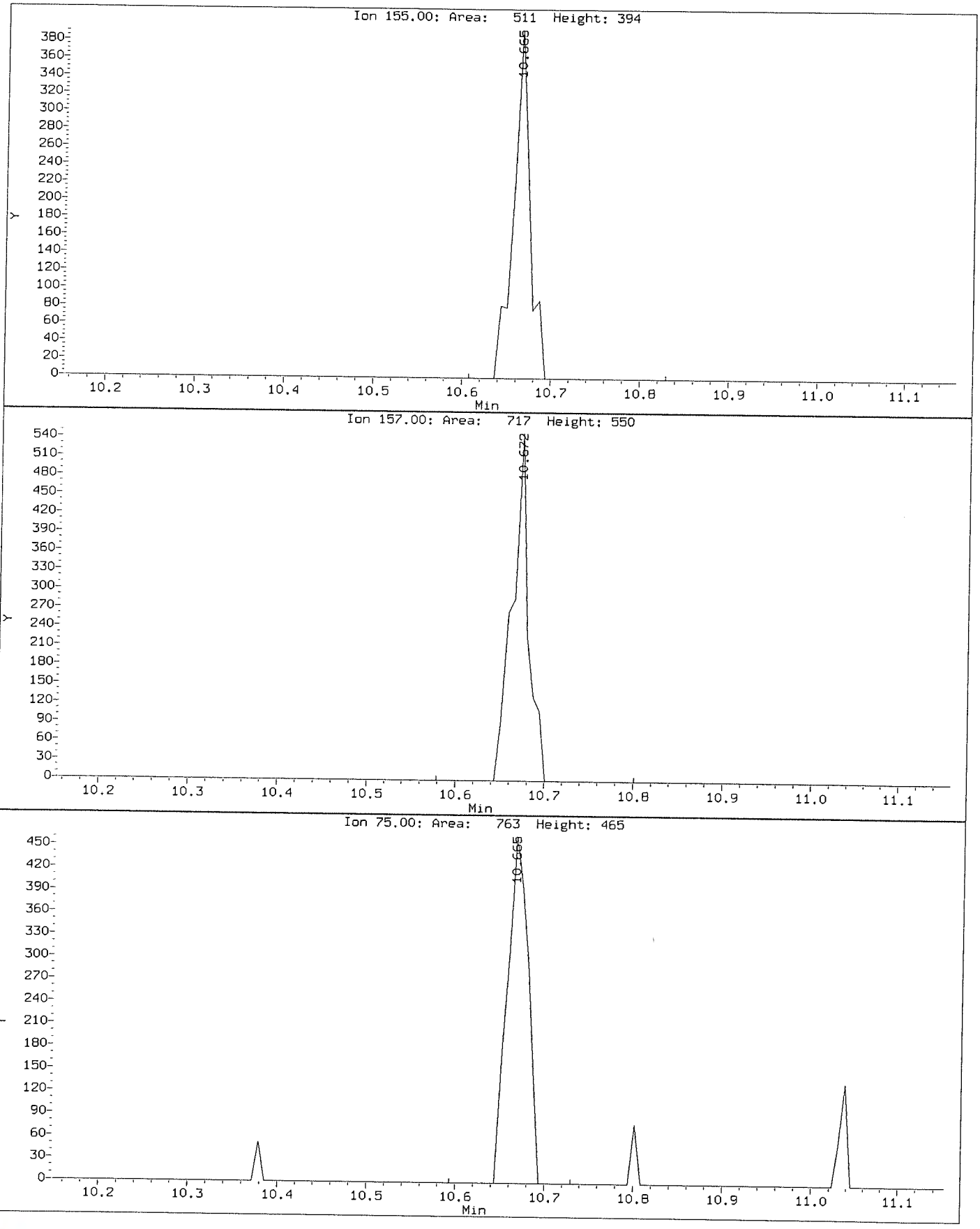
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Instrument: voa6.i
Client Sample ID: VSTD002

Compound: 1,2-Dibromo-3-Chloropropane
CAS Number: 96-12-8



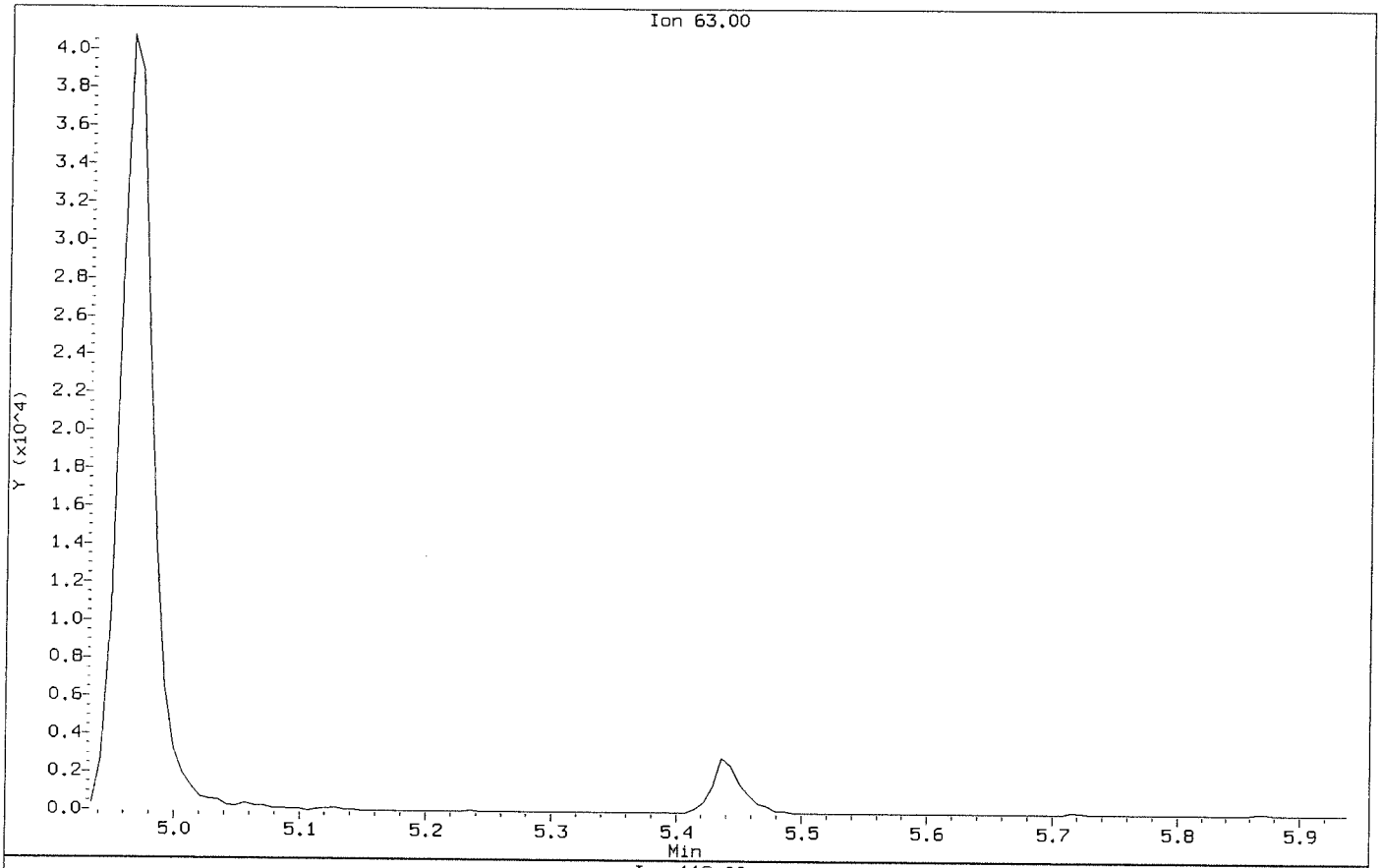
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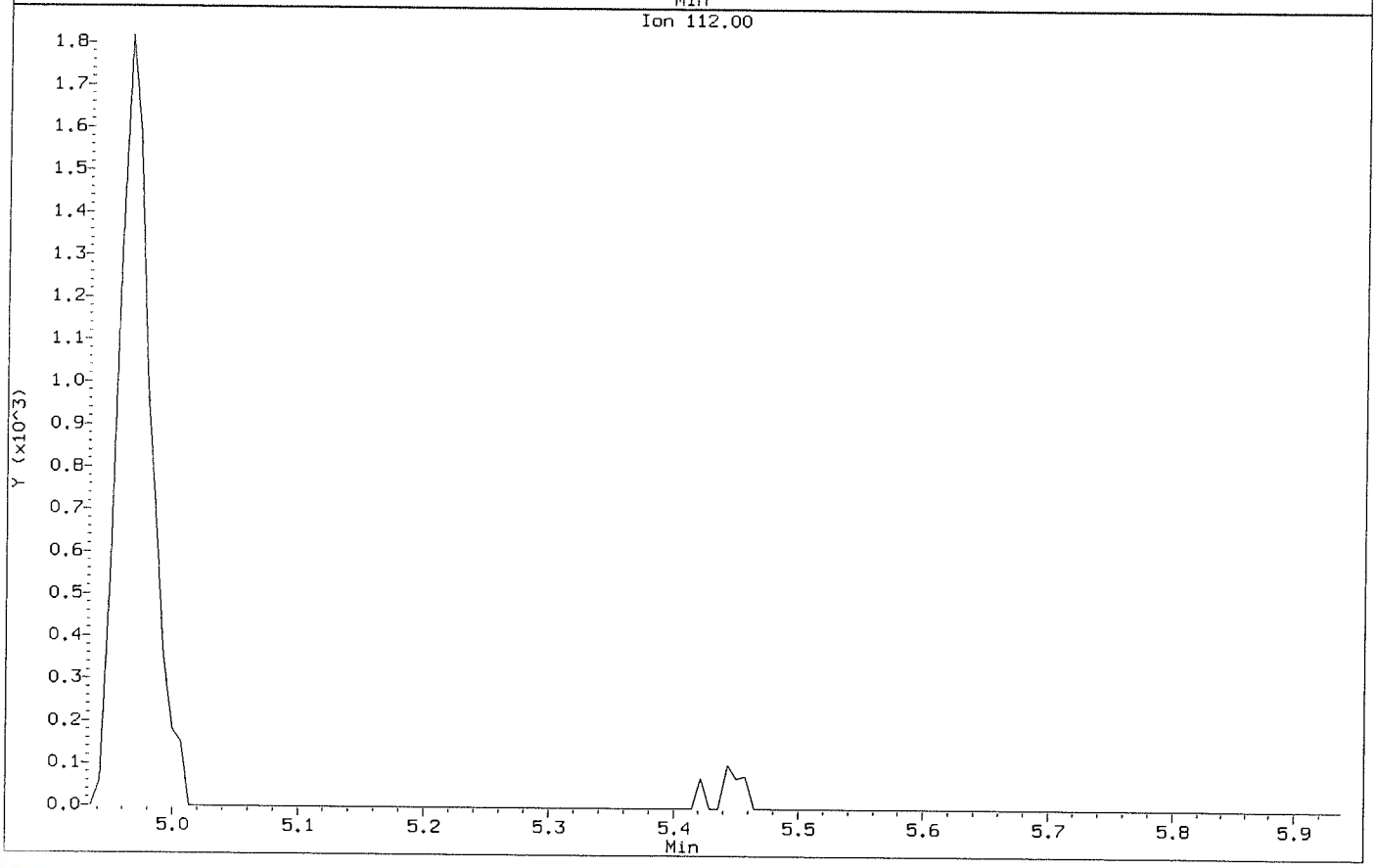
Compound: 1,2-Dibromo-3-Chloropropane
CAS Number: 96-12-8



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Instrument: voa6.i
Client Sample ID: VSTD002

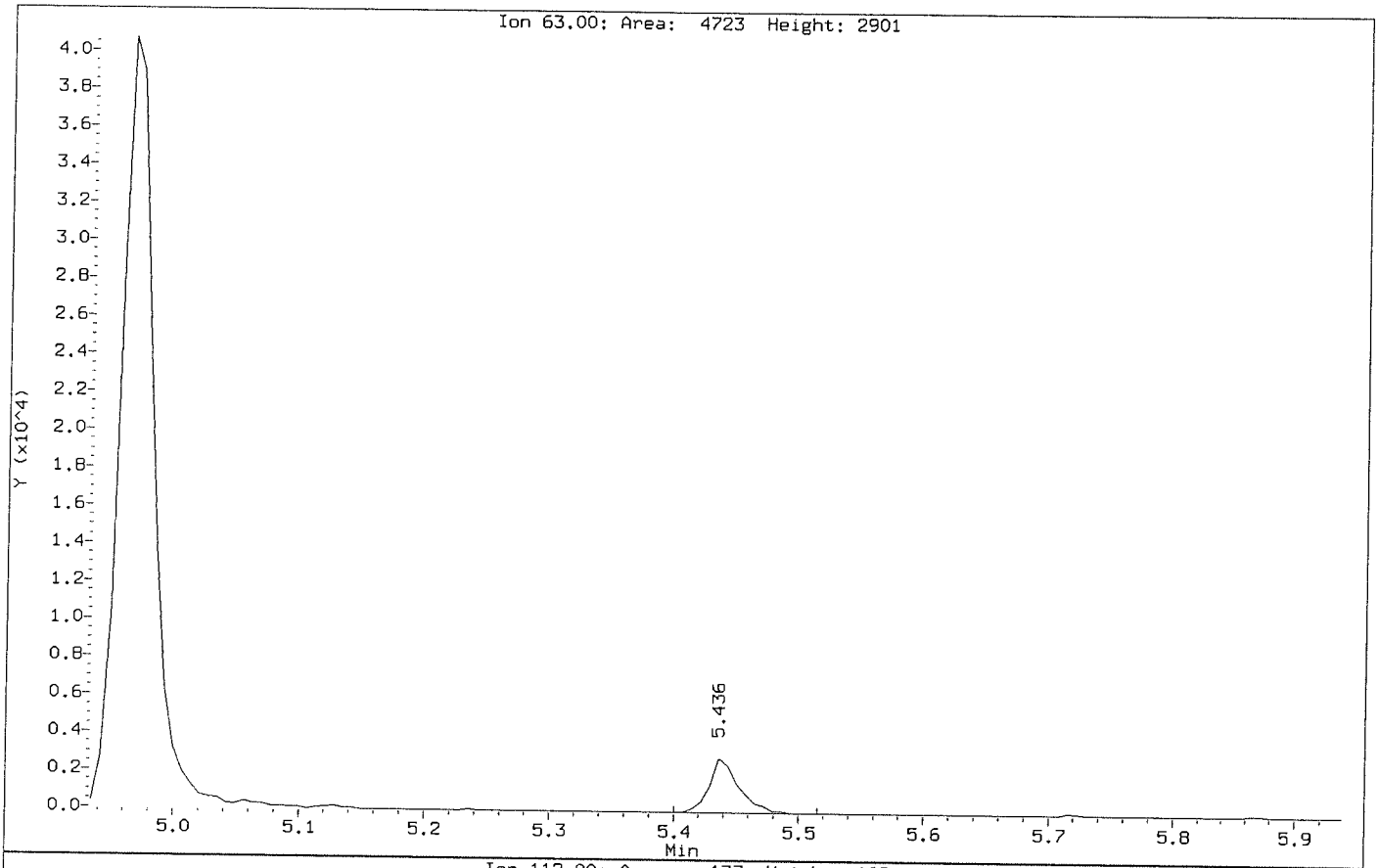
Compound: 1,2-Dichloropropane
CAS Number: 78-87-5

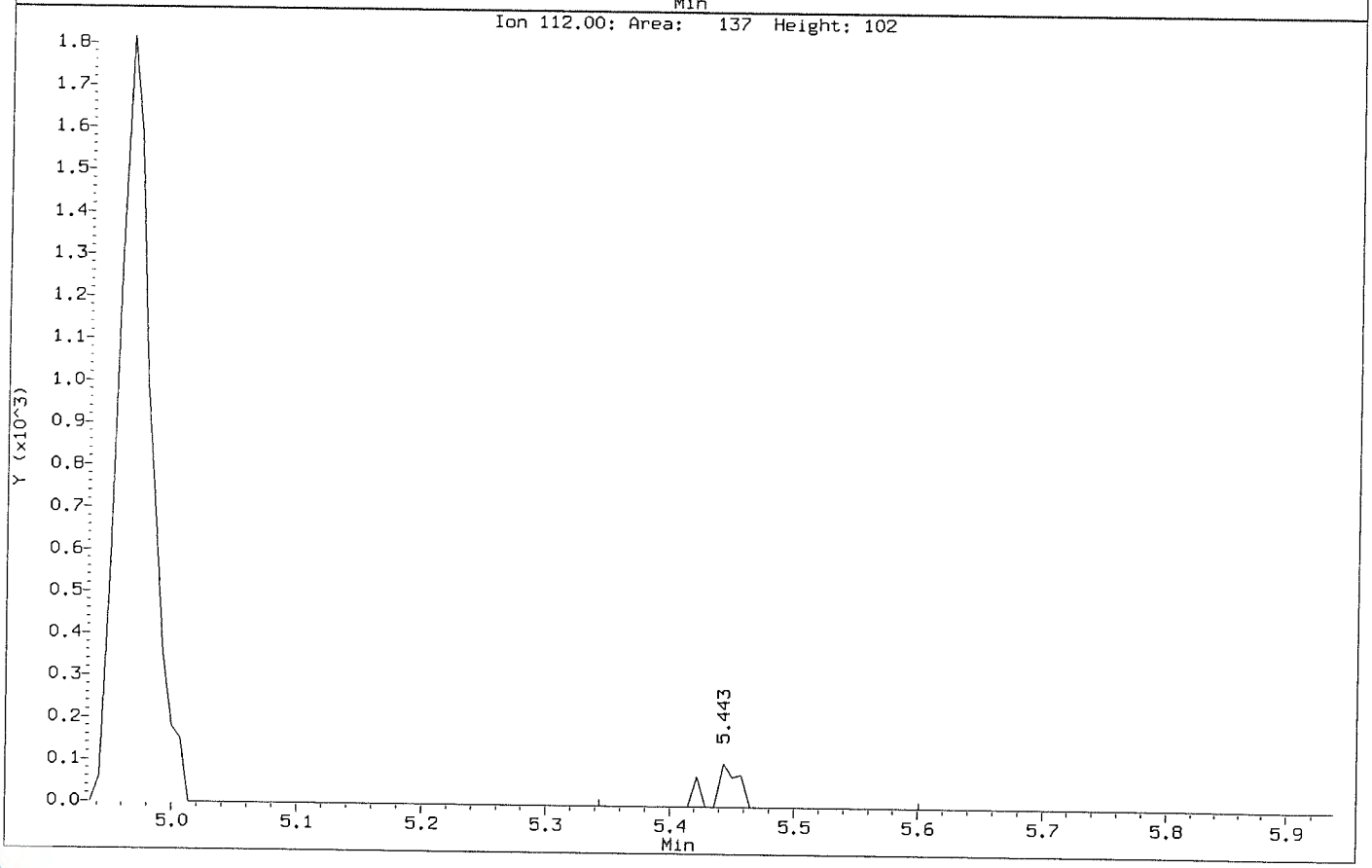




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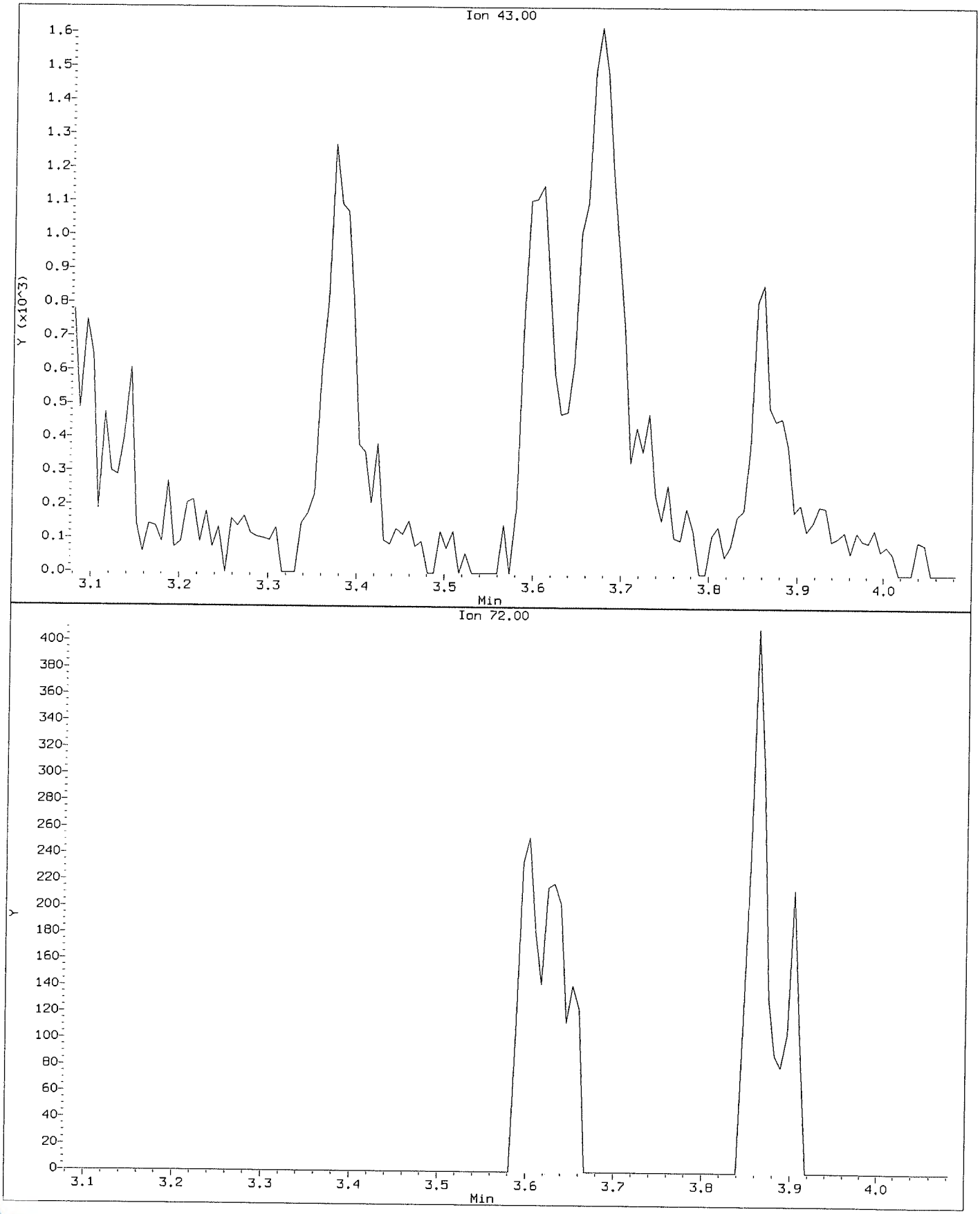
Compound: 1,2-Dichloropropane
CAS Number: 78-87-5





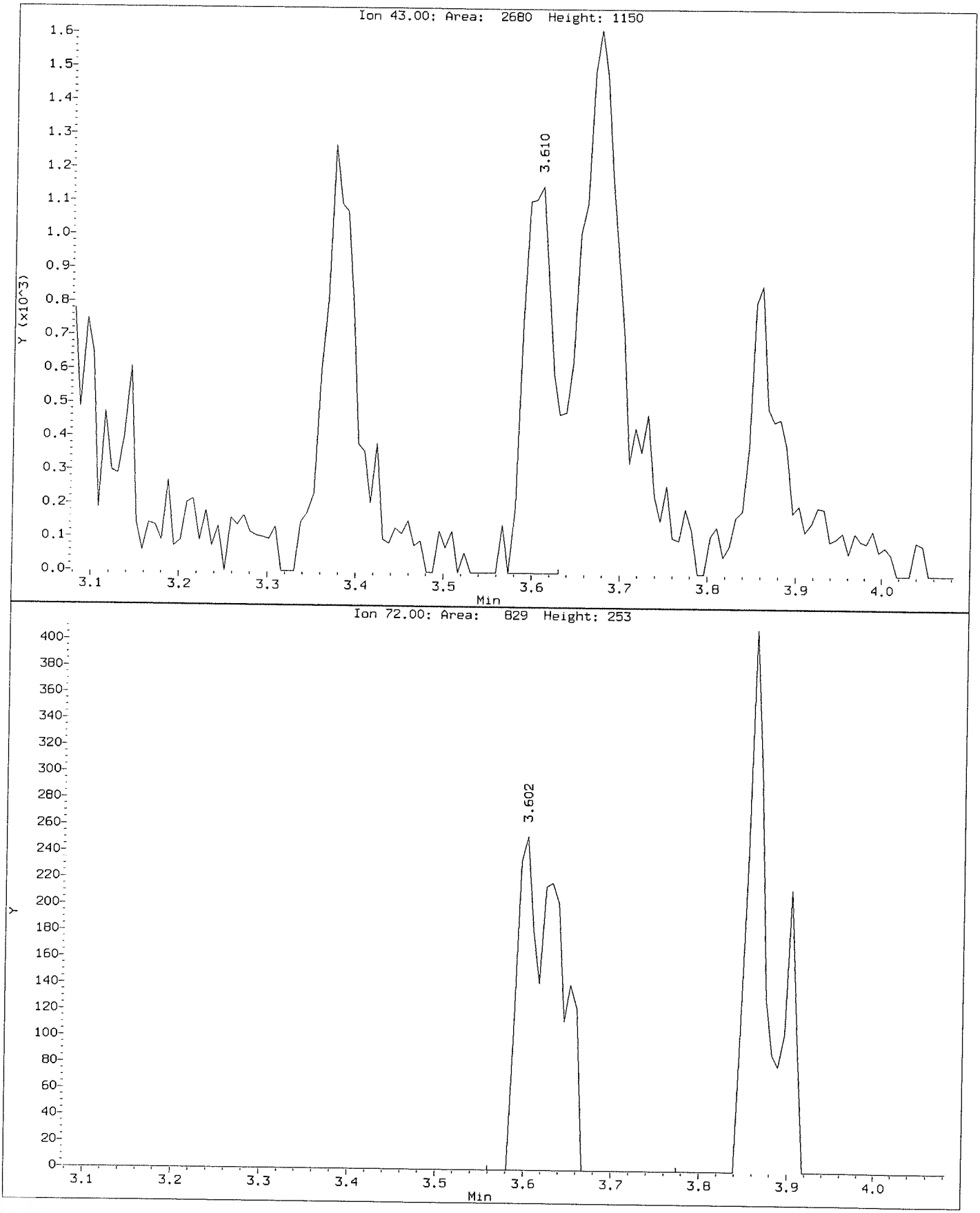
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Injection Date: 18-MAY-2021 12:46
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: 2-Butanone
CAS Number: 78-93-3



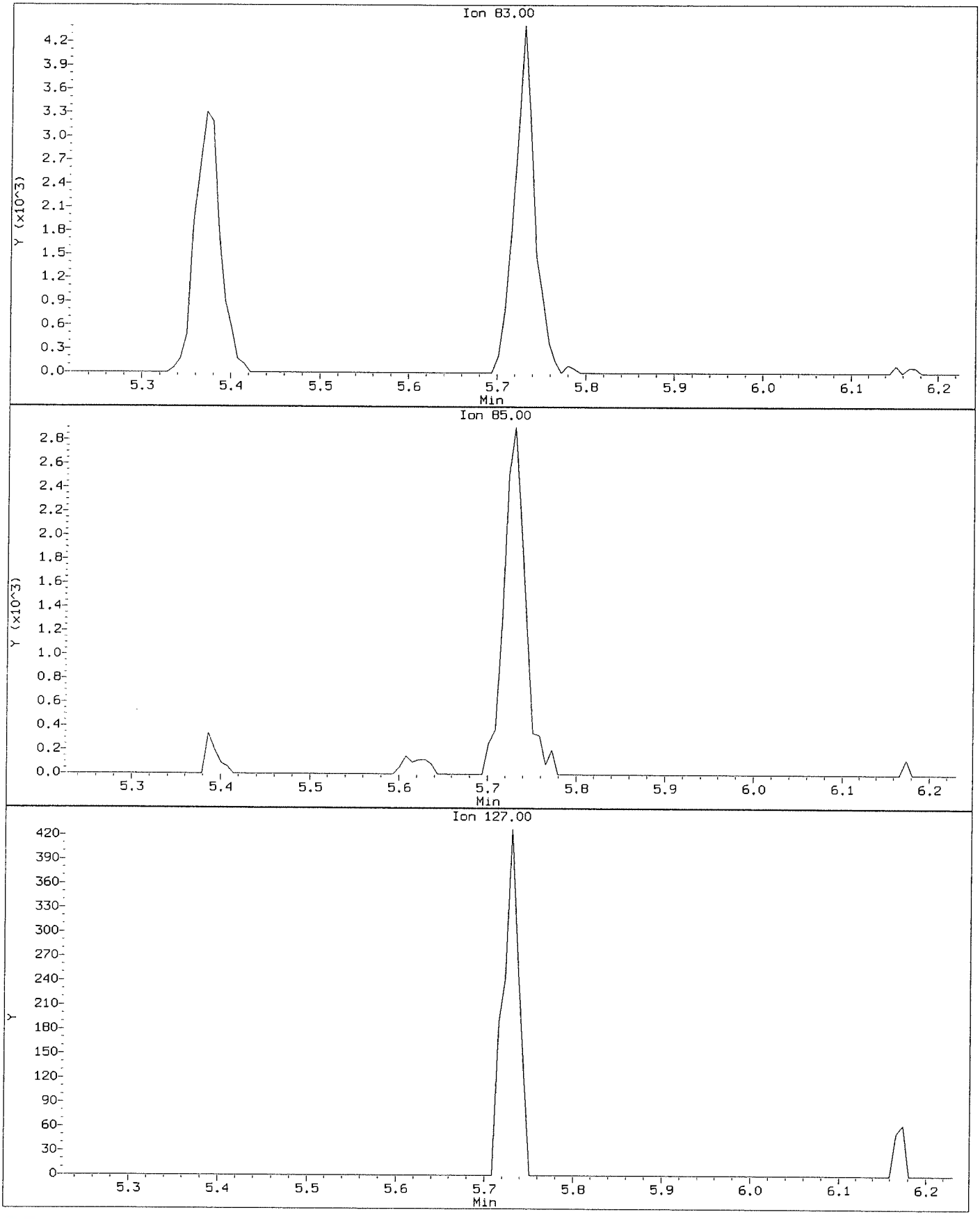
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Client Sample ID: VSTD002

Compound: 2-Butanone
CAS Number: 78-93-3



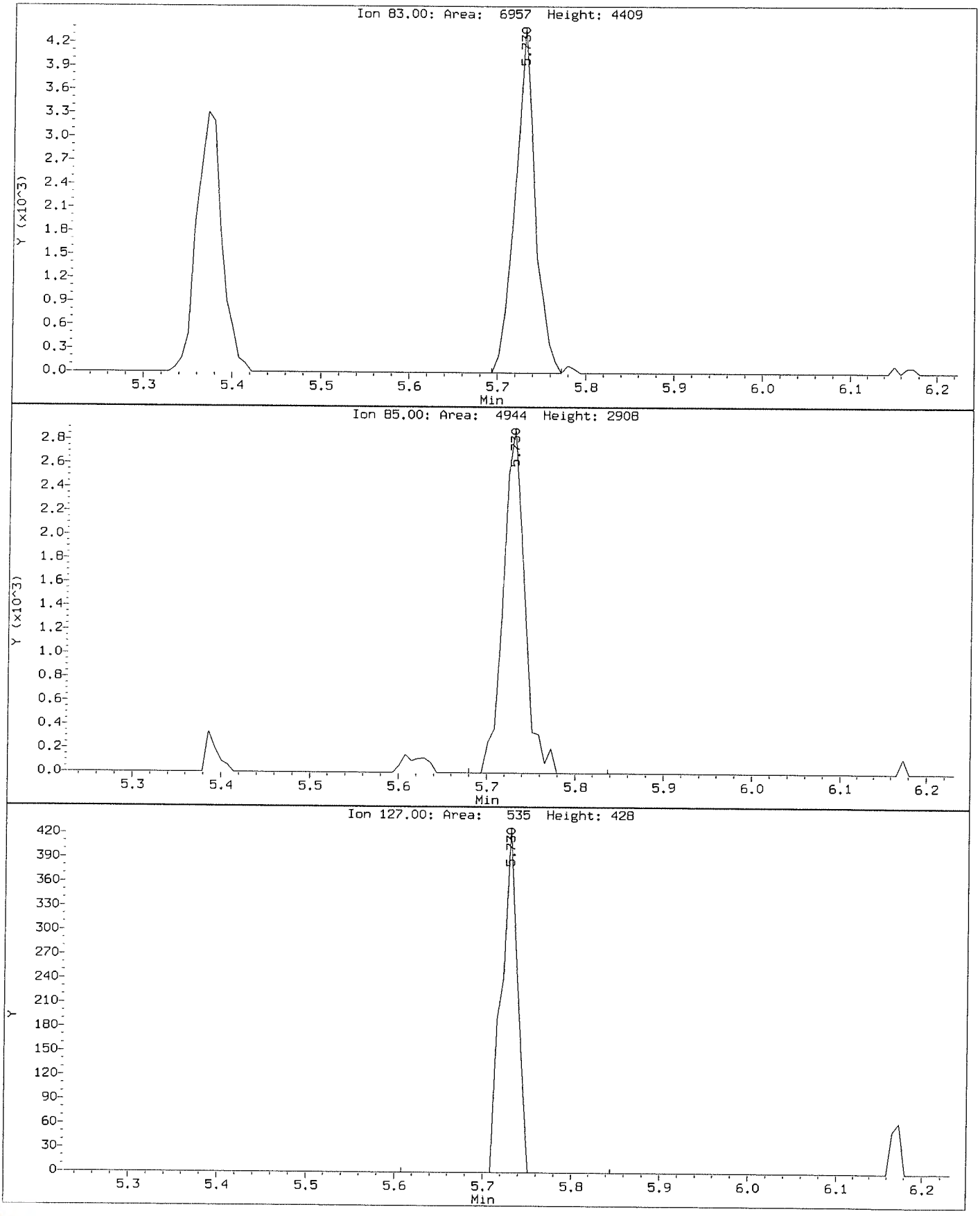
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Instrument: voa6.i
Client Sample ID: VSTD002

Compound: Bromodichloromethane
CAS Number: 75-27-4



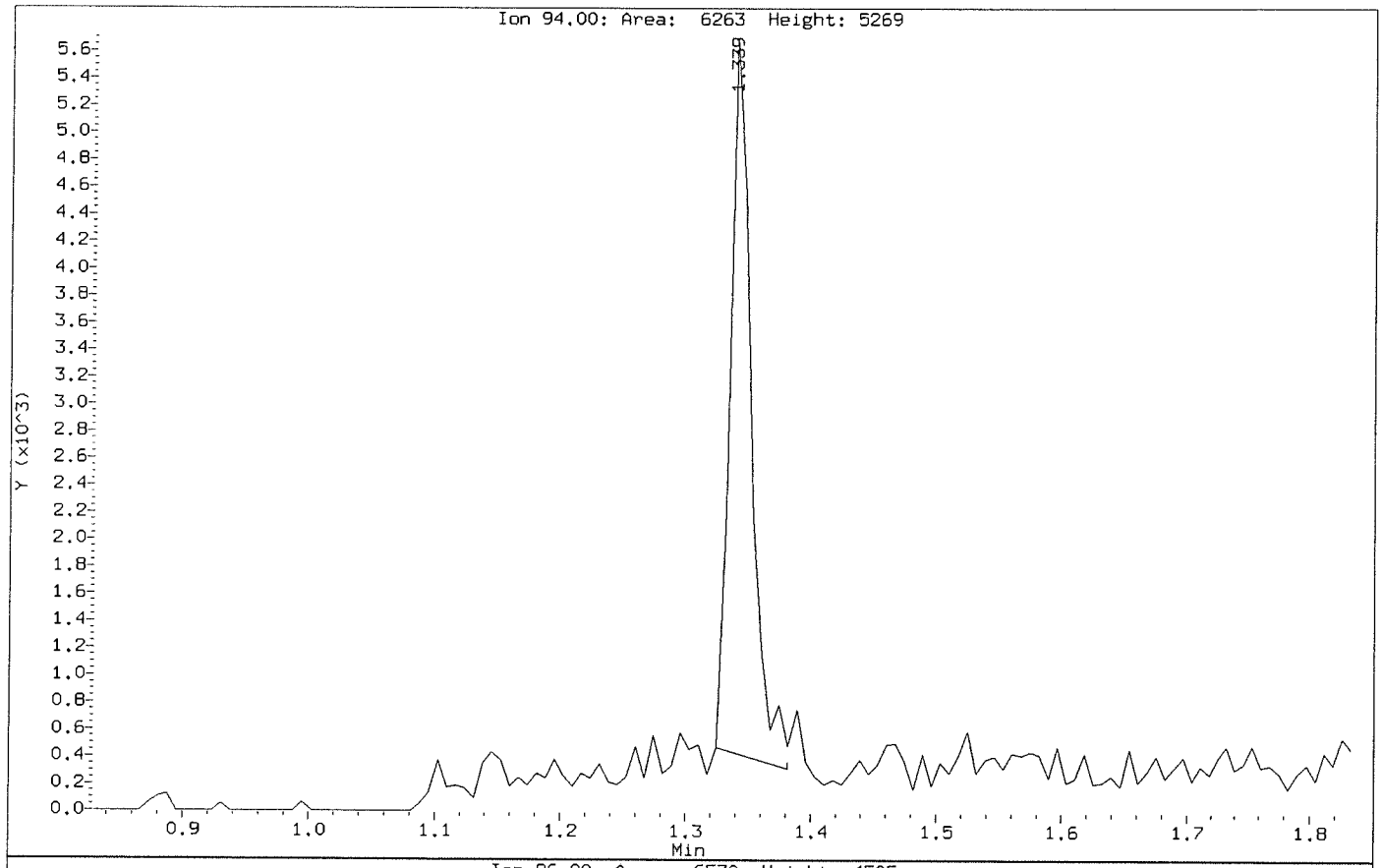
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Client Sample ID: VSTD002

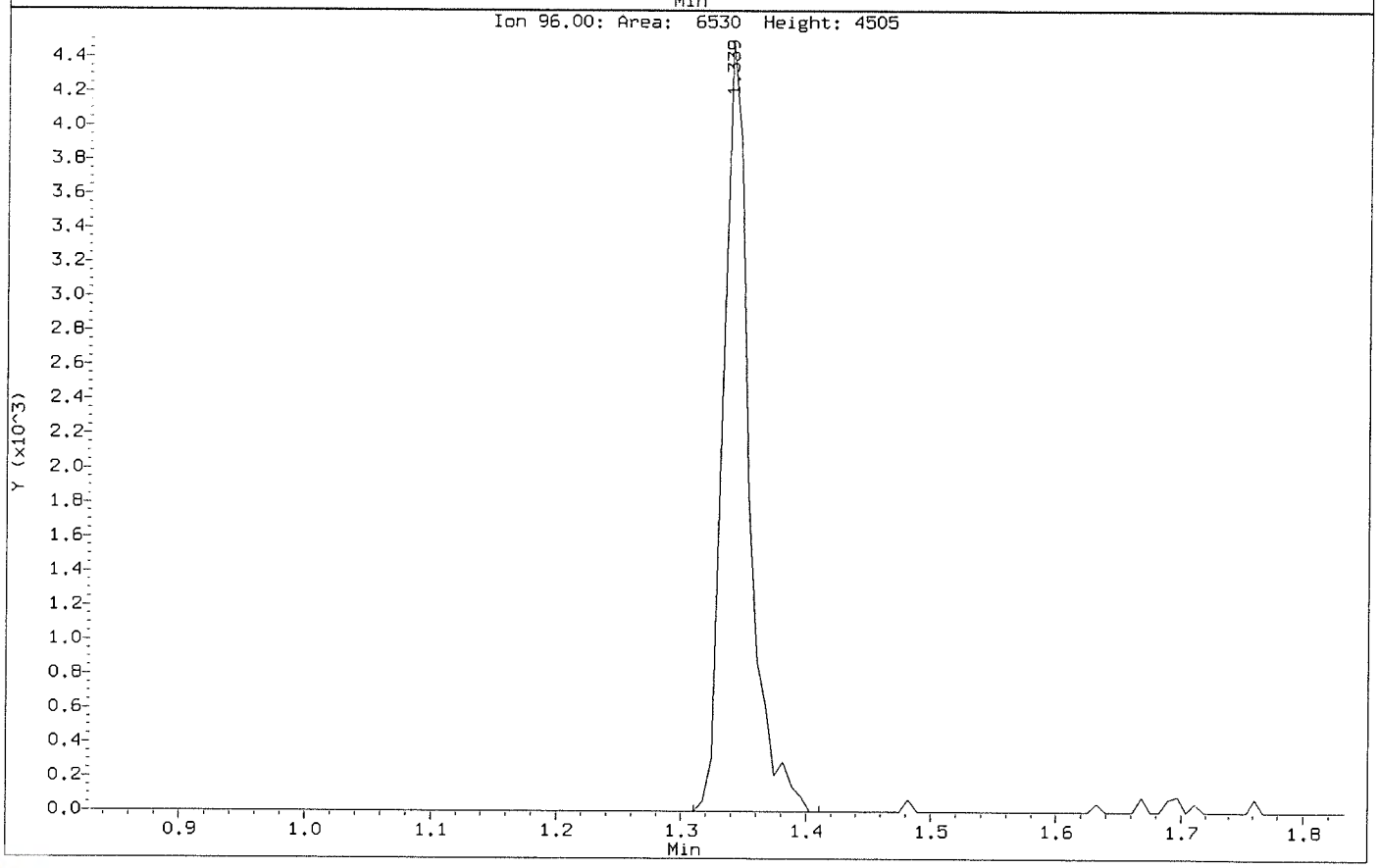
Compound: Bromodichloromethane
CAS Number: 75-27-4



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Client Sample ID: VSTD002

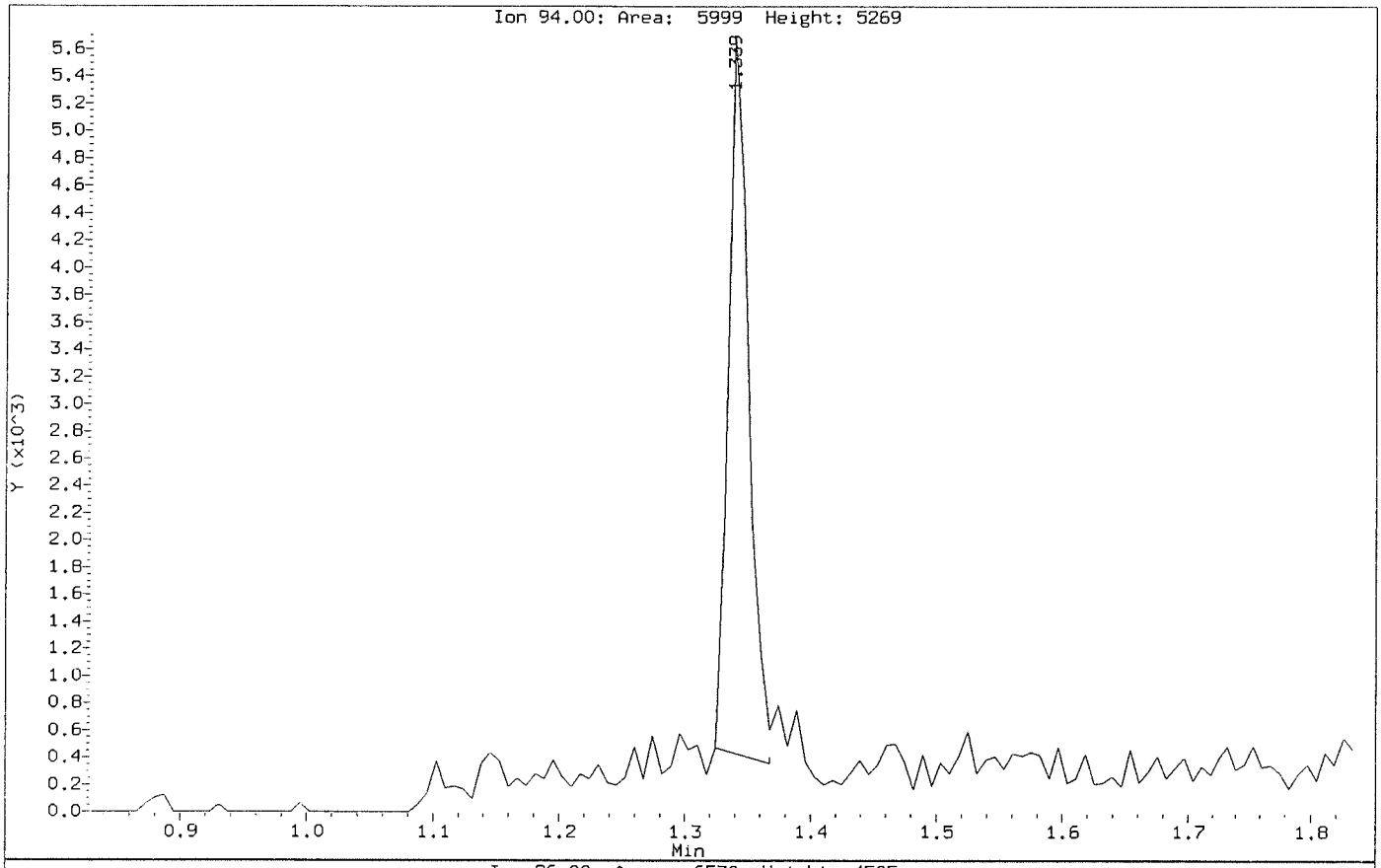
Compound: Bromomethane
CAS Number: 74-83-9

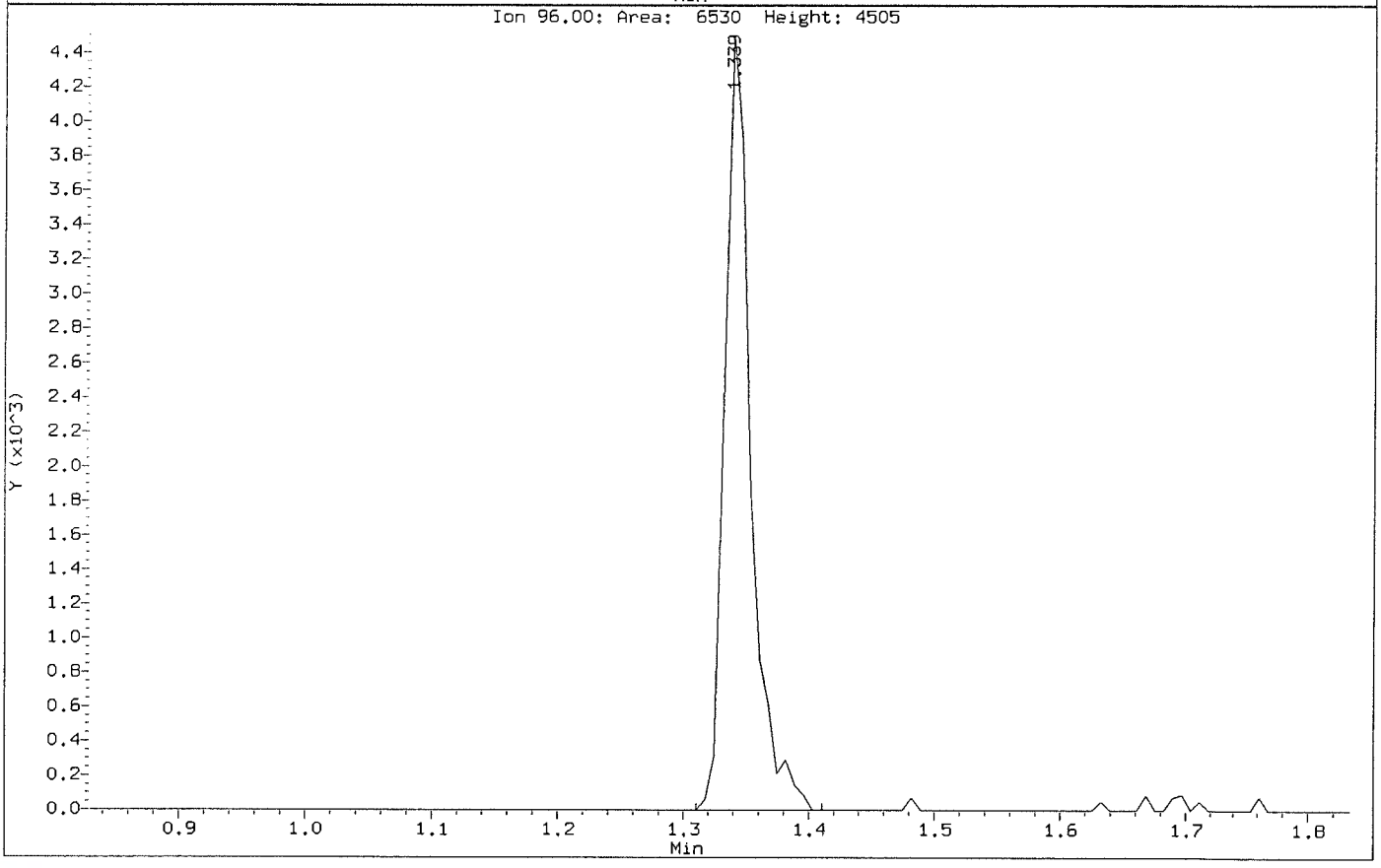




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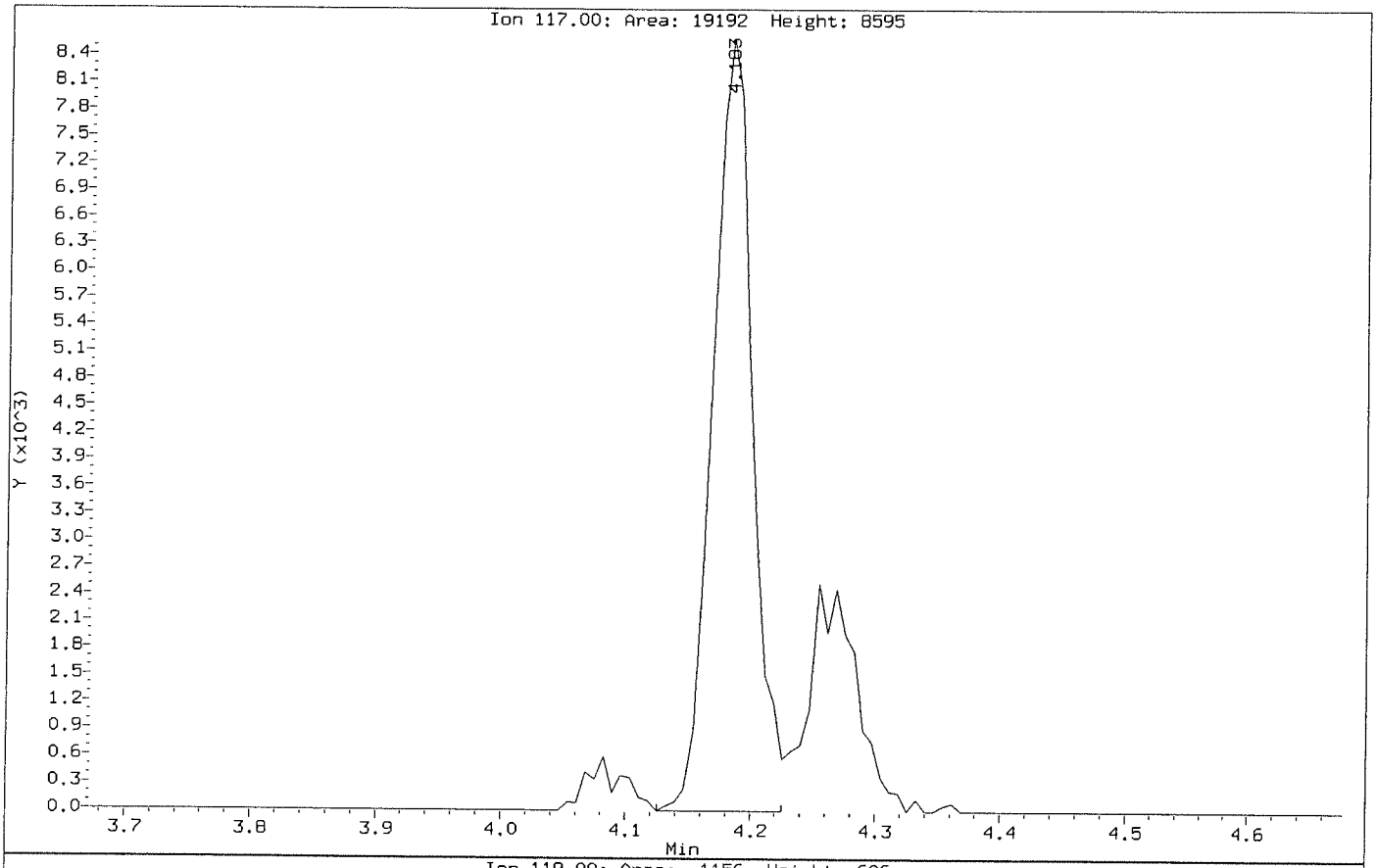
Compound: Bromomethane
CAS Number: 74-83-9

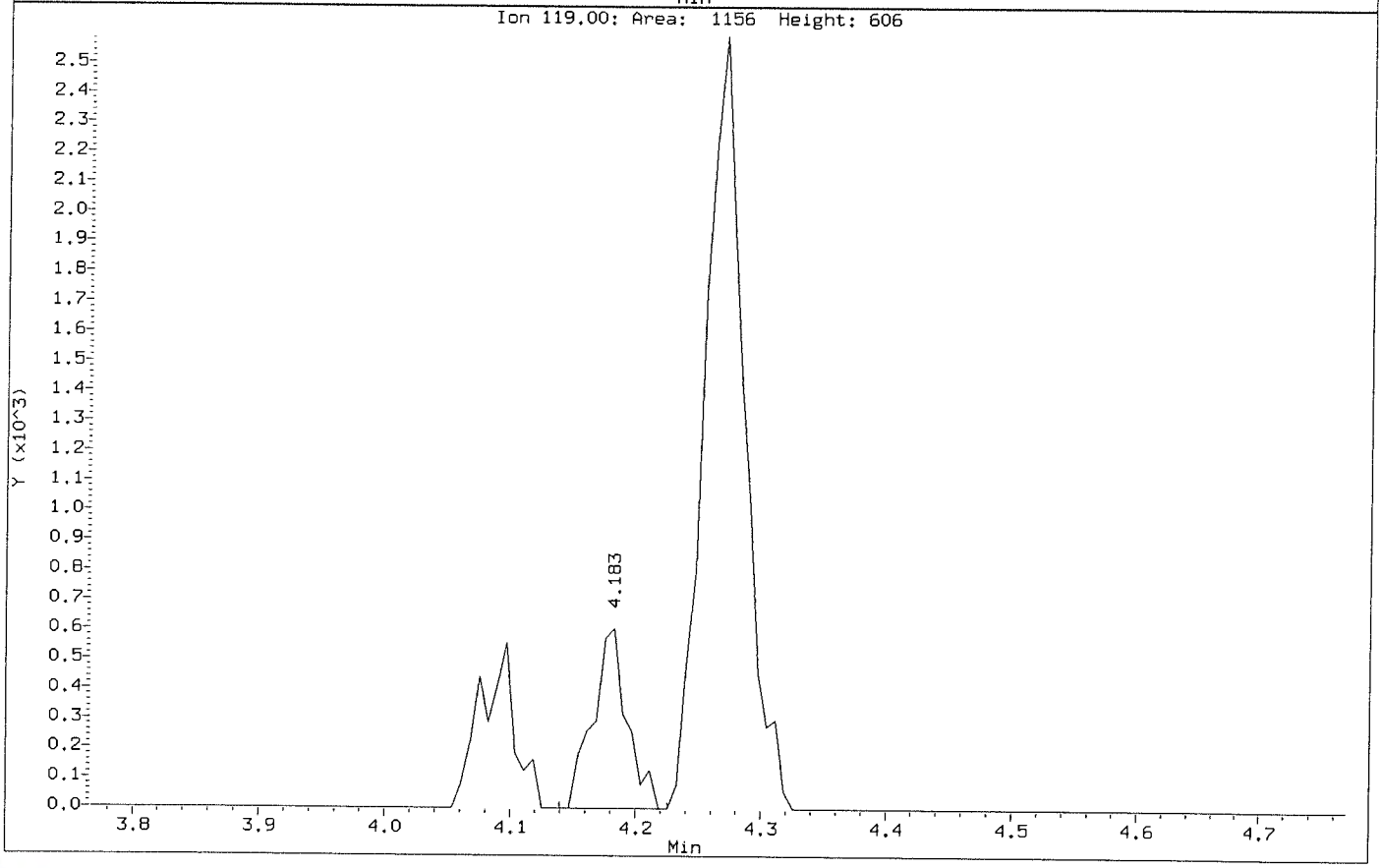




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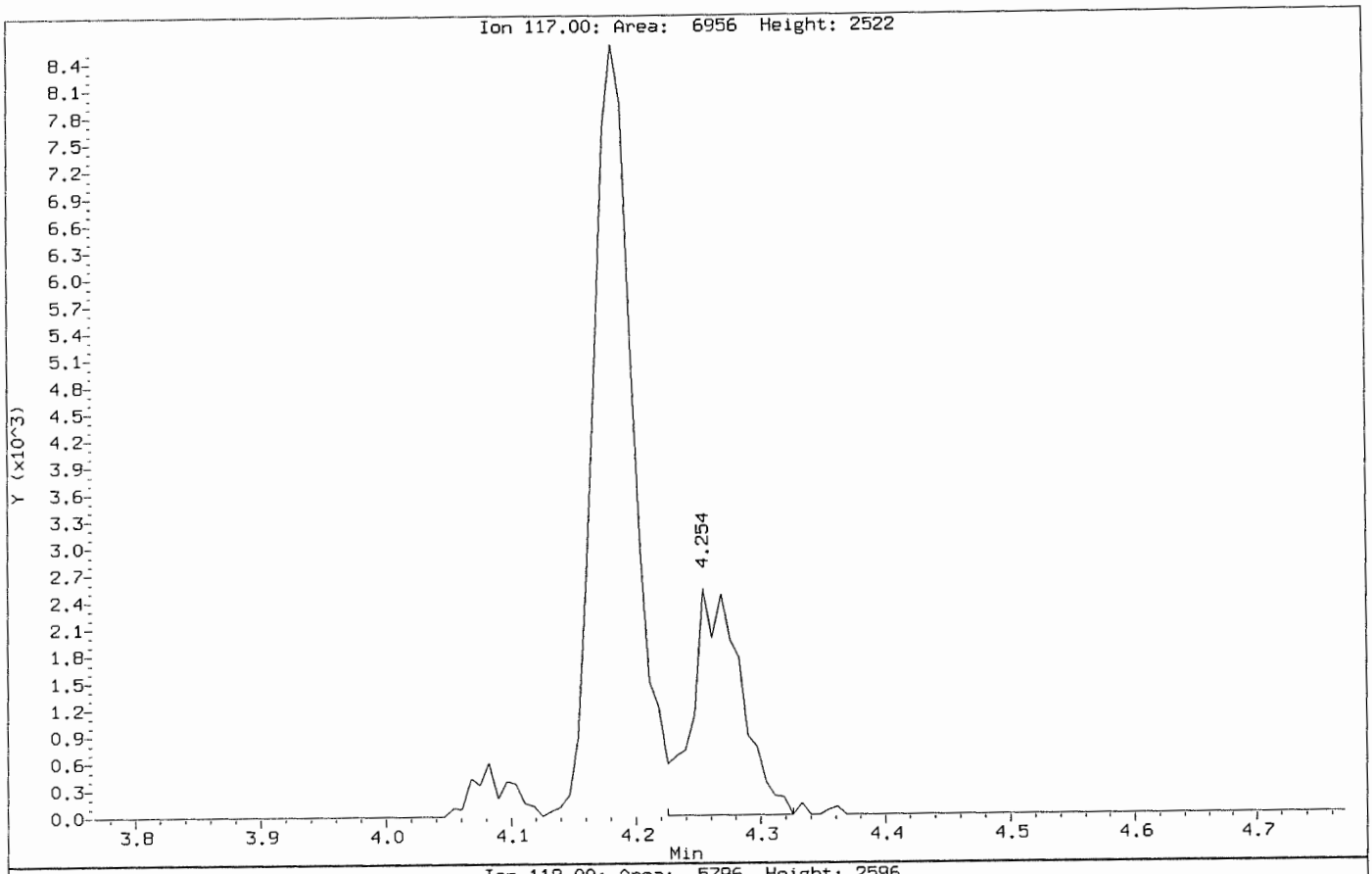
Compound: Carbon Tetrachloride
CAS Number: 56-23-5

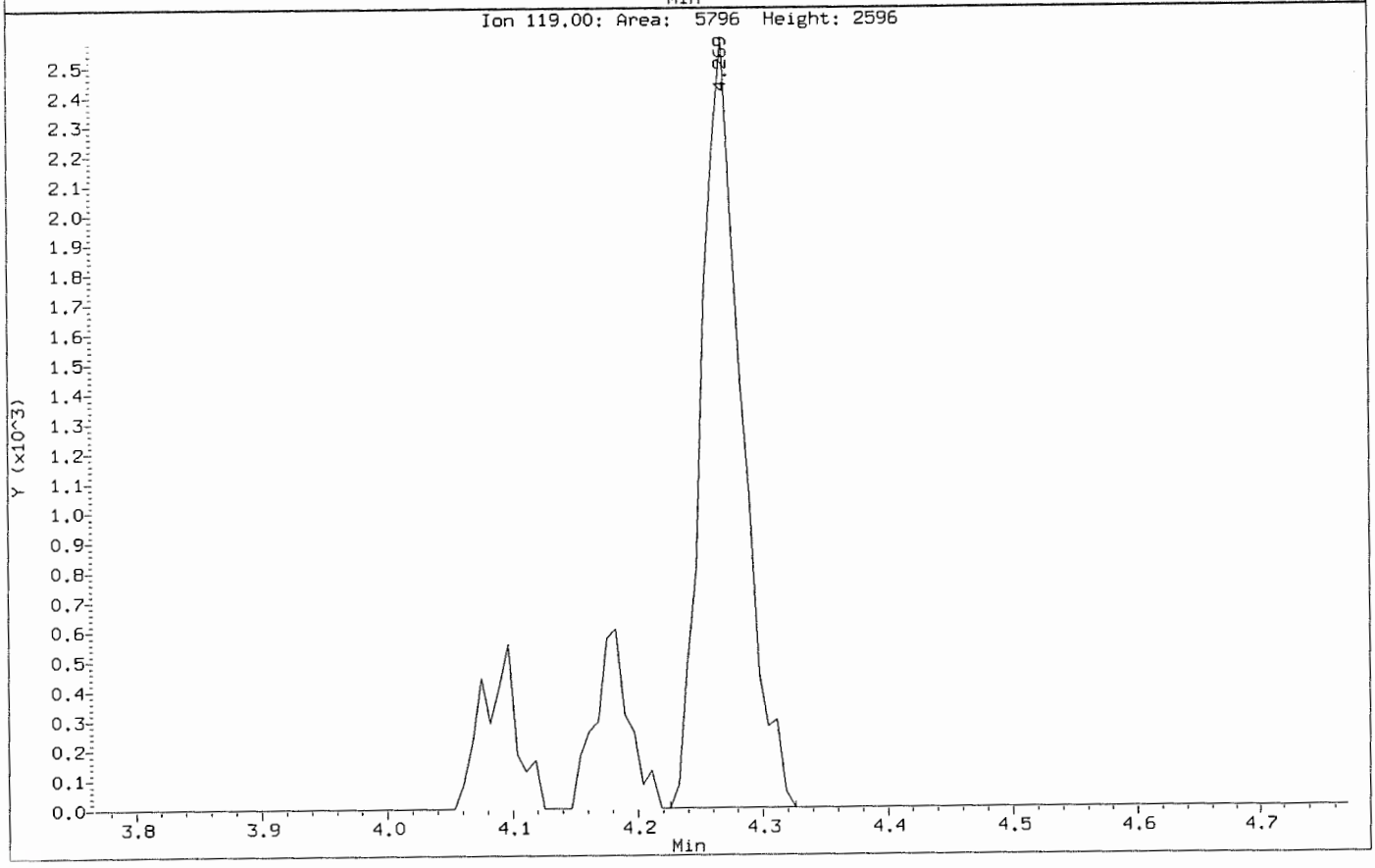




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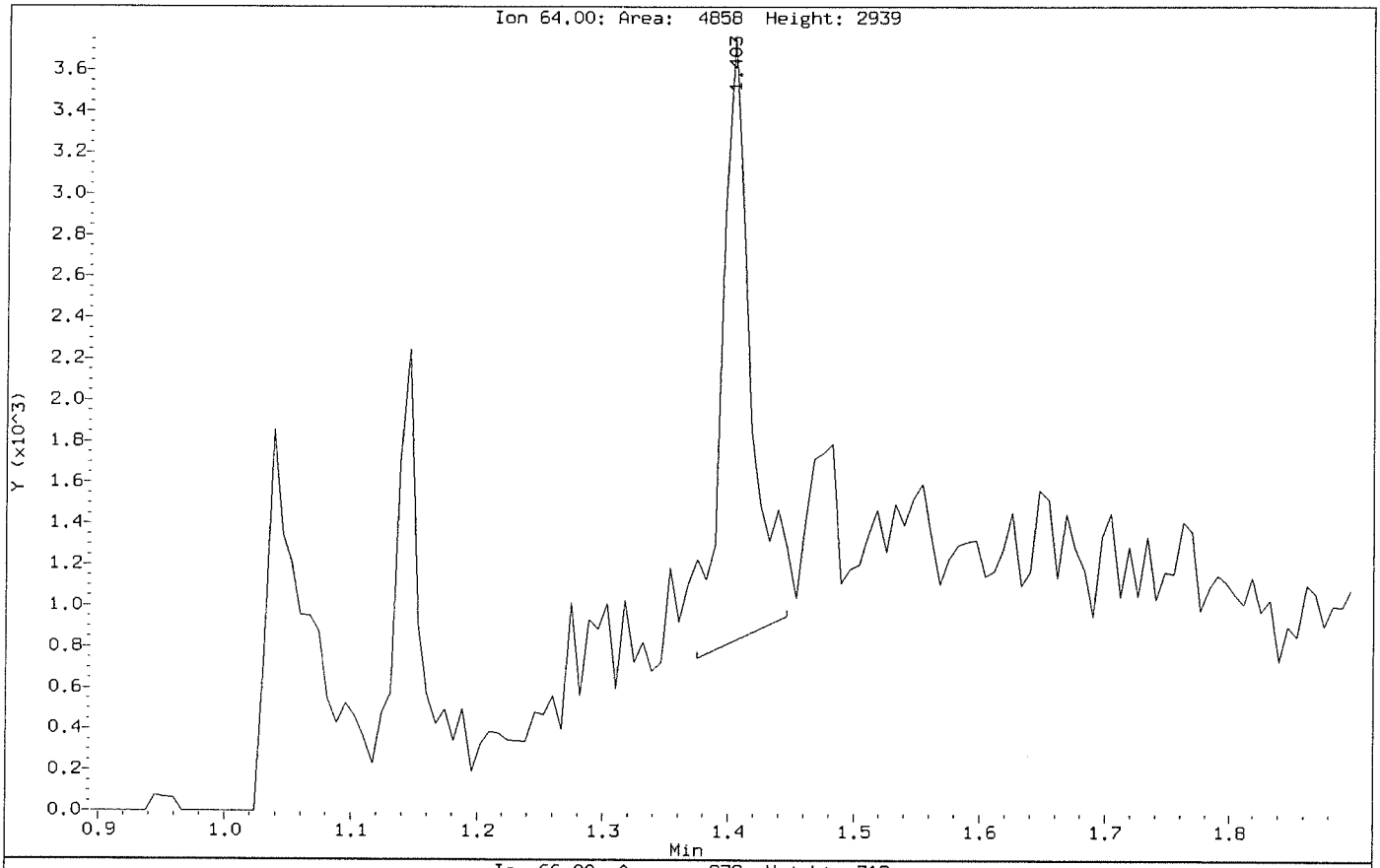
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CAS Number: 56-23-5

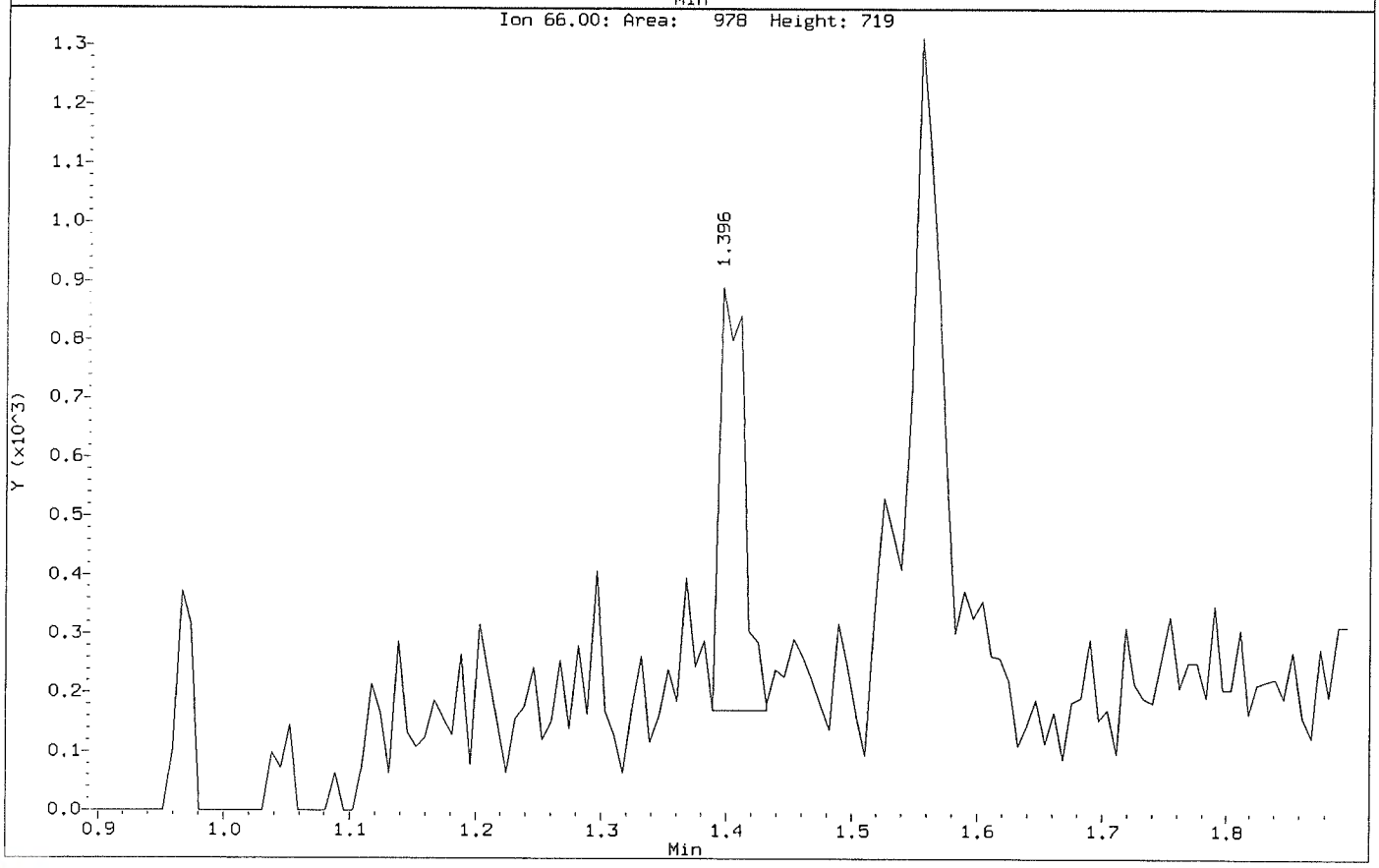




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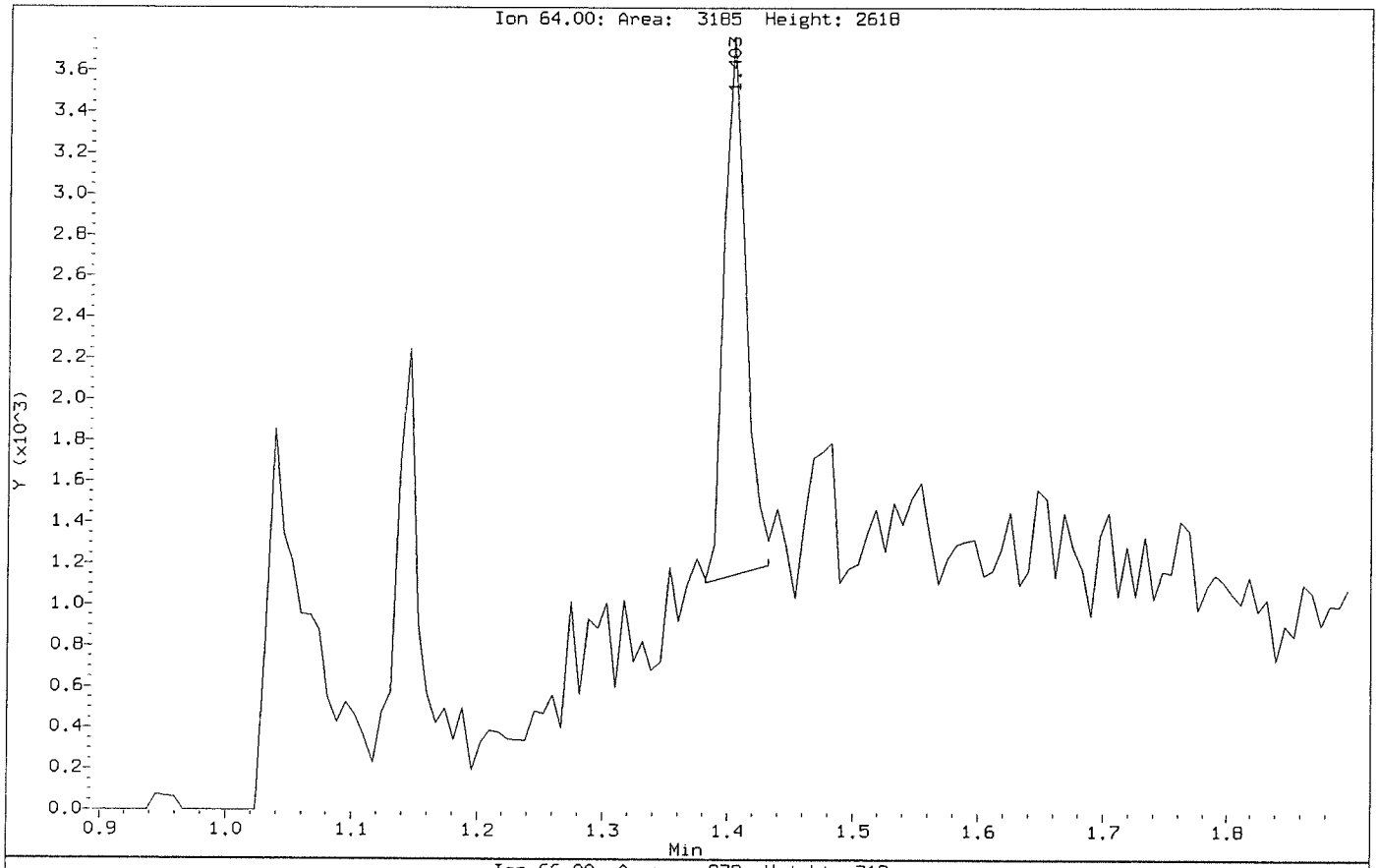
Compound: Chloroethane
CAS Number: 75-00-3

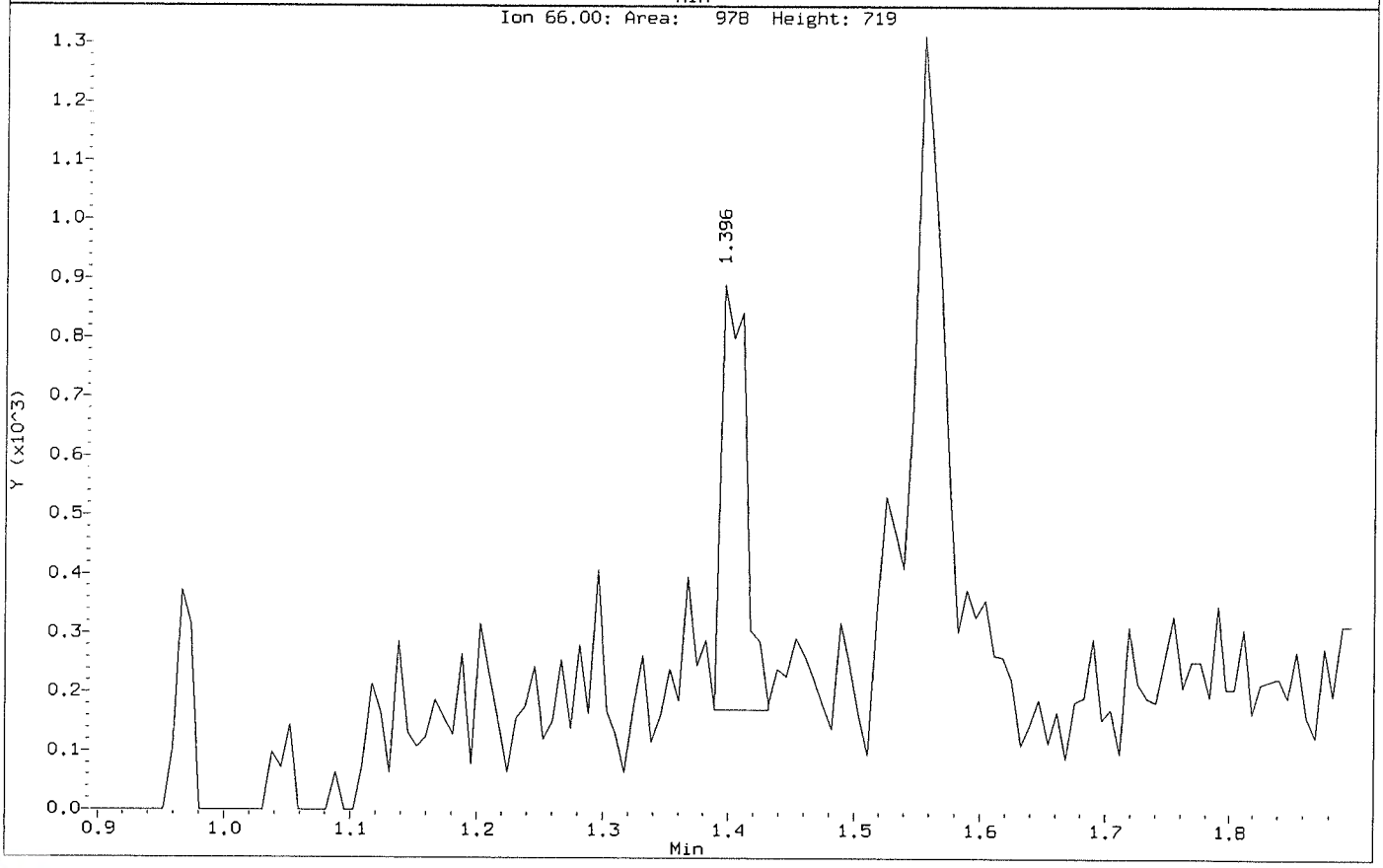




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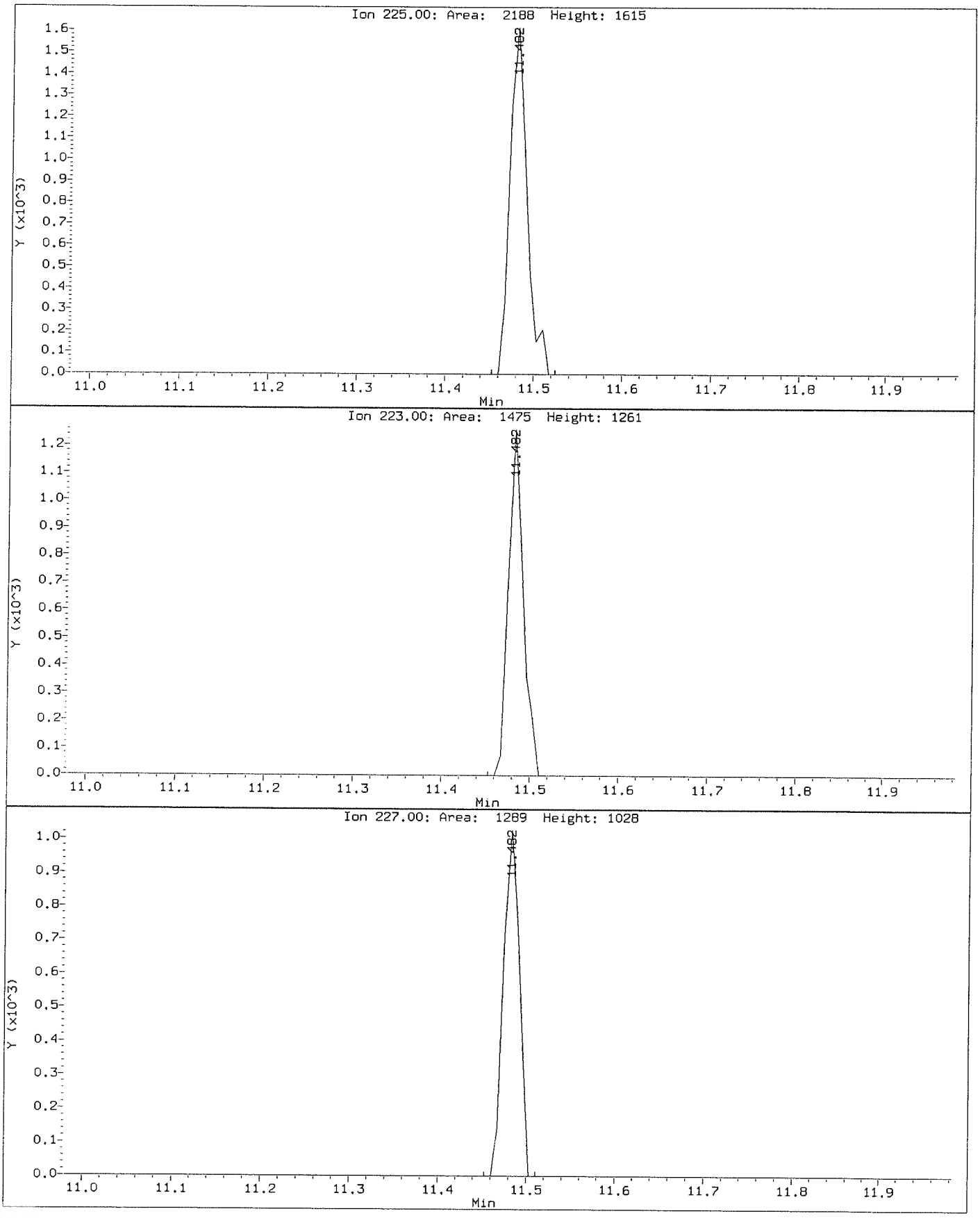
Compound: Chloroethane
CAS Number: 75-00-3





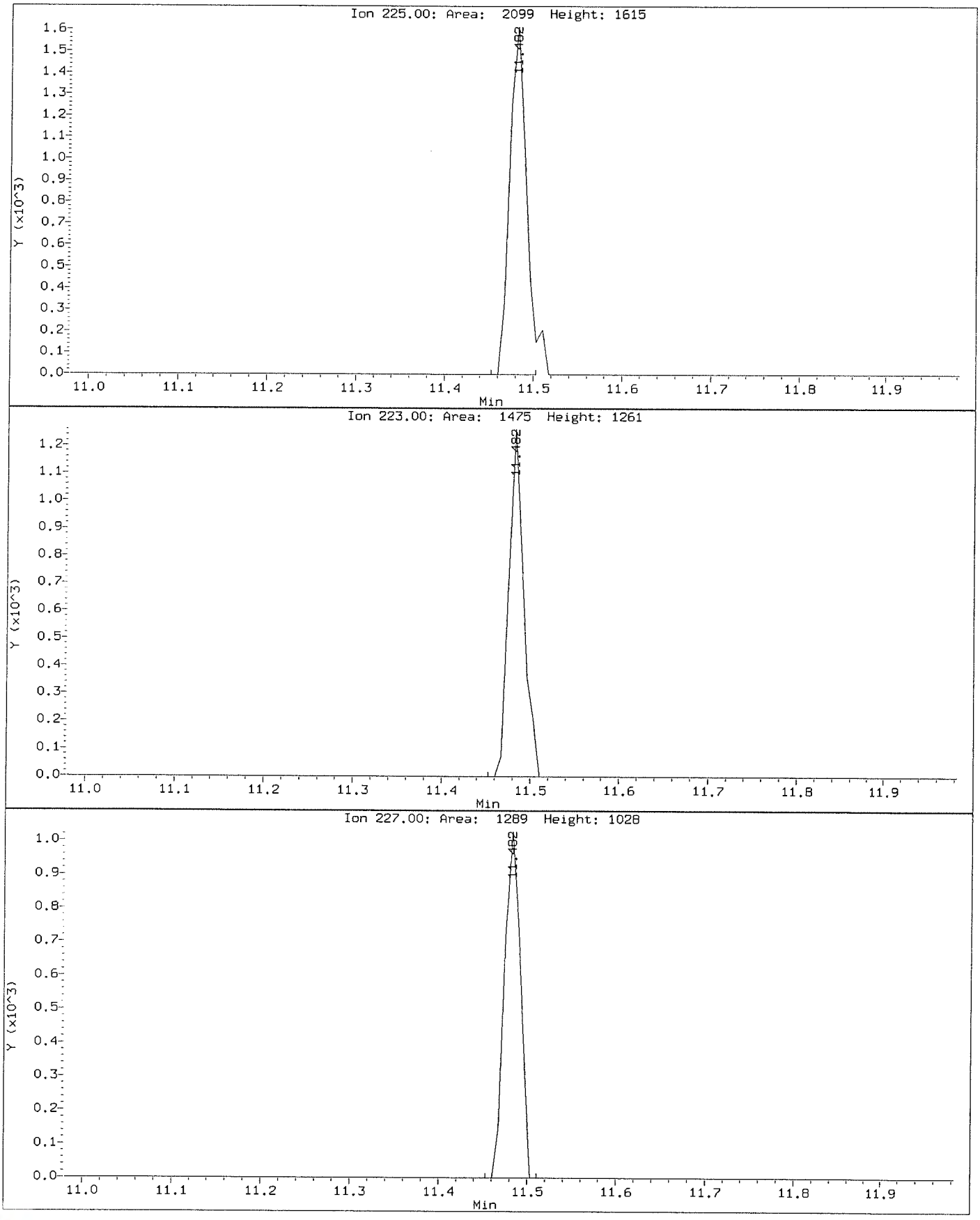
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Injection Date: 18-MAY-2021 12:46
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: Hexachlorobutadiene
CAS Number: 87-68-3



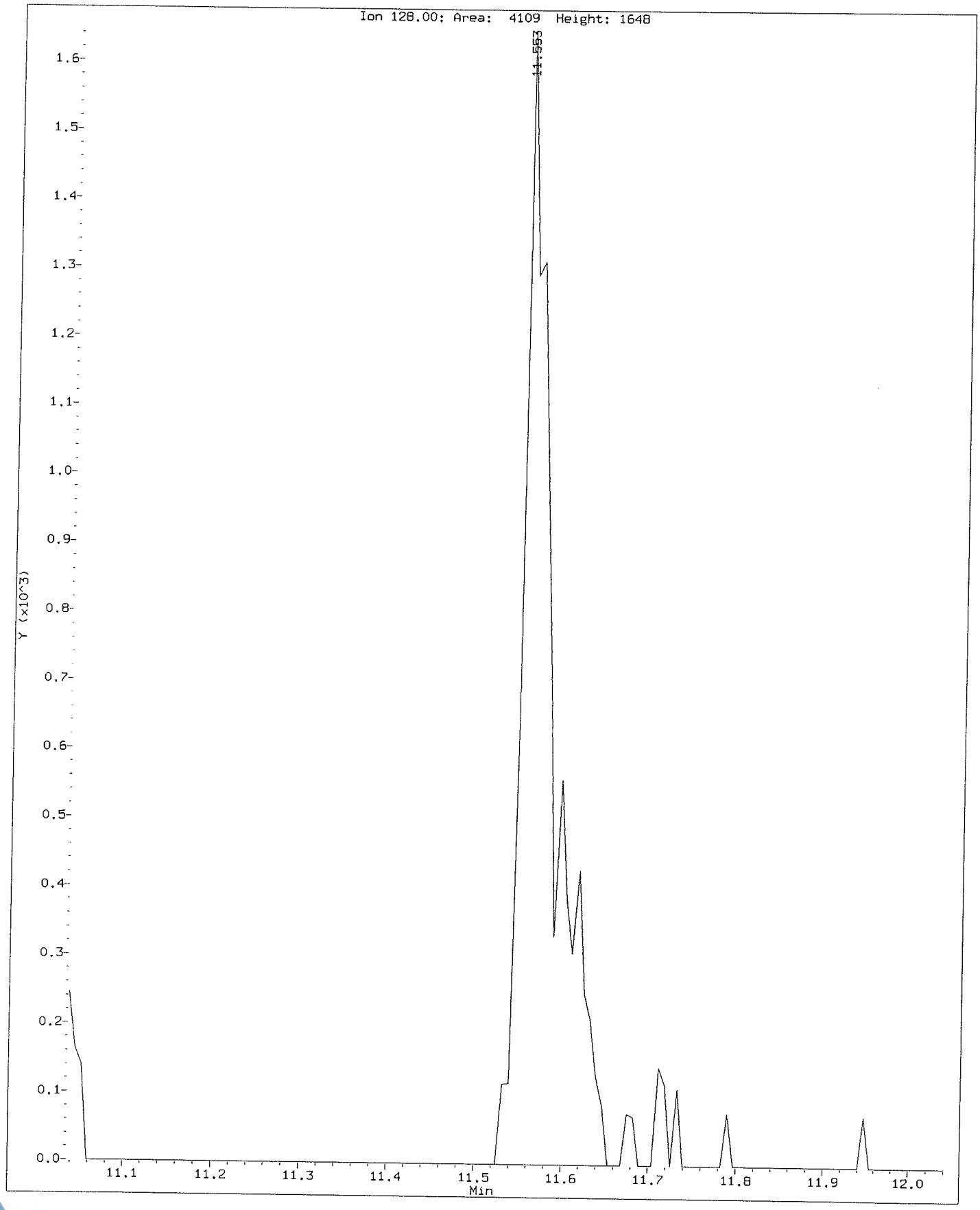
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Instrument: voa6.i
Client Sample ID: VSTD002

Compound: Hexachlorobutadiene
CAS Number: 87-68-3



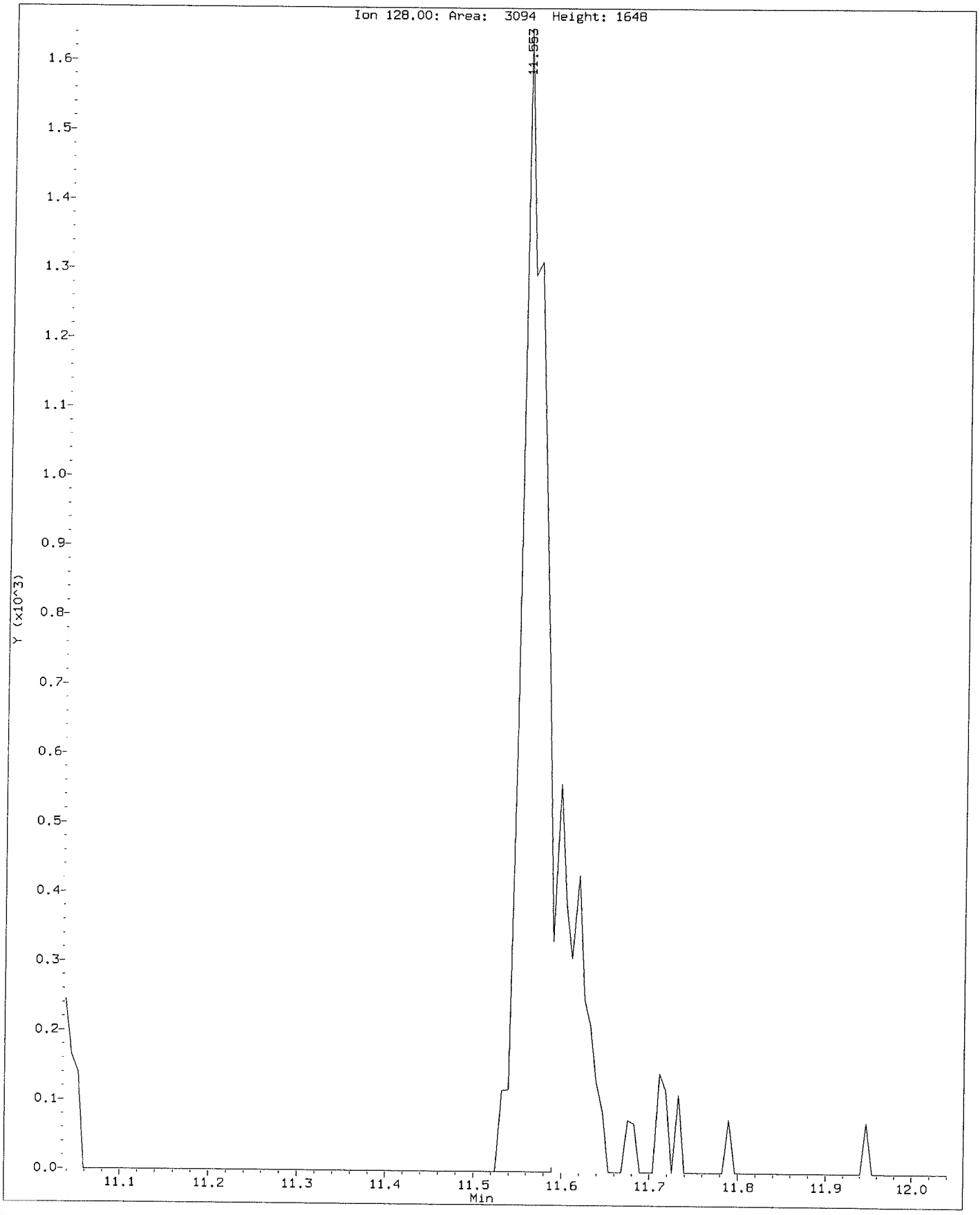
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Injection Date: 18-MAY-2021 12:46
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: Naphthalene
CAS Number: 91-20-3



Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\X051805.D
Injection Date: 18-MAY-2021 12:46
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Client Sample ID: VSTD002

Compound: Naphthalene
CAS Number: 91-20-3



Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051806.D Page 1
Report Date: 22-Jun-2021 08:20

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210518.b\X051806.D
Lab Smp Id: VSDT005 Client Smp ID: VSTD005
Inj Date : 18-MAY-2021 13:07
Operator : PC Inst ID: voa6.i
Smp Info : VSDT005;VSTD005;1;5;;
Misc Info : HS18090001;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X210518.b\8260W.m
Meth Date : 22-Jun-2021 08:20 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 12:46 Cal File: X051805.D
Als bottle: 7 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

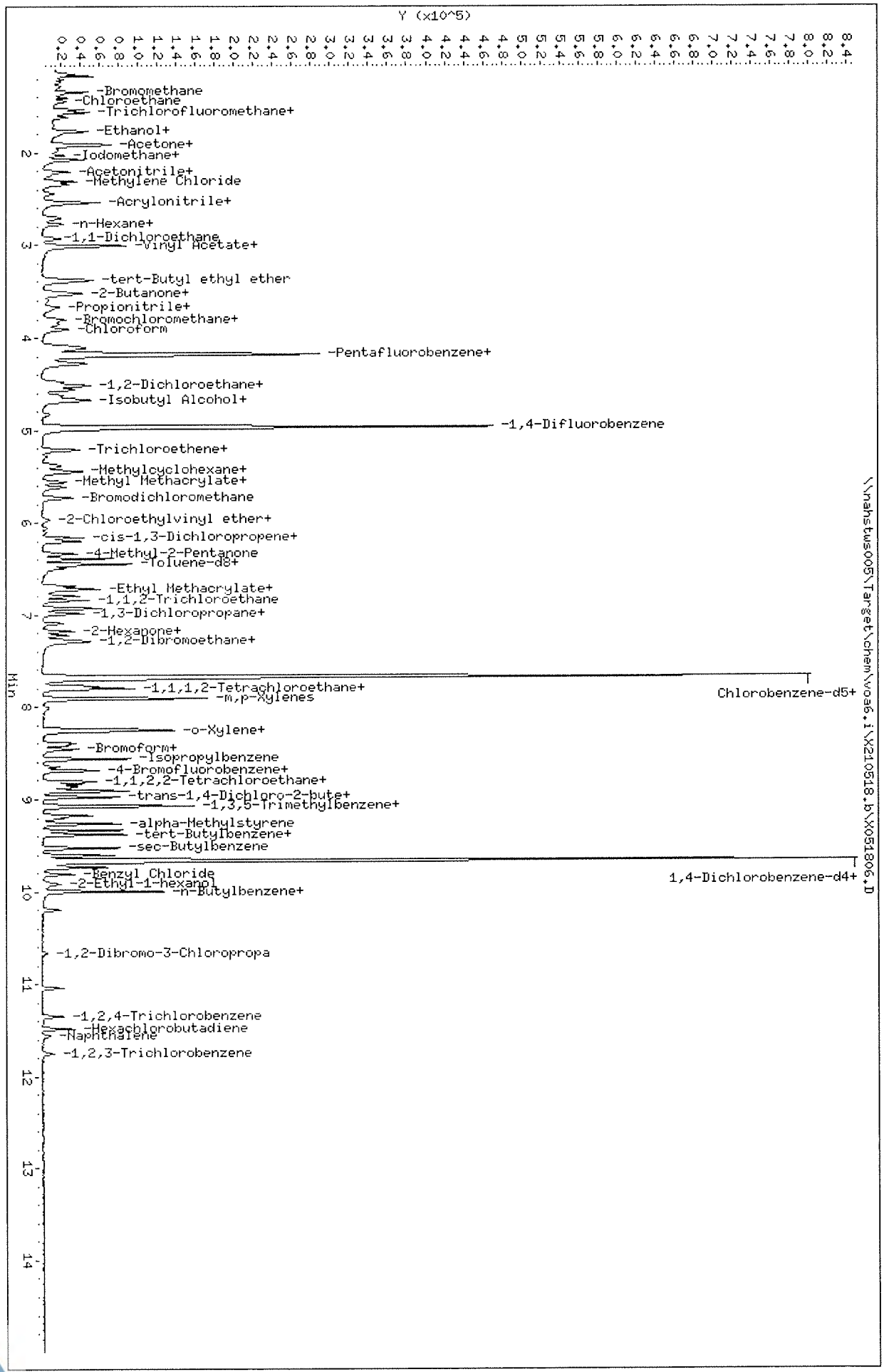
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	225058	50.0000	
*	36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	374386	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	349203	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	167006	50.0000	
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	16438	5.00000	4.48(a)
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	15616	5.00000	4.84(a)
$	30 Dibromofluoromethane	113	4.103	4.103	(0.981)	12495	5.00000	4.77(a)
$	48 Toluene-d8	98	6.388	6.388	(0.833)	42740	5.00000	5.89
	60 1,1,1,2-Tetrachloroethane	131	7.771	7.771	(1.013)	12874	5.00000	5.06
	31 1,1,1-Trichloroethane	97	4.089	4.089	(0.978)	19150	5.00000	5.00
	68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	14932	5.00000	4.92(a)
	138 Freon TF	101	1.919	1.919	(0.459)	11140	5.00000	5.21
	53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	9408	5.00000	4.63(a)
	22 1,1-Dichloroethane	63	2.929	2.929	(0.700)	19958	5.00000	4.78(a)
	11 1,1-Dichloroethene	96	1.911	1.911	(0.457)	11117	5.00000	4.93(a)
	32 1,1-Dichloropropene	75	4.275	4.275	(0.860)	15980	5.00000	4.98(a)
	93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.216)	3826	5.00000	5.37
	71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	9928	5.00000	3.81(aMH)
	90 1,2,4-Trichlorobenzene	180	11.345	11.345	(1.174)	7168	5.00000	7.00
	79 1,2,4-Trimethylbenzene	105	9.382	9.382	(0.971)	40866	5.00000	4.81(a)
	89 1,2-Dibromo-3-Chloropropane	155	10.665	10.665	(1.104)	1184	5.00000	6.69
	57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	11790	5.00000	4.83(a)

Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051806.D Page 2
Report Date: 22-Jun-2021 08:20

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	9.999	9.999	(1.035)	22875	5.00000	4.88(a)
33	1,2-Dichloroethane	62	4.562	4.562	(0.918)	18828	5.00000	5.11
42	1,2-Dichloropropane	63	5.436	5.436	(1.094)	12574	5.00000	4.99(aM)
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	38648	5.00000	4.63(a)
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	23137	5.00000	4.82(a)
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	20253	5.00000	5.10
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	24844	5.00000	5.29
26	2,2-Dichloropropane	77	3.516	3.516	(0.841)	18465	5.00000	4.95(a)
24	2-Butanone	43	3.588	3.588	(0.858)	7505	10.0000	9.03
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	35922	5.00000	4.82(a)
52	2-Hexanone	43	7.097	7.097	(0.925)	15257	10.0000	10.06
77	4-Chlorotoluene	91	9.074	9.074	(0.939)	41267	5.00000	4.75(a)
82	p-Isopropyltoluene	119	9.648	9.648	(0.999)	38993	5.00000	4.72(a)
45	4-Methyl-2-Pentanone	43	6.331	6.331	(0.825)	23491	10.0000	10.64
10	Acetone	43	1.983	1.983	(0.474)	8158	10.0000	9.92
37	Benzene	78	4.512	4.512	(0.908)	46553	5.00000	5.02
74	Bromobenzene	156	8.809	8.809	(0.912)	14708	5.00000	5.28
29	Bromochloromethane	128	3.802	3.802	(0.909)	7065	5.00000	5.15
39	Bromodichloromethane	83	5.729	5.729	(1.153)	18096	5.00000	5.00
66	Bromoform	173	8.415	8.415	(1.097)	7918	5.00000	4.68(Ta)
6	Bromomethane	94	1.338	1.338	(0.320)	15785	5.00000	6.25
19	Carbon Disulfide	76	2.069	2.069	(0.495)	49473	10.0000	9.33
34	Carbon Tetrachloride	117	4.268	4.268	(0.859)	16315	5.00000	4.99(aH)
59	Chlorobenzene	112	7.692	7.692	(1.003)	32631	5.00000	4.76(a)
7	Chloroethane	64	1.403	1.403	(0.336)	8398	5.00000	4.92(aM)
28	Chloroform	83	3.910	3.910	(0.935)	24324	5.00000	5.08
3	Chloromethane	50	1.081	1.081	(0.258)	14179	5.00000	6.05
27	cis-1,2-Dichloroethene	96	3.523	3.523	(0.842)	12551	5.00000	4.83(a)
46	cis-1,3-Dichloropropene	75	6.159	6.159	(1.239)	20073	5.00000	4.89(a)
55	Dibromochloromethane	129	7.176	7.176	(0.936)	12858	5.00000	4.71(a)
44	Dibromomethane	93	5.557	5.557	(1.118)	8941	5.00000	4.95(a)
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	14123	5.00000	6.85
61	Ethylbenzene	106	7.799	7.799	(1.017)	16617	5.00000	4.91(a)
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	4641	5.00000	7.52
67	Isopropylbenzene	105	8.559	8.559	(1.116)	49325	5.00000	4.76(a)
62	m,p-Xylenes	106	7.907	7.907	(1.031)	41694	10.0000	9.56
17	Methylene Chloride	84	2.305	2.305	(0.551)	11006	5.00000	4.87(a)
87	n-Butylbenzene	91	9.991	9.991	(1.034)	34349	5.00000	4.38(a)
73	n-Propylbenzene	91	8.910	8.910	(0.922)	56986	5.00000	4.81(a)
92	Naphthalene	128	11.553	11.553	(1.196)	8781	5.00000	6.84
63	o-Xylene	106	8.244	8.244	(1.075)	20375	5.00000	4.80(a)
81	sec-Butylbenzene	105	9.519	9.519	(0.985)	45656	5.00000	4.66(a)
64	Styrene	104	8.258	8.258	(1.077)	31296	5.00000	5.55
78	tert-Butylbenzene	119	9.332	9.332	(0.966)	34739	5.00000	4.91(a)
56	Tetrachloroethene	164	6.933	6.933	(0.904)	9252	5.00000	4.76(a)
50	Toluene	91	6.446	6.446	(0.840)	49788	5.00000	4.94(a)
20	trans-1,2-Dichloroethene	96	2.527	2.527	(0.604)	10258	5.00000	4.73(a)
51	trans-1,3-Dichloropropene	75	6.689	6.689	(1.346)	16774	5.00000	4.67(a)
38	Trichloroethene	130	5.214	5.214	(1.049)	13273	5.00000	5.35
8	Trichlorofluoromethane	101	1.560	1.560	(0.373)	22800	5.00000	5.27
5	Vinyl Chloride	62	1.145	1.145	(0.274)	14191	5.00000	5.22

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

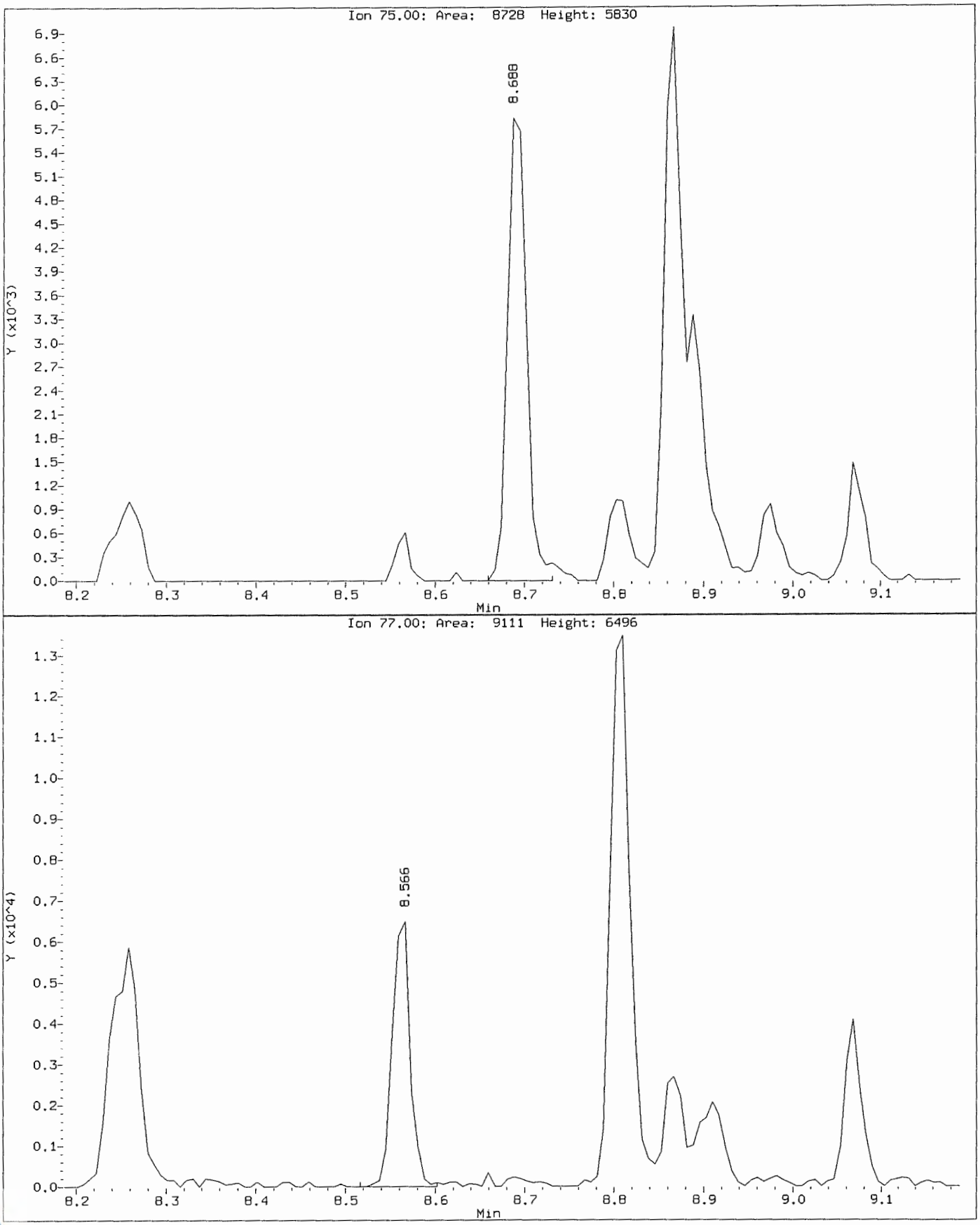


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Date : 18-MAY-2021 13:07
Client ID: VSTD005
Sample Info: VSDT005;VSTD005;1;5;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

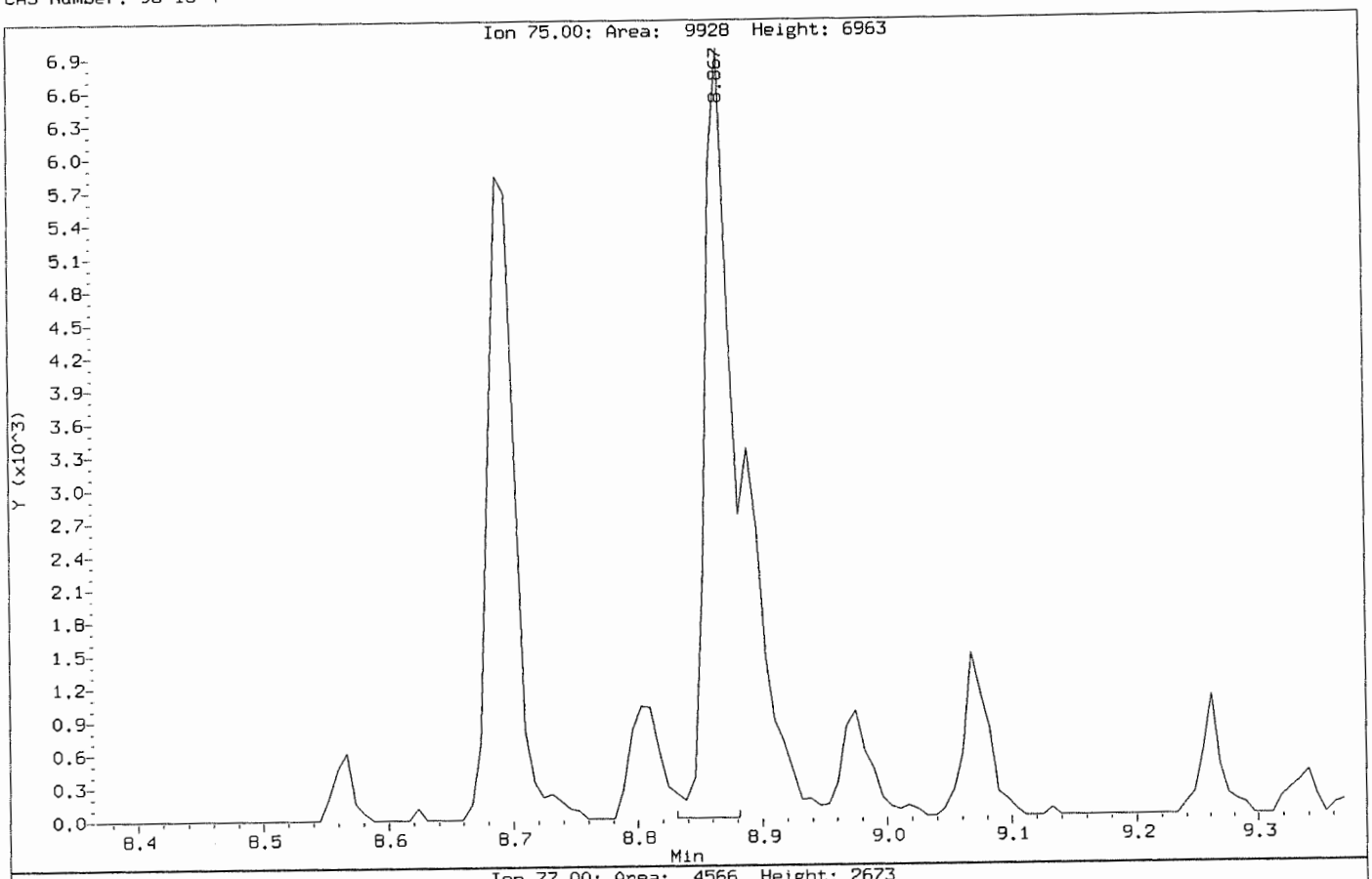
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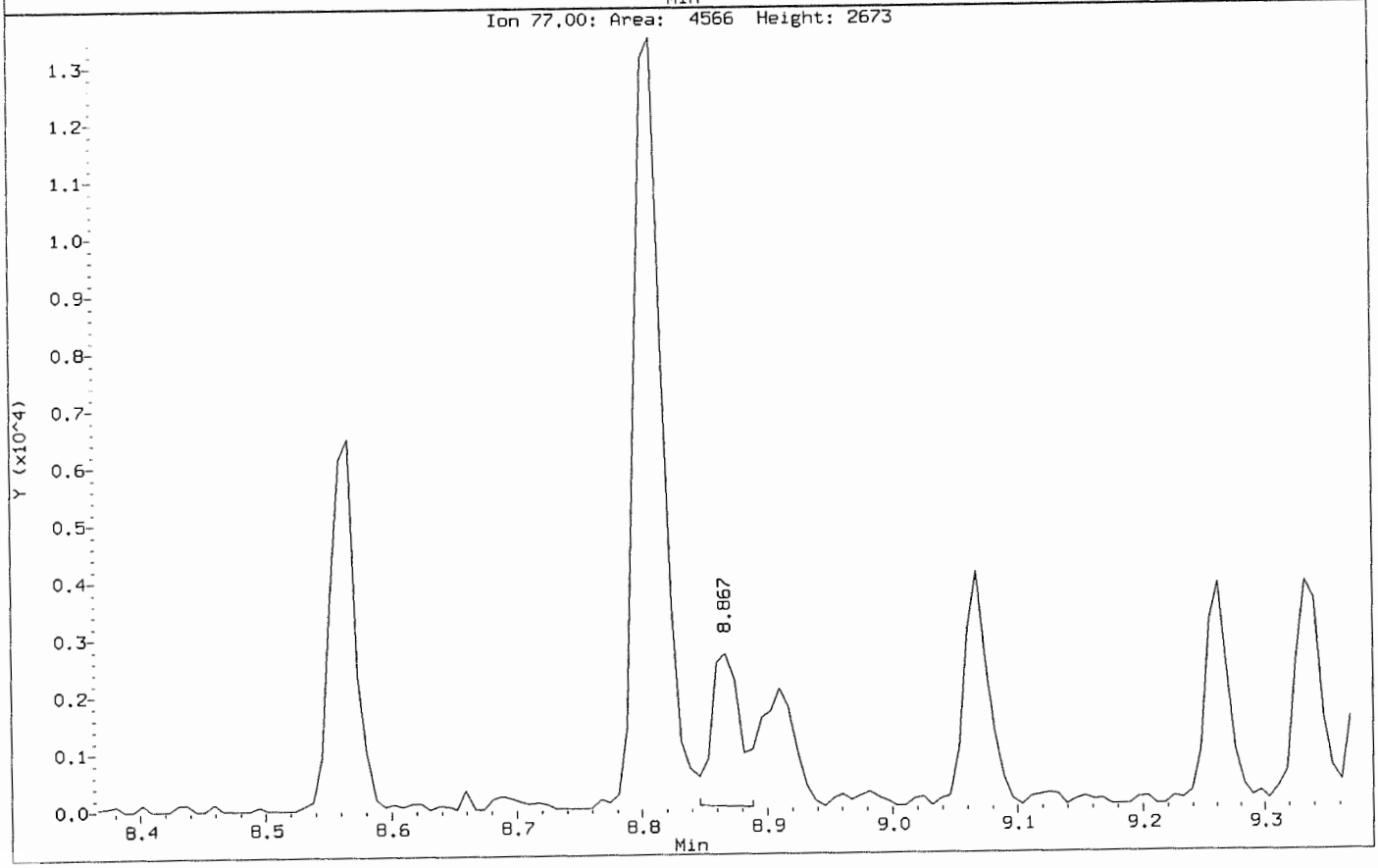
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



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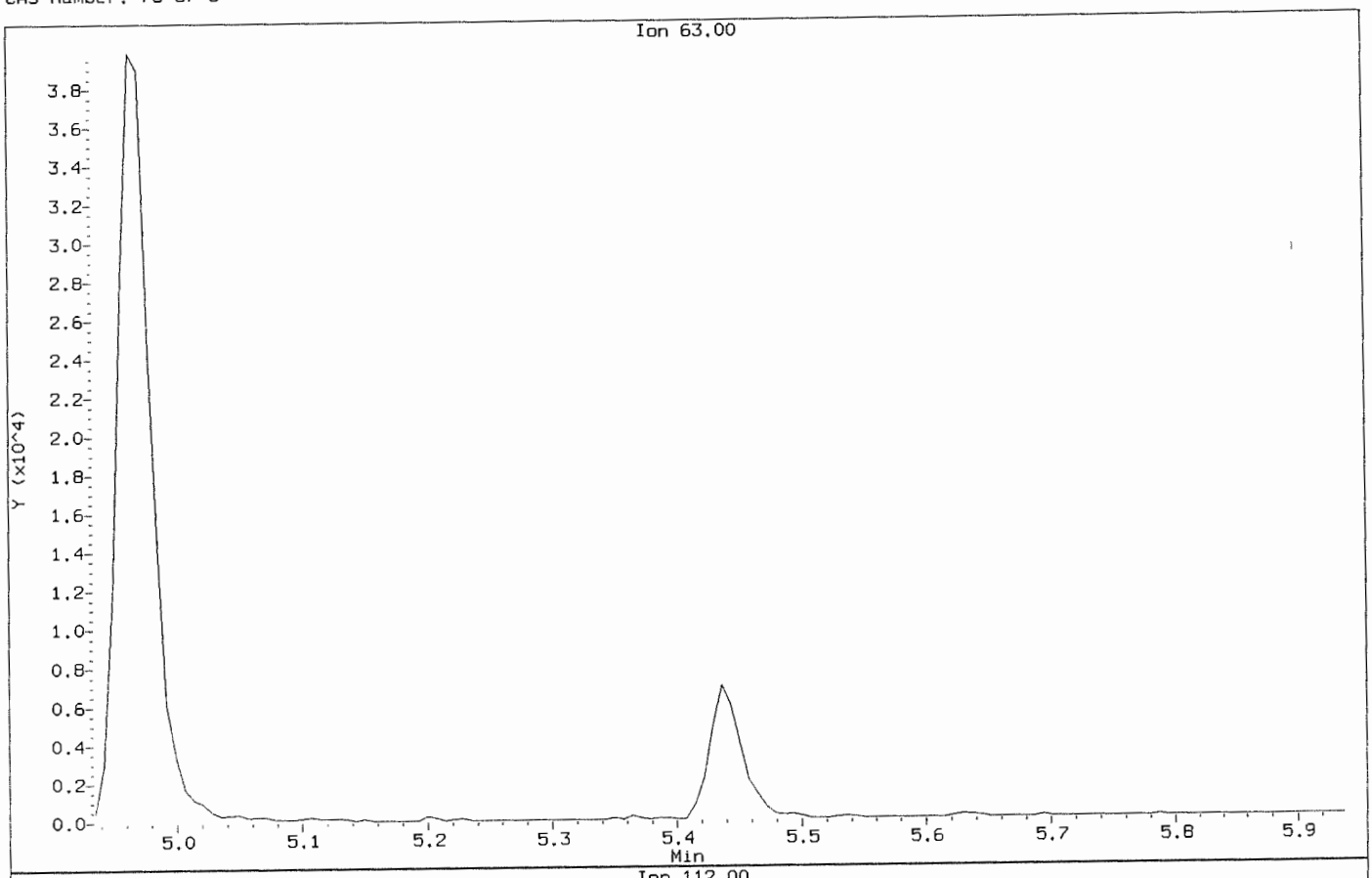
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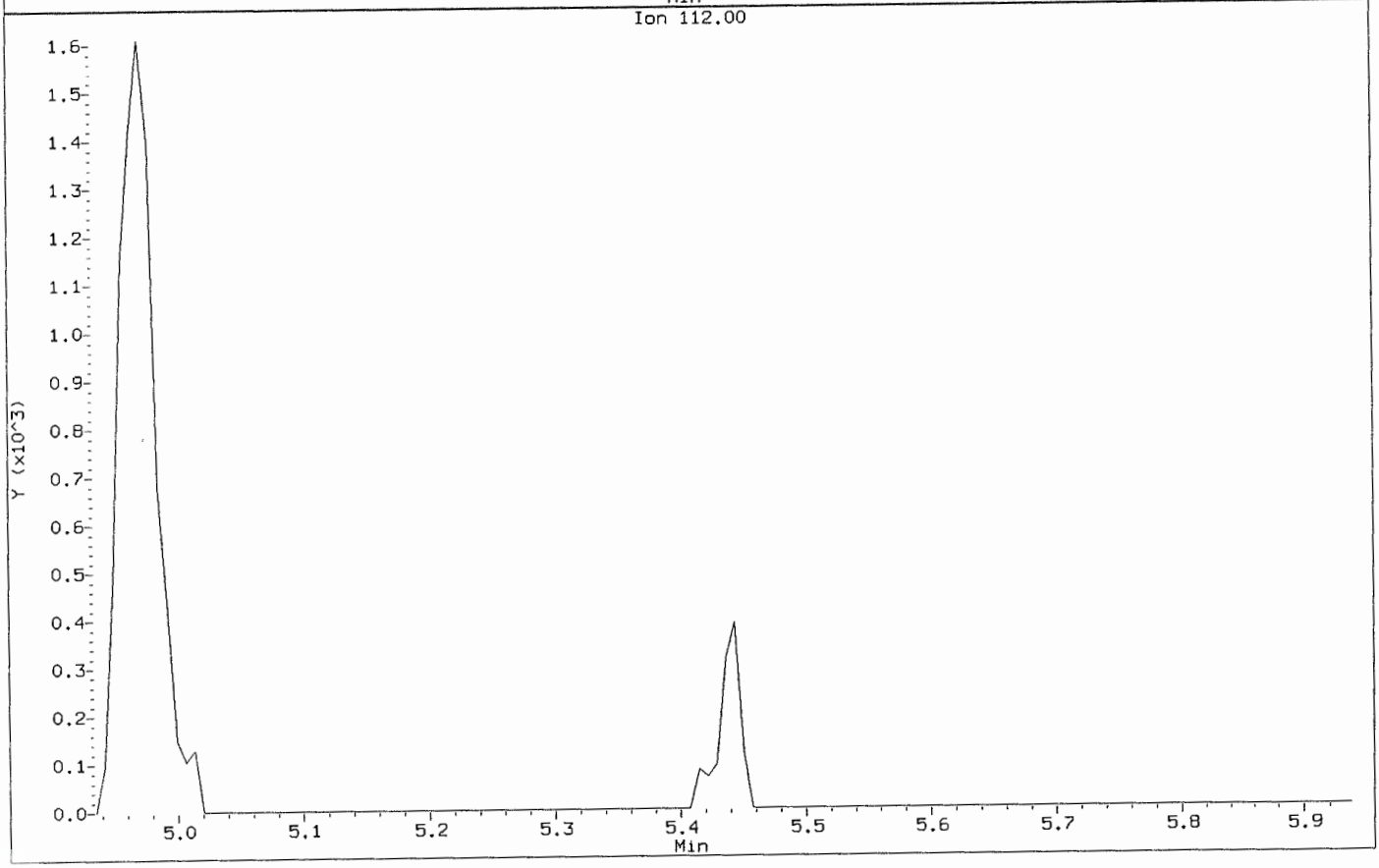




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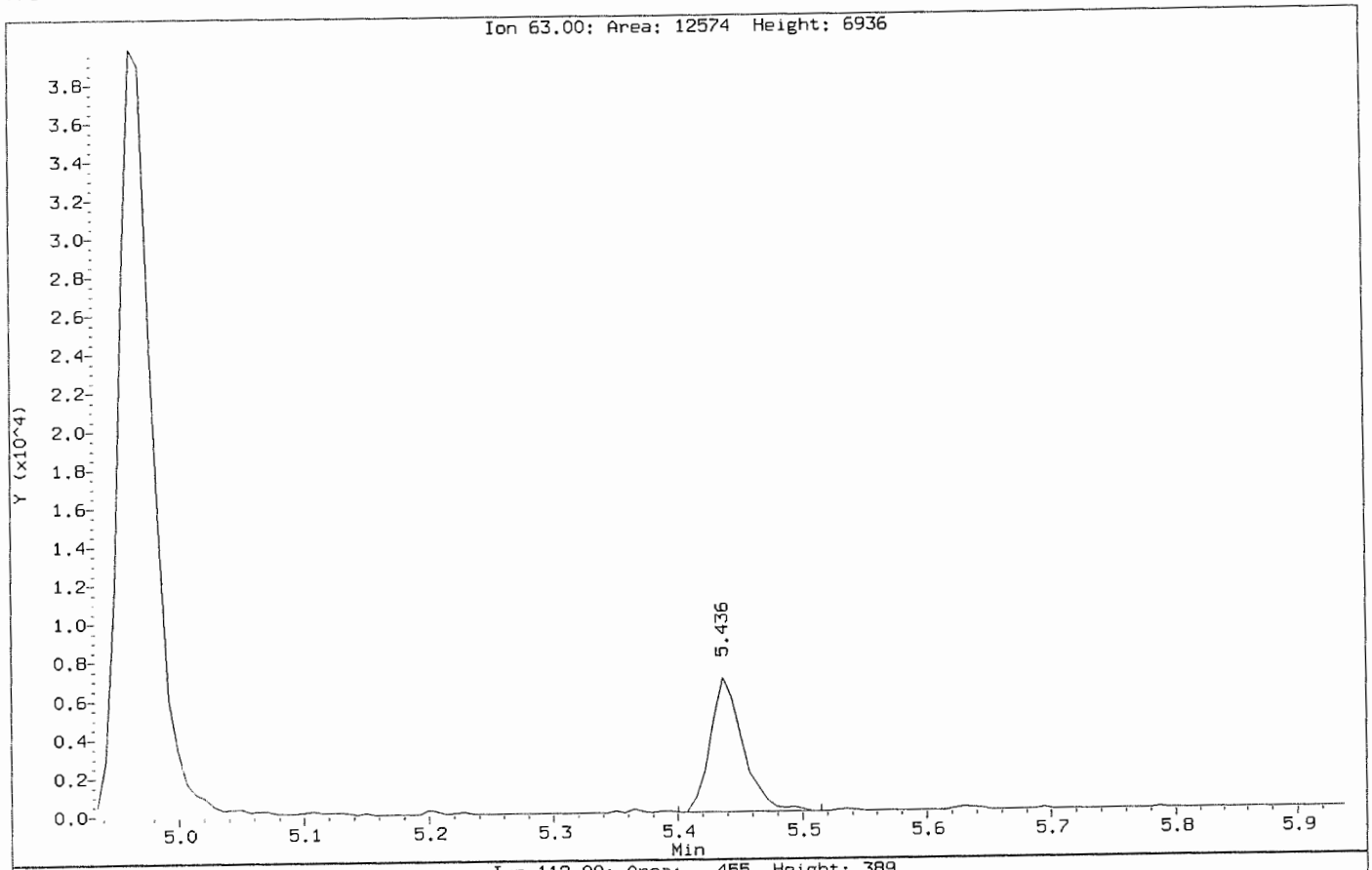
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CAS Number: 78-87-5

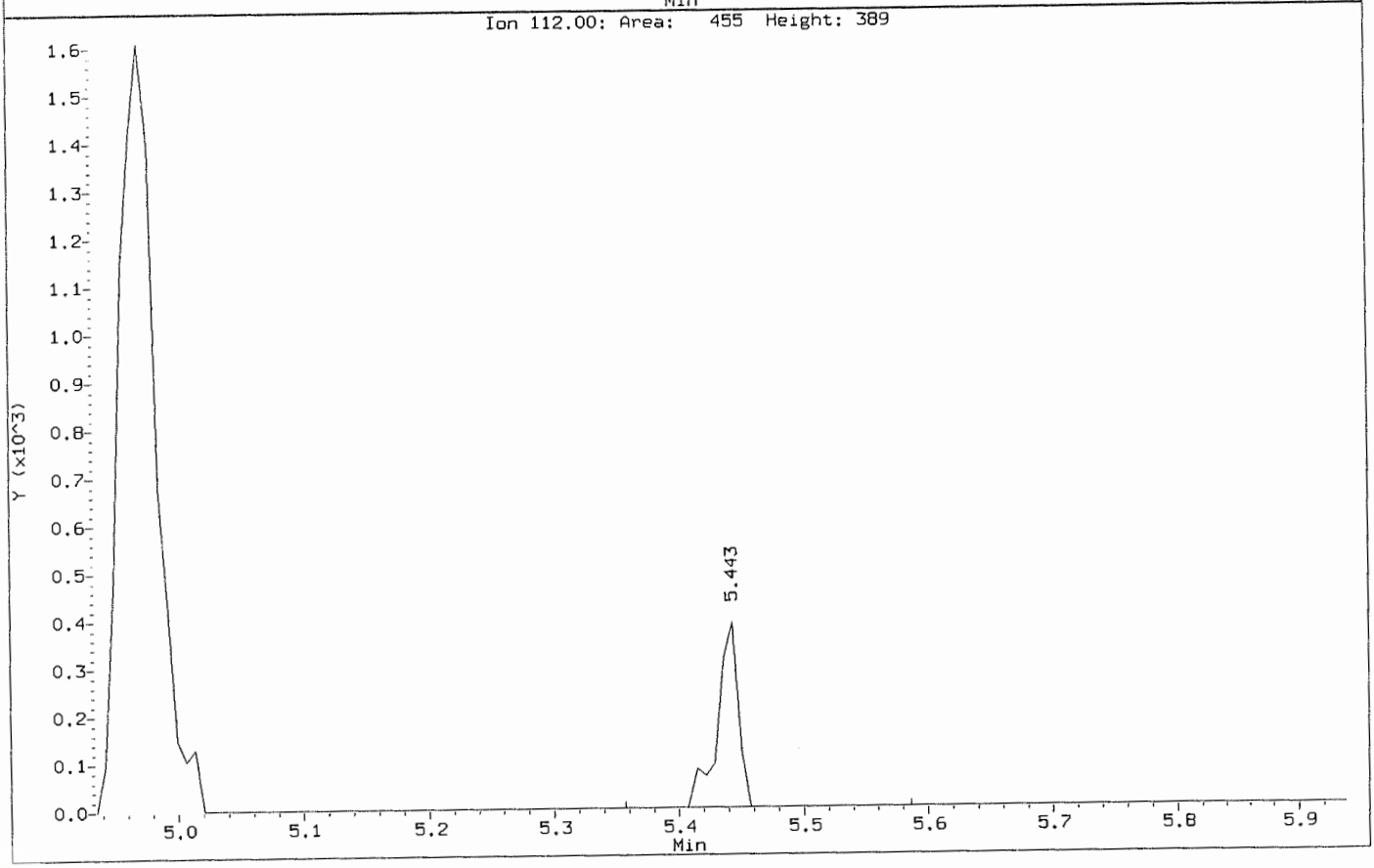




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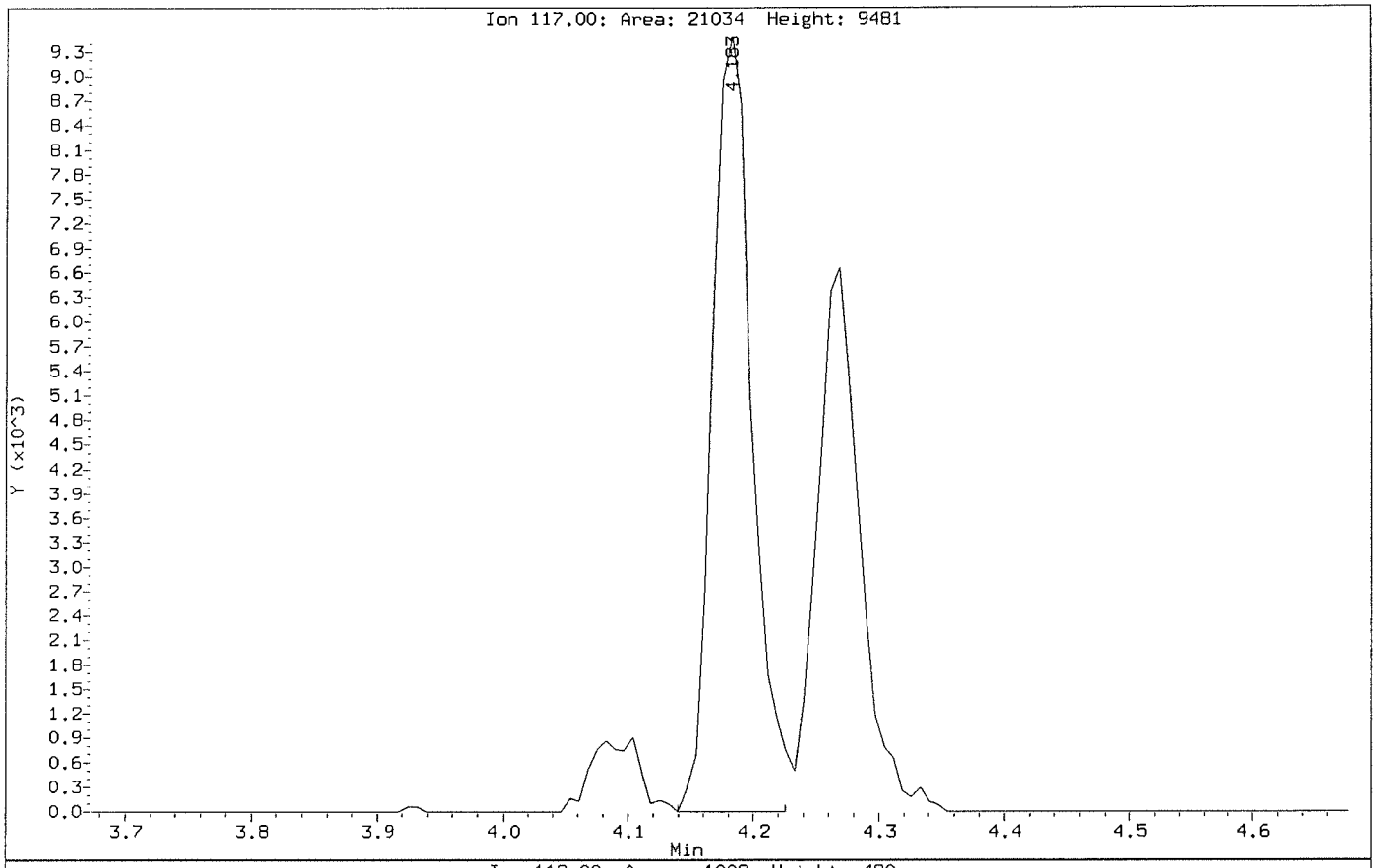
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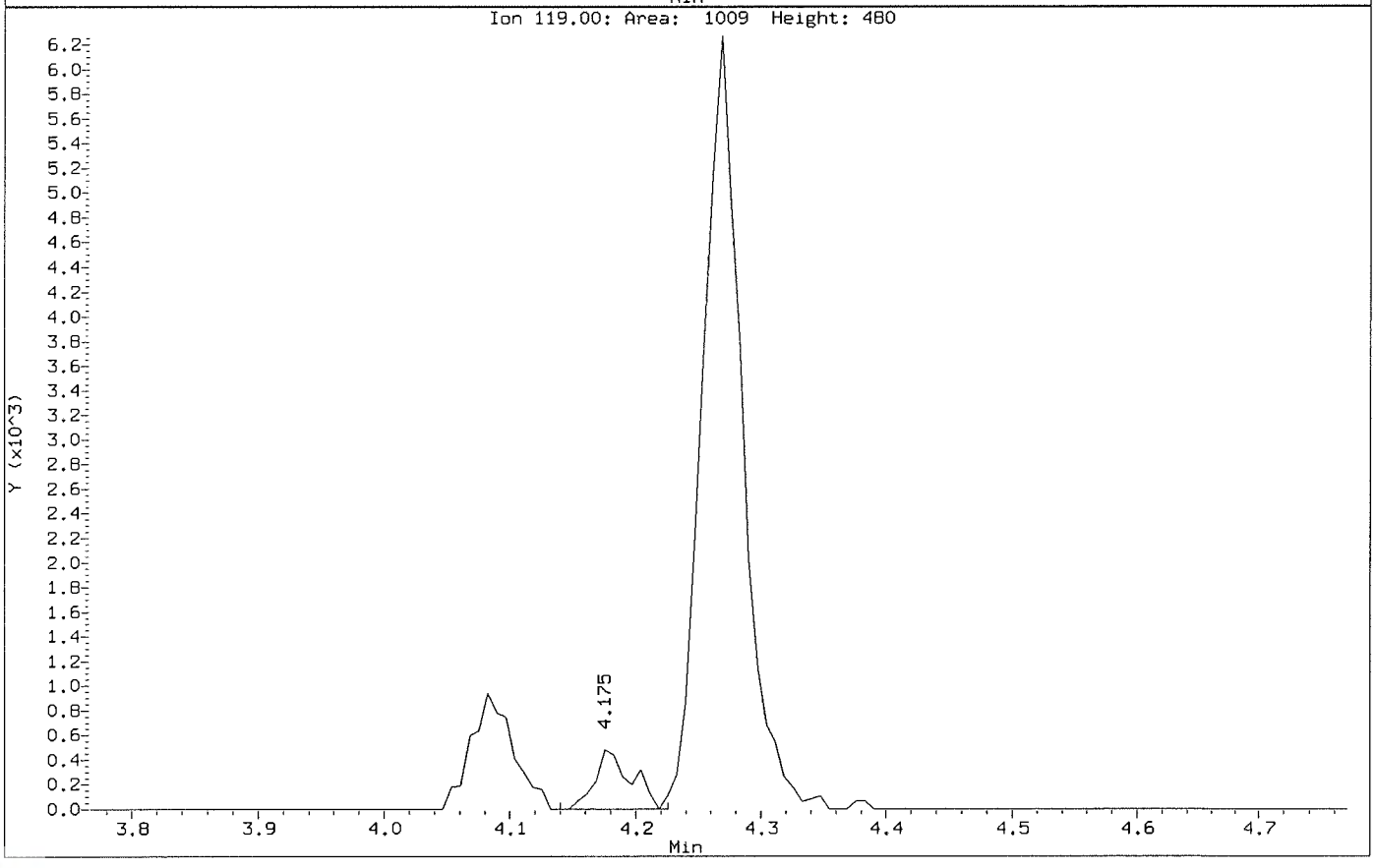




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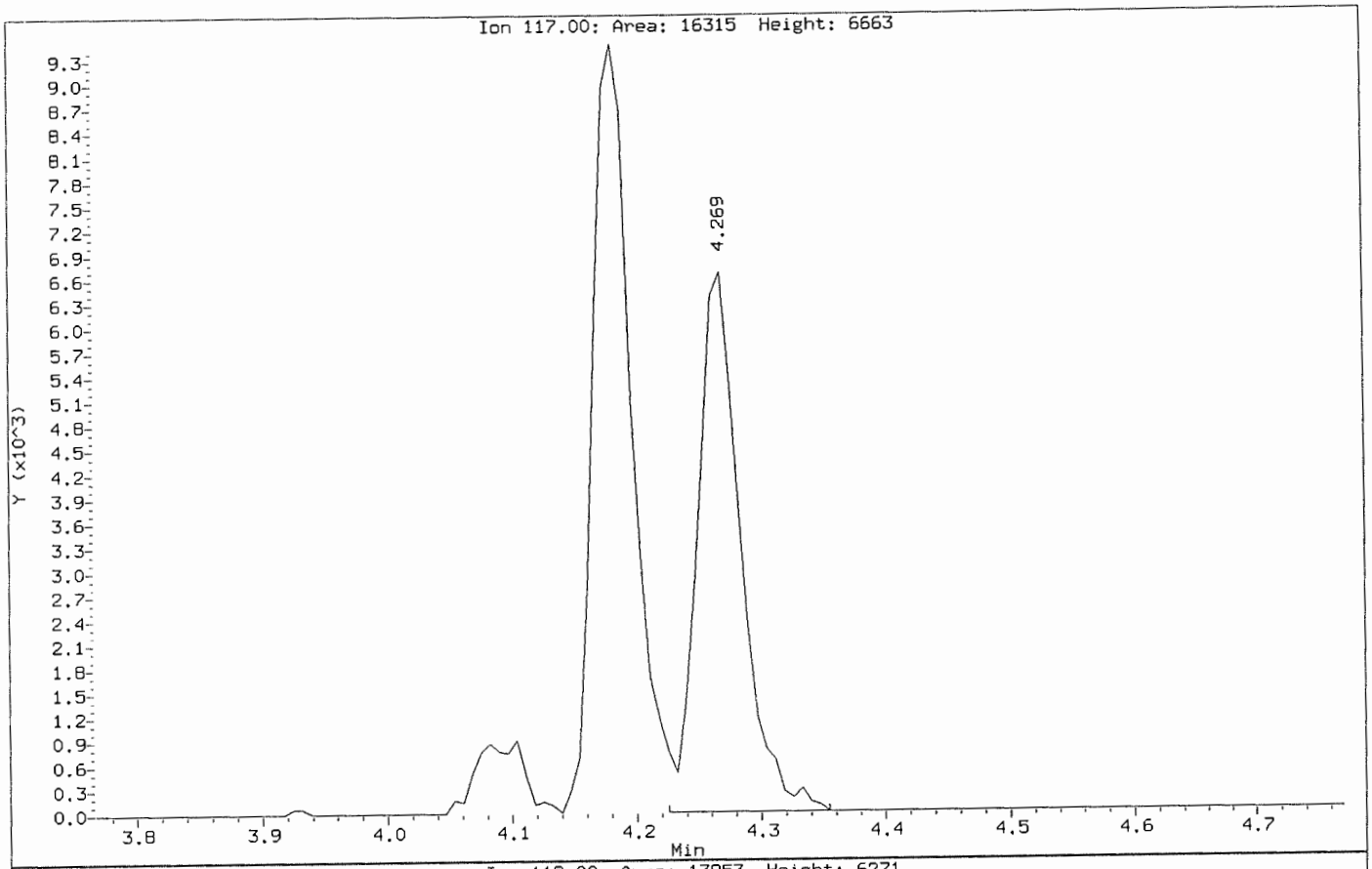
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CAS Number: 56-23-5

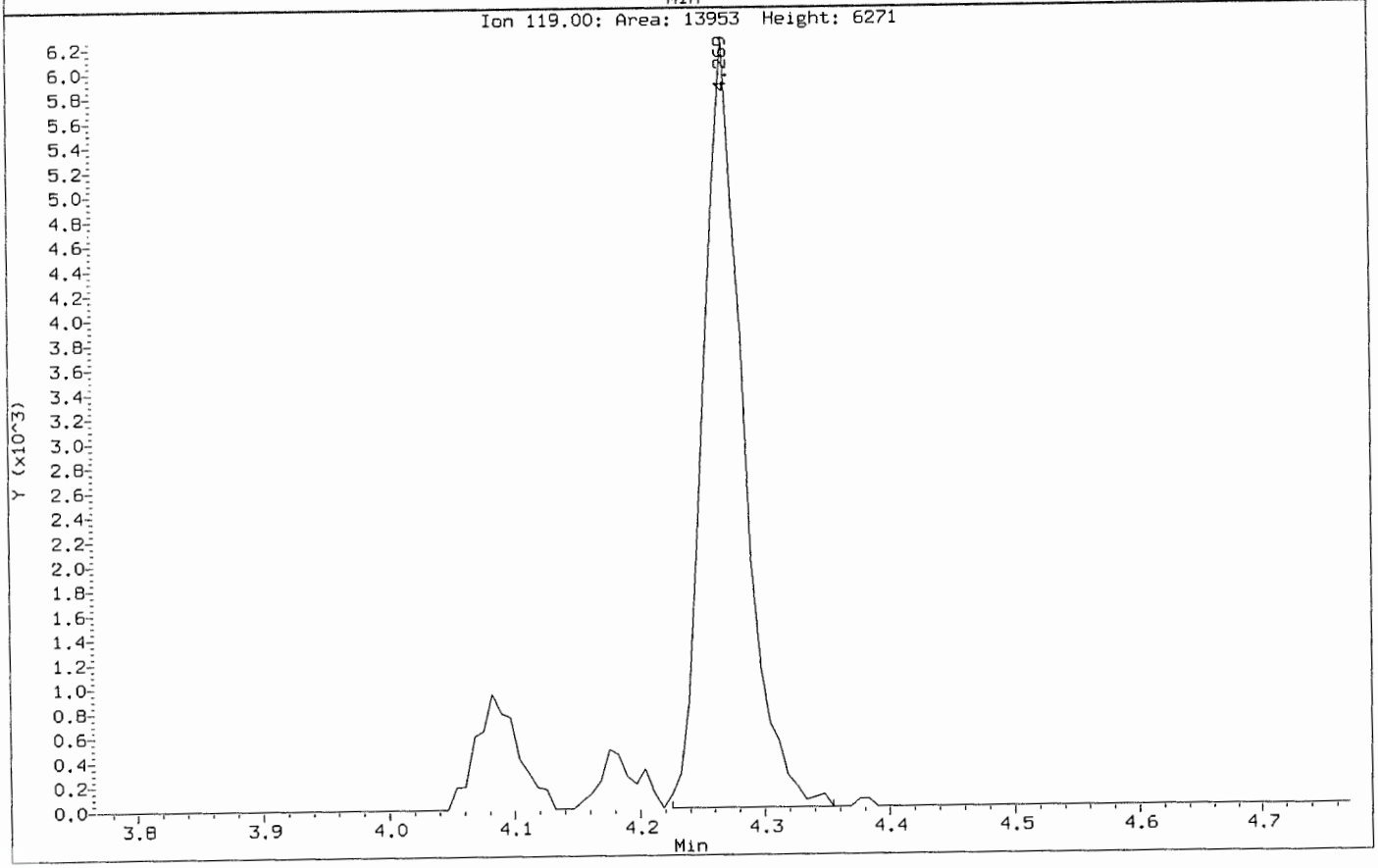




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Instrument: voa6.i
Client Sample ID: VSTD005

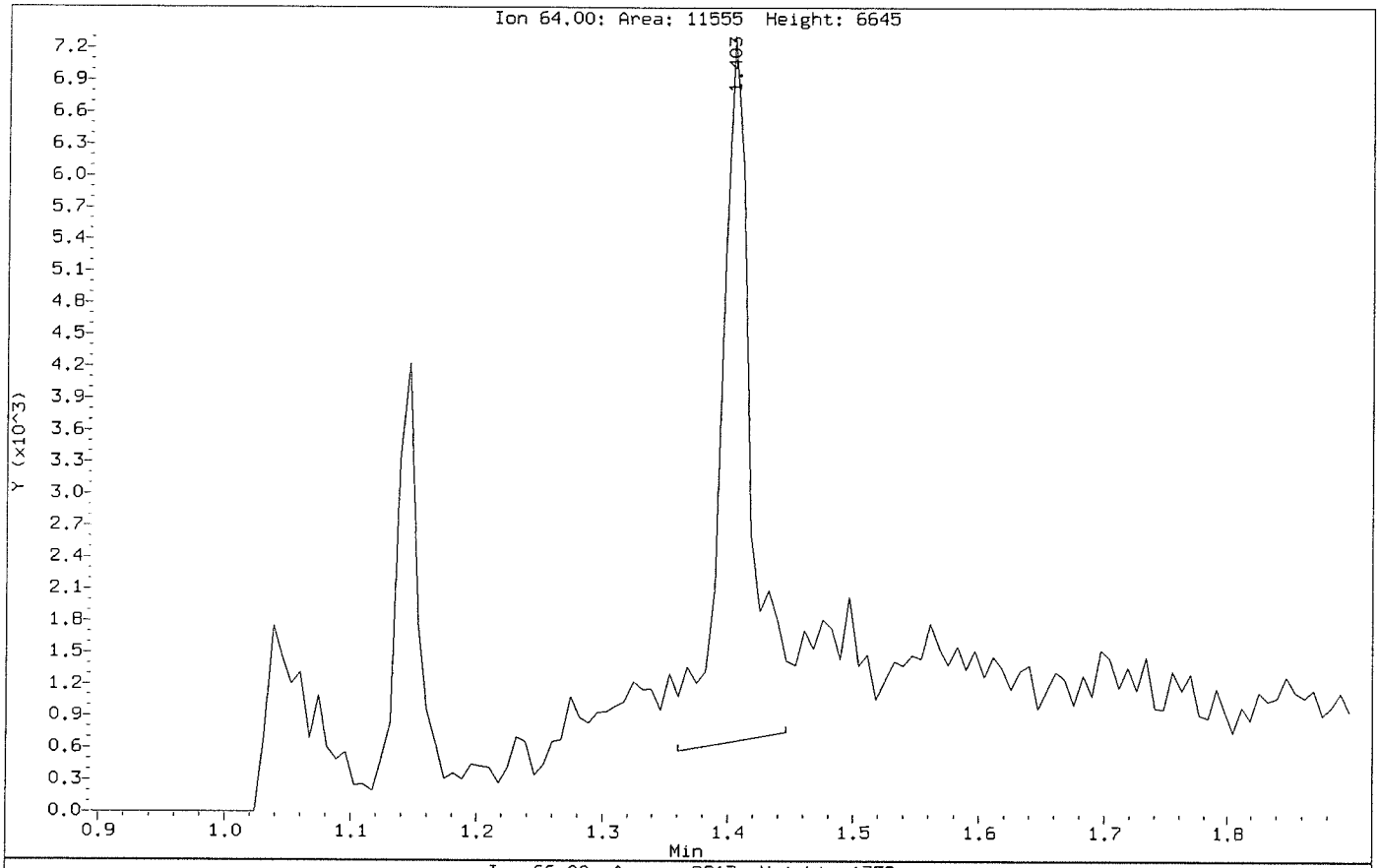
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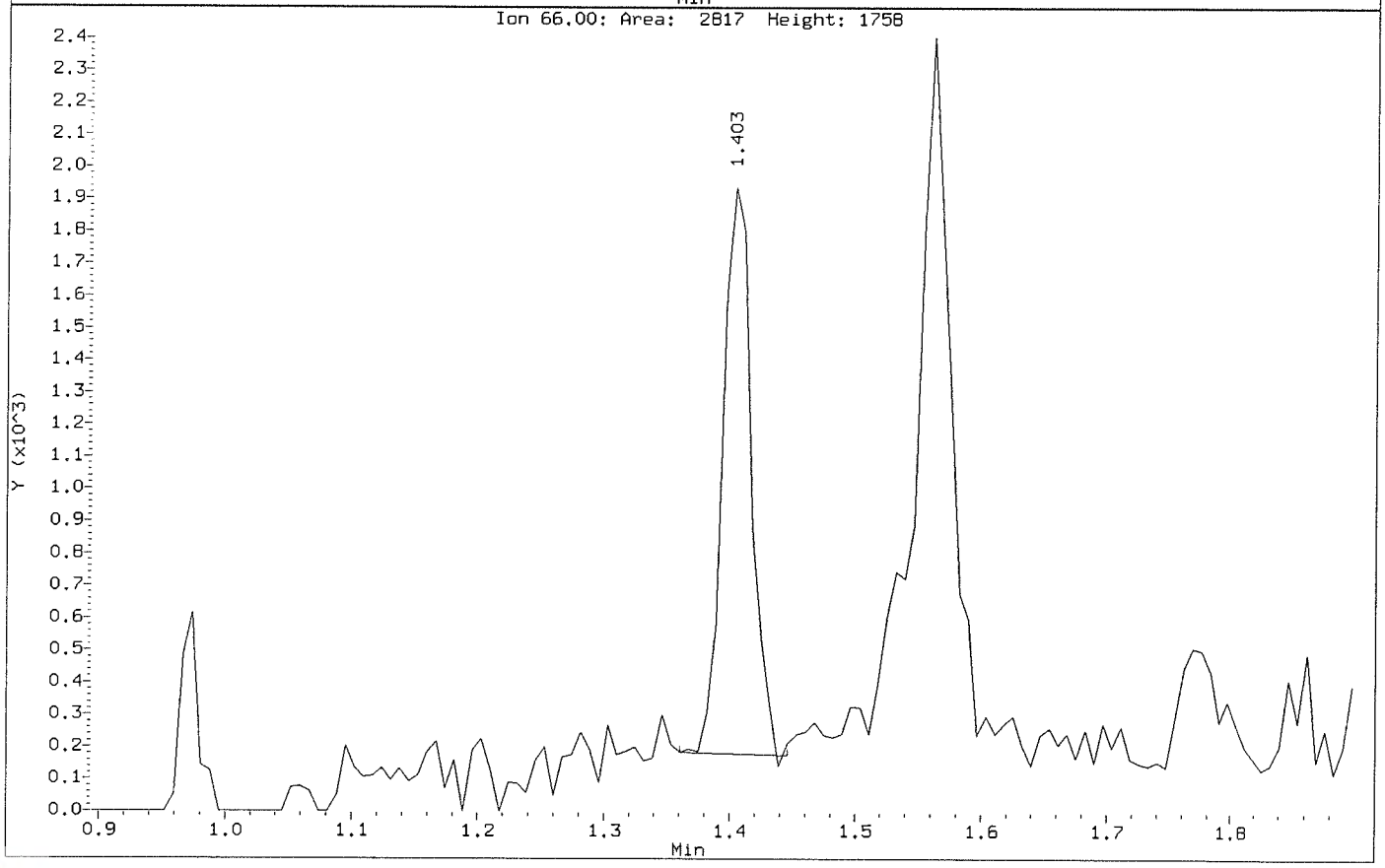




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Instrument: voa6.i
Client Sample ID: VSTD005

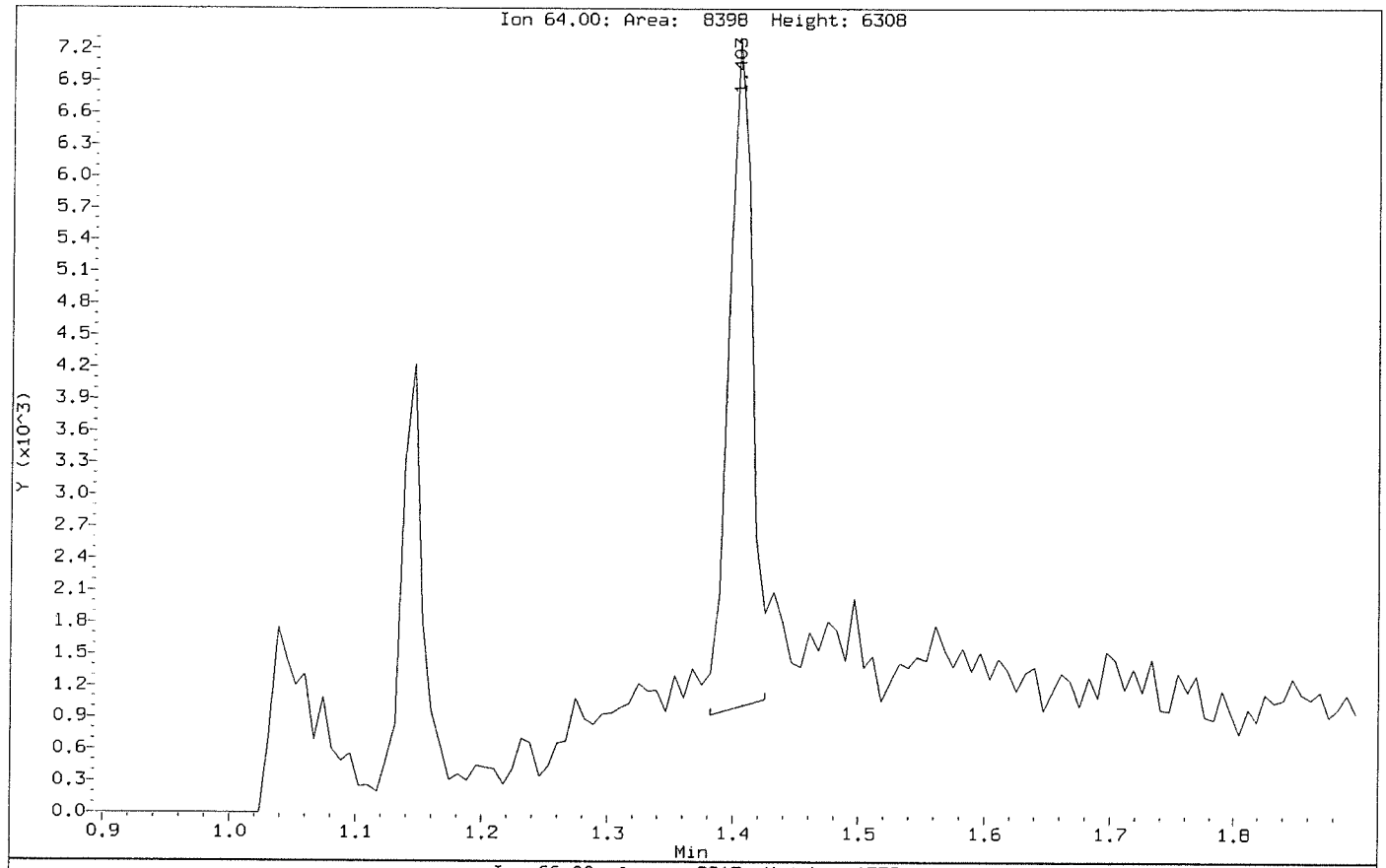
Compound: Chloroethane
CAS Number: 75-00-3

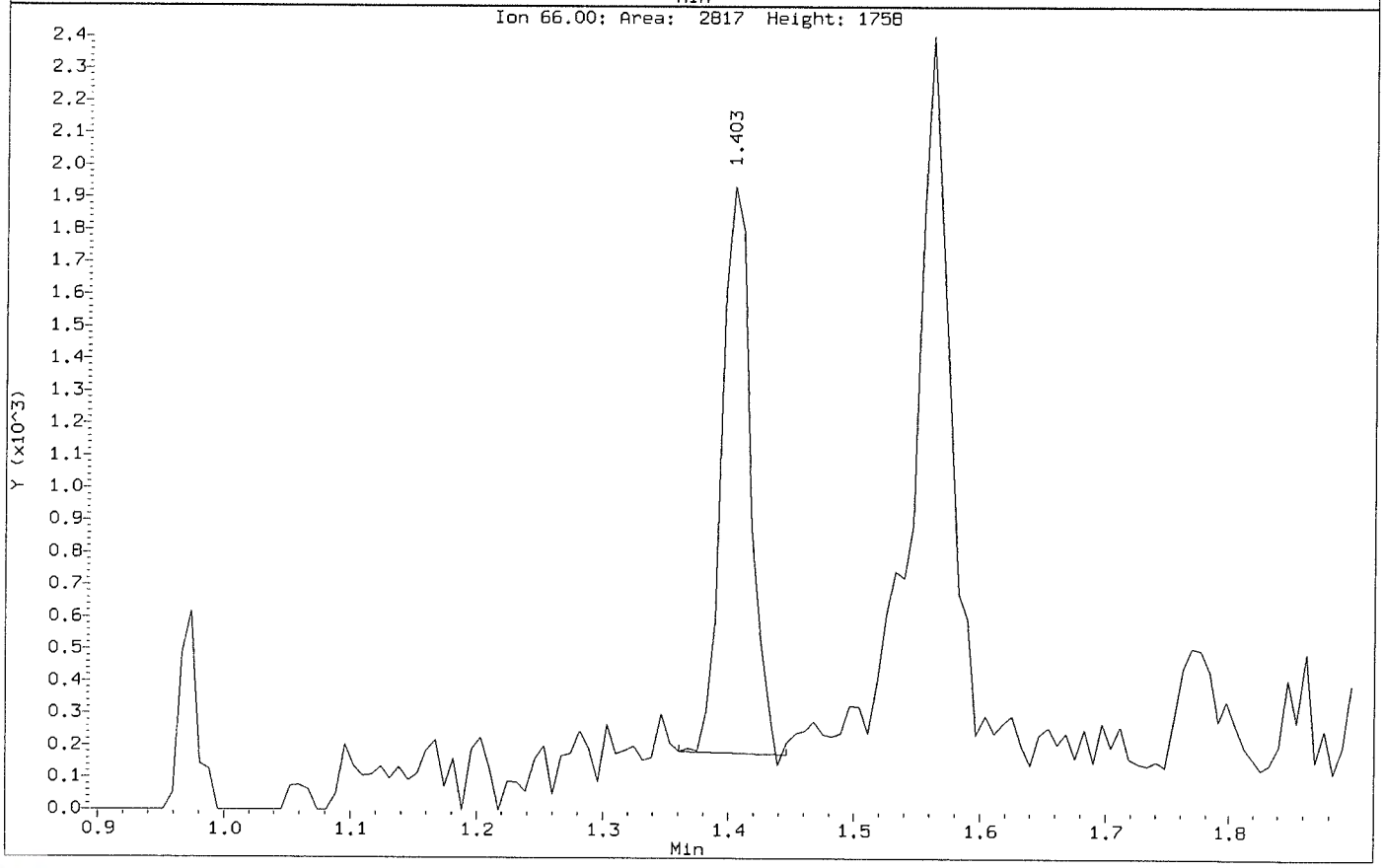




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Injection Date: 18-MAY-2021 13:07
Instrument: voa6.i
Client Sample ID: VSTD005

Compound: Chloroethane
CAS Number: 75-00-3





ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210518.b\X051807.D
Lab Smp Id: VSDT020 Client Smp ID: VSTD020
Inj Date : 18-MAY-2021 13:28
Operator : PC Inst ID: voa6.i
Smp Info : VSDT020;VSTD020;1;6;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X210518.b\8260W.m
Meth Date : 22-Jun-2021 08:20 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 13:07 Cal File: X051806.D
Als bottle: 8 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

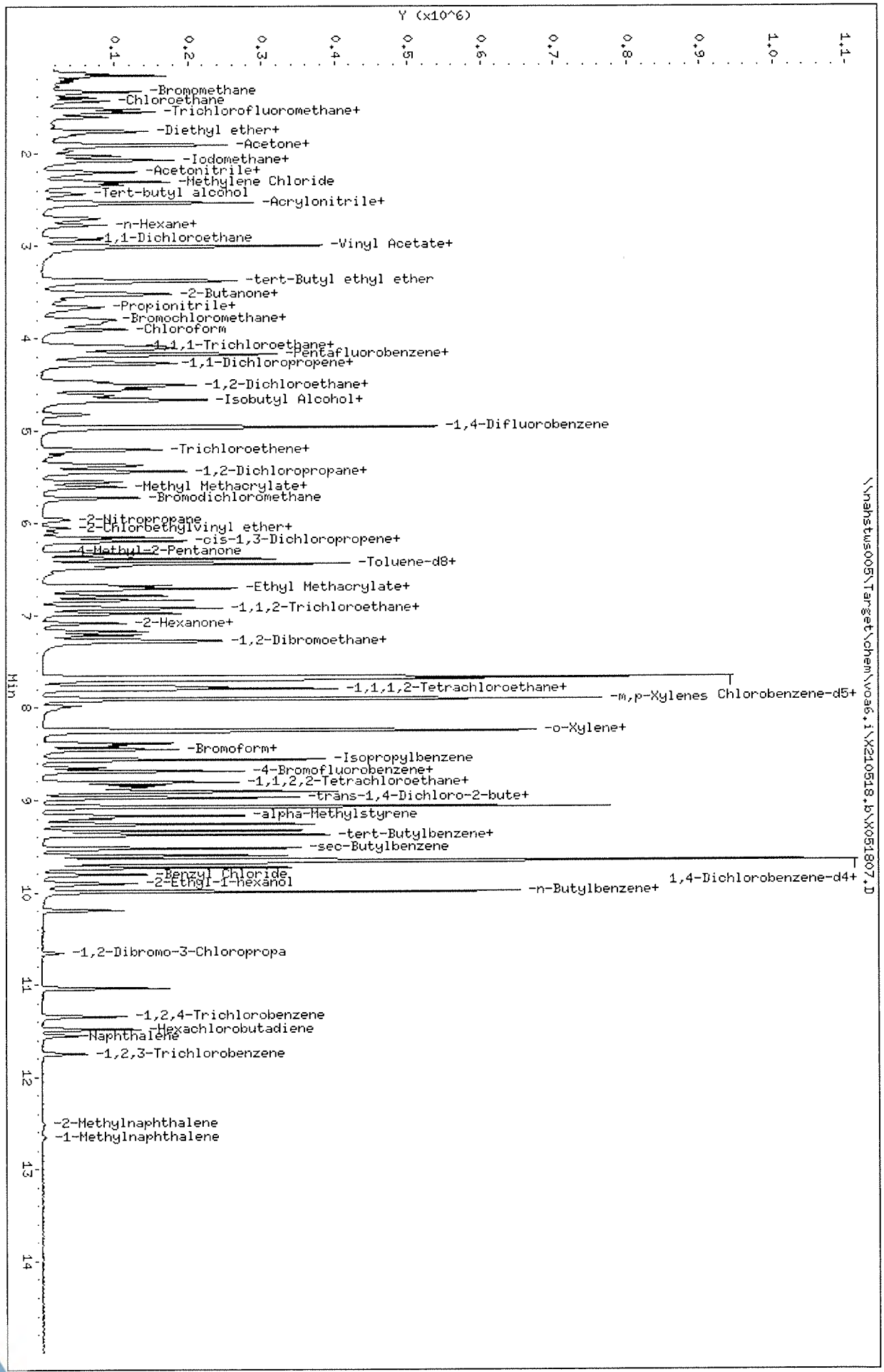
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	239147	50.0000	
*	36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	395431	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	387314	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	196242	50.0000	
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	67187	20.0000	20.87
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	68387	20.0000	18.78
$	30 Dibromofluoromethane	113	4.103	4.103	(0.981)	55528	20.0000	20.71
$	48 Toluene-d8	98	6.388	6.388	(0.833)	177650	20.0000	19.30
	60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	53138	20.0000	18.83
	31 1,1,1-Trichloroethane	97	4.082	4.082	(0.976)	79461	20.0000	19.53
	68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	63561	20.0000	19.23
	138 Freon TF	101	1.919	1.919	(0.459)	43285	20.0000	19.07
	53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	42865	20.0000	19.05
	22 1,1-Dichloroethane	63	2.922	2.922	(0.699)	85085	20.0000	19.21
	11 1,1-Dichloroethene	96	1.919	1.919	(0.459)	44209	20.0000	18.48
	32 1,1-Dichloropropene	75	4.283	4.283	(0.862)	63118	20.0000	18.63
	93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.216)	17129	20.0000	18.97
	71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	50993	20.0000	18.76(MH)
	90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	30700	20.0000	19.01
	79 1,2,4-Trimethylbenzene	105	9.383	9.383	(0.971)	177707	20.0000	17.80
	89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.103)	4660	20.0000	18.65
	57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	53873	20.0000	19.92

Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051807.D Page 2
Report Date: 22-Jun-2021 08:20

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	102122	20.0000	18.56
33	1,2-Dichloroethane	62	4.555	4.555	(0.916)	79057	20.0000	20.33
42	1,2-Dichloropropane	63	5.436	5.436	(1.094)	53324	20.0000	20.06
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	174662	20.0000	17.83
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	103039	20.0000	18.27
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	87802	20.0000	19.93
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	112231	20.0000	19.62
26	2,2-Dichloropropane	77	3.509	3.509	(0.839)	74977	20.0000	18.92
24	2-Butanone	43	3.581	3.581	(0.856)	35815	40.0000	40.57
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	154565	20.0000	17.67
52	2-Hexanone	43	7.090	7.090	(0.924)	64652	40.0000	39.20
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	187764	20.0000	18.41
82	p-Isopropyltoluene	119	9.648	9.648	(0.999)	167380	20.0000	17.27
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	96386	40.0000	39.12
10	Acetone	43	1.976	1.976	(0.473)	27873	40.0000	43.32
37	Benzene	78	4.512	4.512	(0.908)	188446	20.0000	19.26
74	Bromobenzene	156	8.802	8.802	(0.911)	63498	20.0000	19.41
29	Bromochloromethane	128	3.795	3.795	(0.908)	27530	20.0000	18.88
39	Bromodichloromethane	83	5.729	5.729	(1.153)	74633	20.0000	19.53
66	Bromoform	173	8.408	8.408	(1.096)	34786	20.0000	18.57
6	Bromomethane	94	1.339	1.339	(0.320)	51157	20.0000	20.06
19	Carbon Disulfide	76	2.069	2.069	(0.495)	208910	40.0000	37.07
34	Carbon Tetrachloride	117	4.268	4.268	(0.859)	62631	20.0000	18.17(H)
59	Chlorobenzene	112	7.692	7.692	(1.003)	141615	20.0000	18.64
7	Chloroethane	64	1.403	1.403	(0.336)	39588	20.0000	21.86
28	Chloroform	83	3.910	3.910	(0.935)	101443	20.0000	19.96
3	Chloromethane	50	1.073	1.073	(0.257)	54108	20.0000	21.11
27	cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	52610	20.0000	19.08
46	cis-1,3-Dichloropropene	75	6.152	6.152	(1.238)	88923	20.0000	20.51
55	Dibromochloromethane	129	7.176	7.176	(0.936)	58237	20.0000	19.23
44	Dibromomethane	93	5.558	5.558	(1.118)	38557	20.0000	20.24
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	57043	20.0000	20.24
61	Ethylbenzene	106	7.800	7.800	(1.017)	67752	20.0000	18.05
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	20104	20.0000	19.17
67	Isopropylbenzene	105	8.559	8.559	(1.116)	203782	20.0000	17.76
62	m,p-Xylenes	106	7.907	7.907	(1.031)	179924	40.0000	37.19
17	Methylene Chloride	84	2.306	2.306	(0.551)	46728	20.0000	19.48
87	n-Butylbenzene	91	9.991	9.991	(1.034)	158021	20.0000	17.14
73	n-Propylbenzene	91	8.910	8.910	(0.922)	240606	20.0000	17.31
92	Naphthalene	128	11.546	11.546	(1.195)	42386	20.0000	18.49
63	o-Xylene	106	8.244	8.244	(1.075)	85643	20.0000	18.20
81	sec-Butylbenzene	105	9.519	9.519	(0.985)	198389	20.0000	17.24
64	Styrene	104	8.258	8.258	(1.077)	151430	20.0000	18.31
78	tert-Butylbenzene	119	9.340	9.340	(0.967)	140248	20.0000	16.87
56	Tetrachloroethene	164	6.926	6.926	(0.903)	39827	20.0000	18.50
50	Toluene	91	6.446	6.446	(0.840)	211082	20.0000	18.88
20	trans-1,2-Dichloroethene	96	2.528	2.528	(0.604)	42462	20.0000	18.45
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.344)	76644	20.0000	20.20
38	Trichloroethene	130	5.207	5.207	(1.048)	50471	20.0000	19.27
8	Trichlorofluoromethane	101	1.561	1.561	(0.373)	89444	20.0000	19.45
5	Vinyl Chloride	62	1.145	1.145	(0.274)	54952	20.0000	19.03

QC Flag Legend

M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

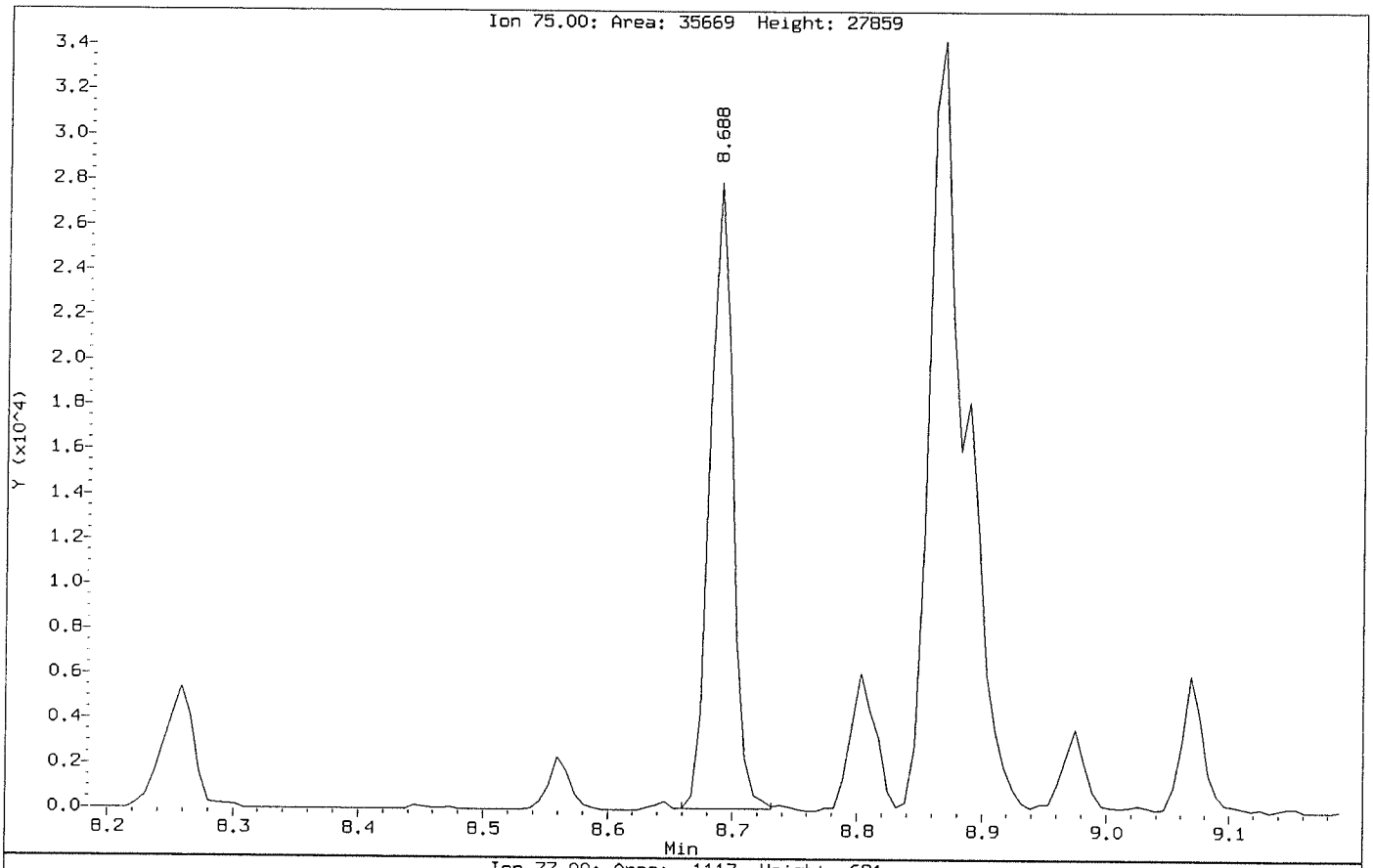


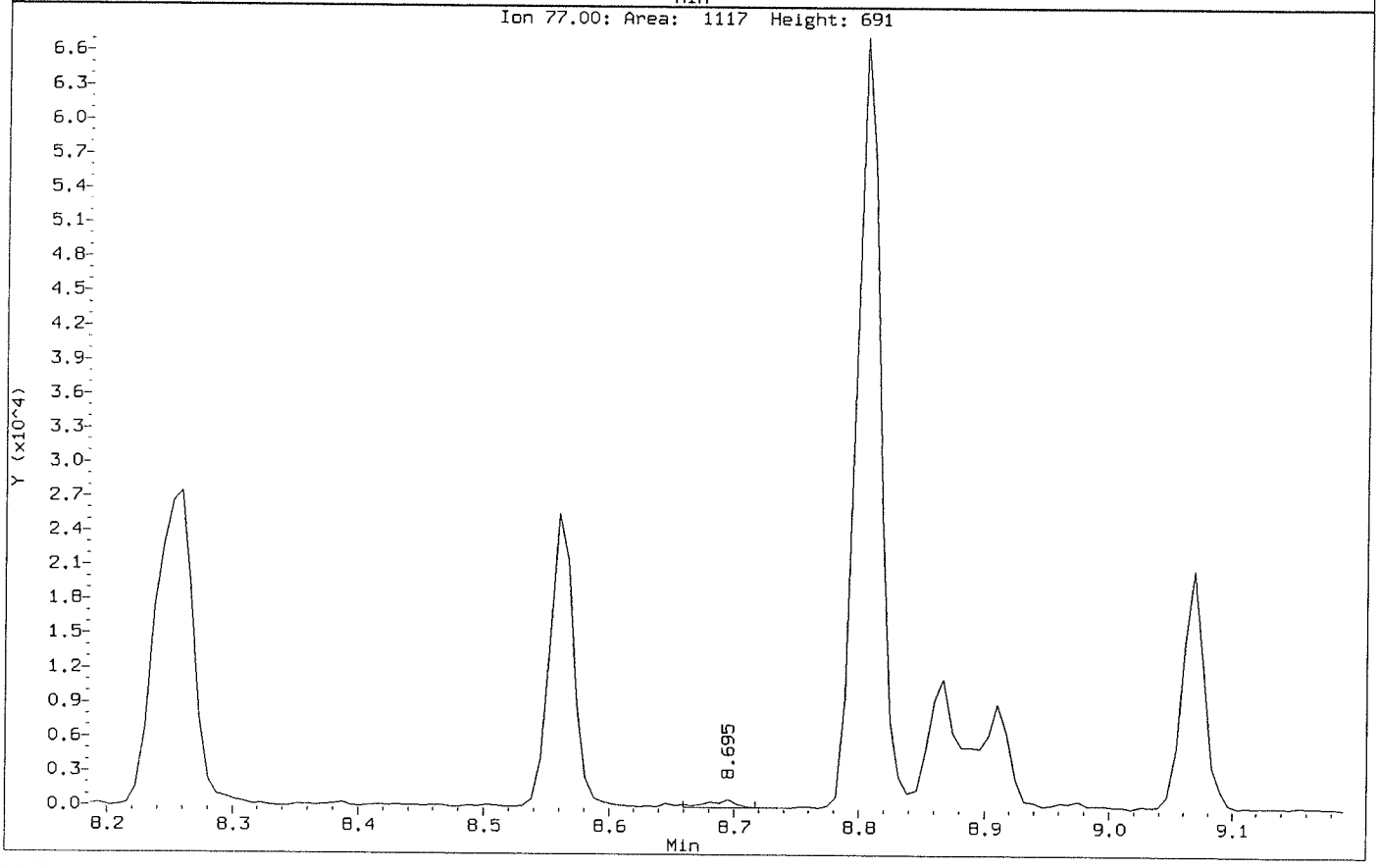
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Client ID: VSTD020
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Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\Before\X051807.D
Injection Date: 18-MAY-2021 13:28
Instrument: voa6.i
Client Sample ID: VSTD020

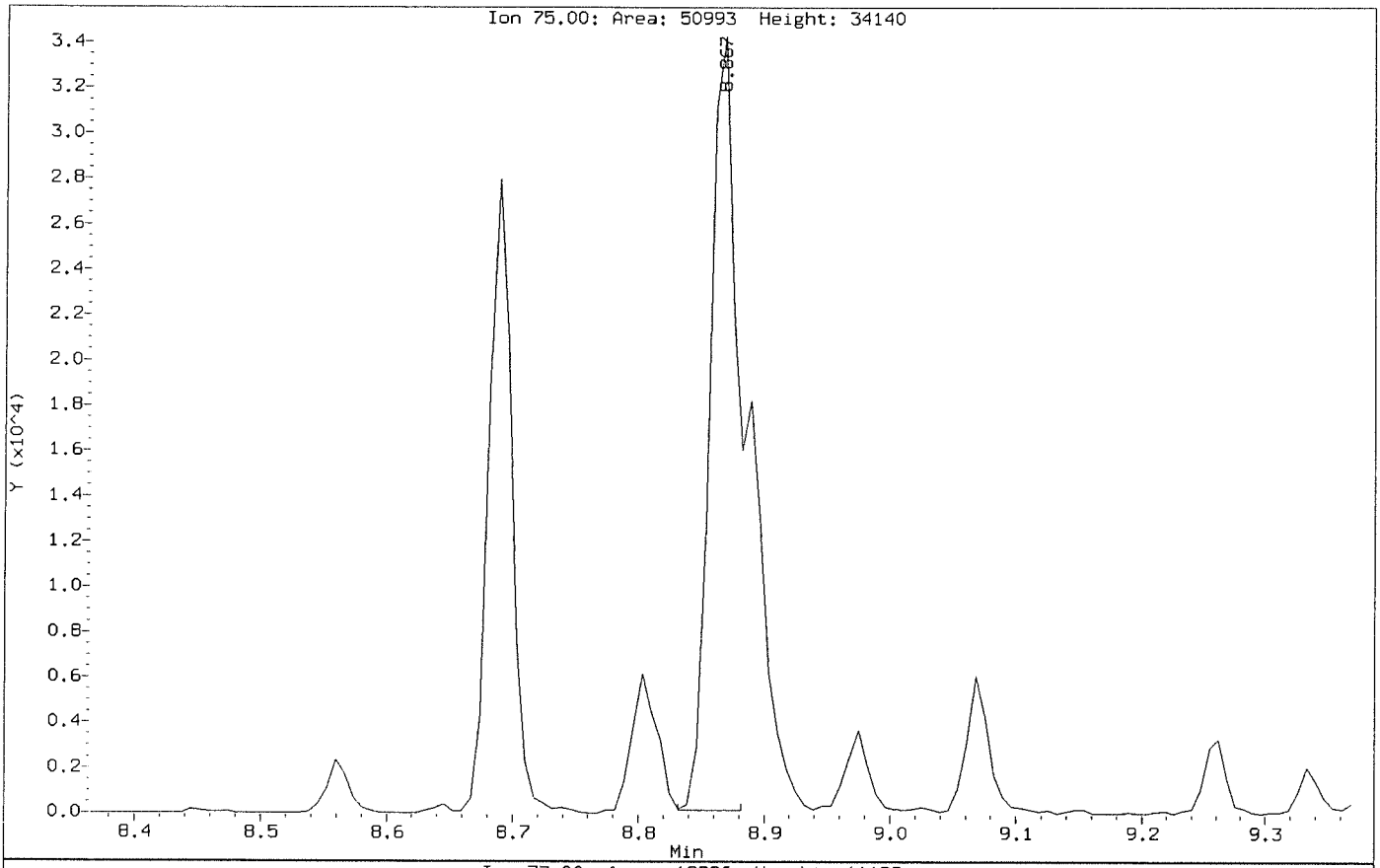
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4

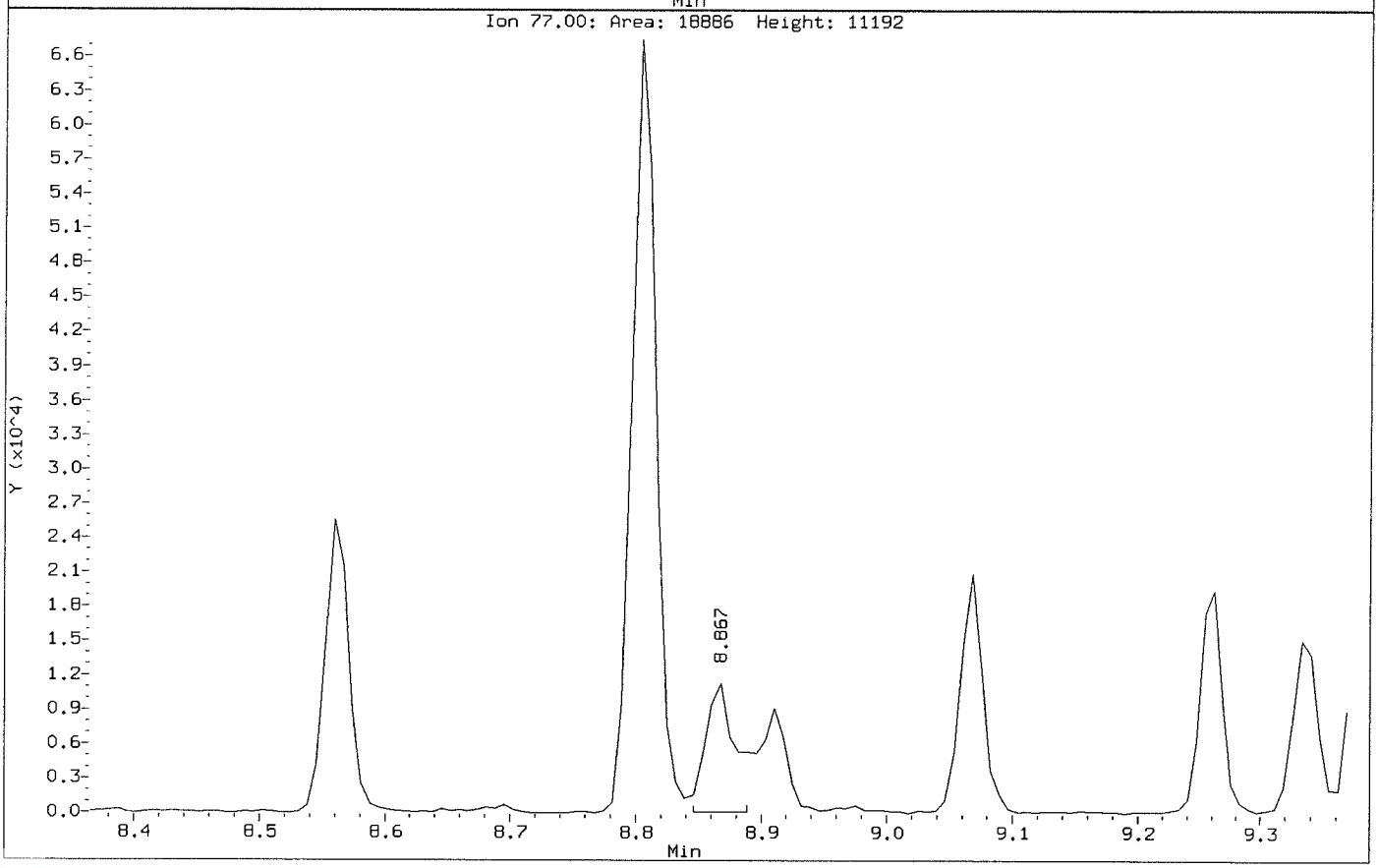




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Injection Date: 18-MAY-2021 13:28
Instrument: voa6.i
Client Sample ID: VSTD020

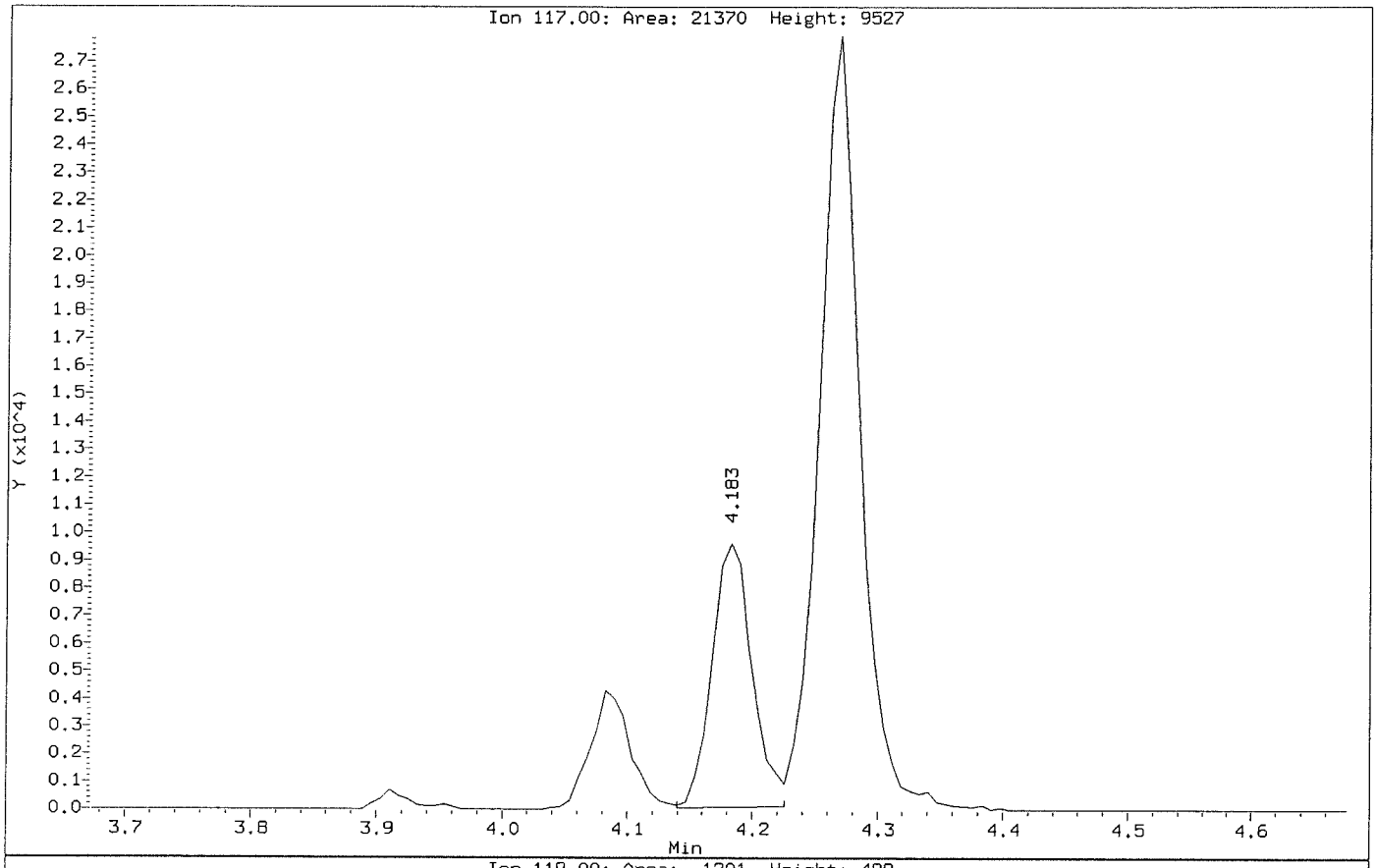
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4

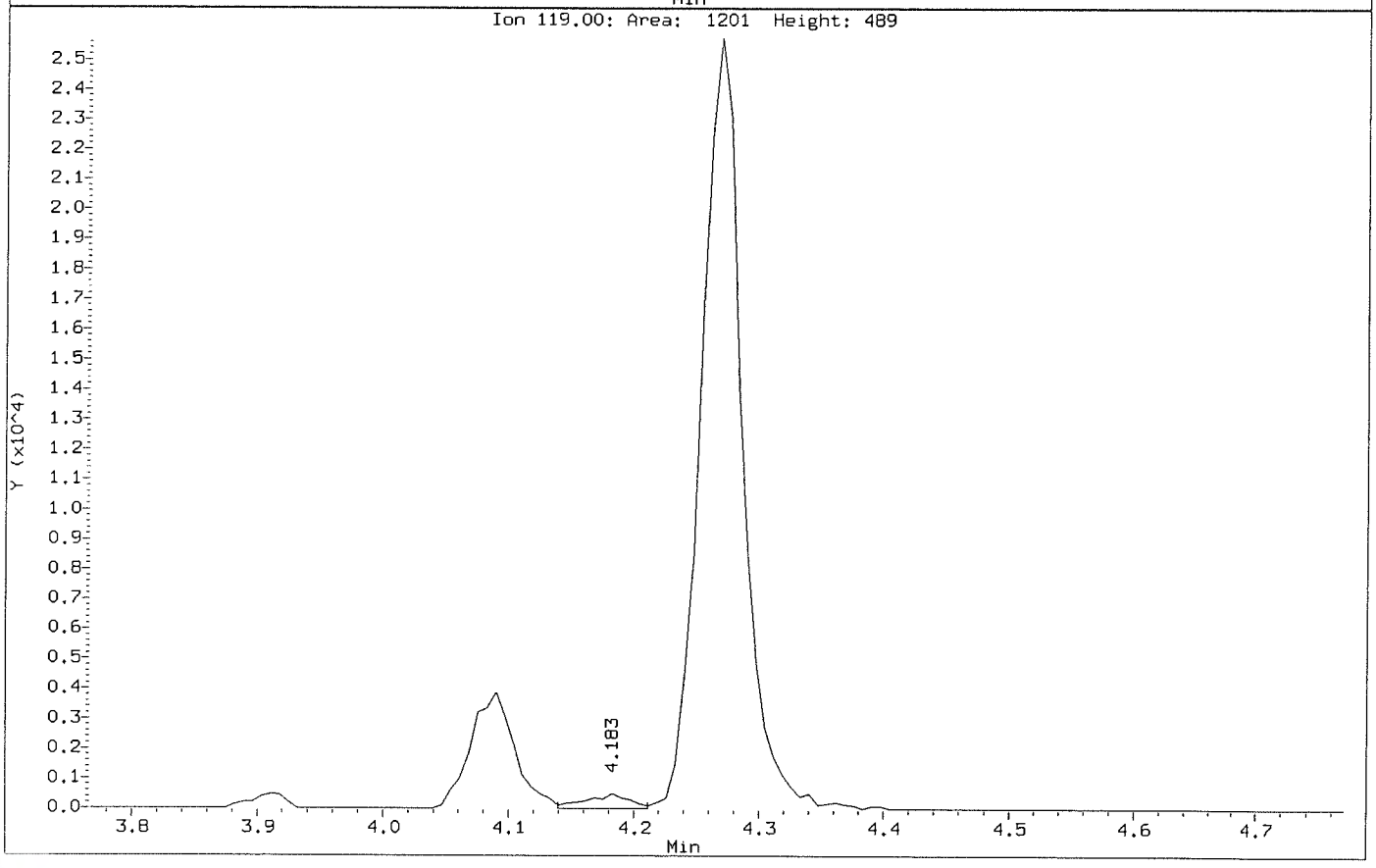




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Injection Date: 18-MAY-2021 13:28
Instrument: voa6.i
Client Sample ID: VSTD020

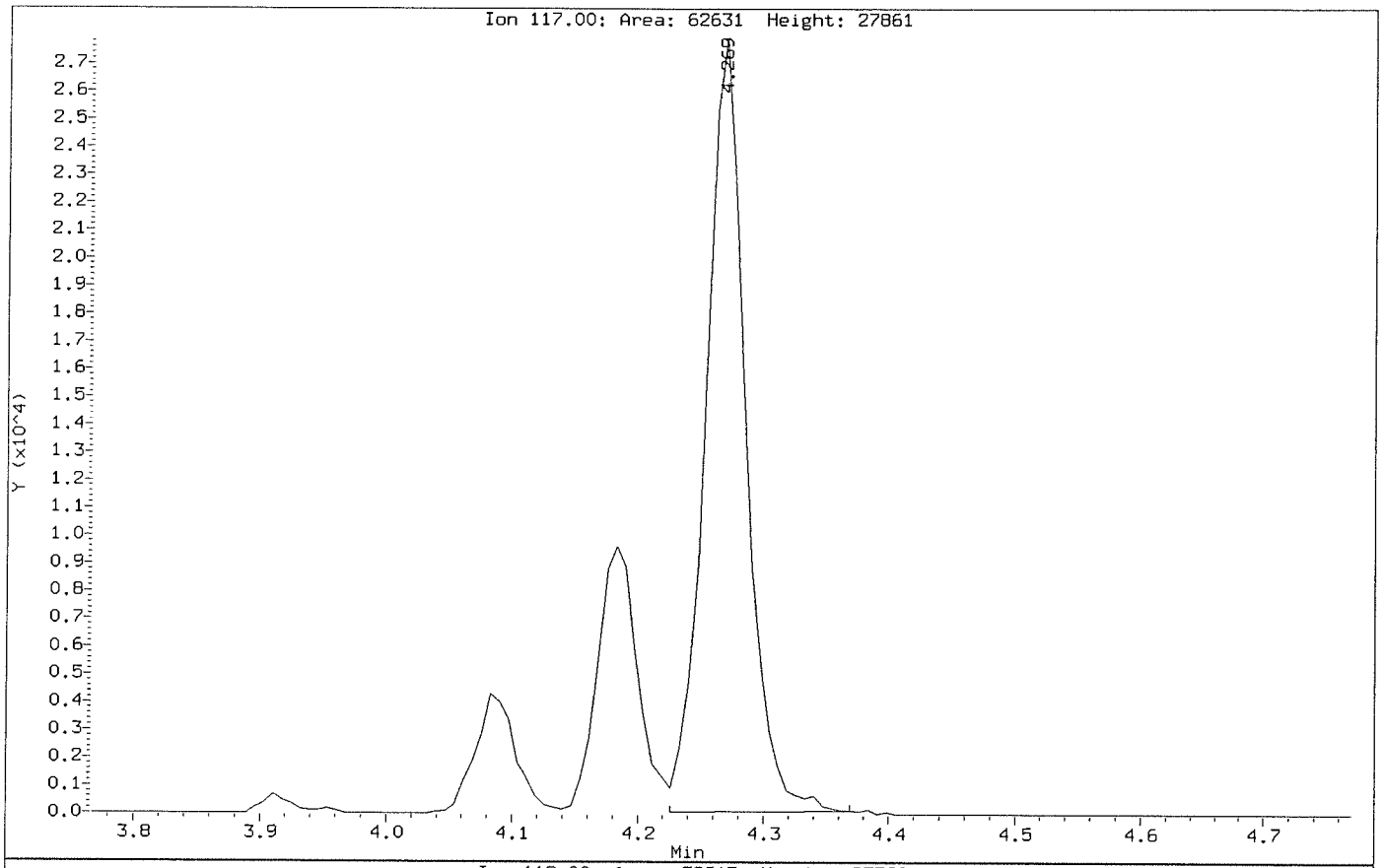
Compound: Carbon Tetrachloride
CAS Number: 56-23-5

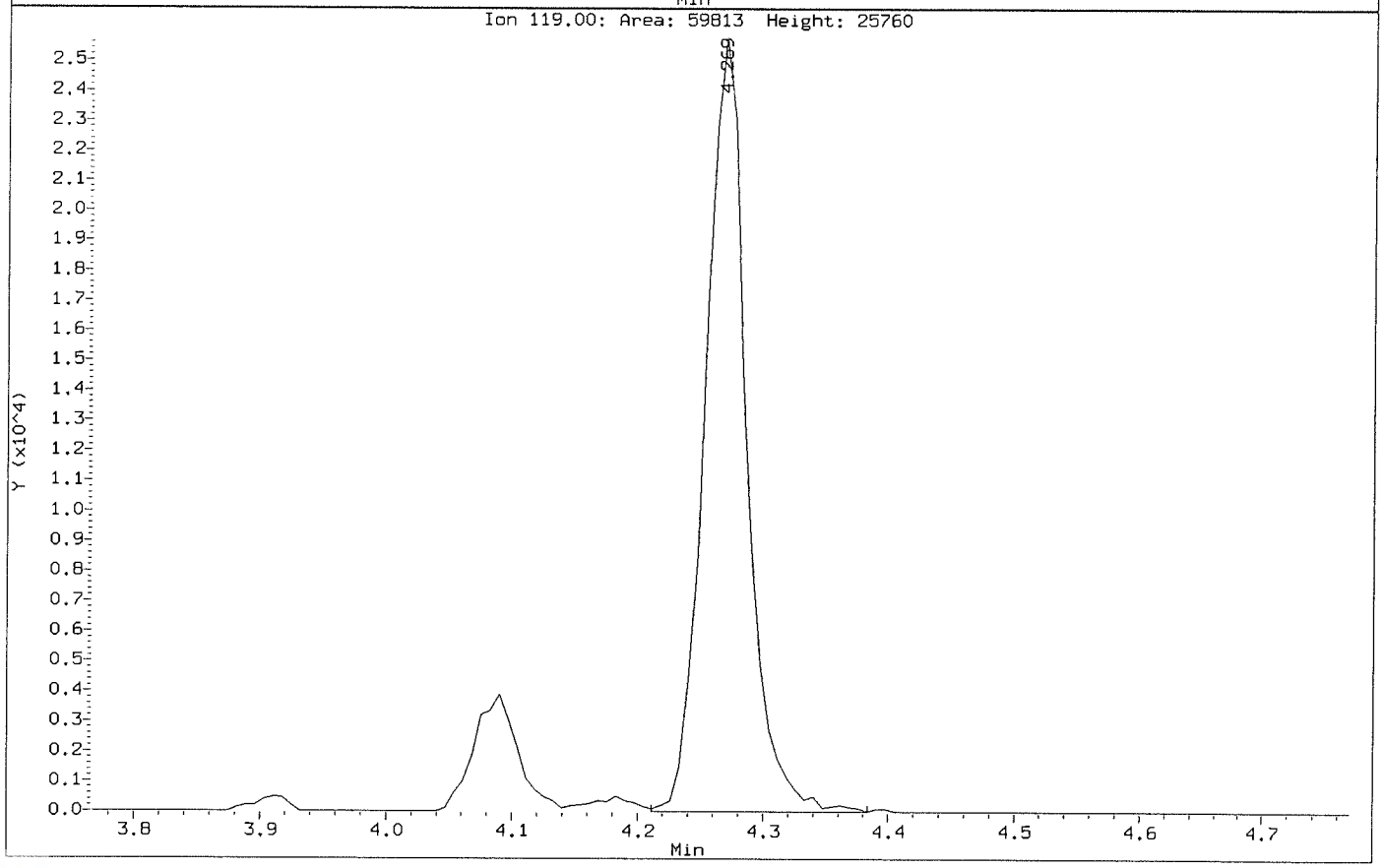




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Injection Date: 18-MAY-2021 13:28
Instrument: voa6.i
Client Sample ID: VSTD020

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051808.D Page 1
Report Date: 22-Jun-2021 08:20

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210518.b\X051808.D
Lab Smp Id: VSDT050 Client Smp ID: VSTD050
Inj Date : 18-MAY-2021 13:49
Operator : PC Inst ID: voa6.i
Smp Info : VSDT050;VSTD050;1;7;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210518.b\8260W.m
Meth Date : 22-Jun-2021 08:20 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 13:28 Cal File: X051807.D
Als bottle: 9 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

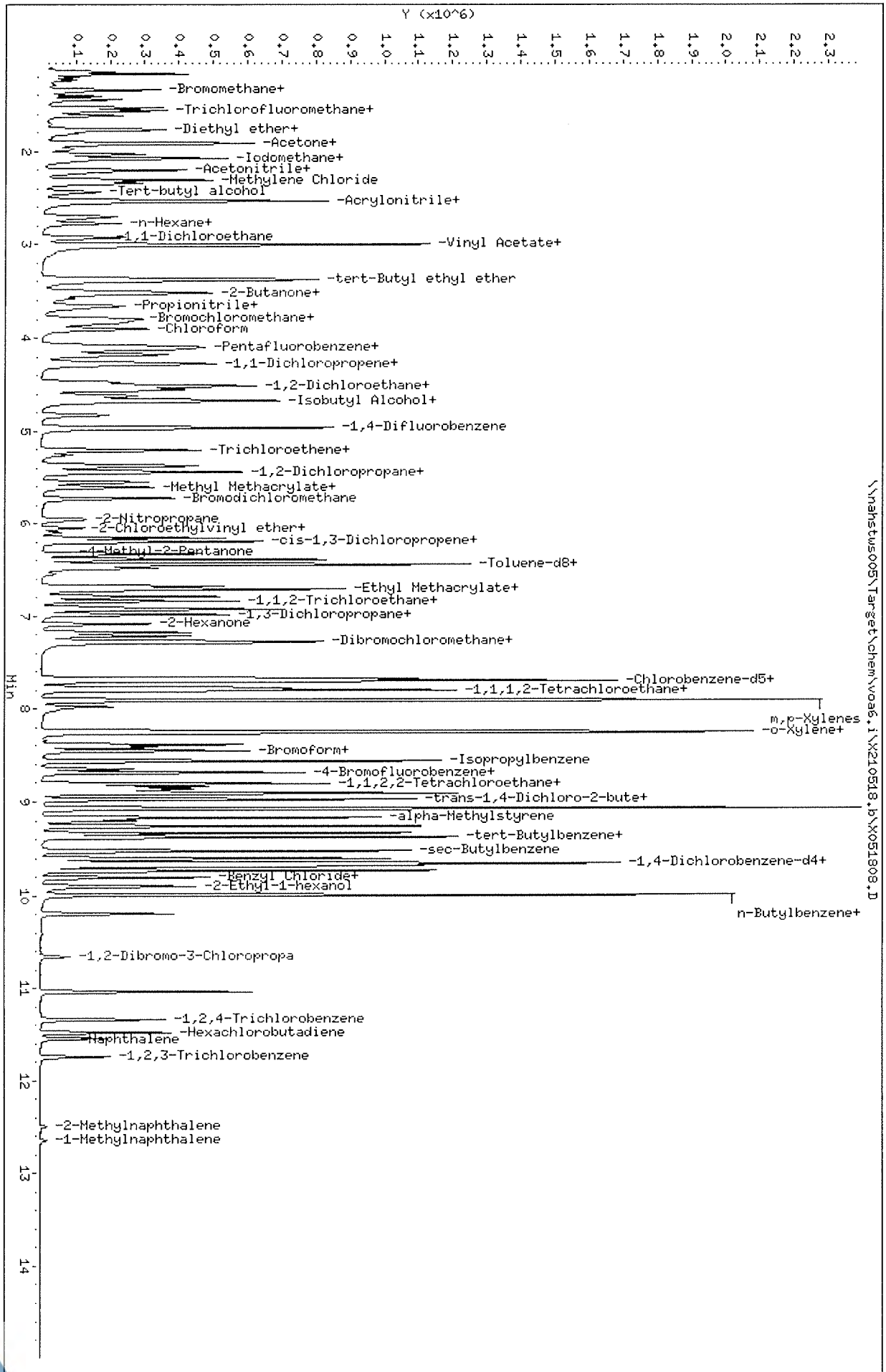
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	271623	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	462076	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	443934	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	234223	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.469	4.469	(1.068)	177225	50.0000	50.15
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	197985	50.0000	47.25
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	145001	50.0000	47.91
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	483036	50.0000	44.41
60 1,1,1,2-Tetrachloroethane	131	7.771	7.771	(1.013)	158680	50.0000	49.06
31 1,1,1-Trichloroethane	97	4.082	4.082	(0.976)	219680	50.0000	47.55
68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	192852	50.0000	49.70
138 Freon TF	101	1.912	1.912	(0.457)	103127	50.0000	40.01
53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	126274	50.0000	48.96
22 1,1-Dichloroethane	63	2.922	2.922	(0.699)	244803	50.0000	48.66
11 1,1-Dichloroethene	96	1.919	1.919	(0.459)	113858	50.0000	41.91
32 1,1-Dichloropropene	75	4.283	4.283	(0.863)	169476	50.0000	42.81
93 1,2,3-Trichlorobenzene	180	11.739	11.739	(1.215)	53322	50.0000	47.87
71 1,2,3-Trichloropropane	75	8.860	8.860	(0.917)	161438	50.0000	50.79(MH)
90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	93881	50.0000	44.87
79 1,2,4-Trimethylbenzene	105	9.375	9.375	(0.970)	554335	50.0000	46.53
89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.103)	14297	50.0000	45.43
57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	158974	50.0000	51.29

Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051808.D Page 2
Report Date: 22-Jun-2021 08:20

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	296098	50.0000	45.10
33	1,2-Dichloroethane	62	4.555	4.555	(0.918)	227654	50.0000	50.10
42	1,2-Dichloropropane	63	5.436	5.436	(1.095)	149596	50.0000	48.17
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	547543	50.0000	46.83
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	319195	50.0000	47.43
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	251676	50.0000	49.85
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	328636	50.0000	47.76
26	2,2-Dichloropropane	77	3.516	3.516	(0.841)	208486	50.0000	46.33
24	2-Butanone	43	3.581	3.581	(0.856)	99370	100.000	99.10
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	468855	50.0000	44.91
52	2-Hexanone	43	7.083	7.083	(0.923)	184352	100.000	97.93
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	567359	50.0000	46.61
82	p-Isopropyltoluene	119	9.648	9.648	(0.999)	521890	50.0000	45.12
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	268097	100.000	94.82
10	Acetone	43	1.976	1.976	(0.473)	67628	100.000	98.41
37	Benzene	78	4.512	4.512	(0.909)	558350	50.0000	48.84
74	Bromobenzene	156	8.802	8.802	(0.911)	182153	50.0000	46.65
29	Bromochloromethane	128	3.795	3.795	(0.908)	81173	50.0000	49.03
39	Bromodichloromethane	83	5.729	5.729	(1.154)	217522	50.0000	48.72
66	Bromoform	173	8.408	8.408	(1.096)	108857	50.0000	50.70
6	Bromomethane	94	1.339	1.339	(0.320)	137904	50.0000	48.28
19	Carbon Disulfide	76	2.069	2.069	(0.495)	618017	100.000	96.57
34	Carbon Tetrachloride	117	4.268	4.268	(0.860)	174579	50.0000	43.34(H)
59	Chlorobenzene	112	7.692	7.692	(1.003)	415148	50.0000	47.69
7	Chloroethane	64	1.403	1.403	(0.336)	91299	50.0000	44.40
28	Chloroform	83	3.910	3.910	(0.935)	276573	50.0000	47.92
3	Chloromethane	50	1.081	1.081	(0.258)	144469	50.0000	49.31
27	cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	150804	50.0000	48.17
46	cis-1,3-Dichloropropene	75	6.152	6.152	(1.240)	254601	50.0000	50.25
55	Dibromochloromethane	129	7.176	7.176	(0.936)	176711	50.0000	50.92
44	Dibromomethane	93	5.550	5.550	(1.118)	108491	50.0000	48.74
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	146727	50.0000	43.21
61	Ethylbenzene	106	7.800	7.800	(1.017)	206868	50.0000	48.08
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	54907	50.0000	39.76
67	Isopropylbenzene	105	8.559	8.559	(1.116)	617711	50.0000	46.98
62	m,p-Xylenes	106	7.907	7.907	(1.031)	542165	100.000	97.79
17	Methylene Chloride	84	2.306	2.306	(0.551)	132553	50.0000	48.66
87	n-Butylbenzene	91	9.991	9.991	(1.034)	487657	50.0000	44.33
73	n-Propylbenzene	91	8.910	8.910	(0.922)	762402	50.0000	45.95
92	Naphthalene	128	11.546	11.546	(1.195)	135654	50.0000	44.37
63	o-Xylene	106	8.244	8.244	(1.075)	260680	50.0000	48.34
81	sec-Butylbenzene	105	9.519	9.519	(0.985)	600068	50.0000	43.70
64	Styrene	104	8.258	8.258	(1.077)	468440	50.0000	46.43
78	tert-Butylbenzene	119	9.340	9.340	(0.967)	433704	50.0000	43.71
56	Tetrachloroethene	164	6.926	6.926	(0.903)	113805	50.0000	46.13
50	Toluene	91	6.446	6.446	(0.840)	631628	50.0000	49.31
20	trans-1,2-Dichloroethene	96	2.535	2.535	(0.606)	121902	50.0000	46.64
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	240773	50.0000	54.33
38	Trichloroethene	130	5.207	5.207	(1.049)	143217	50.0000	46.80
8	Trichlorofluoromethane	101	1.561	1.561	(0.373)	218785	50.0000	41.90
5	Vinyl Chloride	62	1.145	1.145	(0.274)	141344	50.0000	43.10

QC Flag Legend

M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

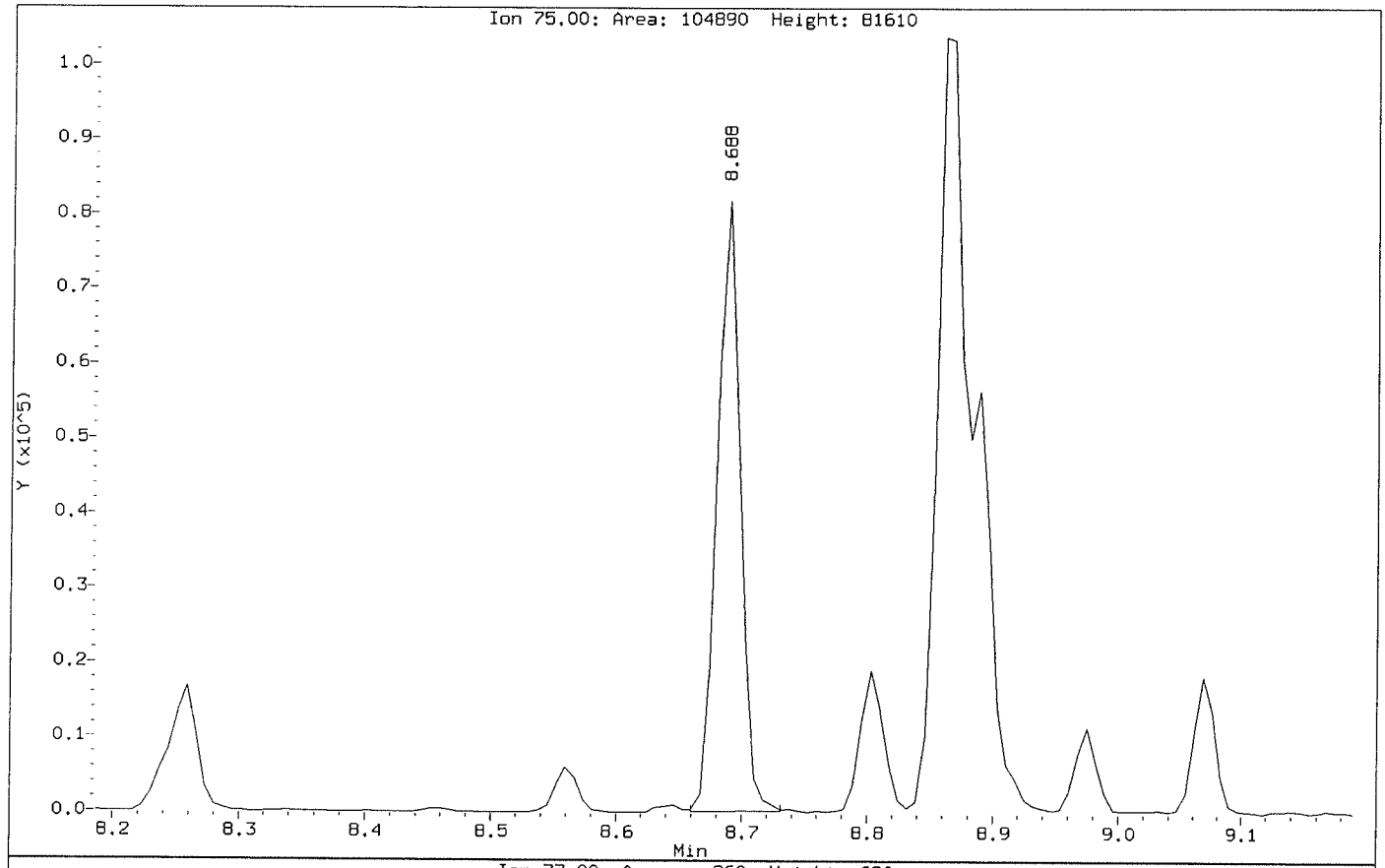


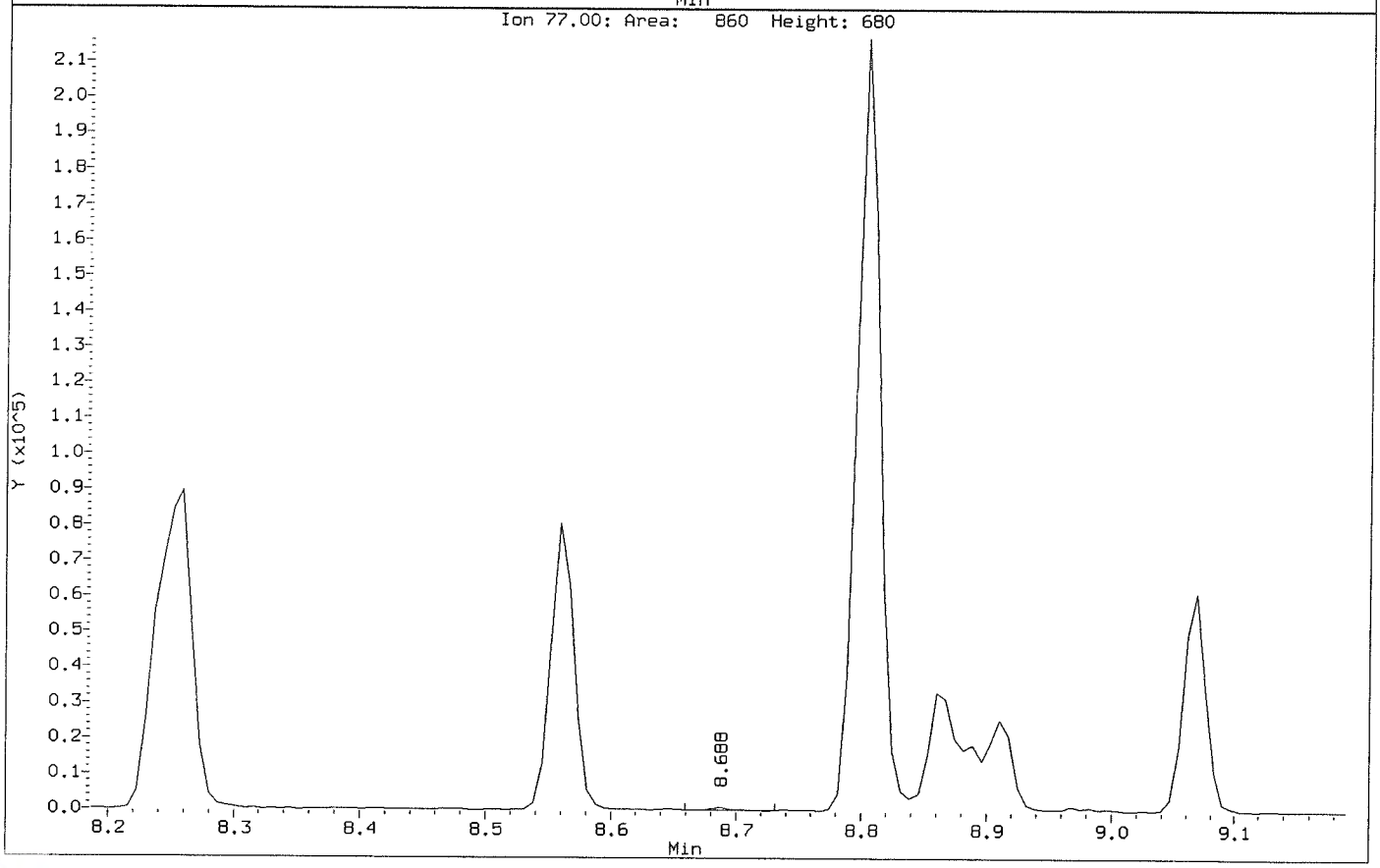
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Date : 18-MAY-2021 13:49
Client ID: VSTD050
Sample Info: VSDT050;VSTD050;1;7;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\Before\X051808.D
Injection Date: 18-MAY-2021 13:49
Instrument: voa6.i
Client Sample ID: VSTD050

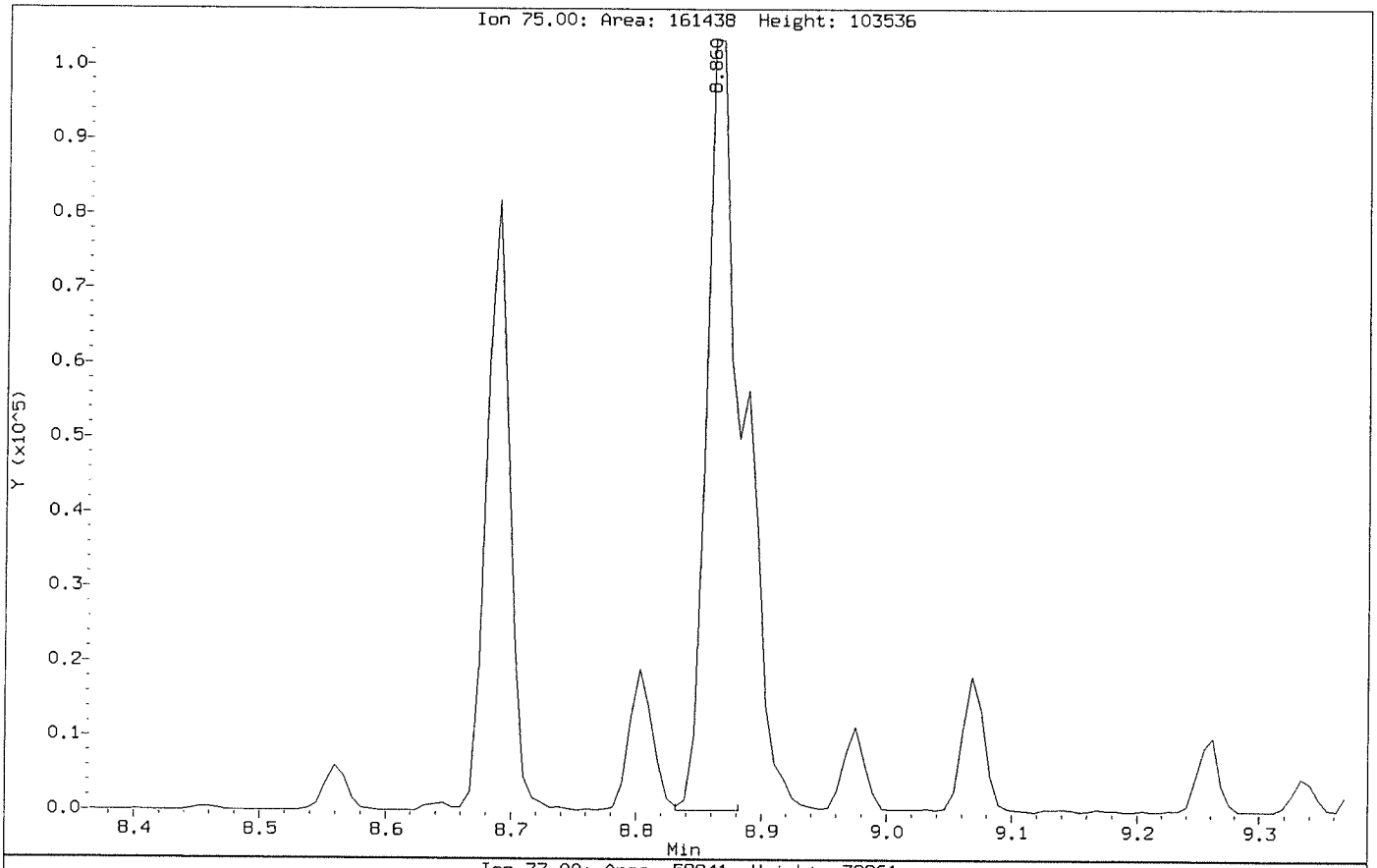
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4

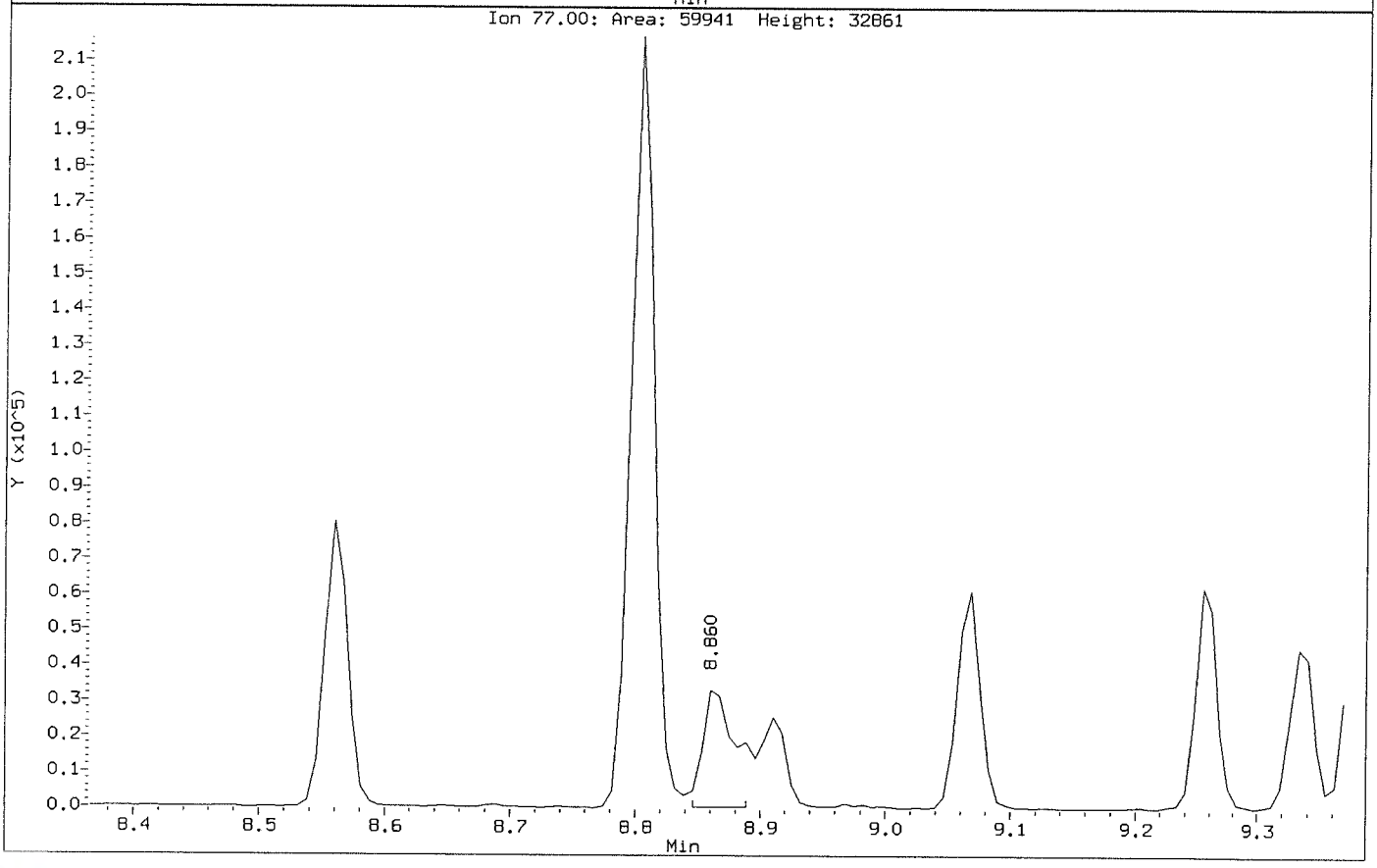




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Instrument: voa6.i
Client Sample ID: VSTD050

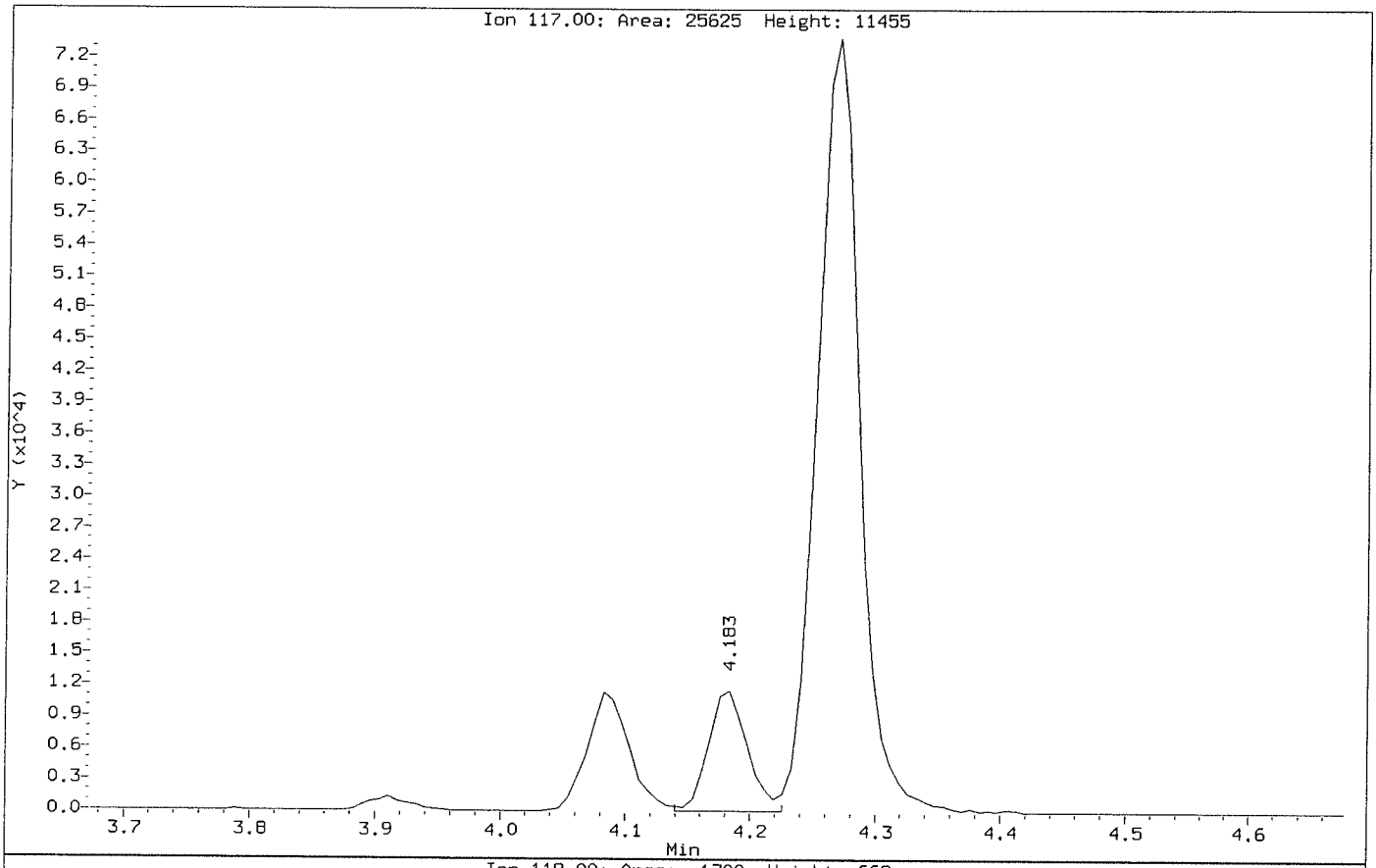
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4

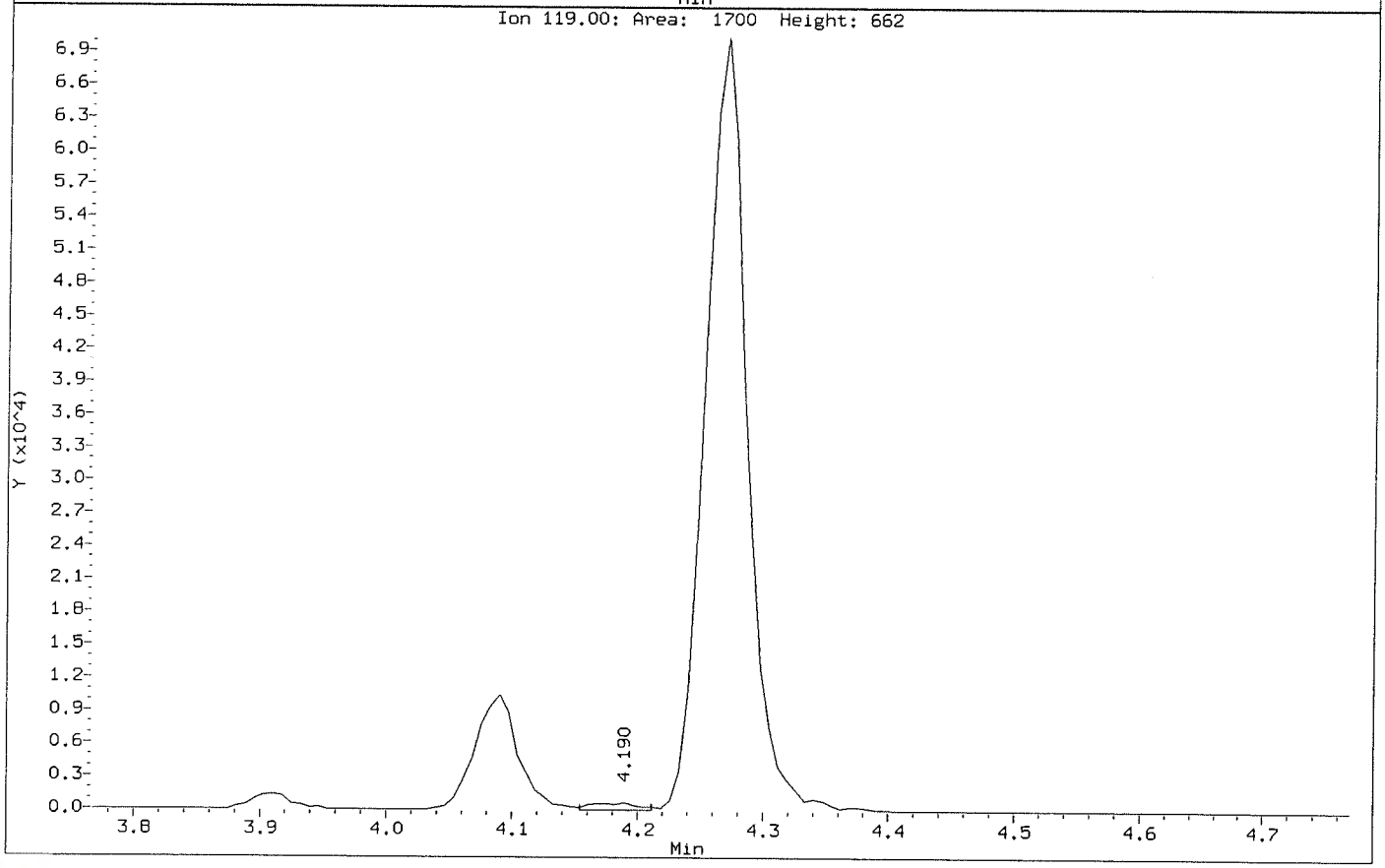




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Injection Date: 18-MAY-2021 13:49
Instrument: voa6.i
Client Sample ID: VSTD050

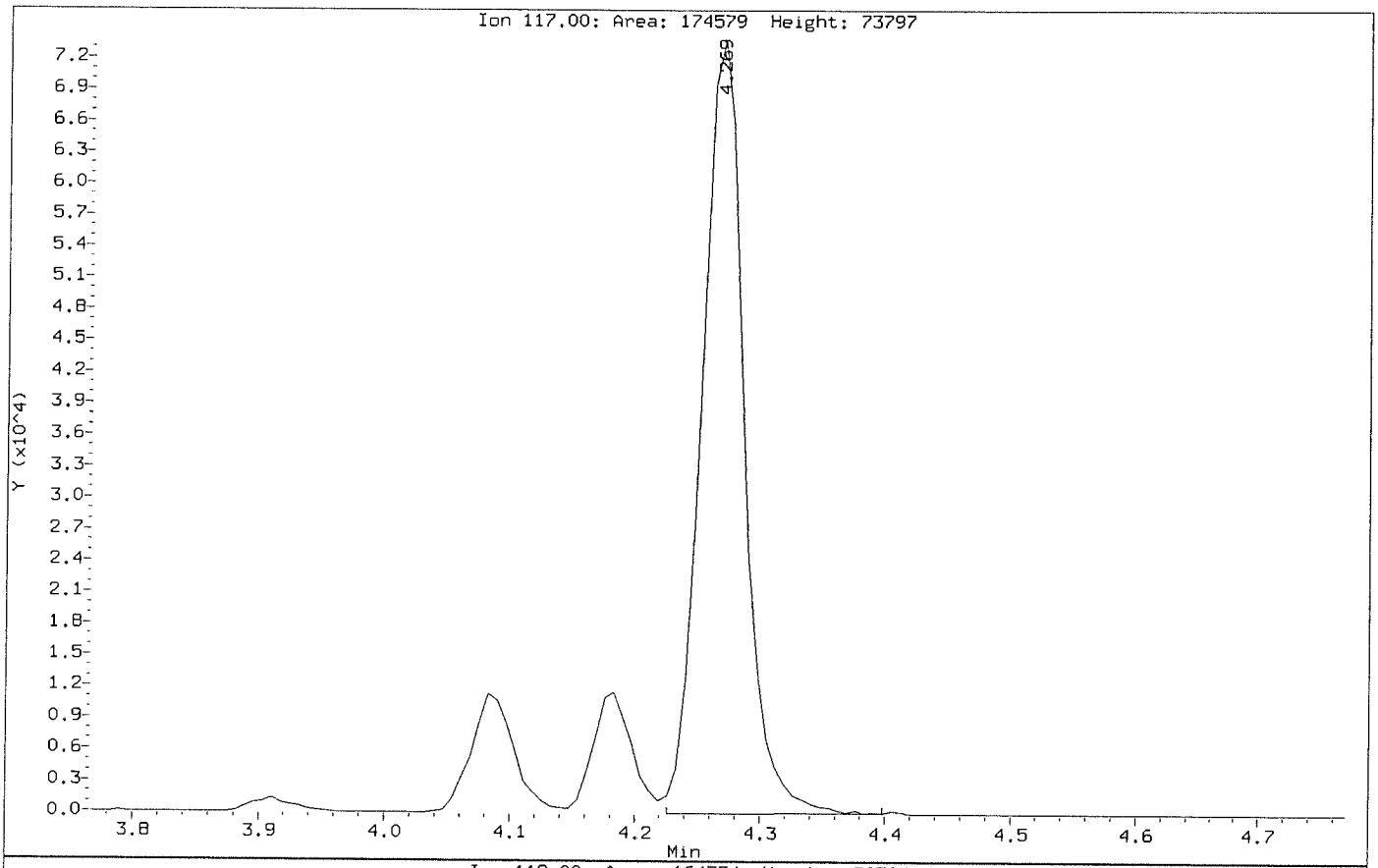
Compound: Carbon Tetrachloride
CAS Number: 56-23-5

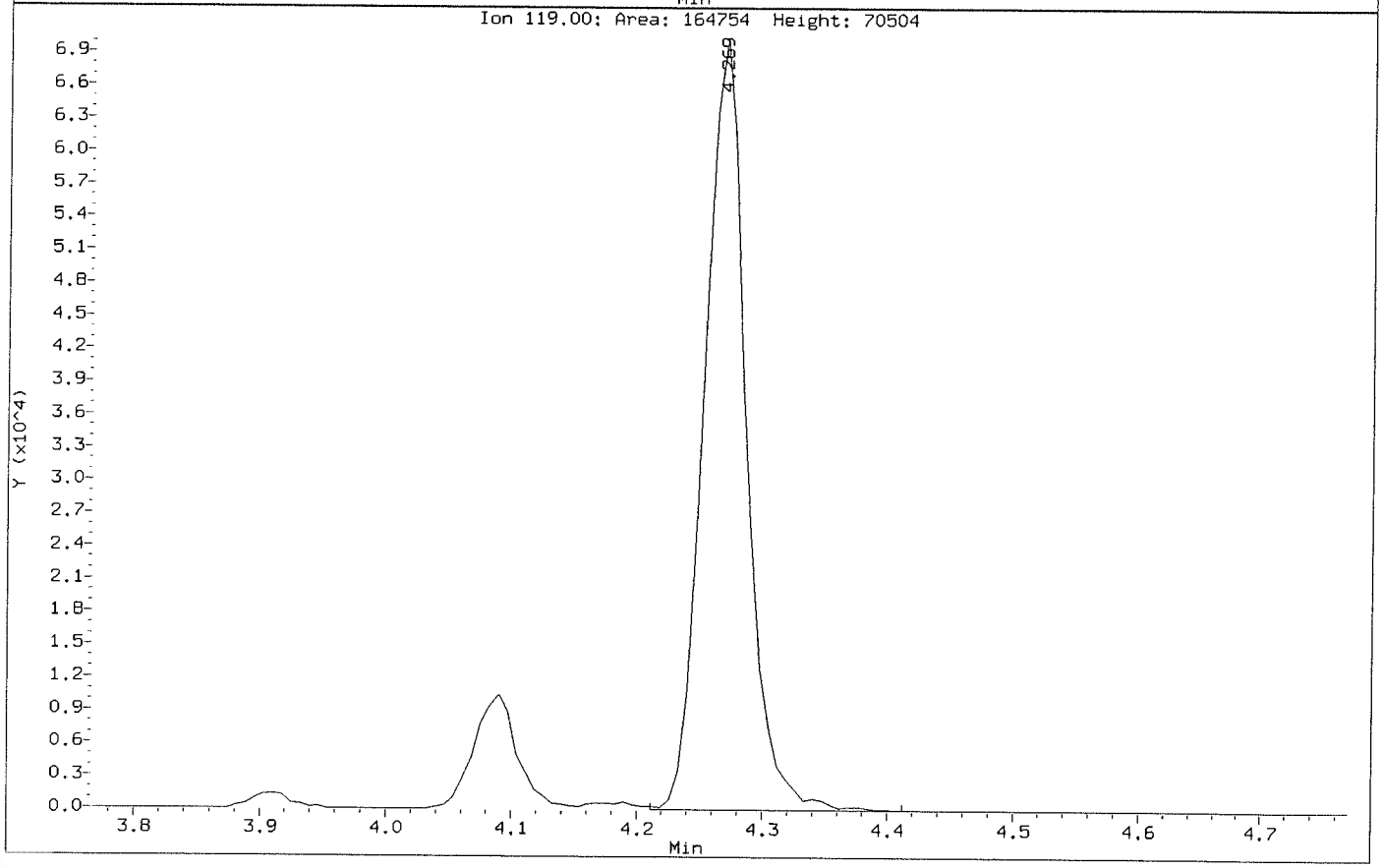




Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\X051808.D
Injection Date: 18-MAY-2021 13:49
Instrument: voa6.i
Client Sample ID: VSTD050

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210518.b\X051809.D
Lab Smp Id: VSDT100 Client Smp ID: VSTD100
Inj Date : 18-MAY-2021 14:10
Operator : PC Inst ID: voa6.i
Smp Info : VSDT100;VSTD100;1;8;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210518.b\8260W.m
Meth Date : 22-Jun-2021 08:20 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 10 Calibration Sample, Level: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

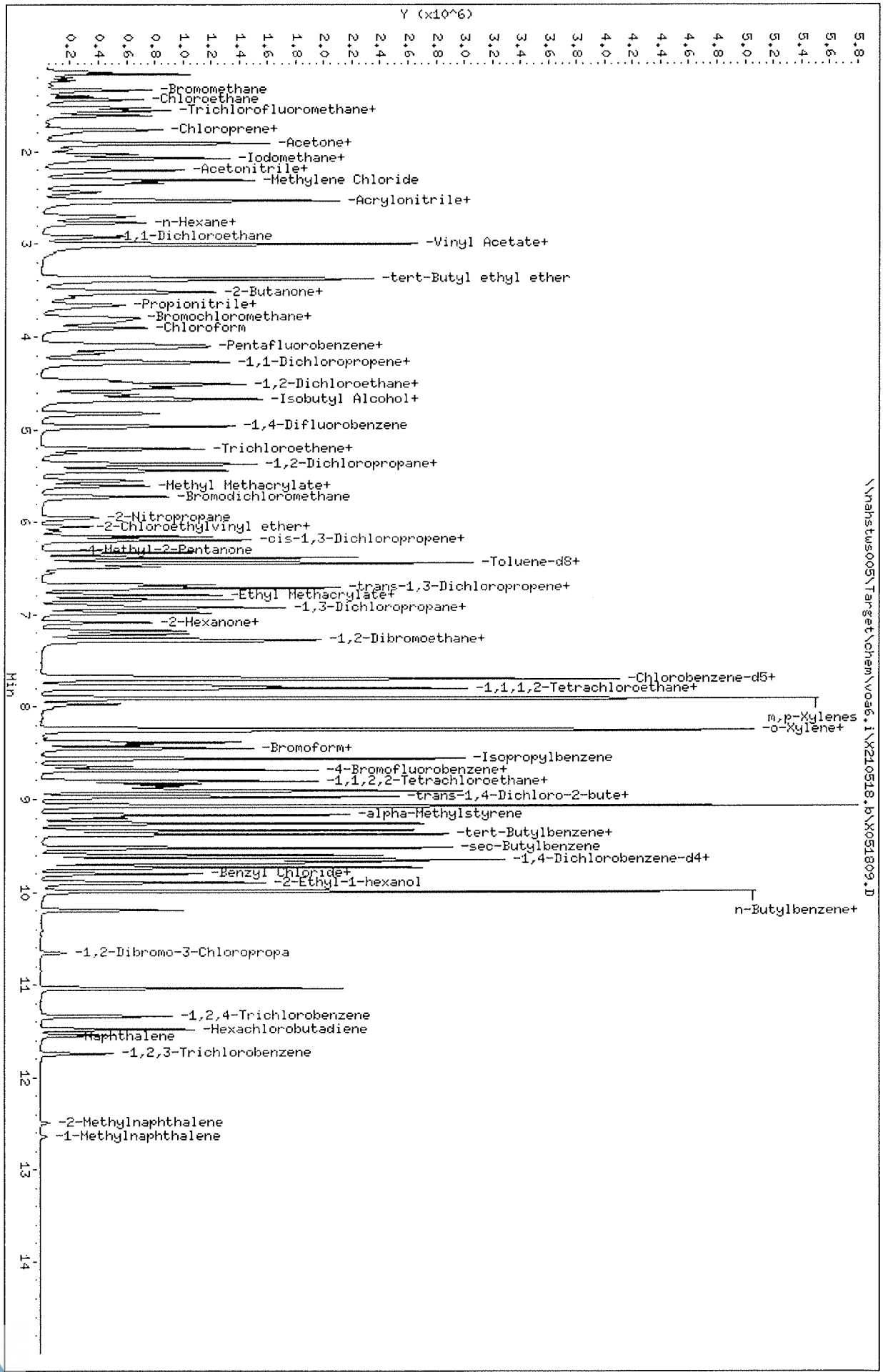
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	314001	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	515778	50.0000	
*	47 Chlorobenzene-d5	117	7.670	7.670	(1.000)	499074	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	263690	50.0000	
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	428979	100.000	106.40
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	494712	100.000	104.87
$	30 Dibromofluoromethane	113	4.103	4.103	(0.981)	355480	100.000	101.86
$	48 Toluene-d8	98	6.388	6.388	(0.833)	1269181	100.000	102.44
	60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	370212	100.000	101.81
	31 1,1,1-Trichloroethane	97	4.082	4.082	(0.976)	563928	100.000	105.58
	68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	443127	100.000	101.99
	138 Freon TF	101	1.919	1.919	(0.459)	289976	100.000	97.33
	53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	297064	100.000	102.46
	22 1,1-Dichloroethane	63	2.921	2.921	(0.699)	592075	100.000	101.82
	11 1,1-Dichloroethene	96	1.911	1.911	(0.457)	287208	100.000	91.46
	32 1,1-Dichloropropene	75	4.282	4.282	(0.863)	458513	100.000	103.77
	93 1,2,3-Trichlorobenzene	180	11.739	11.739	(1.215)	129422	100.000	99.33
	71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	370826	100.000	104.28(MH)
	90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	230076	100.000	94.78
	79 1,2,4-Trimethylbenzene	105	9.375	9.375	(0.970)	1381832	100.000	103.03
	89 1,2-Dibromo-3-Chloropropane	155	10.657	10.657	(1.103)	35357	100.000	97.87
	57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	370175	100.000	106.24

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	710748	100.000	96.16
33	1,2-Dichloroethane	62	4.555	4.555	(0.918)	496566	100.000	97.91
42	1,2-Dichloropropane	63	5.436	5.436	(1.095)	346292	100.000	99.90
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	1375282	100.000	104.48
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	759728	100.000	100.28
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	570759	100.000	100.57
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	774191	100.000	99.68
26	2,2-Dichloropropane	77	3.509	3.509	(0.839)	542311	100.000	104.25
24	2-Butanone	43	3.580	3.580	(0.856)	243094	200.000	209.73(A)
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	1122830	100.000	95.54
52	2-Hexanone	43	7.090	7.090	(0.924)	424072	200.000	200.67(A)
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	1388921	100.000	101.35
82	p-Isopropyltoluene	119	9.647	9.647	(0.999)	1372597	100.000	105.42
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	642103	200.000	201.91(A)
10	Acetone	43	1.976	1.976	(0.473)	161640	200.000	208.98(A)
37	Benzene	78	4.512	4.512	(0.909)	1325440	100.000	103.87
74	Bromobenzene	156	8.802	8.802	(0.911)	434635	100.000	98.87
29	Bromochloromethane	128	3.795	3.795	(0.908)	192522	100.000	100.60
39	Bromodichloromethane	83	5.729	5.729	(1.154)	522723	100.000	104.89
66	Bromoform	173	8.408	8.408	(1.096)	260736	100.000	108.02
6	Bromomethane	94	1.338	1.338	(0.320)	330862	100.000	100.72
19	Carbon Disulfide	76	2.069	2.069	(0.495)	1515397	200.000	204.83(A)
34	Carbon Tetrachloride	117	4.268	4.268	(0.860)	477105	100.000	106.12(H)
59	Chlorobenzene	112	7.692	7.692	(1.003)	991098	100.000	101.27
7	Chloroethane	64	1.403	1.403	(0.336)	231805	100.000	97.52
28	Chloroform	83	3.910	3.910	(0.935)	675366	100.000	101.23
3	Chloromethane	50	1.073	1.073	(0.257)	323129	100.000	95.20
27	cis-1,2-Dichloroethene	96	3.523	3.523	(0.842)	374274	100.000	103.42
46	cis-1,3-Dichloropropene	75	6.152	6.152	(1.240)	610311	100.000	107.93
55	Dibromochloromethane	129	7.176	7.176	(0.936)	418487	100.000	107.28
44	Dibromomethane	93	5.550	5.550	(1.118)	257462	100.000	103.63
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	385804	100.000	95.65
61	Ethylbenzene	106	7.799	7.799	(1.017)	512156	100.000	105.90
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	159233	100.000	97.40
67	Isopropylbenzene	105	8.559	8.559	(1.116)	1609936	100.000	108.92
62	m,p-Xylenes	106	7.907	7.907	(1.031)	1348570	200.000	216.38(A)
17	Methylene Chloride	84	2.305	2.305	(0.551)	327997	100.000	104.16
87	n-Butylbenzene	91	9.991	9.991	(1.034)	1312086	100.000	105.96
73	n-Propylbenzene	91	8.910	8.910	(0.922)	1949961	100.000	104.41
92	Naphthalene	128	11.539	11.539	(1.194)	338098	100.000	94.47
63	o-Xylene	106	8.244	8.244	(1.075)	632124	100.000	104.28
81	sec-Butylbenzene	105	9.519	9.519	(0.985)	1619983	100.000	104.81
64	Styrene	104	8.258	8.258	(1.077)	1137742	100.000	98.28
78	tert-Butylbenzene	119	9.339	9.339	(0.967)	1137349	100.000	101.82
56	Tetrachloroethene	164	6.926	6.926	(0.903)	296905	100.000	107.06
50	Toluene	91	6.446	6.446	(0.840)	1538042	100.000	106.81
20	trans-1,2-Dichloroethene	96	2.527	2.527	(0.604)	308131	100.000	101.99
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	546481	100.000	110.47
38	Trichloroethene	130	5.206	5.206	(1.049)	347501	100.000	101.74
8	Trichlorofluoromethane	101	1.560	1.560	(0.373)	566576	100.000	93.87
5	Vinyl Chloride	62	1.145	1.145	(0.274)	347786	100.000	91.73

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

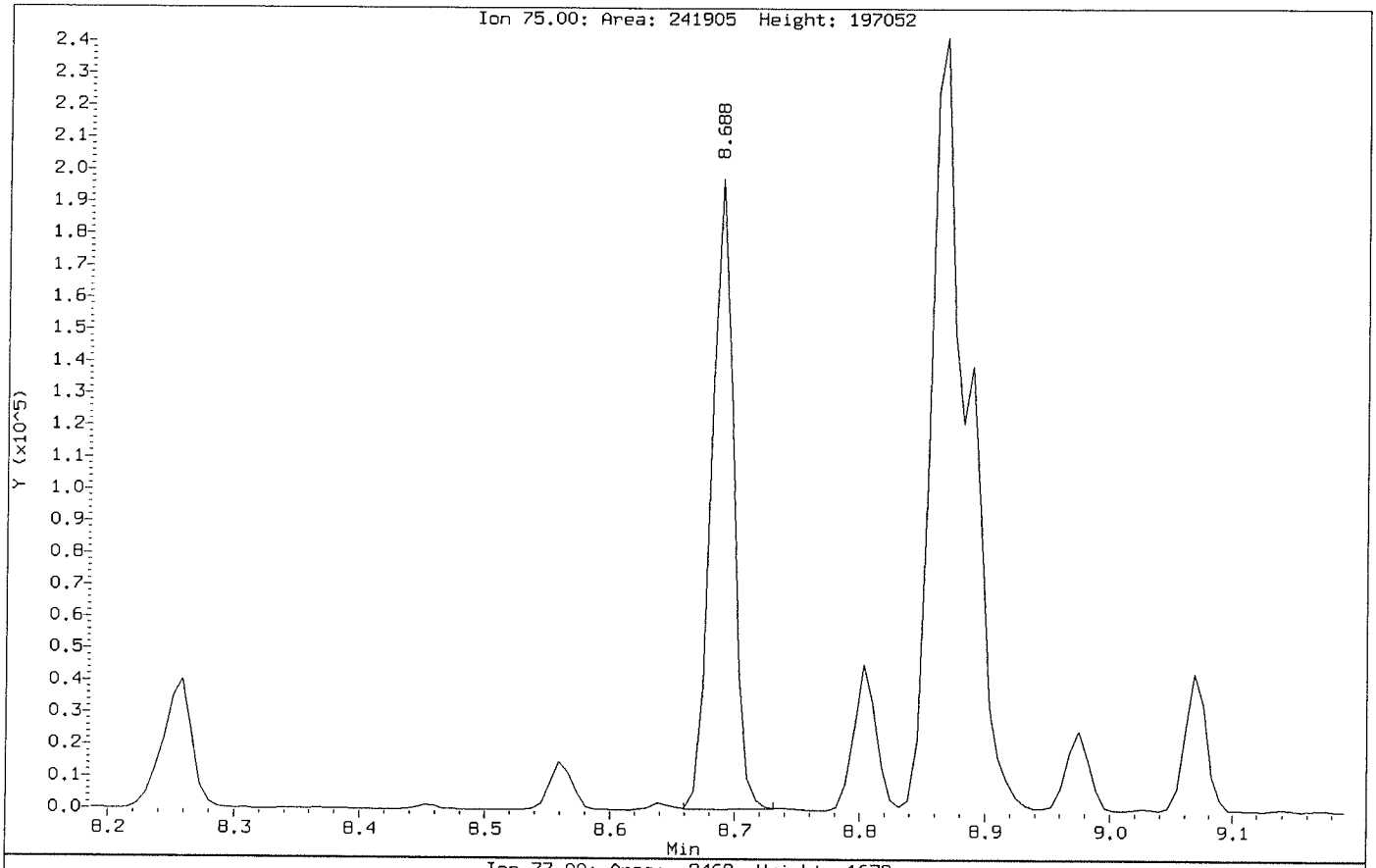


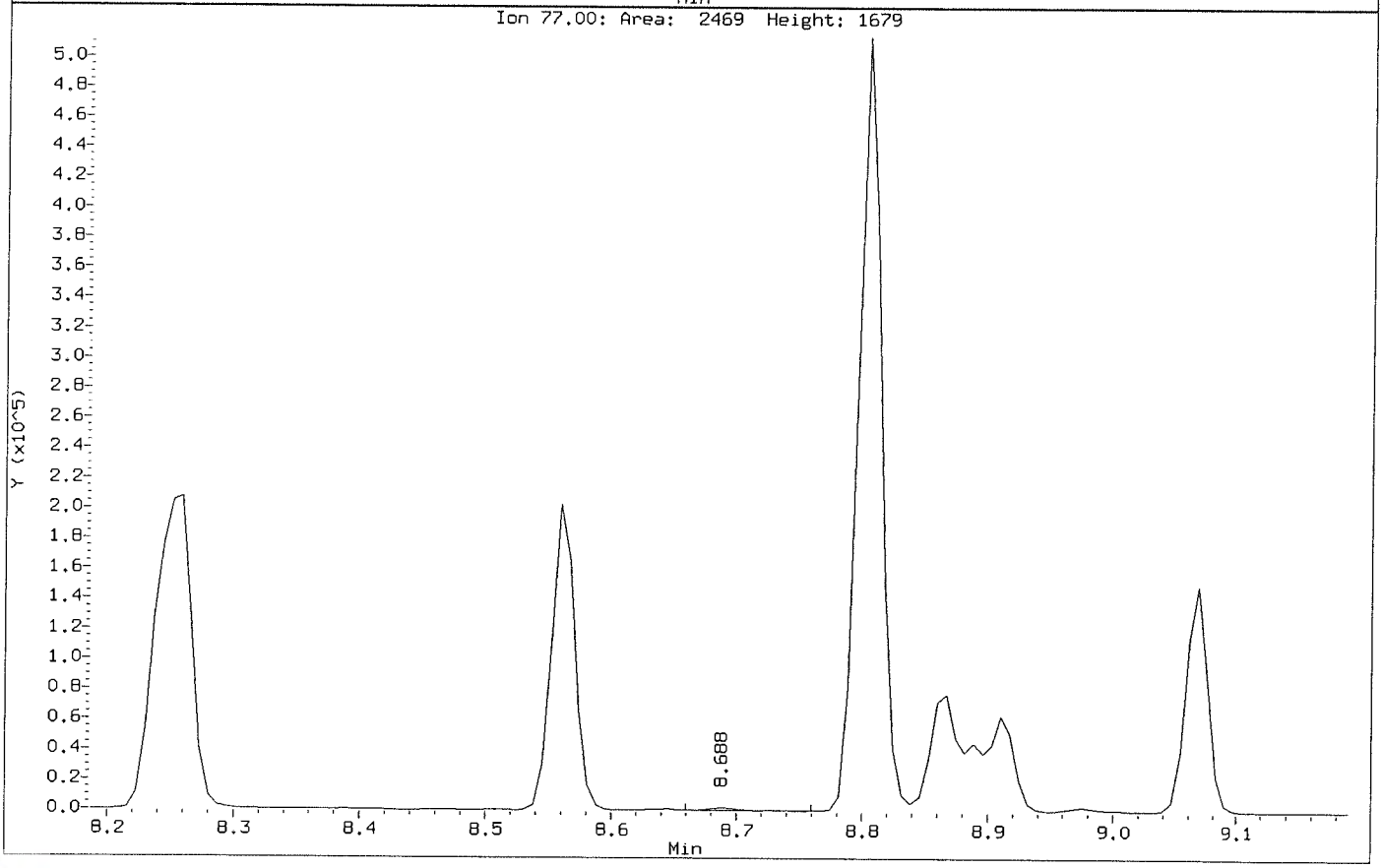
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Client ID: VSTD100
Sample Info: VSDT100;VSTD100;1;8;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\Before\X051809.D
Injection Date: 18-MAY-2021 14:10
Instrument: voa6.i
Client Sample ID: VSTD100

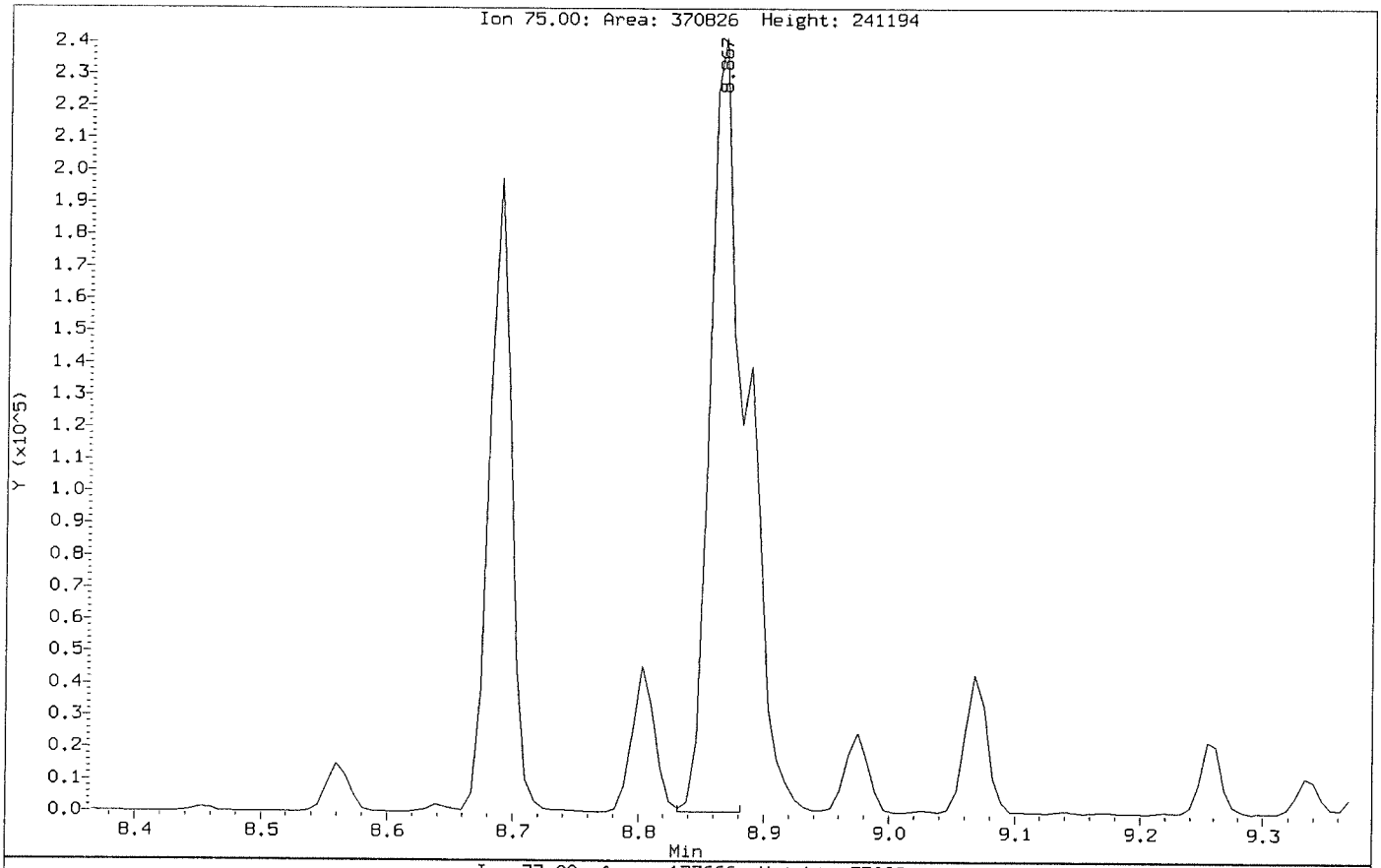
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4

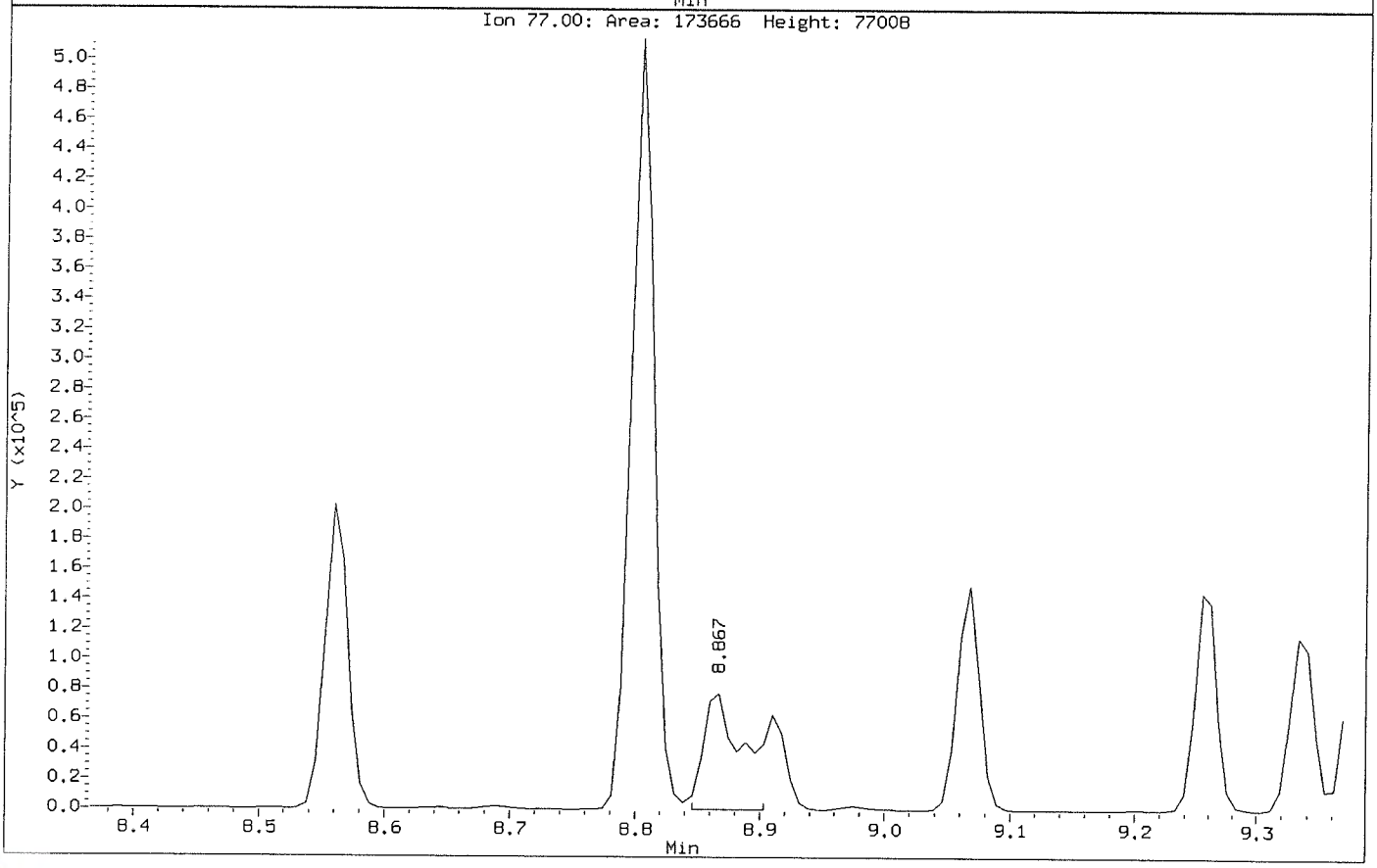




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Instrument: voa6.i
Client Sample ID: VSTD100

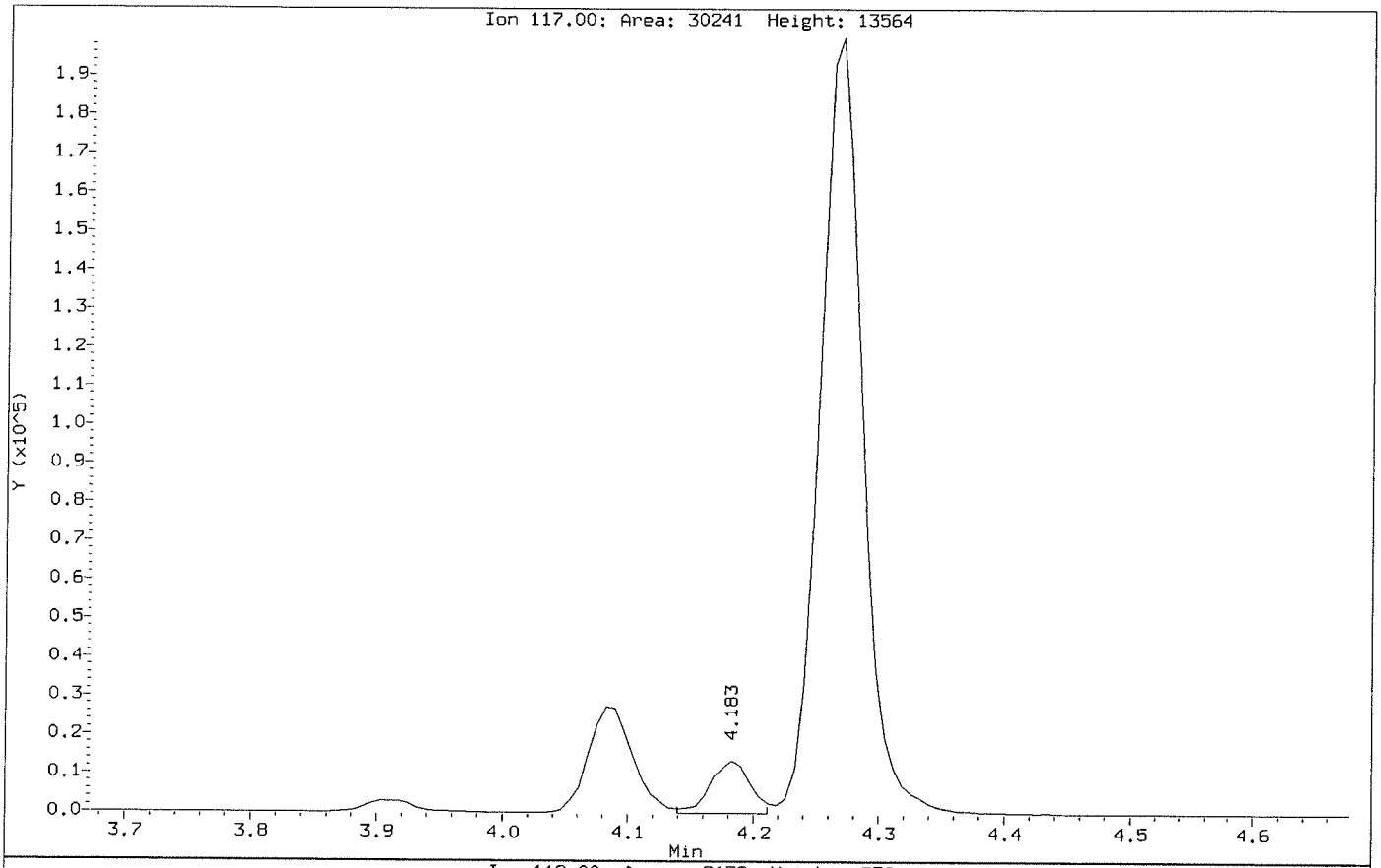
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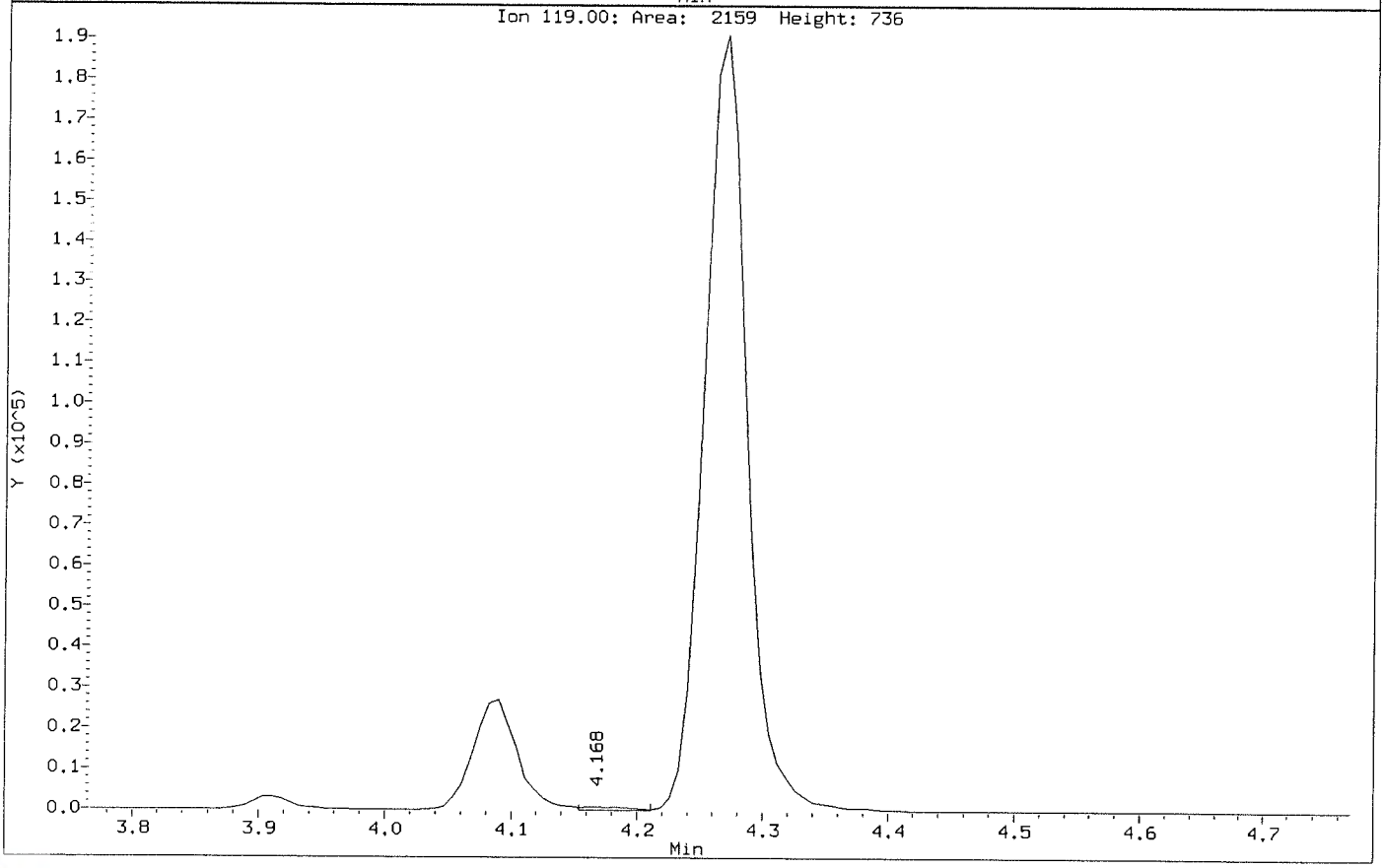




Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\Before\X051809.D
Injection Date: 18-MAY-2021 14:10
Instrument: voa6.i
Client Sample ID: VSTD100

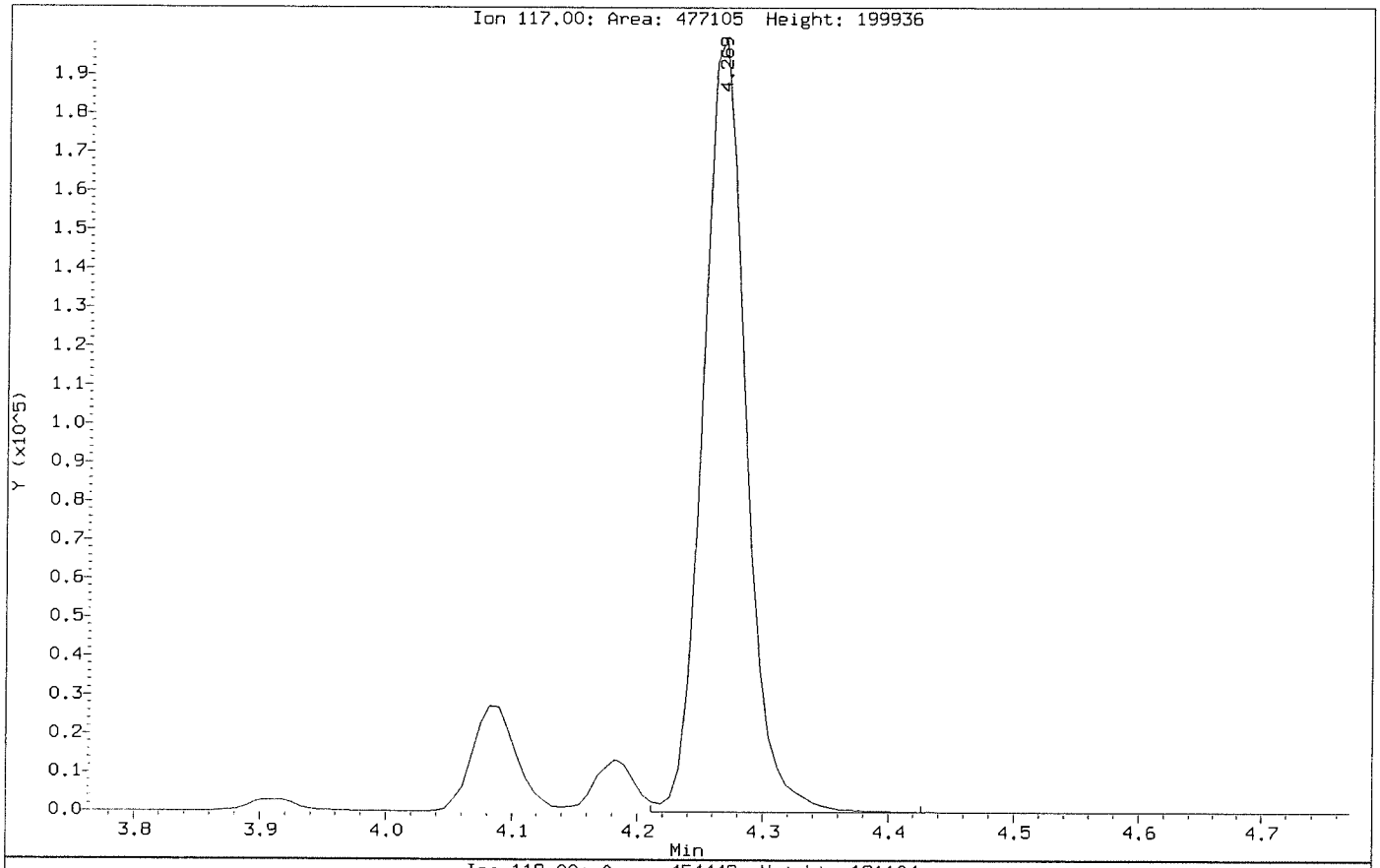
Compound: Carbon Tetrachloride
CAS Number: 56-23-5

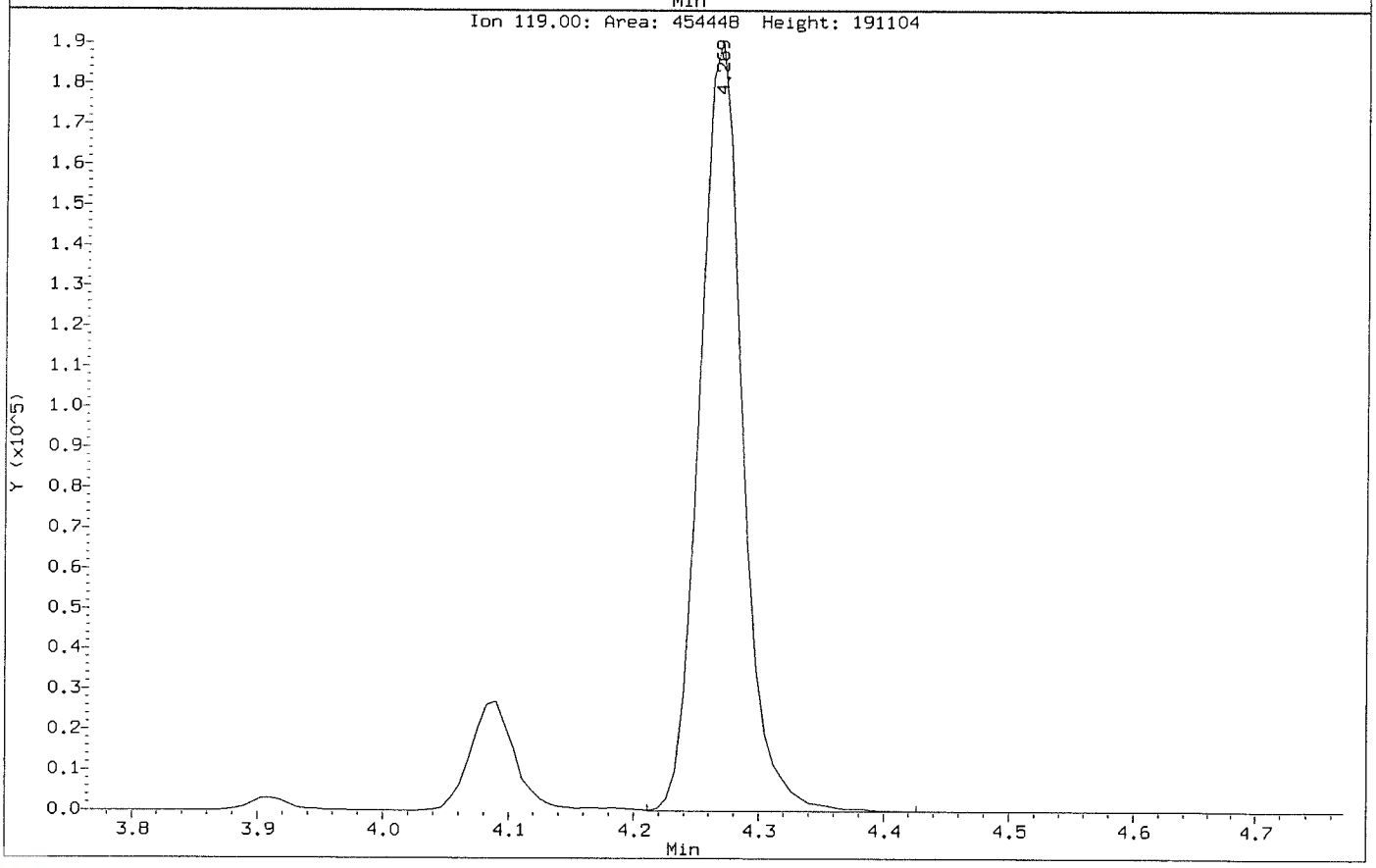




Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\X051809.D
Injection Date: 18-MAY-2021 14:10
Instrument: voa6.i
Client Sample ID: VSTD100

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210518.b\X051810.D
Lab Smp Id: VSDT150 Client Smp ID: VSTD150
Inj Date : 18-MAY-2021 14:31
Operator : PC Inst ID: voa6.i
Smp Info : VSDT150;VSTD150;1;9;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210518.b\8260W.m
Meth Date : 22-Jun-2021 08:20 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 14:10 Cal File: X051809.D
Als bottle: 11 Calibration Sample, Level: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

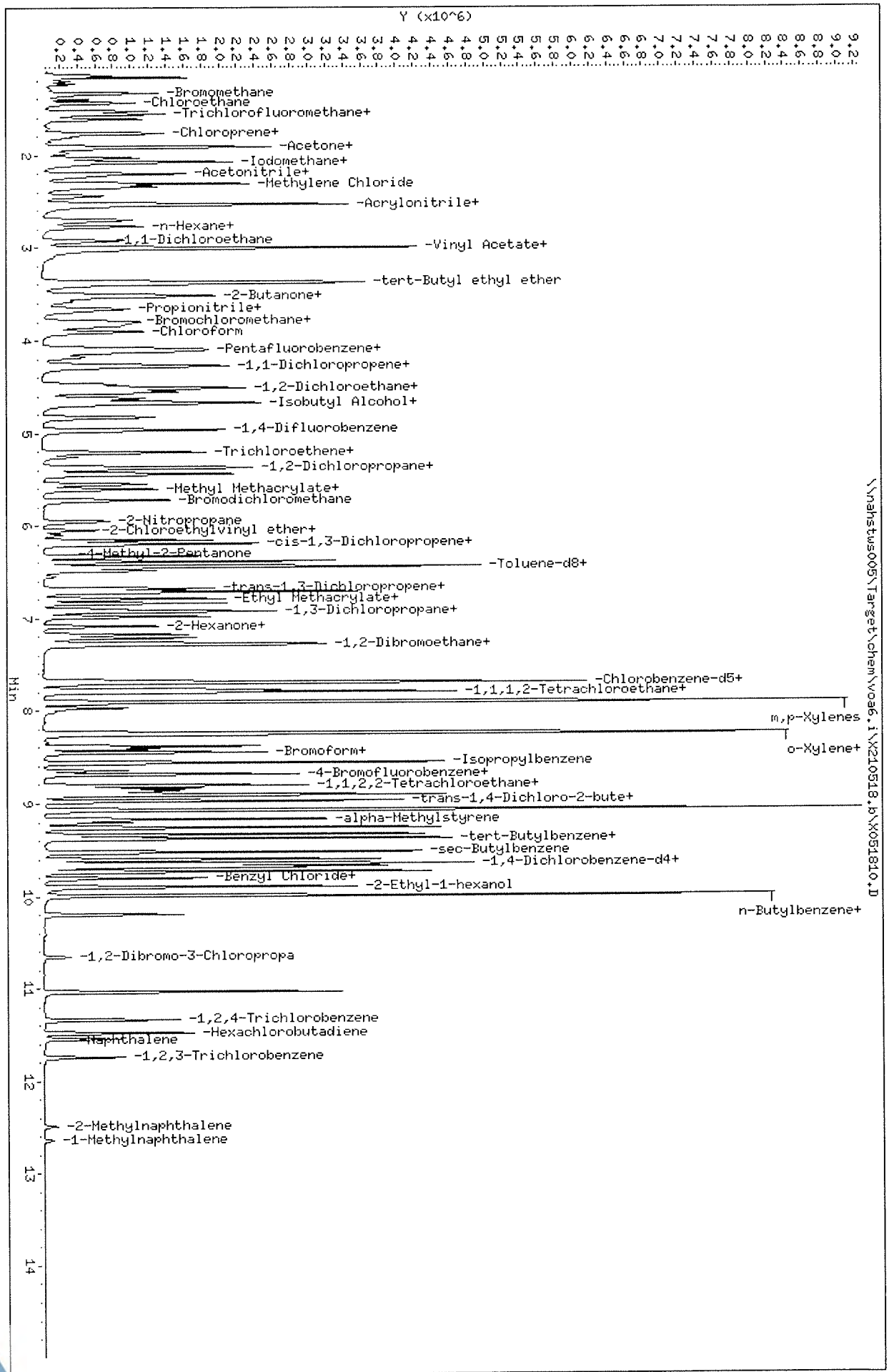
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	329109	50.0000	
*	36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	561232	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	528578	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	275715	50.0000	
$	35 1,2-Dichloroethane-d4	65	4.469	4.469	(1.069)	631492	150.000	149.95
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	751419	150.000	150.35
$	30 Dibromofluoromethane	113	4.096	4.096	(0.979)	559479	150.000	153.07
$	48 Toluene-d8	98	6.388	6.388	(0.833)	1868970	150.000	142.03
	60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	583245	150.000	151.45
	31 1,1,1-Trichloroethane	97	4.082	4.082	(0.976)	897728	150.000	160.37
	68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	690313	150.000	152.22
	138 Freon TF	101	1.911	1.911	(0.457)	467404	150.000	149.69
	53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	459596	150.000	149.68
	22 1,1-Dichloroethane	63	2.921	2.921	(0.699)	952111	150.000	156.22
	11 1,1-Dichloroethene	96	1.911	1.911	(0.457)	466111	150.000	141.61
	32 1,1-Dichloropropene	75	4.282	4.282	(0.862)	721187	150.000	150.00
	93 1,2,3-Trichlorobenzene	180	11.739	11.739	(1.215)	217046	150.000	153.02
	71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	570152	150.000	153.63(MH)
	90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	378072	150.000	147.54
	79 1,2,4-Trimethylbenzene	105	9.382	9.382	(0.971)	2166512	150.000	154.49
	89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.103)	55728	150.000	146.72
	57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	578368	150.000	156.73

Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051810.D Page 2
Report Date: 22-Jun-2021 08:20

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	1139772	150.000	147.49
33	1,2-Dichloroethane	62	4.555	4.555	(0.916)	771966	150.000	139.89
42	1,2-Dichloropropane	63	5.436	5.436	(1.094)	552978	150.000	146.61
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	2177669	150.000	158.22
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	1194968	150.000	150.85
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	901901	150.000	150.04
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	1228277	150.000	151.12
26	2,2-Dichloropropane	77	3.509	3.509	(0.839)	851542	150.000	156.19
24	2-Butanone	43	3.580	3.580	(0.856)	372510	300.000	306.63(A)
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	1760413	150.000	143.25
52	2-Hexanone	43	7.090	7.090	(0.924)	684773	300.000	306.08(A)
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	2179360	150.000	152.09
82	p-Isopropyltoluene	119	9.648	9.648	(0.999)	2130981	150.000	156.53
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	1037606	300.000	308.03(A)
10	Acetone	43	1.976	1.976	(0.473)	237075	300.000	294.50(A)
37	Benzene	78	4.512	4.512	(0.908)	2104958	150.000	151.60
74	Bromobenzene	156	8.802	8.802	(0.911)	688486	150.000	149.79
29	Bromochloromethane	128	3.795	3.795	(0.908)	308322	150.000	153.72
39	Bromodichloromethane	83	5.722	5.722	(1.151)	826506	150.000	152.41
66	Bromoform	173	8.408	8.408	(1.096)	428300	150.000	167.54
6	Bromomethane	94	1.331	1.331	(0.318)	596164	150.000	173.50
19	Carbon Disulfide	76	2.069	2.069	(0.495)	2589664	300.000	333.97(A)
34	Carbon Tetrachloride	117	4.268	4.268	(0.859)	758939	150.000	155.14
59	Chlorobenzene	112	7.692	7.692	(1.003)	1550410	150.000	149.58
7	Chloroethane	64	1.403	1.403	(0.336)	345673	150.000	138.75
28	Chloroform	83	3.910	3.910	(0.935)	1055145	150.000	150.90
3	Chloromethane	50	1.073	1.073	(0.257)	530291	150.000	148.93
27	cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	604470	150.000	159.36
46	cis-1,3-Dichloropropene	75	6.159	6.159	(1.239)	975279	150.000	158.51
55	Dibromochloromethane	129	7.176	7.176	(0.936)	660021	150.000	159.75
44	Dibromomethane	93	5.550	5.550	(1.117)	415353	150.000	153.64
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	635388	150.000	149.11
61	Ethylbenzene	106	7.799	7.799	(1.017)	794587	150.000	155.13
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	251193	150.000	145.34
67	Isopropylbenzene	105	8.559	8.559	(1.116)	2535541	150.000	161.98
62	m,p-Xylenes	106	7.907	7.907	(1.031)	2132347	300.000	323.04(A)
17	Methylene Chloride	84	2.305	2.305	(0.551)	531906	150.000	161.17
87	n-Butylbenzene	91	9.991	9.991	(1.034)	2079941	150.000	160.65
73	n-Propylbenzene	91	8.910	8.910	(0.922)	2928436	150.000	149.96
92	Naphthalene	128	11.539	11.539	(1.194)	555881	150.000	146.77
63	o-Xylene	106	8.244	8.244	(1.075)	1010780	150.000	157.44
81	sec-Butylbenzene	105	9.519	9.519	(0.985)	2534431	150.000	156.82
64	Styrene	104	8.258	8.258	(1.077)	1857964	150.000	150.58
78	tert-Butylbenzene	119	9.340	9.340	(0.967)	1789516	150.000	153.23
56	Tetrachloroethene	164	6.933	6.933	(0.904)	471649	150.000	160.58
50	Toluene	91	6.446	6.446	(0.840)	2428646	150.000	159.25
20	trans-1,2-Dichloroethene	96	2.527	2.527	(0.604)	513534	150.000	162.18
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.344)	875463	150.000	162.64
38	Trichloroethene	130	5.206	5.206	(1.048)	549218	150.000	147.78
8	Trichlorofluoromethane	101	1.560	1.560	(0.373)	898149	150.000	141.97
5	Vinyl Chloride	62	1.138	1.138	(0.272)	553097	150.000	139.19

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



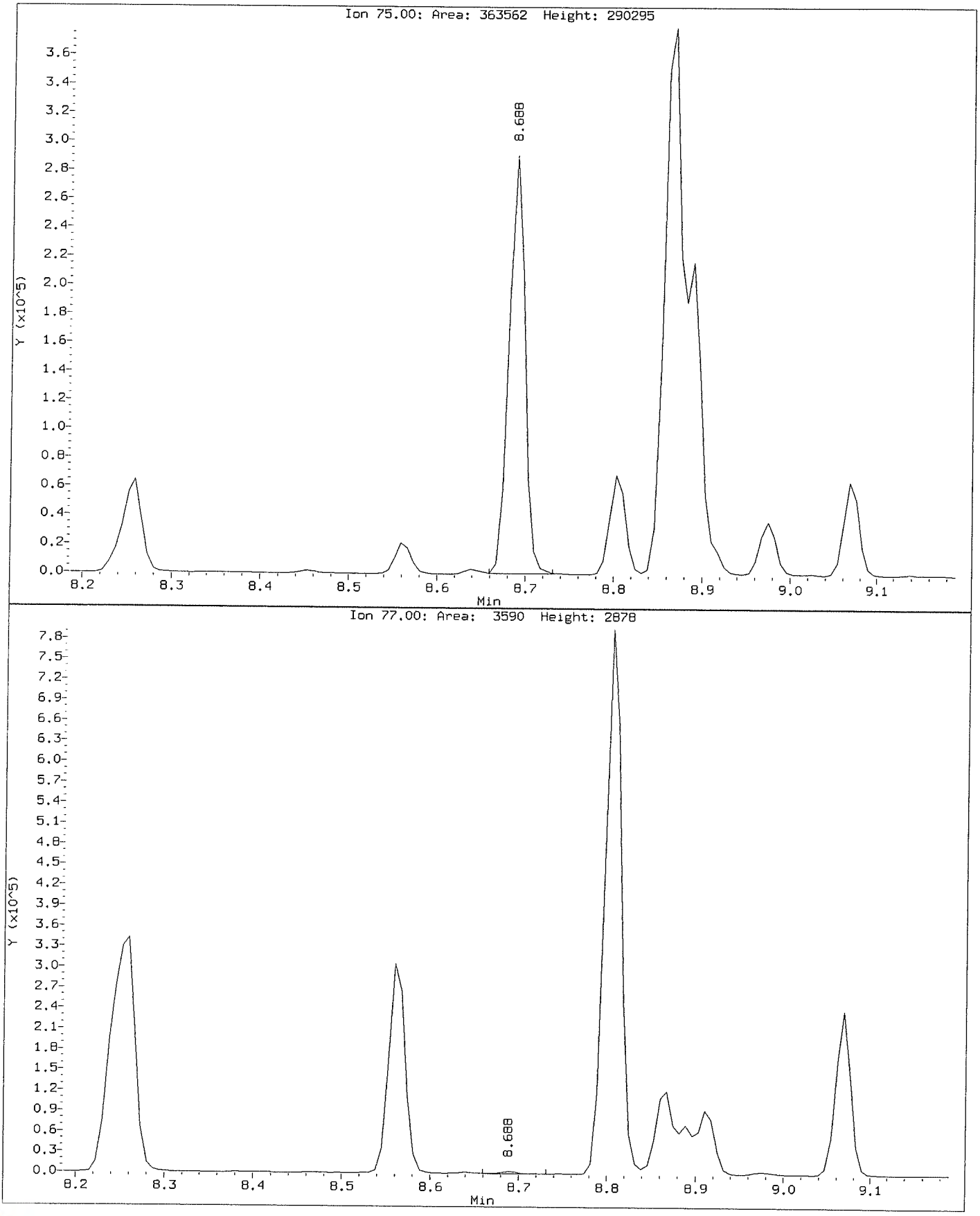
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Client ID: VSTD150
Sample Info: VSDT150;VSTD150;1;9;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

\\nahstws005\Target\chem\voa6.i\X210518.b\X051810.D

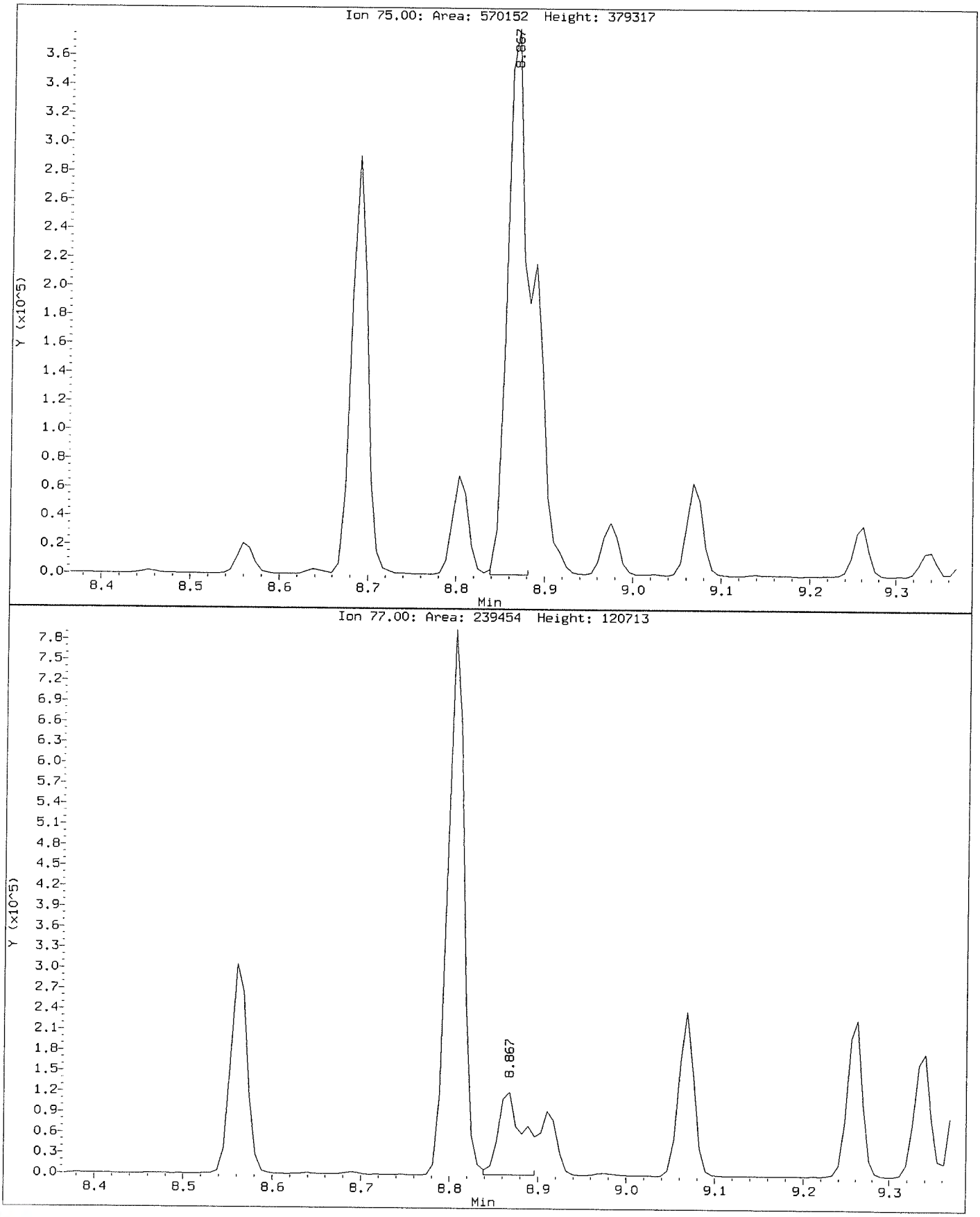
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Injection Date: 18-MAY-2021 14:31
Instrument: voa6.i
Client Sample ID: VSTD150

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\X051810.D
Injection Date: 18-MAY-2021 14:31
Instrument: voa6.i
Client Sample ID: VSTD150

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051811.D Page 1
Report Date: 22-Jun-2021 08:20

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210518.b\X051811.D
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Inj Date : 18-MAY-2021 14:52
Operator : PC Inst ID: voa6.i
Smp Info : VSDT200;VSTD200;1;10;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210518.b\8260W.m
Meth Date : 22-Jun-2021 08:20 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 14:31 Cal File: X051810.D
Als bottle: 12 Calibration Sample, Level: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

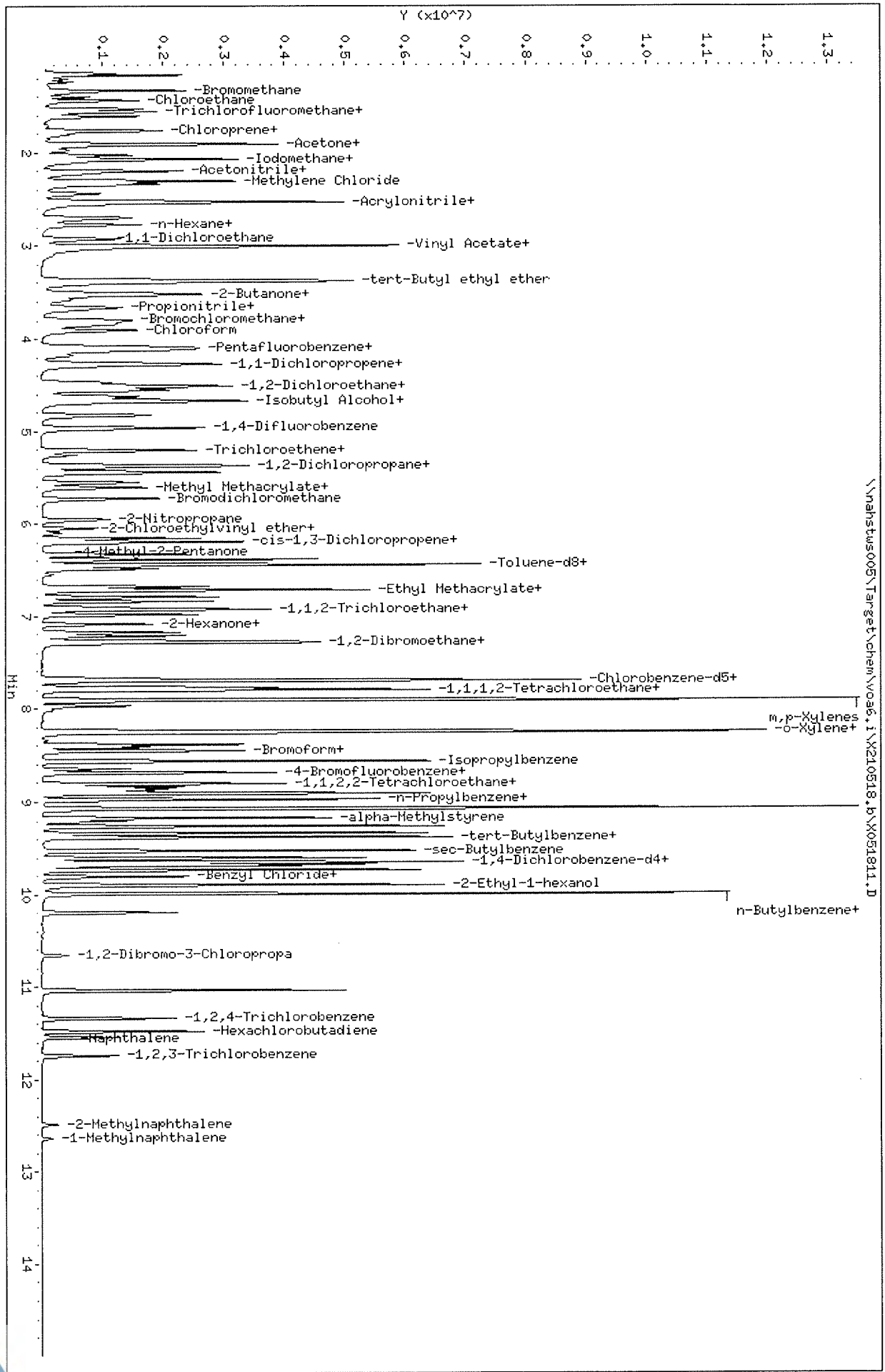
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1	Pentafluorobenzene	168	4.182	4.182	(1.000)	345916	50.0000	
* 36	1,4-Difluorobenzene	114	4.963	4.963	(1.000)	588472	50.0000	
* 47	Chlorobenzene-d5	117	7.671	7.671	(1.000)	555625	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	290246	50.0000	
$ 35	1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	867782	200.000	196.44
$ 69	4-Bromofluorobenzene	95	8.688	8.688	(1.133)	1039902	200.000	197.91
$ 30	Dibromofluoromethane	113	4.096	4.096	(0.979)	756859	200.000	197.08
$ 48	Toluene-d8	98	6.388	6.388	(0.833)	2599039	200.000	187.57
60	1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	817405	200.000	201.93(A)
31	1,1,1-Trichloroethane	97	4.082	4.082	(0.976)	1267981	200.000	215.51(A)
68	1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	941646	200.000	197.40
138	Freon TF	101	1.911	1.911	(0.457)	701725	200.000	213.82(A)
53	1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	644929	200.000	199.81
22	1,1-Dichloroethane	63	2.921	2.921	(0.699)	1359241	200.000	212.18(A)
11	1,1-Dichloroethene	96	1.911	1.911	(0.457)	685117	200.000	198.04
32	1,1-Dichloropropene	75	4.282	4.282	(0.863)	1025250	200.000	203.38(A)
93	1,2,3-Trichlorobenzene	180	11.739	11.739	(1.215)	307927	200.000	198.57
71	1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	760241	200.000	194.77(MH)
90	1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	556188	200.000	205.21(A)
79	1,2,4-Trimethylbenzene	105	9.383	9.383	(0.971)	3046305	200.000	206.36(A)
89	1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.103)	81966	200.000	204.37(A)
57	1,2-Dibromoethane	107	7.262	7.262	(0.947)	808859	200.000	208.52(A)

Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051811.D Page 2
Report Date: 22-Jun-2021 08:20

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	1637655	200.000	201.31(A)
33	1,2-Dichloroethane	62	4.555	4.555	(0.918)	1042686	200.000	180.20
42	1,2-Dichloropropane	63	5.436	5.436	(1.095)	761644	200.000	192.58
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	3139978	200.000	216.72(A)
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	1690760	200.000	202.76(A)
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	1218096	200.000	192.78
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	1710708	200.000	199.85
26	2,2-Dichloropropane	77	3.509	3.509	(0.839)	1199420	200.000	209.30(A)
24	2-Butanone	43	3.580	3.580	(0.856)	513022	400.000	401.78(A)
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	2458535	200.000	190.05
52	2-Hexanone	43	7.090	7.090	(0.924)	929961	400.000	395.53(A)
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	3087694	200.000	204.70(A)
82	p-Isopropyltoluene	119	9.655	9.655	(0.999)	3103142	200.000	216.53(A)
45	4-Methyl-2-Pentanone	43	6.331	6.331	(0.825)	1395319	400.000	394.03(A)
10	Acetone	43	1.976	1.976	(0.473)	336393	400.000	399.38(A)
37	Benzene	78	4.512	4.512	(0.909)	2912199	200.000	200.02(A)
74	Bromobenzene	156	8.809	8.809	(0.912)	960630	200.000	198.54
29	Bromochloromethane	128	3.795	3.795	(0.908)	421944	200.000	200.14(A)
39	Bromodichloromethane	83	5.722	5.722	(1.153)	1143964	200.000	201.19(A)
66	Bromoform	173	8.408	8.408	(1.096)	591908	200.000	220.27(A)
6	Bromomethane	94	1.331	1.331	(0.318)	1028472	200.000	285.09(A)
19	Carbon Disulfide	76	2.069	2.069	(0.495)	3804461	400.000	466.80(A)
34	Carbon Tetrachloride	117	4.268	4.268	(0.860)	1096156	200.000	213.70(A)
59	Chlorobenzene	112	7.692	7.692	(1.003)	2262308	200.000	207.64(A)
7	Chloroethane	64	1.396	1.396	(0.334)	499152	200.000	190.62
28	Chloroform	83	3.910	3.910	(0.935)	1481226	200.000	201.55(A)
3	Chloromethane	50	1.073	1.073	(0.257)	760194	200.000	203.04(A)
27	cis-1,2-Dichloroethene	96	3.523	3.523	(0.842)	842045	200.000	211.21(A)
46	cis-1,3-Dichloropropene	75	6.159	6.159	(1.241)	1345882	200.000	208.61(A)
55	Dibromochloromethane	129	7.176	7.176	(0.936)	936355	200.000	215.61(A)
44	Dibromomethane	93	5.550	5.550	(1.118)	570422	200.000	201.24(A)
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	916851	200.000	203.94(A)
61	Ethylbenzene	106	7.799	7.799	(1.017)	1127474	200.000	209.41(A)
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	377761	200.000	206.26(A)
67	Isopropylbenzene	105	8.566	8.566	(1.117)	3672148	200.000	223.17(A)
62	m,p-Xylenes	106	7.907	7.907	(1.031)	3061828	400.000	441.27(A)
17	Methylene Chloride	84	2.298	2.298	(0.550)	744253	200.000	214.56(A)
87	n-Butylbenzene	91	9.991	9.991	(1.034)	3008380	200.000	220.73(A)
73	n-Propylbenzene	91	8.910	8.910	(0.922)	4200522	200.000	204.34(A)
92	Naphthalene	128	11.539	11.539	(1.194)	826266	200.000	205.96(A)
63	o-Xylene	106	8.244	8.244	(1.075)	1438569	200.000	213.16(A)
81	sec-Butylbenzene	105	9.526	9.526	(0.986)	3709108	200.000	218.02(A)
64	Styrene	104	8.258	8.258	(1.077)	2618657	200.000	201.30(A)
78	tert-Butylbenzene	119	9.340	9.340	(0.967)	2556764	200.000	207.96(A)
56	Tetrachloroethene	164	6.926	6.926	(0.903)	689947	200.000	223.46(A)
50	Toluene	91	6.446	6.446	(0.840)	3431584	200.000	214.06(A)
20	trans-1,2-Dichloroethene	96	2.527	2.527	(0.604)	732798	200.000	220.19(A)
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	1193973	200.000	211.55(A)
38	Trichloroethene	130	5.206	5.206	(1.049)	782732	200.000	200.86(A)
8	Trichlorofluoromethane	101	1.560	1.560	(0.373)	1300834	200.000	195.63
5	Vinyl Chloride	62	1.138	1.138	(0.272)	806948	200.000	193.21

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

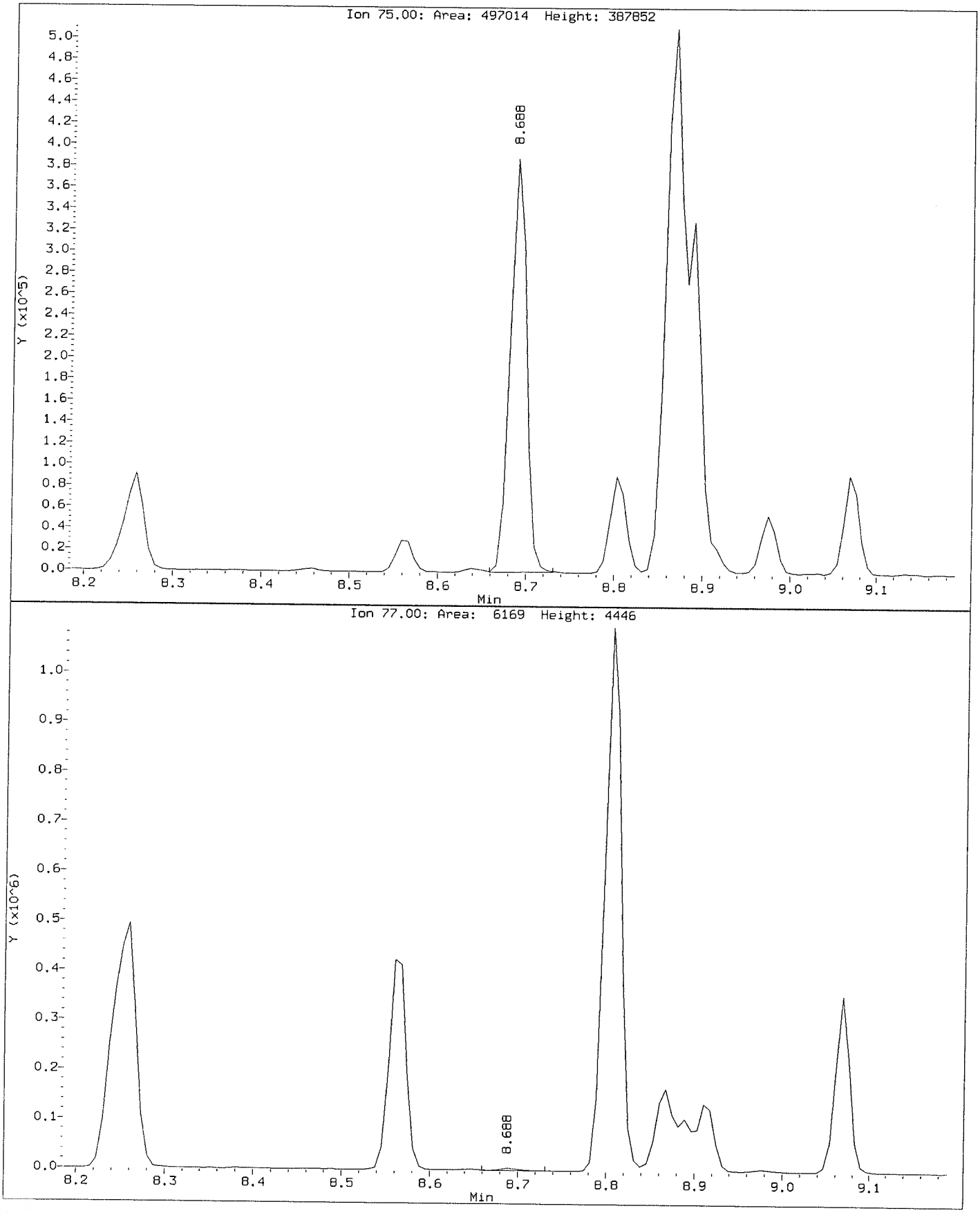


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Client ID: VSTD200
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Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

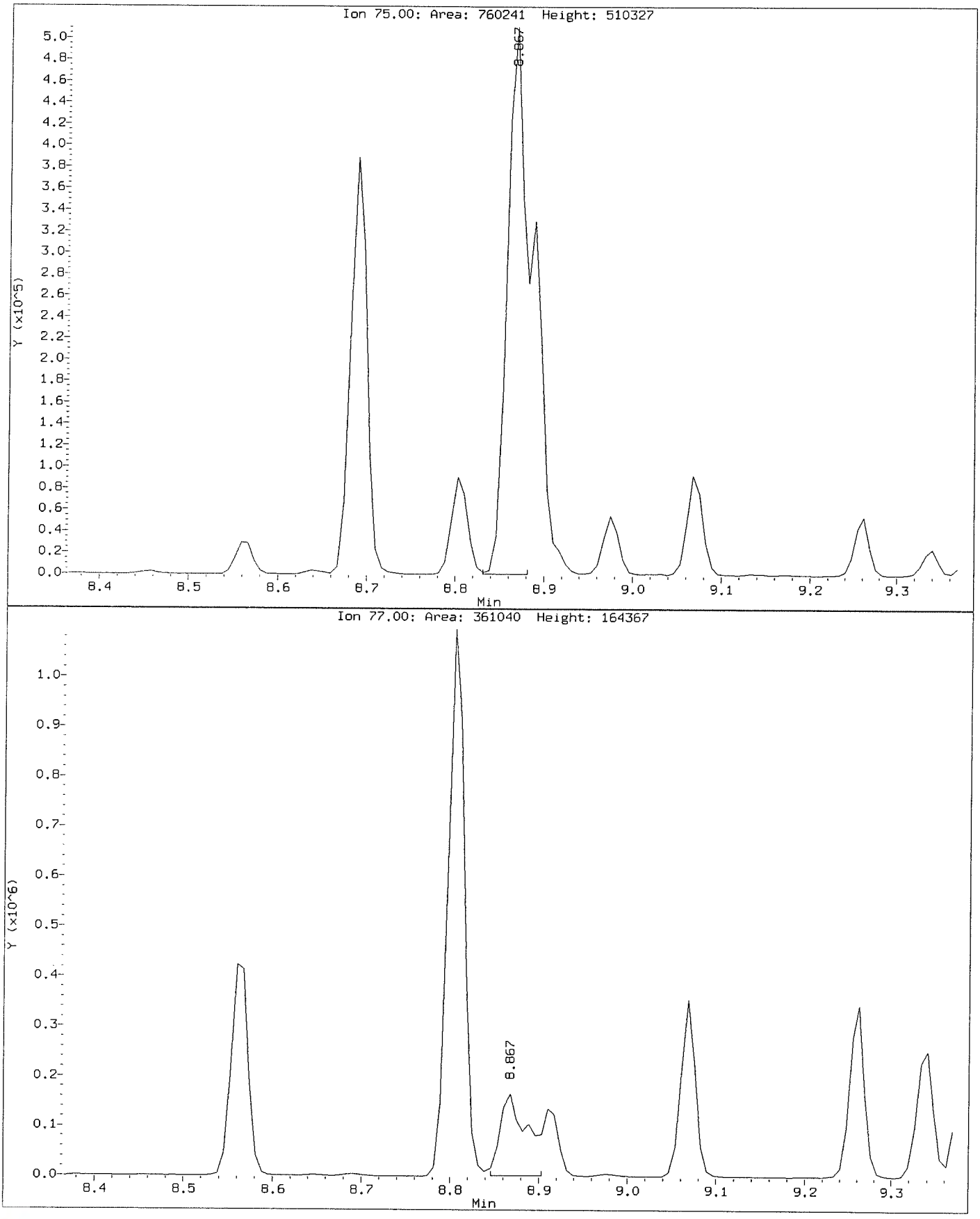
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Injection Date: 18-MAY-2021 14:52
Instrument: voa6.i
Client Sample ID: VSTD200

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\X051811.D
Injection Date: 18-MAY-2021 14:52
Instrument: voa6.i
Client Sample ID: VSTD200

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051814.D Page 1
Report Date: 22-Jun-2021 08:20

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210518.b\X051814.D
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Inj Date : 18-MAY-2021 16:04
Operator : PC Inst ID: voa6.i
Smp Info : CCV;CCV;2;;ICV
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210518.b\8260W.m
Meth Date : 22-Jun-2021 08:20 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 14:52 Cal File: X051811.D
Als bottle: 15 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

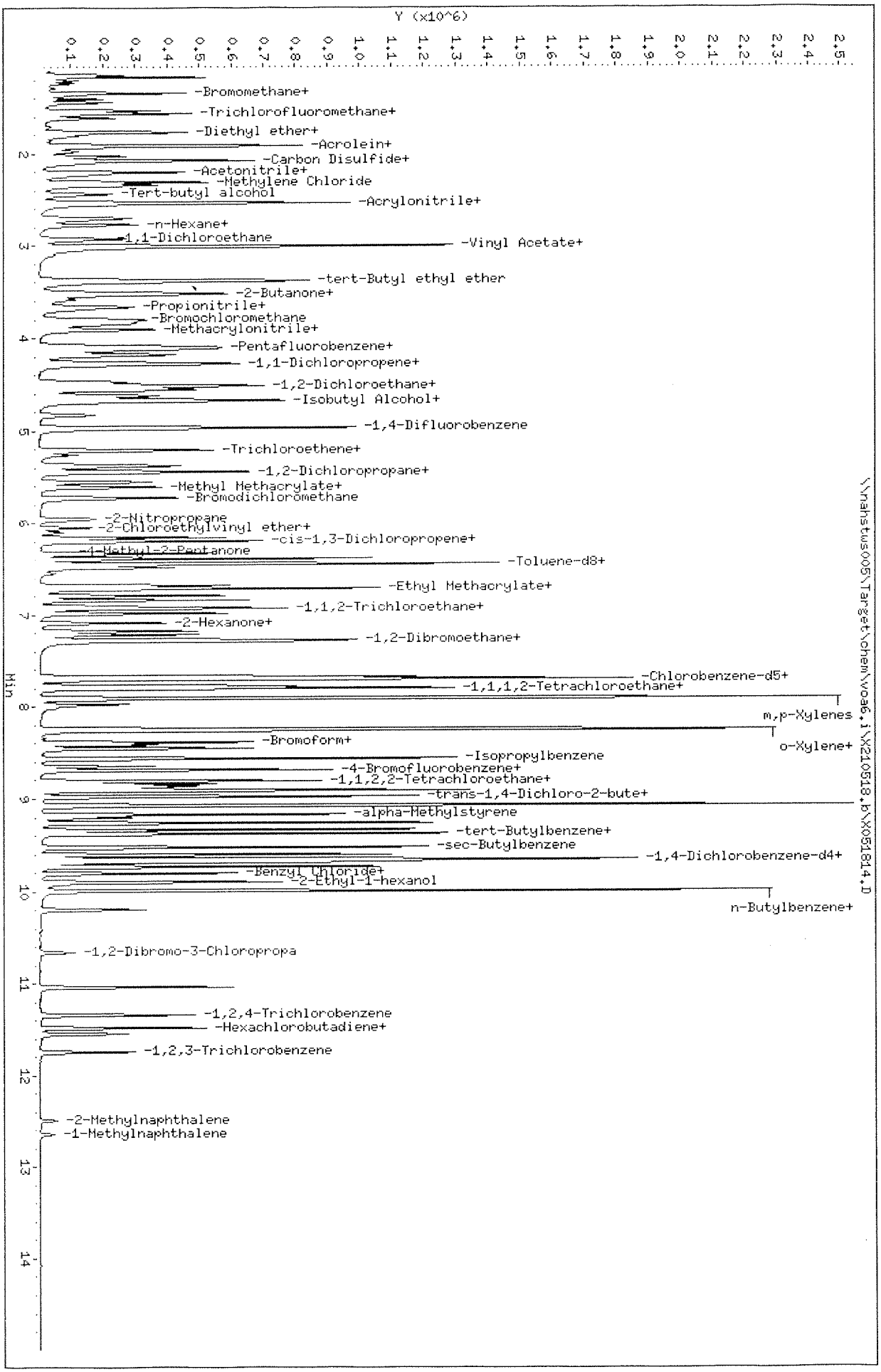
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	314020	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	520811	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.671	(1.000)	484823	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	250460	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.469	4.476	(1.069)	205067	50.1979	50.19
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	230369	50.3369	50.33
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	175772	50.2504	50.25
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	584625	49.1076	49.10
60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	170258	48.2027	48.20
31 1,1,1-Trichloroethane	97	4.082	4.082	(0.976)	270319	50.6112	50.61
68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	214655	51.7580	51.75
138 Freon TF	101	1.919	1.911	(0.459)	142176	47.7226	47.72
53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	140911	50.0345	50.03
22 1,1-Dichloroethane	63	2.921	2.921	(0.699)	274803	47.2562	47.25
11 1,1-Dichloroethene	96	1.911	1.911	(0.457)	148405	47.2568	47.25
32 1,1-Dichloropropene	75	4.282	4.282	(0.863)	215541	48.3130	48.31
93 1,2,3-Trichlorobenzene	180	11.739	11.739	(1.215)	71059	59.1408	59.14
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	180570	53.1631	53.16(M)
90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	120554	53.3923	53.39
79 1,2,4-Trimethylbenzene	105	9.382	9.383	(0.971)	597253	46.8861	46.88
89 1,2-Dibromo-3-Chloropropane	155	10.657	10.658	(1.103)	19095	56.3452	56.34
57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	175810	51.9432	51.94

Data File: \\nahstws005\Target\chem\voa6.i\X210518.b\X051814.D Page 2
Report Date: 22-Jun-2021 08:20

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	329044	46.8735	46.87
33	1,2-Dichloroethane	62	4.555	4.555	(0.918)	250302	48.8804	48.88
42	1,2-Dichloropropane	63	5.436	5.436	(1.095)	167115	47.7459	47.74
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	590381	47.2215	47.22
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	343639	47.7565	47.75
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	277959	50.4174	50.41
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	352814	47.9586	47.95
26	2,2-Dichloropropane	77	3.509	3.509	(0.839)	260587	50.0938	50.09
24	2-Butanone	43	3.580	3.580	(0.856)	119740	103.302	103.30
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	510642	45.7453	45.74
52	2-Hexanone	43	7.090	7.090	(0.924)	215239	104.715	104.71
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	612096	47.0259	47.02
82	p-Isopropyltoluene	119	9.647	9.655	(0.999)	578626	46.7908	46.79
45	4-Methyl-2-Pentanone	43	6.324	6.331	(0.824)	315436	102.153	102.15
10	Acetone	43	1.976	1.976	(0.473)	92565	117.467	117.46
37	Benzene	78	4.512	4.512	(0.909)	646518	50.1763	50.17
74	Bromobenzene	156	8.802	8.809	(0.911)	196985	47.1796	47.17
29	Bromochloromethane	128	3.795	3.795	(0.908)	92140	48.1462	48.14
39	Bromodichloromethane	83	5.729	5.722	(1.154)	248409	49.3648	49.36
66	Bromoform	173	8.408	8.408	(1.096)	122293	52.1571	52.15
6	Bromomethane	94	1.338	1.331	(0.320)	187724	56.9415	56.94
19	Carbon Disulfide	76	2.069	2.069	(0.495)	792228	107.080	107.07
34	Carbon Tetrachloride	117	4.268	4.268	(0.860)	219217	48.2910	48.29
59	Chlorobenzene	112	7.692	7.692	(1.003)	455368	47.8996	47.89
7	Chloroethane	64	1.403	1.396	(0.336)	111773	47.0223	47.02
28	Chloroform	83	3.910	3.910	(0.935)	318549	47.7476	47.74
3	Chloromethane	50	1.073	1.073	(0.257)	175510	51.8144	51.81
27	cis-1,2-Dichloroethene	96	3.530	3.523	(0.844)	177242	48.9746	48.97
46	cis-1,3-Dichloropropene	75	6.152	6.159	(1.240)	286606	50.1968	50.19
55	Dibromochloromethane	129	7.176	7.176	(0.936)	198733	52.4448	52.44
44	Dibromomethane	93	5.550	5.550	(1.118)	125829	50.1588	50.15
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	202217	51.1231	51.12
61	Ethylbenzene	106	7.799	7.799	(1.017)	229958	48.9489	48.94
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	72493	48.3476	48.34
67	Isopropylbenzene	105	8.559	8.566	(1.116)	689621	48.0318	48.03
62	m,p-Xylenes	106	7.900	7.907	(1.030)	598088	98.7859	98.78
17	Methylene Chloride	84	2.305	2.298	(0.551)	155672	49.4373	49.43
87	n-Butylbenzene	91	9.991	9.991	(1.034)	559802	47.5986	47.59
73	n-Propylbenzene	91	8.910	8.910	(0.922)	842024	47.4685	47.46
92	Naphthalene	128	11.539	11.539	(1.194)	198367	59.5423	59.54 (M)
63	o-Xylene	106	8.244	8.244	(1.075)	286204	48.6033	48.60
81	sec-Butylbenzene	105	9.519	9.526	(0.985)	681120	46.3974	46.39
64	Styrene	104	8.258	8.258	(1.077)	512733	46.5385	46.53
78	tert-Butylbenzene	119	9.339	9.340	(0.967)	481642	45.4003	45.40
56	Tetrachloroethene	164	6.926	6.926	(0.903)	135210	50.1892	50.18
50	Toluene	91	6.446	6.446	(0.840)	698935	49.9665	49.96
20	trans-1,2-Dichloroethene	96	2.527	2.527	(0.604)	151505	50.1483	50.14
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	259978	52.0492	52.04
38	Trichloroethene	130	5.206	5.206	(1.049)	166097	48.1615	48.16
8	Trichlorofluoromethane	101	1.560	1.560	(0.373)	289827	48.0155	48.01
5	Vinyl Chloride	62	1.145	1.138	(0.274)	181830	47.9597	47.95

QC Flag Legend

M - Compound response manually integrated.

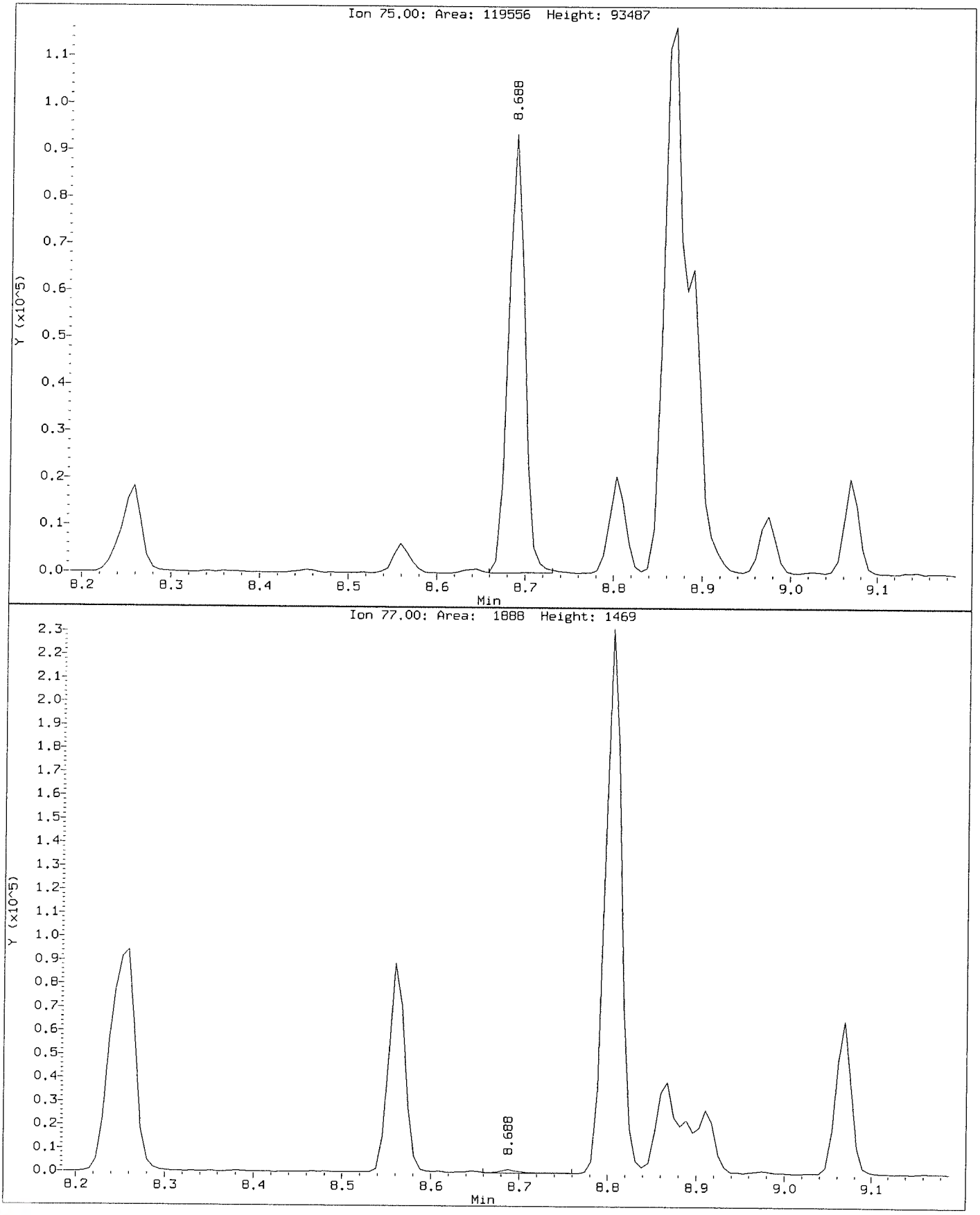


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Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

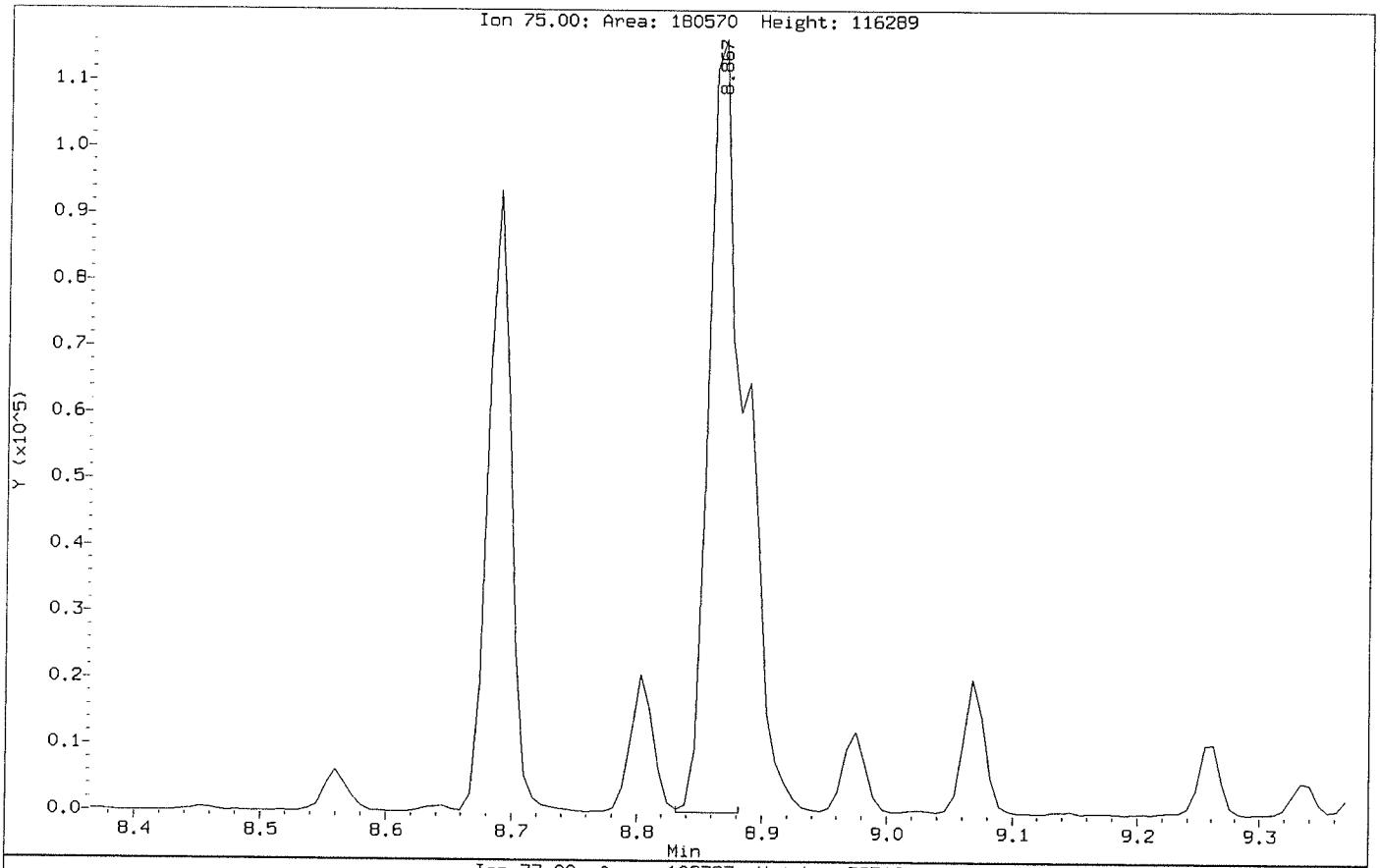
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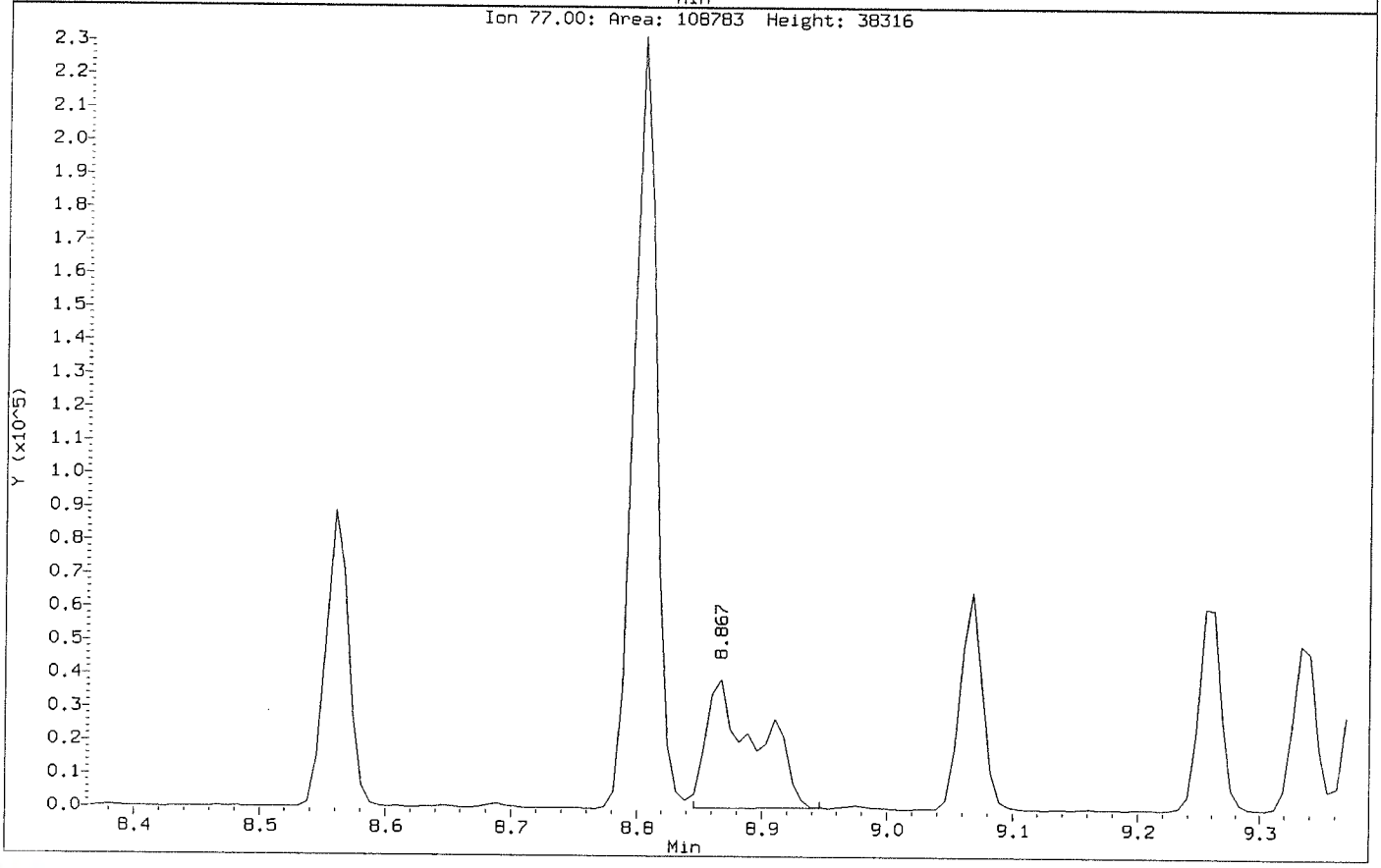
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



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Instrument: voa6.i
Client Sample ID: ICV

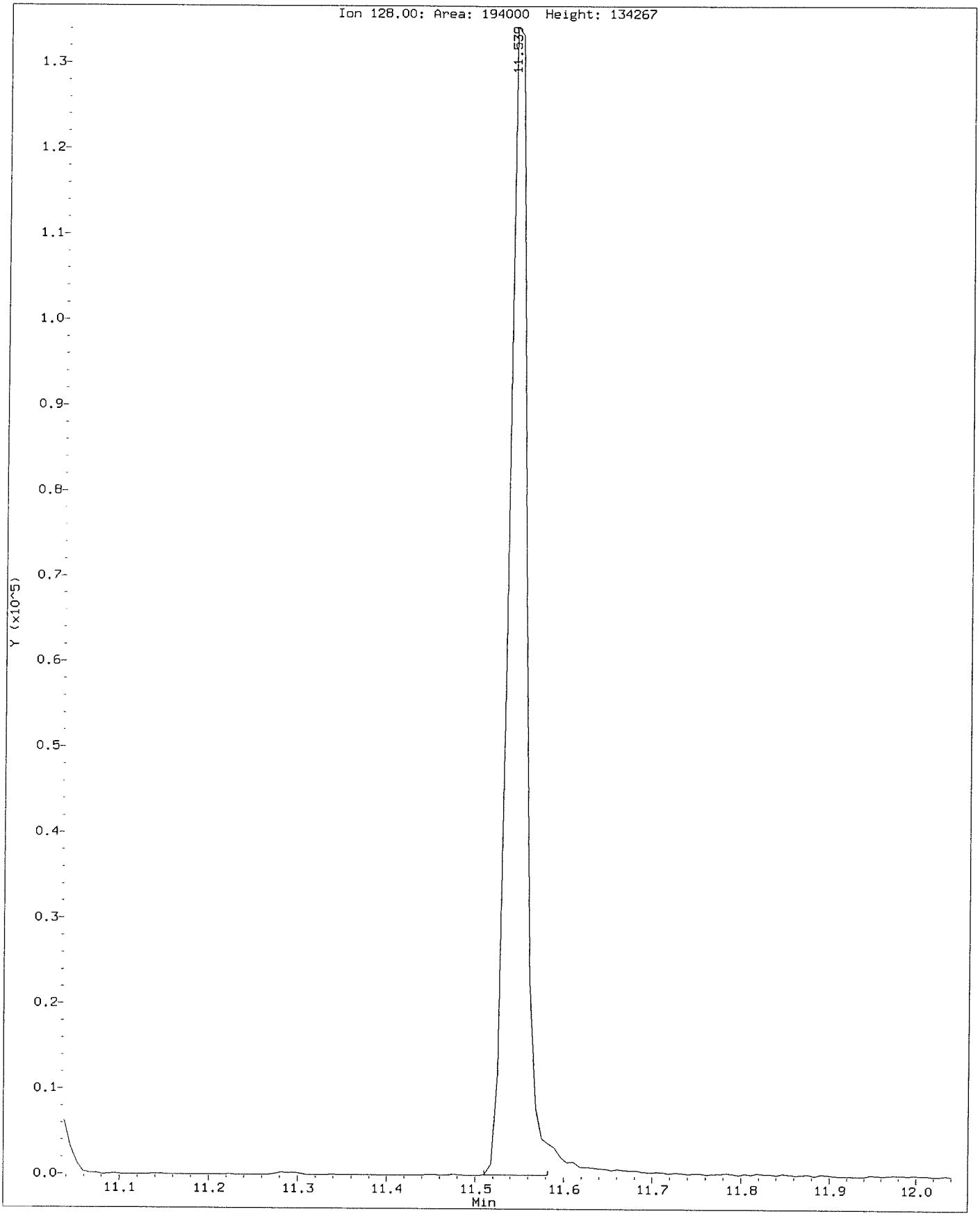
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





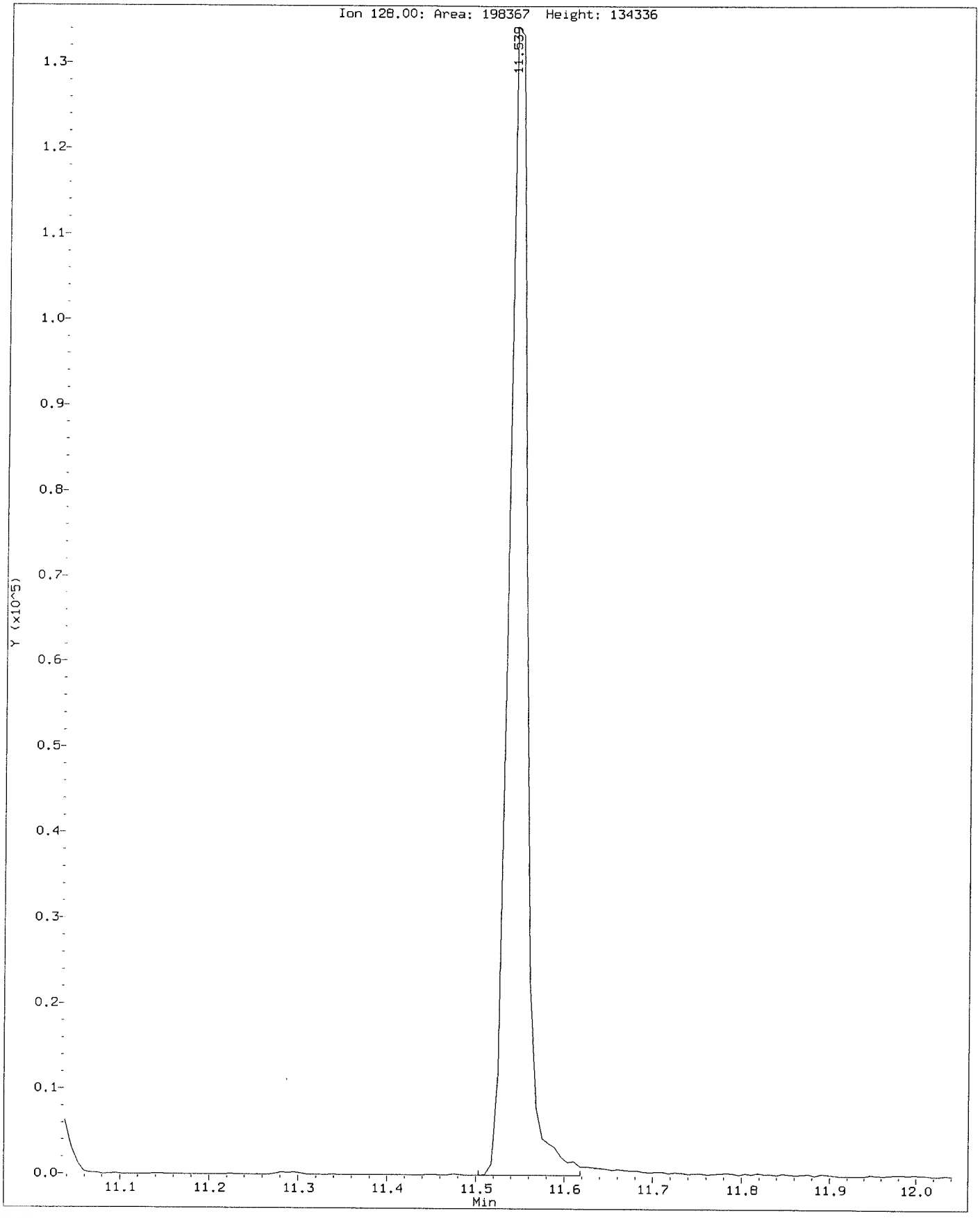
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Injection Date: 18-MAY-2021 16:04
Instrument: voa6.i
Client Sample ID: ICV

Compound: Naphthalene
CAS Number: 91-20-3



Data File: \\NAHSTWS005\Target\chem\voa6.i\X210518.b\X051814.D
Injection Date: 18-MAY-2021 16:04
Instrument: voa6.i
Client Sample ID: ICV

Compound: Naphthalene
CAS Number: 91-20-3



MSVOA06 -Logbook

Batch: 44959 **Analyst:** Presenta Cabascango

Date: 05-21-2021 **Reviewer:**

Method: 8260 **Laboratory:** Houston

Comments:

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	05-21-2021 10:12 am	1.00	50 mL	50 mL	X052101.D	Liquid	Y	NA
2	CCV	CCV	05-21-2021 10:33 am	1.00	50 mL	50 mL	X052102a.D	Liquid	Y	NA
3	CCV	CCV	05-21-2021 10:54 am	1.00	50 mL	50 mL	X052103.D	Liquid	Y	NA
4	CCB	SAMP	05-21-2021 11:15 am	1.00	50 mL	50 mL	X052104.D	Liquid	Y	NA
5	VLCSW-210521	LCS	05-21-2021 11:36 am	1.00	50 mL	50 mL	X052105.D	Liquid	Y	NA
6	BLANK	SAMP	05-21-2021 11:57 am	1.00	50 mL	50 mL	X052106.D	Liquid	Y	NA
7	VBLKW-210521	MBLK	05-21-2021 12:18 pm	1.00	50 mL	50 mL	X052107.D	Liquid	Y	NA
8	HS21050898-01	SAMP	05-21-2021 12:39 pm	1.00	50 mL	50 mL	X052108.D	Liquid	Y	NA
9	HS21050898-02	SAMP	05-21-2021 01:00 pm	1.00	50 mL	50 mL	X052109.D	Liquid	Y	NA
10	HS21050892-08	SAMP	05-21-2021 01:21 pm	1.00	50 mL	50 mL	X052110.D	Liquid	Y	NA
11	HS21050972-03	SAMP	05-21-2021 01:43 pm	1.00	50 mL	50 mL	X052111.D	Liquid	Y	NA
12	HS21050972-03MS	MS	05-21-2021 02:04 pm	1.00	50 mL	50 mL	X052112.D	Liquid	Y	NA
13	HS21050972-03MSD	MSD	05-21-2021 02:25 pm	1.00	50 mL	50 mL	X052113.D	Liquid	Y	NA
14	HS21050629-02	SAMP	05-21-2021 02:46 pm	100000.	0.5 µL	50 mL	X052114.D	Liquid	Y	NA
15	HS21050668-11	SAMP	05-21-2021 03:07 pm	50000.(	1 µL	50 mL	X052115.D	Liquid	Y	NA
16	HS21050629-01	SAMP	05-21-2021 03:28 pm	500.0(	100 µL	50 mL	X052116.D	Liquid	Y	NA
17	HS21050629-10	SAMP	05-21-2021 03:49 pm	250.0(	200 µL	50 mL	X052117.D	Liquid	Y	NA
18	HS21050972-01	SAMP	05-21-2021 04:10 pm	1.00	50 mL	50 mL	X052118.D	Liquid	Y	NA
19	HS21050972-02	SAMP	05-21-2021 04:31 pm	1.00	50 mL	50 mL	X052119.D	Liquid	Y	NA
20	HS21050972-04	SAMP	05-21-2021 04:52 pm	1.00	50 mL	50 mL	X052120.D	Liquid	Y	NA
21	HS21050972-05	SAMP	05-21-2021 05:13 pm	1.00	50 mL	50 mL	X052121.D	Liquid	Y	NA
22	HS21050972-06	SAMP	05-21-2021 05:34 pm	1.00	50 mL	50 mL	X052122.D	Liquid	Y	NA
23	HS21050972-07	SAMP	05-21-2021 05:55 pm	1.00	50 mL	50 mL	X052123.D	Liquid	Y	NA
24	MBLK-165999	MBLK	05-21-2021 06:16 pm	20.00	2.5 mL	50 mL	X052124.D	Liquid	Y	NA
25	HS21050668-01	SAMP	05-21-2021 06:37 pm	20.00	2.5 mL	50 mL	X052125.D	Liquid	Y	NA
26	HS21050668-04	SAMP	05-21-2021 06:58 pm	20.00	2.5 mL	50 mL	X052126.D	Liquid	Y	NA
27	HS21050668-06	SAMP	05-21-2021 07:20 pm	20.00	2.5 mL	50 mL	X052127.D	Liquid	Y	NA
28	HS21050668-10	SAMP	05-21-2021 07:41 pm	20.00	2.5 mL	50 mL	X052128.D	Liquid	Y	NA
29	HS21050668-05	SAMP	05-21-2021 08:02 pm	50.00	1 mL	50 mL	X052129.D	Liquid	Y	NA
30	HS21050668-07	SAMP	05-21-2021 08:23 pm	50.00	1 mL	50 mL	X052130.D	Liquid	Y	NA
31	CCV-END	CCV	05-21-2021 08:44 pm	1.00	50 mL	50 mL	X052131.D	Liquid	Y	NA
32	BLANK	SAMP	05-21-2021 09:05 pm	1.00	50 mL	50 mL	X052132.D	Liquid	Y	NA

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050972

	CLIENT SAMPLE NO.	SMC1 #	SMC2 #	SMC3 (TOL)#	OTHER (DCE)#	TOT OUT
01	VLCSW-210521	97	96	98	99	0
02	VBLKW-210521	91	91	110	93	0
03	HS21050972-03	90	93	107	94	0
04	HS21050972-03MS	97	90	104	90	0
05	HS21050972-03MSD	99	92	103	96	0
06	HS21050972-01	86	91	109	89	0
07	HS21050972-02	90	90	109	90	0
08	HS21050972-04	86	93	111	92	0
09	HS21050972-05	88	91	109	91	0
10	HS21050972-06	86	88	108	88	0
11	HS21050972-07	87	89	110	91	0
12						
13						
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27						
28						

		QC LIMITS
SMC1	= 4-Bromofluorobenzene	(70-130)
SMC2	= Dibromofluoromethane	(70-130)
SMC3 (TOL)	= Toluene-d8	(0-130)
OTHER(DCE)	= 1,2-Dichloroethane-d4	(0-130)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

VBLKW-210521

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050972

Lab File ID: X052107 Lab Sample ID: VBLKW-210521

Date Analyzed: 05/21/21 Time Analyzed: 1218

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA6

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VLCSW-210521	VLCSW-210521	X052105	1136
02	HS21050972-03	HS21050972-03	X052111	1343
03	HS21050972-03MS	HS21050972-03MS	X052112	1404
04	HS21050972-03MSD	HS21050972-03MSD	X052113	1425
05	HS21050972-01	HS21050972-01	X052118	1610
06	HS21050972-02	HS21050972-02	X052119	1631
07	HS21050972-04	HS21050972-04	X052120	1652
08	HS21050972-05	HS21050972-05	X052121	1713
09	HS21050972-06	HS21050972-06	X052122	1734
10	HS21050972-07	HS21050972-07	X052123	1755
11				
12				
13				
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COMMENTS:

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050972

Lab File ID: X052101 BFB Injection Date: 05/21/21

Instrument ID: VOA6 BFB Injection Time: 1012

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	23.7
75	30.0 - 60.0% of mass 95	52.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	1.0 (1.5)1
174	Greater than 50.0% of mass 95	68.9
175	5.0 - 9.0% of mass 174	5.6 (8.1)1
176	95.0 - 101.0% of mass 174	67.9 (98.6)1
177	5.0 - 9.0% of mass 176	4.5 (6.6)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CCV	CCV	X052103	05/21/21	1054
02	VLCSW-210521	VLCSW-210521	X052105	05/21/21	1136
03	VBLKW-210521	VBLKW-210521	X052107	05/21/21	1218
04	HS21050972-03	HS21050972-03	X052111	05/21/21	1343
05	HS21050972-03MS	HS21050972-03MS	X052112	05/21/21	1404
06	HS21050972-03MSD	HS21050972-03MSD	X052113	05/21/21	1425
07	HS21050972-01	HS21050972-01	X052118	05/21/21	1610
08	HS21050972-02	HS21050972-02	X052119	05/21/21	1631
09	HS21050972-04	HS21050972-04	X052120	05/21/21	1652
10	HS21050972-05	HS21050972-05	X052121	05/21/21	1713
11	HS21050972-06	HS21050972-06	X052122	05/21/21	1734
12	HS21050972-07	HS21050972-07	X052123	05/21/21	1755
13	CCV-END	CCV-END	X052131	05/21/21	2044
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050972

Instrument ID: VOA6 Calibration Date: 05/21/21 Time: 1054

Lab File ID: X052103 Init. Calib. Date(s): 05/18/21 05/18/21

Init. Calib. Times: 1123 1452

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
cis-1,3-Dichloropropene	0.5480000	0.5791681	0.5791681	0.2	-5.69	20.00	AVRG
trans-1,3-Dichloropropene	0.4790000	0.5277729	0.5277729	0.1	-10.18	20.00	AVRG
1,3-Dichlorobenzene	1.4360000	1.3997150	1.3997150	0.6	2.53	20.00	AVRG
2,2-Dichloropropane	0.8280000	0.8792704	0.8792704	0.1	-6.19	20.00	AVRG
1,1-Dichloropropene	0.4280000	0.4368445	0.4368445	0.1	-2.07	20.00	AVRG
Dibromomethane	0.2410000	0.2472383	0.2472383	0.1	-2.59	20.00	AVRG
1,2-Dibromoethane	0.3490000	0.3621627	0.3621627	0.1	-3.77	20.00	AVRG
trans-1,2-Dichloroethene	0.4810000	0.4937579	0.4937579	0.1	-2.65	20.00	AVRG
1,1,1,2-Tetrachloroethane	0.3640000	0.3674629	0.3674629	0.1	-0.95	20.00	AVRG
1,1,1-Trichloroethane	0.8500000	0.8936031	0.8936031	0.1	-5.13	20.00	AVRG
1,1,2,2-Tetrachloroethane	49.860655	50.000000	0.8259440	0.3	0.28	20.00	LINR
Toluene	1.4430000	1.4975173	1.4975173	0.4	-3.78	20.00	AVRG
1,1,2-Trichloroethane	0.2900000	0.2866647	0.2866647	0.1	1.15	20.00	AVRG
1,1-Dichloroethane	0.9260000	0.9466885	0.9466885	0.2	-2.23	20.00	AVRG
1,1-Dichloroethene	0.5000000	0.4724459	0.4724459	0.1	5.51	20.00	AVRG
Trichlorofluoromethane	0.9610000	0.9223315	0.9223315	0.1	4.02	20.00	AVRG
1,2,3-Trichlorobenzene	49.091594	50.000000	0.2336514	0.01	1.82	20.00	2RDR
Tetrachloroethene	0.2780000	0.2896380	0.2896380	0.2	-4.19	20.00	AVRG
1,2,4-Trichlorobenzene	46.609217	50.000000	0.4172193	0.1	6.78	20.00	LINR
1,2,4-Trimethylbenzene	2.5430000	2.4869705	2.4869705	0.1	2.20	20.00	AVRG
tert-Butylbenzene	2.1180000	2.0349185	2.0349185	0.1	3.92	20.00	AVRG
Trichloroethene	0.3310000	0.3333773	0.3333773	0.2	-0.72	20.00	AVRG
1,2-Dichlorobenzene	1.4010000	1.3453778	1.3453778	0.4	3.97	20.00	AVRG
1,2-Dichloroethane	0.4910000	0.5009528	0.5009528	0.1	-2.03	20.00	AVRG
1,2-Dichloropropane	0.3360000	0.3320503	0.3320503	0.1	1.18	20.00	AVRG
1,3,5-Trimethylbenzene	2.4960000	2.4461714	2.4461714	0.1	2.00	20.00	AVRG
1,3-Dichloropropane	0.5690000	0.5596983	0.5596983	0.1	1.63	20.00	AVRG
1,4-Dichlorobenzene	48.575835	50.000000	1.4268900	0.4	2.85	20.00	LINR
2-Butanone	0.1850000	0.1946863	0.1946863	0.1	-5.24	20.00	AVRG
2-Chlorotoluene	2.2280000	2.0978276	2.0978276	0.1	5.84	20.00	AVRG
2-Hexanone	97.290999	100.00000	0.2062802	0.1	2.71	20.00	LINR
4-Chlorotoluene	2.5980000	2.5787673	2.5787673	0.1	0.74	20.00	AVRG
Styrene	47.571989	50.000000	1.0819766	0.3	4.86	20.00	LINR
4-Methyl-2-Pentanone	96.595943	100.00000	0.3075984	0.1	3.40	20.00	LINR
Acetone	115.40955	100.00000	0.1449145	0.1	-15.41	20.00	LINR
Benzene	1.2370000	1.2460477	1.2460477	0.5	-0.73	20.00	AVRG
Bromobenzene	0.8340000	0.8026621	0.8026621	0.1	3.76	20.00	AVRG
Bromochloromethane	0.3050000	0.3036319	0.3036319	0.1	0.45	20.00	AVRG
Bromodichloromethane	0.4830000	0.5000748	0.5000748	0.2	-3.54	20.00	AVRG
Bromoform	0.2420000	0.2518305	0.2518305	0.1	-4.06	20.00	AVRG
Bromomethane	52.187571	50.000000	0.5483141	0.1	-4.38	20.00	LINR
Carbon Disulfide	1.1780000	1.2319480	1.2319480	0.1	-4.58	20.00	AVRG

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS2105097

Instrument ID: VOA6 Calibration Date: 05/21/21 Time: 1054

Lab File ID: X052103 Init. Calib. Date(s): 05/18/21 05/18/21

Init. Calib. Times: 1123 1452

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Carbon Tetrachloride	0.4360000	0.4510744	0.4510744	0.1	-3.46	20.00	AVRG
Chlorobenzene	0.9800000	0.9771051	0.9771051	0.5	0.30	20.00	AVRG
Chloroethane	0.3780000	0.3991376	0.3991376	0.1	-5.59	20.00	AVRG
Chloroform	1.0620000	1.0762571	1.0762571	0.2	-1.34	20.00	AVRG
Chloromethane	52.099472	50.000000	0.5620022	0.1	-4.20	20.00	LINR
cis-1,2-Dichloroethene	0.5760000	0.5890006	0.5890006	0.1	-2.26	20.00	AVRG
Dibromochloromethane	0.3900000	0.3976663	0.3976663	0.1	-1.96	20.00	AVRG
Dichlorodifluoromethane	52.107600	50.000000	0.6568893	0.1	-4.22	20.00	LINR
Ethylbenzene	0.4840000	0.4978221	0.4978221	0.1	-2.86	20.00	AVRG
Hexachlorobutadiene	48.793660	50.000000	0.2922982	0.1	2.41	20.00	LINR
Isopropylbenzene	1.4800000	1.5284175	1.5284175	0.1	-3.27	20.00	AVRG
m,p-Xylenes	0.6240000	0.6454563	0.6454563	0.1	-3.44	20.00	AVRG
Methylene Chloride	0.5010000	0.5084833	0.5084833	0.1	-1.49	20.00	AVRG
n-Butylbenzene	2.3480000	2.3916754	2.3916754	0.5	-1.86	20.00	AVRG
n-Propylbenzene	3.5410000	3.5249108	3.5249108	0.1	0.45	20.00	AVRG
Naphthalene	45.871078	50.000000	0.6001648	0.2	8.26	20.00	LINR
o-Xylene	0.6070000	0.6155132	0.6155132	0.3	-1.40	20.00	AVRG
sec-Butylbenzene	2.9310000	2.8571668	2.8571668	0.1	2.52	20.00	AVRG
Vinyl Chloride	0.6040000	0.5722600	0.5722600	0.1	5.25	20.00	AVRG
1,2,3-Trichloropropane	48.783790	50.000000	0.6622455	0.1	2.43	20.00	LINR
p-Isopropyltoluene	2.4690000	2.4869104	2.4869104	0.1	-0.72	20.00	AVRG
1,2-Dibromo-3-Chloropropane	48.151425	50.000000	6.48e-002	0.05	3.70	20.00	LINR
Freon TF	0.4740000	0.4655667	0.4655667	0.1	1.78	20.00	AVRG
4-Bromofluorobenzene	49.833465	50.000000	0.4703973	0.1	0.33	20.00	LINR
Dibromofluoromethane	50.043798	50.000000	0.5574568	0.1	-0.09	20.00	LINR
Toluene-d8	48.052073	50.000000	1.1793884	0.1	3.90	20.00	LINR
1,2-Dichloroethane-d4	52.182258	50.000000	0.6782161	0.1	-4.36	20.00	LINR

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050972

Instrument ID: VOA6 Calibration Date: 05/21/21 Time: 2044

Lab File ID: X052131 Init. Calib. Date(s): 05/18/21 05/18/21

Init. Calib. Times: 1123 1452

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
cis-1,3-Dichloropropene	0.5480000	0.5649068	0.5649068	0.2	-3.08	50.00	AVRG
trans-1,3-Dichloropropene	0.4790000	0.5078913	0.5078913	0.1	-6.03	50.00	AVRG
1,3-Dichlorobenzene	1.4360000	1.3636256	1.3636256	0.6	5.04	50.00	AVRG
2,2-Dichloropropane	0.8280000	0.7450642	0.7450642	0.1	10.02	50.00	AVRG
1,1-Dichloropropene	0.4280000	0.4323877	0.4323877	0.1	-1.02	50.00	AVRG
Dibromomethane	0.2410000	0.2465580	0.2465580	0.1	-2.31	50.00	AVRG
1,2-Dibromoethane	0.3490000	0.3563797	0.3563797	0.1	-2.11	50.00	AVRG
trans-1,2-Dichloroethene	0.4810000	0.4741722	0.4741722	0.1	1.42	50.00	AVRG
1,1,1,2-Tetrachloroethane	0.3640000	0.3531024	0.3531024	0.1	2.99	50.00	AVRG
1,1,1-Trichloroethane	0.8500000	0.9132739	0.9132739	0.1	-7.44	50.00	AVRG
1,1,2,2-Tetrachloroethane	47.401440	50.000000	0.7856359	0.3	5.20	50.00	LINR
Toluene	1.4430000	1.4574286	1.4574286	0.4	-1.00	50.00	AVRG
1,1,2-Trichloroethane	0.2900000	0.2905152	0.2905152	0.1	-0.18	50.00	AVRG
1,1-Dichloroethane	0.9260000	0.8673908	0.8673908	0.2	6.33	50.00	AVRG
1,1-Dichloroethene	0.5000000	0.4904564	0.4904564	0.1	1.91	50.00	AVRG
Trichlorofluoromethane	0.9610000	0.9979740	0.9979740	0.1	-3.85	50.00	AVRG
1,2,3-Trichlorobenzene	34.540021	50.000000	0.1622721	0.01	30.92	50.00	2RDR
Tetrachloroethene	0.2780000	0.2908741	0.2908741	0.2	-4.63	50.00	AVRG
1,2,4-Trichlorobenzene	36.941032	50.000000	0.3258394	0.1	26.12	50.00	LINR
1,2,4-Trimethylbenzene	2.5430000	2.4342300	2.4342300	0.1	4.28	50.00	AVRG
tert-Butylbenzene	2.1180000	2.0794133	2.0794133	0.1	1.82	50.00	AVRG
Trichloroethene	0.3310000	0.3392649	0.3392649	0.2	-2.50	50.00	AVRG
1,2-Dichlorobenzene	1.4010000	1.2786709	1.2786709	0.4	8.73	50.00	AVRG
1,2-Dichloroethane	0.4910000	0.5168108	0.5168108	0.1	-5.26	50.00	AVRG
1,2-Dichloropropane	0.3360000	0.3388410	0.3388410	0.1	-0.84	50.00	AVRG
1,3,5-Trimethylbenzene	2.4960000	2.4277791	2.4277791	0.1	2.73	50.00	AVRG
1,3-Dichloropropane	0.5690000	0.5636572	0.5636572	0.1	0.94	50.00	AVRG
1,4-Dichlorobenzene	47.949038	50.000000	1.4083818	0.4	4.10	50.00	LINR
2-Butanone	0.1850000	0.1864929	0.1864929	0.1	-0.81	50.00	AVRG
2-Chlorotoluene	2.2280000	2.1068978	2.1068978	0.1	5.44	50.00	AVRG
2-Hexanone	104.49501	100.00000	0.2215120	0.1	-4.50	50.00	LINR
4-Chlorotoluene	2.5980000	2.5144936	2.5144936	0.1	3.21	50.00	AVRG
Styrene	47.973048	50.000000	1.0914493	0.3	4.05	50.00	LINR
4-Methyl-2-Pentanone	100.91037	100.00000	0.3213497	0.1	-0.91	50.00	LINR
Acetone	112.63355	100.00000	0.1415778	0.1	-12.63	50.00	LINR
Benzene	1.2370000	1.2567440	1.2567440	0.5	-1.60	50.00	AVRG
Bromobenzene	0.8340000	0.8115880	0.8115880	0.1	2.69	50.00	AVRG
Bromochloromethane	0.3050000	0.3147806	0.3147806	0.1	-3.21	50.00	AVRG
Bromodichloromethane	0.4830000	0.5016327	0.5016327	0.2	-3.86	50.00	AVRG
Bromoform	0.2420000	0.2485230	0.2485230	0.1	-2.70	50.00	AVRG
Bromomethane	52.793072	50.000000	0.5546182	0.1	-5.59	50.00	LINR
Carbon Disulfide	1.1780000	1.1255722	1.1255722	0.1	4.45	50.00	AVRG

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS2105097

Instrument ID: VOA6 Calibration Date: 05/21/21 Time: 2044

Lab File ID: X052131 Init. Calib. Date(s): 05/18/21 05/18/21

Init. Calib. Times: 1123 1452

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Carbon Tetrachloride	0.4360000	0.4403654	0.4403654	0.1	-1.00	50.00	AVRG
Chlorobenzene	0.9800000	0.9730352	0.9730352	0.5	0.71	50.00	AVRG
Chloroethane	0.3780000	0.3810897	0.3810897	0.1	-0.82	50.00	AVRG
Chloroform	1.0620000	1.0747769	1.0747769	0.2	-1.20	50.00	AVRG
Chloromethane	46.220375	50.000000	0.4982952	0.1	7.56	50.00	LINR
cis-1,2-Dichloroethene	0.5760000	0.5931207	0.5931207	0.1	-2.97	50.00	AVRG
Dibromochloromethane	0.3900000	0.3960050	0.3960050	0.1	-1.54	50.00	AVRG
Dichlorodifluoromethane	44.631628	50.000000	0.5587285	0.1	10.74	50.00	LINR
Ethylbenzene	0.4840000	0.4940379	0.4940379	0.1	-2.07	50.00	AVRG
Hexachlorobutadiene	39.191890	50.000000	0.2307609	0.1	21.62	50.00	LINR
Isopropylbenzene	1.4800000	1.5809618	1.5809618	0.1	-6.82	50.00	AVRG
m,p-Xylenes	0.6240000	0.6486087	0.6486087	0.1	-3.94	50.00	AVRG
Methylene Chloride	0.5010000	0.4727347	0.4727347	0.1	5.64	50.00	AVRG
n-Butylbenzene	2.3480000	2.2259363	2.2259363	0.5	5.20	50.00	AVRG
n-Propylbenzene	3.5410000	3.5674803	3.5674803	0.1	-0.75	50.00	AVRG
Naphthalene	35.181644	50.000000	0.4501621	0.2	29.64	50.00	LINR
o-Xylene	0.6070000	0.6099637	0.6099637	0.3	-0.49	50.00	AVRG
sec-Butylbenzene	2.9310000	2.8702545	2.8702545	0.1	2.07	50.00	AVRG
Vinyl Chloride	0.6040000	0.5562039	0.5562039	0.1	7.91	50.00	AVRG
1,2,3-Trichloropropane	49.231215	50.000000	0.6682436	0.1	1.54	50.00	LINR
p-Isopropyltoluene	2.4690000	2.4124204	2.4124204	0.1	2.29	50.00	AVRG
1,2-Dibromo-3-Chloropropane	41.111787	50.000000	5.5e-002	0.05	17.78	50.00	LINR
Freon TF	0.4740000	0.4702595	0.4702595	0.1	0.79	50.00	AVRG
4-Bromofluorobenzene	51.392897	50.000000	0.4851534	0.1	-2.78	50.00	LINR
Dibromofluoromethane	53.709663	50.000000	0.5981070	0.1	-7.42	50.00	LINR
Toluene-d8	47.637349	50.000000	1.1689900	0.1	4.72	50.00	LINR
1,2-Dichloroethane-d4	53.021349	50.000000	0.6888625	0.1	-6.04	50.00	LINR

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050972

Lab File ID (Standard): X052103 Date Analyzed: 05/21/21

Instrument ID: VOA6 Time Analyzed: 1054

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS1(DCB) AREA #	RT #	IS2(CBZ) AREA #	RT #	IS3(DFB) AREA #	RT #
	12 HOUR STD	232971	9.66	436210	7.67	447649	4.96
	UPPER LIMIT	465942	10.16	872420	8.17	895298	5.46
	LOWER LIMIT	116486	9.16	218105	7.17	223825	4.46
	CLIENT SAMPLE NO.						
01	VLCSW-210521	193570	9.66	376751	7.67	397267	4.96
02	VBLKW-210521	160883	9.66	360382	7.67	398677	4.96
03	HS21050972-03	161259	9.66	351626	7.67	381978	4.96
04	HS21050972-03MS	199997	9.66	402712	7.67	426912	4.96
05	HS21050972-03MSD	205010	9.66	412291	7.67	437796	4.96
06	HS21050972-01	156386	9.66	343807	7.67	372317	4.96
07	HS21050972-02	160104	9.66	351261	7.67	379104	4.97
08	HS21050972-04	150084	9.66	333476	7.67	369579	4.96
09	HS21050972-05	154520	9.66	344111	7.67	376630	4.97
10	HS21050972-06	149244	9.66	339556	7.67	366227	4.96
11	HS21050972-07	148922	9.66	330060	7.67	361033	4.96
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (CBZ) = Chlorobenzene-d5
IS3 (DFB) = 1,4-Difluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050972

Lab File ID (Standard): X052103 Date Analyzed: 05/21/21

Instrument ID: VOA6 Time Analyzed: 1054

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS4 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	269942	4.18				
	UPPER LIMIT	539884	4.68				
	LOWER LIMIT	134971	3.68				
	CLIENT SAMPLE NO.						
01	VLCSW-210521	241349	4.18				
02	VBLKW-210521	257307	4.18				
03	HS21050972-03	242337	4.18				
04	HS21050972-03MS	268883	4.18				
05	HS21050972-03MSD	279299	4.18				
06	HS21050972-01	246404	4.18				
07	HS21050972-02	241723	4.18				
08	HS21050972-04	237482	4.18				
09	HS21050972-05	239944	4.18				
10	HS21050972-06	239655	4.18				
11	HS21050972-07	236146	4.18				
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS4 = Pentafluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052101.D

Date : 21-MAY-2021 10:12

Client ID: BFB

Instrument: voa6.i

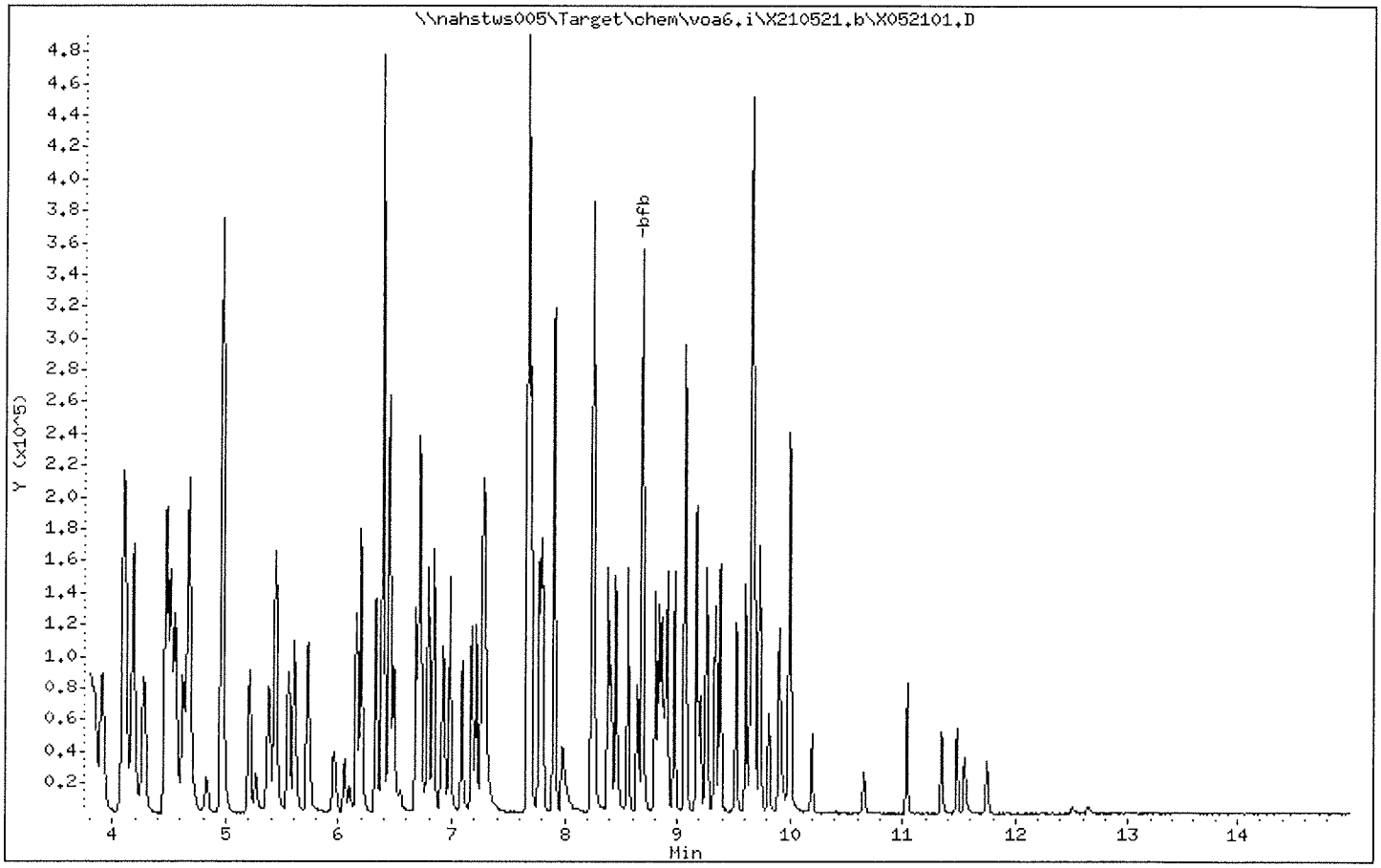
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25



Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052101.D

Date : 21-MAY-2021 10:12

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

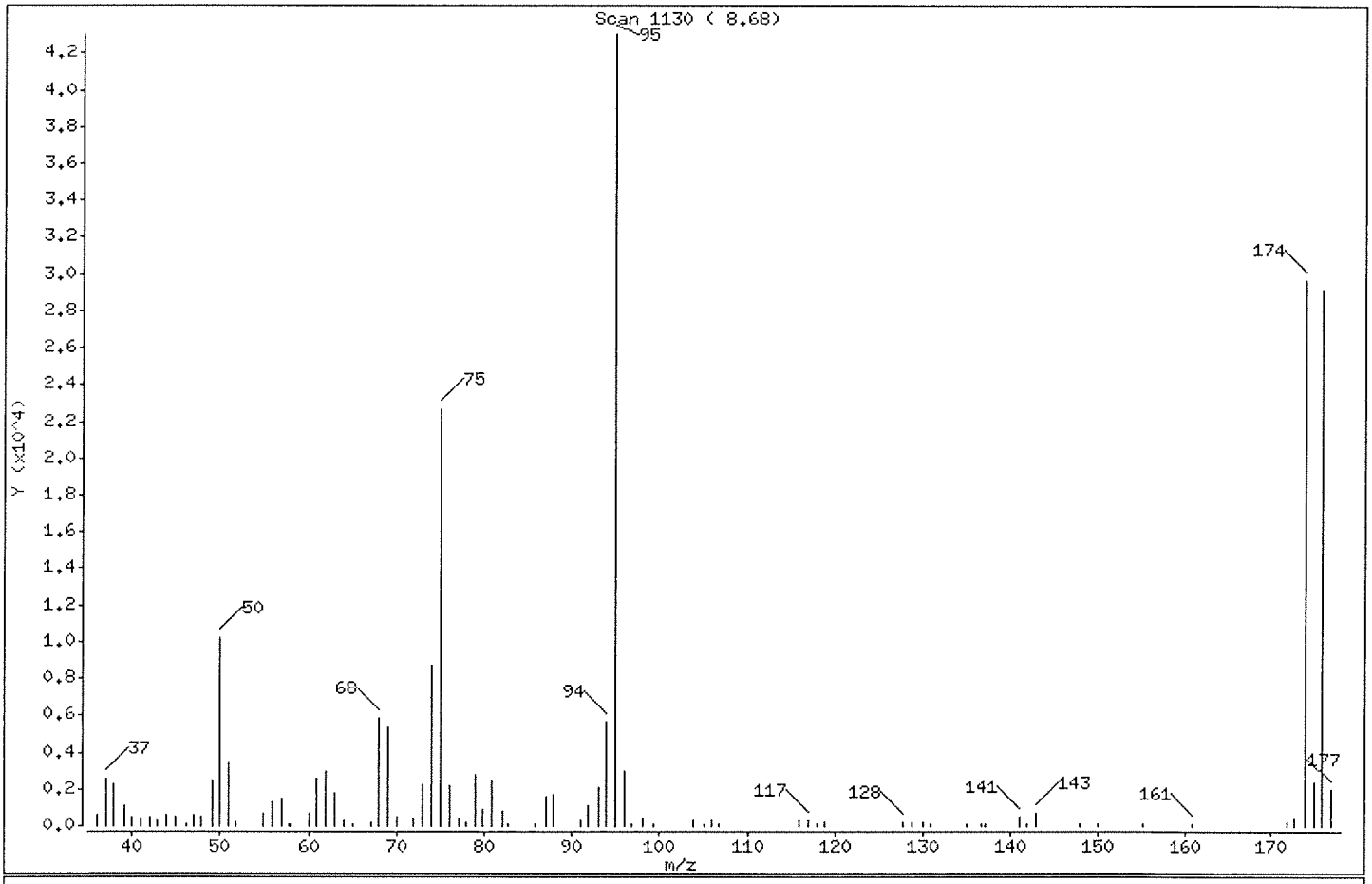
Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	23.66
75	30.00 - 60.00% of mass 95	52.57
96	5.00 - 9.00% of mass 95	6.79
173	Less than 2.00% of mass 174	1.01 (1.47)
174	Greater than 50.00% of mass 95	68.87
175	5.00 - 9.00% of mass 174	5.58 (8.11)
176	95.00 - 101.00% of mass 174	67.92 (98.62)
177	5.00 - 9.00% of mass 176	4.49 (6.61)

Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052101.D Page 3

Date : 21-MAY-2021 10:12

Client ID: BFB Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

Data File: X052101.D
Spectrum: Scan 1130 (8.68)
Location of Maximum: 95.00
Number of points: 84

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	551	60.00	651	85.90	84	129.90	227
37.00	2526	61.00	2527	87.00	1588	130.80	95
38.00	2251	62.00	2969	87.90	1670	135.00	87
39.10	1112	63.00	1764	90.90	311	136.60	109
39.90	448	64.00	282	91.90	1067	137.10	61
41.10	384	65.10	56	93.00	2069	141.00	515
42.00	542	67.10	169	94.00	5624	141.80	69
42.90	304	67.90	5832	95.00	43024	142.90	684
44.00	598	69.00	5319	96.00	2921	147.90	59
45.00	456	70.00	526	96.90	101	149.90	59
46.10	99	72.00	414	98.10	363	155.00	81
47.00	549	73.00	2255	99.20	81	160.90	104
47.90	465	74.00	8696	103.90	345	171.90	238
49.00	2501	75.00	22616	105.10	136	172.80	436
50.00	10178	76.00	2166	106.00	262	173.90	29632
51.00	3453	77.00	414	106.80	118	174.90	2402
51.90	206	78.00	158	115.90	271	175.90	29224
55.00	697	78.90	2809	116.90	329	176.90	1932
56.00	1305	79.80	878	117.90	142		
57.00	1440	80.90	2428	118.80	162		
57.90	109	82.00	775	127.70	189		
58.10	109	82.80	119	128.80	166		

Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052103.D Page 1
Report Date: 22-Jun-2021 12:08

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210521.b\X052103.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 21-MAY-2021 10:54
Operator : PC Inst ID: voa6.i
Smp Info : CCV;CCV;2;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210521.b\8260W.m
Meth Date : 22-Jun-2021 12:08 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 3 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

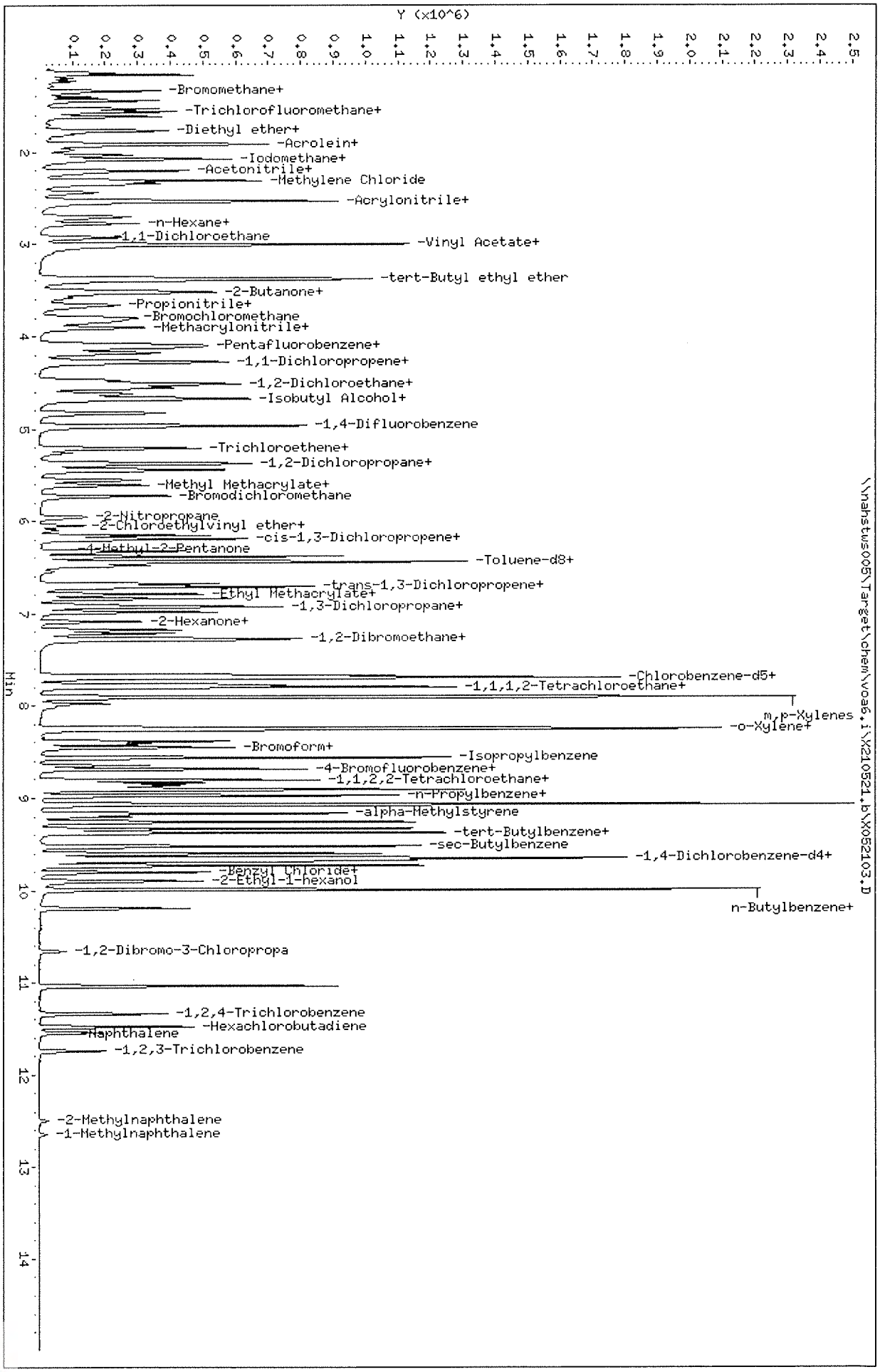
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	269942	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	447649	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	436210	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	232971	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	183079	50.0000	52.18
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	205192	50.0000	49.83
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	150481	50.0000	50.04
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	514461	50.0000	48.05
60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	160291	50.0000	50.43
31 1,1,1-Trichloroethane	97	4.089	4.089	(0.978)	241221	50.0000	52.53
68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	192421	50.0000	49.86
138 Freon TF	101	1.919	1.919	(0.459)	125676	50.0000	49.07
53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	125046	50.0000	49.34
22 1,1-Dichloroethane	63	2.921	2.921	(0.699)	255551	50.0000	51.12
11 1,1-Dichloroethene	96	1.911	1.911	(0.457)	127533	50.0000	47.24
32 1,1-Dichloropropene	75	4.282	4.282	(0.863)	195553	50.0000	50.99
93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.216)	54434	50.0000	49.09
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	154284	50.0000	48.78(M)
90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	97200	50.0000	46.60
79 1,2,4-Trimethylbenzene	105	9.383	9.383	(0.971)	579392	50.0000	48.89
89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.103)	15103	50.0000	48.15
57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	157979	50.0000	51.87

Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052103.D Page 2
Report Date: 22-Jun-2021 12:08

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88 1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	313434	50.0000	48.00
33 1,2-Dichloroethane	62	4.555	4.555	(0.918)	224251	50.0000	50.95
42 1,2-Dichloropropane	63	5.436	5.436	(1.095)	148642	50.0000	49.40
75 1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	569887	50.0000	49.00
83 1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	326093	50.0000	48.72
54 1,3-Dichloropropane	76	6.983	6.983	(0.910)	244146	50.0000	49.21
84 1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	332424	50.0000	48.57
26 2,2-Dichloropropane	77	3.509	3.509	(0.839)	237352	50.0000	53.07
24 2-Butanone	43	3.580	3.580	(0.856)	105108	100.000	105.48
76 2-Chlorotoluene	91	8.974	8.974	(0.929)	488733	50.0000	47.06
52 2-Hexanone	43	7.090	7.090	(0.924)	179963	100.000	97.29
77 4-Chlorotoluene	91	9.067	9.067	(0.938)	600778	50.0000	49.62
82 p-Isopropyltoluene	119	9.648	9.648	(0.999)	579378	50.0000	50.36
45 4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	268355	100.000	96.59
10 Acetone	43	1.976	1.976	(0.473)	78237	100.000	115.40
37 Benzene	78	4.512	4.512	(0.909)	557792	50.0000	50.36
74 Bromobenzene	156	8.802	8.802	(0.911)	186997	50.0000	48.14
29 Bromochloromethane	128	3.795	3.795	(0.908)	81963	50.0000	49.82
39 Bromodichloromethane	83	5.729	5.729	(1.154)	223858	50.0000	51.75
66 Bromoform	173	8.408	8.408	(1.096)	109851	50.0000	52.07
6 Bromomethane	94	1.338	1.338	(0.320)	148013	50.0000	52.18
19 Carbon Disulfide	76	2.069	2.069	(0.495)	665109	100.000	104.57
34 Carbon Tetrachloride	117	4.268	4.268	(0.860)	201923	50.0000	51.75
59 Chlorobenzene	112	7.692	7.692	(1.003)	426223	50.0000	49.83
7 Chloroethane	64	1.403	1.403	(0.336)	107744	50.0000	52.72
28 Chloroform	83	3.910	3.910	(0.935)	290527	50.0000	50.65
3 Chloromethane	50	1.073	1.073	(0.257)	151708	50.0000	52.09
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	158996	50.0000	51.10
46 cis-1,3-Dichloropropene	75	6.159	6.159	(1.241)	259264	50.0000	52.82
55 Dibromochloromethane	129	7.176	7.176	(0.936)	173466	50.0000	50.87
44 Dibromomethane	93	5.550	5.550	(1.118)	110676	50.0000	51.32
2 Dichlorodifluoromethane	85	0.973	0.973	(0.233)	177322	50.0000	52.10
61 Ethylbenzene	106	7.799	7.799	(1.017)	217155	50.0000	51.37
91 Hexachlorobutadiene	225	11.481	11.481	(1.188)	68097	50.0000	48.79
67 Isopropylbenzene	105	8.559	8.559	(1.116)	666711	50.0000	51.61
62 m,p-Xylenes	106	7.907	7.907	(1.031)	563109	100.000	103.37
17 Methylene Chloride	84	2.305	2.305	(0.551)	137261	50.0000	50.70
87 n-Butylbenzene	91	9.991	9.991	(1.034)	557191	50.0000	50.93
73 n-Propylbenzene	91	8.910	8.910	(0.922)	821202	50.0000	49.76
92 Naphthalene	128	11.546	11.546	(1.195)	139821	50.0000	45.87
63 o-Xylene	106	8.244	8.244	(1.075)	268493	50.0000	50.67
81 sec-Butylbenzene	105	9.519	9.519	(0.985)	665637	50.0000	48.74
64 Styrene	104	8.258	8.258	(1.077)	471969	50.0000	47.57
78 tert-Butylbenzene	119	9.340	9.340	(0.967)	474077	50.0000	48.04
56 Tetrachloroethene	164	6.926	6.926	(0.903)	126343	50.0000	52.12
50 Toluene	91	6.446	6.446	(0.840)	653232	50.0000	51.90
20 trans-1,2-Dichloroethene	96	2.528	2.528	(0.604)	133286	50.0000	51.32
51 trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	236257	50.0000	55.03
38 Trichloroethene	130	5.206	5.206	(1.049)	149236	50.0000	50.34
8 Trichlorofluoromethane	101	1.560	1.560	(0.373)	248976	50.0000	47.98
5 Vinyl Chloride	62	1.145	1.145	(0.274)	154477	50.0000	47.39

QC Flag Legend

M - Compound response manually integrated.

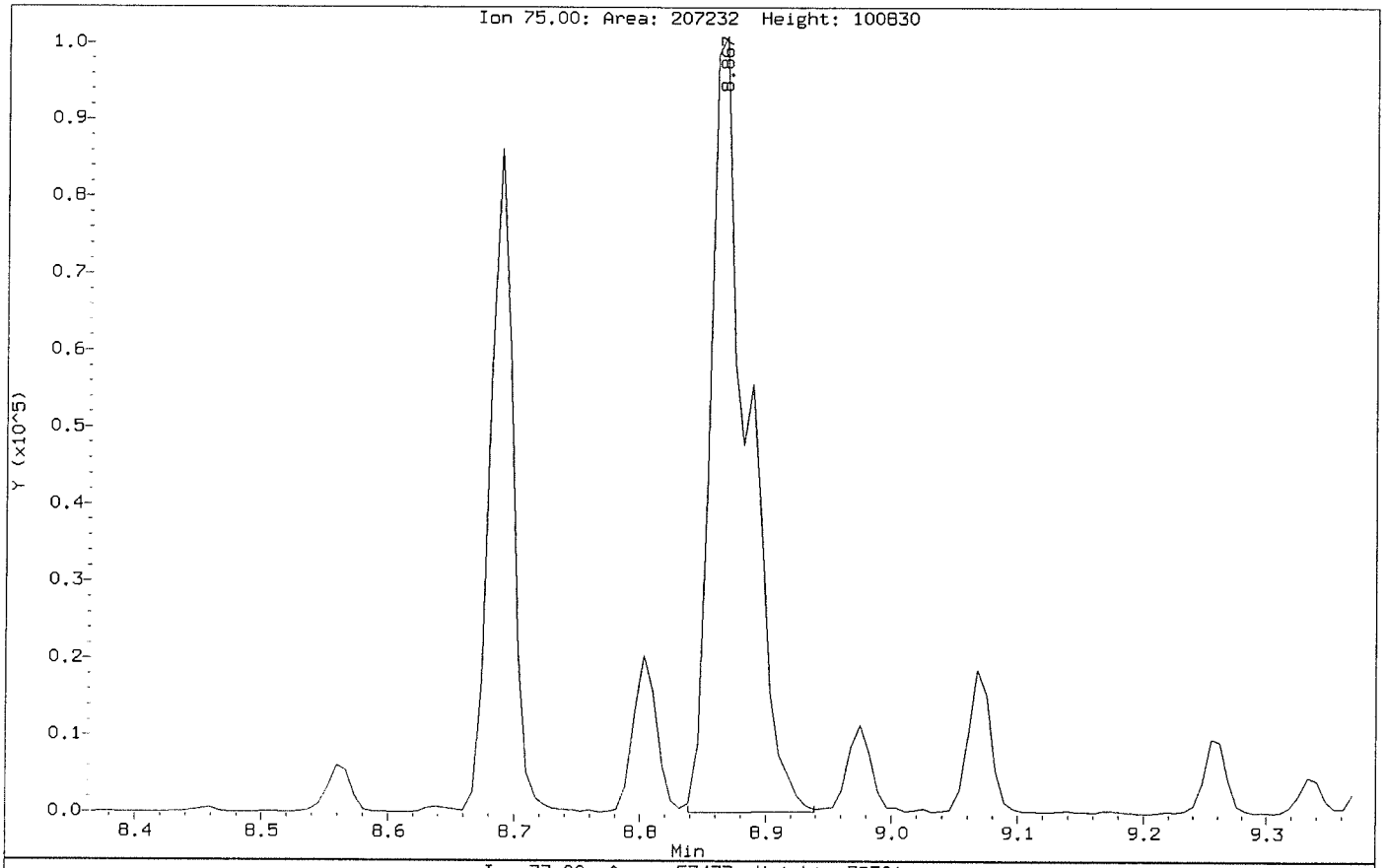


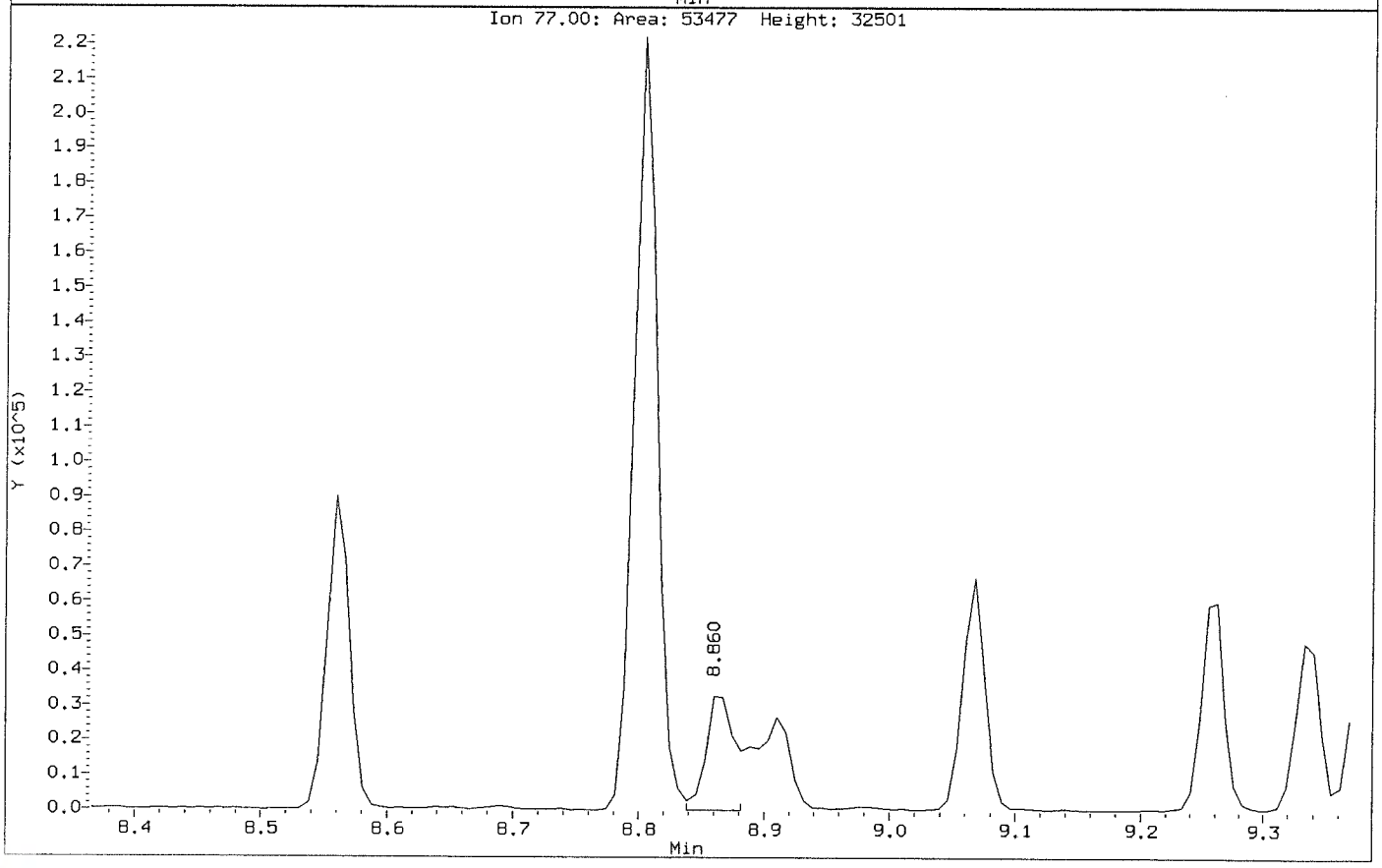
Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052103.D
Date : 21-MAY-2021 10:54
Client ID: CCV
Sample Info: CCV;CCV;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X210521.b\Before\X052103.D
Injection Date: 21-MAY-2021 10:54
Instrument: voa6.i
Client Sample ID: CCV

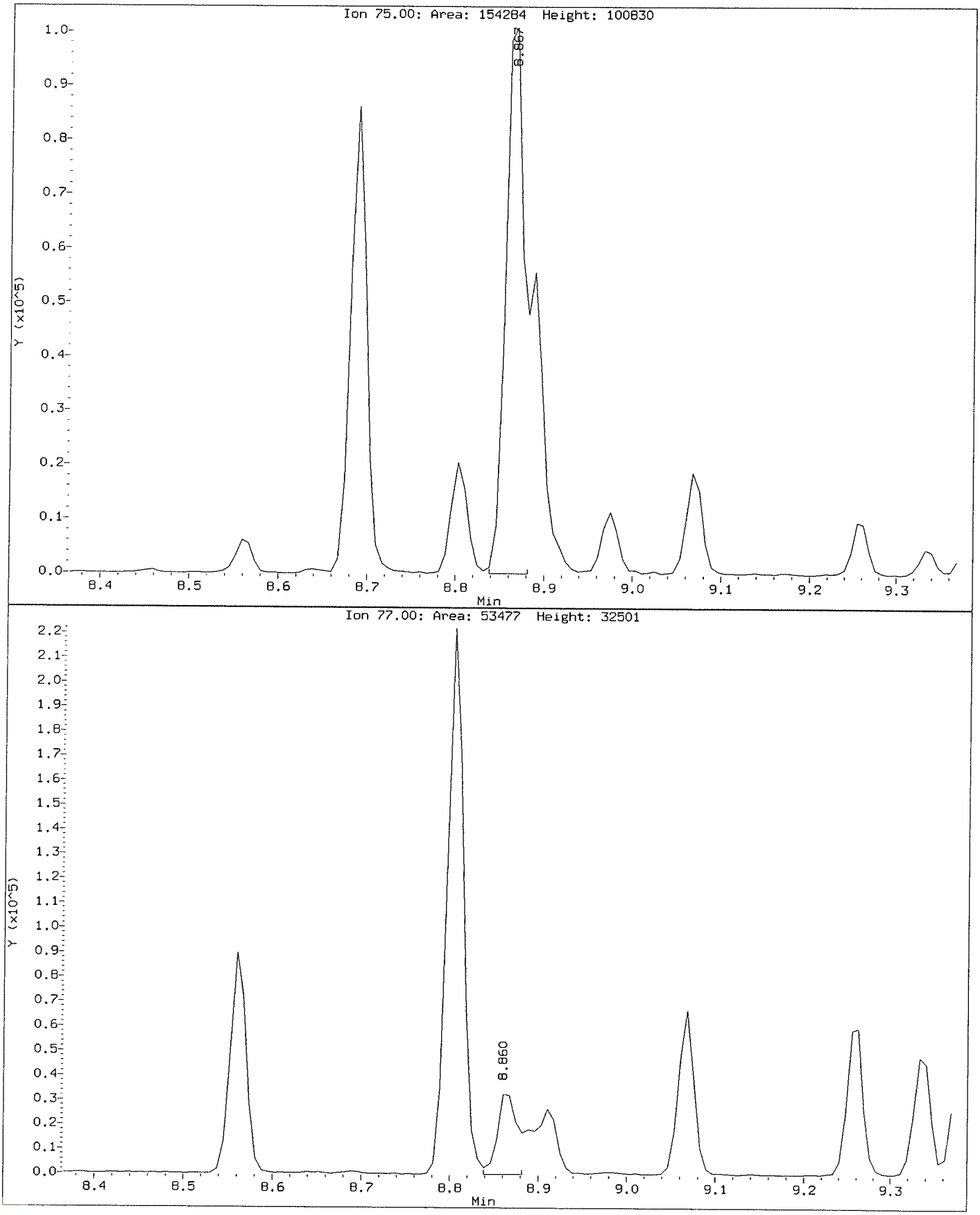
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





Data File: \\NAHSTWS005\Target\chem\voa6.i\X210521.b\X052103.D
Injection Date: 21-MAY-2021 10:54
Instrument: voa6.i
Client Sample ID: CCV

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052105.D Page 1
Report Date: 22-Jun-2021 12:11

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210521.b\X052105.D
Lab Smp Id: VLCSW-210521 Client Smp ID: VLCSW-210521
Inj Date : 21-MAY-2021 11:36
Operator : PC Inst ID: voa6.i
Smp Info : VLCSW-210521;VLCSW-210521;3;;LCS
Misc Info : HS18090001;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X210521.b\8260W.m
Meth Date : 22-Jun-2021 12:10 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 5 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

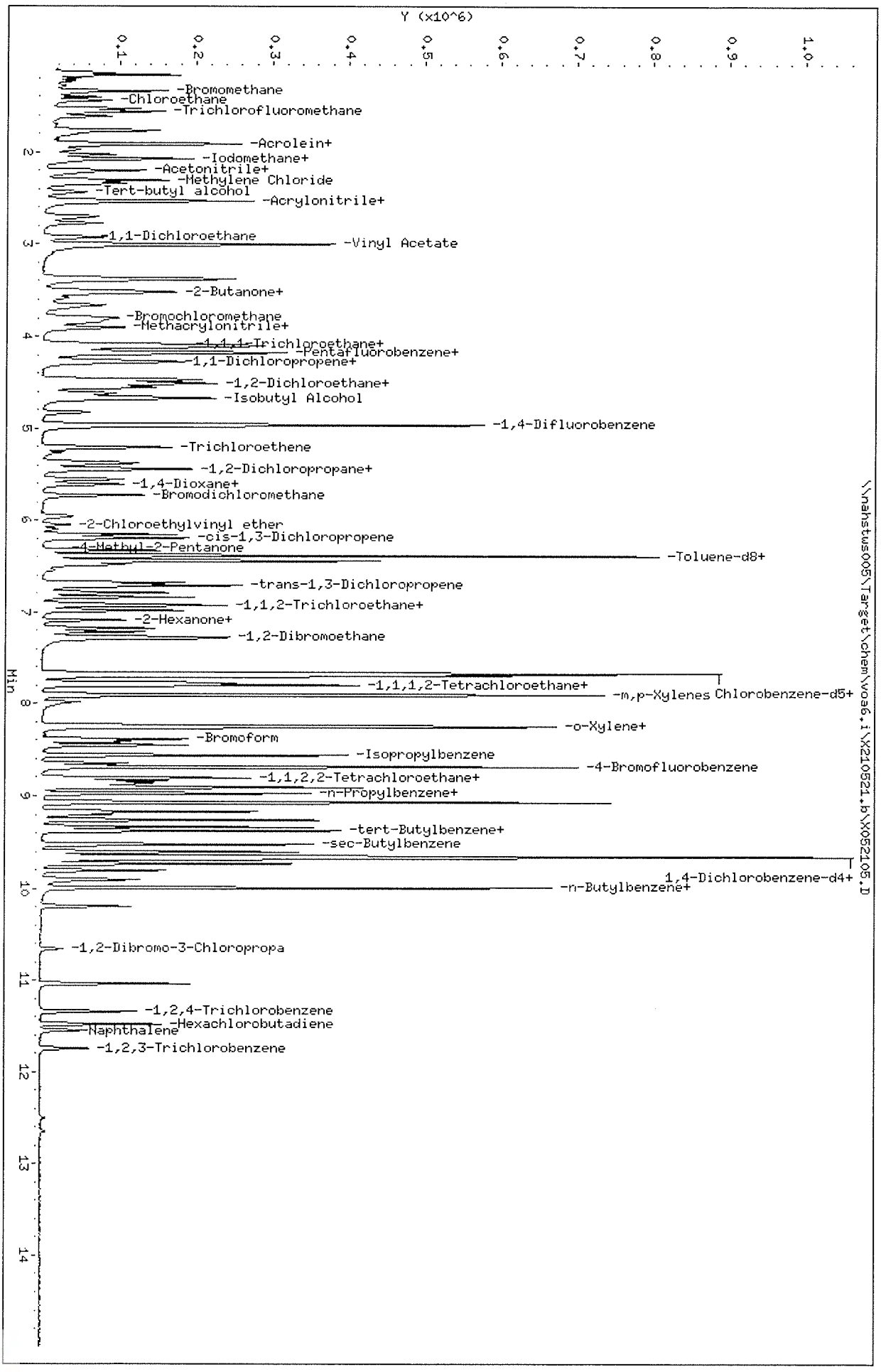
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	241349	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	397267	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	376751	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	193570	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.469	(1.070)	155453	49.4935	49.49
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	173011	48.6521	48.65
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	129420	48.1301	48.13
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	456017	49.2887	49.28
60 1,1,1,2-Tetrachloroethane	131	7.778	7.771	(1.014)	54411	19.8235	19.82
31 1,1,1-Trichloroethane	97	4.082	4.082	(0.976)	79316	19.3216	19.32
68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	63697	19.5458	19.54
138 Freon TF	101	1.919	1.911	(0.459)	42307	18.4766	18.47
53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	42518	19.4279	19.42
22 1,1-Dichloroethane	63	2.922	2.921	(0.699)	84340	18.8705	18.87
11 1,1-Dichloroethene	96	1.919	1.911	(0.459)	48377	20.0432	20.04
32 1,1-Dichloropropene	75	4.283	4.282	(0.863)	65680	19.3003	19.30
93 1,2,3-Trichlorobenzene	180	11.746	11.739	(1.216)	17866	20.0198	20.01
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	51385	19.1855	19.18(M)
90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	32298	20.1201	20.12
79 1,2,4-Trimethylbenzene	105	9.375	9.375	(0.970)	176226	17.9001	17.90
89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.103)	5028	20.2551	20.25
57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	51708	19.6595	19.65

Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052105.D Page 2
Report Date: 22-Jun-2021 12:11

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
88	1,2-Dichlorobenzene	146	9.992	9.991	(1.034)	98776	18.2064	18.20
33	1,2-Dichloroethane	62	4.555	4.555	(0.918)	79378	20.3221	20.32
42	1,2-Dichloropropane	63	5.436	5.436	(1.095)	50691	18.9867	18.98
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	173007	17.9049	17.90
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	103628	18.6340	18.63
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	84475	19.7177	19.71
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	108260	19.1936	19.19
26	2,2-Dichloropropane	77	3.509	3.509	(0.839)	78177	19.5534	19.55
24	2-Butanone	43	3.581	3.580	(0.856)	34139	38.3205	38.32
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	155814	18.0608	18.06
52	2-Hexanone	43	7.090	7.090	(0.924)	63888	39.8300	39.83
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	182091	18.1012	18.10
82	p-Isopropyltoluene	119	9.648	9.648	(0.999)	166725	17.4447	17.44
45	4-Methyl-2-Pentanone	43	6.331	6.324	(0.825)	92727	38.6980	38.69
10	Acetone	43	1.976	1.976	(0.473)	31677	49.4424	49.44
37	Benzene	78	4.512	4.512	(0.909)	194849	19.8250	19.82
74	Bromobenzene	156	8.802	8.802	(0.911)	62791	19.4589	19.45
29	Bromochloromethane	128	3.795	3.795	(0.908)	28869	19.6272	19.62
39	Bromodichloromethane	83	5.729	5.729	(1.154)	74004	19.2798	19.27
66	Bromoform	173	8.408	8.408	(1.096)	35752	19.6219	19.62
6	Bromomethane	94	1.339	1.338	(0.320)	62458	24.3789	24.37
19	Carbon Disulfide	76	2.069	2.069	(0.495)	227368	39.9851	39.98
34	Carbon Tetrachloride	117	4.268	4.268	(0.860)	62337	18.0026	18.00
59	Chlorobenzene	112	7.692	7.692	(1.003)	144505	19.5605	19.56
7	Chloroethane	64	1.403	1.403	(0.336)	43421	23.7672	23.76
28	Chloroform	83	3.903	3.910	(0.933)	93541	18.2427	18.24
3	Chloromethane	50	1.074	1.081	(0.257)	52244	20.2123	20.21
27	cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	52652	18.9291	18.92
46	cis-1,3-Dichloropropene	75	6.152	6.152	(1.240)	84664	19.4396	19.43
55	Dibromochloromethane	129	7.176	7.176	(0.936)	58694	19.9322	19.93
44	Dibromomethane	93	5.550	5.550	(1.118)	37054	19.3642	19.36
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	56427	19.8848	19.88
61	Ethylbenzene	106	7.800	7.799	(1.017)	71858	19.6833	19.68
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	22451	21.2830	21.28
67	Isopropylbenzene	105	8.559	8.559	(1.116)	206861	18.5407	18.54
62	m,p-Xylenes	106	7.907	7.907	(1.031)	181168	38.5070	38.50
17	Methylene Chloride	84	2.306	2.305	(0.551)	45634	18.8558	18.85
87	n-Butylbenzene	91	9.992	9.991	(1.034)	164035	18.0467	18.04
73	n-Propylbenzene	91	8.910	8.910	(0.922)	251581	18.3510	18.35
92	Naphthalene	128	11.546	11.539	(1.195)	47164	20.4655	20.46
63	o-Xylene	106	8.244	8.244	(1.075)	88646	19.3721	19.37
81	sec-Butylbenzene	105	9.519	9.519	(0.985)	190795	16.8166	16.81
64	Styrene	104	8.258	8.258	(1.077)	152757	18.9294	18.92
78	tert-Butylbenzene	119	9.333	9.332	(0.966)	138894	16.9402	16.94
56	Tetrachloroethene	164	6.933	6.926	(0.904)	40836	19.5062	19.50
50	Toluene	91	6.446	6.446	(0.840)	220836	20.3161	20.31
20	trans-1,2-Dichloroethene	96	2.528	2.527	(0.604)	44291	19.0746	19.07
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	79221	20.7929	20.79
38	Trichloroethene	130	5.207	5.206	(1.049)	50953	19.3689	19.36
8	Trichlorofluoromethane	101	1.561	1.560	(0.373)	92228	19.8800	19.88
5	Vinyl Chloride	62	1.145	1.145	(0.274)	57845	19.8513	19.85

QC Flag Legend

M - Compound response manually integrated.

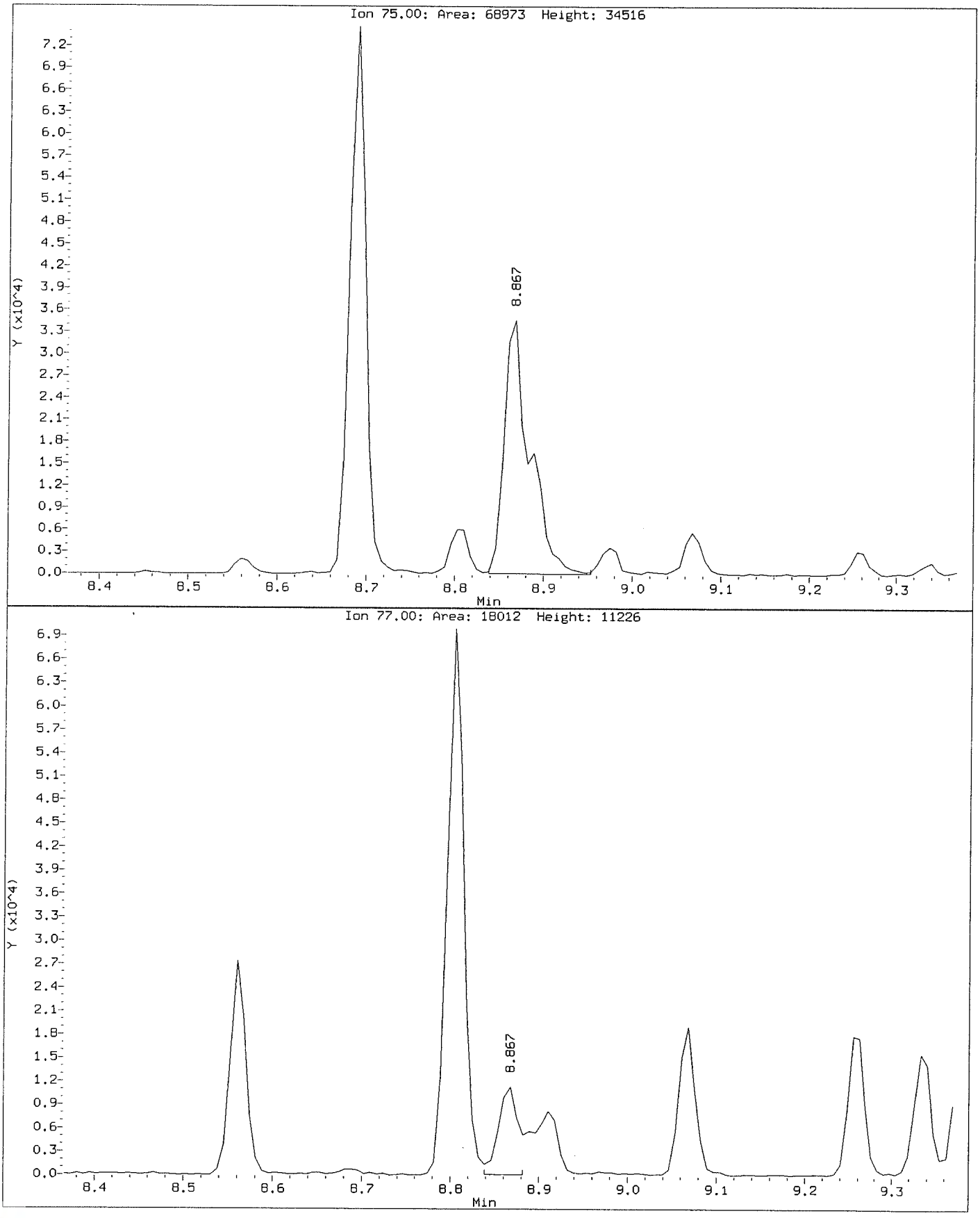


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Date : 21-MAY-2021 11:36
Client ID: VLCSW-210521
Sample Info: VLCSW-210521;VLCSW-210521;3;;LCS
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

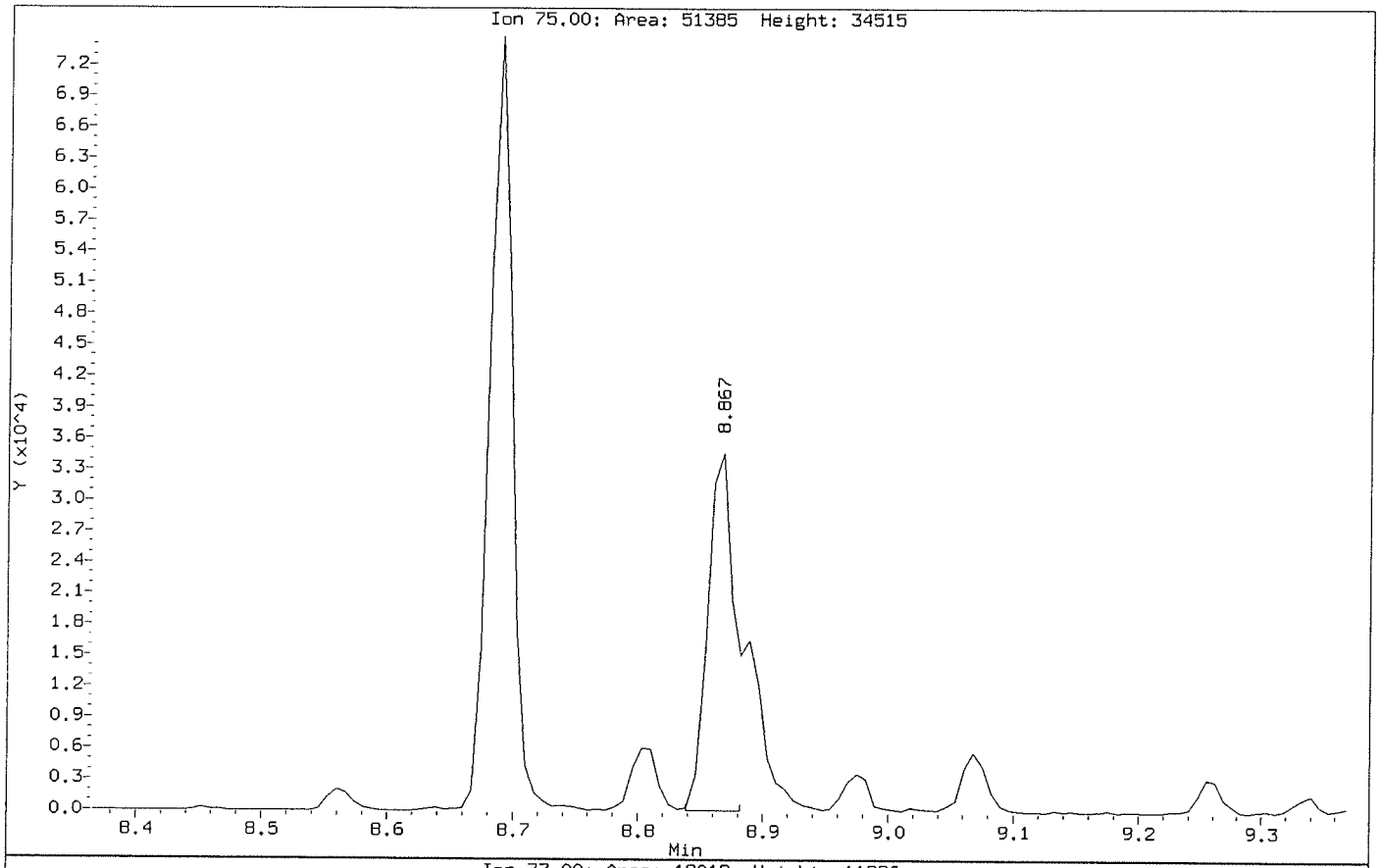
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Injection Date: 21-MAY-2021 11:36
Instrument: voa6.i
Client Sample ID: VLCSW-210521

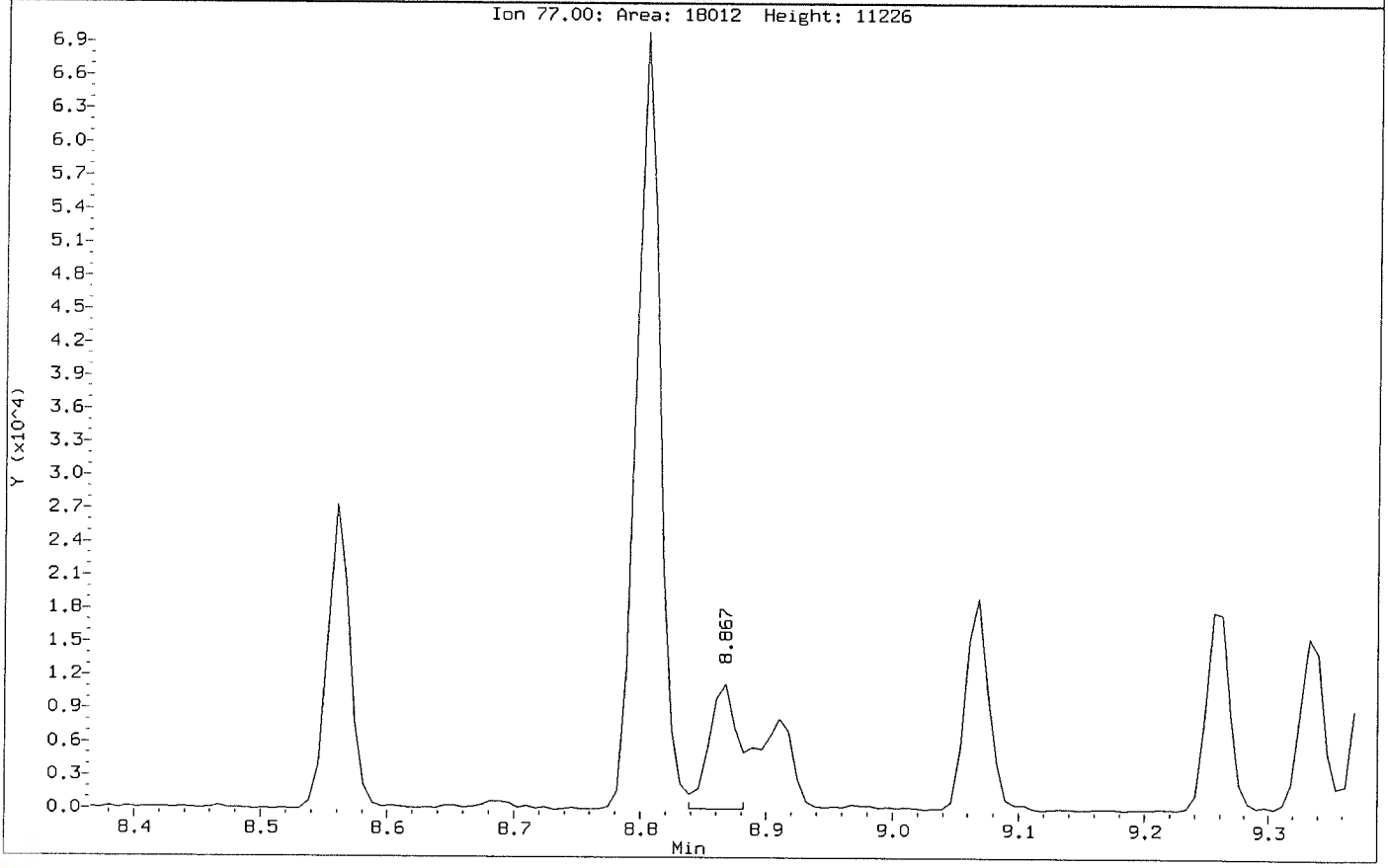
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



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Injection Date: 21-MAY-2021 11:36
Instrument: voa6.i
Client Sample ID: VLCSW-210521

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052107.D Page 1
Report Date: 22-Jun-2021 12:11

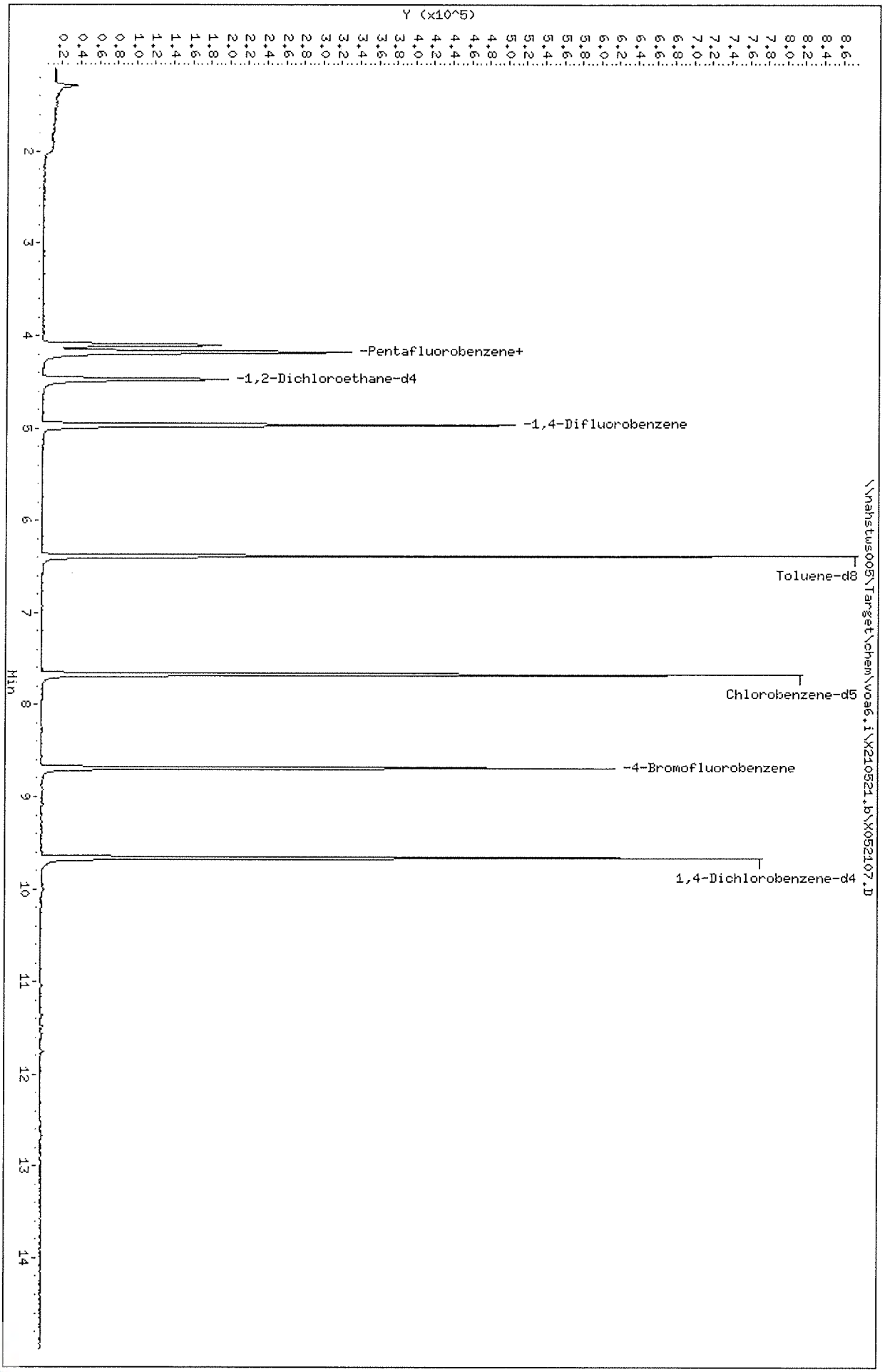
ALS Laboratory Group

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Lab Smp Id: VBLKW-210521 Client Smp ID: VBLKW-210521
Inj Date : 21-MAY-2021 12:18
Operator : PC Inst ID: voa6.i
Smp Info : VBLKW-210521;VBLKW-210521;3;;BLANK
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210521.b\8260W.m
Meth Date : 22-Jun-2021 12:10 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 7 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	257307	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	398677	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.671	(1.000)	360382	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	160883	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.469	(1.070)	155701	46.4211	46.42
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	154564	45.4469	45.44
$ 30 Dibromofluoromethane	113	4.096	4.096	(0.979)	130537	45.5224	45.52
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	486563	54.8619	54.86



Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052107.D
Date : 21-MAY-2021 12:18
Client ID: VBLKW-210521
Sample Info: VBLKW-210521;VBLKW-210521;3;;BLANK
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052111.D Page 1
Report Date: 22-Jun-2021 12:13

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210521.b\X052111.D
Lab Smp Id: HS21050972-03 Client Smp ID: HS21050972-03
Inj Date : 21-MAY-2021 13:43
Operator : PC Inst ID: voa6.i
Smp Info : HS21050972-03;HS21050972-03;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210521.b\8260W.m
Meth Date : 22-Jun-2021 12:12 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 11
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

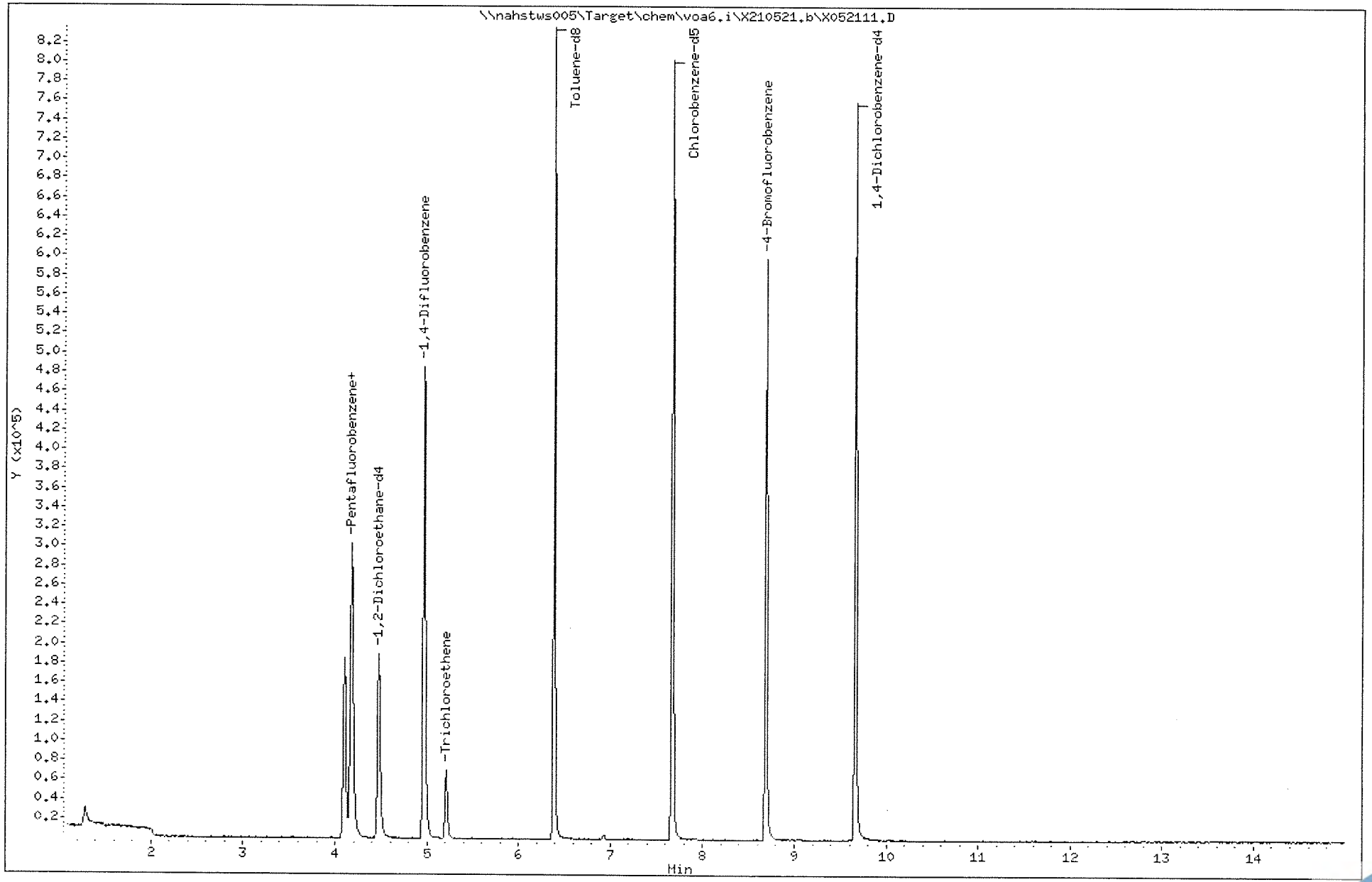
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	242337	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	381978	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	351626	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	161259	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.469	(1.070)	149067	47.2096	47.20
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	149064	44.9225	44.92
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	125517	46.4805	46.48
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	462525	53.4763	53.47
38 Trichloroethene	130	5.206	5.206	(1.049)	21475	8.49010	8.49

Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052111.D
Date : 21-MAY-2021 13:43
Client ID: HS21050972-03
Sample Info: HS21050972-03;HS21050972-03;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i

Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052111.D

Date : 21-MAY-2021 13:43

Client ID: HS21050972-03

Instrument: voa6.i

Sample Info: HS21050972-03;HS21050972-03;;;

Purge Volume: 5.0

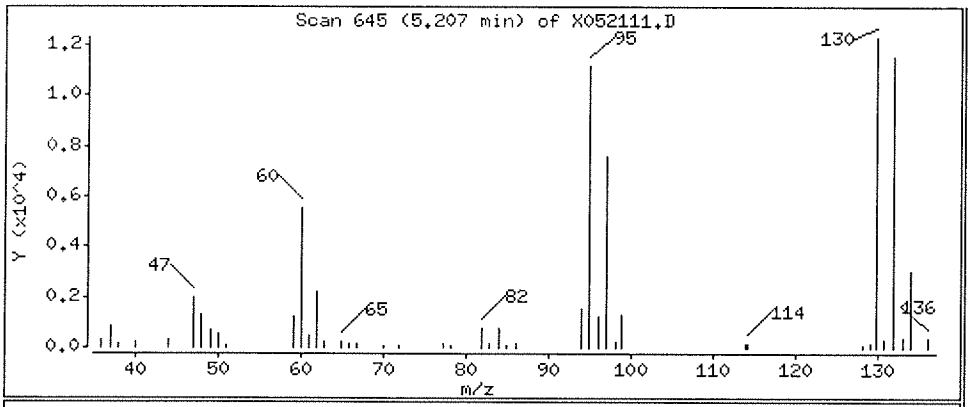
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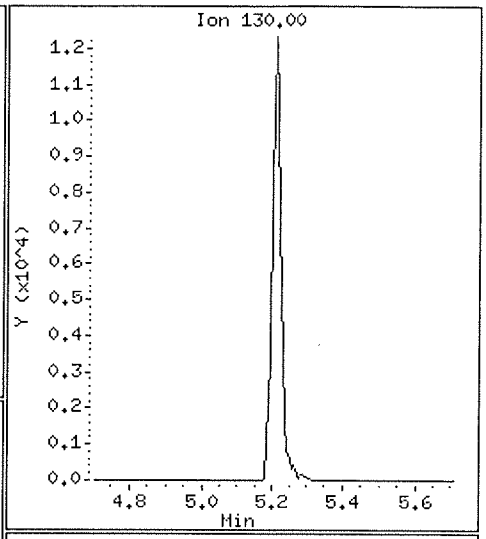
Column phase: DB624

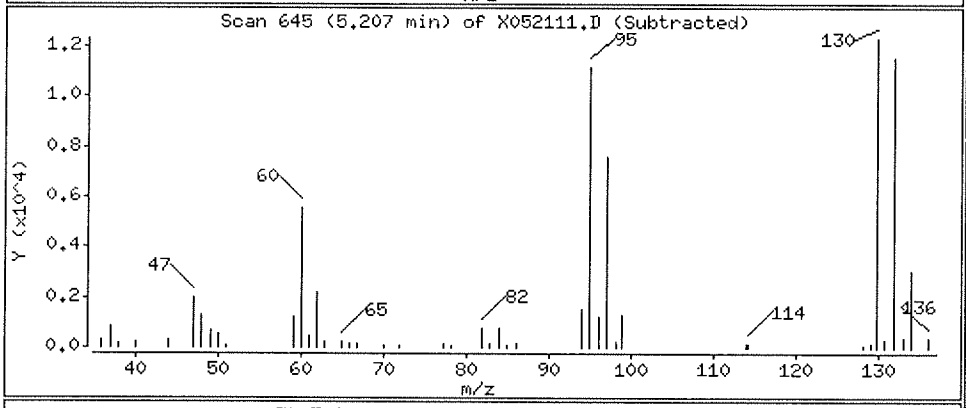
Column diameter: 0.18

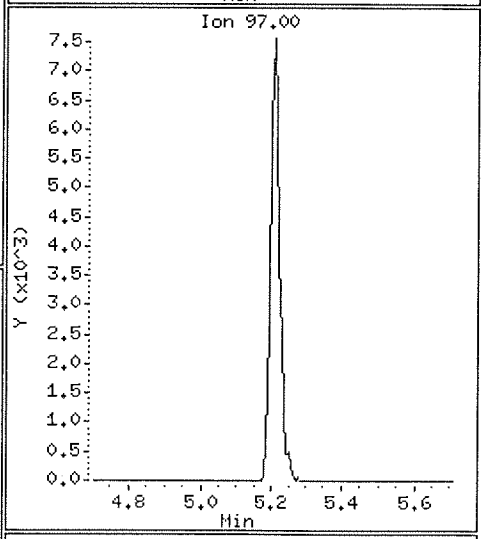
38 Trichloroethene

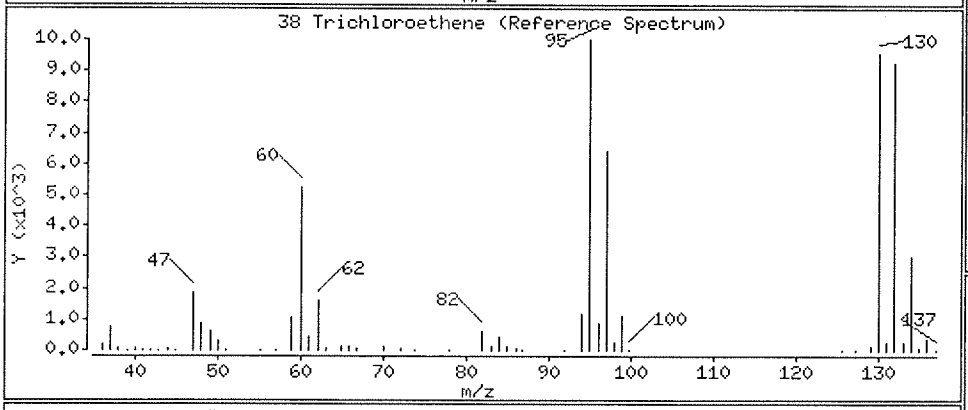
Concentration: 8.49 ug/l

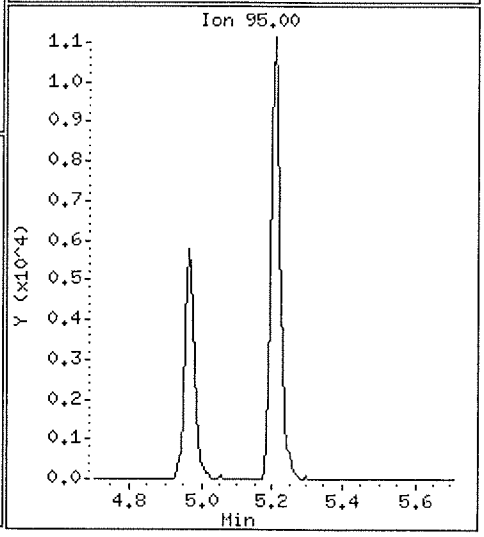


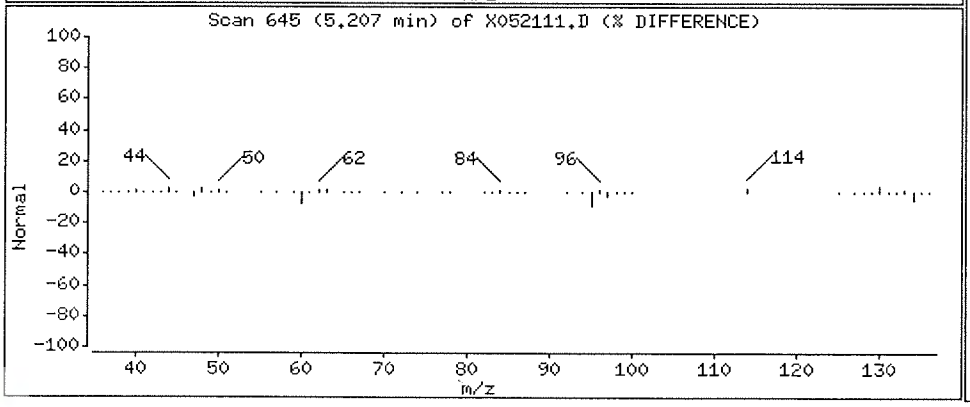












Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052112.D Page 1
Report Date: 22-Jun-2021 12:11

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210521.b\X052112.D
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Inj Date : 21-MAY-2021 14:04
Operator : PC Inst ID: voa6.i
Smp Info : HS21050972-03MS;HS21050972-03MS;3;;MS
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210521.b\8260W.m
Meth Date : 22-Jun-2021 12:10 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 12 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

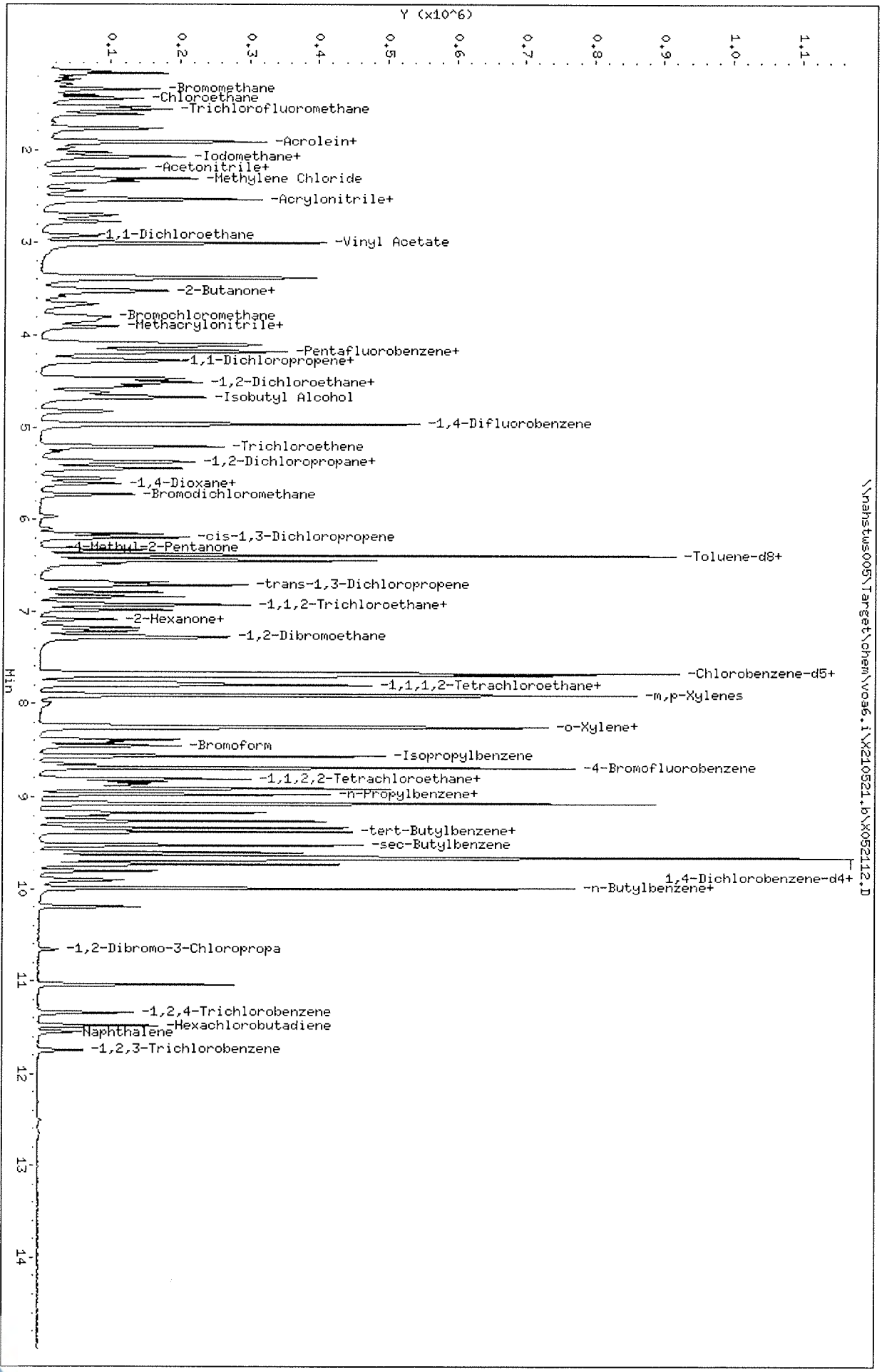
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	268883	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	426912	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	402712	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	199997	50.0000	
$	35 1,2-Dichloroethane-d4	65	4.469	4.469	(1.068)	157144	44.7908	44.79
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	184056	48.4220	48.42
$	30 Dibromofluoromethane	113	4.096	4.096	(0.979)	135576	45.2428	45.24
$	48 Toluene-d8	98	6.388	6.388	(0.833)	512374	51.7581	51.75
	60 1,1,1,2-Tetrachloroethane	131	7.778	7.771	(1.014)	56296	19.1880	19.18
	31 1,1,1-Trichloroethane	97	4.089	4.082	(0.978)	85891	18.7807	18.78
	68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	66686	19.8125	19.81
	138 Freon TF	101	1.919	1.911	(0.459)	55650	21.8151	21.81
	53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	43145	18.4435	18.44
	22 1,1-Dichloroethane	63	2.922	2.921	(0.699)	83737	16.8170	16.81
	11 1,1-Dichloroethene	96	1.912	1.911	(0.457)	53505	19.8978	19.89
	32 1,1-Dichloropropene	75	4.283	4.282	(0.863)	72846	19.9196	19.91
	93 1,2,3-Trichlorobenzene	180	11.746	11.739	(1.216)	18763	20.3377	20.33
	71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	53276	19.2544	19.25 (M)
	90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	33063	19.9575	19.95
	79 1,2,4-Trimethylbenzene	105	9.383	9.375	(0.971)	210418	20.6863	20.68
	89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.103)	5485	21.2964	21.29
	57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	55319	19.6765	19.67

Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052112.D Page 2
Report Date: 22-Jun-2021 12:11

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	107868	19.2434	19.24
33	1,2-Dichloroethane	62	4.555	4.555	(0.918)	79007	18.8225	18.82
42	1,2-Dichloropropane	63	5.436	5.436	(1.095)	51327	17.8899	17.88
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	207487	20.7832	20.78
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	115936	20.1773	20.17
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	85426	18.6543	18.65
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	119168	20.4320	20.43
26	2,2-Dichloropropane	77	3.509	3.509	(0.839)	77823	17.4716	17.47
24	2-Butanone	43	3.581	3.580	(0.856)	33079	33.3284	33.32
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	177699	19.9356	19.93
52	2-Hexanone	43	7.090	7.090	(0.924)	62388	36.3640	36.36
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	207220	19.9372	19.93
82	p-Isopropyltoluene	119	9.648	9.648	(0.999)	215693	21.8431	21.84
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	93765	36.6133	36.61
10	Acetone	43	1.976	1.976	(0.473)	28679	39.2133	39.21
37	Benzene	78	4.512	4.512	(0.909)	196568	18.6111	18.61
74	Bromobenzene	156	8.802	8.802	(0.911)	64960	19.4842	19.48
29	Bromochloromethane	128	3.795	3.795	(0.908)	28273	17.2536	17.25
39	Bromodichloromethane	83	5.729	5.729	(1.154)	73404	17.7956	17.79
66	Bromoform	173	8.408	8.408	(1.096)	36684	18.8355	18.83
6	Bromomethane	94	1.339	1.338	(0.320)	70425	24.6795	24.67
19	Carbon Disulfide	76	2.069	2.069	(0.495)	241600	38.1372	38.13
34	Carbon Tetrachloride	117	4.268	4.268	(0.860)	71502	19.2155	19.21
59	Chlorobenzene	112	7.692	7.692	(1.003)	152540	19.3171	19.31
7	Chloroethane	64	1.403	1.403	(0.336)	47398	23.2874	23.28
28	Chloroform	83	3.910	3.910	(0.935)	99768	17.4647	17.46
3	Chloromethane	50	1.081	1.081	(0.258)	51843	18.0290	18.02
27	cis-1,2-Dichloroethene	96	3.523	3.530	(0.842)	53852	17.3780	17.37
46	cis-1,3-Dichloropropene	75	6.159	6.152	(1.241)	83466	17.8337	17.83
55	Dibromochloromethane	129	7.176	7.176	(0.936)	57695	18.3299	18.32
44	Dibromomethane	93	5.550	5.550	(1.118)	36378	17.6908	17.69
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	56355	18.0410	18.04
61	Ethylbenzene	106	7.800	7.799	(1.017)	82662	21.1831	21.18
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	24585	22.3664	22.36
67	Isopropylbenzene	105	8.559	8.559	(1.116)	250400	20.9962	20.99
62	m,p-Xylenes	106	7.907	7.907	(1.031)	205939	40.9503	40.95
17	Methylene Chloride	84	2.306	2.305	(0.551)	46326	17.1816	17.18
87	n-Butylbenzene	91	9.991	9.991	(1.034)	204565	21.7824	21.78
73	n-Propylbenzene	91	8.910	8.910	(0.922)	308565	21.7842	21.78
92	Naphthalene	128	11.546	11.539	(1.195)	43340	18.5450	18.54
63	o-Xylene	106	8.244	8.244	(1.075)	94465	19.3130	19.31
81	sec-Butylbenzene	105	9.519	9.519	(0.985)	254901	21.7449	21.74
64	Styrene	104	8.258	8.258	(1.077)	164847	19.0938	19.09
78	tert-Butylbenzene	119	9.340	9.332	(0.967)	180716	21.3327	21.33
56	Tetrachloroethene	164	6.926	6.926	(0.903)	49986	22.3377	22.33
50	Toluene	91	6.446	6.446	(0.840)	238126	20.4945	20.49
20	trans-1,2-Dichloroethene	96	2.535	2.527	(0.606)	46120	17.8284	17.82
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	77701	18.9778	18.97
38	Trichloroethene	130	5.207	5.206	(1.049)	79705	28.1946	28.19
8	Trichlorofluoromethane	101	1.561	1.560	(0.373)	106320	20.5708	20.57
5	Vinyl Chloride	62	1.138	1.145	(0.272)	58678	18.0751	18.07

QC Flag Legend

M - Compound response manually integrated.

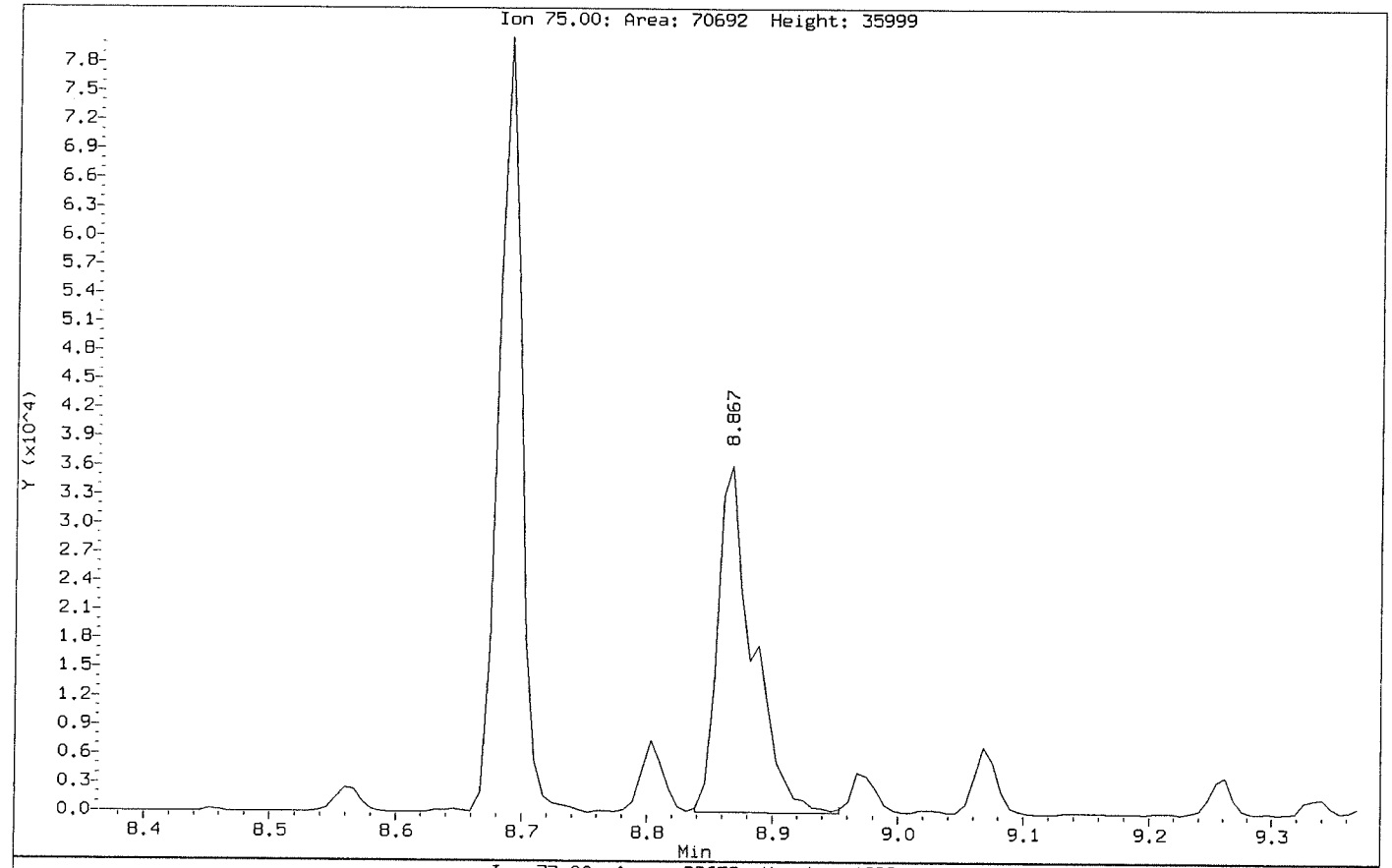


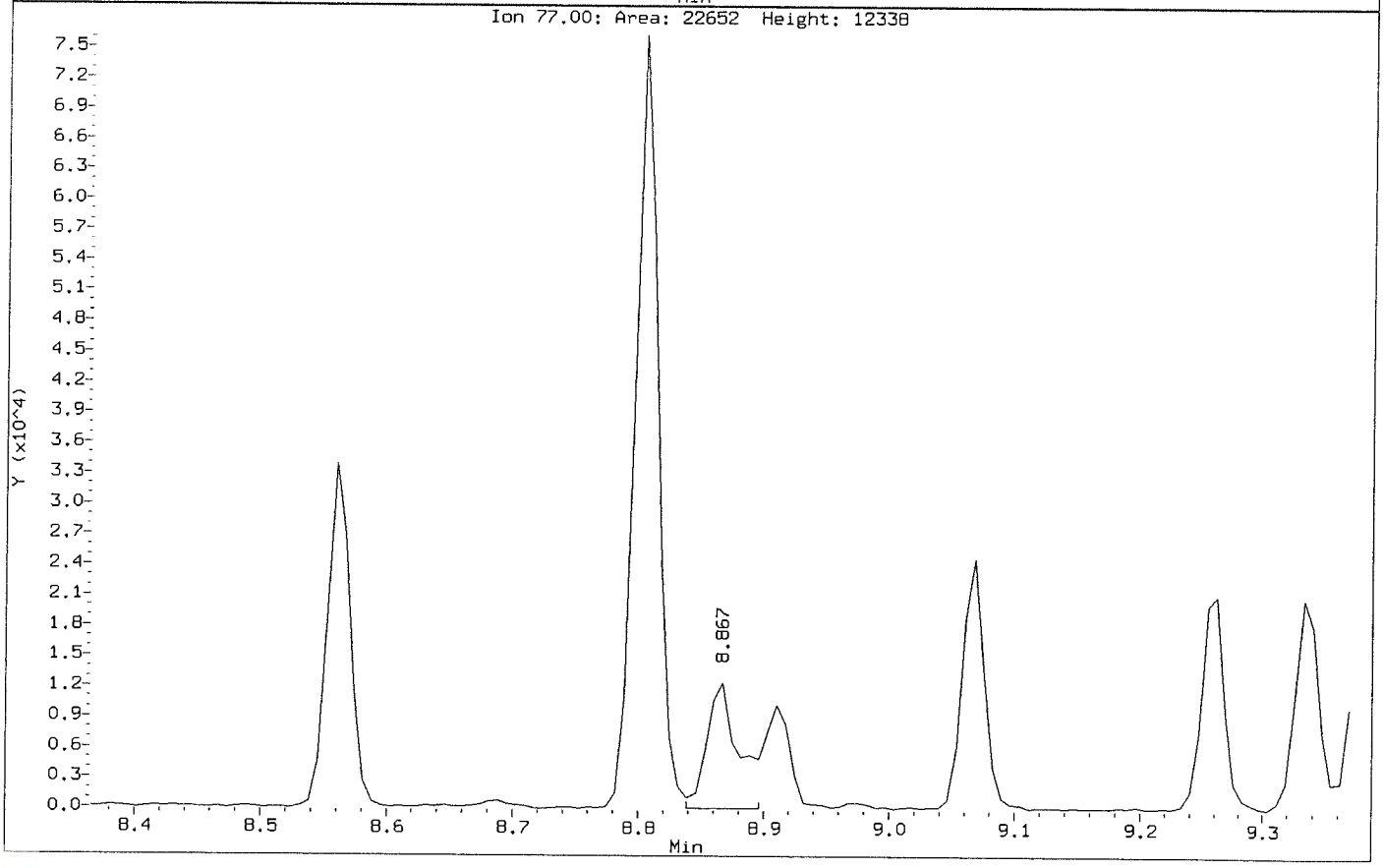
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Sample Info: HS21050972-03MS;HS21050972-03MS;3;;MS
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X210521.b\Before\X052112.D
Injection Date: 21-MAY-2021 14:04
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Client Sample ID: HS21050972-03MS

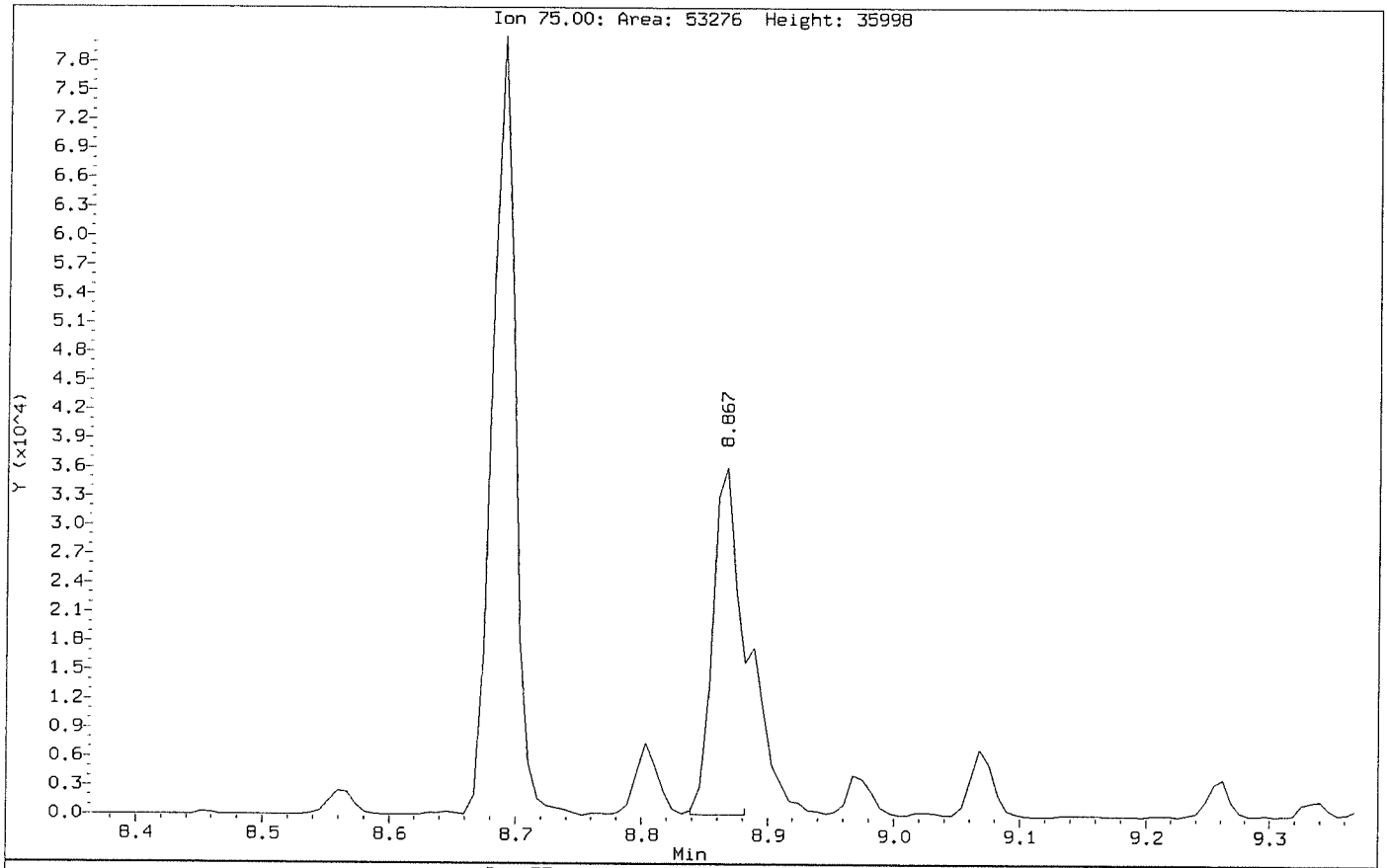
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CAS Number: 96-18-4

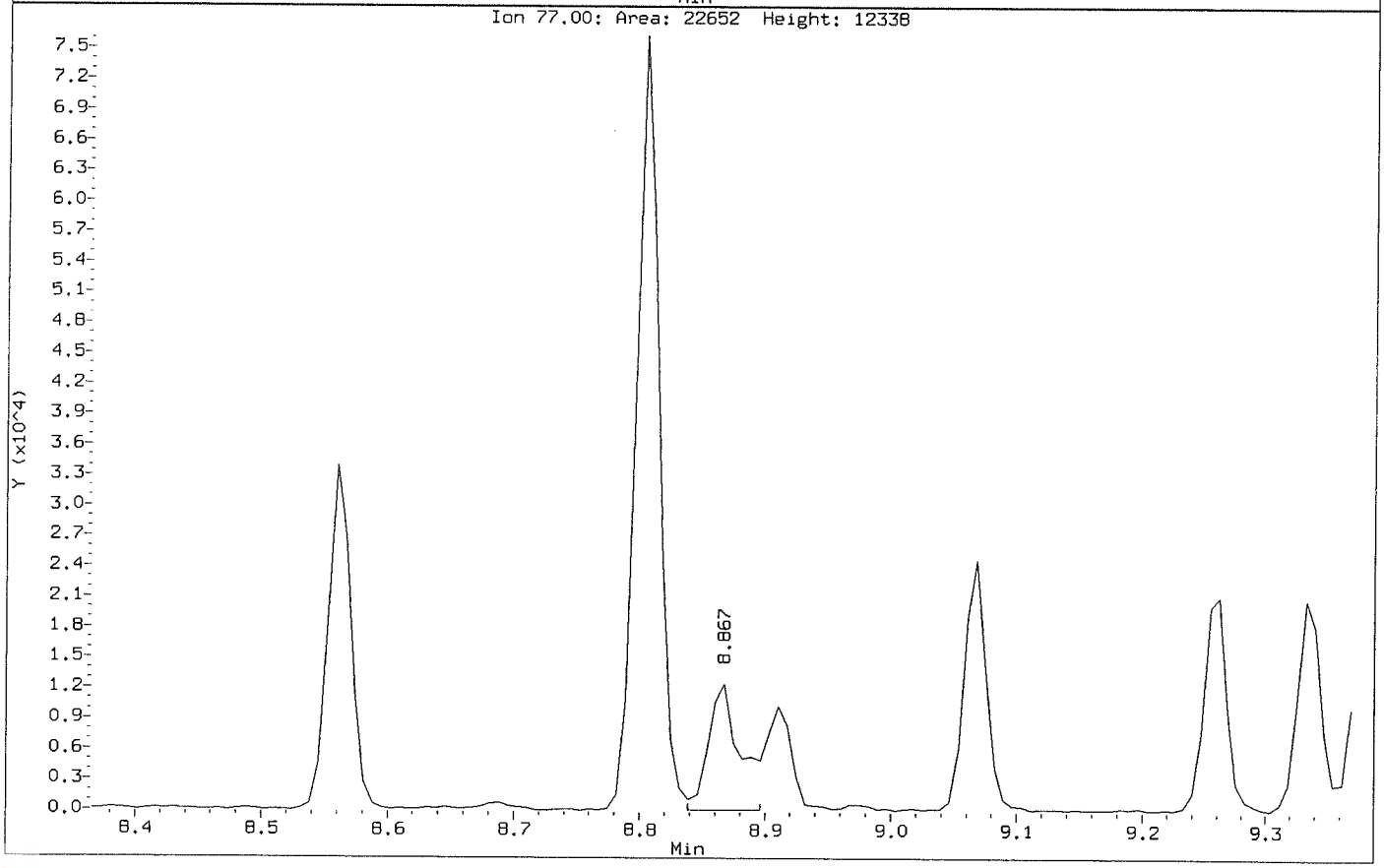




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Injection Date: 21-MAY-2021 14:04
Instrument: voa6.i
Client Sample ID: HS21050972-03MS

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052113.D Page 1
Report Date: 22-Jun-2021 12:11

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210521.b\X052113.D
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Inj Date : 21-MAY-2021 14:25
Operator : PC Inst ID: voa6.i
Smp Info : HS21050972-03MSD;HS21050972-03MSD;3;;MSD
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210521.b\8260W.m
Meth Date : 22-Jun-2021 12:10 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 12 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

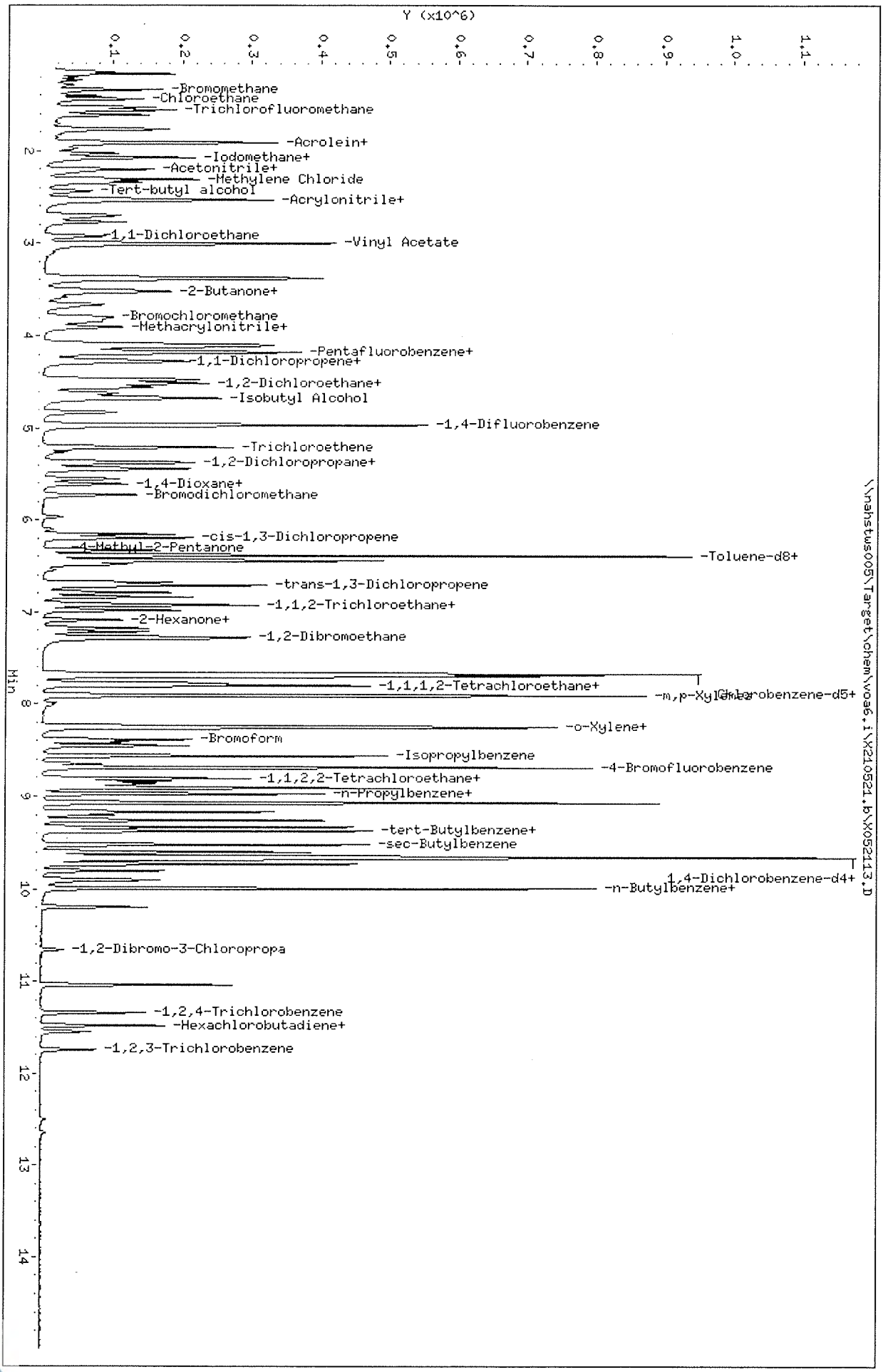
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1	Pentafluorobenzene	168	4.182	4.182	(1.000)	279299	50.0000	
* 36	1,4-Difluorobenzene	114	4.963	4.963	(1.000)	437796	50.0000	
* 47	Chlorobenzene-d5	117	7.671	7.671	(1.000)	412291	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	205010	50.0000	
$ 35	1,2-Dichloroethane-d4	65	4.469	4.469	(1.068)	174388	47.9390	47.93
$ 69	4-Bromofluorobenzene	95	8.688	8.688	(1.133)	192839	49.5511	49.55
$ 30	Dibromofluoromethane	113	4.096	4.096	(0.979)	143139	45.9890	45.98
$ 48	Toluene-d8	98	6.388	6.388	(0.833)	523633	51.6683	51.66
60	1,1,1,2-Tetrachloroethane	131	7.771	7.771	(1.013)	57545	19.1580	19.15
31	1,1,1-Trichloroethane	97	4.089	4.082	(0.978)	88740	18.6800	18.68
68	1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	70014	20.3054	20.30
138	Freon TF	101	1.912	1.911	(0.457)	56971	21.5001	21.50
53	1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	45342	18.9324	18.93
22	1,1-Dichloroethane	63	2.922	2.921	(0.699)	86995	16.8197	16.81
11	1,1-Dichloroethene	96	1.912	1.911	(0.457)	54638	19.5614	19.56
32	1,1-Dichloropropene	75	4.283	4.282	(0.863)	70906	18.9071	18.90
93	1,2,3-Trichlorobenzene	180	11.746	11.739	(1.216)	22284	23.4455	23.44
71	1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	56740	20.0289	20.02(M)
90	1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	38724	22.4513	22.45
79	1,2,4-Trimethylbenzene	105	9.375	9.375	(0.970)	208262	19.9737	19.97
89	1,2-Dibromo-3-Chloropropane	155	10.650	10.658	(1.102)	5799	21.9146	21.91
57	1,2-Dibromoethane	107	7.262	7.262	(0.947)	57051	19.8211	19.82

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	110133	19.1670	19.16
33	1,2-Dichloroethane	62	4.555	4.555	(0.918)	80568	18.7172	18.71
42	1,2-Dichloropropane	63	5.436	5.436	(1.095)	53429	18.1596	18.15
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	209471	20.4689	20.46
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	113230	19.2245	19.22
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	88978	18.9785	18.97
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	121507	20.3249	20.32
26	2,2-Dichloropropane	77	3.509	3.509	(0.839)	79063	17.0880	17.08
24	2-Butanone	43	3.581	3.580	(0.856)	34017	32.9953	32.99
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	176753	19.3446	19.34
52	2-Hexanone	43	7.090	7.090	(0.924)	66747	38.0131	38.01
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	211997	19.8980	19.89
82	p-Isopropyltoluene	119	9.648	9.648	(0.999)	212083	20.9523	20.95
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	101012	38.5221	38.52
10	Acetone	43	1.976	1.976	(0.473)	27807	36.2598	36.25
37	Benzene	78	4.512	4.512	(0.909)	204580	18.8882	18.88
74	Bromobenzene	156	8.802	8.802	(0.911)	67135	19.6442	19.64
29	Bromochloromethane	128	3.795	3.795	(0.908)	28405	16.6877	16.68
39	Bromodichloromethane	83	5.722	5.729	(1.153)	75078	17.7489	17.74
66	Bromoform	173	8.408	8.408	(1.096)	39590	19.8553	19.85
6	Bromomethane	94	1.339	1.338	(0.320)	67007	22.5659	22.56
19	Carbon Disulfide	76	2.069	2.069	(0.495)	246247	37.4211	37.42
34	Carbon Tetrachloride	117	4.261	4.268	(0.859)	72291	18.9445	18.94
59	Chlorobenzene	112	7.692	7.692	(1.003)	155138	19.1896	19.18
7	Chloroethane	64	1.403	1.403	(0.336)	45696	21.6139	21.61
28	Chloroform	83	3.910	3.910	(0.935)	99136	16.7068	16.70
3	Chloromethane	50	1.073	1.081	(0.257)	53321	17.8538	17.85
27	cis-1,2-Dichloroethene	96	3.523	3.530	(0.842)	55318	17.1854	17.18
46	cis-1,3-Dichloropropene	75	6.152	6.152	(1.240)	86603	18.0440	18.04
55	Dibromochloromethane	129	7.176	7.176	(0.936)	62677	19.4500	19.45
44	Dibromomethane	93	5.550	5.550	(1.118)	39371	18.6703	18.67
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	56179	17.3977	17.39
61	Ethylbenzene	106	7.800	7.799	(1.017)	80990	20.2724	20.27
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	25233	22.3905	22.39
67	Isopropylbenzene	105	8.559	8.559	(1.116)	254294	20.8273	20.82
62	m,p-Xylenes	106	7.900	7.907	(1.030)	208658	40.5270	40.52
17	Methylene Chloride	84	2.306	2.305	(0.551)	48128	17.1842	17.18
87	n-Butylbenzene	91	9.991	9.991	(1.034)	203950	21.1859	21.18
73	n-Propylbenzene	91	8.910	8.910	(0.922)	311235	21.4354	21.43
92	Naphthalene	128	11.546	11.539	(1.195)	54379	22.0045	22.00
63	o-Xylene	106	8.244	8.244	(1.075)	96739	19.3184	19.31
81	sec-Butylbenzene	105	9.519	9.519	(0.985)	257758	21.4509	21.45
64	Styrene	104	8.258	8.258	(1.077)	164395	18.6447	18.64
78	tert-Butylbenzene	119	9.340	9.332	(0.967)	179632	20.6862	20.68
56	Tetrachloroethene	164	6.926	6.926	(0.903)	49206	21.4783	21.47
50	Toluene	91	6.446	6.446	(0.840)	240104	20.1847	20.18
20	trans-1,2-Dichloroethene	96	2.528	2.527	(0.604)	48986	18.2301	18.23
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	82025	19.5358	19.53
38	Trichloroethene	130	5.207	5.206	(1.049)	82081	28.3132	28.31
8	Trichlorofluoromethane	101	1.561	1.560	(0.373)	109420	20.3811	20.38
5	Vinyl Chloride	62	1.138	1.145	(0.272)	61539	18.2494	18.24

QC Flag Legend

M - Compound response manually integrated.

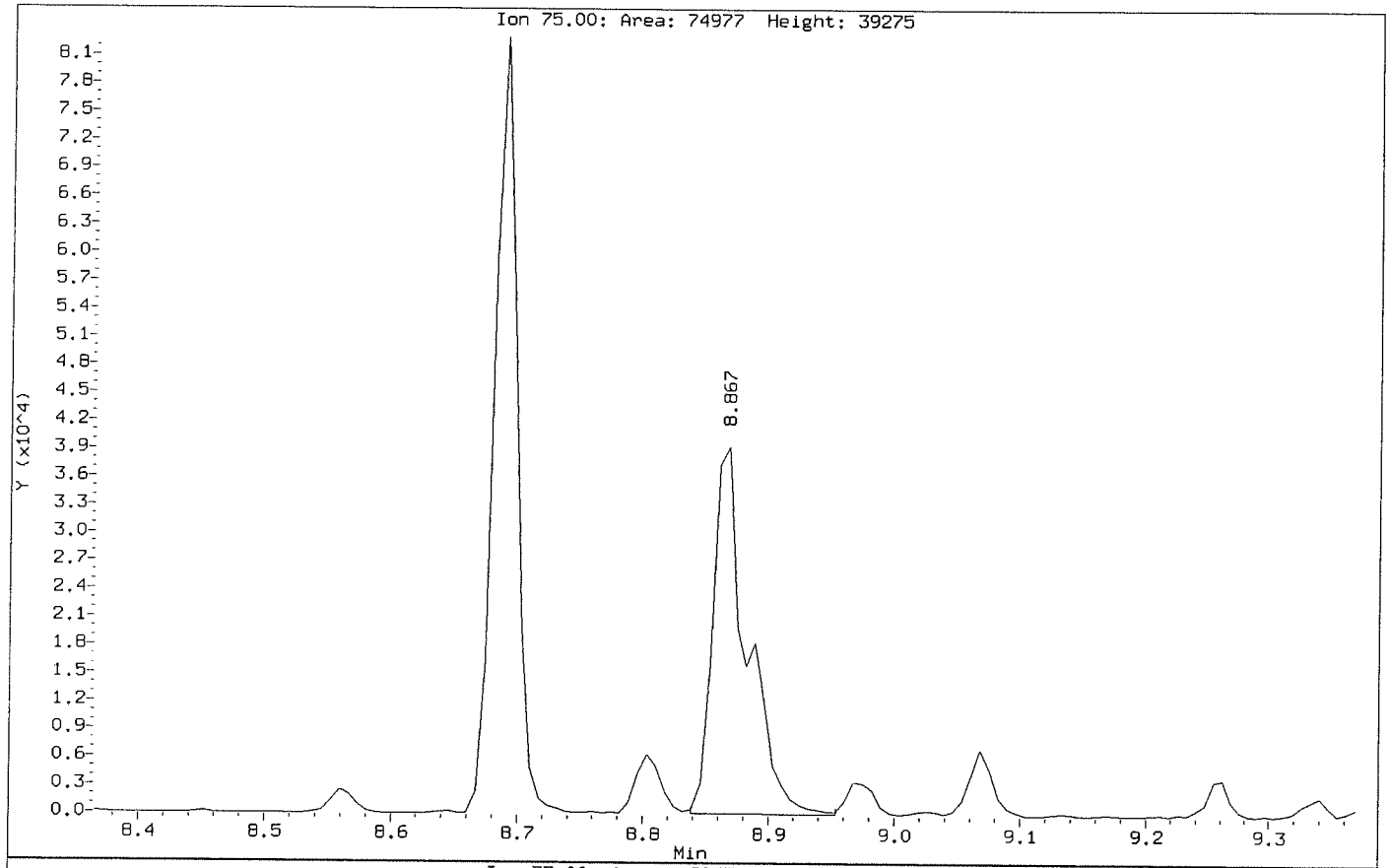


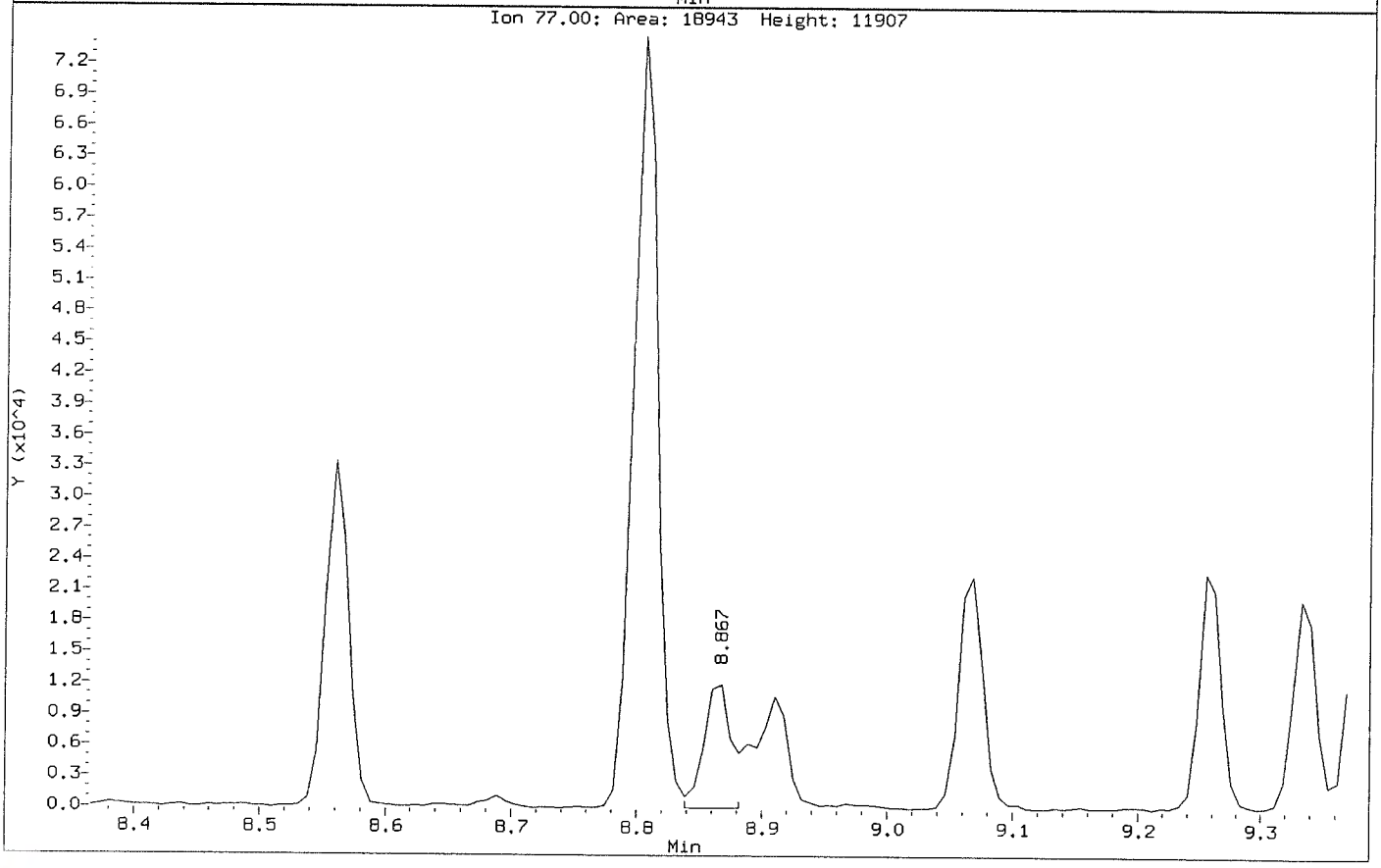
Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052113.D
Date : 21-MAY-2021 14:25
Client ID: HS21050972-03MSD
Sample Info: HS21050972-03MSD;HS21050972-03MSD;3;;MSD
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X210521.b\Before\X052113.D
Injection Date: 21-MAY-2021 14:25
Instrument: voa6.i
Client Sample ID: HS21050972-03MSD

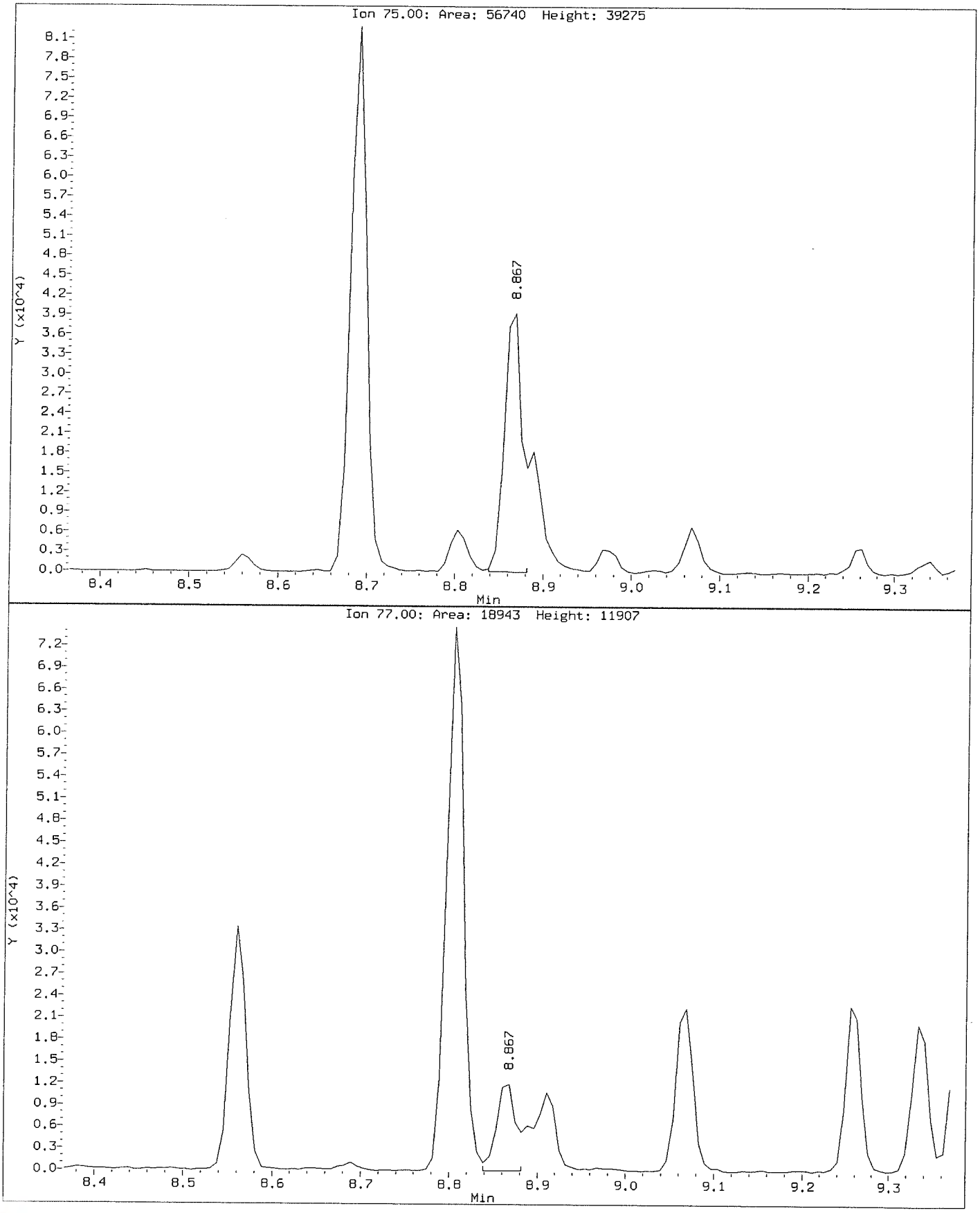
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





Data File: \\NAHSTWS005\Target\chem\voa6.i\X210521.b\X052113.D
Injection Date: 21-MAY-2021 14:25
Instrument: voa6.i
Client Sample ID: HS21050972-03MSD

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052118.D Page 1
Report Date: 22-Jun-2021 12:13

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210521.b\X052118.D
Lab Smp Id: HS21050972-01 Client Smp ID: HS21050972-01
Inj Date : 21-MAY-2021 16:10
Operator : PC Inst ID: voa6.i
Smp Info : HS21050972-01;HS21050972-01;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210521.b\8260W.m
Meth Date : 22-Jun-2021 12:12 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 17
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

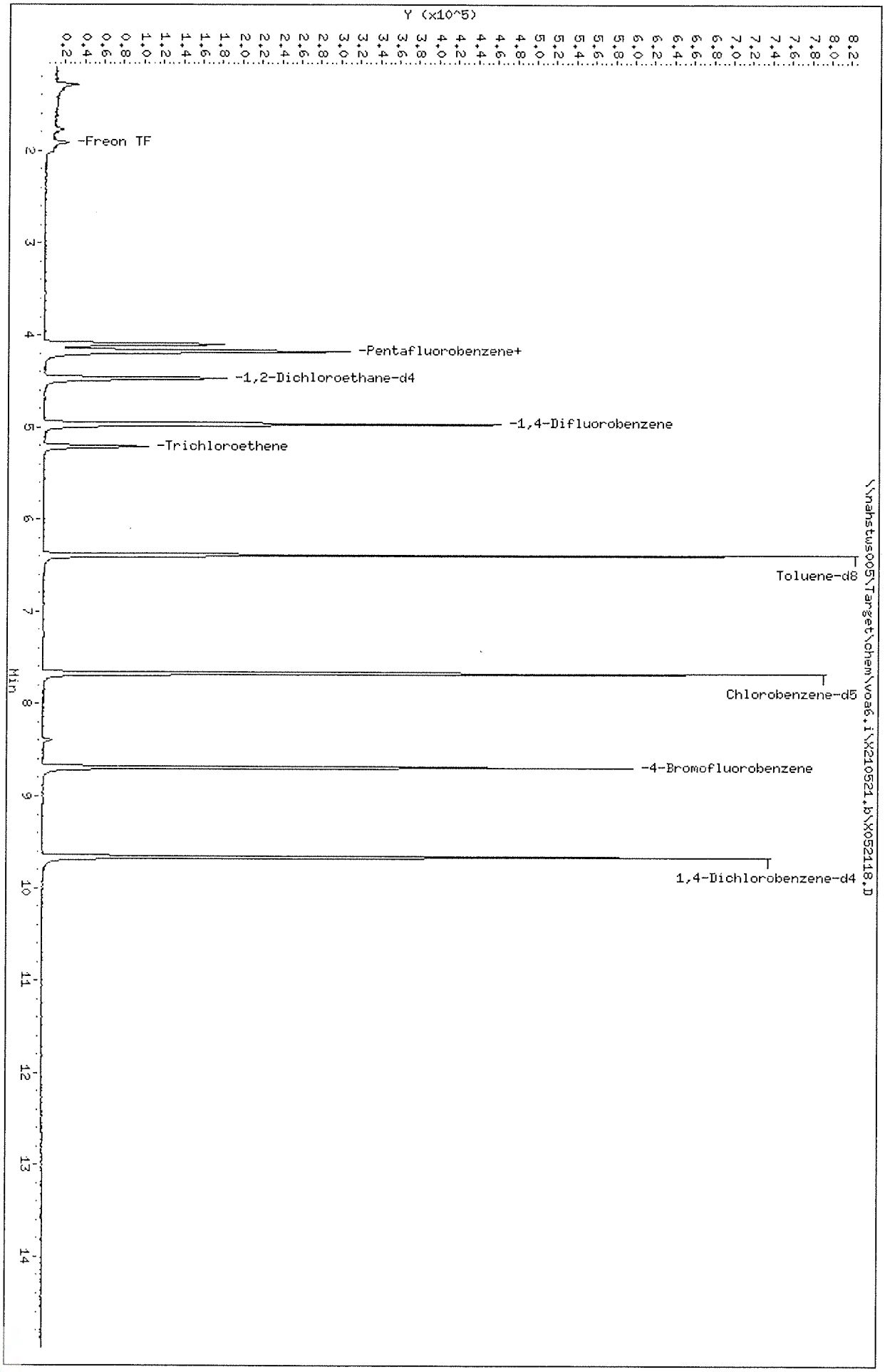
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	246404	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	372317	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.671	(1.000)	343807	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	156386	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.469	4.469	(1.069)	142787	44.4007	44.40
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	140128	43.1946	43.19
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	124498	45.3366	45.33
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	462738	54.6941	54.69
138 Freon TF	101	1.919	1.911	(0.459)	6391	2.73386	2.73(a)
38 Trichloroethene	130	5.206	5.206	(1.049)	32715	13.2694	13.26

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).



Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052118.D
Date : 21-MAY-2021 16:10
Client ID: HS21050972-01
Sample Info: HS21050972-01;HS21050972-01;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052118.D

Date : 21-MAY-2021 16:10

Client ID: HS21050972-01

Instrument: voa6.i

Sample Info: HS21050972-01;HS21050972-01;;;

Purge Volume: 5.0

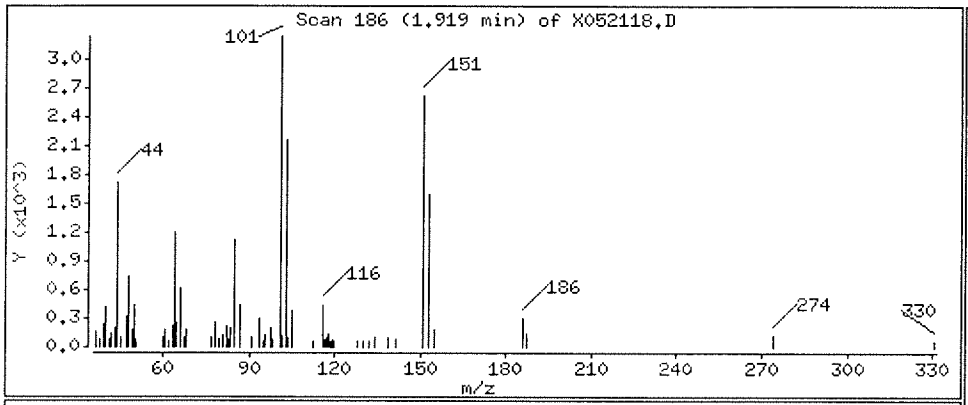
Operator: PC

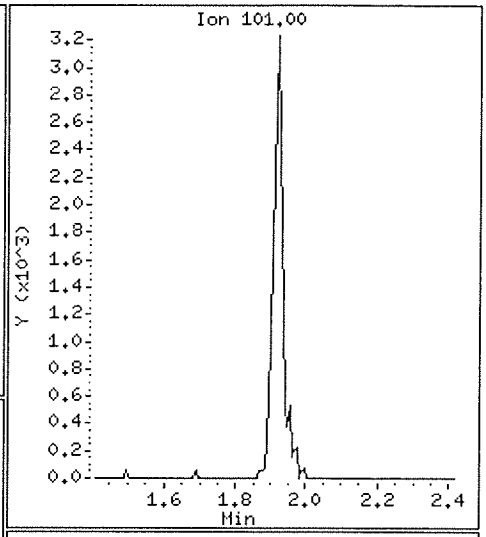
Column phase: DB624

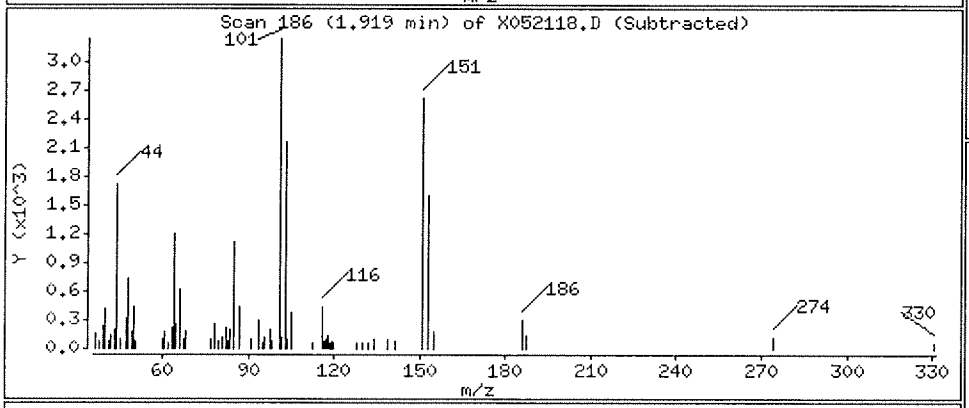
Column diameter: 0.18

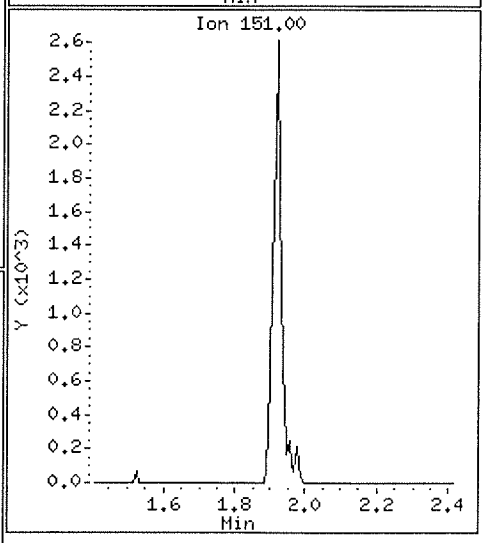
138 Freon TF

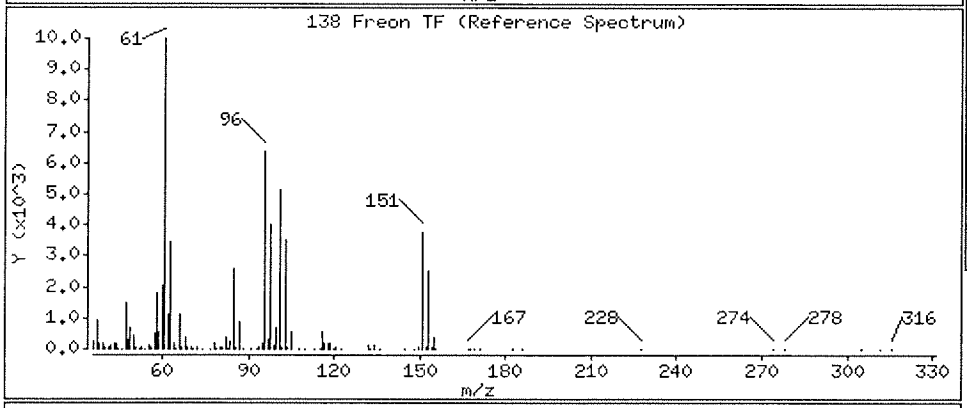
Concentration: 2.73 ug/l

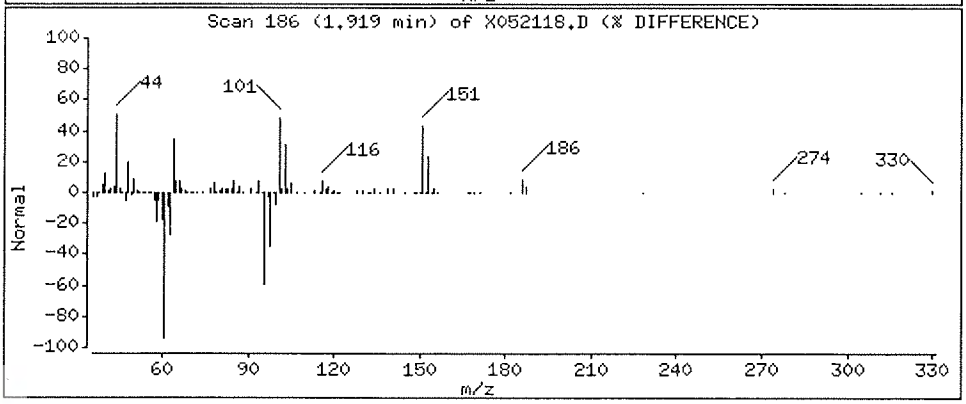












Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052118.D Page 4

Date : 21-MAY-2021 16:10

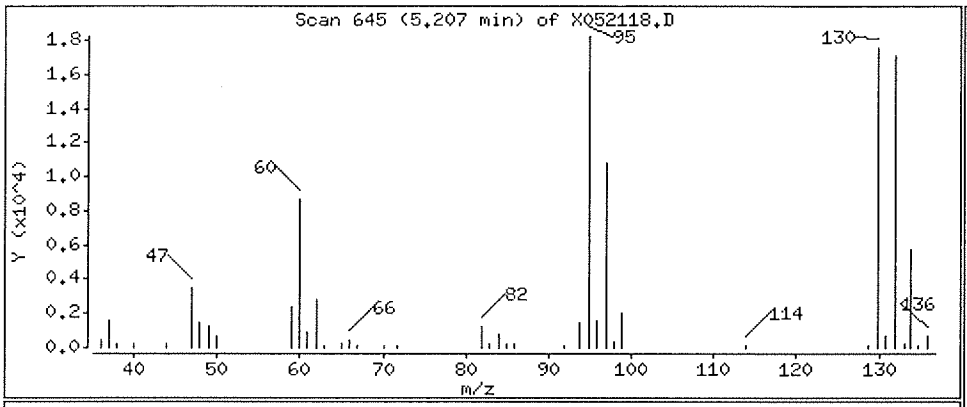
Client ID: HS21050972-01 Instrument: voa6.i

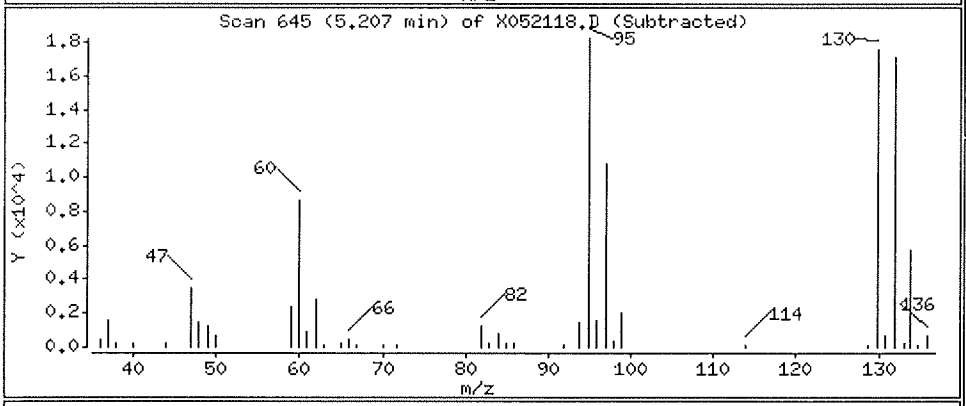
Sample Info: HS21050972-01;HS21050972-01;;;

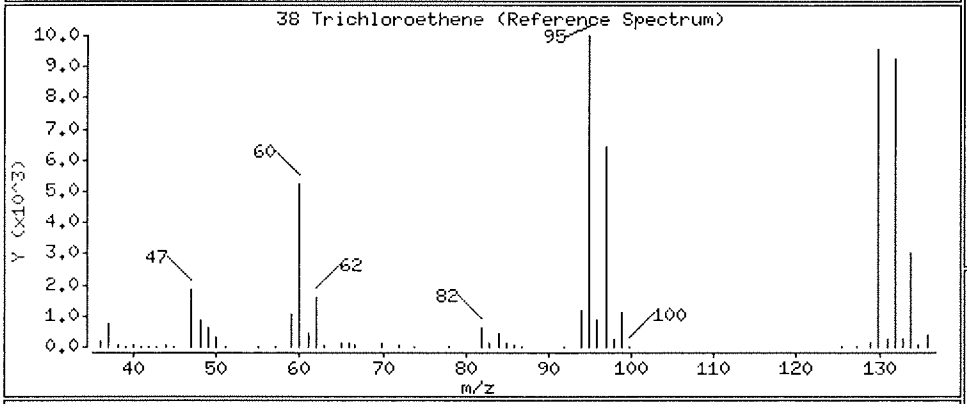
Purge Volume: 5.0 Operator: PC

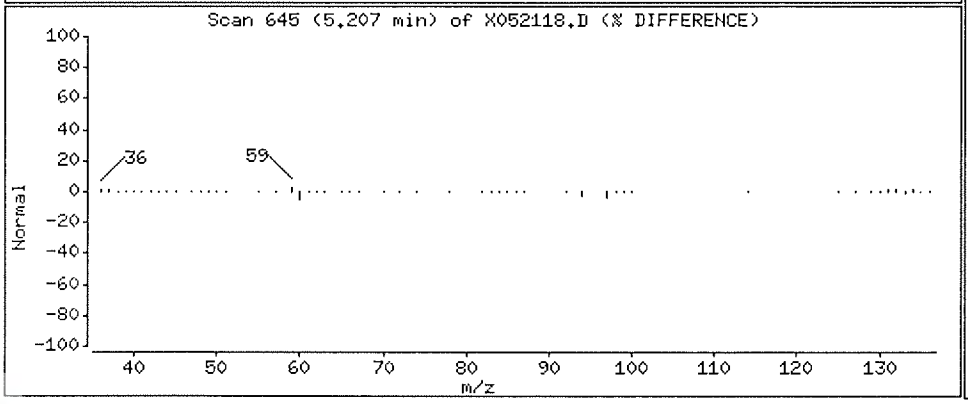
Column phase: DB624 Column diameter: 0.18

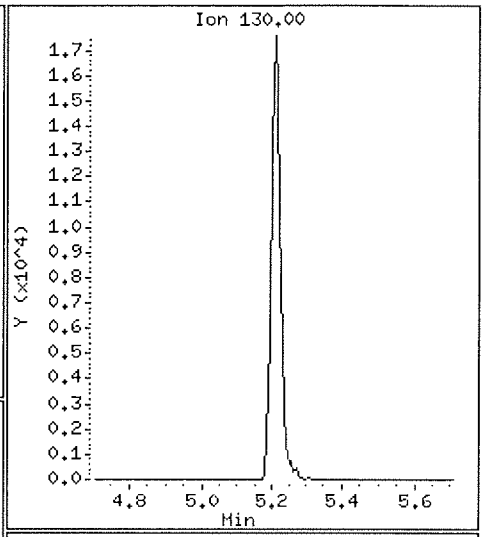
38 Trichloroethene Concentration: 13.26 ug/l

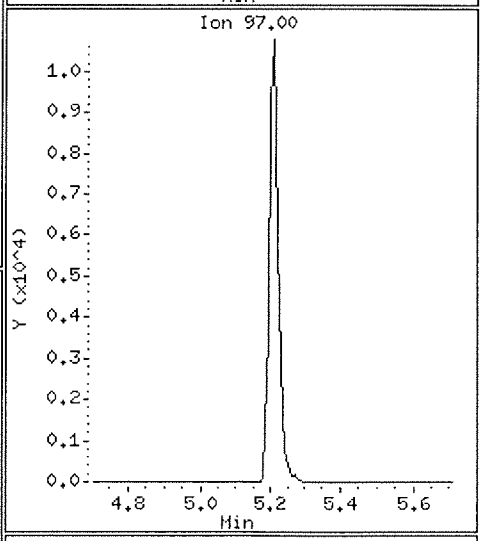


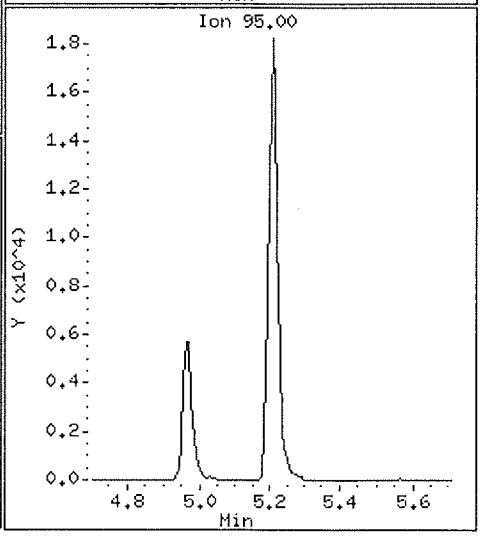












ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210521.b\X052119.D
Lab Smp Id: HS21050972-02 Client Smp ID: HS21050972-02
Inj Date : 21-MAY-2021 16:31
Operator : PC Inst ID: voa6.i
Smp Info : HS21050972-02;HS21050972-02;;;
Misc Info : HS18090001;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X210521.b\8260W.m
Meth Date : 22-Jun-2021 12:12 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 18
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

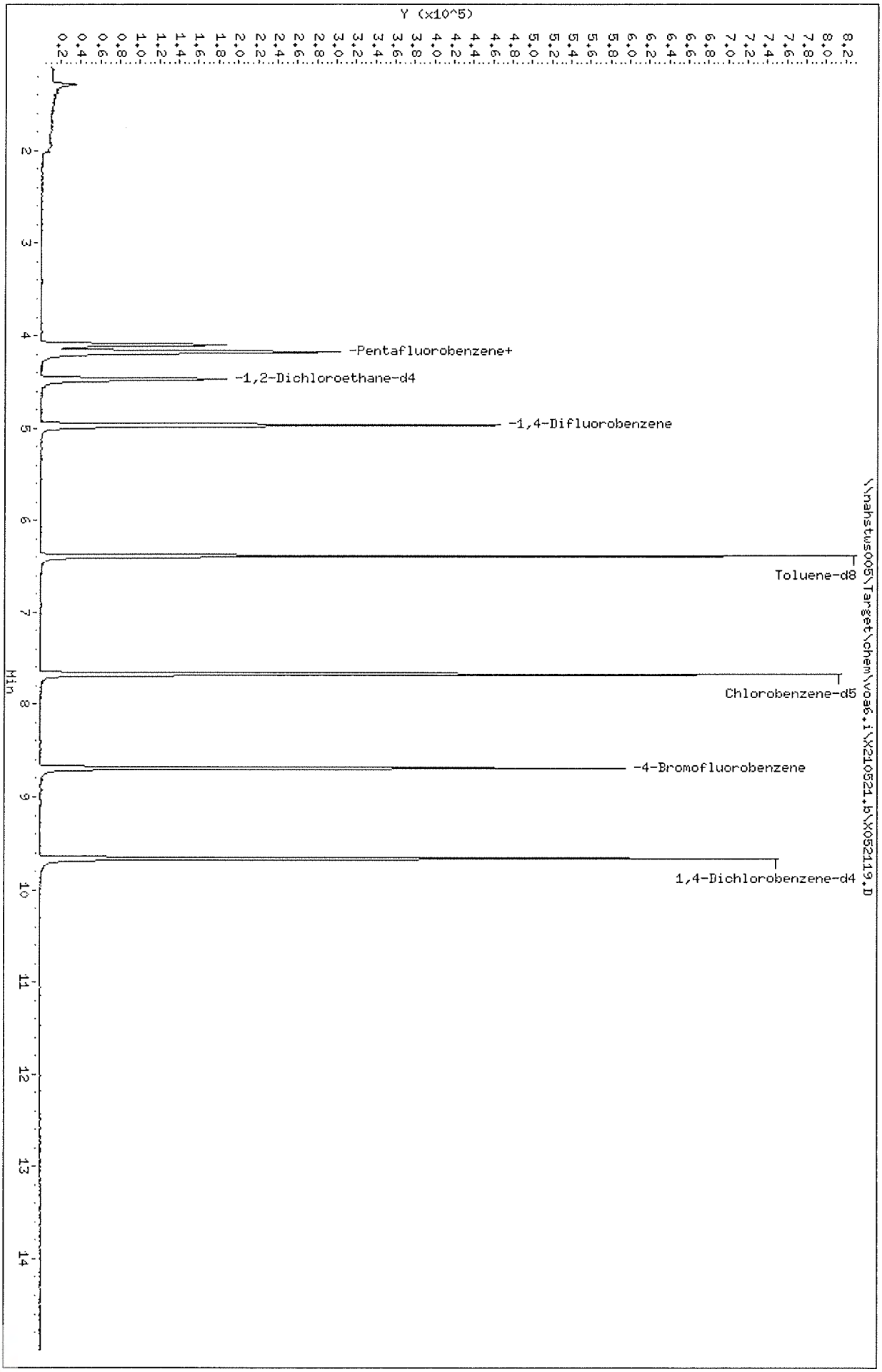
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	241723	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.963	(1.000)	379104	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.671	(1.000)	351261	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	160104	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.469	4.469	(1.069)	142517	45.1971	45.19
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	148708	44.8620	44.86
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	121815	45.2180	45.21
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	471551	54.5557	54.55

Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052119.D
Date : 21-MAY-2021 16:31
Client ID: HS21050972-02
Sample Info: HS21050972-02;HS21050972-02;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210521.b\X052120.D
Lab Smp Id: HS21050972-04 Client Smp ID: HS21050972-04
Inj Date : 21-MAY-2021 16:52
Operator : PC Inst ID: voa6.i
Smp Info : HS21050972-04;HS21050972-04;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210521.b\8260W.m
Meth Date : 22-Jun-2021 12:12 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 19
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

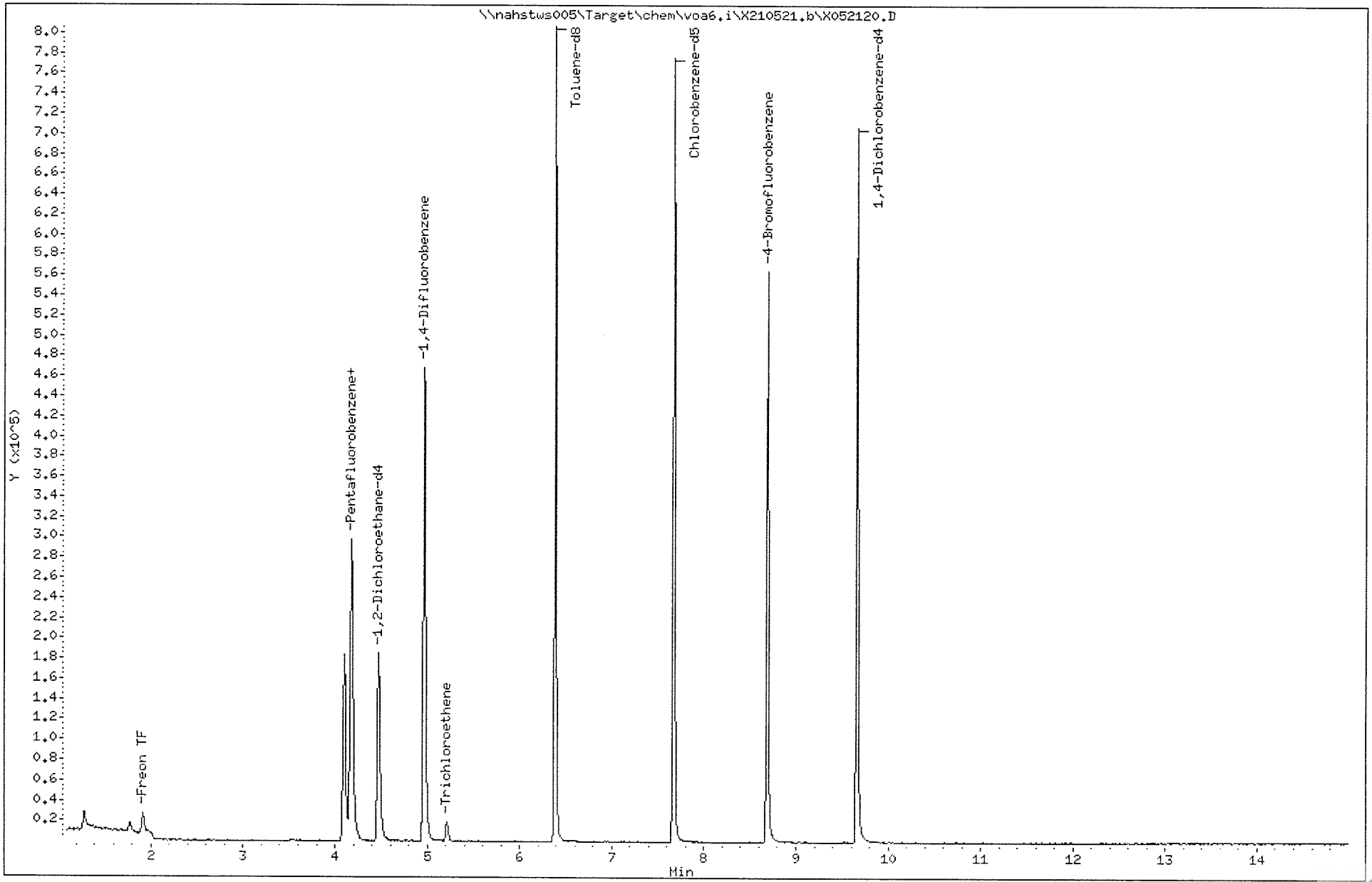
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	237482	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	369579	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.671	(1.000)	333476	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	150084	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.469	(1.070)	142088	45.8846	45.88
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	134689	42.8054	42.80
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	122557	46.3114	46.31
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	457577	55.7399	55.73
138 Freon TF	101	1.926	1.911	(0.461)	6016	2.67013	2.67(a)
38 Trichloroethene	130	5.214	5.206	(1.051)	5929	2.42266	2.42(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052120.D
Date : 21-MAY-2021 16:52
Client ID: HS21050972-04
Sample Info: HS21050972-04;HS21050972-04;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052120.D

Date : 21-MAY-2021 16:52

Client ID: HS21050972-04

Instrument: voa6.i

Sample Info: HS21050972-04;HS21050972-04;;;

Purge Volume: 5.0

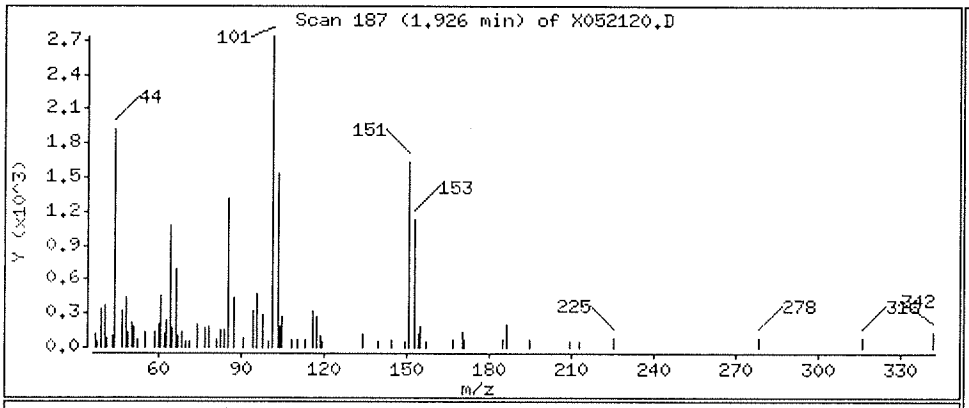
Operator: PC

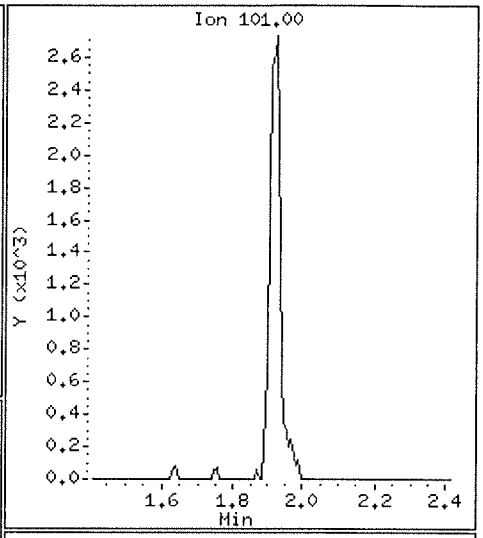
Column phase: DB624

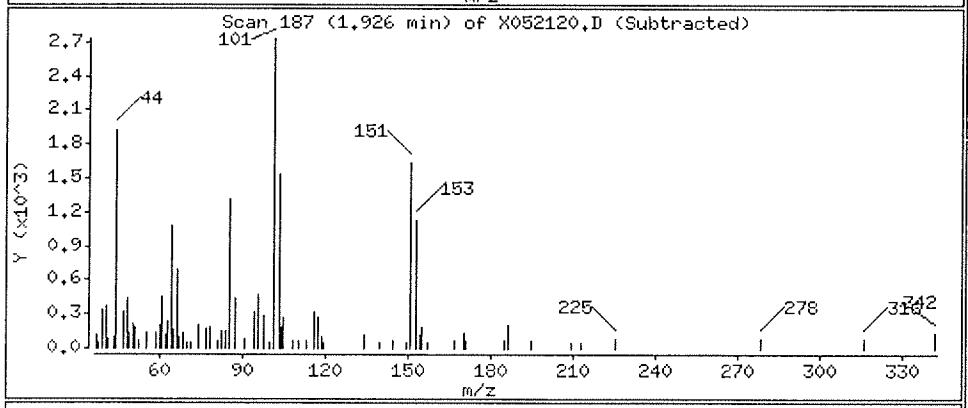
Column diameter: 0.18

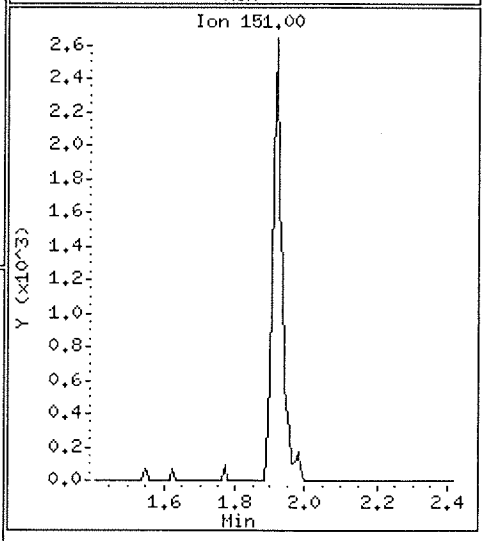
138 Freon TF

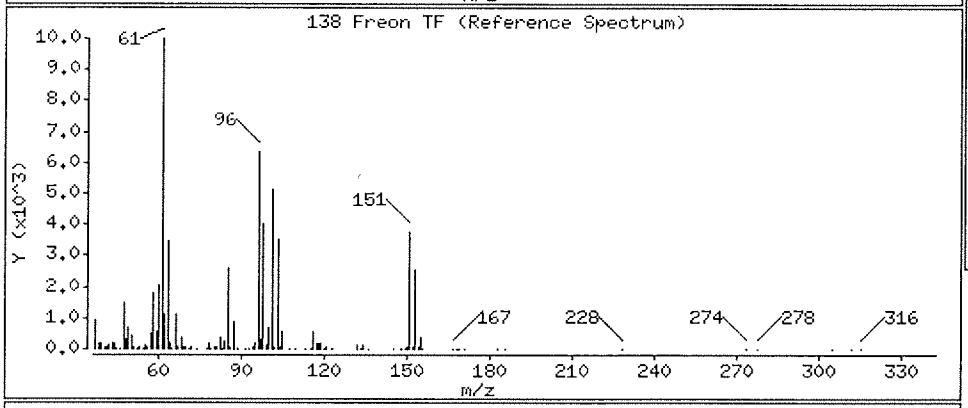
Concentration: 2.67 ug/l

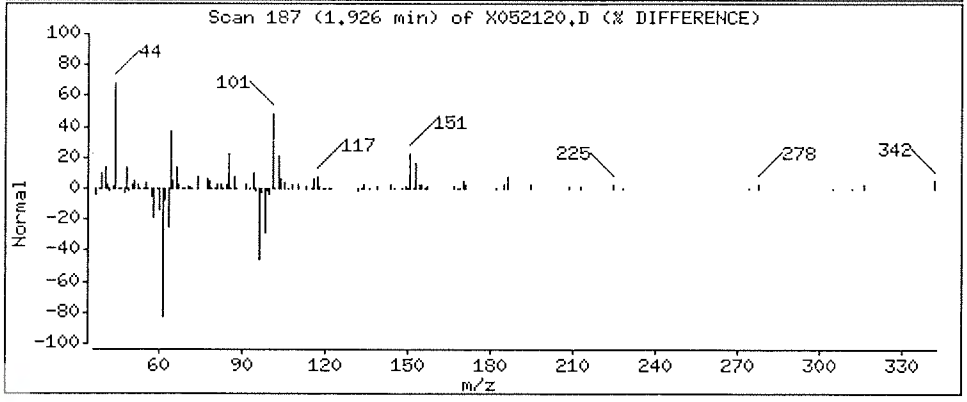












Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052120.D

Date : 21-MAY-2021 16:52

Client ID: HS21050972-04

Instrument: voa6.i

Sample Info: HS21050972-04;HS21050972-04;;;

Purge Volume: 5.0

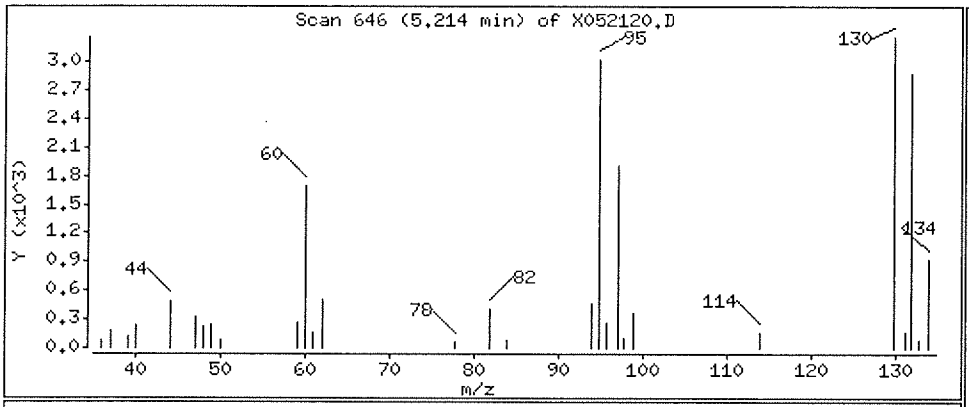
Operator: PC

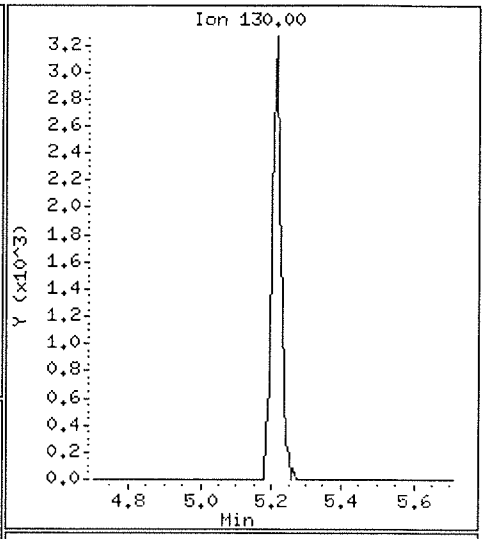
Column phase: DB624

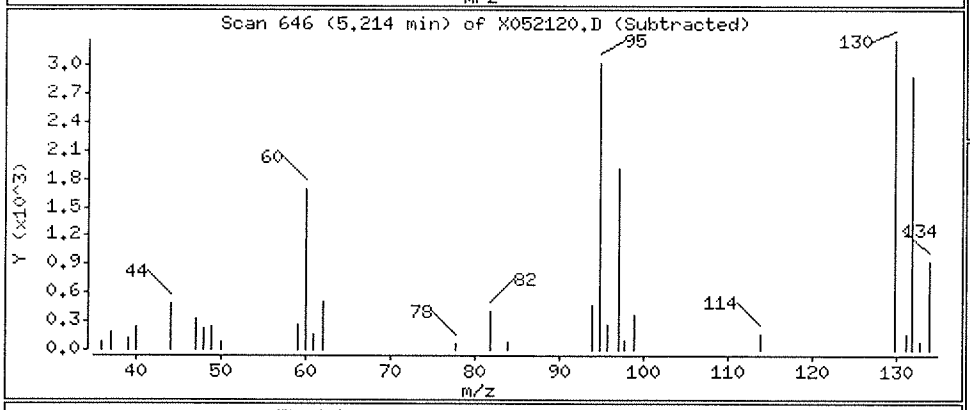
Column diameter: 0.18

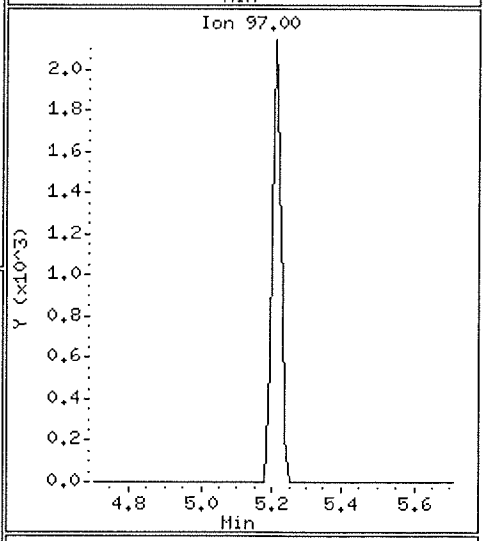
38 Trichloroethene

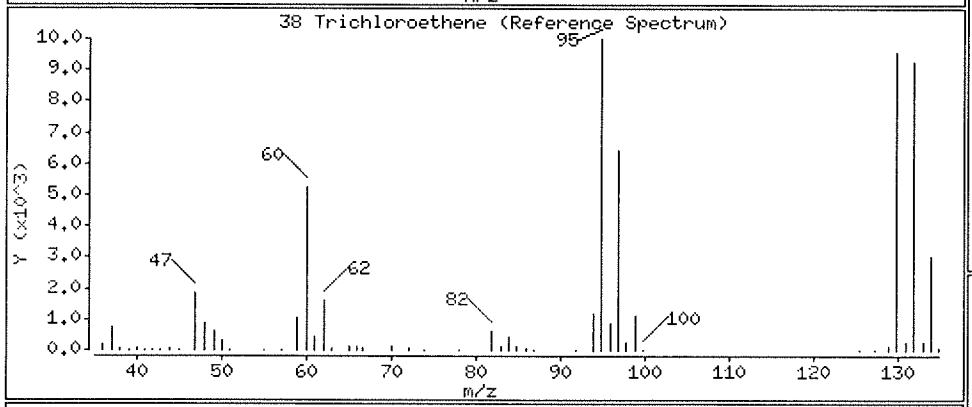
Concentration: 2.42 ug/l

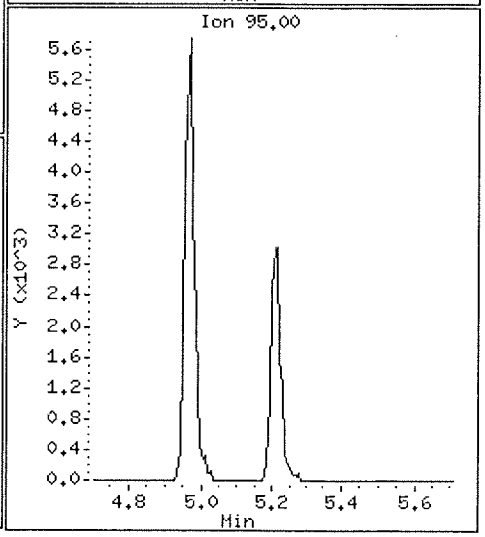


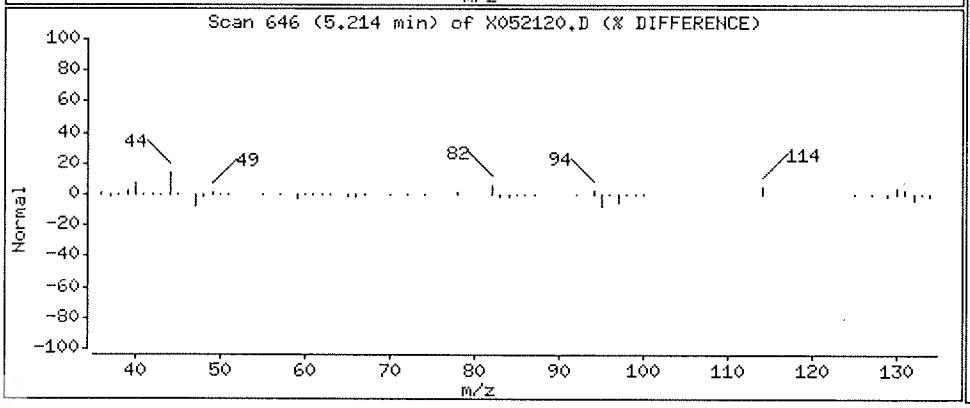












ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210521.b\X052121.D
Lab Smp Id: HS21050972-05 Client Smp ID: HS21050972-05
Inj Date : 21-MAY-2021 17:13
Operator : PC Inst ID: voa6.i
Smp Info : HS21050972-05;HS21050972-05;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210521.b\8260W.m
Meth Date : 22-Jun-2021 12:12 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 20
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

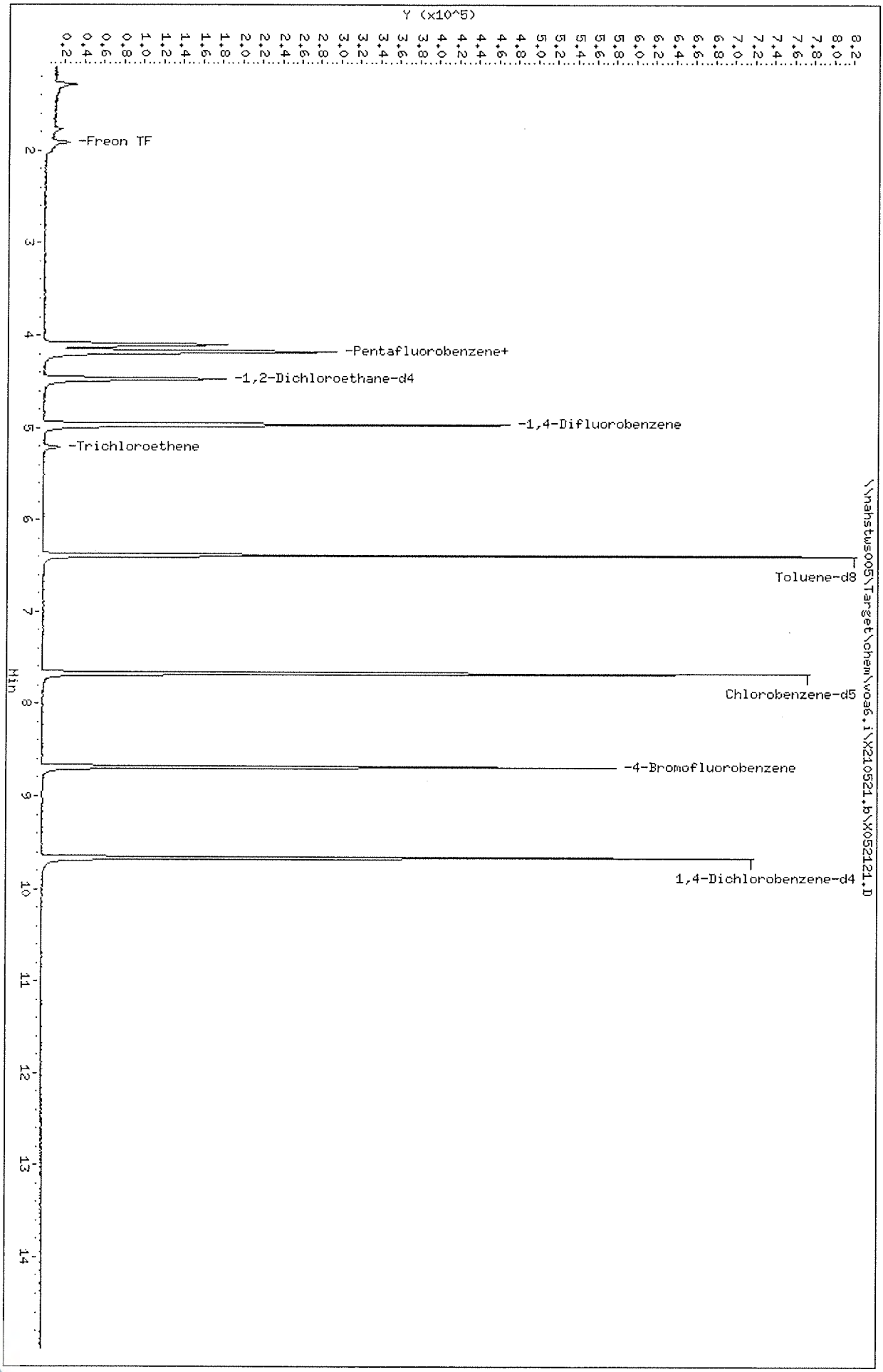
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	239944	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.963	(1.000)	376630	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	344111	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	154520	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.469	(1.070)	142334	45.4815	45.48
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	143257	44.1175	44.11
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	121155	45.3069	45.30
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	460270	54.3606	54.36
138 Freon TF	101	1.912	1.911	(0.457)	5239	2.30141	2.30(a)
38 Trichloroethene	130	5.207	5.206	(1.048)	5620	2.25341	2.25(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052121.D
Date : 21-MAY-2021 17:13
Client ID: HS21050972-05
Sample Info: HS21050972-05;HS21050972-05;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052121.D

Date : 21-MAY-2021 17:13

Client ID: HS21050972-05

Instrument: voa6.i

Sample Info: HS21050972-05;HS21050972-05;;;

Purge Volume: 5.0

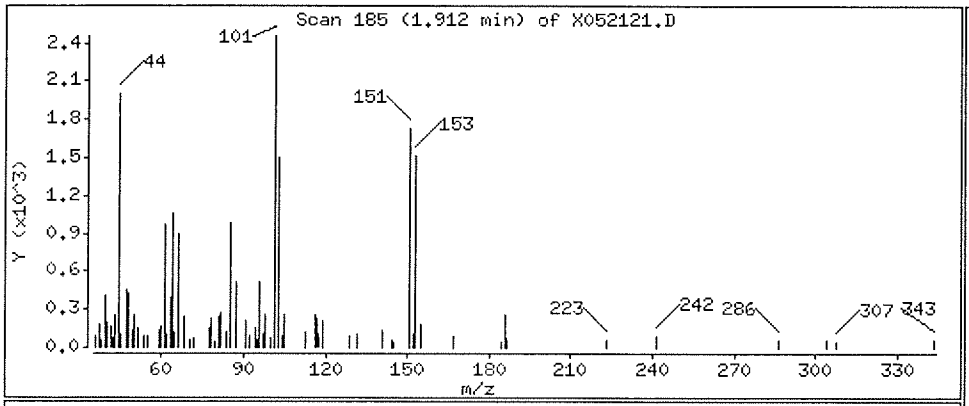
Operator: PC

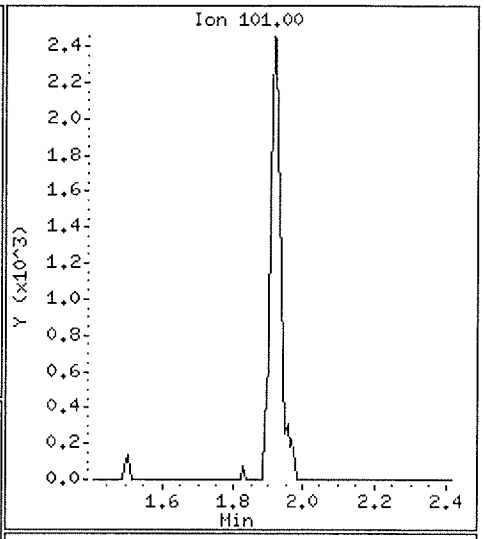
Column phase: DB624

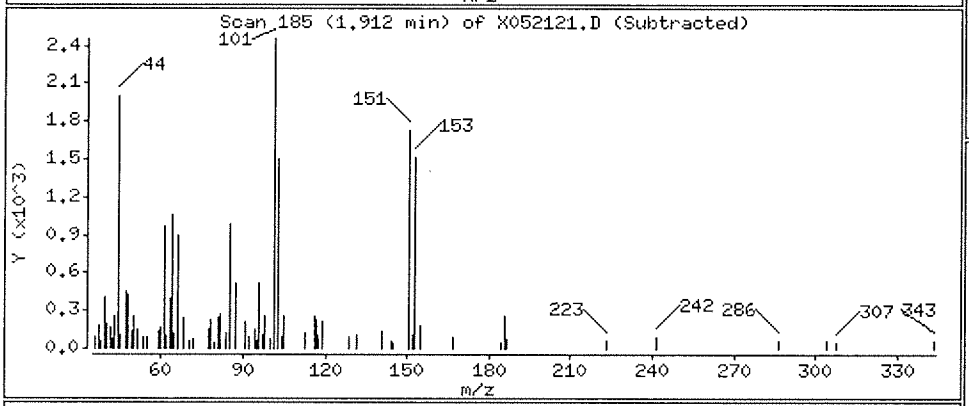
Column diameter: 0.18

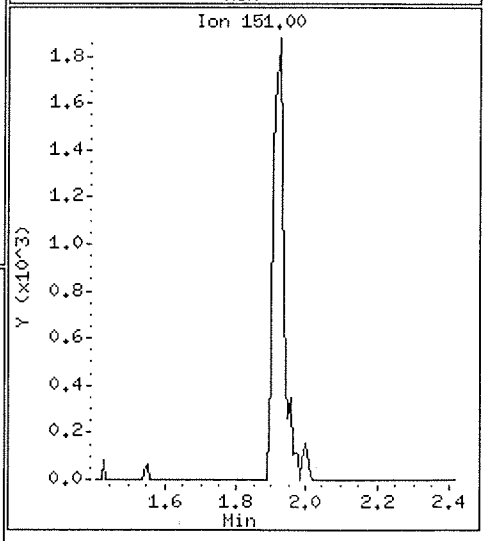
138 Freon TF

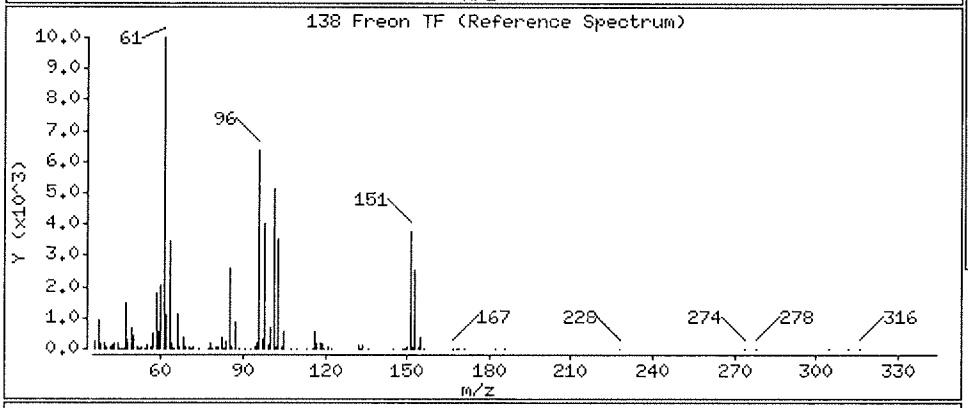
Concentration: 2.30 ug/l

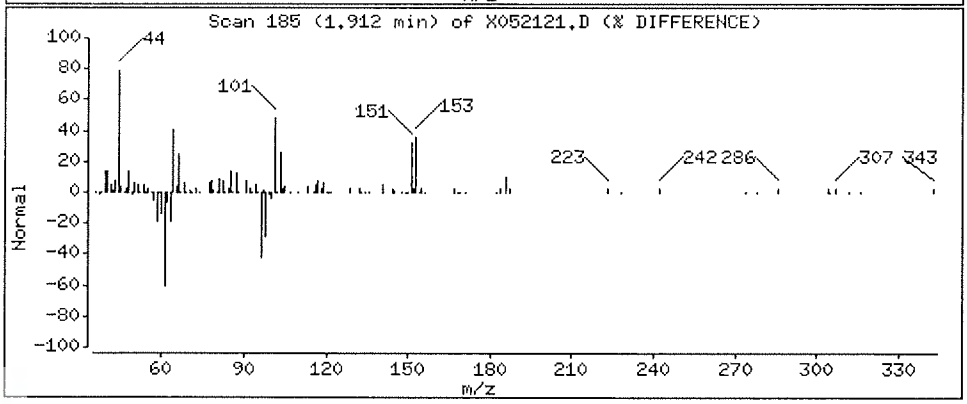












Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052121.D

Date : 21-MAY-2021 17:13

Client ID: HS21050972-05

Instrument: voa6.i

Sample Info: HS21050972-05;HS21050972-05;;;

Purge Volume: 5.0

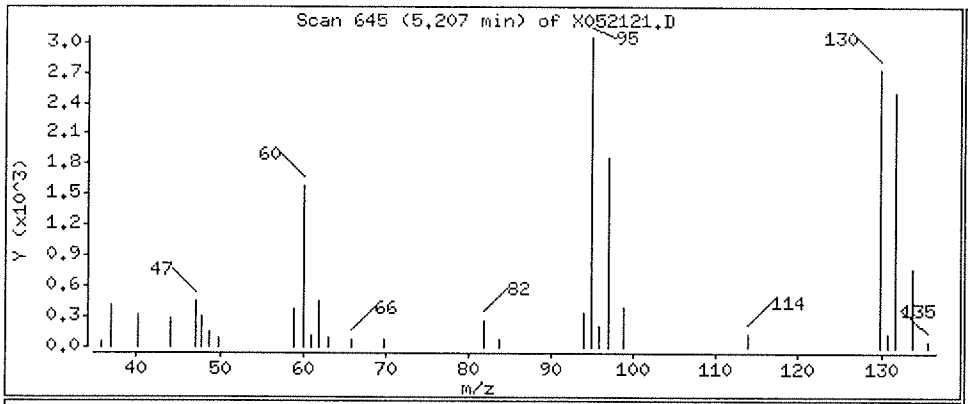
Operator: PC

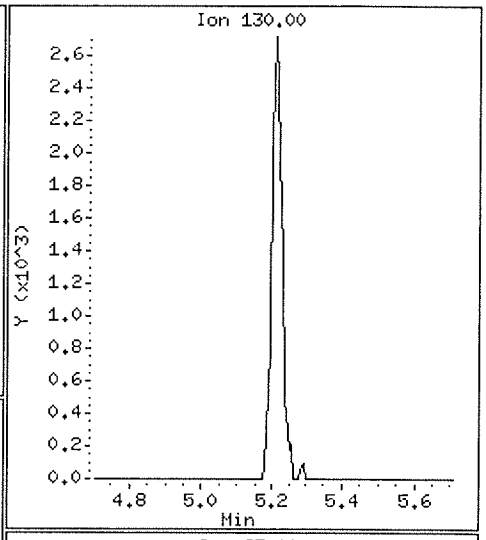
Column phase: DB624

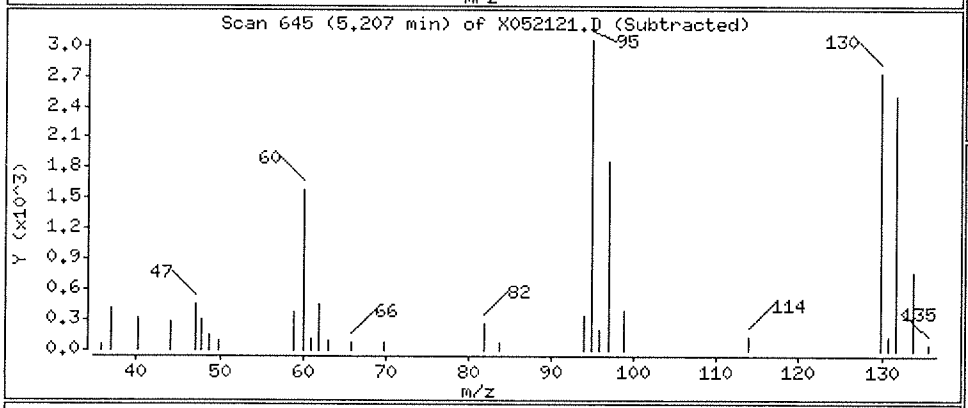
Column diameter: 0.18

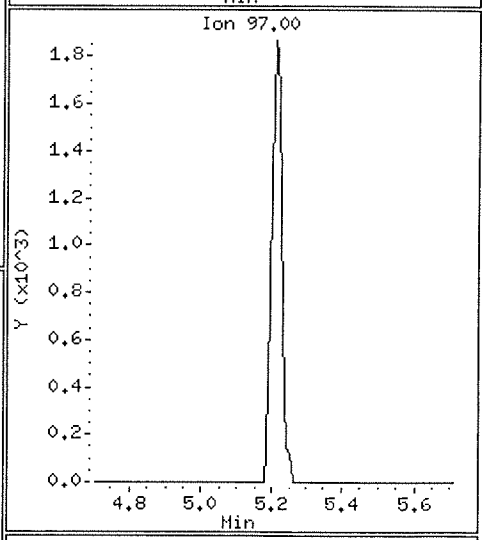
38 Trichloroethene

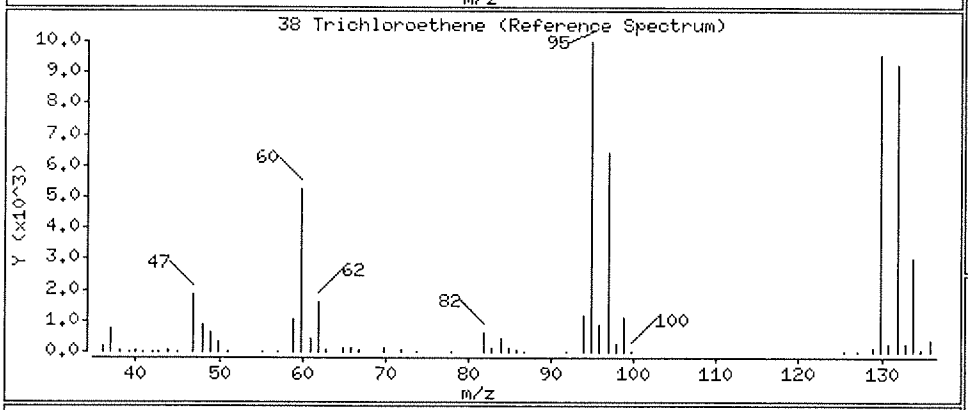
Concentration: 2.25 ug/l

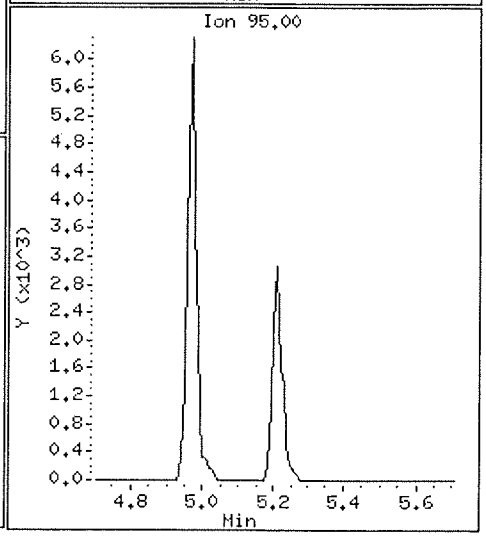


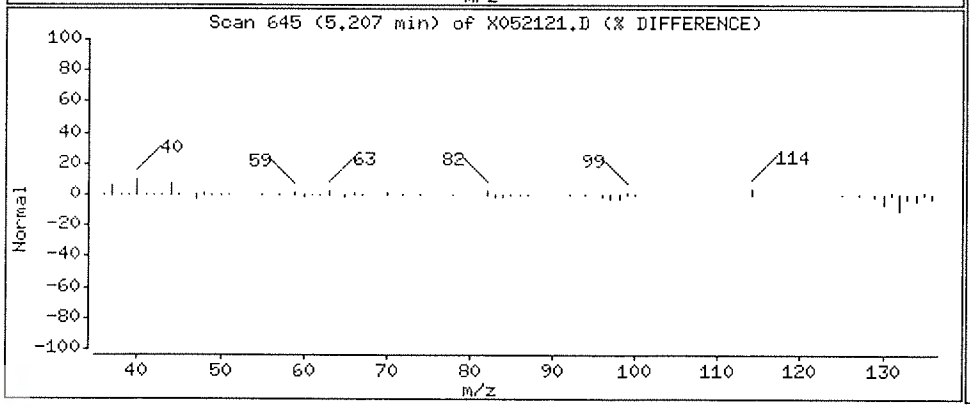












Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052122.D Page 1
Report Date: 22-Jun-2021 12:13

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210521.b\X052122.D
Lab Smp Id: HS21050972-06 Client Smp ID: HS21050972-06
Inj Date : 21-MAY-2021 17:34
Operator : PC Inst ID: voa6.i
Smp Info : HS21050972-06;HS21050972-06;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210521.b\8260W.m
Meth Date : 22-Jun-2021 12:12 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 21
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

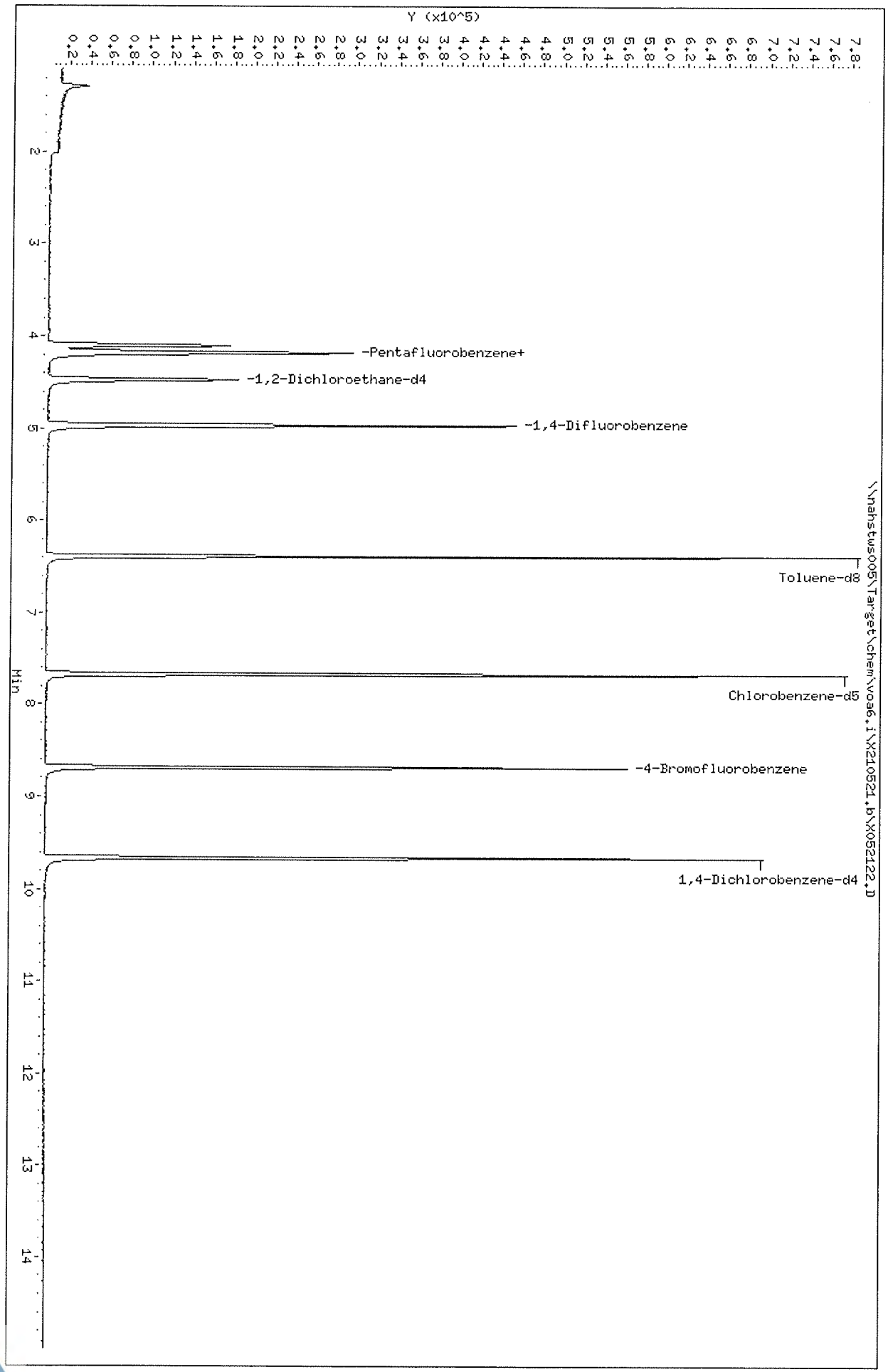
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	239655	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	366227	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	339556	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	149244	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.469	(1.070)	138506	44.2790	44.27
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	138565	43.2474	43.24(M)
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	117262	43.8969	43.89
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	450042	53.8749	53.87

QC Flag Legend

M - Compound response manually integrated.

Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052122.D
Date : 21-MAY-2021 17:34
Client ID: HS2105097Z-06
Sample Info: HS2105097Z-06;HS2105097Z-06;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052123.D Page 1
Report Date: 22-Jun-2021 12:13

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210521.b\X052123.D
Lab Smp Id: HS21050972-07 Client Smp ID: HS21050972-07
Inj Date : 21-MAY-2021 17:55
Operator : PC Inst ID: voa6.i
Smp Info : HS21050972-07;HS21050972-07;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210521.b\8260W.m
Meth Date : 22-Jun-2021 12:12 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 22
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

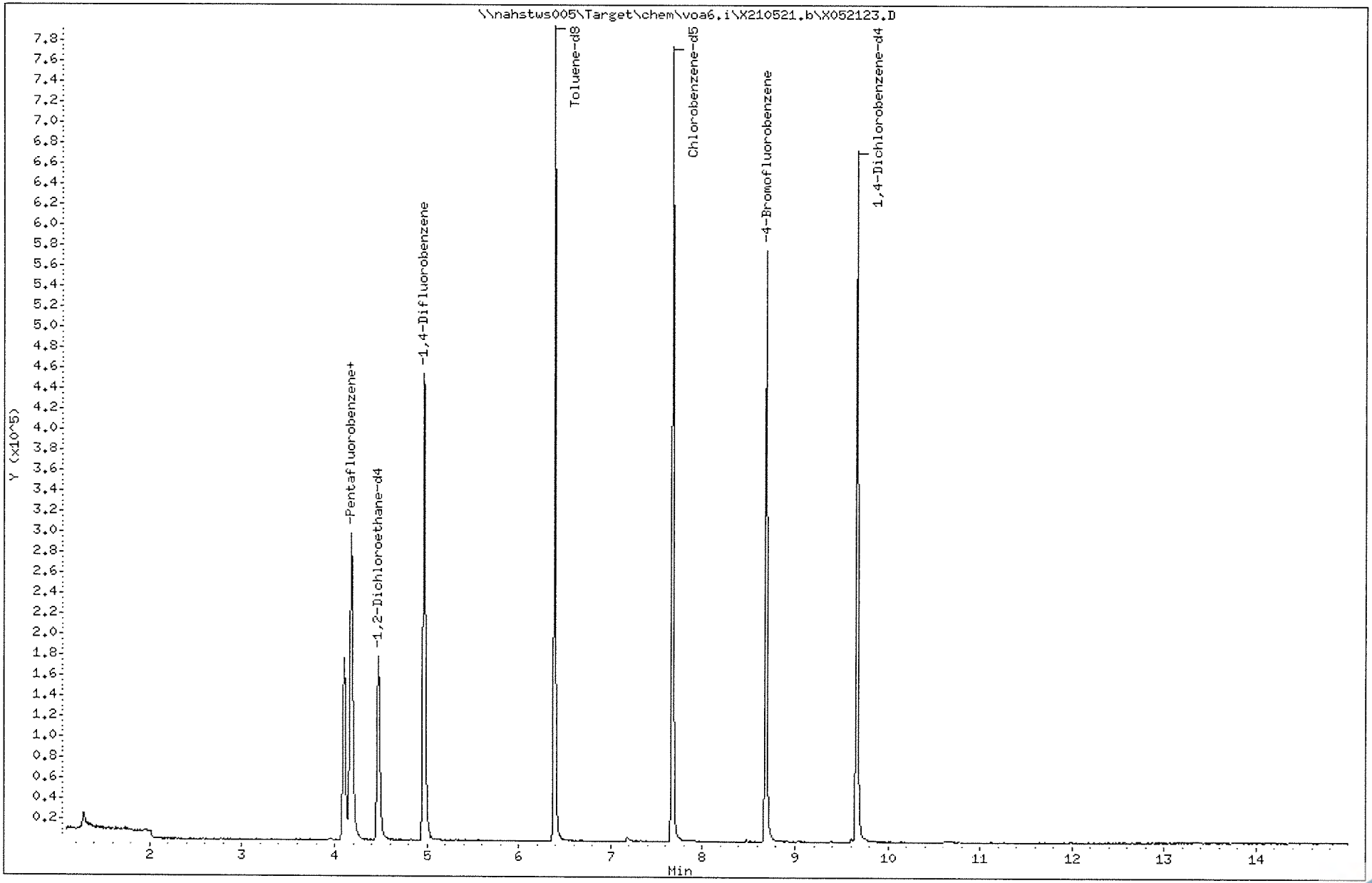
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	236146	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	361033	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.671	(1.000)	330060	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	148922	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.469	(1.070)	139836	45.3998	45.39
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	135878	43.6278	43.62
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	117689	44.7157	44.71
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	445985	54.9055	54.90

Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052123.D
Date : 21-MAY-2021 17:55
Client ID: HS21050972-07
Sample Info: HS21050972-07;HS21050972-07;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210521.b\X052131.D
Lab Smp Id: CCV-END Client Smp ID: CCV-END
Inj Date : 21-MAY-2021 20:44
Operator : PC Inst ID: voa6.i
Smp Info : CCV-END;CCV-END;2;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210521.b\8260W.m
Meth Date : 22-Jun-2021 12:09 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 30 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

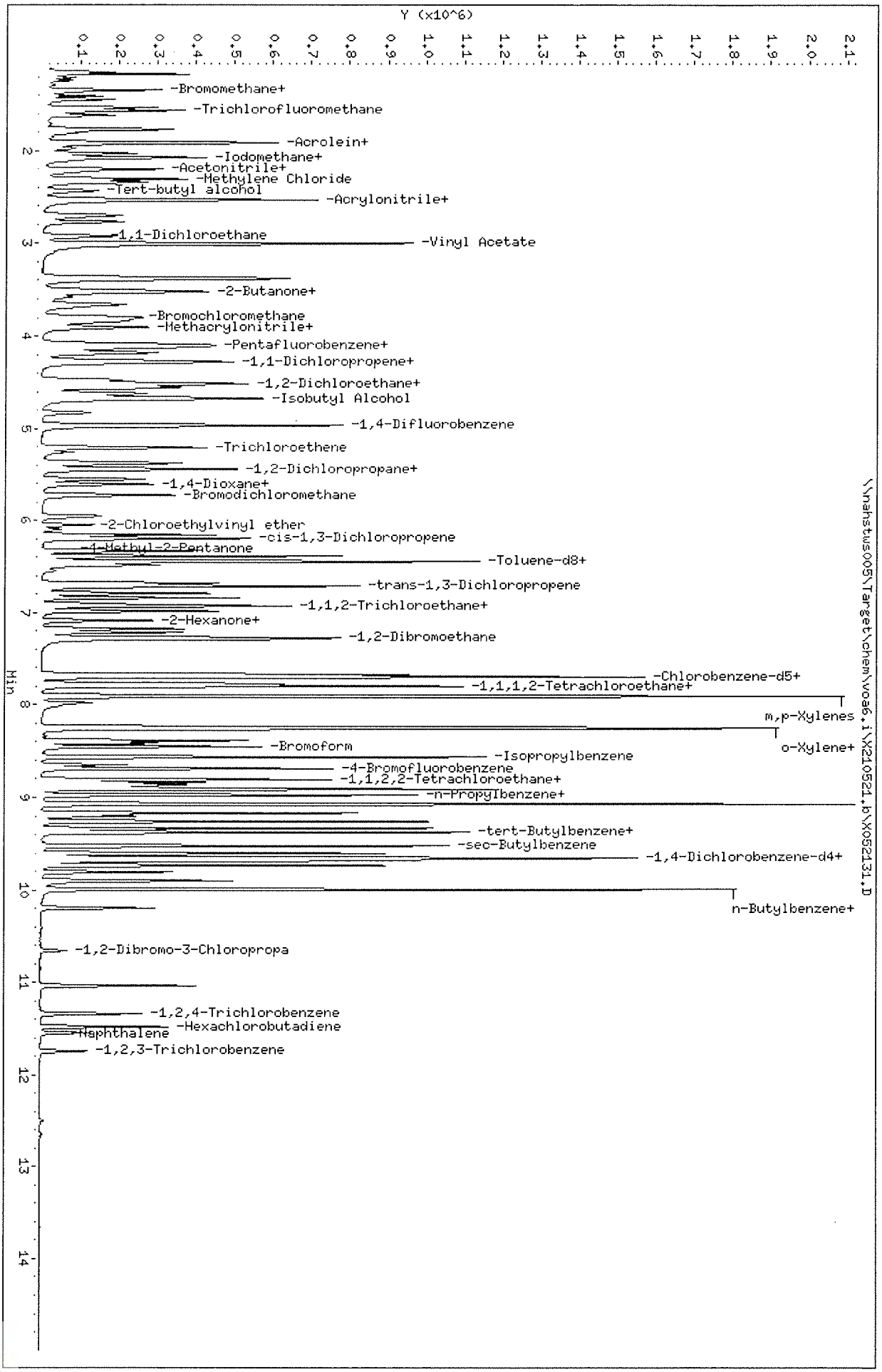
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

		QUANT SIG					AMOUNTS	
	Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	CAL-AMT (ug/l)	ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	222609	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	382194	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	378975	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	202296	50.0000	
$	35 1,2-Dichloroethane-d4	65	4.469	4.469	(1.069)	153347	50.0000	53.02
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	183861	50.0000	51.39
$	30 Dibromofluoromethane	113	4.096	4.096	(0.979)	133144	50.0000	53.70
$	48 Toluene-d8	98	6.388	6.388	(0.833)	443018	50.0000	47.63
	60 1,1,1,2-Tetrachloroethane	131	7.771	7.771	(1.013)	133817	50.0000	48.46
	31 1,1,1-Trichloroethane	97	4.082	4.082	(0.976)	203303	50.0000	53.69
	68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	158931	50.0000	47.40
	138 Freon TF	101	1.911	1.911	(0.457)	104684	50.0000	49.56
	53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	110098	50.0000	50.01
	22 1,1-Dichloroethane	63	2.921	2.921	(0.699)	193089	50.0000	46.83
	11 1,1-Dichloroethene	96	1.911	1.911	(0.457)	109180	50.0000	49.04
	32 1,1-Dichloropropene	75	4.282	4.282	(0.863)	165256	50.0000	50.47
	93 1,2,3-Trichlorobenzene	180	11.739	11.739	(1.215)	32827	50.0000	34.54
	71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	135183	50.0000	49.23(M)
	90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	65916	50.0000	36.94
	79 1,2,4-Trimethylbenzene	105	9.375	9.375	(0.970)	492435	50.0000	47.86
	89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.103)	11131	50.0000	41.11
	57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	135059	50.0000	51.04

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	258670	50.0000	45.62
33	1,2-Dichloroethane	62	4.555	4.555	(0.918)	197522	50.0000	52.56
42	1,2-Dichloropropane	63	5.436	5.436	(1.095)	129503	50.0000	50.41
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	491130	50.0000	48.63
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	275856	50.0000	47.46
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	213612	50.0000	49.56
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	284910	50.0000	47.94
26	2,2-Dichloropropane	77	3.509	3.509	(0.839)	165858	50.0000	44.97
24	2-Butanone	43	3.580	3.580	(0.856)	83030	100.000	101.04
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	426217	50.0000	47.27
52	2-Hexanone	43	7.090	7.090	(0.924)	167895	100.000	104.49
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	508672	50.0000	48.38
82	p-Isopropyltoluene	119	9.648	9.648	(0.999)	488023	50.0000	48.86
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	243567	100.000	100.91
10	Acetone	43	1.976	1.976	(0.473)	63033	100.000	112.63
37	Benzene	78	4.512	4.512	(0.909)	480320	50.0000	50.79
74	Bromobenzene	156	8.802	8.802	(0.911)	164181	50.0000	48.68
29	Bromochloromethane	128	3.795	3.795	(0.908)	70073	50.0000	51.65
39	Bromodichloromethane	83	5.729	5.729	(1.154)	191721	50.0000	51.91
66	Bromoform	173	8.408	8.408	(1.096)	94184	50.0000	51.38
6	Bromomethane	94	1.338	1.338	(0.320)	123463	50.0000	52.79
19	Carbon Disulfide	76	2.069	2.069	(0.495)	501125	100.000	95.54
34	Carbon Tetrachloride	117	4.268	4.268	(0.860)	168305	50.0000	50.52
59	Chlorobenzene	112	7.692	7.692	(1.003)	368756	50.0000	49.62
7	Chloroethane	64	1.403	1.403	(0.336)	84834	50.0000	50.34
28	Chloroform	83	3.910	3.910	(0.935)	239255	50.0000	50.58
3	Chloromethane	50	1.081	1.081	(0.258)	110925	50.0000	46.22
27	cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	132034	50.0000	51.46
46	cis-1,3-Dichloropropene	75	6.152	6.152	(1.240)	215904	50.0000	51.52
55	Dibromochloromethane	129	7.176	7.176	(0.936)	150076	50.0000	50.66
44	Dibromomethane	93	5.550	5.550	(1.118)	94233	50.0000	51.18
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	124378	50.0000	44.63
61	Ethylbenzene	106	7.799	7.799	(1.017)	187228	50.0000	50.98
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	46682	50.0000	39.19
67	Isopropylbenzene	105	8.559	8.559	(1.116)	599145	50.0000	53.38
62	m,p-Xylenes	106	7.907	7.907	(1.031)	491613	100.000	103.87
17	Methylene Chloride	84	2.305	2.305	(0.551)	105235	50.0000	47.14
87	n-Butylbenzene	91	9.991	9.991	(1.034)	450298	50.0000	47.40
73	n-Propylbenzene	91	8.910	8.910	(0.922)	721687	50.0000	50.37
92	Naphthalene	128	11.539	11.539	(1.194)	91066	50.0000	35.18
63	o-Xylene	106	8.244	8.244	(1.075)	231161	50.0000	50.22
81	sec-Butylbenzene	105	9.519	9.519	(0.985)	580641	50.0000	48.96
64	Styrene	104	8.258	8.258	(1.077)	413632	50.0000	47.97
78	tert-Butylbenzene	119	9.332	9.332	(0.966)	420657	50.0000	49.09
56	Tetrachloroethene	164	6.926	6.926	(0.903)	110234	50.0000	52.34
50	Toluene	91	6.446	6.446	(0.840)	552329	50.0000	50.51
20	trans-1,2-Dichloroethene	96	2.527	2.527	(0.604)	105555	50.0000	49.28
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	194113	50.0000	52.95
38	Trichloroethene	130	5.206	5.206	(1.049)	129665	50.0000	51.23
8	Trichlorofluoromethane	101	1.560	1.560	(0.373)	222158	50.0000	51.91
5	Vinyl Chloride	62	1.145	1.145	(0.274)	123816	50.0000	46.06

QC Flag Legend

M - Compound response manually integrated.

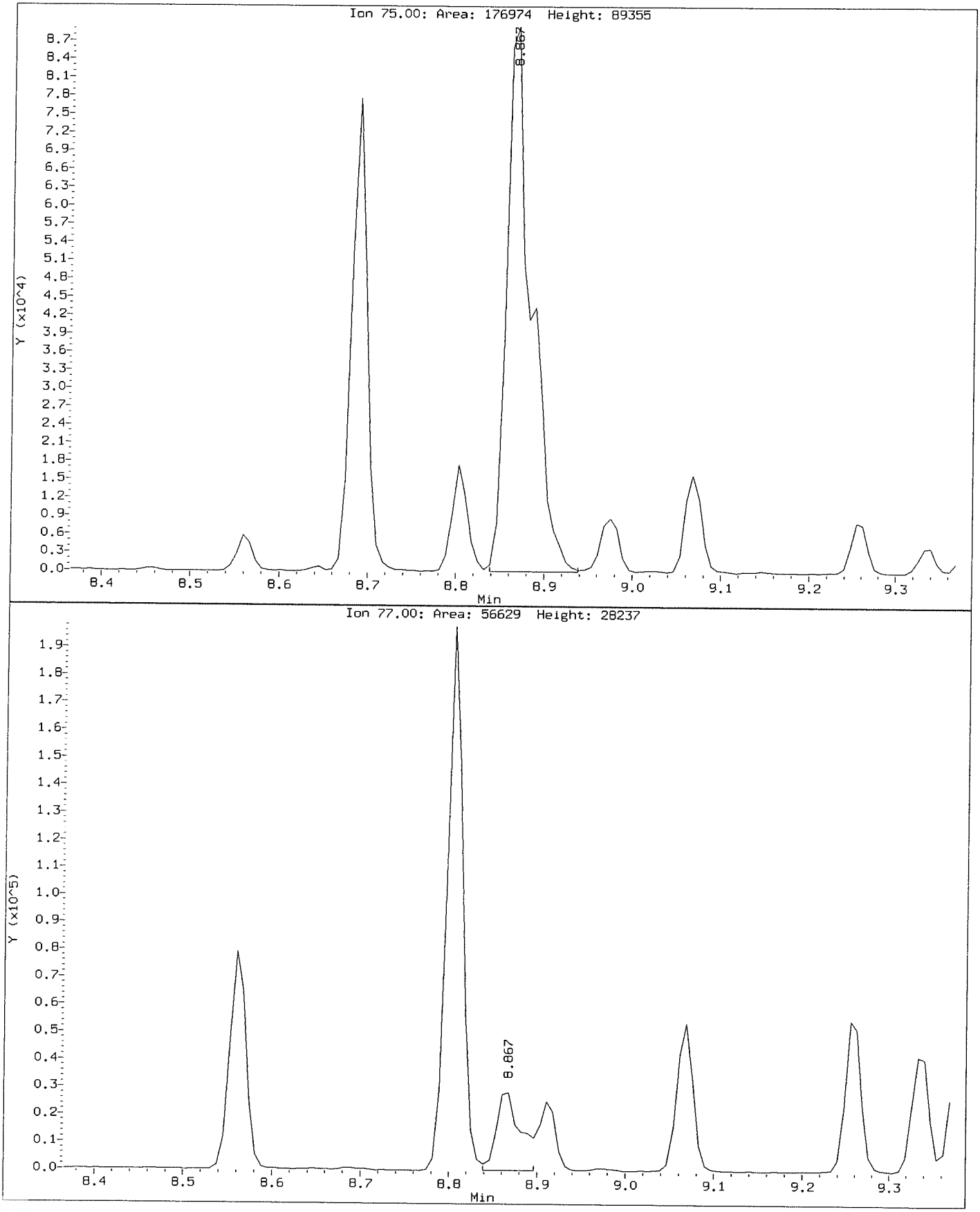


Data File: \\nahstws005\Target\chem\voa6.i\X210521.b\X052131.D
Date : 21-MAY-2021 20:44
Client ID: CCV-END
Sample Info: CCV-END;CCV-END;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

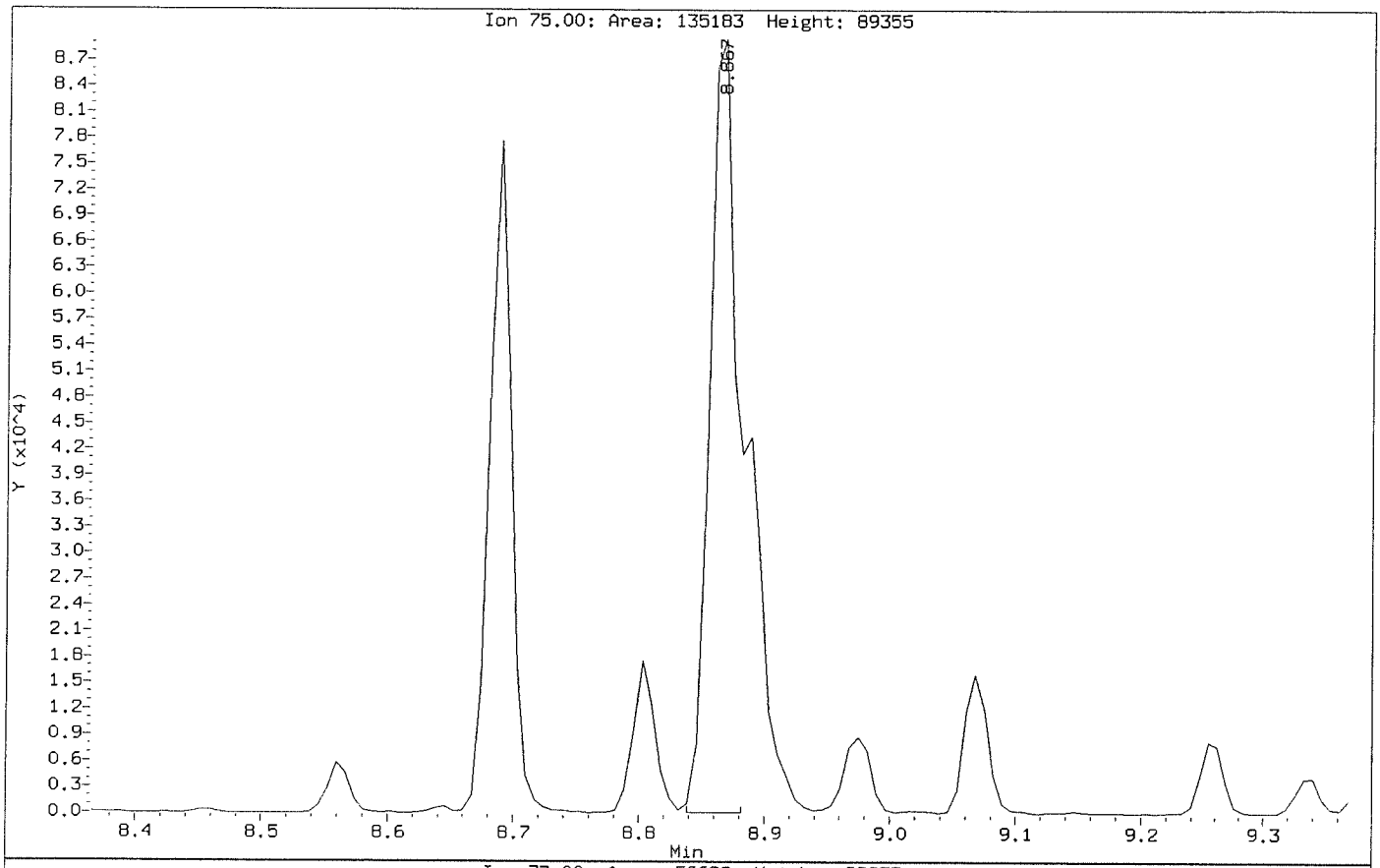
Data File: \\NAHSTWS005\Target\chem\voa6.i\X210521.b\Before\X052131.D
Injection Date: 21-MAY-2021 20:44
Instrument: voa6.i
Client Sample ID: CCV-END

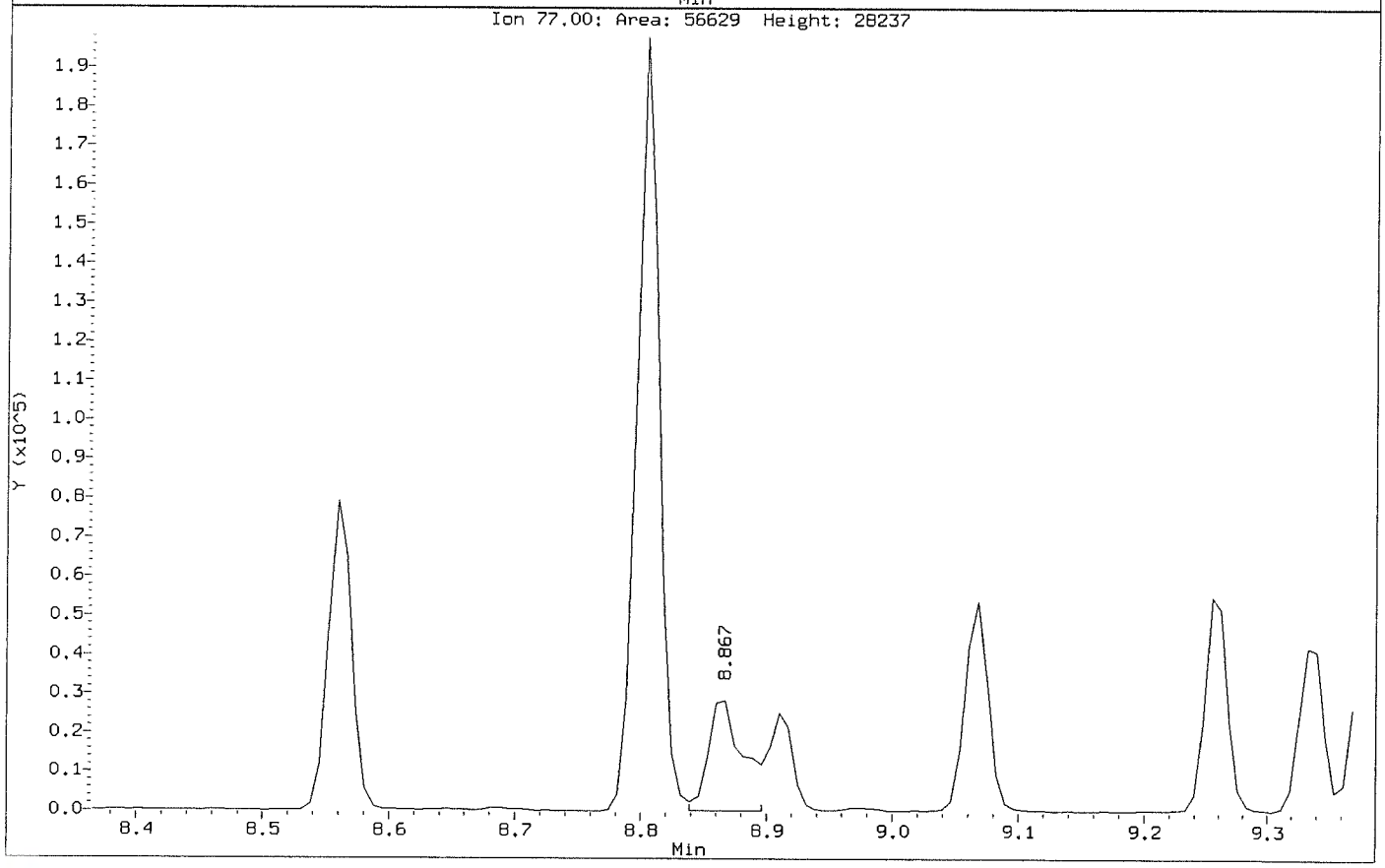
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



Data File: \\NAHSTWS005\Target\chem\voa6.i\X210521.b\X052131.D
Injection Date: 21-MAY-2021 20:44
Instrument: voa6.i
Client Sample ID: CCV-END

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





MSVOA06 -Logbook

Batch: 44960 **Analyst:** Presenta Cabascango

Date: 05-23-2021 **Reviewer:**

Method: 8260 **Laboratory:** Houston

Comments:

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	05-23-2021 11:42 am	1.00	50 mL	50 mL	X052301.D	Liquid	Y	NA
2	CCV	CCV	05-23-2021 12:02 pm	1.00	50 mL	50 mL	X052302a.D	Liquid	Y	NA
3	CCV	CCV	05-23-2021 12:23 pm	1.00	50 mL	50 mL	X052303.D	Liquid	Y	NA
4	CCB	SAMP	05-23-2021 12:44 pm	1.00	50 mL	50 mL	X052304.D	Liquid	Y	NA
5	VLCSW-210523	LCS	05-23-2021 01:12 pm	1.00	50 mL	50 mL	X052305.D	Liquid	Y	NA
6	BLANK	SAMP	05-23-2021 01:33 pm	1.00	50 mL	50 mL	X052306.D	Liquid	Y	NA
7	VBLKW-210523	MBLK	05-23-2021 01:54 pm	1.00	50 mL	50 mL	X052307.D	Liquid	Y	NA
8	MBLK-166056	MBLK	05-23-2021 02:15 pm	20.00	2.5 mL	50 mL	X052308.D	Liquid	Y	NA
9	HS21050892-06	SAMP	05-23-2021 02:36 pm	20.00	2.5 mL	50 mL	X052309.D	Liquid	Y	NA
10	HS21050972-18	SAMP	05-23-2021 02:57 pm	1.00	50 mL	50 mL	X052310.D	Liquid	Y	NA
11	HS21050892-06MS	MS	05-23-2021 03:18 pm	20.00	2.5 mL	50 mL	X052311.D	Liquid	Y	NA
12	HS21050892-06MSD	MSD	05-23-2021 03:39 pm	20.00	2.5 mL	50 mL	X052312.D	Liquid	Y	NA
13	HS21050892-01	SAMP	05-23-2021 04:00 pm	20.00	2.5 mL	50 mL	X052313.D	Liquid	Y	NA
14	HS21050892-02	SAMP	05-23-2021 04:21 pm	20.00	2.5 mL	50 mL	X052314.D	Liquid	Y	NA
15	HS21050892-03	SAMP	05-23-2021 04:42 pm	20.00	2.5 mL	50 mL	X052315.D	Liquid	Y	NA
16	HS21050892-04	SAMP	05-23-2021 05:03 pm	20.00	2.5 mL	50 mL	X052316.D	Liquid	Y	NA
17	HS21050892-05	SAMP	05-23-2021 05:24 pm	20.00	2.5 mL	50 mL	X052317.D	Liquid	Y	NA
18	HS21050892-07	SAMP	05-23-2021 05:46 pm	20.00	2.5 mL	50 mL	X052318.D	Liquid	Y	NA
19	HS21050972-08	SAMP	05-23-2021 06:07 pm	1.00	50 mL	50 mL	X052319.D	Liquid	Y	NA
20	HS21050972-09	SAMP	05-23-2021 06:28 pm	1.00	50 mL	50 mL	X052320.D	Liquid	Y	NA
21	HS21050972-10	SAMP	05-23-2021 06:49 pm	1.00	50 mL	50 mL	X052321.D	Liquid	Y	NA
22	HS21050972-11	SAMP	05-23-2021 07:10 pm	1.00	50 mL	50 mL	X052322.D	Liquid	Y	NA
23	HS21050972-12	SAMP	05-23-2021 07:31 pm	1.00	50 mL	50 mL	X052323.D	Liquid	Y	NA
24	HS21050972-13	SAMP	05-23-2021 07:52 pm	1.00	50 mL	50 mL	X052324.D	Liquid	Y	NA
25	HS21050972-14	SAMP	05-23-2021 08:13 pm	1.00	50 mL	50 mL	X052325.D	Liquid	Y	NA
26	HS21050972-15	SAMP	05-23-2021 08:34 pm	1.00	50 mL	50 mL	X052326.D	Liquid	Y	NA
27	HS21050972-16	SAMP	05-23-2021 08:55 pm	1.00	50 mL	50 mL	X052327.D	Liquid	Y	NA
28	HS21050972-17	SAMP	05-23-2021 09:16 pm	1.00	50 mL	50 mL	X052328.D	Liquid	Y	NA
29	HS21051002-01	SAMP	05-23-2021 09:37 pm	1.00	50 mL	50 mL	X052329.D	Liquid	Y	NA
30	HS21051002-02	SAMP	05-23-2021 09:58 pm	1.00	50 mL	50 mL	X052330.D	Liquid	Y	NA
31	CCV-END	CCV	05-23-2021 10:19 pm	1.00	50 mL	50 mL	X052331.D	Liquid	Y	NA
32	BLANK	SAMP	05-23-2021 10:40 pm	1.00	50 mL	50 mL	X052332.D	Liquid	Y	NA

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050972

	CLIENT SAMPLE NO.	SMC1 #	SMC2 #	SMC3 (TOL) #	OTHER (DCE) #	TOT OUT
01	VLCSW-210523	97	99	98	105	0
02	VBLKW-210523	88	88	112	92	0
03	HS21050972-18	90	90	107	90	0
04	HS21050892-06MS	96	96	106	95	0
05	HS21050892-06MSD	98	94	105	95	0
06	HS21050972-08	90	92	108	91	0
07	HS21050972-09	91	90	108	90	0
08	HS21050972-10	88	90	108	90	0
09	HS21050972-11	90	93	109	92	0
10	HS21050972-12	93	91	108	90	0
11	HS21050972-13	91	92	108	93	0
12	HS21050972-14	88	91	108	94	0
13	HS21050972-15	90	94	108	92	0
14	HS21050972-16	91	91	108	91	0
15	HS21050972-17	92	92	108	91	0
16						
17						
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28						

		QC LIMITS
SMC1	= 4-Bromofluorobenzene	(70-130)
SMC2	= Dibromofluoromethane	(70-130)
SMC3 (TOL)	= Toluene-d8	(0-130)
OTHER(DCE)	= 1,2-Dichloroethane-d4	(0-130)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

VBLKW-210523

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050972

Lab File ID: X052307 Lab Sample ID: VBLKW-210523

Date Analyzed: 05/23/21 Time Analyzed: 1354

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA6

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VLCSW-210523	VLCSW-210523	X052305	1312
02	HS21050972-18	HS21050972-18	X052310	1457
03	HS21050892-06MS	HS21050892-06MS	X052311	1518
04	HS21050892-06MSD	HS21050892-06MSD	X052312	1539
05	HS21050972-08	HS21050972-08	X052319	1807
06	HS21050972-09	HS21050972-09	X052320	1828
07	HS21050972-10	HS21050972-10	X052321	1849
08	HS21050972-11	HS21050972-11	X052322	1910
09	HS21050972-12	HS21050972-12	X052323	1931
10	HS21050972-13	HS21050972-13	X052324	1952
11	HS21050972-14	HS21050972-14	X052325	2013
12	HS21050972-15	HS21050972-15	X052326	2034
13	HS21050972-16	HS21050972-16	X052327	2055
14	HS21050972-17	HS21050972-17	X052328	2116
15				
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COMMENTS:

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050972

Lab File ID: X052301 BFB Injection Date: 05/23/21

Instrument ID: VOA6 BFB Injection Time: 1142

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.9
75	30.0 - 60.0% of mass 95	44.3
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	8.2
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	106.1
175	5.0 - 9.0% of mass 174	7.1 (6.7)1
176	95.0 - 101.0% of mass 174	105.6 (99.5)1
177	5.0 - 9.0% of mass 176	5.3 (5.0)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CCV	CCV	X052303	05/23/21	1223
02	VLCSW-210523	VLCSW-210523	X052305	05/23/21	1312
03	VBLKW-210523	VBLKW-210523	X052307	05/23/21	1354
04	HS21050972-18	HS21050972-18	X052310	05/23/21	1457
05	HS21050892-06MS	HS21050892-06MS	X052311	05/23/21	1518
06	HS21050892-06MSD	HS21050892-06MSD	X052312	05/23/21	1539
07	HS21050972-08	HS21050972-08	X052319	05/23/21	1807
08	HS21050972-09	HS21050972-09	X052320	05/23/21	1828
09	HS21050972-10	HS21050972-10	X052321	05/23/21	1849
10	HS21050972-11	HS21050972-11	X052322	05/23/21	1910
11	HS21050972-12	HS21050972-12	X052323	05/23/21	1931
12	HS21050972-13	HS21050972-13	X052324	05/23/21	1952
13	HS21050972-14	HS21050972-14	X052325	05/23/21	2013
14	HS21050972-15	HS21050972-15	X052326	05/23/21	2034
15	HS21050972-16	HS21050972-16	X052327	05/23/21	2055
16	HS21050972-17	HS21050972-17	X052328	05/23/21	2116
17	CCV-END	CCV-END	X052331	05/23/21	2219
18					
19					
20					
21					
22					

FORM V VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050972

Instrument ID: VOA6 Calibration Date: 05/23/21 Time: 1223

Lab File ID: X052303 Init. Calib. Date(s): 05/18/21 05/18/21

Init. Calib. Times: 1123 1452

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE	
cis-1,3-Dichloropropene	0.5480000	0.5637566	0.5637566	0.2	-2.88	20.00	AVRG	
trans-1,3-Dichloropropene	0.4790000	0.5209977	0.5209977	0.1	-8.77	20.00	AVRG	
1,3-Dichlorobenzene	1.4360000	1.3902310	1.3902310	0.6	3.19	20.00	AVRG	
2,2-Dichloropropane	0.8280000	0.8766319	0.8766319	0.1	-5.87	20.00	AVRG	
1,1-Dichloropropene	0.4280000	0.4300989	0.4300989	0.1	-0.49	20.00	AVRG	
Dibromomethane	0.2410000	0.2350987	0.2350987	0.1	2.45	20.00	AVRG	
1,2-Dibromoethane	0.3490000	0.3467447	0.3467447	0.1	0.65	20.00	AVRG	
trans-1,2-Dichloroethene	0.4810000	0.4785891	0.4785891	0.1	0.50	20.00	AVRG	
1,1,1,2-Tetrachloroethane	0.3640000	0.3626222	0.3626222	0.1	0.38	20.00	AVRG	
1,1,1-Trichloroethane	0.8500000	0.8790688	0.8790688	0.1	-3.42	20.00	AVRG	
1,1,2,2-Tetrachloroethane	48.167569	50.000000	0.7981932	0.3	3.66	20.00	LINR	
Toluene	1.4430000	1.4691214	1.4691214	0.4	-1.81	20.00	AVRG	
1,1,2-Trichloroethane	0.2900000	0.2752211	0.2752211	0.1	5.10	20.00	AVRG	
1,1-Dichloroethane	0.9260000	0.9162920	0.9162920	0.2	1.05	20.00	AVRG	
1,1-Dichloroethene	0.5000000	0.4558865	0.4558865	0.1	8.82	20.00	AVRG	
Trichlorofluoromethane	0.9610000	0.9226231	0.9226231	0.1	3.99	20.00	AVRG	
1,2,3-Trichlorobenzene	40.403558	50.000000	0.1908796	0.01	19.19	20.00	2RDR	
Tetrachloroethene	0.2780000	0.2889967	0.2889967	0.2	-3.96	20.00	AVRG	
1,2,4-Trichlorobenzene	40.162628	50.000000	0.3562886	0.1	19.67	20.00	LINR	
1,2,4-Trimethylbenzene	2.5430000	2.5189290	2.5189290	0.1	0.95	20.00	AVRG	
tert-Butylbenzene	2.1180000	2.0243235	2.0243235	0.1	4.42	20.00	AVRG	
Trichloroethene	0.3310000	0.3282508	0.3282508	0.2	0.83	20.00	AVRG	
1,2-Dichlorobenzene	1.4010000	1.3130591	1.3130591	0.4	6.28	20.00	AVRG	
1,2-Dichloroethane	0.4910000	0.4871293	0.4871293	0.1	0.79	20.00	AVRG	
1,2-Dichloropropane	0.3360000	0.3254284	0.3254284	0.1	3.15	20.00	AVRG	
1,3,5-Trimethylbenzene	2.4960000	2.5278983	2.5278983	0.1	-1.28	20.00	AVRG	
1,3-Dichloropropane	0.5690000	0.5486490	0.5486490	0.1	3.58	20.00	AVRG	
1,4-Dichlorobenzene	49.437211	50.000000	1.4523250	0.4	1.12	20.00	LINR	
2-Butanone	0.1850000	0.1919288	0.1919288	0.1	-3.74	20.00	AVRG	
2-Chlorotoluene	2.2280000	2.1064936	2.1064936	0.1	5.45	20.00	AVRG	
2-Hexanone	93.563351	100.00000	0.1983987	0.1	6.44	20.00	LINR	
4-Chlorotoluene	2.5980000	2.5781346	2.5781346	0.1	0.76	20.00	AVRG	
Styrene	47.498674	50.000000	1.0802449	0.3	5.00	20.00	LINR	
4-Methyl-2-Pentanone	90.641590	100.00000	0.2886202	0.1	9.36	20.00	LINR	
Acetone	133.00753	100.00000	0.1660665	0.1	-33.01	20.00	LINR	<-
Benzene	1.2370000	1.2227474	1.2227474	0.5	1.15	20.00	AVRG	
Bromobenzene	0.8340000	0.8130223	0.8130223	0.1	2.52	20.00	AVRG	
Bromochloromethane	0.3050000	0.3008938	0.3008938	0.1	1.35	20.00	AVRG	
Bromodichloromethane	0.4830000	0.4799346	0.4799346	0.2	0.63	20.00	AVRG	
Bromoform	0.2420000	0.2446442	0.2446442	0.1	-1.09	20.00	AVRG	
Bromomethane	50.500885	50.000000	0.5307533	0.1	-1.00	20.00	LINR	
Carbon Disulfide	1.1780000	1.2304456	1.2304456	0.1	-4.45	20.00	AVRG	

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS2105097

Instrument ID: VOA6 Calibration Date: 05/23/21 Time: 1223

Lab File ID: X052303 Init. Calib. Date(s): 05/18/21 05/18/21

Init. Calib. Times: 1123 1452

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Carbon Tetrachloride	0.4360000	0.4413213	0.4413213	0.1	-1.22	20.00	AVRG
Chlorobenzene	0.9800000	0.9531513	0.9531513	0.5	2.74	20.00	AVRG
Chloroethane	0.3780000	0.3555179	0.3555179	0.1	5.95	20.00	AVRG
Chloroform	1.0620000	1.0488136	1.0488136	0.2	1.24	20.00	AVRG
Chloromethane	53.146110	50.000000	0.5733438	0.1	-6.29	20.00	LINR
cis-1,2-Dichloroethene	0.5760000	0.5682272	0.5682272	0.1	1.35	20.00	AVRG
Dibromochloromethane	0.3900000	0.3944960	0.3944960	0.1	-1.15	20.00	AVRG
Dichlorodifluoromethane	51.015541	50.000000	0.6425503	0.1	-2.03	20.00	LINR
Ethylbenzene	0.4840000	0.4969290	0.4969290	0.1	-2.67	20.00	AVRG
Hexachlorobutadiene	45.108877	50.000000	0.2686826	0.1	9.78	20.00	LINR
Isopropylbenzene	1.4800000	1.5105573	1.5105573	0.1	-2.06	20.00	AVRG
m,p-Xylenes	0.6240000	0.6357034	0.6357034	0.1	-1.88	20.00	AVRG
Methylene Chloride	0.5010000	0.5160668	0.5160668	0.1	-3.01	20.00	AVRG
n-Butylbenzene	2.3480000	2.3892590	2.3892590	0.5	-1.76	20.00	AVRG
n-Propylbenzene	3.5410000	3.5733114	3.5733114	0.1	-0.91	20.00	AVRG
Naphthalene	40.049584	50.000000	0.5184730	0.2	19.90	20.00	LINR
o-Xylene	0.6070000	0.5939611	0.5939611	0.3	2.15	20.00	AVRG
sec-Butylbenzene	2.9310000	2.9485337	2.9485337	0.1	-0.60	20.00	AVRG
Vinyl Chloride	0.6040000	0.5705329	0.5705329	0.1	5.54	20.00	AVRG
1,2,3-Trichloropropane	49.817704	50.000000	0.6761058	0.1	0.36	20.00	LINR
p-Isopropyltoluene	2.4690000	2.4889899	2.4889899	0.1	-0.81	20.00	AVRG
1,2-Dibromo-3-Chloropropane	44.217213	50.000000	5.93e-002	0.05	11.56	20.00	LINR
Freon TF	0.4740000	0.4742668	0.4742668	0.1	-0.06	20.00	AVRG
4-Bromofluorobenzene	51.119547	50.000000	0.4825668	0.1	-2.24	20.00	LINR
Dibromofluoromethane	50.309573	50.000000	0.5604039	0.1	-0.62	20.00	LINR
Toluene-d8	49.231340	50.000000	1.2089560	0.1	1.54	20.00	LINR
1,2-Dichloroethane-d4	53.223964	50.000000	0.6914333	0.1	-6.45	20.00	LINR

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050972

Instrument ID: VOA6 Calibration Date: 05/23/21 Time: 2219

Lab File ID: X052331 Init. Calib. Date(s): 05/18/21 05/18/21

Init. Calib. Times: 1123 1452

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
cis-1,3-Dichloropropene	0.5480000	0.5493445	0.5493445	0.2	-0.24	50.00	AVRG
trans-1,3-Dichloropropene	0.4790000	0.5080528	0.5080528	0.1	-6.06	50.00	AVRG
1,3-Dichlorobenzene	1.4360000	1.4330150	1.4330150	0.6	0.21	50.00	AVRG
2,2-Dichloropropane	0.8280000	0.7525742	0.7525742	0.1	9.11	50.00	AVRG
1,1-Dichloropropene	0.4280000	0.4123577	0.4123577	0.1	3.65	50.00	AVRG
Dibromomethane	0.2410000	0.2339457	0.2339457	0.1	2.93	50.00	AVRG
1,2-Dibromoethane	0.3490000	0.3552421	0.3552421	0.1	-1.79	50.00	AVRG
trans-1,2-Dichloroethene	0.4810000	0.4750366	0.4750366	0.1	1.24	50.00	AVRG
1,1,1,2-Tetrachloroethane	0.3640000	0.3601264	0.3601264	0.1	1.06	50.00	AVRG
1,1,1-Trichloroethane	0.8500000	0.8807967	0.8807967	0.1	-3.62	50.00	AVRG
1,1,2,2-Tetrachloroethane	47.363092	50.000000	0.7850074	0.3	5.27	50.00	LINR
Toluene	1.4430000	1.4813424	1.4813424	0.4	-2.66	50.00	AVRG
1,1,2-Trichloroethane	0.2900000	0.2853874	0.2853874	0.1	1.59	50.00	AVRG
1,1-Dichloroethane	0.9260000	0.9118687	0.9118687	0.2	1.53	50.00	AVRG
1,1-Dichloroethene	0.5000000	0.4862005	0.4862005	0.1	2.76	50.00	AVRG
Trichlorofluoromethane	0.9610000	0.9294501	0.9294501	0.1	3.28	50.00	AVRG
1,2,3-Trichlorobenzene	36.375477	50.000000	0.1712050	0.01	27.25	50.00	2RDR
Tetrachloroethene	0.2780000	0.2960738	0.2960738	0.2	-6.50	50.00	AVRG
1,2,4-Trichlorobenzene	37.757433	50.000000	0.3335557	0.1	24.48	50.00	LINR
1,2,4-Trimethylbenzene	2.5430000	2.5866100	2.5866100	0.1	-1.71	50.00	AVRG
tert-Butylbenzene	2.1180000	2.1236924	2.1236924	0.1	-0.27	50.00	AVRG
Trichloroethene	0.3310000	0.3333407	0.3333407	0.2	-0.71	50.00	AVRG
1,2-Dichlorobenzene	1.4010000	1.3196096	1.3196096	0.4	5.81	50.00	AVRG
1,2-Dichloroethane	0.4910000	0.5033482	0.5033482	0.1	-2.51	50.00	AVRG
1,2-Dichloropropane	0.3360000	0.3327459	0.3327459	0.1	0.97	50.00	AVRG
1,3,5-Trimethylbenzene	2.4960000	2.5584783	2.5584783	0.1	-2.50	50.00	AVRG
1,3-Dichloropropane	0.5690000	0.5600860	0.5600860	0.1	1.57	50.00	AVRG
1,4-Dichlorobenzene	49.241401	50.000000	1.4465431	0.4	1.52	50.00	LINR
2-Butanone	0.1850000	0.1706764	0.1706764	0.1	7.74	50.00	AVRG
2-Chlorotoluene	2.2280000	2.1085297	2.1085297	0.1	5.36	50.00	AVRG
2-Hexanone	94.338632	100.00000	0.2000379	0.1	5.66	50.00	LINR
4-Chlorotoluene	2.5980000	2.6102419	2.6102419	0.1	-0.47	50.00	AVRG
Styrene	49.511829	50.000000	1.1277942	0.3	0.98	50.00	LINR
4-Methyl-2-Pentanone	94.168737	100.00000	0.2998622	0.1	5.83	50.00	LINR
Acetone	126.01490	100.00000	0.1576616	0.1	-26.01	50.00	LINR
Benzene	1.2370000	1.2466623	1.2466623	0.5	-0.78	50.00	AVRG
Bromobenzene	0.8340000	0.8180430	0.8180430	0.1	1.91	50.00	AVRG
Bromochloromethane	0.3050000	0.3052084	0.3052084	0.1	-0.07	50.00	AVRG
Bromodichloromethane	0.4830000	0.4798823	0.4798823	0.2	0.64	50.00	AVRG
Bromoform	0.2420000	0.2435040	0.2435040	0.1	-0.62	50.00	AVRG
Bromomethane	49.696509	50.000000	0.5223787	0.1	0.61	50.00	LINR
Carbon Disulfide	1.1780000	1.1670340	1.1670340	0.1	0.93	50.00	AVRG

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS2105097

Instrument ID: VOA6 Calibration Date: 05/23/21 Time: 2219

Lab File ID: X052331 Init. Calib. Date(s): 05/18/21 05/18/21

Init. Calib. Times: 1123 1452

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Carbon Tetrachloride	0.4360000	0.4298035	0.4298035	0.1	1.42	50.00	AVRG
Chlorobenzene	0.9800000	1.0147996	1.0147996	0.5	-3.55	50.00	AVRG
Chloroethane	0.3780000	0.3626399	0.3626399	0.1	4.06	50.00	AVRG
Chloroform	1.0620000	1.0437885	1.0437885	0.2	1.71	50.00	AVRG
Chloromethane	48.134856	50.000000	0.5190409	0.1	3.73	50.00	LINR
cis-1,2-Dichloroethene	0.5760000	0.5662899	0.5662899	0.1	1.68	50.00	AVRG
Dibromochloromethane	0.3900000	0.3970724	0.3970724	0.1	-1.81	50.00	AVRG
Dichlorodifluoromethane	45.846724	50.000000	0.5746829	0.1	8.31	50.00	LINR
Ethylbenzene	0.4840000	0.5115156	0.5115156	0.1	-5.68	50.00	AVRG
Hexachlorobutadiene	42.905651	50.000000	0.2545622	0.1	14.19	50.00	LINR
Isopropylbenzene	1.4800000	1.6160283	1.6160283	0.1	-9.19	50.00	AVRG
m,p-Xylenes	0.6240000	0.6663532	0.6663532	0.1	-6.79	50.00	AVRG
Methylene Chloride	0.5010000	0.4839331	0.4839331	0.1	3.41	50.00	AVRG
n-Butylbenzene	2.3480000	2.3575633	2.3575633	0.5	-0.41	50.00	AVRG
n-Propylbenzene	3.5410000	3.5839420	3.5839420	0.1	-1.21	50.00	AVRG
Naphthalene	31.609552	50.000000	0.4000357	0.2	36.78	50.00	LINR
o-Xylene	0.6070000	0.6348477	0.6348477	0.3	-4.59	50.00	AVRG
sec-Butylbenzene	2.9310000	3.0188594	3.0188594	0.1	-3.00	50.00	AVRG
Vinyl Chloride	0.6040000	0.5615180	0.5615180	0.1	7.03	50.00	AVRG
1,2,3-Trichloropropane	46.059107	50.000000	0.6257193	0.1	7.88	50.00	LINR
p-Isopropyltoluene	2.4690000	2.5250856	2.5250856	0.1	-2.27	50.00	AVRG
1,2-Dibromo-3-Chloropropane	38.663352	50.000000	5.16e-002	0.05	22.67	50.00	LINR
Freon TF	0.4740000	0.4630350	0.4630350	0.1	2.31	50.00	AVRG
4-Bromofluorobenzene	51.060688	50.000000	0.4820099	0.1	-2.12	50.00	LINR
Dibromofluoromethane	51.182576	50.000000	0.5700845	0.1	-2.36	50.00	LINR
Toluene-d8	49.930951	50.000000	1.2264973	0.1	0.14	50.00	LINR
1,2-Dichloroethane-d4	51.449490	50.000000	0.6689186	0.1	-2.90	50.00	LINR

FORM VII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050972

Lab File ID (Standard): X052303 Date Analyzed: 05/23/21

Instrument ID: VOA6 Time Analyzed: 1223

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS1(DCB) AREA #	IS1(DCB) RT #	IS2(CBZ) AREA #	IS2(CBZ) RT #	IS3(DFB) AREA #	IS3(DFB) RT #
	12 HOUR STD	217074	9.66	421036	7.67	432261	4.96
	UPPER LIMIT	434148	10.16	842072	8.17	864522	5.46
	LOWER LIMIT	108537	9.16	210518	7.17	216131	4.46
	CLIENT SAMPLE NO.						
01	VLCSW-210523	186104	9.66	370470	7.67	392545	4.96
02	VBLKW-210523	152253	9.66	354029	7.67	399543	4.96
03	HS21050972-18	149311	9.66	350679	7.67	379155	4.97
04	HS21050892-06MS	201354	9.66	391017	7.67	418318	4.96
05	HS21050892-06MSD	201126	9.66	394283	7.67	432102	4.96
06	HS21050972-08	159845	9.66	343215	7.67	379398	4.96
07	HS21050972-09	157638	9.66	343052	7.67	375090	4.96
08	HS21050972-10	145812	9.66	336879	7.67	372282	4.97
09	HS21050972-11	150766	9.66	335738	7.67	378260	4.96
10	HS21050972-12	155240	9.66	340485	7.67	376433	4.96
11	HS21050972-13	152883	9.66	336355	7.67	382495	4.96
12	HS21050972-14	150801	9.66	328454	7.67	372728	4.97
13	HS21050972-15	144012	9.66	322489	7.67	369182	4.97
14	HS21050972-16	152435	9.66	331623	7.67	369140	4.96
15	HS21050972-17	154060	9.66	331444	7.67	374728	4.97
16							
17							
18							
19							
20							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (CBZ) = Chlorobenzene-d5
IS3 (DFB) = 1,4-Difluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS21050972

Lab File ID (Standard): X052303 Date Analyzed: 05/23/21

Instrument ID: VOA6 Time Analyzed: 1223

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS4 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	259354	4.18				
	UPPER LIMIT	518708	4.68				
	LOWER LIMIT	129677	3.68				
	CLIENT SAMPLE NO.						
01	VLCSW-210523	241556	4.18				
02	VBLKW-210523	258912	4.18				
03	HS21050972-18	242510	4.18				
04	HS21050892-06MS	268549	4.18				
05	HS21050892-06MSD	278351	4.18				
06	HS21050972-08	240682	4.18				
07	HS21050972-09	243211	4.18				
08	HS21050972-10	240129	4.18				
09	HS21050972-11	236315	4.18				
10	HS21050972-12	244366	4.18				
11	HS21050972-13	240707	4.18				
12	HS21050972-14	239766	4.18				
13	HS21050972-15	238663	4.18				
14	HS21050972-16	238499	4.18				
15	HS21050972-17	245510	4.18				
16							
17							
18							
19							
20							

IS4 = Pentafluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052301.D

Date : 23-MAY-2021 11:42

Client ID: BFB

Instrument: voa6.i

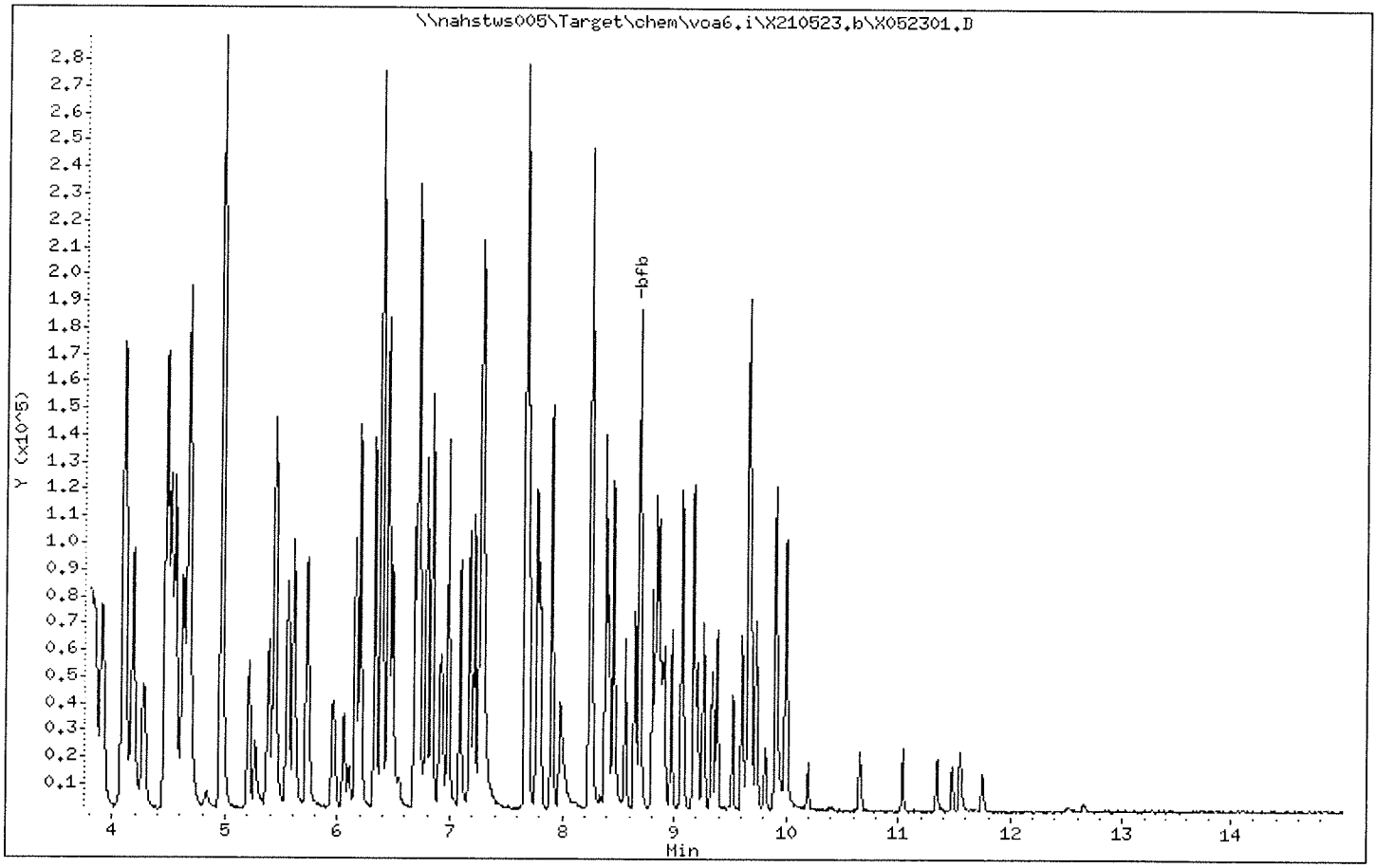
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25



Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052301.D

Date : 23-MAY-2021 11:42

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

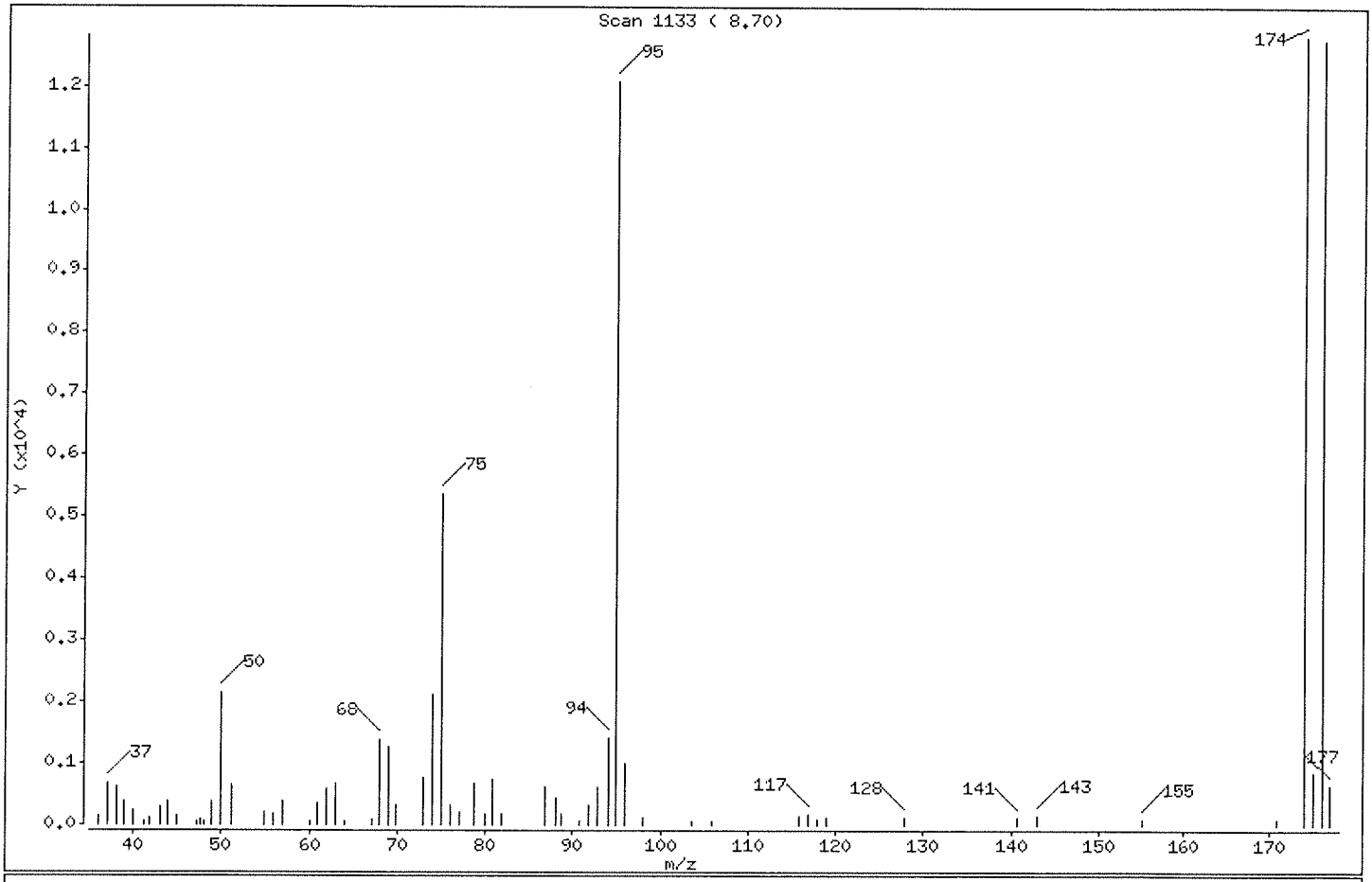
Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	17.90
75	30.00 - 60.00% of mass 95	44.34
96	5.00 - 9.00% of mass 95	8.18
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	106.15
175	5.00 - 9.00% of mass 174	7.14 (6.73)
176	95.00 - 101.00% of mass 174	105.65 (99.53)
177	5.00 - 9.00% of mass 176	5.29 (5.01)

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052301.D

Date : 23-MAY-2021 11:42

Client ID: BFB Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

Data File: X052301.D
Spectrum: Scan 1133 (8.70)
Location of Maximum: 173.90
Number of points: 62

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	147	54.90	202	77.10	200	105.90	60
37.00	684	55.90	187	78.80	674	115.90	151
38.10	623	57.00	396	80.00	173	116.90	179
39.00	391	60.00	53	80.90	745	117.90	81
39.90	244	61.00	364	81.90	190	119.00	116
41.30	53	62.00	597	86.90	630	127.80	130
41.90	112	63.00	674	88.10	439	140.70	111
43.00	303	64.10	65	88.60	168	143.00	136
43.90	381	67.10	76	90.80	51	155.00	94
45.00	147	68.00	1397	91.80	329	170.80	97
47.20	59	68.90	1266	92.90	605	173.90	12814
47.60	78	69.90	311	94.00	1409	174.90	862
48.10	58	72.90	770	95.00	12072	175.90	12754
48.90	385	74.00	2114	96.00	987	176.80	639
50.00	2161	75.00	5353	98.00	127		
51.10	649	76.10	317	103.70	57		

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052303.D Page 1
Report Date: 22-Jun-2021 12:24

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210523.b\X052303.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 23-MAY-2021 12:23
Operator : PC Inst ID: voa6.i
Smp Info : CCV;CCV;2;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210523.b\8260W.m
Meth Date : 22-Jun-2021 12:24 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 3 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

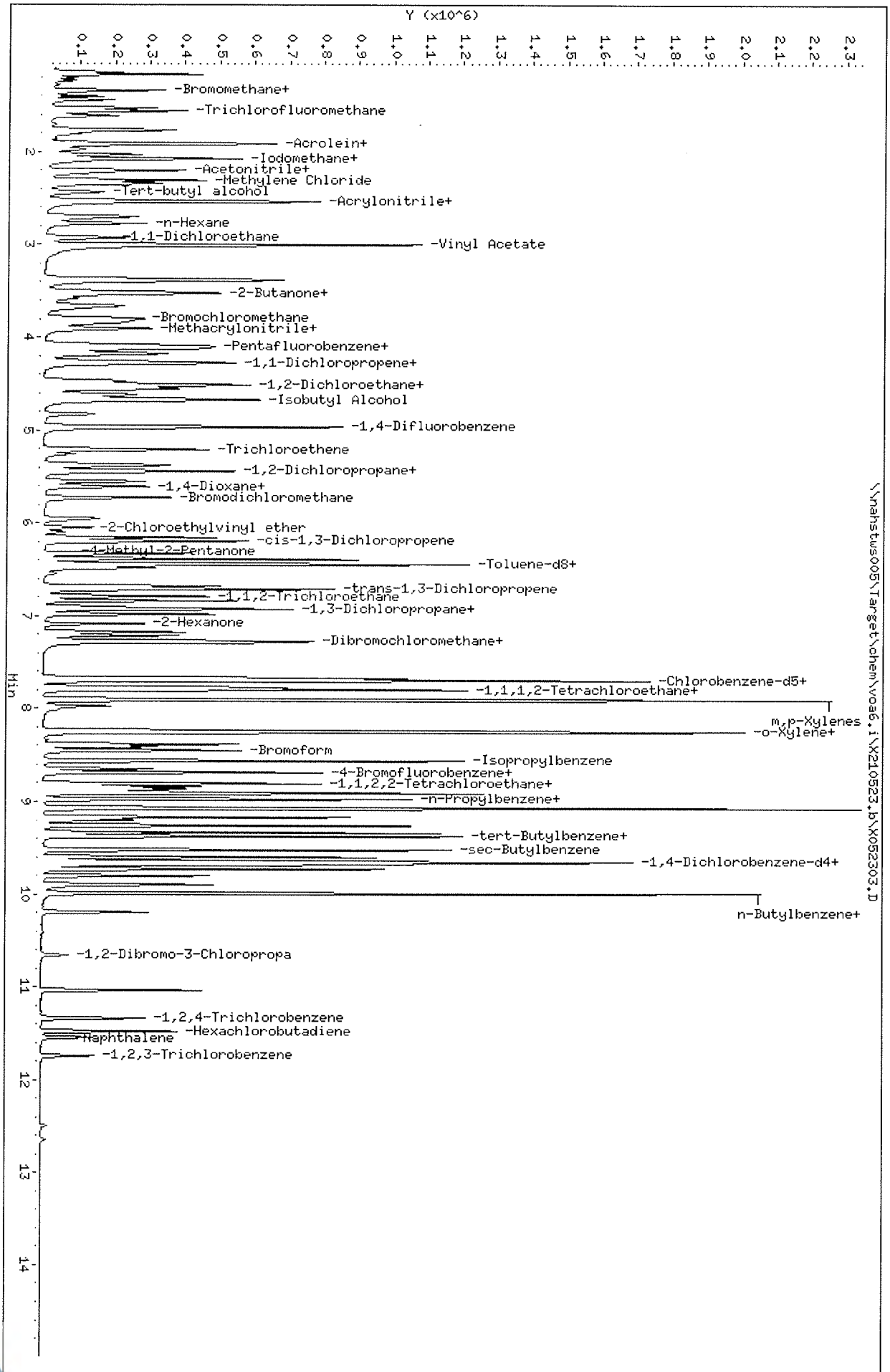
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	259354	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	432261	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	421036	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	217074	50.0000	
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	179326	50.0000	53.22
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	203178	50.0000	51.11
$	30 Dibromofluoromethane	113	4.103	4.103	(0.981)	145343	50.0000	50.30
$	48 Toluene-d8	98	6.389	6.389	(0.833)	509014	50.0000	49.23
	60 1,1,1,2-Tetrachloroethane	131	7.771	7.771	(1.013)	152677	50.0000	49.77
	31 1,1,1-Trichloroethane	97	4.082	4.082	(0.976)	227990	50.0000	51.68
	68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	173267	50.0000	48.16
	138 Freon TF	101	1.919	1.919	(0.459)	123003	50.0000	49.98
	53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	115878	50.0000	47.37
	22 1,1-Dichloroethane	63	2.922	2.922	(0.699)	237644	50.0000	49.47
	11 1,1-Dichloroethene	96	1.919	1.919	(0.459)	118236	50.0000	45.58
	32 1,1-Dichloropropene	75	4.283	4.283	(0.863)	185915	50.0000	50.20
	93 1,2,3-Trichlorobenzene	180	11.739	11.739	(1.215)	41435	50.0000	40.40(M)
	71 1,2,3-Trichloropropane	75	8.860	8.860	(0.917)	146765	50.0000	49.81(M)
	90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	77341	50.0000	40.16(M)
	79 1,2,4-Trimethylbenzene	105	9.375	9.375	(0.970)	546794	50.0000	49.52
	89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.103)	12883	50.0000	44.21
	57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	145992	50.0000	49.66

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052303.D Page 2
Report Date: 22-Jun-2021 12:24

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88 1,2-Dichlorobenzene	146	9.992	9.992	(1.034)	285031	50.0000	46.84
33 1,2-Dichloroethane	62	4.555	4.555	(0.918)	210567	50.0000	49.54
42 1,2-Dichloropropane	63	5.436	5.436	(1.095)	140670	50.0000	48.42
75 1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	548741	50.0000	50.64
83 1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	301783	50.0000	48.38
54 1,3-Dichloropropane	76	6.983	6.983	(0.910)	231001	50.0000	48.24
84 1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	315262	50.0000	49.43
26 2,2-Dichloropropane	77	3.509	3.509	(0.839)	227358	50.0000	52.91
24 2-Butanone	43	3.573	3.573	(0.854)	99555	100.000	103.99
76 2-Chlorotoluene	91	8.974	8.974	(0.929)	457265	50.0000	47.26
52 2-Hexanone	43	7.083	7.083	(0.923)	167066	100.000	93.56
77 4-Chlorotoluene	91	9.067	9.067	(0.938)	559646	50.0000	49.60
82 p-Isopropyltoluene	119	9.648	9.648	(0.999)	540295	50.0000	50.41
45 4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	243039	100.000	90.64
10 Acetone	43	1.976	1.976	(0.473)	86140	100.000	133.00
37 Benzene	78	4.512	4.512	(0.909)	528546	50.0000	49.42
74 Bromobenzene	156	8.802	8.802	(0.911)	176486	50.0000	48.77
29 Bromochloromethane	128	3.795	3.795	(0.908)	78038	50.0000	49.37
39 Bromodichloromethane	83	5.722	5.722	(1.153)	207457	50.0000	49.67
66 Bromoform	173	8.408	8.408	(1.096)	103004	50.0000	50.58
6 Bromomethane	94	1.339	1.339	(0.320)	137653	50.0000	50.50
19 Carbon Disulfide	76	2.069	2.069	(0.495)	638242	100.000	104.44
34 Carbon Tetrachloride	117	4.268	4.268	(0.860)	190766	50.0000	50.63
59 Chlorobenzene	112	7.692	7.692	(1.003)	401311	50.0000	48.60
7 Chloroethane	64	1.403	1.403	(0.336)	92205	50.0000	46.96
28 Chloroform	83	3.910	3.910	(0.935)	272014	50.0000	49.36
3 Chloromethane	50	1.074	1.074	(0.257)	148699	50.0000	53.14
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	147372	50.0000	49.30
46 cis-1,3-Dichloropropene	75	6.152	6.152	(1.240)	243690	50.0000	51.42
55 Dibromochloromethane	129	7.176	7.176	(0.936)	166097	50.0000	50.47
44 Dibromomethane	93	5.550	5.550	(1.118)	101624	50.0000	48.80
2 Dichlorodifluoromethane	85	0.973	0.973	(0.233)	166648	50.0000	51.01
61 Ethylbenzene	106	7.800	7.800	(1.017)	209225	50.0000	51.28
91 Hexachlorobutadiene	225	11.481	11.481	(1.188)	58324	50.0000	45.10
67 Isopropylbenzene	105	8.559	8.559	(1.116)	635999	50.0000	51.00
62 m,p-Xylenes	106	7.907	7.907	(1.031)	535308	100.000	101.81
17 Methylene Chloride	84	2.306	2.306	(0.551)	133844	50.0000	51.46
87 n-Butylbenzene	91	9.992	9.992	(1.034)	518646	50.0000	50.88
73 n-Propylbenzene	91	8.910	8.910	(0.922)	775673	50.0000	50.45
92 Naphthalene	128	11.539	11.539	(1.194)	112547	50.0000	40.04 (M)
63 o-Xylene	106	8.244	8.244	(1.075)	250079	50.0000	48.90
81 sec-Butylbenzene	105	9.519	9.519	(0.985)	640050	50.0000	50.30
64 Styrene	104	8.258	8.258	(1.077)	454822	50.0000	47.49
78 tert-Butylbenzene	119	9.333	9.333	(0.966)	439428	50.0000	47.79
56 Tetrachloroethene	164	6.926	6.926	(0.903)	121678	50.0000	52.00
50 Toluene	91	6.446	6.446	(0.840)	618553	50.0000	50.91
20 trans-1,2-Dichloroethene	96	2.528	2.528	(0.604)	124124	50.0000	49.74
51 trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	225207	50.0000	54.32
38 Trichloroethene	130	5.207	5.207	(1.049)	141890	50.0000	49.57
8 Trichlorofluoromethane	101	1.561	1.561	(0.373)	239286	50.0000	47.99
5 Vinyl Chloride	62	1.145	1.145	(0.274)	147970	50.0000	47.25

QC Flag Legend

M - Compound response manually integrated.

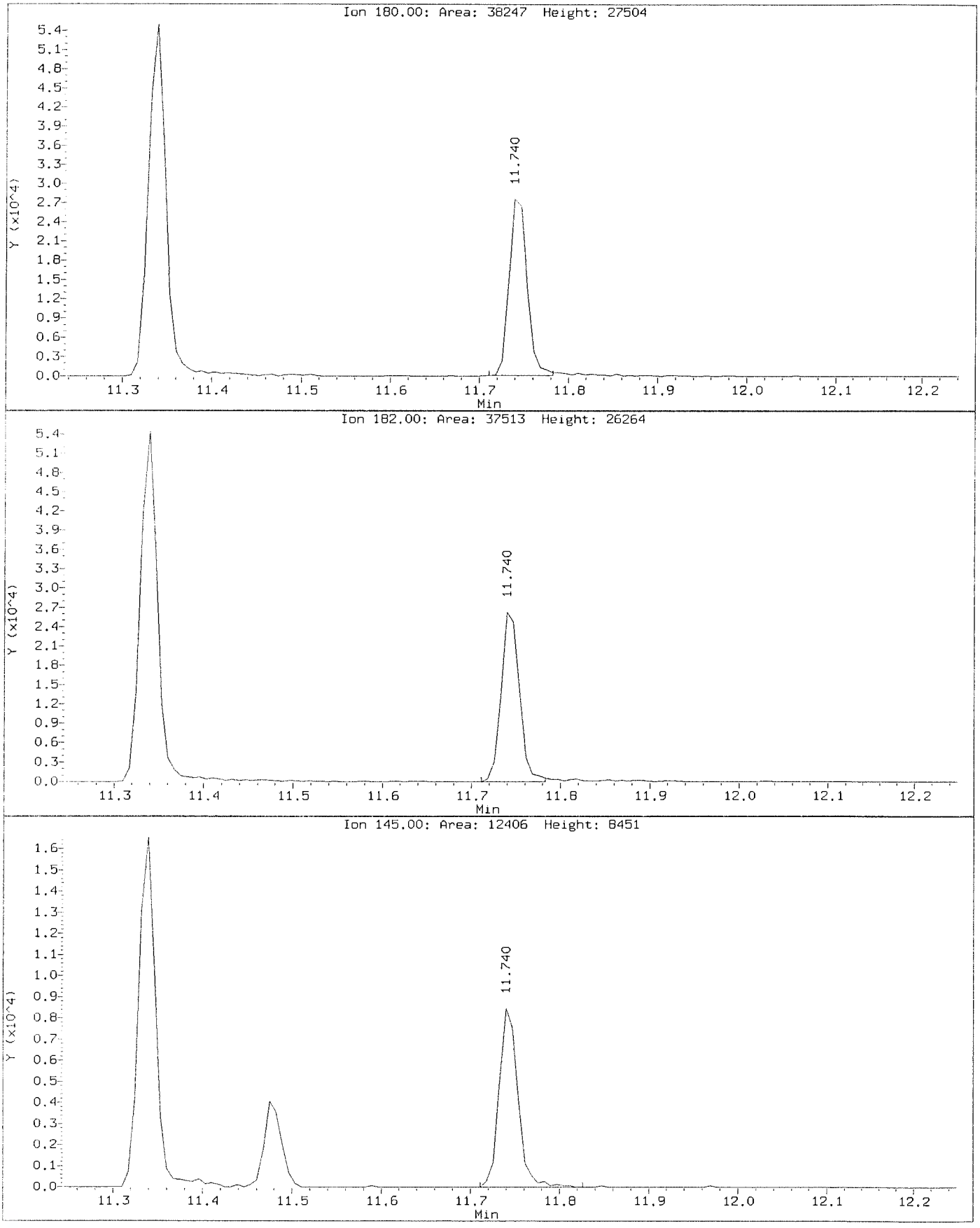


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Sample Info: CCV;CCV;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

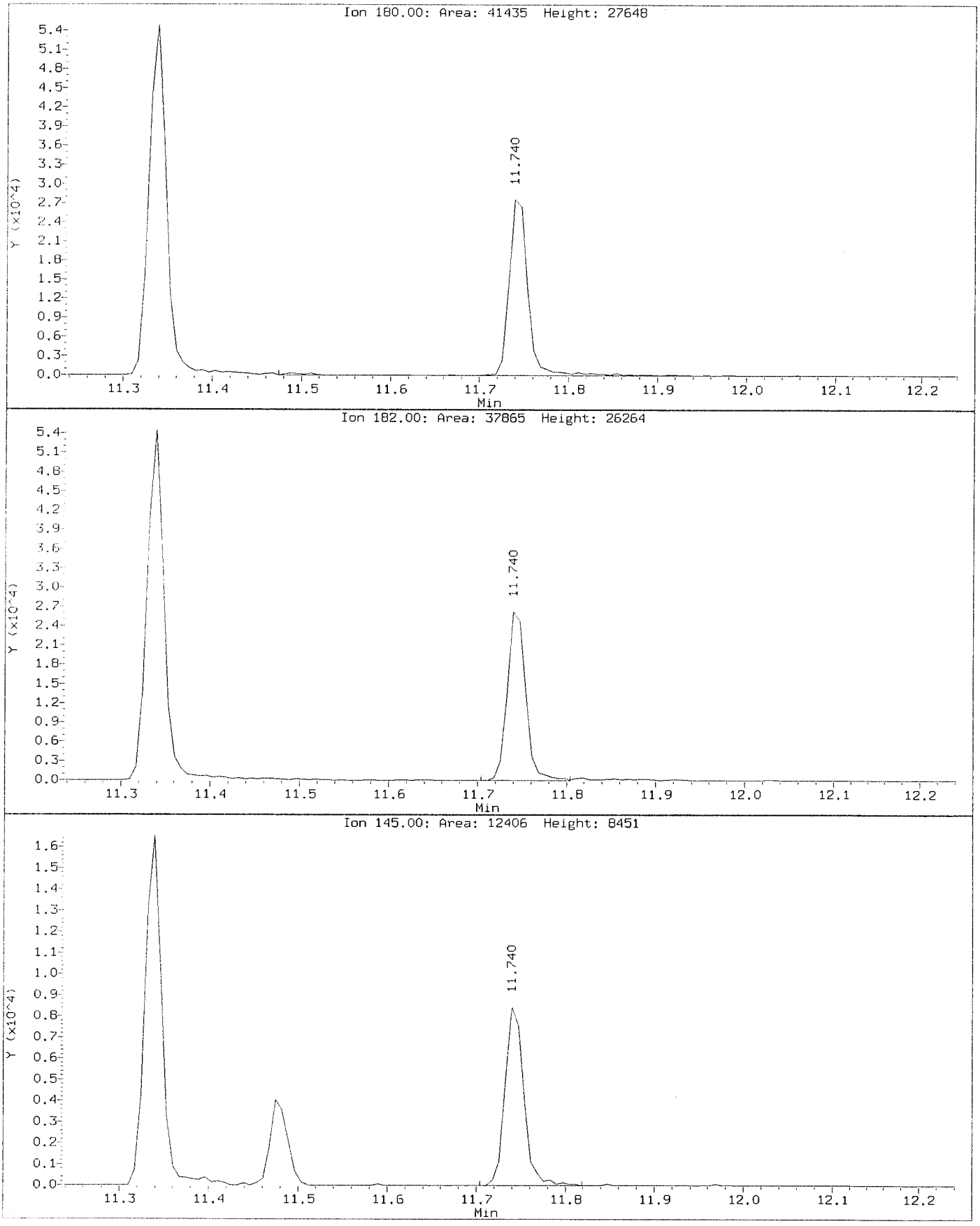
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Client Sample ID: CCV

Compound: 1,2,3-Trichlorobenzene
CAS Number: 87-61-6



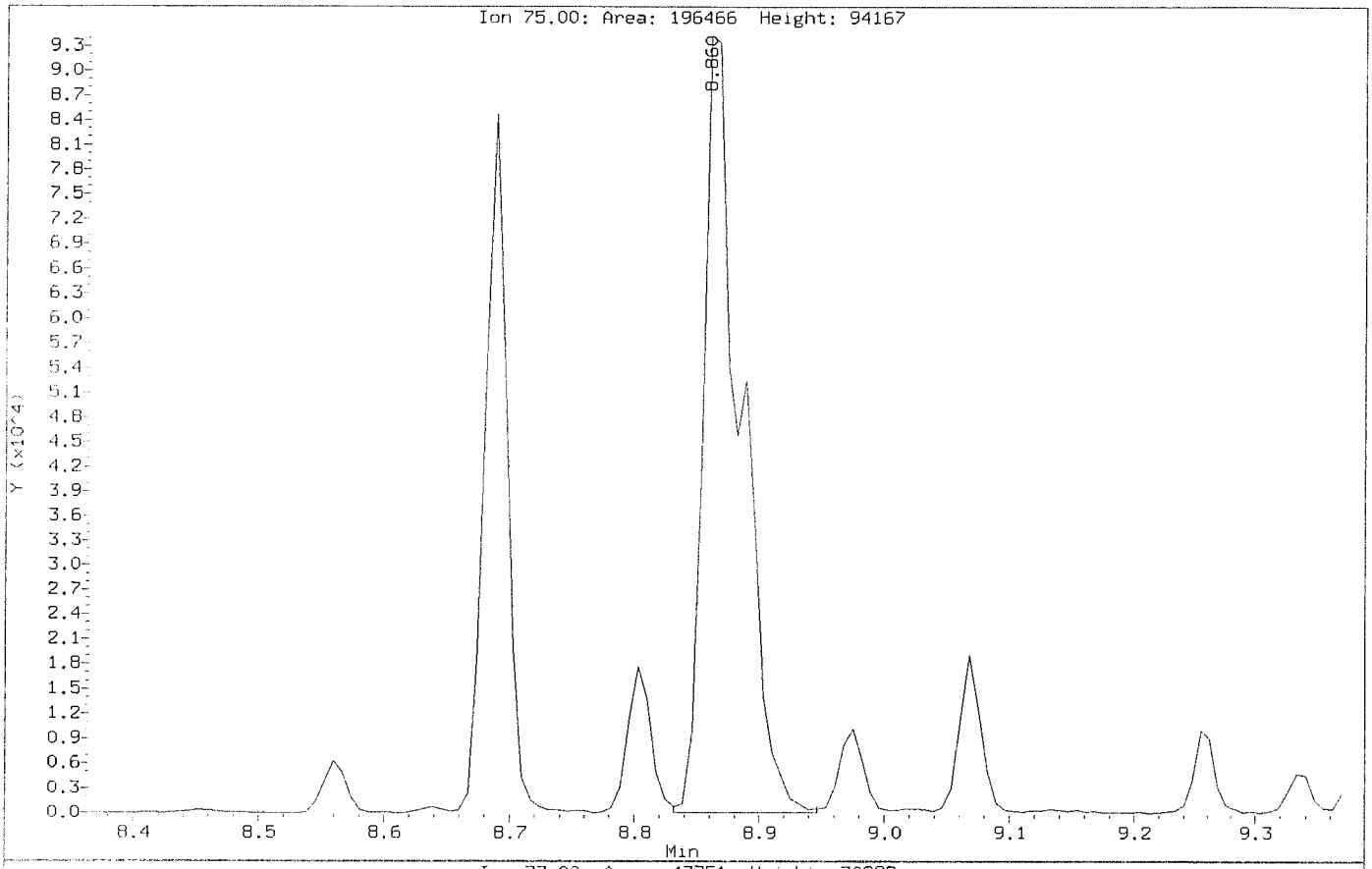
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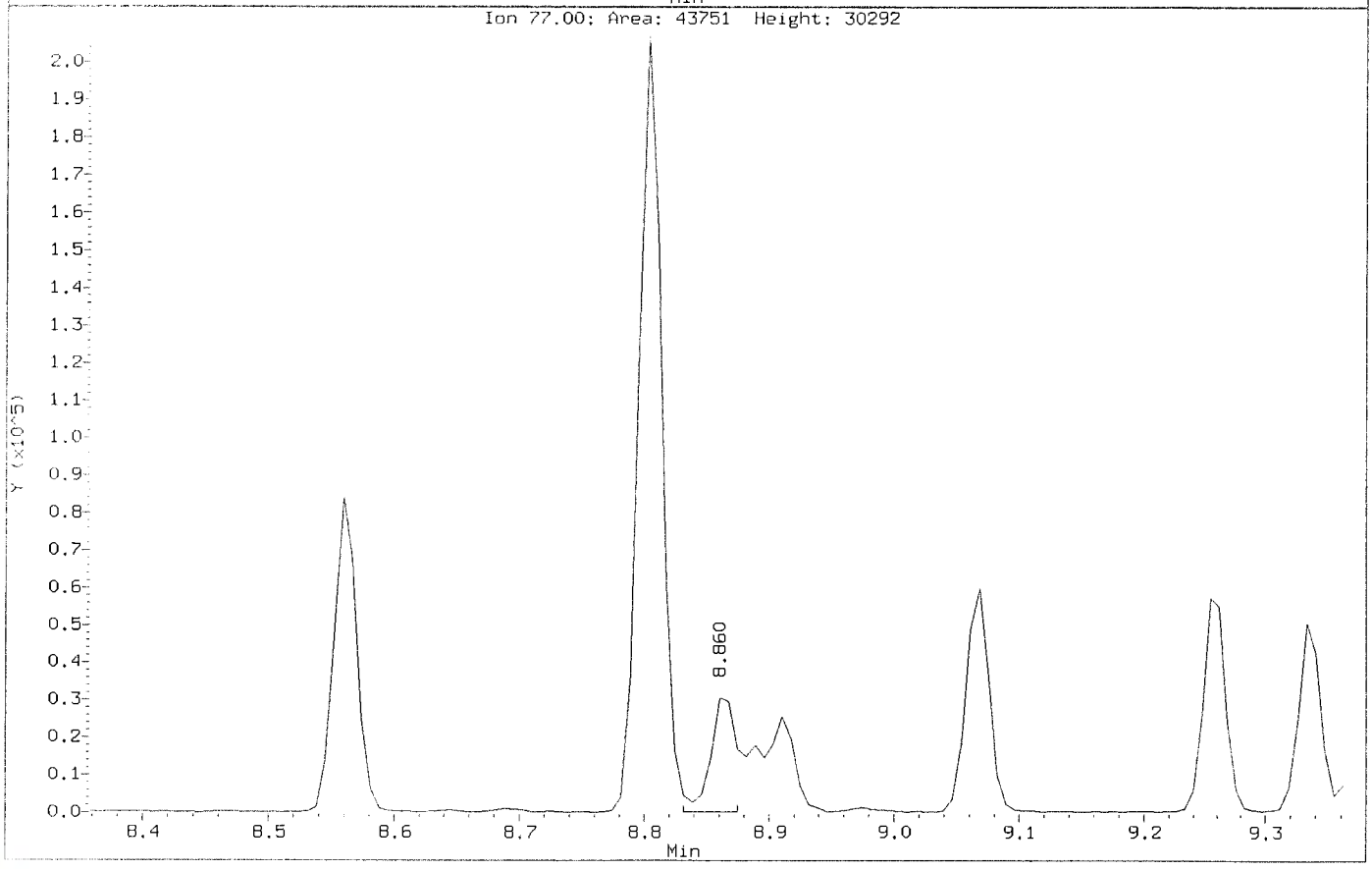
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CAS Number: 87-61-6



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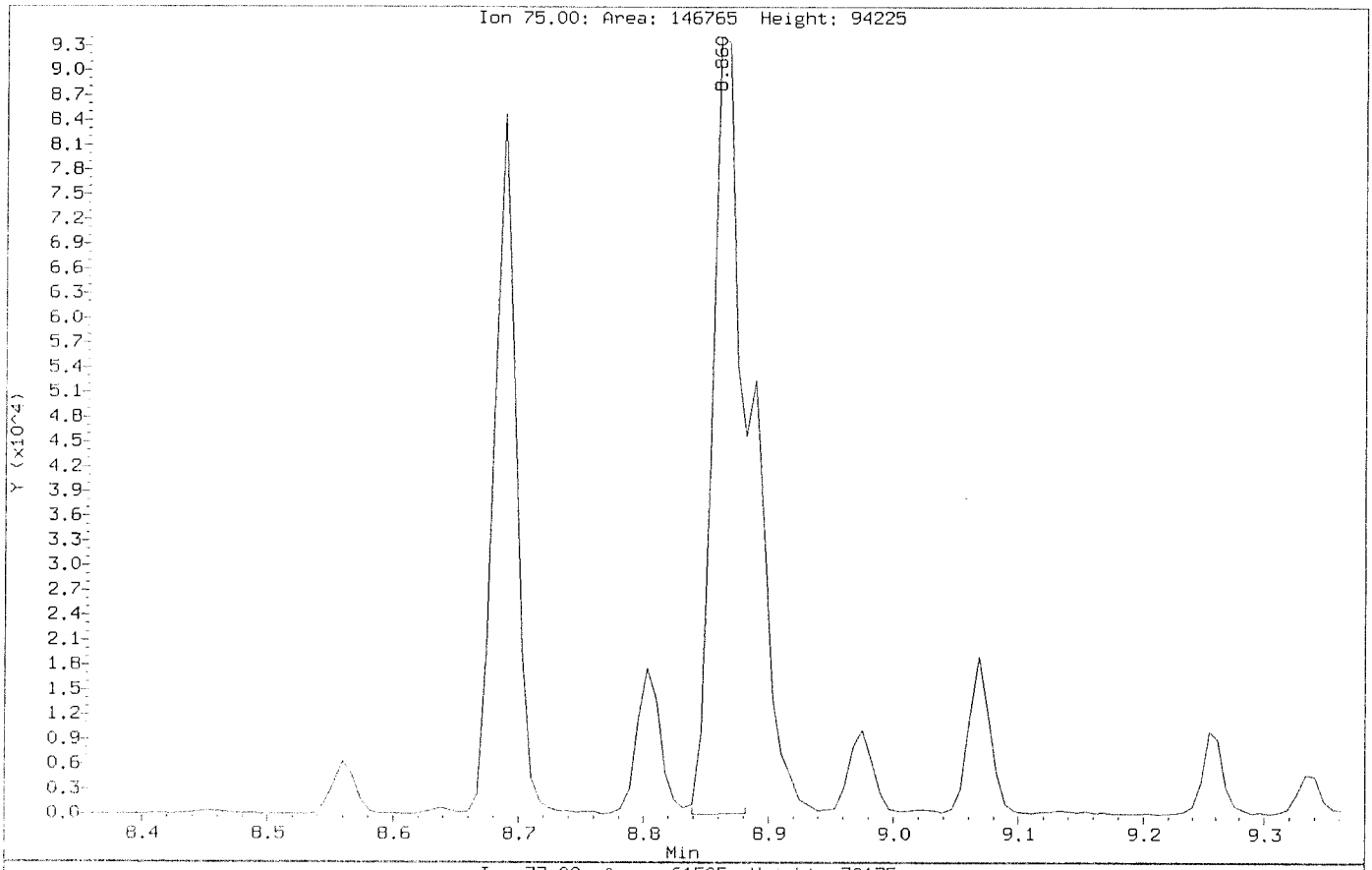
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CAS Number: 96-18-4

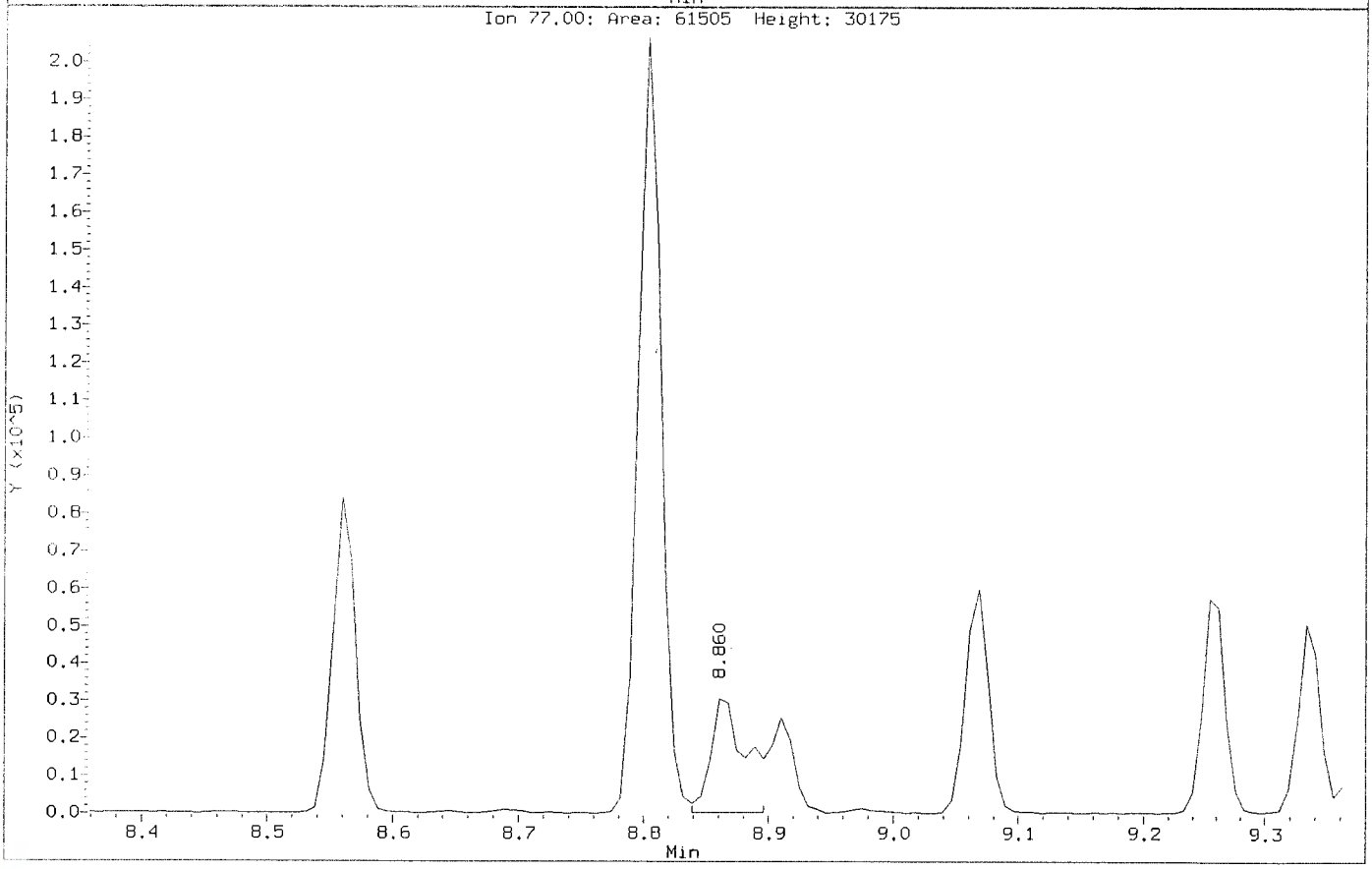




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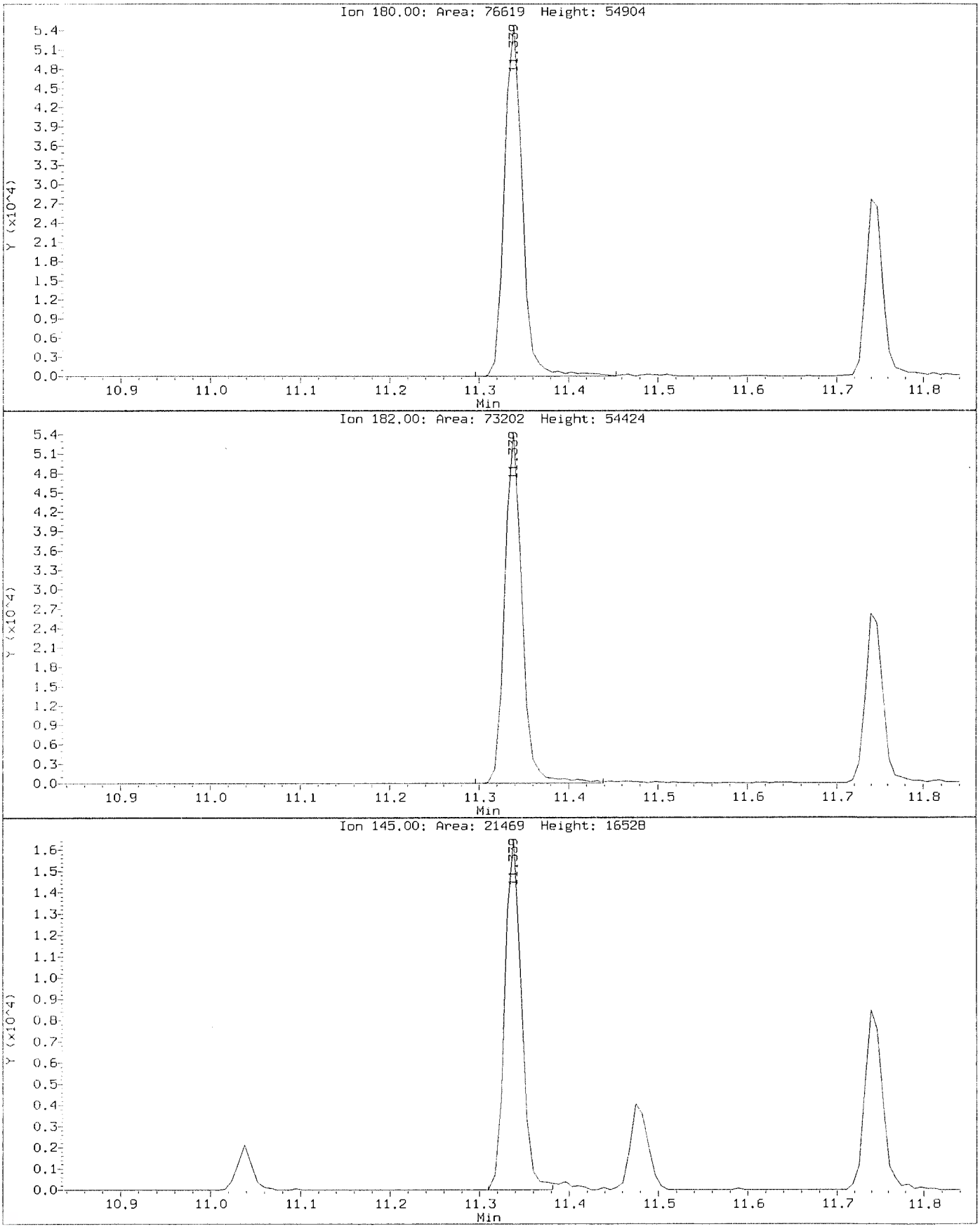
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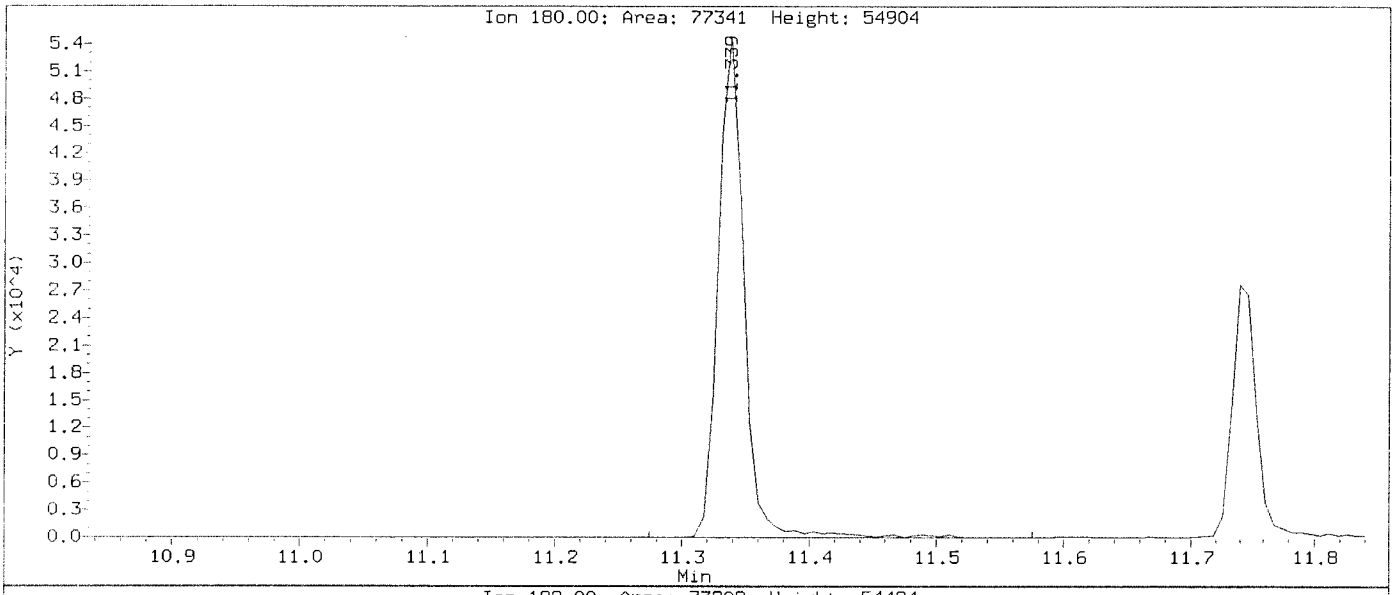
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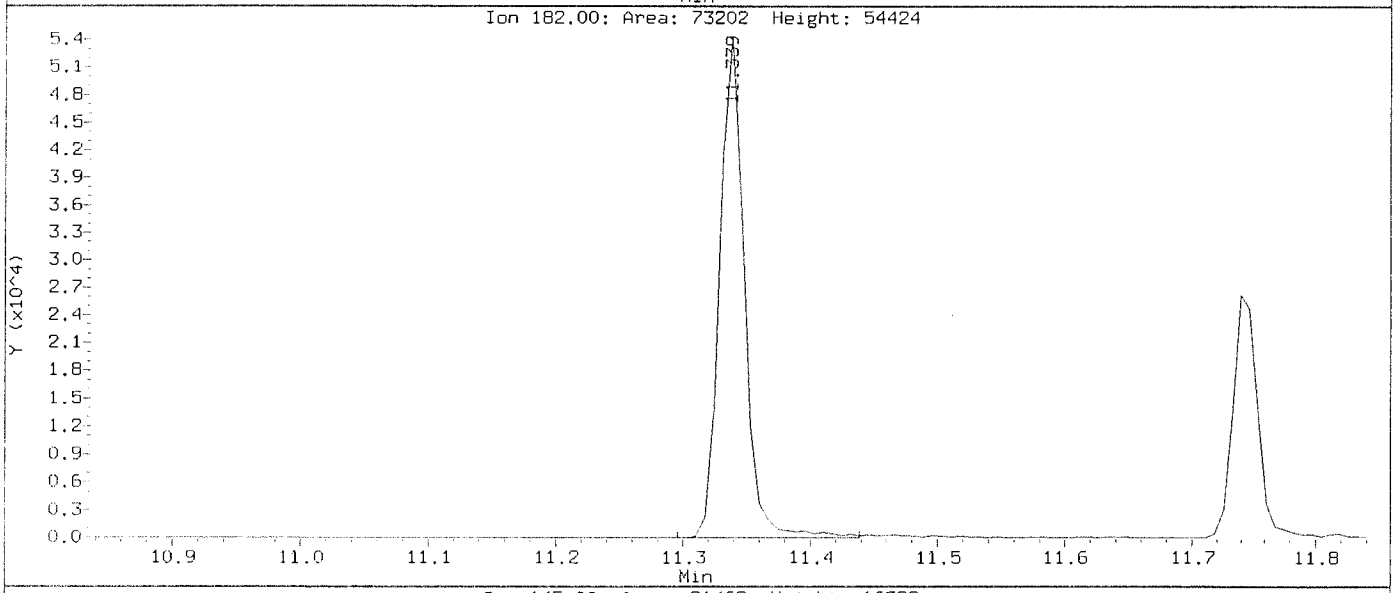
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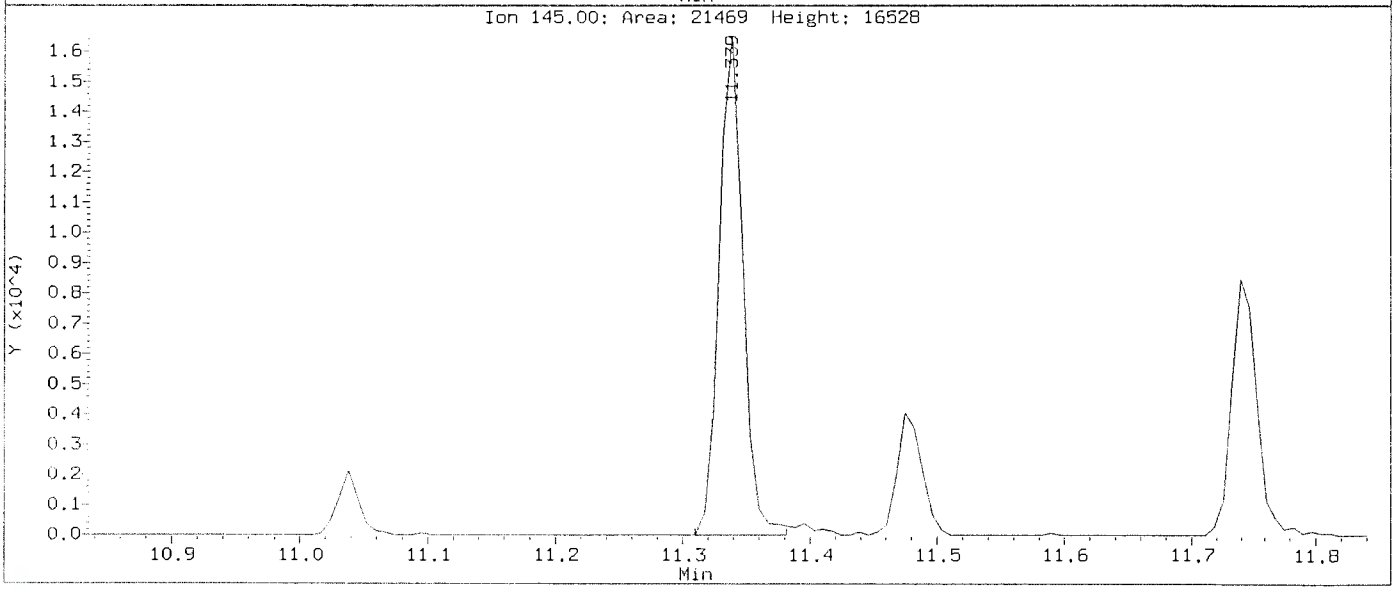


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Client Sample ID: CCV

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CAS Number: 120-82-1

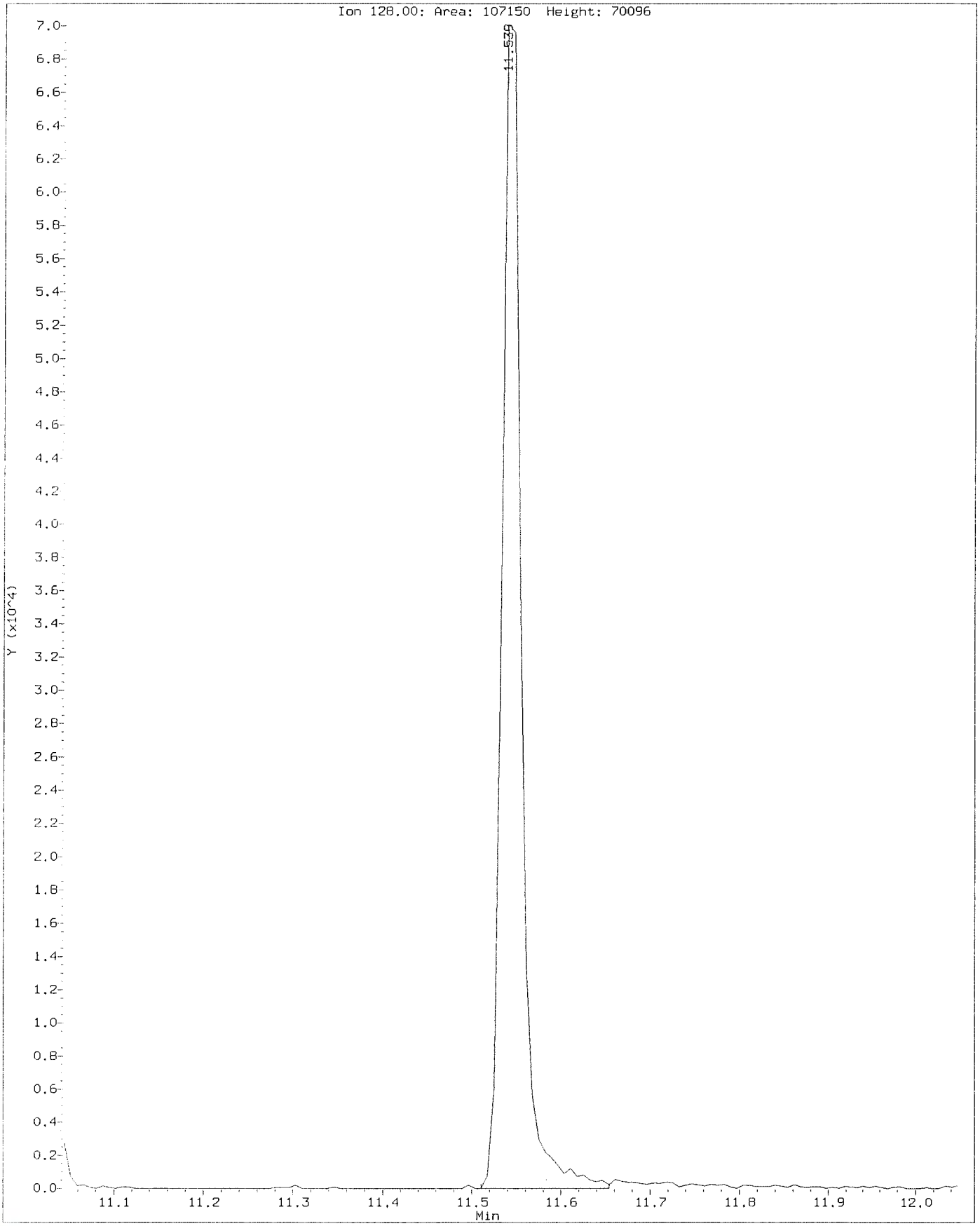






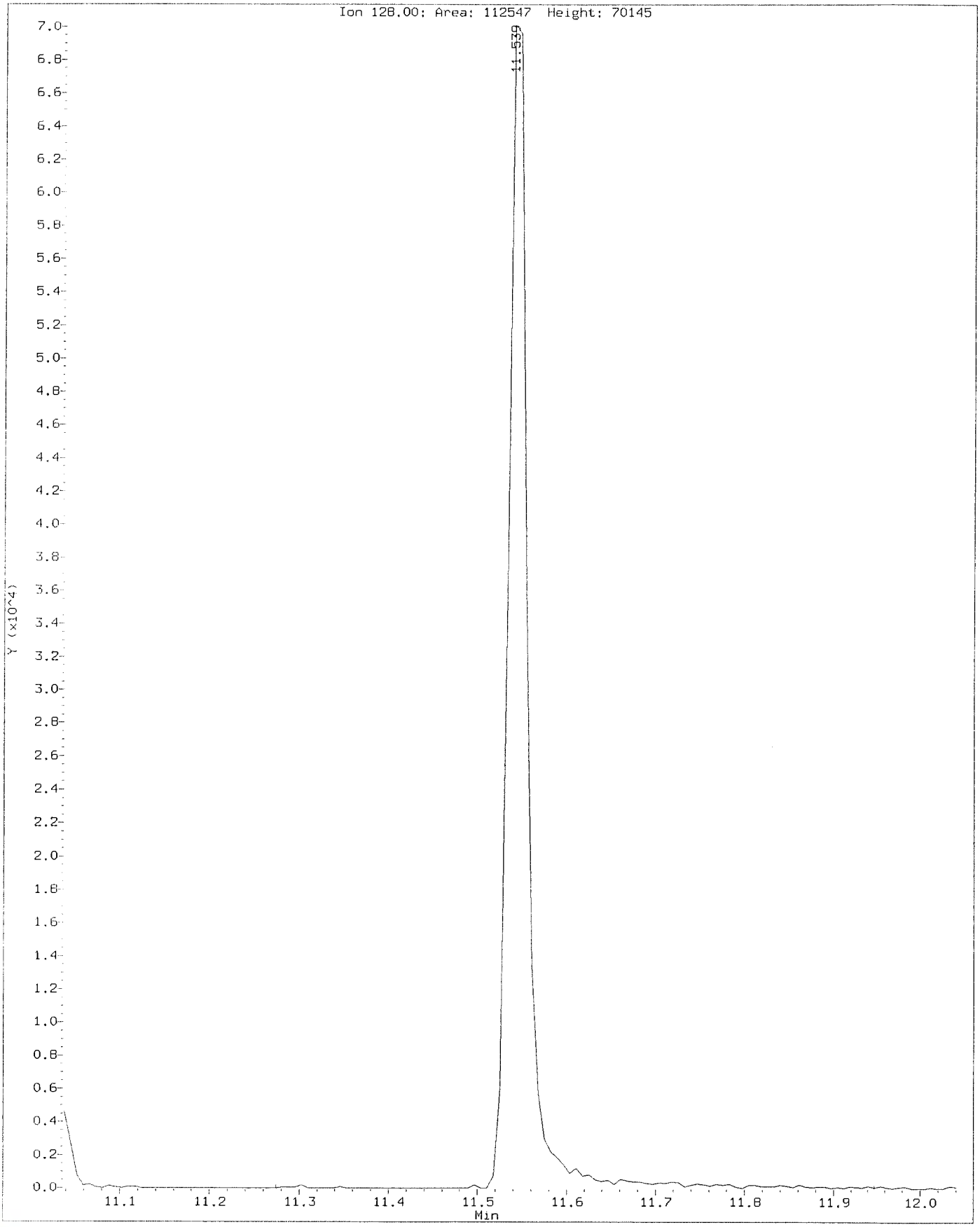
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Injection Date: 23-MAY-2021 12:23
Instrument: voa6.i
Client Sample ID: CCV

Compound: Naphthalene
CAS Number: 91-20-3



Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052303.D
Injection Date: 23-MAY-2021 12:23
Instrument: voa6.i
Client Sample ID: CCV

Compound: Naphthalene
CAS Number: 91-20-3



Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052305.D Page 1
Report Date: 22-Jun-2021 12:26

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210523.b\X052305.D
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Inj Date : 23-MAY-2021 13:12
Operator : PC Inst ID: voa6.i
Smp Info : VLCSW-210523;VLCSW-210523;3;;LCS
Misc Info : HS18090001;WATER;0;1;
Comment :
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Meth Date : 22-Jun-2021 12:24 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 5 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

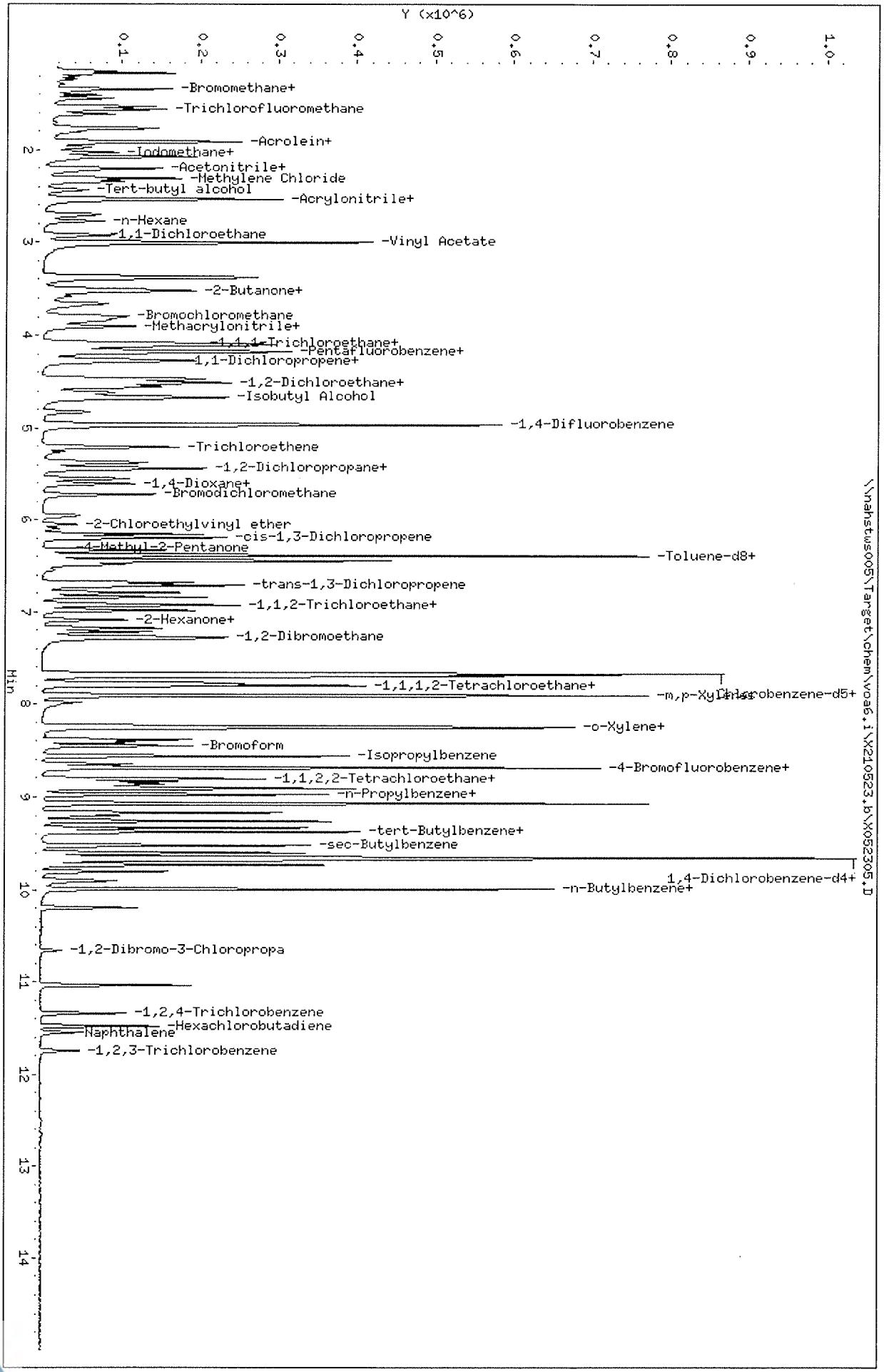
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1	Pentafluorobenzene	168	4.182	4.182	(1.000)	241556	50.0000	
* 36	1,4-Difluorobenzene	114	4.963	4.963	(1.000)	392545	50.0000	
* 47	Chlorobenzene-d5	117	7.671	7.671	(1.000)	370470	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	186104	50.0000	
$ 35	1,2-Dichloroethane-d4	65	4.469	4.476	(1.069)	164880	52.5258	52.52
$ 69	4-Bromofluorobenzene	95	8.688	8.688	(1.133)	169778	48.5526	48.55
$ 30	Dibromofluoromethane	113	4.096	4.103	(0.979)	133684	49.6805	49.68
$ 48	Toluene-d8	98	6.388	6.389	(0.833)	446464	49.0787	49.07
60	1,1,1,2-Tetrachloroethane	131	7.771	7.771	(1.013)	54727	20.2766	20.27
31	1,1,1-Trichloroethane	97	4.082	4.082	(0.976)	82914	20.1808	20.18
68	1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	64014	20.4552	20.45
138	Freon TF	101	1.912	1.919	(0.457)	37794	16.4915	16.49
53	1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	44809	20.8219	20.82
22	1,1-Dichloroethane	63	2.922	2.922	(0.699)	90409	20.2110	20.21
11	1,1-Dichloroethene	96	1.912	1.919	(0.457)	45097	18.6682	18.66
32	1,1-Dichloropropene	75	4.282	4.283	(0.863)	63180	18.7890	18.78
93	1,2,3-Trichlorobenzene	180	11.746	11.739	(1.216)	14219	16.6866	16.68
71	1,2,3-Trichloropropane	75	8.860	8.860	(0.917)	51878	20.1775	20.17(M)
90	1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	27479	18.0887	18.08
79	1,2,4-Trimethylbenzene	105	9.375	9.375	(0.970)	179403	18.9539	18.95
89	1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.103)	4386	18.5264	18.52
57	1,2-Dibromoethane	107	7.262	7.262	(0.947)	55358	21.4040	21.40

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052305.D Page 2
Report Date: 22-Jun-2021 12:26

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.992	(1.034)	101638	19.4855	19.48
33	1,2-Dichloroethane	62	4.555	4.555	(0.918)	87724	22.7290	22.72
42	1,2-Dichloropropane	63	5.436	5.436	(1.095)	55110	20.8902	20.89
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	172508	18.5694	18.56
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	107070	20.0254	20.02
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	89283	21.1933	21.19
84	1,4-Dichlorobenzene	146	9.683	9.684	(1.002)	114607	21.1084	21.10
26	2,2-Dichloropropane	77	3.509	3.509	(0.839)	82643	20.6527	20.65
24	2-Butanone	43	3.581	3.573	(0.856)	35906	40.2694	40.26
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	155896	18.7952	18.79
52	2-Hexanone	43	7.090	7.083	(0.924)	62118	39.3801	39.38
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	191406	19.7904	19.79
82	p-Isopropyltoluene	119	9.648	9.648	(0.999)	167859	18.2680	18.26
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	95882	40.6886	40.68
10	Acetone	43	1.976	1.976	(0.473)	47168	76.0730	76.07
37	Benzene	78	4.512	4.512	(0.909)	203860	20.9914	20.99
74	Bromobenzene	156	8.802	8.802	(0.911)	65163	21.0041	21.00
29	Bromochloromethane	128	3.795	3.795	(0.908)	29857	20.2815	20.28
39	Bromodichloromethane	83	5.722	5.722	(1.153)	80704	21.2782	21.27
66	Bromoform	173	8.408	8.408	(1.096)	35199	19.6459	19.64
6	Bromomethane	94	1.338	1.339	(0.320)	63906	24.9334	24.93
19	Carbon Disulfide	76	2.069	2.069	(0.495)	221164	38.8608	38.86
34	Carbon Tetrachloride	117	4.268	4.268	(0.860)	64204	18.7648	18.76
59	Chlorobenzene	112	7.692	7.692	(1.003)	146364	20.1481	20.14
7	Chloroethane	64	1.403	1.403	(0.336)	39333	21.5111	21.51
28	Chloroform	83	3.903	3.910	(0.933)	102562	19.9848	19.98
3	Chloromethane	50	1.073	1.074	(0.257)	56987	22.0072	22.00
27	cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	55707	20.0103	20.01
46	cis-1,3-Dichloropropene	75	6.152	6.152	(1.240)	94200	21.8893	21.88
55	Dibromochloromethane	129	7.176	7.176	(0.936)	61465	21.2271	21.22
44	Dibromomethane	93	5.550	5.550	(1.118)	40981	21.6740	21.67
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	56459	19.8796	19.87
61	Ethylbenzene	106	7.800	7.800	(1.017)	73279	20.4129	20.41
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	21092	20.8697	20.86
67	Isopropylbenzene	105	8.559	8.559	(1.116)	203368	18.5366	18.53
62	m,p-Xylenes	106	7.900	7.907	(1.030)	181434	39.2174	39.21
17	Methylene Chloride	84	2.305	2.306	(0.551)	49851	20.5806	20.58
87	n-Butylbenzene	91	9.991	9.992	(1.034)	155251	17.7655	17.76
73	n-Propylbenzene	91	8.910	8.910	(0.922)	246881	18.7306	18.73
92	Naphthalene	128	11.546	11.539	(1.195)	38178	17.7212	17.72
63	o-Xylene	106	8.244	8.244	(1.075)	88075	19.5737	19.57
81	sec-Butylbenzene	105	9.519	9.519	(0.985)	189679	17.3889	17.38
64	Styrene	104	8.258	8.258	(1.077)	155735	19.5608	19.56
78	tert-Butylbenzene	119	9.340	9.333	(0.967)	133500	16.9355	16.93
56	Tetrachloroethene	164	6.926	6.926	(0.903)	39341	19.1107	19.11
50	Toluene	91	6.446	6.446	(0.840)	228465	21.3743	21.37
20	trans-1,2-Dichloroethene	96	2.528	2.528	(0.604)	46973	20.2123	20.21
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	83148	22.0861	22.08
38	Trichloroethene	130	5.207	5.207	(1.049)	54610	21.0088	21.00
8	Trichlorofluoromethane	101	1.561	1.561	(0.373)	90451	19.4803	19.48
5	Vinyl Chloride	62	1.145	1.145	(0.274)	56925	19.5188	19.51

QC Flag Legend

M - Compound response manually integrated.

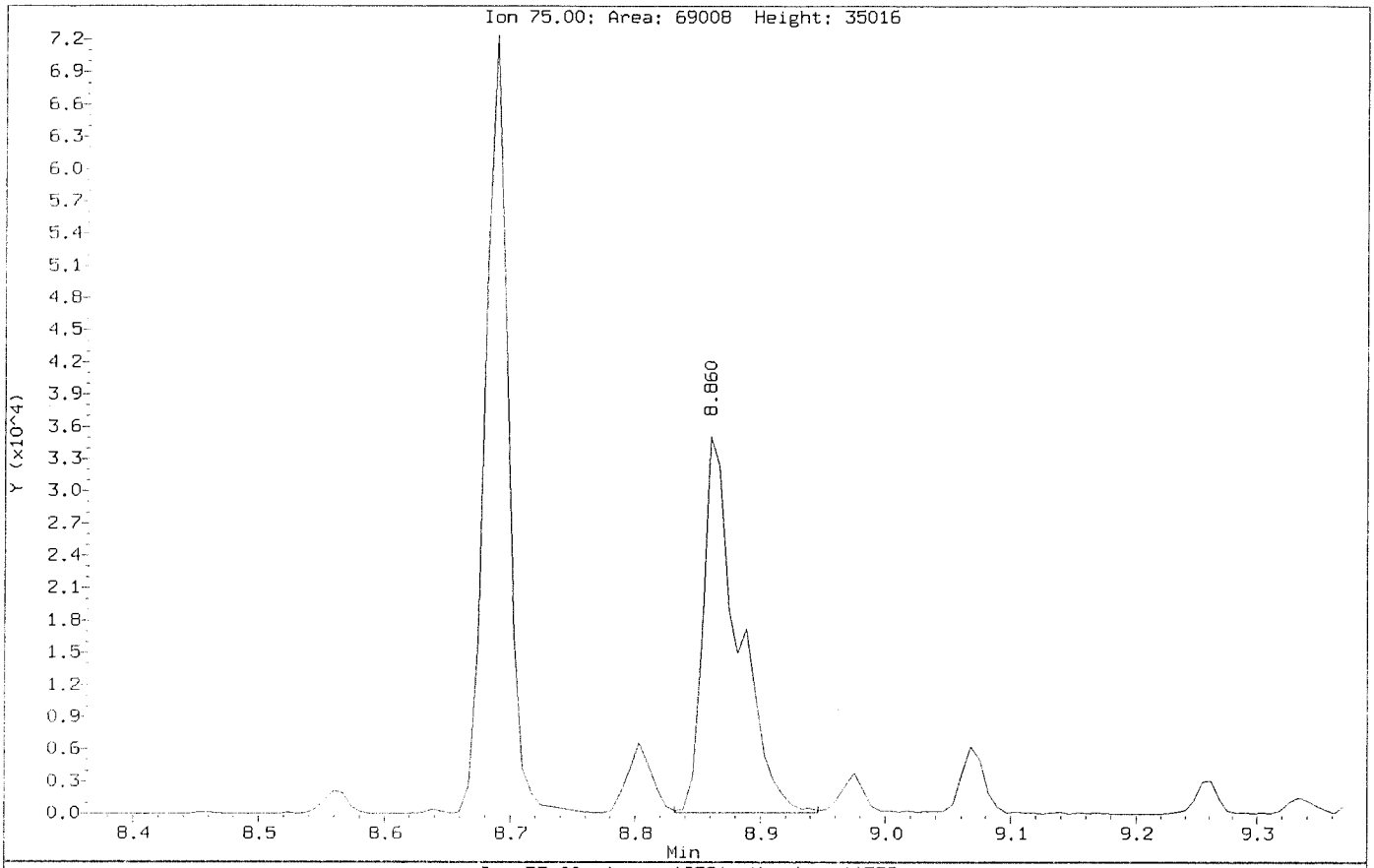


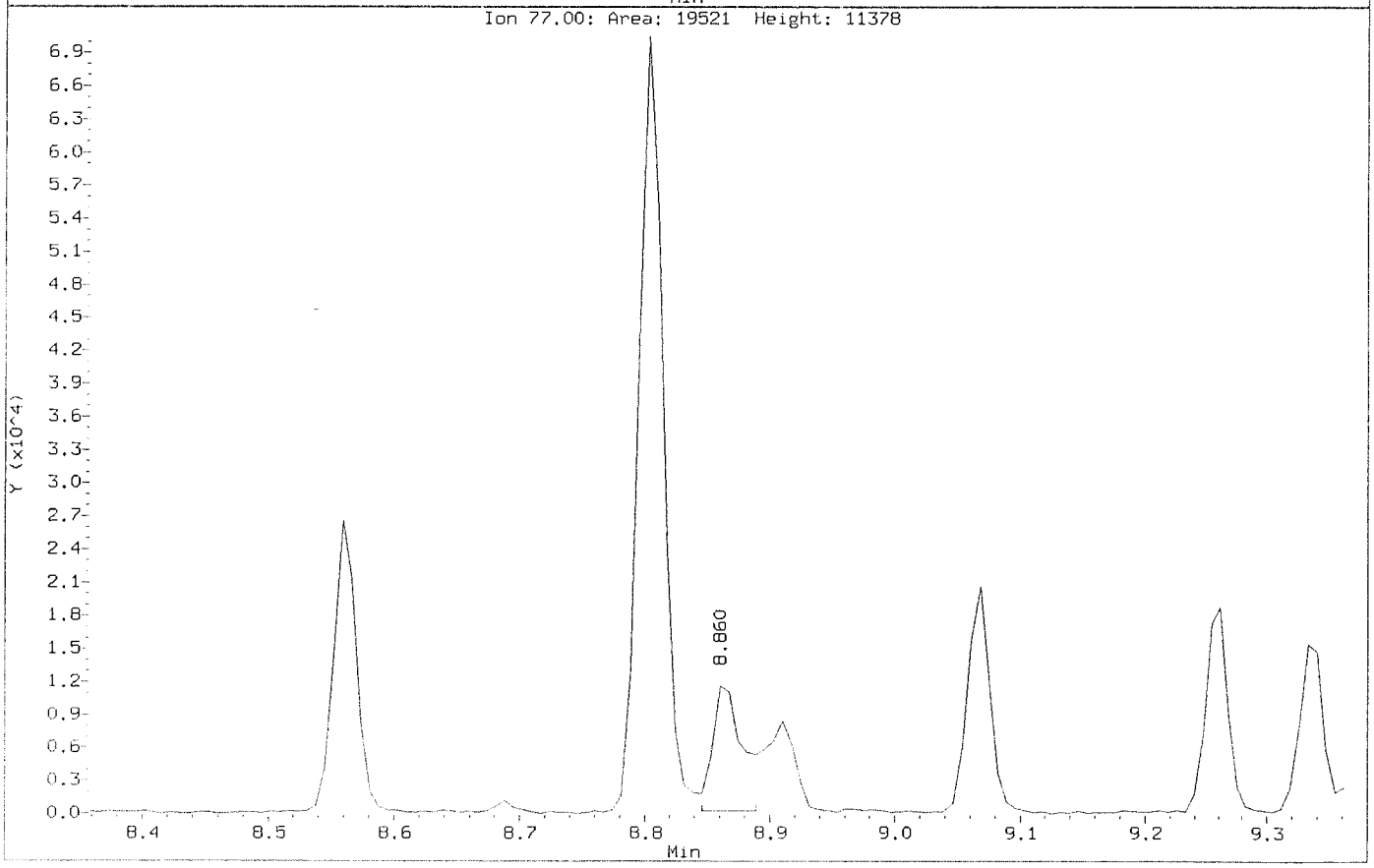
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Sample Info: VLCSW-210523;VLCSW-210523;3;;LCS
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\Before\X052305.D
Injection Date: 23-MAY-2021 13:12
Instrument: voa6.i
Client Sample ID: VLCSW-210523

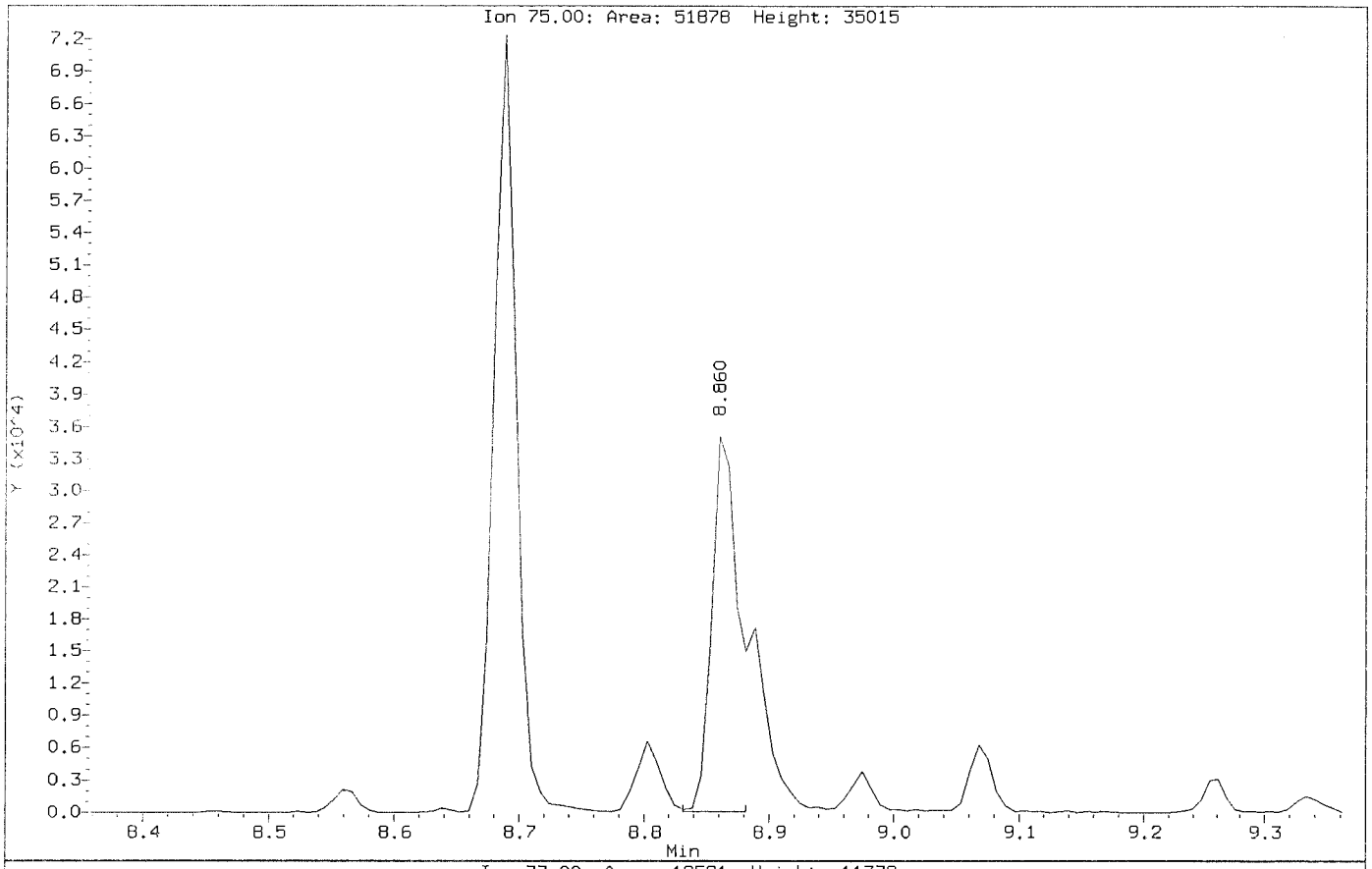
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4

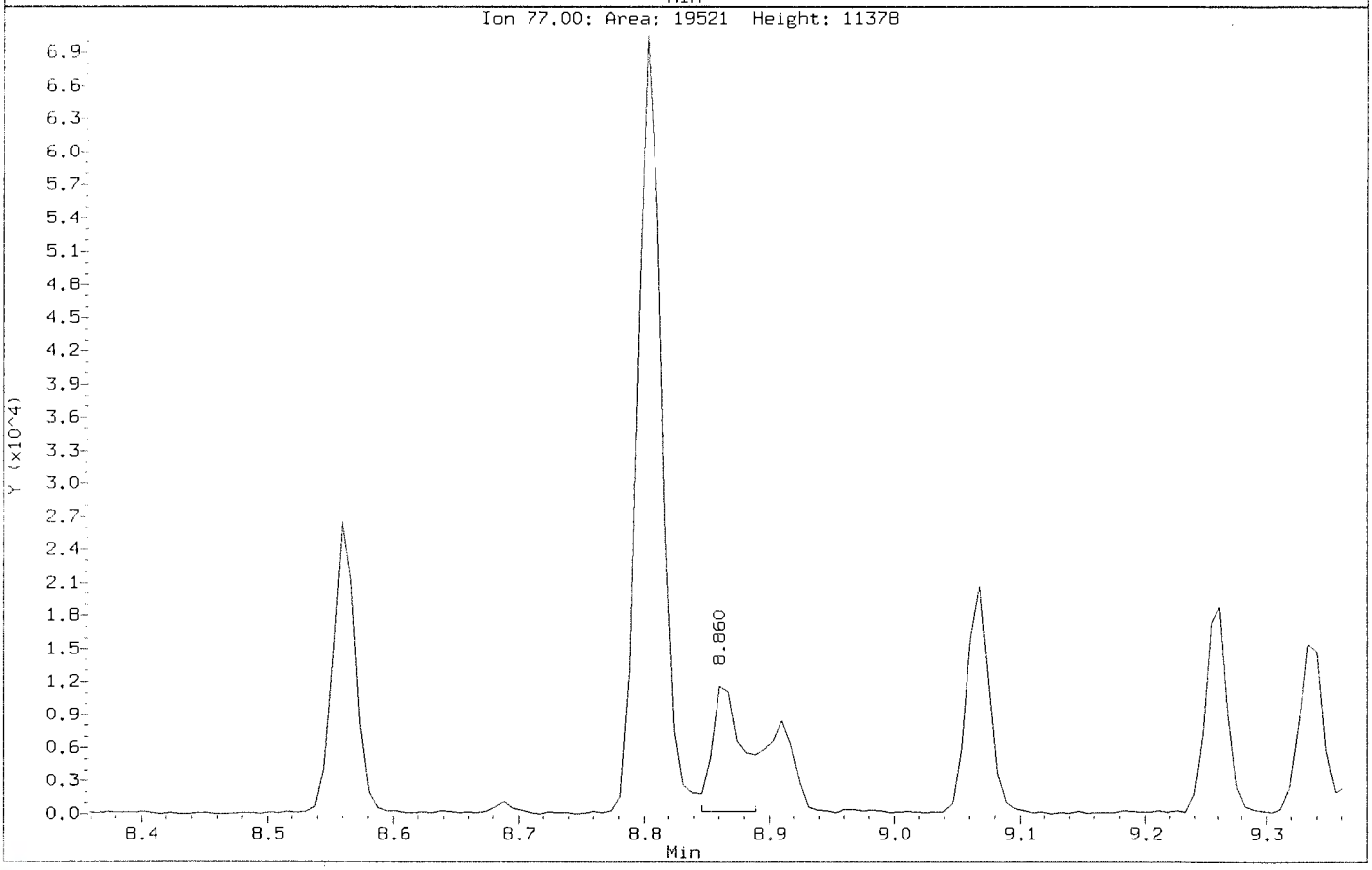




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Injection Date: 23-MAY-2021 13:12
Instrument: voa6.i
Client Sample ID: VLCSW-210523

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052307.D Page 1
Report Date: 22-Jun-2021 12:26

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210523.b\X052307.D
Lab Smp Id: VBLKW-210523 Client Smp ID: VBLKW-210523
Inj Date : 23-MAY-2021 13:54
Operator : PC Inst ID: voa6.i
Smp Info : VBLKW-210523;VBLKW-210523;3;;BLANK
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210523.b\8260W.m
Meth Date : 22-Jun-2021 12:24 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 7 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

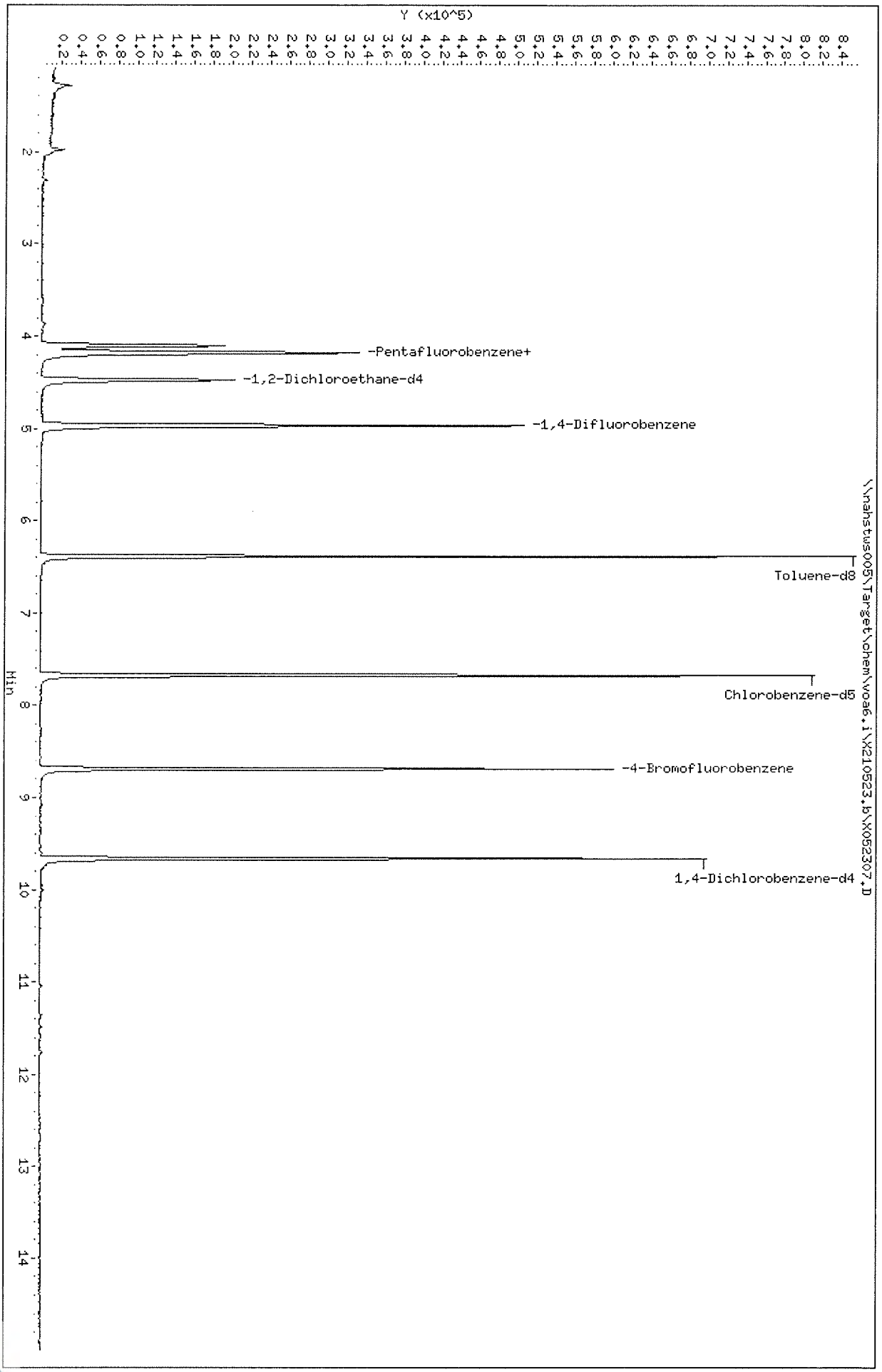
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	258912	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	399543	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	354029	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	152253	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	155491	46.0615	46.06
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	147543	44.1644	44.16
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	126463	43.8198	43.81
$ 48 Toluene-d8	98	6.388	6.389	(0.833)	486742	55.8484	55.84

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052307.D
Date : 23-MAY-2021 13:54
Client ID: VBLKW-210523
Sample Info: VBLKW-210523;VBLKW-210523;3;;BLANK
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052310.D Page 1
Report Date: 22-Jun-2021 12:29

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210523.b\X052310.D
Lab Smp Id: HS21050972-18 Client Smp ID: HS21050972-18
Inj Date : 23-MAY-2021 14:57
Operator : PC Inst ID: voa6.i
Smp Info : HS21050972-18;HS21050972-18;;;
Misc Info : HS18090001;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X210523.b\8260W.m
Meth Date : 22-Jun-2021 12:26 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	242510	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.963	(1.000)	379155	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	350679	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	149311	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	142222	44.9505	44.95
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	148160	44.7711	44.77
$ 30 Dibromofluoromethane	113	4.104	4.103	(0.981)	122277	45.2423	45.24
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	463477	53.7262	53.72

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052310.D

Date : 23-MAY-2021 14:57

Client ID: HS21050972-18

Instrument: voa6.i

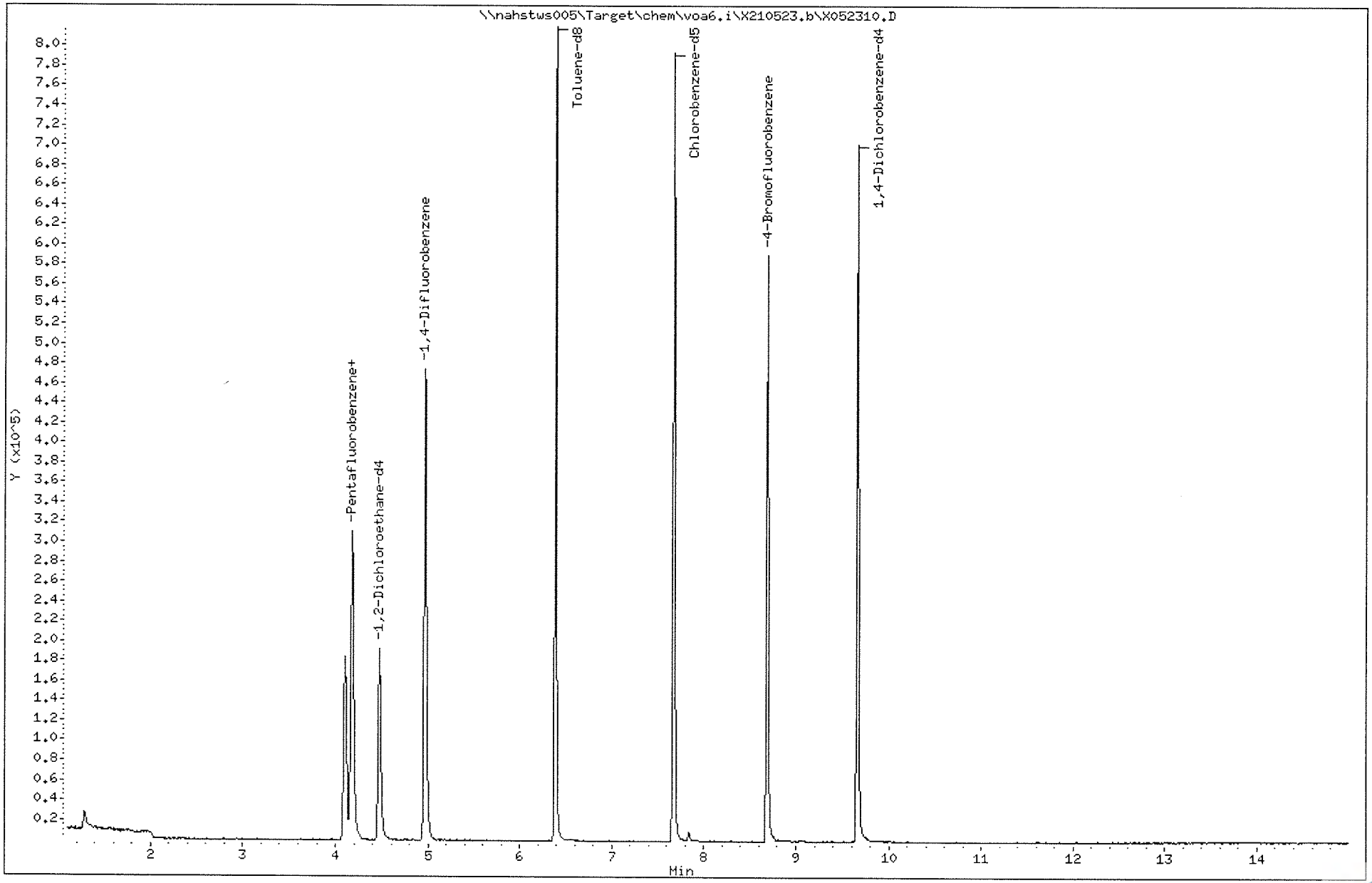
Sample Info: HS21050972-18;HS21050972-18;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052311.D Page 1
Report Date: 22-Jun-2021 12:26

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210523.b\X052311.D
Lab Smp Id: HS21050892-06MS Client Smp ID: HS21050892-06MS
Inj Date : 23-MAY-2021 15:18
Operator : PC Inst ID: voa6.i
Smp Info : HS21050892-06MS;HS21050892-06MS;3;;MS
Misc Info : HS18090001;WATER;0;20;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X210523.b\8260W.m
Meth Date : 22-Jun-2021 12:24 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 11 QC Sample: MS
Dil Factor: 20.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	20.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

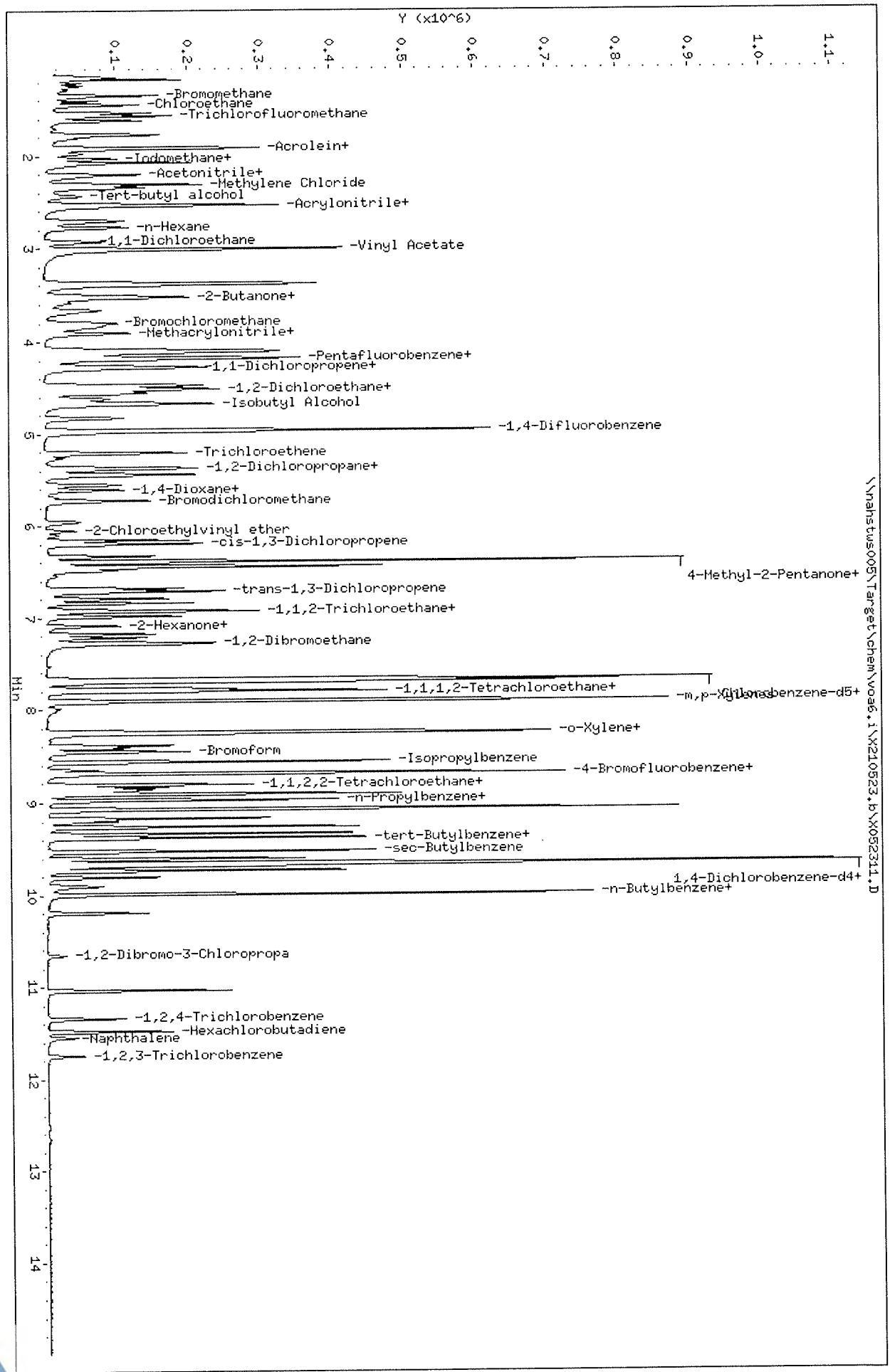
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1	Pentafluorobenzene	168	4.182	4.182	(1.000)	268549	50.0000	
* 36	1,4-Difluorobenzene	114	4.963	4.963	(1.000)	418318	50.0000	
* 47	Chlorobenzene-d5	117	7.670	7.671	(1.000)	391017	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	201354	50.0000	
$ 35	1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	165647	47.3436	47.34
$ 69	4-Bromofluorobenzene	95	8.688	8.688	(1.133)	178113	48.2604	48.26
$ 30	Dibromofluoromethane	113	4.103	4.103	(0.981)	143251	47.8767	47.87
$ 48	Toluene-d8	98	6.388	6.389	(0.833)	507554	52.7842	52.78
60	1,1,1,2-Tetrachloroethane	131	7.771	7.771	(1.013)	58552	20.5539	411.07
31	1,1,1-Trichloroethane	97	4.089	4.082	(0.978)	91585	20.0506	401.01
68	1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	63347	18.6637	373.27
138	Freon TF	101	1.919	1.919	(0.459)	53684	21.0706	421.41
53	1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	43711	19.2444	384.88
22	1,1-Dichloroethane	63	2.921	2.922	(0.699)	83981	16.8870	337.73
11	1,1-Dichloroethene	96	1.919	1.919	(0.459)	51512	19.1804	383.60
32	1,1-Dichloropropene	75	4.282	4.283	(0.863)	75161	20.9749	419.49
93	1,2,3-Trichlorobenzene	180	11.746	11.739	(1.216)	12765	13.9490	278.97
71	1,2,3-Trichloropropane	75	8.867	8.860	(0.918)	50744	18.1825	363.64(M)
90	1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	28398	17.3884	347.76
79	1,2,4-Trimethylbenzene	105	9.382	9.375	(0.971)	205701	20.0863	401.72
89	1,2-Dibromo-3-Chloropropane	155	10.657	10.658	(1.103)	4597	17.9972	359.94
57	1,2-Dibromoethane	107	7.262	7.262	(0.947)	56149	20.5691	411.38

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052311.D Page 2
Report Date: 22-Jun-2021 12:26

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.992	(1.034)	104284	18.4786	369.57
33	1,2-Dichloroethane	62	4.555	4.555	(0.918)	82633	20.0908	401.81
42	1,2-Dichloropropane	63	5.436	5.436	(1.095)	54852	19.5113	390.22
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	205424	20.4379	408.75
83	1,3-Dichlorobenzene	146	9.604	9.605	(0.994)	111951	19.3524	387.04
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	85095	19.1378	382.75
84	1,4-Dichlorobenzene	146	9.683	9.684	(1.002)	118362	20.1604	403.20
26	2,2-Dichloropropane	77	3.516	3.509	(0.841)	84811	19.0641	381.28
24	2-Butanone	43	3.580	3.573	(0.856)	30507	30.7752	615.50
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	174391	19.4327	388.65
52	2-Hexanone	43	7.090	7.083	(0.924)	62583	37.5777	751.55
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	206151	19.7007	394.01
82	p-Isopropyltoluene	119	9.647	9.648	(0.999)	210438	21.1673	423.34
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	89429	35.9662	719.32
10	Acetone	43	1.976	1.976	(0.473)	42073	60.0161	1200.32
37	Benzene	78	4.512	4.512	(0.909)	210432	20.3331	406.66
74	Bromobenzene	156	8.809	8.802	(0.912)	66346	19.7658	395.31
29	Bromochloromethane	128	3.795	3.795	(0.908)	28302	17.2928	345.85
39	Bromodichloromethane	83	5.729	5.722	(1.154)	81482	20.1598	403.19
66	Bromoform	173	8.408	8.408	(1.096)	36223	19.1551	383.10
6	Bromomethane	94	1.338	1.339	(0.320)	62949	22.0370	440.73
19	Carbon Disulfide	76	2.069	2.069	(0.495)	237017	37.4603	749.20
34	Carbon Tetrachloride	117	4.268	4.268	(0.860)	76950	21.1044	422.08
59	Chlorobenzene	112	7.692	7.692	(1.003)	152599	19.9025	398.05
7	Chloroethane	64	1.403	1.403	(0.336)	40925	20.1321	402.64
28	Chloroform	83	3.910	3.910	(0.935)	103283	18.1025	362.04
3	Chloromethane	50	1.080	1.074	(0.258)	54362	18.9168	378.33
27	cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	55373	17.8911	357.82
46	cis-1,3-Dichloropropene	75	6.152	6.152	(1.240)	92284	20.1229	402.45
55	Dibromochloromethane	129	7.176	7.176	(0.936)	60251	19.7144	394.28
44	Dibromomethane	93	5.550	5.550	(1.118)	37853	18.7863	375.72
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	53030	17.1179	342.35
61	Ethylbenzene	106	7.799	7.800	(1.017)	81111	21.4073	428.14
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	24627	22.2696	445.39
67	Isopropylbenzene	105	8.559	8.559	(1.116)	249352	21.5337	430.67
62	m,p-Xylenes	106	7.907	7.907	(1.031)	202551	41.4812	829.62
17	Methylene Chloride	84	2.305	2.306	(0.551)	46621	17.3125	346.24
87	n-Butylbenzene	91	9.991	9.992	(1.034)	198015	20.9429	418.85
73	n-Propylbenzene	91	8.910	8.910	(0.922)	303398	21.2751	425.50
92	Naphthalene	128	11.546	11.539	(1.195)	30684	13.9618	279.23
63	o-Xylene	106	8.243	8.244	(1.075)	93659	19.7209	394.41
81	sec-Butylbenzene	105	9.518	9.519	(0.985)	248951	21.0941	421.88
64	Styrene	104	8.258	8.258	(1.077)	160634	19.1560	383.11
78	tert-Butylbenzene	119	9.339	9.333	(0.967)	173357	20.3261	406.52
56	Tetrachloroethene	164	6.925	6.926	(0.903)	51280	23.6014	472.02
50	Toluene	91	6.446	6.446	(0.840)	237706	21.0703	421.40
20	trans-1,2-Dichloroethene	96	2.527	2.528	(0.604)	48438	18.7477	374.95
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	82207	20.4908	409.81
38	Trichloroethene	130	5.206	5.207	(1.049)	59731	21.5631	431.26
8	Trichlorofluoromethane	101	1.560	1.561	(0.373)	103697	20.0883	401.76
5	Vinyl Chloride	62	1.145	1.145	(0.274)	59017	18.2021	364.04

QC Flag Legend

M - Compound response manually integrated.

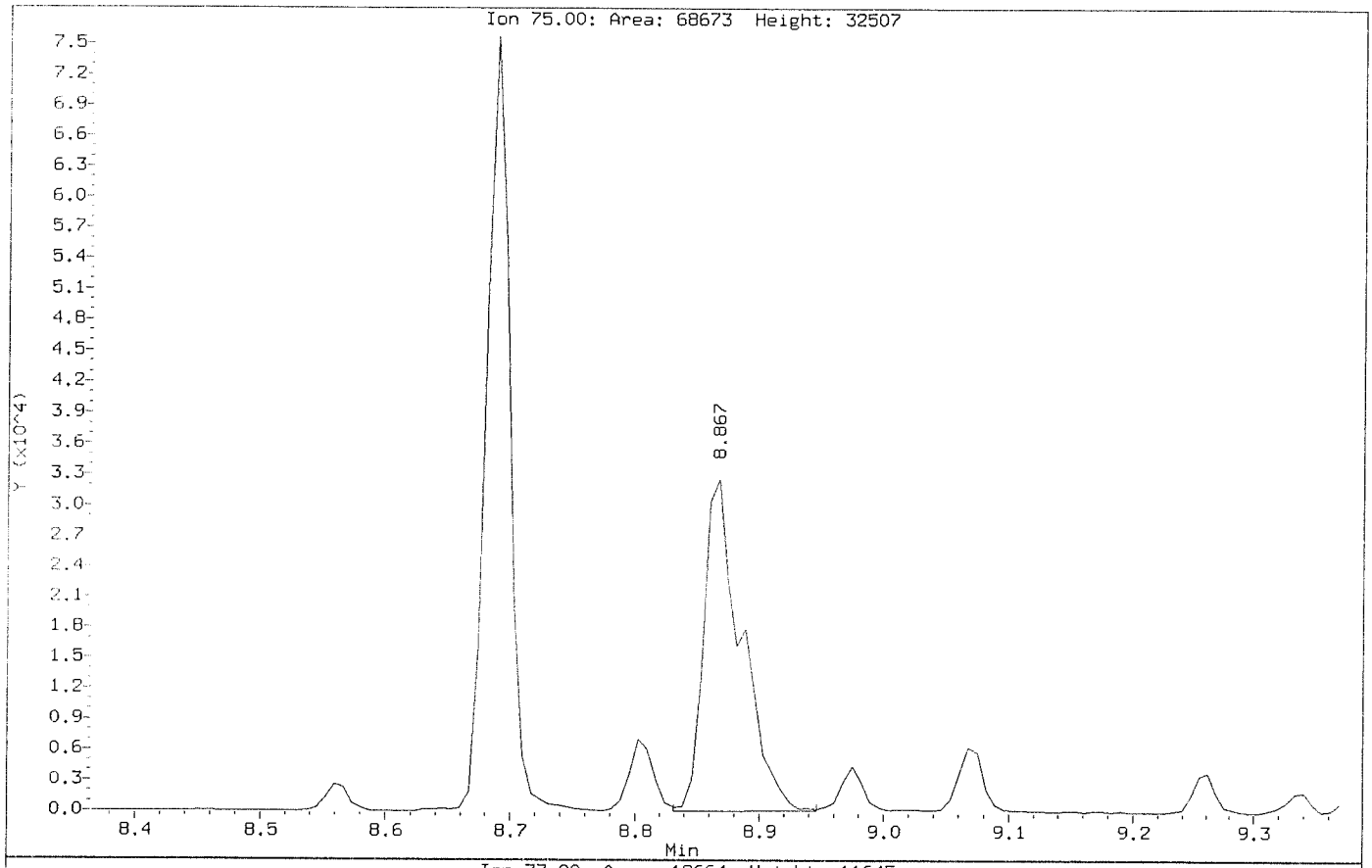


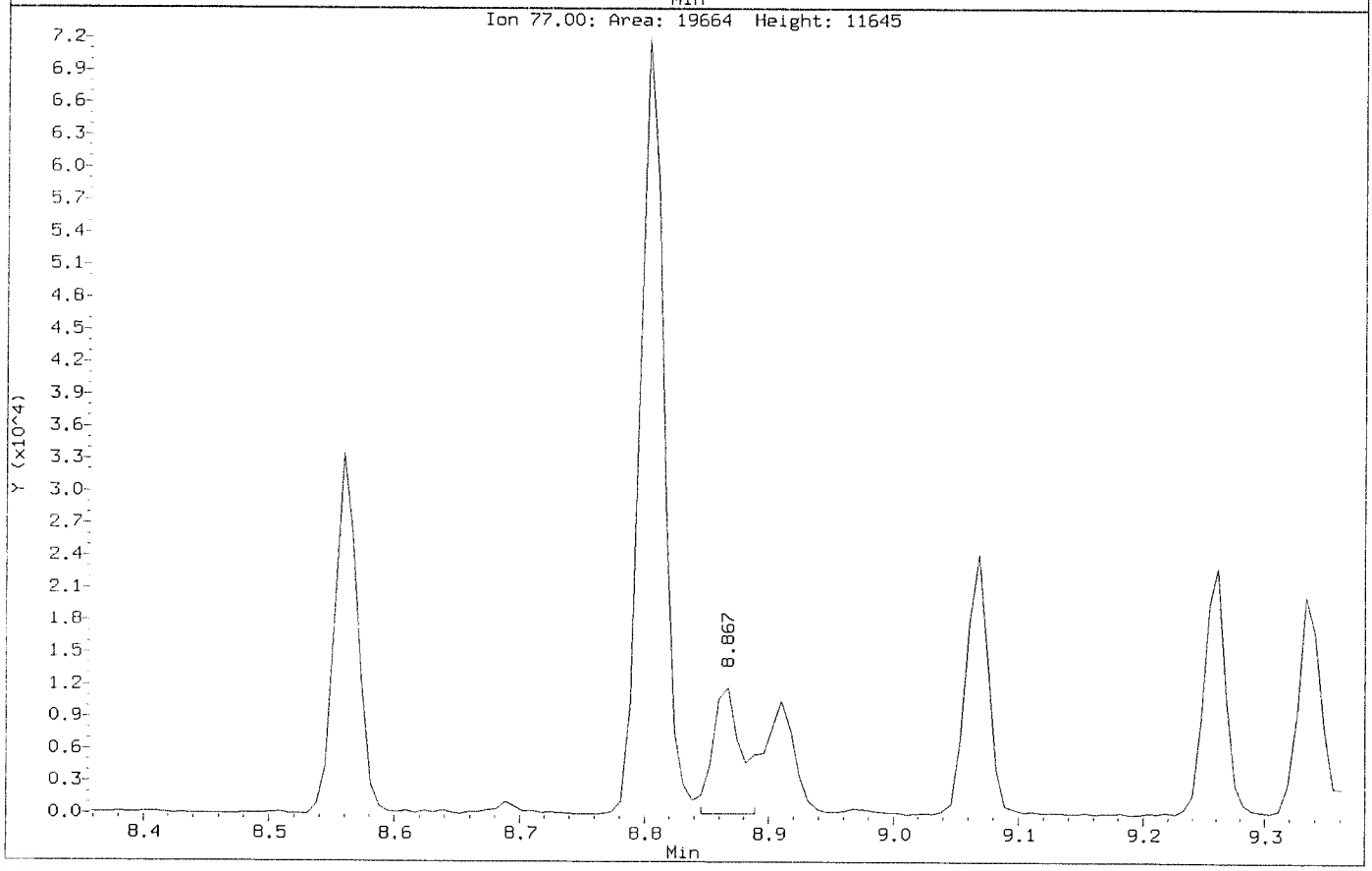
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Date : 23-MAY-2021 15:18
Client ID: HS21050892-06MS
Sample Info: HS21050892-06MS;HS21050892-06MS;3;;MS
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\Before\X052311.D
Injection Date: 23-MAY-2021 15:18
Instrument: voa6.i
Client Sample ID: HS21050892-06MS

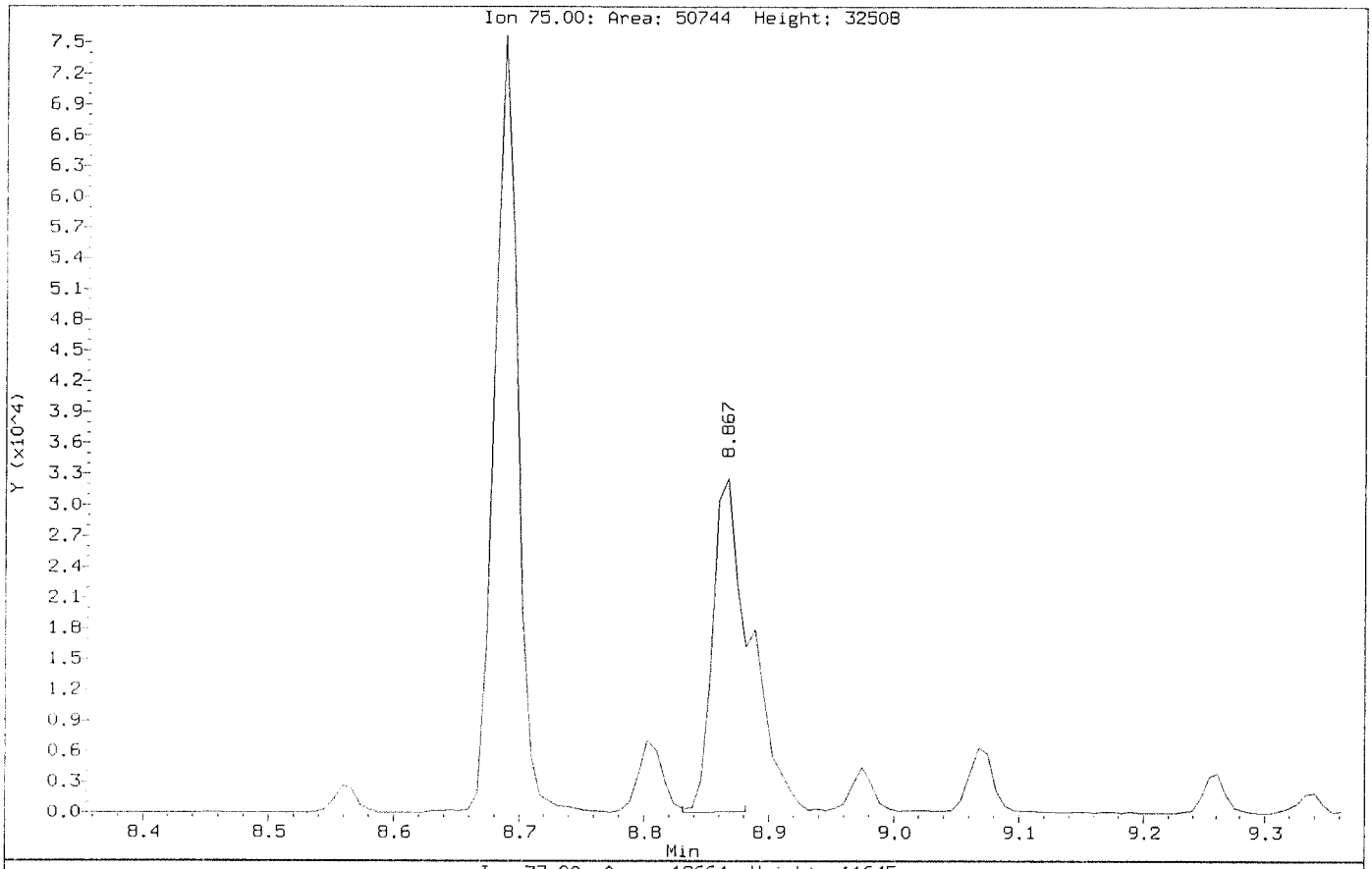
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4

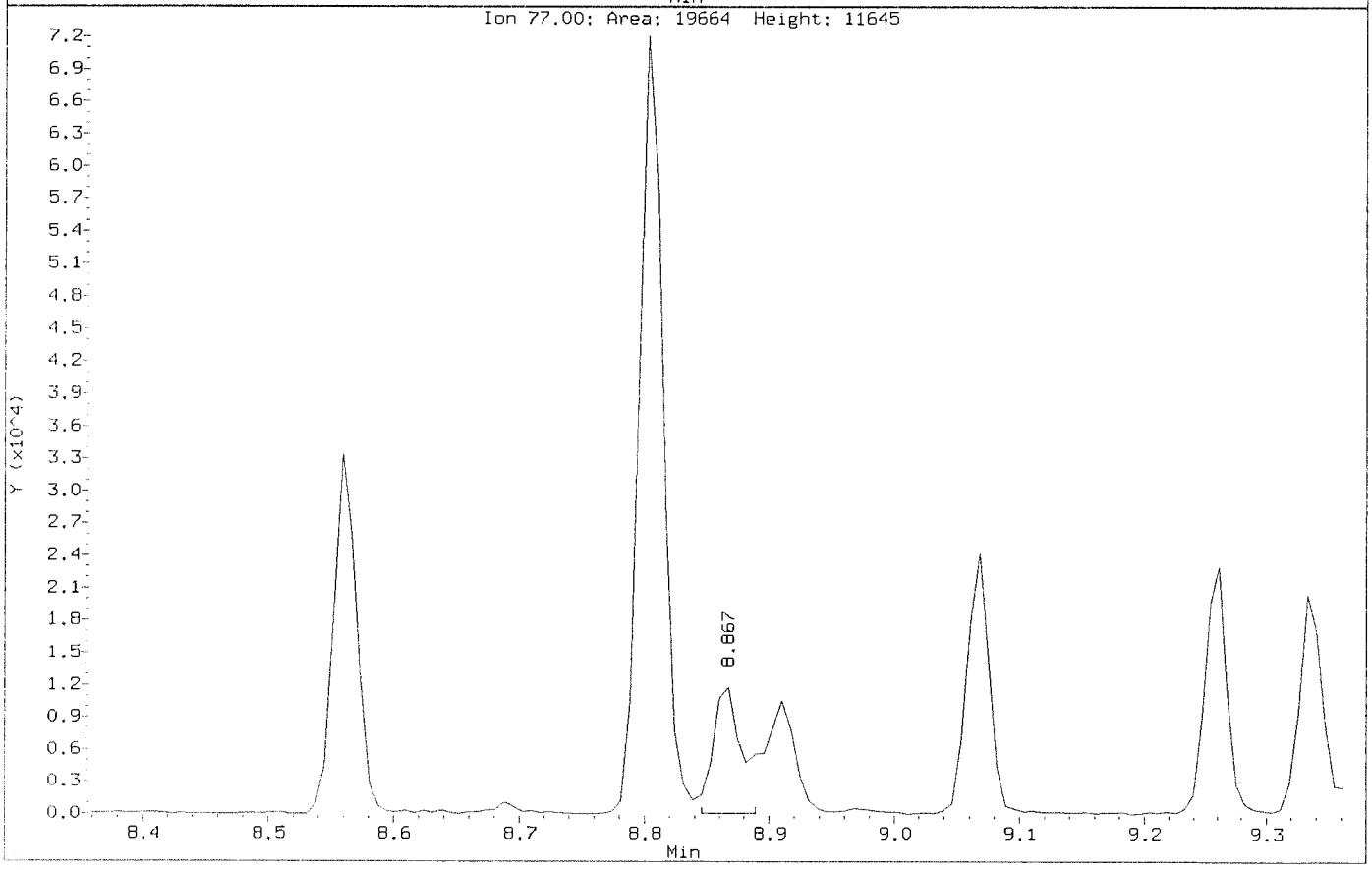




Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052311.D
Injection Date: 23-MAY-2021 15:18
Instrument: voa6.i
Client Sample ID: HS21050892-06MS

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210523.b\X052312.D
Lab Smp Id: HS21050892-06MSD Client Smp ID: HS21050892-06MSD
Inj Date : 23-MAY-2021 15:39
Operator : PC Inst ID: voa6.i
Smp Info : HS21050892-06MSD;HS21050892-06MSD;3;;MSD
Misc Info : HS18090001;WATER;0;20;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210523.b\8260W.m
Meth Date : 22-Jun-2021 12:24 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 11 QC Sample: MSD
Dil Factor: 20.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	20.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

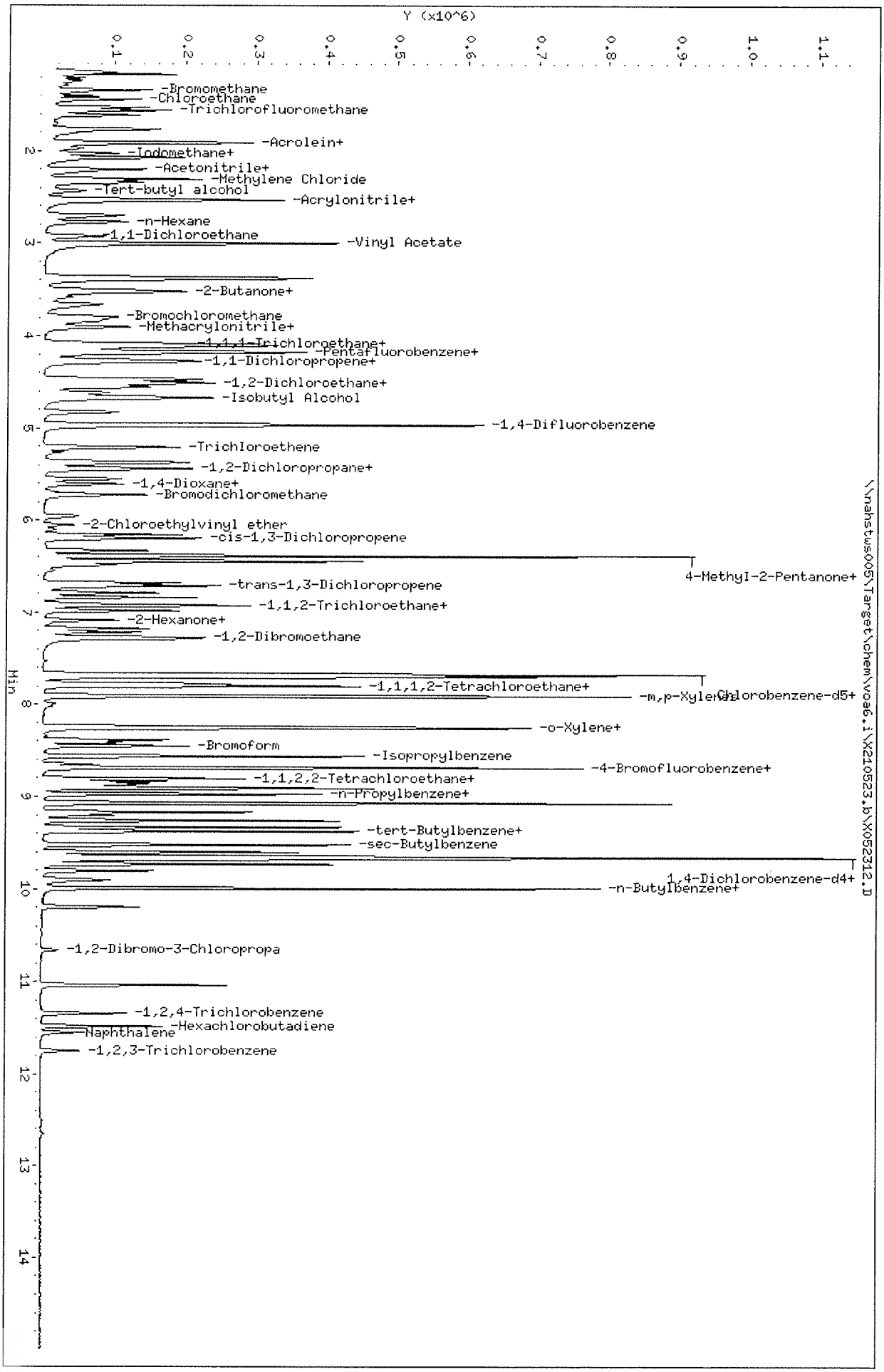
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	278351	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	432102	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	394283	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	201126	50.0000	
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	172256	47.5030	47.50
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	181856	48.8649	48.86
$	30 Dibromofluoromethane	113	4.103	4.103	(0.981)	145368	46.8686	46.86
$	48 Toluene-d8	98	6.388	6.389	(0.833)	508478	52.4488	52.44
	60 1,1,1,2-Tetrachloroethane	131	7.778	7.771	(1.014)	55632	19.3671	387.34
	31 1,1,1-Trichloroethane	97	4.082	4.082	(0.976)	91619	19.3517	387.03
	68 1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	63535	18.7424	374.84
	138 Freon TF	101	1.919	1.919	(0.459)	52830	20.0052	400.10
	53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	44307	19.3452	386.90
	22 1,1-Dichloroethane	63	2.921	2.922	(0.699)	83741	16.2457	324.91
	11 1,1-Dichloroethene	96	1.911	1.919	(0.457)	50557	18.1619	363.23
	32 1,1-Dichloropropene	75	4.282	4.283	(0.863)	77716	20.9961	419.92
	93 1,2,3-Trichlorobenzene	180	11.746	11.739	(1.216)	15565	16.8937	337.87
	71 1,2,3-Trichloropropane	75	8.867	8.860	(0.918)	51839	18.6099	372.19(M)
	90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	28647	17.5363	350.72
	79 1,2,4-Trimethylbenzene	105	9.375	9.375	(0.970)	199974	19.5492	390.98
	89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.103)	4556	17.8694	357.38
	57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	56214	20.4223	408.44

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052312.D Page 2
Report Date: 22-Jun-2021 12:26

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.992	(1.034)	104342	18.5098	370.19
33	1,2-Dichloroethane	62	4.555	4.555	(0.918)	83350	19.6187	392.37
42	1,2-Dichloropropane	63	5.436	5.436	(1.095)	55332	19.0542	381.08
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	202545	20.1743	403.48
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	114854	19.8768	397.53
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	86068	19.1963	383.92
84	1,4-Dichlorobenzene	146	9.683	9.684	(1.002)	119898	20.4416	408.83
26	2,2-Dichloropropane	77	3.516	3.509	(0.841)	87224	18.9161	378.32
24	2-Butanone	43	3.580	3.573	(0.856)	35620	34.6678	693.35
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	170755	19.0491	380.98
52	2-Hexanone	43	7.090	7.083	(0.924)	61051	36.3453	726.90
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	202805	19.4029	388.05
82	p-Isopropyltoluene	119	9.648	9.648	(0.999)	211983	21.3469	426.93
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	88414	35.2651	705.30
10	Acetone	43	1.976	1.976	(0.473)	41723	57.1980	1143.96
37	Benzene	78	4.512	4.512	(0.909)	207470	19.4074	388.14
74	Bromobenzene	156	8.802	8.802	(0.911)	66005	19.6865	393.72
29	Bromochloromethane	128	3.795	3.795	(0.908)	29235	17.2338	344.67
39	Bromodichloromethane	83	5.729	5.722	(1.154)	79019	18.9267	378.53
66	Bromoform	173	8.408	8.408	(1.096)	35158	18.4379	368.75
6	Bromomethane	94	1.338	1.339	(0.320)	58348	19.6565	393.12
19	Carbon Disulfide	76	2.069	2.069	(0.495)	231197	35.2537	705.07
34	Carbon Tetrachloride	117	4.268	4.268	(0.860)	76397	20.2844	405.68
59	Chlorobenzene	112	7.692	7.692	(1.003)	148687	19.2317	384.63
7	Chloroethane	64	1.403	1.403	(0.336)	39637	18.8119	376.23
28	Chloroform	83	3.910	3.910	(0.935)	102995	17.4163	348.32
3	Chloromethane	50	1.073	1.074	(0.257)	54464	18.2928	365.85
27	cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	58057	18.0977	361.95
46	cis-1,3-Dichloropropene	75	6.152	6.152	(1.240)	91966	19.4138	388.27
55	Dibromochloromethane	129	7.176	7.176	(0.936)	59944	19.4515	389.03
44	Dibromomethane	93	5.550	5.550	(1.118)	39641	19.0461	380.92
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	56480	17.5322	350.64
61	Ethylbenzene	106	7.799	7.800	(1.017)	78711	20.6018	412.03
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	24040	21.8359	436.71
67	Isopropylbenzene	105	8.559	8.559	(1.116)	242621	20.7788	415.57
62	m,p-Xylenes	106	7.907	7.907	(1.031)	203480	41.3263	826.52
17	Methylene Chloride	84	2.305	2.306	(0.551)	47492	17.0149	340.29
87	n-Butylbenzene	91	9.991	9.992	(1.034)	199102	21.0817	421.63
73	n-Propylbenzene	91	8.910	8.910	(0.922)	300515	21.0968	421.93
92	Naphthalene	128	11.546	11.539	(1.195)	39866	17.2274	344.54
63	o-Xylene	106	8.244	8.244	(1.075)	92712	19.3598	387.19
81	sec-Butylbenzene	105	9.519	9.519	(0.985)	240359	20.3892	407.78
64	Styrene	104	8.258	8.258	(1.077)	160870	19.0373	380.74
78	tert-Butylbenzene	119	9.340	9.333	(0.967)	169774	19.9286	398.57
56	Tetrachloroethene	164	6.926	6.926	(0.903)	48970	22.3515	447.03
50	Toluene	91	6.446	6.446	(0.840)	232021	20.3960	407.91
20	trans-1,2-Dichloroethene	96	2.527	2.528	(0.604)	47809	17.8527	357.05
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	82717	19.9602	399.20
38	Trichloroethene	130	5.206	5.207	(1.049)	58370	20.3996	407.99
8	Trichlorofluoromethane	101	1.560	1.561	(0.373)	101054	18.8869	377.73
5	Vinyl Chloride	62	1.145	1.145	(0.274)	59246	17.6293	352.58

QC Flag Legend

M - Compound response manually integrated.

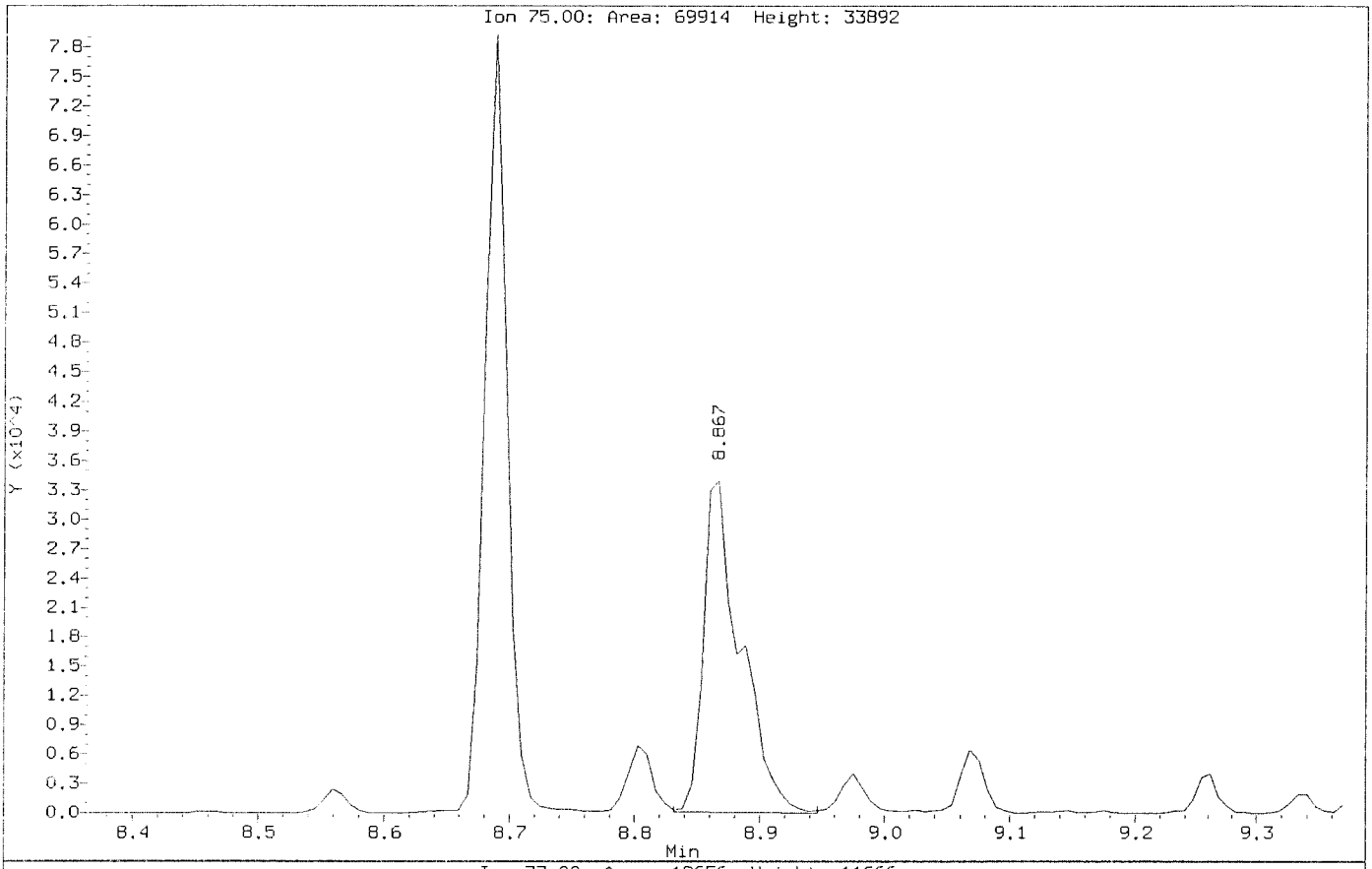


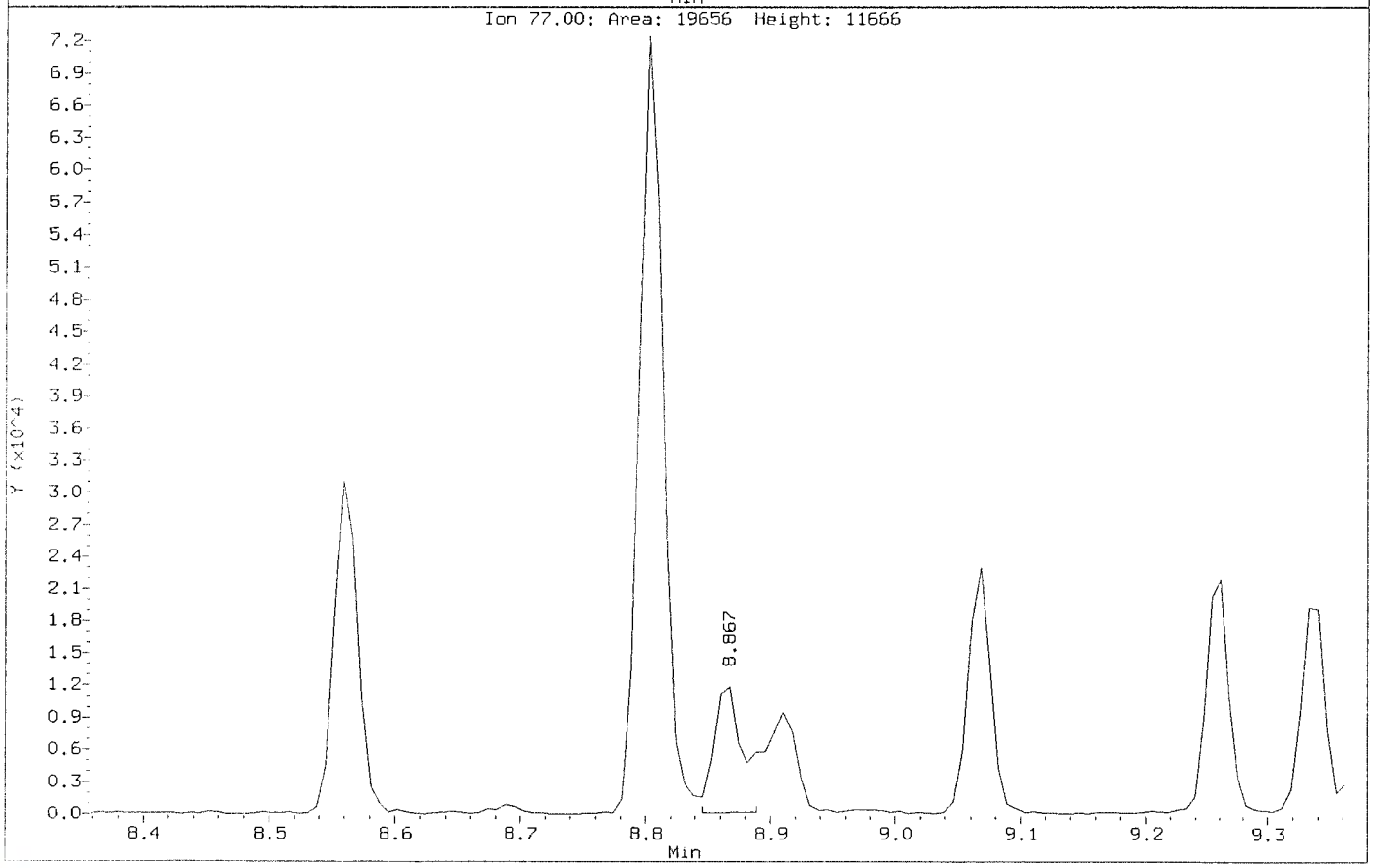
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Sample Info: HS21050892-06HSD;HS21050892-06HSD;3;;HSD
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\Before\X052312.D
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Instrument: voa6.i
Client Sample ID: HS21050892-06MSD

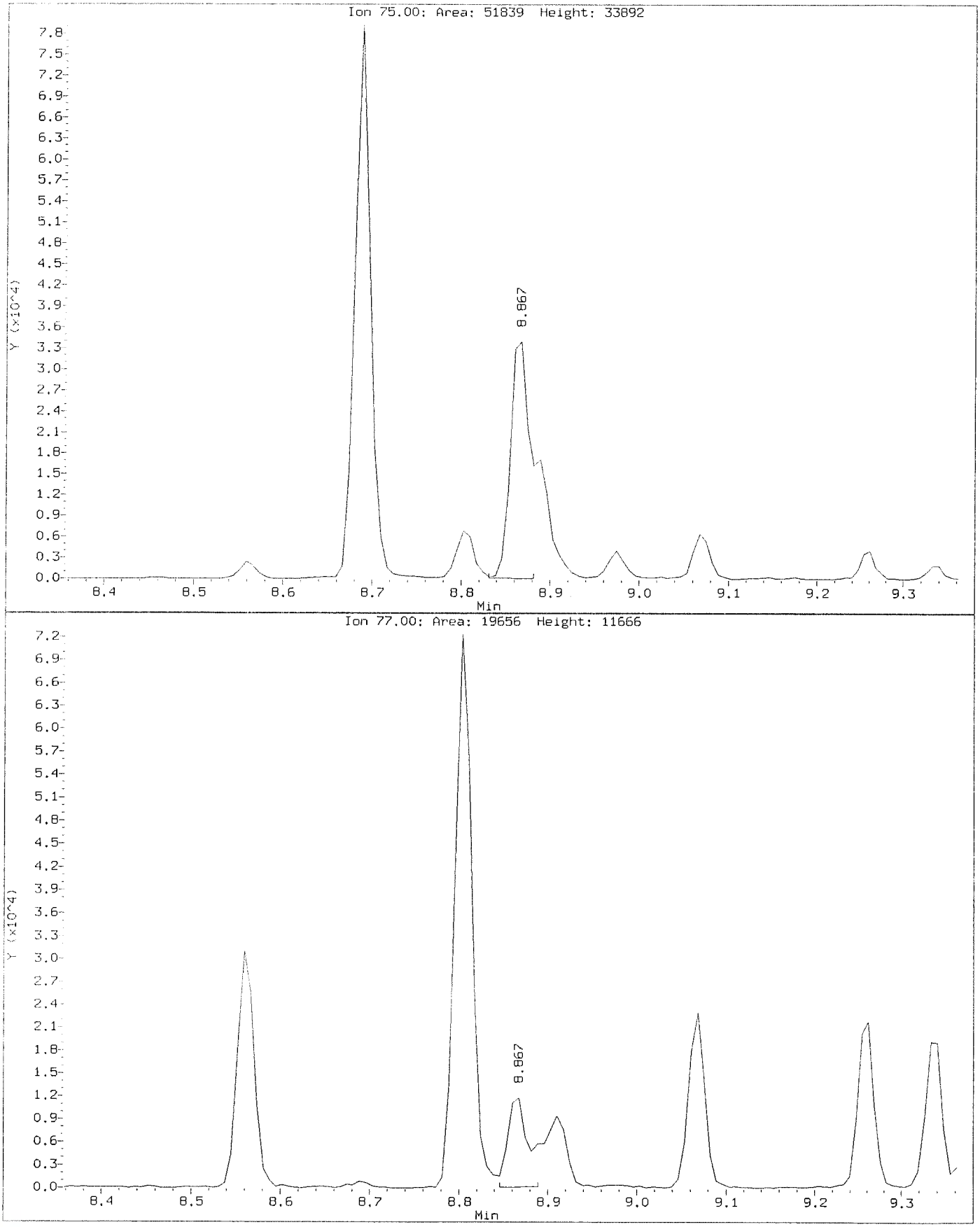
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052312.D
Injection Date: 23-MAY-2021 15:39
Instrument: voa6.i
Client Sample ID: HS21050892-06MSD

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052319.D Page 1
Report Date: 22-Jun-2021 12:29

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210523.b\X052319.D
Lab Smp Id: HS21050972-08 Client Smp ID: HS21050972-08
Inj Date : 23-MAY-2021 18:07
Operator : PC Inst ID: voa6.i
Smp Info : HS21050972-08;HS21050972-08;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210523.b\8260W.m
Meth Date : 22-Jun-2021 12:26 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 18
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	240682	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	379398	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	343215	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	159845	50.0000	
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	143468	45.7095	45.70
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	146659	45.2799	45.27
$	30 Dibromofluoromethane	113	4.103	4.103	(0.981)	123139	45.9107	45.91
$	48 Toluene-d8	98	6.388	6.389	(0.833)	457250	54.1490	54.14
	56 Tetrachloroethene	164	6.933	6.926	(0.904)	6527	3.42241	3.42(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052319.D

Date : 23-MAY-2021 18:07

Client ID: HS21050972-08

Instrument: voa6.i

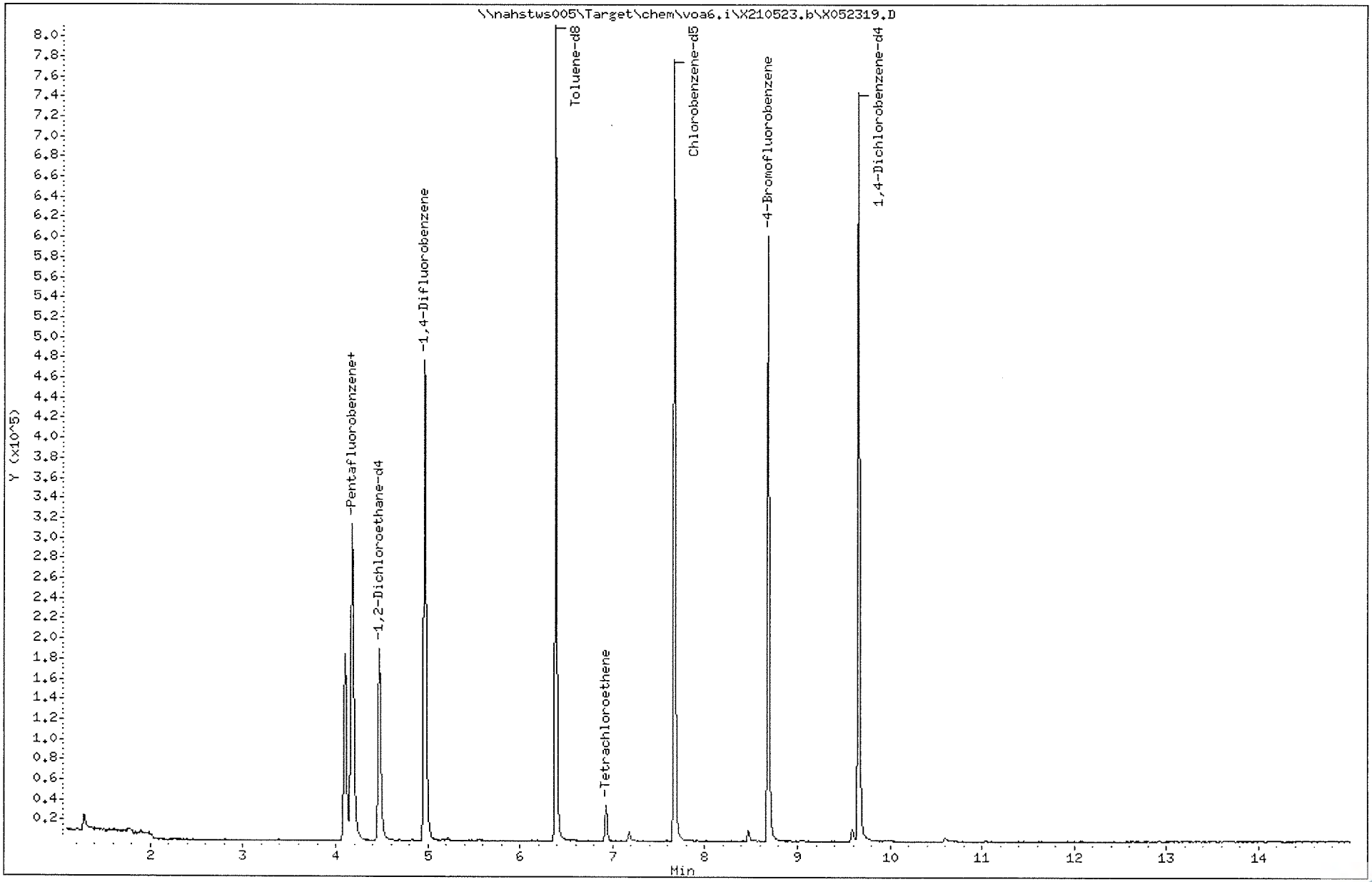
Sample Info: HS21050972-08;HS21050972-08;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052319.D

Date : 23-MAY-2021 18:07

Client ID: HS21050972-08

Instrument: voa6.i

Sample Info: HS21050972-08;HS21050972-08;;;

Purge Volume: 5.0

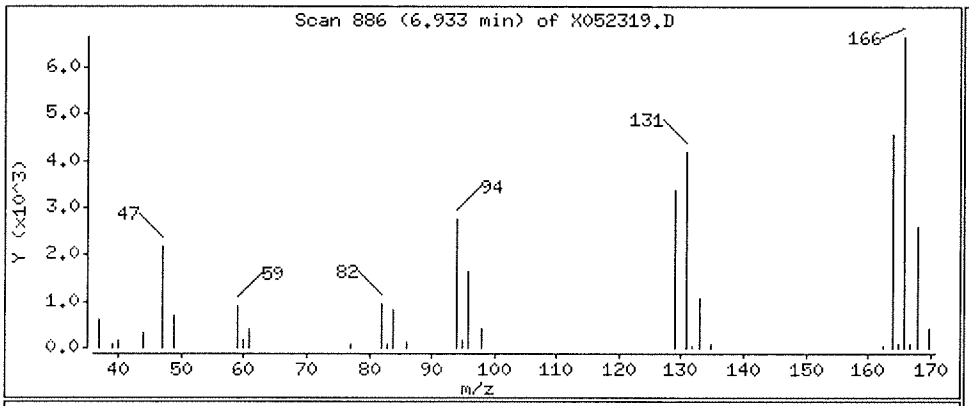
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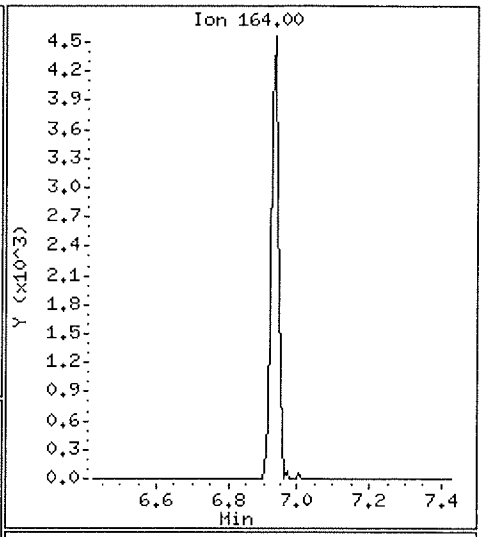
Column phase: DB624

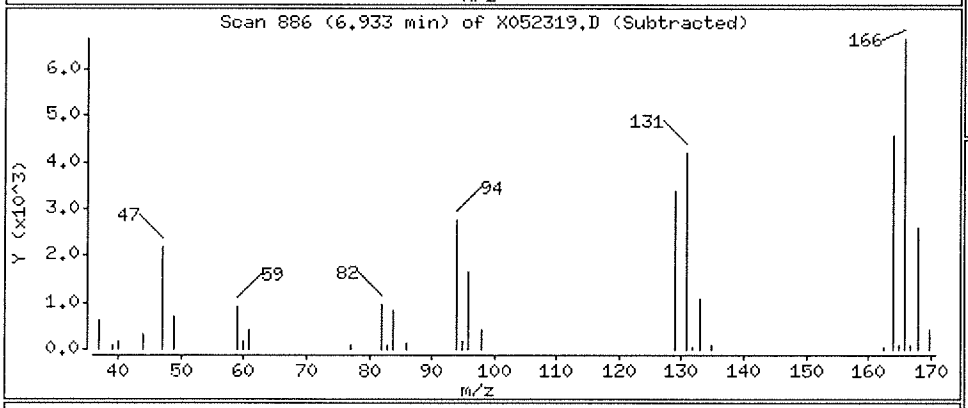
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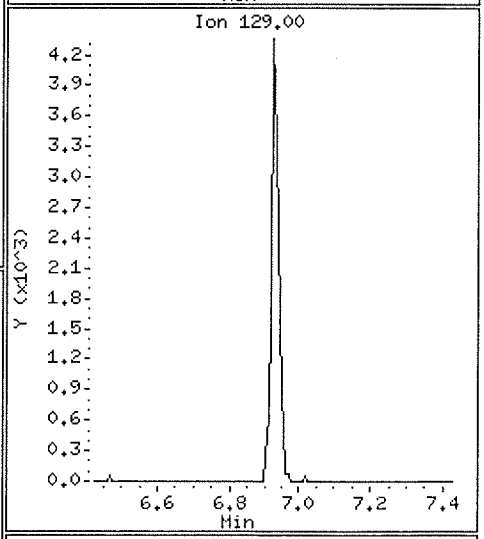
56 Tetrachloroethene

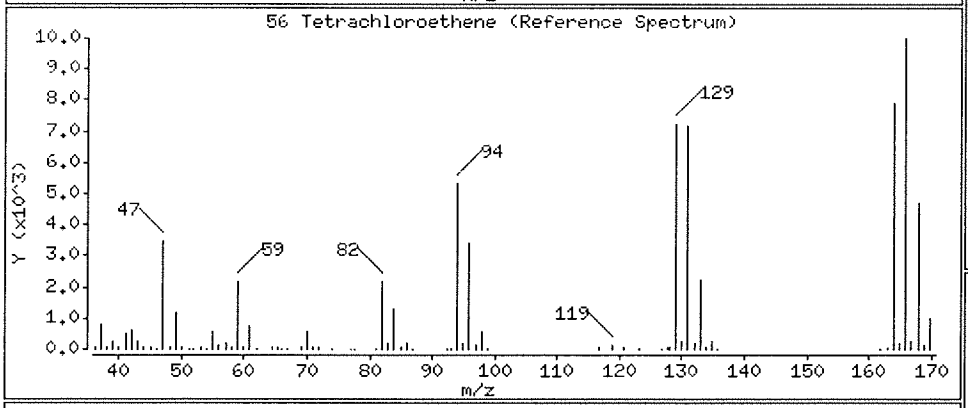
Concentration: 3.42 ug/l

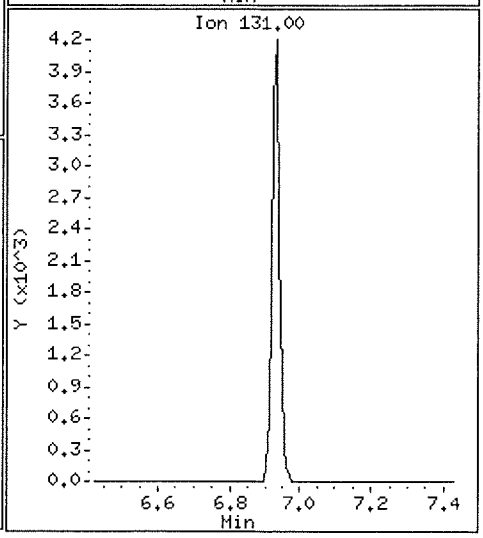


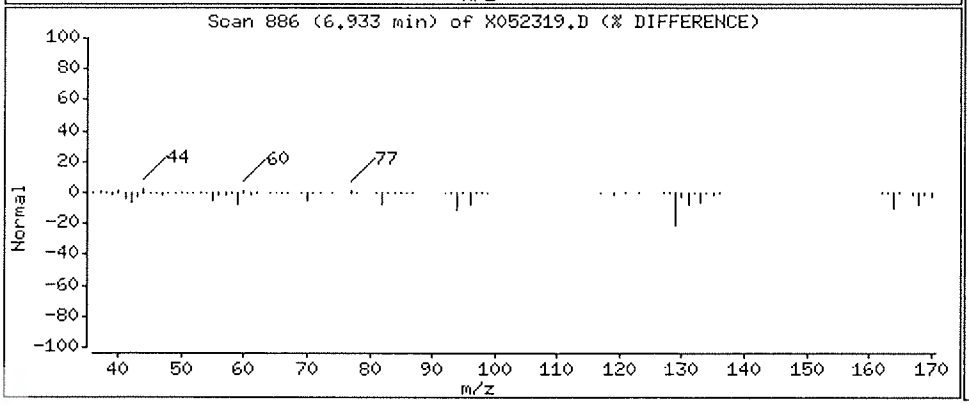












ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210523.b\X052320.D
Lab Smp Id: HS21050972-09 Client Smp ID: HS21050972-09
Inj Date : 23-MAY-2021 18:28
Operator : PC Inst ID: voa6.i
Smp Info : HS21050972-09;HS21050972-09;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210523.b\8260W.m
Meth Date : 22-Jun-2021 12:26 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 19
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

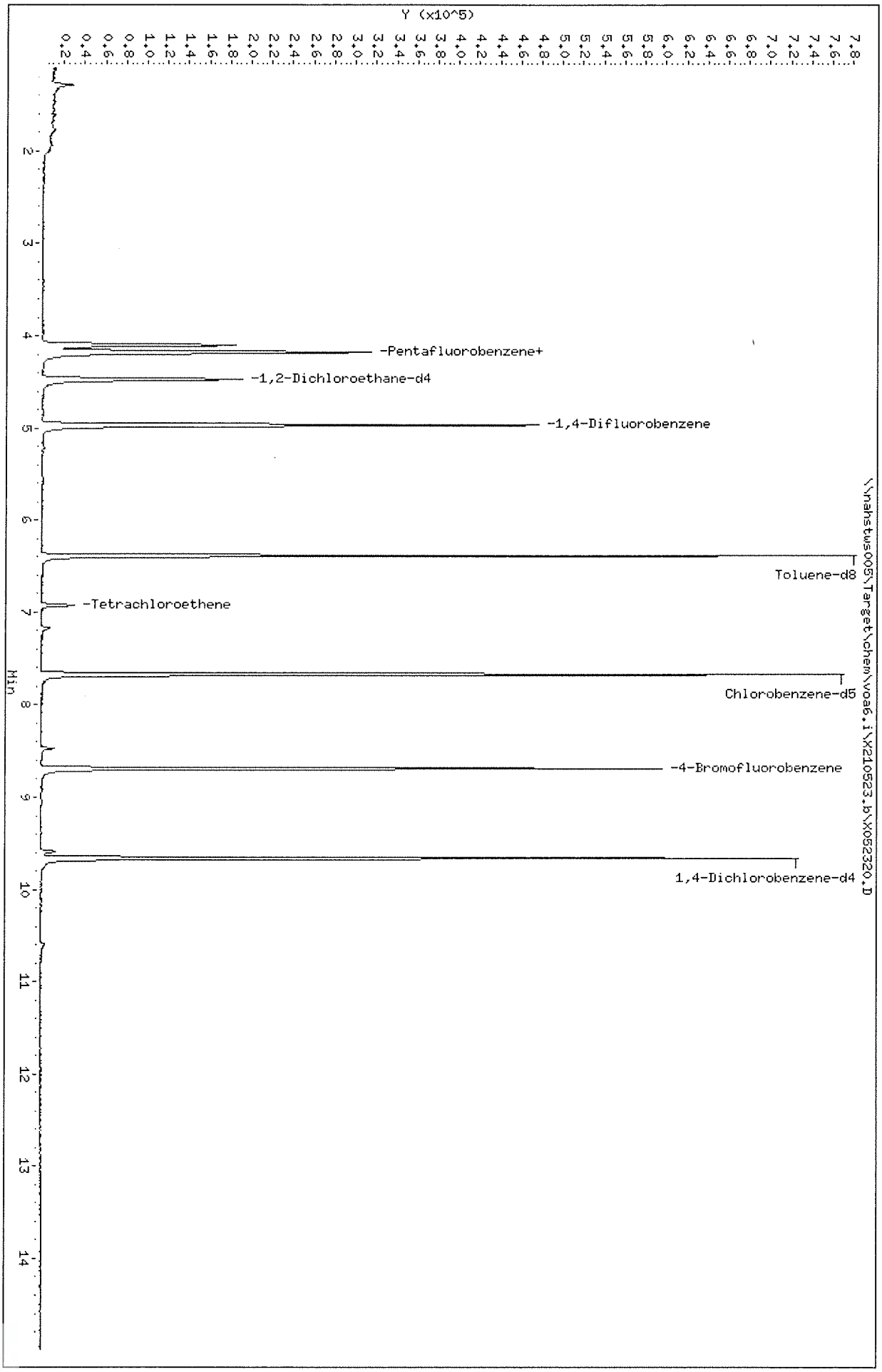
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	243211	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	375090	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	343052	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	157638	50.0000	
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	143184	45.1290	45.12
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	146658	45.3011	45.30
$	30 Dibromofluoromethane	113	4.103	4.103	(0.981)	121599	44.8599	44.85
$	48 Toluene-d8	98	6.388	6.389	(0.833)	456900	54.1335	54.13
	56 Tetrachloroethene	164	6.926	6.926	(0.903)	6879	3.60869	3.60(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).



Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052320.D
Date : 23-MAY-2021 18:28
Client ID: HS21050972-09
Sample Info: HS21050972-09;HS21050972-09;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052320.D

Date : 23-MAY-2021 18:28

Client ID: HS21050972-09

Instrument: voa6.i

Sample Info: HS21050972-09;HS21050972-09;;;

Purge Volume: 5.0

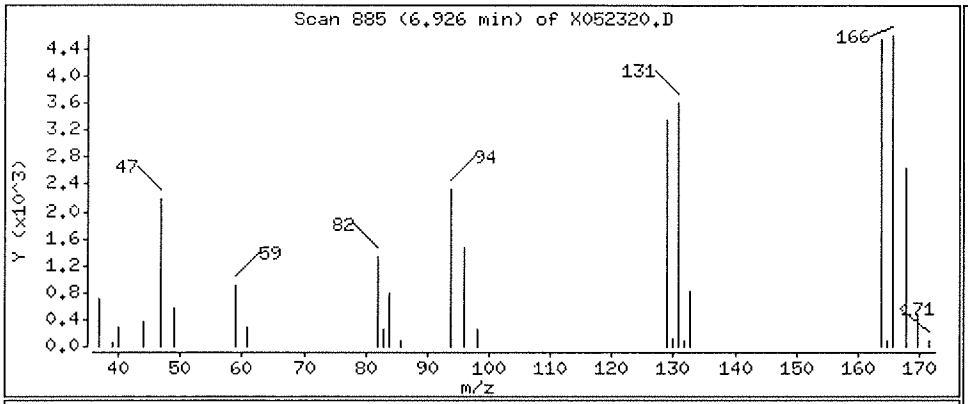
Operator: PC

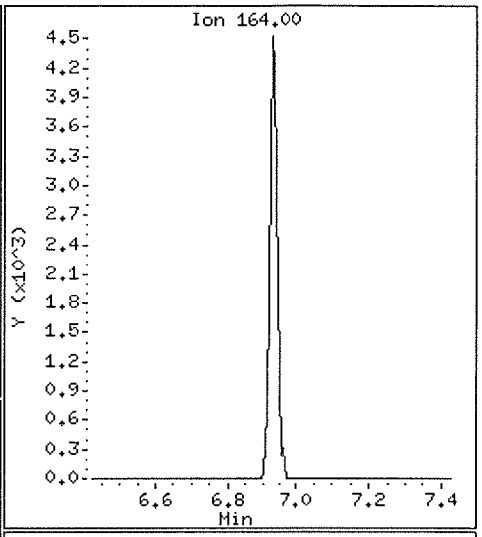
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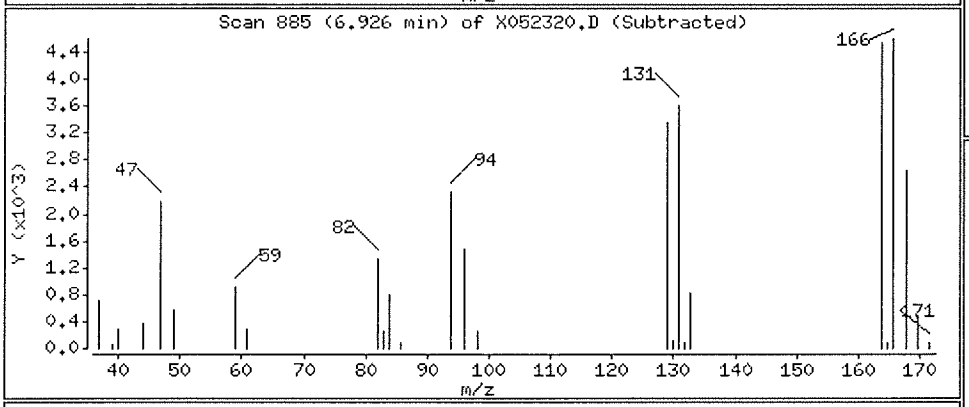
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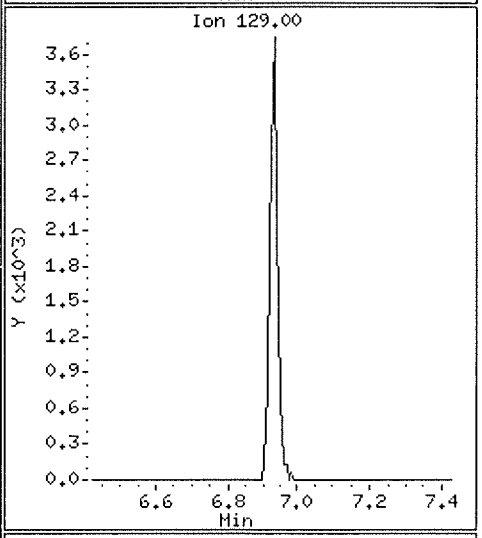
56 Tetrachloroethene

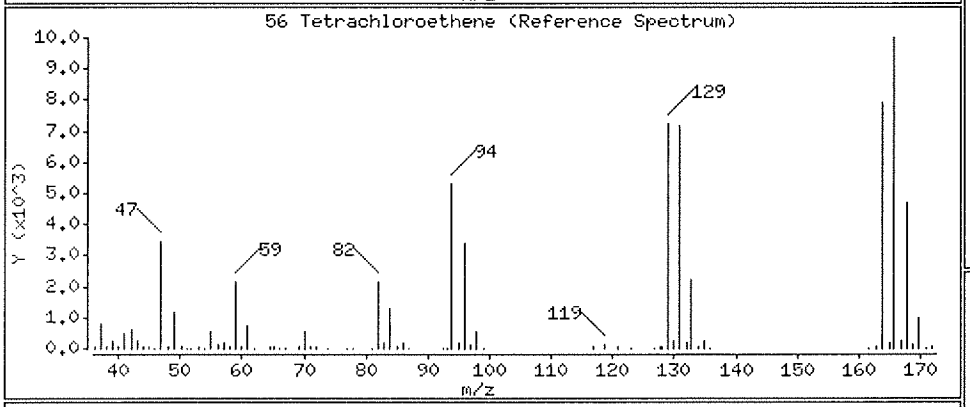
Concentration: 3.60 ug/l

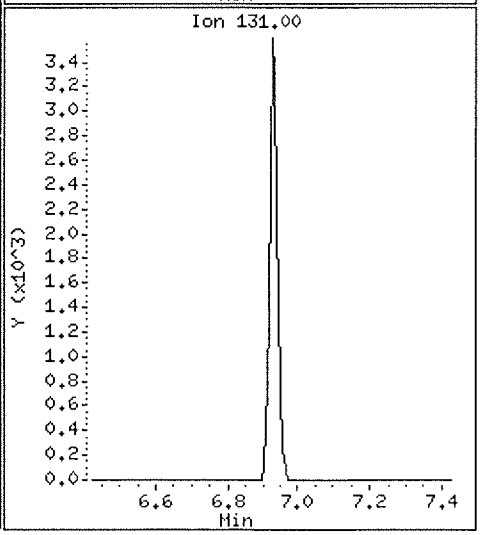


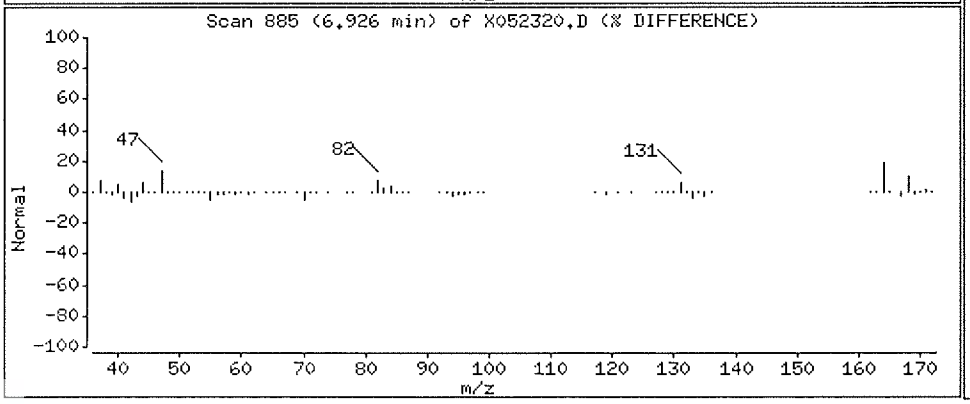












Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052321.D Page 1
Report Date: 22-Jun-2021 12:29

ALS Laboratory Group

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Misc Info : HS18090001;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X210523.b\8260W.m
Meth Date : 22-Jun-2021 12:26 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 20
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	240129	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.963	(1.000)	372282	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	336879	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	145812	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	141185	45.0684	45.06
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	140446	44.1802	44.18
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	120030	44.8493	44.84
$ 48 Toluene-d8	98	6.388	6.389	(0.833)	447386	53.9805	53.98

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052321.D

Date : 23-MAY-2021 18:49

Client ID: HS21050972-10

Instrument: voa6.i

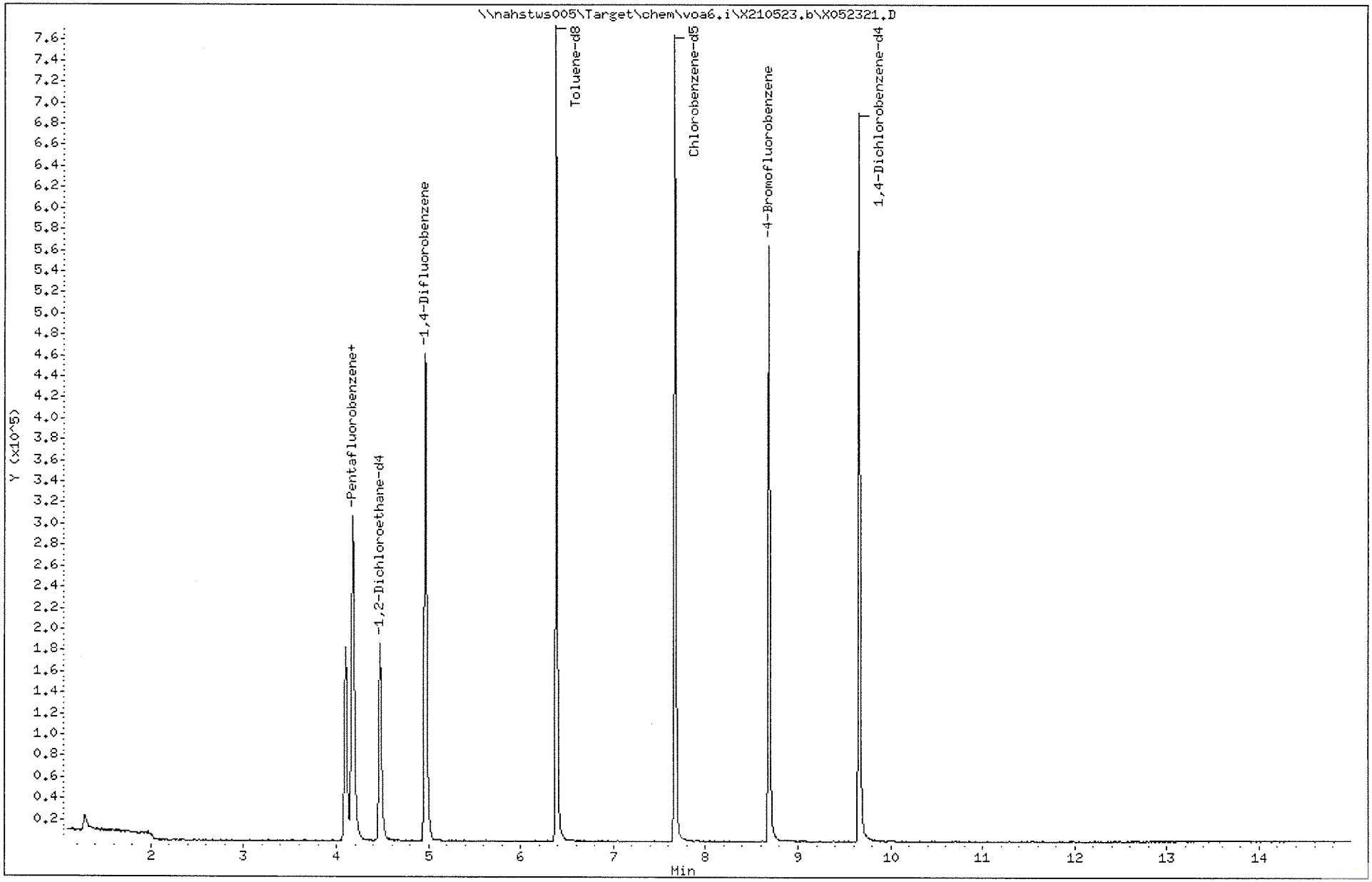
Sample Info: HS21050972-10;HS21050972-10;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052322.D Page 1
Report Date: 22-Jun-2021 12:29

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210523.b\X052322.D
Lab Smp Id: HS21050972-11 Client Smp ID: HS21050972-11
Inj Date : 23-MAY-2021 19:10
Operator : PC Inst ID: voa6.i
Smp Info : HS21050972-11;HS21050972-11;;;
Misc Info : HS18090001;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X210523.b\8260W.m
Meth Date : 22-Jun-2021 12:26 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 21
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

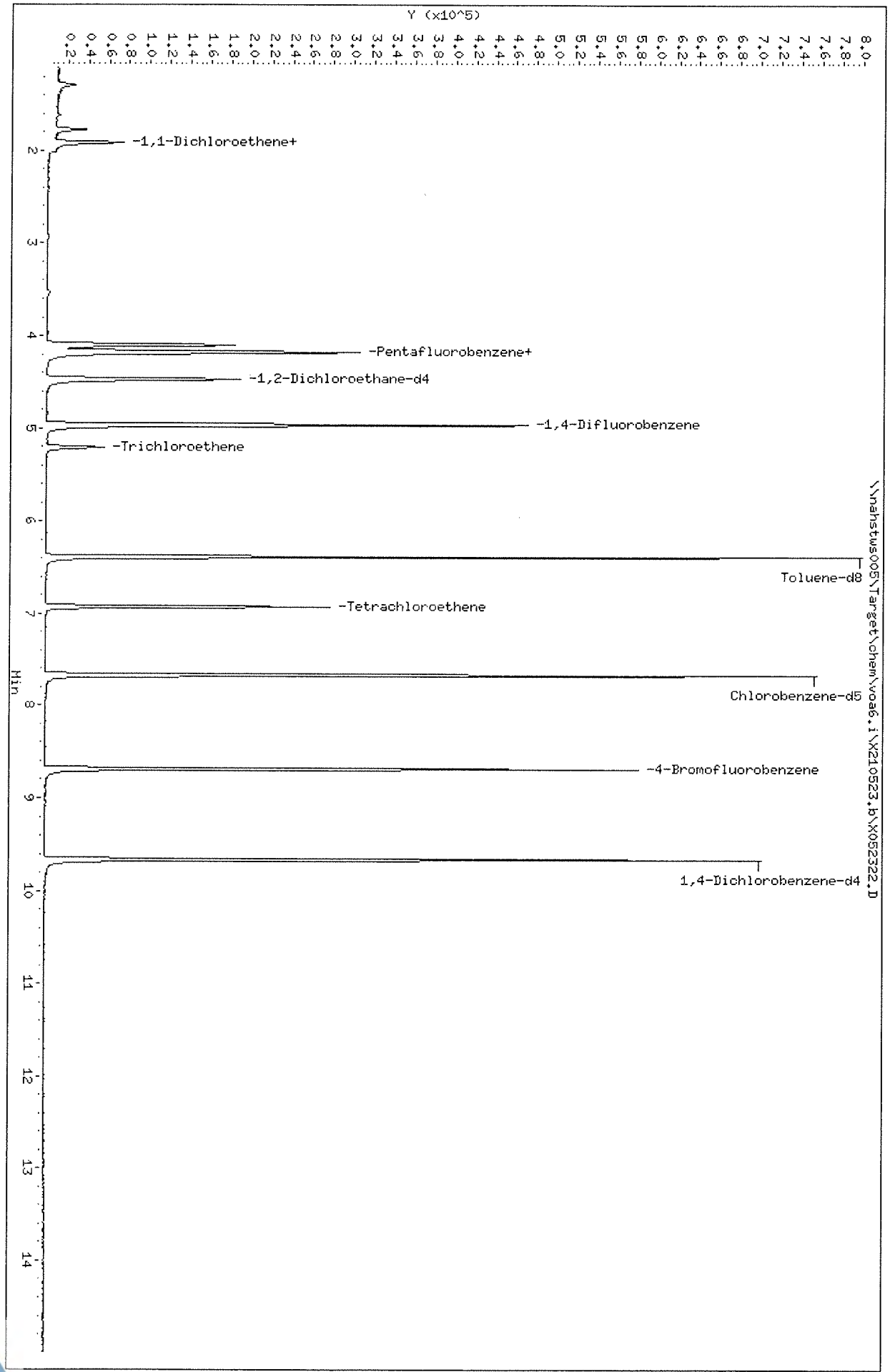
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	236315	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	378260	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	335738	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	150766	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	141380	45.8813	45.88
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	142571	44.9988	44.99
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	122142	46.3828	46.38
$ 48 Toluene-d8	98	6.388	6.389	(0.833)	449182	54.3739	54.37
138 Freon TF	101	1.919	1.919	(0.459)	21970	9.79927	9.79
11 1,1-Dichloroethene	96	1.919	1.919	(0.459)	4358	1.84404	1.84(a)
56 Tetrachloroethene	164	6.926	6.926	(0.903)	50538	27.0896	27.08
38 Trichloroethene	130	5.206	5.207	(1.049)	17388	6.94188	6.94

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052322.D
Date : 23-MAY-2021 19:10
Client ID: HS21050972-11
Sample Info: HS21050972-11;HS21050972-11;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052322.D

Date : 23-MAY-2021 19:10

Client ID: HS21050972-11

Instrument: voa6.i

Sample Info: HS21050972-11;HS21050972-11;;;

Purge Volume: 5.0

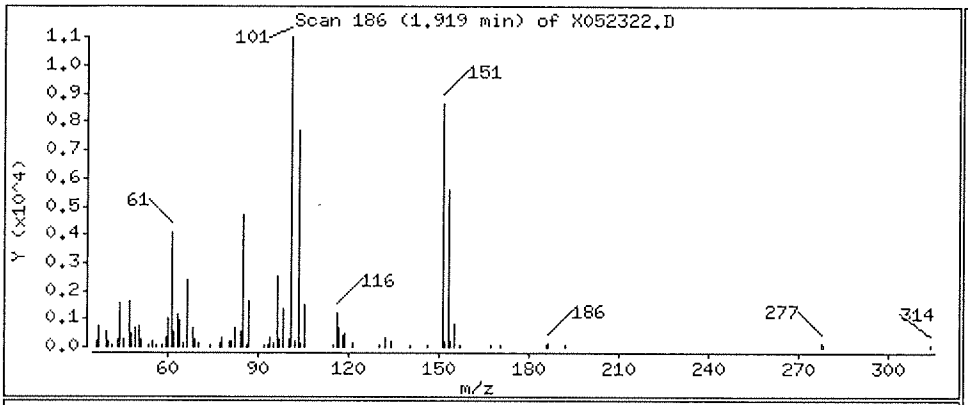
Operator: PC

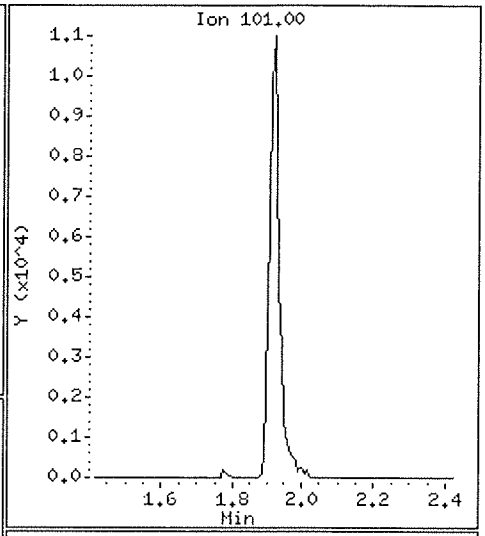
Column phase: DB624

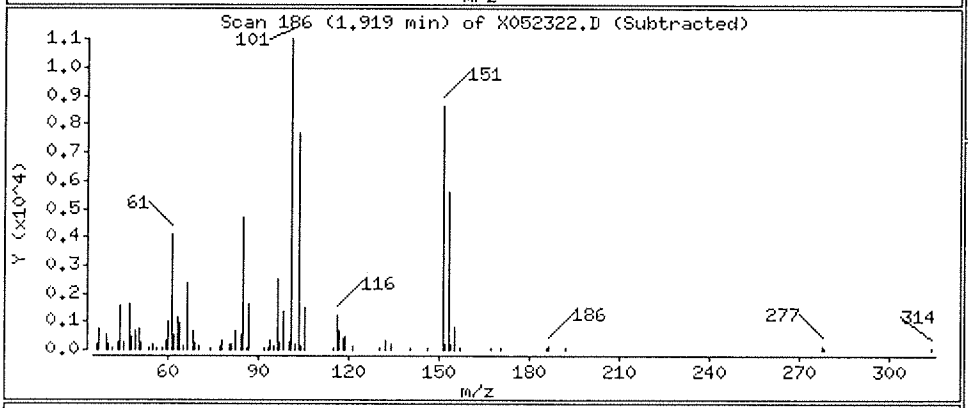
Column diameter: 0.18

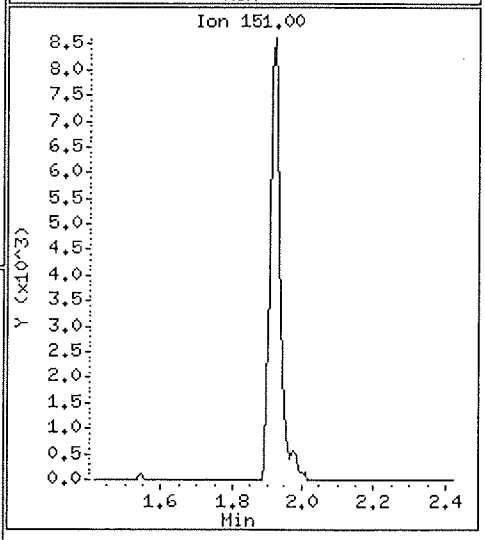
138 Freon TF

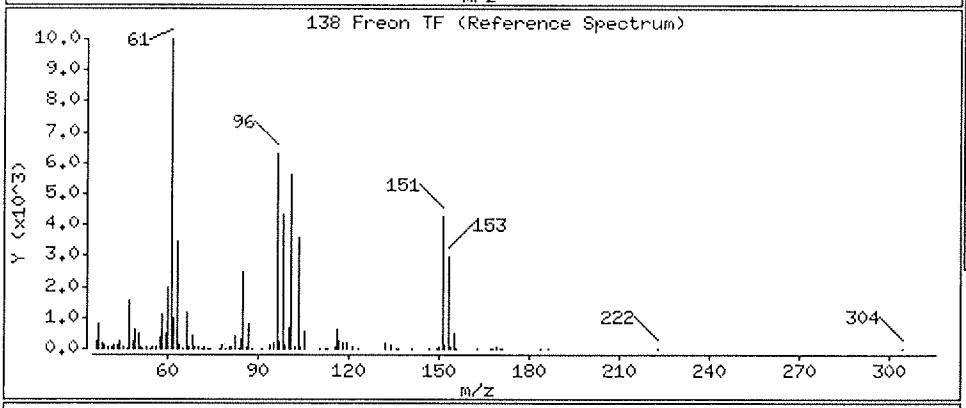
Concentration: 9.79 ug/l

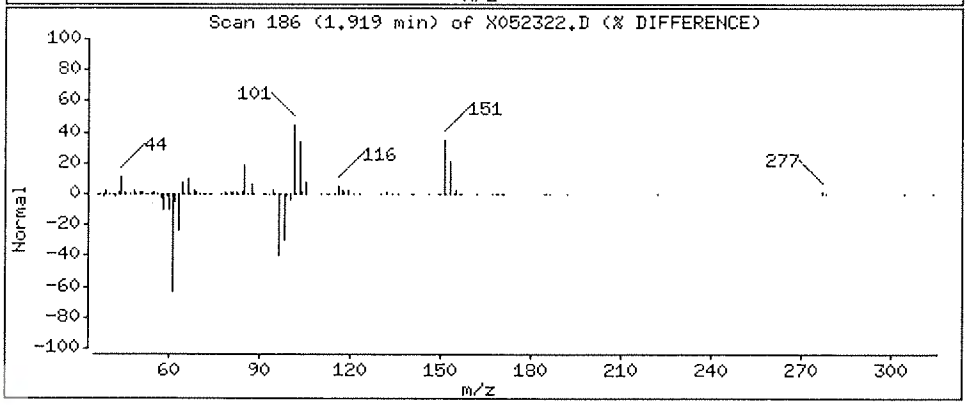












Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052322.D

Date : 23-MAY-2021 19:10

Client ID: HS21050972-11

Instrument: voa6.i

Sample Info: HS21050972-11;HS21050972-11;;;

Purge Volume: 5.0

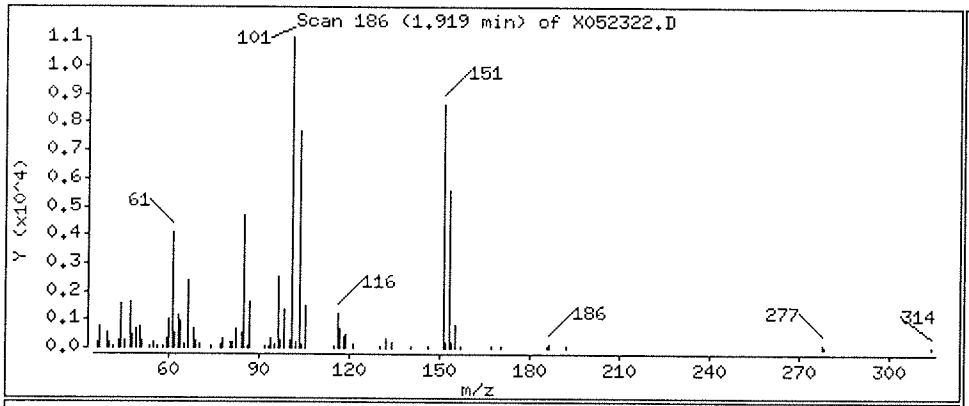
Operator: PC

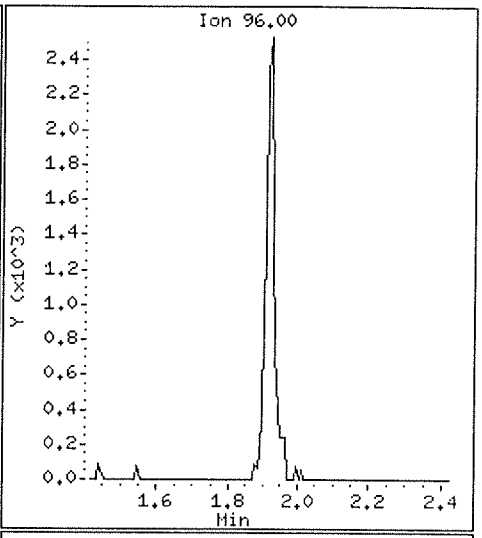
Column phase: DB624

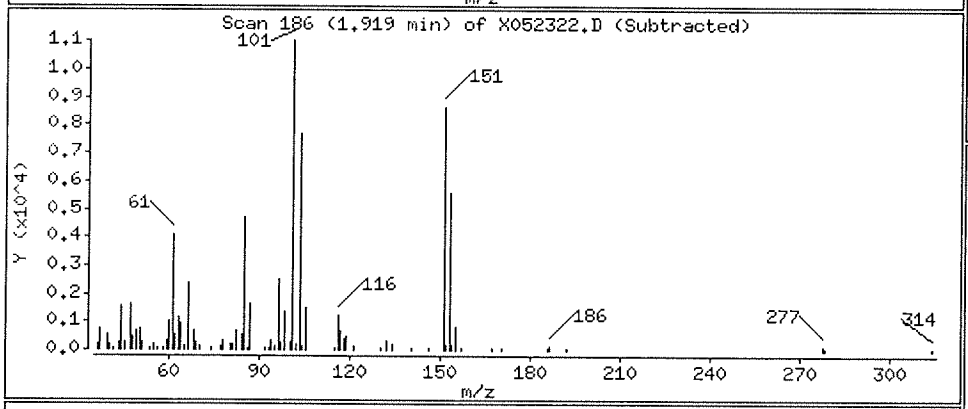
Column diameter: 0.18

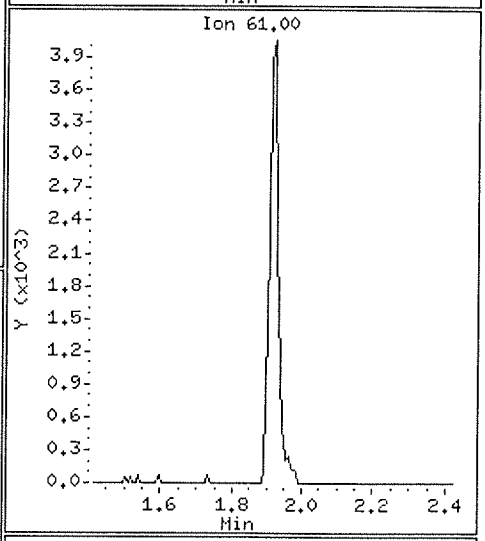
11 1,1-Dichloroethene

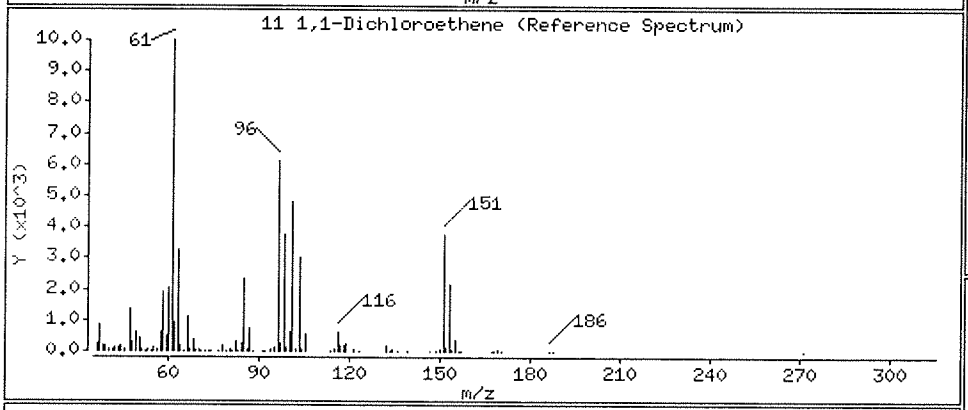
Concentration: 1.84 ug/l

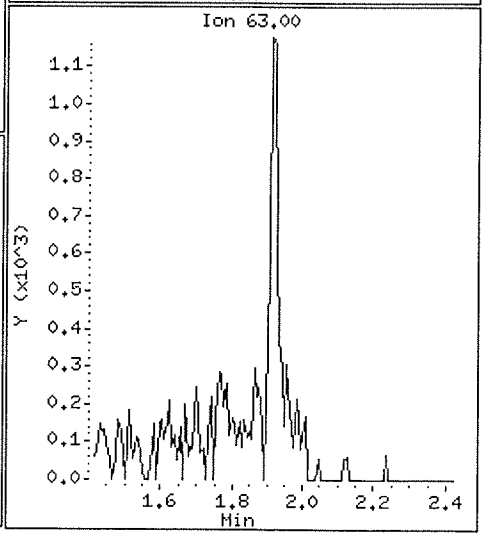


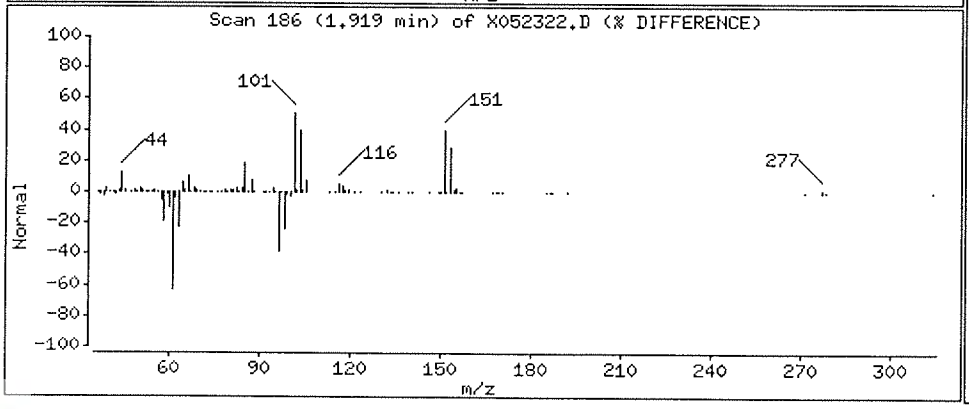












Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052322.D Page 5

Date : 23-MAY-2021 19:10

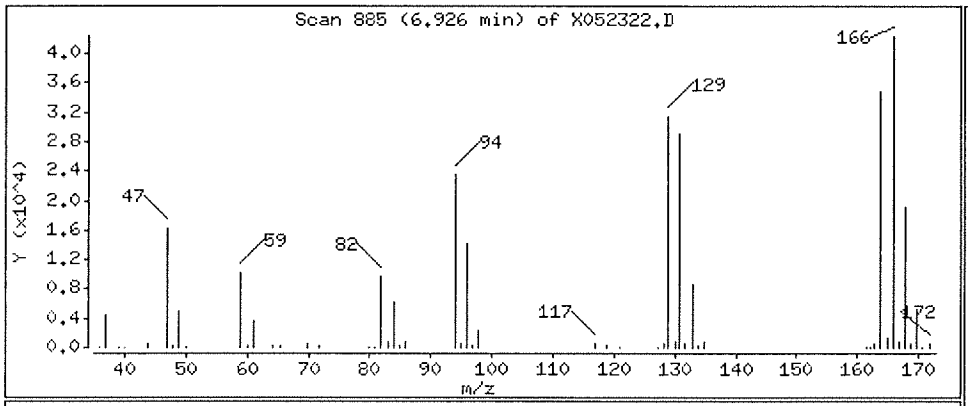
Client ID: HS21050972-11 Instrument: voa6.i

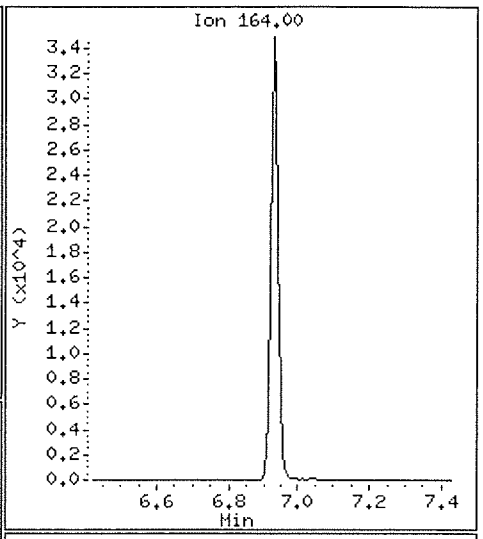
Sample Info: HS21050972-11;HS21050972-11;;;

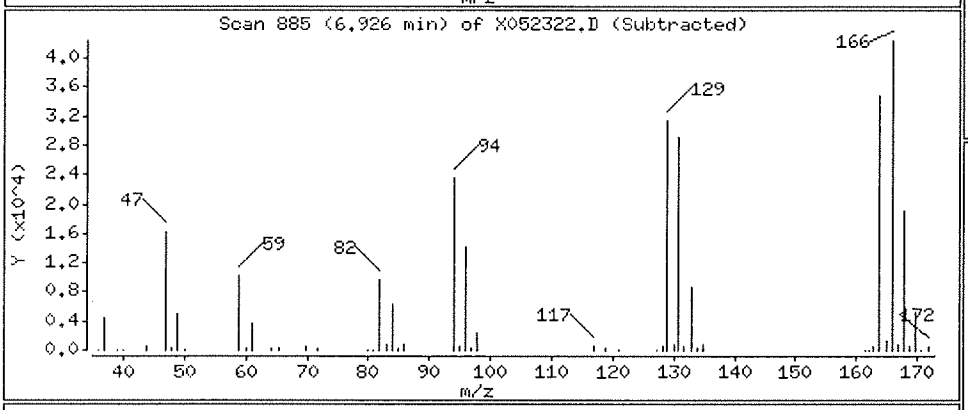
Purge Volume: 5.0 Operator: PC

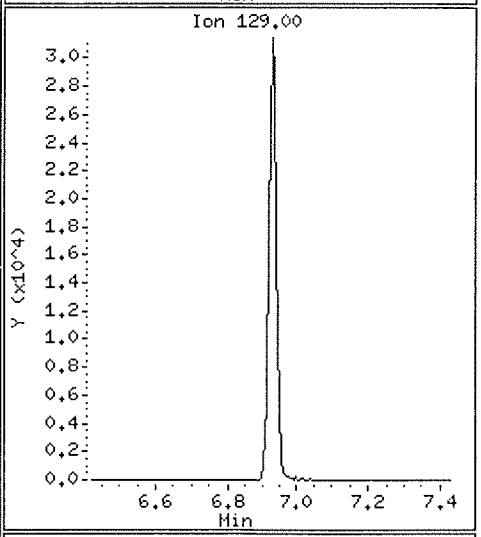
Column phase: DB624 Column diameter: 0.18

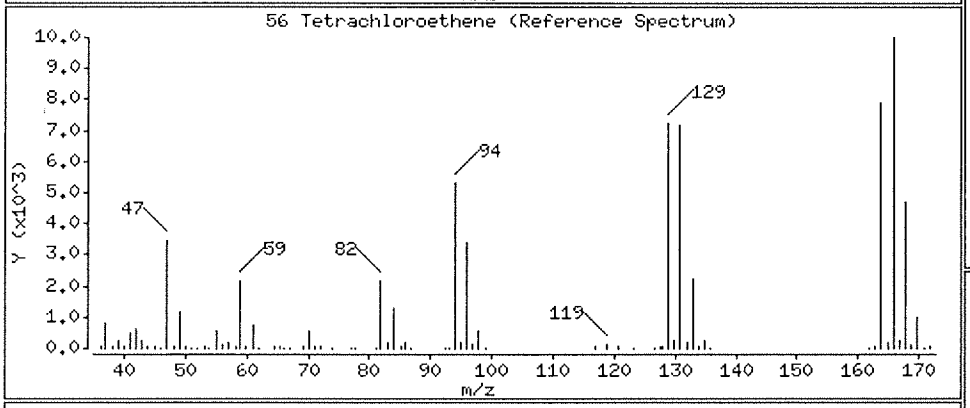
56 Tetrachloroethene Concentration: 27.08 ug/l

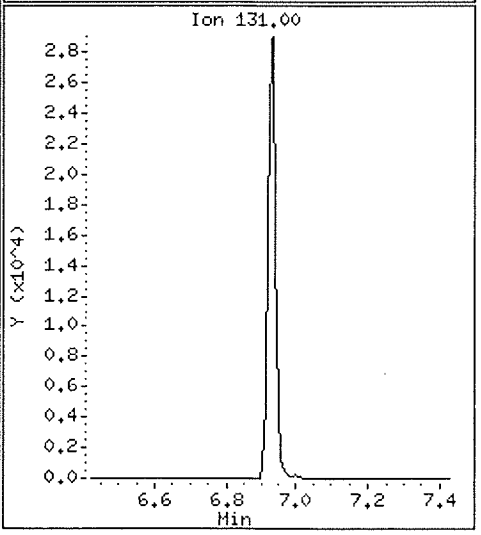


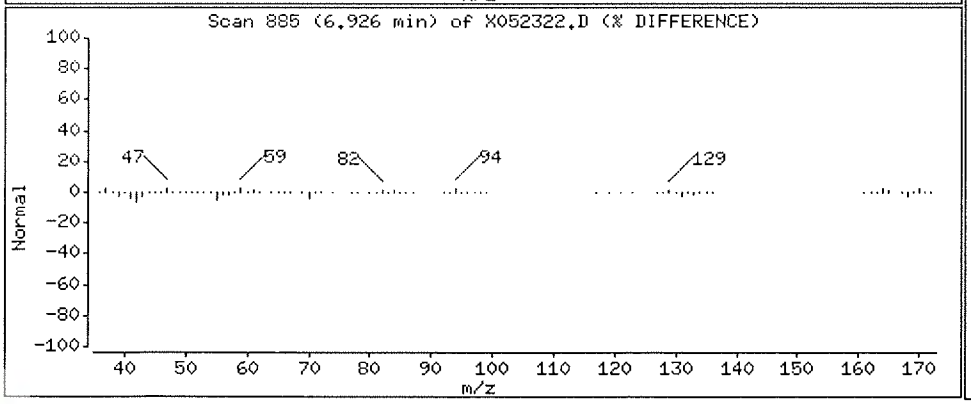












Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052322.D

Date : 23-MAY-2021 19:10

Client ID: HS21050972-11

Instrument: voa6.i

Sample Info: HS21050972-11;HS21050972-11;;;

Purge Volume: 5.0

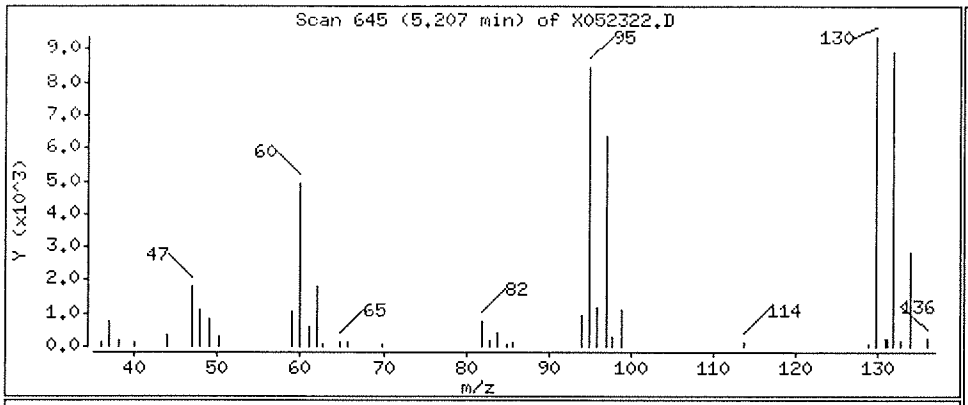
Operator: PC

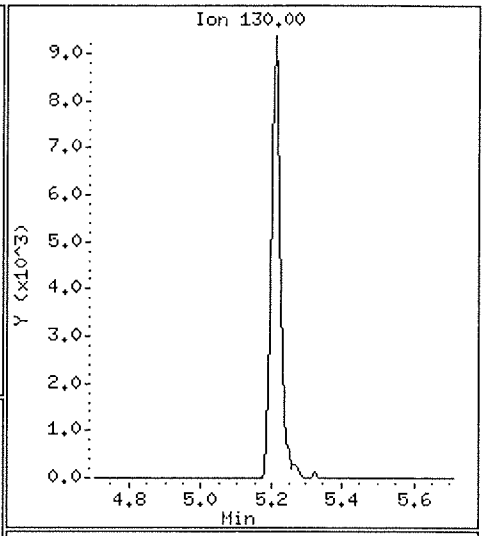
Column phase: DB624

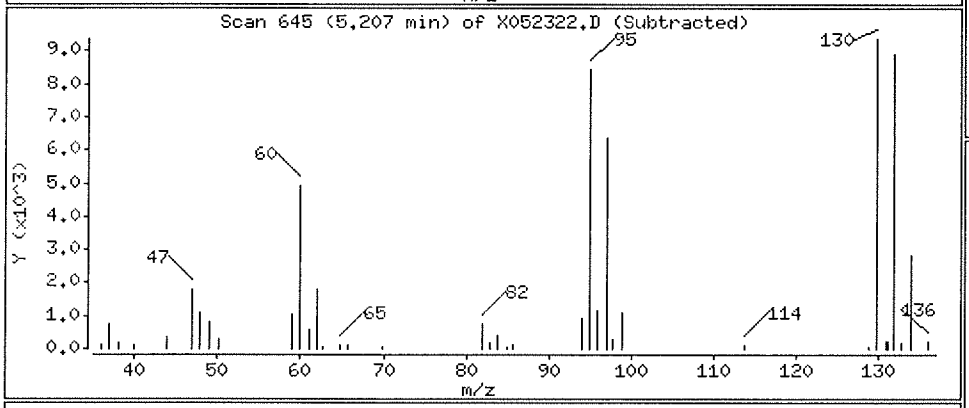
Column diameter: 0.18

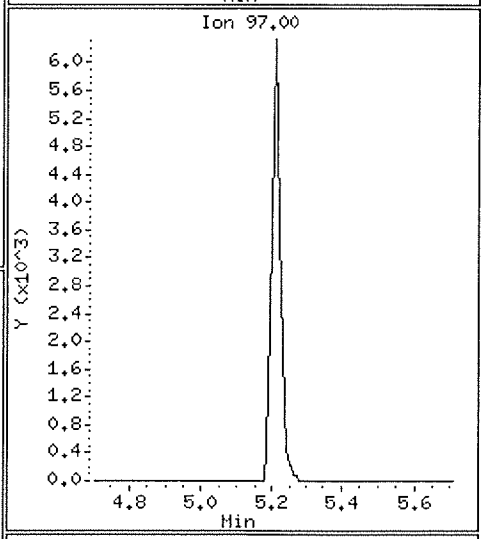
38 Trichloroethene

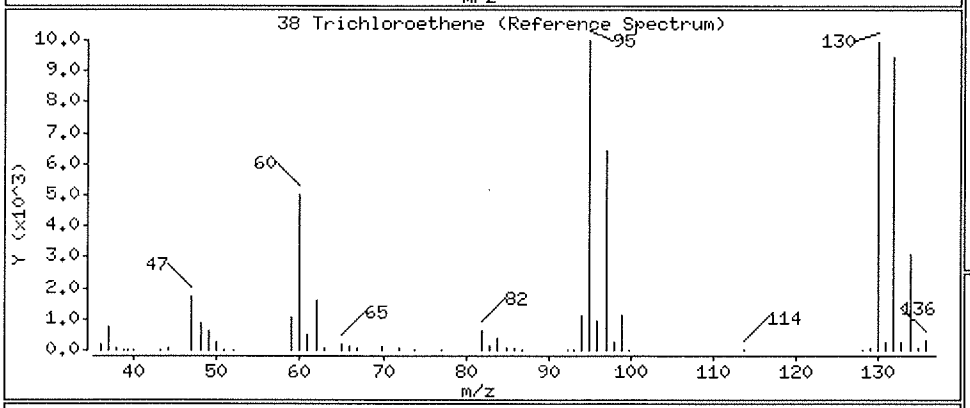
Concentration: 6.94 ug/l

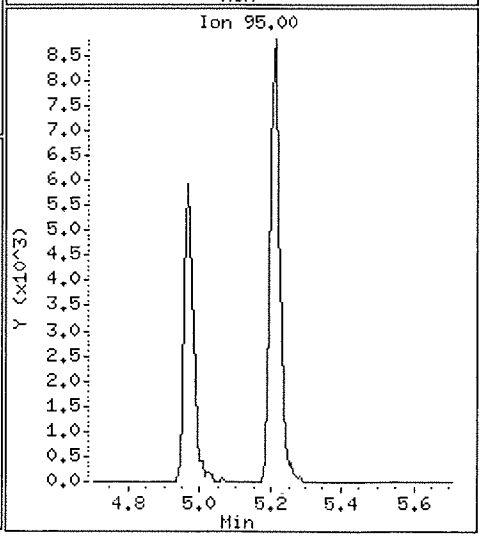


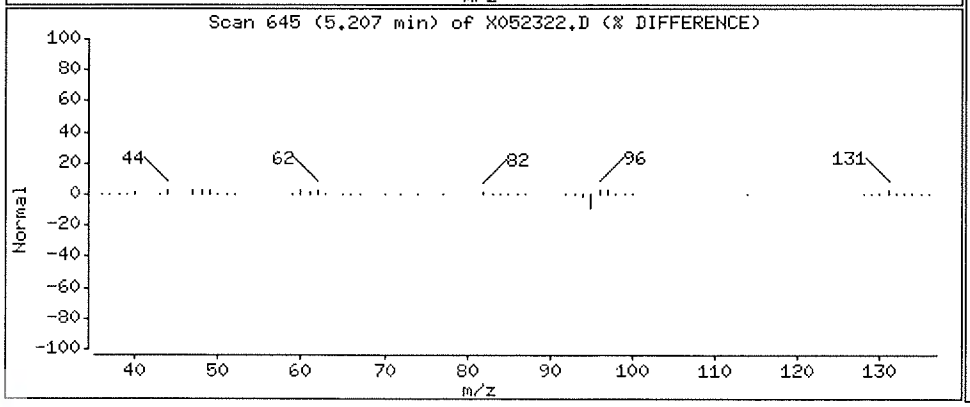












Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052323.D Page 1
Report Date: 22-Jun-2021 12:29

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210523.b\X052323.D
Lab Smp Id: HS21050972-12 Client Smp ID: HS21050972-12
Inj Date : 23-MAY-2021 19:31
Operator : PC Inst ID: voa6.i
Smp Info : HS21050972-12;HS21050972-12;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210523.b\8260W.m
Meth Date : 22-Jun-2021 12:26 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 22
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

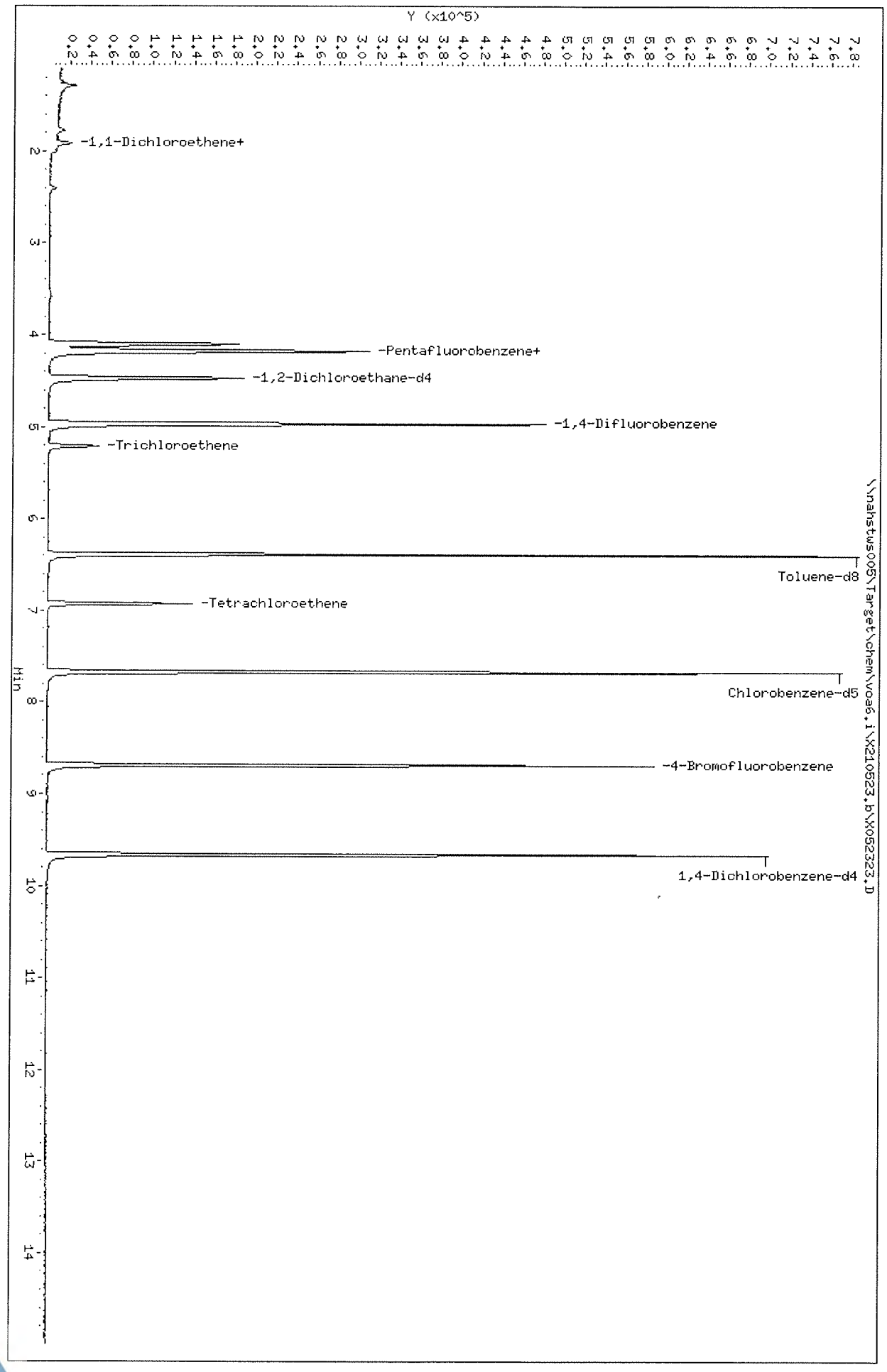
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	244366	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	376433	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	340485	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	155240	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	143470	45.0019	45.00
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	149458	46.5108	46.51
$ 30 Dibromofluoromethane	113	4.096	4.103	(0.979)	124122	45.5779	45.57
$ 48 Toluene-d8	98	6.388	6.389	(0.833)	451648	53.9188	53.91
138 Freon TF	101	1.919	1.919	(0.459)	4660	2.01002	2.01(a)
11 1,1-Dichloroethene	96	1.919	1.919	(0.459)	1550	0.63426	0.63(a)
56 Tetrachloroethene	164	6.926	6.926	(0.903)	26565	14.0410	14.04
38 Trichloroethene	130	5.207	5.207	(1.049)	15527	6.22900	6.22

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).



Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052323.D
Date : 23-MAY-2021 19:31
Client ID: HS21050972-12
Sample Info: HS21050972-12;HS21050972-12;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052323.D

Date : 23-MAY-2021 19:31

Client ID: HS21050972-12

Instrument: voa6.i

Sample Info: HS21050972-12;HS21050972-12;;;

Purge Volume: 5.0

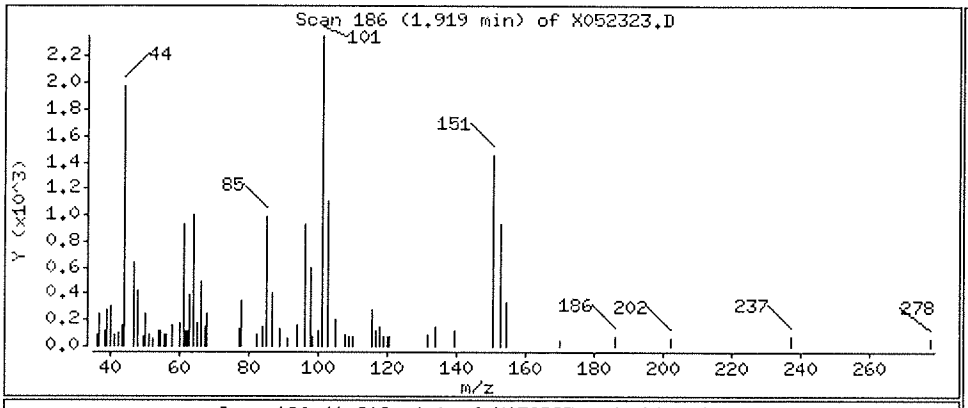
Operator: PC

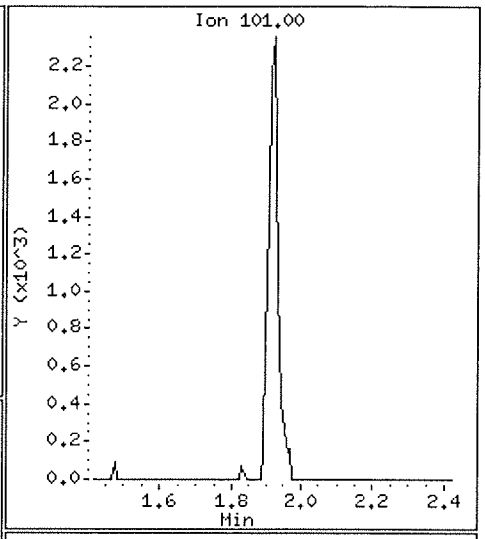
Column phase: DB624

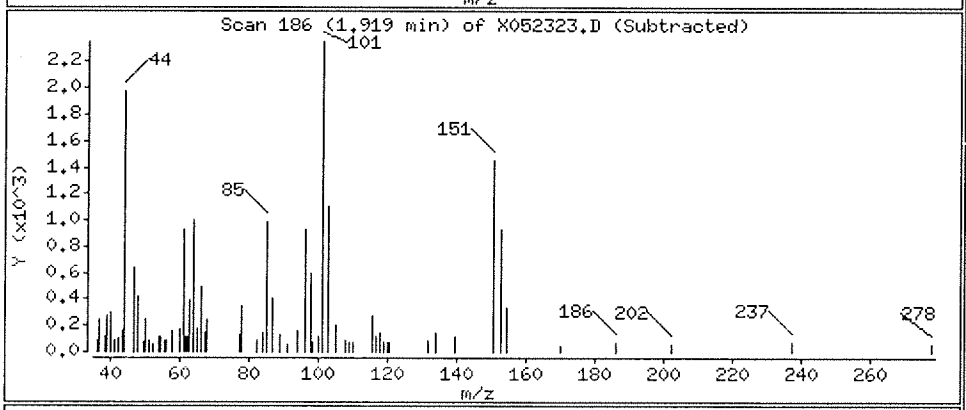
Column diameter: 0.18

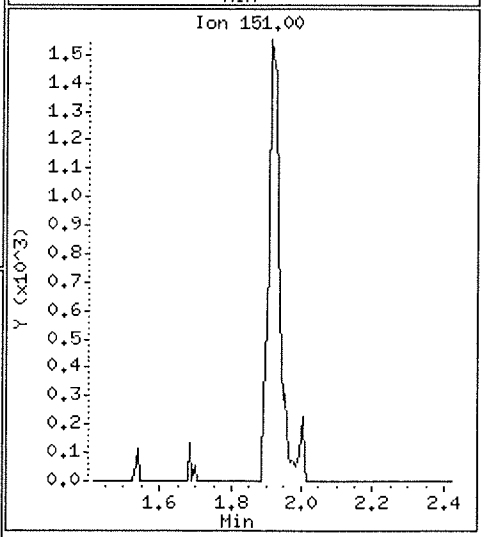
138 Freon TF

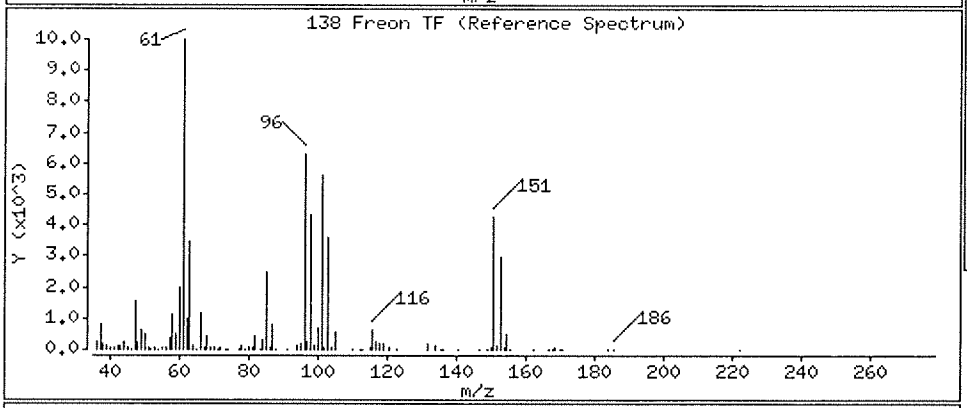
Concentration: 2.01 ug/l

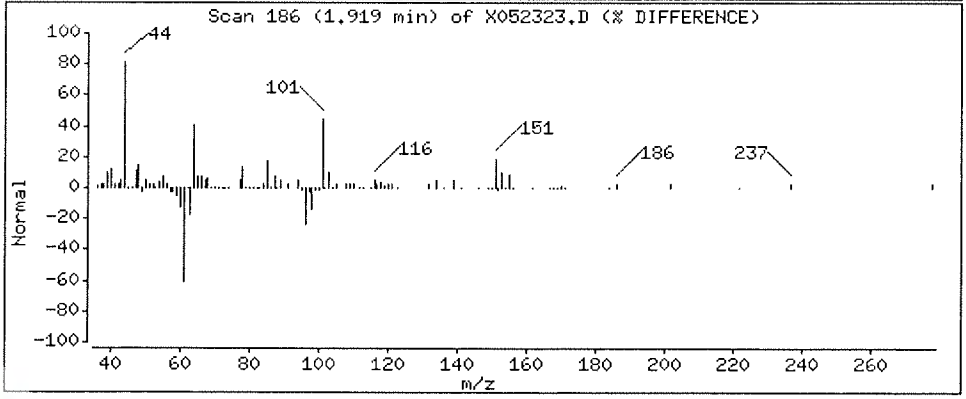












Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052323.D

Date : 23-MAY-2021 19:31

Client ID: HS21050972-12

Instrument: voa6.i

Sample Info: HS21050972-12;HS21050972-12;;;

Purge Volume: 5.0

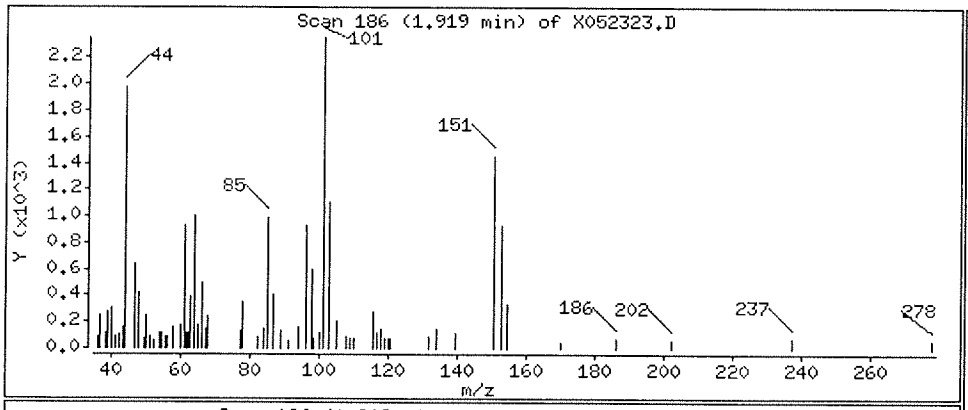
Operator: PC

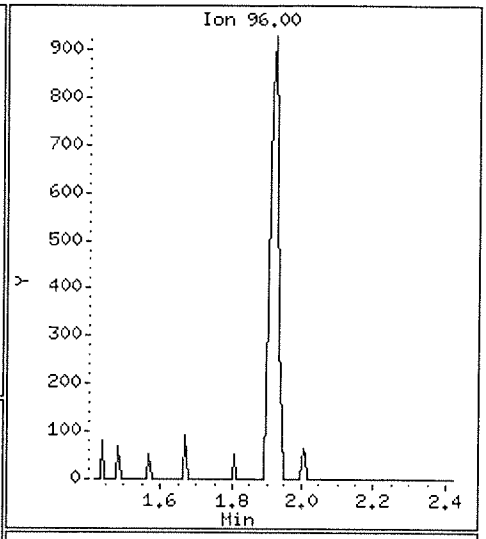
Column phase: DB624

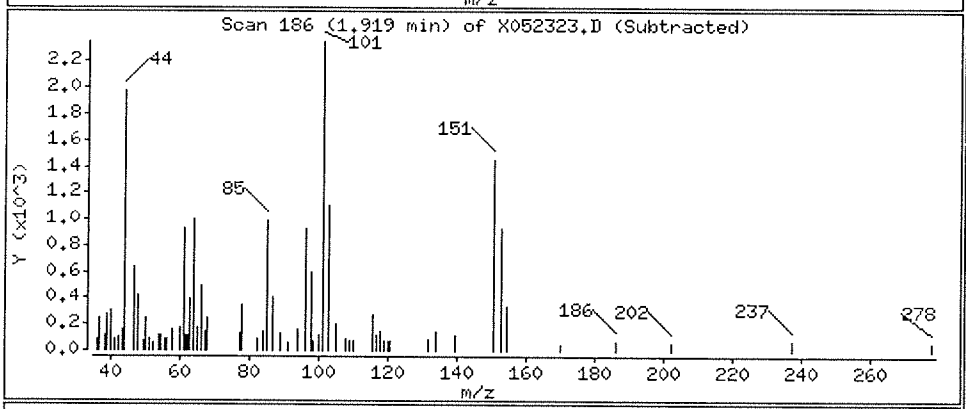
Column diameter: 0.18

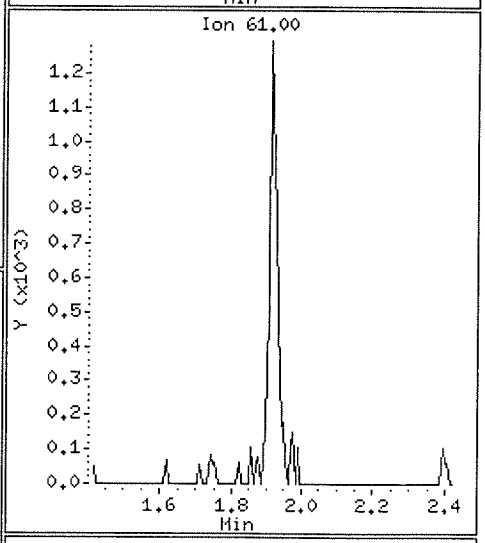
11 1,1-Dichloroethene

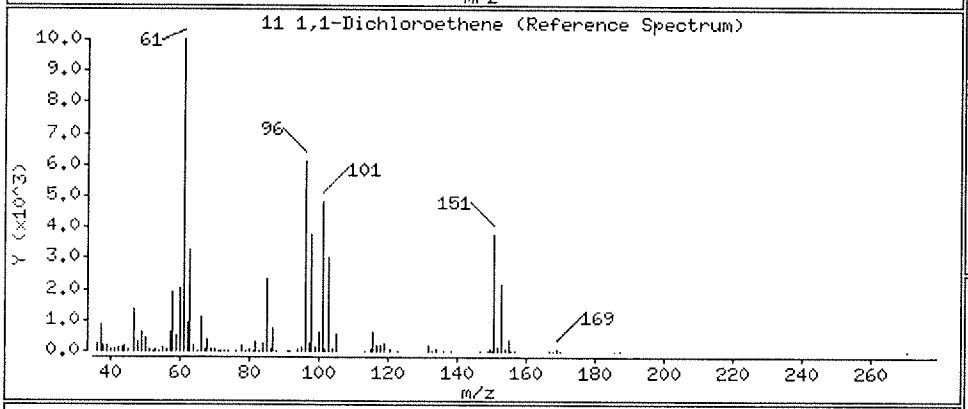
Concentration: 0.63 ug/l

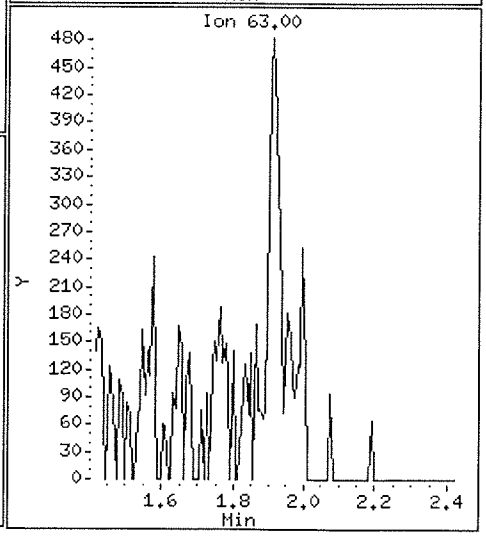


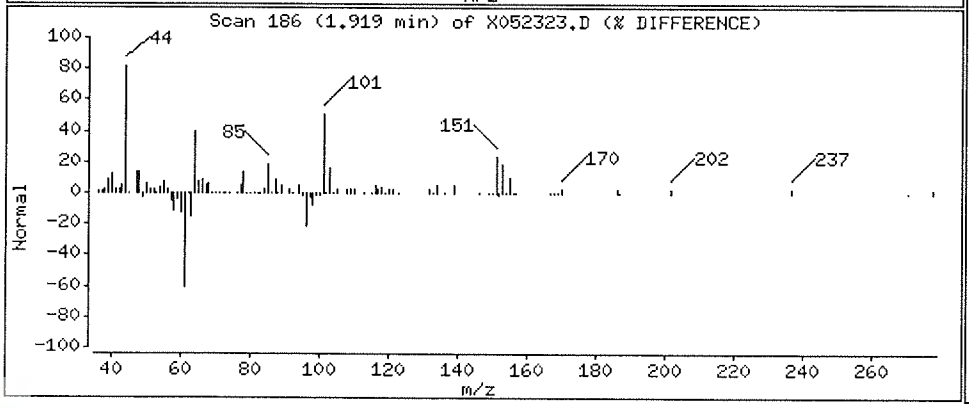












Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052323.D

Date : 23-MAY-2021 19:31

Client ID: HS21050972-12

Instrument: voa6.i

Sample Info: HS21050972-12;HS21050972-12;;;

Purge Volume: 5.0

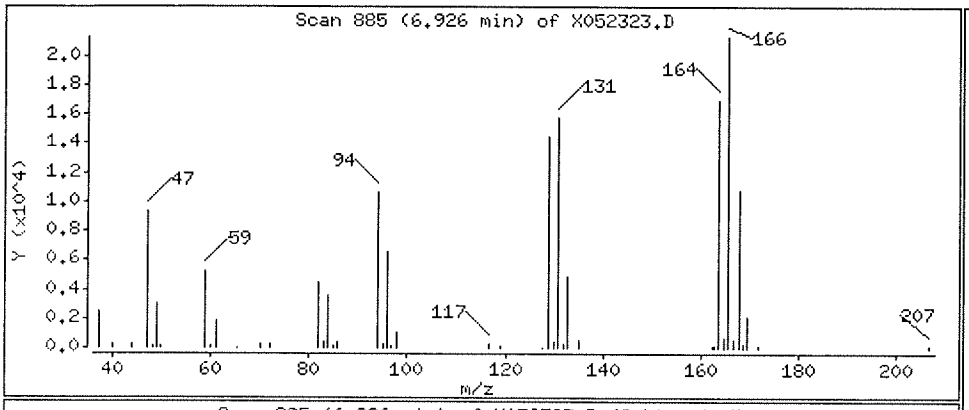
Operator: PC

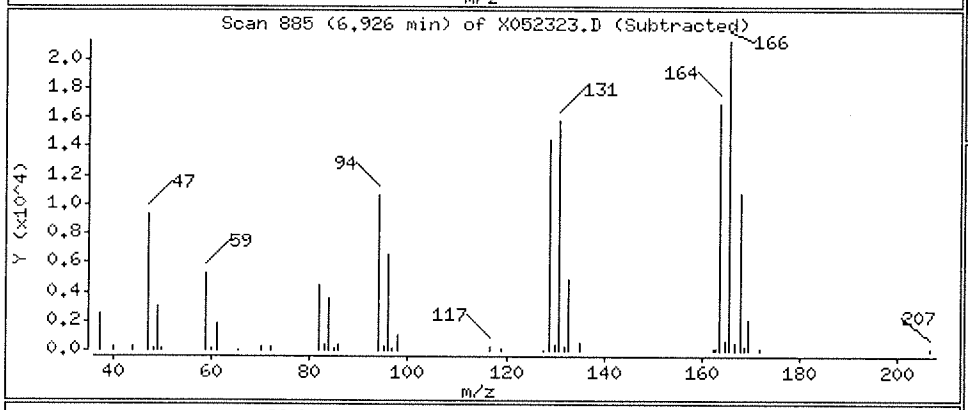
Column phase: DB624

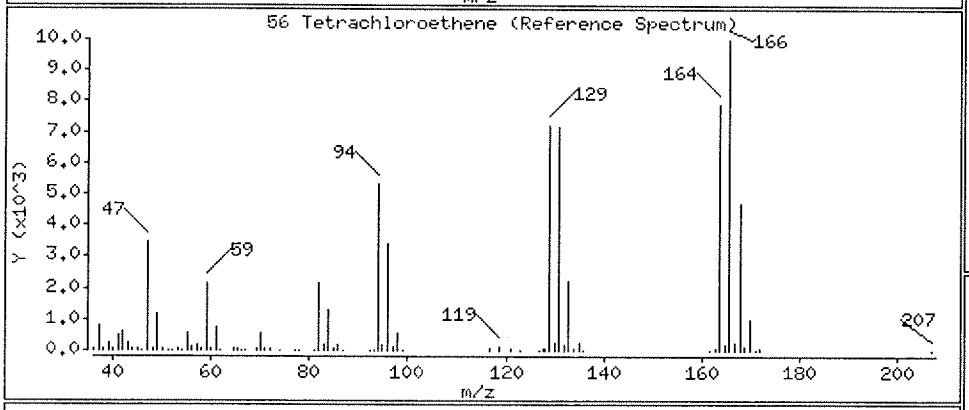
Column diameter: 0.18

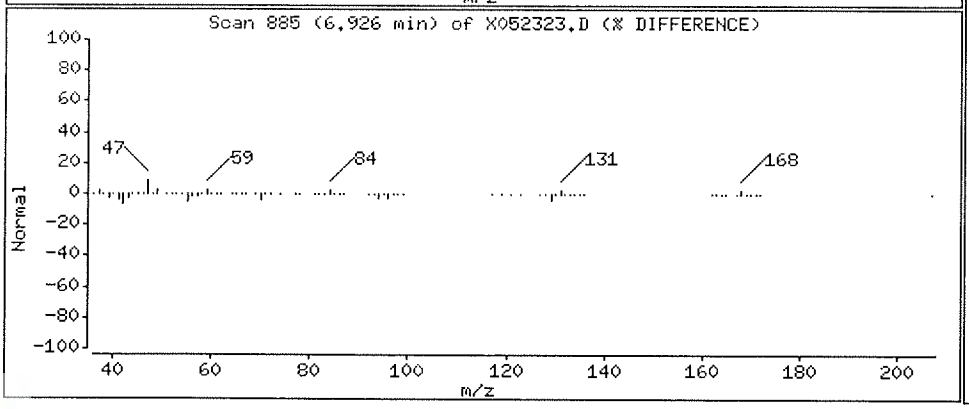
56 Tetrachloroethene

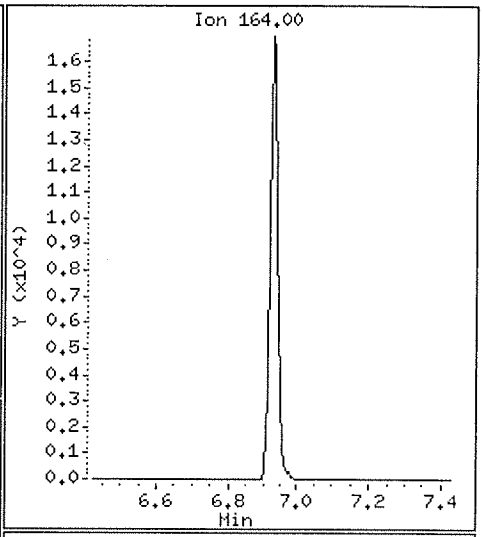
Concentration: 14.04 ug/l

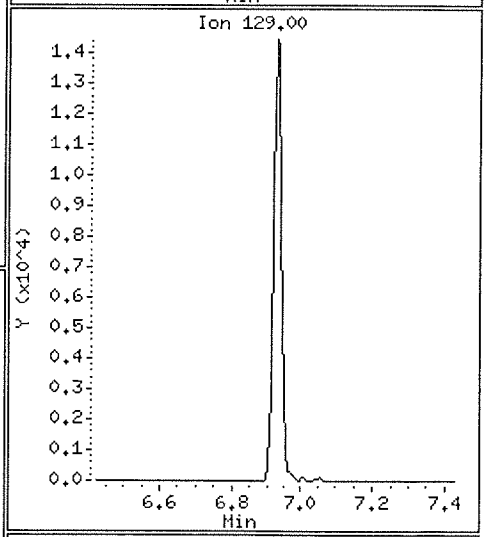


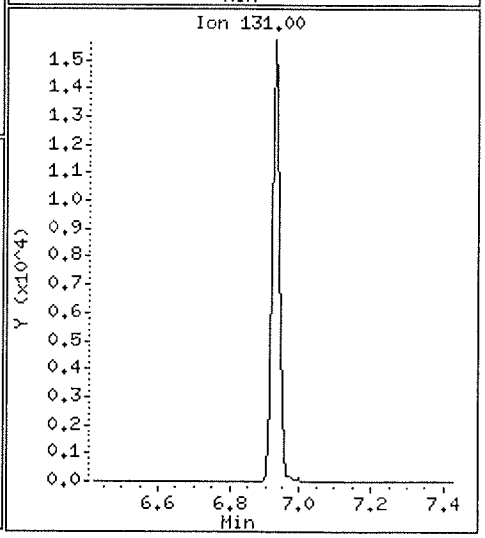












Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052323.D

Date : 23-MAY-2021 19:31

Client ID: HS21050972-12

Instrument: voa6.i

Sample Info: HS21050972-12;HS21050972-12;;;

Purge Volume: 5.0

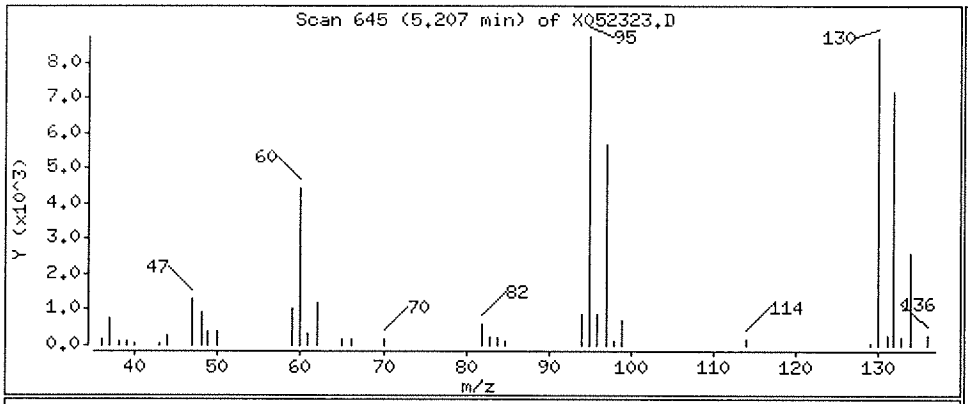
Operator: PC

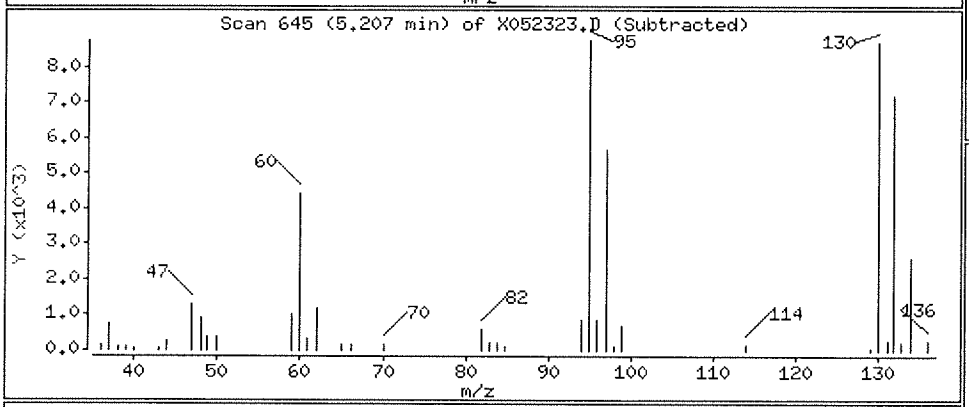
Column phase: DB624

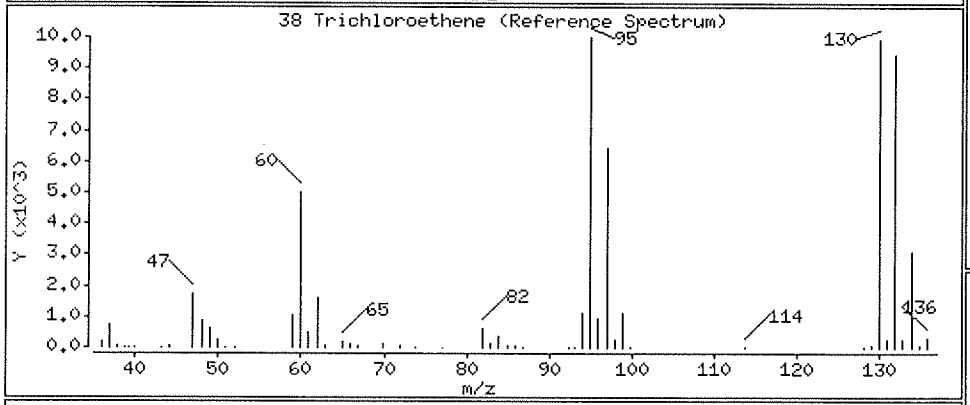
Column diameter: 0.18

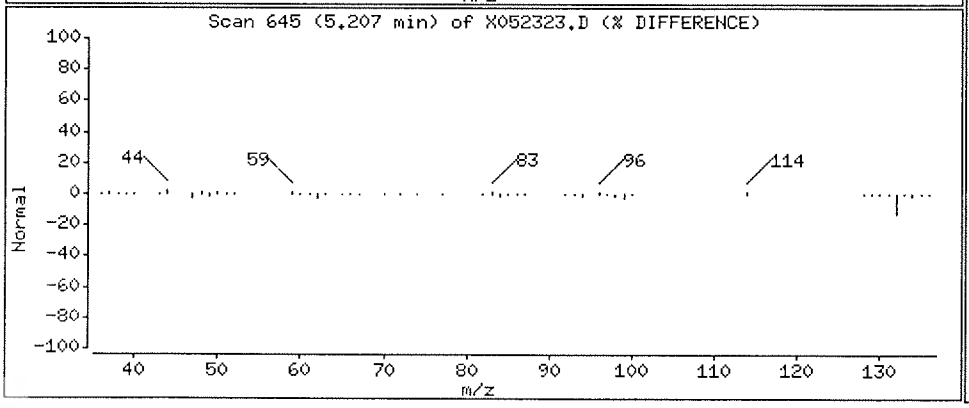
38 Trichloroethene

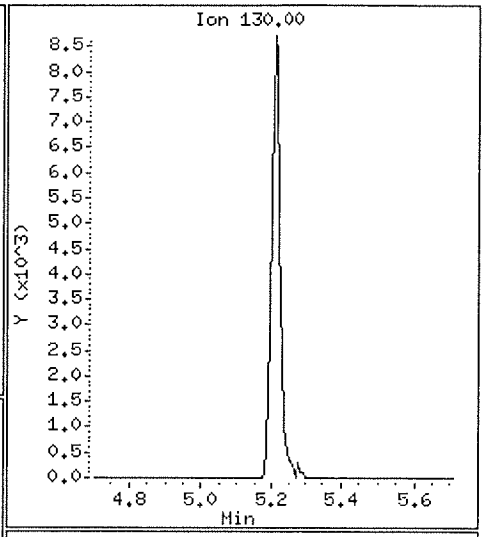
Concentration: 6.22 ug/l

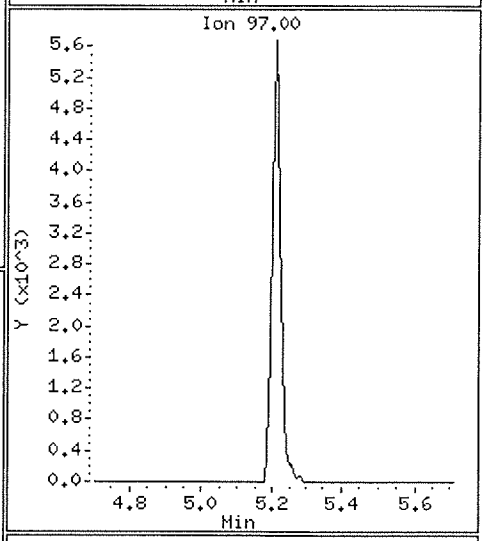


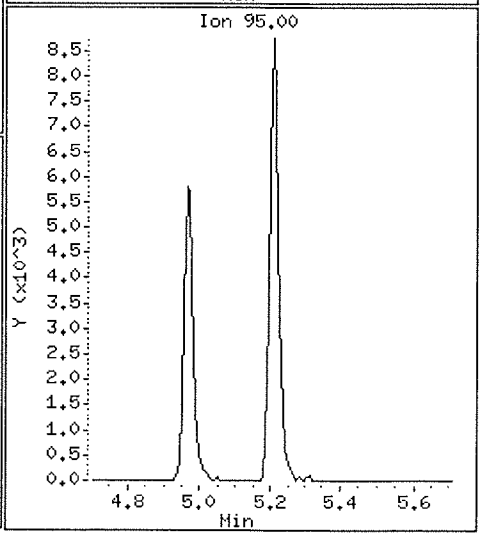












Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052324.D Page 1
Report Date: 22-Jun-2021 12:29

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210523.b\X052324.D
Lab Smp Id: HS21050972-13 Client Smp ID: HS21050972-13
Inj Date : 23-MAY-2021 19:52
Operator : PC Inst ID: voa6.i
Smp Info : HS21050972-13;HS21050972-13;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210523.b\8260W.m
Meth Date : 22-Jun-2021 12:26 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 23
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

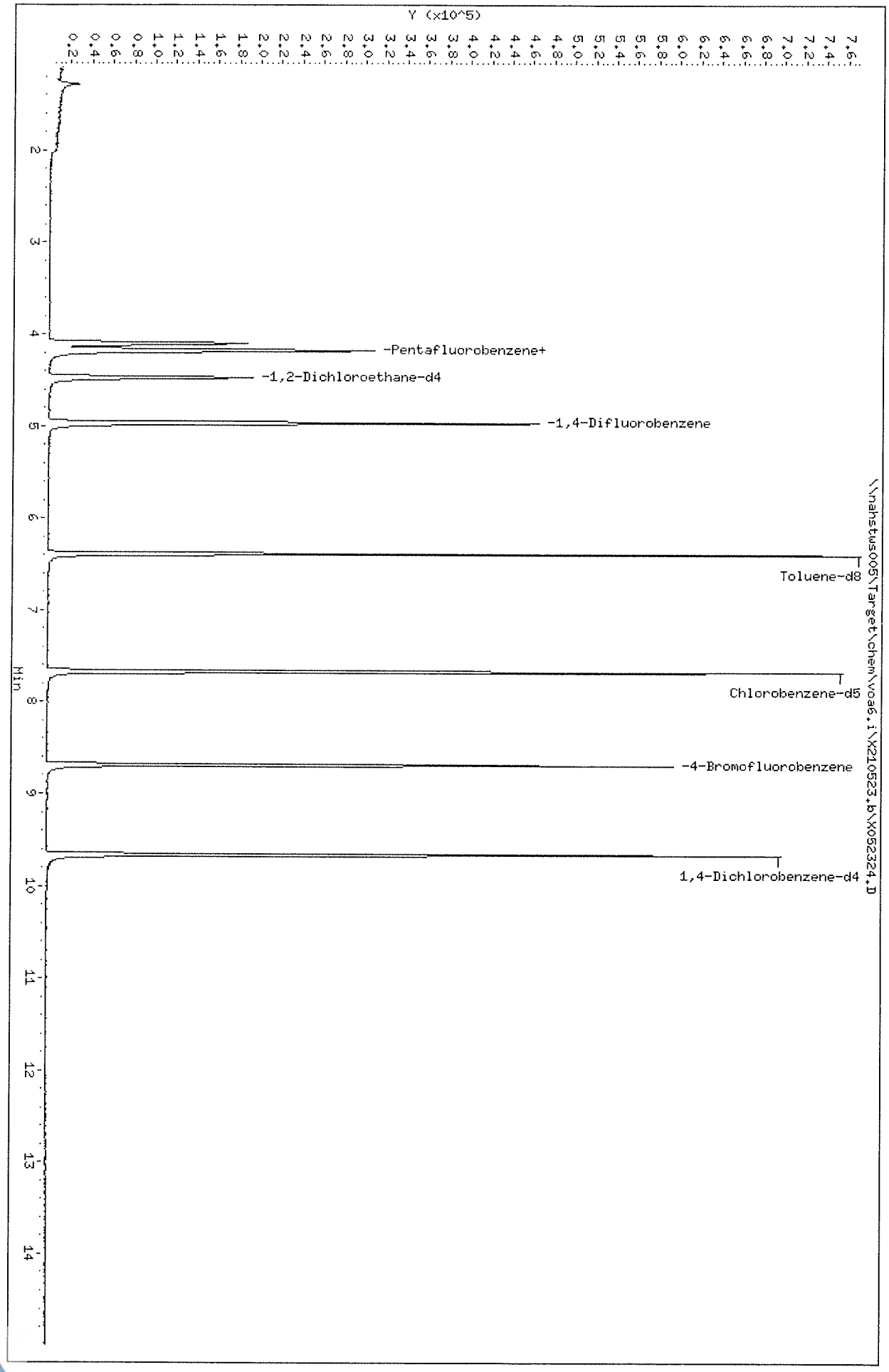
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	240707	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	382495	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	336355	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	152883	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	145372	46.3281	46.32
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	144846	45.6313	45.63
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	123924	46.2000	46.19
$ 48 Toluene-d8	98	6.388	6.389	(0.833)	446214	53.9241	53.92

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052324.D
Date : 23-MAY-2021 19:52
Client ID: HS21050972-13
Sample Info: HS21050972-13;HS21050972-13;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052325.D Page 1
Report Date: 22-Jun-2021 12:29

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210523.b\X052325.D
Lab Smp Id: HS21050972-14 Client Smp ID: HS21050972-14
Inj Date : 23-MAY-2021 20:13
Operator : PC Inst ID: voa6.i
Smp Info : HS21050972-14;HS21050972-14;;;
Misc Info : HS18090001;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X210523.b\8260W.m
Meth Date : 22-Jun-2021 12:26 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 24
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

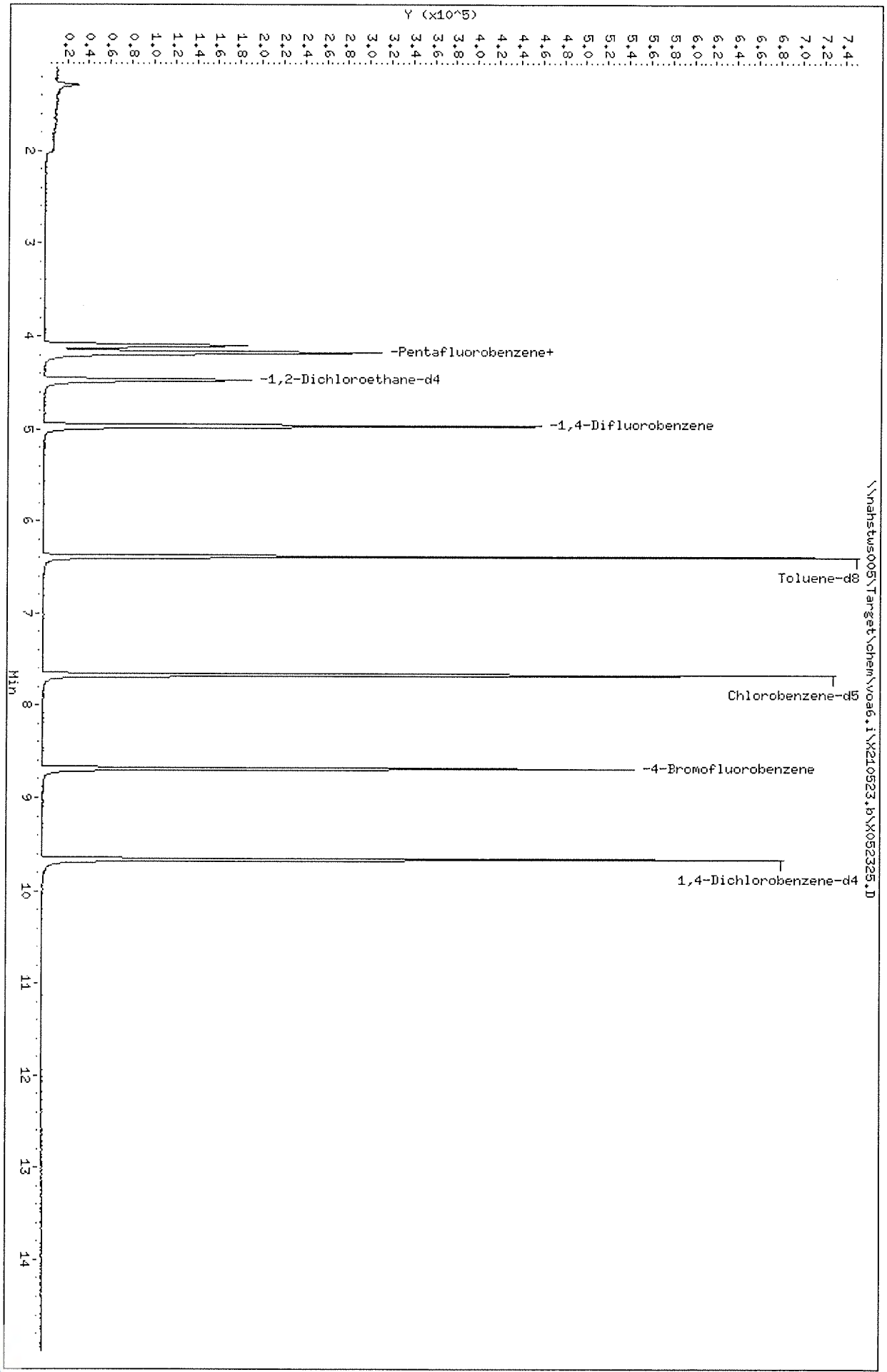
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	239766	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.963	(1.000)	372728	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	328454	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	150801	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.469	4.476	(1.068)	147385	47.1766	47.17
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	137008	44.2041	44.20
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	121900	45.6209	45.62
$ 48 Toluene-d8	98	6.388	6.389	(0.833)	436295	53.9924	53.99

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052325.D
Date : 23-MAY-2021 20:13
Client ID: HS21050972-14
Sample Info: HS21050972-14;HS21050972-14;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052326.D Page 1
Report Date: 22-Jun-2021 12:29

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210523.b\X052326.D
Lab Smp Id: HS21050972-15 Client Smp ID: HS21050972-15
Inj Date : 23-MAY-2021 20:34
Operator : PC Inst ID: voa6.i
Smp Info : HS21050972-15;HS21050972-15;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210523.b\8260W.m
Meth Date : 22-Jun-2021 12:26 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 25
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

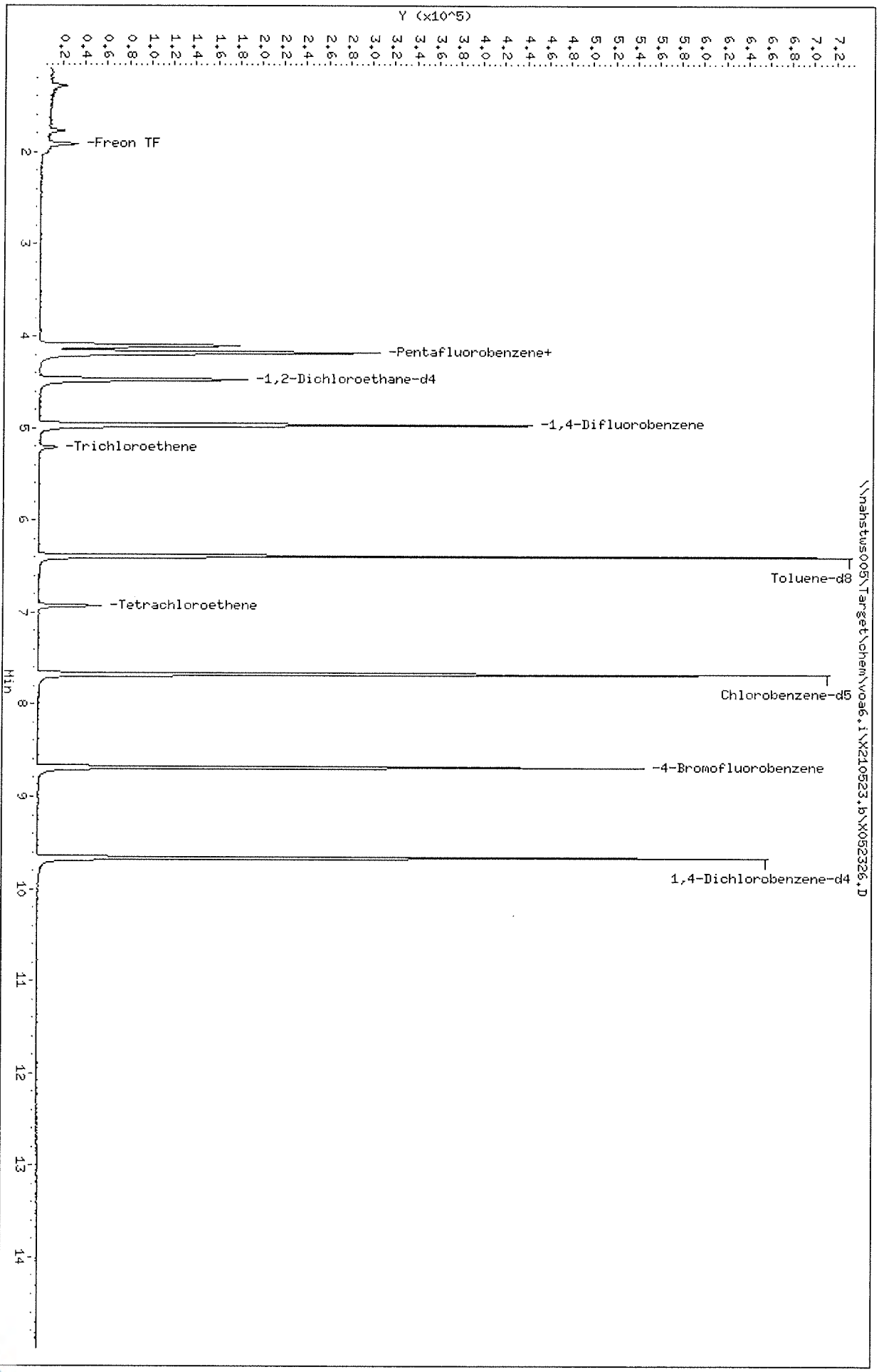
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	238663	50.0000	
*	36 1,4-Difluorobenzene	114	4.970	4.963	(1.000)	369182	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	322489	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	144012	50.0000	
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	143587	46.1463	46.14
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	137412	45.1519	45.15
$	30 Dibromofluoromethane	113	4.104	4.103	(0.981)	124939	46.9811	46.98
$	48 Toluene-d8	98	6.389	6.389	(0.833)	427817	53.9238	53.92
	138 Freon TF	101	1.919	1.919	(0.459)	8625	3.80916	3.80(a)
	56 Tetrachloroethene	164	6.933	6.926	(0.904)	10723	5.98393	5.98
	38 Trichloroethene	130	5.214	5.207	(1.049)	5087	2.08084	2.08(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).



Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052326.D
Date : 23-MAY-2021 20:34
Client ID: HS21050972-15
Sample Info: HS21050972-15;HS21050972-15;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052326.D

Date : 23-MAY-2021 20:34

Client ID: HS21050972-15

Instrument: voa6.i

Sample Info: HS21050972-15;HS21050972-15;;;

Purge Volume: 5.0

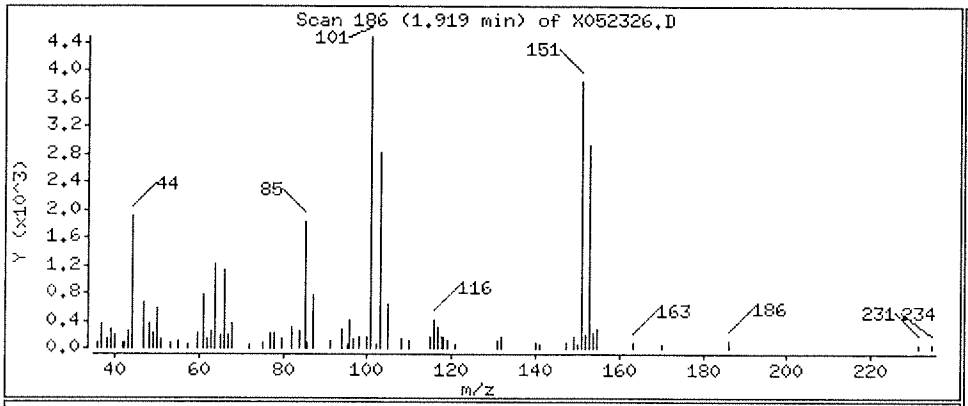
Operator: PC

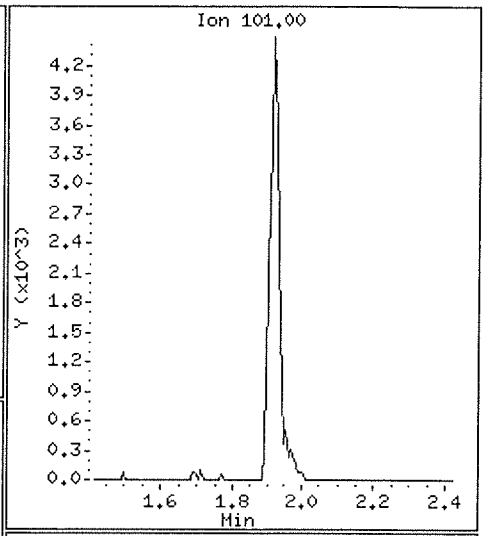
Column phase: DB624

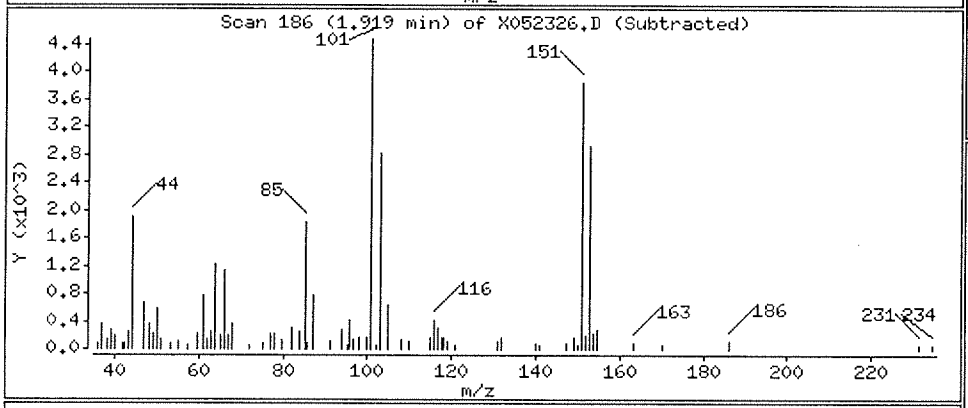
Column diameter: 0.18

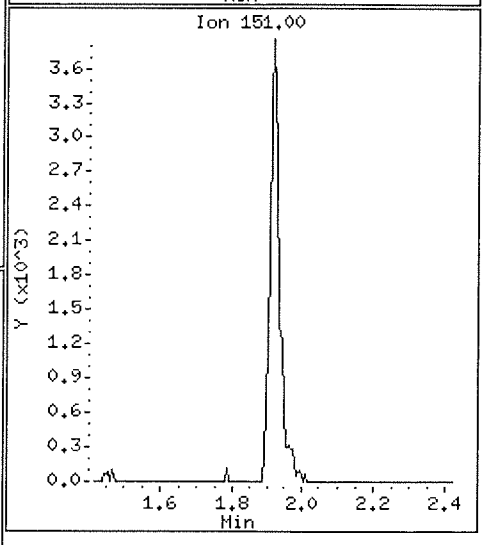
138 Freon TF

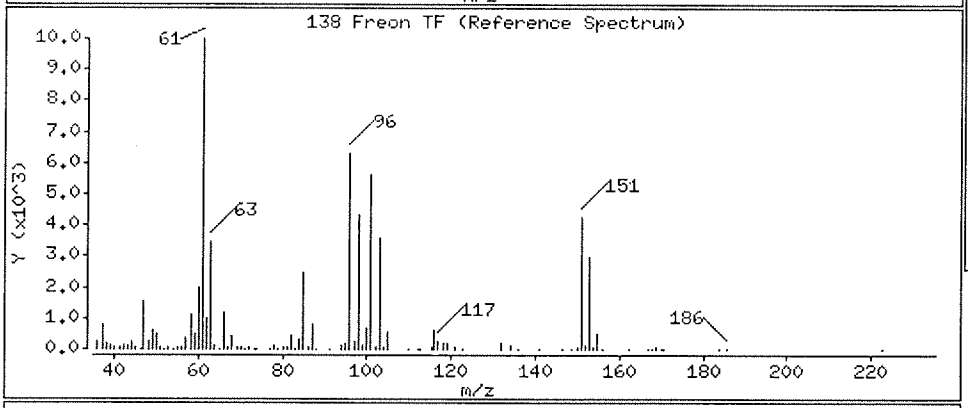
Concentration: 3.80 ug/l

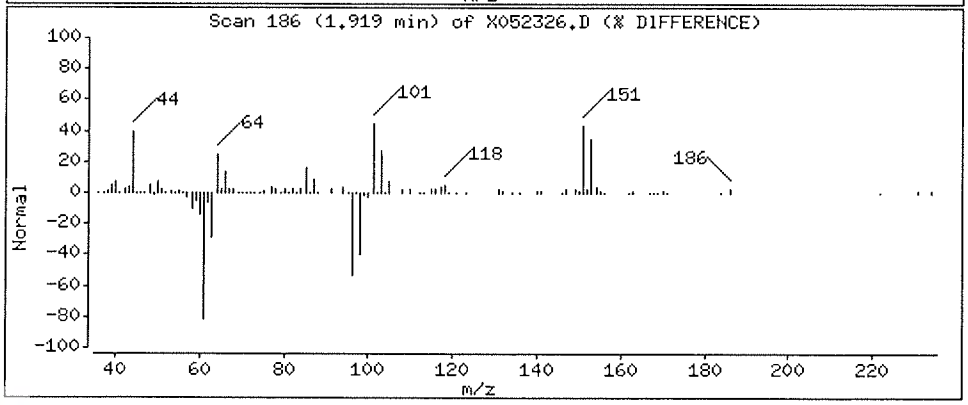












Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052326.D

Date : 23-MAY-2021 20:34

Client ID: HS21050972-15

Instrument: voa6.i

Sample Info: HS21050972-15;HS21050972-15;;;

Purge Volume: 5.0

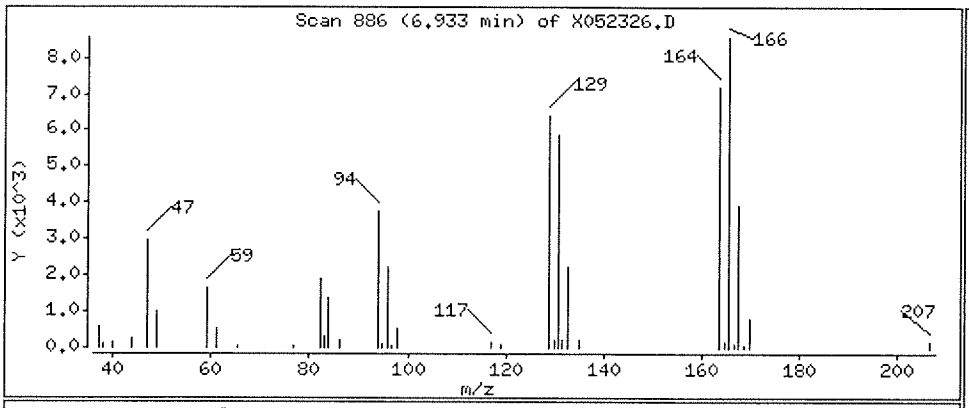
Operator: PC

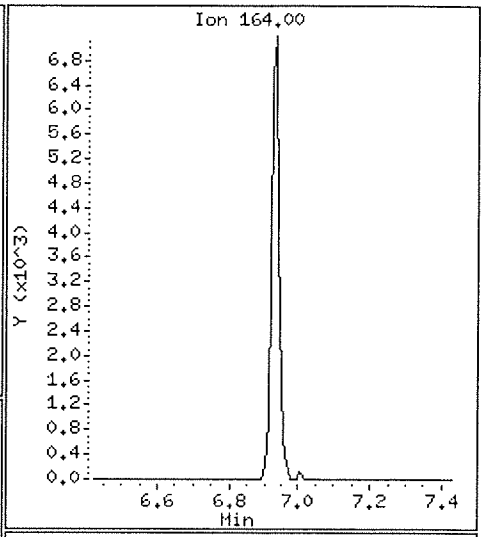
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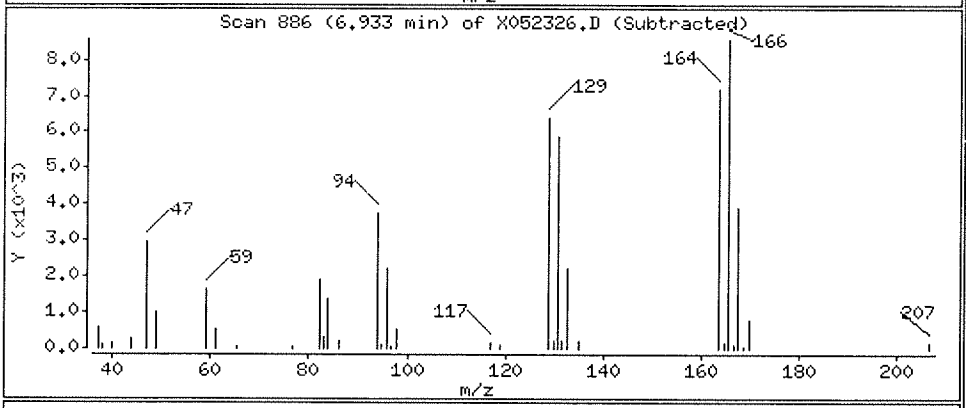
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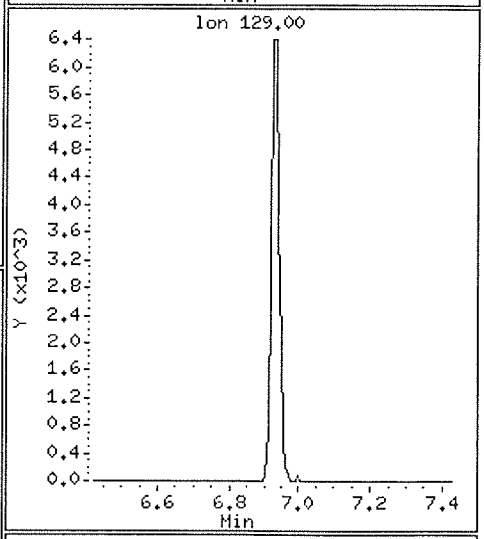
56 Tetrachloroethene

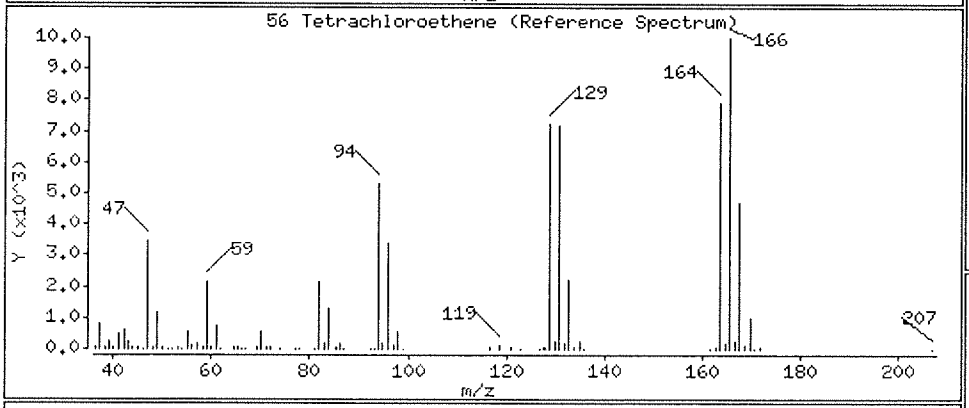
Concentration: 5.98 ug/l

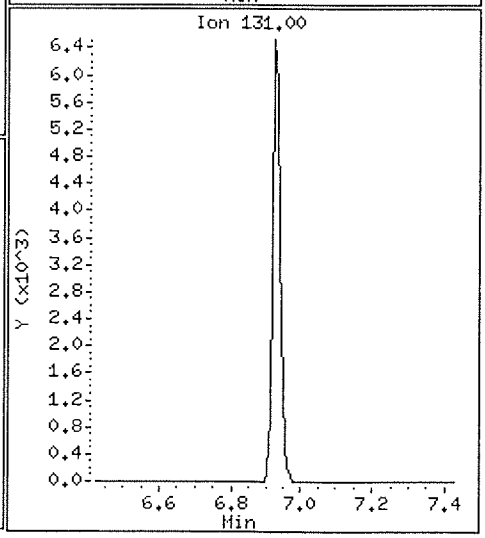


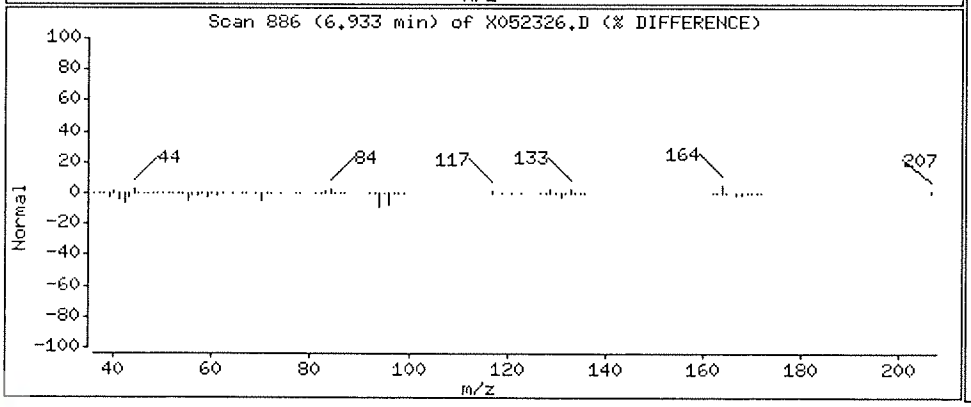












Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052326.D

Date : 23-MAY-2021 20:34

Client ID: HS21050972-15

Instrument: voa6.i

Sample Info: HS21050972-15;HS21050972-15;;;

Purge Volume: 5.0

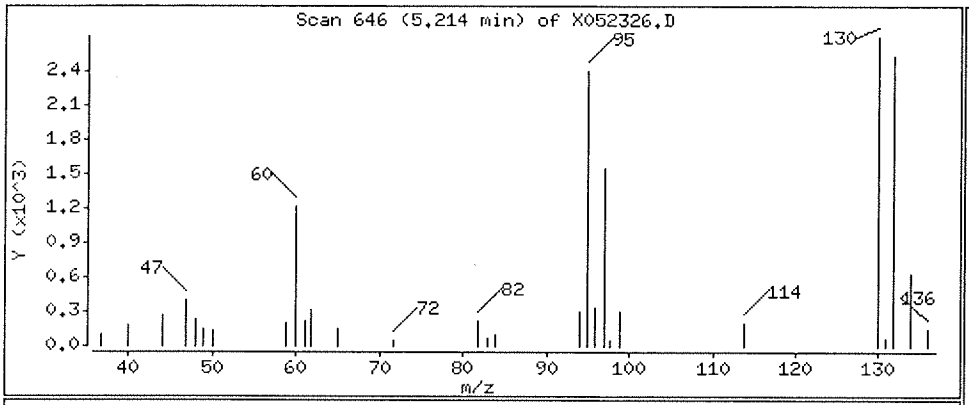
Operator: PC

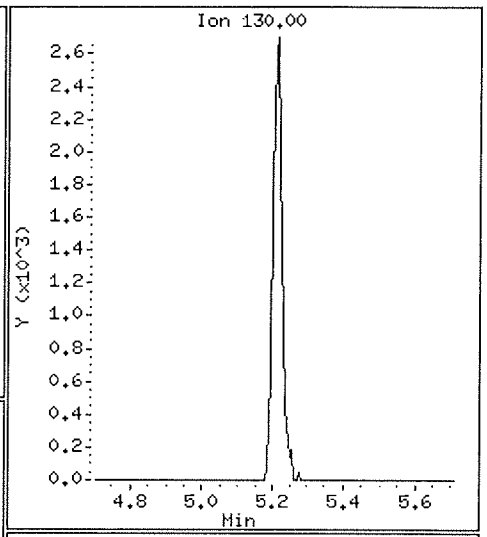
Column phase: DB624

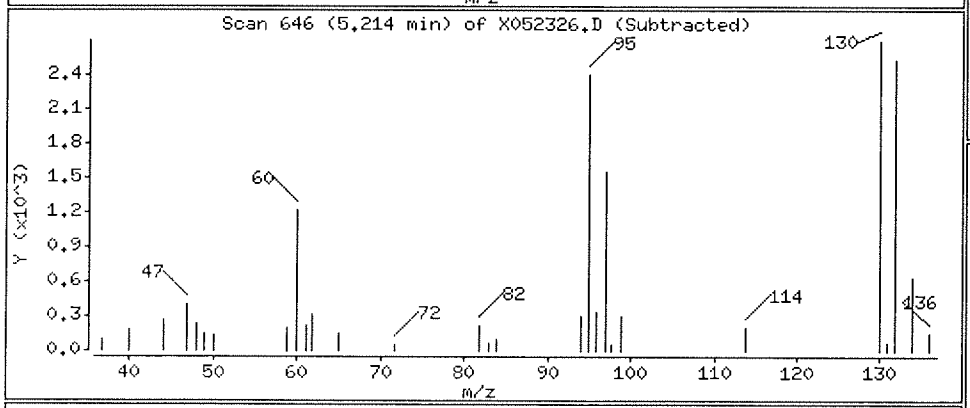
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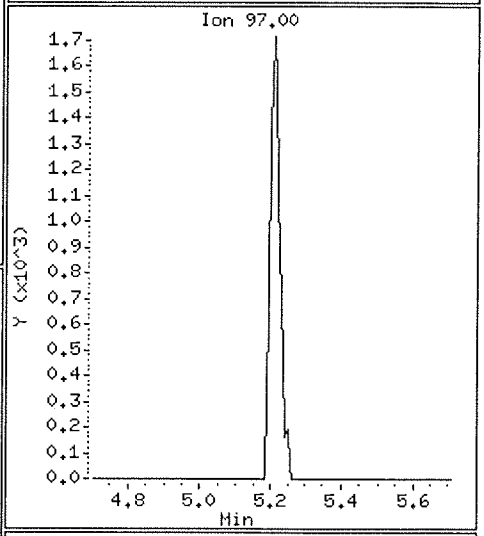
38 Trichloroethene

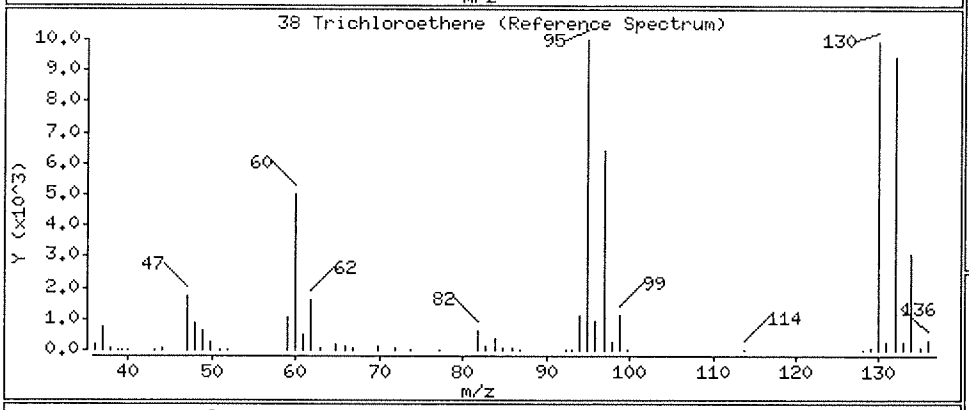
Concentration: 2.08 ug/l

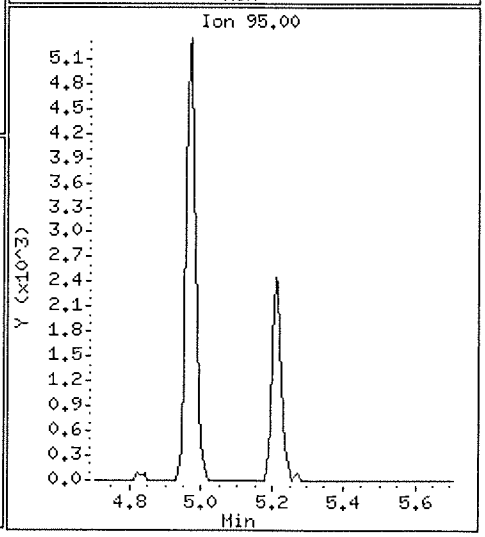


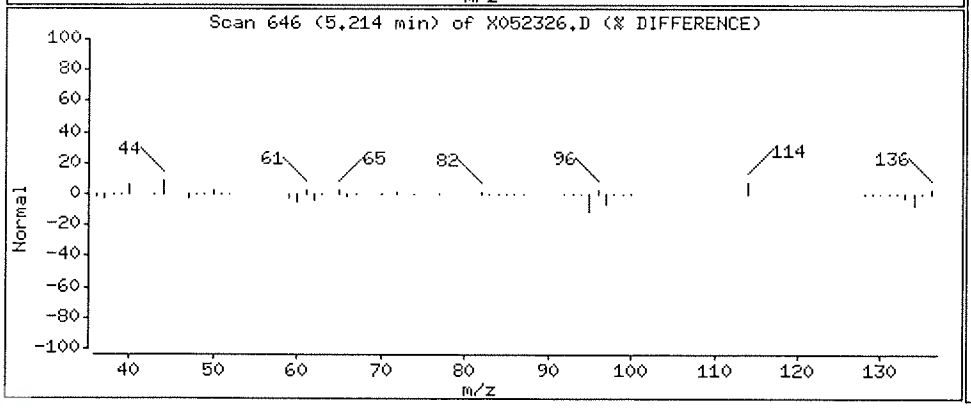












Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052327.D Page 1
Report Date: 22-Jun-2021 12:29

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210523.b\X052327.D
Lab Smp Id: HS21050972-16 Client Smp ID: HS21050972-16
Inj Date : 23-MAY-2021 20:55
Operator : PC Inst ID: voa6.i
Smp Info : HS21050972-16;HS21050972-16;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210523.b\8260W.m
Meth Date : 22-Jun-2021 12:26 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 26
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

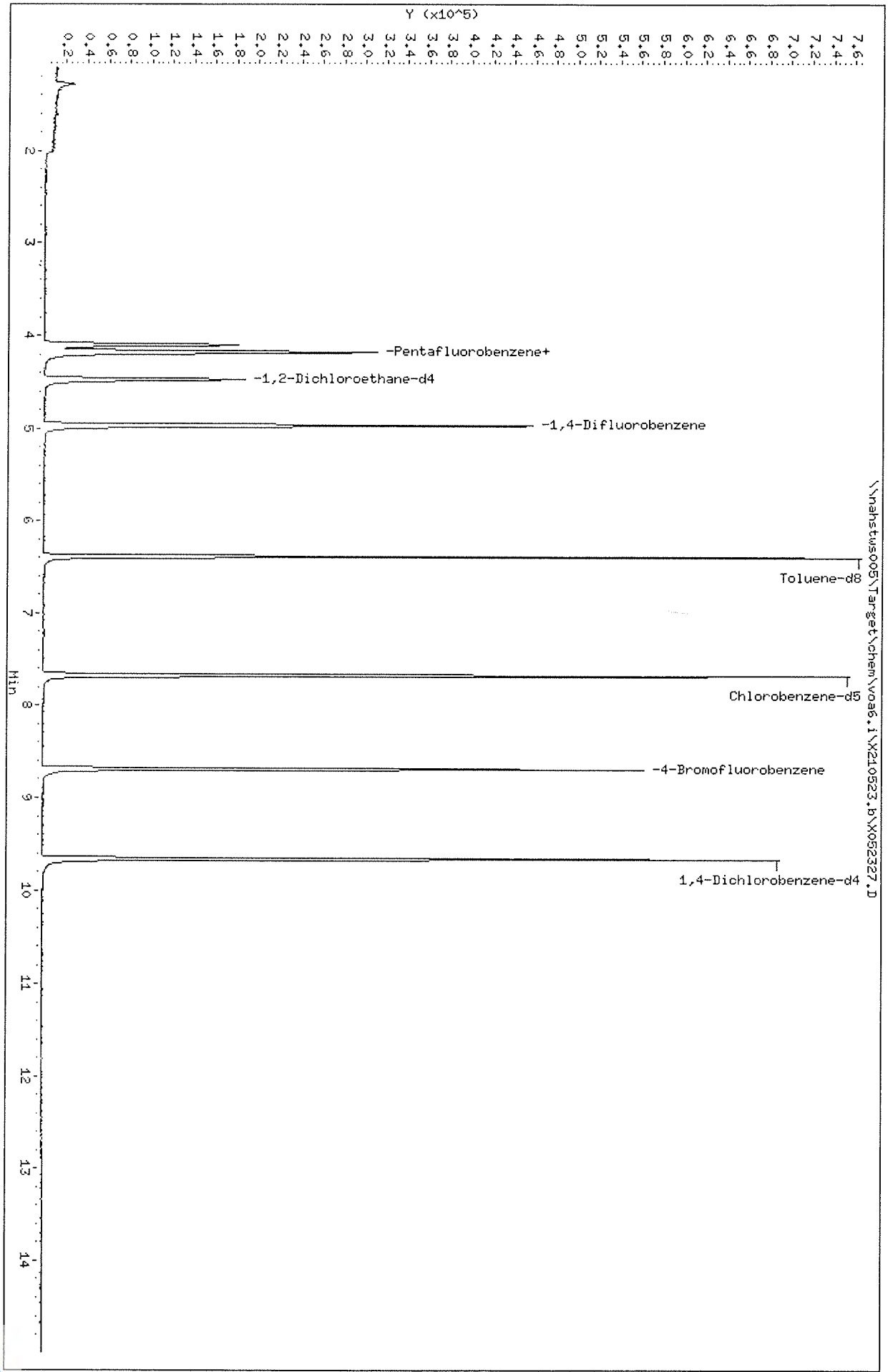
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	238499	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	369140	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	331623	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	152435	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	141188	45.3861	45.38
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	141973	45.3651	45.36
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	120898	45.4856	45.48
$ 48 Toluene-d8	98	6.388	6.389	(0.833)	438693	53.7745	53.77

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052327.D
Date : 23-MAY-2021 20:55
Client ID: HS21050972-16
Sample Info: HS21050972-16;HS21050972-16;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052328.D Page 1
Report Date: 22-Jun-2021 12:29

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210523.b\X052328.D
Lab Smp Id: HS21050972-17 Client Smp ID: HS21050972-17
Inj Date : 23-MAY-2021 21:16
Operator : PC Inst ID: voa6.i
Smp Info : HS21050972-17;HS21050972-17;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210523.b\8260W.m
Meth Date : 22-Jun-2021 12:26 devak.giga Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 27
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

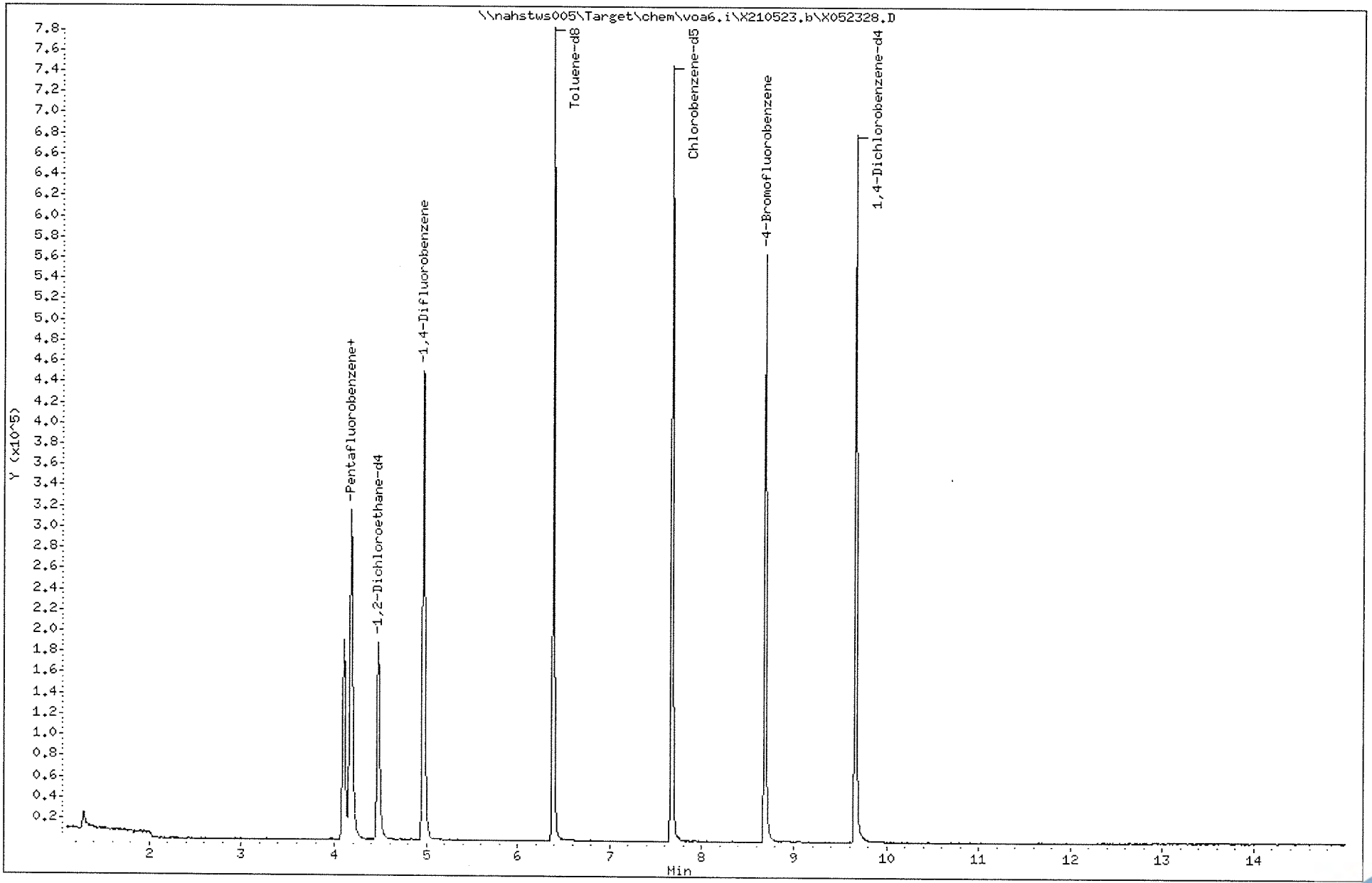
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	245510	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.963	(1.000)	374728	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	331444	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	154060	50.0000	
$ 35 1,2-Dichloroethane-d4	65	4.469	4.476	(1.069)	146227	45.6714	45.67
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	144162	46.0875	46.08
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	126008	46.0572	46.05
$ 48 Toluene-d8	98	6.388	6.389	(0.833)	439998	53.9600	53.96

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052328.D
Date : 23-MAY-2021 21:16
Client ID: HS21050972-17
Sample Info: HS21050972-17;HS21050972-17;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i

Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052331.D Page 1
Report Date: 22-Jun-2021 12:23

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210523.b\X052331.D
Lab Smp Id: CCV-END Client Smp ID: CCV-END
Inj Date : 23-MAY-2021 22:19
Operator : PC Inst ID: voa6.i
Smp Info : CCV-END;CCV-END;2;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210523.b\8260W.m
Meth Date : 22-Jun-2021 12:22 voa6.i Quant Type: ISTD
Cal Date : 18-MAY-2021 13:49 Cal File: X051808.D
Als bottle: 30 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

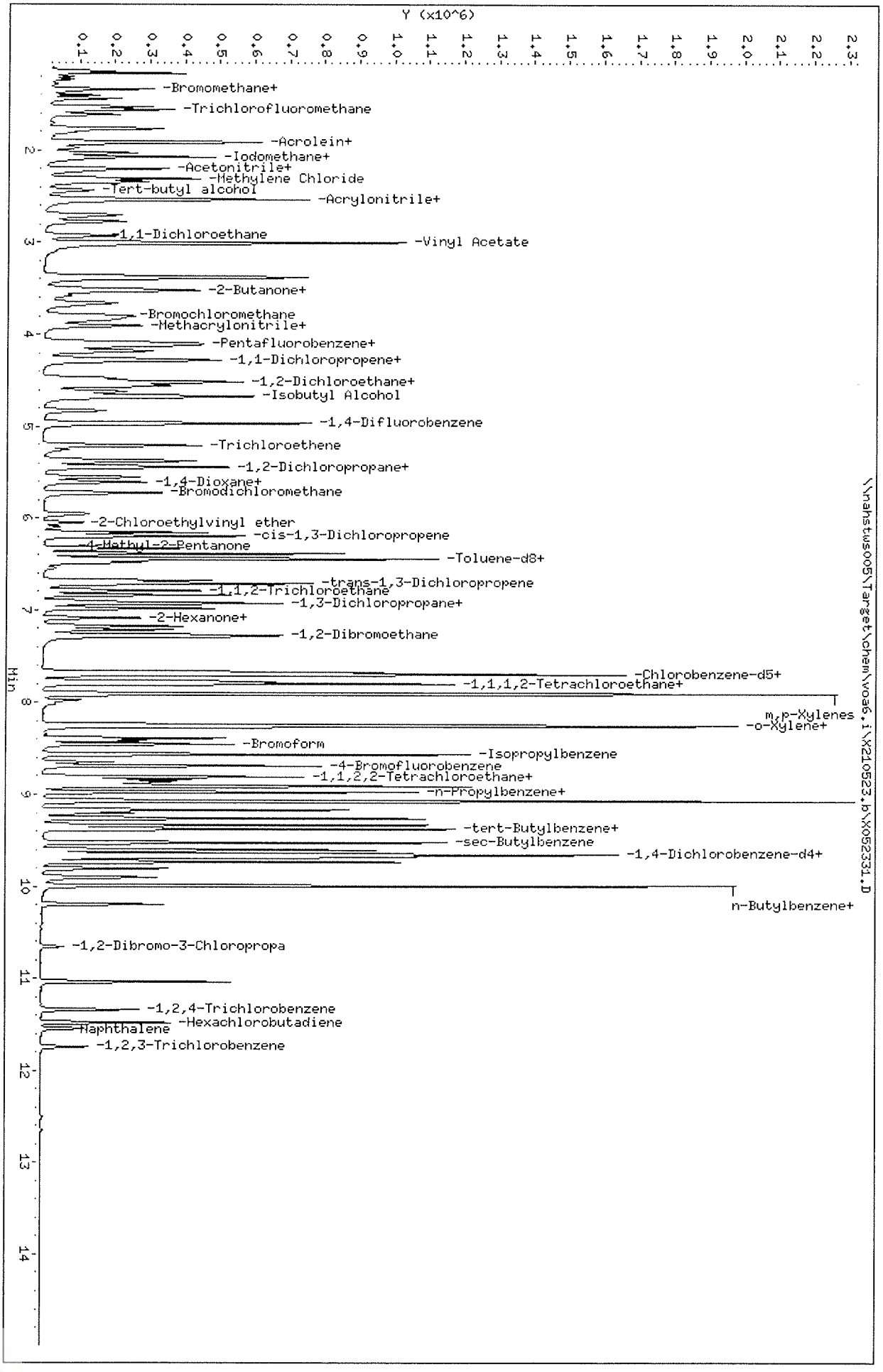
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1	Pentafluorobenzene	168	4.182	4.182	(1.000)	236386	50.0000	
* 36	1,4-Difluorobenzene	114	4.963	4.963	(1.000)	405141	50.0000	
* 47	Chlorobenzene-d5	117	7.670	7.670	(1.000)	395550	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	212891	50.0000	
$ 35	1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	158123	50.0000	51.44
$ 69	4-Bromofluorobenzene	95	8.688	8.688	(1.133)	190659	50.0000	51.06
$ 30	Dibromofluoromethane	113	4.103	4.103	(0.981)	134760	50.0000	51.18
$ 48	Toluene-d8	98	6.388	6.388	(0.833)	485141	50.0000	49.93
60	1,1,1,2-Tetrachloroethane	131	7.771	7.771	(1.013)	142448	50.0000	49.43
31	1,1,1-Trichloroethane	97	4.082	4.082	(0.976)	208208	50.0000	51.78
68	1,1,2,2-Tetrachloroethane	83	8.838	8.838	(0.915)	167121	50.0000	47.36
138	Freon TF	101	1.919	1.919	(0.459)	109455	50.0000	48.80
53	1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	112885	50.0000	49.12
22	1,1-Dichloroethane	63	2.921	2.921	(0.699)	215553	50.0000	49.24
11	1,1-Dichloroethene	96	1.911	1.911	(0.457)	114931	50.0000	48.61
32	1,1-Dichloropropene	75	4.282	4.282	(0.863)	167063	50.0000	48.13
93	1,2,3-Trichlorobenzene	180	11.739	11.739	(1.215)	36448	50.0000	36.37
71	1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	133210	50.0000	46.05(M)
90	1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	71011	50.0000	37.75
79	1,2,4-Trimethylbenzene	105	9.375	9.375	(0.970)	550666	50.0000	50.85
89	1,2-Dibromo-3-Chloropropane	155	10.657	10.657	(1.103)	10988	50.0000	38.66
57	1,2-Dibromoethane	107	7.262	7.262	(0.947)	140516	50.0000	50.88

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
88	1,2-Dichlorobenzene	146	9.991	9.991	(1.034)	280933	50.0000	47.08
33	1,2-Dichloroethane	62	4.555	4.555	(0.918)	203927	50.0000	51.19
42	1,2-Dichloropropane	63	5.436	5.436	(1.095)	134809	50.0000	49.51
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	544677	50.0000	51.25
83	1,3-Dichlorobenzene	146	9.604	9.604	(0.994)	305076	50.0000	49.87
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	221542	50.0000	49.25
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.002)	307956	50.0000	49.24
26	2,2-Dichloropropane	77	3.516	3.516	(0.841)	177898	50.0000	45.42
24	2-Butanone	43	3.580	3.580	(0.856)	80691	100.000	92.47
76	2-Chlorotoluene	91	8.974	8.974	(0.929)	448887	50.0000	47.30
52	2-Hexanone	43	7.090	7.090	(0.924)	158250	100.000	94.33
77	4-Chlorotoluene	91	9.067	9.067	(0.938)	555697	50.0000	50.22
82	p-Isopropyltoluene	119	9.647	9.647	(0.999)	537568	50.0000	51.14
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	237221	100.000	94.16
10	Acetone	43	1.976	1.976	(0.473)	74538	100.000	126.01
37	Benzene	78	4.512	4.512	(0.909)	505074	50.0000	50.39
74	Bromobenzene	156	8.802	8.802	(0.911)	174154	50.0000	49.07
29	Bromochloromethane	128	3.795	3.795	(0.908)	72147	50.0000	50.08
39	Bromodichloromethane	83	5.722	5.722	(1.153)	194420	50.0000	49.66
66	Bromoform	173	8.408	8.408	(1.096)	96318	50.0000	50.35
6	Bromomethane	94	1.338	1.338	(0.320)	123483	50.0000	49.69
19	Carbon Disulfide	76	2.069	2.069	(0.495)	551741	100.000	99.06
34	Carbon Tetrachloride	117	4.268	4.268	(0.860)	174131	50.0000	49.31
59	Chlorobenzene	112	7.692	7.692	(1.003)	401404	50.0000	51.75
7	Chloroethane	64	1.403	1.403	(0.336)	85723	50.0000	47.90
28	Chloroform	83	3.910	3.910	(0.935)	246737	50.0000	49.12
3	Chloromethane	50	1.073	1.073	(0.257)	122694	50.0000	48.13
27	cis-1,2-Dichloroethene	96	3.523	3.523	(0.842)	133863	50.0000	49.13
46	cis-1,3-Dichloropropene	75	6.152	6.152	(1.240)	222562	50.0000	50.10
55	Dibromochloromethane	129	7.176	7.176	(0.936)	157062	50.0000	50.80
44	Dibromomethane	93	5.550	5.550	(1.118)	94781	50.0000	48.56
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	135847	50.0000	45.84
61	Ethylbenzene	106	7.799	7.799	(1.017)	202330	50.0000	52.78
91	Hexachlorobutadiene	225	11.481	11.481	(1.188)	54194	50.0000	42.90
67	Isopropylbenzene	105	8.559	8.559	(1.116)	639220	50.0000	54.56
62	m,p-Xylenes	106	7.907	7.907	(1.031)	527152	100.000	106.72
17	Methylene Chloride	84	2.305	2.305	(0.551)	114395	50.0000	48.25
87	n-Butylbenzene	91	9.991	9.991	(1.034)	501904	50.0000	50.20
73	n-Propylbenzene	91	8.910	8.910	(0.922)	762989	50.0000	50.60
92	Naphthalene	128	11.546	11.546	(1.195)	85164	50.0000	31.60
63	o-Xylene	106	8.243	8.243	(1.075)	251114	50.0000	52.26
81	sec-Butylbenzene	105	9.519	9.519	(0.985)	642688	50.0000	51.50
64	Styrene	104	8.258	8.258	(1.077)	446099	50.0000	49.51
78	tert-Butylbenzene	119	9.339	9.339	(0.967)	452115	50.0000	50.13
56	Tetrachloroethene	164	6.925	6.925	(0.903)	117112	50.0000	53.28
60	Toluene	91	6.446	6.446	(0.840)	585945	50.0000	51.34
20	trans-1,2-Dichloroethene	96	2.527	2.527	(0.604)	112292	50.0000	49.37
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	205833	50.0000	52.97
38	Trichloroethene	130	5.206	5.206	(1.049)	135050	50.0000	50.33
8	Trichlorofluoromethane	101	1.560	1.560	(0.373)	219709	50.0000	48.35
5	Vinyl Chloride	62	1.145	1.145	(0.274)	132735	50.0000	46.50

QC Flag Legend

M - Compound response manually integrated.

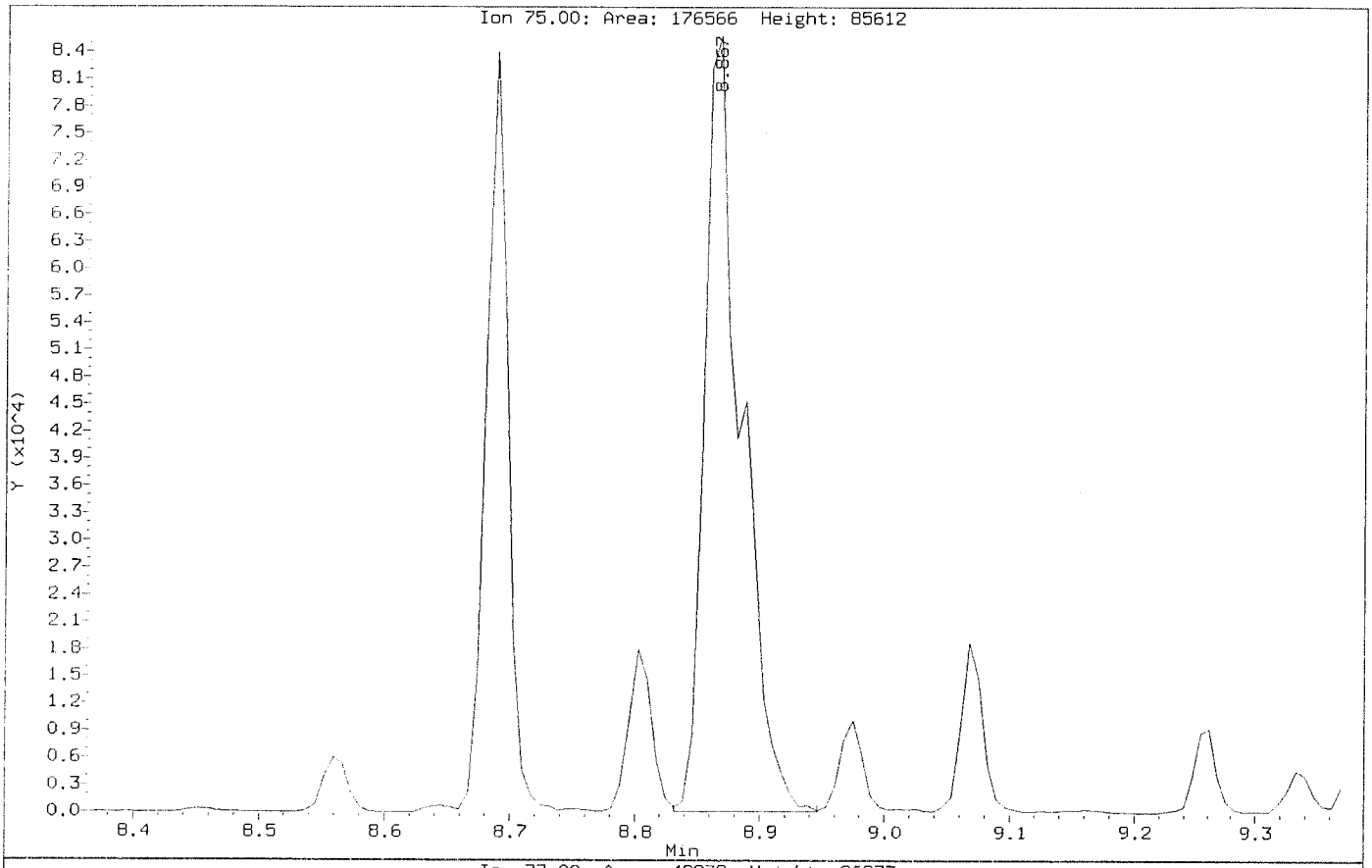


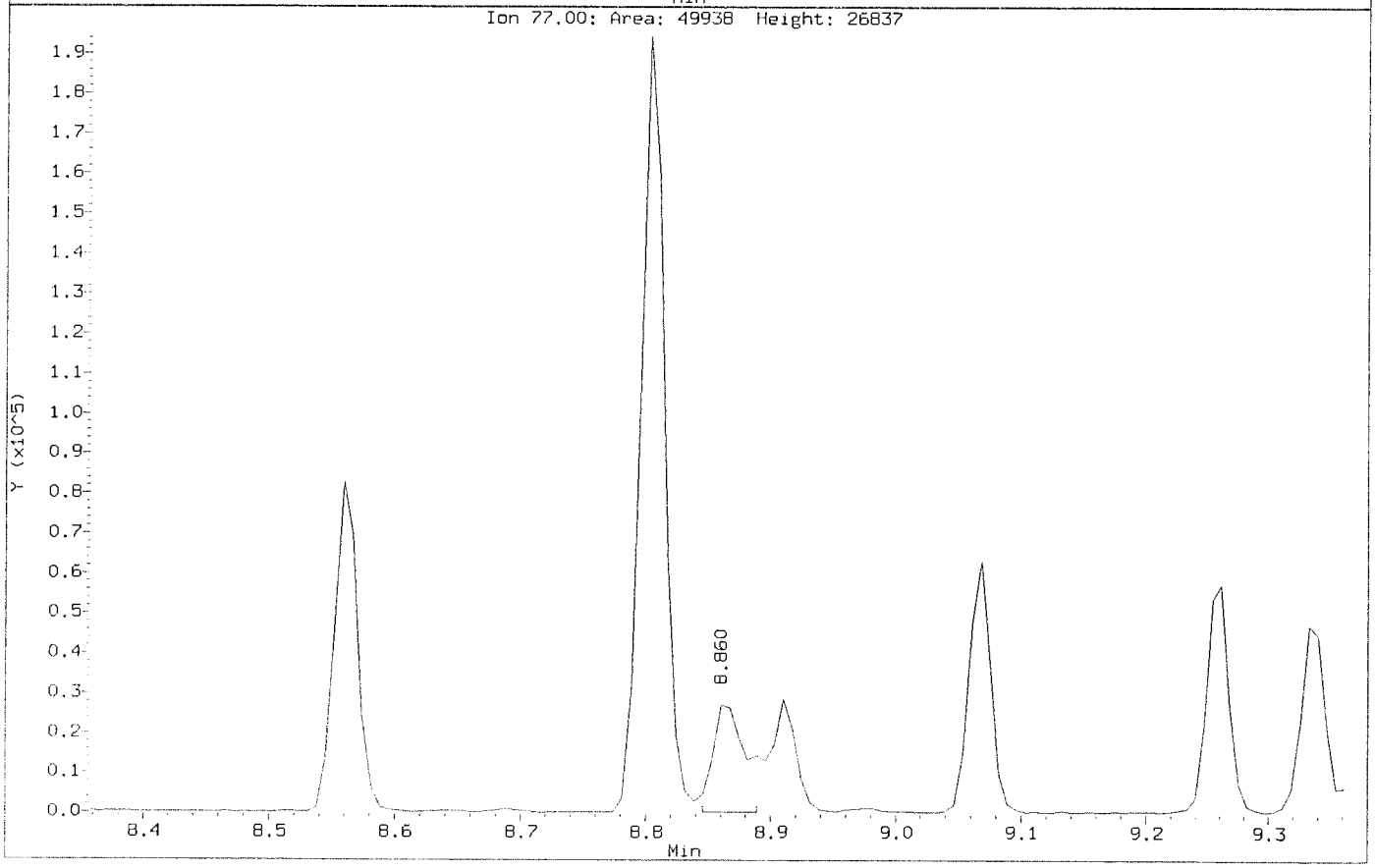
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Date : 23-MAY-2021 22:19
Client ID: CCV-END
Sample Info: CCV-END;CCV-END;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\Before\X052331.D
Injection Date: 23-MAY-2021 22:19
Instrument: voa6.i
Client Sample ID: CCV-END

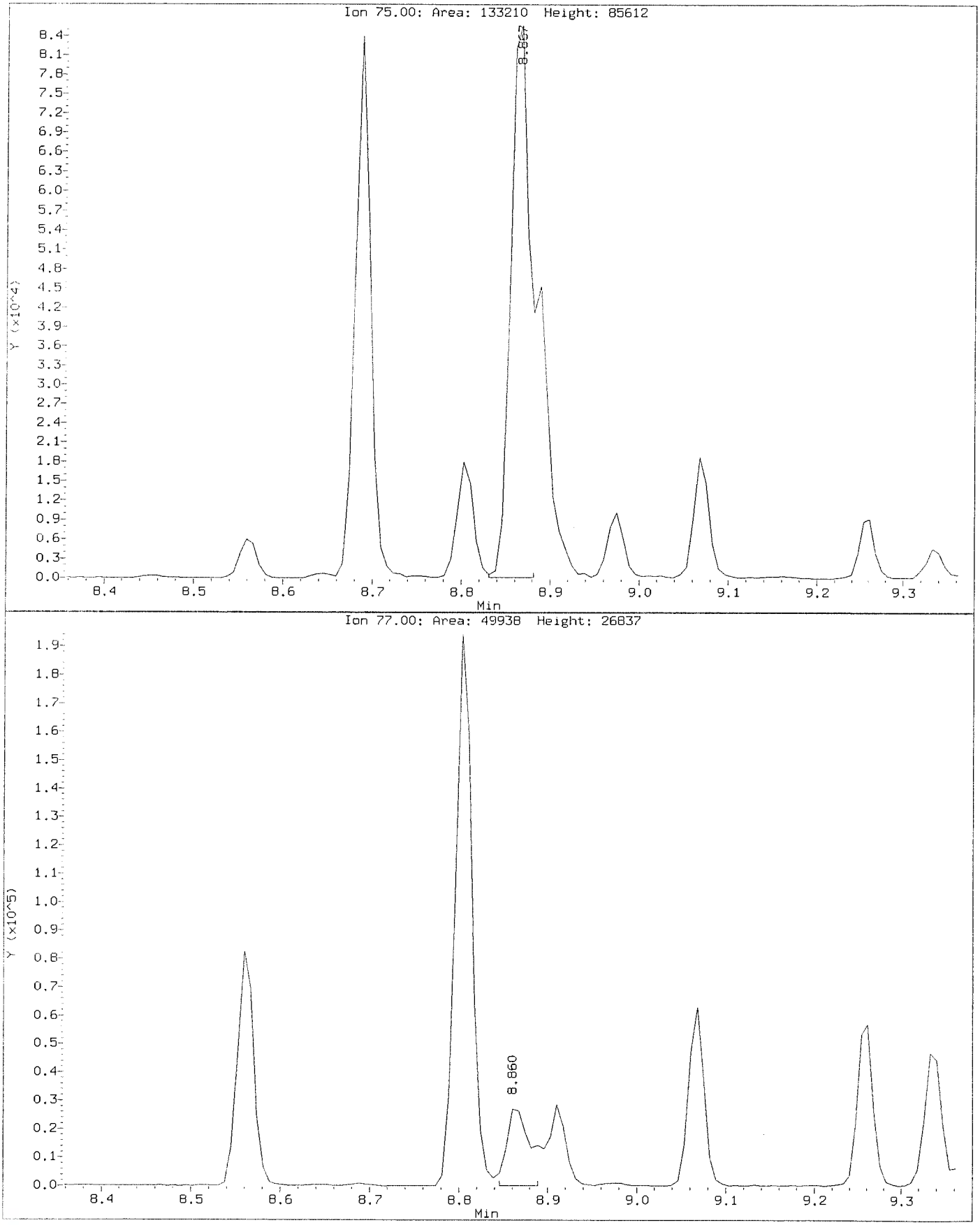
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





Data File: \\nahstws005\Target\chem\voa6.i\X210523.b\X052331.D
Injection Date: 23-MAY-2021 22:19
Instrument: voa6.i
Client Sample ID: CCV-END

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



HS21050972 Wet Chem Raw Data (9056_anions_W)

ALS WO# HS21050972

Sequence: 052021
Last Update Operator: alshs.nouser

CD	Name	Comment	Type	Position	Dilution	Level	Instrument Method	Processing Method
	STD1		Calibration	BB1	1.00	1	Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	STD2		Calibration	BB2	1.00	2	Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	STD3		Calibration	BB3	1.00	3	Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	STD4		Calibration	BB4	1.00	4	Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	STD5		Calibration	BB5	1.00	5	Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	STD6		Calibration	BB6	1.00	6	Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	ICV		Unknown	BB7	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	ICB		Unknown	BB8	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	CCV		Unknown	R1	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	CCB		Unknown	R4	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	MBLK		Unknown	R5	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	LCS		Unknown	R2	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	CCV1		Unknown	R3	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	CCB		Unknown	R8	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	HS21050972-08		Unknown	GB1	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	HS21050972-08MS		Unknown	GB2	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	HS21050972-08MSD		Unknown	GB3	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	HS21050972-09		Unknown	GB4	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	HS21050972-10		Unknown	GB5	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	HS21050972-11		Unknown	GB6	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	CCV		Unknown	R1	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO
	CCB		Unknown	R4	1.00		Anions Program ISO37mM 150mm short 0.4	Anions Processing Method ISO

Sequence: 052021
Last Update Operator: alshs.nouser

CD	Name	Volume	Status	Inject Time
	STD1	5.0	Finished	5/5/2021 6:12:32 PM -05:00
	STD2	5.0	Finished	5/5/2021 6:20:08 PM -05:00
	STD3	5.0	Finished	5/5/2021 6:27:33 PM -05:00
	STD4	5.0	Finished	5/5/2021 6:34:56 PM -05:00
	STD5	5.0	Finished	5/5/2021 6:42:20 PM -05:00
	STD6	5.0	Finished	5/5/2021 6:49:43 PM -05:00
	ICV	5.0	Finished	5/5/2021 6:57:07 PM -05:00
	ICB	5.0	Finished	5/5/2021 7:14:09 PM -05:00
	CCV	5.0	Finished	5/20/2021 9:25:55 AM -05:00
	CCB	5.0	Finished	5/20/2021 9:33:19 AM -05:00
	MBLK	5.0	Finished	5/20/2021 9:40:43 AM -05:00
	LCS	5.0	Finished	5/20/2021 9:48:07 AM -05:00
	CCV1	5.0	Finished	5/20/2021 1:51:22 PM -05:00
	CCB	5.0	Finished	5/20/2021 2:00:45 PM -05:00
	HS21050972-08	5.0	Finished	5/20/2021 2:08:11 PM -05:00
	HS21050972-08MS	5.0	Finished	5/20/2021 2:15:34 PM -05:00
	HS21050972-08MSD	5.0	Finished	5/20/2021 2:22:57 PM -05:00
	HS21050972-09	5.0	Finished	5/20/2021 2:30:20 PM -05:00
	HS21050972-10	5.0	Finished	5/20/2021 2:37:46 PM -05:00
	HS21050972-11	5.0	Finished	5/20/2021 2:45:09 PM -05:00
	CCV	5.0	Finished	5/20/2021 3:50:13 PM -05:00
	CCB	5.0	Finished	5/20/2021 3:57:38 PM -05:00

Sequence: 052021
Injection #6: STD6

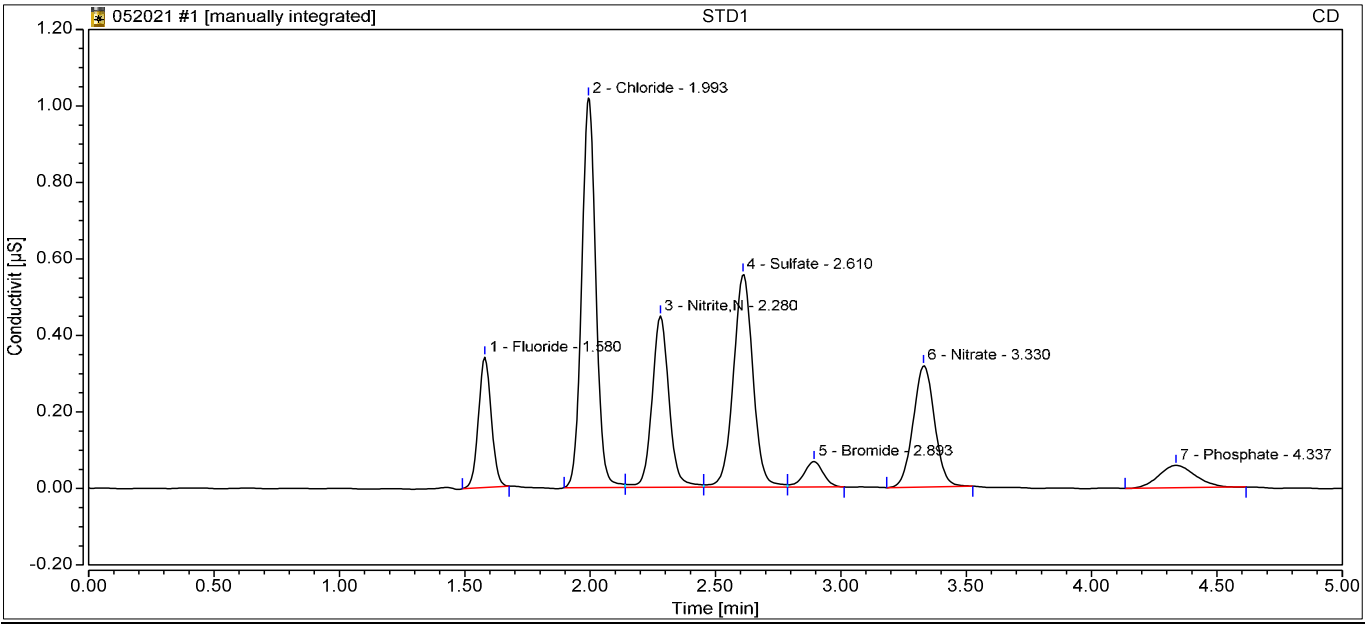
Calibration

Peak No.	Peak Name	Cal.Type	Eval.Type	Number of Points	Rel.Std.Dev. %	Coeff.of Determination	C0 (Offset)	C1 (Slope)	C2 (Curve)
1	*Fluoride*	*Lin, WithOffset, 1/*	*Area*	*6*	*26.4373*	*0.99601*	*0.0037*	*0.2049*	*0.0000*
2	Chloride	Lin, WithOffset, 1/	Area	6	0.6871	1.00000	-0.0005	0.1344	0.0000
3	Nitrite,N	Lin, WithOffset, 1/	Area	6	17.7767	0.99788	0.0149	0.2622	0.0000
4	Sulfate	Lin, WithOffset, 1/	Area	6	1.7139	0.99998	0.0010	0.0990	0.0000
5	Bromide	Lin, WithOffset, 1/	Area	6	3.9005	0.99992	0.0004	0.0565	0.0000
6	Nitrate	Lin, WithOffset, 1/	Area	6	4.7579	0.99988	-0.0013	0.3350	0.0000
7	Phosphate	Lin, WithOffset, 1/	Area	6	7.9708	0.99971	-0.0045	0.1295	0.0000
n.a.	Chlorate	Lin, WithOffset, 1/	Area	0	n.a.	n.a.	n.a.	n.a.	n.a.
Maximum					**26.4373**	1.00000			
Minimum					0.6871	**0.99601**			

1 STD1

Sample Name:	**STD1**	*Injection Volume:*	**5.00**
Vial Number:	**BB1**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/05/2021 18:12**	*Sample Weight:*	**1.0000**

Run Time:



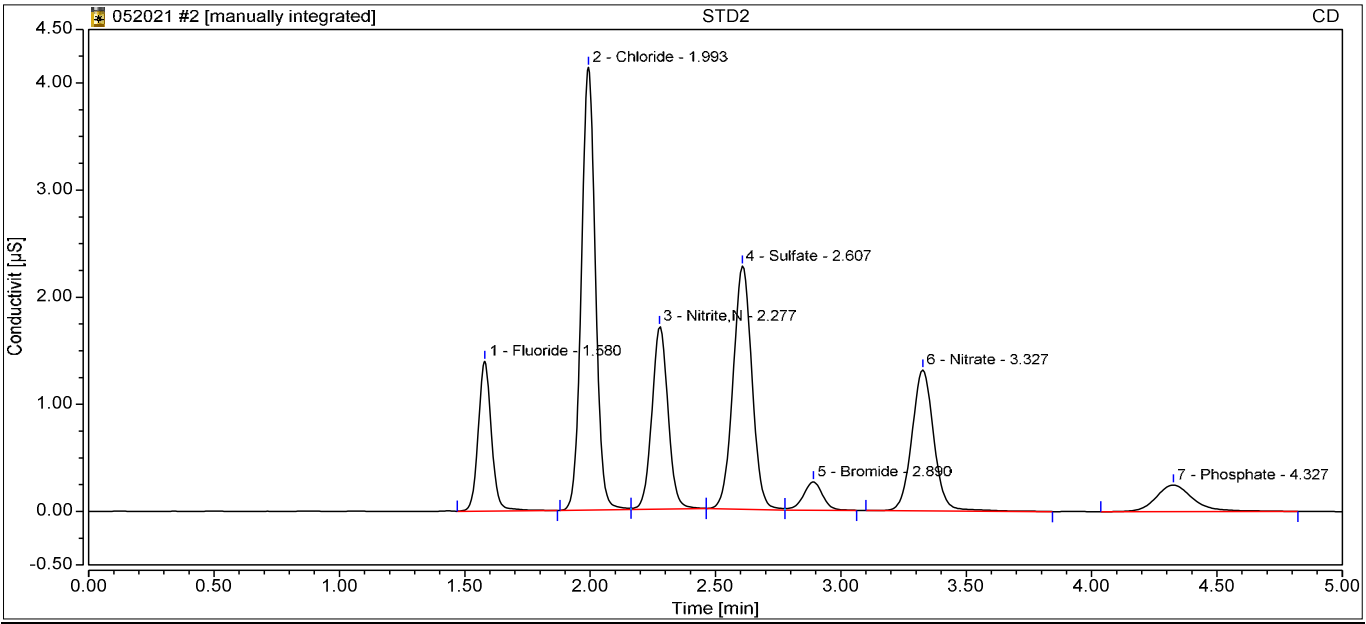
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB*	0.020	0.0804	0.0804	1.0000
2	1.99	Chloride	BM *	0.067	0.4989	0.4989	1.0000
3	2.28	Nitrite,N	M *	0.035	0.0767	0.0767	1.0000
4	2.61	Sulfate	M *	0.050	0.4965	0.4965	1.0000
5	2.89	Bromide	MB*	0.006	0.0985	0.0985	1.0000
6	3.33	Nitrate	BMB*	0.031	0.0974	0.0974	1.0000
7	4.34	Phosphate	BMB*	0.010	0.1110	0.1110	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.219**		**1.46**	

2 STD2

Sample Name:	**STD2**	*Injection Volume:*	**5.00**
Vial Number:	**BB2**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/05/2021 18:20**	*Sample Weight:*	**1.0000**

Run Time:



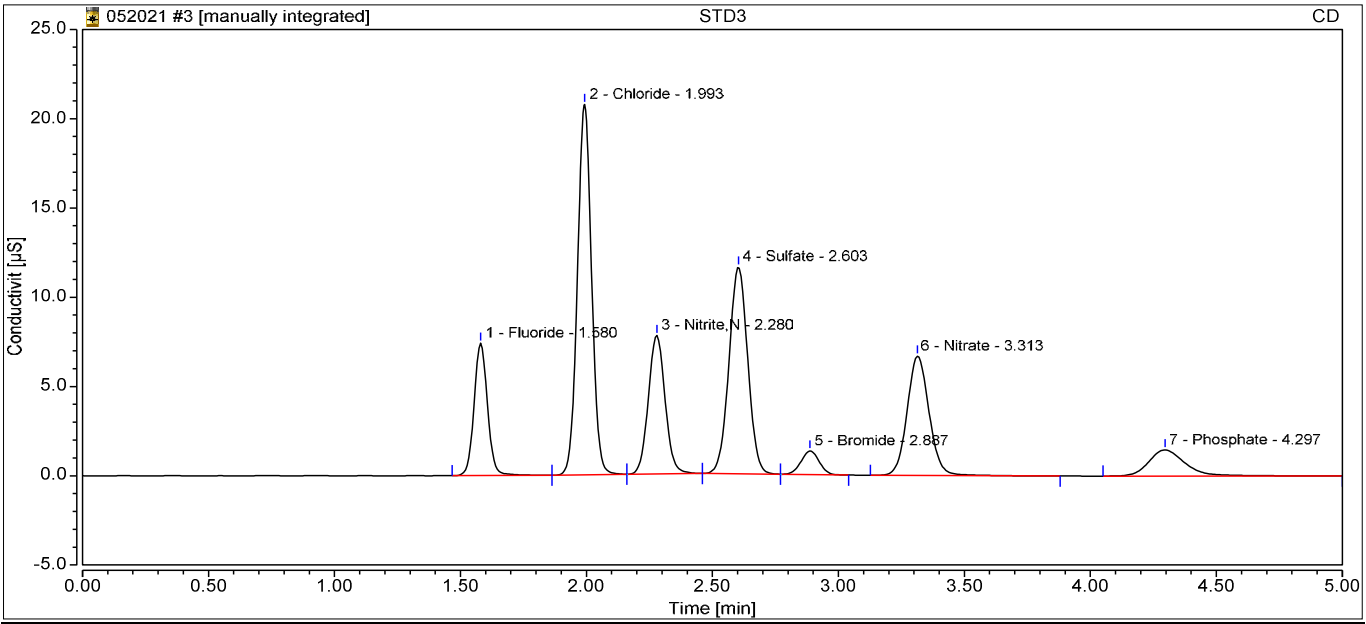
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.085	0.3985	0.3985	1.0000
2	1.99	Chloride	BM *	0.268	1.9973	1.9973	1.0000
3	2.28	Nitrite,N	Mb*	0.127	0.4273	0.4273	1.0000
4	2.61	Sulfate	bM *	0.198	1.9879	1.9879	1.0000
5	2.89	Bromide	MB*	0.024	0.4134	0.4134	1.0000
6	3.33	Nitrate	BMB	0.133	0.4017	0.4017	1.0000
7	4.33	Phosphate	BMB	0.043	0.3676	0.3676	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.878**		**5.99**	

3 STD3

Sample Name:	**STD3**	*Injection Volume:*	**5.00**
Vial Number:	**BB3**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/05/2021 18:27**	*Sample Weight:*	**1.0000**

Run Time:



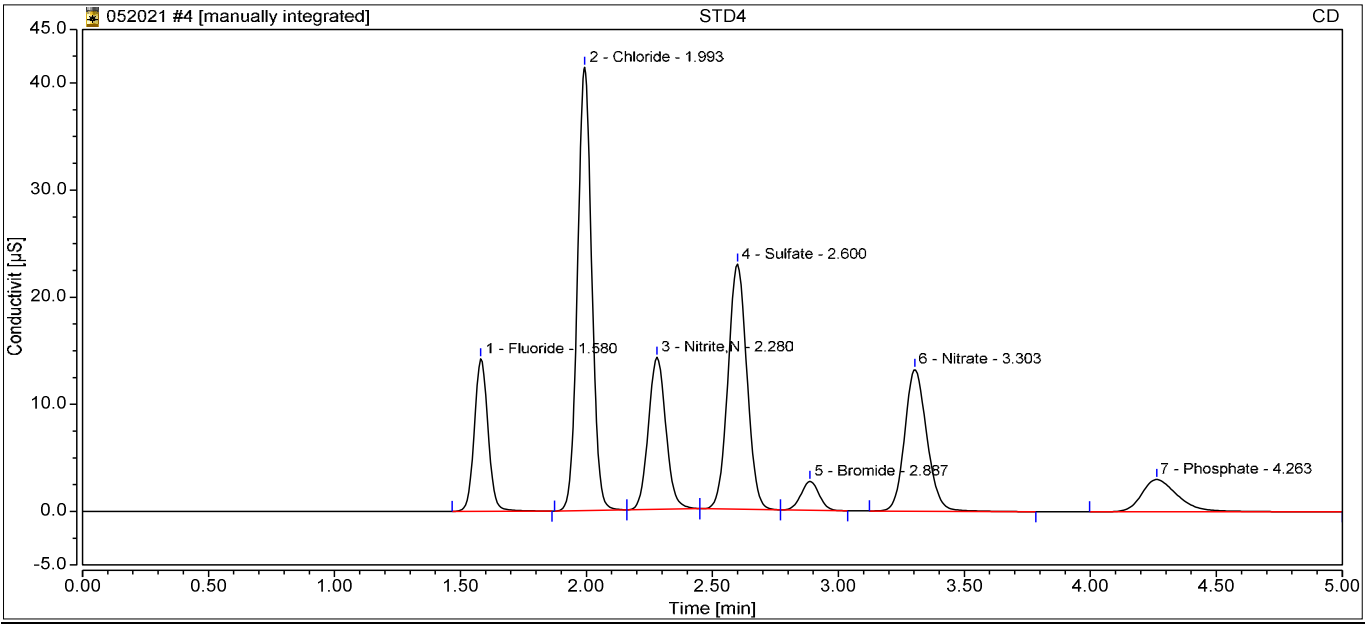
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMb*	0.459	2.2233	2.2233	1.0000
2	1.99	Chloride	bM *	1.346	10.0167	10.0167	1.0000
3	2.28	Nitrite,N	Mb*	0.600	2.2303	2.2303	1.0000
4	2.60	Sulfate	bM *	1.000	10.0941	10.0941	1.0000
5	2.89	Bromide	MB*	0.112	1.9684	1.9684	1.0000
6	3.31	Nitrate	BMB	0.675	2.0188	2.0188	1.0000
7	4.30	Phosphate	BMB	0.247	1.9396	1.9396	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**4.438**		**30.49**	

4 STD4

Sample Name:	**STD4**	*Injection Volume:*	**5.00**
Vial Number:	**BB4**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/05/2021 18:34**	*Sample Weight:*	**1.0000**

Run Time:



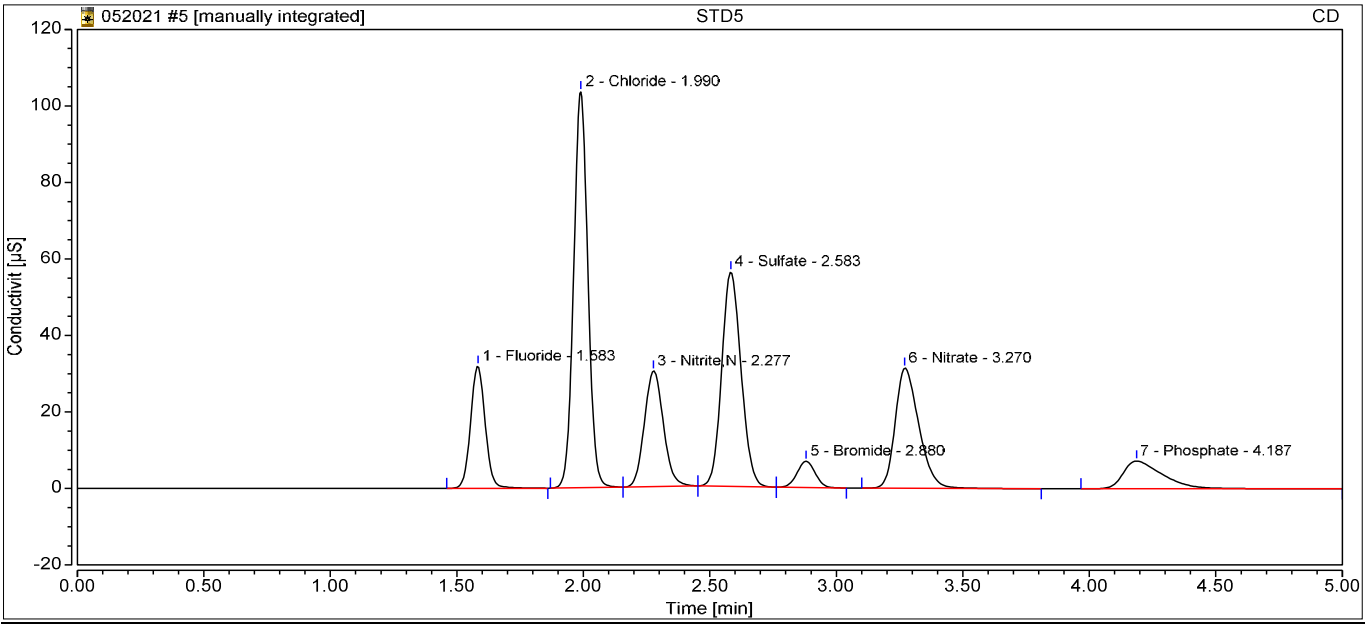
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.903	4.3869	4.3869	1.0000
2	1.99	Chloride	BM *	2.691	20.0267	20.0267	1.0000
3	2.28	Nitrite,N	Mb*	1.144	4.3066	4.3066	1.0000
4	2.60	Sulfate	bMB*	1.988	20.0727	20.0727	1.0000
5	2.89	Bromide	BMB	0.224	3.9555	3.9555	1.0000
6	3.30	Nitrate	BMB	1.350	4.0333	4.0333	1.0000
7	4.26	Phosphate	BMB	0.506	3.9429	3.9429	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**8.805**		**60.72**	

5 STD5

Sample Name:	**STD5**	*Injection Volume:*	**5.00**
Vial Number:	**BB5**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/05/2021 18:42**	*Sample Weight:*	**1.0000**

Run Time:



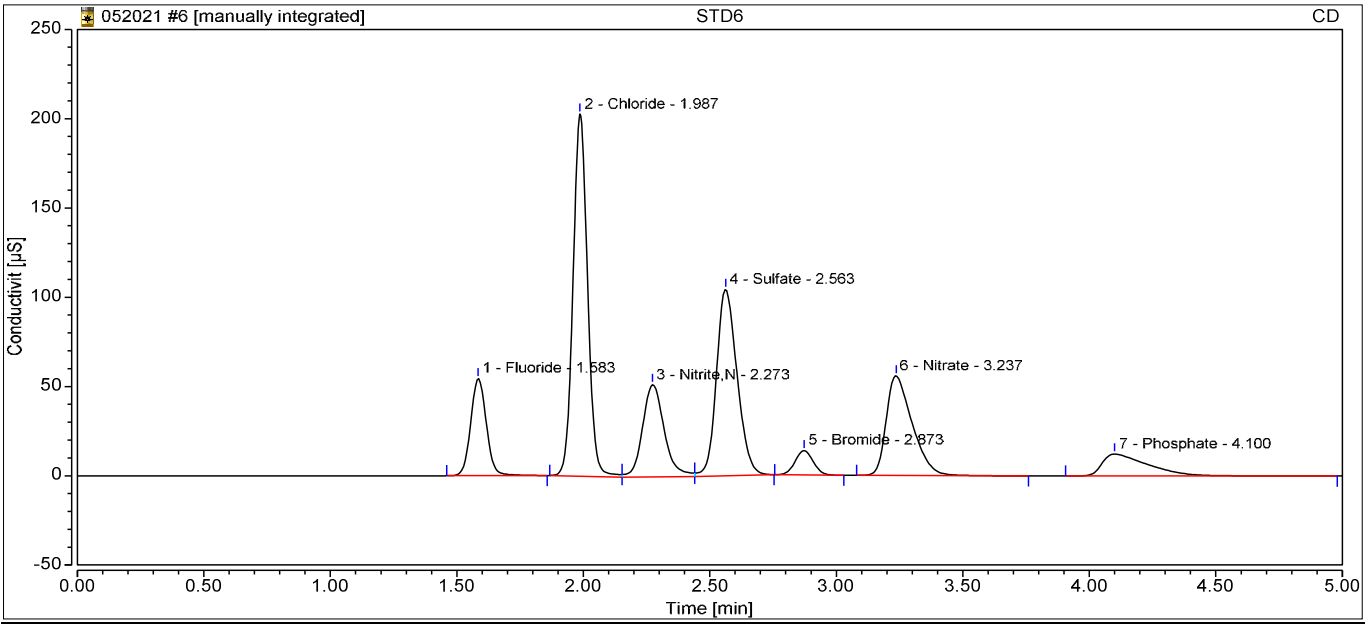
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	2.140	10.4243	10.4243	1.0000
2	1.99	Chloride	BMb*	6.732	50.0934	50.0934	1.0000
3	2.28	Nitrite,N	bMb*	2.637	9.9988	9.9988	1.0000
4	2.58	Sulfate	bMB*	4.966	50.1541	50.1541	1.0000
5	2.88	Bromide	BMB	0.571	10.1112	10.1112	1.0000
6	3.27	Nitrate	BMB	3.393	10.1328	10.1328	1.0000
7	4.19	Phosphate	BMB	1.313	10.1773	10.1773	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**21.751**		**151.09**	

6 STD6

Sample Name:	**STD6**	*Injection Volume:*	**5.00**
Vial Number:	**BB6**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/05/2021 18:49**	*Sample Weight:*	**1.0000**

Run Time:



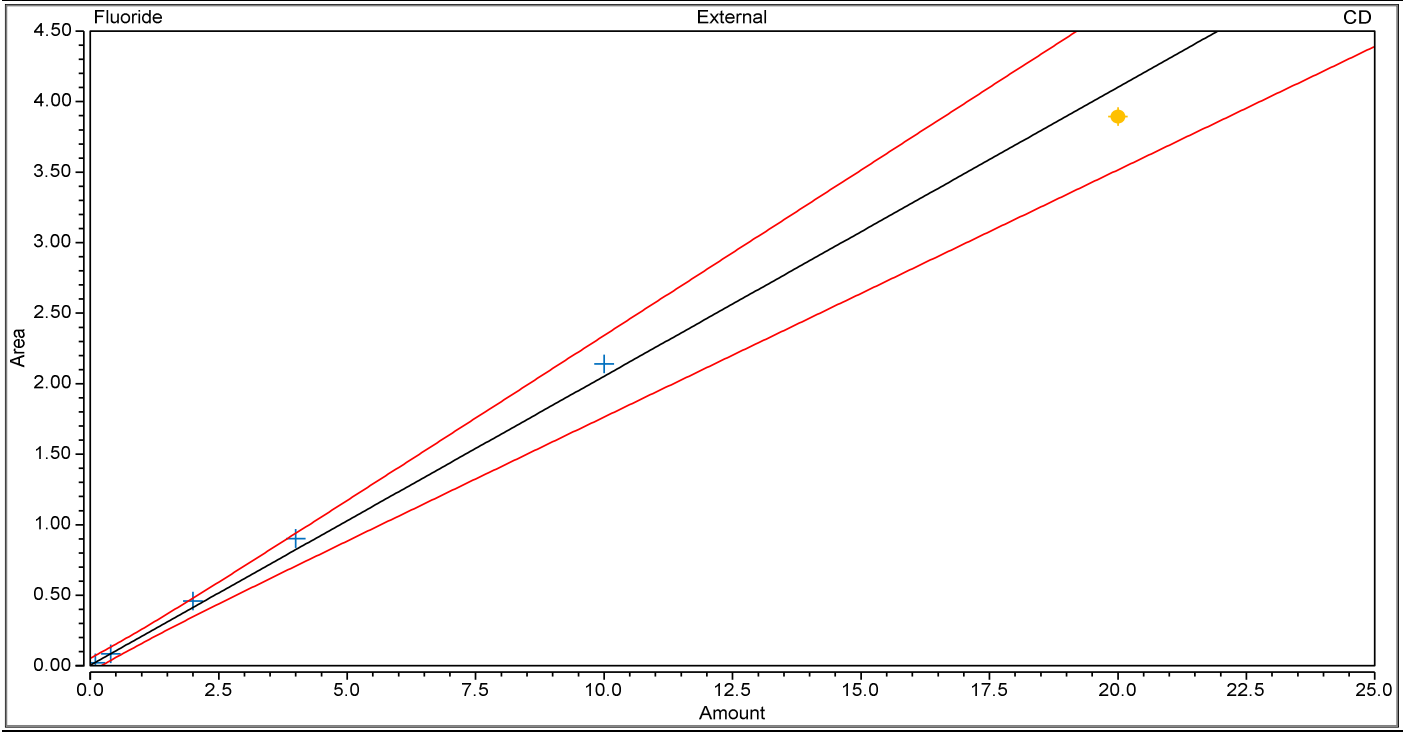
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	3.894	18.9867	18.9867	1.0000
2	1.99	Chloride	BM *	13.421	99.8669	99.8669	1.0000
3	2.27	Nitrite,N	M *	5.117	19.4604	19.4604	1.0000
4	2.56	Sulfate	MB*	9.870	99.6947	99.6947	1.0000
5	2.87	Bromide	BMB	1.127	19.9531	19.9531	1.0000
6	3.24	Nitrate	BMB	6.637	19.8160	19.8160	1.0000
7	4.10	Phosphate	BMB	2.580	19.9616	19.9616	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**42.646**		**297.74**	

Calibration

Calibration Details	Fluoride		
Calibration Type	Lin, WithOffset, 1/A	*Offset (C0)*	0.0037
Evaluation Type	Area	*Slope (C1)*	0.2049
Number of Calibration Points	6	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9960

Calibration Plot **Fluoride**



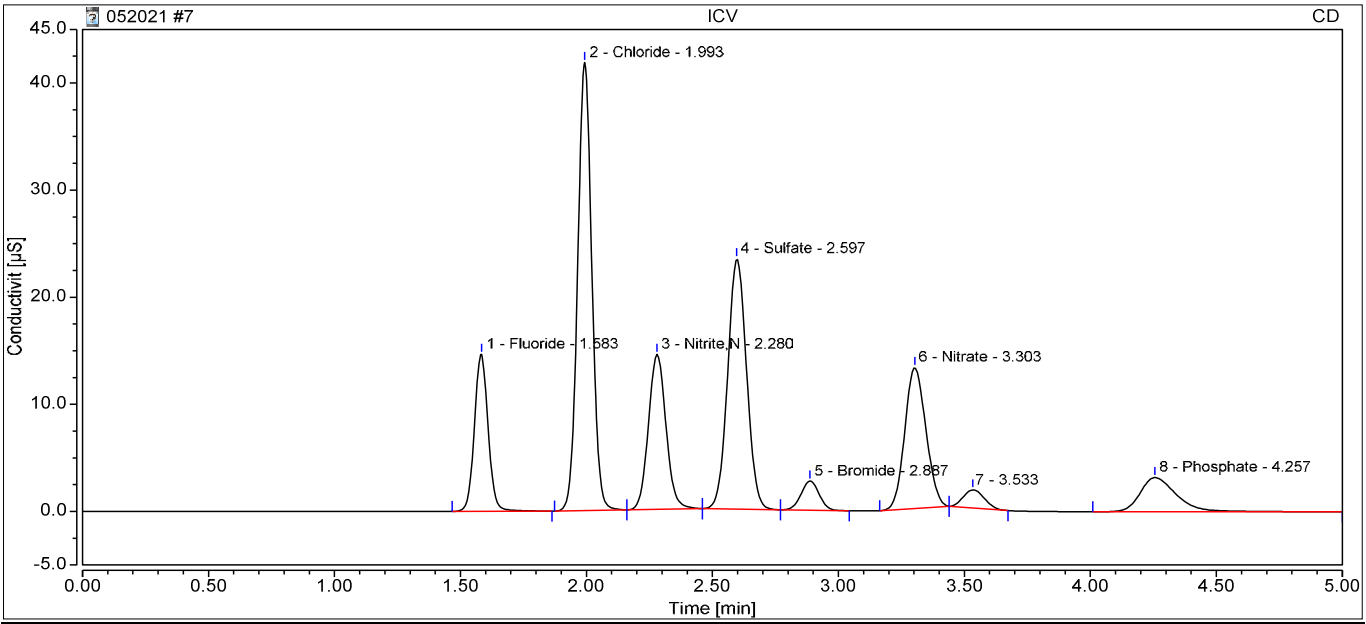
Calibration Results **Fluoride**

No.	Injection Name	Calibration Level	X Value CD Fluoride	Y Value CD Fluoride	Y Value CD Fluoride	Area µS*min CD Fluoride	Height µS CD Fluoride
1	STD1	1	0.1000	0.0202	0.0202	0.020	0.341
2	STD2	2	0.4000	0.0854	0.0854	0.085	1.397
3	STD3	3	2.0000	0.4593	0.4593	0.459	7.420
4	STD4	4	4.0000	0.9026	0.9026	0.903	14.229
5	STD5	5	10.0000	2.1397	2.1397	2.140	31.975
6	STD6	6	20.0000	3.8942	3.8942	3.894	54.315

7 ICV

Sample Name:	**ICV**	*Injection Volume:*	**5.00**
Vial Number:	**BB7**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/05/2021 18:57**	*Sample Weight:*	**1.0000**

Run Time:



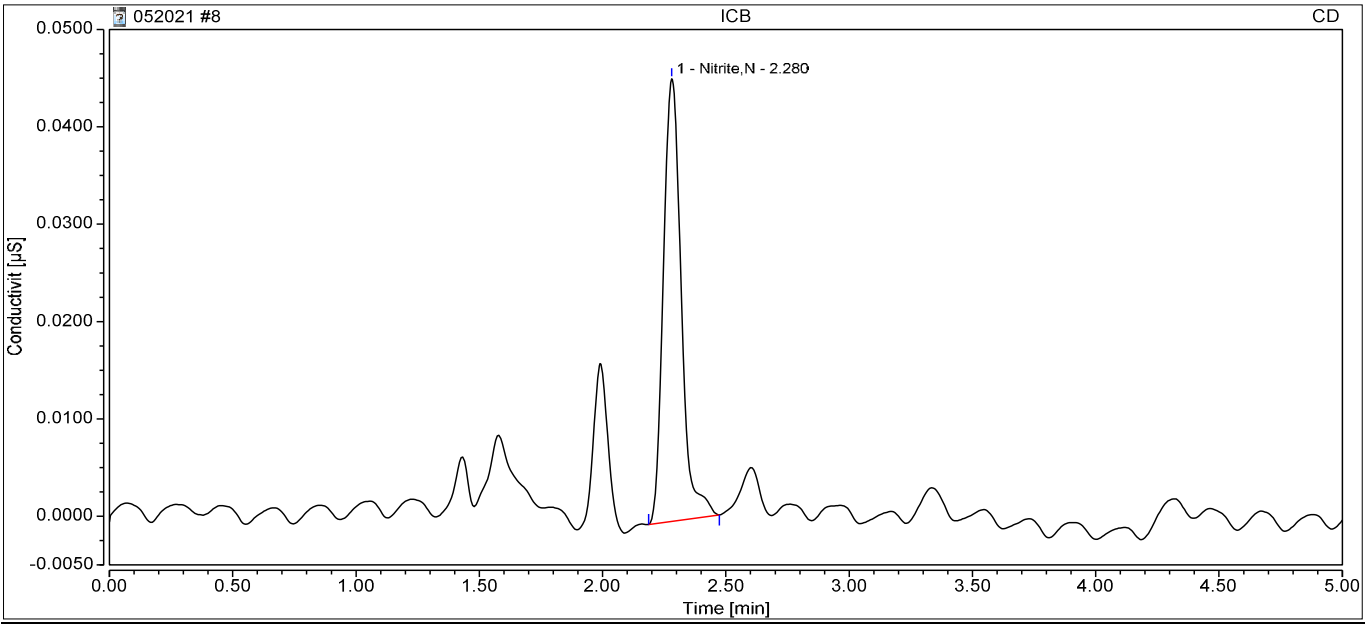
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.924	4.4936	4.4936	1.0000
2	1.99	Chloride	BMB	2.715	20.2077	20.2077	1.0000
3	2.28	Nitrite,N	BMB	1.168	4.3995	4.3995	1.0000
4	2.60	Sulfate	BMB	2.028	20.4771	20.4771	1.0000
5	2.89	Bromide	BMB	0.226	3.9960	3.9960	1.0000
6	3.30	Nitrate	BMB	1.281	3.8265	3.8265	1.0000
8	4.26	Phosphate	BMB	0.533	4.1549	4.1549	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**8.876**		**61.56**	

8 ICB

Sample Name:	**ICB**	*Injection Volume:*	**5.00**
Vial Number:	**BB8**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/05/2021 19:14**	*Sample Weight:*	**1.0000**

Run Time:

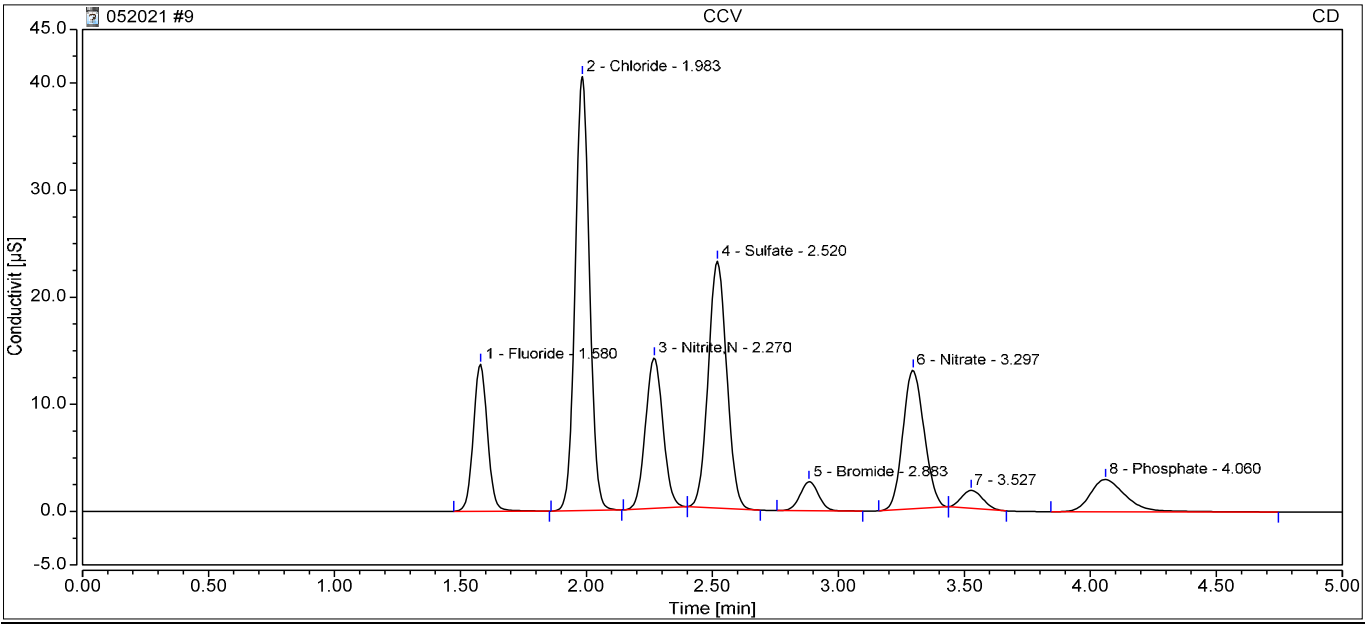


Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
1	2.28	Nitrite,N	BMB	0.004	n.a.	n.a.	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.004**		**0.00**	

9 CCV			
Sample Name:	**CCV**	*Injection Volume:*	**5.00**
Vial Number:	**R1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/20/2021 09:25**	*Sample Weight:*	**1.0000**

Run Time:



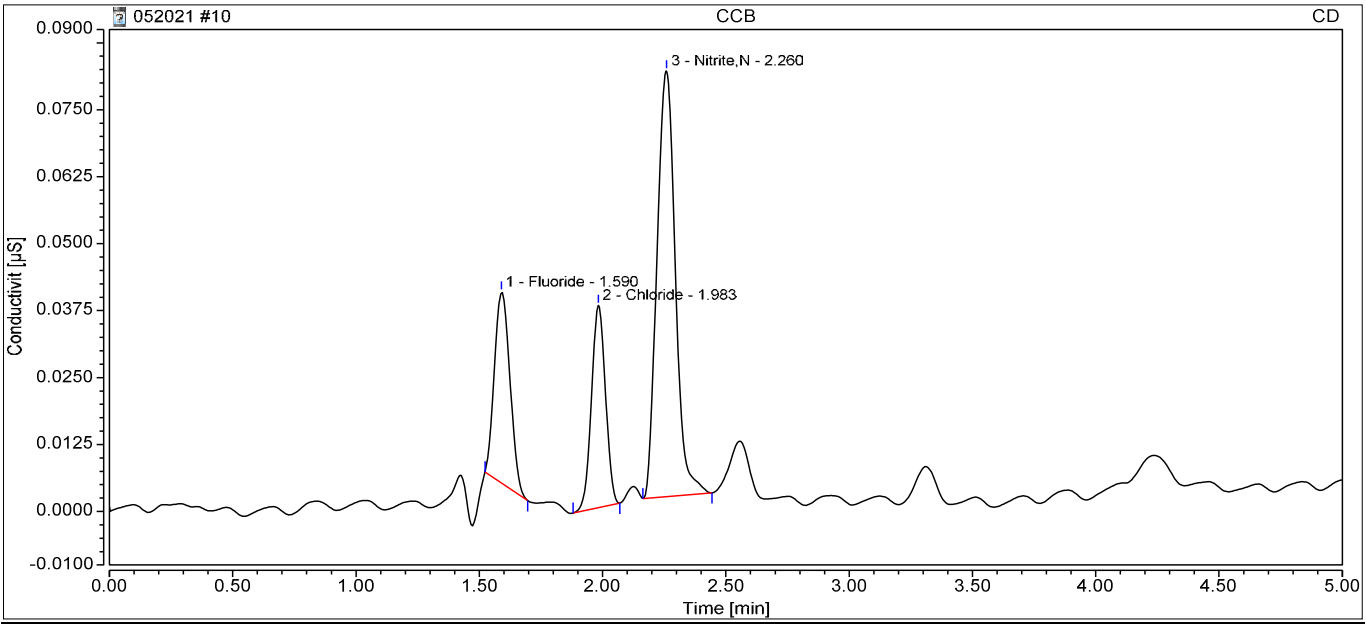
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.893	4.3411	4.3411	1.0000
2	1.98	Chloride	BMB	2.670	19.8708	19.8708	1.0000
3	2.27	Nitrite,N	BMB	1.132	4.2612	4.2612	1.0000
4	2.52	Sulfate	BMB	1.963	19.8165	19.8165	1.0000
5	2.88	Bromide	BMB	0.229	4.0553	4.0553	1.0000
6	3.30	Nitrate	BMB	1.267	3.7858	3.7858	1.0000
8	4.06	Phosphate	BMB	0.491	3.8235	3.8235	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**8.645**		**59.95**	

10 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R4**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/20/2021 09:33**	*Sample Weight:*	**1.0000**

Run Time:



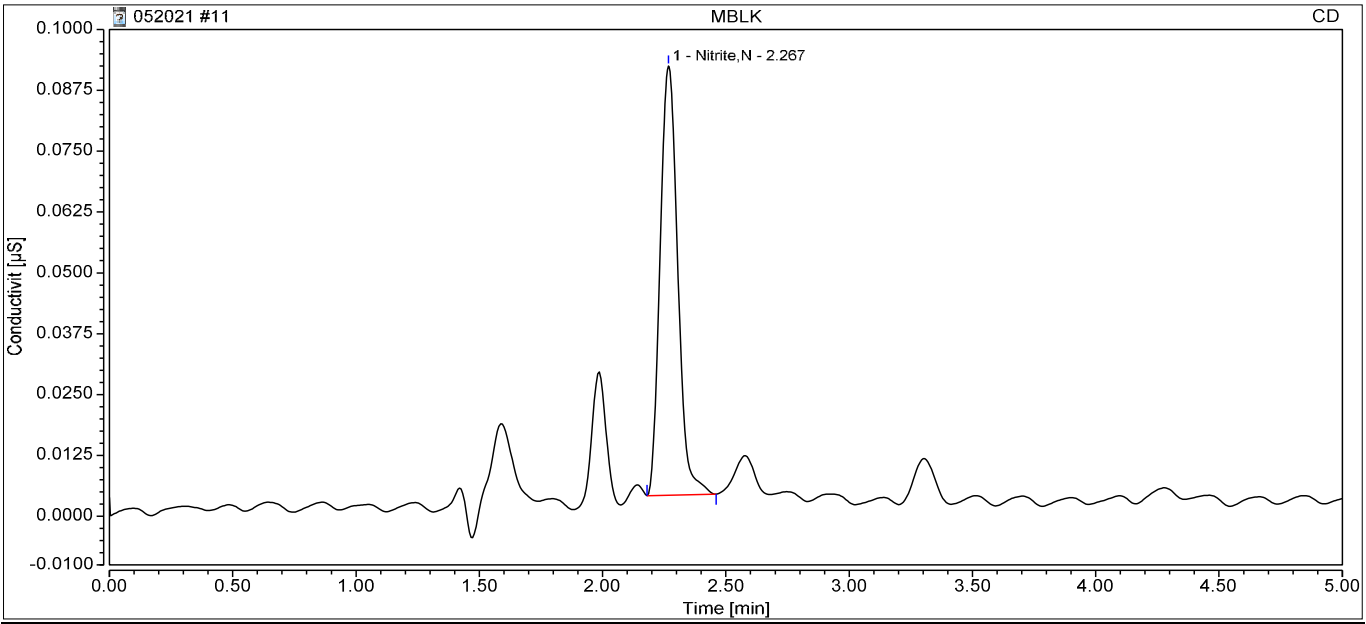
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.59	Fluoride	BMB	0.003	n.a.	n.a.	1.0000
2	1.98	Chloride	BMB	0.002	0.0221	0.0221	1.0000
3	2.26	Nitrite,N	BMB	0.007	n.a.	n.a.	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.012**		**0.02**	

11 MBLK

Sample Name:	**MBLK**	*Injection Volume:*	**5.00**
Vial Number:	**R5**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/20/2021 09:40**	*Sample Weight:*	**1.0000**

Run Time:



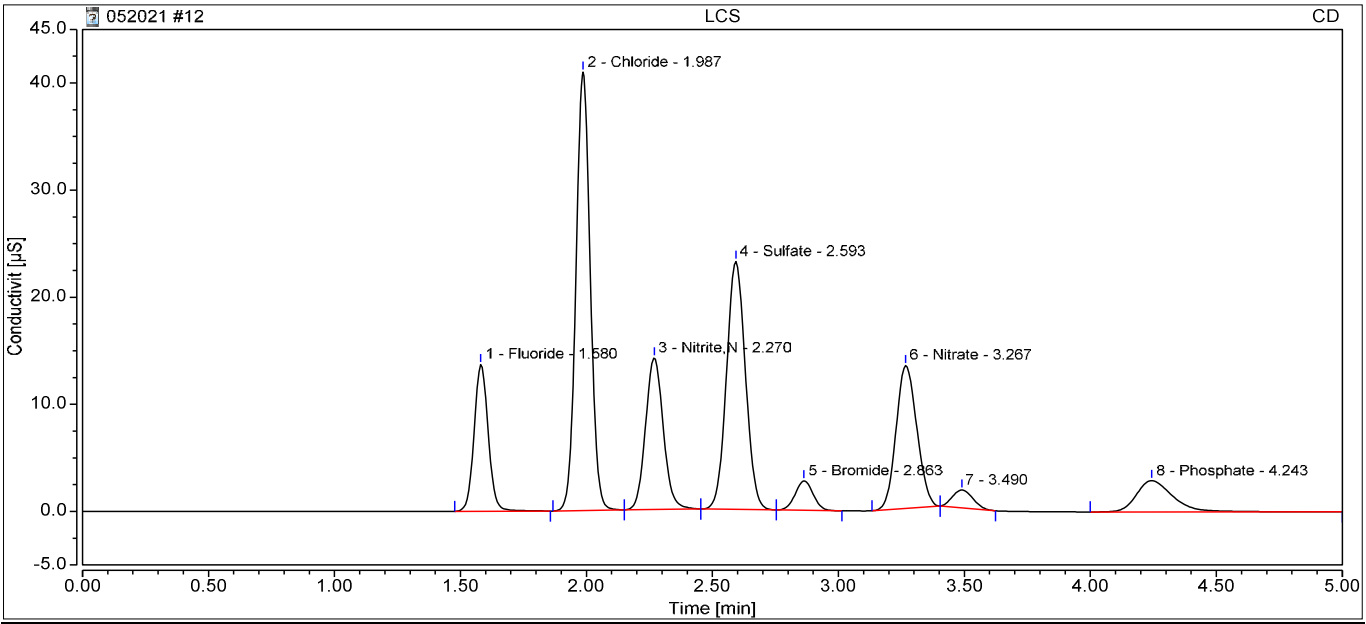
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
1	2.27	Nitrite,N	BMB	0.007	n.a.	n.a.	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.007**		**0.00**	

12 LCS

Sample Name:	**LCS**	*Injection Volume:*	**5.00**
Vial Number:	**R2**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/20/2021 09:48**	*Sample Weight:*	**1.0000**

Run Time:



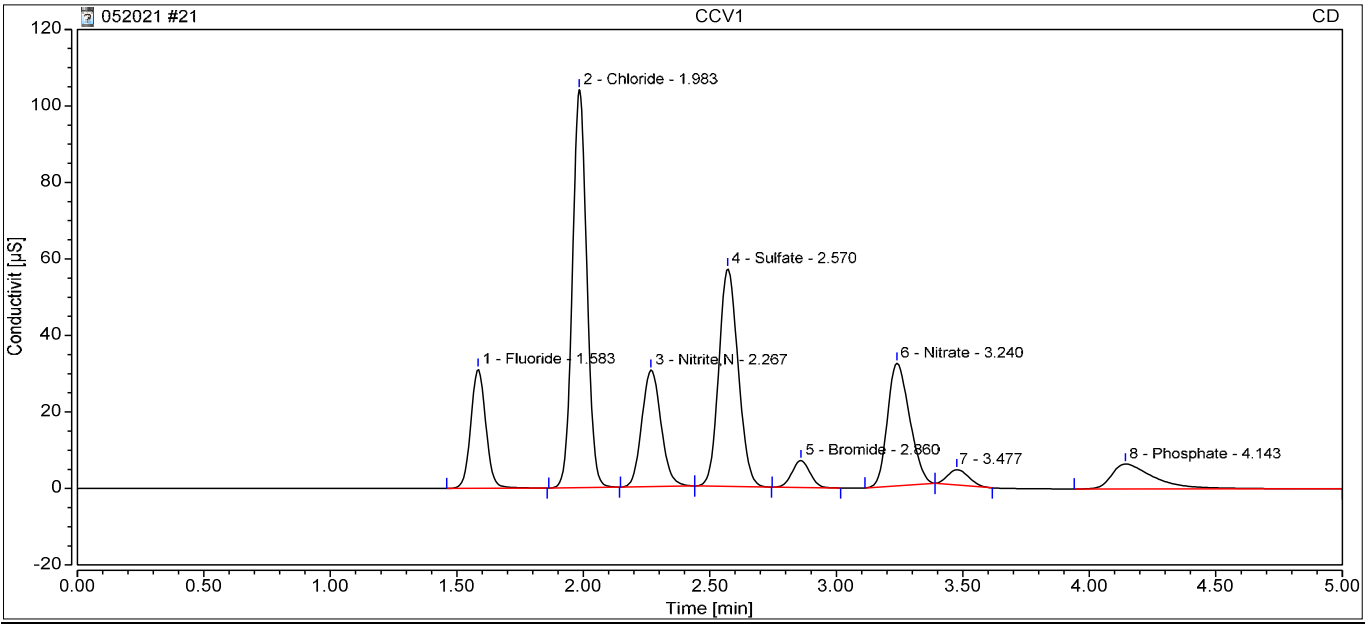
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.891	4.3319	4.3319	1.0000
2	1.99	Chloride	BMB	2.681	19.9558	19.9558	1.0000
3	2.27	Nitrite,N	BMB	1.157	4.3555	4.3555	1.0000
4	2.59	Sulfate	BMB	2.012	20.3178	20.3178	1.0000
5	2.86	Bromide	BMB	0.226	3.9934	3.9934	1.0000
6	3.27	Nitrate	BMB	1.276	3.8125	3.8125	1.0000
8	4.24	Phosphate	BMB	0.492	3.8382	3.8382	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**8.736**		**60.60**	

21 CCV1

Sample Name:	**CCV1**	*Injection Volume:*	**5.00**
Vial Number:	**R3**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/20/2021 13:51**	*Sample Weight:*	**1.0000**

Run Time:

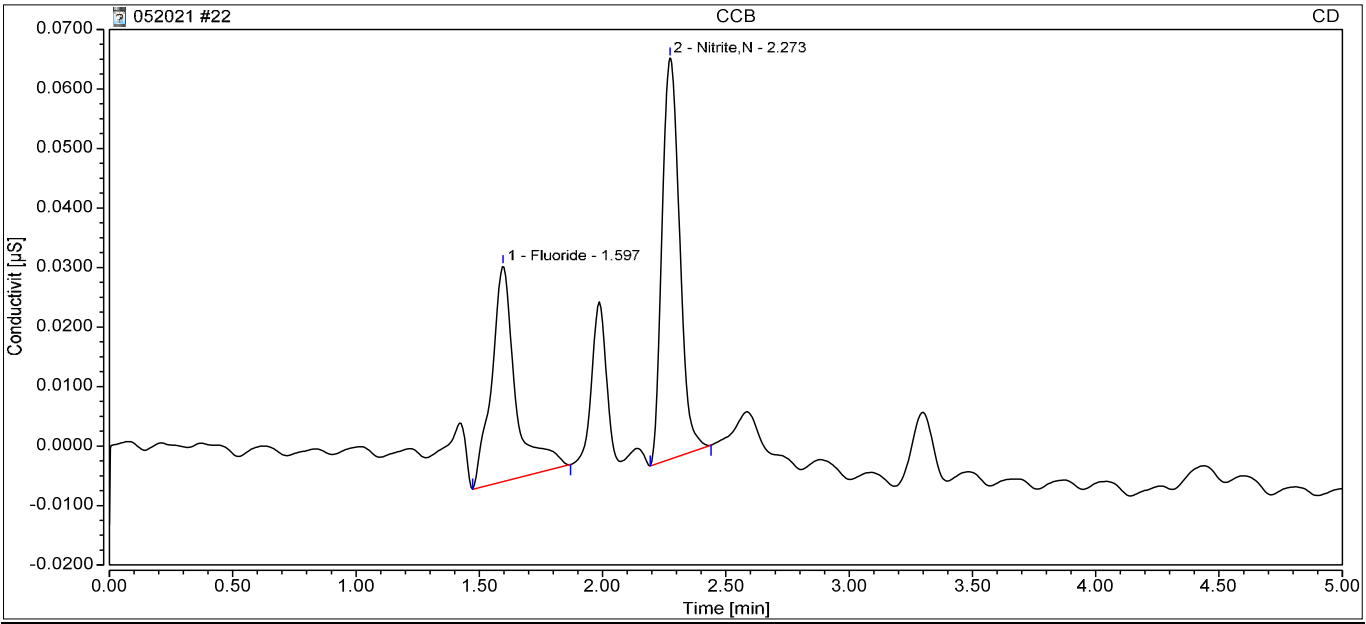


Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	2.149	10.4672	10.4672	1.0000
2	1.98	Chloride	BMB	6.841	50.9076	50.9076	1.0000
3	2.27	Nitrite,N	BMB	2.688	10.1938	10.1938	1.0000
4	2.57	Sulfate	BMB	5.053	51.0324	51.0324	1.0000
5	2.86	Bromide	BMB	0.581	10.2883	10.2883	1.0000
6	3.24	Nitrate	BMB	3.248	9.7004	9.7004	1.0000
8	4.14	Phosphate	BMB	1.271	9.8512	9.8512	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**21.831**		**152.44**	

22 CCB			
Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R8**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/20/2021 14:00**	*Sample Weight:*	**1.0000**

Run Time:



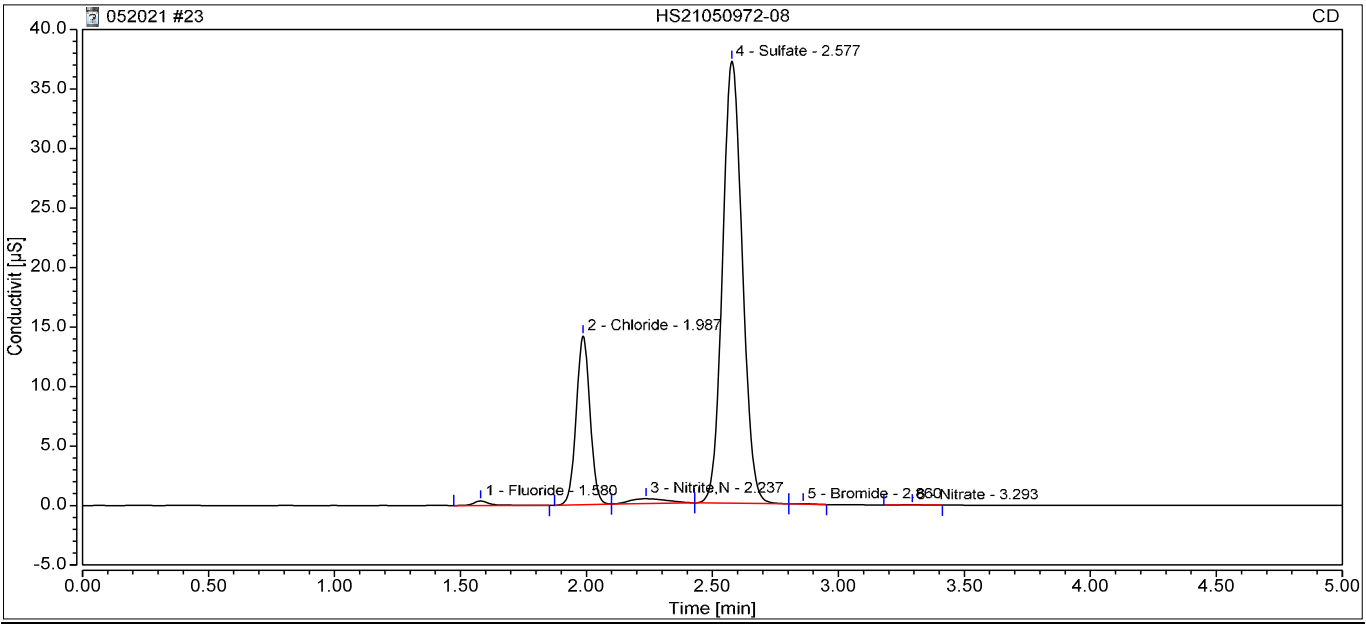
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.60	Fluoride	BMB	0.004	0.0019	0.0019	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
2	2.27	Nitrite,N	BMB	0.006	n.a.	n.a.	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.010**		**0.00**	

23 HS21050972-08

Sample Name:	**HS21050972-08**	*Injection Volume:*	**5.00**
Vial Number:	**GB1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/20/2021 14:08**	*Sample Weight:*	**1.0000**

Run Time:



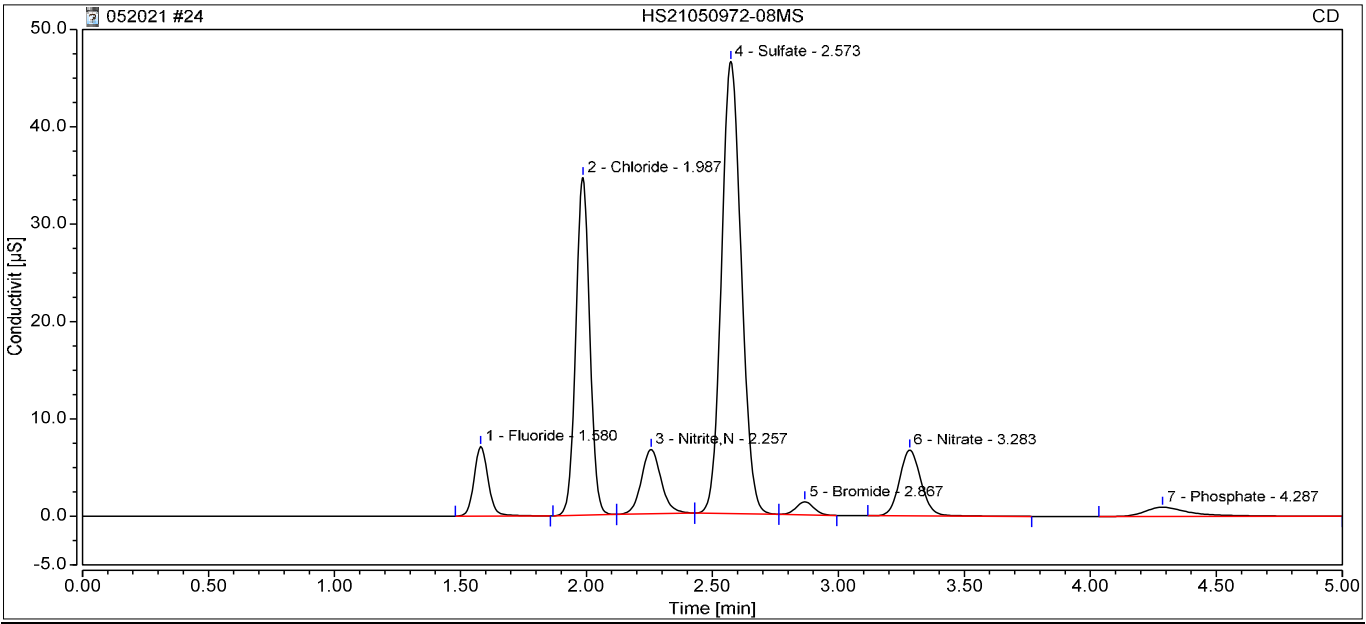
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.029	0.1234	0.1234	1.0000
2	1.99	Chloride	BMB	0.899	6.6917	6.6917	1.0000
3	2.24	Nitrite,N	BMB	0.067	0.1977	0.1977	1.0000
4	2.58	Sulfate	BMB	3.384	34.1734	34.1734	1.0000
5	2.86	Bromide	BMB	0.002	0.0370	0.0370	1.0000
6	3.29	Nitrate	BMB	0.003	0.0118	0.0118	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**4.384**		**41.24**	

24 HS21050972-08MS

Sample Name:	**HS21050972-08MS**	*Injection Volume:*	**5.00**
Vial Number:	**GB2**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/20/2021 14:15**	*Sample Weight:*	**1.0000**

Run Time:



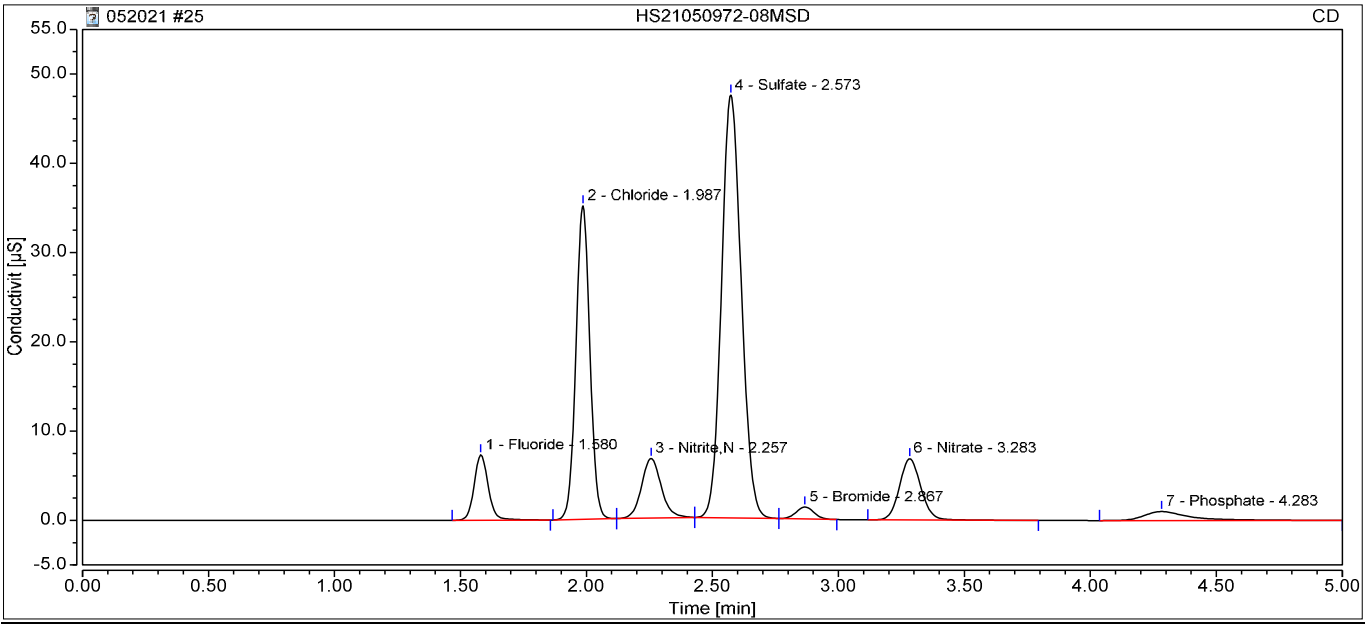
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.467	2.2628	2.2628	1.0000
2	1.99	Chloride	BMB	2.221	16.5314	16.5314	1.0000
3	2.26	Nitrite,N	BMB	0.599	2.2283	2.2283	1.0000
4	2.57	Sulfate	BMB	4.227	42.6940	42.6940	1.0000
5	2.87	Bromide	BMB	0.108	1.9114	1.9114	1.0000
6	3.28	Nitrate	BMB	0.670	2.0049	2.0049	1.0000
7	4.29	Phosphate	BMB	0.202	1.5933	1.5933	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**8.495**		**69.23**	

25 HS21050972-08MSD

Sample Name:	**HS21050972-08MSD**	*Injection Volume:*	**5.00**
Vial Number:	**GB3**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/20/2021 14:22**	*Sample Weight:*	**1.0000**

Run Time:



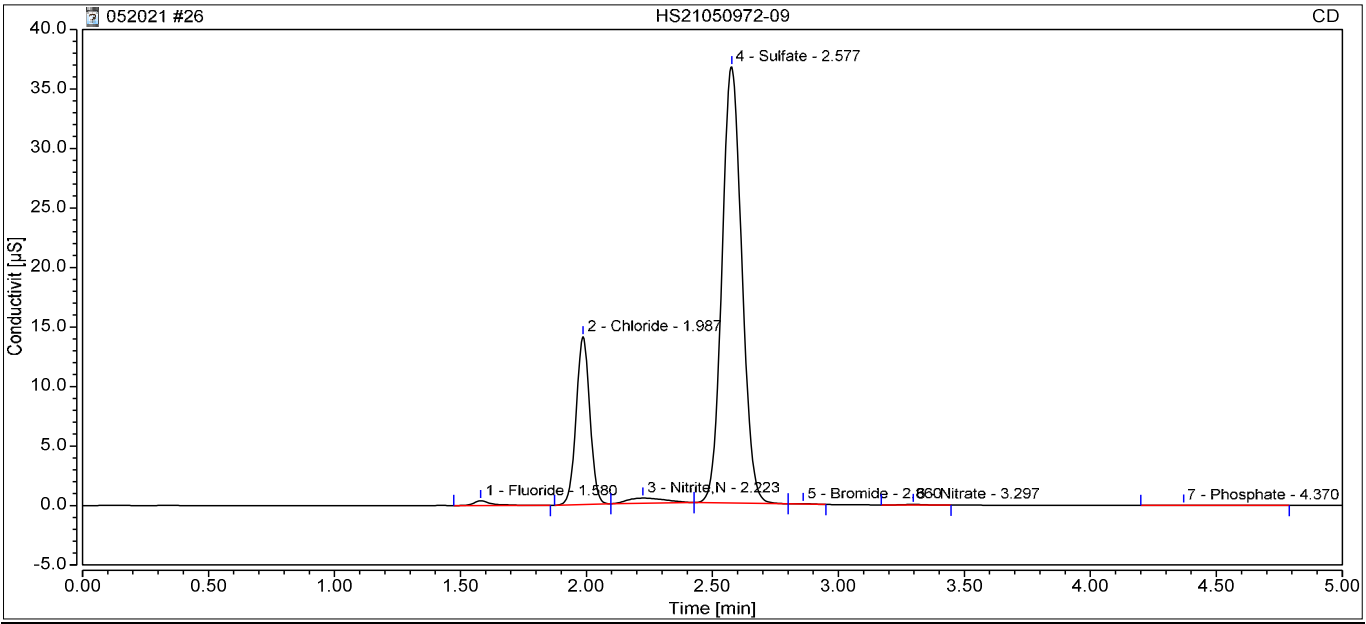
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.479	2.3213	2.3213	1.0000
2	1.99	Chloride	BMB	2.246	16.7130	16.7130	1.0000
3	2.26	Nitrite,N	BMB	0.606	2.2534	2.2534	1.0000
4	2.57	Sulfate	BMB	4.306	43.4940	43.4940	1.0000
5	2.87	Bromide	BMB	0.110	1.9341	1.9341	1.0000
6	3.28	Nitrate	BMB	0.678	2.0267	2.0267	1.0000
7	4.28	Phosphate	BMB	0.213	1.6770	1.6770	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**8.637**		**70.42**	

26 HS21050972-09

Sample Name:	**HS21050972-09**	*Injection Volume:*	**5.00**
Vial Number:	**GB4**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/20/2021 14:30**	*Sample Weight:*	**1.0000**

Run Time:



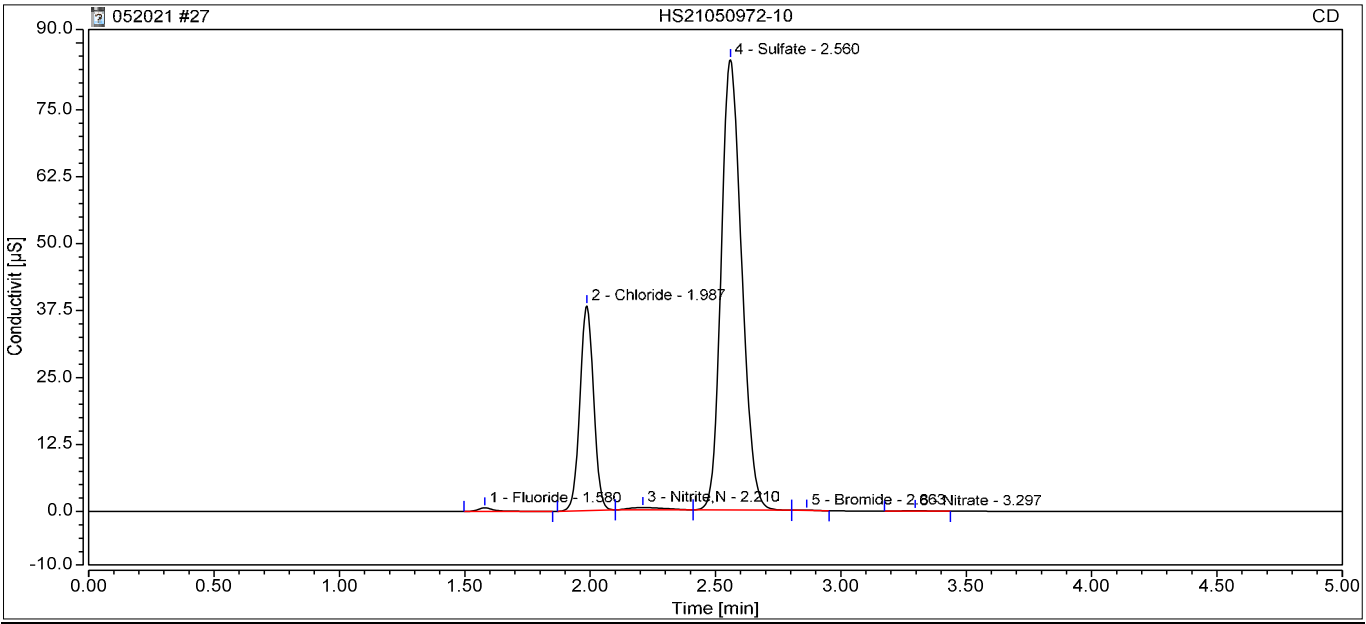
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.033	0.1408	0.1408	1.0000
2	1.99	Chloride	BMB	0.887	6.6063	6.6063	1.0000
3	2.22	Nitrite,N	BMB	0.075	0.2283	0.2283	1.0000
4	2.58	Sulfate	BMB	3.349	33.8167	33.8167	1.0000
5	2.86	Bromide	BMB	0.002	0.0334	0.0334	1.0000
6	3.30	Nitrate	BMB	0.005	0.0182	0.0182	1.0000
7	4.37	Phosphate	BMB	0.004	0.0632	0.0632	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**4.354**		**40.91**	

27 HS21050972-10

Sample Name:	**HS21050972-10**	*Injection Volume:*	**5.00**
Vial Number:	**GB5**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/20/2021 14:37**	*Sample Weight:*	**1.0000**

Run Time:



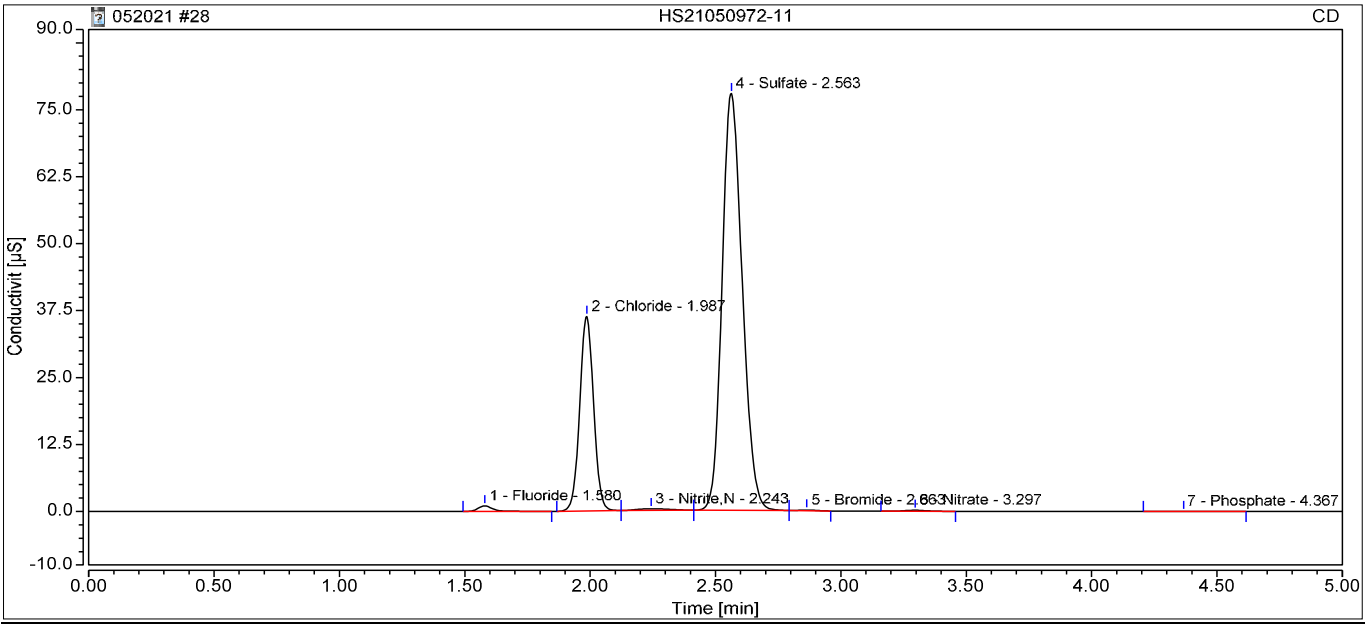
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.049	0.2215	0.2215	1.0000
2	1.99	Chloride	BMB	2.422	18.0245	18.0245	1.0000
3	2.21	Nitrite,N	BMB	0.070	0.2119	0.2119	1.0000
4	2.56	Sulfate	BMB	7.993	80.7346	80.7346	1.0000
5	2.86	Bromide	BMB	0.005	0.0808	0.0808	1.0000
6	3.30	Nitrate	BMB	0.009	0.0303	0.0303	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**10.548**		**99.30**	

28 HS21050972-11

Sample Name:	**HS21050972-11**	*Injection Volume:*	**5.00**
Vial Number:	**GB6**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/20/2021 14:45**	*Sample Weight:*	**1.0000**

Run Time:



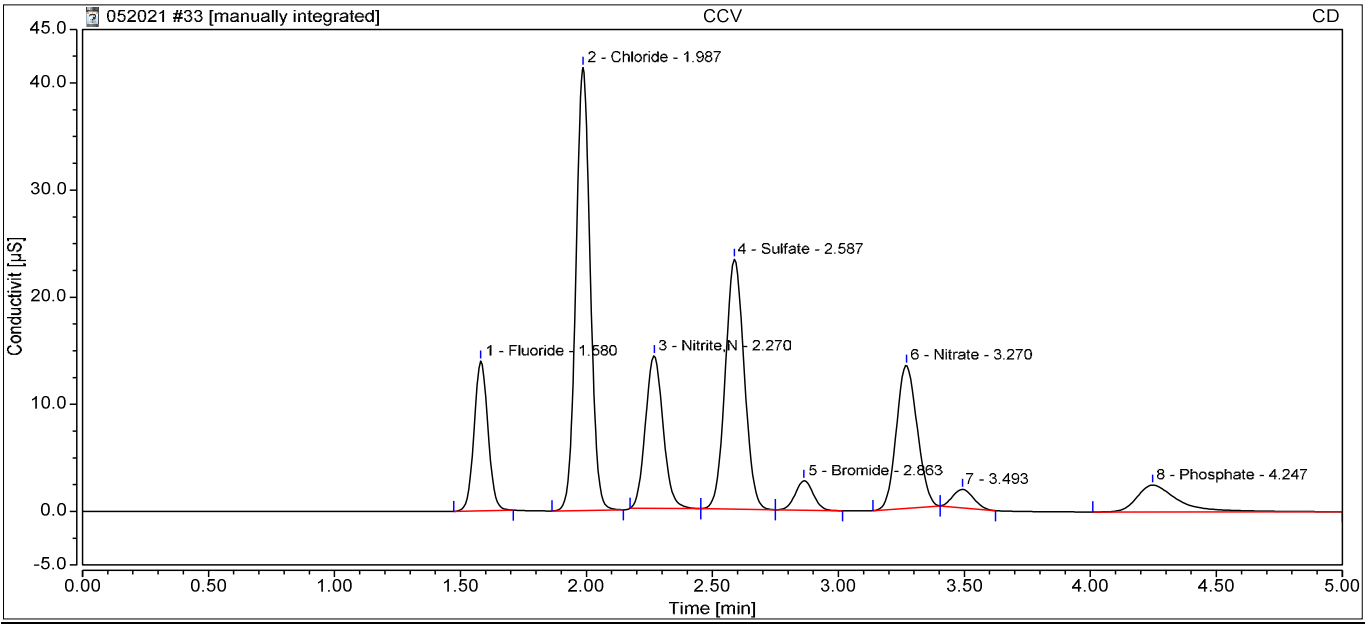
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB	0.071	0.3272	0.3272	1.0000
2	1.99	Chloride	BMB	2.326	17.3141	17.3141	1.0000
3	2.24	Nitrite,N	BMB	0.046	0.1188	0.1188	1.0000
4	2.56	Sulfate	BMB	7.259	73.3159	73.3159	1.0000
5	2.86	Bromide	BMB	0.009	0.1518	0.1518	1.0000
6	3.30	Nitrate	BMB	0.018	0.0589	0.0589	1.0000
7	4.37	Phosphate	BMB	0.002	0.0512	0.0512	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**9.731**		**91.34**	

33 CCV

Sample Name:	**CCV**	*Injection Volume:*	**5.00**
Vial Number:	**R1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/20/2021 15:50**	*Sample Weight:*	**1.0000**

Run Time:



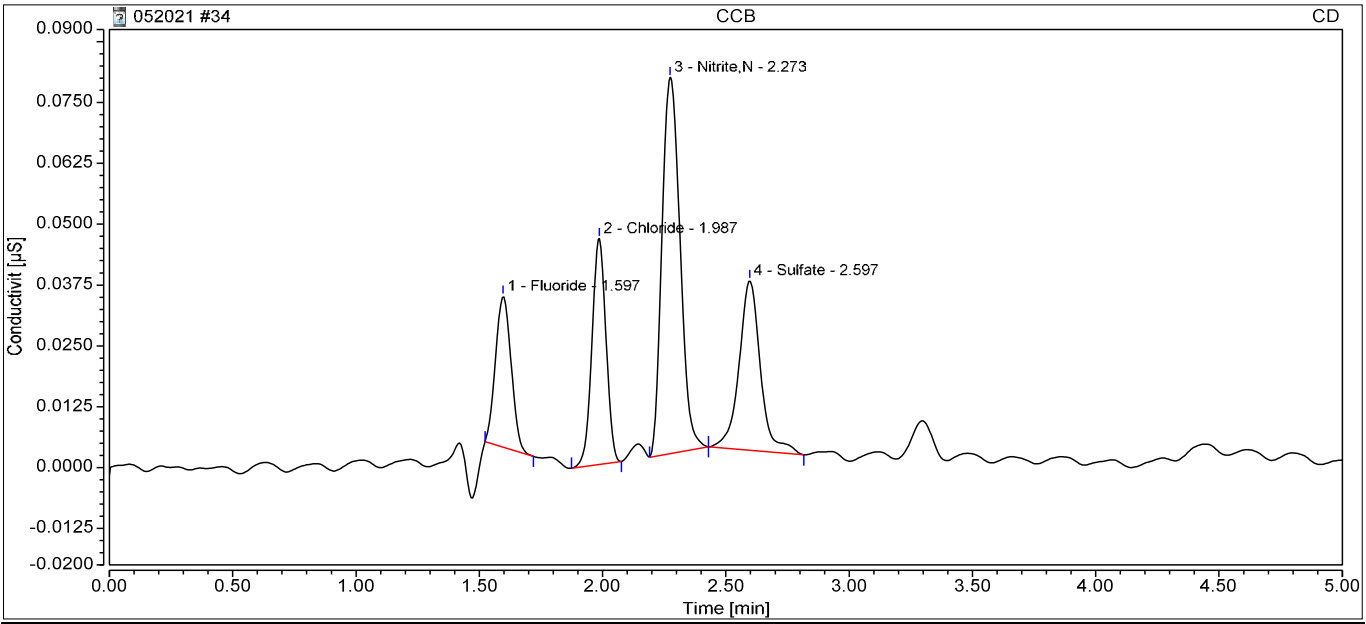
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.58	Fluoride	BMB*	0.894	4.3449	4.3449	1.0000
2	1.99	Chloride	BMB	2.715	20.2032	20.2032	1.0000
3	2.27	Nitrite,N	BMB*	1.160	4.3659	4.3659	1.0000
4	2.59	Sulfate	BMB	2.029	20.4828	20.4828	1.0000
5	2.86	Bromide	BMB	0.228	4.0276	4.0276	1.0000
6	3.27	Nitrate	BMB	1.279	3.8230	3.8230	1.0000
8	4.25	Phosphate	BMB	0.475	3.7016	3.7016	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**8.779**		**60.95**	

34 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R4**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**05/20/2021 15:57**	*Sample Weight:*	**1.0000**

Run Time:



Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.60	Fluoride	BMB	0.002	n.a.	n.a.	1.0000
2	1.99	Chloride	BMB	0.003	0.0263	0.0263	1.0000
3	2.27	Nitrite,N	BMB	0.007	n.a.	n.a.	1.0000
4	2.60	Sulfate	BMB	0.004	0.0251	0.0251	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.015**		**0.05**	

HS21050972 Wet Chem Raw Data (TOC_W 5310B)

ALS WO# HS21050972

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	Type	Analysis	Sample Name	Sample ID	Origin	Result
1	Standard	NPOC	CAL	3150171(01-07)	02_25_2021_CAL.2021_02_	
2	Unknown	NPOC	ICV	315017108	02_25_2021_CAL.cal	NPOC:10.14mg/L
3	Unknown	NPOC	ICB		02_25_2021_CAL.cal	NPOC:-0.1140mg/L
4	Unknown	NPOC	CCV	315017106	02_25_2021_CAL.cal	NPOC:25.02mg/L
5	Unknown	NPOC	CCB		02_25_2021_CAL.cal	NPOC:-0.07587mg/L
6	Unknown	NPOC	MBLK-02252021		02_25_2021_CAL.cal	NPOC:-0.1214mg/L
7	Unknown	NPOC	LCS-02252021		02_25_2021_CAL.cal	NPOC:10.15mg/L
8	Unknown	NPOC	LCSD02252021		02_25_2021_CAL.cal	NPOC:10.16mg/L
9	Unknown	NPOC	HS21020689-01		02_25_2021_CAL.cal	NPOC:22.48mg/L
10	Unknown	NPOC	HS21020689-02		02_25_2021_CAL.cal	NPOC:17.34mg/L
11	Unknown	NPOC	HS21020689-02MS		02_25_2021_CAL.cal	NPOC:28.25mg/L
12	Unknown	NPOC	HS21020689-03		02_25_2021_CAL.cal	NPOC:10.22mg/L
13	Unknown	NPOC	HS21020538-01		02_25_2021_CAL.cal	NPOC:20.36mg/L
14	Unknown	NPOC	HS21020538-02		02_25_2021_CAL.cal	NPOC:4.452mg/L
15	Unknown	NPOC	HS21020793-02DF10		02_25_2021_CAL.cal	NPOC:17.50mg/L
16	Unknown	NPOC	CCV		02_25_2021_CAL.cal	NPOC:25.46mg/L
17	Unknown	NPOC	CCB		02_25_2021_CAL.cal	NPOC:0.08018mg/L

	Notes	Status	Date / Time	Vial
1		Completed	2/25/2021 1	1, 2, 3, 4, 5,
2		Completed	2/25/2021 1	8
3		Completed	2/25/2021 1	9
4		Completed	2/25/2021 1	10
5		Completed	2/25/2021 1	11
6		Completed	2/25/2021 1	12
7		Completed	2/25/2021 1	13
8		Completed	2/25/2021 1:	14
9		Completed	2/25/2021 1:	15
10		Completed	2/25/2021 1:	16
11		Completed	2/25/2021 1:	17
12		Completed	2/25/2021 2:	18
13		Completed	2/25/2021 2:	19
14		Completed	2/25/2021 2:	20
15		Completed	2/25/2021 2:	21
16		Completed	2/25/2021 3:	22
17		Completed	2/25/2021 3:	23

TOC-Control L Report

2021_02_25_001.tlx

Instr.Information

Instrument Options	TOC/ASI/IC Unit/
Catalyst	Regular Sensitivity

Cal. Curve

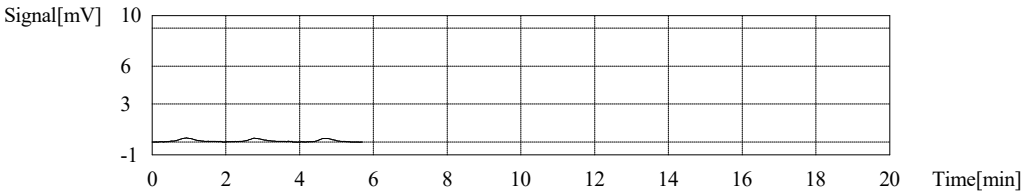
Sample Name:	CAL
Sample ID:	3150171(01-07)
Cal. Curve:	02_25_2021_CAL.2021_02_25_09_13_02.cal
Status	Completed

Type	Anal.
Standard	NPOC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	0.7577	50uL	1.000	*******		2/25/2021 9:21:39 AM
2	0.6368	50uL	1.000	*******		2/25/2021 9:23:47 AM
3	0.6500	50uL	1.000	*******		2/25/2021 9:25:55 AM

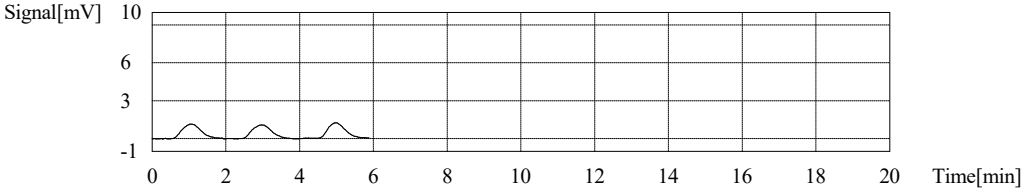
Acid Add.	0.000%
Sparge Gas Flow	80mL/min
Sp. Time	180.0sec
Mean Area	0.6815



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	4.063	50uL	1.000	*******		2/25/2021 9:34:44 AM
2	3.946	50uL	1.000	*******		2/25/2021 9:37:02 AM
3	3.886	50uL	1.000	*******		2/25/2021 9:39:10 AM

Acid Add.	0.000%
Sparge Gas Flow	80mL/min
Sp. Time	180.0sec
Mean Area	3.965



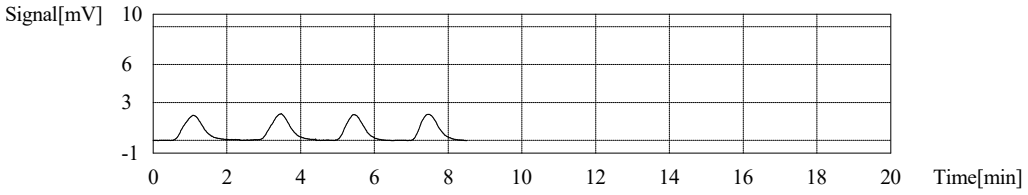
Conc: 2.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	7.014	50uL	1.000	*******		2/25/2021 9:48:25 AM
2	6.976	50uL	1.000	*******		2/25/2021 9:50:44 AM
3	6.738	50uL	1.000	*******	E	2/25/2021 9:53:02 AM
4	6.989	50uL	1.000	*******		2/25/2021 9:55:18 AM

TOC-Control L Report

2021_02_25_001.tlx

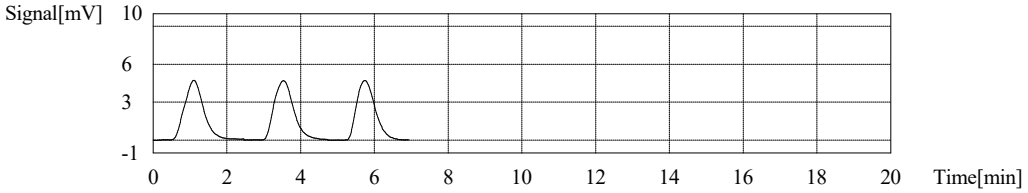
Acid Add. 0.000%
Sparge Gas Flow 80mL/min
Sp. Time 180.0sec
Mean Area 6.993



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	16.70	50uL	1.000	*******		2/25/2021 10:04:35 AM
2	16.99	50uL	1.000	*******		2/25/2021 10:07:06 AM
3	16.40	50uL	1.000	*******		2/25/2021 10:09:32 AM

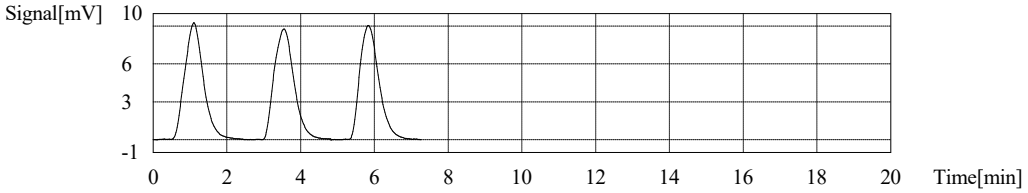
Acid Add. 0.000%
Sparge Gas Flow 80mL/min
Sp. Time 180.0sec
Mean Area 16.70



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	32.33	50uL	1.000	*******		2/25/2021 10:18:54 AM
2	32.41	50uL	1.000	*******		2/25/2021 10:21:29 AM
3	32.27	50uL	1.000	*******		2/25/2021 10:24:10 AM

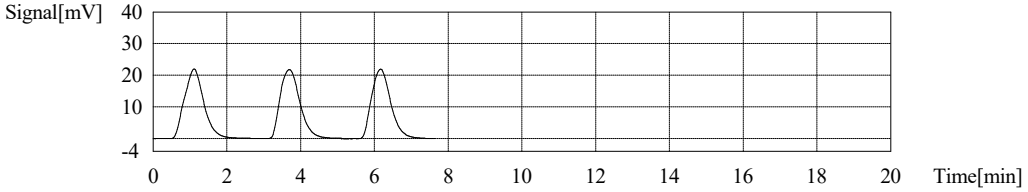
Acid Add. 0.000%
Sparge Gas Flow 80mL/min
Sp. Time 180.0sec
Mean Area 32.34



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	79.83	50uL	1.000	*******		2/25/2021 10:33:42 AM
2	80.51	50uL	1.000	*******		2/25/2021 10:36:25 AM
3	79.09	50uL	1.000	*******		2/25/2021 10:39:12 AM

Acid Add. 0.000%
Sparge Gas Flow 80mL/min
Sp. Time 180.0sec
Mean Area 79.81



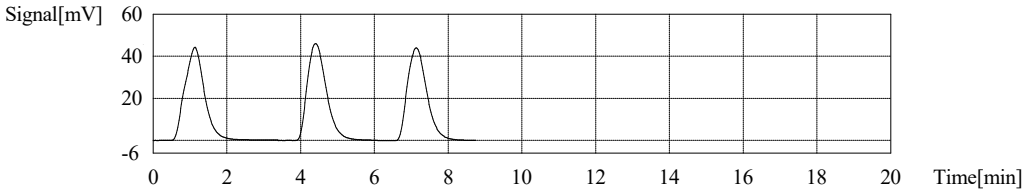
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	162.4	50uL	1.000	*******		2/25/2021 10:49:29 AM
2	163.8	50uL	1.000	*******		2/25/2021 10:52:26 AM
3	159.9	50uL	1.000	*******		2/25/2021 10:55:21 AM

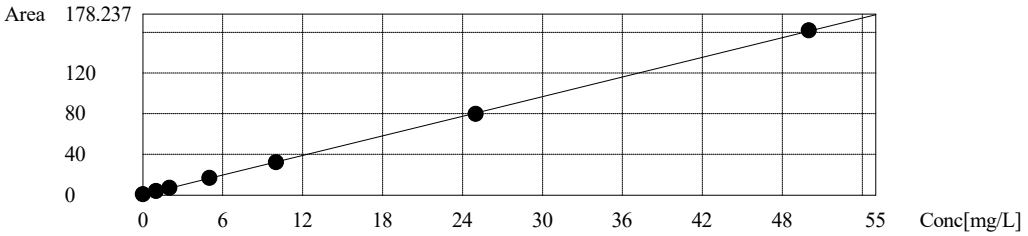
TOC-Control L Report

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Acid Add.	0.000%
Sparge Gas Flow	80mL/min
Sp. Time	180.0sec
Mean Area	162.0



Slope:	3.220
Intercept	0.4365
r^2	0.9999
r	1.0000
RSE(%)	N/A
Zero Shift	No



Sample

Sample Name:	ICV
Sample ID:	315017108
Origin:	02_25_2021_CAL.cal
Status	Completed
Chk. Result	

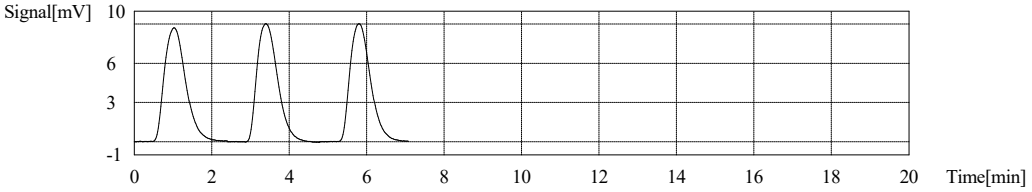
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.14mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	33.04	10.13mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:32:06 AM
2	33.24	10.19mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:34:44 AM
3	32.98	10.11mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:37:17 AM

Mean Area	33.09
Mean Conc.	10.14mg/L



Sample

Sample Name:	ICB
Sample ID:	
Origin:	02_25_2021_CAL.cal
Status	Completed
Chk. Result	

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:-0.1140mg/L

1. Det

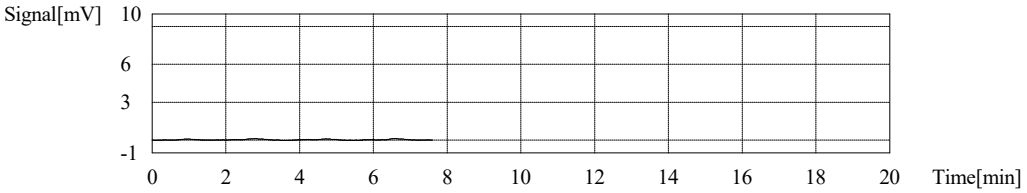
TOC-Control L Report

2021_02_25_001.tlx

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.000	-0.1356mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:46:05 AM
2	0.2080	-0.07096mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:48:13 AM
3	0.000	-0.1356mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:50:20 AM
4	0.2102	-0.07028mg/L	50uL	1.000	E	02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:52:27 AM

Mean Area 0.06933
Mean Conc. -0.1140mg/L



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	Type	Analysis	Sample Name	Sample ID	Origin	Result	Notes	Status	Date / Time
1	Unknown	NPOC	CCV	3100603915	05_10_2021	NPOC:25.8		Completed	5/20/2021 5:
2	Unknown	NPOC	CCB	TOC_W	05_10_2021	NPOC:0.14		Completed	5/20/2021 6:
3	Unknown	NPOC	MBLK-05202021	TOC_W 531	05_10_2021	NPOC:0.13		Completed	5/20/2021 6:
4	Unknown	NPOC	LCS-05202021		05_10_2021	NPOC:10.3		Completed	5/20/2021 6:
5	Unknown	NPOC	LCSD-05202021		05_10_2021	NPOC:10.2		Completed	5/20/2021 6:
6	Unknown	NPOC	HS21050917-02		05_10_2021	NPOC:3.07		Completed	5/20/2021 6:
7	Unknown	NPOC	HS21050940-01		05_10_2021	NPOC:7.26		Completed	5/20/2021 7:
8	Unknown	NPOC	HS21050940-01MS		05_10_2021	NPOC:18.5		Completed	5/20/2021 7:
9	Unknown	NPOC	HS21050990-01		05_10_2021	NPOC:4.91		Completed	5/20/2021 7:
10	Unknown	NPOC	HS21050990-02		05_10_2021	NPOC:7.79		Completed	5/20/2021 7:
11	Unknown	NPOC	HS21050994-07		05_10_2021	NPOC:54.2		Completed	5/20/2021 7:
12	Unknown	NPOC	HS21050994-08		05_10_2021	NPOC:39.1		Completed	5/20/2021 8:
13	Unknown	NPOC	CCV	3100603915	05_10_2021	NPOC:25.9		Completed	5/20/2021 8:
14	Unknown	NPOC	CCB		05_10_2021	NPOC:0.13		Completed	5/20/2021 8:
15	Unknown	NPOC	HS21050906-01		05_10_2021	NPOC:34.8		Completed	5/20/2021 8:
16	Unknown	NPOC	HS21050916-01		05_10_2021	NPOC:11.2		Completed	5/20/2021 9:
17	Unknown	NPOC	HS21050932-01		05_10_2021	NPOC:3.90		Completed	5/20/2021 9:
18	Unknown	NPOC	HS21050934-01		05_10_2021	NPOC:2.34		Completed	5/20/2021 9:
19	Unknown	NPOC	CCV	3100603915	05_10_2021	NPOC:26.0		Completed	5/20/2021 9:
20	Unknown	NPOC	CCB		05_10_2021	NPOC:0.13		Completed	5/20/2021 9:
21	Unknown	NPOC	MBLK2-05202021	TOC_W 531	05_10_2021	NPOC:0.11		Completed	5/20/2021 1
22	Unknown	NPOC	LCS2-05202021		05_10_2021	NPOC:10.2		Completed	5/20/2021 1
23	Unknown	NPOC	LCSD2-05202021		05_10_2021	NPOC:10.2		Completed	5/20/2021 1
24	Unknown	NPOC	HS21050905-02		05_10_2021	NPOC:0.55		Completed	5/20/2021 1
25	Unknown	NPOC	HS21050905-02MS		05_10_2021	NPOC:11.1		Completed	5/20/2021 1
26	Unknown	NPOC	HS21050910-01		05_10_2021	NPOC:12.6		Completed	5/20/2021 1
27	Unknown	NPOC	HS21050972-08		05_10_2021	NPOC:0.98		Completed	5/20/2021 1
28	Unknown	NPOC	HS21050972-09		05_10_2021	NPOC:1.15		Completed	5/20/2021 1
29	Unknown	NPOC	HS21050972-10		05_10_2021	NPOC:1.37		Completed	5/20/2021 1
30	Unknown	NPOC	HS21050972-11		05_10_2021	NPOC:1.48		Completed	5/21/2021 1
31	Unknown	NPOC	CCV	3100603915	05_10_2021	NPOC:25.8		Completed	5/21/2021 1
32	Unknown	NPOC	CCB		05_10_2021	NPOC:0.24		Completed	5/21/2021 1
33	Unknown	NPOC	HS21050996-02		05_10_2021	NPOC:4.34		Completed	5/21/2021 1
34	Unknown	NPOC	HS21050996-06		05_10_2021	NPOC:6.34		Completed	5/21/2021 1
35	Unknown	NPOC	HS21050996-09		05_10_2021	NPOC:5.42		Completed	5/21/2021 1:
36	Unknown	NPOC	CCV	3100603915	05_10_2021	NPOC:25.7		Completed	5/21/2021 1:
37	Unknown	NPOC	CCB		05_10_2021	NPOC:0.13		Completed	5/21/2021 1:

	Vial
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	1
14	2
15	13
16	14
17	15
18	16
19	1
20	2
21	3
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24	17
25	18
26	19
27	20
28	21
29	22
30	23
31	24
32	25
33	26
34	27
35	28
36	24
37	25

TOC-Control L Report

2021_05_20_001.tlx

Instr.Information

Instrument Options: TOC/ASI/IC Unit/
Catalyst: Regular Sensitivity

Sample

Sample Name: MBLK2-05202021
Sample ID: TOC_W 5310B
Origin: 05_10_2021A_CAL.cal
Status: Completed
Chk. Result

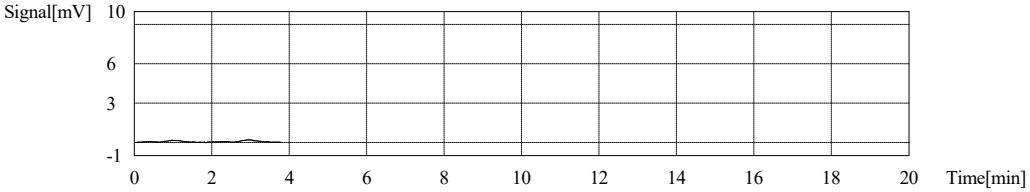
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.1164mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.3224	0.09690mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 10:00:47 PM
2	0.4521	0.1359mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 10:03:47 PM

Mean Area 0.3872
Mean Conc. 0.1164mg/L



Sample

Sample Name: LCS2-05202021
Sample ID:
Origin: 05_10_2021A_CAL.cal
Status: Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.20mg/L

1. Det

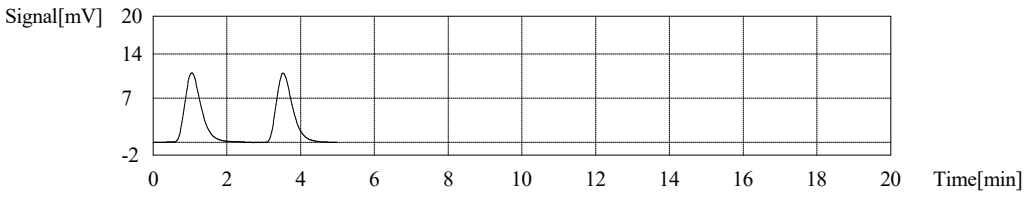
Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	33.91	10.19mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 10:12:20 PM
2	34.00	10.22mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 10:15:21 PM

TOC-Control L Report

2021_05_20_001.tlx

Mean Area 33.95
Mean Conc. 10.20mg/L



Sample

Sample Name: LCSD2-05202021
Sample ID:
Origin: 05_10_2021A_CAL.cal
Status Completed
Chk. Result

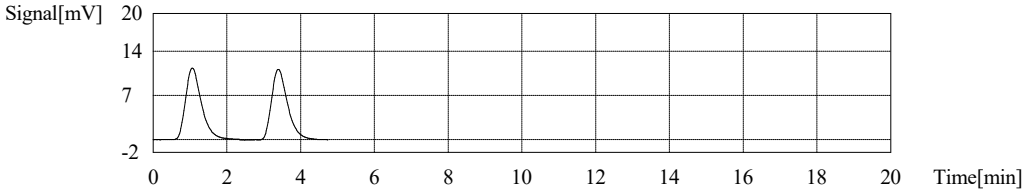
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.29mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	34.18	10.27mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 10:24:03 PM
2	34.30	10.31mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 10:27:07 PM

Mean Area 34.24
Mean Conc. 10.29mg/L



Sample

Sample Name: HS21050905-02
Sample ID:
Origin: 05_10_2021A_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.5590mg/L

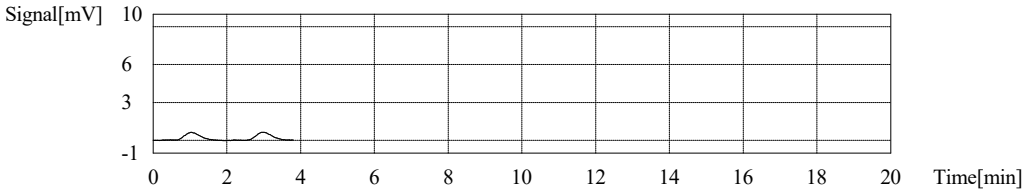
1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1.814	0.5452mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 10:35:12 PM
2	1.906	0.5728mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 10:38:12 PM

TOC-Control L Report

Mean Area 1.860
Mean Conc. 0.5590mg/L



Sample

Sample Name: HS21050905-02MS
Sample ID:
Origin: 05_10_2021A_CAL.cal
Status Completed
Chk. Result

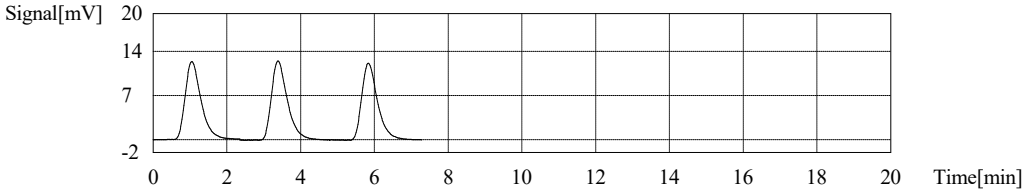
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:11.11mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	37.08	11.14mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 10:46:37 PM
2	38.19	11.48mg/L	50uL	1.000	E	05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 10:49:42 PM
3	36.84	11.07mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 10:52:46 PM

Mean Area 36.96
Mean Conc. 11.11mg/L



Sample

Sample Name: HS21050972-08
Sample ID:
Origin: 05_10_2021A_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.9813mg/L

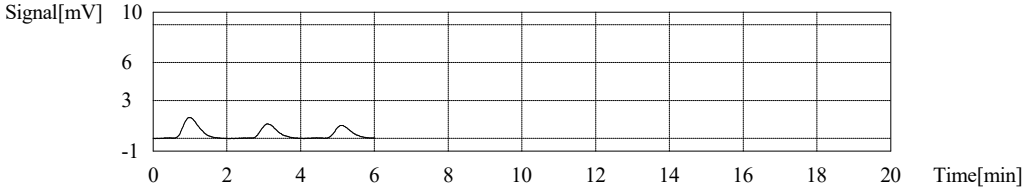
1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.036	1.514mg/L	50uL	1.000	E	05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 11:13:02 PM
2	3.475	1.044mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 11:15:58 PM
3	3.055	0.9182mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 11:18:51 PM

TOC-Control L Report

Mean Area 3.265
Mean Conc. 0.9813mg/L



Sample

Sample Name: HS21050972-09
Sample ID:
Origin: 05_10_2021A_CAL.cal
Status Completed
Chk. Result

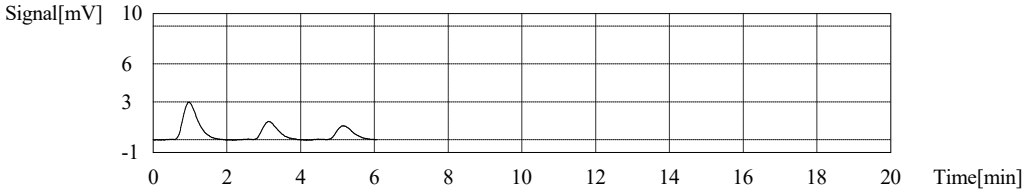
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:1.154mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.361	2.513mg/L	50uL	1.000	E	05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 11:27:17 PM
2	4.285	1.288mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 11:30:10 PM
3	3.395	1.020mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 11:33:04 PM

Mean Area 3.840
Mean Conc. 1.154mg/L



Sample

Sample Name: HS21050972-10
Sample ID:
Origin: 05_10_2021A_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:1.374mg/L

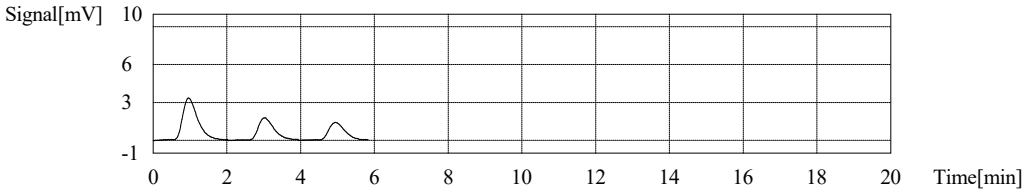
1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.267	2.785mg/L	50uL	1.000	E	05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 11:41:25 PM
2	5.035	1.513mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 11:44:17 PM
3	4.107	1.234mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 11:47:17 PM

TOC-Control L Report

Mean Area 4.571
Mean Conc. 1.374mg/L



Sample

Sample Name: HS21050972-11
Sample ID:
Origin: 05_10_2021A_CAL.cal
Status Completed
Chk. Result

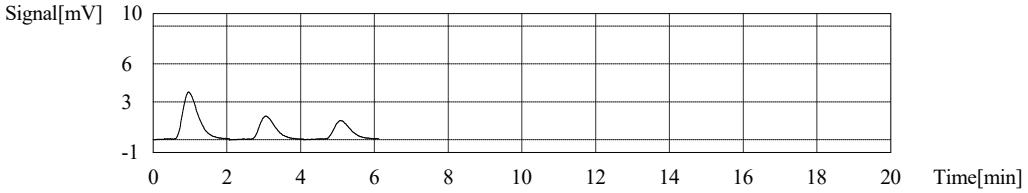
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:1.486mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.81	3.249mg/L	50uL	1.000	E	05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 11:55:40 PM
2	5.441	1.635mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/20/2021 11:58:36 PM
3	4.451	1.338mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/21/2021 12:01:39 AM

Mean Area 4.946
Mean Conc. 1.486mg/L



Sample

Sample Name: CCV
Sample ID: 3100603915
Origin: 05_10_2021A_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:25.87mg/L

1. Det

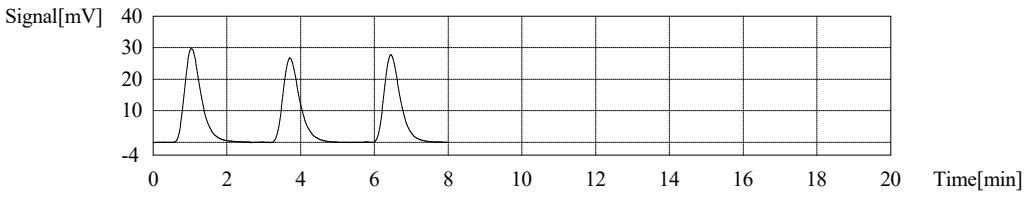
Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	93.24	28.02mg/L	50uL	1.000	E	05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/21/2021 12:10:35 AM
2	86.36	25.96mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/21/2021 12:13:42 AM
3	85.80	25.79mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/21/2021 12:16:34 AM

TOC-Control L Report

2021_05_20_001.tlx

Mean Area 86.08
Mean Conc. 25.87mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: 05_10_2021A_CAL.cal
Status Completed
Chk. Result

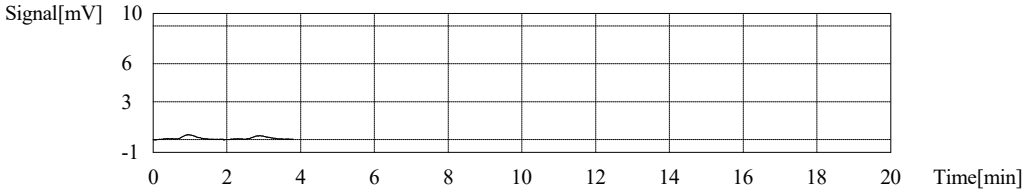
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.2466mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.8418	0.2530mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/21/2021 12:24:47 AM
2	0.7989	0.2401mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/21/2021 12:27:47 AM

Mean Area 0.8204
Mean Conc. 0.2466mg/L



Sample

Sample Name: CCV
Sample ID: 3100603915
Origin: 05_10_2021A_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:25.72mg/L

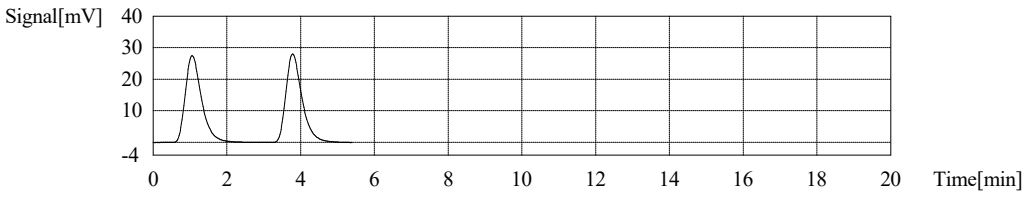
1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	84.93	25.53mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/21/2021 1:11:09 AM
2	86.21	25.91mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/21/2021 1:14:09 AM

TOC-Control L Report

Mean Area 85.57
Mean Conc. 25.72mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: 05_10_2021A_CAL.cal
Status Completed
Chk. Result

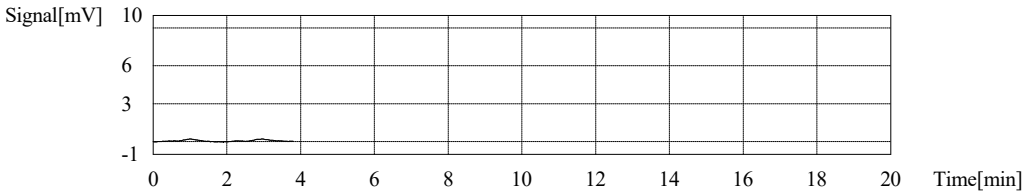
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.1375mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.4804	0.1444mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/21/2021 1:22:13 AM
2	0.4343	0.1305mg/L	50uL	1.000		05_10_2021A_CAL.2021_05_10_17_37_49.cal	5/21/2021 1:25:13 AM

Mean Area 0.4574
Mean Conc. 0.1375mg/L



HS21050972 ALS Simi Valley P2102781 Tier IV

ALS WO# HS21050972

LABORATORY REPORT

June 8, 2021

Ragen Giga
ALS Environmental - US
10450 Stancliff Rd Suite 210
Houston, TX 77099

RE: HS21050972

Dear Ragen:

Enclosed are the results of the samples submitted to our laboratory on May 21, 2021. For your reference, these analyses have been assigned our service request number P2102781.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Hayden Akers at 5:40 pm, Jun 08, 2021

Hayden Akers
Project Manager

Client: ALS Environmental - US
Project: HS21050972

Service Request No: P2102781

CASE NARRATIVE

The samples were received intact under chain of custody on May 21, 2021 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

Methane, Ethene and Ethane Analysis

The samples were analyzed for methane, ethene, and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

Manual integrations were performed on the following sample(s) and analyte(s). Refer to the raw data for additional information.

Sample Identification(s)	Analyte(s)
P2102781-001 & -003	Methane

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-008
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272019-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Environmental - US
Project ID: HS21050972
Service Request: P2102781

Date Received: 5/21/2021
Time Received: 16:49

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2	RSK 175 - Gases
35BWW12_210518	P2102781-001	Water	5/18/2021	07:40	X	X
35BWW12_210518-FD	P2102781-002	Water	5/18/2021	07:40	X	X
35BWW23_210518	P2102781-003	Water	5/18/2021	08:30	X	X
35BWW14_210518	P2102781-004	Water	5/18/2021	09:20	X	X

P2102781

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **16159**

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone: +1 805 526 7161

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	Ragen Giga
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RagenP.Giga@ALSGlobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS21050972
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS21050972-08**	**35BWW12_210518**	**Groundwater**	**18 May 2021 07:40**
	MEE + CO2. Provide DOD LV II & IV pdf separate. EDD. EQuIS 5.0 - Longhorn		Equis	03 Jun 2021
2.	**HS21050972-09**	**35BWW12_210518-FD**	**Groundwater**	**18 May 2021 07:40**
	MEE + CO2. Provide DOD LV II & IV pdf separate. EDD. EQuIS 5.0 - Longhorn		Equis	03 Jun 2021
3.	**HS21050972-10**	**35BWW23_210518**	**Groundwater**	**18 May 2021 08:30**
	MEE + CO2. Provide DOD LV II & IV pdf separate. EDD. EQuIS 5.0 - Longhorn		Equis	03 Jun 2021
4.	**HS21050972-11**	**35BWW14_210518**	**Groundwater**	**18 May 2021 09:20**
	MEE + CO2. Provide DOD LV II & IV pdf separate. EDD. EQuIS 5.0 - Longhorn		Equis	03 Jun 2021

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.
VOANeat for CO2 & VOAHCL for MEE

QC Level: DOD IV (DoD Data Package)

P2102781

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense**

COC ID: **16159**

Relinquished By: _____ Date/Time: 5/20/2021 1800.

Received By: _____ Date/Time: 5-21-21 0945

Cooler ID(s): _____ Temperature(s): 2° WBS

ALS Environmental
Sample Acceptance Check Form

Client: ALS Environmental - US Work order: P2102781

Project: HS21050972

Sample(s) received on: 5/21/21 Date opened: 5/21/21 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: 2° C Blank Temperature: ° C	Wet Ic		
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler lid. Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☒	☐	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2102781-001.01	40mL VOA NP		7		A	wh 5/29/21
P2102781-001.02	40mL VOA NP				A	
P2102781-001.03	40mL VOA NP				A	
P2102781-001.04	40ml VOA HCL		1		A	CB 6/1/21
P2102781-001.05	40ml VOA HCL				A	
P2102781-001.06	40ml VOA HCL				A	
P2102781-002.01	40mL VOA NP		7		A	wh 5/29/21
P2102781-002.02	40mL VOA NP				A	
P2102781-002.03	40mL VOA NP				A	
P2102781-002.04	40ml VOA HCL		1		A	CB 6/1/21
P2102781-002.05	40ml VOA HCL				A	
P2102781-002.06	40ml VOA HCL				A	
P2102781-003.01	40mL VOA NP		7		A	wh 5/29/21
P2102781-003.02	40mL VOA NP				A	
P2102781-003.03	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: ALS Environmental - US Work order: P2102781

Project: HS21050972

Sample(s) received on: 5/21/21 Date opened: 5/21/21 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2102781-003.04	40ml VOA HCL		1		A	CB 6/1/21
P2102781-003.05	40ml VOA HCL				A	
P2102781-003.06	40ml VOA HCL				A	
P2102781-004.01	40mL VOA NP		7		A	wh 5/29/21
P2102781-004.02	40mL VOA NP				A	
P2102781-004.03	40mL VOA NP				A	
P2102781-004.04	40ml VOA HCL		1		A	CB 6/1/21
P2102781-004.05	40ml VOA HCL				A	
P2102781-004.06	40ml VOA HCL				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Environmental - US**
Client Project ID: **HS21050972** ALS Project ID: P2102781

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date(s) Collected: 5/18/21
Date Received: 5/21/21
Date Analyzed: 5/29/21

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
35BWW12_210518	P2102781-001	0.10	**480,000**	1,000	860	370	
35BWW12_210518-FD	P2102781-002	0.050	**500,000**	2,000	1,700	740	
35BWW23_210518	P2102781-003	0.050	**660,000**	2,000	1,700	740	
35BWW14_210518	P2102781-004	0.050	**320,000**	2,000	1,700	740	
Method Control Sample	P210529-MB	0.10	860	1,000	860	370	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Environmental - US**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2102781
Client Project ID: **HS21050972** ALS Sample ID: P210529-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Connor Barrett Date Analyzed: 5/29/21
Matrix: Water Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result$_1$ LCS ug/L	Result$_1$ DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	19,400	19,500	**85**	**85**	80-122	0	12	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Environmental - US**
Client Sample ID: **35BWW12_210518**
Client Project ID: **HS21050972**

ALS Project ID: P2102781
ALS Sample ID: P2102781-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 5/18/21
Date Received: 5/21/21
Date Analyzed: 6/1/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Environmental - US**
Client Sample ID: **35BWW12_210518-FD**
Client Project ID: **HS21050972**

ALS Project ID: P2102781
ALS Sample ID: P2102781-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 5/18/21
Date Received: 5/21/21
Date Analyzed: 6/1/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Environmental - US**
Client Sample ID: **35BWW23_210518**
Client Project ID: **HS21050972**

ALS Project ID: P2102781
ALS Sample ID: P2102781-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 5/18/21
Date Received: 5/21/21
Date Analyzed: 6/1/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Environmental - US**
Client Sample ID: **35BWW14_210518**
Client Project ID: **HS21050972**

ALS Project ID: P2102781
ALS Sample ID: P2102781-004

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 5/18/21
Date Received: 5/21/21
Date Analyzed: 6/1/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Environmental - US**
Client Sample ID: **Method Control Sample**
Client Project ID: **HS21050972**

ALS Project ID: P2102781
ALS Sample ID: P210601-MB

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 6/01/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Environmental - US**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS21050972**

ALS Project ID: P2102781
ALS Sample ID: P210601-LCS
P210601-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 6/01/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.52	2.41	2.29	**96**	**91**	73-125	5	26	
74-85-1	Ethene	4.40	4.82	4.82	**110**	**110**	72-133	0	11	
74-84-0	Ethane	4.72	4.83	4.86	**102**	**103**	74-131	1	10	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\29\
Data File : 05292108.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2021, 17:53:02
Operator : CB
Sample : P2102781-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 18:01:15 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

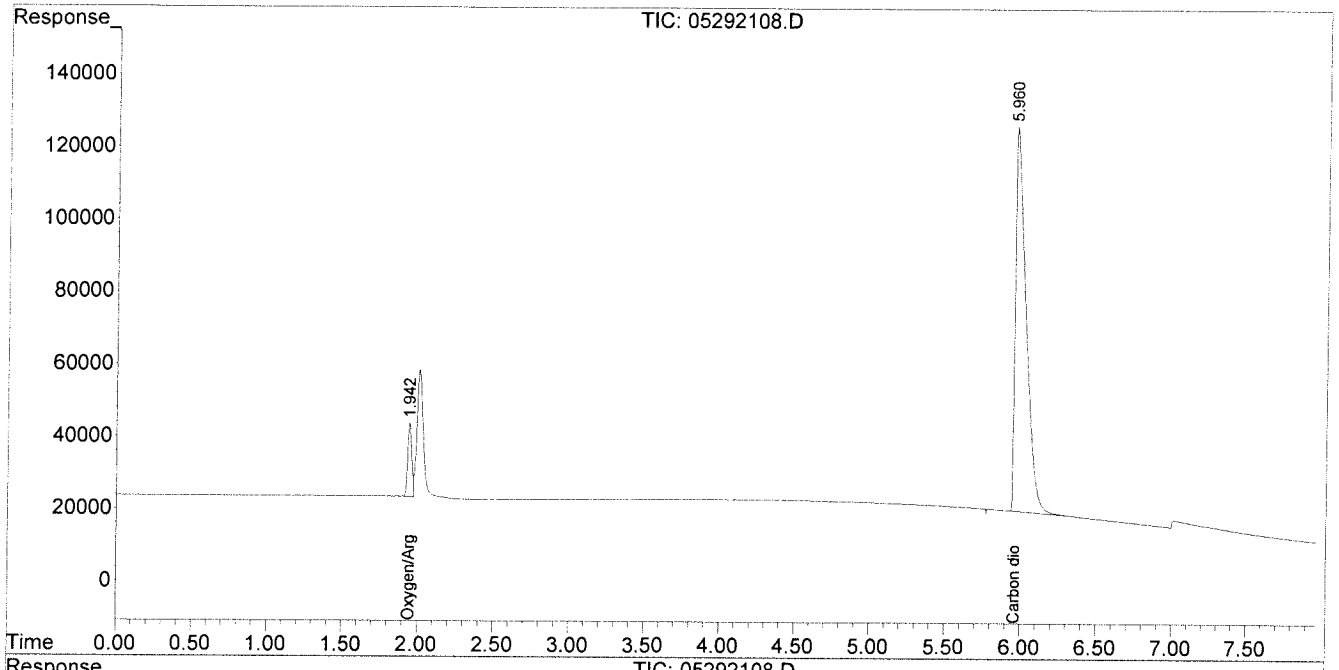
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.943f	369449	0.078	ppm
2)	Carbon monoxide	1.943f	369449	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.961	5157161	21970.686	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

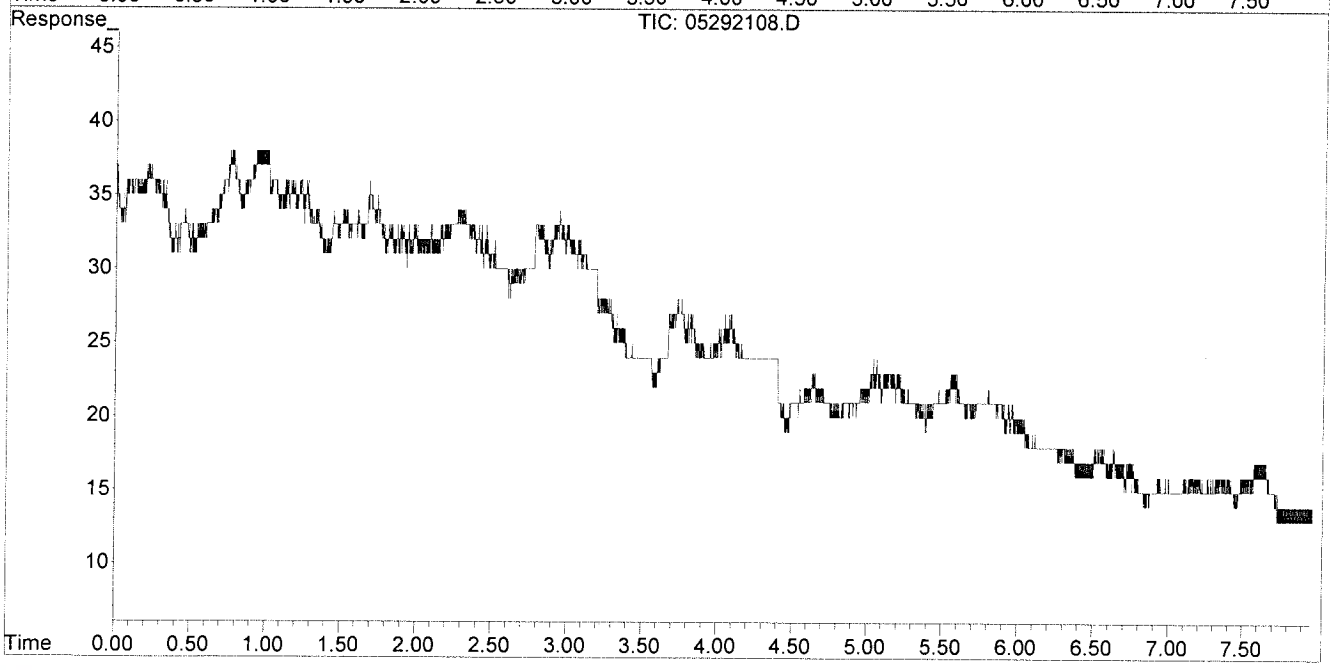
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\29\
Data File : 05292108.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2021, 17:53:02
Operator : CB
Sample : P2102781-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 18:01:15 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\29\
Data File : 05292109.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2021, 18:03:21
Operator : CB
Sample : P2102781-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 03 15:07:54 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

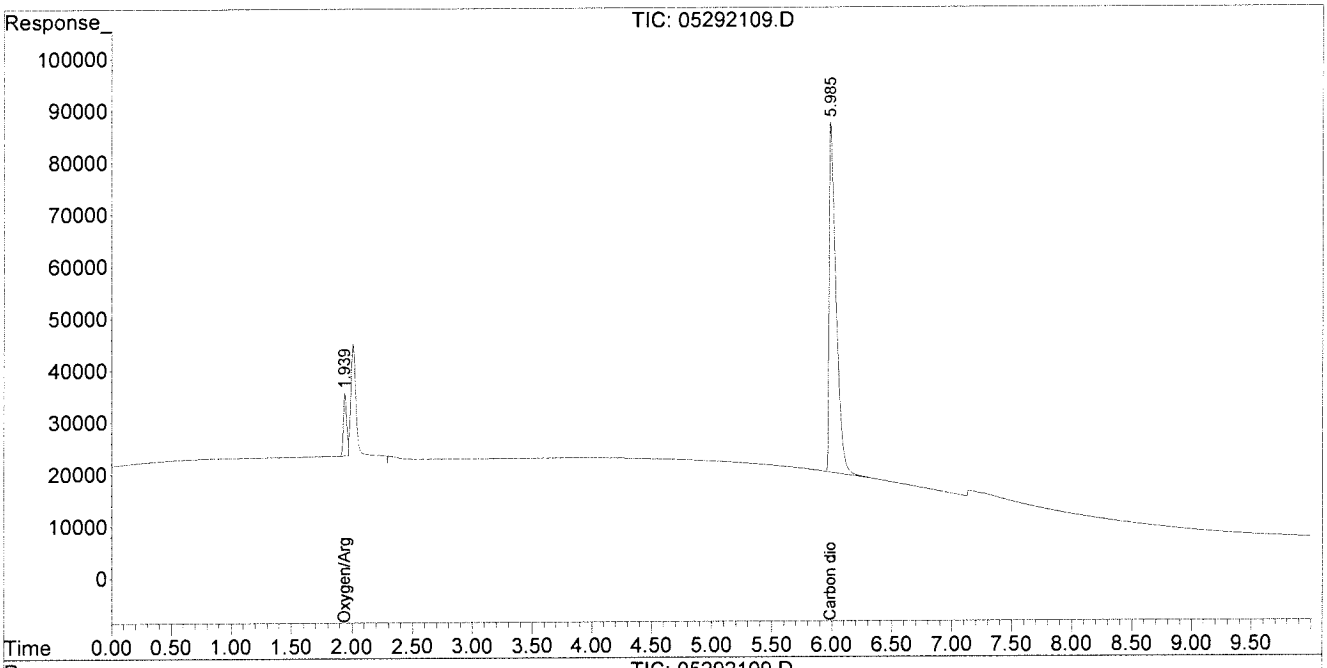
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.940f	217590	0.046	ppm
2)	Carbon monoxide	1.940f	217590	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.986	2681709	11424.691	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

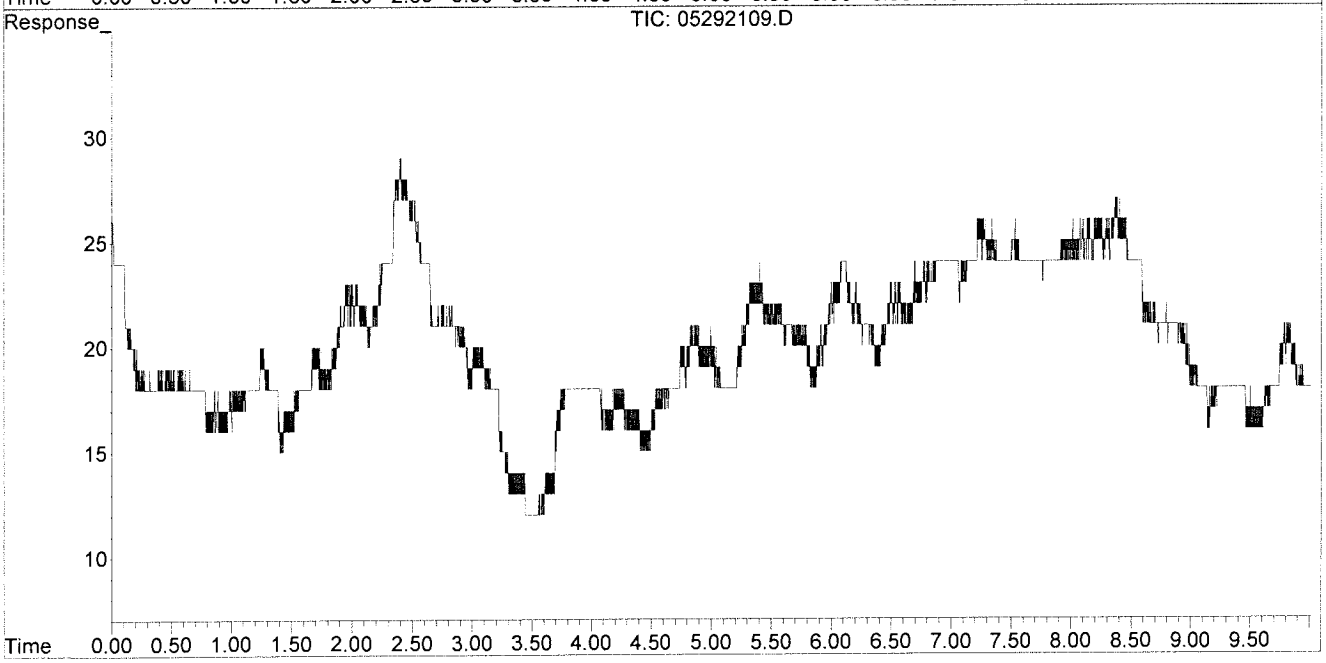
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\29\
Data File : 05292109.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2021, 18:03:21
Operator : CB
Sample : P2102781-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 03 15:07:54 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\29\
Data File : 05292110.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2021, 18:16:47
Operator : CB
Sample : P2102781-003 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 03 15:08:18 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

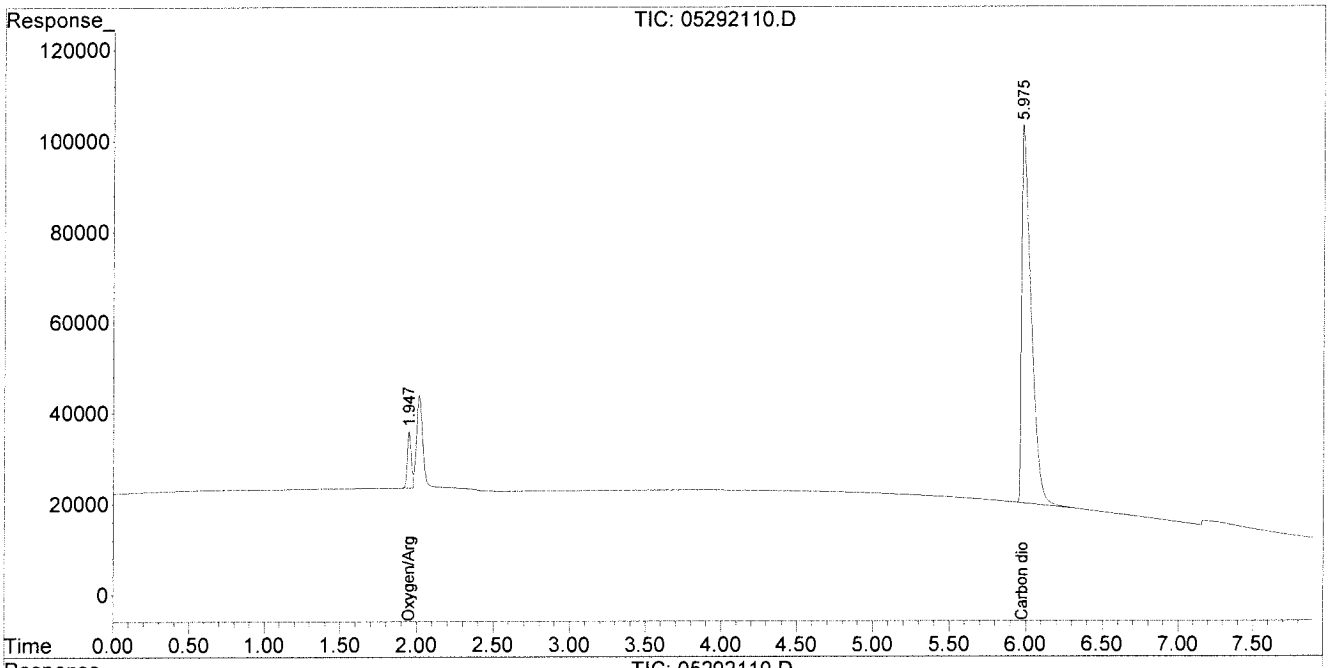
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.947f	223873	0.047	ppm
2)	Carbon monoxide	1.947f	223873	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.976	3545862	15106.181	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

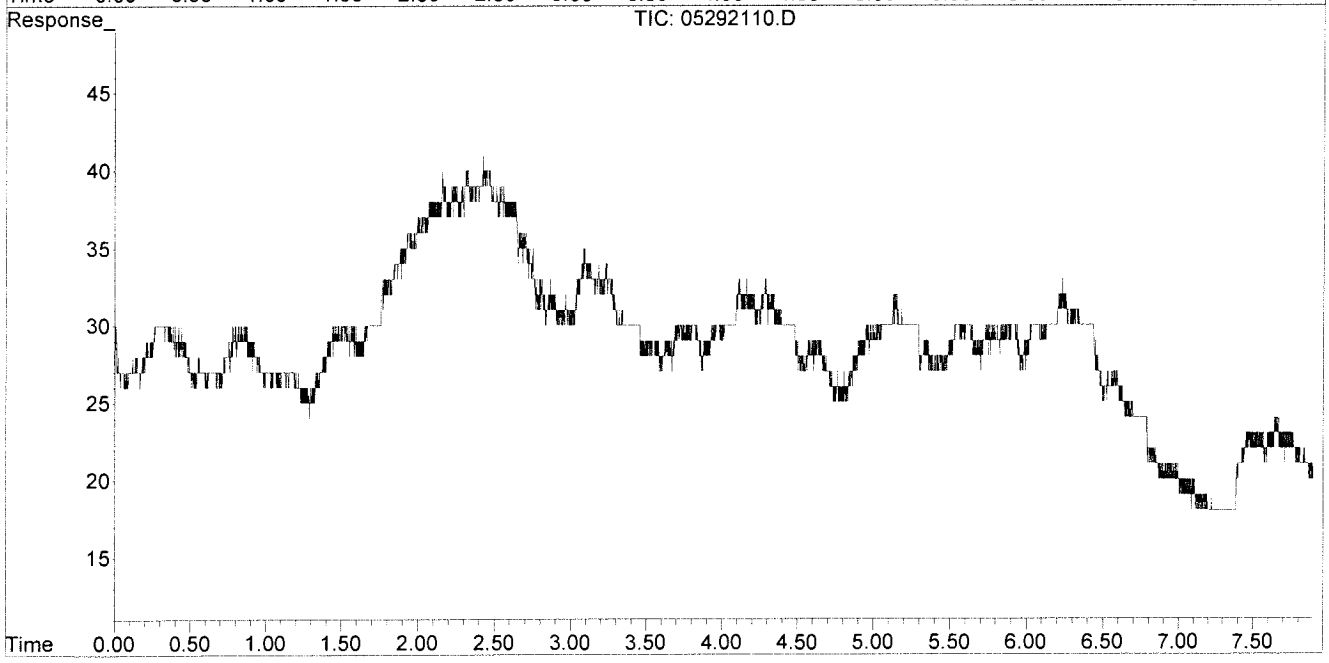
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\29\
Data File : 05292110.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2021, 18:16:47
Operator : CB
Sample : P2102781-003 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 03 15:08:18 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\29\
Data File : 05292111.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2021, 18:27:55
Operator : CB
Sample : P2102781-004 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 03 15:08:42 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

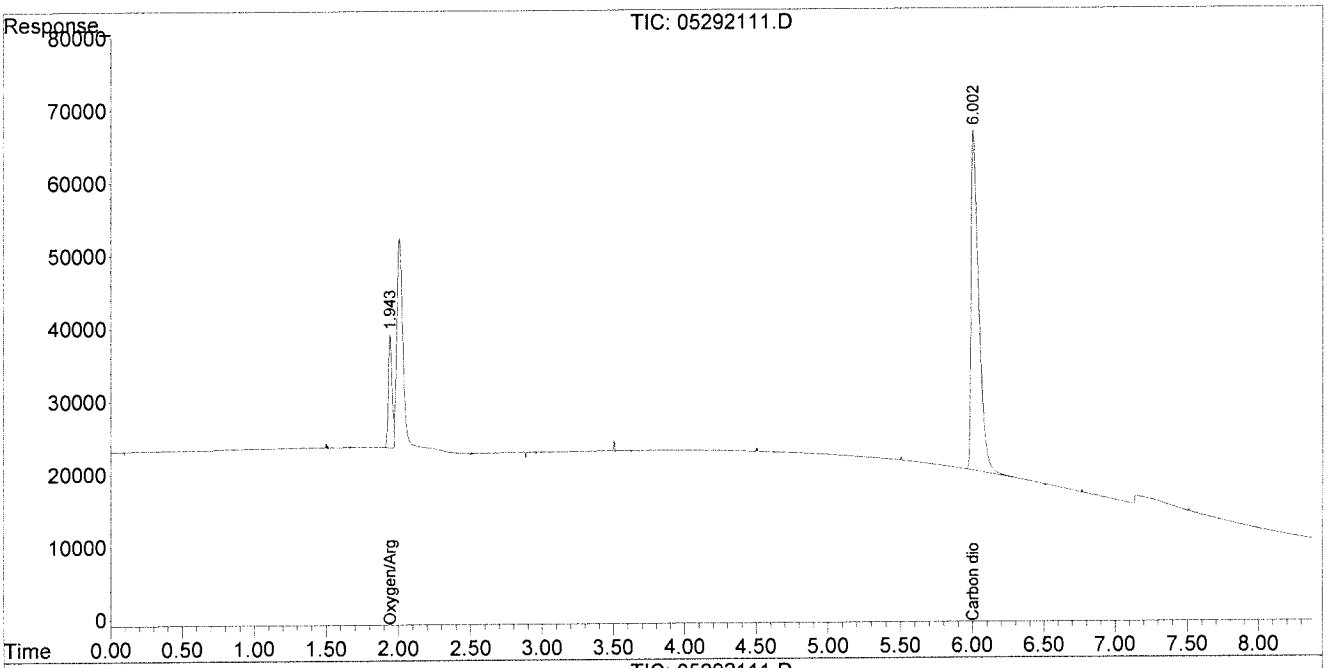
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.944f	271613	0.057	ppm
2)	Carbon monoxide	1.944f	271613	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.003	1708001	7276.475	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

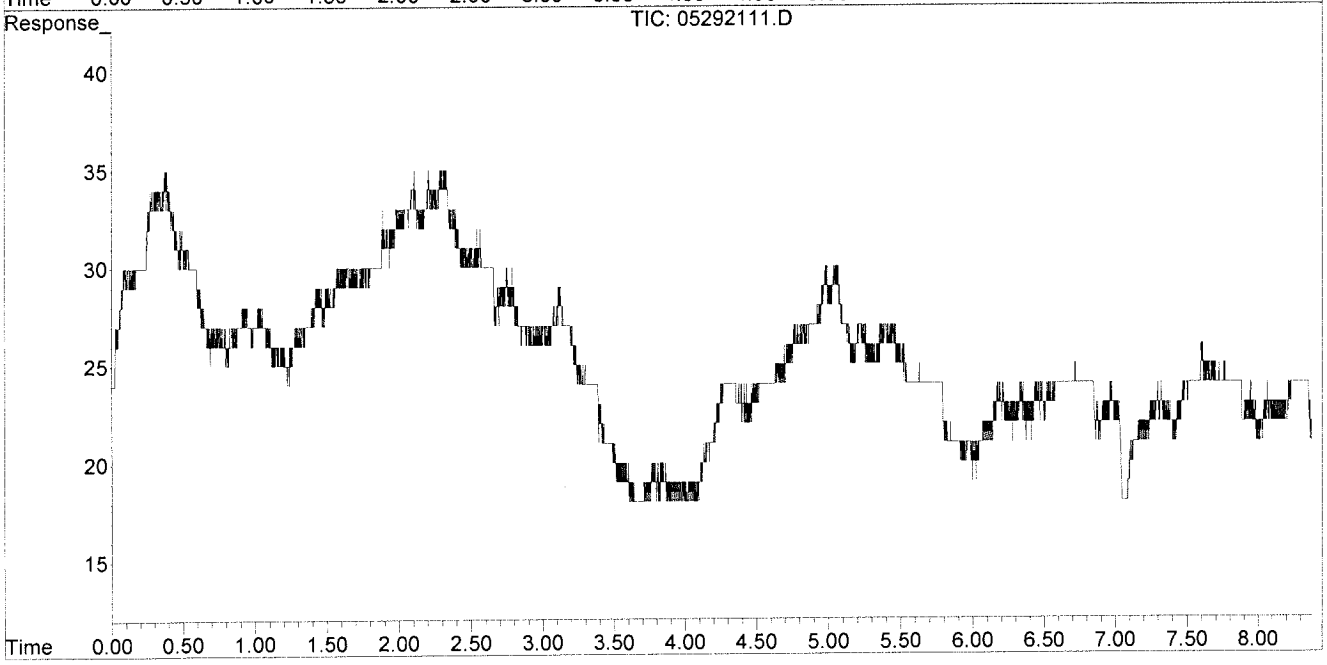
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\29\
Data File : 05292111.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2021, 18:27:55
Operator : CB
Sample : P2102781-004 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 03 15:08:42 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2021_05\29\
Data File : 05292103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2021, 12:48:52
Operator : CB
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 03 14:40:22 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.933f	228092	0.048	ppm
2)	Carbon monoxide	1.933f	228092	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

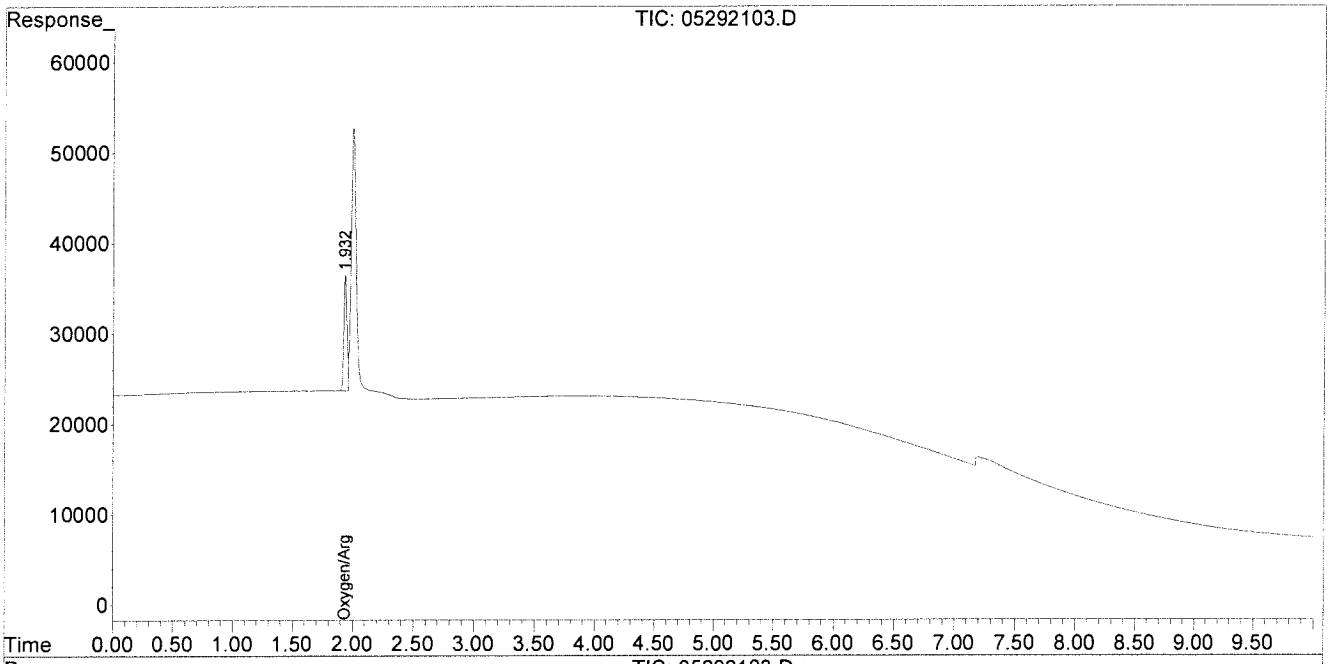
(f)=RT Delta > 1/2 Window (m)=manual int.

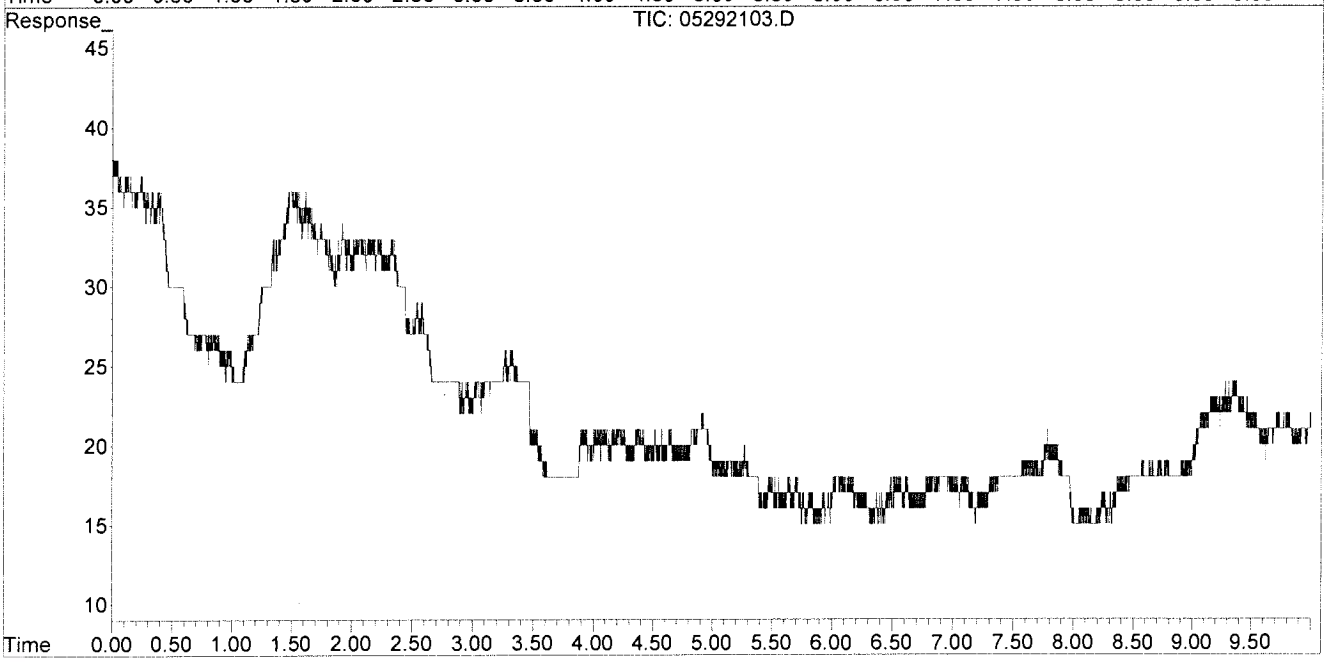
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\29\
Data File : 05292103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2021, 12:48:52
Operator : CB
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 03 14:40:22 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\29\
Data File : 05292106.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2021, 17:26:28
Operator : CB
Sample : lcs tcd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 17:34:39 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.826	5277855	1.109	ppm
2)	Carbon monoxide	1.826	5277855	N.D.	ppm
3)	Methane (TCD)	4.080f	331769	35080.487	ppm
4)	Carbon dioxide	6.002	208661	888.945	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

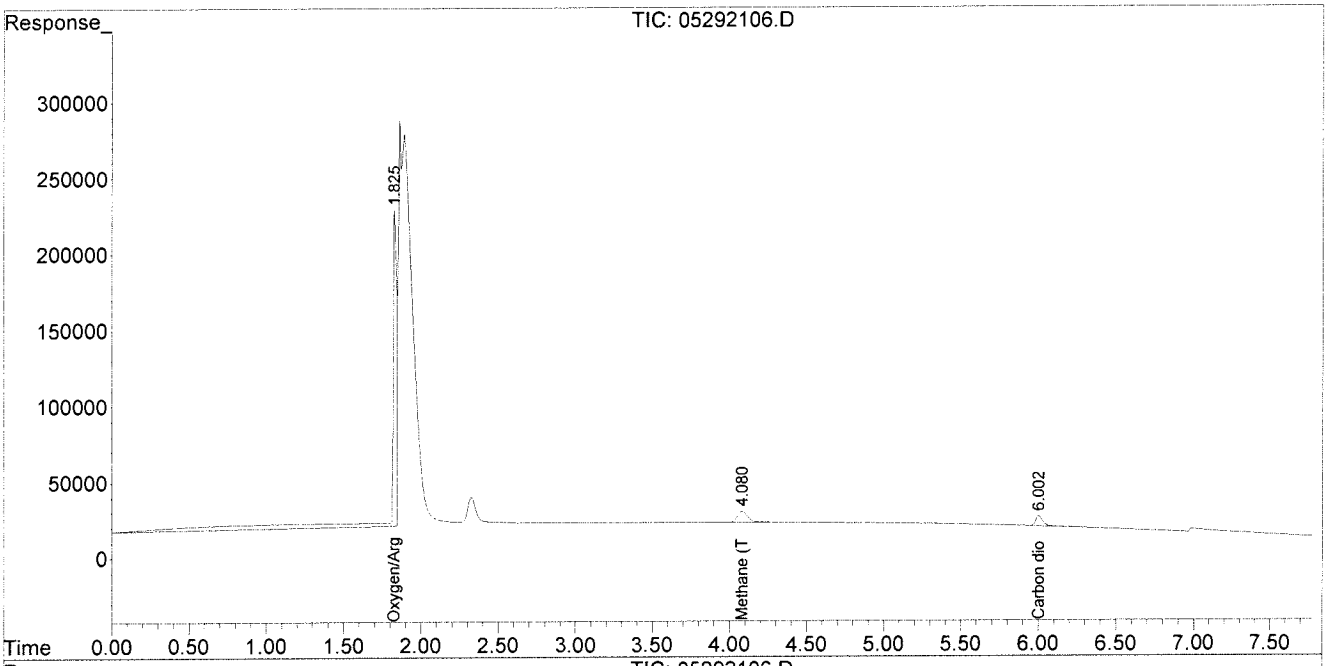
(f)=RT Delta > 1/2 Window (m)=manual int.

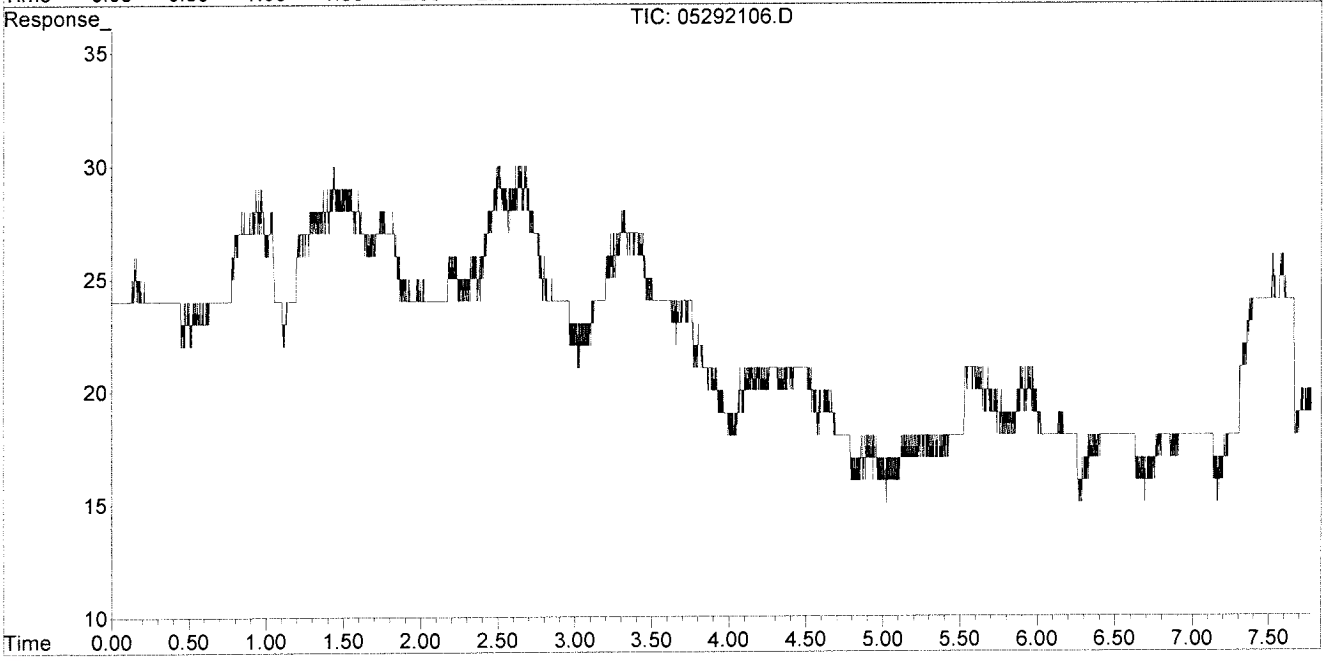
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\29\
Data File : 05292106.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2021, 17:26:28
Operator : CB
Sample : lcs tcd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 17:34:39 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\29\
Data File : 05292107.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2021, 17:36:26
Operator : CB
Sample : lcsd tcd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 17:51:52 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.850	3035703	0.638	ppm
2)	Carbon monoxide	1.850	3035703	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.026	209235	891.388	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

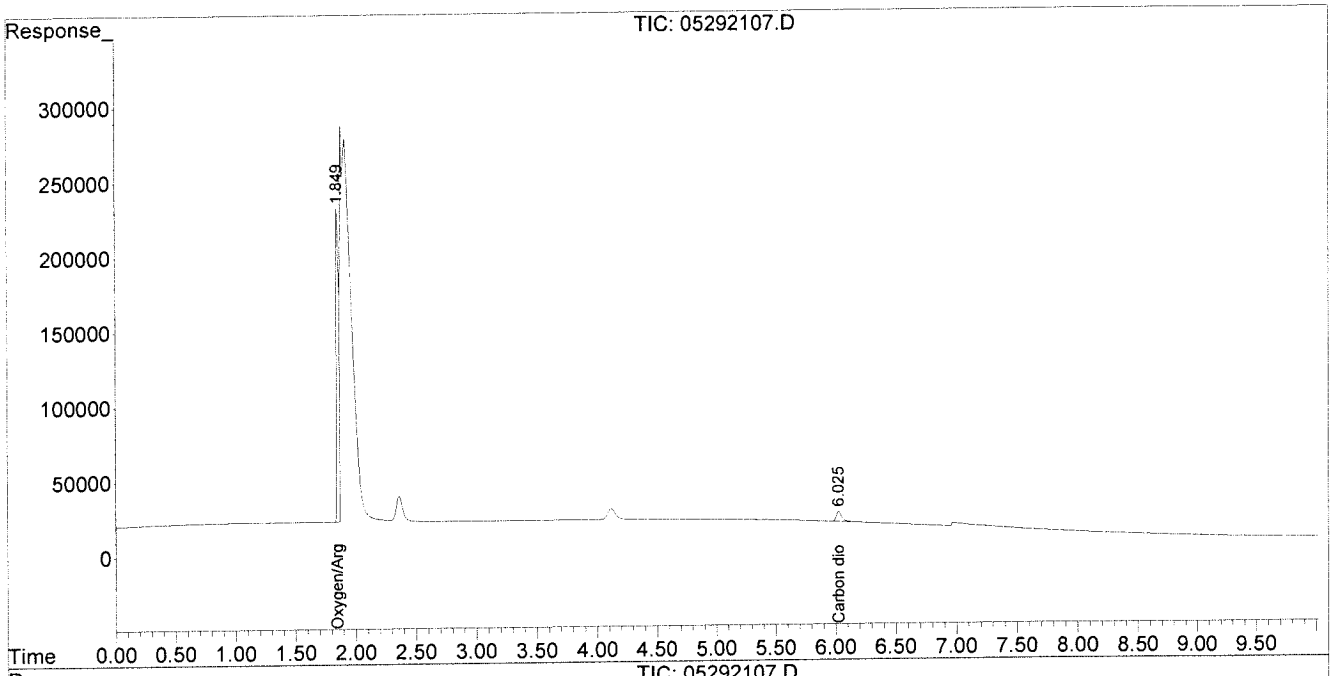
(f)=RT Delta > 1/2 Window (m)=manual int.

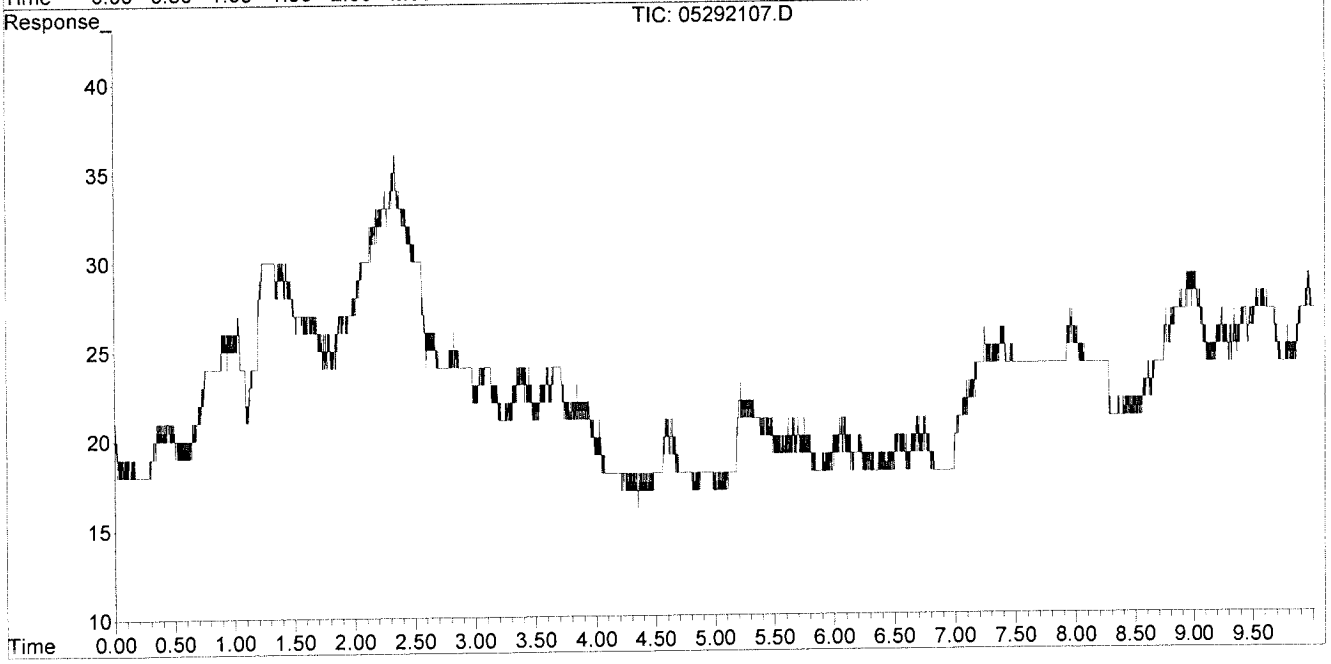
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\29\
Data File : 05292107.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2021, 17:36:26
Operator : CB
Sample : lcsd tcd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 17:51:52 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :





Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg	%RSD
1)	Oxygen/Argon	4.760						4.760 E6	0.00
2)	Carbon monoxide	2.775		1.066	0.043	0.033	0.027	0.657 E6	170.12
3)	Methane (TCD)							9.457	0.00
4)	Carbon dioxide	2.717	2.193	2.338	2.272	2.265	2.298	2.347 E2	7.99

Signal #2 Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg	%RSD
6)	Methane (FID)	1.253	1.160	1.005	0.927	0.848	0.848	0.945 E4	15.85
7)	Ethylene	1.677	1.605	1.900	1.749	1.597	1.579	1.684 E4	7.30
8)	Ethane	1.769	1.631	1.866	1.767	1.639	1.667	1.723 E4	5.40
9)	Propylene	2.402	2.309	2.767	2.551	2.331	2.333	2.449 E4	7.32
10)	Propane	2.906	2.737	2.817	2.639	2.410	2.420	2.655 E4	7.75
11)	Isobutylene							0.000	-1.00
12)	Isobutane							0.000	-1.00
13)	n-Butane							0.000	-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS082817_CO2.M Wed Aug 30 13:24:19 2017

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291715.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291716.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291717.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291719.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291720.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291721.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241711.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Aug 29 14:21 2017	Aug 29 14:20 2017	29-Aug-2017, 14:07
2	2	Aug 29 14:52 2017	Aug 29 14:51 2017	29-Aug-2017, 14:22
3	3	Aug 29 15:04 2017	Aug 29 15:04 2017	29-Aug-2017, 14:53
4	4	Aug 29 15:36 2017	Aug 29 15:36 2017	29-Aug-2017, 15:23
5	5	Aug 29 15:57 2017	Aug 29 15:57 2017	29-Aug-2017, 15:44
6	6	Aug 29 16:13 2017	Aug 29 16:13 2017	29-Aug-2017, 16:00
7	7	Aug 25 09:05 2017	Aug 24 16:00 2017	24-Aug-2017, 15:44
8	8	Aug 25 09:06 2017	Aug 24 16:13 2017	24-Aug-2017, 16:02
9	9	Aug 25 09:06 2017	Aug 24 16:31 2017	24-Aug-2017, 16:16
10	10	Aug 25 09:07 2017	Aug 24 16:42 2017	24-Aug-2017, 16:33

RS082817_CO2.M Wed Aug 30 13:24:30 2017

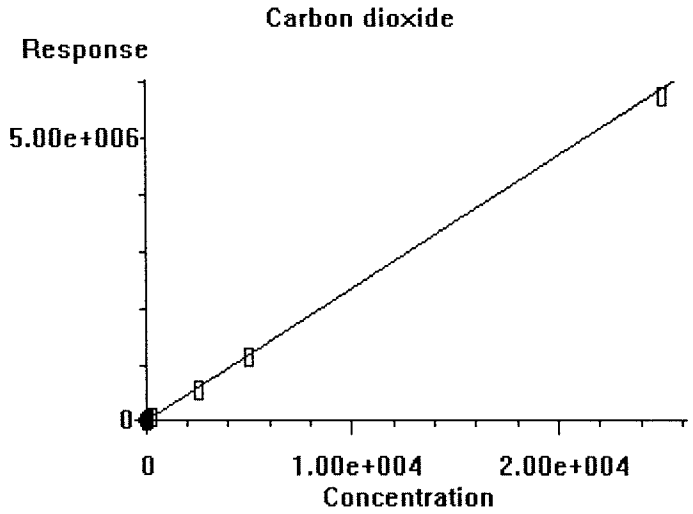
dit Compounds -- Compound #4 -- Carbon dioxide

Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response	Lvl ID	Concentration	Response
1	25.000000	6793.665186			
2	100.000000	21932.418000			
3	250.000000	58460.642510			
4	2500.000000	568043.388750			
5	5000.000000	1132363.215937			
6	25000.000000	5744294.891563			
7	25000.000000				
8	25000.000000				
9	2000.000000				
10	30000.000000				



0.000e+000	Quadratic term
2.347e+002	Linear term
0.000e+000	Constant term
7.987%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

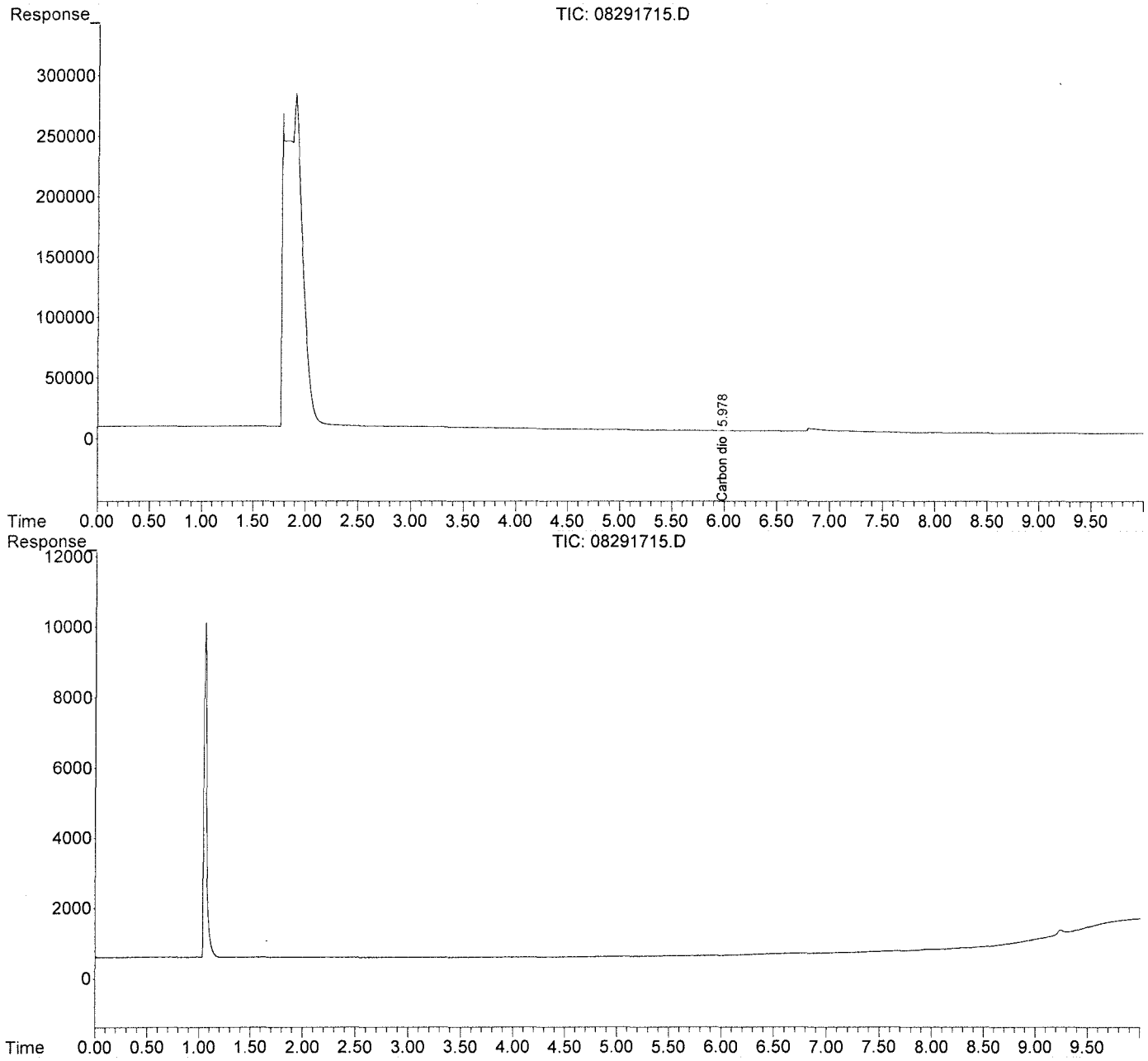
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.776	277465	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	6794	27.870	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

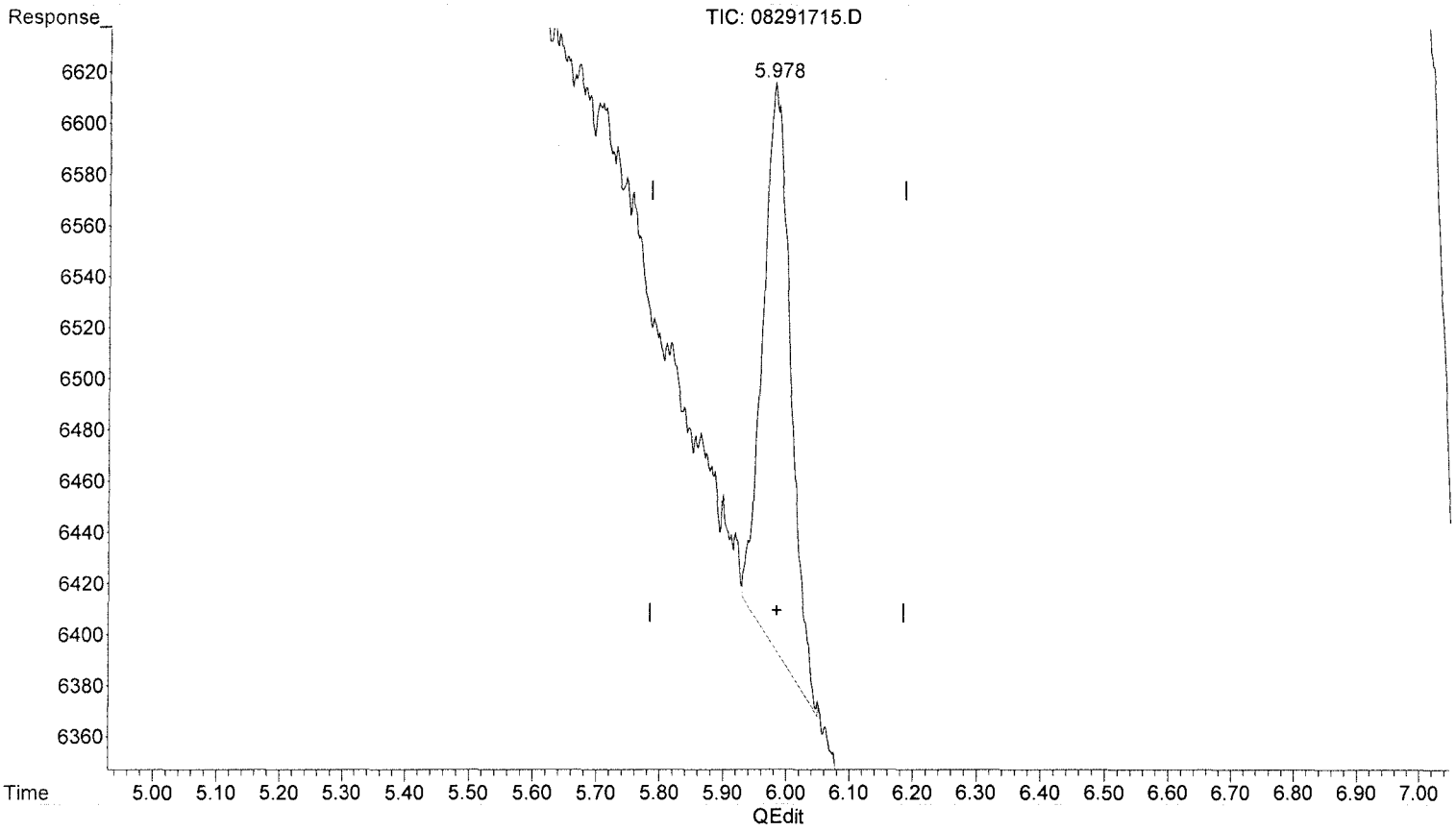
Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

5.978min 27.870 ppm m

response 6794

M 9/30/17
Blu
M.
pr/w

M 9/4/17

(+) = Expected Retention Time

RS082817_CO2.M Wed Aug 30 13:17:47 2017 Page: 1

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

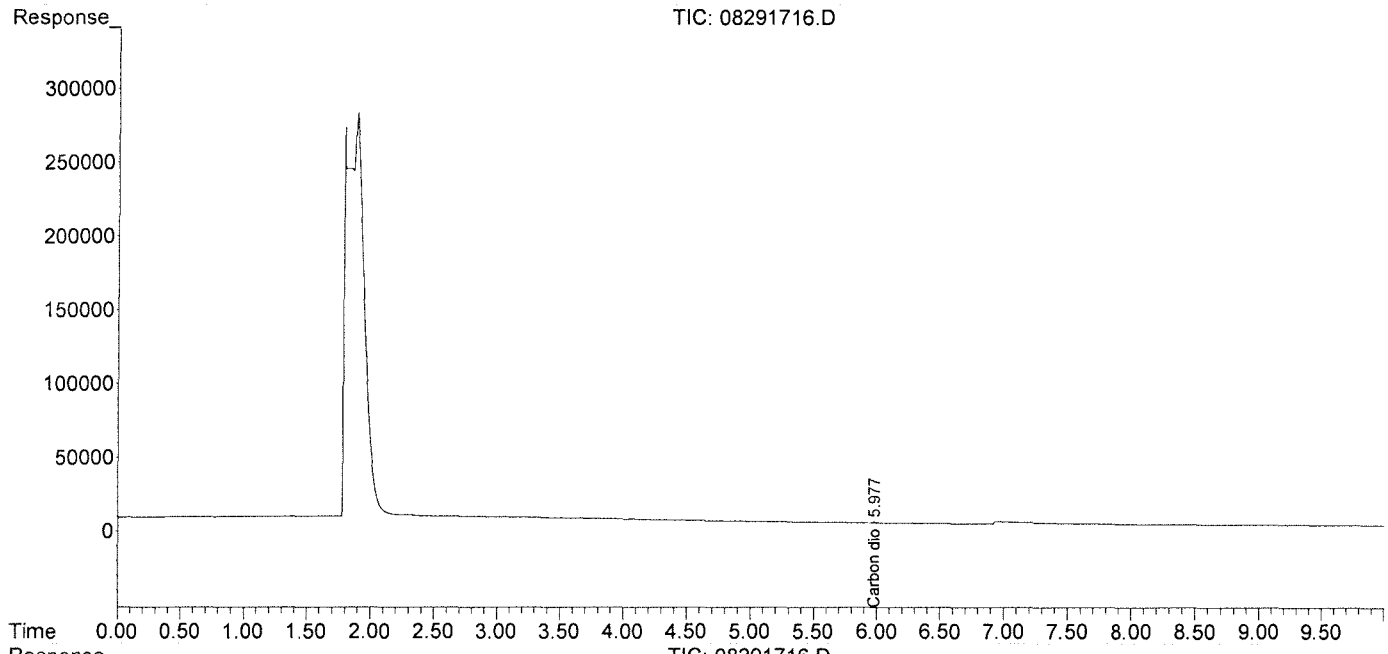
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.790	-598962	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	21932	87.858	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

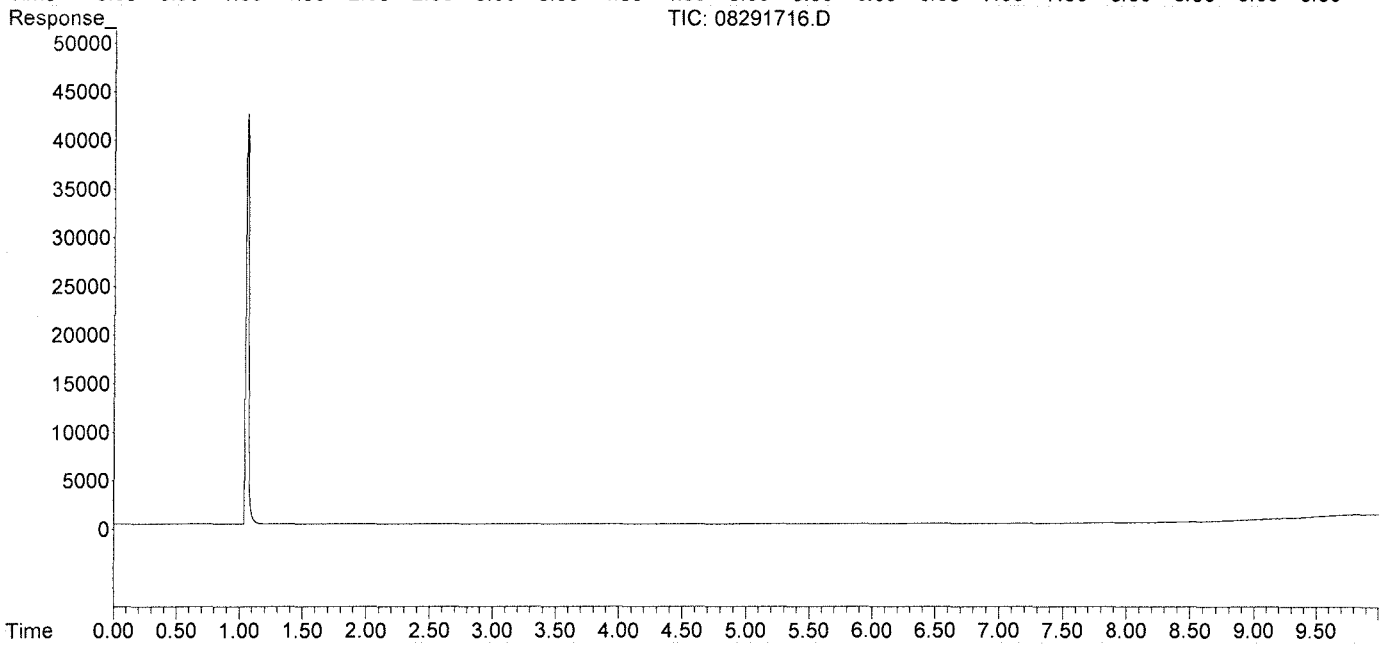
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

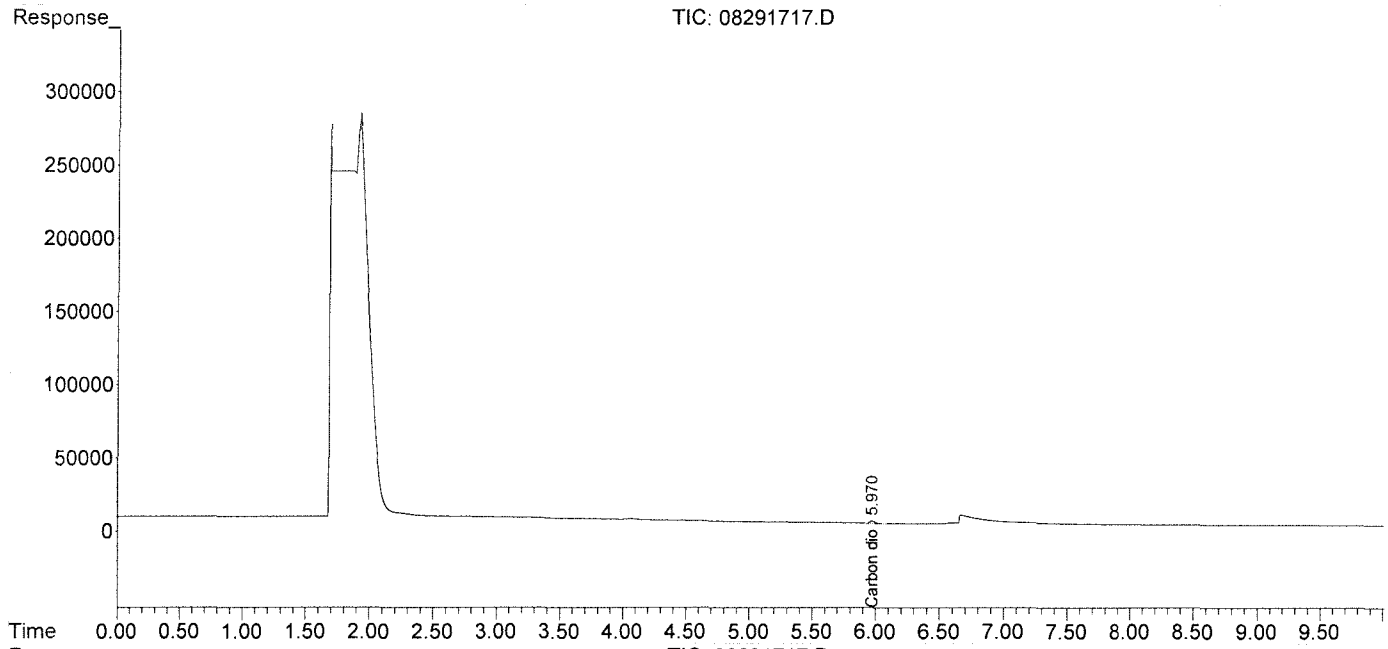
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.920f	-30716454	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.970	58461	240.204	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

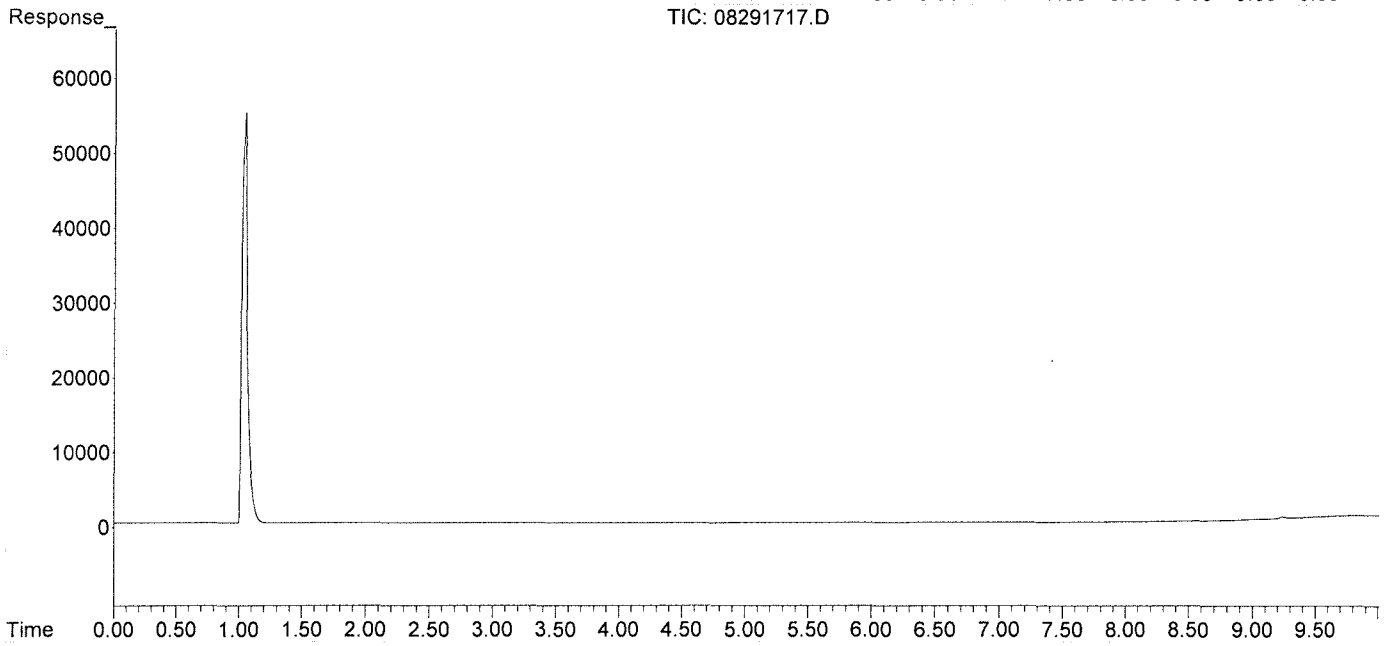
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

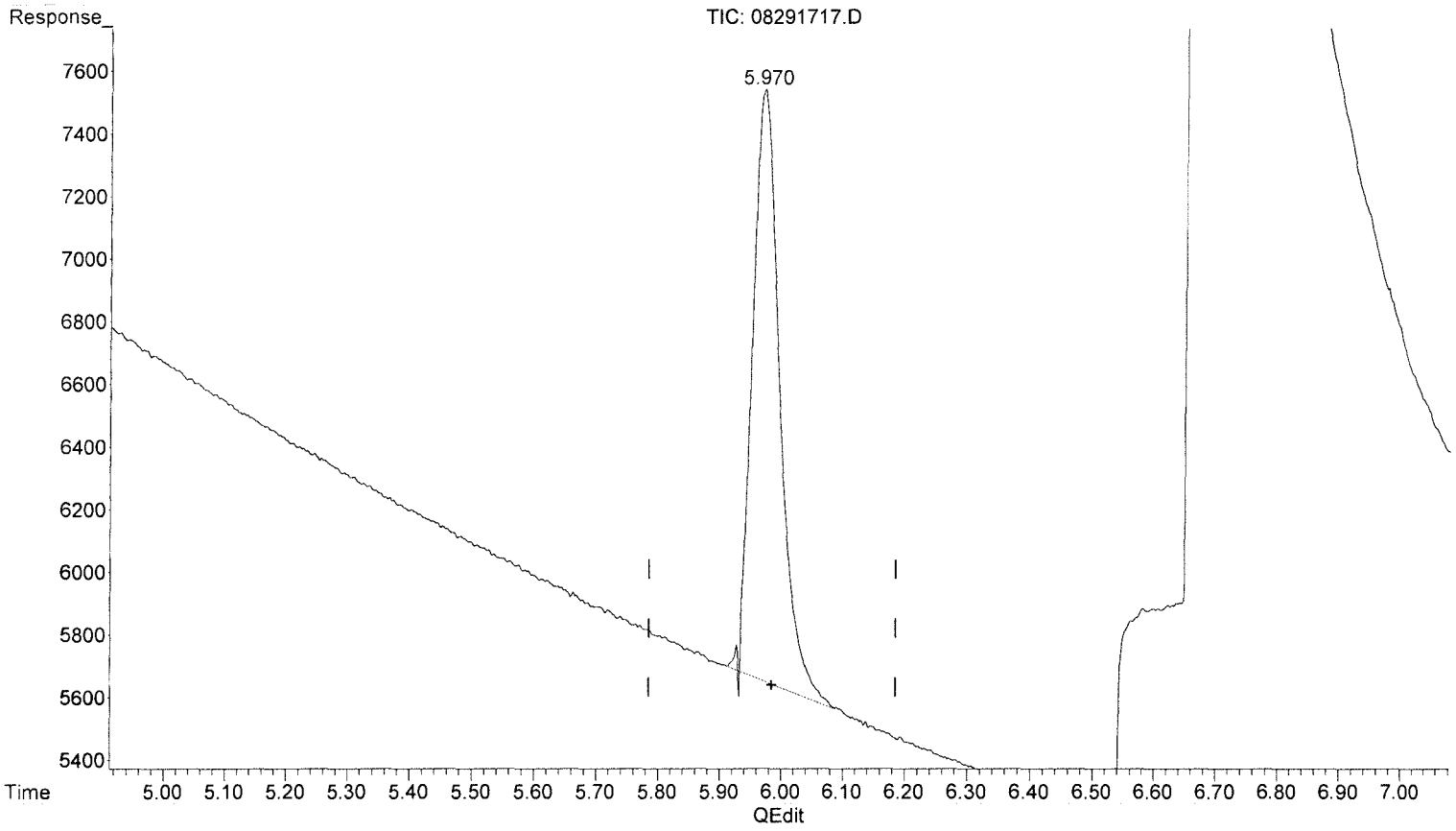




Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

5.970min 240.204 ppm m

response 58461

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

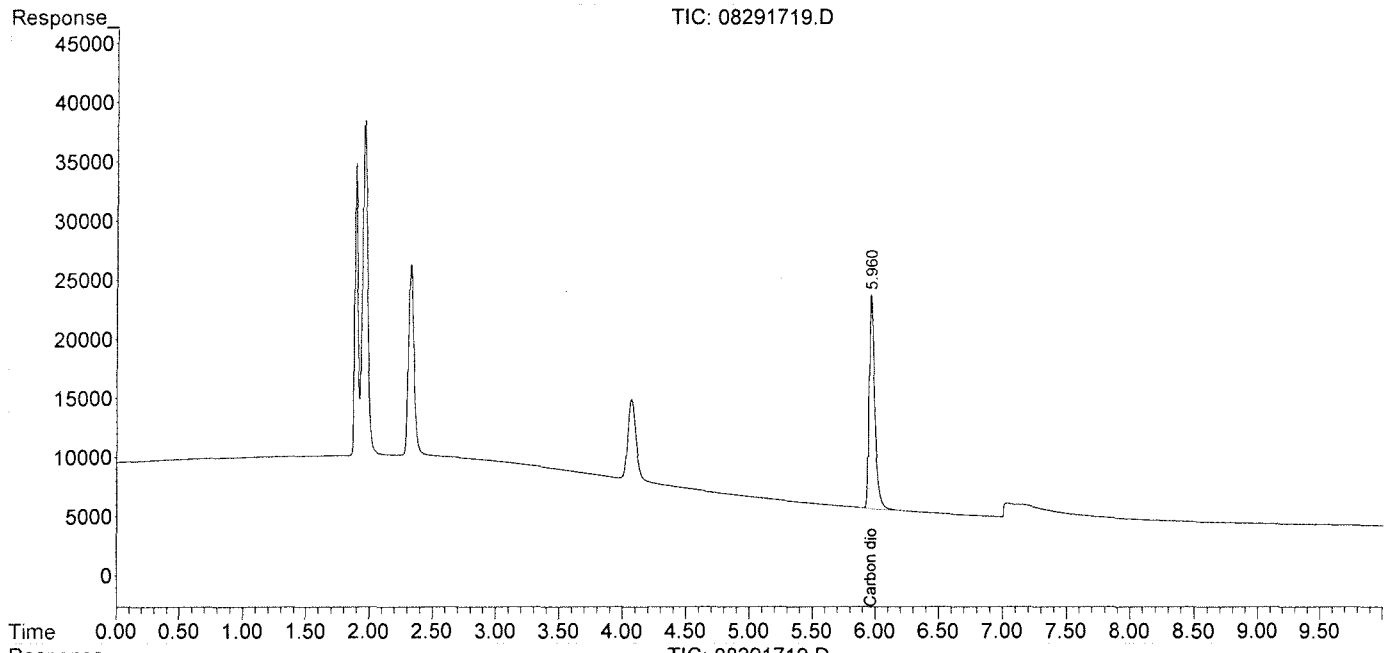
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.891	425113	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.962	568043	2369.673	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

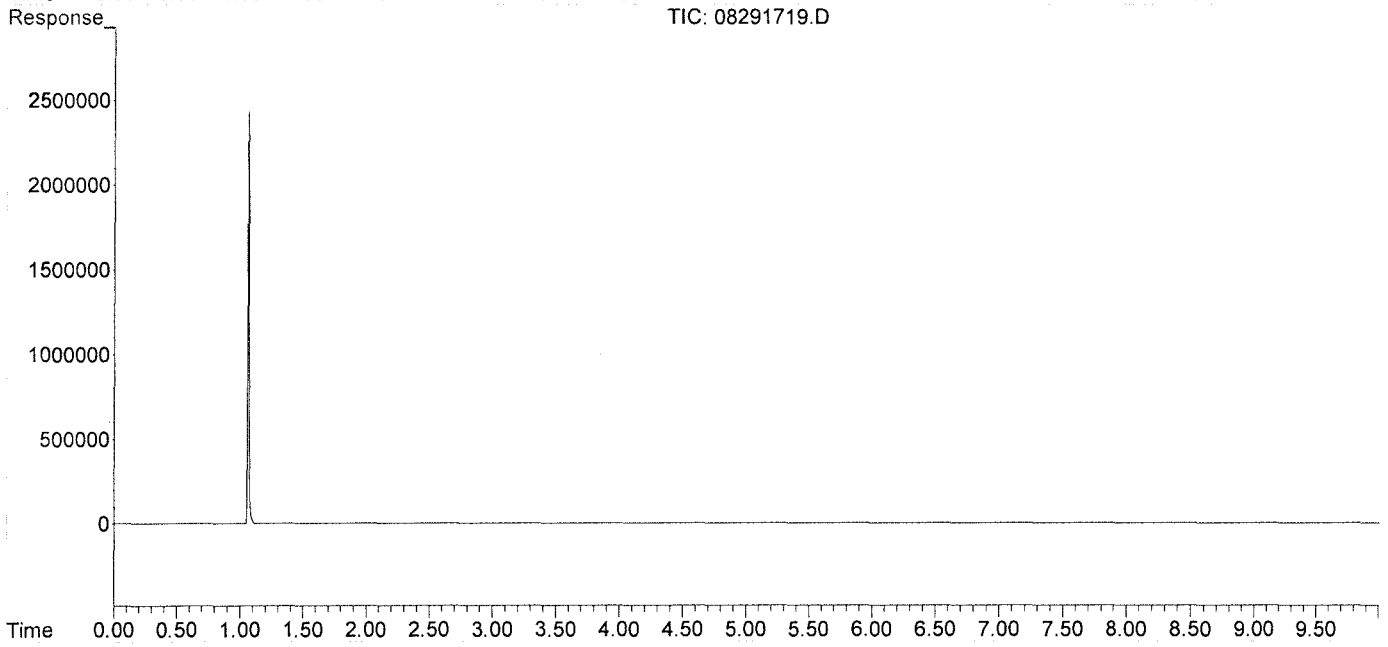
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

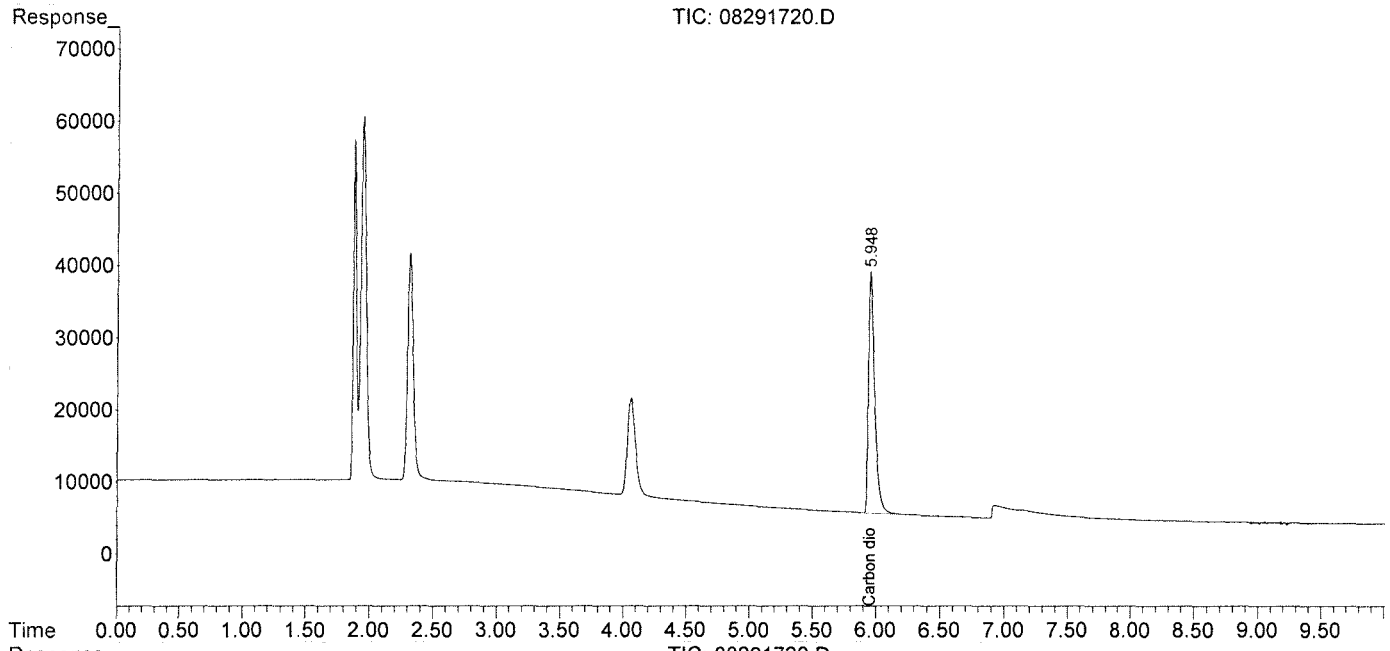
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.880	819221	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.948	1132363	4753.126	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

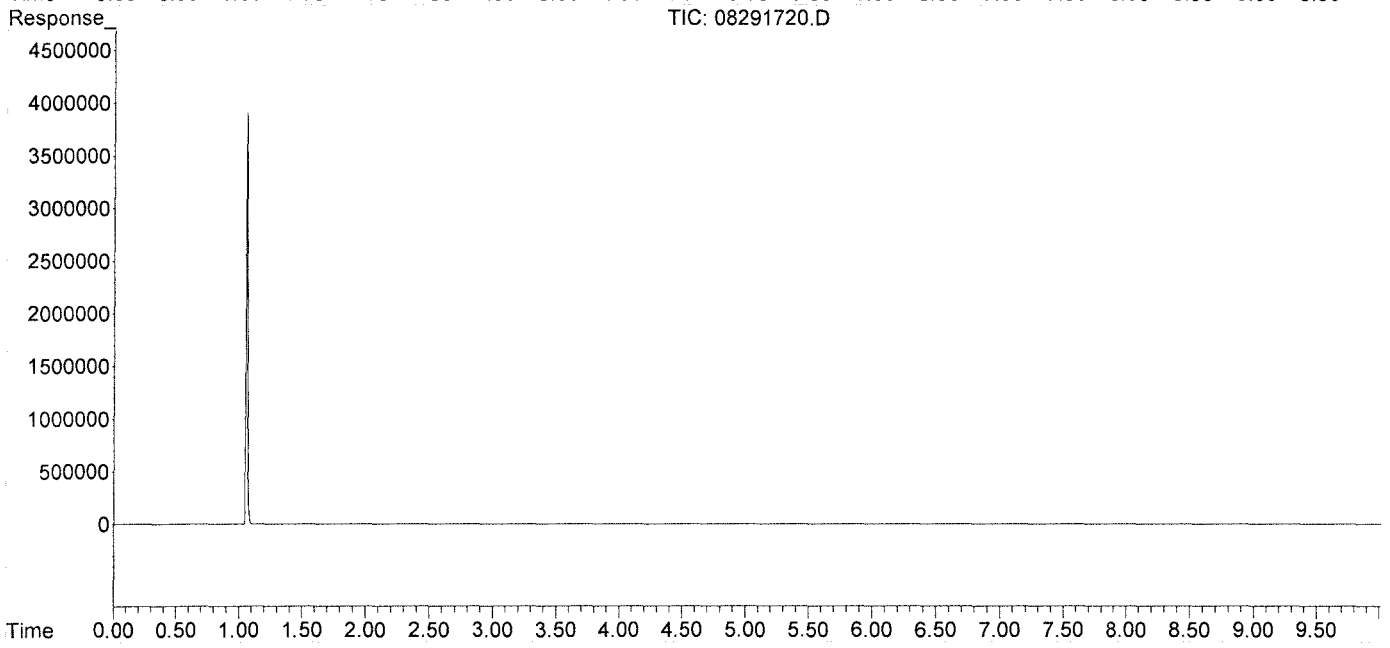
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

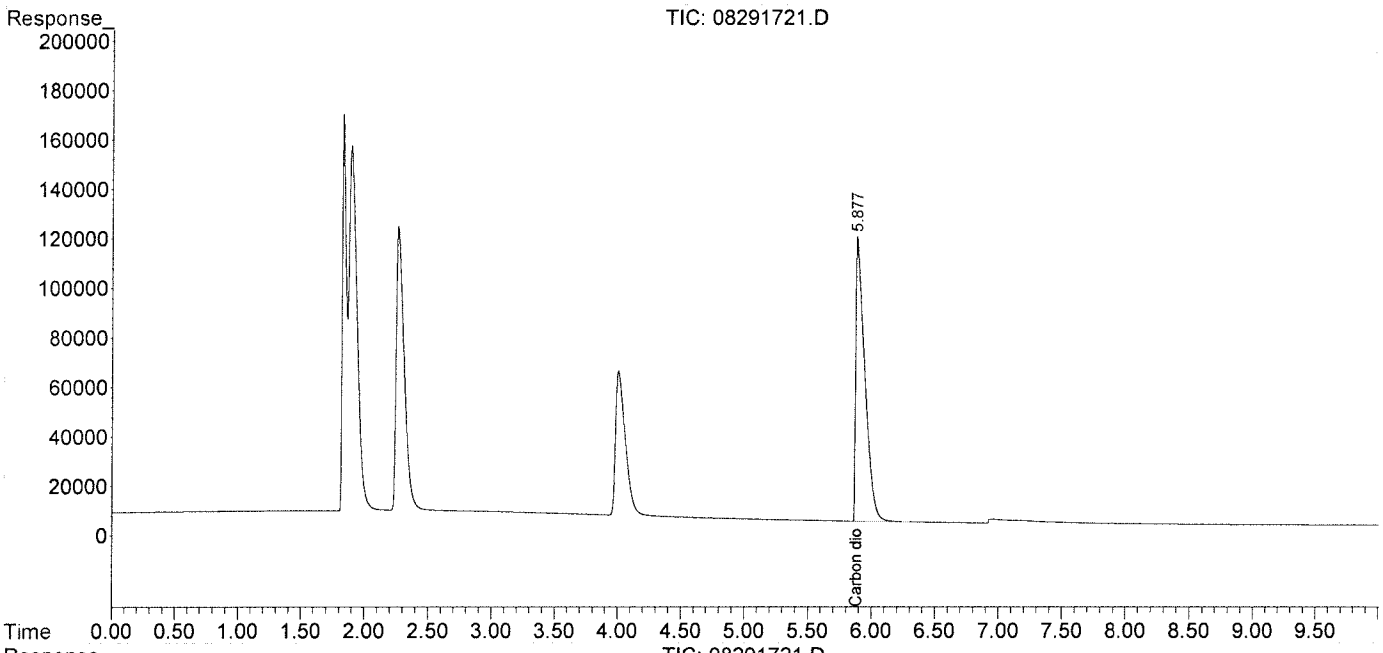
	Compound	R.T.	Response	Conc	Units	
Target	Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.827	3325463	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.879f	5744295	24443.288	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

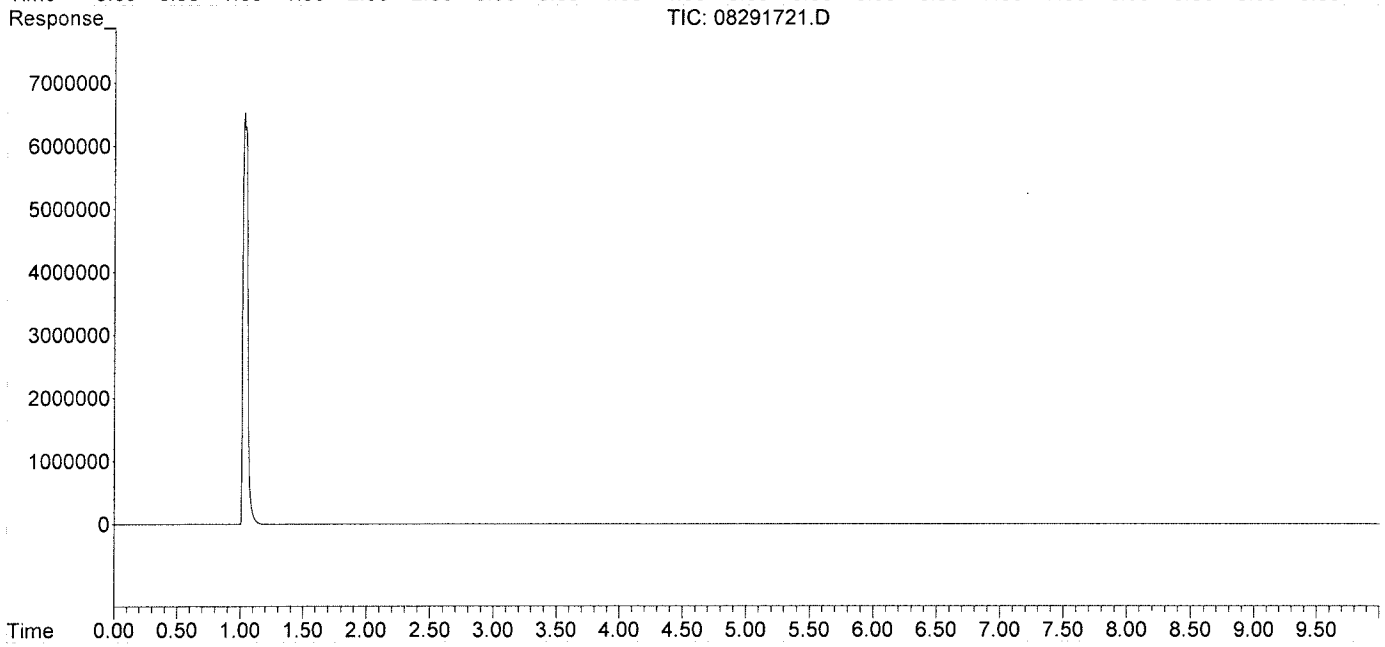
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.886	536422	0.113	ppm
2)	Carbon monoxide	1.886	536422	N.D.	ppm
3)	Methane (TCD)	4.059f	626500	66244.710	ppm
4)	Carbon dioxide	5.947	1163775	4957.948	ppm
6)	Methane (FID)	1.062	37290742	3947.023	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

actual %D
5000 99.16

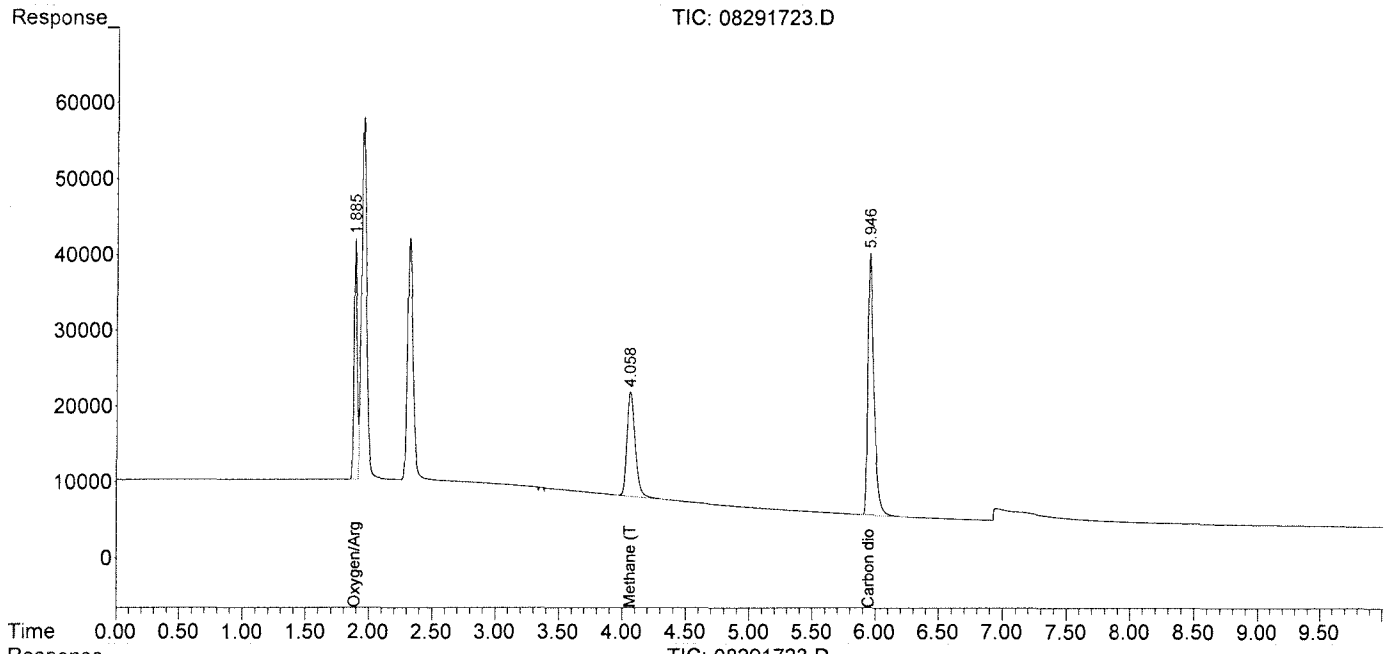
(f)=RT Delta > 1/2 Window (m)=manual int.

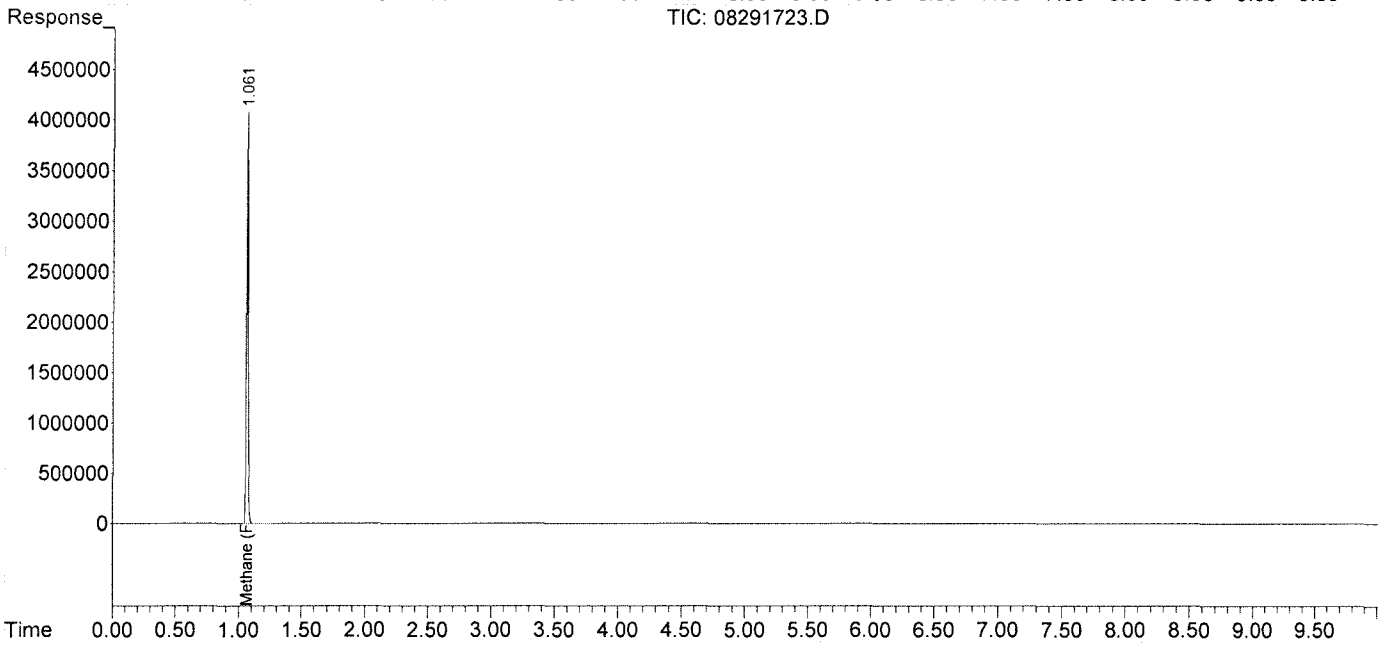
W 9/4/17

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Dissolved Gases by RSK175

ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Environmental - US
Service Request: P2102781
Sample Vol. (ml) : 32.00 ml
Analyst : CB
Date Analysis : 05/29/21
Head Space Vol.(ml) : 8.00 ml
Instrument : GC#10
Detector : FID#10, TCD#10
Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Carbon Dioxide
std S32-03232001 0.1mL	0.100	206.710
ACTUAL		200.00
%Difference		3.4%
mcs 0.1ml	0.100	0.000
rb 0.1ml	0.100	0.000
lcs tcd 0.1ml	0.100	888.945
lcsd tcd 0.1ml	0.100	891.388
P2102781-001 0.1ml	0.100	21970.7
P2102781-002 50ul	0.050	11424.7
P2102781-003 50ul	0.050	15106.2
P2102781-004 50ul	0.050	7276.5

FINAL HEAD SPACE RESULT (ppm)

	Carbon Dioxide
WWt.	44.10
HENRY'S CONSTANT	1.42E+03
RL	100.00
mcs 0.1ml	0.000
lcs tcd 0.1ml	8889.450
lcsd tcd 0.1ml	8913.880
P2102781-001 0.1ml	219706.9
P2102781-002 50ul	228493.8
P2102781-003 50ul	302123.6
P2102781-004 50ul	145529.5

std S32-03232001 0.1mL	213.625
ACTUAL	200.00
%Difference	6.8%

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\29\
Data File : 05292101.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2021, 12:18:31
Operator : CB
Sample : std S32-03232001 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 12:32:13 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

6/3/21

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

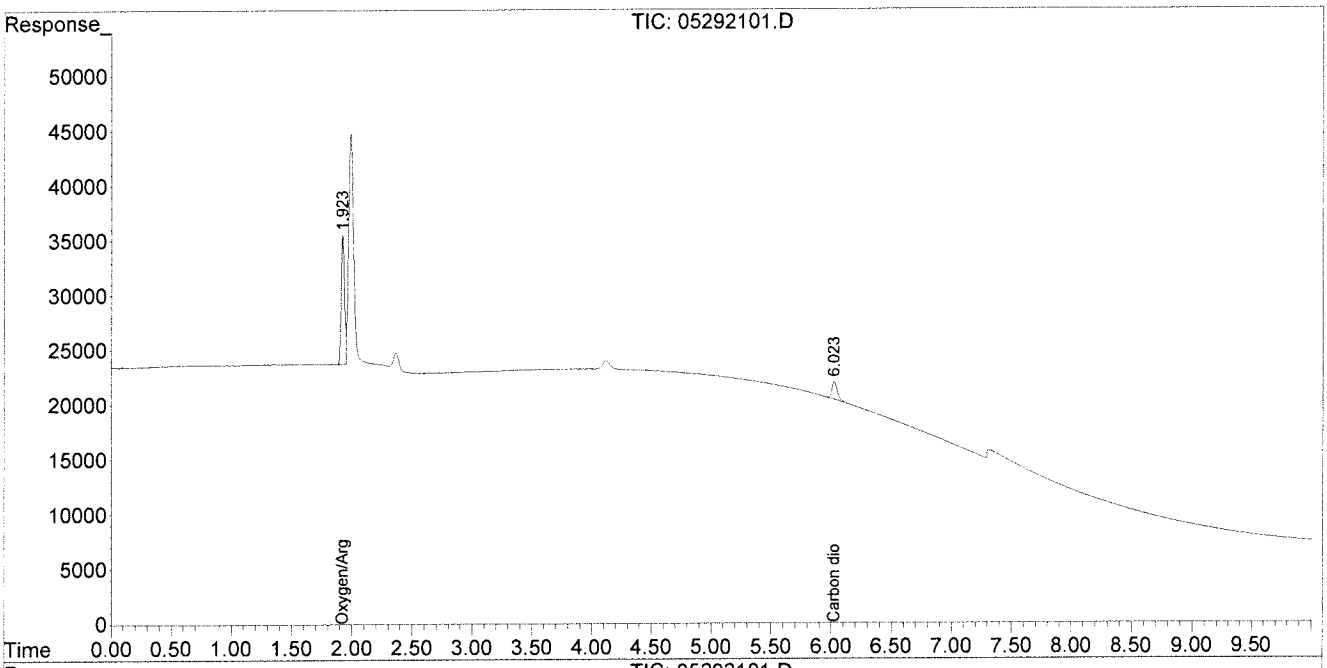
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.923f	219058	0.046	ppm	
2)	Carbon monoxide	1.923f	219058	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.023	48521	206.710	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

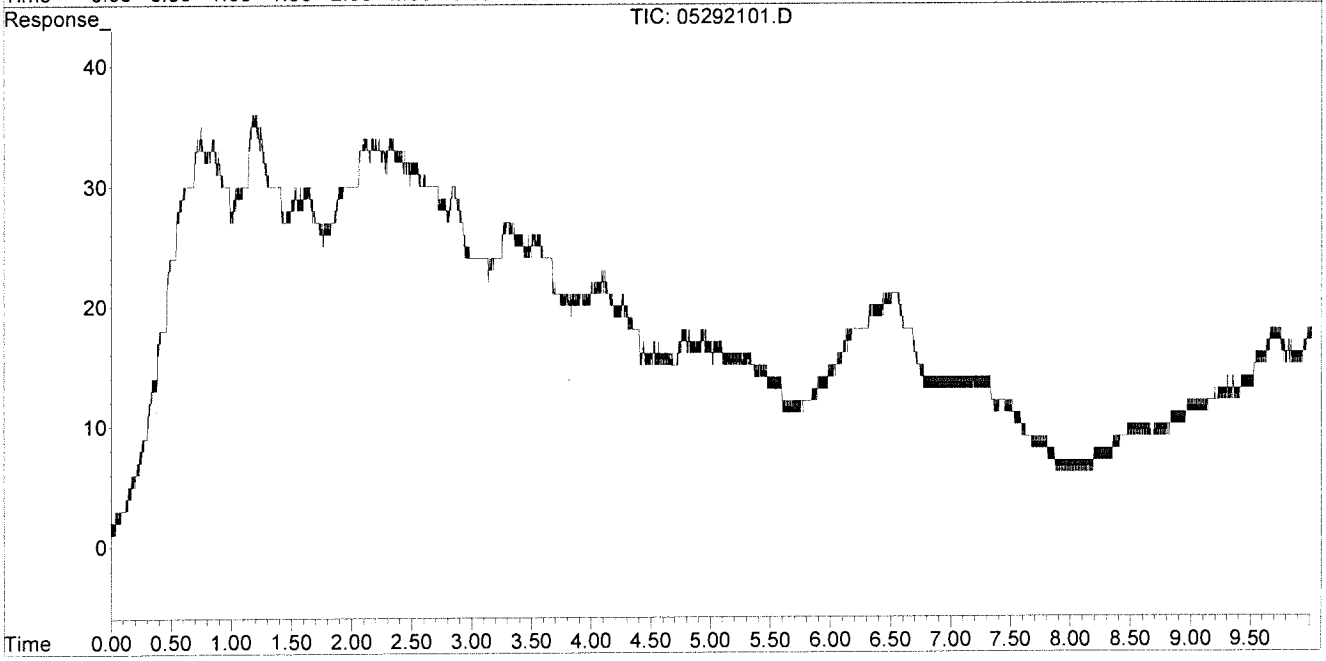
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\29\
Data File : 05292101.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2021, 12:18:31
Operator : CB
Sample : std S32-03232001 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 12:32:13 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



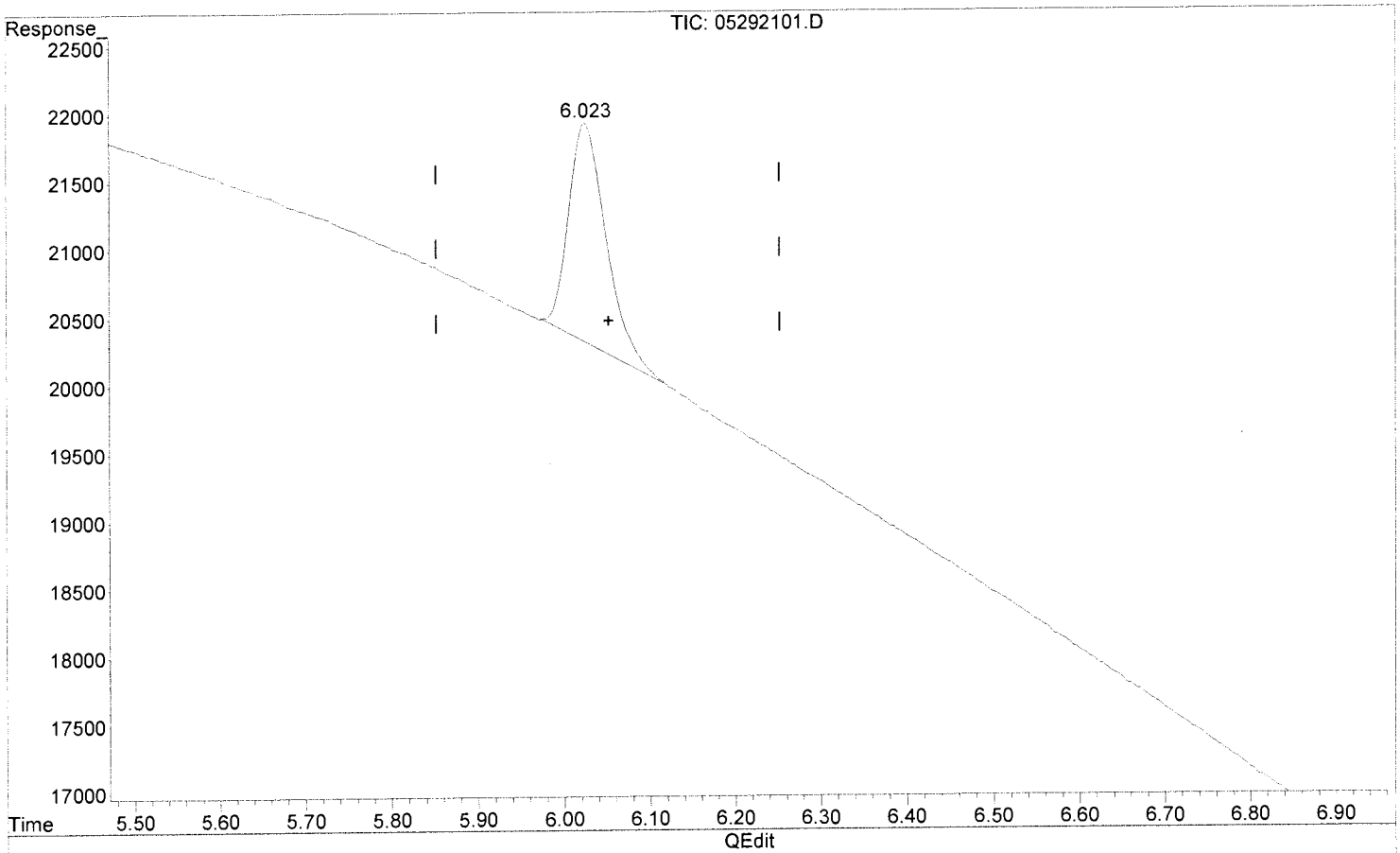


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\29\
Data File : 05292101.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2021, 12:18:31
Operator : CB
Sample : std S32-03232001 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 12:32:13 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :



(4) Carbon dioxide

6.023min 206.710 ppm m

response 48521

6/3/21 CB
BLK
no problems

(+) = Expected Retention Time
RS082817_CO2.M Thu Jun 03 15:07:01 2021

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\29\
Data File : 05292118.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2021, 19:48:51
Operator : CB
Sample : std S32-03232001 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 03 14:48:09 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

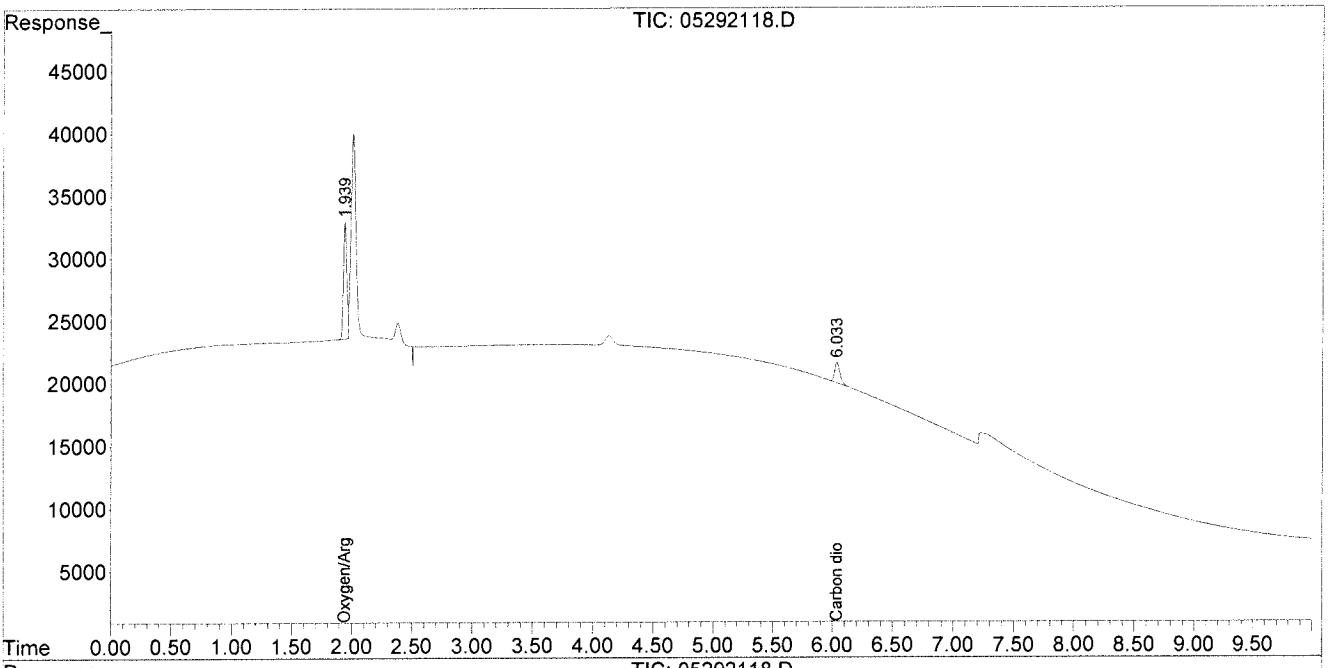
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.940f	176559	0.037	ppm	
2)	Carbon monoxide	1.940f	176559	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.033	50144	213.625	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

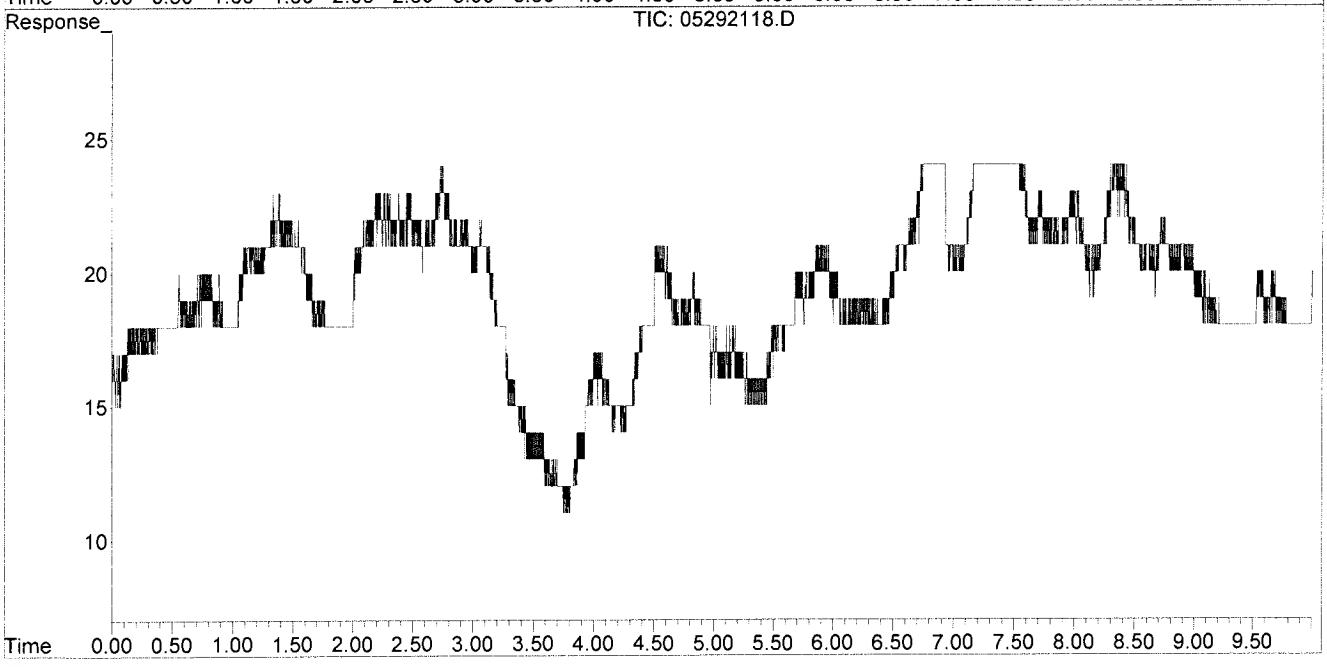
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\29\
Data File : 05292118.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2021, 19:48:51
Operator : CB
Sample : std S32-03232001 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 03 14:48:09 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



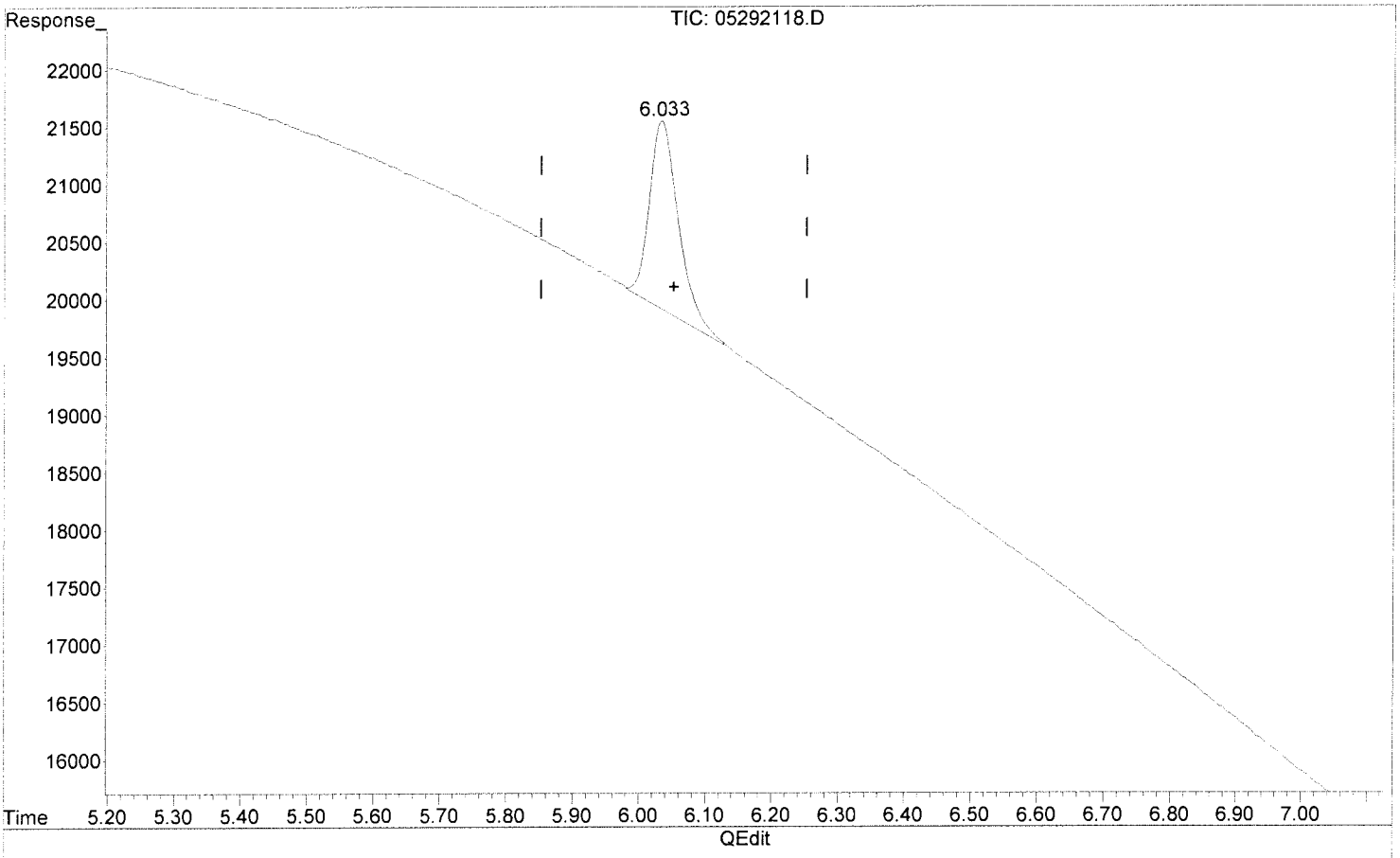


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2021_05\29\
Data File : 05292118.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2021, 19:48:51
Operator : CB
Sample : std S32-03232001 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 03 14:48:09 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.033min 213.625 ppm m

response 50144

CB

6/3/21

BLK

for previous

(+) = Expected Retention Time

RS082817_CO2.M Thu Jun 03 15:09:10 2021 Page: 1

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_08\29\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	29-Aug-17, 07:58:00	08291701.D	std s30-06161601		MC	RSKBOTH.M	Pass
2	29-Aug-17, 08:11:02	08291702.D	mb 0.5ml		MC	RSKBOTH.M	Pass
3	29-Aug-17, 08:24:13	08291703.D	4089-001 0.5ml		MC	RSKBOTH.M	
4	29-Aug-17, 08:39:29	08291704.D	4089-002 0.5ml		MC	RSKBOTH.M	
5	29-Aug-17, 08:53:38	08291705.D	4089-003 0.5ml		MC	RSKBOTH.M	
6	29-Aug-17, 09:33:52	08291706.D	4089-004 0.5ml		MC	RSKBOTH.M	
7	29-Aug-17, 09:50:51	08291707.D	4089-005 0.5ml		MC	RSKBOTH.M	
8	29-Aug-17, 10:07:54	08291708.D	4089-006 0.5ml		MC	RSKBOTH.M	
9	29-Aug-17, 10:42:34	08291709.D	4089-007 0.5ml		MC	RSKBOTH.M	
10	29-Aug-17, 11:06:01	08291710.D	4089-008 0.5ml		MC	RSKBOTH.M	
11	29-Aug-17, 11:23:53	08291711.D	4089-009 0.5ml		MC	RSKBOTH.M	
12	29-Aug-17, 11:37:17	08291712.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
13	29-Aug-17, 11:50:31	08291713.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
14	29-Aug-17, 12:29:45	08291714.D	std s30-06161601		MC	RSKBOTH.M	Pass
15	29-Aug-17, 14:07:01	08291715.D	25ppm s32-08291701 0.25ml		MC	RSKBOTH.M	Curve
16	29-Aug-17, 14:22:12	08291716.D	100ppm s32-08291702 0.2ml		MC	RSKBOTH.M	Curve
17	29-Aug-17, 14:53:00	08291717.D	250ppm s32-08291702 0.5ml		MC	RSKBOTH.M	Curve
18	29-Aug-17, 15:07:43	08291718.D	mis inject		MC	RSKBOTH.M	
19	29-Aug-17, 15:23:21	08291719.D	2500ppm s32-08231701 50ul		MC	RSKBOTH.M	Curve
20	29-Aug-17, 15:44:54	08291720.D	5000ppm s32-08231701 0.1ml		MC	RSKBOTH.M	Curve
21	29-Aug-17, 16:00:09	08291721.D	25000ppm s32-08231701 0.5ml		MC	RSKBOTH.M	Curve
22	29-Aug-17, 16:15:43	08291722.D	mb 0.1ml		MC	RSKBOTH.M	Pass
23	29-Aug-17, 16:35:37	08291723.D	icv s30-07071701		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_TCD\2021_05\29\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	29-May-21, 12:18:31	05292101.D	std S32-03232001 0.1mL		CB	RSKBOTH.M	Pass
2	29-May-21, 12:34:38	05292102.D	rb 0.1ml		CB	RSKBOTH.M	Pass
3	29-May-21, 12:48:52	05292103.D	mcs 0.1ml		CB	RSKBOTH.M	Pass
4	29-May-21, 13:07:32	05292104.D	lcs tcd 0.1ml		CB	RSKBOTH.M	Pass
5	29-May-21, 17:14:05	05292105.D	lcs tcd 0.1ml		CB	RSKBOTH.M	Pass
6	29-May-21, 17:26:28	05292106.D	lcs tcd 0.1ml		CB	RSKBOTH.M	Pass
7	29-May-21, 17:36:26	05292107.D	lcsd tcd 0.1ml		CB	RSKBOTH.M	Pass
8	29-May-21, 17:53:02	05292108.D	P2102781-001 0.1ml		CB	RSKBOTH.M	
9	29-May-21, 18:03:21	05292109.D	P2102781-002 50ul		CB	RSKBOTH.M	
10	29-May-21, 18:16:47	05292110.D	P2102781-003 50ul		CB	RSKBOTH.M	
11	29-May-21, 18:27:55	05292111.D	P2102781-004 50ul		CB	RSKBOTH.M	
12	29-May-21, 18:39:08	05292112.D	K2105608-005 50ul		CB	RSKBOTH.M	
13	29-May-21, 18:50:26	05292113.D	K2105608-006 0.1ml		CB	RSKBOTH.M	
14	29-May-21, 19:01:06	05292114.D	K2105608-001 0.1ml		CB	RSKBOTH.M	
15	29-May-21, 19:11:34	05292115.D	K2105608-002 0.1ml		CB	RSKBOTH.M	
16	29-May-21, 19:22:36	05292116.D	K2105608-003 0.1ml		CB	RSKBOTH.M	
17	29-May-21, 19:38:00	05292117.D	K2105608-004 0.1ml		CB	RSKBOTH.M	
18	29-May-21, 19:48:51	05292118.D	std S32-03232001 0.1mL		CB	RSKBOTH.M	Do Not Use
19	29-May-21, 20:05:35	05292119.D	std S32-03232001 0.1mL		CB	RSKBOTH.M	Pass

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012106.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 12:13
Operator : CB
Sample : P2102781-001 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 07 09:54:03 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

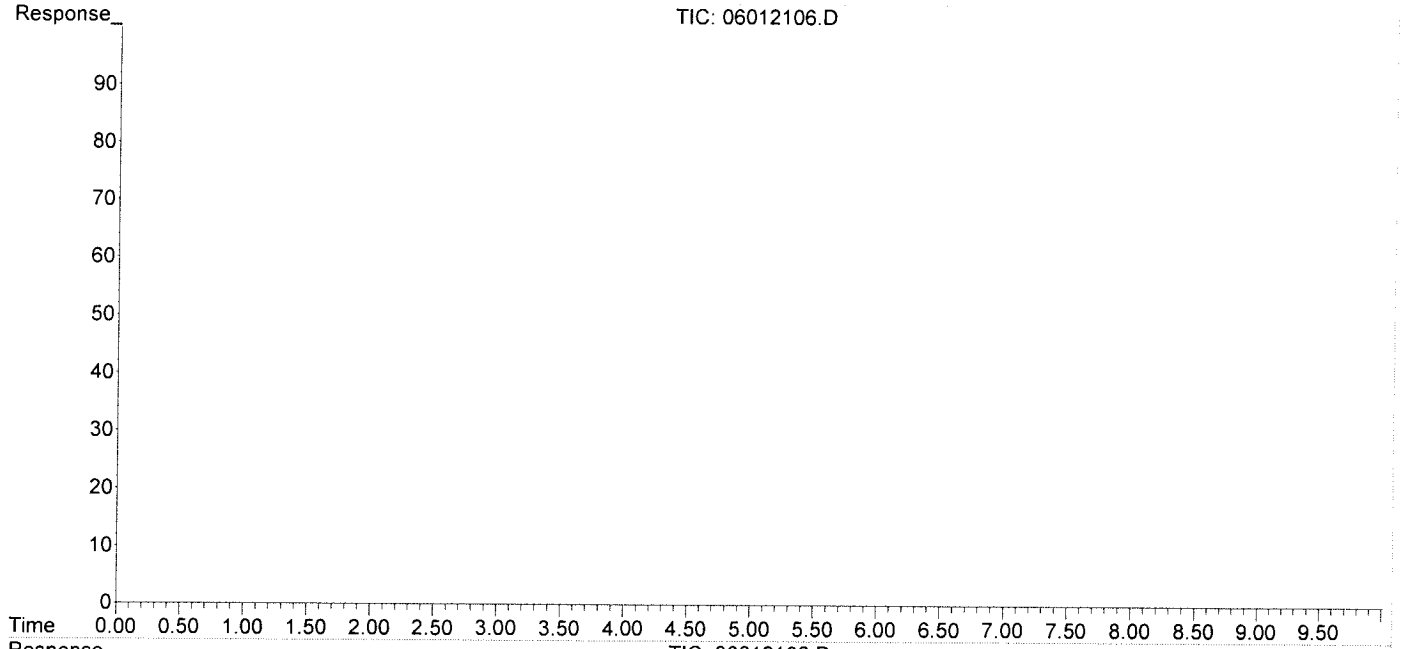
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.113	1124	0.124	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

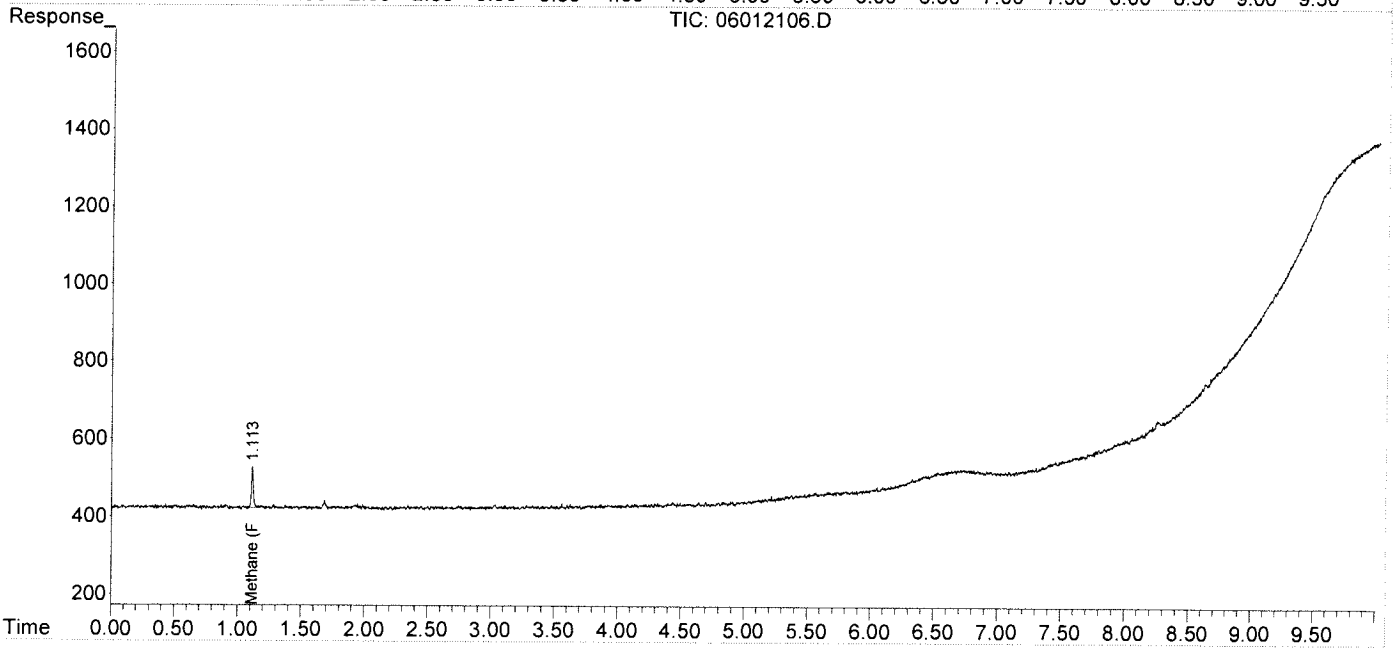
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012106.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 12:13
Operator : CB
Sample : P2102781-001 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 07 09:54:03 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

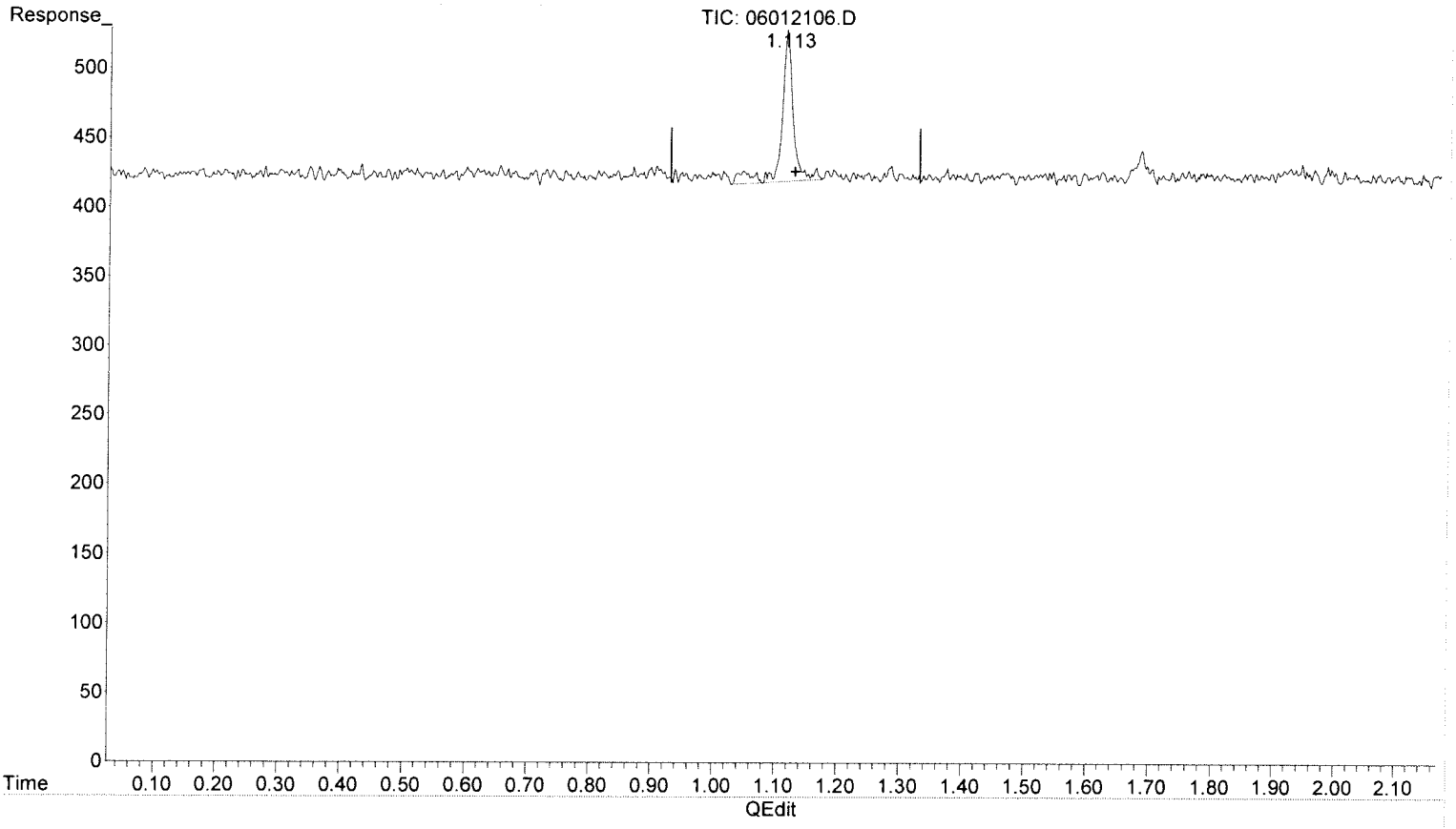




Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012106.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 12:13
Operator : CB
Sample : P2102781-001 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 07 09:54:03 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.114min 0.157 ppm

response 1422

Manual Integration:

Before

06/07/21

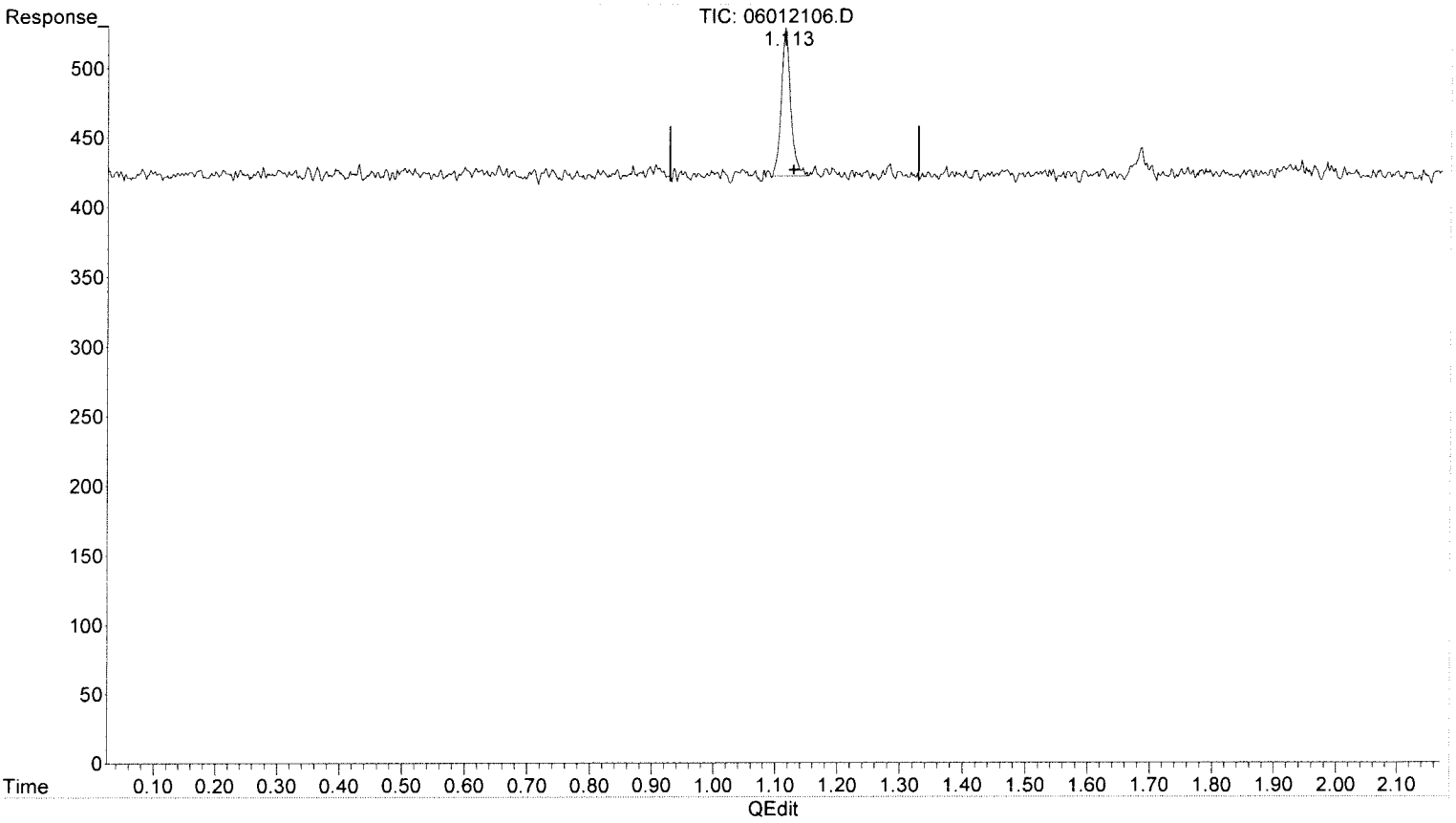
(+) = Expected Retention Time

RS091217_R.M Mon Jun 07 09:54:11 2021 Page: 1

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012106.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 12:13
Operator : CB
Sample : P2102781-001 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 07 09:54:03 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.113min 0.124 ppm m

response 1124

Manual Integration:

After

BLC

06/07/21

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012107.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 13:06
Operator : CB
Sample : P2102781-002 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 07 09:54:34 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

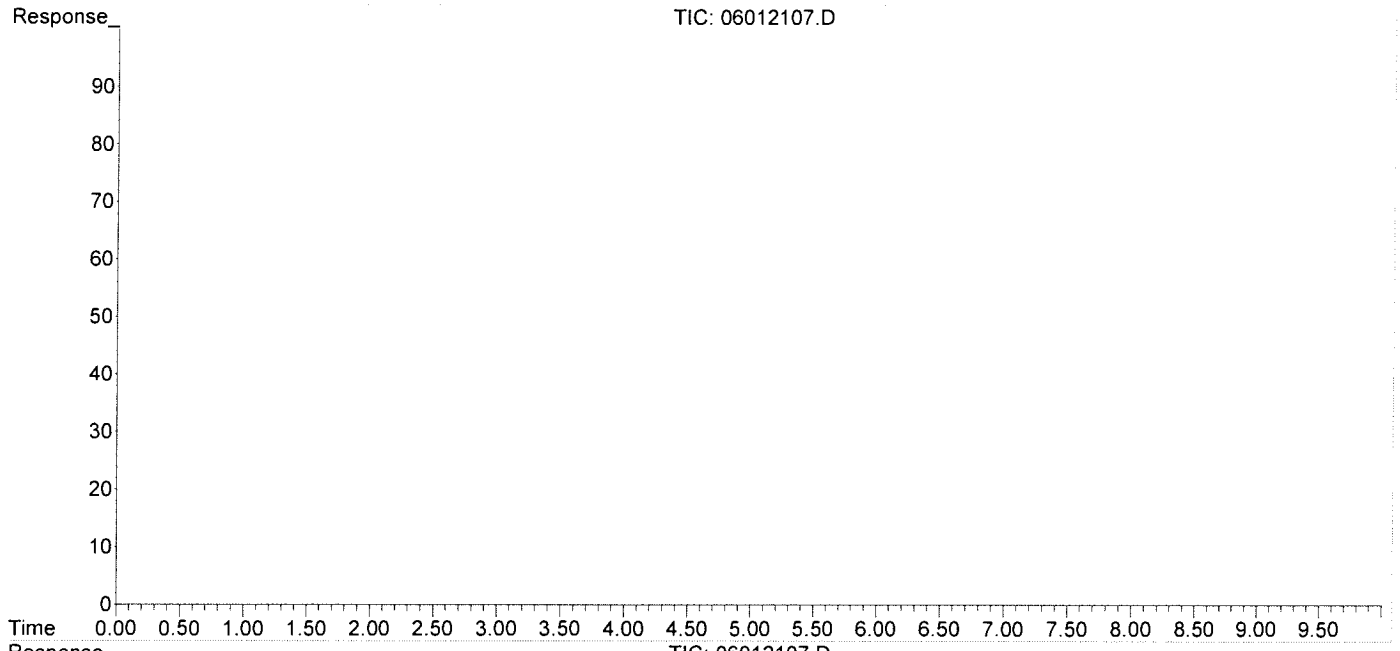
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.112	1018	0.112	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

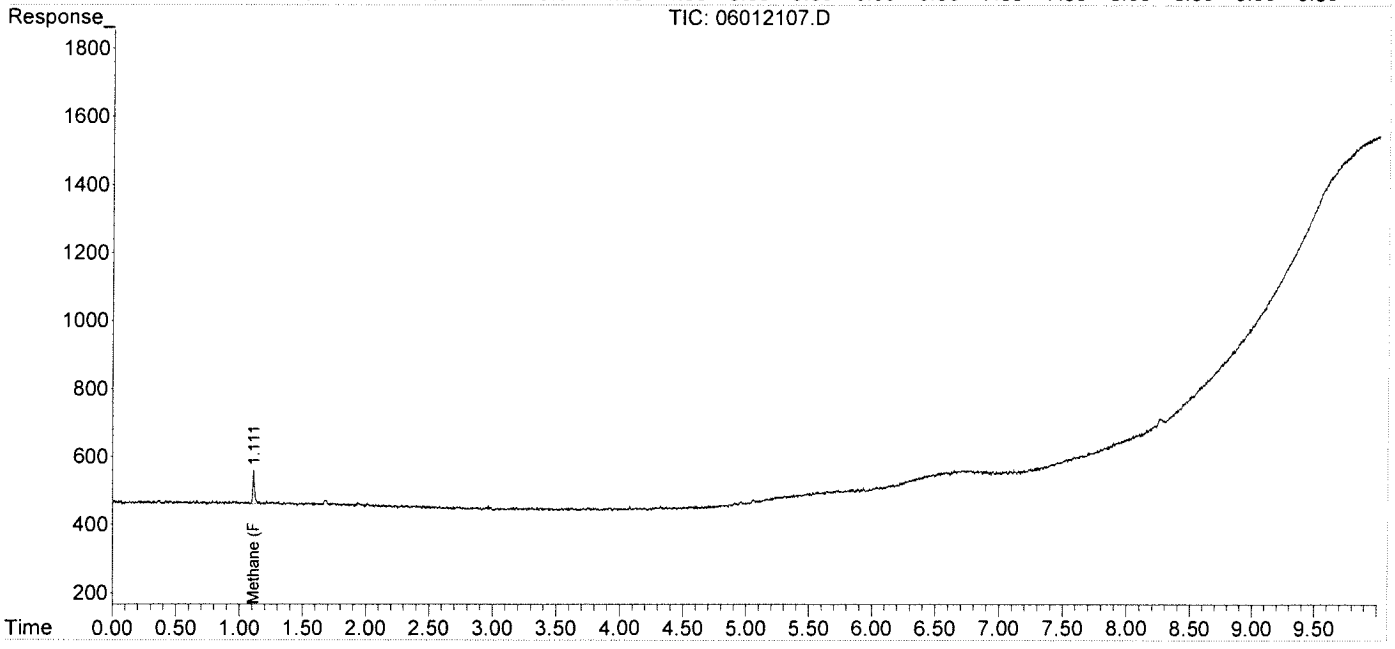
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012107.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 13:06
Operator : CB
Sample : P2102781-002 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 07 09:54:34 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012108.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 13:20
Operator : CB
Sample : 2781-003 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 07 09:54:54 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

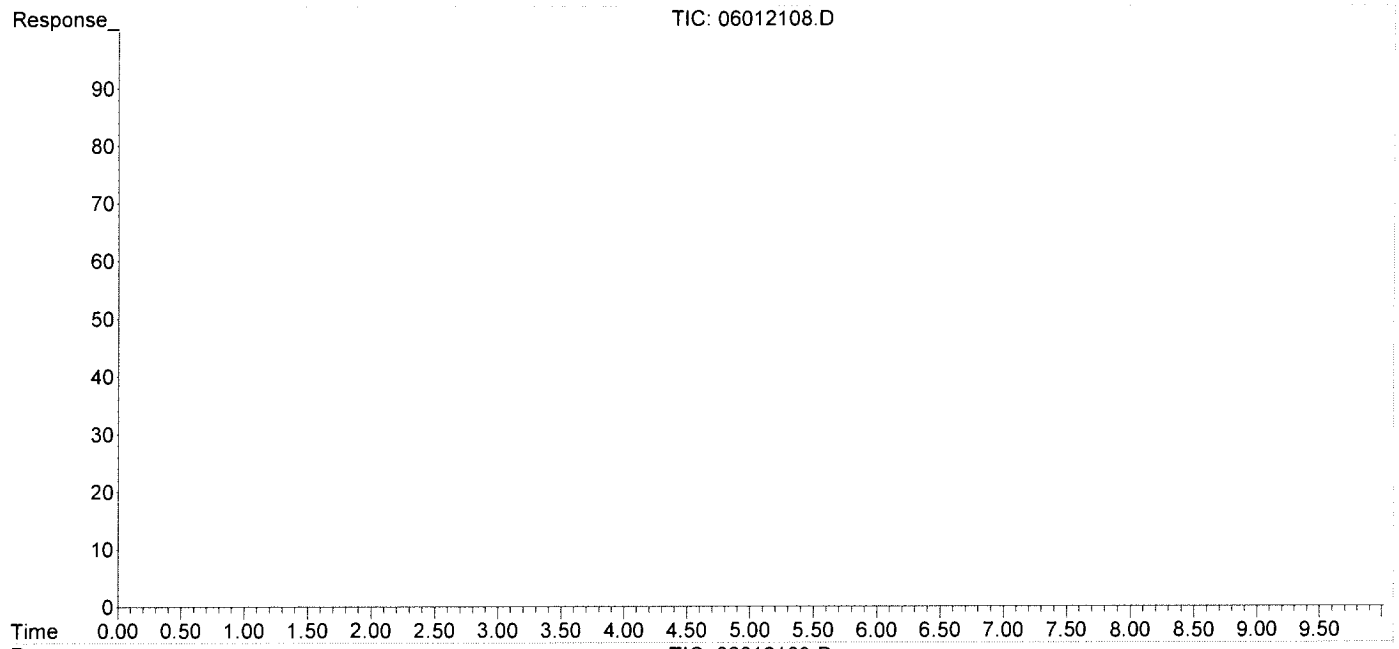
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.103	1235	0.136	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

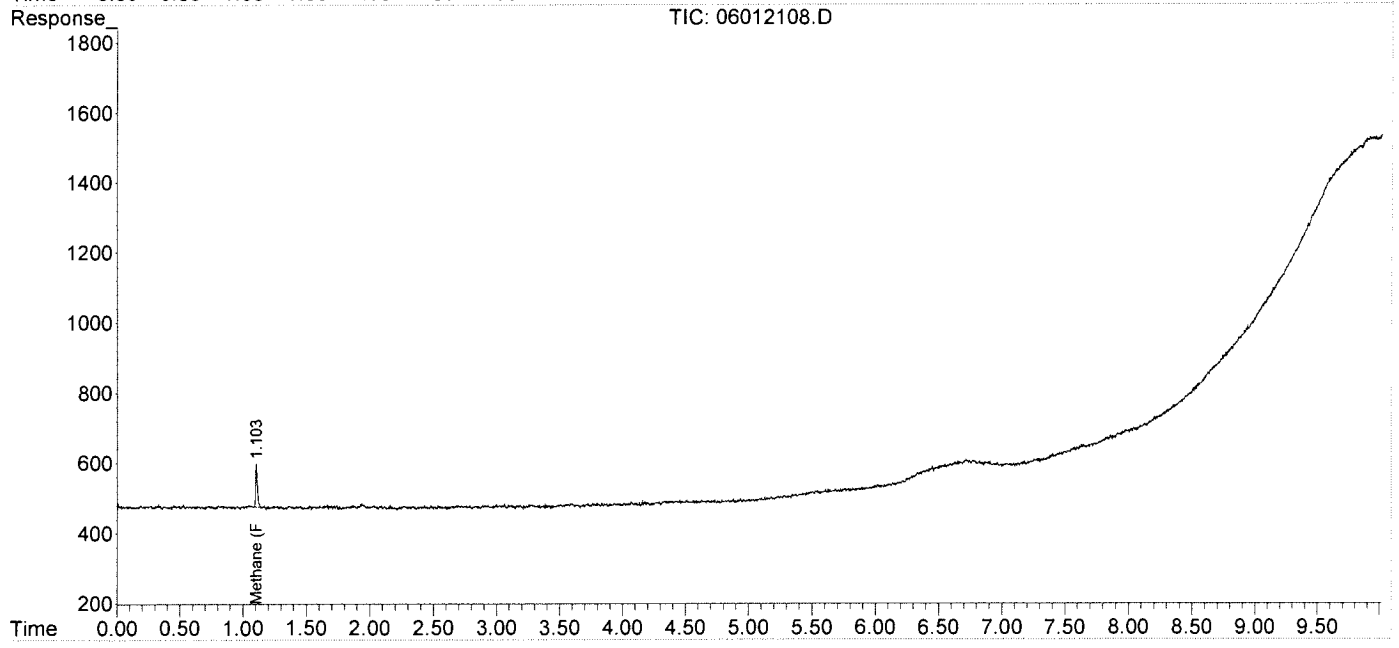
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012108.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 13:20
Operator : CB
Sample : 2781-003 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 07 09:54:54 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

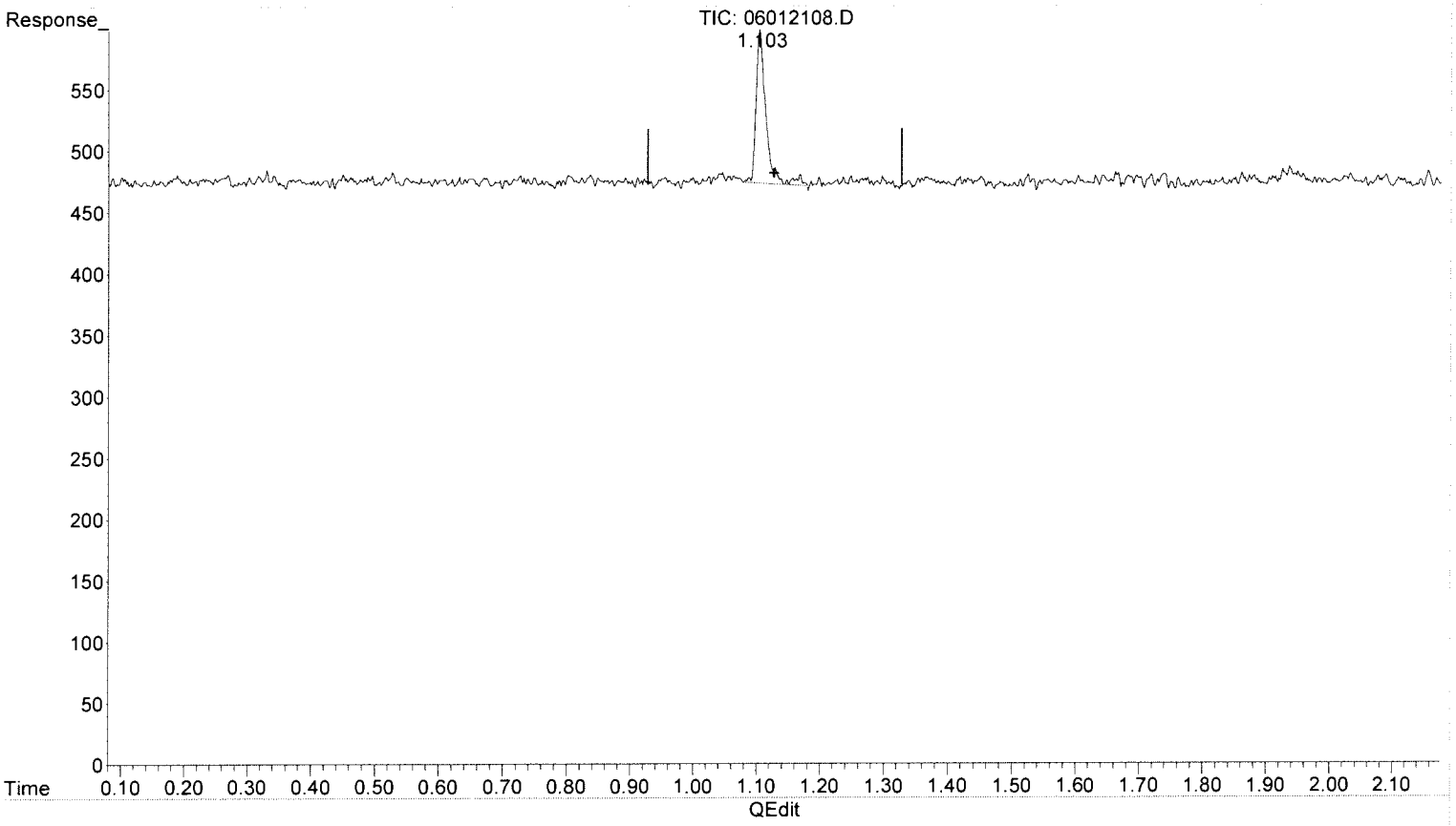




Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012108.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 13:20
Operator : CB
Sample : 2781-003 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 07 09:54:54 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.105min 0.152 ppm

response 1374

Manual Integration:

Before

06/07/21

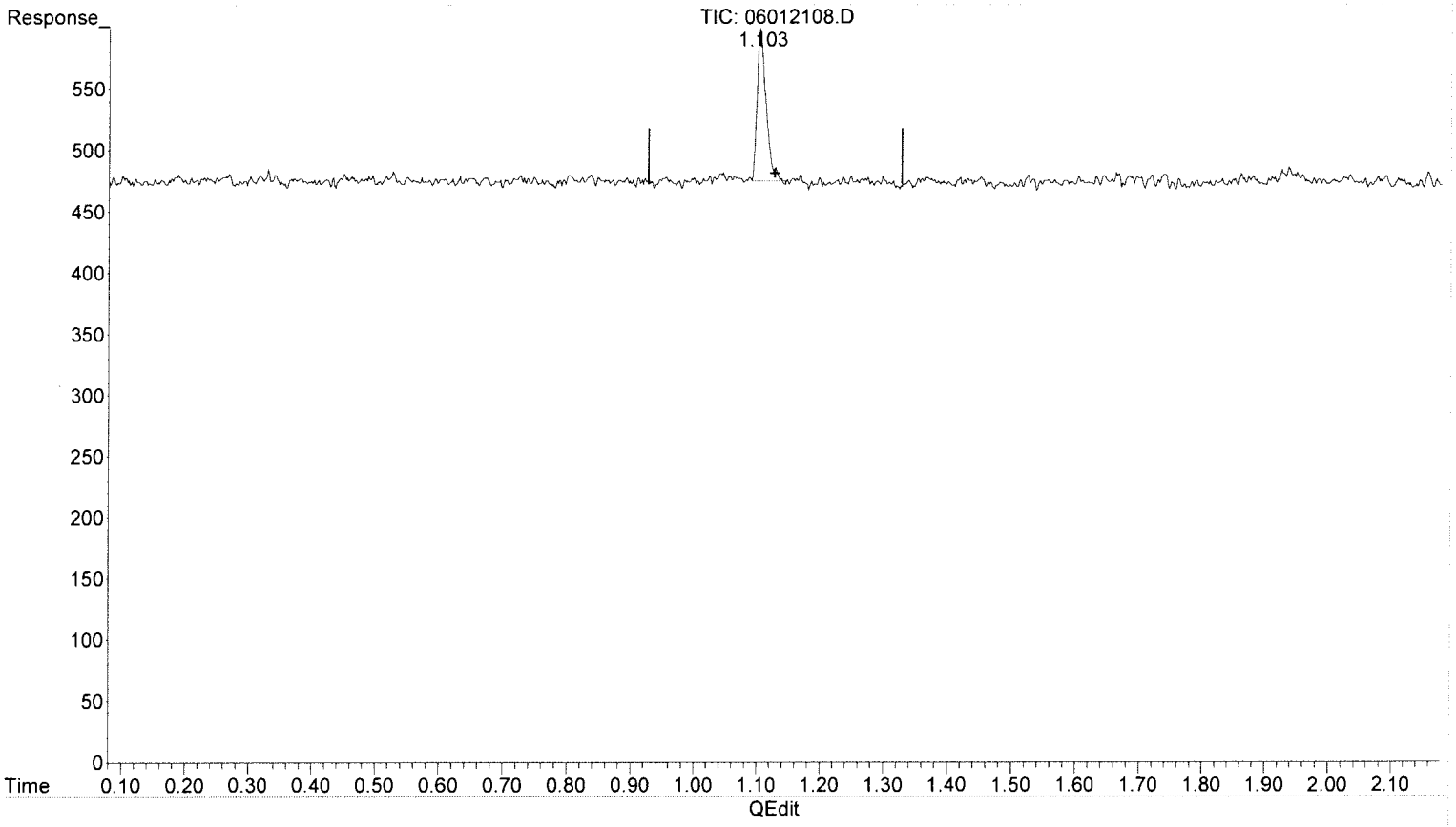
(+) = Expected Retention Time

RS091217_R.M Mon Jun 07 09:55:01 2021 Page: 1

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012108.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 13:20
Operator : CB
Sample : 2781-003 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 07 09:54:54 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :



(6) Methane (FID)

1.103min 0.136 ppm m

response 1235

Manual Integration:

After

BLC

06/07/21

(+) = Expected Retention Time

RS091217_R.M Mon Jun 07 09:55:06 2021

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012109.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 13:38
Operator : CB
Sample : P2102781-004 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 07 09:55:31 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

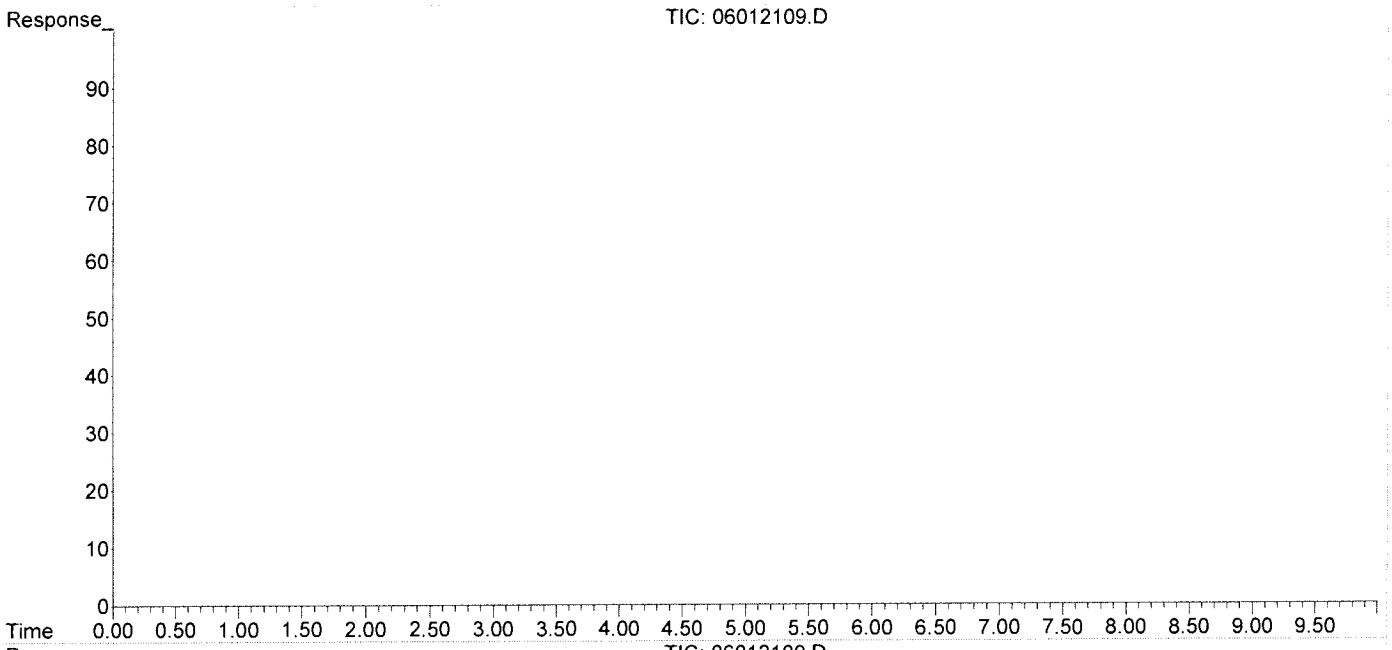
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.105	1055	0.116	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

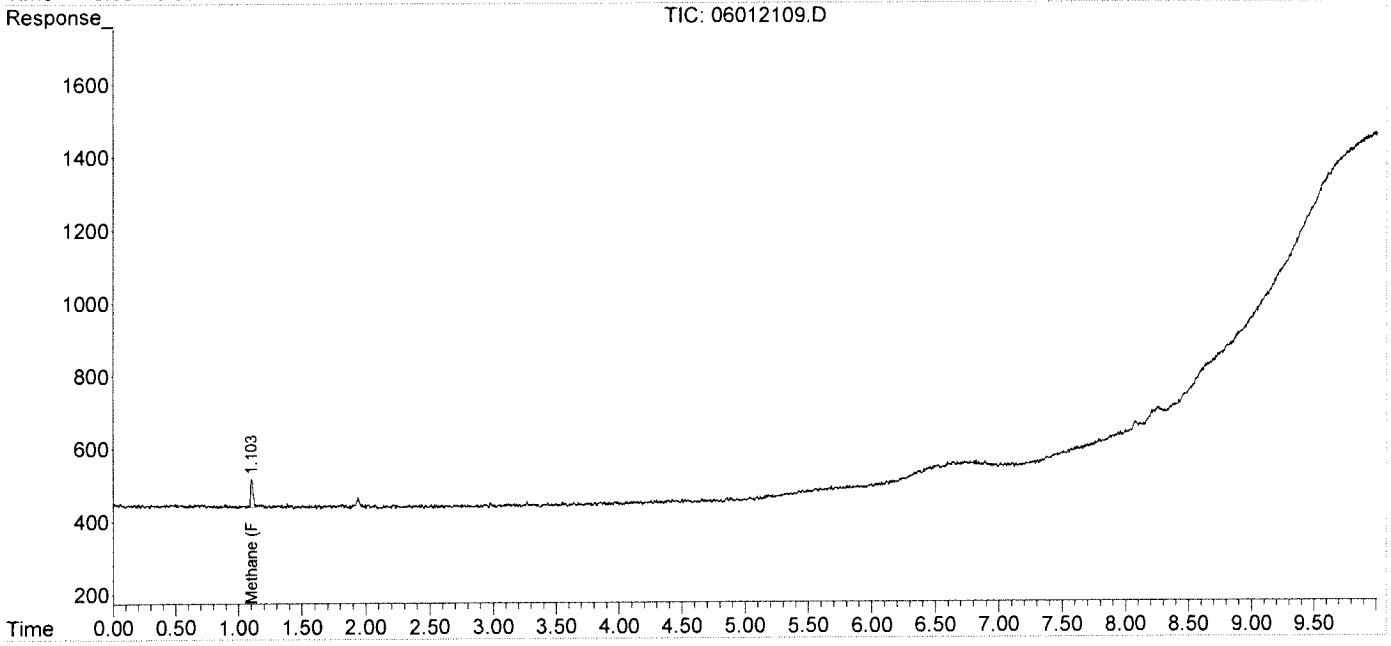
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012109.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 13:38
Operator : CB
Sample : P2102781-004 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 07 09:55:31 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 11:08
Operator : CB
Sample : MCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 01 11:30:04 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

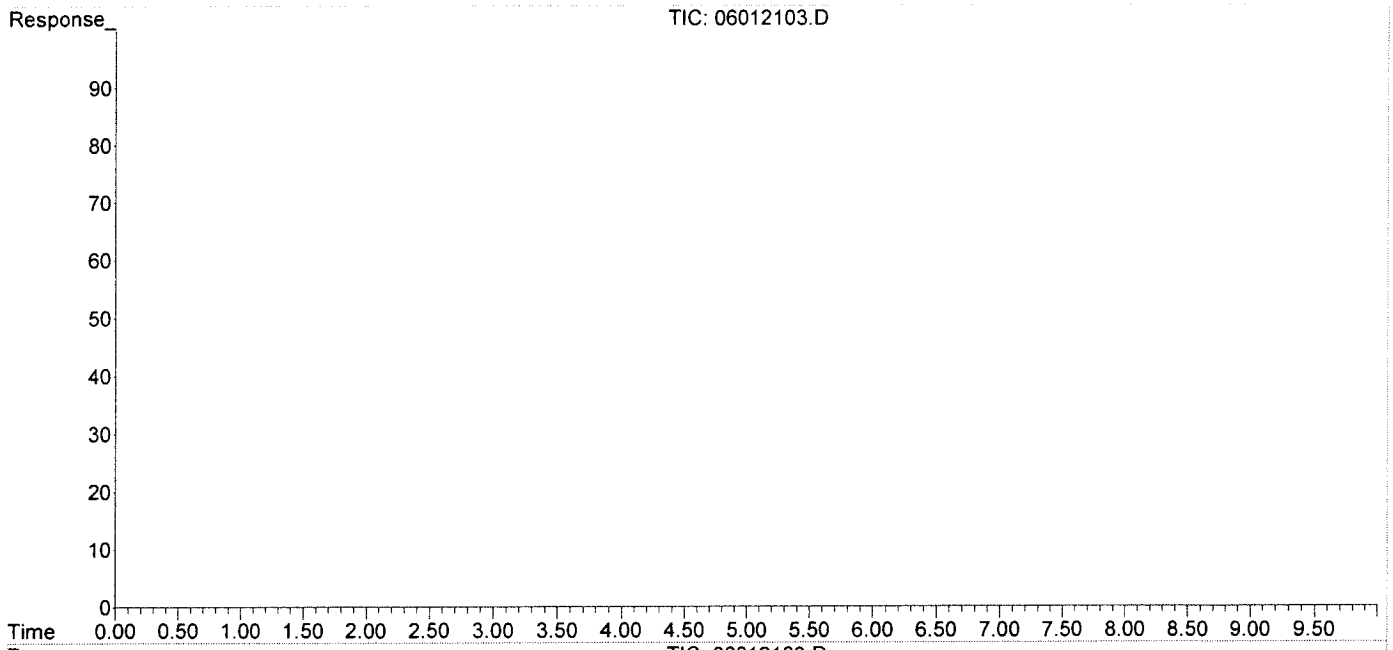
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.109	1613	0.178	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.703	2525	0.095	ppm	
13)	n-Butane	6.703	2525	0.095	ppm	

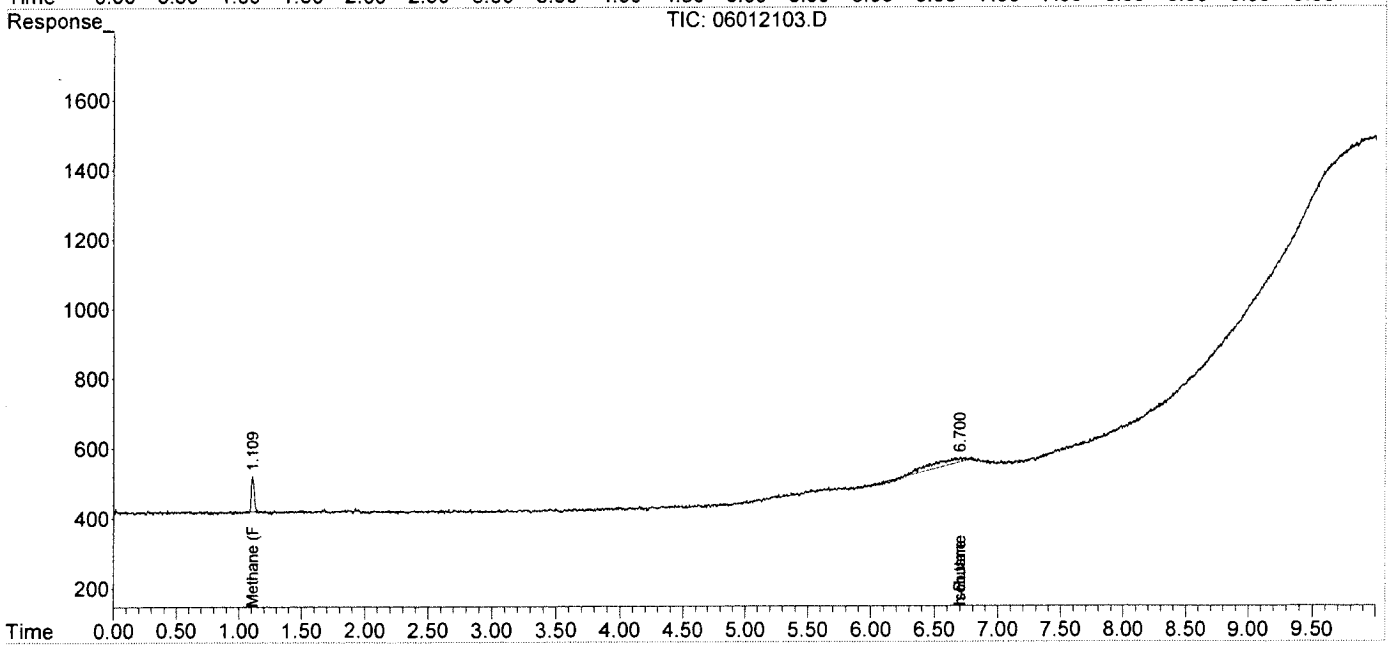
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 11:08
Operator : CB
Sample : MCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 01 11:30:04 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

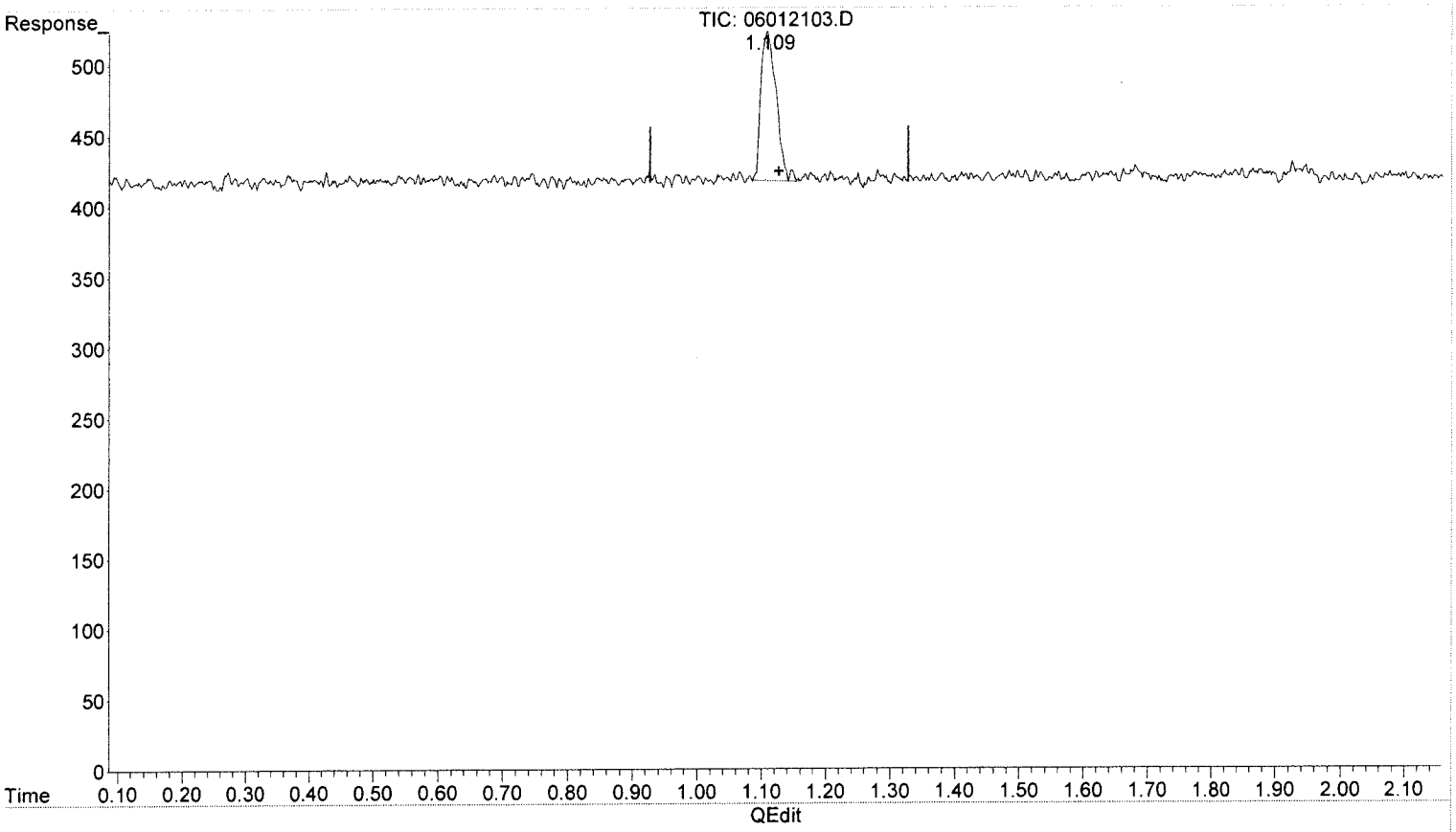




Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 11:08
Operator : CB
Sample : MCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 01 11:30:04 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.109min 0.194 ppm

response 1763

Manual Integration:

Before

06/07/21

(+) = Expected Retention Time

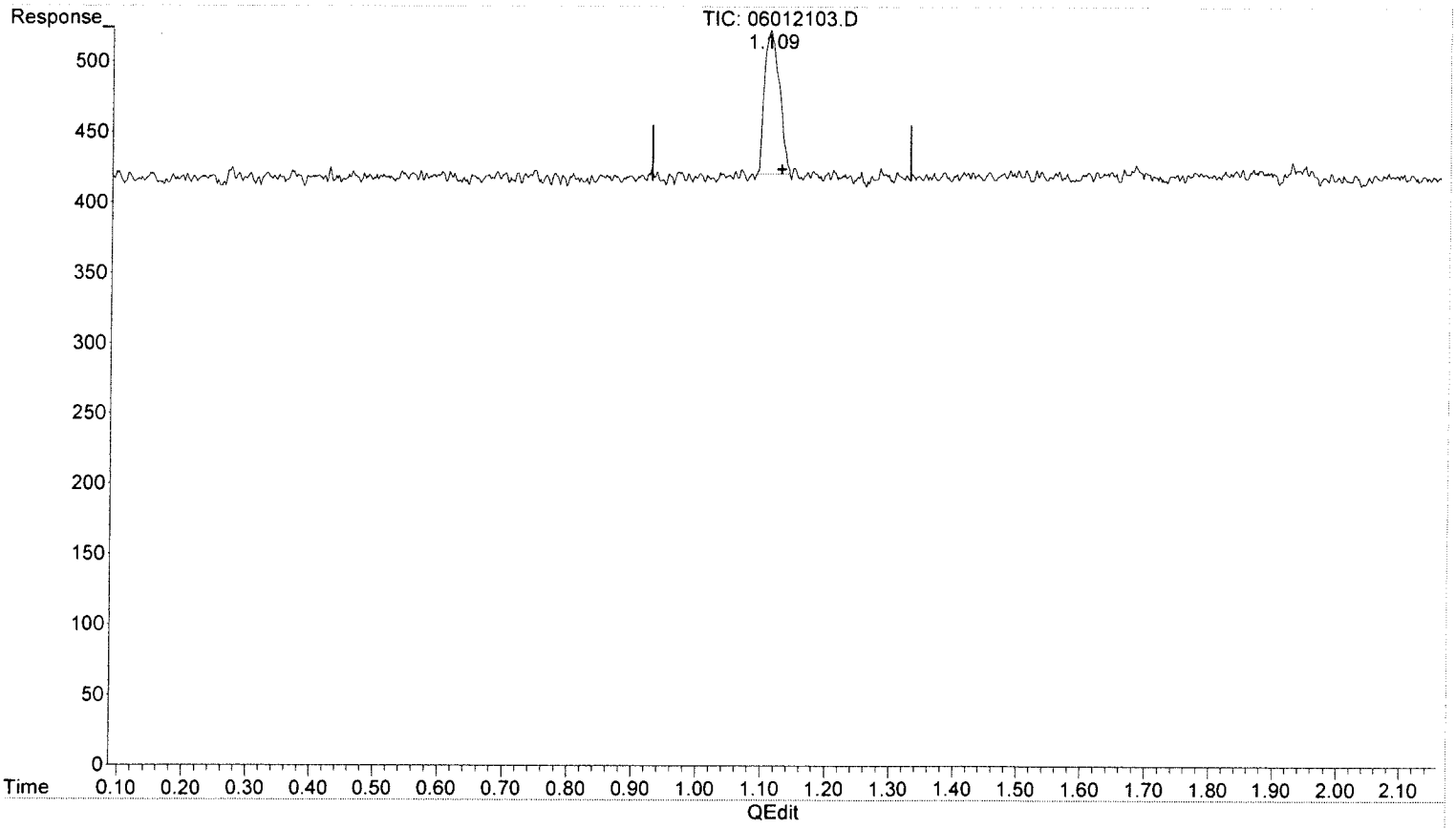
RS091217_R.M Mon Jun 07 09:46:43 2021

01075890

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 11:08
Operator : CB
Sample : MCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 01 11:30:04 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.109min 0.178 ppm m

response 1613

Manual Integration:

After

BLC

06/07/21

(+) = Expected Retention Time

RS091217_R.M Mon Jun 07 09:46:57 2021

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012104.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 11:31
Operator : CB
Sample : LCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 07 09:47:10 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

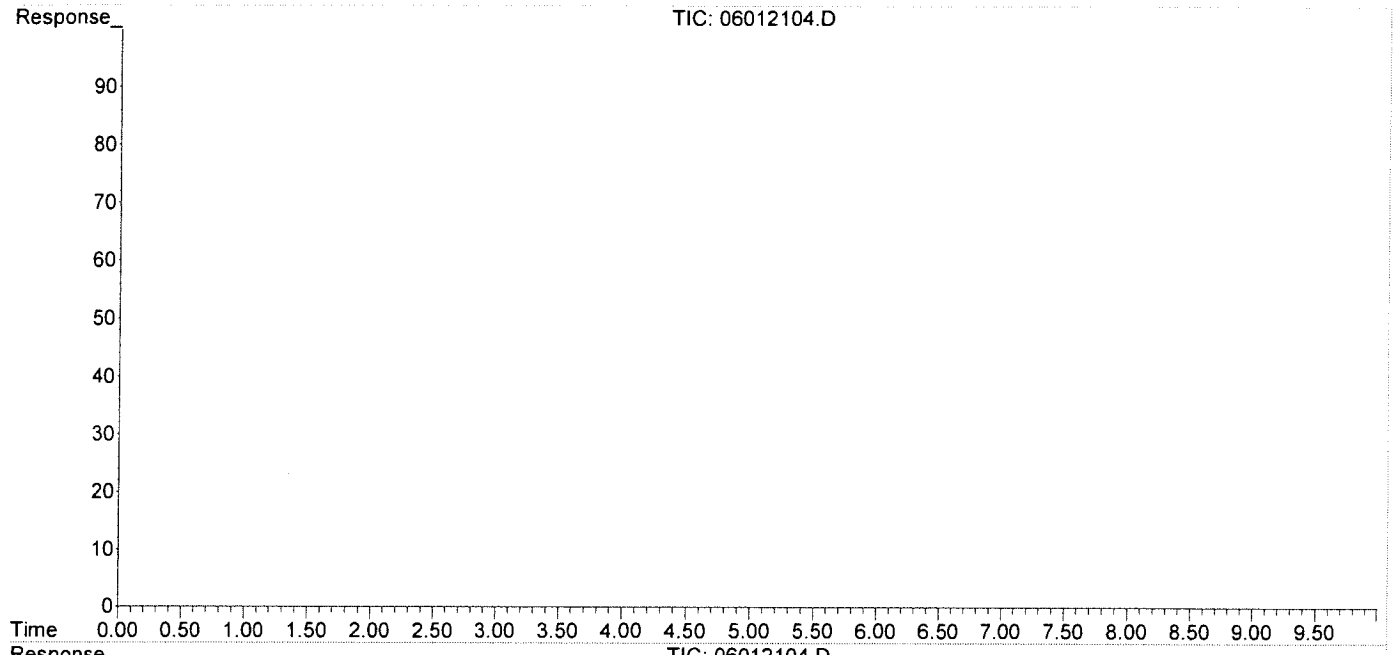
	Compound	R.T.	Response	Conc	Units	
Target	Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.112	13115	1.446	ppm	m
7)	Ethylene	1.681	18150	1.085	ppm	
8)	Ethane	1.944	21792	1.286	ppm	
9)	Propylene	4.326	25068	1.070	ppm	
10)	Propane	4.446	33151	1.332	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.660	49437	1.857	ppm	
13)	n-Butane	6.660	49437	1.857	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012104.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 11:31
Operator : CB
Sample : LCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 07 09:47:10 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

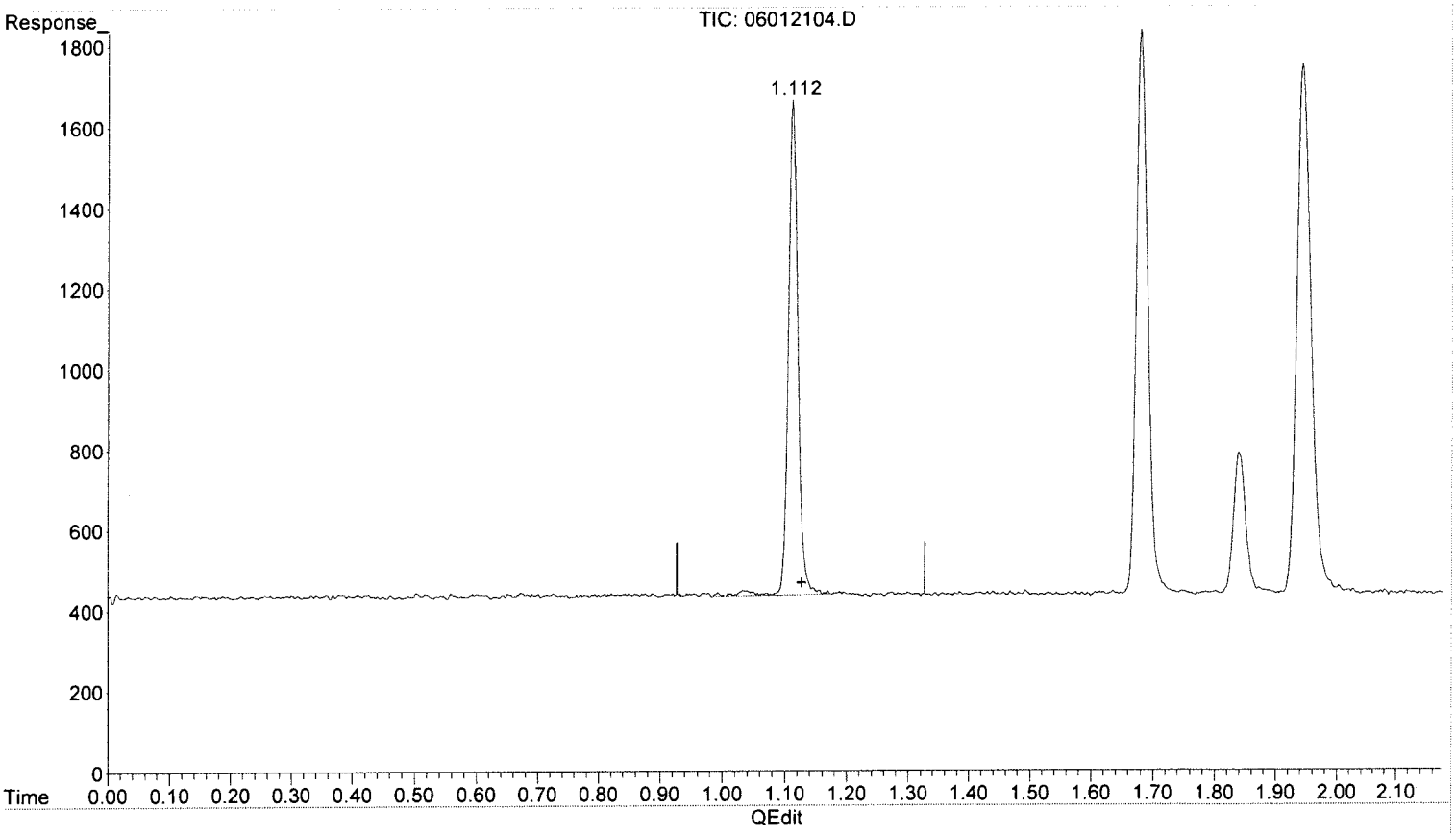
Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012104.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 11:31
Operator : CB
Sample : LCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 07 09:47:10 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.113min 1.493 ppm

response 13545

Manual Integration:

Before

06/07/21

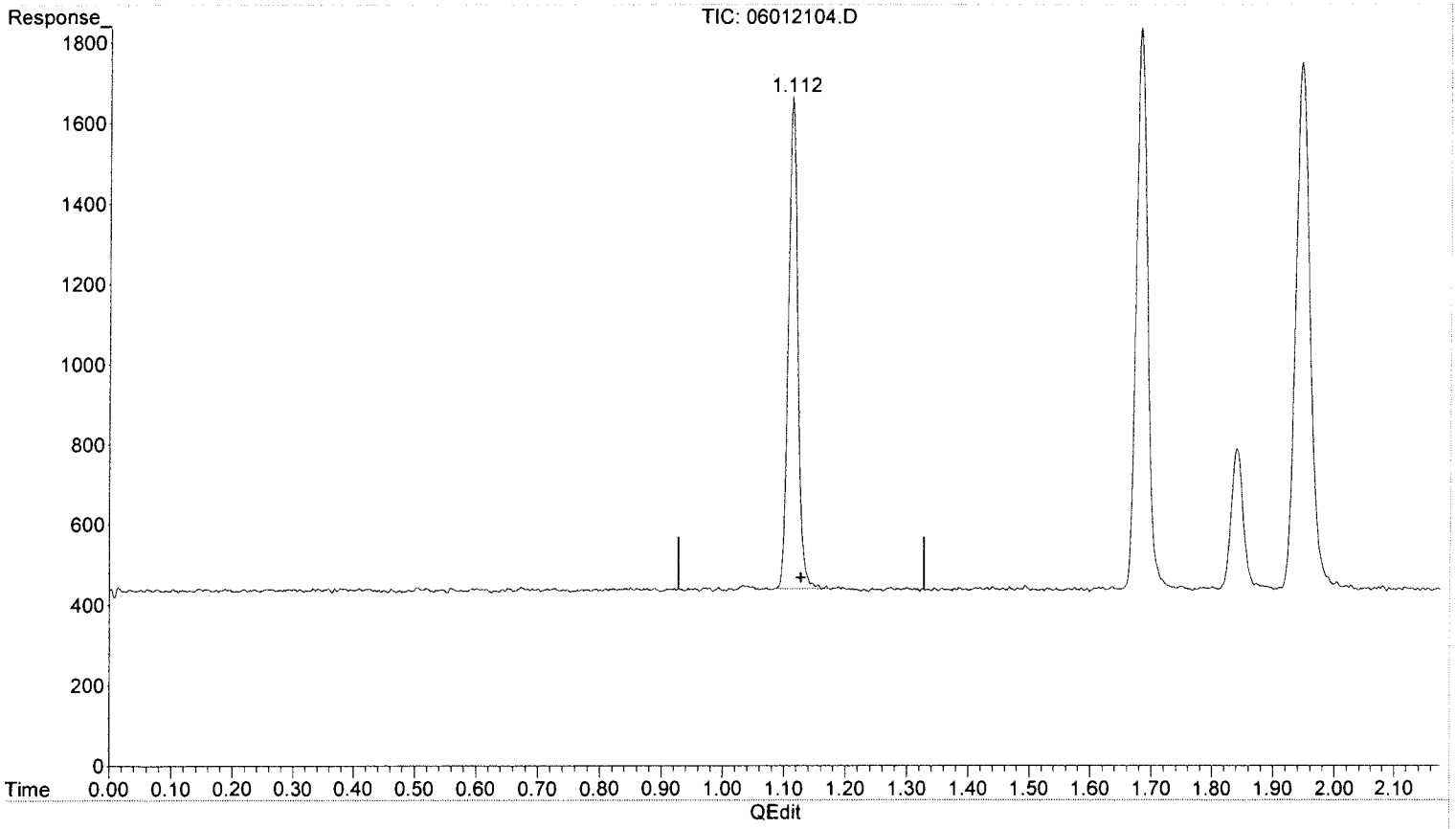
(+) = Expected Retention Time

RS091217_R.M Mon Jun 07 09:47:20 2021

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012104.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 11:31
Operator : CB
Sample : LCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 07 09:47:10 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.112min 1.446 ppm m

response 13115

Manual Integration:

After

BLC

06/07/21

(+) = Expected Retention Time

RS091217_R.M Mon Jun 07 09:47:27 2021

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 11:48
Operator : CB
Sample : LCSD 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 07 09:47:40 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

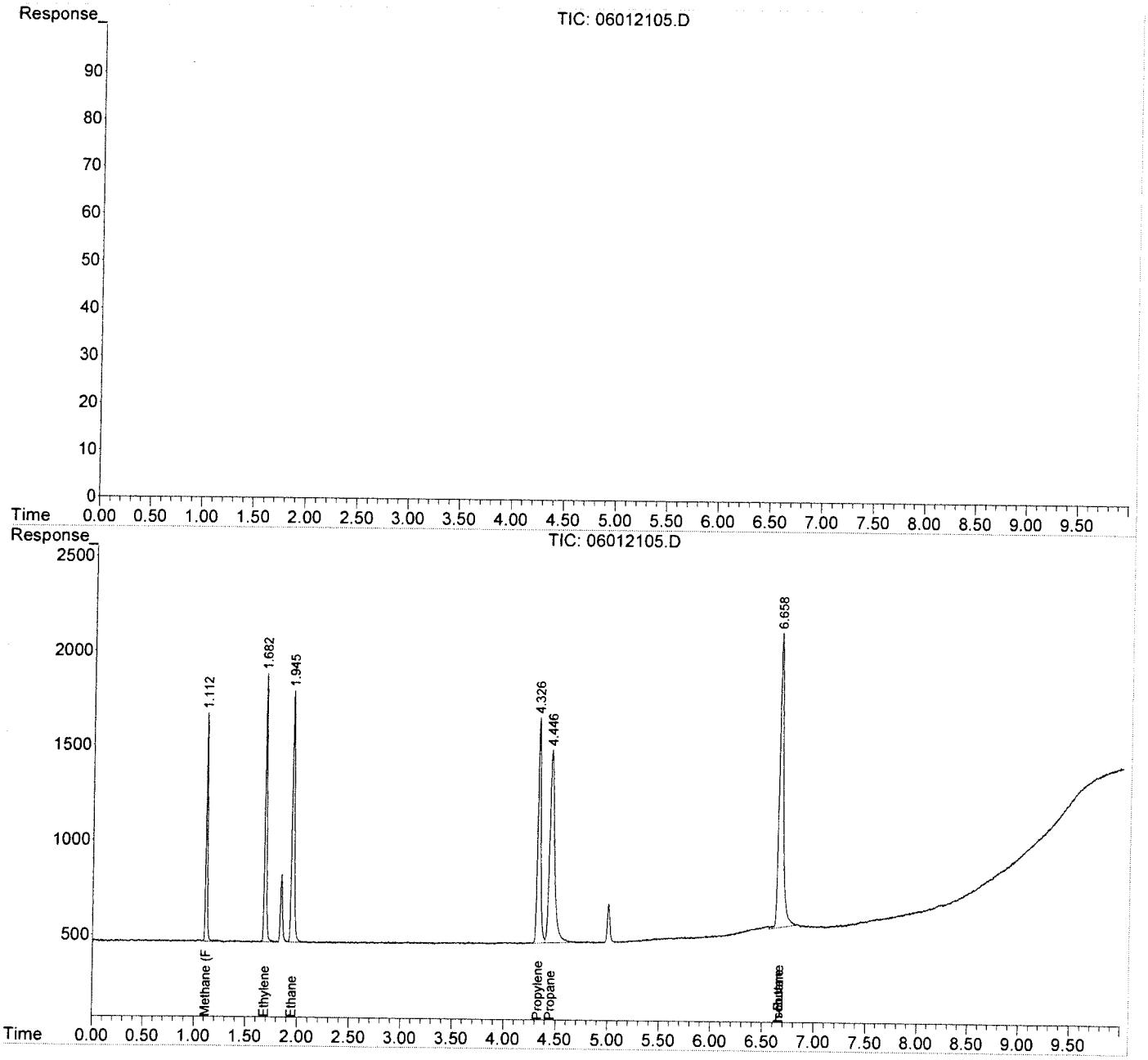
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.113	12536	1.382	ppm
7)	Ethylene	1.682	18169	1.086	ppm
8)	Ethane	1.945	21892	1.292	ppm
9)	Propylene	4.327	24395	1.041	ppm
10)	Propane	4.447	33594	1.350	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.659	44112	1.657	ppm
13)	n-Butane	6.659	44112	1.657	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 11:48
Operator : CB
Sample : LCSD 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 07 09:47:40 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



RS091217_R.M Mon Jun 07 09:47:54 2021 Page: 2

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg	%RSD
1)	Oxygen/Argon	3.739		1.014			0.001	0.793 E6	189.17
2)	Carbon monoxide	3.739		1.014			0.001	0.594 E6	221.92
3)	Methane (TCD)						2.161	0.951 E2	106.37
4)	Carbon dioxide	2.365	2.569	2.558	2.361	2.459	2.314	2.438 E2	4.44

Signal #2 Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg	%RSD
6)	Methane (FID)		1.180	0.975	0.908	0.870	0.868	0.907 E4	11.66
7)	Ethylene	1.736	1.638	1.780	1.720	1.628	1.670	1.673 E4	3.90
8)	Ethane	1.781	1.676	1.784	1.730	1.692	1.675	1.695 E4	3.83
9)	Propylene	2.505	2.296	2.592	2.480	2.346	2.252	2.343 E4	6.56
10)	Propane	2.439	2.283	2.645	2.555	2.433	2.522	2.488 E4	4.20
11)	Isobutylene							0.652 E1	138.46
12)	Isobutane	6.058	4.793	2.214	1.553	1.353		2.662 E4	86.17
13)	n-Butane	6.058	4.793	2.214	1.553	1.353		2.662 E4	86.17

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS091217_R.M Wed Sep 13 15:11:48 2017

Edit Compounds -- Compound #6 -- Methane (FID)

Search by: Ret Time Name Index Find Compound

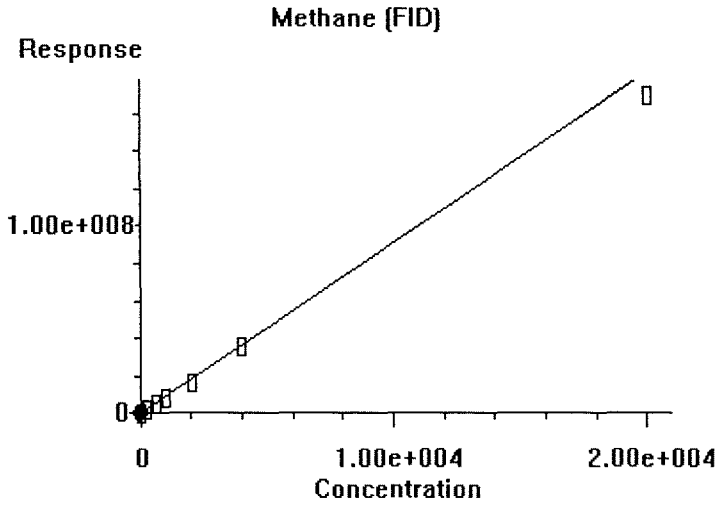
Compound Database
External Standard Compoun
- Oxygen/Argon
- Carbon monoxide
- Methane (TCD)
- Carbon dioxide
- Signal #2
- Methane (FID)
- Ethylene
- Ethane
- Propylene
- Propane
- Isobutylene
- Isobutane
- n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	
2	0.302000	3564.400000
3	1.510000	14725.268625
4	4.530000	41128.575000
5	10.570000	91966.784531
6	200.000000	1735997.497500
7	600.000000	5189848.900000
8	1000.000000	8598533.570000
9	2000.000000	16098209.390000
10	4000.000000	35776839.311362

Lvl ID	Concentration	Response
11	20000.000000	169009160.49199

Methane (FID)



0.000e+000	Quadratic term
9.071e+003	Linear term
0.000e+000	Constant term
11.657%	RF Rel Std Dev

OK Cancel Help Print Calibration Curve Copy Calibration Curve

Edit Compounds -- Compound #7 -- Ethylene

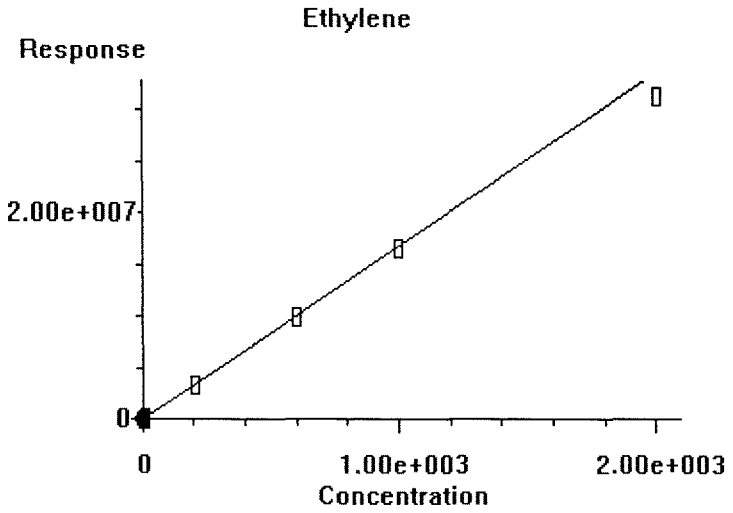
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2621.970000
2	0.302000	4946.731301
3	1.510000	26884.746847
4	4.530000	77902.721497
5	10.570000	172085.529560
6	200.000000	3339702.313219
7	600.000000	10007758.776971
8	1000.000000	16608503.805988
9	2000.000000	31192443.898600
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.673e+004	Linear term
0.000e+000	Constant term
3.897%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #8 -- Ethane

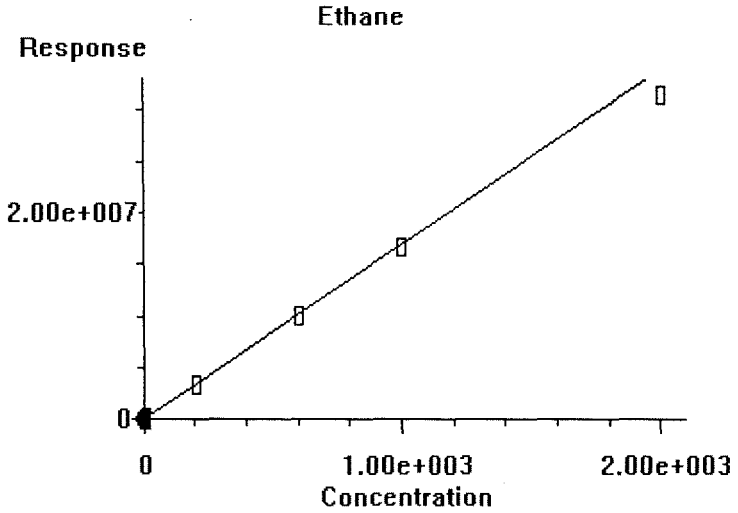
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2689.928008
2	0.302000	5060.331943
3	1.510000	26943.667500
4	4.530000	78353.525045
5	10.570000	178840.731148
6	200.000000	3350442.319129
7	600.000000	10048964.218029
8	1000.000000	16709164.879012
9	2000.000000	31424217.938900
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.695e+004	Linear term
0.000e+000	Constant term
3.831%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #9 -- Propylene

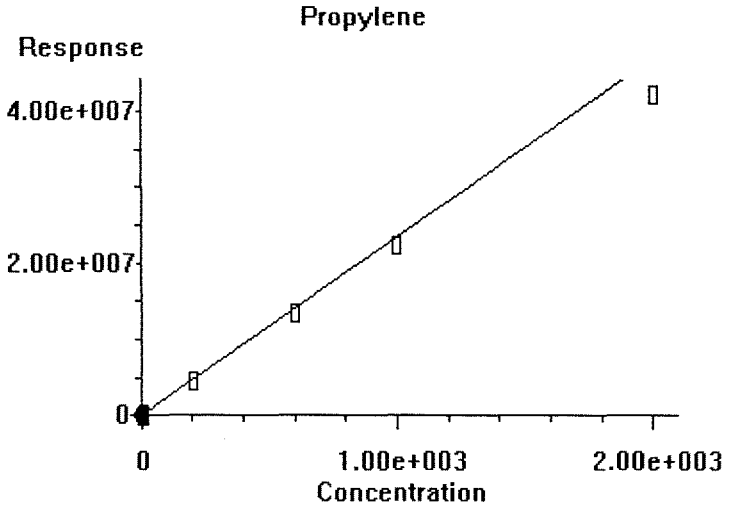
Search by: (•) Ret Time ( ) Name ( ) Index [ ] Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3782.537646
2	0.302000	6933.285530
3	1.510000	39139.518208
4	4.530000	112341.896872
5	10.570000	248003.903623
6	200.000000	4504060.086084
7	600.000000	13569342.761419
8	1000.000000	22494887.720990
9	2000.000000	42124689.656800
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.343e+004	Linear term
0.000e+000	Constant term
6.559%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #10 -- Propane

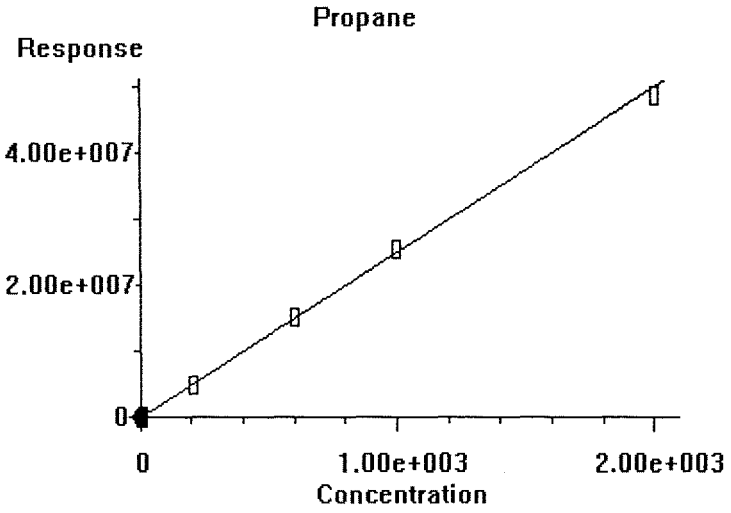
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3682.897354
2	0.302000	6894.237803
3	1.510000	39934.166792
4	4.530000	115723.428128
5	10.570000	257124.432806
6	200.000000	5043035.663916
7	600.000000	15251325.797404
8	1000.000000	25459410.657938
9	2000.000000	48583085.287451
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.488e+004	Linear term
0.000e+000	Constant term
4.200%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121702.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121703.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121704.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121705.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121706.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121707.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121711.D
11	11	20000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121712.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Sep 13 11:04 2017	Sep 12 15:03 2017	12-Sep-2017, 10:52
2	2	Sep 13 11:05 2017	Sep 13 11:05 2017	12-Sep-2017, 11:05
3	3	Sep 13 11:06 2017	Sep 13 11:05 2017	12-Sep-2017, 11:45
4	4	Sep 13 11:09 2017	Sep 13 11:06 2017	12-Sep-2017, 12:09
5	5	Sep 13 11:09 2017	Sep 13 11:09 2017	12-Sep-2017, 12:30
6	6	Sep 13 11:10 2017	Sep 13 11:10 2017	12-Sep-2017, 12:47
7	7	Sep 13 11:11 2017	Sep 13 11:10 2017	12-Sep-2017, 13:00
8	8	Sep 13 11:12 2017	Sep 13 11:11 2017	12-Sep-2017, 13:47
9	9	Sep 13 11:12 2017	Sep 13 11:12 2017	12-Sep-2017, 14:07
10	10	Sep 13 11:14 2017	Sep 13 11:13 2017	12-Sep-2017, 14:48
11	11	Sep 13 11:14 2017	Sep 13 11:14 2017	12-Sep-2017, 15:21

RS091217_R.M Wed Sep 13 15:11:22 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.767	373920	0.128	ppm	
2)	Carbon monoxide	1.767	373920	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	1.595	2622	0.156	ppm	
8)	Ethane	1.848	2690	0.156	ppm	
9)	Propylene	4.222	3783	0.154	ppm	
10)	Propane	4.348	3683	0.139	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.582f	6058	NoCal	ppm	
13)	n-Butane	6.582f	6058	NoCal	ppm	

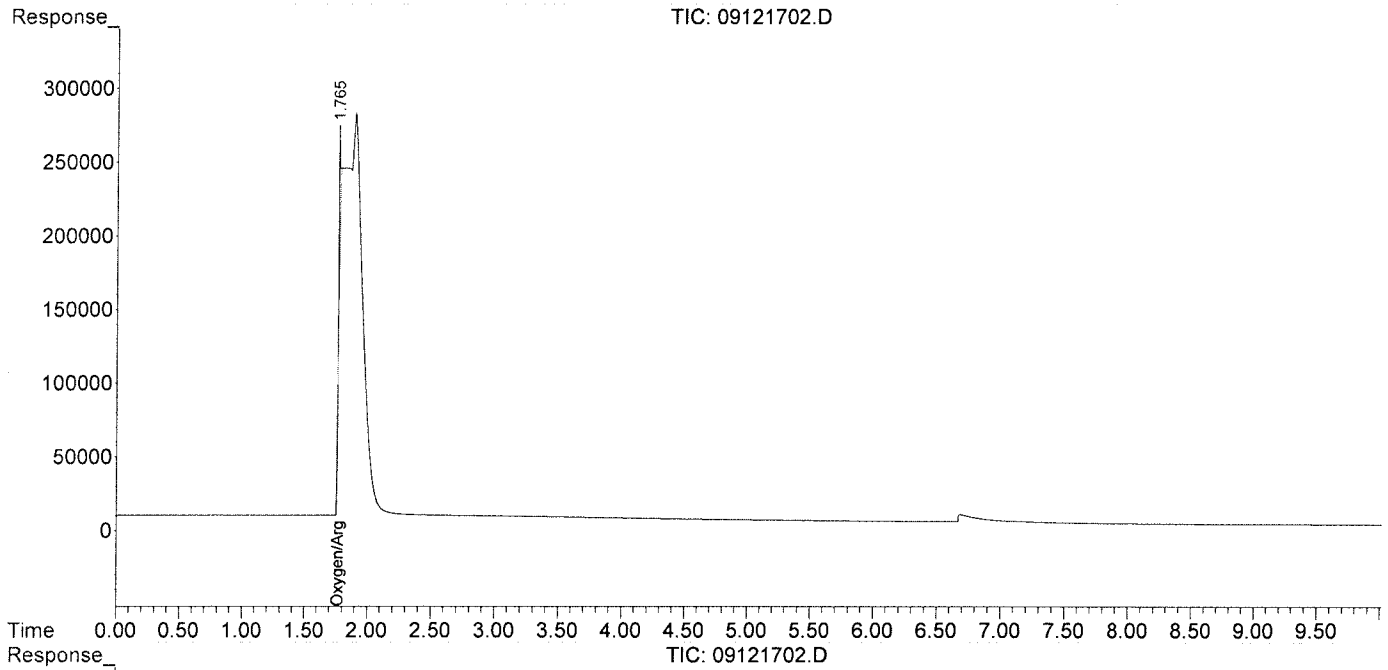
(f)=RT Delta > 1/2 Window (m)=manual int.

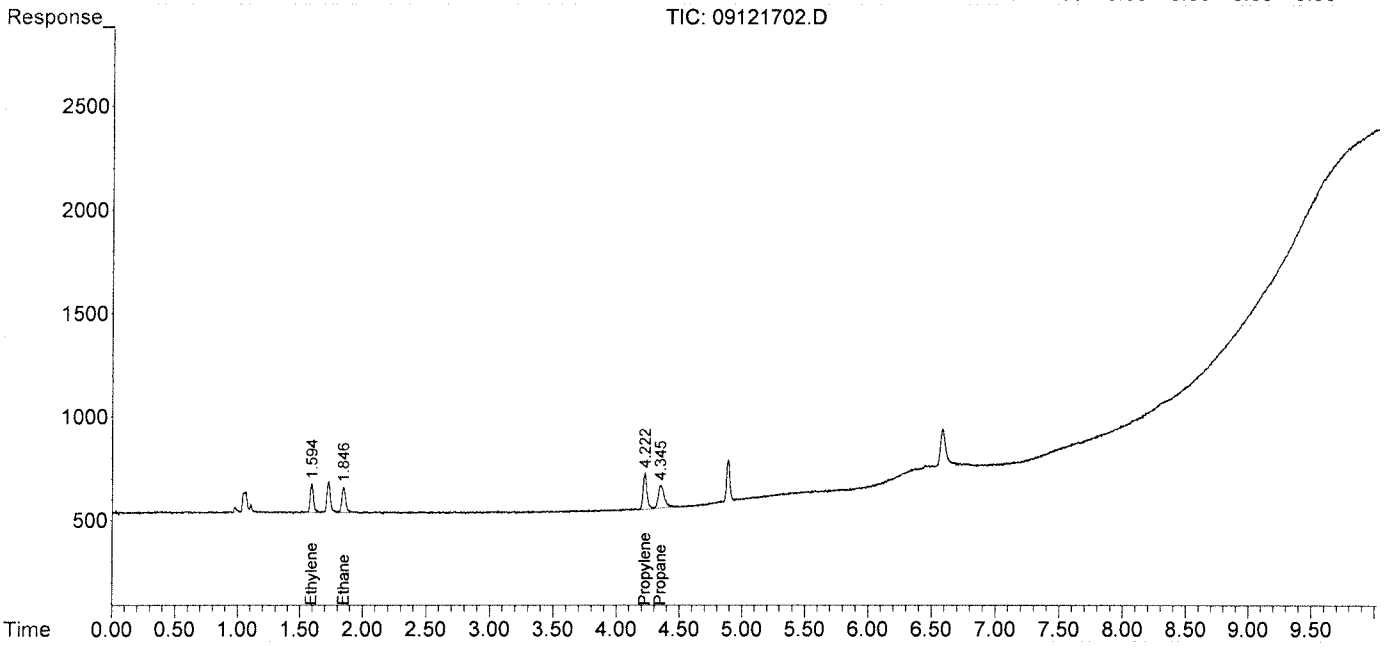
9/13/17

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

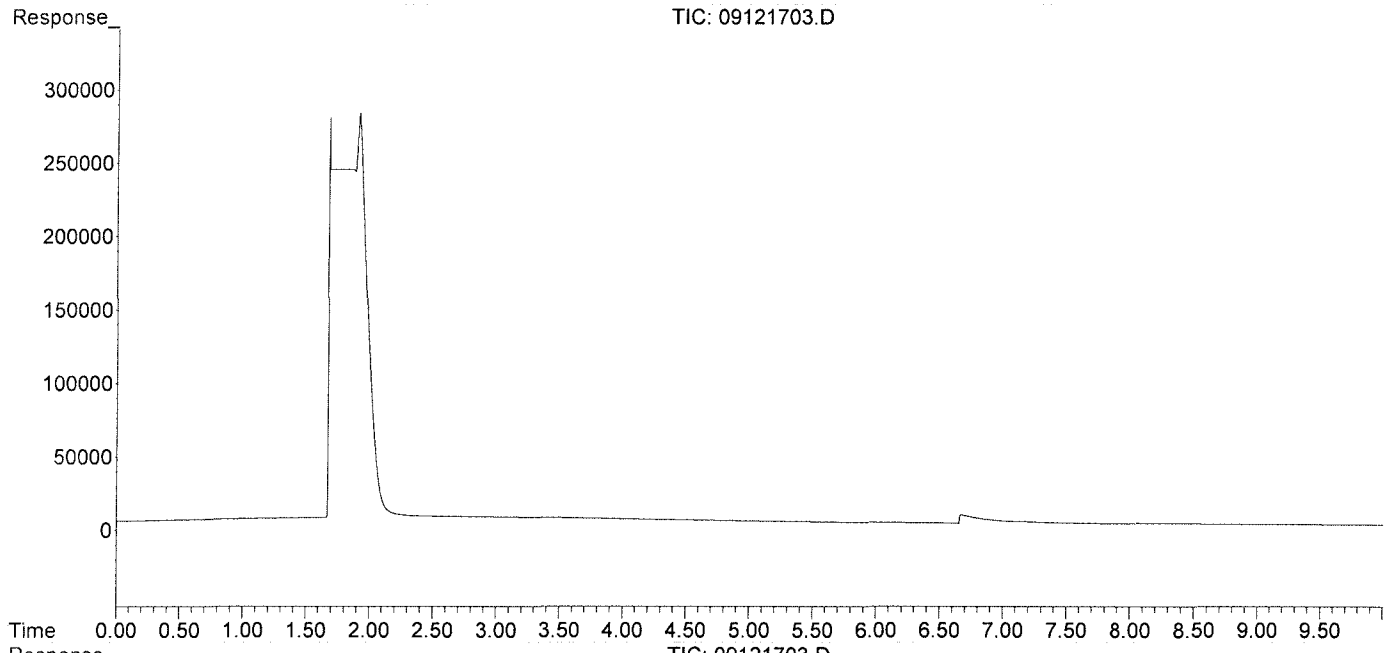
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.913f	-25181981	N.D.	ppm	
2)	Carbon monoxide	1.913f	-25181981	1.089	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.049	3564	0.391	ppm	m
7)	Ethylene	1.577	4947	0.292	ppm	
8)	Ethane	1.828	5060	0.293	ppm	
9)	Propylene	4.207	6933	0.281	ppm	
10)	Propane	4.337	6894	0.268	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	9587	0.158	ppm	
13)	n-Butane	6.579f	9587	0.158	ppm	

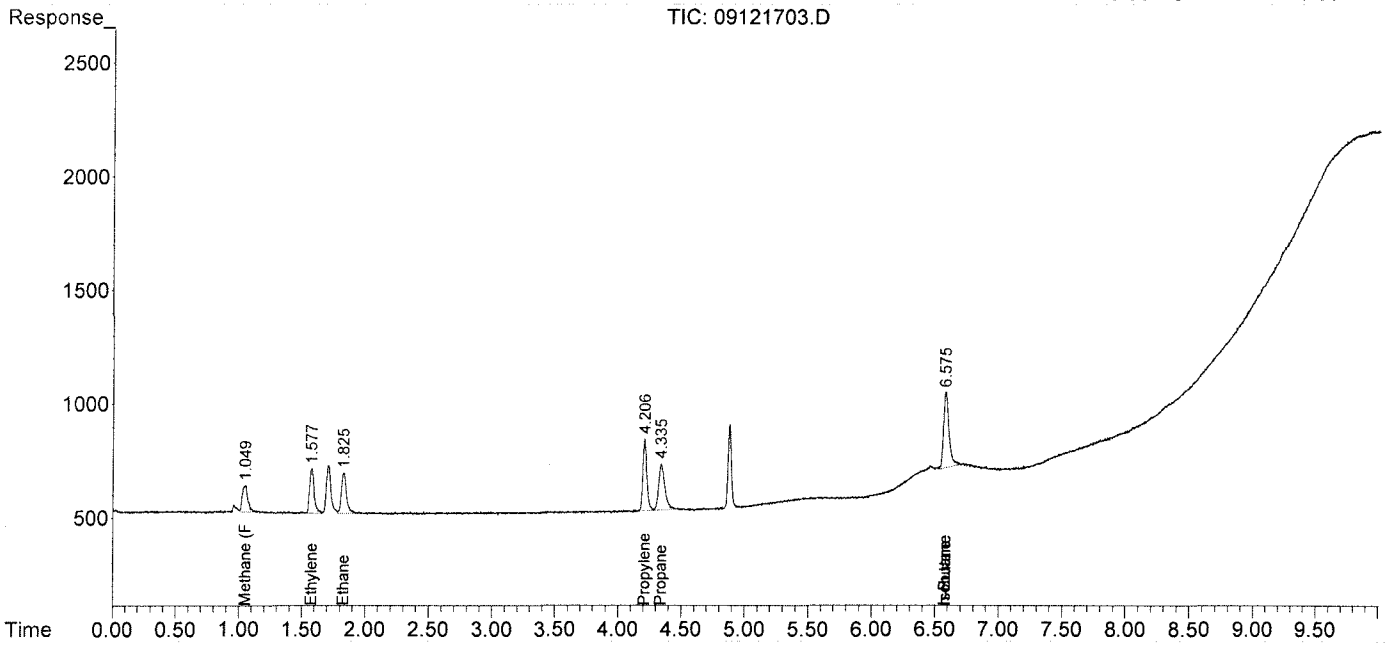
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



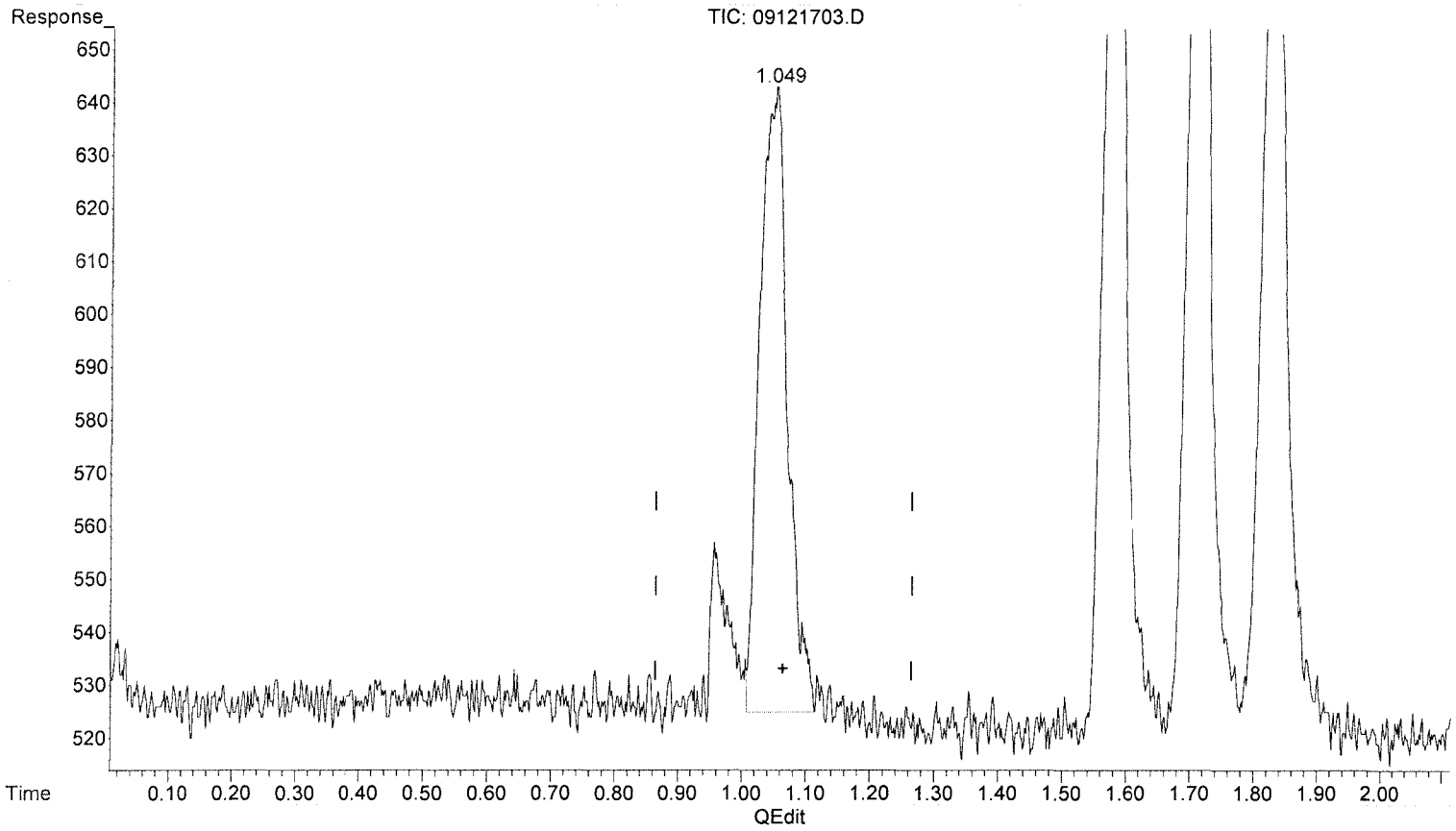


01075908

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.049min 0.391 ppm m

response 3564

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

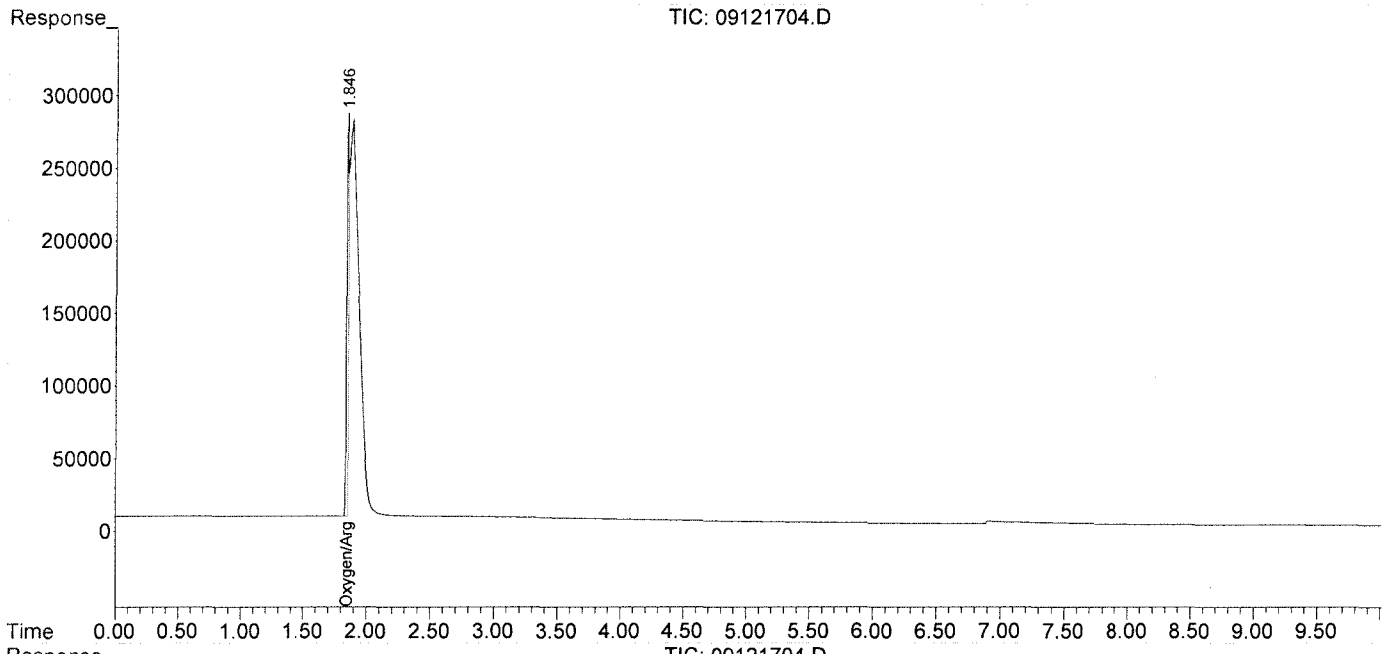
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.847	2536230	1.056	ppm
2)	Carbon monoxide	1.847	2536230	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.064	14725	1.613	ppm
7)	Ethylene	1.598	26885	1.582	ppm
8)	Ethane	1.851	26944	1.555	ppm
9)	Propylene	4.220	39140	1.589	ppm
10)	Propane	4.349	39934	1.596	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	55348	1.020	ppm
13)	n-Butane	6.578f	55348	1.020	ppm

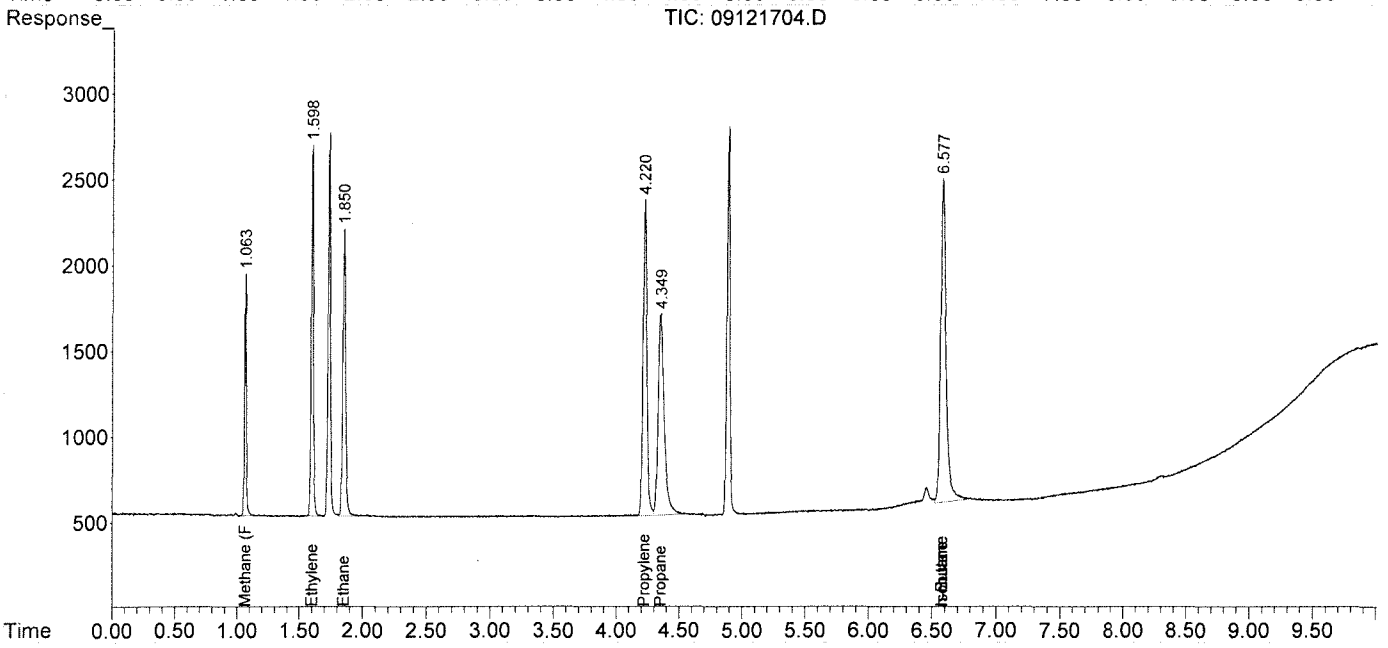
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

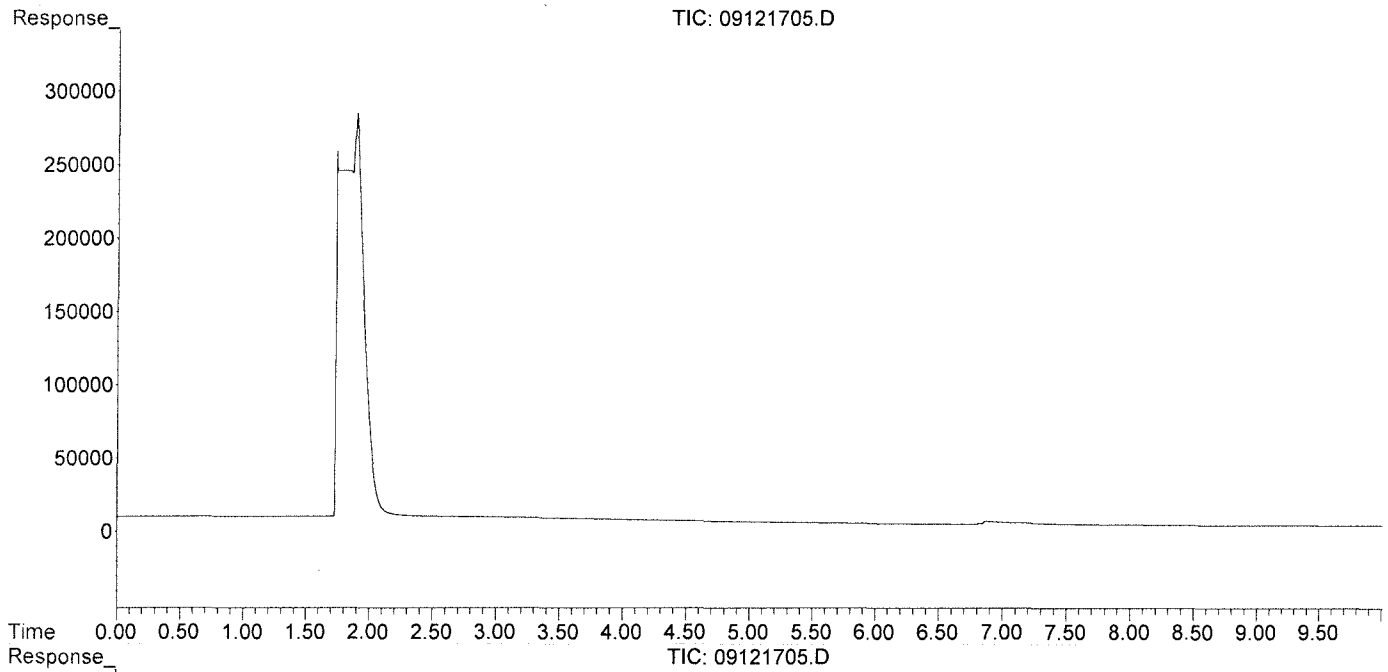
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.738	-331216	N.D.	ppm
2)	Carbon monoxide	1.738	-331216	0.019	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.052	41129	4.522	ppm
7)	Ethylene	1.586	77903	4.637	ppm
8)	Ethane	1.838	78354	4.558	ppm
9)	Propylene	4.218	112342	4.614	ppm
10)	Propane	4.347	115723	4.680	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.580f	155256	3.565	ppm
13)	n-Butane	6.580f	155256	3.565	ppm

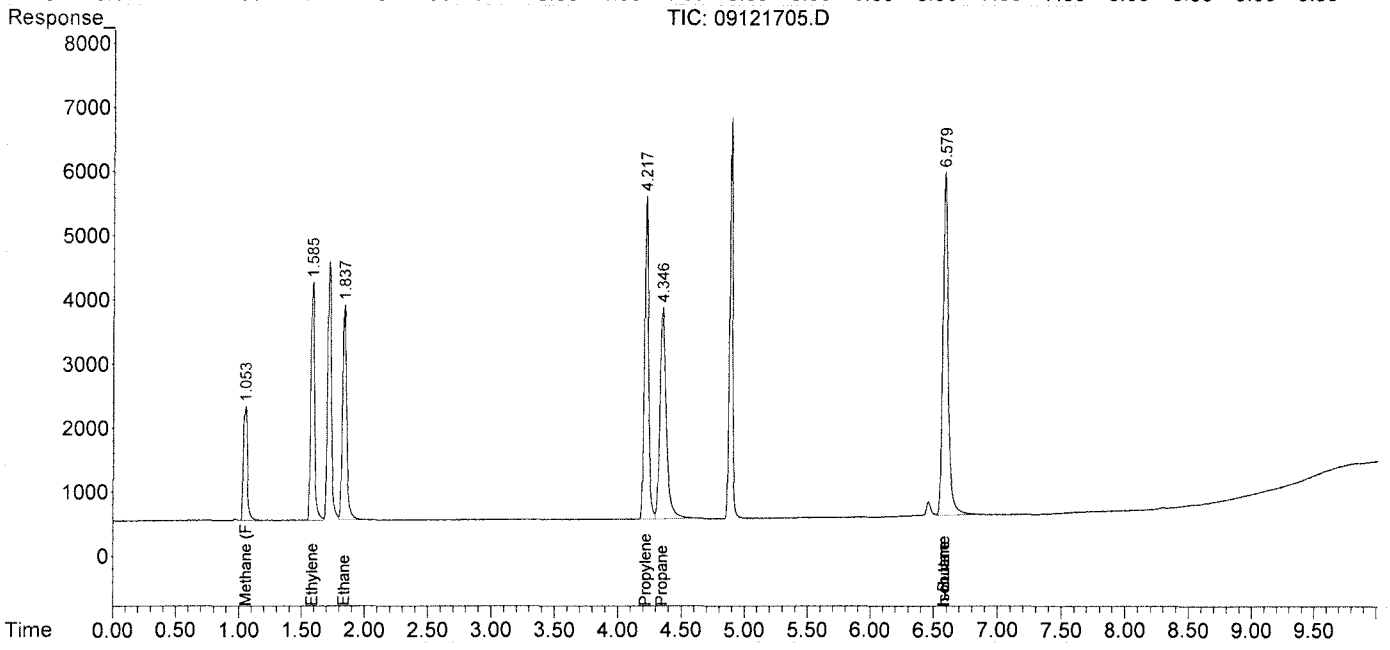
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

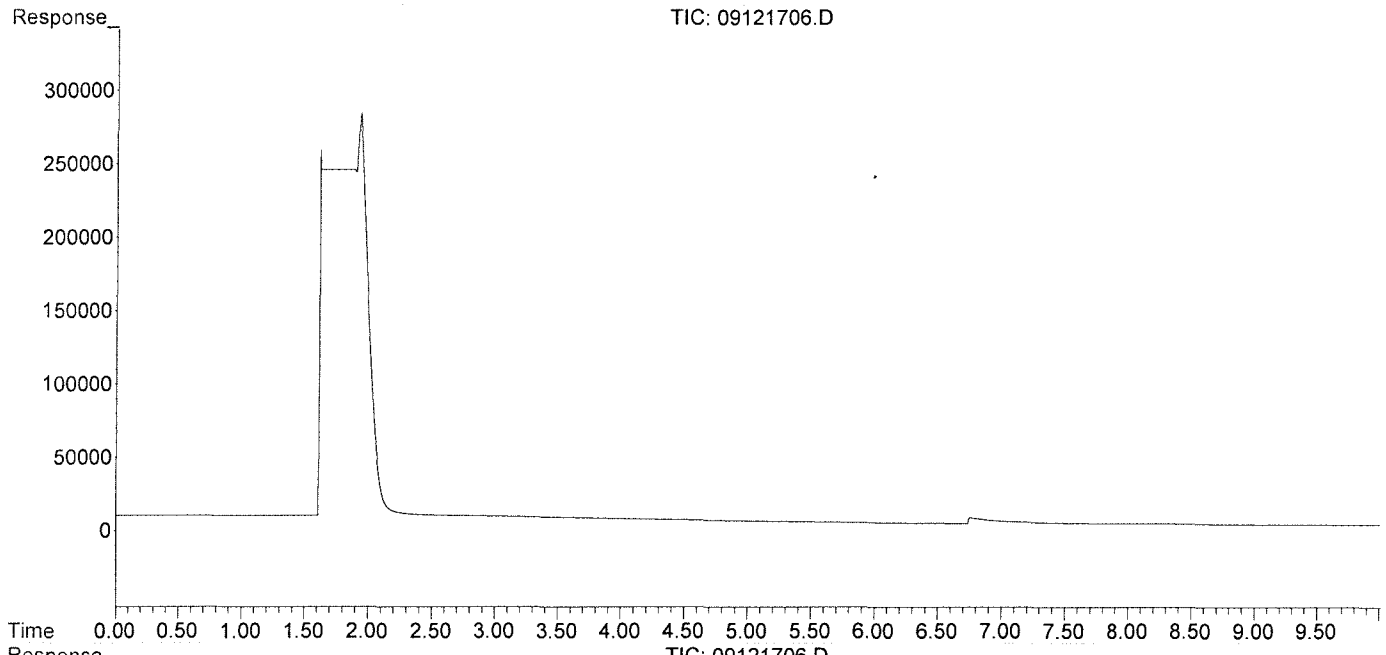
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.929f	-31871242	N.D.	ppm
2)	Carbon monoxide	1.929f	-31871242	1.818	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.025	91967	10.135	ppm
7)	Ethylene	1.568	172086	10.273	ppm
8)	Ethane	1.822	178841	10.441	ppm
9)	Propylene	4.214	248004	10.236	ppm
10)	Propane	4.344	257124	10.458	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	338181	9.254	ppm
13)	n-Butane	6.578f	338181	9.254	ppm

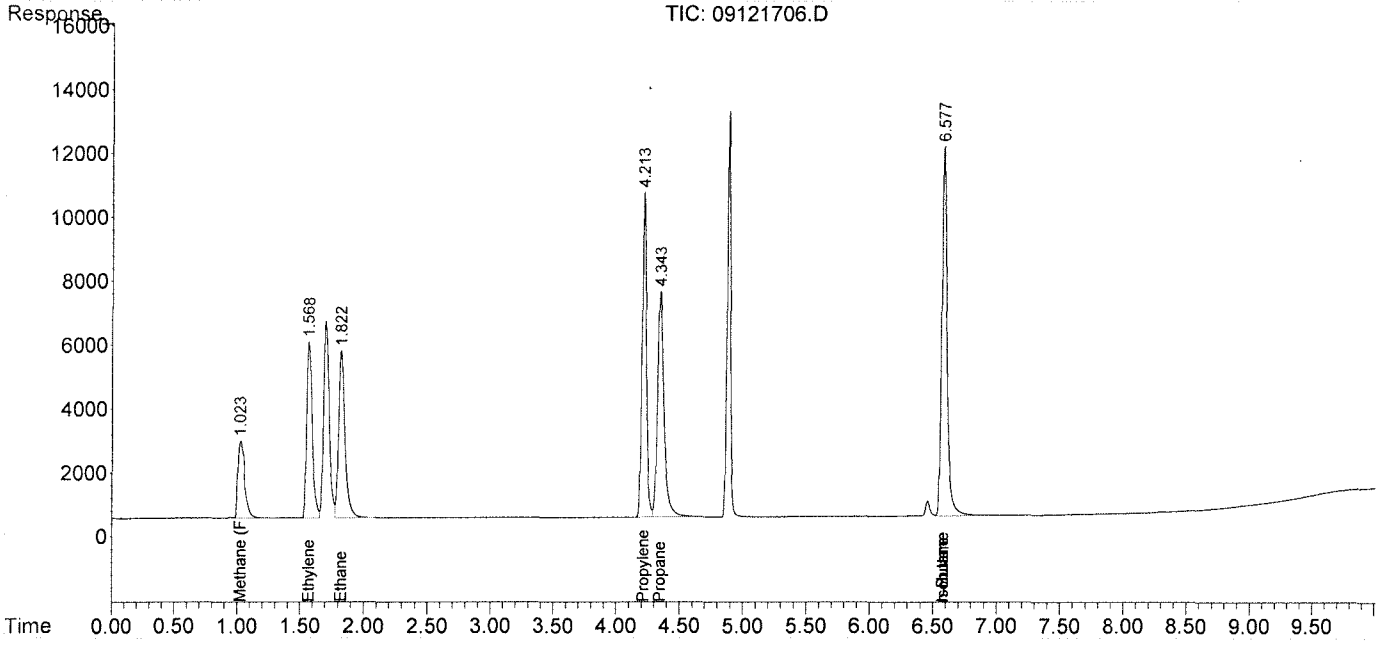
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

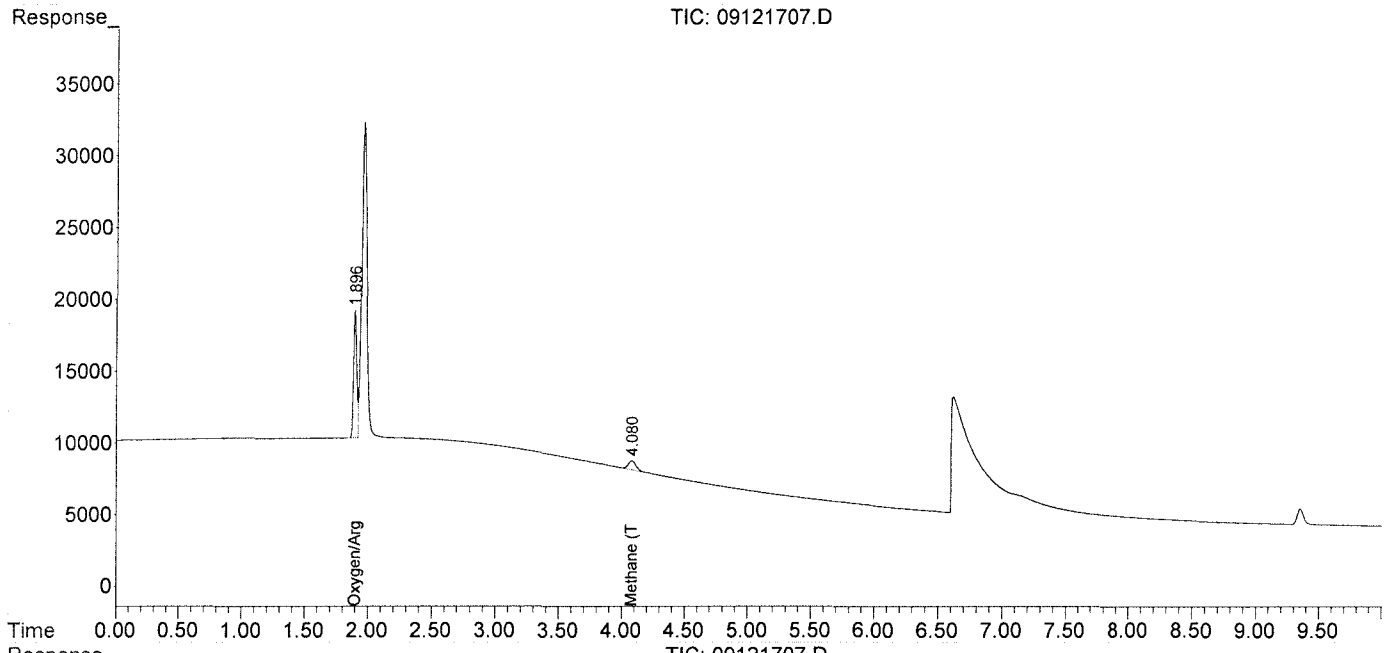
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.897	155286	0.065	ppm
2)	Carbon monoxide	1.897	155286	N.D.	ppm
3)	Methane (TCD)	4.079f	27015	2856.472	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.063	1735997	190.792	ppm
7)	Ethylene	1.597	3339702	198.758	ppm
8)	Ethane	1.849	3350442	194.597	ppm
9)	Propylene	4.201	4504060	185.706	ppm
10)	Propane	4.333	5043036	204.809	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

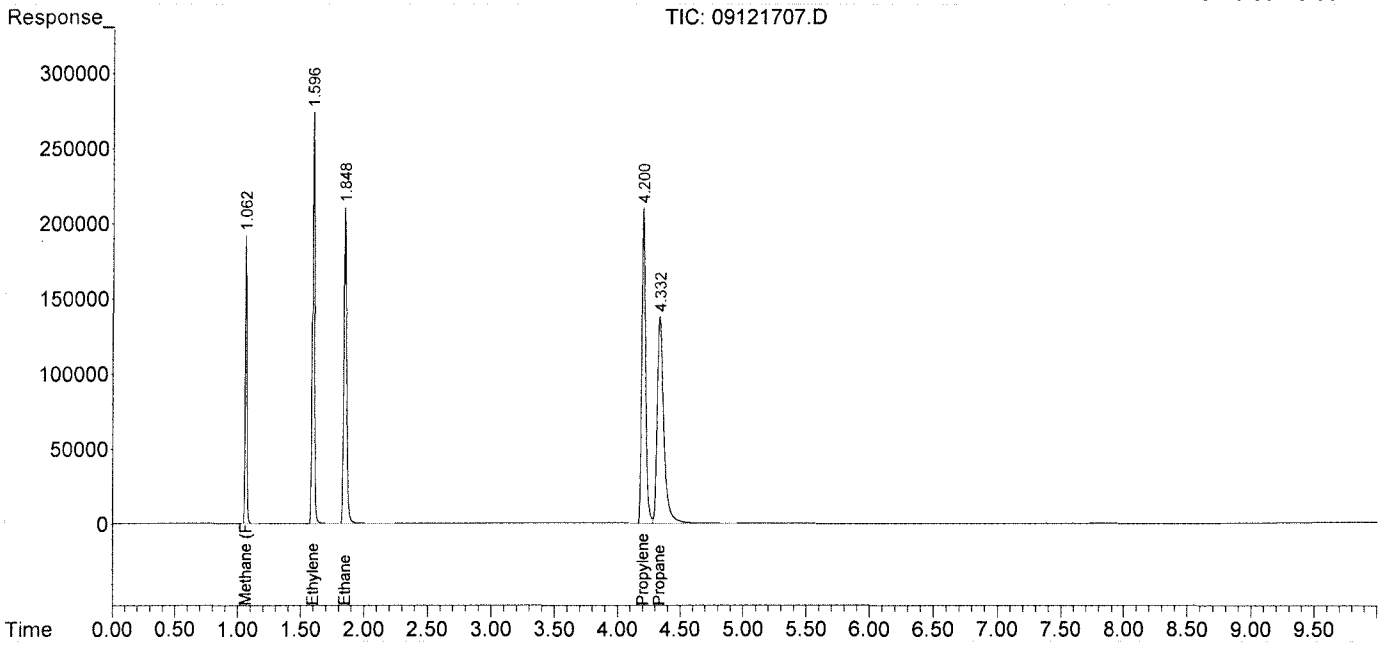
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

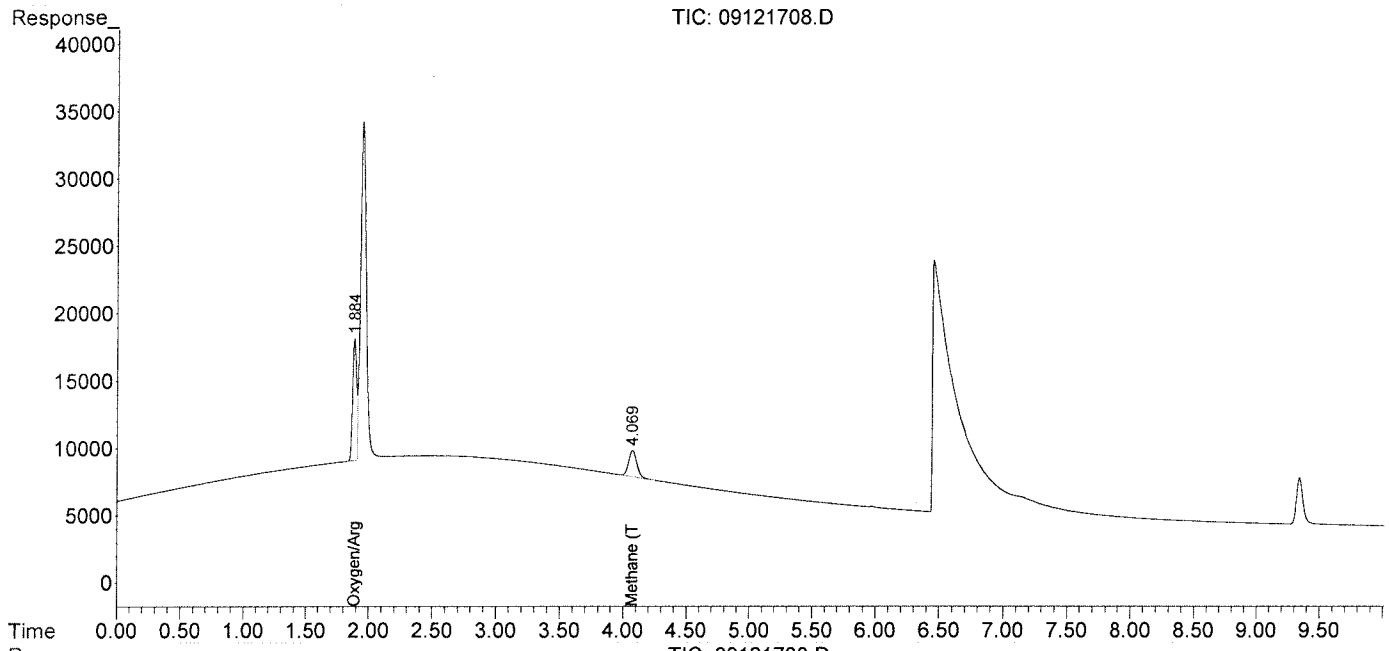
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.884	196022	0.124	ppm
2)	Carbon monoxide	1.884	196022	N.D.	ppm
3)	Methane (TCD)	4.070f	88282	782.730	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.044	5189849	539.759	ppm
7)	Ethylene	1.573	10007759	590.286	ppm
8)	Ethane	1.822	10048964	583.213	ppm
9)	Propylene	4.160	13569343	562.612	ppm
10)	Propane	4.300	15251326	615.171	ppm
11)	Isobutylene	6.143	9815	NoCal	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

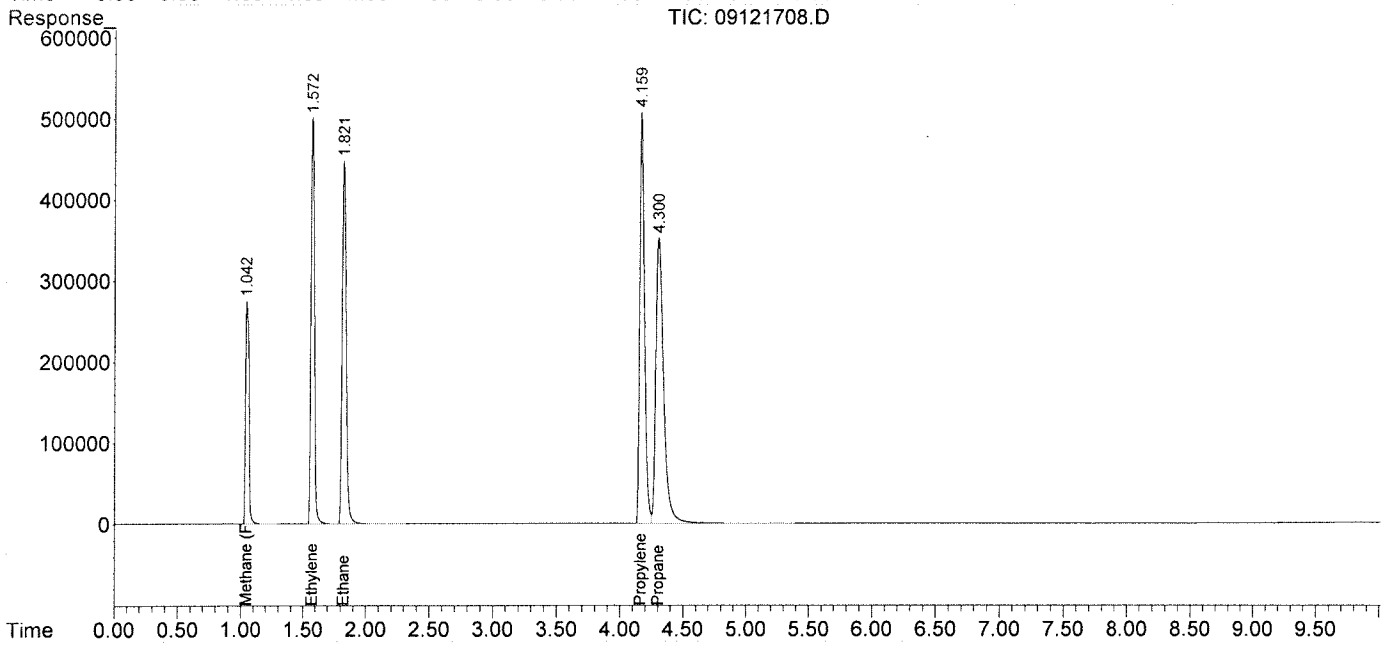
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

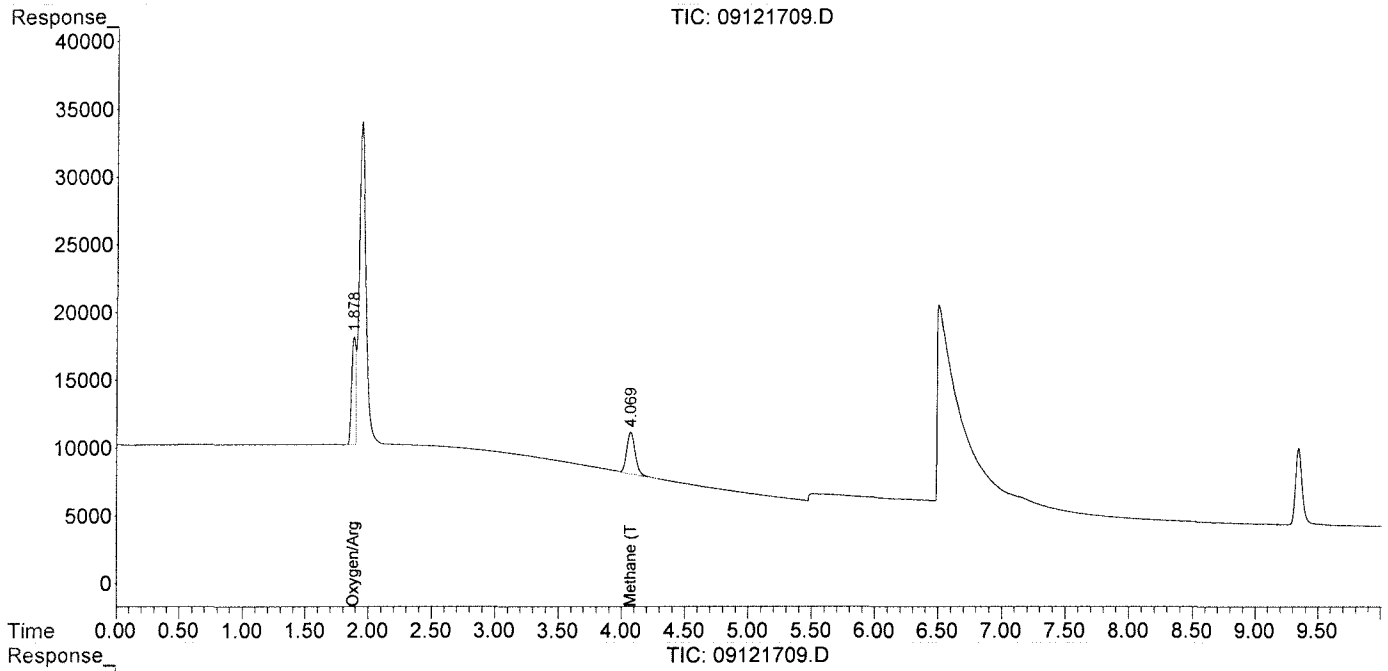
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.879	192611	0.162	ppm
2)	Carbon monoxide	1.879	192611	N.D.	ppm
3)	Methane (TCD)	4.070f	145492	1244.729	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.039	8598534	945.644	ppm
7)	Ethylene	1.576	16608504	981.887	ppm
8)	Ethane	1.827	16709165	973.644	ppm
9)	Propylene	4.161	22494888	941.060	ppm
10)	Propane	4.298	25459411	1023.223	ppm
11)	Isobutylene	6.138	16970	8645.243	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

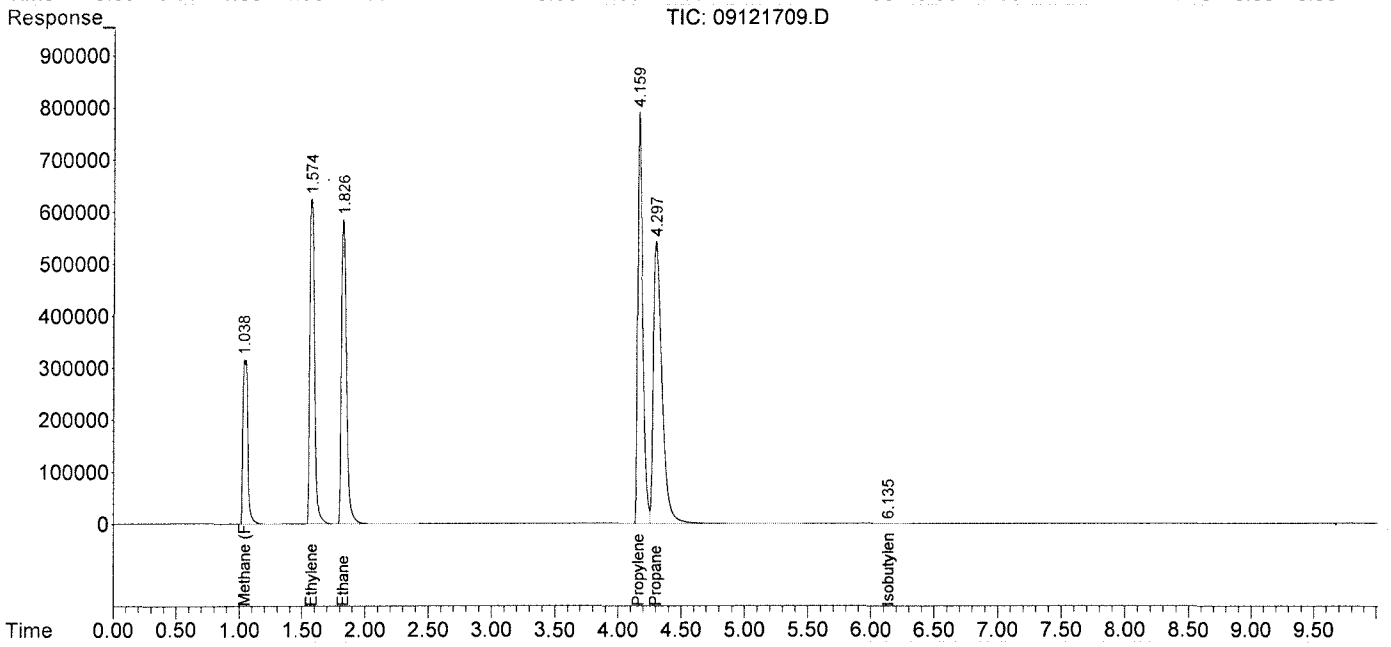
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

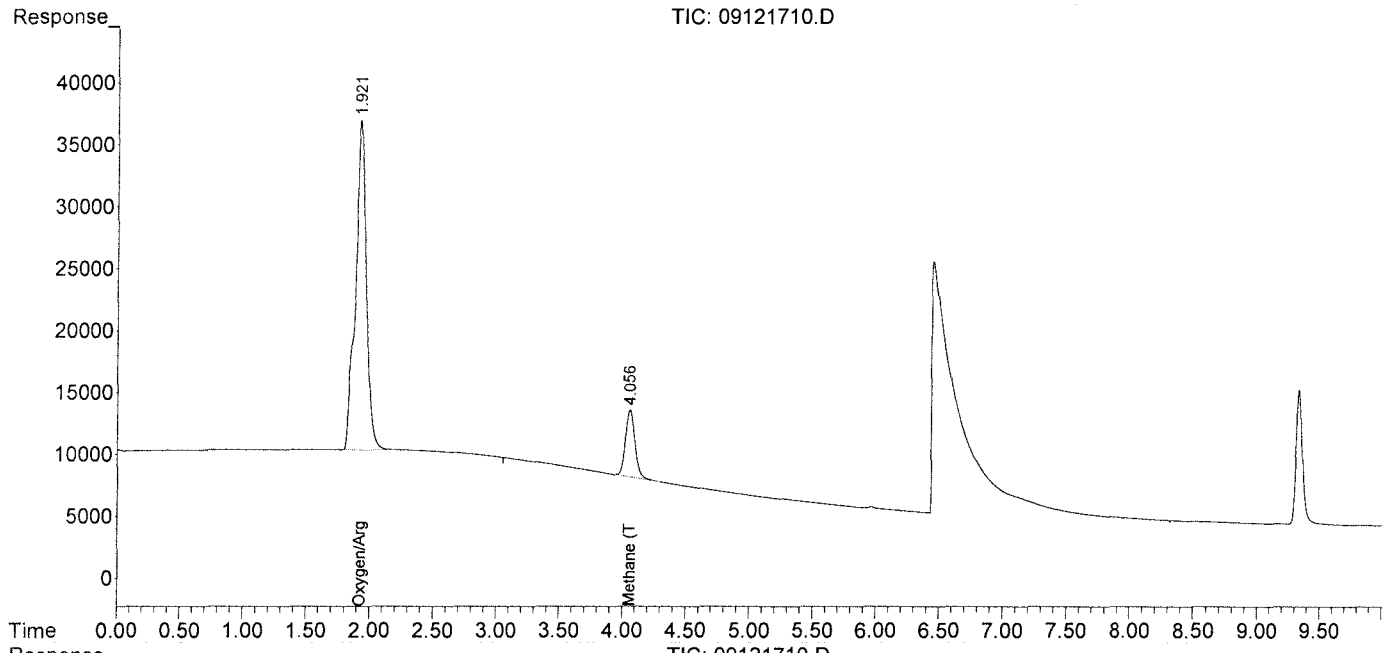
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.922f	1578147	1.659	ppm	
2)	Carbon monoxide	1.922f	1578147	N.D.	ppm	
3)	Methane (TCD)	4.057f	281651	3526.607	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.016	16098209	1763.622	ppm	
7)	Ethylene	1.552	31192444	1848.268	ppm	
8)	Ethane	1.801	31424218	1837.143	ppm	
9)	Propylene	4.129	42124690	1775.341	ppm	m
10)	Propane	4.269	48583085	1946.921	ppm	
11)	Isobutylene	6.136	33832	25613.603	ppm	
12)	Isobutane	6.576f	3845	0.120	ppm	
13)	n-Butane	6.576f	3845	0.120	ppm	

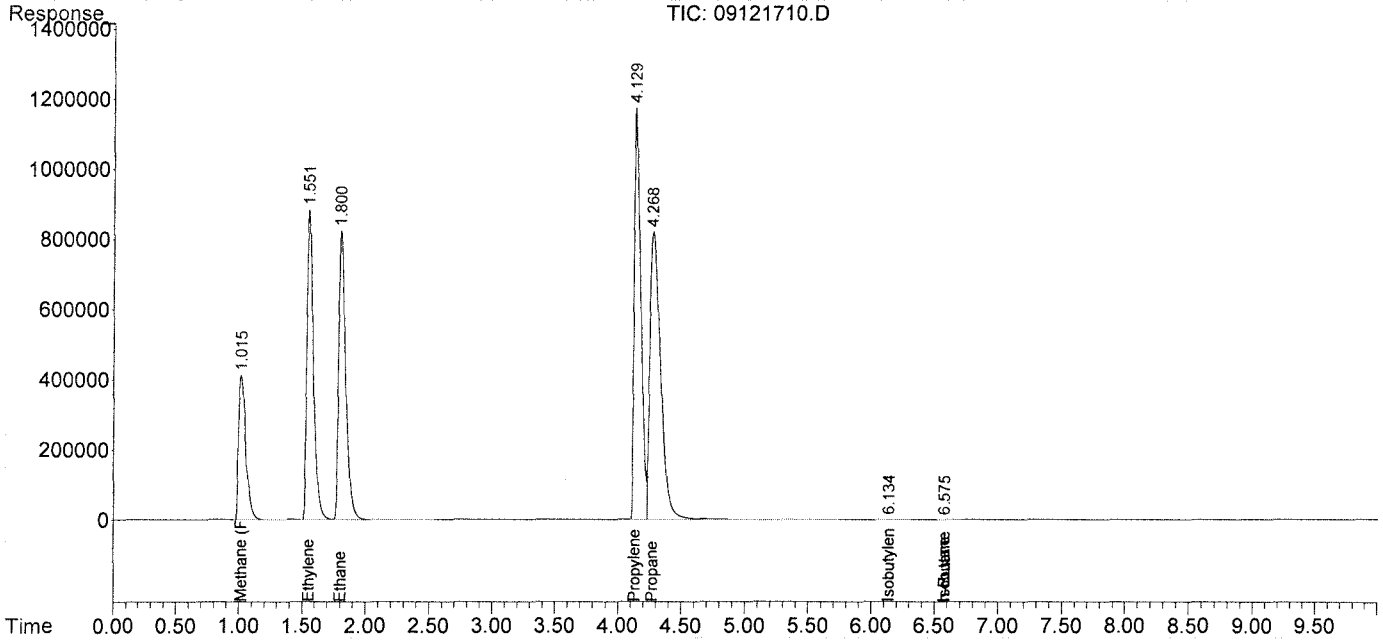
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

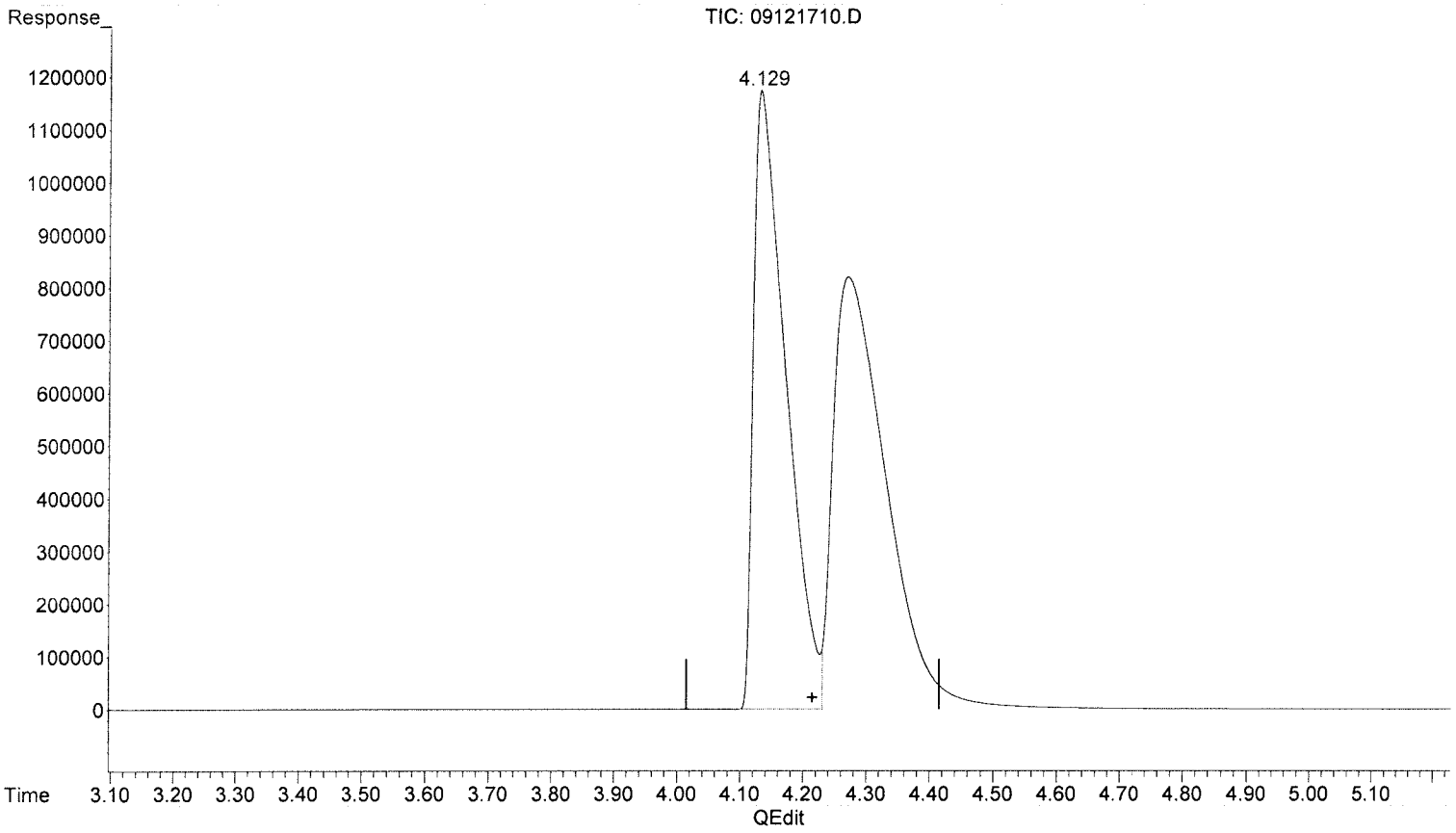




Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(9) Propylene

4.129min 1775.341 ppm m

response 42124690

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

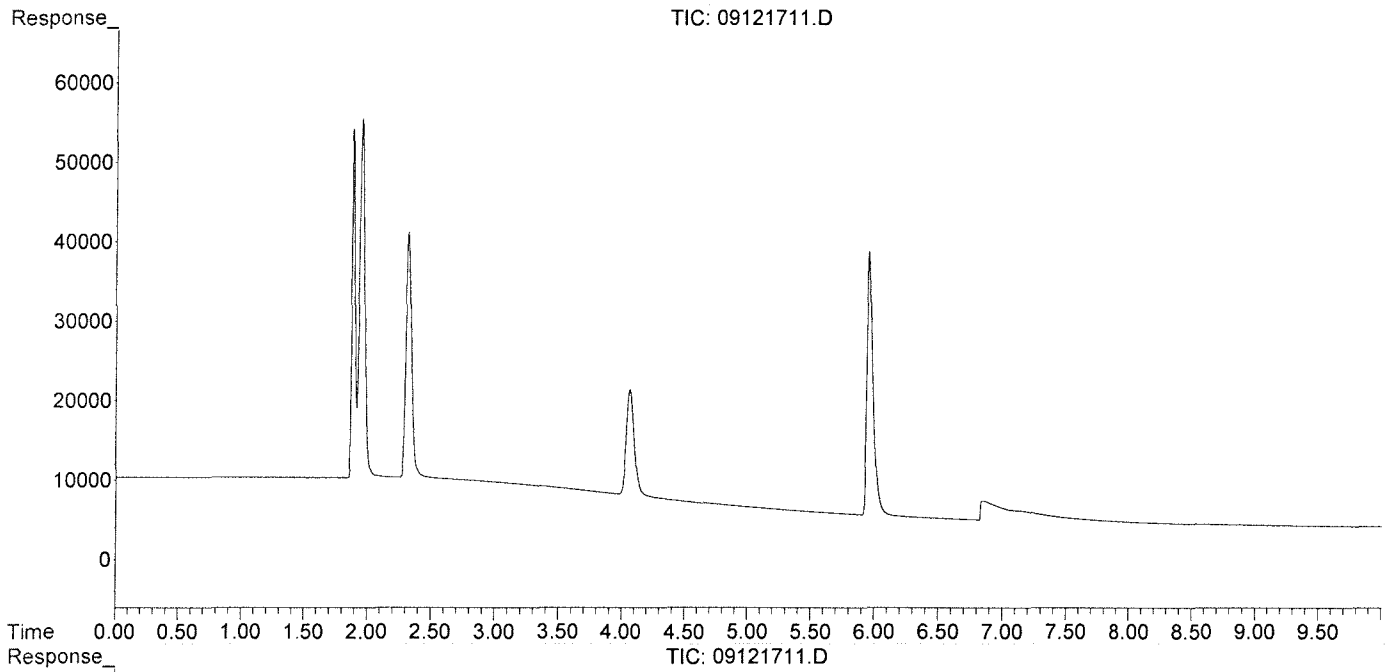
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.059	35776839	3925.122	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

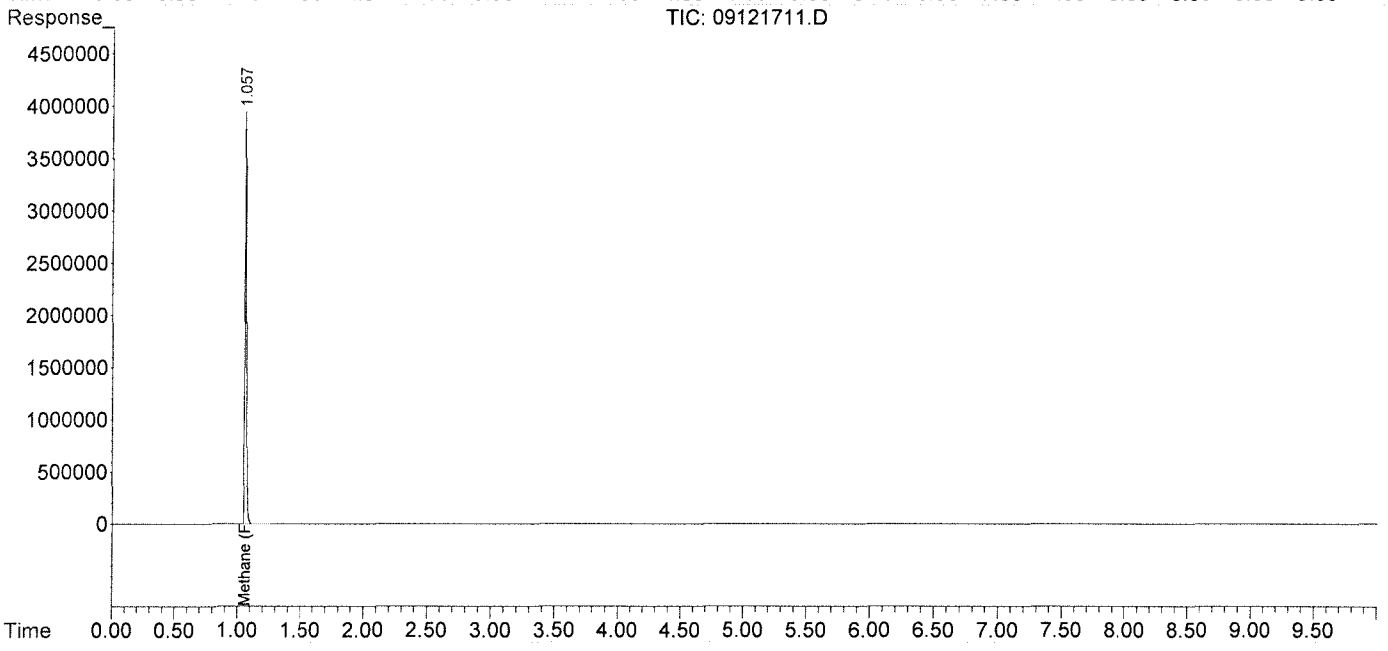
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

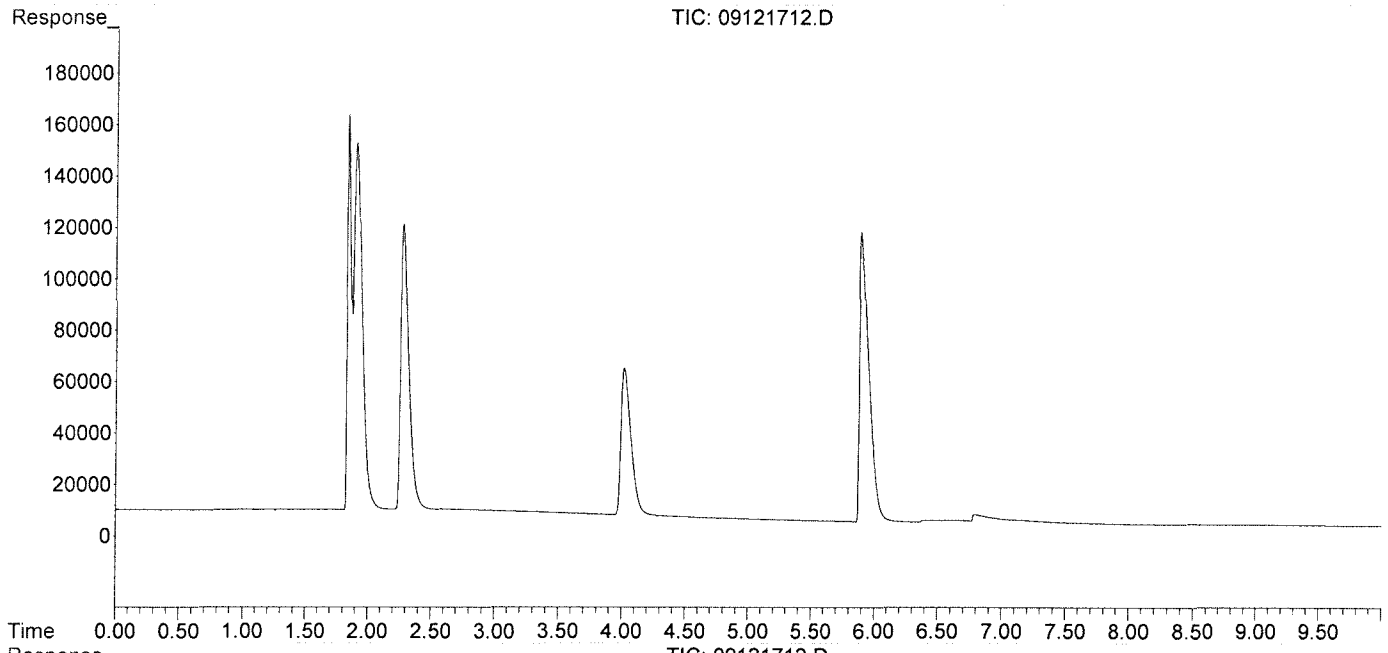
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.836	3190788	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.034	169009160	18492.064	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

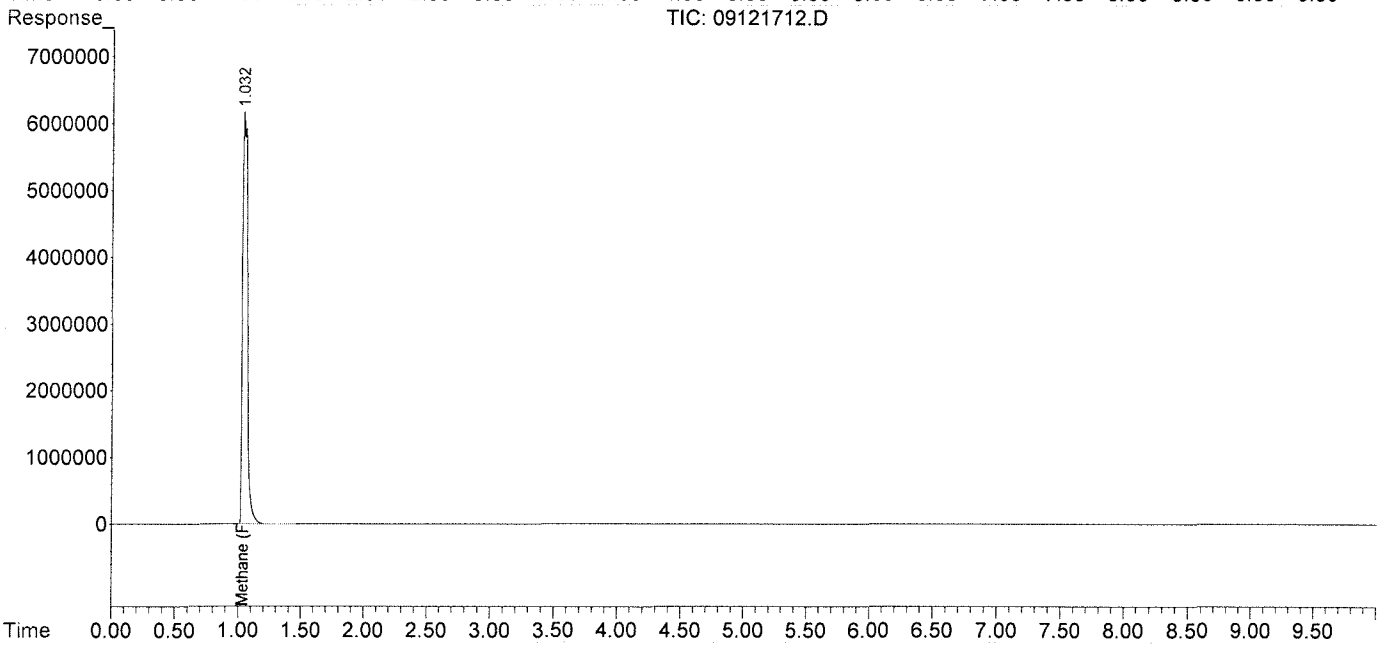
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.843	2922459	3.687	ppm	
2)	Carbon monoxide	1.843	2922459	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	actual %D
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.063	13748	1.516	ppm	~~1500~~ 1.50 101.1
7)	Ethylene	1.598	24153	1.443	ppm	~~1500~~ 1.50 96.2
8)	Ethane	1.850	24488	1.445	ppm	~~1500~~ 1.50 96.3
9)	Propylene	4.221	36004	1.537	ppm	~~1500~~ 1.50 102.5
10)	Propane	4.350	37738	1.517	ppm	~~1511~~ 1.51 100.5
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	48019	1.804	ppm	9/14/17
13)	n-Butane	6.579f	48019	1.804	ppm	

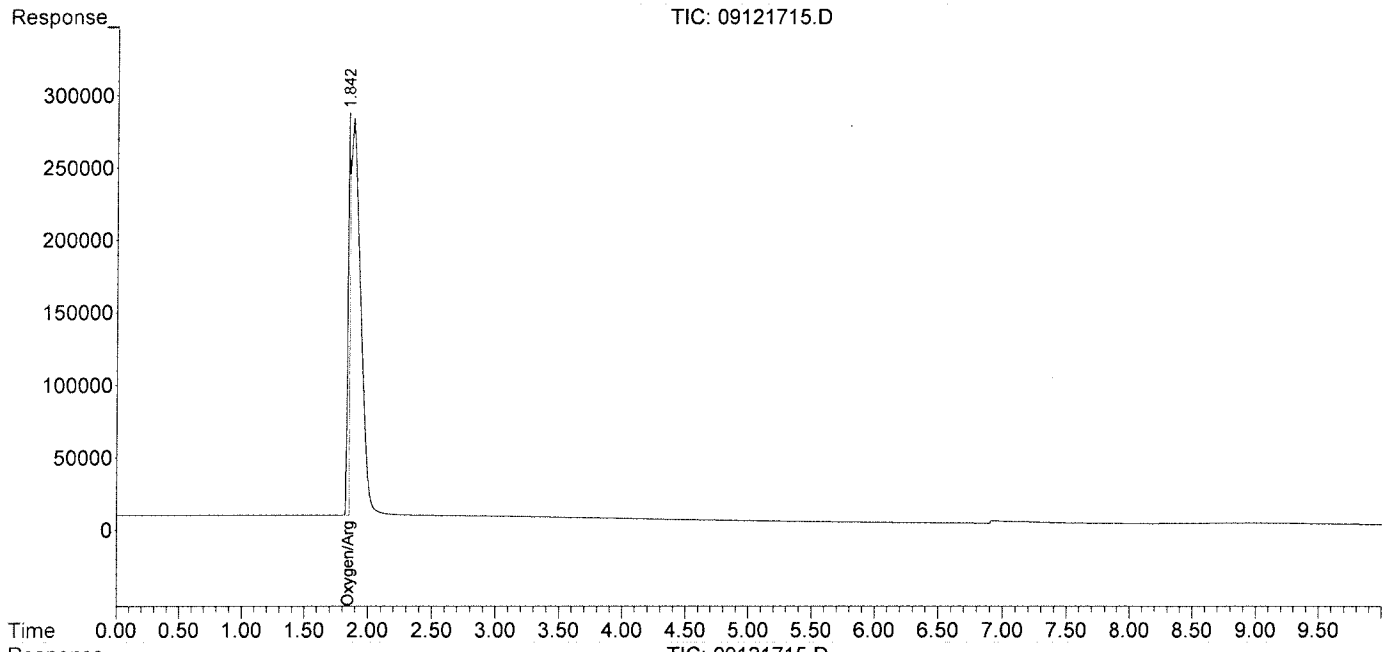
(f)=RT Delta > 1/2 Window (m)=manual int.

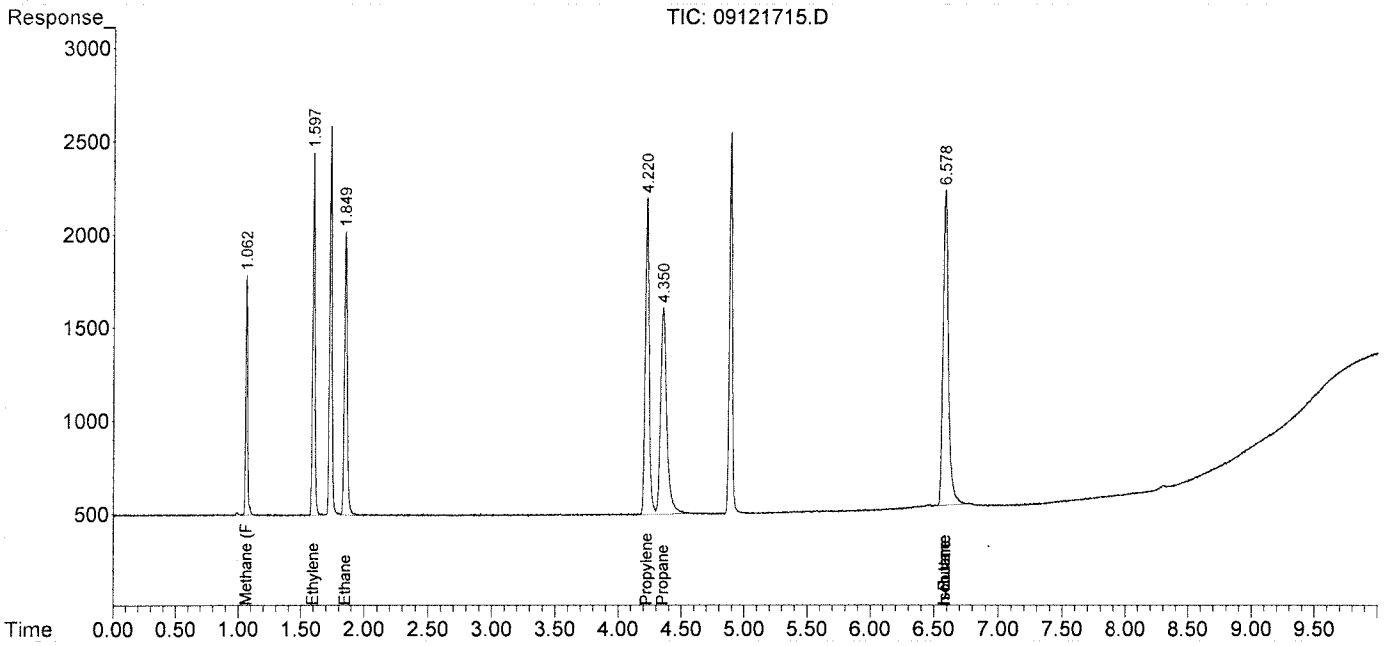
9/14/17

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Dissolved Gases by RSK175

CB
6/7/21

ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Environmental - US
Service Request: P2102781
Sample Vol. (ml) : 32.00 ml
Analyst : CB
Date Analysis : 06/01/21
Head Space Vol.(ml) : 8.00 ml

Instrument : GC#10
Detector : FID#10, TCD#10
Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Methane	Ethylene	Ethane
STD S32-05252101 0.1ml	0.100	1.582	1.587	1.543
ACTUAL		1.52	1.51	1.52
%Difference		4.1%	5.1%	1.5%
MCS 0.1mL	0.100	0.178	0.000	0.000
RB 0.1mL	0.100	0.000	0.000	0.000
LCS S32-06252002 0.1ml	0.100	1.446	1.085	1.286
LCSD S32-06252002 0.1r	0.100	1.382	1.086	1.292
P2102781-001 0.1mL	0.100	0.124	0.000	0.000
P2102781-002 0.1mL	0.100	0.112	0.000	0.000
P2102781-003 0.1mL	0.100	0.136	0.000	0.000
P2102781-004 0.1mL	0.100	0.116	0.000	0.000
STD S32-05252101 0.1mL		1.552	1.535	1.519
ACTUAL		1.52	1.51	1.52
%Difference		2.1%	1.7%	0.1%

FINAL HEAD SPACE RESULT (ppm)

	Methane	Ethylene	Ethane
WWt.	16.04	28.05	30.07
HENRY'S CONSTANT	3.76E+04	1.02E+04	2.63E+04
RL	1.30	1.00	0.60
MCS 0.1mL	1.780	0.000	0.000
LCS S32-06252002 0.1mL	14.460	10.850	12.860
LCSD S32-06252002 0.1mL	13.820	10.860	12.920
P2102781-001 0.1mL	1.240	0.000	0.000
P2102781-002 0.1mL	1.120	0.000	0.000
P2102781-003 0.1mL	1.360	0.000	0.000
P2102781-004 0.1mL	1.160	0.000	0.000

01075931

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012101.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 09:59
Operator : CB
Sample : STD S32-05252101 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

CB
6/1/21

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 01 10:09:20 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

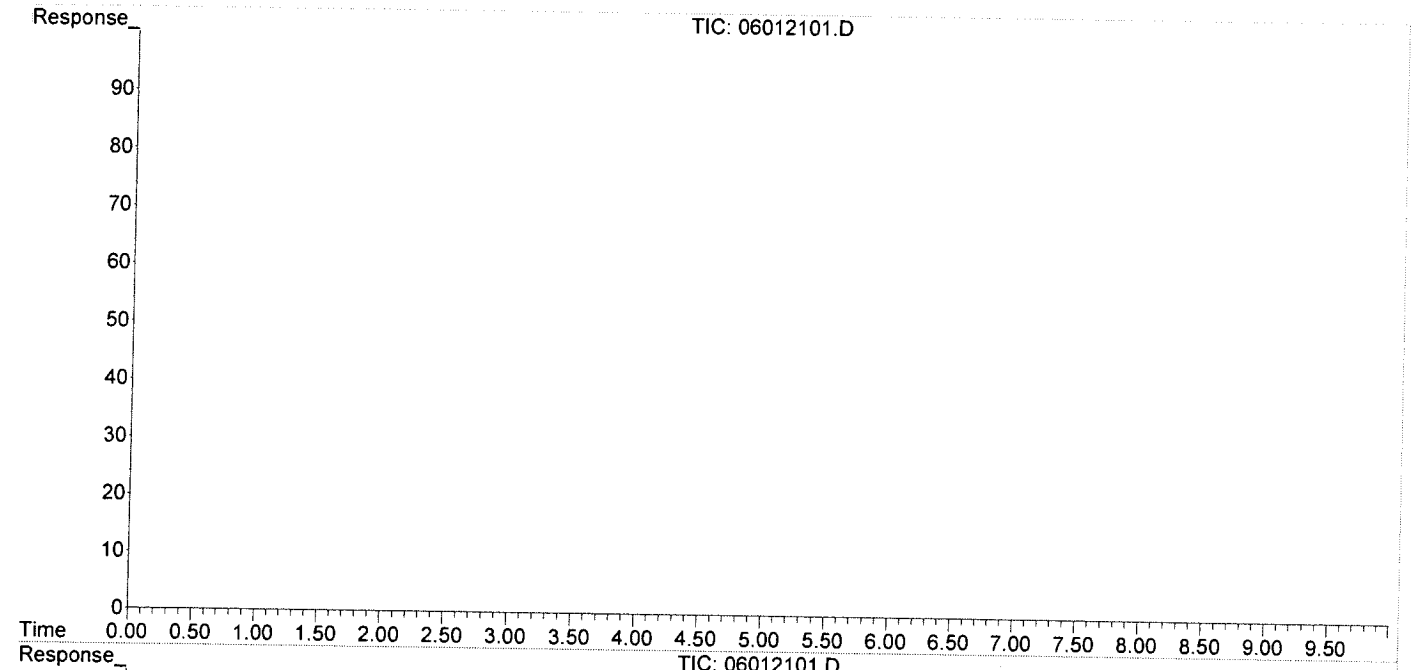
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.117	14352	1.582	ppm
7)	Ethylene	1.688	26557	1.587	ppm
8)	Ethane	1.952	26146	1.543	ppm
9)	Propylene	4.335	38248	1.632	ppm
10)	Propane	4.456	39350	1.582	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.669	55848	2.098	ppm
13)	n-Butane	6.669	55848	2.098	ppm

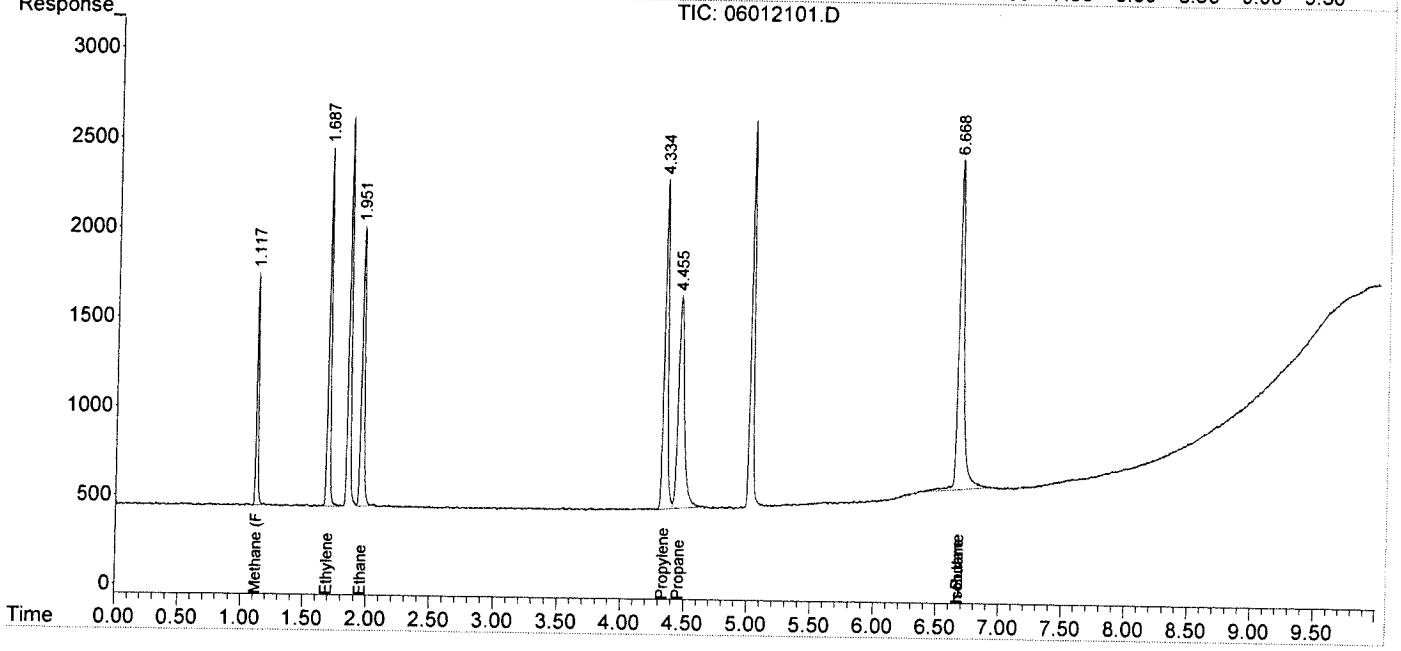
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012101.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 09:59
Operator : CB
Sample : STD S32-05252101 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 01 10:09:20 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :





RS091217_R.M Mon Jun 07 09:46:01 2021 Page: 2

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012116.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 16:41
Operator : CB
Sample : STD S32-05252101 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 01 16:58:43 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

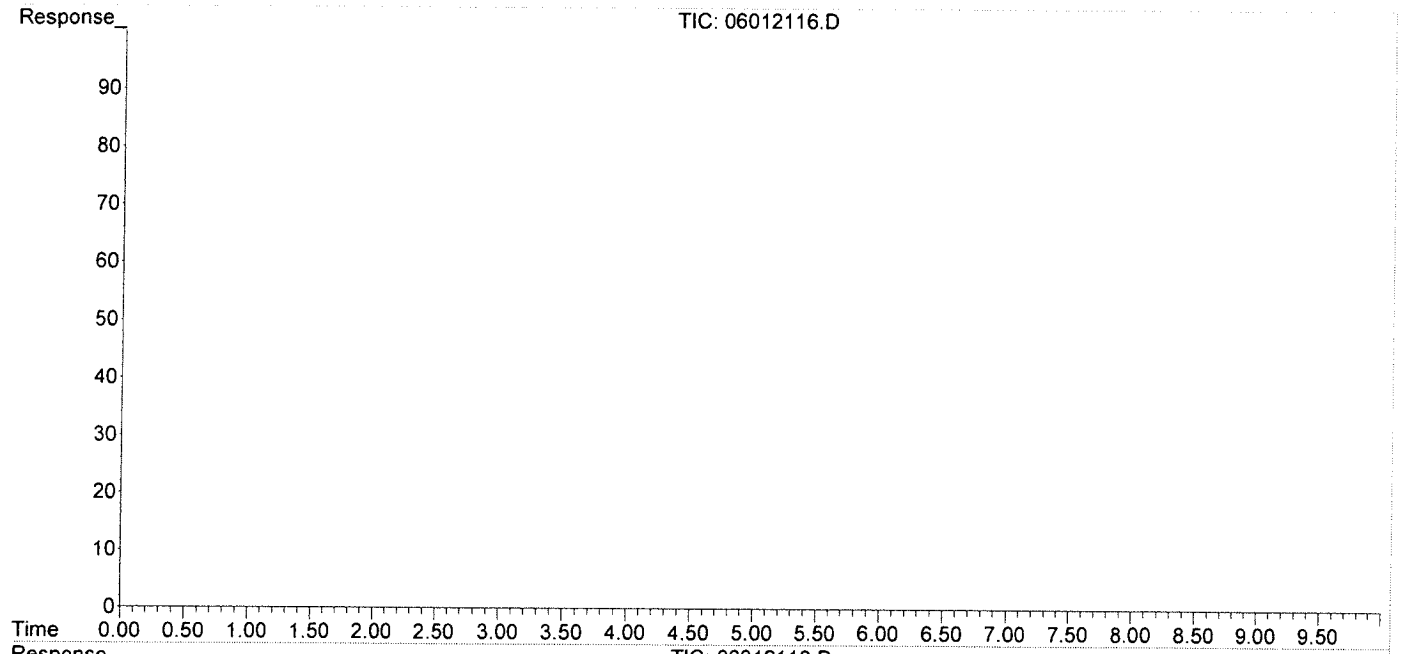
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.109	14076	1.552	ppm	
7)	Ethylene	1.674	25694	1.535	ppm	m
8)	Ethane	1.937	25749	1.519	ppm	
9)	Propylene	4.317	36785	1.570	ppm	
10)	Propane	4.437	37761	1.518	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.651	48778	1.833	ppm	
13)	n-Butane	6.651	48778	1.833	ppm	

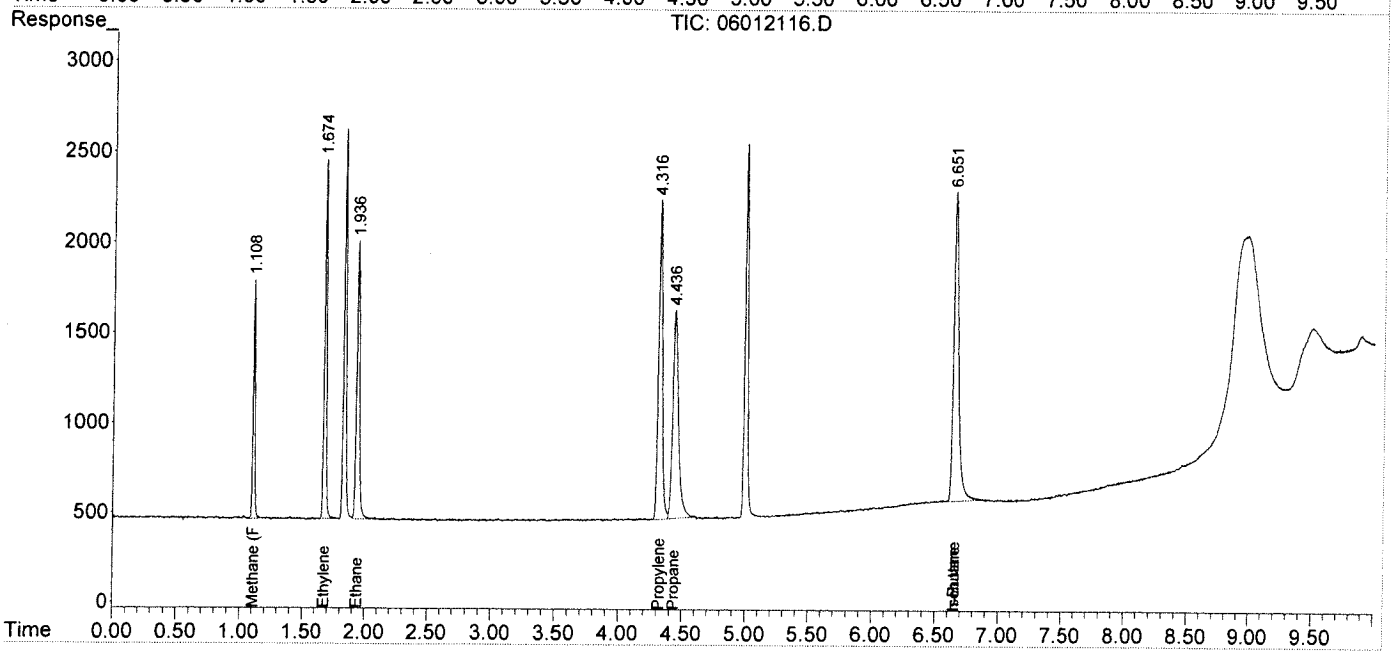
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012116.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 16:41
Operator : CB
Sample : STD S32-05252101 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 01 16:58:43 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

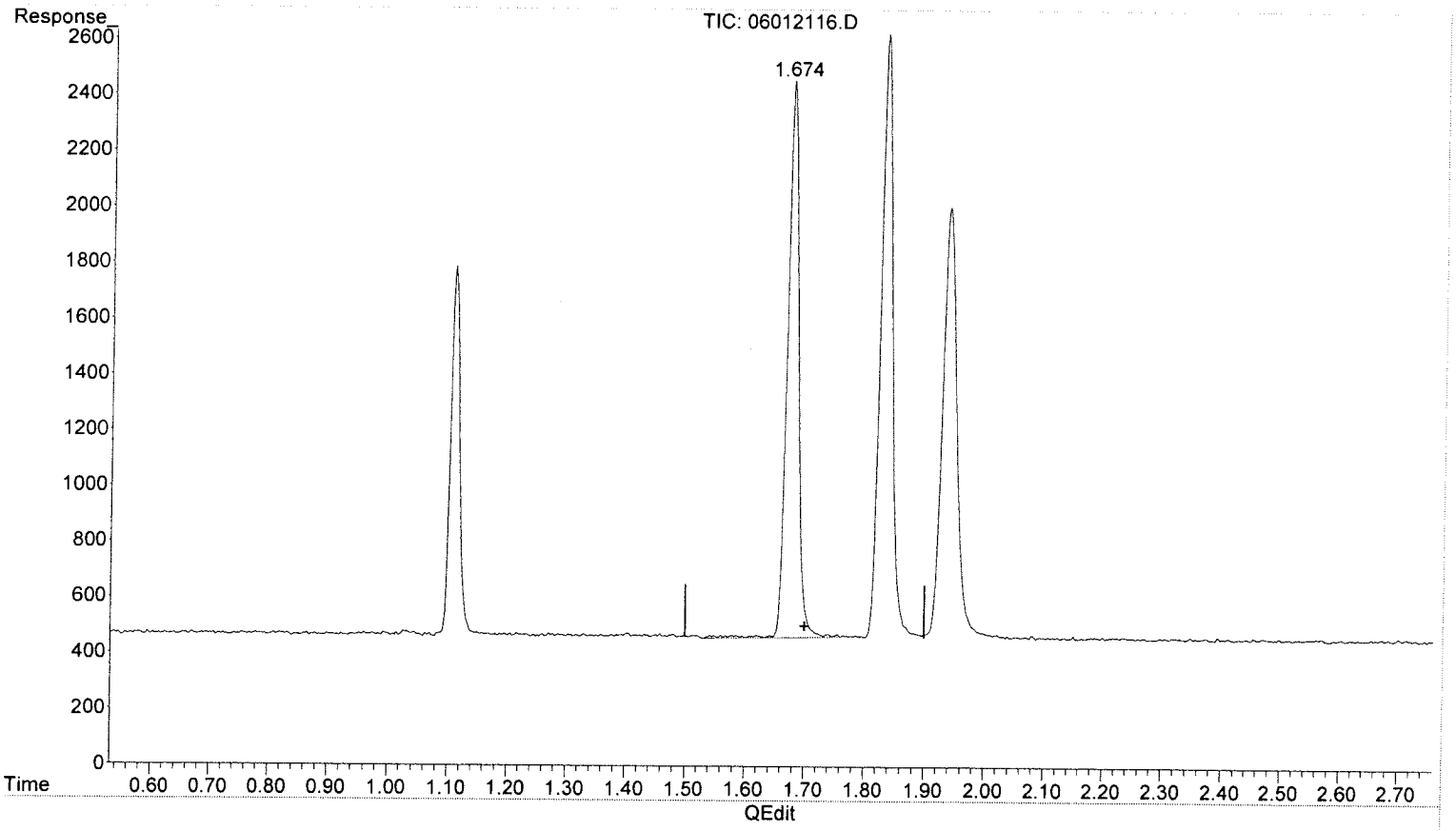




Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012116.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 16:41
Operator : CB
Sample : STD S32-05252101 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 01 16:58:43 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(7) Ethylene

1.675min 1.564 ppm

response 26179

Manual Integration:

Before

06/07/21

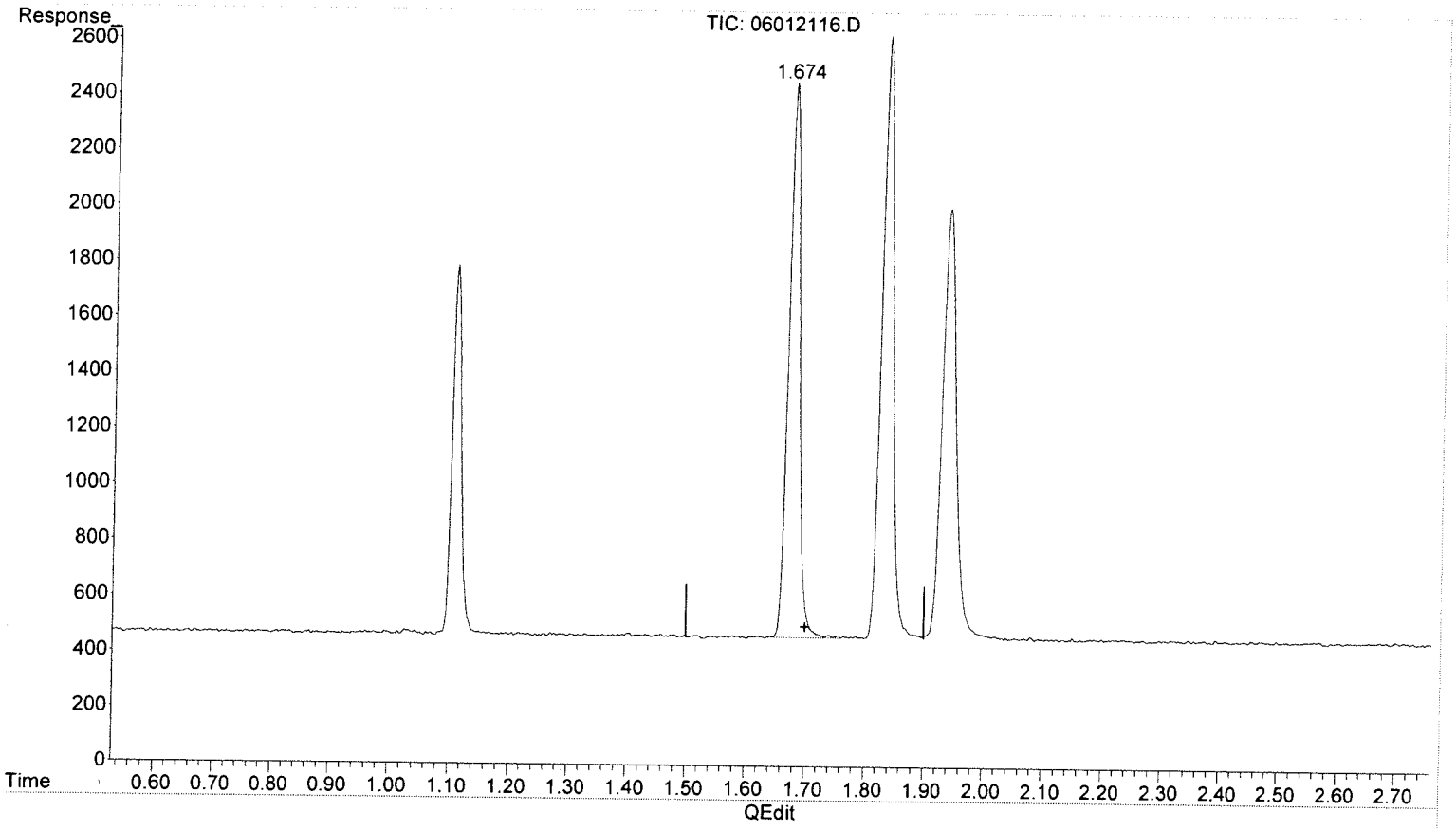
(+) = Expected Retention Time

RS091217_R.M Mon Jun 07 09:49:39 2021

Data Path : J:\GC10\DATA\RSK_FID\2021_06\01\
Data File : 06012116.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jun-2021, 16:41
Operator : CB
Sample : STD S32-05252101 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 01 16:58:43 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :



(7) Ethylene
1.674min 1.535 ppm m
response 25694

Manual Integration:
After
BLC
06/07/21

(+) = Expected Retention Time
RS091217_R.M Mon Jun 07 09:49:46 2021

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_09\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-Sep-17, 08:38:08	09121701.D	test		MC	RSKBOTH.M	
2	12-Sep-17, 10:52:40	09121702.D	0.151ppm 0.250ml s32-09121702		MC	RSKBOTH.M	Curve
3	12-Sep-17, 11:05:49	09121703.D	0.302ppm 0.5ml s32-09121702		MC	RSKBOTH.M	Curve
4	12-Sep-17, 11:45:34	09121704.D	1.51ppm 0.1ml s32-09051701		MC	RSKBOTH.M	Curve
5	12-Sep-17, 12:09:33	09121705.D	4.53ppm 0.3ml s32-09051701		MC	RSKBOTH.M	Curve
6	12-Sep-17, 12:30:23	09121706.D	10.57ppm 0.7ml s32-09051701		MC	RSKBOTH.M	Curve
7	12-Sep-17, 12:47:18	09121707.D	200ppm 0.1ml s32-09121701		MC	RSKBOTH.M	Curve
8	12-Sep-17, 13:00:22	09121708.D	600ppm 0.3ml s32-09121701		MC	RSKBOTH.M	Curve
9	12-Sep-17, 13:47:48	09121709.D	1000ppm 0.5ml s32-09121701		MC	RSKBOTH.M	Curve
10	12-Sep-17, 14:07:58	09121710.D	2000ppm 1ml s32-09121701		MC	RSKBOTH.M	Curve
11	12-Sep-17, 14:48:48	09121711.D	4000ppm 0.1ml s32-08231701		MC	RSKBOTH.M	Curve
12	12-Sep-17, 15:21:51	09121712.D	20000ppm 0.5ml s32-08231701		MC	RSKBOTH.M	Curve
13	12-Sep-17, 15:38:59	09121713.D	mb 0.5ml		MC	RSKBOTH.M	Pass
14	12-Sep-17, 15:55:35	09121714.D	mb 0.1ml		MC	RSKBOTH.M	Pass
15	12-Sep-17, 16:15:26	09121715.D	icv s30-05241604		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2021_06\01\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	01-Jun-21, 08:42:58	06012100.D	purge		CB	RSKBOTH.M	Do Not Use
2	01-Jun-21, 09:59:32	06012101.D	STD S32-05252101 0.1mL		CB	RSKBOTH.M	Pass
3	01-Jun-21, 10:30:04	06012102.D	RB 0.1mL		CB	RSKBOTH.M	Pass
4	01-Jun-21, 11:08:15	06012103.D	MCS 0.1mL		CB	RSKBOTH.M	Pass
5	01-Jun-21, 11:31:10	06012104.D	LCS S32-06252002 0.1mL		CB	RSKBOTH.M	Pass
6	01-Jun-21, 11:48:28	06012105.D	LCSD S32-06252002 0.1mL		CB	RSKBOTH.M	Pass
7	01-Jun-21, 12:13:08	06012106.D	P2102781-001 0.1mL		CB	RSKBOTH.M	
8	01-Jun-21, 13:06:33	06012107.D	P2102781-002 0.1mL		CB	RSKBOTH.M	
9	01-Jun-21, 13:20:24	06012108.D	P2102781-003 0.1mL		CB	RSKBOTH.M	
10	01-Jun-21, 13:38:01	06012109.D	P2102781-004 0.1mL		CB	RSKBOTH.M	
11	01-Jun-21, 14:11:51	06012110.D	K2105608-001 0.1mL		CB	RSKBOTH.M	
12	01-Jun-21, 14:41:28	06012111.D	K2105608-002 0.1mL		CB	RSKBOTH.M	
13	01-Jun-21, 14:56:03	06012112.D	K2105608-003 0.1mL		CB	RSKBOTH.M	
14	01-Jun-21, 15:17:19	06012113.D	K2105608-004 0.1mL		CB	RSKBOTH.M	
15	01-Jun-21, 15:45:20	06012114.D	K2105608-005 0.1mL		CB	RSKBOTH.M	
16	01-Jun-21, 16:08:13	06012115.D	K2105608-006 0.1mL		CB	RSKBOTH.M	
17	01-Jun-21, 16:41:48	06012116.D	STD S32-05252101 0.1mL		CB	RSKBOTH.M	Pass
18	01-Jun-21, 17:02:45	06012117.D	K2105817-025 0.1mL		CB	RSKBOTH.M	
19	01-Jun-21, 17:19:31	06012118.D	STD S32-05252101 0.1mL		CB	RSKBOTH.M	Pass

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

January 27, 2022

DAIN-ODB-LO

Mr. Brian Follin
U.S. Environmental Protection Agency, Region 6
1201 Elm Street, Suite 500
Dallas, Texas 75270-2002

Re: Request for Schedule Extension for LHAAP-47 Draft Revised ROD Response to Comments

Dear Mr. Follin,

A 30-day extension of the schedule to respond to comments on the Draft Revised ROD for LHAAP-47 is respectfully requested in accordance with Federal Facility Agreement (FFA) Section XVII.B.5, where the parties agree a good cause exists. The good cause is a delay in legal review as a result of the holiday backlog.

The 30-day extension will commence February 1, 2022 and conclude March 2, 2022. It impacts the submittal of the Draft Final ROD for LHAAP-47, which will be submitted with the RTCs on March 2, 2022. No other document schedules are directly impacted by the extension.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.ctr@army.mil.

Sincerely,

Rose M. Zeiler

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
April Palmie, TCEQ
Project File

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

January 27, 2022

DAIN-ODB-LO

Ms. April Palmie
Texas Commission on Environmental Quality
Superfund Section, MC-136
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Request for Schedule Extension for LHAAP-47 Draft Revised ROD Response to Comments

Dear Ms. Palmie,

A 30-day extension of the schedule to respond to comments on the Draft Revised ROD for LHAAP-47 is respectfully requested in accordance with Federal Facility Agreement (FFA) Section XVII.B.5, where the parties agree a good cause exists. The good cause is a delay in legal review as a result of the holiday backlog.

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The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.ctr@army.mil.

Sincerely,

Rose M. Zeiler

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
Brian Follin, EPA-Region 6
Project File

LHAAP-29 PDI Data Summary and Proposed New Field Work

A summary of sampling results from the March 3, 2021 LHAAP-29 field investigation and the Eurofins reanalysis of a select subset of those samples is presented in this memorandum. The data set was evaluated to identify areas where data gaps exist. New sample locations and depths are recommended to close the data gaps.

A total of 91 samples were sent for re-analysis using Method 8321A. In the original analysis, 86 samples were non-detects and 5 had positive results. Of the 86 samples with non-detects, 52 of the re-analyzed samples showed a positive detection. In this group of 52, three samples (29SB121, 29SB123 and 29SB151) were found to have concentrations of explosives (2,4-DNT and 2,6-DNT) that exceeded the GWP-Ind MSC. The original 5 samples with positive results again tested positive for explosives. The re-analysis confirmed two of the original samples with concentrations of explosives exceeded the GWP-Ind MSC. The relative percent difference was calculated for the confirmed positive results, which varied from 5.3 to 143 percent. In most cases, the re-analyzed results were lower than the originally detected concentration.

Initial field efforts will include determining depth to the water table, either through the installation of temporary piezometers or gauging of adjacent wells, if present, or a combination of both methods. Water table measurements will be used to determine the depth of proposed DPT borings and sample collection by defining the extent that GWP-Ind screening levels can be applied; that is, GWP-Ind's are not applicable to saturated soils and saturated soil will not be collected for analysis. Water table measurements will be collected at all areas of concern including Cooling Water Outfall / Ditch, North and South Cooling Water Lines, and Transite and Wooden TNT Wastewater Lines to determine practical depth to apply GWP-Ind screening levels.

Bldg. 812-F

Data Summary

Results from the 3 March PDI investigation revealed concentrations of explosives that exceeded the Texas Commission on Environmental Quality soil medium specific concentration for industrial use based on groundwater protection (MSC GWP-Ind) at 6 of the 8 borings where samples were collected. In most cases, each boring had multiple detections at various depths. Two borings (29SB121 and 29SB123) did not show explosives at concentrations above the method detection limit (MDL). Results from the March sampling event are provided in **Table 1**. Based on these results, all four sample depths from borings 29SB121 and 29SB123 were submitted to Euronfins/Test America for re-analysis using Method 8321A. Low concentrations of explosives were detected above the MDL in three of the 29SB121 samples and two from boring 29SB123. 2,4-Dinitrotoluene (2,4-DNT) was found to exceed the GWP-Ind MSC in 29SB121 at the 3 - 4 foot depth, while 2,6-DNT was found to exceed the GWP-Ind MSC in 29SB123 at the 15 – 16 foot depth. Based on this data, vertical and spatial extent of contamination has not been fully defined at 29SB123, while spatial extent at 29SB121 has not been defined. The Euronfins/Test America results are provided in **Table 2**.

Table 1. Bldg. 812-F March 2021 PDI Sample Results

Chemical Name	Sample ID	29SB118				29SB119				29SB120			
	Collection Date	3/2/2021				3/2/2021				3/2/2021			
	Depth Interval (ft bgs)	3-4	7-8	11-12	15-16	3-4	7-8	11-12	15-16	3-4	7-8	11-12	15-16
	LOQ (mg/kg)	0.393	0.405	0.406	0.399	0.397	0.402	0.409	0.391	0.393	0.401	0.388	0.415
	LOD (mg/kg)	0.196	0.202	0.203	0.200	0.198	0.201	0.205	0.196	0.197	0.201	0.194	0.207
	DL (mg/kg)	0.0981	0.101	0.101	0.0998	0.0992	0.100	0.102	0.0978	0.0983	0.100	0.0971	0.104
	Comparison Levels[1] (mg/kg)												
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]	<0.196 U	<0.202 U	<0.203 U	<0.200 U	1.04	<0.201 U	<0.205 U	<0.196 U	<0.197 U	0.296 J	<0.194 U	<0.207 U
2,4-Dinitrotoluene (2,4-DNT)	0.042	**0.258 J**	<0.202 U	<0.203 U	**0.132 J+**	**0.647**	<0.201 U	**0.548**	**0.763 J+**	**0.581**	**0.746**	**2.12**	**0.571**
2,6-Dinitrotoluene (2,6-DNT)	0.042	<0.196 U	<0.202 U	<0.203 U	<0.200 U	**0.0996 J**	<0.201 U	<0.205 U	**0.683 J+**	<0.197 U	<0.201 U	**0.45**	**0.135 J**

Chemical Name	Sample ID	29SB121				29SB122				29SB123			
	Collection Date	3/2/2021				3/2/2021				3/2/2021			
	Depth Interval (ft bgs)	3-4	7-8	11-12	15-16	3-4	7-8	11-12	15-16	2-3	7-8	11-12	15-16
	LOQ (mg/kg)	0.408	0.396	0.383	0.407	0.398	0.393	0.412	0.397	0.386	0.404	0.388	0.402
	LOD (mg/kg)	0.204	0.198	0.192	0.203	0.199	0.196	0.206	0.198	0.193	0.202	0.194	0.201
	DL (mg/kg)	0.102	0.0989	0.0958	0.102	0.0996	0.0982	0.103	0.0992	0.0964	0.101	0.0969	0.101
	Comparison Levels[1] (mg/kg)												
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]	<0.204 U	<0.198 U	<0.192 U	<0.203 U	<0.199 U	<0.196 U	<0.206 U	<0.198 U	<0.193 U	<0.202 U	<0.194 U	<0.201 U
2,4-Dinitrotoluene (2,4-DNT)	0.042	<0.204 U	<0.198 U	<0.192 U	<0.203 U	**0.418**	**0.43**	**0.609**	**4.78 J+**	<0.193 U	<0.202 U	<0.194 U	<0.201 U
2,6-Dinitrotoluene (2,6-DNT)	0.042	<0.204 U	<0.198 U	<0.192 U	<0.203 U	<0.199 U	<0.196 U	<0.206 U	**0.318 J+**	<0.193 U	<0.202 U	<0.194 U	<0.201 U

Chemical Name	Sample ID	29SB124				29SB125			
	Collection Date	3/2/2021				3/2/2021			
	Depth Interval (ft bgs)	3-4	7-8	11-12	15-16	3-4	6-7	11-12	15-16
	LOQ (mg/kg)	0.387	0.391	0.416	0.405	0.401	0.408	0.401	0.416
	LOD (mg/kg)	0.193	0.196	0.208	0.203	0.200	0.204	0.201	0.208
	DL (mg/kg)	0.0967	0.0978	0.104	0.101	0.100	0.102	0.100	0.104
	Comparison Levels[1] (mg/kg)								
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]	<0.193 U	<0.196 U	<0.208 U	<0.203 U	<0.200 U	<0.204 U	<0.201 U	<0.208 U
2,4-Dinitrotoluene (2,4-DNT)	0.042	<0.193 U	<0.196 U	<0.208 U	**5.78 J+**	<0.200 U	**0.201 J**	<0.201 U	**0.3 J**
2,6-Dinitrotoluene (2,6-DNT)	0.042	<0.193 U	<0.196 U	<0.208 U	**1.13 J+**	<0.200 U	<0.204 U	<0.201 U	<0.208 U

Notes:
1 = GWP-Ind Texas Commission on Environmental Quality soil medium specific concentration for industrial use based on groundwater protection
mg/kg = milligrams per kilogram
J+ = Estimated Biased High
J- = Estimated Biased Low
J = Estimated
<0.195 U = Nondetect
<0.195 UJ = Nondetect, LOD estimated
Shaded = Positive Detection
Bold = Exceeds Comparison Level

Table 2. Re-Analyzed Bldg. 812-F March 2021 PDI Sample Results

Eurofins Re-Analyses Results: Subset 1 & 2									
Explosive	Sample ID	29SB121				29SB123			
	Re-analyses Date	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	9/1/21
	Depth Interval (ft bgs)	3-4	7-8	11-12	15-16	2-3	7-8	11-12	15-16
	Comparison Level[1] (mg/kg)								
2,4,6-TNT	4.7[a]/5.1[b]	0.014 J	0.015 UJ	0.014 UJ	0.015 UJ	0.015 UJ	0.014 UJ	0.014 UJ	0.0066 J+
2,4-DNT	0.042	**0.068 J**	0.0081 J	0.027 UJ	0.0096 J	0.012 J	0.028 UJ	0.028 UJ	0.028 UJ
2,6-DNT	0.042	0.028 UJ	0.02 J	0.027 UJ	0.023 J	0.029 UJ	0.028 UJ	0.028 UJ	**0.047 J**

Notes:
1 = GWP-Ind Texas Commission on Environmental Quality soil medium specific concentration for industrial use based on groundwater protection
mg/kg = milligrams per kilogram
J+ = Estimated Biased High
J = Estimated
<0.015 UJ = Nondetect
Shaded = Positive Detection
Bold = Exceeds Comparison Level

Proposed New Field Work

Vertical extent of contamination has not been delineated at 7 borings including: 29SB118, 29SB119, 29SB120, 29SB122, 29SB123, 29SB124, and 29SB125. To define vertical extent (i.e., total unsaturated soil depth), one boring would be co-located with the former boring locations and one sample collected from 19 – 20 feet below ground surface (ft bgs) and analyzed for explosives using Method 8321A. All eight borings, at various depths, showed explosives concentrations that exceeded the GWP-Ind MSC in the original lab results and re-analysis. As such, the spatial extent has not been fully delineated. To determine spatial extent, nine additional borings would be located 15 to 20 ft outside the "grid" established for the March 2021 PDI investigation. Eight borings would be located outside of borings 29SB118, 29SB119, 29SB120, 29SB122, 29SB123, 29SB124, and 29SB125 to the northeast, southeast, and southwest and samples collected at 3 - 4, 6 - 7, 11 - 12, 15 - 16 and 19 - 20 ft bgs. New borings offset from 29SB119, 29SB120, and 29SB122 will be moved to 20 ft and closer to the former Building 812-F. These borings generally had higher concentrations of explosives. One boring would be located 15 ft to the northwest of 29SB121 and have three samples collected at 3 - 4, 7 - 8, and 11 – 12 ft bgs and analyzed for explosives. The total depth of each boring and sample collection will be dependent on water table elevation.

Total of 16 additional borings; 15 to total depth of 20 ft bgs dependent on water table elevation and one to a total depth of 12 ft bgs dependent on water table elevation.
50 samples for explosive analyses.
Figure 1 provides proposed new DPT locations.

Cooling Water Outfall / Ditch "B" and "C"

Data Summary

Results from the 3 March PDI investigation at the "B" location revealed concentrations of explosives that exceeded the GWP-Ind MSC at 2 of the 8 borings where samples were collected. Only one boring had multiple detections at various depths (29SB129), while the second boring (29SB126) had a single detection exceeding the GWP-Ind MSC. The remaining borings did not show explosives at concentrations above the MDL. Results from the March sampling event are provided in **Table 3**. Based on these results, samples from 6 borings were submitted to Euronfins/Test America for re-analysis using Method 8321A to either confirm results greater than the original lab MDL or where the result was a non-detect. Borings and samples included 29SB126 (3 – 4, 5 – 6 ft bgs), 29SB127 (1 – 2 ft bgs), 29SB128 (1 – 2 ft bgs), 29SB129 (5 – 6 ft bgs), 12SB130 (1 – 2 ft bgs), and 29SB132 (1 – 2 ft bgs). Low concentrations of explosives below the GWP-Ind MSC were detected in boring 29SB121 at the 3 -4 ft bgs sample depth, while the 5 – 6 ft bgs sample had no explosives detected above the MDL. Boring 29SB126 had low concentrations of 2,4,6-TNT, 2,4-DNT, and 2,6-DNT below the GWP-Ind, which defines vertical extent. Boring 29SB128 had a single detection of 2,4,6-TNT at the 1 – 2 ft bgs sample depth, which previously was reported as below the MDL. Boring 29SB129 had detections of 2,4,6-TNT, 2,4-DNT, and 2,6-DNT at concentrations exceeding the GWP-Ind MSC. Based on the re-analysis data, vertical and spatial extent of contamination has not been fully defined at/surrounding boring 29SB129, while spatial extent has not fully been delineated around 29SB126 at 1 – 2 ft bgs interval. At the "C" location, original sample results did not reveal any detections greater than the MDL. Samples were not selected from this area for re-analysis. After further review of historic data, sample 29SB15 (collected in 2005), which was located to the northeast across the road from area "C", contained 2,4,6-TNT concentrations of 110 mg/kg (0 – 2 ft bgs) and 54 mg/kg (5 – 7 ft bgs). Vertical extent will need to be defined at sample location 29SB15 and further down gradient to define spatial extent. No other data gaps are apparent based on historic, March 2021, and the re-analyzed data. The Eurofins/Test America sample results, which closely matched the original lab results, are provided in **Table 4**.

Table 3. Cooling Water Outfall / Ditch March 2021 PDI Sample Results

Chemical Name	Sample ID	29SB126				29SB127				29SB128			
	Collection Date	3/2/2021				3/3/2021				3/3/2021			
	Depth Interval (ft bgs)	1-2	3-4	5-6	7-8	1-2	3-4	5-6	7-8	1-2	3-4	5-6	7-8
	LOQ (mg/kg)	0.394	0.402	0.418	0.409	0.382	0.389	0.406	0.389	0.403	0.393	0.396	0.419
	LOD (mg/kg)	0.197	0.201	0.209	0.204	0.191	0.195	0.203	0.194	0.202	0.197	0.198	0.209
	DL (mg/kg)	0.0985	0.101	0.104	0.102	0.0954	0.0973	0.101	0.0972	0.101	0.0983	0.0989	0.105
	Comparison Levels[1] (mg/kg)												
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]	<0.197 UJ	<0.201 UJ	<0.209 UJ	<0.204 UJ	<0.191 UJ	<0.195 UJ	<0.203 UJ	<0.194 UJ	<0.202 UJ	<0.197 UJ	<0.198 UJ	<0.209 UJ
2,4-Dinitrotoluene (2,4-DNT)	0.042	<0.197 UJ	<0.201 UJ	<0.209 UJ	<0.204 UJ	<0.191 UJ	<0.195 UJ	<0.203 UJ	<0.194 UJ	<0.202 UJ	<0.197 UJ	<0.198 UJ	<0.209 UJ
2,6-Dinitrotoluene (2,6-DNT)	0.042	**0.178 J**	<0.201 UJ	<0.209 UJ	<0.204 UJ	<0.191 UJ	<0.195 UJ	<0.203 UJ	<0.194 UJ	<0.202 UJ	<0.197 UJ	<0.198 UJ	<0.209 UJ

Chemical Name	Sample ID	29SB129				29SB130				29SB131			
	Collection Date	3/2/2021				3/2/2021				3/2/2021			
	Depth Interval (ft bgs)	1-2	3-4	5-6	7-8	1-2	3-4	5-6	7-8	1-2	3-4	5-6	7-8
	LOQ (mg/kg)	0.409	0.382	0.410	0.387	0.384	0.391	0.399	0.393	0.393	0.402	0.419	0.399
	LOD (mg/kg)	0.205	0.191	0.205	0.193	0.192	0.196	0.199	0.197	0.197	0.201	0.210	0.200
	DL (mg/kg)	0.102	0.0956	0.102	0.0967	0.0960	0.0978	0.0997	0.0983	0.0983	0.101	0.105	0.0998
	Comparison Levels[1] (mg/kg)												
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]	<0.205 U	**5.13 J+**	**23.2 J+**	2.72 J+	<0.192 UJ	<0.196 UJ	<0.199 UJ	<0.197 UJ	<0.197 UJ	<0.201 UJ	<0.210 UJ	<0.200 UJ
2,4-Dinitrotoluene (2,4-DNT)	0.042	<0.205 U	**1.45 J+**	**212**	**6.7 J+**	<0.192 UJ	<0.196 UJ	<0.199 UJ	<0.197 UJ	<0.197 UJ	<0.201 UJ	<0.210 UJ	<0.200 UJ
2,6-Dinitrotoluene (2,6-DNT)	0.042	<0.205 U	**21.3 J+**	**108**	**58.3**	<0.192 UJ	<0.196 UJ	<0.199 UJ	<0.197 UJ	<0.197 UJ	<0.201 UJ	<0.210 UJ	<0.200 UJ

Chemical Name	Sample ID	29SB132				29SB133			
	Collection Date	3/2/2021				3/2/2021			
	Depth Interval (ft bgs)	1-2	3-4	5-6	7-8	1-2	3-4	5-6	7-8
	LOQ (mg/kg)	0.408	0.383	0.402	0.404	0.387	0.393	0.407	0.405
	LOD (mg/kg)	0.204	0.192	0.201	0.202	0.193	0.196	0.203	0.202
	DL (mg/kg)	0.102	0.0958	0.100	0.101	0.0967	0.0982	0.102	0.101
	Comparison Levels[1] (mg/kg)								
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]	<0.204 UJ	<0.192 UJ	<0.201 UJ	<0.202 UJ	<0.193 UJ	<0.196 UJ	<0.203 UJ	<0.206 UJ
2,4-Dinitrotoluene (2,4-DNT)	0.042	<0.204 UJ	<0.192 UJ	<0.201 UJ	<0.202 UJ	<0.193 UJ	<0.196 UJ	<0.203 UJ	<0.206 UJ
2,6-Dinitrotoluene (2,6-DNT)	0.042	<0.204 UJ	<0.192 UJ	<0.201 UJ	<0.202 UJ	<0.193 UJ	<0.196 UJ	<0.203 UJ	<0.206 UJ

Notes:
1 = GWP-Ind Texas Commission on Environmental Quality soil medium specific concentration for industrial use based on groundwater protection
mg/kg = milligrams per kilogram
a = applies to 0-3 feet below ground surface
b = applies from 3 feet below ground surface to groundwater interface
J+ = Estimated Biased High
J = Estimated
<0.195 UJ = Nondetect
Shaded = Positive Detection
Bold = Exceeds Comparison Level

Table 4. Re-Analyzed Cooling Water Outfall / Ditch March 2021 PDI Sample Results

Eurofins Re-Analyses Results: Subset 1 & 2								
Explosive	Sample ID	29SB126		29SB127	29SB128	29SB129	29SB130	29SB132
	Re-analyses Date	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21
	Depth Interval (ft bgs)	3-4	5-6	1-2	1-2	5-6	1-2	1-2
	Comparison Level (mg/kg)							
2,4,6-TNT	4.7[a]/5.1[b]	0.011 J	0.015 UJ	0.015 UJ	0.0097 J	**22 J**	0.014 UJ	0.015 UJ
2,4-DNT	0.042	0.0088 J	0.029 UJ	0.029 UJ	0.029 UJ	**180 J**	0.029 UJ	0.029 UJ
2,6-DNT	0.042	0.022 J	0.029 UJ	0.029 UJ	0.029 UJ	**130 J**	0.029 UJ	0.029 UJ

Notes:
1 = GWP-Ind Texas Commission on Environmental Quality soil medium specific concentration for industrial use based on groundwater protection
mg/kg = milligrams per kilogram
a = applies to 0-3 feet below ground surface
b = applies from 3 feet below ground surface to groundwater interface
J = Estimated
0.15 UJ = Nondetect
Shaded = Positive Detection
Bold = Exceeds Comparison Level

Proposed New Field Work:

Vertical and spatial extent of contamination at/around boring 29SB129 has not been fully delineated. To capture vertical extent, one boring would be co-located with the former boring location and advanced to 12 ft bgs. Samples would be collected at 9 – 10 ft bgs and 11 – 12 ft bgs. Two additional borings would be located 10 ft to either side of 29SB129 to define spatial extent with samples collected at depths of 3 – 4 ft bgs, 7 – 8, and 11- 12 ft bgs. One boring would also be located 5 ft down gradient of 29SB126 to define spatial extent with samples collected 1 – 2 ft bgs and 3 – 4 ft bgs.

Down gradient of the C location and across the road, one sample would be co-located with historic sample 29SB15 to define vertical extent with a sample collected from 7 – 9 ft bgs. Two additional borings would be located adjacent to shallow groundwater monitoring wells 29WW05 and 29WW116 where concentrations of nitrotoluenes in groundwater were found to exceed Residential Groundwater PCLs. Soil samples would be collected from each boring at 0 – 2 ft bgs, 5 – 7 ft bgs, 10 – 12, and just above the depth of the water table. All samples would be analyzed for explosives using Method 8321A. The total depth of each boring and sample collection will be dependent on water table elevation.

Total of 7 additional borings; one to total depth of 4 ft bgs, one to total depth of 9 ft bgs, three to total depth of 12 ft bgs and two to the top of water table elevation.
19 samples for explosive analyses.
Figure 2 provides proposed DPT locations.

North Cooling Water Line

Data Summary

Results from the 3 March PDI investigation revealed concentrations of explosives that exceeded the GWP-Ind MSC at 3 of the 8 borings where samples were collected. Two borings had multiple detections at various depths (29SB138 and 29SB143), while the third boring (29SB139) had a single detection exceeding the GWP-Ind MSC. Three borings (29SB142, 29SB146 and 29SB147) had detections of explosives but below the GWP-Ind MSC, while the remaining two borings (29Sb144 and 29SB145) had no detections of explosives. Results from the March sampling event are provided in **Table 5**. Based on these results, samples from 4 borings were submitted to Euronfins/Test America for re-analysis using Method 8321A to either confirm results greater than the original lab MDL or where the result was a non-detect. Borings and samples included 29SB144 (3 –

4, 7 – 8, 11 – 12, and 15 - 16 ft bgs), 29SB145 (3 – 4, 7 – 8, 11 – 12, and 15 - 16 ft bgs), 29SB146 (3 – 4, 7 – 8, and 11 – 12 ft bgs), and 29SB147 (3 – 4, 7 – 8, and 11 – 12 ft bgs). Low concentrations of explosives (mainly 2,4,6-TNT) were detected below the GWP-Ind MSC in every sample submitted. The Eurofins/Test America results are provided in **Table 6**.

Table 5. North Cooling Water Line March 2021 PDI Sample Results

Chemical Name	Sample ID	29SB138				29SB139				29SB142			
	Collection Date	3/8/2021				3/9/2021				3/8/2021			
	Depth Interval (ft bgs)	3-4	7-8	11-12	15-16	3-4	7-8	11-12	15-16	3-4	7-8	11-12	15-16
	LOQ (mg/kg)	0.397	0.399	0.388	0.401	0.386	0.385	0.392	0.404	0.390	0.392	0.411	0.407
	LOD (mg/kg)	0.199	0.199	0.194	0.200	0.193	0.192	0.196	0.202	0.195	0.196	0.205	0.203
	DL (mg/kg)	0.0993	0.0997	0.0970	0.100	0.0966	0.0962	0.0979	0.101	0.0976	0.0980	0.103	0.102
	Comparison Levels[1] (mg/kg)												
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]	<0.199 U	<0.199 U	**9.14 J-**	**7.34 J-**	**97.6**	4.56 J-	<0.196 U	0.300 J	2.32 J-	3.24 J-	2.77 J-	0.626 J-
2,4-Dinitrotoluene (2,4-DNT)	0.042	<0.199 U	<0.199 U	<0.194 U	<0.200 U	<0.193 U	<0.192 U	<0.196 U	<0.202 U	<0.195 U	<0.196 U	<0.205 U	<0.203 UJ
2,6-Dinitrotoluene (2,6-DNT)	0.042	<0.199 U	<0.199 U	<0.194 UJ	<0.200 UJ	<0.193 U	<0.192 U	<0.196 U	<0.202 U	<0.195 UJ	<0.196 UJ	<0.205 UJ	<0.203 UJ

Chemical Name	Sample ID	29SB143				29SB144				29SB145			
	Collection Date	3/8/2021				3/8/2021				3/8/2021			
	Depth Interval (ft bgs)	3-4	7-8	11-12	15-16	3-4	7-8	11-12	15-16	3-4	7-8	11-12	15-16
	LOQ (mg/kg)	0.388	0.398	0.393	0.394	0.407	0.418	0.389	0.416	0.413	0.409	0.412	0.388
	LOD (mg/kg)	0.194	0.199	0.196	0.197	0.203	0.209	0.194	0.208	0.207	0.204	0.206	0.194
	DL (mg/kg)	0.0970	0.0994	0.0981	0.0985	0.102	0.104	0.0972	0.104	0.103	0.102	0.103	0.0971
	Comparison Levels[1] (mg/kg)												
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]	**6.25 J-**	**5.57 J-**	**4.87 J-**	**26.6 J-**	<0.203 U	<0.209 U	<0.194 U	<0.208 U	<0.207 UJ	<0.204 UJ	<0.206 U	<0.194 U
2,4-Dinitrotoluene (2,4-DNT)	0.042	<0.194 U	<0.199 U	<0.196 U	<0.197 U	<0.203 U	<0.209 U	<0.194 U	<0.208 U	<0.207 U	<0.204 U	<0.206 U	<0.194 U
2,6-Dinitrotoluene (2,6-DNT)	0.042	<0.194 UJ	<0.199 UJ	<0.196 UJ	<0.197 UJ	<0.203 U	<0.209 U	<0.194 U	<0.208 U	<0.207 UJ	<0.204 UJ	<0.206 U	<0.194 U

Chemical Name	Sample ID	29SB146				29SB147			
	Collection Date	3/9/2021				3/9/2021			
	Depth Interval (ft bgs)	3-4	7-8	11-12	15-16	3-4	7-8	11-12	15-16
	LOQ (mg/kg)	0.388	0.420	0.415	0.419	0.403	0.398	0.400	0.414
	LOD (mg/kg)	0.194	0.210	0.207	0.209	0.201	0.199	0.200	0.207
	DL (mg/kg)	0.0969	0.105	0.104	0.105	0.101	0.0996	0.100	0.104
	Comparison Levels[1] (mg/kg)								
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]	<0.194 U	<0.210 U	<0.207 U	0.143 J	<0.201 U	<0.199 U	<0.200 U	0.319 J
2,4-Dinitrotoluene (2,4-DNT)	0.042	<0.194 U	<0.210 U	<0.207 U	<0.209 U	<0.201 U	<0.199 U	<0.200 U	<0.207 U
2,6-Dinitrotoluene (2,6-DNT)	0.042	<0.194 U	<0.210 U	<0.207 U	<0.209 U	<0.201 U	<0.199 U	<0.200 U	<0.207 U

Notes:
1 = GWP-Ind Texas Commission on Environmental Quality soil medium specific concentration for industrial use based on groundwater protection
mg/kg = milligrams per kilogram
J- = Estimated Biased Low
J = Estimated
<0.200 U = Nondetect
<0.015 UJ = Nondetect
Shaded = Positive Detection
Bold = Exceeds Comparison Level

Table 6. Re-Analyzed North Cooling Water Line March 2021 PDI Sample Results

Eurofins Re-Analyses Results: Subset 1 & 2									
Explosive	Sample ID	29SB144				29SB145			
	Re-analyses Date	10/7/21	10/7/21	10/7/21	9/1/21	10/7/21	10/7/21	10/7/21	9/1/21
	Depth Interval (ft bgs)	3-4	7-8	11-12	15-16	3-4	7-8	11-12	14-15
	Comparison Level (mg/kg)								
2,4,6-TNT	4.7[a]/5.1[b]	0.034 J	0.021 J	0.022 J	0.018 J	0.013 J	0.17 J	0.02 J	0.024 J
2,4-DNT	0.042	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.028 UJ	0.029 UJ	0.029 UJ	0.01 J
2,6-DNT	0.042	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.028 UJ	0.029 UJ	0.029 UJ	0.03 UJ

Notes:
1 = GWP-Ind Texas Commission on Environmental Quality soil medium specific concentration for industrial use based on groundwater protection
mg/kg = milligrams per kilogram
J = Estimated
<0.015 UJ = Nondetect
Shaded = Positive Detection
Bold = Exceeds Comparison Level

Table 6. Re-Analyzed North Cooling Water Line March 2021 PDI Sample Results

Eurofins Re-Analyses Results: Subset 1 & 2							
Explosive	Sample ID	29SB146			29SB147		
	Re-analyses Date	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21
	Depth Interval (ft bgs)	3-4	7-8	11-12	3-4	7-8	11-12
	Comparison Level (mg/kg)						
2,4,6-TNT	4.7[a]/5.1[b]	*0.1 J*	*0.019 J*	*0.022 J*	*0.045 J*	*0.061 J*	*0.03 J*
2,4-DNT	0.042	0.028 UJ	0.029 UJ	0.03 UJ	0.029 UJ	0.029 UJ	0.028 UJ
2,6-DNT	0.042	0.028 UJ	0.029 UJ	0.03 UJ	0.029 UJ	0.029 UJ	0.028 UJ

Notes:
1 = GWP-Ind Texas Commission on Environmental Quality soil medium specific concentration for industrial use based on groundwater protection
mg/kg = milligrams per kilogram
J = Estimated
<0.015 UJ = Nondetect
Shaded = Positive Detection
Bold = Exceeds Comparison Level

Proposed New Field Work

Vertical extent of contamination at boring 29SB138 has not been fully delineated. To capture vertical extent, one boring would be co-located with the former boring location and advanced to 20 ft bgs. Samples would be collected at 3 - 4 ft bgs to confirm depth to initial subsurface contamination and at 19 – 20 ft bgs to define total vertical extent. A second boring would be co-located with former boring 29SB143 to define vertical extent with a sample collected at 19 - 20 ft bgs. All samples would be analyzed for explosives using Method 8321A. Two borings would also be located 10 ft on either side of 29SB138, 29SB139, and 29SB143 to identify contaminant spatial extent. Borings advanced adjacent to 29SB138 and 29SB143 would have samples collected from 7 – 8, 11 – 12, 15 – 16, and 19 – 20 ft bgs and analyzed for explosives using Method 8321A. The two borings advanced on either side of 29SB139 would have samples collected from 3 – 4 ft bgs and 7 – 8 ft bgs and analyzed for explosives using Method 8321A. No other borings are proposed. Re-analysis of samples from borings 29SB144, 29SB145, 29SB146, and 29SB147 confirm presence of explosives (mainly 2,4,6-TNT), but at levels below the GWP-Ind MSC. The total depth of each boring and sample collection will be dependent on water table elevation.

Total of 8 additional borings; 6 to a total depth of 20 ft bgs and two to 8 ft bgs. Depth of borings and sample collection dependent on water table elevations.

24 samples for explosive analyses.
Figure 3 provides proposed DPT locations.

South Cooling Water Line

Data Summary

Results from the 3 March PDI investigation revealed concentrations of explosives that exceeded the MDL at 1 of the 9 borings where samples were collected. Boring 29SB165 had a low hit of 2,4,6-TNT at the 15 – 16 foot interval. Samples from eight borings were submitted for re-analysis to Eurofins/Test America for explosives analysis using Method 8321A to either confirm results greater than the original lab MDL or where the result was a non-detect. Results from the March sampling event are provided in **Table 7**. Based on the re-analysis, 2,4,6-TNT was detected at four borings (29SB135, 29SB136, 29SB164, and 29SB165) at low concentrations. No other explosives were detected. The Eurofins/Test America results are provided in **Table 8**.

Table 7. South Cooling Water Line March 2021 PDI Sample Results

Chemical Name	Sample ID	29SB135				29SB136				29SB160			
	Collection Date	3/4/2021				3/4/2021				3/3/2021			
	Depth Interval (ft bgs)	3-4	7-8	11-12	15-16	3-4	7-8	11-12	15-16	3-4	7-8	11-12	15-16
	LOQ (mg/kg)	0.399	0.396	0.389	0.407	0.394	0.405	0.399	0.412	0.388	0.415	0.413	0.396
	LOD (mg/kg)	0.200	0.198	0.195	0.204	0.197	0.202	0.199	0.206	0.194	0.207	0.207	0.198
	DL (mg/kg)	0.0998	0.0990	0.0973	0.102	0.0985	0.101	0.0997	0.103	0.0970	0.104	0.103	0.0989
	Comparison Levels[1] (mg/kg)												
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]	<0.200 UJ	<0.198 U	<0.195 UJ	<0.204 UJ	<0.197 UJ	<0.202 UJ	<0.199 UJ	<0.206 UJ	<0.194 U	<0.207 U	<0.207 U	<0.198 U
2,4-Dinitrotoluene (2,4-DNT)	0.042	<0.200 UJ	<0.198 U	<0.195 UJ	<0.204 U	<0.197 U	<0.202 U	<0.199 U	<0.206 U	<0.194 U	<0.207 U	<0.207 U	<0.198 U
2,6-Dinitrotoluene (2,6-DNT)	0.042	<0.200 UJ	<0.198 U	<0.195 UJ	<0.204 UJ	<0.197 UJ	<0.202 UJ	<0.199 UJ	<0.206 UJ	<0.194 U	<0.207 U	<0.207 U	<0.198 U

Chemical Name	Sample ID	29SB161				29SB162				29SB163			
	Collection Date	3/4/2021				3/4/2021				3/4/2021			
	Depth Interval (ft bgs)	3-4	7-8	11-12	15-16	3-4	7-8	11-12	15-16	3-4	7-8	11-12	15-16
	LOQ (mg/kg)	0.406	0.398	0.407	0.407	0.396	0.419	0.392	0.389	0.395	0.407	0.412	0.400
	LOD (mg/kg)	0.203	0.199	0.203	0.203	0.198	0.209	0.196	0.195	0.197	0.204	0.206	0.200
	DL (mg/kg)	0.101	0.0995	0.102	0.102	0.0990	0.105	0.0979	0.0974	0.0987	0.102	0.103	0.100
	Comparison Levels[1] (mg/kg)												
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]	<0.203 U	<0.199 U	<0.203 U	<0.203 UJ	<0.198 UJ	<0.209 UJ	<0.196 UJ	<0.195 UJ	<0.197 UJ	<0.204 UJ	<0.206 UJ	<0.200 UJ
2,4-Dinitrotoluene (2,4-DNT)	0.042	<0.203 U	<0.199 U	<0.203 U	<0.203 UJ	<0.198 UJ	<0.209 UJ	<0.196 U	<0.195 UJ	<0.197 U	<0.204 U	<0.206 U	<0.200 U
2,6-Dinitrotoluene (2,6-DNT)	0.042	<0.203 U	<0.199 U	<0.203 U	<0.203 UJ	<0.198 UJ	<0.209 UJ	<0.196 UJ	<0.195 UJ	<0.197 UJ	<0.204 UJ	<0.206 UJ	<0.200 UJ

Chemical Name	Sample ID	29SB164				29SB165				29SB166			
	Collection Date	3/4/2021				3/9/2021				3/3/2021			
	Depth Interval (ft bgs)	3-4	7-8	11-12	15-16	3-4	7-8	11-12	15-16	3-4	7-8	11-12	15-16
	LOQ (mg/kg)	0.383	0.389	0.388	0.396	0.401	0.410	0.414	0.405	0.411	0.393	0.410	0.397
	LOD (mg/kg)	0.191	0.195	0.194	0.198	0.201	0.205	0.207	0.203	0.206	0.197	0.205	0.198
	DL (mg/kg)	0.0957	0.0973	0.0970	0.0990	0.100	0.103	0.103	0.101	0.103	0.0983	0.103	0.0992
	Comparison Levels[1] (mg/kg)												
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]	<0.191 UJ	<0.195 UJ	<0.194 UJ	<0.198 UJ	<0.201 U	<0.205 U	<0.207 U	0.252 J	<0.206 U	<0.197 U	<0.205 U	<0.198 U
2,4-Dinitrotoluene (2,4-DNT)	0.042	<0.191 UJ	<0.195 U	<0.194 U	<0.198 U	<0.201 U	<0.205 U	<0.207 U	<0.203 U	<0.206 U	<0.197 U	<0.205 U	<0.198 U
2,6-Dinitrotoluene (2,6-DNT)	0.042	<0.191 UJ	<0.195 UJ	<0.194 UJ	<0.198 UJ	<0.201 U	<0.205 U	<0.207 U	<0.203 U	<0.206 U	<0.197 U	<0.205 U	<0.198 U

Notes:
1 = GWP-Ind Texas Commission on Environmental Quality soil medium specific concentration for industrial use based on groundwater protection
mg/kg = milligrams per kilogram
J = Estimated
<0.205 U = Nondetect
<0.200 UJ = Nondetect
Shaded = Positive Detection
Bold = Exceeds Comparison Level

Table 8. Re-Analyzed South Cooling Water Line March 2021 PDI Sample Results

Eurofins Re-Analyses Results: Subset 1 & 2									
Explosive	Sample ID	29SB135	29SB136	29SB160			29SB161		
	Re-analyses Date	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21
	Depth Interval (ft bgs)	15-16	15-16	7-8	11-12	15-16	7-8	11-12	15-16
	Comparison Level (mg/kg)								
2,4,6-TNT	4.7[a]/5.1[b]	0.0072 J+	0.0072 J+	0.015 UJ	0.015 UJ	0.015UJ	0.015 UJ	0.015 UJ	0.015 UJ
2,4-DNT	0.042	0.029 UJ	0.029 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.029 UJ	0.029 UJ	0.03 UJ
2,6-DNT	0.042	0.029 UJ	0.029 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.029 UJ	0.029 UJ	0.03 UJ

Eurofins Re-Analyses Results: Subset 1 & 2									
Explosive	Sample ID	29SB163			29SB164			29SB165	
	Re-analyses Date	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21
	Depth Interval (ft bgs)	7-8	11-12	15-16	7-8	11-12	15-16	7-8	11-12
	Comparison Level (mg/kg)								
2,4,6-TNT	4.7[a]/5.1[b]	0.014 UJ	0.015 UJ	0.015 UJ	0.0096 J	0.014 UJ	0.015UJ	0.039 J	0.71 J
2,4-DNT	0.042	0.028 UJ	0.029 UJ	0.03 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.03 UJ
2,6-DNT	0.042	0.028 UJ	0.029 UJ	0.03 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.03 UJ

Table 8. Re-Analyzed South Cooling Water Line March 2021 PDI Sample Results

Eurofins Re-Analyses Results: Subset 1 & 2				
Explosive	Sample ID	29SB166		
	Re-analyses Date	10/7/21	10/7/21	10/7/21
	Depth Interval (ft bgs)	7-8	11-12	15-16
	Comparison Level (mg/kg)			
2,4,6-TNT	4.7/5.1	0.015 UJ	0.015 UJ	0.015 UJ
2,4-DNT	0.042	0.03 UJ	0.029 UJ	0.028 UJ
2,6-DNT	0.042	0.03 UJ	0.029 UJ	0.028 UJ

Notes:
1 = GWP-Ind Texas Commission on Environmental Quality soil medium specific concentration for industrial use based on groundwater protection
mg/kg = milligrams per kilogram
J+ = Estimated Biased High
<0.015 UJ = Nondetect
Shaded = Positive Detection
Bold = Exceeds Comparison Level

Proposed New Field Work

Depth to possible contamination at boring 29SB135 has not been fully determined, while the vertical extent has been defined. To capture depth to contamination, one boring would be co-located with the former boring location and advanced to 8 ft bgs. Samples would be collected at 3 - 4 ft bgs to confirm presence and depth to initial subsurface contamination, if present, and at 7 – 8 ft bgs to define total vertical extent, if present. A second boring would be co-located with former boring 29SB136 to define depth to contamination and vertical extent with samples collected at 3 - 4 and 7 – 8 ft bgs, respectfully. All samples would be analyzed for explosives using Method 8321A. No other borings are proposed. Re-analysis of samples from borings 29SB160, 29SB161, 29SB163, 29SB164, 29SB165, and 29SB166 confirm either absence or presence of low levels of explosives at levels below the GWP-Ind MSC. There are no data gaps associated with vertical extent. The total depth of each boring and sample collection will be dependent on water table elevation.

Total of 2 additional borings; two to total depth of 8 ft bgs dependent on depth to water table.

4 samples for explosive analyses.
Figure 4 provides proposed DPT locations.

Transite TNT Wastewater Line

Data Summary

Results from the 3 March PDI investigation revealed concentrations of explosives that exceeded the GWP-Ind MSC at 2 of the 8 borings where samples were collected. Boring 29SB137 had 2,4,6-TNT concentrations at 11 – 12 and 15 – 16 ft bgs and 29SB152 had high 2,4,6-TNT concentrations at the 3 – 4 ft bgs interval. The remaining six borings had non-detects for explosives in all samples collected. Results from the March sampling event are provided in **Table 9**. Based on these results, samples from 8 borings were submitted to Euronfins/Test America for re-analysis using Method 8321A to either confirm results greater than the original lab MDL or where the result was a non-detect. Borings and samples included 29SB137 (15 - 16 ft bgs), 29SB140 (3 – 4, 11 – 12, and 15 - 16 ft bgs), 29SB148 (3 – 4, 11 – 12, and 15 - 16 ft bgs), 29SB149 (3 – 4, 11 – 12, and 15 – 16 ft bgs), 29SB150 (3 – 4, 11 – 12, and 15 - 16 ft bgs), 29SB151 (3 – 4, 11 – 12, and 15 - 16 ft bgs), 29SB152 (11 – 12 and 15 - 16 ft bgs), and 29SB153 (3 – 4, 11 – 12, and 15 - 16 ft bgs). The re-analysis of the sample collected from 29SB137 confirmed high 2,4,6-TNT concentrations that exceed the GWP-Ind, in addition to a concentration of 2,4-DNT that exceeded the GWP-IND. Boring 29SB151 had a detection of 2,4-DNT at the 3 – 4 ft bgs interval that exceeded the GWP-Ind MSC. However, sample results for the lower intervals at 11 – 12 and 15 – 16 ft bgs were non-detect for explosives. The remaining boring samples showed concentrations of 2,4,6-TNT below the GWP-Ind MSC. The Eurofins/Test America results are provided in **Table 10**.

Table 9. Transite TNT Wastewater Line March 2021 PDI Sample Results

Chemical Name	Sample ID	29SB137				29SB140				29SB148			
	Collection Date	3/8/2021				3/4/2021				3/8/2021			
	Depth Interval (ft bgs)	3-4	7-8	11-12	15-16	3-4	7-8	11-12	15-16	3-4	7-8	11-12	15-16
	LOQ (mg/kg)	0.385	0.416	0.402	0.404	0.393	0.398	0.404	0.393	0.390	0.402	0.402	0.398
	LOD (mg/kg)	0.193	0.208	0.201	0.202	0.196	0.199	0.202	0.197	0.195	0.201	0.201	0.199
	DL (mg/kg)	0.0963	0.104	0.101	0.101	0.0981	0.0994	0.101	0.0983	0.0976	0.101	0.101	0.0995
	Comparison Levels[1] (mg/kg)												
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]	0.209 J	<0.208 U	**41.6**	**31.8**	<0.196 U	<0.199 U	<0.202 U	<0.197 UJ	<0.195 U	<0.201 U	<0.201 U	<0.199 U
2,4-Dinitrotoluene (2,4-DNT)	0.042	<0.193 U	<0.208 U	**0.196 J**	**0.146 J**	<0.196 U	<0.199 U	<0.202 U	<0.197 U	<0.195 U	<0.201 U	<0.201 U	<0.199 U
2,6-Dinitrotoluene (2,6-DNT)	0.042	<0.193 U	<0.208 U	<0.201 U	<0.202 U	<0.196 U	<0.199 U	<0.202 U	<0.197 UJ	<0.195 U	<0.201 U	<0.201 U	<0.199 U

Chemical Name	Sample ID	29SB149				29SB150				29SB151			
	Collection Date	3/4/2021				3/4/2021				3/4/2021			
	Depth Interval (ft bgs)	3-4	7-8	11-12	15-16	3-4	7-8	11-12	15-16	3-4	7-8	11-12	15-16
	LOQ (mg/kg)	0.415	0.388	0.385	0.396	0.396	0.408	0.404	0.387	0.386	0.391	0.396	0.397
	LOD (mg/kg)	0.208	0.194	0.193	0.198	0.198	0.201	0.202	0.194	0.193	0.196	0.198	0.198
	DL (mg/kg)	0.104	0.0971	0.0963	0.0990	0.0991	0.102	0.101	0.0968	0.0964	0.0978	0.0989	0.0992
	Comparison Levels[1] (mg/kg)												
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]	<0.208 U	<0.194 U	<0.193 U	<0.198 U	<0.198 U	<0.204 U	<0.202 U	<0.194 U	<0.193 U	<0.196 U	<0.198 U	<0.198 U
2,4-Dinitrotoluene (2,4-DNT)	0.042	<0.208 U	<0.194 U	<0.193 U	<0.198 U	<0.198 U	<0.204 U	<0.202 U	<0.194 U	<0.193 U	<0.196 U	<0.198 U	<0.198 U
2,6-Dinitrotoluene (2,6-DNT)	0.042	<0.208 U	<0.194 U	<0.193 U	<0.198 U	<0.198 U	<0.204 U	<0.202 U	<0.194 U	<0.193 U	<0.196 U	<0.198 U	<0.198 U

Chemical Name	Sample ID	29SB152				29SB153			
	Collection Date	3/4/2021				3/4/2021			
	Depth Interval (ft bgs)	3-4	7-8	11-12	15-16	3-4	7-8	11-12	15-16
	LOQ (mg/kg)	0.391	0.405	0.395	0.386	0.398	0.397	0.402	0.413
	LOD (mg/kg)	0.196	0.203	0.198	0.193	0.199	0.199	0.201	0.207
	DL (mg/kg)	0.0978	0.101	0.0988	0.0965	0.0995	0.0993	0.101	0.103
	Comparison Levels[1] (mg/kg)								
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]	0.621	<0.203 U	<0.198 U	<0.193 U	<0.199 U	<0.199 U	<0.201 U	<0.207 U
2,4-Dinitrotoluene (2,4-DNT)	0.042	**0.770 J+**	<0.203 U	<0.198 U	<0.193 U	<0.199 U	<0.199 U	<0.201 U	<0.207 U
2,6-Dinitrotoluene (2,6-DNT)	0.042	<0.196 U	<0.203 U	<0.198 U	<0.193 U	<0.199 U	<0.199 U	<0.201 U	<0.207 U

Notes:
1 = GWP-Ind Texas Commission on Environmental Quality soil medium specific concentration for industrial use based on groundwater protection
mg/kg = milligrams per kilogram
J+ = Estimated Biased High
J = Estimated
<0.208 U = Nondetect
Shaded = Positive Detection
Bold = Exceeds Comparison Level

Table 10. Re-Analyzed Transite TNT Wastewater Line March 2021 PDI Sample Results

Eurofins Re-Analyses Results: Subset 1 & 2								
Explosive	Sample ID	29SB137	29SB140			29SB148		
	Re-analyses Date	10/7/21	10/7/21	10/7/21	9/1/21	10/7/21	10/7/21	9/1/21
	Depth Interval (ft bgs)	15-16	3-4	11-12	15-16	3-4	11-12	15-16
	Comparison Level (mg/kg)							
2,4,6-TNT	4.7[a]/5.1[b]	**21 J**	0.015 UJ	0.015 UJ	0.018 J	0.02 J	0.022 J	0.046 J
2,4-DNT	0.042	**0.069 J**	0.029 UJ	0.029 UJ	0.0094 J	0.029 UJ	0.028 UJ	0.029 UJ
2,6-DNT	0.042	0.029 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.028 UJ	0.029 UJ

Table 10. Re-Analyzed Transite TNT Wastewater Line March 2021 PDI Sample Results

Eurofins Re-Analyses Results: Subset 1 & 2							
Explosive	Sample ID	29SB149			29SB150		
	Re-analyses Date	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21
	Depth Interval (ft bgs)	3-4	11-12	15-16	3-4	11-12	15-16
	Comparison Level (mg/kg)						
2,4,6-TNT	4.7[a]/5.1[b]	0.0091 J	0.015 UJ	0.015 UJ	0.011 J	0.015 UJ	0.0094 J
2,4-DNT	0.042	0.028 UJ	0.029 UJ	0.029 UJ	0.03 UJ	0.029 UJ	0.029 UJ
2,6-DNT	0.042	0.028 UJ	0.029 UJ	0.029 UJ	0.03 UJ	0.029 UJ	0.029 UJ

Eurofins Re-Analyses Results: Subset 1 & 2									
Explosive	Sample ID	29SB151			29SB152		29SB153		
	Re-analyses Date	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21
	Depth Interval (ft bgs)	3-4	11-12	15-16	11-12	15-16	3-4	11-12	15-16
	Comparison Level (mg/kg)								
2,4,6-TNT	4.7[a]/5.1[b]	0.011 J	0.015 UJ	0.015 UJ	0.0094 J	0.14 UJ	0.015 UJ	0.14 UJ	0.015 UJ
2,4-DNT	0.042	**0.07 J**	0.03 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.029 UJ
2,6-DNT	0.042	0.029 UJ	0.03 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.029 UJ

Notes:
1 = GWP-Ind Texas Commission on Environmental Quality soil medium specific concentration for industrial use based on groundwater protection
mg/kg = milligrams per kilogram
J = Estimated
<0.015 UJ = Nondetect
Shaded = Positive Detection
Bold = Exceeds Comparison Level

Proposed New Field Work

Vertical extent of contamination at boring 29SB137 has not been fully delineated. To determine total extent of contamination, one boring would be co-located with the former boring location and advanced to 20 ft bgs. One sample would be collected at 19 - 20 ft bgs to define total vertical extent and analyzed for explosives using Method 8321A. Two additional borings would be offset 10 ft to either side from 29SB137 to determine if contaminants have spread. Samples would be collected from 3 – 4, 11 – 12, 15 – 16, and 19 – 20 ft bgs. Two borings would also be offset 10 ft to either side from 29SB151 with samples collected from 3 – 4 ft bgs and 7 – 8 ft bgs to define spatial extent. No other borings are proposed. Re-analysis of samples from borings 29SB140, 29SB148, 29SB149, 29SB150, 29SB152, and 29SB153 confirm either absence or presence of low levels of explosives at levels below the GWP-Ind MSC. The total depth of each boring and sample collection will be dependent on water table elevation.

Total of 5 additional borings; three to a total depth of 20 ft bgs and two to 8 ft bgs dependent on water table elevation.
14 samples for explosive analyses.
Figure 5 provides proposed DPT location.

Wooden TNT Wastewater Line

Data Summary

Results from the 3 March PDI investigation revealed low concentrations of explosives at 3 of the 8 borings where samples were collected. Two borings had two detections at various depths (29SB134 and 29SB155), while the third boring (29SB156) had a single detection exceeding the MDL. Results from the March sampling event and original analysis are provided in **Table 11**. Based on these results, samples from 8 borings were submitted to Euronfins/Test America for re-analysis using

Method 8321A to either confirm results greater than the original lab MDL or whether the result was a non-detect. Borings and samples included 29SB134 (3 – 4, 11 – 12, and 15 - 16 ft bgs), 29SB141 (10 – 11, 13 - 14 and 17 - 18 ft bgs), 29SB154 (3 – 4, 6 - 7, and 10 – 11 ft bgs), 29SB155 (11 – 12 ft bgs), 29SB156 (12 – 13 ft bgs), 29SB157 (12.5 – 13.5 ft bgs), 29SB158 (10 – 11, 13 - 14, and 17 – 18 ft bgs) and 29SB159 (1.5 – 2.5, 4.5 – 5.5, and 8.5 – 9.5 ft bgs). Low concentrations of explosives (mainly 2,4,6-TNT) were detected below the GWP-Ind MSC in every sample resubmitted. Boring 29SB134 had a detection of 2,4-DNT at the 3 – 4 ft bgs interval that exceeded the GWP-Ind MSC. However, sample results for the lower intervals at 11 – 12 and 15 – 16 ft bgs were non-detect for explosives. The Eurofins/Test America results are provided in **Table 12**.

Table 11. Wooden TNT Wastewater Line March 2021 PDI Sample Results

Chemical Name	Sample ID	29SB134			29SB141			29SB154			29SB155	
	Collection Date	3/10/2021			3/10/2021			3/10/2021			44264	
	Depth Interval (ft bgs)	5-6	8-9	12-13	10-11	13-14	17-18	3-4	6-7	10-11	11-12	15-16
	Comparison Levels[1] (mg/kg)											
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]	<0.197 U	0.117 J	0.189 J	<0.203 U	<0.199 U	<0.205 U	<0.206 U	<0.201 U	<0.203 U	0.436 J	0.197 J
2,4-Dinitrotoluene (2,4-DNT)	0.042	<0.197 U	<0.199 U	<0.205 U	<0.203 U	<0.199 U	<0.205 U	<0.206 U	<0.201 U	<0.203 U	<0.210 U	<0.195 U
2,6-Dinitrotoluene (2,6-DNT)	0.042	<0.197 U	<0.199 U	<0.205 U	<0.203 U	<0.199 U	<0.205 U	<0.206 U	<0.201 U	<0.203 U	<0.210 U	<0.195 U

Chemical Name	Sample ID	29SB156			29SB157			29SB158			29SB159		
	Collection Date	3/10/2021			3/10/2021			3/10/2021			3/10/2021		
	Depth Interval (ft bgs)	9-10	12-13	16-17	5.5-6.5	8.5-9.5	12.5-13.5	10-11	13-14	17-18	1.5-2.5	4.5-5.5	8.5-9.5
	Comparison Levels[1] (mg/kg)												
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]	2.50 J	<0.209 U	<0.208 U	<0.197 U	<0.201 U	<0.206 U	<0.190 U	<0.210 U	<0.209 U	<0.207 U	<0.206 U	<0.196 U
2,4-Dinitrotoluene (2,4-DNT)	0.042	<0.194 U	<0.209 U	<0.208 U	<0.197 U	<0.201 U	<0.206 U	<0.190 U	<0.210 U	<0.209 U	<0.207 U	<0.206 U	<0.196 U
2,6-Dinitrotoluene (2,6-DNT)	0.042	<0.194 U	<0.209 U	<0.208 U	<0.197 U	<0.201 U	<0.206 U	<0.190 U	<0.210 U	<0.209 U	<0.207 U	<0.206 U	<0.196 U

Notes:
1 = GWP-Ind Texas Commission on Environmental Quality soil medium specific concentration for industrial use based on groundwater protection
mg/kg = milligrams per kilogram
J = Estimated
<0.197 U = Nondetect
Shaded = Positive Detection
Bold = Exceeds Comparison Level

Table 12. Re-Analyzed Wooden TNT Wastewater Line March 2021 PDI Sample Results

Eurofins Re-Analyses Results: Subset 1 & 2										
Explosive	Sample ID	29SB134			29SB141			29SB154		
	Re-analyses Date	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21
	Depth Interval (ft bgs)	3-4	11-12	15-16	10-11	13-14	17-18	3-4	6-7	10-11
	Comparison Level (mg/kg)									
2,4,6-TNT	4.7[a]/5.1[b]	0.011 J	0.015 UJ	0.015 UJ	0.0011 J	0.089 J	0.011 J	0.026 J	0.013 J	0.012 J
2,4-DNT	0.042	**0.07 J**	0.03 UJ	0.029 UJ	0.028 UJ	0.027 UJ	0.028 UJ	0.029 UJ	0.029 UJ	0.029 UJ
2,6-DNT	0.042	0.029 UJ	0.03 UJ	0.029 UJ	0.028 UJ	0.027 UJ	0.028 UJ	0.029 UJ	0.029 UJ	0.029 UJ
Eurofins Re-Analyses Results: Subset 1 & 2										
Explosive	Sample ID	29SB155	29SB156	29SB157	29SB158			29SB159		
	Re-analyses Date	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21	10/7/21
	Depth Interval (ft bgs)	11-12	12-13	12.5-13.5	10-11	13-14	17-18	1.5-2.5	4.5-5.5	8.5-9.5
	Comparison Level (mg/kg)									
2,4,6-TNT	4.7[a]/5.1[b]	0.073 J	0.0069 J+	0.012 J	0.11 J	0.012 J	0.014 J	0.016 J	0.01 J	0.01 J
2,4-DNT	0.042	0.027 UJ	0.028 UJ	0.028 UJ	0.029 UJ	0.028 UJ	0.029 UJ	0.028 UJ	0.029 UJ	0.03 UJ
2,6-DNT	0.042	0.027 UJ	0.028 UJ	0.028 UJ	0.029 UJ	0.028 UJ	0.029 UJ	0.028 UJ	0.029 UJ	0.03 UJ

Notes:
1 = GWP-Ind Texas Commission on Environmental Quality soil medium specific concentration for industrial use based on groundwater protection
mg/kg = milligrams per kilogram
J+ = Estimated Biased High
J = Estimated
<0.015 UJ = Nondetect
Shaded = Exceeds Comparison Level
Bold = Positive Detection

Proposed New Field Work

Re-analysis of samples from borings 29SB134, 29SB141, 29SB154, 29SB155, 29SB156, 29SB157, 29SB158, and 29SB159 confirm either absence or presence of low levels of explosives at levels below the GWP-Ind MSC. There are no data gaps associated with vertical extent. (Note: The proposed approach for the RD is to completely remove the former wooden TNT wastewater line.) No additional field work is proposed for the Wooden TNT Wastewater Line.

01075955

Eurofins Re-Analyses Results: Subset 1 & 2								
Sample ID	29SB121				29SB123			
Re-analyses Date	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	9/1/2021
Depth (ft bgs)	3-4	7-8	11-12	15-16	2-3	7-8	11-12	15-16
2,4,6-TNT	**0.014 J**	0.015 UJ	0.014 UJ	0.015 UJ	0.015 UJ	0.014 UJ	0.014 UJ	**0.0066 J+**
2,4-DNT 0.042	**0.068 J**	**0.0081 J**	0.027 UJ	**0.0096 J**	**0.012 J**	0.028 UJ	0.028 UJ	0.028 UJ
2,6-DNT 0.042	0.028 UJ	**0.02 J**	0.027 UJ	**0.023 J**	0.029 UJ	0.028 UJ	0.028 UJ	**0.047 J**

29SB77

STEP-29SW01

801-F

29SB89

29SB88

COC	29SB118 (3/2/2021)	
	3-4 (ft bgs)	15-16 (ft bgs)
2,4-DNT	**0.258 J**	**0.132 J+**

COC	29SB119 (3/2/2021)		
	3-4 (ft bgs)	11-12 (ft bgs)	15-16 (ft bgs)
2,4,6-TNT	1.04	ND	ND
2,4-DNT	**0.647**	**0.548**	**0.763 J+**
2,6-DNT	**0.0996J**	ND	**0.683 J+**

812-F

29SG118 *
6/11/2014
2,4-DNT
0.138 J (6')
17.10 (10')
2,6-DNT
3.42 (10')
*Units in milligrams per kilogram (mg/kg)

29SB121

29SB123

LHAAP-29

COC	29SB120 (3/2/2021)			
	3-4 (ft bgs)	6-7 (ft bgs)	11-12 (ft bgs)	15-16 (ft bgs)
2,4,6-TNT	ND	0.296 J	ND	ND
2,4-DNT	**0.581**	**0.746**	**2.12**	**0.571**
2,6-DNT	ND	ND	**0.45**	**0.135 J**

COC	29SB124 (3/2/2021)	
	3-4 (ft bgs)	15-16 (ft bgs)
2,4-DNT	ND	**5.87 J+**
2,6-DNT	ND	**1.13 J+**

COC	29SB122 (3/2/2021)			
	3-4 (ft bgs)	6-7 (ft bgs)	11-12 (ft bgs)	15-16 (ft bgs)
2,4-DNT	**0.418**	**0.43**	**0.609**	**4.78 J+**
2,6-DNT	ND	ND	ND	**0.318 J+**

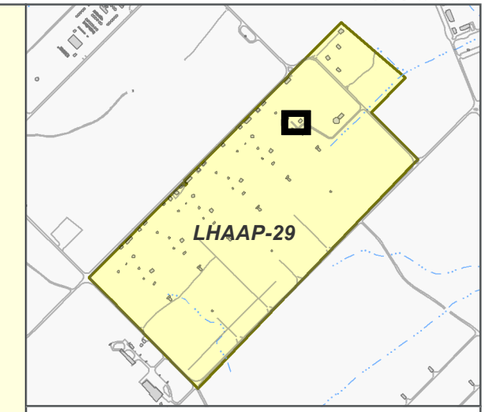
COC	29SB125 (3/2/2021)	
	6-7 (ft bgs)	15-16 (ft bgs)
2,4-DNT	**0.201 J**	**0.3 J**

803-F

29SB73

Screening levels	
	Comparison Levels[1] (mg/kg)
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]
2,4-Dinitrotoluene (2,4-DNT)	0.042
2,6-Dinitrotoluene (2,6-DNT)	0.042
For all sampling results see LHAAP 29 PDI Report Table 1 - Building 812-F Soil Sample Results	

NOTES:
1 = GWP-Ind Texas Commission on Environmental Quality soil medium specific concentration for industrial use based on groundwater protection
<0.195 U = Nondetect (ND)
Shaded = Positive Detection
mg/kg milligrams per kilogram
Depth Interval (ft bgs)
J+ = Estimated Biased High
J- = Estimated Biased Low
J = Estimated
Bold = Exceeds Comparison Level
a = applies to 0-3 feet below ground surface
b = applies from 3 feet below ground surface to groundwater interface



LEGEND

- Proposed New DPT Soil Boring Locations
- 2021 DPT Soil Boring Location (29SB118 - 29SB125)

Historic Sample Locations and Results (Shaw 2020)

- Solid Residual Sample from Line or Manhole
- Water Sample from Line or Man Hole
- Surface Soil Samples
- TNT Cooling Water Drain Line (North)
- Stream
- Road
- Building
- Site LHAAP-29

DATA SOURCES: Shaw, 2010, Final Feasibility Study, LHAAP-29, Former TNT Production Area, Group 2, Longhorn Army Ammunition Plant, Karnack, Texas, December.

BUILDING 812-F
2021 DPT SOIL SAMPLE
EXPLOSIVES DETECTIONS
LHAAP-29 PDI REPORT JUNE 2021
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

N

0 20 40
FEET

FIGURE 1

PATH: J:\2018\18-025_LHAAP_SITES29_47_18AND24_ROD_(WERNER)\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\LHAAP29\LHAAP_29_PDI_2022NEWSAMPLING_BUILDING812F_FIG1.MXD - USER: KLOFGREN - DATE: 1/12/2022

Eurofins Re-Analyses Results: Subset 1 & 2							
Sample ID	29SB126		29SB127	29SB128	29SB129	29SB130	29SB132
Re-analyses Date	3/4/2022	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021
Depth	3-4	5-6	1-2	1-2	5-6	1-2	1-2
2,4,6-TNT	**0.011 J**	0.015 UJ	0.015 UJ	**0.0097 J**	**22 J**	0.014 UJ	0.015 UJ
2,4-DNT 0.042	**0.0088 J**	0.029 UJ	0.029 UJ	0.029 UJ	**180 J**	0.029 UJ	0.029 UJ
2,6-DNT 0.042	**0.022 J**	0.029 UJ	0.029 UJ	0.029 UJ	**130 J**	0.029 UJ	0.029 UJ

COC	29SB15 (Shaw, 2005)	
	0-2 (ft bgs)	5-7 (ft bgs)
2,4,6-TNT	**110**	**54**

COC	29SB129 (3/2/2021)		
	3-4 (ft bgs)	5-6 (ft bgs)	7-8 (ft bgs)
2,4,6-TNT	**5.13 J+**	**23.2 J+**	2.72 J+
2,4-DNT	**1.45 J+**	**212**	**6.7 J+**
2,6-DNT	**21.3 J+**	**108**	**58.3**

COC	29SB126 (3/2/2021)
	1-2 (ft bgs)
2,6-DNT	**0.178 J**

29WW116 (Shaw, 2005)
2,4-DNT - 1 U
2,6-DNT - 239 ug/L
2-NT - 8,140 ug/L
3-NT - 451 ug/L
4-NT - 1,400 ug/L

29WW05 (Shaw, 2005)
2,4-DNT - 50.9 ug/L
2,6-DNT - 224 ug/L
2-NT - 1,230 ug/L
3-NT - 123 ug/L
4-NT - 42.7 ug/L

29SD13
COC **0-0.5'**
TNT **51 J**

29SD46
COC **0-0.5'**
TNT **26,000**
2,4-DNT **8,000**
2,6-DNT **15**

29SB112
6/13/2014
2,4-DNT
0.0544 J (0-0.5')
<0.0596 (2'-4')
2,6-DNT
0.0862 (0-0.5')
0.0704J (2'-4')

*Units in milligrams per kilogram (mg/kg)

Cooling Water Outfall/Ditch - C

Cooling Water Outfall/Ditch - B

o-NT

p-NT

2,6-DNT

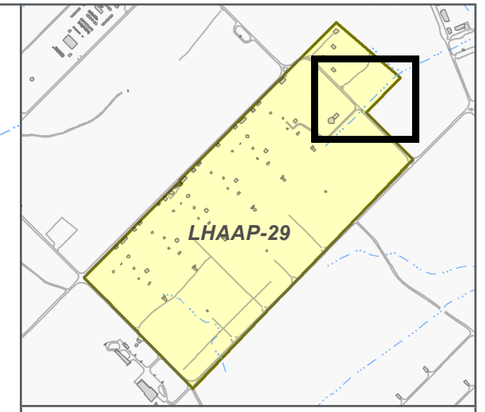
29SB154 29SB149 29SB78 29SB15 29SB126 29SB127 29SB128 29SB129 29SB130 29SB131 29SB132 29SB133 29SB114 29SB115 29SB116 29SB117 29SB108 29SB109 29SB110 29SB111 29SB112 29SB113 29SB127 29SB128

29SD15 29SW15 29SD29 29SS04 29SD45 29SW45 29SD44 29SW44 29WL12 29SD14 29SD13 29SD30

GPS-12

STEP-29SS28 STEP-29SS27 STEP-29SS25 STEP-29SS26 STEP-29SS15

804-D 804-E 618-A 618-B



LEGEND

- Proposed New DPT Soil Boring Locations
- 2021 DPT Soil Boring Location (29SB126 - 29SB133)

Historic Sample Locations and Results (Shaw 2020)

- Water Sample from Line or Man Hole
- Water Sample from Line or Man Hole
- Shallow Groundwater Monitoring Well
- Sediment Samples
- Soil Boring Samples
- Surface Soil Samples
- Soil Sample from Cooling Water Outfall / Ditch
- Extent of soil contamination identified in the 2010 Shaw Final Feasibility Study and March 2021 PDI initial field investigation
- TNT Cooling Water Drain Line (North)
- TNT Wooden Wastewater Line
- TNT Transite Wastewater Line
- Stream
- Road
- Building
- Site LHAAP-29

NITROTOLUENES IN SHALLOW ZONE GROUNDWATER

- 3(m)-NT and 4(p)-NT (TRRP Tier 1 Residential Groundwater PCL - all occurrences = 240 µg/L and 57 µg/L)*
- 2,4-DNT and 2,6-DNT (TRRP Tier 1 Residential Groundwater PCL - all occurrences = 1.3 ug/L) *
- 2(o)-NT (TRRP Tier 1 Residential Groundwater PCL - all occurrences = 4.1 µg/L)*

DATA SOURCES: Shaw, 2010, Final Feasibility Study, LHAAP-29, Former TNT Production Area, Group 2, Longhorn Army Ammunition Plant, Karnack, Texas, December.

Screening levels	
	Comparison Levels[1] (mg/kg)
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]
2,4-Dinitrotoluene (2,4-DNT)	0.042
2,6-Dinitrotoluene (2,6-DNT)	0.042
For all sampling results see LHAAP 29 PDI Report Table 2 - Cooling Water Outfall / Ditch Soil Sample Results	

NOTES:
1 = GWP-Ind Texas Commission on Environmental Quality soil medium specific concentration for industrial use based on groundwater protection
<0.195 U = Nondetect (ND)
Shaded = Positive Detection
mg/kg milligrams per kilogram
Depth Interval (ft bgs)
J+ = Estimated Biased High
J- = Estimated Biased Low
J = Estimated
Bold = Exceeds Comparison Level
a = applies to 0-3 feet below ground surface
b = applies from 3 feet below ground surface to groundwater interface

COOLING WATER OUTFALL / DITCH - 2021 DPT SOIL SAMPLE EXPLOSIVES DETECTIONS
LHAAP-29 PDI REPORT JUNE 2021
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

N
0 40 80
FEET

FIGURE 2

PATH: J:\2018\18-025_LHAAP_SITES29_47_18AND24_ROD_(WERNER)\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\LHAAP29\LHAAP_29_PDI_2022NEWSAMPLING_COOLINGWATEROUTFALLDITCH_FIG2.MXD - USER: KLOFGREN - DATE: 1/26/2022

LHAAP-49

LHAAP-32

LHAAP-35B (37)

LHAAP-29

AP-23

Building 812-F – A

Cooling Water Outfall/Ditch - C

Cooling Water Outfall/Ditch - B

MH11 (02/23/2005)		
Explosive	Associated Line	Concentration (µg/L)
2,4 DNT	N Cooling	0.922 J
2,6 DNT	N Cooling	1.15

COC	29SB142 (3/8/2021)			
	3-4 (ft bgs)	7-8 (ft bgs)	11-12 (ft bgs)	15-16 (ft bgs)
2,4,6-TNT	2.32 J-	3.24 J-	2.77 J-	0.626 J-

COC	29SB143 (3/8/2021)			
	3-4 (ft bgs)	7-8 (ft bgs)	11-12 (ft bgs)	15-16 (ft bgs)
2,4,6-TNT	6.25 J-	5.57 J-	4.87 J-	26.6 J-

MH12 (02/23/2005)		
Explosive	Associated Line	Concentration (µg/L)
2,4 DNT	N Cooling	0.934 J
2,6 DNT	N Cooling	1.31

MH10 (12/17/2004)		
COC	Associated Line	Concentration (mg/kg)
2,4,6 TNT	N Cooling	7
2,4 DNT	N Cooling	1.1
2,6 DNT	N Cooling	0.24J
2-amino-4,6-DNT	N Cooling	9
4-amino-2,6-DNT	N Cooling	7.8

MH10 (02/23/2005)		
Explosive	Associated Line	Concentration (µg/L)
2,4 DNT	N Cooling	1.05
2,6 DNT	N Cooling	1.35

MH09 (02/23/05)		
COC	Associated Line	Concentration (µg/L)
2,4 DNT	N Cooling	1.13
2,6 DNT	N Cooling	1.27

MH09 (12/17/2004)		
COC	Associated Line	Concentration (mg/kg)
2-amino-4,6-DNT	N Cooling	2.4 J
4-amino-2,6-DNT	N Cooling	2.5 J

COC	29SB146 (3/9/2021)
	15-16 (ft bgs)
2,4,6-TNT	0.143 J

29WW22 (Shaw, 2005)
nitrotoluenes - ND

29WW20 (Shaw, 2005)
2,4-DNT - 32.4 ug/L
2,6-DNT - 112 ug/L
2-NT - 401 ug/L
3-NT - 43.3 ug/L
4-NT - 374 ug/L

29WW23 (Shaw, 2005)
nitrotoluenes - ND

MH01 (12/15/2004)		
COC	Associated Line	Concentration (µg/L)
2,4,6 TNT	S Cooling	250
2.4 DNT	S Cooling	15
2.6 DNT	S Cooling	4.1
4-amino-2,6 DNT	S Cooling	33

MH02 (12/17/2004)		
COC	Associated Line	Concentration (mg/kg)
2,4,6 TNT	S Cooling	11
2-amino-4,6 DNT	S Cooling	3.8 J
4-amino-2,6 DNT	S Cooling	2.6 J

COC	29SB138 (3/8/2021)	
	11-12 (ft bgs	15-16 (ft bgs)
2,4,6-TNT	9.14 J-	7.34 J-

COC	29SB139 (3/9/2021)		
	3-4 (ft bgs)	7-8 (ft bgs)	15-16 (ft bgs)
2,4,6-TNT	97.6	4.56 J-	0.3 J

COC	29SB147 (3/9/2021)
	15-16 (ft bgs)
2,4,6-TNT	0.319 J

MH08 (12/17/2004)		
COC	Associated Line	Concentration (mg/kg)
2,4,6 TNT	N Cooling	5.5
2,4 DNT	N Cooling	0.71
2,6 DNT	N Cooling	0.30J

COC	29SB165 (3/9/2021)
	15-16 (ft bgs)
2,4,6-TNT	0.252 J

MH05 (02/24/2005)		
COC	Associated Line	Concentration (µg/L)
2,4,6 TNT	S Cooling	84.3 JL

MH06 (02/24/2005)		
COC	Associated Line	Concentration (µg/L)
2,4,6 TNT	S Cooling	430

29SB09	
COC	Concentration (mg/kg)
2,4,6 TNT	7.5

29SB09R	
COC	Concentration (mg/kg)
2,4,6 TNT	14.7

NITROTOLUENES IN SHALLOW ZONE GROUNDWATER
- 3(m)-NT and 4(p)-NT (TRRP Tier 1 Residential Groundwater PCL - all occurrences = 240 µg/L and 57 µg/L)
- 2,4-DNT and 2,6-DNT (TRRP Tier 1 Residential Groundwater PCL - all occurrences = 1.3 ug/L)
- 2(o)-NT (TRRP Tier 1 Residential Groundwater PCL - all occurrences = 4.1 µg/L)

NOTES:
1= GWP-Ind Texas Commission on Environmental Quality soil medium specific concentration for industrial use based on groundwater protection
<0.195 U = Nondetect (ND)
Shaded = Positive Detection
mg/kg milligrams per kilogram
Depth Interval (ft bgs)
J+ = Estimated Biased High
J- = Estimated Biased Low
J = Estimated
Bold = Exceeds Comparison Level
a = applies to 0-3 feet below ground surface
b = applies from 3 feet below ground surface to groundwater interface

Screening levels: Soils	
	Comparison Levels[1] (mg/kg)
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]
2,4-Dinitrotoluene (2,4-DNT)	0.042
2,6-Dinitrotoluene (2,6-DNT)	0.042

Eurofins Re-Analyses Results: Subset 1 & 2

Sample ID	29SB144				29SB145				29SB146			29SB147		
Re-analyses Date	10/7/2021	10/7/2021	10/7/2021	9/1/2021	10/7/2021	10/7/2021	10/7/2021	9/1/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021
Depth (ft bgs)	3-4	7-8	11-12	15-16	3-4	7-8	11-12	14-15	3-4	7-8	11-12	3-4	7-8	11-12
2,4,6-TNT	**0.034 J**	**0.021 J**	**0.022 J**	**0.018 J**	**0.013 J**	**0.17 J**	**0.02 J**	**0.024 J**	**0.1 J**	**0.019 J**	**0.022 J**	**0.045 J**	**0.061 J**	**0.03 J**
2,4-DNT 0.042	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.028 UJ	0.029 UJ	0.029 UJ	0.01J	0.028 UJ	0.029 UJ	0.03 UJ	0.029 UJ	0.029 UJ	0.028 UJ
2,6-DNT 0.042	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.028 UJ	0.029 UJ	0.029 UJ	0.03 UJ	0.028 UJ	0.029 UJ	0.03 UJ	0.029 UJ	0.029 UJ	0.028 UJ

DATA SOURCES: Shaw, 2010, Final Feasibility Study, LHAAP-29, Former TNT Production Area, Group 2, Longhorn Army Ammunition Plant, Karnack, Texas, December.

- Solid residual samples from within TNT transite wastewater lines
- Soil borings near TNT wooden wastewater line
- Solid residual samples from within cooling water lines
- Liquid samples from within cooling water lines
- Indicates COC levels above GWP-Ind
- Indicates COC levels above GWP-Ind and SAI-ind
- Indicates COC levels above GWP-Ind

For all sampling results see LHAAP 29 PDI Report Table 3 - North Cooling Water Line Soil Sample Results



LEGEND
- Proposed New DPT Soil Boring Locations
- 2021 DPT Soil Boring Location (North: 29SB138 - 29SB139, 29SB142 - 29SB147)(South: 29SB135 - 29SB136, 29SB160 - 29SB166)

Historic Sample Locations and Results (Shaw 2010)
- Water Sample from Line or Man Hole
- Solid residual Sample from Line or Man Hole
- Soil Boring
- Water Sample from Line or Man Hole
- Solid residual Sample from Line or Man Hole
- Water Line Sample
- Shallow Groundwater Monitoring Well
- TNT Cooling Water Drain Line (North)
- TNT Cooling Water Drain Line (South)
- TNT Wooden Wastewater Line
- TNT Transite Wastewater Line
- Stream
- Road
- Building
- Site LHAAP-29

NORTH AND SOUTH TNT COOLING WATER LINES
2021 DPT SOIL SAMPLE
EXPLOSIVES DETECTIONS

LHAAP-29 PDI REPORT JUNE 2021
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

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FIGURE 3

PATH: J:\2018\18-025_LHAAP_SITES29_47_18AND24_ROD_(WERNER)\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\LHAAP29\LHAAP_29_PDI_2022NEWSAMPLINGS_N_COOLING_WATER_DRAIN_LINE_HISTORIC_FIG3.MXD - USER: KLOFGREN - DATE: 1/12/2022

Eurofins Re-Analyses Results: Subset 1 & 2					
Sample ID	29SB165		29SB166		
Re-analyses Date	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021
Depth (ft bgs)	7-8	11-12	7-8	11-12	15-16
2,4,6-TNT	0.039 J	0.71 J	0.015 UJ	0.015 UJ	0.015 UJ
2,4-DNT 0.042	0.029 UJ	0.03 UJ	0.03 UJ	0.029 UJ	0.028 UJ
2,6-DNT 0.042	0.029 UJ	0.03 UJ	0.03 UJ	0.029 UJ	0.028 UJ

MH11 (02/23/2005)		
Explosive	Associated Line	Concentration (µg/L)
2,4 DNT	N Cooling	0.922 J
2,6 DNT	N Cooling	1.15

COC	29SB143 (3/8/2021)			
	3-4 (ft bgs)	7-8 (ft bgs)	11-12 (ft bgs)	15-16 (ft bgs)
2,4,6-TNT	6.25 J-	5.57 J-	4.87 J-	26.6 J-

MH10 (12/17/2004)		
COC	Associated Line	Concentration (mg/kg)
2,4,6 TNT	N Cooling	7
2,4 DNT	N Cooling	1.1
2,6 DNT	N Cooling	0.24J
2-amino-4,6-DNT	N Cooling	9
4-amino-2,6-DNT	N Cooling	7.8

MH10 (02/23/2005)		
Explosive	Associated Line	Concentration (µg/L)
2,4 DNT	N Cooling	1.05
2,6 DNT	N Cooling	1.35

MH09 (02/23/05)		
COC	Associated Line	Concentration (µg/L)
2,4 DNT	N Cooling	1.13
2,6 DNT	N Cooling	1.27

COC	29SB146 (3/9/2021)
	15-16 (ft bgs)
2,4,6-TNT	0.143 J

MH09 (12/17/2004)		
COC	Associated Line	Concentration (mg/kg)
2-amino-4,6-DNT	N Cooling	2.4 J
4-amino-2,6-DNT	N Cooling	2.5 J

COC	29SB147 (3/9/2021)
	15-16 (ft bgs)
2,4,6-TNT	0.319 J

MH08 (12/17/2004)		
COC	Associated Line	Concentration (mg/kg)
2,4,6 TNT	N Cooling	5.5
2,4 DNT	N Cooling	0.71
2,6 DNT	N Cooling	0.30J

COC	29SB165 (3/9/2021)
	15-16 (ft bgs)
2,4,6-TNT	0.252 J

29SB09R	
COC	Concentration (mg/kg)
2,4,6 TNT	14.7

29WW03 (Shaw, 2005)
2,4-DNT - 1 U
2,6-DNT - 9.32 ug/L
2-NT - 71.3 ug/L
3-NT - 5.5 ug/L
4-NT - 37.2 ug/L

29SB09	
COC	Concentration (mg/kg)
2,4,6 TNT	7.5

29WW29 (Shaw, 2005)
nitrotoluenes - ND

29WW32 (Shaw, 2005)
nitrotoluenes - ND

COC	29SB142 (3/8/2021)			
	3-4 (ft bgs)	7-8 (ft bgs)	11-12 (ft bgs)	15-16 (ft bgs)
2,4,6-TNT	2.32 J-	3.24 J-	2.77 J-	0.626 J-

MH12 (02/23/2005)		
Explosive	Associated Line	Concentration (µg/L)
2,4 DNT	N Cooling	0.934 J
2,6 DNT	N Cooling	1.31

COC	29SB138 (3/8/2021)	
	11-12 (ft bgs)	15-16 (ft bgs)
2,4,6-TNT	9.14 J-	7.34 J-

COC	29SB139 (3/9/2021)		
	3-4 (ft bgs)	7-8 (ft bgs)	15-16 (ft bgs)
2,4,6-TNT	97.6	4.56 J-	0.3 J

MH05 (02/24/2005)		
COC	Associated Line	Concentration (µg/L)
2,4,6 TNT	S Cooling	84.3 JL

MH06 (02/24/2005)		
COC	Associated Line	Concentration (µg/L)
2,4,6 TNT	S Cooling	430

MH01 (12/15/2004)		
COC	Associated Line	Concentration (µg/L)
2,4,6 TNT	S Cooling	250
2.4 DNT	S Cooling	15
2.6 DNT	S Cooling	4.1
4-amino-2,6 DNT	S Cooling	33

MH02 (12/17/2004)		
COC	Associated Line	Concentration (mg/kg)
2,4,6 TNT	S Cooling	11
2-amino-4,6 DNT	S Cooling	3.8 J
4-amino-2,6 DNT	S Cooling	2.6 J

NITROTOLUENES IN SHALLOW ZONE GROUNDWATER
- 3(m)-NT and 4(p)-NT (TRRP Tier 1 Residential Groundwater PCL - all occurrences = 240 µg/L and 57 µg/L)
- 2,4-DNT and 2,6-DNT (TRRP Tier 1 Residential Groundwater PCL - all occurrences = 1.3 ug/L)
- 2(o)-NT (TRRP Tier 1 Residential Groundwater PCL - all occurrences = 4.1 µg/L)

NOTES:
1= GWP-Ind Texas Commission on Environmental Quality soil medium specific concentration for industrial use based on groundwater protection
<0.195 U = Nondetect (ND)
Shaded = Positive Detection
mg/kg milligrams per kilogram
Depth Interval (ft bgs)
J+ = Estimated Biased High
J- = Estimated Biased Low
J = Estimated
Bold = Exceeds Comparison Level
a = applies to 0-3 feet below ground surface
b = applies from 3 feet below ground surface to groundwater interface

Screening levels: Soils	
	Comparison Levels[1] (mg/kg)
2,4,6-Trinitrotoluene (2,4,6-TNT)	4.7[a]/5.1[b]
2,4-Dinitrotoluene (2,4-DNT)	0.042
2,6-Dinitrotoluene (2,6-DNT)	0.042

For all sampling results see LHAAP 29 PDI Report Table 3 - North Cooling Water Line Soil Sample Results

DATA SOURCES: Shaw, 2010, Final Feasibility Study, LHAAP-29, Former TNT Production Area, Group 2, Longhorn Army Ammunition Plant, Karnack, Texas, December.

- Solid residual samples from within TNT transite wastewater lines
- Soil borings near TNT wooden wastewater line
- Solid residual samples from within cooling water lines
- Liquid samples from within cooling water lines
- Indicates COC levels above GWP-Ind
- Indicates COC levels above GWP-Ind and SAI-ind
- Indicates COC levels above GWP-Ind

Eurofins Re-Analyses Results: Subset 1 & 2															
Sample ID	29SB135	29SB136	29SB160			29SB161			29SB163			29SB164			
Re-analyses Date	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021
Depth (ft bgs)	15-16	15-16	7-8	11-12	15-16	7-8	11-12	15-16	7-8	11-12	15-16	7-8	11-12	15-16	
2,4,6-TNT	0.0072 J+	0.0072 J+	0.015 UJ	0.015 UJ	0.015UJ	0.015 UJ	0.015 UJ	0.015 UJ	0.014 UJ	0.015 UJ	0.015 UJ	0.0096 J	0.014 UJ	0.015UJ	
2,4-DNT 0.042	0.029 UJ	0.029 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.029 UJ	0.029 UJ	0.03 UJ	0.028 UJ	0.029 UJ	0.03 UJ	0.029 UJ	0.029 UJ	0.029 UJ	
2,6-DNT 0.042	0.029 UJ	0.029 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.029 UJ	0.029 UJ	0.03 UJ	0.028 UJ	0.029 UJ	0.03 UJ	0.029 UJ	0.029 UJ	0.029 UJ	

LEGEND
- Proposed New DPT Soil Boring Locations
- 2021 DPT Soil Boring Location (North: 29SB138 - 29SB139, 29SB142 - 29SB147)(South: 29SB135 - 29SB136, 29SB160 - 29SB166)

Historic Sample Locations and Results (Shaw 2010)
- Water Sample from Line or Man Hole
- Solid residual Sample from Line or Man Hole
- Soil Boring
- Water Sample from Line or Man Hole
- Solid residual Sample from Line or Man Hole
- Water Line Sample
- Shallow Groundwater Monitoring Well
- TNT Cooling Water Drain Line (North)
- TNT Cooling Water Drain Line (South)
- TNT Wooden Wastewater Line
- TNT Transite Wastewater Line
- Stream
- Road
- Building
- Site LHAAP-29

NORTH AND SOUTH TNT COOLING WATER LINES
2021 DPT SOIL SAMPLE
EXPLOSIVES DETECTIONS

LHAAP-29 PDI REPORT JUNE 2021
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

N
0 200 400
FEET

FIGURE 4

PATH: J:\2018\18-025_LHAAP_SITES29_47_18AND24_ROD_(WERNER)\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\LHAAP29\LHAAP_29_PDI_2022NEWSAMPLING_S_COOLING_WATER_DRAIN_LINE_HISTORIC_FIG4.MXD - USER: KLOFGREN - DATE: 1/12/2022

Eurofins Re-Analyses Results: Subset 1 & 2

Sample ID	29SB149			29SB150			29SB151			29SB152		29SB153		
Re-analyses Date	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021
Depth (ft bgs)	3-4	11-12	15-16	3-4	11-12	15-16	3-4	11-12	15-16	11-12	15-16	3-4	11-12	15-16
2,4,6-TNT	0.0091 J	0.015 UJ	0.015 UJ	0.011 J	0.015 UJ	0.0094 J	0.011 J	0.015 UJ	0.015 UJ	0.0094 J	0.14 UJ	0.015 UJ	0.14 UJ	0.015 UJ
2,4-DNT 0.042	0.028 UJ	0.029 UJ	0.029 UJ	0.03 UJ	0.029 UJ	0.029 UJ	**0.07 J**	0.03 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.029 UJ
2,6-DNT 0.042	0.028 UJ	0.029 UJ	0.029 UJ	0.03 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.03 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.029 UJ

Sample ID	29SB137	29SB140			29SB148		
Re-analyses Date	10/7/2021	10/7/2021	10/7/2021	9/1/2021	10/7/2021	10/7/2021	9/1/2021
Depth (ft bgs)	15-16	3-4	11-12	15-16	3-4	11-12	15-16
2,4,6-TNT	**21 J**	0.015 UJ	0.015 UJ	**0.018 J**	**0.02 J**	**0.022 J**	**0.046 J**
2,4-DNT 0.042	**0.069 J**	0.029 UJ	0.029 UJ	**0.0094 J**	0.029 UJ	0.028 UJ	0.029 UJ
2,6-DNT 0.042	0.029 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.029 UJ	0.028 UJ	0.029 UJ

COC	29SB137 (3/8/2021)		
	3-4 (ft bgs)	11-12 (ft bgs)	15-16 (ft bgs)
2,4,6-TNT	0.214 J	**41.6**	**31.8**
2,4-DNT	<0.194 U	**0.196 J**	**0.15 J**

COC	29SB85 (12/15/2004)	
	Depth (bgs)	Concentration (mg/kg)
2-amino-4,6-DNT	4-5 ft	0.23 J
2-amino-4,6-DNT	8-9 ft	0.9
4-amino-2,6-DNT	8-9 ft	0.3 J

29WL13 (09/26/06)	
COC	Concentration (mg/kg)
2,4,6 TNT	526
2,4 DNT	89
1,3 DNB	1.08

COC	29SB152 (3/4/2021)
	3-4 (ft bgs)
2,4,6-TNT	0.621
2,4-DNT	**0.77 J+**

29WL14 (09/27/06)	
COC	Concentration (mg/kg)
2,4,6 TNT	58.4
2,4 DNT	7.21
2-amino-4,6 DNT	19 JH
4-amino-2,6 DNT	13.3

29SB09	
COC	Concentration (mg/kg)
2,4,6 TNT	7.5

29SB09R	
COC	Concentration (mg/kg)
2,4,6 TNT	14.7

32WL05 (09/28/06)	
COC	Concentration (mg/kg)
2,4,6 TNT	17JL
2,4 DNT	5.15 JL

COC	29SB155 (3/9/2021)	
	11-12 (ft bgs)	15-16 (ft bgs)
2,4,6-TNT	0.436 J	0.197 J

COC	29SB156 (3/10/2021)
	9-10 (ft bgs)
2,4,6-TNT	2.5 J

COC	29SB151 (10/7/2021)
	3-4 (ft bgs)
2,4,6-TNT	0.011 J
2,4-DNT	**0.07 J**

COC	29SB134 (3/10/2021)	
	8-9 (ft bgs)	12-13 (ft bgs)
2,4,6-TNT	0.118 J+	0.189 J

LHAAP-32
LHAAP-35B (37)
LHAAP-23
LHAAP-64
LHAAP-29
32SW18
32SD18
32WL03
32WL05
32WL02
29SB148
29SW15
29SD15
29SB154
29SW45
29SW44
29SD45
29SD44
29WL12
STEP-29SW01
29SB149
29WL43-MH12
29SD43-MH12
29SD12
29SW12
29WL03
29WL47
29SB85
29WL32-MH01
29SD32-MH01
29WL11
29SD42-MH11
29WL42-MH11
29SB150
29WL33-MH02
29SD33-MH02
29WL41-MH10
29SD41-MH10
29SB151
29SB83
29WL10-03
29WL34-MH03
29WL02
29WL13
29WL40-MH09
29WL06
29SD40-MH09
29SB157
29WL35-MH04
29SD35-MH04
29WL39-MH08
29SD39-MH08
29SB158
29WL36-MH05
29SD36-MH05
29SB153
29WL38-MH07
29SD38-MH07
29SD37-MH06
29WL14
29WL37-MH06
29SB09
29SB140
29SB09R
29SW03
29SD02
29SB159
29SD04
29SW04
29SW02

DATA SOURCES: Shaw, 2010, Final Feasibility Study, LHAAP-29, Former TNT Production Area, Group 2, Longhorn Army Ammunition Plant, Karnack, Texas, December.

Solid residual samples from within TNT transite wastewater lines
Soil borings near TNT wooden wastewater line
Solid residual samples from within cooling water lines
Liquid samples from within cooling water lines
Indicates COC levels above GWP-Ind
Indicates COC levels above GWP-Ind and SAI-ind
Indicates COC levels above GWP-Ind

NOTES:
1= GWP-Ind Texas Commission on Environmental Quality soil medium specific concentration for industrial use based on groundwater protection
<0.195 U = Nondetect (ND)
Shaded = Positive Detection
mg/kg milligrams per kilogram
Depth Interval (ft bgs)
J+ = Estimated Biased High
J- = Estimated Biased Low
J = Estimated
Bold = Exceeds Comparison Level
a = applies to 0-3 feet below ground surface
b = applies from 3 feet below ground surface to groundwater interface

Screening levels: Soils	
	Comparison Levels[1] (mg/kg)
2,4,6-Trinitrotoluene (2,4,6-TNT)	5.1
2,4-Dinitrotoluene (2,4-DNT)	0.042
2,6-Dinitrotoluene (2,6-DNT)	0.042
Screening Levels: Cooling Water / Transite Lines Solid Residue	
2,4,6-Trinitrotoluene (2,4,6-TNT)	5.1
2,4-Dinitrotoluene (2,4-DNT)	0.042
2,6-Dinitrotoluene (2,6-DNT)	0.042
For all sampling results see LHAAP 29 PDI Report Table 3 - North Cooling Water Line Soil Sample Results	



LEGEND

- Proposed New DPT Soil Boring Locations
- 2021 DPT Soil Boring Location (Wooden TNT Wastewater Line: 29SB134, 29SB141, 29SB54 - 29SB159)(Transite TNT Wastewater Line: 29SB137, 29SB140, 29SB148 - 29SB153)

Historic Sample Locations and Results (Shaw 2010)

- Water Sample from Line or Man Hole
- Solid residual Sample from Line or Man Hole
- Soil Boring
- Water Sample from Line or Man Hole
- Solid residual Sample from Line or Man Hole
- Water Line Sample

- TNT Cooling Water Drain Line (North)
- TNT Cooling Water Drain Line (South)
- TNT Wooden Wastewater Line
- TNT Transite Wastewater Line
- Stream
- Road
- Building
- Site LHAAP-29

WOODEN AND TRANSITE TNT WASTEWATER LINES
2021 DPT SOIL SAMPLE
EXPLOSIVES DETECTIONS

LHAAP-29 PDI REPORT JUNE 2021
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

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FIGURE 5

PATH: J:\2018\18-025_LHAAP_SITES29_47_18AND24_ROD_(WERNER)\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\LHAAP29\LHAAP_29_PDI_2022NEWSAMPLINGS_TRANSITE_WOODEN_WASTEWATER_LINE_HISTORIC_FIG5.MXD - USER: KLOFGREN - DATE: 1/12/2022

Eurofins Re-analysis Results							
Client Sample ID	Analysis Method	Analyte	Result	Unit	Final Qualifier	LOQ	DL
29SB123 (15-16)	8321A	1,3-Dinitrobenzene	0.015	mg/Kg	J	0.095	0.0068
29SB123 (15-16)	8321A	2,4,6-Trinitrotoluene	0.0066	mg/Kg	J+	0.095	0.0048
29SB123 (15-16)	8321A	2,6-Dinitrotoluene	0.047	mg/Kg	J	0.095	0.019
29SB123 (15-16)	8321A	m-Nitrotoluene	0.015	mg/Kg	J	0.095	0.012
29SB123 (15-16)	8321A	o-Nitrotoluene	0.067	mg/Kg	J	0.095	0.0054
29SB123 (15-16)	8321A	p-Nitrotoluene	0.1	mg/Kg	J	0.095	0.01
29SB129 (5-6)	8321A	1,3-Dinitrobenzene	0.77	mg/Kg	J	0.099	0.007
29SB129 (5-6)	8321A	2,4,6-Trinitrotoluene	22	mg/Kg	J	5	0.25
29SB129 (5-6)	8321A	2,4-Dinitrotoluene	180	mg/Kg	J	50	4.1
29SB129 (5-6)	8321A	2,6-Dinitrotoluene	130	mg/Kg	J	50	9.9
29SB129 (5-6)	8321A	m-Nitrotoluene	0.77	mg/Kg	J	0.099	0.013
29SB129 (5-6)	8321A	o-Nitrotoluene	3.5	mg/Kg	J	5	0.28
29SB129 (5-6)	8321A	p-Nitrotoluene	4.2	mg/Kg	J	5	0.54
29SB135 (15-16)	8321A	2,4,6-Trinitrotoluene	0.0072	mg/Kg	J+	0.098	0.0049
29SB136 (15-16)	8321A	2,4,6-Trinitrotoluene	0.0072	mg/Kg	J+	0.098	0.0049
29SB137 (15-16)	8321A	2,4,6-Trinitrotoluene	21	mg/Kg	J	4.9	0.25
29SB137 (15-16)	8321A	2,4-Dinitrotoluene	0.069	mg/Kg	J	0.098	0.008
29SB137 (15-16)	8321A	2-Amino-4,6-dinitrotoluene	0.046	mg/Kg	J	0.098	0.012
29SB137 (15-16)	8321A	4-Amino-2,6-dinitrotoluene	0.057	mg/Kg	J	0.098	0.005
29SB145 (15-16)	8321A	2,4,6-Trinitrotoluene	0.024	mg/Kg	J	0.099	0.005
29SB145 (15-16)	8321A	2,4-Dinitrotoluene	0.01	mg/Kg	J	0.099	0.0081
29SB146 (15-16)	8321A	2,4,6-Trinitrotoluene	0.074	mg/Kg	J	0.097	0.0049
29SB148 (15-16)	8321A	2,4,6-Trinitrotoluene	0.046	mg/Kg	J	0.096	0.0048
29SB155 (11-12)	8321A	2,4,6-Trinitrotoluene	0.073	mg/Kg	J	0.091	0.0046
29SB156 (12-13)	8321A	2,4,6-Trinitrotoluene	0.0069	mg/Kg	J+	0.093	0.0047
DUP18	8321A	2,4,6-Trinitrotoluene	0.0088	mg/Kg	J+	0.092	0.0046
29SB157(5.5-6.5)	8321A	2,4,6-Trinitrotoluene	0.0096	mg/Kg	J	0.091	0.0046
29SB158(10-11)	8321A	2,4,6-Trinitrotoluene	0.11	mg/Kg	J	0.098	0.0049
29SB158(13-14)	8321A	2,4,6-Trinitrotoluene	0.012	mg/Kg	J	0.092	0.0046
29SB158(17-18)	8321A	2,4,6-Trinitrotoluene	0.014	mg/Kg	J	0.097	0.0049

MicroBac Original Results								
Analysis Method	parm_syn	Result	Unit	Final Qualifier	LOQ	DL	LOD	RPD
8330B	1,3-Dinitrobenzene	<0.201	mg/kg	U	0.402	0.1	0.201	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.201	mg/kg	U	0.402	0.1	0.201	low hit, high ND
8330B	2,6-Dinitrotoluene	<0.201	mg/kg	U	0.402	0.1	0.201	low hit, high ND
8330B	3-Nitrotoluene	<0.201	mg/kg	U	0.402	0.1	0.201	low hit, high ND
8330B	2-Nitrotoluene	<0.201	mg/kg	U	0.402	0.1	0.201	low hit, high ND
8330B	4-Nitrotoluene	<0.201	mg/kg	U	0.402	0.1	0.201	low hit, high ND
8330B	1,3-Dinitrobenzene	0.53	mg/kg	J+	0.41	0.1	0.205	37%
8330B	2,4,6-Trinitrotoluene	23.2	mg/kg	J+	2.05	0.51	1.02	5.30%
8330B	2,4-Dinitrotoluene	212	mg/kg		10.2	2.56	5.12	16%
8330B	2,6-Dinitrotoluene	108	mg/kg		10.2	2.56	5.12	18%
8330B	3-Nitrotoluene	0.387	mg/kg	J+	0.41	0.1	0.205	66%
8330B	2-Nitrotoluene	2.17	mg/kg	J+	0.41	0.1	0.205	47%
8330B	4-Nitrotoluene	3.48	mg/kg	J+	0.41	0.1	0.205	19%
8330B	2,4,6-Trinitrotoluene	<0.204	mg/kg	UJ	0.407	0.1	0.204	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.206	mg/kg	UJ	0.412	0.1	0.206	low hit, high ND
8330B	2,4,6-Trinitrotoluene	31.8	mg/kg		4.04	1.01	2.02	41%
8330B	2,4-Dinitrotoluene	0.146	mg/kg	J	0.404	0.1	0.202	72%
8330B	2-Amino-4,6-dinitrotoluene	<0.202	mg/kg	UJ	0.404	0.1	0.202	low hit, high ND
8330B	4-Amino-2,6-dinitrotoluene	0.245	mg/kg	J-	0.404	0.1	0.202	125%
8330B	2,4,6-Trinitrotoluene	<0.194	mg/kg	U	0.388	0.1	0.194	low hit, high ND
8330B	2,4-Dinitrotoluene	<0.194	mg/kg	U	0.388	0.1	0.194	low hit, high ND
8330B	2,4,6-Trinitrotoluene	0.143	mg/kg	J	0.419	0.11	0.209	64%
8330B	2,4,6-Trinitrotoluene	<0.199	mg/kg	U	0.398	0.1	0.199	low hit, high ND
8330B	2,4,6-Trinitrotoluene	0.436	mg/kg	J	0.42	0.11	0.21	143%
8330B	2,4,6-Trinitrotoluene	<0.209	mg/kg	U	0.418	0.11	0.209	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.196	mg/kg	UJ	0.393	0.1	0.196	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.197	mg/kg	U	0.394	0.1	0.197	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.190	mg/kg	U	0.381	0.1	0.19	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.210	mg/kg	U	0.42	0.11	0.21	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.209	mg/kg	U	0.418	0.1	0.209	low hit, high ND

Eurofins Re-analysis Results							
Client Sample ID	Analysis Method	Analyte	Result	Unit	Final Qualifier	LOQ	DL
29SB141(10-11)	8321A	2,4,6-Trinitrotoluene	0.011	mg/Kg	J	0.092	0.0046
29SB141(13-14)	8321A	2,4,6-Trinitrotoluene	0.0089	mg/Kg	J	0.091	0.0046
29SB141(17-18)	8321A	2,4,6-Trinitrotoluene	0.011	mg/Kg	J	0.094	0.0047
29SB157(12.5-13.5)	8321A	2,4,6-Trinitrotoluene	0.012	mg/Kg	J	0.092	0.0046
29SB154(3-4)	8321A	2,4,6-Trinitrotoluene	0.026	mg/Kg	J	0.097	0.0049
29SB154(3-4)	8321A	4-Amino-2,6-dinitrotoluene	0.0085	mg/Kg	J	0.097	0.0049
29SB154(6-7)	8321A	2,4,6-Trinitrotoluene	0.013	mg/Kg	J	0.098	0.0049
29SB154(10-11)	8321A	2,4,6-Trinitrotoluene	0.012	mg/Kg	J	0.098	0.0049
29SB159(1.5-2.5)	8321A	2,4,6-Trinitrotoluene	0.016	mg/Kg	J	0.095	0.0048
29SB159(4.5-5.5)	8321A	2,4,6-Trinitrotoluene	0.01	mg/Kg	J	0.096	0.0048
29SB159(8.5-9.5)	8321A	2,4,6-Trinitrotoluene	0.01	mg/Kg	J	0.099	0.005
29SB123(2-3)	8321A	2,4-Dinitrotoluene	0.012	mg/Kg	J	0.097	0.008
29SB128(1-2)	8321A	2,4,6-Trinitrotoluene	0.0097	mg/Kg	J	0.097	0.0049
29SB128(1-2)	8321A	4-Amino-2,6-dinitrotoluene	0.0053	mg/Kg	J	0.097	0.0049
29SB121(3-4)	8321A	2,4,6-Trinitrotoluene	0.014	mg/Kg	J	0.093	0.0047
29SB121(3-4)	8321A	2,4-Dinitrotoluene	0.068	mg/Kg	J	0.093	0.0076
29SB121(3-4)	8321A	4-Amino-2,6-dinitrotoluene	0.0061	mg/Kg	J	0.093	0.0047
29SB121(3-4)	8321A	p-Nitrotoluene	0.01	mg/Kg	J	0.093	0.01
29SB121(7-8)	8321A	2,4-Dinitrotoluene	0.0081	mg/Kg	J	0.099	0.0081
29SB121(7-8)	8321A	2,6-Dinitrotoluene	0.02	mg/Kg	J	0.099	0.02
29SB121(15-16)	8321A	2,4-Dinitrotoluene	0.0096	mg/Kg	J	0.099	0.0081
29SB121(15-16)	8321A	2,6-Dinitrotoluene	0.023	mg/Kg	J	0.099	0.02
29SB121(15-16)	8321A	m-Nitrotoluene	0.064	mg/Kg	J	0.099	0.013
29SB121(15-16)	8321A	o-Nitrotoluene	0.4	mg/Kg	J	0.099	0.0057
29SB121(15-16)	8321A	p-Nitrotoluene	1.1	mg/Kg	J	0.099	0.011
29SB126(3-4)	8321A	2,4,6-Trinitrotoluene	0.011	mg/Kg	J	0.097	0.0049
29SB126(3-4)	8321A	2,4-Dinitrotoluene	0.0088	mg/Kg	J	0.097	0.008

MicroBac Original Results									
Analysis Method	parm_syn	Result	Unit	Final Qualifier	LOQ	DL	LOD	RPD
8330B	2,4,6-Trinitrotoluene	<0.203	mg/kg	U	0.407	0.1	0.203	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.199	mg/kg	U	0.397	0.1	0.199	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.205	mg/kg	U	0.409	0.1	0.205	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.206	mg/kg	U	0.412	0.1	0.206	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.206	mg/kg	U	0.413	0.1	0.206	low hit, high ND
8330B	4-Amino-2,6-dinitrotoluene	<0.206	mg/kg	U	0.413	0.1	0.206	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.201	mg/kg	U	0.402	0.1	0.201	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.203	mg/kg	U	0.406	0.1	0.203	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.207	mg/kg	U	0.414	0.1	0.207	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.206	mg/kg	U	0.412	0.1	0.206	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.196	mg/kg	U	0.393	0.1	0.196	low hit, high ND
8330B	2,4-Dinitrotoluene	<0.193	mg/kg dry	U	0.386	0.1	0.193	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.202	mg/kg	UJ	0.403	0.1	0.202	low hit, high ND
8330B	4-Amino-2,6-dinitrotoluene	<0.202	mg/kg	UJ	0.403	0.1	0.202	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.204	mg/kg	U	0.408	0.1	0.204	low hit, high ND
8330B	2,4-Dinitrotoluene	<0.204	mg/kg	U	0.408	0.1	0.204	low hit >Screening, high ND
8330B	4-Amino-2,6-dinitrotoluene	<0.204	mg/kg	U	0.408	0.1	0.204	low hit, high ND
8330B	4-Nitrotoluene	<0.204	mg/kg	U	0.408	0.1	0.204	low hit, high ND
8330B	2,4-Dinitrotoluene	<0.198	mg/kg	U	0.396	0.1	0.198	low hit, high ND
8330B	2,6-Dinitrotoluene	<0.198	mg/kg	U	0.396	0.1	0.198	low hit, high ND
8330B	2,4-Dinitrotoluene	<0.203	mg/kg	U	0.407	0.1	0.203	low hit, high ND
8330B	2,6-Dinitrotoluene	<0.203	mg/kg	U	0.407	0.1	0.203	low hit, high ND
8330B	3-Nitrotoluene	<0.203	mg/kg	U	0.407	0.1	0.203	low hit, high ND
8330B	2-Nitrotoluene	0.283	mg/kg	J+	0.407	0.1	0.203	34%
8330B	4-Nitrotoluene	0.937	mg/kg	J+	0.407	0.1	0.203	16%
8330B	2,4,6-Trinitrotoluene	<0.201	mg/kg	UJ	0.402	0.1	0.201	low hit, high ND
8330B	2,4-Dinitrotoluene	<0.201	mg/kg	UJ	0.402	0.1	0.201	low hit, high ND

Eurofins Re-analysis Results							
Client Sample ID	Analysis Method	Analyte	Result	Unit	Final Qualifier	LOQ	DL
29SB126(5-6)	8321A	o-Nitrotoluene	0.0082	mg/Kg	J	0.098	0.0056
29SB140(15-16)	8321A	2,4-Dinitrotoluene	0.0094	mg/Kg	J	0.098	0.008
29SB162(11-12)	8321A	2,4,6-Trinitrotoluene	0.0092	mg/Kg	J	0.096	0.0048
29SB164(7-8)	8321A	2,4,6-Trinitrotoluene	0.0096	mg/Kg	J	0.098	0.0049
29SB149(3-4)	8321A	2,4,6-Trinitrotoluene	0.0091	mg/Kg	J	0.093	0.0047
29SB150(3-4)	8321A	2,4,6-Trinitrotoluene	0.011	mg/Kg	J	0.099	0.005
29SB150(15-16)	8321A	2,4,6-Trinitrotoluene	0.0094	mg/Kg	J	0.097	0.0049
29SB151(3-4)	8321A	2,4,6-Trinitrotoluene	0.011	mg/Kg	J	0.096	0.0048
29SB151(3-4)	8321A	2,4-Dinitrotoluene	0.07	mg/Kg	J	0.096	0.0079
29SB152(11-12)	8321A	2,4,6-Trinitrotoluene	0.0094	mg/Kg	J	0.096	0.0049
29SB145(3-4)	8321A	2,4,6-Trinitrotoluene	0.013	mg/Kg	J	0.094	0.0047
29SB146(3-4)	8321A	2,4,6-Trinitrotoluene	0.1	mg/Kg	J	0.093	0.0047
29SB146(7-8)	8321A	2,4,6-Trinitrotoluene	0.019	mg/Kg	J	0.096	0.0049
29SB146(11-12)	8321A	2,4,6-Trinitrotoluene	0.022	mg/Kg	J	0.099	0.005
29SB147(3-4)	8321A	2,4,6-Trinitrotoluene	0.045	mg/Kg	J	0.095	0.0048
29SB147(7-8)	8321A	2,4,6-Trinitrotoluene	0.061	mg/Kg	J	0.095	0.0048
29SB147(11-12)	8321A	2,4,6-Trinitrotoluene	0.03	mg/Kg	J	0.094	0.0047
29SB165(7-8)	8321A	2,4,6-Trinitrotoluene	0.039	mg/Kg	J	0.098	0.0049
29SB165(11-12)	8321A	2,4,6-Trinitrotoluene	0.71	mg/Kg	J	0.099	0.005
29SB145(7-8)	8321A	2,4,6-Trinitrotoluene	0.017	mg/Kg	J	0.098	0.0049
29SB145(11-12)	8321A	2,4,6-Trinitrotoluene	0.02	mg/Kg	J	0.096	0.0048
29SB144(3-4)	8321A	2,4,6-Trinitrotoluene	0.034	mg/Kg	J	0.099	0.005
29SB144(7-8)	8321A	2,4,6-Trinitrotoluene	0.021	mg/Kg	J	0.099	0.005

MicroBac Original Results								
Analysis Method	parm_syn	Result	Unit	Final Qualifier	LOQ	DL	LOD	RPD
8330B	2-Nitrotoluene	<0.201	mg/kg	UJ	0.418	0.1	0.201	low hit, high ND
8330B	2,4-Dinitrotoluene	<0.197	mg/kg	U	0.393	0.1	0.197	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.196	mg/kg	UJ	0.392	0.1	0.196	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.195	mg/kg	UJ	0.389	0.1	0.195	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.208	mg/kg	U	0.415	0.1	0.208	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.198	mg/kg	U	0.396	0.1	0.198	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.194	mg/kg	U	0.387	0.1	0.194	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.193	mg/kg	U	0.386	0.1	0.193	low hit, high ND
8330B	2,4-Dinitrotoluene	<0.193	mg/kg	U	0.386	0.1	0.193	low hit >Screening, high ND
8330B	2,4,6-Trinitrotoluene	<0.198	mg/kg	U	0.395	0.1	0.198	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.207	mg/kg	UJ	0.413	0.1	0.207	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.194	mg/kg	U	0.388	0.1	0.194	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.210	mg/kg	U	0.42	0.11	0.21	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.207	mg/kg	U	0.415	0.1	0.207	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.201	mg/kg	U	0.403	0.1	0.201	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.199	mg/kg	U	0.398	0.1	0.199	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.200	mg/kg	U	0.4	0.1	0.2	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.205	mg/kg	U	0.41	0.1	0.205	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.207	mg/kg	U	0.414	0.1	0.207	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.204	mg/kg	UJ	0.409	0.1	0.204	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.206	mg/kg	U	0.412	0.1	0.206	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.203	mg/kg	U	0.407	0.1	0.203	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.209	mg/kg	U	0.418	0.1	0.209	low hit, high ND

Eurofins Re-analysis Results							
Client Sample ID	Analysis Method	Analyte	Result	Unit	Final Qualifier	LOQ	DL
29SB144(11-12)	8321A	2,4,6-Trinitrotoluene	0.022	mg/Kg	J	0.098	0.005
29SB144(15-16)	8321A	2,4,6-Trinitrotoluene	0.018	mg/Kg	J	0.1	0.005
29SB148(3-4)	8321A	2,4,6-Trinitrotoluene	0.02	mg/Kg	J	0.097	0.0049
29SB148(11-12)	8321A	2,4,6-Trinitrotoluene	0.022	mg/Kg	J	0.095	0.0048

MicroBac Original Results								
Analysis Method	parm_syn	Result	Unit	Final Qualifier	LOQ	DL	LOD	RPD
8330B	2,4,6-Trinitrotoluene	<0.194	mg/kg	U	0.389	0.1	0.194	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.208	mg/kg	U	0.416	0.1	0.208	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.195	mg/kg	U	0.39	0.1	0.195	low hit, high ND
8330B	2,4,6-Trinitrotoluene	<0.201	mg/kg	U	0.402	0.1	0.201	low hit, high ND

From: Follin, Brian <Follin.Brian@epa.gov>
Sent: Thursday, February 17, 2022 3:27 PM
To: Foss, William A.; April Palmie
Cc: Williams, Aaron K SWF @SWT; Zeiler, Rose; rose.m.zeiler.ctr@army.mil; Bowlby, Michael A CIV USARMY IMCOM (USA); pbging@usgs.gov; clbraun@usgs.gov; paul_bruckwicki@fws.gov; Montoya, Chelsea R CIV USARMY CESWF (USA); Nieves, Ana C CIV USARMY IMCOM AEC (USA); Sierocinski, Lena J CIV USARMY IMCOM AEC (USA); Kim Nemmers; Zack Beck; Srivastav, Praveen
Subject: RE: Draft Final Seventh Annual RA-O Report - LHAAP-46

EXTERNAL SENDER

I appreciate and accept all of the responses to out comments for the RA-O LHAAP-46 report.

Thank you,

Brian Follin
(214)665-7490

From: Foss, William A. <William.Foss@aptim.com>
Sent: Monday, January 31, 2022 5:16 PM
To: Follin, Brian <Follin.Brian@epa.gov>; April Palmie <april.palmie@tceq.texas.gov>
Cc: Williams, Aaron K SWF @SWT <Aaron.K.Williams@usace.army.mil>; Zeiler, Rose <Rose.Zeiler@calibresys.com>; rose.m.zeiler.ctr@army.mil; Bowlby, Michael A CIV USARMY IMCOM (USA) <michael.a.bowlby.civ@army.mil>; pbging@usgs.gov; clbraun@usgs.gov; paul_bruckwicki@fws.gov; Montoya, Chelsea R CIV USARMY CESWF (USA) <Chelsea.R.Montoya@usace.army.mil>; Nieves, Ana C CIV USARMY IMCOM AEC (USA) <ana.c.nieves2.civ@mail.mil>; Sierocinski, Lena J CIV USARMY IMCOM AEC (USA) <lena.j.sierocinski.civ@mail.mil>; Kim Nemmers <knemmers@bhate.com>; Zack Beck <zbeck@bhate.com>; Srivastav, Praveen <Praveen.Srivastav@aptim.com>
Subject: Draft Final Seventh Annual RA-O Report - LHAAP-46

Brian and April,

The *Draft Final Seventh Annual Remedial Action Operation Report* for LHAAP-46 has been uploaded to the "Documents" folder of the project portal for your review and can be accessed directly via the link provided below. The Draft Final document includes a table with responses to the EPA comments on the Draft report that were received from the USEPA on December 16, 2021. The TCEQ did not have any comments requiring a formal response. The RTC Table and Transmittal Letters are attached to this email for your convenience. In accordance with the Federal Facility Agreement, this Draft Final will be considered Final after 30 days without further comment. Electronic copies of the transmittal letters are included in the report PDF and are attached to this email for your convenience.

January 2022 Draft Final Seventh Annual Remedial Action Operation Report, LHAAP-46 (~38 MB)
January 2022 Draft Final Seventh Annual Remedial Action Operation Report - LHAAP-46

Please let us know if you have any questions or have any difficulty accessing the files. Thanks!

Bill

WILLIAM A. FOSS, PG
Senior Geologist

OUR OFFICE ADDRESS IS CHANGING APRIL 30, 2021
PLEASE USE THE NEW ADDRESS BELOW

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DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

January 31, 2022

DAIN-ODB-LO

Mr. Brian Follin
U.S. Environmental Protection Agency
1201 Elm Street, Suite 500
Dallas, TX 75270-2002

Re: Draft Final Seventh Annual Remedial Action Operation Report, LHAAP-46 (Plant 2 Area), Longhorn Army Ammunition Plant, Karnack, Texas, January 2022

Dear Mr. Follin,

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder at the following address for your review: (https://docs.cbifederalservices.com/sites/501032/regulators/Shared%20Documents/Forms/AllItems.aspx). An electronic copy of this letter and download instructions for the electronic file have been sent via email. The document includes revisions based upon the Environmental Protection Agency's (EPA) comments on the Draft version received on December 16, 2021. The Texas Commission on Environmental Quality did not have any comments requiring a formal response. A table of responses to the EPA comments on the Draft version is included with this Draft Final document. In accordance with Federal Facility Agreement, this Draft Final will be considered Final after 30 days without further comment.

The document was prepared by Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.ctr@mail.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Electronic Copies furnished:
A. Palmie, TCEQ, Austin, TX
P. Bruckwicki, USFWS, Caddo Lake NWR, TX (1 hard copy and 1 CD)
C. Montoya, USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
M. Bowlby, USAEC, San Antonio, TX
K. Nemmers, Bhate, Lakewood, CO
P. Srivastav, APTIM, Houston, TX

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

January 31, 2022

DAIN-ODB-LO

Ms. April Palmie
Texas Commission on Environmental Quality
Superfund Section, MC-136
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Draft Final Seventh Annual Remedial Action Operation Report, LHAAP-46 (Plant 2 Area), Longhorn Army Ammunition Plant, Karnack, Texas, January 2022

Dear Ms. Palmie,

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder at the following address for your review: (https://docs.cbifederalservices.com/sites/501032/regulators/Shared%20Documents/Forms/AllItems.aspx). An electronic copy of this letter and download instructions for the electronic file have been sent via email. The document includes revisions based upon the Environmental Protection Agency's (EPA) comments on the Draft version received on December 16, 2021. The Texas Commission on Environmental Quality did not have any comments requiring a formal response. A table of responses to the EPA comments on the Draft version is included with this Draft Final document. In accordance with Federal Facility Agreement, this Draft Final will be considered Final after 30 days without further comment.

The document was prepared by Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.ctr@mail.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Electronic Copies furnished:
B. Follin, USEPA Region 6, Dallas, TX
P. Bruckwicki, USFWS, Caddo Lake NWR, TX (1 hard copy and 1 CD)
C. Montoya, USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
M. Bowlby, USAEC, San Antonio, TX
K. Nemmers, Bhate, Lakewood, CO
P. Srivastav, APTIM, Houston, TX

Response to Comments on
Seventh Annual Remedial Action Operation Report
LHAAP-46 (Plant 2 Area)
Longhorn Army Ammunition Plant, Karnack, Texas

Document Date: 22 October 2021
Comment Date: 16 December 2021

Reviewer: Brian Follin, USEPA
Respondent: Dr. Rose Zeiler

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X)
2. Commenter Agrees (A) with response, or Does Not Agree (D) with response

Comment Ref. #	Section, Page Ref.	USEPA Comment	C, D, E, or X	Response	A or D[2]
1.	Figure 2-1	Figure 2-1 has 23 sites with blue halos and section 1.2 indicates: 12 shallow, 9 intermediate, 1 deep = 22 wells plus one well was considered shallow/intermediate which would be a total of 23 wells. But section 2.2 indicates 24 wells. Should that really say 23 wells?	C	A total of 24 wells were sampled or gauged. Figure 2-1 will be revised to include a blue halo around 46WW14. Section 1.2 will be revised to include 10 intermediate wells sampled and to include 24 wells as the total number of wells sampled or gauged. The last paragraph in Section 1.2 will be revised to the following: "Groundwater monitoring completed as part of the Year 7 RA-O consisted of groundwater sampling at 12 shallow zone wells, 10 intermediate zone, 1 shallow/intermediate zone well, and 1 deep zone well. Of these 24 monitoring wells, eleven wells were dry such that no samples were collected for laboratory analysis. This report summarizes the LUC compliance inspection, monitoring well inspection, and results of groundwater and surface water sampling."	

2.	Figure 2-5	Figure 2-5 actually shows 10 wells that were sampled in the intermediate zone. So, this would bring the total to 24 wells. If this is correct, you need to indicate 10 intermediate wells. And there should be a blue halo around 46WW14 on figure 2-1.	C	See response to Comment #1. Figure 2-1 and Section 1.2 will be revised as noted above.	
3.	Section 2.2.1.1	Section 2.2.1.1 lists 11 wells that were dry, but figure 2-2 shows 9 wells that were dry. LHSMW20 and LHSMW24 are not shown on figure 2-2. I would include those 2 sites on figure and indicate dry like others.	C	Figure 2-2 will be revised as suggested to show LHSMW20 and LHSMW24 as dry.	
4.	Figure 2-2	It seems unusual that flow directions differ so widely between shallow and intermediate zones within what is presumably the same aquifer. One contributing factor could be that the potentiometric map that dictates flow direction in the shallow zone is defined by only 4 measurements. In the image shown below which is a modified version of Figure 2-2, information from Table 2-3 was used to inform what water levels in the dry wells cannot exceed (the values shown are conservative and could be lower depending on the distance between the bases of the screens and the total depths in each of the "dry" wells); this process was used to inform the delineation of potentiometric surface contours in the shallow zone in August 2019 (Figure 2-3 of the Fifth Annual RA-O Report for LHAAP-46 - also shown below), which resulted in delineation of potentiometric contours that dictated flow in a due easterly direction rather than a southeasterly direction as shown in Figure 2-2.	C	Figure 2-2 will be revised as suggested to use the "dry" elevations as maximum potential elevations for each location to inform the contours drawn. The portions of the contours drawn using the "dry" elevations will be shown as dashed to reflect the uncertainty. There will still be a southeasterly flow direction shown towards the northern end of the site, but it is likely that the lack of locations with measurable groundwater and likely connections between the shallow and intermediate zones (see response to Comment #5) overemphasize the southeasterly component. It should be noted that while there are four groundwater elevations shown on the figure, the 46WW17 elevation is likely to be representative of the intermediate zone potentiometric surface and was not used in the drawing of the contours for the shallow zone.	

5.	Figure 2-2	It also seems unusual that the water levels in "shallow wells" 46WW13 (<177.46) and 46WW15 (<177.01) agree more closely with water levels in nearby intermediate wells (46WW02 and LHSM23R) than they do with nearby shallow wells (LHSMW17 and 46WW01). It may be that 46WW13 and 46WW15 are in communication with both the shallow and intermediate zones.	C	Concur. There are several locations at LHAAP-46 where the boring logs and groundwater elevations suggest that there may be some level of connection between the shallow and intermediate zones. The localized flow directions in the shallow zone may be influenced by these connections. As noted in the response to Comment #4, the shallow zone flow direction is only tied to 3 groundwater elevation measurements.	

Note: TCEQ accepted the report without comments requiring a formal response in an email dated December 14, 2021.

Draft Final
Seventh Annual Remedial Action Operation Report, LHAAP-46 (Plant 2 Area)

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Acronyms and Abbreviations

µg/L	micrograms per liter
amsl	above mean sea level
AECOM	AECOM Technical Services, Inc.
bgs	below ground surface
Bhate	Bhate Environmental Associates, Inc.
COCs	contaminant(s) of concern
DCE	dichloroethene
DO	dissolved oxygen
LHAAP	Longhorn Army Ammunition Plant
LUC	land use control
MCL	maximum contaminant level
mg/L	milligram(s) per liter
MNA	monitored natural attenuation
mV	millivolts
ORP	oxidation-reduction potential
RA-O	remedial action operation
RACR	Remedial Action Completion Report
RD	Remedial Design
Shaw	Shaw Environmental, Inc.
TCE	trichloroethene
TNT	trinitrotoluene
TOC	total organic carbon
U.S.	United States
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VC	vinyl chloride
VOC	volatile organic compound

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1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Tulsa District, contracted with Bhate Environmental Associates, Inc. (Bhate) under the Omaha Multiple Environmental Government Acquisition National Small Business Multiple Award Task Order Contract, Environmental Remediation Services with Military Munitions Response Program, Task Order No. W9128BV17F0150, to conduct environmental restoration at multiple sites at the former Longhorn Army Ammunition Plant (LHAAP). The Bhate Team consists of Bhate and Aptim Federal Services, LLC.

LHAAP is located in east Texas, in the northeastern corner of Harrison County between State Highway 43 in Karnack, Texas, and the western shore of Caddo Lake, as shown on **Figure 1-1**. The nearest cities are Marshall, Texas, approximately 14 miles to the southwest, and Shreveport, Louisiana, approximately 40 miles to the east. Caddo Lake is a large freshwater lake that bounds LHAAP to the north and east. The eastern fence of the LHAAP installation is 3.5 miles from the Texas-Louisiana state border.

LHAAP was established in December 1941 with the primary mission of manufacturing trinitrotoluene (TNT). Production of TNT began at Plant 1 in October 1942 through 1945, then Plant 1 was placed on standby status until February 1952. In 1952, the facility was reactivated, and production of pyrotechnic ammunition, such as photoflash bombs, simulators, hand signals, and tracers for 40-millimeter ammunition, continued at Plant 2, northeast of Plant 1, through 1956. In December 1954, a third facility, Plant 3, began production of solid-fuel rocket motors for tactical missiles until 1965, when Plant 2 was reactivated for the production of pyrotechnic and illuminating ammunition. In the years following the Vietnam conflict, LHAAP continued to produce flares and other basic pyrotechnic or illuminating items for the U.S. Department of Defense inventory. From September 1988 to May 1991, LHAAP was also used for the static firing and elimination of Pershing I and II rocket motors.

Remedial action operation (RA-O) activities are required at LHAAP-46 under the Record of Decision issued for the site in September 2010 (USACE 2010). The Remedial Action Completion Report (RACR) (AECOM 2015) outlined the implementation of RA-O to address risks associated with contaminated groundwater at the LHAAP-46 site. The RACR was developed using the basis and details of the Remedial Design (RD) (Shaw 2011) and the Remedial Action Work Plan for LHAAP-46 (AECOM 2013).

Groundwater monitoring at LHAAP-46 is ongoing, as described in the RACR. This report represents the seventh year of RA-O implementation and summarizes the results of site inspections and sampling activities. RA-O groundwater sampling performed at LHAAP-46

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between May 2013 and March 2021 has determined that 8 of the 12 shallow wells have been dry during nearly every sampling event. Due to contractual reasons, sampling was not performed in 2017. Five of the dry shallow monitoring wells are located within the historical trichloroethene (TCE) plume area or to the east (downgradient) of the current shallow zone TCE plume areas. The inability to sample these shallow wells in key locations has prevented the full evaluation of the plume extent and the progress of the monitored natural attenuation (MNA) remedy at the site (AECOM 2017). A *Final Technical Memorandum – Remedial-Action Operation Monitoring at LHAAP-46* was submitted in March 2018 (Bhate 2018a), which concluded that the groundwater elevations declining in the area of LHAAP-46 were not likely to be a temporary rain-dependent issue but were part of a long-term trend of declining groundwater elevations. The memorandum recommended that MNA evaluation at LHAAP-46 should proceed without waiting for data from the dry wells, and the regulators concurred with the recommendation. The annual RA-O sampling event typically conducted in February of each year was conducted in March 2021 due to the extreme freeze event that occurred in mid-February 2021. An evaluation of the MNA remedy is included in **Section 3.0** of this Seventh Annual RA-O Report.

1.1 Remedial Action Objectives

The remedial action objectives for the LHAAP-46 site are to protect human health and meet applicable or relevant and appropriate requirements. There are no unacceptable ecological risks posed by the LHAAP-46 site (USACE 2010). The remedial action objectives for LHAAP-46, consistent with the reasonably anticipated future use of the site as a national wildlife refuge, are:

- Protection of human health by preventing human exposure to the contaminated groundwater.
- Protection of human health and the environment by preventing contaminated groundwater from migrating into nearby surface water.
- Returning groundwater to its potential beneficial use as a drinking water source, wherever practicable.

1.2 Performance Objectives

The remedy selected for LHAAP-46 is land use controls (LUC) and MNA. The performance objectives at LHAAP-46 consist of two components: physical inspections and groundwater/surface water monitoring. As a component of the LUC implementation, the civil survey of the LUC boundary was conducted in November 2014 and recorded in the Harrison County Courthouse in December 2014. Physical inspections are conducted annually to confirm compliance with the LUC objectives, which consist of preventing human exposure to

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groundwater contamination at levels that pose an unacceptable risk to a future maintenance worker and ensuring that there is no withdrawal or use of groundwater from the site for anything other than environmental monitoring and testing until the maximum contaminant levels (MCL) are attained. Groundwater monitoring of the remedy has been conducted at the site since May 2013, and LHAAP-46 is included in the facility-wide Longhorn Five-Year Review. Groundwater and surface water monitoring are being performed to:

- Detect changes in environmental conditions that may reduce the efficacy of natural attenuation processes.
- Identify potentially toxic and/or mobile transformation products.
- Verify that the plume is not expanding.
- Verify no unacceptable impact to downgradient receptors, such as discharge to surface water.
- Detect new releases of contaminants to the environment that could impact effectiveness of the natural attenuation remedy.
- Verify attainment of the remediation objectives.

LHAAP-46 RA-O monitoring began in 2013. Monitoring during the first two years was performed on a quarterly basis and documented in annual reports (AECOM 2016a, 2016b). In accordance with the RD (Shaw 2011), the Year 3 (AECOM 2017), Year 4 (Bhate 2019a), and Year 5 (Bhate 2020) RA-O monitoring events were conducted semiannually, the Year 6 RA-O (Bhate 2021a) was conducted on an annual basis, and the Year 7 RA-O monitoring period is the second event where the monitoring was conducted annually.

Groundwater monitoring completed as part of the Year 7 RA-O consisted of groundwater sampling at 12 shallow zone wells, 10 intermediate zone, one shallow/intermediate zone well, and one deep zone well. Of these 24 monitoring wells, eleven wells were dry such that no samples were collected for laboratory analysis. This report summarizes the LUC compliance inspection, monitoring well inspection, and results of groundwater and surface water sampling.

1.3 Site Description

Site LHAAP-46 (Plant 2 Area) is located in the north-central portion of LHAAP, in a formerly industrial area where pyrotechnic and illumination devices were produced until 1997 (**Figure 1-2**). LHAAP-46 occupies approximately 190 acres within a triangular area bounded by Avenue P to the southwest, the LHAAP property boundary fence to the north, and site LHAAP-47 to the southeast. The surface features at LHAAP-46 include asphalt paved roads, parking areas, building foundation remnants, abandoned buildings, areas that are wooded, and

overgrown grasses and other vegetation. The topography is relatively flat, sloping slightly to the east, with the surface water drainage flowing to the east into tributaries of Goose Prairie Creek, which eventually discharges into Caddo Lake. LHAAP-46 has no known areas of archaeological or historical importance.

1.4 Conceptual Site Model

A detailed Conceptual Site Model for LHAAP-46 was previously developed and is presented in the Record of Decision (USACE 2010). Based on additional data collected as part of final remedy implementation and presented in the LHAAP-46 Draft Final RACR (AECOM 2015), the lithologic units at the site have been characterized. Three water-bearing zones, identified as the shallow, intermediate, and deep zones, are present beneath LHAAP-46. The shallow groundwater zone is encountered at approximately 10 to 28 feet below ground surface (bgs) and extends to approximately 30 feet beneath LHAAP-46. The lithology of the shallow zone consists mostly of clay, with relatively thin discontinuous sand layers. Groundwater tends to occur preferentially in the more permeable thin sand layers. The shallow groundwater zone is typically unconfined.

The intermediate groundwater zone is generally sandier than the shallow groundwater zone. A relatively thick sand layer was identified in the intermediate groundwater zone in three of the five monitoring wells installed during remedy implementation, but it was not present in the boreholes for monitoring wells 46WW08 and 46WW16, in the northern part of the site. Clay that overlies the sand acts as a leaky aquitard to the shallow groundwater zone. At 46WW17, the uppermost sandy layers appeared deeper than the other nearby shallow zone wells and there was no obvious aquitard separating the shallow zone from the intermediate zone. The well was installed in the uppermost observed saturated zone at a depth that straddles the depths typically seen for shallow and intermediate zone wells at the site, and the groundwater elevation is consistent with other nearby intermediate zone wells. 46WW17 is referred to as a shallow/intermediate zone well due to the position of the well screen and the lack of a confining layer to separate the two zones, and the groundwater elevations are used only in the development of potentiometric surface contours for the intermediate zone.

The difference in groundwater elevations seen in shallow and intermediate groundwater zone wells supports some degree of hydraulic separation of those zones, although contaminants of concern (COCs) in the shallow groundwater zone are also present in groundwater in the intermediate zone. Depth to groundwater was observed to range from approximately 19 to 37 feet bgs in the intermediate zone wells. The sand interval representing the intermediate zone is at a depth between 36 and 43 feet bgs.

Only one groundwater monitoring well, 46WW03, is completed in the deep groundwater zone. Based on previous investigations, the deep groundwater-bearing zone consists primarily of

clay, with occasional fine sand and silt layers. However, a thick, fine-grained sand bed occurs approximately 88 feet bgs and extends to approximately 101.5 feet bgs. The upper surface of the sand is gradational, with an increase in the proportion of sand beginning at about 80 feet bgs.

The basal contact of the deep zone sand unit with the underlying shale and clay units is sharp. Monitoring well 46WW03 is screened in this deep sand bed between 90 and 100 feet bgs. The clayey section above the deep sand layer is interpreted as an aquitard separating the intermediate groundwater zone from the deep groundwater zone. A very hard layer identified at 82 feet bgs may represent the upper boundary of the deep groundwater zone where possible mineralization (cementation) has occurred. Based on the depth to groundwater in well 46WW03, it appears that the water-bearing sand in the deep zone is under confined to semiconfined conditions. Communication between the intermediate groundwater zone and the deep groundwater zone is limited based on the difference in groundwater elevations in collocated wells 46WW02 and 46WW03, which was 3.0 feet or greater during the second, third, and fourth year RA-O periods. During the fifth, sixth, and seventh year RA-Os, the difference in elevation was slightly lower, averaging 2.7 feet, but still indicating a lack of hydraulic communication between the intermediate and deep zones in this area. Additionally, the groundwater analytical results corroborate the lack of communication between the intermediate and deep zones, as the COCs in the intermediate zone at 46WW02 have not migrated downward in the vicinity of deep well 46WW03.

Groundwater elevations in shallow and intermediate wells at the site have been declining since at least the year 2000, as documented in the *Final Technical Memorandum – Remedial Action Operation Monitoring at LHAAP-46* (Bhate 2018a). The average decline in wells evaluated in the memorandum has been greater than 10 feet since 2000, and several of the wells at the site have run dry and have remained that way in most cases even after large rainfall events, as documented in previous RA-O reports. The conclusion of the memorandum was that the decline in groundwater elevations was not attributable to changes in rainfall. The groundwater elevations measured in February 2021 were generally slightly higher than those measured in 2020 but did not result in measurable water in any previously dry shallow wells.

The groundwater COCs in the shallow and intermediate zones at LHAAP-46 are TCE and its daughter products cis-1,2-dichloroethene (DCE) and vinyl chloride (VC). Human health risks associated with these COCs are the primary driver for remedial action, as the site poses no unacceptable ecological risks (USACE 2010). Previous investigations conducted at the Plant 2 Area between 1991 and 2008 determined the nature and extent of contamination in the soil, groundwater, surface water, and sediments at LHAAP-46. The most likely sources of contamination were spills resulting from a variety of support services that occurred in the area (USACE 2009, 2010). The spills resulted in soil contamination, and the COCs released to the

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surface soil subsequently migrated through leaching to the groundwater. The previous investigations and the risk assessments concluded that the soil, sediment, and surface water at LHAAP-46 do not pose a risk to the environment or to human health under an industrial exposure scenario for a future maintenance worker (USACE 2010).

The nearest significant surface water body to LHAAP-46 is Goose Prairie Creek, which is located approximately 1,500 feet east of the site (**Figure 1-2**). Minor drainages located north of the site and within the south-central portion of the site feed into Goose Prairie Creek. The potential exposure pathways are groundwater used as drinking water and migration of impacted groundwater into surface water. Shallow groundwater is not used as drinking water at the refuge, and this potential exposure pathway has been eliminated for any hypothetical future receptors because LUCs are in place that prohibit the use of groundwater for any purpose other than for environmental monitoring and testing.

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2.0 SITE ACTIVITIES AT LHAAP-46

This chapter describes the results of the seventh annual RA-O activities, including the annual LUC compliance inspection, annual groundwater monitoring, and monitoring system repairs and/or maintenance performed at LHAAP-46.

2.1 Annual Land Use Control Compliance Inspection, Well Maintenance, and Repairs

2.1.1 Annual Land Use Control Compliance Inspection

The annual LUC compliance inspection for LHAAP-46 was performed on May 26, 2021, and no LUC violations were identified. The LUC for LHAAP-46 is groundwater restriction. Groundwater use at LHAAP-46 is restricted to environmental monitoring and testing until levels of COCs in groundwater and soil allow unrestricted use and unlimited exposure. The restriction applies to groundwater underlying a 63.772-acre tract defined by the surveyed LUC boundary (AECOM 2015). The Annual LUC Compliance Certification Documentation Form for the seventh annual RA-O period is included in **Appendix A**.

2.1.2 Well Field Operation and Maintenance

Inspections of the conditions/integrity of monitoring wells were conducted during the sampling event, and the information was recorded on the field sampling forms. **Table 2-1** provides a summary of the maintenance activities that were performed at the site during the seventh annual RA-O period. **Appendix B** includes a photographic log, which shows the condition of the wells during this period. During the seventh annual reporting period, no noncompliance issues or concerns were noted during the annual inspection. No damage to well bollards, pads, or protective well casings was observed. Mowing the area to control brush and weeds was conducted at LHAAP-46 on March 11, 2021. According to the well inspection forms and photographs in Appendix B, monitoring wells LHSMW18, LHSMW21, and LHSMW25 need to be repainted. They will be repainted prior to the Year 8 RAO sampling event in February 2022. Measured total depths in monitoring wells 46WW05 and 46WW17 indicated that both wells may have slightly more than 10% of the screened interval blocked by silt accumulation in the well. The wells will be redeveloped prior to the February 2022 Year 8 sampling event to reduce the siltation.

2.2 Annual Groundwater Monitoring

LHAAP-46 seventh year RA-O monitoring wells are depicted on **Figure 2-1**. During the March 2021 sampling event, 9 of the 24 wells were dry or had insufficient water for a sample to be collected, as shown in **Table 2-2**. Before attempting to collect groundwater samples, the

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wells were gauged using a water level probe, and the depth to water (or bottom of the well) was recorded to the nearest 0.01 foot from the top of casing.

Groundwater samples were collected using the low-flow sampling procedures described in the Installation-Wide Work Plan (Bhate 2018b). The low-flow method is utilized to minimize the turbidity in the groundwater samples. After water quality parameters stabilized and were within acceptable ranges, samples were collected at the same low flow rate. All groundwater samples were analyzed for volatile organic compounds (VOCs) according to SW-846 Method 8260b. Samples from a subset of wells were also analyzed for MNA parameters, as further discussed in **Section 3.0**. Laboratory analytical data packages are provided in **Appendix C**. Sample collection field forms are provided in **Appendix D**. The MNA parameter list was revised in accordance with the *Final Technical Memorandum – Monitored Natural Attenuation Parameters* (Bhate 2019b). As a result, phosphorus, manganese, total iron, and dissolved iron (laboratory) were not analyzed for in the sampling events covered by this report and will not be analyzed for in future events.

2.2.1 Groundwater Elevations and Flow Direction

Synoptic water level measurements were attempted at 26 wells in March 2021. Eleven of the wells were dry in March 2021 and could not be gauged. Groundwater elevations are summarized in **Table 2-3**. In accordance with the recommendations in the Fourth Annual RA-O Report (Bhate 2019a), the off-schedule attempts to gauge and sample wells that were dry during the semiannual sampling events were discontinued. As approved in the Fifth Annual RA-O Report (finalized after the February 2020 annual sampling event), groundwater elevations were measured in the following wells to gather additional information regarding the potentiometric surface and the extent of dry conditions in the shallow aquifer, beginning with the March 2021 event: 46WW15, LHSMW20, and LHSMW24. All three wells were dry in March 2021.

2.2.1.1 Shallow Groundwater Zone

During the March 2021 monitoring event, shallow wells 46WW01, 46WW04, 46WW10, 46WW12, 46WW13, 46WW15, LHSMW17, LHSMW18, LHSMW20, LHSMW22, and LHSMW24 were dry. Only wells 46WW11, LHSMW19, and LHSMW21 could be gauged for groundwater in the shallow zone. **Figure 2-2** represents the groundwater potentiometric surface for the shallow groundwater zone, as interpreted during the March 2021 monitoring event. Based on the gauging data collected during the March 2021 event, the groundwater flow was generally to the southeast; however, from historical water levels, including currently dry wells, the groundwater flow direction has generally been to the east.

The groundwater elevations at 46WW11, LHSMW19, and LHSMW21 have been relatively consistent over the years and have generally not changed more than one to two feet from one

event to the next between 2013 and 2021. Although the shallow potentiometric surface is represented by only three data points, the interpretation of shallow groundwater flow direction to the southeast is consistent with what was presented previously in the RD document and the previous years of RA-O sampling.

2.2.1.2 Intermediate Groundwater Zone

Water was present in each of the intermediate zone wells gauged during the March 2021 gauging event. **Figure 2-3** presents the groundwater potentiometric surface. The groundwater elevation in 46WW08 was not used in developing the contour maps because the groundwater elevation appears to be anomalously high relative to other intermediate zone wells as observed in previous years. The groundwater elevation in 46WW08 continues to be similar to the shallow zone elevation, and it is possible that there is leakage from the shallow zone in this area of the site such that the well reflects shallow zone conditions. The groundwater flow direction in the intermediate groundwater zone interpreted from the March 2021 data is generally to the north, consistent with the flow direction presented in previous RA-O reports.

2.2.1.3 Deep Groundwater Zone

Well 46WW03 is the only well screened in the deep groundwater zone, and therefore, a potentiometric surface map for the deep zone was not constructed.

2.2.1.4 Vertical Gradients

For the shallow and intermediate zones, well pair 46WW04/46WW06 has been used in the past to evaluate the vertical gradient. For the intermediate and deep zones, well pair 46WW02/46WW03 has been used to evaluate the vertical gradient. During the seventh year RA-O sampling events, shallow well 46WW04 was dry in March 2021; therefore, a gradient could not be determined in the vicinity of the 46WW04/46WW06 well pair.

Shallow to Intermediate Zone. For the most recent monitoring event when water was present in both wells (August 2016), the groundwater elevation difference between 46WW04 and 46WW06 was 16.74 feet with a downward vertical gradient, indicating that there is significant hydraulic separation between the shallow and intermediate zones in this area of the site.

The perpendicular direction of horizontal groundwater gradients between the shallow and intermediate zones also indicates that these zones are discrete water-bearing units. However, as discussed in **Section 1.4**, the clay that overlies the intermediate zone sand may act as a leaky aquitard to the shallow groundwater zone, allowing groundwater to slowly move vertically between the zones in some areas of the site. The absence of a distinct confining layer in recently installed well 46WW17 supports this interpretation.

Intermediate to Deep Zone. A similar evaluation was conducted between collocated intermediate and deep zone wells 46WW02 and 46WW03 in March 2021. The groundwater elevations in March 2021 were 173.64 feet above mean sea level (amsl) in the intermediate well (46WW02) and 170.97 feet amsl in the deep well (46WW03), indicating a difference of 2.67 feet between these two zones with a downward vertical gradient. The low vertical gradient indicates that there is still hydraulic separation between these two units, but the layer between the zones may be more permeable than the layer between the shallow and intermediate zones.

2.2.2 Groundwater Analytical Results

VOC and MNA parameter analytical results and field parameter measurements for the 2021 annual samples are presented in **Table 2-4**. **Table 2-5** provides historical results for LHAAP-46 COCs. Laboratory reports are provided in **Appendix C**. During the seventh year RA-O monitoring events, TCE was detected at concentrations above the MCL (5 micrograms per liter [µg/L]) in five of the sampled monitoring wells (46WW02, 46WW05, 46WW11, LHSMW19, and LHSMW21). The COCs, cis-1,2-DCE and VC, were detected in one well (LHSMW21) at concentrations above their respective MCLs.

Figure 2-4 depicts the shallow zone COC results for wells sampled during the seventh year RA-O sampling events. TCE was detected above the MCL in three of four of the shallow or shallow/intermediate wells where a sufficient amount of water was present to collect a sample. At 46WW11, TCE increased slightly from 14 µg/L in February 2020 to 19 µg/L in March 2021. TCE concentrations at LHSMW19 decreased back to 13 µg/L in March 2021, matching the August 2019 level after having increased to 19 µg/L in February 2020. The March 2021 analytical results from LHSMW21 indicated a TCE concentration of 33 µg/L, slightly lower than the 36 µg/L detected in 2020. The cis-1,2-DCE concentration decreased from 170 µg/L in 2020 to 130 µg/L in 2021; while VC increased from 2.4 µg/L in February 2020 to 3.7 µg/L in March 2021. The decreases in TCE and DCE concentrations with a continued increase in VC may suggest that biological degradation is occurring in this area.

Figure 2-5 depicts the intermediate zone COC data for wells sampled in March 2021. TCE continued to be detected above the MCL in only two intermediate wells (46WW02 and 46WW05) in 2021. At 46WW02, the TCE increased from 15 µg/L in February 2020 to 25 µg/L in March 2021. At 46WW05, TCE increased slightly from 19 µg/L in February 2020 to 20 µg/L in March 2021. No COCs were detected above the laboratory reporting limits in new shallow/intermediate well 46WW17.

No COCs were detected above the laboratory reporting limits in the deep zone well 46WW03.

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2.3 Surface Water Sampling

Figure 2-1 shows the surface water location associated with site LHAAP-46. Surface water sample location 46SW10 is located in a tributary to Goose Prairie Creek. The location is downgradient of the intermediate zone groundwater plume but cross gradient from the shallow zone groundwater plume.

To determine if groundwater can potentially influence surface water, groundwater elevations are compared to the elevation at the bottom of the creek. The elevation of the bottom of the creek at surface water sampling location 46SW10 is 197.27 feet amsl. LHSMW21 is the nearest shallow zone well to the surface water sampling location. The groundwater elevation was gauged in March 2021, during the seventh year RA-O sampling period. At LHSMW21, the groundwater elevation in March 2021 was 189.14 feet amsl, which was below the bottom of the creek. Groundwater was not discharging to the creek; therefore, a surface water sample was not collected.

2.4 Groundwater Monitoring Network

As approved in the Sixth Annual RA-O Report (Bhate 2021a), the recently installed well, 46WW17, was added to the sampling network beginning with the Year 7 annual sampling in March 2021. No changes to the groundwater monitoring network are planned for Year 8 (**Figure 2-6)**.

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3.0 NATURAL ATTENUATION EVALUATION

This section presents the results of the natural attenuation evaluation for LHAAP-46 groundwater COCs as described in the Final RD (Shaw 2011). Samples were collected in March 2021 from 15 of the 24 wells planned for the annual sampling event, including a sample from the recently installed shallow groundwater monitoring well 46WW17. Field parameters were recorded during the sampling of each of these wells. In addition, samples from two shallow zone wells and four intermediate zone wells were analyzed for additional parameters used to evaluate MNA. The analytical results are summarized in **Table 2-4**. The three lines of evidence to evaluate MNA are presented in **Sections 3.1** through **3.3**.

3.1 First Line of Evidence: Change in COC Concentrations

Natural attenuation is the combination of multiple mechanisms, including biodegradation, volatilization, dilution, advection, and absorption that reduce contaminant concentrations. The first line of evidence evaluates the decrease in COC concentrations over time and distance. As with previous RA-O events at LHAAP-46, the inability to sample many of the shallow wells due to dry conditions hinders a full evaluation of MNA at the site. However, evaluation of the groundwater elevation trends indicated that the declining elevations were not related to lack of rainfall, and a rebound of the elevations has not occurred despite abundant rainfall for the last several years, including during the winter of 2020/2021. COC concentrations for the seventh year of RA-O sampling events are provided on **Figures 2-4** and **2-5** as well as in **Tables 2-4** and **2-5**.

During the seventh annual RA-O sampling, TCE was detected at concentrations above the MCL of 5 µg/L in three shallow (46WW11, LHSMW19, and LHSMW21) and two intermediate (46WW02 and 46WW05) monitoring wells. At LHSMW21, the TCE degradation daughter products, cis-1,2-DCE and VC, were observed above their respective MCLs, suggesting that biological degradation may be occurring in the groundwater near this well.

Mann-Kendall analysis for the seventh annual RA-O monitoring period was completed for TCE. The results are presented in **Appendix E** in graphical format, with statistical results presented on the bottom of the page. The GSI Mann-Kendall Tool Kit was used for this analysis. The concentrations of COCs are presented in µg/L. Half the reporting limit was used for nondetect results. For duplicate samples, the primary sample result was used. The level of significance is calculated for each analysis and provided on the trend analysis sheet. A summary table of the Mann-Kendall results is provided in **Table 3-1**. Historical COC results for all wells are presented in **Table 2-5**.

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3.1.1 Shallow Zone

In March 2021, three shallow wells had a sufficient amount of water to collect samples. Analytical results from two wells, 46WW11 and LHSMW19, indicated TCE concentrations above the MCL of 5 µg/L. The analytical results from the third well, LHSMW21, indicated the presence of TCE, cis-1,2-DCE, and VC at concentrations above their respective MCLs. At the new downgradient well, 47WW17, which screens a combined shallow/intermediate zone, no COCs were observed above their detection limits. Monitoring well 46WW17, located to the northeast of LHSMW21, straddles the shallow and intermediate zone intervals based on screened elevation, but the groundwater elevation is likely to be representative of intermediate zone saturation. While the lack of shallow zone saturation detected during the drilling of 46WW17 currently delineates the northeastern plume boundary, installation of an additional well only in the shallow zone (based on screened elevation) may be advisable in the future to confirm the absence of shallow zone saturation and/or contamination to the northeast of LHSMW19.

Well 46WW11

VOC groundwater results since August 2013 are available for this well (**Table 2-5**). TCE concentrations in this well have decreased over time from a high of 90.6 µg/L in July 2014 to 14 µg/L in February 2020 but increased slightly to 19 µg/L in March 2021 (**Figure 3-1)**. Since 2015, cis-1,2-DCE and VC have remained below the laboratory reporting limit of 1.0 µg/L. The Mann-Kendall trend analysis in 46WW11 indicates a statistically significant decrease in TCE concentrations over time with a confidence factor greater than 99.9 percent.

Figure 3-1 shows a graph of TCE concentration and groundwater elevation versus time in 46WW11. The historical decrease in TCE concentrations and the lack of cis-1,2-DCE and VC indicates abiotic processes are likely to be the primary mechanism for the decrease in COCs rather than anaerobic biodegradation of TCE.

Well LHSMW19

VOC groundwater results since December 1994 are available (**Table 2-5**). TCE levels in this well increased from 26 µg/L in December 1994 to a high of 85.5 µg/L in February 2007. Since 2007, TCE levels have decreased to a low of 2.4 µg/L in February 2018 before rebounding to 19 µg/L in February 2020 then declining to 13 µg/L in March 2021 (**Figure 3-1**). The TCE degradation product cis-1,2-DCE fluctuated over the years at low levels and was not detected in February 2018 but has since risen to the highest concentration detected in this well in February 2020 (5.6 µg/L) and declined back to 3.9 µg/L in March 2021, still well below the MCL of 70 µg/L. VC has remained below laboratory reporting limits of 1.0 µg/L since 1994. Even with the slight rebound in TCE concentrations, the Mann-Kendall trend analysis of the

analytical data for monitoring well LHSMW19 indicates a statistically significant decrease in TCE concentrations over time with a confidence factor of 99.9 percent.

Figure 3-1 includes a graph of TCE concentrations and groundwater elevations over time in LHSMW19. The decrease in TCE concentrations over time and the presence of cis-1,2-DCE during the seventh year RA-O period, although below the MCL, indicate limited biodegradation is likely occurring; however, other MNA processes, including dilution and dispersion, may be the primary mechanisms for the decrease in COCs.

Well LHSMW21

VOC groundwater results are available for this well since February 1996 (**Table 2-4**). The TCE concentrations in this well have increased over time, from below the detection limit of 1 µg/L in 1998 and below the MCL of 5 µg/L in 2013 to 36 µg/L in February 2020, before declining slightly to 33 µg/L in March 2021 (**Figure 3-1**). Since 1996, cis-1,2-DCE has also increased from below the detection limit in 1998 and below the MCL in 2013 to 170 µg/L in February 2020 but has declined to 130 µg/L in March 2021. VC has continued to slowly increase recently and was detected at 3.7 µg/L, above the MCL of 2.0 µg/L, during the Year 7 RA-O sampling event. The Mann-Kendall trend analysis in LHSMW21 for TCE, cis-1,2-DCE, and VC indicates a statistically significant increasing trend with a confidence factor greater than 98 percent for each COC as shown in **Table 3-1** and **Appendix E**.

Figure 3-1 shows a graph of TCE, cis-1,2-DCE, and VC concentrations along with groundwater elevation versus time at LHSMW21. The presence of cis-1,2-DCE and VC during the seventh year RA-O period indicates biodegradation is likely occurring. Also, the increases in concentrations at LHSMW21 likely indicate plume expansion or migration to the northeast and will continue to be evaluated. Monitoring 46WW17, located to the northeast of LHSMW21, currently bounds the plume in this direction based on the lack of observed shallow saturation and the lack of a confining layer underlying the shallow permeable strata. However, it may be advisable to install a well screened only in the shallow permeable strata at a depth comparable to LHSMW21 in the future to confirm the absence of saturation and/or contamination downgradient of LHSMW21.

Other Shallow Zone Wells

Historically, COCs have been below their respective MCLs at the other shallow zone wells, except for 46WW01 and LHSMW18. During the third year RA-O period, groundwater was present at 46WW01 and LHSMW18, and COCs concentrations were below their respective MCLs for each of these wells. There has been insufficient water present in both of these wells for sampling since the third year RA-O period.

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Shallow Zone COCs and Distance

Based on the direction of groundwater flow, which is generally to the east or east-southeast based on limited potentiometric data in the shallow zone, monitoring well 46WW10 was considered a background well for the shallow zone; however, it has been dry since 2018. During the sixth annual sampling event, LHSMW19 was used as the most upgradient well in the shallow zone. TCE at LHSMW19 has fluctuated and was below the MCL for the first time in February 2018 before rebounding to current levels. Monitoring wells downgradient of LHSMW19 and 46WW11 were dry in 2018, although monitoring well LHSMW21, which is downgradient and cross gradient of these wells based on the historical flow direction, did have sufficient water for sampling. Based on the concentrations of COCs present in well LHSMW21 above MCLs, it appears concentrations were increasing away from the historical center of the contaminant plume and that there may be a northward component to the plume migration or expansion that is not visible in the potentiometric surface contours due to the limited groundwater elevation data available. Monitoring well 46WW17 was installed in July 2020 and is located to the northeast of LHSMW21. This well is considered a shallow/intermediate well. Concentrations of COCs in 46WW17 are below their detection limits and currently define the northeastern edge of the shallow plume near LHSMW21.

3.1.2 Intermediate Zone

Groundwater samples were collected from nine wells in the intermediate zone during the seventh year RA-O. Two wells, 46WW02 and 46WW05, had TCE above the MCL and are the focus of this section.

Well 46WW02

At 46WW02, COCs have been observed above the MCLs since November 1998 (**Table 2-4**), and TCE was detected above the MCL during the seventh year RA-O monitoring period. The TCE concentrations in this well have been decreasing since November 2014, from 38.2 µg/L to 15 µg/L in February 2020 before increasing to 25 µg/L in March 2021. The TCE concentration detected during the sixth year RA-O was the lowest observed to date. During the RA-O sampling events, the TCE degradation product cis-1,2-DCE has been present at low levels (below 3 µg/L), and VC has remained below the laboratory reporting limit of 1.0 µg/L. **Figure 3-1** includes a graph of TCE, cis-1,2-DCE, and VC concentrations over time and shows decreasing concentrations of TCE and consistently low concentrations of cis-1,2-DCE and VC. Mann-Kendall trend analysis was conducted for TCE, the only COC above the MCL. The results are presented in **Appendix E**. The Mann-Kendall trend analysis in 46WW02 indicates a statistically significant decrease in TCE concentrations over time with a confidence factor of 99.5 percent.

The historical decrease in TCE concentrations and the lack of significant cis-1,2-DCE and VC concentrations indicate abiotic processes are likely to be the primary mechanism for the decrease in TCE, rather than anaerobic biodegradation.

Well 46WW05

VOC groundwater results are available for 46WW05 from October 2008 through the seventh year RA-O monitoring period in 2021 (**Table 2-4**). TCE, cis-1,2-DCE, VC, and 1,1-DCE have historically been detected in 46WW05; however, only TCE has been detected above its MCL since November 2014. The highest level of TCE was 144 µg/L in May 2013 and concentrations decreased to their lowest level at 6.4 µg/L in August 2018. Concentrations rebounded to 62 µg/L in August 2019, decreased to 19 µg/L in February 2020, and remained relatively stable at 20 µg/L in March 2021. **Figure 3-1** includes a graph of concentrations of TCE, cis-1,2-DCE, and VC in monitoring well 46WW05 over time and shows overall decrease in TCE concentrations. Mann-Kendall trend analysis was conducted for TCE, the only COC currently above the MCL. The results are presented in **Appendix E**. The trend analysis for TCE in 46WW05 indicates that there is a statistically significant decrease in TCE concentrations over time with a greater than 99.9 percent confidence factor.

The decrease in TCE concentrations over time and the presence of cis-1,2-DCE indicate limited biodegradation is likely occurring. Other MNA processes, including dilution and dispersion, are likely to be the primary mechanisms reducing COC concentrations in the vicinity of well 46WW05.

Other Intermediate Zone Wells

Historically, all COCs have been below their respective MCLs at the other intermediate zone monitoring wells.

Intermediate Zone COCs and Distance

The direction of groundwater flow in the intermediate zone is to the north. During the seventh year RA-O sampling event, no COCs were observed in shallow/intermediate well 46WW17. Two independent plumes exist in the intermediate zone at 46WW02 and 46WW05, separated by 46WW09, where no COCs have been detected. COCs have not been detected in wells 46WW09 or 46WW16, downgradient of wells 46WW02 and 46WW05, respectively. The data from wells in the intermediate zone indicate that TCE is degrading over distance within the individual plumes.

3.1.3 Deep Zone

No COCs were detected at deep zone monitoring well 46WW03 during the seventh year RA-O sampling events. COCs have not been observed at this well since the well was installed and first sampled in 1998.

3.1.4 Plume Stability

Plume maps completed for the March 2021 sampling event are presented for the shallow zone and the intermediate zone on **Figures 2-4** and **2-5**, respectively. Analysis of the historical COC data indicates a decreasing trend in shallow monitoring wells 46WW11 and LHSMW19. However, the increasing trends until 2020 for TCE, cis-1,2-DCE, and VC at LHSMW21, followed by decreases in TCE and 1,2-DCE in 2021, indicate that the shallow zone plume may be fluctuating or migrating northeastward. All the COCs are below their detection limits at the recently installed well 46WW17, and the plume is bound in this direction, based on the lack of a separate shallow saturated zone noted during drilling. However, installation of an additional well at a depth comparable to LHSMW21 may be desirable to confirm the absence of shallow groundwater or contamination downgradient of LHSMW21. Although groundwater levels could only be measured from three wells during the March 2021 sampling event, shallow groundwater flow appears to generally be toward the southeast, which is consistent with the historical generally eastward groundwater flow direction.

In the intermediate zone, only two wells, 46WW02 and 46WW05, have COCs above the MCLs. Based on the general direction of intermediate groundwater flow (generally to the north), the following wells are considered to be along the groundwater flowpath: 46WW02, 46WW09, 46WW05, and 46WW16. Contaminated groundwater in the vicinity of wells 46WW02 and 46WW05 occurs in two separate, isolated plumes; however, no COCs have been detected above MCLs at wells downgradient of these two wells. Therefore, based on the inferred flowpath, COC levels are not increasing with distance from the source area. Concentrations of COCs in wells surrounding the most impacted wells (46WW02 and 46WW05) are decreasing over time, despite slight increases in March 2021, indicating the intermediate zone plume is not migrating. Due to the potential for expansion of the shallow plume beyond LHSMW21, the intermediate well 46WW14 was added to the monitoring network beginning with the March 2021 annual sampling event. All three COCs were below the laboratory detection limit at 46WW14 during the March 2021 sampling event, indicating that shallow contamination at LHSMW21 has not spread to the intermediate zone in that area.

3.2 Second Line of Evidence: Geochemical Indicators

To aid in determining if the groundwater is favorable for MNA processes, geochemical indicators are evaluated. During groundwater sampling, field parameters were collected and include dissolved oxygen (DO), oxidation-reduction potential (ORP), pH, conductivity,

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turbidity, and temperature. Select monitoring wells were sampled for additional MNA parameters, as shown in **Table 2-1**. **Table 2-4** provides the geochemical data used to determine if the site groundwater is favorable for MNA biological degradation processes. The MNA parameters analyzed during the seventh year of RA-O include anions (chloride, nitrate, and sulfate), total organic carbon (TOC), and dissolved gases (ethene, ethane, methane, and carbon dioxide).

Dissolved Oxygen

DO is the most thermodynamically favored electron acceptor used by microbes for biodegradation of organic carbon, whether natural or anthropogenic (USEPA 1998). Anaerobic bacteria, which are the primary microbes able to degrade the site COCs, may be inhibited at DO concentrations greater than 0.5 milligram per liter (mg/L). In monitoring wells where COCs are above the MCL, the DO concentrations during the seventh year RA-O ranged from 0.02 to 0.11 mg/L, with an average of 0.068 mg/L. The low DO levels (<0.5 mg/L) observed in each of the impacted wells are favorable for reductive dechlorination.

Oxidation-Reduction Potential

The ORP levels indicate the oxidative or reductive potential in the aquifer and aid in determining if conditions are conducive for biodegradation. ORP values less than 50 millivolts (mV) indicate that the aquifer is favorable for biological reductive dechlorination of chlorinated ethenes and ethanes. During the seventh year RA-O monitoring, the ORP measurements ranged from -113 to 267 mV, with an average of 22.8 mV. In March 2021, the ORP measurements were below 50 mV at one impacted well, LHSMW19, in the shallow groundwater, suggesting that groundwater is favorable for reductive dechlorination in that location. The ORP levels at 10 of the 15 wells where water was present were below 50 mV, indicating that reducing conditions favorable for reductive dechlorination are present throughout the site, but the elevated ORP values (greater than 50 mV) at 4 of the 5 impacted wells suggests that conditions are oxidative within most of the plume area.

Nitrate

After DO has been depleted by microbes in the treatment zone, nitrate may be used as an electron acceptor and is reduced to nitrite. Nitrate levels above 1.0 mg/L may compete with reductive dechlorination (USEPA 1998). The nitrate concentrations were all below 1.0 mg/L, with analytical results from most samples below laboratory detection levels during the seventh year RA-O. The nitrate levels are not expected to inhibit the anaerobic degradation of site COCs.

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Sulfate

After DO, nitrate, and iron have been depleted in the groundwater, sulfate is used as an electron acceptor and is reduced to sulfide. Concentrations of sulfate greater than 20 mg/L may compete with reductive dechlorination of the site COCs. However, in many plumes with high concentrations of sulfate, reductive dechlorination still occurs (USEPA 1998). Sulfate was sampled in monitoring wells designated for MNA analysis during the seventh year RA-O and ranged from 170 to 4,080 mg/L. The elevated sulfate concentrations observed at the site indicate sulfate may compete as an electron acceptor with site COCs.

Methane

Methanogenesis occurs in highly reducing conditions and generally occurs after oxygen, nitrate, iron, and sulfate have been depleted. Methane levels above 500 µg/L are considered indicative of methanogenic conditions (USEPA 1998). Methane concentrations were less than 2 µg/L during the seventh year RA-O and suggest that methanogenic conditions are not present in the groundwater.

Total Organic Carbon

Regardless of the electron acceptor being used, organic carbon is a required source of reduced carbon and energy to sustain microbial activity. TOC is utilized as an energy and hydrogen source to support reductive dechlorination of the chlorinated COCs. TOC concentrations greater than 20 mg/L are considered adequate to support microbial activity (USEPA 1998). The highest level of TOC observed during the seventh year RA-O sampling event was 10.4 mg/L, indicating that carbon concentrations in the groundwater are not supportive of reductive dechlorination.

pH

The pH of the groundwater can affect the activity of microbial populations. Microbes capable of degrading chlorinated aliphatic hydrocarbons generally prefer pH values from 6 to 8 standard units (USEPA 1998). The pH levels in the shallow and intermediate zones ranged from 4.10 to 6.84 standard units, with an average of 5.72 standard units during the seventh year RA-O sampling. The measured pH was below 6.0 standard units in 10 of the 15 readings collected during the seventh year RA-O sampling event, and particularly low (4.10 and 4.25) in the impacted intermediate zone wells, which is likely to be inhibiting degradation via dechlorinating bacteria.

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Ethene and Ethane

Ethane and ethene are two final degradation products of the reductive dechlorination pathways for chlorinated ethanes and ethenes. During the seventh year RA-O, ethane and ethene concentrations continue to be below the laboratory reporting limits of 0.47 and 0.55 µg/L, respectively, in each of the groundwater samples analyzed. The data indicate that complete reductive dechlorination is not occurring.

Geochemical Indicator MNA Parameter Summary

The qualitative assessment of groundwater geochemical indicators collected during the seventh year RA-O period suggests that current groundwater conditions are not favorable for MNA processes via biological reduction. Nonetheless, certain parameters observed in a few locations may indicate that conditions could favor biological natural attenuation, such as the low DO and nitrate concentrations. The minimal presence of the degradation products, cis-1,2-DCE and VC, suggests that limited biological degradation may be occurring; however, the primary MNA processes responsible for reducing concentrations appear to be abiotic.

3.3 Third Line of Evidence: Predictive Analysis and Microbial Analysis

If the first two lines of evidence for MNA are deemed inadequate or inconclusive and/or the need for a contingency remedy is evaluated, data from field or microcosm studies will be necessary to establish the third line of evidence for MNA. The COC and geochemistry data indicate that abiotic degradation of the site contaminants are the primary mechanisms reducing concentrations, and therefore, the microbial analysis are not required. Dechlorinating bacteria such as *Dehalococcoides ethenogenes* and associated functional genes have not been measured at this site and could not be used to assess whether they exist naturally at the site.

Also, predictive analysis using degradation rates can be used as a third line of evidence to estimate the time required to reach the MCL. Using Mann-Kendall trend analysis, TCE concentrations showed a significant decrease over time in shallow zone wells 46WW11 and LHSMW19 and intermediate zone wells 46WW02 and 46WW05. The calculated first order rate constants and the times to achieve the MCL of 5 µg/L are included in **Appendix F**.

At shallow groundwater well 46WW11, the first order rate constant was calculated at 0.0008 day^{-1}, and the time to achieve the MCL of 5 µg/L from the March 2021 concentration of 19 µg/L is estimated at 4.6 years. For LHSMW19, the first order rate constant is 0.0006 day^{-1}, and the time to achieve MCL of 5 µg/L from the March 2021 concentration of 13 µg/L is estimated at 4.4 years. At intermediate zone well 46WW05, the first order rate constant is 0.0009 day-^{1}, and the time to achieve MCL of 5 µg/L from the March 2021

concentration of 20 µg/L is estimated at 4.2 years. At intermediate zone well 46WW02, the first order rate constant is 0.0003 day-^{1}, and the time to achieve MCL of 5 µg/L from the March 2021 concentration of 25 µg/L is estimated at 14.7 years.

These determinations assume that the decrease in concentrations will continue at the same rate as calculated from recent data. The predictive analysis estimates that TCE may decrease to below the MCL in areas where decreasing concentrations are observed in 14.7 years at LHAAP-46. The predictive analysis cleanup time based on the wells with decreasing trends increased from the sixth annual RA-O estimate due to increases in concentration at 46WW02. In addition, this analysis only applies to wells with a decreasing trend, and currently there are increasing trends for TCE, cis-1,2-DCE, and VC at LHSMW21, so the time to reach the MCL in site groundwater cannot be determined at this time.

While these calculations provide an estimated time to achieve the MCL at each location with a decreasing trend, given lithologic variability and groundwater elevation fluctuations that may influence COC concentrations, the time necessary to achieve the MCL may vary by an order of magnitude or more. Additionally, the rate of reduction could diminish over time as the residual concentrations decrease, and the time frames to achieve the MCL may be longer than estimated by these calculations.

4.0 CONCLUSIONS AND RECOMENDATIONS

During the seventh year RA-O monitoring at LHAAP-46, samples were collected from shallow, intermediate, and deep zone wells in March 2021. Samples were analyzed for VOCs and geochemical parameters to evaluate effectiveness of MNA as a site remedy. Reductions in COC concentrations over time and with distance were evaluated. The results of the evaluation and the conclusions are summarized below.

- During the seventh annual reporting period, monitoring wells LHSMW18, LHSMW21, and LHSMW25 were identified as needing to be repainted. They will be repainted prior to the February 2022 Year 8 sampling event. No other issues or concerns were noted during the annual well inspections and no damage to well bollards, pads, or protective well casings was observed. Measured total depths in monitoring wells 46WW05 and 16WW17 indicated that both wells may have greater than 10% of the screened interval blocked by silt accumulation in the well. The two wells will be redeveloped prior to the February 2022 Year 8 sampling event to reduce the siltation.
- Consistent with previous years, groundwater flow direction appears to be to the southeast in the shallow zone and generally to the north in the intermediate zone. However, the potentiometric contours are based on relatively few locations and may not accurately depict small differences in the flow directions that exist at the site.
- TCE, cis-1,2-DCE, and VC are the only COCs detected in the groundwater at concentrations exceeding the MCLs in 2021.
- In the shallow groundwater zone, wells 46WW11, LHSMW19, LHSMW21, and recent shallow/intermediate monitoring well 46WW17 are the only wells where sufficient water was present to collect samples. The groundwater elevation at 46WW17 indicates that it is likely representative of the intermediate zone. However, the absence of shallow saturation or a confining layer underlying the permeable intervals observed during drilling indicates that saturation and/or contamination may not be present in the shallow zone interval northeast of LHSMW21. Consideration should be given to confirming this in the future by installing a shallow well near 46WW17 with a screened interval elevation similar to LHSMW21 to determine if saturated conditions and/or contamination are present. TCE concentrations demonstrate a decreasing trend in wells 46WW11 and LHSMW19 based on Mann-Kendall trend analysis. The Mann-Kendall

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analysis at well LHSMW21 indicates increasing trends for TCE, cis-1,2-DCE, and VC. Future sampling will aid in determining if these trends continue.

- The presence of TCE, cis-1,2-DCE, and VC in well LHSMW21 exceeding the MCL indicated that a downgradient well was required, and in June 2020 46WW17 was installed and sampled. The data from 46WW17 continue to show that no COCs were above their MCLs and the plume is bound in this direction. Monitoring well 46WW17 will continue to be monitored as part of the annual RA-O sampling.
- In the intermediate zone, COC concentrations show a decreasing trend. Groundwater elevations have shown a loose correlation with the COC concentrations, and dilution is not apparent when groundwater elevations have increased. COCs have not increased with distance from the most impacted wells, 46WW02 and 46WW05, and no new detection of COCs at boundary area wells have been reported, indicating plume migration is not occurring. Due to the presence of COCs detected at shallow well LHSMW21, 46WW14 was added to the annual sampling to assess potential downward migration into the intermediate zone. All COCs were below the laboratory detection limit in March 2021 at 46WW14.
- No COCs were detected in the one deep well, 46WW03.
- The assessment of geochemical parameters indicates that groundwater conditions are not favorable for biological reductive dechlorination in most areas, and that abiotic MNA processes appear to be primarily responsible for reducing concentrations.
- The predictive analysis estimates that TCE concentrations may decrease to below the MCL at LHAAP-46 in 14.7 years where COCs are decreasing; however, based on the increasing concentrations at LHSMW21, it is not possible to determine when COCs will reach the MCL in all areas of the site. Also, given lithologic variability at the site, the potential for plume migration, and other factors affecting the concentration trends, the time for all COCs to reach the MCL may vary by an order of magnitude or more.

No compliance issues or concerns were noted during the annual LUC inspection for LHAAP-46 conducted on May 26, 2021. LHSMW23 was replaced by LHSMW23R in August 2019. Monitoring well LHSMW21 was added to the monitoring network in place of LHSMW20 due to the persistent dry conditions at LHSMW20. As COCs were detected in LHSMW21, the installation of the downgradient well 46WW17 was completed in June 2020. Intermediate zone monitoring well 46WW14 was added to assess downward migration near

shallow well LHSMW21. 46WW14, LHSMW23R, and 46WW17 will continue to be sampled as part of the annual RA-O sampling.

The trend analysis of COC concentrations in wells with sufficient historical data was conducted. In four of the five wells where COCs were observed above the MCL, concentrations are decreasing. At the one monitoring well where COCs have increased recently (LHSMW21), the 2021 TCE concentrations decreased relative to February 2020. The increasing COC concentrations since 2016 suggest that the shallow groundwater plume may be expanding or migrating; however, downgradient well 46WW17 did not contain detectable COC concentrations, indicating the plume has not migrated far past LHSMW21. MNA with LUCs is still considered an appropriate remedy at this time. The MNA monitoring will continue on an annual basis in Year 8, in accordance with the RACR (AECOM 2015). The MNA parameter list is shown in the notes in **Table 2-6**. The wells to be sampled during the Year 8 monitoring event are shown in **Table 2-6** and illustrated on **Figure 2-6**. To gather additional information regarding the potentiometric surface and the extent of dry conditions in the shallow aquifer, groundwater elevations will continue to be measured in LHSMW20 and LHSMW24 during each sampling event, as shown in **Table 2-6**.

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • January 2022

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Tables

Table 2-1
Well Maintenance Activities Year 7 RA-O

Well ID	Date Inspected	Pads	Bollards	Protective Casings	Locks	Date Mowed	Photos	Comments
46WW01	3/18/2021	Good	Good	Good	In Place	3/11/2021	Yes	
46WW02	3/16/2021	Good	Good	Good	In Place	3/11/2021	Yes	
46WW03	3/18/2021	Good	Good	Good	In Place	3/11/2021	Yes	
46WW04	3/15/2021	Good	Good	Good	In Place	3/11/2021	Yes	
46WW05	3/16/2021	Good	Good	Good	In Place	3/11/2021	Yes	
46WW06	3/15/2021	Good	Good	Good	In Place	3/11/2021	Yes	
46WW07	3/18/2021	Good	Good	Good	In Place	3/11/2021	Yes	
46WW08	3/15/2021	Good	Good	Good	In Place	3/11/2021	Yes	
46WW09	3/16/2021	Good	Good	Good	In Place	3/11/2021	Yes	
46WW10	3/15/2021	Good	Good	Good	In Place	3/11/2021	Yes	
46WW11	3/16/2021	Good	Good	Good	In Place	3/11/2021	Yes	
46WW12	3/15/2021	Good	Good	Good	In Place	3/11/2021	Yes	
46WW13	3/15/2021	Good	Good	Good	In Place	3/11/2021	Yes	
46WW14	3/15/2021	Good	Good	Good	In Place	3/11/2021	Yes	
46WW15	3/15/2021	Good	Good	Good	In Place	3/11/2021	Yes	
46WW16	3/16/2021	Good	Good	Good	In Place	3/11/2021	Yes	
46WW17	3/15/2021	Good	Good	Good	In Place	3/11/2021	Yes	
LHSMW17	3/15/2021	Good	Good	Good	In Place	3/11/2021	Yes	
LHSMW18	3/15/2021	Good	Good	Good	In Place	3/11/2021	Yes	
LHSMW19	3/18/2021	Good	Good	Good	In Place	3/11/2021	Yes	
LHSMW21	3/16/2021	Good	Good	Good	In Place	3/11/2021	Yes	
LHSMW22	3/15/2021	Good	Good	Good	In Place	3/11/2021	Yes	
LHSMW23R	3/18/2021	Good	Good	Good	In Place	3/11/2021	Yes	
LHSMW25	3/15/2021	Good	Good	Good	In Place	3/11/2021	Yes	

Notes:

ID - identifier

RA-O - remedial action operation

Table 2-2
Year 7 Annual RA-O Sampling Locations

Well ID	Groundwater Zone	VOC	Field Parameters	MNA	Water Present
46WW01	Shallow	X	X		No
46WW04	Shallow	X	X		No
46WW10	Shallow	X	X		No
46WW11	Shallow	X	X	X	Yes
46WW12	Shallow	X	X		No
46WW13	Shallow	X	X		No
46WW15	Shallow	X	X		No
46WW17	Shallow/ Intermediate	X	X		Yes
LHSMW17	Shallow	X	X		No
LHSMW18 [a]	Shallow	X	X		No
LHSMW19	Shallow	X	X		Yes
LHSMW20	Shallow	Groundwater Elevation Only			
LHSMW21	Shallow	X	X	X	Yes
LHSMW22	Shallow	X	X		No
LHSMW24	Shallow	Groundwater Elevation Only			
46WW02	Intermediate	X	X	X	Yes
46WW05	Intermediate	X	X	X	Yes
46WW06	Intermediate	X	X		Yes
46WW07	Intermediate	X	X		Yes
46WW08	Intermediate	X	X		Yes
46WW09	Intermediate	X	X	X	Yes
46WW14	Intermediate	X	X		Yes
46WW16	Intermediate	X	X	X	Yes
LHSMW23R	Intermediate	X	X		Yes
LHSMW25	Intermediate	X	X		Yes
46WW03	Deep	X	X		Yes
46SW10 [b]	Surface Water	X	X		NS

Notes:

Field parameters to be monitored for all wells: pH, temperature, conductivity, turbidity, oxidation-reduction potential (ORP), and dissolved oxygen (DO).

MNA parameters include nitrate, sulfate, chloride, TOC, dissolved iron (field), and dissolved gases (methane, ethane, ethene, carbon dioxide).

[a] LHSMW18 only sampled if LHSMW17 is dry.

[b] 46SW10 is only sampled if surface water is present and the GW elevation at either LHSMW21 or 46WW16 exceeds 197 feet.

X - well will be analyzed for that parameter

GW - groundwater

ID - identification

MNA - monitored natural attenuation

NS - not sampled due to water level was below the creek bottom

RA-O - remedial action operation

TOC - total organic carbon

VOC - volatile organic compounds

Table 2-3
Groundwater Elevation Data

Well ID	Zone	Sampling Date	Screen Interval (ft BTOC)		Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
			Top	Bottom				
46WW01	S	1/16/2002	17.07	27.07	212.82	209.75	Dry	Dry
		3/15/2002	17.07	27.07	212.82	209.75	Dry	Dry
		2/13/2005	17.07	27.07	212.82	209.75	26.00	186.82
		5/15/2005	17.07	27.07	212.82	209.75	Dry	Dry
		2/19/2007	17.07	27.07	212.82	209.75	22.65	190.16
		3/16/2008	17.07	27.07	212.82	209.75	25.45	187.37
		5/15/2008	17.07	27.07	212.82	209.75	Dry	Dry
		10/13/2008	17.07	27.07	212.82	209.75	Dry	Dry
		05/02/13	17.07	27.07	212.82	209.75	26.00	186.82
		05/28/13	17.07	27.07	212.82	209.75	Dry	Dry
		08/10/13	17.07	27.07	212.82	209.75	Dry	Dry
		09/20/13	17.07	27.07	212.82	209.75	Dry	Dry
		01/25/14	17.07	27.07	212.82	209.75	Dry	Dry
		07/15/14	17.07	27.07	212.82	209.75	Dry	Dry
		11/18/14	17.07	27.07	212.82	209.75	Dry	Dry
		02/03/15	17.07	27.07	212.82	209.75	Dry	Dry
		05/05/15	17.07	27.07	212.82	209.75	Dry	Dry
		08/05/15	17.07	27.07	212.82	209.75	Dry	Dry
		02/01/16	17.07	27.07	212.82	209.75	Dry	Dry
		03/28/16	17.07	27.07	212.82	209.75	24.85	187.97
		08/03/16	17.07	27.07	212.82	209.75	25.45	187.37
		02/20/18	17.07	27.07	212.82	209.75	Dry	Dry
		08/27/18	17.07	27.07	212.82	209.75	Dry	Dry
		02/20/19	17.07	27.07	212.82	209.75	Dry	Dry
		08/12/19	17.07	27.07	212.82	209.75	Dry	Dry
		02/19/20	17.07	27.07	212.82	209.75	Dry	Dry
		03/18/21	17.07	27.07	212.82	209.75	Dry	Dry
46WW02	I	1/16/2002	38.05	48.05	212.21	209.16	37.11	175.10
		5/15/2002	38.05	48.05	212.21	209.16	37.30	174.91
		2/13/2005	38.05	48.05	212.21	209.16	35.90	176.31
		6/15/2005	38.05	48.05	212.21	209.16	37.00	175.21
		2/20/2007	38.05	48.05	212.21	209.16	31.49	180.72
		4/7/2008	38.05	48.05	212.21	209.16	32.30	179.91

Table 2-3
Groundwater Elevation Data

Well ID	Zone	Sampling Date	Screen Interval (ft BTOC)		Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
			Top	Bottom				
46WW02	I	4/16/2008	38.05	48.05	212.21	209.16	37.25	174.96
		5/15/2008	38.05	48.05	212.21	209.16	37.03	175.18
		05/02/13	38.05	48.05	212.21	209.16	35.90	176.31
		05/28/13	38.05	48.05	212.21	209.16	35.85	176.36
		08/14/13	38.05	48.05	212.21	209.16	36.15	176.06
		08/17/13	38.05	48.05	212.21	209.16	36.20	176.01
		09/19/13	38.05	48.05	212.21	209.16	36.33	175.88
		01/27/14	38.05	48.05	212.21	209.16	36.52	175.69
		07/15/14	38.05	48.05	212.21	209.16	36.63	175.58
		11/18/14	38.05	48.05	212.21	209.16	37.37	174.84
		02/05/15	38.05	48.05	212.21	209.16	37.30	174.91
		05/06/15	38.05	48.05	212.21	209.16	37.00	175.21
		08/05/15	38.05	48.05	212.21	209.16	37.03	175.18
		02/01/16	38.05	48.05	212.21	209.16	37.11	175.10
		08/04/16	38.05	48.05	212.21	209.16	37.25	174.96
		02/20/18	38.05	48.05	212.21	209.16	37.76	174.45
		08/29/18	38.05	48.05	212.21	209.16	38.25	173.96
		02/21/19	38.05	48.05	212.21	209.16	46WW02 contained water and a sample was collected. The sample collection log was misplaced and no water level information is available.	
		08/12/19	38.05	48.05	212.21	209.16	38.23	173.98
		02/13/20	38.05	48.05	212.21	209.16	38.74	173.47
		03/16/21	38.05	48.05	212.21	209.16	38.57	173.64
46WW03	D	3/16/2002	92.67	102.67	212.47	209.80	40.69	171.78
		5/15/2002	92.67	102.67	212.47	209.80	40.60	171.87
		6/15/2005	92.67	102.67	212.47	209.80	40.32	172.15
		4/16/2008	92.67	102.67	212.47	209.80	40.77	171.70
		5/15/2008	92.67	102.67	212.47	209.80	40.71	171.76
		05/30/13	92.67	102.67	212.47	209.80	39.81	172.66
		08/17/13	92.67	102.67	212.47	209.80	40.34	172.13
		09/26/13	92.67	102.67	212.47	209.80	46.48	165.99
		01/25/14	92.67	102.67	212.47	209.80	40.61	171.86

Table 2-3
Groundwater Elevation Data

Well ID	Zone	Sampling Date	Screen Interval (ft BTOC)		Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
			Top	Bottom				
46WW03	D	07/17/14	92.67	102.67	212.47	209.80	40.47	172.00
		11/20/14	92.67	102.67	212.47	209.80	41.00	171.47
		02/05/15	92.67	102.67	212.47	209.80	40.60	171.87
		05/06/15	92.67	102.67	212.47	209.80	40.32	172.15
		08/05/15	92.67	102.67	212.47	209.80	40.71	171.76
		02/03/16	92.67	102.67	212.47	209.80	40.69	171.78
		08/04/16	92.67	102.67	212.47	209.80	40.77	171.70
		02/26/18	92.67	102.67	212.47	209.80	41.47	171.00
		08/27/18	92.67	102.67	212.47	209.80	42.05	170.42
		02/20/19	92.67	102.67	212.47	209.80	41.20	171.27
		08/12/19	92.67	102.67	212.47	209.80	41.19	171.28
		02/19/20	92.67	102.67	212.47	209.80	41.75	170.72
		03/18/21	92.67	102.67	212.47	209.80	41.50	170.97
46WW04	S	2/16/2002	16.92	26.92	215.39	212.47	25.67	189.72
		3/15/2002	16.92	26.92	215.39	212.47	Dry	Dry
		2/13/2005	16.92	26.92	215.39	212.47	24.86	190.53
		5/15/2005	16.92	26.92	215.39	212.47	24.48	190.91
		2/19/2007	16.92	26.92	215.39	212.47	21.31	194.08
		3/16/2008	16.92	26.92	215.39	212.47	25.04	190.35
		4/15/2008	16.92	26.92	215.39	212.47	24.13	191.26
		9/13/2008	16.92	26.92	215.39	212.47	25.48	189.91
		05/02/13	16.92	26.92	215.39	212.47	24.86	190.53
		05/24/13	16.92	26.92	215.39	212.47	24.90	190.49
		08/09/13	16.92	26.92	215.39	212.47	25.48	189.91
		09/20/13	16.92	26.92	215.39	212.47	26.00	189.39
		01/25/14	16.92	26.92	215.39	212.47	25.90	189.49
		07/17/14	16.92	26.92	215.39	212.47	24.68	190.71
		11/19/14	16.92	26.92	215.39	212.47	26.00	189.39
		02/03/15	16.92	26.92	215.39	212.47	Dry	Dry
		05/05/15	16.92	26.92	215.39	212.47	24.48	190.91
		08/04/15	16.92	26.92	215.39	212.47	24.13	191.26
		02/02/16	16.92	26.92	215.39	212.47	25.67	189.72
		08/03/16	16.92	26.92	215.39	212.47	25.04	190.35

Table 2-3
Groundwater Elevation Data

Well ID	Zone	Sampling Date	Screen Interval (ft BTOC)		Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
			Top	Bottom				
46WW04	S	02/22/18	16.92	26.92	215.39	212.47	Dry	Dry
		08/29/18	16.92	26.92	215.39	212.47	Dry	Dry
		02/20/19	16.92	26.92	215.39	212.47	Dry	Dry
		08/13/19	16.92	26.92	215.39	212.47	Dry	Dry
		02/18/20	16.92	26.92	215.39	212.47	Dry	Dry
		03/15/21	16.92	26.92	215.39	212.47	Dry	Dry
46WW05	I	1/16/2002	36.65	46.65	208.24	205.59	38.08	170.16
		5/15/2002	36.65	46.65	208.24	205.59	37.45	170.79
		5/15/2005	36.65	46.65	208.24	205.59	38.03	170.21
		3/16/2008	36.65	46.65	208.24	205.59	38.35	169.89
		6/15/2008	36.65	46.65	208.24	205.59	37.05	171.19
		05/30/13	36.65	46.65	208.24	205.59	37.25	170.99
		08/14/13	36.65	46.65	208.24	205.59	37.65	170.59
		08/17/13	36.65	46.65	208.24	205.59	37.73	170.51
		09/24/13	36.65	46.65	208.24	205.59	37.75	170.49
		01/28/14	36.65	46.65	208.24	205.59	38.20	170.04
		07/16/14	36.65	46.65	208.24	205.59	37.83	170.41
		11/19/14	36.65	46.65	208.24	205.59	38.48	169.76
		02/05/15	36.65	46.65	208.24	205.59	37.45	170.79
		05/05/15	36.65	46.65	208.24	205.59	38.03	170.21
		08/06/15	36.65	46.65	208.24	205.59	37.05	171.19
		02/01/16	36.65	46.65	208.24	205.59	38.08	170.16
		08/03/16	36.65	46.65	208.24	205.59	38.35	169.89
		02/26/18	36.65	46.65	208.24	205.59	39.03	169.21
		08/28/18	36.65	46.65	208.24	205.59	39.25	168.99
		02/25/19	36.65	46.65	208.24	205.59	39.14	169.10
		08/13/19	36.65	46.65	208.24	205.59	38.45	169.79
		02/13/20	36.65	46.65	208.24	205.59	39.32	168.92
		03/16/21	36.65	46.65	208.24	205.59	39.00	169.24

Table 2-3
Groundwater Elevation Data

Well ID	Zone	Sampling Date	Screen Interval (ft BTOC)		Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
			Top	Bottom				
46WW06	I	2/16/2002	40.60	50.60	213.84	211.24	39.76	174.08
		6/15/2002	40.60	50.60	213.84	211.24	39.93	173.91
		1/15/2005	40.60	50.60	213.84	211.24	39.91	173.93
		4/15/2008	40.60	50.60	213.84	211.24	39.90	173.94
		4/16/2008	40.60	50.60	213.84	211.24	40.23	173.61
		05/24/13	40.60	50.60	213.84	211.24	38.98	174.86
		08/16/13	40.60	50.60	213.84	211.24	39.12	174.72
		09/25/13	40.60	50.60	213.84	211.24	39.10	174.74
		01/25/14	40.60	50.60	213.84	211.24	39.28	174.56
		07/17/14	40.60	50.60	213.84	211.24	39.55	174.29
		11/19/14	40.60	50.60	213.84	211.24	39.91	173.93
		02/06/15	40.60	50.60	213.84	211.24	39.93	173.91
		05/01/15	40.60	50.60	213.84	211.24	39.91	173.93
		08/04/15	40.60	50.60	213.84	211.24	39.90	173.94
		02/02/16	40.60	50.60	213.84	211.24	39.76	174.08
		08/04/16	40.60	50.60	213.84	211.24	40.23	173.61
		02/26/18	40.60	50.60	213.84	211.24	39.91	173.93
		08/27/18	40.60	50.60	213.84	211.24	41.10	172.74
		02/20/19	40.60	50.60	213.84	211.24	41.05	172.79
		08/13/19	40.60	50.60	213.84	211.24	39.80	174.04
		02/18/20	40.60	50.60	213.84	211.24	41.77	172.07
		03/15/21	40.60	50.60	213.84	211.24	41.55	172.29
46WW07	I	2/16/2002	41.50	51.00	207.87	205.37	35.70	172.17
		3/15/2002	41.50	51.00	207.87	205.37	35.95	171.92
		1/15/2005	41.50	51.00	207.87	205.37	35.62	172.25
		2/16/2008	41.50	51.00	207.87	205.37	35.96	171.91
		4/15/2008	41.50	51.00	207.87	205.37	35.68	172.19
		05/25/13	41.50	51.00	207.87	205.37	35.28	172.59
		08/16/13	41.50	51.00	207.87	205.37	35.60	172.27
		09/19/13	41.50	51.00	207.87	205.37	35.70	172.17
		01/27/14	41.50	51.00	207.87	205.37	36.72	171.15
		07/18/14	41.50	51.00	207.87	205.37	35.47	172.40
		11/19/14	41.50	51.00	207.87	205.37	36.25	171.62

Table 2-3
Groundwater Elevation Data

Well ID	Zone	Sampling Date	Screen Interval (ft BTOC)		Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
			Top	Bottom				
46WW07	I	02/03/15	41.50	51.00	207.87	205.37	35.95	171.92
		05/01/15	41.50	51.00	207.87	205.37	35.62	172.25
		08/04/15	41.50	51.00	207.87	205.37	35.68	172.19
		02/02/16	41.50	51.00	207.87	205.37	35.70	172.17
		08/02/16	41.50	51.00	207.87	205.37	35.96	171.91
		03/23/18	41.50	51.00	207.87	205.37	36.77	171.10
		08/27/18	41.50	51.00	207.87	205.37	31.15	176.72
		02/20/19	41.50	51.00	207.87	205.37	36.51	171.36
		08/12/19	41.50	51.00	207.87	205.37	36.42	171.45
		02/18/20	41.50	51.00	207.87	205.37	36.81	171.06
		03/18/21	41.50	51.00	207.87	205.37	36.68	171.19
46WW08	I	3/15/2002	35.72	45.22	211.73	209.51	21.85	189.88
		3/16/2002	35.72	45.22	211.73	209.51	21.75	189.98
		1/15/2005	35.72	45.22	211.73	209.51	20.94	190.79
		2/16/2008	35.72	45.22	211.73	209.51	21.37	190.36
		4/15/2008	35.72	45.22	211.73	209.51	21.02	190.71
		05/25/13	35.72	45.22	211.73	209.51	21.35	190.38
		08/16/13	35.72	45.22	211.73	209.51	21.55	190.18
		09/21/13	35.72	45.22	211.73	209.51	21.75	189.98
		01/28/14	35.72	45.22	211.73	209.51	21.85	189.88
		07/18/14	35.72	45.22	211.73	209.51	21.30	190.43
		11/20/14	35.72	45.22	211.73	209.51	22.06	189.67
		02/03/15	35.72	45.22	211.73	209.51	21.85	189.88
		05/01/15	35.72	45.22	211.73	209.51	20.94	190.79
		08/04/15	35.72	45.22	211.73	209.51	21.02	190.71
		02/03/16	35.72	45.22	211.73	209.51	21.75	189.98
		08/02/16	35.72	45.22	211.73	209.51	21.37	190.36
		02/23/18	35.72	45.22	211.73	209.51	22.43	189.30
		08/27/18	35.72	45.22	211.73	209.51	22.76	188.97
		02/20/19	35.72	45.22	211.73	209.51	22.00	189.73
		08/13/19	35.72	45.22	211.73	209.51	20.59	191.14
		02/18/20	35.72	45.22	211.73	209.51	22.15	189.58
		03/15/21	35.72	45.22	211.73	209.51	21.55	190.18

Table 2-3
Groundwater Elevation Data

Well ID	Zone	Sampling Date	Screen Interval (ft BTOC)		Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
			Top	Bottom				
46WW09	I	2/16/2002	31.48	40.98	210.19	207.71	37.35	172.84
		5/15/2002	31.48	40.98	210.19	207.71	35.90	174.29
		5/15/2005	31.48	40.98	210.19	207.71	36.55	173.64
		3/16/2008	31.48	40.98	210.19	207.71	37.83	172.36
		6/15/2008	31.48	40.98	210.19	207.71	37.47	172.72
		05/30/13	31.48	40.98	210.19	207.71	34.50	175.69
		08/13/13	31.48	40.98	210.19	207.71	36.95	173.24
		08/17/13	31.48	40.98	210.19	207.71	36.03	174.16
		09/24/13	31.48	40.98	210.19	207.71	32.50	177.69
		01/27/14	31.48	40.98	210.19	207.71	33.05	177.14
		07/15/14	31.48	40.98	210.19	207.71	38.18	172.01
		11/19/14	31.48	40.98	210.19	207.71	36.99	173.20
		02/05/15	31.48	40.98	210.19	207.71	35.90	174.29
		05/05/15	31.48	40.98	210.19	207.71	36.55	173.64
		08/06/15	31.48	40.98	210.19	207.71	37.47	172.72
		02/02/16	31.48	40.98	210.19	207.71	37.35	172.84
		08/03/16	31.48	40.98	210.19	207.71	37.83	172.36
		02/22/18	31.48	40.98	210.19	207.71	38.65	171.54
		08/28/18	31.48	40.98	210.19	207.71	38.81	171.38
		02/25/19	31.48	40.98	210.19	207.71	38.81	171.38
		08/12/19	31.48	40.98	210.19	207.71	38.40	171.79
		02/13/20	31.48	40.98	210.19	207.71	38.95	171.24
		03/16/21	31.48	40.98	210.19	207.71	38.60	171.59
46WW10	S	2/16/2002	14.19	23.69	213.69	211.40	24.08	189.61
		3/15/2002	14.19	23.69	213.69	211.40	23.95	189.74
		5/15/2005	14.19	23.69	213.69	211.40	23.80	189.89
		3/16/2008	14.19	23.69	213.69	211.40	24.17	189.52
		4/15/2008	14.19	23.69	213.69	211.40	23.57	190.12
		9/13/2008	14.19	23.69	213.69	211.40	22.00	191.69
		05/24/13	14.19	23.69	213.69	211.40	23.20	190.49
		08/09/13	14.19	23.69	213.69	211.40	22.00	191.69
		09/20/13	14.19	23.69	213.69	211.40	23.42	190.27
		01/25/14	14.19	23.69	213.69	211.40	23.61	190.08

Table 2-3
Groundwater Elevation Data

Well ID	Zone	Sampling Date	Screen Interval (ft BTOC)		Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
			Top	Bottom				
46WW10	S	07/17/14	14.19	23.69	213.69	211.40	23.57	190.12
		11/19/14	14.19	23.69	213.69	211.40	23.83	189.86
		02/03/15	14.19	23.69	213.69	211.40	23.95	189.74
		05/05/15	14.19	23.69	213.69	211.40	23.80	189.89
		08/04/15	14.19	23.69	213.69	211.40	23.57	190.12
		02/02/16	14.19	23.69	213.69	211.40	24.08	189.61
		08/03/16	14.19	23.69	213.69	211.40	24.17	189.52
		02/22/18	14.19	23.69	213.69	211.40	Dry	Dry
		08/29/18	14.19	23.69	213.69	211.40	Dry	Dry
		02/20/19	14.19	23.69	213.69	211.40	Dry	Dry
		08/13/19	14.19	23.69	213.69	211.40	Dry	Dry
		02/18/20	14.19	23.69	213.69	211.40	Dry	Dry
		03/15/21	14.19	23.69	213.69	211.40	Dry	Dry
46WW11	S	1/16/2002	22.25	32.25	212.22	209.97	25.25	186.97
		4/15/2002	22.25	32.25	212.22	209.97	25.37	186.85
		6/15/2005	22.25	32.25	212.22	209.97	24.48	187.74
		3/16/2008	22.25	32.25	212.22	209.97	25.02	187.20
		5/15/2008	22.25	32.25	212.22	209.97	24.37	187.85
		05/25/13	22.25	32.25	212.22	209.97	Dry	Dry
		08/14/13	22.25	32.25	212.22	209.97	25.63	186.59
		09/19/13	22.25	32.25	212.22	209.97	25.98	186.24
		01/28/14	22.25	32.25	212.22	209.97	25.35	186.87
		07/16/14	22.25	32.25	212.22	209.97	24.76	187.46
		11/18/14	22.25	32.25	212.22	209.97	25.80	186.42
		02/04/15	22.25	32.25	212.22	209.97	25.37	186.85
		05/06/15	22.25	32.25	212.22	209.97	24.48	187.74
		08/05/15	22.25	32.25	212.22	209.97	24.37	187.85
		02/01/16	22.25	32.25	212.22	209.97	25.25	186.97
		08/03/16	22.25	32.25	212.22	209.97	25.02	187.20
		02/20/18	22.25	32.25	212.22	209.97	25.95	186.27
		08/29/18	22.25	32.25	212.22	209.97	27.30	184.92

Table 2-3
Groundwater Elevation Data

Well ID	Zone	Sampling Date	Screen Interval (ft BTOC)		Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
			Top	Bottom				
46WW11	S	02/21/19	22.25	32.25	212.22	209.97	46WW11 contained water and a sample was collected. The sample collection log was misplaced and no water level information is available.	
		08/12/19	22.25	32.25	212.22	209.97	24.62	187.60
		02/13/20	22.25	32.25	212.22	209.97	25.72	186.50
		03/16/21	22.25	32.25	212.22	209.97	25.22	187.00
46WW12	S	1/16/2002	18.97	28.47	209.57	207.10	Dry	Dry
		3/15/2002	18.97	28.47	209.57	207.10	Dry	Dry
		5/15/2005	18.97	28.47	209.57	207.10	Dry	Dry
		4/15/2008	18.97	28.47	209.57	207.10	Dry	Dry
		4/16/2008	18.97	28.47	209.57	207.10	Dry	Dry
		10/13/2008	18.97	28.47	209.57	207.10	Dry	Dry
		05/28/13	18.97	28.47	209.57	207.10	Dry	Dry
		08/10/13	18.97	28.47	209.57	207.10	Dry	Dry
		09/20/13	18.97	28.47	209.57	207.10	Dry	Dry
		01/25/14	18.97	28.47	209.57	207.10	Dry	Dry
		07/15/14	18.97	28.47	209.57	207.10	Dry	Dry
		11/19/14	18.97	28.47	209.57	207.10	Dry	Dry
		02/03/15	18.97	28.47	209.57	207.10	Dry	Dry
		05/05/15	18.97	28.47	209.57	207.10	Dry	Dry
		08/04/15	18.97	28.47	209.57	207.10	Dry	Dry
		02/01/16	18.97	28.47	209.57	207.10	Dry	Dry
		08/04/16	18.97	28.47	209.57	207.10	Dry	Dry
		02/20/18	18.97	28.47	209.57	207.10	Dry	Dry
		08/27/18	18.97	28.47	209.57	207.10	Dry	Dry
		02/20/19	18.97	28.47	209.57	207.10	Dry	Dry
		08/13/19	18.97	28.47	209.57	207.10	Dry	Dry
		02/18/20	18.97	28.47	209.57	207.10	Dry	Dry
		03/15/21	18.97	28.47	209.57	207.10	Dry	Dry

Table 2-3
Groundwater Elevation Data

Well ID	Zone	Sampling Date	Screen Interval (ft BTOC)		Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
			Top	Bottom				
46WW13	S	1/16/2002	21.42	30.92	208.38	205.96	Dry	Dry
		3/15/2002	21.42	30.92	208.38	205.96	Dry	Dry
		5/15/2005	21.42	30.92	208.38	205.96	Dry	Dry
		4/16/2008	21.42	30.92	208.38	205.96	Dry	Dry
		5/15/2008	21.42	30.92	208.38	205.96	Dry	Dry
		05/28/13	21.42	30.92	208.38	205.96	30.05	178.33
		08/13/13	21.42	30.92	208.38	205.96	30.20	178.18
		09/23/13	21.42	30.92	208.38	205.96	30.35	178.03
		01/27/14	21.42	30.92	208.38	205.96	Dry	Dry
		07/15/14	21.42	30.92	208.38	205.96	Dry	Dry
		11/19/14	21.42	30.92	208.38	205.96	Dry	Dry
		02/03/15	21.42	30.92	208.38	205.96	Dry	Dry
		05/05/15	21.42	30.92	208.38	205.96	Dry	Dry
		08/05/15	21.42	30.92	208.38	205.96	Dry	Dry
		02/01/16	21.42	30.92	208.38	205.96	Dry	Dry
		08/04/16	21.42	30.92	208.38	205.96	Dry	Dry
		02/20/18	21.42	30.92	208.38	205.96	Dry	Dry
		08/27/18	21.42	30.92	208.38	205.96	Dry	Dry
		02/20/19	21.42	30.92	208.38	205.96	Dry	Dry
		08/13/19	21.42	30.92	208.38	205.96	Dry	Dry
		02/18/20	21.42	30.92	208.38	205.96	Dry	Dry
		03/15/21	21.42	30.92	208.38	205.96	Dry	Dry
46WW14	I	03/15/21	44.60	54.10	204.40	201.80	33.15	171.25
46WW15	S	05/29/13	20.45	29.95	206.96	205.01	Dry	Dry
		08/10/13	20.45	29.95	206.96	205.01	Dry	Dry
		09/24/13	20.45	29.95	206.96	205.01	Dry	Dry
		01/25/14	20.45	29.95	206.96	205.01	Dry	Dry
		07/15/14	20.45	29.95	206.96	205.01	Dry	Dry
		11/19/14	20.45	29.95	206.96	205.01	Dry	Dry
		02/03/15	20.45	29.95	206.96	205.01	Dry	Dry
		05/05/15	20.45	29.95	206.96	205.01	Dry	Dry
		08/04/15	20.45	29.95	206.96	205.01	Dry	Dry
		02/01/16	20.45	29.95	206.96	205.01	Dry	Dry

Table 2-3
Groundwater Elevation Data

Well ID	Zone	Sampling Date	Screen Interval (ft BTOC)		Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
			Top	Bottom				
46WW15	S	08/04/16	20.45	29.95	206.96	205.01	Dry	Dry
		02/20/19	20.45	29.95	206.96	205.01	Dry	Dry
		08/13/19	20.45	29.95	206.96	205.01	Dry	Dry
		02/18/20	20.45	29.95	206.96	205.01	Dry	Dry
		03/15/21	20.45	29.95	206.96	205.01	Dry	Dry
46WW16	I	4/15/2002	40.66	50.46	208.23	205.57	37.31	170.92
		5/15/2005	40.66	50.46	208.23	205.57	37.31	170.92
		1/14/2007	40.66	50.46	208.23	205.57	37.00	171.23
		6/15/2008	40.66	50.46	208.23	205.57	37.35	170.88
		07/01/14	40.66	50.46	208.23	205.57	37.00	171.23
		07/16/14	40.66	50.46	208.23	205.57	37.15	171.08
		11/18/14	40.66	50.46	208.23	205.57	38.00	170.23
		02/04/15	40.66	50.46	208.23	205.57	37.31	170.92
		05/05/15	40.66	50.46	208.23	205.57	37.31	170.92
		08/06/15	40.66	50.46	208.23	205.57	37.35	170.88
		02/22/18	40.66	50.46	208.23	205.57	38.33	169.9
		08/28/18	40.66	50.46	208.23	205.57	38.62	169.61
		02/21/19	40.66	50.46	208.23	205.57	46WW16 contained water and a sample was collected. The sample collection log was misplaced and no water level information is available.	
		08/13/19	40.66	50.46	208.23	205.57	37.95	170.28
		02/13/20	40.66	50.46	208.23	205.57	38.62	169.61
		03/16/21	40.66	50.46	208.23	205.57	38.15	170.08
46WW17	S/I	07/07/20	27.69	37.69	202.54	199.85	33.95	168.59
		03/15/21	27.69	37.69	202.54	199.85	30.63	171.91
LHSMW08	I	12/1/1994	25.52	35.52	211.73	209.51	13.52	198.21
		2/1/1996	25.52	35.52	211.73	209.51	15.24	196.49
		12/1/1996	25.52	35.52	211.73	209.51	15.24	196.49
		4/7/2008	25.52	35.52	211.73	209.51	25.78	185.95
		9/13/2008	25.52	35.52	211.73	209.51	32.50	179.23
		05/29/13	25.52	35.52	211.73	209.51	30.48	181.25
		08/09/13	25.52	35.52	211.73	209.51	32.50	179.23
		09/21/13	25.52	35.52	211.73	209.51	31.70	180.03

Table 2-3
Groundwater Elevation Data

Well ID	Zone	Sampling Date	Screen Interval (ft BTOC)		Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
			Top	Bottom				
LHSMW11	S	12/1/1994	17.02	27.02	212.91	209.89	13.54	199.37
		2/1/1996	17.02	27.02	212.91	209.89	15.40	197.51
		12/1/1996	17.02	27.02	212.91	209.89	15.40	197.51
		3/16/2002	17.02	27.02	212.91	209.89	Dry	Dry
		5/16/2008	17.02	27.02	212.91	209.89	26.46	186.45
		10/13/2008	17.02	27.02	212.91	209.89	Dry	Dry
		05/24/13	17.02	27.02	212.91	209.89	Dry	Dry
		08/10/13	17.02	27.02	212.91	209.89	Dry	Dry
		09/20/13	17.02	27.02	212.91	209.89	Dry	Dry
		01/25/14	17.02	27.02	212.91	209.89	Dry	Dry
		02/03/16	17.02	27.02	212.91	209.89	Dry	Dry
		08/05/16	17.02	27.02	212.91	209.89	26.46	186.45
		02/25/19	17.02	27.02	212.91	209.89	Dry	Dry
LHSMW12	S	12/1/1994	6.64	16.64	209.02	205.98	9.66	199.36
		2/1/1996	6.64	16.64	209.02	205.98	10.48	198.54
		12/1/1996	6.64	16.64	209.02	205.98	10.48	198.54
		3/16/2002	6.64	16.64	209.02	205.98	Dry	Dry
		5/16/2008	6.64	16.64	209.02	205.98	Dry	Dry
		10/13/2008	6.64	16.64	209.02	205.98	Dry	Dry
		05/24/13	6.64	16.64	209.02	205.98	Dry	Dry
		08/10/13	6.64	16.64	209.02	205.98	Dry	Dry
		09/20/13	6.64	16.64	209.02	205.98	Dry	Dry
		01/25/14	6.64	16.64	209.02	205.98	Dry	Dry
		02/03/16	6.64	16.64	209.02	205.98	Dry	Dry
		08/05/16	6.64	16.64	209.02	205.98	Dry	Dry
		02/25/19	6.64	16.64	209.02	205.98	Dry	Dry
LHSMW14	S	12/1/1994	10.51	20.51	244.78	241.67	9.80	234.98
		2/1/1996	10.51	20.51	244.78	241.67	9.94	234.84
		12/1/1996	10.51	20.51	244.78	241.67	9.94	234.84
		3/16/2002	10.51	20.51	244.78	241.67	9.55	235.23
		9/13/2008	10.51	20.51	244.78	241.67	14.92	229.86

Table 2-3
Groundwater Elevation Data

Well ID	Zone	Sampling Date	Screen Interval (ft BTOC)		Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
			Top	Bottom				
LHSMW14	S	05/24/13	10.51	20.51	244.78	241.67	12.81	231.97
		08/09/13	10.51	20.51	244.78	241.67	14.92	229.86
		09/24/13	10.51	20.51	244.78	241.67	15.5	229.28
		02/03/16	10.51	20.51	244.78	241.67	9.55	235.23
		02/25/19	10.51	20.51	244.78	241.67	8.47	236.31
LHSMW15	S	12/1/1994	14.57	24.57	226.65	223.68	16.05	210.60
		2/1/1996	14.57	24.57	226.65	223.68	16.60	210.05
		12/1/1996	14.57	24.57	226.65	223.68	16.60	210.05
		3/16/2002	14.57	24.57	226.65	223.68	Dry	Dry
		5/16/2008	14.57	24.57	226.65	223.68	Dry	Dry
		10/13/2008	14.57	24.57	226.65	223.68	Dry	Dry
		05/25/13	14.57	24.57	226.65	223.68	Dry	Dry
		08/10/13	14.57	24.57	226.65	223.68	Dry	Dry
		09/20/13	14.57	24.57	226.65	223.68	Dry	Dry
		01/25/14	14.57	24.57	226.65	223.68	Dry	Dry
		02/03/16	14.57	24.57	226.65	223.68	Dry	Dry
		08/05/16	14.57	24.57	226.65	223.68	Dry	Dry
		02/25/19	14.57	24.57	226.65	223.68	Dry	Dry
LHSMW16	S	12/1/1994	14.49	24.49	232.19	229.30	8.25	223.94
		2/1/1996	14.49	24.49	232.19	229.30	9.96	222.23
		12/1/1996	14.49	24.49	232.19	229.30	9.96	222.23
		3/16/2002	14.49	24.49	232.19	229.30	14.22	217.97
		4/15/2002	14.49	24.49	232.19	229.30	Dry	Dry
		5/15/2005	14.49	24.49	232.19	229.30	Dry	Dry
		5/15/2008	14.49	24.49	232.19	229.30	Dry	Dry
		5/16/2008	14.49	24.49	232.19	229.30	11.25	220.94
		10/13/2008	14.49	24.49	232.19	229.30	18.80	213.39
		05/29/13	14.49	24.49	232.19	229.30	16.70	215.49
		08/10/13	14.49	24.49	232.19	229.30	18.80	213.39
		09/25/13	14.49	24.49	232.19	229.30	20.95	211.24
		01/29/14	14.49	24.49	232.19	229.30	20.54	211.65
		11/19/14	14.49	24.49	232.19	229.30	21.26	210.93
		02/04/15	14.49	24.49	232.19	229.30	NM	NM
		05/05/15	14.49	24.49	232.19	229.30	NM	NM

Table 2-3
Groundwater Elevation Data

Well ID	Zone	Sampling Date	Screen Interval (ft BTOC)		Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
			Top	Bottom				
LHSMW16	S	08/05/15	14.49	24.49	232.19	229.30	NM	NM
		02/03/16	14.49	24.49	232.19	229.30	14.22	217.97
		08/05/16	14.49	24.49	232.19	229.30	11.25	220.94
		02/22/18	14.49	24.49	232.19	229.30	Dry	Dry
		08/28/18	14.49	24.49	232.19	229.30	Dry	Dry
		02/25/19	14.49	24.49	232.19	229.30	10.32	221.87
LHSMW17	S	12/1/1994	16.68	26.68	214.58	211.50	11.24	203.34
		2/1/1996	16.68	26.68	214.58	211.50	13.15	201.43
		12/1/1996	16.68	26.68	214.58	211.50	13.15	201.43
		2/16/2002	16.68	26.68	214.58	211.50	Dry	Dry
		3/15/2002	16.68	26.68	214.58	211.50	Dry	Dry
		5/15/2005	16.68	26.68	214.58	211.50	Dry	Dry
		3/16/2008	16.68	26.68	214.58	211.50	Dry	Dry
		5/15/2008	16.68	26.68	214.58	211.50	Dry	Dry
		11/18/14	16.68	26.68	214.58	211.50	Dry	Dry
		02/03/15	16.68	26.68	214.58	211.50	Dry	Dry
		05/05/15	16.68	26.68	214.58	211.50	NM	NM
		08/05/15	16.68	26.68	214.58	211.50	Dry	Dry
		02/02/16	16.68	26.68	214.58	211.50	Dry	Dry
		08/03/16	16.68	26.68	214.58	211.50	Dry	Dry
		02/22/18	16.68	26.68	214.58	211.50	Dry	Dry
		08/29/18	16.68	26.68	214.58	211.50	Dry	Dry
		02/20/19	16.68	26.68	214.58	211.50	Dry	Dry
		08/13/19	16.68	26.68	214.58	211.50	Dry	Dry
		02/18/20	16.68	26.68	214.58	211.50	Dry	Dry
		03/15/21	16.68	26.68	214.58	211.50	Dry	Dry
LHSMW18	S	12/1/1994	17.47	27.47	215.35	212.38	13.68	201.67
		2/1/1996	17.47	27.47	215.35	212.38	15.07	200.28
		12/1/1996	17.47	27.47	215.35	212.38	15.07	200.28
		2/16/2002	17.47	27.47	215.35	212.38	Dry	Dry
		3/15/2002	17.47	27.47	215.35	212.38	Dry	Dry
		5/15/2005	17.47	27.47	215.35	212.38	Dry	Dry
		2/20/2007	17.47	27.47	215.35	212.38	22.47	192.88
		3/16/2008	17.47	27.47	215.35	212.38	24.66	190.69

Table 2-3
Groundwater Elevation Data

Well ID	Zone	Sampling Date	Screen Interval (ft BTOC)		Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
			Top	Bottom				
LHSMW18	S	5/15/2008	17.47	27.47	215.35	212.38	Dry	Dry
		10/13/2008	17.47	27.47	215.35	212.38	Dry	Dry
		05/28/13	17.47	27.47	215.35	212.38	25.62	189.73
		08/10/13	17.47	27.47	215.35	212.38	Dry	Dry
		09/20/13	17.47	27.47	215.35	212.38	Dry	Dry
		01/25/14	17.47	27.47	215.35	212.38	Dry	Dry
		07/17/14	17.47	27.47	215.35	212.38	Dry	Dry
		11/20/14	17.47	27.47	215.35	212.38	NM	NM
		02/03/15	17.47	27.47	215.35	212.38	Dry	Dry
		05/05/15	17.47	27.47	215.35	212.38	Dry	Dry
		08/05/15	17.47	27.47	215.35	212.38	Dry	Dry
		02/02/16	17.47	27.47	215.35	212.38	Dry	Dry
		03/28/16	17.47	27.47	215.35	212.38	25.15	190.20
		08/03/16	17.47	27.47	215.35	212.38	24.66	190.69
		02/22/18	17.47	27.47	215.35	212.38	Dry	Dry
		08/29/18	17.47	27.47	215.35	212.38	Dry	Dry
		02/20/19	17.47	27.47	215.35	212.38	Dry	Dry
		08/13/19	17.47	27.47	215.35	212.38	Dry	Dry
		02/18/20	17.47	27.47	215.35	212.38	Dry	Dry
		03/15/21	17.47	27.47	215.35	212.38	Dry	Dry
LHSMW19	S	12/1/1994	19.76	29.76	212.96	209.80	11.15	201.81
		2/1/1996	19.76	29.76	212.96	209.80	12.35	200.61
		12/1/1996	19.76	29.76	212.96	209.80	12.35	200.61
		1/16/2002	19.76	29.76	212.96	209.80	24.91	188.05
		4/15/2002	19.76	29.76	212.96	209.80	24.90	188.06
		6/15/2005	19.76	29.76	212.96	209.80	24.25	188.71
		2/20/2007	19.76	29.76	212.96	209.80	20.90	192.06
		3/16/2008	19.76	29.76	212.96	209.80	24.84	188.12
		5/15/2008	19.76	29.76	212.96	209.80	24.36	188.60
		05/28/13	19.76	29.76	212.96	209.80	24.50	188.46
		08/13/13	19.76	29.76	212.96	209.80	25.13	187.83
		09/23/13	19.76	29.76	212.96	209.80	26.38	186.58
		01/28/14	19.76	29.76	212.96	209.80	24.90	188.06
		07/16/14	19.76	29.76	212.96	209.80	24.55	188.41

Table 2-3
Groundwater Elevation Data

Well ID	Zone	Sampling Date	Screen Interval (ft BTOC)		Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
			Top	Bottom				
LHSMW19	S	11/18/14	19.76	29.76	212.96	209.80	25.33	187.63
		02/04/15	19.76	29.76	212.96	209.80	24.90	188.06
		05/06/15	19.76	29.76	212.96	209.80	24.25	188.71
		08/05/15	19.76	29.76	212.96	209.80	24.36	188.60
		02/01/16	19.76	29.76	212.96	209.80	24.91	188.05
		08/03/16	19.76	29.76	212.96	209.80	24.84	188.12
		02/20/18	19.76	29.76	212.96	209.80	25.91	187.05
		08/28/18	19.76	29.76	212.96	209.80	26.61	186.35
		02/20/19	19.76	29.76	212.96	209.80	25.55	187.41
		08/12/19	19.76	29.76	212.96	209.80	24.70	188.26
		02/19/20	19.76	29.76	212.96	209.80	25.35	187.61
		03/18/21	19.76	29.76	212.96	209.80	25.08	187.88
LHSMW20	S	12/1/1994	15.08	25.08	209.29	206.21	12.60	196.69
		2/1/1996	15.08	25.08	209.29	206.21	12.84	196.45
		12/1/1996	15.08	25.08	209.29	206.21	12.84	196.45
		05/28/13	15.08	25.08	209.29	206.21	24.2	185.09
		08/10/13	15.08	25.08	209.29	206.21	Dry	Dry
		09/20/13	15.08	25.08	209.29	206.21	Dry	Dry
		01/25/14	15.08	25.08	209.29	206.21	Dry	Dry
		07/17/14	15.08	25.08	209.29	206.21	Dry	Dry
		11/20/14	15.08	25.08	209.29	206.21	Dry	Dry
		02/03/15	15.08	25.08	209.29	206.21	Dry	Dry
		05/05/15	15.08	25.08	209.29	206.21	Dry	Dry
		08/04/15	15.08	25.08	209.29	206.21	Dry	Dry
		02/01/16	15.08	25.08	209.29	206.21	Dry	Dry
		08/04/16	15.08	25.08	209.29	206.21	Dry	Dry
		02/20/19	15.08	25.08	209.29	206.21	Dry	Dry
		08/13/19	15.08	25.08	209.29	206.21	Dry	Dry
		03/18/21	15.08	25.08	209.29	206.21	Dry	Dry

Table 2-3
Groundwater Elevation Data

Well ID	Zone	Sampling Date	Screen Interval (ft BTOC)		Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
			Top	Bottom				
LHSMW21	S	12/1/1994	19.61	29.61	207.67	204.66	10.92	196.75
		2/1/1996	19.61	29.61	207.67	204.66	11.70	195.97
		12/1/1996	19.61	29.61	207.67	204.66	11.70	195.97
		05/28/13	19.61	29.61	207.67	204.66	19.87	187.80
		08/10/13	19.61	29.61	207.67	204.66	22.40	185.27
		09/25/13	19.61	29.61	207.67	204.66	23.60	184.07
		02/02/16	19.61	29.61	207.67	204.66	22.15	185.52
		08/05/16	19.61	29.61	207.67	204.66	21.12	186.55
		02/25/19	19.61	29.61	207.67	204.66	22.22	185.45
		08/13/19	19.61	29.61	207.67	204.66	20.55	187.12
		02/13/20	19.61	29.61	207.67	204.66	21.30	186.37
		03/16/21	19.61	29.61	207.67	204.66	18.53	189.14
LHSMW22	S	12/1/1994	18.69	28.69	209.60	206.41	13.89	195.71
		2/1/1996	18.69	28.69	209.60	206.41	15.08	194.52
		12/1/1996	18.69	28.69	209.60	206.41	15.08	194.52
		1/16/2002	18.69	28.69	209.60	206.41	Dry	Dry
		3/15/2002	18.69	28.69	209.60	206.41	Dry	Dry
		5/15/2005	18.69	28.69	209.60	206.41	Dry	Dry
		2/19/2007	18.69	28.69	209.60	206.41	25.21	184.39
		4/15/2008	18.69	28.69	209.60	206.41	Dry	Dry
		4/16/2008	18.69	28.69	209.60	206.41	Dry	Dry
		10/13/2008	18.69	28.69	209.60	206.41	Dry	Dry
		05/28/13	18.69	28.69	209.60	206.41	Dry	Dry
		08/10/13	18.69	28.69	209.60	206.41	Dry	Dry
		09/20/13	18.69	28.69	209.60	206.41	Dry	Dry
		01/25/14	18.69	28.69	209.60	206.41	Dry	Dry
		07/17/14	18.69	28.69	209.60	206.41	Dry	Dry
		11/20/14	18.69	28.69	209.60	206.41	Dry	Dry
		02/03/15	18.69	28.69	209.60	206.41	Dry	Dry
		05/05/15	18.69	28.69	209.60	206.41	Dry	Dry
		08/04/15	18.69	28.69	209.60	206.41	Dry	Dry
		02/01/16	18.69	28.69	209.60	206.41	Dry	Dry
		08/04/16	18.69	28.69	209.60	206.41	Dry	Dry
		02/20/18	18.69	28.69	209.60	206.41	Dry	Dry

Table 2-3
Groundwater Elevation Data

Well ID	Zone	Sampling Date	Screen Interval (ft BTOC)		Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
			Top	Bottom				
LHSMW22	S	08/28/18	18.69	28.69	209.60	206.41	Dry	Dry
		02/20/19	18.69	28.69	209.60	206.41	Dry	Dry
		08/13/19	18.69	28.69	209.60	206.41	Dry	Dry
		02/18/20	18.69	28.69	209.60	206.41	Dry	Dry
		03/15/21	18.69	28.69	209.60	206.41	Dry	Dry
LHSMW23	I	12/1/1994	21.42	41.42	208.82	205.80	15.53	193.29
		2/1/1996	21.42	41.42	208.82	205.80	17.02	191.80
		12/1/1996	21.42	41.42	208.82	205.80	17.02	191.80
		1/16/2002	21.42	41.42	208.82	205.80	Dry	Dry
		3/15/2002	21.42	41.42	208.82	205.80	Dry	Dry
		5/15/2005	21.42	41.42	208.82	205.80	Dry	Dry
		2/19/2007	21.42	41.42	208.82	205.80	26.55	182.27
		04/07/08	21.42	41.42	208.82	205.80	27.64	181.18
		04/15/08	21.42	41.42	208.82	205.80	Dry	Dry
		04/16/08	21.42	41.42	208.82	205.80	Dry	Dry
		10/13/08	21.42	41.42	208.82	205.80	Dry	Dry
		05/25/13	21.42	41.42	208.82	205.80	Dry	Dry
		08/10/13	21.42	41.42	208.82	205.80	Dry	Dry
		09/20/13	21.42	41.42	208.82	205.80	Dry	Dry
		01/25/14	21.42	41.42	208.82	205.80	Dry	Dry
		07/17/14	21.42	41.42	208.82	205.80	Dry	Dry
		11/20/14	21.42	41.42	208.82	205.80	Dry	Dry
		02/03/15	21.42	41.42	208.82	205.80	Dry	Dry
		05/05/15	21.42	41.42	208.82	205.80	Dry	Dry
		08/04/15	21.42	41.42	208.82	205.80	Dry	Dry
		02/01/16	21.42	41.42	208.82	205.80	Dry	Dry
		03/28/16	21.42	41.42	208.82	205.80	Dry	Dry
		08/04/16	21.42	41.42	208.82	205.80	Dry	Dry
		02/20/18	21.42	41.42	208.82	205.80	Dry	Dry
		08/28/18	21.42	41.42	208.82	205.80	Dry	Dry
		02/20/19	21.42	41.42	208.82	205.80	Dry	Dry
		08/13/19	21.42	41.42	208.82	205.80	Dry	Dry

Table 2-3
Groundwater Elevation Data

Well ID	Zone	Sampling Date	Screen Interval (ft BTOC)		Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
			Top	Bottom				
LHSMW23R	I	09/03/19	23.09	43.09	208.84	205.75	35.80	173.04
		02/19/20	23.09	43.09	208.84	205.75	35.90	172.94
		03/18/21	23.09	43.09	208.84	205.75	35.95	172.89
LHSMW24	S	12/1/1994	18.96	28.96	203.84	200.52	11.90	191.94
		02/01/96	18.96	28.96	203.84	200.52	13.84	190.00
		12/1/1996	18.96	28.96	203.84	200.52	13.84	190.00
		2/16/2002	18.96	28.96	203.84	200.52	27.88	175.96
		5/16/2008	18.96	28.96	203.84	200.52	Dry	Dry
		10/13/2008	18.96	28.96	203.84	200.52	Dry	Dry
		05/28/13	18.96	28.96	203.84	200.52	Dry	Dry
		08/10/13	18.96	28.96	203.84	200.52	Dry	Dry
		09/20/13	18.96	28.96	203.84	200.52	Dry	Dry
		01/25/14	18.96	28.96	203.84	200.52	Dry	Dry
		07/17/14	18.96	28.96	203.84	200.52	Dry	Dry
		02/02/16	18.96	28.96	203.84	200.52	27.88	175.96
		08/05/16	18.96	28.96	203.84	200.52	Dry	Dry
		02/25/19	18.96	28.96	203.84	200.52	Dry	Dry
		03/18/21	18.96	28.96	203.84	200.52	Dry	Dry
LHSMW25	I	12/1/1994	22.10	42.10	201.97	199.07	15.75	186.22
		2/1/1996	22.10	42.10	201.97	199.07	17.10	184.87
		12/1/1996	22.10	42.10	201.97	199.07	17.10	184.87
		4/7/2008	22.10	42.10	201.97	199.07	25.50	176.47
		02/22/18	22.10	42.10	201.97	199.07	30.90	171.07
		08/27/18	22.10	42.10	201.97	199.07	31.33	170.64
		02/25/19	22.10	42.10	201.97	199.07	30.93	171.04
		08/12/19	22.10	42.10	201.97	199.07	29.85	172.12
		02/19/20	22.10	42.10	201.97	199.07	31.22	170.75
		03/15/21	22.10	42.10	201.97	199.07	30.82	171.15
LHSMW27	S	12/1/1994	10.50	20.50	202.10	199.20	12.19	189.91
		2/1/1996	10.50	20.50	202.10	199.20	14.05	188.05
		12/1/1996	10.50	20.50	202.10	199.20	14.05	188.05
		2/16/2002	10.50	20.50	202.10	199.20	17.82	184.28
		5/16/2008	10.50	20.50	202.10	199.20	Dry	Dry
		10/13/2008	10.50	20.50	202.10	199.20	Dry	Dry

Table 2-3
Groundwater Elevation Data

Well ID	Zone	Sampling Date	Screen Interval (ft BTOC)		Top of Casing Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
			Top	Bottom				
LHSMW27	S	05/28/13	10.50	20.50	202.10	199.20	Dry	Dry
		08/10/13	10.50	20.50	202.10	199.20	Dry	Dry
		09/20/13	10.50	20.50	202.10	199.20	Dry	Dry
		01/25/14	10.50	20.50	202.10	199.20	Dry	Dry
		07/18/14	10.50	20.50	202.10	199.20	Dry	Dry
		02/02/16	10.50	20.50	202.10	199.20	17.82	184.28
		08/05/16	10.50	20.50	202.10	199.20	Dry	Dry
		02/25/19	10.50	20.50	202.10	199.20	19.17	182.93

Notes:

bgs - below ground surface
BTOC - below top of casing
D - Deep
ft - feet
I - Intermediate
ID - identifier
MSL - mean seal level
NM - not measured
S - shallow

Table 2-4
Groundwater RA-O Results - 2021

	Location Code		46WW02		46WW03				46WW05		46WW06		46WW07				46WW08		46WW09	
	Sample ID		46WW02-210316		46WW03-210318		46WW03-210318-		46WW05-210316		46WW06-210315		46WW07-210318		46WW07-210318-		46WW08-210315		46WW09-210316	
	Sample Date		3/16/2021		3/18/2021		3/18/2021		3/16/2021		3/15/2021		3/18/2021		3/18/2021		3/15/2021		3/16/2021	
	Location Description		Site 46 - Central, Within Site Boundary, Intermediate Zone		Site 46 - Central, Within Site Boundary, Deep Zone				Site 46 - North, Within Site Boundary, Intermediate Zone		Site 46 - West, Within Site Boundary, Intermediate Zone		Site 46 - North, Within Site Boundary. Intermediate Zone.				Site 46 - North-Northwest, Within Site Boundary, Intermediate Zone		Site 46 - Central, Within Site Boundary. Intermediate Zone.	
Analyte	**Units**	**MCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
Field Measurements																				
Dissolved oxygen	mg/L	NV	0.07		0.09		0.09		0.08		0.08		0.04		0.04		0.03		0.06	
Oxidation Reduction Potential	mV	NV	210		60		60		267		-14		2		2		-113		23	
pH	Std. Units	NV	4.25		5.82		5.82		4.10		5.75		6.36		6.36		6.10		5.86	
Dissolved Gases (RSK-175)																				
Carbon dioxide	µg/L	NV	420,000		NA		NA		450,000		NA		NA		NA		NA		200,000	
Ethane	µg/L	NV	< 0.47	U	NA		NA		< 0.47	U	NA		NA		NA		NA		< 0.47	U
Ethylene	µg/L	NV	< 0.55	U	NA		NA		< 0.55	U	NA		NA		NA		NA		< 0.55	U
Methane	µg/L	NV	< 1	U	NA		NA		1.3	J	NA		NA		NA		NA		< 1	U
General Chemistry (SM5310B/SW9056A)																				
Chloride	mg/L	NV	31.4		NA		NA		172		NA		NA		NA		NA		463	
Nitrate	mg/L	NV	0.205		NA		NA		< 0.5	U	NA		NA		NA		NA		0.603	
Sulfate	mg/L	NV	170		NA		NA		4,080		NA		NA		NA		NA		2,330	
Total organic carbon	mg/L	NV	10.4		NA		NA		10.4		NA		NA		NA		NA		4.71	
Volatile Organic Compounds (Method SW8260C)																				
cis-1,2-Dichloroethene	µg/L	70	1.4		< 0.5	U	< 0.5	U	1.6		< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	**25**		< 0.5	U	< 0.5	U	**20**		< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue highlighting indicates concentrations above the MCL.

µg/L - micrograms per liter

< The analyte was not detected above the concentration shown.

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

UJ - Undetected estimated: The analyte was analyzed for but, was not detected. Even though the analyte was not detected, certain discrepancies in meeting analyte specific quality control were not met.

FD - field duplicate

ID - identifier

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

mV - millivolts

NA - not analyzed

NV - no value; MCLs only shown for constituents of concern

RA-O - remedial action operation

Std. Units - standard pH units

Val Qual - Validation Qualifier

Table 2-4
Groundwater RA-O Results - 2021

	Location Code		46WW11				46WW14		46WW16		46WW17		LHSMW19		LHSMW21		LHSMW23R		LHSMW25	
	Sample ID		46WW11-210316		46WW11-210316-		46WW14-210315		46WW16-210316		46WW17-210315		LHSMW19-210318		LHSMW21-210316		LHSMW23R-210318		LHSMW25-210315	
	Sample Date		3/16/2021		3/16/2021		3/15/2021		3/16/2021		3/15/2021		3/18/2021		3/16/2021 &		3/18/2021		3/15/2021	
	Location Description		Site 46 - Central, Within Site Boundary, Shallow Zone				Site 45 - Northeast, Within Site Boundary, Intermediate Zone.		Site 46 - North, Within Site Boundary, Intermediate Zone		Site 46 - Northeast, Within Site Boundary, Shallow / Intermediate Zone.		Site 46 - Central, Within Site Boundary, Shallow Zone		Site 46 - North, Within Site Boundary, Shallow Zone		Site 46 - South, Within Site Boundary, Intermediate Zone		Site 46 - East, Within Site Boundary, Intermediate Zone	
Analyte	**Units**	**MCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
Field Measurements																				
Dissolved oxygen	mg/L	NV	0.02		0.02		0.07		0.04		0.08		0.08		0.07		0.11		0.1	
Oxidation Reduction Potential	mV	NV	69		69		-63		-105		-1		-59		115		9		-58	
pH	Std. Units	NV	5.58		5.58		5.66		5.55		6.44		6.84		5.54		5.66		6.36	
Dissolved Gases (RSK-175)																				
Carbon dioxide	µg/L	NV	83,000		85,000		NA		670,000		NA		NA		NA		NA		NA	
Ethane	µg/L	NV	< 0.47	U	< 0.47	U	NA		< 0.47	UJ	NA		NA		< 0.47		NA		NA	
Ethylene	µg/L	NV	< 0.55	U	< 0.55	U	NA		< 0.55	UJ	NA		NA		< 0.55		NA		NA	
Methane	µg/L	NV	2	J	1.4	J	NA		< 1	UJ	NA		NA		< 1		NA		NA	
General Chemistry (SM5310B/SW9056A)																				
Chloride	mg/L	NV	114		111		NA		277		NA		NA		227		NA		NA	
Nitrate	mg/L	NV	0.126		0.115		NA		< 0.2	U	NA		NA		0.292		NA		NA	
Sulfate	mg/L	NV	335		331		NA		609		NA		NA		693		NA		NA	
Total organic carbon	mg/L	NV	1.91		1.73		NA		2.9		NA		NA		1.76		NA		NA	
Volatile Organic Compounds (Method SW8260C)																				
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	UJ	< 0.5	U	3.9		**130**		0.66	J	< 0.5	U
Trichloroethene	µg/L	5	**19**		**19**		< 0.5	U	< 0.5	U	< 0.5	U	**13**		**33**		0.64	J	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	**3.7**		< 0.5	U	< 0.5	U

Notes:

Blue highlighting indicates concentrations above the MCL.

µg/L - micrograms per liter

< The analyte was not detected above the concentration shown.

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

UJ - Undetected estimated: The analyte was analyzed for but, was not detected. Even though the analyte was not detected, certain discrepancies in meeting analyte specific quality control were not met.

FD - field duplicate

ID - identifier

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

mV - millivolts

NA - not analyzed

NV - no value; MCLs only shown for constituents of concern

RA-O - remedial action operation

Std. Units - standard pH units

Val Qual - Validation Qualifier

Table 2-5
COC Concentrations

Location Code			46WW01												46WW02									
Sample ID			46WW01-981001		46WW01-981107		46WW01-981107FD		46WW01-FEB2007		46WW01-032916		46WW01-080416		46WW02-981106		46WW02-FEB2007		46WW02-102808		46WW02-052813		46WW02-091913	
Sample Date			10/1/1998		11/7/1998		11/7/1998		2/19/2007		3/29/2016		8/4/2016		11/6/1998		2/20/2007		10/28/2008		5/28/2013		9/19/2013	
Location Description			Site 46 - Central, inside site boundary. Shallow Zone.												Site 46 - Central, inside site boundary. Intermediate Zone.									
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	1.2		< 1	U	< 1	U	< 0.83	U	< 0.5	U	< 0.5	U	1		1.4	J	1.45		1.76		1.91	
Trichloroethene	µg/L	5	**6.6**		< 1	U	< 1	U	< 0.63	U	< 0.5	U	< 0.5	U	**24**		**28.9**		**31.2**		**30**		**37.4**	
Vinyl chloride	µg/L	2	< 1	U	< 1	U	< 1	U	< 0.32	U	< 0.5	U	< 0.5	U	< 1	U	< 0.32	U	< 0.25	U	0.495	J	0.465	J

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			46WW02																					
Sample ID			46WW02-012714		46WW02-071514		46WW02-111814		46WW02-020515		46WW02-050615		46WW02-080515		46WW02-020116		46WW02-080416		46WW02-022018		46WW02-180829		46WW02-190221	
Sample Date			1/27/2014		7/15/2014		11/18/2014		2/5/2015		5/6/2015		8/5/2015		2/1/2016		8/4/2016		2/20/2018		8/29/2018		2/21/2019	
Location Description			Site 46 - Central, inside site boundary. Intermediate Zone.																					
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	2.09		1.72		1.97		2.08		1.44		1.37		1.28		1.31		0.52	J	1.4		1	
Trichloroethene	µg/L	5	**35.2**		**32.8**		**38.2**		**37.6**		**24**		**20.3**		**16.6**		**20.7**		**21**		**24**		**16**	
Vinyl chloride	µg/L	2	0.556	J	0.493	J	0.501	J	0.432	J	< 0.5	U	< 0.5	U	< 0.5	U	0.259	J	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			46WW02						46WW03													
Sample ID			46WW02-190812		46WW02-200213		46WW02-210316		46WW03-981106		46WW03-053013		46WW03-053013-FD		46WW03-092613		46WW03-012514		46WW03FD-012514		46WW03-071714		46WW03-112014	
Sample Date			8/12/2019		2/13/2020		3/16/2021		11/6/1998		5/30/2013		5/30/2013		9/26/2013		1/25/2014		1/25/2014		7/17/2014		11/20/2014	
Location Description			Site 46 - Central, inside site boundary. Intermediate Zone.						Site 46 - Central, inside site boundary. Deep Zone													
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	1.1		1.6		1.4		< 1	U	< 0.25	U	< 0.25	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	**17**		**15**		**25**		< 1	U	< 0.25	U	< 0.25	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.25	U	< 0.25	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			46WW03																				
Sample ID			46WW03FD-112014		46WW03-020515		46WW03-050615		46WW03-080515		46WW03FD-080515		46WW03-020316		46WW03-080416		46WW03-022618		46WW03-180827		46WW03-190220		46WW03-190812	
Sample Date			11/20/2014		2/5/2015		5/6/2015		8/5/2015		8/5/2015		2/3/2016		8/4/2016		2/26/2018		8/27/2018		2/20/2019		8/12/2019	
Location Description			Site 46 - Central, inside site boundary. Deep Zone.																				
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			**46WW03**								**46WW04**													
Sample ID			**46WW03-200219**		**46WW03-200219-FD**		**46WW03-210318**		**46WW03-210318-FD**		**46WW04-981107**		**46WW04-FEB2007**		**46WW04F-052413**		**46WW04-092113**		**46WW04-012514**		**46WW04-071814**		**46WW04-050615**	
Sample Date			**2/19/2020**		**2/19/2020**		**3/18/2021**		**3/18/2021**		**11/7/1998**		**2/19/2007**		**5/24/2013**		**9/21/2013**		**1/25/2014**		**7/18/2014**		**5/6/2015**	
Location Description			**Site 46 - Central, inside site boundary. Deep Zone.**								**Site 46 - West, inside site boundary. Shallow Zone.**													
Analyte	**Units**	**MCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.83	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	0.71	J	< 0.63	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.32	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			46WW04				46WW05															
Sample ID			46WW04-080515		46WW04-020316		46WW05-100908		46WW05-053013		46WW05-092413		46WW05-012814		46WW05-071614		46WW05-111914		46WW05-020515		46WW05-050515		46WW05-080615	
Sample Date			8/5/2015		2/3/2016		10/9/2008		5/30/2013		9/24/2013		1/28/2014		7/16/2014		11/19/2014		2/5/2015		5/5/2015		8/6/2015	
Location Description			Site 46 - West, inside site boundary. Shallow Zone.				Site 46 - N, inside site boundary. Intermediate Zone.																	
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	1.72		10.2		8.12		10.3		9.74		9.55		10.9		7		3.87	
Trichloroethene	µg/L	5	< 0.5	U	< 0.5	U	**5.9**		**144**		**112**		**131**		**130**		**128**		**143**		**80.5**		**34**	
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.25	U	**2.14**		1.79		**2.53**		**2.09**		1.59		1.72		0.956	J	0.274	J

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			46WW05																		46WW06			
Sample ID			46WW05-020116		46WW05-080316		46WW05-022618		46WW05-022618-FD		46WW05-180828		46WW05-190225		46WW05-190813		46WW05-200213		46WW05-210316		46WW06-100908		46WW06-052413	
Sample Date			2/1/2016		8/3/2016		2/26/2018		2/26/2018		8/28/2018		2/25/2019		8/13/2019		2/13/2020		3/16/2021		10/9/2008		5/24/2013	
Location Description			Site 46 - N, inside site boundary. Intermediate Zone.																		Site 46 - W, inside site boundary. Intermediate Zone.			
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	3.12		1.86		< 0.5	U	0.62	J	< 0.5	U	2.2		4.8		1.6		1.6		< 0.25	U	< 0.5	U
Trichloroethene	µg/L	5	**46.4**		**23.6**		**14**		**14**		**6.4**		**27**		**62**		**19**		**20**		< 0.25	U	< 0.5	U
Vinyl chloride	µg/L	2	0.832	J	0.522	J	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	1.2		0.65	J	< 0.5	U	< 0.25	U	< 0.5	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			46WW06																			
Sample ID			46WW06-092513		46WW06-012514		46WW06-071714		46WW06FD-071714		46WW06-111914		46WW06FD-111914		46WW06-020615		46WW06-050115		46WW06-080415		46WW06-020216		46WW06-080416	
Sample Date			9/25/2013		1/25/2014		7/17/2014		7/17/2014		11/19/2014		11/19/2014		2/6/2015		5/1/2015		8/4/2015		2/2/2016		8/4/2016	
Location Description			Site 46 - W, inside site boundary. Intermediate Zone.																			
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			46WW06														46WW07							
Sample ID			46WW06FD-080416		46WW06-022618		46WW06-180827		46WW06-190220		46WW06-190813		46WW06-200219		46WW06-210315		46WW07-052513		46WW07-052513-FD		46WW07-091913		46WW07-012714	
Sample Date			8/4/2016		2/26/2018		8/27/2018		2/20/2019		8/13/2019		2/19/2020		3/15/2021		5/25/2013		5/25/2013		9/21/2013		1/27/2014	
Location Description			Site 46 - W, inside site boundary. Intermediate Zone.														Site 46 - N, inside site boundary. Intermediate Zone.							
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	0.65	J	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			46WW07																			
Sample ID			46WW07-071814		46WW07FD-071814		46WW07-112014		46WW07-020315		46WW07-050115		46WW07-080415		46WW07-020216		46WW07-080216		46WW07-022318		46WW07-180827		46WW07-190220	
Sample Date			7/18/2014		7/18/2014		11/20/2014		2/3/2015		5/1/2015		8/4/2015		2/2/2016		8/2/2016		2/23/2018		8/27/2018		2/20/2019	
Location Description			Site 46 - N, inside site boundary. Intermediate Zone.																			
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			46WW07										46WW08									
Sample ID			46WW07-190812		46WW07-200218		46WW07-200218-FD		46WW07-210318		46WW07-210318-FD		46WW08-052513		46WW08-092113		46WW08-092113-FD		46WW08-012814		46WW08FD-012814		46WW08-071814	
Sample Date			8/12/2019		2/18/2020		2/18/2020		3/18/2021		3/18/2021		5/25/2013		9/21/2013		9/21/2013		1/28/2014		1/28/2014		7/18/2014	
Location Description			Site 46 - N, inside site boundary. Intermediate Zone.										Site 46 - NNW, inside site boundary. Intermediate Zone.											
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			46WW08																			
Sample ID			46WW08-112014		46WW08-020315		46WW08FD-020315		46WW08-050115		46WW08FD-050115		46WW08-080415		46WW08-020316		46WW08-080216		46WW08-022318		46WW08-022318-FD		46WW08-180827	
Sample Date			11/20/2014		2/3/2015		2/3/2015		5/1/2015		5/1/2015		8/4/2015		2/3/2016		8/2/2016		2/23/2018		2/23/2018		8/27/2018	
Location Description			Site 46 - NNW, inside site boundary. Intermediate Zone.																					
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			46WW08												46WW09									
Sample ID			46WW08-180827FD		46WW08-190220		46WW08-190813		46WW08-190813-FD		46WW08-200218		46WW08-210315		46WW09-092413		46WW09-012714		46WW09-071514		46WW09-111914		46WW09-020515	
Sample Date			8/27/2018		2/20/2019		8/13/2019		8/13/2019		2/18/2020		3/15/2021		9/24/2013		1/27/2014		7/15/2014		11/19/2014		2/5/2015	
Location Description			Site 46 - NNW, inside site boundary. Intermediate Zone.												Site 46 - Central, within site boundary. Intermediate Zone.									
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			46WW09																			
Sample ID			46WW09-050515		46WW09-080615		46WW09-020216		46WW09-080316		46WW09-022218		46WW09-180828		46WW09-190225		46WW09-190225-FD		46WW09-190812		46WW09-200213	
Sample Date			5/5/2015		8/6/2015		2/2/2016		8/3/2016		2/22/2018		8/28/2018		2/25/2019		2/25/2019		8/12/2019		2/13/2020	
Location Description			Site 46 - Central, within site boundary. Intermediate Zone.																			
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			46WW10																			
Sample ID			46WW10-052513		46WW10-092113		46WW10-012514		46WW10-071714		46WW10-112014		46WW10-020415		46WW10-050615		46WW10FD-050615		46WW10-080515		46WW10-020316		46WW10-080416	
Sample Date			5/25/2013		9/21/2013		1/25/2014		7/17/2014		11/20/2014		2/4/2015		5/6/2015		5/6/2015		8/5/2015		2/3/2016		8/4/2016	
Location Description			Site 46 - West, inside site boundary. Shallow Zone.																			
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			46WW11																					
Sample ID			46WW11-081413		46WW11-091913		46WW11-012814		46WW11-071614		46WW11-111814		46WW11-020415		46WW11-050615		46WW11-080515		46WW11-020116		46WW11-080316		46WW11-022018	
Sample Date			8/14/2013		9/19/2013		1/28/2014		7/16/2014		11/18/2014		2/4/2015		5/6/2015		8/5/2015		2/1/2016		8/3/2016		2/20/2018	
Location Description			Site 46 - Central, within site boundary. Shallow Zone.																					
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	1.56		1.11		2.04		2.12		1.28		1.99		1.4		0.749	J	0.578	J	0.325	J	< 0.5	U
Trichloroethene	µg/L	5	**85.9**		**79.8**		**87.5**		**90.6**		**70.7**		**63.6**		**45.3**		**26.3**		**20.5**		**21.2**		**18**	
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			46WW11																		46WW13			
Sample ID			46WW11-180829		46WW11-180829FD		46WW11-190221		46WW11-190812		46WW11-190812-FD		46WW11-200213		46WW11-200213-FD		46WW11-210316		46WW11-210316-FD		46WW13-052913		46WW13-092413	
Sample Date			8/29/2018		8/29/2018		2/21/2019		8/12/2019		8/12/2019		2/13/2020		2/13/2020		3/16/2021		3/16/2021		5/29/2013		9/24/2013	
Location Description			Site 46 - Central, within site boundary. Shallow Zone.																		Site 46 - SE, within site boundary. Shallow Zone.			
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	37.3		35.5	
Trichloroethene	µg/L	5	**13**		**12**		**13**		**24**		**24**		**14**		**14**		**19**		**19**		**107**		**103**	
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	**13.1**		**9.83**	

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			46WW14																			
Sample ID			46WW14-052913		46WW14-091913		46WW14-012714		46WW14-071514		46WW14-111914		46WW14-020615		46WW14FD-020615		46WW14-050515		46WW14-020216		46WW14FD-020216		46WW14-080216	
Sample Date			5/29/2013		9/19/2013		1/27/2014		7/15/2014		11/19/2014		2/6/2015		2/6/2015		5/5/2015		2/2/2016		2/2/2016		8/2/2016	
Location Description			Site 46 - NE, within site boundary. Intermediate Zone.																			
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	< 0.25	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	< 0.25	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2	< 0.25	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

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µg/L - micrograms per liter

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U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

	Location Code	46WW14		46WW16								
	Sample ID	46WW14FD-080216	46WW14-210315	46WW16-070114	46WW16-071614	46WW16-111814	46WW16-050515	46WW16-080615	46WW16-020116	46WW16-080316	46WW16-022218	46WW16-180828
	Sample Date	8/2/2016	3/15/2021	7/1/2014	7/16/2014	11/18/2014	5/5/2015	8/6/2015	2/1/2016	8/3/2016	2/22/2018	8/28/2018
	Location Description	Site 46 - NE, within site boundary. Intermediate Zone.		Site 46 - N, within site boundary. Intermediate Zone.								
Analyte	Units	MCL	Result / Val Qual	Result / Val Qual	Result / Val Qual	Result / Val Qual	Result / Val Qual	Result / Val Qual	Result / Val Qual	Result / Val Qual	Result / Val Qual	Result / Val Qual	Result / Val Qual
cis-1,2-Dichloroethene	µg/L	70	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Trichloroethene	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Vinyl chloride	µg/L	2	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

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U - Undetected: The analyte was analyzed for, but not detected.

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PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			46WW16								46MW17				LHSMW08							
Sample ID			46WW16-190221		46WW16-190813		46WW16-200213		46WW16-210316		46WW17-200707		46WW17-210315		LHSMW08-960813		LHSMW08-960813FD		LHSMW08-980513		LHSMW08-092113	
Sample Date			2/21/2019		8/13/2019		2/13/2020		3/16/2021		7/7/2020		3/15/2021		8/13/1996		8/13/1996		5/13/1998		9/21/2013	
Location Description			Site 46 - N, within site boundary. Intermediate Zone.								Site 46 - Northeast, Within Site Boundary, Shallow/Intermediate Zone.				Site 46 - South, outside of site boundary. Intermediate Zone.							
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	UJ	0.5	U	< 0.5	U	< 0.2	U	< 0.2	U	< 1	U	< 0.5	U
Trichloroethene	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	0.5	U	< 0.5	U	< 0.25	U	< 0.25	U	< 1	U	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	0.5	U	< 0.5	U	< 0.24	U	< 0.24	U	< 1	U	< 0.5	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			LHSMW11								LHSMW12				LHSMW14							
Sample ID			LHSMW11-960813		LHSMW11-980514		LHSMW11-980514FD		LHSMW11-031508		LHSMW12-960813		LHSMW12-980514		LHSMW14-941129		LHSMW14-960206		LHSMW14-960814		LHSMW14-960814FD	
Sample Date			8/13/1996		5/14/1998		5/14/1998		3/15/2008		8/13/1996		5/14/1998		11/29/1994		2/6/1996		8/14/1996		8/14/1996	
Location Description			Site 46 - South, outside of site boundary. Shallow Zone.								Site 46 - South, outside of site boundary. Shallow Zone.				Site 46 - West, outside of site boundary. Shallow Zone.							
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	< 0.2	U	< 1	U	< 1	U	< 0.25	U	< 0.2	U	< 1	U			< 1	U	< 0.2	U	< 0.2	U
Trichloroethene	µg/L	5	< 0.25	U	< 1	U	< 1	U	< 0.25	U	< 0.25	U	< 1	U	< 5	U	< 1	U	< 0.25	U	< 0.25	U
Vinyl chloride	µg/L	2	< 0.24	U	< 1	U	< 1	U	< 0.25	U	< 0.24	U	< 1	U			< 1	U	< 0.24	U	< 0.24	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			LHSMW14				LHSMW15								LHSMW16					
Sample ID			LHSMW14-980514		LHSMW14-092413		LHSMW15-960206		LHSMW15-960815		LHSMW15-980514		LHSMW15-102708		LHSMW16-941129		LHSMW16-960206		LHSMW16-960815		LHSMW16-980514	
Sample Date			5/14/1998		9/24/2013		2/6/1996		8/15/1996		5/14/1998		10/27/2008		11/29/1994		2/6/1996		8/15/1996		5/14/1998	
Location Description			Site 46 - West, outside of site boundary. Shallow Zone.				Site 46 - West, outside of site boundary. Shallow Zone.								Site 46 - West, outside of site boundary. Shallow Zone.							
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	< 1	U	< 0.5	U	< 1	U	< 0.2	U	< 1	U	< 0.25	U			< 1	U	< 0.2	U	< 1	U
Trichloroethene	µg/L	5	< 1	U	< 0.5	U	< 1	U	< 0.25	U	< 1	U	< 0.25	U	< 5	U	< 1	U	< 0.25	U	< 1	U
Vinyl chloride	µg/L	2	< 1	U	< 0.5	U	< 1	U	< 0.24	U	< 1	U	< 0.25	U			< 1	U	< 0.24	U	< 1	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

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mg/L - milligrams per liter

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Table 2-5
COC Concentrations

Location Code			LHSMW17														LHSMW18							
Sample ID			LHSMW17-960212		LHSMW17-960815		LHSMW17-980514		LHSMW17-000524		LHSMW17-000524FD		LHSMW17-001002FD		LHSMW17-001003		LHSMW18-941202		LHSMW18-960212		LHSMW18-960815		LHSMW18-980514	
Sample Date			2/12/1996		8/15/1996		5/14/1998		5/24/2000		5/24/2000		10/2/2000		10/3/2000		12/2/1994		2/12/1996		8/15/1996		5/14/1998	
Location Description			Site 46 - SW, inside site boundary. Shallow Zone.														Site 46 - Central, inside site boundary. Shallow Zone.							
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	< 1	U	< 0.2	U	< 1	U	< 1	U	**100**	J	< 1	U	< 1	U			4.5		6.1		9.8	
Trichloroethene	µg/L	5	< 1	U	< 0.25	U	< 1	U	< 1	U	1		< 1	U	< 1	U	**14**		**21**		**27.5**		**38**	
Vinyl chloride	µg/L	2	< 1	U	< 0.24	U	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U			< 1	U	0.68		0.71	J

Notes:

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µg/L - micrograms per liter

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MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

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Table 2-5
COC Concentrations

Location Code			LHSMW18				LHSMW19															
Sample ID			LHSMW18-FEB2007		LHSMW18-032916		LHSMW19-941202		LHSMW19-960206		LHSMW19-960815		LHSMW19-980515		LHSMW19-FEB2007		LHSMW19-110620		LHSMW19-052813		LHSMW19-092413		LHSMW19-012814	
Sample Date			2/20/2007		3/29/2016		12/2/1994		2/6/1996		8/15/1996		5/15/1998		2/20/2007		6/20/2011		5/28/2013		9/24/2013		1/28/2014	
Location Description			Site 46 - Central, inside site boundary. Shallow Zone.				Site 46 - Central, within site boundary. Shallow Zone.															
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	1.5	J	1.28				< 3	U	< 0.2	U	< 1	U	< 0.83	U	2.98		1.45		2.44		2.15	
Trichloroethene	µg/L	5	4.8		3.35		**26**		**77**		**47.1**		**70**		**85.5**		**66.4**		**32.3**		**40.9**		**33.5**	
Vinyl chloride	µg/L	2	< 0.32	U	< 0.5	U			**< 3**	U	< 0.24	U	< 1	U	< 0.32	U	< 0.25	U	< 0.25	U	< 0.5	U	< 0.5	U

Notes:

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Table 2-5
COC Concentrations

Location Code			LHSMW19																					
Sample ID			LHSMW19-071614		LHSMW19-111814		LHSMW19-020415		LHSMW19-050615		LHSMW19-080515		LHSMW19-020116		LHSMW19-080316		LHSMW19-022018		LHSMW19-180828		LHSMW19-190220		LHSMW19-190812	
Sample Date			7/16/2014		11/18/2014		2/4/2015		5/6/2015		8/5/2015		2/1/2016		8/3/2016		2/20/2018		8/28/2018		2/20/2019		8/12/2019	
Location Description			Site 46 - Central, within site boundary. Shallow Zone.																					
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	1.52		1.59		1.9		0.944	J	2.3		1.92		0.967	J	< 0.5	U	1.7		3.9		4.2	
Trichloroethene	µg/L	5	**28.6**		**31.2**		**31.3**		**13.4**		**26.2**		**24.2**		**8.53**		2.4		**8.8**		**16**		**13**	
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

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Table 2-5
COC Concentrations

	Location Code	LHSMW19		LHSMW20				LHSMW21				
	Sample ID	LHSMW19-200219	LHSMW19-210318	LHSMW20-960207	LHSMW20-960815	LHSMW20-980515	LHSMW20-102708	LHSMW21-960207	LHSMW21-960815	LHSMW21-980515	LHSMW21-092513	LHSMW21-190225
	Sample Date	2/19/2020	3/18/2021	2/7/1996	8/15/1996	5/15/1998	10/27/2008	2/7/1996	8/15/1996	5/15/1998	9/25/2013	2/25/2019
	Location Description	Site 46 - Central, within site boundary. Shallow Zone.		Site 46 - N, inside site boundary. Shallow Zone.				Site 46 - NE, inside site boundary. Shallow Zone.				

Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	5.6		3.9		< 1	U	< 0.2	U	< 1	U	< 0.25	U	< 1	U	< 0.2	U	< 1	U	30.6		**100**			
Trichloroethene	µg/L	5	**19**		**13**		< 1	U	< 0.25	U	< 1	U	< 0.25	U	< 1	U	< 0.25	U	< 1	U	1.64		**20**			
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 1	U	< 0.24	U	< 1	U	< 0.25	U	< 1	U	< 0.24	U	< 1	U	1.44		< 0.5	U		

Notes:

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mg/L - milligrams per liter

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Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			LHSMW21						LHSMW22								LHSMW23							
Sample ID			LHSMW21-190813		LHSMW21-200213		LHSMW21-210316		LHSMW22-960207		LHSMW22-960815		LHSMW22-980515		LHSMW22-FEB2007		LHSMW23-941204		LHSMW23-941204FD		LHSMW23-960206		LHSMW23-960815	
Sample Date			8/13/2019		2/13/2020		3/16/2021 & 4/29/2021		2/7/1996		8/15/1996		5/15/1998		2/19/2007		12/4/1994		12/4/1994		2/6/1996		8/15/1996	
Location Description			Site 46 - NE, inside site boundary. Shallow Zone.						Site 46 - Central, inside site boundary. Shallow Zone.								Site 46 - SE, inside site boundary. Intermediate Zone.							
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	**170**		**170**		**130**		< 1	U	0.54		1.1		< 0.83	U					< 1	U	< 0.2	U
Trichloroethene	µg/L	5	**41**		**36**		**33**		1		1.7		3.1		< 0.63	U	< 5	U	< 5	U	< 1	U	< 0.25	U
Vinyl chloride	µg/L	2	0.97	J	**2.4**		**3.7**		< 1	U	< 0.24	U	< 1	U	< 0.32	U					< 1	U	< 0.24	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

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mg/L - milligrams per liter

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Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			LHSMW23						LHSMW23R						LHSMW24							
Sample ID			LHSMW23-980515		LHSMW23-FEB2007		LHSMW23-102808		LHSMW23R-190903		LHSMW23R-200219		LHSMW25-210315		LHSMW24-941204		LHSMW24-960207		LHSMW24-960820		LHSMW24-980515	
Sample Date			5/15/1998		2/19/2007		10/28/2008		9/3/2019		2/19/20		3/15/2021		12/4/1994		2/7/1996		8/20/1996		5/15/1998	
Location Description			Site 46 - SE, inside site boundary. Intermediate Zone.						Site 46 - East, Within Site Boundary, Intermediate Zone.						Site 46 - E, outside of site boundary. Shallow Zone.							
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	< 1	U	< 0.83	U	0.614	J	0.5	U	0.71	J	< 0.5	U			< 1	U	< 0.2	U	< 1	U
Trichloroethene	µg/L	5	1.3		1.4	J	2.51		0.5	U	0.65	J	< 0.5	U	< 5	U	< 1	U	< 0.25	U	< 1	U
Vinyl chloride	µg/L	2	< 1	U	< 0.32	U	0.412	J,H	0.5	U	< 0.5	U	< 0.5	U			< 1	U	< 0.24	U	< 1	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			LHSMW25																			
Sample ID			LHSMW25-941204		LHSMW25-960207		LHSMW25-960820		LHSMW25-980515		LHSMW25-102808		LHSMW25-102808-QA		LHSMW25-052513		LHSMW25-092513		LHSMW25-092513-FD		LHSMW25-012514		LHSMW25-071814	
Sample Date			12/4/1994		2/7/1996		8/20/1996		5/15/1998		10/28/2008		10/28/2008		5/25/2013		9/25/2013		9/25/2013		1/25/2014		7/18/2014	
Location Description			Site 46 - E, within site boundary. Intermediate zone.																					
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70			< 1	U	< 0.2	U	< 1	U	< 0.25	U	< 0.25	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	< 5	U	< 1	U	< 0.25	U	< 1	U	< 0.25	U	< 0.25	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2			< 1	U	< 0.24	U	< 1	U	< 0.25	UJ,H	< 0.25	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			LHSMW25																			
Sample ID			LHSMW25-112014		LHSMW25-020615		LHSMW25-050115		LHSMW25-080415		LHSMW25FD-080415		LHSMW25-020216		LHSMW25FD-020216		LHSMW25-080416		LHSMW25-022218		LHSMW25-180827		LHSMW25-190225	
Sample Date			11/20/2014		2/6/2015		5/1/2015		8/4/2015		8/4/2015		2/2/2016		2/2/2016		8/4/2016		2/22/2018		8/27/2018		2/25/2019	
Location Description			Site 46 - E, within site boundary. Intermediate zone.																					
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-5
COC Concentrations

Location Code			LHSMW25						LHSMW27					
Sample ID			LHSMW25-190812		LHSMW25-200219		LHSMW25-210315		LHSMW27-960208		LHSMW27-960820		LHSMW27-980515	
Sample Date			8/12/2019		2/19/2020		3/15/2021		2/8/1996		8/20/1996		5/15/1998	
Location Description			Site 46 - E, within site boundary. Intermediate zone.						Site 46 - SE, outside of site boundary. Shallow Zone.					
Analyte	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.2	U	< 1	U
Trichloroethene	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.25	U	< 1	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.24	U	< 1	U

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

Val Qual - validation qualifier

Table 2-6
Year 8 Annual RA-O Sampling Locations

Well ID	Groundwater Zone	Groundwater Elevations	VOC	Field Parameters	MNA
46WW01	Shallow	X	X	X	
46WW04	Shallow	X	X	X	
46WW10	Shallow	X	X	X	
46WW11	Shallow	X	X	X	X
46WW12	Shallow	X	X	X	
46WW13	Shallow	X	X	X	
46WW15	Shallow	X	X	X	
LHSMW17	Shallow	X	X	X	
LHSMW18 [a]	Shallow	X	X	X	
LHSMW19	Shallow	X	X	X	
LHSMW20	Shallow	X			
LHSMW21	Shallow	X	X	X	X
LHSMW22	Shallow	X	X	X	
LHSMW24	Shallow	X			
46WW17	Shallow/Intermediate	X	X	X	
46WW02	Intermediate	X	X	X	X
46WW05	Intermediate	X	X	X	X
46WW06	Intermediate	X	X	X	
46WW07	Intermediate	X	X	X	
46WW08	Intermediate	X	X	X	
46WW09	Intermediate	X	X	X	X
46WW14	Intermediate	X	X	X	
46WW16	Intermediate	X	X	X	X
LHSMW23R	Intermediate	X	X	X	
LHSMW25	Intermediate	X	X	X	
46WW03	Deep	X	X	X	
46SW10 [b]	Surface Water		X	X	

Notes:

Field parameters to be monitored for all wells: pH, temperature, conductivity, turbidity, oxidation-reduction potential (ORP), and dissolved oxygen (DO).

MNA parameters include nitrate, sulfate, chloride, TOC, dissolved iron (field), and dissolved gases (methane, ethane, ethene, carbon dioxide).

[a] LHSMW18 only sampled if LHSMW17 is dry.

[b] 46SW10 is only sampled if surface water is present and the GW elevation at either LHSMW21 or 46WW16 exceeds 197 feet.

X - well will be analyzed for that parameter.

ID - identifier

MNA - monitored natural attenuation

RA-O - remedial action operation

TOC - total organic carbon

VOC - volatile organic compound

Table 3-1
Mann-Kendall Trend Summary

Monitoring Well	Groundwater Zone	Statistical TCE Trend	Statistical 1,2-DCE Trend	Statistical VC Trend	Confidence Factor
46WW11	Shallow	**Decreasing**	**NA**	**NA**	> 99.9%
LHSMW19	Shallow	**Decreasing**	**NA**	**NA**	99.9%
LHSMW21	Shallow	**Increasing**	**Increasing**	**Increasing**	98.9%, 99.3%, 99.6%
46WW02	Intermediate	**Decreasing**	**NA**	**NA**	99.5%
46WW05	Intermediate	**Decreasing**	**NA**	**NA**	> 99.9%

Notes:

> greater than

DCE - dichloroethene

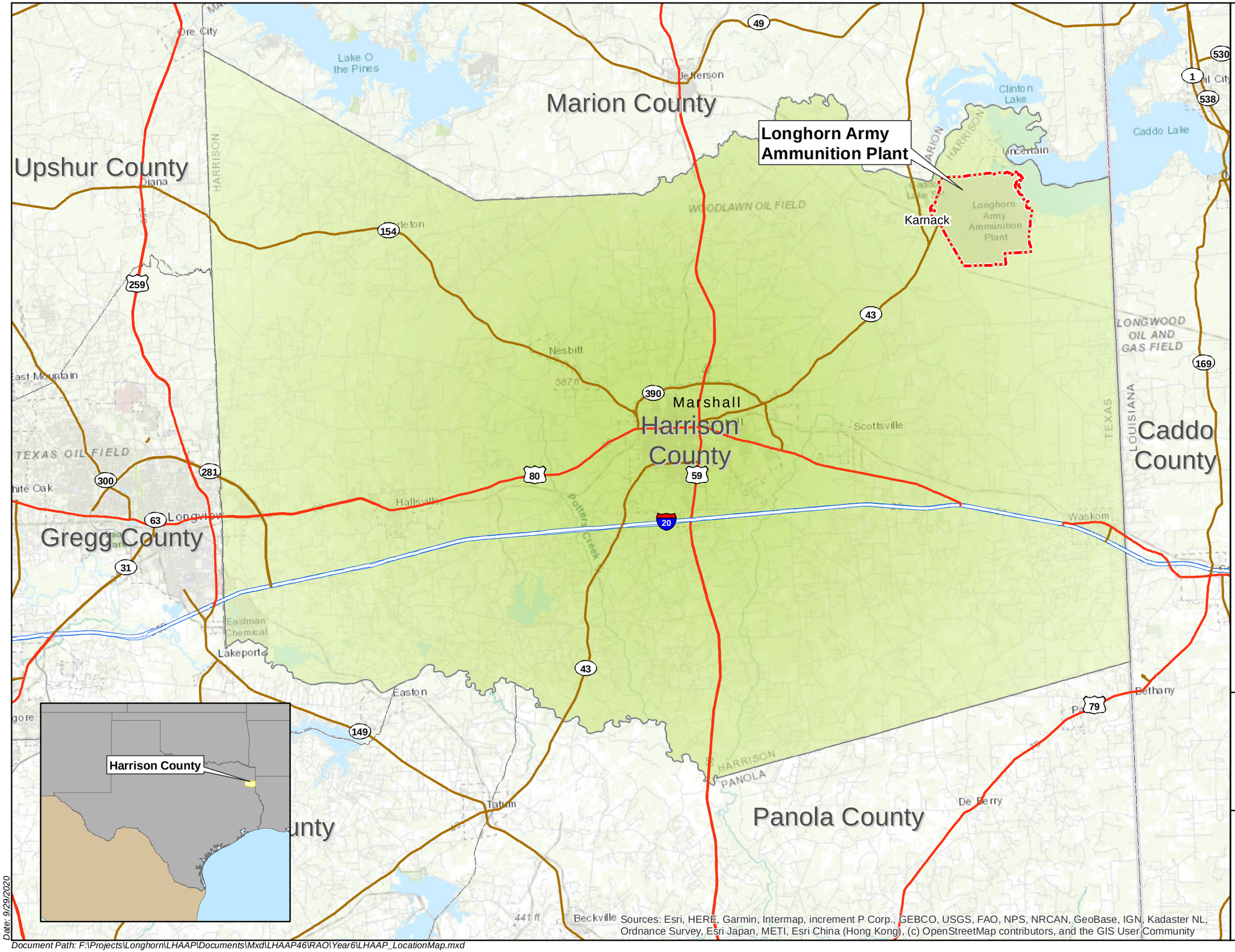
MCL - Maximum Contaminant Level

NA - Trend not calculated because chemical was not detected above the MCL

TCE - trichloroethene

VC - vinyl chloride

Figures



Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant

N

0 2 4 Miles

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Figure 1-1

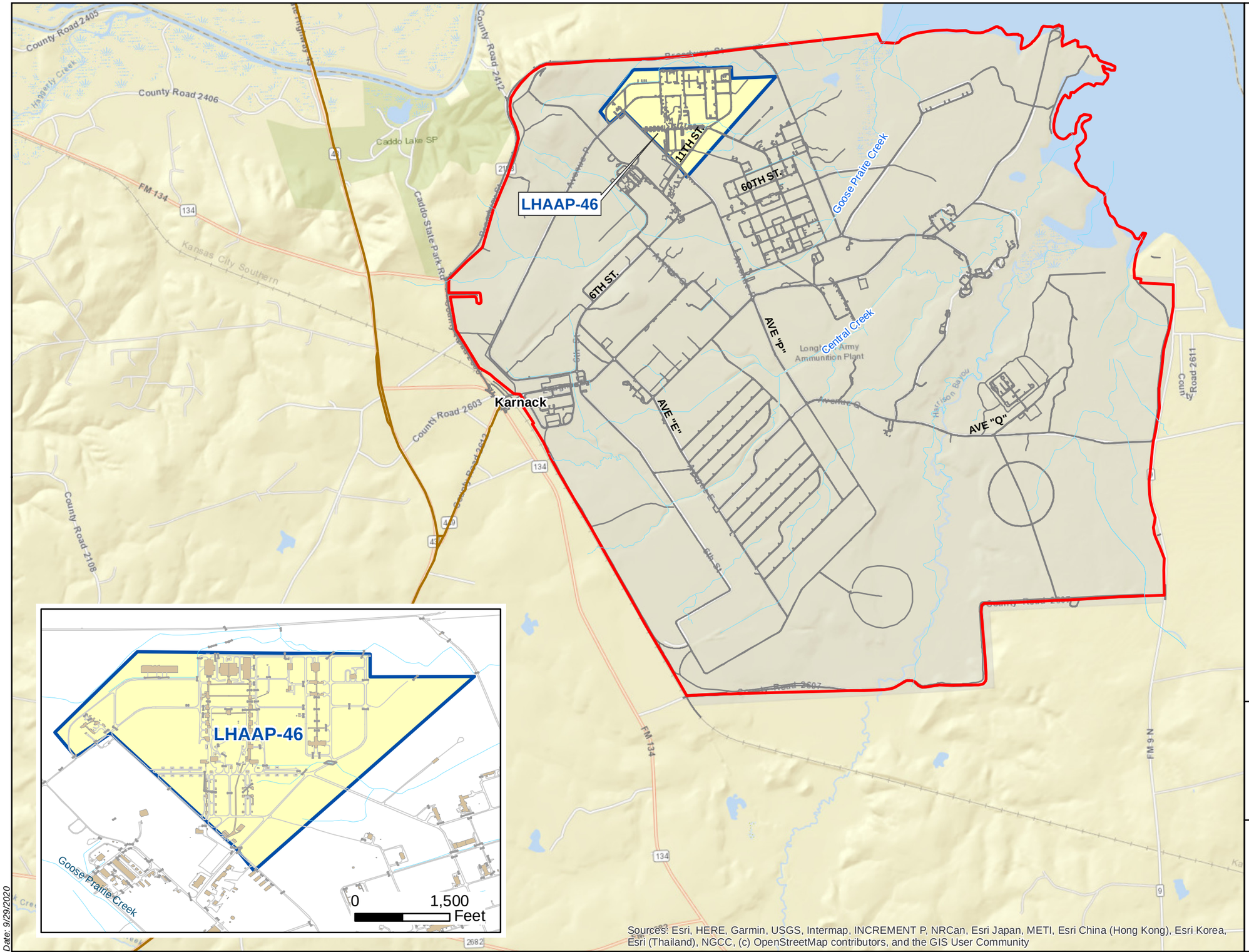
LHAAP Location Map
Seventh Annual RA-O Report
LHAAP-46

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Date: 9/29/2020

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP46\RAO\Year6\LHAAP_LocationMap.mxd



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

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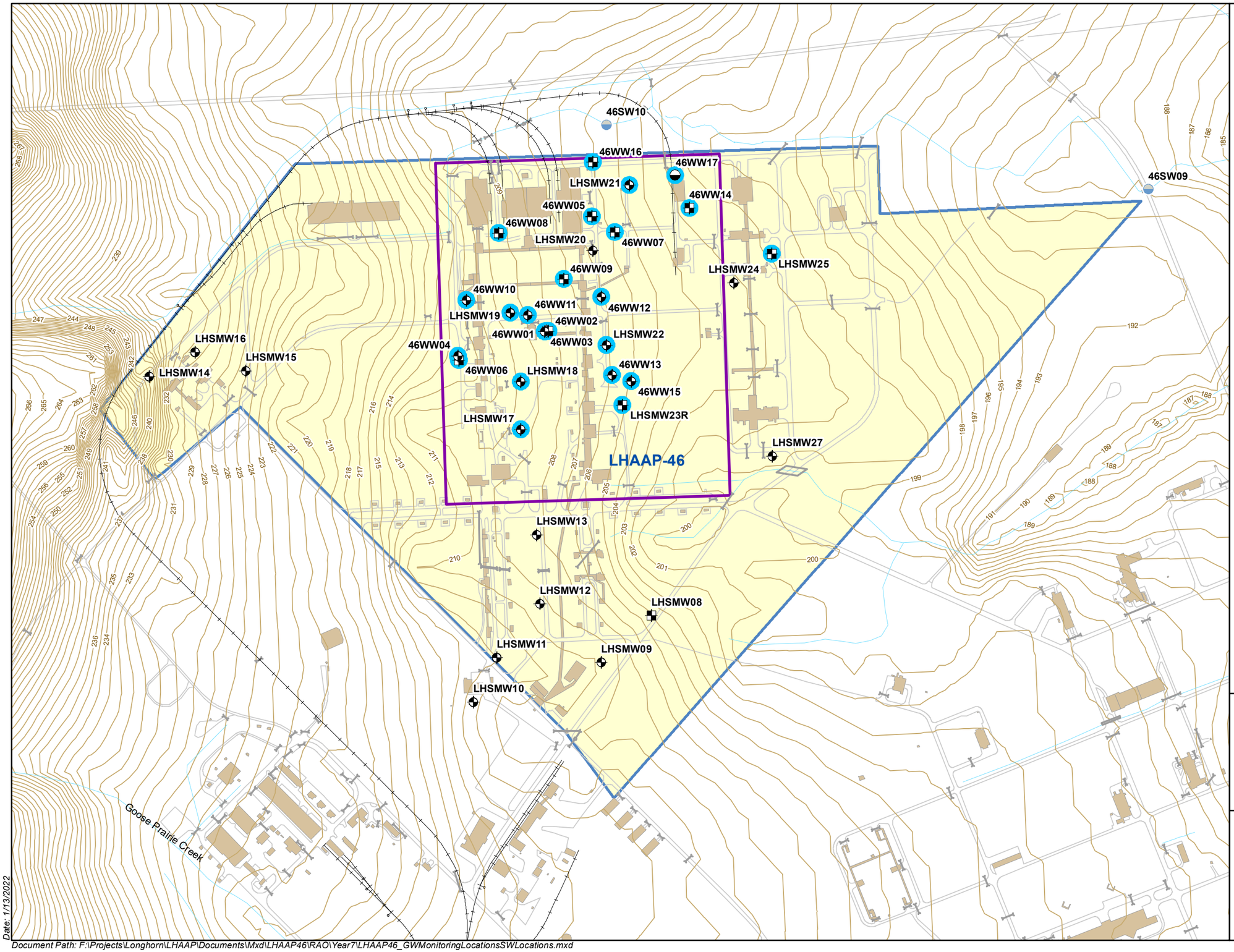
Figure 1-2

LHAAP Site Vicinity Map
Seventh Annual RA-O Report
LHAAP-46

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 9/29/2020

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP46\RAO\Year6\LHAAP46_SiteLocationMap.mxd



- Shallow Monitoring Well
- Shallow/Intermediate Monitoring Well
- Intermediate Monitoring Well
- Deep Monitoring Well
- RA-O Monitoring Well
- Surface Water Sample Location
- Former Railroad Location
- Culvert
- Surveyed Land Use Control Boundary
- Stream
- Surface Elevation Lines (in feet above mean sea level)
- Roads
- Former Buildings
- LHAAP-46 Site Boundary

Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant

N

0 250 500 Feet

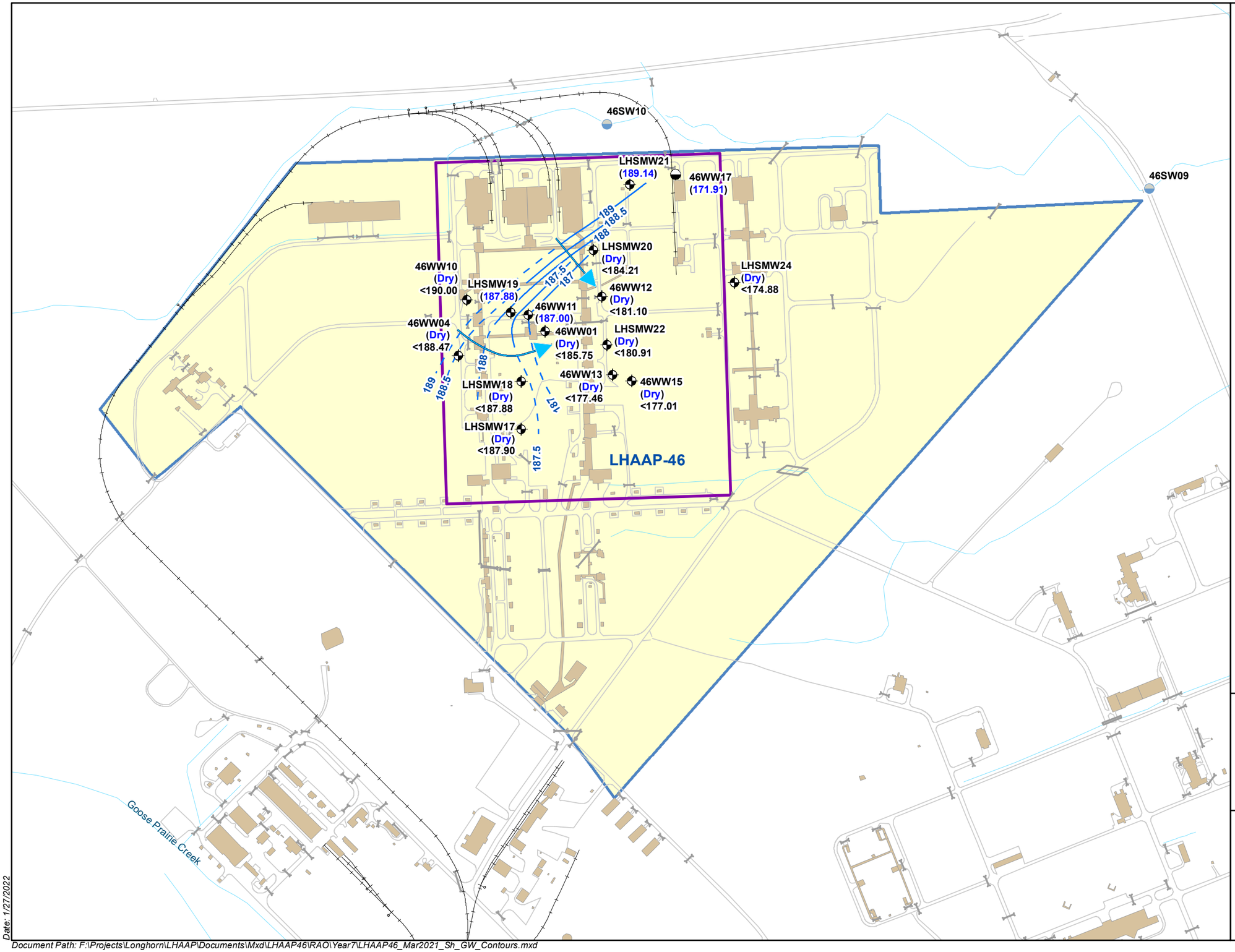
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Figure 2-1
Groundwater Monitoring Wells and Surface Water Locations
Seventh Annual RA-O Report
LHAAP-46
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 1/13/2022

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP46\RAO\Year7\LHAAP46_GWMonitoringLocationsSWLocations.mxd



- Shallow Monitoring Well
- Shallow/Intermediate Monitoring Well
- Surface Water Sample Location
- Former Railroad Location
- Historical Groundwater Flow Direction
- Groundwater Contour (in feet above msl)
- Culvert
- Surveyed Land Use Control Boundary
- Stream
- Roads
- Former Buildings
- LHAAP-46 Site Boundary
- 186.27 Groundwater Elevation (ft msl)

Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant
3. msl = Mean Sea Level
4. Monitoring well 46WW17 is a shallow/intermediate well installed in an area with no apparent confining layer between the shallow and intermediate zones. The groundwater elevation shown was measured in July 2020 and was not used to develop the shallow or intermediate zone potentiometric contours.
5. Wells that were dry have their bottom of screen elevation shown.

N

0 250 500 Feet

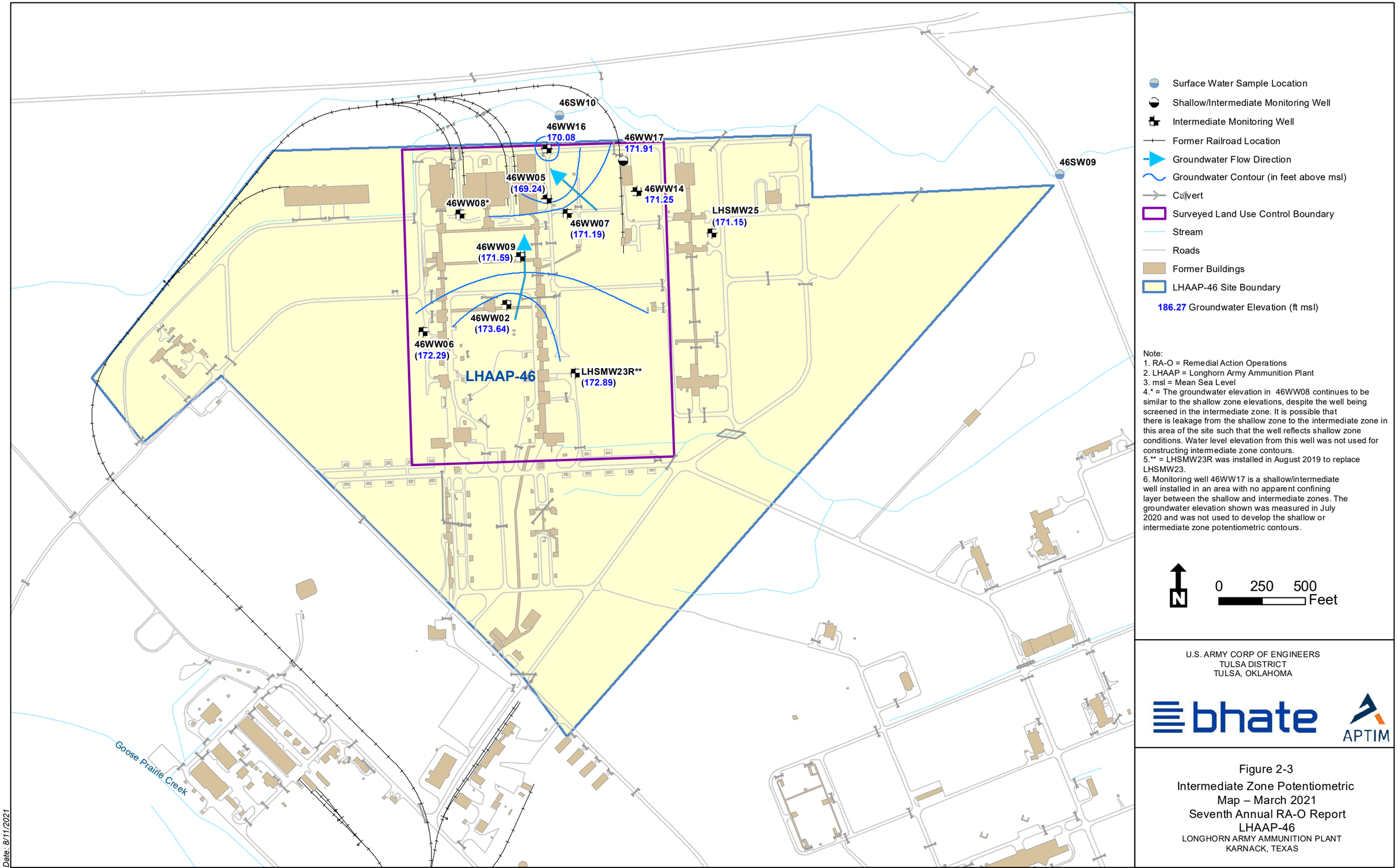
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Figure 2-2
Shallow Zone Potentiometric Map – March 2021
Seventh Annual RA-O Report
LHAAP-46
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 1/27/2022

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP46\RAO\Year7\LHAAP46_Mar2021_Sh_GW_Contours.mxd



- Surface Water Sample Location
- Shallow/Intermediate Monitoring Well
- Intermediate Monitoring Well
- Former Railroad Location
- Groundwater Flow Direction
- Groundwater Contour (in feet above msl)
- Culvert
- Surveyed Land Use Control Boundary
- Stream
- Roads
- Former Buildings
- LHAAP-46 Site Boundary
- **186.27** Groundwater Elevation (ft msl)

Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant
3. msl = Mean Sea Level
4.* = The groundwater elevation in 46WW08 continues to be similar to the shallow zone elevations, despite the well being screened in the intermediate zone. It is possible that there is leakage from the shallow zone to the intermediate zone in this area of the site such that the well reflects shallow zone conditions. Water level elevation from this well was not used for constructing intermediate zone contours.
5.** = LHSMW23R was installed in August 2019 to replace LHSMW23.
6. Monitoring well 46WW17 is a shallow/intermediate well installed in an area with no apparent confining layer between the shallow and intermediate zones. The groundwater elevation shown was measured in July 2020 and was not used to develop the shallow or intermediate zone potentiometric contours.

N

0 250 500 Feet

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Figure 2-3
Intermediate Zone Potentiometric Map – March 2021
Seventh Annual RA-O Report
LHAAP-46
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 8/11/2021

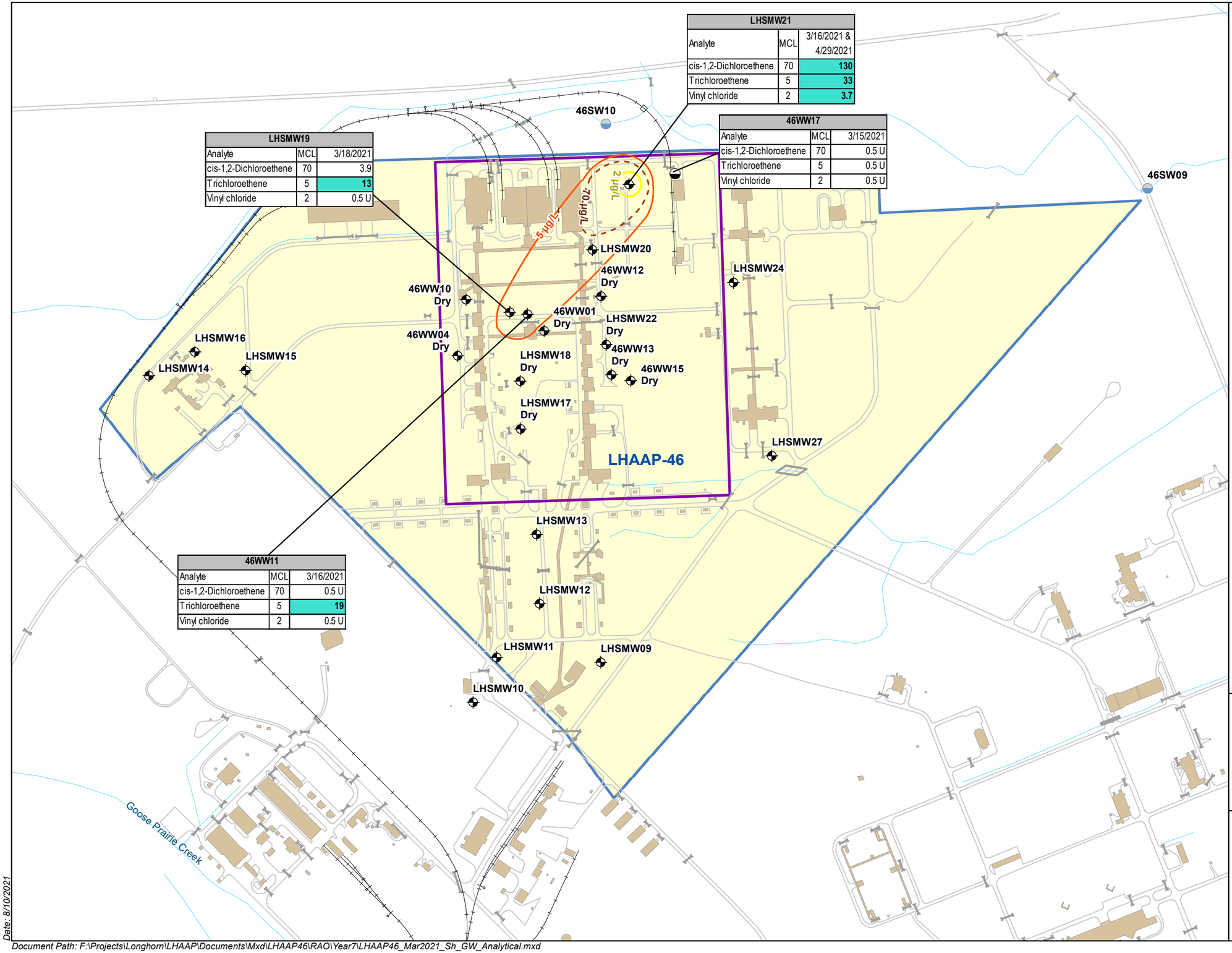
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LHSMW21		
Analyte	MCL	3/16/2021 & 4/29/2021
cis-1,2-Dichloroethene	70	**130**
Trichloroethene	5	**33**
Vinyl chloride	2	**3.7**

LHSMW19		
Analyte	MCL	3/18/2021
cis-1,2-Dichloroethene	70	3.9
Trichloroethene	5	**13**
Vinyl chloride	2	0.5 U

46WW17		
Analyte	MCL	3/15/2021
cis-1,2-Dichloroethene	70	0.5 U
Trichloroethene	5	0.5 U
Vinyl chloride	2	0.5 U

46WW11		
Analyte	MCL	3/16/2021
cis-1,2-Dichloroethene	70	0.5 U
Trichloroethene	5	**19**
Vinyl chloride	2	0.5 U



- Shallow Monitoring Well
- Shallow/Intermediate Monitoring Well
- Surface Water Sample Location
- Shallow Zone TCE Plume (*Dashed where inferred*)
- Shallow Zone cis-1,2 DCE Plume (*Dashed where inferred*)
- Shallow Zone VC Plume (*Dashed where inferred*)
- Former Railroad Location
- Culvert
- Surveyed Land Use Control Boundary
- Stream
- Roads
- Former Buildings
- LHAAP-46 Site Boundary

Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant

N

0 250 500 Feet

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Figure 2-4
Shallow Groundwater Results, March 2021
Seventh Annual RA-O Report
LHAAP-46
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 8/10/2021

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP46\RAO\Year7\LHAAP46_Mar2021_Sh_GW_Analytical.mxd

46WW16		
Analyte	MCL	3/16/2021
cis-1,2-Dichloroethene	70	0.5 U
Trichloroethene	5	0.5 U
Vinyl chloride	2	0.5 U

46WW08		
Analyte	MCL	3/15/2021
cis-1,2-Dichloroethene	70	0.5 U
Trichloroethene	5	0.5 U
Vinyl chloride	2	0.5 U

46WW05		
Analyte	MCL	3/16/2021
cis-1,2-Dichloroethene	70	1.6
Trichloroethene	5	**20**
Vinyl chloride	2	0.5 U

46WW17		
Analyte	MCL	3/15/2021
cis-1,2-Dichloroethene	70	0.5 U
Trichloroethene	5	0.5 U
Vinyl chloride	2	0.5 U

46WW14		
Analyte	MCL	3/15/2021
cis-1,2-Dichloroethene	70	0.5 U
Trichloroethene	5	0.5 U
Vinyl chloride	2	0.5 U

LHSMW25		
Analyte	MCL	3/15/2021
cis-1,2-Dichloroethene	70	0.5 U
Trichloroethene	5	0.5 U
Vinyl chloride	2	0.5 U

46WW02		
Analyte	MCL	3/16/2021
cis-1,2-Dichloroethene	70	1.4
Trichloroethene	5	**25**
Vinyl chloride	2	0.5 U

46WW07		
Analyte	MCL	3/18/2021
cis-1,2-Dichloroethene	70	0.5 U
Trichloroethene	5	0.5 U
Vinyl chloride	2	0.5 U

46WW06		
Analyte	MCL	3/15/2021
cis-1,2-Dichloroethene	70	0.5 U
Trichloroethene	5	0.5 U
Vinyl chloride	2	0.5 U

46WW09		
Analyte	MCL	3/16/2021
cis-1,2-Dichloroethene	70	0.5 U
Trichloroethene	5	0.5 U
Vinyl chloride	2	0.5 U

LHSMW23R		
Analyte	MCL	3/18/2021
cis-1,2-Dichloroethene	70	0.66 J
Trichloroethene	5	0.64 J
Vinyl chloride	2	0.5 U

46SW10

46SW09

5 µg/L

5 µg/L

LHAAP-46

LHSMW08

Goose Prairie Creek

- Shallow/Intermediate Monitoring Well
- Intermediate Monitoring Well
- Surface Water Sample Location
- Intermediate Zone TCE Plume (*Dashed where inferred*)
- Former Railroad Location
- Culvert
- Surveyed Land Use Control Boundary
- Stream
- Roads
- Former Buildings
- LHAAP-46 Site Boundary

Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant

N

0 250 500 Feet

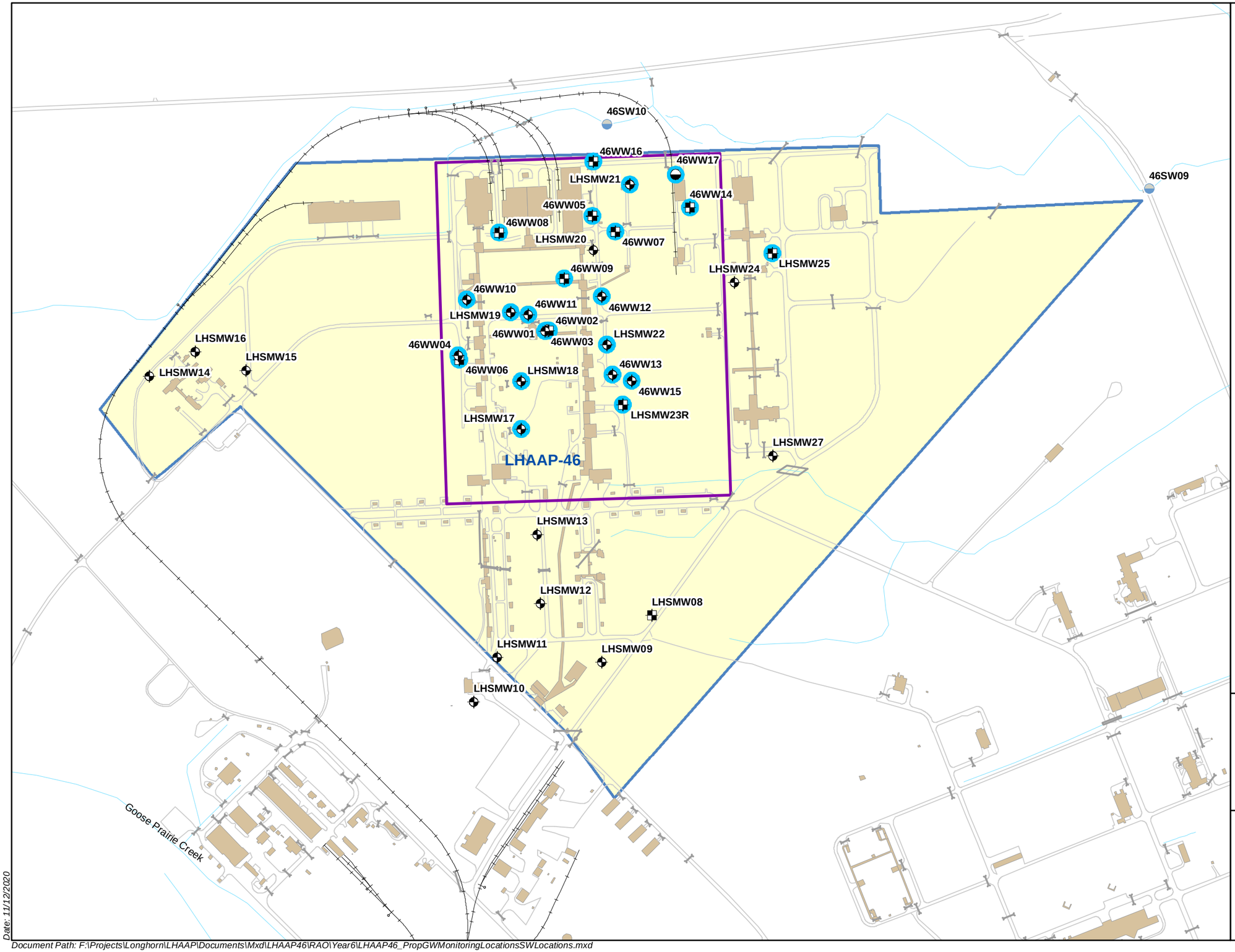
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Figure 2-5
Intermediate Groundwater Results,
March 2021
Seventh Annual RA-O Report
LHAAP-46
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 8/10/2021

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP46\RAO\Year7\LHAAP46_Mar2021_Int_GW_Analytical.mxd



- Shallow Monitoring Well
- Shallow/Intermediate Monitoring Well
- Intermediate Monitoring Well
- Deep Monitoring Well
- RA-O Monitoring Well
- Surface Water Sample Location
- Former Railroad Location
- Culvert
- Surveyed Land Use Control Boundary
- Stream
- Roads
- Former Buildings
- LHAAP-46 Site Boundary

Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant

N

0 250 500 Feet

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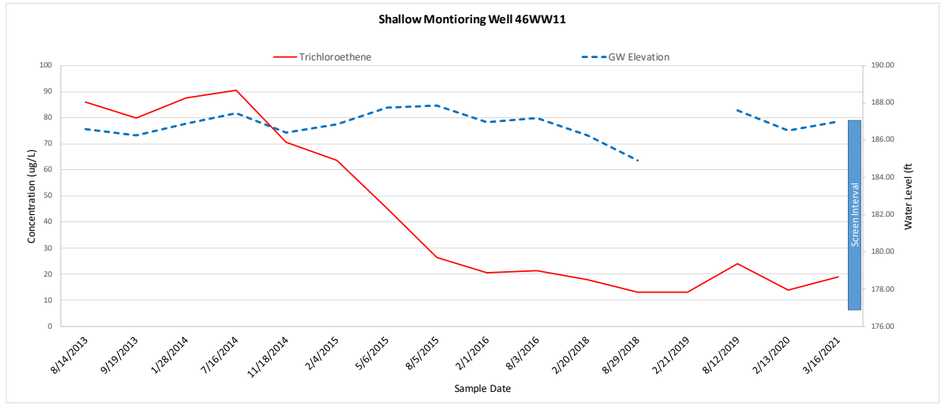
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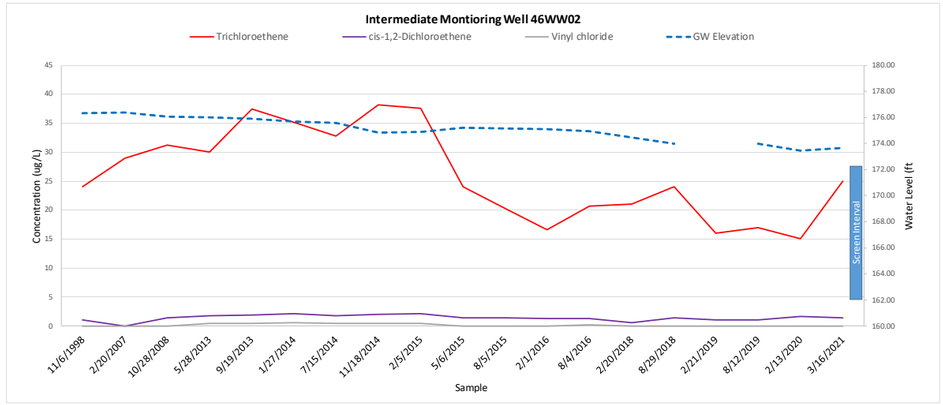
Figure 2-6

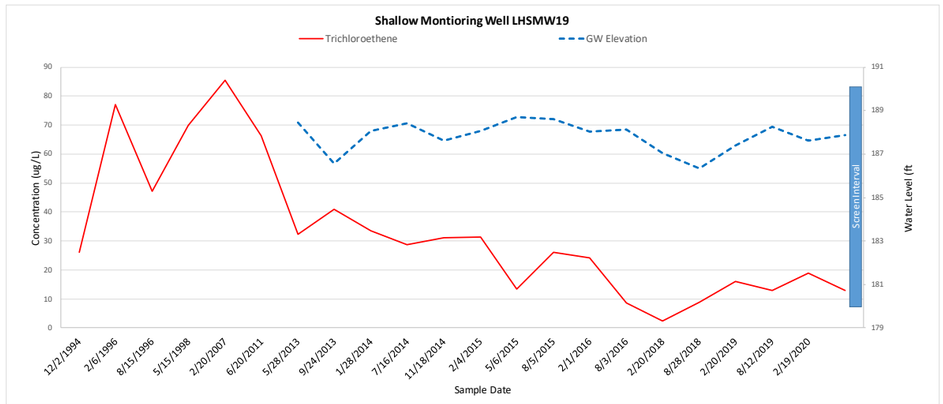
Year 8 Annual RA-O Monitoring Locations
Seventh Annual RA-O Report
LHAAP-46
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

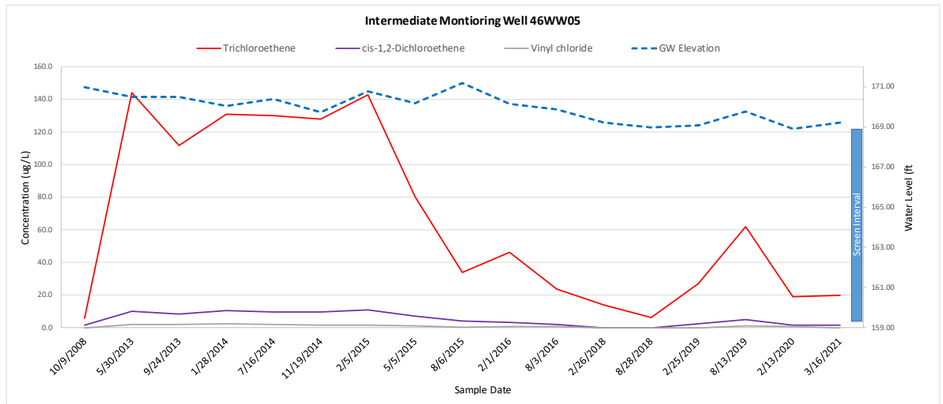
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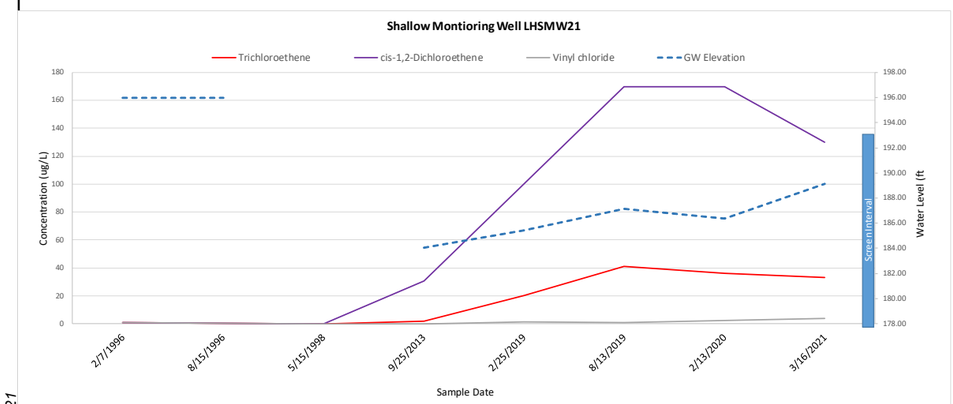
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Cleanup Levels:
1,1-Dichlorothene = 7 µg/L
cis-1,2-Dichloroethene = 70 µg/L
Trichloroethene = 5 µg/L
Vinyl Chloride = 2 µg/L

Notes:
1. RA-O = Remedial Action Operations

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Figure 3-1

COC Concentration Trends
Seventh Annual RA-O Report
LHAAP-46

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 8/11/2021

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP46\RAO\Year7\LHAAP46_COC_Concentrations.mxd

Appendix A

Annual Land Use Control Compliance Certification and Documentation

Sample Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design dated _____ for LHAAP-46 a certification of site was conducted by APTim [indicate transferee] on 5/26/21.

A summary of land use control mechanisms is as follows:

Groundwater restriction – restriction of the use of groundwater to environmental monitoring and testing until cleanup levels are met [Indicate whether groundwater restrictions are still required at LHAAP-46]

A summary of compliance with land use and restriction covenants is as follows:

No use of groundwater, installation of new groundwater wells, or tampering with existing wells at LHAAP-46.

I, the undersigned, do document that the certification was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: MAY 26, 2021

Name/Title: Scott Beesinger Senior Field Tech

Signature: Scott Beesinger

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year.

Appendix B

Photographic Log and Well Inspection Forms

PHOTO LOG

Photo No.	Date	Task and Description
1	3/18/21	Well Inspection at 46WW01
2	3/16/21	Well Inspection at 46WW02
3	3/18/21	Well Inspection at 46WW03
4	3/15/21	Well Inspection at 46WW04
5	3/16/21	Well Inspection at 46WW05
6	3/15/21	Well Inspection at 46WW06
7	3/18/21	Well Inspection at 46WW07
8	3/15/21	Well Inspection at 46WW08
9	3/16/21	Well Inspection at 46WW09
10	3/15/21	Well Inspection at 46WW10
11	3/16/21	Well Inspection at 46WW11
12	3/15/21	Well Inspection at 46WW12
13	3/15/21	Well Inspection at 46WW13
14	3/15/21	Well Inspection at 46WW14
15	3/15/21	Well Inspection at 46WW15
16	3/16/21	Well Inspection at 46WW16
17	3/15/21	Well Inspection at 46WW17
18	3/15/21	Well Inspection at LHSMW17
19	3/15/21	Well Inspection at LHSMW18
20	3/18/21	Well Inspection at LHSMW19
21	3/16/21	Well Inspection at LHSMW21
22	3/15/21	Well Inspection at LHSMW22
23	3/18/21	Well Inspection at LHSMW23R
24	3/15/21	Well Inspection at LHSMW25



PHOTO 1: Well Inspection at 46WW01
DATE: March 18, 2021



PHOTO 2: Well Inspection at 46WW02
DATE: March 16, 2021



PHOTO 3: Well Inspection at 46WW03
DATE: March 18, 2021



PHOTO 4: Well Inspection at 46WW04
DATE: March 15, 2021



PHOTO 5: Well Inspection at 46WW05
DATE: March 16, 2021



PHOTO 6: Well Inspection at 46WW06
DATE: March 15, 2021



PHOTO 7: Well Inspection at 46WW07
DATE: March 18, 2021



PHOTO 8: Well Inspection at 46WW08
DATE: March 15, 2021



PHOTO 9: Well Inspection at 46WW09
DATE: March 16, 2021



PHOTO 10: Well Inspection at 46WW10
DATE: March 15, 2021



PHOTO 11: Well Inspection at 46WW11
DATE: March 16, 2021



PHOTO 12: Well Inspection at 46WW12
DATE: March 15, 2021



PHOTO 13: Well Inspection at 46WW13
DATE: March 15, 2021



PHOTO 14: Well Inspection at 46WW14
DATE: March 15, 2021



PHOTO 15: Well Inspection at 46WW15
DATE: March 15, 2021



PHOTO 16: Well Inspection at 46WW16
DATE: March 16, 2021



PHOTO 17: Well Inspection at 46WW17
DATE: March 15, 2021



PHOTO 18: Well Inspection at LHSMW17
DATE: March 15, 2021



PHOTO 19: Well Inspection at LHSMW18
DATE: March 15, 2021



PHOTO 20: Well Inspection at LHSMW19
DATE: March 18, 2021



PHOTO 21: Well Inspection at LHSMW21
DATE: March 16, 2021



PHOTO 22: Well Inspection at LHSMW22
DATE: March 15, 2021



PHOTO 23: Well Inspection at LHSMW23R
DATE: March 18, 2021



PHOTO 24: Well Inspection at LHSMW25
DATE: March 15, 2021

01076090

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 46
Well ID: 46WW01
Inspection Date: 3/18/21
Well Completion Depth/ Measured Depth:
Inspector: Scott Beesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01076091

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 50132
Client: Army
Site Name: 46
Well ID: 46WW02
Inspection Date: 3/16/21
Well Completion Depth/ Measured Depth: 47.67
Inspector: Scott Beesinger

☒ ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA
Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01076092

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 46
Well ID: 46WW03
Inspection Date: 3/18/21
Well Completion Depth/ Measured Depth: 103.25
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☒ Yes ☐ No
Is well open to completed depth? (complete when gauging)
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01076093

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 46
Well ID: 46WW04
Inspection Date: 3/15/21
Well Completion Depth/ Measured Depth: 26.95
Inspector: Scott Beesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☒ Yes ☐ No
Is well open to completed depth? (complete when gauging) ☐ Yes ☒ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging)

COMMENTS:

01076094

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 46

Well ID: 46WW05
Inspection Date: 3/16/21
Well Completion Depth/ Measured Depth: 45.48
Inspector: Scott Beesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☒ Yes ☐ No
Is well open to completed depth? (complete when gauging) ☐ Yes ☒ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging)

COMMENTS:

01076095

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 46
Well ID: 46WW06
Inspection Date: 3/15/21
Well Completion Depth/ Measured Depth: 52.33
Inspector: Scott Beesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01076096

WELL INSPECTION FORM

Job Name: HAAP
Job No.: 501032
Client: Army
Site Name: 46
Well ID: 46WW07
Inspection Date: 3/18/21
Well Completion Depth/ Measured Depth: 57.68
Inspector: Scott Beesinger

☒ ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED
Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☒ Yes ☐ No
Is well open to completed depth? (complete when gauging) ☐ Yes ☒ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging)

COMMENTS:

01076097

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 46
Well ID: 46WW08
Inspection Date: 3/15/21
Well Completion Depth/ Measured Depth: 45.32
Inspector: Scott Bussinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☒ Yes ☐ No
Is well open to completed depth? (complete when gauging) ☐ Yes ☒ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging)

COMMENTS:

01076098

WELL INSPECTION FORM

Job Name: LHAAP | Well ID: 46MW09
Job No.: 501032 | Inspection Date: 3/16/21
Client: Army | Well Completion Depth/ Measured Depth: 42.27
Site Name: 46 | Inspector: Scott Beesinger

☒ ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA
Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging)

COMMENTS:

01076099

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 46
Well ID: 46WW10
Inspection Date: 3/15/21
Well Completion Depth/ Measured Depth: 25.33
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01076100

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 46
Well ID: 46WW11
Inspection Date: 3/16/21
Well Completion Depth/ Measured Depth: 32.92
Inspector: Scott Beesinger

☒ ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA
Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging)

COMMENTS:

01076101

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 46
Well ID: 46MW12
Inspection Date: 3/15/21
Well Completion Depth/ Measured Depth: 28.69
Inspector: Scott Beesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01076102

WELL INSPECTION FORM

Job Name: LTAAP
Job No.: 501032
Client: ARMY
Site Name: 46
Well ID: 46 MW13
Inspection Date: 3/15/21
Well Completion Depth/ Measured Depth: 31.61
Inspector: SCOTT BERSINGER

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01076103

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 46
Well ID: 46WW14
Inspection Date: 3/15/21
Well Completion Depth/ Measured Depth: 54.70
Inspector: Scott Beesinger

☒ ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA
Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01076104

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 46
Well ID: 46WW15
Inspection Date: 3/15/21
Well Completion Depth/ Measured Depth: 30.23
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01076105

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 46
Well ID: 46WW16
Inspection Date: 3/16/21
Well Completion Depth/ Measured Depth: 57.65
Inspector: Scott Beasinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging)

COMMENTS:

01076106

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 46
Well ID: 46MW17
Inspection Date: 3/15/21
Well Completion Depth/ Measured Depth: 36.50
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01076107

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 46
Well ID: LHSMW17
Inspection Date: 3/15/21
Well Completion Depth/ Measured Depth: 27.05
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01076108

WELL INSPECTION FORM

Job Name: LHAAP | Well ID: LHSMW18
Job No.: 501032 | Inspection Date: 3/15/21
Client: ARMY | Well Completion Depth/ Measured Depth: 27.90
Site Name: 4b | Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☐ Good ☐ Broken ☐ Cracked ☒ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01076109

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 46
Well ID: LHSMW19
Inspection Date: 3/18/21
Well Completion Depth/ Measured Depth: 30.00
Inspector: Scott Beesinger

[X] ABOVE GROUND

Well Accessible? [X] Yes [ ] No
Protective casing? [X] Yes [ ] No
Material: METAL
Condition: [X] Good [ ] Broken [ ] Cracked [ ] Need Paint
Lid Condition: [X] Good [ ] Broken [X] Cracked
Hinge Condition: [X] Good [ ] Less than 50% rusted [ ] More than 50% rusted

[ ] FLUSH MOUNTED NA

Well cover present? [ ] Yes [ ] No
Condition: [ ] Good [ ] Broken [ ] Cracked
Condition of Sump: [ ] Clean [ ] Dry [ ] Standing Water

CONCRETE PAD:

Sloped away from casing? [X] Yes [ ] No
Pad Area Cleared of Vegetation? [X] Yes [ ] No
Check any of the following features that apply:
[ ] Many Cracks [ ] Gap Around Casing [ ] Few Cracks [ ] Ponded Water [ ] No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: [X] Good [ ] Broken [ ] Cracked [ ] Other (describe)
Cap present? [X] Yes [ ] No
Well lock present? [X] Yes [ ] No
Lock functioning properly? [X] Yes [ ] No
Are bollards present and stable? [X] Yes [ ] No
Well ID visible? [X] Yes [ ] No

WELL INTEGRITY:

Bailer present? [ ] Yes [X] No
Visual obstruction? [X] Yes [ ] No
Is well open to completed depth? (complete when gauging) [ ] Yes [X] No
Is silt present in well? (complete when gauging) [ ] Yes [X] No
Is silt greater than 10% of well screen length? (complete when gauging)

COMMENTS:

01076110

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 46
Well ID: LHSMW21
Inspection Date: 3/16/21
Well Completion Depth/ Measured Depth: 29.73
Inspector: Scott Beesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☒ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01076111

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 46
Well ID: LHSMW22
Inspection Date: 3/15/21
Well Completion Depth/ Measured Depth: 28.85
Inspector: Scott Beesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01076112

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 46
Well ID: LHSMW23R
Inspection Date: 3/18/21
Well Completion Depth/ Measured Depth: 43.22
Inspector: Scott Beesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☒ Yes ☐ No
Is well open to completed depth? (complete when gauging) ☐ Yes ☒ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging)

COMMENTS:

01076113

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 46
Well ID: LHSMW25
Inspection Date: 3/15/21
Well Completion Depth/ Measured Depth: 42.65
Inspector: Scott Beesinger

☒ ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good SB ☐ Broken ☐ Cracked ☒ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA
Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☒ Yes ☐ No
Is well open to completed depth? (complete when gauging) ☐ Yes ☒ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging)

COMMENTS:

Appendix C

Laboratory Analytical Data Package

(Provided electronically on the Portal and CD)

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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April 06, 2021

Vicki Graves
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS21030874**

Laboratory Results for: **LHAAP 46 February 2021**

Dear Vicki Graves ,

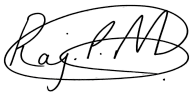
ALS Environmental received 13 sample(s) on Mar 17, 2021 for the analysis presented in the following report.

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

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

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

Sincerely,



Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Work Order: HS21030874

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS21030874-01	46WW06-210315	Groundwater		15-Mar-2021 10:10	17-Mar-2021 10:10	☐
HS21030874-02	46WW08-210315	Groundwater		15-Mar-2021 10:50	17-Mar-2021 10:10	☐
HS21030874-03	46WW17-210315	Groundwater		15-Mar-2021 11:35	17-Mar-2021 10:10	☐
HS21030874-04	LHSMW25-210315	Groundwater		15-Mar-2021 12:20	17-Mar-2021 10:10	☐
HS21030874-05	46WW14-210315	Groundwater		15-Mar-2021 13:10	17-Mar-2021 10:10	☐
HS21030874-06	LHSMW21-210316	Groundwater		16-Mar-2021 07:45	17-Mar-2021 10:10	☐
HS21030874-07	46WW05-210316	Groundwater		16-Mar-2021 08:35	17-Mar-2021 10:10	☐
HS21030874-08	46WW16-210316	Groundwater		16-Mar-2021 09:30	17-Mar-2021 10:10	☐
HS21030874-09	46WW09-210316	Groundwater		16-Mar-2021 10:30	17-Mar-2021 10:10	☐
HS21030874-10	46WW11-210316	Groundwater		16-Mar-2021 11:20	17-Mar-2021 10:10	☐
HS21030874-11	46WW11-210316-FD	Groundwater		16-Mar-2021 11:20	17-Mar-2021 10:10	☐
HS21030874-12	46WW02-210316	Groundwater		16-Mar-2021 12:15	17-Mar-2021 10:10	☐
HS21030874-13	Trip Blank- 210316	Water		16-Mar-2021 00:00	17-Mar-2021 10:10	☐

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP 46 February 2021
Work Order: HS21030874

Work Order Comments

- Sample vials for RSK 175 and Dissolved CO2 on sample LHSMW21-210316 were received at the Houston lab, vials went missing during the transit from Houston to Simi Valley lab. Therefore analysis for MEE and Dissolved CO2 for sample LHSMW21-210316 is not reported in this report. Client was informed on 04/06/2021.

Work Order Comments

- The analysis for Methane, Methene, Ethane and CO2 by RSK175 was subcontracted to ALS Simi Valley, CA. Final report attached.

GCMS Volatiles by Method SW8260

Batch ID: R380287

Sample ID: 46WW16-210316(HS21030874-08MS)

- The recovery of the Matrix Spike (MS) and the Matrix Spike Duplicate (MSD) associated to this/these analyte/analytes was/were outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MS/MSD MSD may be due to sample matrix interference. cis-1,2-Dichloroethene

WetChemistry by Method SM5310B

Batch ID: R380512

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

WetChemistry by Method SW9056

Batch ID: R380480

Sample ID: 46WW05-210316 (HS21030874-07)

- Sample ran at 5X due to high concentration of Sulfate

Sample ID: 46WW09-210316 (HS21030874-09)

- Sample ran at 5X due to high concentration of Sulfate

Sample ID: 46WW16-210316 (HS21030874-08)

- Sample ran at 2X due to high concentration of Sulfate

Sample ID: 46WW16-210316 (HS21030874-08MS)

- The MS and/or MSD recovery was outside of the control limits; however, the result in the parent sample is greater than 4x the spike amount. (Chloride)

Batch ID: R380595

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: 46WW06-210315
Collection Date: 15-Mar-2021 10:10

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 02:38
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 02:38
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 02:38
Surr: 1,2-Dichloroethane-d4	*81.8*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 02:38*
Surr: 4-Bromofluorobenzene	*88.4*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 02:38*
Surr: Dibromofluoromethane	*86.8*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 02:38*
Surr: Toluene-d8	*98.0*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 02:38*

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP 46 February 2021 WorkOrder:HS21030874
Sample ID: 46WW08-210315 Lab ID:HS21030874-02
Collection Date: 15-Mar-2021 10:50 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 02:59
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 02:59
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 02:59
Surr: 1,2-Dichloroethane-d4	*81.1*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 02:59*
Surr: 4-Bromofluorobenzene	*85.0*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 02:59*
Surr: Dibromofluoromethane	*84.0*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 02:59*
Surr: Toluene-d8	*99.5*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 02:59*

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP 46 February 2021 WorkOrder:HS21030874
Sample ID: 46WW17-210315 Lab ID:HS21030874-03
Collection Date: 15-Mar-2021 11:35 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 03:20
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 03:20
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 03:20
Surr: 1,2-Dichloroethane-d4	*84.5*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 03:20*
Surr: 4-Bromofluorobenzene	*87.4*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 03:20*
Surr: Dibromofluoromethane	*86.9*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 03:20*
Surr: Toluene-d8	*98.2*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 03:20*

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP 46 February 2021 WorkOrder:HS21030874
Sample ID: LHSMW25-210315 Lab ID:HS21030874-04
Collection Date: 15-Mar-2021 12:20 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 03:41
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 03:41
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 03:41
Surr: 1,2-Dichloroethane-d4	*81.3*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 03:41*
Surr: 4-Bromofluorobenzene	*86.4*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 03:41*
Surr: Dibromofluoromethane	*86.5*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 03:41*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 03:41*

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP 46 February 2021 WorkOrder:HS21030874
Sample ID: 46WW14-210315 Lab ID:HS21030874-05
Collection Date: 15-Mar-2021 13:10 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 04:02
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 04:02
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 04:02
Surr: 1,2-Dichloroethane-d4	*82.9*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 04:02*
Surr: 4-Bromofluorobenzene	*86.2*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 04:02*
Surr: Dibromofluoromethane	*85.8*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 04:02*
Surr: Toluene-d8	*99.3*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 04:02*

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: LHSMW21-210316
Collection Date: 16-Mar-2021 07:45

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
cis-1,2-Dichloroethene	**130**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 01:14
Trichloroethene	**33**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 01:14
Vinyl chloride	**3.7**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 01:14
Surr: 1,2-Dichloroethane-d4	*85.9*		**0**	*81-118*		*%REC*	*1*	*25-Mar-2021 01:14*
Surr: 4-Bromofluorobenzene	*86.1*		**0**	*85-114*		*%REC*	*1*	*25-Mar-2021 01:14*
Surr: Dibromofluoromethane	*86.6*		**0**	*80-119*		*%REC*	*1*	*25-Mar-2021 01:14*
Surr: Toluene-d8	*97.5*		**0**	*89-112*		*%REC*	*1*	*25-Mar-2021 01:14*
TOTAL ORGANIC CARBON - SM5310B		**Method:SM5310B**						Analyst: MZD
Organic Carbon, Total	**1.76**		**0.500**	**0.500**	**1.00**	**mg/L**	1	26-Mar-2021 20:15
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**227**		**2.00**	**5.00**	**5.00**	**mg/L**	10	29-Mar-2021 18:46
Nitrogen, Nitrate (As N)	**0.292**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	17-Mar-2021 16:07
Sulfate	**693**		**2.00**	**5.00**	**5.00**	**mg/L**	10	29-Mar-2021 18:46

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: 46WW05-210316
Collection Date: 16-Mar-2021 08:35

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
cis-1,2-Dichloroethene	**1.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 04:23
Trichloroethene	**20**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 04:23
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 04:23
Surr: 1,2-Dichloroethane-d4	*82.9*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 04:23*
Surr: 4-Bromofluorobenzene	*87.9*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 04:23*
Surr: Dibromofluoromethane	*85.6*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 04:23*
Surr: Toluene-d8	*98.0*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 04:23*
TOTAL ORGANIC CARBON - SM5310B		**Method:SM5310B**						Analyst: MZD
Organic Carbon, Total	**10.4**		**0.500**	**0.500**	**1.00**	**mg/L**	1	26-Mar-2021 20:32
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**172**		**1.00**	**2.50**	**2.50**	**mg/L**	5	17-Mar-2021 16:26
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	17-Mar-2021 16:26
Sulfate	**4,080**		**10.0**	**25.0**	**25.0**	**mg/L**	50	29-Mar-2021 19:05
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	05-Apr-2021 17:17

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: 46WW16-210316
Collection Date: 16-Mar-2021 09:30

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 00:53
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 00:53
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 00:53
Surr: 1,2-Dichloroethane-d4	*82.7*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 00:53*
Surr: 4-Bromofluorobenzene	*86.4*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 00:53*
Surr: Dibromofluoromethane	*85.0*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 00:53*
Surr: Toluene-d8	*100.0*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 00:53*
TOTAL ORGANIC CARBON - SM5310B		**Method:SM5310B**						Analyst: MZD
Organic Carbon, Total	**2.90**		**0.500**	**0.500**	**1.00**	**mg/L**	1	26-Mar-2021 20:48
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**277**		**4.00**	**10.0**	**10.0**	**mg/L**	20	29-Mar-2021 20:00
Nitrogen, Nitrate (As N)	0.200	U	0.0600	0.200	0.200	mg/L	2	17-Mar-2021 16:44
Sulfate	**609**		**4.00**	**10.0**	**10.0**	**mg/L**	20	29-Mar-2021 20:00
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	05-Apr-2021 17:17

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: 46WW09-210316
Collection Date: 16-Mar-2021 10:30

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 04:44
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 04:44
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 04:44
Surr: 1,2-Dichloroethane-d4	*81.4*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 04:44*
Surr: 4-Bromofluorobenzene	*89.5*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 04:44*
Surr: Dibromofluoromethane	*85.8*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 04:44*
Surr: Toluene-d8	*99.4*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 04:44*
TOTAL ORGANIC CARBON - SM5310B		**Method:SM5310B**						Analyst: MZD
Organic Carbon, Total	**4.71**		**0.500**	**0.500**	**1.00**	**mg/L**	1	26-Mar-2021 21:21
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**463**		**10.0**	**25.0**	**25.0**	**mg/L**	50	29-Mar-2021 20:18
Nitrogen, Nitrate (As N)	**0.603**		**0.150**	**0.500**	**0.500**	**mg/L**	5	17-Mar-2021 17:39
Sulfate	**2,330**		**10.0**	**25.0**	**25.0**	**mg/L**	50	29-Mar-2021 20:18
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	05-Apr-2021 17:17

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: 46WW11-210316
Collection Date: 16-Mar-2021 11:20

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 05:05
Trichloroethene	**19**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 05:05
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 05:05
Surr: 1,2-Dichloroethane-d4	*84.1*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 05:05*
Surr: 4-Bromofluorobenzene	*87.1*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 05:05*
Surr: Dibromofluoromethane	*88.7*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 05:05*
Surr: Toluene-d8	*97.5*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 05:05*
TOTAL ORGANIC CARBON - SM5310B		**Method:SM5310B**						Analyst: MZD
Organic Carbon, Total	**1.91**		**0.500**	**0.500**	**1.00**	**mg/L**	1	26-Mar-2021 21:36
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**114**		**2.00**	**5.00**	**5.00**	**mg/L**	10	29-Mar-2021 20:37
Nitrogen, Nitrate (As N)	**0.126**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	17-Mar-2021 17:58
Sulfate	**335**		**2.00**	**5.00**	**5.00**	**mg/L**	10	29-Mar-2021 20:37
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	05-Apr-2021 17:17

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: 46WW11-210316-FD
Collection Date: 16-Mar-2021 11:20

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-11
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 05:26
Trichloroethene	**19**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 05:26
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 05:26
Surr: 1,2-Dichloroethane-d4	*83.6*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 05:26*
Surr: 4-Bromofluorobenzene	*87.9*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 05:26*
Surr: Dibromofluoromethane	*86.1*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 05:26*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 05:26*
TOTAL ORGANIC CARBON - SM5310B		**Method:SM5310B**						Analyst: MZD
Organic Carbon, Total	**1.73**		**0.500**	**0.500**	**1.00**	**mg/L**	1	26-Mar-2021 21:52
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**111**		**2.00**	**5.00**	**5.00**	**mg/L**	10	29-Mar-2021 20:55
Nitrogen, Nitrate (As N)	**0.115**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	17-Mar-2021 18:16
Sulfate	**331**		**2.00**	**5.00**	**5.00**	**mg/L**	10	29-Mar-2021 20:55
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	05-Apr-2021 17:17

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: 46WW02-210316
Collection Date: 16-Mar-2021 12:15

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-12
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
cis-1,2-Dichloroethene	**1.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 05:48
Trichloroethene	**25**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 05:48
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 05:48
Surr: 1,2-Dichloroethane-d4	*84.1*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 05:48*
Surr: 4-Bromofluorobenzene	*92.3*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 05:48*
Surr: Dibromofluoromethane	*86.7*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 05:48*
Surr: Toluene-d8	*100.0*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 05:48*
TOTAL ORGANIC CARBON - SM5310B		**Method:SM5310B**						Analyst: MZD
Organic Carbon, Total	**10.4**		**0.500**	**0.500**	**1.00**	**mg/L**	1	26-Mar-2021 22:38
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**31.4**		**0.200**	**0.500**	**0.500**	**mg/L**	1	17-Mar-2021 19:12
Nitrogen, Nitrate (As N)	**0.205**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	17-Mar-2021 19:12
Sulfate	**170**		**2.00**	**5.00**	**5.00**	**mg/L**	10	29-Mar-2021 21:13
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	05-Apr-2021 17:17

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: Trip Blank- 210316
Collection Date: 16-Mar-2021 00:00

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-13
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 00:10
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 00:10
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 00:10
Surr: 1,2-Dichloroethane-d4	*85.1*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 00:10*
Surr: 4-Bromofluorobenzene	*89.0*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 00:10*
Surr: Dibromofluoromethane	*86.5*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 00:10*
Surr: Toluene-d8	*99.4*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 00:10*

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021 **DATES REPORT**
WorkOrder: HS21030874

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R380287 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS21030874-13	Trip Blank- 210316	16 Mar 2021 00:00			25 Mar 2021 00:10	1
Batch ID: R380287 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS21030874-01	46WW06-210315	15 Mar 2021 10:10			25 Mar 2021 02:38	1
HS21030874-02	46WW08-210315	15 Mar 2021 10:50			25 Mar 2021 02:59	1
HS21030874-03	46WW17-210315	15 Mar 2021 11:35			25 Mar 2021 03:20	1
HS21030874-04	LHSMW25-210315	15 Mar 2021 12:20			25 Mar 2021 03:41	1
HS21030874-05	46WW14-210315	15 Mar 2021 13:10			25 Mar 2021 04:02	1
HS21030874-06	LHSMW21-210316	16 Mar 2021 07:45			25 Mar 2021 01:14	1
HS21030874-07	46WW05-210316	16 Mar 2021 08:35			25 Mar 2021 04:23	1
HS21030874-08	46WW16-210316	16 Mar 2021 09:30			25 Mar 2021 00:53	1
HS21030874-09	46WW09-210316	16 Mar 2021 10:30			25 Mar 2021 04:44	1
HS21030874-10	46WW11-210316	16 Mar 2021 11:20			25 Mar 2021 05:05	1
HS21030874-11	46WW11-210316-FD	16 Mar 2021 11:20			25 Mar 2021 05:26	1
HS21030874-12	46WW02-210316	16 Mar 2021 12:15			25 Mar 2021 05:48	1
Batch ID: R380480 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS21030874-06	LHSMW21-210316	16 Mar 2021 07:45			17 Mar 2021 16:07	1
HS21030874-07	46WW05-210316	16 Mar 2021 08:35			17 Mar 2021 16:26	5
HS21030874-08	46WW16-210316	16 Mar 2021 09:30			17 Mar 2021 16:44	2
HS21030874-09	46WW09-210316	16 Mar 2021 10:30			17 Mar 2021 17:39	5
HS21030874-10	46WW11-210316	16 Mar 2021 11:20			17 Mar 2021 17:58	1
HS21030874-11	46WW11-210316-FD	16 Mar 2021 11:20			17 Mar 2021 18:16	1
HS21030874-12	46WW02-210316	16 Mar 2021 12:15			17 Mar 2021 19:12	1
Batch ID: R380512 (0)	**Test Name :** TOTAL ORGANIC CARBON - SM5310B				**Matrix:** Groundwater	
HS21030874-06	LHSMW21-210316	16 Mar 2021 07:45			26 Mar 2021 20:15	1
HS21030874-07	46WW05-210316	16 Mar 2021 08:35			26 Mar 2021 20:32	1
HS21030874-08	46WW16-210316	16 Mar 2021 09:30			26 Mar 2021 20:48	1
HS21030874-09	46WW09-210316	16 Mar 2021 10:30			26 Mar 2021 21:21	1
HS21030874-10	46WW11-210316	16 Mar 2021 11:20			26 Mar 2021 21:36	1
HS21030874-11	46WW11-210316-FD	16 Mar 2021 11:20			26 Mar 2021 21:52	1
HS21030874-12	46WW02-210316	16 Mar 2021 12:15			26 Mar 2021 22:38	1

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021 **DATES REPORT**
WorkOrder: HS21030874

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R380595 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS21030874-06	LHSMW21-210316	16 Mar 2021 07:45			29 Mar 2021 18:46	10
HS21030874-07	46WW05-210316	16 Mar 2021 08:35			29 Mar 2021 19:05	50
HS21030874-08	46WW16-210316	16 Mar 2021 09:30			29 Mar 2021 20:00	20
HS21030874-09	46WW09-210316	16 Mar 2021 10:30			29 Mar 2021 20:18	50
HS21030874-10	46WW11-210316	16 Mar 2021 11:20			29 Mar 2021 20:37	10
HS21030874-11	46WW11-210316-FD	16 Mar 2021 11:20			29 Mar 2021 20:55	10
HS21030874-12	46WW02-210316	16 Mar 2021 12:15			29 Mar 2021 21:13	10
Batch ID: R380971 (0)	**Test Name :** SUBCONTRACT ANALYSIS - RSK				**Matrix:** Groundwater	
HS21030874-07	46WW05-210316	16 Mar 2021 08:35			05 Apr 2021 17:17	1
HS21030874-08	46WW16-210316	16 Mar 2021 09:30			05 Apr 2021 17:17	1
HS21030874-09	46WW09-210316	16 Mar 2021 10:30			05 Apr 2021 17:17	1
HS21030874-10	46WW11-210316	16 Mar 2021 11:20			05 Apr 2021 17:17	1
HS21030874-11	46WW11-210316-FD	16 Mar 2021 11:20			05 Apr 2021 17:17	1
HS21030874-12	46WW02-210316	16 Mar 2021 12:15			05 Apr 2021 17:17	1

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
WorkOrder: HS21030874

QC BATCH REPORT

Batch ID: R380287 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-210324** Units: **ug/L** Analysis Date: **24-Mar-2021 23:49**
Client ID: Run ID: **VOA6_380287** SeqNo: **6010140** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*41.61*	*1.0*	*50*	*0*	*83.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*43.01*	*1.0*	*50*	*0*	*86.0*	*85 - 114*				
Surr: Dibromofluoromethane	*41.63*	*1.0*	*50*	*0*	*83.3*	*80 - 119*				
Surr: Toluene-d8	*49.55*	*1.0*	*50*	*0*	*99.1*	*89 - 112*				

LCS Sample ID: **VLCSW-210324** Units: **ug/L** Analysis Date: **24-Mar-2021 23:07**
Client ID: Run ID: **VOA6_380287** SeqNo: **6010139** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	17.03	1.0	20	0	85.1	78 - 123				
Trichloroethene	18.97	1.0	20	0	94.9	79 - 123				
Vinyl chloride	20.8	1.0	20	0	104	58 - 137				
Surr: 1,2-Dichloroethane-d4	*46.94*	*1.0*	*50*	*0*	*93.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.68*	*1.0*	*50*	*0*	*97.4*	*85 - 114*				
Surr: Dibromofluoromethane	*47.83*	*1.0*	*50*	*0*	*95.7*	*80 - 119*				
Surr: Toluene-d8	*46.75*	*1.0*	*50*	*0*	*93.5*	*89 - 112*				

MS Sample ID: **HS21030874-08MS** Units: **ug/L** Analysis Date: **25-Mar-2021 01:35**
Client ID: **46WW16-210316** Run ID: **VOA6_380287** SeqNo: **6010145** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	15.4	1.0	20	0	77.0	78 - 123				S
Trichloroethene	17.04	1.0	20	0	85.2	79 - 123				
Vinyl chloride	16.9	1.0	20	0	84.5	58 - 137				
Surr: 1,2-Dichloroethane-d4	*41.43*	*1.0*	*50*	*0*	*82.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*46.79*	*1.0*	*50*	*0*	*93.6*	*85 - 114*				
Surr: Dibromofluoromethane	*44.3*	*1.0*	*50*	*0*	*88.6*	*80 - 119*				
Surr: Toluene-d8	*47.7*	*1.0*	*50*	*0*	*95.4*	*89 - 112*				

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
WorkOrder: HS21030874

QC BATCH REPORT

Batch ID: R380287 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS21030874-08MSD** Units: **ug/L** Analysis Date: **25-Mar-2021 01:56**
Client ID: **46WW16-210316** Run ID: **VOA6_380287** SeqNo: **6010146** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	15.27	1.0	20	0	76.3	78 - 123	15.4	0.901	20	S
Trichloroethene	17.34	1.0	20	0	86.7	79 - 123	17.04	1.74	20	
Vinyl chloride	15.66	1.0	20	0	78.3	58 - 137	16.9	7.62	20	
Surr: 1,2-Dichloroethane-d4	*42.69*	*1.0*	*50*	*0*	*85.4*	*81 - 118*	*41.43*	*2.99*	*20*	
Surr: 4-Bromofluorobenzene	*45.04*	*1.0*	*50*	*0*	*90.1*	*85 - 114*	*46.79*	*3.81*	*20*	
Surr: Dibromofluoromethane	*43.6*	*1.0*	*50*	*0*	*87.2*	*80 - 119*	*44.3*	*1.57*	*20*	
Surr: Toluene-d8	*47.51*	*1.0*	*50*	*0*	*95.0*	*89 - 112*	*47.7*	*0.408*	*20*	

The following samples were analyzed in this batch:

HS21030874-01	HS21030874-02	HS21030874-03	HS21030874-04
HS21030874-05	HS21030874-06	HS21030874-07	HS21030874-08
HS21030874-09	HS21030874-10	HS21030874-11	HS21030874-12
HS21030874-13			

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
WorkOrder: HS21030874

QC BATCH REPORT

Batch ID: R380480 (0) **Instrument: ICS2100** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-** Units: **mg/L** Analysis Date: **17-Mar-2021 15:30**
Client ID: Run ID: **ICS2100_380480** SeqNo: **6014135** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.500	0.500								U
Nitrogen, Nitrate (As N)	0.100	0.100								U

LCS Sample ID: **LCS-** Units: **mg/L** Analysis Date: **17-Mar-2021 15:49**
Client ID: Run ID: **ICS2100_380480** SeqNo: **6014136** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.5	0.500	20	0	97.5	80 - 120				
Nitrogen, Nitrate (As N)	3.898	0.100	4	0	97.5	80 - 120				

MS Sample ID: **HS21030874-08MS** Units: **mg/L** Analysis Date: **17-Mar-2021 17:03**
Client ID: **46WW16-210316** Run ID: **ICS2100_380480** SeqNo: **6014140** PrepDate: DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	284.2	1.00	20	281.9	11.7	80 - 120				SEO
Nitrogen, Nitrate (As N)	3.966	0.200	4	0	99.1	80 - 120				

MSD Sample ID: **HS21030874-08MSD** Units: **mg/L** Analysis Date: **17-Mar-2021 17:21**
Client ID: **46WW16-210316** Run ID: **ICS2100_380480** SeqNo: **6014141** PrepDate: DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	284.2	1.00	20	281.9	11.3	80 - 120	284.2	0.0239	20	SEO
Nitrogen, Nitrate (As N)	3.965	0.200	4	0	99.1	80 - 120	3.966	0.0303	20	

The following samples were analyzed in this batch: HS21030874-06 HS21030874-07 HS21030874-08 HS21030874-09 HS21030874-10 HS21030874-11 HS21030874-12

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
WorkOrder: HS21030874

QC BATCH REPORT

Batch ID: R380512 (0) **Instrument: TOC_04** **Method: TOTAL ORGANIC CARBON - SM5310B**

MBLK Sample ID: **MBLK3-03262021** Units: **mg/L** Analysis Date: **26-Mar-2021 19:30**
Client ID: Run ID: **TOC_04_380512** SeqNo: **6014737** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	0.500	1.00								U

LCS Sample ID: **LCS3-03262021** Units: **mg/L** Analysis Date: **26-Mar-2021 19:44**
Client ID: Run ID: **TOC_04_380512** SeqNo: **6014738** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.28	1.00	10	0	103	85 - 115				

LCSD Sample ID: **LCSD3-03262021** Units: **mg/L** Analysis Date: **26-Mar-2021 19:59**
Client ID: Run ID: **TOC_04_380512** SeqNo: **6014739** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.52	1.00	10	0	105	85 - 115	10.28	2.31	20	

MS Sample ID: **HS21030874-08MS** Units: **mg/L** Analysis Date: **26-Mar-2021 21:05**
Client ID: **46WW16-210316** Run ID: **TOC_04_380512** SeqNo: **6014743** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	14.12	1.00	10	2.905	112	80 - 120				

The following samples were analyzed in this batch:

HS21030874-06	HS21030874-07	HS21030874-08	HS21030874-09
HS21030874-10	HS21030874-11	HS21030874-12	

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
WorkOrder: HS21030874

QC BATCH REPORT

Batch ID: R380595 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-** Units: **mg/L** Analysis Date: **30-Mar-2021 00:17**
Client ID: Run ID: **ICS-Integrion_380595** SeqNo: **6016717** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.500	0.500								U
Sulfate	0.500	0.500								U

LCS Sample ID: **LCS-** Units: **mg/L** Analysis Date: **30-Mar-2021 00:36**
Client ID: Run ID: **ICS-Integrion_380595** SeqNo: **6016718** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	18.89	0.500	20	0	94.5	80 - 120				
Sulfate	19.36	0.500	20	0	96.8	80 - 120				

MS Sample ID: **HS21031405-01MS** Units: **mg/L** Analysis Date: **29-Mar-2021 16:37**
Client ID: Run ID: **ICS-Integrion_380595** SeqNo: **6016703** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	62.37	0.500	10	52.87	95.0	80 - 120				O
Sulfate	86.54	0.500	10	77.5	90.3	80 - 120				O

MSD Sample ID: **HS21031405-01MSD** Units: **mg/L** Analysis Date: **29-Mar-2021 16:56**
Client ID: Run ID: **ICS-Integrion_380595** SeqNo: **6016704** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	63.45	0.500	10	52.87	106	80 - 120	62.37	1.72	20	O
Sulfate	88.59	0.500	10	77.5	111	80 - 120	86.54	2.35	20	O

The following samples were analyzed in this batch:

HS21030874-06	HS21030874-07	HS21030874-08	HS21030874-09
HS21030874-10	HS21030874-11	HS21030874-12	

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
WorkOrder: **HS21030874**

QUALIFIERS, ACRONYMS, UNITS

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

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

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	PJLA L20-507-R2	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2020-2021	31-Jul-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
North Carolina	624-2021	31-Dec-2021
North Dakota	R-193 2020-2021	30-Apr-2021
Oklahoma	2020-165	31-Aug-2021
Texas	T104704231-20-26	30-Apr-2021

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Work Order: HS21030874

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS21030874-01	46WW06-210315	Login	3/17/2021 1:27:57 PM	NDR	Disposed
HS21030874-01	46WW06-210315	Login	3/17/2021 1:27:57 PM	NDR	Disposed
HS21030874-01	46WW06-210315	Login	3/17/2021 1:27:57 PM	NDR	Sub
HS21030874-01	46WW06-210315	Login	3/17/2021 1:27:57 PM	NDR	Sub
HS21030874-06	LHSMW21-210316	Login	3/17/2021 1:27:57 PM	NDR	Disposed
HS21030874-06	LHSMW21-210316	Login	3/17/2021 1:27:57 PM	NDR	Disposed
HS21030874-06	LHSMW21-210316	Login	3/17/2021 1:27:57 PM	NDR	Sub
HS21030874-06	LHSMW21-210316	Login	3/17/2021 1:27:57 PM	NDR	Sub

ALS Houston, US Date: 06-Apr-21

Sample Receipt Checklist

Work Order ID: HS21030874 **Date/Time Received:** **17-Mar-2021 10:10**

Client Name: CBI-Houston **Received by:** **Jared R. Makan**

Completed By: */S/ Nilesh D. Ranchod* 17-Mar-2021 14:20 **Reviewed by:** */S/ RJ Modashia* 17-Mar-2021 15:42

eSignature Date/Time eSignature Date/Time

Matrices: **GW/Water** Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☐	No ☑	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.2c U/c	IR31
Cooler(s)/Kit(s):	45583	
Date/Time sample(s) sent to storage:	03/17/2021 15:00	

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

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: **LHAAP 46 February 2021**

Prepared By:

P.O. Number

Aptim Environmental & Infrastucture, Inc.
Longhorn Army Ammunition Plant - 46

HS21030874

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Carbon Dioxide by RSK 175	Anions (nitrate, chloride and sulfate) by SW9056						Remarks (Preservatives, etc.)
46WW06-210315	WG	3/15/21/1010		3	X										
46WW08-210315	WG	3/15/21/1050		3	X										
46WW17-210315	WG	3/15/21/1135		3	X										
LHSMW25-210315	WG	3/15/21/1220		3	X										
46WW14-210315	WG	3/15/21/1310		3	X										
LHSMW21-210316	WG	3/16/21/0745		12	X	X	X	X	X						
46WW05-210316	WG	3/16/21/0835		12	X	X	X	X	X						
46WW16-210316	WG	3/16/21/0930		12	X	X	X	X	X						

Additional Remarks: **Standard TAT on all parameters. Please email results to Susan.Huang@aptim.com and invoices to fedinvoices@aptim.com**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Susan Beeson	3/16/21	1430									

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition
J. Mashburn	3/17/21	10:10							

Remarks: Cooler 45583
Temp 1.2°C 1231 CFO

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: **LHAAP 46 February 2021**

Prepared By:

P.O. Number

Field Sample I.D. / Time	Sample Matrix	Date /	MS / MSD	No. OF CONTAINERS	VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Carbon Dioxide by RSK 175	Anions (nitrate, chloride and sulfate) by SW9056	Remarks (Preservatives, etc.)
46WW16-210316-MS	WG	3/16/21/0930		12	X	X	X	X	X	
46WW16-210316-MSD	WG	3/16/21/0930		12	X	X	X	X	X	
46WW09-210316	WG	3/16/21/1030		12	X	X	X	X	X	
46WW11-210316	WG	3/16/21/1120		12	X	X	X	X	X	
46WW11-210316-FD	WG	3/16/21/1120		12	X	X	X	X	X	
46WW02-210316	WG	3/16/21/1215		12	X	X	X	X	X	
TRIP BLANK-210316	WG	3/16/21		2	X					

Analyses

Additional Remarks: Standard TAT on all parameters. Please email results to Susan.Huang@aptim.com and invoices to fedinvoices@aptim.com

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Susan Beesley	3/16/21	1430									

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition
J. MALCOLM	3/17/21	10:10							

Remarks:
Cooler 45583
Temp 1.2°C 1431 CF0

Aptim Environmental & Infrastucture, Inc.
Longhorn Army Ammunition Plant - 46

HS21030874

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

45583

CUSTODY SEAL

Date: 3/16/21 Time: 1430
Name: Scott Beesinger
Company: Shatz

Seal Broken By: SB
Date: 03/17/21

45583 MAR 17 2021

Must Deliver Next Business Day
Time and Tempature Sensitive!

45583

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

SHIP DATE: 03FEB21
ACTWGT: 1.00 LB MAN
CAD: 0221247/CAFE3408
DIMS: 19x16x13 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5666
REF: LHAAP-46-B076543-RJ

RMA:

FedEx Express

FedEx
TRK# 0221 9473 0840 0345

WED - 17 MAR AA
PRIORITY OVERNIGHT

XH SGRA

77099
TX-US
IAH

FID: 3923207 16Mar2021 GGGA 560G3/AC39/1B23

LABORATORY REPORT

April 6, 2021

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

RE: HS21030874

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on March 18, 2021. For your reference, these analyses have been assigned our service request number P2101408.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Hayden Akers at 2:25 pm, Apr 06, 2021

Hayden Akers
Project Manager

Client: ALS Laboratory Group Service Request No: P2101408
Project: HS21030874

CASE NARRATIVE

The samples were received intact under chain of custody on March 18, 2021 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

Methane, Ethene and Ethane Analysis

The samples were analyzed for methane, ethene, and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-008
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272019-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Laboratory Group
Service Request: P2101408
Project ID: HS21030874

Date Received: 3/18/2021
Time Received: 09:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - Gases	RSK 175 - CO2
LHSMW21-210316	P2101408-001	Water	3/16/2021	07:45	X	X
46WW05-210316	P2101408-002	Water	3/16/2021	08:35	X	X
46WW16-210316	P2101408-003	Water	3/16/2021	09:30	X	X
46WW09-210316	P2101408-004	Water	3/16/2021	10:30	X	X
46WW11-210316	P2101408-005	Water	3/16/2021	11:20	X	X
46WW11-210316-FD	P2101408-006	Water	3/16/2021	11:20	X	X
46WW02-210316	P2101408-007	Water	3/16/2021	12:15	X	X

P2101408

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **15794**

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone: +1 805 526 7161

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS21030874
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS21030874-06**	**LHSMW21-210316**	**Groundwater**	**16 Mar 2021 07:45**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021
2.	**HS21030874-07**	**46WW05-210316**	**Groundwater**	**16 Mar 2021 08:35**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021
3.	**HS21030874-08**	**46WW16-210316**	**Groundwater**	**16 Mar 2021 09:30**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021
4.	**HS21030874-09**	**46WW09-210316**	**Groundwater**	**16 Mar 2021 10:30**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021
5.	**HS21030874-10**	**46WW11-210316**	**Groundwater**	**16 Mar 2021 11:20**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021
6.	**HS21030874-11**	**46WW11-210316-FD**	**Groundwater**	**16 Mar 2021 11:20**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021
7.	**HS21030874-12**	**46WW02-210316**	**Groundwater**	**16 Mar 2021 12:15**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021

Comments:

P2101408

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **15794**

Please analyze for the analysis listed above.
Send report to the emails shown above.
MS/MSD Sample HS21030874-08
NEAT & HCL VIALS

QC Level: DOD IV (DoD Data Package)

Relinquished By:		Date/Time:	3/19/2021 1800.
Received By:		Date/Time:	3-18-21 0930
Cooler ID(s):		Temperature(s):	2°

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P2101408

Project:

Sample(s) received on: 3/18/2021 Date opened: 3/18/2021 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: 2° C Blank Temperature: ° C	Wet Ic		
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler lid. Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☒	☐	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2101408-001.01	40ml VOA HCL				A	
P2101408-001.02	40ml VOA HCL				A	
P2101408-001.03	40ml VOA HCL				A	
P2101408-001.04	40mL VOA NP				A	
P2101408-001.05	40mL VOA NP				A	
P2101408-001.06	40mL VOA NP				A	
P2101408-002.01	40ml VOA HCL		1		A	wh 3/30/21
P2101408-002.02	40ml VOA HCL				A	
P2101408-002.03	40ml VOA HCL				A	
P2101408-002.04	40mL VOA NP		7		A	wh 3/26/21
P2101408-002.05	40mL VOA NP				A	
P2101408-002.06	40mL VOA NP				A	
P2101408-003.01	40ml VOA HCL		1		A	wh 3/30/21
P2101408-003.02	40ml VOA HCL		1		A	wh 3/30/21
P2101408-003.03	40ml VOA HCL		1		A	wh 3/30/21

Explain any discrepancies: (include lab sample ID numbers): Sample -001 was not received with the rest of the samples.

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P2101408

Project:

Sample(s) received on: 3/18/2021 Date opened: 3/18/2021 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2101408-003.04	40mL VOA NP		7		A	wh 3/26/21
P2101408-003.05	40mL VOA NP		7		A	wh 3/26/21
P2101408-003.06	40mL VOA NP		7		A	wh 3/26/21
P2101408-003.07	40ml VOA HCL				A	
P2101408-003.08	40ml VOA HCL				A	
P2101408-003.09	40ml VOA HCL				A	
P2101408-003.10	40ml VOA HCL				A	
P2101408-003.11	40ml VOA HCL				A	
P2101408-003.12	40ml VOA HCL				A	
P2101408-003.13	40mL VOA NP				A	
P2101408-003.14	40mL VOA NP				A	
P2101408-003.15	40mL VOA NP				A	
P2101408-003.16	40mL VOA NP				A	
P2101408-003.17	40mL VOA NP				A	
P2101408-003.18	40mL VOA NP				A	
P2101408-004.01	40ml VOA HCL		1		A	wh 3/30/21
P2101408-004.02	40ml VOA HCL				A	
P2101408-004.03	40ml VOA HCL				A	
P2101408-004.04	40mL VOA NP		7		A	wh 3/26/21
P2101408-004.05	40mL VOA NP				A	
P2101408-004.06	40mL VOA NP				A	
P2101408-005.01	40ml VOA HCL		1		A	wh 3/30/21
P2101408-005.02	40ml VOA HCL				A	
P2101408-005.03	40ml VOA HCL				A	
P2101408-005.04	40mL VOA NP		7		A	wh 3/26/21
P2101408-005.05	40mL VOA NP				A	
P2101408-005.06	40mL VOA NP				A	
P2101408-006.01	40ml VOA HCL		1		A	wh 3/30/21
P2101408-006.02	40ml VOA HCL				A	
P2101408-006.03	40ml VOA HCL				A	
P2101408-006.04	40mL VOA NP		7		A	wh 3/26/21
P2101408-006.05	40mL VOA NP				A	
P2101408-006.06	40mL VOA NP				A	
P2101408-007.01	40ml VOA HCL		1		A	wh 3/30/21
P2101408-007.02	40ml VOA HCL				A	
P2101408-007.03	40ml VOA HCL				A	
P2101408-007.04	40mL VOA NP		7		A	wh 3/26/21
P2101408-007.05	40mL VOA NP				A	
P2101408-007.06	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Project ID: **HS21030874** ALS Project ID: P2101408

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date(s) Collected: 3/16/21
Date Received: 3/18/21
Date Analyzed: 3/26/21

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
46WW05-210316	P2101408-002	0.10	**450,000**	1,000	860	370	
46WW16-210316	P2101408-003	0.10	**670,000**	1,000	860	370	
46WW09-210316	P2101408-004	0.10	**200,000**	1,000	860	370	
46WW11-210316	P2101408-005	0.10	**83,000**	1,000	860	370	
46WW11-210316-FD	P2101408-006	0.10	**85,000**	1,000	860	370	
46WW02-210316	P2101408-007	0.10	**420,000**	1,000	860	370	
Method Control Sample	P210326-MB	0.10	860	1,000	860	370	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **46WW16-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-003MS
P2101408-003DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: ######
Date Received: ######
Date Analyzed: ######
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount MS / DMS ug/L	Sample Amount ug/L	Result MS ug/L	Result DMS ug/L	% Recovery MS	% Recovery DMS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	45,800	671,000	723,000	720,000	**114**	**107**	80-122	6	30	

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2101408
Client Project ID: **HS21030874** ALS Sample ID: P210326-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Connor Barrett Date Analyzed: 3/26/21
Matrix: Water Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result$_1$ LCS ug/L	Result$_1$ DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	23,500	23,300	**103**	**102**	80-122	1.0	12	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **46WW05-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 03/16/21
Date Received: 03/18/21
Date Analyzed: 03/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**1.3**	1.3	1.0	0.51	**J**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **46WW16-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 03/16/21
Date Received: 03/18/21
Date Analyzed: 03/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **46WW09-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-004

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 03/16/21
Date Received: 03/18/21
Date Analyzed: 03/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **46WW11-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-005

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 03/16/21
Date Received: 03/18/21
Date Analyzed: 03/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**2.0**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **46WW11-210316-FD**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-006

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 03/16/21
Date Received: 03/18/21
Date Analyzed: 03/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**1.4**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **46WW02-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-007

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 03/16/21
Date Received: 03/18/21
Date Analyzed: 03/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **Method Control Sample** ALS Project ID: P2101408
Client Project ID: **HS21030874** ALS Sample ID: P210330-MB

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Connor Barrett Date Analyzed: 3/30/21
Matrix: Water Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **46WW16-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-003MS
P2101408-003DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 3/16/21
Date Received: 3/18/21
Date Analyzed: 3/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount MS / DMS µg/L	Sample Amount µg/L	Result MS µg/L	Result DMS µg/L	% Recovery MS	% Recovery DMS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	169	0.405	86.7	90.2	**51**	**53**	73-125	4	30	**N**
74-85-1	Ethene	294	ND	164	174	**56**	**59**	72-133	5	30	**N**
74-84-0	Ethane	317	ND	171	180	**54**	**57**	74-131	5	30	**N**

N = The matrix spike recovery is not within control limits. See case narrative.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P210330-LCS
P210330-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 3/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.52	2.67	2.62	**106**	**104**	73-125	2	26	
74-85-1	Ethene	4.40	4.90	4.80	**111**	**109**	72-133	2	11	
74-84-0	Ethane	4.72	4.74	4.69	**100**	**99**	74-131	1	10	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

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

March 25, 2021

Vicki Graves
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS21031052**

Laboratory Results for: **Longhorn Army Ammunition Plant 46**

Dear Vicki Graves ,

ALS Environmental received 7 sample(s) on Mar 19, 2021 for the analysis presented in the following report.

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

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

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

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
Work Order: HS21031052

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS21031052-01	LHSMW23R-210318	Groundwater		18-Mar-2021 07:50	19-Mar-2021 10:05	☐
HS21031052-02	46WW07-210318	Groundwater		18-Mar-2021 08:30	19-Mar-2021 10:05	☐
HS21031052-03	46WW07-210318-FD	Groundwater		18-Mar-2021 08:30	19-Mar-2021 10:05	☐
HS21031052-04	LHSMW19-210318	Groundwater		18-Mar-2021 09:30	19-Mar-2021 10:05	☐
HS21031052-05	46WW03-210318	Groundwater		18-Mar-2021 10:15	19-Mar-2021 10:05	☐
HS21031052-06	46WW03-210318-FD	Groundwater		18-Mar-2021 10:15	19-Mar-2021 10:05	☐
HS21031052-07	Trip Blank-210318	Water	CG-121520-652	18-Mar-2021 00:00	19-Mar-2021 10:05	☐

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
Work Order: HS21031052

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R380287

Sample ID: HS21030874-08MS

- MS and MSD are for an unrelated sample

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
Sample ID: LHSMW23R-210318
Collection Date: 18-Mar-2021 07:50

ANALYTICAL REPORT
WorkOrder:HS21031052
Lab ID:HS21031052-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	**0.66**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 06:09
Trichloroethene	**0.64**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 06:09
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 06:09
Surr: 1,2-Dichloroethane-d4	*83.4*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 06:09*
Surr: 4-Bromofluorobenzene	*89.1*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 06:09*
Surr: Dibromofluoromethane	*83.3*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 06:09*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 06:09*

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

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
Sample ID: 46WW07-210318
Collection Date: 18-Mar-2021 08:30

ANALYTICAL REPORT
WorkOrder:HS21031052
Lab ID:HS21031052-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 06:30
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 06:30
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 06:30
Surr: 1,2-Dichloroethane-d4	*83.2*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 06:30*
Surr: 4-Bromofluorobenzene	*87.4*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 06:30*
Surr: Dibromofluoromethane	*83.9*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 06:30*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 06:30*

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

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
Sample ID: 46WW07-210318-FD
Collection Date: 18-Mar-2021 08:30

ANALYTICAL REPORT
WorkOrder:HS21031052
Lab ID:HS21031052-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 06:51
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 06:51
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 06:51
Surr: 1,2-Dichloroethane-d4	*83.5*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 06:51*
Surr: 4-Bromofluorobenzene	*85.3*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 06:51*
Surr: Dibromofluoromethane	*87.3*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 06:51*
Surr: Toluene-d8	*97.6*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 06:51*

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

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
Sample ID: LHSMW19-210318
Collection Date: 18-Mar-2021 09:30

ANALYTICAL REPORT
WorkOrder:HS21031052
Lab ID:HS21031052-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
cis-1,2-Dichloroethene	**3.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 07:12
Trichloroethene	**13**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 07:12
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 07:12
Surr: 1,2-Dichloroethane-d4	*82.9*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 07:12*
Surr: 4-Bromofluorobenzene	*88.6*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 07:12*
Surr: Dibromofluoromethane	*87.6*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 07:12*
Surr: Toluene-d8	*100*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 07:12*

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

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
Sample ID: 46WW03-210318
Collection Date: 18-Mar-2021 10:15

ANALYTICAL REPORT
WorkOrder:HS21031052
Lab ID:HS21031052-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 07:33
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 07:33
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 07:33
Surr: 1,2-Dichloroethane-d4	*83.1*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 07:33*
Surr: 4-Bromofluorobenzene	*86.9*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 07:33*
Surr: Dibromofluoromethane	*85.1*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 07:33*
Surr: Toluene-d8	*100*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 07:33*

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

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
Sample ID: 46WW03-210318-FD
Collection Date: 18-Mar-2021 10:15

ANALYTICAL REPORT
WorkOrder:HS21031052
Lab ID:HS21031052-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 07:54
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 07:54
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 07:54
Surr: 1,2-Dichloroethane-d4	*81.4*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 07:54*
Surr: 4-Bromofluorobenzene	*87.5*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 07:54*
Surr: Dibromofluoromethane	*85.1*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 07:54*
Surr: Toluene-d8	*99.4*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 07:54*

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

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
Sample ID: Trip Blank-210318
Collection Date: 18-Mar-2021 00:00

ANALYTICAL REPORT
WorkOrder:HS21031052
Lab ID:HS21031052-07
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 00:31
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 00:31
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 00:31
Surr: 1,2-Dichloroethane-d4	*81.9*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 00:31*
Surr: 4-Bromofluorobenzene	*86.5*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 00:31*
Surr: Dibromofluoromethane	*83.2*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 00:31*
Surr: Toluene-d8	*99.9*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 00:31*

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

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
WorkOrder: HS21031052

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R380287 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS21031052-07	Trip Blank-210318	18 Mar 2021 00:00			25 Mar 2021 00:31	1
Batch ID: R380287 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS21031052-01	LHSMW23R-210318	18 Mar 2021 07:50			25 Mar 2021 06:09	1
HS21031052-02	46WW07-210318	18 Mar 2021 08:30			25 Mar 2021 06:30	1
HS21031052-03	46WW07-210318-FD	18 Mar 2021 08:30			25 Mar 2021 06:51	1
HS21031052-04	LHSMW19-210318	18 Mar 2021 09:30			25 Mar 2021 07:12	1
HS21031052-05	46WW03-210318	18 Mar 2021 10:15			25 Mar 2021 07:33	1
HS21031052-06	46WW03-210318-FD	18 Mar 2021 10:15			25 Mar 2021 07:54	1

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
WorkOrder: HS21031052

QC BATCH REPORT

Batch ID: R380287 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-210324** Units: **ug/L** Analysis Date: **24-Mar-2021 23:49**
Client ID: Run ID: **VOA6_380287** SeqNo: **6010140** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*41.61*	*1.0*	*50*	*0*	*83.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*43.01*	*1.0*	*50*	*0*	*86.0*	*85 - 114*				
Surr: Dibromofluoromethane	*41.63*	*1.0*	*50*	*0*	*83.3*	*80 - 119*				
Surr: Toluene-d8	*49.55*	*1.0*	*50*	*0*	*99.1*	*89 - 112*				

LCS Sample ID: **VLCSW-210324** Units: **ug/L** Analysis Date: **24-Mar-2021 23:07**
Client ID: Run ID: **VOA6_380287** SeqNo: **6010139** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	17.03	1.0	20	0	85.1	78 - 123				
Trichloroethene	18.97	1.0	20	0	94.9	79 - 123				
Vinyl chloride	20.8	1.0	20	0	104	58 - 137				
Surr: 1,2-Dichloroethane-d4	*46.94*	*1.0*	*50*	*0*	*93.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.68*	*1.0*	*50*	*0*	*97.4*	*85 - 114*				
Surr: Dibromofluoromethane	*47.83*	*1.0*	*50*	*0*	*95.7*	*80 - 119*				
Surr: Toluene-d8	*46.75*	*1.0*	*50*	*0*	*93.5*	*89 - 112*				

MS Sample ID: **HS21030874-08MS** Units: **ug/L** Analysis Date: **25-Mar-2021 01:35**
Client ID: Run ID: **VOA6_380287** SeqNo: **6010145** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	15.4	1.0	20	0	77.0	78 - 123				S
Trichloroethene	17.04	1.0	20	0	85.2	79 - 123				
Vinyl chloride	16.9	1.0	20	0	84.5	58 - 137				
Surr: 1,2-Dichloroethane-d4	*41.43*	*1.0*	*50*	*0*	*82.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*46.79*	*1.0*	*50*	*0*	*93.6*	*85 - 114*				
Surr: Dibromofluoromethane	*44.3*	*1.0*	*50*	*0*	*88.6*	*80 - 119*				
Surr: Toluene-d8	*47.7*	*1.0*	*50*	*0*	*95.4*	*89 - 112*				

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
WorkOrder: HS21031052

QC BATCH REPORT

Batch ID: R380287 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS21030874-08MSD** Units: **ug/L** Analysis Date: **25-Mar-2021 01:56**
Client ID: Run ID: **VOA6_380287** SeqNo: **6010146** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	15.27	1.0	20	0	76.3	78 - 123	15.4	0.901	20	S
Trichloroethene	17.34	1.0	20	0	86.7	79 - 123	17.04	1.74	20	
Vinyl chloride	15.66	1.0	20	0	78.3	58 - 137	16.9	7.62	20	
Surr: 1,2-Dichloroethane-d4	*42.69*	*1.0*	*50*	*0*	*85.4*	*81 - 118*	*41.43*	*2.99*	*20*	
Surr: 4-Bromofluorobenzene	*45.04*	*1.0*	*50*	*0*	*90.1*	*85 - 114*	*46.79*	*3.81*	*20*	
Surr: Dibromofluoromethane	*43.6*	*1.0*	*50*	*0*	*87.2*	*80 - 119*	*44.3*	*1.57*	*20*	
Surr: Toluene-d8	*47.51*	*1.0*	*50*	*0*	*95.0*	*89 - 112*	*47.7*	*0.408*	*20*	

The following samples were analyzed in this batch: HS21031052-01 HS21031052-02 HS21031052-03 HS21031052-04
HS21031052-05 HS21031052-06 HS21031052-07

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
WorkOrder: **HS21031052**

QUALIFIERS, ACRONYMS, UNITS

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

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

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	PJLA L20-507-R2	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2020-2021	31-Jul-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
North Carolina	624-2021	31-Dec-2021
North Dakota	R-193 2020-2021	30-Apr-2021
Oklahoma	2020-165	31-Aug-2021
Texas	T104704231-20-26	30-Apr-2021

ALS Houston, US Date: 25-Mar-21

Sample Receipt Checklist

Work Order ID: HS21031052 **Date/Time Received:** **19-Mar-2021 10:05**

Client Name: CBI-Houston **Received by:** **Nelson D. Dusara**

Completed By: */S/ Paresh M. Giga* (eSignature) 20-Mar-2021 09:05 (Date/Time) **Reviewed by:** */S/ RJ Modashia* (eSignature) 21-Mar-2021 14:13 (Date/Time)

Matrices: **GW/Water** Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.1C U/C	IR31	
Cooler(s)/Kit(s):	46861		
Date/Time sample(s) sent to storage:	3/19/2021 19:00		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: **LHAAP 46 February 2021**

Prepared By:

P.O. Number

HS21031052
Aptim Environmental & Infrastucture, Inc.
Longhorn Army Ammunition Plant 46

Field Sample I.D. / Time	Sample Matrix	Date /	MS / MSD	No. OF CONTAINERS	Analyses: VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Carbon Dioxide by RSK 175	Anions (nitrate, chloride and sulfate) by SW9056						Remarks (Preservatives, etc.)	Lab I.D.#
LHSMW23R-210318	WG	3/18/21/0750		3	X											
46WW07-210318	WG	3/18/21/0830		3	X											
46WW07-210318-FD	WG	3/18/21/0830		3	X											
LHSMW19-210318	WG	3/18/21/0930		3	X											
46WW03-210318	WG	3/18/21/1015		3	X											
46WW03-210318-FD	WG	3/18/21/1015		3	X											
TRIP BLANK-210318	W	3/18/21		2	X											

Additional Remarks: **Standard TAT on all parameters. Please email results to Susan.Huang@aptim.com and invoices to fedinvoices@aptim.com**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
[signature]	3/18/21	1030	NID	3/19/2021	10:05						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

GIC
46861 1.10
431

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly CIC.0

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

46861

CUSTODY SEAL

Date: 3/18/21 Time: 1430
Name: Scott Beesinger
Company: BHATE

Seal Broken By:
Date: 03/19/21

46861 MAR 19 2021

Must Deliver Next Business Day
Time and Tempature Sensitive!

46861

Part # 159469-434 RITZ EXP 10/21

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

SHIP DATE: 03FEB21
ACTWGT: 1.00 LB MAN
CAD: 0221247/CAFE3408
DIMS: 19x16x13 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-46-B076543-RJ

RMA:

FedEx Express

FedEx
TRK# 0221 9473 0840 0389

FRI - 19 MAR AA
PRIORITY OVERNIGHT

XH SGRA

77099
TX-US
IAH

FID: 392320Z 18Mar2021 GG0A 56DG3/AC3971B23

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

LABORATORY REPORT

May 25, 2021

Vicki Graves
Shaw Environment & Infrastructure, Inc.
312 Directors Drive
Knoxville, TN 37923

RE: LONGHORN ARMY AMMN. PLANT (LHAAP) / 501032

Dear Vicki:

Enclosed are the results of the sample submitted to our laboratory on April 30, 2021. For your reference, this analysis has been assigned our service request number P2102422.

The analysis was performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Hayden Akers at 9:52 am, May 26, 2021

Hayden Akers
Project Manager

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

Client: Shaw Environment & Infrastructure, Inc. Service Request No: P2102422
Project: LONGHORN ARMY AMMN. PLANT (LHAAP) / 501032

CASE NARRATIVE

The sample was received intact under chain of custody on April 30, 2021 and was stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the sample at the time of sample receipt.

Methane, Ethene and Ethane Analysis

The sample was analyzed for methane, ethene, and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-008
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272019-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Shaw Environment & Infrastructure, Inc. Service Request: P2102422

Project ID: LONGHORN ARMY AMMN. PLANT (LHAAP) / 501032

Date Received: 4/30/2021

Time Received: 09:35

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - Gases
LHSMW21-210429 R	P2102422-001	Water	4/29/2021	09:35	X

R2102422

01076187

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 2655 Park Center Drive, Suite A Simi Valley, CA 93065 (805) 526-7161 ATTN: Hayden Akers

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: LHAAP 46 February 2021

Prepared By:

P.O. Number

Field Sample I.D. / Time	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Carbon Dioxide by RSK 175	Anions (nitrate, chloride and sulfate) by SW9056					Remarks (Preservatives, etc.)	Lab I.D.#
LHSMW21-210429R	WG	4/29/21/0935		3			X								
TRIP BLANK-210429	W	4/29/21		2	X										

Additional Remarks: Standard TAT on all parameters. Please email results to Vicki.Graves@aptim.com and invoices to fedinvoices@aptim.com

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
										4-30-21	0930

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition
AL DAVIS	4-30-21	0930	7911 5757 2813	A-DAVIS	4-30-21	0930	3°		GOOD / CUSTODY SEAL INTACT

Remarks:

ALS Environmental
Sample Acceptance Check Form

Client: Aptim Work order: P2102422

Project: LONGHORN ARMY AMMN. PLANT (LHAAP) 501032

Sample(s) received on: 4/30/21 Date opened: 4/30/21 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: 3° C Blank Temperature: ° C			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? _____ Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☒	☐	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2102422-001.01	40ml clear vial		1		A	CB 5/12/21
P2102422-001.02	40ml clear vial				A	
P2102422-001.03	40ml clear vial				A	
P2102422-002.01	40ml clear vial				A	
P2102422-002.02	40ml clear vial				A	

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: **Shaw Environment & Infrastructure, Inc.**
Client Sample ID: **LHSMW21-210429 R** ALS Project ID: P2102422
Client Project ID: **LONGHORN ARMY AMMN. PLANT (LHAAP) / 501032** ALS Sample ID: P2102422-001

Test Code: RSK 175 Date Collected: 4/29/21
Instrument ID: HP5890A/GC10/FID Date Received: 4/30/21
Analyst: Connor Barrett Date Analyzed: 5/12/21
Matrix: Water Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: **Shaw Environment & Infrastructure, Inc.**
Client Sample ID: **Method Control Sample** ALS Project ID: P2102422
Client Project ID: **LONGHORN ARMY AMMN. PLANT (LHAAP) / 501032** ALS Sample ID: P210512-MB

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Connor Barrett Date Analyzed: 5/12/21
Matrix: Water Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Shaw Environment & Infrastructure, Inc.**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **LONGHORN ARMY AMMN. PLANT (LHAAP) / 501032**

ALS Project ID: P2102422
ALS Sample ID: P210512-LCS
P210512-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/12/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result[1] LCS µg/L	Result[1] DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.52	2.89	2.45	**115**	**97**	73-125	17	26	
74-85-1	Ethene	4.40	5.02	4.89	**114**	**111**	72-133	3	11	
74-84-0	Ethane	4.72	4.91	4.78	**104**	**101**	74-131	3	10	

[1] = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122114.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 14:17
Operator : CB
Sample : 2422-001 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 14 14:03:26 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

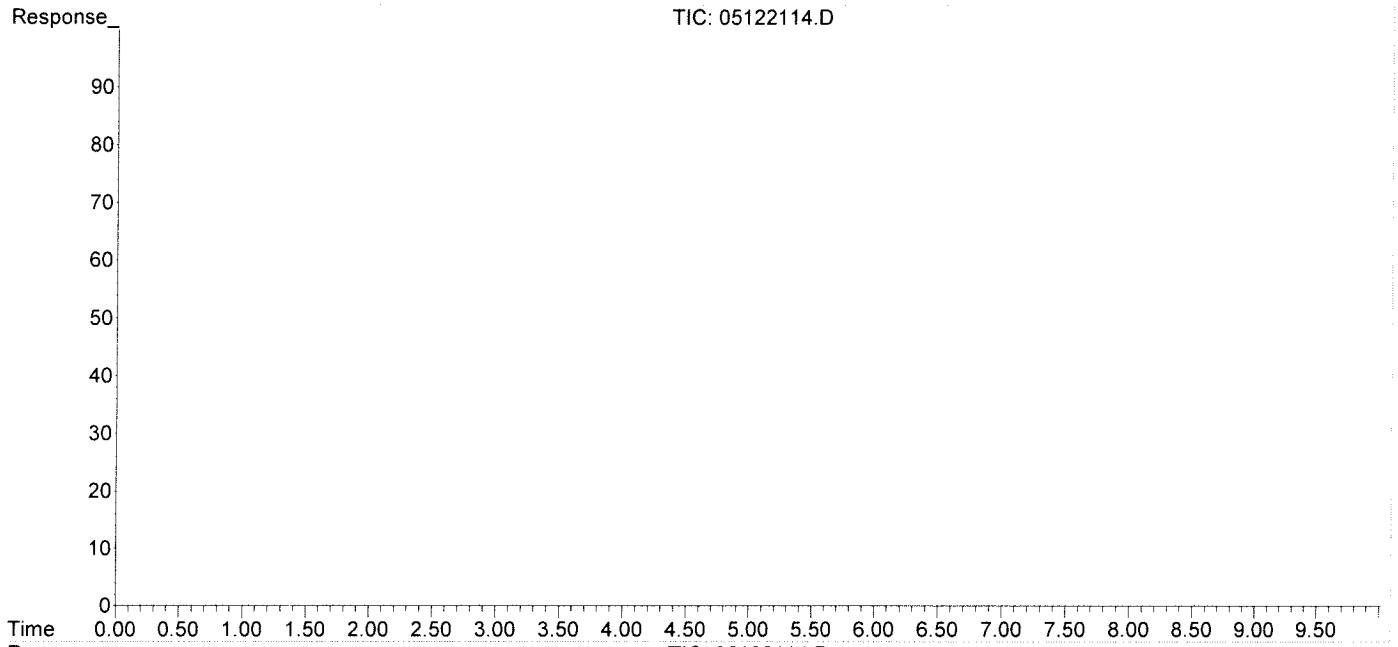
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.102	1957	0.216	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

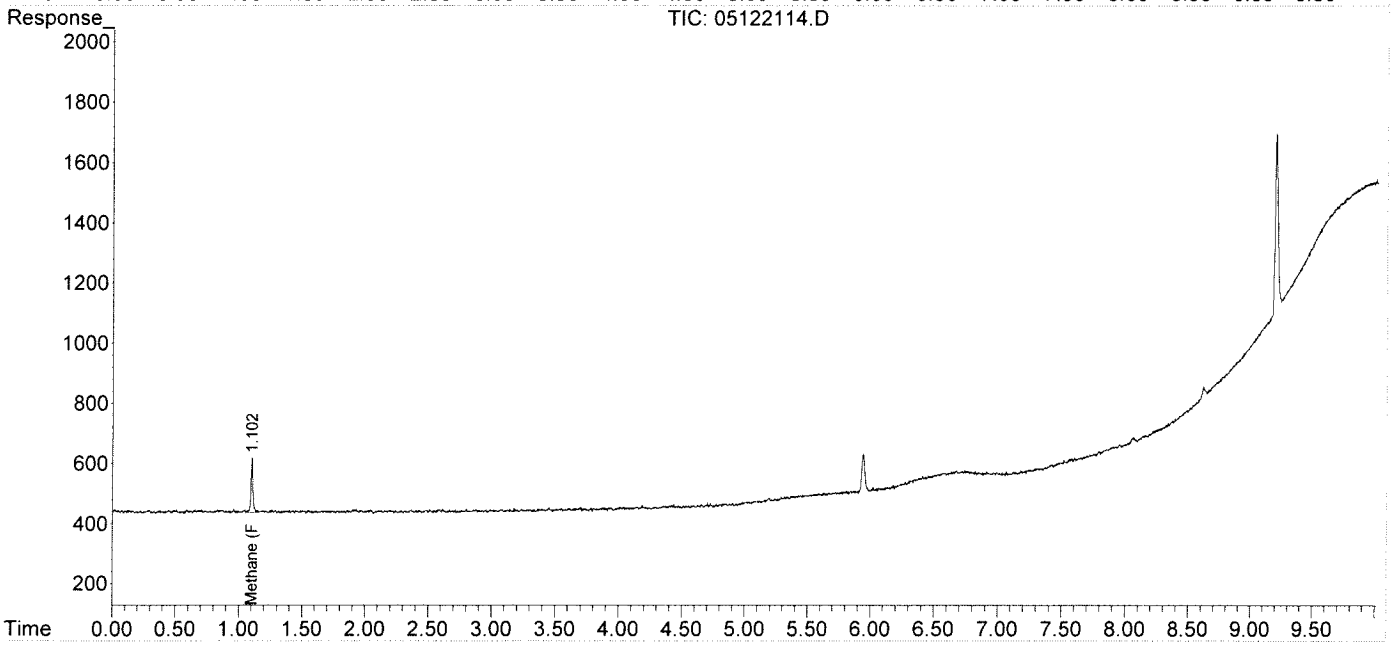
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122114.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 14:17
Operator : CB
Sample : 2422-001 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 14 14:03:26 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 10:01
Operator : CB
Sample : MCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 14 13:45:59 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

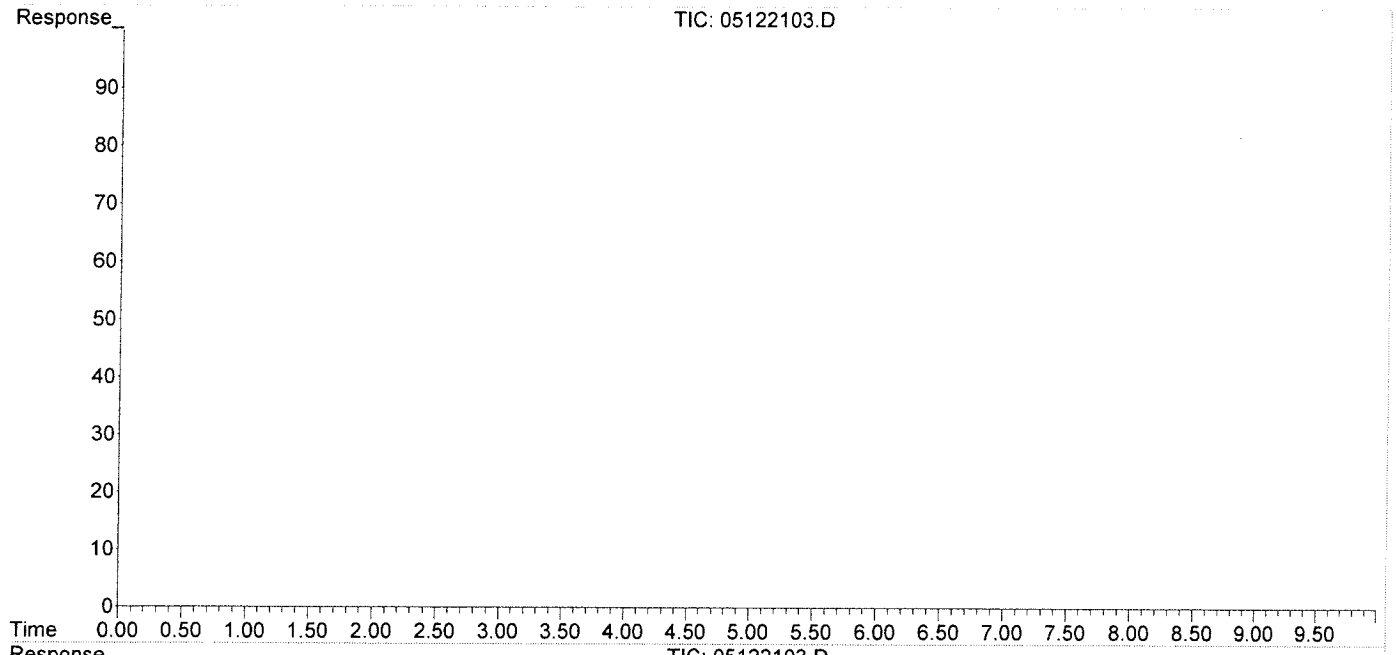
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.111	981	0.108	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

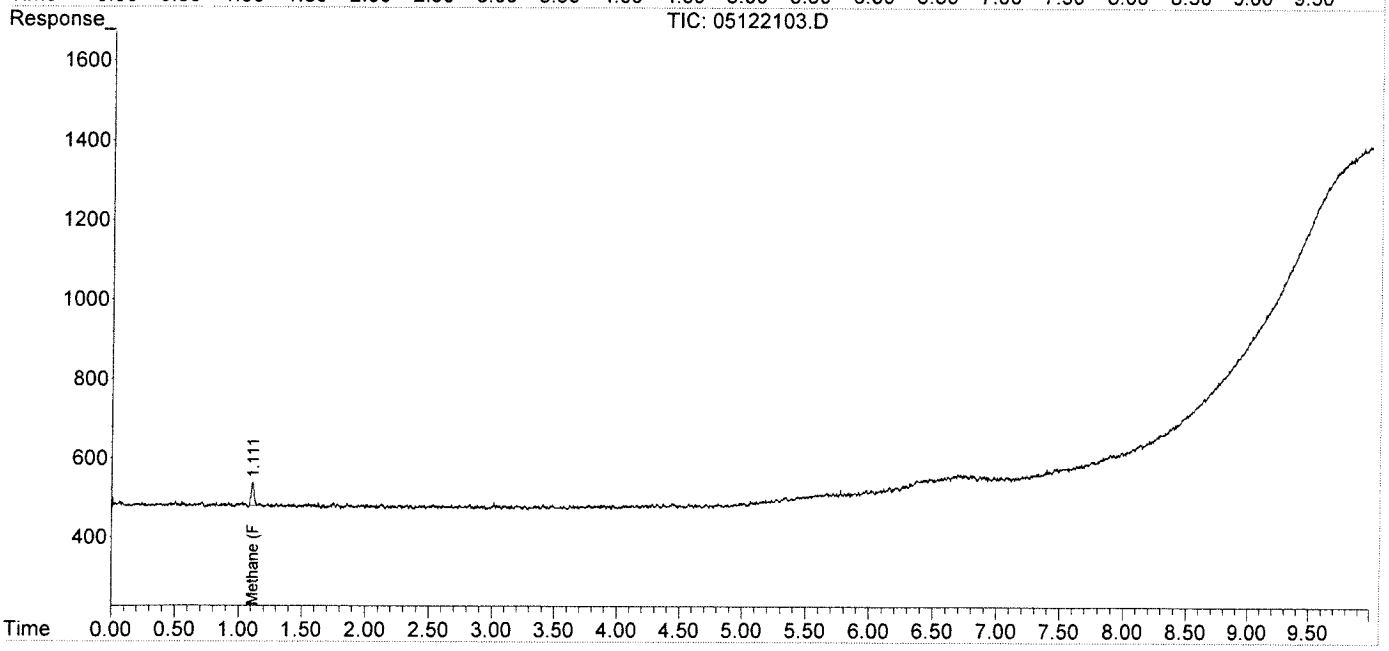
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 10:01
Operator : CB
Sample : MCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 14 13:45:59 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

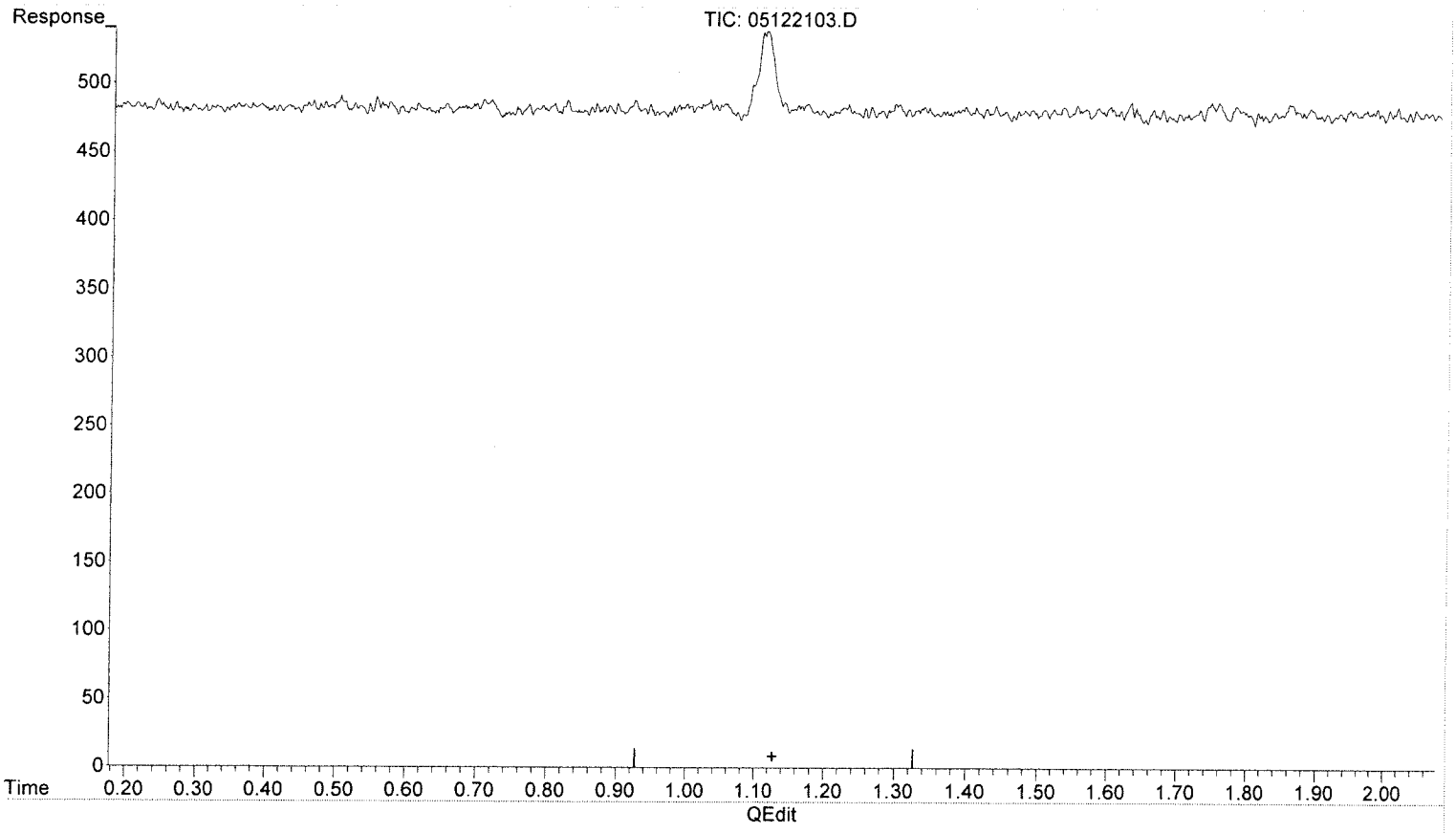




Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 10:01
Operator : CB
Sample : MCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 14 13:45:59 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)
1.128min 0.000 ppm
response 0

Manual Integration:
Before

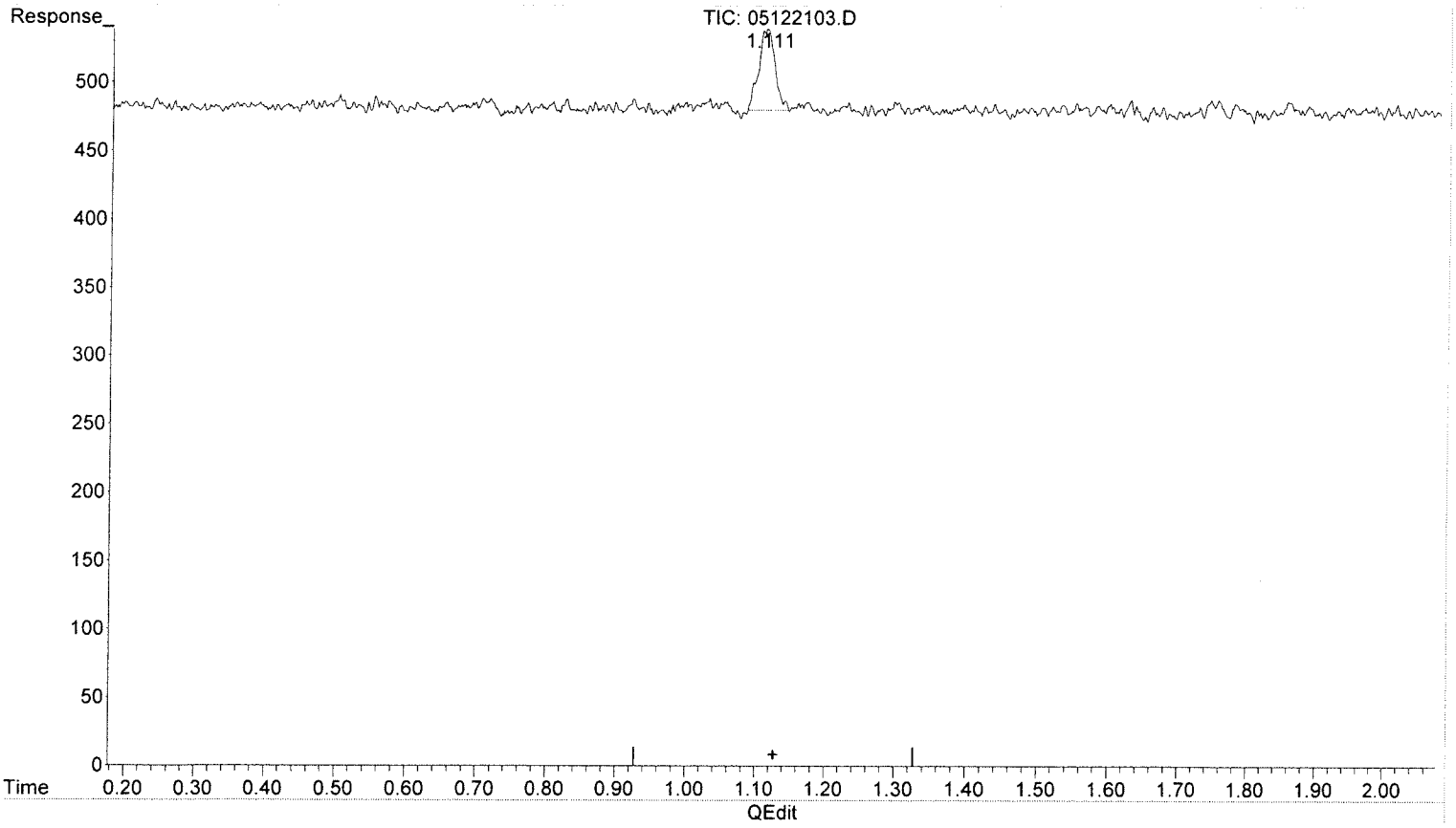
05/14/21

(+) = Expected Retention Time
RS091217_R.M Fri May 14 13:46:12 2021

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 10:01
Operator : CB
Sample : MCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 14 13:45:59 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)
1.111min 0.108 ppm m
response 981

Manual Integration:
After
MP
05/14/21

(+) = Expected Retention Time
RS091217_R.M Fri May 14 13:46:19 2021 Page: 1

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122104.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 10:15
Operator : CB
Sample : LCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 14 13:46:30 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

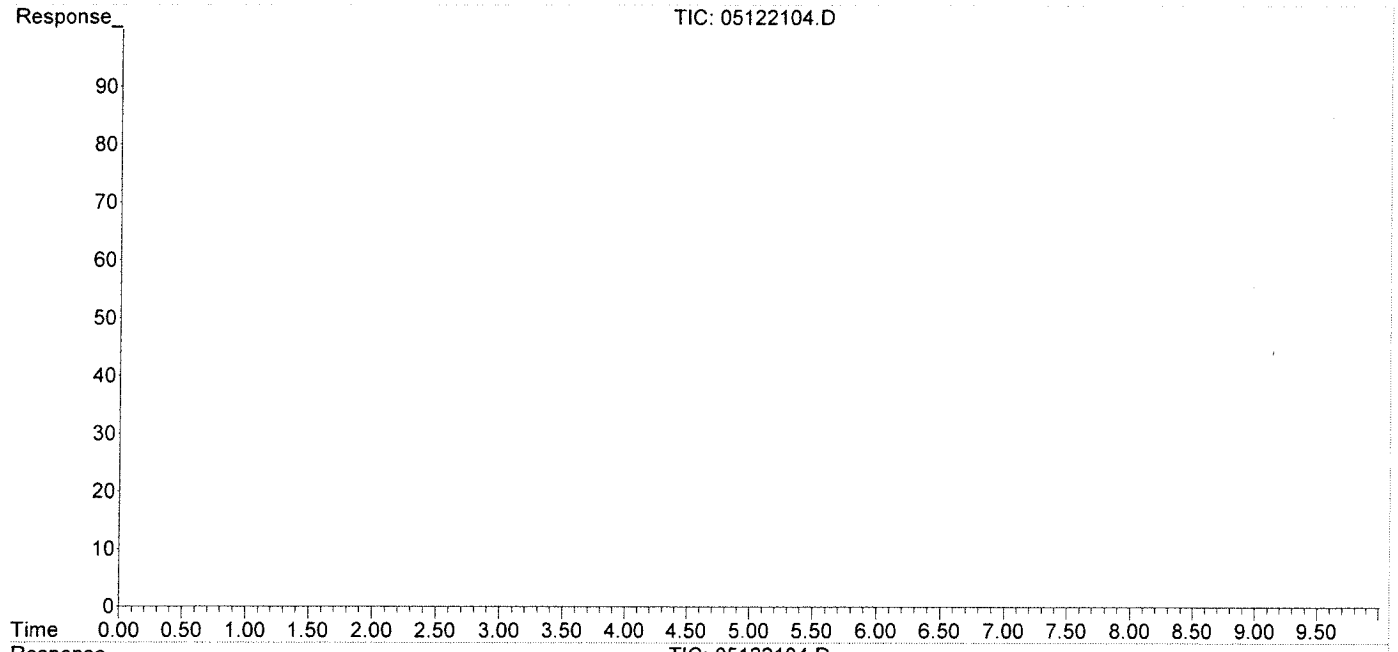
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.102	14761	1.627	ppm
7)	Ethylene	1.668	18916	1.130	ppm
8)	Ethane	1.930	22119	1.305	ppm
9)	Propylene	4.314	26480	1.130	ppm
10)	Propane	4.434	32865	1.321	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.648	44488	1.671	ppm
13)	n-Butane	6.648	44488	1.671	ppm

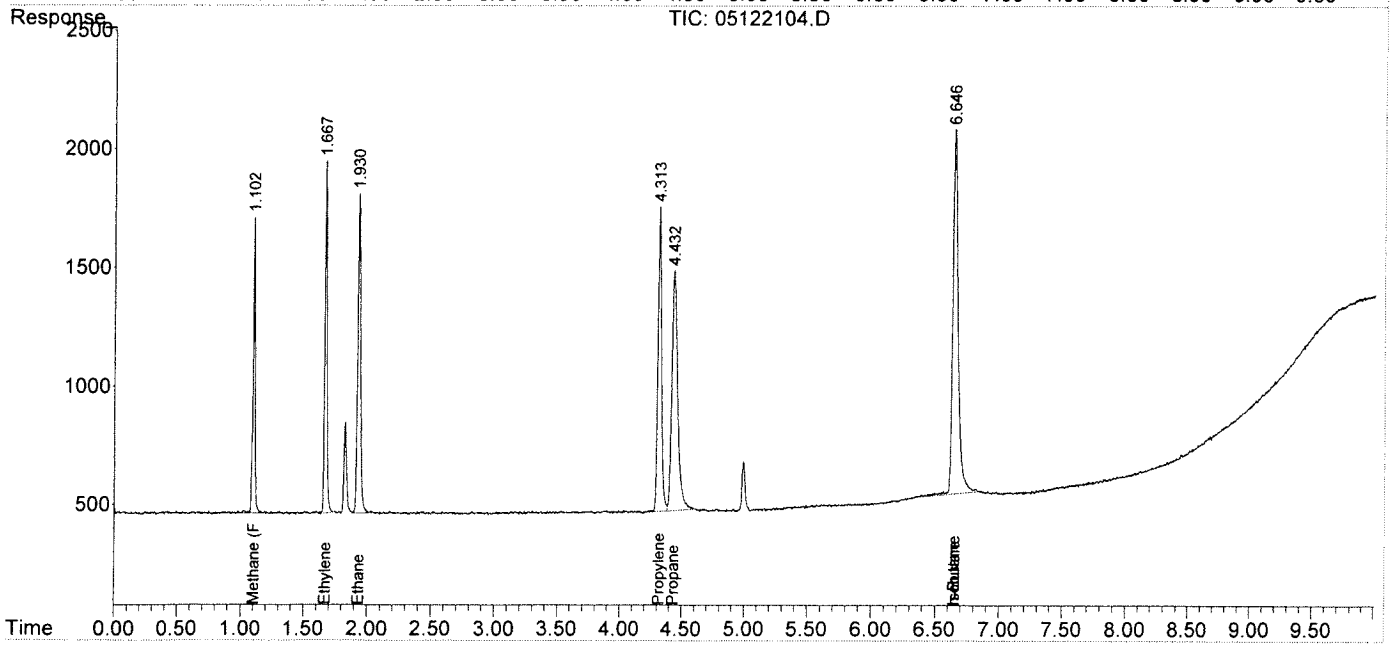
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122104.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 10:15
Operator : CB
Sample : LCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 14 13:46:30 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 10:41
Operator : CB
Sample : LCSD 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 14 13:46:53 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

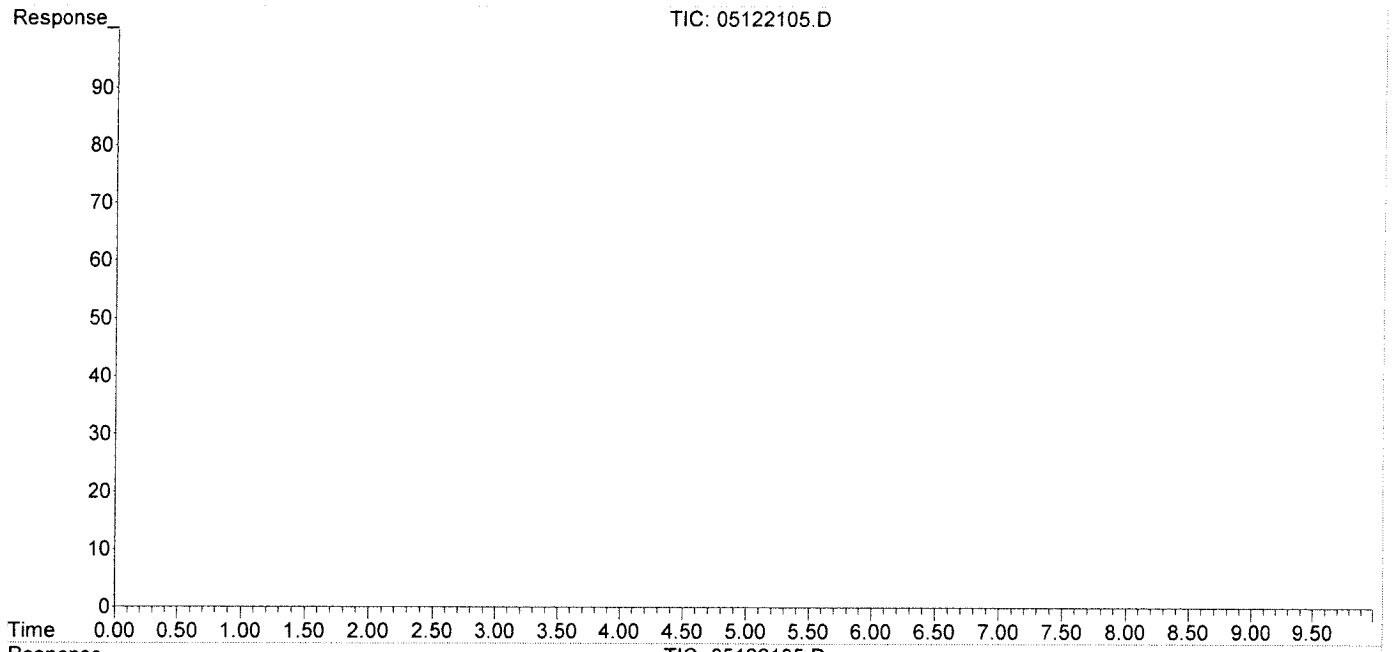
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.106	12659	1.396	ppm
7)	Ethylene	1.670	18416	1.100	ppm
8)	Ethane	1.932	21554	1.272	ppm
9)	Propylene	4.311	25440	1.086	ppm
10)	Propane	4.431	32431	1.303	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.645f	42153	1.584	ppm
13)	n-Butane	6.645f	42153	1.584	ppm

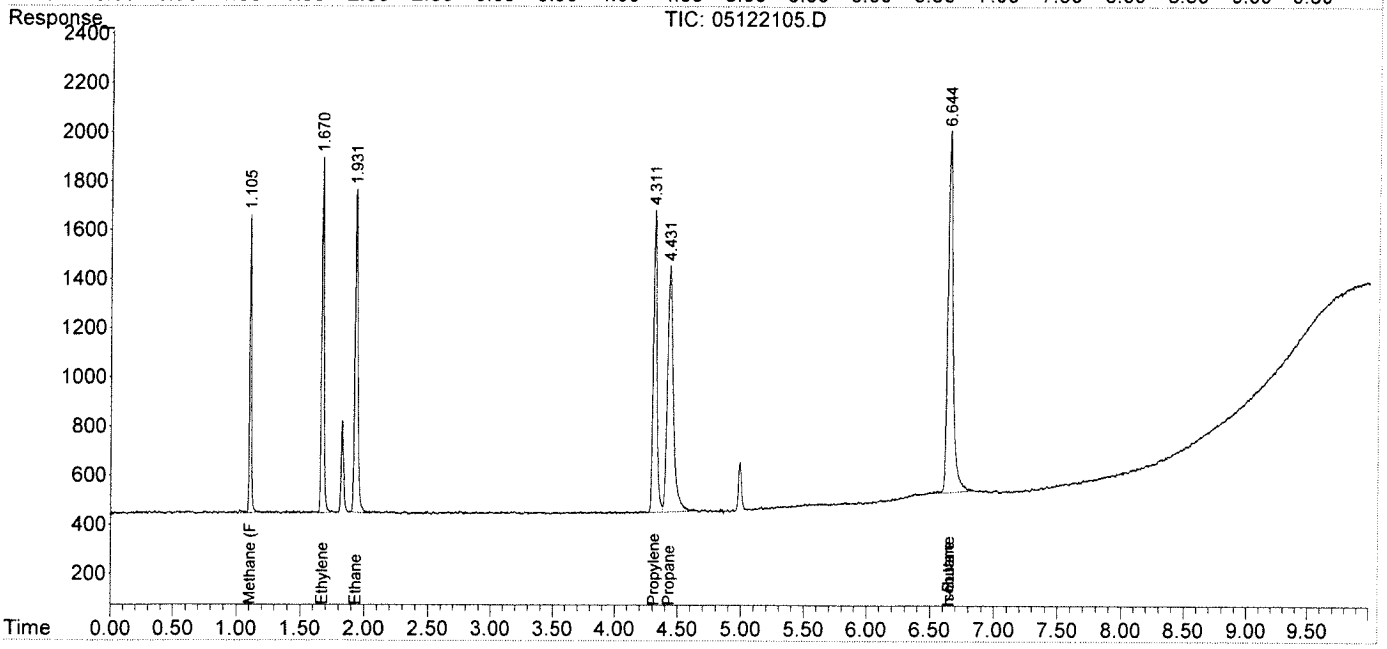
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 10:41
Operator : CB
Sample : LCSD 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 14 13:46:53 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg	%RSD
1)	Oxygen/Argon	3.739		1.014			0.001	0.793 E6	189.17
2)	Carbon monoxide	3.739		1.014			0.001	0.594 E6	221.92
3)	Methane (TCD)						2.161	0.951 E2	106.37
4)	Carbon dioxide	2.365	2.569	2.558	2.361	2.459	2.314	2.438 E2	4.44

Signal #2 Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg	%RSD
6)	Methane (FID)		1.180	0.975	0.908	0.870	0.868	0.907 E4	11.66
7)	Ethylene	1.736	1.638	1.780	1.720	1.628	1.670	1.673 E4	3.90
8)	Ethane	1.781	1.676	1.784	1.730	1.692	1.675	1.695 E4	3.83
9)	Propylene	2.505	2.296	2.592	2.480	2.346	2.252	2.343 E4	6.56
10)	Propane	2.439	2.283	2.645	2.555	2.433	2.522	2.488 E4	4.20
11)	Isobutylene							0.652 E1	138.46
12)	Isobutane	6.058	4.793	2.214	1.553	1.353		2.662 E4	86.17
13)	n-Butane	6.058	4.793	2.214	1.553	1.353		2.662 E4	86.17

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS091217_R.M Wed Sep 13 15:11:48 2017

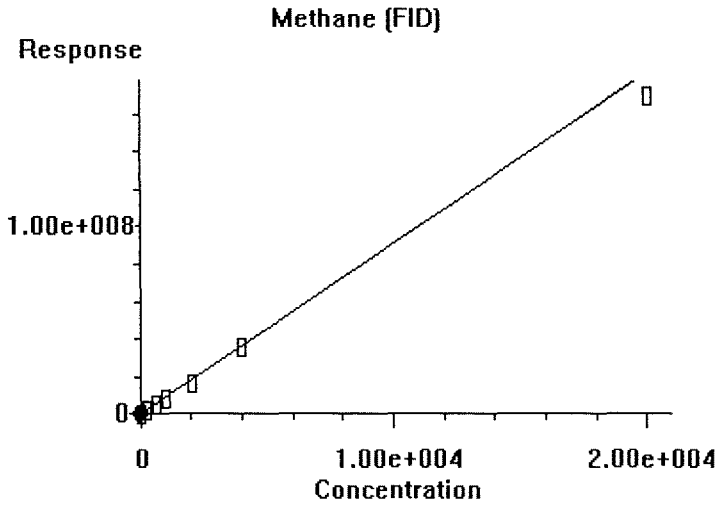
Edit Compounds -- Compound #6 -- Methane (FID)

Search by: Ret Time Name Index Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	
2	0.302000	3564.400000
3	1.510000	14725.268625
4	4.530000	41128.575000
5	10.570000	91966.784531
6	200.000000	1735997.497500
7	600.000000	5189848.900000
8	1000.000000	8598533.570000
9	2000.000000	16098209.390000
10	4000.000000	35776839.311362
11	20000.000000	169009160.49199



0.000e+000	Quadratic term
9.071e+003	Linear term
0.000e+000	Constant term
11.657%	RF Rel Std Dev

OK Cancel Help Print Calibration Curve Copy Calibration Curve

Edit Compounds -- Compound #7 -- Ethylene

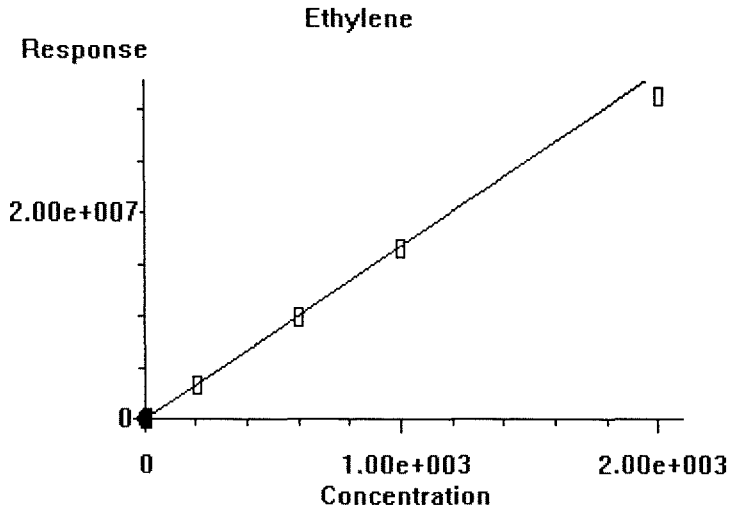
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2621.970000
2	0.302000	4946.731301
3	1.510000	26884.746847
4	4.530000	77902.721497
5	10.570000	172085.529560
6	200.000000	3339702.313219
7	600.000000	10007758.776971
8	1000.000000	16608503.805988
9	2000.000000	31192443.898600
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.673e+004	Linear term
0.000e+000	Constant term
3.897%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #8 -- Ethane

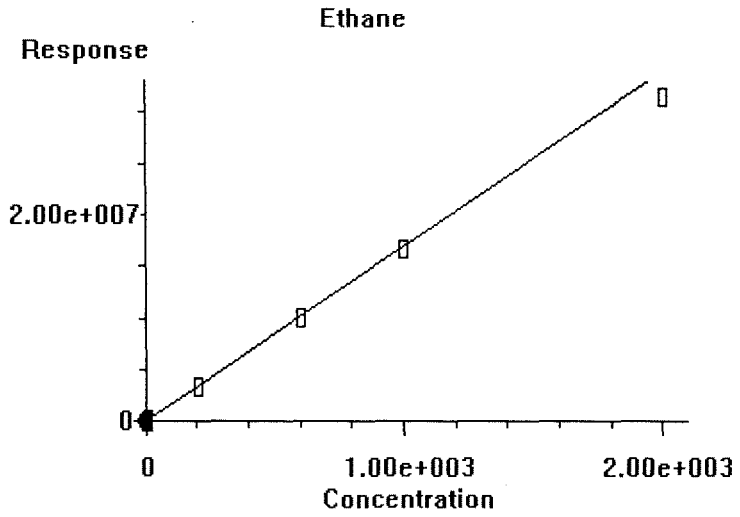
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2689.928008
2	0.302000	5060.331943
3	1.510000	26943.667500
4	4.530000	78353.525045
5	10.570000	178840.731148
6	200.000000	3350442.319129
7	600.000000	10048964.218029
8	1000.000000	16709164.879012
9	2000.000000	31424217.938900
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.695e+004	Linear term
0.000e+000	Constant term
3.831%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #9 -- Propylene

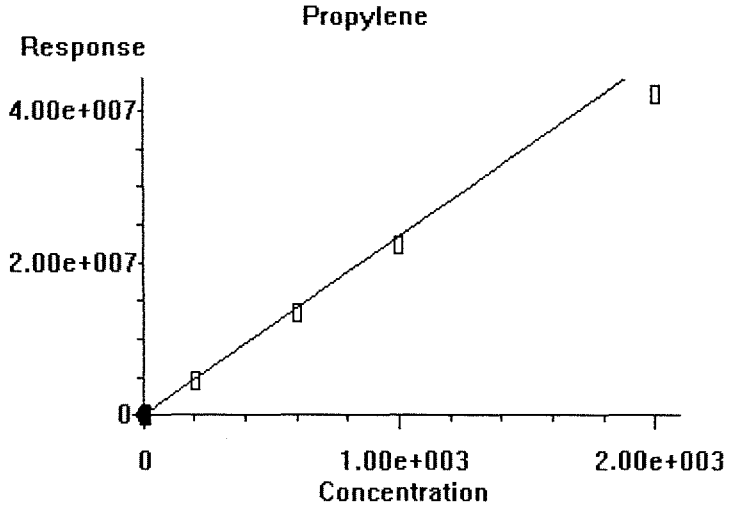
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3782.537646
2	0.302000	6933.285530
3	1.510000	39139.518208
4	4.530000	112341.896872
5	10.570000	248003.903623
6	200.000000	4504060.086084
7	600.000000	13569342.761419
8	1000.000000	22494887.720990
9	2000.000000	42124689.656800
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.343e+004	Linear term
0.000e+000	Constant term
6.559%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #10 -- Propane

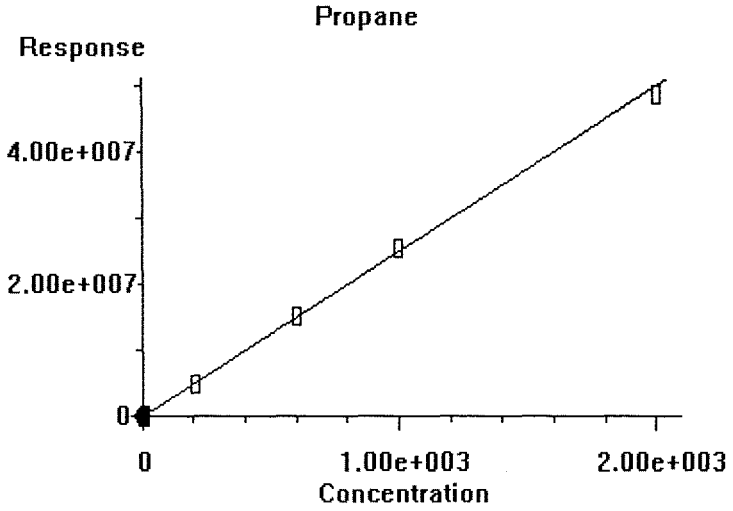
Search by: Ret Time Name Index Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3682.897354
2	0.302000	6894.237803
3	1.510000	39934.166792
4	4.530000	115723.428128
5	10.570000	257124.432806
6	200.000000	5043035.663916
7	600.000000	15251325.797404
8	1000.000000	25459410.657938
9	2000.000000	48583085.287451
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.488e+004	Linear term
0.000e+000	Constant term
4.200%	RF Rel Std Dev

OK Cancel Help Print Calibration Curve Copy Calibration Curve

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121702.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121703.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121704.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121705.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121706.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121707.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121711.D
11	11	20000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121712.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Sep 13 11:04 2017	Sep 12 15:03 2017	12-Sep-2017, 10:52
2	2	Sep 13 11:05 2017	Sep 13 11:05 2017	12-Sep-2017, 11:05
3	3	Sep 13 11:06 2017	Sep 13 11:05 2017	12-Sep-2017, 11:45
4	4	Sep 13 11:09 2017	Sep 13 11:06 2017	12-Sep-2017, 12:09
5	5	Sep 13 11:09 2017	Sep 13 11:09 2017	12-Sep-2017, 12:30
6	6	Sep 13 11:10 2017	Sep 13 11:10 2017	12-Sep-2017, 12:47
7	7	Sep 13 11:11 2017	Sep 13 11:10 2017	12-Sep-2017, 13:00
8	8	Sep 13 11:12 2017	Sep 13 11:11 2017	12-Sep-2017, 13:47
9	9	Sep 13 11:12 2017	Sep 13 11:12 2017	12-Sep-2017, 14:07
10	10	Sep 13 11:14 2017	Sep 13 11:13 2017	12-Sep-2017, 14:48
11	11	Sep 13 11:14 2017	Sep 13 11:14 2017	12-Sep-2017, 15:21

RS091217_R.M Wed Sep 13 15:11:22 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.767	373920	0.128	ppm	
2)	Carbon monoxide	1.767	373920	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	1.595	2622	0.156	ppm	
8)	Ethane	1.848	2690	0.156	ppm	
9)	Propylene	4.222	3783	0.154	ppm	
10)	Propane	4.348	3683	0.139	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.582f	6058	NoCal	ppm	
13)	n-Butane	6.582f	6058	NoCal	ppm	

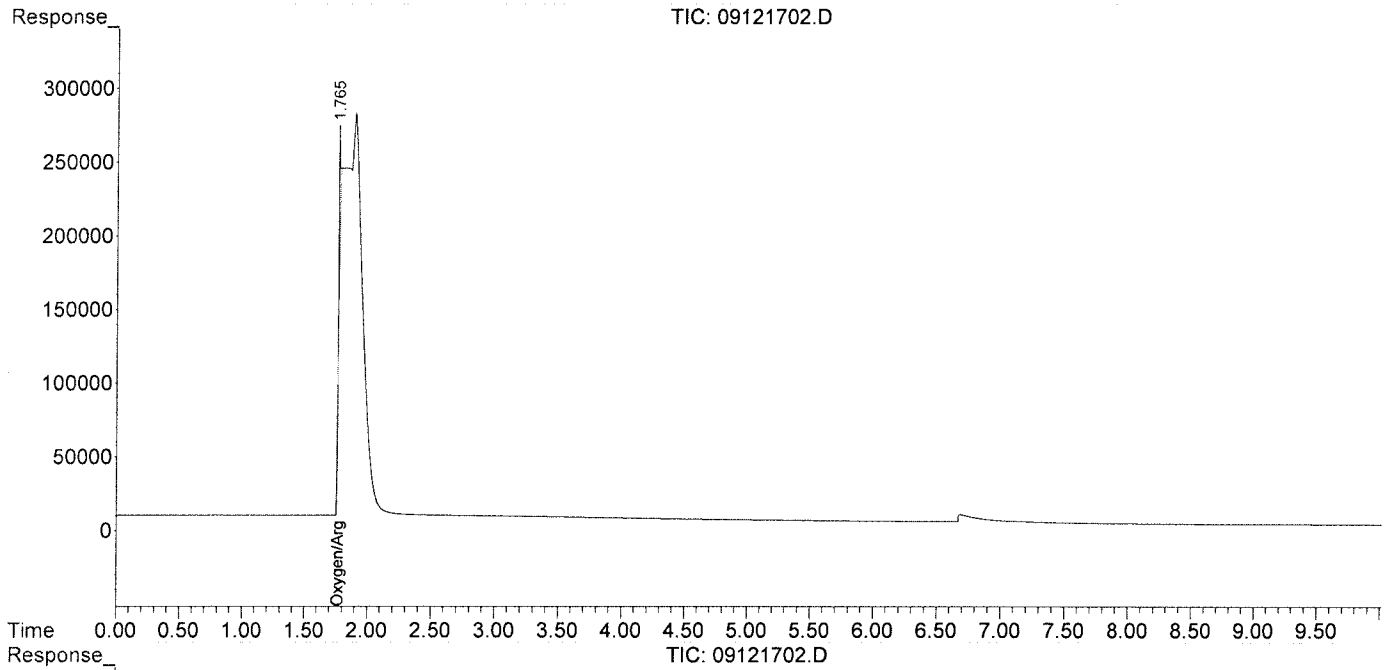
(f)=RT Delta > 1/2 Window (m)=manual int.

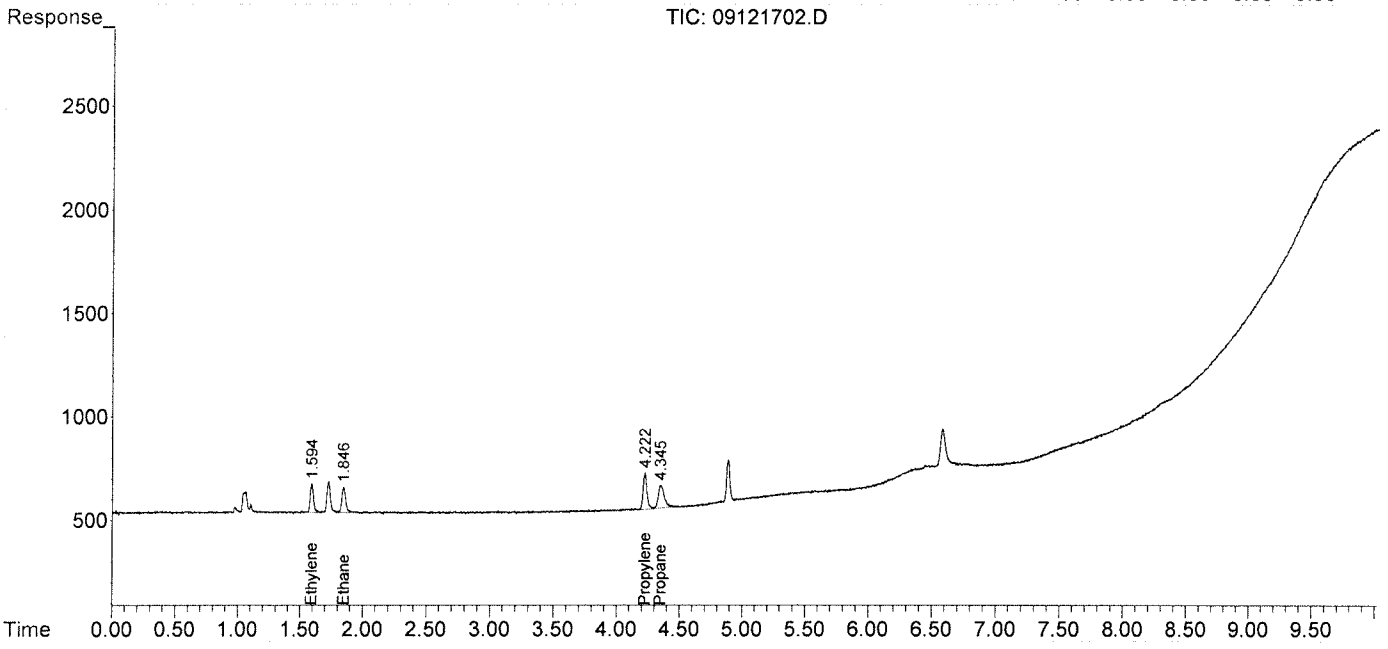
9/13/17

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

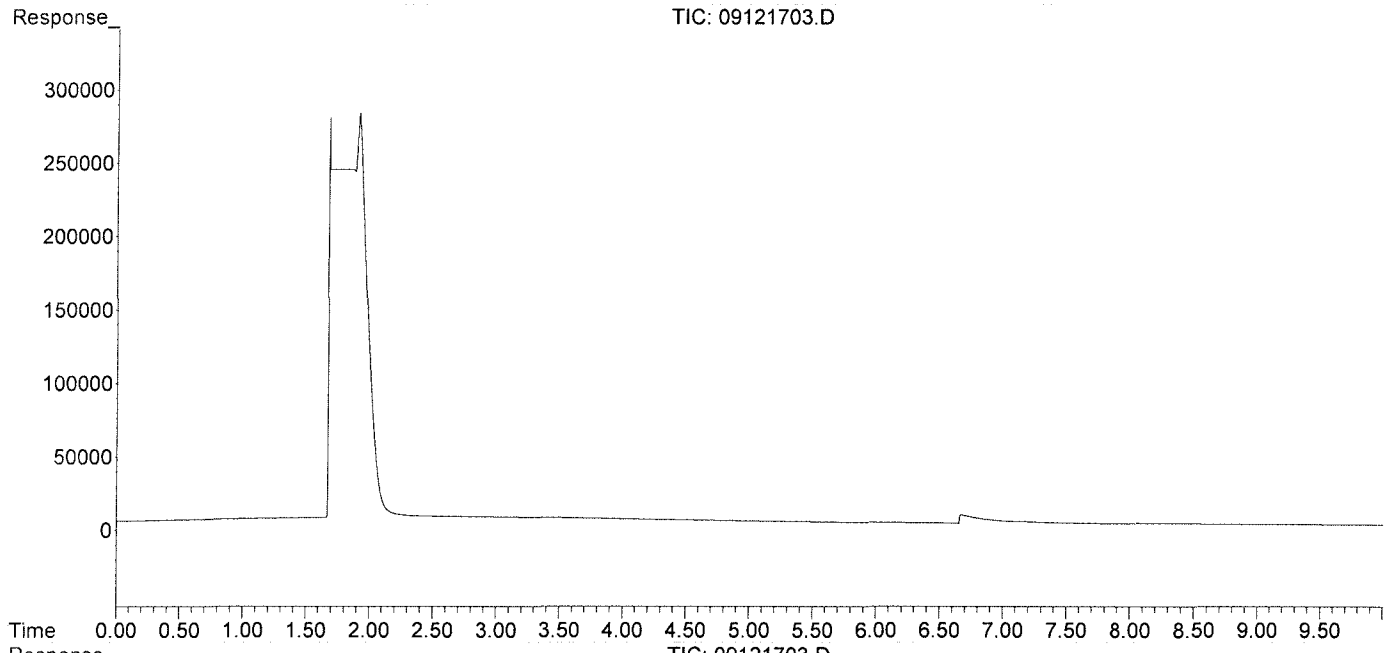
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.913f	-25181981	N.D.	ppm	
2)	Carbon monoxide	1.913f	-25181981	1.089	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.049	3564	0.391	ppm	m
7)	Ethylene	1.577	4947	0.292	ppm	
8)	Ethane	1.828	5060	0.293	ppm	
9)	Propylene	4.207	6933	0.281	ppm	
10)	Propane	4.337	6894	0.268	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	9587	0.158	ppm	
13)	n-Butane	6.579f	9587	0.158	ppm	

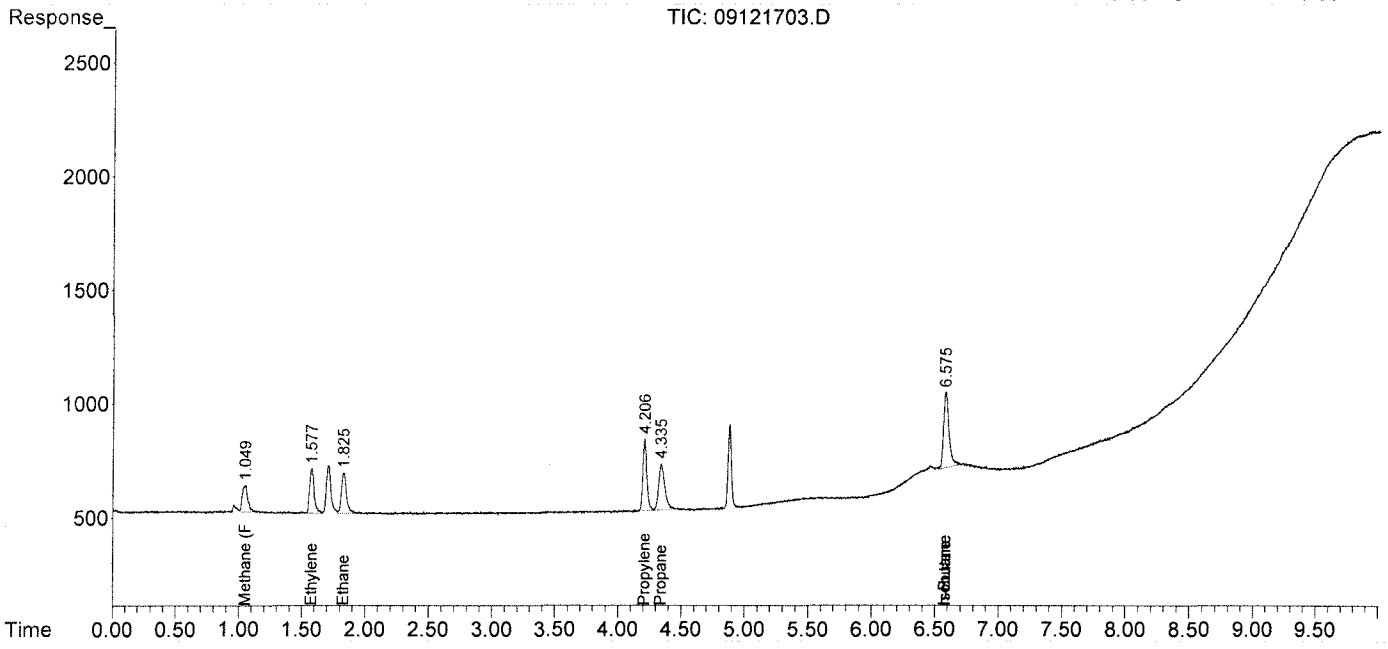
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

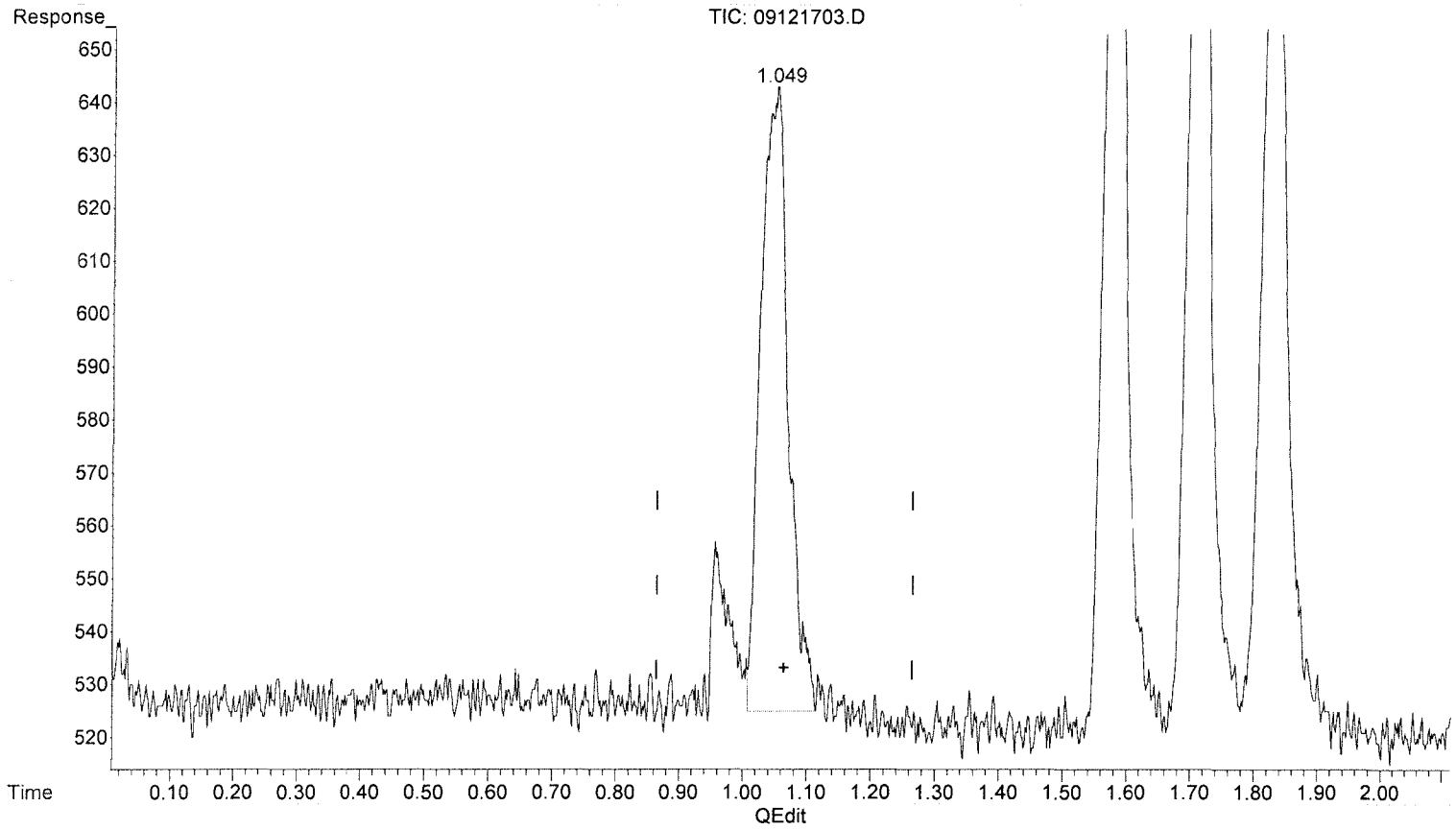




Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.049min 0.391 ppm m

response 3564

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

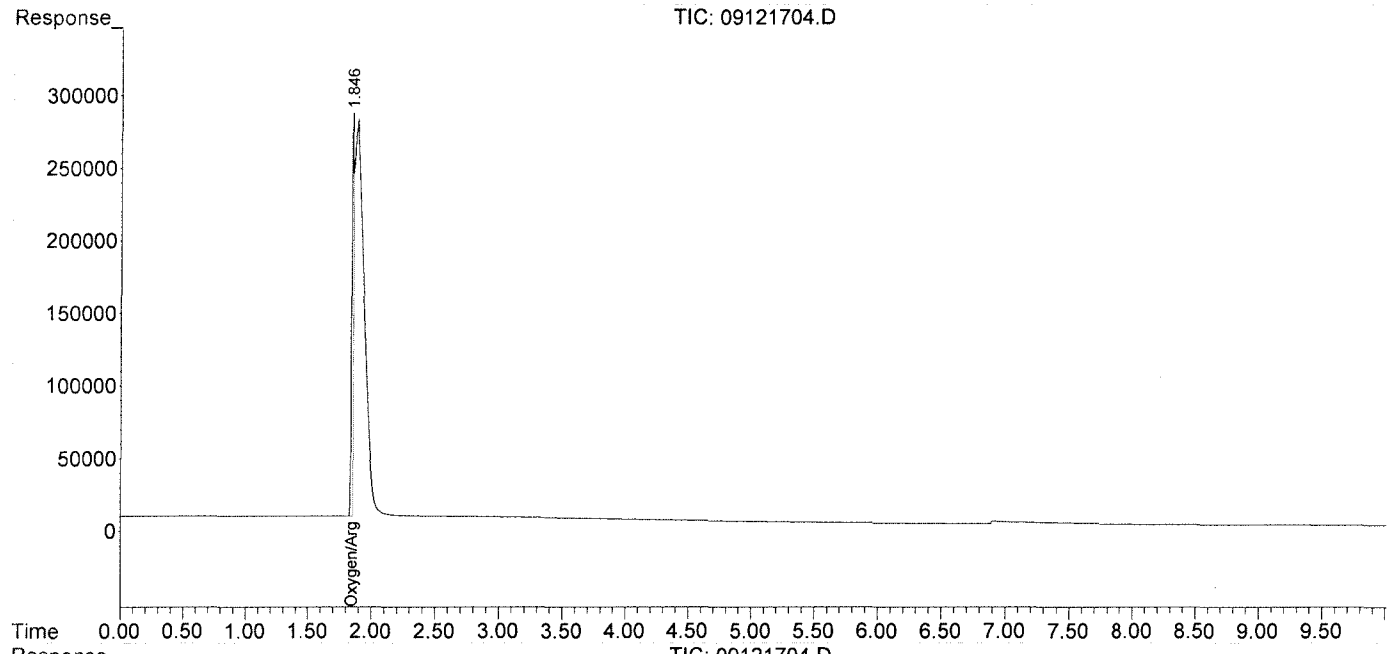
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.847	2536230	1.056	ppm
2)	Carbon monoxide	1.847	2536230	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.064	14725	1.613	ppm
7)	Ethylene	1.598	26885	1.582	ppm
8)	Ethane	1.851	26944	1.555	ppm
9)	Propylene	4.220	39140	1.589	ppm
10)	Propane	4.349	39934	1.596	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	55348	1.020	ppm
13)	n-Butane	6.578f	55348	1.020	ppm

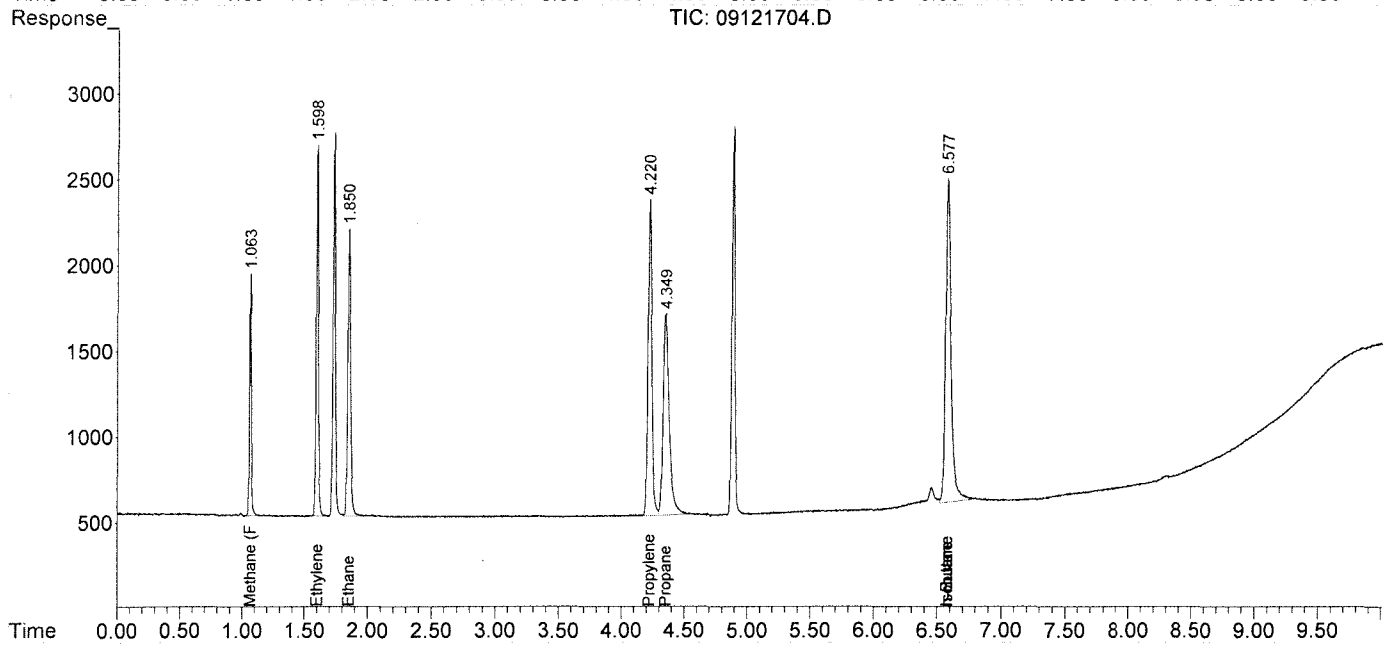
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

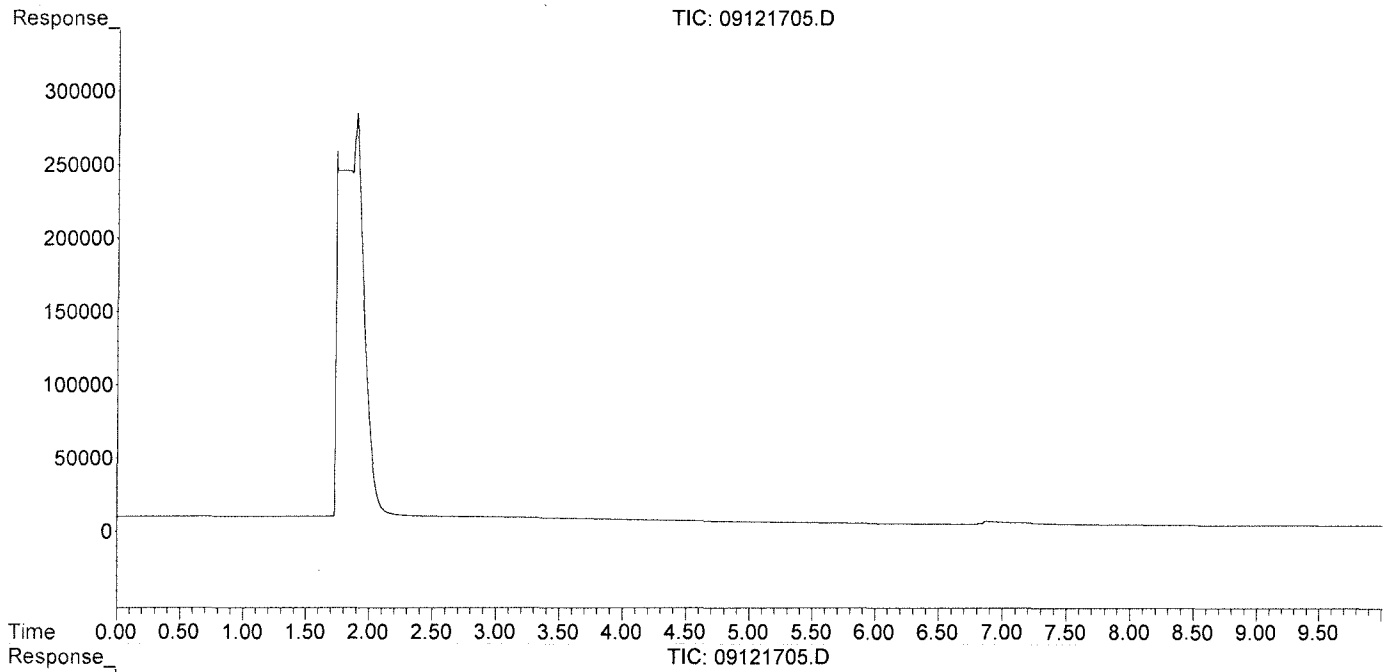
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.738	-331216	N.D.	ppm
2)	Carbon monoxide	1.738	-331216	0.019	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.052	41129	4.522	ppm
7)	Ethylene	1.586	77903	4.637	ppm
8)	Ethane	1.838	78354	4.558	ppm
9)	Propylene	4.218	112342	4.614	ppm
10)	Propane	4.347	115723	4.680	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.580f	155256	3.565	ppm
13)	n-Butane	6.580f	155256	3.565	ppm

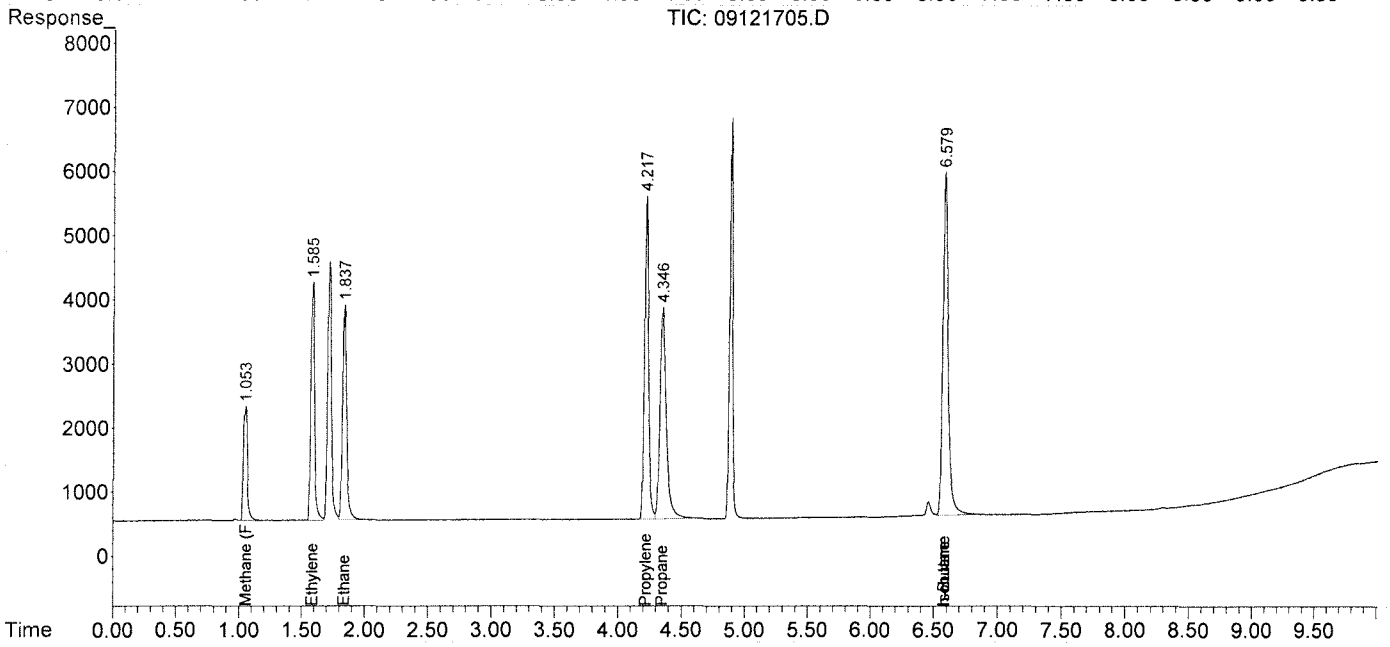
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

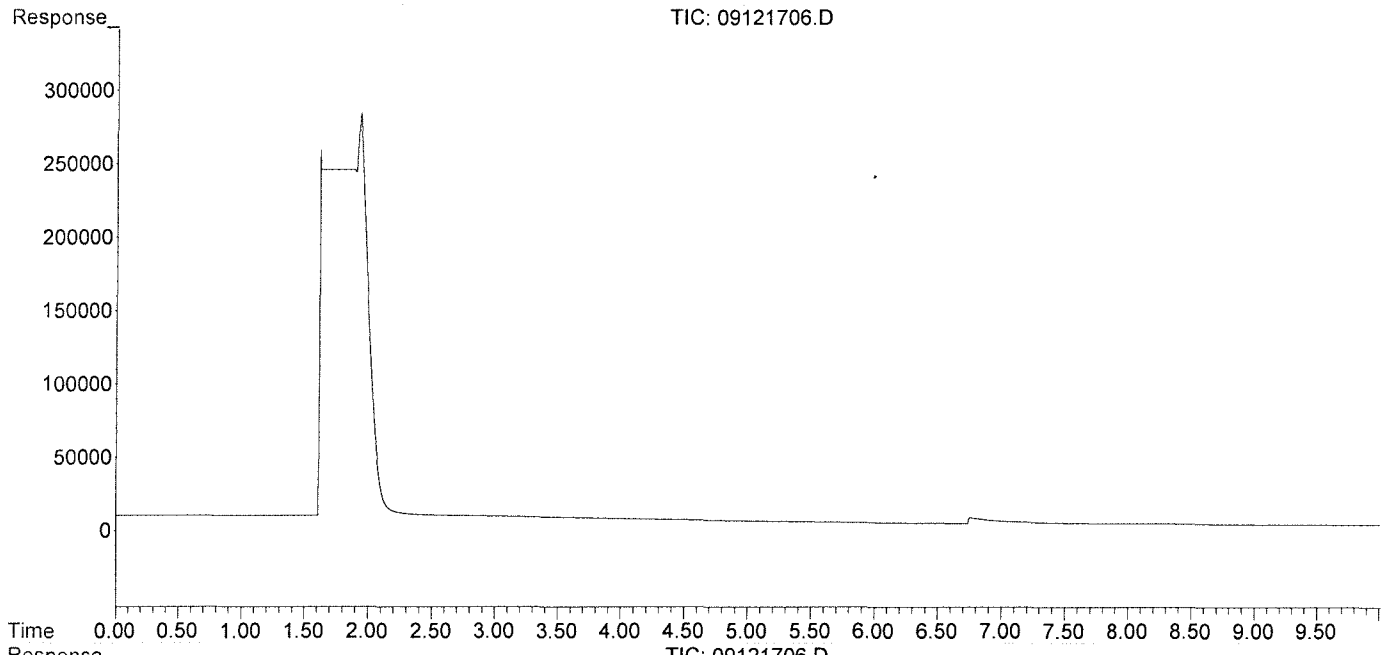
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.929f	-31871242	N.D.	ppm
2)	Carbon monoxide	1.929f	-31871242	1.818	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.025	91967	10.135	ppm
7)	Ethylene	1.568	172086	10.273	ppm
8)	Ethane	1.822	178841	10.441	ppm
9)	Propylene	4.214	248004	10.236	ppm
10)	Propane	4.344	257124	10.458	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	338181	9.254	ppm
13)	n-Butane	6.578f	338181	9.254	ppm

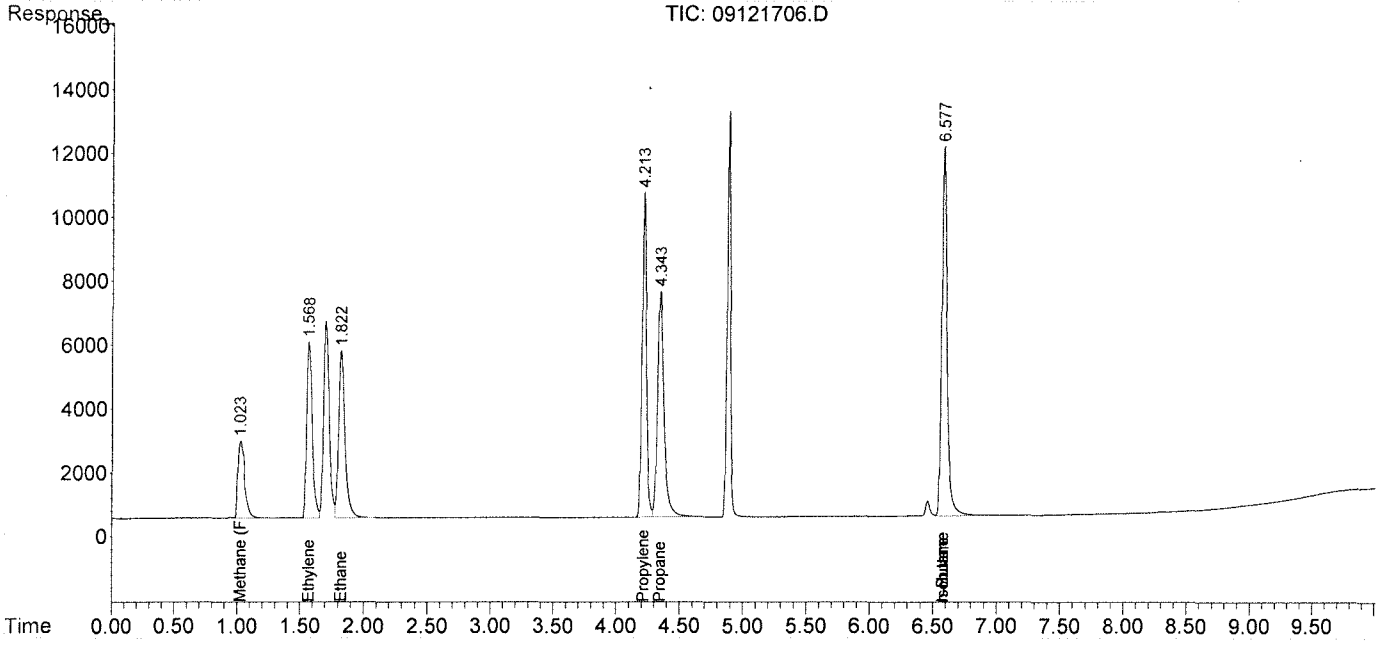
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

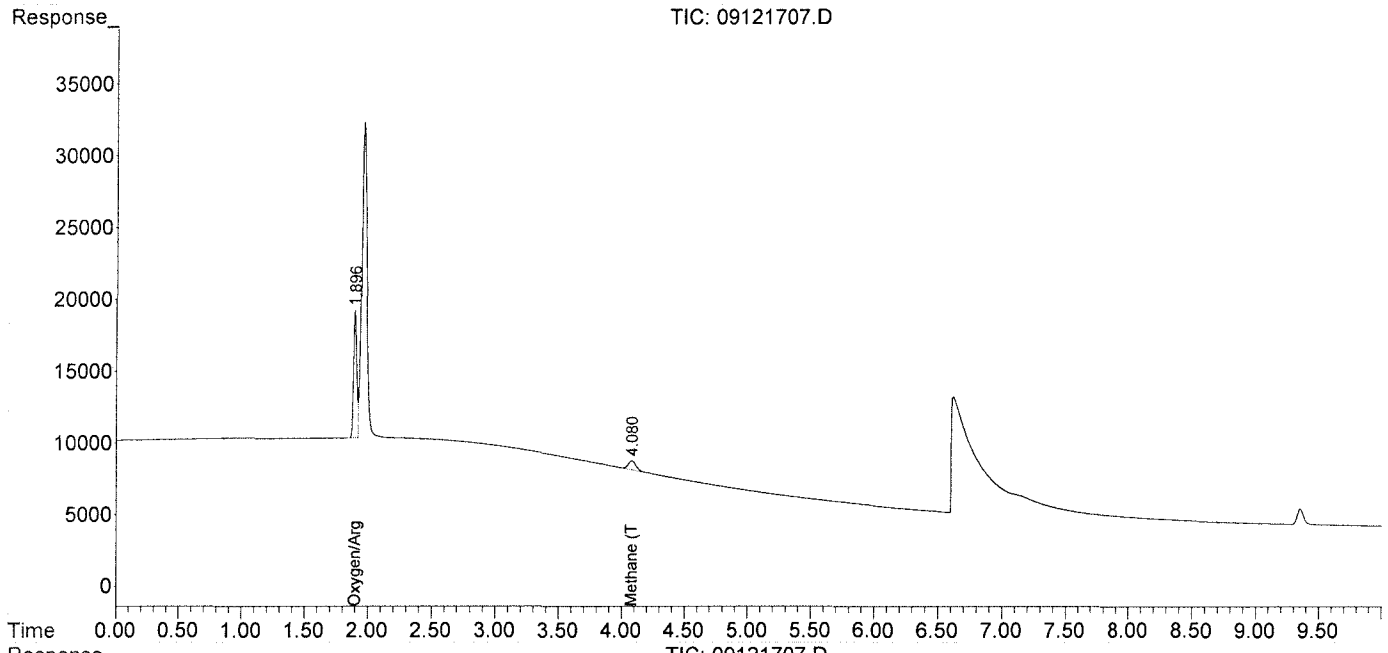
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.897	155286	0.065	ppm
2)	Carbon monoxide	1.897	155286	N.D.	ppm
3)	Methane (TCD)	4.079f	27015	2856.472	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.063	1735997	190.792	ppm
7)	Ethylene	1.597	3339702	198.758	ppm
8)	Ethane	1.849	3350442	194.597	ppm
9)	Propylene	4.201	4504060	185.706	ppm
10)	Propane	4.333	5043036	204.809	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

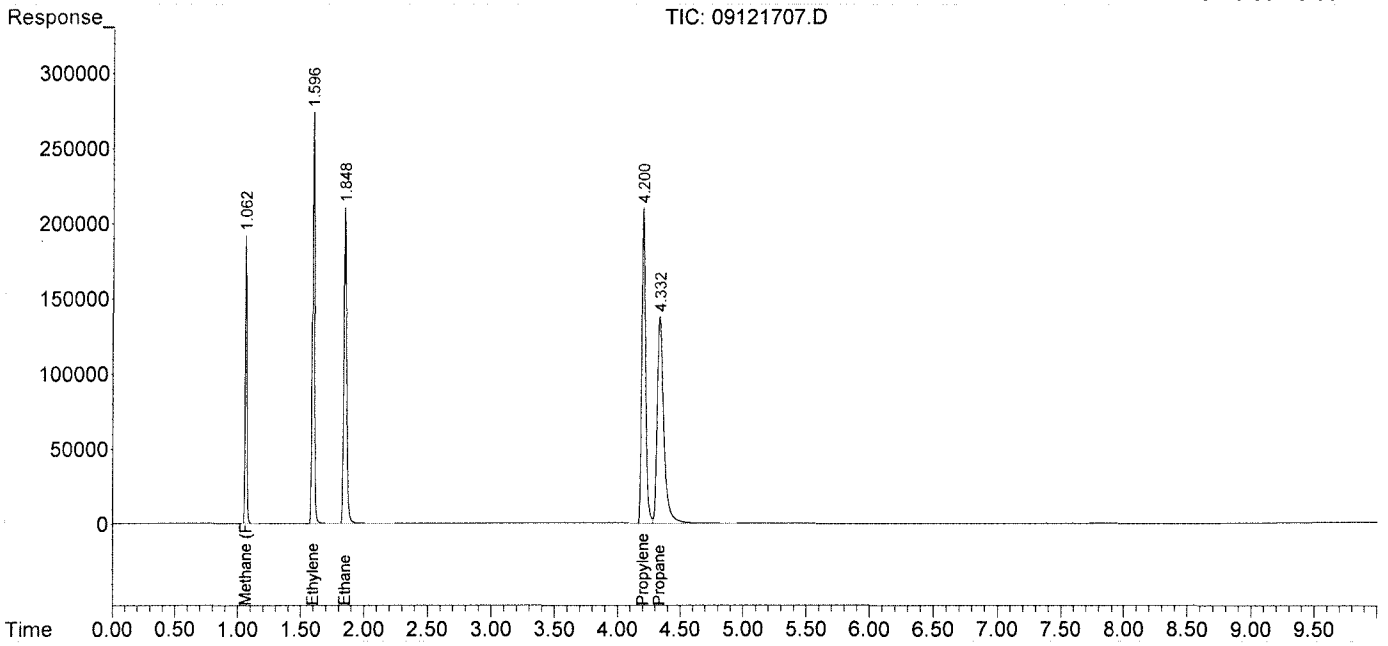
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

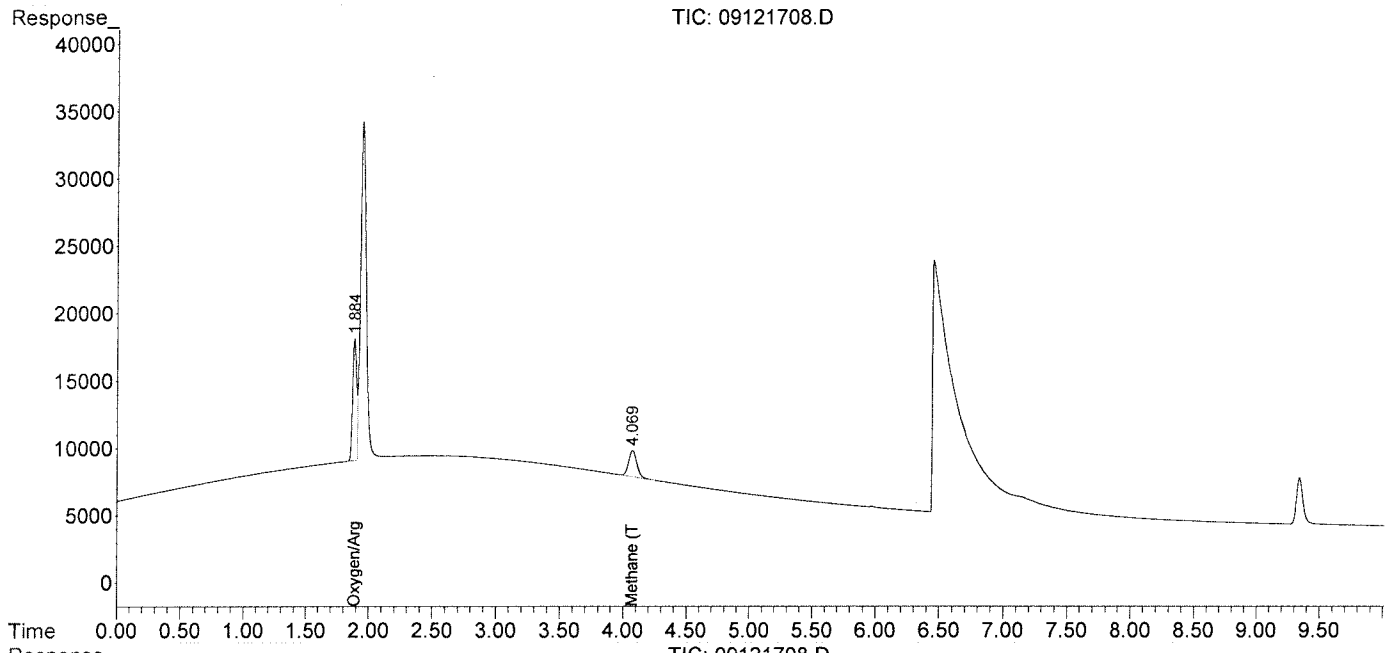
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.884	196022	0.124	ppm
2)	Carbon monoxide	1.884	196022	N.D.	ppm
3)	Methane (TCD)	4.070f	88282	782.730	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.044	5189849	539.759	ppm
7)	Ethylene	1.573	10007759	590.286	ppm
8)	Ethane	1.822	10048964	583.213	ppm
9)	Propylene	4.160	13569343	562.612	ppm
10)	Propane	4.300	15251326	615.171	ppm
11)	Isobutylene	6.143	9815	NoCal	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

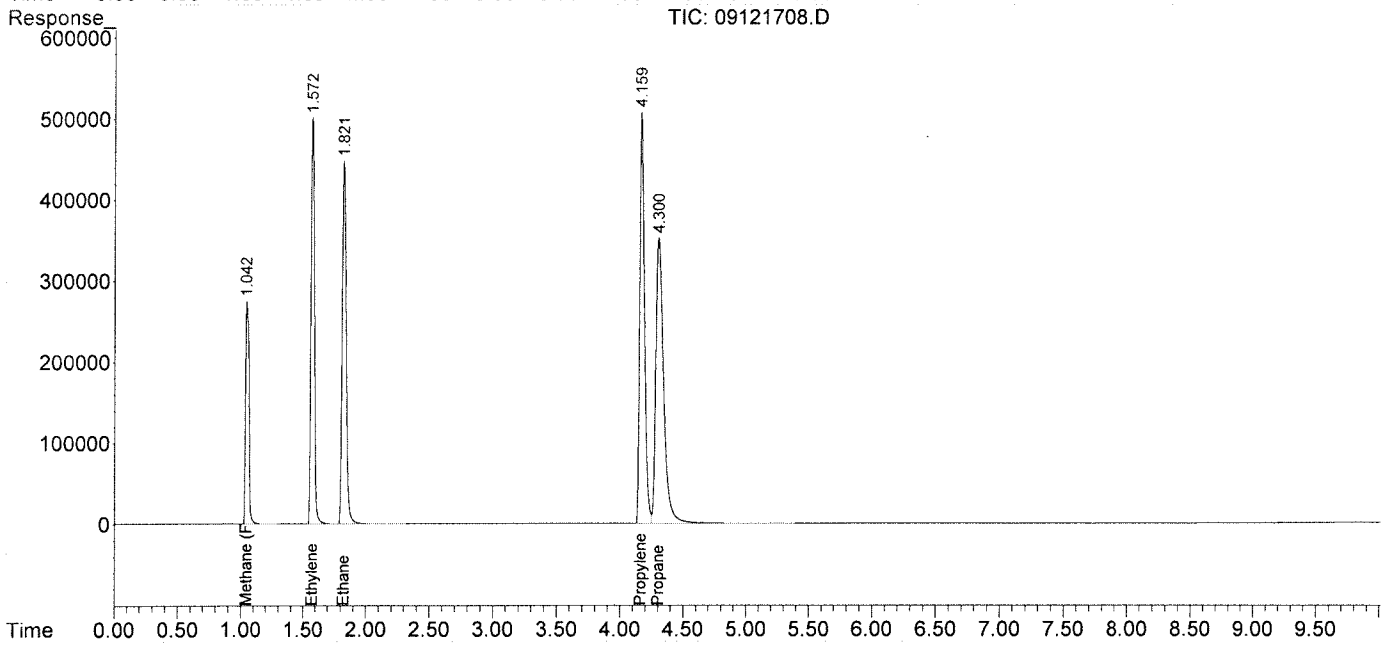
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

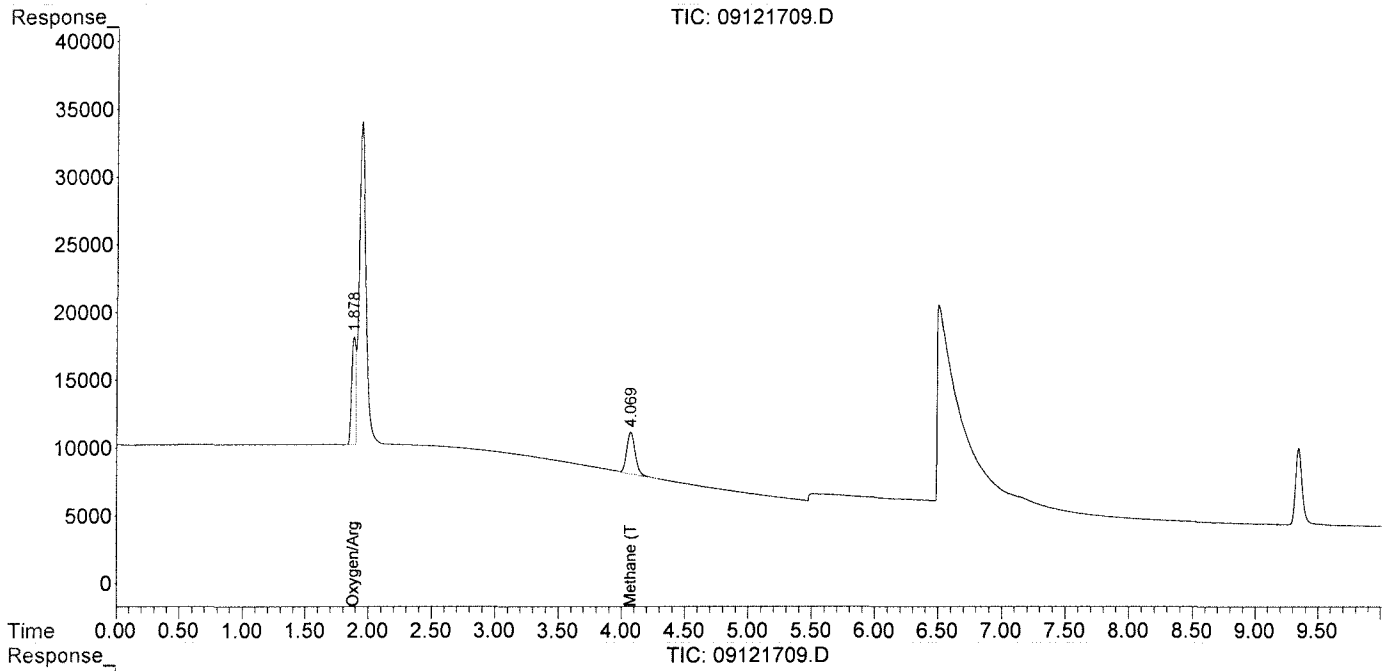
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.879	192611	0.162	ppm
2)	Carbon monoxide	1.879	192611	N.D.	ppm
3)	Methane (TCD)	4.070f	145492	1244.729	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.039	8598534	945.644	ppm
7)	Ethylene	1.576	16608504	981.887	ppm
8)	Ethane	1.827	16709165	973.644	ppm
9)	Propylene	4.161	22494888	941.060	ppm
10)	Propane	4.298	25459411	1023.223	ppm
11)	Isobutylene	6.138	16970	8645.243	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

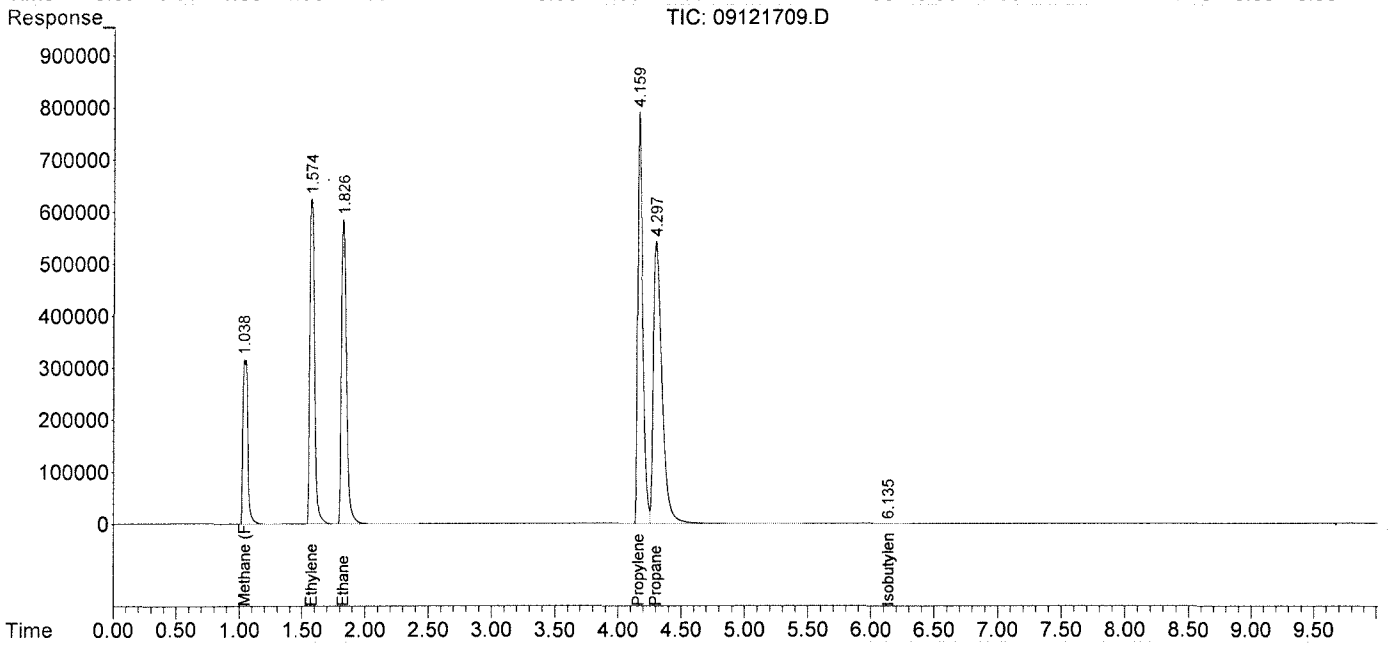
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

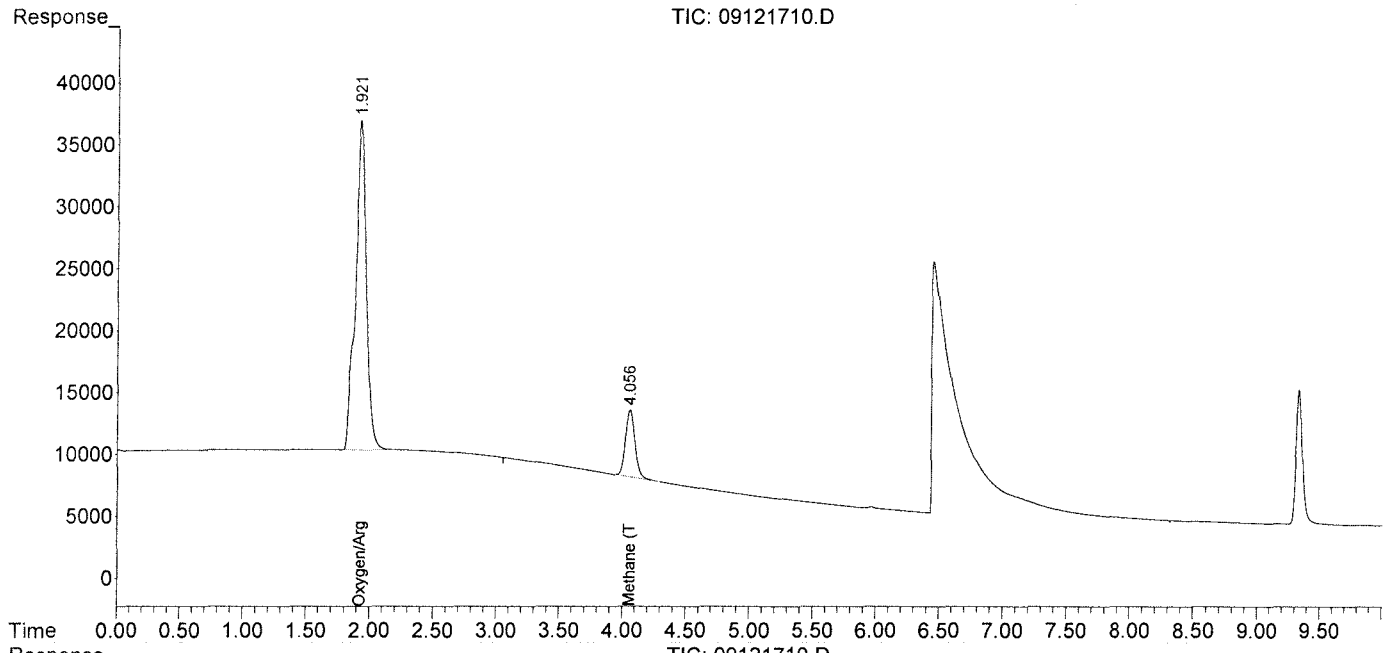
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.922f	1578147	1.659	ppm	
2)	Carbon monoxide	1.922f	1578147	N.D.	ppm	
3)	Methane (TCD)	4.057f	281651	3526.607	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.016	16098209	1763.622	ppm	
7)	Ethylene	1.552	31192444	1848.268	ppm	
8)	Ethane	1.801	31424218	1837.143	ppm	
9)	Propylene	4.129	42124690	1775.341	ppm	m
10)	Propane	4.269	48583085	1946.921	ppm	
11)	Isobutylene	6.136	33832	25613.603	ppm	
12)	Isobutane	6.576f	3845	0.120	ppm	
13)	n-Butane	6.576f	3845	0.120	ppm	

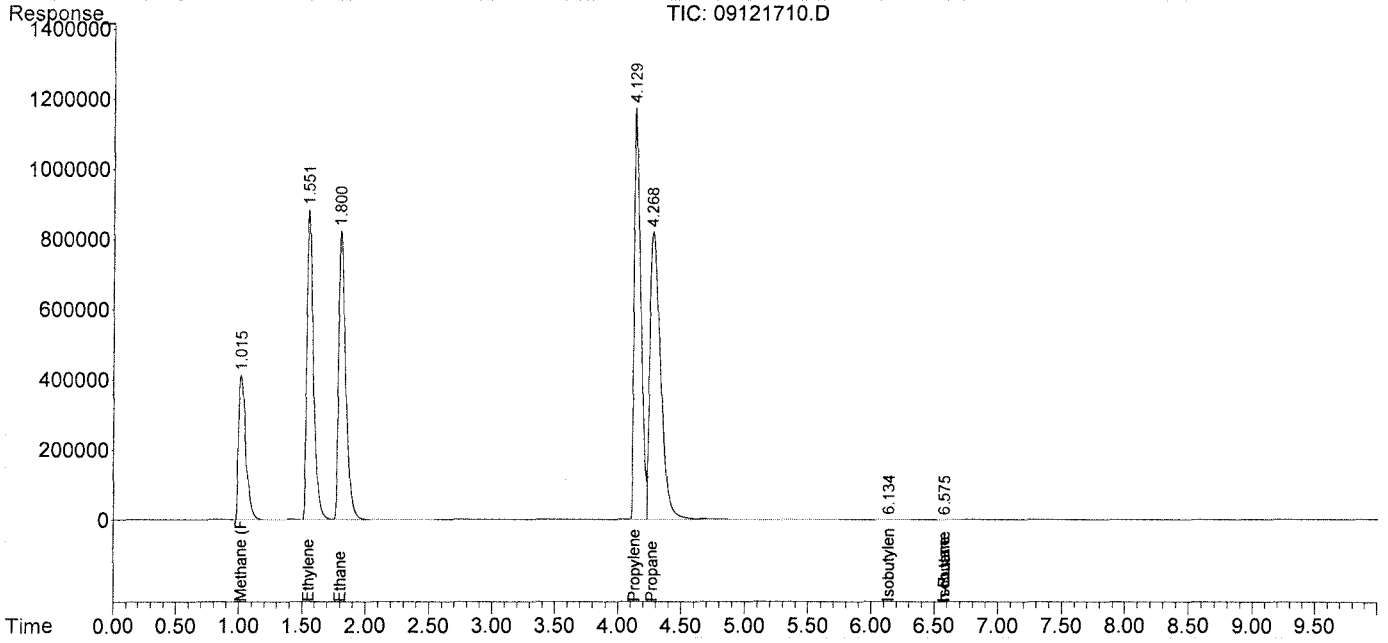
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

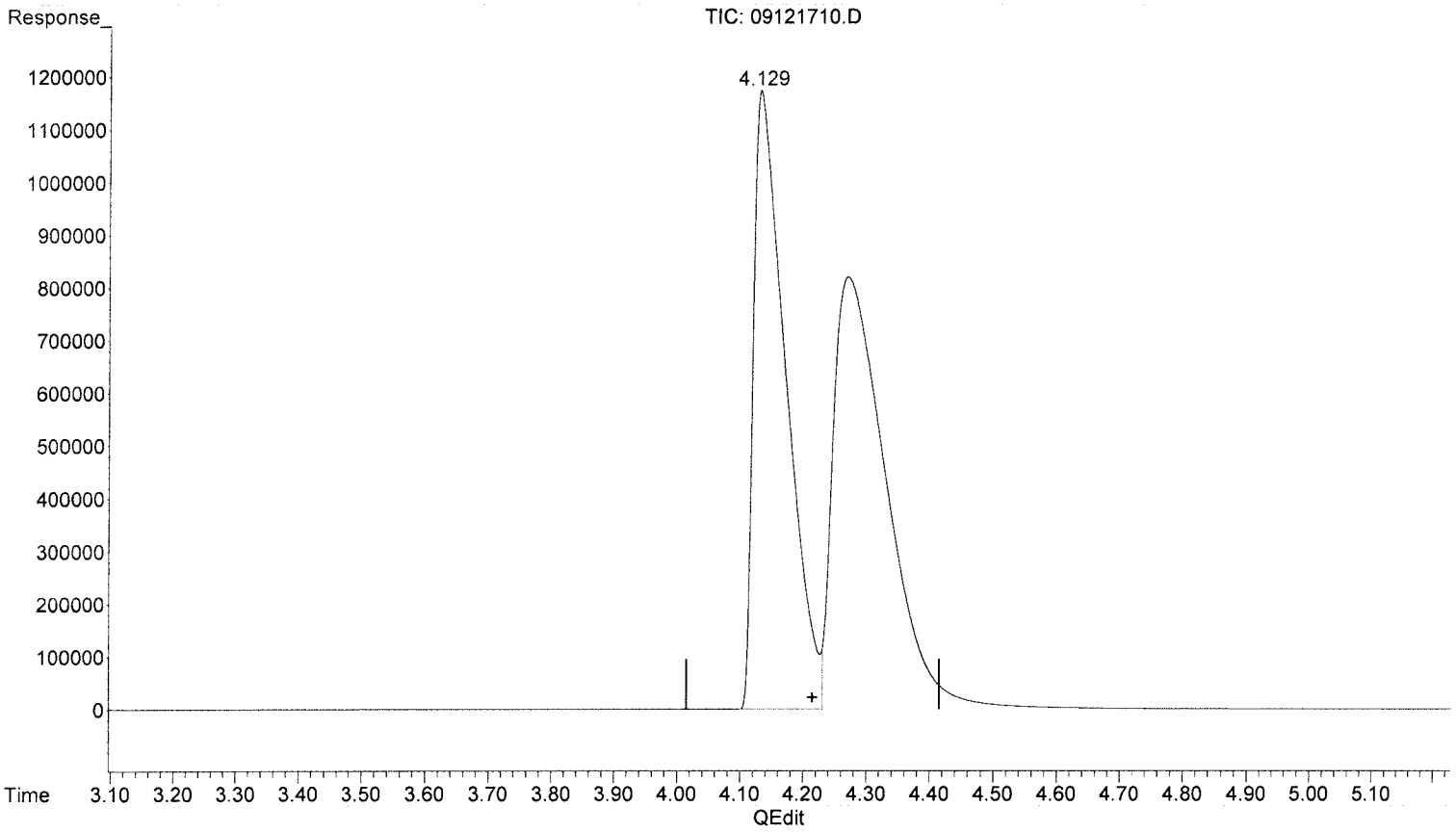




Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(9) Propylene

4.129min 1775.341 ppm m

response 42124690

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

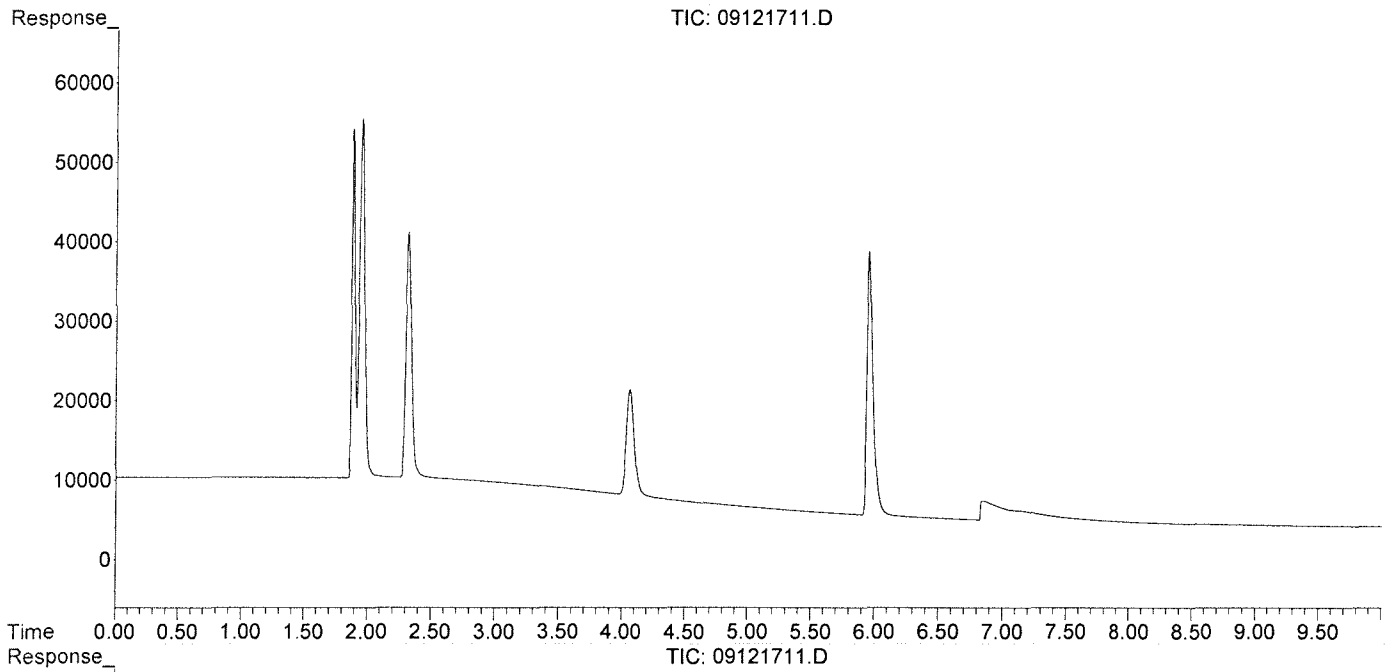
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.059	35776839	3925.122	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

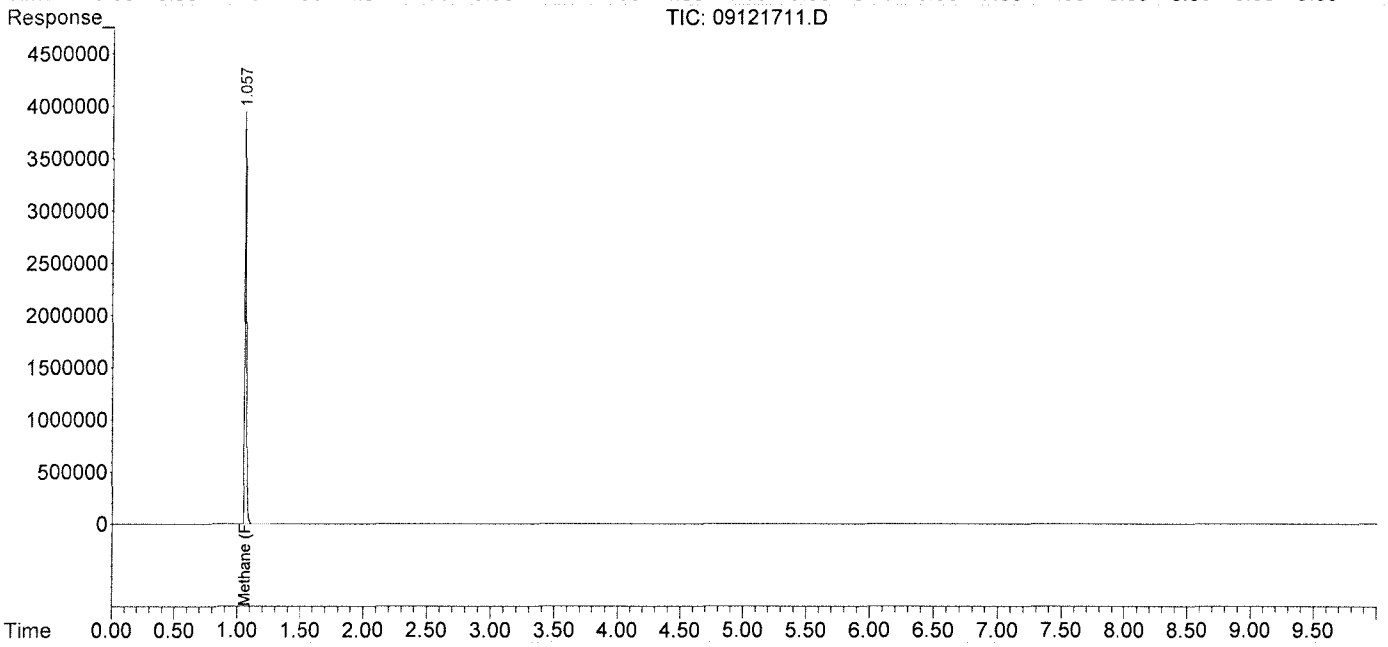
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

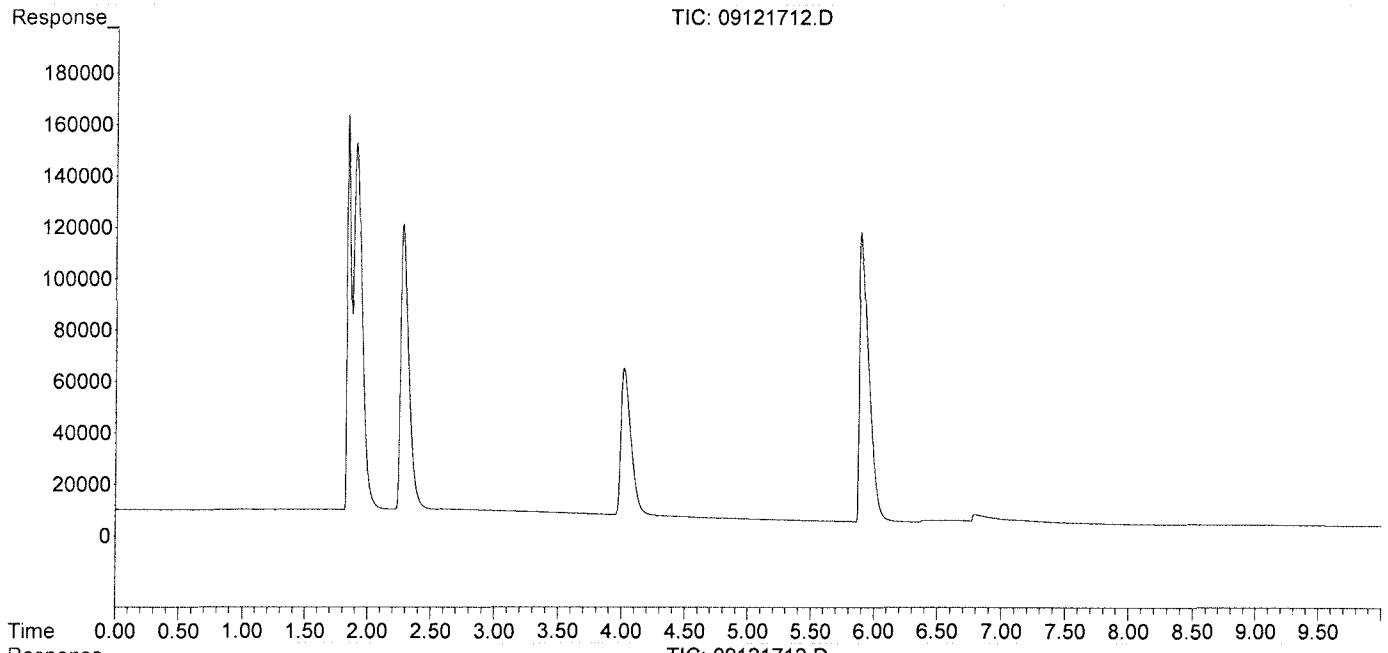
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.836	3190788	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.034	169009160	18492.064	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

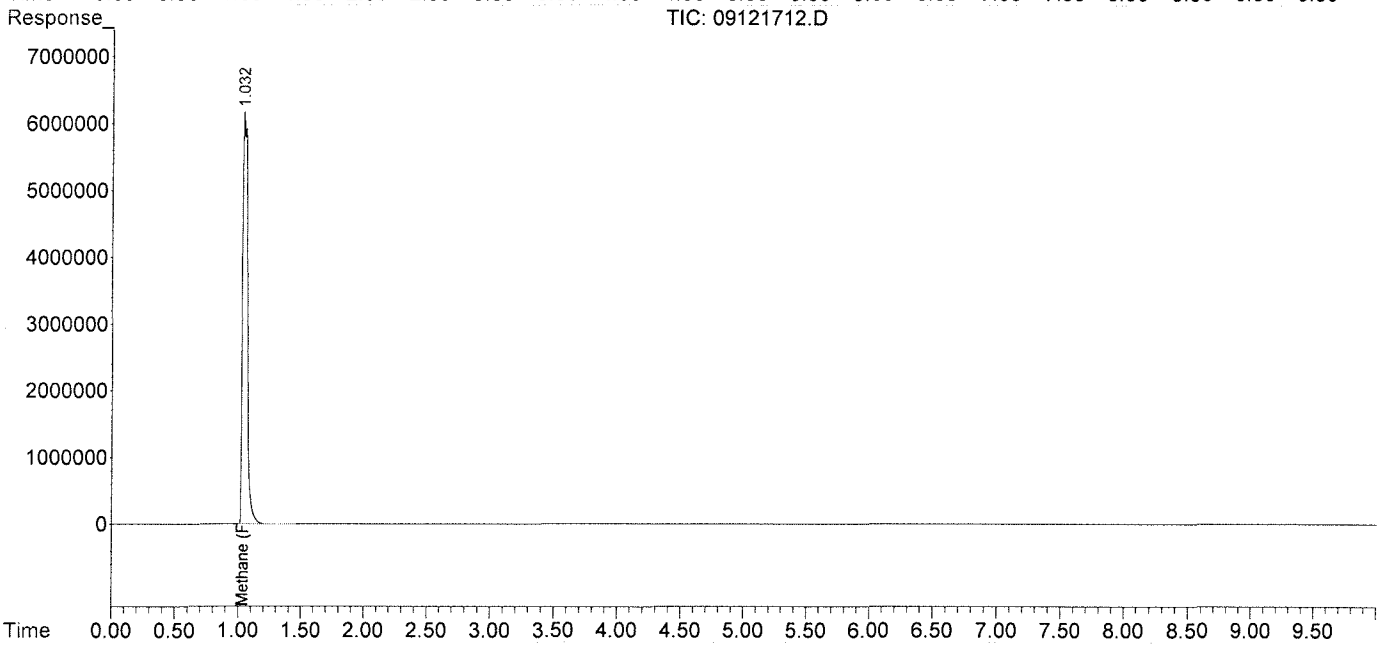
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units			
Target Compounds								
1)	Oxygen/Argon	1.843	2922459	3.687	ppm			
2)	Carbon monoxide	1.843	2922459	N.D.	ppm			
3)	Methane (TCD)	0.000	0	N.D.	ppm	actual	%	
4)	Carbon dioxide	0.000	0	N.D.	ppm			
6)	Methane (FID)	1.063	13748	1.516	ppm	~~1500~~	1.50	101.1
7)	Ethylene	1.598	24153	1.443	ppm	~~1500~~	1.50	96.2
8)	Ethane	1.850	24488	1.445	ppm	~~1500~~	1.50	96.3
9)	Propylene	4.221	36004	1.537	ppm	~~1500~~	1.50	102.5
10)	Propane	4.350	37738	1.517	ppm	~~1511~~	1.51	100.5
11)	Isobutylene	0.000	0	N.D.	ppm			
12)	Isobutane	6.579f	48019	1.804	ppm	9/14/17		
13)	n-Butane	6.579f	48019	1.804	ppm			

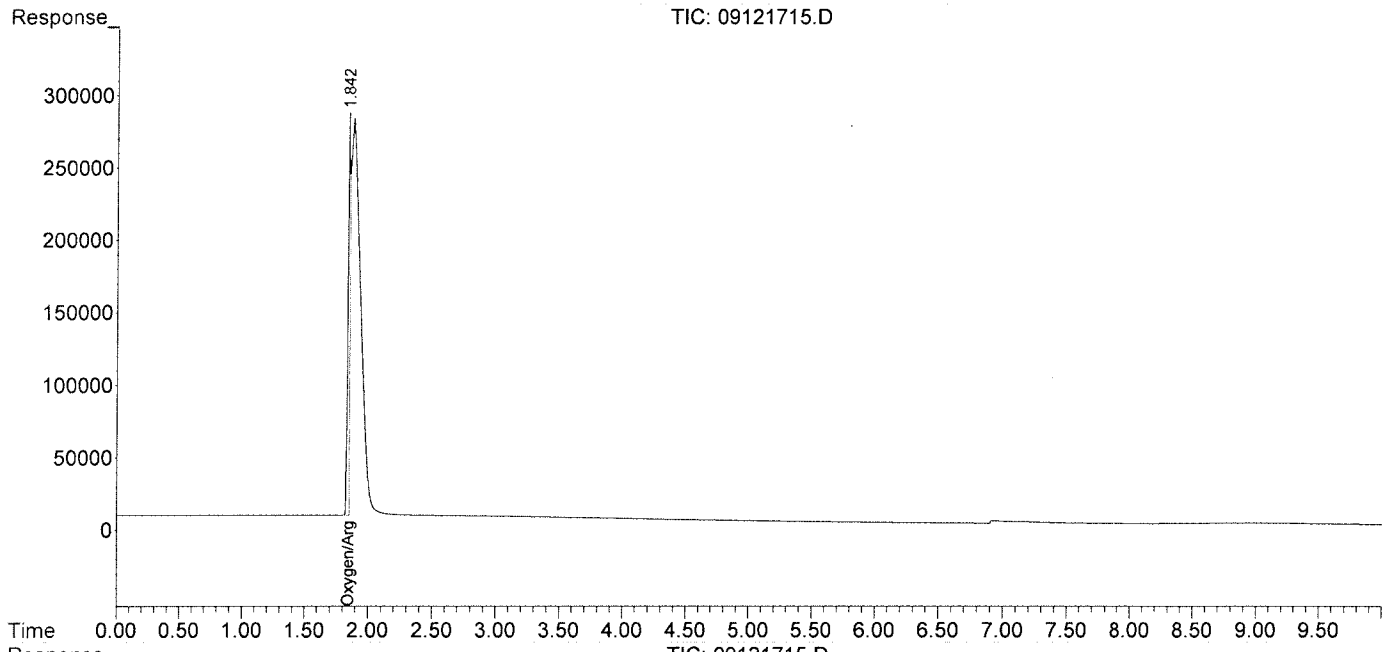
(f)=RT Delta > 1/2 Window (m)=manual int.

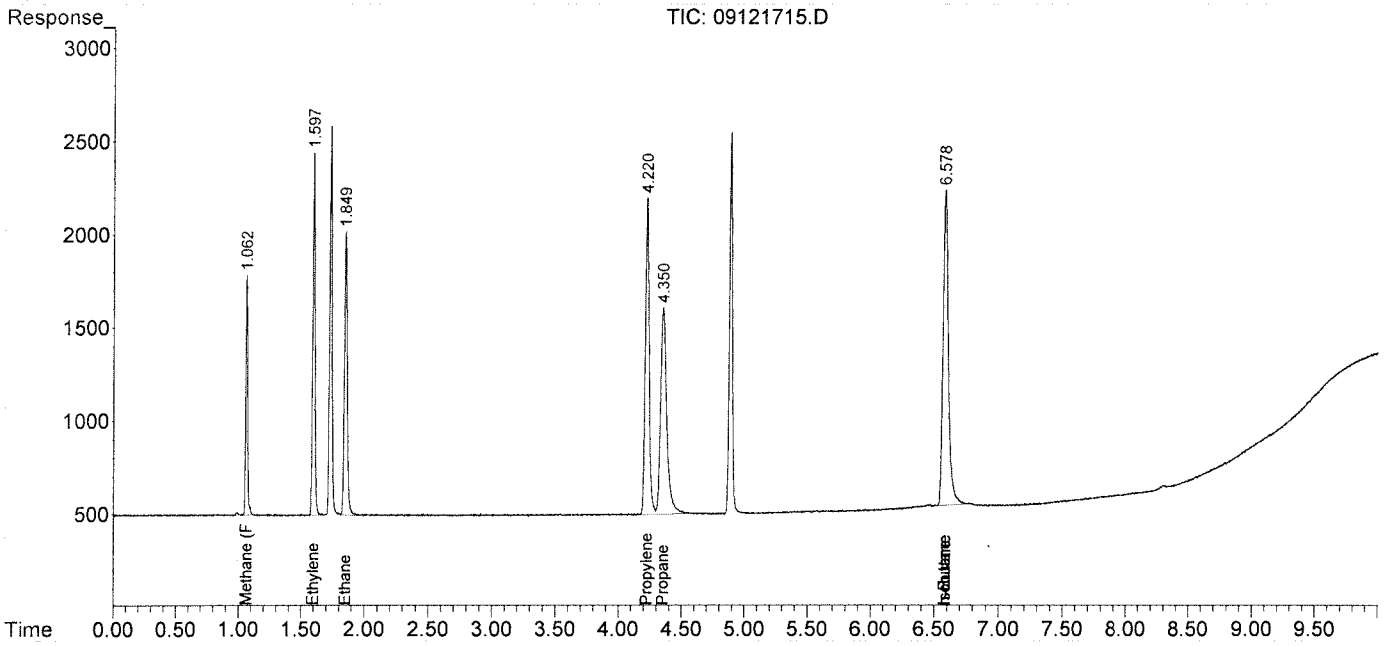
9/14/17

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Dissolved Gases by RSK175

ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : Shaw Environment & Infrastructure, Inc. Analyst : CB
Service Request: P2102422 Date Analysis : 05/12/21
Sample Vol. (ml) : 32.00 ml Head Space Vol.(ml) : 8.00 ml

Instrument : GC#10
Detector : FID#10, TCD#10
Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Methane	Ethylene	Ethane
STD S32-05221901 0.1ml	0.100	93.343	99.260	98.649
ACTUAL		101.50	100.90	101.40
%Difference		8.0%	1.6%	2.7%
MCS 0.1mL	0.100	0.108	0.000	0.000
RB 0.1mL	0.100	0.131	0.000	0.000
LCS 0.1mL	0.100	1.627	1.130	1.305
LCSD 0.1mL	0.100	1.396	1.100	1.272
2422-001 0.1mL	0.100	0.216	0.000	0.000
STD S32-05221901 0.1mL		92.070	97.985	97.584
ACTUAL		101.50	100.90	101.40
%Difference		9.3%	2.9%	3.8%

FINAL HEAD SPACE RESULT (ppm)

	Methane	Ethylene	Ethane
WWt.	16.04	28.05	30.07
HENRY'S CONSTANT	3.76E+04	1.02E+04	2.63E+04
RL	1.30	1.00	0.60
MCS 0.1mL	1.080	0.000	0.000
LCS 0.1mL	16.270	11.300	13.050
LCSD 0.1mL	13.960	11.000	12.720
2422-001 0.1mL	2.160	0.000	0.000

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122101.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 08:15
Operator : CB
Sample : STD S32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

CB
5/14/21

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 12 09:37:56 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

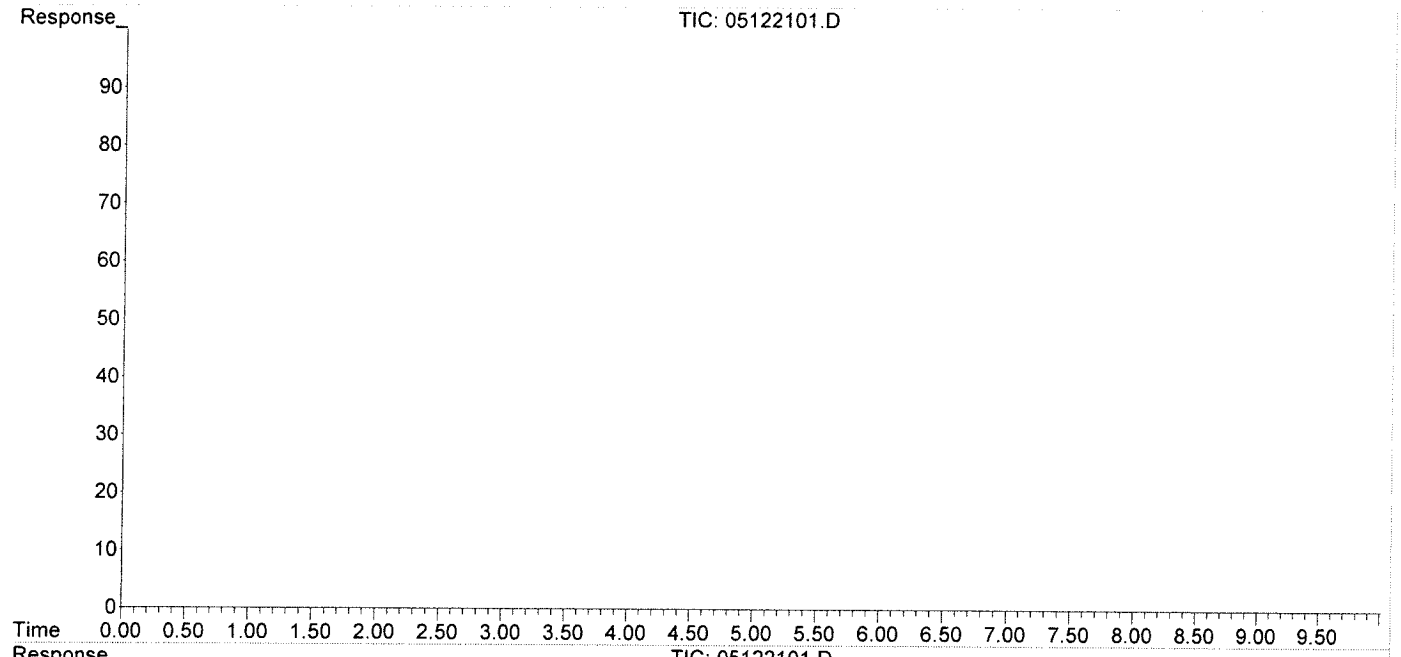
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.103	846682	93.343	ppm
7)	Ethylene	1.666	1661055	99.260	ppm
8)	Ethane	1.927	1672113	98.649	ppm
9)	Propylene	4.302	2440157	104.140	ppm
10)	Propane	4.423	2508230	100.812	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

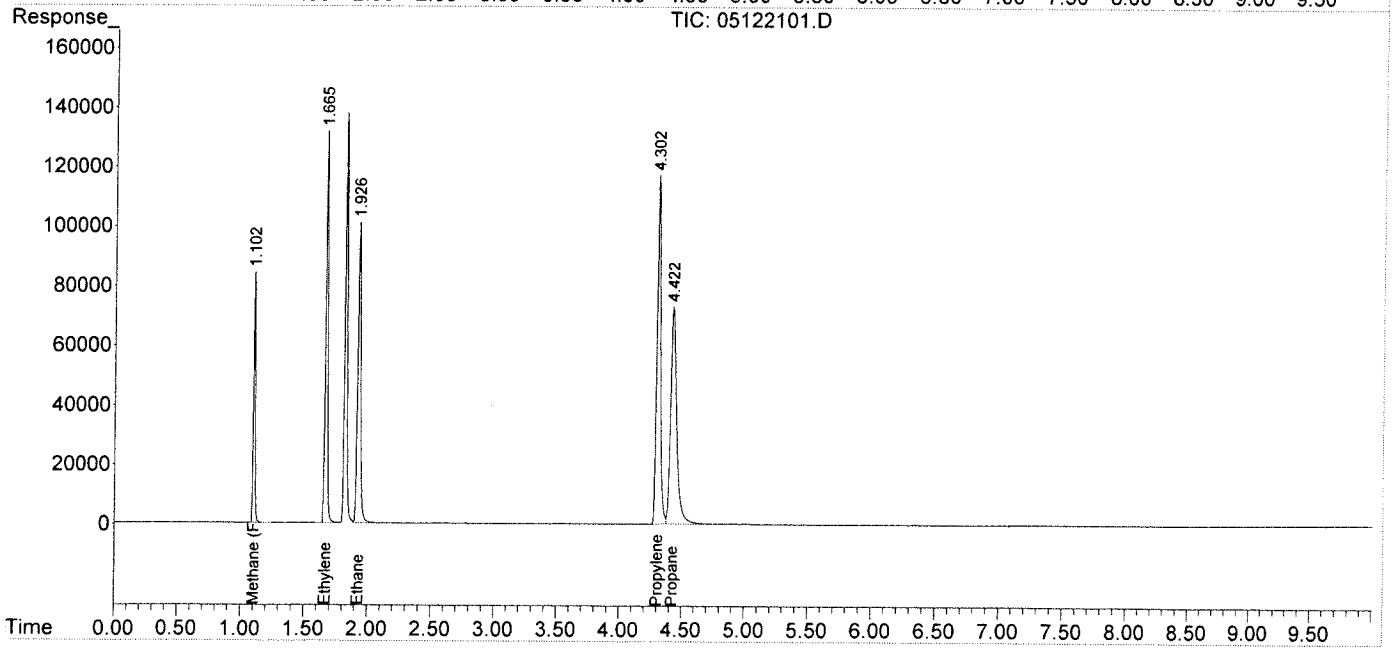
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122101.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 08:15
Operator : CB
Sample : STD S32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 12 09:37:56 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122116.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 14:52
Operator : CB
Sample : STD S32-05221901 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 12 16:24:28 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

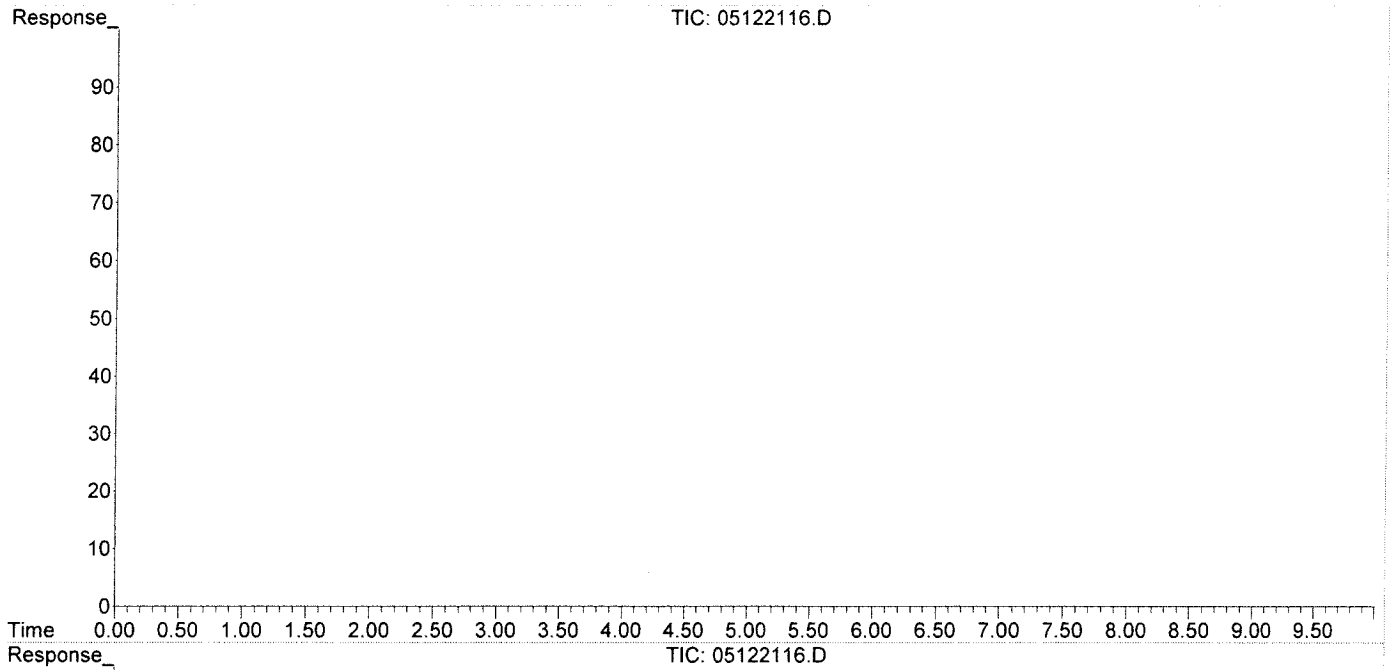
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.095	835134	92.070	ppm
7)	Ethylene	1.655	1639710	97.985	ppm
8)	Ethane	1.915	1654066	97.584	ppm
9)	Propylene	4.294	2406930	102.722	ppm
10)	Propane	4.415	2477992	99.597	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

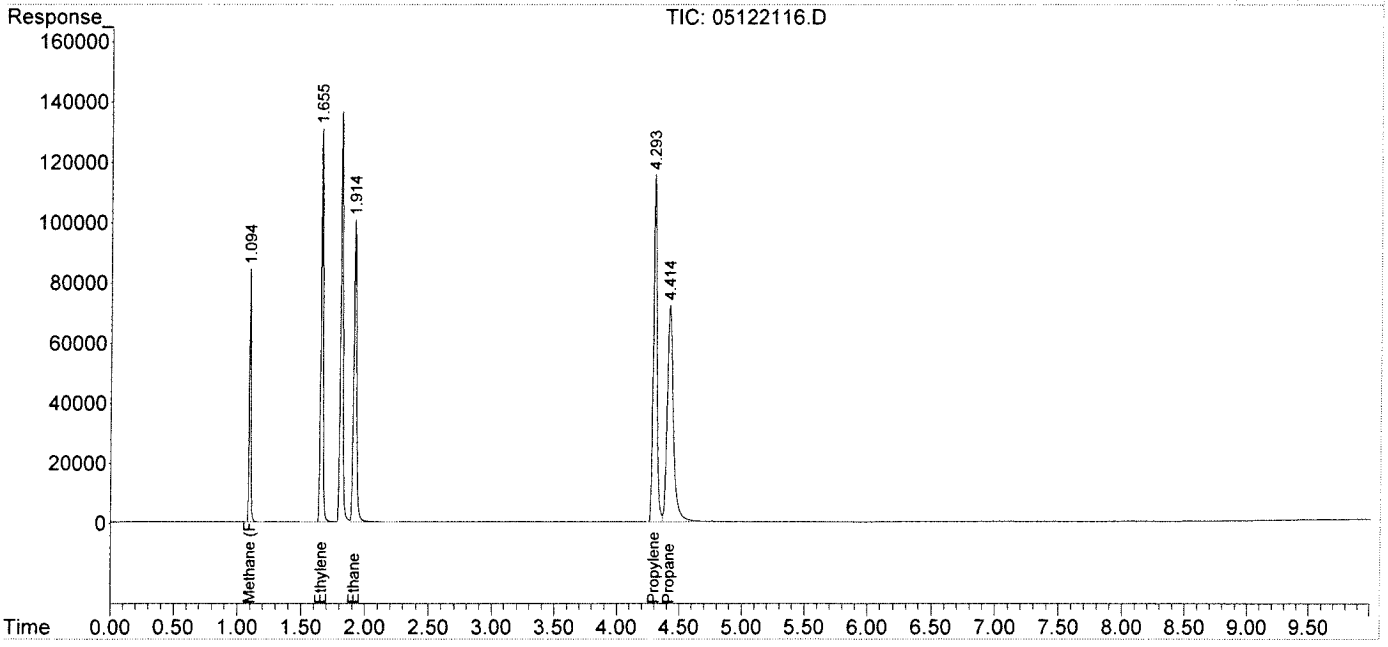
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122116.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 14:52
Operator : CB
Sample : STD S32-05221901 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 12 16:24:28 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_09\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-Sep-17, 08:38:08	09121701.D	test		MC	RSKBOTH.M	
2	12-Sep-17, 10:52:40	09121702.D	0.151ppm 0.250ml s32-09121702		MC	RSKBOTH.M	Curve
3	12-Sep-17, 11:05:49	09121703.D	0.302ppm 0.5ml s32-09121702		MC	RSKBOTH.M	Curve
4	12-Sep-17, 11:45:34	09121704.D	1.51ppm 0.1ml s32-09051701		MC	RSKBOTH.M	Curve
5	12-Sep-17, 12:09:33	09121705.D	4.53ppm 0.3ml s32-09051701		MC	RSKBOTH.M	Curve
6	12-Sep-17, 12:30:23	09121706.D	10.57ppm 0.7ml s32-09051701		MC	RSKBOTH.M	Curve
7	12-Sep-17, 12:47:18	09121707.D	200ppm 0.1ml s32-09121701		MC	RSKBOTH.M	Curve
8	12-Sep-17, 13:00:22	09121708.D	600ppm 0.3ml s32-09121701		MC	RSKBOTH.M	Curve
9	12-Sep-17, 13:47:48	09121709.D	1000ppm 0.5ml s32-09121701		MC	RSKBOTH.M	Curve
10	12-Sep-17, 14:07:58	09121710.D	2000ppm 1ml s32-09121701		MC	RSKBOTH.M	Curve
11	12-Sep-17, 14:48:48	09121711.D	4000ppm 0.1ml s32-08231701		MC	RSKBOTH.M	Curve
12	12-Sep-17, 15:21:51	09121712.D	20000ppm 0.5ml s32-08231701		MC	RSKBOTH.M	Curve
13	12-Sep-17, 15:38:59	09121713.D	mb 0.5ml		MC	RSKBOTH.M	Pass
14	12-Sep-17, 15:55:35	09121714.D	mb 0.1ml		MC	RSKBOTH.M	Pass
15	12-Sep-17, 16:15:26	09121715.D	icv s30-05241604		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2021_05\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-May-21, 07:21:31	05122100.D	purge		CB	RSKBOTH.M	
2	12-May-21, 08:15:08	05122101.D	STD S32-05221901 0.1mL		CB	RSKBOTH.M	
3	12-May-21, 09:40:00	05122102.D	RB 0.1mL		CB	RSKBOTH.M	
4	12-May-21, 10:01:26	05122103.D	MCS 0.1mL		CB	RSKBOTH.M	
5	12-May-21, 10:15:51	05122104.D	LCS 0.1mL		CB	RSKBOTH.M	
6	12-May-21, 10:41:59	05122105.D	LCSD 0.1mL		CB	RSKBOTH.M	
7	12-May-21, 11:03:36	05122106.D	k2104380-001 0.1mL		CB	RSKBOTH.M	
8	12-May-21, 12:09:09	05122107.D	k2104380-001 MS 0.1mL		CB	RSKBOTH.M	
9	12-May-21, 12:26:56	05122108.D	k2104380-001 MSD 0.1mL		CB	RSKBOTH.M	
10	12-May-21, 12:53:19	05122109.D	k2104380-002 0.1mL		CB	RSKBOTH.M	
11	12-May-21, 13:10:13	05122110.D	k2104380-014 0.1mL		CB	RSKBOTH.M	
12	12-May-21, 13:23:58	05122111.D	k2104380-005 0.1mL		CB	RSKBOTH.M	
13	12-May-21, 13:38:12	05122112.D	k2104380-007 0.1mL		CB	RSKBOTH.M	
14	12-May-21, 13:56:26	05122113.D	k2104380-003 0.1mL		CB	RSKBOTH.M	
15	12-May-21, 14:17:08	05122114.D	2422-001 0.1mL		CB	RSKBOTH.M	
16	12-May-21, 14:38:49	05122115.D	P2102461-001 0.1mL		CB	RSKBOTH.M	
17	12-May-21, 14:52:55	05122116.D	STD S32-05221901 0.1mL		CB	RSKBOTH.M	
18	12-May-21, 17:05:55	05122117.D	P2102461-002 0.1mL		CB	RSKBOTH.M	
19	12-May-21, 17:53:45	05122118.D	STD S32-05221901 0.1mL		CB	RSKBOTH.M	

Appendix D

Groundwater Sampling Forms

Note: The groundwater sample collection logs for selected wells have been revised to correct screened interval data to maintain consistency with changes to the LHAAP database that were discussed in the *Memorandum for Record – Revision of Sample Collection Logs for Multiple Sampling Events* (Bhate 2021b).

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46SW10**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 46SW10-210318 **DATE/TIME:** 3/18/21 1127 **Pump Inlet Depth:** NA

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** SW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

NO Sample Collected

NOT Required

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW01**

Sampler(s): Scott Bressinger

FIELD CONDITIONS CLEAR

SAMPLING INFORMATION

Sample No: 46WW01-210318 **DATE/TIME:** 3/18/21 1123 **Pump Inlet Depth:** _____

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/18/21

Depth to Water - Initial (DTWi) (ft) DRY

Purge End Date/Time: 3/18/21

17.07-27.07 FT BTOC

L'George 07/27/2021

Depth to Well Bottom (ft) 26.95

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 17.00 - 27.00

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): _____

Pump Start Time: _____

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - DRY

APTIM

Sample Collection Log

Location ID: 46WW01		Sample No: 46WW01-210318								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/18/21		100	.5							
↓		100	1.0							
		100	1.5							
		100	2.0							
		100	2.5							
		100	3.0							

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW02**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 46WW02-210316 **DATE/TIME:** 3/16/21 1137 **Pump Inlet Depth:** 42.00

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions (chloride/nitrate/sulfate) in Water by SW9056	1 x 125 mL HPDE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/16/21 1145

Depth to Water - Initial (DTWi) (ft) 38.57

38.05-48.05 ft btoc

Purge End Date/Time: 3/16/21 1215

Depth to Well Bottom (ft) 47.62

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 37.00 - 47.00

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 42.00

Pump Start Time: 1145

Ferrous Iron (Required (Y) or N) 0.50 mg/L

2ND DEPTH TO WATER = 38.57

APTIM

Sample Collection Log

Location ID: 46WW02		Sample No: 46WW02-210316								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/16/21	1150	100	.5	38.65	0.818	20.04	5.25	7.5	99	0.70
	1155	100	1.0	38.70	0.770	19.55	4.51	5.7	181	0.24
	1200	100	1.5	38.73	0.764	19.52	4.27	5.3	207	0.08
	1205	100	2.0	38.75	0.763	19.48	4.26	4.8	208	0.08
	1210	100	2.5	38.77	0.763	19.43	4.26	4.5	209	0.07
↓	1215	100	3.0	38.78	0.763	19.40	4.25	4.2	210	0.07

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW03**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR

SAMPLING INFORMATION

Sample No: 46WW03-210318 **DATE/TIME:** 3/18/21 0937 **Pump Inlet Depth:** 98.00

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/18/21 0945

Depth to Water - Initial (DTWi) (ft) 41.50

92.67 - 102.67 ft bgs

Purge End Date/Time: 3/18/21 1015

I George 07/27/2021

Depth to Well Bottom (ft) 103.25

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 93.00 - 103.00

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 98.00

Pump Start Time: 0945

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - 41.50

APTIM

Sample Collection Log

Location ID: 46WW03		Sample No: 46WW03-210318								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/18/21	0955	100	.5	4.56	1.23	13.95	7.62	31.9	[redacted]19	0.77
	0955	100	1.0	4.60	1.14	15.43	[redacted]13	30.5	[redacted]41	0.25
	[redacted]	100	1.5	4.63	1.08	15.79	5.85	28.9	58	0.10
	[redacted]	100	2.0	4.65	1.07	15.86	5.84	28.4	59	0.10
	1005	100	2.5	4.66	1.06	15.90	5.83	27.8	60	0.10
	1015	100	3.0	4.66	1.06	15.95	5.82	27.5	60	0.09

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW03**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 46WW03-210318-FD **DATE/TIME:** 3/18/21 **Pump Inlet Depth:** 98.00

Sampling Method: **Sample Purpose:** FD **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/18/21 0945

Depth to Water - Initial (DTWi) (ft) 41.50

92.67-102.67 ft bgs

Purge End Date/Time: 3/18/21 1015

Depth to Well Bottom (ft) 103.25

L George 07/27/2021

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 93.00 - 103.00

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 98.00

Pump Start Time: 0945

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - 41.50

APTIM

Sample Collection Log

Location ID: 46WW03				Sample No: 46WW03-21038-FD						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/18/24	0950	100	.5	41.56	1.23	13.95	7.62	31.9	19	0.77
	0955	100	1.0	41.60	1.14	15.43	6.13	30.5	41	0.25
	1000	100	1.5	41.63	1.08	15.79	5.85	28.9	58	0.10
	1005	100	2.0	41.65	1.07	15.86	5.84	28.4	59	0.10
	1010	100	2.5	41.66	1.06	15.90	5.83	27.8	60	0.10
↓	1015	100	3.0	41.66	1.06	15.95	5.82	27.5	60	0.09

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW04**

Sampler(s): Scott Bressinger

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 46WW04-210315 **DATE/TIME:** 3/15/21 0922 **Pump Inlet Depth:** 22.00

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/15/21 NA

Depth to Water - Initial (DTWi) (ft) DRY 16.92-26.92 ft btoc

Purge End Date/Time: 3/15/21 NA

L George 07/27/2021

Depth to Well Bottom (ft) 26.95

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 17.00 - 27.00

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 22.00

Pump Start Time: NA

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - DRY

APTIM

Sample Collection Log

Location ID: 46WW04				Sample No: 46WW04-210315						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
			Dry well							

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW05**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 46WW05-210316 **DATE/TIME:** 3/16/21 0757 **Pump Inlet Depth:** 40.50

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions (chloride/nitrate/sulfate) in Water by SW9056	1 x 125 mL HPDE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/16/21 0805

Depth to Water - Initial ~~(DTWi)~~ (ft) 39.00 35.65-45.65 ft btoc

Purge End Date/Time: 3/16/21 0835

Lcampagne 07/27/2021

~~Depth to Well Bottom~~ (ft) 45.48

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 35.65 - 45.35

Discharge Tube Diameter: 1/4"

Immersible Layer: Y (N)

Approximate depth of pump inlet*(ft): 40.50

Pump Start Time: 0805

Ferrous Iron (Required) (Y or N) 1.41 mg/L

2nd Depth to water - 39.00

APTIM

Sample Collection Log

Location ID: 46WW05				Sample No: 46WW05-210316						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/16/21	0810	100	.5	39.08	5.82	17.13	5.86	131	147	0.79
	0815	100	1.0	39.14	5.90	17.79	4.45	118	231	0.28
	0820	100	1.5	39.18	5.95	18.08	4.12	105	264	0.09
	0825	100	2.0	39.21	5.96	18.16	4.11	104	265	0.09
	0830	100	2.5	39.23	5.97	18.21	4.11	104	266	0.09
	0835	100	3.0	39.25	5.97	18.27	4.10	103	267	0.08

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW06**

Sampler(s): Scott Bessinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 46WW06-210315 **DATE/TIME:** 3/15/21 0929 **Pump Inlet Depth:** 45.50

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/15/21 0940

Depth to Water - Initial (DTWi) (ft) 41.55 40.6-50.6 ft btoc

Purge End Date/Time: 3/15/21 1010

L George 07/27/2021

Depth to Well Bottom (ft) 52.33

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 42.68 - 52.38

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 45.50

Pump Start Time: 0940

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - 41.55

APTIM

Sample Collection Log

Location ID: 46WW06				Sample No: 46WW06-210315						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/15/24	0945	100	.5	41.62	2.04	16.05	6.29	81.3	-25	0.77
	0950	100	1.0	41.68	1.98	16.88	6.05	69.7	-29	0.25
	0955	100	1.5	41.72	1.98	17.08	5.78	63.9	-16	0.09
	1000	100	2.0	41.75	1.98	17.14	5.77	63.4	-15	0.09
	1005	100	2.5	41.77	1.98	17.18	5.76	62.8	-15	0.08
↓	1010	100	3.0	41.79	1.98	17.22	5.75	62.3	-14	0.08

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW07**

Sampler(s): Scott Baessinger

FIELD CONDITIONS CLEAR

SAMPLING INFORMATION

Sample No: 46WW07-210318 **DATE/TIME:** 3/18/21 0756 **Pump Inlet Depth:** 46.25

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/18/21 0800

Depth to Water - Initial (DTWi) (ft) 36.68

Purge End Date/Time: 3/18/21 0830

Depth to Well Bottom (ft) 51.68

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 41.50 - 51.00

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 46.25

Pump Start Time: 0800

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - 36.68

APTIM

Sample Collection Log

Location ID: 46WW07				Sample No: 46WW07-210318						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/18/21	0805	100	.5	36.75	1.29	13.78	6.36	1.8	-1	0.65
	0810	100	1.0	36.81	1.33	14.22	6.38	0.9	0	0.20
	0815	100	1.5	36.85	1.36	14.27	6.37	0.0	1	0.05
	0820	100	2.0	36.87	1.37	14.33	6.36	0.0	1	0.05
	0825	100	2.5	36.88	1.38	14.36	6.36	0.0	2	0.05
↓	0830	100	3.0	36.88	1.38	14.39	6.36	0.0	2	0.04

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW07**

Sampler(s): Scott Baessinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 46WW07-210318-FD **DATE/TIME:** 3/18/21 0756 **Pump Inlet Depth:** 46.25

Sampling Method: **Sample Purpose:** FD **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/18/21 0800

Depth to Water - Initial (DTWi) (ft) 36.68

Purge End Date/Time: 3/18/21 0830

Depth to Well Bottom (ft) 57.68

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 41.50 - 51.00

Discharge Tube Diameter: 1/4" Immersible Layer: Y (N)

Approximate depth of pump inlet*(ft): 46.25

Pump Start Time: 0800

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - 36.68

APTIM

Sample Collection Log

Location ID: 46WW07		Sample No: 46WW07-21031[8]-FD								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/18/21	0805	100	.5	36.75	1.29	13.78	6.36	1.8	-1	0.65
	0810	100	1.0	36.81	1.33	14.22	6.38	0.9	0	0.20
	0815	100	1.5	36.85	1.36	14.27	6.37	0.0	1	0.05
	0820	100	2.0	36.87	1.37	14.33	6.36	0.0	1	0.05
	0825	100	2.5	36.88	1.38	14.36	6.36	0.0	2	0.05
↓	0830	100	3.0	36.88	1.38	14.39	6.36	0.0	2	0.04

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW08**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 46WW08-210315 **DATE/TIME:** 3/15/21 1016 **Pump Inlet Depth:** 40.50

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/15/21 1020

Depth to Water - Initial (DTWi) (ft) 21.55

Purge End Date/Time: 3/15/21 1050

Depth to Well Bottom (ft) 45.32

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 35.72 - 45.22

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 40.50

Pump Start Time: 1020

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DEPTH TO WATER - 21.55

APTIM

Sample Collection Log

Location ID: 46WW08				Sample No: 46WW08-2103 15						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/15/24	1025	100	.5	21.63	3.81	16.45	6.14	89.8	-149	0.66
	1030	100	1.0	21.69	5.18	17.51	6.11	4.4	-115	0.19
	1035	100	1.5	21.73	5.19	17.77	6.11	3.9	-115	0.04
	1040	100	2.0	21.75	5.20	17.84	6.10	3.4	-114	0.04
	1045	100	2.5	21.76	5.21	17.88	6.10	2.7	-113	0.03
	1050	100	3.0	21.77	5.21	17.93	6.10	2.2	-113	0.03

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW09**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

CLEAR

SAMPLING INFORMATION

Sample No: 46WW09-210316 **DATE/TIME:** 3/16/21 0946 **Pump Inlet Depth:** 39.50

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions (chloride/nitrate/sulfate) in Water by SW9056	1 x 125 mL HPDE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/16/21 1000

Depth to Water - Initial (DTWi) (ft) 38.60

Purge End Date/Time: 3/16/21 1030

31.48-40.98 ft btoc

Depth to Well Bottom (ft) 42.27

L George 07/27/2021

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 33.48-42.98

Discharge Tube Diameter: 1/4" Immersible Layer: Y (N)

Approximate depth of pump inlet*(ft): 39.50

Pump Start Time: 1000

Ferrous Iron (Required (Y) or N) 0.52 mg/L

2ND DEPTH TO WATER-38.60

APTIM

Sample Collection Log

Location ID: 46WW09				Sample No: 46WW09-210316						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/16/21	1005	100	.5	38.67	4.63	18.53	6.86	30.5	[redacted]	0.68
	1010	100	1.0	38.74	4.66	18.31	6.18	24.7	11	0.23
	1015	100	1.5	38.79	4.68	18.27	5.88	20.9	21	0.07
	1020	100	2.0	38.83	4.69	18.23	5.87	20.4	22	0.07
	1025	100	2.5	38.86	4.69	18.20	5.87	19.9	23	0.06
	1030	100	3.0	38.89	4.69	18.17	5.86	19.5	23	0.06

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW10**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 46WW10-210315 **DATE/TIME:** 3/15/21 0915 **Pump Inlet Depth:** 20.63

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/15/21/NA

Depth to Water - Initial (DTWi) (ft) Dry 14.19-23.69 ft bTOC

Purge End Date/Time: 3/15/21 NA

J. George 07/27/2021

Depth to Well Bottom (ft) 25.33

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 15.88 - 25.38

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 20.63

Pump Start Time: NA

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - DRY

APTIM

Sample Collection Log

Location ID: 46WW10				Sample No: 46WW10-210315						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
			Dry Well							

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW11**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 46WW11-210316 **DATE/TIME:** 3/16/21 1041 **Pump Inlet Depth:** 28.00

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions (chloride/nitrate/sulfate) in Water by SW9056	1 x 125 mL HPDE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 2"

Purge Start Date/Time: 3/16/21 1050

Depth to Water - Initial (DTWi) (ft) 25.27 22.25 Purge End Date/Time: 3/16/21 1120

Depth to Well Bottom (ft) ~~32.92~~ 32.92 Discharge Tube Length: NA PID Reading: NA

L George 07/27/2021

Screen Interval (ft): 23.00 - 33.00 Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): 28.00 Pump Start Time: 1050

Ferrous Iron (Required Y or N) 0.52 mg/L

2ND DEPTH TO WATER - 25.22

APTIM

Sample Collection Log

Location ID: 46WW11		Sample No: 46WW11-210316								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/16/21	1055	100	.5	25.30	1.42	19.21	6.21	16.4	47	0.61
	1100	100	1.0	25.36	1.37	19.28	5.79	14.5	60	0.18
	1105	100	1.5	25.40	1.34	19.30	5.60	9.8	67	0.03
	1110	100	2.0	25.43	1.33	19.32	5.59	9.5	68	0.03
	1115	100	2.5	25.46	1.33	19.34	5.58	9.0	68	0.02
↓	1120	100	3.0	25.48	1.33	19.36	5.58	8.7	69	0.02

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW11**

Sampler(s): Scott Boessinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 46WW11-210316-FD **DATE/TIME:** 3/16/21 1041 **Pump Inlet Depth:** 28.00

Sampling Method: **Sample Purpose:** FD **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions (chloride/nitrate/sulfate) in Water by SW9056	1 x 125 mL HPDE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/16/21 1050

Depth to Water - Initial (DTWi) (ft) 25.22

Purge End Date/Time: 3/16/21 1120

22.25-32.25 ft btoc

Depth to Well Bottom (ft) 32.92

L George 07/27/2021

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 23.00 - 33.00

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 28.00

Pump Start Time: 1050

Ferrous Iron (Required (Y) or N) 0.52 mg/L

2ND DEPTH TO WATER - 25.22

APTIM

Sample Collection Log

Location ID: 46WW11		Sample No: 46WW11-210316-FD								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/16/21	1055	100	.5	25.30	1.42	19.31	6.21	16.4	47	0.61
	1100	100	1.0	25.36	1.37	19.28	5.79	14.5	60	0.18
	1105	100	1.5	25.40	1.34	19.30	5.60	9.8	67	0.03
	1110	100	2.0	25.43	1.33	19.32	5.59	9.5	68	0.03
	1115	100	2.5	25.46	1.33	19.34	5.58	9.0	68	0.02
	1120	100	3.0	25.48	1.33	19.36	5.58	8.7	69	0.02

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW12**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Foggy / cool

SAMPLING INFORMATION

Sample No: 46WW12-210315 **DATE/TIME:** 3/15/21 0846 **Pump Inlet Depth:** 23.75

Sampling Method: **Sample Purpose: REG** **Sample Matrix: GW**

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / BLADDER Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/15/21 NA

Depth to Water - Initial (DTWi) (ft) DRY

Purge End Date/Time: 3/15/21 NA

Depth to Well Bottom (ft) 28.69

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 18.97 - 28.47

Discharge Tube Diameter: 1/4" Immersible Layer: Y (N)

Approximate depth of pump inlet*(ft): 23.75

Pump Start Time: NA

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - DRY

APTIM

Sample Collection Log

Location ID: 46WW12					Sample No: 46WW12-2102___					
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
			DRY WELL							

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW13**

Sampler(s): Scott Bressinger

FIELD CONDITIONS

Foggy/cool

SAMPLING INFORMATION

Sample No: 46WW13-210315 **DATE/TIME:** 3/15/21 0831 **Pump Inlet Depth:** 26.17

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/15/21

Depth to Water - Initial (DTWi) (ft) Dry

Purge End Date/Time: 3/15/21

Depth to Well Bottom (ft) 31.61

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 21.42 - 30.92

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 26.17

Pump Start Time: _____

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - DRY

APTIM

Sample Collection Log

Location ID: 46WW13				Sample No: 46WW13-210815						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
				Dry well						

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW14**

Sampler(s): Scott Bressinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 46WW14-210315 **DATE/TIME:** 3/15/21 1227 **Pump Inlet Depth:** 49.35

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/15/21 1235

Depth to Water - Initial (DTWi) (ft) 33.15

Purge End Date/Time: 3/15/21 1310

Depth to Well Bottom (ft) 54.70

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 44.60 - 54.10

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 49.35

Pump Start Time: 1235

Ferrous Iron (Required Y or (N) _____ mg/L

2ND Depth to water - 33.15

APTIM

Sample Collection Log

Location ID: 46WW14				Sample No: 46WW14-210315						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/15/21	1240	100	.5	33.22	1.09	19.84	7.23	10.8	-209	0.91
	1245	100	1.0	33.28	1.05	19.40	6.59	8.7	-150	0.49
	1250	100	1.5	33.33	1.06	19.05	5.98	9.0	-93	0.25
	1255	100	2.0	33.37	1.06	19.01	5.68	8.8	-66	0.08
	1300	100	2.5	33.39	1.05	19.97	5.67	8.5	-65	0.08
	1305	100	3.0	33.40	1.05	19.93	5.67	8.3	-64	0.08
↓	1310	100	3.5	33.40	1.05	18.89	5.66	8.1	-63	0.07

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW15**

Sampler(s): Scott Beesinger

FIELD CONDITIONS FOGGY / COOL

SAMPLING INFORMATION

Sample No: 46WW15-210315 **DATE/TIME:** 3/15/21 0806 **Pump Inlet Depth:** 25.20

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / BLADDER Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/15/21 NA

Depth to Water - Initial (DTWi) (ft) DRY

Purge End Date/Time: 3/15/21 NA

Depth to Well Bottom (ft) 30.23

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 20.45 - 29.95

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 25.20

Pump Start Time: NA

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - DRY

APTIM

Sample Collection Log

Location ID: 46WW15 Sample No: 46WW15-210315

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
			Dry Well							

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW15**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Foggy/cool

SAMPLING INFORMATION

Sample No: 46WW15-210315-MS **DATE/TIME:** 3/15/21 0806 **Pump Inlet Depth:** 25.20

Sampling Method: **Sample Purpose:** MS **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/15/21 NA

Depth to Water - Initial (DTWi) (ft) DRY

Purge End Date/Time: 3/15/21 NA

Depth to Well Bottom (ft) 30.23

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 20.45-29.95

Discharge Tube Diameter: 1/4" Immersible Layer: Y/(N)

Approximate depth of pump inlet*(ft): 25.20

Pump Start Time: NA

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DEPTH TO WATER - DRY

APTIM

Sample Collection Log

Location ID: 46WW15				Sample No: 46WW15-210315-MS						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
			Dry Well							

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW15**

Sampler(s): Scott Bessinger

FIELD CONDITIONS FOGGY / COOL

SAMPLING INFORMATION

Sample No: 46WW15-210315-MSD **DATE/TIME:** 3/15/21 0806 **Pump Inlet Depth:** 25.20

Sampling Method: **Sample Purpose: MSD** **Sample Matrix: GW**

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4"

Depth to Water - Initial (DTWi) (ft) DRY

Depth to Well Bottom (ft) 30.23

Screen Interval (ft): 20.45 - 29.95

Approximate depth of pump inlet*(ft): 25.20

Ferrous Iron (Required Y or (N) _____ mg/L

Purging Method/Equipment: Low flow / BLADDER PUMP

Purge Start Date/Time: 3/15/21 NA

Purge End Date/Time: 3/15/21 NA

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Pump Start Time: NA

2WDD DPTH TO WATER - DRY

APTIM

Sample Collection Log

Location ID: 46WW15					Sample No: 46WW15-2103~~1~~5-MSD					
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
			Dry		well					

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW16**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 46WW16-210316 **DATE/TIME:** 3/16/21 0847 **Pump Inlet Depth:** 46.75

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions (chloride/nitrate/sulfate) in Water by SW9056	1 x 125 mL HPDE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/16/21 0900

Depth to Water - Initial (DTWi) (ft) 38.15

Purge End Date/Time: 3/16/21 0930

Depth to Well Bottom (ft) ~~51.65~~ 40.66-50.46 ft btoc

Discharge Tube Length: NA PID Reading: NA

L George 07/27/2021

Screen Interval (ft): 42.00-51.50

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 46.75

Pump Start Time: 0900

Ferrous Iron (Required (Y) or N) 2.04 mg/L

2ND DEPTH TO WATER - 38.15

APTIM

Sample Collection Log

Location ID: 46WW16 Sample No: 46WW16-210316

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/16/21	0905	100	.5	38.23	3.13	18.08	5.71	37.7	-118	0.68
	0910	100	1.0	38.28	3.05	18.41	5.65	31.5	-109	0.19
	0915	100	1.5	38.31	3.02	18.58	5.57	28.9	-107	0.05
	0920	100	2.0	38.33	3.02	18.65	5.58	28.3	-106	0.05
	0925	100	2.5	38.34	3.01	18.73	5.58	27.7	-105	0.04
↓	0930	100	3.0	38.35	3.01	18.79	5.55	27.4	-105	0.04

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW16**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 46WW16-210316-MS **DATE/TIME:** 3/16/21 0847 **Pump Inlet Depth:** 46.75

Sampling Method: **Sample Purpose: MS** **Sample Matrix: GW**

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions (chloride/nitrate/sulfate) in Water by SW9056	1 x 125 mL HPDE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/16/21 0900

Depth to Water - Initial (DTWi) (ft) 38.15

Purge End Date/Time: 3/16/21 0930

40.66-50.46 ft btoc

Depth to Well Bottom (ft) 51.65

Discharge Tube Length: NA PID Reading: NA

L George 07/27/2021

Screen Interval (ft): 42.00 - 51.50

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 46.75

Pump Start Time: 0900

Ferrous Iron (Required (Y) or N) 2.04 mg/L

2ND DEPTH TO WATER - 38.15

APTIM

Sample Collection Log

Location ID: 46WW16				Sample No: 46WW16-210316-MS						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/16/21	0905	100	.5	38.23	3.13	18.08	5.71	37.7	-118	0.68
	0910	100	1.0	38.28	3.05	18.41	5.65	31.5	-109	0.19
	0915	100	1.5	38.31	3.02	18.58	5.57	28.9	-107	0.05
	0920	100	2.0	38.33	3.02	18.65	5.58	28.3	-106	0.05
	0925	100	2.5	38.34	3.01	18.73	5.56	27.7	-105	0.04
	0930	100	3.0	38.35	3.01	18.79	5.55	27.4	-105	0.04

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW16**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 46WW16-210316-MSD **DATE/TIME:** 3/16/21 0847 **Pump Inlet Depth:** 46.75

Sampling Method: **Sample Purpose:** MSD **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions (chloride/nitrate/sulfate) in Water by SW9056	1 x 125 mL HPDE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/16/21 0900

Depth to Water - Initial (DTWi) (ft) 38.15

Purge End Date/Time: 3/16/21 0930

Depth to Well Bottom (ft) ~~51.65~~ 40.66-50.46 ft btoc

L George 07/27/2021

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 42.00 - 51.50

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 46.75

Pump Start Time: 0900

Ferrous Iron (Required (Y) or N) 2.04 mg/L

2ND DEPTH TO WATER - 38.15

APTIM

Sample Collection Log

Location ID: 46WW16 Sample No: 46WW16-210316-MSD

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/16/21	0905	100	.5	38.23	3.13	18.08	5.71	37.7	-118	0.68
	0910	100	1.0	38.28	3.05	18.41	5.65	31.5	-109	0.19
	0915	100	1.5	38.31	3.02	18.58	5.57	28.9	-107	0.05
	0920	100	2.0	38.33	3.02	18.65	5.58	28.3	-106	0.05
	0925	100	2.5	38.34	3.01	18.73	5.56	27.7	-105	0.04
	0930	100	3.0	38.35	3.01	18.79	5.55	27.4	-105	0.04

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW17**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 46WW17-21031S **DATE/TIME:** 3/15/21 1058 **Pump Inlet Depth:** 31.50

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/15/21 1105

Depth to Water - Initial (DTWi) (ft) 30.63

Purge End Date/Time: 3/15/21 1135

27.69-37.69 ft btoc

Depth to Well Bottom (ft) 36.50

L George 07/27/2021

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 25.72 - 35.72

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 31.50

Pump Start Time: 1105

Ferrous Iron (Required Y or (N)) _____ mg/L

2nd Depth to water - 30.63

APTIM

Sample Collection Log

Location ID: 46WW17		Sample No: 46WW17-210315								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/15/24	1110	100	.5	30.70	5.85	17.02	6.69	0.0	-30	0.71
	1115	100	1.0	30.77	5.86	17.81	6.50	0.0	-7	0.23
	1120	100	1.5	30.82	5.85	18.30	6.45	0.0	-2	0.09
	1125	100	2.0	30.85	5.85	18.38	6.45	0.0	-1	0.09
	1130	100	2.5	30.88	5.84	18.47	6.44	0.0	-1	0.09
↓	1135	100	3.0	30.90	5.84	18.54	6.44	0.0	-1	0.08

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW17**

Sampler(s): Scott Bessinger

FIELD CONDITIONS Cloudy

SAMPLING INFORMATION

Sample No: LHSMW17-210315 **DATE/TIME:** 3/15/21 0855 **Pump Inlet Depth:** 22.00

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/15/21 NA

Depth to Water - Initial (DTWi) (ft) Dry 16.68-26.68 ft btoc

Purge End Date/Time: 3/15/21 NA

Depth to Well Bottom (ft) 27.05 L George 07/27/2021

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 17.00 - 27.00

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 22.00

Pump Start Time: NA

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DEPTH TO WATER - DRY

APTIM

Sample Collection Log

Location ID: LHSMW17				Sample No: LHSMW17-2103315						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
			Dry well							

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW18**

Sampler(s): Scott Bassinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: LHSMW18-210315 **DATE/TIME:** 3/15/21 0904 **Pump Inlet Depth:** 22.85

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/15/21 NA

Depth to Water - Initial (DTWi) (ft) DRY

Purge End Date/Time: 3/15/21 NA

17.47-27.47 ft btoc

Depth to Well Bottom (ft) 27.90

Discharge Tube Length: NA

PID Reading: NA

L George 07/27/2021

Screen Interval (ft): 17.85-27.85

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 22.85

Pump Start Time: NA

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - DRY

APTIM

Sample Collection Log

Location ID: LHSMW18				Sample No: LHSMW18-2103 15						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
			Dry Well							

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW19**

Sampler(s): Scott Bessinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: LHSMW19-210318 **DATE/TIME:** 3/18/21 0848 **Pump Inlet Depth:** 26.00

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/18/21 0900

Depth to Water - Initial (DTWi) (ft) 25.08

Purge End Date/Time: 3/18/21 0930

19.76-29.76 ft btoc

Depth to Well Bottom (ft) ~~30.00~~

L George 07/27/2021

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 20.00 - 30.00

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 26.00

Pump Start Time: 0900

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND Depth To water - 25.08

APTIM

Sample Collection Log

Location ID: LHSMW19				Sample No: LHSMW19-210318						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/18/21	0905	100	.5	25.15	3.82	12.55	6.39	0.8	-28	0.71
	0910	100	1.0	25.24	3.90	12.93	6.74	0.0	-49	0.28
	0915	100	1.5	25.25	3.95	12.75	6.81	0.0	-57	0.09
	0920	100	2.0	25.28	3.96	12.70	6.82	0.0	-58	0.09
	0925	100	2.5	25.31	3.96	12.64	6.83	0.0	-59	0.08
↓	0930	100	3.0	25.33	3.96	12.60	6.84	0.0	-59	0.08

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW21**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: LHSMW21-210316 **DATE/TIME:** 3/16/21 0706 **Pump Inlet Depth:** 24.61

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions (chloride/nitrate/sulfate) in Water by SW9056	1 x 125 mL HPDE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/16/21 0715

Depth to Water - Initial (DTWi) (ft) 18.53

Purge End Date/Time: 3/16/21 0745

Depth to Well Bottom (ft) 29.73

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 19.61-29.61

Discharge Tube Diameter: 1/4" Immersible Layer: Y (N)

Approximate depth of pump inlet*(ft): 24.61

Pump Start Time: 0715

Ferrous Iron (Required (Y) or N) 0.64 mg/L

2ND DEPTH TO WATER - 18.53

APTIM

Sample Collection Log

Location ID: LHSMW21 Sample No: LHSMW21-210316

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/16/21	0720	100	.5	18.60	2.53	17.48	6.49	29.6	55	0.73
	0725	100	1.0	18.66	2.51	17.44	5.88	27.5	89	0.24
	0730	100	1.5	18.70	2.51	17.43	5.56	27.1	112	0.08
	0735	100	2.0	18.73	2.50	17.42	5.55	26.7	113	0.08
	0740	100	2.5	18.75	2.50	17.41	5.54	26.5	114	0.07
↓	0745	100	3.0	18.77	2.50	17.41	5.54	26.3	115	0.07

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW22**

Sampler(s): Scott Baesinger

FIELD CONDITIONS Foggy / cool

SAMPLING INFORMATION

Sample No: LHSMW22-210315 **DATE/TIME:** 3/15/21 0840 **Pump Inlet Depth:** 23.94

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/15/21 NA

Depth to Water - Initial (DTWi) (ft) Dry

Purge End Date/Time: 3/15/21 NA

Depth to Well Bottom (ft) ~~28.85~~ 18.69-28.69 ft btoc

L George 07/27/2021

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 18.94 - 28.94

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 23.94

Pump Start Time: NA

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - DRY

APTIM

Sample Collection Log

Location ID: LHSMW22				Sample No: LHSMW22-2103215						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
			DRY		WELL					

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW23R**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: LHSMW23R-21038 **DATE/TIME:** 3/18/21 0708 **Pump Inlet Depth:** ~~24.40~~ 37.00

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/18/21 0720

Depth to Water - Initial (DTWi) (ft) 35.95

Purge End Date/Time: 3/18/21 0750

23.09-43.09 ft btoc

Depth to Well Bottom (ft) 43.22

Discharge Tube Length: NA

PID Reading: NA

L George 07/27/2021

Screen Interval (ft): ~~18.40-40.40~~ 21.40-43.40

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~24.40~~ 37.00 Pump Start Time: 0720

Ferrous Iron (Required Y or (N) _____ mg/L

2nd Depth to water - 35.95

APTIM

Sample Collection Log

Location ID: LHSMW23R		Sample No: LHSMW23R-21031818								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/18/21	0725	100	.5	36.02	4.82	15.28	5.63	1.9	[redacted]30	0.77
	0730	100	1.0	36.08	4.74	15.61	5.70	1.0	17	0.29
	0735	100	1.5	36.12	4.66	15.85	5.68	0.5	10	0.12
	0740	100	2.0	36.15	4.66	15.92	5.67	0.0	9	0.12
	0745	100	2.5	36.17	4.66	15.98	5.67	0.0	9	0.11
	0750	100	3.0	36.19	4.67	16.01	5.66	0.0	9	0.11

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW25**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: LHSMW25-210315 **DATE/TIME:** 3/15/21 1141 **Pump Inlet Depth:** 37.00

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4"

Purge Start Date/Time: 3/15/21 1150

Depth to Water - Initial (DTWi) (ft) 30.82

22.1-42.1 ft btoc

Purge End Date/Time: 3/15/21 1220

L George 07/27/2021

Depth to Well Bottom (ft) 42.65

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 32.00 - 42.00

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 37.00

Pump Start Time: 1150

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - 30.82

APTIM

Sample Collection Log

Location ID: LHSMW25				Sample No: LHSMW25-210315						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/15/21	1155	100	.5	30.90	2.38	18.94	7.30	9.7	-36	0.80
↓	1200	100	1.0	30.96	2.33	18.89	6.55	8.9	-52	0.31
	1205	100	1.5	31.00	2.30	18.87	6.38	8.4	-56	0.11
	1210	100	2.0	31.02	2.29	18.85	6.37	8.0	-57	0.11
	1215	100	2.5	31.04	2.29	18.83	6.37	7.5	-58	0.10
↓	1220	100	3.0	31.05	2.29	18.81	6.36	7.2	-58	0.10

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

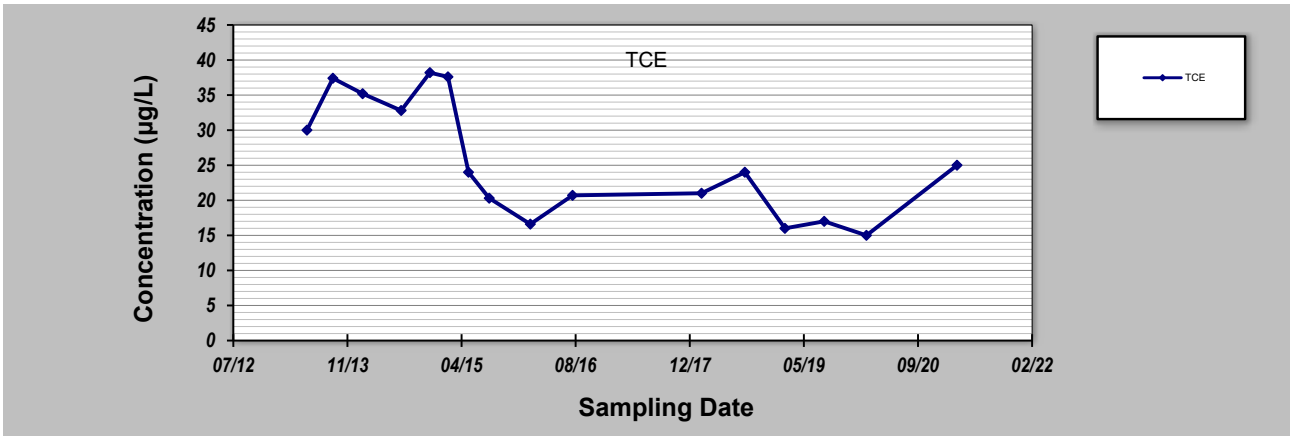
Appendix E

Mann-Kendall Trend Analysis

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	6-Aug-21	Job ID:	501032
Facility Name:	LHAAP-46	Constituent:	46WW02
Conducted By:	William Foss	Concentration Units:	µg/L
Sampling Point ID:	TCE		

Sampling Event	Sampling Date	46WW02 CONCENTRATION (µg/L)
1	5/28/2013	30.0
2	9/19/2013	37.4
3	1/27/2014	35.2
4	7/15/2014	32.8
5	11/18/2014	38.2
6	2/5/2015	37.6
7	5/6/2015	24.0
8	8/5/2015	20.3
9	2/1/2016	16.6
10	8/4/2016	20.7
11	2/20/2018	21.0
12	8/29/2018	24.0
13	2/21/2019	16.0
14	8/12/2019	17.0
15	2/13/2020	15.0
16	3/16/2021	25.0
17		
18		
19		
20		
Coefficient of Variation:		0.32
Mann-Kendall Statistic (S):		-57
Confidence Factor:		99.5%
Concentration Trend:		Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

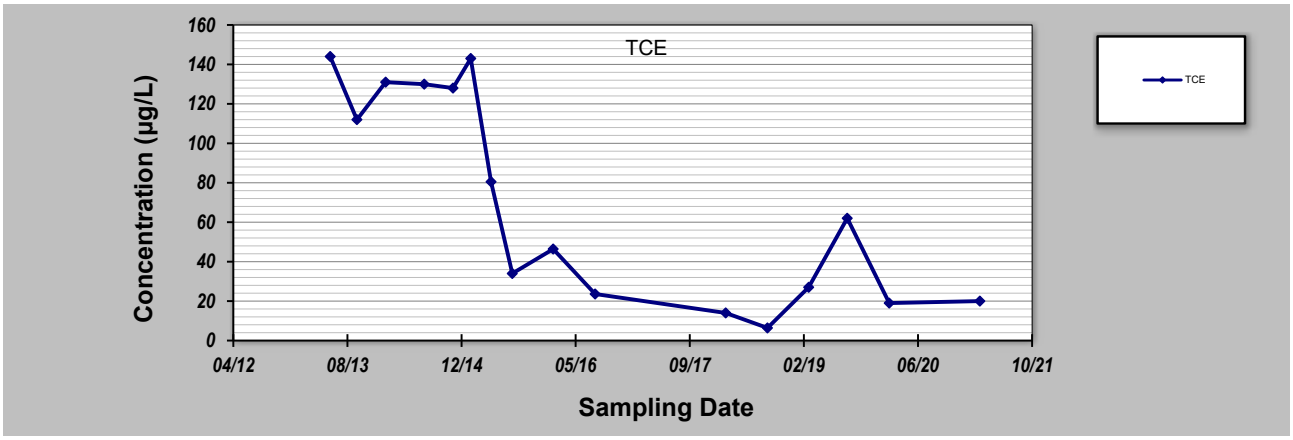
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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	6-Aug-21	Job ID:	501032
Facility Name:	LHAAP-46	Constituent:	46WW05
Conducted By:	William Foss	Concentration Units:	µg/L
Sampling Point ID:	TCE		

Sampling Event	Sampling Date	46WW05 CONCENTRATION (µg/L)
1	5/30/2013	144
2	9/24/2013	112
3	1/28/2014	131
4	7/16/2014	130
5	11/19/2014	128
6	2/5/2015	143
7	5/5/2015	80.5
8	8/6/2015	34
9	2/1/2016	46.4
10	8/3/2016	23.6
11	2/26/2018	14
12	8/28/2018	6.4
13	2/25/2019	27
14	8/13/2019	62
15	2/13/2020	19
16	3/16/2021	20
17		
18		
19		
20		
Coefficient of Variation:		0.75
Mann-Kendall Statistic (S):		-76
Confidence Factor:		>99.9%
Concentration Trend:		Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

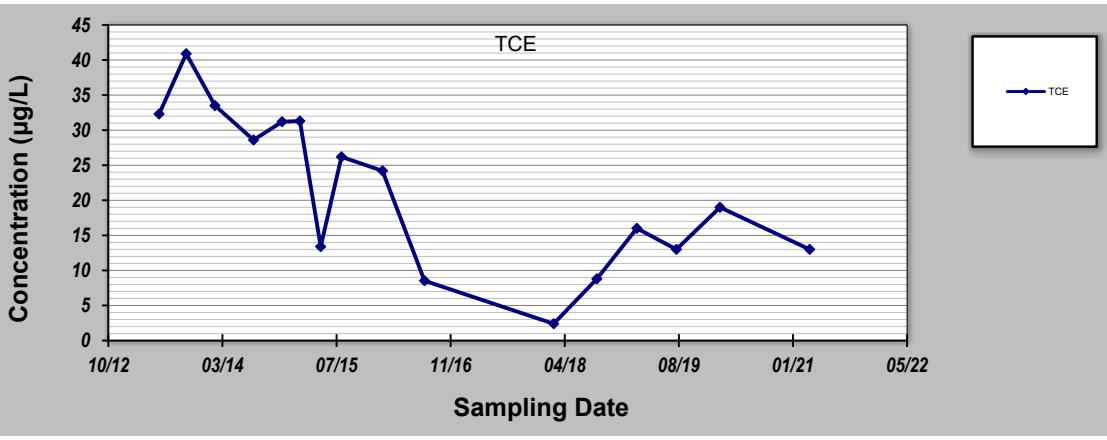
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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	6-Aug-21	Job ID:	501032
Facility Name:	LHAAP-46	Constituent:	LHSMW19
Conducted By:	William Foss	Concentration Units:	µg/L
Sampling Point ID:	TCE		

Sampling Event	Sampling Date	LHSMW19 CONCENTRATION (µg/L)
1	5/28/2013	32.3
2	9/24/2013	40.9
3	1/28/2014	33.5
4	7/16/2014	28.6
5	11/18/2014	31.2
6	2/4/2015	31.3
7	5/6/2015	13.4
8	8/5/2015	26.2
9	2/1/2016	24.2
10	8/3/2016	8.53
11	2/20/2018	2.4
12	8/28/2018	8.8
13	2/20/2019	16
14	8/12/2019	13
15	2/19/2020	19
16	3/18/2021	13
17		
18		
19		
20		
Coefficient of Variation:		0.52
Mann-Kendall Statistic (S):		-69
Confidence Factor:		99.9%
Concentration Trend:		Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

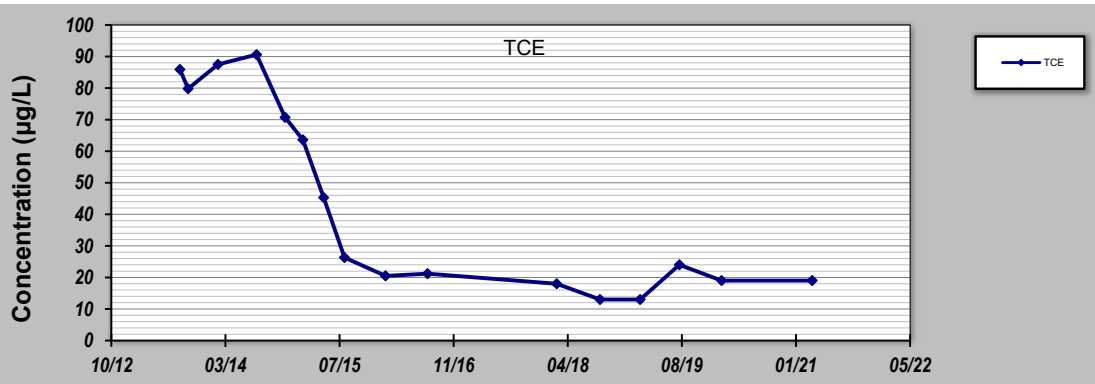
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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	6-Aug-21	Job ID:	501032
Facility Name:	LHAAP-46	Constituent:	46WW11
Conducted By:	William Foss	Concentration Units:	µg/L
Sampling Point ID:	TCE		

Sampling Event	Sampling Date	46WW11 CONCENTRATION (µg/L)
1	8/14/2013	85.9
2	9/19/2013	79.8
3	1/28/2014	87.5
4	7/16/2014	90.6
5	11/18/2014	70.7
6	2/4/2015	63.6
7	5/6/2015	45.3
8	8/5/2015	26.3
9	2/1/2016	20.5
10	8/3/2016	21.2
11	2/20/2018	18
12	8/29/2018	13
13	2/21/2019	13
14	8/12/2019	24
15	2/13/2020	19
16	3/16/2021	19
17		
18		
19		
20		
Coefficient of Variation:		0.70
Mann-Kendall Statistic (S):		-84
Confidence Factor:		>99.9%
Concentration Trend:		Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

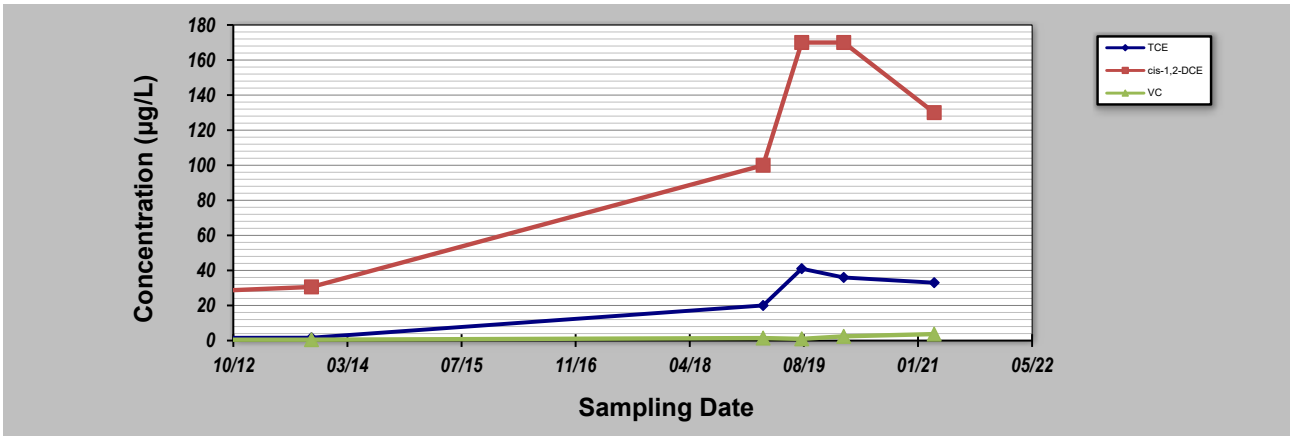
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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	6-Aug-21	Job ID:	501032
Facility Name:	LHAAP-46	Constituent:	LHSMW21
Conducted By:	William Foss	Concentration Units:	µg/L

Sampling Point ID:	TCE	cis-1,2-DCE	VC				
Sampling Event	Sampling Date	LHSMW21 CONCENTRATION (µg/L)						
1	2/7/1996	0.5	0.5	0.5				
2	8/15/1996	0.125	0.1	0.12				
3	5/15/1998	0.5	0.5	0.5				
4	9/25/2013	1.64	30.6	0.5				
5	2/25/2019	20	100	1.44				
6	8/13/2019	41	170	0.97				
7	2/13/2020	36	170	2.4				
8	3/16/2021	33	130	3.7				
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		1.08	1.01	0.96				
Mann-Kendall Statistic (S):		19	20	21				
Confidence Factor:		98.9%	99.3%	99.6%				
Concentration Trend:		Increasing	Increasing	Increasing				



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

DISCLAIMER: *The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.*

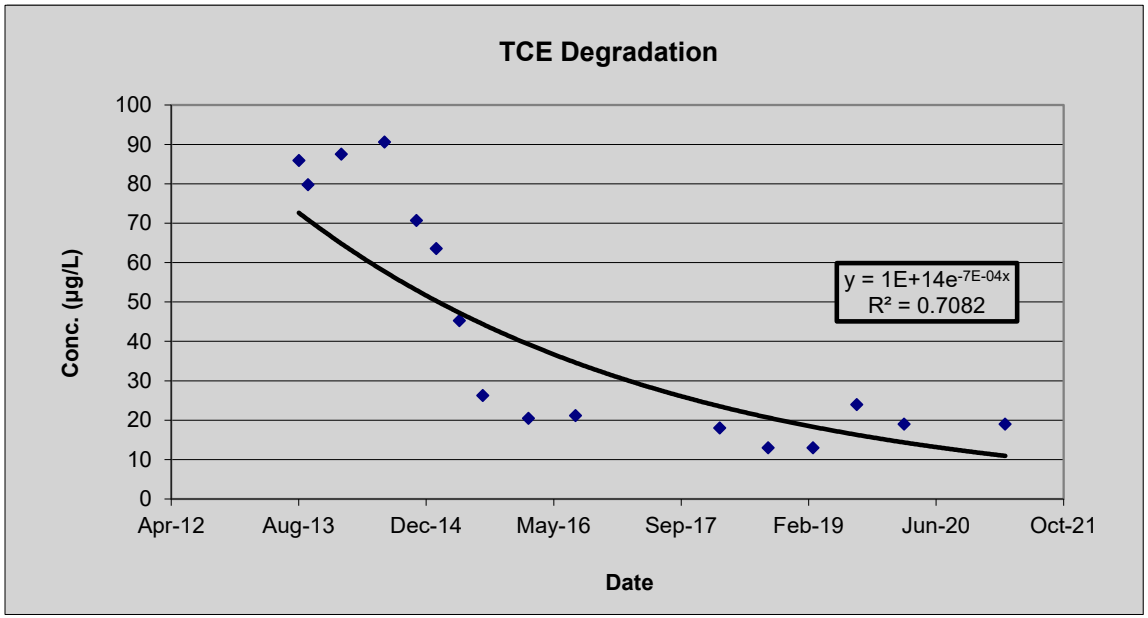
GSI Environmental Inc., www.gsi-net.com

Appendix F

Predictive Modeling

Figure F-1
Time-Dependent Attenuation Rate Constant and Estimated Cleanup Time
46WW11

Date	TCE (µg/L)
8/14/2013	85.9
9/19/2013	79.8
1/28/2014	87.5
7/16/2014	90.6
11/18/2014	70.7
2/4/2015	63.6
5/6/2015	45.3
8/5/2015	26.3
2/1/2016	20.5
8/3/2016	21.2
2/20/2018	18
8/29/2018	13
2/21/2019	13
8/12/2019	24
2/13/2020	19
3/16/2021	19



Chemical: TCE Well ID	Attenuation Rate Constant (day^{-1})	Attenuation Half-life (days)	Attenuation Half-life (years)	Current Conc. (µg/L)	Target Concentration for TCE (µg/L)	Estimated Cleanup Time (years)
46WW11	0.0008	866.4	2.4	19	5	4.6

Notes:

The estimated cleanup time was calculated as the time it would take the most recent detected TCE concentration to reach the MCL using the site-specific attenuation rate, and assuming first order degradation kinetics.

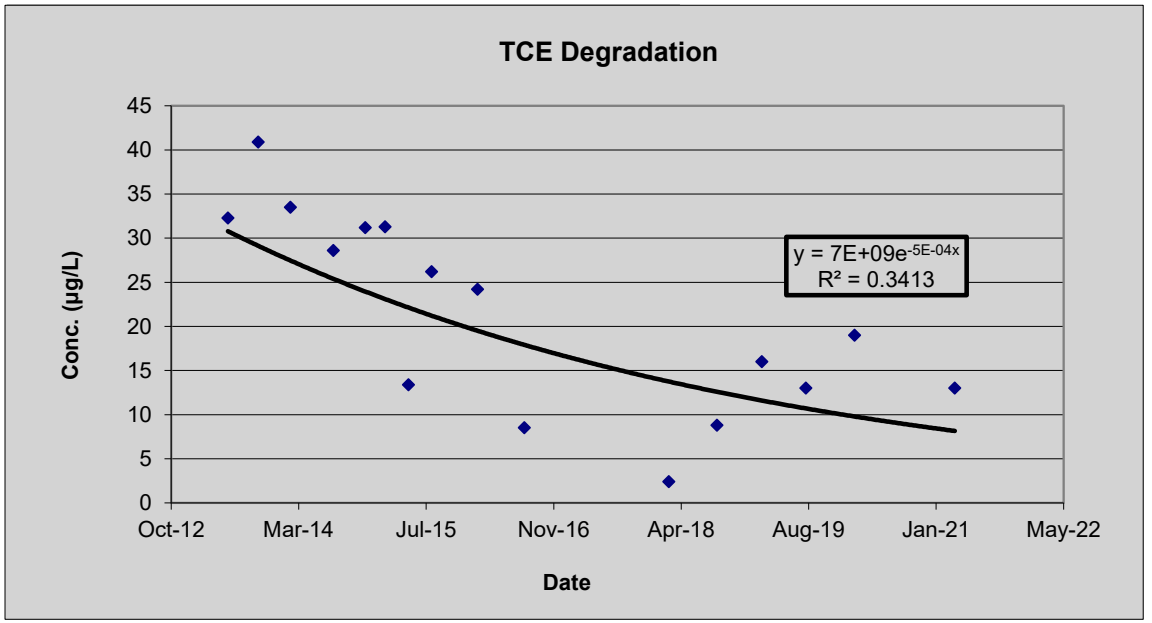
µg/L - micrograms per liter

MCL - maximum contaminant level

TCE - trichloroethene

Figure F-2
Time-Dependent Attenuation Rate Constant and Estimated Cleanup Time
LHSMW19

Date	TCE (µg/L)
5/28/2013	32.3
9/24/2013	40.9
1/28/2014	33.5
7/16/2014	28.6
11/18/2014	31.2
2/4/2015	31.3
5/6/2015	13.4
8/5/2015	26.2
2/1/2016	24.2
8/3/2016	8.53
2/20/2018	2.4
8/28/2018	8.8
2/20/2019	16
8/12/2019	13
2/19/2020	19
3/18/2021	13



Chemical: TCE Well ID	Attenuation Rate Constant (day^{-1})	Attenuation Half-life (days)	Attenuation Half-life (years)	Current Conc. (µg/L)	Target Concentration for TCE (µg/L)	Estimated Cleanup Time (years)
LHSMW19	0.0006	1155.2	3.2	13	5	4.4

Notes:

The estimated cleanup time was calculated as the time it would take the most recent detected TCE concentration to reach the MCL using the site-specific attenuation rate, and assuming first order degradation kinetics.

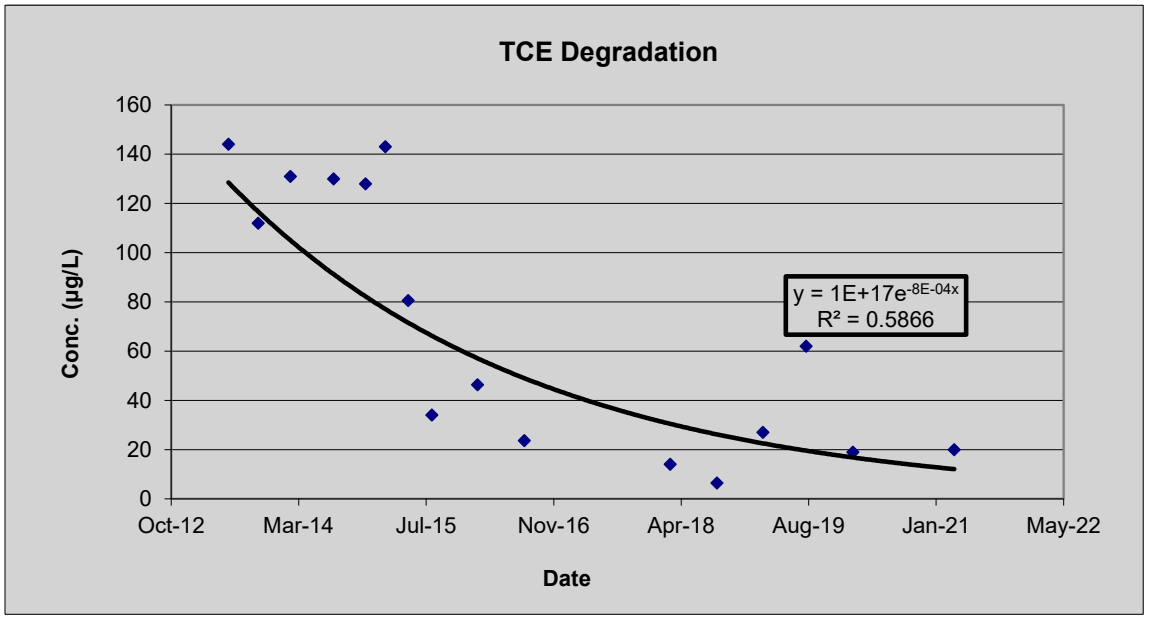
µg/L - micrograms per liter

MCL - maximum contaminant level

TCE - trichloroethene

Figure F-3
Time-Dependent Attenuation Rate Constant and Estimated Cleanup Time
46WW05

Date	TCE (µg/L)
5/30/2013	144
9/24/2013	112
1/28/2014	131
7/16/2014	130
11/19/2014	128
2/5/2015	143
5/5/2015	80.5
8/6/2015	34
2/1/2016	46.4
8/3/2016	23.6
2/26/2018	14
8/28/2018	6.4
2/25/2019	27
8/13/2019	62
2/13/2020	19
3/16/2021	20



Chemical: TCE Well ID	Attenuation Rate Constant (day^{-1})	Attenuation Half-life (days)	Attenuation Half-life (years)	Current Conc. (µg/L)	Target Concentration for TCE (µg/L)	Estimated Cleanup Time (years)
46WW05	0.0009	770.2	2.1	20	5	4.2

Notes:

The estimated cleanup time was calculated as the time it would take the most recent detected TCE concentration to reach the MCL using the site-specific attenuation rate, and assuming first order degradation kinetics.

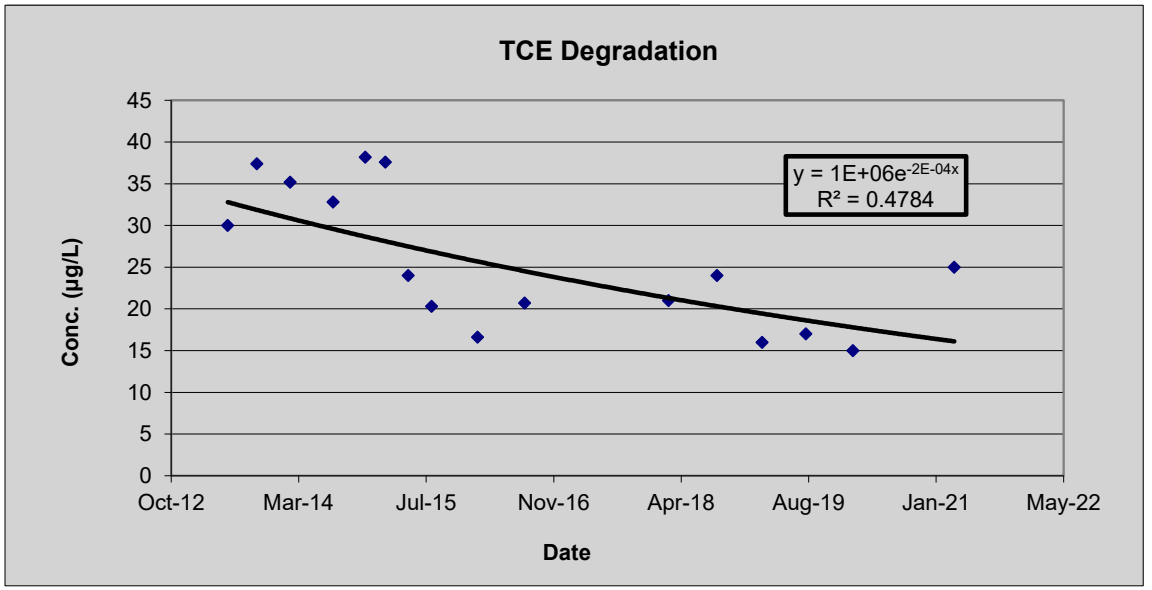
µg/L - micrograms per liter

MCL - maximum contaminant level

TCE - trichloroethene

Figure F-4
Time-Dependent Attenuation Rate Constant and Estimated Cleanup Time
46WW02

Date	TCE (µg/L)
5/28/2013	30
9/19/2013	37.4
1/27/2014	35.2
7/15/2014	32.8
11/18/2014	38.2
2/5/2015	37.6
5/6/2015	24
8/5/2015	20.3
2/1/2016	16.6
8/4/2016	20.7
2/20/2018	21
8/29/2018	24
2/21/2019	16
8/12/2019	17
2/13/2020	15
3/16/2021	25



Chemical: TCE Well ID	Attenuation Rate Constant (day^{-1})	Attenuation Half-life (days)	Attenuation Half-life (years)	Current Conc. (µg/L)	Concentration for TCE (µg/L)	Cleanup Time (years)
46WW02	0.0003	2310.5	6.3	25	5	14.7

Notes:
the site-specific attenuation rate, and assuming first order degradation kinetics.
µg/L - micrograms per liter

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WorkOrder: HS21030874

LHAAP 46 February 2021

Aptim Environmental & Infrastucture, Inc.

Vicki Graves
2500 City West Blvd., Suite 1700
Houston TX 77042

08-Apr-2021

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Certifications

Sample Tracking Record

SampleReceiptCheckList

COC

HS21030874 ALS Simi Valley CA Report P2101408 Tier II

HS21030874 8260_W_DOD Raw Data

HS21030874 Wet Chem Raw Data (TOC_W 5310B)

HS21030874 Wet Chem Raw Data (9056_anions_W)

HS21030874 ALS Simi Valley CA Report P2101408 Tier IV

LABORATORY REPORT

CASE NARRATIVE

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

DETAIL SUMMARY

CHAIN OF CUSTODY

SAMPLE ACCEPTANCE CHECK FORM

RSK 175 CO2

RSK 175

RAW DATA RSK175 CO2

RAW DATA RSK175 GASES

HS21030874 LHAAP 46 February 2021 Final II

ALS WO# HS21030874

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April 06, 2021

Vicki Graves
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS21030874**

Laboratory Results for: **LHAAP 46 February 2021**

Dear Vicki Graves ,

ALS Environmental received 13 sample(s) on Mar 17, 2021 for the analysis presented in the following report.

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

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

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

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Work Order: HS21030874

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS21030874-01	46WW06-210315	Groundwater		15-Mar-2021 10:10	17-Mar-2021 10:10	☐
HS21030874-02	46WW08-210315	Groundwater		15-Mar-2021 10:50	17-Mar-2021 10:10	☐
HS21030874-03	46WW17-210315	Groundwater		15-Mar-2021 11:35	17-Mar-2021 10:10	☐
HS21030874-04	LHSMW25-210315	Groundwater		15-Mar-2021 12:20	17-Mar-2021 10:10	☐
HS21030874-05	46WW14-210315	Groundwater		15-Mar-2021 13:10	17-Mar-2021 10:10	☐
HS21030874-06	LHSMW21-210316	Groundwater		16-Mar-2021 07:45	17-Mar-2021 10:10	☐
HS21030874-07	46WW05-210316	Groundwater		16-Mar-2021 08:35	17-Mar-2021 10:10	☐
HS21030874-08	46WW16-210316	Groundwater		16-Mar-2021 09:30	17-Mar-2021 10:10	☐
HS21030874-09	46WW09-210316	Groundwater		16-Mar-2021 10:30	17-Mar-2021 10:10	☐
HS21030874-10	46WW11-210316	Groundwater		16-Mar-2021 11:20	17-Mar-2021 10:10	☐
HS21030874-11	46WW11-210316-FD	Groundwater		16-Mar-2021 11:20	17-Mar-2021 10:10	☐
HS21030874-12	46WW02-210316	Groundwater		16-Mar-2021 12:15	17-Mar-2021 10:10	☐
HS21030874-13	Trip Blank- 210316	Water		16-Mar-2021 00:00	17-Mar-2021 10:10	☐

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP 46 February 2021
Work Order: HS21030874

Work Order Comments

- Sample vials for RSK 175 and Dissolved CO2 on sample LHSMW21-210316 were received at the Houston lab, vials went missing during the transit from Houston to Simi Valley lab. Therefore analysis for MEE and Dissolved CO2 for sample LHSMW21-210316 is not reported in this report. Client was informed on 04/06/2021.

Work Order Comments

- The analysis for Methane, Methene, Ethane and CO2 by RSK175 was subcontracted to ALS Simi Valley, CA. Final report attached.

GCMS Volatiles by Method SW8260

Batch ID: R380287

Sample ID: 46WW16-210316(HS21030874-08MS)

- The recovery of the Matrix Spike (MS) and the Matrix Spike Duplicate (MSD) associated to this/these analyte/analytes was/were outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MS/MSD MSD may be due to sample matrix interference. cis-1,2-Dichloroethene

WetChemistry by Method SM5310B

Batch ID: R380512

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

WetChemistry by Method SW9056

Batch ID: R380480

Sample ID: 46WW05-210316 (HS21030874-07)

- Sample ran at 5X due to high concentration of Sulfate

Sample ID: 46WW09-210316 (HS21030874-09)

- Sample ran at 5X due to high concentration of Sulfate

Sample ID: 46WW16-210316 (HS21030874-08)

- Sample ran at 2X due to high concentration of Sulfate

Sample ID: 46WW16-210316 (HS21030874-08MS)

- The MS and/or MSD recovery was outside of the control limits; however, the result in the parent sample is greater than 4x the spike amount. (Chloride)

Batch ID: R380595

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: 46WW06-210315
Collection Date: 15-Mar-2021 10:10

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 02:38
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 02:38
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 02:38
Surr: 1,2-Dichloroethane-d4	*81.8*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 02:38*
Surr: 4-Bromofluorobenzene	*88.4*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 02:38*
Surr: Dibromofluoromethane	*86.8*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 02:38*
Surr: Toluene-d8	*98.0*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 02:38*

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: 46WW08-210315
Collection Date: 15-Mar-2021 10:50

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 02:59
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 02:59
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 02:59
Surr: 1,2-Dichloroethane-d4	*81.1*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 02:59*
Surr: 4-Bromofluorobenzene	*85.0*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 02:59*
Surr: Dibromofluoromethane	*84.0*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 02:59*
Surr: Toluene-d8	*99.5*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 02:59*

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: 46WW17-210315
Collection Date: 15-Mar-2021 11:35

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 03:20
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 03:20
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 03:20
Surr: 1,2-Dichloroethane-d4	*84.5*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 03:20*
Surr: 4-Bromofluorobenzene	*87.4*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 03:20*
Surr: Dibromofluoromethane	*86.9*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 03:20*
Surr: Toluene-d8	*98.2*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 03:20*

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: LHSMW25-210315
Collection Date: 15-Mar-2021 12:20

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 03:41
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 03:41
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 03:41
Surr: 1,2-Dichloroethane-d4	*81.3*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 03:41*
Surr: 4-Bromofluorobenzene	*86.4*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 03:41*
Surr: Dibromofluoromethane	*86.5*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 03:41*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 03:41*

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: 46WW14-210315
Collection Date: 15-Mar-2021 13:10

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 04:02
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 04:02
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 04:02
Surr: 1,2-Dichloroethane-d4	*82.9*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 04:02*
Surr: 4-Bromofluorobenzene	*86.2*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 04:02*
Surr: Dibromofluoromethane	*85.8*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 04:02*
Surr: Toluene-d8	*99.3*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 04:02*

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: LHSMW21-210316
Collection Date: 16-Mar-2021 07:45

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
cis-1,2-Dichloroethene	**130**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 01:14
Trichloroethene	**33**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 01:14
Vinyl chloride	**3.7**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 01:14
Surr: 1,2-Dichloroethane-d4	*85.9*		**0**	*81-118*		*%REC*	*1*	*25-Mar-2021 01:14*
Surr: 4-Bromofluorobenzene	*86.1*		**0**	*85-114*		*%REC*	*1*	*25-Mar-2021 01:14*
Surr: Dibromofluoromethane	*86.6*		**0**	*80-119*		*%REC*	*1*	*25-Mar-2021 01:14*
Surr: Toluene-d8	*97.5*		**0**	*89-112*		*%REC*	*1*	*25-Mar-2021 01:14*
TOTAL ORGANIC CARBON - SM5310B		**Method:SM5310B**						Analyst: MZD
Organic Carbon, Total	**1.76**		**0.500**	**0.500**	**1.00**	**mg/L**	1	26-Mar-2021 20:15
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**227**		**2.00**	**5.00**	**5.00**	**mg/L**	10	29-Mar-2021 18:46
Nitrogen, Nitrate (As N)	**0.292**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	17-Mar-2021 16:07
Sulfate	**693**		**2.00**	**5.00**	**5.00**	**mg/L**	10	29-Mar-2021 18:46

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: 46WW05-210316
Collection Date: 16-Mar-2021 08:35

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
cis-1,2-Dichloroethene	**1.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 04:23
Trichloroethene	**20**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 04:23
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 04:23
Surr: 1,2-Dichloroethane-d4	*82.9*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 04:23*
Surr: 4-Bromofluorobenzene	*87.9*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 04:23*
Surr: Dibromofluoromethane	*85.6*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 04:23*
Surr: Toluene-d8	*98.0*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 04:23*
TOTAL ORGANIC CARBON - SM5310B		**Method:SM5310B**						Analyst: MZD
Organic Carbon, Total	**10.4**		**0.500**	**0.500**	**1.00**	**mg/L**	1	26-Mar-2021 20:32
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**172**		**1.00**	**2.50**	**2.50**	**mg/L**	5	17-Mar-2021 16:26
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	17-Mar-2021 16:26
Sulfate	**4,080**		**10.0**	**25.0**	**25.0**	**mg/L**	50	29-Mar-2021 19:05
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	05-Apr-2021 17:17

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: 46WW16-210316
Collection Date: 16-Mar-2021 09:30

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 00:53
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 00:53
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 00:53
Surr: 1,2-Dichloroethane-d4	*82.7*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 00:53*
Surr: 4-Bromofluorobenzene	*86.4*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 00:53*
Surr: Dibromofluoromethane	*85.0*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 00:53*
Surr: Toluene-d8	*100.0*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 00:53*
TOTAL ORGANIC CARBON - SM5310B		**Method:SM5310B**						Analyst: MZD
Organic Carbon, Total	**2.90**		**0.500**	**0.500**	**1.00**	**mg/L**	1	26-Mar-2021 20:48
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**277**		**4.00**	**10.0**	**10.0**	**mg/L**	20	29-Mar-2021 20:00
Nitrogen, Nitrate (As N)	0.200	U	0.0600	0.200	0.200	mg/L	2	17-Mar-2021 16:44
Sulfate	**609**		**4.00**	**10.0**	**10.0**	**mg/L**	20	29-Mar-2021 20:00
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	05-Apr-2021 17:17

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: 46WW09-210316
Collection Date: 16-Mar-2021 10:30

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 04:44
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 04:44
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 04:44
Surr: 1,2-Dichloroethane-d4	*81.4*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 04:44*
Surr: 4-Bromofluorobenzene	*89.5*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 04:44*
Surr: Dibromofluoromethane	*85.8*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 04:44*
Surr: Toluene-d8	*99.4*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 04:44*
TOTAL ORGANIC CARBON - SM5310B		**Method:SM5310B**						Analyst: MZD
Organic Carbon, Total	**4.71**		**0.500**	**0.500**	**1.00**	**mg/L**	1	26-Mar-2021 21:21
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**463**		**10.0**	**25.0**	**25.0**	**mg/L**	50	29-Mar-2021 20:18
Nitrogen, Nitrate (As N)	**0.603**		**0.150**	**0.500**	**0.500**	**mg/L**	5	17-Mar-2021 17:39
Sulfate	**2,330**		**10.0**	**25.0**	**25.0**	**mg/L**	50	29-Mar-2021 20:18
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	05-Apr-2021 17:17

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: 46WW11-210316
Collection Date: 16-Mar-2021 11:20

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 05:05
Trichloroethene	**19**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 05:05
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 05:05
Surr: 1,2-Dichloroethane-d4	*84.1*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 05:05*
Surr: 4-Bromofluorobenzene	*87.1*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 05:05*
Surr: Dibromofluoromethane	*88.7*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 05:05*
Surr: Toluene-d8	*97.5*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 05:05*
TOTAL ORGANIC CARBON - SM5310B		**Method:SM5310B**						Analyst: MZD
Organic Carbon, Total	**1.91**		**0.500**	**0.500**	**1.00**	**mg/L**	1	26-Mar-2021 21:36
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**114**		**2.00**	**5.00**	**5.00**	**mg/L**	10	29-Mar-2021 20:37
Nitrogen, Nitrate (As N)	**0.126**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	17-Mar-2021 17:58
Sulfate	**335**		**2.00**	**5.00**	**5.00**	**mg/L**	10	29-Mar-2021 20:37
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	05-Apr-2021 17:17

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: 46WW11-210316-FD
Collection Date: 16-Mar-2021 11:20

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-11
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 05:26
Trichloroethene	**19**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 05:26
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 05:26
Surr: 1,2-Dichloroethane-d4	*83.6*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 05:26*
Surr: 4-Bromofluorobenzene	*87.9*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 05:26*
Surr: Dibromofluoromethane	*86.1*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 05:26*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 05:26*
TOTAL ORGANIC CARBON - SM5310B		**Method:SM5310B**						Analyst: MZD
Organic Carbon, Total	**1.73**		**0.500**	**0.500**	**1.00**	**mg/L**	1	26-Mar-2021 21:52
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**111**		**2.00**	**5.00**	**5.00**	**mg/L**	10	29-Mar-2021 20:55
Nitrogen, Nitrate (As N)	**0.115**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	17-Mar-2021 18:16
Sulfate	**331**		**2.00**	**5.00**	**5.00**	**mg/L**	10	29-Mar-2021 20:55
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	05-Apr-2021 17:17

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: 46WW02-210316
Collection Date: 16-Mar-2021 12:15

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-12
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
cis-1,2-Dichloroethene	**1.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 05:48
Trichloroethene	**25**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 05:48
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 05:48
Surr: 1,2-Dichloroethane-d4	*84.1*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 05:48*
Surr: 4-Bromofluorobenzene	*92.3*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 05:48*
Surr: Dibromofluoromethane	*86.7*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 05:48*
Surr: Toluene-d8	*100.0*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 05:48*
TOTAL ORGANIC CARBON - SM5310B		**Method:SM5310B**						Analyst: MZD
Organic Carbon, Total	**10.4**		**0.500**	**0.500**	**1.00**	**mg/L**	1	26-Mar-2021 22:38
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**31.4**		**0.200**	**0.500**	**0.500**	**mg/L**	1	17-Mar-2021 19:12
Nitrogen, Nitrate (As N)	**0.205**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	17-Mar-2021 19:12
Sulfate	**170**		**2.00**	**5.00**	**5.00**	**mg/L**	10	29-Mar-2021 21:13
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	05-Apr-2021 17:17

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Sample ID: Trip Blank- 210316
Collection Date: 16-Mar-2021 00:00

ANALYTICAL REPORT
WorkOrder:HS21030874
Lab ID:HS21030874-13
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 00:10
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 00:10
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 00:10
Surr: 1,2-Dichloroethane-d4	*85.1*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 00:10*
Surr: 4-Bromofluorobenzene	*89.0*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 00:10*
Surr: Dibromofluoromethane	*86.5*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 00:10*
Surr: Toluene-d8	*99.4*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 00:10*

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

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
WorkOrder: HS21030874

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R380287 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS21030874-13	Trip Blank- 210316	16 Mar 2021 00:00			25 Mar 2021 00:10	1
Batch ID: R380287 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS21030874-01	46WW06-210315	15 Mar 2021 10:10			25 Mar 2021 02:38	1
HS21030874-02	46WW08-210315	15 Mar 2021 10:50			25 Mar 2021 02:59	1
HS21030874-03	46WW17-210315	15 Mar 2021 11:35			25 Mar 2021 03:20	1
HS21030874-04	LHSMW25-210315	15 Mar 2021 12:20			25 Mar 2021 03:41	1
HS21030874-05	46WW14-210315	15 Mar 2021 13:10			25 Mar 2021 04:02	1
HS21030874-06	LHSMW21-210316	16 Mar 2021 07:45			25 Mar 2021 01:14	1
HS21030874-07	46WW05-210316	16 Mar 2021 08:35			25 Mar 2021 04:23	1
HS21030874-08	46WW16-210316	16 Mar 2021 09:30			25 Mar 2021 00:53	1
HS21030874-09	46WW09-210316	16 Mar 2021 10:30			25 Mar 2021 04:44	1
HS21030874-10	46WW11-210316	16 Mar 2021 11:20			25 Mar 2021 05:05	1
HS21030874-11	46WW11-210316-FD	16 Mar 2021 11:20			25 Mar 2021 05:26	1
HS21030874-12	46WW02-210316	16 Mar 2021 12:15			25 Mar 2021 05:48	1
Batch ID: R380480 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS21030874-06	LHSMW21-210316	16 Mar 2021 07:45			17 Mar 2021 16:07	1
HS21030874-07	46WW05-210316	16 Mar 2021 08:35			17 Mar 2021 16:26	5
HS21030874-08	46WW16-210316	16 Mar 2021 09:30			17 Mar 2021 16:44	2
HS21030874-09	46WW09-210316	16 Mar 2021 10:30			17 Mar 2021 17:39	5
HS21030874-10	46WW11-210316	16 Mar 2021 11:20			17 Mar 2021 17:58	1
HS21030874-11	46WW11-210316-FD	16 Mar 2021 11:20			17 Mar 2021 18:16	1
HS21030874-12	46WW02-210316	16 Mar 2021 12:15			17 Mar 2021 19:12	1
Batch ID: R380512 (0)	**Test Name :** TOTAL ORGANIC CARBON - SM5310B				**Matrix:** Groundwater	
HS21030874-06	LHSMW21-210316	16 Mar 2021 07:45			26 Mar 2021 20:15	1
HS21030874-07	46WW05-210316	16 Mar 2021 08:35			26 Mar 2021 20:32	1
HS21030874-08	46WW16-210316	16 Mar 2021 09:30			26 Mar 2021 20:48	1
HS21030874-09	46WW09-210316	16 Mar 2021 10:30			26 Mar 2021 21:21	1
HS21030874-10	46WW11-210316	16 Mar 2021 11:20			26 Mar 2021 21:36	1
HS21030874-11	46WW11-210316-FD	16 Mar 2021 11:20			26 Mar 2021 21:52	1
HS21030874-12	46WW02-210316	16 Mar 2021 12:15			26 Mar 2021 22:38	1

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
WorkOrder: HS21030874

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R380595 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS21030874-06	LHSMW21-210316	16 Mar 2021 07:45			29 Mar 2021 18:46	10
HS21030874-07	46WW05-210316	16 Mar 2021 08:35			29 Mar 2021 19:05	50
HS21030874-08	46WW16-210316	16 Mar 2021 09:30			29 Mar 2021 20:00	20
HS21030874-09	46WW09-210316	16 Mar 2021 10:30			29 Mar 2021 20:18	50
HS21030874-10	46WW11-210316	16 Mar 2021 11:20			29 Mar 2021 20:37	10
HS21030874-11	46WW11-210316-FD	16 Mar 2021 11:20			29 Mar 2021 20:55	10
HS21030874-12	46WW02-210316	16 Mar 2021 12:15			29 Mar 2021 21:13	10
Batch ID: R380971 (0)	**Test Name :** SUBCONTRACT ANALYSIS - RSK				**Matrix:** Groundwater	
HS21030874-07	46WW05-210316	16 Mar 2021 08:35			05 Apr 2021 17:17	1
HS21030874-08	46WW16-210316	16 Mar 2021 09:30			05 Apr 2021 17:17	1
HS21030874-09	46WW09-210316	16 Mar 2021 10:30			05 Apr 2021 17:17	1
HS21030874-10	46WW11-210316	16 Mar 2021 11:20			05 Apr 2021 17:17	1
HS21030874-11	46WW11-210316-FD	16 Mar 2021 11:20			05 Apr 2021 17:17	1
HS21030874-12	46WW02-210316	16 Mar 2021 12:15			05 Apr 2021 17:17	1

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
WorkOrder: HS21030874

QC BATCH REPORT

Batch ID: R380287 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-210324** Units: **ug/L** Analysis Date: **24-Mar-2021 23:49**
Client ID: Run ID: **VOA6_380287** SeqNo: **6010140** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*41.61*	*1.0*	*50*	*0*	*83.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*43.01*	*1.0*	*50*	*0*	*86.0*	*85 - 114*				
Surr: Dibromofluoromethane	*41.63*	*1.0*	*50*	*0*	*83.3*	*80 - 119*				
Surr: Toluene-d8	*49.55*	*1.0*	*50*	*0*	*99.1*	*89 - 112*				

LCS Sample ID: **VLCSW-210324** Units: **ug/L** Analysis Date: **24-Mar-2021 23:07**
Client ID: Run ID: **VOA6_380287** SeqNo: **6010139** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	17.03	1.0	20	0	85.1	78 - 123				
Trichloroethene	18.97	1.0	20	0	94.9	79 - 123				
Vinyl chloride	20.8	1.0	20	0	104	58 - 137				
Surr: 1,2-Dichloroethane-d4	*46.94*	*1.0*	*50*	*0*	*93.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.68*	*1.0*	*50*	*0*	*97.4*	*85 - 114*				
Surr: Dibromofluoromethane	*47.83*	*1.0*	*50*	*0*	*95.7*	*80 - 119*				
Surr: Toluene-d8	*46.75*	*1.0*	*50*	*0*	*93.5*	*89 - 112*				

MS Sample ID: **HS21030874-08MS** Units: **ug/L** Analysis Date: **25-Mar-2021 01:35**
Client ID: **46WW16-210316** Run ID: **VOA6_380287** SeqNo: **6010145** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	15.4	1.0	20	0	77.0	78 - 123				S
Trichloroethene	17.04	1.0	20	0	85.2	79 - 123				
Vinyl chloride	16.9	1.0	20	0	84.5	58 - 137				
Surr: 1,2-Dichloroethane-d4	*41.43*	*1.0*	*50*	*0*	*82.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*46.79*	*1.0*	*50*	*0*	*93.6*	*85 - 114*				
Surr: Dibromofluoromethane	*44.3*	*1.0*	*50*	*0*	*88.6*	*80 - 119*				
Surr: Toluene-d8	*47.7*	*1.0*	*50*	*0*	*95.4*	*89 - 112*				

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
WorkOrder: HS21030874

QC BATCH REPORT

Batch ID: R380287 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS21030874-08MSD** Units: **ug/L** Analysis Date: **25-Mar-2021 01:56**
Client ID: **46WW16-210316** Run ID: **VOA6_380287** SeqNo: **6010146** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	15.27	1.0	20	0	76.3	78 - 123	15.4	0.901	20	S
Trichloroethene	17.34	1.0	20	0	86.7	79 - 123	17.04	1.74	20	
Vinyl chloride	15.66	1.0	20	0	78.3	58 - 137	16.9	7.62	20	
Surr: 1,2-Dichloroethane-d4	*42.69*	*1.0*	*50*	*0*	*85.4*	*81 - 118*	*41.43*	*2.99*	*20*	
Surr: 4-Bromofluorobenzene	*45.04*	*1.0*	*50*	*0*	*90.1*	*85 - 114*	*46.79*	*3.81*	*20*	
Surr: Dibromofluoromethane	*43.6*	*1.0*	*50*	*0*	*87.2*	*80 - 119*	*44.3*	*1.57*	*20*	
Surr: Toluene-d8	*47.51*	*1.0*	*50*	*0*	*95.0*	*89 - 112*	*47.7*	*0.408*	*20*	

The following samples were analyzed in this batch:

HS21030874-01	HS21030874-02	HS21030874-03	HS21030874-04
HS21030874-05	HS21030874-06	HS21030874-07	HS21030874-08
HS21030874-09	HS21030874-10	HS21030874-11	HS21030874-12
HS21030874-13			

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
WorkOrder: HS21030874

QC BATCH REPORT

Batch ID: R380480 (0) **Instrument: ICS2100** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-** Units: **mg/L** Analysis Date: **17-Mar-2021 15:30**
Client ID: Run ID: **ICS2100_380480** SeqNo: **6014135** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.500	0.500								U
Nitrogen, Nitrate (As N)	0.100	0.100								U

LCS Sample ID: **LCS-** Units: **mg/L** Analysis Date: **17-Mar-2021 15:49**
Client ID: Run ID: **ICS2100_380480** SeqNo: **6014136** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.5	0.500	20	0	97.5	80 - 120				
Nitrogen, Nitrate (As N)	3.898	0.100	4	0	97.5	80 - 120				

MS Sample ID: **HS21030874-08MS** Units: **mg/L** Analysis Date: **17-Mar-2021 17:03**
Client ID: **46WW16-210316** Run ID: **ICS2100_380480** SeqNo: **6014140** PrepDate: DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	284.2	1.00	20	281.9	11.7	80 - 120				SEO
Nitrogen, Nitrate (As N)	3.966	0.200	4	0	99.1	80 - 120				

MSD Sample ID: **HS21030874-08MSD** Units: **mg/L** Analysis Date: **17-Mar-2021 17:21**
Client ID: **46WW16-210316** Run ID: **ICS2100_380480** SeqNo: **6014141** PrepDate: DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	284.2	1.00	20	281.9	11.3	80 - 120	284.2	0.0239	20	SEO
Nitrogen, Nitrate (As N)	3.965	0.200	4	0	99.1	80 - 120	3.966	0.0303	20	

The following samples were analyzed in this batch:

HS21030874-06	HS21030874-07	HS21030874-08	HS21030874-09
HS21030874-10	HS21030874-11	HS21030874-12	

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
WorkOrder: HS21030874

QC BATCH REPORT

Batch ID: R380512 (0) **Instrument: TOC_04** **Method: TOTAL ORGANIC CARBON - SM5310B**

MBLK Sample ID: **MBLK3-03262021** Units: **mg/L** Analysis Date: **26-Mar-2021 19:30**
Client ID: Run ID: **TOC_04_380512** SeqNo: **6014737** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	0.500	1.00								U

LCS Sample ID: **LCS3-03262021** Units: **mg/L** Analysis Date: **26-Mar-2021 19:44**
Client ID: Run ID: **TOC_04_380512** SeqNo: **6014738** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.28	1.00	10	0	103	85 - 115				

LCSD Sample ID: **LCSD3-03262021** Units: **mg/L** Analysis Date: **26-Mar-2021 19:59**
Client ID: Run ID: **TOC_04_380512** SeqNo: **6014739** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.52	1.00	10	0	105	85 - 115	10.28	2.31	20	

MS Sample ID: **HS21030874-08MS** Units: **mg/L** Analysis Date: **26-Mar-2021 21:05**
Client ID: **46WW16-210316** Run ID: **TOC_04_380512** SeqNo: **6014743** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	14.12	1.00	10	2.905	112	80 - 120				

The following samples were analyzed in this batch:

HS21030874-06	HS21030874-07	HS21030874-08	HS21030874-09
HS21030874-10	HS21030874-11	HS21030874-12	

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
WorkOrder: HS21030874

QC BATCH REPORT

Batch ID: R380595 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-** Units: **mg/L** Analysis Date: **30-Mar-2021 00:17**
Client ID: Run ID: **ICS-Integrion_380595** SeqNo: **6016717** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.500	0.500								U
Sulfate	0.500	0.500								U

LCS Sample ID: **LCS-** Units: **mg/L** Analysis Date: **30-Mar-2021 00:36**
Client ID: Run ID: **ICS-Integrion_380595** SeqNo: **6016718** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	18.89	0.500	20	0	94.5	80 - 120				
Sulfate	19.36	0.500	20	0	96.8	80 - 120				

MS Sample ID: **HS21031405-01MS** Units: **mg/L** Analysis Date: **29-Mar-2021 16:37**
Client ID: Run ID: **ICS-Integrion_380595** SeqNo: **6016703** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	62.37	0.500	10	52.87	95.0	80 - 120				O
Sulfate	86.54	0.500	10	77.5	90.3	80 - 120				O

MSD Sample ID: **HS21031405-01MSD** Units: **mg/L** Analysis Date: **29-Mar-2021 16:56**
Client ID: Run ID: **ICS-Integrion_380595** SeqNo: **6016704** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	63.45	0.500	10	52.87	106	80 - 120	62.37	1.72	20	O
Sulfate	88.59	0.500	10	77.5	111	80 - 120	86.54	2.35	20	O

The following samples were analyzed in this batch:

HS21030874-06	HS21030874-07	HS21030874-08	HS21030874-09
HS21030874-10	HS21030874-11	HS21030874-12	

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
WorkOrder: **HS21030874**

QUALIFIERS, ACRONYMS, UNITS

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

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

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	PJLA L20-507-R2	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2020-2021	31-Jul-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
North Carolina	624-2021	31-Dec-2021
North Dakota	R-193 2020-2021	30-Apr-2021
Oklahoma	2020-165	31-Aug-2021
Texas	T104704231-20-26	30-Apr-2021

ALS Houston, US Date: 06-Apr-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 46 February 2021
Work Order: HS21030874

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS21030874-01	46WW06-210315	Login	3/17/2021 1:27:57 PM	NDR	Disposed
HS21030874-01	46WW06-210315	Login	3/17/2021 1:27:57 PM	NDR	Disposed
HS21030874-01	46WW06-210315	Login	3/17/2021 1:27:57 PM	NDR	Sub
HS21030874-01	46WW06-210315	Login	3/17/2021 1:27:57 PM	NDR	Sub
HS21030874-06	LHSMW21-210316	Login	3/17/2021 1:27:57 PM	NDR	Disposed
HS21030874-06	LHSMW21-210316	Login	3/17/2021 1:27:57 PM	NDR	Disposed
HS21030874-06	LHSMW21-210316	Login	3/17/2021 1:27:57 PM	NDR	Sub
HS21030874-06	LHSMW21-210316	Login	3/17/2021 1:27:57 PM	NDR	Sub

ALS Houston, US Date: 06-Apr-21

Sample Receipt Checklist

Work Order ID: HS21030874 **Date/Time Received:** 17-Mar-2021 10:10

Client Name: CBI-Houston **Received by:** Jared R. Makan

Completed By:	/S/ Nilesh D. Ranchod	17-Mar-2021 14:20	**Reviewed by:**	/S/ RJ Modashia	17-Mar-2021 15:42
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **GW/Water** Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☐	No ☑	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.2c U/c	IR31	
Cooler(s)/Kit(s):	45583		
Date/Time sample(s) sent to storage:	03/17/2021 15:00		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: LHAAP 46 February 2021

Prepared By:

P.O. Number

Field Sample I.D. Time	Sample Matrix	Date /	MS / MSD	No. OF CONTAINERS	Analyses: VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Carbon Dioxide by RSK 175	Anions (nitrate, chloride and sulfate) by SW9056	Remarks (Preservatives, etc.)
46WW06-210315	WG	3/15/21/1010		3	X					
46WW08-210315	WG	3/15/21/1050		3	X					
46WW17-210315	WG	3/15/21/1135		3	X					
LHSMW25-210315	WG	3/15/21/1220		3	X					
46WW14-210315	WG	3/15/21/1310		3	X					
LHSMW21-210316	WG	3/16/21/0745		12	X	X	X	X	X	
46WW05-210316	WG	3/16/21/0835		12	X	X	X	X	X	
46WW16-210316	WG	3/16/21/0930		12	X	X	X	X	X	

Additional Remarks: Standard TAT on all parameters. Please email results to Susan.Huang@aptim.com and invoices to fedinvoices@aptim.com

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Santa Beesley	3/16/21	1430									

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition
J. Mascarenas	3/17/21	10:10							

Remarks:
Cooler 45583
Temp 1.2°C 1231 CFO

Aptim Environmental & Infrastucture, Inc.
Longhorn Army Ammunition Plant - 46

HS21030874

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: **LHAAP 46 February 2021**

Prepared By:

P.O. Number

Field Sample I.D. / Time	Sample Matrix	Date /	MS / MSD	No. OF CONTAINERS	Analyses: VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Carbon Dioxide by RSK 175	Anions (nitrate, chloride and sulfate) by SW9056	Remarks (Preservatives, etc.)
46WW16-210316-MS	WG	3/16/21/0930		12	X	X	X	X	X	
46WW16-210316-MSD	WG	3/16/21/0930		12	X	X	X	X	X	
46WW09-210316	WG	3/16/21/1030		12	X	X	X	X	X	
46WW11-210316	WG	3/16/21/1120		12	X	X	X	X	X	
46WW11-210316-FD	WG	3/16/21/1120		12	X	X	X	X	X	
46WW02-210316	WG	3/16/21/1215		12	X	X	X	X	X	
TRIPBLANK-210316	WG	3/16/21		2	X					

Additional Remarks: Standard TAT on all parameters. Please email results to Susan.Huang@aptim.com and invoices to fedinvoices@aptim.com

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
[signature]	3/16/21	1430									

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition
J MALDONADO	3/17/21	10:10							

Remarks:
Cooler 45583
Temp 1.2°C 1431 CF0

Aptim Environmental & Infrastucture, Inc.
Longhorn Army Ammunition Plant - 46

HS21030874

(Word) S:\Lecs\Forms\Chain of Custody - BiWeekly

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5687

45583

CUSTODY SEAL

Date: 3/16/21 Time: 1930
Name: Scott Beesinger
Company: Shatt

Seal Broken By: SLL
Date: 03/17/21

45583 MAR 1 : 2021

Must Deliver Next Business Day
Time and Tempature Sensitive!

45583

ORIGIN ID:SGRA (903) 930-6183
SCOTT BEESINGER
APTIM ENVIROMENTAL & INFASTRUCTURE
1203-B EAST GRAND AVE
PMB 202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 03FEB21
ACTWGT: 1.00 LB MAN
CAD: 0221247/CAFE3408
DIMS: 19x16x13 IN

TO **CLIENT SERVICES**
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5668
REF: LHAAP-46-B076543-RJ

RMA:

FedEx Express

FedEx
TRK# 0221 9473 0840 0345

WED - 17 MAR AA
PRIORITY OVERNIGHT

XH SGRA

77099
TX-US
IAH

FID: 3923707 16Mar2021 CGGA 560G3/AC39/31B23

LABORATORY REPORT

April 6, 2021

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

RE: HS21030874

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on March 18, 2021. For your reference, these analyses have been assigned our service request number P2101408.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Hayden Akers at 2:25 pm, Apr 06, 2021

Hayden Akers
Project Manager

Client: ALS Laboratory Group Service Request No: P2101408
Project: HS21030874

CASE NARRATIVE

The samples were received intact under chain of custody on March 18, 2021 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

Methane, Ethene and Ethane Analysis

The samples were analyzed for methane, ethene, and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-008
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272019-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Laboratory Group
Service Request: P2101408
Project ID: HS21030874

Date Received: 3/18/2021
Time Received: 09:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - Gases	RSK 175 - CO2
LHSMW21-210316	P2101408-001	Water	3/16/2021	07:45	X	X
46WW05-210316	P2101408-002	Water	3/16/2021	08:35	X	X
46WW16-210316	P2101408-003	Water	3/16/2021	09:30	X	X
46WW09-210316	P2101408-004	Water	3/16/2021	10:30	X	X
46WW11-210316	P2101408-005	Water	3/16/2021	11:20	X	X
46WW11-210316-FD	P2101408-006	Water	3/16/2021	11:20	X	X
46WW02-210316	P2101408-007	Water	3/16/2021	12:15	X	X

P2101408

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **15794**

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone: +1 805 526 7161

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS21030874
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS21030874-06**	**LHSMW21-210316**	**Groundwater**	**16 Mar 2021 07:45**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021
2.	**HS21030874-07**	**46WW05-210316**	**Groundwater**	**16 Mar 2021 08:35**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021
3.	**HS21030874-08**	**46WW16-210316**	**Groundwater**	**16 Mar 2021 09:30**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021
4.	**HS21030874-09**	**46WW09-210316**	**Groundwater**	**16 Mar 2021 10:30**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021
5.	**HS21030874-10**	**46WW11-210316**	**Groundwater**	**16 Mar 2021 11:20**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021
6.	**HS21030874-11**	**46WW11-210316-FD**	**Groundwater**	**16 Mar 2021 11:20**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021
7.	**HS21030874-12**	**46WW02-210316**	**Groundwater**	**16 Mar 2021 12:15**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021

Comments:

P2101408

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **15794**

Please analyze for the analysis listed above.
Send report to the emails shown above.
MS/MSD Sample HS21030874-08
NEAT & HCL VIALS

QC Level: DOD IV (DoD Data Package)

Relinquished By:	[signature]	Date/Time:	3/19/2021 1800
Received By:	[signature]	Date/Time:	3-18-21 0930
Cooler ID(s):		Temperature(s):	2°

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P2101408

Project:

Sample(s) received on: 3/18/2021 Date opened: 3/18/2021 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: 2° C Blank Temperature: ° C	Wet Ic		
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler lid. Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☒	☐	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2101408-001.01	40ml VOA HCL				A	
P2101408-001.02	40ml VOA HCL				A	
P2101408-001.03	40ml VOA HCL				A	
P2101408-001.04	40mL VOA NP				A	
P2101408-001.05	40mL VOA NP				A	
P2101408-001.06	40mL VOA NP				A	
P2101408-002.01	40ml VOA HCL		1		A	wh 3/30/21
P2101408-002.02	40ml VOA HCL				A	
P2101408-002.03	40ml VOA HCL				A	
P2101408-002.04	40mL VOA NP		7		A	wh 3/26/21
P2101408-002.05	40mL VOA NP				A	
P2101408-002.06	40mL VOA NP				A	
P2101408-003.01	40ml VOA HCL		1		A	wh 3/30/21
P2101408-003.02	40ml VOA HCL		1		A	wh 3/30/21
P2101408-003.03	40ml VOA HCL		1		A	wh 3/30/21

Explain any discrepancies: (include lab sample ID numbers): Sample -001 was not received with the rest of the samples.

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P2101408

Project:

Sample(s) received on: 3/18/2021 Date opened: 3/18/2021 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2101408-003.04	40mL VOA NP		7		A	wh 3/26/21
P2101408-003.05	40mL VOA NP		7		A	wh 3/26/21
P2101408-003.06	40mL VOA NP		7		A	wh 3/26/21
P2101408-003.07	40ml VOA HCL				A	
P2101408-003.08	40ml VOA HCL				A	
P2101408-003.09	40ml VOA HCL				A	
P2101408-003.10	40ml VOA HCL				A	
P2101408-003.11	40ml VOA HCL				A	
P2101408-003.12	40ml VOA HCL				A	
P2101408-003.13	40mL VOA NP				A	
P2101408-003.14	40mL VOA NP				A	
P2101408-003.15	40mL VOA NP				A	
P2101408-003.16	40mL VOA NP				A	
P2101408-003.17	40mL VOA NP				A	
P2101408-003.18	40mL VOA NP				A	
P2101408-004.01	40ml VOA HCL		1		A	wh 3/30/21
P2101408-004.02	40ml VOA HCL				A	
P2101408-004.03	40ml VOA HCL				A	
P2101408-004.04	40mL VOA NP		7		A	wh 3/26/21
P2101408-004.05	40mL VOA NP				A	
P2101408-004.06	40mL VOA NP				A	
P2101408-005.01	40ml VOA HCL		1		A	wh 3/30/21
P2101408-005.02	40ml VOA HCL				A	
P2101408-005.03	40ml VOA HCL				A	
P2101408-005.04	40mL VOA NP		7		A	wh 3/26/21
P2101408-005.05	40mL VOA NP				A	
P2101408-005.06	40mL VOA NP				A	
P2101408-006.01	40ml VOA HCL		1		A	wh 3/30/21
P2101408-006.02	40ml VOA HCL				A	
P2101408-006.03	40ml VOA HCL				A	
P2101408-006.04	40mL VOA NP		7		A	wh 3/26/21
P2101408-006.05	40mL VOA NP				A	
P2101408-006.06	40mL VOA NP				A	
P2101408-007.01	40ml VOA HCL		1		A	wh 3/30/21
P2101408-007.02	40ml VOA HCL				A	
P2101408-007.03	40ml VOA HCL				A	
P2101408-007.04	40mL VOA NP		7		A	wh 3/26/21
P2101408-007.05	40mL VOA NP				A	
P2101408-007.06	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Project ID: **HS21030874** ALS Project ID: P2101408

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date(s) Collected: 3/16/21
Date Received: 3/18/21
Date Analyzed: 3/26/21

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
46WW05-210316	P2101408-002	0.10	**450,000**	1,000	860	370	
46WW16-210316	P2101408-003	0.10	**670,000**	1,000	860	370	
46WW09-210316	P2101408-004	0.10	**200,000**	1,000	860	370	
46WW11-210316	P2101408-005	0.10	**83,000**	1,000	860	370	
46WW11-210316-FD	P2101408-006	0.10	**85,000**	1,000	860	370	
46WW02-210316	P2101408-007	0.10	**420,000**	1,000	860	370	
Method Control Sample	P210326-MB	0.10	860	1,000	860	370	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **46WW16-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-003MS
P2101408-003DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: ######
Date Received: ######
Date Analyzed: ######
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount MS / DMS ug/L	Sample Amount ug/L	Result MS ug/L	Result DMS ug/L	% Recovery MS	% Recovery DMS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	45,800	671,000	723,000	720,000	**114**	**107**	80-122	6	30	

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P210326-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 3/26/21
Volume(s) Analyzed: NA ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result$_1$ LCS ug/L	Result$_1$ DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	23,500	23,300	**103**	**102**	80-122	1.0	12	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **46WW05-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 03/16/21
Date Received: 03/18/21
Date Analyzed: 03/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**1.3**	1.3	1.0	0.51	**J**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **46WW16-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 03/16/21
Date Received: 03/18/21
Date Analyzed: 03/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **46WW09-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-004

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 03/16/21
Date Received: 03/18/21
Date Analyzed: 03/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **46WW11-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-005

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 03/16/21
Date Received: 03/18/21
Date Analyzed: 03/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**2.0**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **46WW11-210316-FD**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-006

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 03/16/21
Date Received: 03/18/21
Date Analyzed: 03/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**1.4**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **46WW02-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-007

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 03/16/21
Date Received: 03/18/21
Date Analyzed: 03/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **Method Control Sample**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P210330-MB

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 3/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **46WW16-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-003MS
P2101408-003DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 3/16/21
Date Received: 3/18/21
Date Analyzed: 3/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount MS / DMS µg/L	Sample Amount µg/L	Result MS µg/L	Result DMS µg/L	% Recovery MS	% Recovery DMS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	169	0.405	86.7	90.2	**51**	**53**	73-125	4	30	**N**
74-85-1	Ethene	294	ND	164	174	**56**	**59**	72-133	5	30	**N**
74-84-0	Ethane	317	ND	171	180	**54**	**57**	74-131	5	30	**N**

N = The matrix spike recovery is not within control limits. See case narrative.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P210330-LCS
P210330-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 3/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.52	2.67	2.62	**106**	**104**	73-125	2	26	
74-85-1	Ethene	4.40	4.90	4.80	**111**	**109**	72-133	2	11	
74-84-0	Ethane	4.72	4.74	4.69	**100**	**99**	74-131	1	10	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

HS21030874 8260_W_DOD Raw Data

ALS WO# HS21030874

MSVOA06 -Logbook

Batch: 44080 **Analyst:** Presenta Cabascango

Date: 03-15-2021 **Reviewer:**

Method: 8260 **Laboratory:** Houston

Comments:

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	03-15-2021 11:16 am	1.00	50 mL	50 mL	X031501.D	Liquid	Y	NA
2	VSTD000.25	ICAL1	03-15-2021 11:37 am	1.00	50 mL	50 mL	X031502.D	Liquid	Y	NA
3	VSTD000.5	ICAL2	03-15-2021 12:19 pm	1.00	50 mL	50 mL	X031503.D	Liquid	Y	NA
4	VSTD001	ICAL3	03-15-2021 12:39 pm	1.00	50 mL	50 mL	X031504.D	Liquid	Y	NA
5	VSTD002	ICAL4	03-15-2021 01:00 pm	1.00	50 mL	50 mL	X031505.D	Liquid	Y	NA
6	VSTD005	ICAL5	03-15-2021 01:21 pm	1.00	50 mL	50 mL	X031506.D	Liquid	Y	NA
7	VSTD020	ICAL6	03-15-2021 01:42 pm	1.00	50 mL	50 mL	X031507.D	Liquid	Y	NA
8	VSTD050	ICAL7	03-15-2021 02:03 pm	1.00	50 mL	50 mL	X031508.D	Liquid	Y	NA
9	VSTD100	ICAL8	03-15-2021 02:24 pm	1.00	50 mL	50 mL	X031509.D	Liquid	Y	NA
10	VSTD150	ICAL9	03-15-2021 02:45 pm	1.00	50 mL	50 mL	X031510.D	Liquid	Y	NA
11	VSTD200	ICAL	03-15-2021 03:06 pm	1.00	50 mL	50 mL	X031511.D	Liquid	Y	NA
12	BLANK	SAMP	03-15-2021 03:27 pm	1.00	50 mL	50 mL	X031512.D	Liquid	Y	NA
13	BLANK	SAMP	03-15-2021 03:48 pm	1.00	50 mL	50 mL	X031513.D	Liquid	Y	NA
14	CCV	CCV	03-15-2021 04:09 pm	1.00	50 mL	50 mL	X031514.D	Liquid	Y	NA
15	BLANK	SAMP	03-15-2021 04:30 pm	1.00	50 mL	50 mL	X031515.D	Liquid	Y	NA
16	VLCSW-210315	LCS	03-15-2021 04:51 pm	1.00	50 mL	50 mL	X031516.D	Liquid	Y	NA
17	BLANK	SAMP	03-15-2021 05:12 pm	1.00	50 mL	50 mL	X031517.D	Liquid	Y	NA
18	BLANK	SAMP	03-15-2021 05:33 pm	1.00	50 mL	50 mL	X031518.D	Liquid	Y	NA
19	VBLKW-210315	MBLK	03-15-2021 05:54 pm	1.00	50 mL	50 mL	X031519.D	Liquid	Y	NA
20	HS21030616-14	SAMP	03-15-2021 06:15 pm	1.00	50 mL	50 mL	X031520.D	Liquid	Y	NA
21	HS21030616-14MS	MS	03-15-2021 06:36 pm	1.00	50 mL	50 mL	X031521.D	Liquid	Y	NA
22	HS21030616-14MSD	MSD	03-15-2021 06:57 pm	1.00	50 mL	50 mL	X031522.D	Liquid	Y	NA
23	BLANK	SAMP	03-15-2021 07:18 pm	1.00	50 mL	50 mL	X031523.D	Liquid	Y	NA
24	HS21030701-01	SAMP	03-15-2021 07:39 pm	1.00	50 mL	50 mL	X031524.D	Liquid	Y	NA
25	HS21030699-01	SAMP	03-15-2021 08:00 pm	1.00	50 mL	50 mL	X031525.D	Liquid	Y	NA
26	HS21030699-02	SAMP	03-15-2021 08:22 pm	1.00	50 mL	50 mL	X031526.D	Liquid	Y	NA
27	HS21030699-03	SAMP	03-15-2021 08:43 pm	1.00	50 mL	50 mL	X031527.D	Liquid	Y	NA
28	HS21030699-04	SAMP	03-15-2021 09:04 pm	1.00	50 mL	50 mL	X031528.D	Liquid	Y	NA
29	HS21030699-05	SAMP	03-15-2021 09:25 pm	1.00	50 mL	50 mL	X031529.D	Liquid	Y	NA
30	HS21030616-15	SAMP	03-15-2021 09:46 pm	1.00	50 mL	50 mL	X031530.D	Liquid	Y	NA
31	HS21030616-04	SAMP	03-15-2021 10:07 pm	1.00	50 mL	50 mL	X031531.D	Liquid	Y	NA
32	HS21030616-10	SAMP	03-15-2021 10:28 pm	1.00	50 mL	50 mL	X031532.D	Liquid	Y	NA
33	HS21030616-09	SAMP	03-15-2021 10:49 pm	1.00	50 mL	50 mL	X031533.D	Liquid	Y	NA
34	BLANK	SAMP	03-15-2021 11:10 pm	1.00	50 mL	50 mL	X031534.D	Liquid	Y	NA

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS21031C0874

Matrix Spike - Sample No.: ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
Vinyl Chloride	50.00	43.32	87	80-120
cis-1,2-Dichloroethene	50.00	45.66	91	80-120
Trichloroethene	50.00	44.30	89	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM III VOA

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS21030874

Lab File ID: X031501 BFB Injection Date: 03/15/21

Instrument ID: VOA6 BFB Injection Time: 1116

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	26.4
75	30.0 - 60.0% of mass 95	55.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	1.0 (1.2)1
174	Greater than 50.0% of mass 95	82.3
175	5.0 - 9.0% of mass 174	6.7 (8.1)1
176	95.0 - 101.0% of mass 174	80.7 (98.1)1
177	5.0 - 9.0% of mass 176	5.2 (6.4)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD000.25	VSTD000.25	X031502	03/15/21	1137
02	VSTD000.5	VSTD000.5	X031503	03/15/21	1219
03	VSTD001	VSTD001	X031504	03/15/21	1239
04	VSTD002	VSTD002	X031505	03/15/21	1300
05	VSTD005	VSTD005	X031506	03/15/21	1321
06	VSTD020	VSTD020	X031507	03/15/21	1342
07	VSTD050	VSTD050	X031508	03/15/21	1403
08	VSTD100	VSTD100	X031509	03/15/21	1424
09	VSTD150	VSTD150	X031510	03/15/21	1445
10	VSTD200	VSTD200	X031511	03/15/21	1506
11	ICV	ICV	X031514	03/15/21	1609
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

0874

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS21031052

Instrument ID: VOA6 Calibration Date(s): 03/15/21 03/15/21

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1137 1506

LAB FILE ID: RF0.25: X031502 RF0.5: X031503 RF1: X031504
RF2: X031505 RF5: X031506 RF20: X031507

COMPOUND	RF0.25	RF0.5	RF1	RF2	RF5	RF20
Vinyl Chloride		1.061	0.986	1.037	1.022	0.968
cis-1,2-Dichloroethene		0.612	0.698	0.684	0.630	0.612
Trichloroethene		0.423	0.309	0.359	0.337	0.334
Dibromofluoromethane		1993	4678	7977	20536	89737
1,2-Dichloroethane-d4		2842	5757	9939	26207	98913
Toluene-d8		1.657	1.420	1.237	1.285	1.245
4-Bromofluorobenzene		3636	5753	9314	24836	102789

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS HOUSTON Contract: 0874

Lab Code: Case No.: SAS No.: SDG No.: HS2103105

Instrument ID: VOA6 Calibration Date(s): 03/15/21 03/15/21

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1137 1506

LAB FILE ID: RF50: X031508 RF100: X031509 RF150: X031510
RF200: X031511

COMPOUND	RF50	RF100	RF150	RF200
Vinyl Chloride	0.836	0.829	0.844	0.822
cis-1,2-Dichloroethene	0.578	0.624	0.630	0.643
Trichloroethene	0.301	0.334	0.317	0.315
Dibromofluoromethane	236456	572786	959846	1345632
1,2-Dichloroethane-d4	291833	670725		
Toluene-d8	1.175	1.324	1.362	1.386
4-Bromofluorobenzene	307940	763478		

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

0874

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS2103105

Instrument ID: VOA6 Calibration Date(s): 03/15/21 03/15/21

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1137 1506

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
Vinyl Chloride	AVRG		0.93385826		10.671	15.000
cis-1,2-Dichloroethene	AVRG		0.63448096		5.789	15.000
Trichloroethene	AVRG		0.33654108		10.938	15.000
Dibromofluoromethane	LINR	2.117e-002	1.59929687		0.9989565	0.9900000
1,2-Dichloroethane-d4	2ORDR	-5.43e-003	1.51014583	-8.2e-002	0.9999762	0.9900000
Toluene-d8	AVRG		1.34362018		10.506	15.000
4-Bromofluorobenzene	2ORDR	-6.87e-003	2.50209926	-0.4383971	0.9999712	0.9900000

FORM VI VOA

Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031501.D

Date : 15-MAR-2021 11:16

Client ID: BFB

Instrument: voa6.i

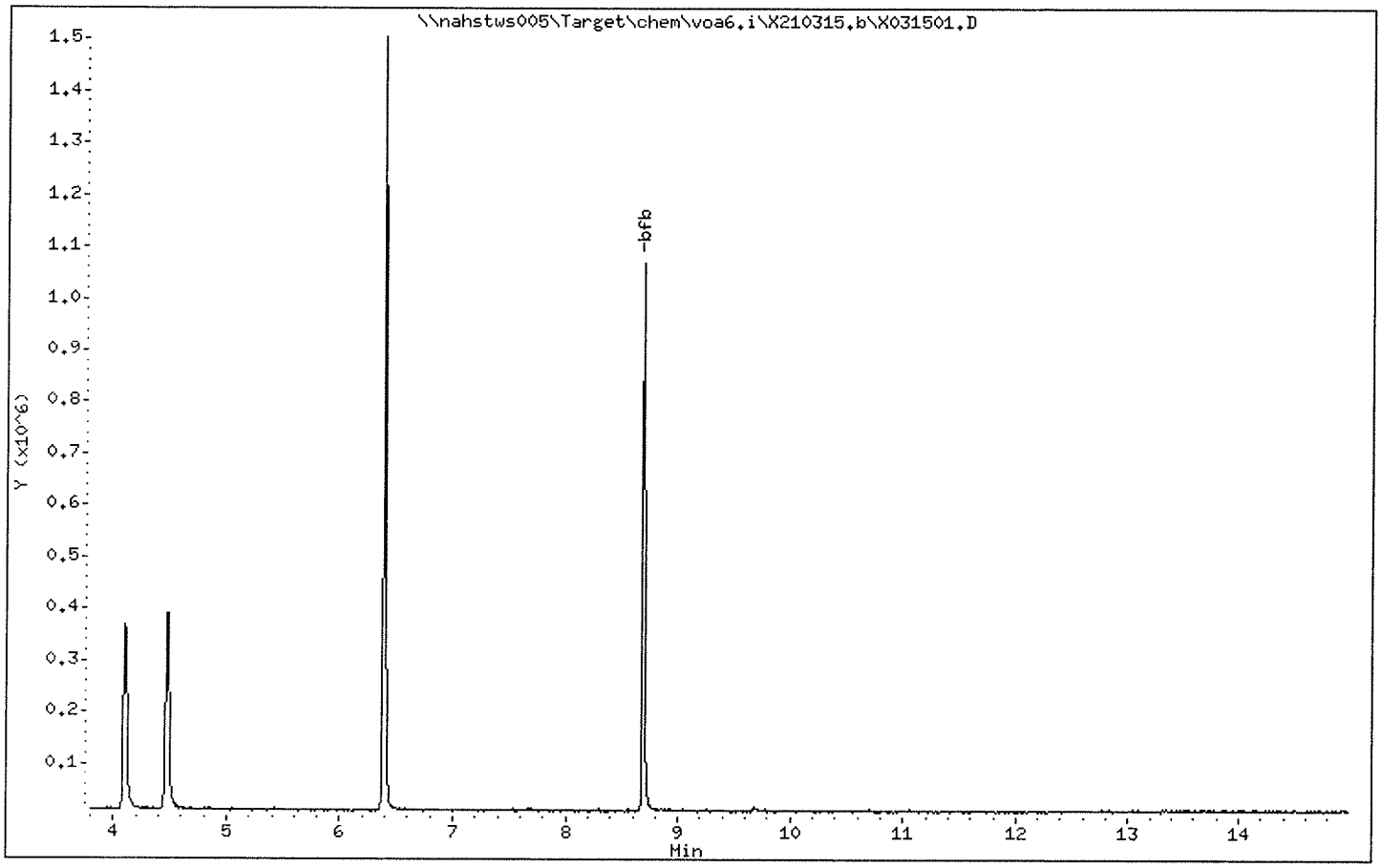
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25



Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031501.D

Date : 15-MAR-2021 11:16

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

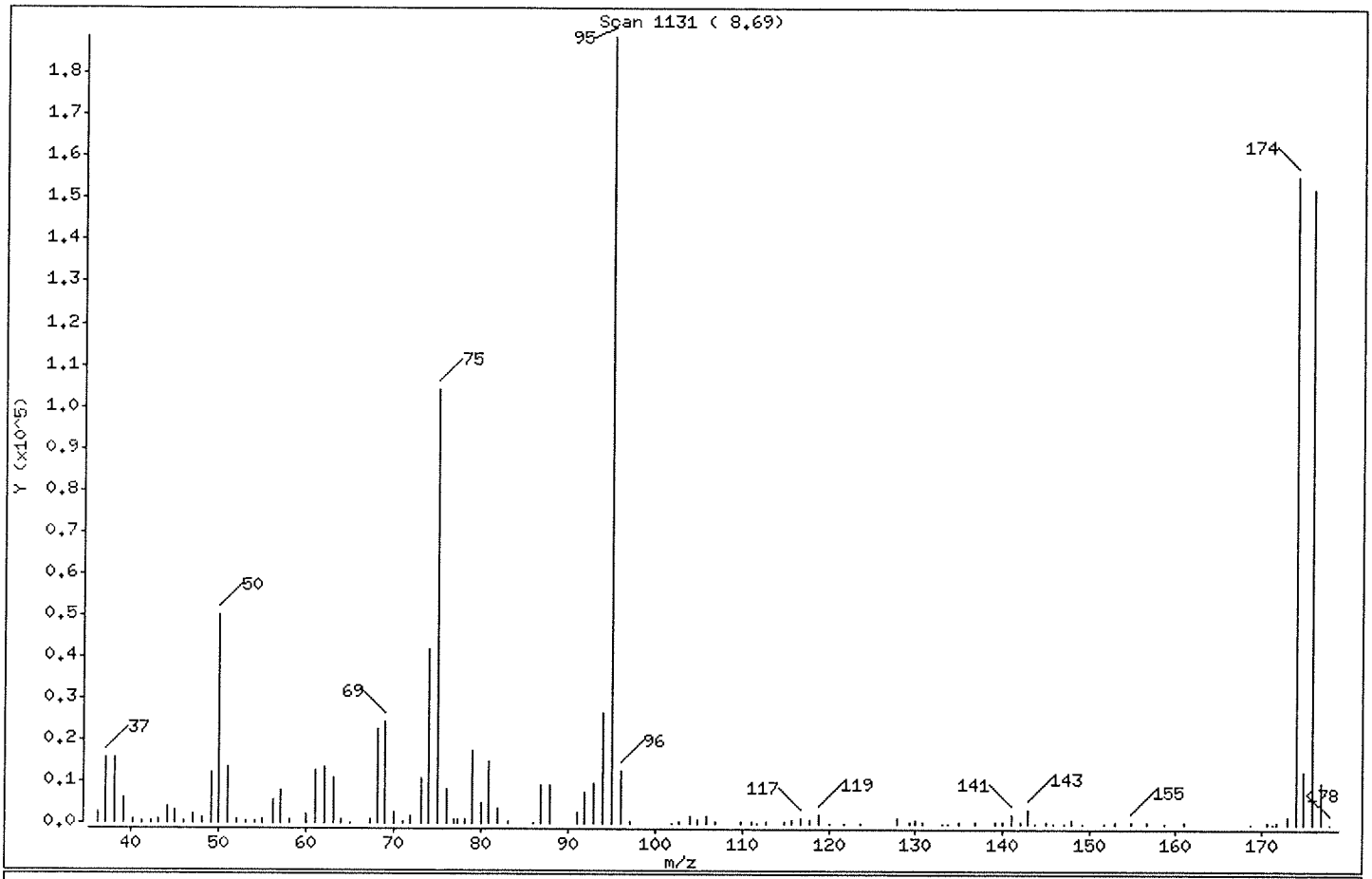
Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	26.39
75	30.00 - 60.00% of mass 95	55.10
96	5.00 - 9.00% of mass 95	6.78
173	Less than 2.00% of mass 174	0.99 (1.20)
174	Greater than 50.00% of mass 95	82.27
175	5.00 - 9.00% of mass 174	6.70 (8.14)
176	95.00 - 101.00% of mass 174	80.68 (98.06)
177	5.00 - 9.00% of mass 176	5.19 (6.44)

Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031501.D

Date : 15-MAR-2021 11:16

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

Data File: X031501.D
Spectrum: Scan 1131 (8.69)
Location of Maximum: 95.00
Number of points: 110

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.10	2712	64.90	76	97.10	391	140.00	222
37.00	15683	67.20	751	101.90	70	140.90	2040
38.00	15425	68.00	22624	102.80	256	142.00	573
39.10	6291	69.00	24384	104.00	1634	142.90	3419
40.10	692	70.00	2592	104.90	678	143.70	58
41.20	576	71.10	297	105.90	1643	144.90	290
42.10	347	71.90	1592	107.00	336	145.80	210
43.00	814	73.10	10947	109.80	283	147.00	97
44.00	4083	74.00	41472	111.10	295	147.90	856
45.00	2870	75.00	104024	111.70	158	149.10	80
46.00	224	76.00	8408	112.80	252	151.70	88
47.10	2233	76.80	1061	114.80	291	152.80	322
48.10	1505	77.20	906	115.80	750	154.80	370
49.00	12020	78.20	675	116.80	1454	156.70	239
50.00	49832	78.90	17472	117.90	1015	158.80	135
51.00	13442	79.90	4573	118.90	2183	161.00	299
52.00	746	80.90	14828	120.00	52	168.80	123
53.00	268	81.90	3346	121.70	97	170.70	240
54.10	250	83.10	275	123.70	64	171.30	129
55.00	1055	86.00	145	127.90	1129	171.70	452
56.10	5482	87.00	8975	129.20	318	173.00	1865
57.00	7822	88.00	9101	129.90	683	173.90	155328
58.00	751	91.00	2632	130.80	260	174.90	12649
60.00	2245	92.00	7361	133.10	118	175.90	152320
61.00	12769	93.00	9497	133.60	176	176.90	9803
62.00	13361	94.00	26384	134.90	302	178.00	206
63.00	11062	95.00	188800	136.90	557		
64.00	713	96.00	12799	139.20	239		

Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031502.D Page 1
Report Date: 02-Apr-2021 14:48

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031502.D
Lab Smp Id: VSTD000.25 Client Smp ID: VSTD000.25
Inj Date : 15-MAR-2021 11:37
Operator : PC Inst ID: voa6.i
Smp Info : VSTD000.25;VSTD000.25;1;1;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:48 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 15:06 Cal File: X031511.D
Als bottle: 2 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

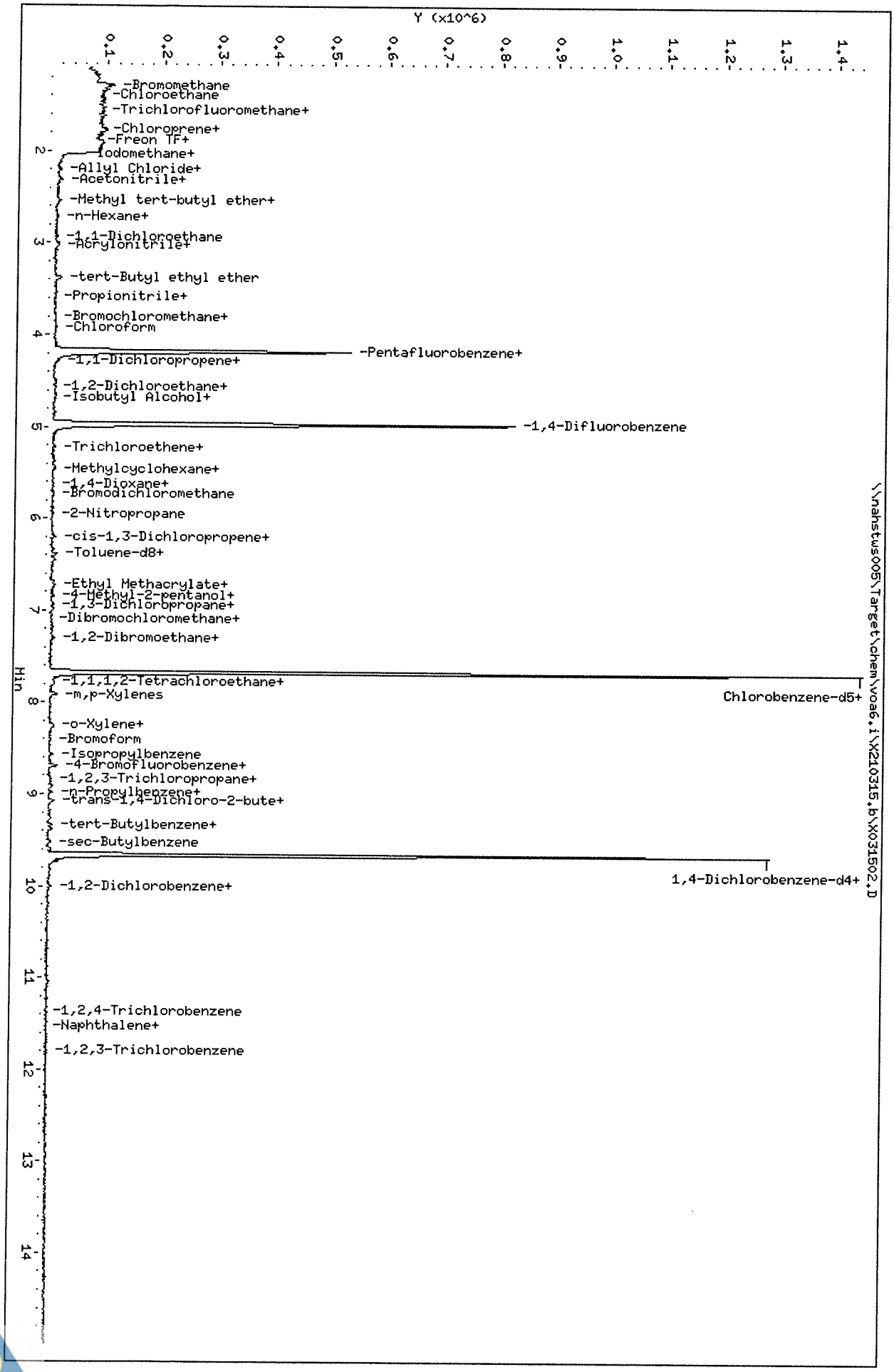
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	391377	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	654673	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	596000	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	249713	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	1263	0.25000	1.31
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	955	0.25000	(TM)
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	5712	0.25000	0.35(T)
$ 69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	3195	0.25000	0.32
27 cis-1,2-Dichloroethene	96	3.545	3.545	(0.848)	1276	0.25000	0.25
38 Trichloroethene	130	5.221	5.221	(1.052)	918	0.25000	0.20
5 Vinyl Chloride	62	1.138	1.138	(0.272)	2356	0.25000	0.32(M)

QC Flag Legend

T - Target compound detected outside RT window.
M - Compound response manually integrated.



Data File: \\nahstus005\Target\chem\voa6.i\X210315.b\X031502.D
Date : 15-MAR-2021 11:37
Client ID: VSTD000.25
Sample Info: VSTD000.25;VSTD000.25;1;1;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031503.D Page 1
Report Date: 02-Apr-2021 14:48

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031503.D
Lab Smp Id: VSTD000.5 Client Smp ID: VSTD000.5
Inj Date : 15-MAR-2021 12:19
Operator : PC Inst ID: voa6.i
Smp Info : VSTD000.5;VSTD000.5;1;2;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:48 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 11:37 Cal File: X031502.D
Als bottle: 4 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

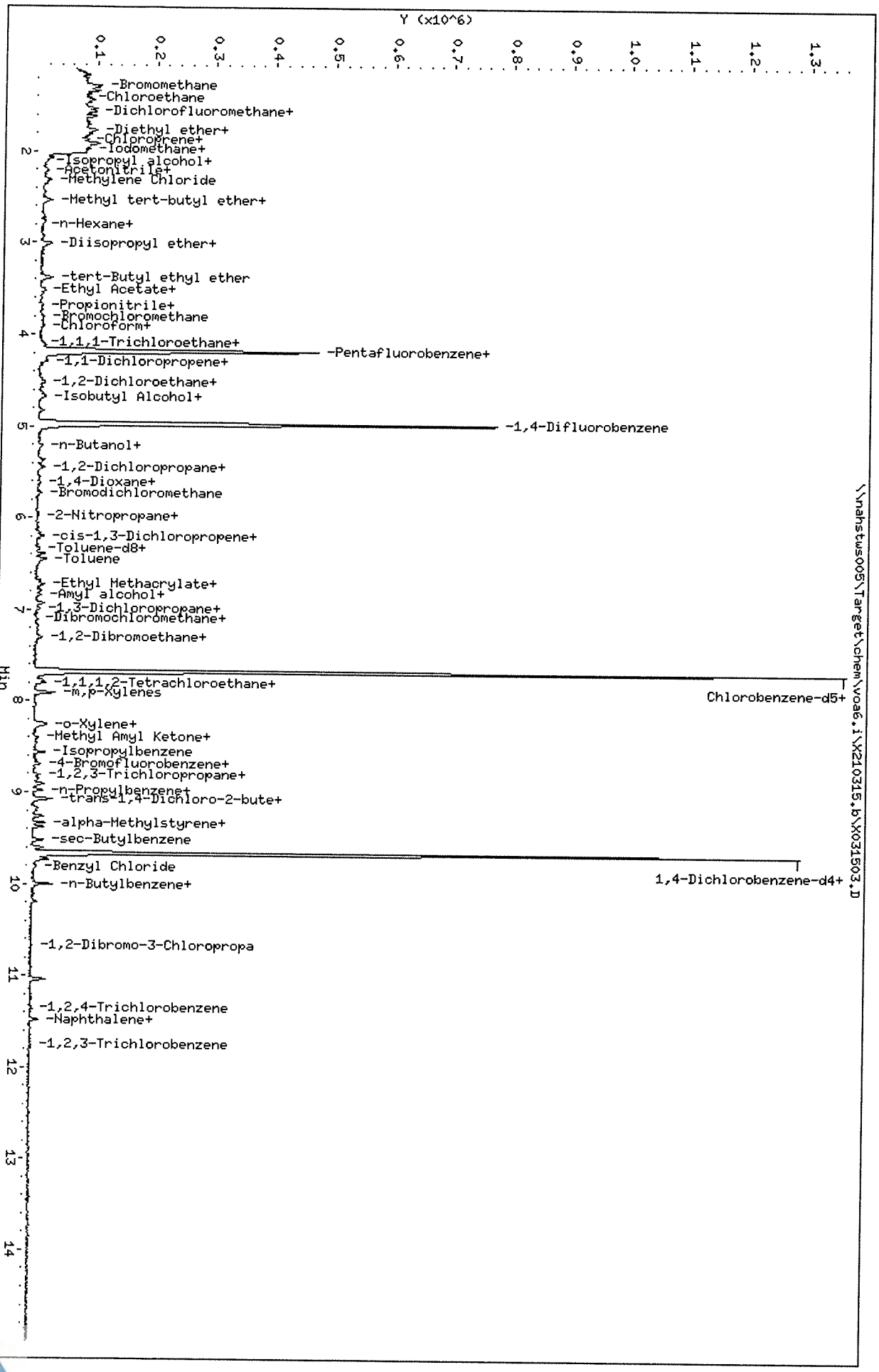
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	349242	50.0000	
*	36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	612960	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	555925	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	244307	50.0000	
$	30 Dibromofluoromethane	113	4.089	4.089	(0.978)	1993	0.50000	1.51
$	35 1,2-Dichloroethane-d4	65	4.483	4.483	(1.072)	2842	0.50000	0.34(TM)
$	48 Toluene-d8	98	6.388	6.388	(0.833)	9213	0.50000	0.61
$	69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	3636	0.50000	0.47
	27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	2138	0.50000	0.48(M)
	38 Trichloroethene	130	5.214	5.214	(1.049)	2592	0.50000	0.62(M)
	5 Vinyl Chloride	62	1.145	1.145	(0.274)	3705	0.50000	0.56(M)

QC Flag Legend

T - Target compound detected outside RT window.
M - Compound response manually integrated.

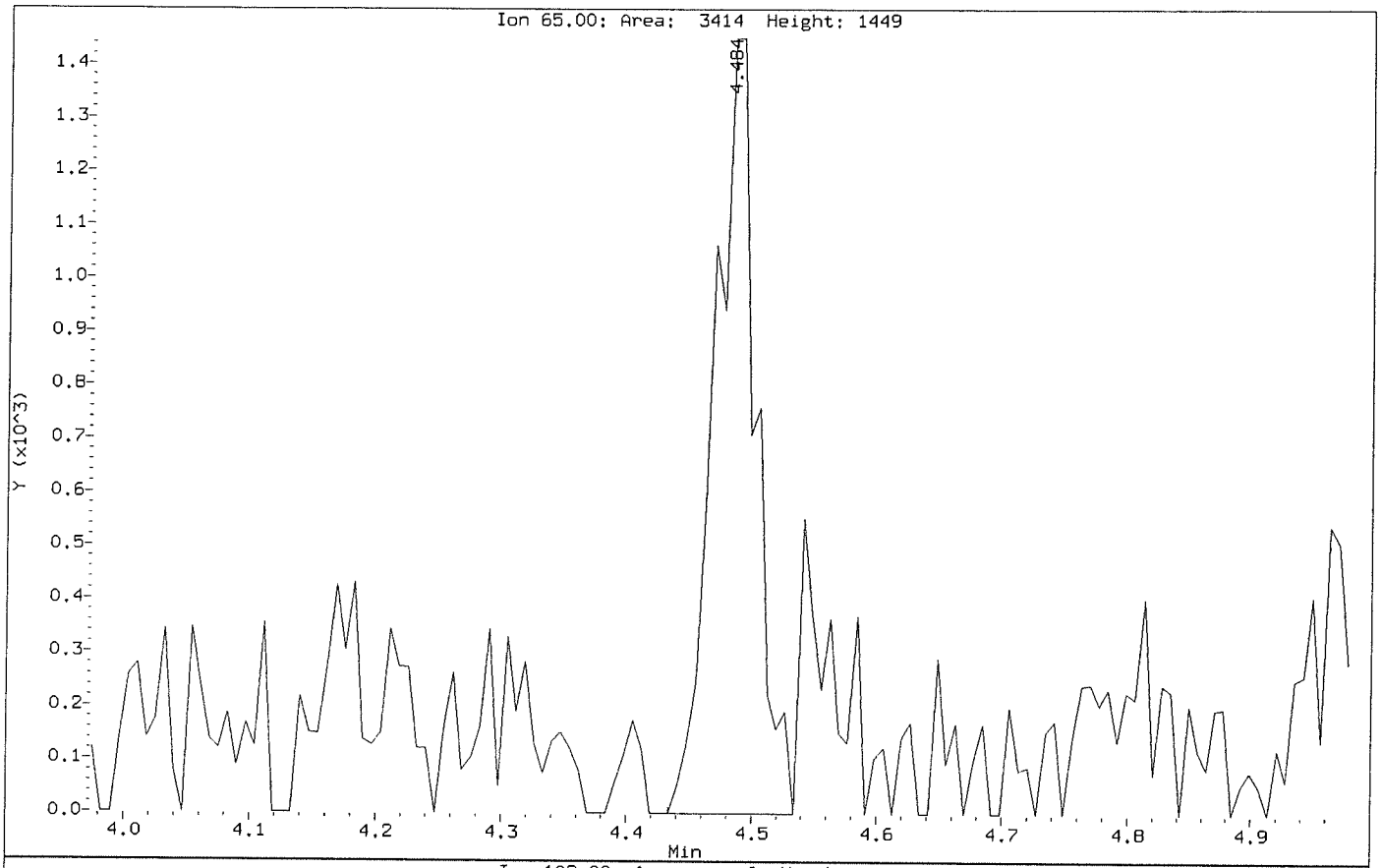


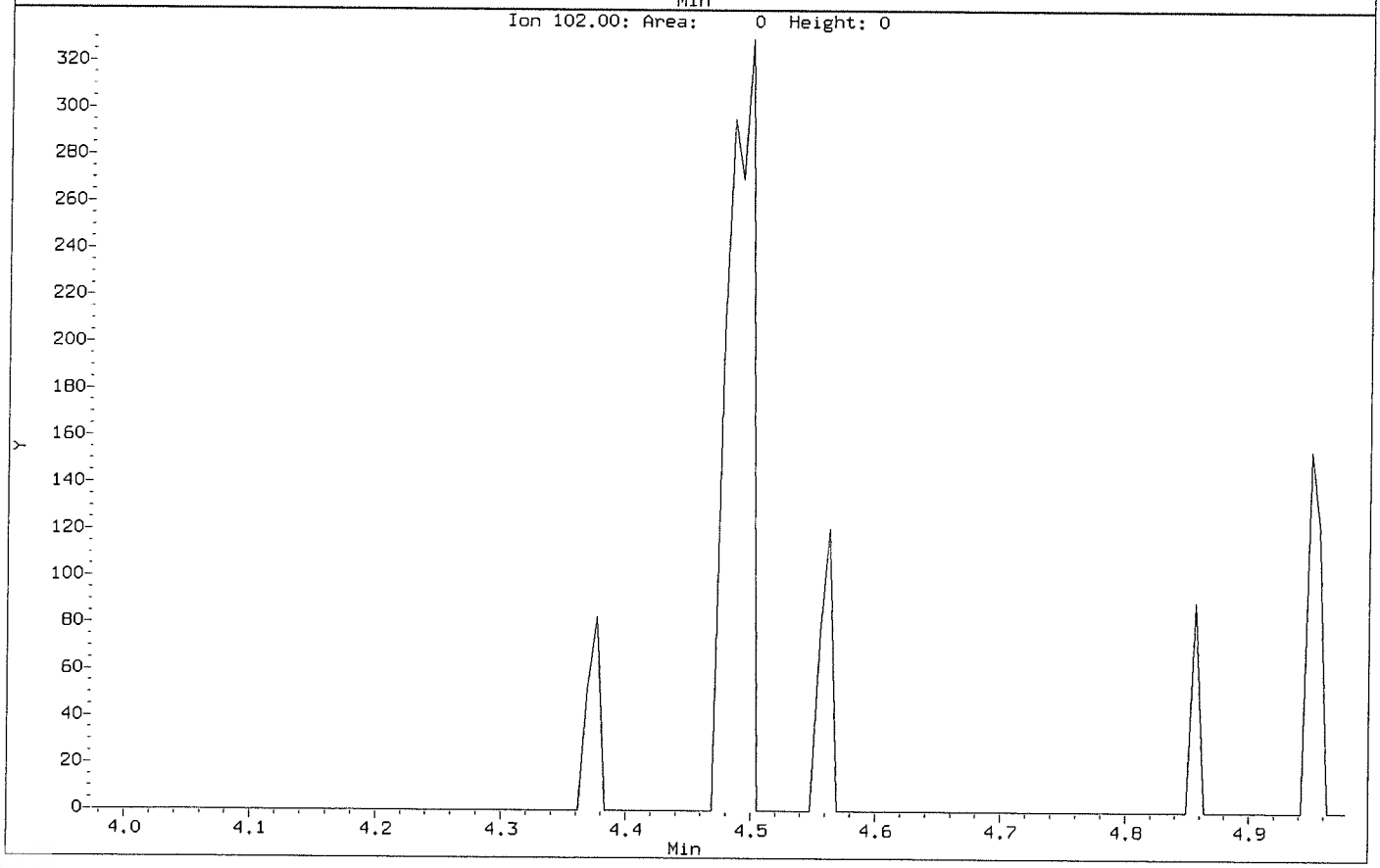
Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031503.D
Date : 15-MAR-2021 12:19
Client ID: VSTD000.5
Sample Info: VSTD000.5;VSTD000.5;1;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X210315.b\Before1\X031503.D
Injection Date: 15-MAR-2021 12:19
Instrument: voa6.i
Client Sample ID: VSTD000.5

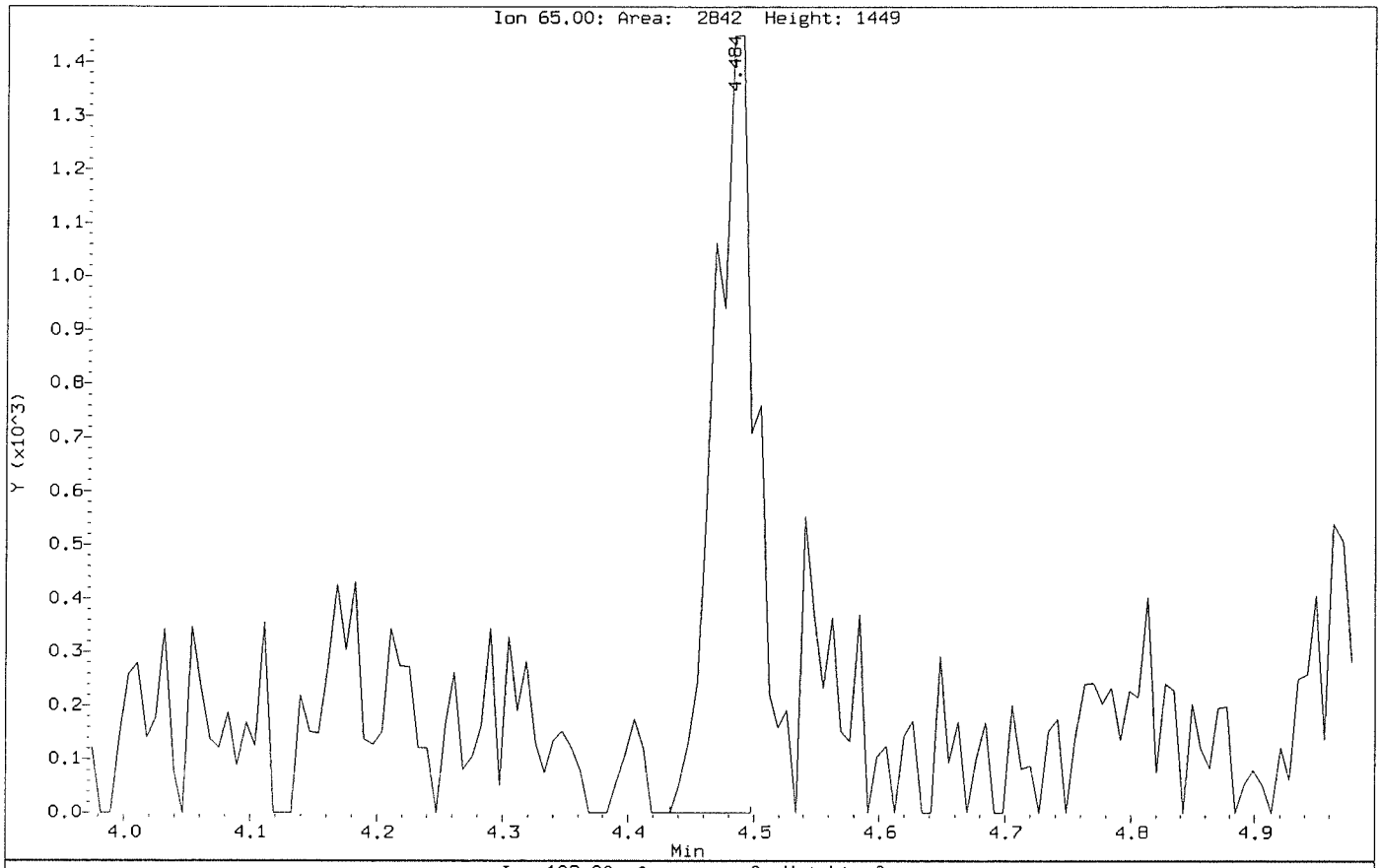
Compound: 1,2-Dichloroethane-d4
CAS Number: 17060-07-0

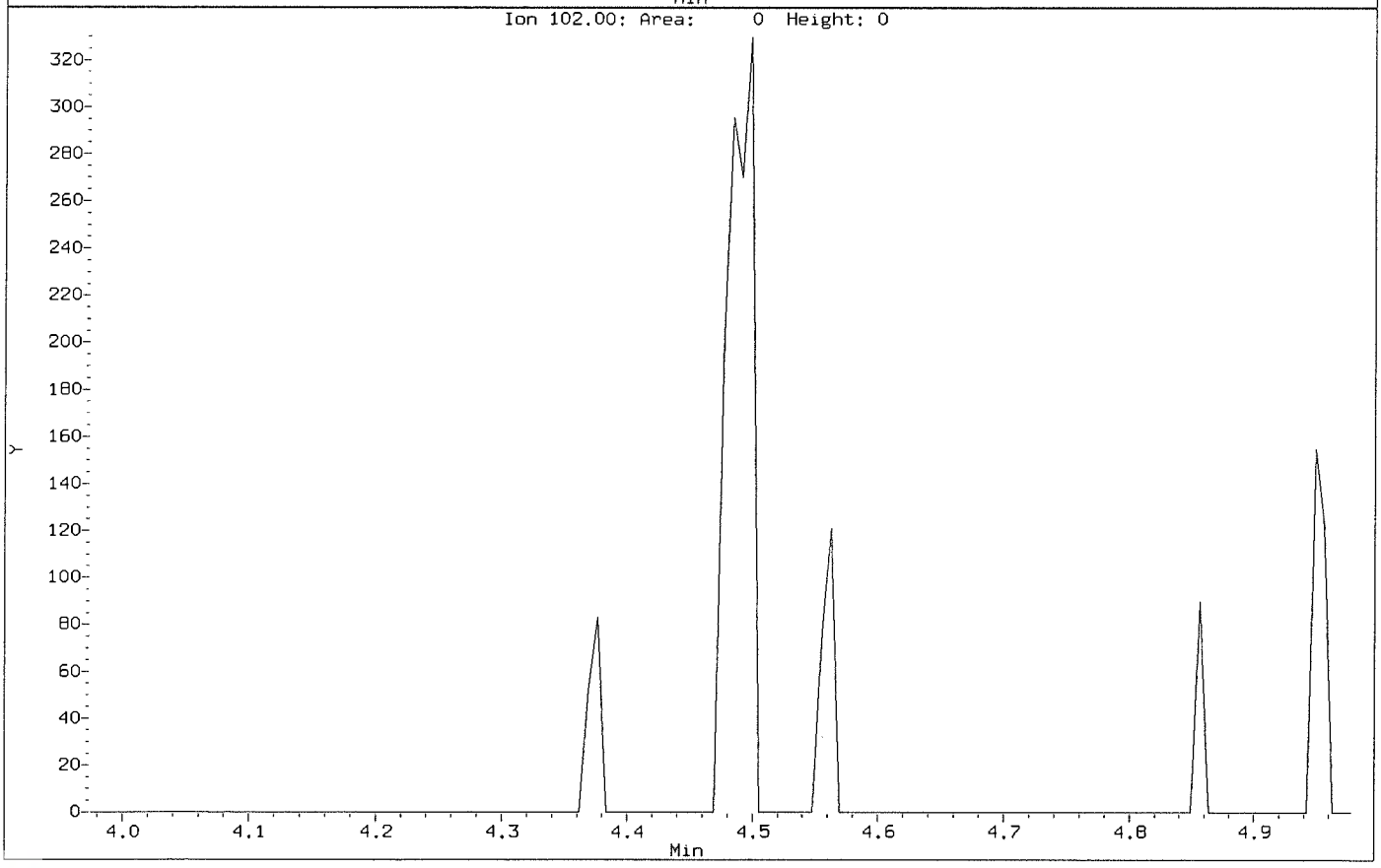




Data File: \\NAHSTWS005\Target\chem\voa6.i\X210315.b\X031503.D
Injection Date: 15-MAR-2021 12:19
Instrument: voa6.i
Client Sample ID: VSTD000.5

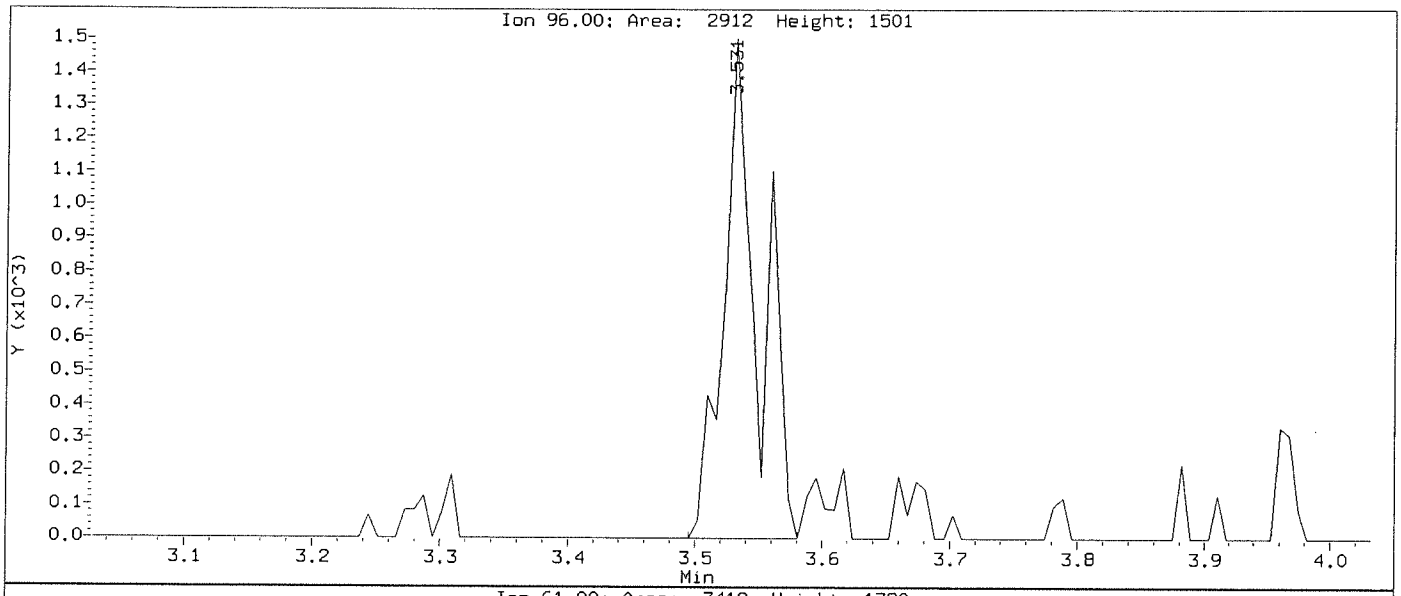
Compound: 1,2-Dichloroethane-d4
CAS Number: 17060-07-0

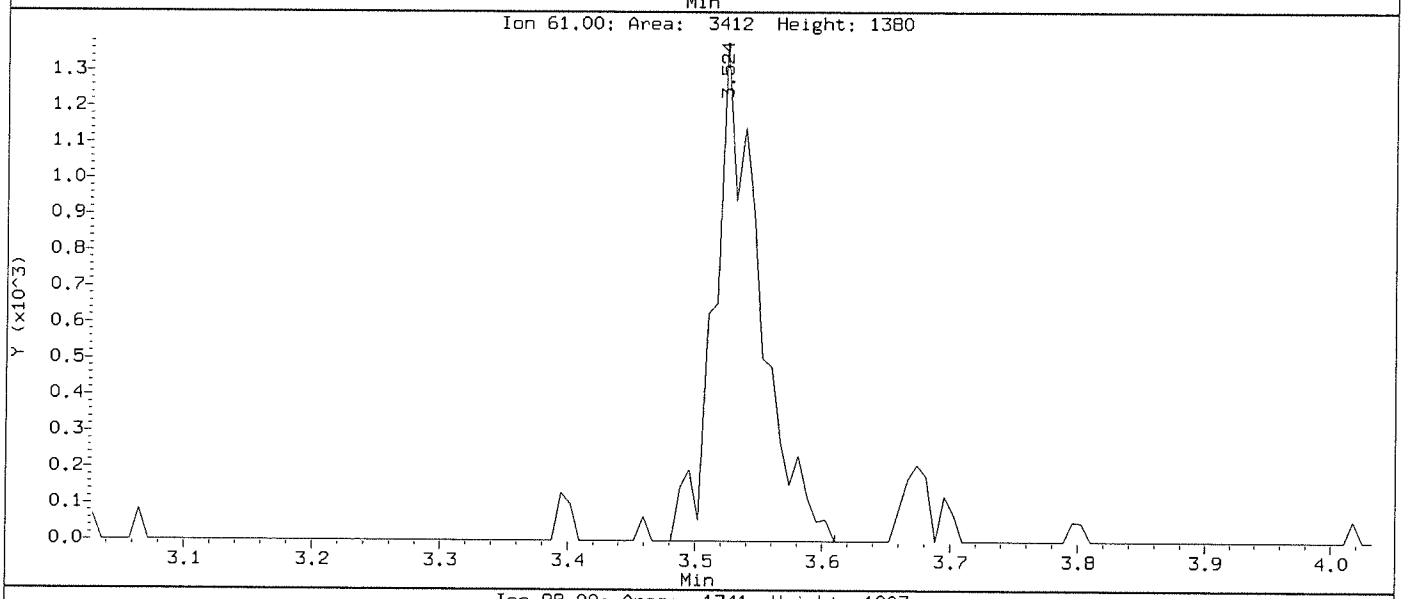


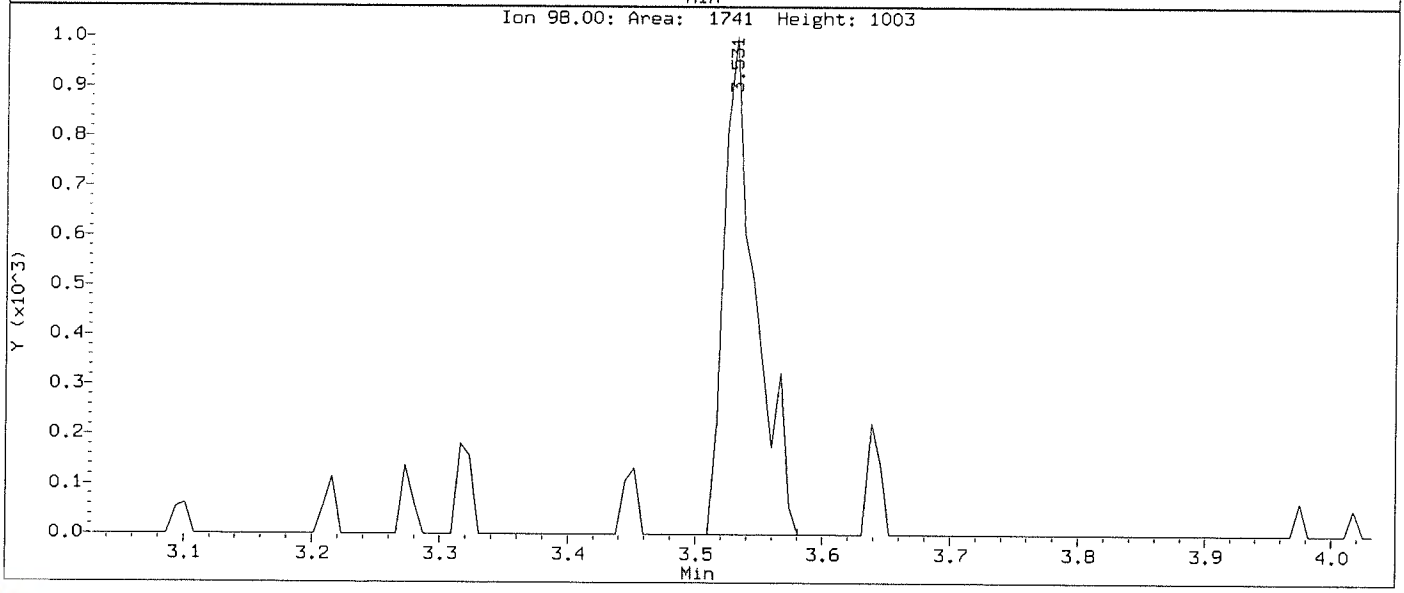


Data File: \\NAHSTWS005\Target\chem\voa6.i\X210315.b\Before1\X031503.D
Injection Date: 15-MAR-2021 12:19
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: cis-1,2-Dichloroethene
CAS Number: 156-59-2

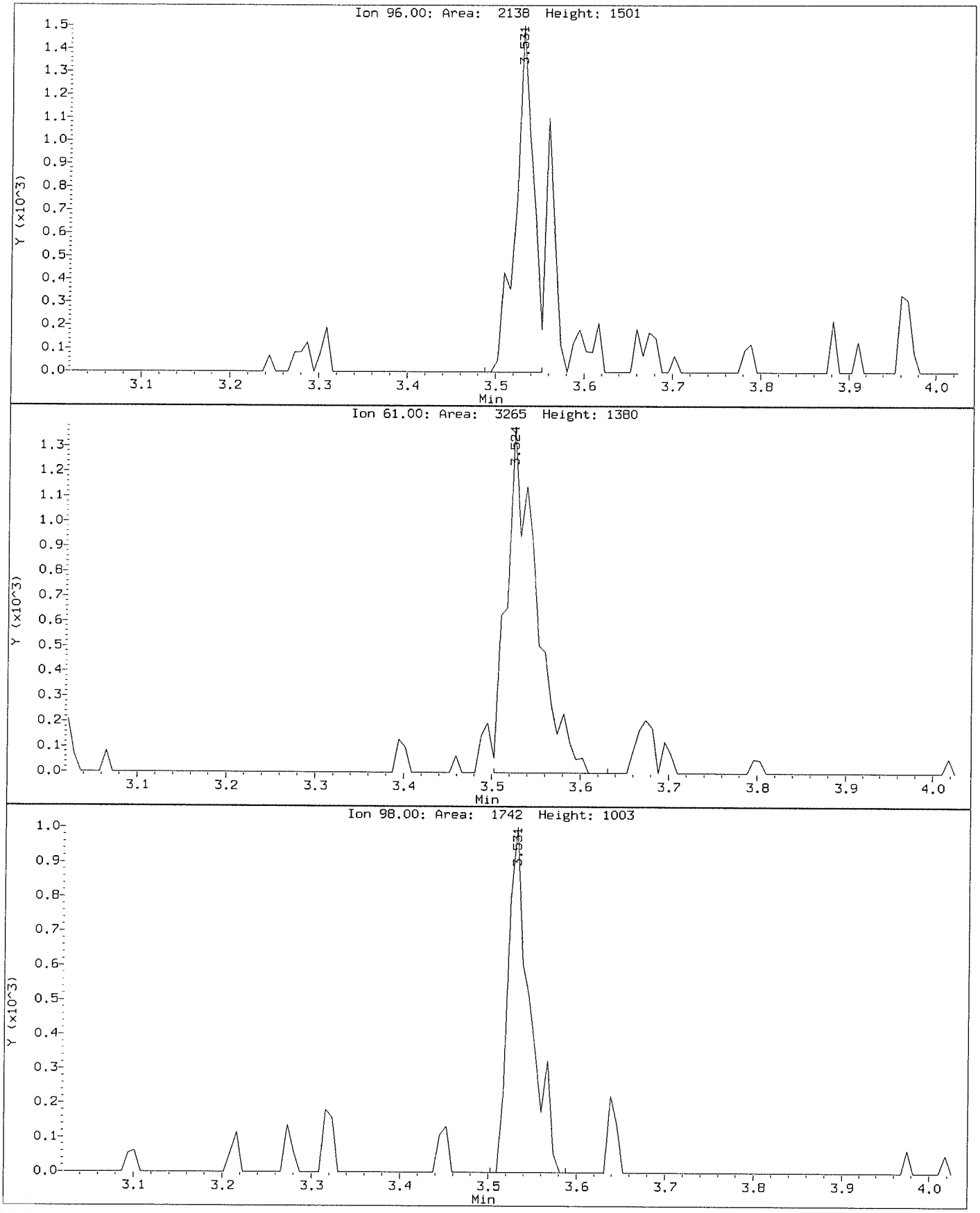






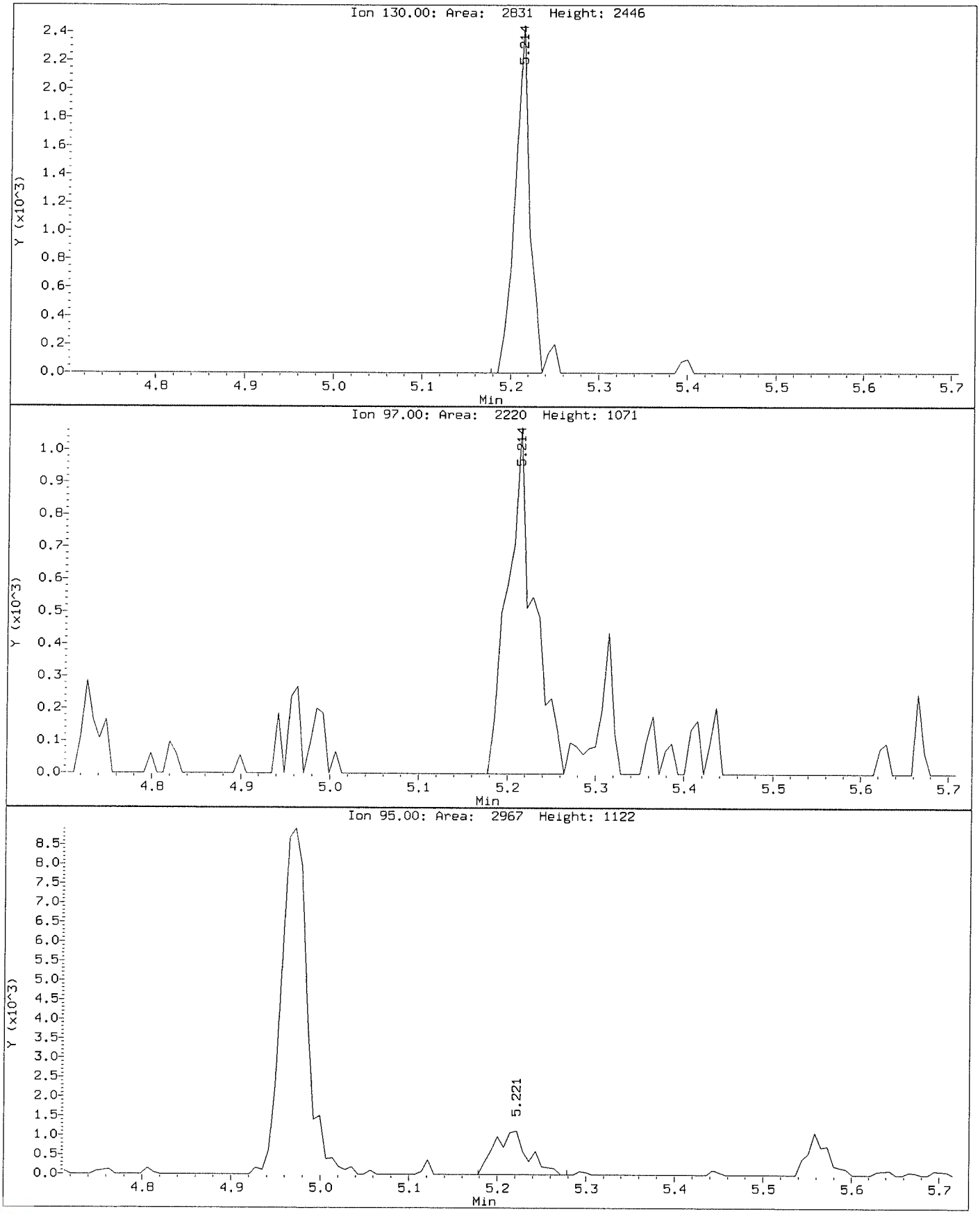
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Injection Date: 15-MAR-2021 12:19
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: cis-1,2-Dichloroethene
CAS Number: 156-59-2



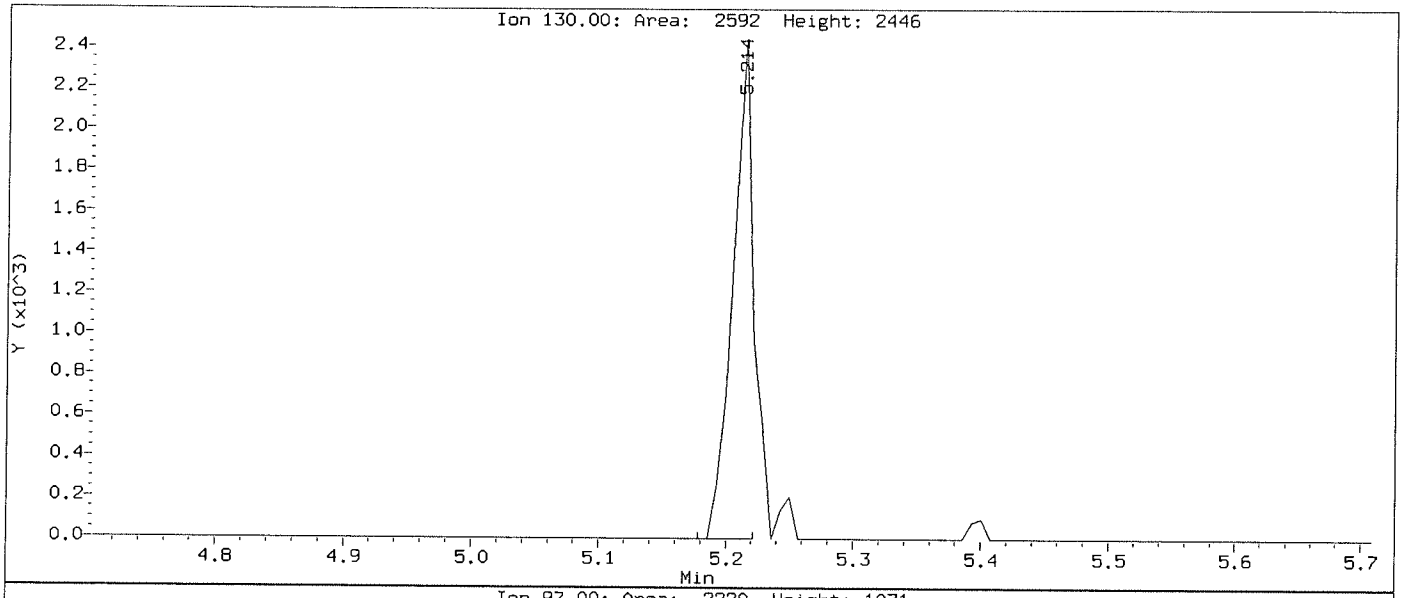
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Injection Date: 15-MAR-2021 12:19
Instrument: voa6.i
Client Sample ID: VSTD000.5

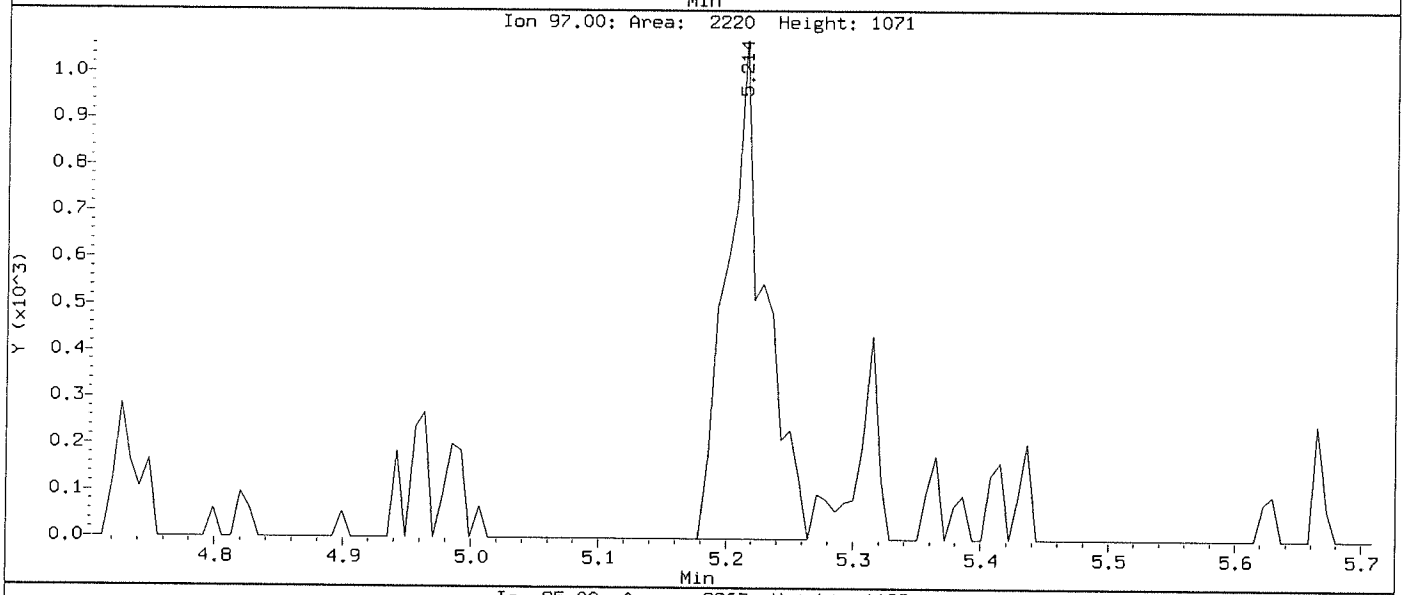
Compound: Trichloroethene
CAS Number: 79-01-6

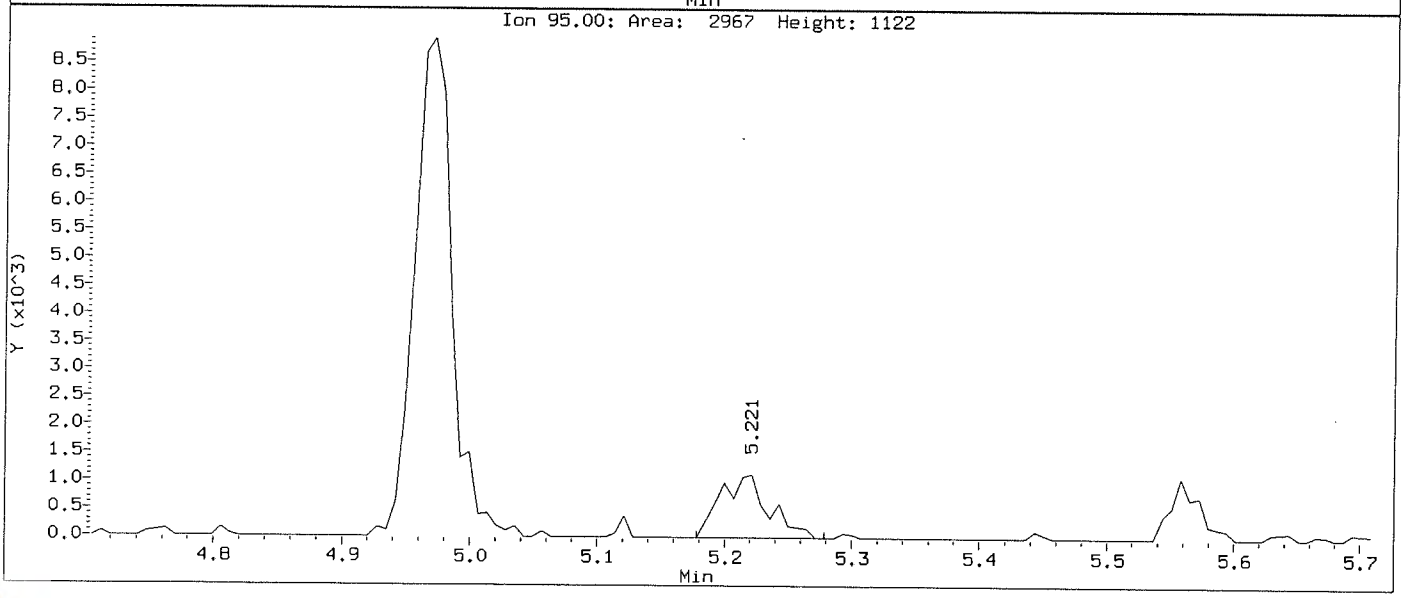


Data File: \\NAHSTWS005\Target\chem\voa6.i\X210315.b\X031503.D
Injection Date: 15-MAR-2021 12:19
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Trichloroethene
CAS Number: 79-01-6

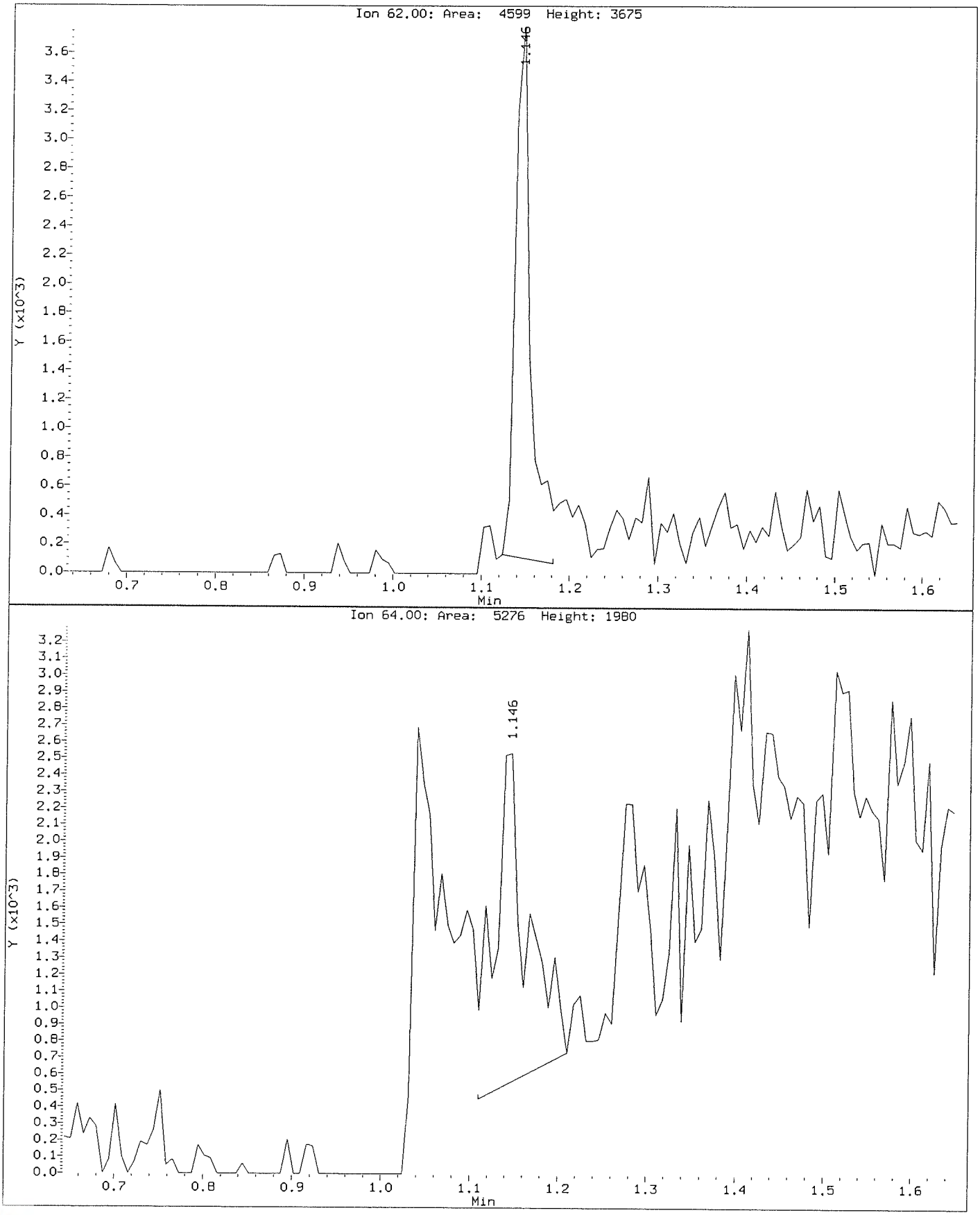






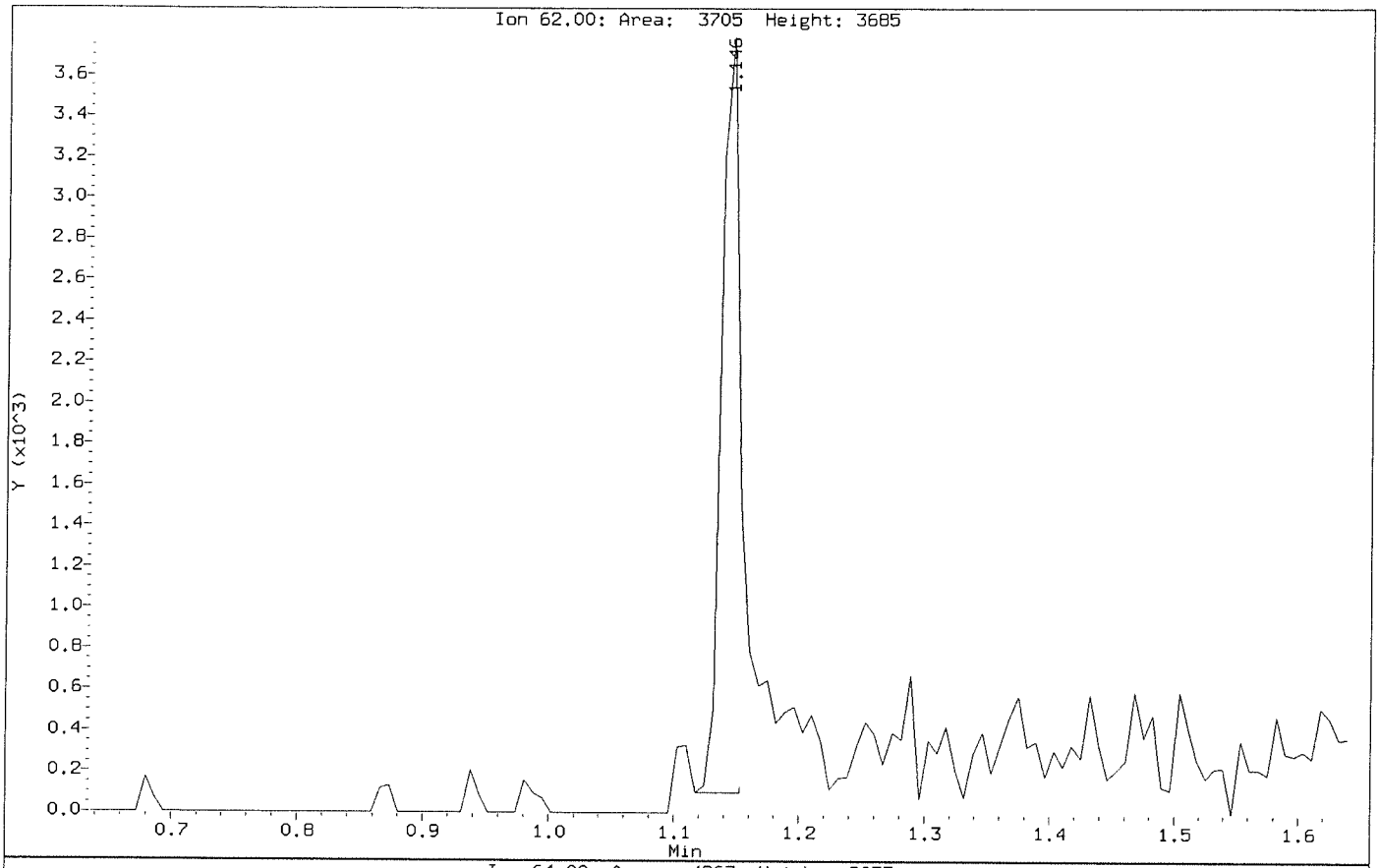
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Injection Date: 15-MAR-2021 12:19
Instrument: voa6.i
Client Sample ID: VSTD000.5

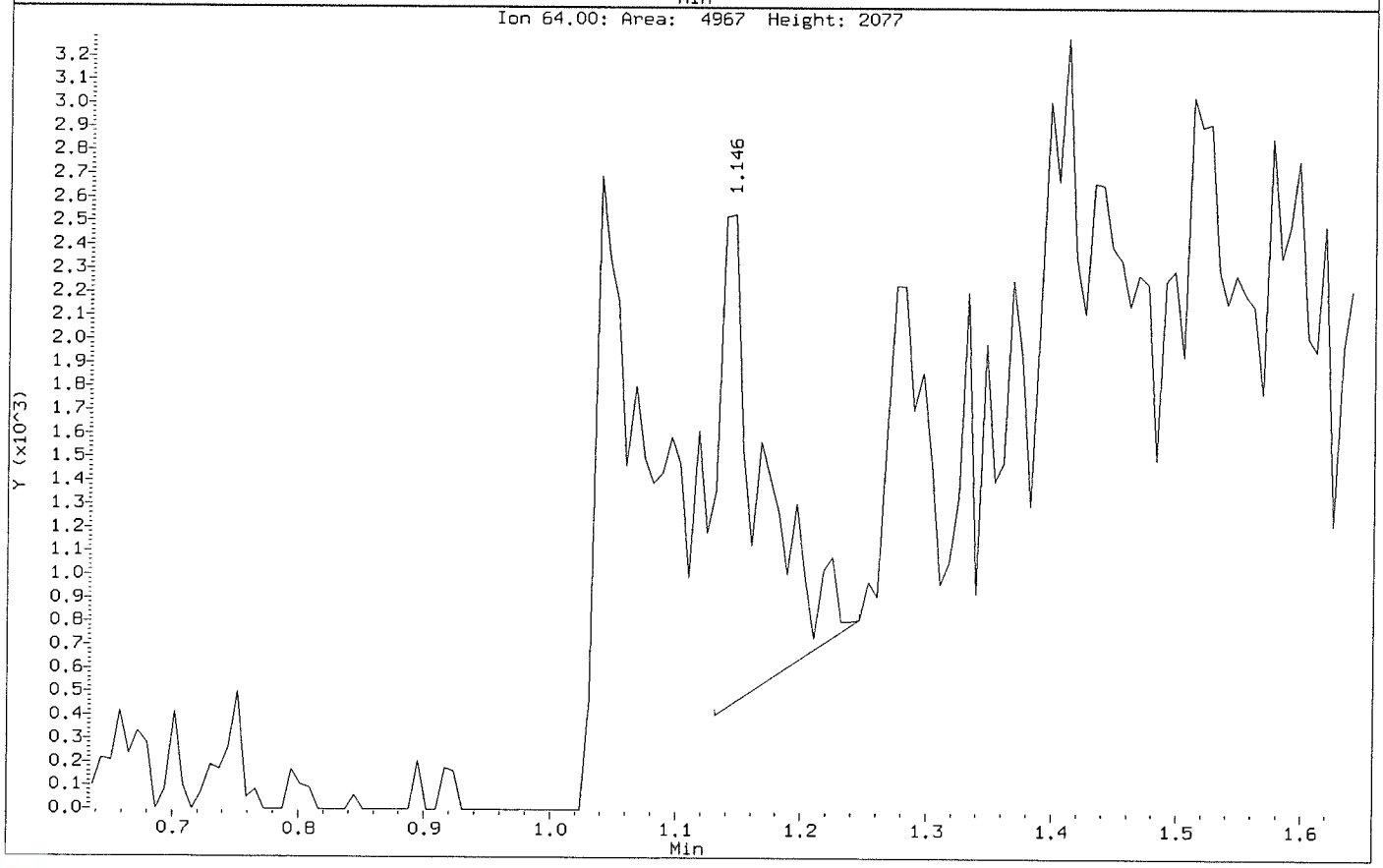
Compound: Vinyl Chloride
CAS Number: 75-01-4



Data File: \\NAHSTWS005\Target\chem\voa6.i\X210315.b\X031503.D
Injection Date: 15-MAR-2021 12:19
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Vinyl Chloride
CAS Number: 75-01-4





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Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031504.D
Lab Smp Id: VSTD001 Client Smp ID: VSTD001
Inj Date : 15-MAR-2021 12:39
Operator : PC Inst ID: voa6.i
Smp Info : VSTD001;VSTD001;1;3;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:49 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 12:19 Cal File: X031503.D
Als bottle: 5 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

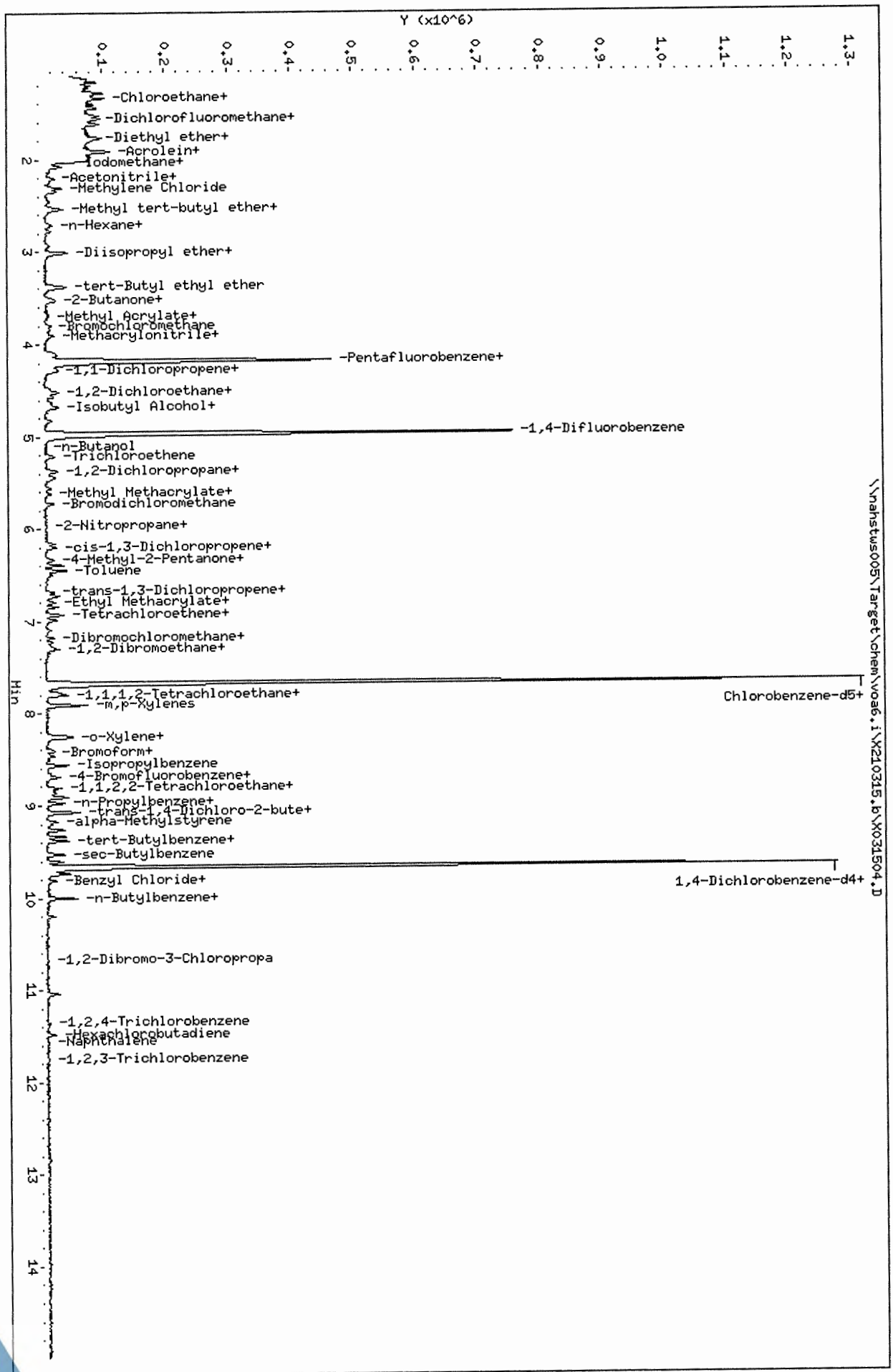
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	349091	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	583945	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	550204	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	243834	50.0000	
$ 30 Dibromofluoromethane	113	4.111	4.111	(0.983)	4678	1.00000	2.13
$ 35 1,2-Dichloroethane-d4	65	4.483	4.483	(1.072)	5757	1.00000	0.97(M)
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	15625	1.00000	1.05
$ 69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	5753	1.00000	0.96
27 cis-1,2-Dichloroethene	96	3.523	3.523	(0.842)	4872	1.00000	1.09
38 Trichloroethene	130	5.214	5.214	(1.049)	3608	1.00000	0.91
5 Vinyl Chloride	62	1.138	1.138	(0.272)	6884	1.00000	1.05

QC Flag Legend

M - Compound response manually integrated.

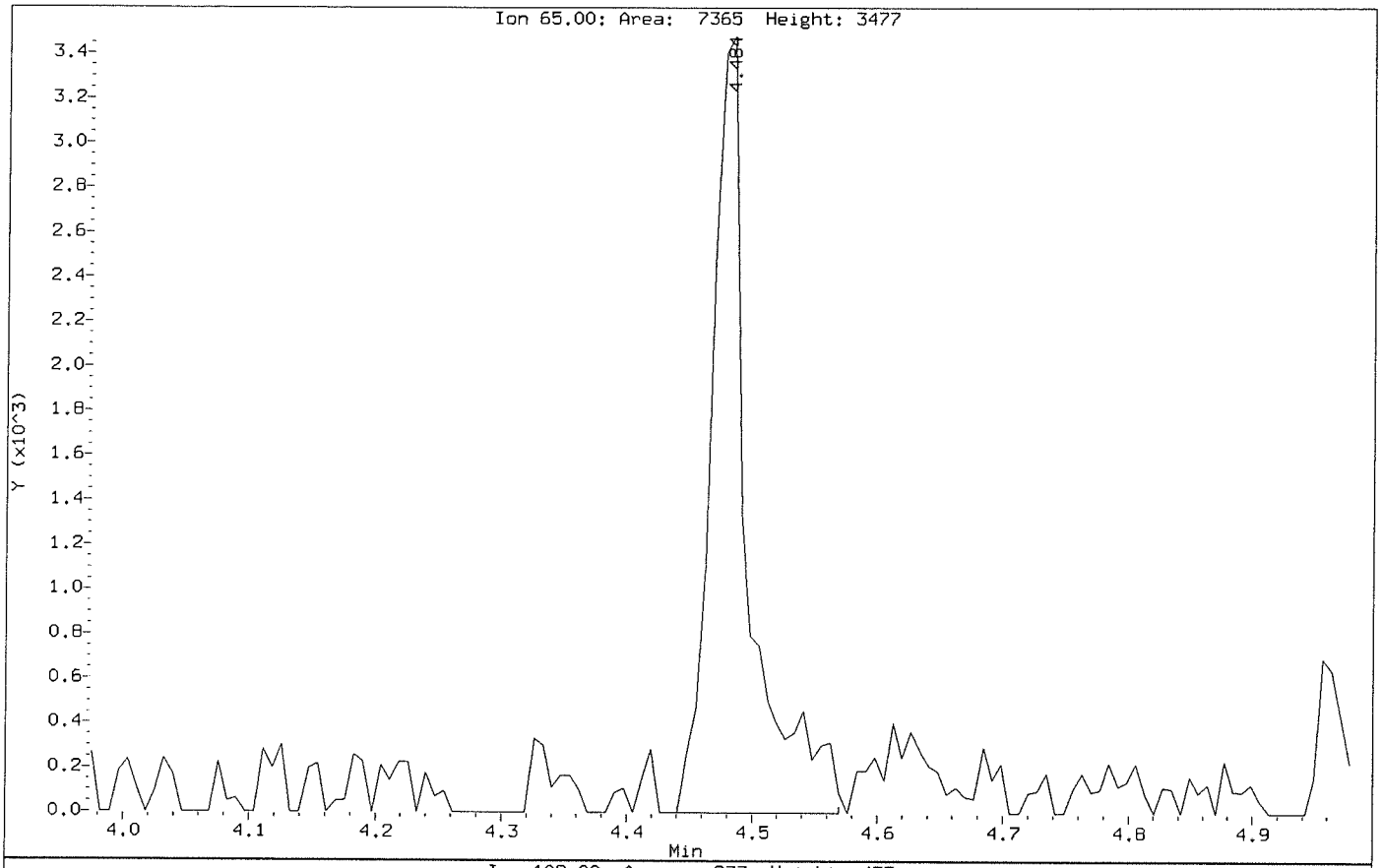


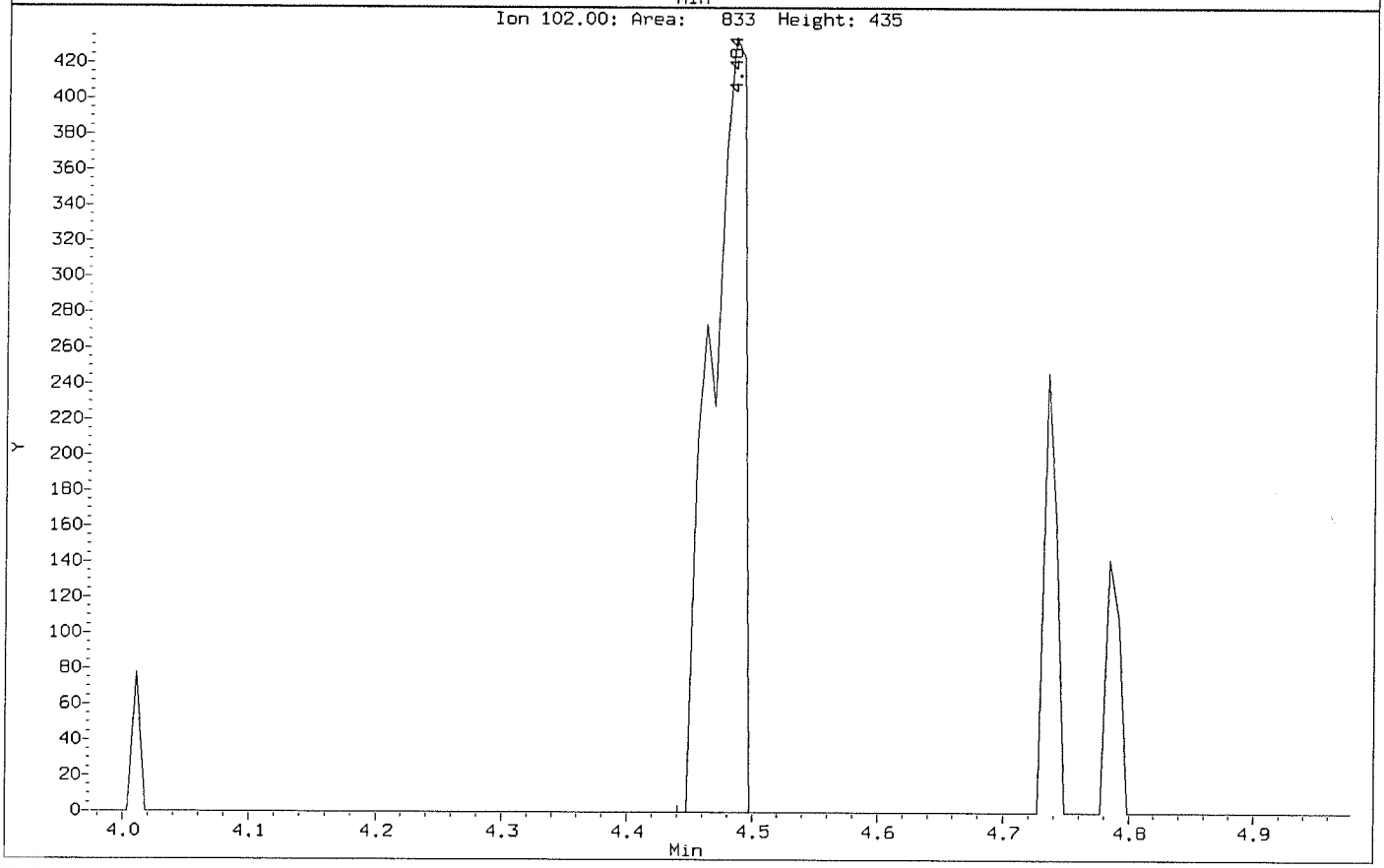
Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031504.D
Date : 15-MAR-2021 12:39
Client ID: VSTD001
Sample Info: VSTD001;VSTD001;1;3;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X210315.b\Before1\X031504.D
Injection Date: 15-MAR-2021 12:39
Instrument: voa6.i
Client Sample ID: VSTD001

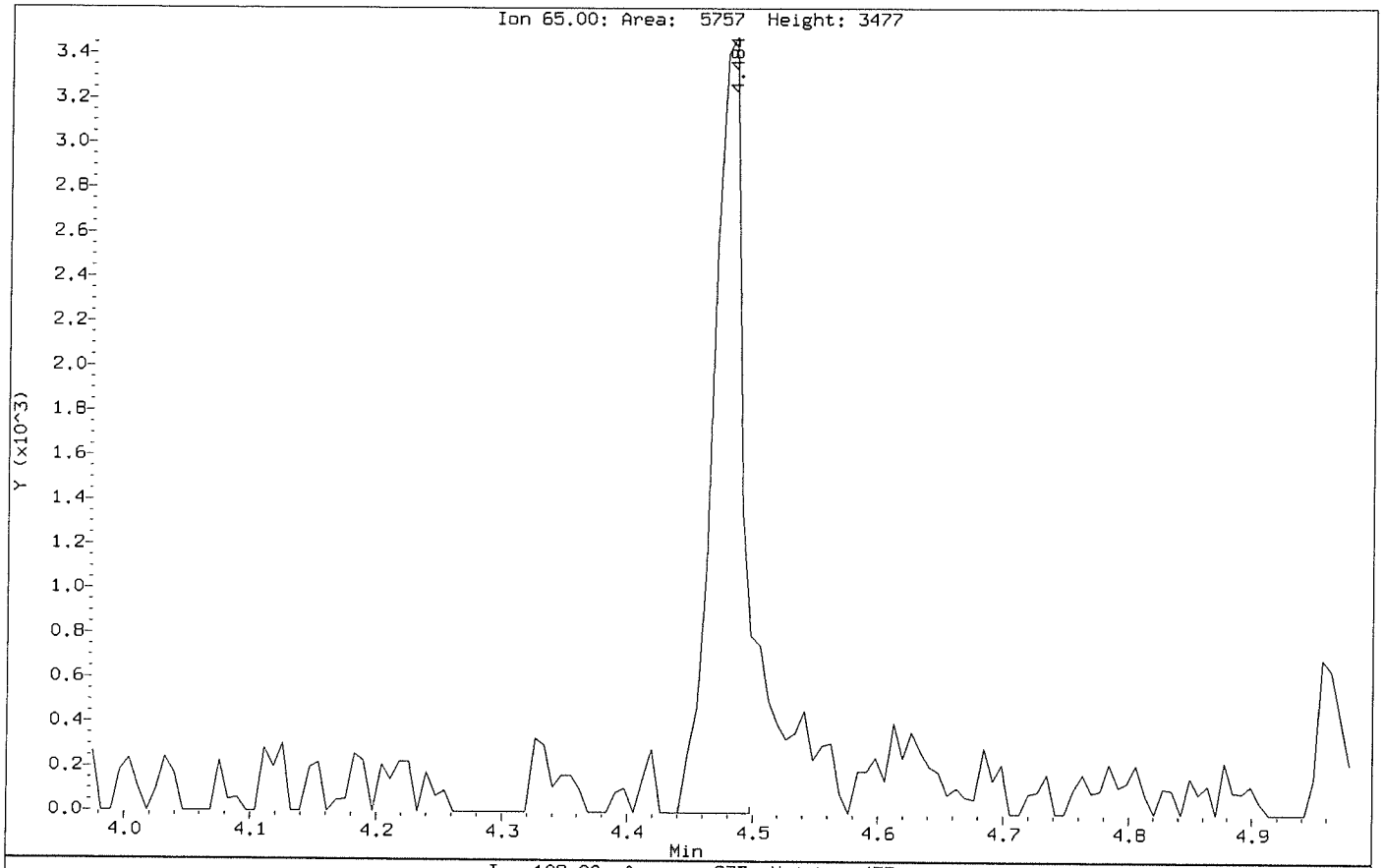
Compound: 1,2-Dichloroethane-d4
CAS Number: 17060-07-0

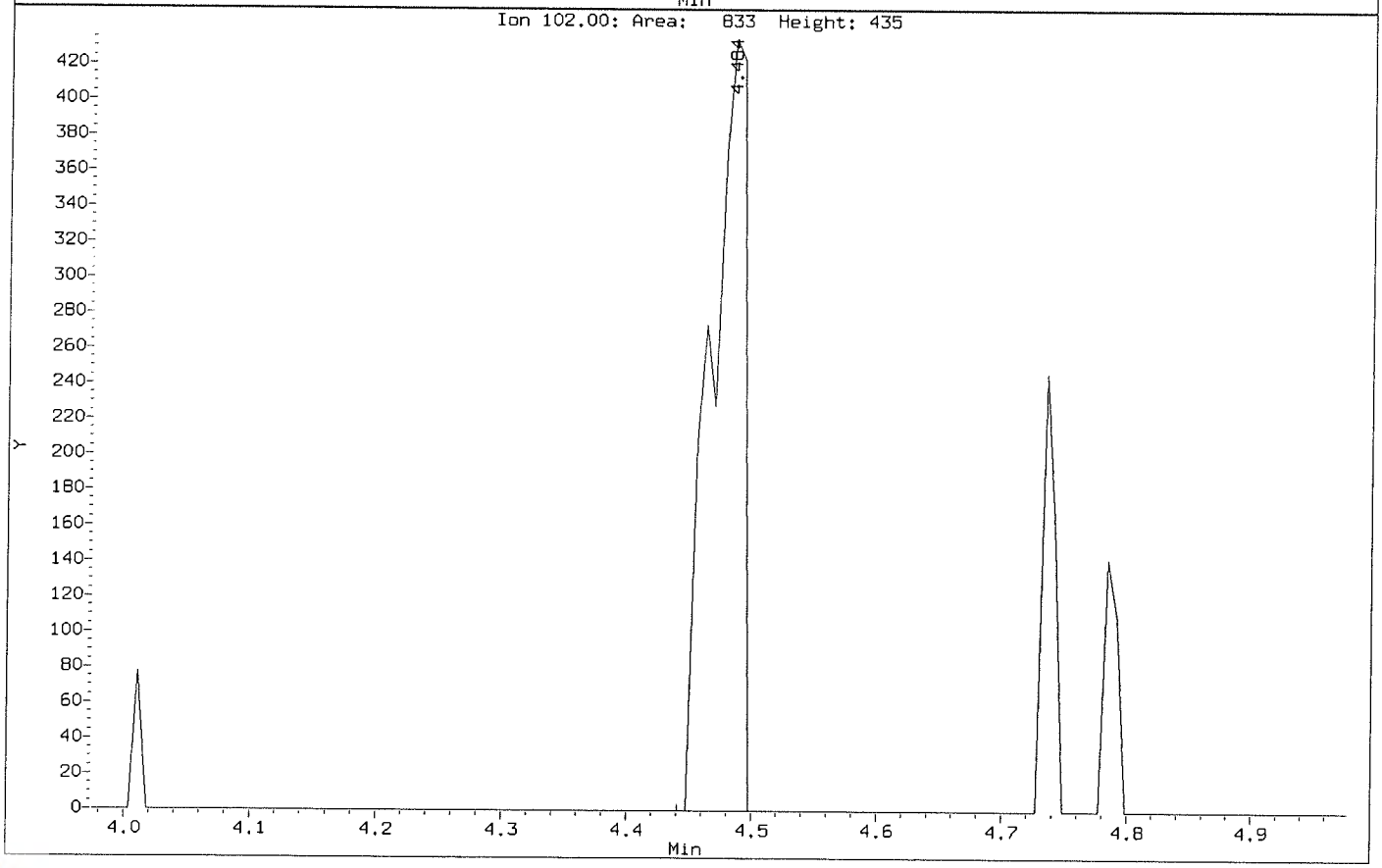




Data File: \\NAHSTWS005\Target\chem\voa6.i\X210315.b\X031504.D
Injection Date: 15-MAR-2021 12:39
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2-Dichloroethane-d4
CAS Number: 17060-07-0





Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031505.D Page 1
Report Date: 02-Apr-2021 14:49

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031505.D
Lab Smp Id: VSTD002 Client Smp ID: VSTD002
Inj Date : 15-MAR-2021 13:00
Operator : PC Inst ID: voa6.i
Smp Info : VSTD002;VSTD002;1;4;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:49 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 12:39 Cal File: X031504.D
Als bottle: 6 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

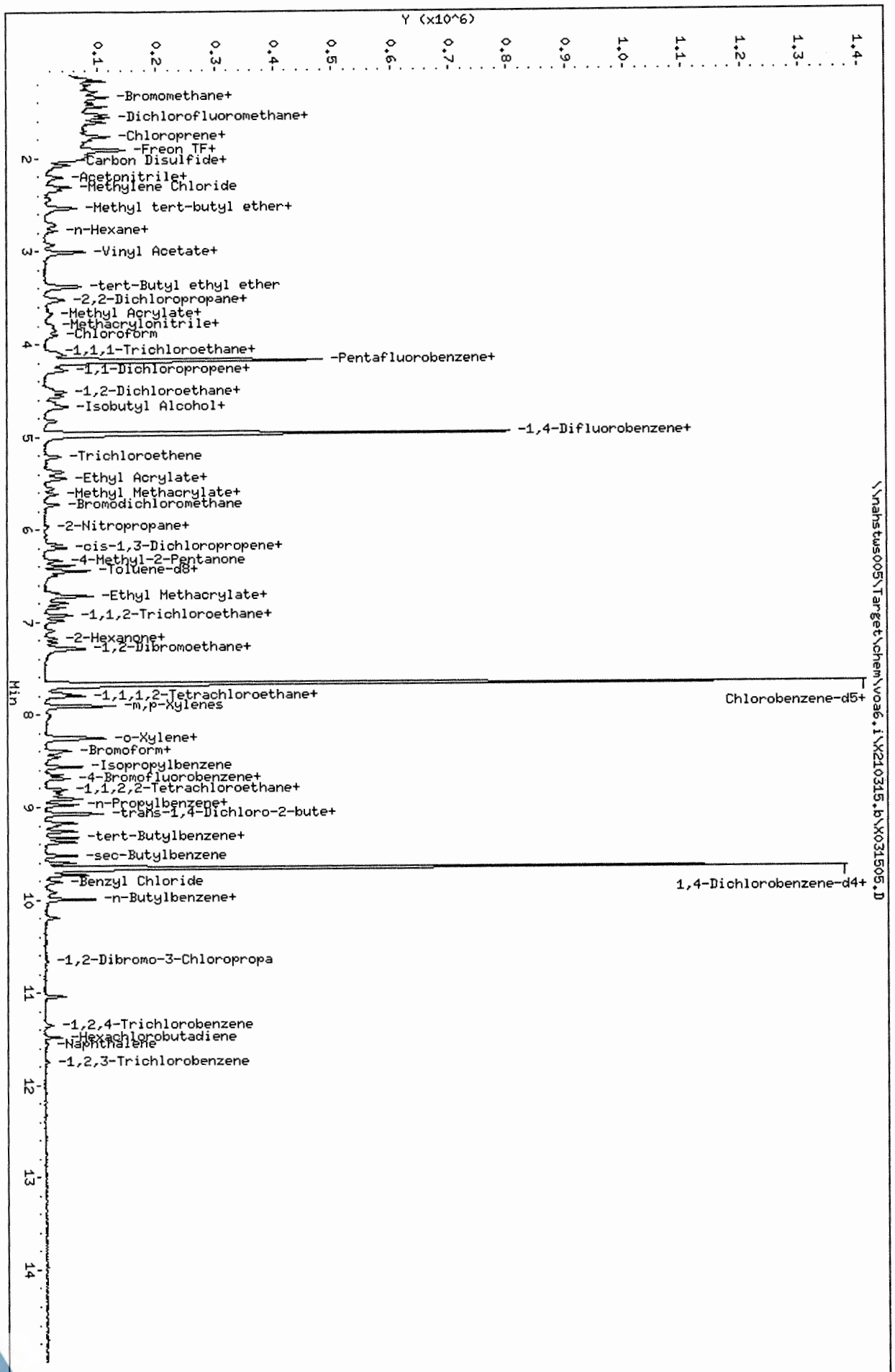
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	355499	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	617506	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	563043	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	253163	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	7977	2.00000	2.85
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	9939	2.00000	1.83(M)
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	27857	2.00000	1.84
$ 69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	9314	2.00000	1.71
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	9720	2.00000	2.15
38 Trichloroethene	130	5.214	5.214	(1.049)	8866	2.00000	2.13
5 Vinyl Chloride	62	1.145	1.145	(0.274)	14742	2.00000	2.22(M)

QC Flag Legend

M - Compound response manually integrated.

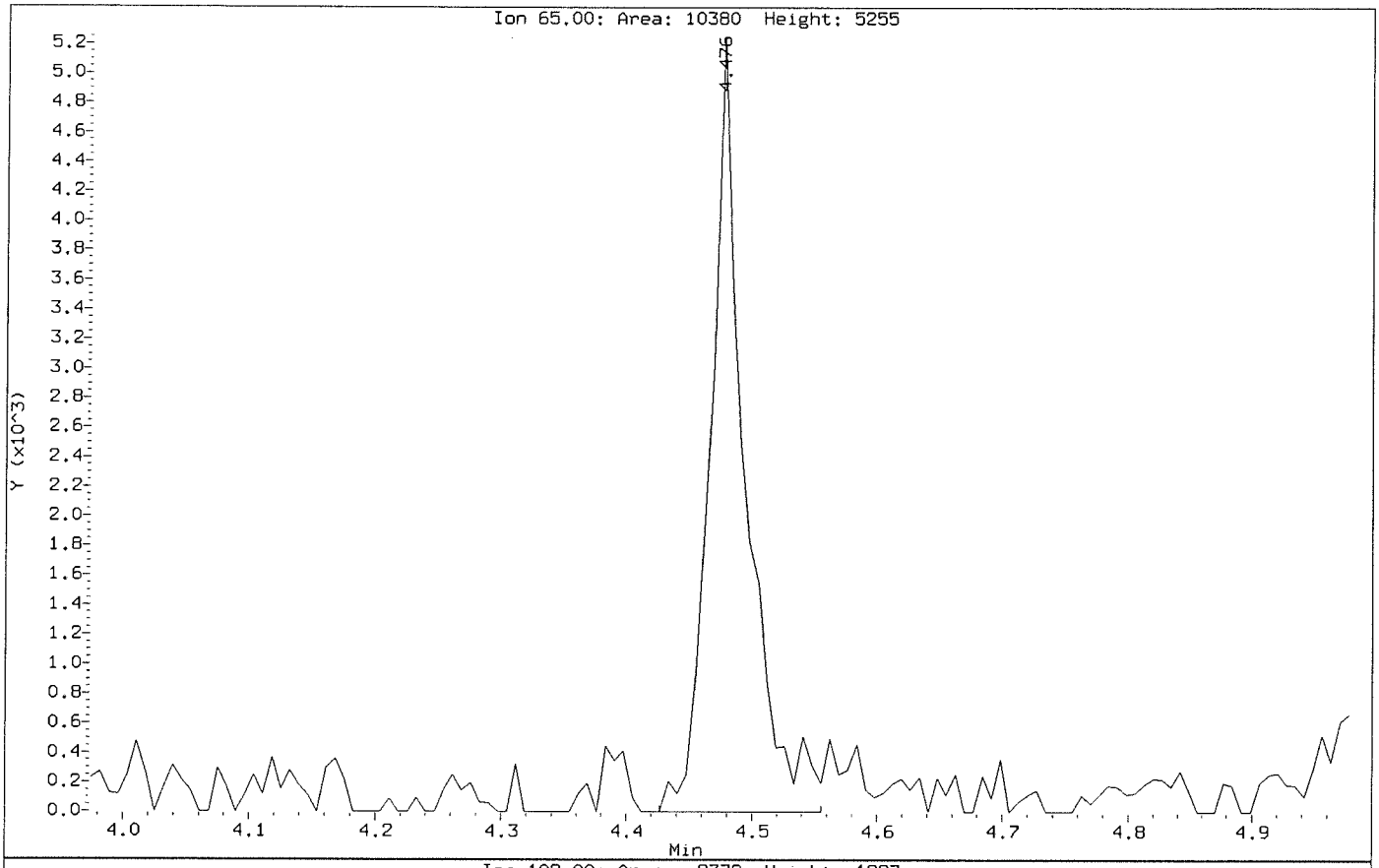


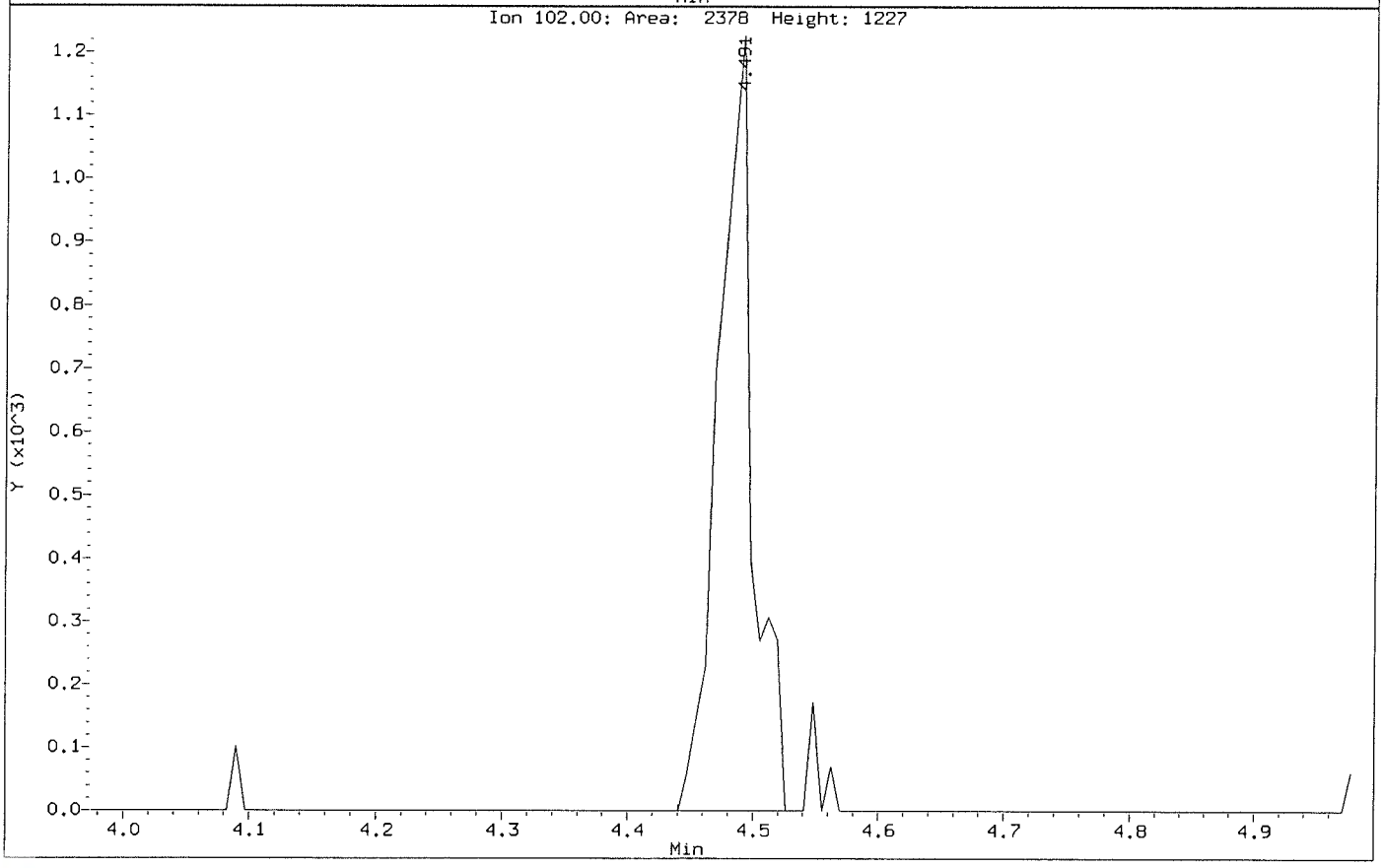
Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031505.D
Date : 15-MAR-2021 13:00
Client ID: VSTD002
Sample Info: VSTD002;VSTD002;1;4;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X210315.b\Before1\X031505.D
Injection Date: 15-MAR-2021 13:00
Instrument: voa6.i
Client Sample ID: VSTD002

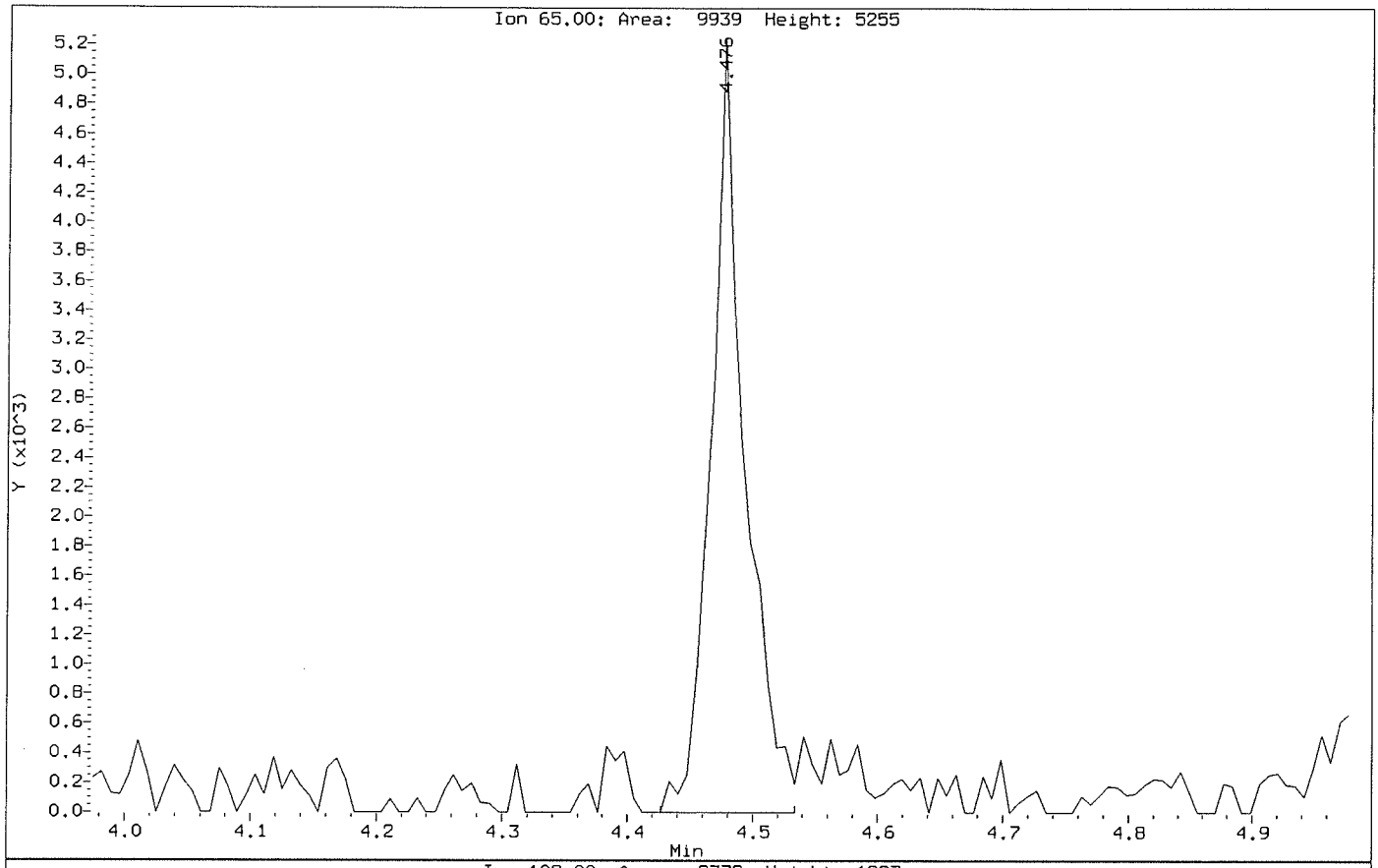
Compound: 1,2-Dichloroethane-d4
CAS Number: 17060-07-0

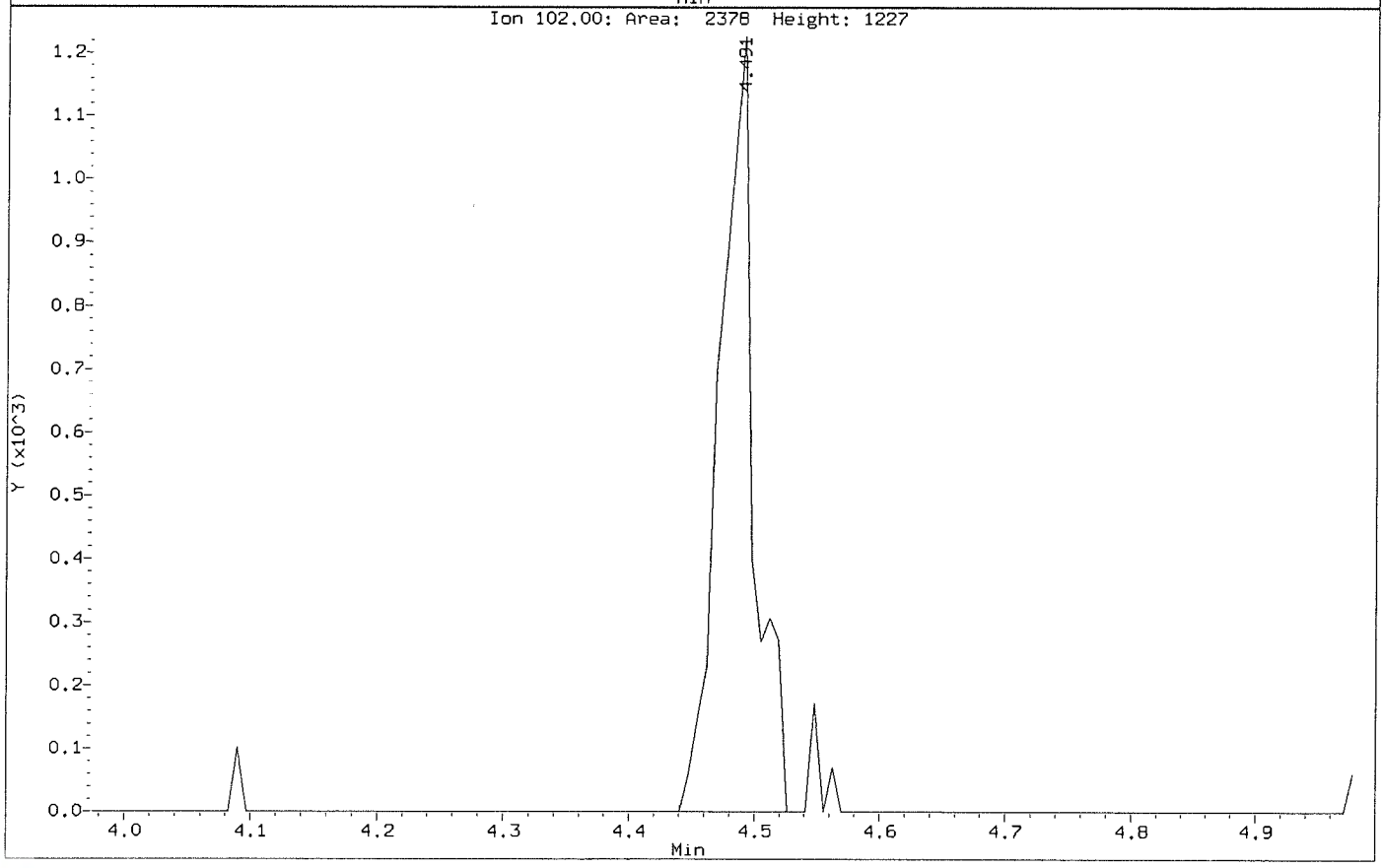




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Injection Date: 15-MAR-2021 13:00
Instrument: voa6.i
Client Sample ID: VSTD002

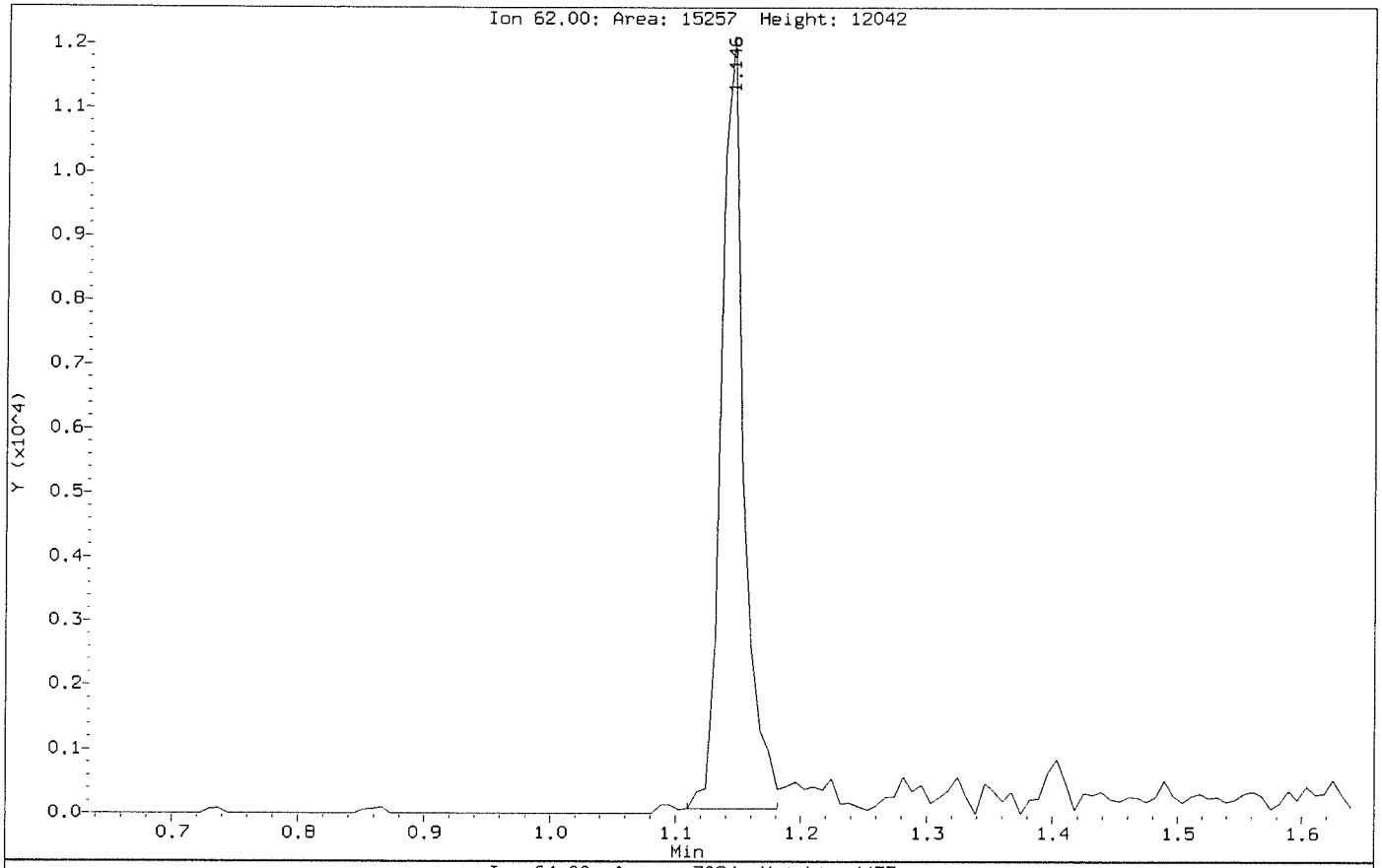
Compound: 1,2-Dichloroethane-d4
CAS Number: 17060-07-0

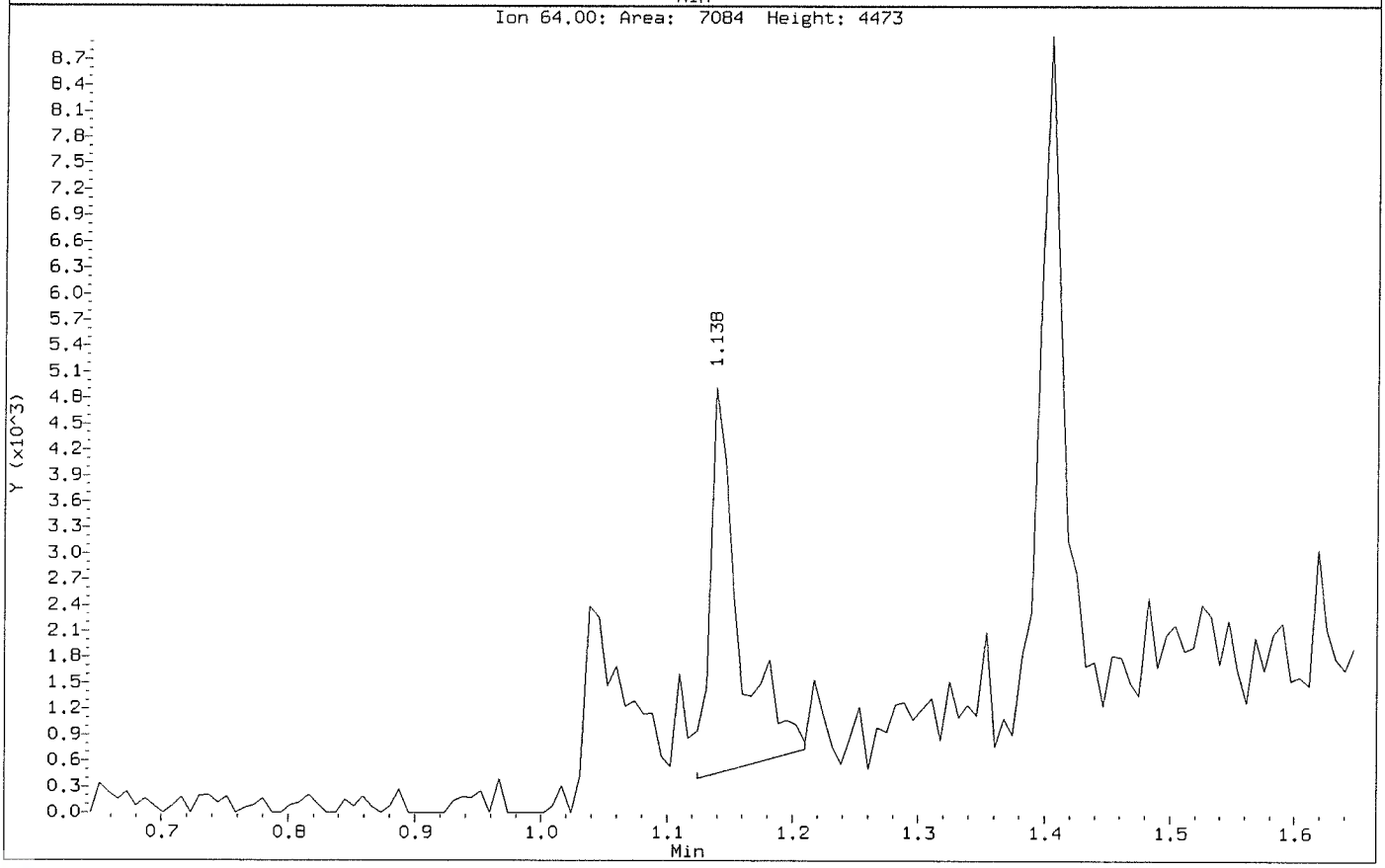




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Instrument: voa6.i
Client Sample ID: VSTD002

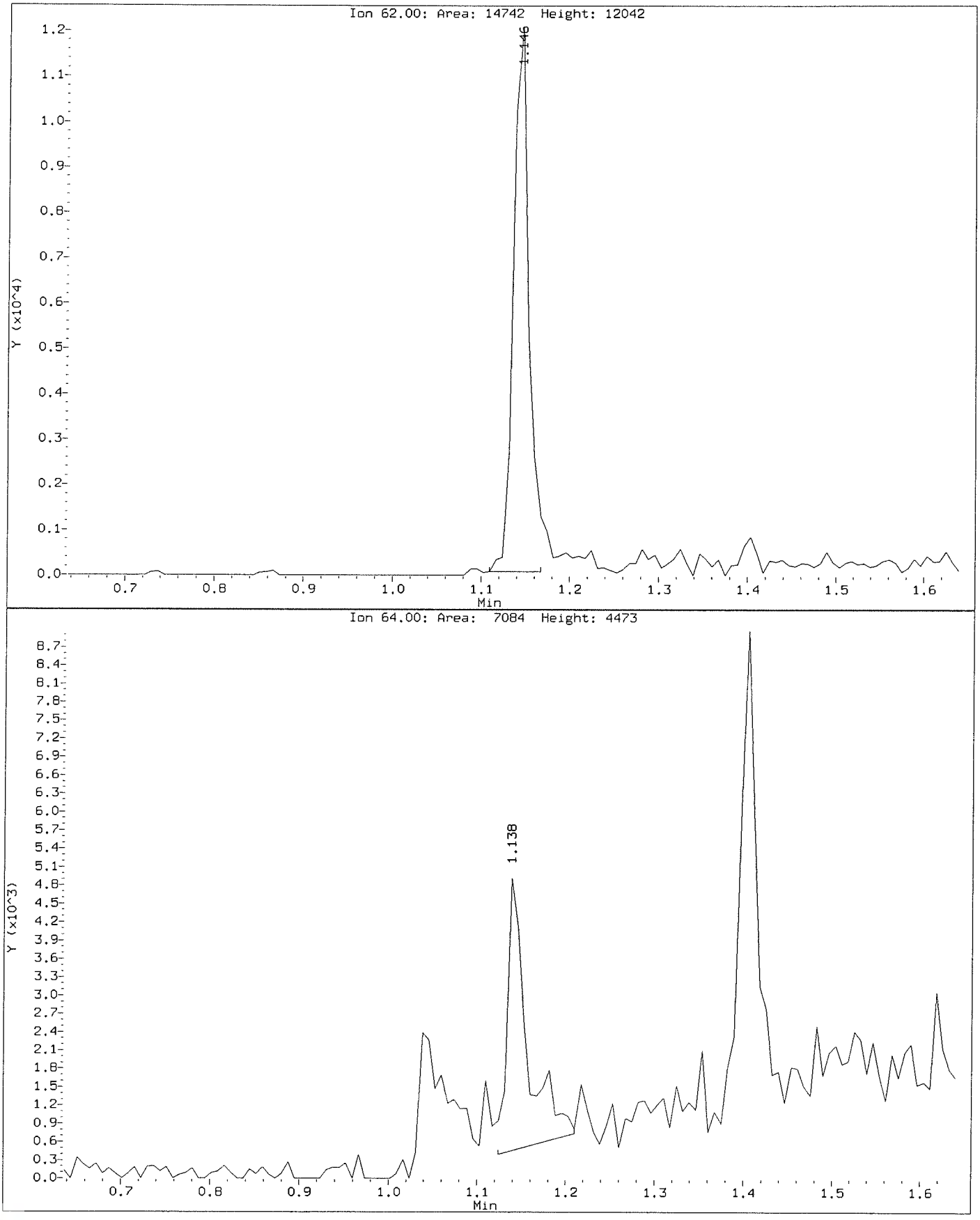
Compound: Vinyl Chloride
CAS Number: 75-01-4





Data File: \\NAHSTWS005\Target\chem\voa6.i\X210315.b\X031505.D
Injection Date: 15-MAR-2021 13:00
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: Vinyl Chloride
CAS Number: 75-01-4



Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031506.D Page 1
Report Date: 02-Apr-2021 14:49

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031506.D
Lab Smp Id: VSTD005 Client Smp ID: VSTD005
Inj Date : 15-MAR-2021 13:21
Operator : PC Inst ID: voa6.i
Smp Info : VSTD005;VSTD005;1;5;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:49 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 13:00 Cal File: X031505.D
Als bottle: 7 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

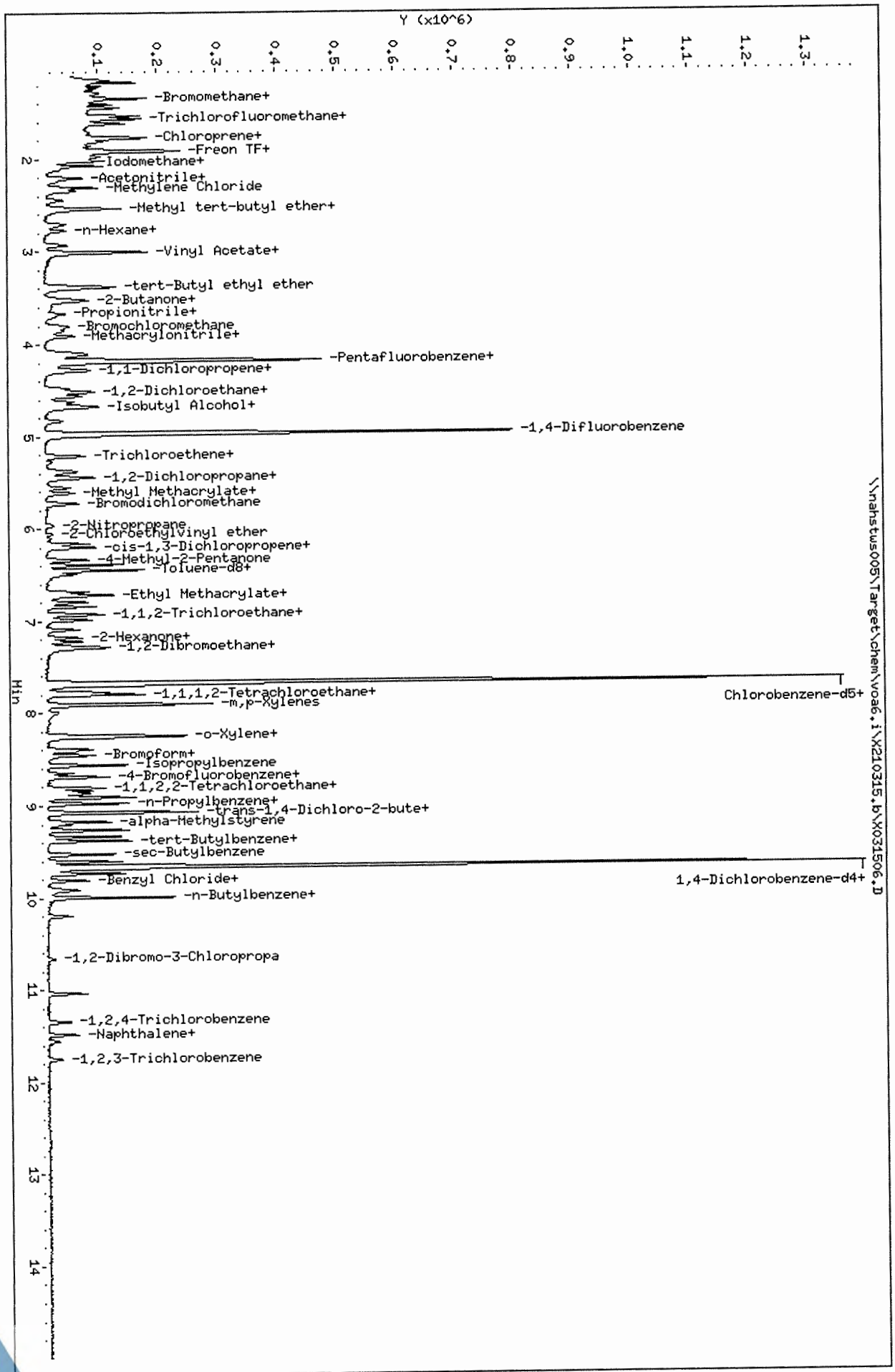
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	349267	50.0000	
*	36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	610153	50.0000	
*	47 Chlorobenzene-d5	117	7.670	7.670	(1.000)	554236	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	252353	50.0000	
$	30 Dibromofluoromethane	113	4.103	4.103	(0.981)	20536	5.00000	5.76
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	26207	5.00000	5.37
$	48 Toluene-d8	98	6.388	6.388	(0.833)	71229	5.00000	4.78
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	24836	5.00000	5.21
	27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	22013	5.00000	4.96
	38 Trichloroethene	130	5.206	5.206	(1.048)	20575	5.00000	5.00
	5 Vinyl Chloride	62	1.138	1.138	(0.272)	35678	5.00000	5.46(M)

QC Flag Legend

M - Compound response manually integrated.

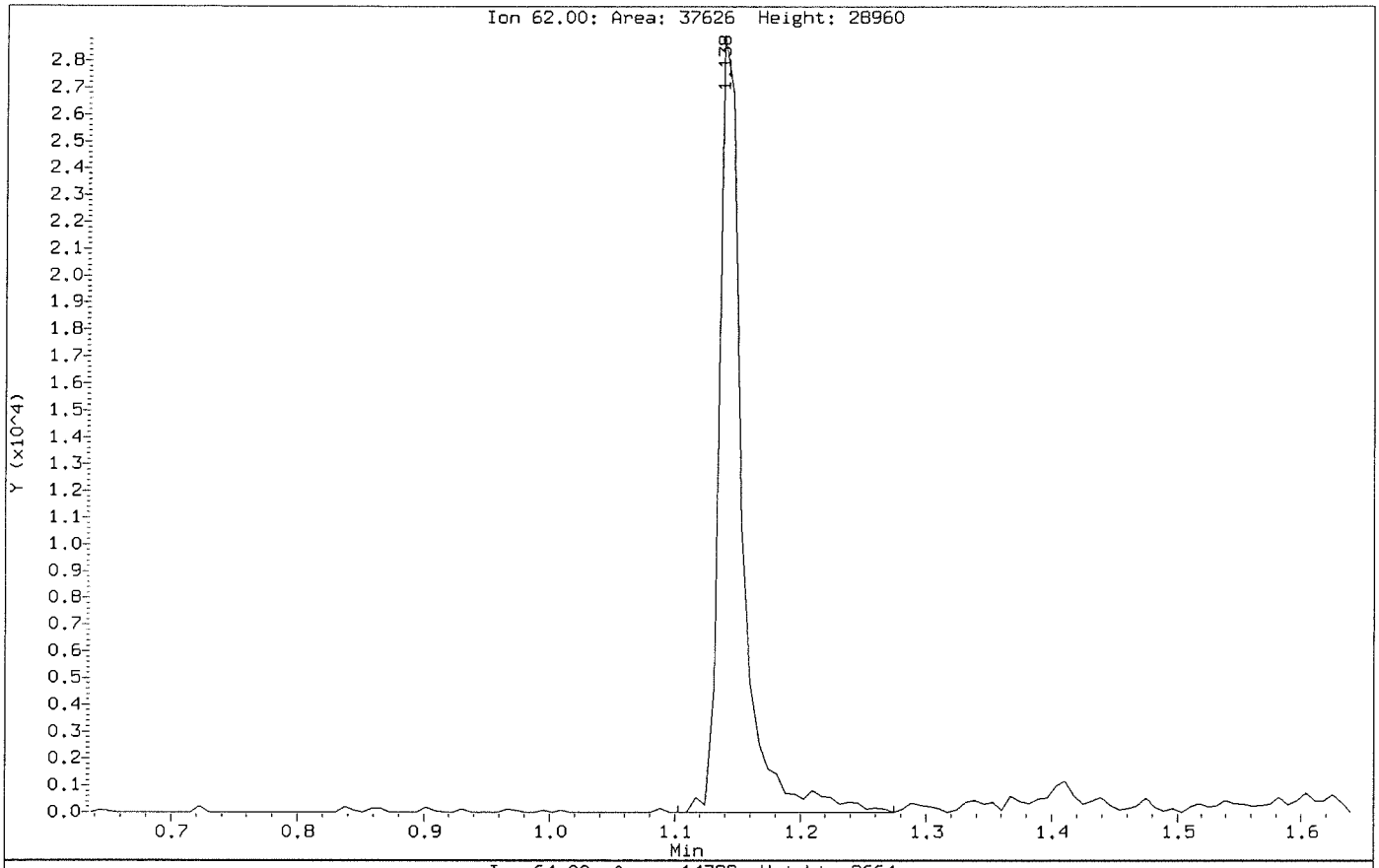


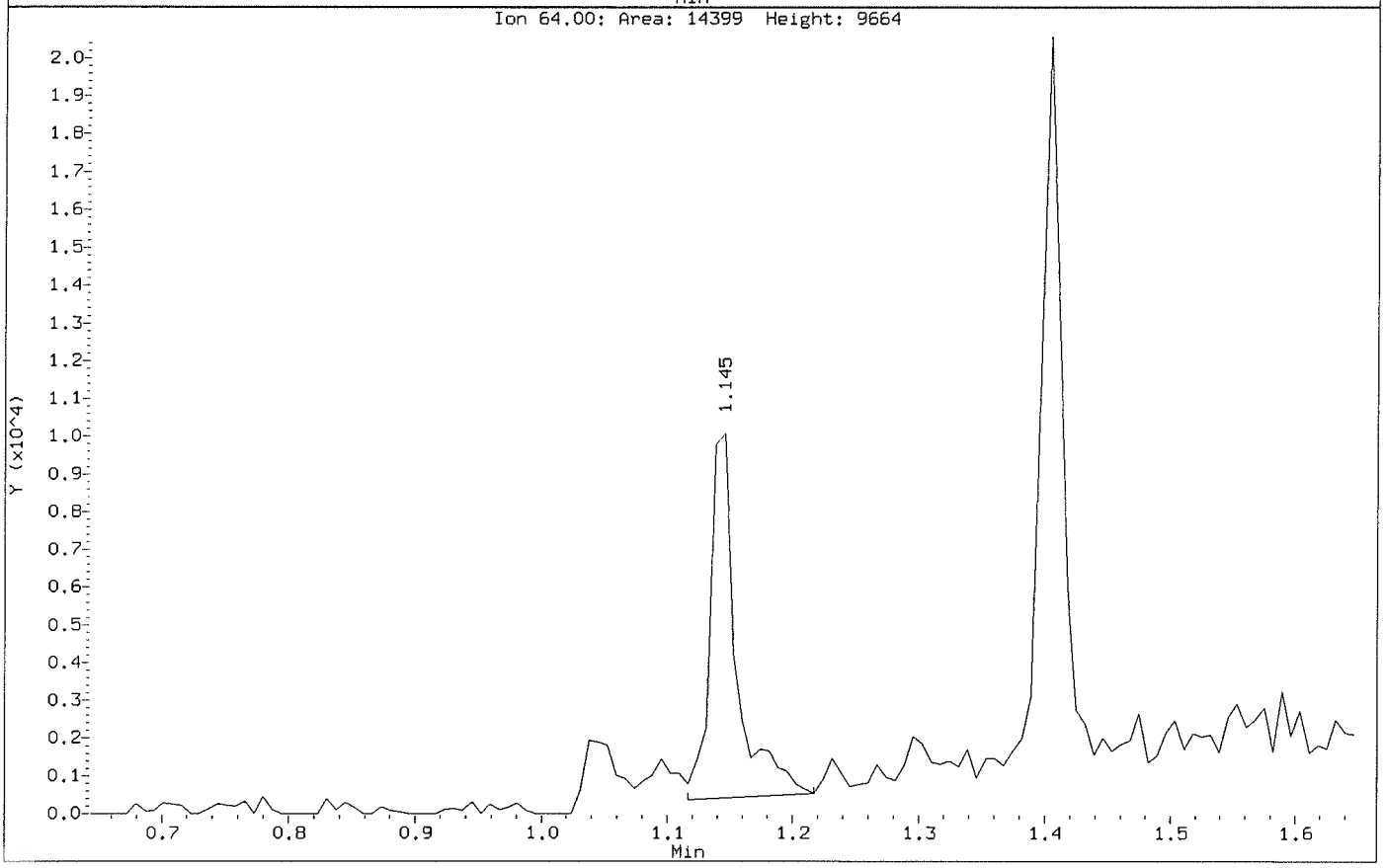
Data File: \\nahstus005\Target\chem\voa6.i\X210315.b\X031506.D
Date : 15-MAR-2021 13:21
Client ID: VSTD005
Sample Info: VSTD005;VSTD005;1;5;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X210315.b\Before1\X031506.D
Injection Date: 15-MAR-2021 13:21
Instrument: voa6.i
Client Sample ID: VSTD005

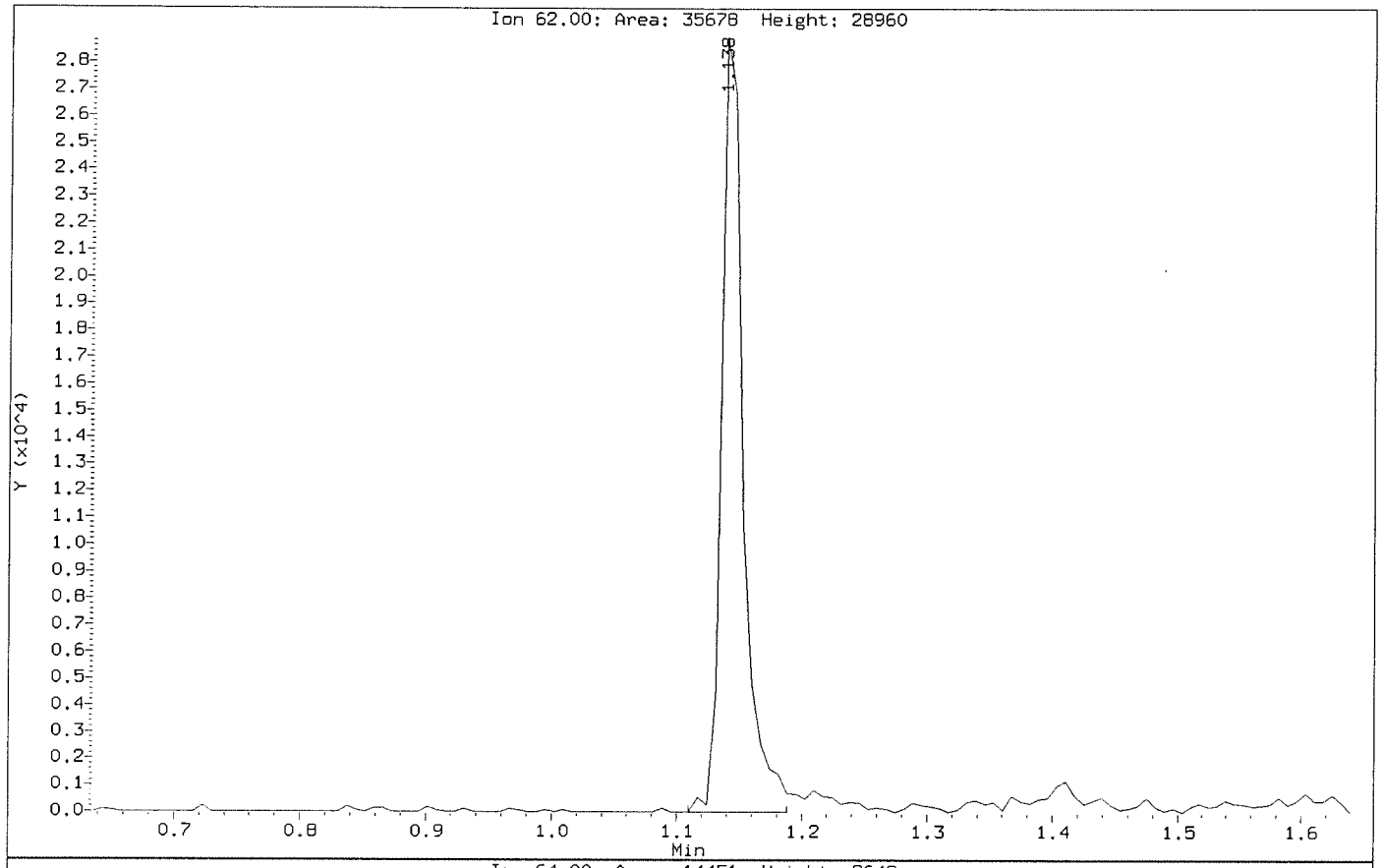
Compound: Vinyl Chloride
CAS Number: 75-01-4

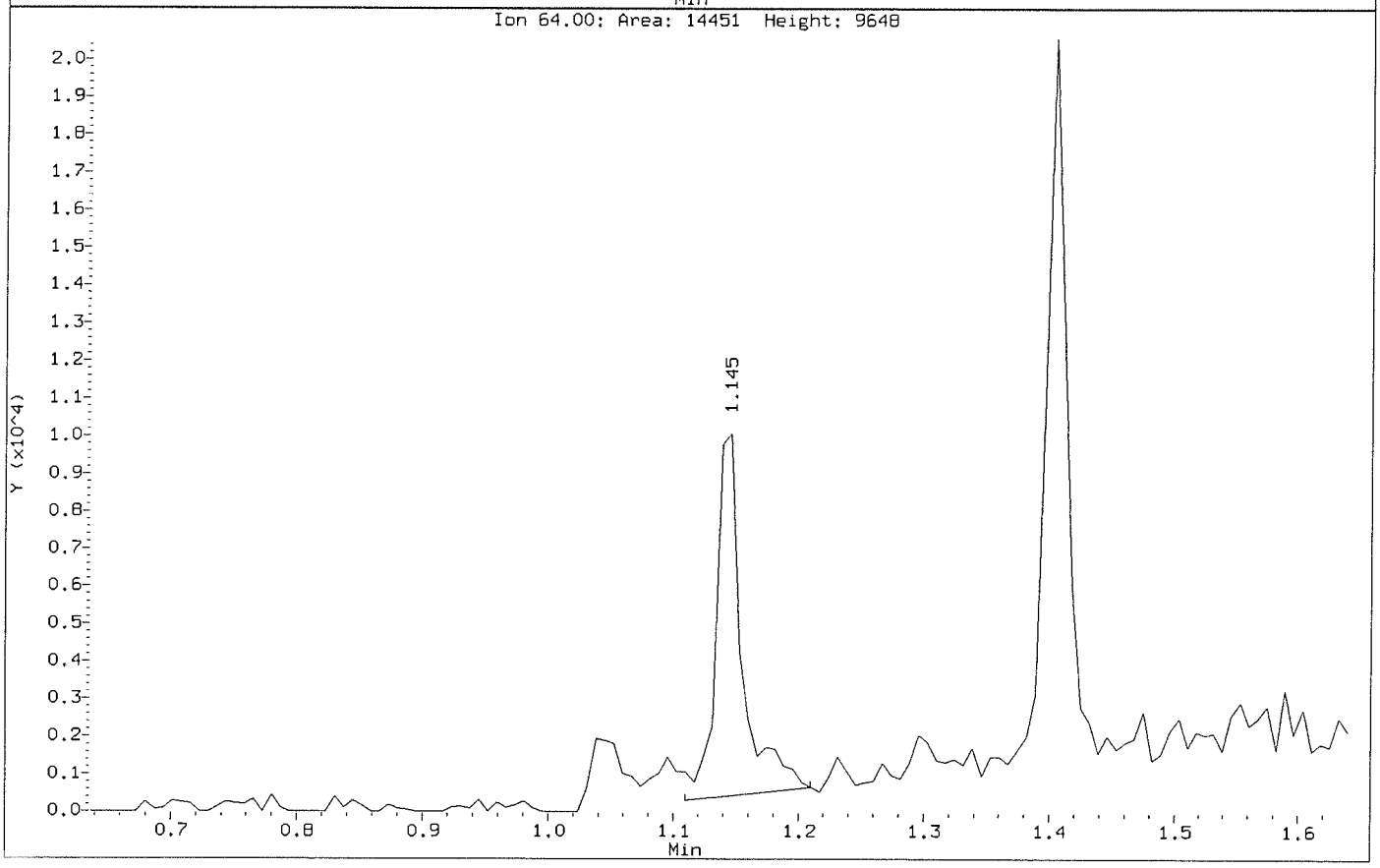




Data File: \\NAHSTWS005\Target\chem\voa6.i\X210315.b\X031506.D
Injection Date: 15-MAR-2021 13:21
Instrument: voa6.i
Client Sample ID: VSTD005

Compound: Vinyl Chloride
CAS Number: 75-01-4





Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031507.D Page 1
Report Date: 02-Apr-2021 14:49

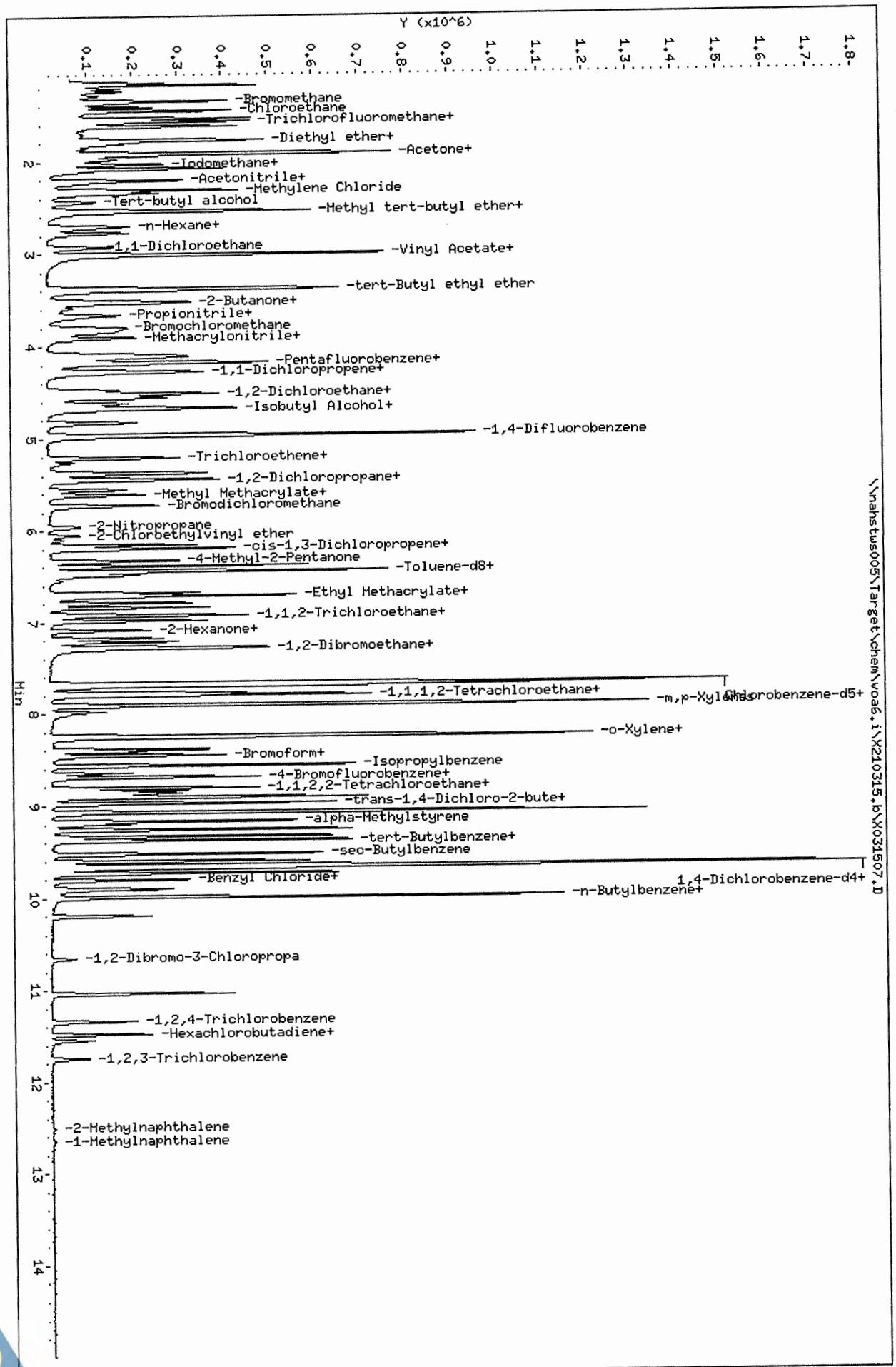
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031507.D
Lab Smp Id: VSTD020 Client Smp ID: VSTD020
Inj Date : 15-MAR-2021 13:42
Operator : PC Inst ID: voa6.i
Smp Info : VSTD020;VSTD020;1;6;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:49 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 13:21 Cal File: X031506.D
Als bottle: 8 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1	Pentafluorobenzene	168	4.182	4.182	(1.000)	362175	50.0000	
* 36	1,4-Difluorobenzene	114	4.970	4.970	(1.000)	627586	50.0000	
* 47	Chlorobenzene-d5	117	7.670	7.670	(1.000)	604937	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	289255	50.0000	
$ 30	Dibromofluoromethane	113	4.103	4.103	(0.981)	89737	20.0000	20.87
$ 35	1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	98913	20.0000	20.04
$ 48	Toluene-d8	98	6.388	6.388	(0.833)	301322	20.0000	18.53
$ 69	4-Bromofluorobenzene	95	8.688	8.688	(1.133)	102789	20.0000	20.28
27	cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	88623	20.0000	19.28
38	Trichloroethene	130	5.206	5.206	(1.048)	83893	20.0000	19.86
5	Vinyl Chloride	62	1.145	1.145	(0.274)	140312	20.0000	20.74



Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031507.D
Date : 15-MAR-2021 13:42
Client ID: VSTD020
Sample Info: VSTD020;VSTD020;1;6;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031508.D Page 1
Report Date: 02-Apr-2021 14:49

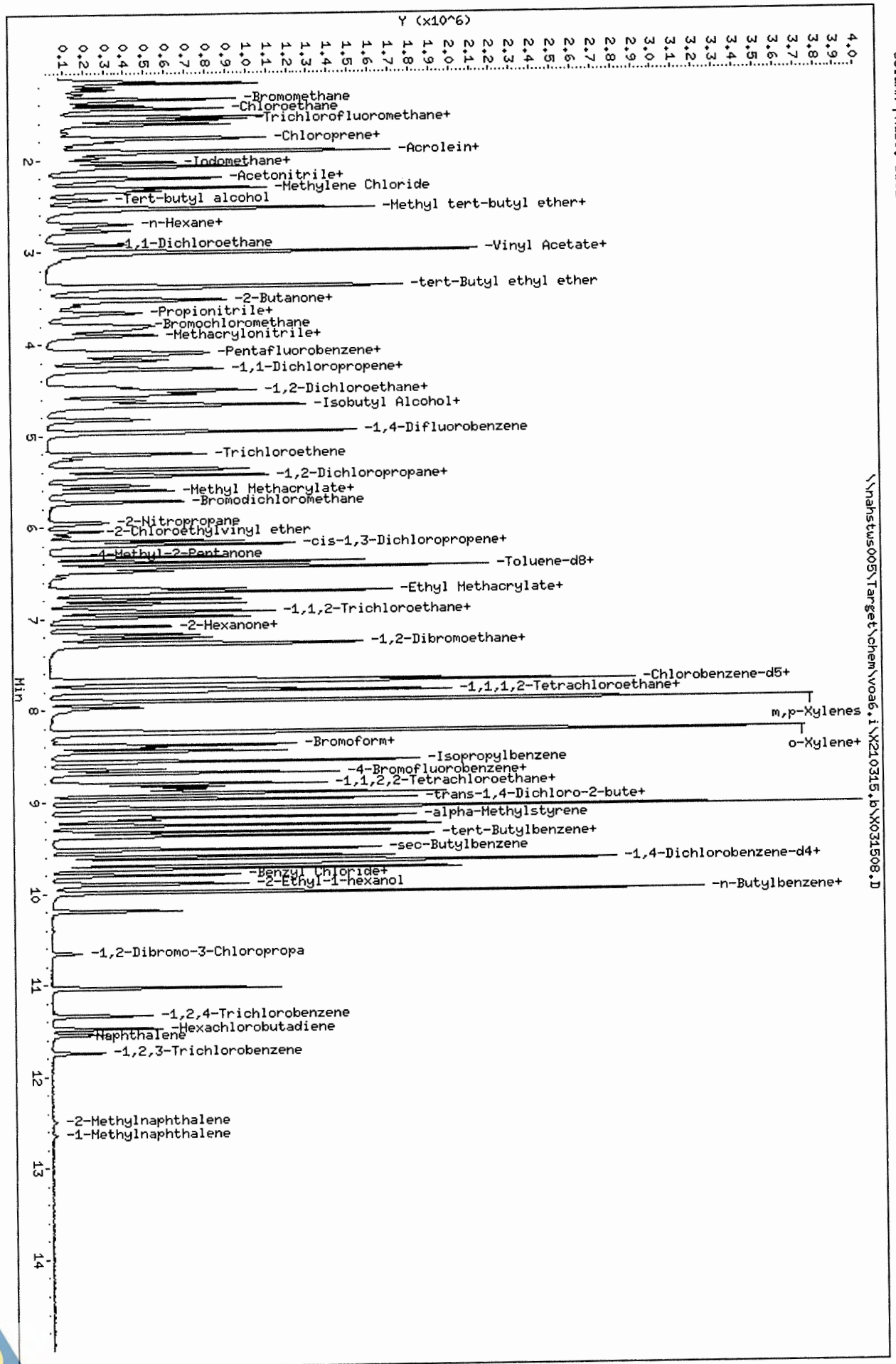
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031508.D
Lab Smp Id: VSTD050 Client Smp ID: VSTD050
Inj Date : 15-MAR-2021 14:03
Operator : PC Inst ID: voa6.i
Smp Info : VSTD050;VSTD050;1;7;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:49 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 13:42 Cal File: X031507.D
Als bottle: 9 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	422603	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	729427	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	709620	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	359679	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	236456	50.0000	45.80
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	291833	50.0000	49.91
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	834128	50.0000	43.74
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	307940	50.0000	49.81
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	244442	50.0000	45.58
38 Trichloroethene	130	5.206	5.206	(1.049)	219677	50.0000	44.74
5 Vinyl Chloride	62	1.145	1.145	(0.274)	353408	50.0000	44.77



Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031508.D
Date : 15-MAR-2021 14:03
Client ID: VSTD050
Sample Info: VSTD050;VSTD050;1;7;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

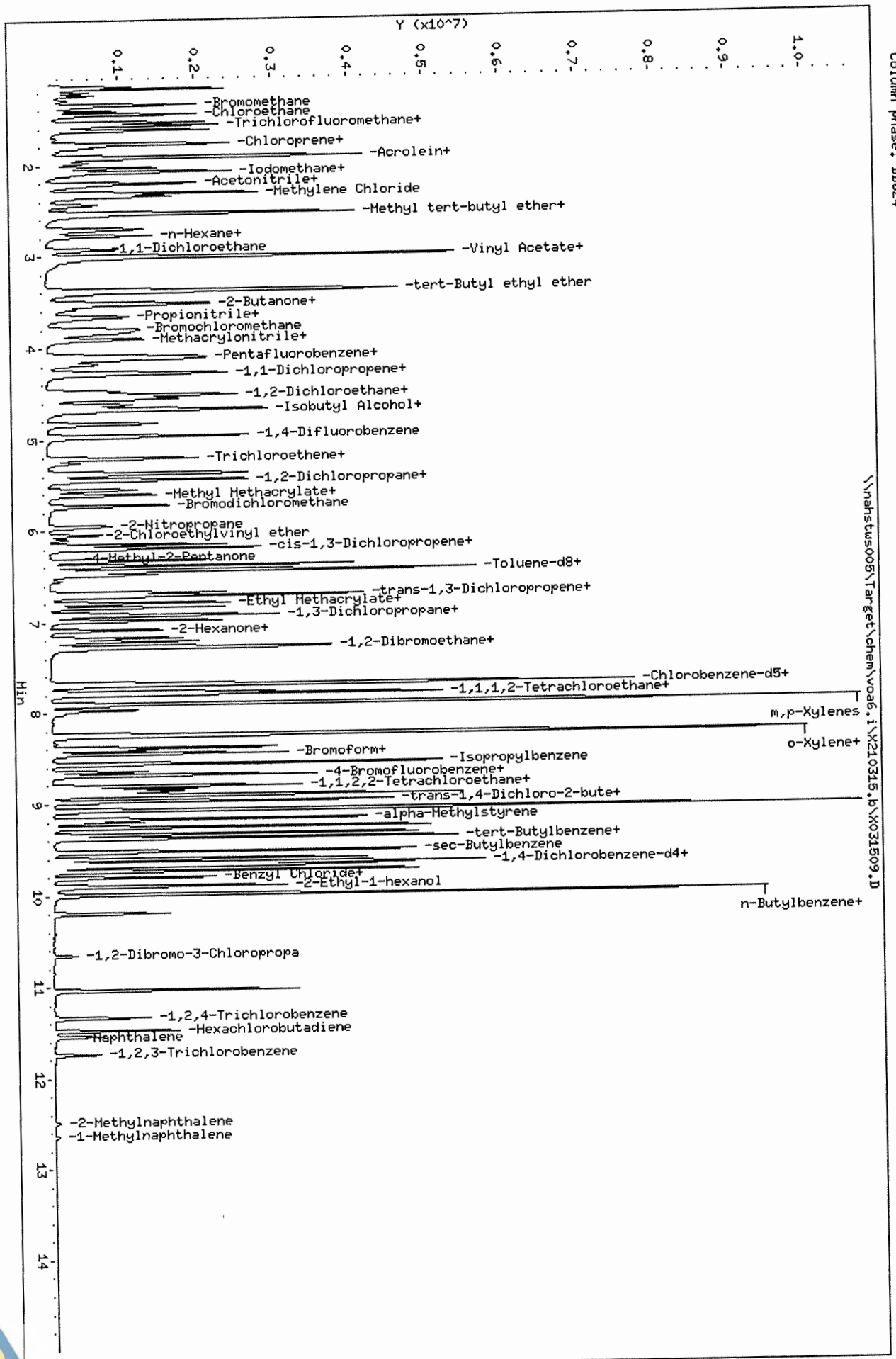
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031509.D
Lab Smp Id: VSTD100 Client Smp ID: VSTD100
Inj Date : 15-MAR-2021 14:24
Operator : PC Inst ID: voa6.i
Smp Info : VSTD100;VSTD100;1;8;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:49 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 10 Calibration Sample, Level: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	465500	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	826013	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	790600	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	424817	50.0000	
$	30 Dibromofluoromethane	113	4.103	4.103	(0.981)	572786	100.000	99.45
$	35 1,2-Dichloroethane-d4	65	4.469	4.469	(1.069)	670725	100.000	100.01
$	48 Toluene-d8	98	6.388	6.388	(0.833)	2094428	100.000	98.58
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	763478	100.000	100.02
	27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	580907	100.000	98.34
	38 Trichloroethene	130	5.206	5.206	(1.049)	551539	100.000	99.20
	5 Vinyl Chloride	62	1.145	1.145	(0.274)	771670	100.000	88.75



Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031509.D
Date : 15-MAR-2021 14:24
Client ID: VSTD100
Sample Info: VSTD100;VSTD100;1;8;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

\\nahstws005\Target\chem\voa6.i\X210315.b\X031509.D

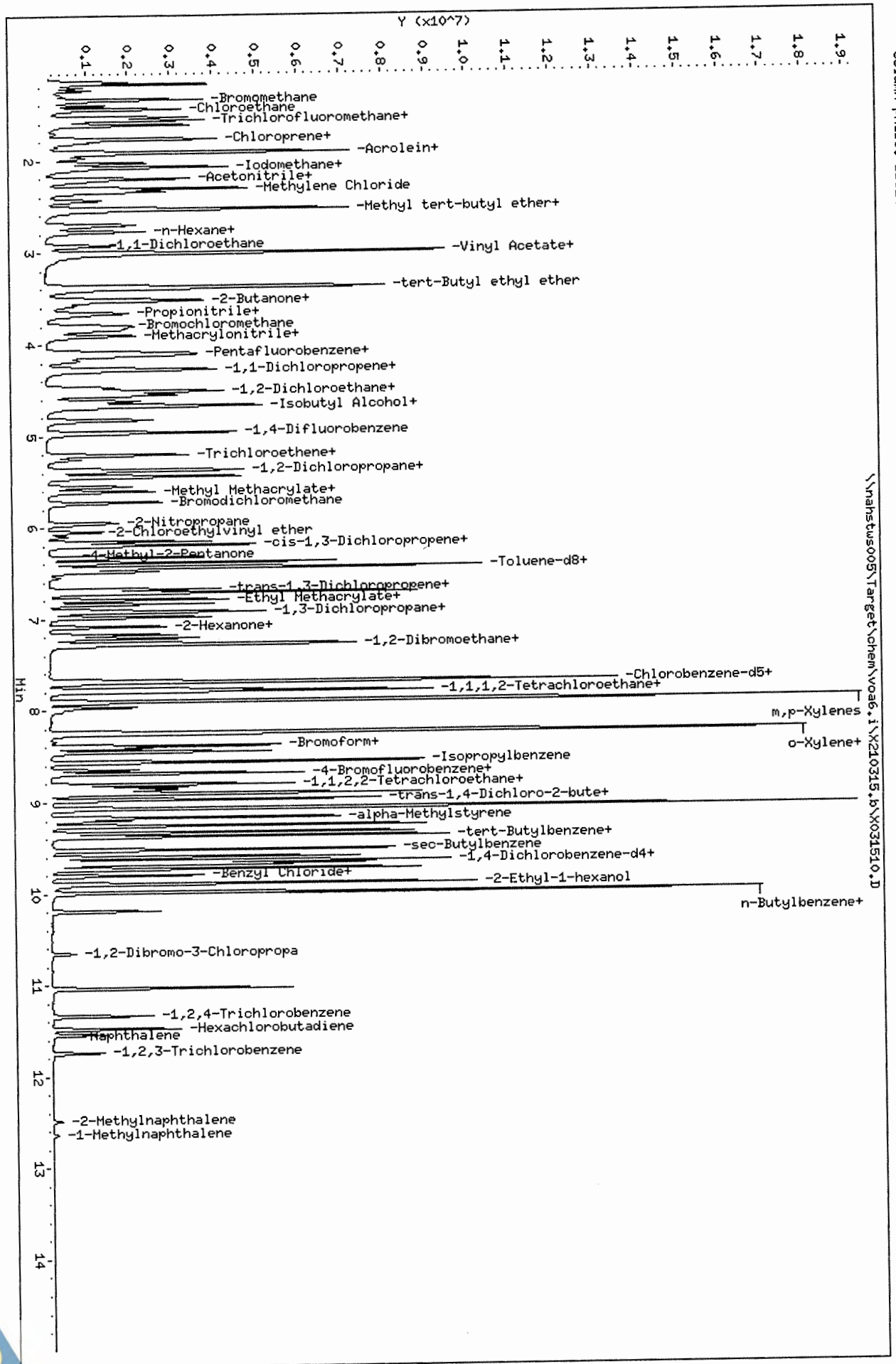
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031510.D
Lab Smp Id: VSTD150 Client Smp ID: VSTD150
Inj Date : 15-MAR-2021 14:45
Operator : PC Inst ID: voa6.i
Smp Info : VSTD150;VSTD150;1;9;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:49 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 14:24 Cal File: X031509.D
Als bottle: 11 Calibration Sample, Level: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	527392	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	967116	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	874794	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	484901	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	959846	150.000	146.59
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	1116579	150.000	141.22
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	3575474	150.000	152.09
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	1285122	150.000	136.13
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	996389	150.000	148.88
38 Trichloroethene	130	5.207	5.207	(1.048)	919855	150.000	141.30
5 Vinyl Chloride	62	1.138	1.138	(0.272)	1335275	150.000	135.55



Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031510.D
Date : 15-MAR-2021 14:45
Client ID: VSTD150
Sample Info: VSTD150;VSTD150;1;9;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031511.D
Lab Smp Id: VSTD200 Client Smp ID: VSTD200
Inj Date : 15-MAR-2021 15:06
Operator : PC Inst ID: voa6.i
Smp Info : VSTD200;VSTD200;1;10;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:49 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 14:45 Cal File: X031510.D
Als bottle: 12 Calibration Sample, Level: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

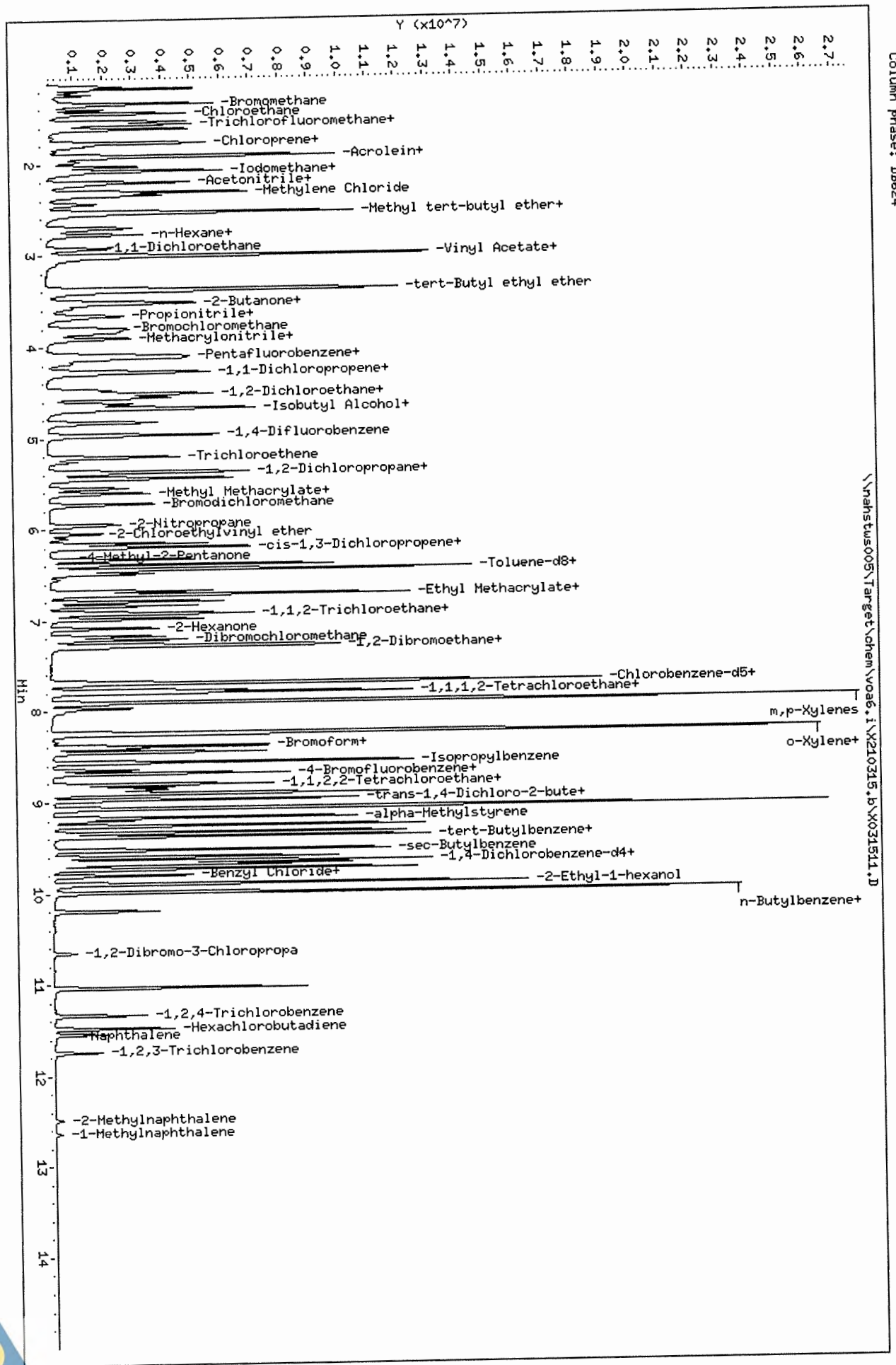
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	531465	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	983431	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	895624	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	479599	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	1345632	200.000	203.52(A)
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	1524648	200.000	182.61
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	4964049	200.000	206.25(A)
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	1813645	200.000	163.10
27 cis-1,2-Dichloroethene	96	3.523	3.523	(0.842)	1366171	200.000	202.57(A)
38 Trichloroethene	130	5.207	5.207	(1.048)	1237797	200.000	186.99
5 Vinyl Chloride	62	1.138	1.138	(0.272)	1747524	200.000	176.05

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.



Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031511.D
Date : 15-MAR-2021 15:06
Client ID: VSTD200
Sample Info: VSTD200;VSTD200;1;10;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031514.D Page 1
Report Date: 02-Apr-2021 14:49

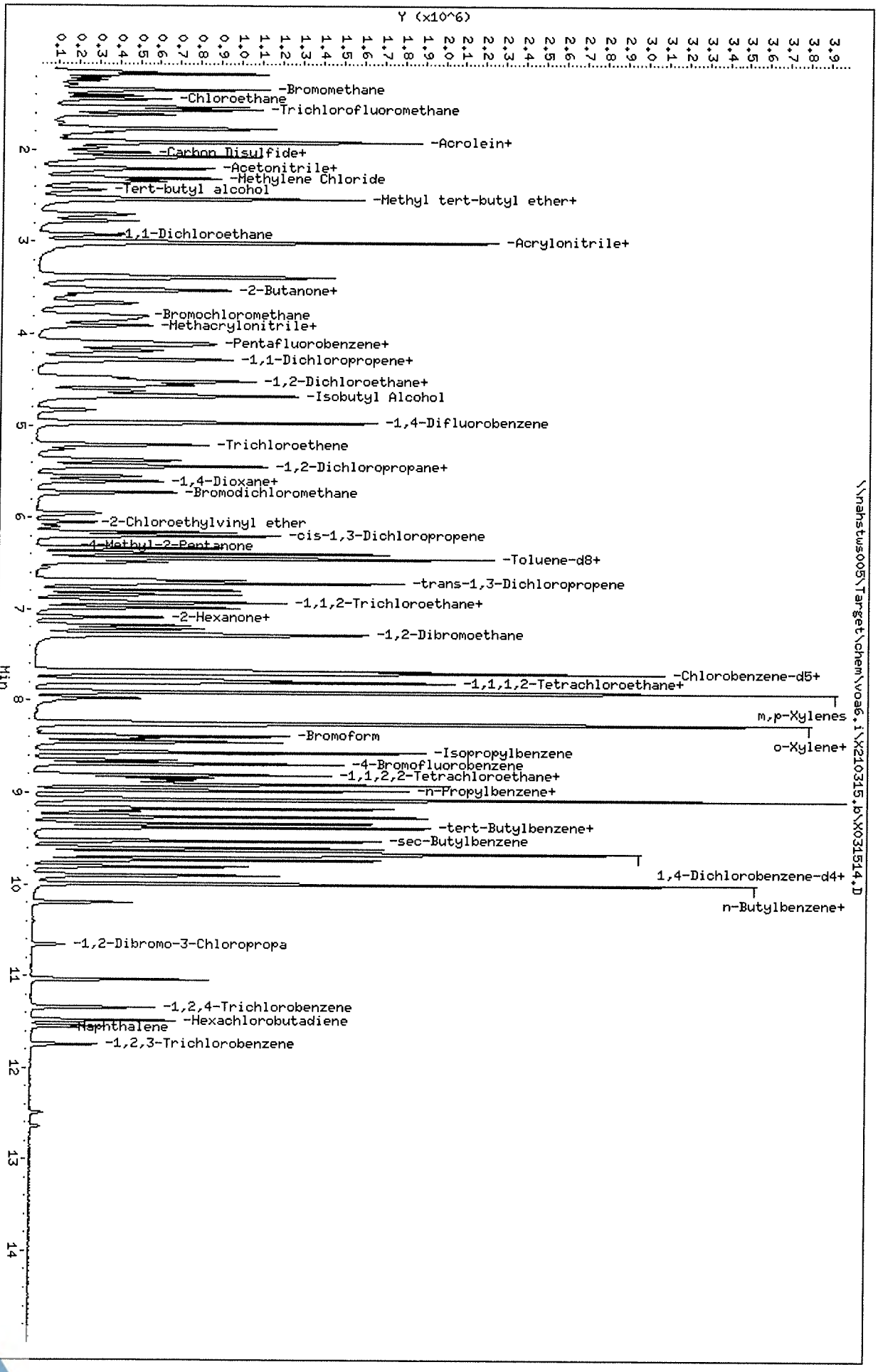
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031514.D
Lab Smp Id: ICV Client Smp ID: ICV
Inj Date : 15-MAR-2021 16:09
Operator : PC Inst ID: voa6.i
Smp Info : CCV;CCV;2;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:49 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 15:06 Cal File: X031511.D
Als bottle: 15 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	439797	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.970	(1.000)	768694	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	735361	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	380441	50.0000	
$	30 Dibromofluoromethane	113	4.103	4.103	(0.981)	261058	48.5246	48.52
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	301793	49.6126	49.61
$	48 Toluene-d8	98	6.388	6.388	(0.833)	921160	46.6152	46.61
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	334153	51.9787	51.97
	27 cis-1,2-Dichloroethene	96	3.523	3.523	(0.842)	254863	45.6674	45.66
	38 Trichloroethene	130	5.207	5.207	(1.049)	229253	44.3092	44.30
	5 Vinyl Chloride	62	1.138	1.138	(0.272)	355867	43.3236	43.32



Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031514.D
Date : 15-MAR-2021 16:09
Client ID: ICV
Sample Info: CCV;CCV^2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

MSVOA06 -Logbook

Batch: 44160 **Analyst:** Presenta Cabascango

Date: 03-24-2021 **Reviewer:**

Method: 8260 **Laboratory:** Houston

Comments:

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	03-24-2021 10:02 am	1.00	50 mL	50 mL	X032401.D	Liquid	Y	NA
2	CCV	CCV	03-24-2021 10:52 am	1.00	50 mL	50 mL	X032402.D	Liquid	Y	NA
3	BLANK	SAMP	03-24-2021 11:12 am	1.00	50 mL	50 mL	X032403.D	Liquid	Y	NA
4	CCB	SAMP	03-24-2021 11:33 am	1.00	50 mL	50 mL	X032404.D	Liquid	Y	NA
5	VLCSW-210324	LCS	03-24-2021 11:54 am	1.00	50 mL	50 mL	X032405.D	Liquid	Y	NA
6	BLANK	SAMP	03-24-2021 12:15 pm	1.00	50 mL	50 mL	X032406.D	Liquid	Y	NA
7	BLANK	SAMP	03-24-2021 12:37 pm	1.00	50 mL	50 mL	X032407.D	Liquid	Y	NA
8	VBLKW-210324	MBLK	03-24-2021 12:58 pm	1.00	50 mL	50 mL	X032408.D	Liquid	Y	NA
9	HS21031116-12	SAMP	03-24-2021 01:19 pm	1.00	50 mL	50 mL	X032409.D	Liquid	Y	NA
10	HS21031116-01	SAMP	03-24-2021 01:40 pm	1.00	50 mL	50 mL	X032410.D	Liquid	Y	NA
11	HS21031116-02	SAMP	03-24-2021 02:01 pm	1.00	50 mL	50 mL	X032411.D	Liquid	Y	NA
12	HS21031116-03	SAMP	03-24-2021 02:22 pm	1.00	50 mL	50 mL	X032412.D	Liquid	Y	NA
13	HS21031116-10	SAMP	03-24-2021 02:43 pm	1.00	50 mL	50 mL	X032413.D	Liquid	Y	NA
14	HS21031116-08	SAMP	03-24-2021 03:04 pm	1.00	50 mL	50 mL	X032414.D	Liquid	Y	NA
15	HS21031116-09	SAMP	03-24-2021 03:25 pm	1.00	50 mL	50 mL	X032415.D	Liquid	Y	NA
16	HS21031116-11	SAMP	03-24-2021 03:46 pm	1.00	50 mL	50 mL	X032416.D	Liquid	Y	NA
17	HS21031116-04	SAMP	03-24-2021 04:07 pm	1.00	50 mL	50 mL	X032417.D	Liquid	Y	NA
18	HS21031116-10MS	MS	03-24-2021 04:28 pm	1.00	50 mL	50 mL	X032418.D	Liquid	Y	NA
19	HS21031116-10MSD	MSD	03-24-2021 04:49 pm	1.00	50 mL	50 mL	X032419.D	Liquid	Y	NA
20	HS21031116-11	SAMP	03-24-2021 05:10 pm	5.00	10 mL	50 mL	X032420.D	Liquid	Y	NA
21	HS21031116-04	SAMP	03-24-2021 05:31 pm	10.00	5 mL	50 mL	X032421.D	Liquid	Y	NA
22	HS21031116-05	SAMP	03-24-2021 05:52 pm	1.00	50 mL	50 mL	X032422.D	Liquid	Y	NA
23	HS21031116-06	SAMP	03-24-2021 06:13 pm	1.00	50 mL	50 mL	X032423.D	Liquid	Y	NA
24	HS21031116-07	SAMP	03-24-2021 06:34 pm	1.00	50 mL	50 mL	X032424.D	Liquid	Y	NA
25	HS21031114-01	SAMP	03-24-2021 06:55 pm	1.00	50 mL	50 mL	X032425.D	Liquid	Y	NA
26	HS21031114-02	SAMP	03-24-2021 07:16 pm	1.00	50 mL	50 mL	X032426.D	Liquid	Y	NA
27	HS21031114-03	SAMP	03-24-2021 07:37 pm	1.00	50 mL	50 mL	X032427.D	Liquid	Y	NA
28	HS21031114-05	SAMP	03-24-2021 07:59 pm	1.00	50 mL	50 mL	X032428.D	Liquid	Y	NA
29	HS21031114-14	SAMP	03-24-2021 08:20 pm	1.00	50 mL	50 mL	X032429.D	Liquid	Y	NA
30	HS21031114-15	SAMP	03-24-2021 08:41 pm	1.00	50 mL	50 mL	X032430.D	Liquid	Y	NA
31	CCV-END	CCV	03-24-2021 09:02 pm	1.00	50 mL	50 mL	X032431.D	Liquid	Y	NA
32	BLANK	SAMP	03-24-2021 09:23 pm	1.00	50 mL	50 mL	X032440.D	Liquid	Y	NA
33	BFB	TUNE	03-24-2021 09:43 pm	1.00	50 mL	50 mL	Y032401.D	Liquid	Y	NA
34	CCV	CCV	03-24-2021 10:04 pm	1.00	50 mL	50 mL	Y032402a.D	Liquid	Y	NA
35	CCV	CCV	03-24-2021 10:25 pm	1.00	50 mL	50 mL	Y032403.D	Liquid	Y	NA
36	CCB	SAMP	03-24-2021 10:46 pm	1.00	50 mL	50 mL	Y032404.D	Liquid	Y	NA
37	VLCSW-210324	LCS	03-24-2021 11:07 pm	1.00	50 mL	50 mL	Y032405.D	Liquid	Y	NA
38	BLANK	SAMP	03-24-2021 11:28 pm	1.00	50 mL	50 mL	Y032406.D	Liquid	Y	NA
39	VBLKW-210324	MBLK	03-24-2021 11:49 pm	1.00	50 mL	50 mL	Y032407.D	Liquid	Y	NA
40	HS21030874-13	SAMP	03-25-2021 12:10 am	1.00	50 mL	50 mL	Y032408.D	Liquid	Y	NA
41	HS21031052-07	SAMP	03-25-2021 12:31 am	1.00	50 mL	50 mL	Y032409.D	Liquid	Y	NA

MSVOA06 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
42	HS21030874-08	SAMP	03-25-2021 12:53 am	1.00	50 mL	50 mL	Y032410.D	Liquid	Y	NA
43	HS21030874-06	SAMP	03-25-2021 01:14 am	1.00	50 mL	50 mL	Y032411.D	Liquid	Y	NA
44	HS21030874-08MS	MS	03-25-2021 01:35 am	1.00	50 mL	50 mL	Y032412.D	Liquid	Y	NA
45	HS21030874-08MSD	MSD	03-25-2021 01:56 am	1.00	50 mL	50 mL	Y032413.D	Liquid	Y	NA
46	BLANK	SAMP	03-25-2021 02:17 am	1.00	50 mL	50 mL	Y032414.D	Liquid	Y	NA
47	HS21030874-01	SAMP	03-25-2021 02:38 am	1.00	50 mL	50 mL	Y032415.D	Liquid	Y	NA
48	HS21030874-02	SAMP	03-25-2021 02:59 am	1.00	50 mL	50 mL	Y032416.D	Liquid	Y	NA
49	HS21030874-03	SAMP	03-25-2021 03:20 am	1.00	50 mL	50 mL	Y032417.D	Liquid	Y	NA
50	HS21030874-04	SAMP	03-25-2021 03:41 am	1.00	50 mL	50 mL	Y032418.D	Liquid	Y	NA
51	HS21030874-05	SAMP	03-25-2021 04:02 am	1.00	50 mL	50 mL	Y032419.D	Liquid	Y	NA
52	HS21030874-07	SAMP	03-25-2021 04:23 am	1.00	50 mL	50 mL	Y032420.D	Liquid	Y	NA
53	HS21030874-09	SAMP	03-25-2021 04:44 am	1.00	50 mL	50 mL	Y032421.D	Liquid	Y	NA
54	HS21030874-10	SAMP	03-25-2021 05:05 am	1.00	50 mL	50 mL	Y032422.D	Liquid	Y	NA
55	HS21030874-11	SAMP	03-25-2021 05:26 am	1.00	50 mL	50 mL	Y032423.D	Liquid	Y	NA
56	HS21030874-12	SAMP	03-25-2021 05:48 am	1.00	50 mL	50 mL	Y032424.D	Liquid	Y	NA
57	HS21031052-01	SAMP	03-25-2021 06:09 am	1.00	50 mL	50 mL	Y032425.D	Liquid	Y	NA
58	HS21031052-02	SAMP	03-25-2021 06:30 am	1.00	50 mL	50 mL	Y032426.D	Liquid	Y	NA
59	HS21031052-03	SAMP	03-25-2021 06:51 am	1.00	50 mL	50 mL	Y032427.D	Liquid	Y	NA
60	HS21031052-04	SAMP	03-25-2021 07:12 am	1.00	50 mL	50 mL	Y032428.D	Liquid	Y	NA
61	HS21031052-05	SAMP	03-25-2021 07:33 am	1.00	50 mL	50 mL	Y032429.D	Liquid	Y	NA
62	HS21031052-06	SAMP	03-25-2021 07:54 am	1.00	50 mL	50 mL	Y032430.D	Liquid	Y	NA
63	CCV-END	CCV	03-25-2021 08:15 am	1.00	50 mL	50 mL	Y032431.D	Liquid	Y	NA
64	BLANK	SAMP	03-25-2021 08:36 am	1.00	50 mL	50 mL	Y032440.D	Liquid	Y	NA

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS21030874

	CLIENT SAMPLE NO.	SMC1 #	SMC2 (DCE)#	SMC3 (TOL)#	OTHER #	TOT OUT
01	VLCSW-210324	96	94	94	97	0
02	VBLKW-210324	83	83	99	86	0
03	HS21030874-13	86	85	99	89	0
04	HS21030874-08	85	83	100	86	0
05	HS21030874-06	87	86	98	86	0
06	HS21030874-08MS	88	83	95	94	0
07	HS21030874-08MSD	87	85	95	90	0
08	HS21030874-01	87	82	98	88	0
09	HS21030874-02	84	81	99	85	0
10	HS21030874-03	87	84	98	87	0
11	HS21030874-04	86	81	103	86	0
12	HS21030874-05	86	83	99	86	0
13	HS21030874-07	86	83	98	88	0
14	HS21030874-09	86	81	99	89	0
15	HS21030874-10	89	84	98	87	0
16	HS21030874-11	86	84	103	88	0
17	HS21030874-12	87	84	100	92	0
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						

		QC LIMITS
SMC1	= Dibromofluoromethane	(0-130)
SMC2 (DCE)	= 1,2-Dichloroethane-d4	(0-130)
SMC3 (TOL)	= Toluene-d8	(0-130)
OTHER	= 4-Bromofluorobenzene	(0-130)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

VBLKW-210324

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS21030874

Lab File ID: Y032407 Lab Sample ID: VBLKW-210324

Date Analyzed: 03/24/21 Time Analyzed: 2349

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA6

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VLCSW-210324	VLCSW-210324	Y032405	2307
02	HS21030874-13	HS21030874-13	Y032408	0010
03	HS21030874-08	HS21030874-08	Y032410	0053
04	HS21030874-06	HS21030874-06	Y032411	0114
05	HS21030874-08MS	HS21030874-08MS	Y032412	0135
06	HS21030874-08MSD	HS21030874-08MSD	Y032413	0156
07	HS21030874-01	HS21030874-01	Y032415	0238
08	HS21030874-02	HS21030874-02	Y032416	0259
09	HS21030874-03	HS21030874-03	Y032417	0320
10	HS21030874-04	HS21030874-04	Y032418	0341
11	HS21030874-05	HS21030874-05	Y032419	0402
12	HS21030874-07	HS21030874-07	Y032420	0423
13	HS21030874-09	HS21030874-09	Y032421	0444
14	HS21030874-10	HS21030874-10	Y032422	0505
15	HS21030874-11	HS21030874-11	Y032423	0526
16	HS21030874-12	HS21030874-12	Y032424	0548
17				
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COMMENTS:

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS21030874

Lab File ID: Y032401 BFB Injection Date: 03/24/21

Instrument ID: VOA6 BFB Injection Time: 2143

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	23.8
75	30.0 - 60.0% of mass 95	56.9
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.4
173	Less than 2.0% of mass 174	1.1 (1.2)1
174	Greater than 50.0% of mass 95	91.0
175	5.0 - 9.0% of mass 174	6.7 (7.4)1
176	95.0 - 101.0% of mass 174	87.1 (95.8)1
177	5.0 - 9.0% of mass 176	6.6 (7.6)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CCV	CCV	Y032403	03/24/21	2225
02	VLCSW-210324	VLCSW-210324	Y032405	03/24/21	2307
03	VBLKW-210324	VBLKW-210324	Y032407	03/24/21	2349
04	HS21030874-13	HS21030874-13	Y032408	03/25/21	0010
05	HS21030874-08	HS21030874-08	Y032410	03/25/21	0053
06	HS21030874-06	HS21030874-06	Y032411	03/25/21	0114
07	HS21030874-08MS	HS21030874-08MS	Y032412	03/25/21	0135
08	HS21030874-08MSD	HS21030874-08MSD	Y032413	03/25/21	0156
09	HS21030874-01	HS21030874-01	Y032415	03/25/21	0238
10	HS21030874-02	HS21030874-02	Y032416	03/25/21	0259
11	HS21030874-03	HS21030874-03	Y032417	03/25/21	0320
12	HS21030874-04	HS21030874-04	Y032418	03/25/21	0341
13	HS21030874-05	HS21030874-05	Y032419	03/25/21	0402
14	HS21030874-07	HS21030874-07	Y032420	03/25/21	0423
15	HS21030874-09	HS21030874-09	Y032421	03/25/21	0444
16	HS21030874-10	HS21030874-10	Y032422	03/25/21	0505
17	HS21030874-11	HS21030874-11	Y032423	03/25/21	0526
18	HS21030874-12	HS21030874-12	Y032424	03/25/21	0548
19	CCV-END	CCV-END	Y032431	03/25/21	0815
20					
21					
22					

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS21030874

Instrument ID: VOA6 Calibration Date: 03/24/21 Time: 2225

Lab File ID: Y032403 Init. Calib. Date(s): 03/15/21 03/15/21

Init. Calib. Times: 1137 1506

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Vinyl Chloride	0.9340000	0.8908589	0.8908589	0.1	4.62	20.00	AVRG
cis-1,2-Dichloroethene	0.6340000	0.5914390	0.5914390	0.1	6.71	20.00	AVRG
Trichloroethene	0.3360000	0.3418477	0.3418477	0.2	-1.74	20.00	AVRG
Dibromofluoromethane	48.394005	50.000000	0.5919549	0.1	3.21	20.00	LINR
1,2-Dichloroethane-d4	49.927503	50.000000	0.6907176	0.1	0.14	20.00	2RDR
Toluene-d8	1.3430000	1.2240969	1.2240969	0.1	8.85	20.00	AVRG
4-Bromofluorobenzene	50.617215	50.000000	0.4414980	0.1	-1.23	20.00	2RDR

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS21030874

Instrument ID: VOA6 Calibration Date: 03/25/21 Time: 0815

Lab File ID: Y032431 Init. Calib. Date(s): 03/15/21 03/15/21

Init. Calib. Times: 1137 1506

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Vinyl Chloride	0.9340000	0.8537697	0.8537697	0.1	8.59	50.00	AVRG
cis-1,2-Dichloroethene	0.6340000	0.5838323	0.5838323	0.1	7.91	50.00	AVRG
Trichloroethene	0.3360000	0.3143227	0.3143227	0.2	6.45	50.00	AVRG
Dibromofluoromethane	49.127704	50.000000	0.6011301	0.1	1.74	50.00	LINR
1,2-Dichloroethane-d4	48.855831	50.000000	0.6753880	0.1	2.29	50.00	2RDR
Toluene-d8	1.3430000	1.1976573	1.1976573	0.1	10.82	50.00	AVRG
4-Bromofluorobenzene	52.136028	50.000000	0.4559034	0.1	-4.27	50.00	2RDR

FORM VII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS21030874

Lab File ID (Standard): Y032403 Date Analyzed: 03/24/21

Instrument ID: VOA6 Time Analyzed: 2225

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS1 AREA #	IS1 RT #	IS2(DFB) AREA #	IS2(DFB) RT #	IS3(CBZ) AREA #	IS3(CBZ) RT #
	12 HOUR STD	246186	4.18	423010	4.96	411157	7.67
	UPPER LIMIT	492372	4.68	846020	5.46	822314	8.17
	LOWER LIMIT	123093	3.68	211505	4.46	205579	7.17
	CLIENT SAMPLE NO.						
01	VLCSW-210324	213787	4.18	364777	4.96	346522	7.67
02	VBLKW-210324	256475	4.18	399631	4.96	352948	7.67
03	HS21030874-13	242572	4.18	384612	4.96	346202	7.67
04	HS21030874-08	248054	4.18	375624	4.96	334910	7.67
05	HS21030874-06	245136	4.18	378763	4.96	347930	7.67
06	HS21030874-08MS	274212	4.18	427019	4.96	409437	7.67
07	HS21030874-08MSD	271052	4.18	432483	4.97	395567	7.67
08	HS21030874-01	254334	4.18	394458	4.96	361350	7.67
09	HS21030874-02	249441	4.18	385175	4.96	346534	7.67
10	HS21030874-03	244753	4.18	376266	4.96	338822	7.67
11	HS21030874-04	247559	4.18	376169	4.97	328148	7.67
12	HS21030874-05	241532	4.18	372135	4.96	334310	7.67
13	HS21030874-07	242723	4.18	380223	4.96	342827	7.67
14	HS21030874-09	242491	4.18	366407	4.96	329011	7.67
15	HS21030874-10	239109	4.18	378292	4.97	345221	7.67
16	HS21030874-11	248645	4.18	385610	4.97	340543	7.67
17	HS21030874-12	238651	4.18	373161	4.97	333058	7.67
18							
19							
20							

IS1 = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS21030874

Lab File ID (Standard): Y032403 Date Analyzed: 03/24/21

Instrument ID: VOA6 Time Analyzed: 2225

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS4(DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	219617	9.66				
	UPPER LIMIT	439234	10.16				
	LOWER LIMIT	109809	9.16				
	CLIENT SAMPLE NO.						
01	VLCSW-210324	177891	9.66				
02	VBLKW-210324	157473	9.66				
03	HS21030874-13	159170	9.66				
04	HS21030874-08	153474	9.66				
05	HS21030874-06	151321	9.66				
06	HS21030874-08MS	210205	9.66				
07	HS21030874-08MSD	190498	9.66				
08	HS21030874-01	164273	9.66				
09	HS21030874-02	145683	9.66				
10	HS21030874-03	153639	9.66				
11	HS21030874-04	146710	9.66				
12	HS21030874-05	149704	9.66				
13	HS21030874-07	153805	9.66				
14	HS21030874-09	143668	9.66				
15	HS21030874-10	154176	9.66				
16	HS21030874-11	160018	9.66				
17	HS21030874-12	161311	9.66				
18							
19							
20							

IS4 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032401.D

Date : 24-MAR-2021 21:43

Client ID: BFB

Instrument: voa6.i

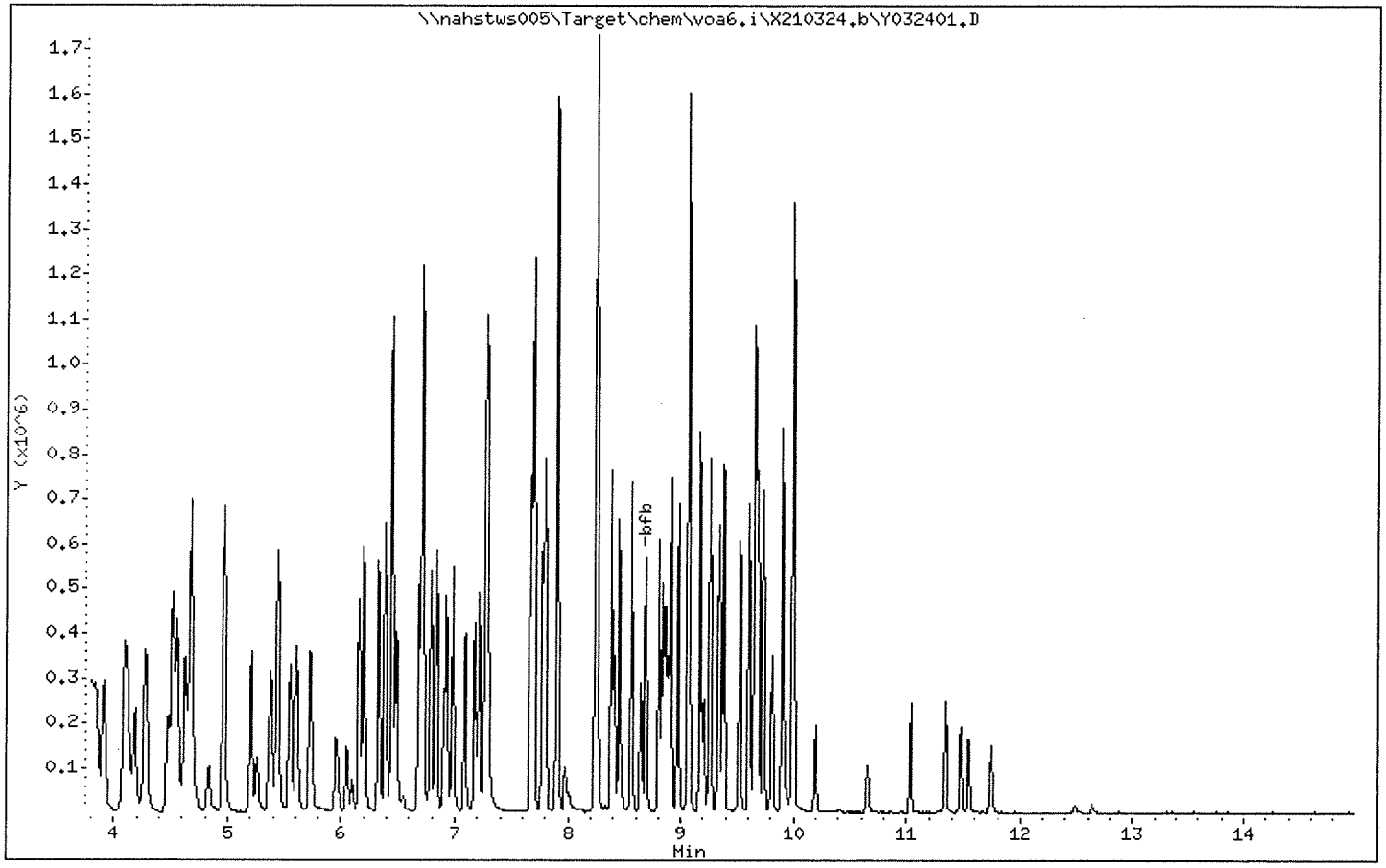
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032401.D

Date : 24-MAR-2021 21:43

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

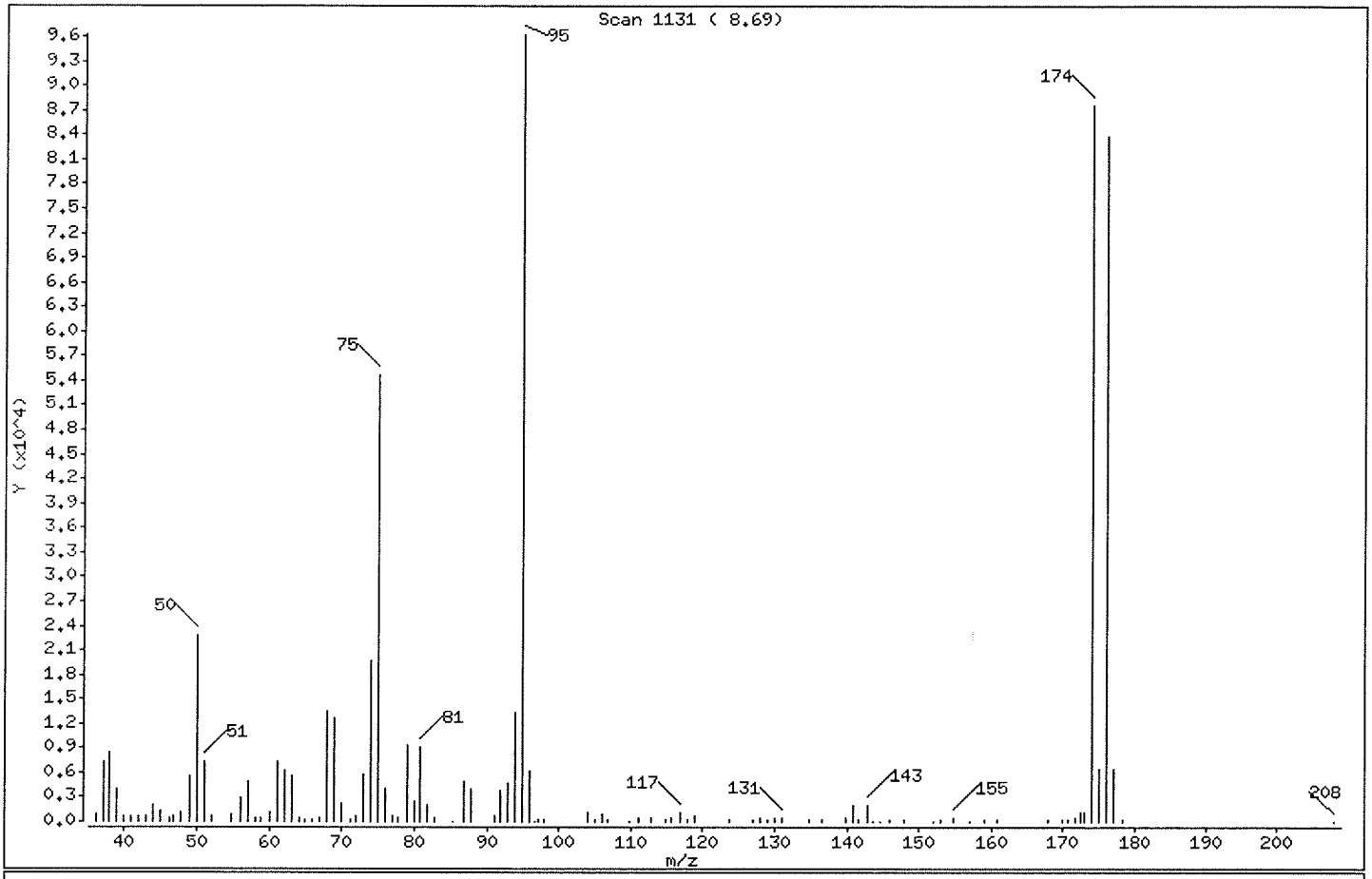
Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	23.78
75	30.00 - 60.00% of mass 95	56.87
96	5.00 - 9.00% of mass 95	6.44
173	Less than 2.00% of mass 174	1.08 (1.18)
174	Greater than 50.00% of mass 95	90.96
175	5.00 - 9.00% of mass 174	6.69 (7.35)
176	95.00 - 101.00% of mass 174	87.15 (95.81)
177	5.00 - 9.00% of mass 176	6.59 (7.56)

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032401.D

Date : 24-MAR-2021 21:43

Client ID: BFB Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

Data File: Y032401.D
Spectrum: Scan 1131 (8.69)
Location of Maximum: 95.00
Number of points: 104

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.10	988	65.00	154	96.00	6201	142.90	2056
37.00	7334	66.00	130	96.80	101	143.70	53
38.00	8360	67.00	386	97.20	133	144.70	55
39.00	3966	68.00	13423	97.90	197	145.80	220
40.00	716	69.00	12525	103.90	1203	147.80	122
41.00	647	70.00	2114	104.90	116	152.00	100
42.00	699	71.10	186	105.90	833	152.90	243
42.90	622	72.00	695	106.70	130	154.80	441
44.00	2087	73.00	5670	109.70	91	157.10	64
45.00	1313	74.00	19720	111.00	366	158.90	190
46.10	349	75.00	54736	112.80	398	160.90	197
46.80	700	76.00	3934	114.90	204	167.90	146
47.80	1139	77.10	640	115.70	366	170.00	130
49.00	5565	77.80	510	116.90	1066	170.70	192
50.00	22888	78.90	9221	118.00	320	171.60	473
50.90	7322	80.00	2485	118.80	561	172.40	1005
52.10	700	80.90	8983	123.70	122	173.00	1036
54.90	953	81.80	2004	126.90	112	173.90	87544
56.10	2944	82.90	423	128.00	380	174.90	6438
57.00	4806	85.40	74	128.90	120	175.90	83872
58.00	445	86.90	4908	129.90	380	176.90	6342
58.90	333	87.90	3912	130.90	450	178.10	126
60.00	1125	91.10	558	134.80	276	208.00	88
61.00	7191	91.90	3843	136.60	163		
62.00	6251	92.90	4629	139.80	542		
63.00	5588	94.00	13324	140.90	2043		
64.10	447	95.00	96240	141.70	281		

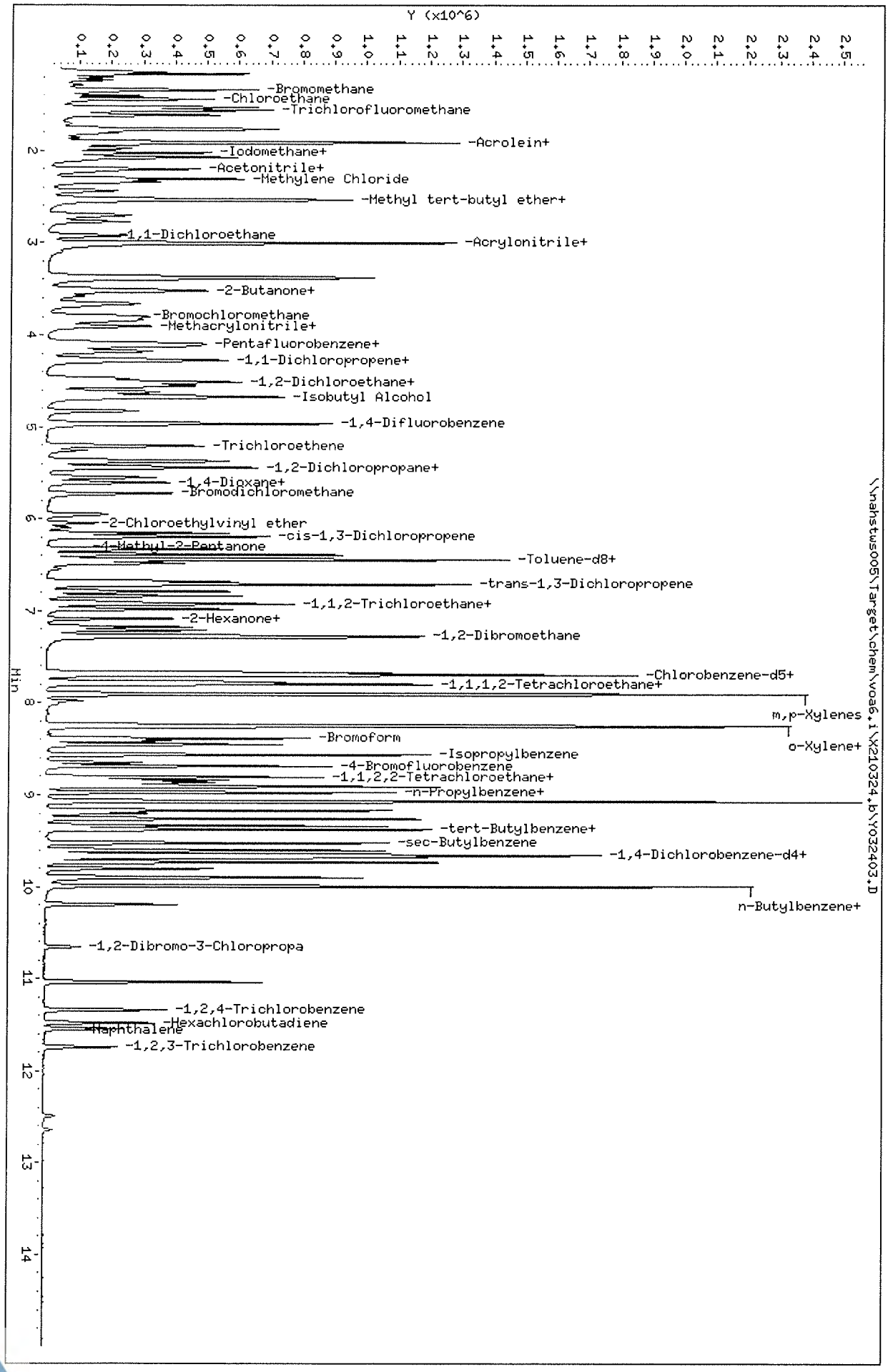
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032403.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 24-MAR-2021 22:25
Operator : PC Inst ID: voa6.i
Smp Info : CCV;CCV;2;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:40 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 34 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	246186	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	423010	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	411157	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	219617	50.0000	
$	30 Dibromofluoromethane	113	4.096	4.096	(0.979)	145731	50.0000	48.39
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	170045	50.0000	49.92
$	48 Toluene-d8	98	6.389	6.389	(0.833)	503296	50.0000	45.55
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	181525	50.0000	50.61
	27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	145604	50.0000	46.60
	38 Trichloroethene	130	5.207	5.207	(1.049)	144605	50.0000	50.78
	5 Vinyl Chloride	62	1.138	1.138	(0.272)	219317	50.0000	47.69



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032403.D
Date : 24-MAR-2021 22:25
Client ID: CCV
Sample Info: CCV;CCV;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032405.D Page 1
Report Date: 02-Apr-2021 14:40

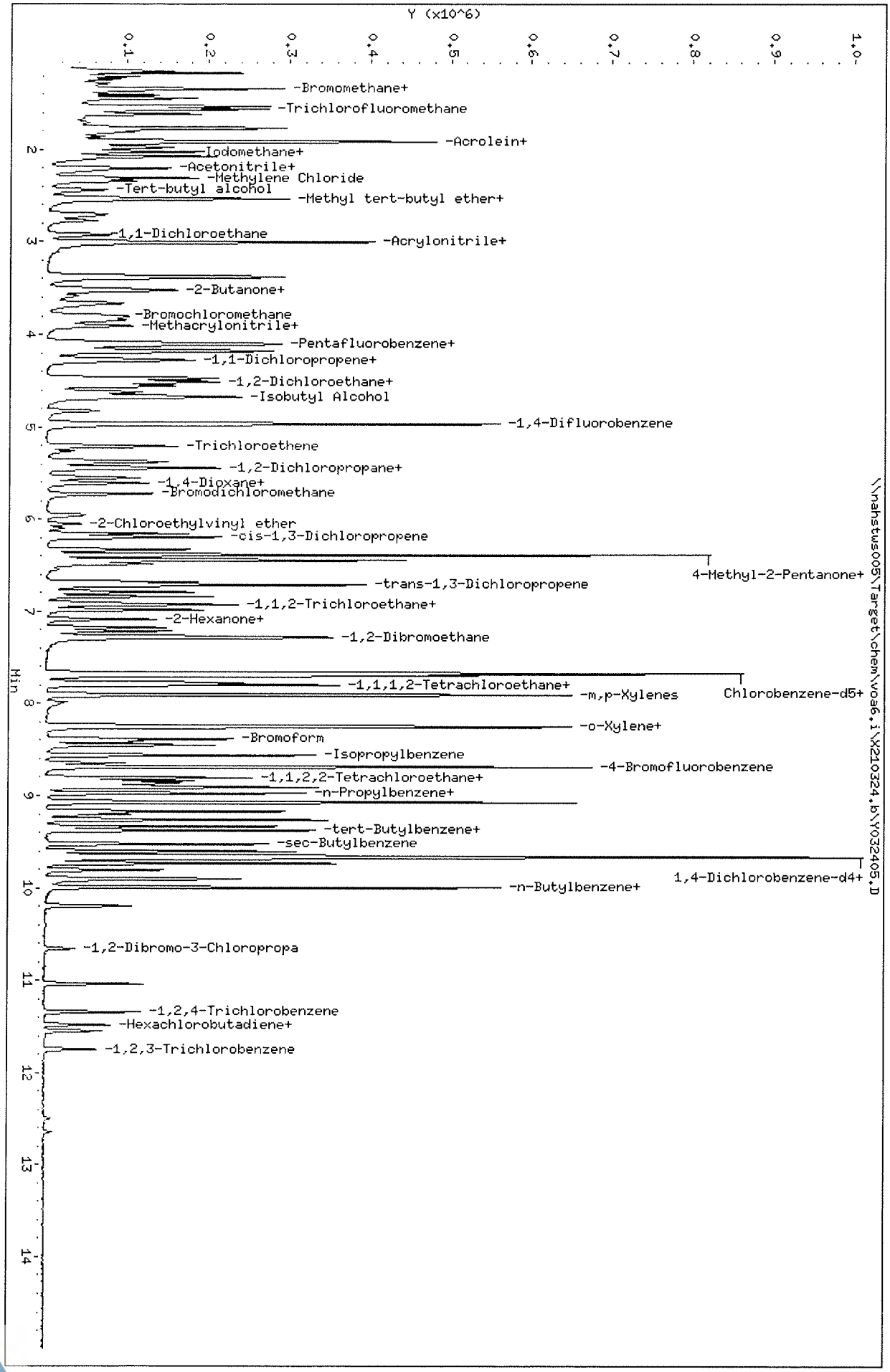
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032405.D
Lab Smp Id: VLCSW-210324 Client Smp ID: VLCSW-210324
Inj Date : 24-MAR-2021 23:07
Operator : PC Inst ID: voa6.i
Smp Info : VLCSW-210324;VLCSW-210324;3;;LCS
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:40 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 36 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	213787	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	364777	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	346522	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	177891	50.0000	
$	30 Dibromofluoromethane	113	4.096	4.096	(0.979)	125051	47.8325	47.83
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	138531	46.9354	46.93
$	48 Toluene-d8	98	6.388	6.389	(0.833)	435371	46.7544	46.75
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	146651	48.6758	48.67
	27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	46195	17.0281	17.02
	38 Trichloroethene	130	5.206	5.207	(1.049)	46577	18.9704	18.97
	5 Vinyl Chloride	62	1.138	1.138	(0.272)	83056	20.8007	20.80



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032405.D
Date : 24-MAR-2021 23:07
Client ID: VLCSW-210324
Sample Info: VLCSW-210324;VLCSW-210324;3;;LCS
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

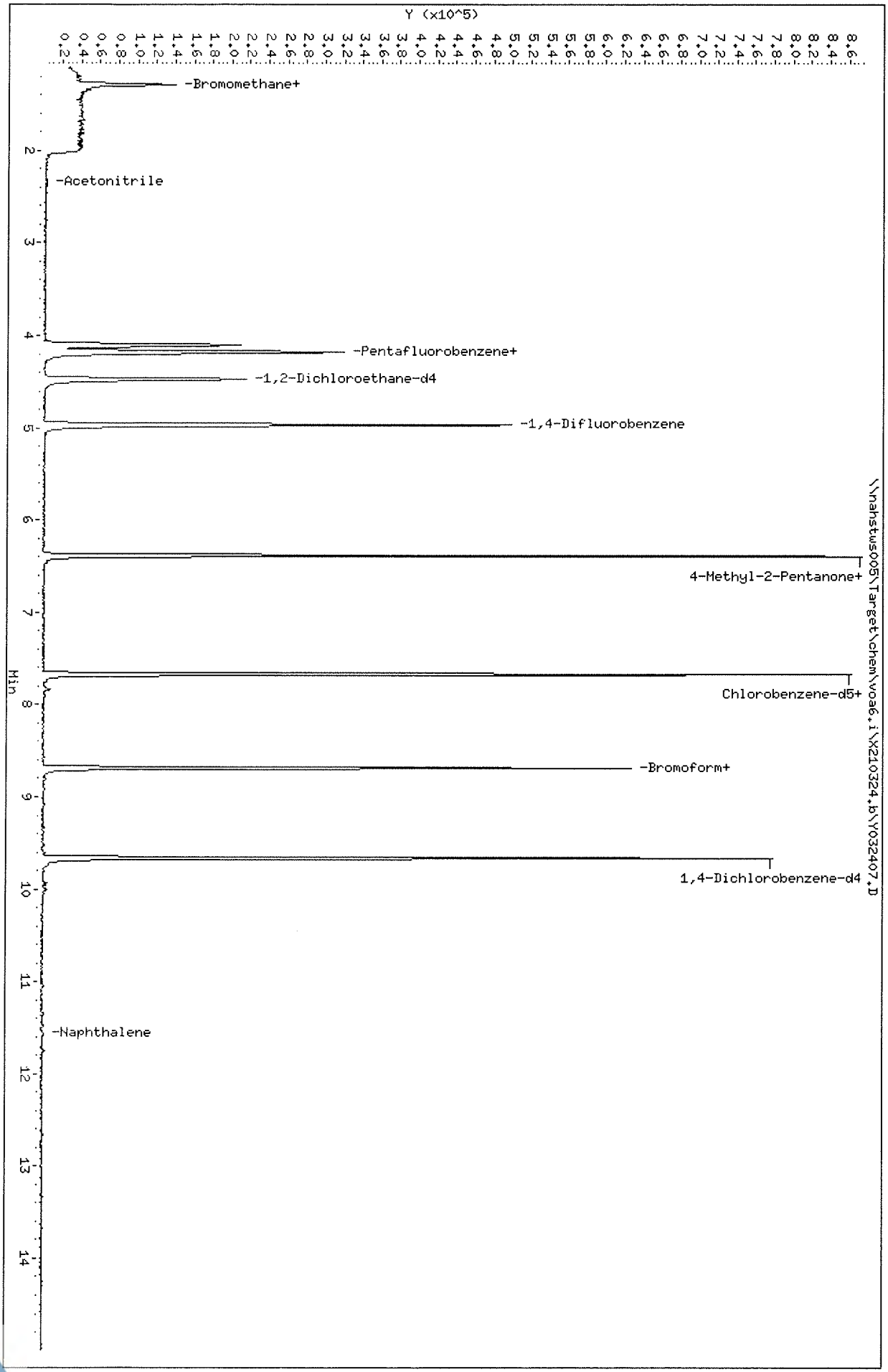
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032407.D
Lab Smp Id: VBLKW-210324 Client Smp ID: VBLKW-210324
Inj Date : 24-MAR-2021 23:49
Operator : PC Inst ID: voa6.i
Smp Info : VBLKW-210324;VBLKW-210324;3;;BLANK
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:40 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 38 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	256475	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	399631	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	352948	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	157473	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	130143	41.6350	41.63
$ 35 1,2-Dichloroethane-d4	65	4.469	4.476	(1.069)	146831	41.6129	41.61
$ 48 Toluene-d8	98	6.388	6.389	(0.833)	469920	49.5458	49.54
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	130820	43.0150	43.01



Data File: \\nahstws005\Target\chem\voa6,i\X210324,b\Y032407.D
Date : 24-MAR-2021 23:49
Client ID: VBLKW-210324
Sample Info: VBLKW-210324;VBLKW-210324;3;;BLANK
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6,i
Operator: PC
Column diameter: 0.18

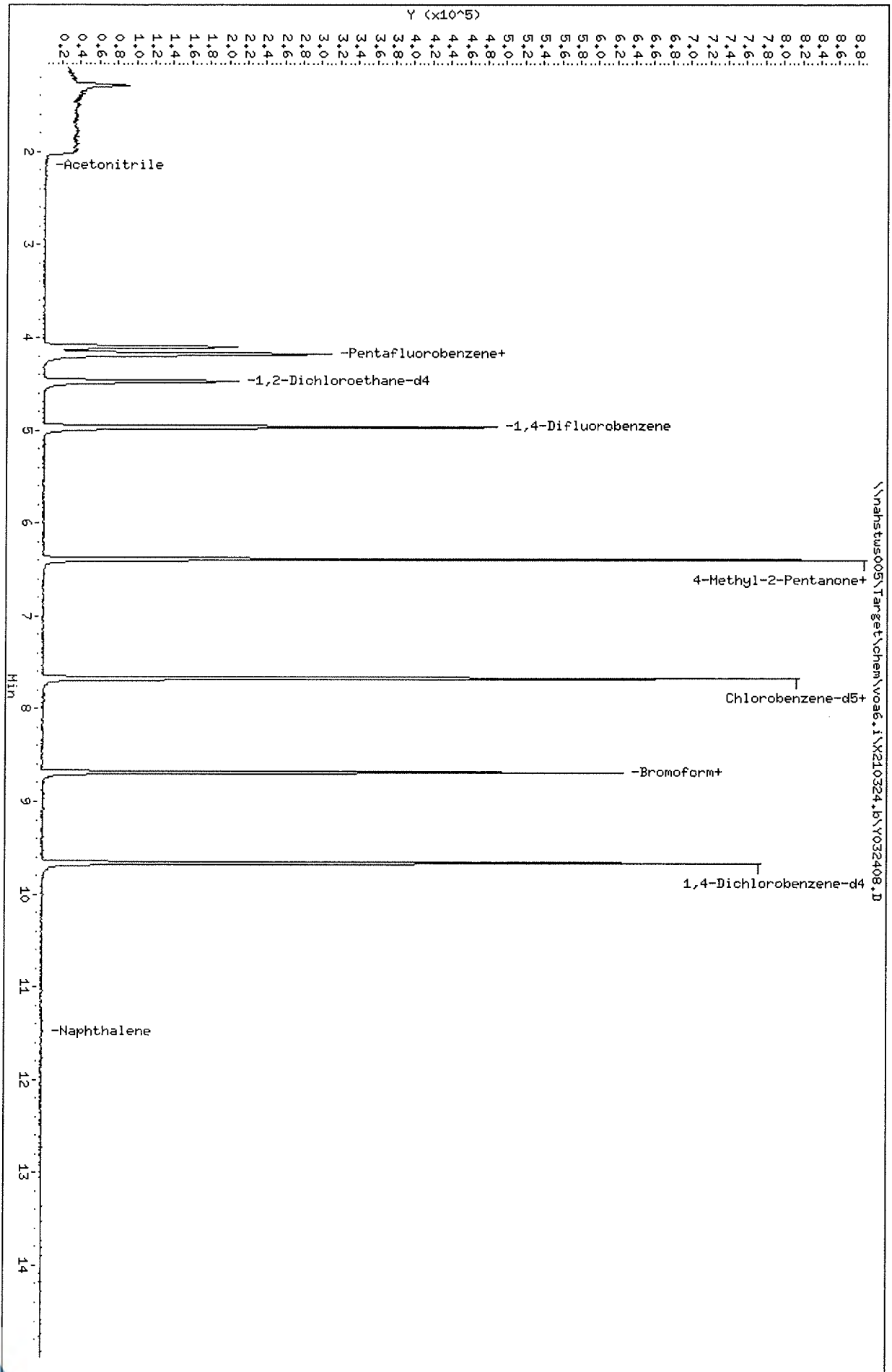
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032408.D
Lab Smp Id: HS21030874-13 Client Smp ID: HS21030874-13
Inj Date : 25-MAR-2021 00:10
Operator : PC Inst ID: voa6.i
Smp Info : HS21030874-13;HS21030874-13;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:33 devak.giga Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 39
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	242572	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	384612	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	346202	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	159170	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	128050	43.2706	43.27
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	142028	42.5337	42.53
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	462436	49.7068	49.70
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	133008	44.4851	44.48



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032408.D
Date : 25-MAR-2021 00:10
Client ID: HS21030874-13
Sample Info: HS21030874-13;HS21030874-13;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032410.D Page 1
Report Date: 02-Apr-2021 14:38

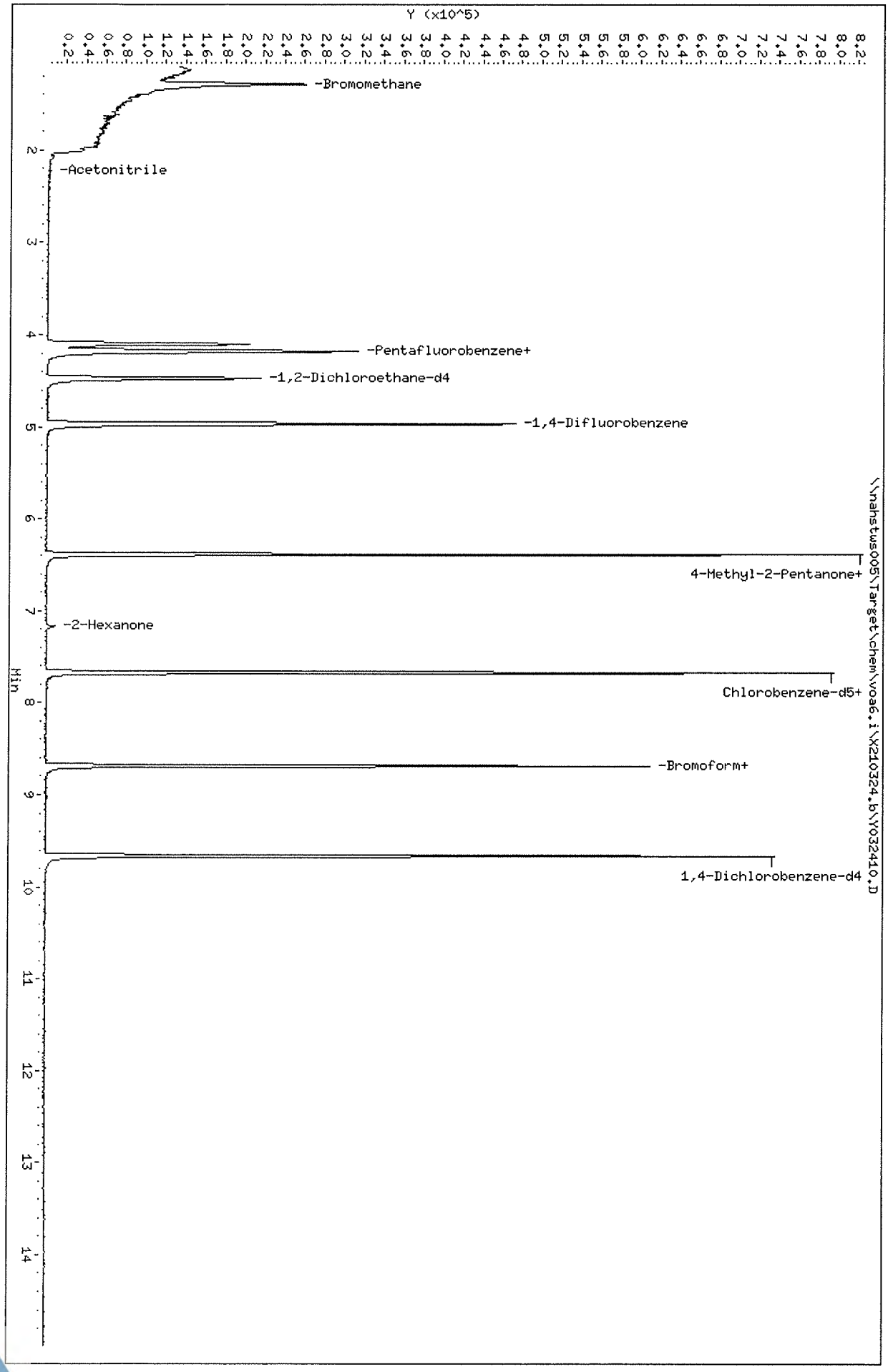
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032410.D
Lab Smp Id: HS21030874-08 Client Smp ID: HS21030874-08
Inj Date : 25-MAR-2021 00:53
Operator : PC Inst ID: voa6.i
Smp Info : HS21030874-08;HS21030874-08;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:33 devak.giga Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 41
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	248054	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	375624	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	334910	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	153474	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	128624	42.5228	42.52
$ 35 1,2-Dichloroethane-d4	65	4.469	4.476	(1.069)	141167	41.3722	41.37
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	449956	49.9960	49.99
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	124746	43.2137	43.21



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032410.D
Date : 25-MAR-2021 00:53
Client ID: HS21030874-08
Sample Info: HS21030874-08;HS21030874-08;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032411.D Page 1
Report Date: 02-Apr-2021 14:38

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032411.D
Lab Smp Id: HS21030874-06 Client Smp ID: HS21030874-06
Inj Date : 25-MAR-2021 01:14
Operator : PC Inst ID: voa6.i
Smp Info : HS21030874-06;HS21030874-06;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:33 devak.giga Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 42
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

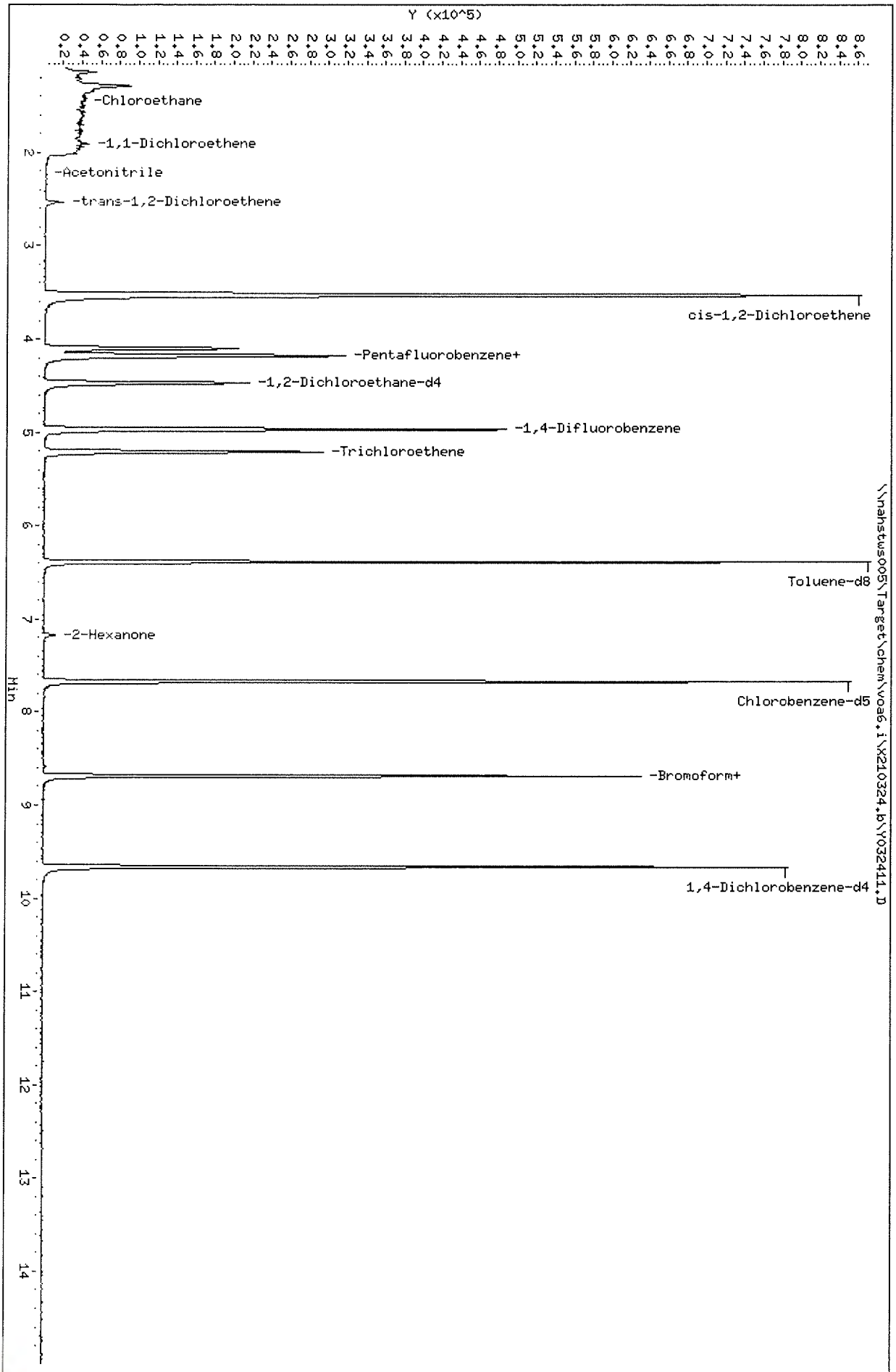
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	245136	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	378763	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.671	(1.000)	347930	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	151321	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	129546	43.3171	43.31
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	144949	42.9431	42.94
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	455870	48.7576	48.75
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	129090	43.0556	43.05(M)
27 cis-1,2-Dichloroethene	96	3.530	3.523	(0.844)	397455	127.771	127.77
38 Trichloroethene	130	5.206	5.206	(1.049)	85240	33.4355	33.43
5 Vinyl Chloride	62	1.138	1.138	(0.272)	16974	3.70737	3.70

QC Flag Legend

M - Compound response manually integrated.



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032411.D
Date : 25-MAR-2021 01:14
Client ID: HS21030874-06
Sample Info: HS21030874-06;HS21030874-06;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032411.D

Date : 25-MAR-2021 01:14

Client ID: HS21030874-06

Instrument: voa6.i

Sample Info: HS21030874-06;HS21030874-06;;;

Purge Volume: 5.0

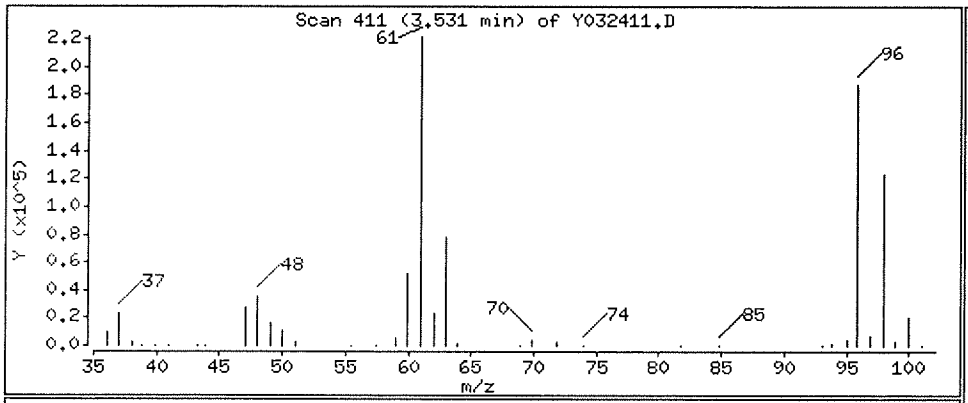
Operator: PC

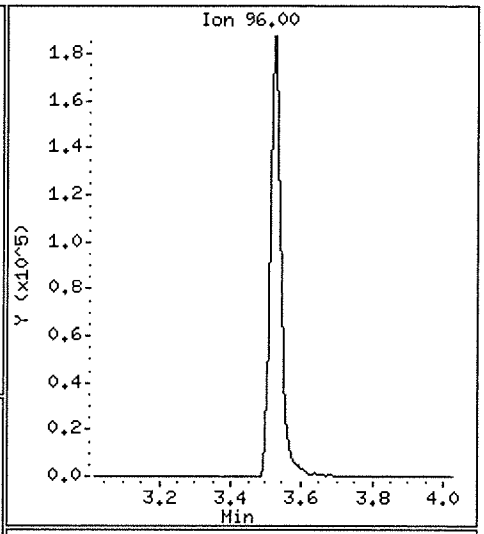
Column phase: DB624

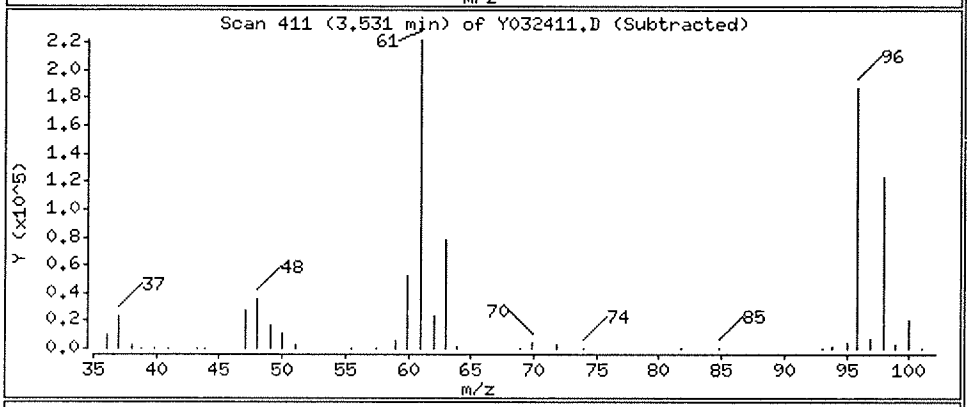
Column diameter: 0.18

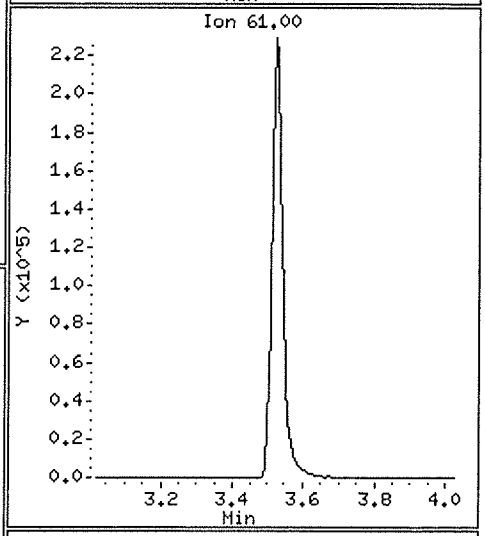
27 cis-1,2-Dichloroethene

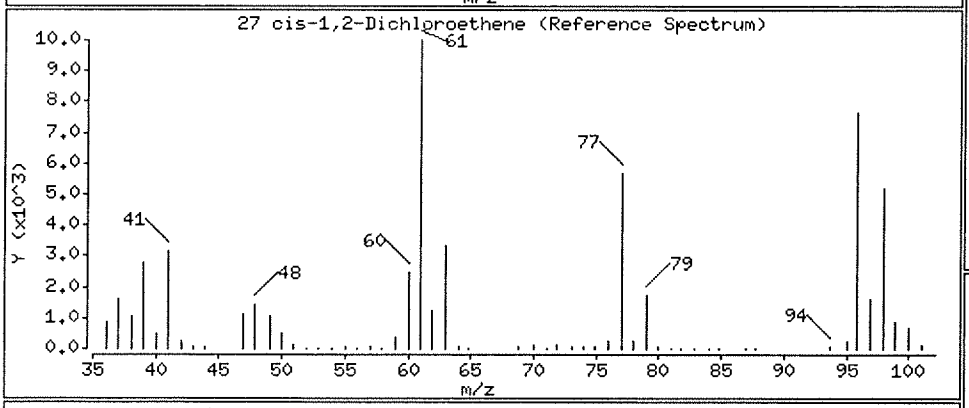
Concentration: 127.77 ug/l

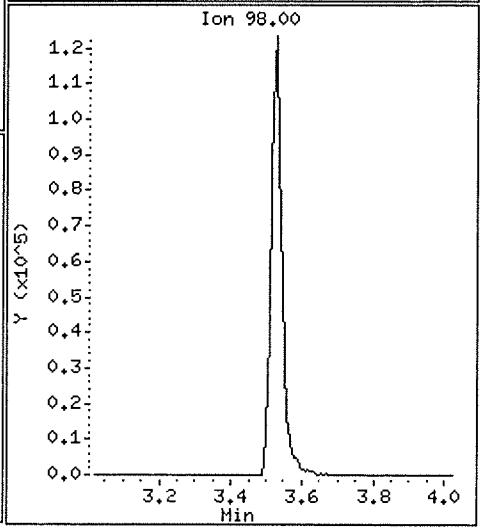


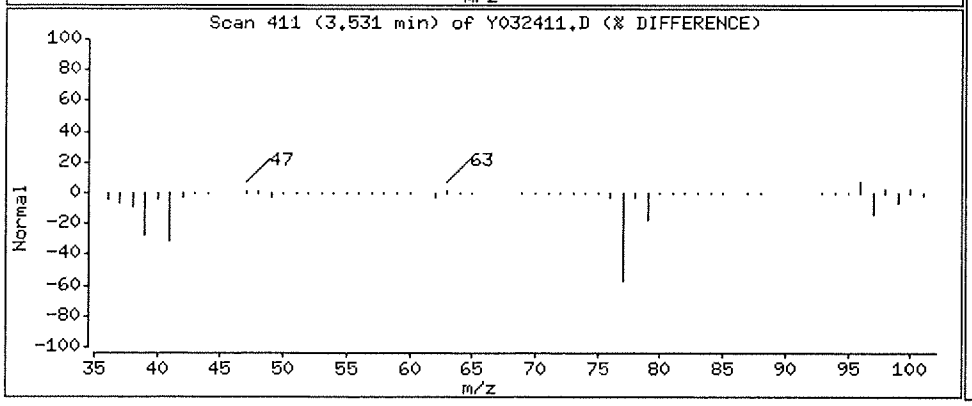












Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032411.D

Date : 25-MAR-2021 01:14

Client ID: HS21030874-06

Instrument: voa6.i

Sample Info: HS21030874-06;HS21030874-06;;;

Purge Volume: 5.0

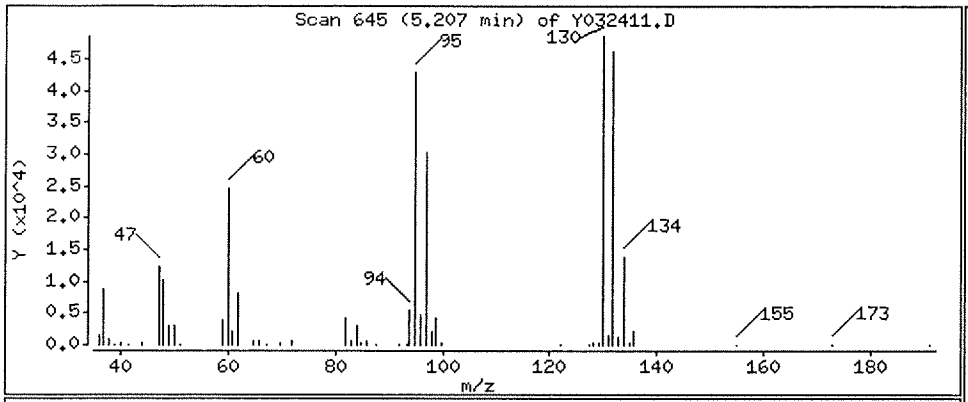
Operator: PC

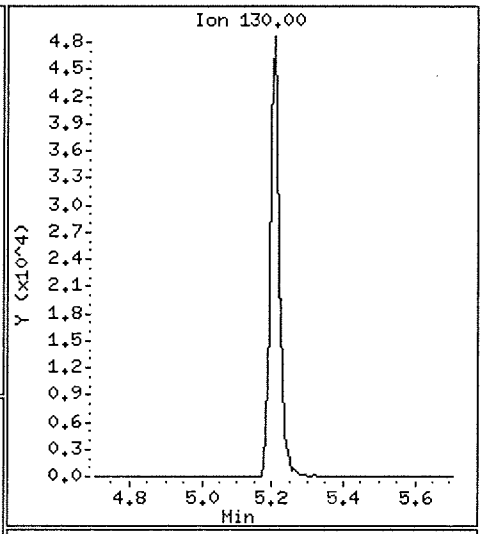
Column phase: DB624

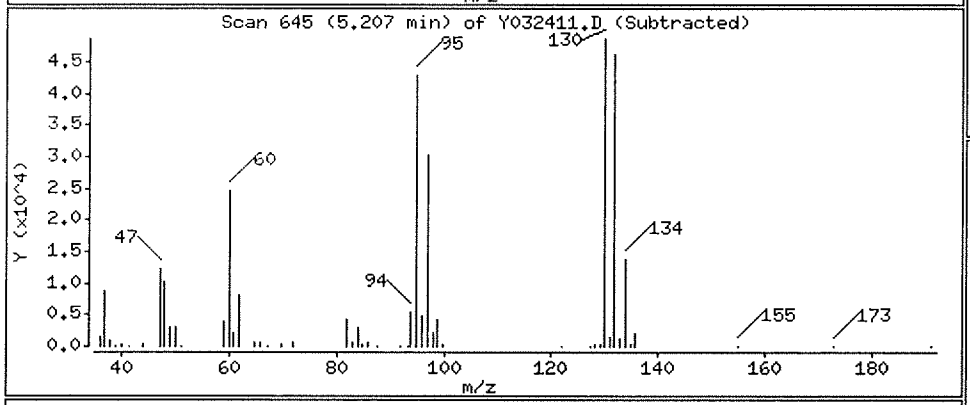
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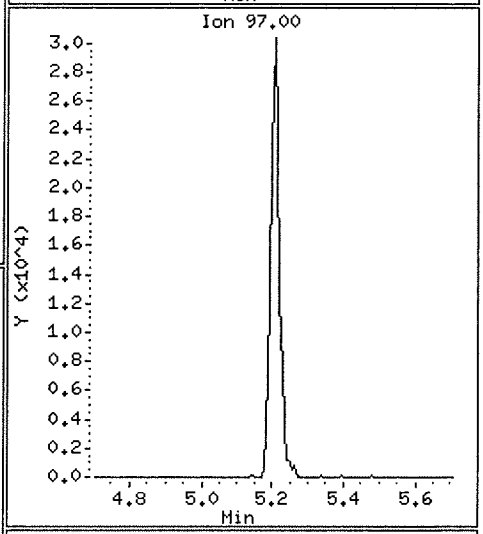
38 Trichloroethene

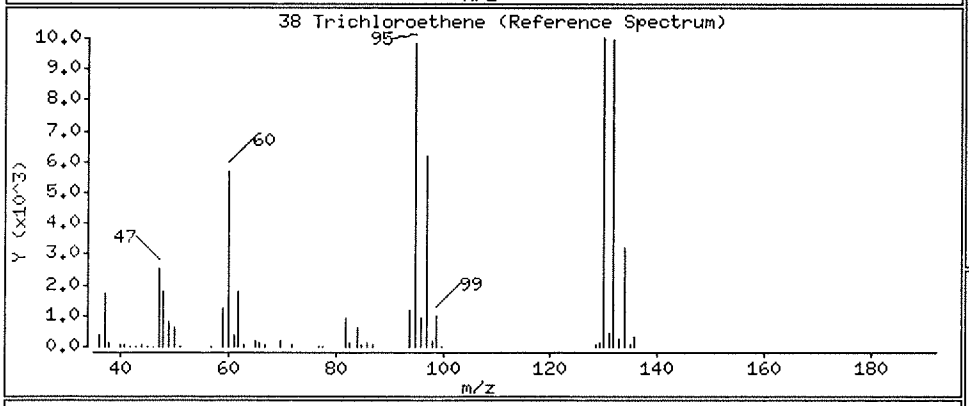
Concentration: 33.43 ug/l

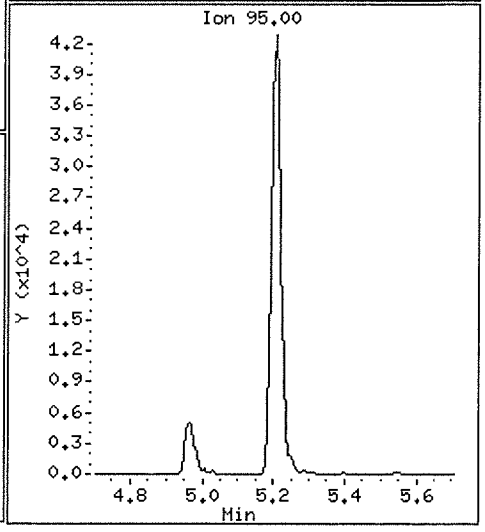


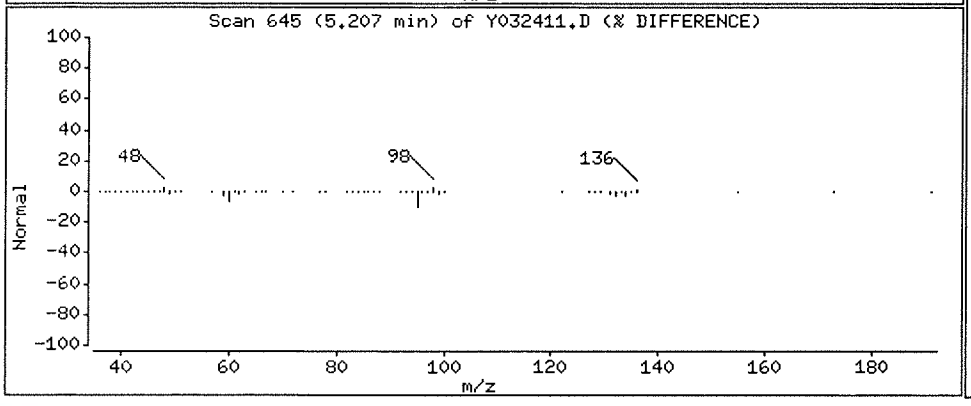












Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032411.D

Date : 25-MAR-2021 01:14

Client ID: HS21030874-06

Instrument: voa6.i

Sample Info: HS21030874-06;HS21030874-06;;;

Purge Volume: 5.0

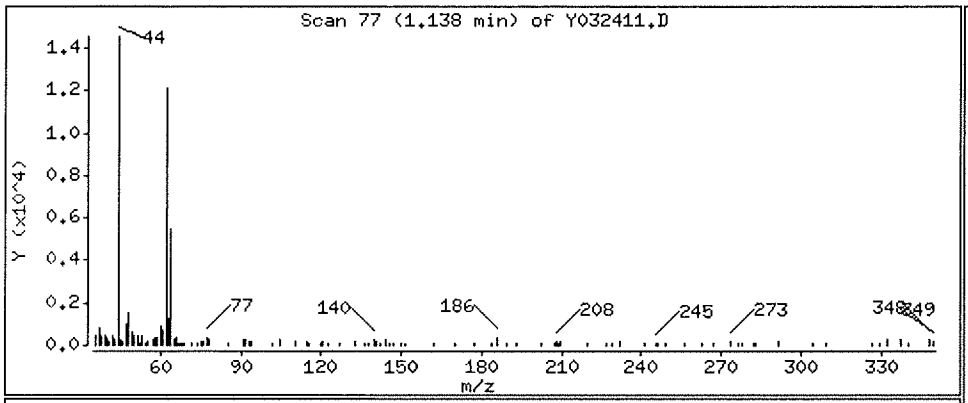
Operator: PC

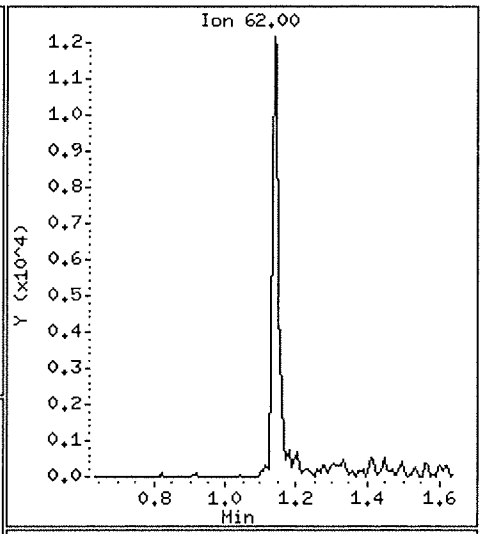
Column phase: DB624

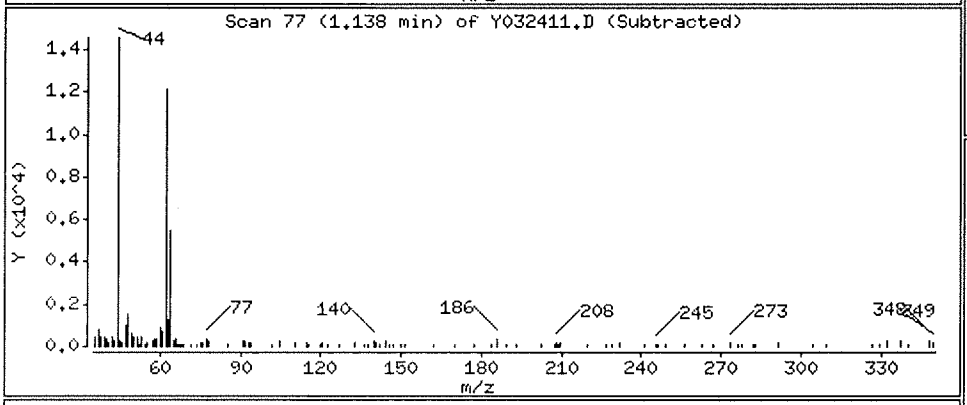
Column diameter: 0.18

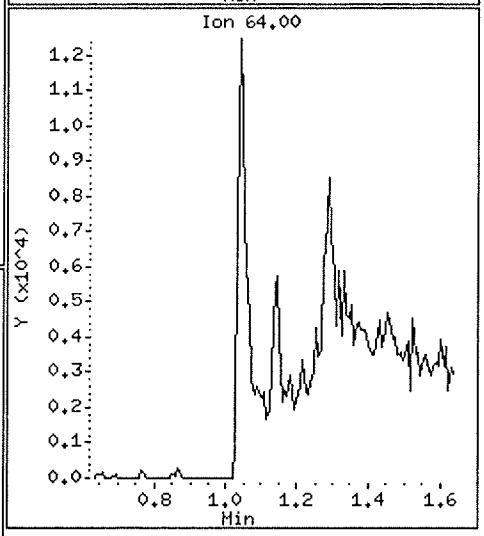
5 Vinyl Chloride

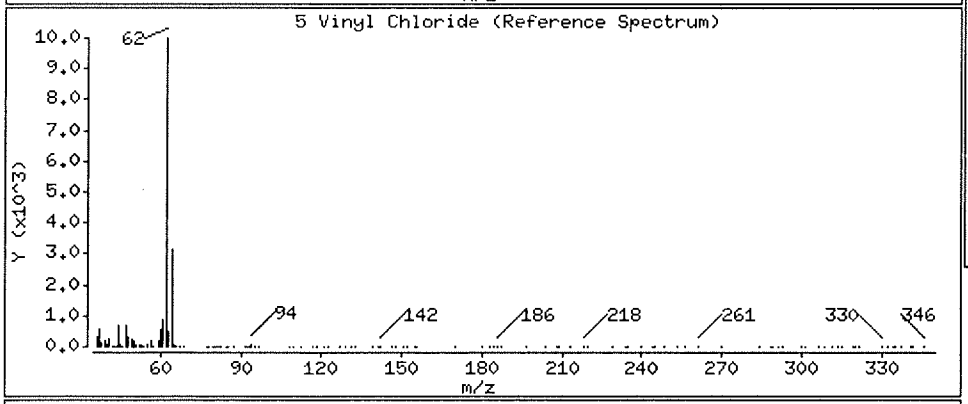
Concentration: 3.70 ug/l

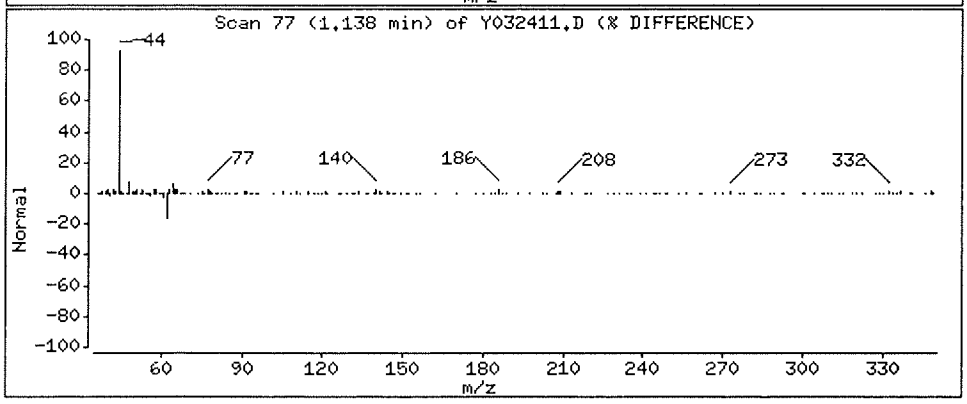






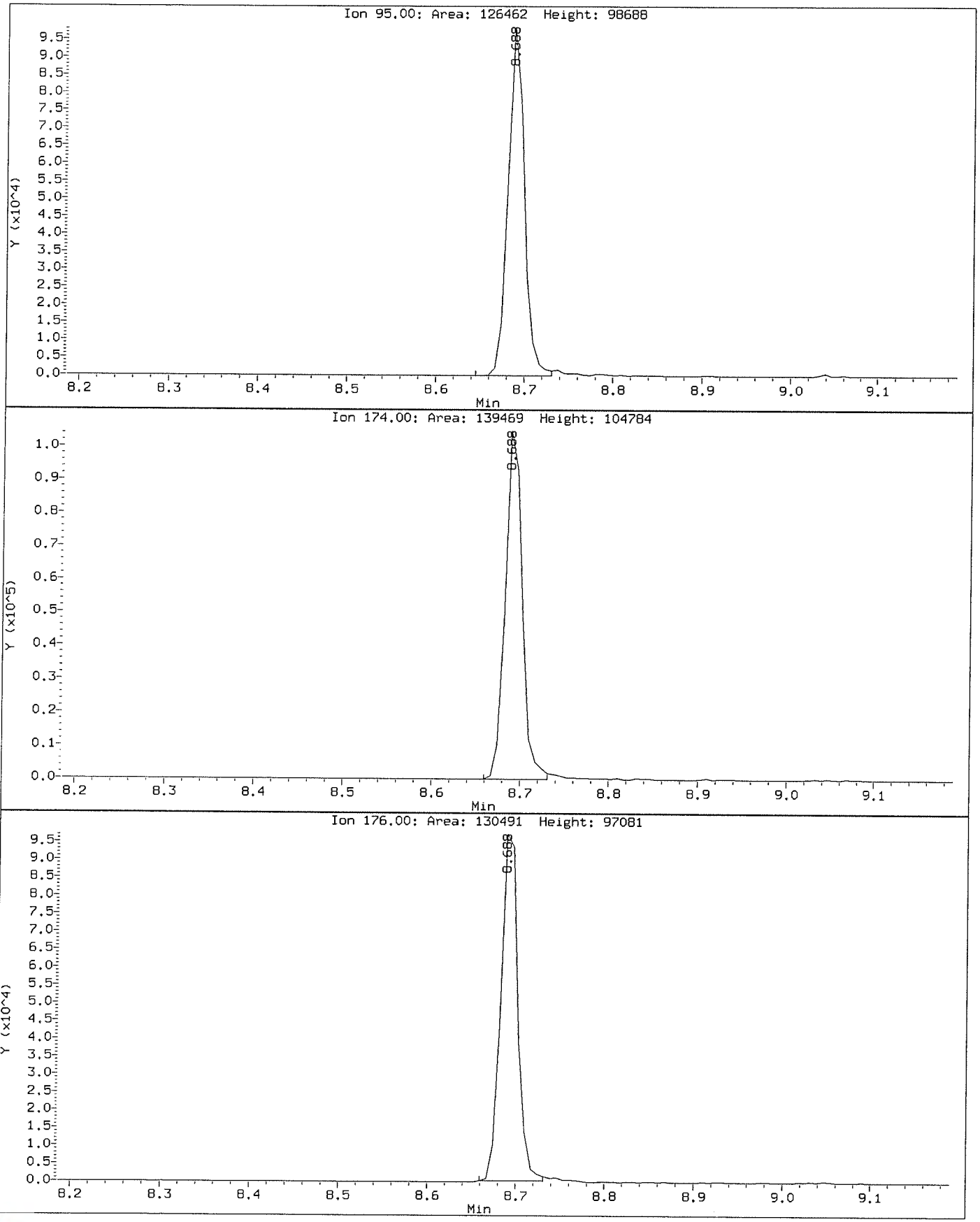






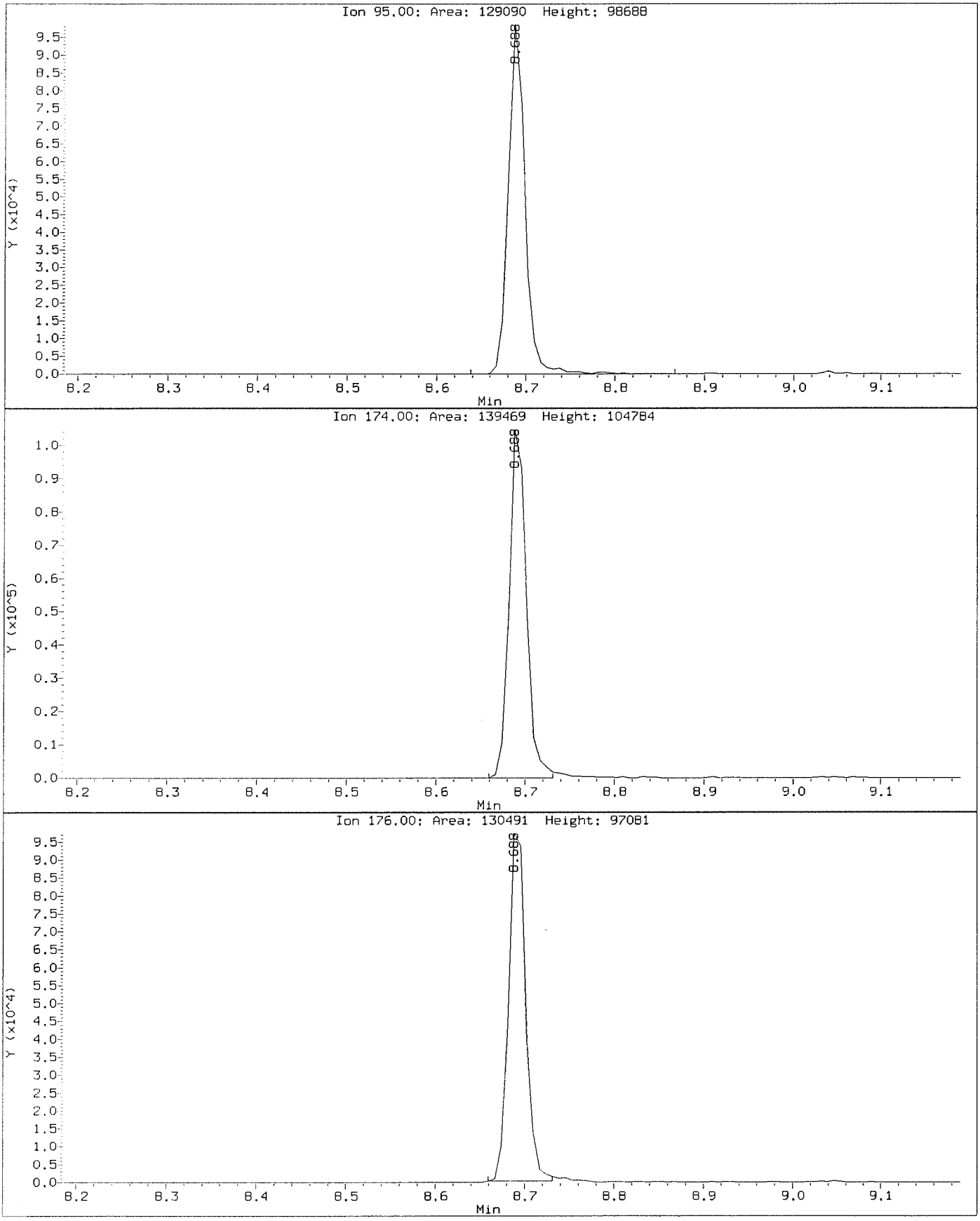
Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Before\Y032411.D
Injection Date: 25-MAR-2021 01:14
Instrument: voa6.i
Client Sample ID: HS21030874-06

Compound: 4-Bromofluorobenzene
CAS Number: 460-00-4



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032411.D
Injection Date: 25-MAR-2021 01:14
Instrument: voa6.i
Client Sample ID: HS21030874-06

Compound: 4-Bromofluorobenzene
CAS Number: 460-00-4



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032412.D Page 1
Report Date: 02-Apr-2021 14:40

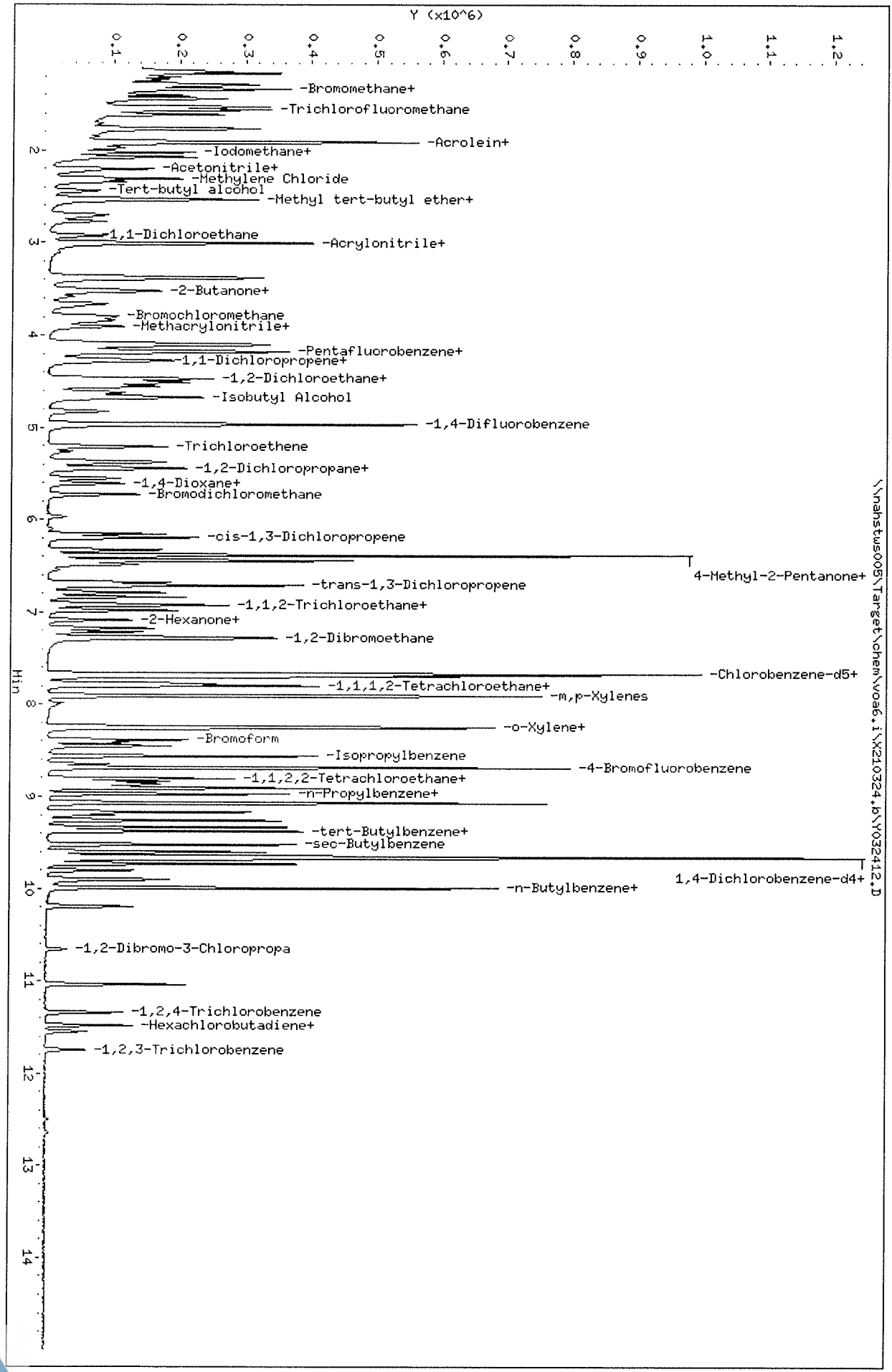
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032412.D
Lab Smp Id: HS21030874-08MS Client Smp ID: HS21030874-08MS
Inj Date : 25-MAR-2021 01:35
Operator : PC Inst ID: voa6.i
Smp Info : HS21030874-08MS;HS21030874-08MS;3;;MS
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:40 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 43 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	274212	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	427019	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	409437	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	210205	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	148268	44.2959	44.29
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	156293	41.4341	41.43
$ 48 Toluene-d8	98	6.388	6.389	(0.833)	524814	47.6993	47.69
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	166059	46.7905	46.79
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	53603	15.4047	15.40
38 Trichloroethene	130	5.206	5.207	(1.049)	48984	17.0427	17.04
5 Vinyl Chloride	62	1.138	1.138	(0.272)	86540	16.8974	16.89



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032412.D
Date : 25-MAR-2021 01:35
Client ID: HS21030874-08MS
Sample Info: HS21030874-08MS;HS21030874-08MS;3;;MS
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

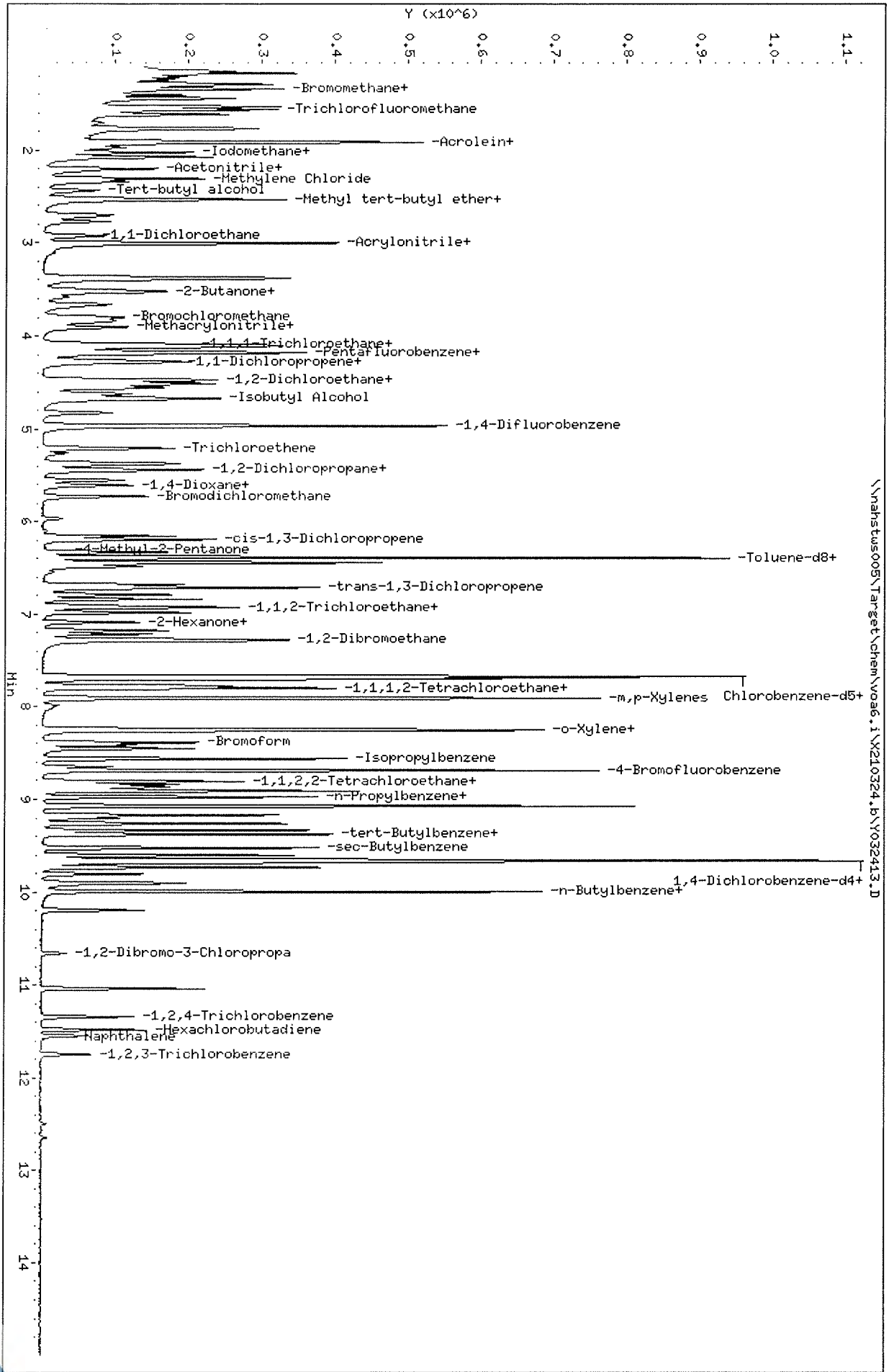
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032413.D
Lab Smp Id: HS21030874-08MSD Client Smp ID: HS21030874-08MSD
Inj Date : 25-MAR-2021 01:56
Operator : PC Inst ID: voa6.i
Smp Info : HS21030874-08MSD;HS21030874-08MSD;3;;MSD
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:40 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 43 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	271052	50.0000	
*	36 1,4-Difluorobenzene	114	4.970	4.963	(1.000)	432483	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	395567	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	190498	50.0000	
$	30 Dibromofluoromethane	113	4.096	4.096	(0.979)	144217	43.6048	43.60
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	159310	42.6920	42.69
$	48 Toluene-d8	98	6.388	6.389	(0.833)	504972	47.5052	47.50
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	154015	45.0432	45.04
	27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	52510	15.2665	15.26
	38 Trichloroethene	130	5.207	5.207	(1.048)	50480	17.3413	17.34
	5 Vinyl Chloride	62	1.138	1.138	(0.272)	79265	15.6573	15.65



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032413.D
Date : 25-MAR-2021 01:56
Client ID: HS21030874-08MSD
Sample Info: HS21030874-08MSD;HS21030874-08MSD;3;;MSD
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032415.D Page 1
Report Date: 02-Apr-2021 14:38

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032415.D
Lab Smp Id: HS21030874-01 Client Smp ID: HS21030874-01
Inj Date : 25-MAR-2021 02:38
Operator : PC Inst ID: voa6.i
Smp Info : HS21030874-01;HS21030874-01;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:33 devak.giga Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 45
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

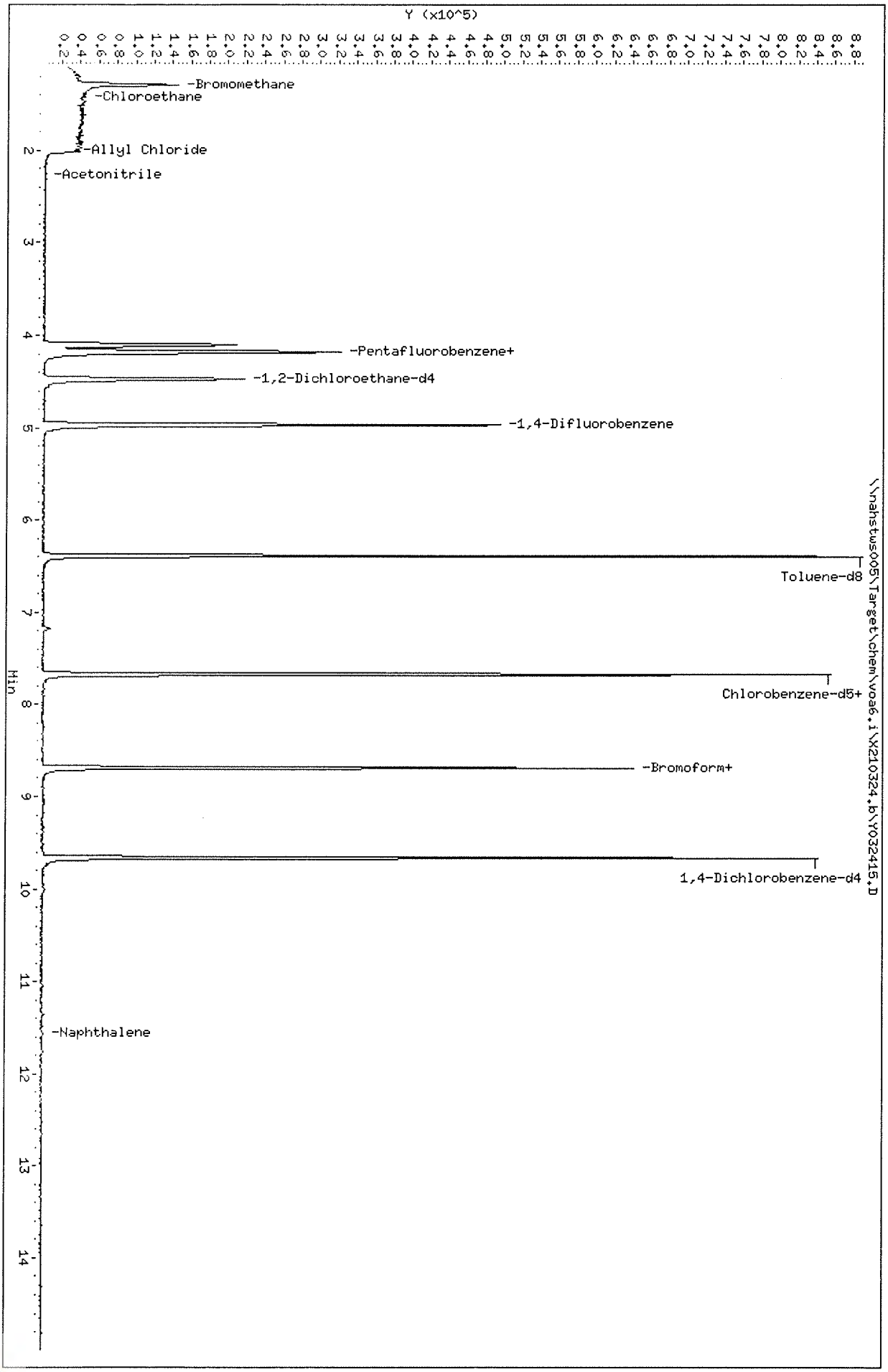
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	254334	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	394458	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	361350	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	164273	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	134727	43.4178	43.41
$ 35 1,2-Dichloroethane-d4	65	4.469	4.476	(1.068)	142997	40.8863	40.88
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	475999	49.0198	49.01
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	137950	44.2220	44.22

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032415.D
Date : 25-MAR-2021 02:38
Client ID: HS21030874-01
Sample Info: HS21030874-01;HS21030874-01;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032416.D Page 1
Report Date: 02-Apr-2021 14:38

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032416.D
Lab Smp Id: HS21030874-02 Client Smp ID: HS21030874-02
Inj Date : 25-MAR-2021 02:59
Operator : PC Inst ID: voa6.i
Smp Info : HS21030874-02;HS21030874-02;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:33 devak.giga Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 46
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

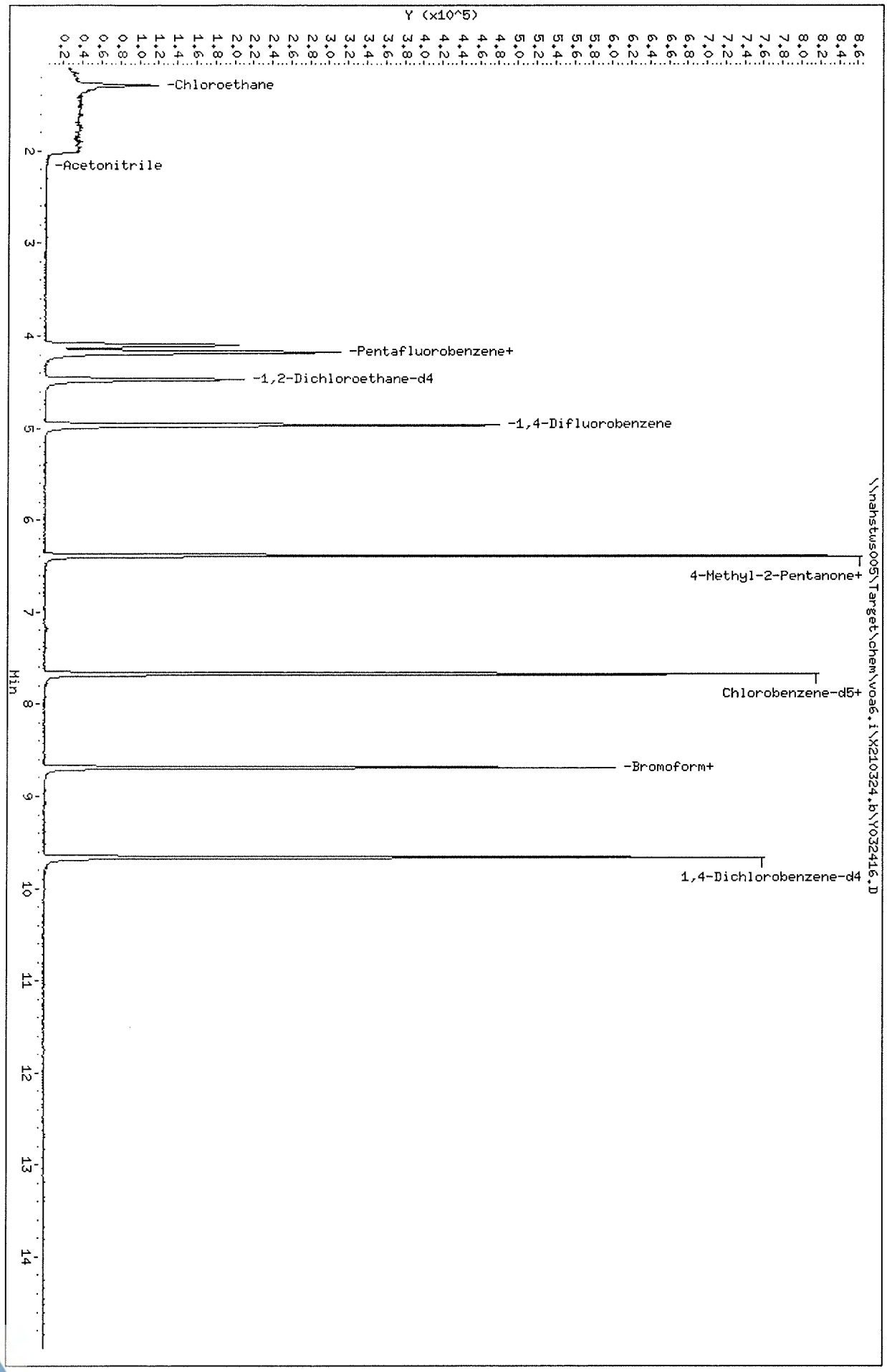
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	249441	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	385175	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	346534	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	145683	50.0000	
$	30 Dibromofluoromethane	113	4.096	4.096	(0.979)	127647	41.9790	41.97
$	35 1,2-Dichloroethane-d4	65	4.469	4.476	(1.068)	139108	40.5627	40.56(M)
$	48 Toluene-d8	98	6.389	6.388	(0.833)	463191	49.7402	49.74
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	126861	42.5177	42.51(M)

QC Flag Legend

M - Compound response manually integrated.

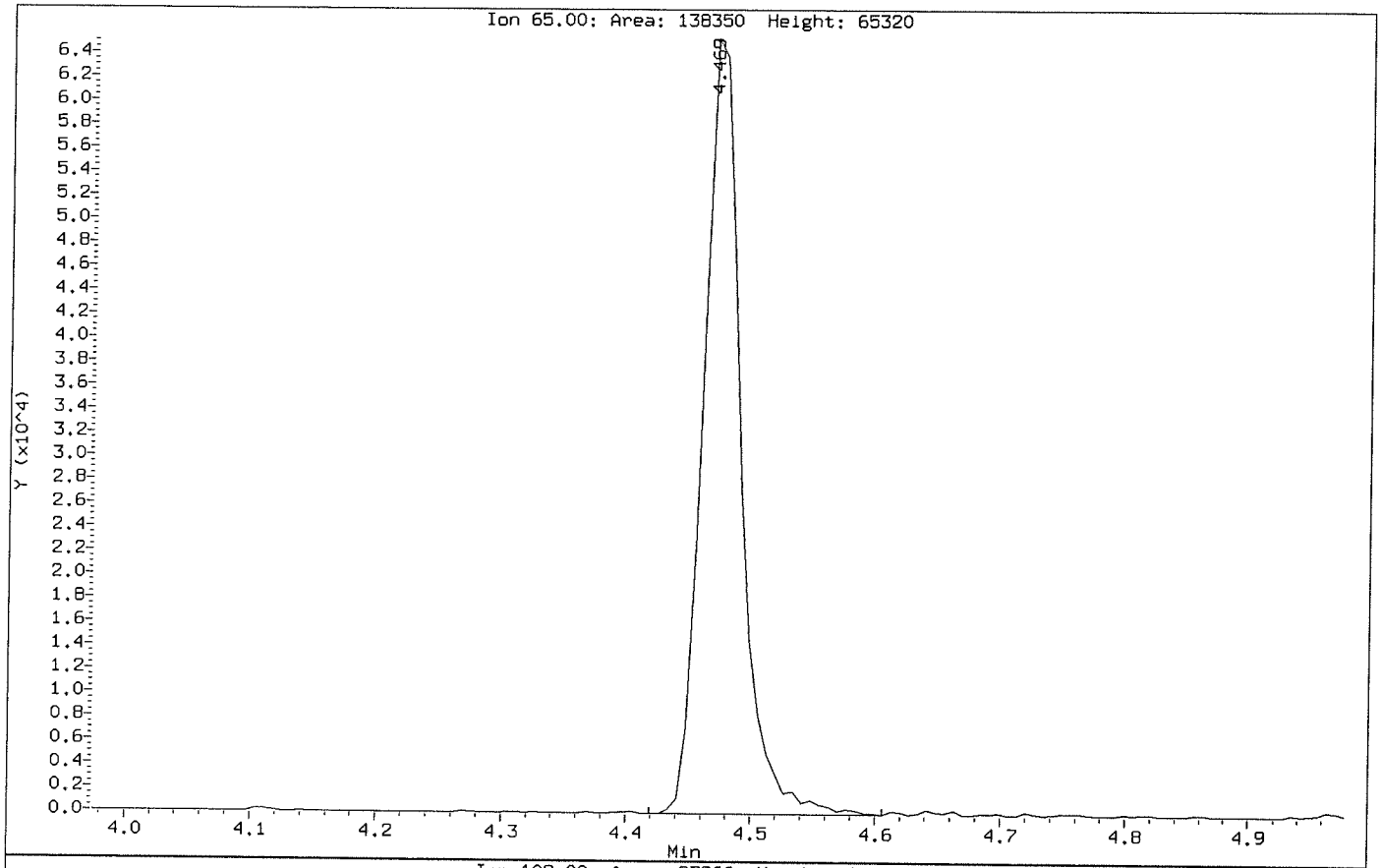
Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032416.D
Date : 25-MAR-2021 02:59
Client ID: HS21030874-02
Sample Info: HS21030874-02;HS21030874-02;;;
Purge Volume: 5.0
Column phase: DB624

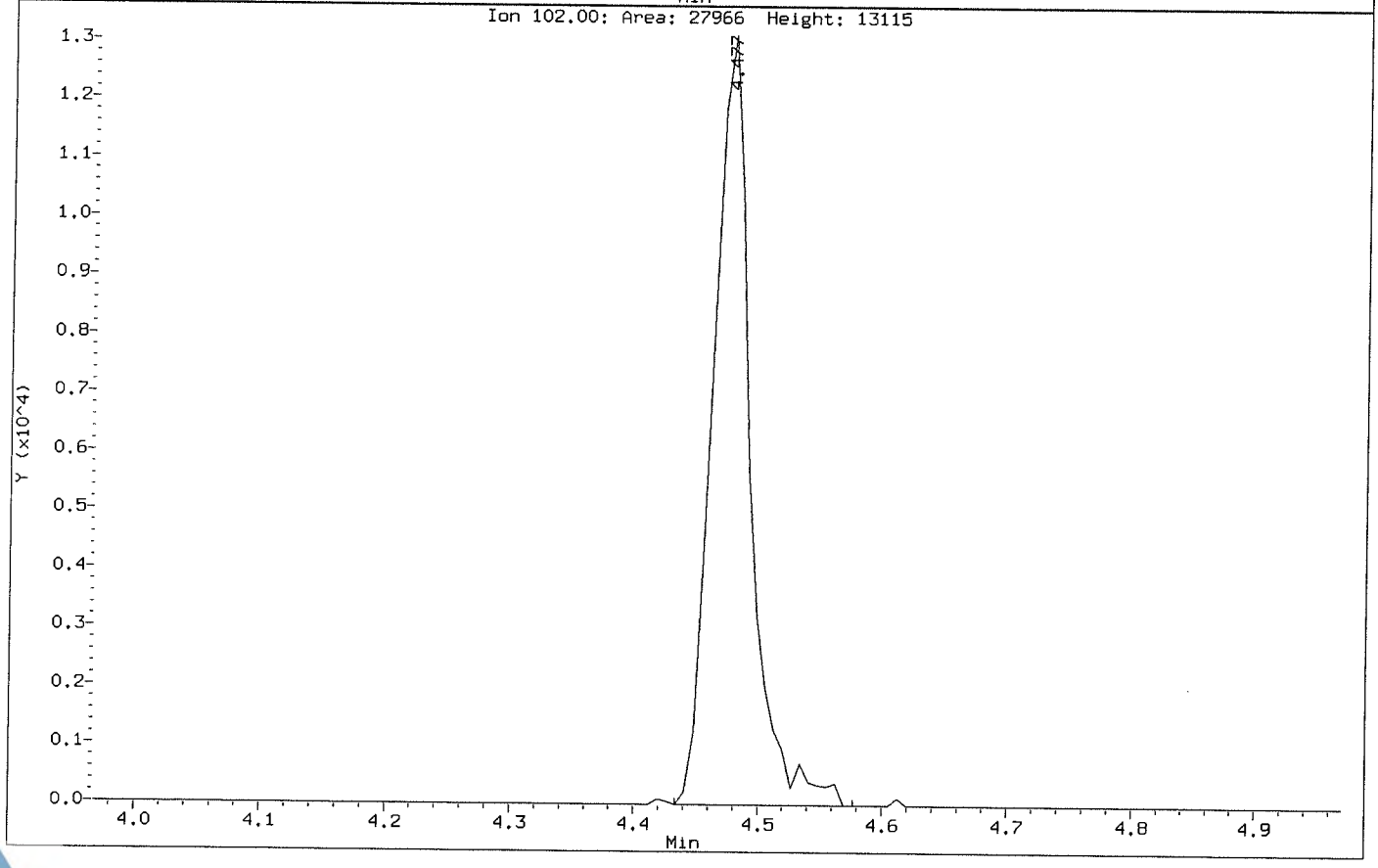
Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Before\Y032416.D
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Instrument: voa6.i
Client Sample ID: HS21030874-02

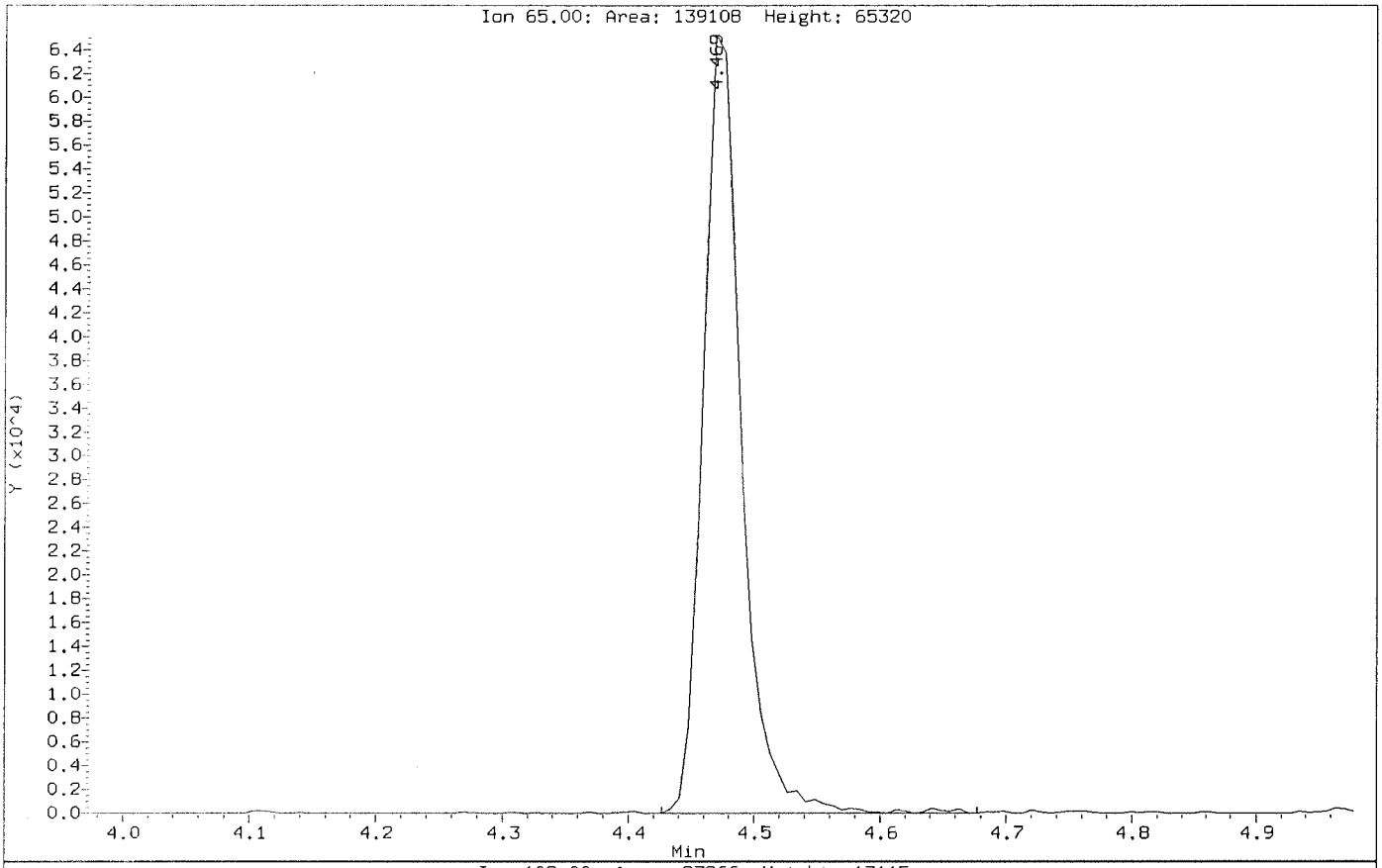
Compound: 1,2-Dichloroethane-d4
CAS Number: 17060-07-0

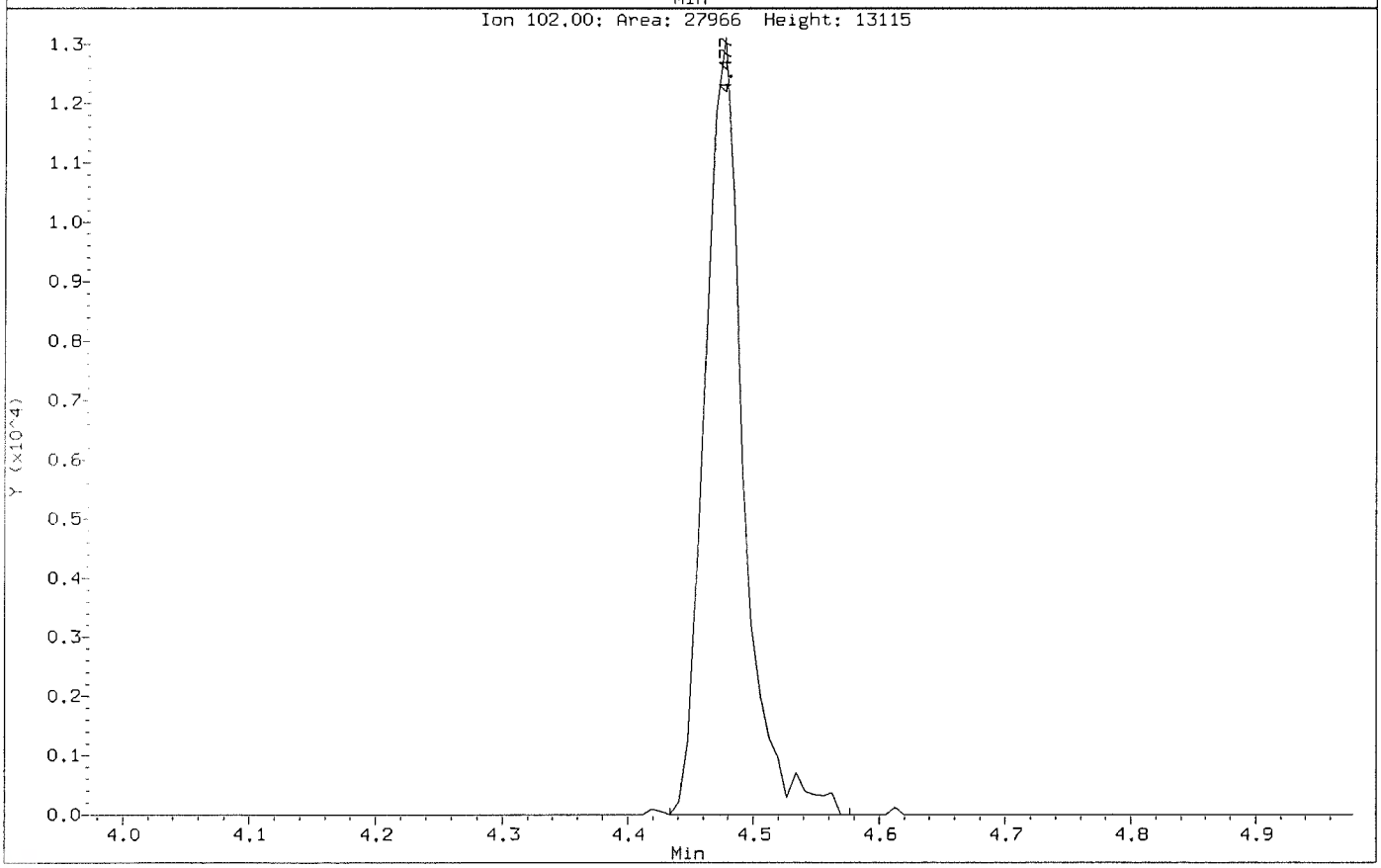




Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032416.D
Injection Date: 25-MAR-2021 02:59
Instrument: voa6.i
Client Sample ID: HS21030874-02

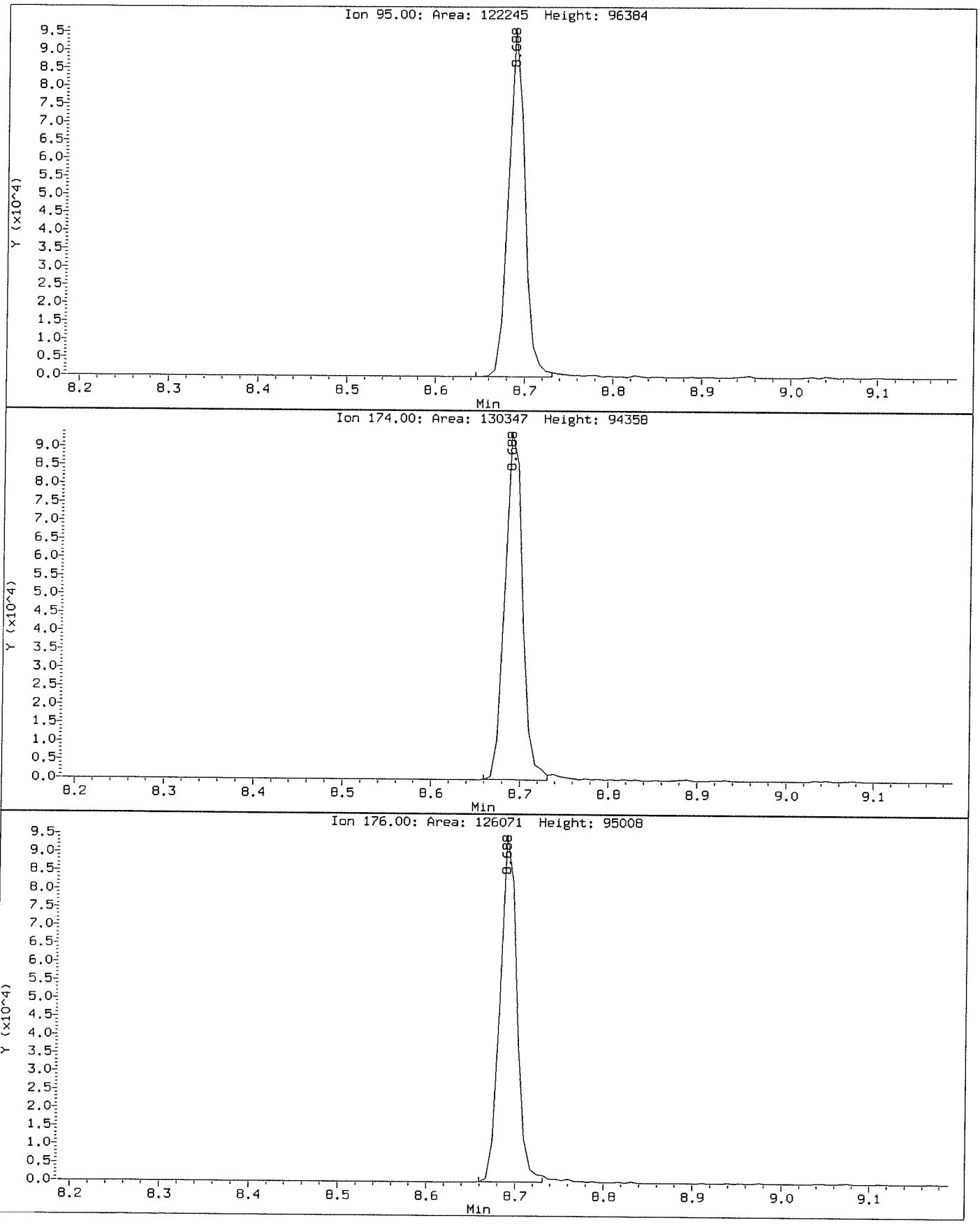
Compound: 1.2-Dichloroethane-d4
CAS Number: 17060-07-0





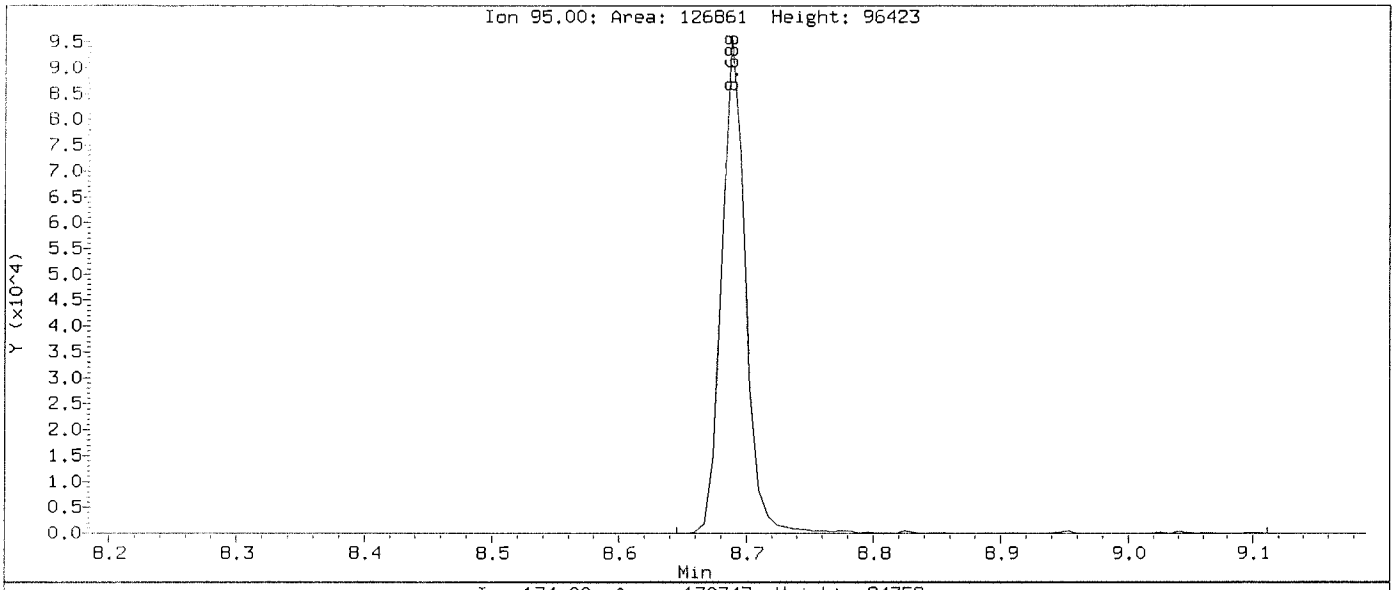
Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Before\Y032416.D
Injection Date: 25-MAR-2021 02:59
Instrument: voa6.i
Client Sample ID: HS21030874-02

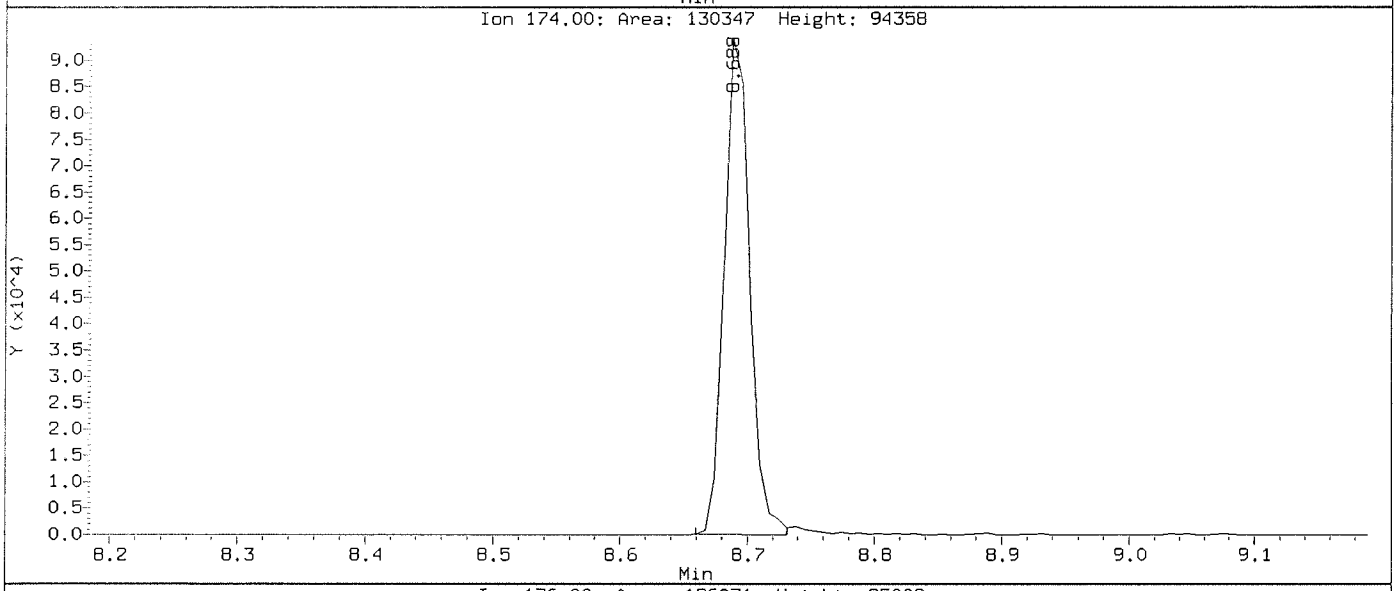
Compound: 4-Bromofluorobenzene
CAS Number: 460-00-4

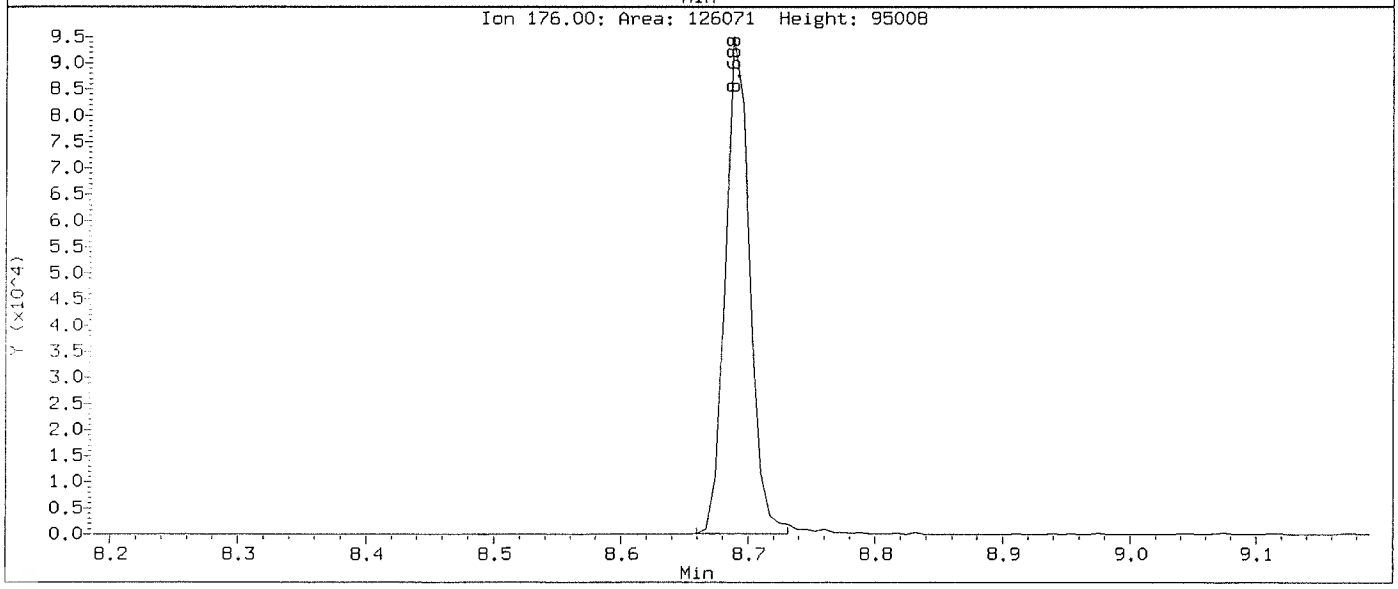


Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032416.D
Injection Date: 25-MAR-2021 02:59
Instrument: voa6.i
Client Sample ID: HS21030874-02

Compound: 4-Bromofluorobenzene
CAS Number: 460-00-4







Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032417.D Page 1
Report Date: 02-Apr-2021 14:38

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032417.D
Lab Smp Id: HS21030874-03 Client Smp ID: HS21030874-03
Inj Date : 25-MAR-2021 03:20
Operator : PC Inst ID: voa6.i
Smp Info : HS21030874-03;HS21030874-03;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:33 devak.giga Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 47
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

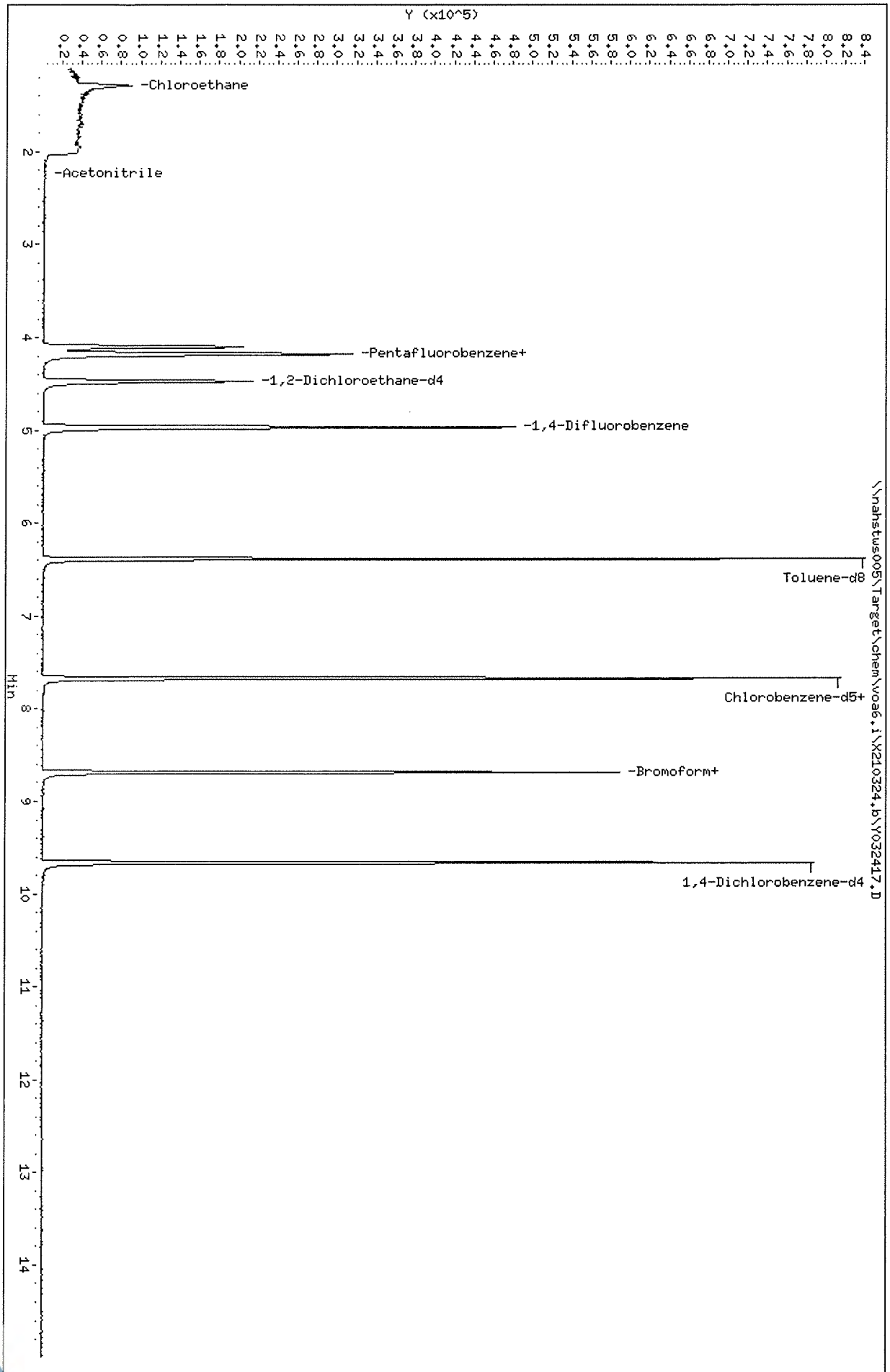
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	244753	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	376266	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	338822	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	153639	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	129696	43.4323	43.43
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	142324	42.2502	42.25
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	446901	49.0832	49.08
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	127706	43.6958	43.69

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032417.D
Date : 25-MAR-2021 03:20
Client ID: HS21030874-03
Sample Info: HS21030874-03;HS21030874-03;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032418.D Page 1
Report Date: 02-Apr-2021 14:38

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032418.D
Lab Smp Id: HS21030874-04 Client Smp ID: HS21030874-04
Inj Date : 25-MAR-2021 03:41
Operator : PC Inst ID: voa6.i
Smp Info : HS21030874-04;HS21030874-04;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:33 devak.giga Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 48
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

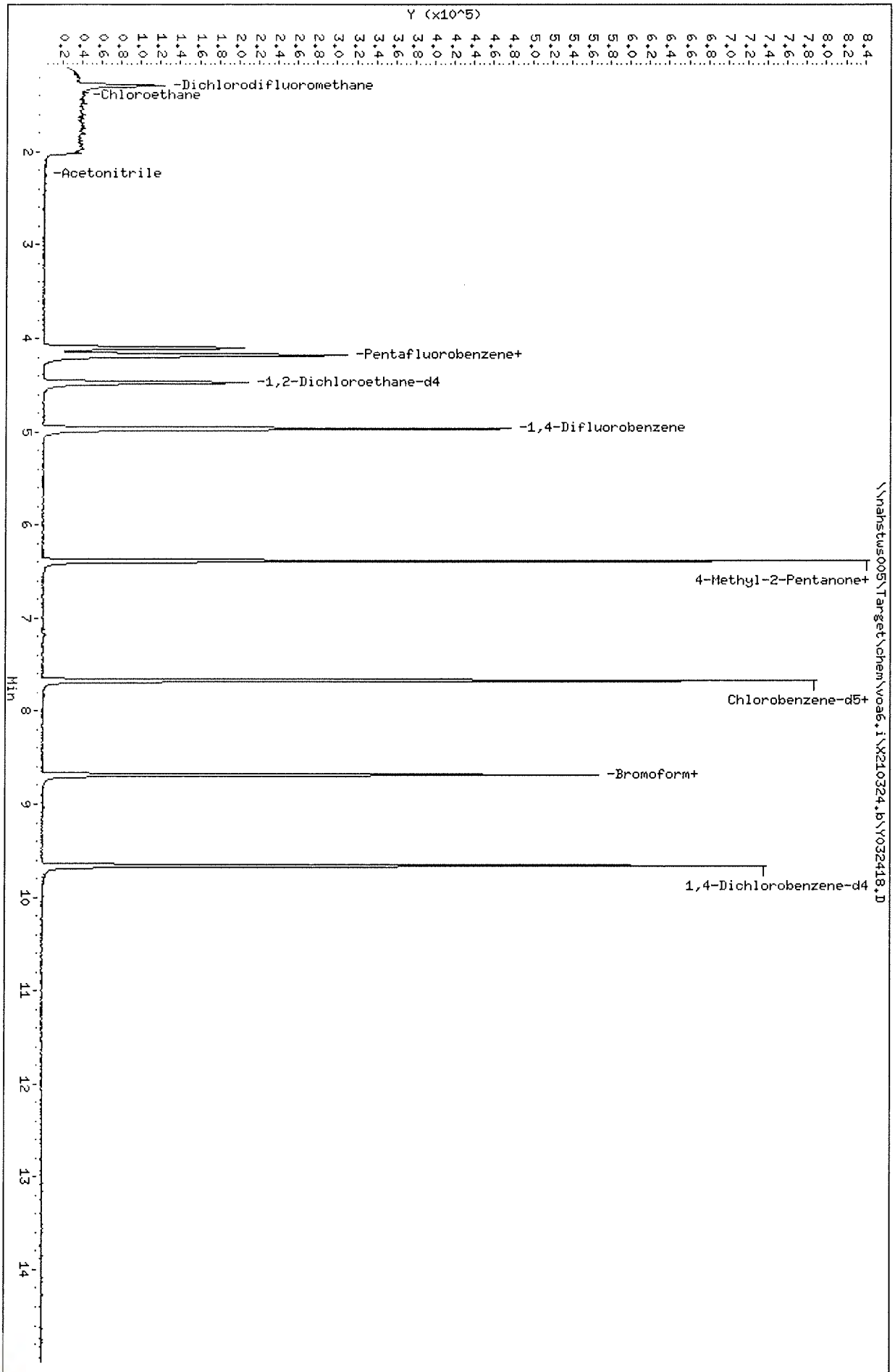
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	247559	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.963	(1.000)	376169	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	328148	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	146710	50.0000	
$ 30 Dibromofluoromethane	113	4.096	4.096	(0.979)	130645	43.2585	43.25
$ 35 1,2-Dichloroethane-d4	65	4.469	4.476	(1.069)	138341	40.6437	40.64(M)
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	453133	51.3865	51.38
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	122216	43.2100	43.20(M)

QC Flag Legend

M - Compound response manually integrated.

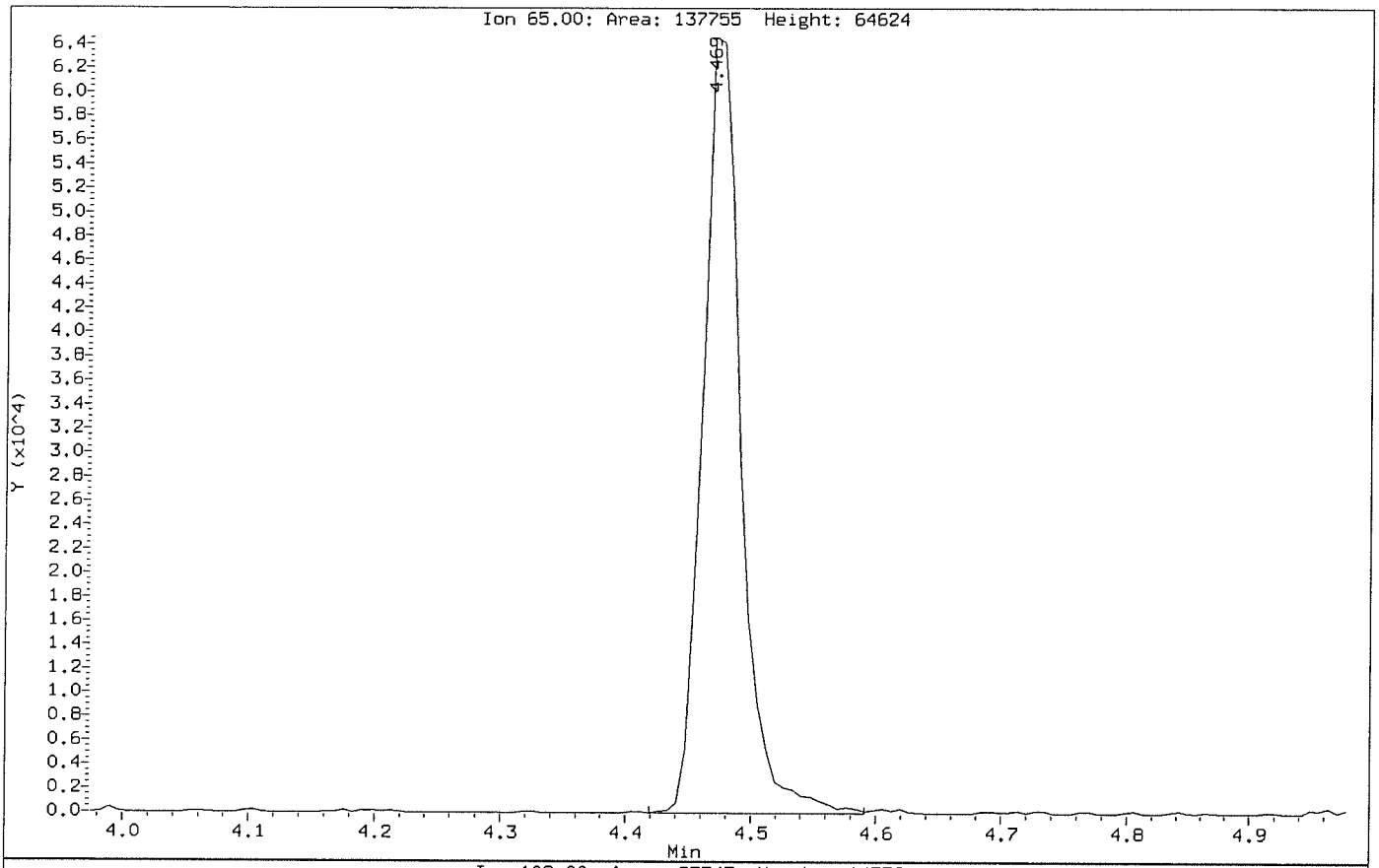
Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032418.D
Date : 25-MAR-2021 03:41
Client ID: HS21030874-04
Sample Info: HS21030874-04;HS21030874-04;;;
Purge Volume: 5.0
Column phase: DB624

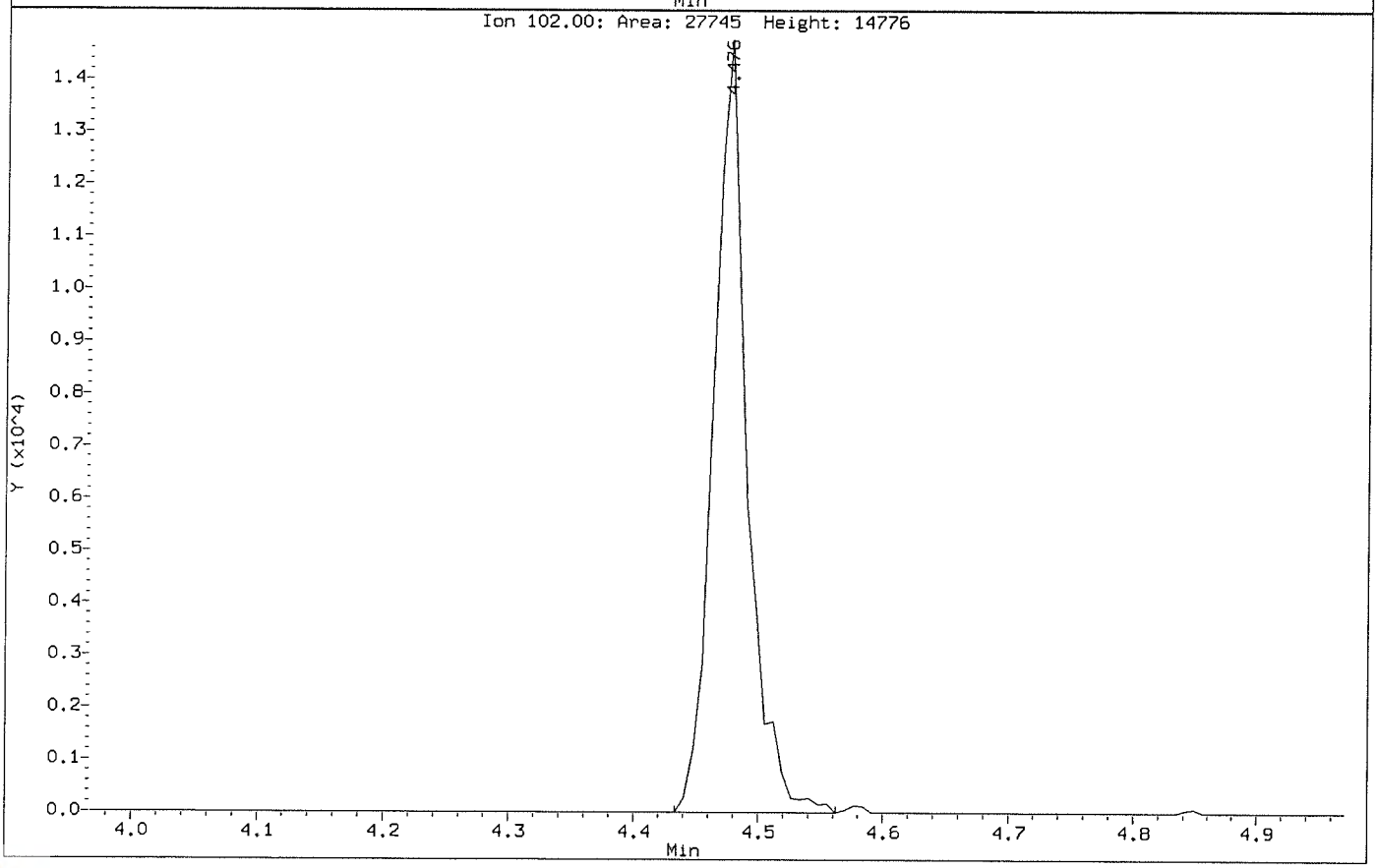
Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Before\Y032418.D
Injection Date: 25-MAR-2021 03:41
Instrument: voa6.i
Client Sample ID: HS21030874-04

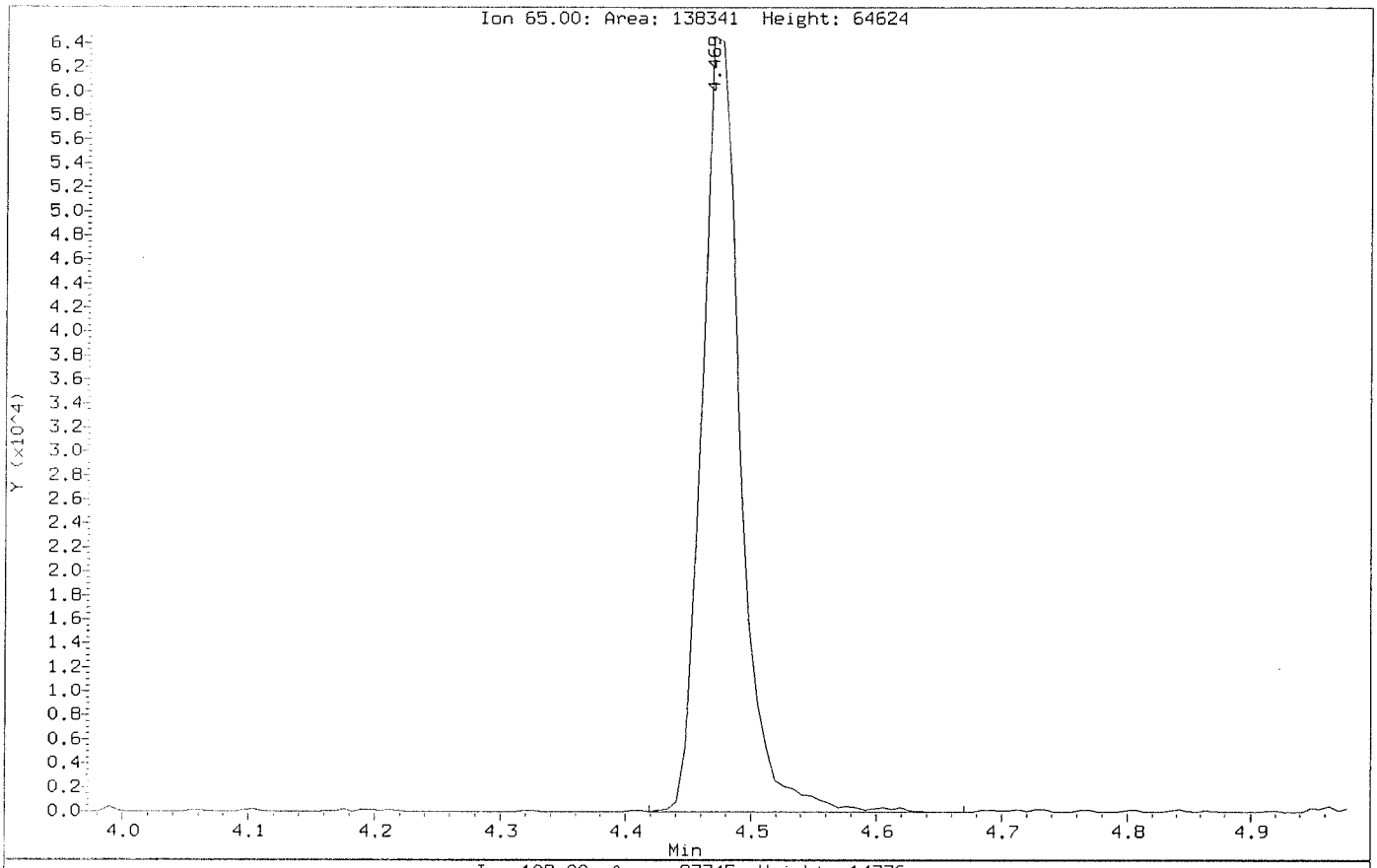
Compound: 1,2-Dichloroethane-d4
CAS Number: 17060-07-0

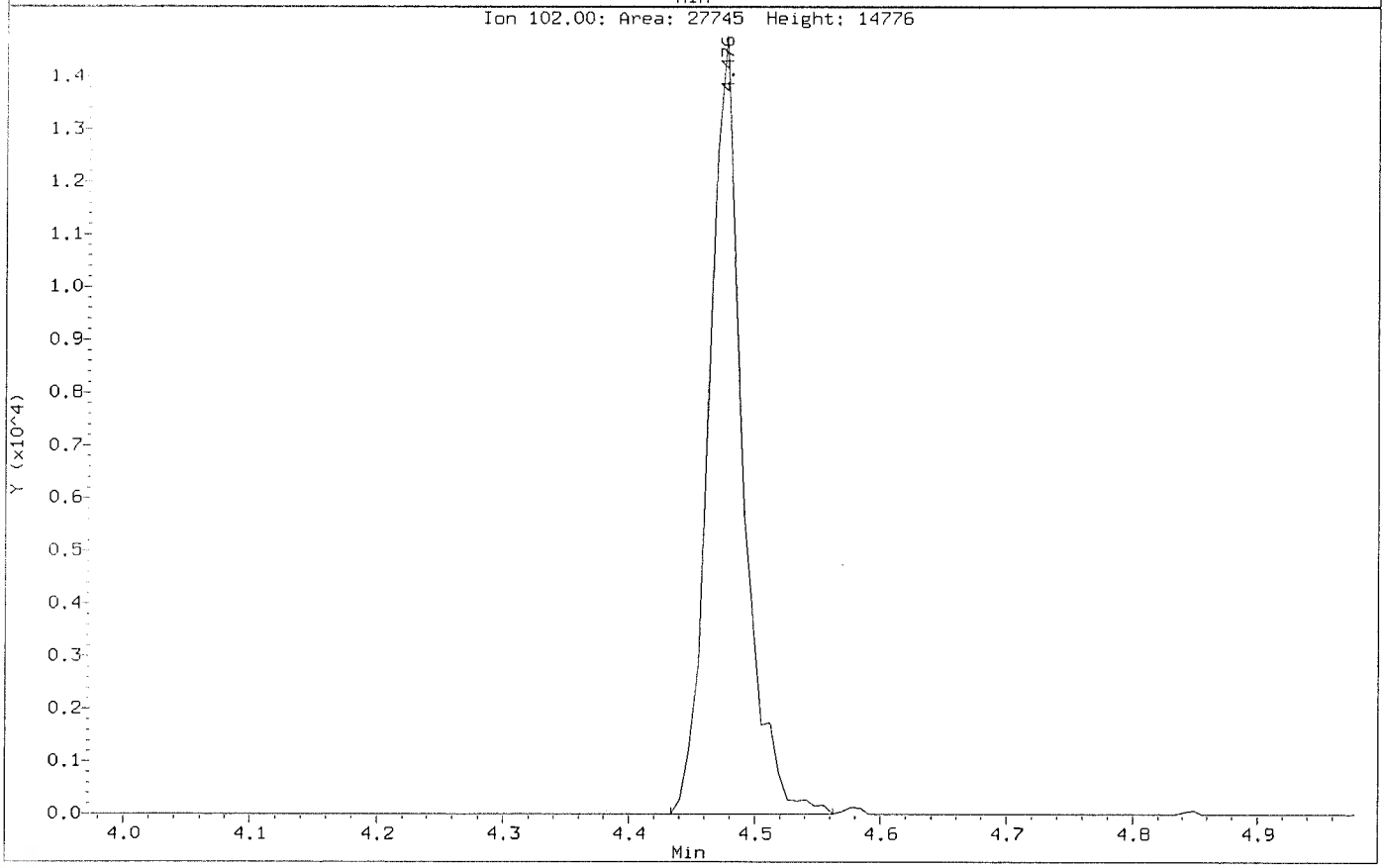




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Instrument: voa6.i
Client Sample ID: HS21030874-04

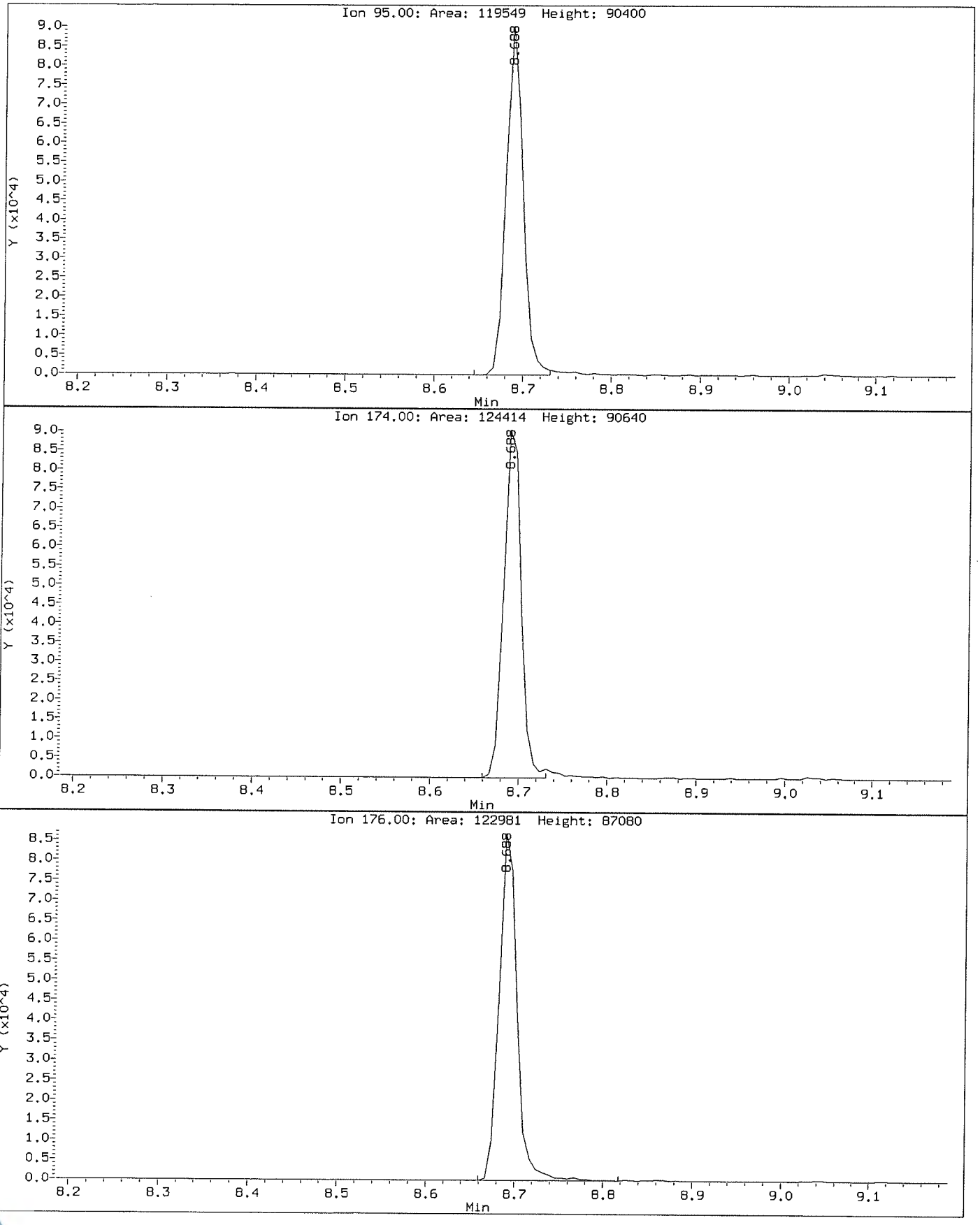
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CAS Number: 17060-07-0





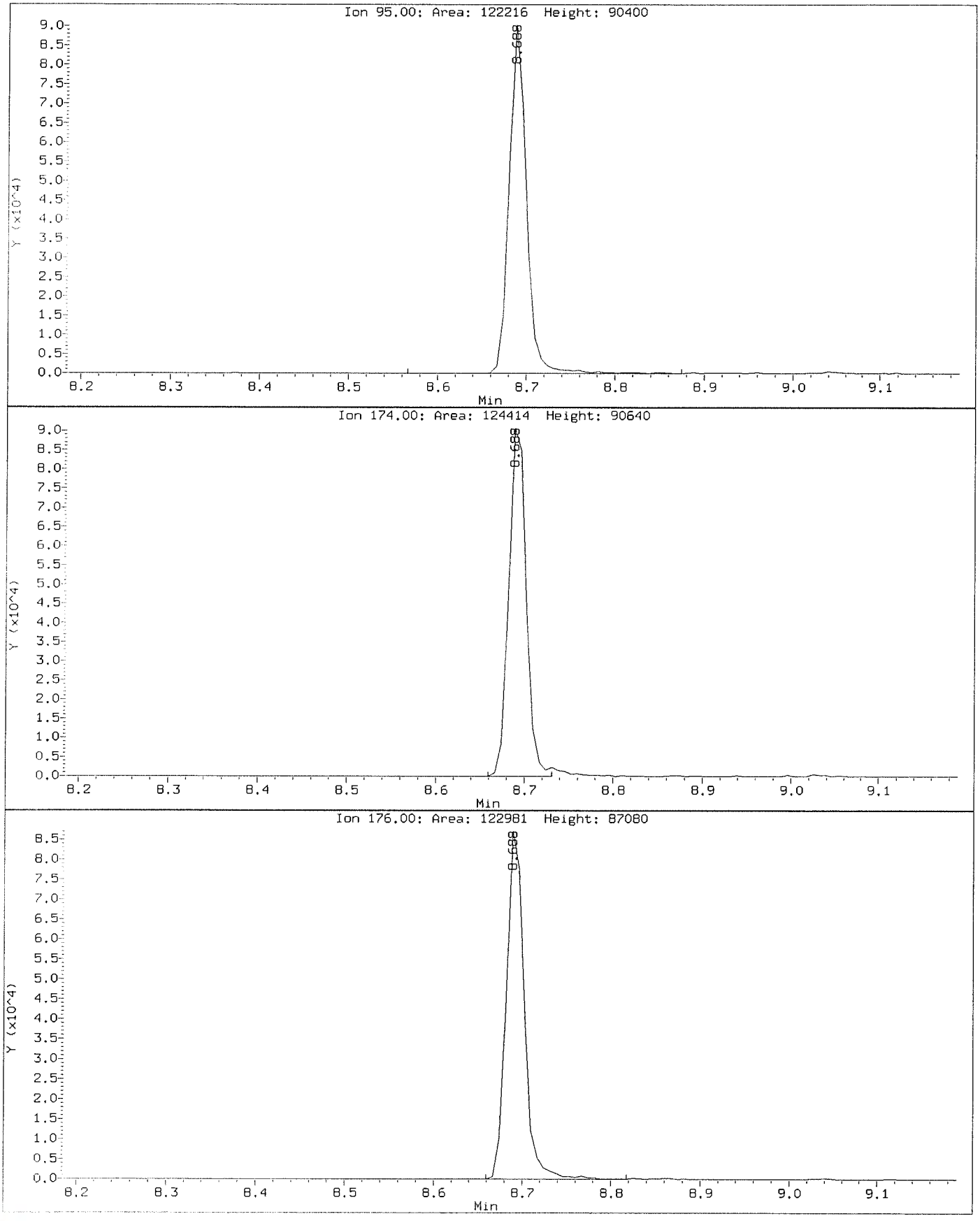
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Injection Date: 25-MAR-2021 03:41
Instrument: voa6.i
Client Sample ID: HS21030874-04

Compound: 4-Bromofluorobenzene
CAS Number: 460-00-4



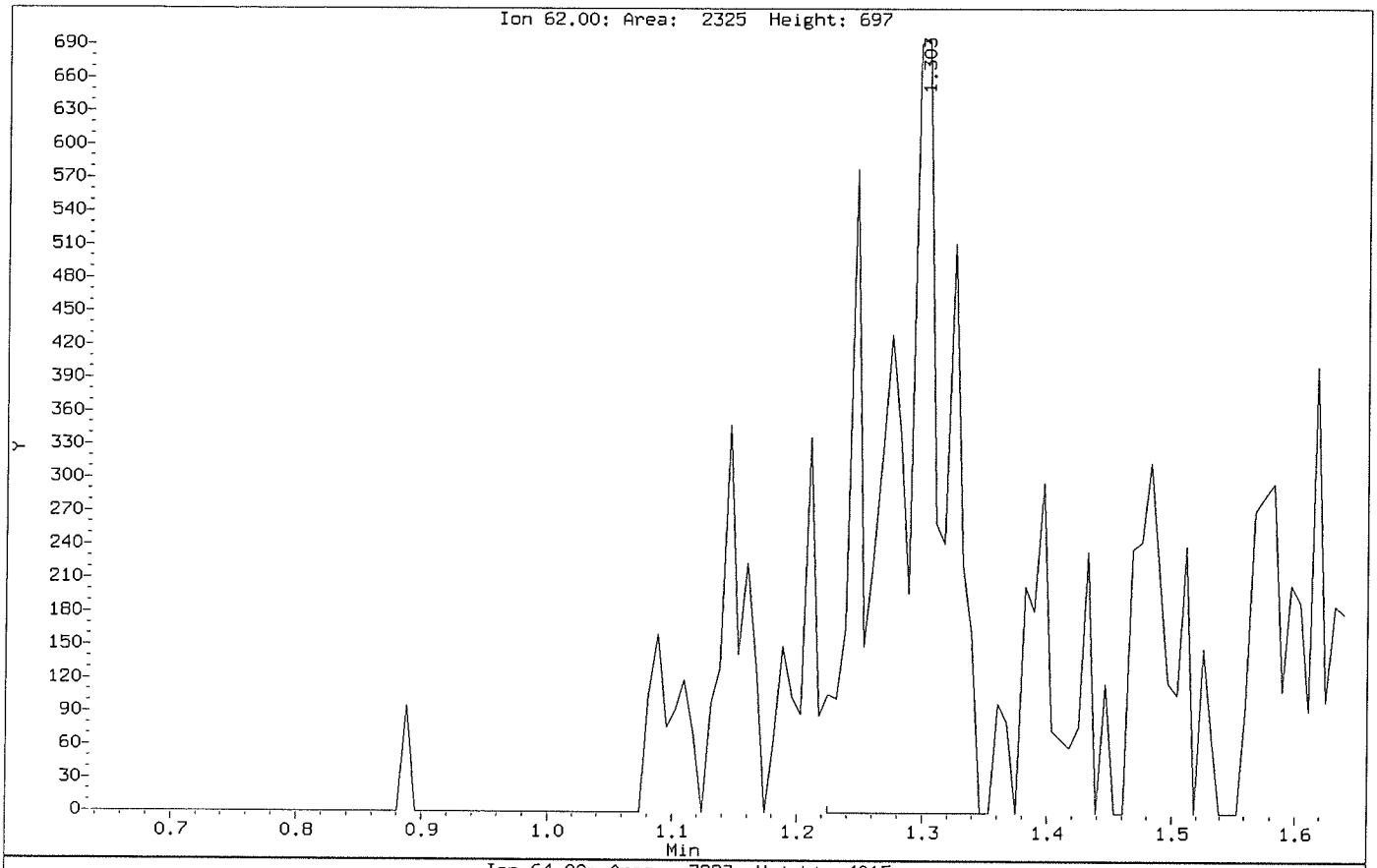
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Instrument: voa6.i
Client Sample ID: HS21030874-04

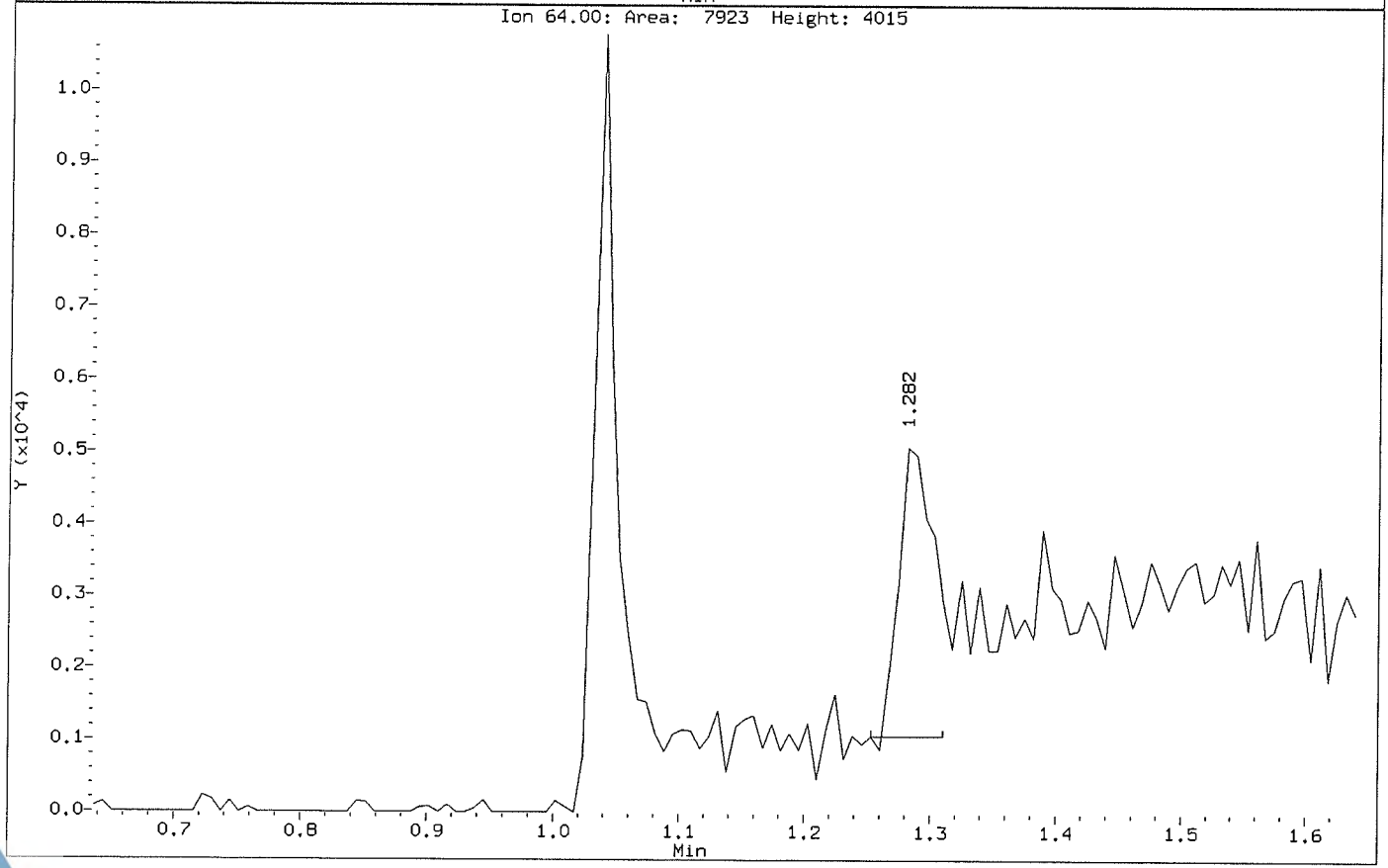
Compound: 4-Bromofluorobenzene
CAS Number: 460-00-4



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Before\Y032418.D
Injection Date: 25-MAR-2021 03:41
Instrument: voa6.i
Client Sample ID: HS21030874-04

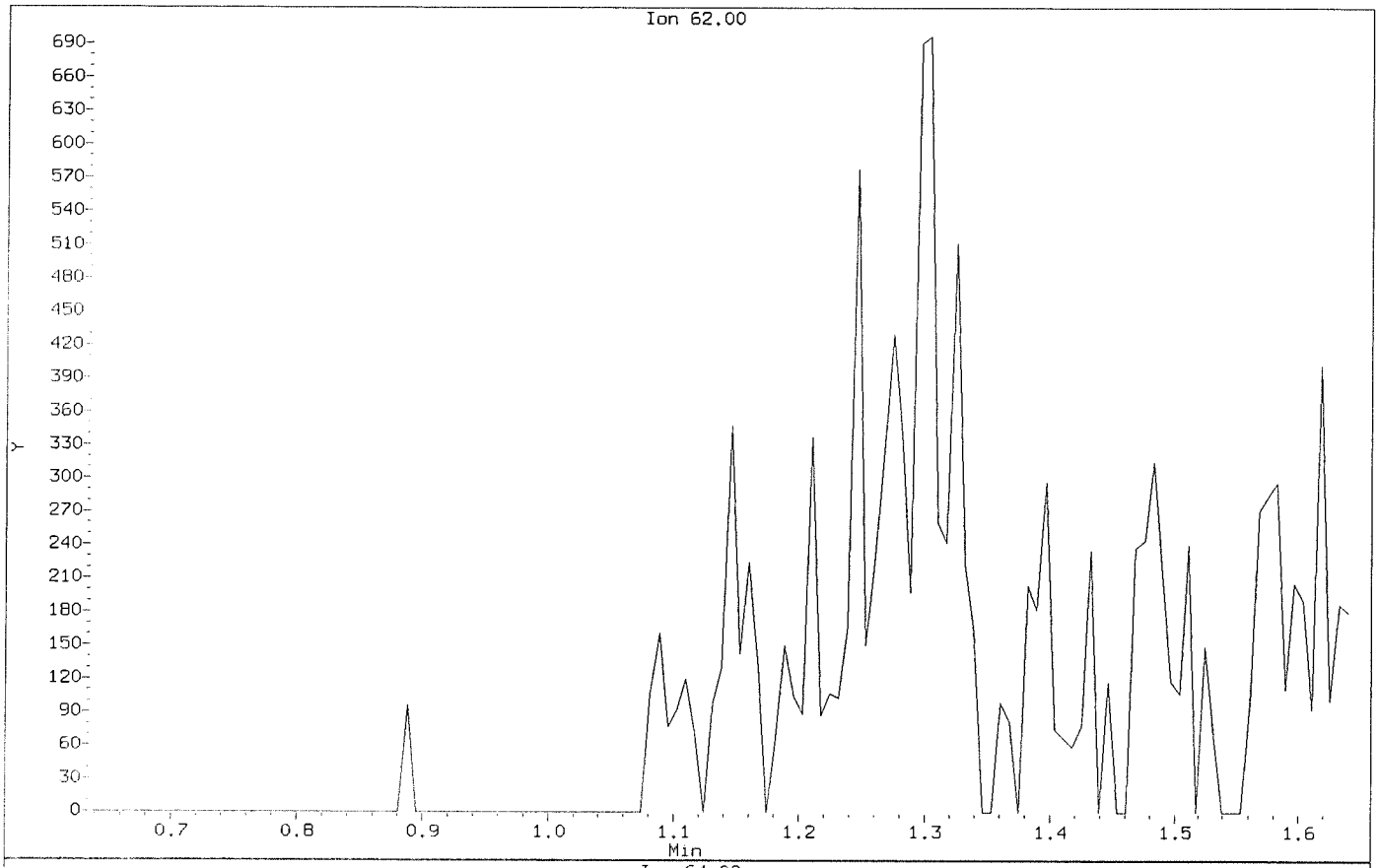
Compound: Vinyl Chloride
CAS Number: 75-01-4

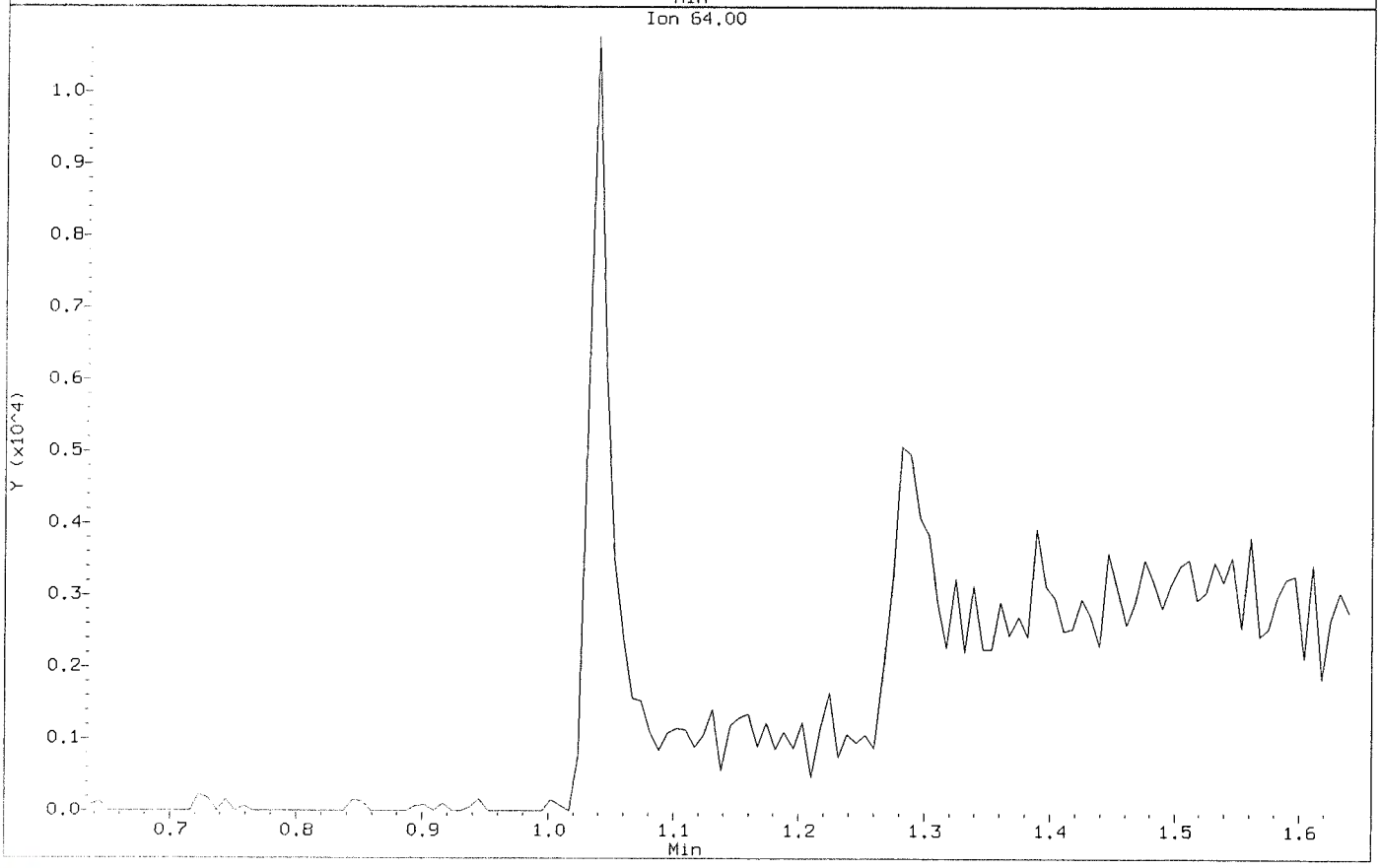




Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032418.D
Injection Date: 25-MAR-2021 03:41
Instrument: voa6.i
Client Sample ID: HS21030874-04

Compound: Vinyl Chloride
CAS Number: 75-01-4





Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032419.D Page 1
Report Date: 02-Apr-2021 14:38

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032419.D
Lab Smp Id: HS21030874-05 Client Smp ID: HS21030874-05
Inj Date : 25-MAR-2021 04:02
Operator : PC Inst ID: voa6.i
Smp Info : HS21030874-05;HS21030874-05;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:33 devak.giga Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 49
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

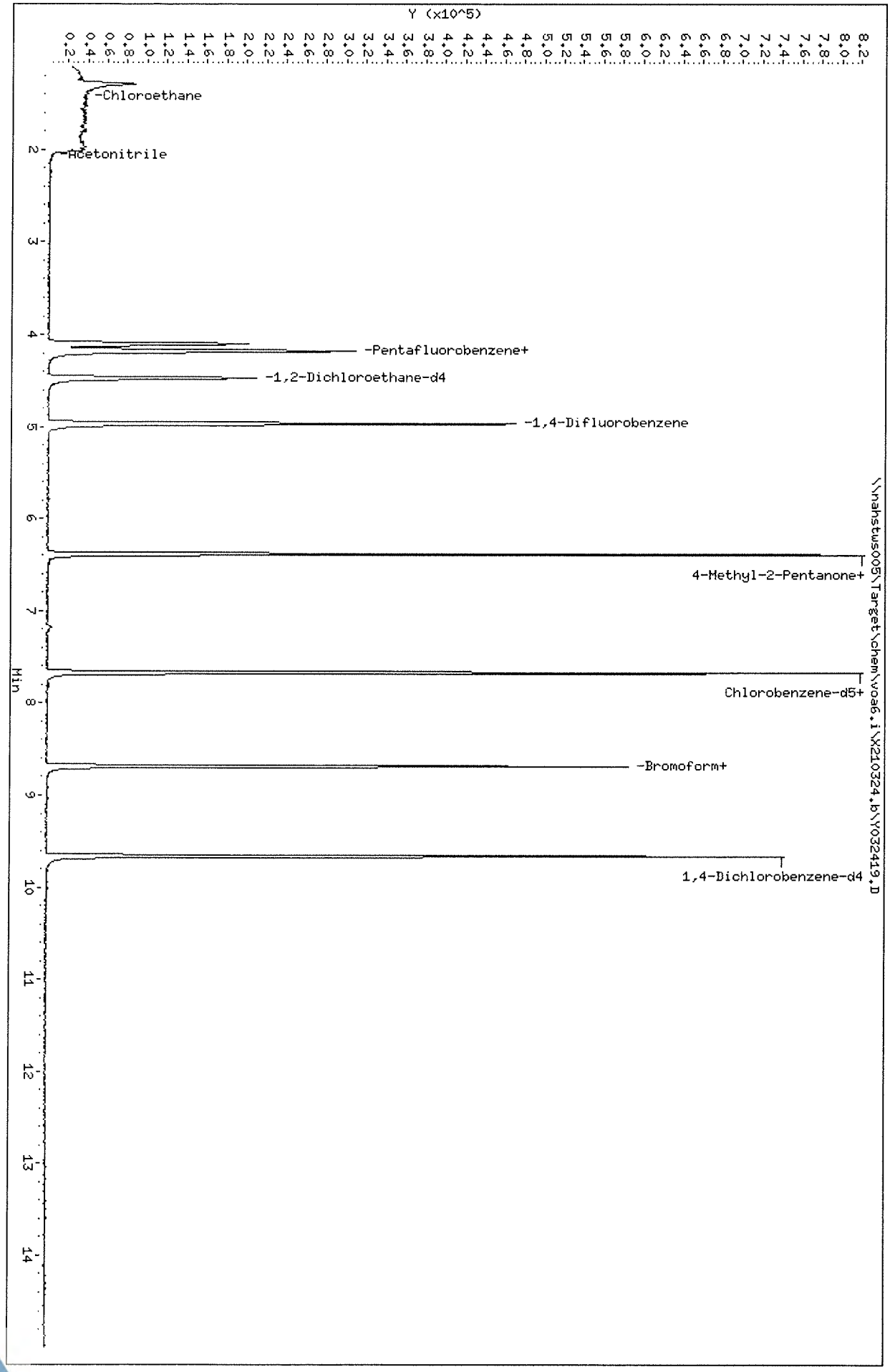
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	241532	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	372135	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	334310	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	149704	50.0000	
$ 30 Dibromofluoromethane	113	4.096	4.096	(0.979)	126426	42.9147	42.91
$ 35 1,2-Dichloroethane-d4	65	4.469	4.476	(1.068)	137679	41.4378	41.43
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	446253	49.6736	49.67
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	124173	43.1000	43.10

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032419.D
Date : 25-MAR-2021 04:02
Client ID: HS21030874-05
Sample Info: HS21030874-05;HS21030874-05;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



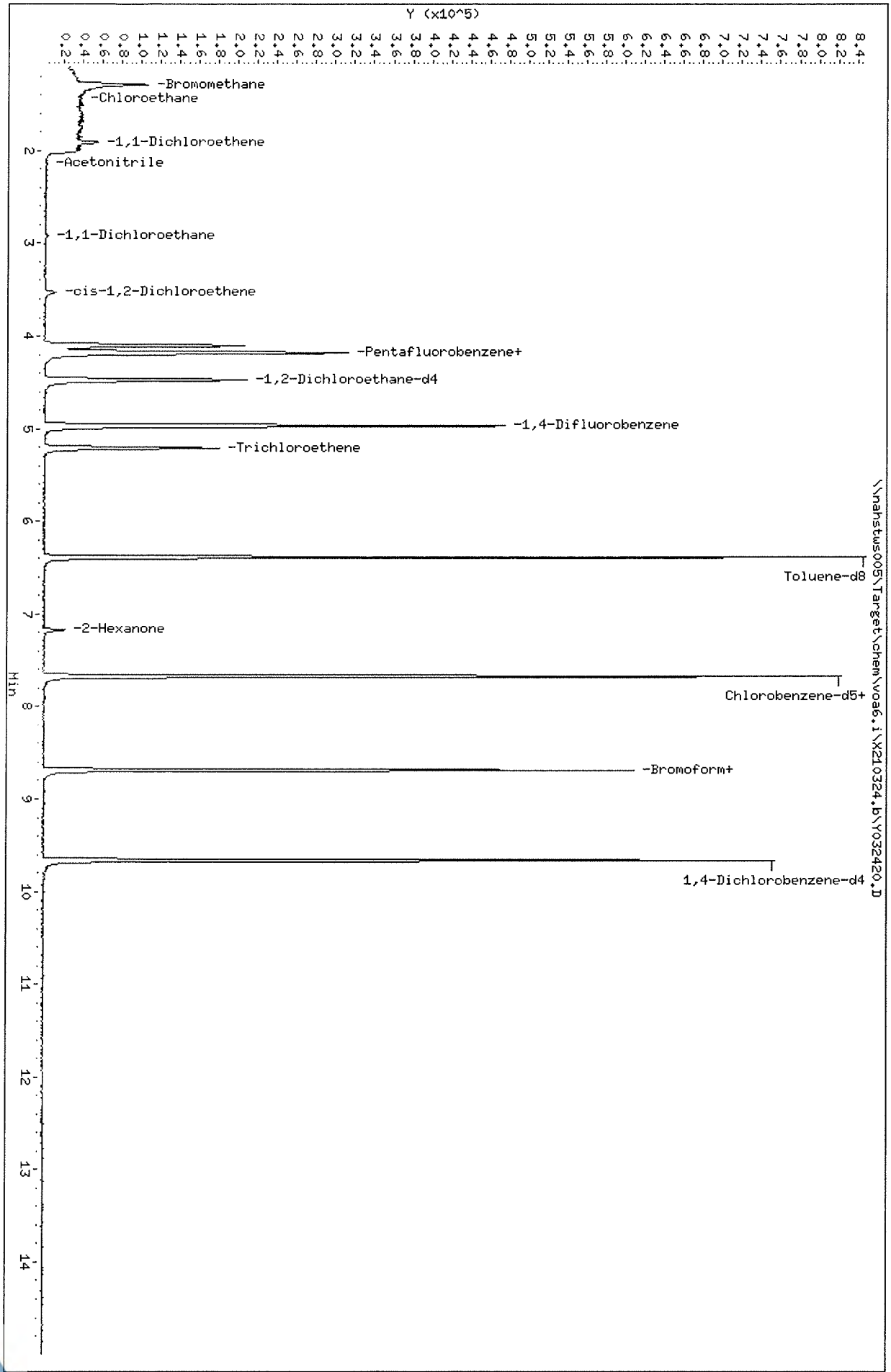
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032420.D
Lab Smp Id: HS21030874-07 Client Smp ID: HS21030874-07
Inj Date : 25-MAR-2021 04:23
Operator : PC Inst ID: voa6.i
Smp Info : HS21030874-07;HS21030874-07;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:33 devak.giga Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 50
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	242723	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	380223	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.671	(1.000)	342827	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	153805	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	126691	42.7966	42.79
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	138387	41.4463	41.44
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	451473	49.0061	49.00
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	129954	43.9296	43.92
27 cis-1,2-Dichloroethene	96	3.523	3.523	(0.842)	5059	1.64250	1.64
38 Trichloroethene	130	5.206	5.206	(1.049)	51979	20.3105	20.31



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032420.D
Date : 25-MAR-2021 04:23
Client ID: HS21030874-07
Sample Info: HS21030874-07;HS21030874-07;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032420.D

Date : 25-MAR-2021 04:23

Client ID: HS21030874-07

Instrument: voa6.i

Sample Info: HS21030874-07;HS21030874-07;;;

Purge Volume: 5.0

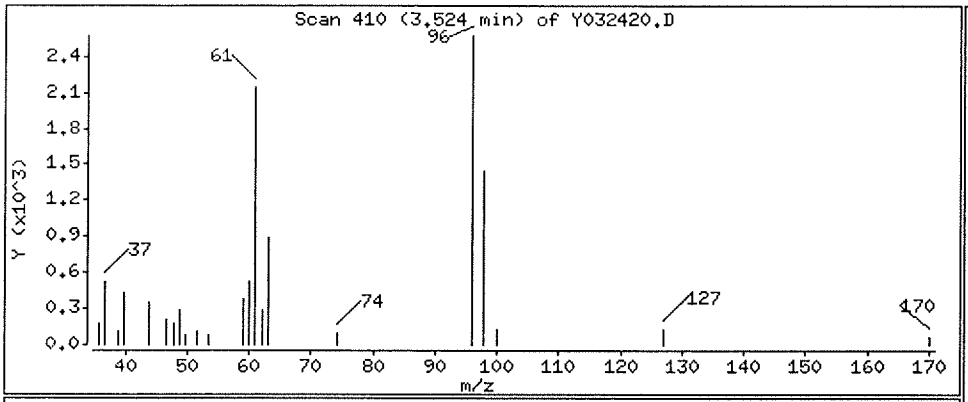
Operator: PC

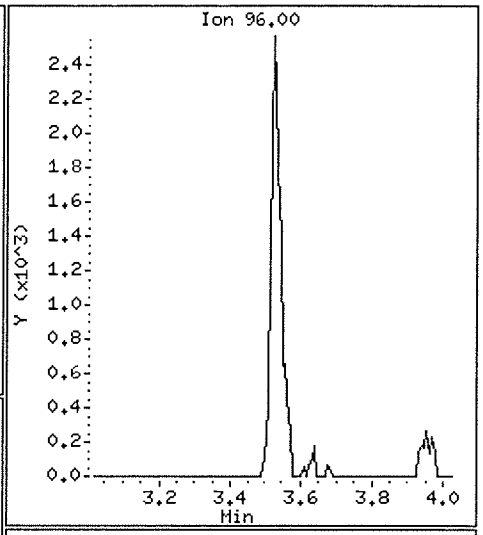
Column phase: DB624

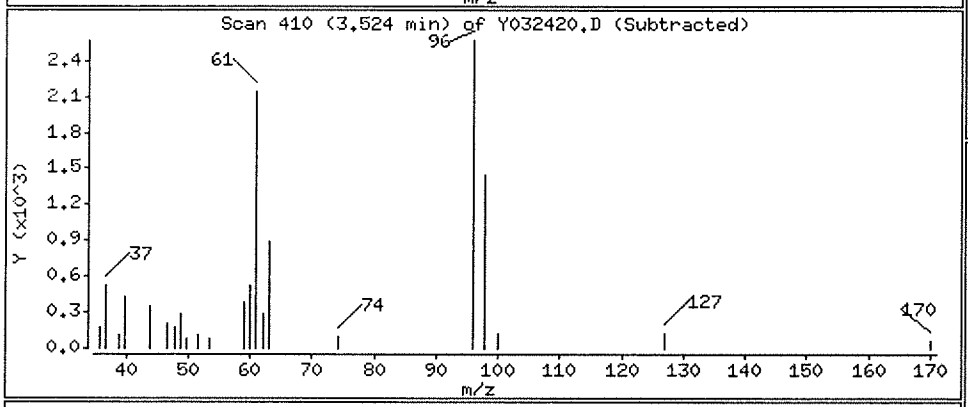
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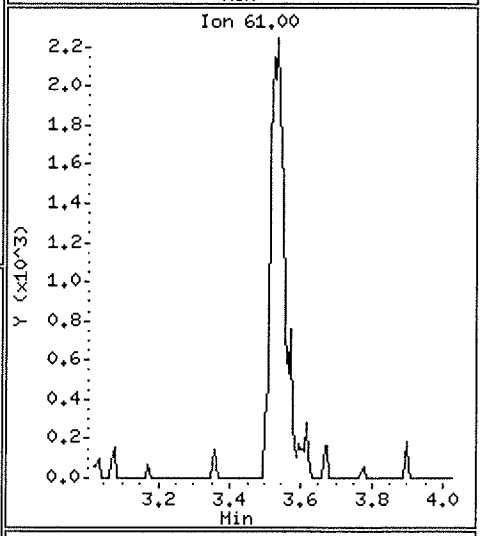
27 cis-1,2-Dichloroethene

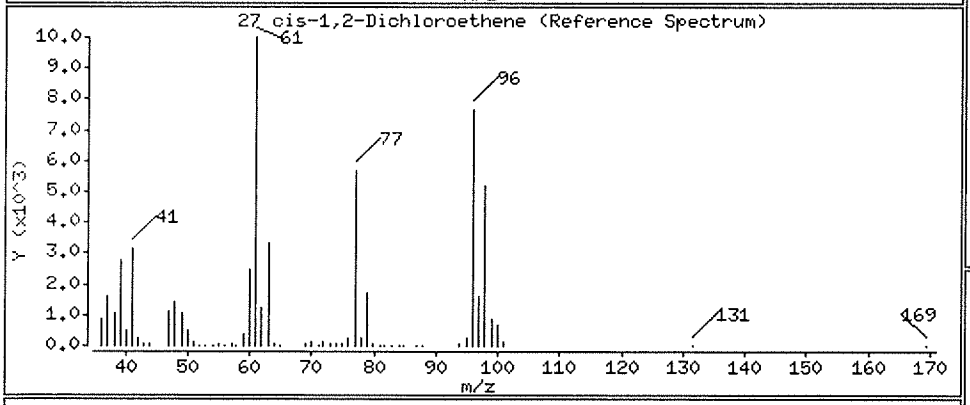
Concentration: 1.64 ug/l

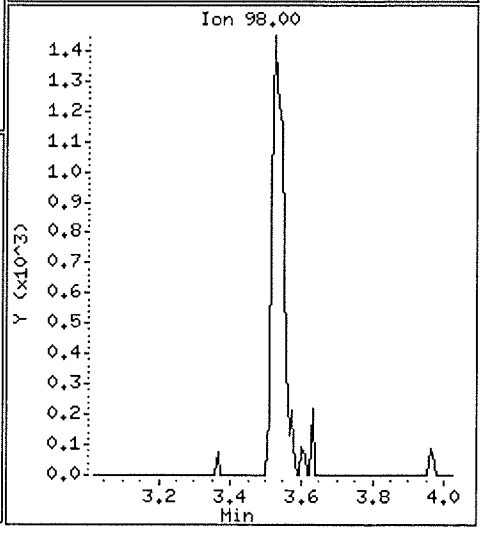


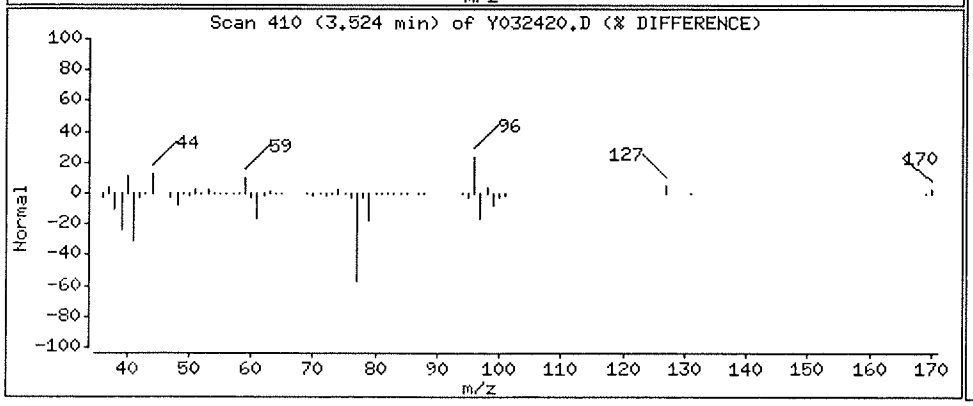












Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032420.D

Date : 25-MAR-2021 04:23

Client ID: HS21030874-07

Instrument: voa6.i

Sample Info: HS21030874-07;HS21030874-07;;;

Purge Volume: 5.0

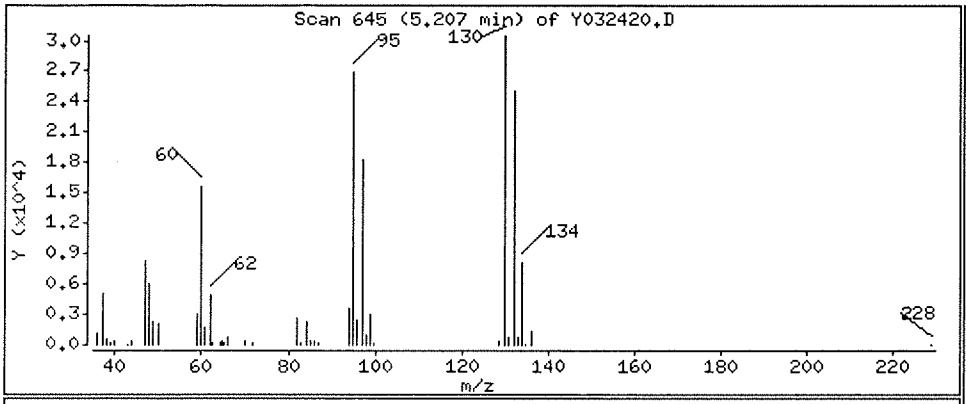
Operator: PC

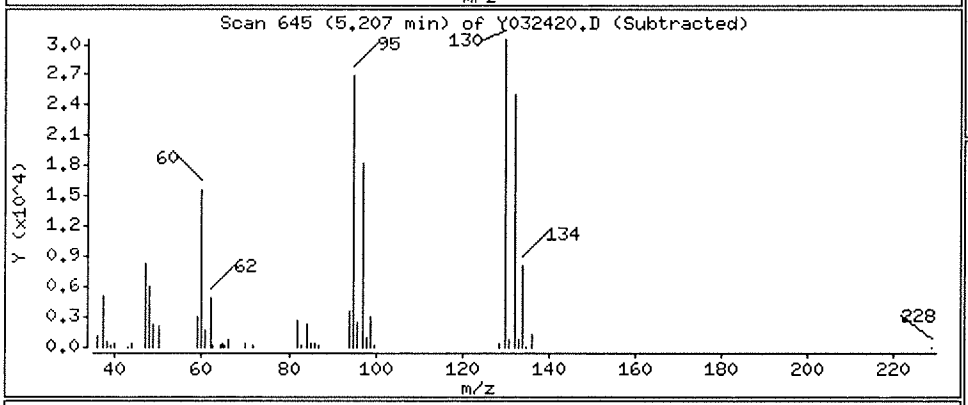
Column phase: DB624

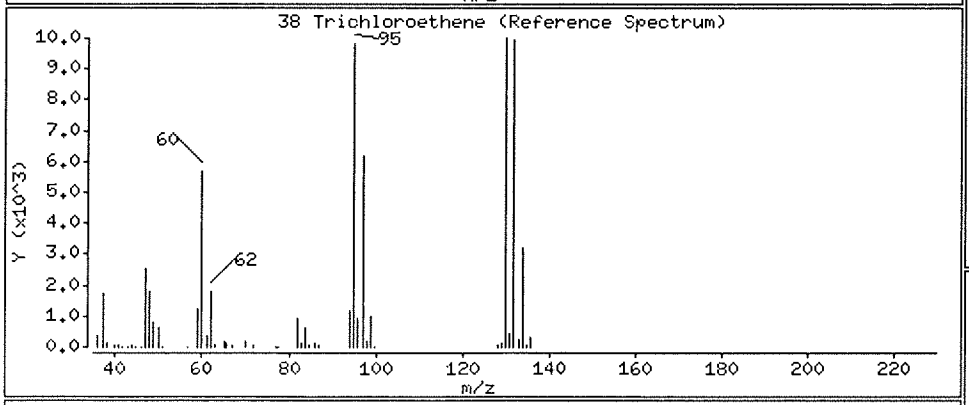
Column diameter: 0.18

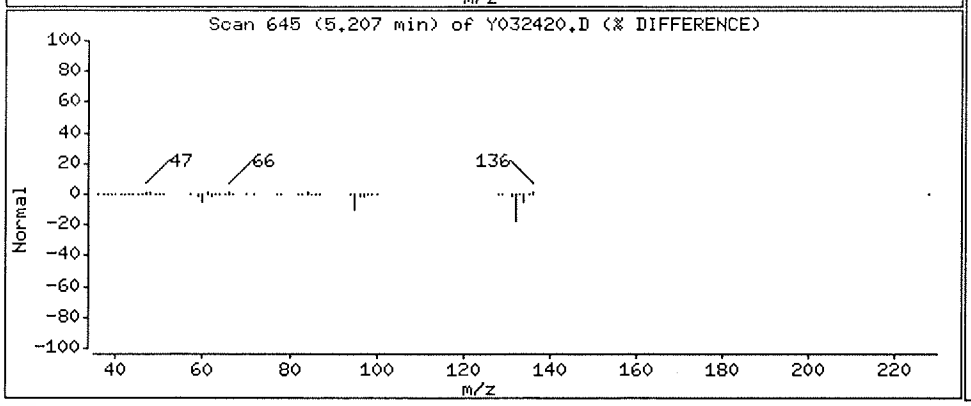
38 Trichloroethene

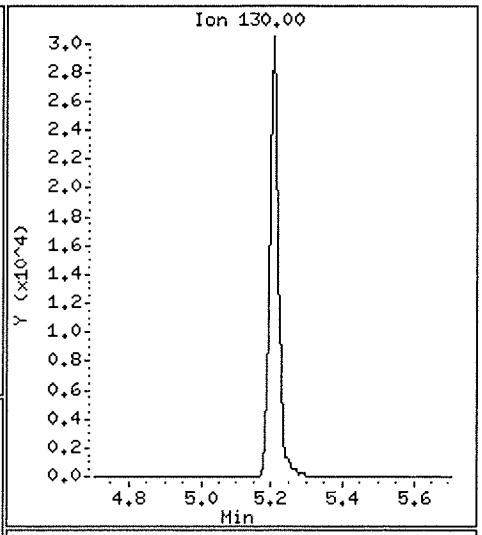
Concentration: 20.31 ug/l

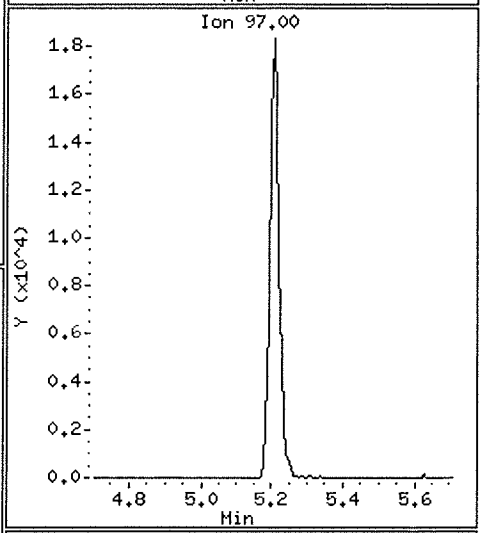


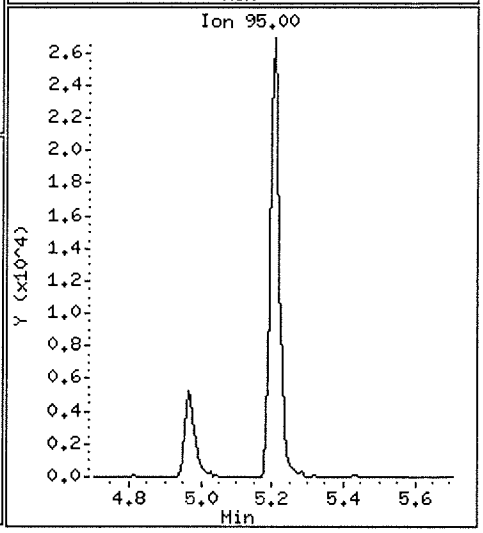












Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032421.D Page 1
Report Date: 02-Apr-2021 14:38

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032421.D
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Inj Date : 25-MAR-2021 04:44
Operator : PC Inst ID: voa6.i
Smp Info : HS21030874-09;HS21030874-09;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:33 devak.giga Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 51
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

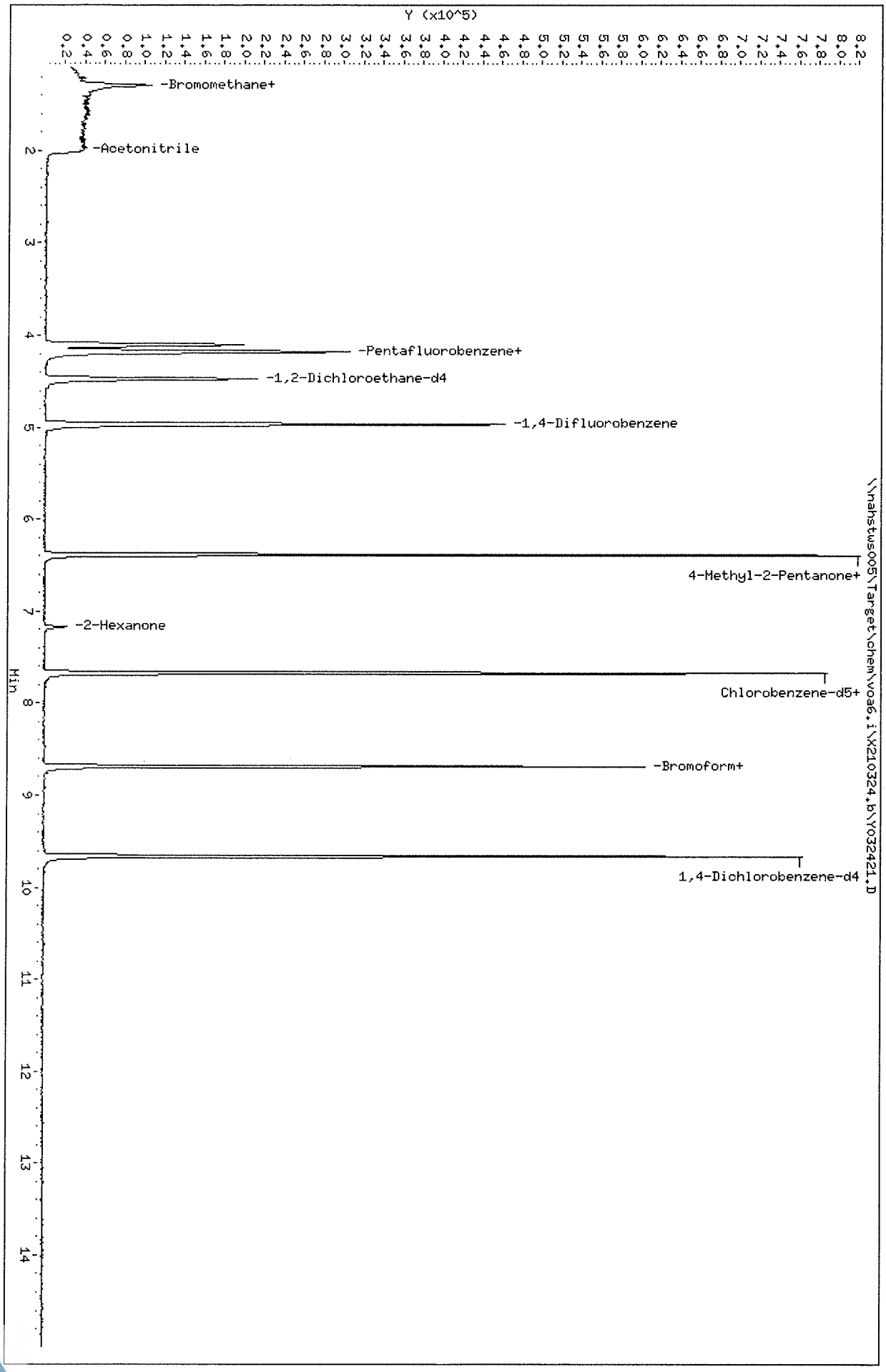
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	242491	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	366407	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	329011	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	143668	50.0000	
$ 30 Dibromofluoromethane	113	4.104	4.096	(0.981)	126939	42.9184	42.91
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	135735	40.7098	40.70
$ 48 Toluene-d8	98	6.389	6.388	(0.833)	439565	49.7171	49.71
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	127159	44.7336	44.73

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032421.D
Date : 25-MAR-2021 04:44
Client ID: HS21030874-09
Sample Info: HS21030874-09;HS21030874-09;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032422.D Page 1
Report Date: 02-Apr-2021 14:38

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032422.D
Lab Smp Id: HS21030874-10 Client Smp ID: HS21030874-10
Inj Date : 25-MAR-2021 05:05
Operator : PC Inst ID: voa6.i
Smp Info : HS21030874-10;HS21030874-10;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:33 devak.giga Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 52
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

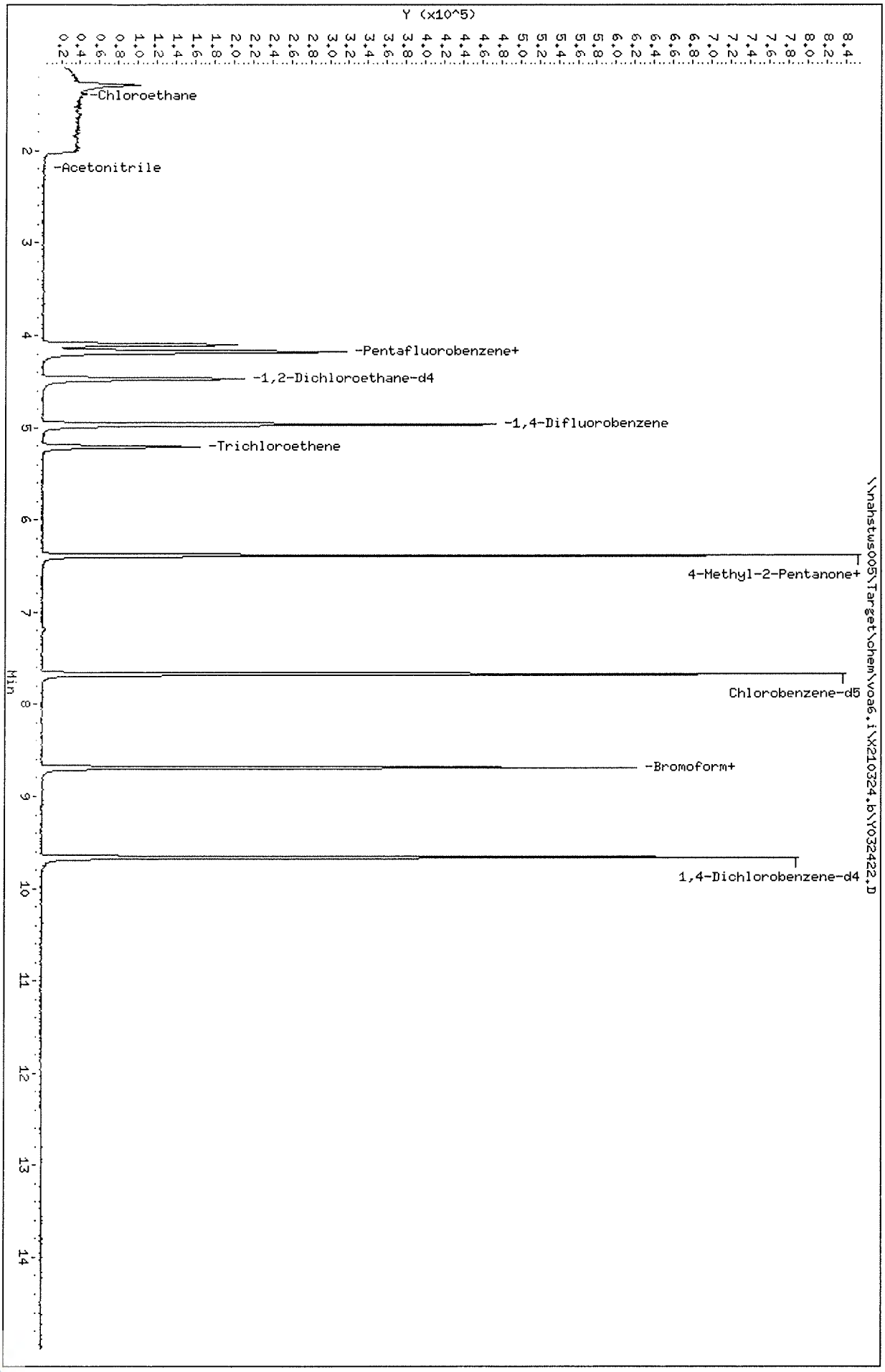
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	239109	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.963	(1.000)	378292	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.671	(1.000)	345221	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	154176	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	129394	44.3315	44.33
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	138284	42.0259	42.02
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	452340	48.7597	48.75
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	129702	43.5650	43.56
38 Trichloroethene	130	5.206	5.206	(1.048)	47378	18.6072	18.60

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032422.D
Date : 25-MAR-2021 05:05
Client ID: HS21030874-10
Sample Info: HS21030874-10;HS21030874-10;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032422.D

Date : 25-MAR-2021 05:05

Client ID: HS21030874-10

Instrument: voa6.i

Sample Info: HS21030874-10;HS21030874-10;;;

Purge Volume: 5.0

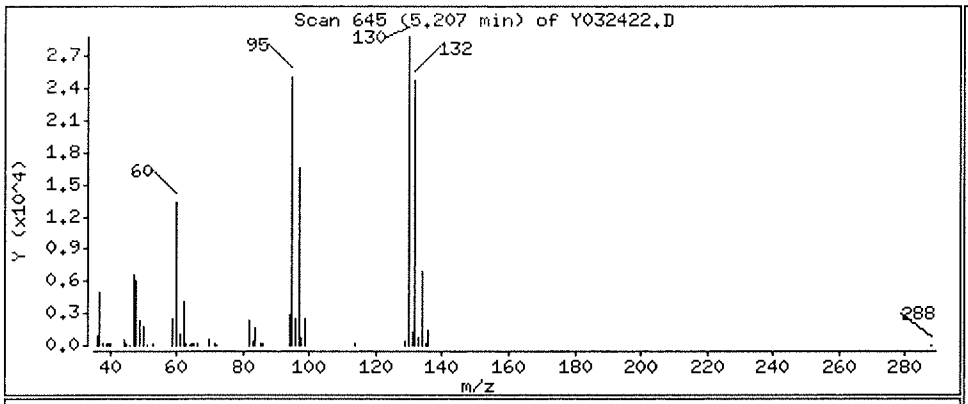
Operator: PC

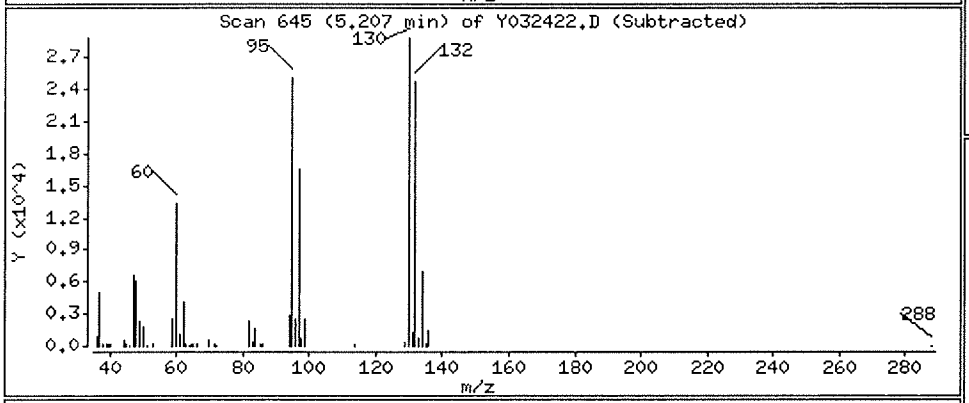
Column phase: DB624

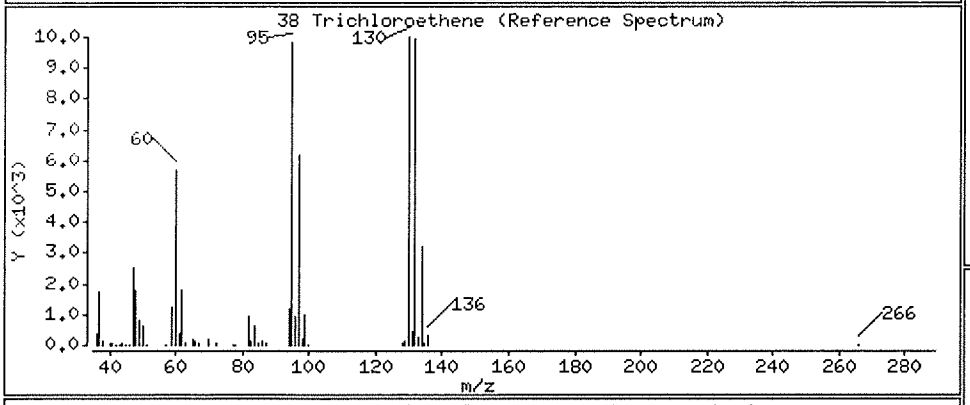
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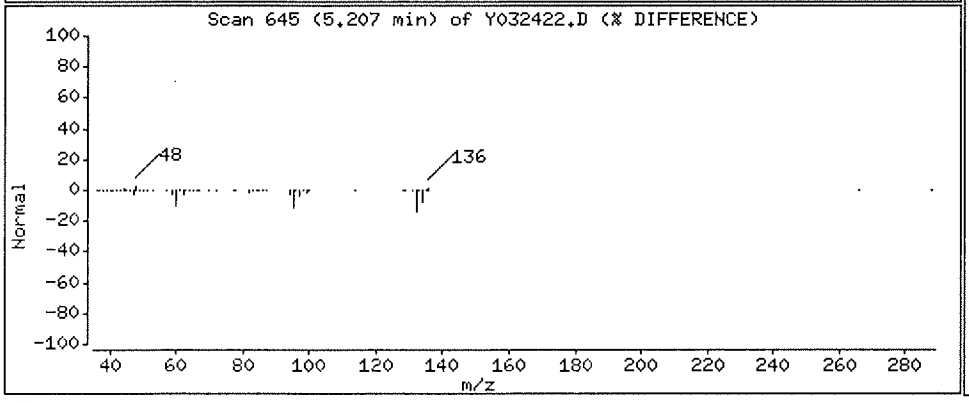
38 Trichloroethene

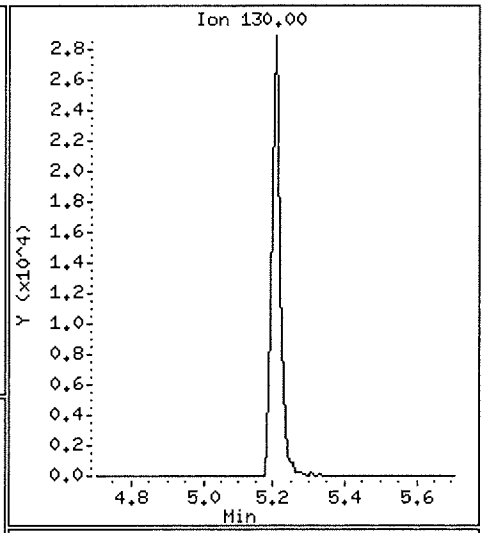
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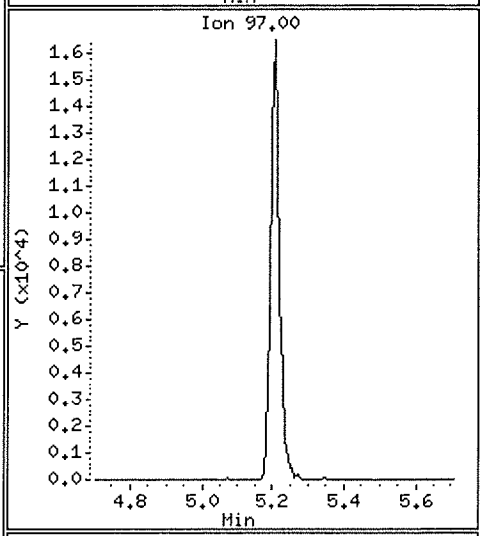


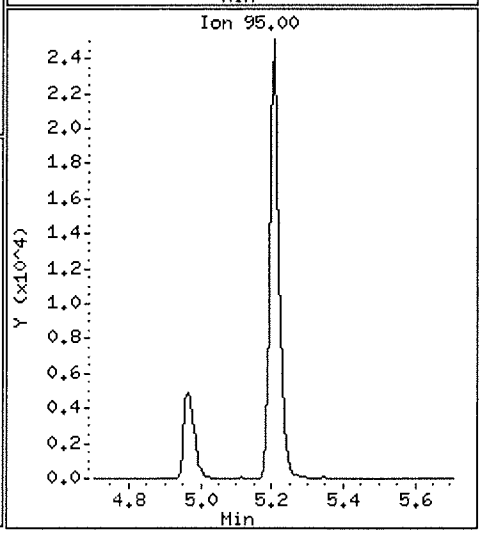












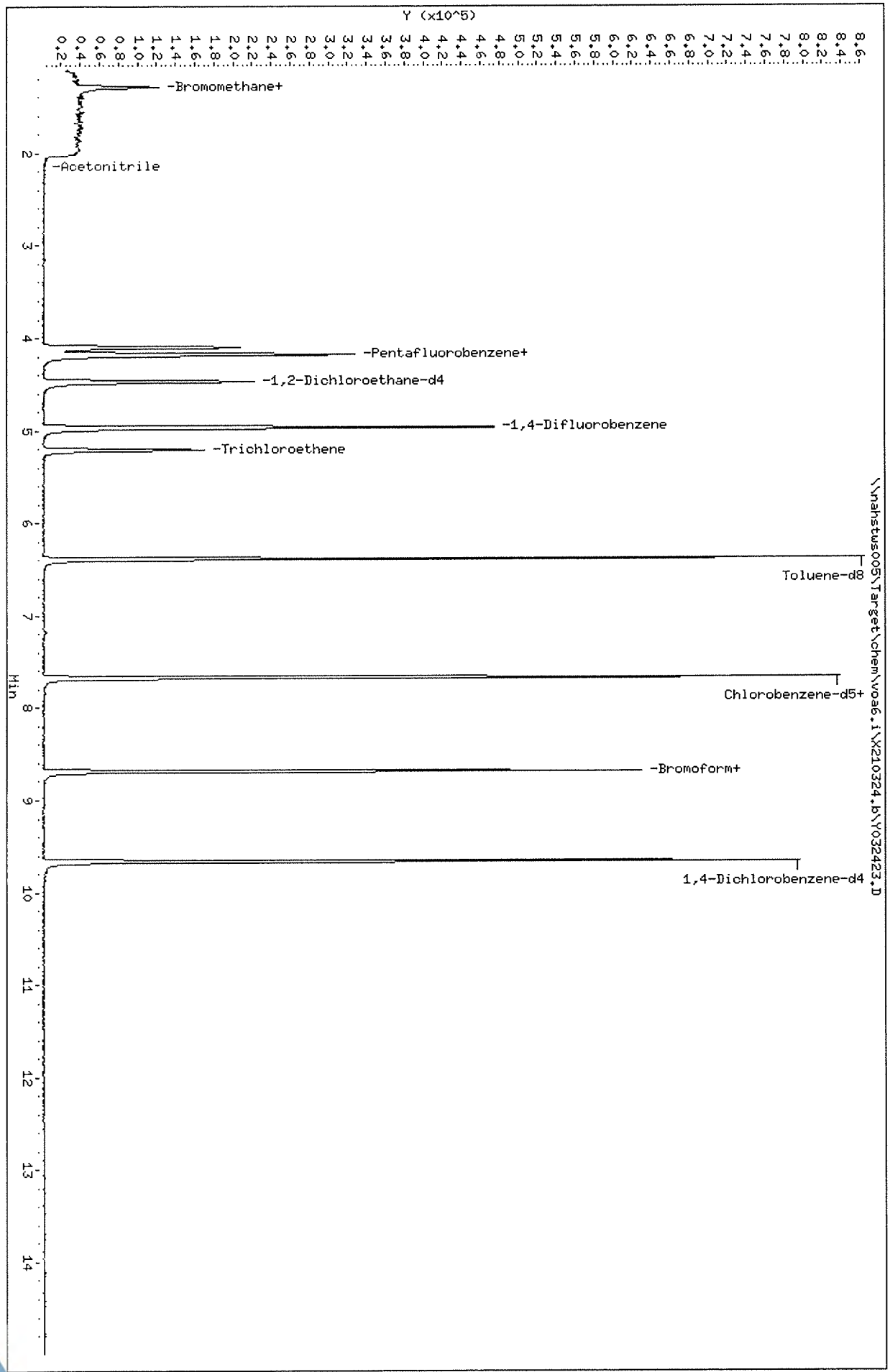
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032423.D
Lab Smp Id: HS21030874-11 Client Smp ID: HS21030874-11
Inj Date : 25-MAR-2021 05:26
Operator : PC Inst ID: voa6.i
Smp Info : HS21030874-11;HS21030874-11;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:33 devak.giga Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 53
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	248645	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.963	(1.000)	385610	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.671	(1.000)	340543	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	160018	50.0000	
$ 30 Dibromofluoromethane	113	4.096	4.096	(0.979)	130552	43.0443	43.04
$ 35 1,2-Dichloroethane-d4	65	4.469	4.476	(1.069)	142933	41.7794	41.77
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	473380	51.7287	51.72
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	129176	43.9575	43.95
38 Trichloroethene	130	5.206	5.206	(1.048)	49580	19.1025	19.10



Data File: \\nahstus005\Target\chem\voa6.i\X210324.b\Y032423.D
Date : 25-MAR-2021 05:26
Client ID: HS21030874-11
Sample Info: HS21030874-11;HS21030874-11;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032423.D

Date : 25-MAR-2021 05:26

Client ID: HS21030874-11

Instrument: voa6.i

Sample Info: HS21030874-11;HS21030874-11;;;

Purge Volume: 5.0

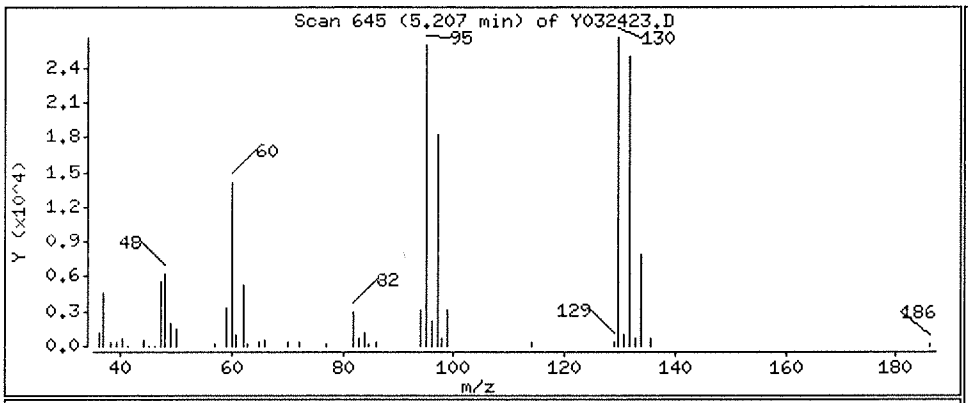
Operator: PC

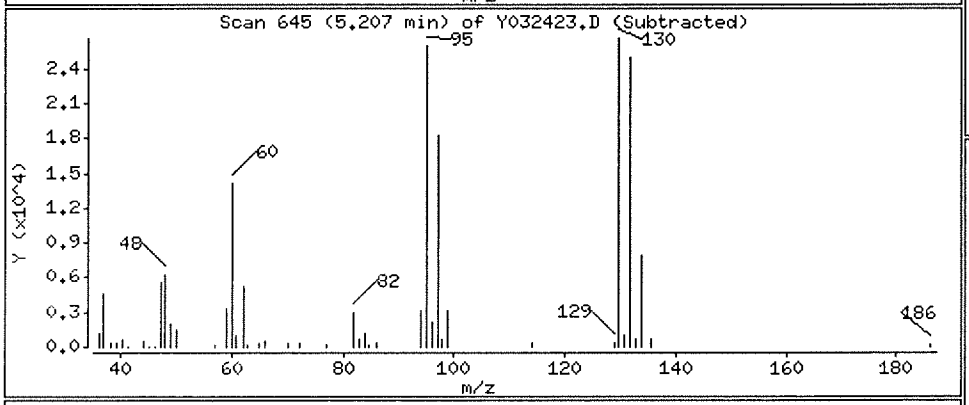
Column phase: DB624

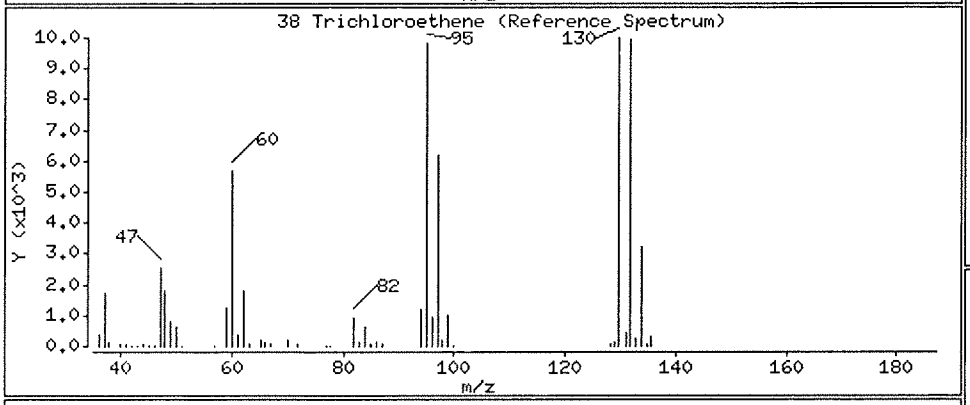
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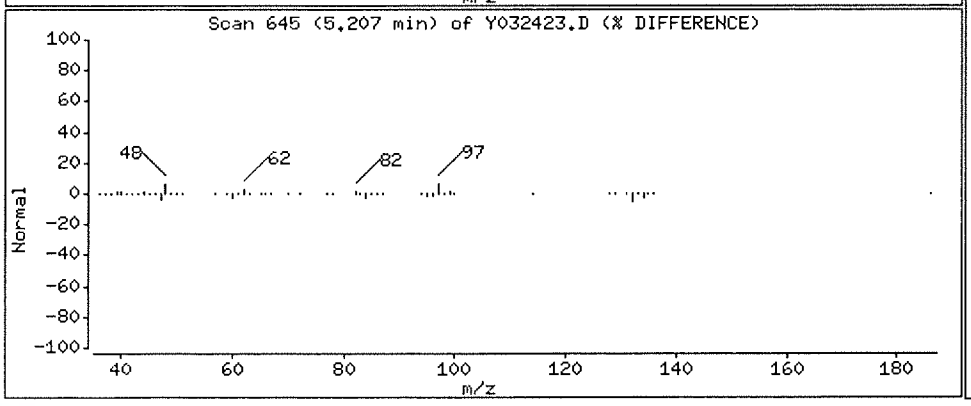
38 Trichloroethene

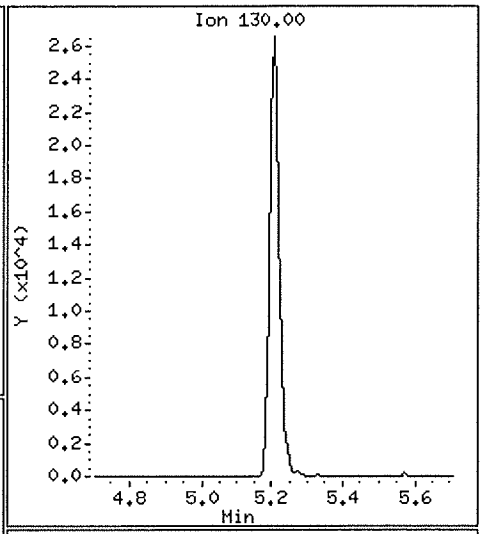
Concentration: 19.10 ug/l

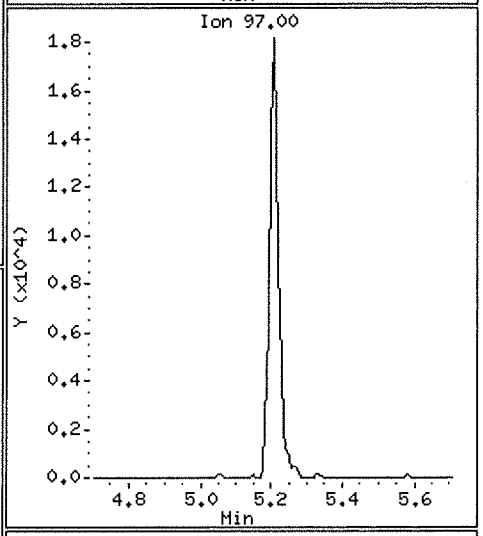


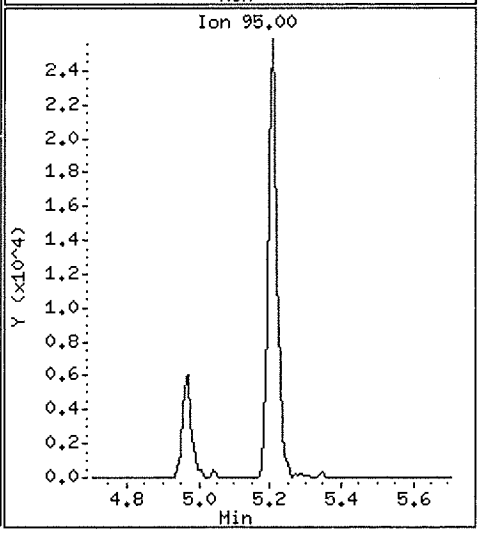












Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032424.D Page 1
Report Date: 02-Apr-2021 14:38

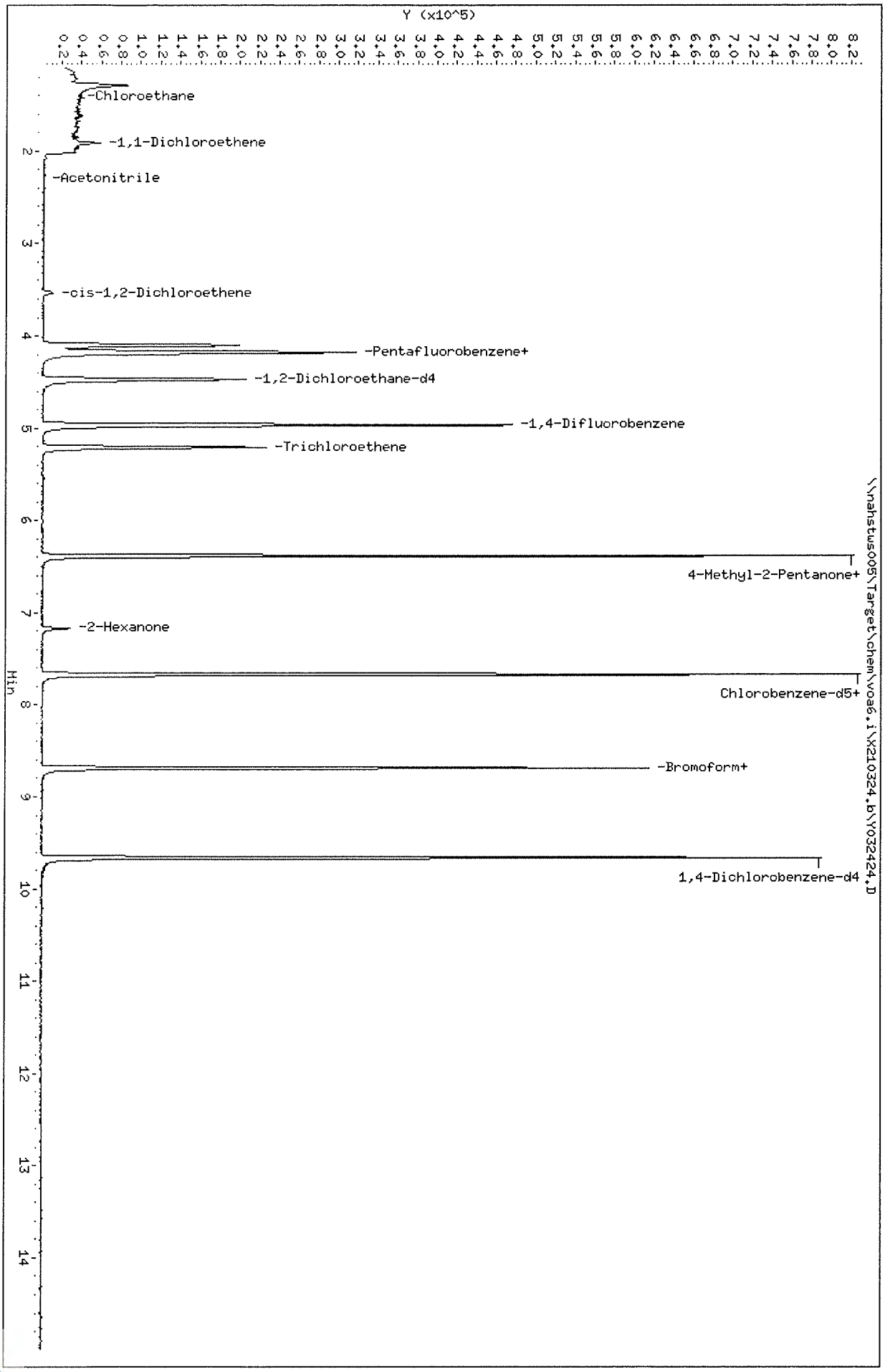
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032424.D
Lab Smp Id: HS21030874-12 Client Smp ID: HS21030874-12
Inj Date : 25-MAR-2021 05:48
Operator : PC Inst ID: voa6.i
Smp Info : HS21030874-12;HS21030874-12;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:33 devak.giga Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 54
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	238651	50.0000	
*	36 1,4-Difluorobenzene	114	4.970	4.963	(1.000)	373161	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	333058	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	161311	50.0000	
$	30 Dibromofluoromethane	113	4.096	4.096	(0.979)	126213	43.3486	43.34
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	138144	42.0630	42.06
$	48 Toluene-d8	98	6.388	6.388	(0.833)	447459	49.9950	49.99
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	133020	46.1254	46.12
	27 cis-1,2-Dichloroethene	96	3.545	3.523	(0.848)	4118	1.35980	1.35
	38 Trichloroethene	130	5.206	5.206	(1.048)	63292	25.1991	25.19



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032424.D
Date : 25-MAR-2021 05:48
Client ID: HS21030874-12
Sample Info: HS21030874-12;HS21030874-12;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032424.D

Date : 25-MAR-2021 05:48

Client ID: HS21030874-12

Instrument: voa6.i

Sample Info: HS21030874-12;HS21030874-12;;;

Purge Volume: 5.0

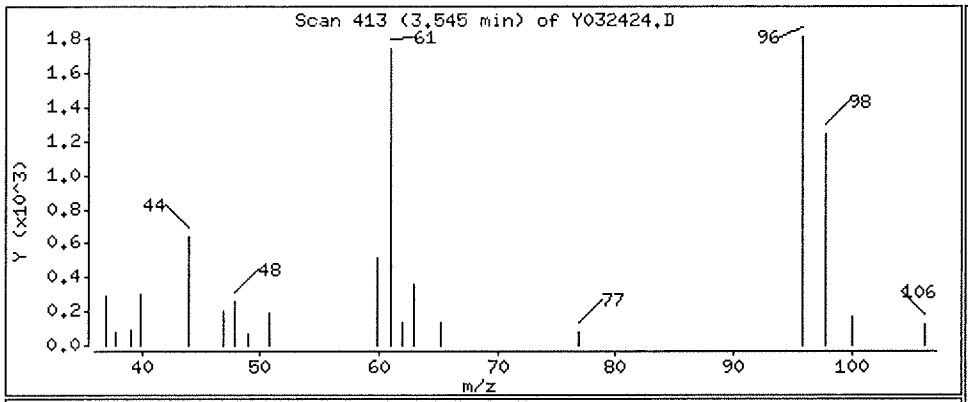
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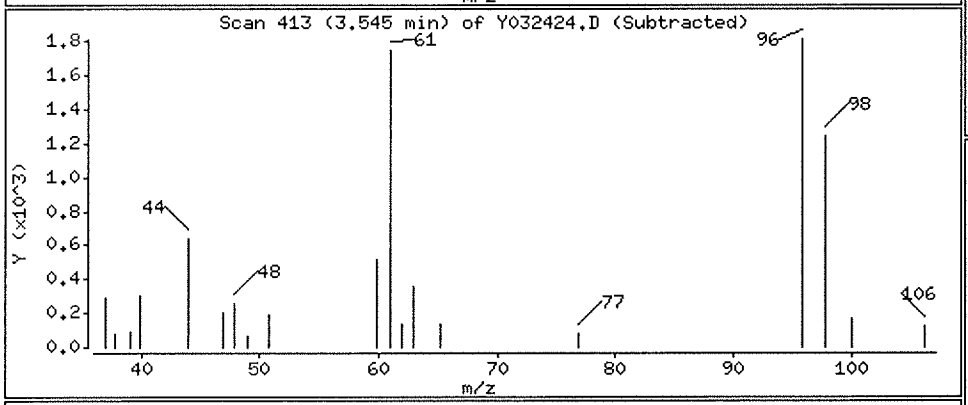
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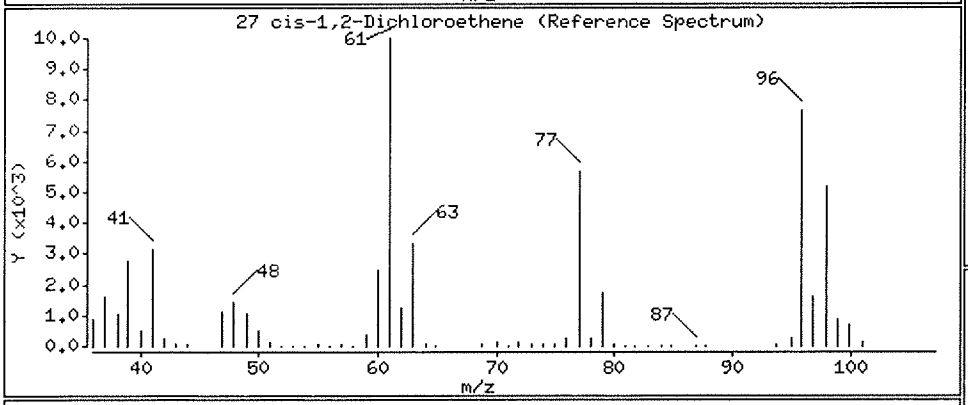
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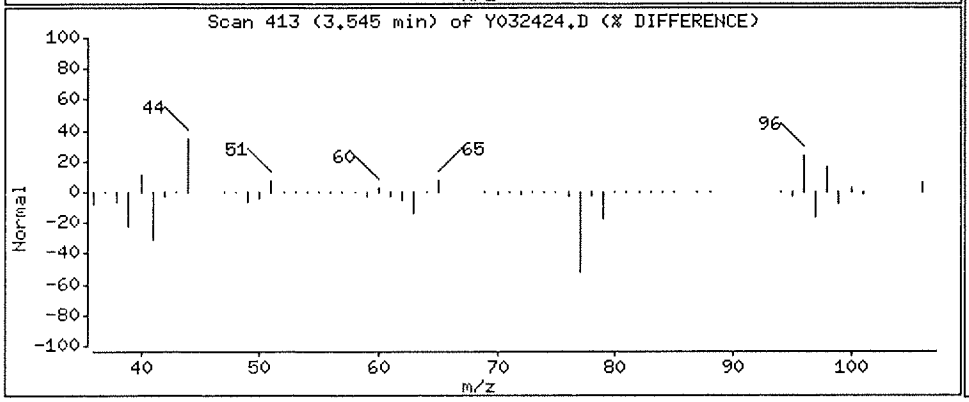
27 cis-1,2-Dichloroethene

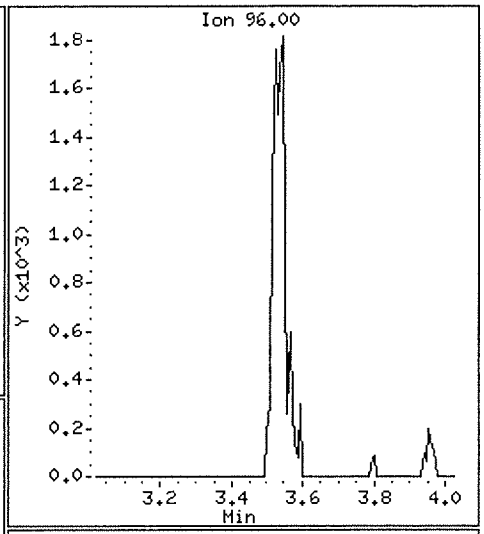
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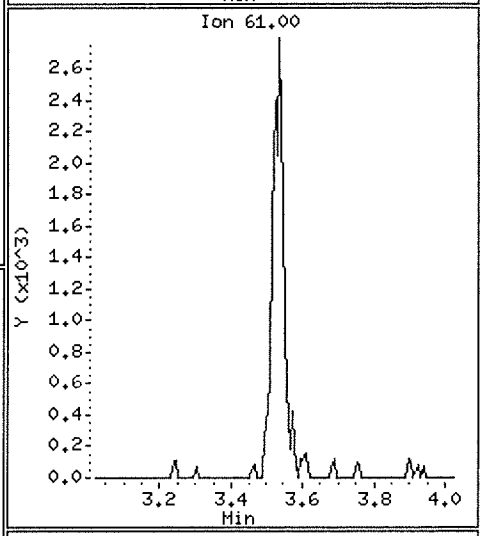


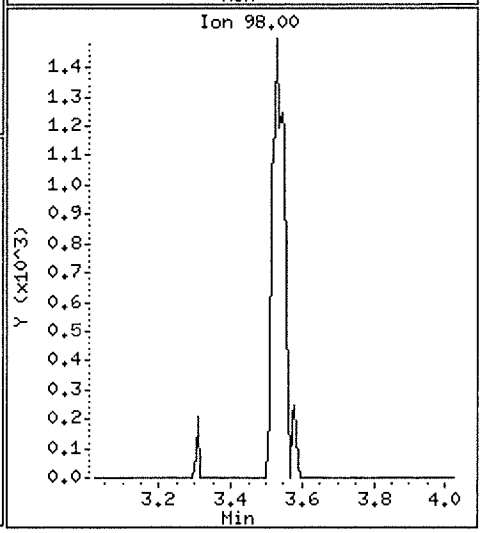












Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032424.D

Date : 25-MAR-2021 05:48

Client ID: HS21030874-12

Instrument: voa6.i

Sample Info: HS21030874-12;HS21030874-12;;;

Purge Volume: 5.0

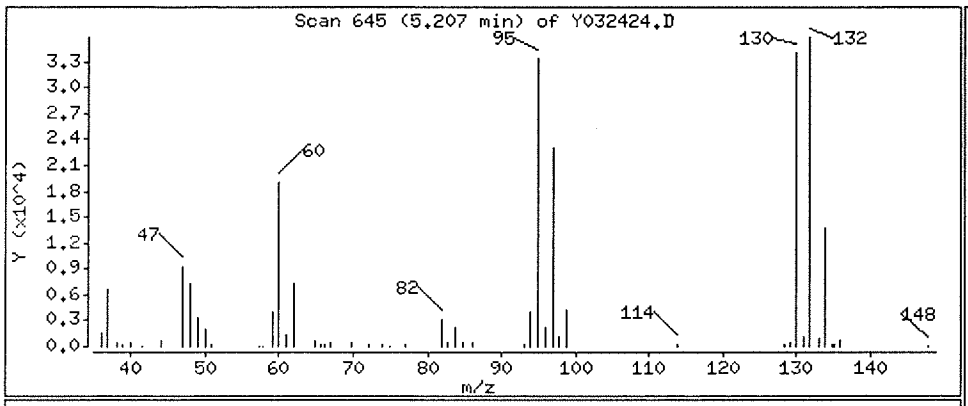
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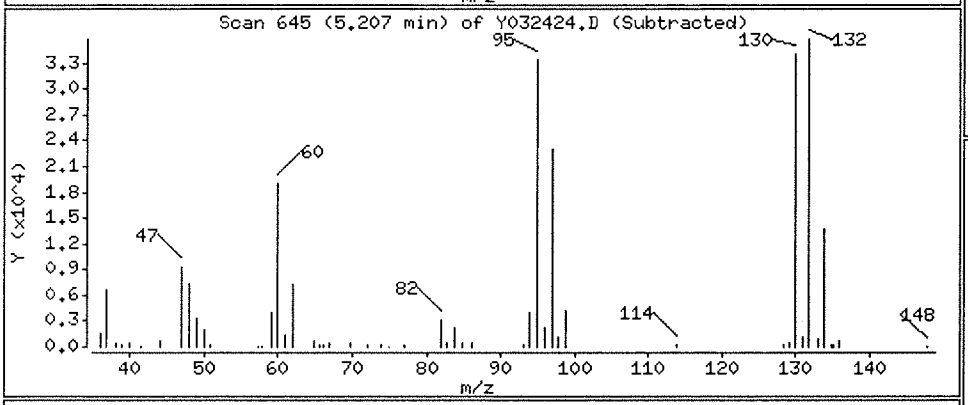
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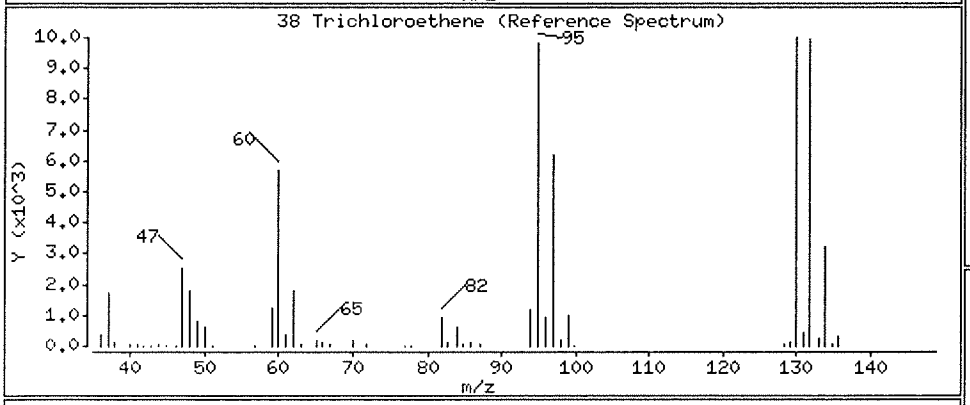
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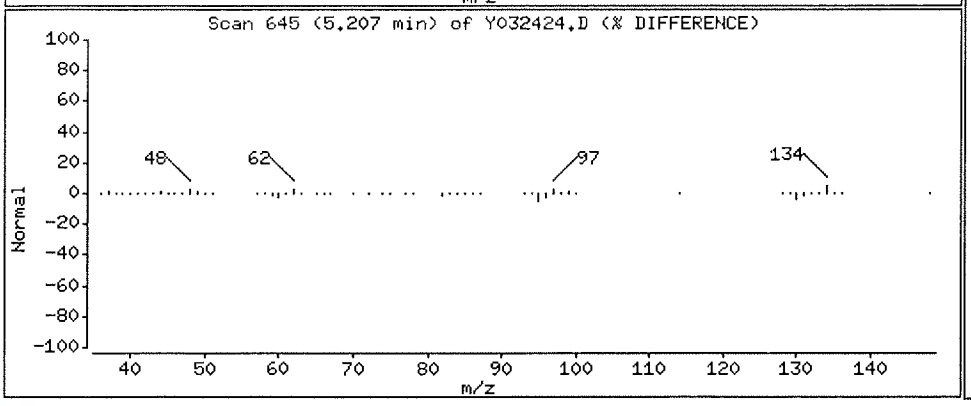
38 Trichloroethene

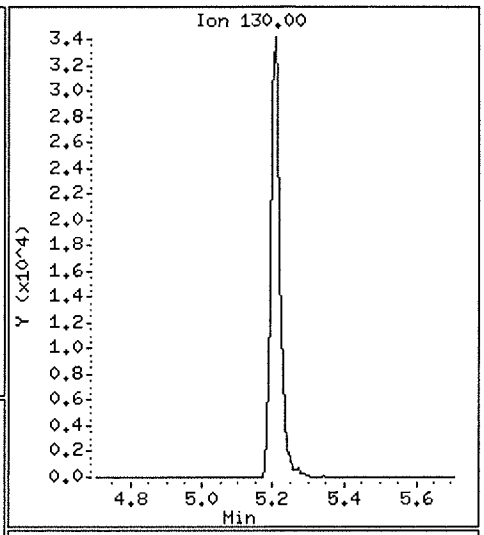
Concentration: 25.19 ug/l

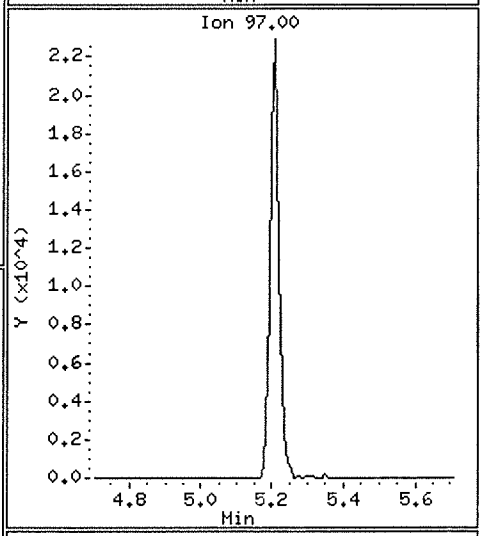


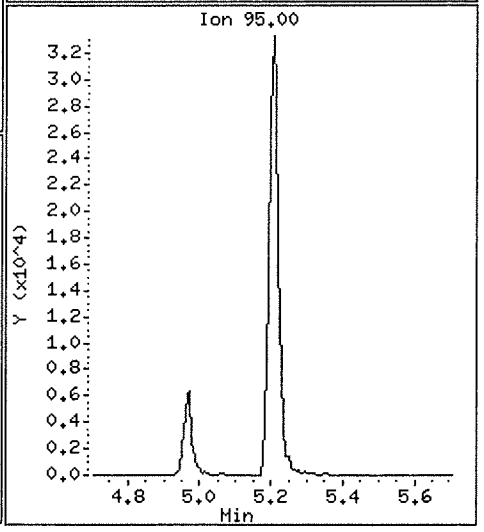












Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032431.D Page 1
Report Date: 02-Apr-2021 14:40

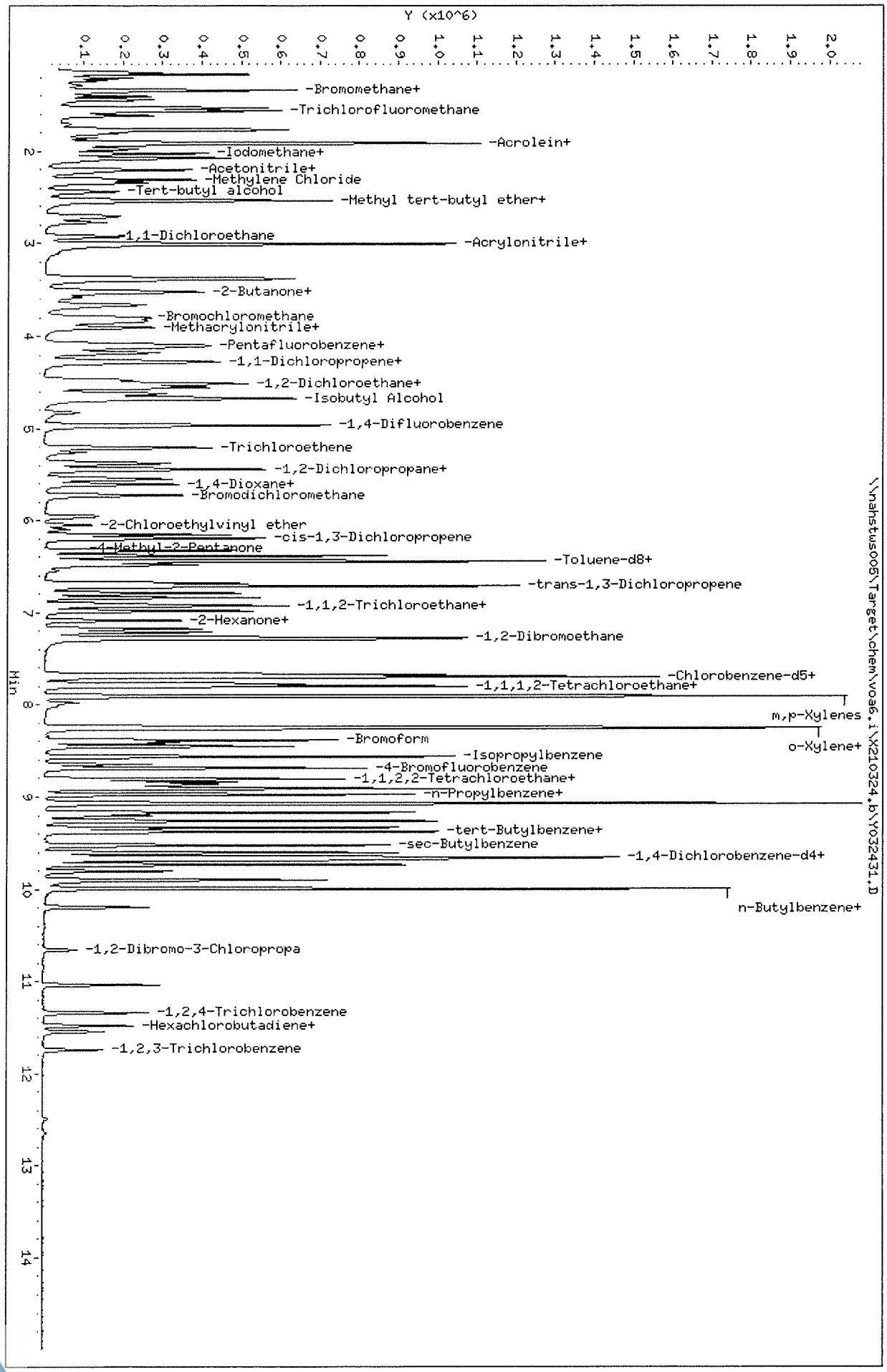
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032431.D
Lab Smp Id: CCV-END Client Smp ID: CCV-END
Inj Date : 25-MAR-2021 08:15
Operator : PC Inst ID: voa6.i
Smp Info : CCV-END;CCV-END;2;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:40 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 61 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	213957	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	382734	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	381605	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	210622	50.0000	
$	30 Dibromofluoromethane	113	4.096	4.096	(0.979)	128616	50.0000	49.12
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	144504	50.0000	48.85
$	48 Toluene-d8	98	6.388	6.388	(0.833)	457032	50.0000	44.56
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	173975	50.0000	52.13
	27 cis-1,2-Dichloroethene	96	3.523	3.523	(0.842)	124915	50.0000	46.00
	38 Trichloroethene	130	5.206	5.206	(1.049)	120302	50.0000	46.69
	5 Vinyl Chloride	62	1.138	1.138	(0.272)	182670	50.0000	45.71



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032431.D
Date : 25-MAR-2021 08:15
Client ID: CCV-END
Sample Info: CCV-END;CCV-END;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

HS21030874 Wet Chem Raw Data (TOC_W 5310B)

ALS WO# HS21030874

C:\TOC-L\Data\2021_02_25_001.tlx

	Type	Analysis	Sample Name	Sample ID	Origin	Result
1	Standard	NPOC	CAL	3150171(01-07)	02_25_2021_CAL.2021_02_	
2	Unknown	NPOC	ICV	315017108	02_25_2021_CAL.cal	NPOC:10.14mg/L
3	Unknown	NPOC	ICB		02_25_2021_CAL.cal	NPOC:-0.1140mg/L
4	Unknown	NPOC	CCV	315017106	02_25_2021_CAL.cal	NPOC:25.02mg/L
5	Unknown	NPOC	CCB		02_25_2021_CAL.cal	NPOC:-0.07587mg/L
6	Unknown	NPOC	MBLK-02252021		02_25_2021_CAL.cal	NPOC:-0.1214mg/L
7	Unknown	NPOC	LCS-02252021		02_25_2021_CAL.cal	NPOC:10.15mg/L
8	Unknown	NPOC	LCSD02252021		02_25_2021_CAL.cal	NPOC:10.16mg/L
9	Unknown	NPOC	HS21020689-01		02_25_2021_CAL.cal	NPOC:22.48mg/L
10	Unknown	NPOC	HS21020689-02		02_25_2021_CAL.cal	NPOC:17.34mg/L
11	Unknown	NPOC	HS21020689-02MS		02_25_2021_CAL.cal	NPOC:28.25mg/L
12	Unknown	NPOC	HS21020689-03		02_25_2021_CAL.cal	NPOC:10.22mg/L
13	Unknown	NPOC	HS21020538-01		02_25_2021_CAL.cal	NPOC:20.36mg/L
14	Unknown	NPOC	HS21020538-02		02_25_2021_CAL.cal	NPOC:4.452mg/L
15	Unknown	NPOC	HS21020793-02DF10		02_25_2021_CAL.cal	NPOC:17.50mg/L
16	Unknown	NPOC	CCV		02_25_2021_CAL.cal	NPOC:25.46mg/L
17	Unknown	NPOC	CCB		02_25_2021_CAL.cal	NPOC:0.08018mg/L

	Notes	Status	Date / Time	Vial
1		Completed	2/25/2021 1	1, 2, 3, 4, 5,
2		Completed	2/25/2021 1	8
3		Completed	2/25/2021 1	9
4		Completed	2/25/2021 1	10
5		Completed	2/25/2021 1	11
6		Completed	2/25/2021 1	12
7		Completed	2/25/2021 1	13
8		Completed	2/25/2021 1:	14
9		Completed	2/25/2021 1:	15
10		Completed	2/25/2021 1:	16
11		Completed	2/25/2021 1:	17
12		Completed	2/25/2021 2:	18
13		Completed	2/25/2021 2:	19
14		Completed	2/25/2021 2:	20
15		Completed	2/25/2021 2:	21
16		Completed	2/25/2021 3:	22
17		Completed	2/25/2021 3:	23

TOC-Control L Report

2021_02_25_001.tlx

Instr.Information

Instrument Options	TOC/ASI/IC Unit/
Catalyst	Regular Sensitivity

Cal. Curve

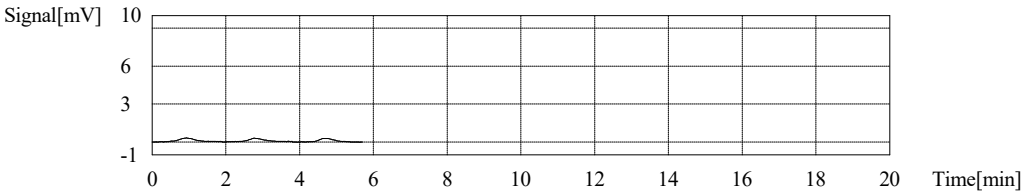
Sample Name:	CAL
Sample ID:	3150171(01-07)
Cal. Curve:	02_25_2021_CAL.2021_02_25_09_13_02.cal
Status	Completed

Type	Anal.
Standard	NPOC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	0.7577	50uL	1.000	*******		2/25/2021 9:21:39 AM
2	0.6368	50uL	1.000	*******		2/25/2021 9:23:47 AM
3	0.6500	50uL	1.000	*******		2/25/2021 9:25:55 AM

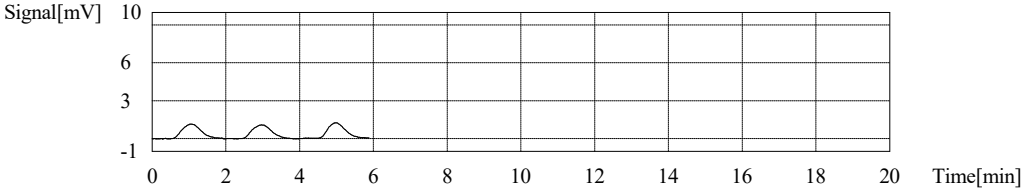
Acid Add.	0.000%
Sparge Gas Flow	80mL/min
Sp. Time	180.0sec
Mean Area	0.6815



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	4.063	50uL	1.000	*******		2/25/2021 9:34:44 AM
2	3.946	50uL	1.000	*******		2/25/2021 9:37:02 AM
3	3.886	50uL	1.000	*******		2/25/2021 9:39:10 AM

Acid Add.	0.000%
Sparge Gas Flow	80mL/min
Sp. Time	180.0sec
Mean Area	3.965

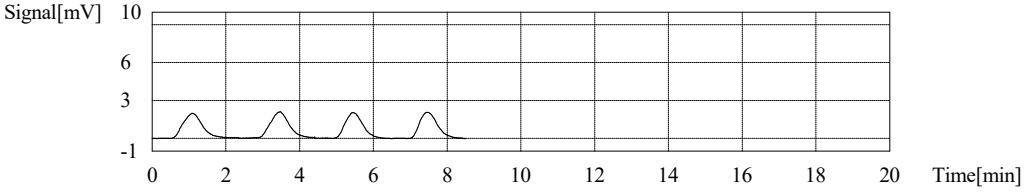


Conc: 2.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	7.014	50uL	1.000	*******		2/25/2021 9:48:25 AM
2	6.976	50uL	1.000	*******		2/25/2021 9:50:44 AM
3	6.738	50uL	1.000	*******	E	2/25/2021 9:53:02 AM
4	6.989	50uL	1.000	*******		2/25/2021 9:55:18 AM

TOC-Control L Report

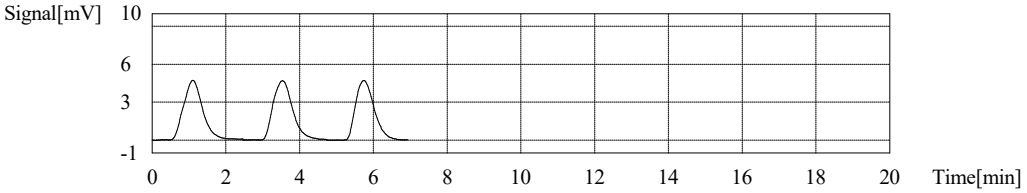
Acid Add. 0.000%
Sparge Gas Flow 80mL/min
Sp. Time 180.0sec
Mean Area 6.993



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	16.70	50uL	1.000	*******		2/25/2021 10:04:35 AM
2	16.99	50uL	1.000	*******		2/25/2021 10:07:06 AM
3	16.40	50uL	1.000	*******		2/25/2021 10:09:32 AM

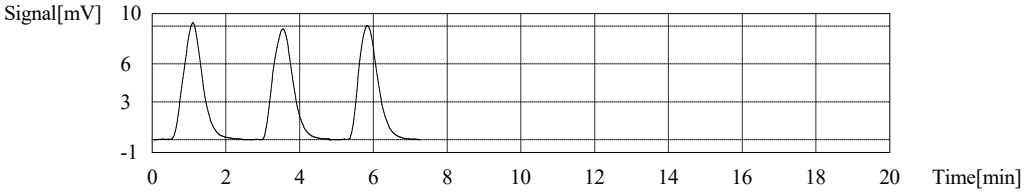
Acid Add. 0.000%
Sparge Gas Flow 80mL/min
Sp. Time 180.0sec
Mean Area 16.70



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	32.33	50uL	1.000	*******		2/25/2021 10:18:54 AM
2	32.41	50uL	1.000	*******		2/25/2021 10:21:29 AM
3	32.27	50uL	1.000	*******		2/25/2021 10:24:10 AM

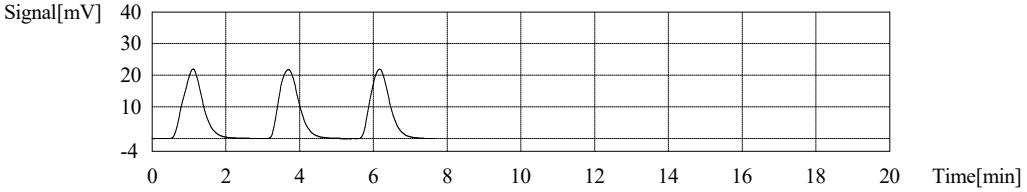
Acid Add. 0.000%
Sparge Gas Flow 80mL/min
Sp. Time 180.0sec
Mean Area 32.34



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	79.83	50uL	1.000	*******		2/25/2021 10:33:42 AM
2	80.51	50uL	1.000	*******		2/25/2021 10:36:25 AM
3	79.09	50uL	1.000	*******		2/25/2021 10:39:12 AM

Acid Add. 0.000%
Sparge Gas Flow 80mL/min
Sp. Time 180.0sec
Mean Area 79.81



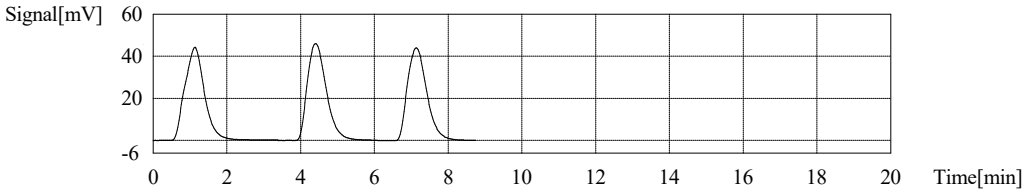
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	162.4	50uL	1.000	*******		2/25/2021 10:49:29 AM
2	163.8	50uL	1.000	*******		2/25/2021 10:52:26 AM
3	159.9	50uL	1.000	*******		2/25/2021 10:55:21 AM

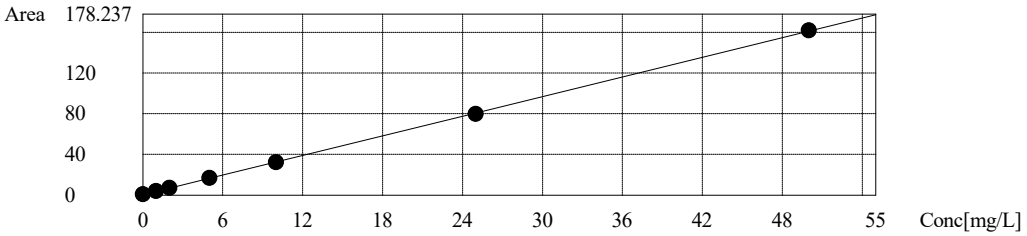
TOC-Control L Report

2021_02_25_001.tlx

Acid Add.	0.000%
Sparge Gas Flow	80mL/min
Sp. Time	180.0sec
Mean Area	162.0



Slope:	3.220
Intercept	0.4365
r^2	0.9999
r	1.0000
RSE(%)	N/A
Zero Shift	No



Sample

Sample Name:	ICV
Sample ID:	315017108
Origin:	02_25_2021_CAL.cal
Status	Completed
Chk. Result	

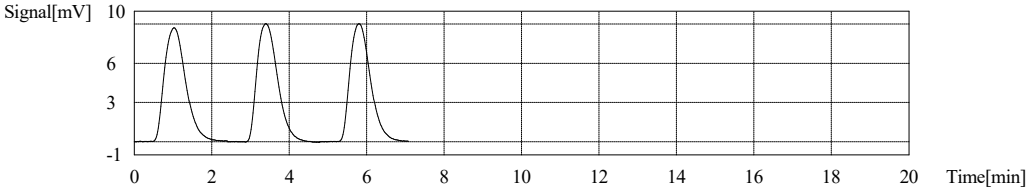
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.14mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	33.04	10.13mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:32:06 AM
2	33.24	10.19mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:34:44 AM
3	32.98	10.11mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:37:17 AM

Mean Area	33.09
Mean Conc.	10.14mg/L



Sample

Sample Name:	ICB
Sample ID:	
Origin:	02_25_2021_CAL.cal
Status	Completed
Chk. Result	

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:-0.1140mg/L

1. Det

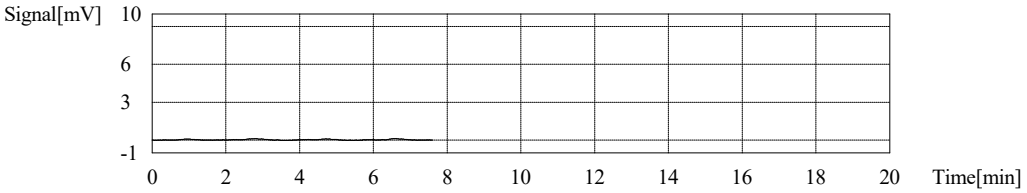
TOC-Control L Report

2021_02_25_001.tlx

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.000	-0.1356mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:46:05 AM
2	0.2080	-0.07096mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:48:13 AM
3	0.000	-0.1356mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:50:20 AM
4	0.2102	-0.07028mg/L	50uL	1.000	E	02_25_2021_CAL.2021_02_25_09_13_02.cal	2/25/2021 11:52:27 AM

Mean Area 0.06933
Mean Conc. -0.1140mg/L



C:\TOC-L\Data\2021_03_26_002.tlx

	Type	Analysis	Sample Name	Sample ID	Origin	Result	Notes
1	Unknown	NPOC	CCV	316131103	02_25_2021	NPOC:24.04mg/L	
2	Unknown	NPOC	CCB		02_25_2021	NPOC:0.01463mg/L	
3	Unknown	NPOC	MBLK-03262021		02_25_2021	NPOC:-0.00877mg/L	
4	Unknown	NPOC	LCS-03262021		02_25_2021	NPOC:10.39mg/L	
5	Unknown	NPOC	LCSD-03262021	TOC_W	02_25_2021	NPOC:10.39mg/L	
6	Unknown	NPOC	HS21031349-01DF10		02_25_2021	NPOC:2.043mg/L	
7	Unknown	NPOC	HS21031302-01		02_25_2021	NPOC:11.94mg/L	
8	Unknown	NPOC	HS21031302-01MS		02_25_2021	NPOC:22.70mg/L	
9	Unknown	NPOC	HS21031286-07		02_25_2021	NPOC:10.14mg/L	
10	Unknown	NPOC	HS21031367-01	TOC_W 5310B	02_25_2021	NPOC:25.37mg/L	
11	Unknown	NPOC	HS21031367-02		02_25_2021	NPOC:5.027mg/L	
12	Unknown	NPOC	CCV	316131103	02_25_2021	NPOC:24.51mg/L	
13	Unknown	NPOC	CCB		02_25_2021	NPOC:0.02603mg/L	
14	Unknown	NPOC	MBLK2-03262021		02_25_2021	NPOC:-0.02634mg/L	
15	Unknown	NPOC	LCS2-03262021		02_25_2021	NPOC:10.22mg/L	
16	Unknown	NPOC	LCSD2-03262021	TOC_W 5310B	02_25_2021	NPOC:10.44mg/L	
17	Unknown	NPOC	HS21030909-06		02_25_2021	NPOC:5.226mg/L	
18	Unknown	NPOC	HS21030909-11		02_25_2021	NPOC:4.319mg/L	
19	Unknown	NPOC	HS21030909-16		02_25_2021	NPOC:4.735mg/L	
20	Unknown	NPOC	HS21030909-21		02_25_2021	NPOC:4.845mg/L	
21	Unknown	NPOC	HS21030909-21MS		02_25_2021	NPOC:15.46mg/L	
22	Unknown	NPOC	HS21030909-26		02_25_2021	NPOC:4.994mg/L	
23	Unknown	NPOC	CCV	316131103	02_25_2021	NPOC:24.76mg/L	
24	Unknown	NPOC	CCB		02_25_2021	NPOC:0.04436mg/L	
25	Unknown	NPOC	MBLK3-03262021		02_25_2021	NPOC:0.01767mg/L	
26	Unknown	NPOC	LCS3-03262021		02_25_2021	NPOC:10.28mg/L	
27	Unknown	NPOC	LCSD3-03262021	TOC_W 5310B	02_25_2021	NPOC:10.52mg/L	
28	Unknown	NPOC	HS21030874-06		02_25_2021	NPOC:1.762mg/L	
29	Unknown	NPOC	HS21030874-07		02_25_2021	NPOC:10.35mg/L	
30	Unknown	NPOC	HS21030874-08		02_25_2021	NPOC:2.905mg/L	
31	Unknown	NPOC	HS21030874-08MS		02_25_2021	NPOC:14.12mg/L	
32	Unknown	NPOC	HS21030874-09		02_25_2021	NPOC:4.709mg/L	
33	Unknown	NPOC	HS21030874-10		02_25_2021	NPOC:1.911mg/L	
34	Unknown	NPOC	HS21030874-11		02_25_2021	NPOC:1.727mg/L	
35	Unknown	NPOC	CCV	316131103	02_25_2021	NPOC:24.51mg/L	
36	Unknown	NPOC	CCB		02_25_2021	NPOC:0.04587mg/L	
37	Unknown	NPOC	HS21030874-12		02_25_2021	NPOC:10.39mg/L	
38	Unknown	NPOC	HS21031162-01		02_25_2021	NPOC:8.371mg/L	
39	Unknown	NPOC	HS21031234-01		02_25_2021	NPOC:7.756mg/L	
40	Unknown	NPOC	HS21031237-01		02_25_2021	NPOC:11.16mg/L	
41	Unknown	NPOC	CCV	316131103	02_25_2021	NPOC:24.59mg/L	
42	Unknown	NPOC	CCB		02_25_2021	NPOC:0.03777mg/L	

	Status	Date / Time	Vial
1	Completed	3/26/2021 1:	1
2	Completed	3/26/2021 1:	2
3	Completed	3/26/2021 2:	3
4	Completed	3/26/2021 2:	4
5	Completed	3/26/2021 2:	5
6	Completed	3/26/2021 2:	6
7	Completed	3/26/2021 3:	7
8	Completed	3/26/2021 3:	8
9	Completed	3/26/2021 3:	9
10	Completed	3/26/2021 3:	10
11	Completed	3/26/2021 4:	11
12	Completed	3/26/2021 4:	12
13	Completed	3/26/2021 4:	13
14	Completed	3/26/2021 4:	3
15	Completed	3/26/2021 5:	4
16	Completed	3/26/2021 5:	5
17	Completed	3/26/2021 5:	14
18	Completed	3/26/2021 5:	15
19	Completed	3/26/2021 6:	16
20	Completed	3/26/2021 6:	17
21	Completed	3/26/2021 6:	18
22	Completed	3/26/2021 6:	19
23	Completed	3/26/2021 7:	1
24	Completed	3/26/2021 7:	2
25	Completed	3/26/2021 7:	3
26	Completed	3/26/2021 7:	4
27	Completed	3/26/2021 7:	5
28	Completed	3/26/2021 8:	20
29	Completed	3/26/2021 8:	21
30	Completed	3/26/2021 8:	22
31	Completed	3/26/2021 9:	23
32	Completed	3/26/2021 9:	24
33	Completed	3/26/2021 9:	25
34	Completed	3/26/2021 9:	26
35	Completed	3/26/2021 1	12
36	Completed	3/26/2021 1	13
37	Completed	3/26/2021 1	27
38	Completed	3/26/2021 1	28
39	Completed	3/26/2021 1	29
40	Completed	3/26/2021 1	30
41	Completed	3/26/2021 1	1
42	Completed	3/26/2021 1	2

TOC-Control L Report

Instr.Information

Instrument Options TOC/ASI/IC Unit/
Catalyst Regular Sensitivity

Sample

Sample Name: CCV
Sample ID: 316131103
Origin: 02_25_2021_CAL.cal
Status Completed
Chk. Result

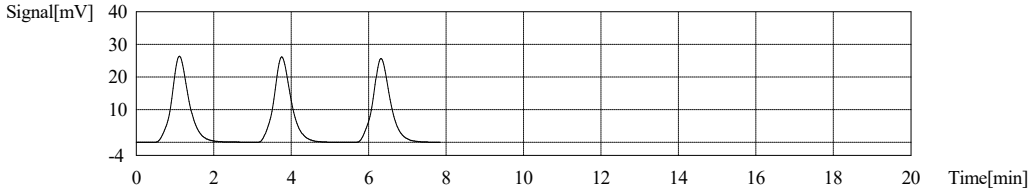
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:24.76mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	80.62	24.90mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 6:56:22 PM
2	80.60	24.90mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 6:59:09 PM
3	79.28	24.49mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 7:02:03 PM

Mean Area 80.17
Mean Conc. 24.76mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: 02_25_2021_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.04436mg/L

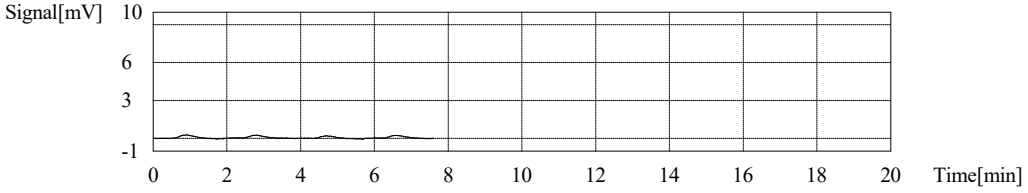
1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.8033	0.1139mg/L	50uL	1.000	E	02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 7:10:52 PM
2	0.5876	0.04693mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 7:13:00 PM
3	0.5682	0.04090mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 7:15:08 PM
4	0.5822	0.04525mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 7:17:17 PM

TOC-Control L Report

Mean Area 0.5793
Mean Conc. 0.04436mg/L



Sample

Sample Name: MBLK3-03262021
Sample ID:
Origin: 02_25_2021_CAL.cal
Status Completed
Chk. Result

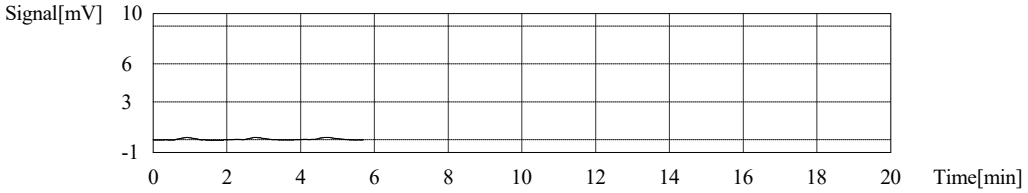
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.01767mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.5571	0.03745mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 7:26:01 PM
2	0.4586	0.00686mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 7:28:09 PM
3	0.4645	0.00870mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 7:30:17 PM

Mean Area 0.4934
Mean Conc. 0.01767mg/L



Sample

Sample Name: LCS3-03262021
Sample ID:
Origin: 02_25_2021_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.28mg/L

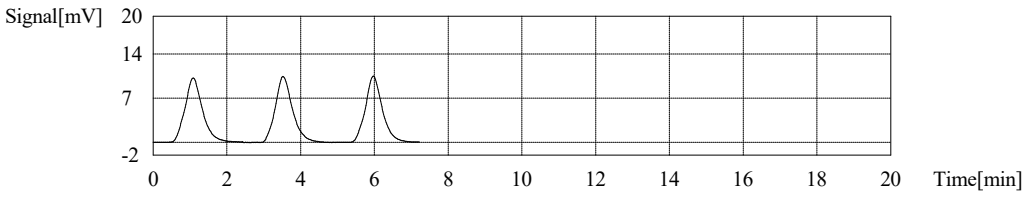
1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	33.34	10.22mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 7:39:38 PM
2	33.99	10.42mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 7:42:18 PM
3	33.25	10.19mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 7:44:54 PM

TOC-Control L Report

Mean Area 33.53
Mean Conc. 10.28mg/L



Sample

Sample Name: LCSD3-03262021
Sample ID: TOC_W 5310B
Origin: 02_25_2021_CAL.cal
Status Completed
Chk. Result

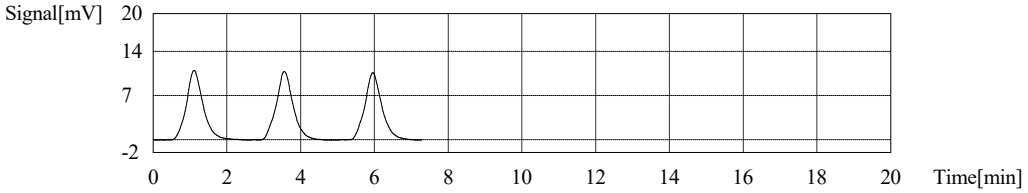
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.52mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	34.36	10.54mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 7:54:14 PM
2	34.56	10.60mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 7:56:53 PM
3	33.98	10.42mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 7:59:34 PM

Mean Area 34.30
Mean Conc. 10.52mg/L



Sample

Sample Name: HS21030874-06
Sample ID:
Origin: 02_25_2021_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:1.762mg/L

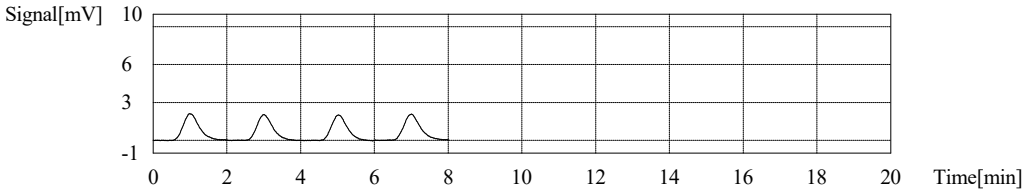
1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.297	1.820mg/L	50uL	1.000	E	02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 8:08:38 PM
2	6.033	1.738mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 8:10:54 PM
3	6.033	1.738mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 8:13:05 PM
4	6.262	1.809mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 8:15:21 PM

TOC-Control L Report

Mean Area 6.109
Mean Conc. 1.762mg/L



Sample

Sample Name: HS21030874-07
Sample ID:
Origin: 02_25_2021_CAL.cal
Status Completed
Chk. Result

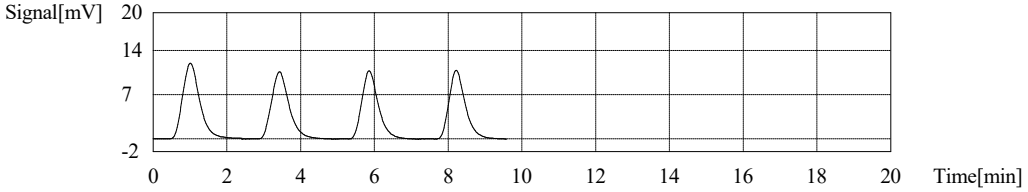
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.35mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	38.04	11.68mg/L	50uL	1.000	E	02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 8:24:35 PM
2	34.75	10.66mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 8:27:16 PM
3	33.26	10.19mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 8:29:52 PM
4	33.31	10.21mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 8:32:29 PM

Mean Area 33.77
Mean Conc. 10.35mg/L



Sample

Sample Name: HS21030874-08
Sample ID:
Origin: 02_25_2021_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:2.905mg/L

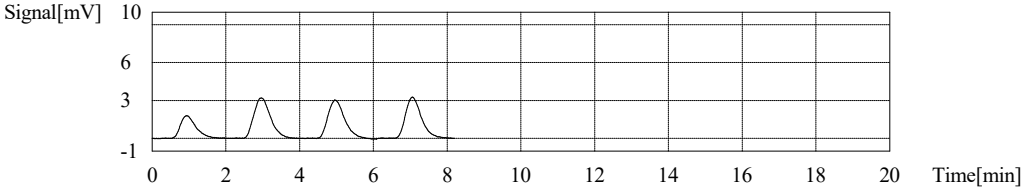
1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.208	1.482mg/L	50uL	1.000	E	02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 8:41:17 PM
2	10.09	2.998mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 8:43:32 PM
3	9.614	2.850mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 8:45:52 PM
4	9.669	2.867mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 8:48:13 PM

TOC-Control L Report

Mean Area 9.791
Mean Conc. 2.905mg/L



Sample

Sample Name: HS21030874-08MS
Sample ID:
Origin: 02_25_2021_CAL.cal
Status Completed
Chk. Result

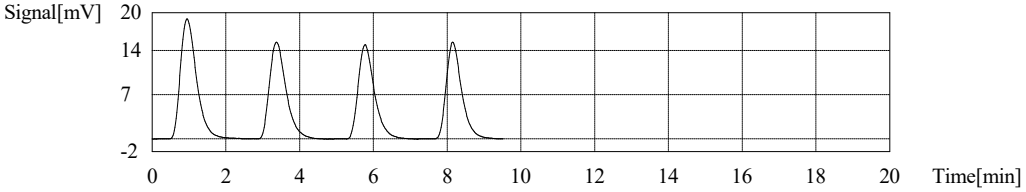
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:14.12mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	57.37	17.68mg/L	50uL	1.000	E	02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 8:57:27 PM
2	47.90	14.74mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 9:00:05 PM
3	45.52	14.00mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 9:02:43 PM
4	44.27	13.61mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 9:05:17 PM

Mean Area 45.90
Mean Conc. 14.12mg/L



Sample

Sample Name: HS21030874-09
Sample ID:
Origin: 02_25_2021_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:4.709mg/L

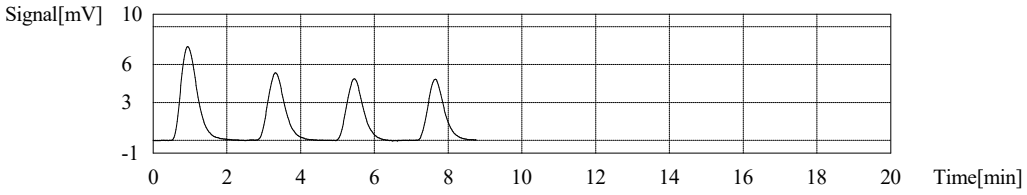
1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	22.82	6.951mg/L	50uL	1.000	E	02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 9:14:25 PM
2	16.75	5.066mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 9:16:47 PM
3	15.28	4.610mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 9:19:13 PM
4	14.77	4.451mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 9:21:34 PM

TOC-Control L Report

Mean Area 15.60
Mean Conc. 4.709mg/L



Sample

Sample Name: HS21030874-10
Sample ID:
Origin: 02_25_2021_CAL.cal
Status Completed
Chk. Result

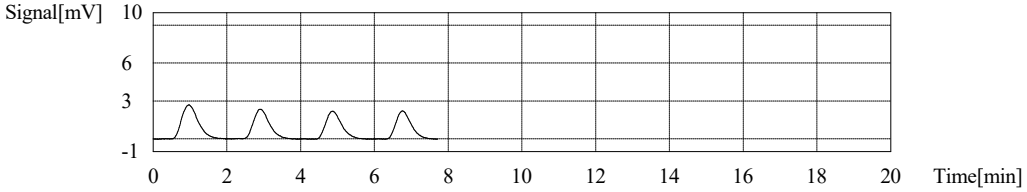
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:1.911mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.239	2.423mg/L	50uL	1.000	E	02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 9:30:20 PM
2	6.907	2.009mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 9:32:32 PM
3	6.528	1.892mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 9:34:40 PM
4	6.333	1.831mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 9:36:48 PM

Mean Area 6.589
Mean Conc. 1.911mg/L



Sample

Sample Name: HS21030874-11
Sample ID:
Origin: 02_25_2021_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:1.727mg/L

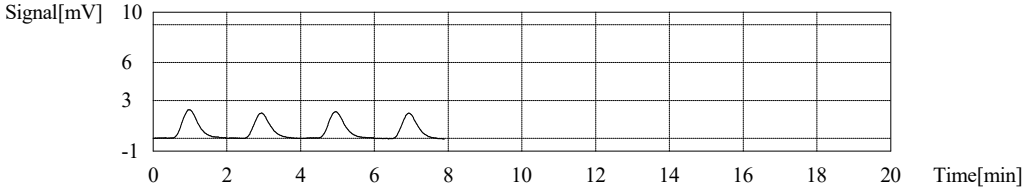
1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.557	1.901mg/L	50uL	1.000	E	02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 9:45:35 PM
2	6.024	1.735mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 9:47:50 PM
3	6.084	1.754mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 9:50:03 PM
4	5.883	1.691mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 9:52:13 PM

TOC-Control L Report

Mean Area 5.997
Mean Conc. 1.727mg/L



Sample

Sample Name: CCV
Sample ID: 316131103
Origin: 02_25_2021_CAL.cal
Status Completed
Chk. Result

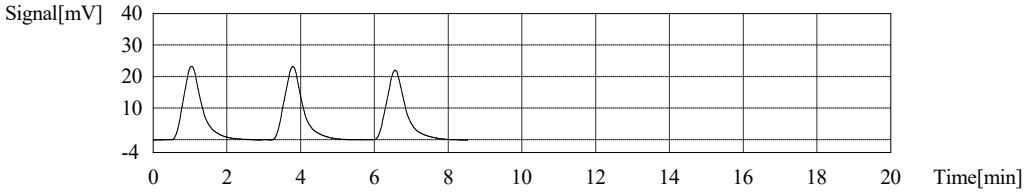
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:24.51mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	79.85	24.66mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 10:01:53 PM
2	79.88	24.67mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 10:04:55 PM
3	78.34	24.19mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 10:08:11 PM

Mean Area 79.36
Mean Conc. 24.51mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: 02_25_2021_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.04587mg/L

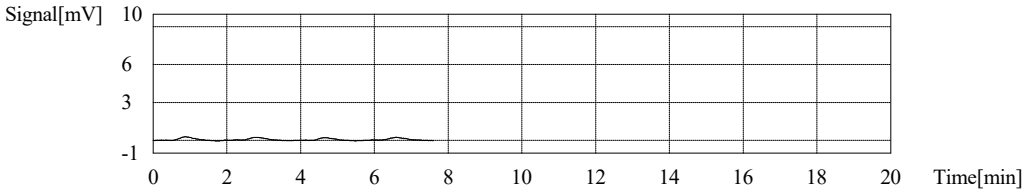
1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.8075	0.1152mg/L	50uL	1.000	E	02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 10:17:00 PM
2	0.6310	0.06040mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 10:19:08 PM
3	0.5507	0.03547mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 10:21:16 PM
4	0.5709	0.04174mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 10:23:24 PM

TOC-Control L Report

Mean Area 0.5842
Mean Conc. 0.04587mg/L



Sample

Sample Name: HS21030874-12
Sample ID:
Origin: 02_25_2021_CAL.cal
Status Completed
Chk. Result

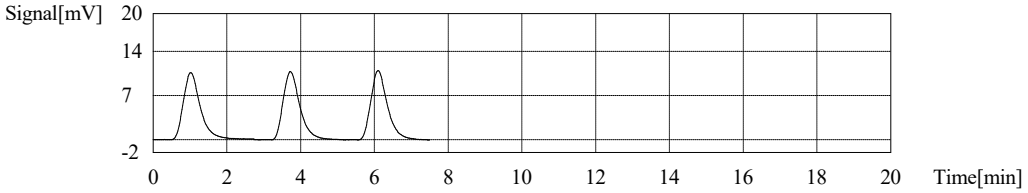
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.39mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	33.74	10.34mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 10:33:06 PM
2	33.62	10.31mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 10:35:42 PM
3	34.30	10.52mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 10:38:21 PM

Mean Area 33.89
Mean Conc. 10.39mg/L



Sample

Sample Name: CCV
Sample ID: 316131103
Origin: 02_25_2021_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:24.59mg/L

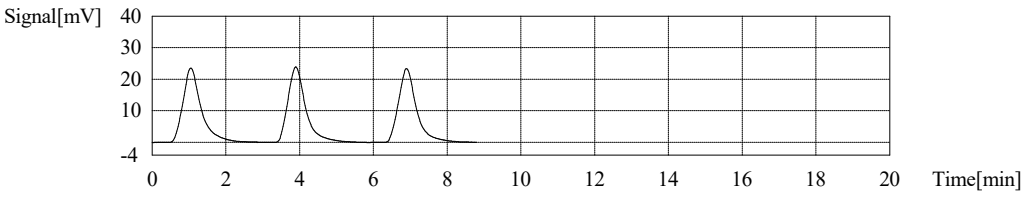
1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	80.08	24.73mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 11:38:11 PM
2	80.18	24.77mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 11:41:24 PM
3	78.59	24.27mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 11:44:36 PM

TOC-Control L Report

Mean Area 79.62
Mean Conc. 24.59mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: 02_25_2021_CAL.cal
Status Completed
Chk. Result

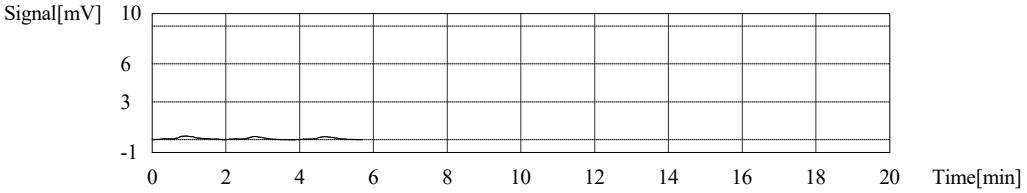
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.03777mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.5819	0.04515mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 11:53:24 PM
2	0.5328	0.02991mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 11:55:31 PM
3	0.5597	0.03826mg/L	50uL	1.000		02_25_2021_CAL.2021_02_25_09_13_02.cal	3/26/2021 11:57:38 PM

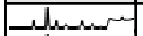
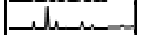
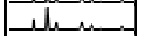
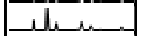
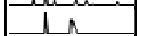
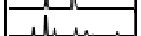
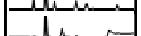
Mean Area 0.5581
Mean Conc. 0.03777mg/L



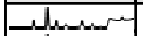
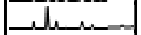
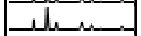
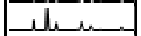
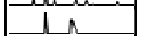
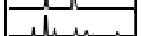
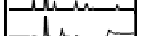
HS21030874 Wet Chem Raw Data (9056_anions_W)

ALS WO# HS21030874

Sequence: 031721
Last Update Operator: alshs.nouser

ECD_1	Name	Comment	Type	Position	Dilution	Level	Instrument Method	Processing Method
	STD1		Calibration	BC1	1.00	01	ICS2100	Anion Processing Method 091720
	STD2		Calibration	BC2	1.00	02	ICS2100	Anion Processing Method 091720
	STD3		Calibration	BC3	1.00	03	ICS2100	Anion Processing Method 091720
	STD4		Calibration	BC4	1.00	04	ICS2100	Anion Processing Method 091720
	STD5		Calibration	BC5	1.00	05	ICS2100	Anion Processing Method 091720
	STD6		Calibration	BC6	1.00	06	ICS2100	Anion Processing Method 091720
	ICV		Unknown	BC7	1.00		ICS2100	Anion Processing Method 091720
	ICB		Unknown	BC8	1.00		ICS2100	Anion Processing Method 091720
	CCB		Unknown	G7	1.00		ICS2100	Anion Processing Method 091720
	CCV1		Unknown	G3	1.00		ICS2100	Anion Processing Method 091720
	MBLK-		Unknown	G5	1.00		ICS2100	Anion Processing Method 091720
	LCS-		Unknown	G2	1.00		ICS2100	Anion Processing Method 091720
	HS21030874-06		Unknown	GA1	1.00		ICS2100	Anion Processing Method 091720
	HS21030874-07DF5		Unknown	GA2	5.00		ICS2100	Anion Processing Method 091720
	HS21030874-08DF2		Unknown	GA3	2.00		ICS2100	Anion Processing Method 091720
	HS21030874-08MSDF2		Unknown	GA4	2.00		ICS2100	Anion Processing Method 091720
	HS21030874-08MSDDF2		Unknown	GA5	2.00		ICS2100	Anion Processing Method 091720
	HS21030874-09DF5		Unknown	GA6	5.00		ICS2100	Anion Processing Method 091720
	HS21030874-10		Unknown	GA7	1.00		ICS2100	Anion Processing Method 091720
	HS21030874-11		Unknown	GA8	1.00		ICS2100	Anion Processing Method 091720
	CCV		Unknown	G1	1.00		ICS2100	Anion Processing Method 091720
	CCB		Unknown	G4	1.00		ICS2100	Anion Processing Method 091720
	HS21030874-12		Unknown	GB1	1.00		ICS2100	Anion Processing Method 091720
	CCV1		Unknown	G3	1.00		ICS2100	Anion Processing Method 091720
	CCB		Unknown	G6	1.00		ICS2100	Anion Processing Method 091720

Sequence: 031721
Last Update Operator: alshs.nouser

ECD_1	Name	Volume [µl]	Status	Inject Time
	STD1	10.0	Finished	2/23/2021 12:08:54 PM -06:00
	STD2	10.0	Finished	2/23/2021 12:26:59 PM -06:00
	STD3	10.0	Finished	2/23/2021 12:45:05 PM -06:00
	STD4	10.0	Finished	2/23/2021 1:03:13 PM -06:00
	STD5	10.0	Finished	2/23/2021 1:21:22 PM -06:00
	STD6	10.0	Finished	2/23/2021 1:39:28 PM -06:00
	ICV	10.0	Finished	2/23/2021 1:57:33 PM -06:00
	ICB	10.0	Finished	2/23/2021 2:34:16 PM -06:00
	CCB	10.0	Finished	3/17/2021 2:54:04 PM -05:00
	CCV1	10.0	Finished	3/17/2021 3:12:30 PM -05:00
	MBLK-	10.0	Finished	3/17/2021 3:30:53 PM -05:00
	LCS-	10.0	Finished	3/17/2021 3:49:22 PM -05:00
	HS21030874-06	10.0	Finished	3/17/2021 4:07:54 PM -05:00
	HS21030874-07DF5	10.0	Finished	3/17/2021 4:26:15 PM -05:00
	HS21030874-08DF2	10.0	Finished	3/17/2021 4:44:39 PM -05:00
	HS21030874-08MSDF2	10.0	Finished	3/17/2021 5:03:10 PM -05:00
	HS21030874-08MSDDF2	10.0	Finished	3/17/2021 5:21:32 PM -05:00
	HS21030874-09DF5	10.0	Finished	3/17/2021 5:39:56 PM -05:00
	HS21030874-10	10.0	Finished	3/17/2021 5:58:28 PM -05:00
	HS21030874-11	10.0	Finished	3/17/2021 6:16:50 PM -05:00
	CCV	10.0	Finished	3/17/2021 6:35:19 PM -05:00
	CCB	10.0	Finished	3/17/2021 6:53:41 PM -05:00
	HS21030874-12	10.0	Finished	3/17/2021 7:12:04 PM -05:00
	CCV1	10.0	Finished	3/17/2021 10:53:05 PM -05:00
	CCB	10.0	Finished	3/17/2021 11:11:29 PM -05:00

Sequence: 031721
Injection #6: STD6

Calibration

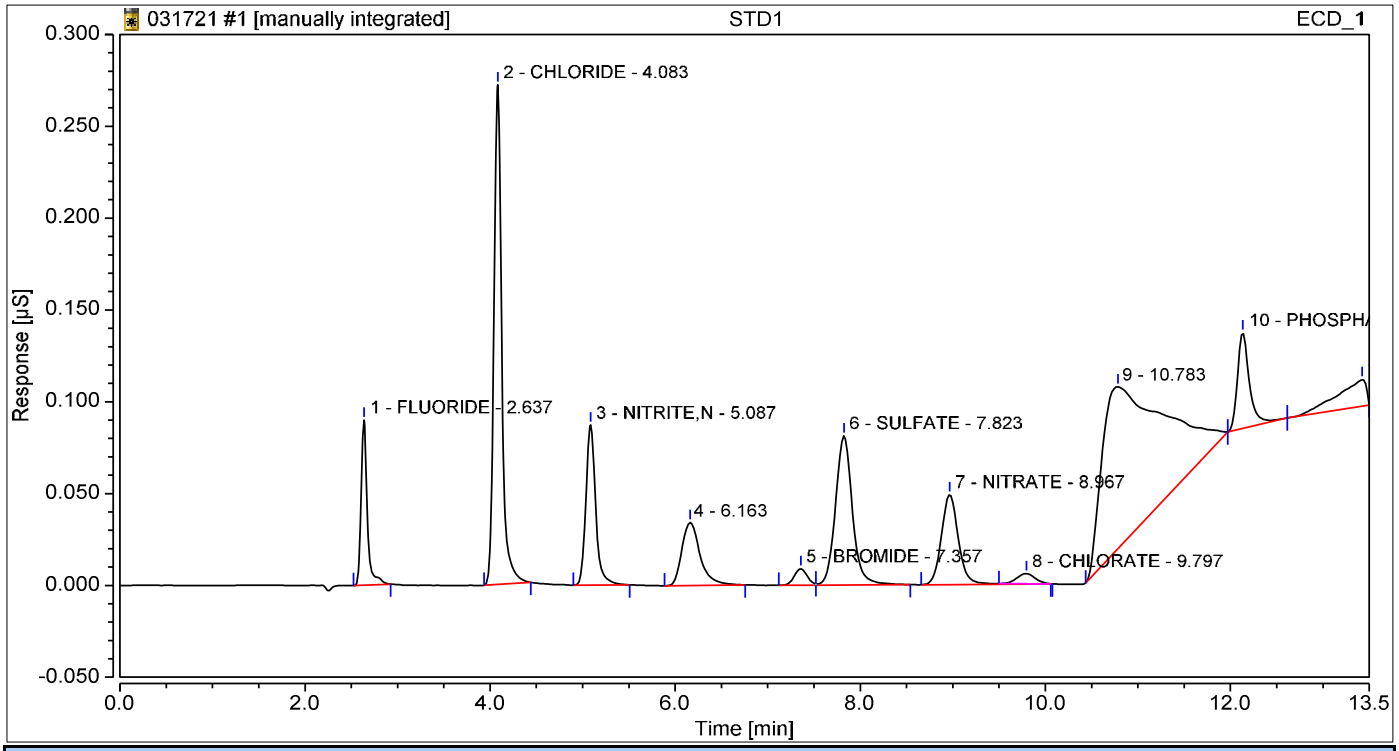
Peak No.	Peak Name	Cal.Type	Eval.Type	Number of Points	Rel.Std.Dev. %	Coeff.of Determination	C0 (Offset)	C1 (Slope)	C2 (Curve)
1	*FLUORIDE*	*Lin, WithOffset, 1/A*	*Area*	*6*	*32.7580*	*0.99559*	*-0.0083*	*0.1590*	*0.0000*
2	CHLORIDE	Lin, 1/A	Area	6	13.9288	0.99899	0.0000	0.0948	0.0000
3	NITRITE,N	Lin, WithOffset, 1/A	Area	6	25.1775	0.99715	-0.0069	0.1980	0.0000
5	BROMIDE	Lin, WithOffset, 1/A	Area	6	39.7224	0.99520	-0.0041	0.0380	0.0000
6	SULFATE	Lin, 1/A	Area	6	17.6577	0.99844	0.0000	0.0711	0.0000
7	NITRATE	Lin, WithOffset, 1/A	Area	6	10.0501	0.99962	-0.0169	0.2384	0.0000
8	CHLORATE	Lin, WithOffset, 1/A	Area	6	44.8926	0.99394	-0.0038	0.0350	0.0000
11	PHOSPHATE	Lin, WithOffset, 1/A	Area	6	24.1745	0.99766	-0.0055	0.0944	0.0000
Maximum					**44.8926**	0.99962			
Minimum					10.0501	**0.99394**			

Chromatogram and Results

Injection Details

Injection Name:	**STD1**	***Run Time (min):***	**13.50**
Vial Number:	**BC1**	***Injection Volume:***	**10.00**
Injection Type:	**Calibration Standard**	***Channel:***	**ECD_1**
Calibration Level:	**01**	***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**1.0000**
Injection Date/Time:	**23/Feb/21 12:08**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

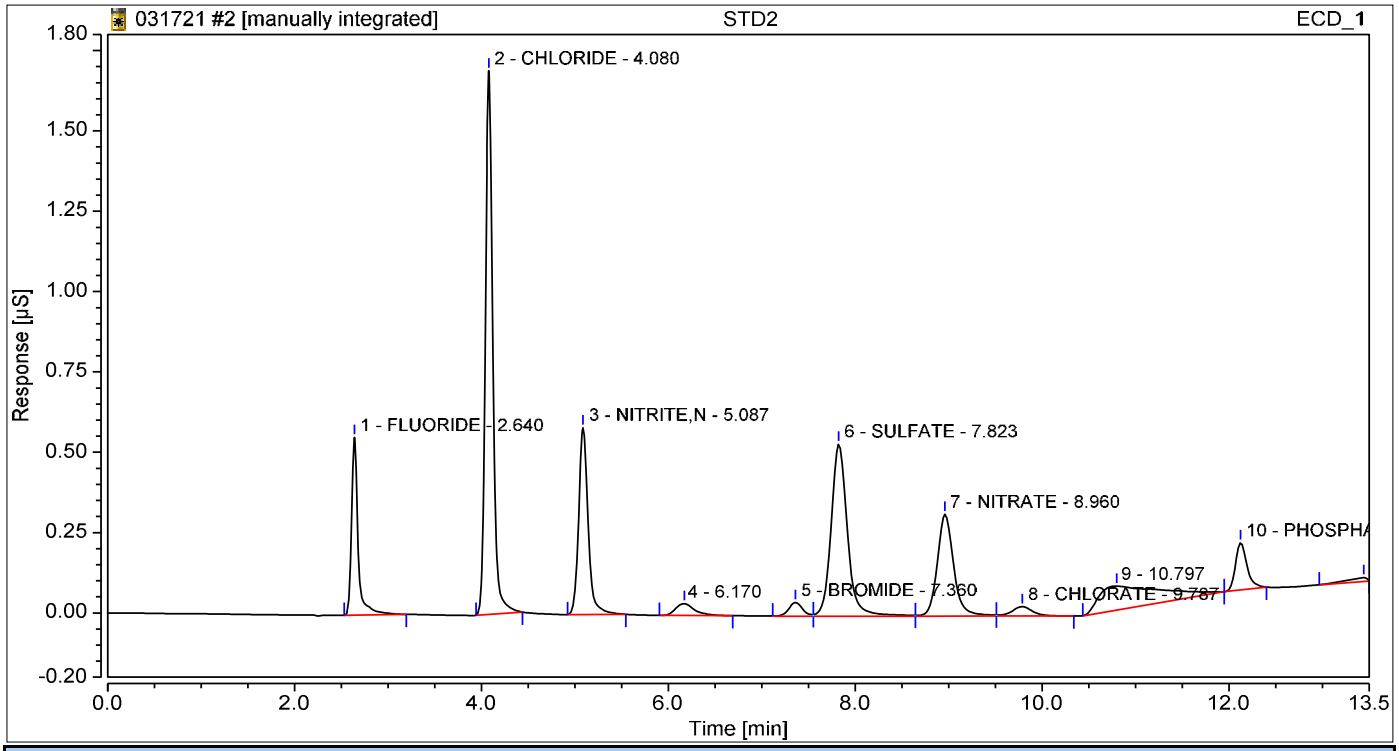
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	2.637	0.007	0.090	4.32	11.47	0.0962
2	CHLORIDE	4.083	0.026	0.272	16.42	34.76	0.2794
3	NITRITE,N	5.087	0.011	0.087	6.61	11.13	0.0887
4		6.163	0.008	0.034	4.88	4.38	n.a.
5	BROMIDE	7.357	0.001	0.009	0.90	1.15	0.1461
6	SULFATE	7.823	0.017	0.081	10.66	10.38	0.2418
7	NITRATE	8.967	0.010	0.049	6.50	6.26	0.1149
8	CHLORATE	9.797	0.001	0.006	0.79	0.70	0.1458
9		10.783	0.066	0.088	40.76	11.27	n.a.
10	PHOSPHATE	12.133	0.008	0.052	4.81	6.65	0.1401
11		13.423	0.005	0.014	3.35	1.84	n.a.
Total:			**0.161**	**0.783**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD2**	***Run Time (min):***	**13.50**
Vial Number:	**BC2**	***Injection Volume:***	**10.00**
Injection Type:	**Calibration Standard**	***Channel:***	**ECD_1**
Calibration Level:	**02**	***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**1.0000**
Injection Date/Time:	**23/Feb/21 12:26**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

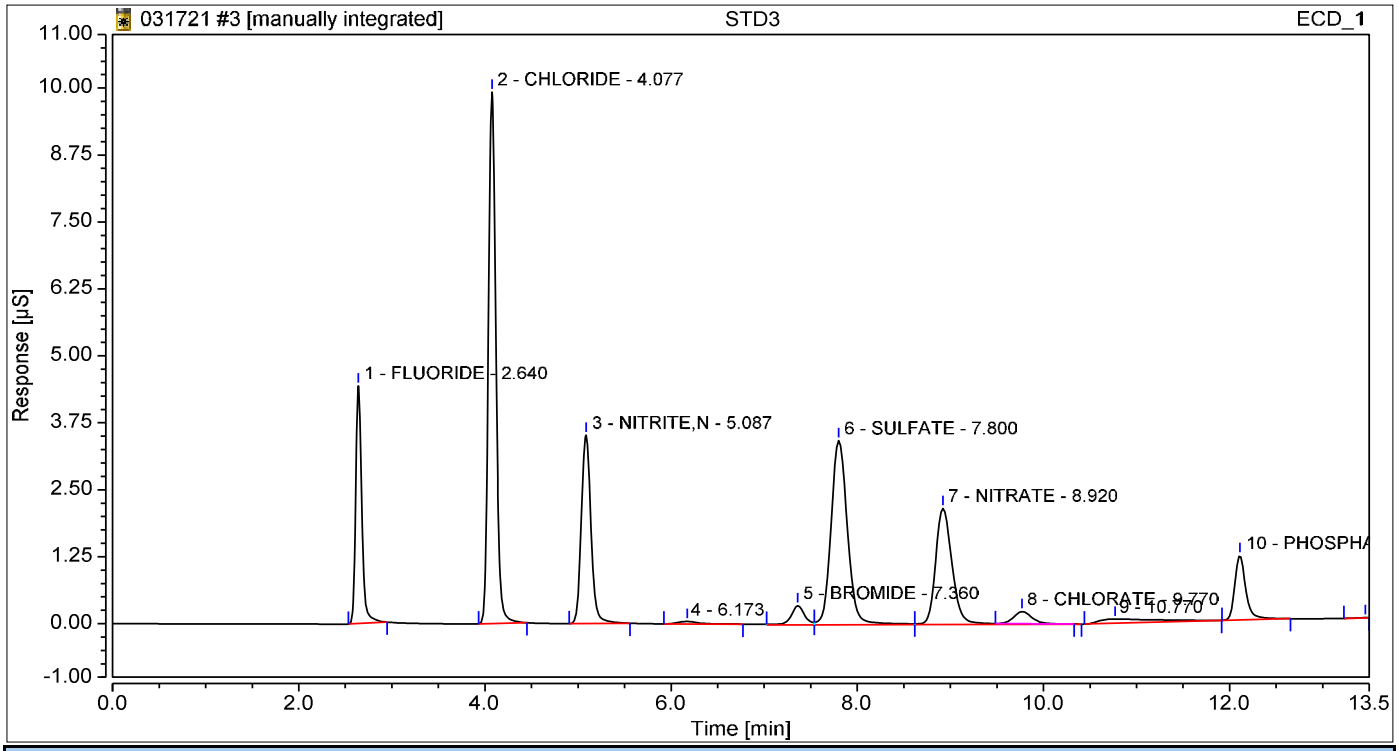
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	2.640	0.045	0.553	8.23	13.75	0.3338
2	CHLORIDE	4.080	0.156	1.691	28.67	42.06	1.6452
3	NITRITE,N	5.087	0.068	0.582	12.48	14.46	0.3776
4		6.170	0.009	0.037	1.60	0.92	n.a.
5	BROMIDE	7.360	0.007	0.043	1.35	1.07	0.3012
6	SULFATE	7.823	0.108	0.535	19.86	13.31	1.5200
7	NITRATE	8.960	0.064	0.318	11.83	7.90	0.3408
8	CHLORATE	9.787	0.008	0.029	1.40	0.73	0.3262
9		10.797	0.055	0.074	10.18	1.85	n.a.
10	PHOSPHATE	12.123	0.021	0.147	3.85	3.66	0.2799
11		13.440	0.003	0.012	0.56	0.30	n.a.
Total:			**0.544**	**4.021**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD3**	***Run Time (min):***	**13.50**
Vial Number:	**BC3**	***Injection Volume:***	**10.00**
Injection Type:	**Calibration Standard**	***Channel:***	**ECD_1**
Calibration Level:	**03**	***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**1.0000**
Injection Date/Time:	**23/Feb/21 12:45**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

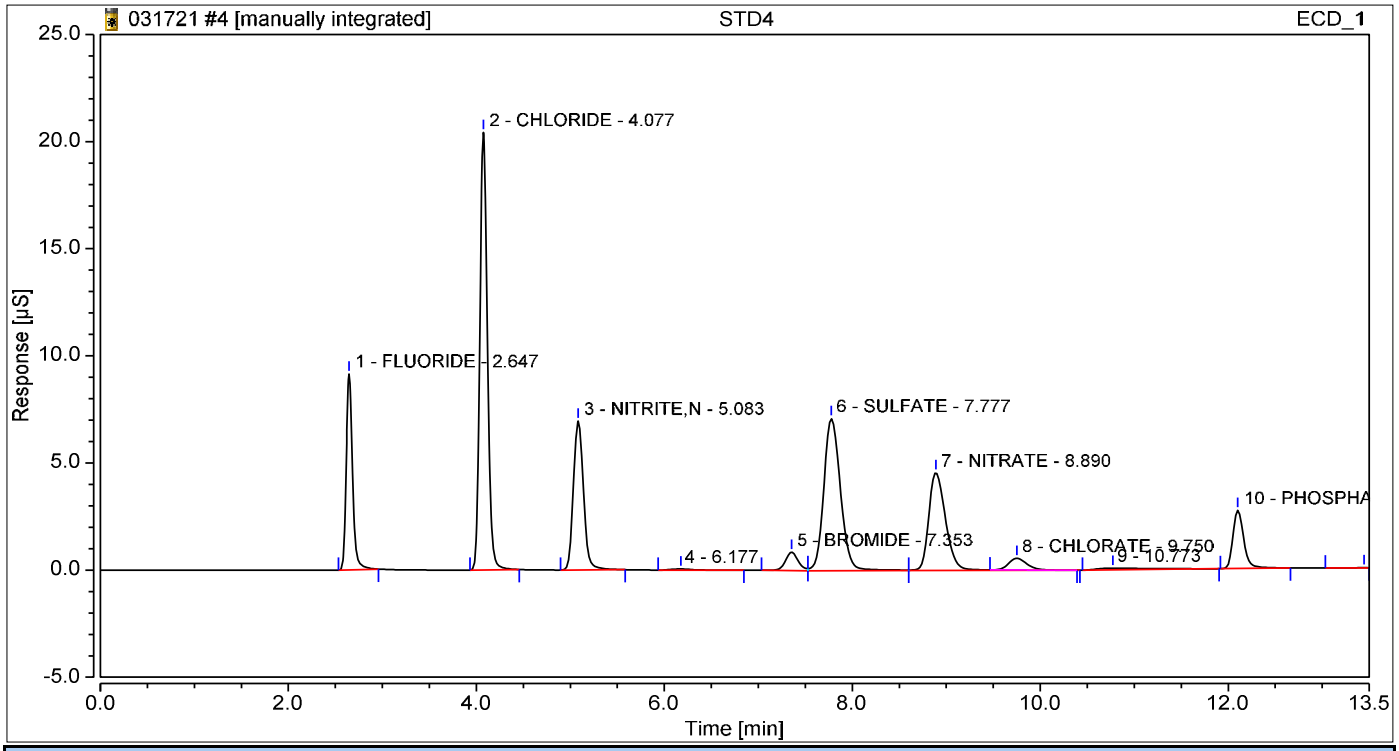
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	2.640	0.337	4.439	10.61	17.47	2.1737
2	CHLORIDE	4.077	0.922	9.924	29.00	39.06	9.7303
3	NITRITE,N	5.087	0.421	3.516	13.25	13.84	2.1630
4		6.173	0.011	0.046	0.36	0.18	n.a.
5	BROMIDE	7.360	0.060	0.359	1.90	1.41	1.6952
6	SULFATE	7.800	0.704	3.440	22.13	13.54	9.9021
7	NITRATE	8.920	0.451	2.171	14.17	8.54	1.9615
8	CHLORATE	9.770	0.051	0.227	1.61	0.89	1.5676
9		10.770	0.056	0.079	1.77	0.31	n.a.
10	PHOSPHATE	12.110	0.165	1.201	5.19	4.73	1.8079
11		13.457	0.001	0.008	0.03	0.03	n.a.
Total:			**3.181**	**25.411**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD4**	***Run Time (min):***	**13.50**
Vial Number:	**BC4**	***Injection Volume:***	**10.00**
Injection Type:	**Calibration Standard**	***Channel:***	**ECD_1**
Calibration Level:	**04**	***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**1.0000**
Injection Date/Time:	**23/Feb/21 13:03**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

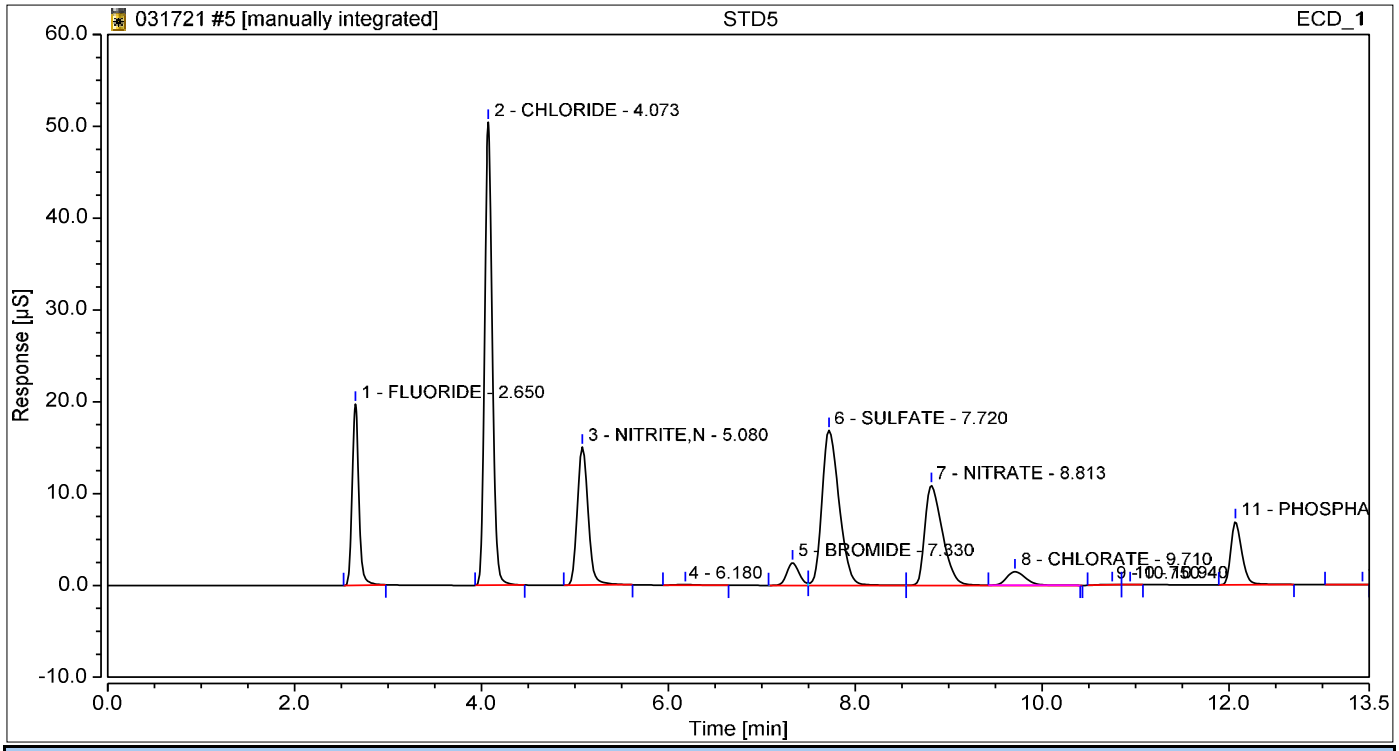
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	2.647	0.714	9.153	10.83	17.45	4.5411
2	CHLORIDE	4.077	1.914	20.425	29.03	38.95	20.1879
3	NITRITE,N	5.083	0.864	6.944	13.11	13.24	4.3982
4		6.177	0.014	0.053	0.21	0.10	n.a.
5	BROMIDE	7.353	0.134	0.859	2.03	1.64	3.6248
6	SULFATE	7.777	1.460	7.097	22.16	13.53	20.5479
7	NITRATE	8.890	0.951	4.564	14.43	8.70	4.0585
8	CHLORATE	9.750	0.122	0.541	1.86	1.03	3.6007
9		10.773	0.054	0.078	0.82	0.15	n.a.
10	PHOSPHATE	12.100	0.363	2.720	5.51	5.19	3.9048
11		13.447	0.002	0.009	0.03	0.02	n.a.
Total:			**6.591**	**52.444**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD5**	***Run Time (min):***	**13.50**
Vial Number:	**BC5**	***Injection Volume:***	**10.00**
Injection Type:	**Calibration Standard**	***Channel:***	**ECD_1**
Calibration Level:	**05**	***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**1.0000**
Injection Date/Time:	**23/Feb/21 13:21**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

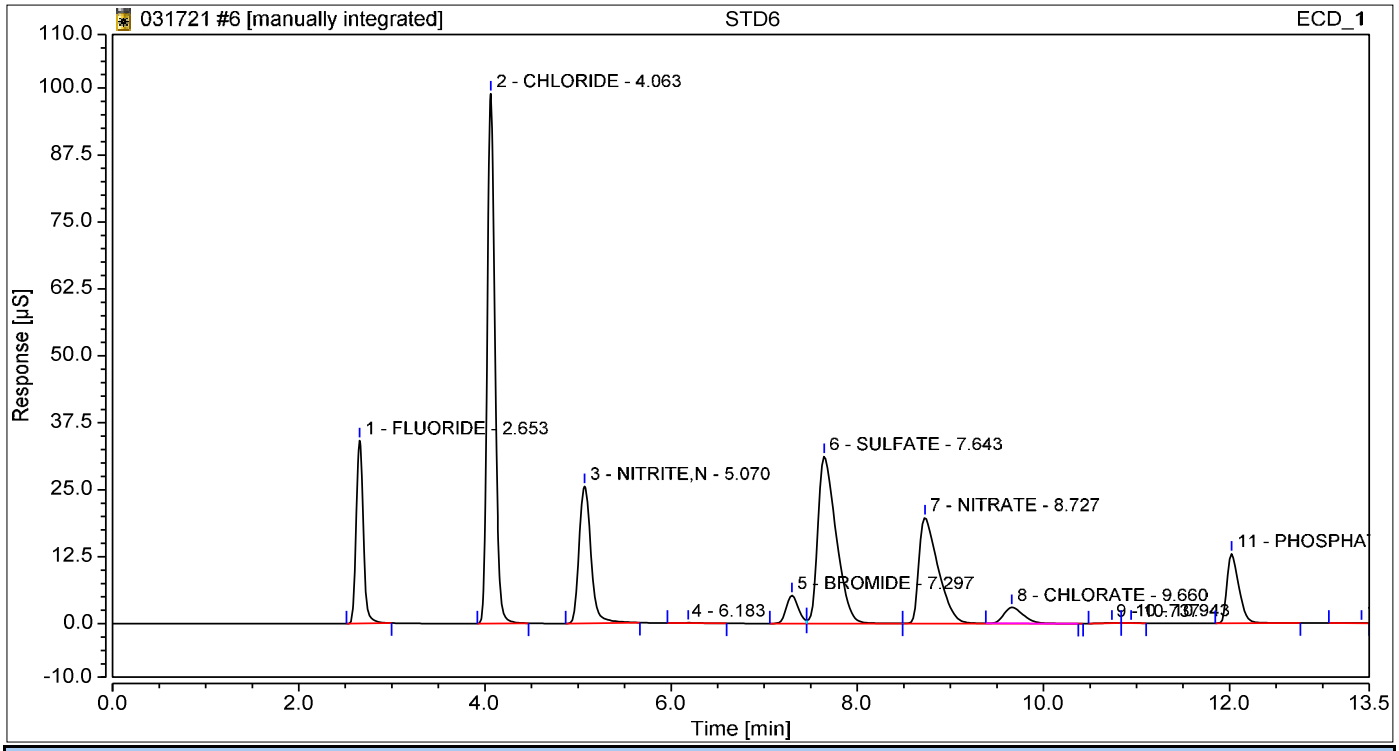
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	2.650	1.627	19.720	10.11	15.91	10.2792
2	CHLORIDE	4.073	4.785	50.426	29.73	40.69	50.4817
3	NITRITE,N	5.080	2.030	15.060	12.61	12.15	10.2848
4		6.180	0.018	0.067	0.11	0.05	n.a.
5	BROMIDE	7.330	0.372	2.456	2.31	1.98	9.9006
6	SULFATE	7.720	3.587	16.897	22.29	13.64	50.4661
7	NITRATE	8.813	2.378	10.879	14.78	8.78	10.0451
8	CHLORATE	9.710	0.346	1.478	2.15	1.19	9.9848
9		10.750	0.008	0.028	0.05	0.02	n.a.
10		10.940	0.001	0.013	0.01	0.01	n.a.
11	PHOSPHATE	12.067	0.940	6.886	5.84	5.56	10.0101
12		13.427	0.003	0.012	0.02	0.01	n.a.
Total:			**16.093**	**123.922**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD6**	***Run Time (min):***	**13.50**
Vial Number:	**BC6**	***Injection Volume:***	**10.00**
Injection Type:	**Calibration Standard**	***Channel:***	**ECD_1**
Calibration Level:	**06**	***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**1.0000**
Injection Date/Time:	**23/Feb/21 13:39**	***Sample Weight:***	**1.0000**

Chromatogram



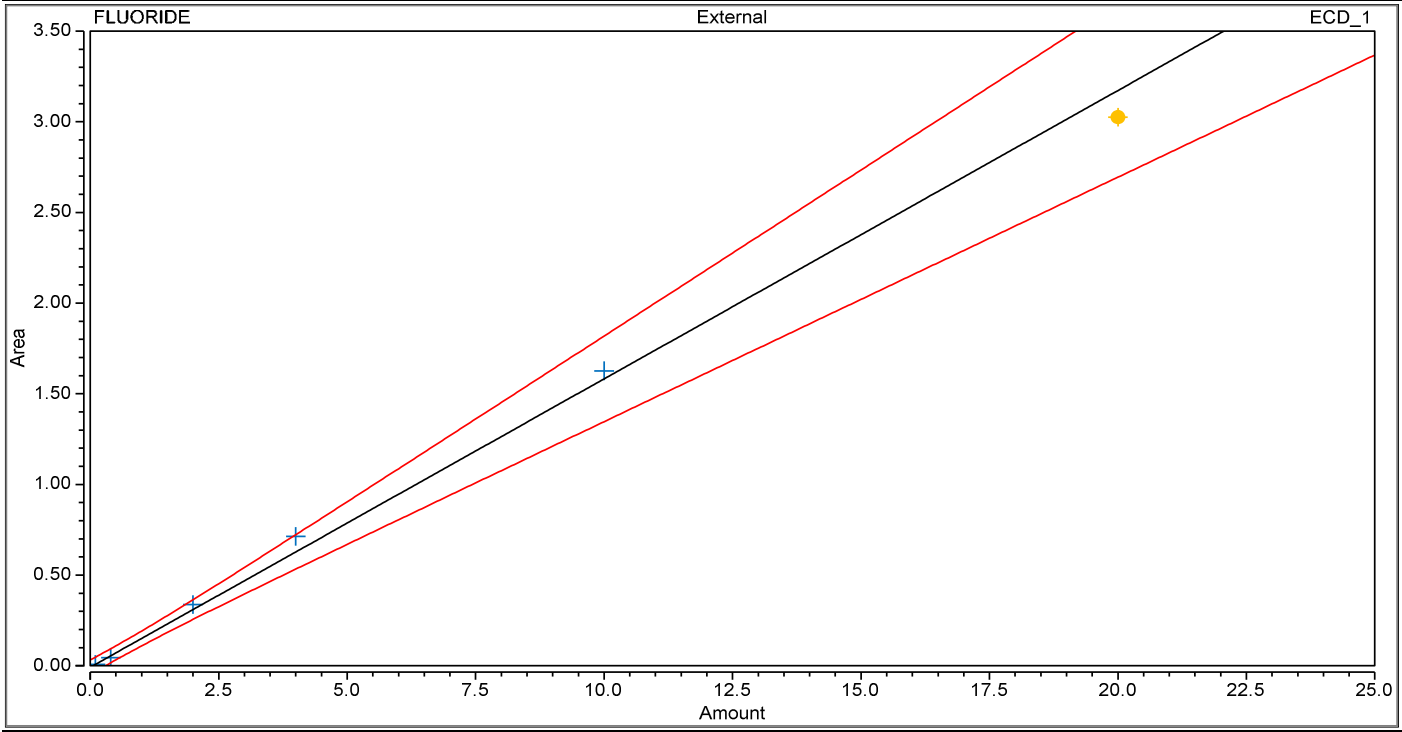
Integration Results

No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	2.653	3.026	34.135	9.57	14.78	19.0760
2	CHLORIDE	4.063	9.495	98.924	30.03	42.83	100.1755
3	NITRITE,N	5.070	3.793	25.593	11.99	11.08	19.1878
4		6.183	0.020	0.071	0.06	0.03	n.a.
5	BROMIDE	7.297	0.787	5.234	2.49	2.27	20.8320
6	SULFATE	7.643	7.095	31.223	22.44	13.52	99.8221
7	NITRATE	8.727	4.747	19.768	15.01	8.56	19.9792
8	CHLORATE	9.660	0.727	2.986	2.30	1.29	20.8748
9		10.737	0.008	0.029	0.02	0.01	n.a.
10		10.943	0.003	0.027	0.01	0.01	n.a.
11	PHOSPHATE	12.020	1.916	12.952	6.06	5.61	20.3572
12		13.417	0.003	0.013	0.01	0.01	n.a.
Total:			**31.619**	**230.955**	**100.00**	**100.00**	

Calibration

Calibration Details	FLUORIDE		
Calibration Type	Lin, WithOffset, 1/A	***Offset (C0)***	-0.0083
Evaluation Type	Area	***Slope (C1)***	0.1590
Number of Calibration Points	6	***Curve (C2)***	0.0000
Number of disabled Calibration Points	0	***R-Square***	0.9956

Calibration Plot **FLUORIDE**



Calibration Results **FLUORIDE**

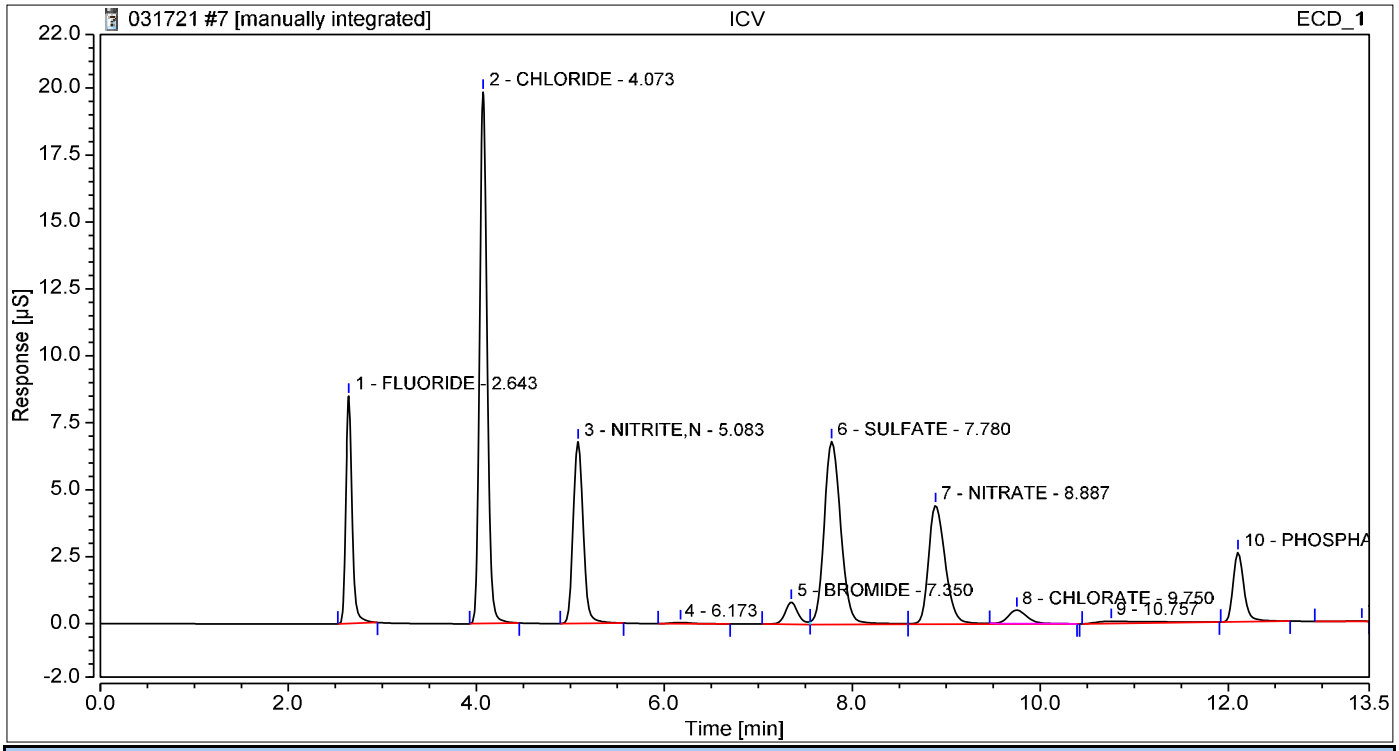
No.	Injection Name	Calibration Level	X Value ECD_1 FLUORIDE	Y Value ECD_1 FLUORIDE	Y Value ECD_1 FLUORIDE	Area µS*min ECD_1 FLUORIDE	Height µS ECD_1 FLUORIDE
1	STD1	01	0.1000	0.0070	0.0070	0.007	0.090
2	STD2	02	0.4000	0.0448	0.0448	0.045	0.553
3	STD3	03	2.0000	0.3374	0.3374	0.337	4.439
4	STD4	04	4.0000	0.7139	0.7139	0.714	9.153
5	STD5	05	10.0000	1.6265	1.6265	1.627	19.720
6	STD6	06	20.0000	3.0256	3.0256	3.026	34.135

Chromatogram and Results

Injection Details

Injection Name:	**ICV**	***Run Time (min):***	**13.50**
Vial Number:	**BC7**	***Injection Volume:***	**10.00**
Injection Type:	**Unknown**	***Channel:***	**ECD_1**
Calibration Level:		***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**1.0000**
Injection Date/Time:	**23/Feb/21 13:57**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

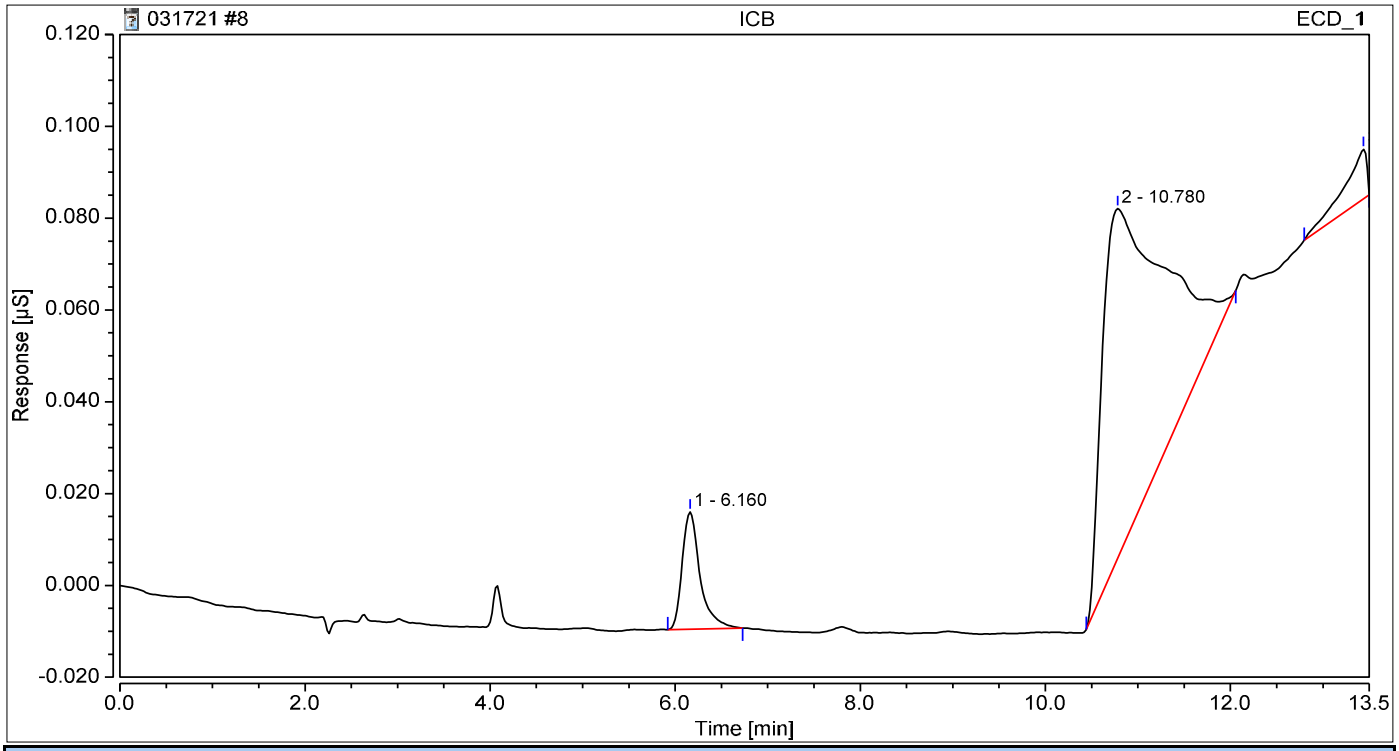
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	2.643	0.659	8.496	10.37	16.84	4.1967
2	CHLORIDE	4.073	1.854	19.849	29.18	39.33	19.5600
3	NITRITE,N	5.083	0.836	6.785	13.16	13.45	4.2583
4		6.173	0.011	0.046	0.17	0.09	n.a.
5	BROMIDE	7.350	0.132	0.826	2.08	1.64	3.5887
6	SULFATE	7.780	1.412	6.831	22.22	13.54	19.8639
7	NITRATE	8.887	0.930	4.440	14.63	8.80	3.9694
8	CHLORATE	9.750	0.115	0.506	1.81	1.00	3.3951
9		10.757	0.055	0.081	0.87	0.16	n.a.
10	PHOSPHATE	12.103	0.346	2.591	5.45	5.13	3.7245
11		13.420	0.003	0.012	0.05	0.02	n.a.
Total:			**6.354**	**50.463**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**ICB**	***Run Time (min):***	**13.50**
Vial Number:	**BC8**	***Injection Volume:***	**10.00**
Injection Type:	**Unknown**	***Channel:***	**ECD_1**
Calibration Level:		***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**1.0000**
Injection Date/Time:	**23/Feb/21 14:34**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

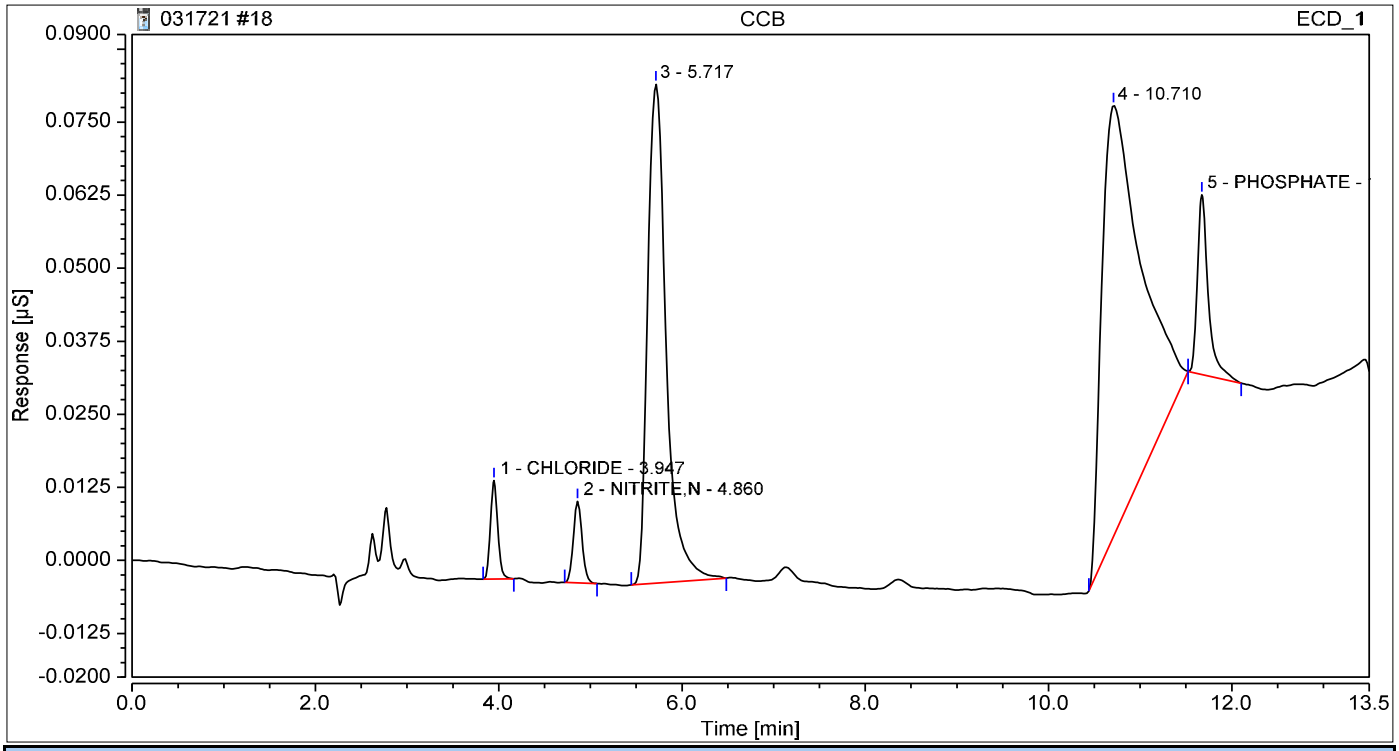
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
n.a.	FLUORIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	NITRITE,N	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		6.160	0.006	0.026	8.67	22.68	n.a.
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	SULFATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	NITRATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		10.780	0.057	0.076	86.46	67.74	n.a.
n.a.	PHOSPHATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		13.437	0.003	0.011	4.87	9.57	n.a.
Total:			**0.066**	**0.113**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB**	***Run Time (min):***	**13.50**
Vial Number:	**G7**	***Injection Volume:***	**10.00**
Injection Type:	**Unknown**	***Channel:***	**ECD_1**
Calibration Level:		***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**1.0000**
Injection Date/Time:	**17/Mar/21 14:54**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

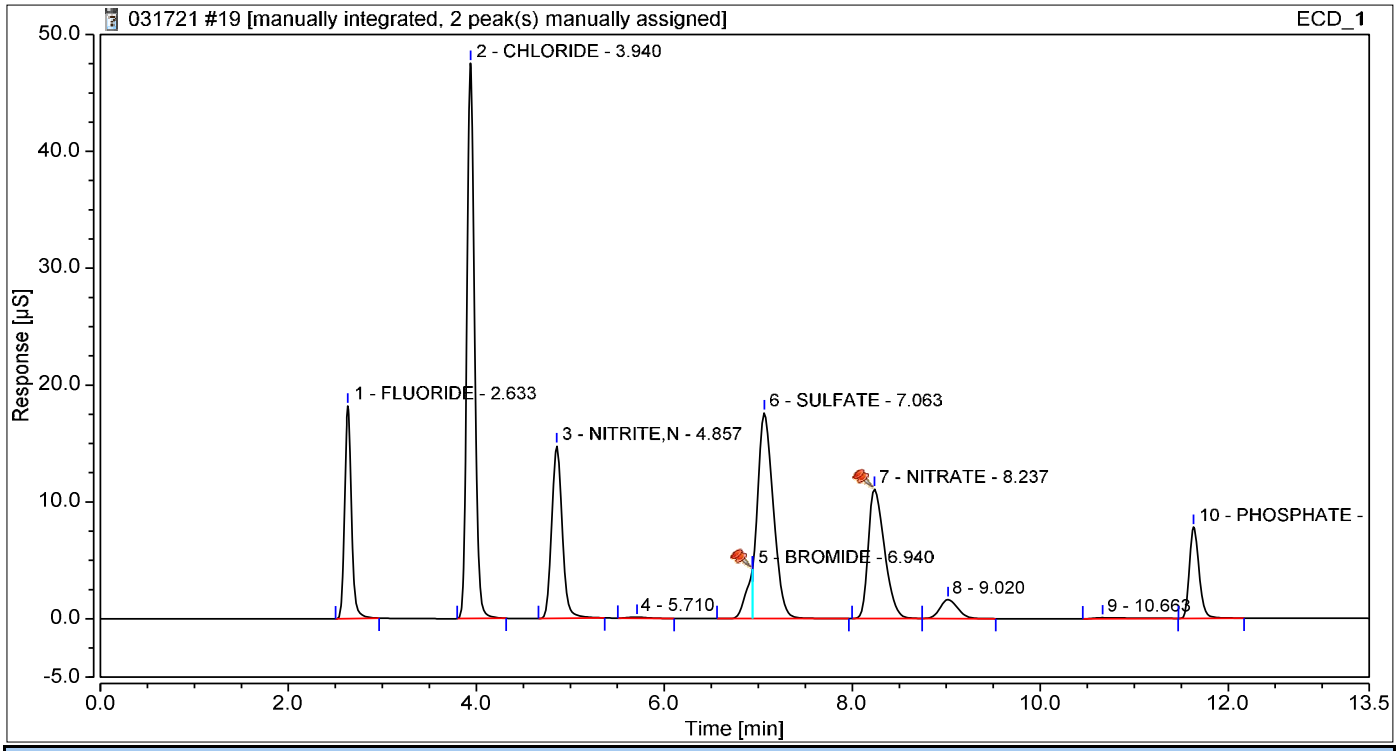
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
n.a.	FLUORIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1	CHLORIDE	3.947	0.002	0.017	2.47	7.65	0.0165
2	NITRITE,N	4.860	0.002	0.014	2.43	6.33	0.0427
3		5.717	0.020	0.085	31.71	38.71	n.a.
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	SULFATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	NITRATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		10.710	0.036	0.074	56.69	33.39	n.a.
5	PHOSPHATE	11.673	0.004	0.031	6.70	13.93	0.1030
Total:			**0.063**	**0.221**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV1**	***Run Time (min):***	**13.50**
Vial Number:	**G3**	***Injection Volume:***	**10.00**
Injection Type:	**Unknown**	***Channel:***	**ECD_1**
Calibration Level:		***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**1.0000**
Injection Date/Time:	**17/Mar/21 15:12**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

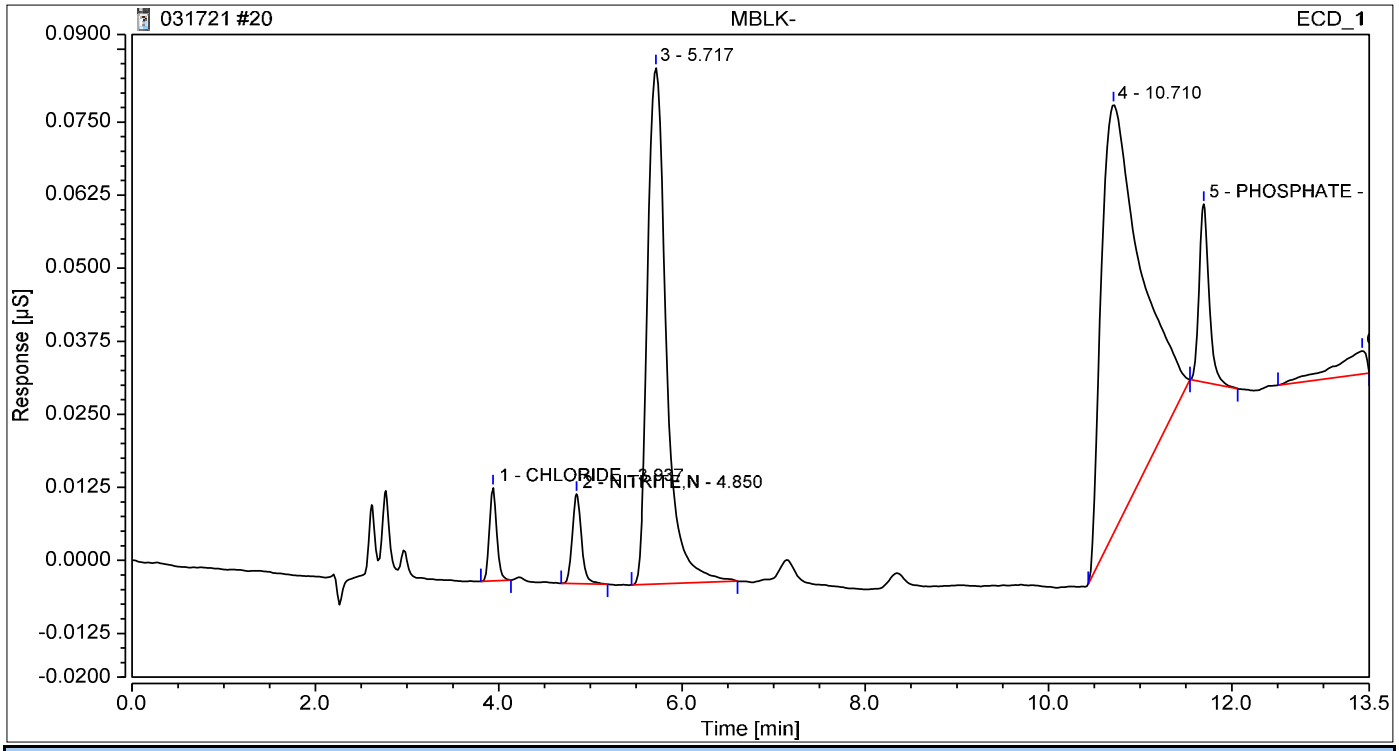
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	2.633	1.539	18.201	10.10	14.80	9.7280
2	CHLORIDE	3.940	4.454	47.500	29.24	38.62	46.9956
3	NITRITE,N	4.857	1.933	14.769	12.69	12.01	9.7953
4		5.710	0.022	0.094	0.15	0.08	n.a.
5	BROMIDE	6.940	0.330	4.247	2.16	3.45	8.7905
6	SULFATE	7.063	3.418	17.609	22.44	14.32	48.0844
7	NITRATE	8.237	2.219	11.071	14.57	9.00	9.3787
8		9.020	0.352	1.619	2.31	1.32	n.a.
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9		10.663	0.036	0.084	0.24	0.07	n.a.
10	PHOSPHATE	11.630	0.930	7.802	6.10	6.34	9.9055
Total:			**15.233**	**122.996**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**MBLK-**	***Run Time (min):***	**13.50**
Vial Number:	**G5**	***Injection Volume:***	**10.00**
Injection Type:	**Unknown**	***Channel:***	**ECD_1**
Calibration Level:		***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**1.0000**
Injection Date/Time:	**17/Mar/21 15:30**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

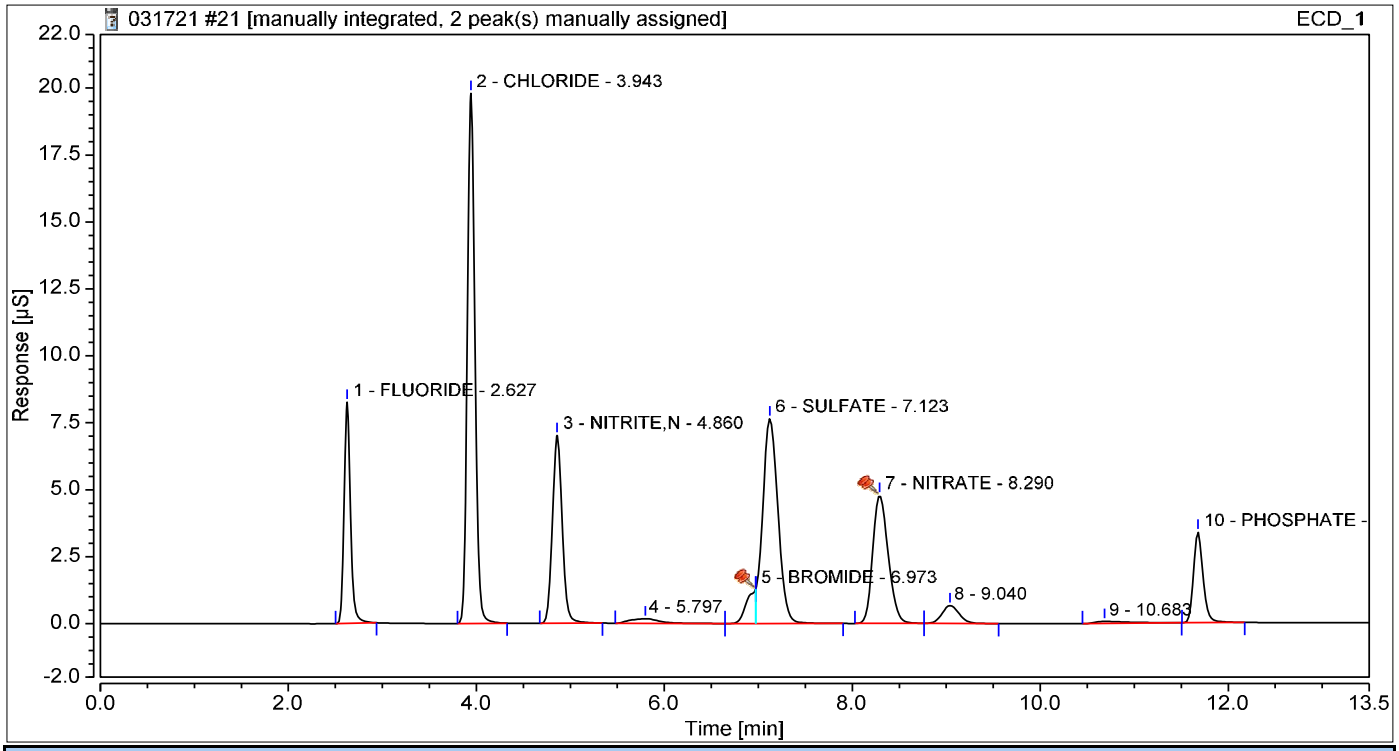
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
n.a.	FLUORIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1	CHLORIDE	3.937	0.001	0.016	2.23	7.02	0.0156
2	NITRITE,N	4.850	0.002	0.015	2.67	6.74	0.0438
3		5.717	0.021	0.088	31.93	38.87	n.a.
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	SULFATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	NITRATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		10.710	0.036	0.073	54.80	32.24	n.a.
5	PHOSPHATE	11.693	0.004	0.030	5.78	13.39	0.0986
6		13.423	0.002	0.004	2.60	1.74	n.a.
Total:			**0.066**	**0.228**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**LCS-**	***Run Time (min):***	**13.50**
Vial Number:	**G2**	***Injection Volume:***	**10.00**
Injection Type:	**Unknown**	***Channel:***	**ECD_1**
Calibration Level:		***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**1.0000**
Injection Date/Time:	**17/Mar/21 15:49**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

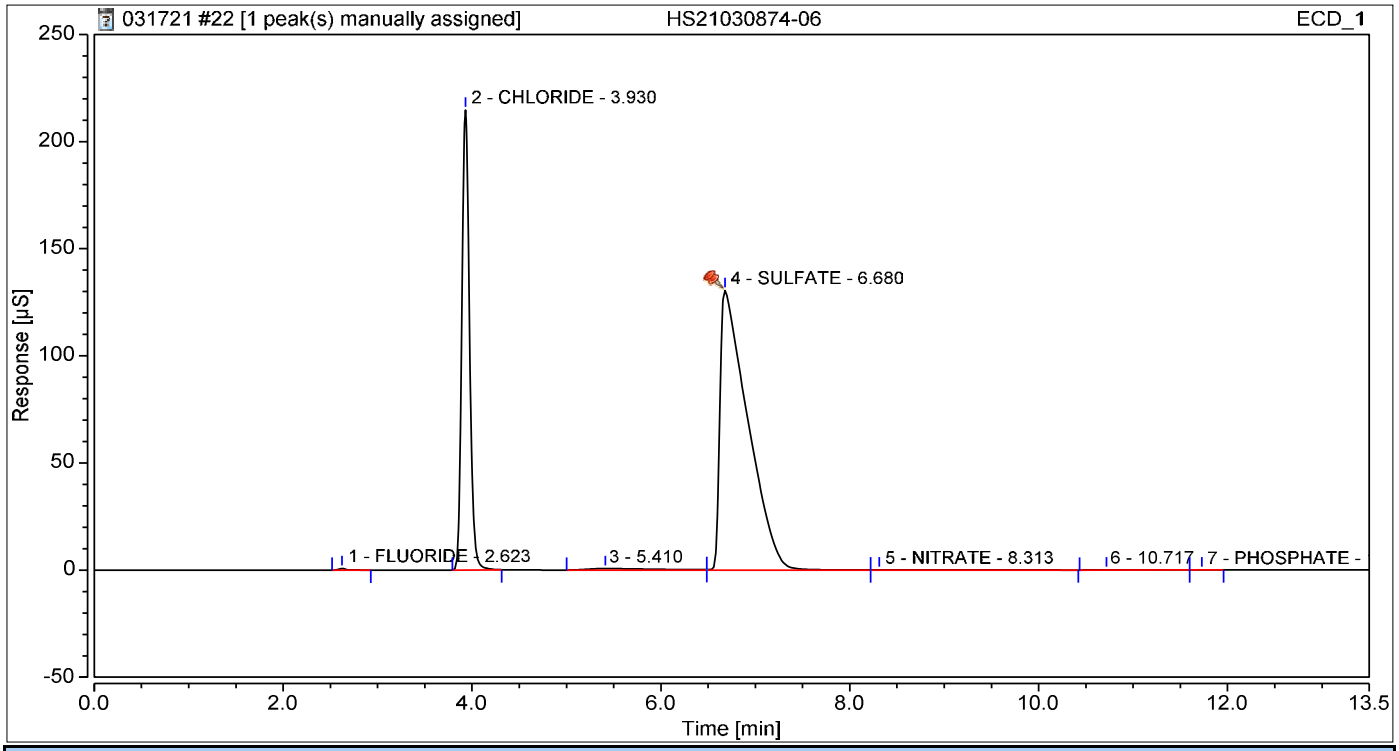
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	2.627	0.665	8.258	10.23	15.56	4.2358
2	CHLORIDE	3.943	1.849	19.787	28.42	37.29	19.5025
3	NITRITE,N	4.860	0.852	7.011	13.10	13.21	4.3379
4		5.797	0.062	0.173	0.95	0.33	n.a.
5	BROMIDE	6.973	0.142	1.281	2.18	2.41	3.8356
6	SULFATE	7.123	1.443	7.648	22.19	14.41	20.3069
7	NITRATE	8.290	0.913	4.780	14.03	9.01	3.8982
8		9.040	0.139	0.663	2.14	1.25	n.a.
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9		10.683	0.036	0.078	0.55	0.15	n.a.
10	PHOSPHATE	11.677	0.403	3.381	6.20	6.37	4.3295
Total:			**6.503**	**53.060**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**HS21030874-06**	***Run Time (min):***	**13.50**
Vial Number:	**GA1**	***Injection Volume:***	**10.00**
Injection Type:	**Unknown**	***Channel:***	**ECD_1**
Calibration Level:		***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**1.0000**
Injection Date/Time:	**17/Mar/21 16:07**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

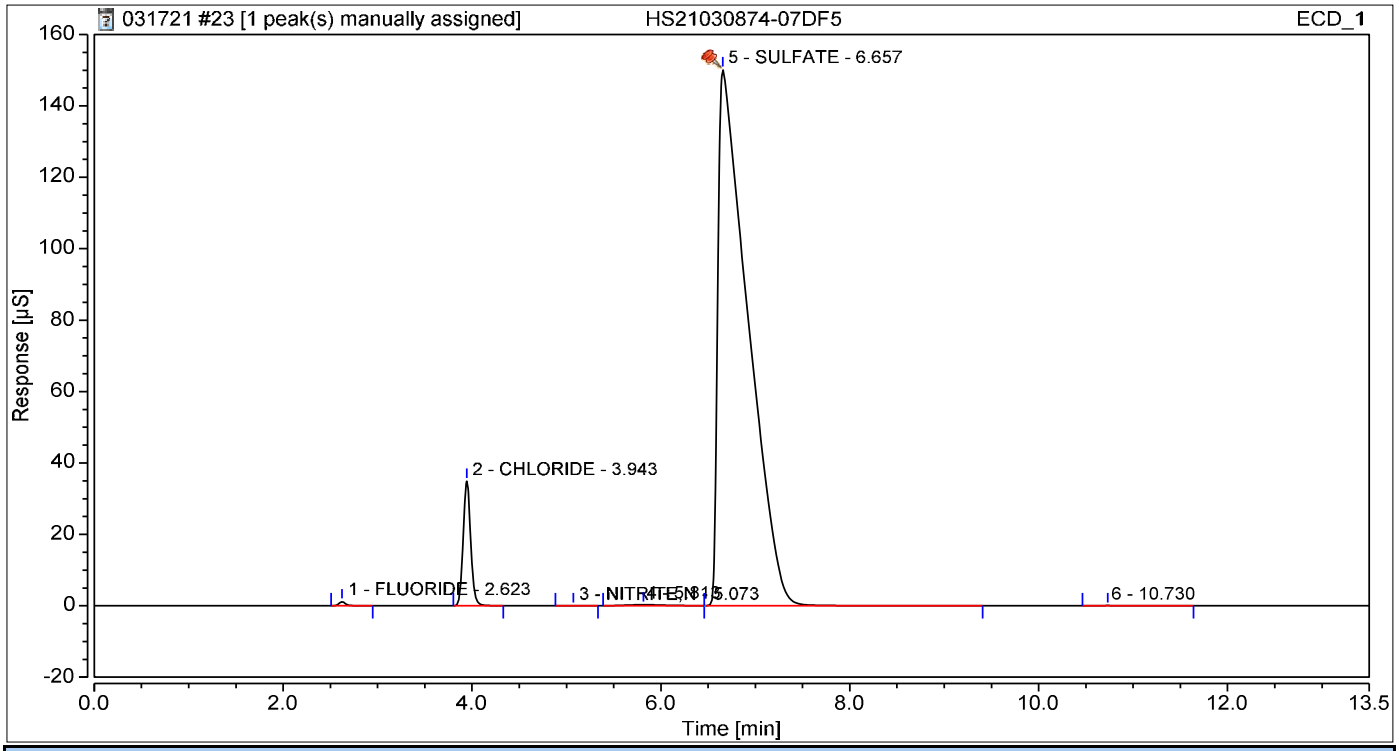
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	2.623	0.064	0.761	0.10	0.22	0.4536
2	CHLORIDE	3.930	20.355	214.671	31.05	61.90	214.7479
n.a.	NITRITE,N	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		5.410	0.583	0.680	0.89	0.20	n.a.
4	SULFATE	6.680	44.442	130.520	67.79	37.63	625.2891
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	NITRATE	8.313	0.053	0.069	0.08	0.02	0.2916
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		10.717	0.062	0.100	0.09	0.03	n.a.
7	PHOSPHATE	11.727	0.002	0.016	0.00	0.00	0.0822
Total:			**65.560**	**346.818**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**HS21030874-07DF5**	***Run Time (min):***	**13.50**
Vial Number:	**GA2**	***Injection Volume:***	**10.00**
Injection Type:	**Unknown**	***Channel:***	**ECD_1**
Calibration Level:		***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**5.0000**
Injection Date/Time:	**17/Mar/21 16:26**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

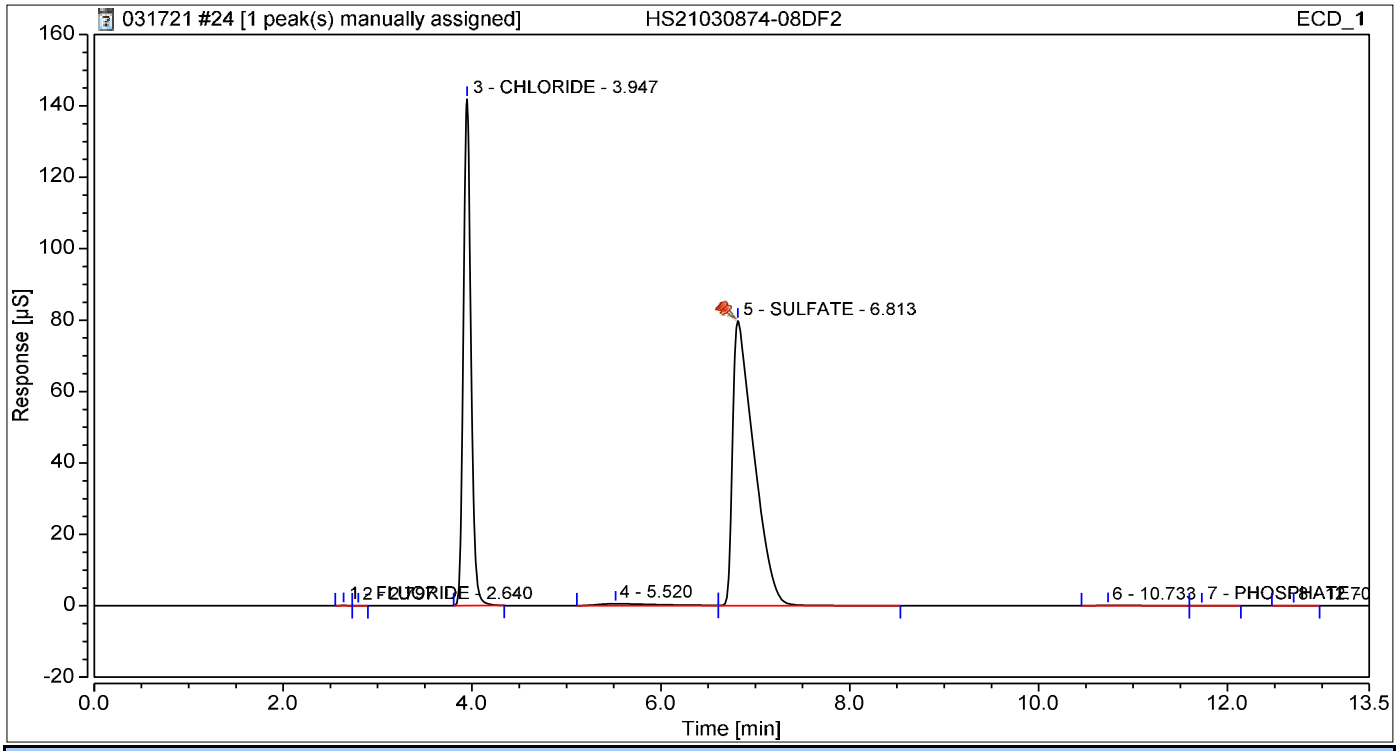
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	2.623	0.094	1.152	0.16	0.62	3.2108
2	CHLORIDE	3.943	3.254	34.890	5.56	18.70	171.6640
3	NITRITE,N	5.073	0.001	0.005	0.00	0.00	0.2033
4		5.813	0.163	0.319	0.28	0.17	n.a.
5	SULFATE	6.657	54.973	150.151	93.93	80.47	3867.2901
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	NITRATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		10.730	0.043	0.075	0.07	0.04	n.a.
n.a.	PHOSPHATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**58.528**	**186.592**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**HS21030874-08DF2**	***Run Time (min):***	**13.50**
Vial Number:	**GA3**	***Injection Volume:***	**10.00**
Injection Type:	**Unknown**	***Channel:***	**ECD_1**
Calibration Level:		***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**2.0000**
Injection Date/Time:	**17/Mar/21 16:44**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

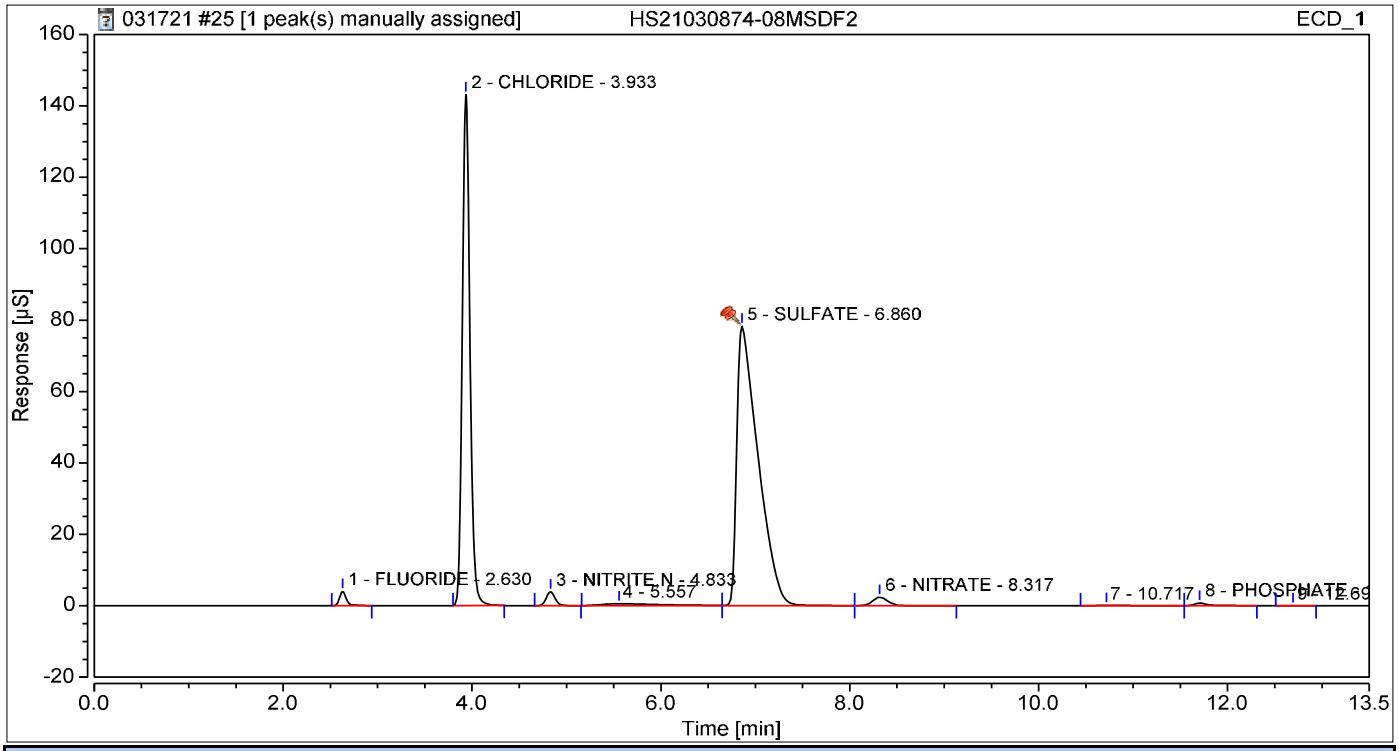
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	2.640	0.008	0.101	0.02	0.05	0.1993
2		2.797	0.003	0.040	0.01	0.02	n.a.
3	CHLORIDE	3.947	13.360	141.827	38.47	63.78	281.8948
n.a.	NITRITE,N	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.520	0.454	0.571	1.31	0.26	n.a.
5	SULFATE	6.813	20.856	79.735	60.05	35.86	586.8704
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	NITRATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		10.733	0.046	0.079	0.13	0.04	n.a.
7	PHOSPHATE	11.727	0.002	0.016	0.01	0.01	0.1660
8		12.700	0.002	0.011	0.00	0.00	n.a.
Total:			**34.731**	**222.379**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**HS21030874-08MSDF2**	***Run Time (min):***	**13.50**
Vial Number:	**GA4**	***Injection Volume:***	**10.00**
Injection Type:	**Unknown**	***Channel:***	**ECD_1**
Calibration Level:		***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**2.0000**
Injection Date/Time:	**17/Mar/21 17:03**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

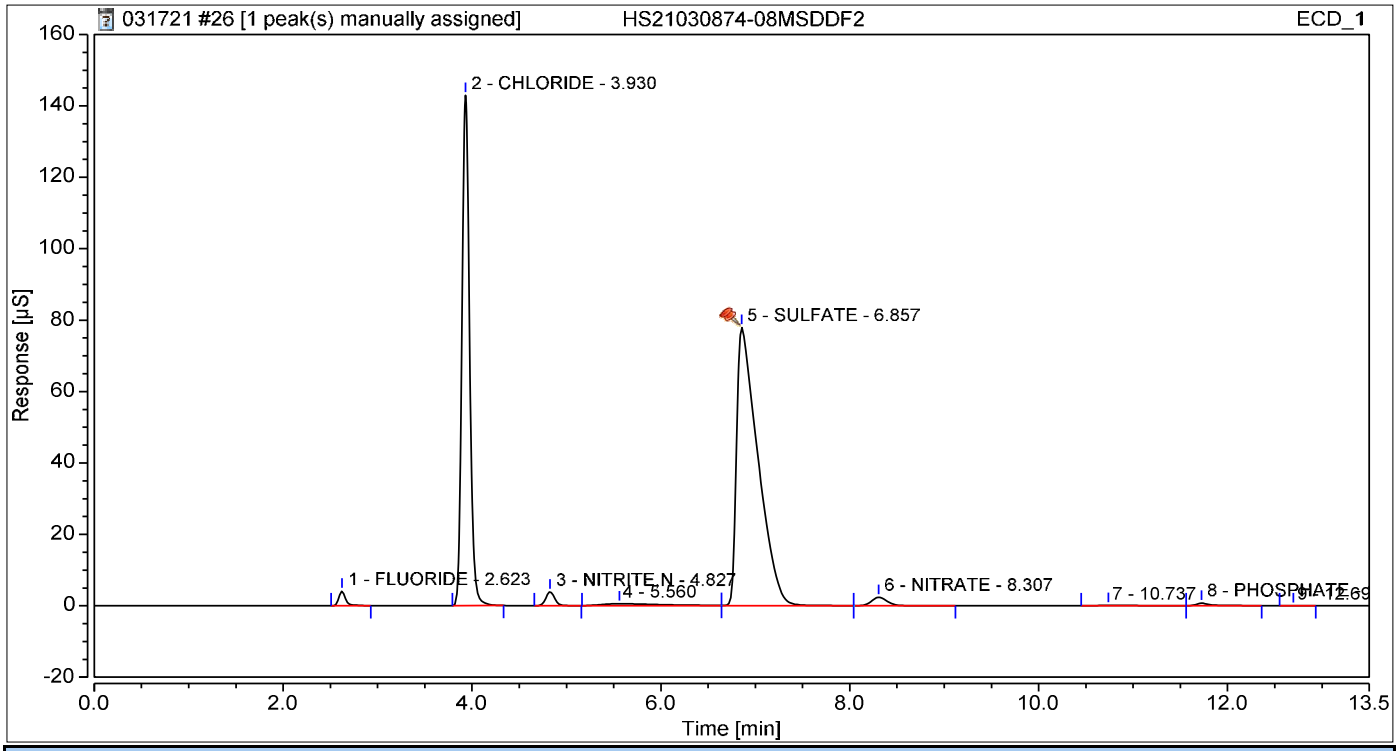
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	2.630	0.338	4.089	0.95	1.75	4.3575
2	CHLORIDE	3.933	13.470	143.106	37.69	61.38	284.2261
3	NITRITE,N	4.833	0.428	3.880	1.20	1.66	4.3882
4		5.557	0.426	0.547	1.19	0.23	n.a.
5	SULFATE	6.860	20.465	78.313	57.26	33.59	575.8765
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	NITRATE	8.317	0.456	2.378	1.28	1.02	3.9657
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
7		10.717	0.043	0.077	0.12	0.03	n.a.
8	PHOSPHATE	11.703	0.113	0.731	0.32	0.31	2.5079
9		12.693	0.002	0.013	0.01	0.01	n.a.
Total:			**35.741**	**233.134**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**HS21030874-08MSDDF2**	***Run Time (min):***	**13.50**
Vial Number:	**GA5**	***Injection Volume:***	**10.00**
Injection Type:	**Unknown**	***Channel:***	**ECD_1**
Calibration Level:		***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**2.0000**
Injection Date/Time:	**17/Mar/21 17:21**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

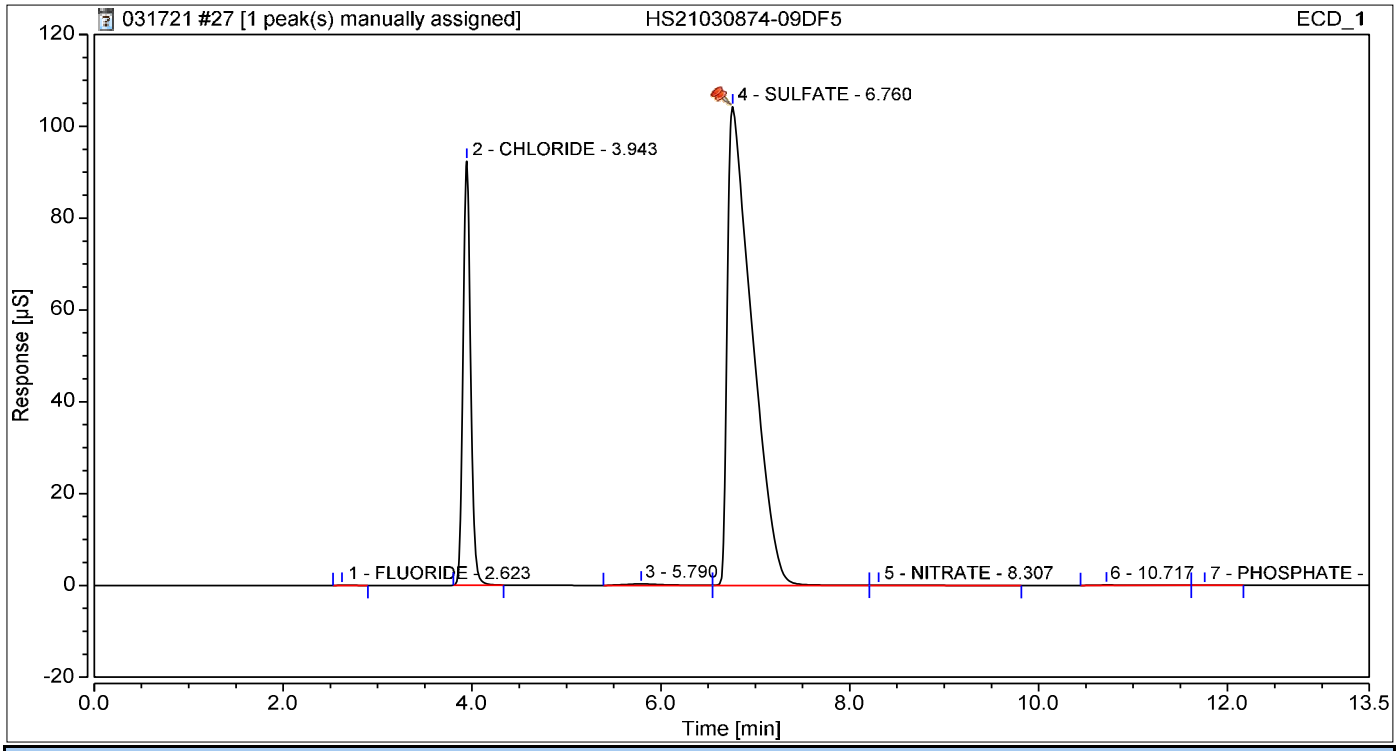
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	2.623	0.339	4.097	0.95	1.76	4.3629
2	CHLORIDE	3.930	13.467	142.890	37.72	61.46	284.1583
3	NITRITE,N	4.827	0.425	3.871	1.19	1.67	4.3657
4		5.560	0.425	0.549	1.19	0.24	n.a.
5	SULFATE	6.857	20.437	77.937	57.24	33.52	575.0947
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	NITRATE	8.307	0.456	2.373	1.28	1.02	3.9647
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
7		10.737	0.045	0.078	0.12	0.03	n.a.
8	PHOSPHATE	11.723	0.111	0.692	0.31	0.30	2.4728
9		12.697	0.002	0.013	0.01	0.01	n.a.
Total:			**35.707**	**232.500**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**HS21030874-09DF5**	***Run Time (min):***	**13.50**
Vial Number:	**GA6**	***Injection Volume:***	**10.00**
Injection Type:	**Unknown**	***Channel:***	**ECD_1**
Calibration Level:		***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**5.0000**
Injection Date/Time:	**17/Mar/21 17:39**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

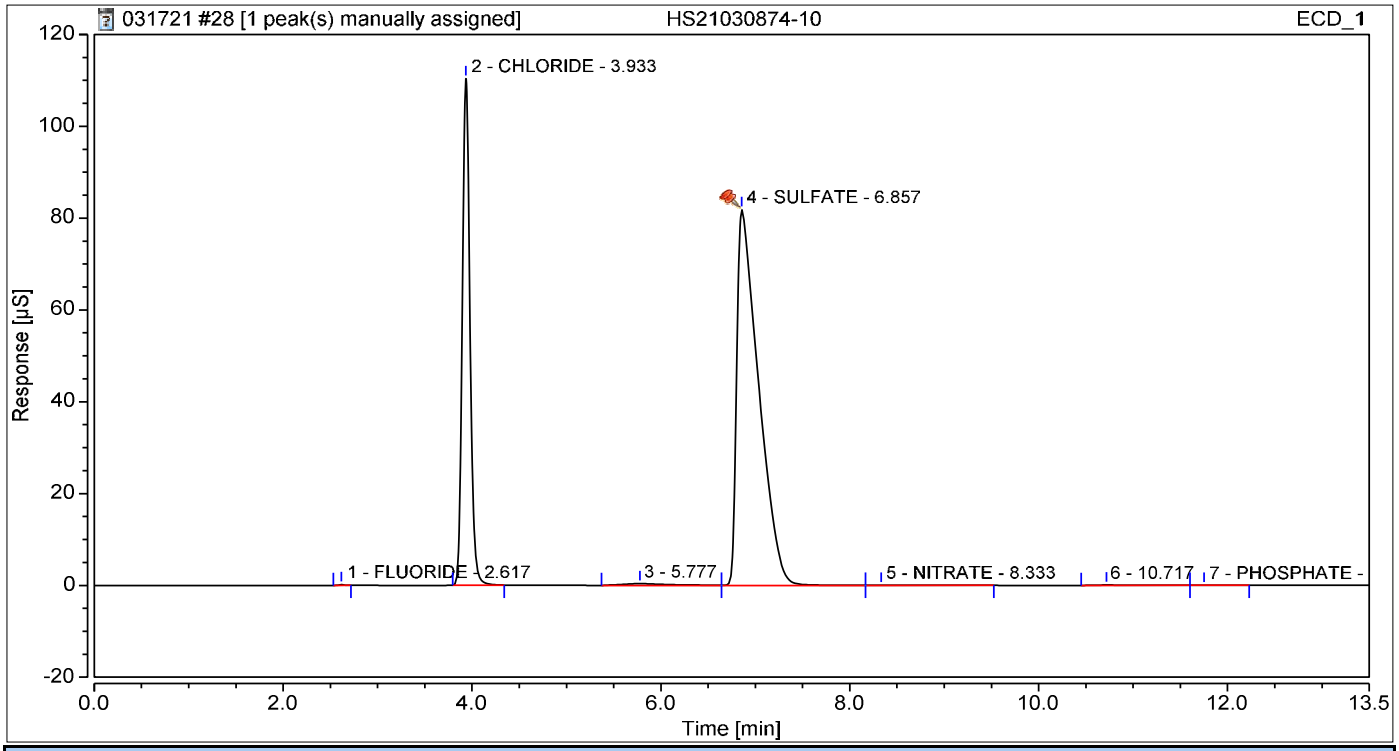
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	2.623	0.006	0.062	0.01	0.03	0.4359
2	CHLORIDE	3.943	8.709	92.361	21.62	46.86	459.3970
n.a.	NITRITE,N	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		5.790	0.158	0.319	0.39	0.16	n.a.
4	SULFATE	6.760	31.356	104.237	77.84	52.89	2205.8477
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	NITRATE	8.307	0.012	0.024	0.03	0.01	0.6029
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		10.717	0.039	0.070	0.10	0.04	n.a.
7	PHOSPHATE	11.757	0.001	0.007	0.00	0.00	0.3680
Total:			**40.280**	**197.081**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**HS21030874-10**	***Run Time (min):***	**13.50**
Vial Number:	**GA7**	***Injection Volume:***	**10.00**
Injection Type:	**Unknown**	***Channel:***	**ECD_1**
Calibration Level:		***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**1.0000**
Injection Date/Time:	**17/Mar/21 17:58**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

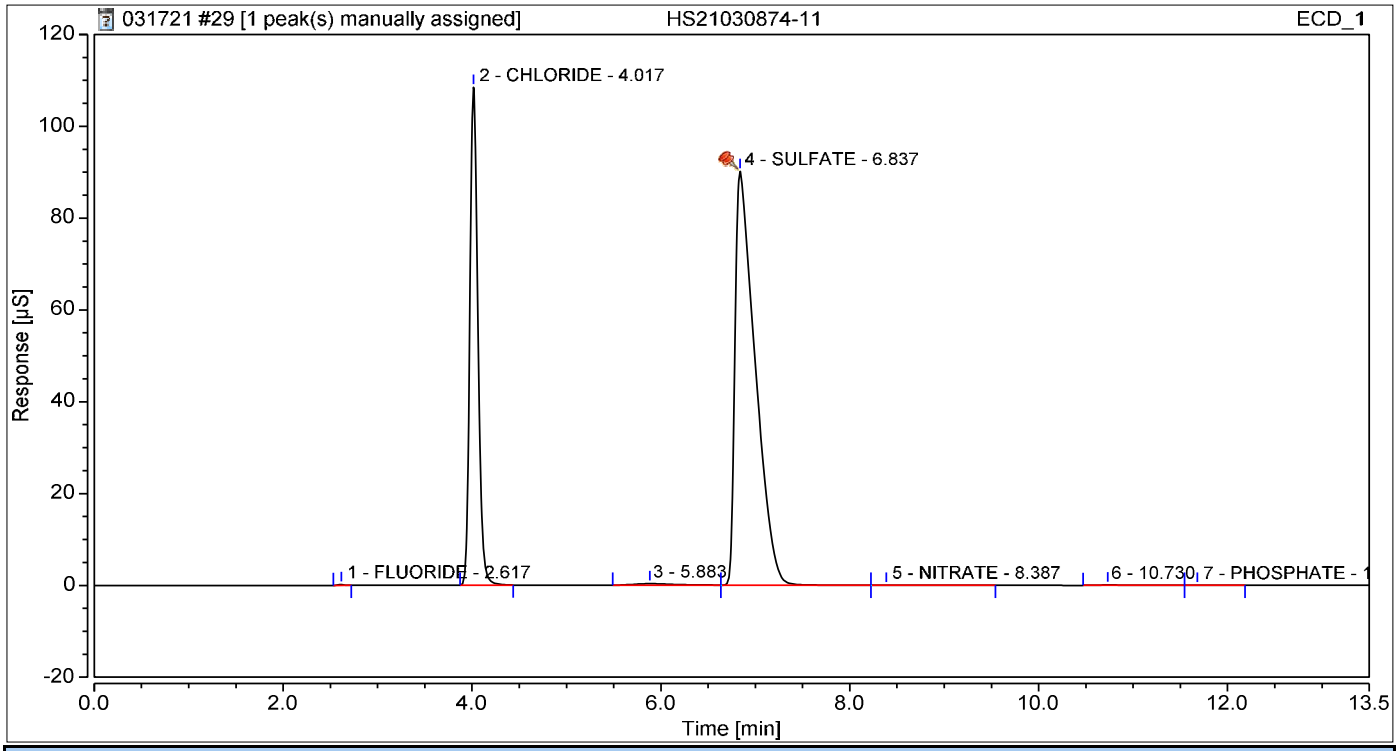
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	2.617	0.011	0.163	0.03	0.08	0.1240
2	CHLORIDE	3.933	10.474	110.358	32.04	57.23	110.5013
n.a.	NITRITE,N	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		5.777	0.215	0.370	0.66	0.19	n.a.
4	SULFATE	6.857	21.934	81.845	67.11	42.44	308.6045
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	NITRATE	8.333	0.013	0.034	0.04	0.02	0.1255
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		10.717	0.037	0.069	0.11	0.04	n.a.
7	PHOSPHATE	11.750	0.002	0.009	0.01	0.00	0.0766
Total:			**32.686**	**192.848**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**HS21030874-11**	***Run Time (min):***	**13.50**
Vial Number:	**GA8**	***Injection Volume:***	**10.00**
Injection Type:	**Unknown**	***Channel:***	**ECD_1**
Calibration Level:		***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**1.0000**
Injection Date/Time:	**17/Mar/21 18:16**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

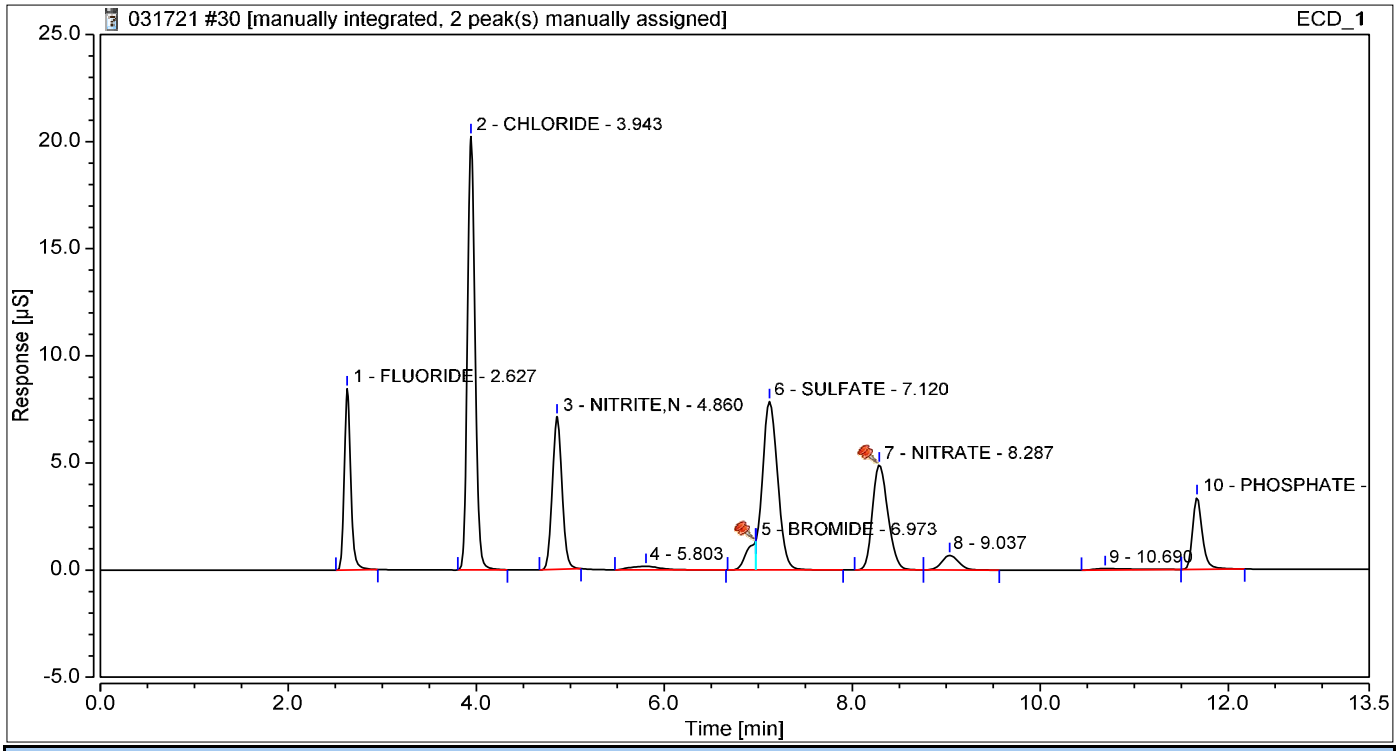
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	2.617	0.011	0.161	0.03	0.08	0.1244
2	CHLORIDE	4.017	10.728	108.421	32.18	54.42	113.1816
n.a.	NITRITE,N	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		5.883	0.202	0.361	0.61	0.18	n.a.
4	SULFATE	6.837	22.350	90.171	67.04	45.26	314.4568
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	NITRATE	8.387	0.011	0.028	0.03	0.01	0.1153
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		10.730	0.034	0.068	0.10	0.03	n.a.
7	PHOSPHATE	11.680	0.002	0.010	0.01	0.01	0.0788
Total:			**33.338**	**199.221**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV**	***Run Time (min):***	**13.50**
Vial Number:	**G1**	***Injection Volume:***	**10.00**
Injection Type:	**Unknown**	***Channel:***	**ECD_1**
Calibration Level:		***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**1.0000**
Injection Date/Time:	**17/Mar/21 18:35**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

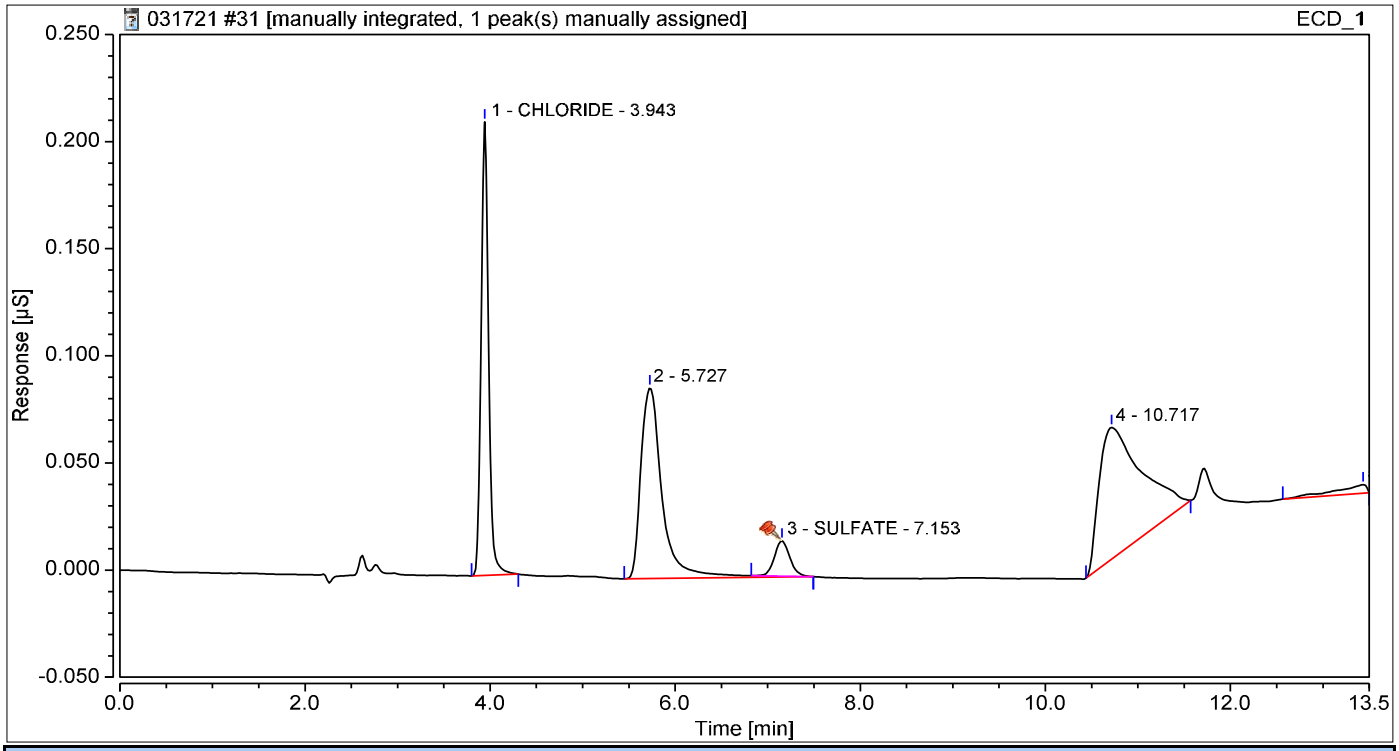
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	2.627	0.683	8.463	10.30	15.61	4.3498
2	CHLORIDE	3.943	1.892	20.227	28.51	37.32	19.9599
3	NITRITE,N	4.860	0.855	7.126	12.89	13.15	4.3539
4		5.803	0.063	0.170	0.95	0.31	n.a.
5	BROMIDE	6.973	0.148	1.348	2.23	2.49	3.9993
6	SULFATE	7.120	1.479	7.868	22.29	14.52	20.8146
7	NITRATE	8.287	0.935	4.904	14.09	9.05	3.9939
8		9.037	0.142	0.677	2.13	1.25	n.a.
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9		10.690	0.031	0.063	0.47	0.12	n.a.
10	PHOSPHATE	11.667	0.408	3.357	6.15	6.19	4.3805
Total:			**6.637**	**54.203**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB**	***Run Time (min):***	**13.50**
Vial Number:	**G4**	***Injection Volume:***	**10.00**
Injection Type:	**Unknown**	***Channel:***	**ECD_1**
Calibration Level:		***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**1.0000**
Injection Date/Time:	**17/Mar/21 18:53**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

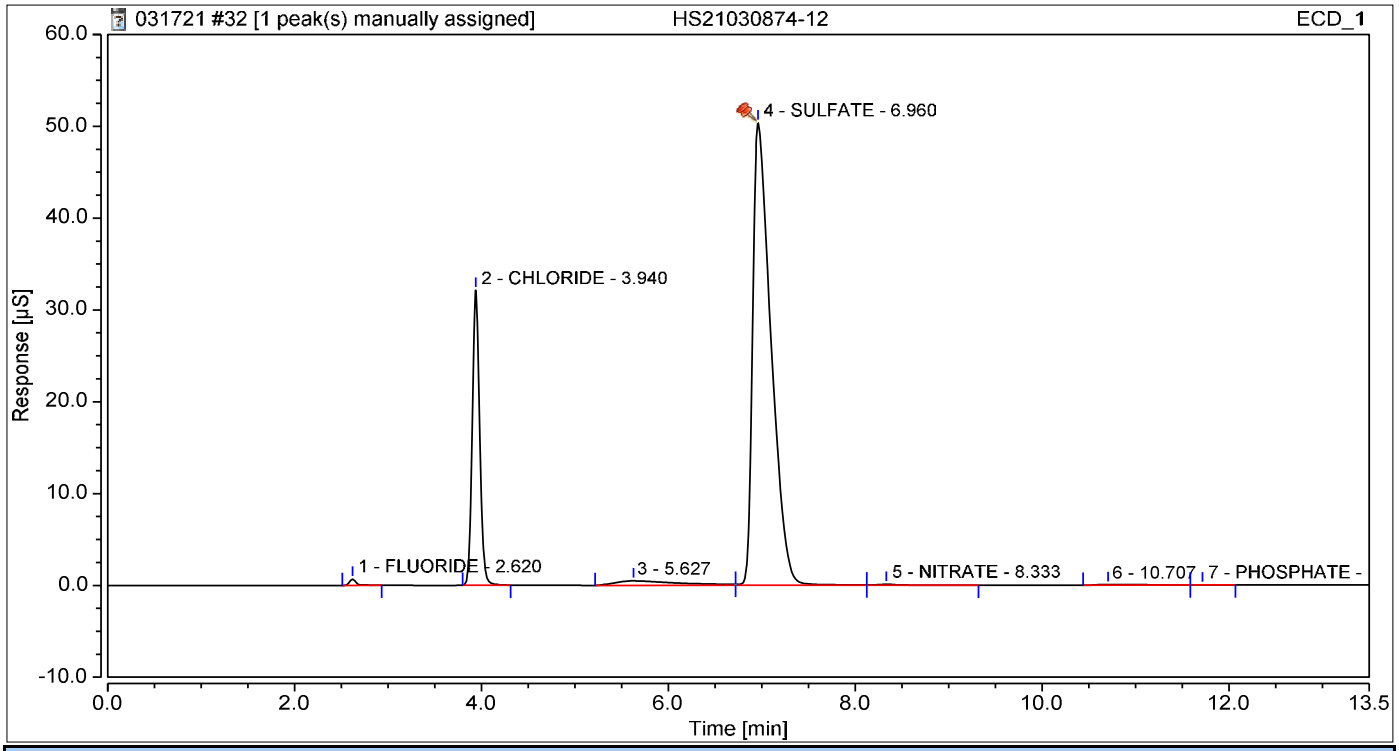
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
n.a.	FLUORIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1	CHLORIDE	3.943	0.020	0.212	24.49	55.32	0.2085
n.a.	NITRITE,N	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		5.727	0.024	0.089	29.61	23.26	n.a.
3	SULFATE	7.153	0.003	0.016	3.97	4.31	0.0450
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	NITRATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		10.717	0.032	0.062	39.88	16.08	n.a.
n.a.	PHOSPHATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		13.433	0.002	0.004	2.05	1.04	n.a.
Total:			**0.081**	**0.383**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**HS21030874-12**	***Run Time (min):***	**13.50**
Vial Number:	**GB1**	***Injection Volume:***	**10.00**
Injection Type:	**Unknown**	***Channel:***	**ECD_1**
Calibration Level:		***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**1.0000**
Injection Date/Time:	**17/Mar/21 19:12**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

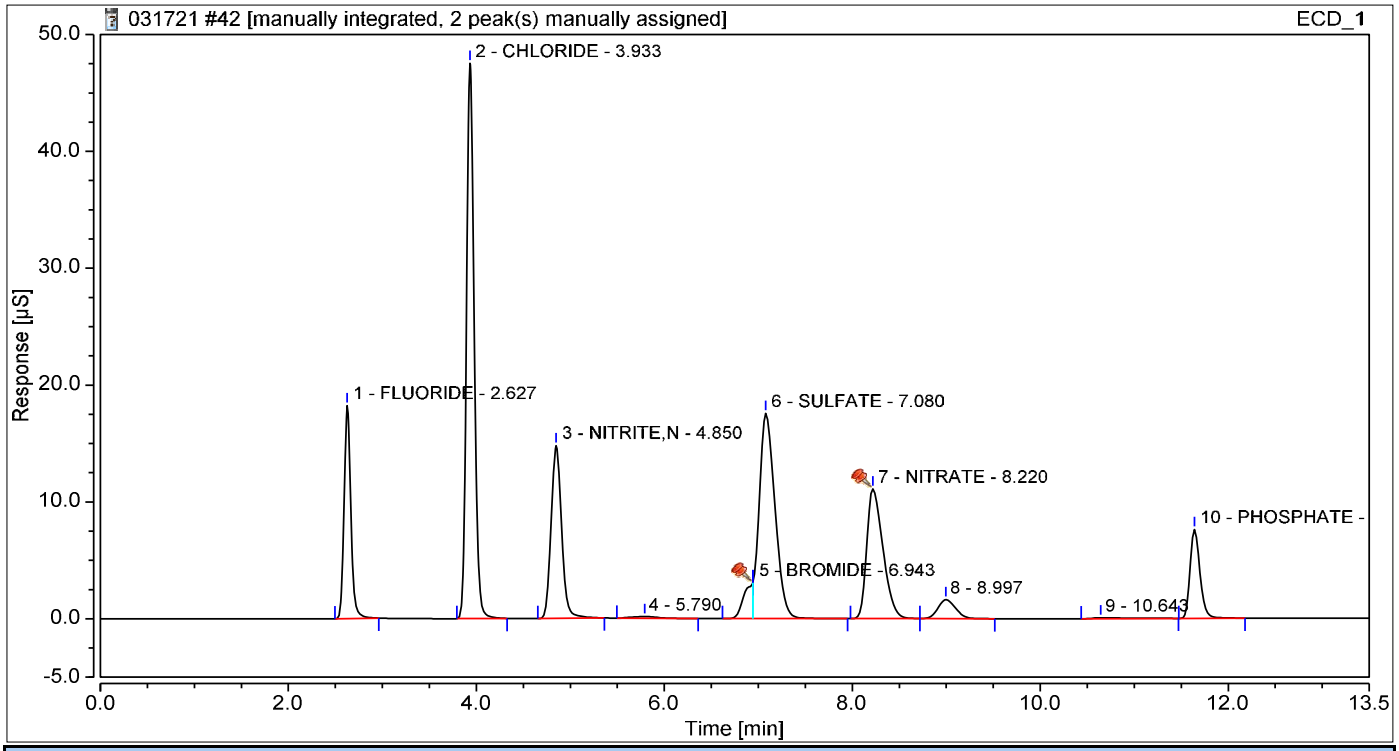
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	2.620	0.056	0.689	0.38	0.82	0.4057
2	CHLORIDE	3.940	2.973	32.144	19.92	38.32	31.3685
n.a.	NITRITE,N	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		5.627	0.387	0.490	2.59	0.58	n.a.
4	SULFATE	6.960	11.428	50.359	76.57	60.04	160.7865
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	NITRATE	8.333	0.032	0.107	0.21	0.13	0.2053
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		10.707	0.045	0.079	0.30	0.09	n.a.
7	PHOSPHATE	11.717	0.002	0.014	0.01	0.02	0.0795
Total:			**14.924**	**83.882**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV1**	***Run Time (min):***	**13.50**
Vial Number:	**G3**	***Injection Volume:***	**10.00**
Injection Type:	**Unknown**	***Channel:***	**ECD_1**
Calibration Level:		***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**1.0000**
Injection Date/Time:	**17/Mar/21 22:53**	***Sample Weight:***	**1.0000**

Chromatogram



Integration Results

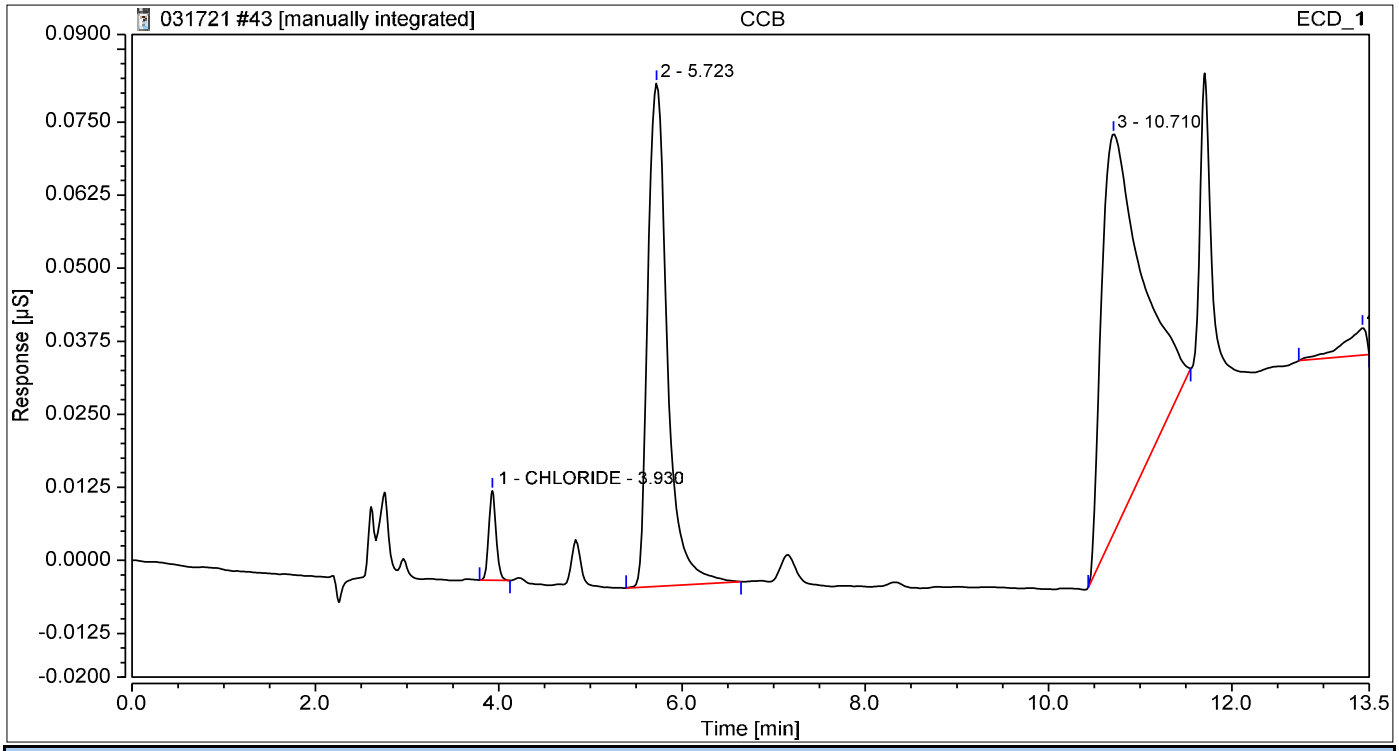
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	2.627	1.542	18.218	10.10	14.97	9.7468
2	CHLORIDE	3.933	4.456	47.508	29.18	39.04	47.0103
3	NITRITE,N	4.850	1.932	14.780	12.65	12.14	9.7905
4		5.790	0.048	0.146	0.31	0.12	n.a.
5	BROMIDE	6.943	0.338	3.073	2.22	2.53	9.0184
6	SULFATE	7.080	3.427	17.571	22.44	14.44	48.2155
7	NITRATE	8.220	2.218	11.094	14.52	9.12	9.3713
8		8.997	0.349	1.621	2.29	1.33	n.a.
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9		10.643	0.034	0.084	0.22	0.07	n.a.
10	PHOSPHATE	11.640	0.927	7.598	6.07	6.24	9.8794
Total:			**15.271**	**121.693**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB**	***Run Time (min):***	**13.50**
Vial Number:	**G6**	***Injection Volume:***	**10.00**
Injection Type:	**Unknown**	***Channel:***	**ECD_1**
Calibration Level:		***Wavelength:***	**n.a.**
Instrument Method:	**ICS2100**	***Bandwidth:***	**n.a.**
Processing Method:	**Anion Processing Method 091720**	***Dilution Factor:***	**1.0000**
Injection Date/Time:	**17/Mar/21 23:11**	***Sample Weight:***	**1.0000**

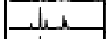
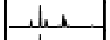
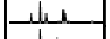
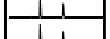
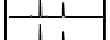
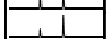
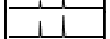
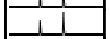
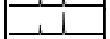
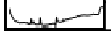
Chromatogram



Integration Results

No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
n.a.	FLUORIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1	CHLORIDE	3.930	0.001	0.015	2.41	8.79	0.0149
n.a.	NITRITE,N	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		5.723	0.021	0.086	36.37	49.36	n.a.
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	SULFATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	NITRATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		10.710	0.035	0.068	58.84	39.19	n.a.
n.a.	PHOSPHATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		13.427	0.001	0.005	2.37	2.66	n.a.
Total:			**0.059**	**0.174**	**100.00**	**100.00**	

Sequence: 032921
Last Update Operator: alshs.nouser

CD	Name	Comment	Type	Position	Dilution	Level	Instrument Method	Processing Method
	STD1		Calibration	BB1	1.00	1	Anions Program 06022020.1	Anions Processing Method
	STD2		Calibration	BB2	1.00	2	Anions Program 06022020.1	Anions Processing Method
	STD3		Calibration	BB3	1.00	3	Anions Program 06022020.1	Anions Processing Method
	STD4		Calibration	BB4	1.00	4	Anions Program 06022020.1	Anions Processing Method
	STD5		Calibration	BB5	1.00	5	Anions Program 06022020.1	Anions Processing Method
	STD6		Calibration	BB6	1.00	6	Anions Program 06022020.1	Anions Processing Method
	ICV		Unknown	BB7	1.00		Anions Program 06022020.1	Anions Processing Method
	ICB		Unknown	BB8	1.00		Anions Program 06022020.1	Anions Processing Method
	CCV		Unknown	R1	1.00		Anions Program 06022020.1	Anions Processing Method
	CCB		Unknown	R4	1.00		Anions Program 06022020.1	Anions Processing Method
	HS21031405-01		Unknown	RA1	1.00		Anions Program 06022020.1	Anions Processing Method
	HS21031405-01MS		Unknown	RA2	1.00		Anions Program 06022020.1	Anions Processing Method
	HS21031405-01MSD		Unknown	RA3	1.00		Anions Program 06022020.1	Anions Processing Method
	HS21030874-06DF10		Unknown	RA8	10.00		Anions Program 06022020.1	Anions Processing Method
	HS21030874-07DF50		Unknown	RB1	50.00		Anions Program 06022020.1	Anions Processing Method
	CCV1		Unknown	R3	1.00		Anions Program 06022020.1	Anions Processing Method
	CCB		Unknown	R8	1.00		Anions Program 06022020.1	Anions Processing Method
	HS21030874-08DF20		Unknown	RB2	20.00		Anions Program 06022020.1	Anions Processing Method
	HS21030874-09DF50		Unknown	RB3	50.00		Anions Program 06022020.1	Anions Processing Method
	HS21030874-10DF10		Unknown	RB4	10.00		Anions Program 06022020.1	Anions Processing Method
	HS21030874-11DF10		Unknown	RB5	10.00		Anions Program 06022020.1	Anions Processing Method
	HS21030874-12DF10		Unknown	RB6	10.00		Anions Program 06022020.1	Anions Processing Method
	CCV		Unknown	R1	1.00		Anions Program 06022020.1	Anions Processing Method
	CCB		Unknown	R4	1.00		Anions Program 06022020.1	Anions Processing Method
	MBLK-		Unknown	R5	1.00		Anions Program 06022020.1	Anions Processing Method
	LCS-		Unknown	R2	1.00		Anions Program 06022020.1	Anions Processing Method
	CCV1		Unknown	R3	1.00		Anions Program 06022020.1	Anions Processing Method
	CCB		Unknown	R8	1.00		Anions Program 06022020.1	Anions Processing Method

Sequence: 032921
Last Update Operator: alshs.nouser

CD	Name	me	Status	Inject Time
	STD1	5.0	Finished	3/19/2021 2:34:19 AM -05:00
	STD2	5.0	Finished	3/19/2021 2:52:47 AM -05:00
	STD3	5.0	Finished	3/19/2021 3:11:11 AM -05:00
	STD4	5.0	Finished	3/19/2021 3:29:36 AM -05:00
	STD5	5.0	Finished	3/19/2021 3:48:01 AM -05:00
	STD6	5.0	Finished	3/19/2021 4:06:28 AM -05:00
	ICV	5.0	Finished	3/19/2021 4:24:53 AM -05:00
	ICB	5.0	Finished	3/19/2021 5:01:41 AM -05:00
	CCV	5.0	Finished	3/29/2021 3:35:13 PM -05:00
	CCB	5.0	Finished	3/29/2021 3:53:37 PM -05:00
	HS21031405-01	5.0	Finished	3/29/2021 4:19:18 PM -05:00
	HS21031405-01MS	5.0	Finished	3/29/2021 4:37:42 PM -05:00
	HS21031405-01MSD	5.0	Finished	3/29/2021 4:56:06 PM -05:00
	HS21030874-06DF10	5.0	Finished	3/29/2021 6:46:39 PM -05:00
	HS21030874-07DF50	5.0	Finished	3/29/2021 7:05:03 PM -05:00
	CCV1	5.0	Finished	3/29/2021 7:23:27 PM -05:00
	CCB	5.0	Finished	3/29/2021 7:41:52 PM -05:00
	HS21030874-08DF20	5.0	Finished	3/29/2021 8:00:15 PM -05:00
	HS21030874-09DF50	5.0	Finished	3/29/2021 8:18:38 PM -05:00
	HS21030874-10DF10	5.0	Finished	3/29/2021 8:37:01 PM -05:00
	HS21030874-11DF10	5.0	Finished	3/29/2021 8:55:26 PM -05:00
	HS21030874-12DF10	5.0	Finished	3/29/2021 9:13:50 PM -05:00
	CCV	5.0	Finished	3/29/2021 11:04:15 PM -05:00
	CCB	5.0	Finished	3/29/2021 11:22:40 PM -05:00
	MBLK-	5.0	Finished	3/30/2021 12:17:51 AM -05:00
	LCS-	5.0	Finished	3/30/2021 12:36:17 AM -05:00
	CCV1	5.0	Finished	3/30/2021 2:45:02 AM -05:00
	CCB	5.0	Finished	3/30/2021 3:03:28 AM -05:00

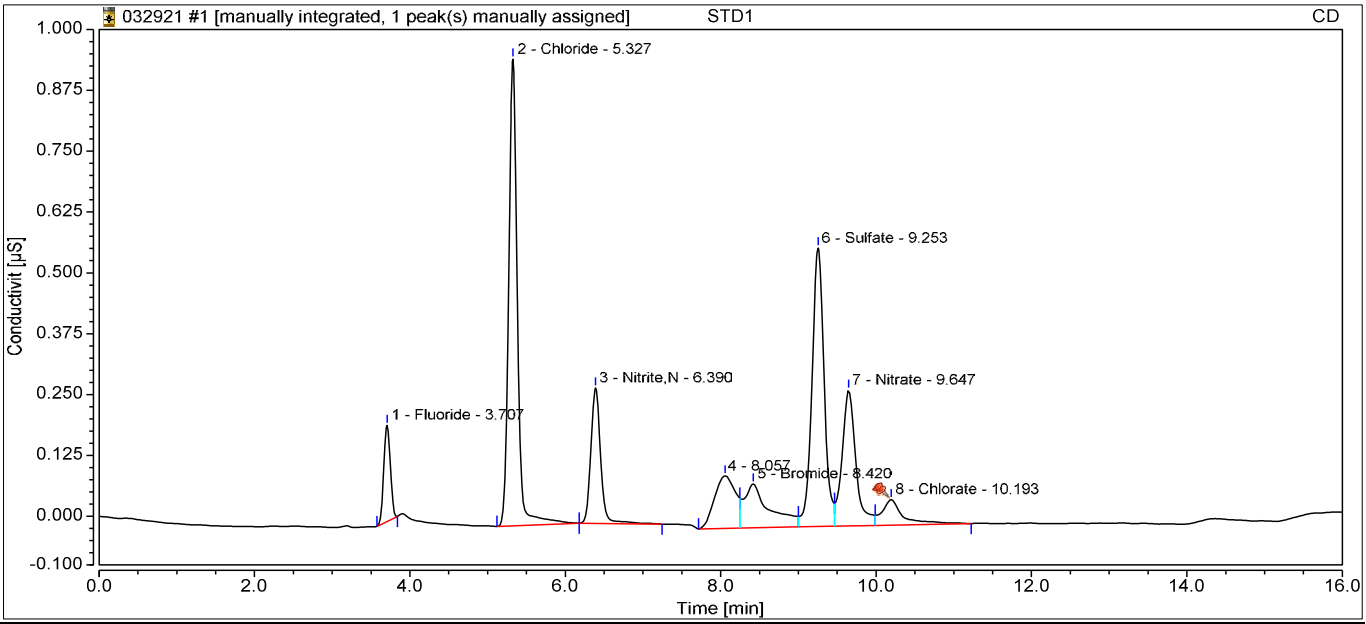
Sequence: 032921
Injection #6: STD6

Calibration

Peak No.	Peak Name	Cal.Type	Eval.Type	Number of Points	Rel.Std.Dev. %	Coeff.of Determination	C0 (Offset)	C1 (Slope)	C2 (Curve)
1	*Fluoride*	*Lin, WithOffset, 1/*	*Area*	*6*	*14.2721*	*0.99908*	*-0.0101*	*0.2938*	*0.0000*
2	Chloride	Lin, WithOffset, 1/	Area	6	1.9269	0.99998	0.0246	0.1961	0.0000
3	Nitrite,N	Lin, WithOffset, 1/	Area	6	29.0460	0.99479	0.0141	0.3834	0.0000
5	Bromide	Lin, WithOffset, 1/	Area	6	6.5246	0.99931	0.0258	0.0775	0.0000
6	Sulfate	Lin, WithOffset, 1/	Area	6	5.7842	0.99978	0.0360	0.1408	0.0000
7	Nitrate	Lin, WithOffset, 1/	Area	6	2.7454	0.99996	0.0067	0.4997	0.0000
8	Chlorate	Lin, WithOffset, 1/	Area	6	17.5063	0.99733	0.0108	0.0850	0.0000
10	Phosphate	Lin, WithOffset, 1/	Area	5	12.5412	0.99846	-0.0503	0.1737	0.0000
Maximum					**29.0460**	0.99998			
Minimum					1.9269	**0.99479**			

1 STD1			
Sample Name:	**STD1**	*Injection Volume:*	**5.00**
Vial Number:	**BB1**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/19/2021 02:34**	*Sample Weight:*	**1.0000**

Run Time:



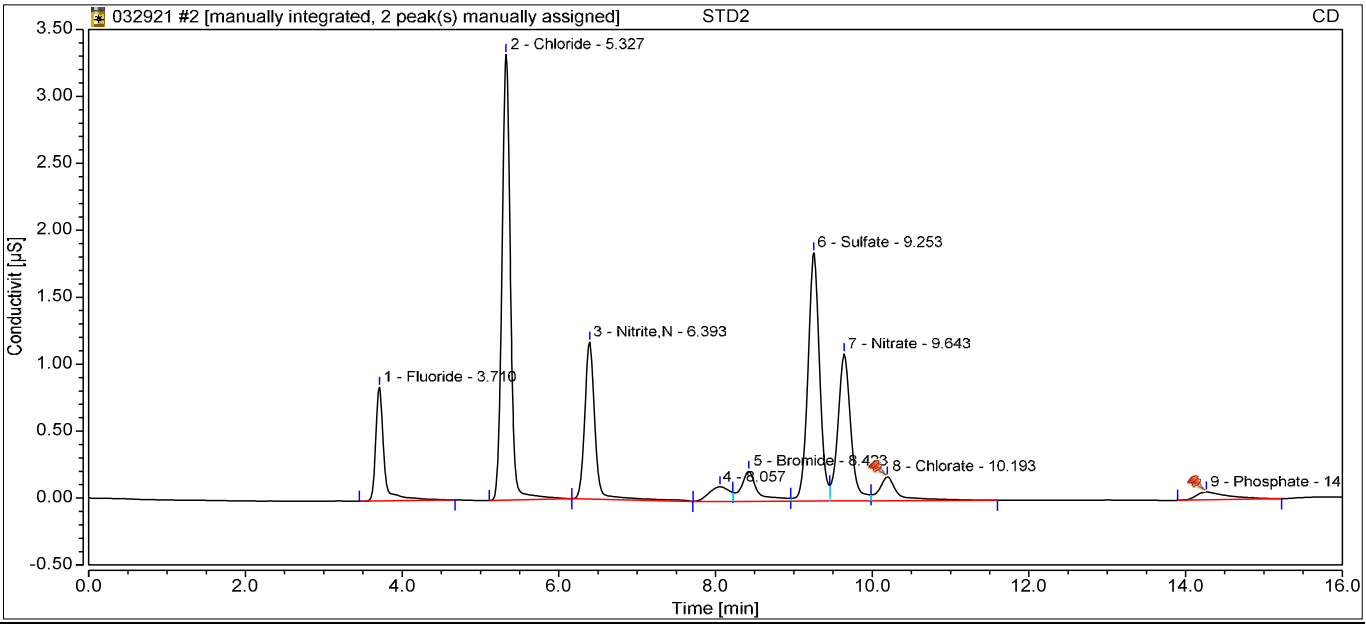
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.71	Fluoride	BMB	0.019	0.1001	0.1001	1.0000
2	5.33	Chloride	BMB	0.123	0.5037	0.5037	1.0000
3	6.39	Nitrite,N	BMB	0.041	0.0691	0.0691	1.0000
5	8.42	Bromide	M *	0.035	0.1129	0.1129	1.0000
6	9.25	Sulfate	M	0.104	0.4806	0.4806	1.0000
7	9.65	Nitrate	M	0.057	0.1016	0.1016	1.0000
8	10.19	Chlorate	MB^	0.017	0.0682	0.0682	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.396**		**1.44**	

2 STD2

Sample Name:	**STD2**	*Injection Volume:*	**5.00**
Vial Number:	**BB2**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/19/2021 02:52**	*Sample Weight:*	**1.0000**

Run Time:



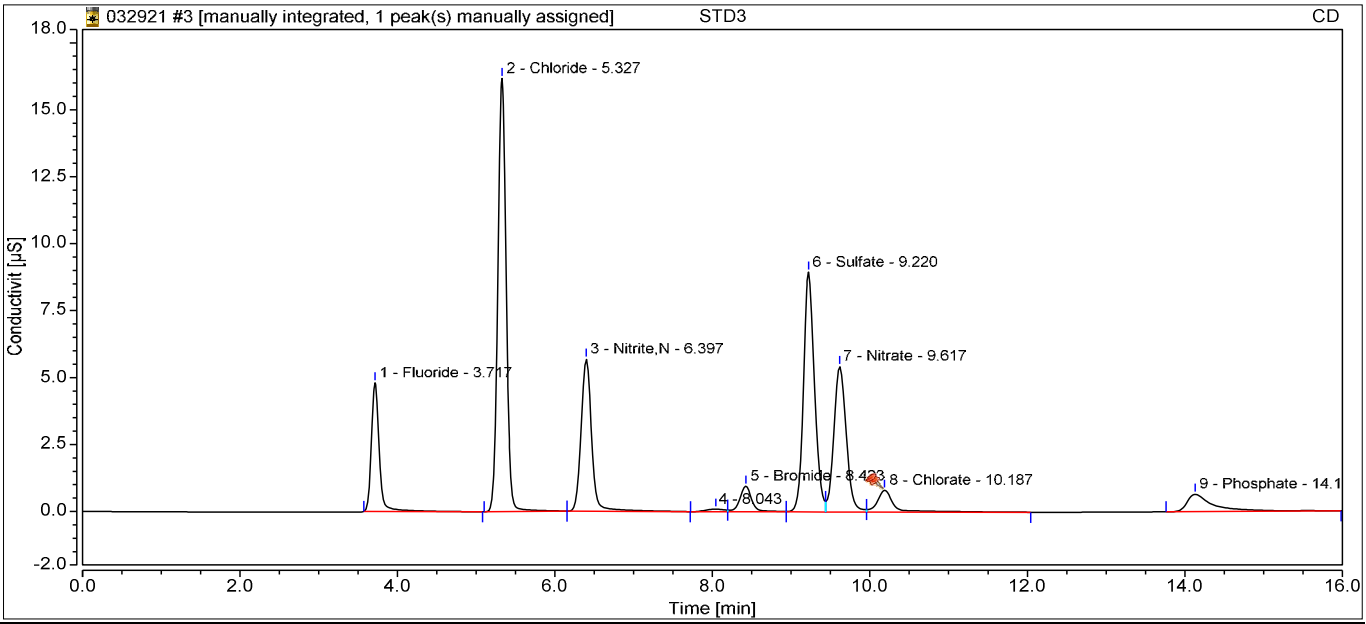
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.71	Fluoride	BMB*	0.105	0.3907	0.3907	1.0000
2	5.33	Chloride	BMB	0.415	1.9922	1.9922	1.0000
3	6.39	Nitrite,N	BMB	0.181	0.4352	0.4352	1.0000
5	8.42	Bromide	M *	0.056	0.3871	0.3871	1.0000
6	9.25	Sulfate	M	0.320	2.0188	2.0188	1.0000
7	9.64	Nitrate	M	0.208	0.4033	0.4033	1.0000
8	10.19	Chlorate	MB^	0.050	0.4595	0.4595	1.0000
9	14.26	Phosphate	BMB^	0.029	0.4541	0.4541	1.0000
Total:			**0.000**	**1.364**		**6.54**	

3 STD3

Sample Name:	**STD3**	*Injection Volume:*	**5.00**
Vial Number:	**BB3**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/19/2021 03:11**	*Sample Weight:*	**1.0000**

Run Time:



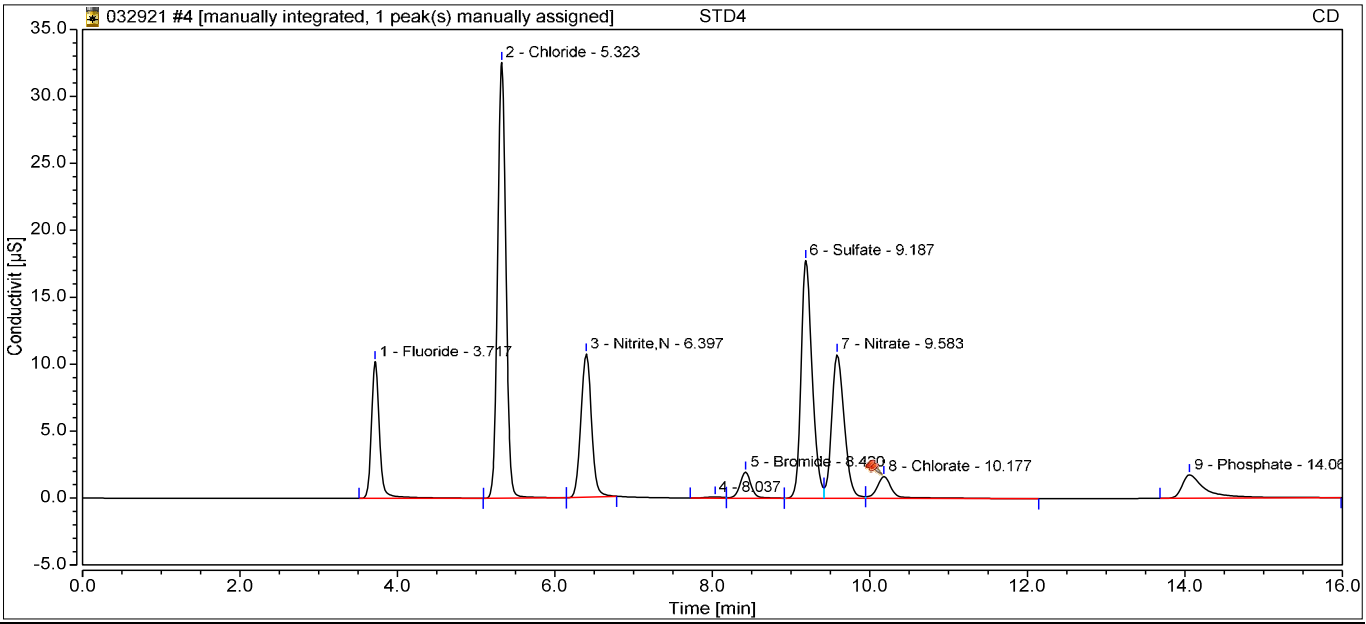
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.72	Fluoride	BMB	0.559	1.9360	1.9360	1.0000
2	5.33	Chloride	BMB	1.967	9.9055	9.9055	1.0000
3	6.40	Nitrite,N	BMB	0.892	2.2893	2.2893	1.0000
5	8.42	Bromide	M *	0.169	1.8534	1.8534	1.0000
6	9.22	Sulfate	M	1.452	10.0579	10.0579	1.0000
7	9.62	Nitrate	M	0.989	1.9651	1.9651	1.0000
8	10.19	Chlorate	MB^	0.201	2.2396	2.2396	1.0000
9	14.13	Phosphate	BMB	0.258	1.7779	1.7779	1.0000
Total:			**0.000**	**6.488**		**32.02**	

4 STD4

Sample Name:	**STD4**	*Injection Volume:*	**5.00**
Vial Number:	**BB4**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/19/2021 03:29**	*Sample Weight:*	**1.0000**

Run Time:



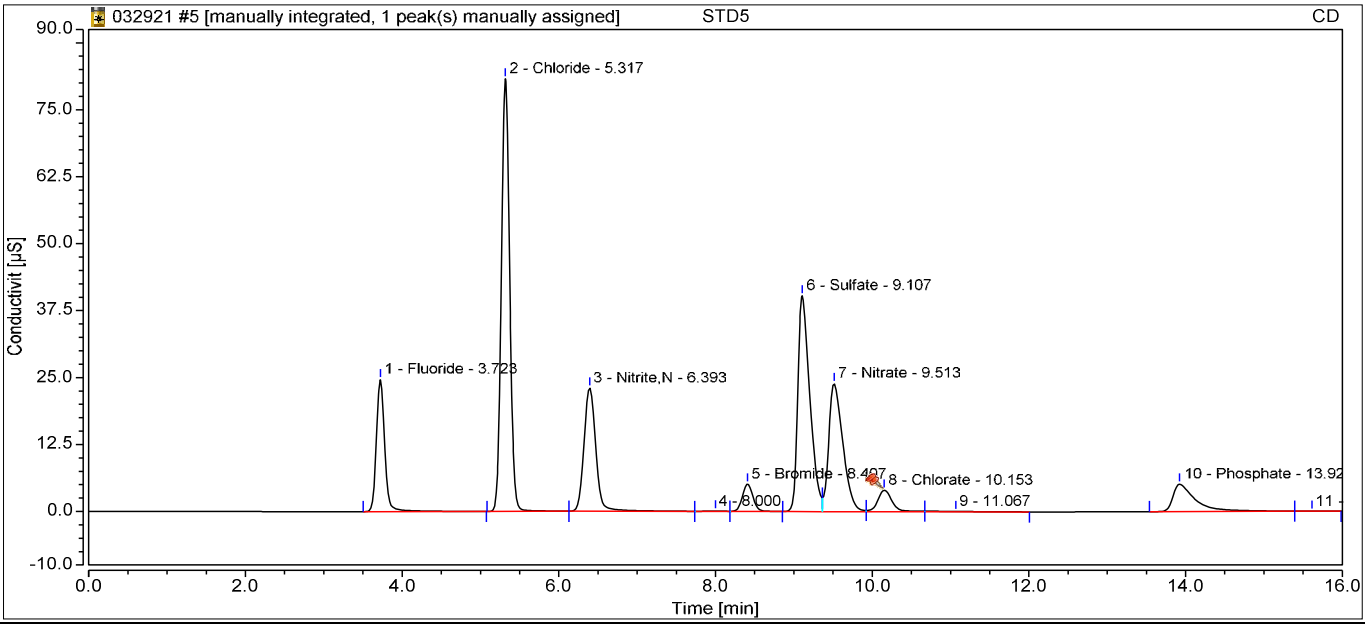
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.72	Fluoride	BMB	1.213	4.1637	4.1637	1.0000
2	5.32	Chloride	BMb*	3.957	20.0467	20.0467	1.0000
3	6.40	Nitrite,N	bMB*	1.671	4.3222	4.3222	1.0000
5	8.42	Bromide	M *	0.323	3.8403	3.8403	1.0000
6	9.19	Sulfate	M	2.909	20.4074	20.4074	1.0000
7	9.58	Nitrate	M	1.986	3.9610	3.9610	1.0000
8	10.18	Chlorate	MB^	0.380	4.3412	4.3412	1.0000
9	14.06	Phosphate	BMB	0.619	3.8518	3.8518	1.0000
Total:			**0.000**	**13.058**		**64.93**	

5 STD5

Sample Name:	**STD5**	*Injection Volume:*	**5.00**
Vial Number:	**BB5**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/19/2021 03:48**	*Sample Weight:*	**1.0000**

Run Time:



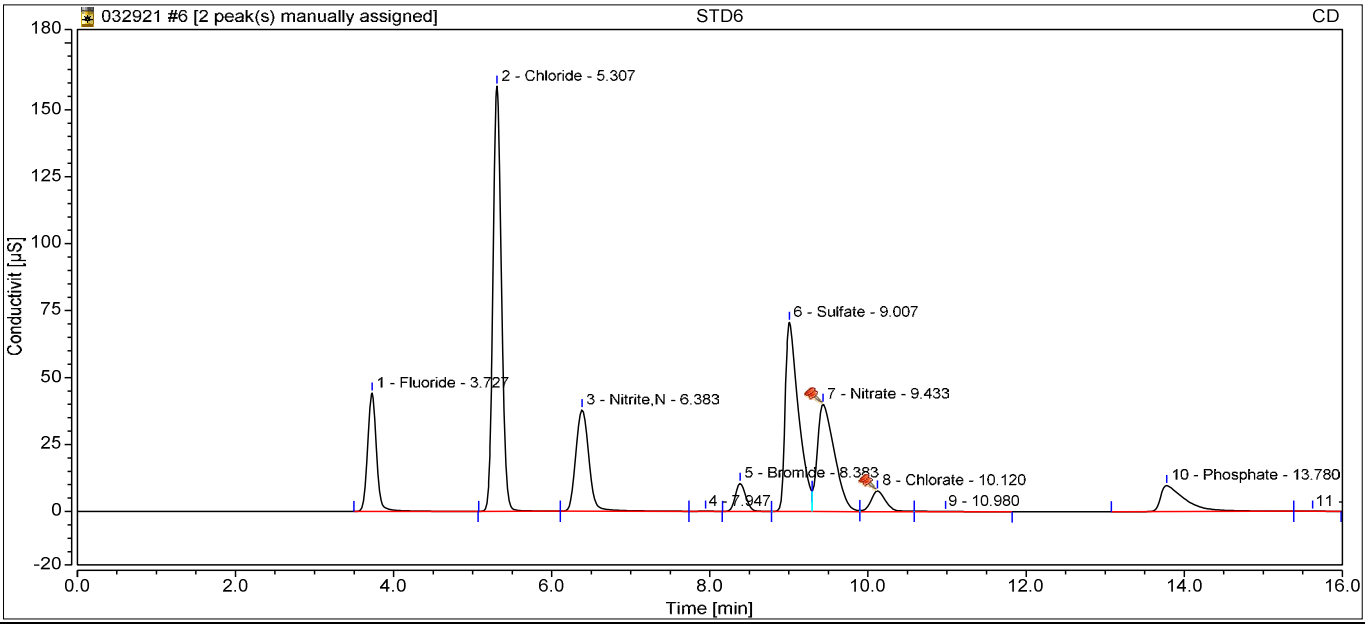
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.72	Fluoride	BMB	3.032	10.3517	10.3517	1.0000
2	5.32	Chloride	BMB	9.893	50.3135	50.3135	1.0000
3	6.39	Nitrite,N	BM *	4.056	10.5424	10.5424	1.0000
5	8.41	Bromide	MB*	0.803	10.0249	10.0249	1.0000
6	9.11	Sulfate	BM	7.184	50.7797	50.7797	1.0000
7	9.51	Nitrate	M	4.996	9.9839	9.9839	1.0000
8	10.15	Chlorate	M ^	0.852	9.8970	9.8970	1.0000
10	13.92	Phosphate	BMB	1.677	9.9434	9.9434	1.0000
Total:			**0.000**	**32.492**		**161.84**	

6 STD6

Sample Name:	**STD6**	*Injection Volume:*	**5.00**
Vial Number:	**BB6**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/19/2021 04:06**	*Sample Weight:*	**1.0000**

Run Time:



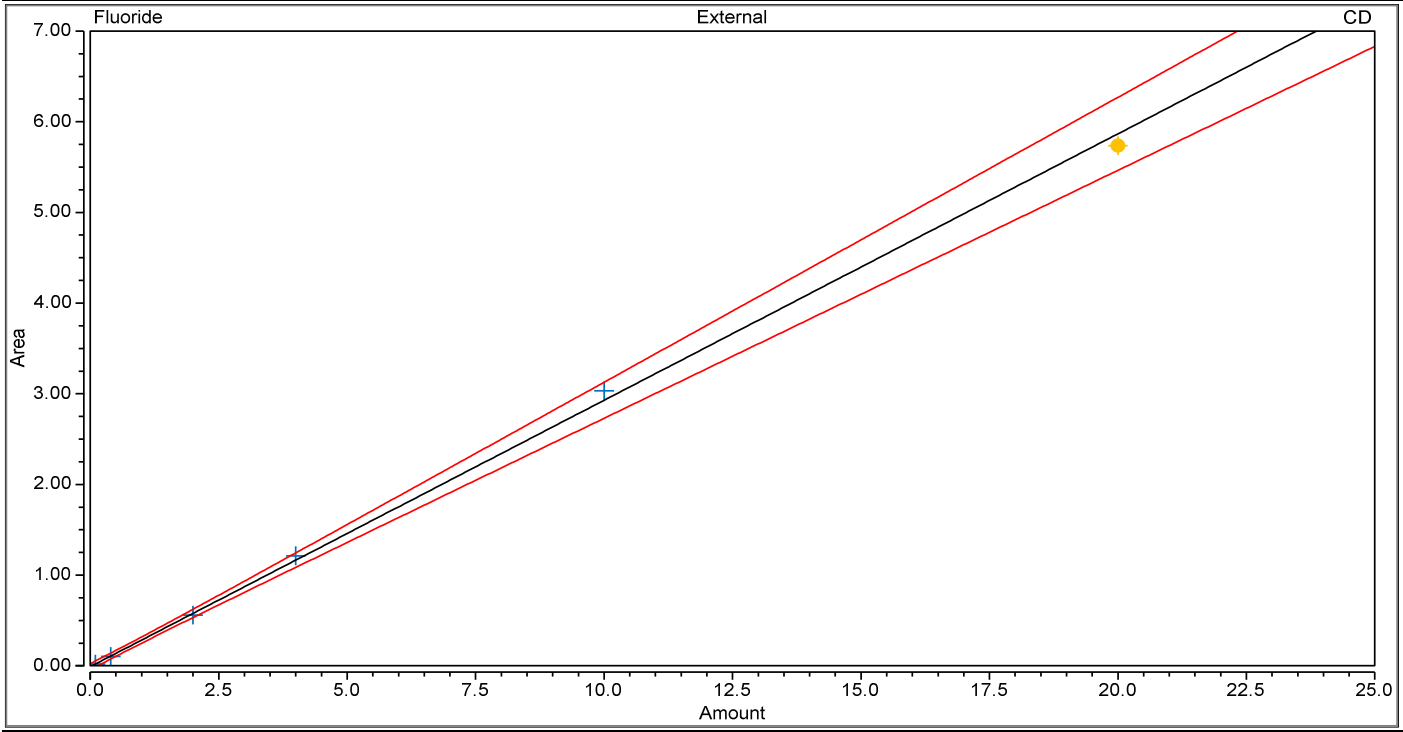
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.73	Fluoride	BMB	5.737	19.5578	19.5578	1.0000
2	5.31	Chloride	BMB	19.587	99.7384	99.7384	1.0000
3	6.38	Nitrite,N	BMB	7.239	18.8419	18.8419	1.0000
5	8.38	Bromide	BM	1.597	20.2814	20.2814	1.0000
6	9.01	Sulfate	M	13.938	98.7555	98.7555	1.0000
7	9.43	Nitrate	M ^	10.043	20.0851	20.0851	1.0000
8	10.12	Chlorate	M ^	1.667	19.4945	19.4945	1.0000
10	13.78	Phosphate	BMB	3.488	20.3728	20.3728	1.0000
Total:			**0.000**	**63.296**		**317.13**	

Calibration

Calibration Details	Fluoride		
Calibration Type	Lin, WithOffset, 1/A	*Offset (C0)*	-0.0101
Evaluation Type	Area	*Slope (C1)*	0.2938
Number of Calibration Points	6	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9991

Calibration Plot **Fluoride**



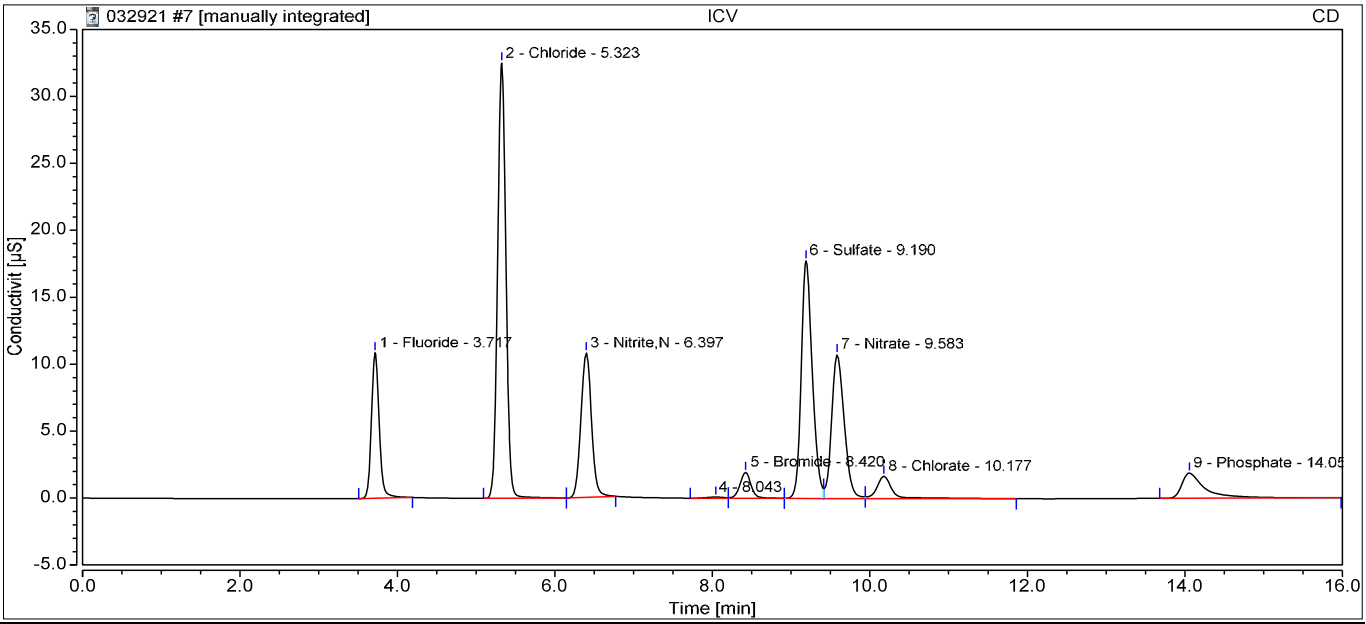
Calibration Results **Fluoride**

No.	Injection Name	Calibration Level	X Value CD Fluoride	Y Value CD Fluoride	Y Value CD Fluoride	Area µS*min CD Fluoride	Height µS CD Fluoride
1	STD1	1	0.1000	0.0193	0.0193	0.019	0.197
2	STD2	2	0.4000	0.1047	0.1047	0.105	0.848
3	STD3	3	2.0000	0.5588	0.5588	0.559	4.805
4	STD4	4	4.0000	1.2134	1.2134	1.213	10.206
5	STD5	5	10.0000	3.0317	3.0317	3.032	24.613
6	STD6	6	20.0000	5.7369	5.7369	5.737	44.208

7 ICV

Sample Name:	**ICV**	*Injection Volume:*	**5.00**
Vial Number:	**BB7**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/19/2021 04:24**	*Sample Weight:*	**1.0000**

Run Time:



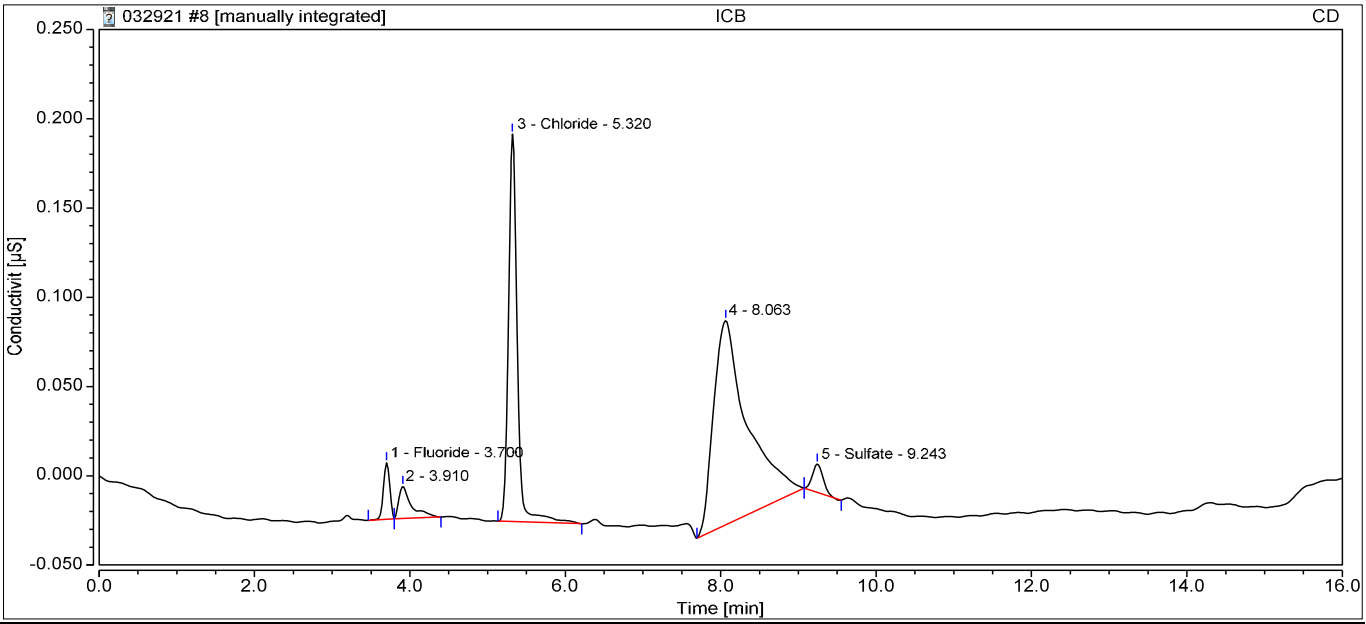
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.72	Fluoride	BMB*	1.234	4.2342	4.2342	1.0000
2	5.32	Chloride	BMb*	3.949	20.0060	20.0060	1.0000
3	6.40	Nitrite,N	bMB*	1.681	4.3476	4.3476	1.0000
5	8.42	Bromide	M	0.321	3.8099	3.8099	1.0000
6	9.19	Sulfate	M	2.901	20.3535	20.3535	1.0000
7	9.58	Nitrate	M	1.981	3.9506	3.9506	1.0000
8	10.18	Chlorate	MB	0.383	4.3825	4.3825	1.0000
9	14.06	Phosphate	BMB	0.657	4.0742	4.0742	1.0000
Total:			**0.000**	**13.107**		**65.16**	

8 ICB

Sample Name:	**ICB**	*Injection Volume:*	**5.00**
Vial Number:	**BB8**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/19/2021 05:01**	*Sample Weight:*	**1.0000**

Run Time:



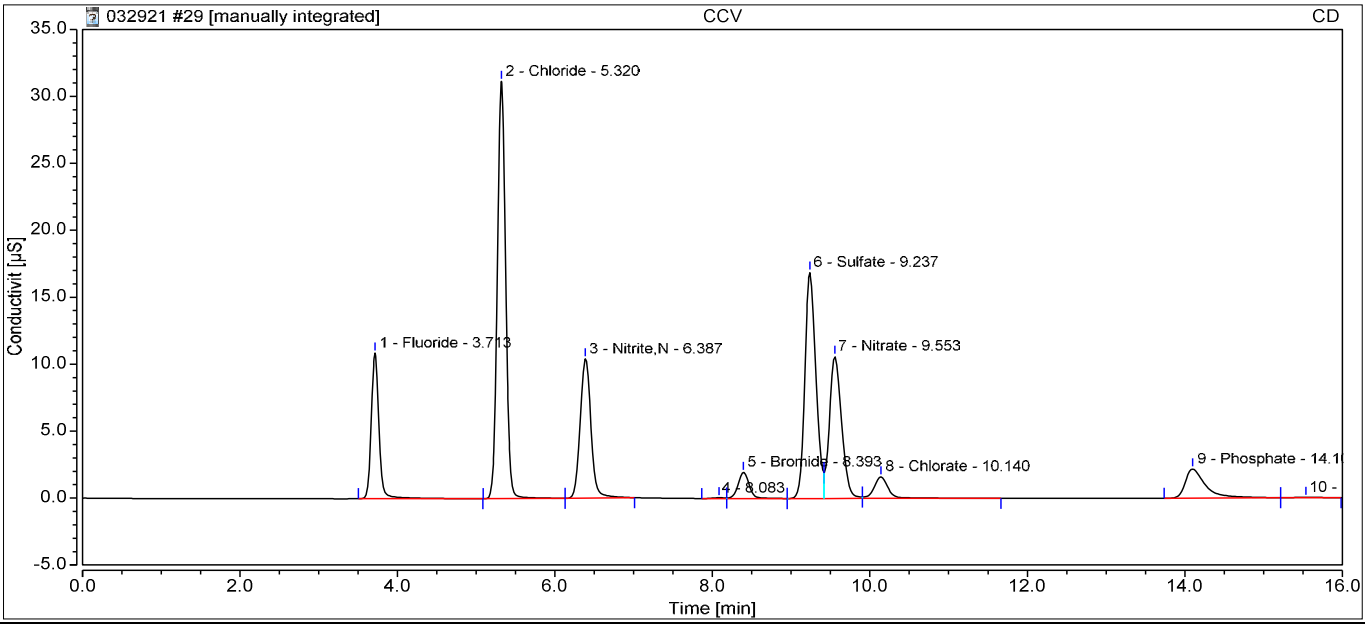
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.70	Fluoride	BMB	0.003	0.0444	0.0444	1.0000
3	5.32	Chloride	BMB	0.028	0.0191	0.0191	1.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
5	9.24	Sulfate	bMB*	0.003	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.034**		**0.06**	

29 CCV

Sample Name:	**CCV**	*Injection Volume:*	**5.00**
Vial Number:	**R1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/29/2021 15:35**	*Sample Weight:*	**1.0000**

Run Time:



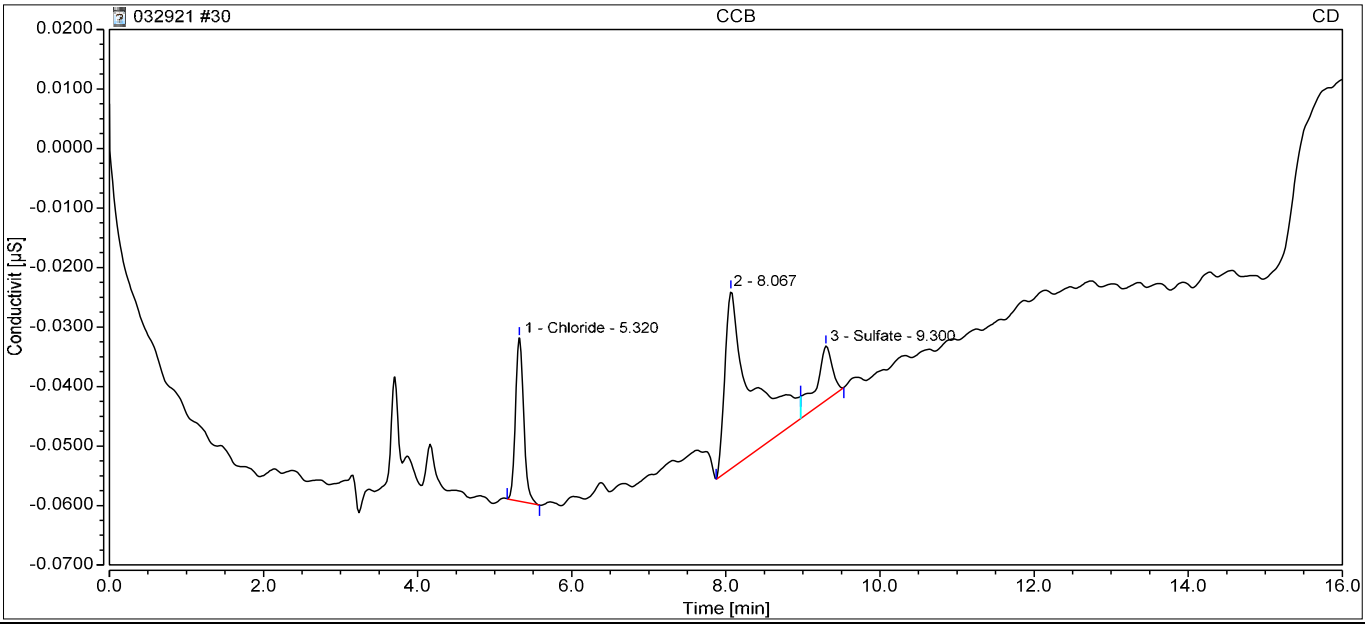
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.71	Fluoride	BMB	1.233	4.2307	4.2307	1.0000
2	5.32	Chloride	BMb*	3.775	19.1200	19.1200	1.0000
3	6.39	Nitrite,N	bMB*	1.654	4.2766	4.2766	1.0000
5	8.39	Bromide	M	0.321	3.8039	3.8039	1.0000
6	9.24	Sulfate	M	2.764	19.3761	19.3761	1.0000
7	9.55	Nitrate	M	1.905	3.7986	3.7986	1.0000
8	10.14	Chlorate	MB	0.340	3.8696	3.8696	1.0000
9	14.10	Phosphate	BMB	0.648	4.0199	4.0199	1.0000
Total:			**0.000**	**12.638**		**62.50**	

30 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R4**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/29/2021 15:53**	*Sample Weight:*	**1.0000**

Run Time:



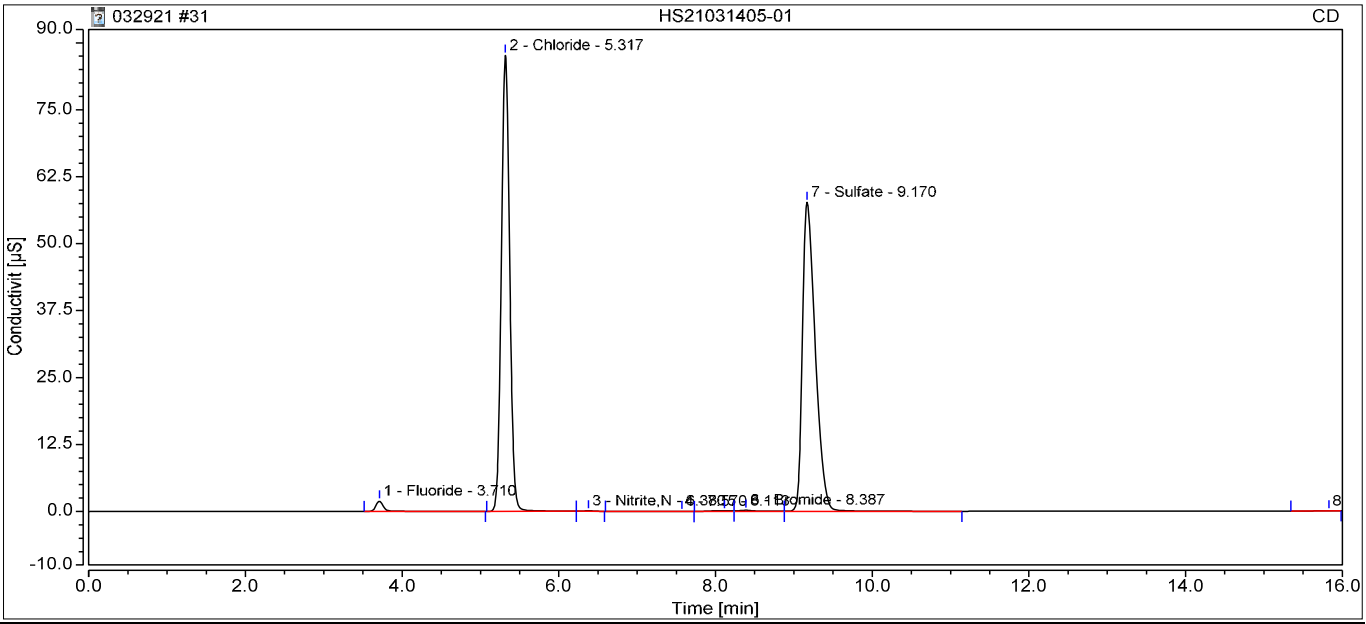
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
1	5.32	Chloride	BMB	0.003	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
3	9.30	Sulfate	MB	0.002	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.006**		**0.00**	

31 HS21031405-01

Sample Name:	**HS21031405-01**	*Injection Volume:*	**5.00**
Vial Number:	**RA1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/29/2021 16:19**	*Sample Weight:*	**1.0000**

Run Time:



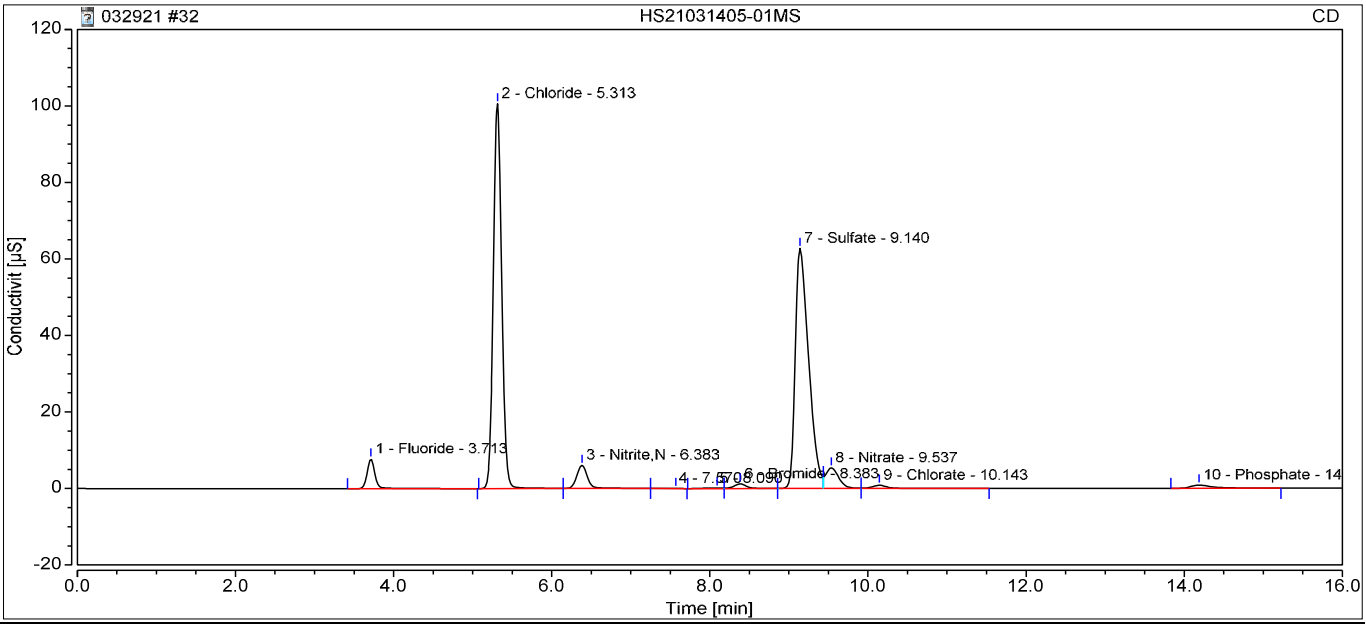
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.71	Fluoride	BMB	0.235	0.8343	0.8343	1.0000
2	5.32	Chloride	BMB	10.395	52.8721	52.8721	1.0000
3	6.38	Nitrite,N	BMB	0.011	n.a.	n.a.	1.0000
6	8.39	Bromide	M	0.067	0.5342	0.5342	1.0000
7	9.17	Sulfate	MB	10.946	77.5028	77.5028	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**21.655**		**131.74**	

32 HS21031405-01MS

Sample Name:	**HS21031405-01MS**	*Injection Volume:*	**5.00**
Vial Number:	**RA2**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/29/2021 16:37**	*Sample Weight:*	**1.0000**

Run Time:



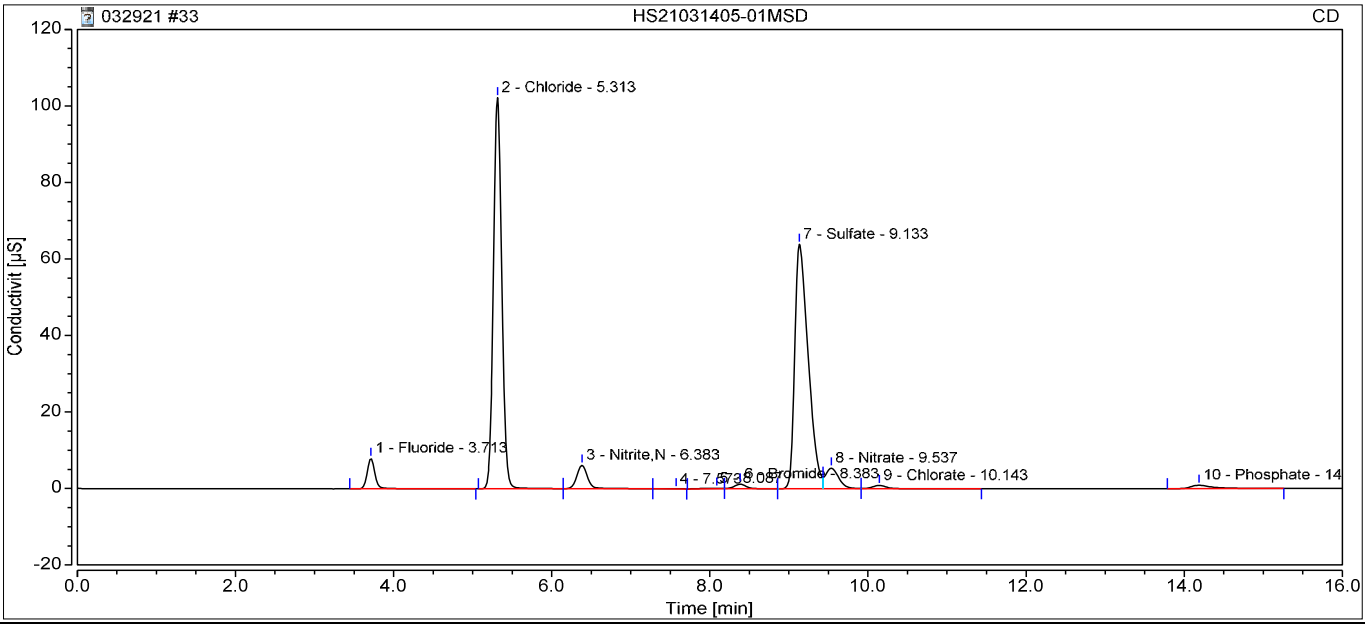
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.71	Fluoride	BMB	0.886	3.0501	3.0501	1.0000
2	5.31	Chloride	BMB	12.257	62.3667	62.3667	1.0000
3	6.38	Nitrite,N	BMB	0.921	2.3643	2.3643	1.0000
6	8.38	Bromide	M	0.231	2.6440	2.6440	1.0000
7	9.14	Sulfate	M	12.218	86.5375	86.5375	1.0000
8	9.54	Nitrate	M	1.029	2.0457	2.0457	1.0000
9	10.14	Chlorate	MB	0.192	2.1359	2.1359	1.0000
10	14.19	Phosphate	BMB	0.281	1.9075	1.9075	1.0000
Total:			**0.000**	**28.015**		**163.05**	

33 HS21031405-01MSD

Sample Name:	**HS21031405-01MSD**	*Injection Volume:*	**5.00**
Vial Number:	**RA3**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/29/2021 16:56**	*Sample Weight:*	**1.0000**

Run Time:



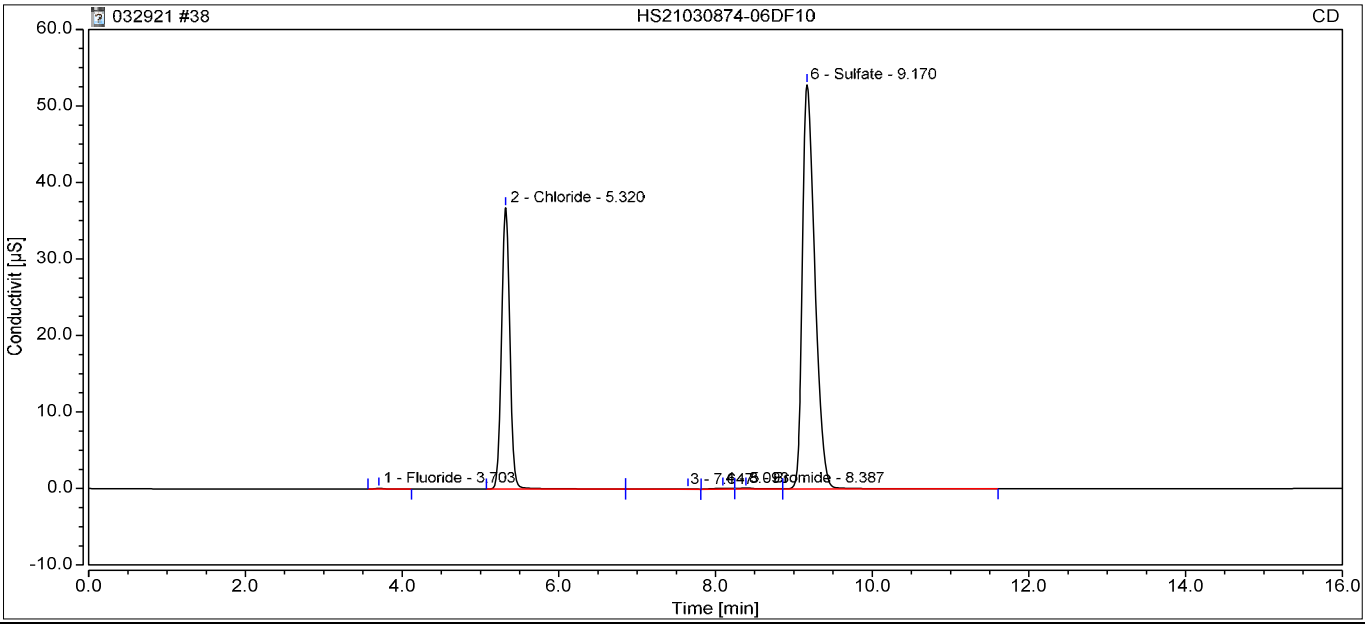
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.71	Fluoride	BMB	0.911	3.1333	3.1333	1.0000
2	5.31	Chloride	BMB	12.470	63.4511	63.4511	1.0000
3	6.38	Nitrite,N	BMB	0.937	2.4064	2.4064	1.0000
6	8.38	Bromide	M	0.232	2.6586	2.6586	1.0000
7	9.13	Sulfate	M	12.508	88.5940	88.5940	1.0000
8	9.54	Nitrate	M	1.046	2.0806	2.0806	1.0000
9	10.14	Chlorate	MB	0.192	2.1329	2.1329	1.0000
10	14.19	Phosphate	BMB	0.297	2.0006	2.0006	1.0000
Total:			**0.000**	**28.592**		**166.46**	

38 HS21030874-06DF10

Sample Name:	**HS21030874-06DF10**	*Injection Volume:*	**5.00**
Vial Number:	**RA8**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**10.0000**
Recording Time:	**03/29/2021 18:46**	*Sample Weight:*	**1.0000**

Run Time:



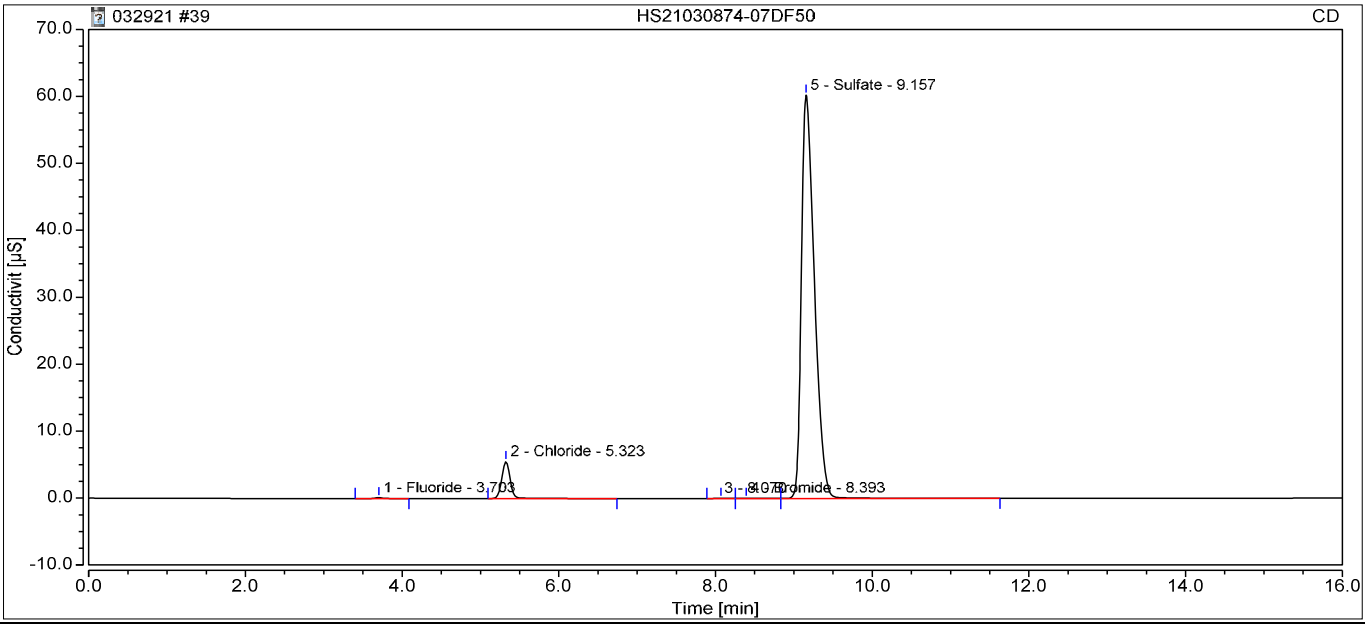
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.70	Fluoride	BMB	0.010	0.0689	0.6888	10.0000
2	5.32	Chloride	BMB	4.481	22.7220	227.2196	10.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	10.0000
5	8.39	Bromide	M	0.043	0.2246	2.2461	10.0000
6	9.17	Sulfate	MB	9.791	69.2983	692.9832	10.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	10.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	10.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	10.0000
Total:			**0.000**	**14.326**		**923.14**	

39 HS21030874-07DF50

Sample Name:	**HS21030874-07DF50**	*Injection Volume:*	**5.00**
Vial Number:	**RB1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**50.0000**
Recording Time:	**03/29/2021 19:05**	*Sample Weight:*	**1.0000**

Run Time:



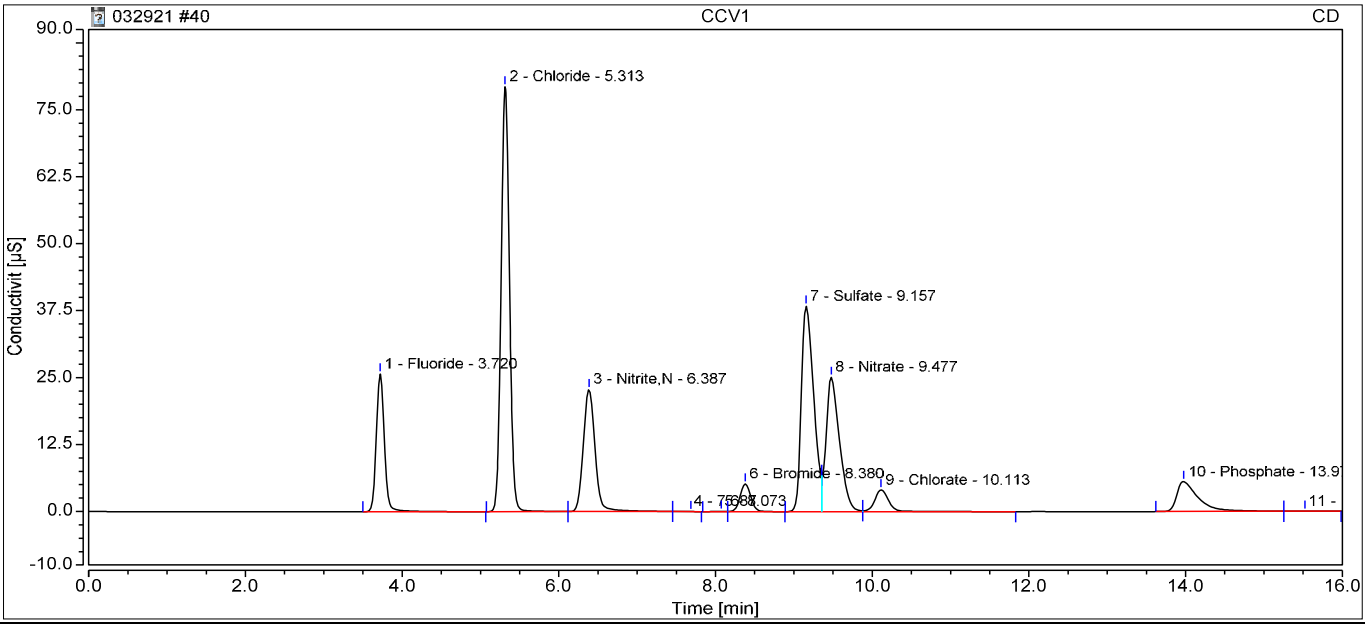
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.70	Fluoride	BMB	0.014	0.0814	4.0697	50.0000
2	5.32	Chloride	BMB	0.684	3.3622	168.1122	50.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	50.0000
4	8.39	Bromide	M	0.007	n.a.	n.a.	50.0000
5	9.16	Sulfate	MB	11.514	81.5337	4076.6872	50.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	50.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	50.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	50.0000
Total:			**0.000**	**12.219**		**4248.87**	

40 CCV1

Sample Name:	**CCV1**	*Injection Volume:*	**5.00**
Vial Number:	**R3**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/29/2021 19:23**	*Sample Weight:*	**1.0000**

Run Time:



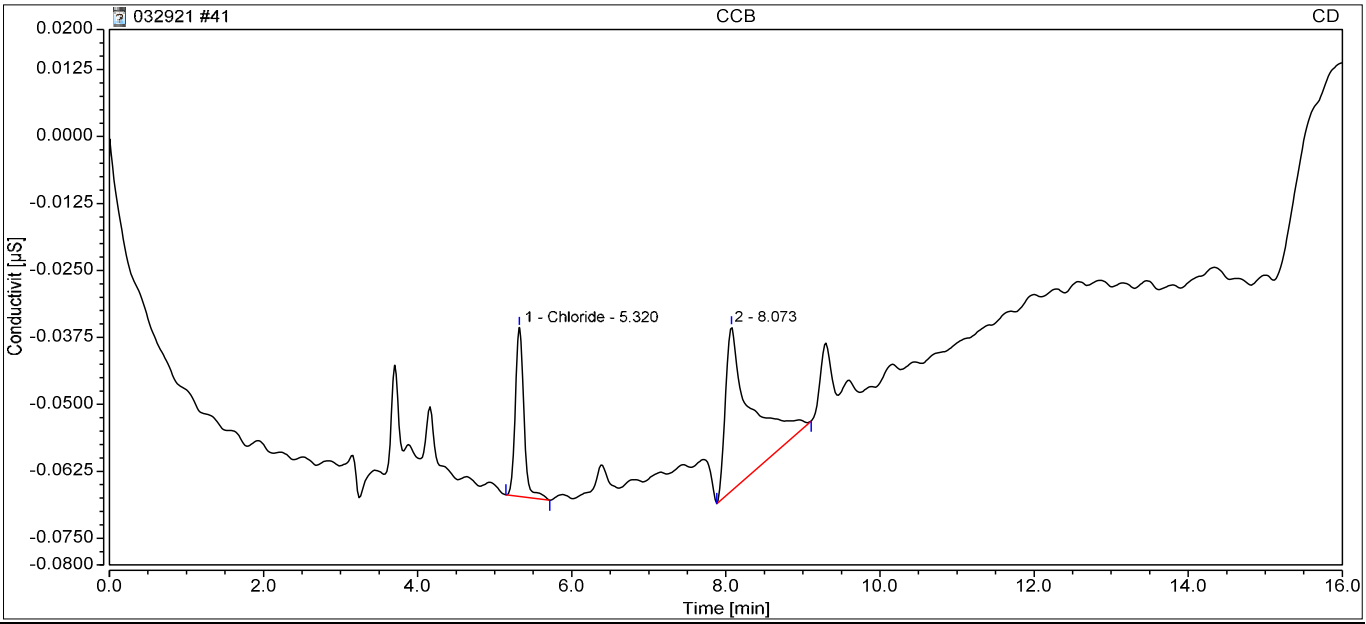
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.72	Fluoride	BMB	3.076	10.5034	10.5034	1.0000
2	5.31	Chloride	BMB	9.680	49.2288	49.2288	1.0000
3	6.39	Nitrite,N	BMB	3.965	10.3043	10.3043	1.0000
6	8.38	Bromide	MB	0.831	10.3941	10.3941	1.0000
7	9.16	Sulfate	BM	7.004	49.5016	49.5016	1.0000
8	9.48	Nitrate	M	4.994	9.9798	9.9798	1.0000
9	10.11	Chlorate	MB	0.860	9.9953	9.9953	1.0000
10	13.97	Phosphate	BMB	1.762	10.4355	10.4355	1.0000
Total:			**0.000**	**32.173**		**160.34**	

41 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R8**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/29/2021 19:41**	*Sample Weight:*	**1.0000**

Run Time:



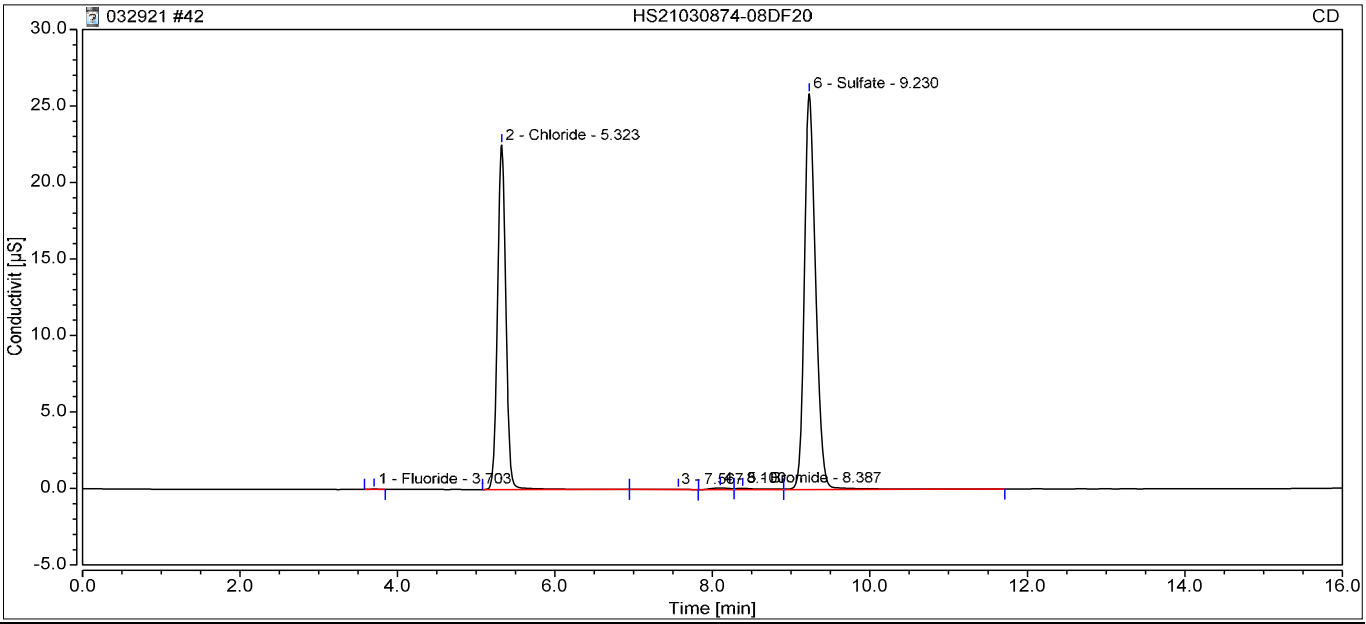
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
1	5.32	Chloride	BMB	0.004	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.004**		**0.00**	

42 HS21030874-08DF20

Sample Name:	**HS21030874-08DF20**	*Injection Volume:*	**5.00**
Vial Number:	**RB2**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**20.0000**
Recording Time:	**03/29/2021 20:00**	*Sample Weight:*	**1.0000**

Run Time:



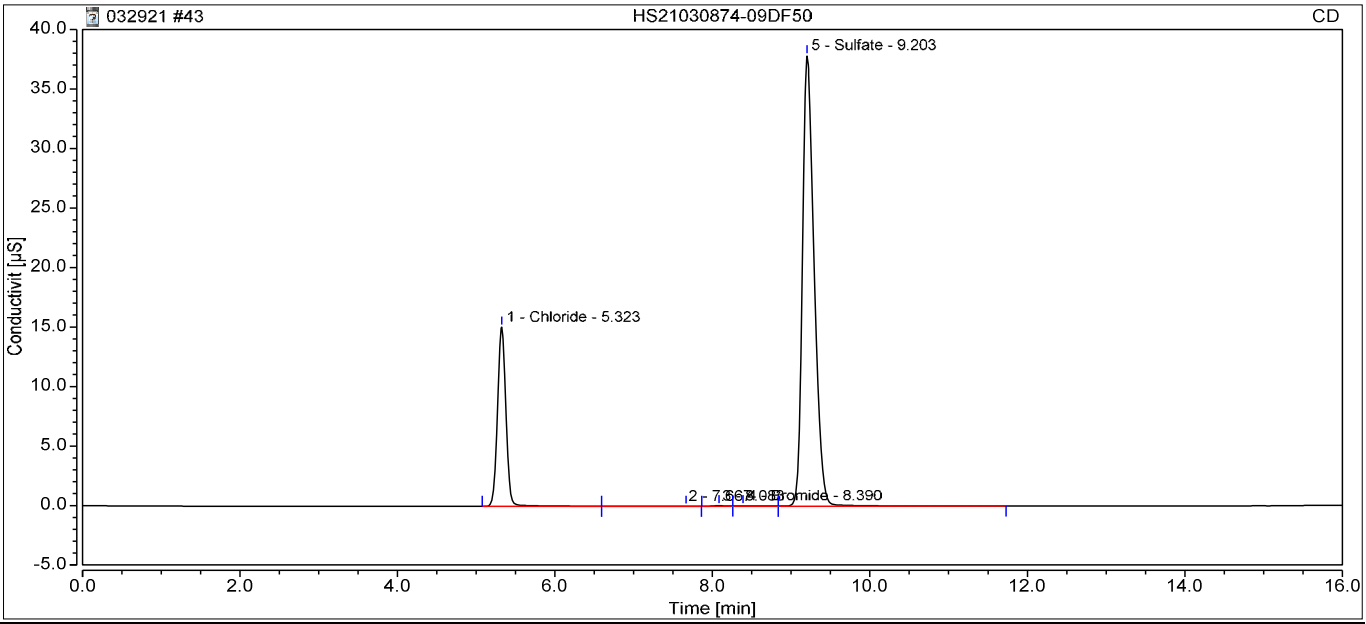
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.70	Fluoride	BMB	0.002	0.0424	0.8481	20.0000
2	5.32	Chloride	BMB	2.741	13.8501	277.0019	20.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	20.0000
5	8.39	Bromide	M	0.030	0.0550	1.0991	20.0000
6	9.23	Sulfate	MB	4.326	30.4722	609.4444	20.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	20.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	20.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	20.0000
Total:			**0.000**	**7.099**		**888.39**	

43 HS21030874-09DF50

Sample Name:	**HS21030874-09DF50**	*Injection Volume:*	**5.00**
Vial Number:	**RB3**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**50.0000**
Recording Time:	**03/29/2021 20:18**	*Sample Weight:*	**1.0000**

Run Time:



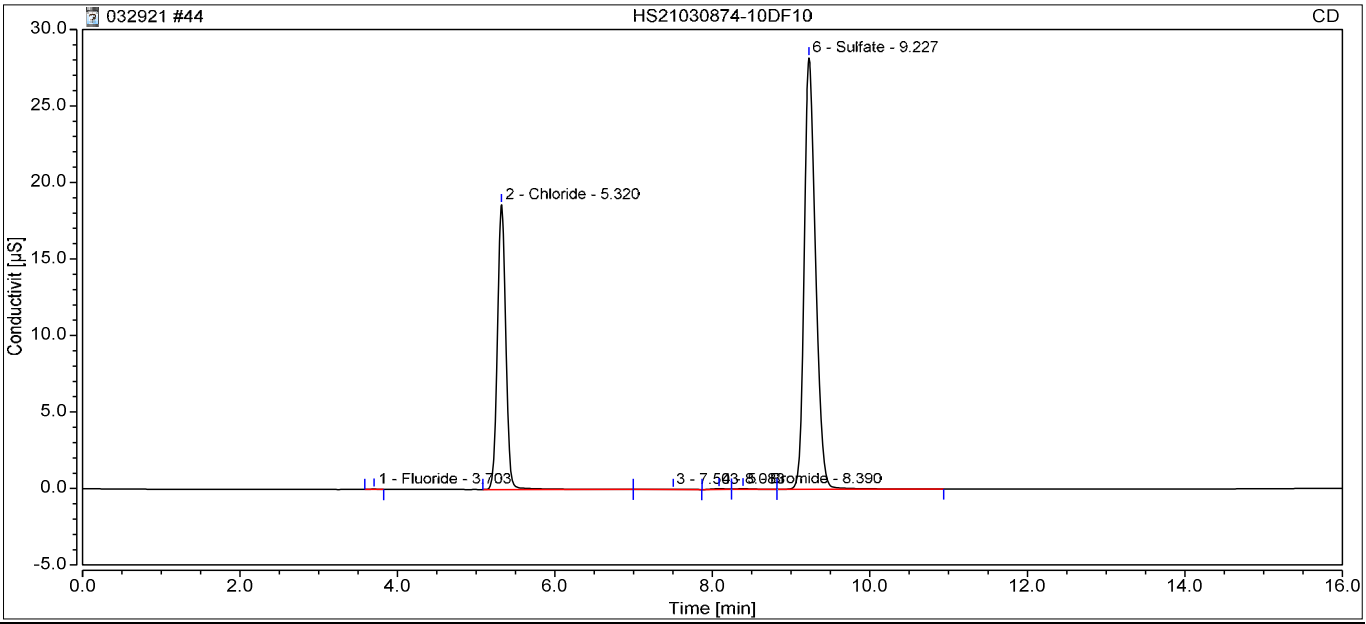
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	50.0000
1	5.32	Chloride	BMB	1.839	9.2528	462.6413	50.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	50.0000
4	8.39	Bromide	M	0.013	n.a.	n.a.	50.0000
5	9.20	Sulfate	MB	6.585	46.5219	2326.0965	50.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	50.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	50.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	50.0000
Total:			**0.000**	**8.437**		**2788.74**	

44 HS21030874-10DF10

Sample Name:	**HS21030874-10DF10**	*Injection Volume:*	**5.00**
Vial Number:	**RB4**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**10.0000**
Recording Time:	**03/29/2021 20:37**	*Sample Weight:*	**1.0000**

Run Time:



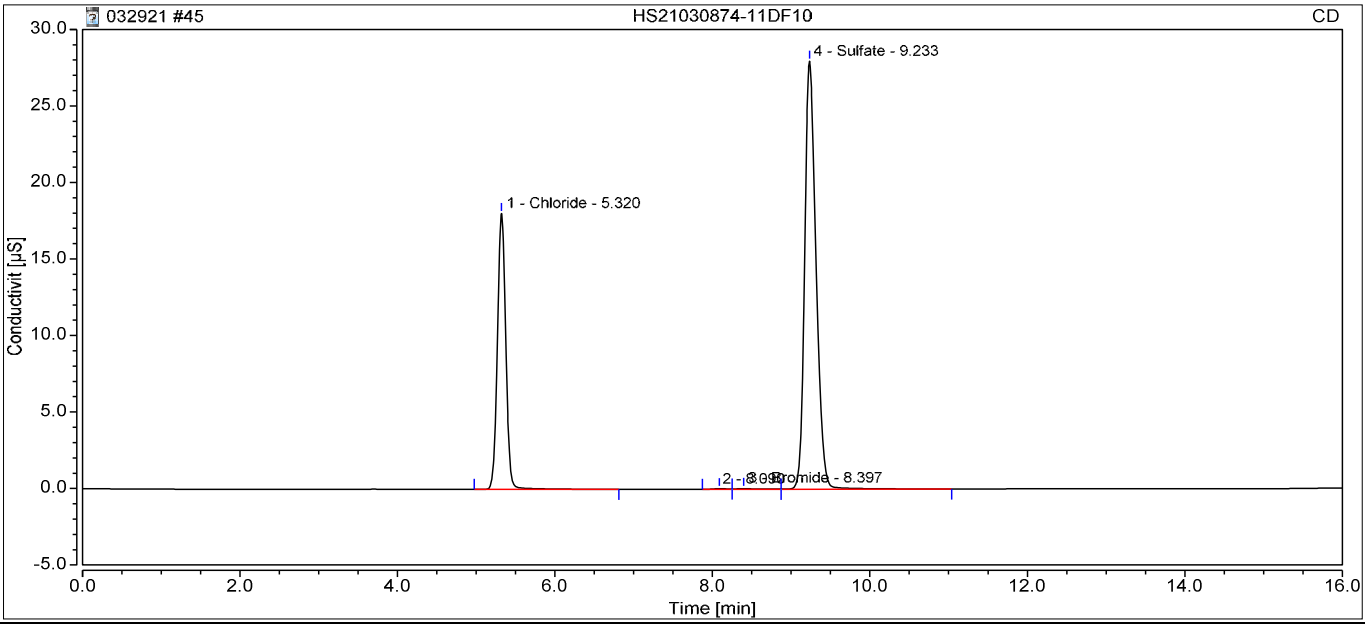
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.70	Fluoride	BMB	0.002	0.0419	0.4186	10.0000
2	5.32	Chloride	BMB	2.270	11.4485	114.4847	10.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	10.0000
5	8.39	Bromide	M	0.015	n.a.	n.a.	10.0000
6	9.23	Sulfate	MB	4.745	33.4545	334.5455	10.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	10.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	10.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	10.0000
Total:			**0.000**	**7.033**		**449.45**	

45 HS21030874-11DF10

Sample Name:	**HS21030874-11DF10**	*Injection Volume:*	**5.00**
Vial Number:	**RB5**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**10.0000**
Recording Time:	**03/29/2021 20:55**	*Sample Weight:*	**1.0000**

Run Time:



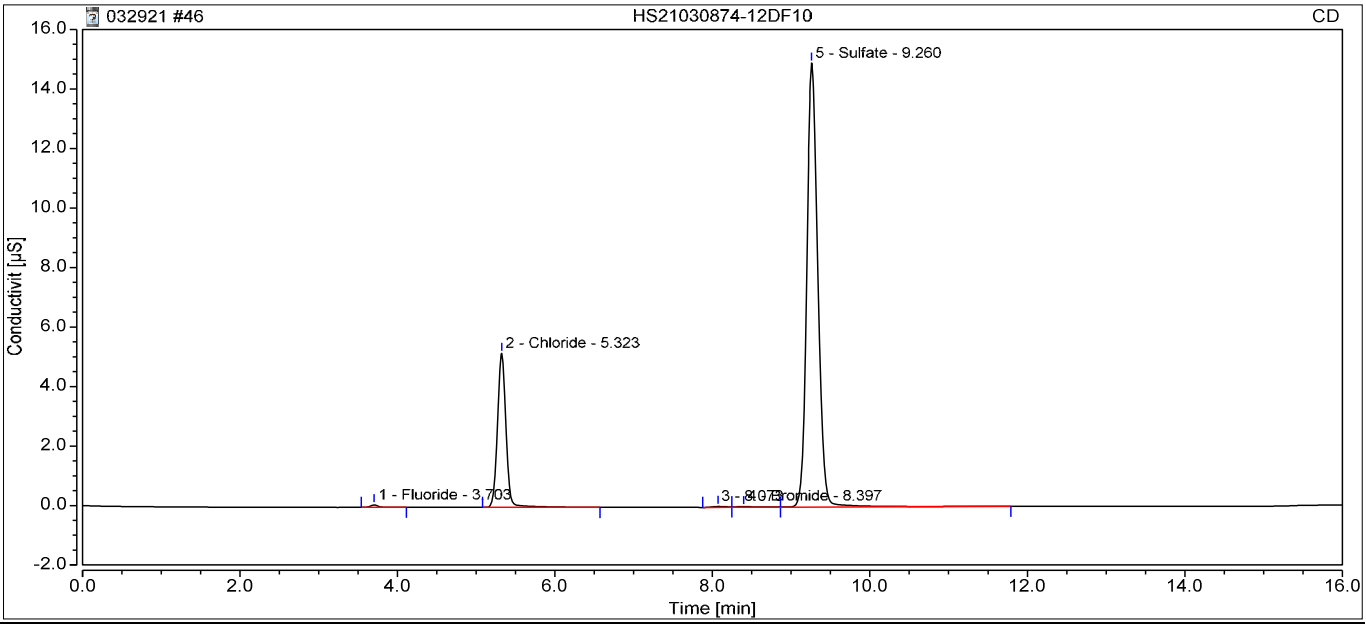
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	10.0000
1	5.32	Chloride	BMB	2.197	11.0766	110.7661	10.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	10.0000
3	8.40	Bromide	M	0.015	n.a.	n.a.	10.0000
4	9.23	Sulfate	MB	4.699	33.1211	331.2108	10.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	10.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	10.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	10.0000
Total:			**0.000**	**6.910**		**441.98**	

46 HS21030874-12DF10

Sample Name:	**HS21030874-12DF10**	*Injection Volume:*	**5.00**
Vial Number:	**RB6**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**10.0000**
Recording Time:	**03/29/2021 21:13**	*Sample Weight:*	**1.0000**

Run Time:



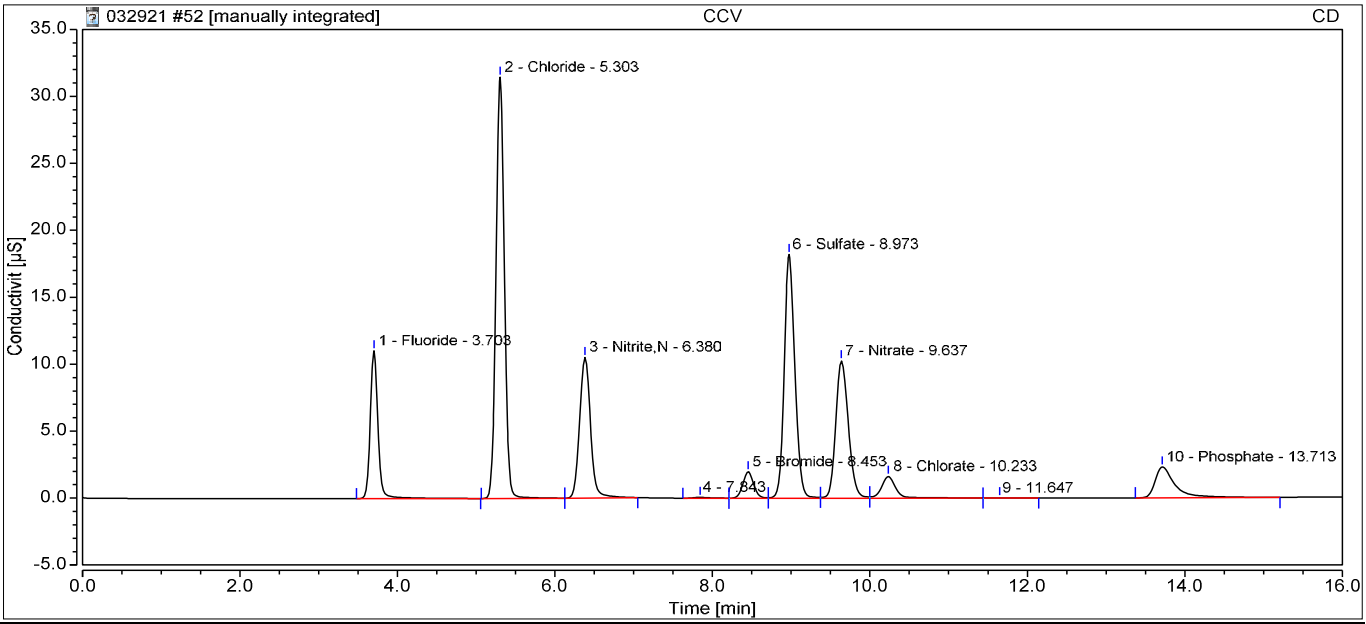
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.70	Fluoride	BMB	0.009	0.0639	0.6394	10.0000
2	5.32	Chloride	BMB	0.643	3.1542	31.5421	10.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	10.0000
4	8.40	Bromide	M	0.009	n.a.	n.a.	10.0000
5	9.26	Sulfate	MB	2.434	17.0343	170.3429	10.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	10.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	10.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	10.0000
Total:			**0.000**	**3.095**		**202.52**	

52 CCV

Sample Name:	**CCV**	*Injection Volume:*	**5.00**
Vial Number:	**R1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/29/2021 23:04**	*Sample Weight:*	**1.0000**

Run Time:



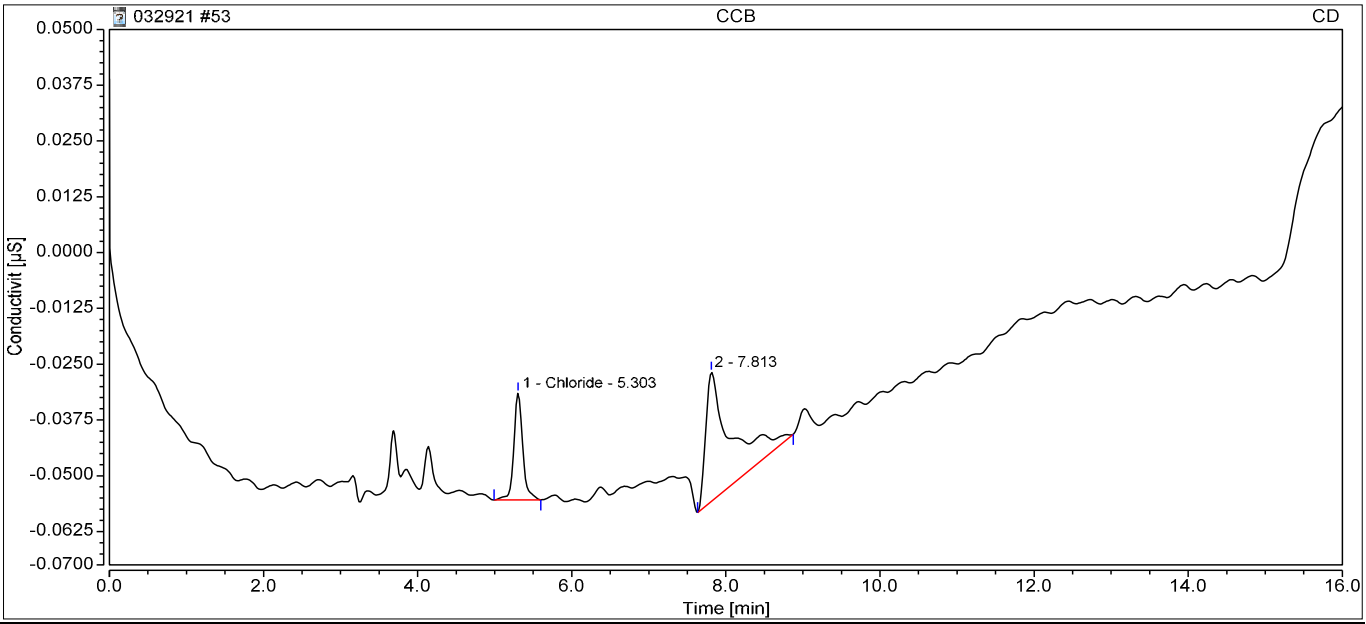
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.70	Fluoride	BMB	1.257	4.3120	4.3120	1.0000
2	5.30	Chloride	BMb*	3.831	19.4063	19.4063	1.0000
3	6.38	Nitrite,N	bMB*	1.685	4.3580	4.3580	1.0000
5	8.45	Bromide	M	0.318	3.7681	3.7681	1.0000
6	8.97	Sulfate	M	2.858	20.0451	20.0451	1.0000
7	9.64	Nitrate	M	1.897	3.7837	3.7837	1.0000
8	10.23	Chlorate	M	0.345	3.9357	3.9357	1.0000
10	13.71	Phosphate	BMB	0.680	4.2067	4.2067	1.0000
Total:			**0.000**	**12.872**		**63.82**	

53 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R4**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/29/2021 23:22**	*Sample Weight:*	**1.0000**

Run Time:



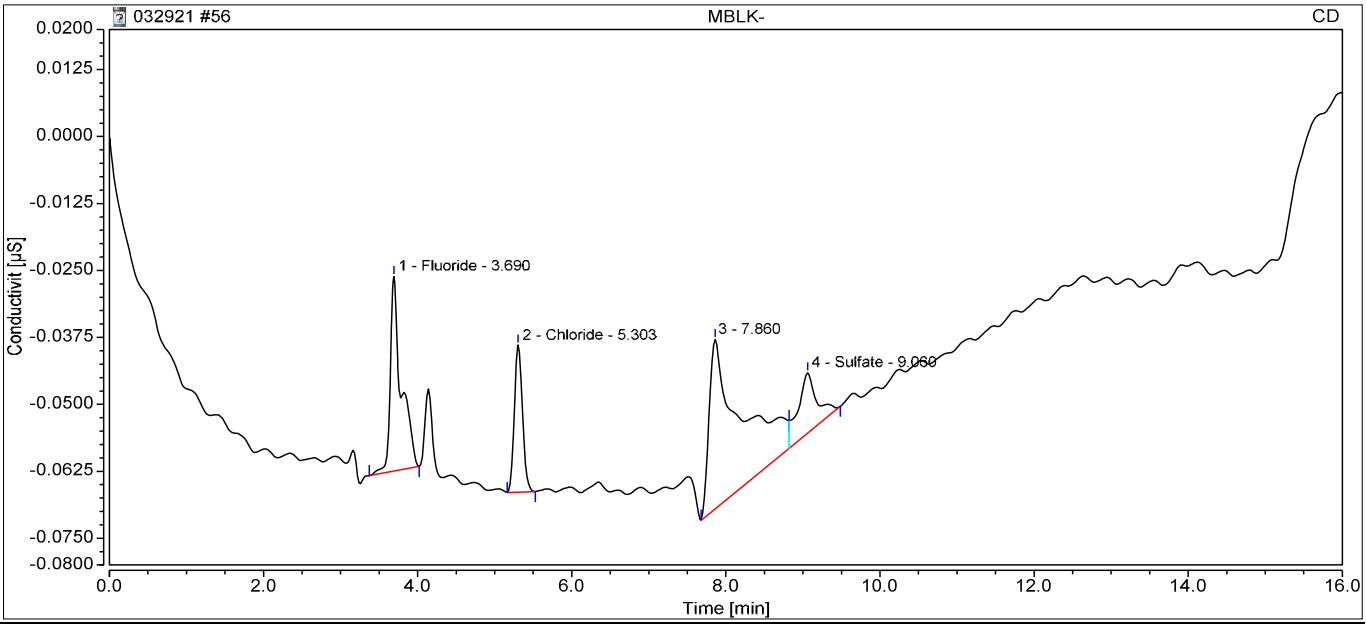
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
1	5.30	Chloride	BMB	0.003	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.003**		**0.00**	

56 MBLK-

Sample Name:	**MBLK-**	*Injection Volume:*	**5.00**
Vial Number:	**R5**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/30/2021 00:17**	*Sample Weight:*	**1.0000**

Run Time:



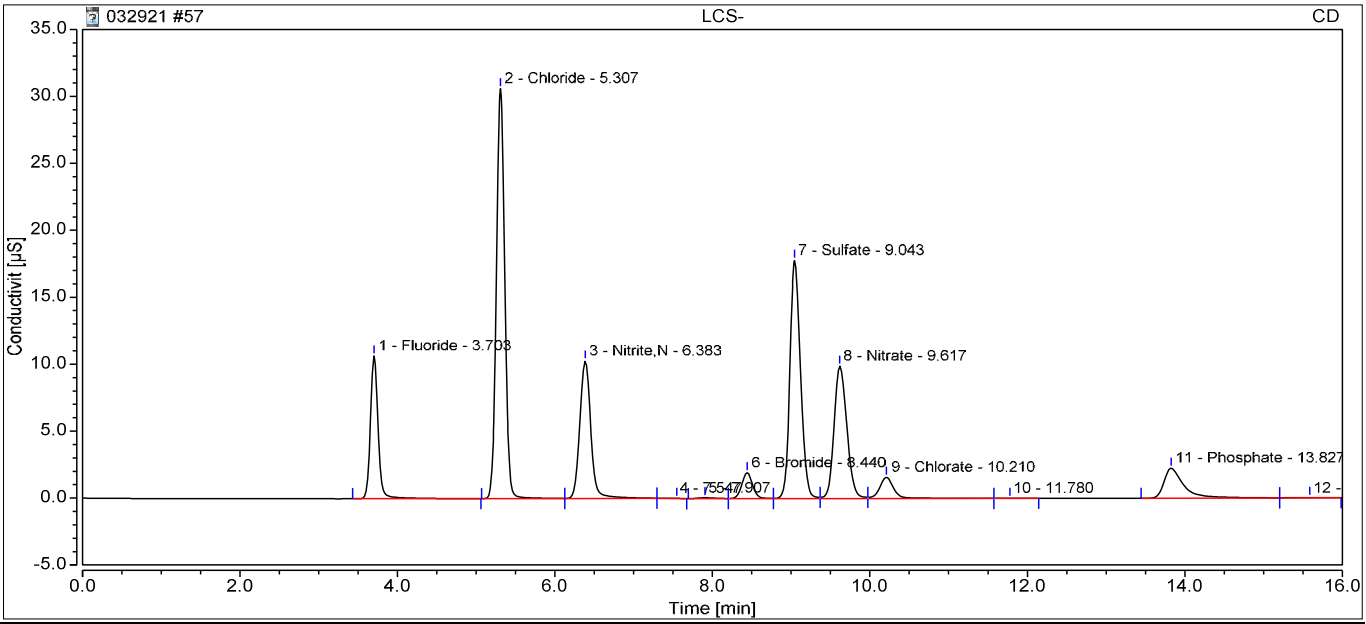
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.69	Fluoride	BMB	0.006	0.0545	0.0545	1.0000
2	5.30	Chloride	BMB	0.003	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
4	9.06	Sulfate	MB	0.003	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.013**		**0.05**	

57 LCS-

Sample Name:	**LCS-**	*Injection Volume:*	**5.00**
Vial Number:	**R2**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/30/2021 00:36**	*Sample Weight:*	**1.0000**

Run Time:



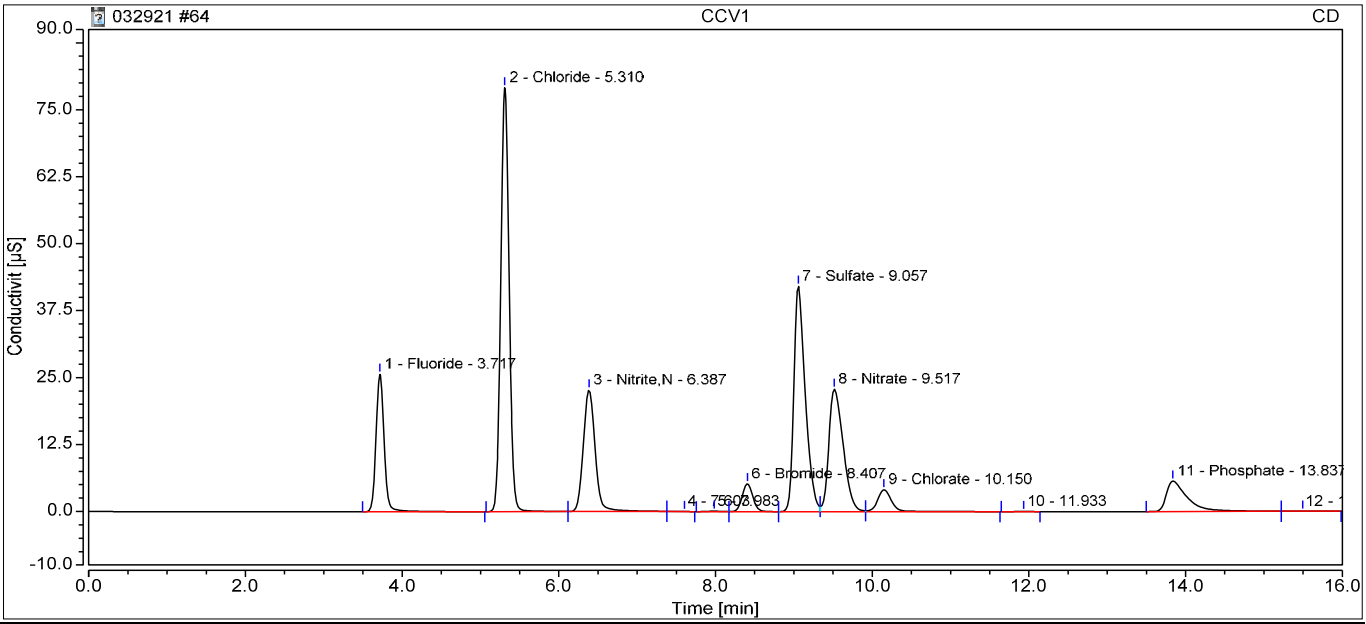
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.70	Fluoride	BMB	1.214	4.1647	4.1647	1.0000
2	5.31	Chloride	BMB	3.730	18.8934	18.8934	1.0000
3	6.38	Nitrite,N	BMB	1.662	4.2985	4.2985	1.0000
6	8.44	Bromide	M	0.313	3.7080	3.7080	1.0000
7	9.04	Sulfate	M	2.762	19.3636	19.3636	1.0000
8	9.62	Nitrate	M	1.854	3.6977	3.6977	1.0000
9	10.21	Chlorate	M	0.335	3.8162	3.8162	1.0000
11	13.83	Phosphate	BMB	0.655	4.0634	4.0634	1.0000
Total:			**0.000**	**12.526**		**62.01**	

64 CCV1

Sample Name:	**CCV1**	*Injection Volume:*	**5.00**
Vial Number:	**R3**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/30/2021 02:45**	*Sample Weight:*	**1.0000**

Run Time:



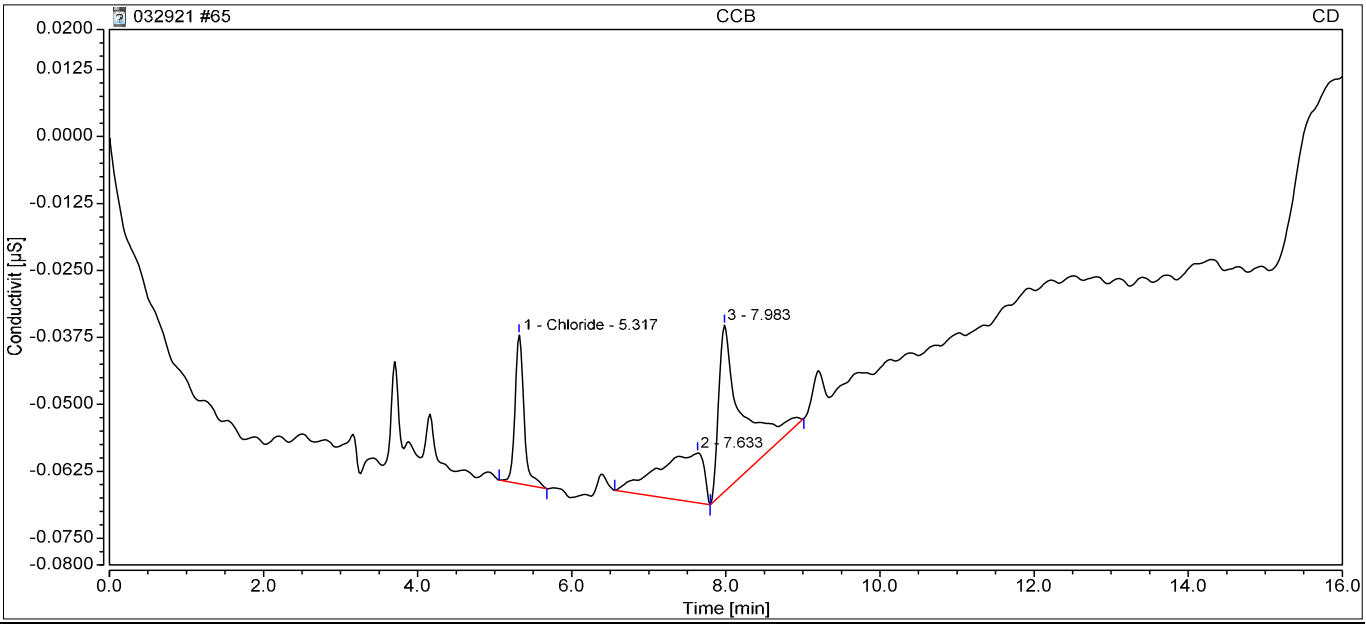
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	3.72	Fluoride	BMB	3.074	10.4940	10.4940	1.0000
2	5.31	Chloride	BMB	9.678	49.2165	49.2165	1.0000
3	6.39	Nitrite,N	BMB	3.964	10.3025	10.3025	1.0000
6	8.41	Bromide	M	0.817	10.2138	10.2138	1.0000
7	9.06	Sulfate	M	7.132	50.4051	50.4051	1.0000
8	9.52	Nitrate	M	4.836	9.6633	9.6633	1.0000
9	10.15	Chlorate	MB	0.847	9.8394	9.8394	1.0000
11	13.84	Phosphate	BMB	1.767	10.4646	10.4646	1.0000
Total:			**0.000**	**32.114**		**160.60**	

65 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R8**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program 06022020.1**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method**	*Dilution Factor:*	**1.0000**
Recording Time:	**03/30/2021 03:03**	*Sample Weight:*	**1.0000**

Run Time:



Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
1	5.32	Chloride	BMB	0.004	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.004**		**0.00**	

HS21030874 ALS Simi Valley CA Report
P2101408 Tier IV

ALS WO# HS21030874

LABORATORY REPORT

April 6, 2021

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

RE: HS21030874

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on March 18, 2021. For your reference, these analyses have been assigned our service request number P2101408.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Hayden Akers at 1:17 pm, Apr 06, 2021

Hayden Akers
Project Manager

Client: ALS Laboratory Group Service Request No: P2101408
Project: HS21030874

CASE NARRATIVE

The samples were received intact under chain of custody on March 18, 2021 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

Methane, Ethene and Ethane Analysis

The samples were analyzed for methane, ethene, and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-008
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272019-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Laboratory Group
Project ID: HS21030874

Service Request: P2101408

Date Received: 3/18/2021
Time Received: 09:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - Gases	RSK 175 - CO2
LHSMW21-210316	P2101408-001	Water	3/16/2021	07:45	X	X
46WW05-210316	P2101408-002	Water	3/16/2021	08:35	X	X
46WW16-210316	P2101408-003	Water	3/16/2021	09:30	X	X
46WW09-210316	P2101408-004	Water	3/16/2021	10:30	X	X
46WW11-210316	P2101408-005	Water	3/16/2021	11:20	X	X
46WW11-210316-FD	P2101408-006	Water	3/16/2021	11:20	X	X
46WW02-210316	P2101408-007	Water	3/16/2021	12:15	X	X

P2101408

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **15794**

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone: +1 805 526 7161

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS21030874
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS21030874-06**	**LHSMW21-210316**	**Groundwater**	**16 Mar 2021 07:45**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021
2.	**HS21030874-07**	**46WW05-210316**	**Groundwater**	**16 Mar 2021 08:35**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021
3.	**HS21030874-08**	**46WW16-210316**	**Groundwater**	**16 Mar 2021 09:30**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021
4.	**HS21030874-09**	**46WW09-210316**	**Groundwater**	**16 Mar 2021 10:30**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021
5.	**HS21030874-10**	**46WW11-210316**	**Groundwater**	**16 Mar 2021 11:20**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021
6.	**HS21030874-11**	**46WW11-210316-FD**	**Groundwater**	**16 Mar 2021 11:20**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021
7.	**HS21030874-12**	**46WW02-210316**	**Groundwater**	**16 Mar 2021 12:15**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			02 Apr 2021

Comments:

P2101408

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **15794**

Please analyze for the analysis listed above.
Send report to the emails shown above.
MS/MSD Sample HS21030874-08
NEAT & HCL VIALS

QC Level: DOD IV (DoD Data Package)

Relinquished By:	[signature]	Date/Time:	3/19/2021 1800
Received By:	[signature]	Date/Time:	3-18-21 0930
Cooler ID(s):		Temperature(s):	2°

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P2101408

Project:

Sample(s) received on: 3/18/21 Date opened: 3/18/21 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: 2° C Blank Temperature: ° C	Wet Ic		
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler lid. Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☒	☐	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2101408-001.01	40ml VOA HCL				A	
P2101408-001.02	40ml VOA HCL				A	
P2101408-001.03	40ml VOA HCL				A	
P2101408-001.04	40mL VOA NP				A	
P2101408-001.05	40mL VOA NP				A	
P2101408-001.06	40mL VOA NP				A	
P2101408-002.01	40ml VOA HCL		1		A	wh 3/30/21
P2101408-002.02	40ml VOA HCL				A	
P2101408-002.03	40ml VOA HCL				A	
P2101408-002.04	40mL VOA NP		7		A	wh 3/26/21
P2101408-002.05	40mL VOA NP				A	
P2101408-002.06	40mL VOA NP				A	
P2101408-003.01	40ml VOA HCL		1		A	wh 3/30/21
P2101408-003.02	40ml VOA HCL		1		A	wh 3/30/21
P2101408-003.03	40ml VOA HCL		1		A	wh 3/30/21

Explain any discrepancies: (include lab sample ID numbers): Sample -001 was not received with the rest of the samples.

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P2101408

Project:

Sample(s) received on: 3/18/21 Date opened: 3/18/21 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2101408-003.04	40mL VOA NP		7		A	wh 3/26/21
P2101408-003.05	40mL VOA NP		7		A	wh 3/26/21
P2101408-003.06	40mL VOA NP		7		A	wh 3/26/21
P2101408-003.07	40ml VOA HCL				A	
P2101408-003.08	40ml VOA HCL				A	
P2101408-003.09	40ml VOA HCL				A	
P2101408-003.10	40ml VOA HCL				A	
P2101408-003.11	40ml VOA HCL				A	
P2101408-003.12	40ml VOA HCL				A	
P2101408-003.13	40mL VOA NP				A	
P2101408-003.14	40mL VOA NP				A	
P2101408-003.15	40mL VOA NP				A	
P2101408-003.16	40mL VOA NP				A	
P2101408-003.17	40mL VOA NP				A	
P2101408-003.18	40mL VOA NP				A	
P2101408-004.01	40ml VOA HCL		1		A	wh 3/30/21
P2101408-004.02	40ml VOA HCL				A	
P2101408-004.03	40ml VOA HCL				A	
P2101408-004.04	40mL VOA NP		7		A	wh 3/26/21
P2101408-004.05	40mL VOA NP				A	
P2101408-004.06	40mL VOA NP				A	
P2101408-005.01	40ml VOA HCL		1		A	wh 3/30/21
P2101408-005.02	40ml VOA HCL				A	
P2101408-005.03	40ml VOA HCL				A	
P2101408-005.04	40mL VOA NP		7		A	wh 3/26/21
P2101408-005.05	40mL VOA NP				A	
P2101408-005.06	40mL VOA NP				A	
P2101408-006.01	40ml VOA HCL		1		A	wh 3/30/21
P2101408-006.02	40ml VOA HCL				A	
P2101408-006.03	40ml VOA HCL				A	
P2101408-006.04	40mL VOA NP		7		A	wh 3/26/21
P2101408-006.05	40mL VOA NP				A	
P2101408-006.06	40mL VOA NP				A	
P2101408-007.01	40ml VOA HCL		1		A	wh 3/30/21
P2101408-007.02	40ml VOA HCL				A	
P2101408-007.03	40ml VOA HCL				A	
P2101408-007.04	40mL VOA NP		7		A	wh 3/26/21
P2101408-007.05	40mL VOA NP				A	
P2101408-007.06	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Project ID: **HS21030874** ALS Project ID: P2101408

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date(s) Collected: 3/16/21
Date Received: 3/18/21
Date Analyzed: 3/26/21

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
46WW05-210316	P2101408-002	0.10	**450,000**	1,000	860	370	
46WW16-210316	P2101408-003	0.10	**670,000**	1,000	860	370	
46WW09-210316	P2101408-004	0.10	**200,000**	1,000	860	370	
46WW11-210316	P2101408-005	0.10	**83,000**	1,000	860	370	
46WW11-210316-FD	P2101408-006	0.10	**85,000**	1,000	860	370	
46WW02-210316	P2101408-007	0.10	**420,000**	1,000	860	370	
Method Control Sample	P210326-MB	0.10	860	1,000	860	370	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **46WW16-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-003MS
P2101408-003DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 3/16/21
Date Received: 3/18/21
Date Analyzed: 3/26/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount MS / DMS ug/L	Sample Amount ug/L	Result MS ug/L	Result DMS ug/L	% Recovery MS	% Recovery DMS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	45,800	671,000	723,000	720,000	**114**	**107**	80-122	6	30	

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2101408
Client Project ID: **HS21030874** ALS Sample ID: P210326-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Connor Barrett Date Analyzed: 3/26/21
Matrix: Water Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result$_1$ LCS ug/L	Result$_1$ DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	23,500	23,300	**103**	**102**	80-122	1.0	12	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **46WW05-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 3/16/21
Date Received: 3/18/21
Date Analyzed: 3/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**1.3**	1.3	1.0	0.51	**J**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **46WW16-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 3/16/21
Date Received: 3/18/21
Date Analyzed: 3/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **46WW09-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-004

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 3/16/21
Date Received: 3/18/21
Date Analyzed: 3/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **46WW11-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-005

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 3/16/21
Date Received: 3/18/21
Date Analyzed: 3/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**2.0**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **46WW11-210316-FD**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-006

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 3/16/21
Date Received: 3/18/21
Date Analyzed: 3/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**1.4**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **46WW02-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-007

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 3/16/21
Date Received: 3/18/21
Date Analyzed: 3/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **Method Control Sample**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P210330-MB

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 3/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **46WW16-210316**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P2101408-003MS
P2101408-003DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: 3/16/21
Date Received: 3/18/21
Date Analyzed: 3/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount MS / DMS µg/L	Sample Amount µg/L	Result MS µg/L	Result DMS µg/L	% Recovery MS	% Recovery DMS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	169	0.405	86.7	90.2	**51**	**53**	73-125	4	30	**N**
74-85-1	Ethene	294	ND	164	174	**56**	**59**	72-133	5	30	**N**
74-84-0	Ethane	317	ND	171	180	**54**	**57**	74-131	5	30	**N**

N = The matrix spike recovery is not within control limits. See case narrative.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS21030874**

ALS Project ID: P2101408
ALS Sample ID: P210330-LCS
P210330-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 3/30/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.52	2.67	2.62	**106**	**104**	73-125	2	26	
74-85-1	Ethene	4.40	4.90	4.80	**111**	**109**	72-133	2	11	
74-84-0	Ethane	4.72	4.74	4.69	**100**	**99**	74-131	1	10	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262104.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 12:24:27
Operator : CB
Sample : P2101408-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:56:48 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

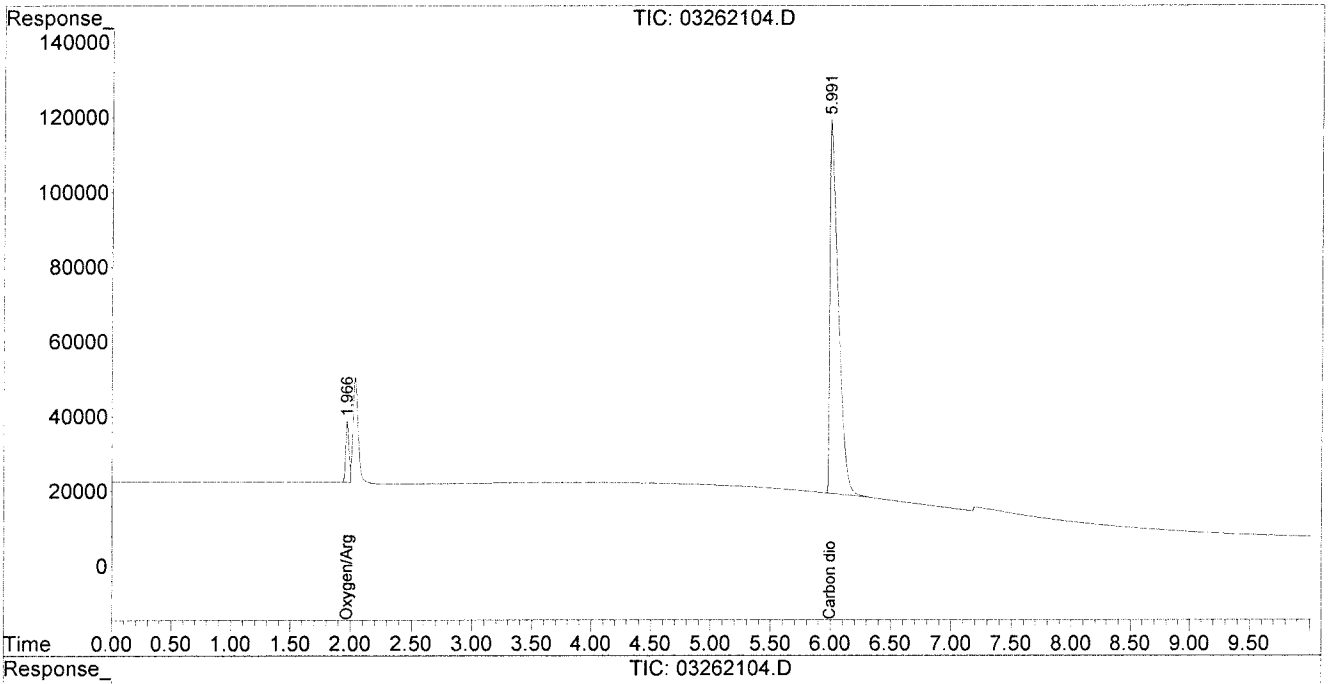
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.967f	302912	0.064	ppm
2)	Carbon monoxide	1.967f	302912	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.992	4826659	20562.670	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

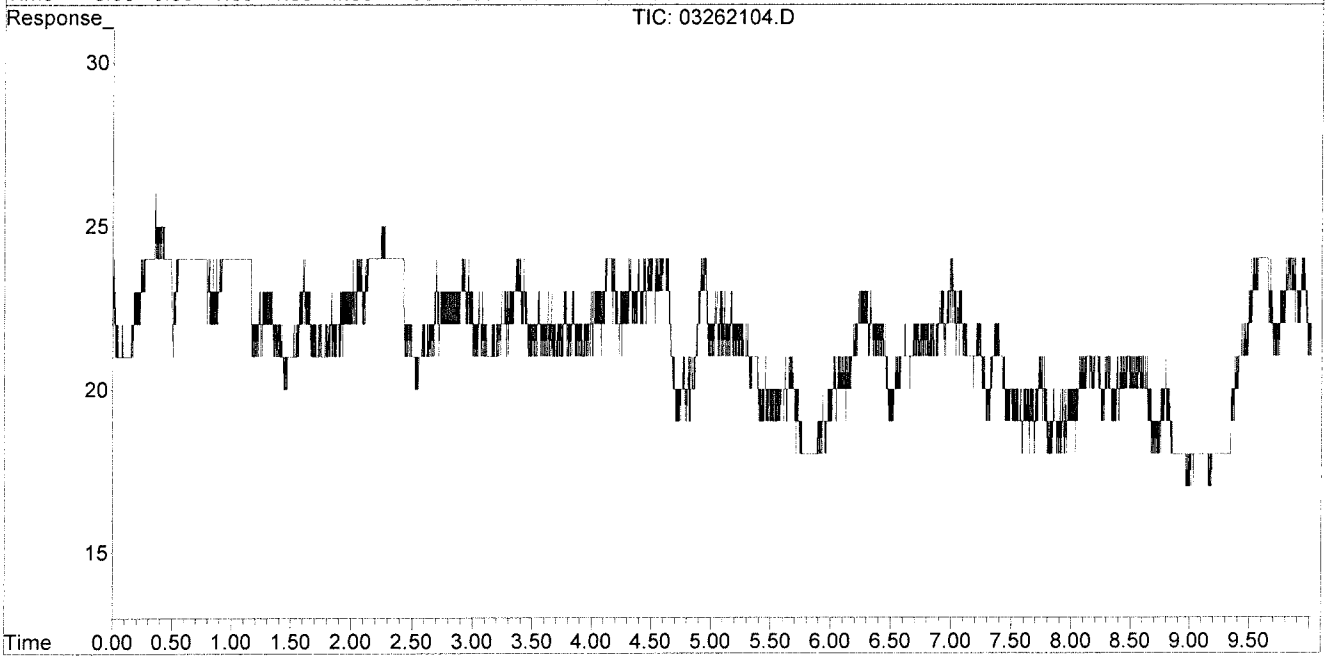
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262104.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 12:24:27
Operator : CB
Sample : P2101408-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:56:48 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262112.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 14:55:05
Operator : CB
Sample : P2101408-003 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:57:29 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

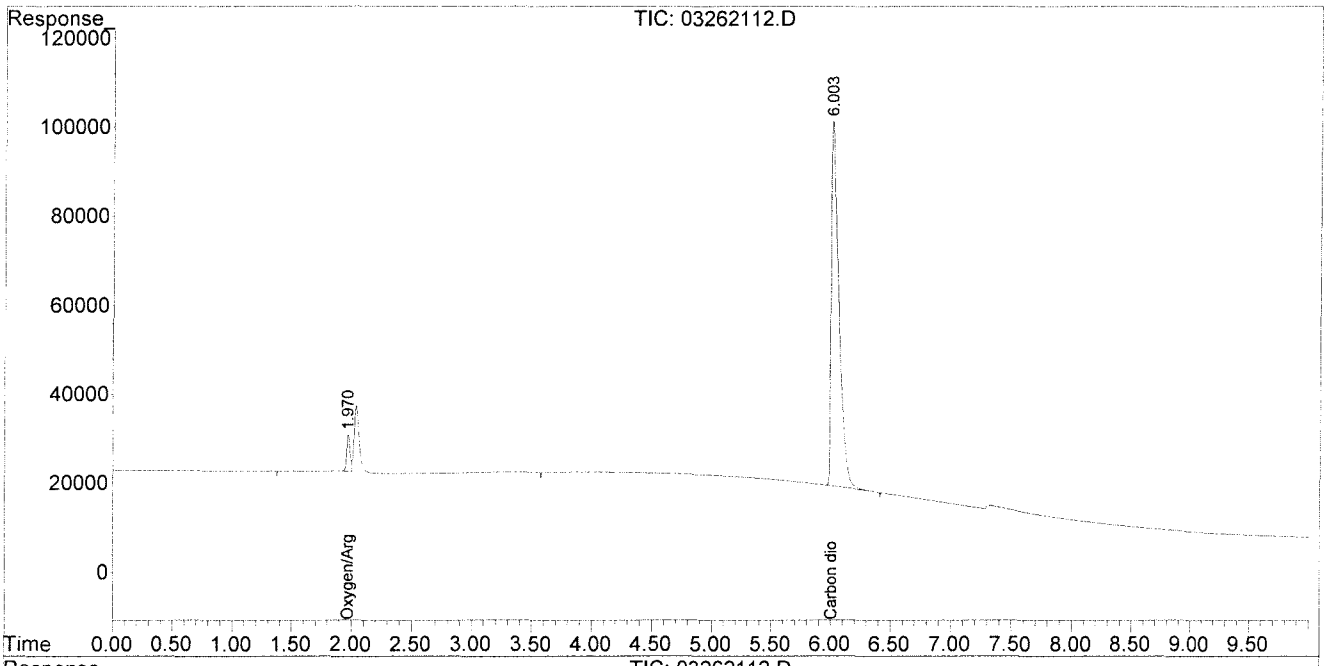
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.971f	151873	0.032	ppm
2)	Carbon monoxide	1.971f	151873	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.004	3607522	15368.869	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

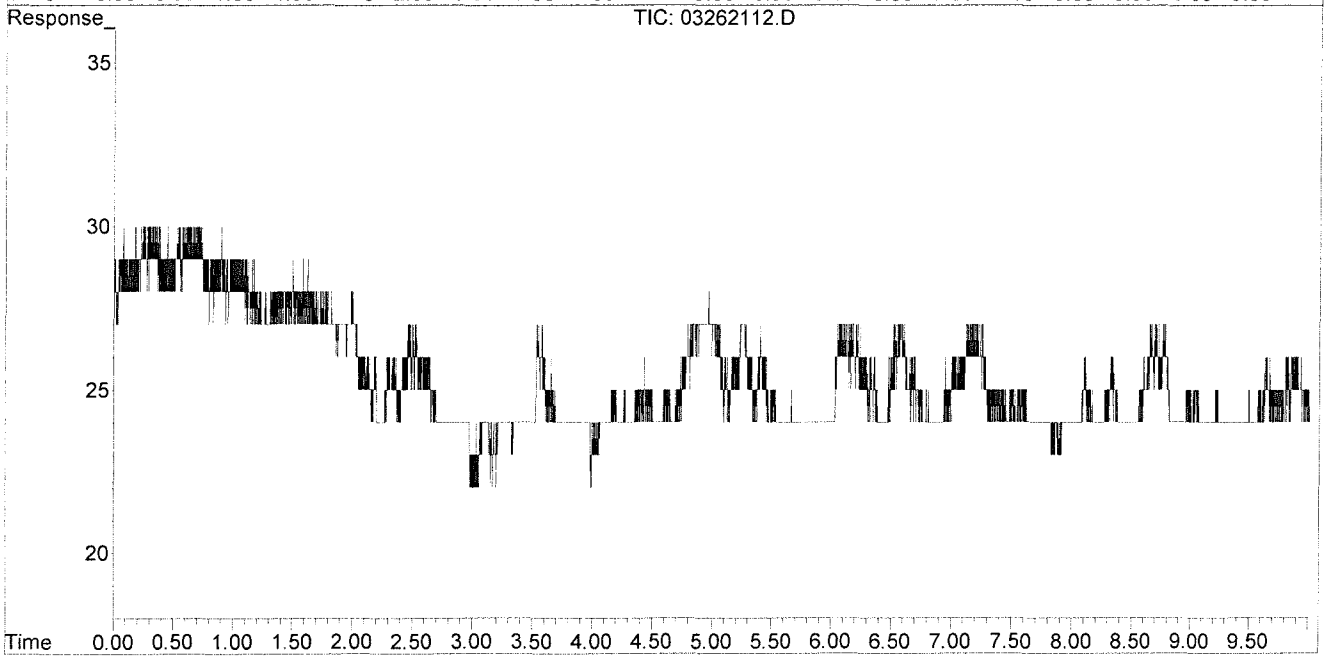
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262112.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 14:55:05
Operator : CB
Sample : P2101408-003 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:57:29 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262113.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 15:12:27
Operator : CB
Sample : P2101408-003ms 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:57:34 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

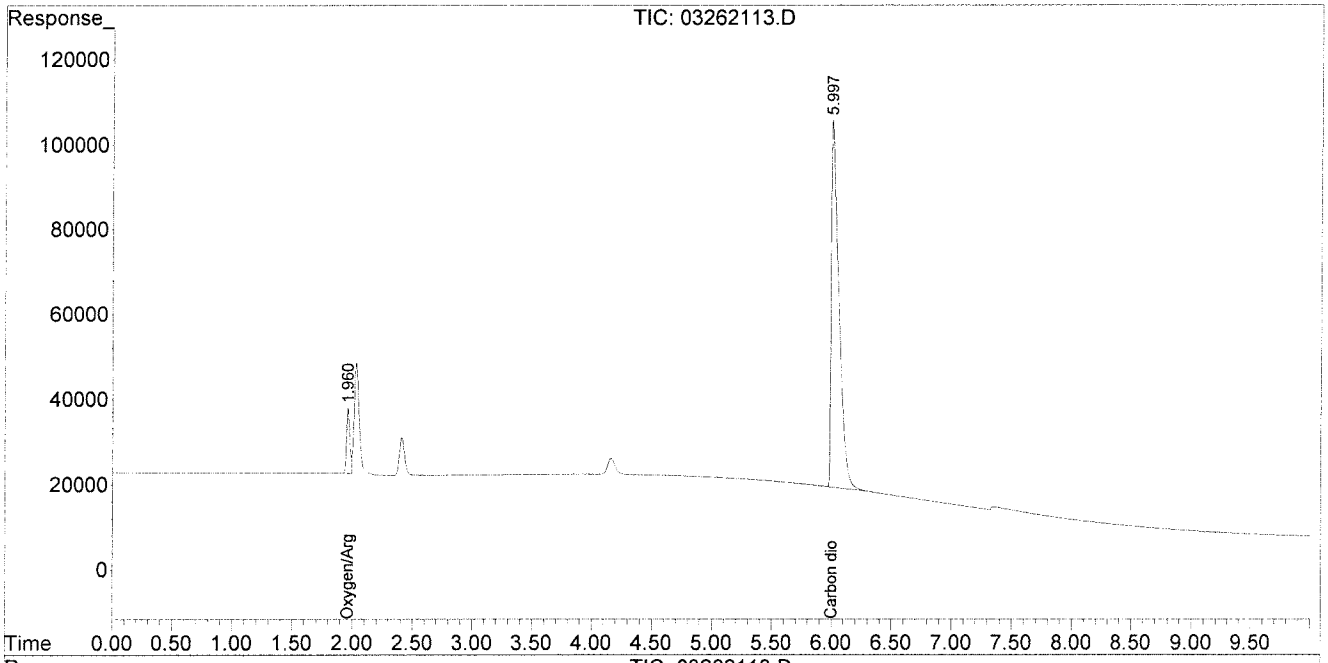
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.961f	277164	0.058	ppm
2)	Carbon monoxide	1.961f	277164	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.998	3888576	16566.222	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

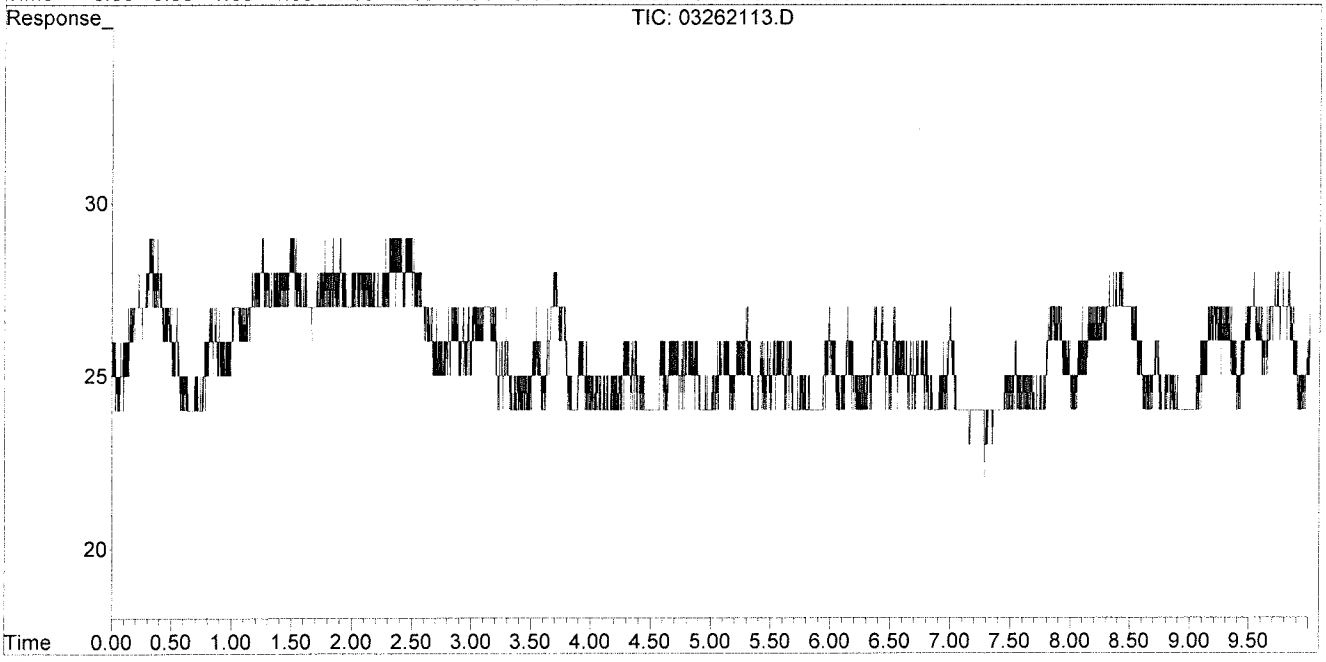
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262113.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 15:12:27
Operator : CB
Sample : P2101408-003ms 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:57:34 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262114.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 15:38:11
Operator : CB
Sample : P2101408-003msd 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:57:37 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

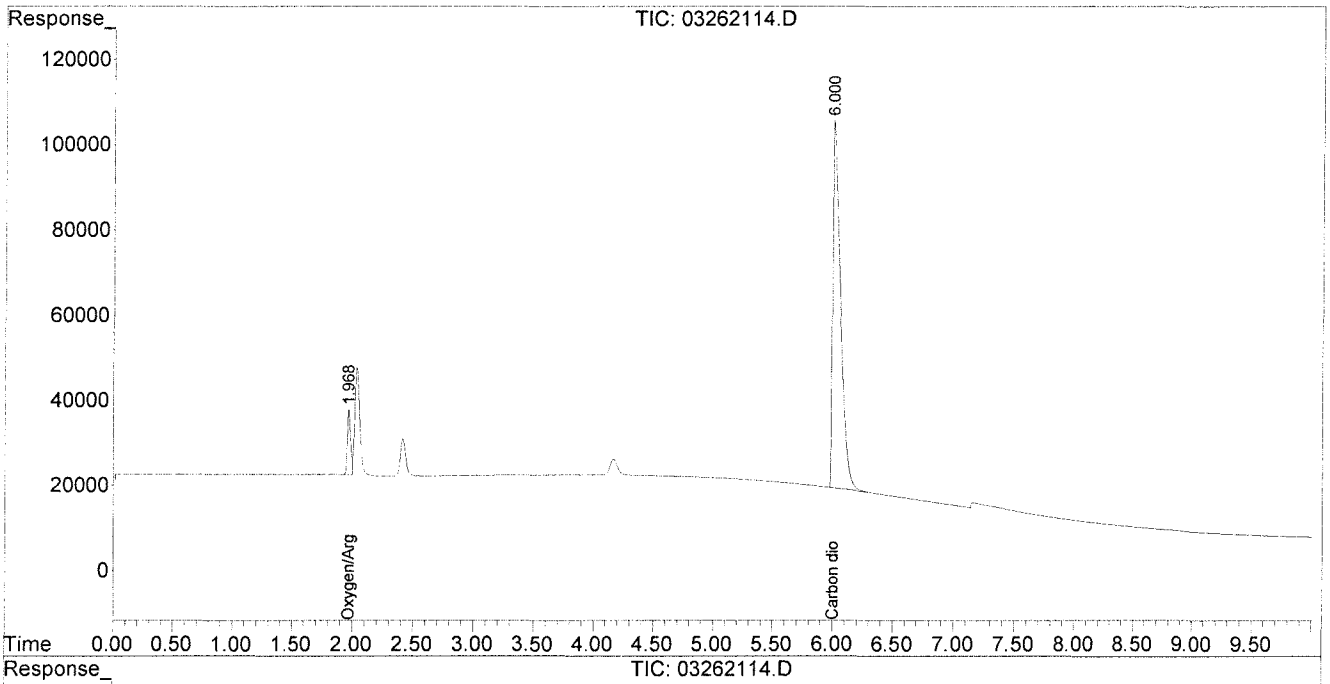
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.969f	280092	0.059	ppm
2)	Carbon monoxide	1.969f	280092	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.002	3874079	16504.460	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

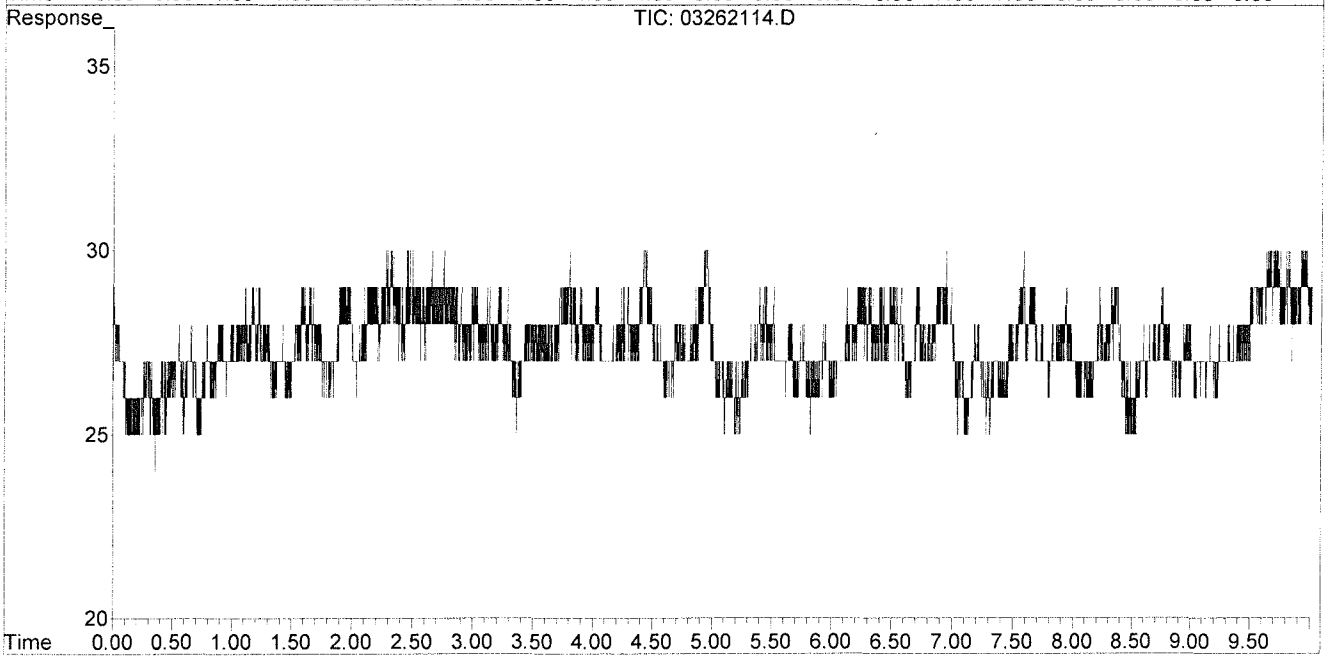
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262114.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 15:38:11
Operator : CB
Sample : P2101408-003msd 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:57:37 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 12:45:56
Operator : CB
Sample : P2101408-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:56:52 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

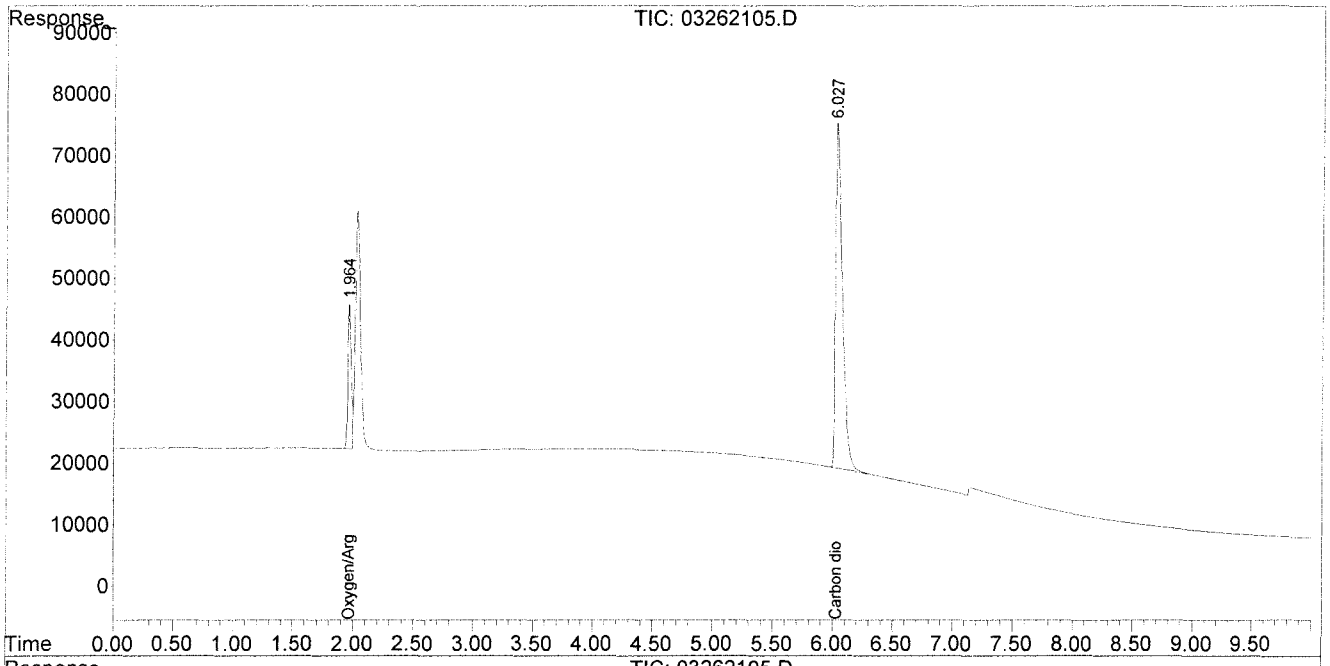
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.965f	433762	0.091	ppm
2)	Carbon monoxide	1.965f	433762	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.028	2191093	9334.558	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

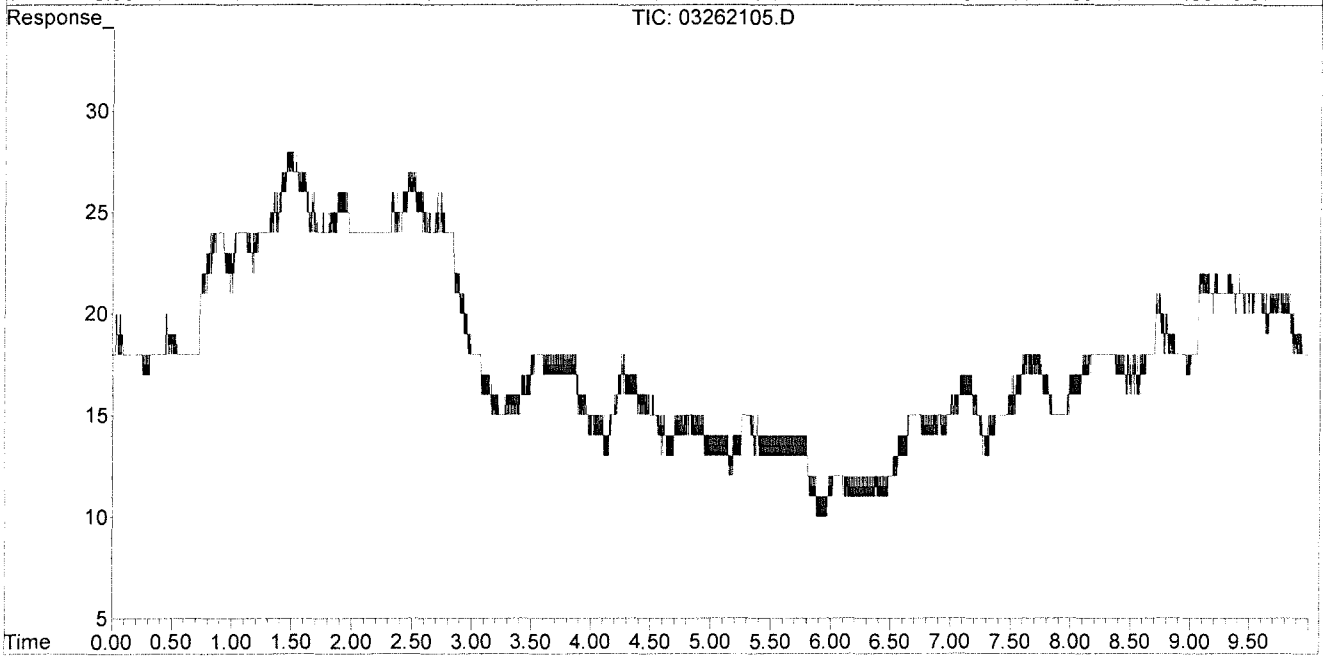
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 12:45:56
Operator : CB
Sample : P2101408-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:56:52 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262106.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 13:02:37
Operator : CB
Sample : P2101408-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:56:56 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

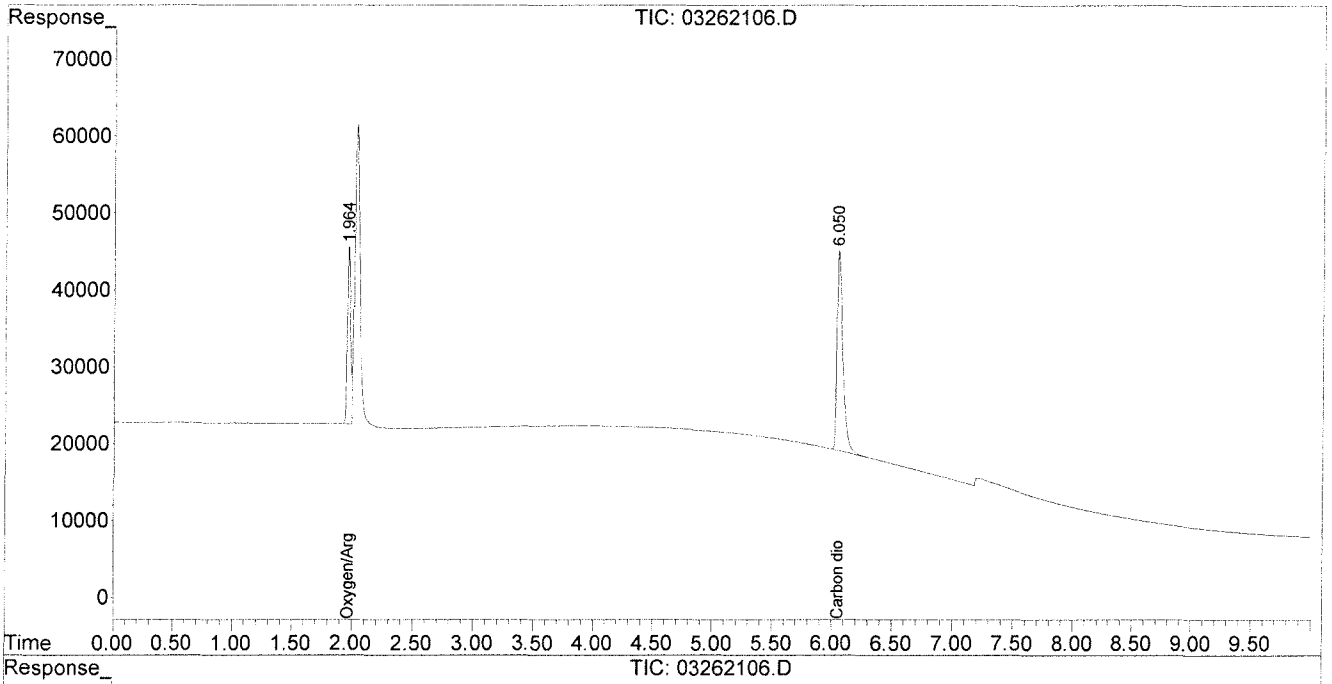
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.965f	422643	0.089	ppm
2)	Carbon monoxide	1.965f	422643	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.051	887741	3781.979	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262106.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 13:02:37
Operator : CB
Sample : P2101408-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:56:56 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262107.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 13:15:27
Operator : CB
Sample : P2101408-006 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:57:00 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.957f	451941	0.095	ppm
2)	Carbon monoxide	1.957f	451941	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.046	910188	3877.608	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

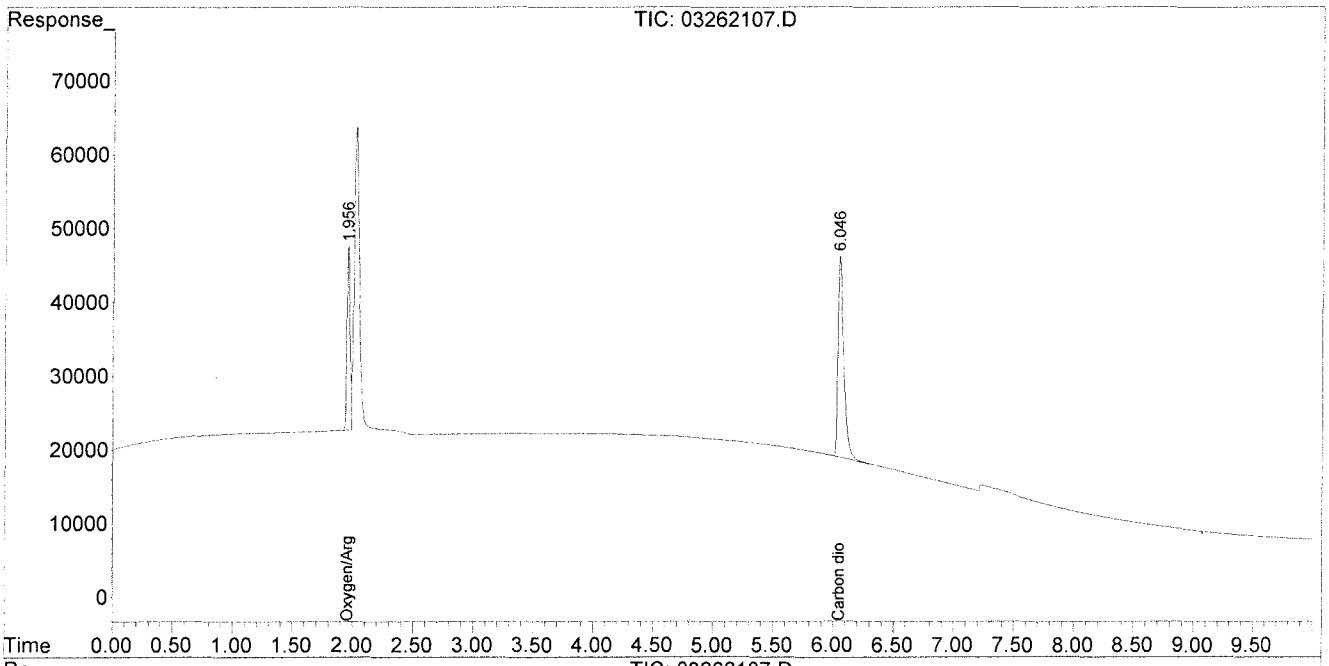
(f)=RT Delta > 1/2 Window (m)=manual int.

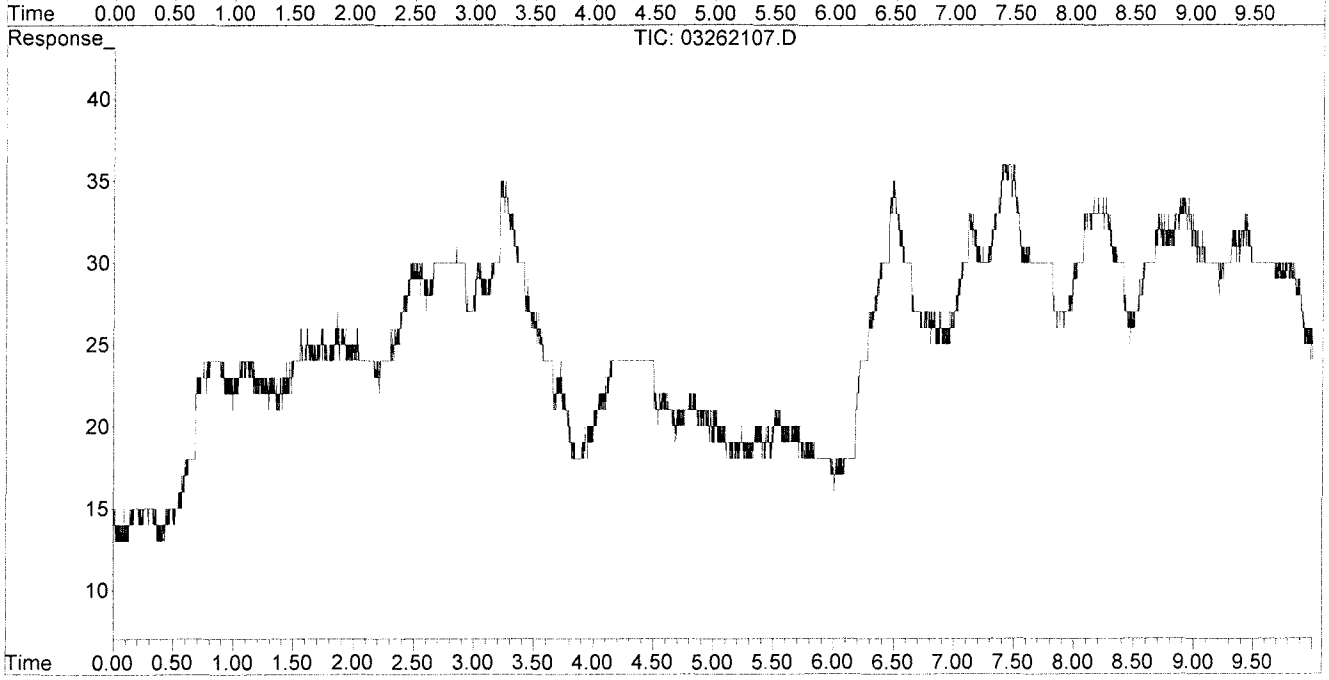
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262107.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 13:15:27
Operator : CB
Sample : P2101408-006 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:57:00 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262108.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 13:29:05
Operator : CB
Sample : P2101408-007 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:57:06 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

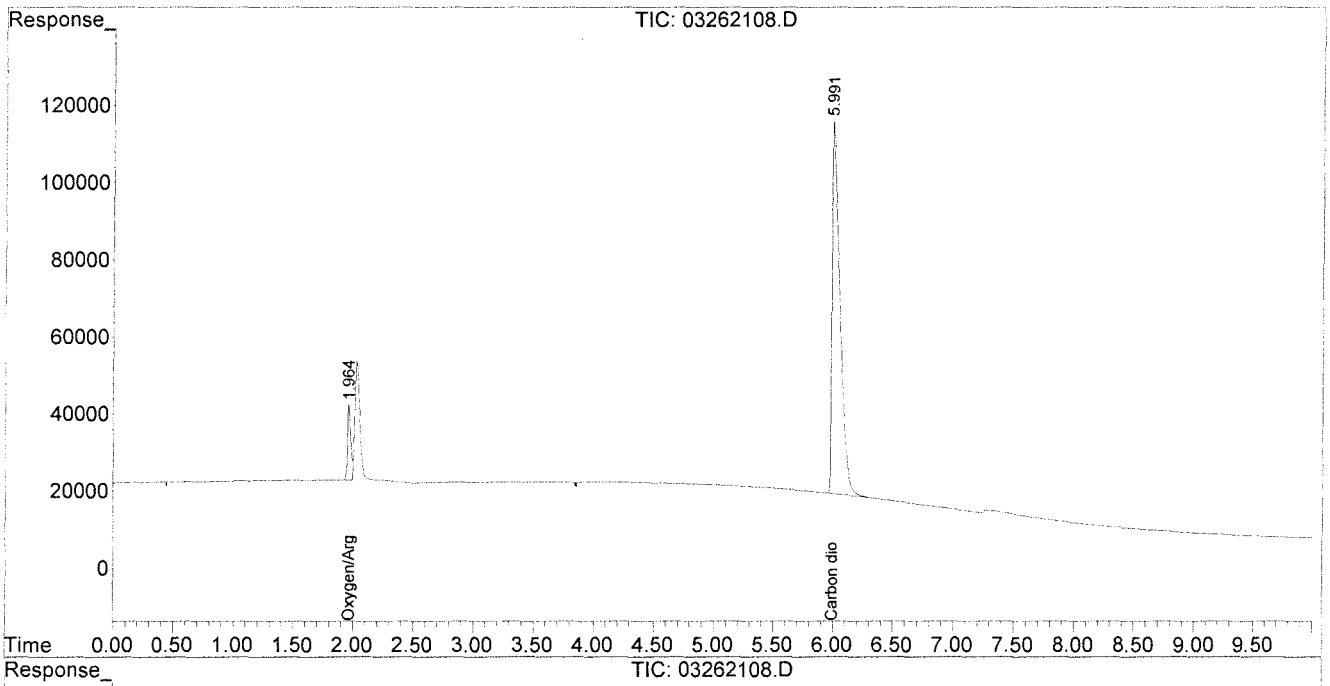
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.965f	357448	0.075	ppm
2)	Carbon monoxide	1.965f	357448	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.991	4490704	19131.426	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

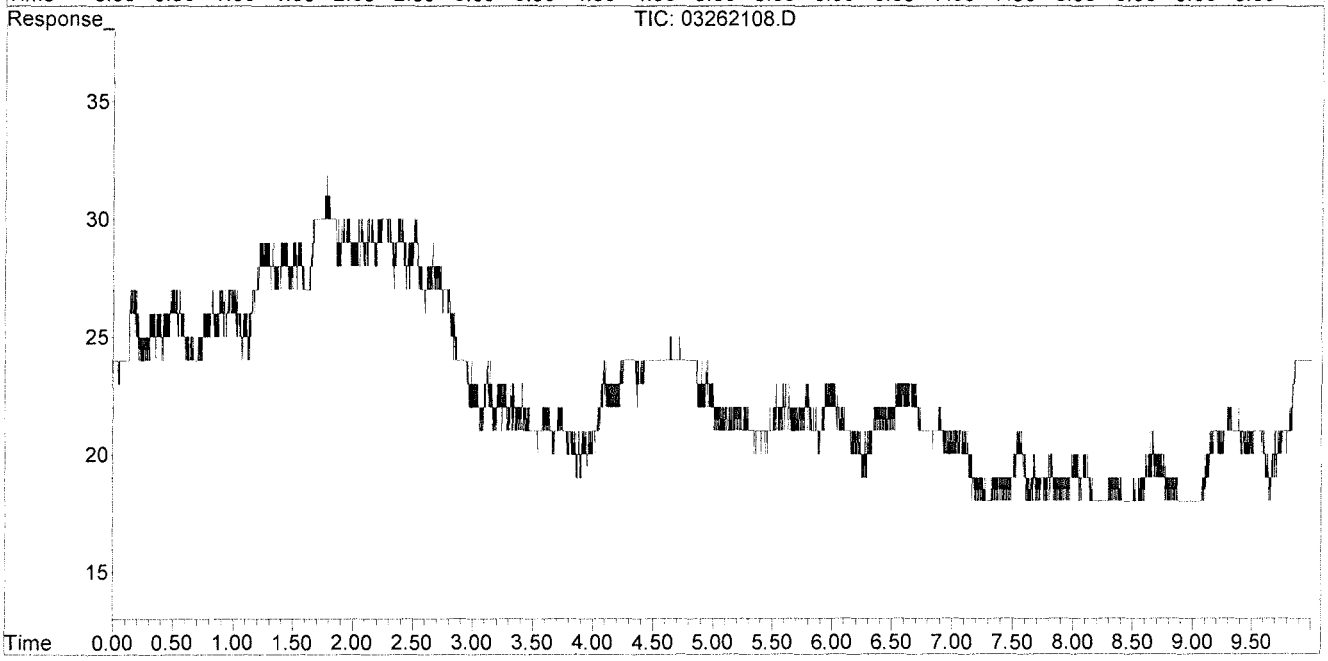
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262108.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 13:29:05
Operator : CB
Sample : P2101408-007 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:57:06 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (Not Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 11:53:04
Operator : CB
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:55:02 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

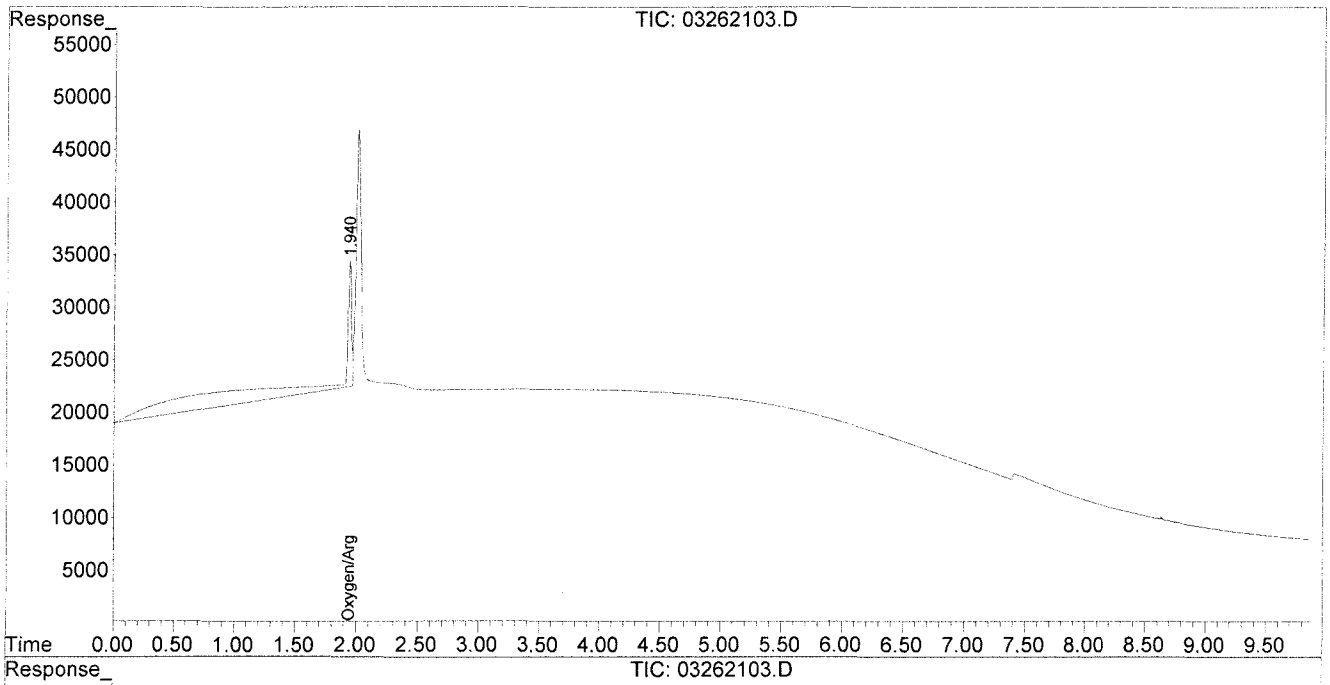
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.940f	1311970	0.276	ppm
2)	Carbon monoxide	1.940f	1311970	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

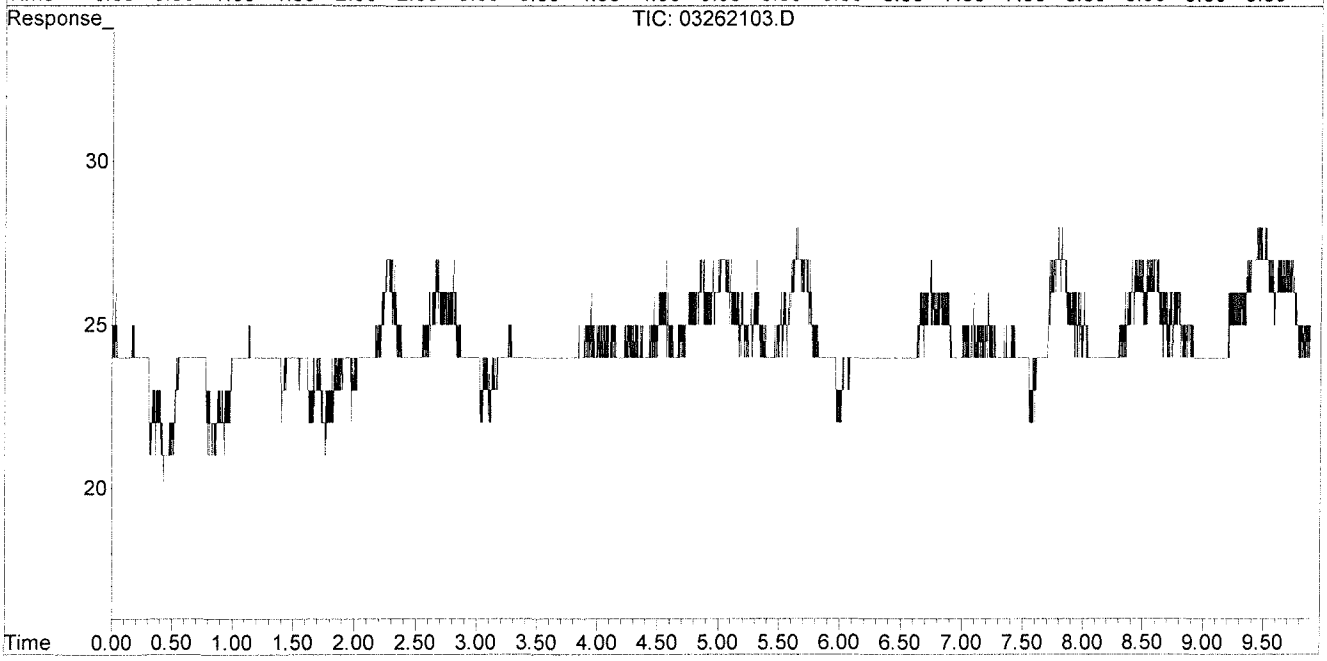
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 11:53:04
Operator : CB
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:55:02 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262109.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 13:53:26
Operator : CB
Sample : lcs tcd 0.1ml
Misc : S32-03172101
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:57:16 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

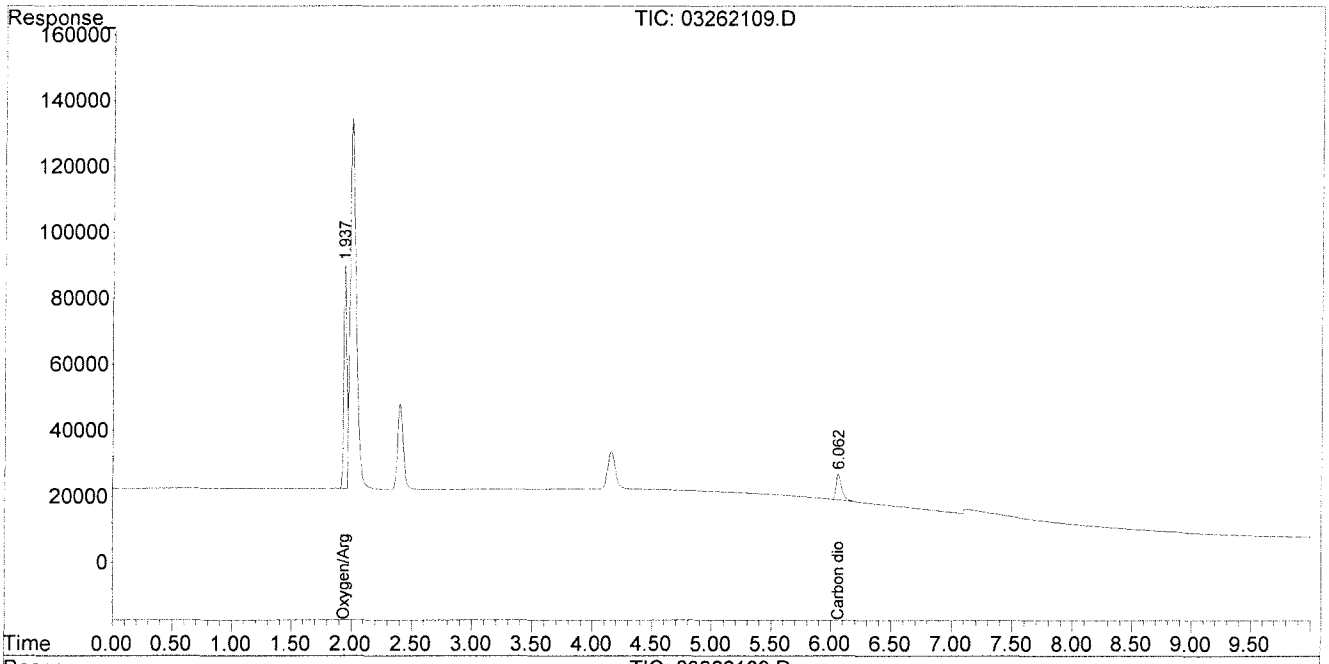
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.937f	1166097	0.245	ppm
2)	Carbon monoxide	1.937f	1166097	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.062	253004	1077.856	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

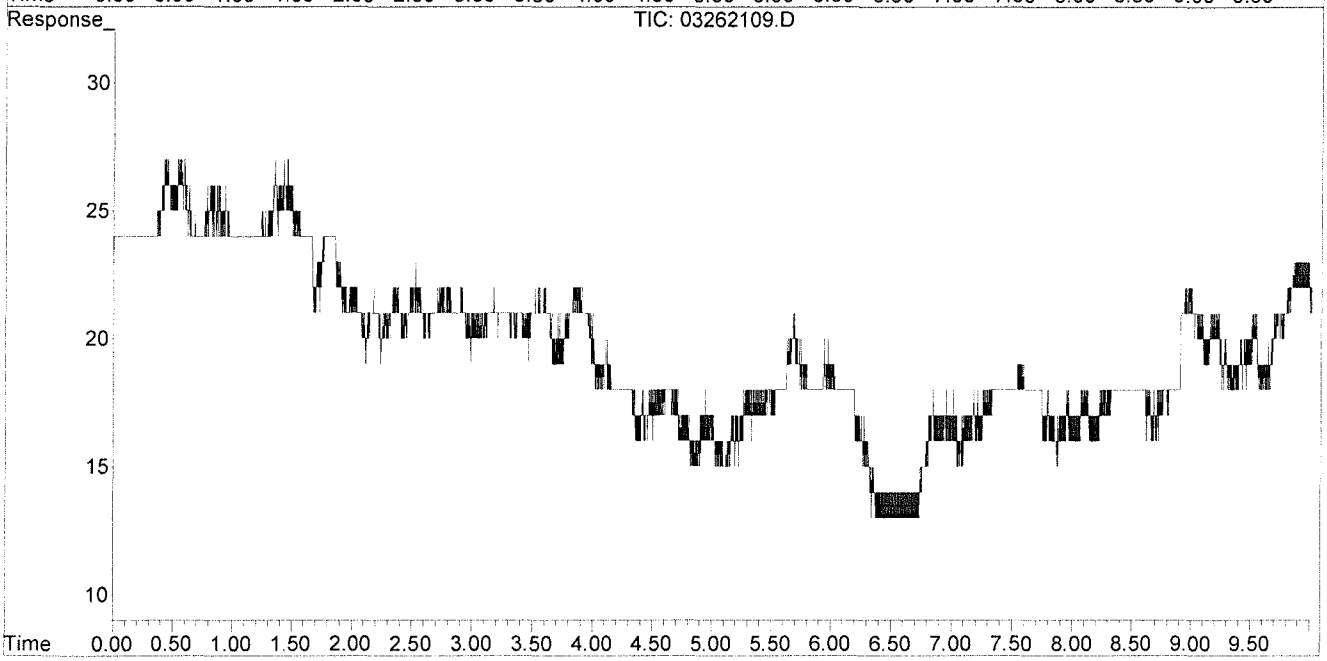
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262109.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 13:53:26
Operator : CB
Sample : lcs tcd 0.1ml
Misc : S32-03172101
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:57:16 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262110.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 14:08:45
Operator : CB
Sample : lcsd tcd 0.1ml
Misc : S32-03172101
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:57:19 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

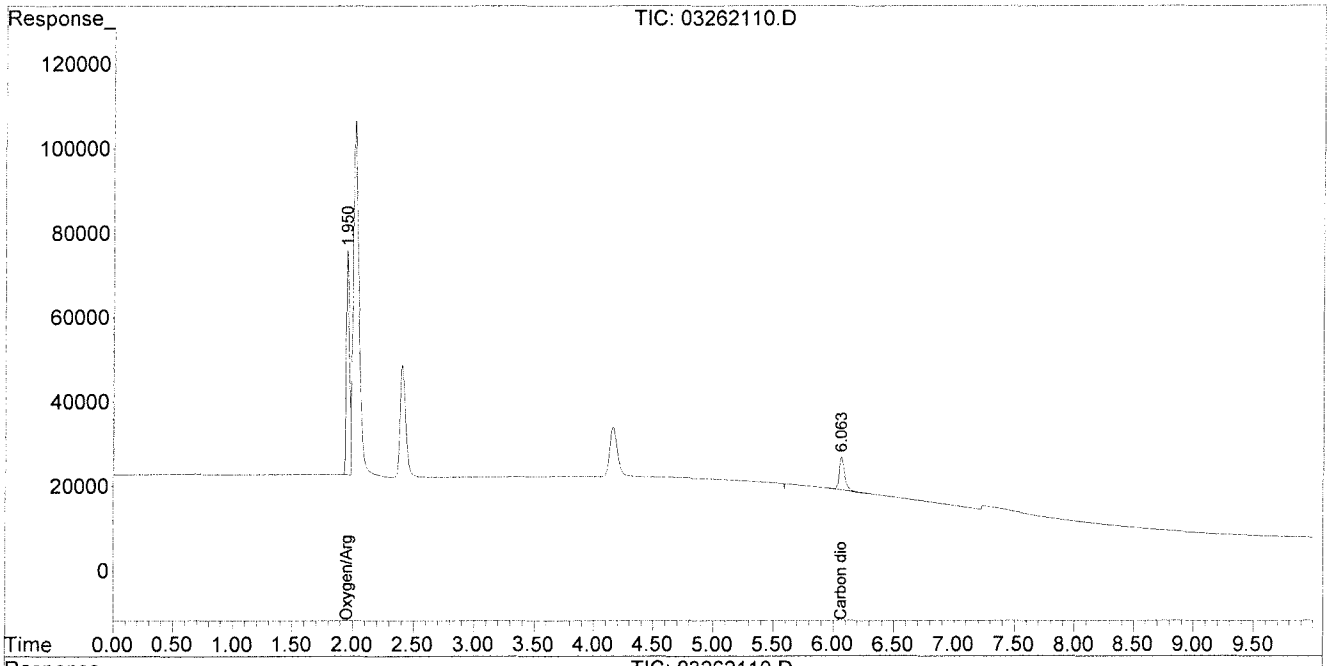
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.951f	928114	0.195	ppm
2)	Carbon monoxide	1.951f	928114	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.063	250430	1066.889	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

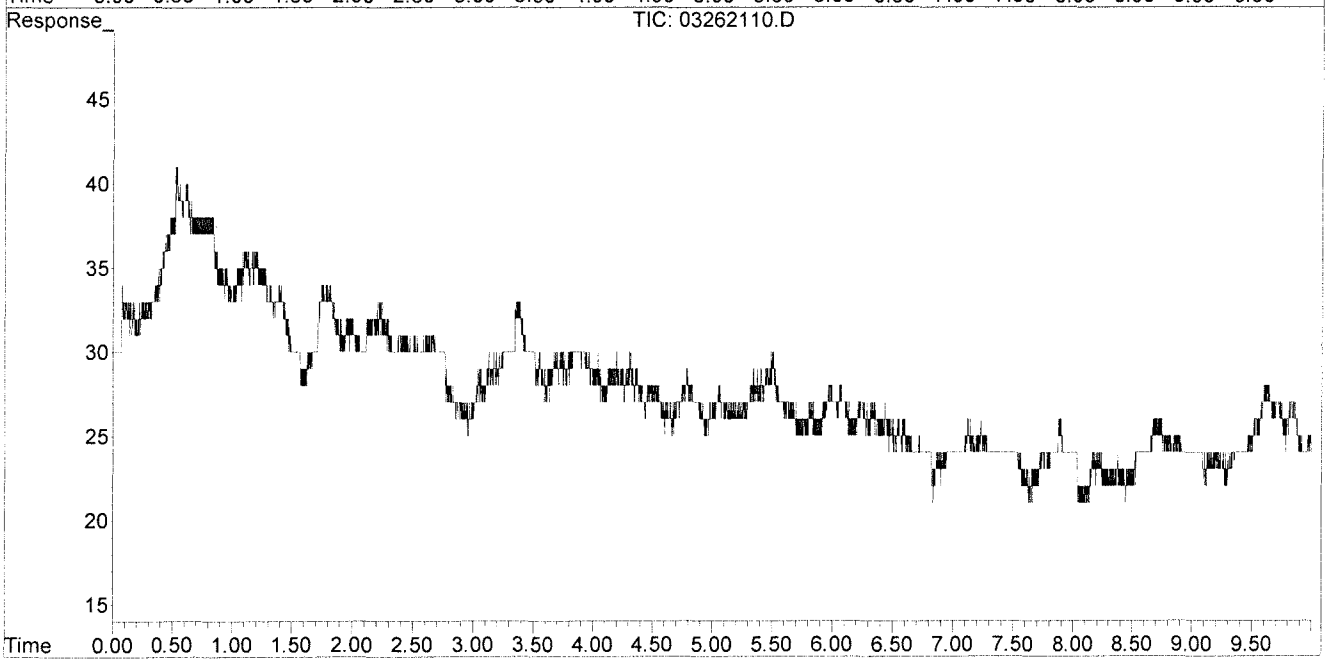
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262110.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 14:08:45
Operator : CB
Sample : lcsd tcd 0.1ml
Misc : S32-03172101
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:57:19 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg	%RSD
1)	Oxygen/Argon	4.760						4.760 E6	0.00
2)	Carbon monoxide	2.775		1.066	0.043	0.033	0.027	0.657 E6	170.12
3)	Methane (TCD)							9.457	0.00
4)	Carbon dioxide	2.717	2.193	2.338	2.272	2.265	2.298	2.347 E2	7.99

Signal #2 Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg	%RSD
6)	Methane (FID)	1.253	1.160	1.005	0.927	0.848	0.848	0.945 E4	15.85
7)	Ethylene	1.677	1.605	1.900	1.749	1.597	1.579	1.684 E4	7.30
8)	Ethane	1.769	1.631	1.866	1.767	1.639	1.667	1.723 E4	5.40
9)	Propylene	2.402	2.309	2.767	2.551	2.331	2.333	2.449 E4	7.32
10)	Propane	2.906	2.737	2.817	2.639	2.410	2.420	2.655 E4	7.75
11)	Isobutylene							0.000	-1.00
12)	Isobutane							0.000	-1.00
13)	n-Butane							0.000	-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS082817_CO2.M Wed Aug 30 13:24:19 2017

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291715.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291716.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291717.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291719.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291720.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291721.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241711.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Aug 29 14:21 2017	Aug 29 14:20 2017	29-Aug-2017, 14:07
2	2	Aug 29 14:52 2017	Aug 29 14:51 2017	29-Aug-2017, 14:22
3	3	Aug 29 15:04 2017	Aug 29 15:04 2017	29-Aug-2017, 14:53
4	4	Aug 29 15:36 2017	Aug 29 15:36 2017	29-Aug-2017, 15:23
5	5	Aug 29 15:57 2017	Aug 29 15:57 2017	29-Aug-2017, 15:44
6	6	Aug 29 16:13 2017	Aug 29 16:13 2017	29-Aug-2017, 16:00
7	7	Aug 25 09:05 2017	Aug 24 16:00 2017	24-Aug-2017, 15:44
8	8	Aug 25 09:06 2017	Aug 24 16:13 2017	24-Aug-2017, 16:02
9	9	Aug 25 09:06 2017	Aug 24 16:31 2017	24-Aug-2017, 16:16
10	10	Aug 25 09:07 2017	Aug 24 16:42 2017	24-Aug-2017, 16:33

RS082817_CO2.M Wed Aug 30 13:24:30 2017

dit Compounds -- Compound #4 -- Carbon dioxide

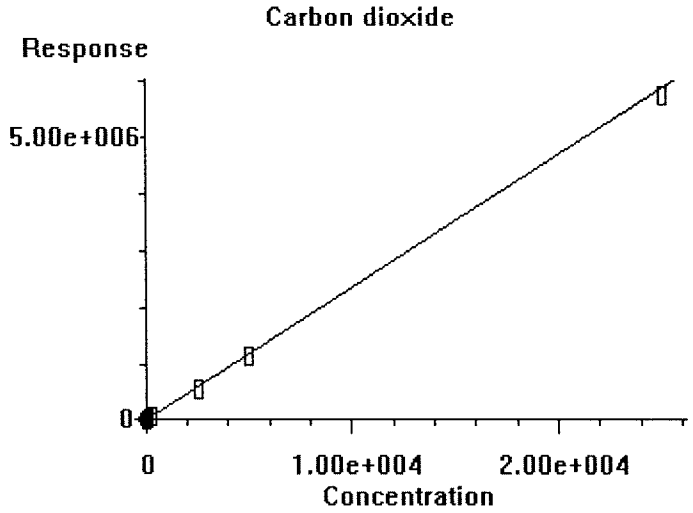
Search by: Ret Time Name Index Find Compound

Compound Database
External Standard Compoun
- Oxygen/Argon
- Carbon monoxide
- Methane (TCD)
- Carbon dioxide
- Signal #2
- Methane (FID)
- Ethylene
- Ethane
- Propylene
- Propane
- Isobutylene
- Isobutane
- n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	25.000000	6793.665186
2	100.000000	21932.418000
3	250.000000	58460.642510
4	2500.000000	568043.388750
5	5000.000000	1132363.215937
6	25000.000000	5744294.891563
7	25000.000000	
8	25000.000000	
9	2000.000000	
10	30000.000000	

Lvl ID	Concentration	Response



0.000e+000	Quadratic term
2.347e+002	Linear term
0.000e+000	Constant term
7.987%	RF Rel Std Dev

OK Cancel Help Print Calibration Curve Copy Calibration Curve

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

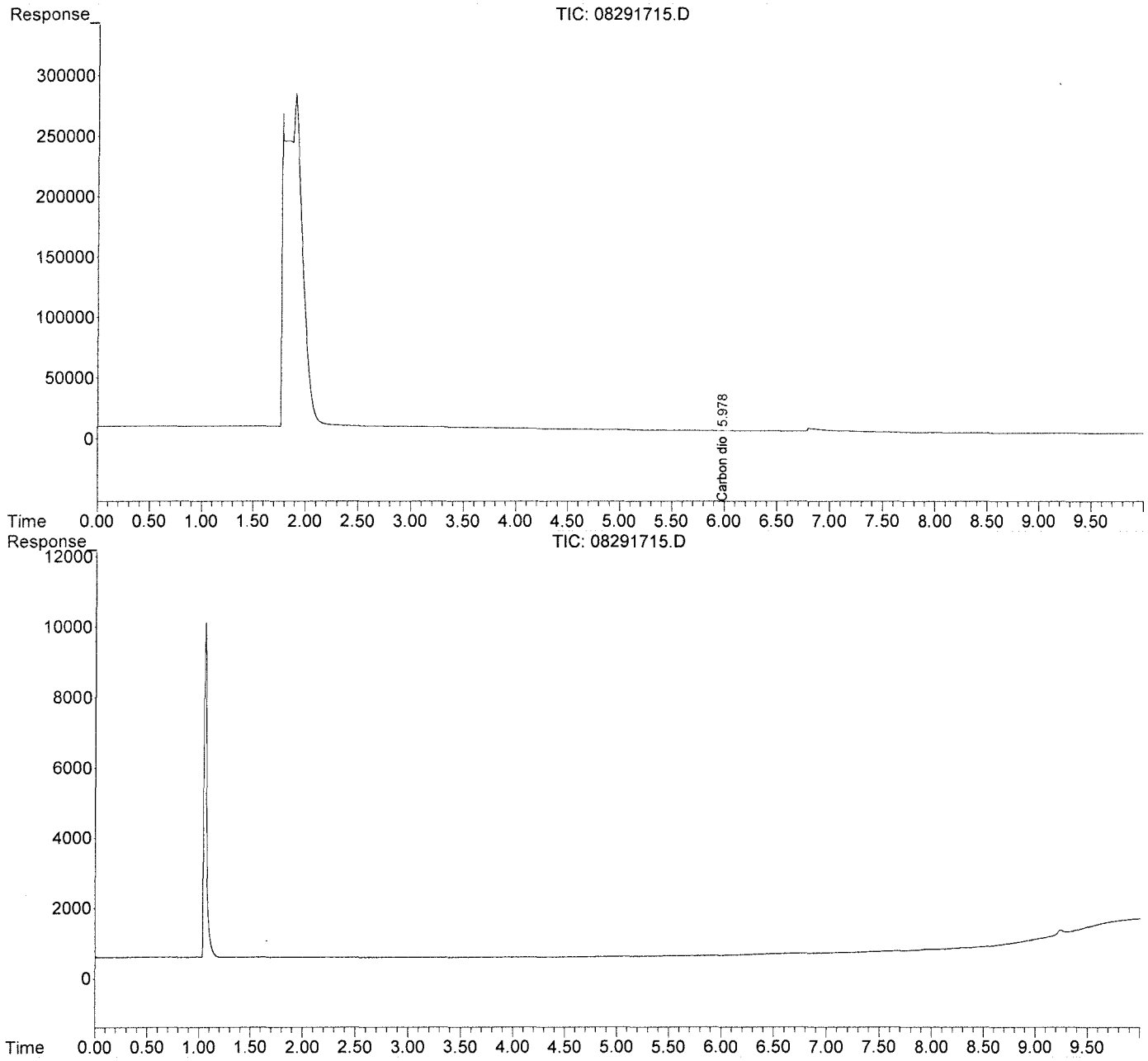
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.776	277465	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	6794	27.870	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

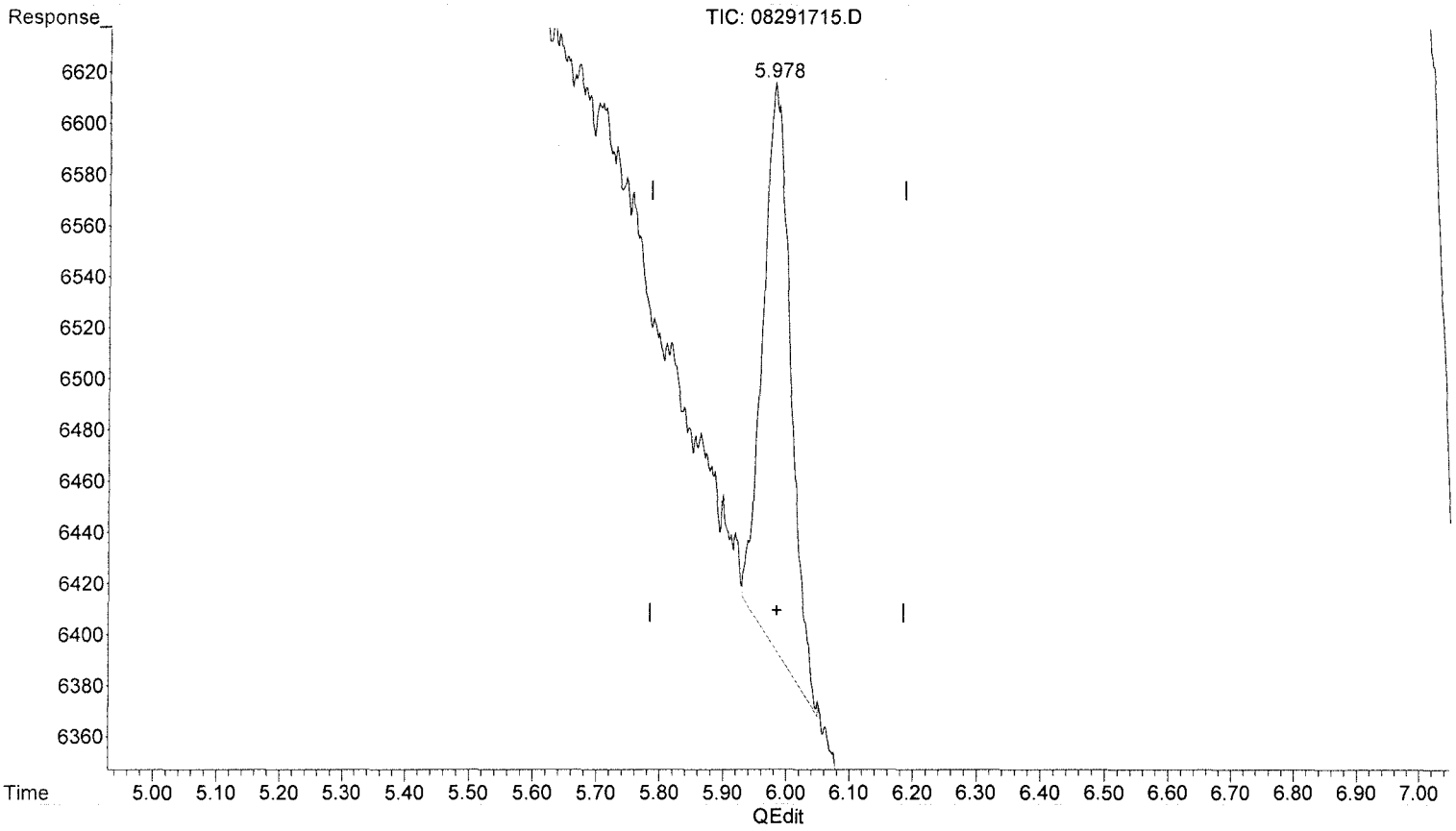
Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

5.978min 27.870 ppm m

response 6794

M 9/30/17
BLK
M
PEER REVIEW

9/4/17

(+) = Expected Retention Time

RS082817_CO2.M Wed Aug 30 13:17:47 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

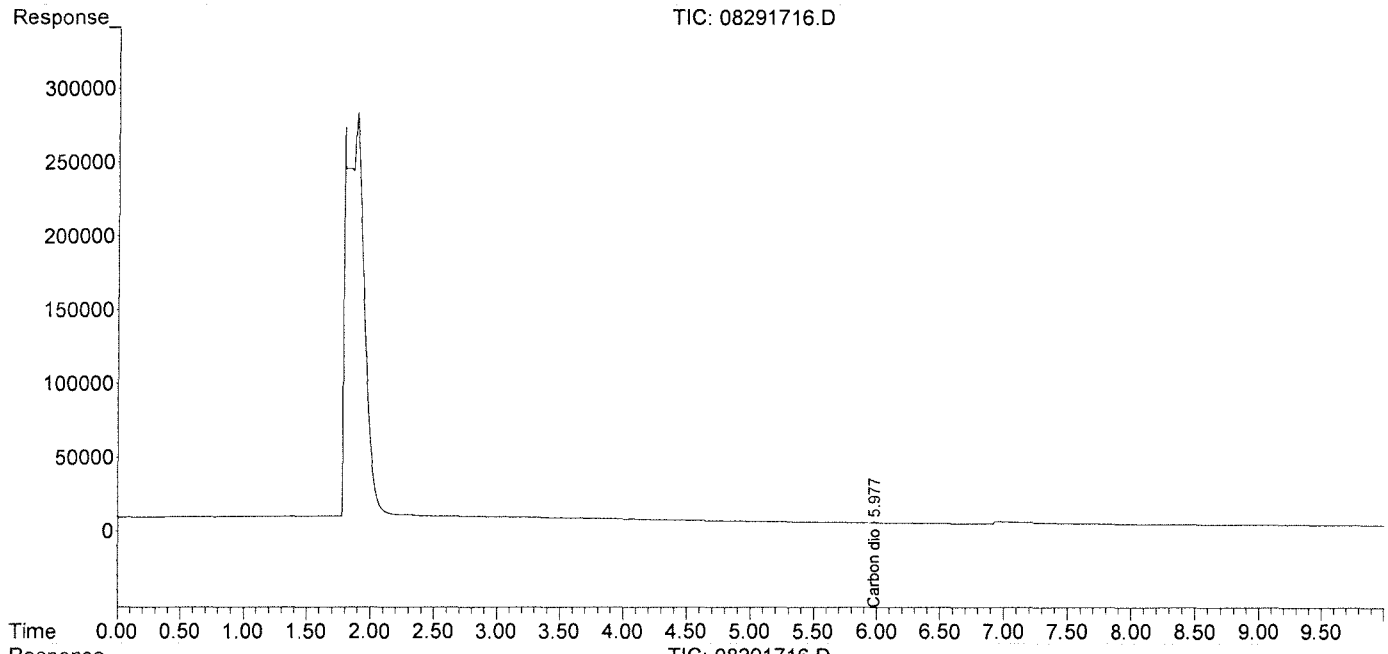
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.790	-598962	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	21932	87.858	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

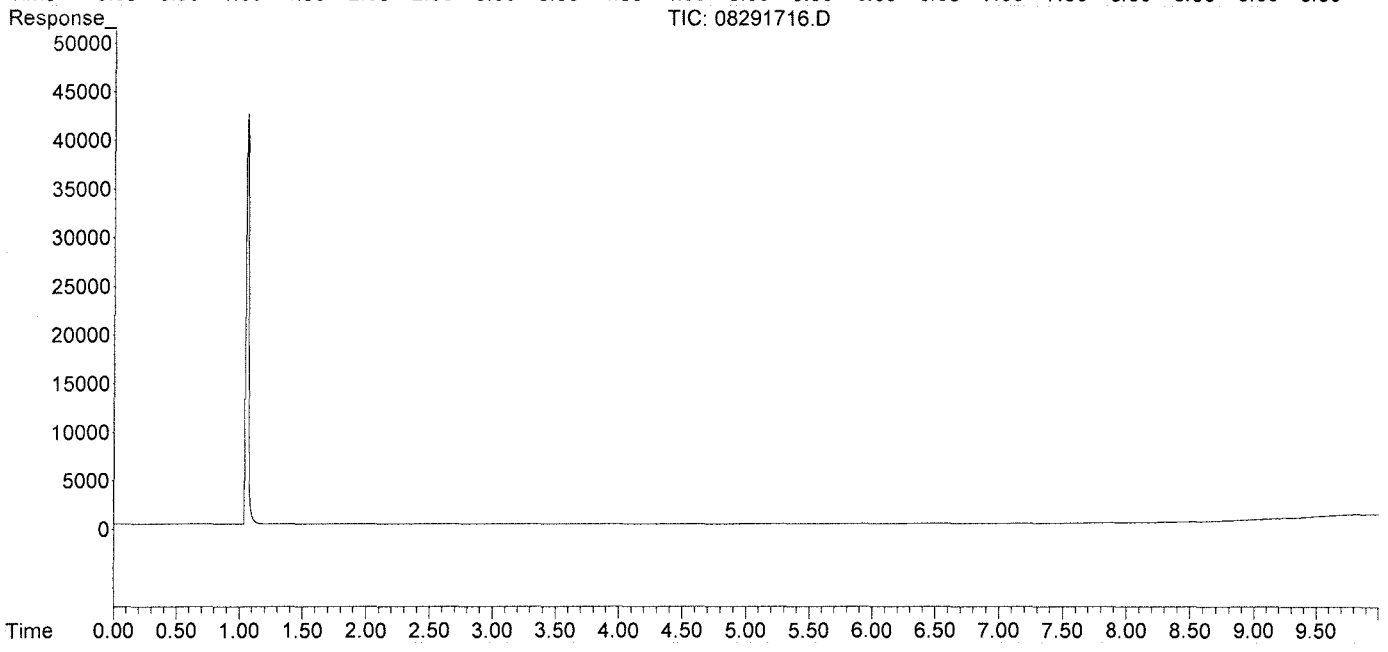
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

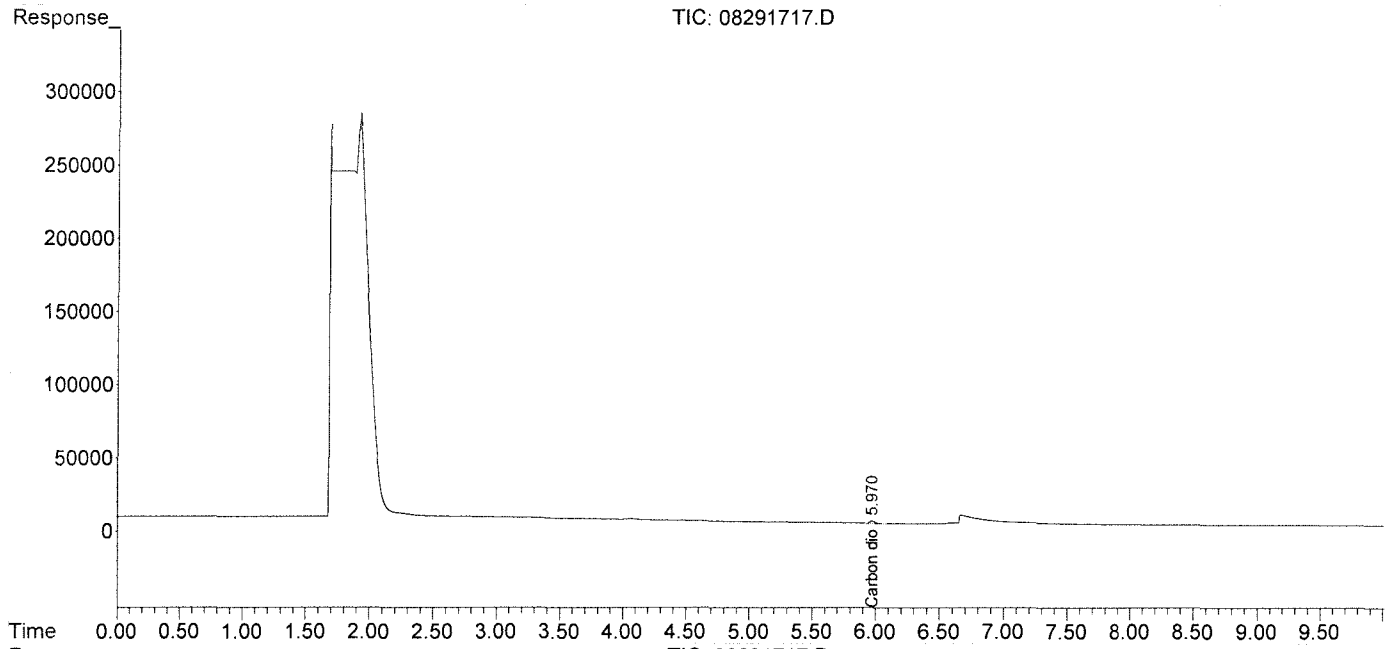
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.920f	-30716454	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.970	58461	240.204	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

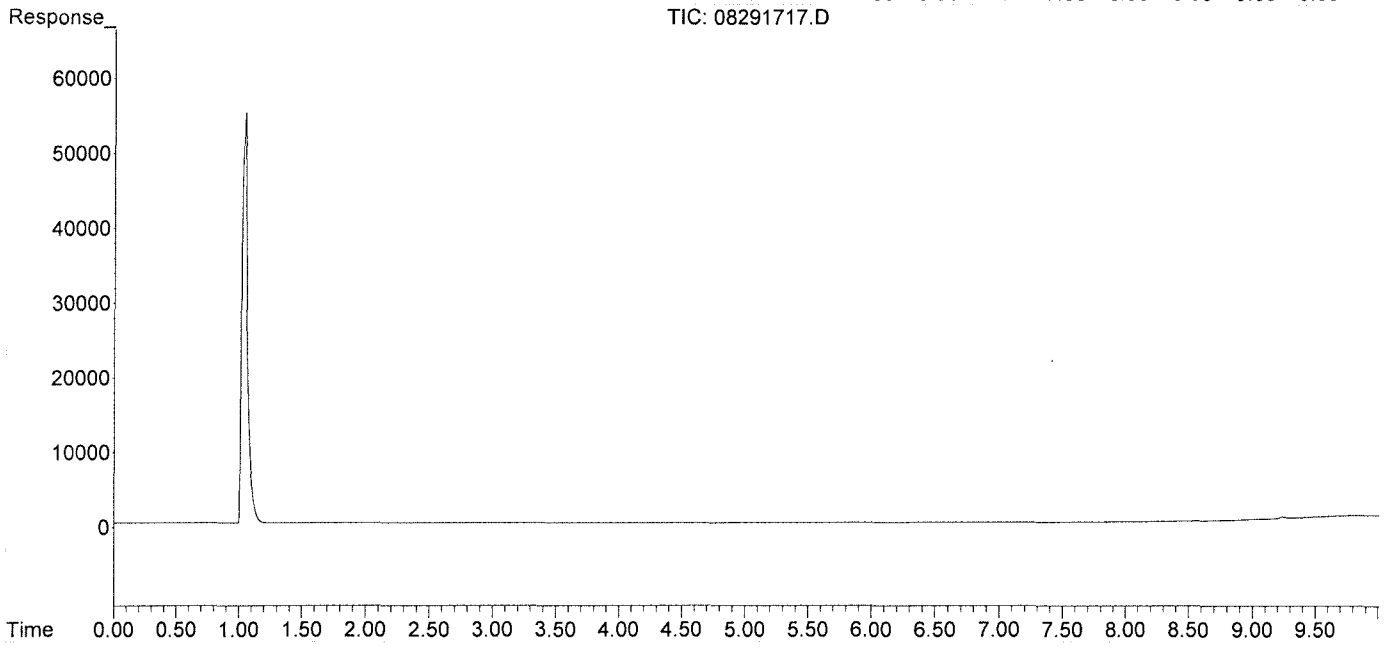
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

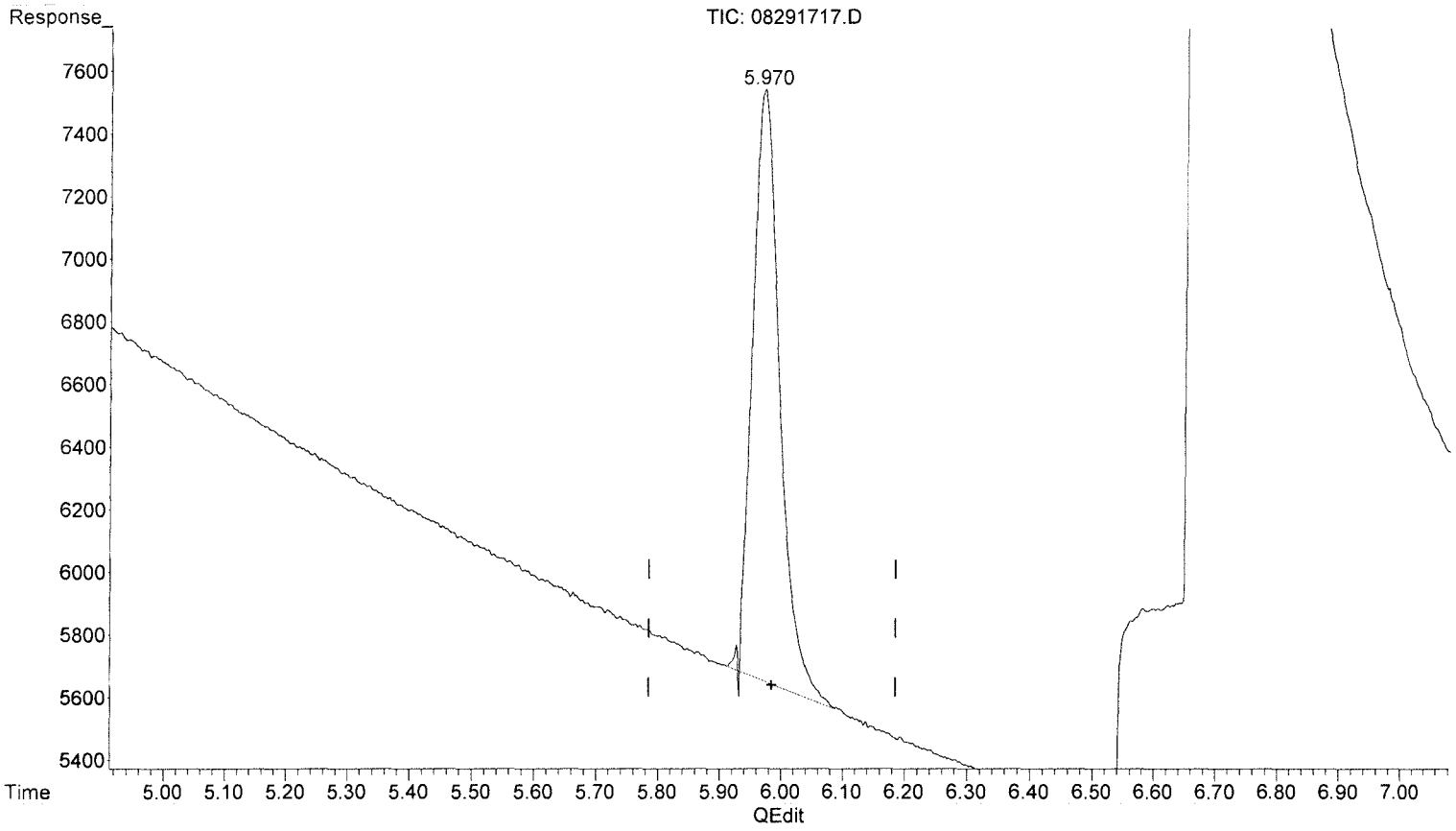




Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

5.970min 240.204 ppm m

response 58461

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

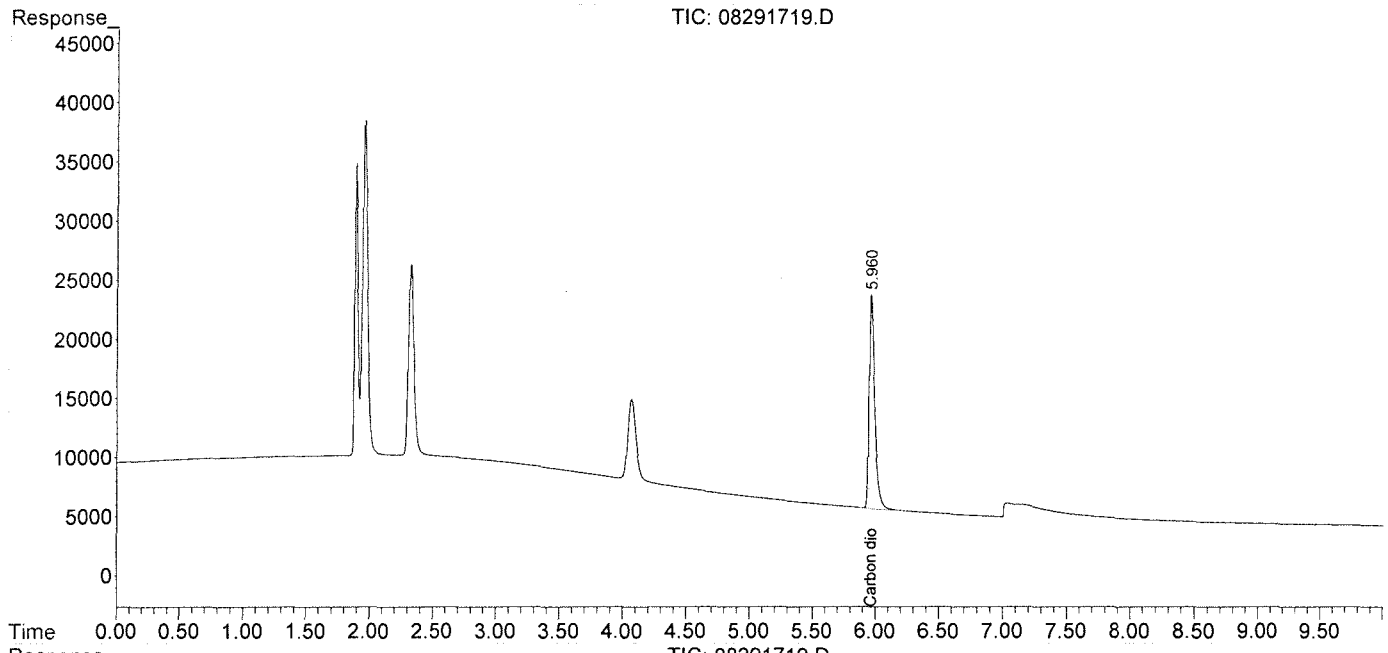
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.891	425113	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.962	568043	2369.673	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

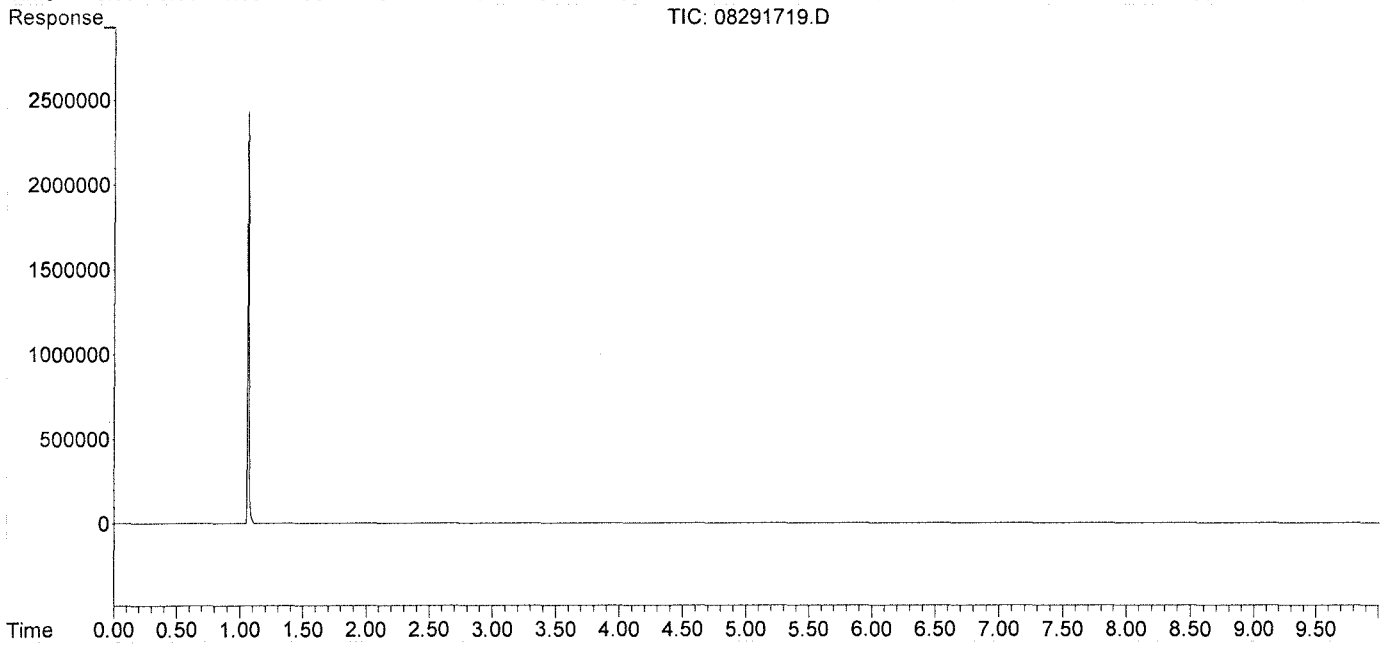
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

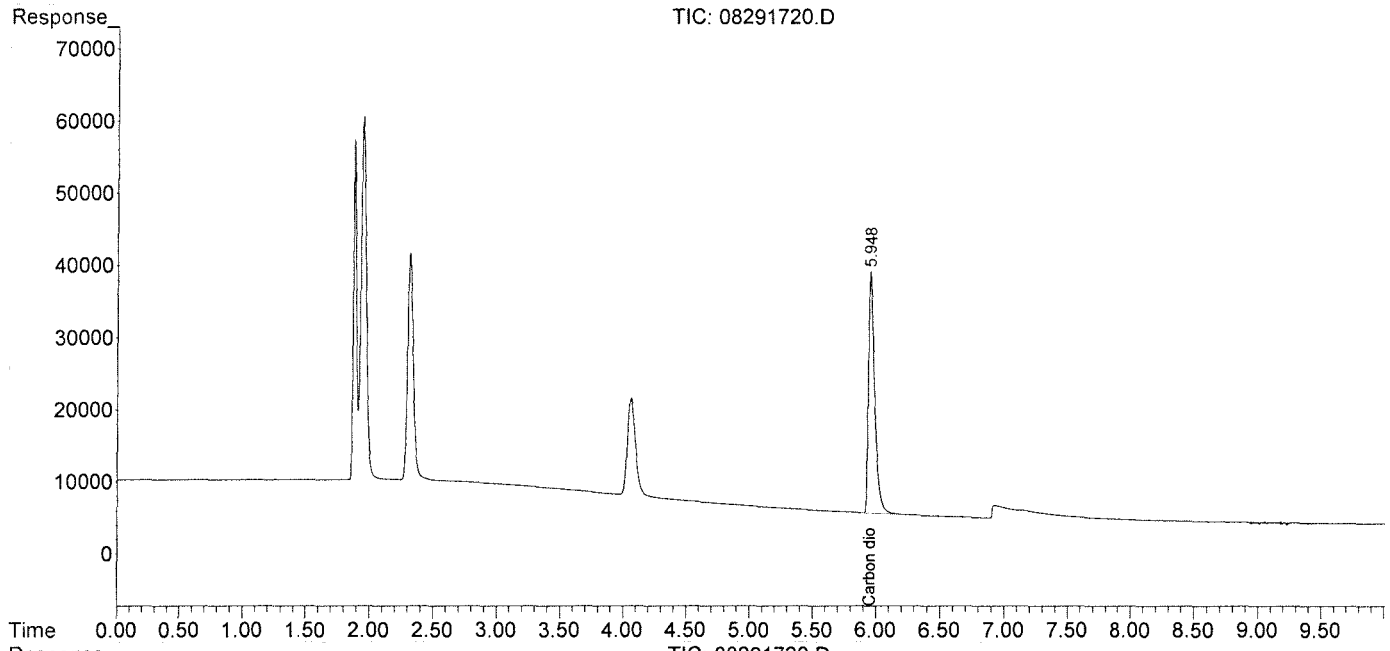
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.880	819221	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.948	1132363	4753.126	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

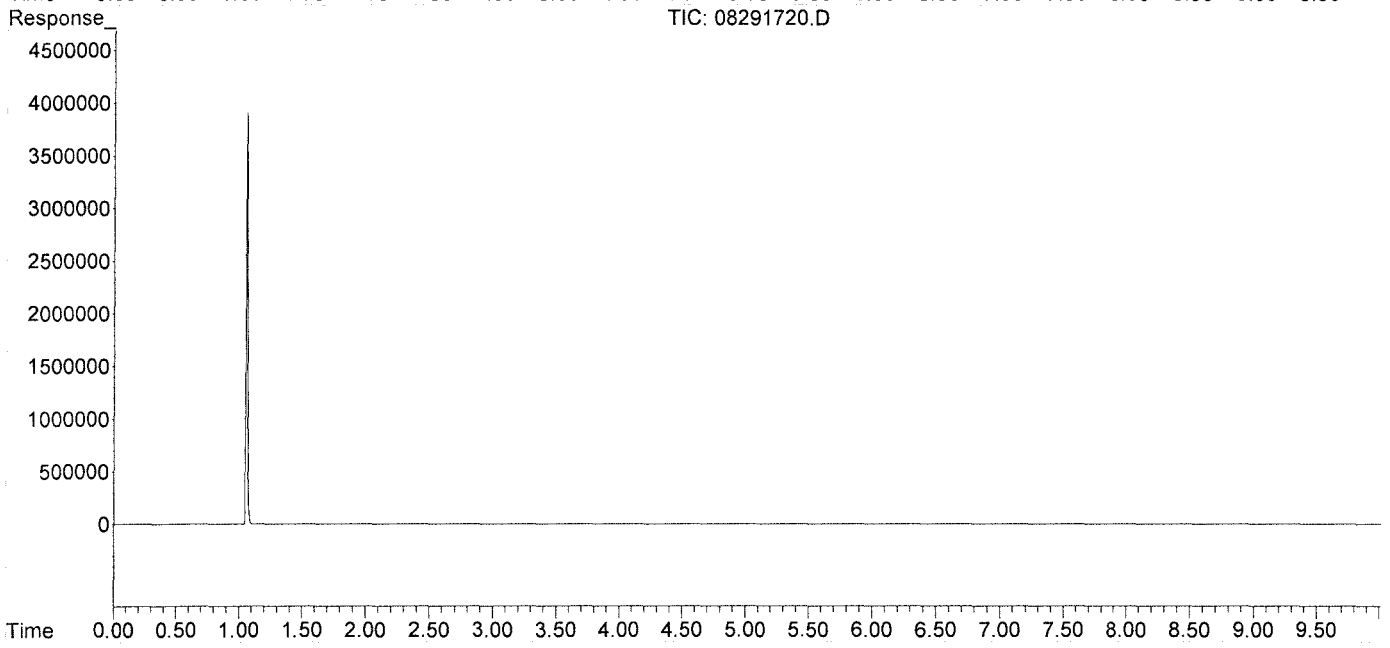
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

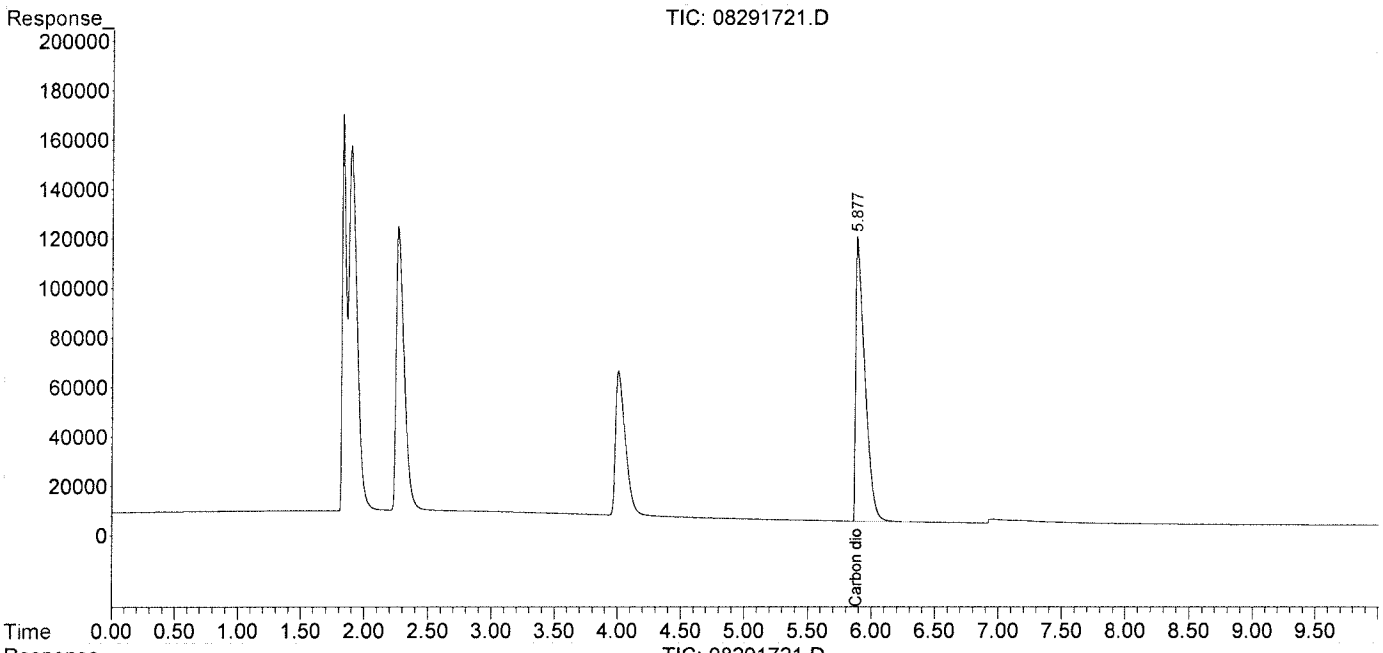
	Compound	R.T.	Response	Conc	Units	
Target	Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.827	3325463	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.879f	5744295	24443.288	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

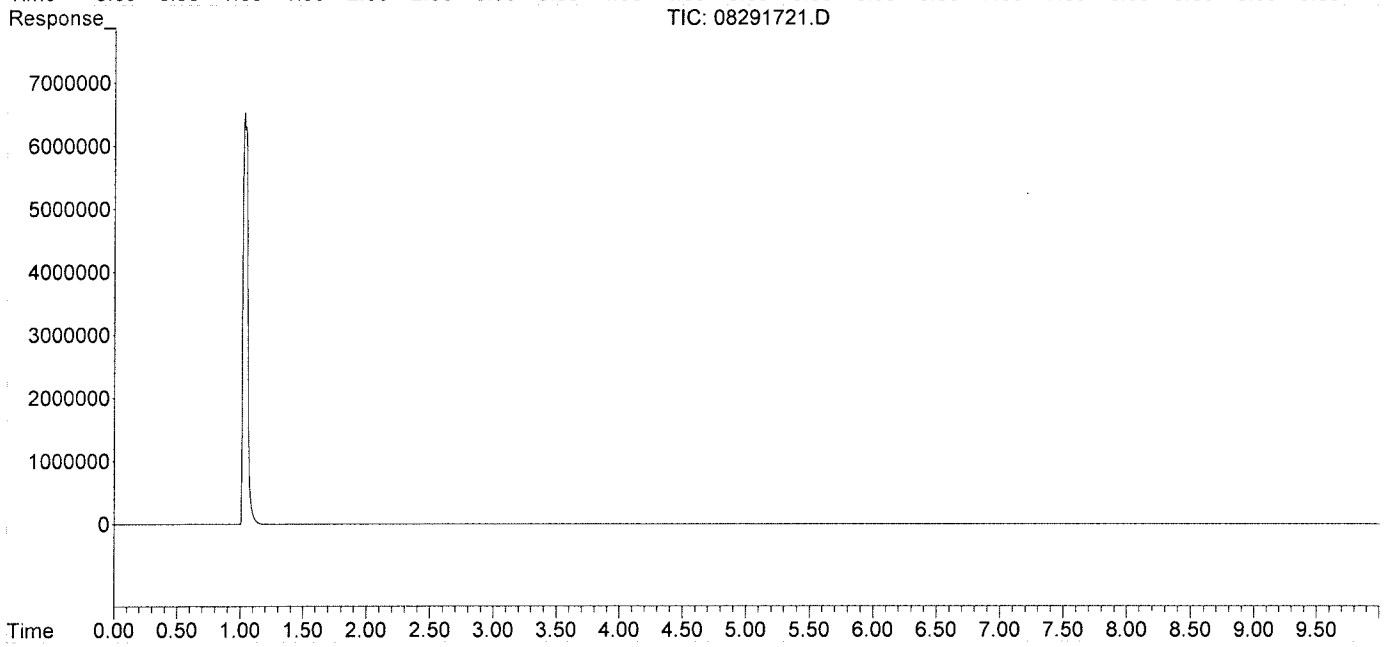
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.886	536422	0.113	ppm
2)	Carbon monoxide	1.886	536422	N.D.	ppm
3)	Methane (TCD)	4.059f	626500	66244.710	ppm
4)	Carbon dioxide	5.947	1163775	4957.948	ppm
6)	Methane (FID)	1.062	37290742	3947.023	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

actual %D
5000 99.16

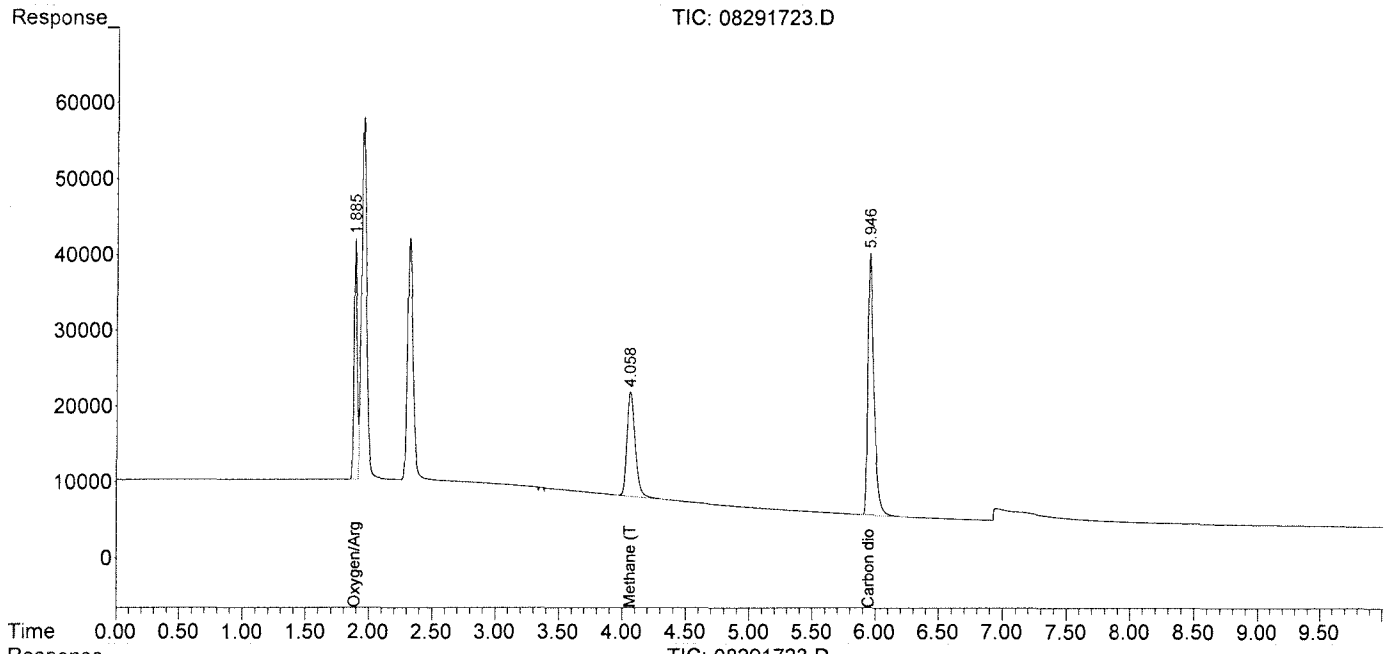
(f)=RT Delta > 1/2 Window (m)=manual int.

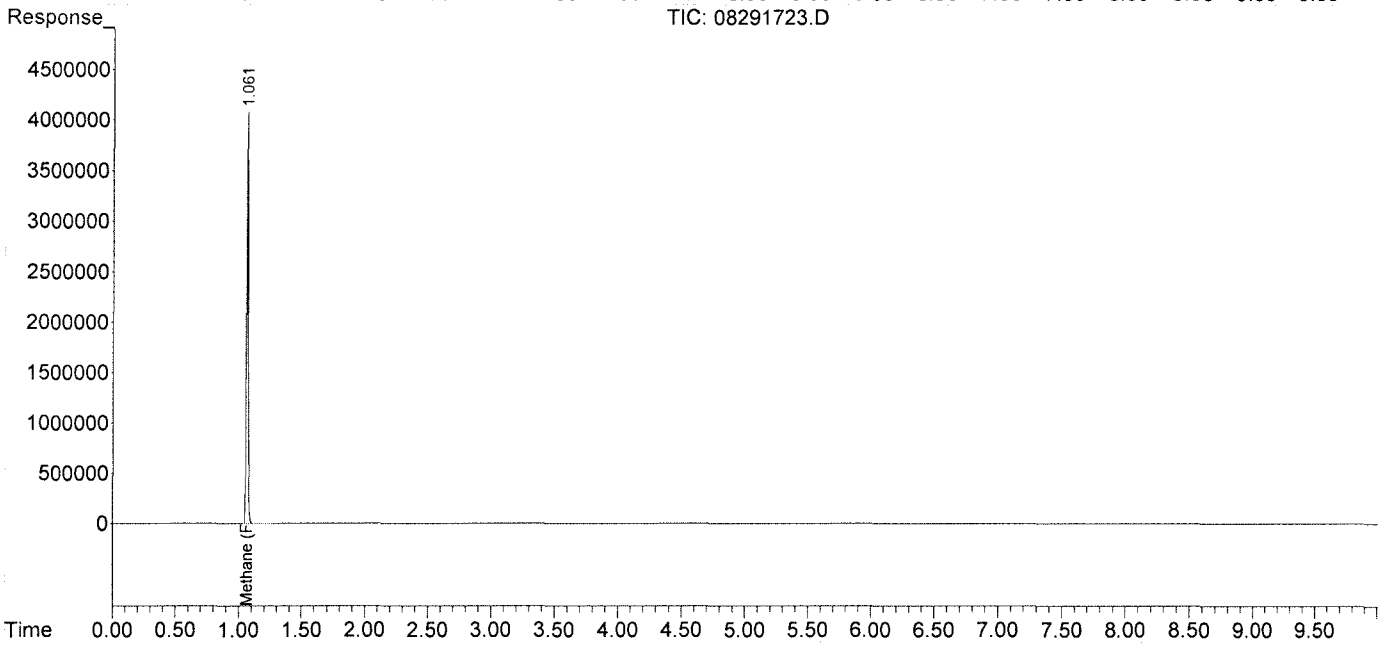
W 9/4/17

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Dissolved Gases by RSK175

CB 3/31/21

ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group | Analyst : CB | Instrument : GC#10
Service Request: P2101408 | Date Analysis : 03/26/21 | Detector : FID#10, TCD#10
Sample Vol. (ml) : 32.00 ml | Head Space Vol.(ml) : 8.00 ml | Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Carbon Dioxide
std s32-02092101	0.100	4925.040
ACTUAL		5000.00
%Difference		1.5%
mcs 0.1ml	0.100	0.000
rb 0.1ml	0.100	0.000
lcs tcd 0.1ml	0.100	1077.86
lcsd tcd 0.1ml	0.100	1066.89
P2101408-002 0.1ml	0.100	20562.67
P2101408-003 50ul	0.050	15368.87
P2101408-004 0.1ml	0.100	9334.56
P2101408-005 0.1ml	0.100	3781.98
P2101408-006 0.1ml	0.100	3877.61
P2101408-007 0.1ml	0.100	19131.43
P2101408-003ms 50ul	0.050	16566.22
P2101408-003msd 50ul	0.050	16504.46
std S32-02092101		4823.534
ACTUAL		5000.00
%Difference		3.5%

FINAL HEAD SPACE RESULT (ppm)

	Carbon Dioxide
WWt.	44.10
HENRY'S CONSTANT	1.42E+03
RL	100.00
mcs 0.1ml	0.000
lcs tcd 0.1ml	10778.56
lcsd tcd 0.1ml	10668.89
P2101408-002 0.1ml	205626.70
P2101408-003 50ul	307377.38
P2101408-004 0.1ml	93345.58
P2101408-005 0.1ml	37819.79
P2101408-006 0.1ml	38776.08
P2101408-007 0.1ml	191314.26
P2101408-003ms 50ul	331324.44
P2101408-003msd 50ul	330089.20
13:29:05	

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262101.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 11:18:45
Operator : CB
Sample : std s32-02092101
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:54:41 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

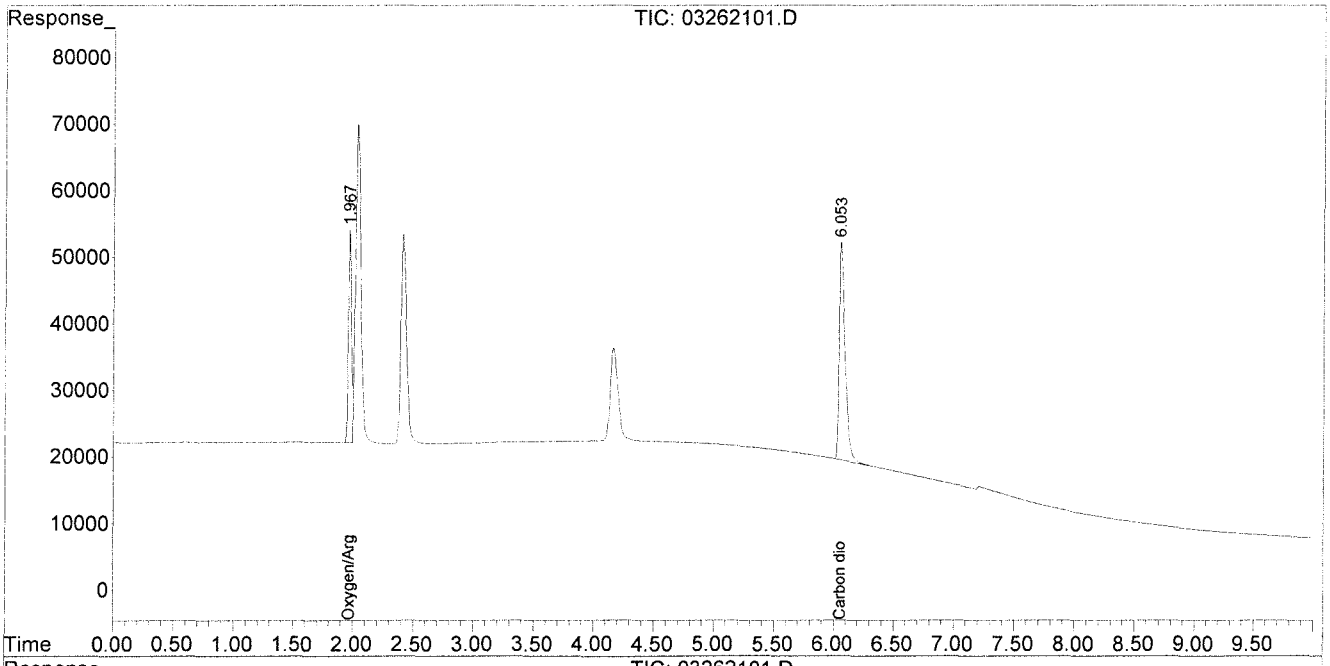
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.967f	580551	0.122	ppm
2)	Carbon monoxide	1.967f	580551	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.054	1156051	4925.040	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

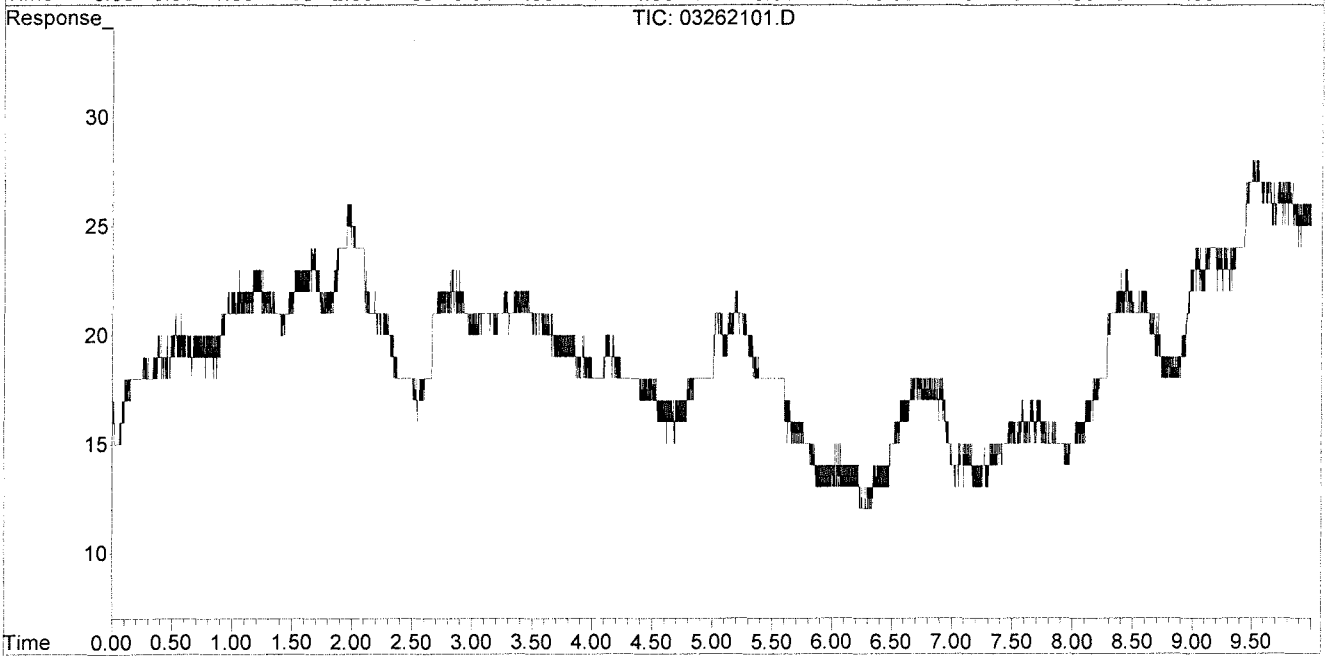
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262101.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 11:18:45
Operator : CB
Sample : std s32-02092101
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:54:41 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262115.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 15:57:01
Operator : CB
Sample : std S32-02092101
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:57:43 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

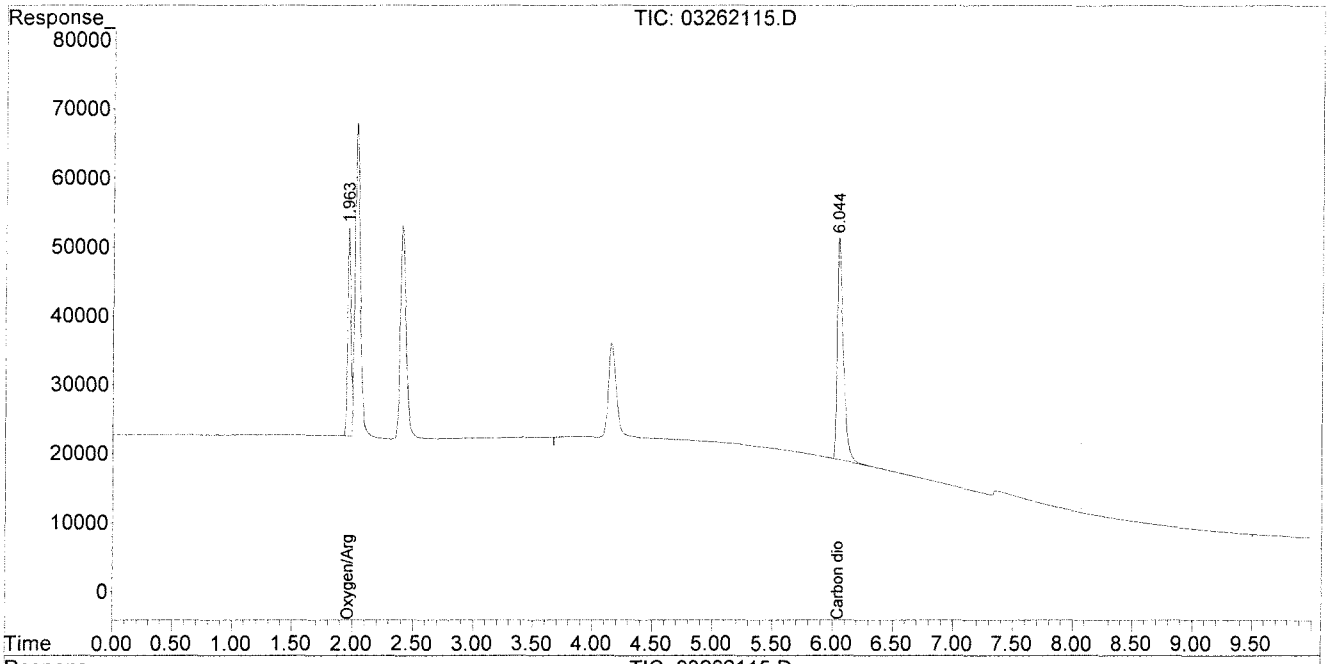
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.964f	544527	0.114	ppm
2)	Carbon monoxide	1.964f	544527	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.045	1132224	4823.534	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

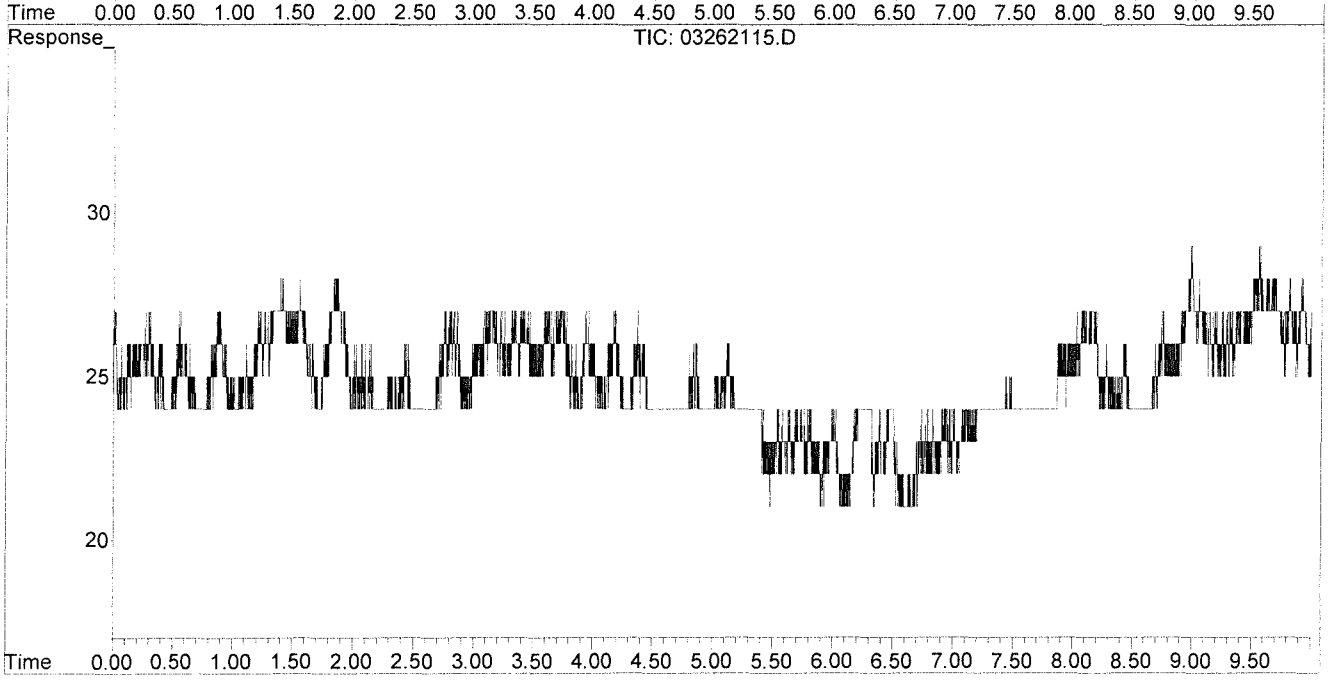
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2021_03\26\
Data File : 03262115.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Mar-2021, 15:57:01
Operator : CB
Sample : std S32-02092101
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 12:57:43 2021
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_08\29\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	29-Aug-17, 07:58:00	08291701.D	std s30-06161601		MC	RSKBOTH.M	Pass
2	29-Aug-17, 08:11:02	08291702.D	mb 0.5ml		MC	RSKBOTH.M	Pass
3	29-Aug-17, 08:24:13	08291703.D	4089-001 0.5ml		MC	RSKBOTH.M	
4	29-Aug-17, 08:39:29	08291704.D	4089-002 0.5ml		MC	RSKBOTH.M	
5	29-Aug-17, 08:53:38	08291705.D	4089-003 0.5ml		MC	RSKBOTH.M	
6	29-Aug-17, 09:33:52	08291706.D	4089-004 0.5ml		MC	RSKBOTH.M	
7	29-Aug-17, 09:50:51	08291707.D	4089-005 0.5ml		MC	RSKBOTH.M	
8	29-Aug-17, 10:07:54	08291708.D	4089-006 0.5ml		MC	RSKBOTH.M	
9	29-Aug-17, 10:42:34	08291709.D	4089-007 0.5ml		MC	RSKBOTH.M	
10	29-Aug-17, 11:06:01	08291710.D	4089-008 0.5ml		MC	RSKBOTH.M	
11	29-Aug-17, 11:23:53	08291711.D	4089-009 0.5ml		MC	RSKBOTH.M	
12	29-Aug-17, 11:37:17	08291712.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
13	29-Aug-17, 11:50:31	08291713.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
14	29-Aug-17, 12:29:45	08291714.D	std s30-06161601		MC	RSKBOTH.M	Pass
15	29-Aug-17, 14:07:01	08291715.D	25ppm s32-08291701 0.25ml		MC	RSKBOTH.M	Curve
16	29-Aug-17, 14:22:12	08291716.D	100ppm s32-08291702 0.2ml		MC	RSKBOTH.M	Curve
17	29-Aug-17, 14:53:00	08291717.D	250ppm s32-08291702 0.5ml		MC	RSKBOTH.M	Curve
18	29-Aug-17, 15:07:43	08291718.D	mis inject		MC	RSKBOTH.M	
19	29-Aug-17, 15:23:21	08291719.D	2500ppm s32-08231701 50ul		MC	RSKBOTH.M	Curve
20	29-Aug-17, 15:44:54	08291720.D	5000ppm s32-08231701 0.1ml		MC	RSKBOTH.M	Curve
21	29-Aug-17, 16:00:09	08291721.D	25000ppm s32-08231701 0.5ml		MC	RSKBOTH.M	Curve
22	29-Aug-17, 16:15:43	08291722.D	mb 0.1ml		MC	RSKBOTH.M	Pass
23	29-Aug-17, 16:35:37	08291723.D	icv s30-07071701		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_TCD\2021_03\26\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	26-Mar-21, 11:18:45	03262101.D	std s32-02092101		CB	RSKBOTH.M	Pass
2	26-Mar-21, 11:40:23	03262102.D	rb 0.1ml		CB	RSKBOTH.M	Pass
3	26-Mar-21, 11:53:04	03262103.D	mcs 0.1ml		CB	RSKBOTH.M	Pass
4	26-Mar-21, 12:24:27	03262104.D	P2101408-002 0.1ml		CB	RSKBOTH.M	
5	26-Mar-21, 12:45:56	03262105.D	P2101408-004 0.1ml		CB	RSKBOTH.M	
6	26-Mar-21, 13:02:37	03262106.D	P2101408-005 0.1ml		CB	RSKBOTH.M	
7	26-Mar-21, 13:15:27	03262107.D	P2101408-006 0.1ml		CB	RSKBOTH.M	
8	26-Mar-21, 13:29:05	03262108.D	P2101408-007 0.1ml		CB	RSKBOTH.M	
9	26-Mar-21, 13:53:26	03262109.D	lcs tcd 0.1ml		CB	RSKBOTH.M	Pass
10	26-Mar-21, 14:08:45	03262110.D	lcsd tcd 0.1ml		CB	RSKBOTH.M	Pass
11	26-Mar-21, 14:38:02	03262111.D	P2101408-003 0.1 mL		CB	RSKBOTH.M	
12	26-Mar-21, 14:55:05	03262112.D	P2101408-003 50ul		CB	RSKBOTH.M	
13	26-Mar-21, 15:12:27	03262113.D	P2101408-003ms 50ul		CB	RSKBOTH.M	
14	26-Mar-21, 15:38:11	03262114.D	P2101408-003msd 50ul		CB	RSKBOTH.M	
15	26-Mar-21, 15:57:01	03262115.D	std S32-02092101		CB	RSKBOTH.M	Pass
16	26-Mar-21, 16:16:45	03262116.D	loq		CB	RSKBOTH.M	
17	26-Mar-21, 16:31:49	03262117.D	loq		CB	RSKBOTH.M	
18	26-Mar-21, 16:53:34	03262118.D	lod		CB	RSKBOTH.M	

01076639

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302104.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 12:52:37
Operator : CB
Sample : P2101408-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:21:15 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

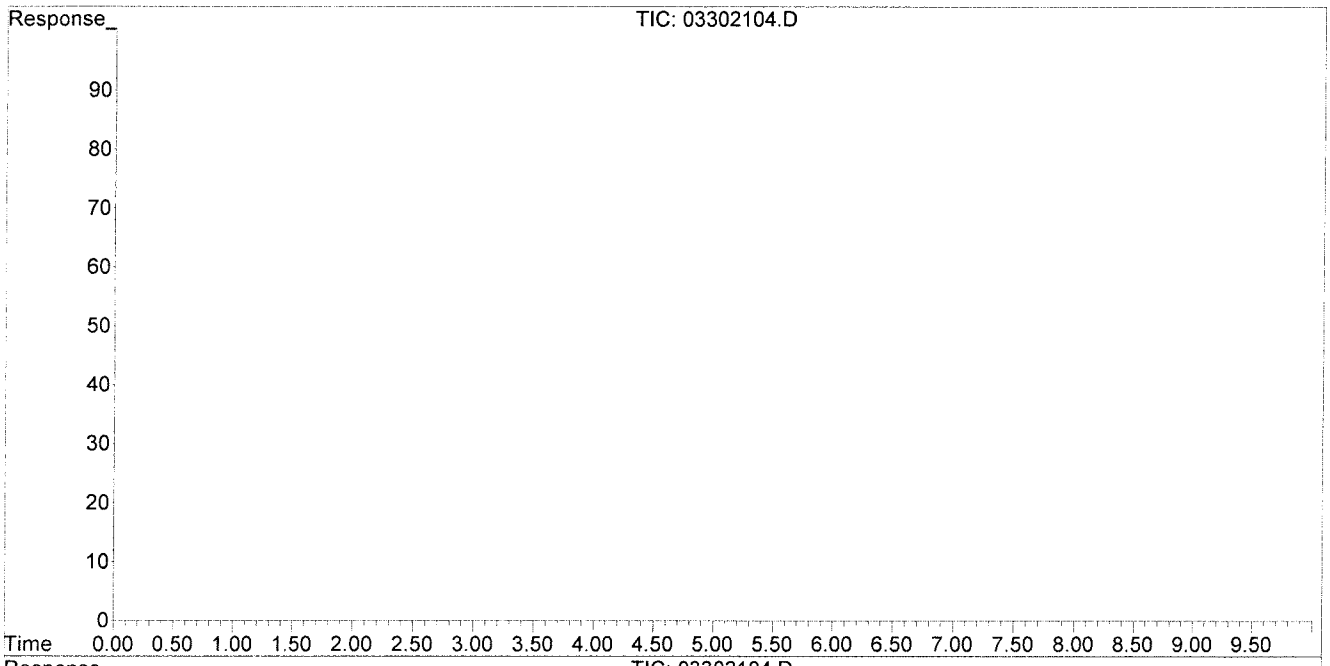
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.114	6087	0.671	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

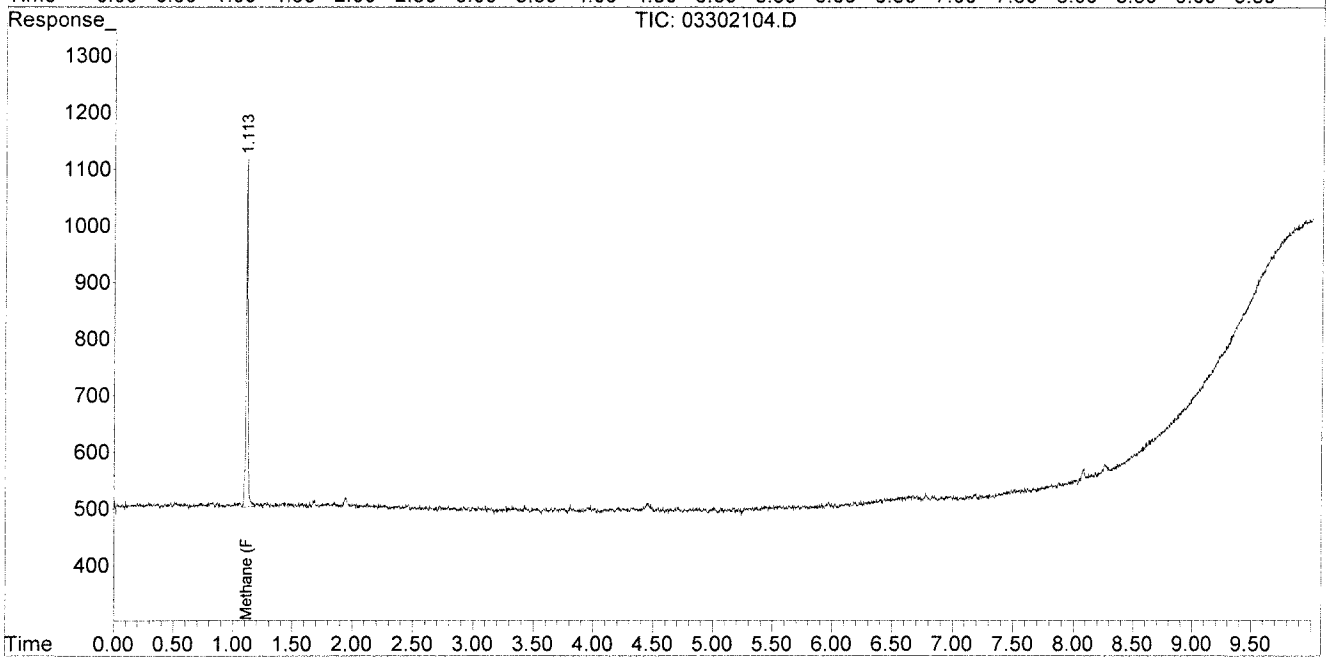
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302104.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 12:52:37
Operator : CB
Sample : P2101408-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:21:15 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 13:28:53
Operator : CB
Sample : P2101408-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:21:31 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

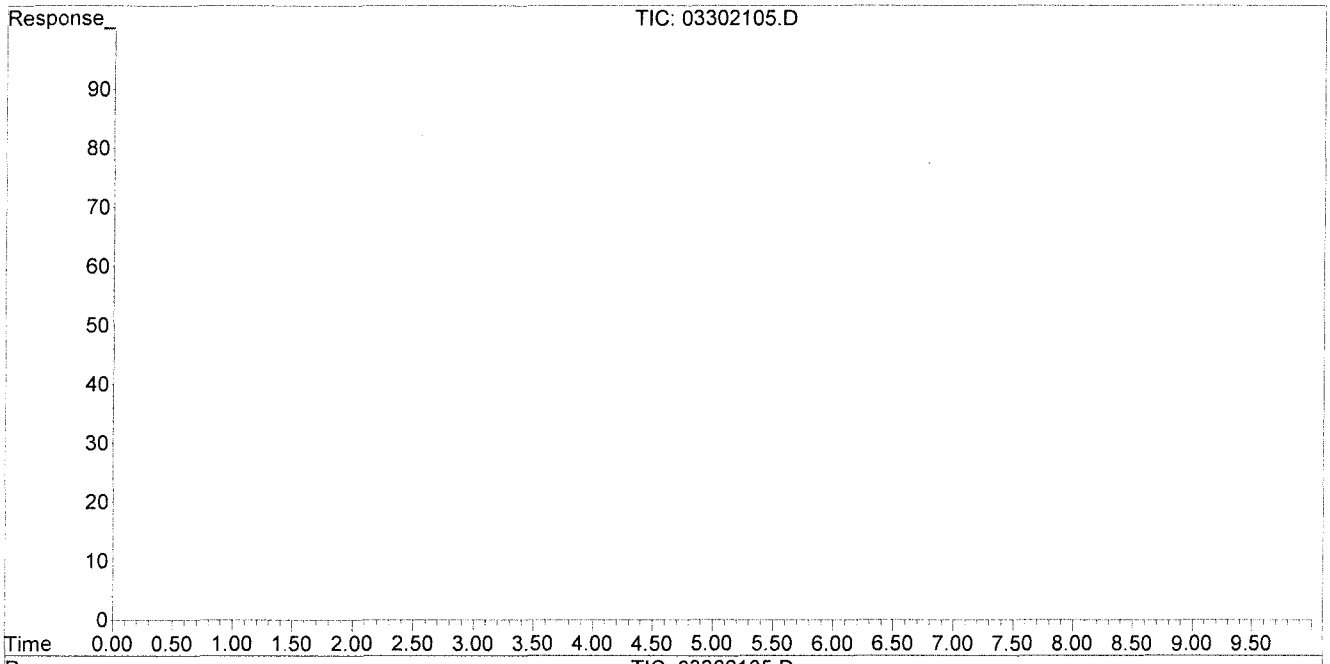
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.112	1933	0.213	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

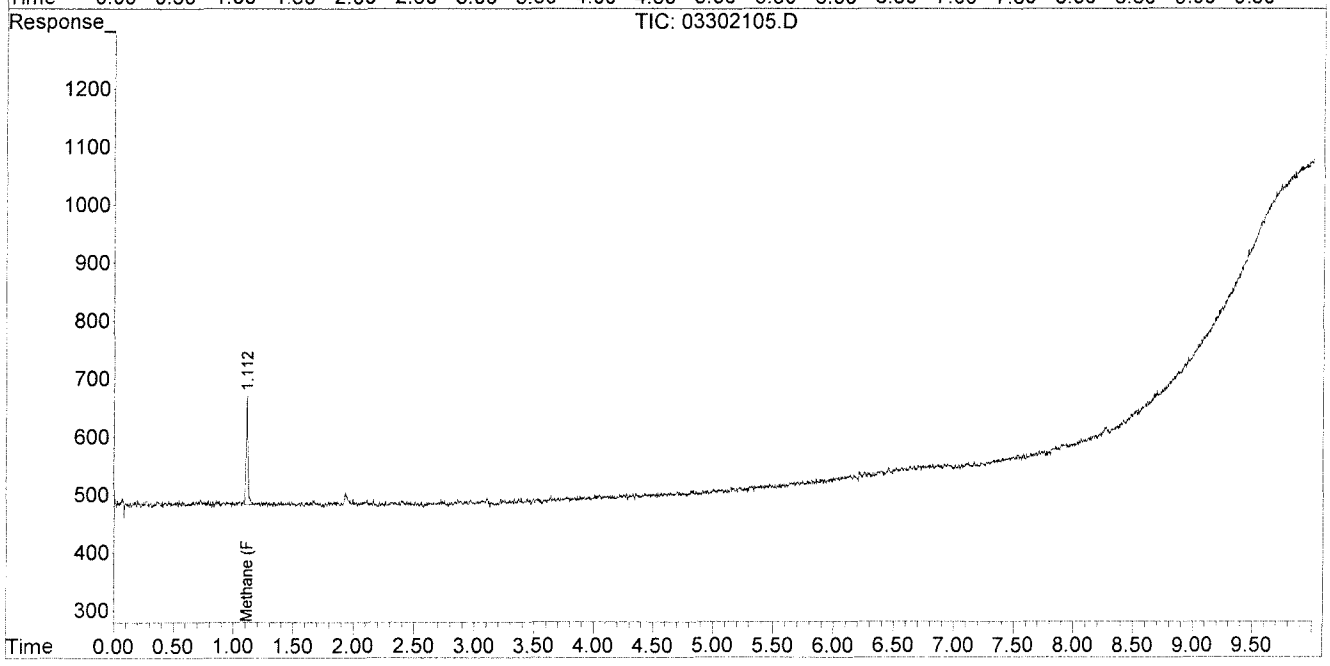
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 13:28:53
Operator : CB
Sample : P2101408-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:21:31 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



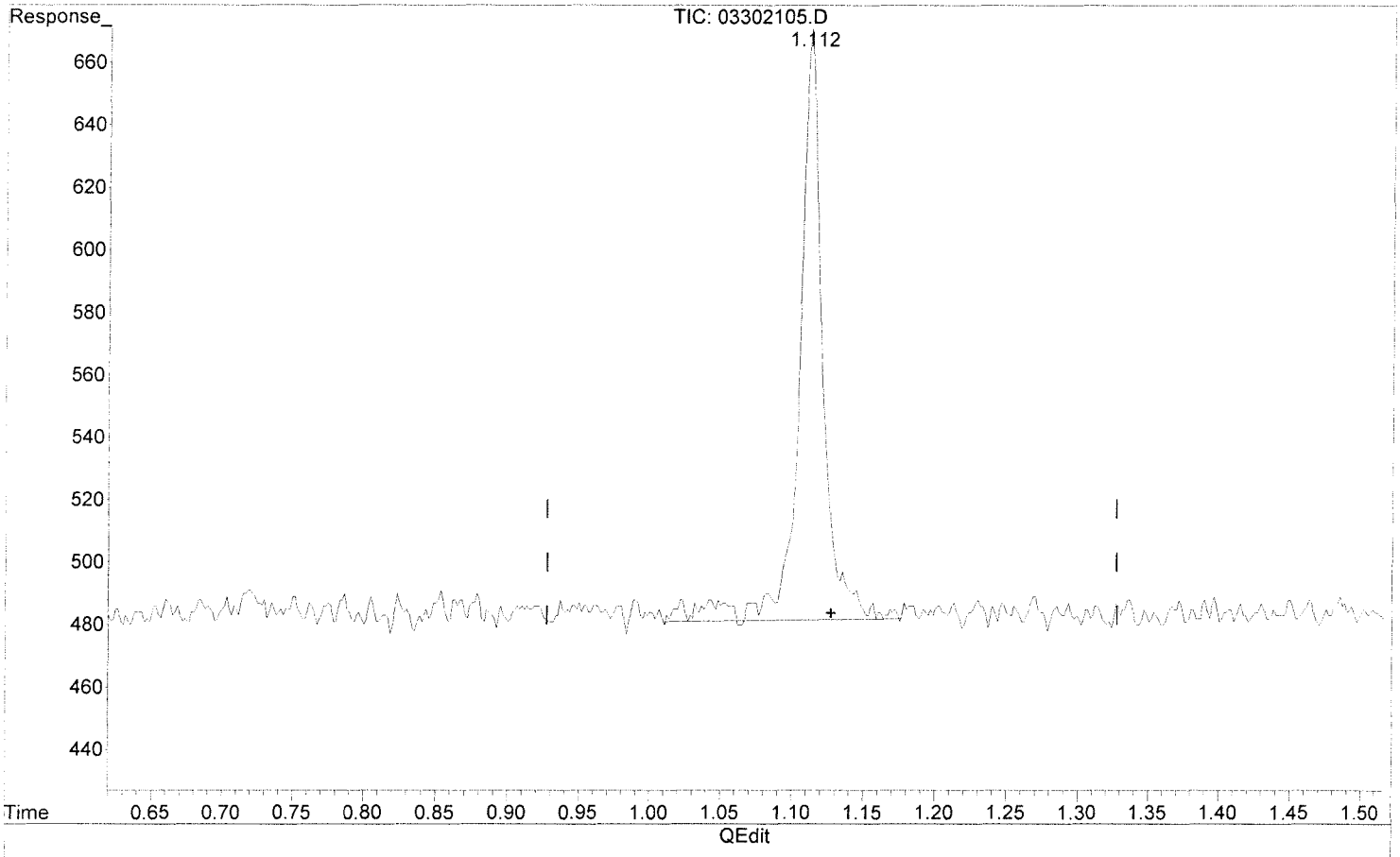


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 13:28:53
Operator : CB
Sample : P2101408-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:21:31 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.112min 0.242 ppm

response 2195

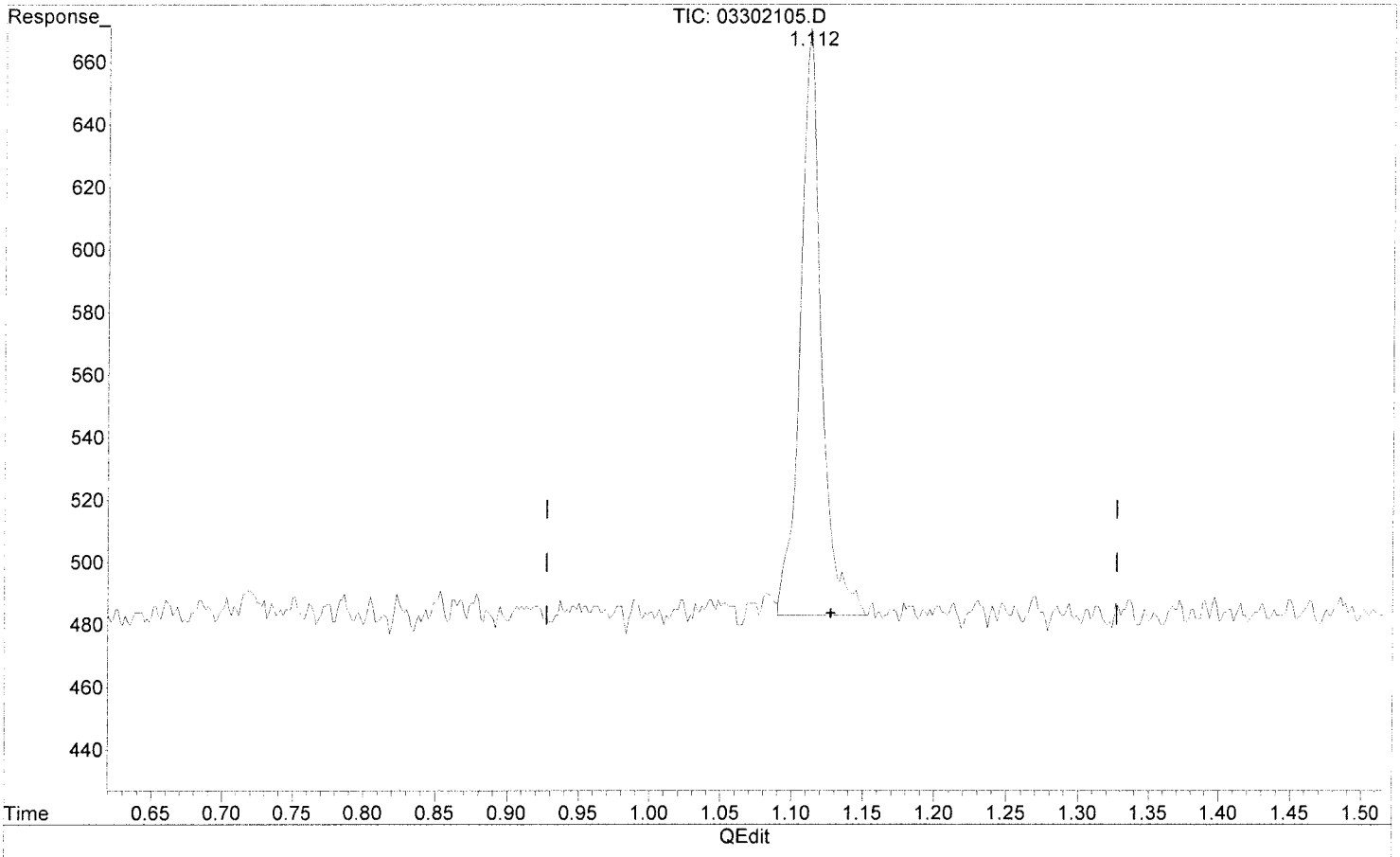
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 13:28:53
Operator : CB
Sample : P2101408-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:21:31 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.112min 0.213 ppm m

response 1933

3/31/21

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302106.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 13:53:15
Operator : CB
Sample : P2101408-003ms 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:21:58 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

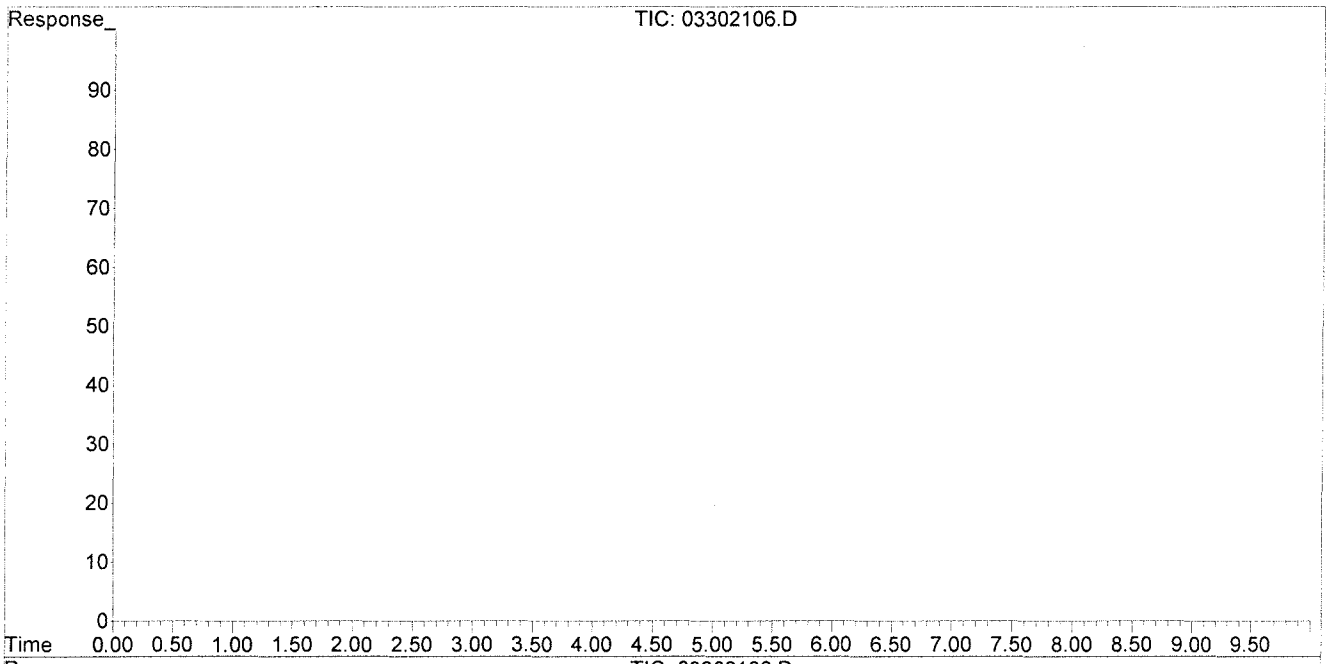
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.110	413004	45.532	ppm
7)	Ethylene	1.674	617167	36.880	ppm
8)	Ethane	1.937	771106	45.492	ppm
9)	Propylene	4.316	837794	35.755	ppm
10)	Propane	4.436	1181032	47.469	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

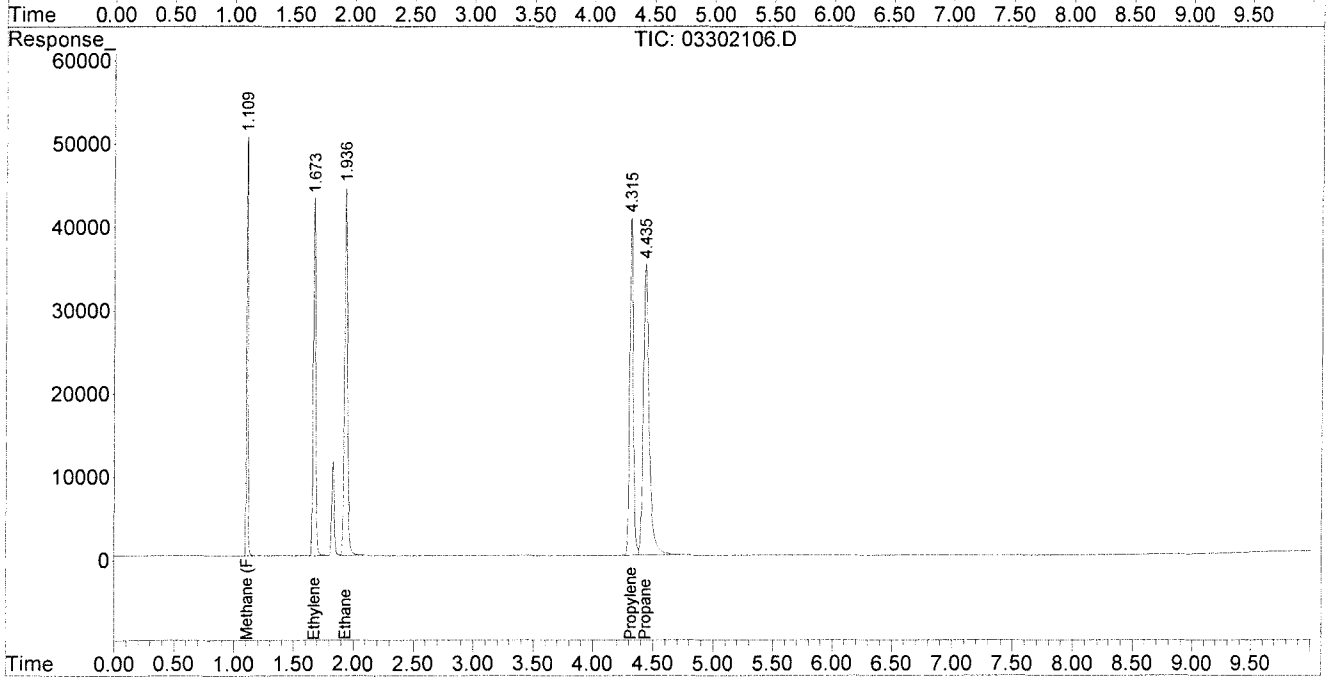
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302106.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 13:53:15
Operator : CB
Sample : P2101408-003ms 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:21:58 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302107.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 14:14:56
Operator : CB
Sample : P2101408-003msd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:22:26 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

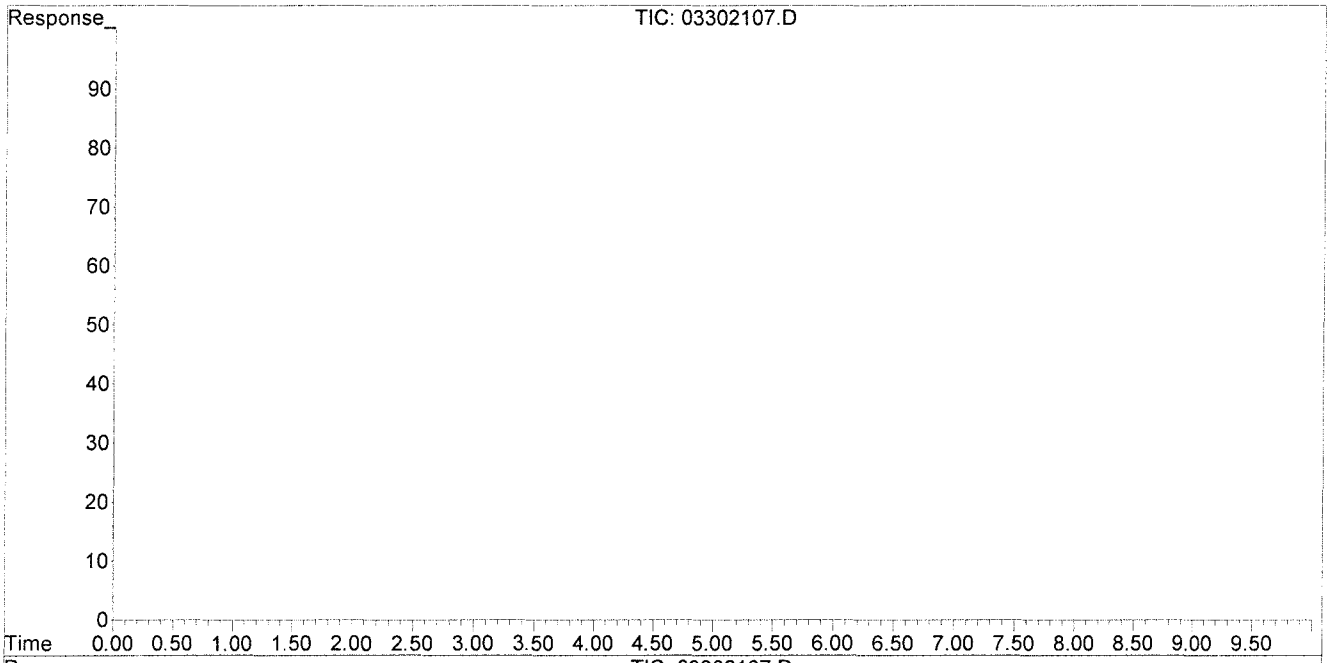
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.109	429879	47.392	ppm
7)	Ethylene	1.673	654600	39.117	ppm
8)	Ethane	1.935	810427	47.812	ppm
9)	Propylene	4.314	901956	38.493	ppm
10)	Propane	4.434	1255928	50.479	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

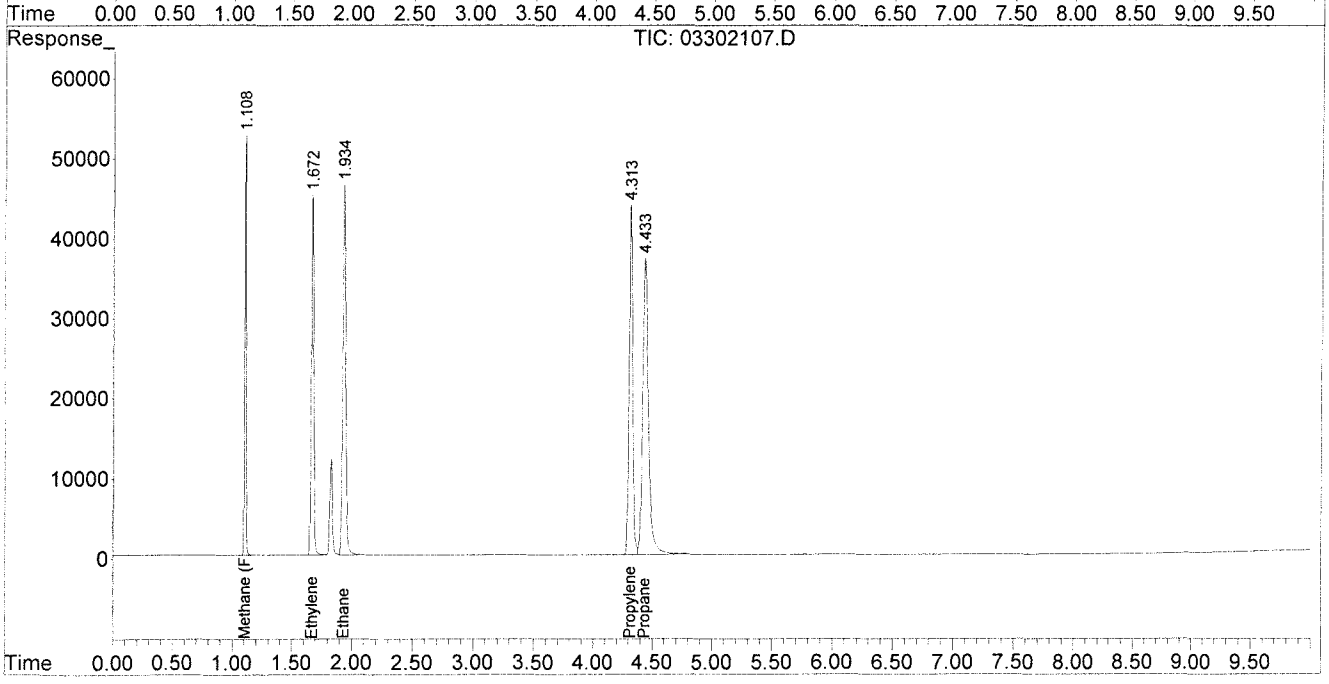
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302107.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 14:14:56
Operator : CB
Sample : P2101408-003msd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:22:26 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302108.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 14:30:09
Operator : CB
Sample : P2101408-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:22:52 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

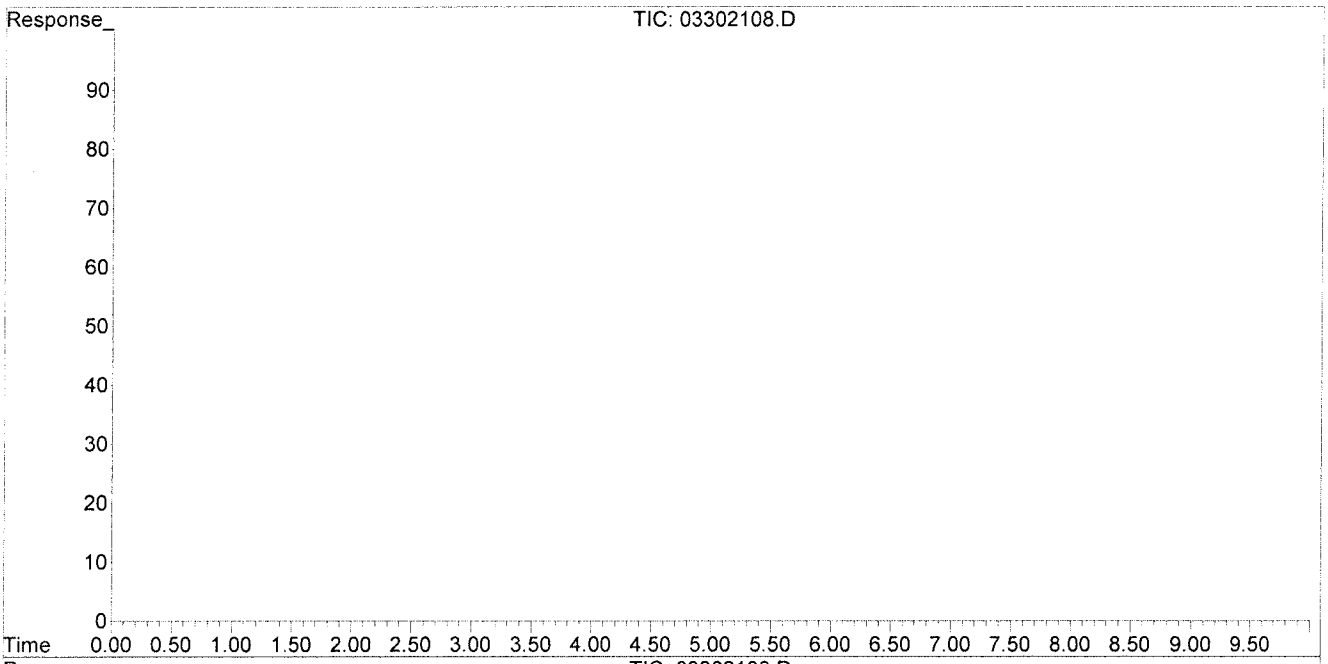
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.110	679	0.075	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

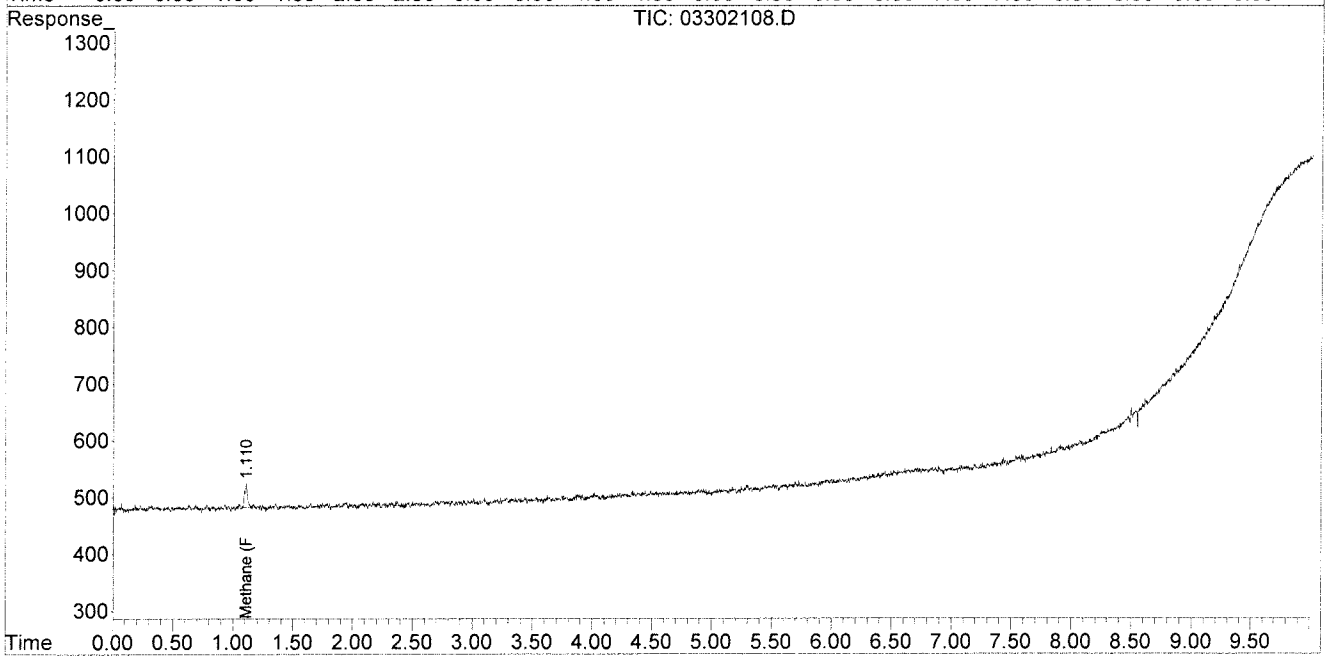
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302108.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 14:30:09
Operator : CB
Sample : P2101408-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:22:52 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

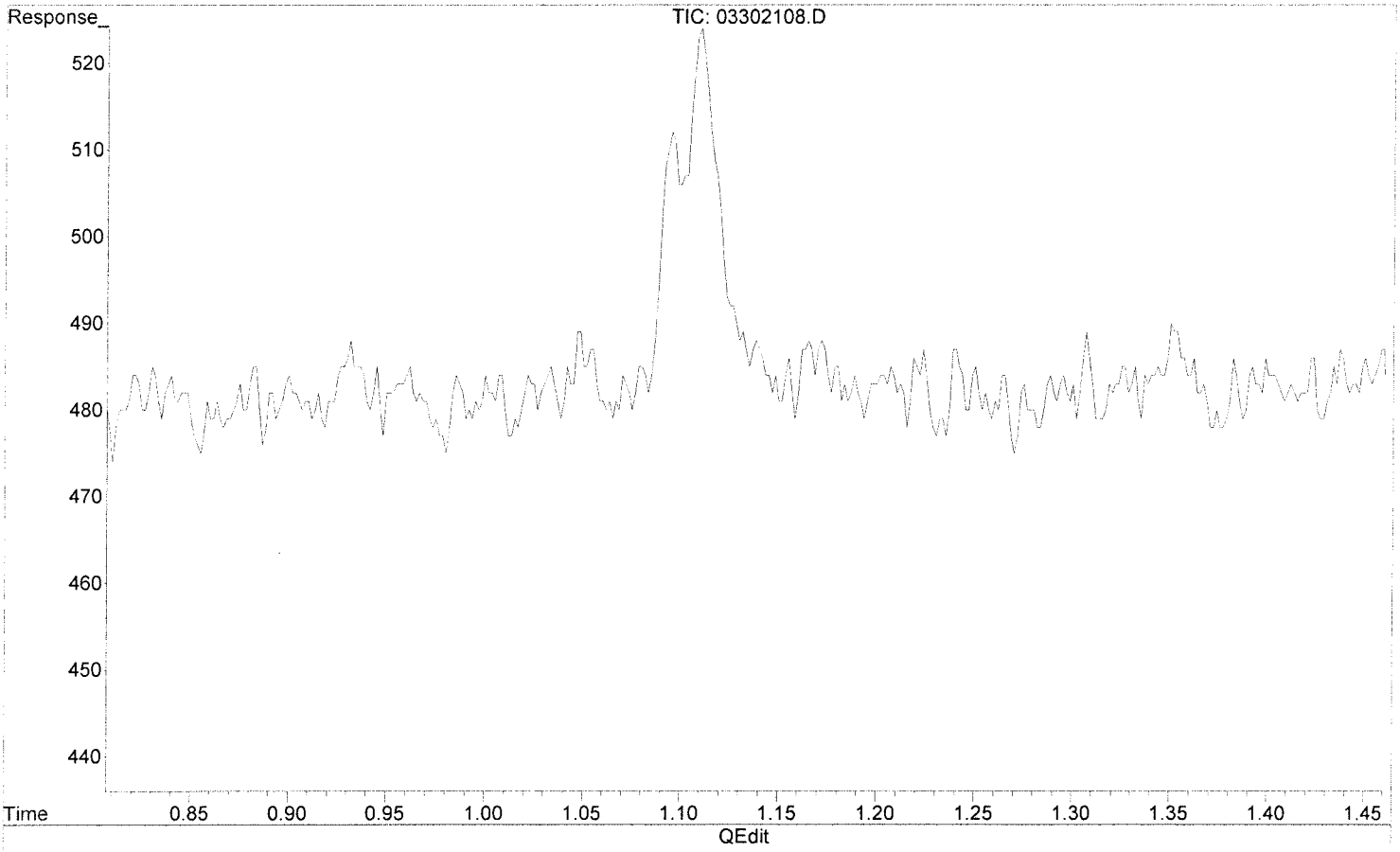




Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302108.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 14:30:09
Operator : CB
Sample : P2101408-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:22:52 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.128min 0.000 ppm

response 0

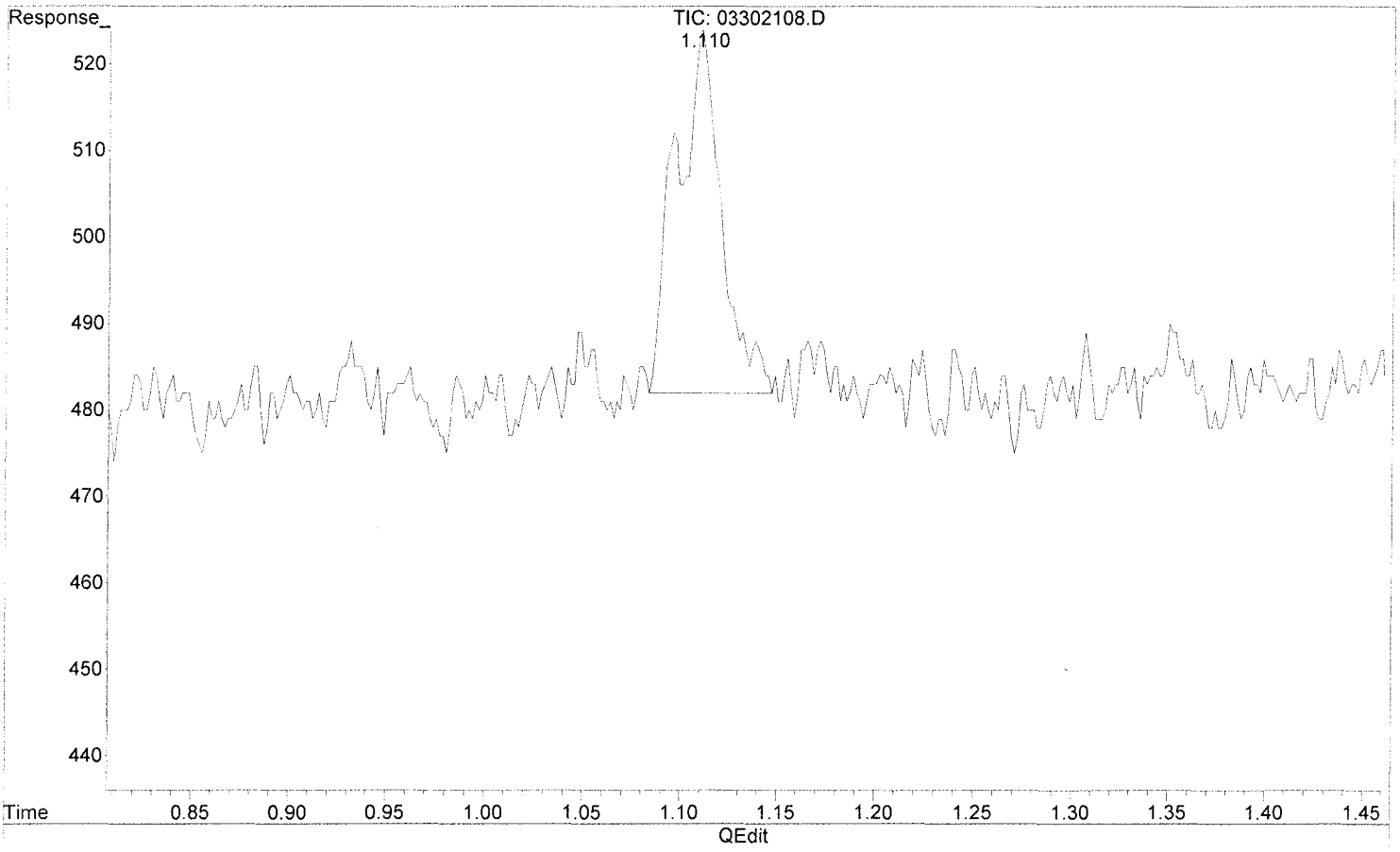
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302108.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 14:30:09
Operator : CB
Sample : P2101408-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:22:52 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.110min 0.075 ppm m

response 679

CB
3/31/21
MW

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302109.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 14:54:33
Operator : CB
Sample : P2101408-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:23:16 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

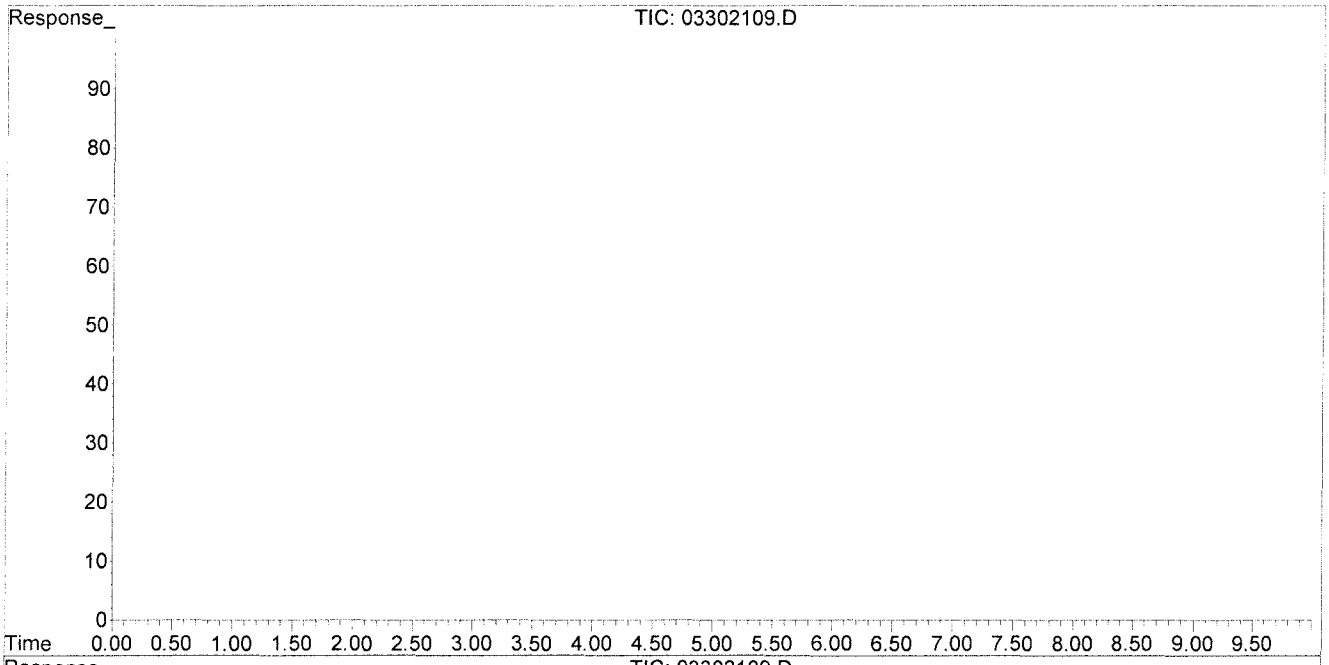
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.109	9567	1.055	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

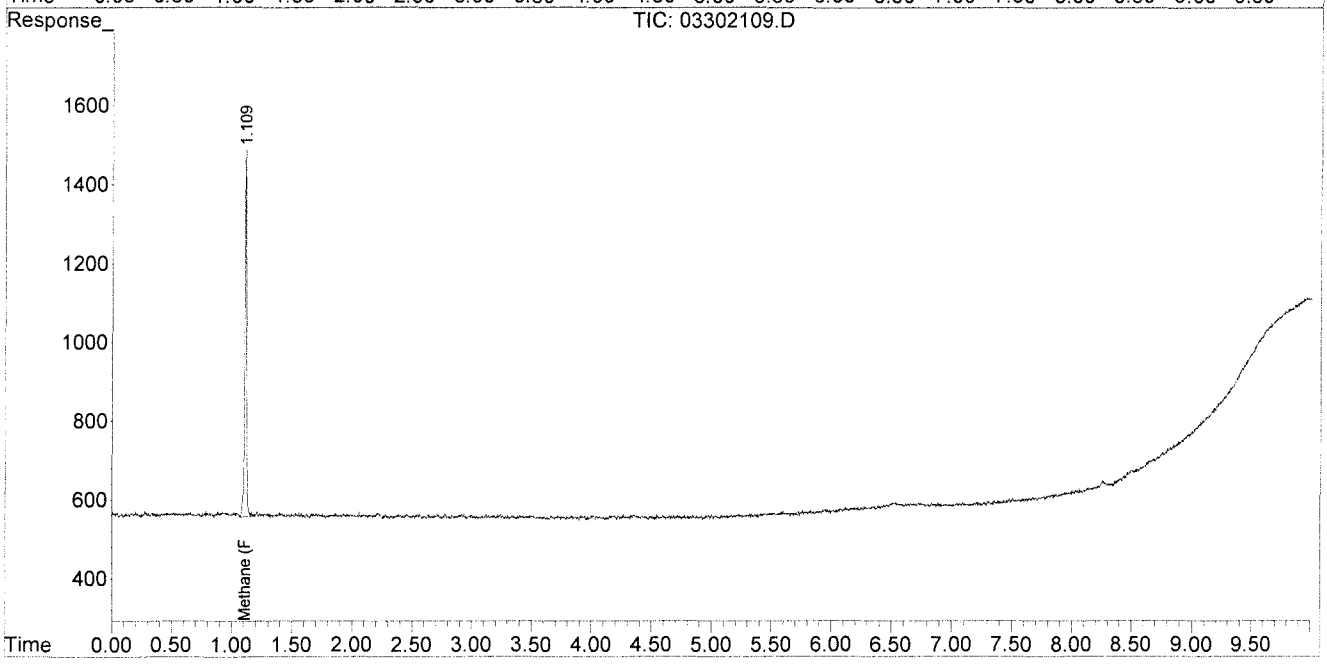
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302109.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 14:54:33
Operator : CB
Sample : P2101408-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:23:16 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302110.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 15:22:58
Operator : CB
Sample : P2101408-006 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:23:31 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

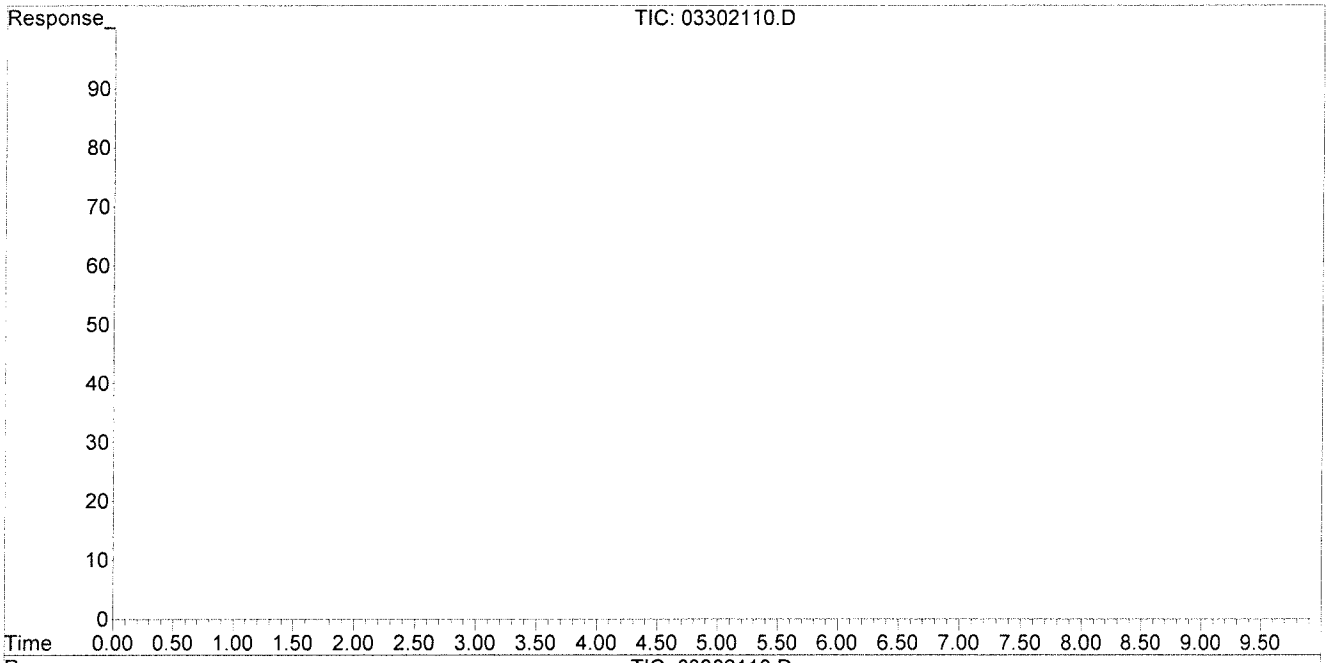
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.111	6668	0.735	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

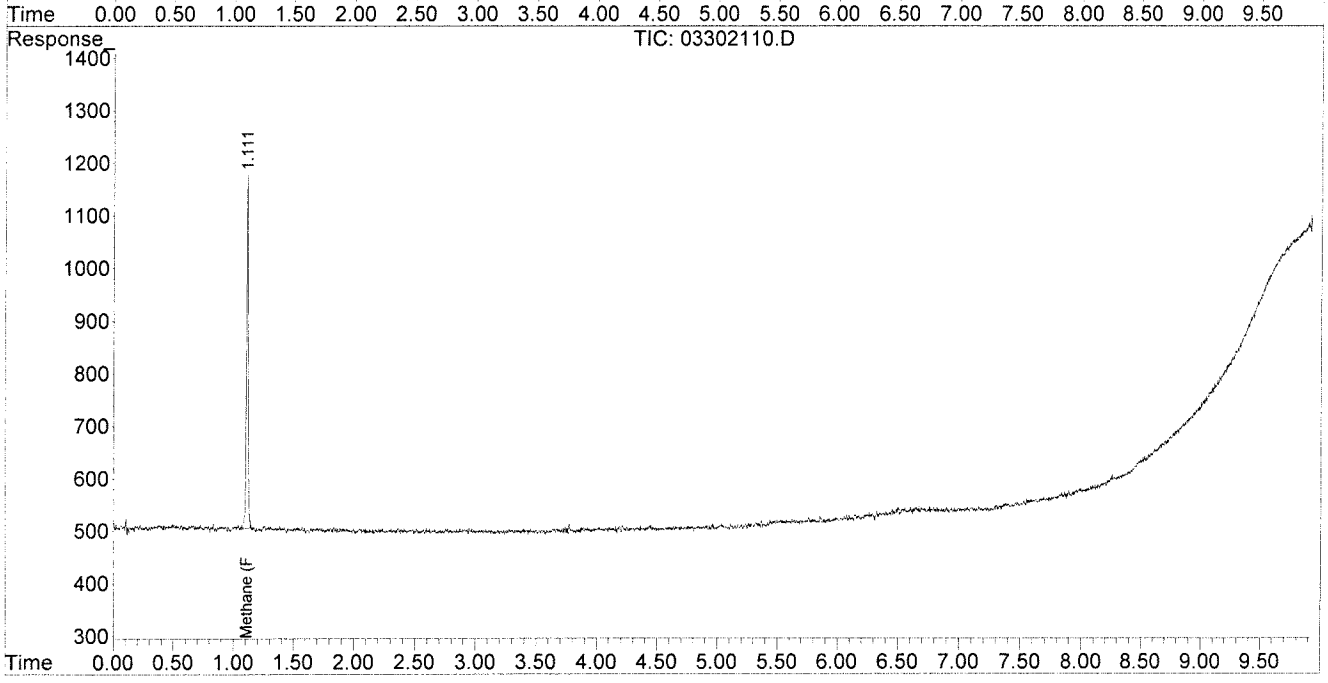
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302110.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 15:22:58
Operator : CB
Sample : P2101408-006 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:23:31 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

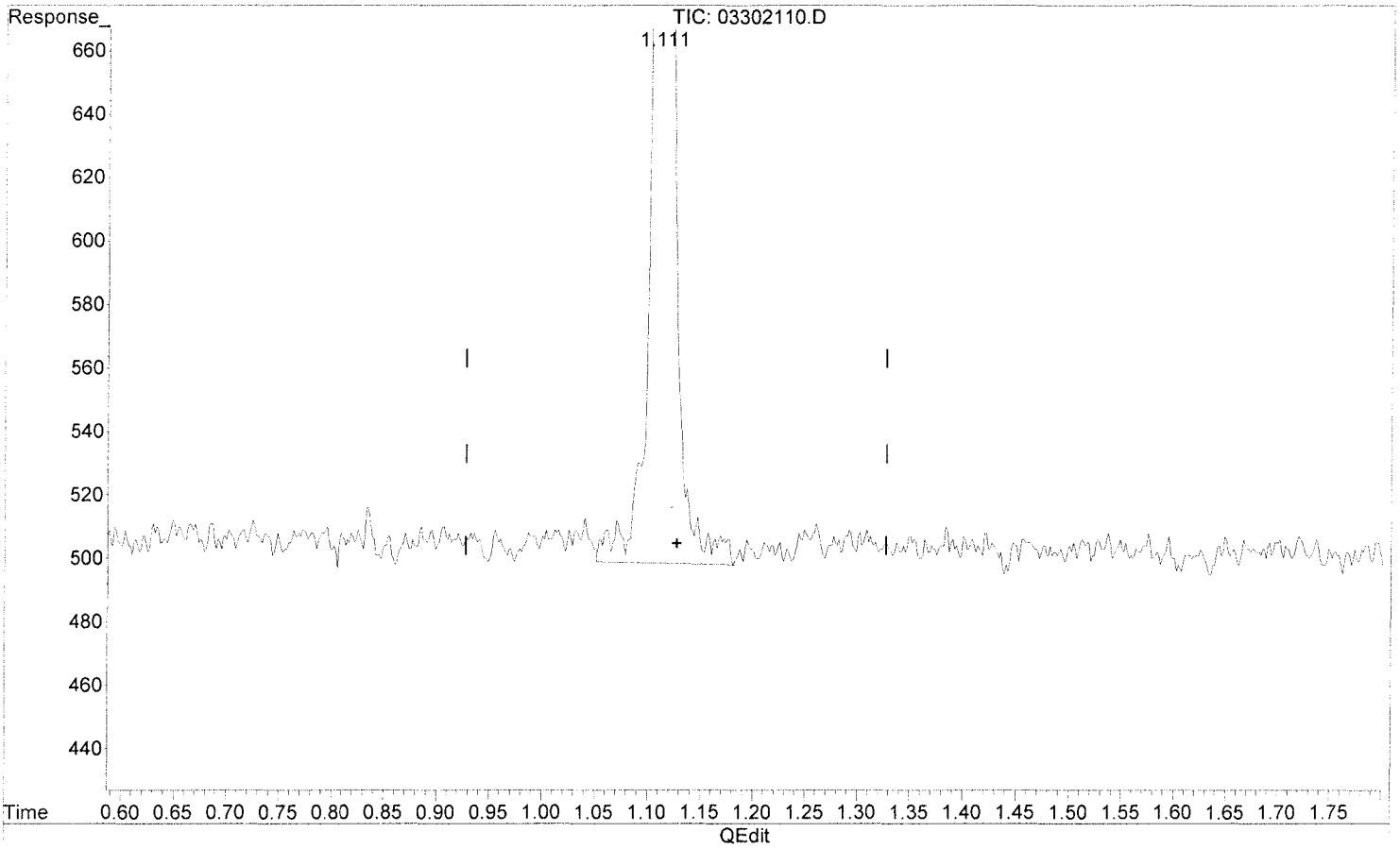




Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302110.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 15:22:58
Operator : CB
Sample : P2101408-006 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:23:31 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.112min 0.794 ppm

response 7201

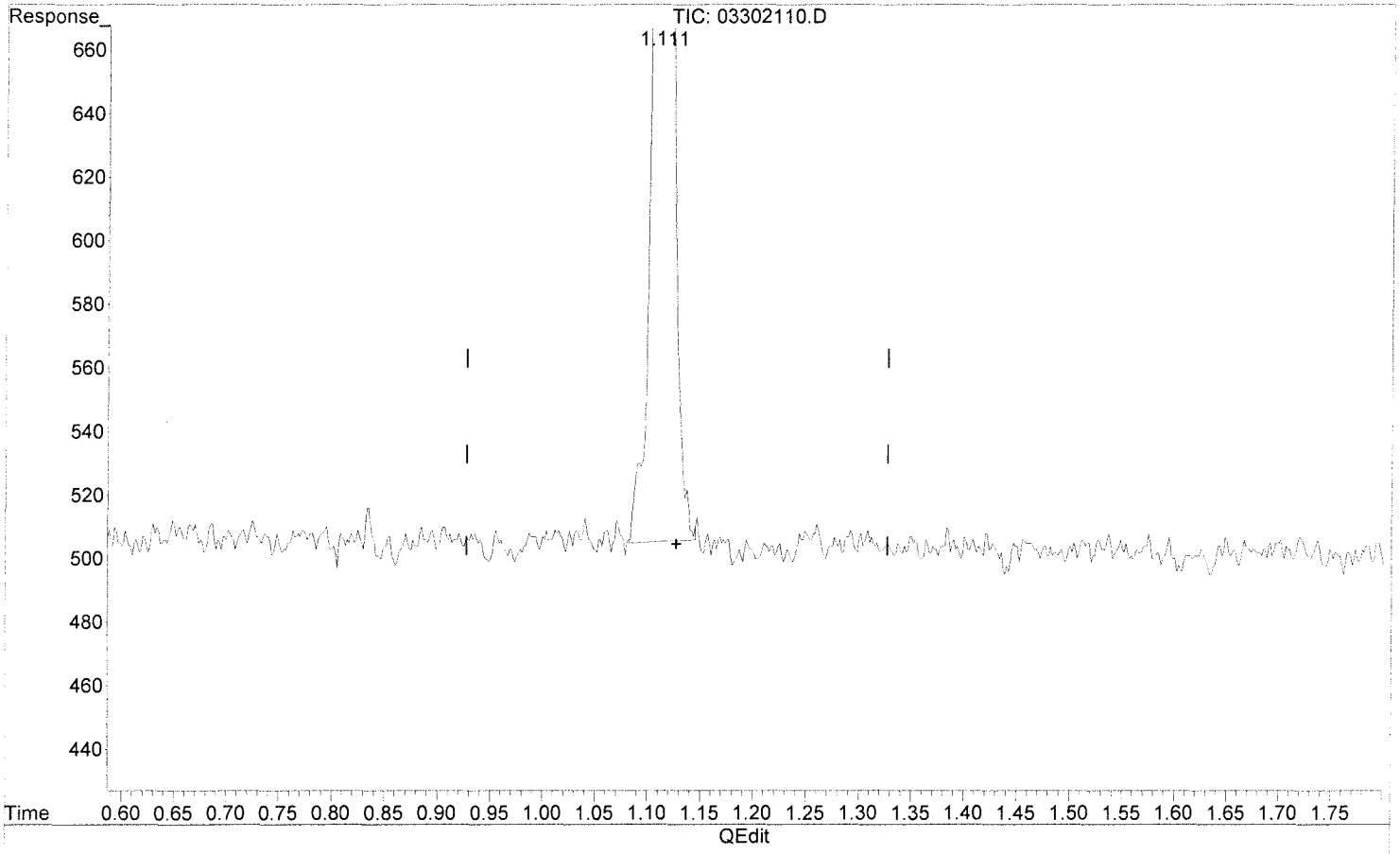
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302110.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 15:22:58
Operator : CB
Sample : P2101408-006 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:23:31 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.111min 0.735 ppm m

response 6668

CB 3/31/21 BV

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302111.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 15:36:00
Operator : CB
Sample : P2101408-007 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:23:59 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

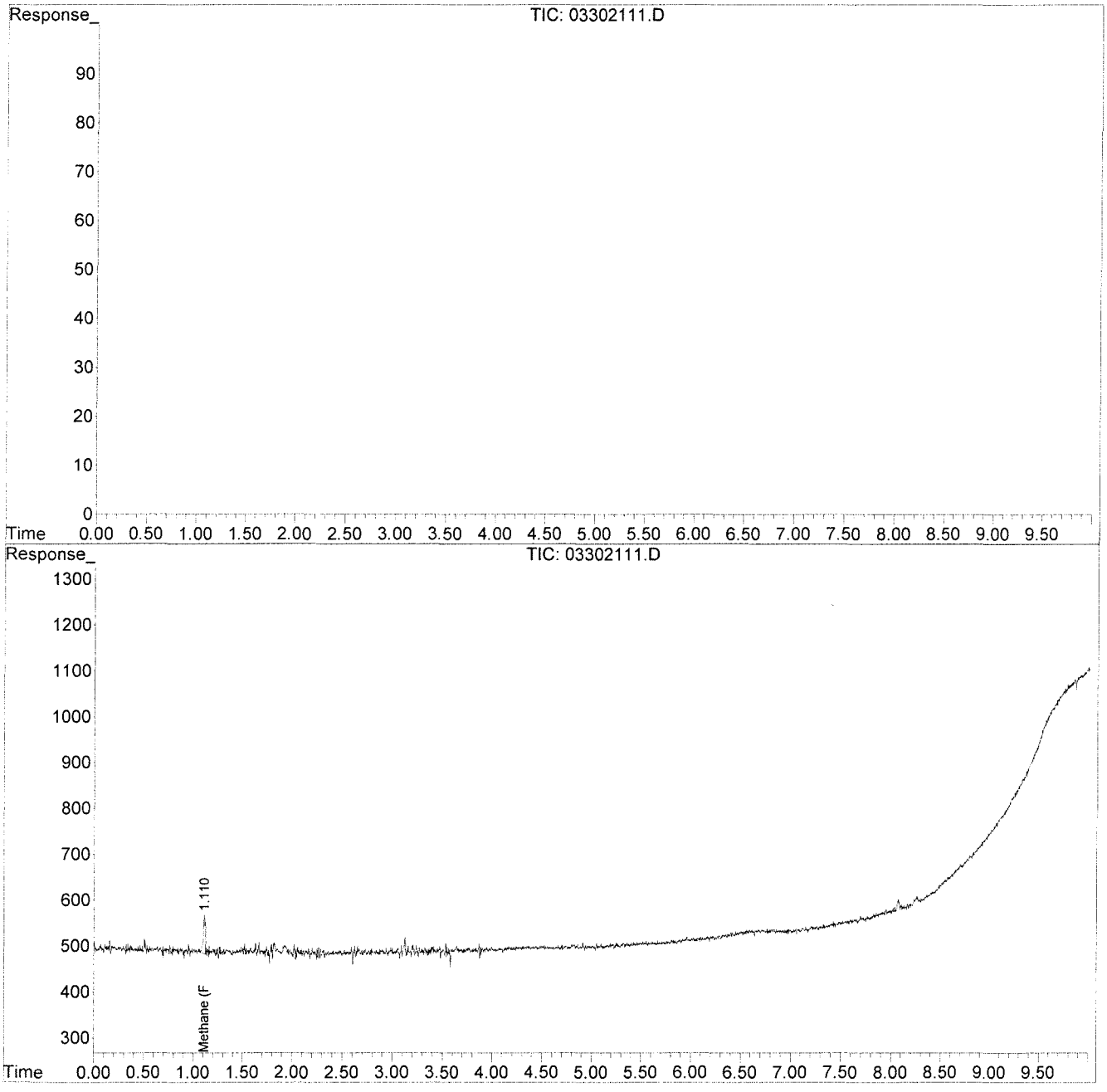
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.110	1165	0.128	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302111.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 15:36:00
Operator : CB
Sample : P2101408-007 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:23:59 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 12:36:30
Operator : CB
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 12:51:14 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

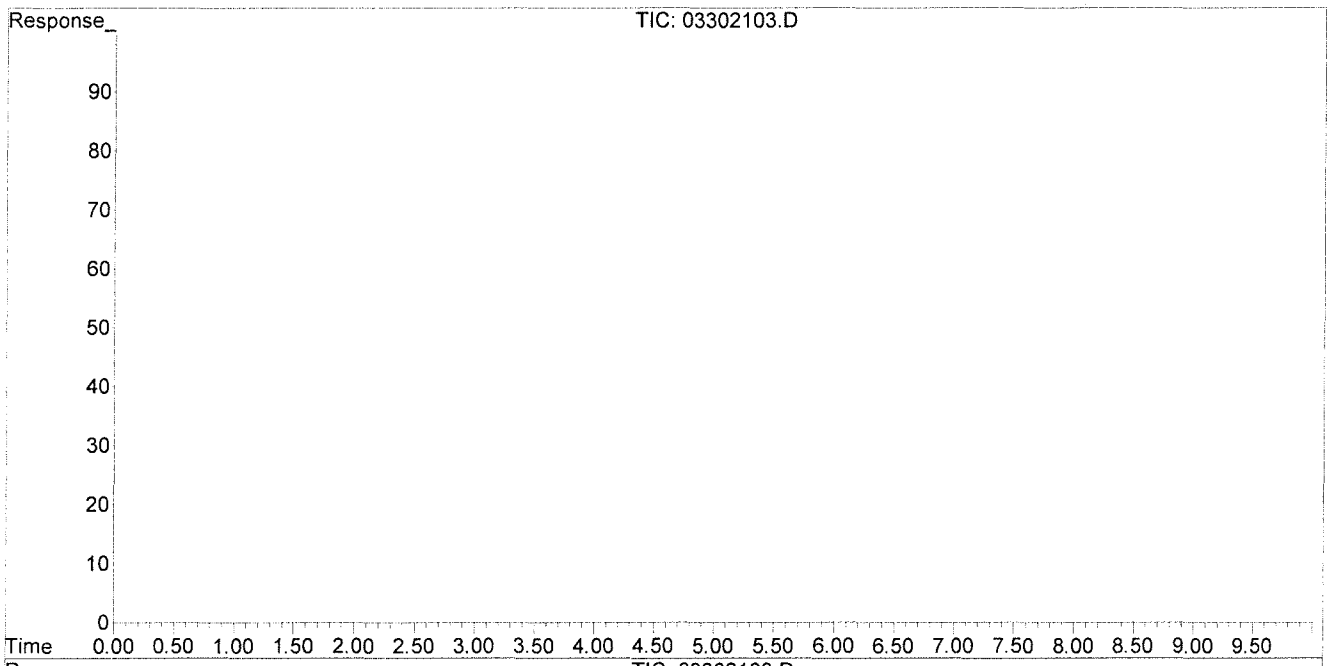
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.103	568	0.063	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

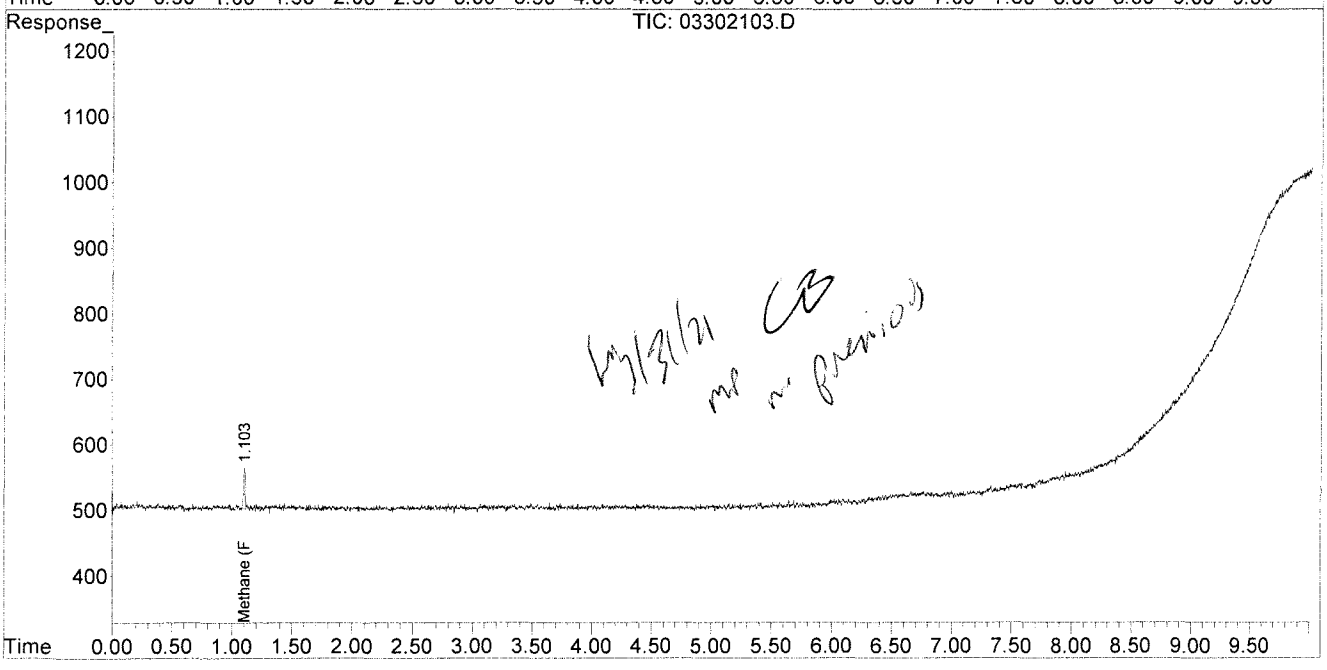
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 12:36:30
Operator : CB
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 12:51:14 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302112.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 15:57:25
Operator : CB
Sample : lcs fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 16:15:21 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

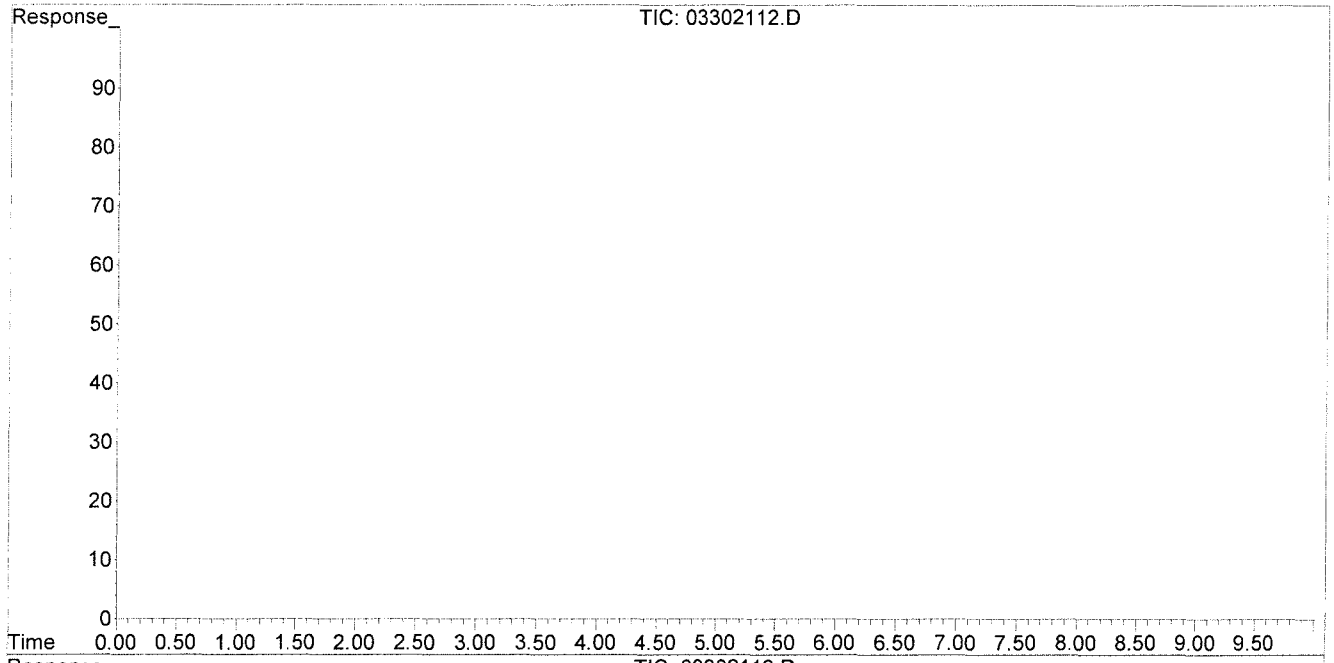
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.110	13294	1.466	ppm	m
7)	Ethylene	1.677	18473	1.104	ppm	
8)	Ethane	1.939	21377	1.261	ppm	
9)	Propylene	4.318	24932	1.064	ppm	
10)	Propane	4.438	31714	1.275	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.651	37974	1.427	ppm	
13)	n-Butane	6.651	37974	1.427	ppm	

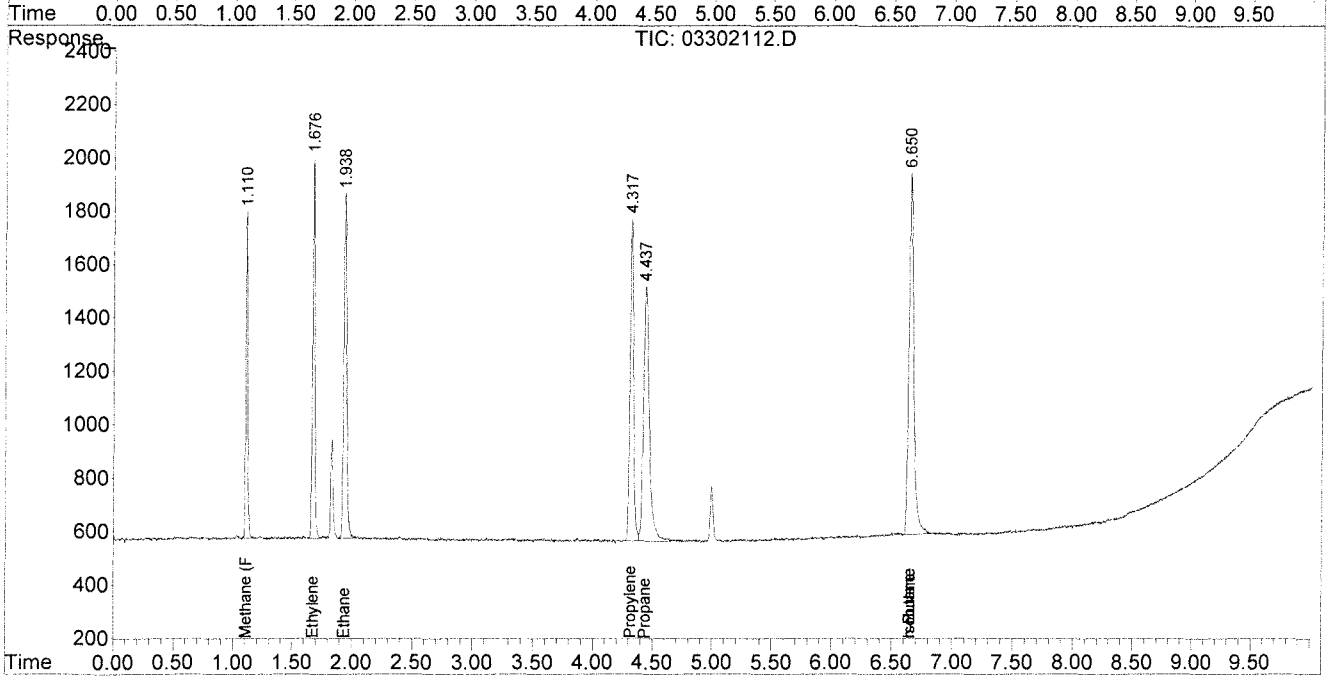
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302112.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 15:57:25
Operator : CB
Sample : lcs fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 16:15:21 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



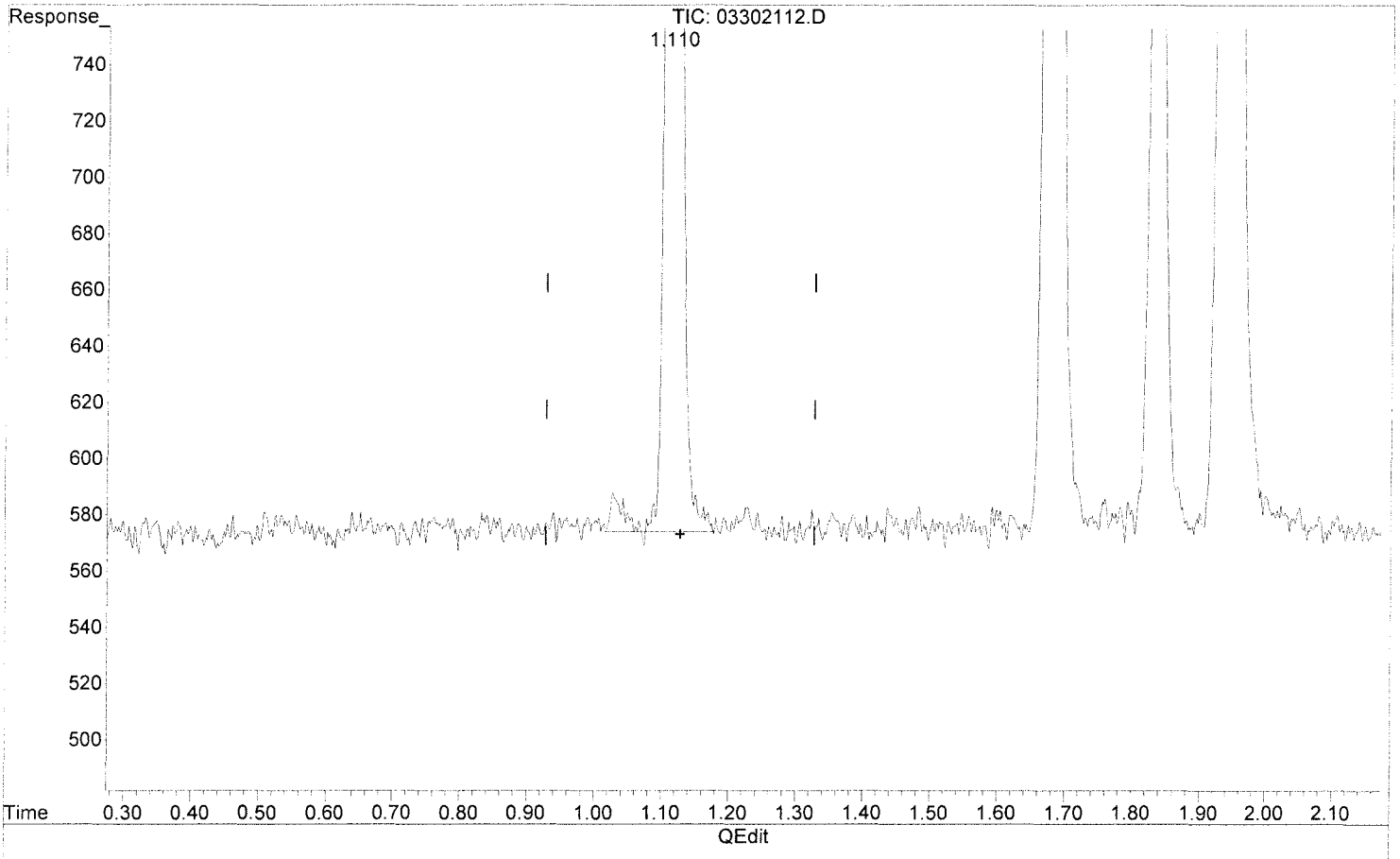


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302112.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 15:57:25
Operator : CB
Sample : lcs fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 16:15:21 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.111min 1.504 ppm

response 13639

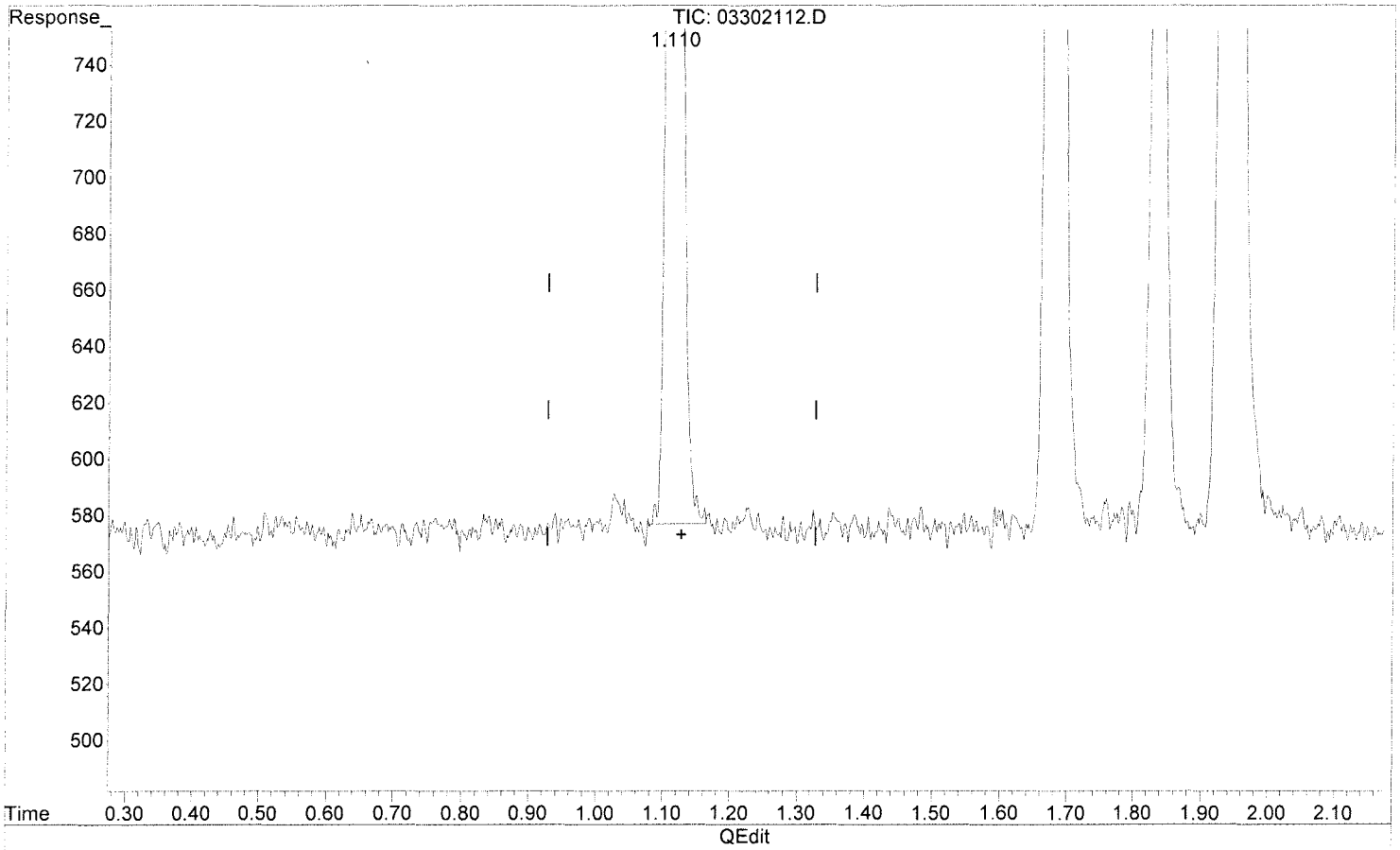
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302112.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 15:57:25
Operator : CB
Sample : lcs fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 16:15:21 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.110min 1.466 ppm m

response 13294

CB 3/31/21

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302113.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 16:16:08
Operator : CB
Sample : lcsd fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 16:30:48 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

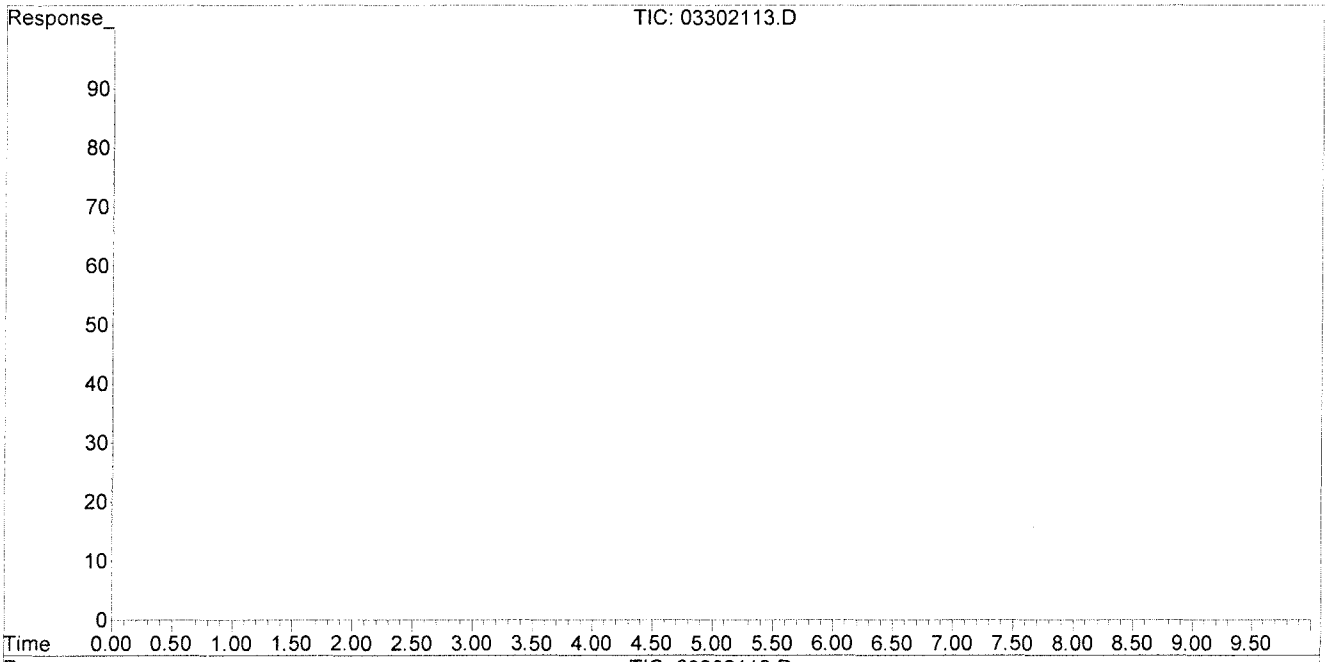
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.108	13070	1.441	ppm	m
7)	Ethylene	1.674	18066	1.080	ppm	
8)	Ethane	1.936	21149	1.248	ppm	
9)	Propylene	4.316	24349	1.039	ppm	
10)	Propane	4.436	30937	1.243	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.649	37136	1.395	ppm	
13)	n-Butane	6.649	37136	1.395	ppm	

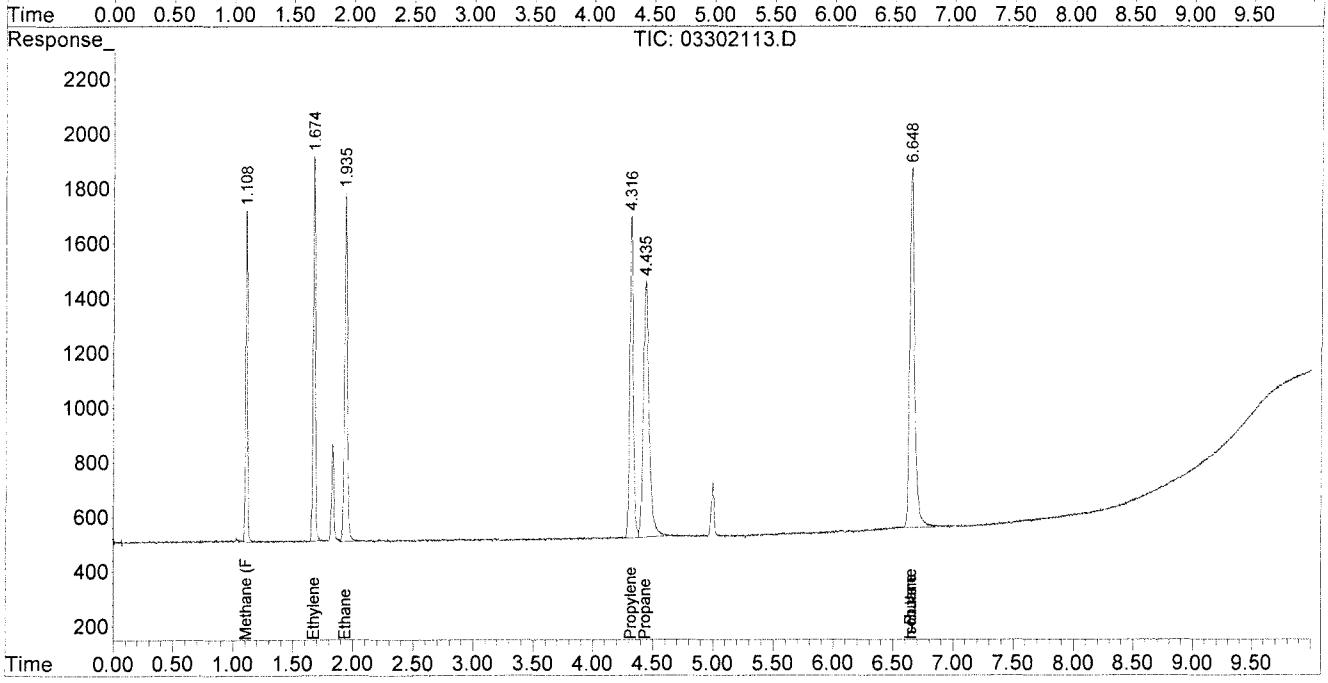
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302113.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 16:16:08
Operator : CB
Sample : lcsd fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 16:30:48 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



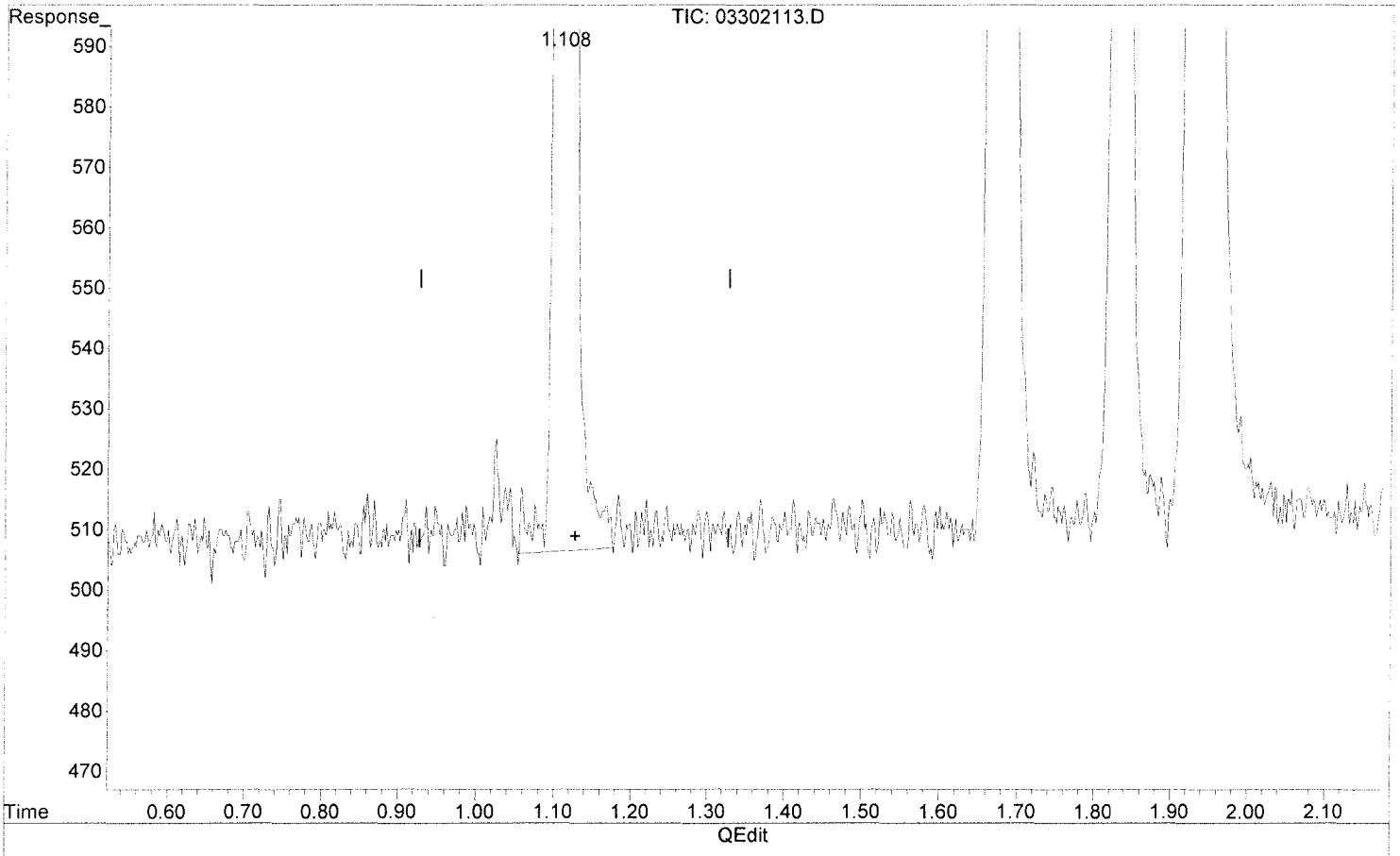


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302113.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 16:16:08
Operator : CB
Sample : lcsd fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 16:30:48 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.109min 1.464 ppm

response 13276

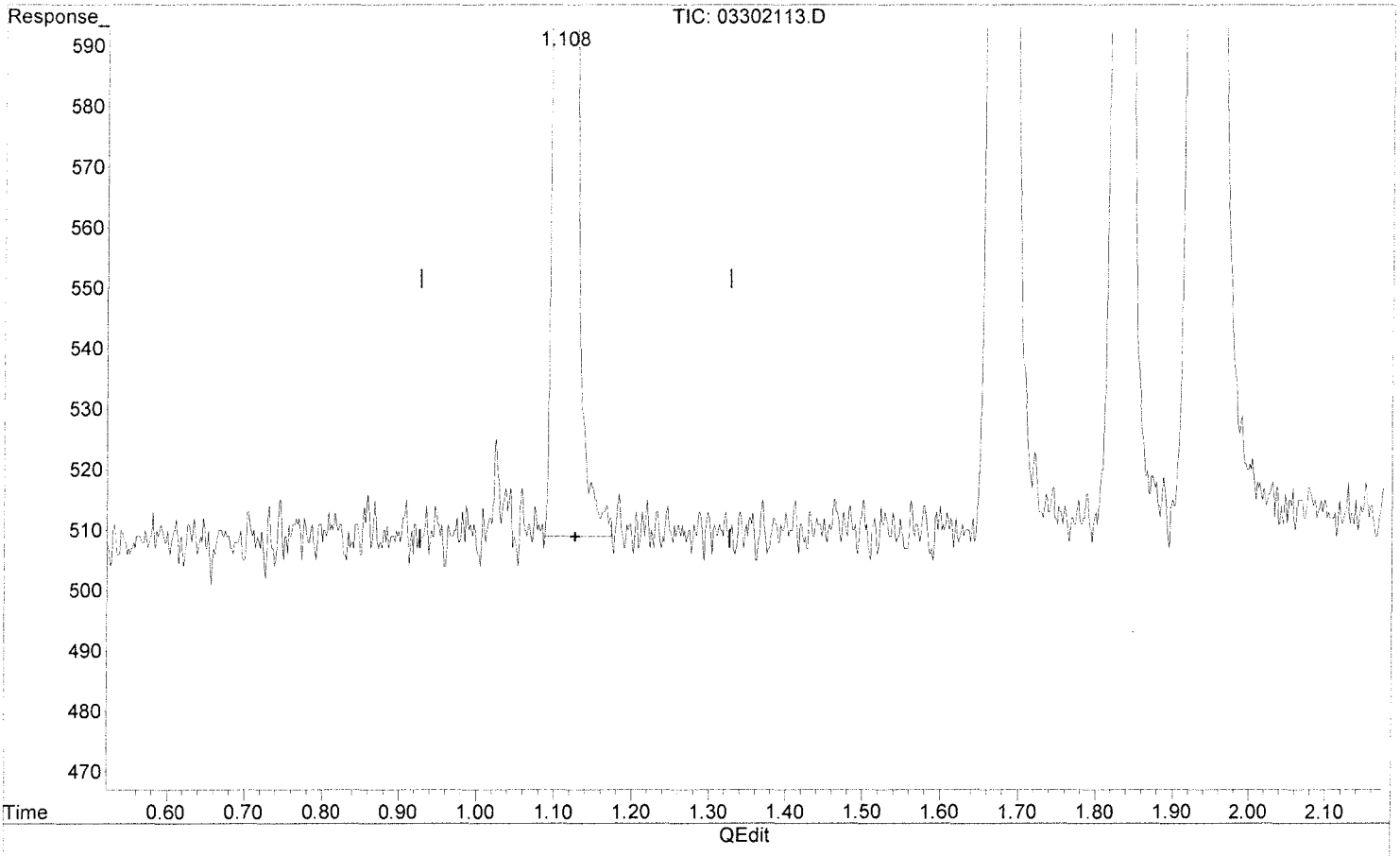
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302113.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 16:16:08
Operator : CB
Sample : lcsd fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 16:30:48 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.108min 1.441 ppm m

response 13070

CB
7/27/21
BLW

(+) = Expected Retention Time

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg	%RSD
1)	Oxygen/Argon	3.739		1.014			0.001	0.793 E6	189.17
2)	Carbon monoxide	3.739		1.014			0.001	0.594 E6	221.92
3)	Methane (TCD)						2.161	0.951 E2	106.37
4)	Carbon dioxide	2.365	2.569	2.558	2.361	2.459	2.314	2.438 E2	4.44

Signal #2 Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg	%RSD
6)	Methane (FID)		1.180	0.975	0.908	0.870	0.868	0.907 E4	11.66
7)	Ethylene	1.736	1.638	1.780	1.720	1.628	1.670	1.673 E4	3.90
8)	Ethane	1.781	1.676	1.784	1.730	1.692	1.675	1.695 E4	3.83
9)	Propylene	2.505	2.296	2.592	2.480	2.346	2.252	2.343 E4	6.56
10)	Propane	2.439	2.283	2.645	2.555	2.433	2.522	2.488 E4	4.20
11)	Isobutylene							0.652 E1	138.46
12)	Isobutane	6.058	4.793	2.214	1.553	1.353		2.662 E4	86.17
13)	n-Butane	6.058	4.793	2.214	1.553	1.353		2.662 E4	86.17

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS091217_R.M Wed Sep 13 15:11:48 2017

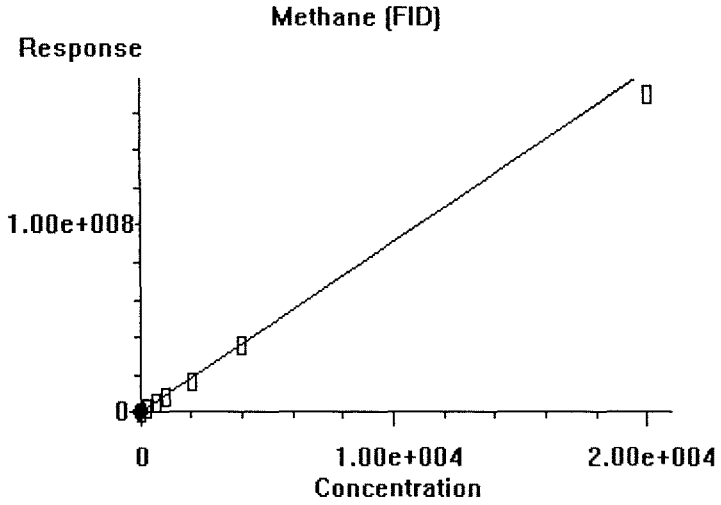
Edit Compounds -- Compound #6 -- Methane (FID)

Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	
2	0.302000	3564.400000
3	1.510000	14725.268625
4	4.530000	41128.575000
5	10.570000	91966.784531
6	200.000000	1735997.497500
7	600.000000	5189848.900000
8	1000.000000	8598533.570000
9	2000.000000	16098209.390000
10	4000.000000	35776839.311362
11	20000.000000	169009160.49199



0.000e+000	Quadratic term
9.071e+003	Linear term
0.000e+000	Constant term
11.657%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #7 -- Ethylene

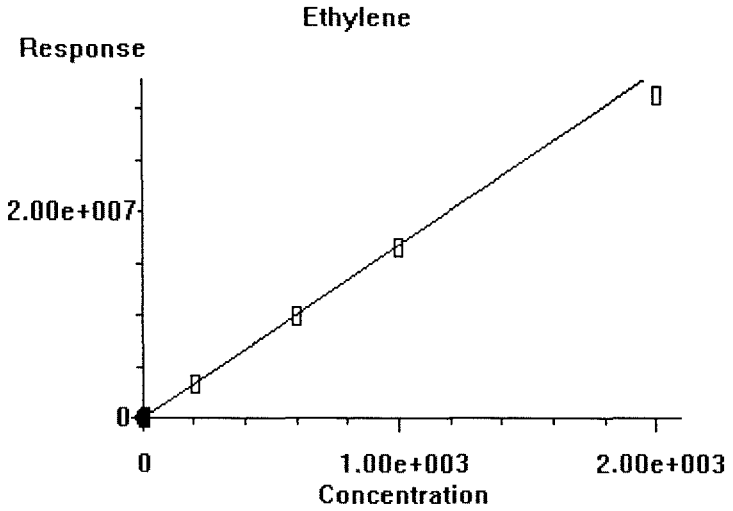
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2621.970000
2	0.302000	4946.731301
3	1.510000	26884.746847
4	4.530000	77902.721497
5	10.570000	172085.529560
6	200.000000	3339702.313219
7	600.000000	10007758.776971
8	1000.000000	16608503.805988
9	2000.000000	31192443.898600
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.673e+004	Linear term
0.000e+000	Constant term
3.897%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #8 -- Ethane

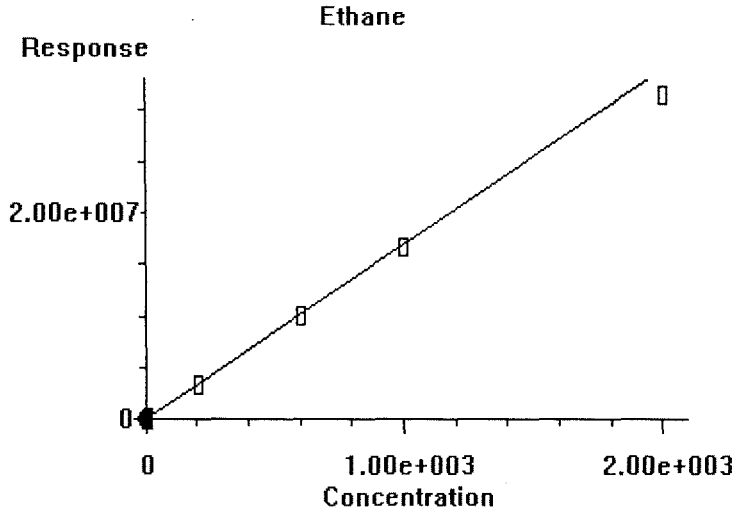
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2689.928008
2	0.302000	5060.331943
3	1.510000	26943.667500
4	4.530000	78353.525045
5	10.570000	178840.731148
6	200.000000	3350442.319129
7	600.000000	10048964.218029
8	1000.000000	16709164.879012
9	2000.000000	31424217.938900
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.695e+004	Linear term
0.000e+000	Constant term
3.831%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #9 -- Propylene

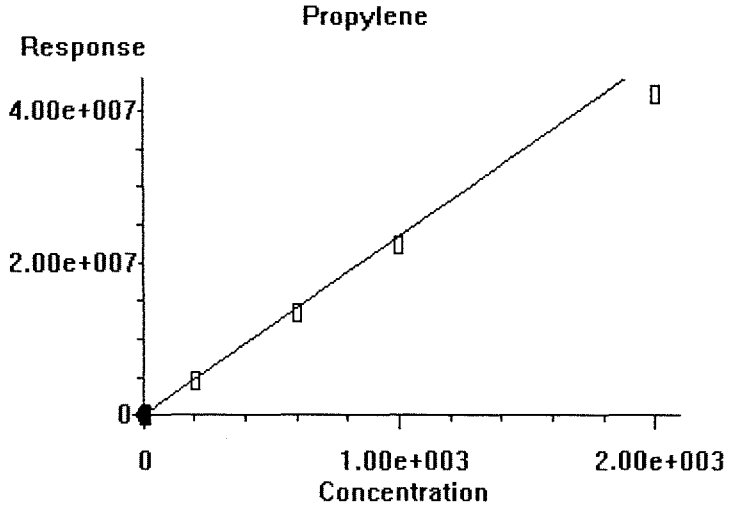
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3782.537646
2	0.302000	6933.285530
3	1.510000	39139.518208
4	4.530000	112341.896872
5	10.570000	248003.903623
6	200.000000	4504060.086084
7	600.000000	13569342.761419
8	1000.000000	22494887.720990
9	2000.000000	42124689.656800
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.343e+004	Linear term
0.000e+000	Constant term
6.559%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #10 -- Propane

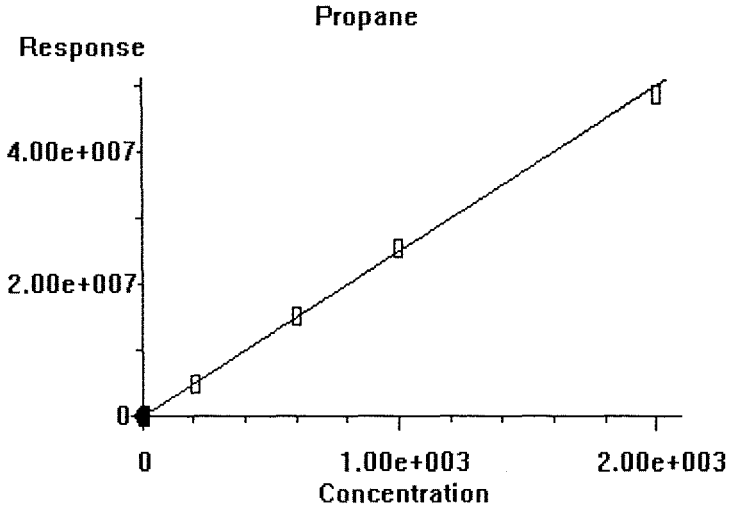
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3682.897354
2	0.302000	6894.237803
3	1.510000	39934.166792
4	4.530000	115723.428128
5	10.570000	257124.432806
6	200.000000	5043035.663916
7	600.000000	15251325.797404
8	1000.000000	25459410.657938
9	2000.000000	48583085.287451
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.488e+004	Linear term
0.000e+000	Constant term
4.200%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121702.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121703.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121704.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121705.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121706.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121707.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121711.D
11	11	20000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121712.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Sep 13 11:04 2017	Sep 12 15:03 2017	12-Sep-2017, 10:52
2	2	Sep 13 11:05 2017	Sep 13 11:05 2017	12-Sep-2017, 11:05
3	3	Sep 13 11:06 2017	Sep 13 11:05 2017	12-Sep-2017, 11:45
4	4	Sep 13 11:09 2017	Sep 13 11:06 2017	12-Sep-2017, 12:09
5	5	Sep 13 11:09 2017	Sep 13 11:09 2017	12-Sep-2017, 12:30
6	6	Sep 13 11:10 2017	Sep 13 11:10 2017	12-Sep-2017, 12:47
7	7	Sep 13 11:11 2017	Sep 13 11:10 2017	12-Sep-2017, 13:00
8	8	Sep 13 11:12 2017	Sep 13 11:11 2017	12-Sep-2017, 13:47
9	9	Sep 13 11:12 2017	Sep 13 11:12 2017	12-Sep-2017, 14:07
10	10	Sep 13 11:14 2017	Sep 13 11:13 2017	12-Sep-2017, 14:48
11	11	Sep 13 11:14 2017	Sep 13 11:14 2017	12-Sep-2017, 15:21

RS091217_R.M Wed Sep 13 15:11:22 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.767	373920	0.128	ppm	
2)	Carbon monoxide	1.767	373920	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	1.595	2622	0.156	ppm	
8)	Ethane	1.848	2690	0.156	ppm	
9)	Propylene	4.222	3783	0.154	ppm	
10)	Propane	4.348	3683	0.139	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.582f	6058	NoCal	ppm	
13)	n-Butane	6.582f	6058	NoCal	ppm	

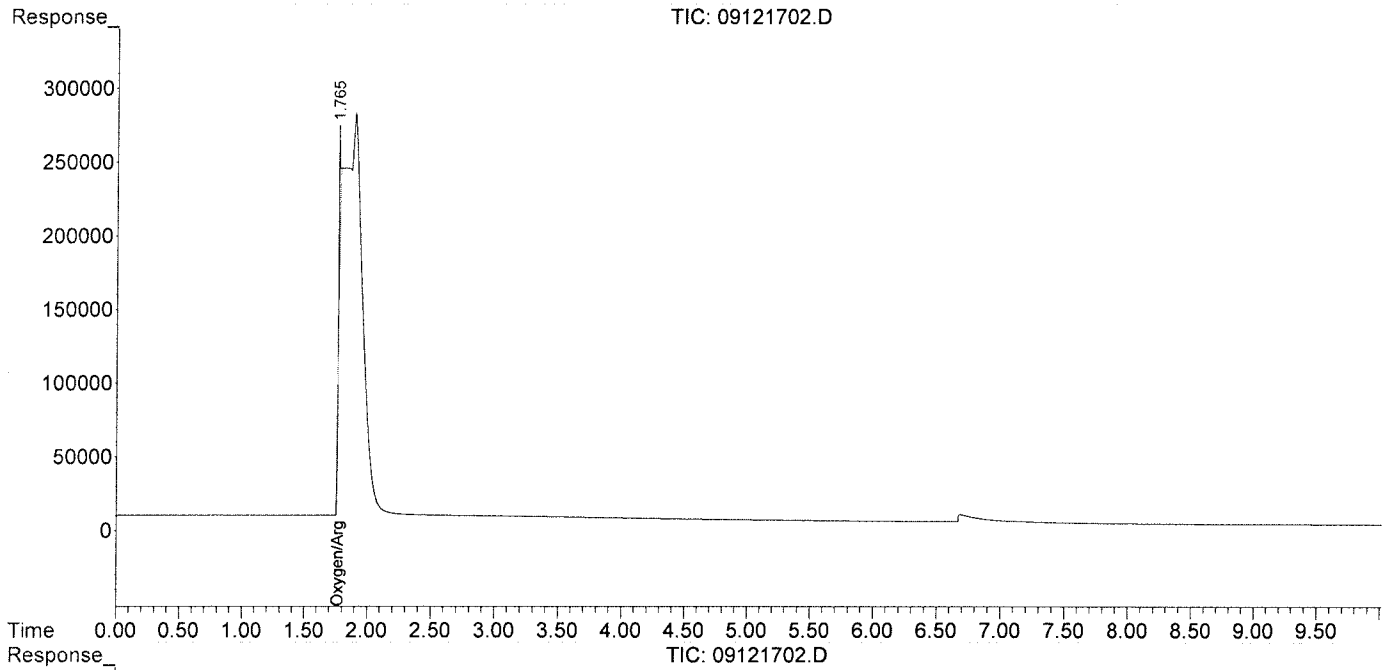
(f)=RT Delta > 1/2 Window (m)=manual int.

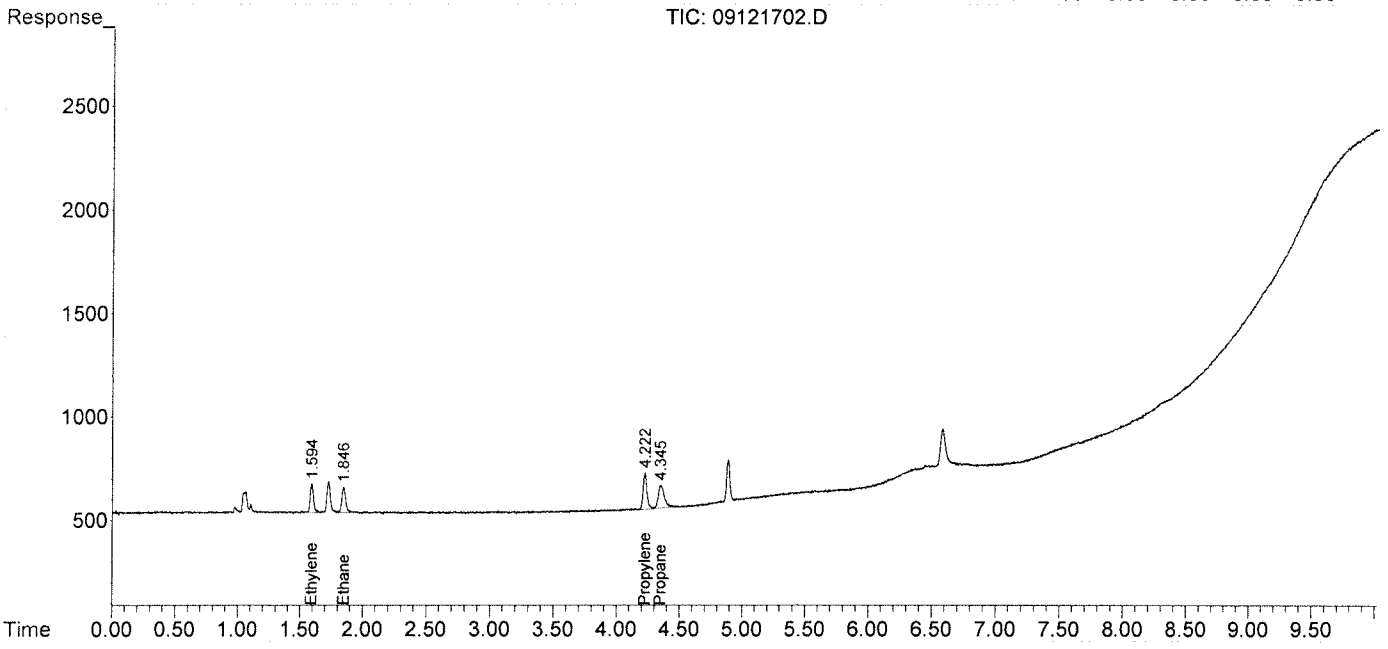
9/13/17

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

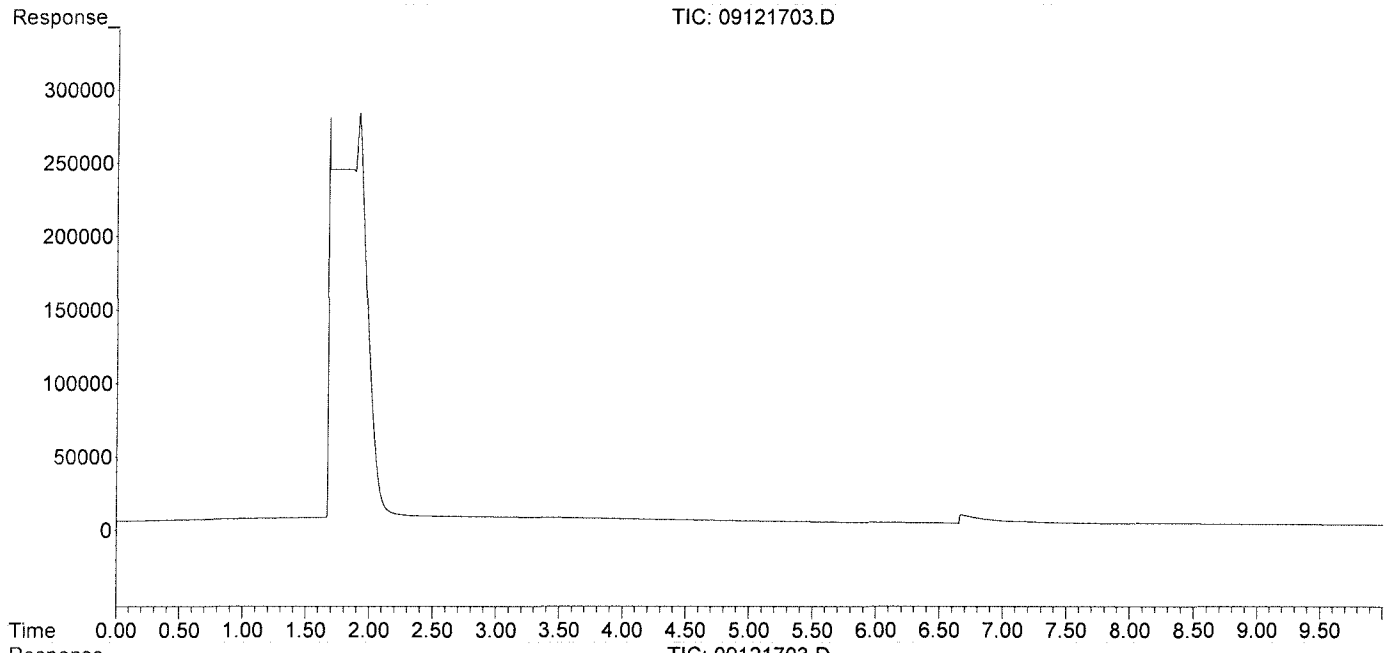
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.913f	-25181981	N.D.	ppm	
2)	Carbon monoxide	1.913f	-25181981	1.089	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.049	3564	0.391	ppm	m
7)	Ethylene	1.577	4947	0.292	ppm	
8)	Ethane	1.828	5060	0.293	ppm	
9)	Propylene	4.207	6933	0.281	ppm	
10)	Propane	4.337	6894	0.268	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	9587	0.158	ppm	
13)	n-Butane	6.579f	9587	0.158	ppm	

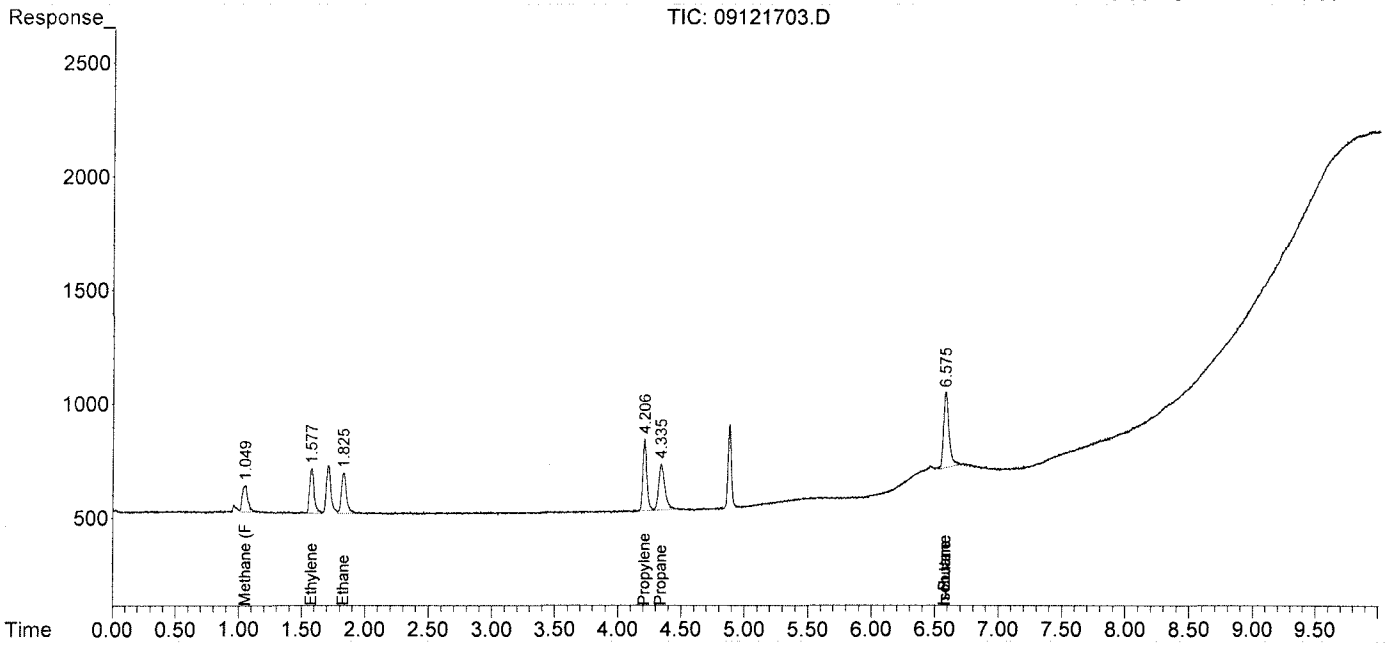
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

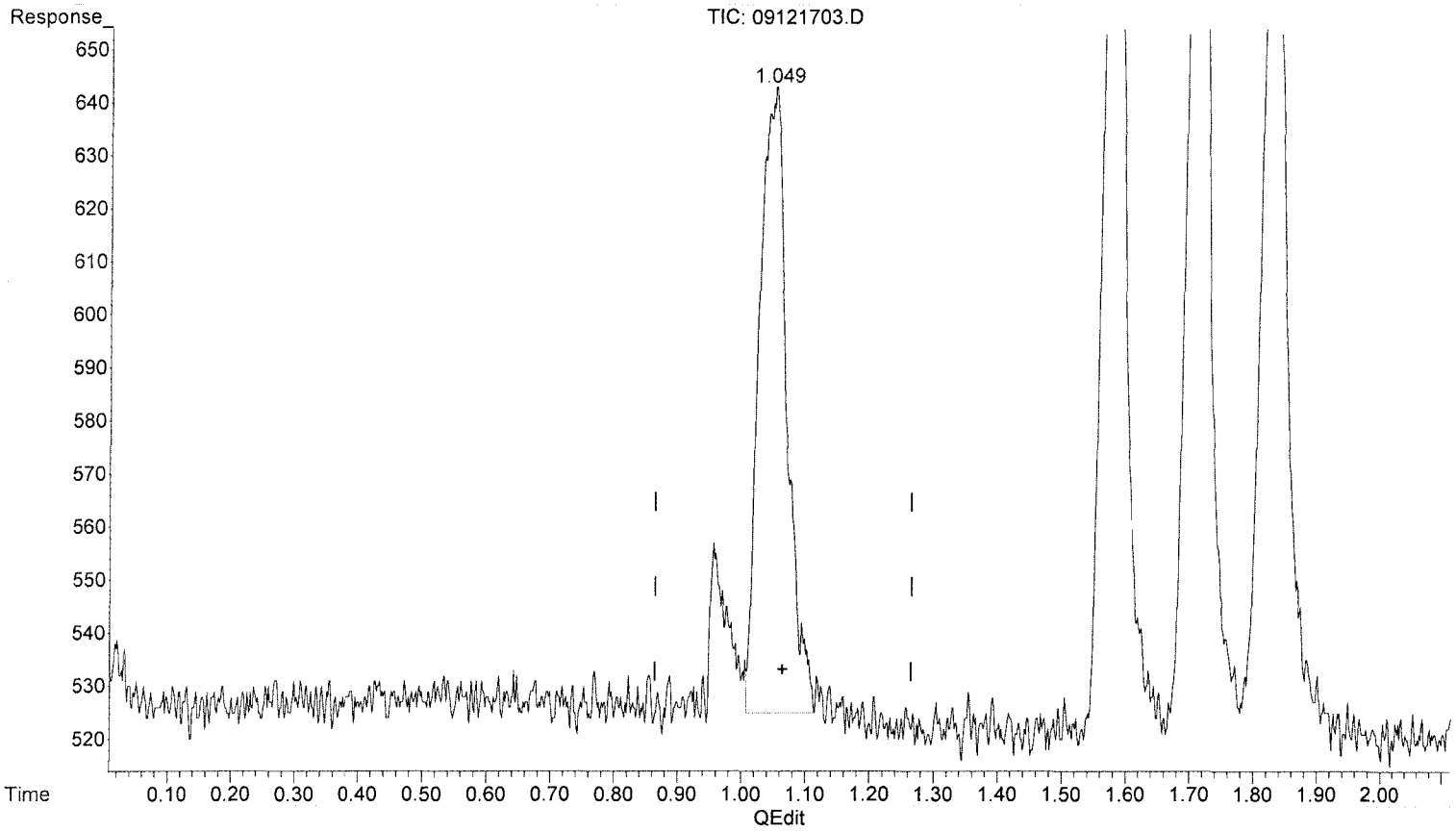




Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.049min 0.391 ppm m

response 3564

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

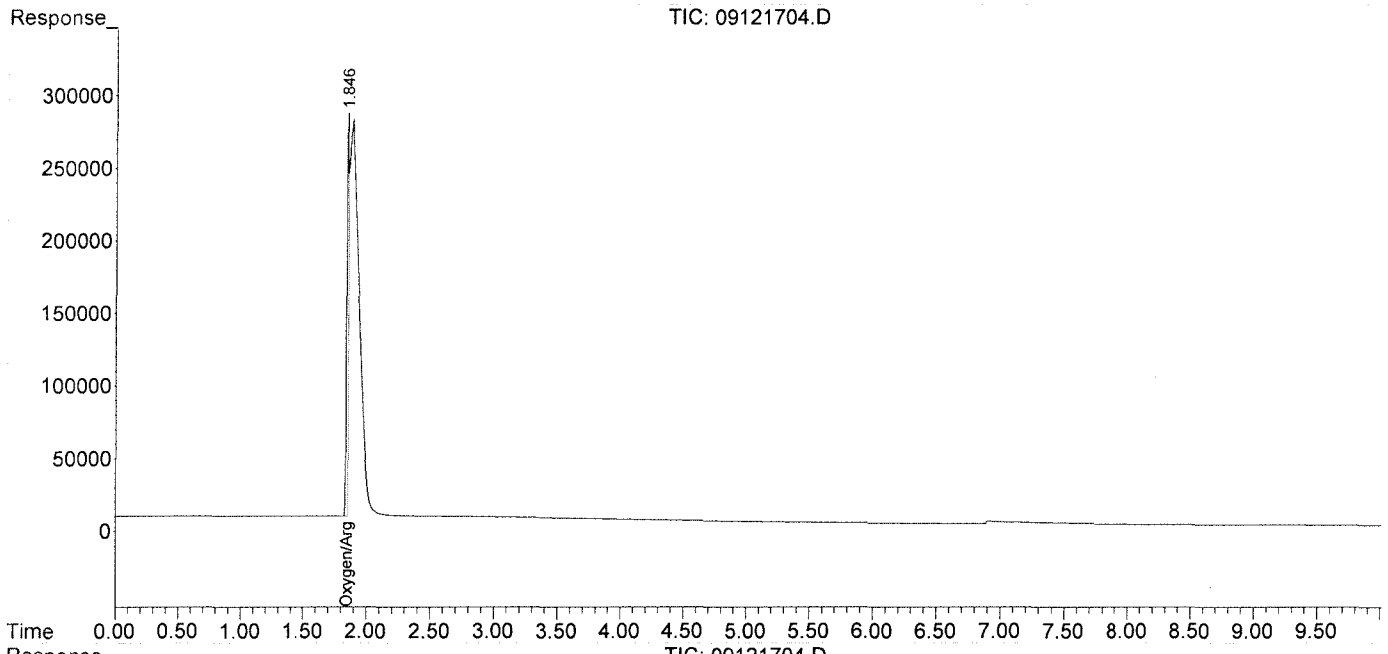
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.847	2536230	1.056	ppm
2)	Carbon monoxide	1.847	2536230	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.064	14725	1.613	ppm
7)	Ethylene	1.598	26885	1.582	ppm
8)	Ethane	1.851	26944	1.555	ppm
9)	Propylene	4.220	39140	1.589	ppm
10)	Propane	4.349	39934	1.596	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	55348	1.020	ppm
13)	n-Butane	6.578f	55348	1.020	ppm

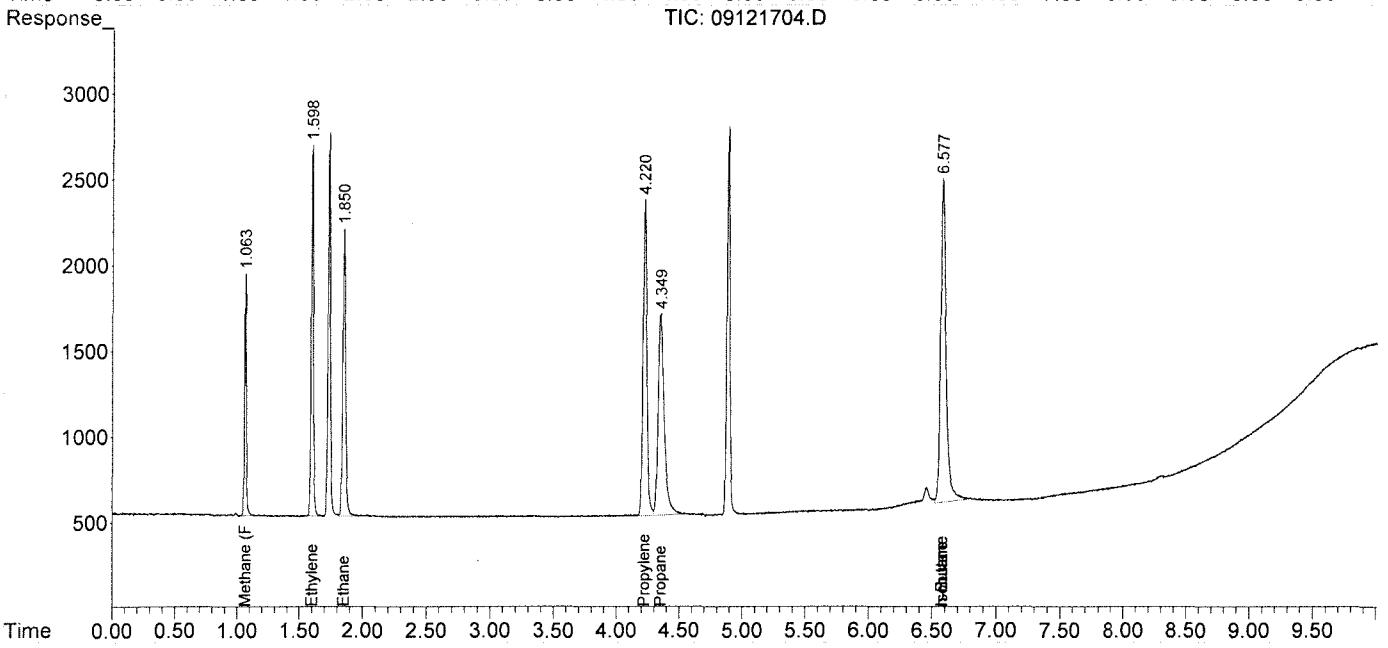
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

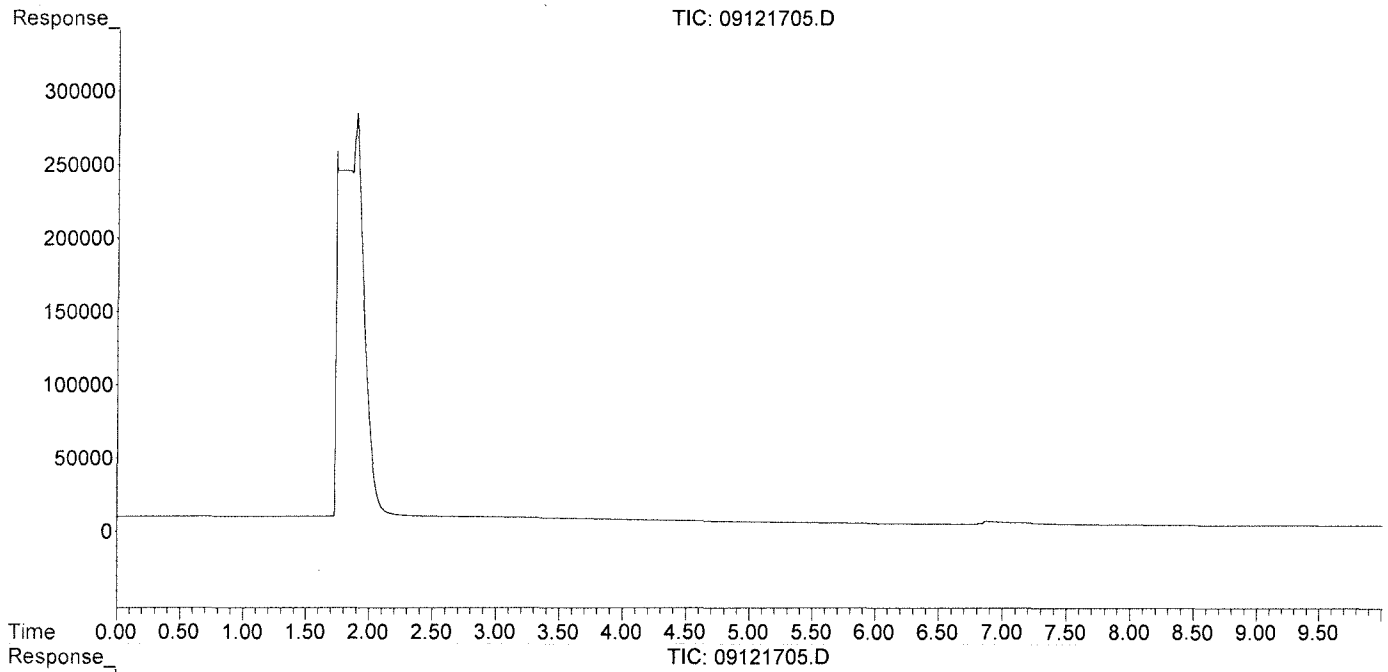
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.738	-331216	N.D.	ppm
2)	Carbon monoxide	1.738	-331216	0.019	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.052	41129	4.522	ppm
7)	Ethylene	1.586	77903	4.637	ppm
8)	Ethane	1.838	78354	4.558	ppm
9)	Propylene	4.218	112342	4.614	ppm
10)	Propane	4.347	115723	4.680	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.580f	155256	3.565	ppm
13)	n-Butane	6.580f	155256	3.565	ppm

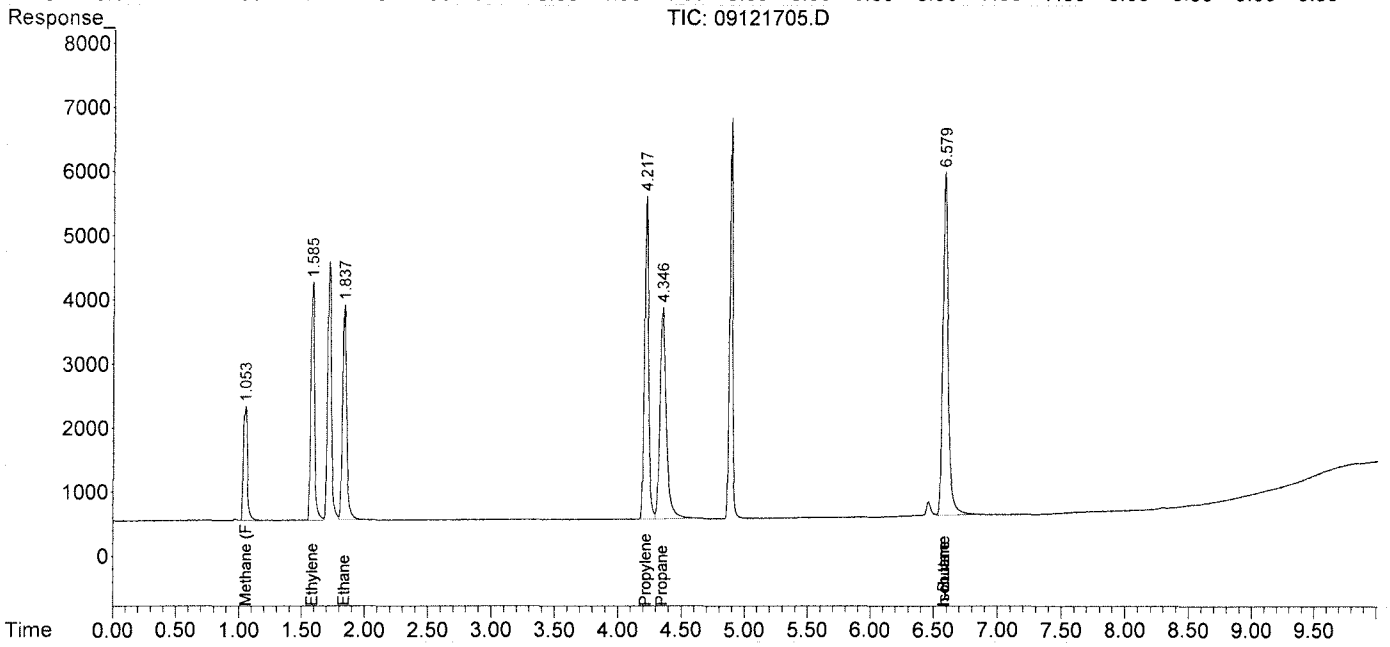
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

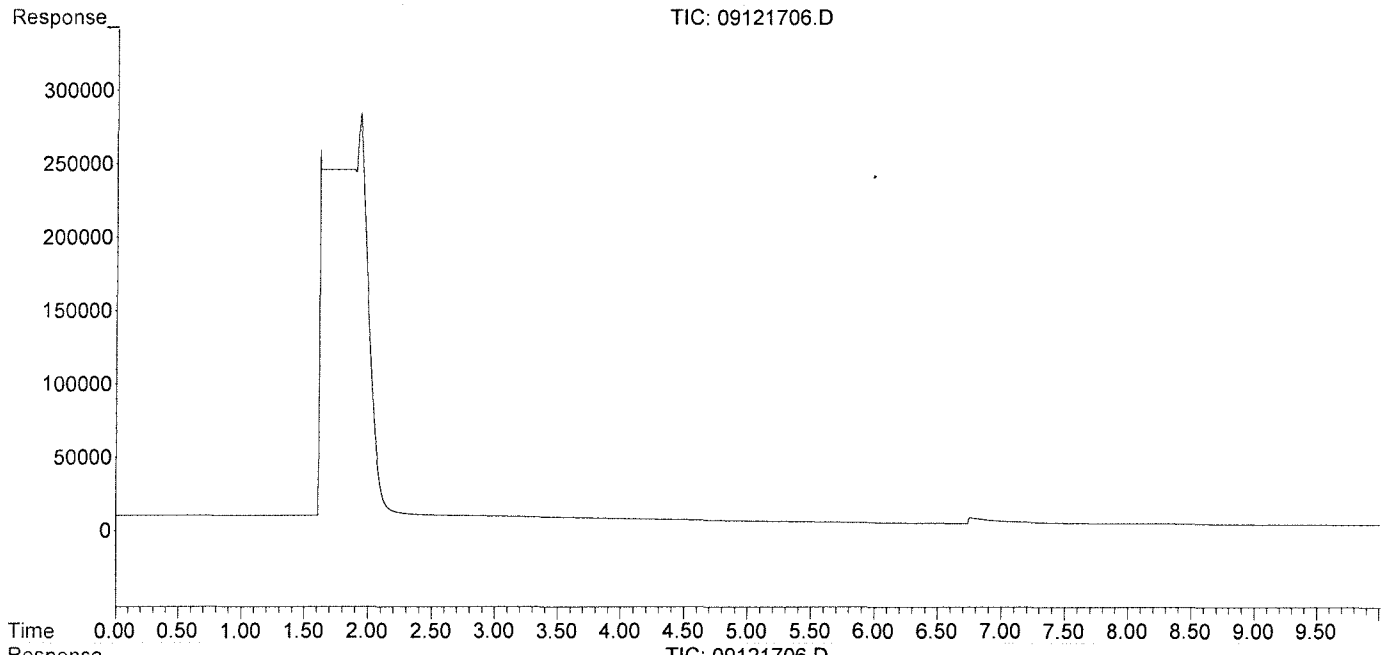
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.929f	-31871242	N.D.	ppm
2)	Carbon monoxide	1.929f	-31871242	1.818	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.025	91967	10.135	ppm
7)	Ethylene	1.568	172086	10.273	ppm
8)	Ethane	1.822	178841	10.441	ppm
9)	Propylene	4.214	248004	10.236	ppm
10)	Propane	4.344	257124	10.458	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	338181	9.254	ppm
13)	n-Butane	6.578f	338181	9.254	ppm

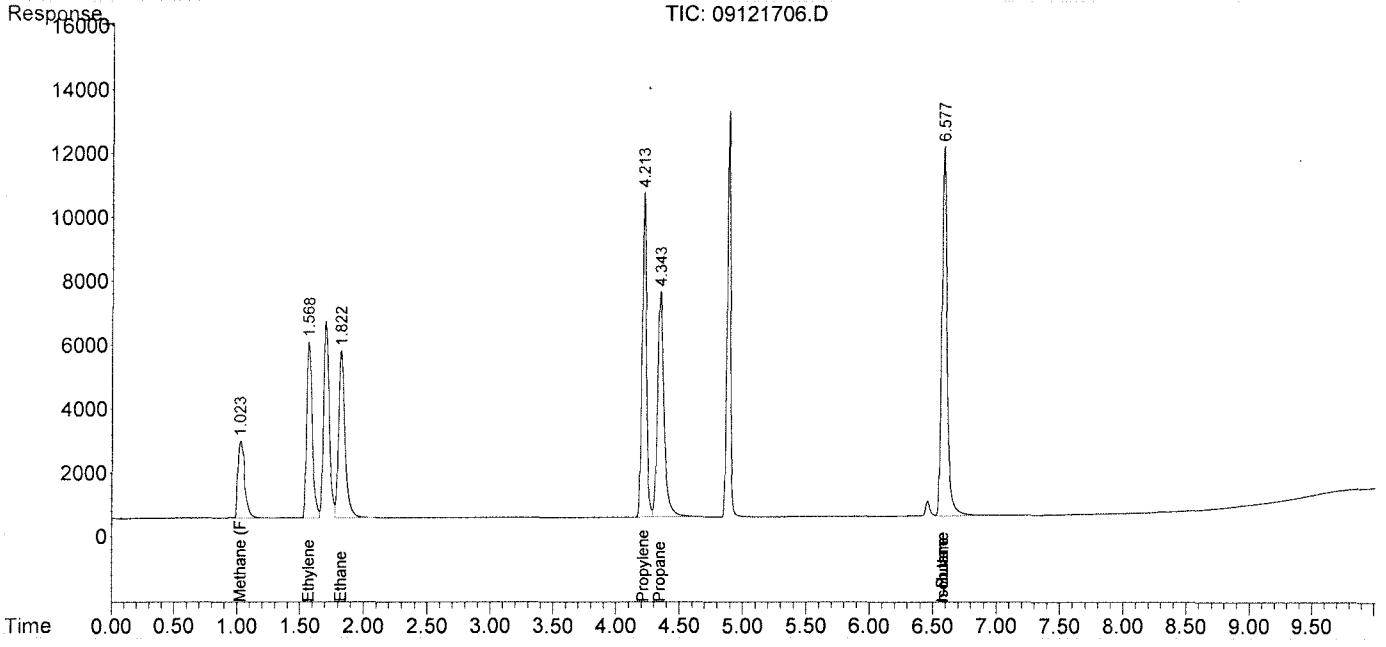
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

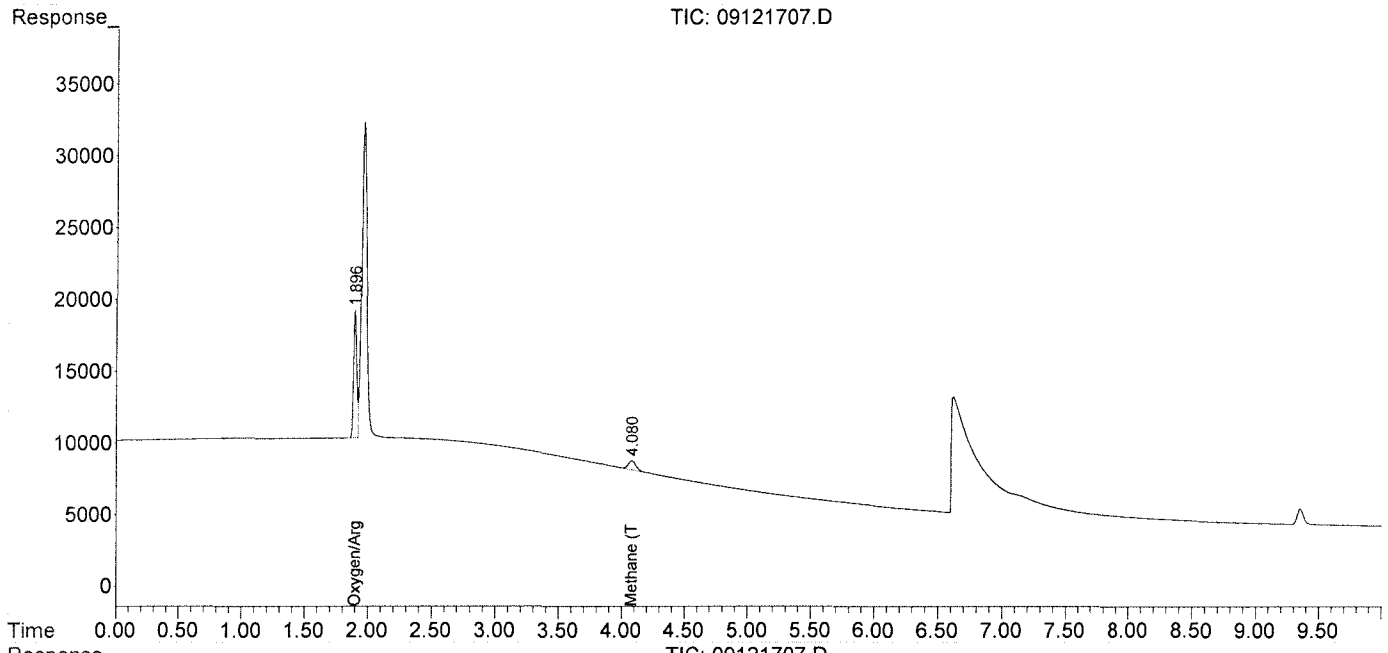
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.897	155286	0.065	ppm
2)	Carbon monoxide	1.897	155286	N.D.	ppm
3)	Methane (TCD)	4.079f	27015	2856.472	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.063	1735997	190.792	ppm
7)	Ethylene	1.597	3339702	198.758	ppm
8)	Ethane	1.849	3350442	194.597	ppm
9)	Propylene	4.201	4504060	185.706	ppm
10)	Propane	4.333	5043036	204.809	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

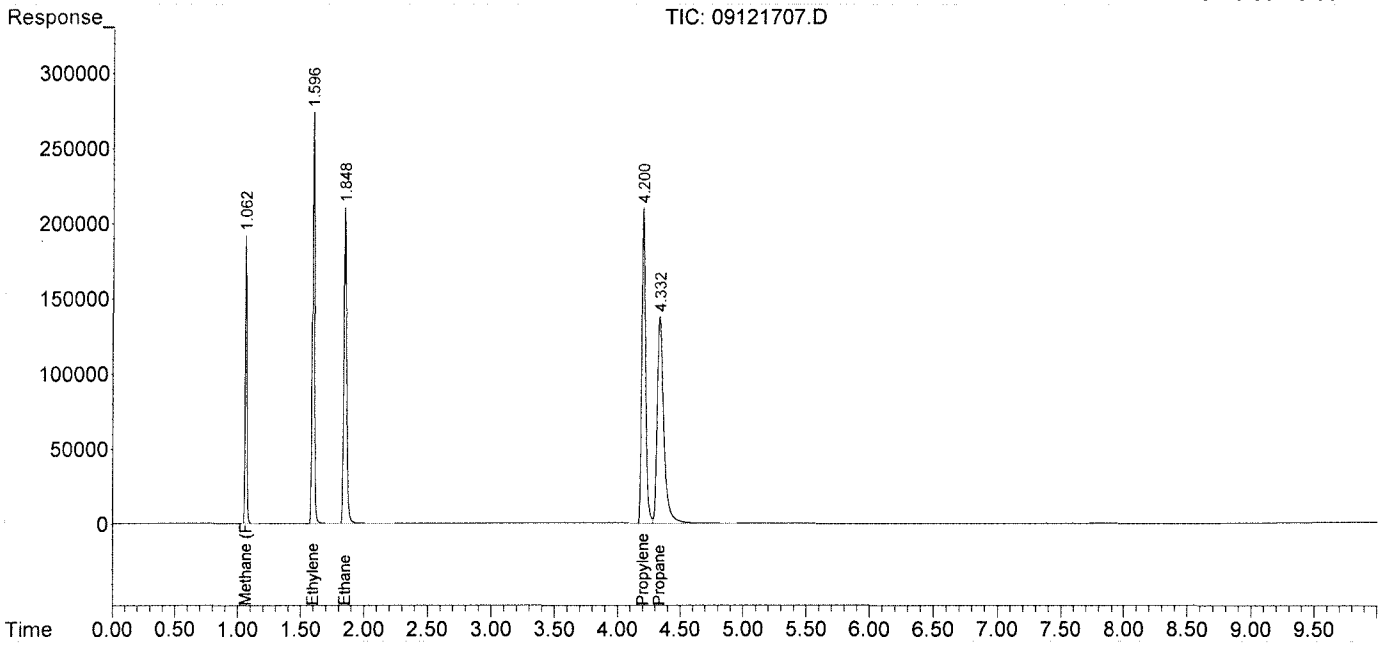
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

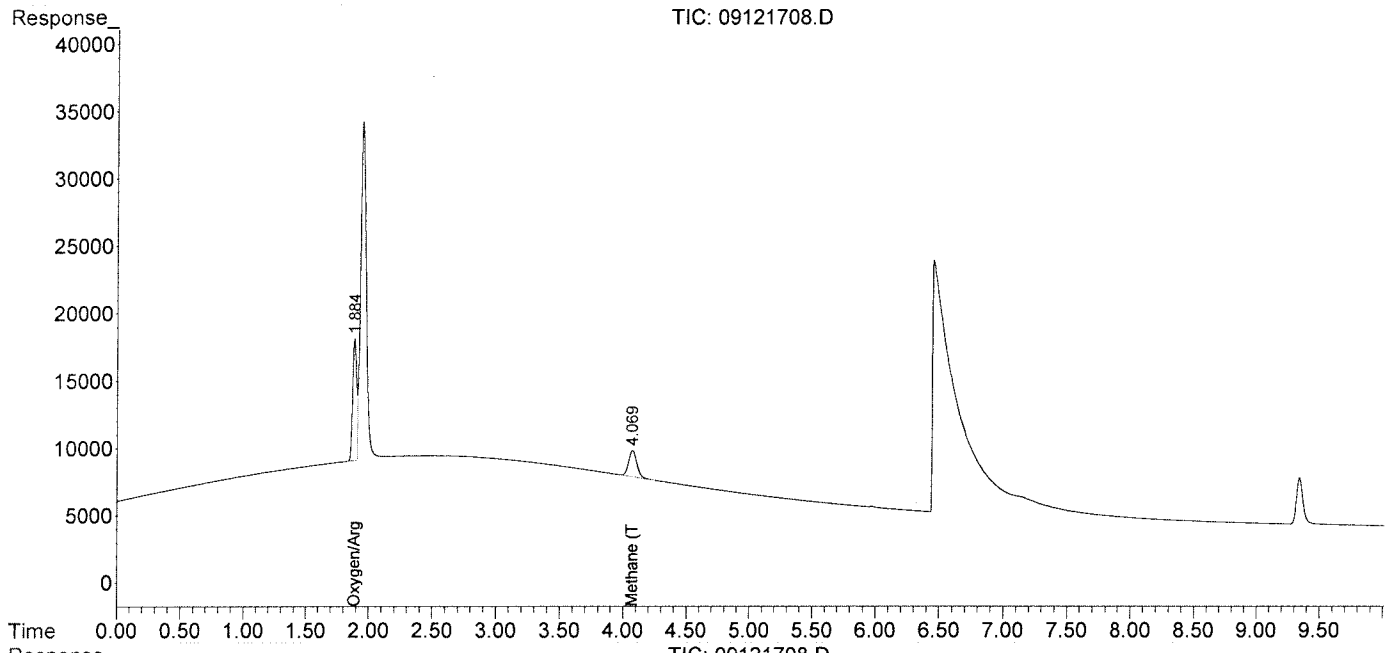
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.884	196022	0.124	ppm
2)	Carbon monoxide	1.884	196022	N.D.	ppm
3)	Methane (TCD)	4.070f	88282	782.730	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.044	5189849	539.759	ppm
7)	Ethylene	1.573	10007759	590.286	ppm
8)	Ethane	1.822	10048964	583.213	ppm
9)	Propylene	4.160	13569343	562.612	ppm
10)	Propane	4.300	15251326	615.171	ppm
11)	Isobutylene	6.143	9815	NoCal	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

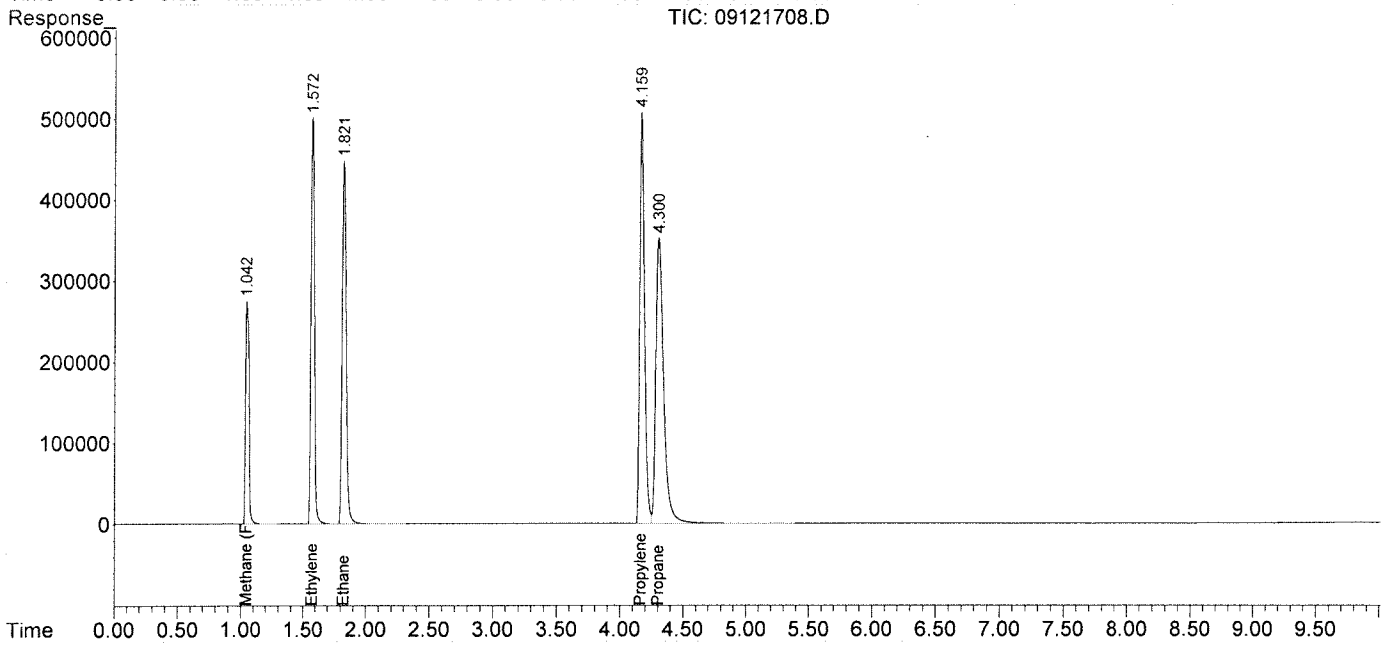
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

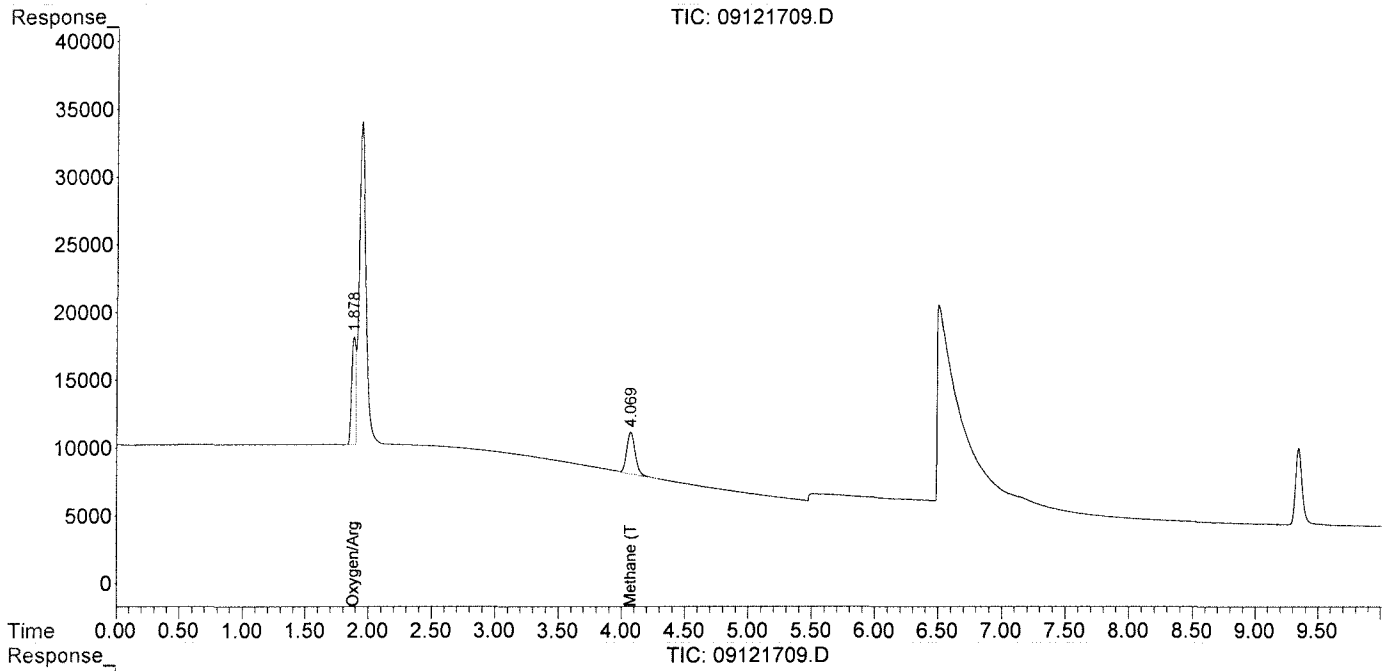
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.879	192611	0.162	ppm
2)	Carbon monoxide	1.879	192611	N.D.	ppm
3)	Methane (TCD)	4.070f	145492	1244.729	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.039	8598534	945.644	ppm
7)	Ethylene	1.576	16608504	981.887	ppm
8)	Ethane	1.827	16709165	973.644	ppm
9)	Propylene	4.161	22494888	941.060	ppm
10)	Propane	4.298	25459411	1023.223	ppm
11)	Isobutylene	6.138	16970	8645.243	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

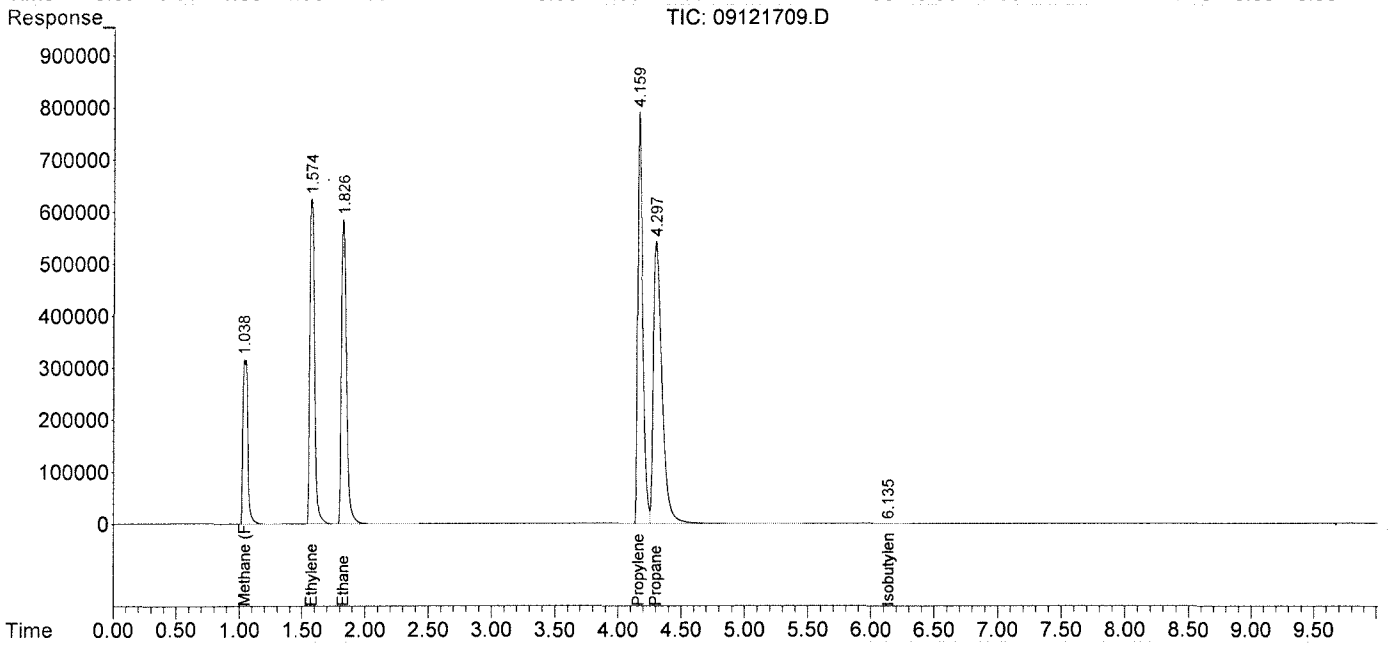
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

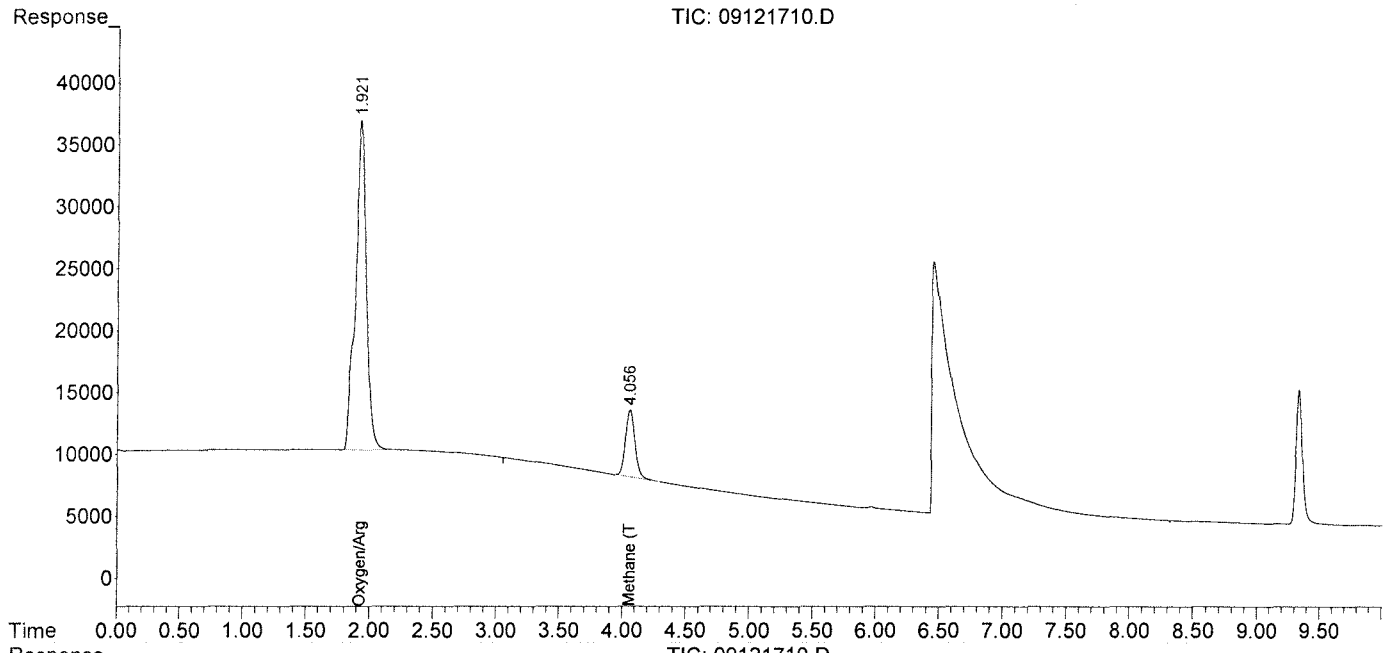
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.922f	1578147	1.659	ppm	
2)	Carbon monoxide	1.922f	1578147	N.D.	ppm	
3)	Methane (TCD)	4.057f	281651	3526.607	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.016	16098209	1763.622	ppm	
7)	Ethylene	1.552	31192444	1848.268	ppm	
8)	Ethane	1.801	31424218	1837.143	ppm	
9)	Propylene	4.129	42124690	1775.341	ppm	m
10)	Propane	4.269	48583085	1946.921	ppm	
11)	Isobutylene	6.136	33832	25613.603	ppm	
12)	Isobutane	6.576f	3845	0.120	ppm	
13)	n-Butane	6.576f	3845	0.120	ppm	

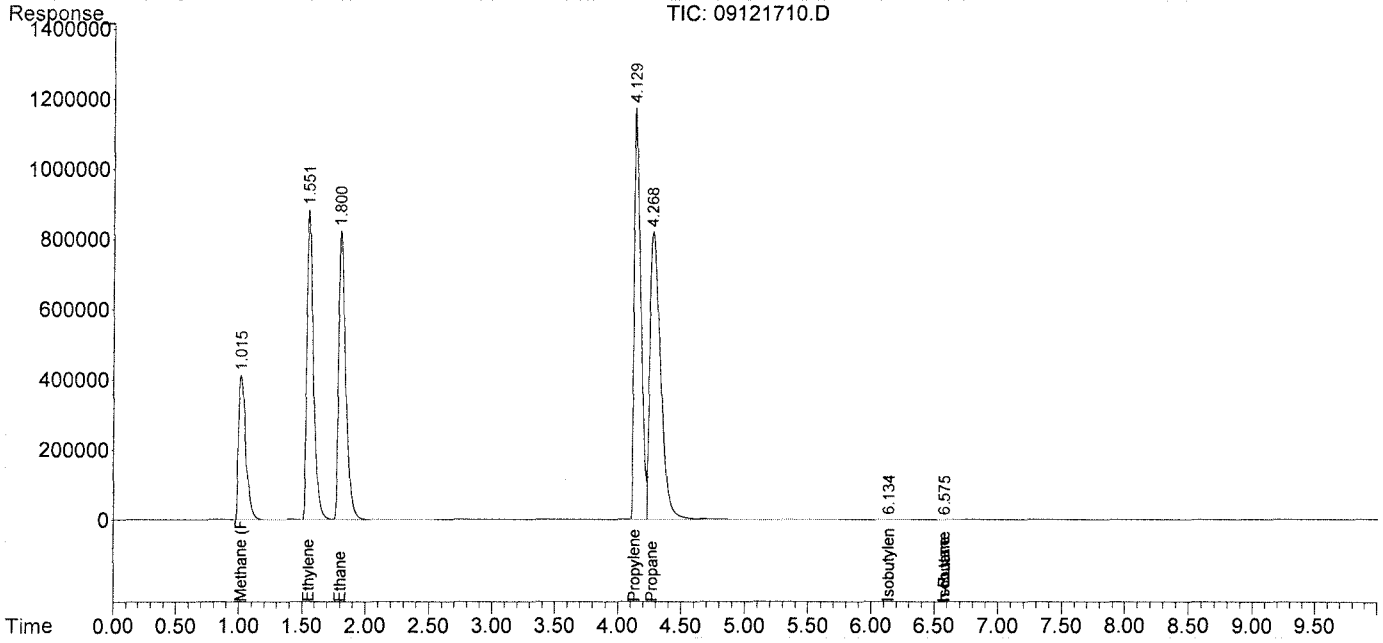
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

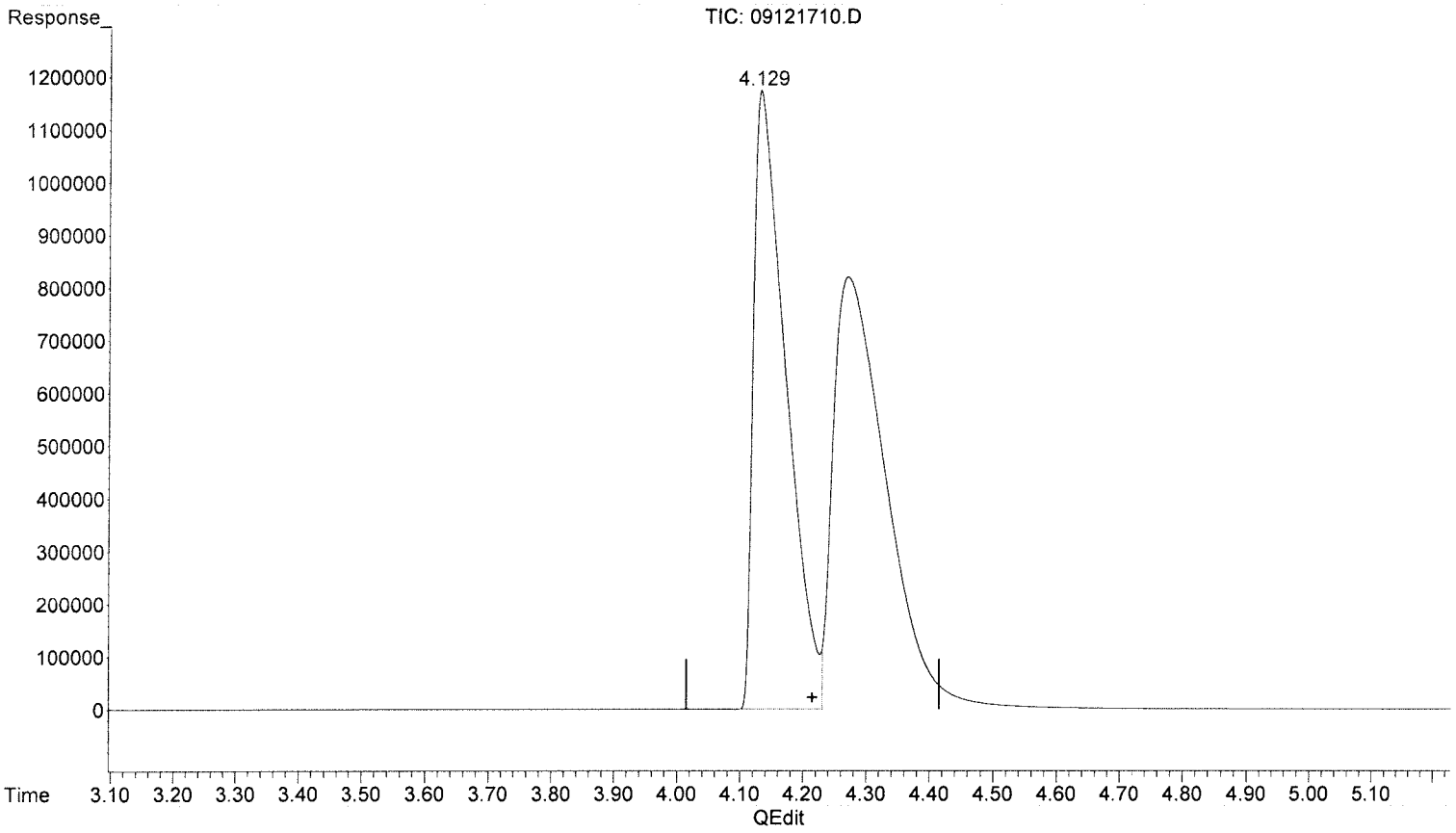




Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(9) Propylene

4.129min 1775.341 ppm m

response 42124690

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

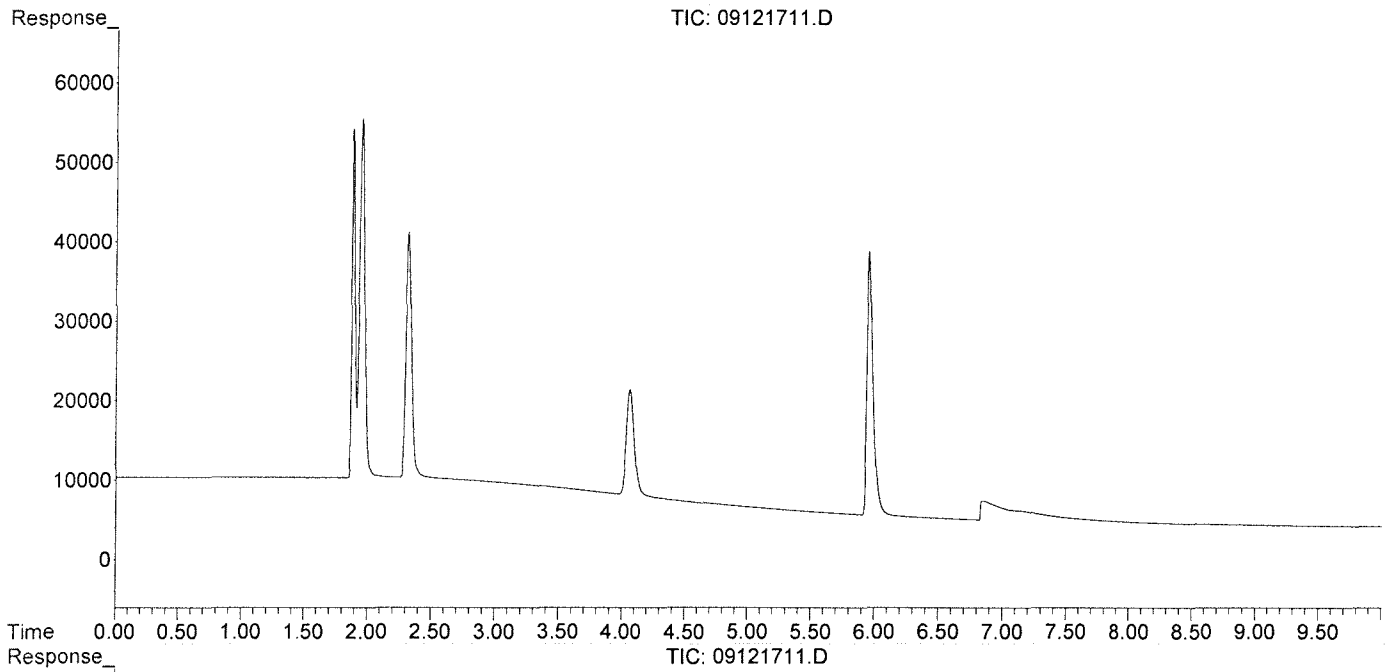
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.059	35776839	3925.122	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

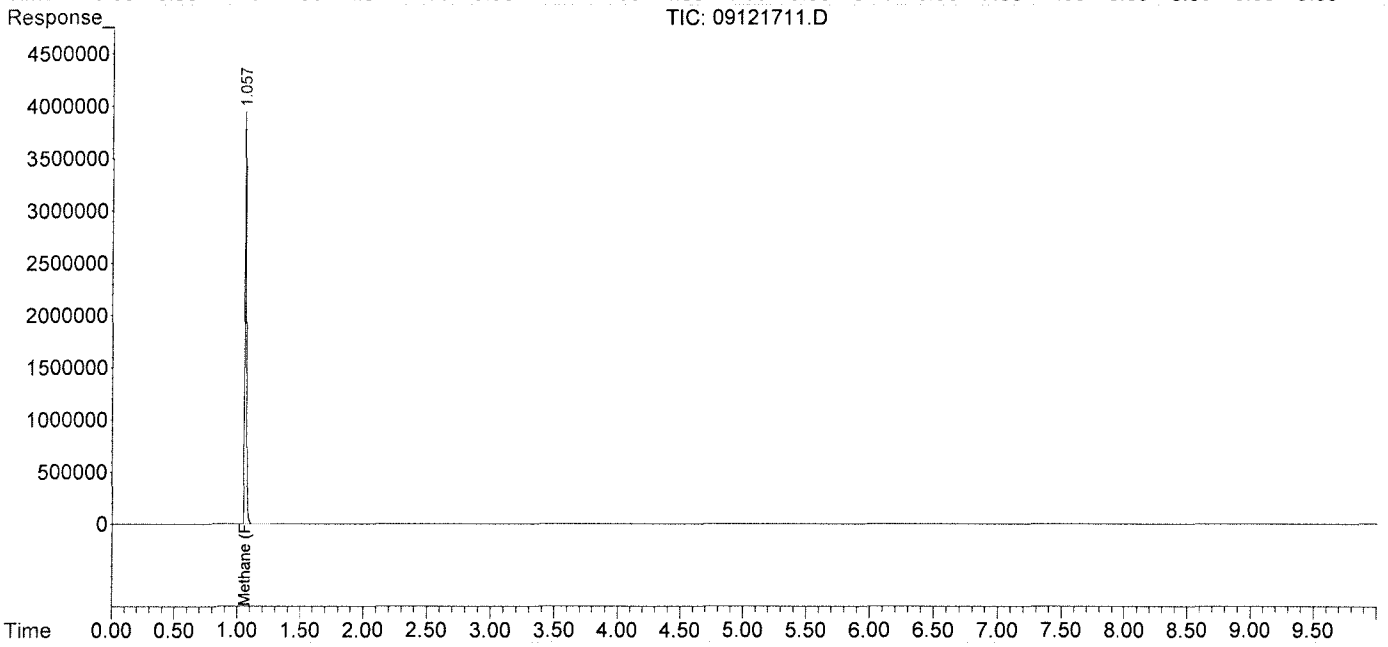
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

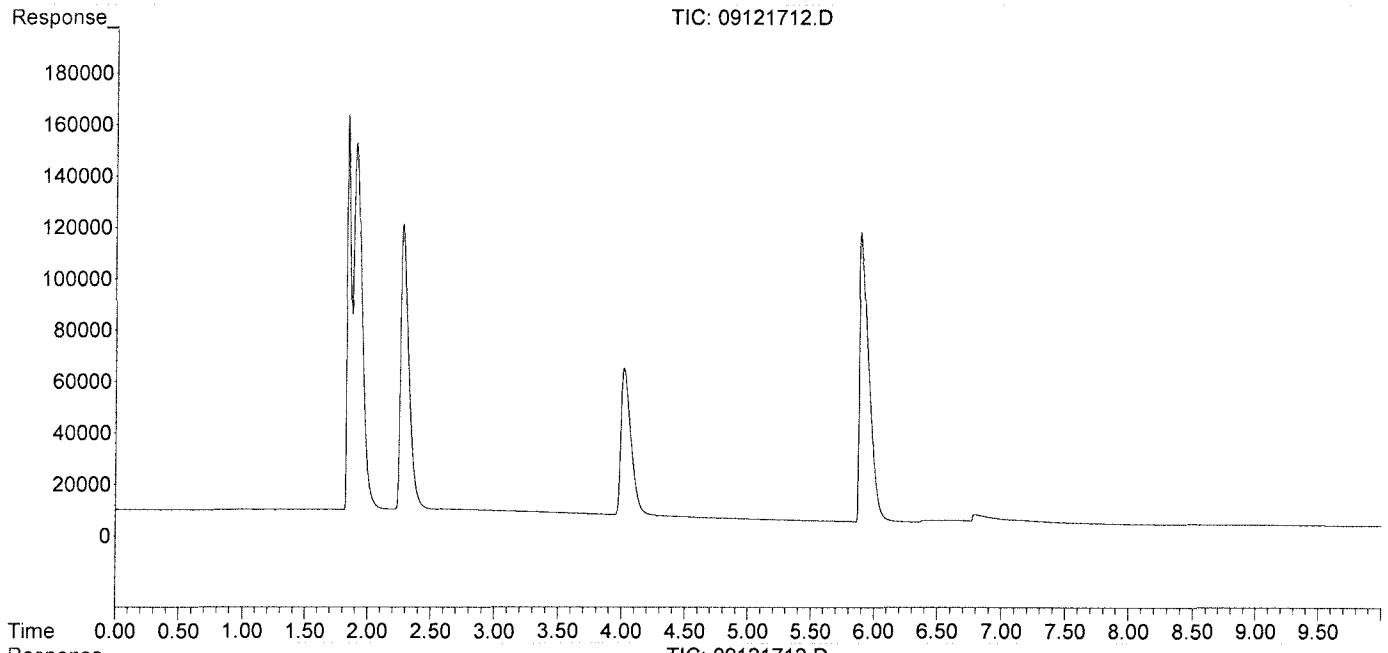
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.836	3190788	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.034	169009160	18492.064	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

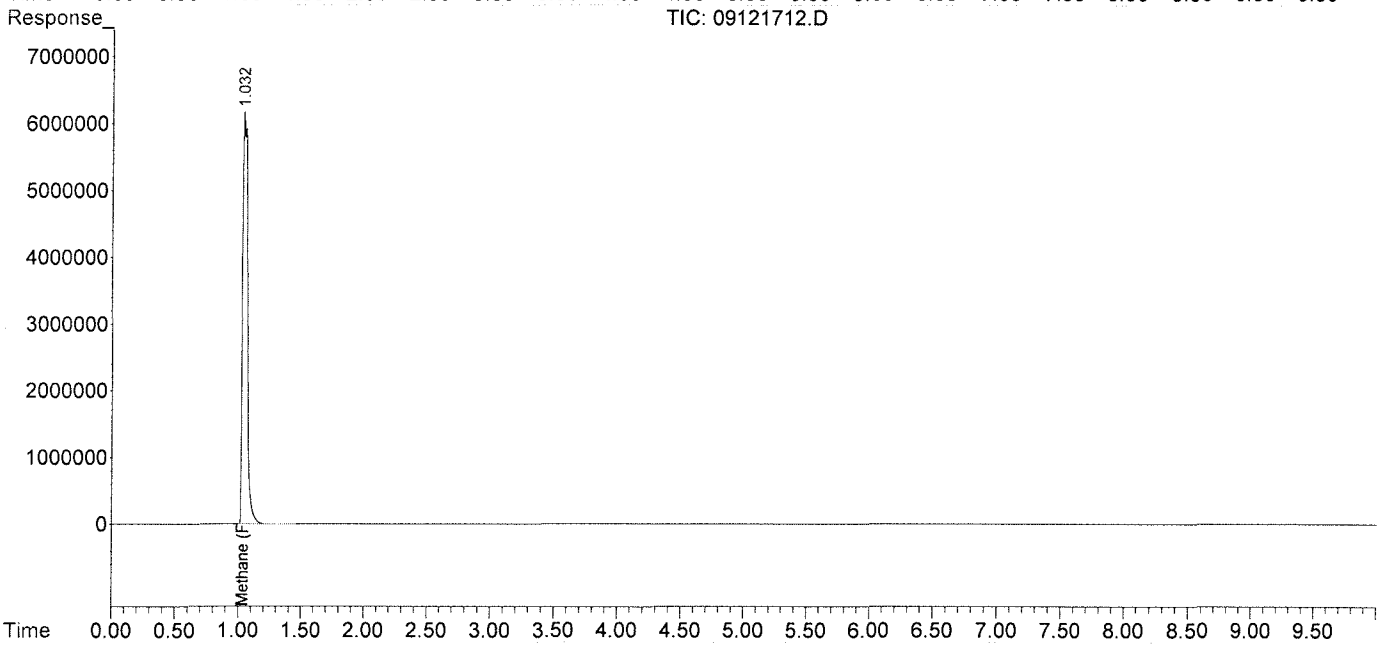
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.843	2922459	3.687	ppm	
2)	Carbon monoxide	1.843	2922459	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	actual %D
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.063	13748	1.516	ppm	~~1570~~ 1.50 101.1
7)	Ethylene	1.598	24153	1.443	ppm	~~1570~~ 1.50 96.2
8)	Ethane	1.850	24488	1.445	ppm	~~1570~~ 1.50 96.3
9)	Propylene	4.221	36004	1.537	ppm	~~1570~~ 1.50 102.5
10)	Propane	4.350	37738	1.517	ppm	~~1571~~ 1.51 100.5
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	48019	1.804	ppm	9/14/17
13)	n-Butane	6.579f	48019	1.804	ppm	

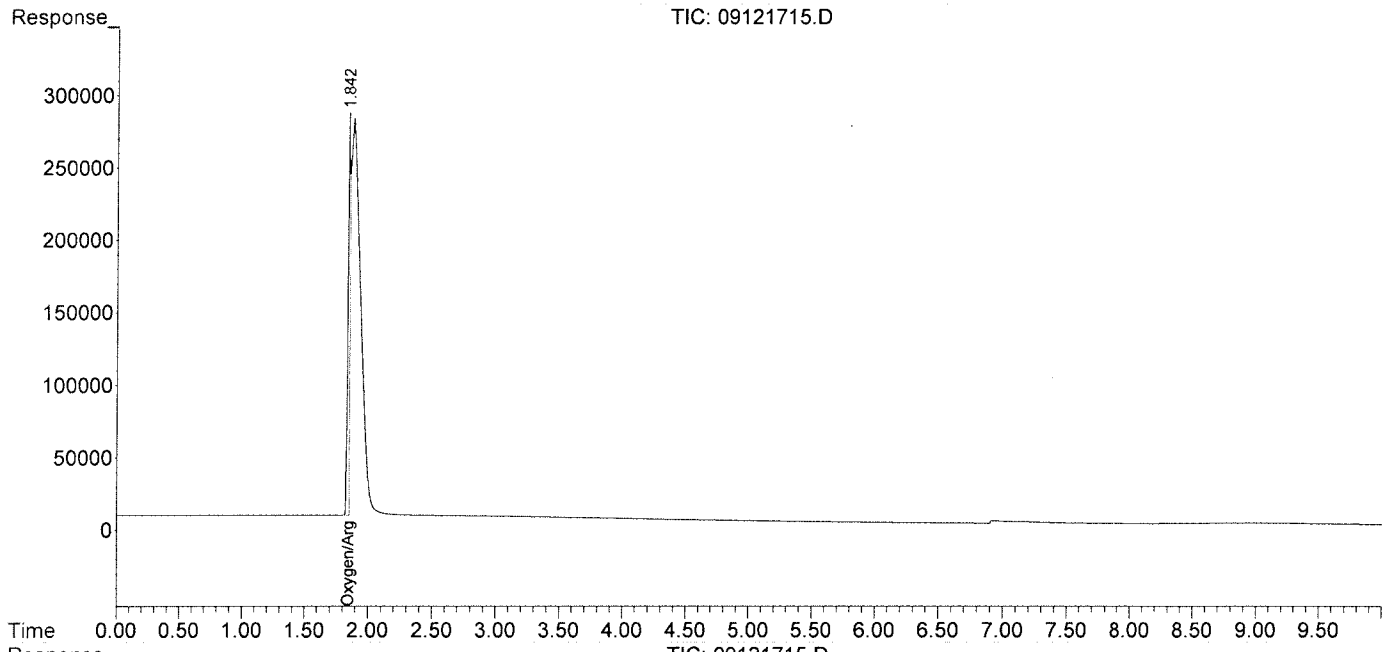
(f)=RT Delta > 1/2 Window (m)=manual int.

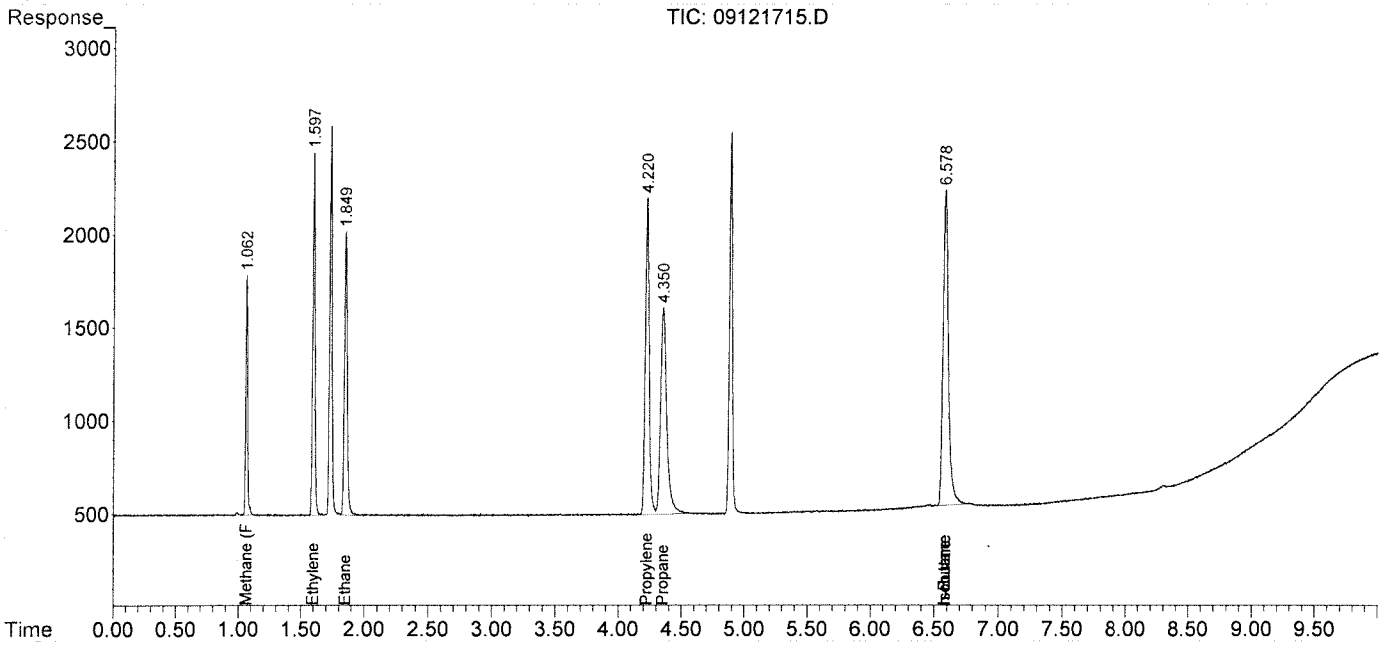
9/14/17

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Dissolved Gases by RSK175

CB
WH 3/31/21

ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P2101408
Sample Vol. (ml) : 32.00 ml
Analyst : CB
Date Analysis : 03/30/21
Head Space Vol.(ml) : 8.00 ml
Instrument : GC#10
Detector : FID#10, TCD#10
Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Methane	Ethylene	Ethane
STD S32-05221901	0.100	93.980	99.911	99.444
ACTUAL		101.50	100.90	101.40
%Difference		7.4%	1.0%	1.9%
mcs 0.1ml	0.100	0.063	0.000	0.000
rb 0.1ml	0.100	0.077	0.000	0.000
lcs fid 0.1ml	0.100	1.466	1.104	1.261
lcsd fid 0.1ml	0.100	1.441	1.080	1.248
P2101408-002 0.1ml	0.100	0.671	0.000	0.000
P2101408-003 0.1ml	0.100	0.213	0.000	0.000
P2101408-004 0.1ml	0.100	0.075	0.000	0.000
P2101408-005 0.1ml	0.100	1.055	0.000	0.000
P2101408-006 0.1ml	0.100	0.735	0.000	0.000
P2101408-007 0.1ml	0.100	0.128	0.000	0.000
P2101408-003ms 0.1ml	0.100	45.532	36.880	45.492
P2101408-003msd 0.1ml	0.100	47.392	39.117	47.812
STD S32-05221901		92.964	99.018	98.523
ACTUAL		101.50	100.90	101.40
%Difference		8.4%	1.9%	2.8%

FINAL HEAD SPACE RESULT (ppm)

	Methane	Ethylene	Ethane
WWt.	16.04	28.05	30.07
HENRY'S CONSTANT	3.76E+04	1.02E+04	2.63E+04
RL	1.30	1.00	0.60
mcs 0.1ml	0.630	0.000	0.000
lcs fid 0.1ml	14.660	11.040	12.610
lcsd fid 0.1ml	14.410	10.800	12.480
P2101408-002 0.1ml	6.710	0.000	0.000
P2101408-003 0.1ml	2.130	0.000	0.000
P2101408-004 0.1ml	0.750	0.000	0.000
P2101408-005 0.1ml	10.550	0.000	0.000
P2101408-006 0.1ml	7.350	0.000	0.000
P2101408-007 0.1ml	1.280	0.000	0.000
P2101408-003ms 0.1ml	455.320	368.800	454.920
P2101408-003msd 0.1ml	473.920	391.170	478.120
15:36:00	0.13	0.00	0.00

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302101.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 11:01:52
Operator : CB
Sample : STD S32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 12:20:24 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

CB 3/31/21

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

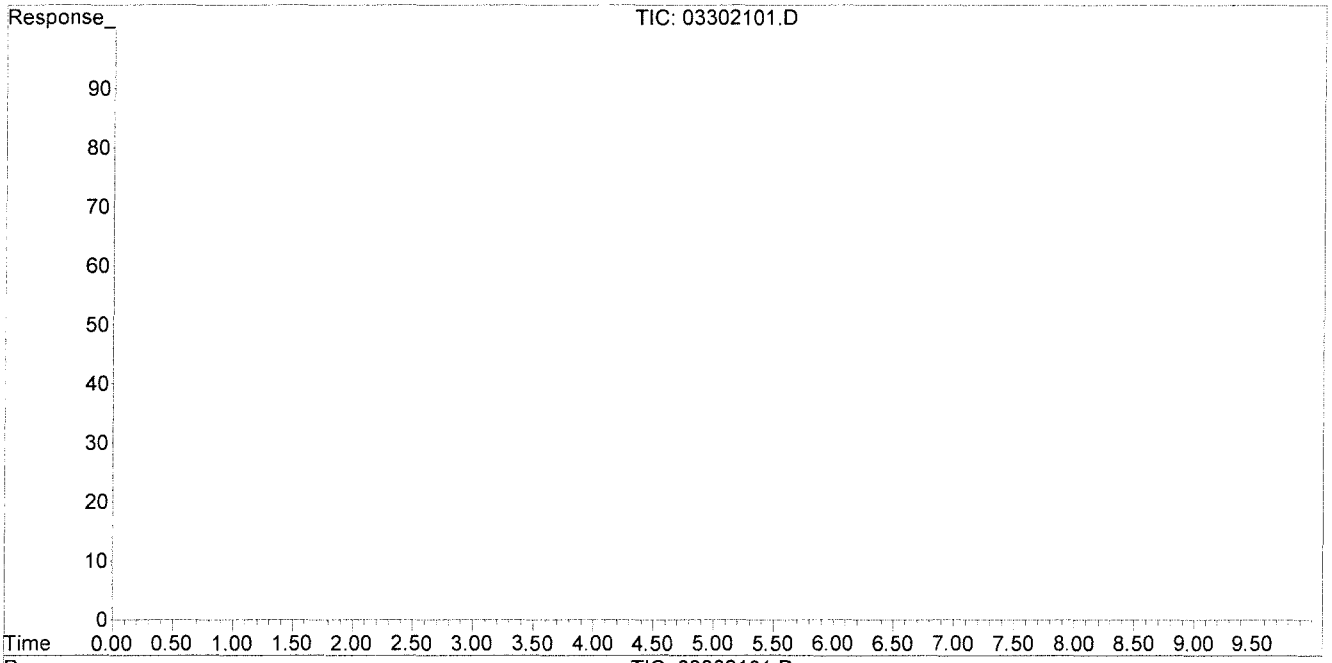
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.110	852460	93.980	ppm
7)	Ethylene	1.675	1671948	99.911	ppm
8)	Ethane	1.937	1685597	99.444	ppm
9)	Propylene	4.319	2445098	104.351	ppm
10)	Propane	4.439	2511209	100.932	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

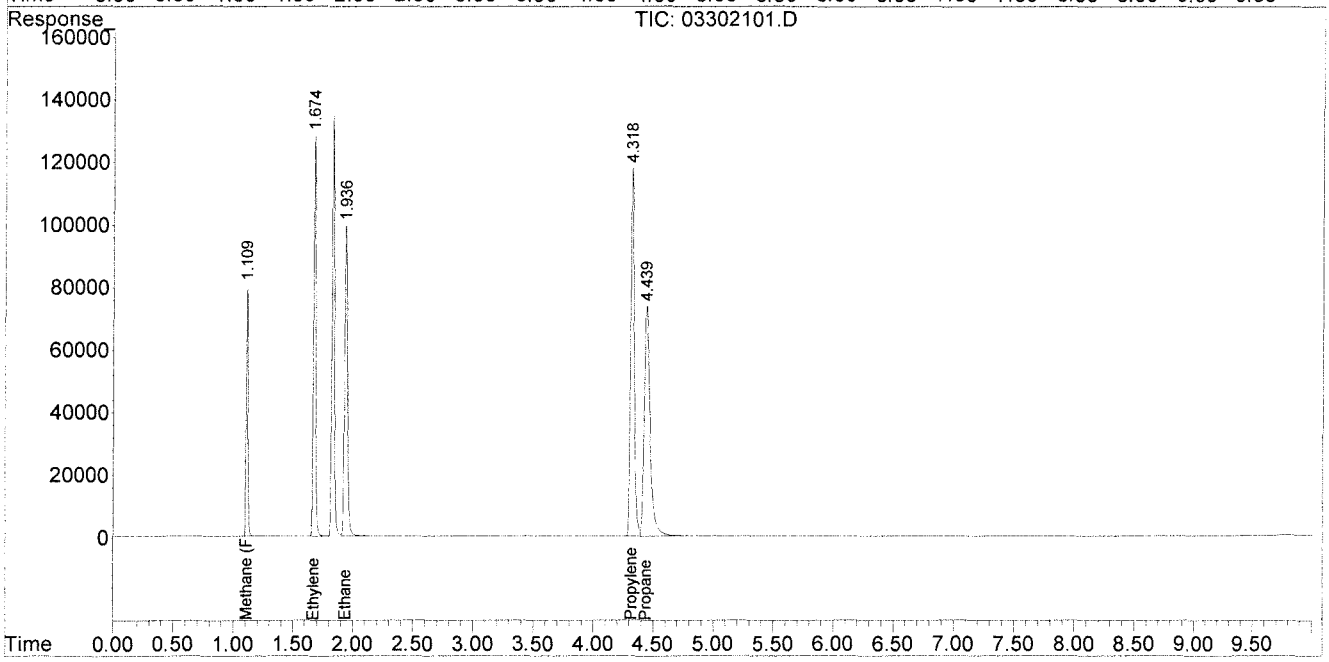
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302101.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 11:01:52
Operator : CB
Sample : STD S32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 12:20:24 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302114.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 16:31:36
Operator : CB
Sample : STD S32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 16:43:32 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

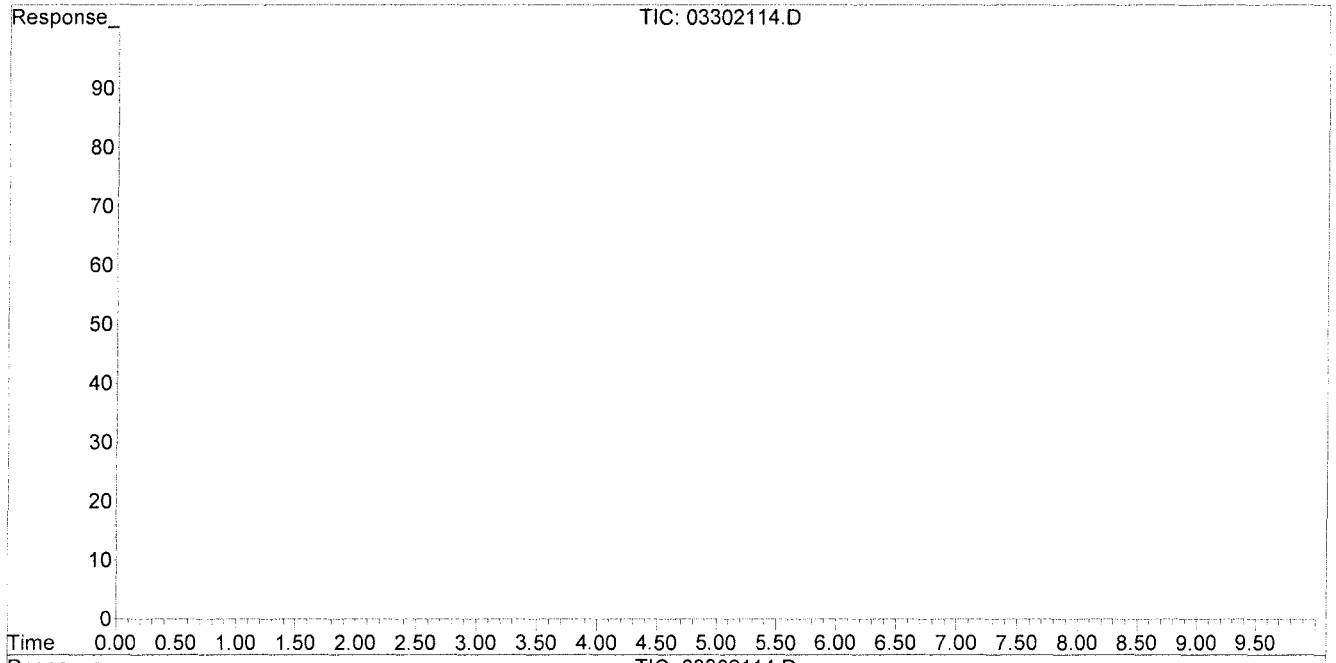
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.103	843242	92.964	ppm
7)	Ethylene	1.669	1657004	99.018	ppm
8)	Ethane	1.930	1669975	98.523	ppm
9)	Propylene	4.309	2428410	103.639	ppm
10)	Propane	4.430	2492366	100.175	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

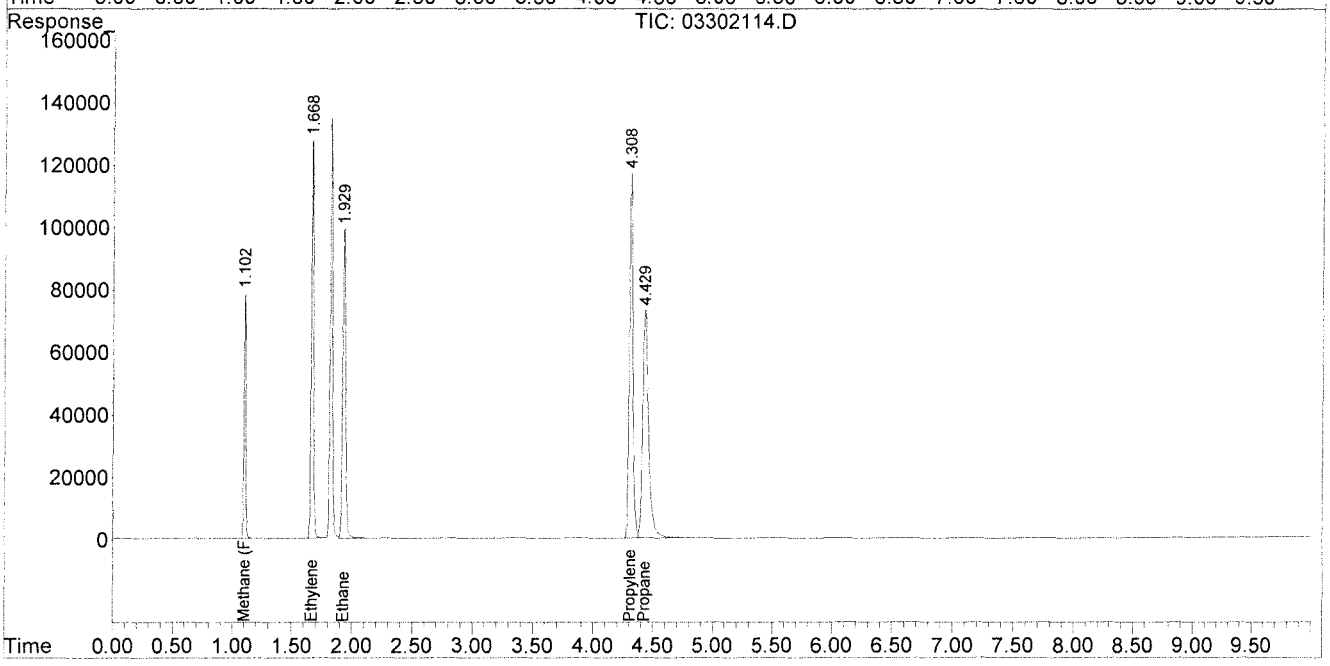
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_03\30\
Data File : 03302114.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2021, 16:31:36
Operator : CB
Sample : STD S32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 16:43:32 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_09\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-Sep-17, 08:38:08	09121701.D	test		MC	RSKBOTH.M	
2	12-Sep-17, 10:52:40	09121702.D	0.151ppm 0.250ml s32-09121702		MC	RSKBOTH.M	Curve
3	12-Sep-17, 11:05:49	09121703.D	0.302ppm 0.5ml s32-09121702		MC	RSKBOTH.M	Curve
4	12-Sep-17, 11:45:34	09121704.D	1.51ppm 0.1ml s32-09051701		MC	RSKBOTH.M	Curve
5	12-Sep-17, 12:09:33	09121705.D	4.53ppm 0.3ml s32-09051701		MC	RSKBOTH.M	Curve
6	12-Sep-17, 12:30:23	09121706.D	10.57ppm 0.7ml s32-09051701		MC	RSKBOTH.M	Curve
7	12-Sep-17, 12:47:18	09121707.D	200ppm 0.1ml s32-09121701		MC	RSKBOTH.M	Curve
8	12-Sep-17, 13:00:22	09121708.D	600ppm 0.3ml s32-09121701		MC	RSKBOTH.M	Curve
9	12-Sep-17, 13:47:48	09121709.D	1000ppm 0.5ml s32-09121701		MC	RSKBOTH.M	Curve
10	12-Sep-17, 14:07:58	09121710.D	2000ppm 1ml s32-09121701		MC	RSKBOTH.M	Curve
11	12-Sep-17, 14:48:48	09121711.D	4000ppm 0.1ml s32-08231701		MC	RSKBOTH.M	Curve
12	12-Sep-17, 15:21:51	09121712.D	20000ppm 0.5ml s32-08231701		MC	RSKBOTH.M	Curve
13	12-Sep-17, 15:38:59	09121713.D	mb 0.5ml		MC	RSKBOTH.M	Pass
14	12-Sep-17, 15:55:35	09121714.D	mb 0.1ml		MC	RSKBOTH.M	Pass
15	12-Sep-17, 16:15:26	09121715.D	icv s30-05241604		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2021_03\30\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	30-Mar-21, 11:01:52	03302101.D	STD S32-05221901		CB	RSKBOTH.M	Pass
2	30-Mar-21, 12:23:38	03302102.D	rb 0.1ml		CB	RSKBOTH.M	Pass
3	30-Mar-21, 12:36:30	03302103.D	mcs 0.1ml		CB	RSKBOTH.M	Pass
4	30-Mar-21, 12:52:37	03302104.D	P2101408-002 0.1ml		CB	RSKBOTH.M	
5	30-Mar-21, 13:28:53	03302105.D	P2101408-003 0.1ml		CB	RSKBOTH.M	
6	30-Mar-21, 13:53:15	03302106.D	P2101408-003ms 0.1ml		CB	RSKBOTH.M	
7	30-Mar-21, 14:14:56	03302107.D	P2101408-003msd 0.1ml		CB	RSKBOTH.M	
8	30-Mar-21, 14:30:09	03302108.D	P2101408-004 0.1ml		CB	RSKBOTH.M	
9	30-Mar-21, 14:54:33	03302109.D	P2101408-005 0.1ml		CB	RSKBOTH.M	
10	30-Mar-21, 15:22:58	03302110.D	P2101408-006 0.1ml		CB	RSKBOTH.M	
11	30-Mar-21, 15:36:00	03302111.D	P2101408-007 0.1ml		CB	RSKBOTH.M	
12	30-Mar-21, 15:57:25	03302112.D	lcs fid 0.1ml		CB	RSKBOTH.M	Pass
13	30-Mar-21, 16:16:08	03302113.D	lcsd fid 0.1ml		CB	RSKBOTH.M	Pass
14	30-Mar-21, 16:31:36	03302114.D	STD S32-05221901		CB	RSKBOTH.M	Pass
15	30-Mar-21, 16:44:53	03302115.D	LOD methane		CB	RSKBOTH.M	
16	30-Mar-21, 16:59:31	03302116.D	loq eepp		CB	RSKBOTH.M	
17	30-Mar-21, 17:26:39	03302117.D	loq eepp		CB	RSKBOTH.M	
18	30-Mar-21, 17:47:43	03302118.D	lod epp		CB	RSKBOTH.M	
19	30-Mar-21, 18:14:25	03302119.D	lod ethene		CB	RSKBOTH.M	

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WorkOrder: HS21031052

Longhorn Army Ammunition Plant 46

Aptim Environmental & Infrastucture, Inc.

Vicki Graves
2500 City West Blvd., Suite 1700
Houston TX 77042

02-Apr-2021

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HS21031052 Longhorn Army Ammunition Plant
46 Final

ALS WO# HS21031052

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March 25, 2021

Vicki Graves
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS21031052**

Laboratory Results for: **Longhorn Army Ammunition Plant 46**

Dear Vicki Graves ,

ALS Environmental received 7 sample(s) on Mar 19, 2021 for the analysis presented in the following report.

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

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

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

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
Work Order: HS21031052

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS21031052-01	LHSMW23R-210318	Groundwater		18-Mar-2021 07:50	19-Mar-2021 10:05	☐
HS21031052-02	46WW07-210318	Groundwater		18-Mar-2021 08:30	19-Mar-2021 10:05	☐
HS21031052-03	46WW07-210318-FD	Groundwater		18-Mar-2021 08:30	19-Mar-2021 10:05	☐
HS21031052-04	LHSMW19-210318	Groundwater		18-Mar-2021 09:30	19-Mar-2021 10:05	☐
HS21031052-05	46WW03-210318	Groundwater		18-Mar-2021 10:15	19-Mar-2021 10:05	☐
HS21031052-06	46WW03-210318-FD	Groundwater		18-Mar-2021 10:15	19-Mar-2021 10:05	☐
HS21031052-07	Trip Blank-210318	Water	CG-121520-652	18-Mar-2021 00:00	19-Mar-2021 10:05	☐

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
Work Order: HS21031052

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R380287

Sample ID: HS21030874-08MS

- MS and MSD are for an unrelated sample

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
Sample ID: LHSMW23R-210318
Collection Date: 18-Mar-2021 07:50

ANALYTICAL REPORT
WorkOrder:HS21031052
Lab ID:HS21031052-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	**0.66**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 06:09
Trichloroethene	**0.64**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 06:09
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 06:09
Surr: 1,2-Dichloroethane-d4	*83.4*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 06:09*
Surr: 4-Bromofluorobenzene	*89.1*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 06:09*
Surr: Dibromofluoromethane	*83.3*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 06:09*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 06:09*

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

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
Sample ID: 46WW07-210318
Collection Date: 18-Mar-2021 08:30

ANALYTICAL REPORT
WorkOrder:HS21031052
Lab ID:HS21031052-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 06:30
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 06:30
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 06:30
Surr: 1,2-Dichloroethane-d4	*83.2*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 06:30*
Surr: 4-Bromofluorobenzene	*87.4*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 06:30*
Surr: Dibromofluoromethane	*83.9*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 06:30*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 06:30*

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

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
Sample ID: 46WW07-210318-FD
Collection Date: 18-Mar-2021 08:30

ANALYTICAL REPORT
WorkOrder:HS21031052
Lab ID:HS21031052-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 06:51
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 06:51
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 06:51
Surr: 1,2-Dichloroethane-d4	*83.5*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 06:51*
Surr: 4-Bromofluorobenzene	*85.3*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 06:51*
Surr: Dibromofluoromethane	*87.3*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 06:51*
Surr: Toluene-d8	*97.6*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 06:51*

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

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
Sample ID: LHSMW19-210318
Collection Date: 18-Mar-2021 09:30

ANALYTICAL REPORT
WorkOrder:HS21031052
Lab ID:HS21031052-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	**3.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 07:12
Trichloroethene	**13**		**0.20**	**0.50**	**1.0**	**ug/L**	1	25-Mar-2021 07:12
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 07:12
Surr: 1,2-Dichloroethane-d4	*82.9*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 07:12*
Surr: 4-Bromofluorobenzene	*88.6*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 07:12*
Surr: Dibromofluoromethane	*87.6*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 07:12*
Surr: Toluene-d8	*100*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 07:12*

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

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
Sample ID: 46WW03-210318
Collection Date: 18-Mar-2021 10:15

ANALYTICAL REPORT
WorkOrder:HS21031052
Lab ID:HS21031052-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 07:33
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 07:33
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 07:33
Surr: 1,2-Dichloroethane-d4	*83.1*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 07:33*
Surr: 4-Bromofluorobenzene	*86.9*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 07:33*
Surr: Dibromofluoromethane	*85.1*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 07:33*
Surr: Toluene-d8	*100*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 07:33*

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

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
Sample ID: 46WW03-210318-FD
Collection Date: 18-Mar-2021 10:15

ANALYTICAL REPORT
WorkOrder:HS21031052
Lab ID:HS21031052-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 07:54
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 07:54
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 07:54
Surr: 1,2-Dichloroethane-d4	*81.4*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 07:54*
Surr: 4-Bromofluorobenzene	*87.5*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 07:54*
Surr: Dibromofluoromethane	*85.1*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 07:54*
Surr: Toluene-d8	*99.4*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 07:54*

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

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
Sample ID: Trip Blank-210318
Collection Date: 18-Mar-2021 00:00

ANALYTICAL REPORT
WorkOrder:HS21031052
Lab ID:HS21031052-07
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 00:31
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 00:31
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	25-Mar-2021 00:31
Surr: 1,2-Dichloroethane-d4	*81.9*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2021 00:31*
Surr: 4-Bromofluorobenzene	*86.5*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2021 00:31*
Surr: Dibromofluoromethane	*83.2*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2021 00:31*
Surr: Toluene-d8	*99.9*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2021 00:31*

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

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
WorkOrder: HS21031052

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R380287 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS21031052-07	Trip Blank-210318	18 Mar 2021 00:00			25 Mar 2021 00:31	1
Batch ID: R380287 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS21031052-01	LHSMW23R-210318	18 Mar 2021 07:50			25 Mar 2021 06:09	1
HS21031052-02	46WW07-210318	18 Mar 2021 08:30			25 Mar 2021 06:30	1
HS21031052-03	46WW07-210318-FD	18 Mar 2021 08:30			25 Mar 2021 06:51	1
HS21031052-04	LHSMW19-210318	18 Mar 2021 09:30			25 Mar 2021 07:12	1
HS21031052-05	46WW03-210318	18 Mar 2021 10:15			25 Mar 2021 07:33	1
HS21031052-06	46WW03-210318-FD	18 Mar 2021 10:15			25 Mar 2021 07:54	1

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
WorkOrder: HS21031052

QC BATCH REPORT

Batch ID: R380287 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-210324** Units: **ug/L** Analysis Date: **24-Mar-2021 23:49**
Client ID: Run ID: **VOA6_380287** SeqNo: **6010140** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*41.61*	*1.0*	*50*	*0*	*83.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*43.01*	*1.0*	*50*	*0*	*86.0*	*85 - 114*				
Surr: Dibromofluoromethane	*41.63*	*1.0*	*50*	*0*	*83.3*	*80 - 119*				
Surr: Toluene-d8	*49.55*	*1.0*	*50*	*0*	*99.1*	*89 - 112*				

LCS Sample ID: **VLCSW-210324** Units: **ug/L** Analysis Date: **24-Mar-2021 23:07**
Client ID: Run ID: **VOA6_380287** SeqNo: **6010139** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	17.03	1.0	20	0	85.1	78 - 123				
Trichloroethene	18.97	1.0	20	0	94.9	79 - 123				
Vinyl chloride	20.8	1.0	20	0	104	58 - 137				
Surr: 1,2-Dichloroethane-d4	*46.94*	*1.0*	*50*	*0*	*93.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.68*	*1.0*	*50*	*0*	*97.4*	*85 - 114*				
Surr: Dibromofluoromethane	*47.83*	*1.0*	*50*	*0*	*95.7*	*80 - 119*				
Surr: Toluene-d8	*46.75*	*1.0*	*50*	*0*	*93.5*	*89 - 112*				

MS Sample ID: **HS21030874-08MS** Units: **ug/L** Analysis Date: **25-Mar-2021 01:35**
Client ID: Run ID: **VOA6_380287** SeqNo: **6010145** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	15.4	1.0	20	0	77.0	78 - 123				S
Trichloroethene	17.04	1.0	20	0	85.2	79 - 123				
Vinyl chloride	16.9	1.0	20	0	84.5	58 - 137				
Surr: 1,2-Dichloroethane-d4	*41.43*	*1.0*	*50*	*0*	*82.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*46.79*	*1.0*	*50*	*0*	*93.6*	*85 - 114*				
Surr: Dibromofluoromethane	*44.3*	*1.0*	*50*	*0*	*88.6*	*80 - 119*				
Surr: Toluene-d8	*47.7*	*1.0*	*50*	*0*	*95.4*	*89 - 112*				

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
WorkOrder: HS21031052

QC BATCH REPORT

Batch ID: R380287 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS21030874-08MSD** Units: **ug/L** Analysis Date: **25-Mar-2021 01:56**
Client ID: Run ID: **VOA6_380287** SeqNo: **6010146** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	15.27	1.0	20	0	76.3	78 - 123	15.4	0.901	20	S
Trichloroethene	17.34	1.0	20	0	86.7	79 - 123	17.04	1.74	20	
Vinyl chloride	15.66	1.0	20	0	78.3	58 - 137	16.9	7.62	20	
Surr: 1,2-Dichloroethane-d4	*42.69*	*1.0*	*50*	*0*	*85.4*	*81 - 118*	*41.43*	*2.99*	*20*	
Surr: 4-Bromofluorobenzene	*45.04*	*1.0*	*50*	*0*	*90.1*	*85 - 114*	*46.79*	*3.81*	*20*	
Surr: Dibromofluoromethane	*43.6*	*1.0*	*50*	*0*	*87.2*	*80 - 119*	*44.3*	*1.57*	*20*	
Surr: Toluene-d8	*47.51*	*1.0*	*50*	*0*	*95.0*	*89 - 112*	*47.7*	*0.408*	*20*	

The following samples were analyzed in this batch: HS21031052-01 HS21031052-02 HS21031052-03 HS21031052-04 HS21031052-05 HS21031052-06 HS21031052-07

ALS Houston, US Date: 25-Mar-21

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 46
WorkOrder: **HS21031052**

QUALIFIERS, ACRONYMS, UNITS

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

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

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	PJLA L20-507-R2	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2020-2021	31-Jul-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
North Carolina	624-2021	31-Dec-2021
North Dakota	R-193 2020-2021	30-Apr-2021
Oklahoma	2020-165	31-Aug-2021
Texas	T104704231-20-26	30-Apr-2021

ALS Houston, US Date: 25-Mar-21

Sample Receipt Checklist

Work Order ID: HS21031052 **Date/Time Received:** **19-Mar-2021 10:05**

Client Name: CBI-Houston **Received by:** **Nelson D. Dusara**

Completed By:	/S/ Paresh M. Giga	20-Mar-2021 09:05	**Reviewed by:**	/S/ RJ Modashia	21-Mar-2021 14:13
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **GW/Water** Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.1C U/C	IR31	
Cooler(s)/Kit(s):	46861		
Date/Time sample(s) sent to storage:	3/19/2021 19:00		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: **LHAAP 46 February 2021**

Prepared By:

P.O. Number

HS21031052
Aptim Environmental & Infrastucture, Inc.
Longhorn Army Ammunition Plant 46

Field Sample I.D. / Time	Sample Matrix	Date /	MS / MSD	No. OF CONTAINERS	Analyses: VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Carbon Dioxide by RSK 175	Anions (nitrate, chloride and sulfate) by SW9056	Remarks (Preservatives, etc.)	Lab I.D.#
LHSMW23R-210318	WG	3/18/21/0750		3	X						
46WW07-210318	WG	3/18/21/0830		3	X						
46WW07-210318-FD	WG	3/18/21/0830		3	X						
LHSMW19-210318	WG	3/18/21/0930		3	X						
46WW03-210318	WG	3/18/21/1015		3	X						
46WW03-210318-FD	WG	3/18/21/1015		3	X						
TRIP BLANK-210318	W	3/18/21		2	X						

Additional Remarks: Standard TAT on all parameters. Please email results to Susan.Huang@aptim.com and invoices to fedinvoices@aptim.com

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
	3/18/21	1030	NID	3/19/21	1015						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

46861 1.10
431

(Word) S:\1-ees\Forms\Chain of Custody - BiWeekly

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

46861

CUSTODY SEAL

Date: 3/18/21 Time: 1430
Name: Scott Beesinger
Company: BHATS

Seal Broken By: SRV
Date: 03/19/21

46861 MAR 19 2021

Must Deliver Next Business Day
Time and Tempature Sensitive!

46861

ORIGIN ID:SGRA (903) 930-8193
SCOTT BEESINGER
APTIM ENVIRONMENTAL & INFRASTRUCTURE
1203-B EAST GRAND AVE
PMB 202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 03FEB21
ACTWGT: 1.00 LB MAN
CAD: 0221247/CAFE3408
DIMS: 19x16x13 IN

TO **CLIENT SERVICES**
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5868
REF: LHAAP-46-8076543-RJ

RMA:

FedEx Express

FedEx
TRK# 0221 9473 0840 0389

FRI - 19 MAR AA
PRIORITY OVERNIGHT

XH SGRA

77099
TX-US
IAH

HS21031052 8260_W_DOD Raw Data

ALS WO# HS21031052

MSVOA06 -Logbook

Batch: 44080 **Analyst:** Presenta Cabascango

Date: 03-15-2021 **Reviewer:**

Method: 8260 **Laboratory:** Houston

Comments:

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	03-15-2021 11:16 am	1.00	50 mL	50 mL	X031501.D	Liquid	Y	NA
2	VSTD000.25	ICAL1	03-15-2021 11:37 am	1.00	50 mL	50 mL	X031502.D	Liquid	Y	NA
3	VSTD000.5	ICAL2	03-15-2021 12:19 pm	1.00	50 mL	50 mL	X031503.D	Liquid	Y	NA
4	VSTD001	ICAL3	03-15-2021 12:39 pm	1.00	50 mL	50 mL	X031504.D	Liquid	Y	NA
5	VSTD002	ICAL4	03-15-2021 01:00 pm	1.00	50 mL	50 mL	X031505.D	Liquid	Y	NA
6	VSTD005	ICAL5	03-15-2021 01:21 pm	1.00	50 mL	50 mL	X031506.D	Liquid	Y	NA
7	VSTD020	ICAL6	03-15-2021 01:42 pm	1.00	50 mL	50 mL	X031507.D	Liquid	Y	NA
8	VSTD050	ICAL7	03-15-2021 02:03 pm	1.00	50 mL	50 mL	X031508.D	Liquid	Y	NA
9	VSTD100	ICAL8	03-15-2021 02:24 pm	1.00	50 mL	50 mL	X031509.D	Liquid	Y	NA
10	VSTD150	ICAL9	03-15-2021 02:45 pm	1.00	50 mL	50 mL	X031510.D	Liquid	Y	NA
11	VSTD200	ICAL	03-15-2021 03:06 pm	1.00	50 mL	50 mL	X031511.D	Liquid	Y	NA
12	BLANK	SAMP	03-15-2021 03:27 pm	1.00	50 mL	50 mL	X031512.D	Liquid	Y	NA
13	BLANK	SAMP	03-15-2021 03:48 pm	1.00	50 mL	50 mL	X031513.D	Liquid	Y	NA
14	CCV	CCV	03-15-2021 04:09 pm	1.00	50 mL	50 mL	X031514.D	Liquid	Y	NA
15	BLANK	SAMP	03-15-2021 04:30 pm	1.00	50 mL	50 mL	X031515.D	Liquid	Y	NA
16	VLCSW-210315	LCS	03-15-2021 04:51 pm	1.00	50 mL	50 mL	X031516.D	Liquid	Y	NA
17	BLANK	SAMP	03-15-2021 05:12 pm	1.00	50 mL	50 mL	X031517.D	Liquid	Y	NA
18	BLANK	SAMP	03-15-2021 05:33 pm	1.00	50 mL	50 mL	X031518.D	Liquid	Y	NA
19	VBLKW-210315	MBLK	03-15-2021 05:54 pm	1.00	50 mL	50 mL	X031519.D	Liquid	Y	NA
20	HS21030616-14	SAMP	03-15-2021 06:15 pm	1.00	50 mL	50 mL	X031520.D	Liquid	Y	NA
21	HS21030616-14MS	MS	03-15-2021 06:36 pm	1.00	50 mL	50 mL	X031521.D	Liquid	Y	NA
22	HS21030616-14MSD	MSD	03-15-2021 06:57 pm	1.00	50 mL	50 mL	X031522.D	Liquid	Y	NA
23	BLANK	SAMP	03-15-2021 07:18 pm	1.00	50 mL	50 mL	X031523.D	Liquid	Y	NA
24	HS21030701-01	SAMP	03-15-2021 07:39 pm	1.00	50 mL	50 mL	X031524.D	Liquid	Y	NA
25	HS21030699-01	SAMP	03-15-2021 08:00 pm	1.00	50 mL	50 mL	X031525.D	Liquid	Y	NA
26	HS21030699-02	SAMP	03-15-2021 08:22 pm	1.00	50 mL	50 mL	X031526.D	Liquid	Y	NA
27	HS21030699-03	SAMP	03-15-2021 08:43 pm	1.00	50 mL	50 mL	X031527.D	Liquid	Y	NA
28	HS21030699-04	SAMP	03-15-2021 09:04 pm	1.00	50 mL	50 mL	X031528.D	Liquid	Y	NA
29	HS21030699-05	SAMP	03-15-2021 09:25 pm	1.00	50 mL	50 mL	X031529.D	Liquid	Y	NA
30	HS21030616-15	SAMP	03-15-2021 09:46 pm	1.00	50 mL	50 mL	X031530.D	Liquid	Y	NA
31	HS21030616-04	SAMP	03-15-2021 10:07 pm	1.00	50 mL	50 mL	X031531.D	Liquid	Y	NA
32	HS21030616-10	SAMP	03-15-2021 10:28 pm	1.00	50 mL	50 mL	X031532.D	Liquid	Y	NA
33	HS21030616-09	SAMP	03-15-2021 10:49 pm	1.00	50 mL	50 mL	X031533.D	Liquid	Y	NA
34	BLANK	SAMP	03-15-2021 11:10 pm	1.00	50 mL	50 mL	X031534.D	Liquid	Y	NA

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS21031052

Matrix Spike - Sample No.: ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
Vinyl Chloride	50.00	43.32	87	80-120
cis-1,2-Dichloroethene	50.00	45.66	91	80-120
Trichloroethene	50.00	44.30	89	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM III VOA

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS21031052

Lab File ID: X031501 BFB Injection Date: 03/15/21

Instrument ID: VOA6 BFB Injection Time: 1116

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	26.4
75	30.0 - 60.0% of mass 95	55.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	1.0 (1.2)1
174	Greater than 50.0% of mass 95	82.3
175	5.0 - 9.0% of mass 174	6.7 (8.1)1
176	95.0 - 101.0% of mass 174	80.7 (98.1)1
177	5.0 - 9.0% of mass 176	5.2 (6.4)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD000.25	VSTD000.25	X031502	03/15/21	1137
02	VSTD000.5	VSTD000.5	X031503	03/15/21	1219
03	VSTD001	VSTD001	X031504	03/15/21	1239
04	VSTD002	VSTD002	X031505	03/15/21	1300
05	VSTD005	VSTD005	X031506	03/15/21	1321
06	VSTD020	VSTD020	X031507	03/15/21	1342
07	VSTD050	VSTD050	X031508	03/15/21	1403
08	VSTD100	VSTD100	X031509	03/15/21	1424
09	VSTD150	VSTD150	X031510	03/15/21	1445
10	VSTD200	VSTD200	X031511	03/15/21	1506
11	ICV	ICV	X031514	03/15/21	1609
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS21031052

Instrument ID: VOA6 Calibration Date(s): 03/15/21 03/15/21

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1137 1506

LAB FILE ID: RF0.25: X031502 RF0.5: X031503 RF1: X031504
RF2: X031505 RF5: X031506 RF20: X031507

COMPOUND	RF0.25	RF0.5	RF1	RF2	RF5	RF20
Vinyl Chloride		1.061	0.986	1.037	1.022	0.968
cis-1,2-Dichloroethene		0.612	0.698	0.684	0.630	0.612
Trichloroethene		0.423	0.309	0.359	0.337	0.334
Dibromofluoromethane		1993	4678	7977	20536	89737
1,2-Dichloroethane-d4		2842	5757	9939	26207	98913
Toluene-d8		1.657	1.420	1.237	1.285	1.245
4-Bromofluorobenzene		3636	5753	9314	24836	102789

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS2103105

Instrument ID: VOA6 Calibration Date(s): 03/15/21 03/15/21

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1137 1506

LAB FILE ID: RF50: X031508 RF100: X031509 RF150: X031510
RF200: X031511

COMPOUND	RF50	RF100	RF150	RF200
Vinyl Chloride	0.836	0.829	0.844	0.822
cis-1,2-Dichloroethene	0.578	0.624	0.630	0.643
Trichloroethene	0.301	0.334	0.317	0.315
Dibromofluoromethane	236456	572786	959846	1345632
1,2-Dichloroethane-d4	291833	670725		
Toluene-d8	1.175	1.324	1.362	1.386
4-Bromofluorobenzene	307940	763478		

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS2103105

Instrument ID: VOA6 Calibration Date(s): 03/15/21 03/15/21

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1137 1506

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
Vinyl Chloride	AVRG		0.93385826		10.671	15.000
cis-1,2-Dichloroethene	AVRG		0.63448096		5.789	15.000
Trichloroethene	AVRG		0.33654108		10.938	15.000
Dibromofluoromethane	LINR	2.117e-002	1.59929687		0.9989565	0.9900000
1,2-Dichloroethane-d4	2ORDR	-5.43e-003	1.51014583	-8.2e-002	0.9999762	0.9900000
Toluene-d8	AVRG		1.34362018		10.506	15.000
4-Bromofluorobenzene	2ORDR	-6.87e-003	2.50209926	-0.4383971	0.9999712	0.9900000

FORM VI VOA

Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031501.D

Date : 15-MAR-2021 11:16

Client ID: BFB

Instrument: voa6.i

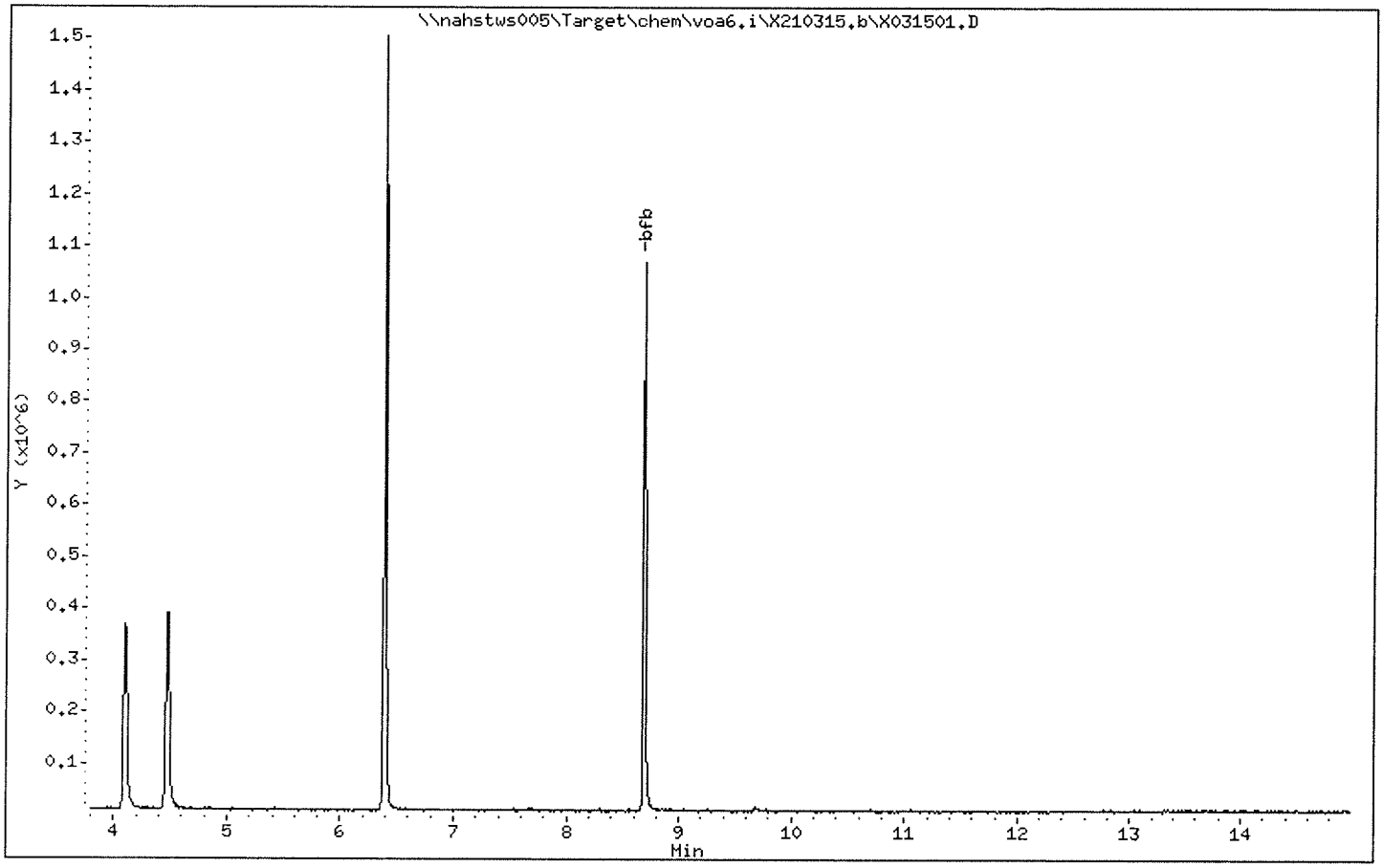
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25



Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031501.D

Date : 15-MAR-2021 11:16

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

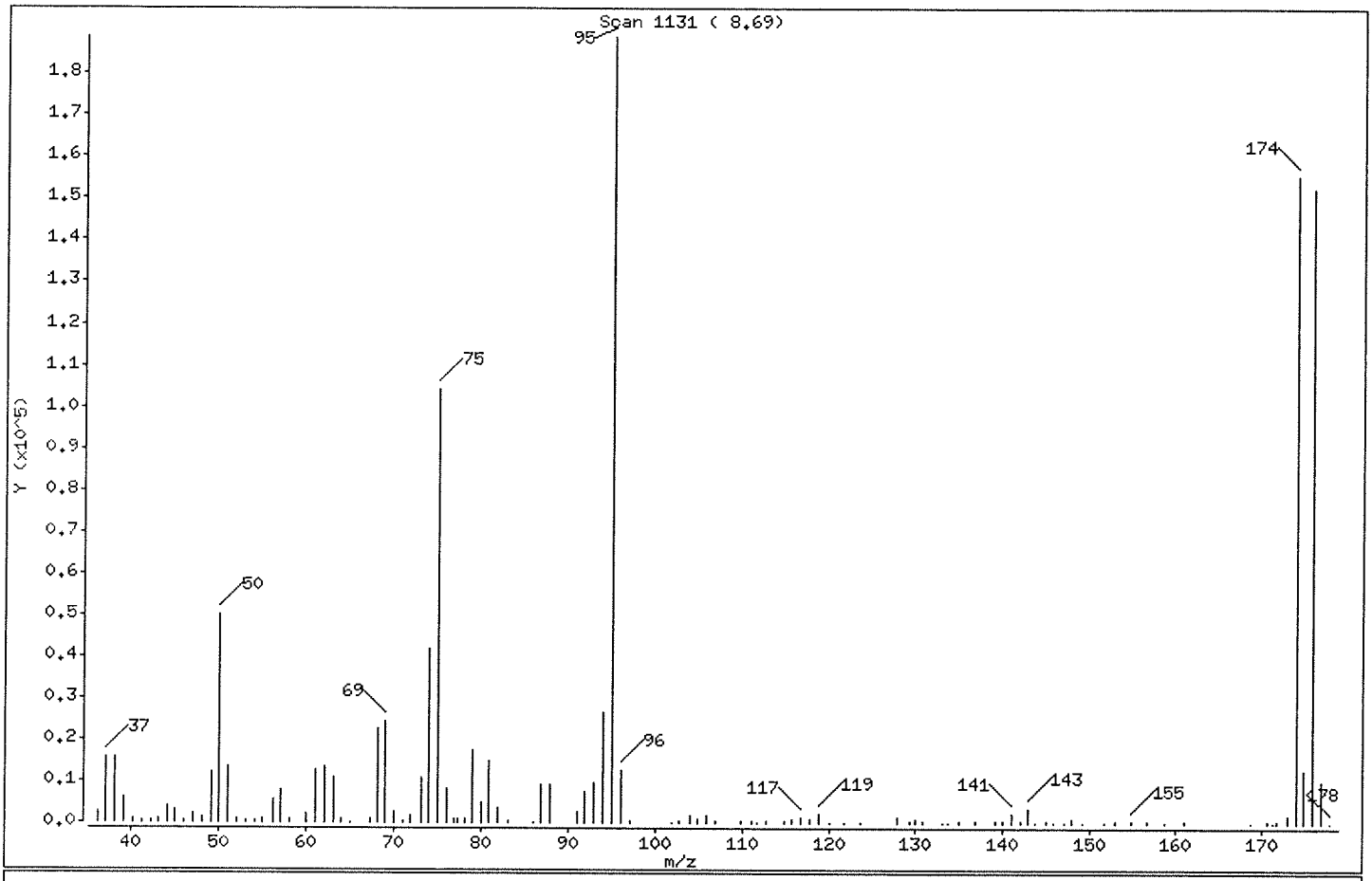
Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	26.39
75	30.00 - 60.00% of mass 95	55.10
96	5.00 - 9.00% of mass 95	6.78
173	Less than 2.00% of mass 174	0.99 (1.20)
174	Greater than 50.00% of mass 95	82.27
175	5.00 - 9.00% of mass 174	6.70 (8.14)
176	95.00 - 101.00% of mass 174	80.68 (98.06)
177	5.00 - 9.00% of mass 176	5.19 (6.44)

Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031501.D

Date : 15-MAR-2021 11:16

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

Data File: X031501.D
Spectrum: Scan 1131 (8.69)
Location of Maximum: 95.00
Number of points: 110

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.10	2712	64.90	76	97.10	391	140.00	222
37.00	15683	67.20	751	101.90	70	140.90	2040
38.00	15425	68.00	22624	102.80	256	142.00	573
39.10	6291	69.00	24384	104.00	1634	142.90	3419
40.10	692	70.00	2592	104.90	678	143.70	58
41.20	576	71.10	297	105.90	1643	144.90	290
42.10	347	71.90	1592	107.00	336	145.80	210
43.00	814	73.10	10947	109.80	283	147.00	97
44.00	4083	74.00	41472	111.10	295	147.90	856
45.00	2870	75.00	104024	111.70	158	149.10	80
46.00	224	76.00	8408	112.80	252	151.70	88
47.10	2233	76.80	1061	114.80	291	152.80	322
48.10	1505	77.20	906	115.80	750	154.80	370
49.00	12020	78.20	675	116.80	1454	156.70	239
50.00	49832	78.90	17472	117.90	1015	158.80	135
51.00	13442	79.90	4573	118.90	2183	161.00	299
52.00	746	80.90	14828	120.00	52	168.80	123
53.00	268	81.90	3346	121.70	97	170.70	240
54.10	250	83.10	275	123.70	64	171.30	129
55.00	1055	86.00	145	127.90	1129	171.70	452
56.10	5482	87.00	8975	129.20	318	173.00	1865
57.00	7822	88.00	9101	129.90	683	173.90	155328
58.00	751	91.00	2632	130.80	260	174.90	12649
60.00	2245	92.00	7361	133.10	118	175.90	152320
61.00	12769	93.00	9497	133.60	176	176.90	9803
62.00	13361	94.00	26384	134.90	302	178.00	206
63.00	11062	95.00	188800	136.90	557		
64.00	713	96.00	12799	139.20	239		

Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031502.D Page 1
Report Date: 02-Apr-2021 14:48

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031502.D
Lab Smp Id: VSTD000.25 Client Smp ID: VSTD000.25
Inj Date : 15-MAR-2021 11:37
Operator : PC Inst ID: voa6.i
Smp Info : VSTD000.25;VSTD000.25;1;1;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:48 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 15:06 Cal File: X031511.D
Als bottle: 2 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

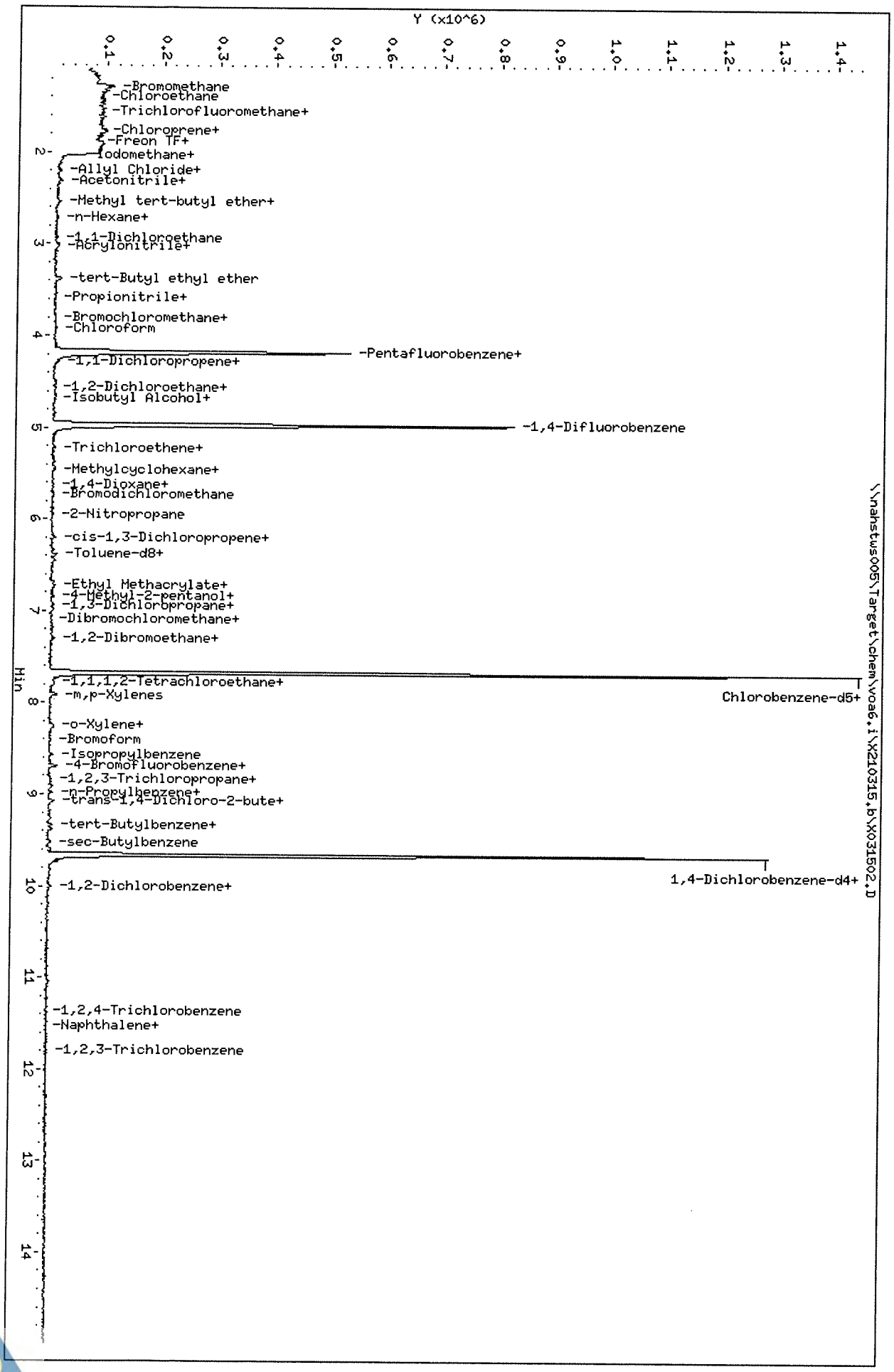
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	391377	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	654673	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	596000	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	249713	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	1263	0.25000	1.31
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	955	0.25000	(TM)
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	5712	0.25000	0.35(T)
$ 69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	3195	0.25000	0.32
27 cis-1,2-Dichloroethene	96	3.545	3.545	(0.848)	1276	0.25000	0.25
38 Trichloroethene	130	5.221	5.221	(1.052)	918	0.25000	0.20
5 Vinyl Chloride	62	1.138	1.138	(0.272)	2356	0.25000	0.32(M)

QC Flag Legend

T - Target compound detected outside RT window.
M - Compound response manually integrated.



Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031502.D
Date : 15-MAR-2021 11:37
Client ID: VSTD000.25
Sample Info: VSTD000.25;VSTD000.25;1;1;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031503.D Page 1
Report Date: 02-Apr-2021 14:48

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031503.D
Lab Smp Id: VSTD000.5 Client Smp ID: VSTD000.5
Inj Date : 15-MAR-2021 12:19
Operator : PC Inst ID: voa6.i
Smp Info : VSTD000.5;VSTD000.5;1;2;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:48 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 11:37 Cal File: X031502.D
Als bottle: 4 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

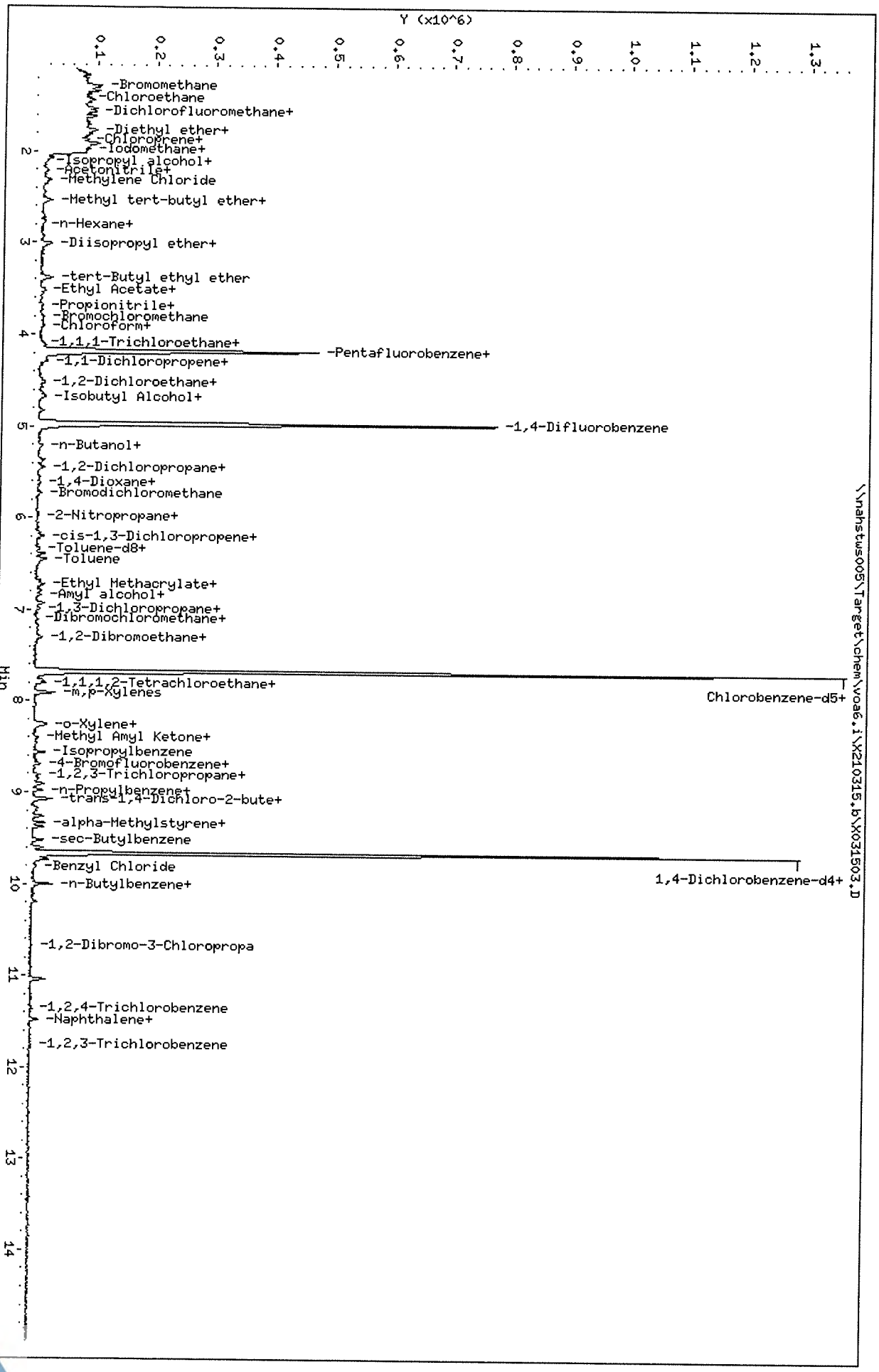
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	349242	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	612960	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	555925	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	244307	50.0000	
$ 30 Dibromofluoromethane	113	4.089	4.089	(0.978)	1993	0.50000	1.51
$ 35 1,2-Dichloroethane-d4	65	4.483	4.483	(1.072)	2842	0.50000	0.34(TM)
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	9213	0.50000	0.61
$ 69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	3636	0.50000	0.47
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	2138	0.50000	0.48(M)
38 Trichloroethene	130	5.214	5.214	(1.049)	2592	0.50000	0.62(M)
5 Vinyl Chloride	62	1.145	1.145	(0.274)	3705	0.50000	0.56(M)

QC Flag Legend

T - Target compound detected outside RT window.
M - Compound response manually integrated.

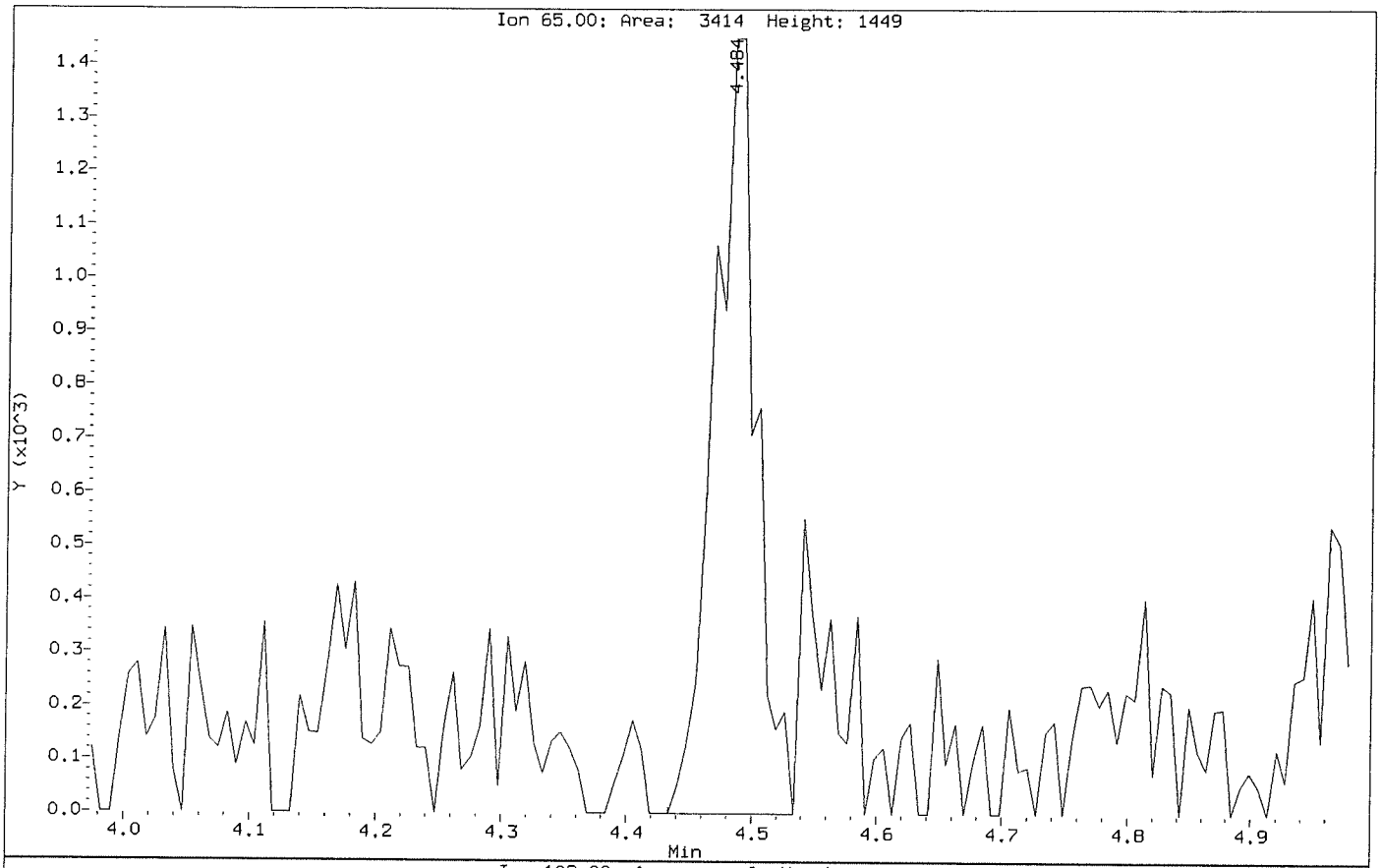


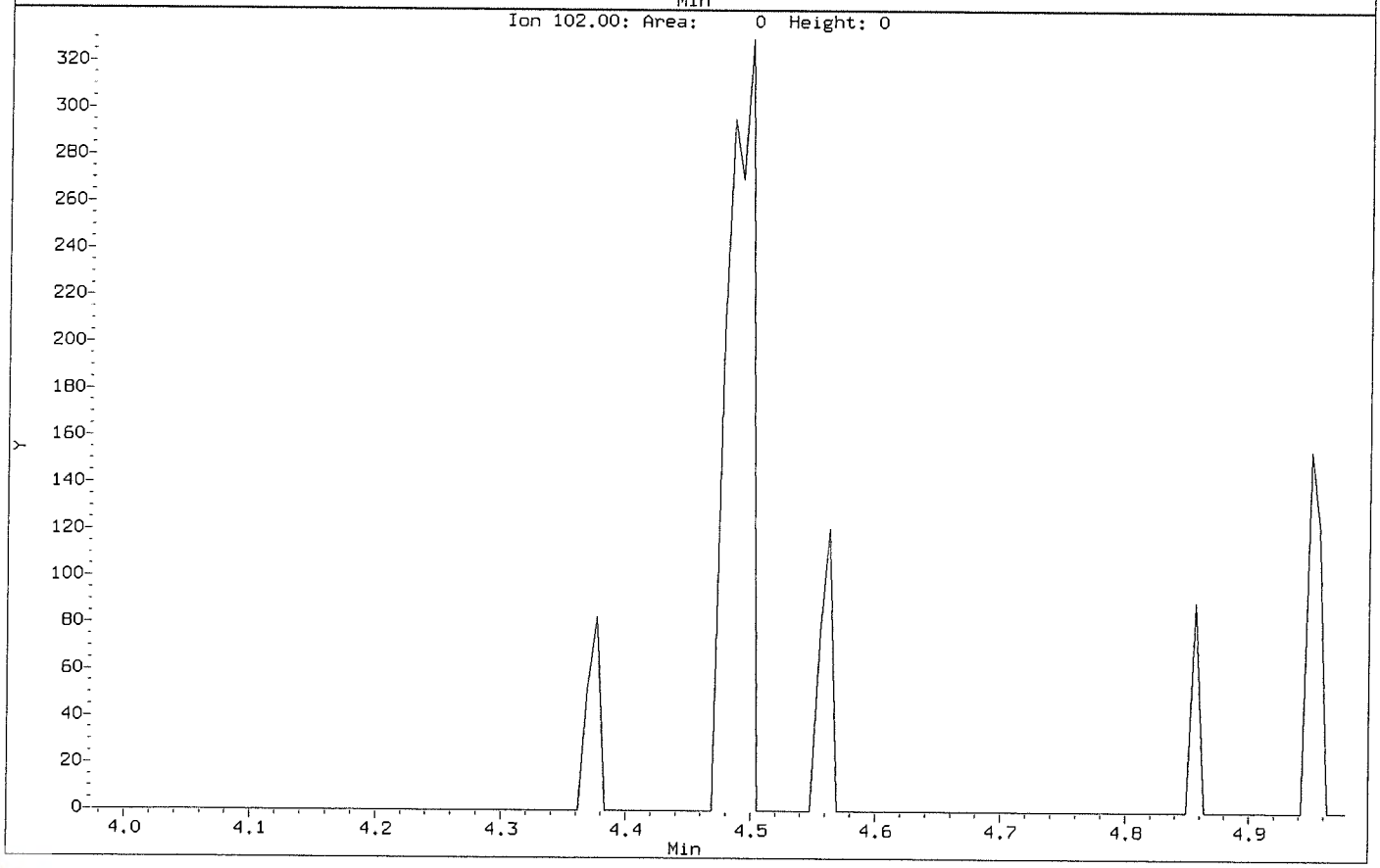
Data File: \\nahstus005\Target\chem\voa6.i\X210315.b\X031503.D
Date : 15-MAR-2021 12:19
Client ID: VSTD000.5
Sample Info: VSTD000.5;VSTD000.5;1;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X210315.b\Before1\X031503.D
Injection Date: 15-MAR-2021 12:19
Instrument: voa6.i
Client Sample ID: VSTD000.5

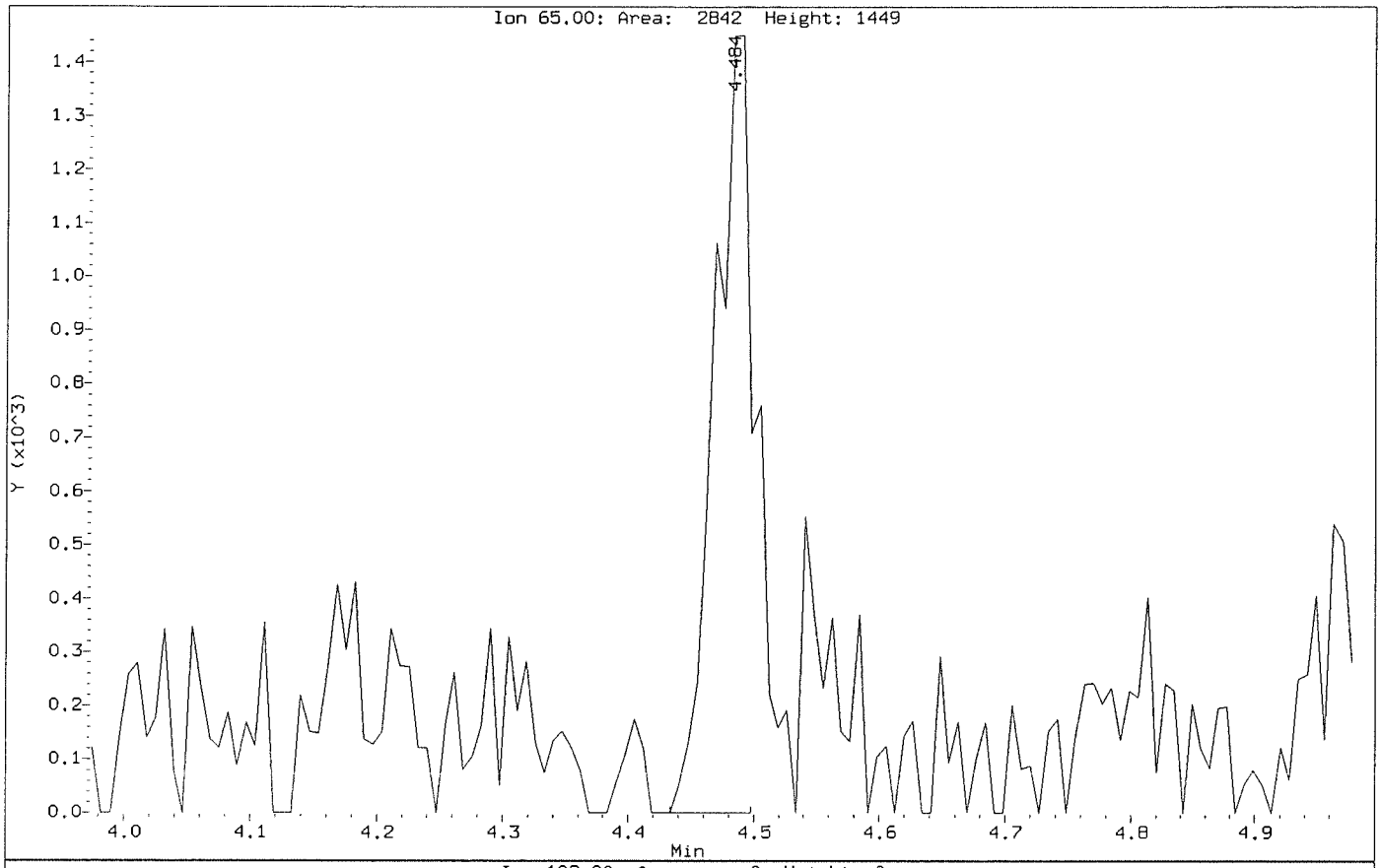
Compound: 1,2-Dichloroethane-d4
CAS Number: 17060-07-0

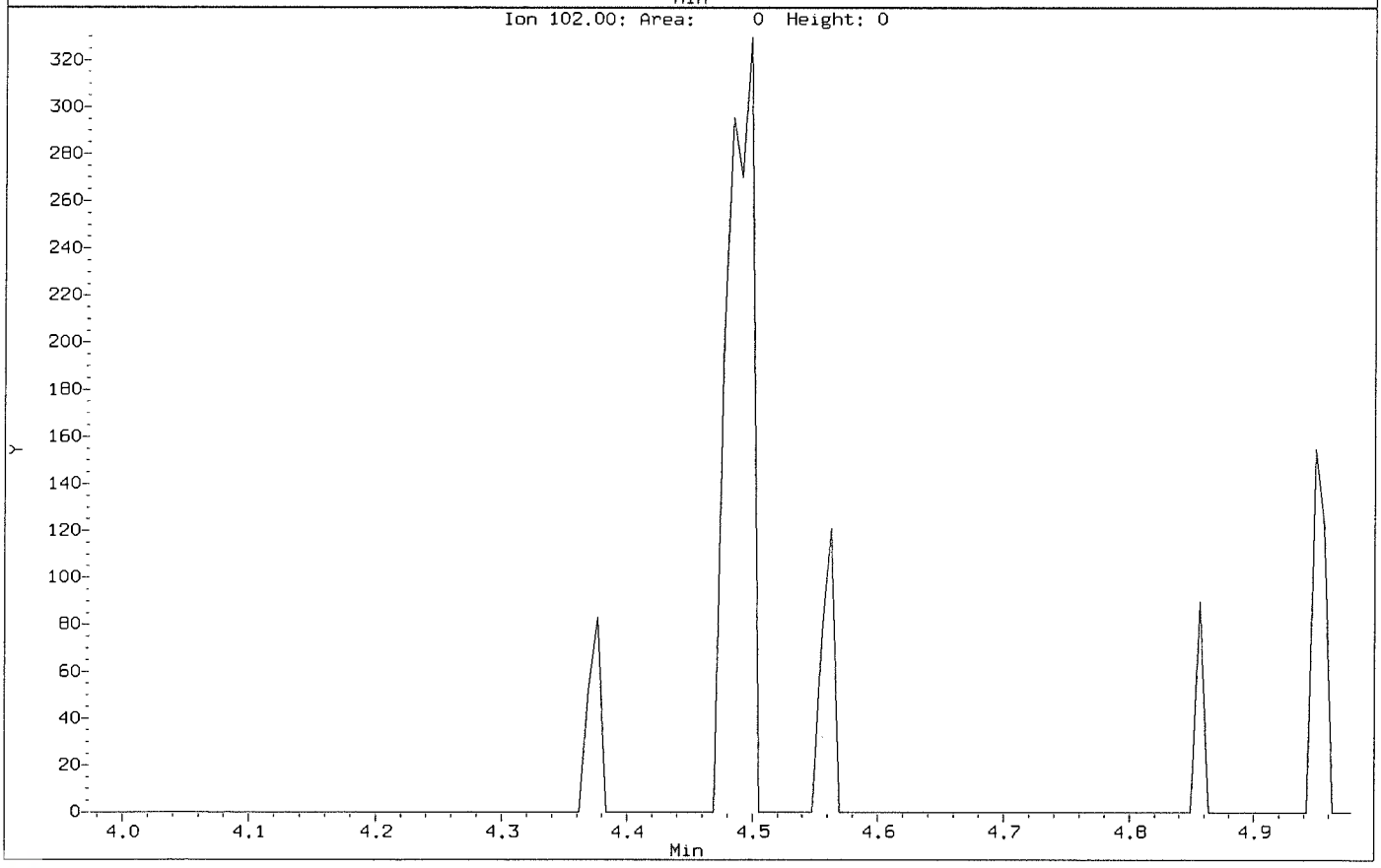




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Injection Date: 15-MAR-2021 12:19
Instrument: voa6.i
Client Sample ID: VSTD000.5

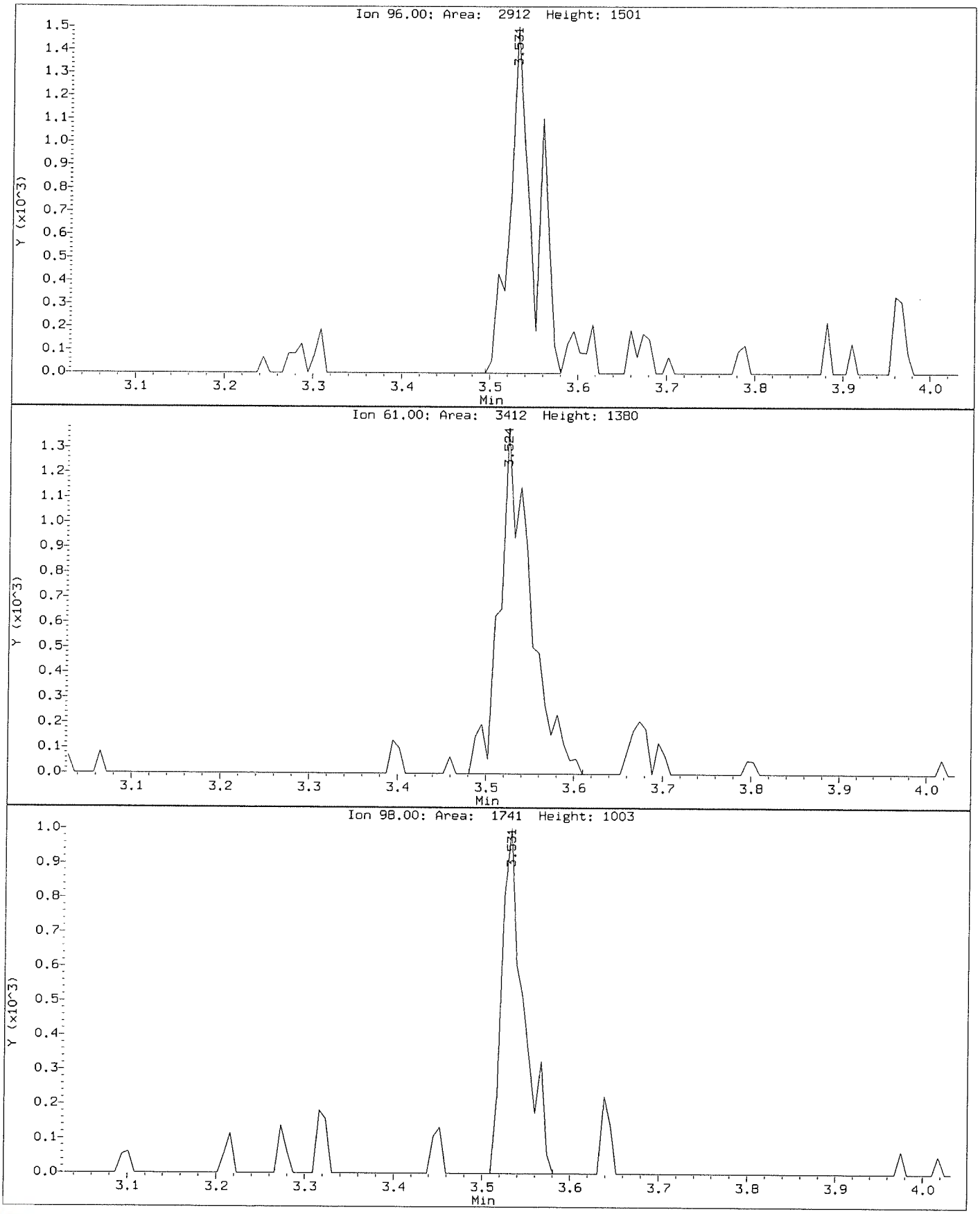
Compound: 1,2-Dichloroethane-d4
CAS Number: 17060-07-0





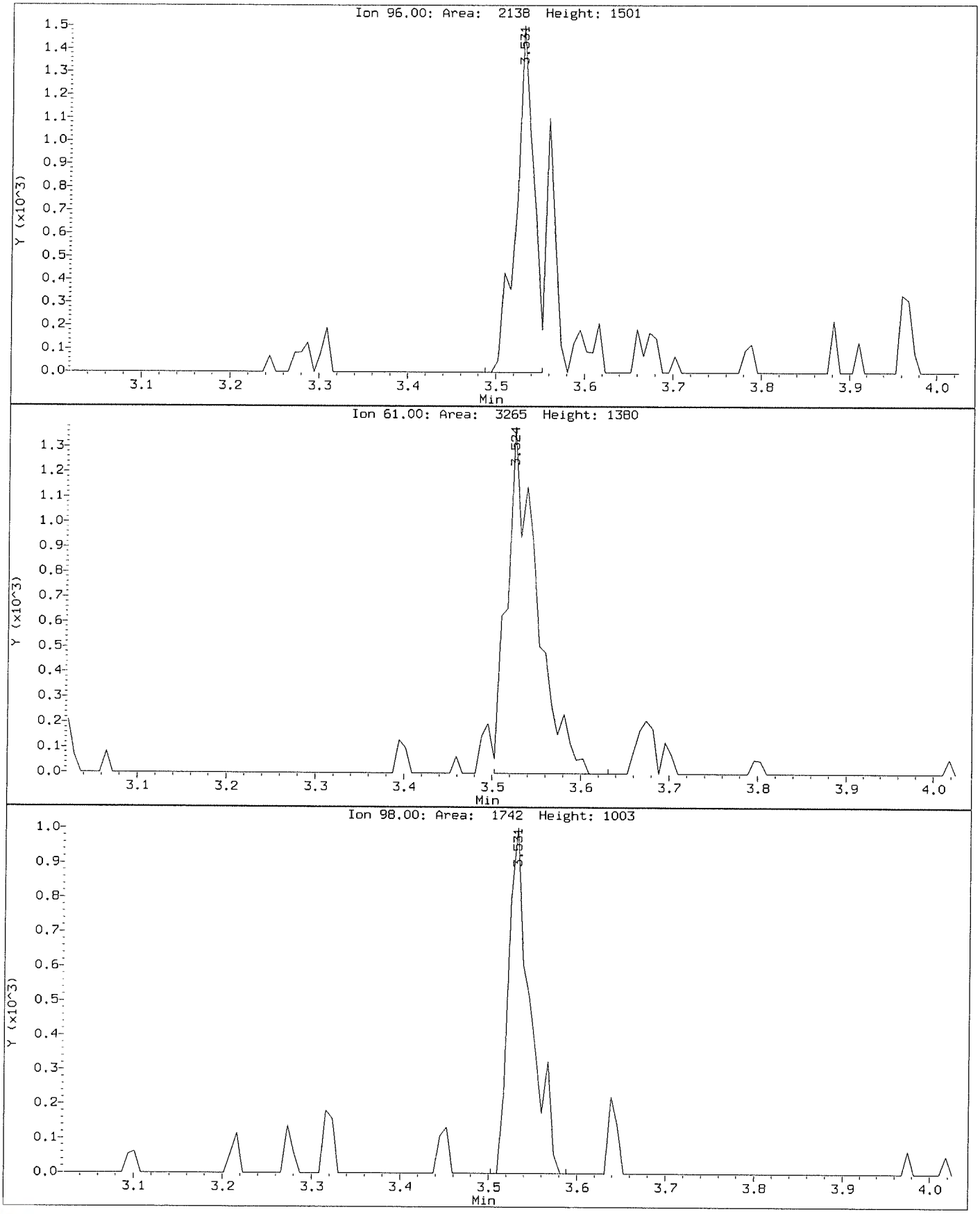
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Injection Date: 15-MAR-2021 12:19
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: cis-1,2-Dichloroethene
CAS Number: 156-59-2



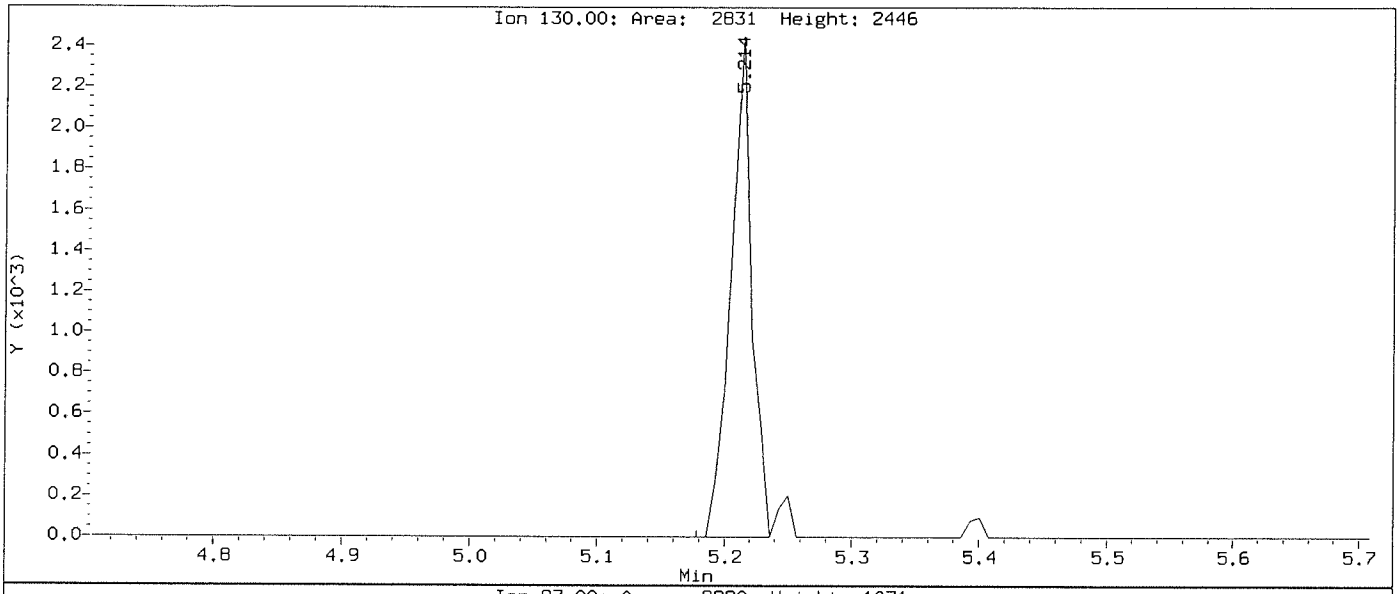
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Injection Date: 15-MAR-2021 12:19
Instrument: voa6.i
Client Sample ID: VSTD000.5

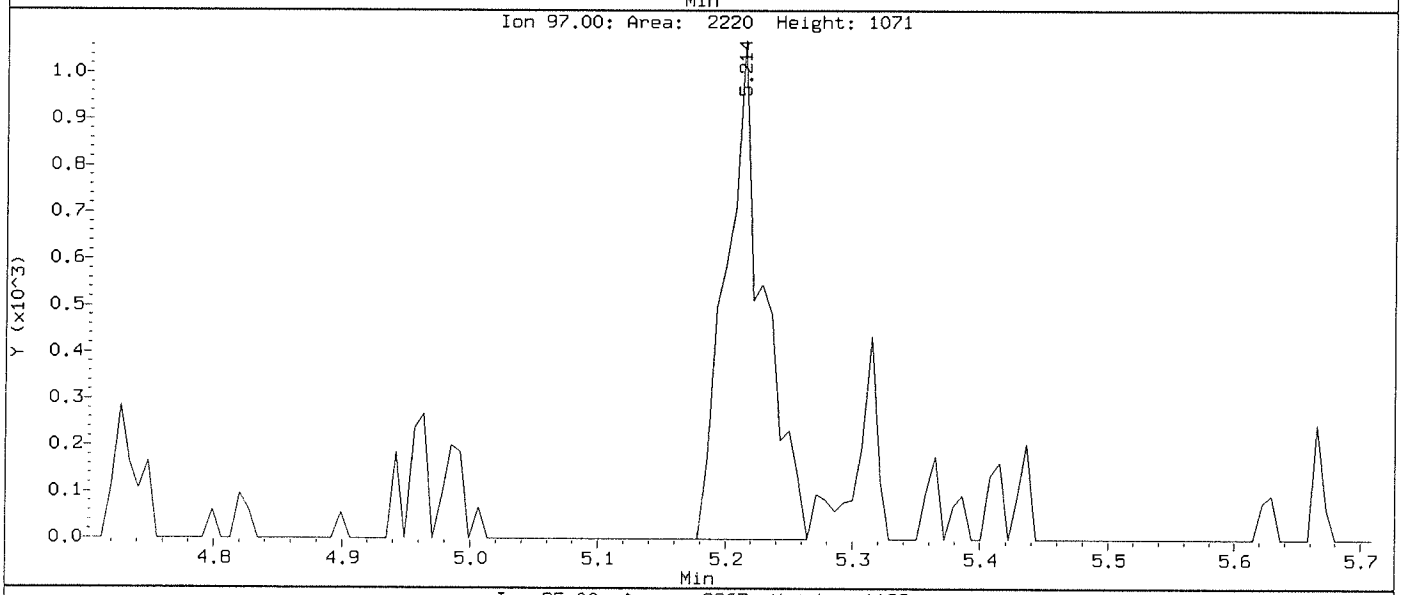
Compound: cis-1,2-Dichloroethene
CAS Number: 156-59-2

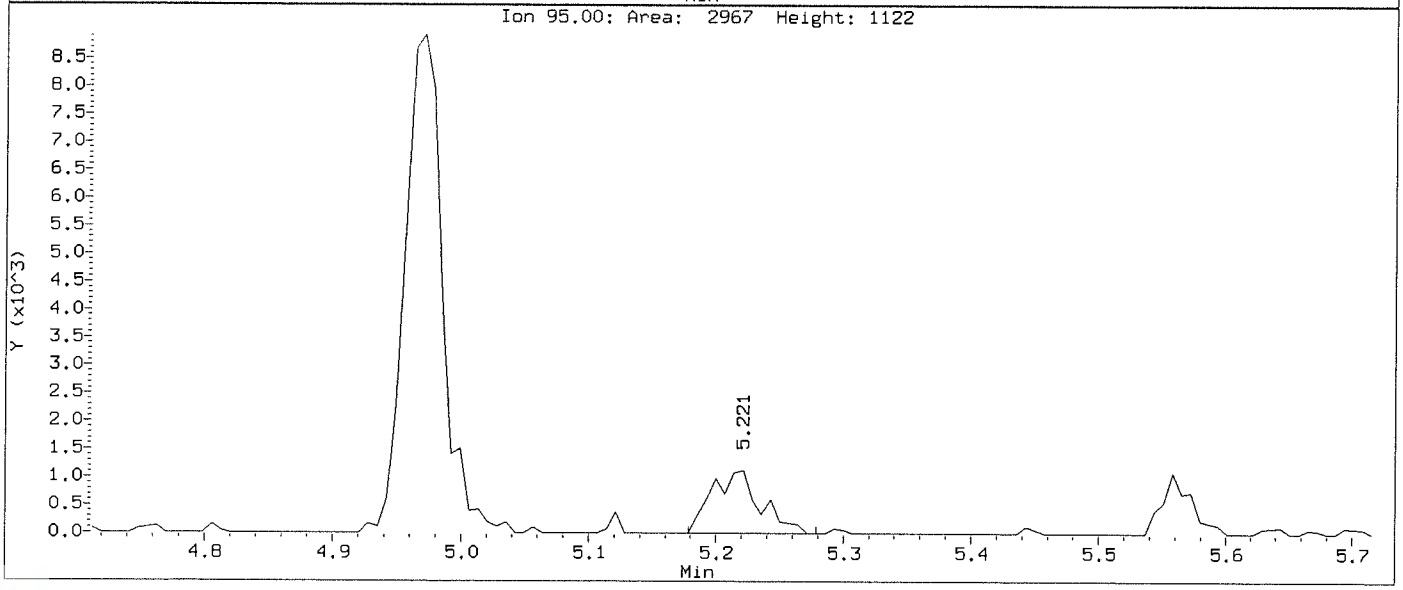


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Injection Date: 15-MAR-2021 12:19
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Trichloroethene
CAS Number: 79-01-6

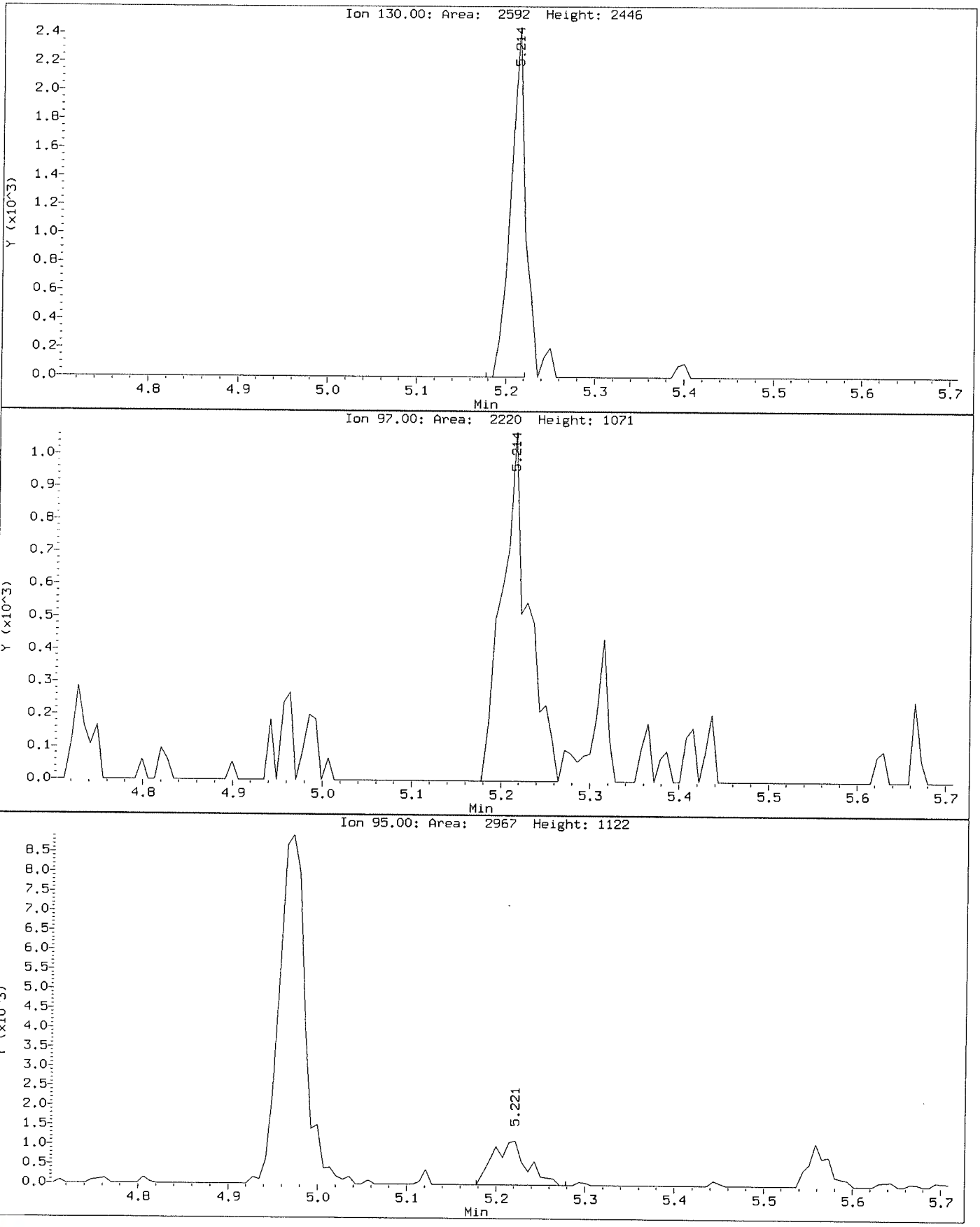






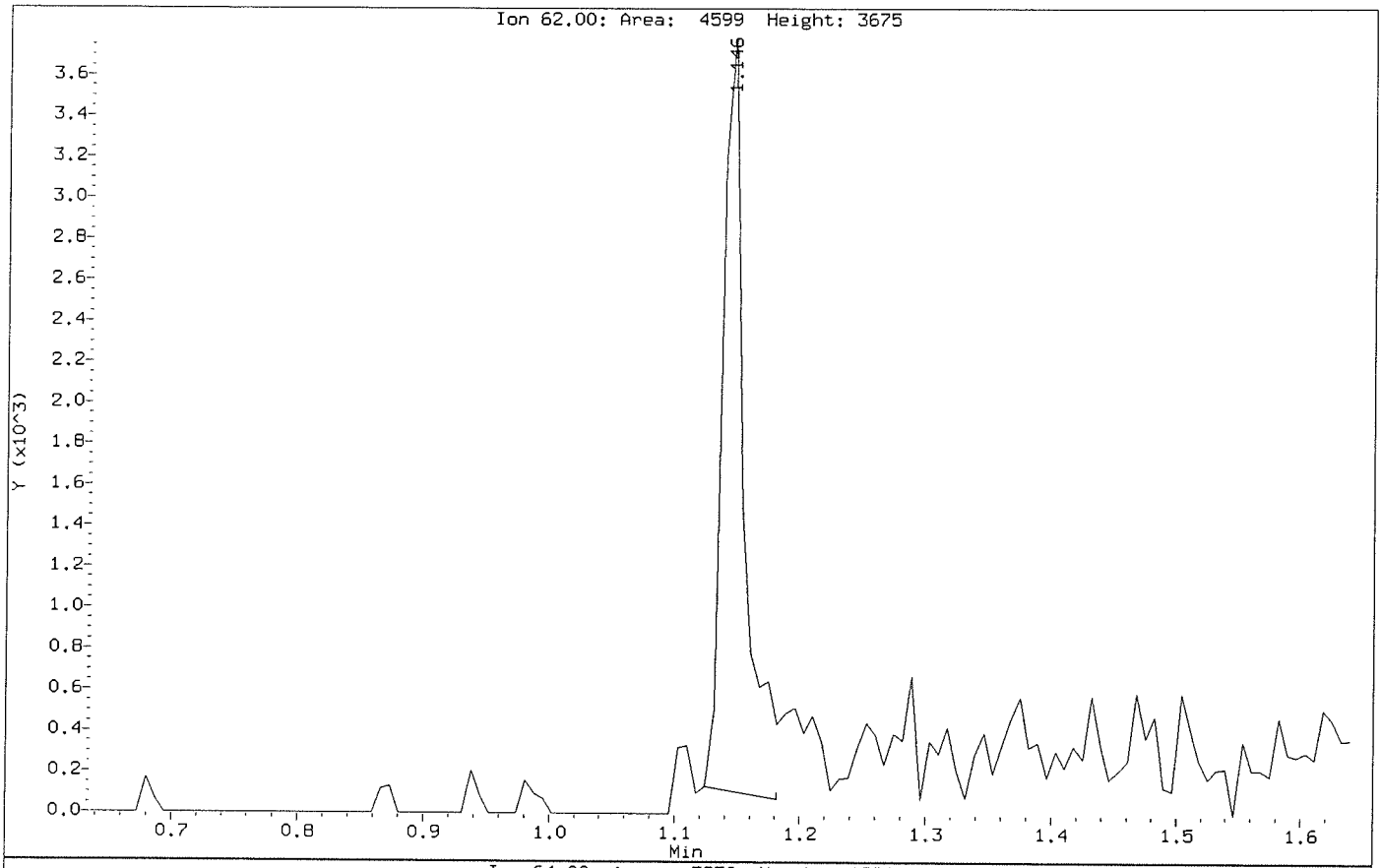
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Injection Date: 15-MAR-2021 12:19
Instrument: voa6.i
Client Sample ID: VSTD000.5

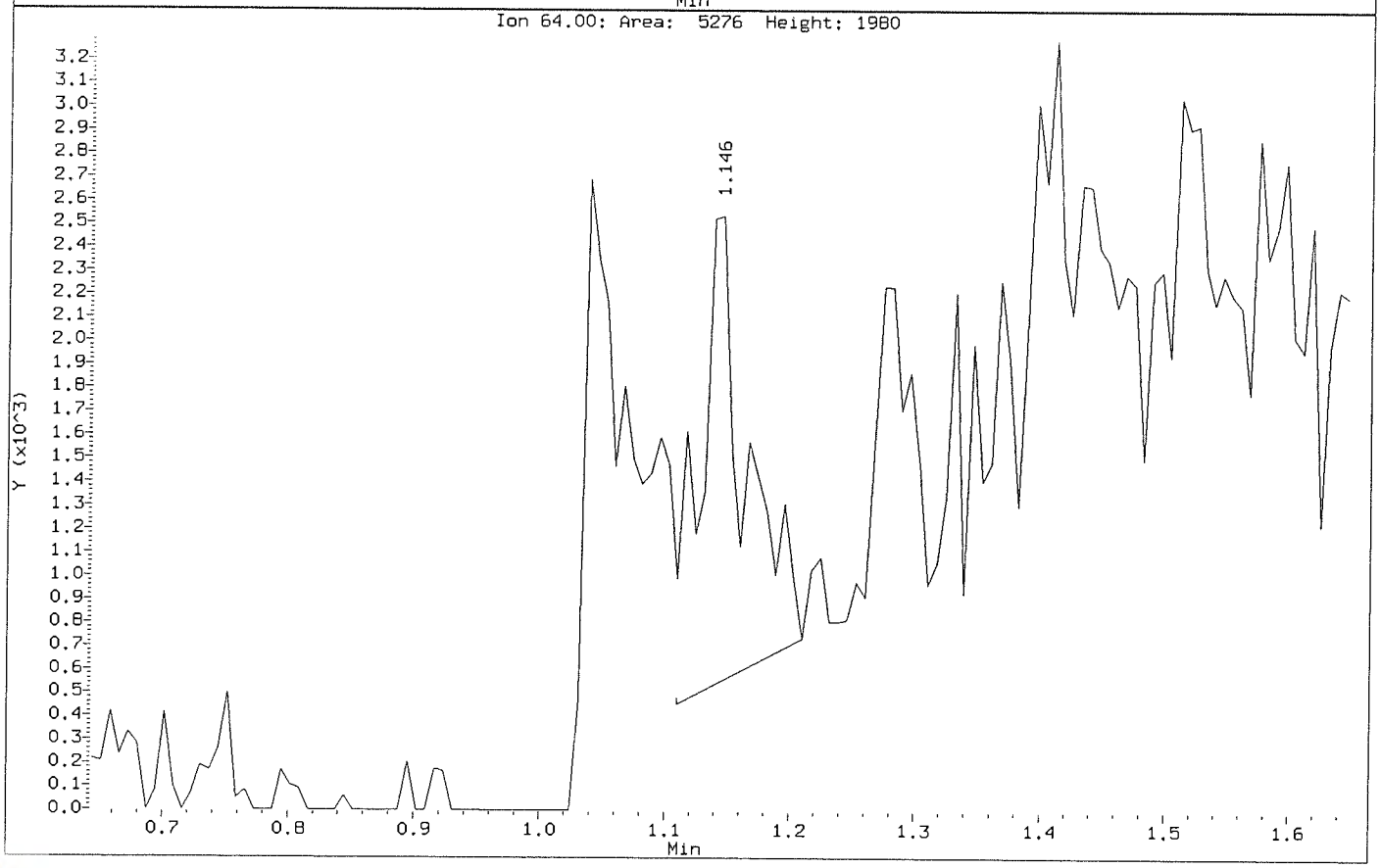
Compound: Trichloroethene
CAS Number: 79-01-6



Data File: \\NAHSTWS005\Target\chem\voa6.i\X210315.b\Before1\X031503.D
Injection Date: 15-MAR-2021 12:19
Instrument: voa6.i
Client Sample ID: VSTD000.5

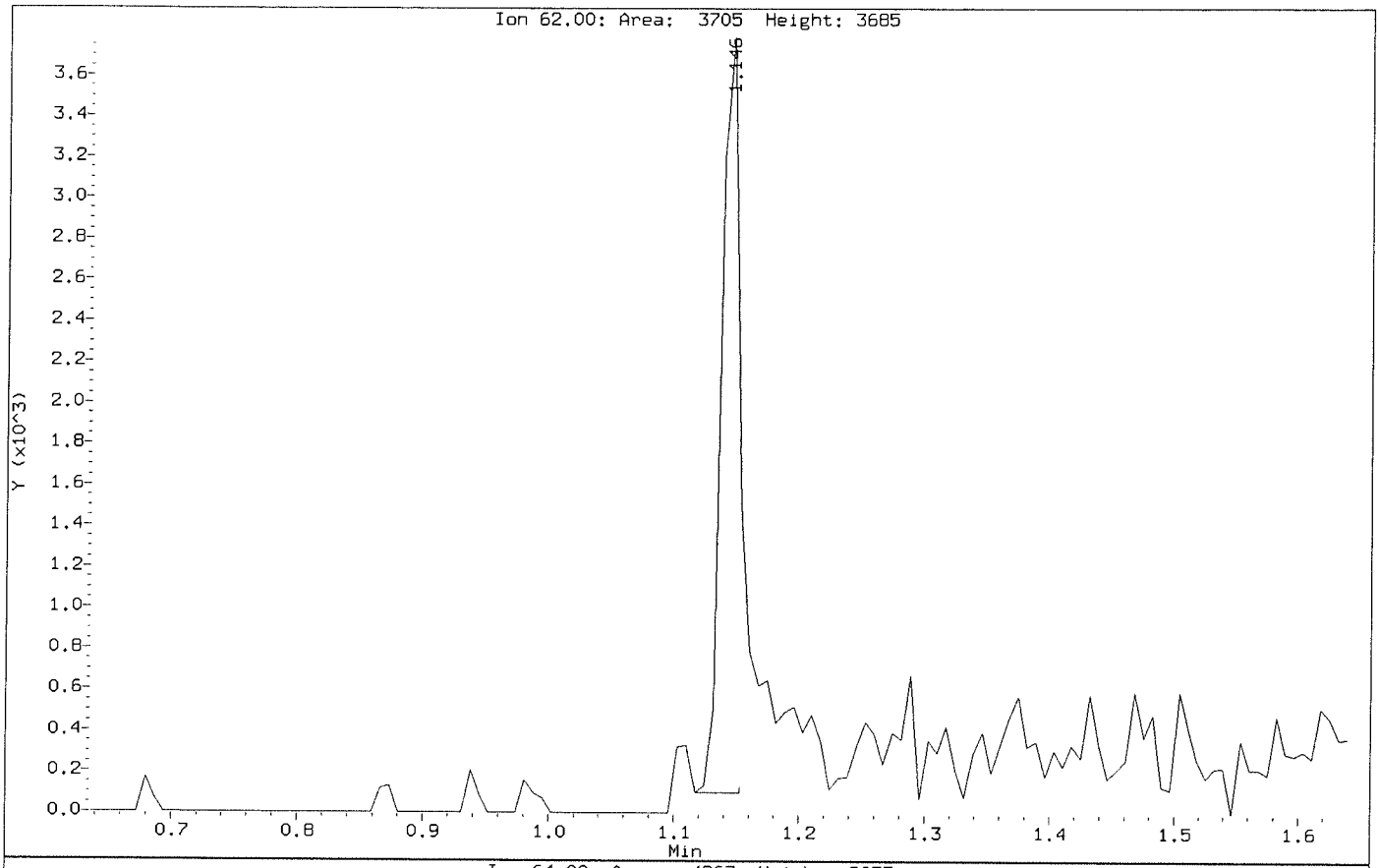
Compound: Vinyl Chloride
CAS Number: 75-01-4

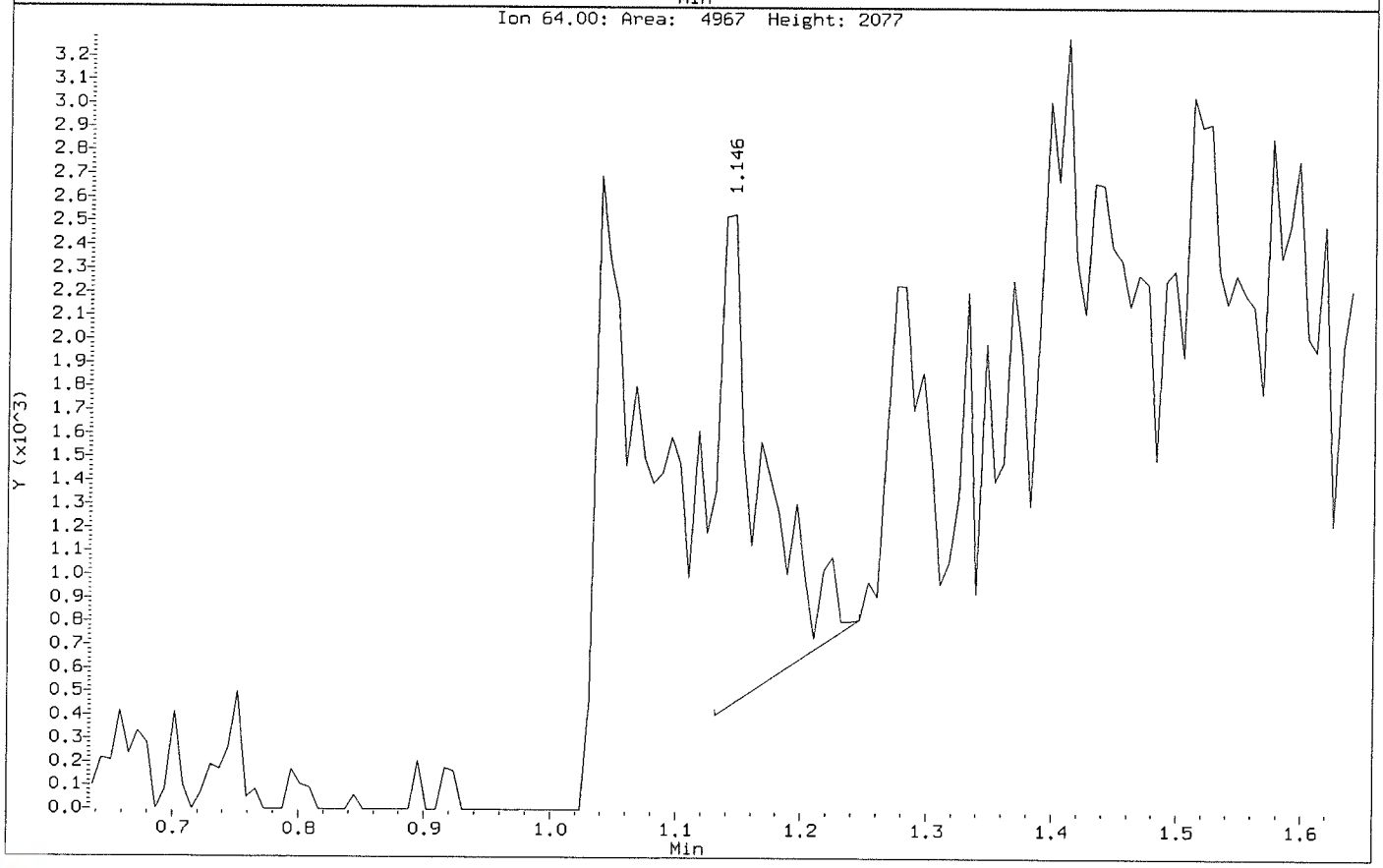




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Injection Date: 15-MAR-2021 12:19
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Vinyl Chloride
CAS Number: 75-01-4





Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031504.D Page 1
Report Date: 02-Apr-2021 14:49

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Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031504.D
Lab Smp Id: VSTD001 Client Smp ID: VSTD001
Inj Date : 15-MAR-2021 12:39
Operator : PC Inst ID: voa6.i
Smp Info : VSTD001;VSTD001;1;3;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:49 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 12:19 Cal File: X031503.D
Als bottle: 5 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

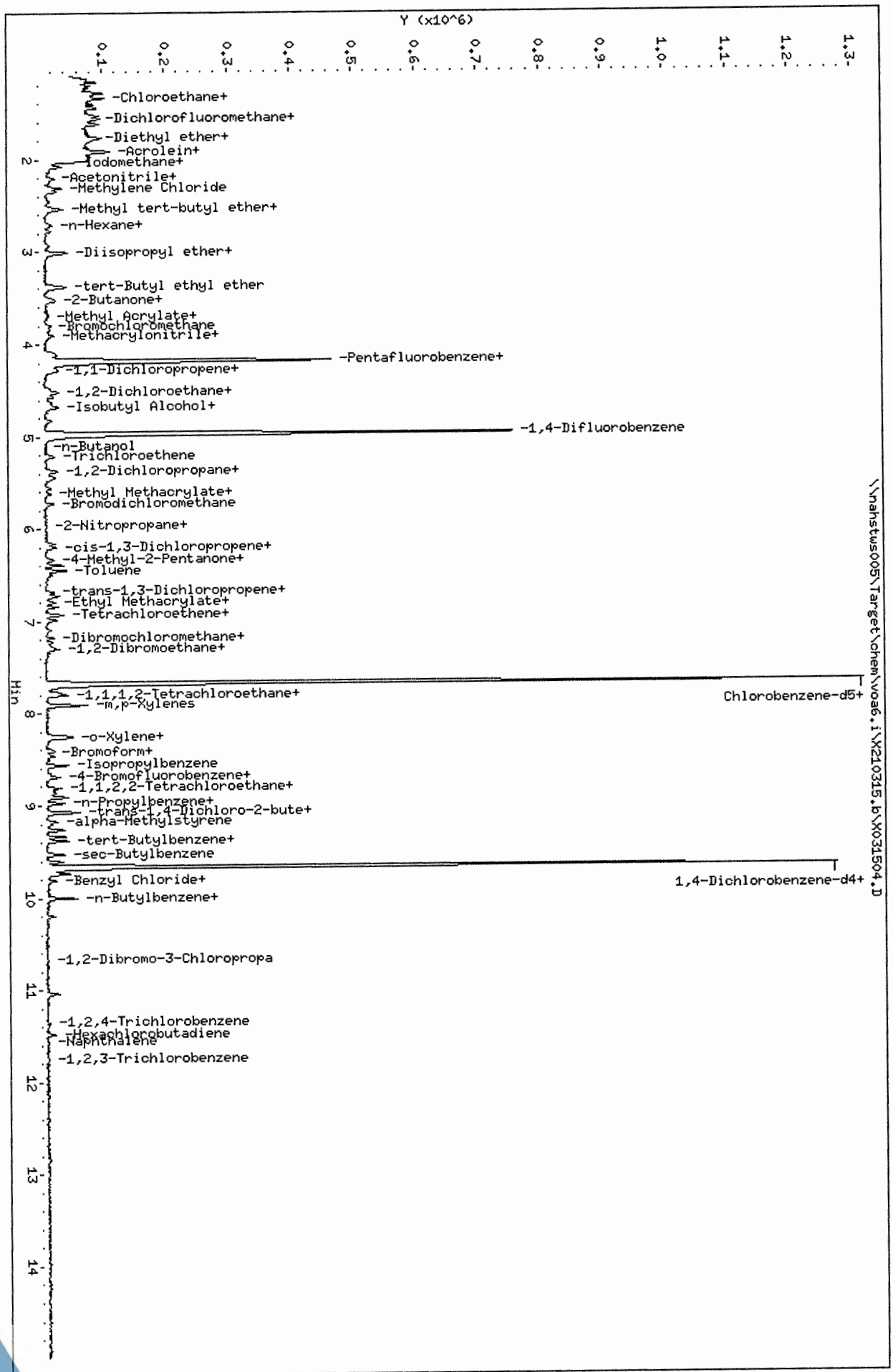
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	349091	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	583945	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	550204	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	243834	50.0000	
$ 30 Dibromofluoromethane	113	4.111	4.111	(0.983)	4678	1.00000	2.13
$ 35 1,2-Dichloroethane-d4	65	4.483	4.483	(1.072)	5757	1.00000	0.97(M)
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	15625	1.00000	1.05
$ 69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	5753	1.00000	0.96
27 cis-1,2-Dichloroethene	96	3.523	3.523	(0.842)	4872	1.00000	1.09
38 Trichloroethene	130	5.214	5.214	(1.049)	3608	1.00000	0.91
5 Vinyl Chloride	62	1.138	1.138	(0.272)	6884	1.00000	1.05

QC Flag Legend

M - Compound response manually integrated.

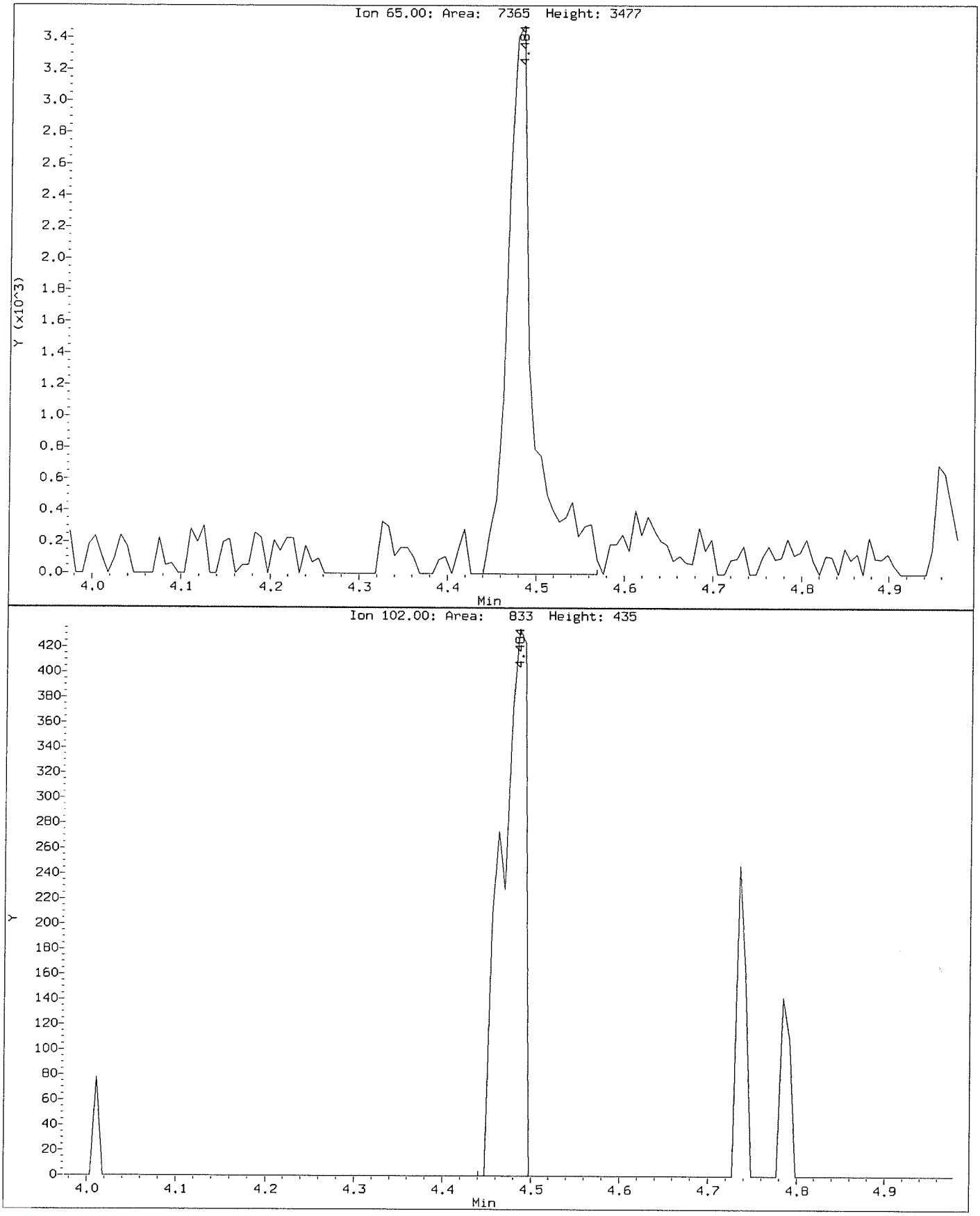


Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031504.D
Date : 15-MAR-2021 12:39
Client ID: VSTD001
Sample Info: VSTD001;VSTD001;1;3;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

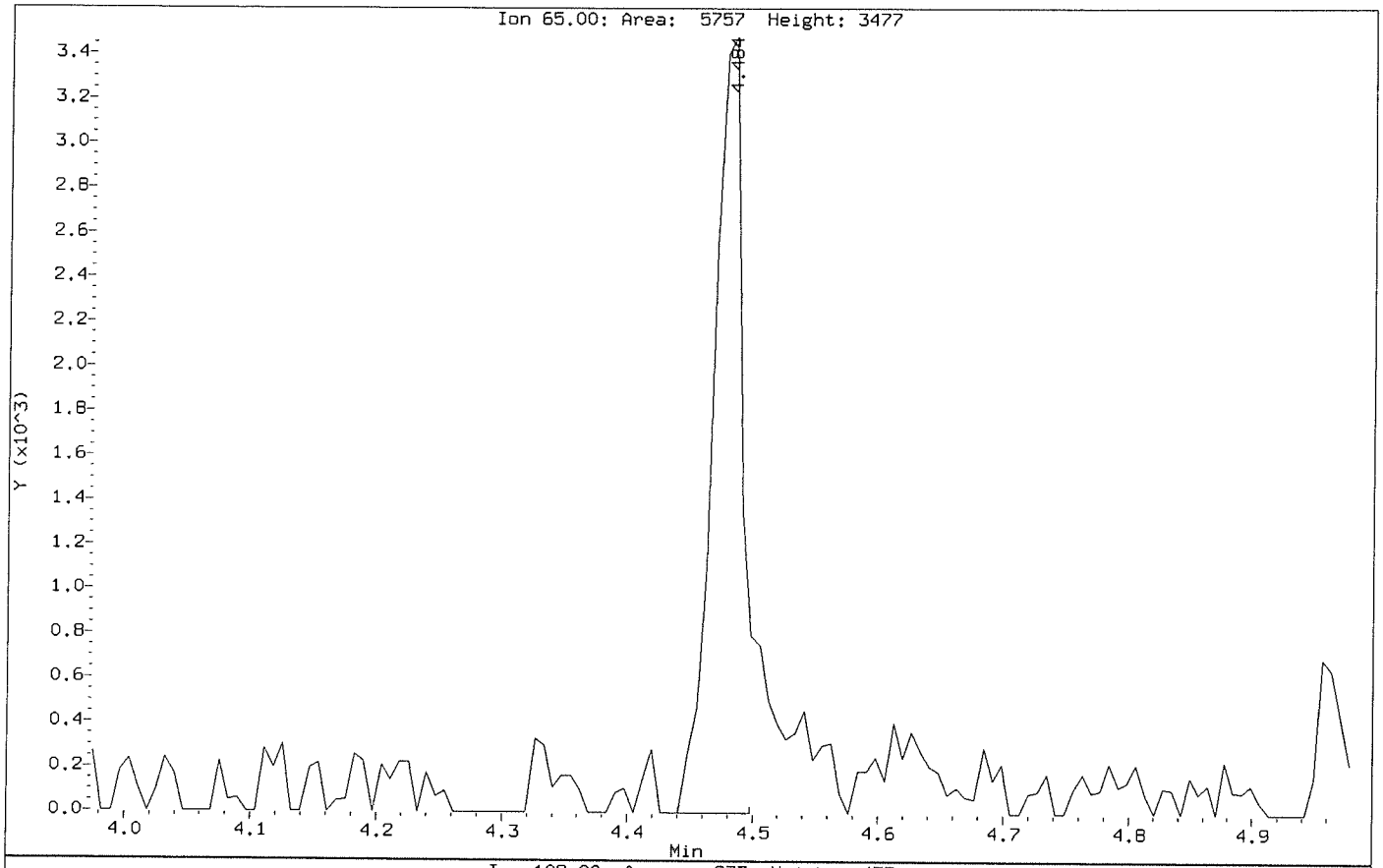
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Injection Date: 15-MAR-2021 12:39
Instrument: voa6.i
Client Sample ID: VSTD001

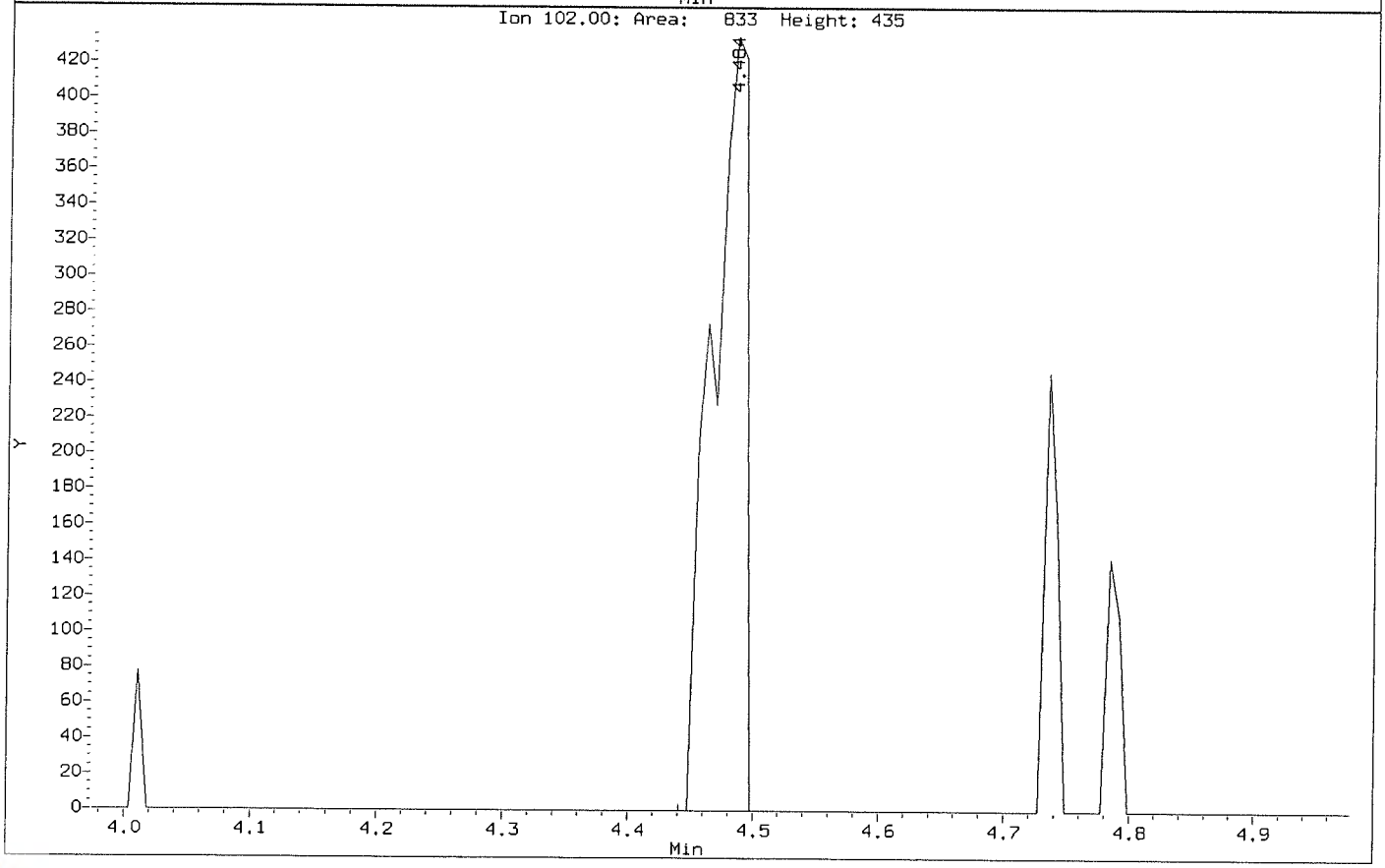
Compound: 1,2-Dichloroethane-d4
CAS Number: 17060-07-0



Data File: \\NAHSTWS005\Target\chem\voa6.i\X210315.b\X031504.D
Injection Date: 15-MAR-2021 12:39
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2-Dichloroethane-d4
CAS Number: 17060-07-0





Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031505.D Page 1
Report Date: 02-Apr-2021 14:49

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031505.D
Lab Smp Id: VSTD002 Client Smp ID: VSTD002
Inj Date : 15-MAR-2021 13:00
Operator : PC Inst ID: voa6.i
Smp Info : VSTD002;VSTD002;1;4;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:49 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 12:39 Cal File: X031504.D
Als bottle: 6 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

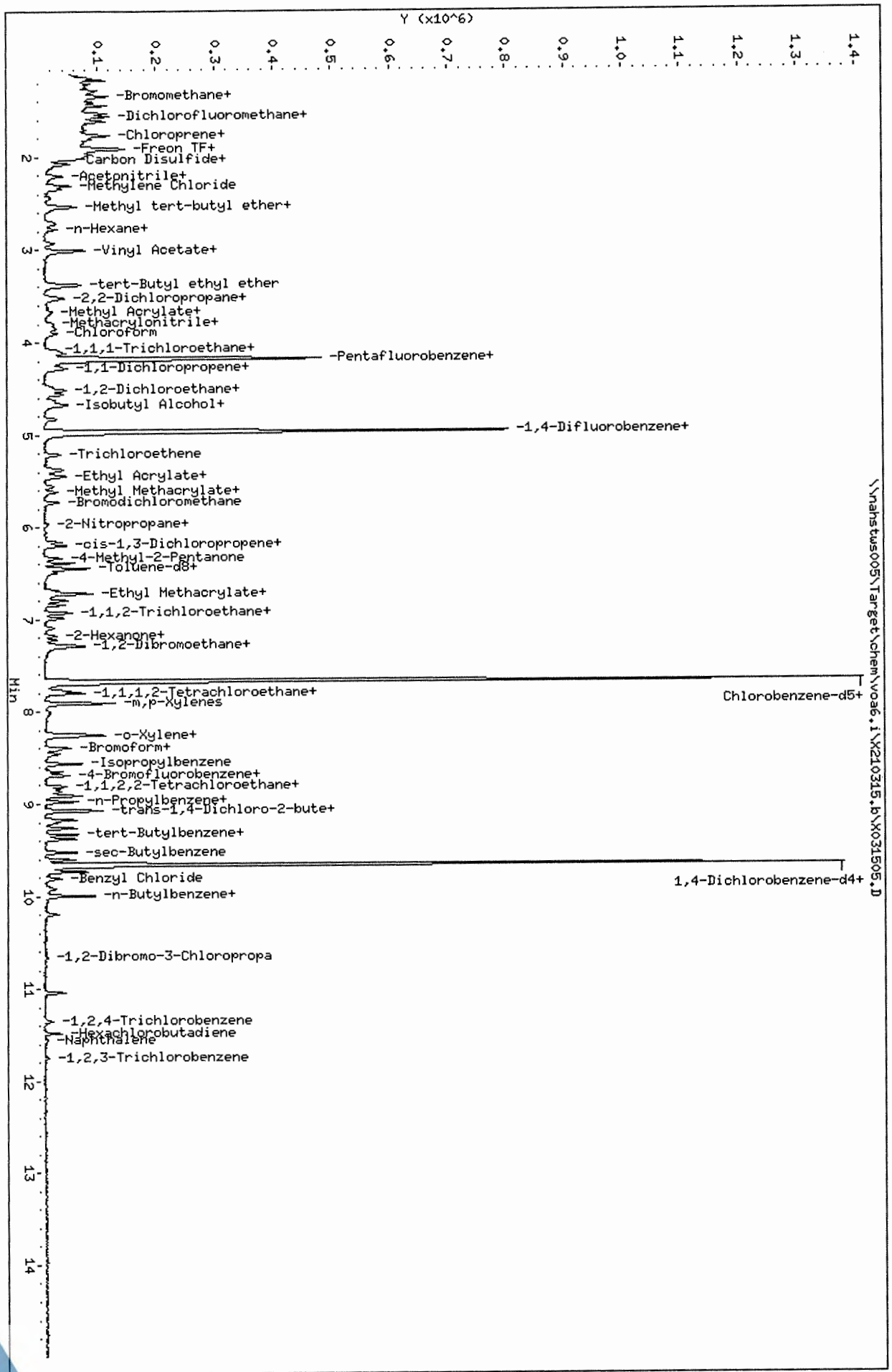
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	355499	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	617506	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	563043	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	253163	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	7977	2.00000	2.85
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	9939	2.00000	1.83(M)
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	27857	2.00000	1.84
$ 69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	9314	2.00000	1.71
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	9720	2.00000	2.15
38 Trichloroethene	130	5.214	5.214	(1.049)	8866	2.00000	2.13
5 Vinyl Chloride	62	1.145	1.145	(0.274)	14742	2.00000	2.22(M)

QC Flag Legend

M - Compound response manually integrated.

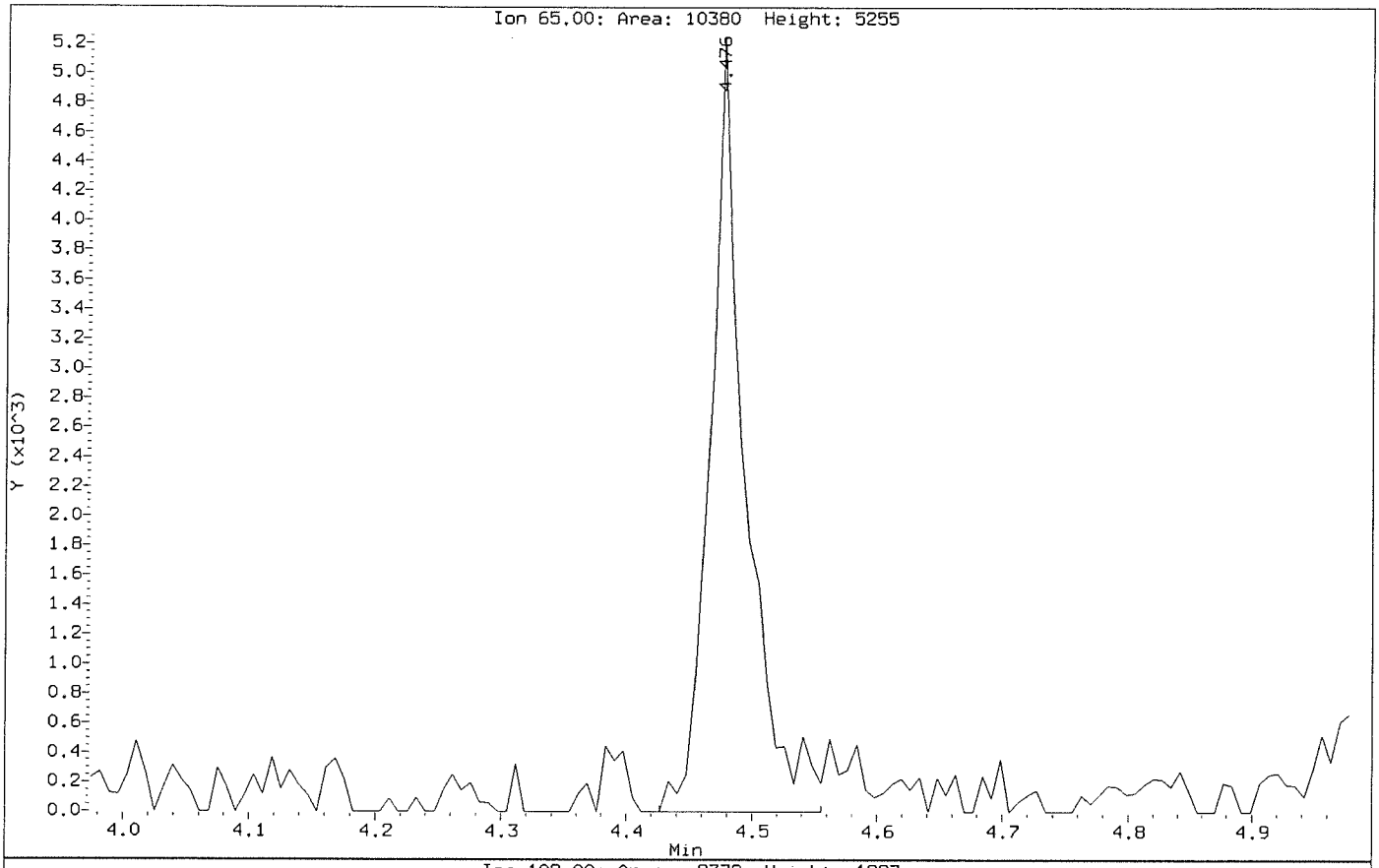


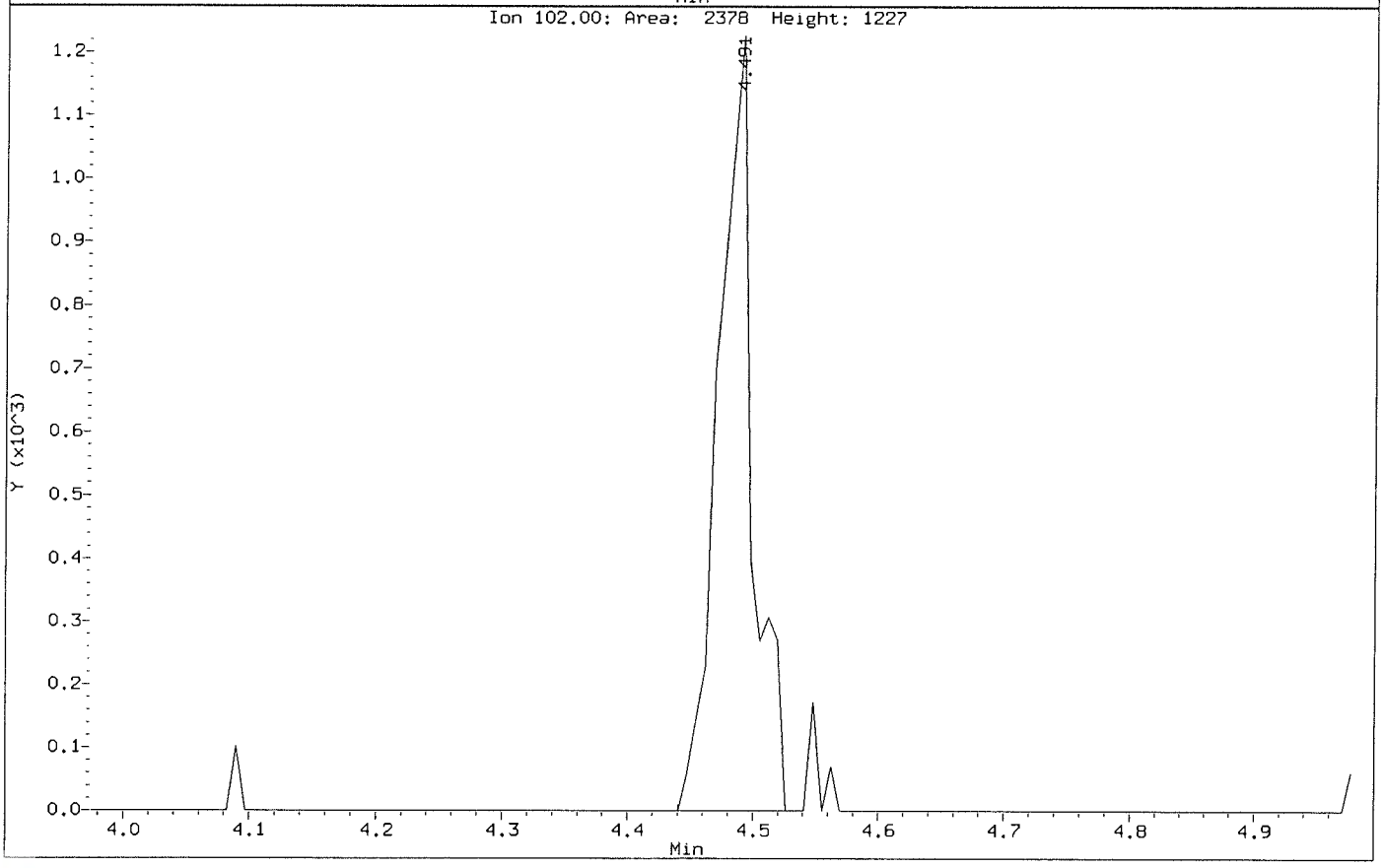
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Date : 15-MAR-2021 13:00
Client ID: VSTD002
Sample Info: VSTD002;VSTD002;1;4;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X210315.b\Before1\X031505.D
Injection Date: 15-MAR-2021 13:00
Instrument: voa6.i
Client Sample ID: VSTD002

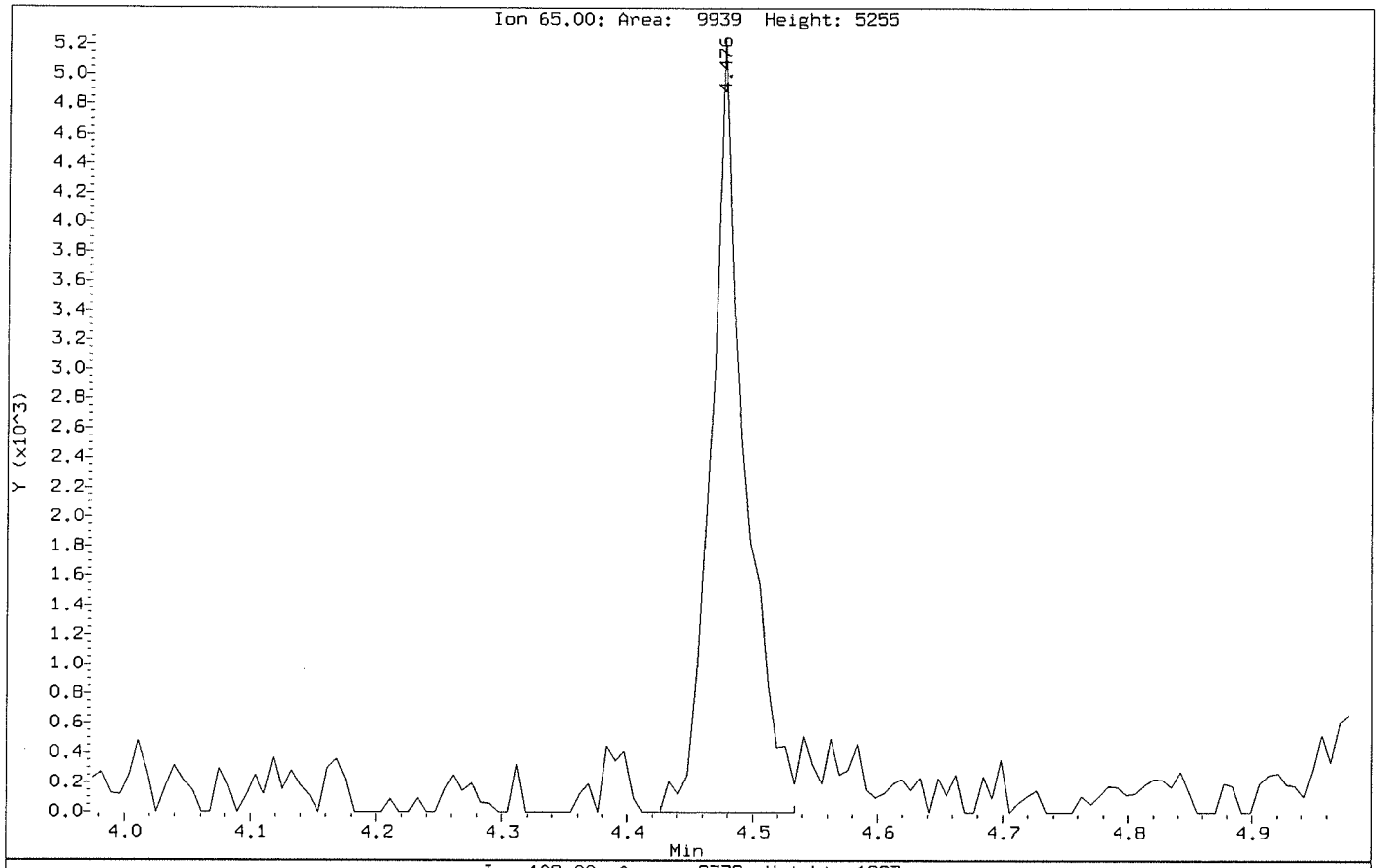
Compound: 1,2-Dichloroethane-d4
CAS Number: 17060-07-0

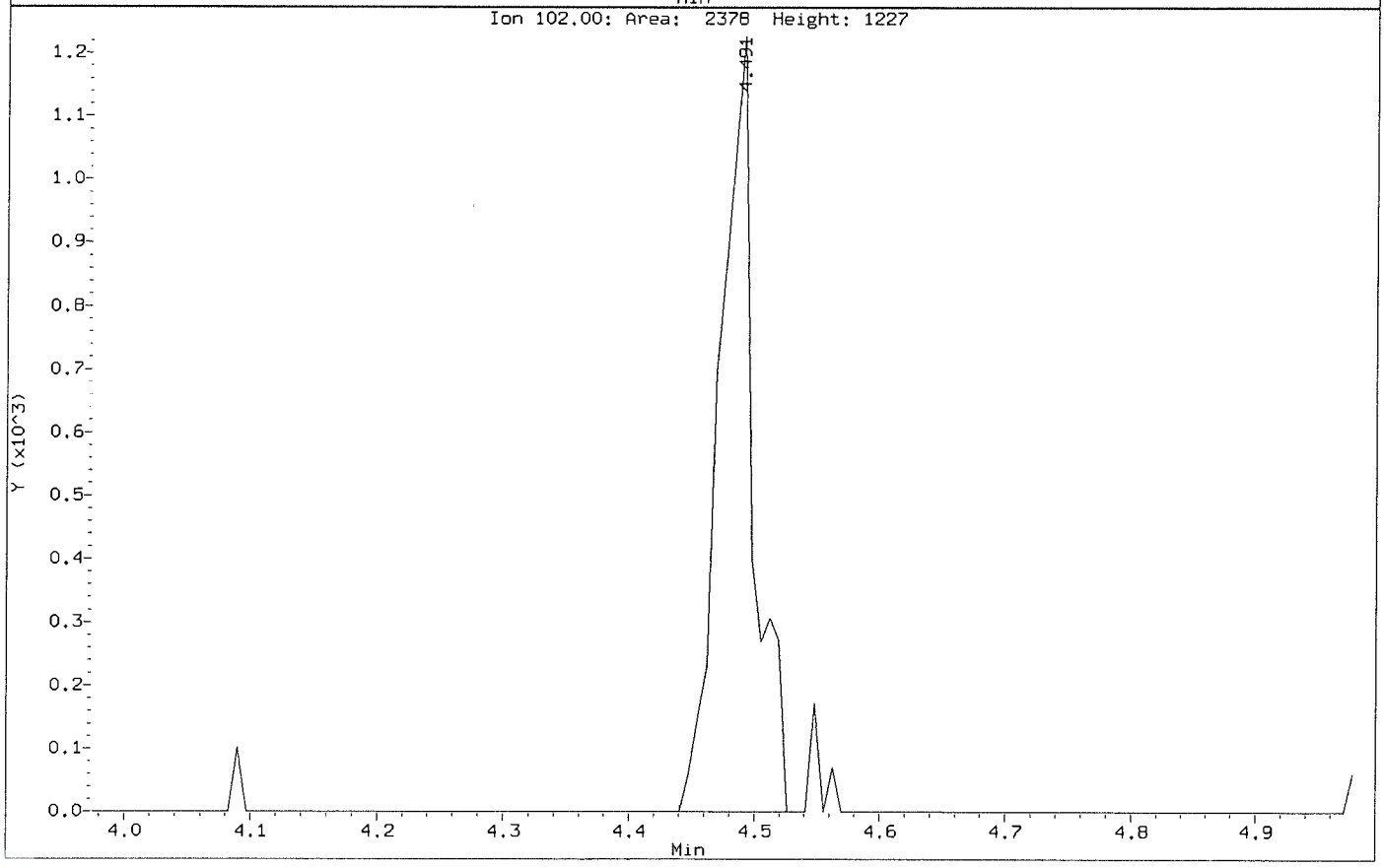




Data File: \\NAHSTWS005\Target\chem\voa6.i\X210315.b\X031505.D
Injection Date: 15-MAR-2021 13:00
Instrument: voa6.i
Client Sample ID: VSTD002

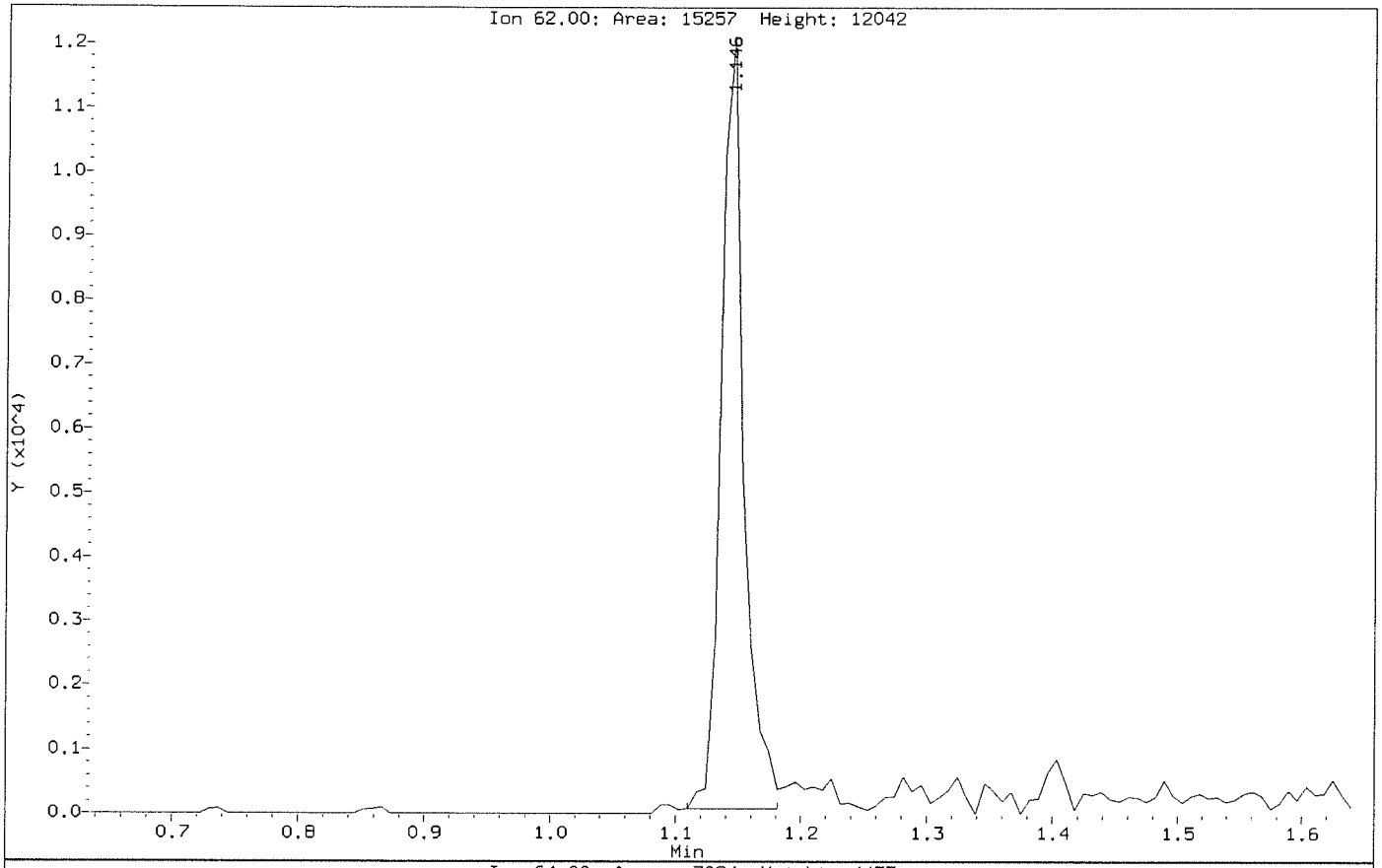
Compound: 1,2-Dichloroethane-d4
CAS Number: 17060-07-0

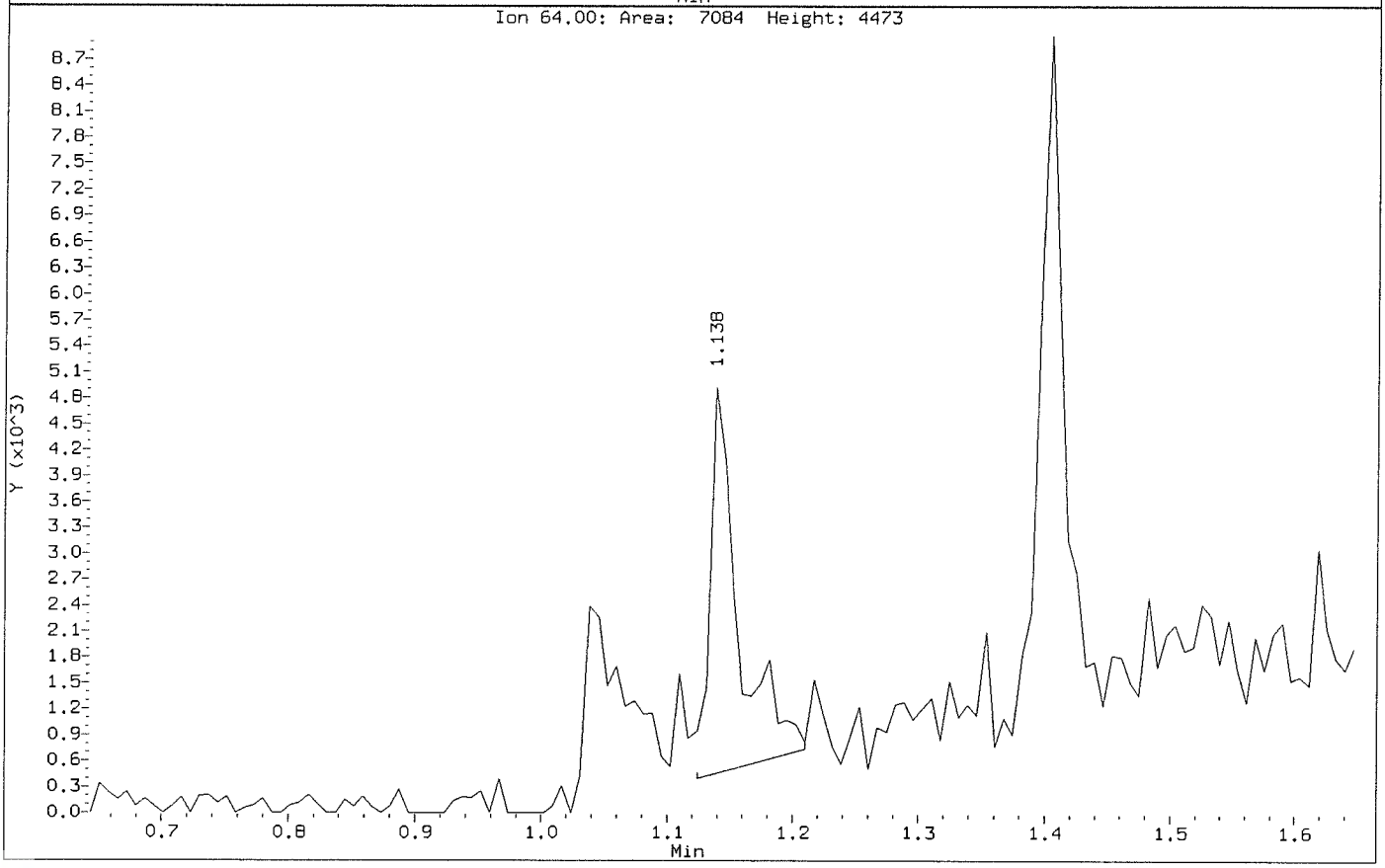




Data File: \\NAHSTWS005\Target\chem\voa6.i\X210315.b\Before1\X031505.D
Injection Date: 15-MAR-2021 13:00
Instrument: voa6.i
Client Sample ID: VSTD002

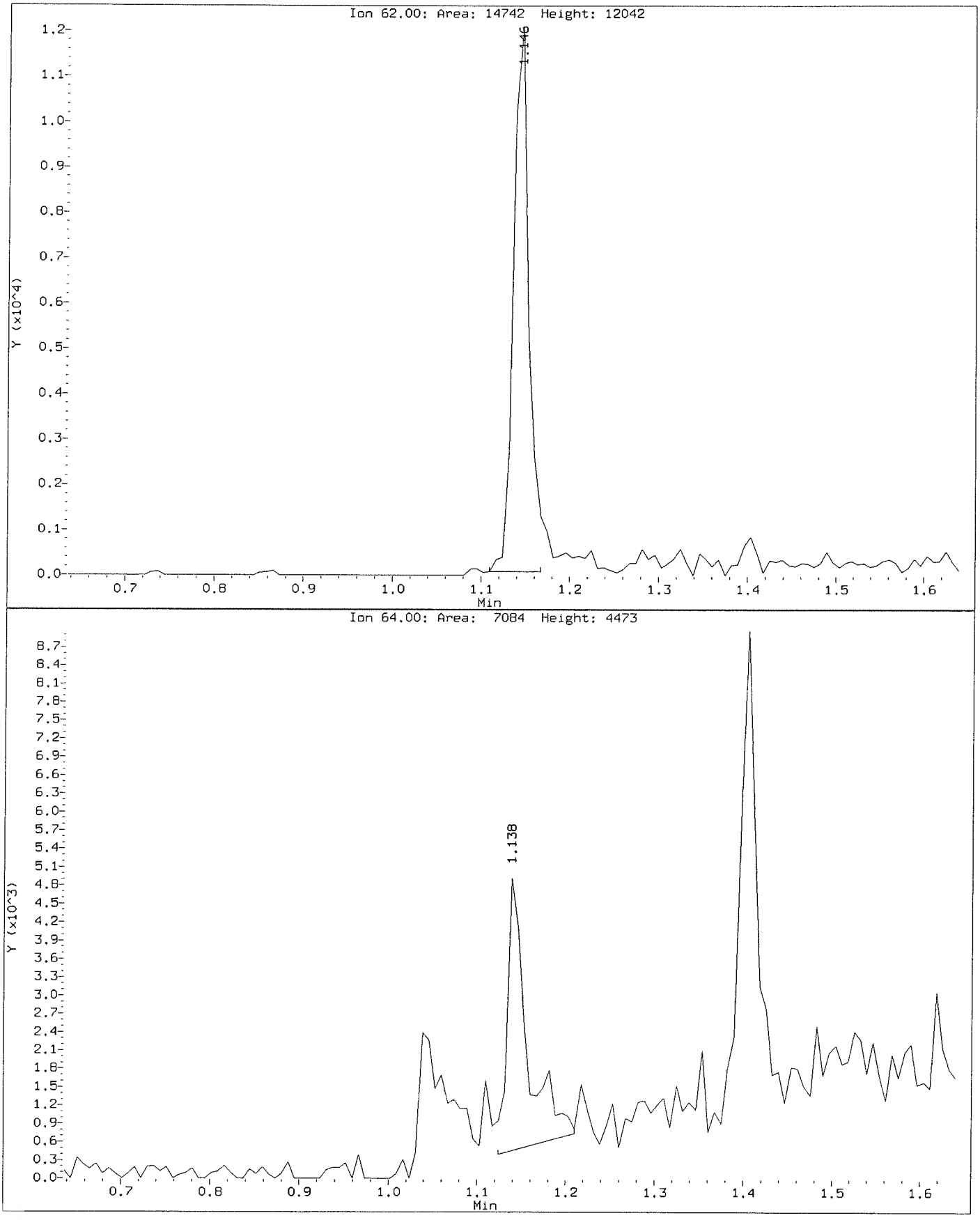
Compound: Vinyl Chloride
CAS Number: 75-01-4





Data File: \\NAHSTWS005\Target\chem\voa6.i\X210315.b\X031505.D
Injection Date: 15-MAR-2021 13:00
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: Vinyl Chloride
CAS Number: 75-01-4



Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031506.D Page 1
Report Date: 02-Apr-2021 14:49

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031506.D
Lab Smp Id: VSTD005 Client Smp ID: VSTD005
Inj Date : 15-MAR-2021 13:21
Operator : PC Inst ID: voa6.i
Smp Info : VSTD005;VSTD005;1;5;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:49 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 13:00 Cal File: X031505.D
Als bottle: 7 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

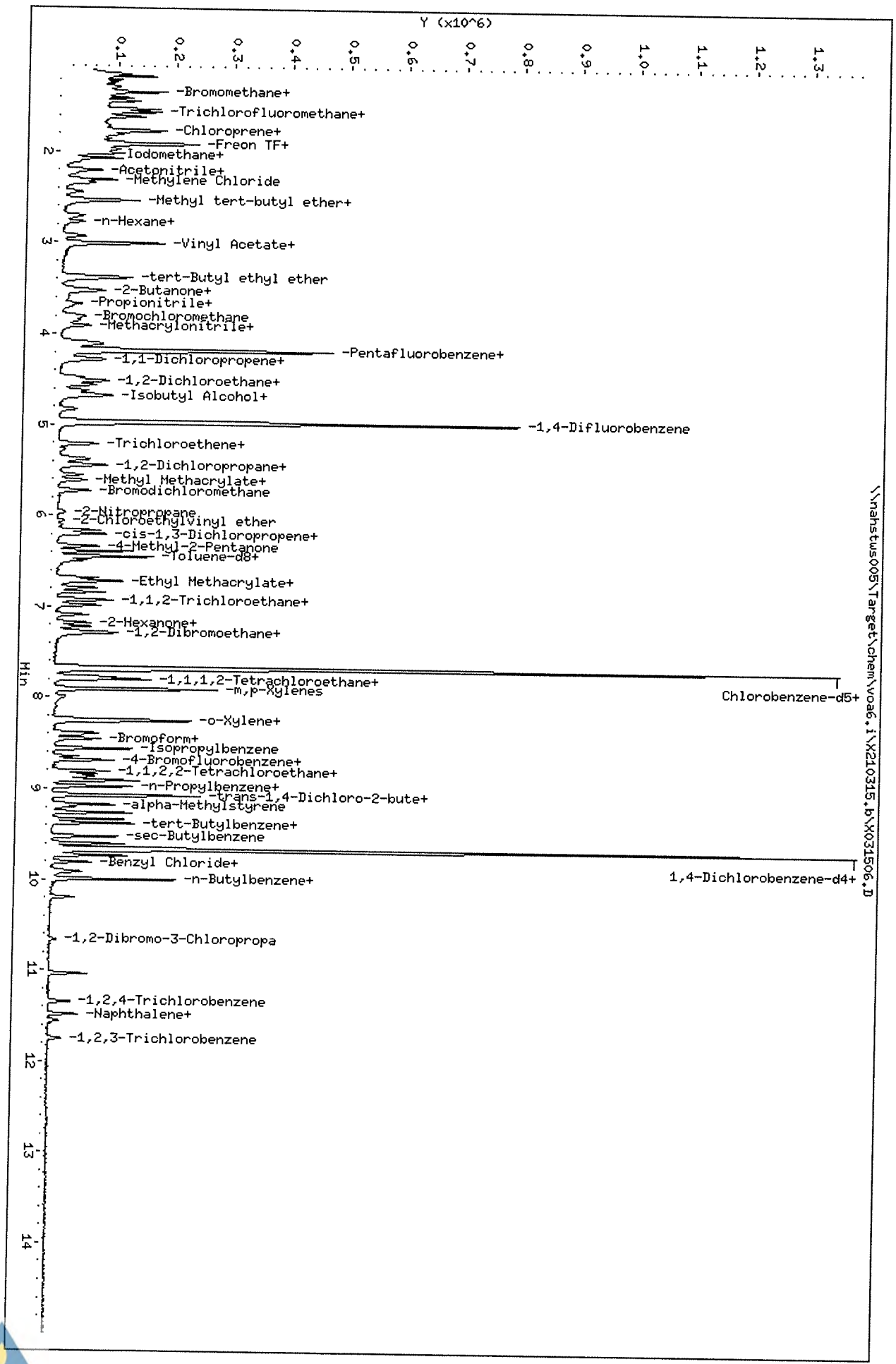
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	349267	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	610153	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.670	(1.000)	554236	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	252353	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	20536	5.00000	5.76
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	26207	5.00000	5.37
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	71229	5.00000	4.78
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	24836	5.00000	5.21
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	22013	5.00000	4.96
38 Trichloroethene	130	5.206	5.206	(1.048)	20575	5.00000	5.00
5 Vinyl Chloride	62	1.138	1.138	(0.272)	35678	5.00000	5.46 (M)

QC Flag Legend

M - Compound response manually integrated.

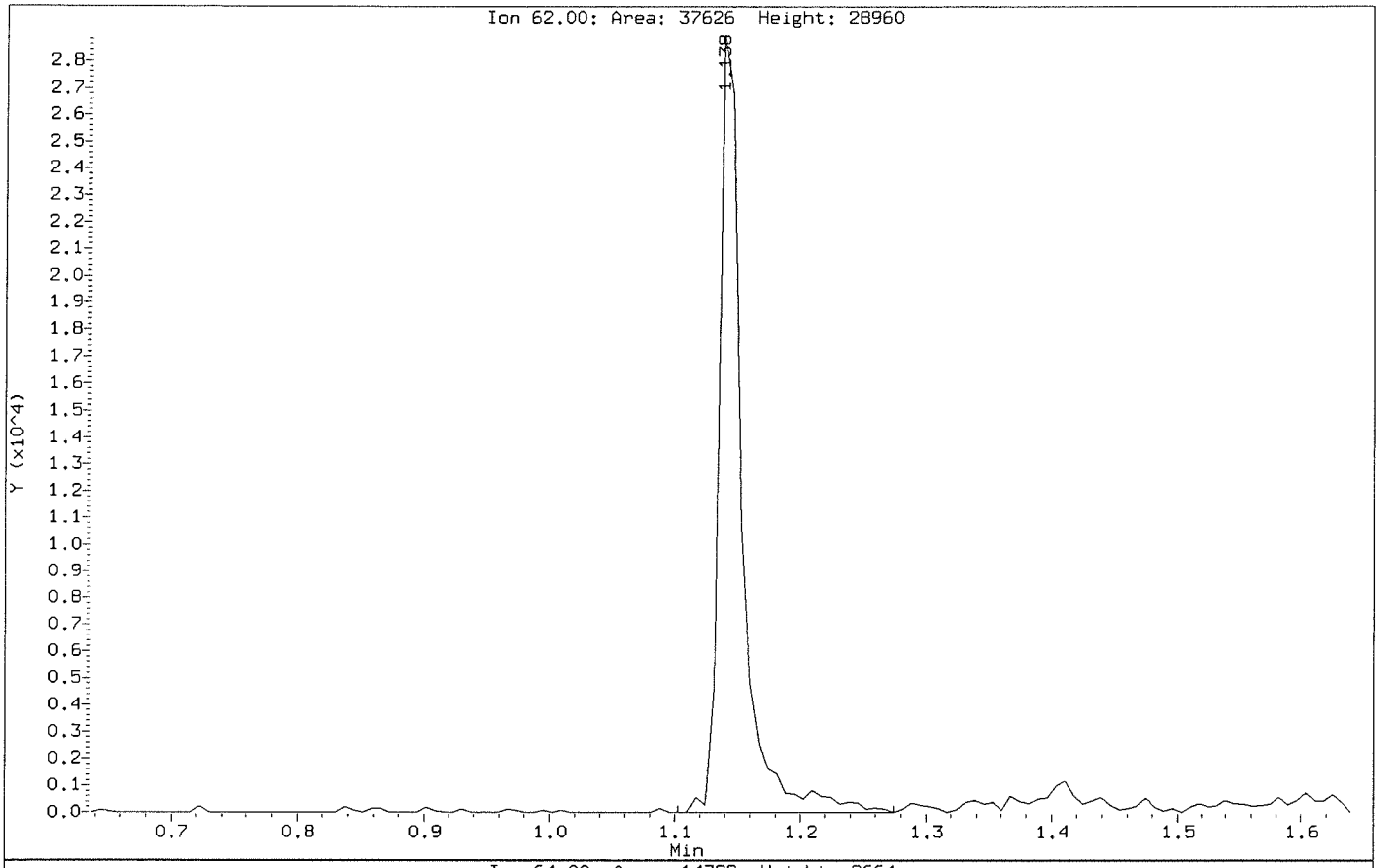


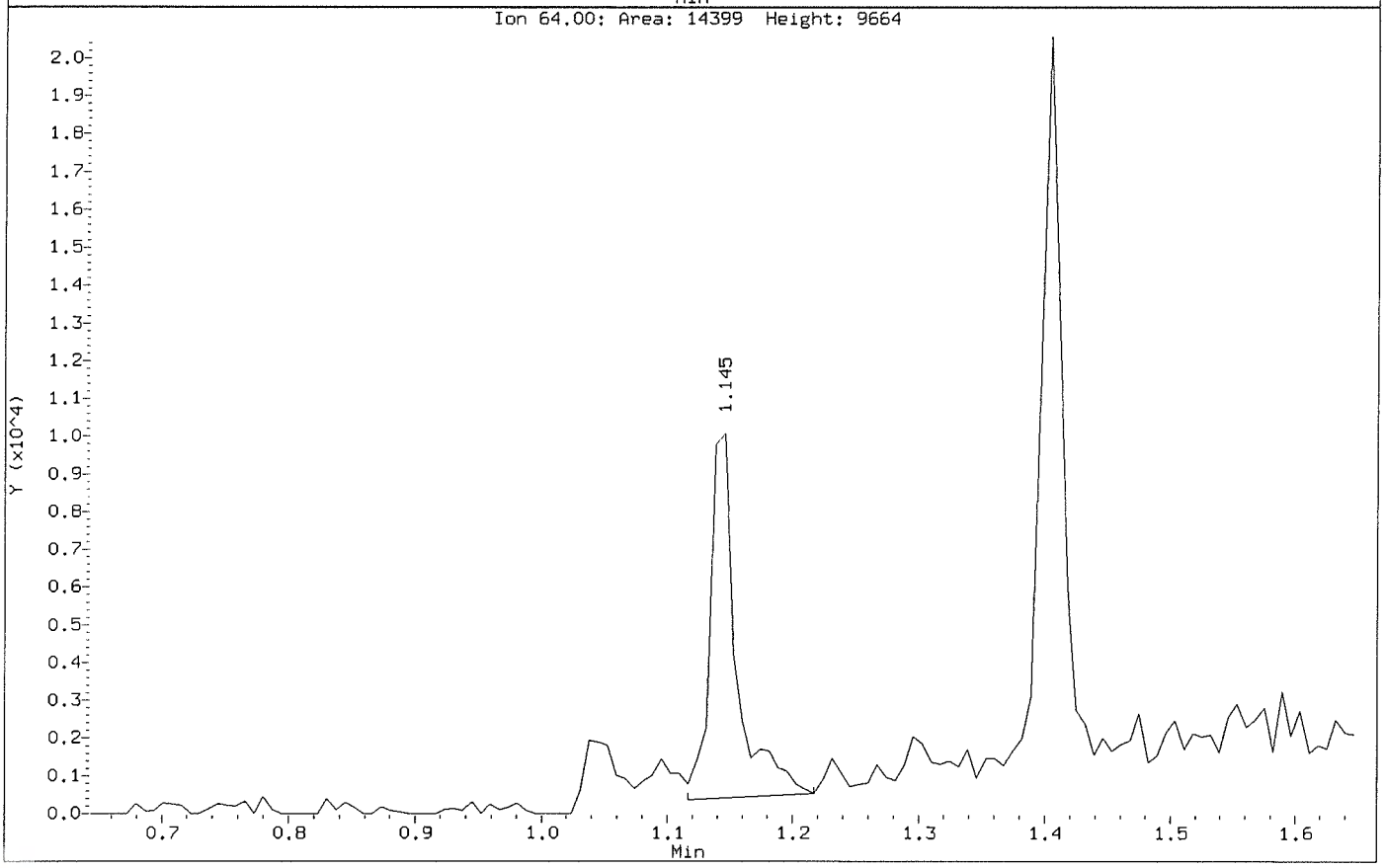
Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031506.D
Date : 15-MAR-2021 13:21
Client ID: VSTD005
Sample Info: VSTD005;VSTD005;1;5;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X210315.b\Before1\X031506.D
Injection Date: 15-MAR-2021 13:21
Instrument: voa6.i
Client Sample ID: VSTD005

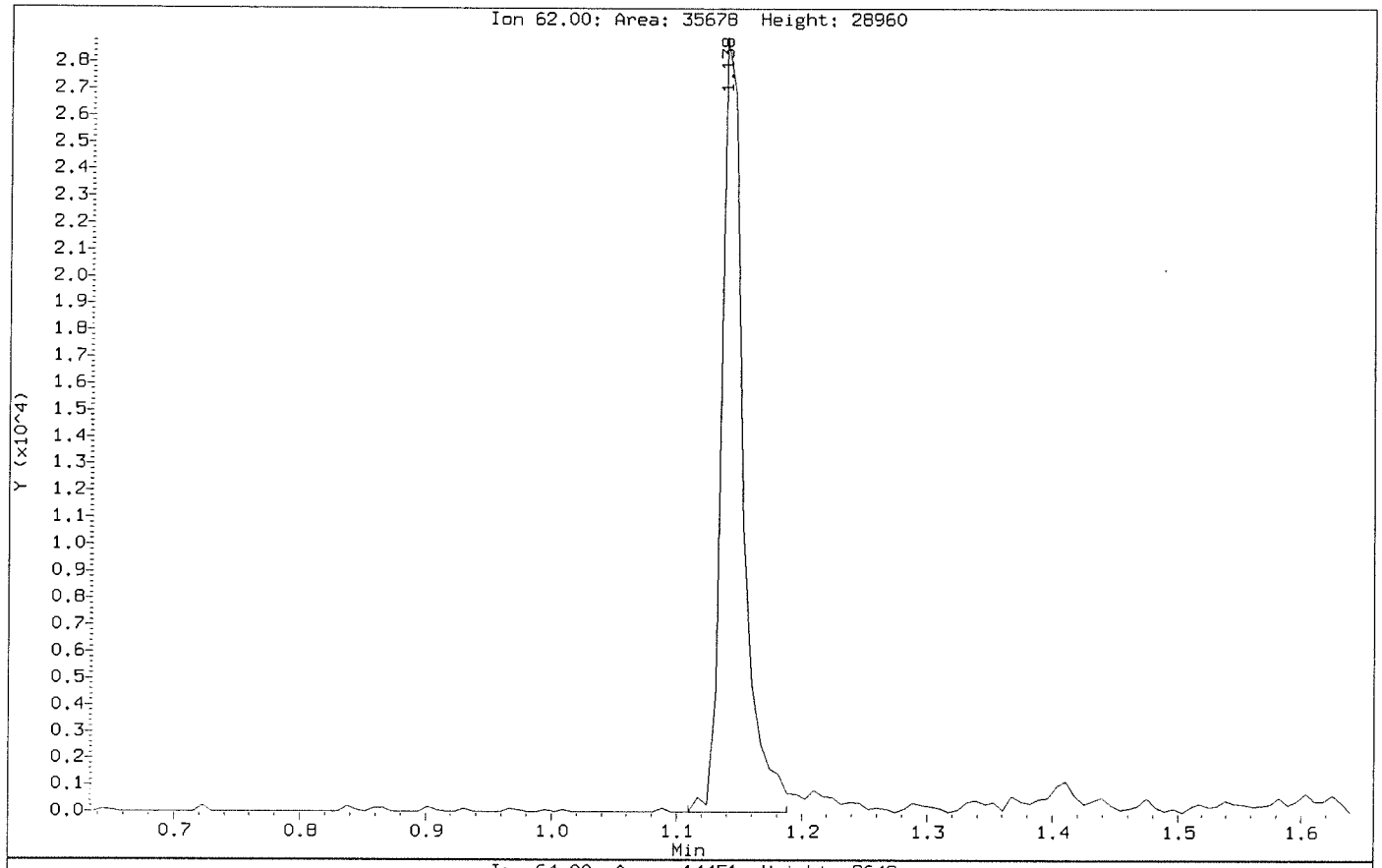
Compound: Vinyl Chloride
CAS Number: 75-01-4

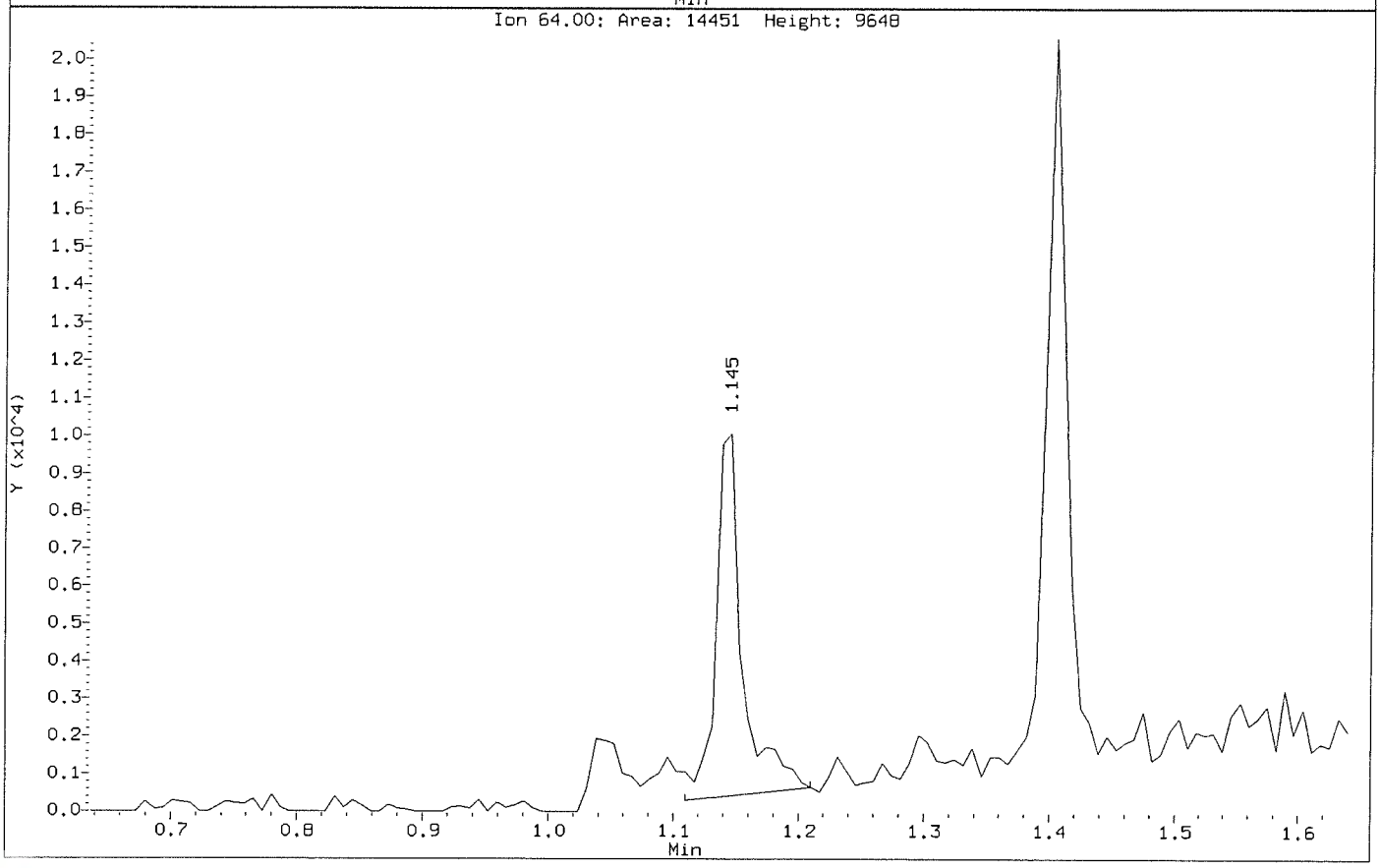




Data File: \\NAHSTWS005\Target\chem\voa6.i\X210315.b\X031506.D
Injection Date: 15-MAR-2021 13:21
Instrument: voa6.i
Client Sample ID: VSTD005

Compound: Vinyl Chloride
CAS Number: 75-01-4





Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031507.D Page 1
Report Date: 02-Apr-2021 14:49

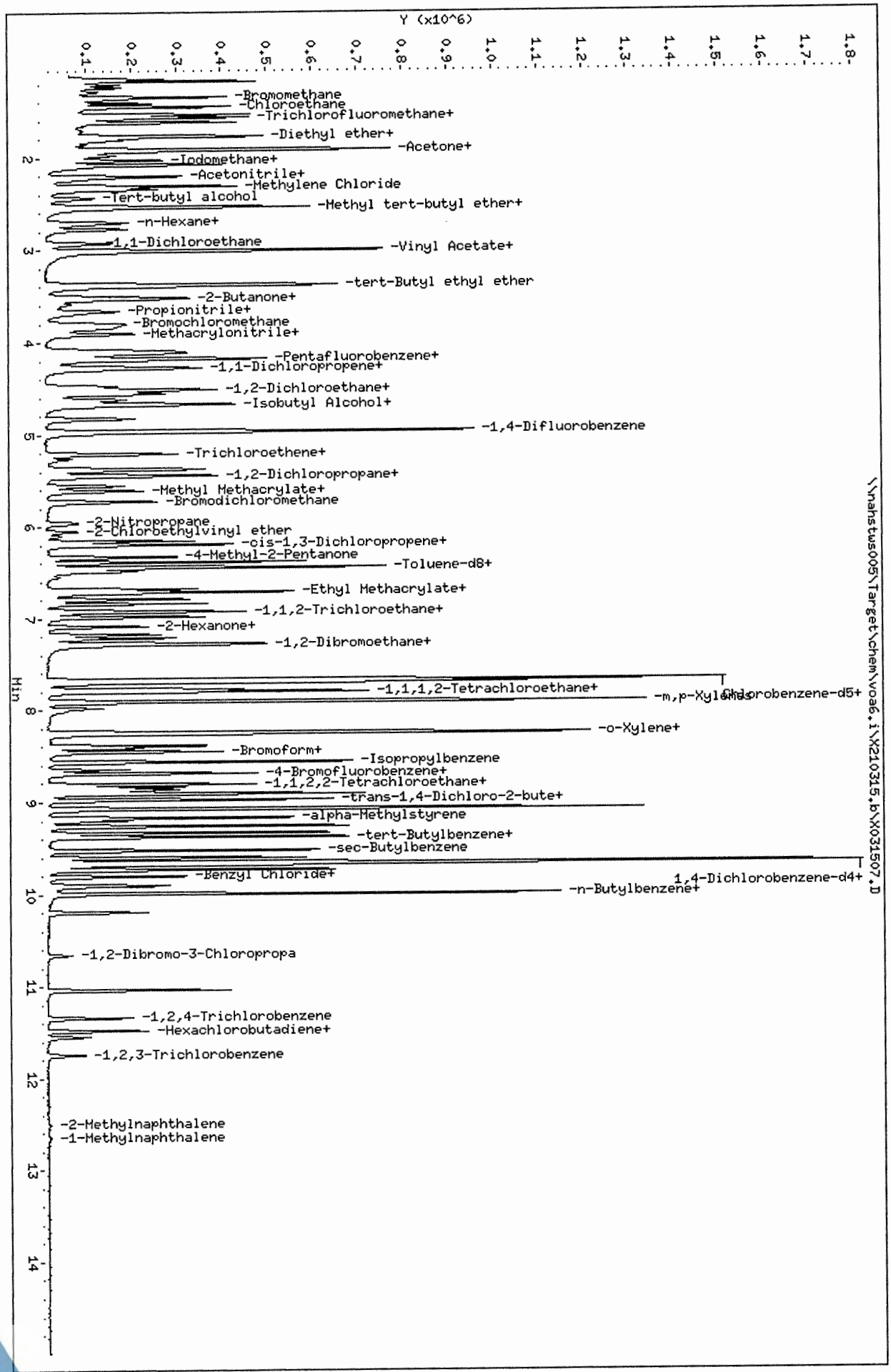
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031507.D
Lab Smp Id: VSTD020 Client Smp ID: VSTD020
Inj Date : 15-MAR-2021 13:42
Operator : PC Inst ID: voa6.i
Smp Info : VSTD020;VSTD020;1;6;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:49 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 13:21 Cal File: X031506.D
Als bottle: 8 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	362175	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	627586	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.670	(1.000)	604937	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	289255	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	89737	20.0000	20.87
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	98913	20.0000	20.04
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	301322	20.0000	18.53
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	102789	20.0000	20.28
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	88623	20.0000	19.28
38 Trichloroethene	130	5.206	5.206	(1.048)	83893	20.0000	19.86
5 Vinyl Chloride	62	1.145	1.145	(0.274)	140312	20.0000	20.74



Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031507.D
Date : 15-MAR-2021 13:42
Client ID: VSTD020
Sample Info: VSTD020;VSTD020;1;6;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031508.D Page 1
Report Date: 02-Apr-2021 14:49

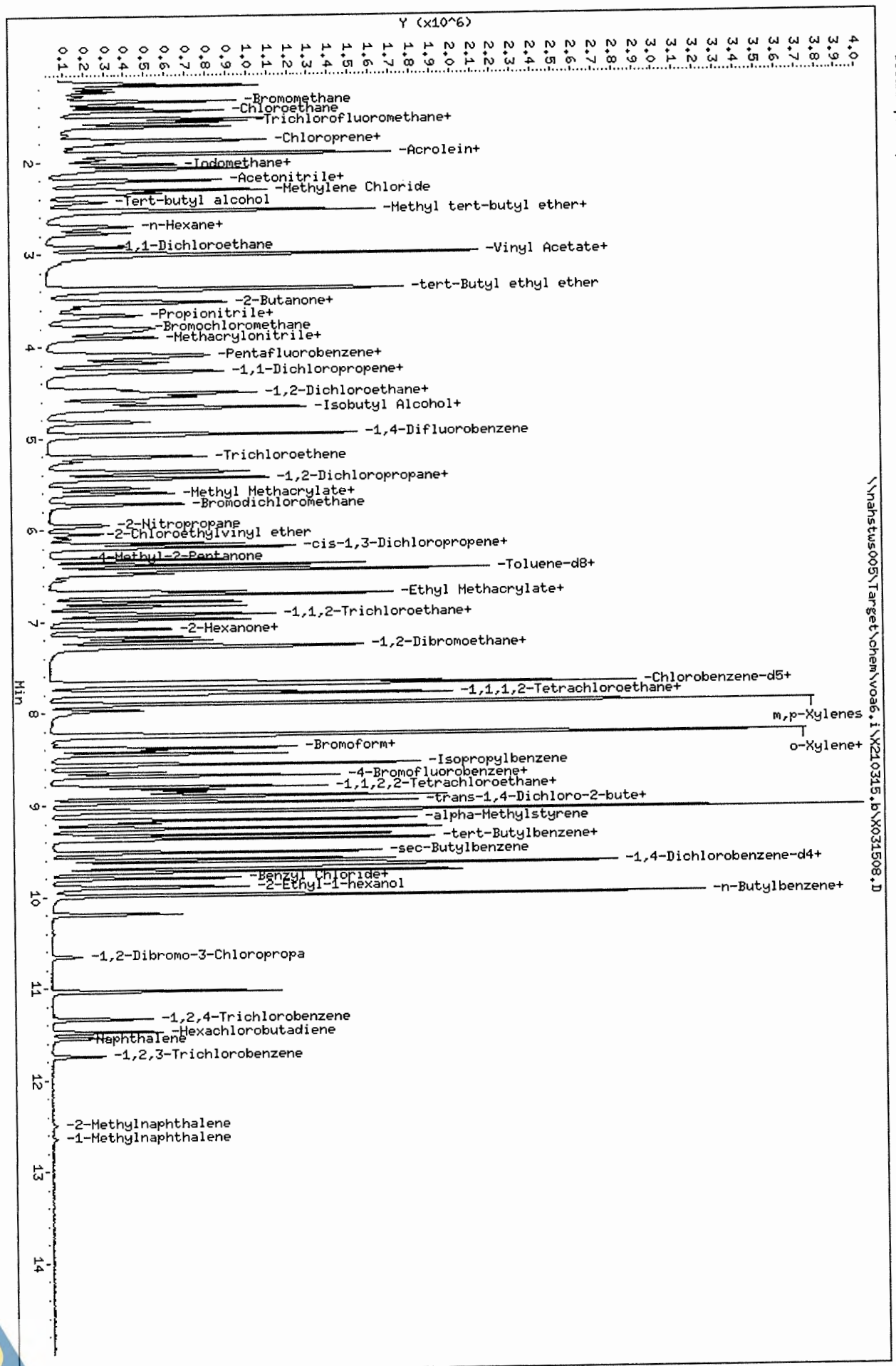
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031508.D
Lab Smp Id: VSTD050 Client Smp ID: VSTD050
Inj Date : 15-MAR-2021 14:03
Operator : PC Inst ID: voa6.i
Smp Info : VSTD050;VSTD050;1;7;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:49 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 13:42 Cal File: X031507.D
Als bottle: 9 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	422603	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	729427	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	709620	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	359679	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	236456	50.0000	45.80
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	291833	50.0000	49.91
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	834128	50.0000	43.74
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	307940	50.0000	49.81
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	244442	50.0000	45.58
38 Trichloroethene	130	5.206	5.206	(1.049)	219677	50.0000	44.74
5 Vinyl Chloride	62	1.145	1.145	(0.274)	353408	50.0000	44.77



Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031508.D
Date : 15-MAR-2021 14:03
Client ID: VSTD050
Sample Info: VSTD050;VSTD050;1;7;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031509.D Page 1
Report Date: 02-Apr-2021 14:49

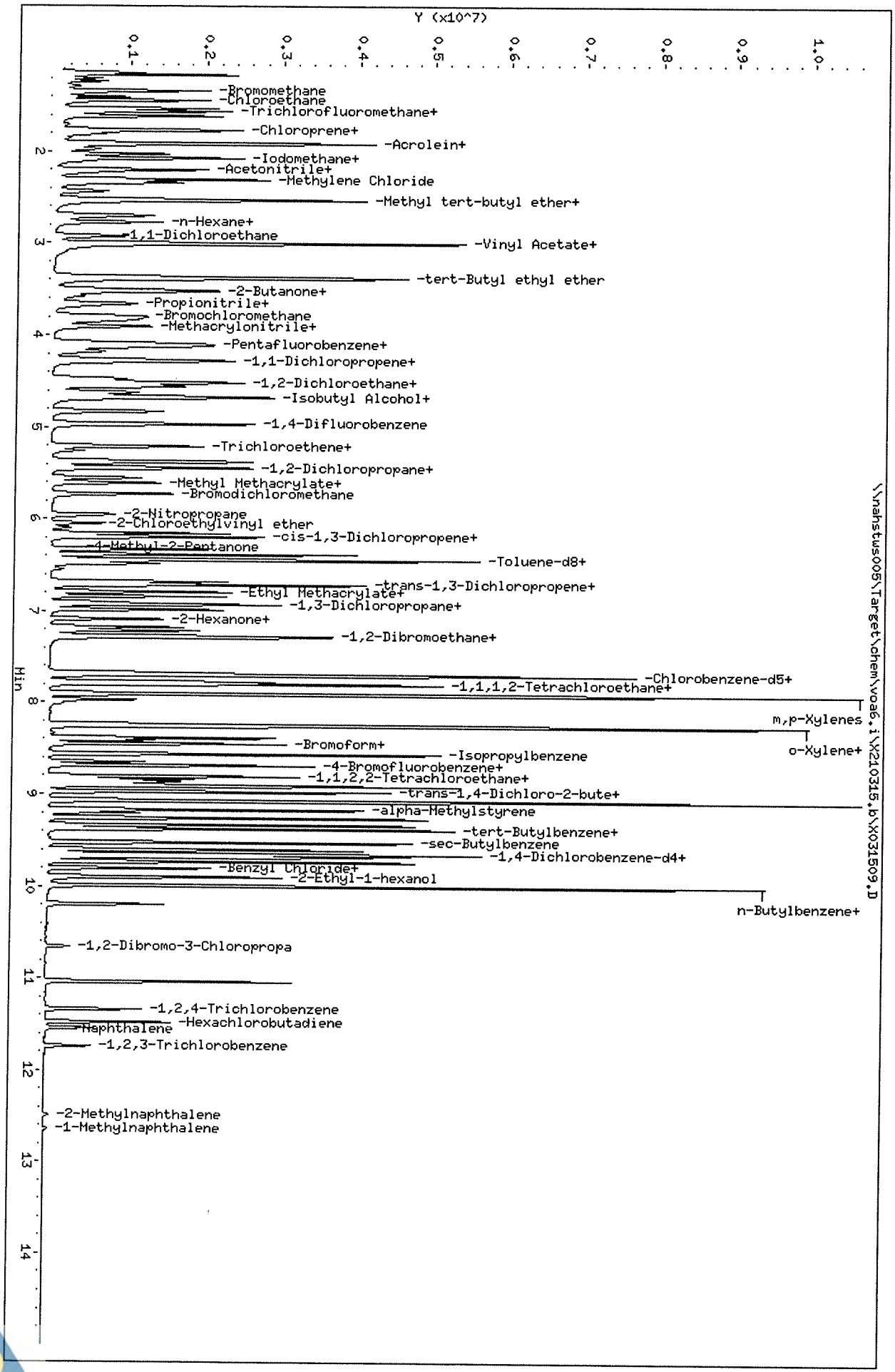
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031509.D
Lab Smp Id: VSTD100 Client Smp ID: VSTD100
Inj Date : 15-MAR-2021 14:24
Operator : PC Inst ID: voa6.i
Smp Info : VSTD100;VSTD100;1;8;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:49 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 10 Calibration Sample, Level: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	465500	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	826013	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	790600	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	424817	50.0000	
$	30 Dibromofluoromethane	113	4.103	4.103	(0.981)	572786	100.000	99.45
$	35 1,2-Dichloroethane-d4	65	4.469	4.469	(1.069)	670725	100.000	100.01
$	48 Toluene-d8	98	6.388	6.388	(0.833)	2094428	100.000	98.58
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	763478	100.000	100.02
	27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	580907	100.000	98.34
	38 Trichloroethene	130	5.206	5.206	(1.049)	551539	100.000	99.20
	5 Vinyl Chloride	62	1.145	1.145	(0.274)	771670	100.000	88.75



Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031509.D
Date : 15-MAR-2021 14:24
Client ID: VSTD100
Sample Info: VSTD100;VSTD100;1;8;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

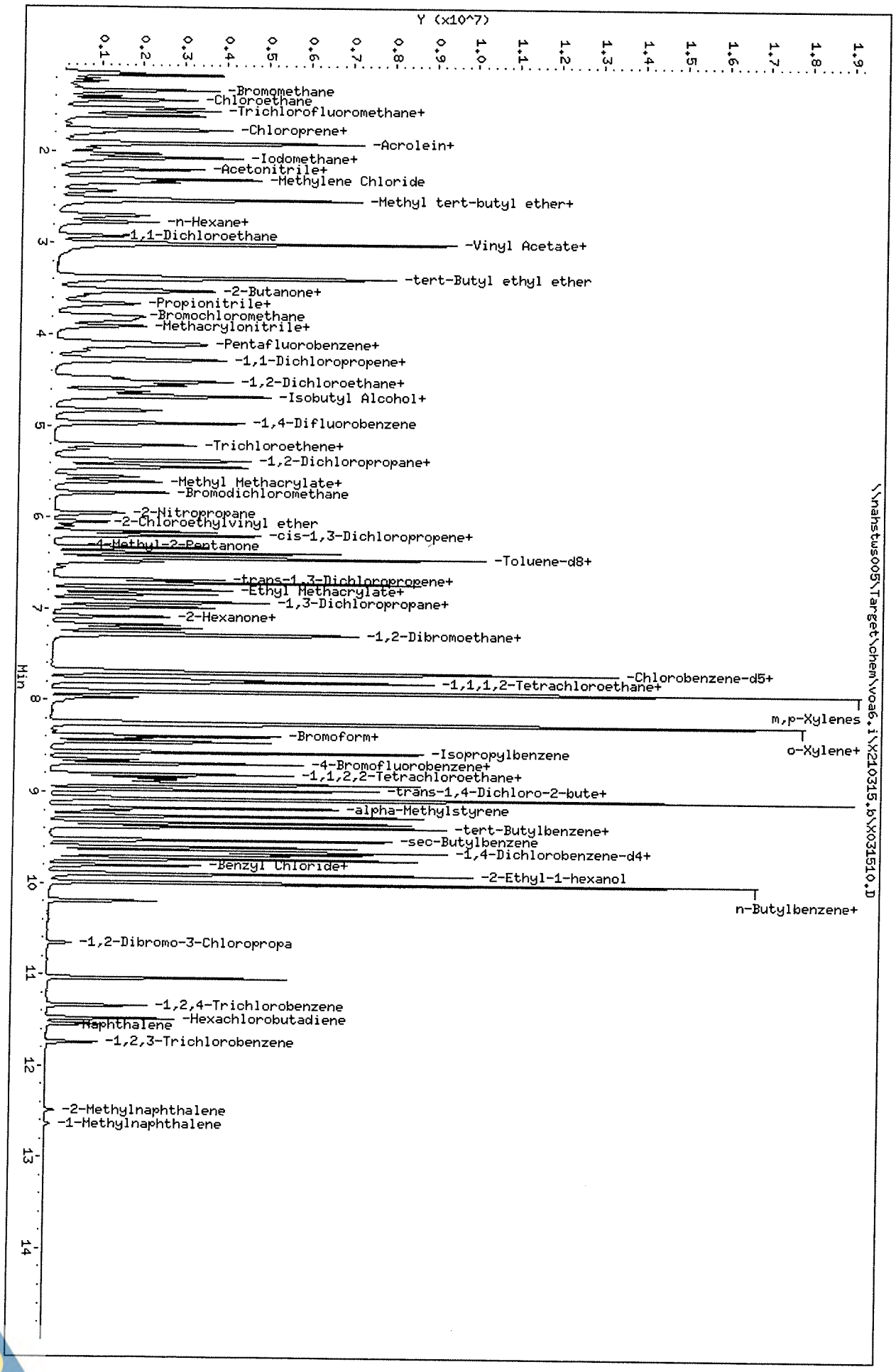
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031510.D
Lab Smp Id: VSTD150 Client Smp ID: VSTD150
Inj Date : 15-MAR-2021 14:45
Operator : PC Inst ID: voa6.i
Smp Info : VSTD150;VSTD150;1;9;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:49 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 14:24 Cal File: X031509.D
Als bottle: 11 Calibration Sample, Level: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	527392	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	967116	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	874794	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	484901	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	959846	150.000	146.59
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	1116579	150.000	141.22
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	3575474	150.000	152.09
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	1285122	150.000	136.13
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	996389	150.000	148.88
38 Trichloroethene	130	5.207	5.207	(1.048)	919855	150.000	141.30
5 Vinyl Chloride	62	1.138	1.138	(0.272)	1335275	150.000	135.55



Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031510.D
Date : 15-MAR-2021 14:45
Client ID: VSTD150
Sample Info: VSTD150;VSTD150;1;9;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031511.D Page 1
Report Date: 02-Apr-2021 14:49

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031511.D
Lab Smp Id: VSTD200 Client Smp ID: VSTD200
Inj Date : 15-MAR-2021 15:06
Operator : PC Inst ID: voa6.i
Smp Info : VSTD200;VSTD200;1;10;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:49 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 14:45 Cal File: X031510.D
Als bottle: 12 Calibration Sample, Level: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

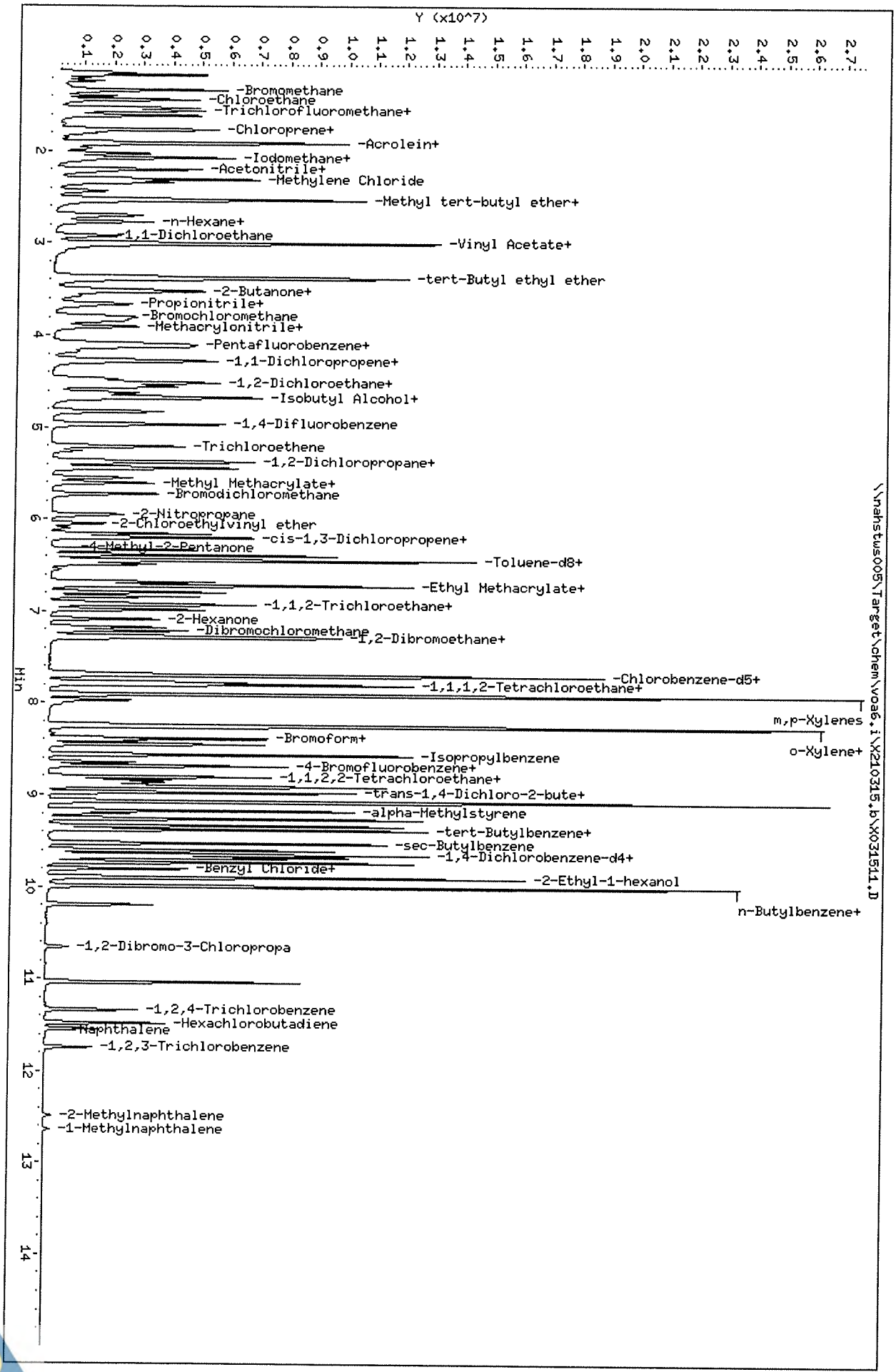
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	531465	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	983431	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	895624	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	479599	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	1345632	200.000	203.52(A)
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	1524648	200.000	182.61
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	4964049	200.000	206.25(A)
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	1813645	200.000	163.10
27 cis-1,2-Dichloroethene	96	3.523	3.523	(0.842)	1366171	200.000	202.57(A)
38 Trichloroethene	130	5.207	5.207	(1.048)	1237797	200.000	186.99
5 Vinyl Chloride	62	1.138	1.138	(0.272)	1747524	200.000	176.05

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.



Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031511.D
Date : 15-MAR-2021 15:06
Client ID: VSTD200
Sample Info: VSTD200;VSTD200;1;10;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031514.D Page 1
Report Date: 02-Apr-2021 14:49

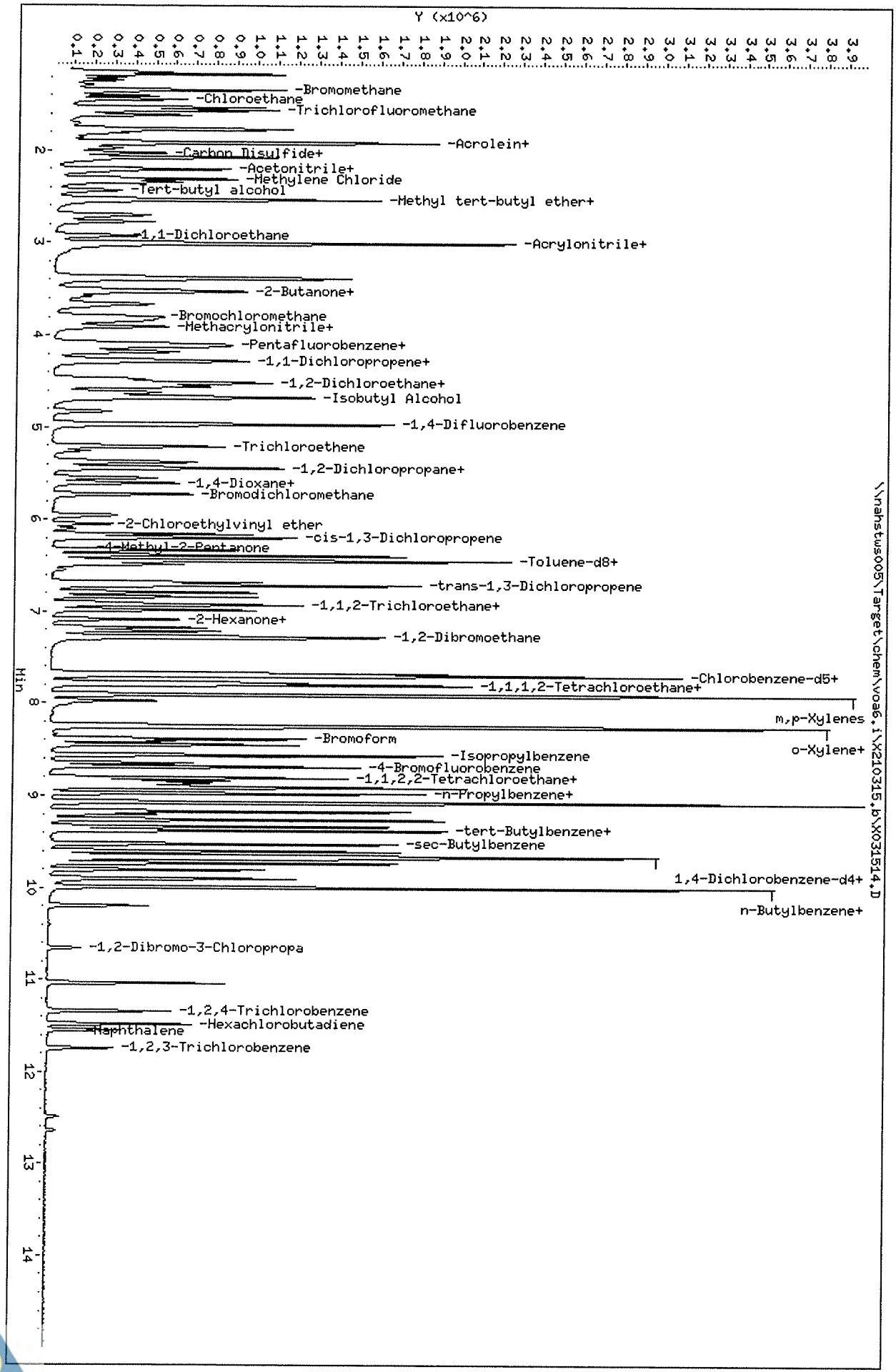
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210315.b\X031514.D
Lab Smp Id: ICV Client Smp ID: ICV
Inj Date : 15-MAR-2021 16:09
Operator : PC Inst ID: voa6.i
Smp Info : CCV;CCV;2;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210315.b\8260Wa.m
Meth Date : 02-Apr-2021 14:49 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 15:06 Cal File: X031511.D
Als bottle: 15 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	439797	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.970	(1.000)	768694	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	735361	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	380441	50.0000	
$	30 Dibromofluoromethane	113	4.103	4.103	(0.981)	261058	48.5246	48.52
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	301793	49.6126	49.61
$	48 Toluene-d8	98	6.388	6.388	(0.833)	921160	46.6152	46.61
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	334153	51.9787	51.97
	27 cis-1,2-Dichloroethene	96	3.523	3.523	(0.842)	254863	45.6674	45.66
	38 Trichloroethene	130	5.207	5.207	(1.049)	229253	44.3092	44.30
	5 Vinyl Chloride	62	1.138	1.138	(0.272)	355867	43.3236	43.32



Data File: \\nahstws005\Target\chem\voa6.i\X210315.b\X031514.D
Date : 15-MAR-2021 16:09
Client ID: ICV
Sample Info: CCV;CCV;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

MSVOA06 -Logbook

Batch: 44160 **Analyst:** Presenta Cabascango

Date: 03-24-2021 **Reviewer:**

Method: 8260 **Laboratory:** Houston

Comments:

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	03-24-2021 10:02 am	1.00	50 mL	50 mL	X032401.D	Liquid	Y	NA
2	CCV	CCV	03-24-2021 10:52 am	1.00	50 mL	50 mL	X032402.D	Liquid	Y	NA
3	BLANK	SAMP	03-24-2021 11:12 am	1.00	50 mL	50 mL	X032403.D	Liquid	Y	NA
4	CCB	SAMP	03-24-2021 11:33 am	1.00	50 mL	50 mL	X032404.D	Liquid	Y	NA
5	VLCSW-210324	LCS	03-24-2021 11:54 am	1.00	50 mL	50 mL	X032405.D	Liquid	Y	NA
6	BLANK	SAMP	03-24-2021 12:15 pm	1.00	50 mL	50 mL	X032406.D	Liquid	Y	NA
7	BLANK	SAMP	03-24-2021 12:37 pm	1.00	50 mL	50 mL	X032407.D	Liquid	Y	NA
8	VBLKW-210324	MBLK	03-24-2021 12:58 pm	1.00	50 mL	50 mL	X032408.D	Liquid	Y	NA
9	HS21031116-12	SAMP	03-24-2021 01:19 pm	1.00	50 mL	50 mL	X032409.D	Liquid	Y	NA
10	HS21031116-01	SAMP	03-24-2021 01:40 pm	1.00	50 mL	50 mL	X032410.D	Liquid	Y	NA
11	HS21031116-02	SAMP	03-24-2021 02:01 pm	1.00	50 mL	50 mL	X032411.D	Liquid	Y	NA
12	HS21031116-03	SAMP	03-24-2021 02:22 pm	1.00	50 mL	50 mL	X032412.D	Liquid	Y	NA
13	HS21031116-10	SAMP	03-24-2021 02:43 pm	1.00	50 mL	50 mL	X032413.D	Liquid	Y	NA
14	HS21031116-08	SAMP	03-24-2021 03:04 pm	1.00	50 mL	50 mL	X032414.D	Liquid	Y	NA
15	HS21031116-09	SAMP	03-24-2021 03:25 pm	1.00	50 mL	50 mL	X032415.D	Liquid	Y	NA
16	HS21031116-11	SAMP	03-24-2021 03:46 pm	1.00	50 mL	50 mL	X032416.D	Liquid	Y	NA
17	HS21031116-04	SAMP	03-24-2021 04:07 pm	1.00	50 mL	50 mL	X032417.D	Liquid	Y	NA
18	HS21031116-10MS	MS	03-24-2021 04:28 pm	1.00	50 mL	50 mL	X032418.D	Liquid	Y	NA
19	HS21031116-10MSD	MSD	03-24-2021 04:49 pm	1.00	50 mL	50 mL	X032419.D	Liquid	Y	NA
20	HS21031116-11	SAMP	03-24-2021 05:10 pm	5.00	10 mL	50 mL	X032420.D	Liquid	Y	NA
21	HS21031116-04	SAMP	03-24-2021 05:31 pm	10.00	5 mL	50 mL	X032421.D	Liquid	Y	NA
22	HS21031116-05	SAMP	03-24-2021 05:52 pm	1.00	50 mL	50 mL	X032422.D	Liquid	Y	NA
23	HS21031116-06	SAMP	03-24-2021 06:13 pm	1.00	50 mL	50 mL	X032423.D	Liquid	Y	NA
24	HS21031116-07	SAMP	03-24-2021 06:34 pm	1.00	50 mL	50 mL	X032424.D	Liquid	Y	NA
25	HS21031114-01	SAMP	03-24-2021 06:55 pm	1.00	50 mL	50 mL	X032425.D	Liquid	Y	NA
26	HS21031114-02	SAMP	03-24-2021 07:16 pm	1.00	50 mL	50 mL	X032426.D	Liquid	Y	NA
27	HS21031114-03	SAMP	03-24-2021 07:37 pm	1.00	50 mL	50 mL	X032427.D	Liquid	Y	NA
28	HS21031114-05	SAMP	03-24-2021 07:59 pm	1.00	50 mL	50 mL	X032428.D	Liquid	Y	NA
29	HS21031114-14	SAMP	03-24-2021 08:20 pm	1.00	50 mL	50 mL	X032429.D	Liquid	Y	NA
30	HS21031114-15	SAMP	03-24-2021 08:41 pm	1.00	50 mL	50 mL	X032430.D	Liquid	Y	NA
31	CCV-END	CCV	03-24-2021 09:02 pm	1.00	50 mL	50 mL	X032431.D	Liquid	Y	NA
32	BLANK	SAMP	03-24-2021 09:23 pm	1.00	50 mL	50 mL	X032440.D	Liquid	Y	NA
33	BFB	TUNE	03-24-2021 09:43 pm	1.00	50 mL	50 mL	Y032401.D	Liquid	Y	NA
34	CCV	CCV	03-24-2021 10:04 pm	1.00	50 mL	50 mL	Y032402a.D	Liquid	Y	NA
35	CCV	CCV	03-24-2021 10:25 pm	1.00	50 mL	50 mL	Y032403.D	Liquid	Y	NA
36	CCB	SAMP	03-24-2021 10:46 pm	1.00	50 mL	50 mL	Y032404.D	Liquid	Y	NA
37	VLCSW-210324	LCS	03-24-2021 11:07 pm	1.00	50 mL	50 mL	Y032405.D	Liquid	Y	NA
38	BLANK	SAMP	03-24-2021 11:28 pm	1.00	50 mL	50 mL	Y032406.D	Liquid	Y	NA
39	VBLKW-210324	MBLK	03-24-2021 11:49 pm	1.00	50 mL	50 mL	Y032407.D	Liquid	Y	NA
40	HS21030874-13	SAMP	03-25-2021 12:10 am	1.00	50 mL	50 mL	Y032408.D	Liquid	Y	NA
41	HS21031052-07	SAMP	03-25-2021 12:31 am	1.00	50 mL	50 mL	Y032409.D	Liquid	Y	NA

MSVOA06 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
42	HS21030874-08	SAMP	03-25-2021 12:53 am	1.00	50 mL	50 mL	Y032410.D	Liquid	Y	NA
43	HS21030874-06	SAMP	03-25-2021 01:14 am	1.00	50 mL	50 mL	Y032411.D	Liquid	Y	NA
44	HS21030874-08MS	MS	03-25-2021 01:35 am	1.00	50 mL	50 mL	Y032412.D	Liquid	Y	NA
45	HS21030874-08MSD	MSD	03-25-2021 01:56 am	1.00	50 mL	50 mL	Y032413.D	Liquid	Y	NA
46	BLANK	SAMP	03-25-2021 02:17 am	1.00	50 mL	50 mL	Y032414.D	Liquid	Y	NA
47	HS21030874-01	SAMP	03-25-2021 02:38 am	1.00	50 mL	50 mL	Y032415.D	Liquid	Y	NA
48	HS21030874-02	SAMP	03-25-2021 02:59 am	1.00	50 mL	50 mL	Y032416.D	Liquid	Y	NA
49	HS21030874-03	SAMP	03-25-2021 03:20 am	1.00	50 mL	50 mL	Y032417.D	Liquid	Y	NA
50	HS21030874-04	SAMP	03-25-2021 03:41 am	1.00	50 mL	50 mL	Y032418.D	Liquid	Y	NA
51	HS21030874-05	SAMP	03-25-2021 04:02 am	1.00	50 mL	50 mL	Y032419.D	Liquid	Y	NA
52	HS21030874-07	SAMP	03-25-2021 04:23 am	1.00	50 mL	50 mL	Y032420.D	Liquid	Y	NA
53	HS21030874-09	SAMP	03-25-2021 04:44 am	1.00	50 mL	50 mL	Y032421.D	Liquid	Y	NA
54	HS21030874-10	SAMP	03-25-2021 05:05 am	1.00	50 mL	50 mL	Y032422.D	Liquid	Y	NA
55	HS21030874-11	SAMP	03-25-2021 05:26 am	1.00	50 mL	50 mL	Y032423.D	Liquid	Y	NA
56	HS21030874-12	SAMP	03-25-2021 05:48 am	1.00	50 mL	50 mL	Y032424.D	Liquid	Y	NA
57	HS21031052-01	SAMP	03-25-2021 06:09 am	1.00	50 mL	50 mL	Y032425.D	Liquid	Y	NA
58	HS21031052-02	SAMP	03-25-2021 06:30 am	1.00	50 mL	50 mL	Y032426.D	Liquid	Y	NA
59	HS21031052-03	SAMP	03-25-2021 06:51 am	1.00	50 mL	50 mL	Y032427.D	Liquid	Y	NA
60	HS21031052-04	SAMP	03-25-2021 07:12 am	1.00	50 mL	50 mL	Y032428.D	Liquid	Y	NA
61	HS21031052-05	SAMP	03-25-2021 07:33 am	1.00	50 mL	50 mL	Y032429.D	Liquid	Y	NA
62	HS21031052-06	SAMP	03-25-2021 07:54 am	1.00	50 mL	50 mL	Y032430.D	Liquid	Y	NA
63	CCV-END	CCV	03-25-2021 08:15 am	1.00	50 mL	50 mL	Y032431.D	Liquid	Y	NA
64	BLANK	SAMP	03-25-2021 08:36 am	1.00	50 mL	50 mL	Y032440.D	Liquid	Y	NA

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS21031052

	CLIENT SAMPLE NO.	SMC1 #	SMC2 (DCE)#	SMC3 (TOL)#	OTHER #	TOT OUT
01	VLCSW-210324	96	94	94	97	0
02	VBLKW-210324	83	83	99	86	0
03	HS21031052-07	83	82	100	86	0
04	HS21030874-08MS	88	83	95	94	0
05	HS21030874-08MSD	87	85	95	90	0
06	HS21031052-01	83	83	101	89	0
07	HS21031052-02	84	83	103	87	0
08	HS21031052-03	87	84	98	85	0
09	HS21031052-04	88	83	100	89	0
10	HS21031052-05	85	83	100	87	0
11	HS21031052-06	85	81	99	88	0
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28						

		QC LIMITS
SMC1	= Dibromofluoromethane	(0-130)
SMC2 (DCE)	= 1,2-Dichloroethane-d4	(0-130)
SMC3 (TOL)	= Toluene-d8	(0-130)
OTHER	= 4-Bromofluorobenzene	(0-130)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

VBLKW-210324

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS21031052

Lab File ID: Y032407 Lab Sample ID: VBLKW-210324

Date Analyzed: 03/24/21 Time Analyzed: 2349

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA6

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VLCSW-210324	VLCSW-210324	Y032405	2307
02	HS21031052-07	HS21031052-07	Y032409	0031
03	HS21030874-08MS	HS21030874-08MS	Y032412	0135
04	HS21030874-08MSD	HS21030874-08MSD	Y032413	0156
05	HS21031052-01	HS21031052-01	Y032425	0609
06	HS21031052-02	HS21031052-02	Y032426	0630
07	HS21031052-03	HS21031052-03	Y032427	0651
08	HS21031052-04	HS21031052-04	Y032428	0712
09	HS21031052-05	HS21031052-05	Y032429	0733
10	HS21031052-06	HS21031052-06	Y032430	0754
11				
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COMMENTS:

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS21031052

Lab File ID: Y032401 BFB Injection Date: 03/24/21

Instrument ID: VOA6 BFB Injection Time: 2143

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	23.8
75	30.0 - 60.0% of mass 95	56.9
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.4
173	Less than 2.0% of mass 174	1.1 (1.2)1
174	Greater than 50.0% of mass 95	91.0
175	5.0 - 9.0% of mass 174	6.7 (7.4)1
176	95.0 - 101.0% of mass 174	87.1 (95.8)1
177	5.0 - 9.0% of mass 176	6.6 (7.6)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CCV	CCV	Y032403	03/24/21	2225
02	VLCSW-210324	VLCSW-210324	Y032405	03/24/21	2307
03	VBLKW-210324	VBLKW-210324	Y032407	03/24/21	2349
04	HS21031052-07	HS21031052-07	Y032409	03/25/21	0031
05	HS21030874-08MS	HS21030874-08MS	Y032412	03/25/21	0135
06	HS21030874-08MSD	HS21030874-08MSD	Y032413	03/25/21	0156
07	HS21031052-01	HS21031052-01	Y032425	03/25/21	0609
08	HS21031052-02	HS21031052-02	Y032426	03/25/21	0630
09	HS21031052-03	HS21031052-03	Y032427	03/25/21	0651
10	HS21031052-04	HS21031052-04	Y032428	03/25/21	0712
11	HS21031052-05	HS21031052-05	Y032429	03/25/21	0733
12	HS21031052-06	HS21031052-06	Y032430	03/25/21	0754
13	CCV-END	CCV-END	Y032431	03/25/21	0815
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS21031052

Instrument ID: VOA6 Calibration Date: 03/24/21 Time: 2225

Lab File ID: Y032403 Init. Calib. Date(s): 03/15/21 03/15/21

Init. Calib. Times: 1137 1506

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Vinyl Chloride	0.9340000	0.8908589	0.8908589	0.1	4.62	20.00	AVRG
cis-1,2-Dichloroethene	0.6340000	0.5914390	0.5914390	0.1	6.71	20.00	AVRG
Trichloroethene	0.3360000	0.3418477	0.3418477	0.2	-1.74	20.00	AVRG
Dibromofluoromethane	48.394005	50.000000	0.5919549	0.1	3.21	20.00	LINR
1,2-Dichloroethane-d4	49.927503	50.000000	0.6907176	0.1	0.14	20.00	2RDR
Toluene-d8	1.3430000	1.2240969	1.2240969	0.1	8.85	20.00	AVRG
4-Bromofluorobenzene	50.617215	50.000000	0.4414980	0.1	-1.23	20.00	2RDR

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS21031052

Instrument ID: VOA6 Calibration Date: 03/25/21 Time: 0815

Lab File ID: Y032431 Init. Calib. Date(s): 03/15/21 03/15/21

Init. Calib. Times: 1137 1506

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Vinyl Chloride	0.9340000	0.8537697	0.8537697	0.1	8.59	50.00	AVRG
cis-1,2-Dichloroethene	0.6340000	0.5838323	0.5838323	0.1	7.91	50.00	AVRG
Trichloroethene	0.3360000	0.3143227	0.3143227	0.2	6.45	50.00	AVRG
Dibromofluoromethane	49.127704	50.000000	0.6011301	0.1	1.74	50.00	LINR
1,2-Dichloroethane-d4	48.855831	50.000000	0.6753880	0.1	2.29	50.00	2RDR
Toluene-d8	1.3430000	1.1976573	1.1976573	0.1	10.82	50.00	AVRG
4-Bromofluorobenzene	52.136028	50.000000	0.4559034	0.1	-4.27	50.00	2RDR

FORM VII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS21031052

Lab File ID (Standard): Y032403 Date Analyzed: 03/24/21

Instrument ID: VOA6 Time Analyzed: 2225

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS1 AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	246186	4.18	423010	4.96	411157	7.67
	UPPER LIMIT	492372	4.68	846020	5.46	822314	8.17
	LOWER LIMIT	123093	3.68	211505	4.46	205579	7.17
	CLIENT SAMPLE NO.						
01	VLCSW-210324	213787	4.18	364777	4.96	346522	7.67
02	VBLKW-210324	256475	4.18	399631	4.96	352948	7.67
03	HS21031052-07	258210	4.18	389980	4.97	350865	7.67
04	HS21030874-08MS	274212	4.18	427019	4.96	409437	7.67
05	HS21030874-08MSD	271052	4.18	432483	4.97	395567	7.67
06	HS21031052-01	248403	4.18	370882	4.96	331000	7.67
07	HS21031052-02	253910	4.18	384550	4.96	335981	7.67
08	HS21031052-03	236119	4.18	361660	4.97	326355	7.67
09	HS21031052-04	237502	4.18	359771	4.96	328826	7.67
10	HS21031052-05	239834	4.18	370332	4.97	337793	7.67
11	HS21031052-06	240859	4.18	372775	4.96	333452	7.67
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS1 = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS21031052

Lab File ID (Standard): Y032403 Date Analyzed: 03/24/21

Instrument ID: VOA6 Time Analyzed: 2225

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS4(DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	219617	9.66				
	UPPER LIMIT	439234	10.16				
	LOWER LIMIT	109809	9.16				
	CLIENT SAMPLE NO.						
01	VLCSW-210324	177891	9.66				
02	VBLKW-210324	157473	9.66				
03	HS21031052-07	153450	9.66				
04	HS21030874-08MS	210205	9.66				
05	HS21030874-08MSD	190498	9.66				
06	HS21031052-01	139502	9.66				
07	HS21031052-02	141217	9.66				
08	HS21031052-03	140617	9.66				
09	HS21031052-04	156374	9.66				
10	HS21031052-05	152441	9.66				
11	HS21031052-06	148443	9.66				
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS4 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032401.D

Date : 24-MAR-2021 21:43

Client ID: BFB

Instrument: voa6.i

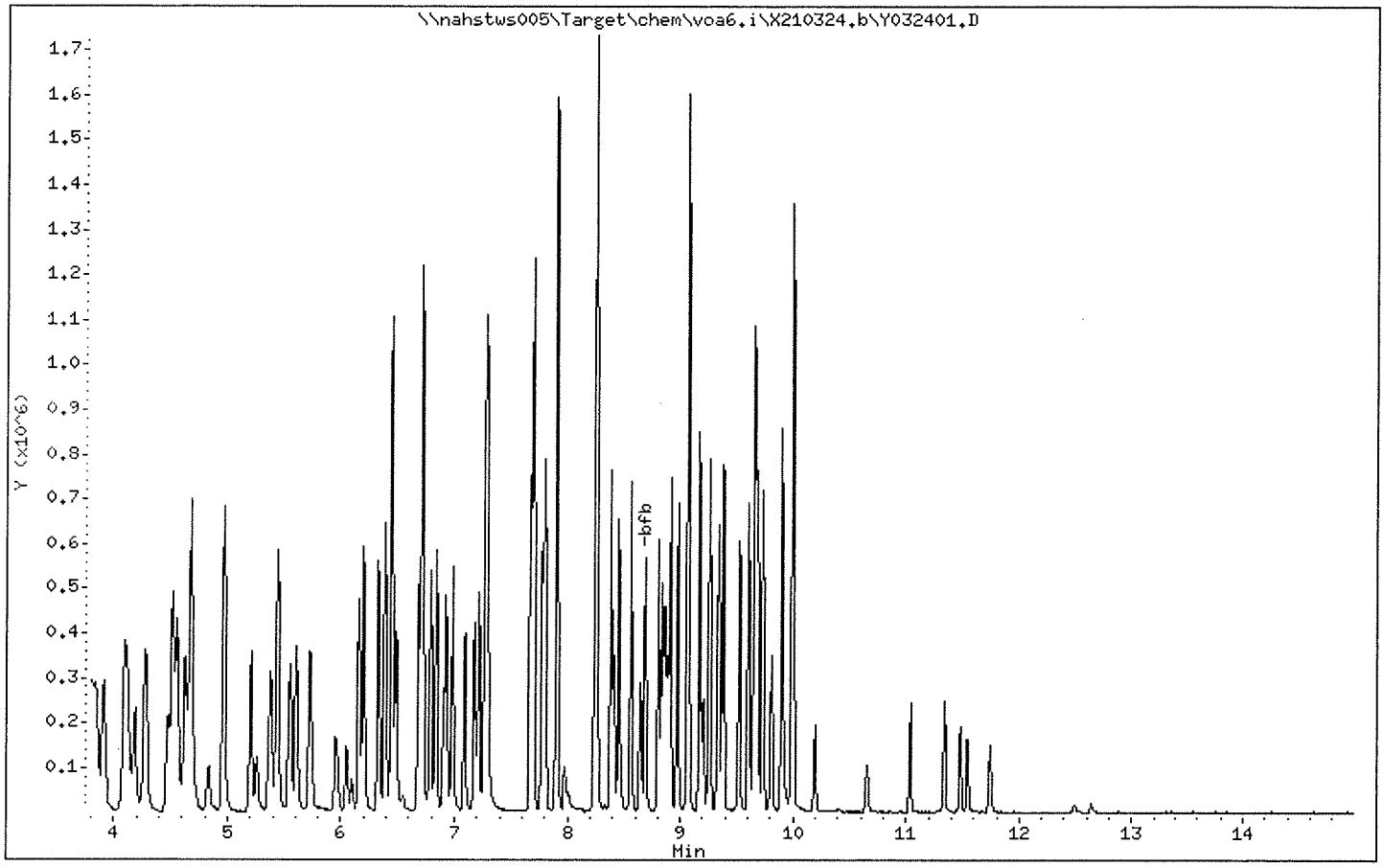
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032401.D

Date : 24-MAR-2021 21:43

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

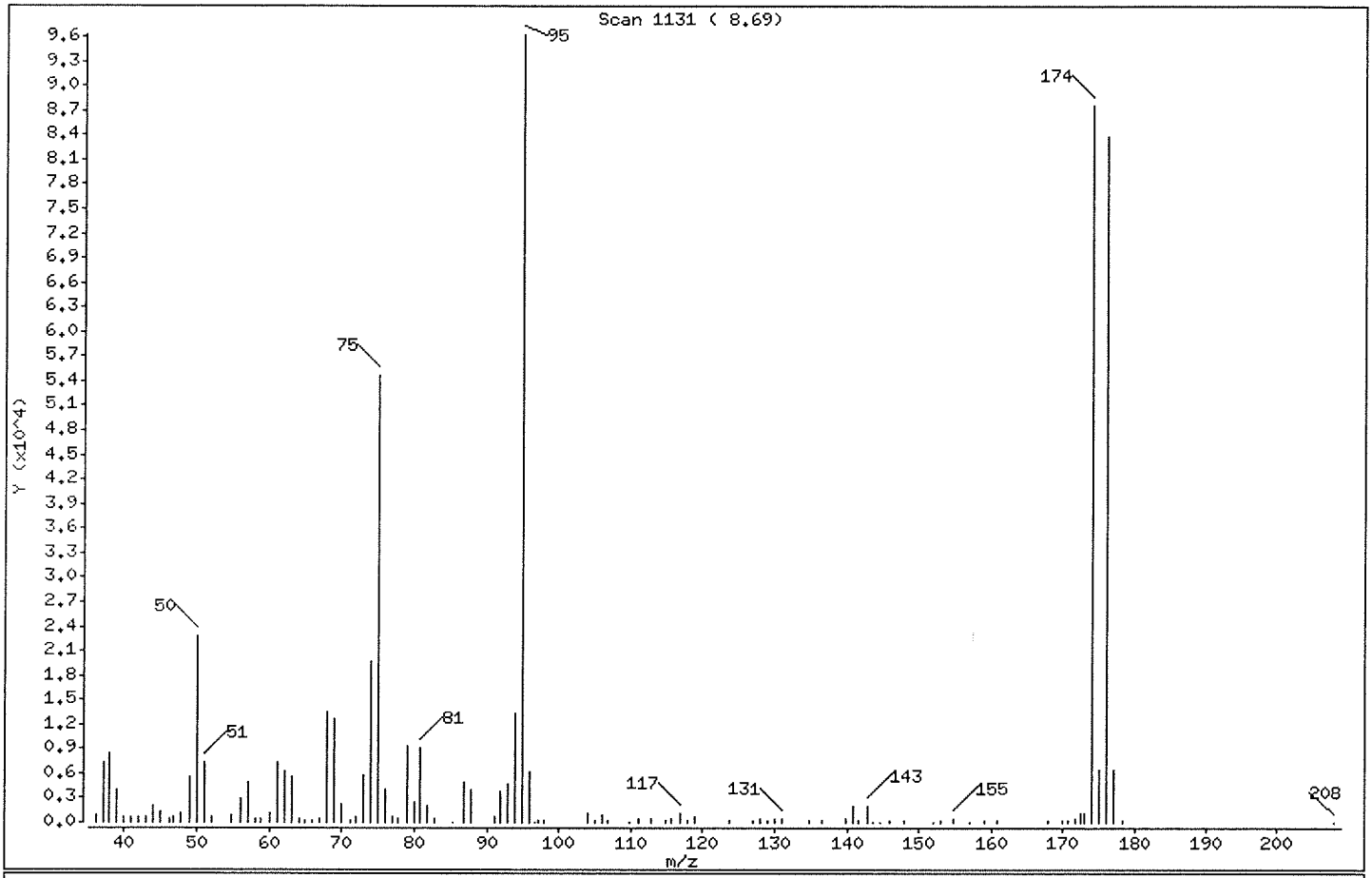
Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	23.78
75	30.00 - 60.00% of mass 95	56.87
96	5.00 - 9.00% of mass 95	6.44
173	Less than 2.00% of mass 174	1.08 (1.18)
174	Greater than 50.00% of mass 95	90.96
175	5.00 - 9.00% of mass 174	6.69 (7.35)
176	95.00 - 101.00% of mass 174	87.15 (95.81)
177	5.00 - 9.00% of mass 176	6.59 (7.56)

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032401.D

Date : 24-MAR-2021 21:43

Client ID: BFB Instrument: voa6.i

Sample Info: BFB:BFB:3:;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

Data File: Y032401.D
Spectrum: Scan 1131 (8.69)
Location of Maximum: 95.00
Number of points: 104

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.10	988	65.00	154	96.00	6201	142.90	2056
37.00	7334	66.00	130	96.80	101	143.70	53
38.00	8360	67.00	386	97.20	133	144.70	55
39.00	3966	68.00	13423	97.90	197	145.80	220
40.00	716	69.00	12525	103.90	1203	147.80	122
41.00	647	70.00	2114	104.90	116	152.00	100
42.00	699	71.10	186	105.90	833	152.90	243
42.90	622	72.00	695	106.70	130	154.80	441
44.00	2087	73.00	5670	109.70	91	157.10	64
45.00	1313	74.00	19720	111.00	366	158.90	190
46.10	349	75.00	54736	112.80	398	160.90	197
46.80	700	76.00	3934	114.90	204	167.90	146
47.80	1139	77.10	640	115.70	366	170.00	130
49.00	5565	77.80	510	116.90	1066	170.70	192
50.00	22888	78.90	9221	118.00	320	171.60	473
50.90	7322	80.00	2485	118.80	561	172.40	1005
52.10	700	80.90	8983	123.70	122	173.00	1036
54.90	953	81.80	2004	126.90	112	173.90	87544
56.10	2944	82.90	423	128.00	380	174.90	6438
57.00	4806	85.40	74	128.90	120	175.90	83872
58.00	445	86.90	4908	129.90	380	176.90	6342
58.90	333	87.90	3912	130.90	450	178.10	126
60.00	1125	91.10	558	134.80	276	208.00	88
61.00	7191	91.90	3843	136.60	163		
62.00	6251	92.90	4629	139.80	542		
63.00	5588	94.00	13324	140.90	2043		
64.10	447	95.00	96240	141.70	281		

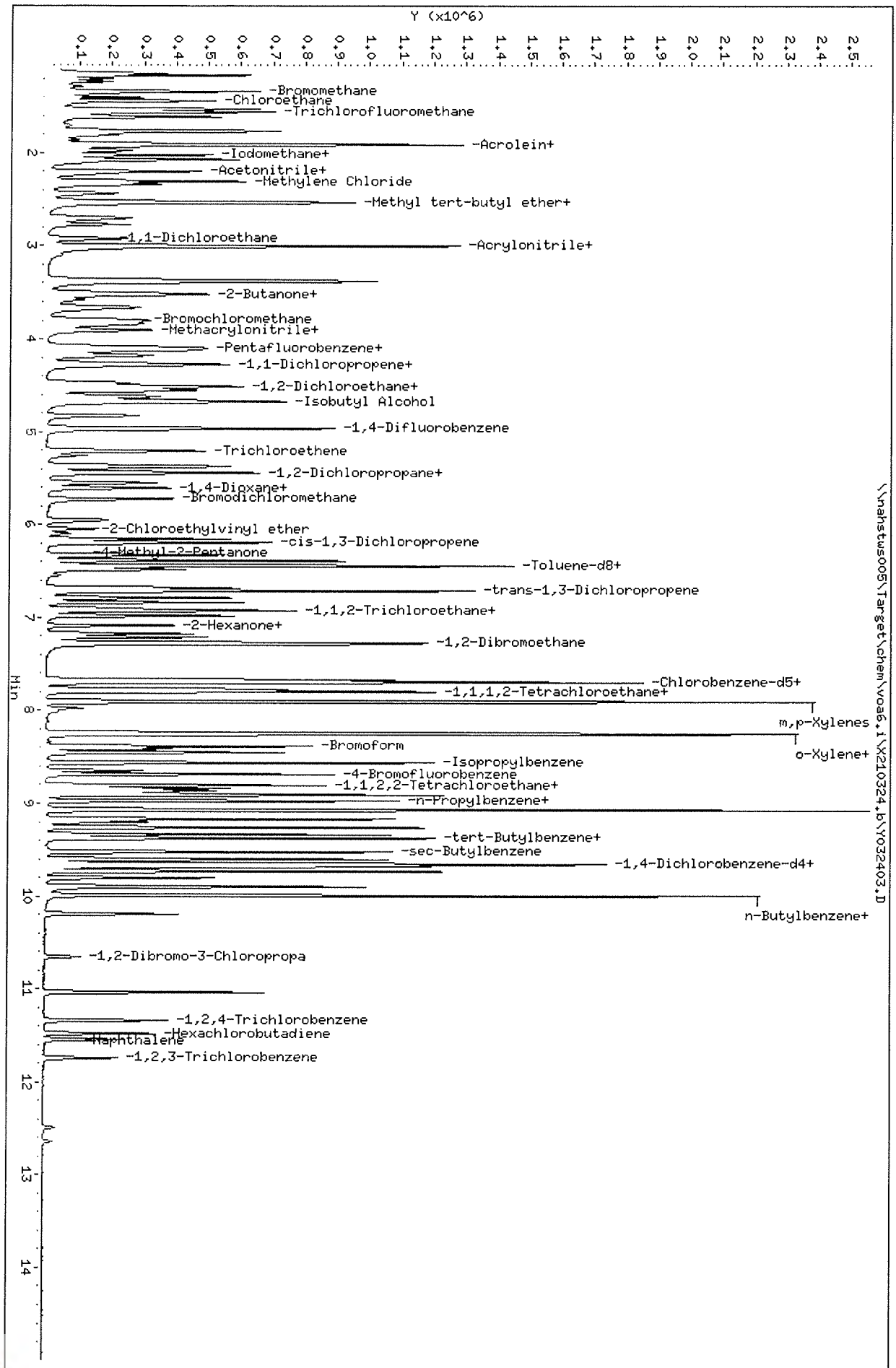
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032403.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 24-MAR-2021 22:25
Operator : PC Inst ID: voa6.i
Smp Info : CCV;CCV;2;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:40 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 34 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	246186	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	423010	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	411157	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	219617	50.0000	
$	30 Dibromofluoromethane	113	4.096	4.096	(0.979)	145731	50.0000	48.39
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	170045	50.0000	49.92
$	48 Toluene-d8	98	6.389	6.389	(0.833)	503296	50.0000	45.55
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	181525	50.0000	50.61
	27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	145604	50.0000	46.60
	38 Trichloroethene	130	5.207	5.207	(1.049)	144605	50.0000	50.78
	5 Vinyl Chloride	62	1.138	1.138	(0.272)	219317	50.0000	47.69



Data File: \\nahstws005\Target\chem\voa6,i\X210324,b\Y032403,D
Date : 24-MAR-2021 22:25
Client ID: CCV
Sample Info: CCV;CCV;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6,i
Operator: PC
Column diameter: 0.18

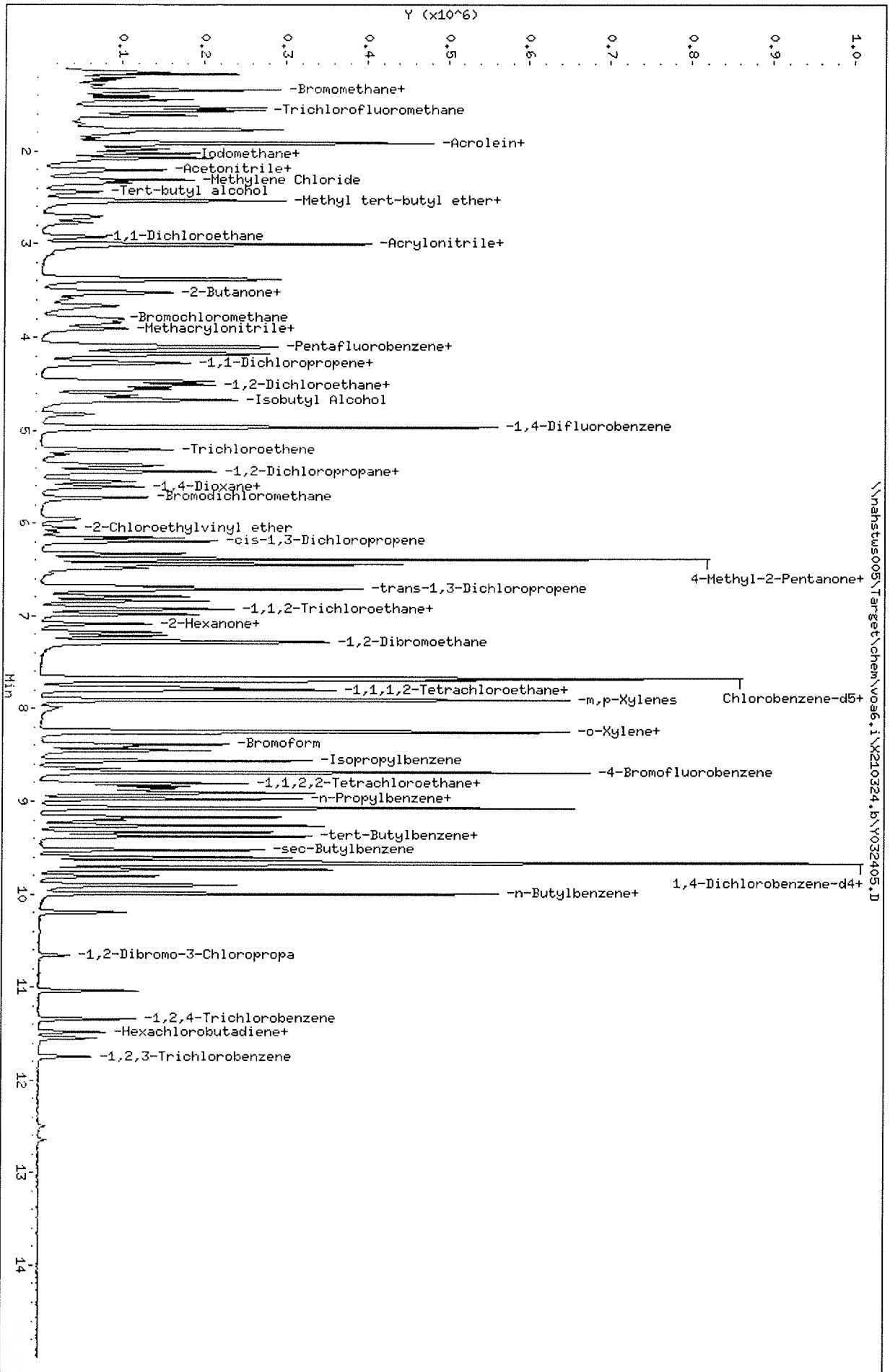
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032405.D
Lab Smp Id: VLCSW-210324 Client Smp ID: VLCSW-210324
Inj Date : 24-MAR-2021 23:07
Operator : PC Inst ID: voa6.i
Smp Info : VLCSW-210324;VLCSW-210324;3;;LCS
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:40 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 36 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	213787	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	364777	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	346522	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	177891	50.0000	
$	30 Dibromofluoromethane	113	4.096	4.096	(0.979)	125051	47.8325	47.83
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	138531	46.9354	46.93
$	48 Toluene-d8	98	6.388	6.389	(0.833)	435371	46.7544	46.75
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	146651	48.6758	48.67
	27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	46195	17.0281	17.02
	38 Trichloroethene	130	5.206	5.207	(1.049)	46577	18.9704	18.97
	5 Vinyl Chloride	62	1.138	1.138	(0.272)	83056	20.8007	20.80



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032405.D
Date : 24-MAR-2021 23:07
Client ID: VLCSW-210324
Sample Info: VLCSW-210324;VLCSW-210324;3;;LCS
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

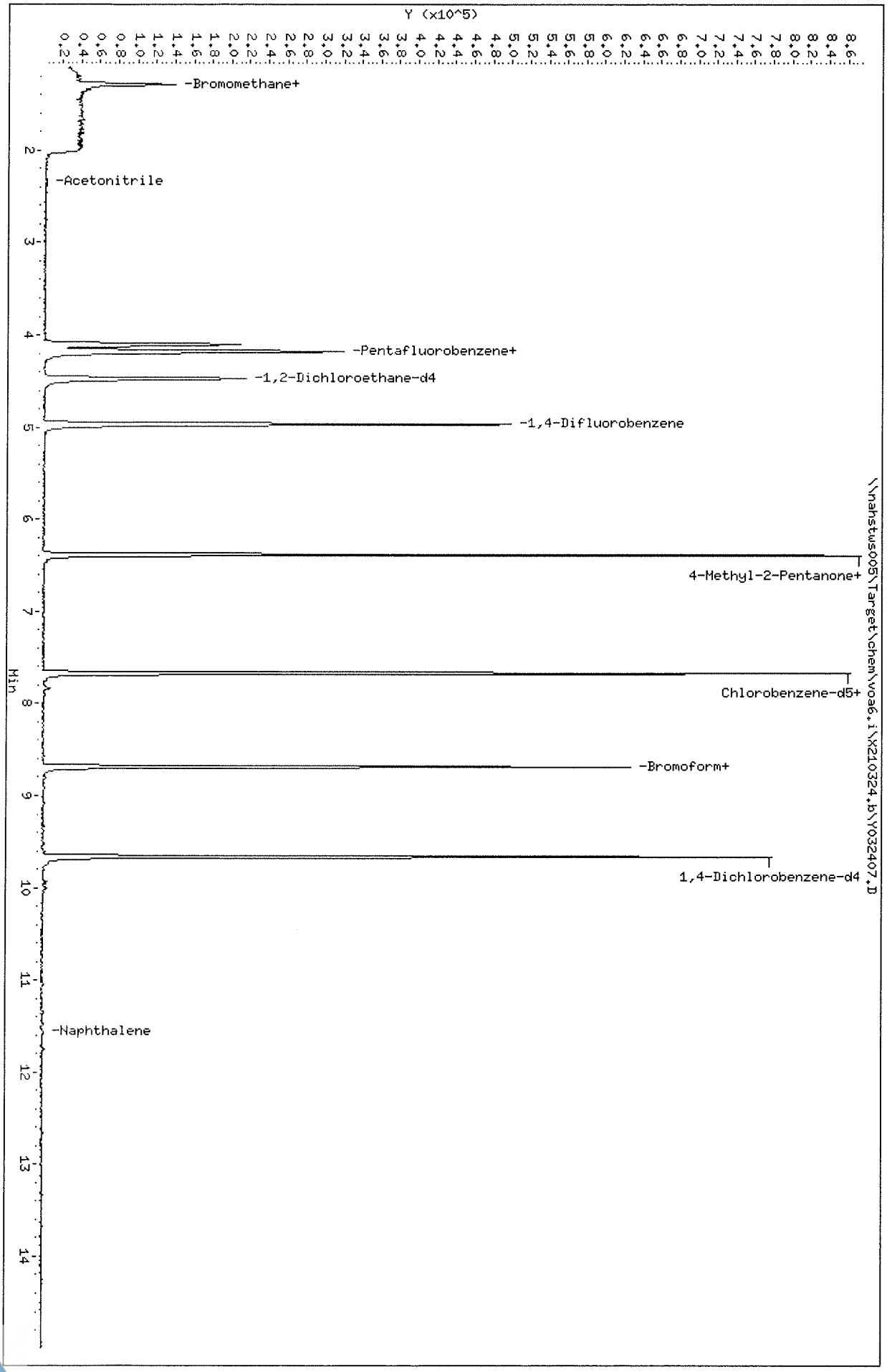
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032407.D
Lab Smp Id: VBLKW-210324 Client Smp ID: VBLKW-210324
Inj Date : 24-MAR-2021 23:49
Operator : PC Inst ID: voa6.i
Smp Info : VBLKW-210324;VBLKW-210324;3;;BLANK
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:40 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 38 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	256475	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	399631	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	352948	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	157473	50.0000	
$	30 Dibromofluoromethane	113	4.103	4.096	(0.981)	130143	41.6350	41.63
$	35 1,2-Dichloroethane-d4	65	4.469	4.476	(1.069)	146831	41.6129	41.61
$	48 Toluene-d8	98	6.388	6.389	(0.833)	469920	49.5458	49.54
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	130820	43.0150	43.01



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032407.D
Date : 24-MAR-2021 23:49
Client ID: VBLKW-210324
Sample Info: VBLKW-210324;VBLKW-210324;3;;BLANK
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032409.D
Lab Smp Id: HS21031052-07 Client Smp ID: HS21031052-07
Inj Date : 25-MAR-2021 00:31
Operator : PC Inst ID: voa6.i
Smp Info : HS21031052-07;HS21031052-07;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:33 devak.giga Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 40
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

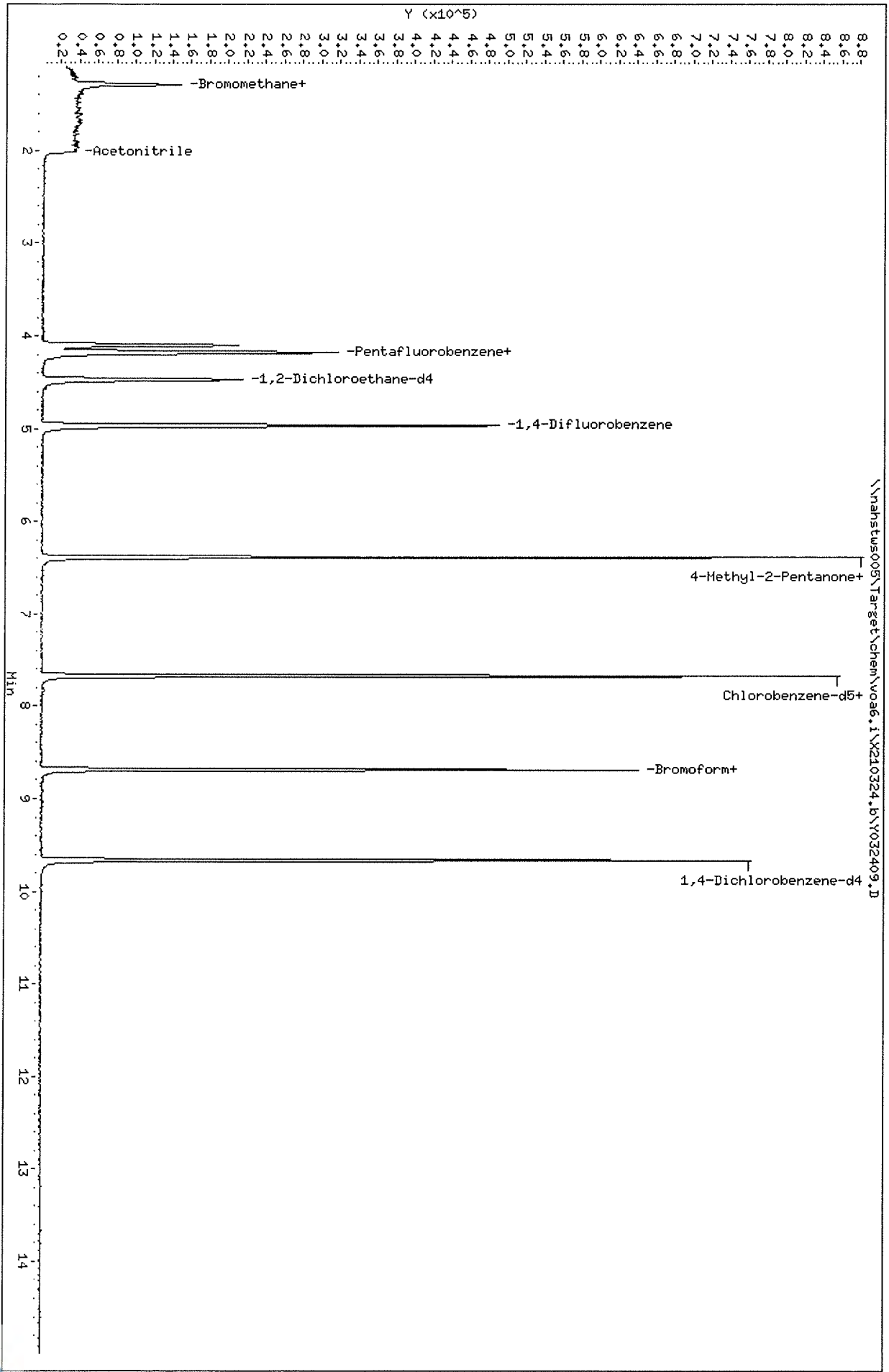
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	258210	50.0000	
*	36 1,4-Difluorobenzene	114	4.970	4.963	(1.000)	389980	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	350865	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	153450	50.0000	
$	30 Dibromofluoromethane	113	4.103	4.096	(0.981)	130929	41.6057	41.60
$	35 1,2-Dichloroethane-d4	65	4.469	4.476	(1.069)	145362	40.9373	40.93
$	48 Toluene-d8	98	6.388	6.388	(0.833)	470969	49.9512	49.95
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	130875	43.2714	43.27

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032409.D
Date : 25-MAR-2021 00:31
Client ID: HS21031052-07
Sample Info: HS21031052-07;HS21031052-07;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032412.D Page 1
Report Date: 02-Apr-2021 14:40

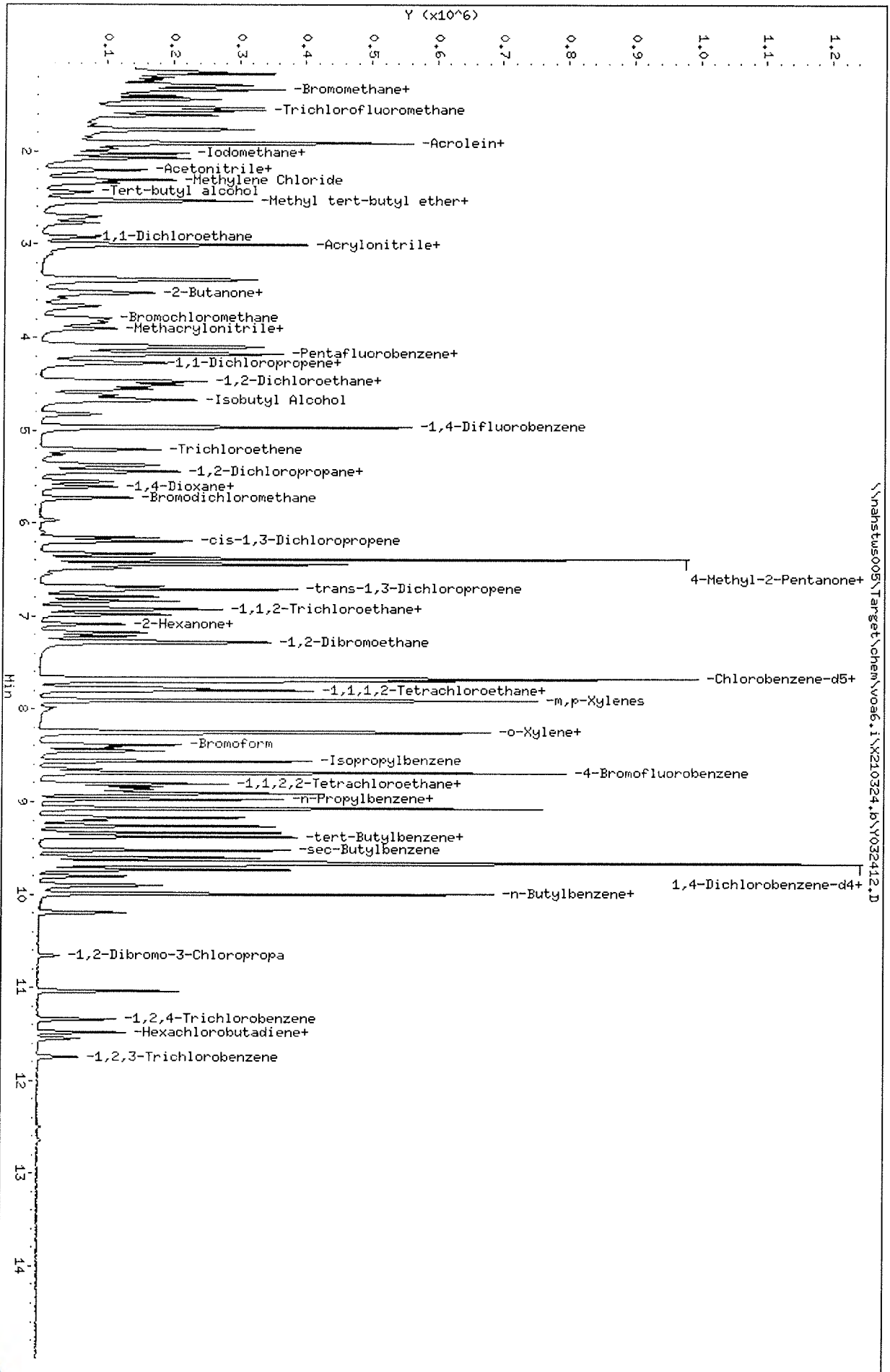
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032412.D
Lab Smp Id: HS21030874-08MS Client Smp ID: HS21030874-08MS
Inj Date : 25-MAR-2021 01:35
Operator : PC Inst ID: voa6.i
Smp Info : HS21030874-08MS;HS21030874-08MS;3;;MS
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:40 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 43 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	274212	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	427019	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	409437	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	210205	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	148268	44.2959	44.29
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	156293	41.4341	41.43
$ 48 Toluene-d8	98	6.388	6.389	(0.833)	524814	47.6993	47.69
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	166059	46.7905	46.79
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	53603	15.4047	15.40
38 Trichloroethene	130	5.206	5.207	(1.049)	48984	17.0427	17.04
5 Vinyl Chloride	62	1.138	1.138	(0.272)	86540	16.8974	16.89



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032412.D
Date : 25-MAR-2021 01:35
Client ID: HS21030874-08MS
Sample Info: HS21030874-08MS;HS21030874-08MS;3;;MS
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

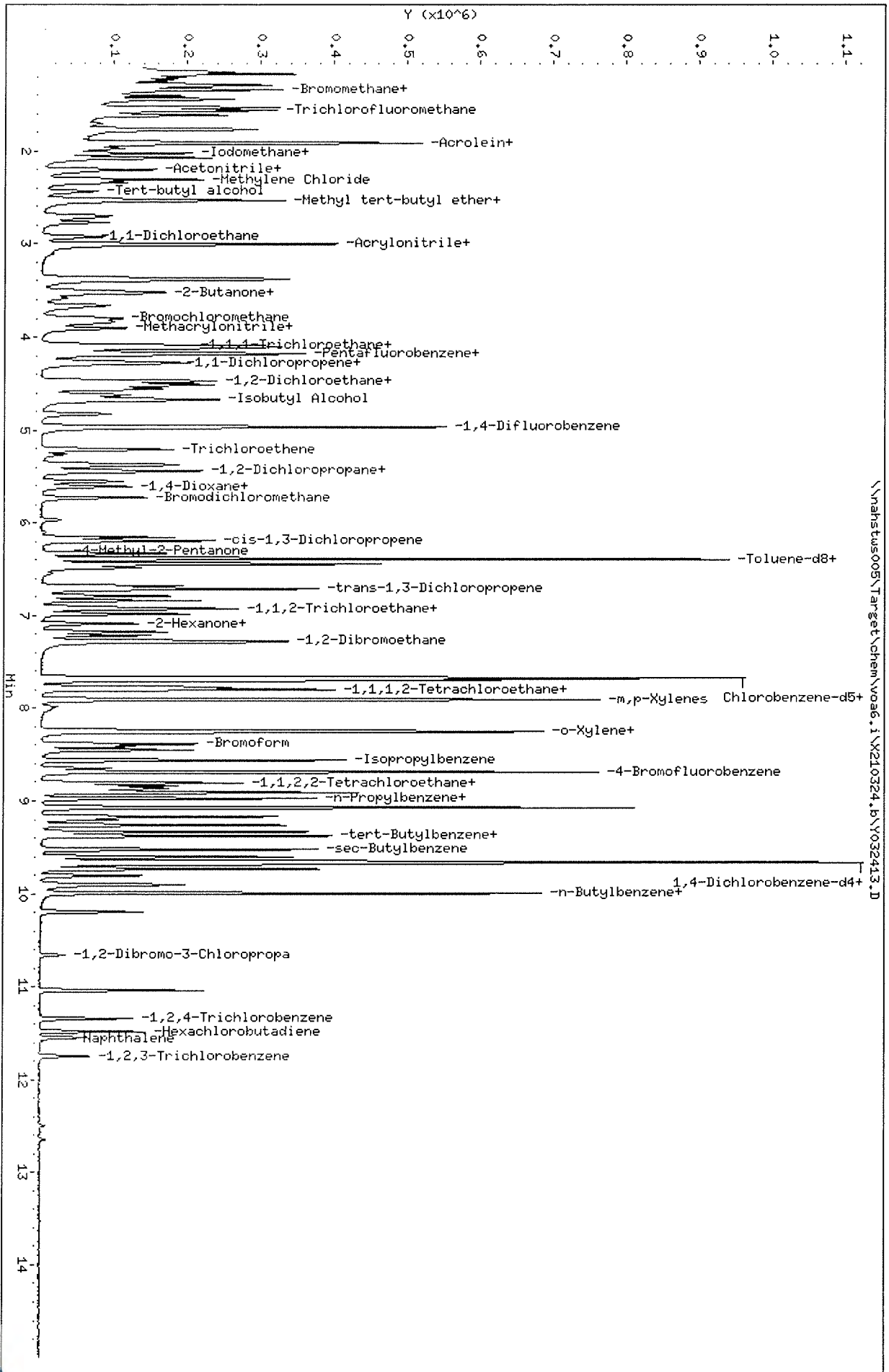
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032413.D
Lab Smp Id: HS21030874-08MSD Client Smp ID: HS21030874-08MSD
Inj Date : 25-MAR-2021 01:56
Operator : PC Inst ID: voa6.i
Smp Info : HS21030874-08MSD;HS21030874-08MSD;3;;MSD
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:40 voa6.i Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 43 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	271052	50.0000	
*	36 1,4-Difluorobenzene	114	4.970	4.963	(1.000)	432483	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	395567	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	190498	50.0000	
$	30 Dibromofluoromethane	113	4.096	4.096	(0.979)	144217	43.6048	43.60
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	159310	42.6920	42.69
$	48 Toluene-d8	98	6.388	6.389	(0.833)	504972	47.5052	47.50
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	154015	45.0432	45.04
	27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	52510	15.2665	15.26
	38 Trichloroethene	130	5.207	5.207	(1.048)	50480	17.3413	17.34
	5 Vinyl Chloride	62	1.138	1.138	(0.272)	79265	15.6573	15.65



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032413.D
Date : 25-MAR-2021 01:56
Client ID: HS21030874-08HSD
Sample Info: HS21030874-08HSD;HS21030874-08HSD;3;;HSD
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032425.D Page 1
Report Date: 02-Apr-2021 14:38

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032425.D
Lab Smp Id: HS21031052-01 Client Smp ID: HS21031052-01
Inj Date : 25-MAR-2021 06:09
Operator : PC Inst ID: voa6.i
Smp Info : HS21031052-01;HS21031052-01;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:33 devak.giga Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 55
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

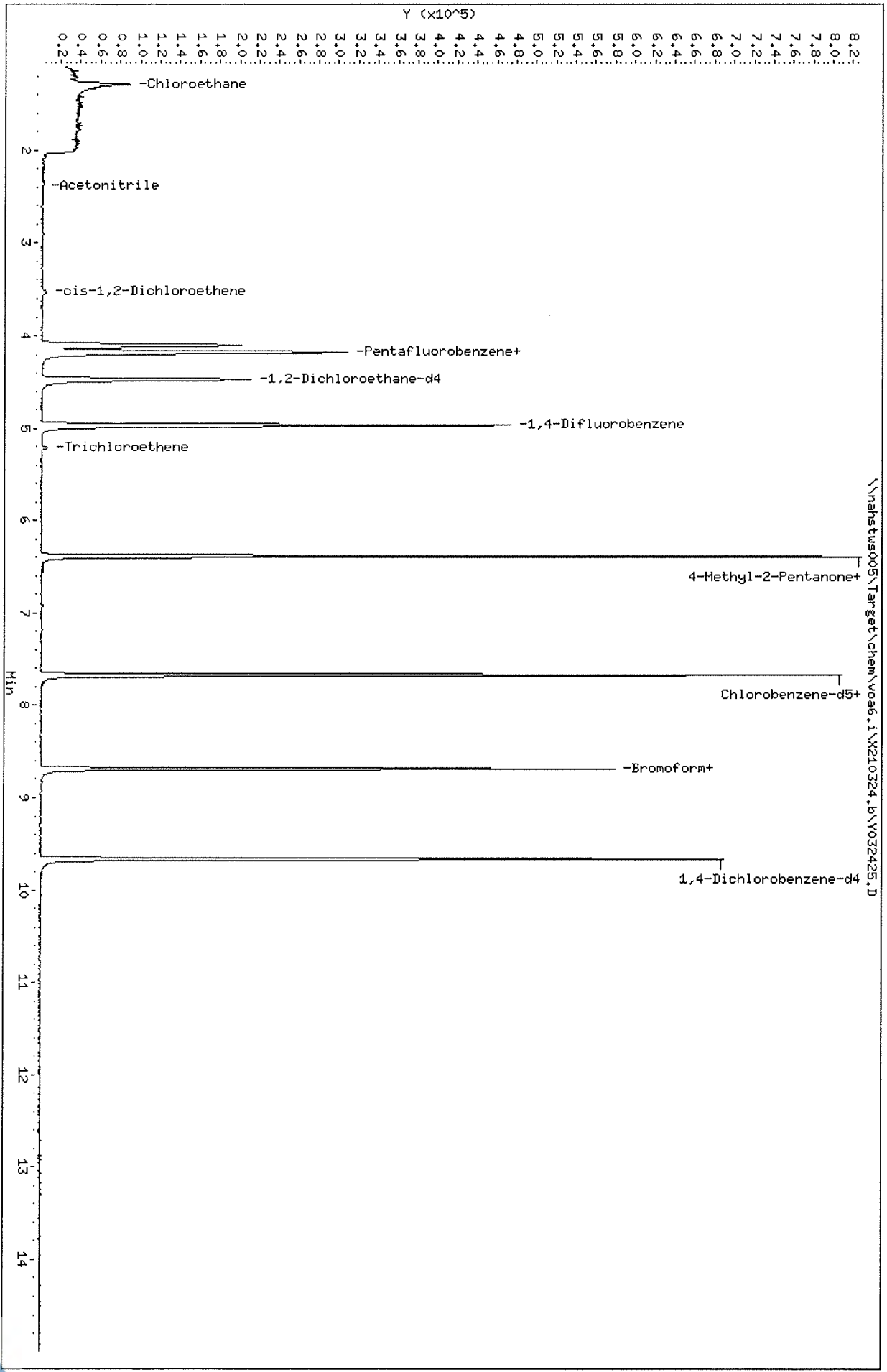
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	248403	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	370882	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	331000	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	139502	50.0000	
$ 30 Dibromofluoromethane	113	4.096	4.096	(0.979)	126039	41.6324	41.63
$ 35 1,2-Dichloroethane-d4	65	4.469	4.476	(1.069)	142504	41.6968	41.69
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	448354	50.4065	50.40
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	127383	44.5556	44.55
27 cis-1,2-Dichloroethene	96	3.530	3.523	(0.844)	2076	0.65860	0.65
38 Trichloroethene	130	5.207	5.206	(1.049)	1587	0.63573	0.63

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032425.D
Date : 25-MAR-2021 06:09
Client ID: HS21031052-01
Sample Info: HS21031052-01;HS21031052-01;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032425.D

Date : 25-MAR-2021 06:09

Client ID: HS21031052-01

Instrument: voa6.i

Sample Info: HS21031052-01;HS21031052-01;;;

Purge Volume: 5.0

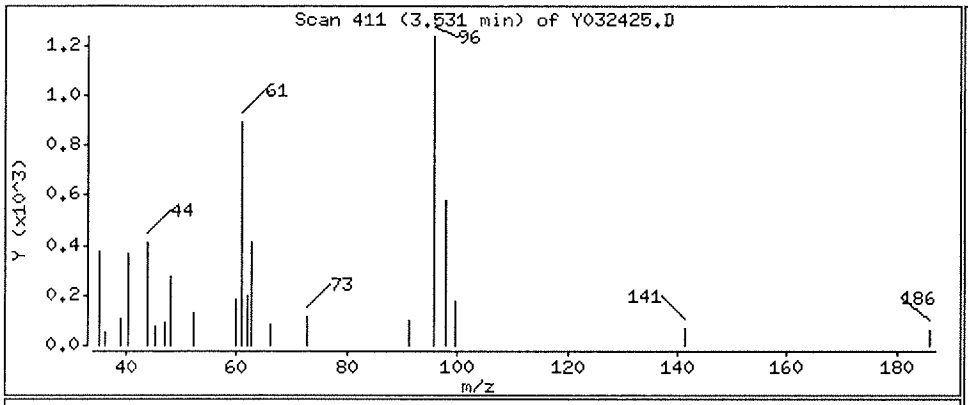
Operator: PC

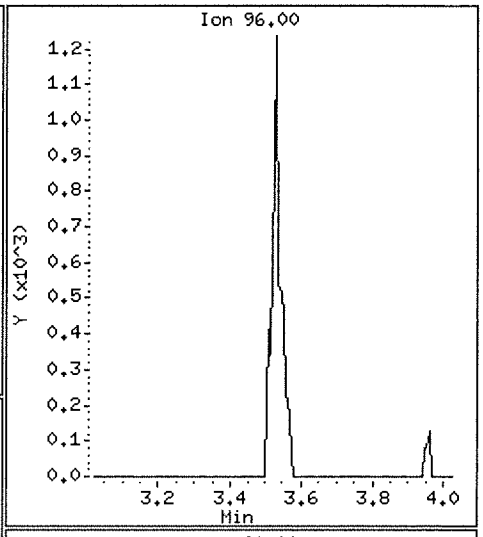
Column phase: DB624

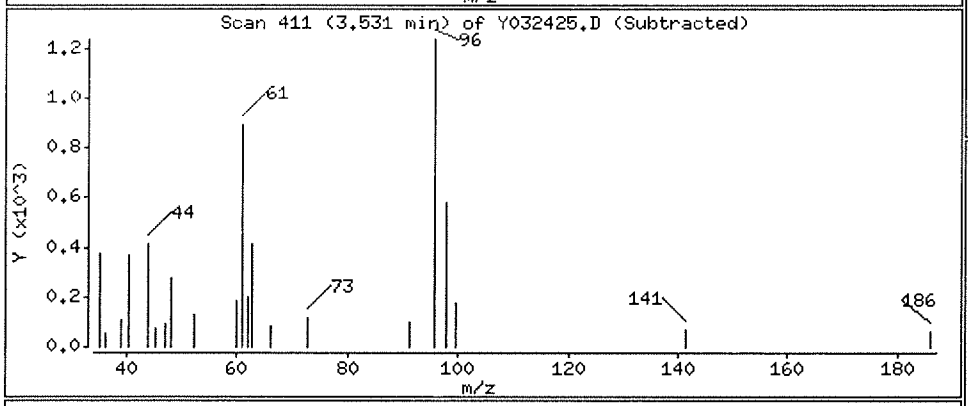
Column diameter: 0.18

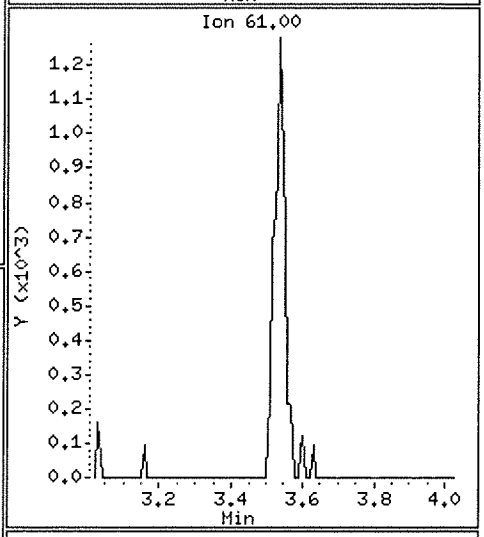
27 cis-1,2-Dichloroethene

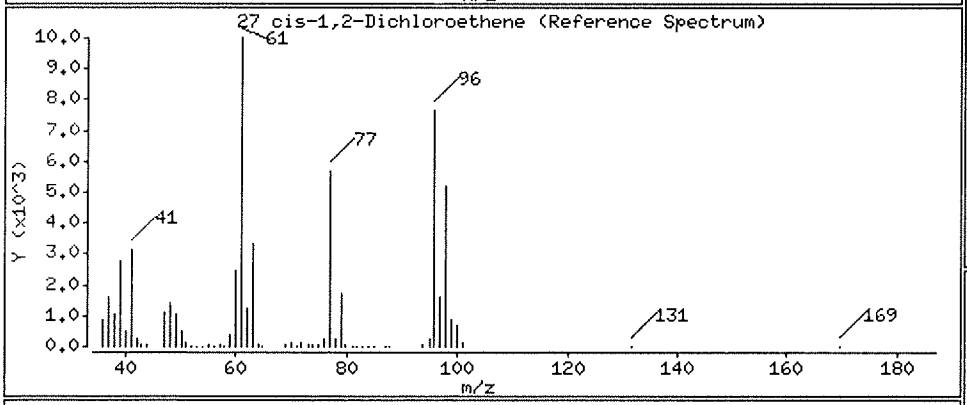
Concentration: 0.65 ug/l

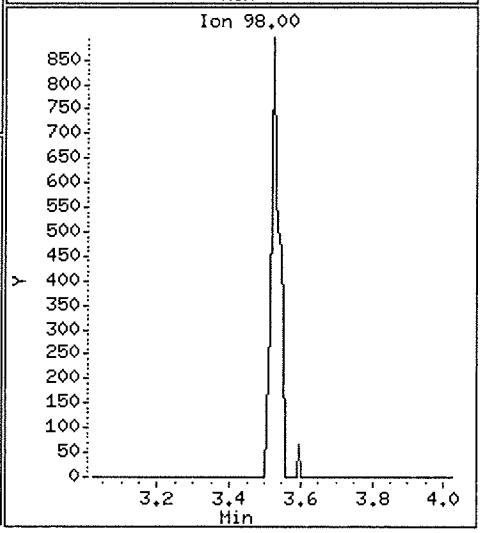


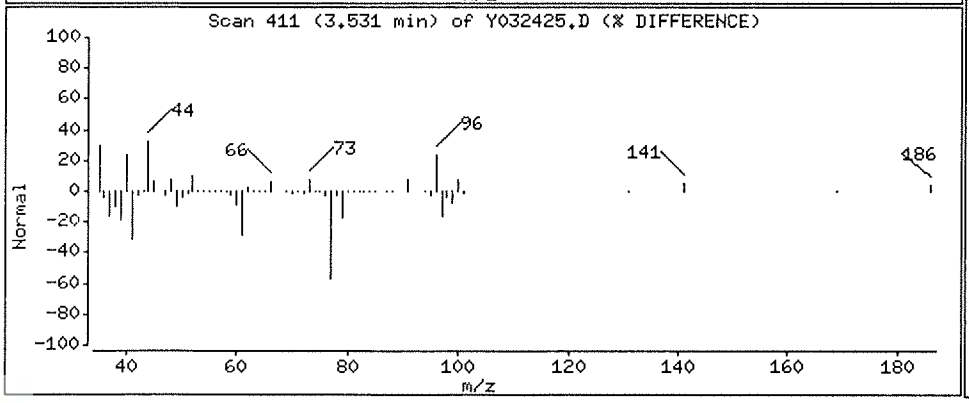












Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032425.D

Date : 25-MAR-2021 06:09

Client ID: HS21031052-01

Instrument: voa6.i

Sample Info: HS21031052-01;HS21031052-01;;;

Purge Volume: 5.0

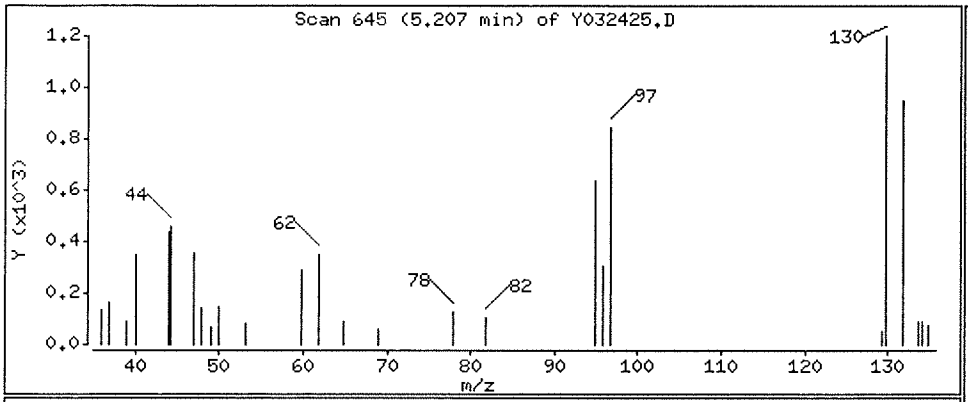
Operator: PC

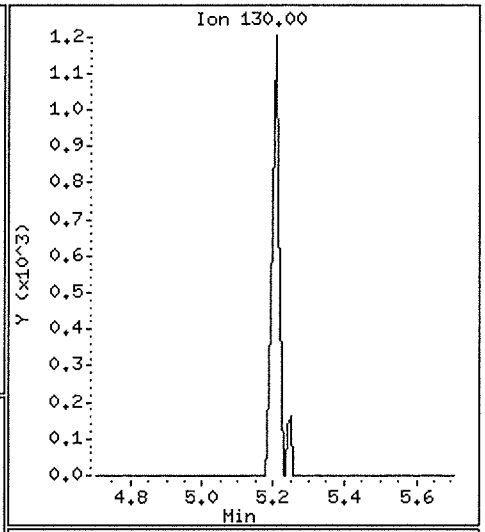
Column phase: DB624

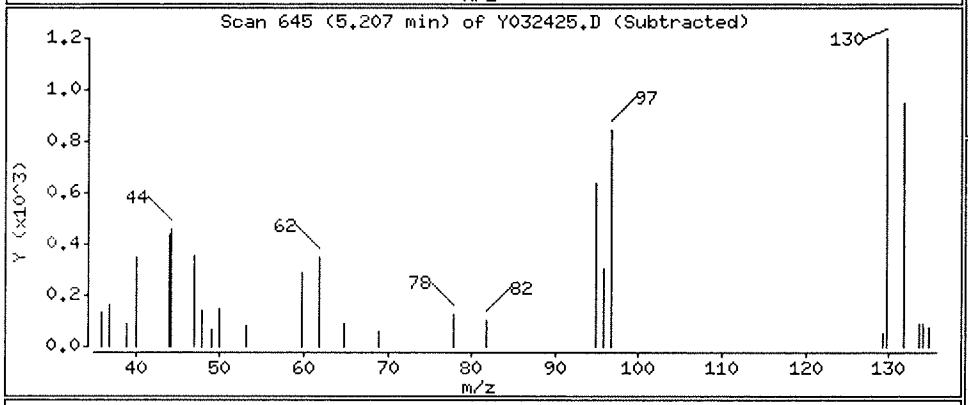
Column diameter: 0.18

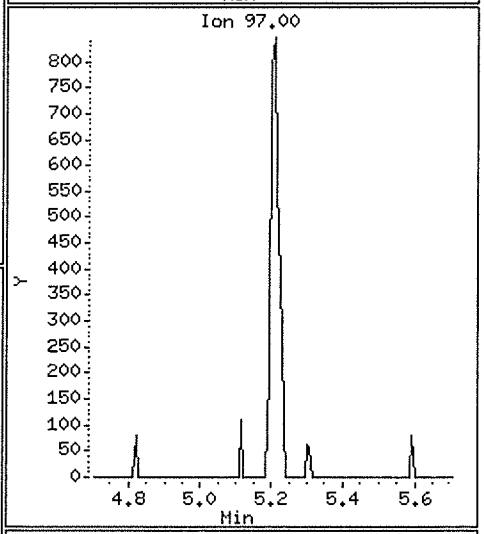
38 Trichloroethene

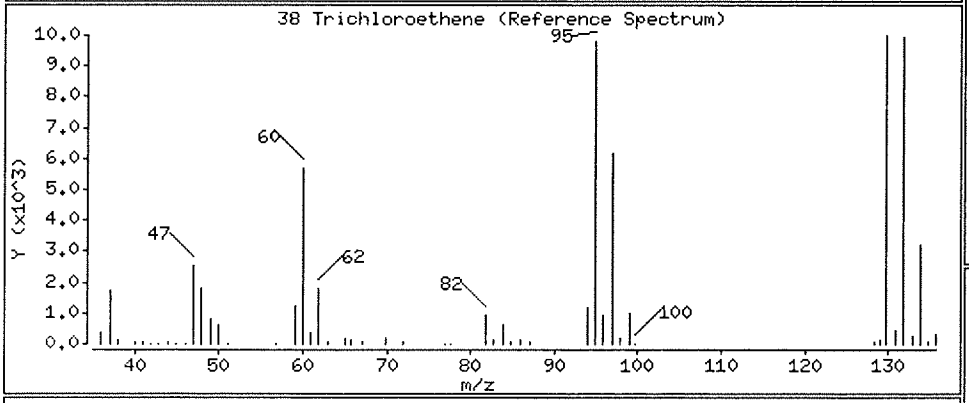
Concentration: 0.63 ug/l

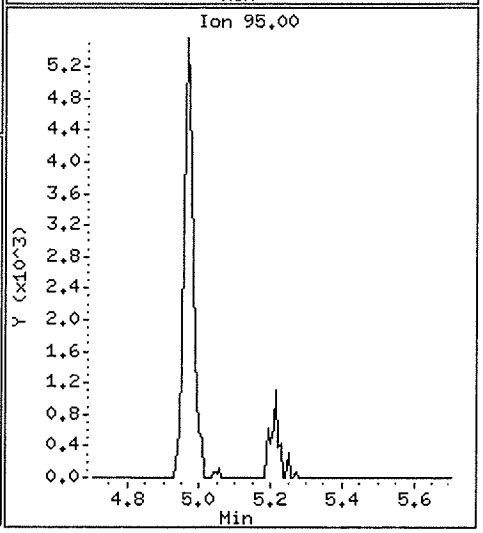


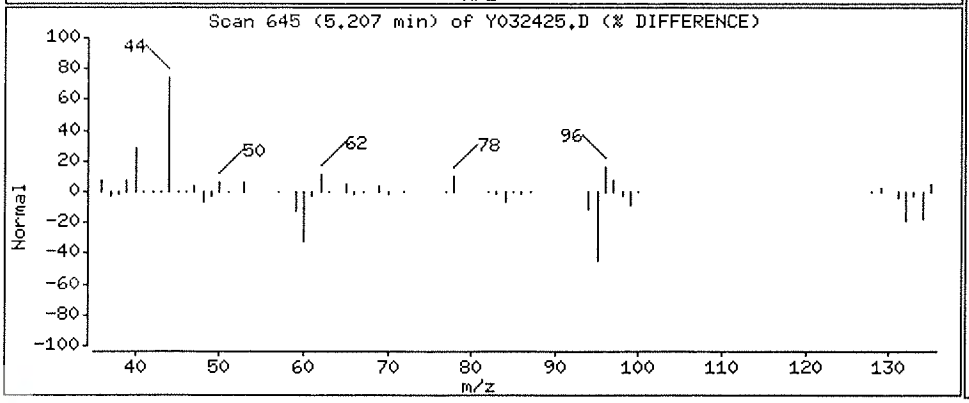












Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032426.D Page 1
Report Date: 02-Apr-2021 14:38

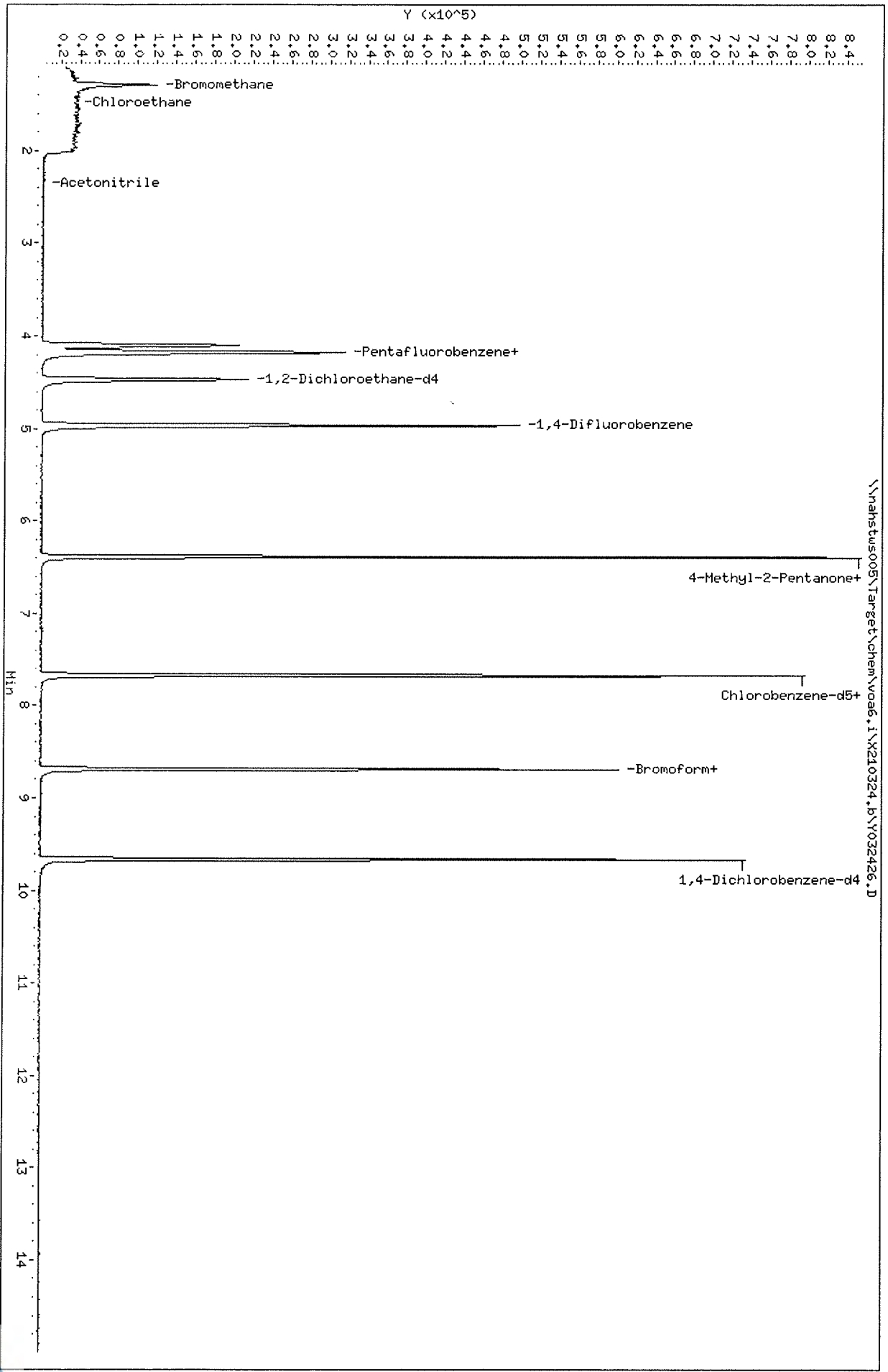
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032426.D
Lab Smp Id: HS21031052-02 Client Smp ID: HS21031052-02
Inj Date : 25-MAR-2021 06:30
Operator : PC Inst ID: voa6.i
Smp Info : HS21031052-02;HS21031052-02;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:33 devak.giga Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 56
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	253910	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	384550	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	335981	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	141217	50.0000	
$ 30 Dibromofluoromethane	113	4.096	4.096	(0.979)	129871	41.9592	41.95
$ 35 1,2-Dichloroethane-d4	65	4.469	4.476	(1.069)	145248	41.5810	41.58
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	463357	51.3209	51.32
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	126629	43.6938	43.69



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032426.D
Date : 25-MAR-2021 06:30
Client ID: HS21031052-02
Sample Info: HS21031052-02;HS21031052-02;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032427.D Page 1
Report Date: 02-Apr-2021 14:38

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032427.D
Lab Smp Id: HS21031052-03 Client Smp ID: HS21031052-03
Inj Date : 25-MAR-2021 06:51
Operator : PC Inst ID: voa6.i
Smp Info : HS21031052-03;HS21031052-03;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:33 devak.giga Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 57
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

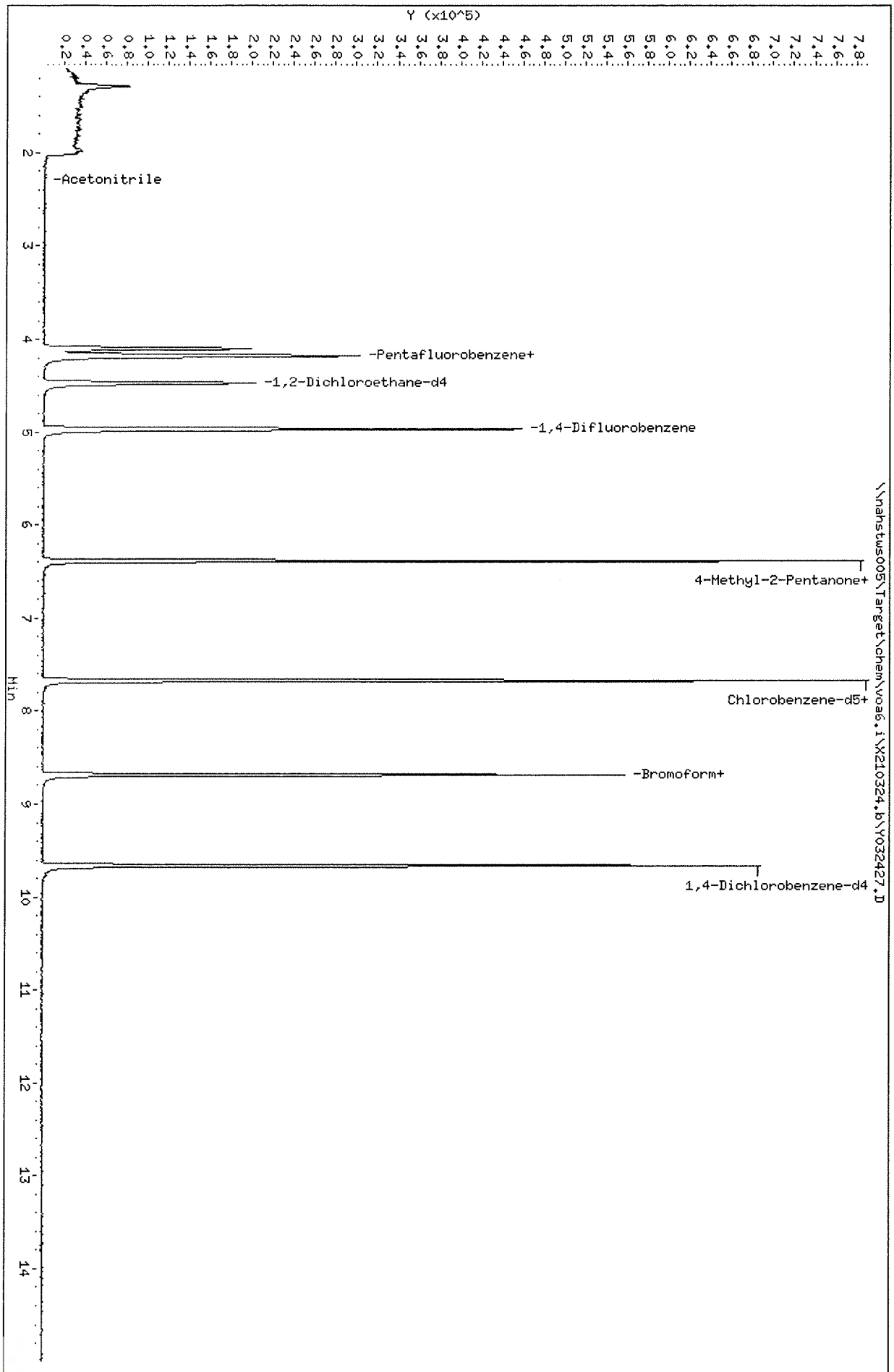
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	236119	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.963	(1.000)	361660	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.671	(1.000)	326355	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	140617	50.0000	
$ 30 Dibromofluoromethane	113	4.096	4.096	(0.979)	125806	43.6643	43.66
$ 35 1,2-Dichloroethane-d4	65	4.469	4.476	(1.069)	135676	41.7625	41.76
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	428144	48.8195	48.81
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	119934	42.6714	42.67(M)

QC Flag Legend

M - Compound response manually integrated.

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032427.D
Date : 25-MAR-2021 06:51
Client ID: HS21031052-03
Sample Info: HS21031052-03;HS21031052-03;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032428.D Page 1
Report Date: 02-Apr-2021 14:38

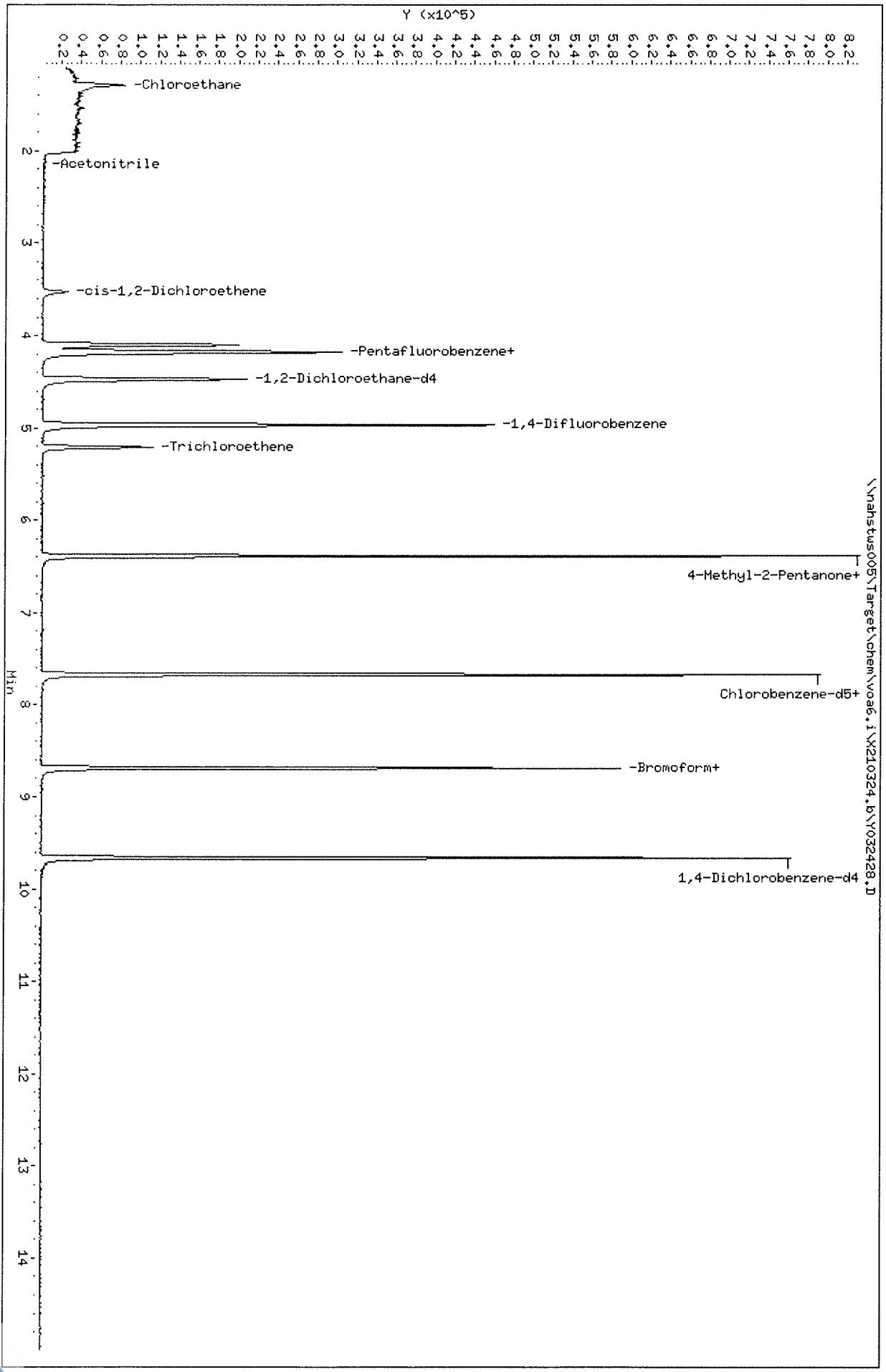
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032428.D
Lab Smp Id: HS21031052-04 Client Smp ID: HS21031052-04
Inj Date : 25-MAR-2021 07:12
Operator : PC Inst ID: voa6.i
Smp Info : HS21031052-04;HS21031052-04;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:33 devak.giga Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 58
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.182	4.182	(1.000)	237502	50.0000	
*	36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	359771	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	328826	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	156374	50.0000	
$	30 Dibromofluoromethane	113	4.096	4.096	(0.979)	126877	43.7768	43.77
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	135362	41.4319	41.43
$	48 Toluene-d8	98	6.388	6.388	(0.833)	442459	50.0726	50.07
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	125782	44.3039	44.30
	27 cis-1,2-Dichloroethene	96	3.530	3.523	(0.844)	11634	3.86023	3.86
	38 Trichloroethene	130	5.206	5.206	(1.049)	31061	12.8269	12.82



Data File: \\nahstws005\Target\chem\voa6,i\X210324,b\Y032428.D
Date : 25-MAR-2021 07:12
Client ID: HS21031052-04
Sample Info: HS21031052-04;HS21031052-04;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6,i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032428.D

Date : 25-MAR-2021 07:12

Client ID: HS21031052-04

Instrument: voa6.i

Sample Info: HS21031052-04;HS21031052-04;;;

Purge Volume: 5.0

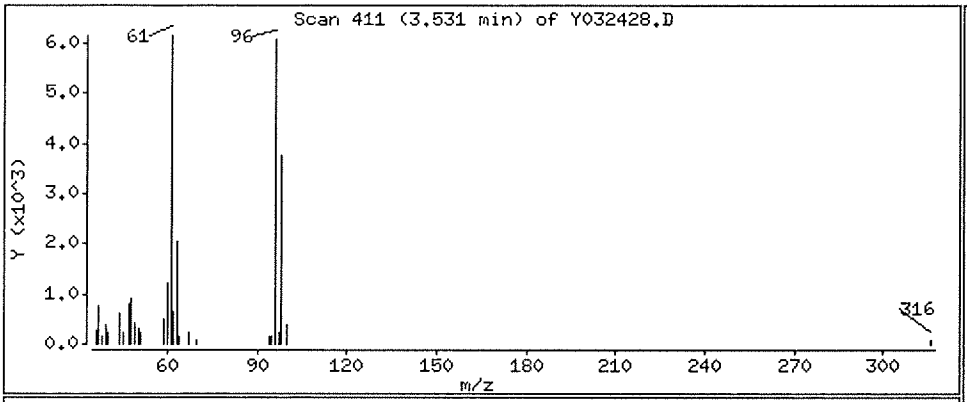
Operator: PC

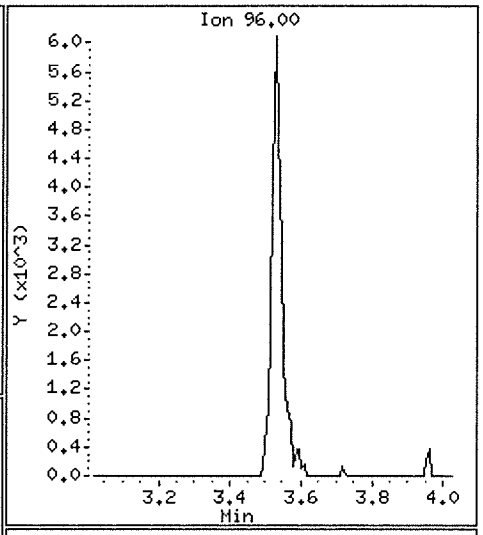
Column phase: DB624

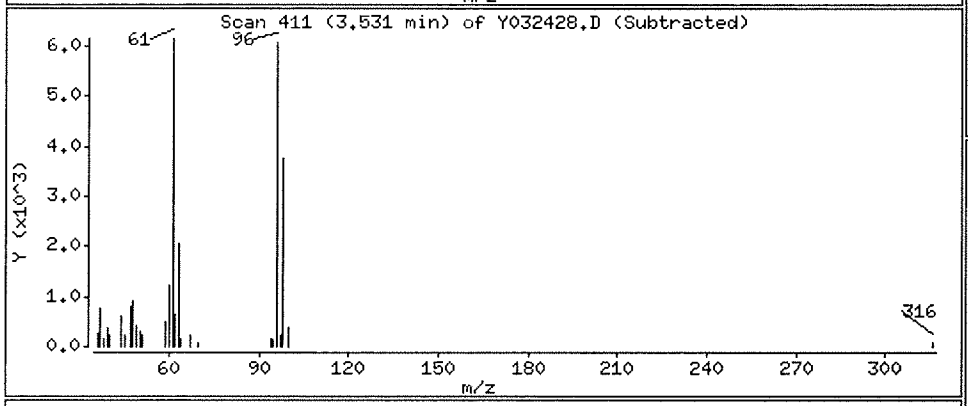
Column diameter: 0.18

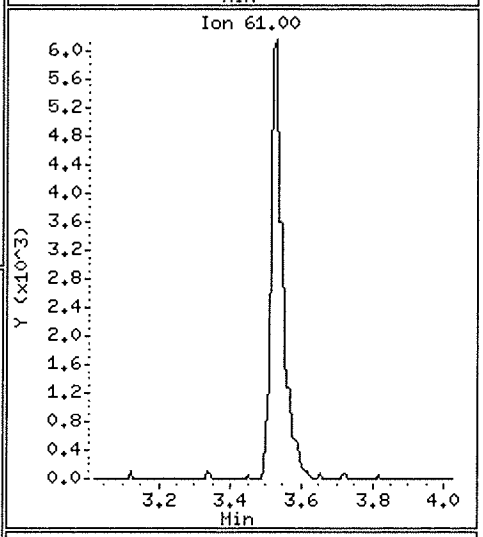
27 cis-1,2-Dichloroethene

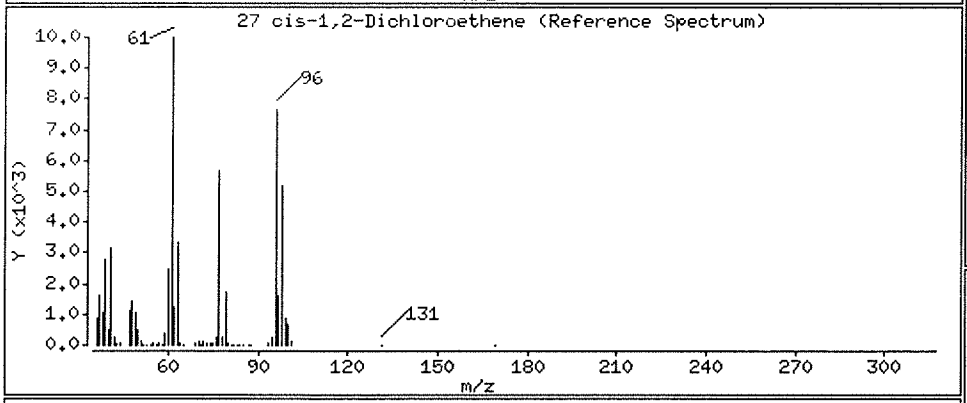
Concentration: 3.86 ug/l

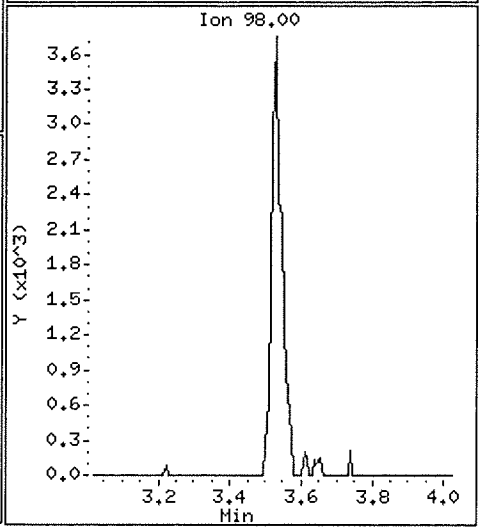


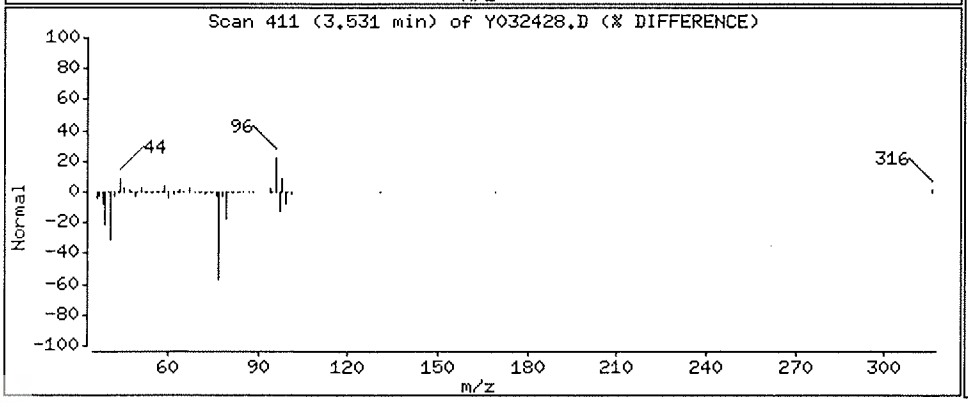












Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032428.D Page 4

Date : 25-MAR-2021 07:12

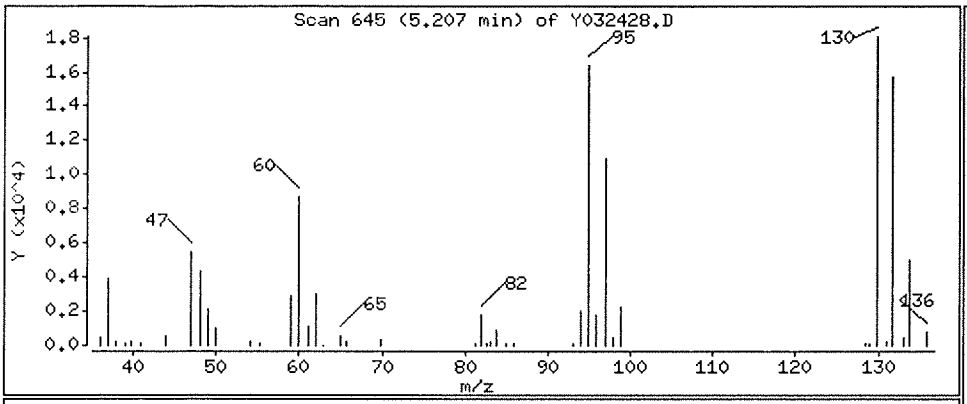
Client ID: HS21031052-04 Instrument: voa6.i

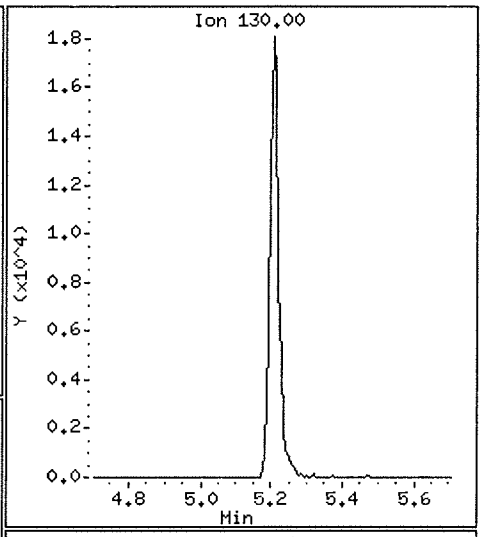
Sample Info: HS21031052-04;HS21031052-04;;;

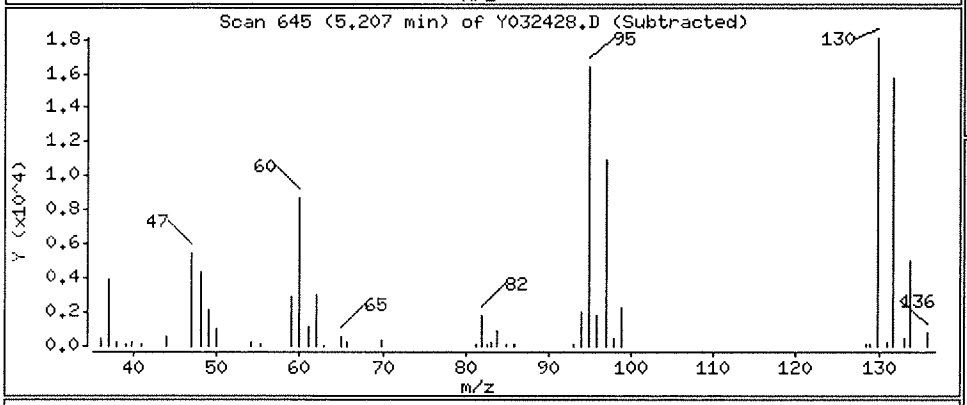
Purge Volume: 5.0 Operator: PC

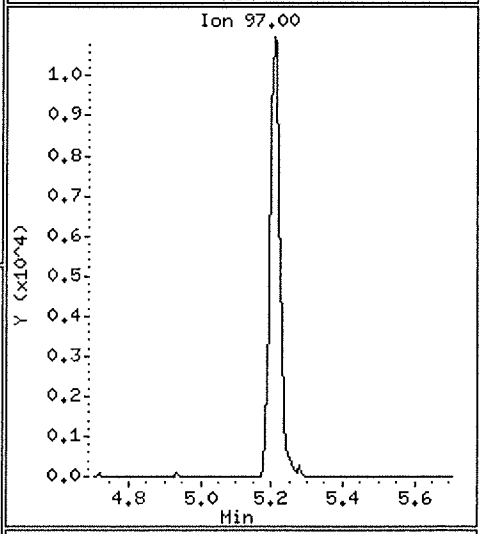
Column phase: DB624 Column diameter: 0.18

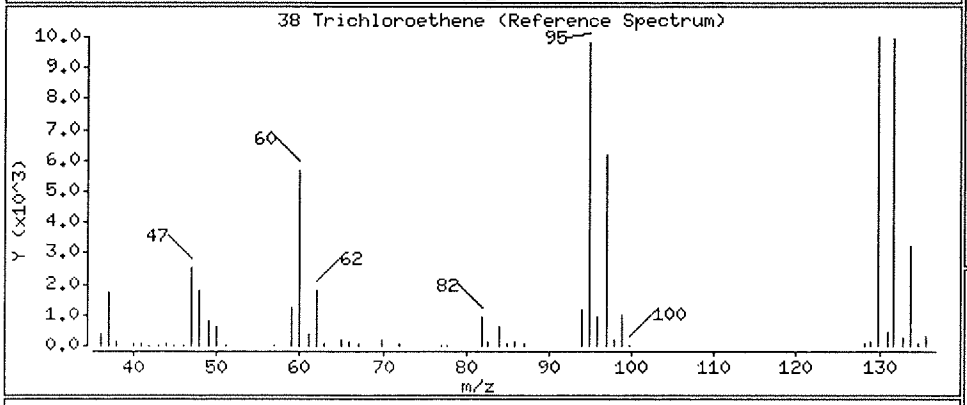
38 Trichloroethene Concentration: 12.82 ug/l

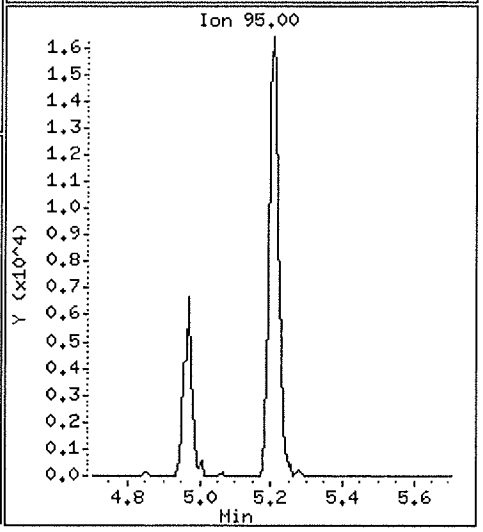


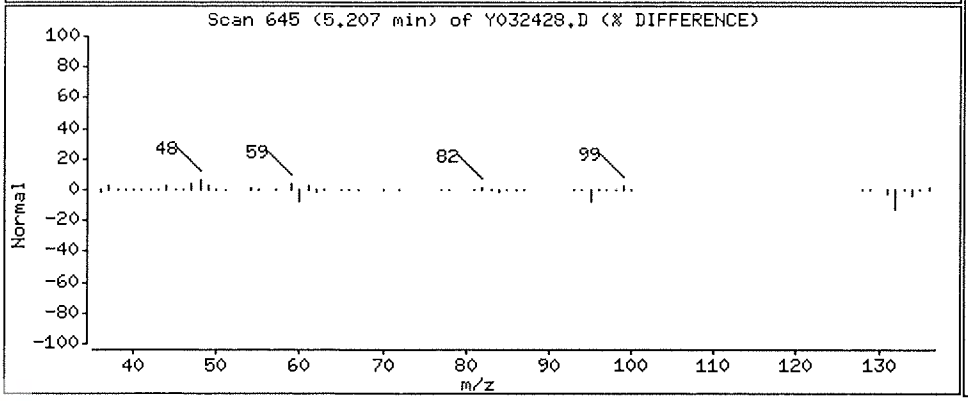












Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032429.D Page 1
Report Date: 02-Apr-2021 14:38

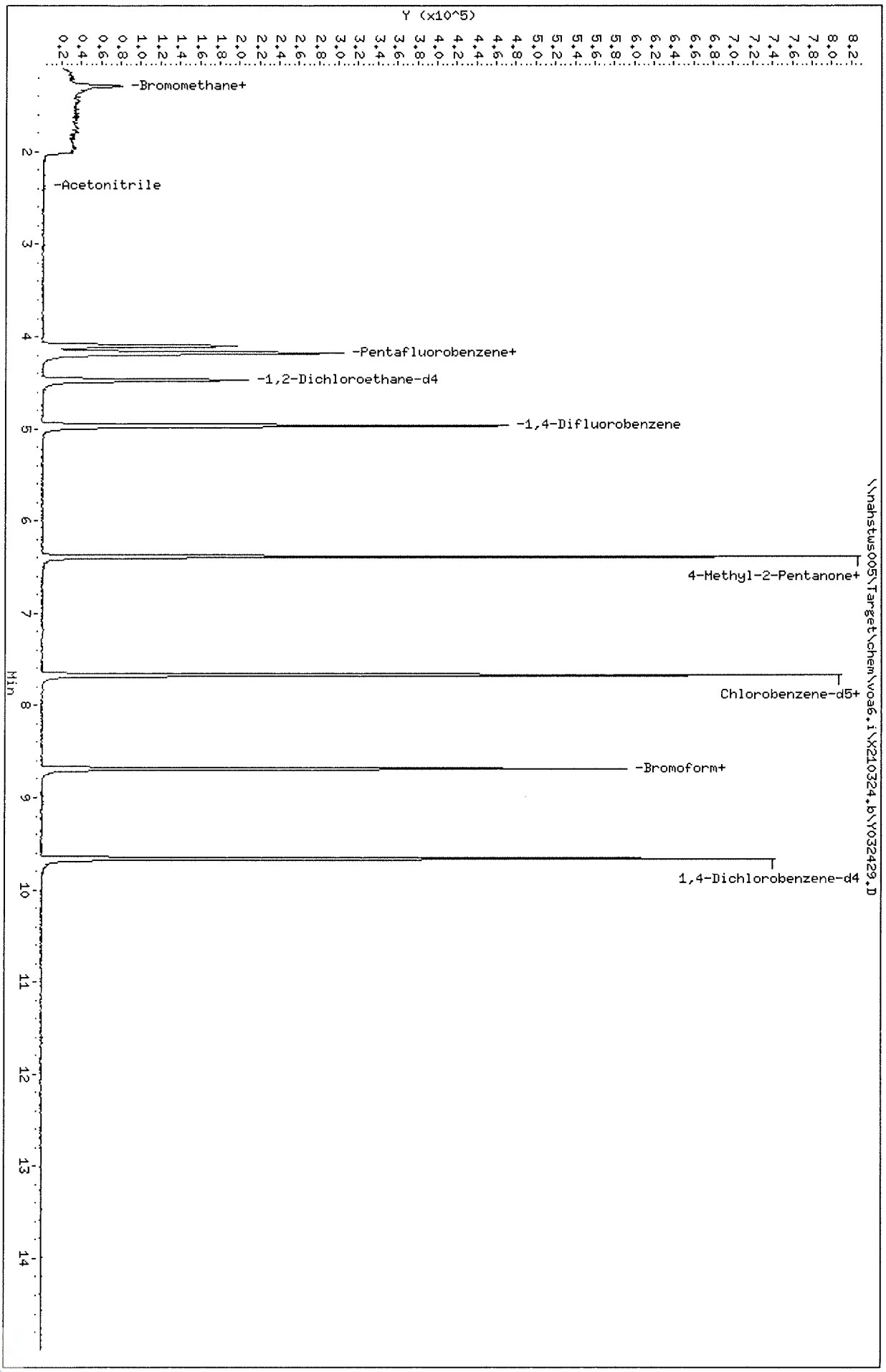
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032429.D
Lab Smp Id: HS21031052-05 Client Smp ID: HS21031052-05
Inj Date : 25-MAR-2021 07:33
Operator : PC Inst ID: voa6.i
Smp Info : HS21031052-05;HS21031052-05;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:33 devak.giga Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 59
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	239834	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.963	(1.000)	370332	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	337793	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	152441	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	124505	42.5706	42.57
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	137141	41.5648	41.56
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	455032	50.1285	50.12
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	126524	43.4404	43.44



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032429.D
Date : 25-MAR-2021 07:33
Client ID: HS21031052-05
Sample Info: HS21031052-05;HS21031052-05;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032430.D Page 1
Report Date: 02-Apr-2021 14:38

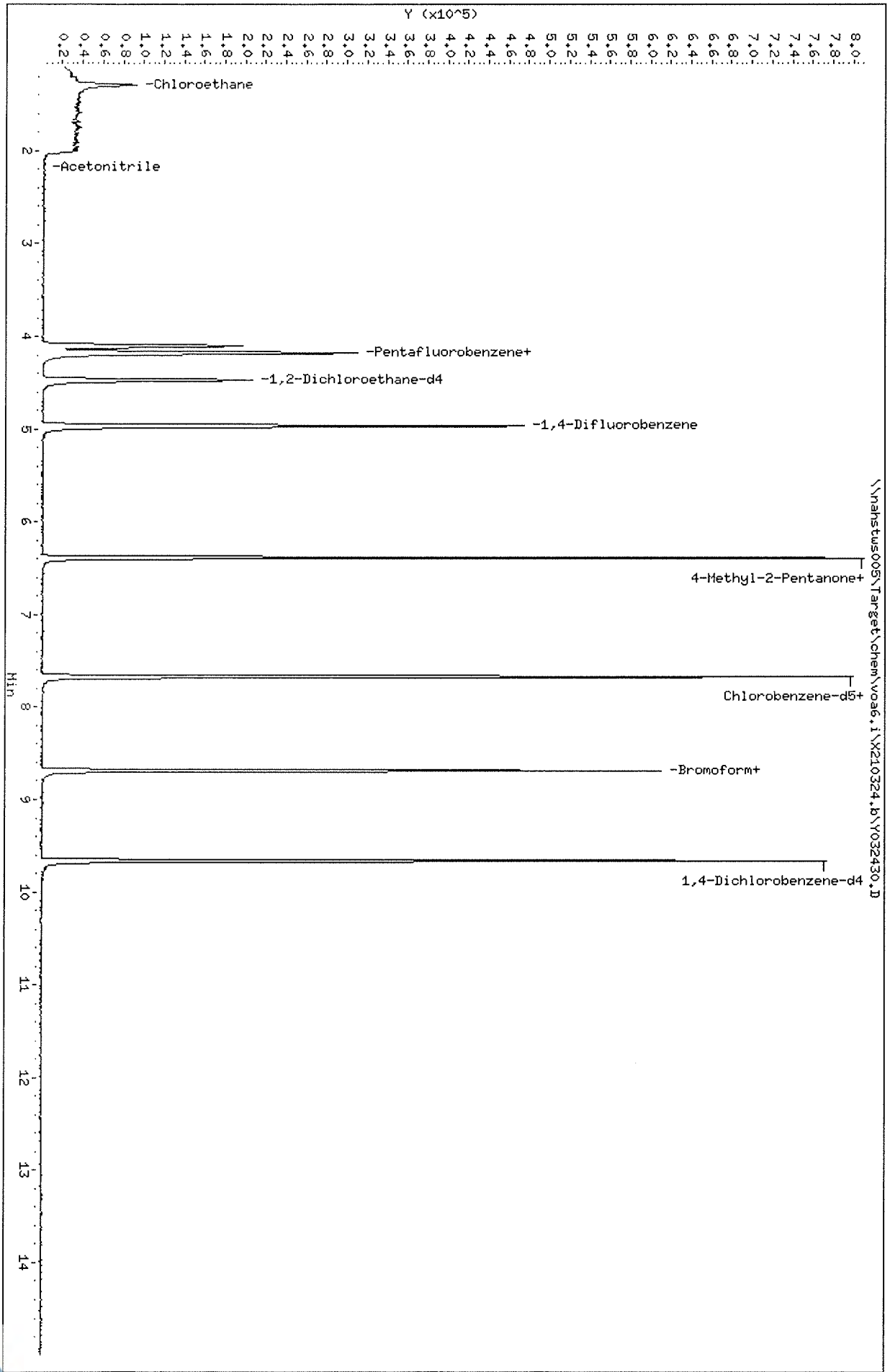
ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X210324.b\Y032430.D
Lab Smp Id: HS21031052-06 Client Smp ID: HS21031052-06
Inj Date : 25-MAR-2021 07:54
Operator : PC Inst ID: voa6.i
Smp Info : HS21031052-06;HS21031052-06;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X210324.b\8260Wa.m
Meth Date : 02-Apr-2021 14:33 devak.giga Quant Type: ISTD
Cal Date : 15-MAR-2021 14:03 Cal File: X031508.D
Als bottle: 60
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBI_SL.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.182	4.182	(1.000)	240859	50.0000	
* 36 1,4-Difluorobenzene	114	4.963	4.963	(1.000)	372775	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	333452	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	148443	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.096	(0.981)	124926	42.5337	42.53
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	134756	40.6905	40.69
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	445337	49.6991	49.69
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	125908	43.7694	43.76



Data File: \\nahstws005\Target\chem\voa6.i\X210324.b\Y032430.D
Date : 25-MAR-2021 07:54
Client ID: HS21031052-06
Sample Info: HS21031052-06;HS21031052-06;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

LABORATORY REPORT

May 25, 2021

Vicki Graves
Shaw Environment & Infrastructure, Inc.
312 Directors Drive
Knoxville, TN 37923

RE: LONGHORN ARMY AMMN. PLANT (LHAAP) / 501032

Dear Vicki:

Enclosed are the results of the sample submitted to our laboratory on April 30, 2021. For your reference, this analysis has been assigned our service request number P2102422.

The analysis was performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Hayden Akers at 9:52 am, May 26, 2021

Hayden Akers
Project Manager

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

Client: Shaw Environment & Infrastructure, Inc. Service Request No: P2102422
Project: LONGHORN ARMY AMMN. PLANT (LHAAP) / 501032

CASE NARRATIVE

The sample was received intact under chain of custody on April 30, 2021 and was stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the sample at the time of sample receipt.

Methane, Ethene and Ethane Analysis

The sample was analyzed for methane, ethene, and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-008
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272019-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Shaw Environment & Infrastructure, Inc. Service Request: P2102422

Project ID: LONGHORN ARMY AMMN. PLANT (LHAAP) / 501032

Date Received: 4/30/2021

Time Received: 09:35

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - Gases
LHSMW21-210429 R	P2102422-001	Water	4/29/2021	09:35	X

R2102422

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 2655 Park Center Drive, Suite A Simi Valley, CA 93065 (805) 526-7161 ATTN: Hayden Akers

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: LHAAP 46 February 2021

Prepared By:

P.O. Number

Field Sample I.D. / Time	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Carbon Dioxide by RSK 175	Anions (nitrate, chloride and sulfate) by SW9056					Remarks (Preservatives, etc.)	Lab I.D.#
LHSMW21-210429R	WG	4/29/21/0935		3			X								
TRIP BLANK-210429	W	4/29/21		2	X										

Additional Remarks: Standard TAT on all parameters. Please email results to Vicki.Graves@aptim.com and invoices to fedinvoices@aptim.com

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
										4-30-21	0930

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition
AL DAVID	4-30-21	0930	7911 4757 2818	A-GRAY	4-30-21	0930	3°		GOOD / CUSTODY SEAL INTACT

Remarks:

ALS Environmental
Sample Acceptance Check Form

Client: Aptim Work order: P2102422

Project: LONGHORN ARMY AMMN. PLANT (LHAAP) 501032

Sample(s) received on: 4/30/21 Date opened: 4/30/21 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: 3° C Blank Temperature: ° C			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? _____ Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☒	☐	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2102422-001.01	40ml clear vial		1		A	CB 5/12/21
P2102422-001.02	40ml clear vial				A	
P2102422-001.03	40ml clear vial				A	
P2102422-002.01	40ml clear vial				A	
P2102422-002.02	40ml clear vial				A	

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: **Shaw Environment & Infrastructure, Inc.**
Client Sample ID: **LHSMW21-210429 R** ALS Project ID: P2102422
Client Project ID: **LONGHORN ARMY AMMN. PLANT (LHAAP) / 501032** ALS Sample ID: P2102422-001

Test Code: RSK 175 Date Collected: 4/29/21
Instrument ID: HP5890A/GC10/FID Date Received: 4/30/21
Analyst: Connor Barrett Date Analyzed: 5/12/21
Matrix: Water Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: **Shaw Environment & Infrastructure, Inc.**
Client Sample ID: **Method Control Sample** ALS Project ID: P2102422
Client Project ID: **LONGHORN ARMY AMMN. PLANT (LHAAP) / 501032** ALS Sample ID: P210512-MB

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Connor Barrett Date Analyzed: 5/12/21
Matrix: Water Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Shaw Environment & Infrastructure, Inc.**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **LONGHORN ARMY AMMN. PLANT (LHAAP) / 501032**

ALS Project ID: P2102422
ALS Sample ID: P210512-LCS
P210512-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Connor Barrett
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/12/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result[1] LCS µg/L	Result[1] DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.52	2.89	2.45	**115**	**97**	73-125	17	26	
74-85-1	Ethene	4.40	5.02	4.89	**114**	**111**	72-133	3	11	
74-84-0	Ethane	4.72	4.91	4.78	**104**	**101**	74-131	3	10	

[1] = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122114.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 14:17
Operator : CB
Sample : 2422-001 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 14 14:03:26 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

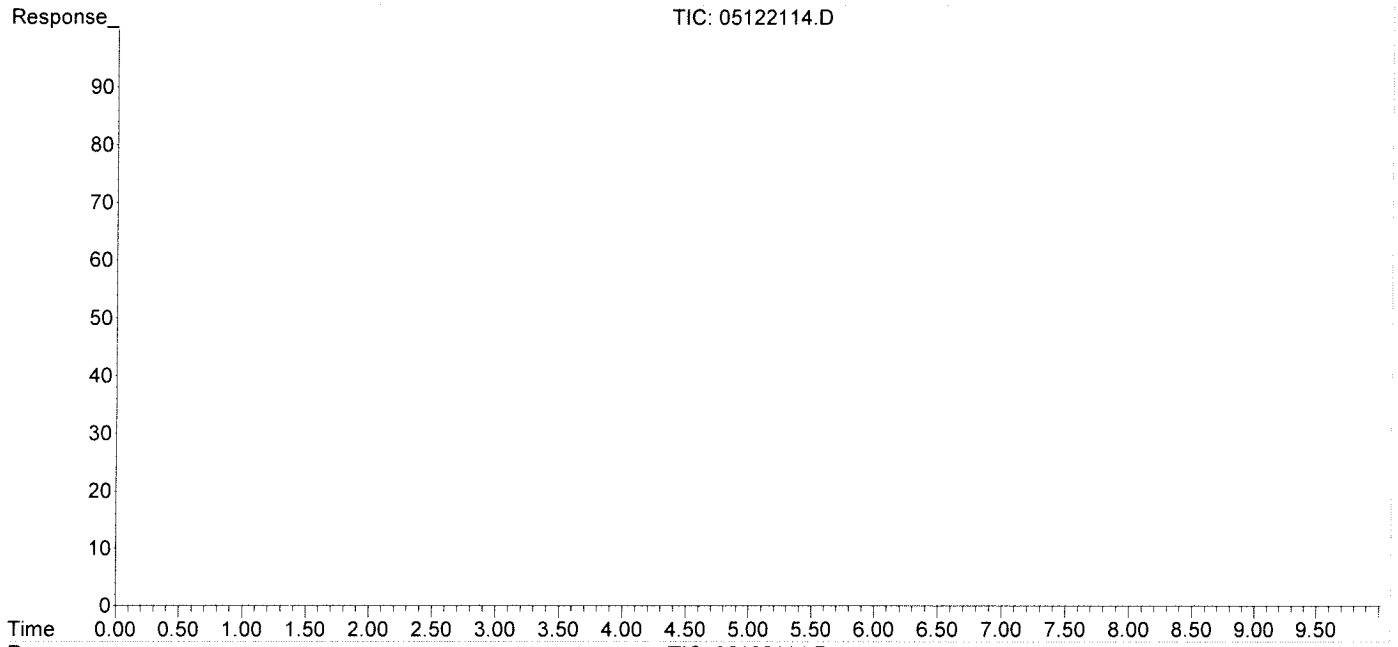
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.102	1957	0.216	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

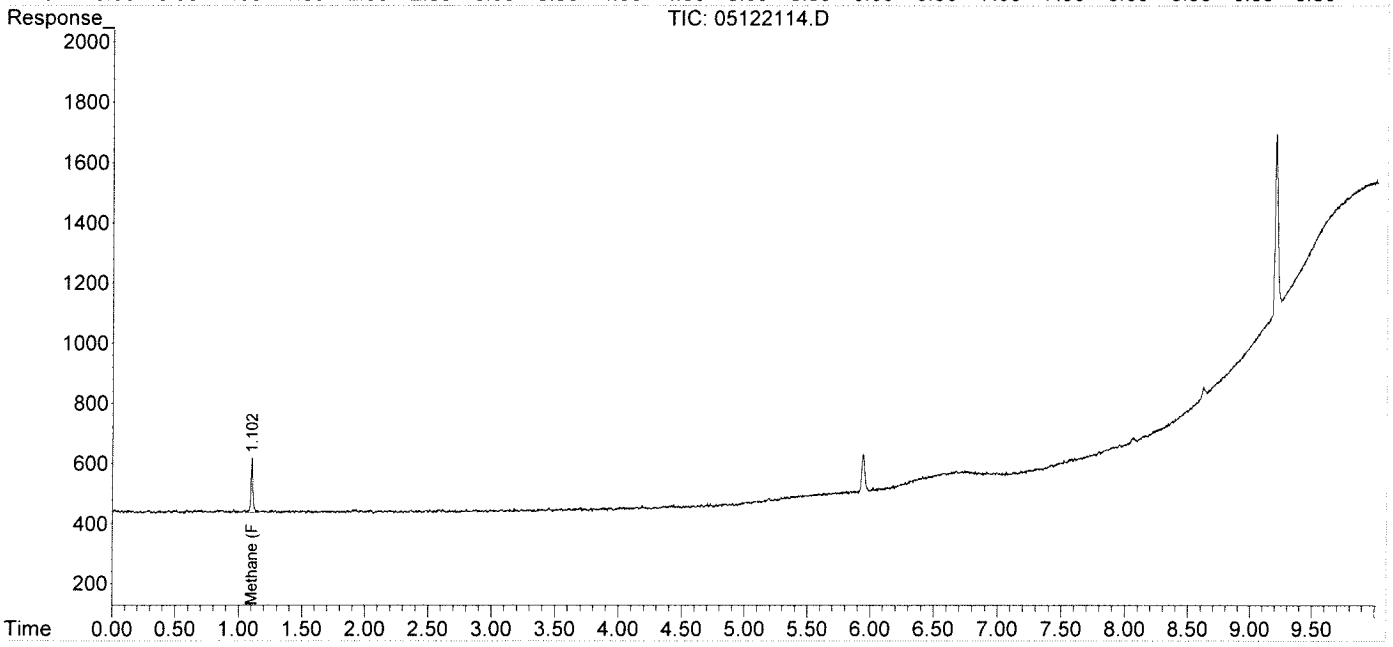
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122114.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 14:17
Operator : CB
Sample : 2422-001 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 14 14:03:26 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 10:01
Operator : CB
Sample : MCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 14 13:45:59 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

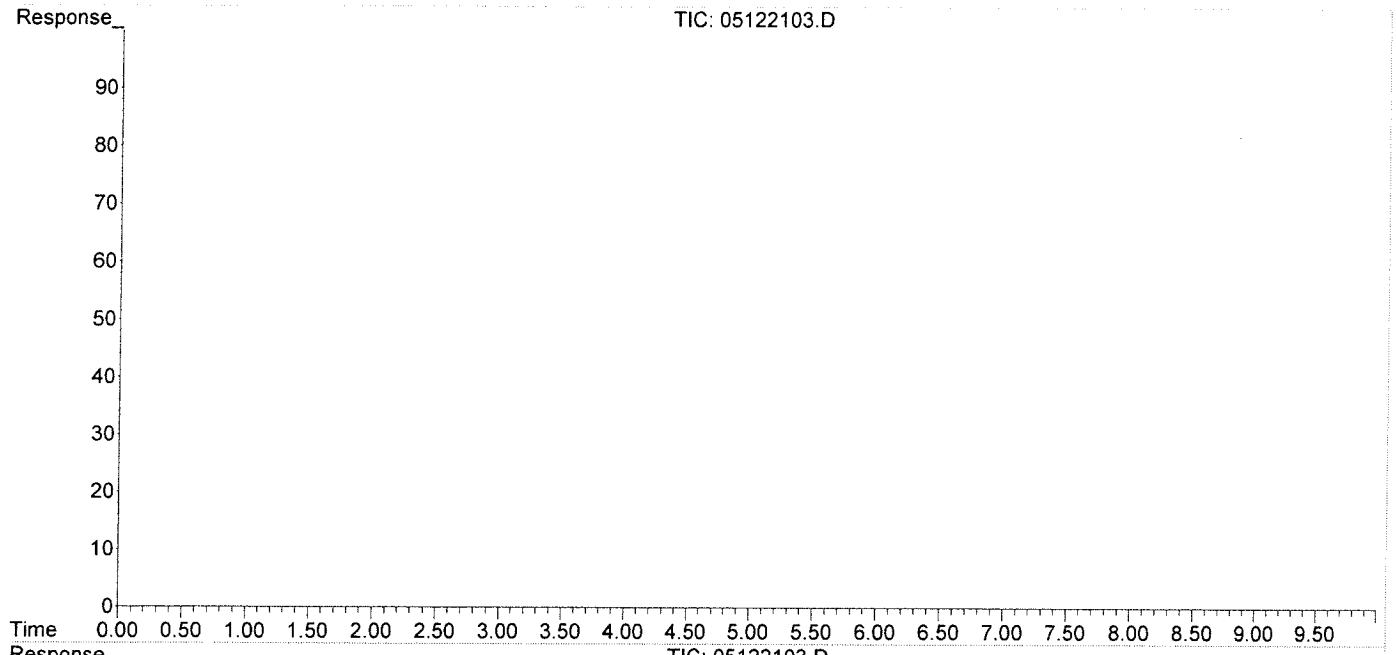
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.111	981	0.108	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

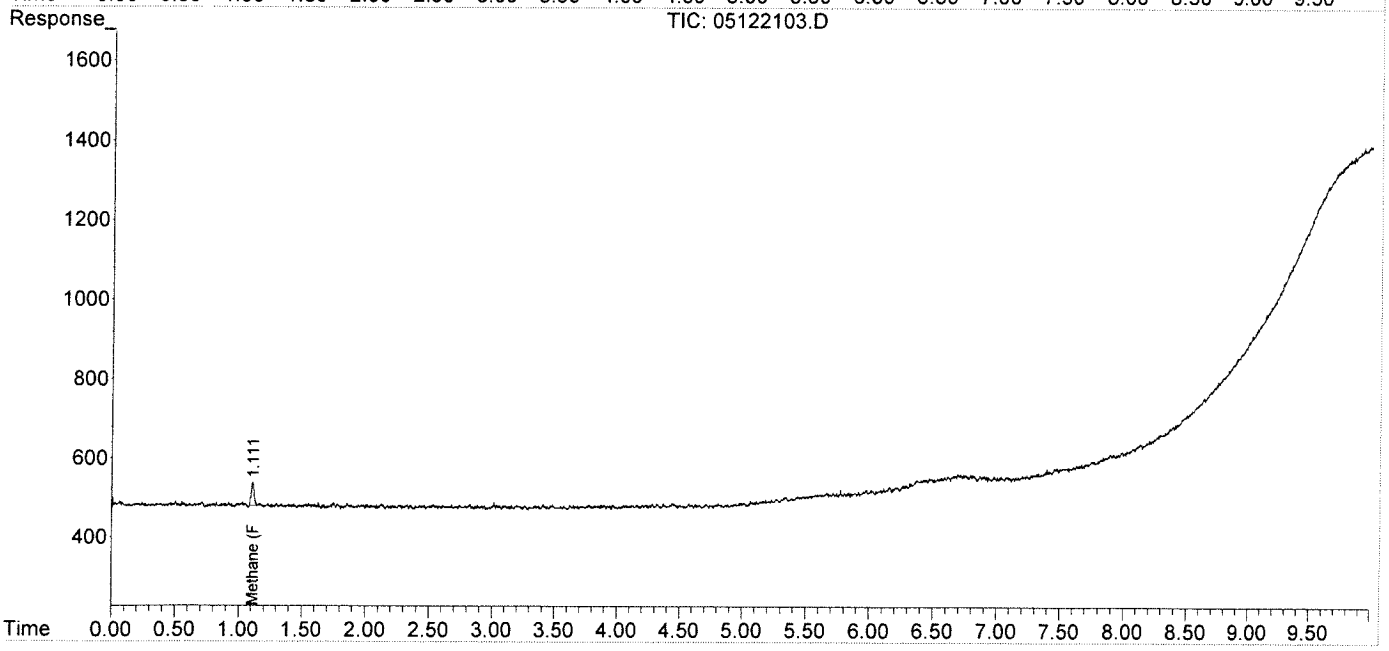
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 10:01
Operator : CB
Sample : MCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 14 13:45:59 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

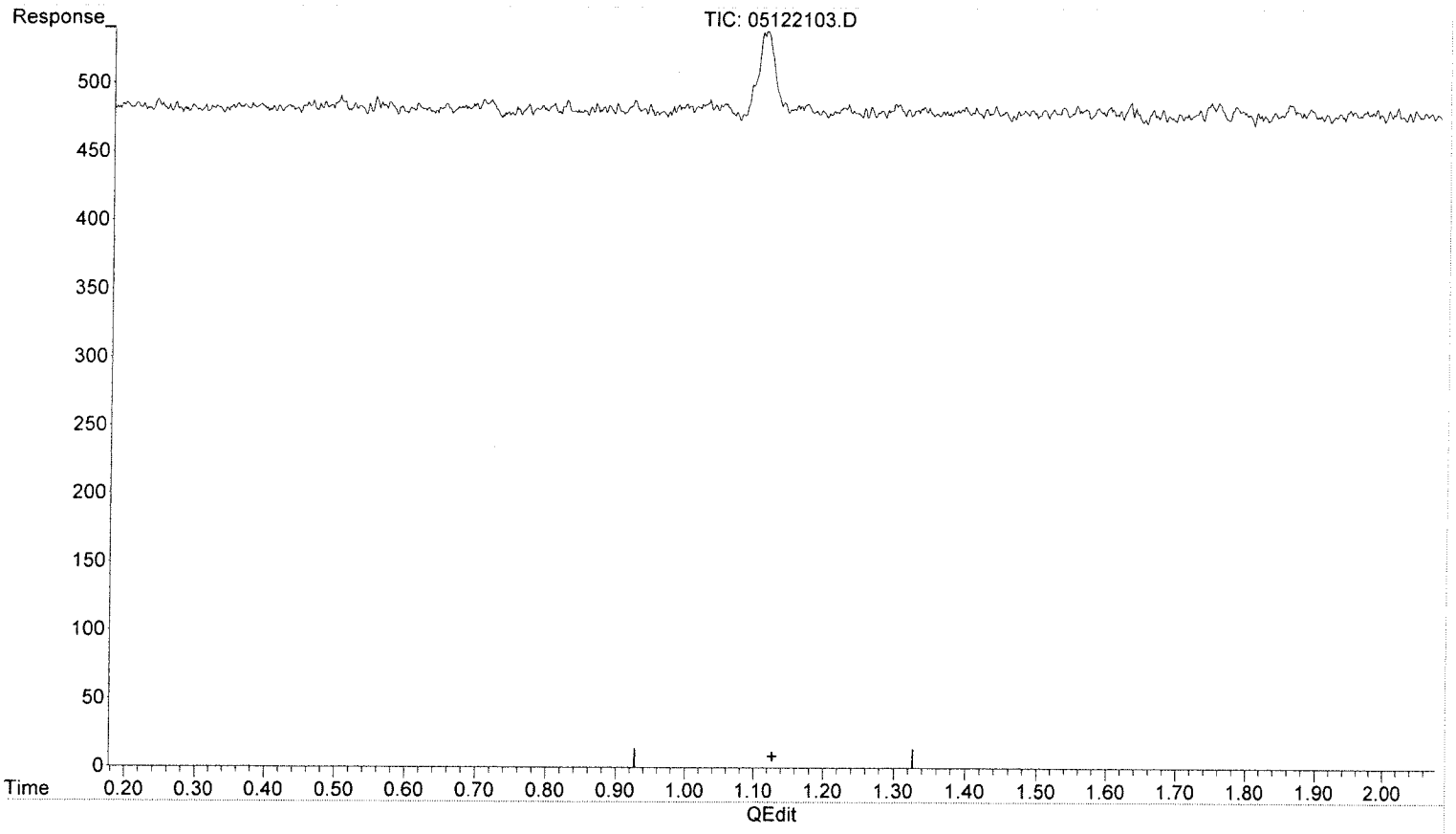




Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 10:01
Operator : CB
Sample : MCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 14 13:45:59 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.128min 0.000 ppm

response 0

Manual Integration:

Before

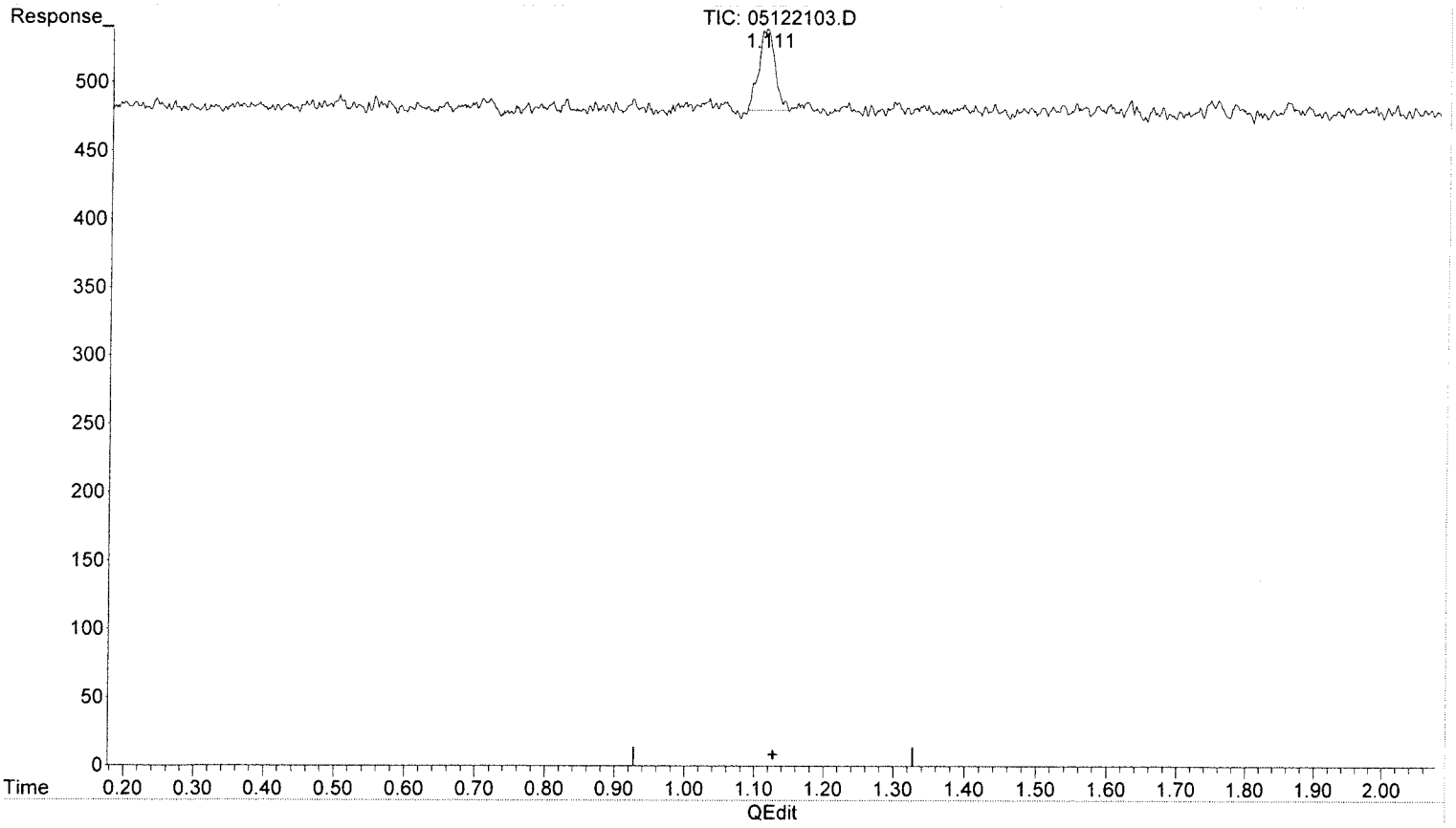
05/14/21

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 10:01
Operator : CB
Sample : MCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 14 13:45:59 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)
1.111min 0.108 ppm m
response 981

Manual Integration:
After
MP
05/14/21

(+) = Expected Retention Time
RS091217_R.M Fri May 14 13:46:19 2021 Page: 1

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122104.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 10:15
Operator : CB
Sample : LCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 14 13:46:30 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

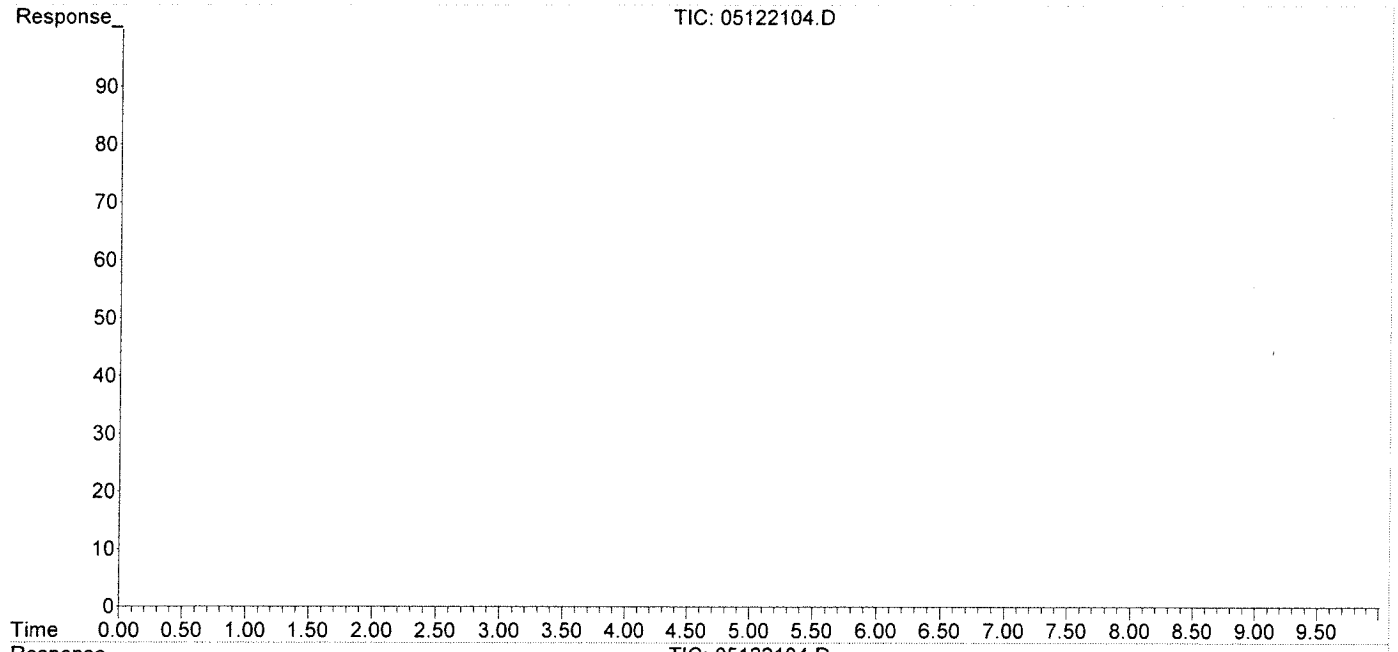
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.102	14761	1.627	ppm
7)	Ethylene	1.668	18916	1.130	ppm
8)	Ethane	1.930	22119	1.305	ppm
9)	Propylene	4.314	26480	1.130	ppm
10)	Propane	4.434	32865	1.321	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.648	44488	1.671	ppm
13)	n-Butane	6.648	44488	1.671	ppm

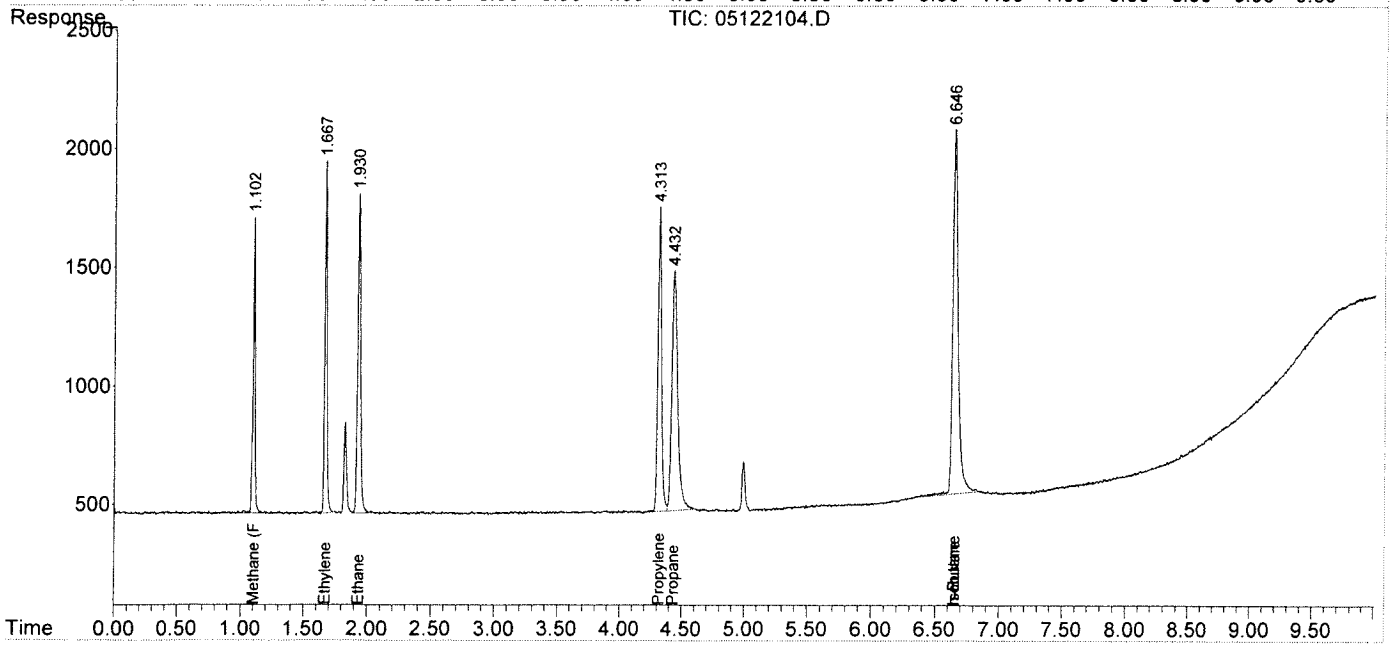
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122104.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 10:15
Operator : CB
Sample : LCS 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 14 13:46:30 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 10:41
Operator : CB
Sample : LCSD 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 14 13:46:53 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

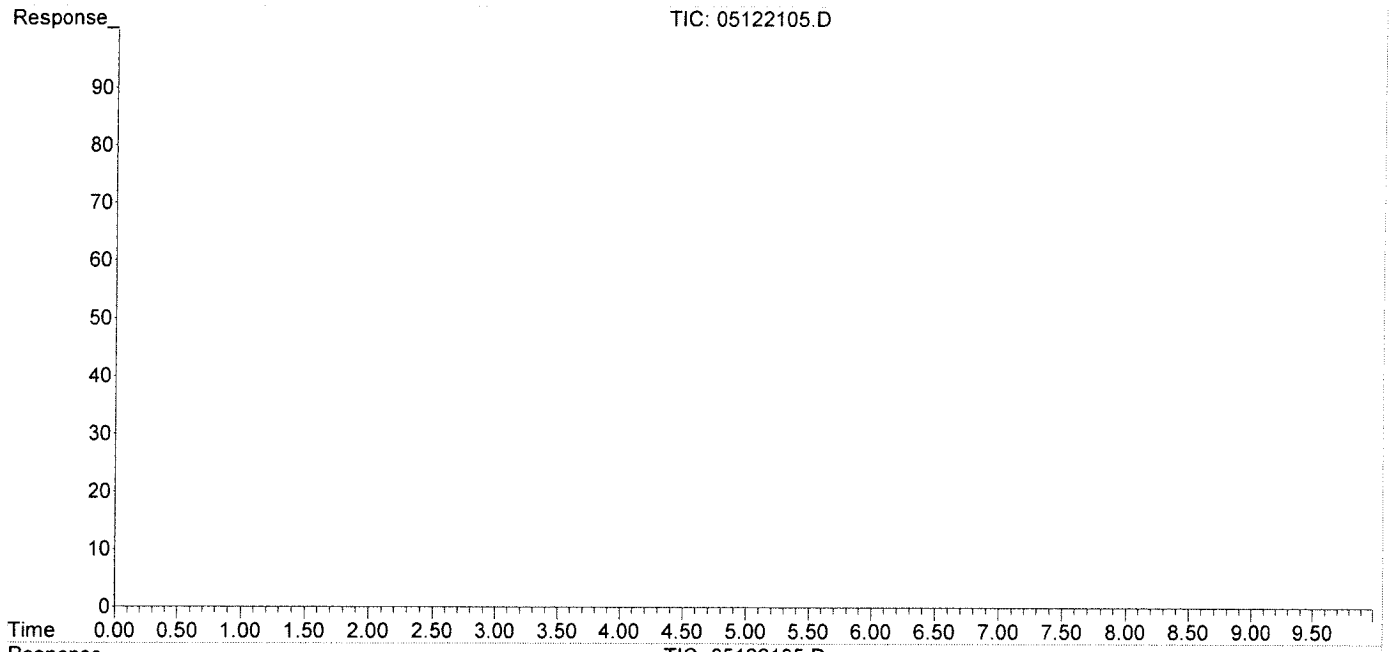
	Compound	R.T.	Response	Conc	Units
Target	Compounds				
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.106	12659	1.396	ppm
7)	Ethylene	1.670	18416	1.100	ppm
8)	Ethane	1.932	21554	1.272	ppm
9)	Propylene	4.311	25440	1.086	ppm
10)	Propane	4.431	32431	1.303	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.645f	42153	1.584	ppm
13)	n-Butane	6.645f	42153	1.584	ppm

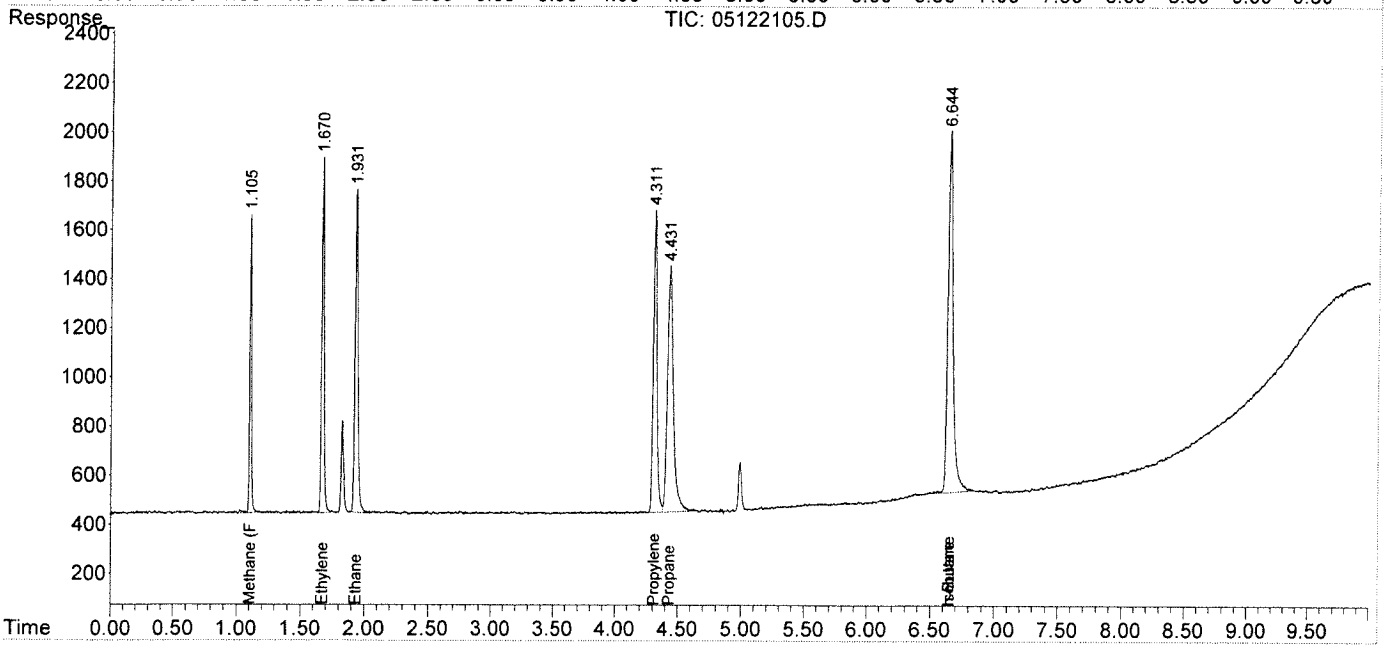
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 10:41
Operator : CB
Sample : LCSD 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 14 13:46:53 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg	%RSD
1)	Oxygen/Argon	3.739		1.014			0.001	0.793 E6	189.17
2)	Carbon monoxide	3.739		1.014			0.001	0.594 E6	221.92
3)	Methane (TCD)						2.161	0.951 E2	106.37
4)	Carbon dioxide	2.365	2.569	2.558	2.361	2.459	2.314	2.438 E2	4.44

Signal #2 Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg	%RSD
6)	Methane (FID)		1.180	0.975	0.908	0.870	0.868	0.907 E4	11.66
7)	Ethylene	1.736	1.638	1.780	1.720	1.628	1.670	1.673 E4	3.90
8)	Ethane	1.781	1.676	1.784	1.730	1.692	1.675	1.695 E4	3.83
9)	Propylene	2.505	2.296	2.592	2.480	2.346	2.252	2.343 E4	6.56
10)	Propane	2.439	2.283	2.645	2.555	2.433	2.522	2.488 E4	4.20
11)	Isobutylene							0.652 E1	138.46
12)	Isobutane	6.058	4.793	2.214	1.553	1.353		2.662 E4	86.17
13)	n-Butane	6.058	4.793	2.214	1.553	1.353		2.662 E4	86.17

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS091217_R.M Wed Sep 13 15:11:48 2017

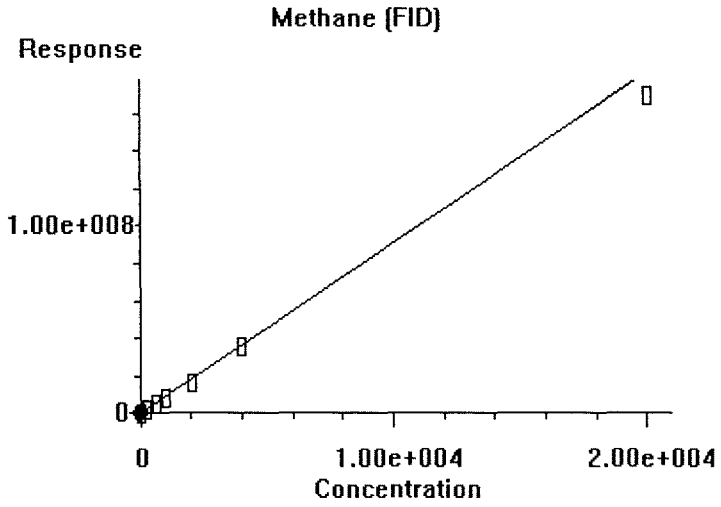
Edit Compounds -- Compound #6 -- Methane (FID)

Search by: Ret Time Name Index Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response	Lvl ID	Concentration	Response
1	0.151000		11	20000.000000	169009160.49199
2	0.302000	3564.400000			
3	1.510000	14725.268625			
4	4.530000	41128.575000			
5	10.570000	91966.784531			
6	200.000000	1735997.497500			
7	600.000000	5189848.900000			
8	1000.000000	8598533.570000			
9	2000.000000	16098209.390000			
10	4000.000000	35776839.311362			



0.000e+000	Quadratic term
9.071e+003	Linear term
0.000e+000	Constant term
11.657%	RF Rel Std Dev

OK Cancel Help Print Calibration Curve Copy Calibration Curve

Edit Compounds -- Compound #7 -- Ethylene

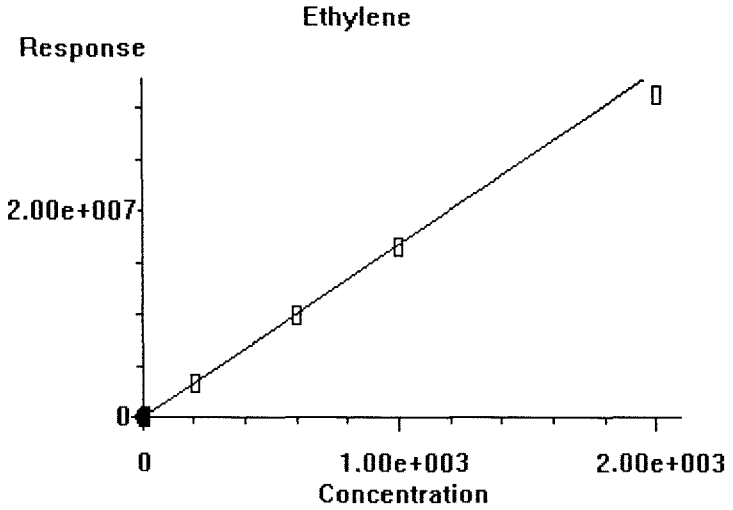
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2621.970000
2	0.302000	4946.731301
3	1.510000	26884.746847
4	4.530000	77902.721497
5	10.570000	172085.529560
6	200.000000	3339702.313219
7	600.000000	10007758.776971
8	1000.000000	16608503.805988
9	2000.000000	31192443.898600
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.673e+004	Linear term
0.000e+000	Constant term
3.897%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #8 -- Ethane

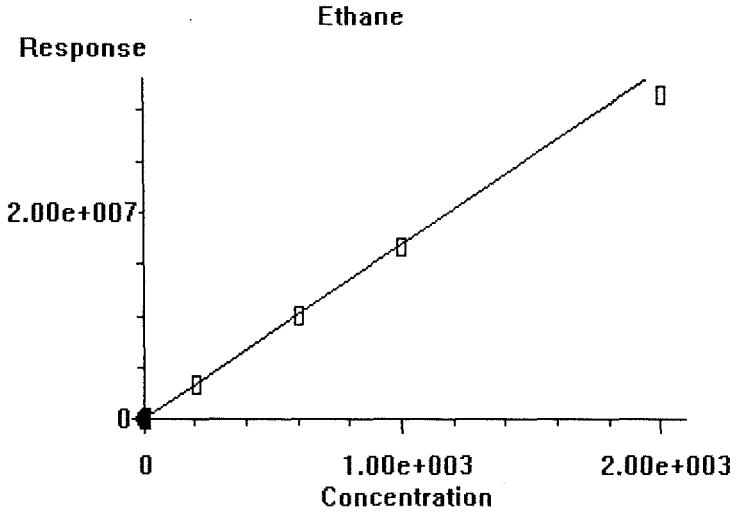
Search by: Ret Time Name Index Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2689.928008
2	0.302000	5060.331943
3	1.510000	26943.667500
4	4.530000	78353.525045
5	10.570000	178840.731148
6	200.000000	3350442.319129
7	600.000000	10048964.218029
8	1000.000000	16709164.879012
9	2000.000000	31424217.938900
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.695e+004	Linear term
0.000e+000	Constant term
3.831%	RF Rel Std Dev

OK Cancel Help Print Calibration Curve Copy Calibration Curve

Edit Compounds -- Compound #9 -- Propylene

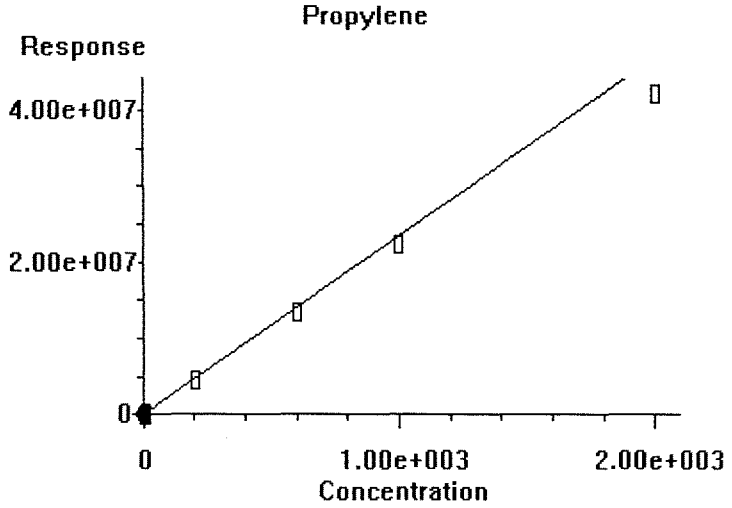
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3782.537646
2	0.302000	6933.285530
3	1.510000	39139.518208
4	4.530000	112341.896872
5	10.570000	248003.903623
6	200.000000	4504060.086084
7	600.000000	13569342.761419
8	1000.000000	22494887.720990
9	2000.000000	42124689.656800
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.343e+004	Linear term
0.000e+000	Constant term
6.559%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #10 -- Propane

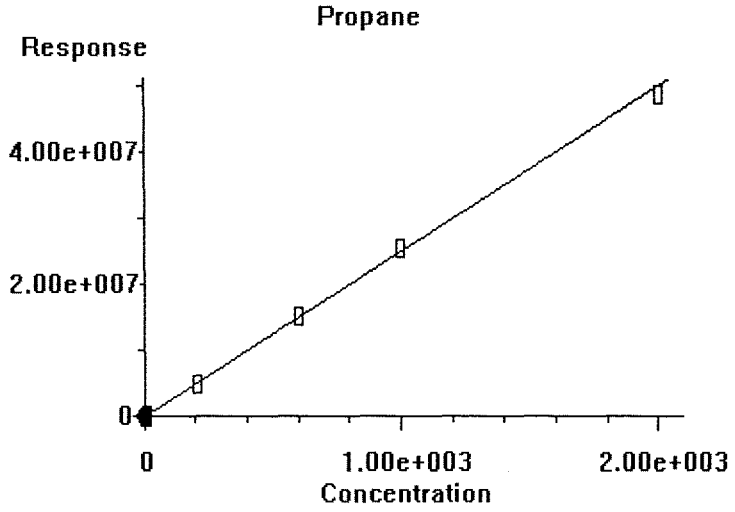
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
  - External Standard Compoun
    - Oxygen/Argon
    - Carbon monoxide
    - Methane (TCD)
    - Carbon dioxide
    - Signal #2
    - Methane (FID)
    - Ethylene
    - Ethane
    - Propylene
    - Propane
    - Isobutylene
    - Isobutane
    - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3682.897354
2	0.302000	6894.237803
3	1.510000	39934.166792
4	4.530000	115723.428128
5	10.570000	257124.432806
6	200.000000	5043035.663916
7	600.000000	15251325.797404
8	1000.000000	25459410.657938
9	2000.000000	48583085.287451
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.488e+004	Linear term
0.000e+000	Constant term
4.200%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121702.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121703.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121704.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121705.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121706.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121707.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121711.D
11	11	20000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121712.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Sep 13 11:04 2017	Sep 12 15:03 2017	12-Sep-2017, 10:52
2	2	Sep 13 11:05 2017	Sep 13 11:05 2017	12-Sep-2017, 11:05
3	3	Sep 13 11:06 2017	Sep 13 11:05 2017	12-Sep-2017, 11:45
4	4	Sep 13 11:09 2017	Sep 13 11:06 2017	12-Sep-2017, 12:09
5	5	Sep 13 11:09 2017	Sep 13 11:09 2017	12-Sep-2017, 12:30
6	6	Sep 13 11:10 2017	Sep 13 11:10 2017	12-Sep-2017, 12:47
7	7	Sep 13 11:11 2017	Sep 13 11:10 2017	12-Sep-2017, 13:00
8	8	Sep 13 11:12 2017	Sep 13 11:11 2017	12-Sep-2017, 13:47
9	9	Sep 13 11:12 2017	Sep 13 11:12 2017	12-Sep-2017, 14:07
10	10	Sep 13 11:14 2017	Sep 13 11:13 2017	12-Sep-2017, 14:48
11	11	Sep 13 11:14 2017	Sep 13 11:14 2017	12-Sep-2017, 15:21

RS091217_R.M Wed Sep 13 15:11:22 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.767	373920	0.128	ppm	
2)	Carbon monoxide	1.767	373920	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	1.595	2622	0.156	ppm	
8)	Ethane	1.848	2690	0.156	ppm	
9)	Propylene	4.222	3783	0.154	ppm	
10)	Propane	4.348	3683	0.139	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.582f	6058	NoCal	ppm	
13)	n-Butane	6.582f	6058	NoCal	ppm	

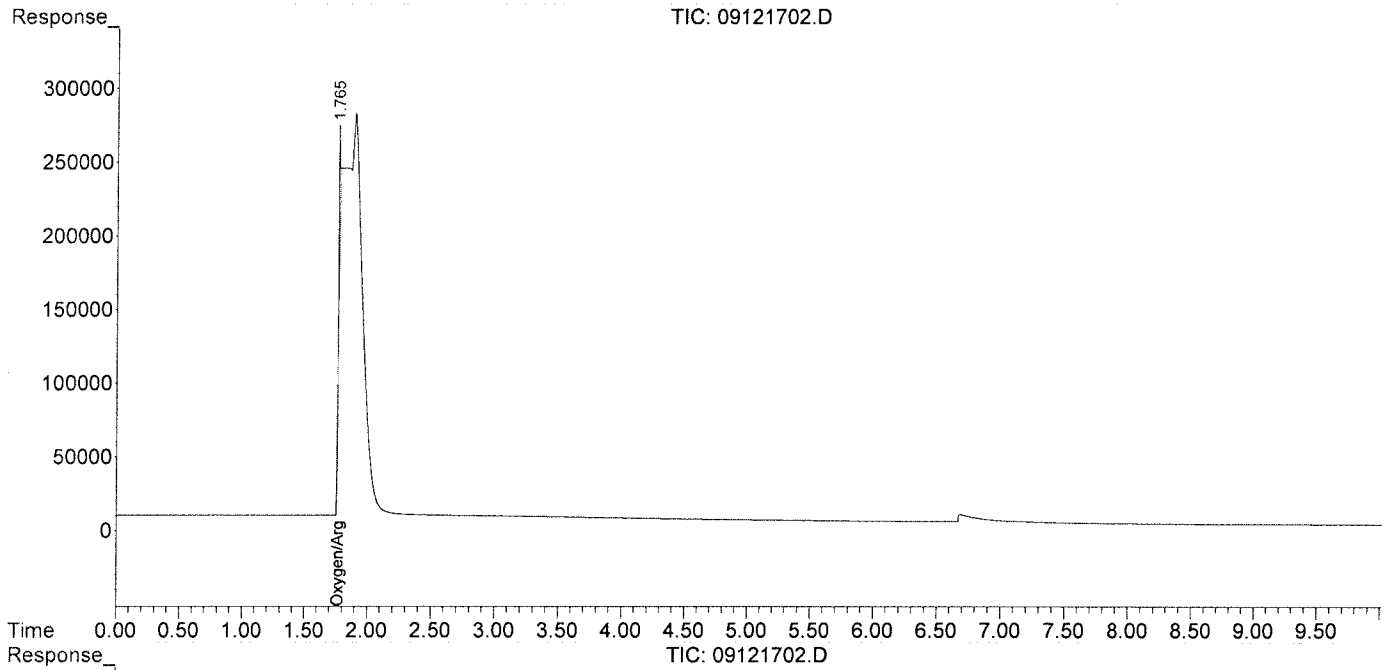
(f)=RT Delta > 1/2 Window (m)=manual int.

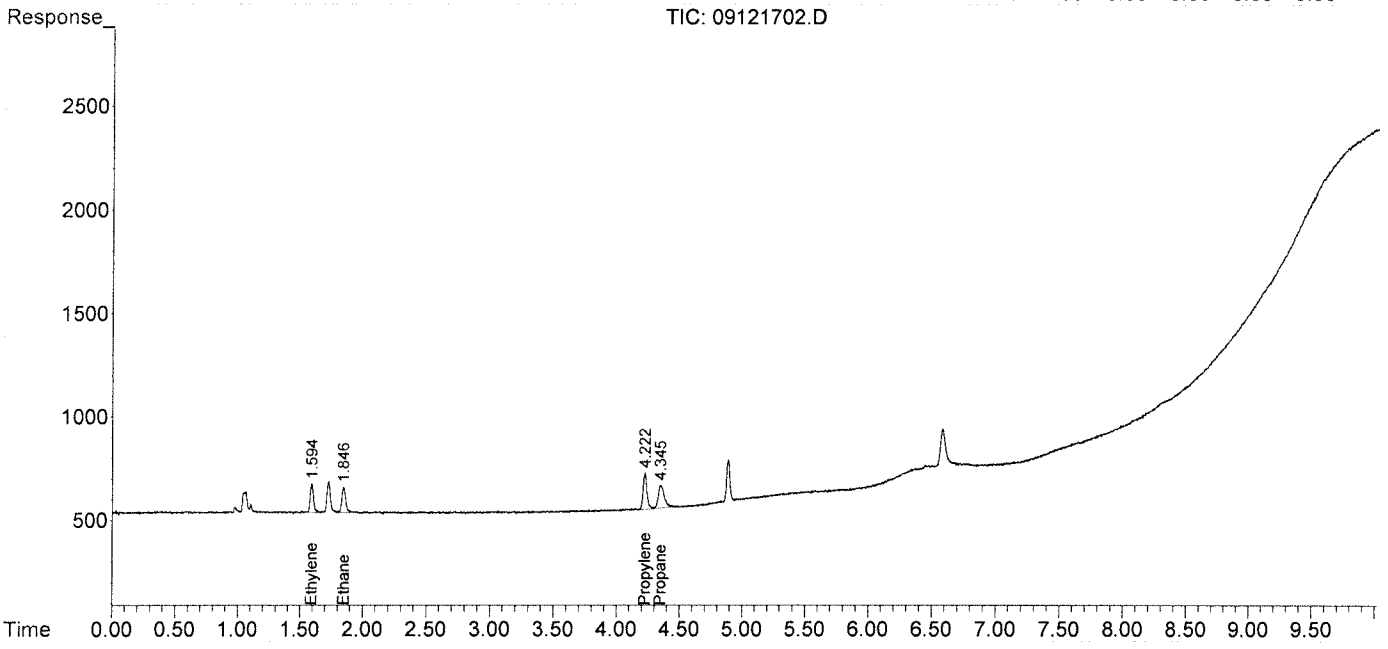
9/13/17

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

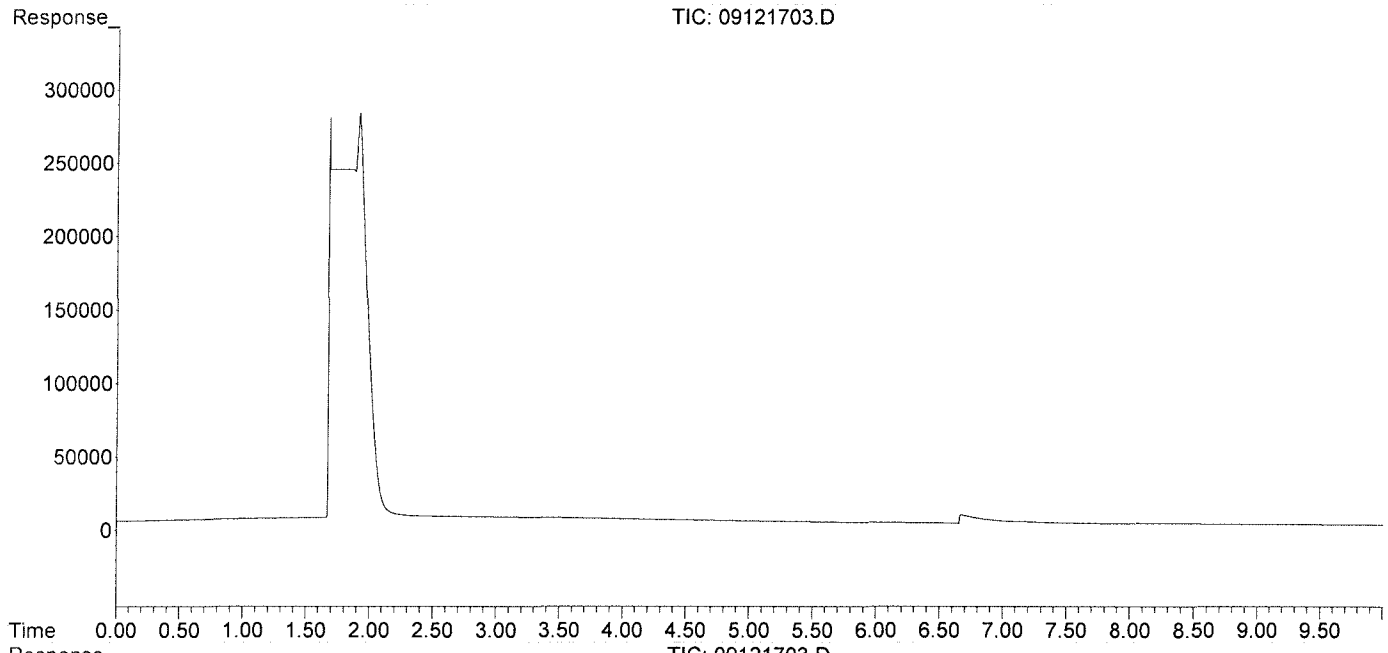
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.913f	-25181981	N.D.	ppm	
2)	Carbon monoxide	1.913f	-25181981	1.089	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.049	3564	0.391	ppm	m
7)	Ethylene	1.577	4947	0.292	ppm	
8)	Ethane	1.828	5060	0.293	ppm	
9)	Propylene	4.207	6933	0.281	ppm	
10)	Propane	4.337	6894	0.268	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	9587	0.158	ppm	
13)	n-Butane	6.579f	9587	0.158	ppm	

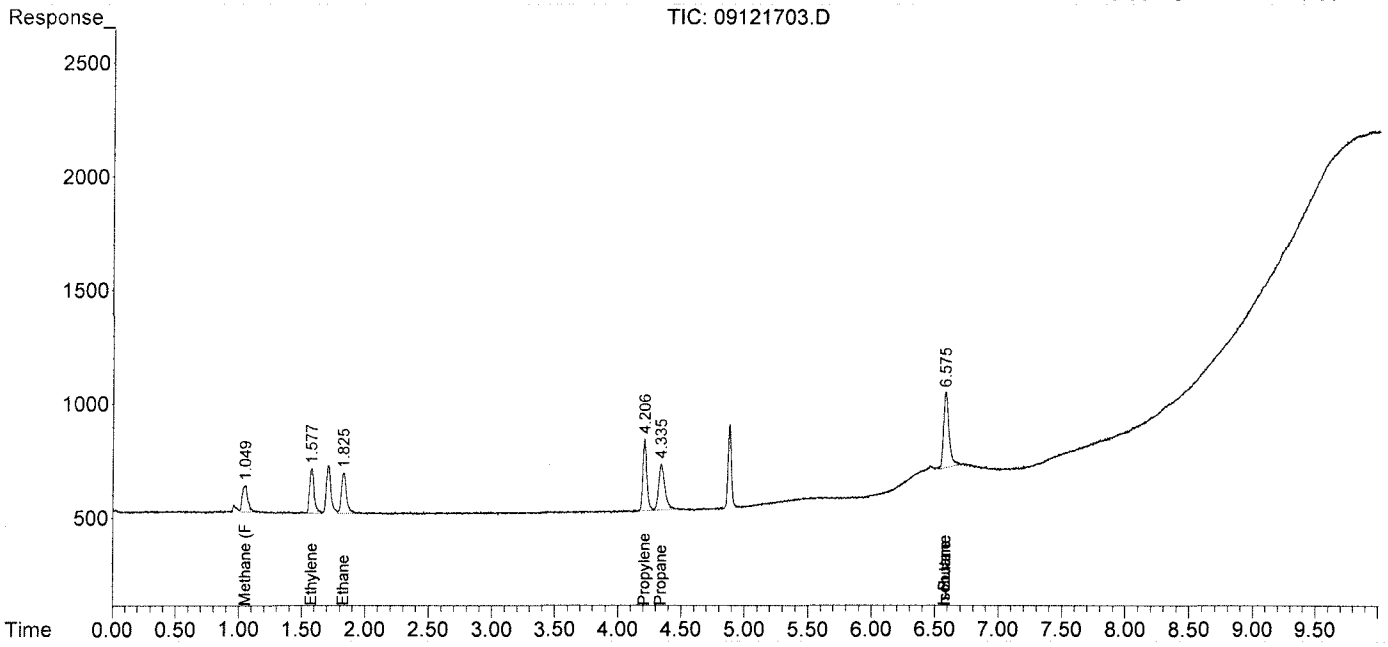
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

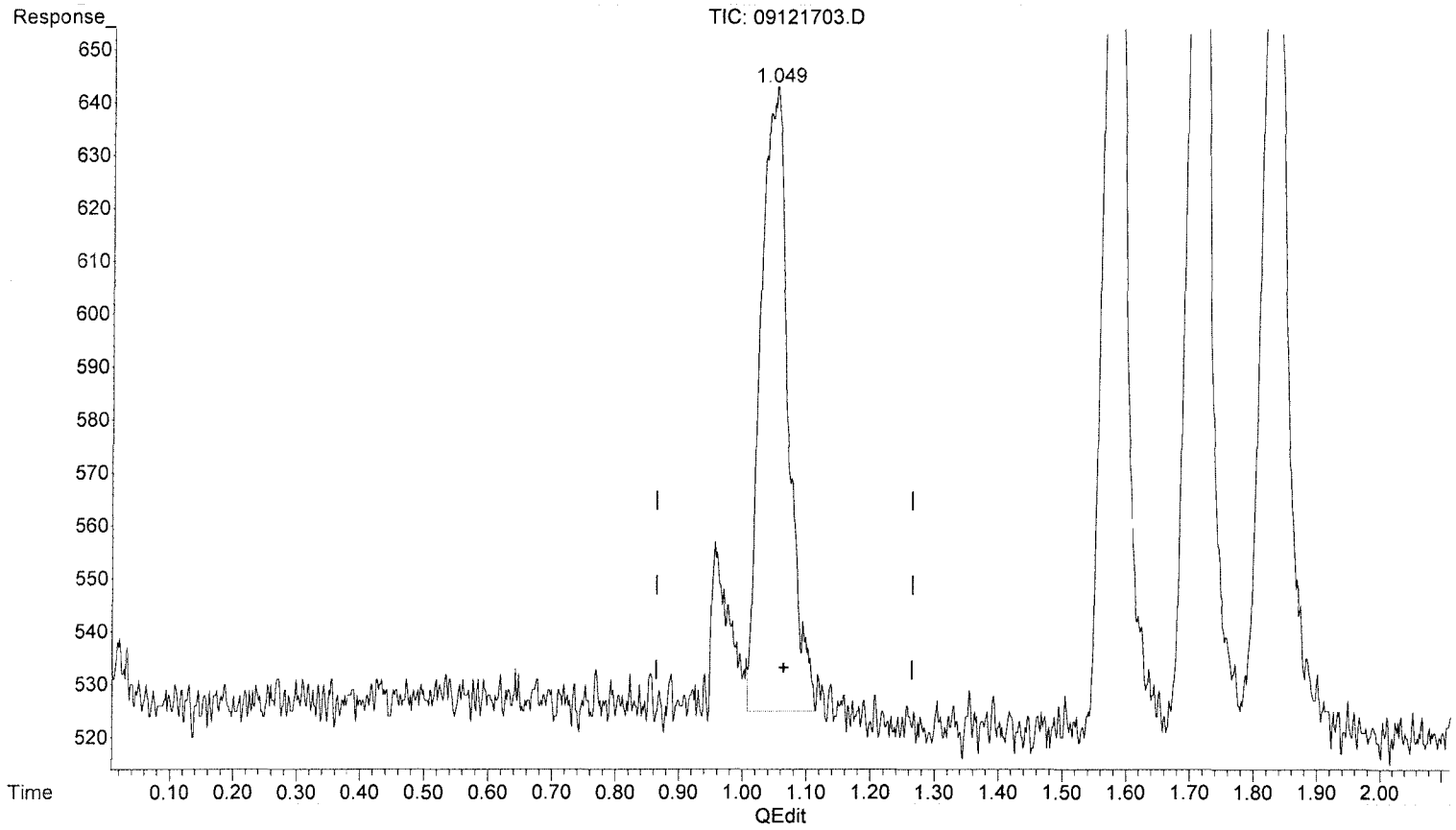




Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.049min 0.391 ppm m

response 3564

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

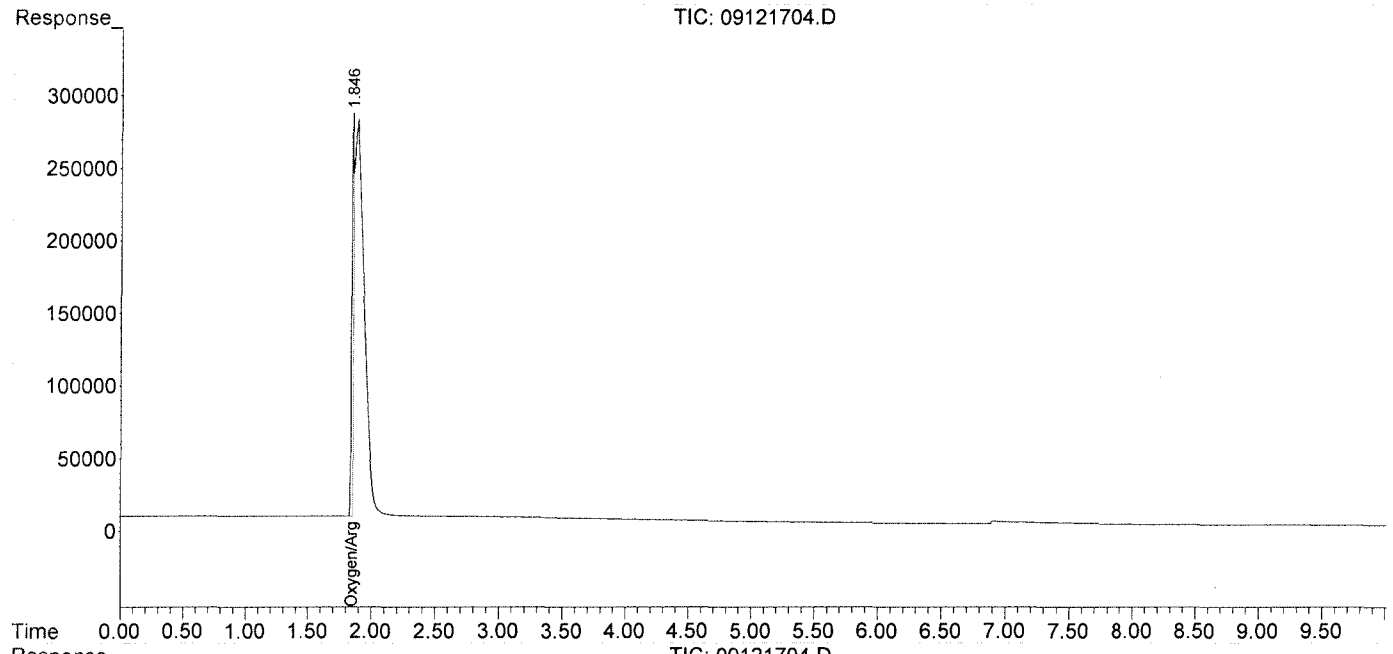
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.847	2536230	1.056	ppm
2)	Carbon monoxide	1.847	2536230	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.064	14725	1.613	ppm
7)	Ethylene	1.598	26885	1.582	ppm
8)	Ethane	1.851	26944	1.555	ppm
9)	Propylene	4.220	39140	1.589	ppm
10)	Propane	4.349	39934	1.596	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	55348	1.020	ppm
13)	n-Butane	6.578f	55348	1.020	ppm

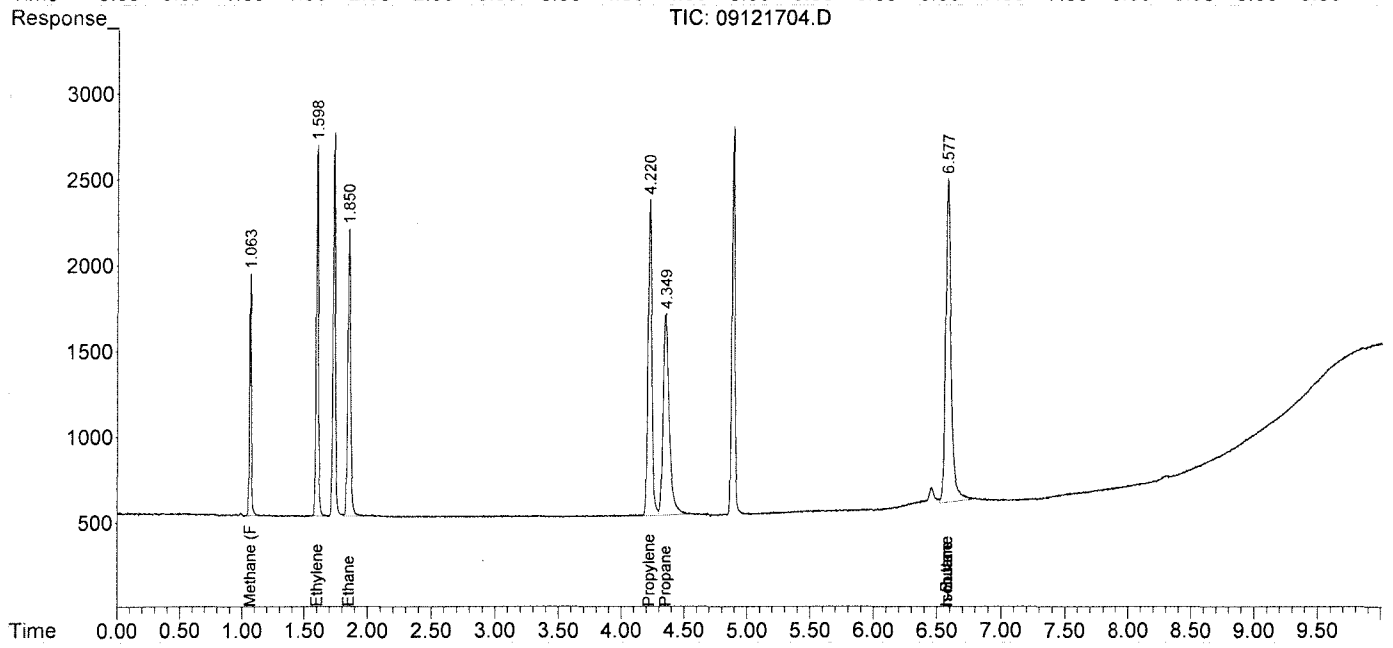
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

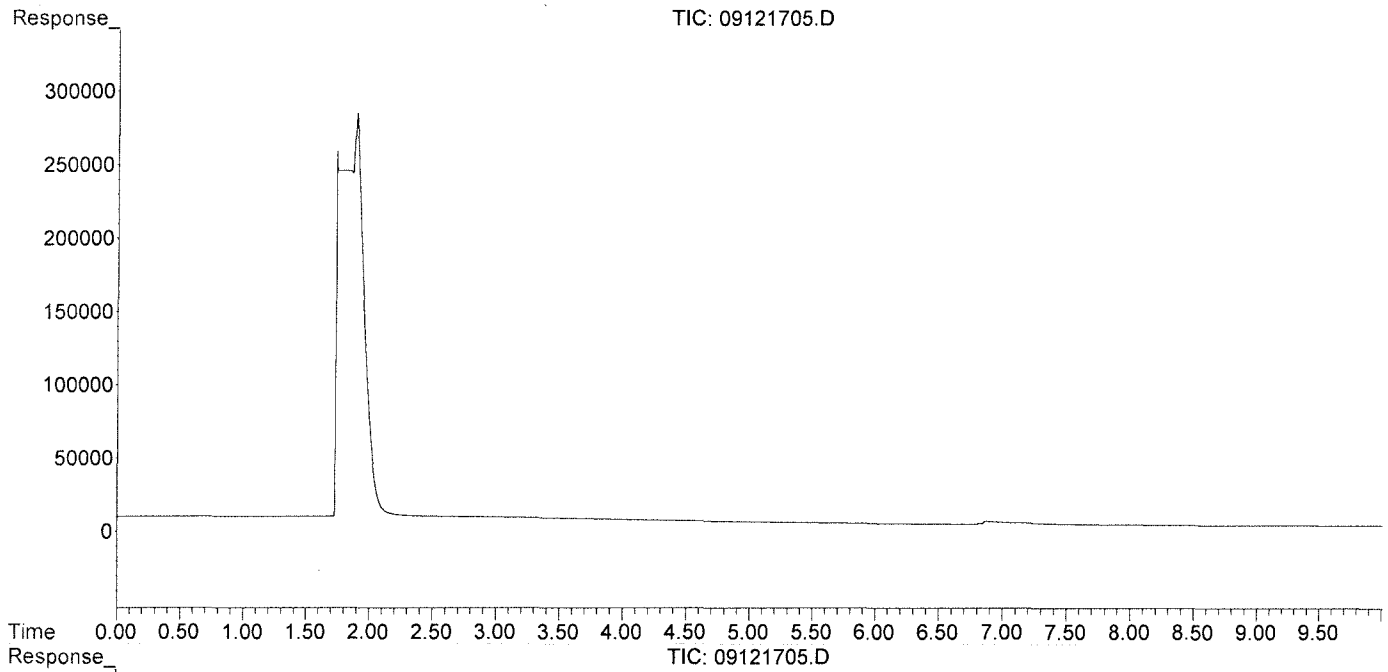
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.738	-331216	N.D.	ppm
2)	Carbon monoxide	1.738	-331216	0.019	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.052	41129	4.522	ppm
7)	Ethylene	1.586	77903	4.637	ppm
8)	Ethane	1.838	78354	4.558	ppm
9)	Propylene	4.218	112342	4.614	ppm
10)	Propane	4.347	115723	4.680	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.580f	155256	3.565	ppm
13)	n-Butane	6.580f	155256	3.565	ppm

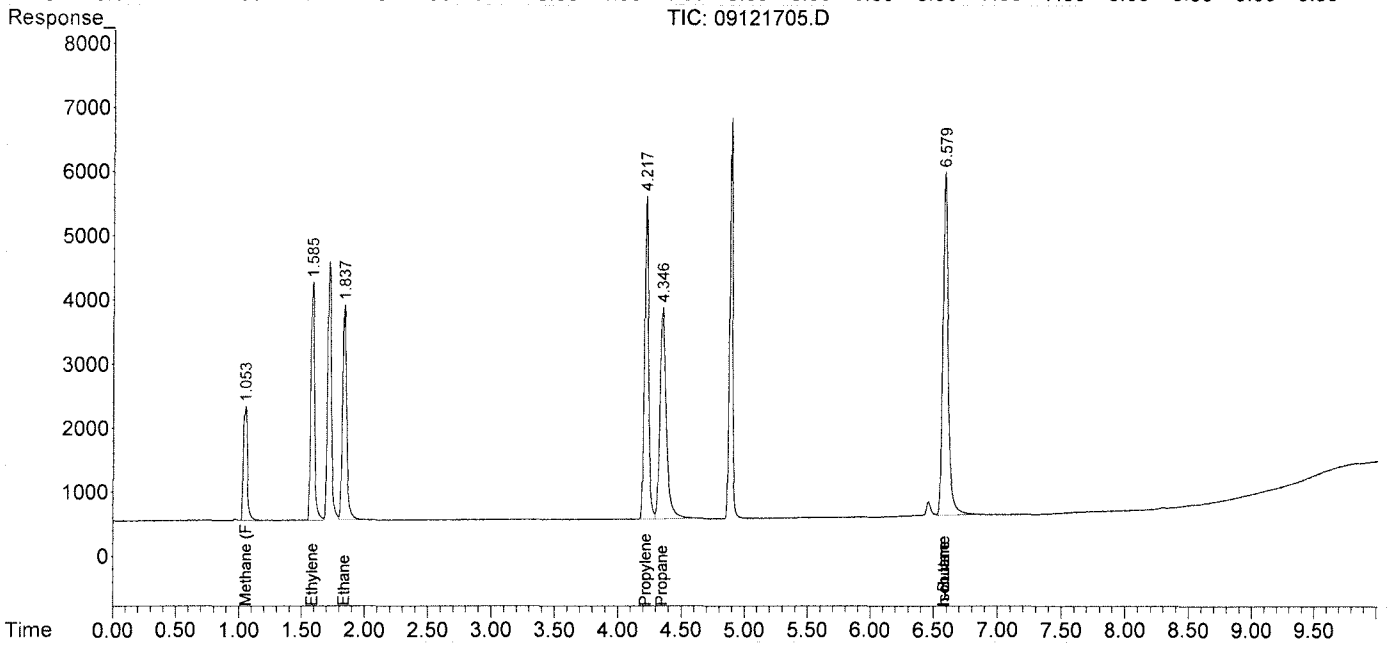
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

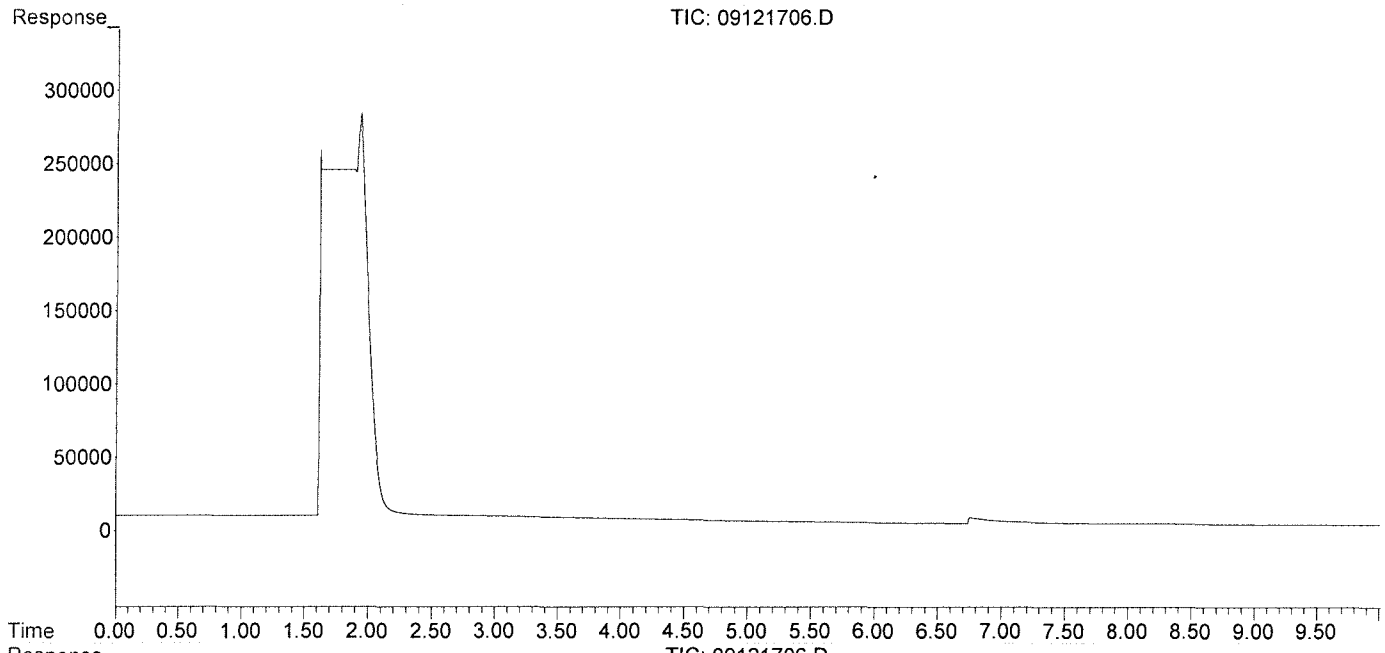
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.929f	-31871242	N.D.	ppm
2)	Carbon monoxide	1.929f	-31871242	1.818	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.025	91967	10.135	ppm
7)	Ethylene	1.568	172086	10.273	ppm
8)	Ethane	1.822	178841	10.441	ppm
9)	Propylene	4.214	248004	10.236	ppm
10)	Propane	4.344	257124	10.458	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	338181	9.254	ppm
13)	n-Butane	6.578f	338181	9.254	ppm

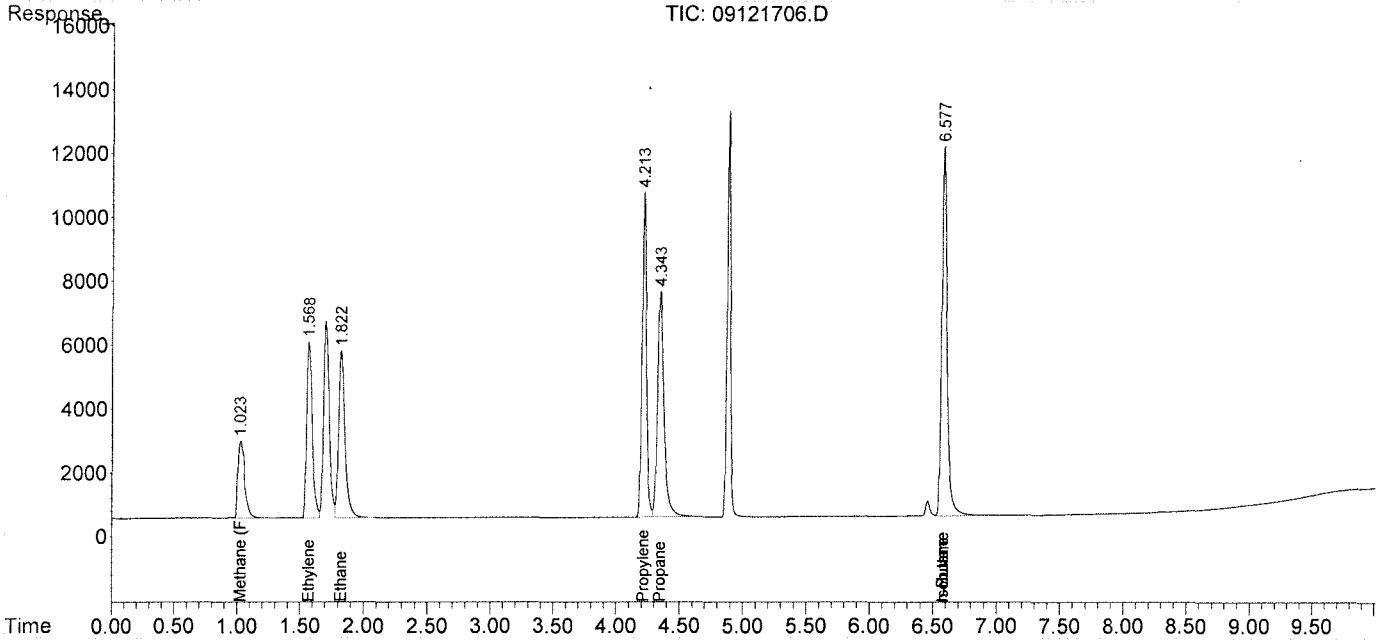
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

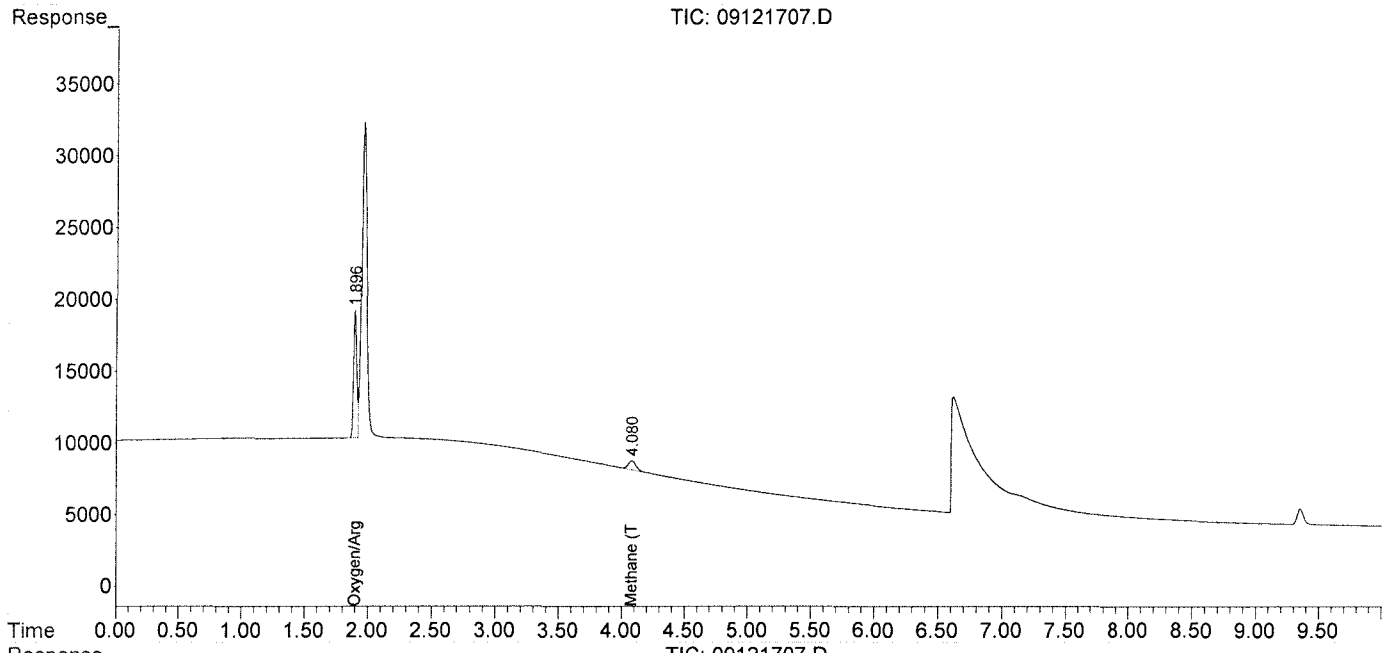
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.897	155286	0.065	ppm
2)	Carbon monoxide	1.897	155286	N.D.	ppm
3)	Methane (TCD)	4.079f	27015	2856.472	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.063	1735997	190.792	ppm
7)	Ethylene	1.597	3339702	198.758	ppm
8)	Ethane	1.849	3350442	194.597	ppm
9)	Propylene	4.201	4504060	185.706	ppm
10)	Propane	4.333	5043036	204.809	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

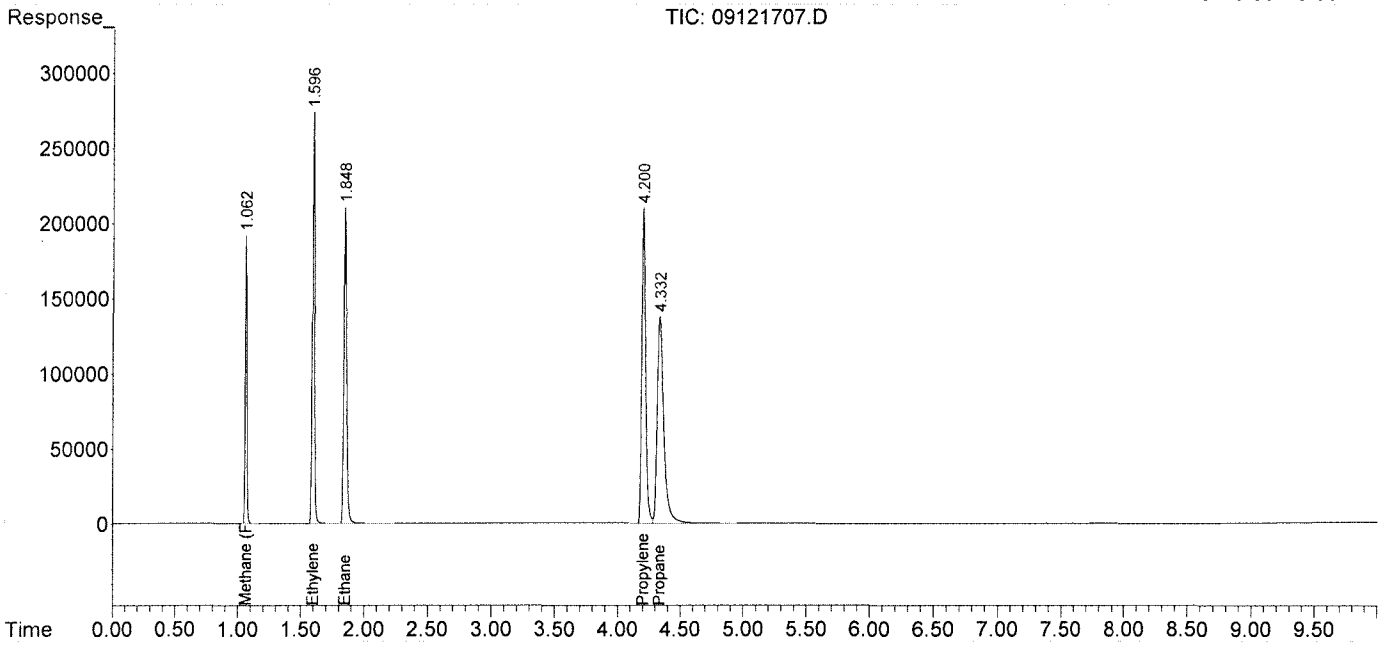
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

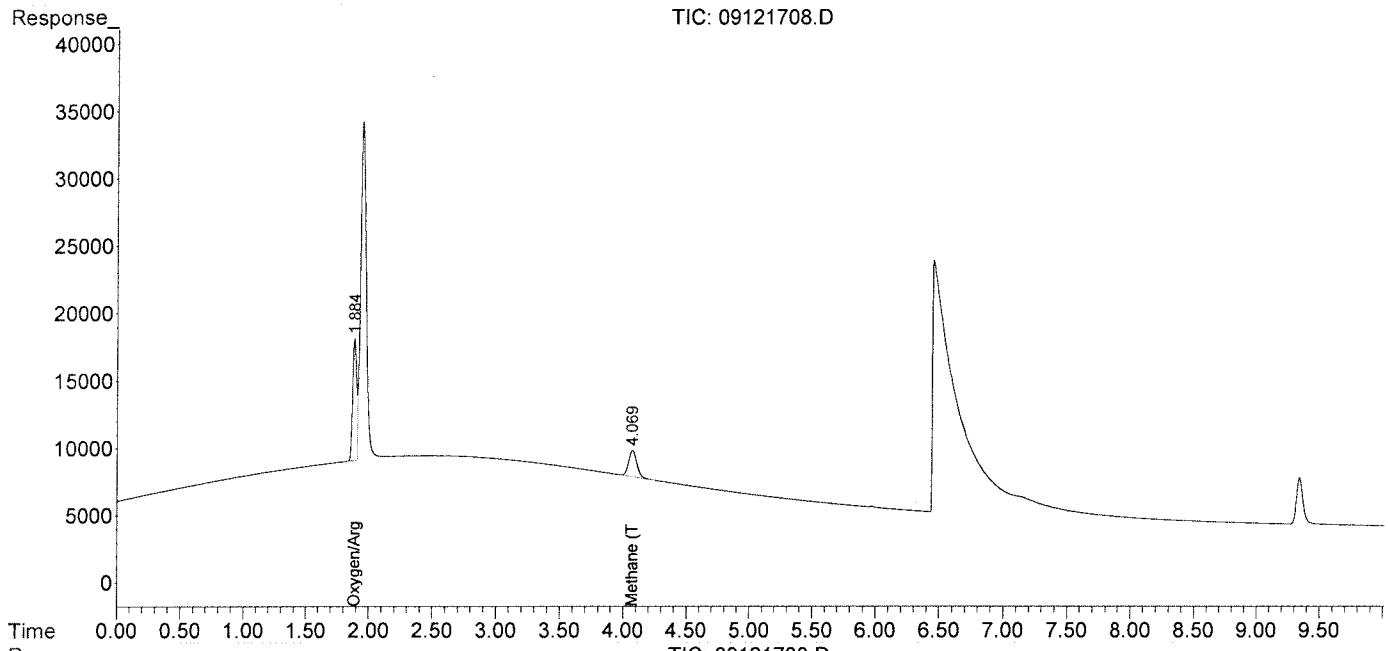
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.884	196022	0.124	ppm
2)	Carbon monoxide	1.884	196022	N.D.	ppm
3)	Methane (TCD)	4.070f	88282	782.730	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.044	5189849	539.759	ppm
7)	Ethylene	1.573	10007759	590.286	ppm
8)	Ethane	1.822	10048964	583.213	ppm
9)	Propylene	4.160	13569343	562.612	ppm
10)	Propane	4.300	15251326	615.171	ppm
11)	Isobutylene	6.143	9815	NoCal	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

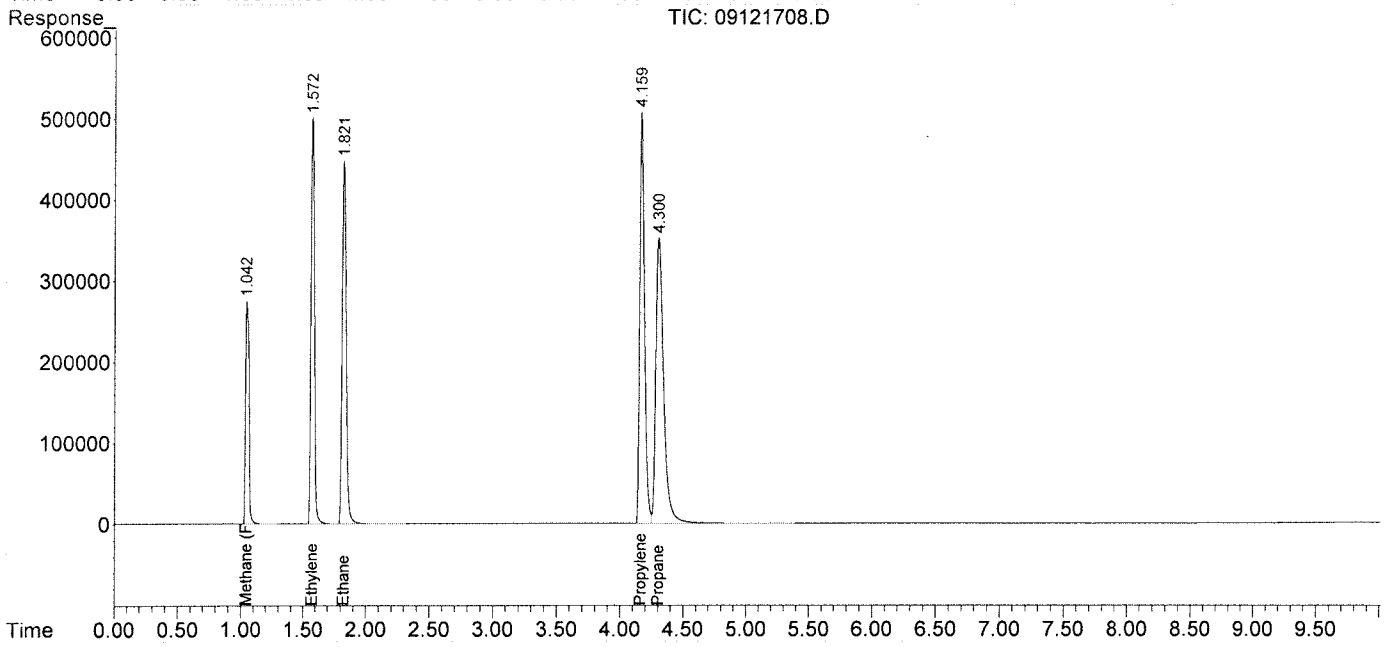
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

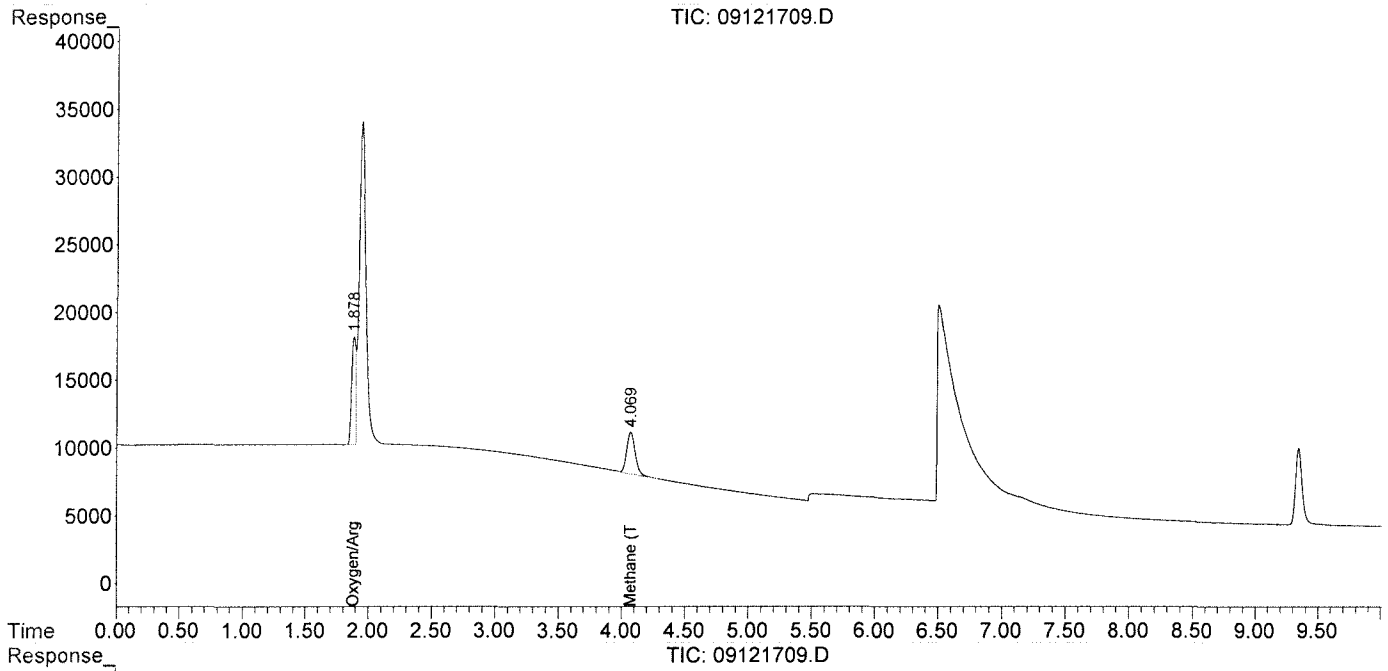
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.879	192611	0.162	ppm
2)	Carbon monoxide	1.879	192611	N.D.	ppm
3)	Methane (TCD)	4.070f	145492	1244.729	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.039	8598534	945.644	ppm
7)	Ethylene	1.576	16608504	981.887	ppm
8)	Ethane	1.827	16709165	973.644	ppm
9)	Propylene	4.161	22494888	941.060	ppm
10)	Propane	4.298	25459411	1023.223	ppm
11)	Isobutylene	6.138	16970	8645.243	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

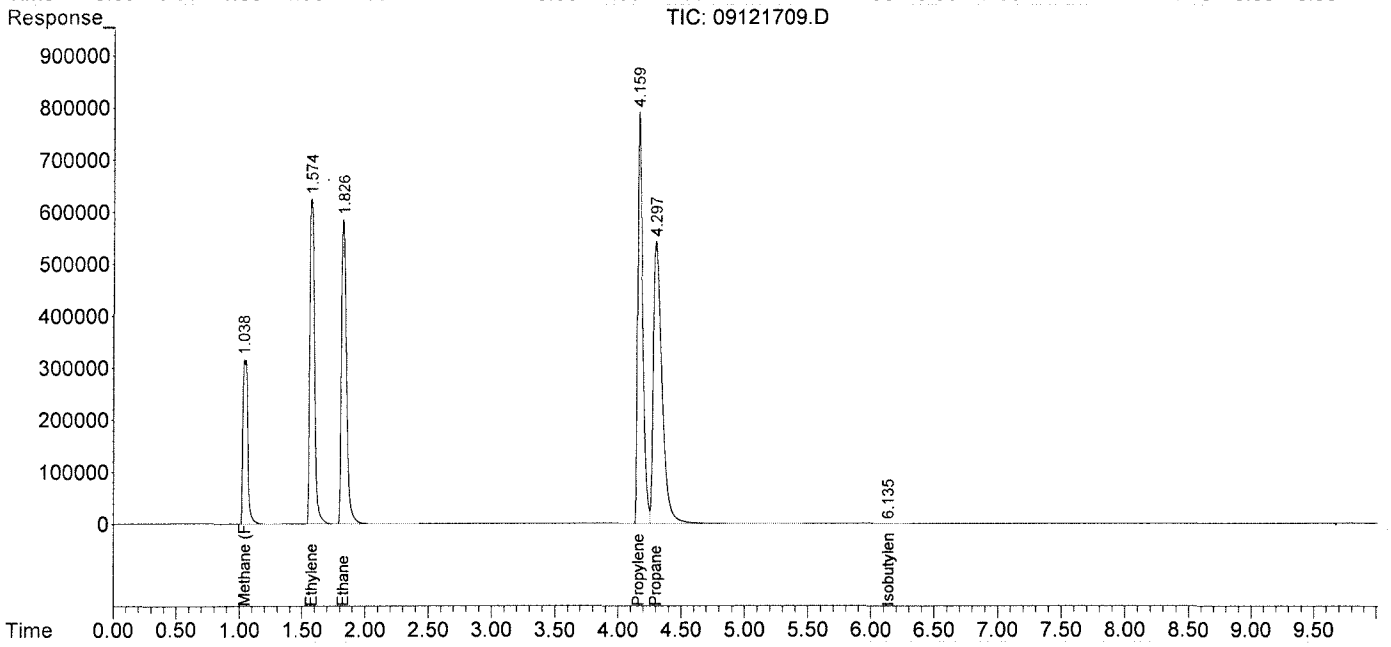
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

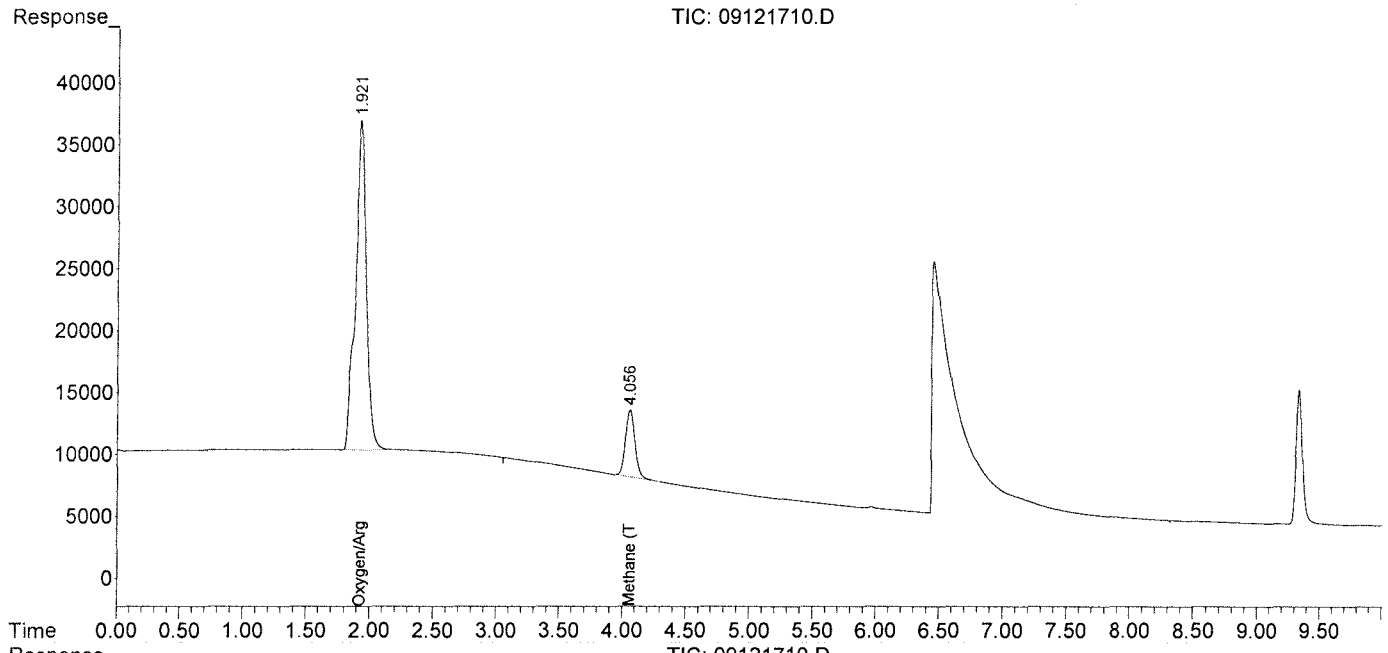
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.922f	1578147	1.659	ppm	
2)	Carbon monoxide	1.922f	1578147	N.D.	ppm	
3)	Methane (TCD)	4.057f	281651	3526.607	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.016	16098209	1763.622	ppm	
7)	Ethylene	1.552	31192444	1848.268	ppm	
8)	Ethane	1.801	31424218	1837.143	ppm	
9)	Propylene	4.129	42124690	1775.341	ppm	m
10)	Propane	4.269	48583085	1946.921	ppm	
11)	Isobutylene	6.136	33832	25613.603	ppm	
12)	Isobutane	6.576f	3845	0.120	ppm	
13)	n-Butane	6.576f	3845	0.120	ppm	

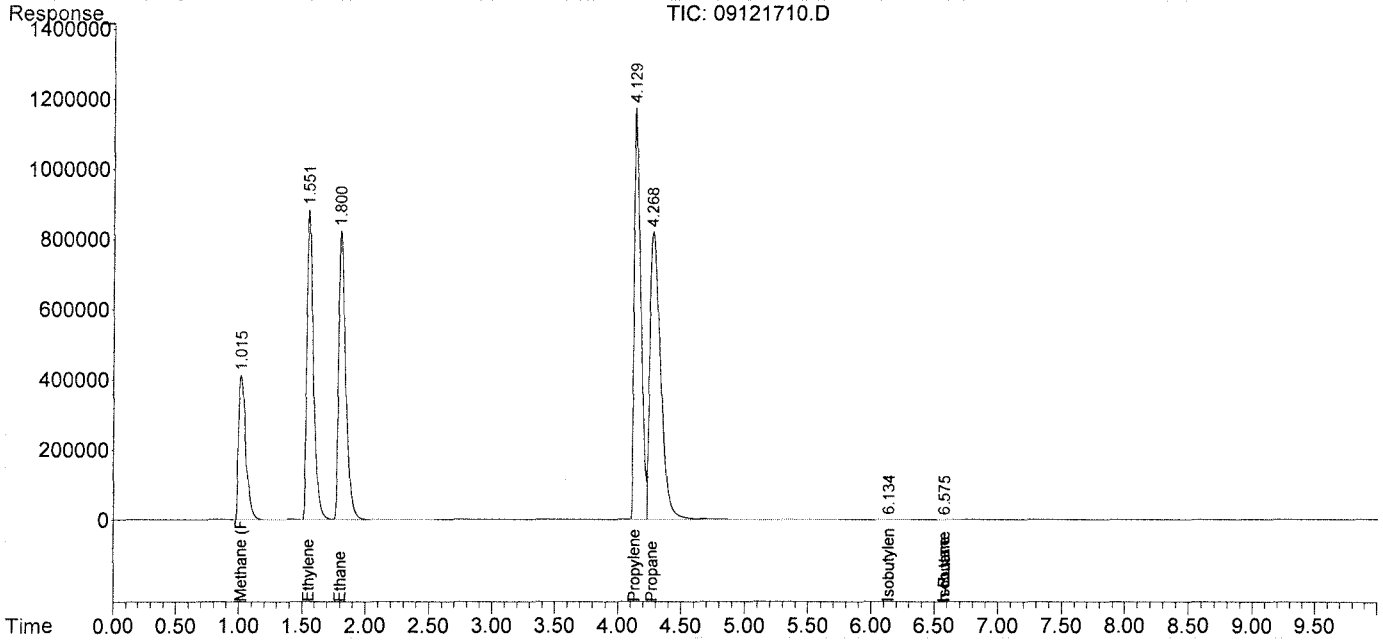
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

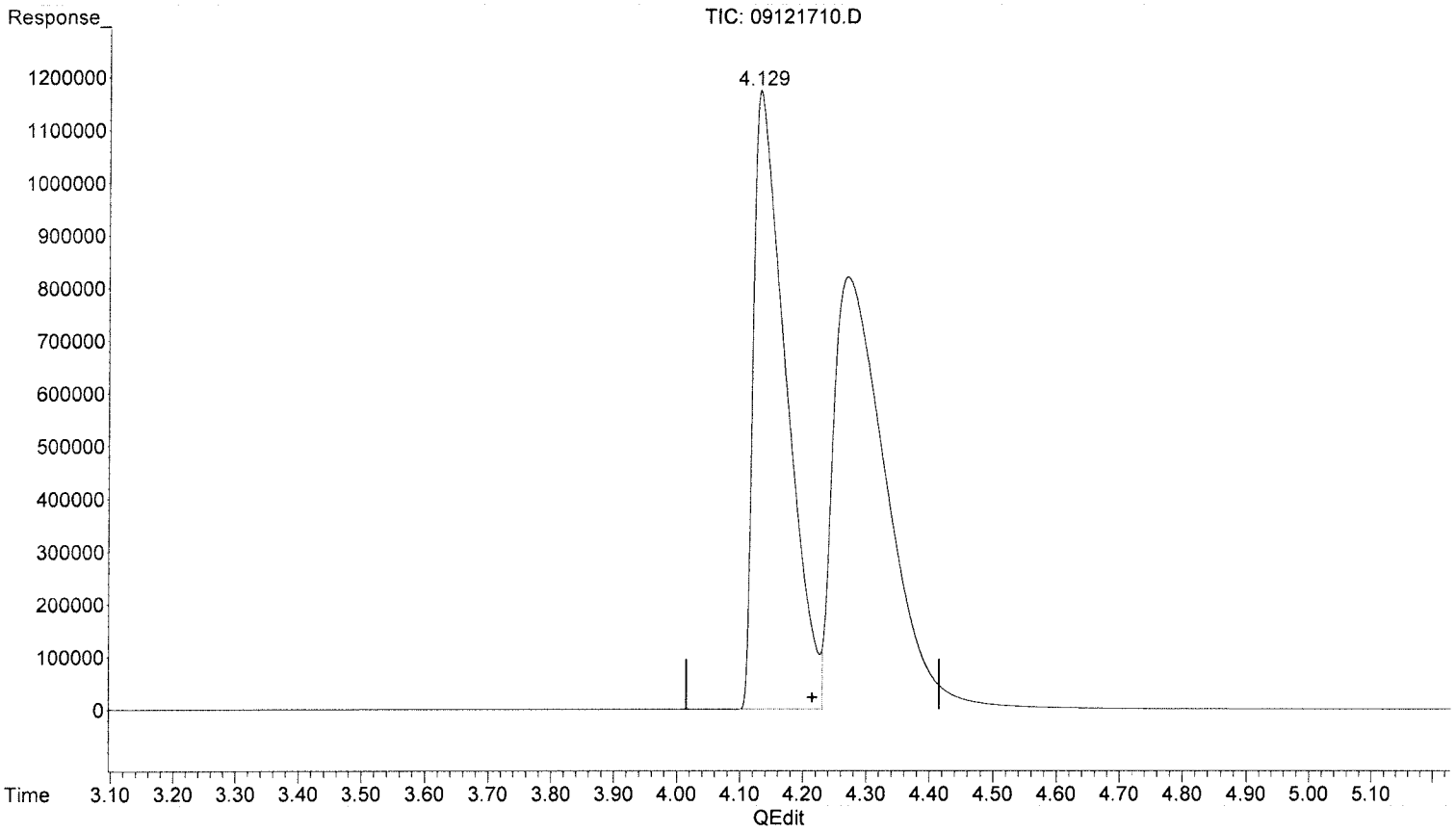




Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(9) Propylene

4.129min 1775.341 ppm m

response 42124690

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

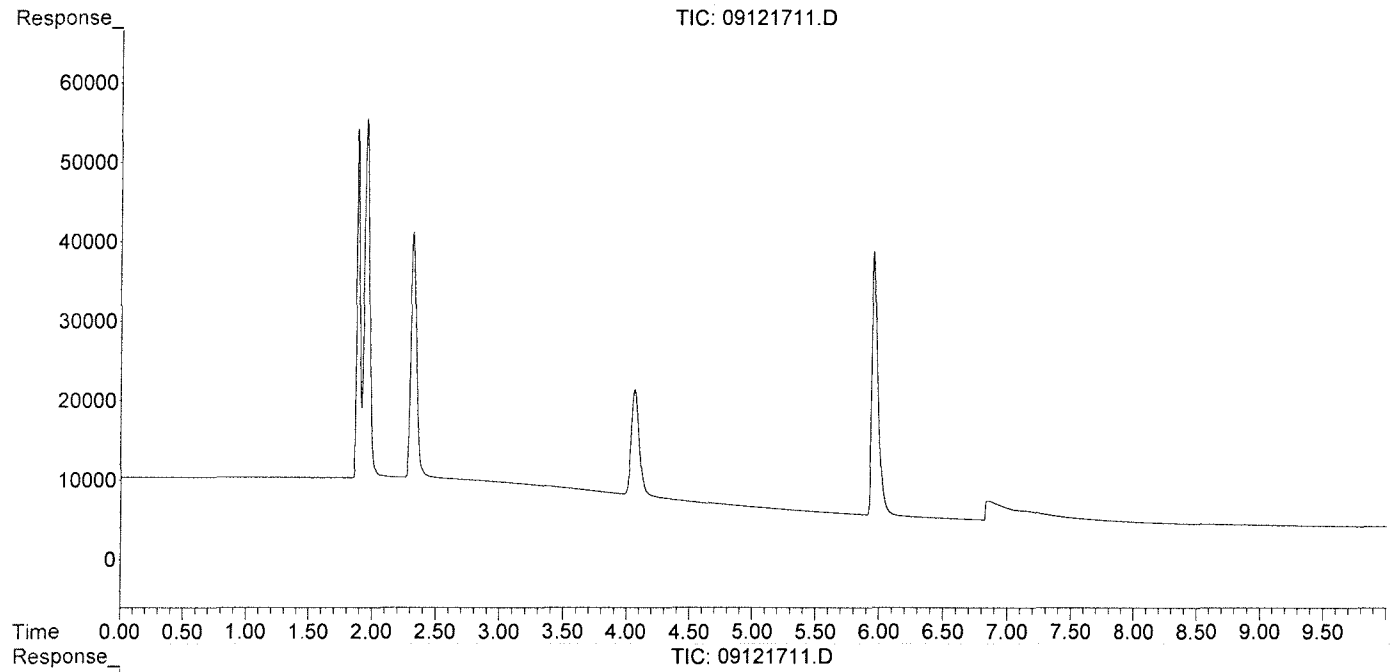
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.059	35776839	3925.122	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

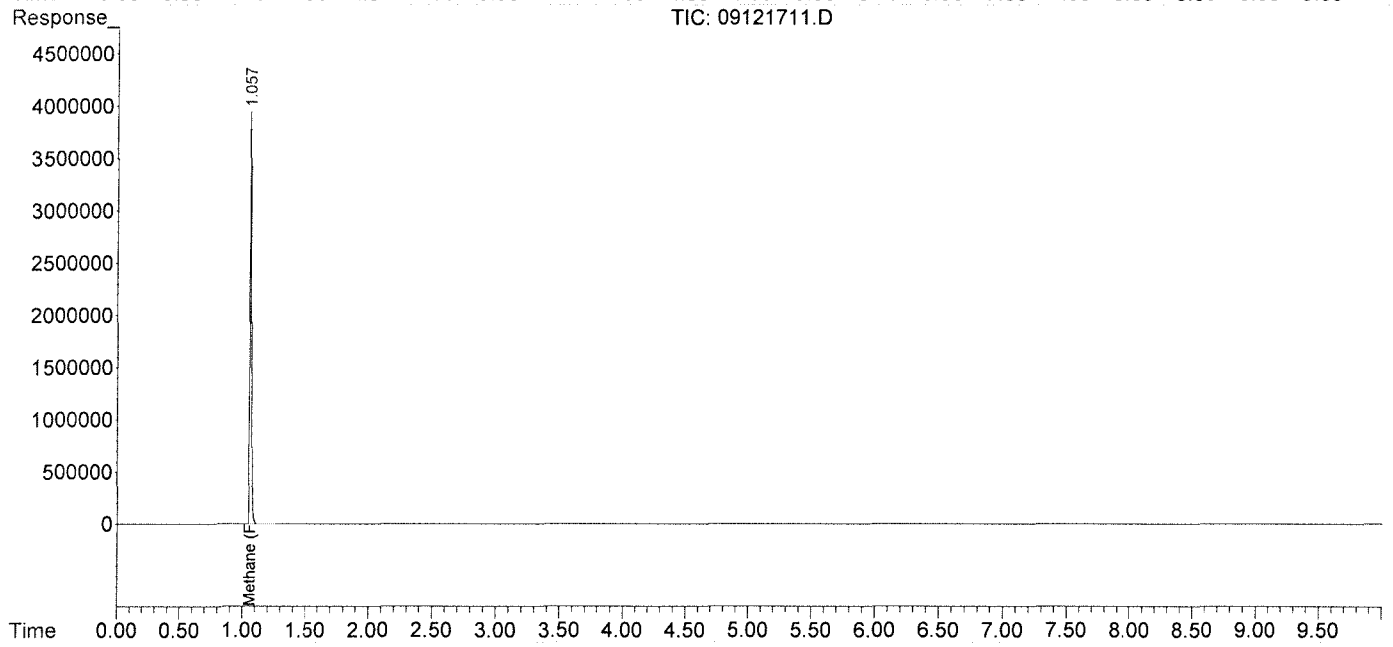
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

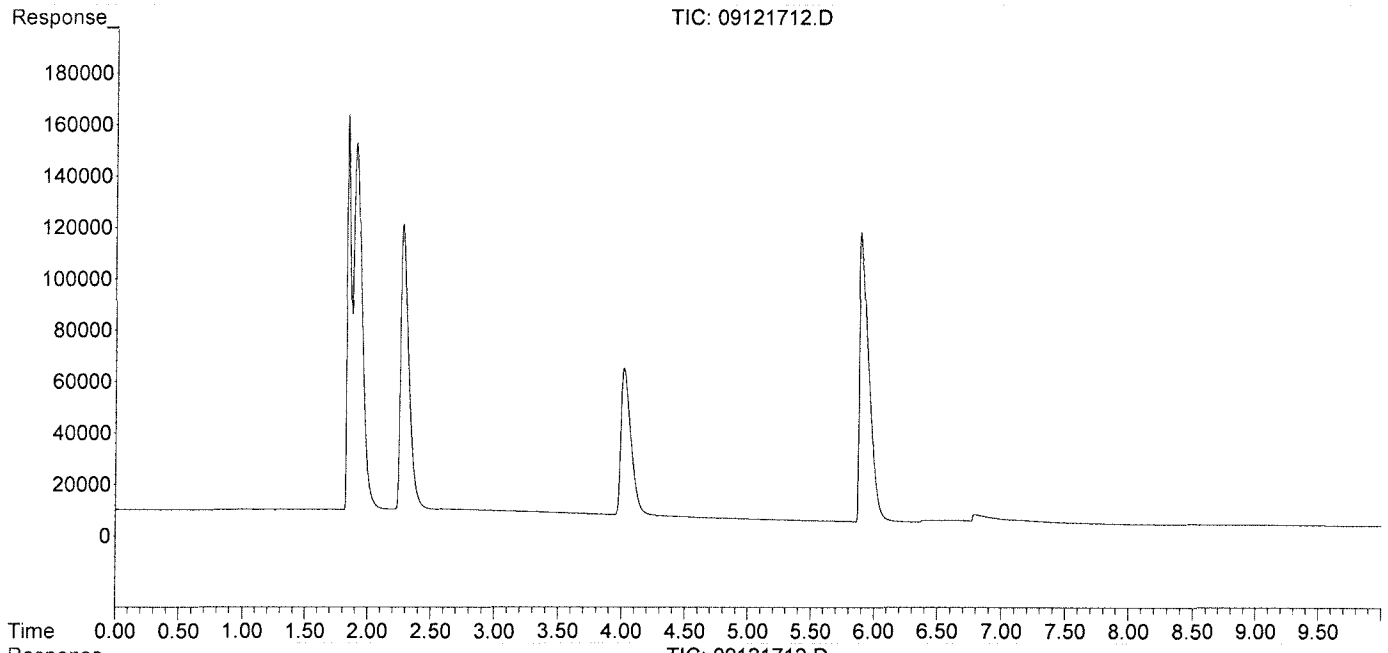
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.836	3190788	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.034	169009160	18492.064	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

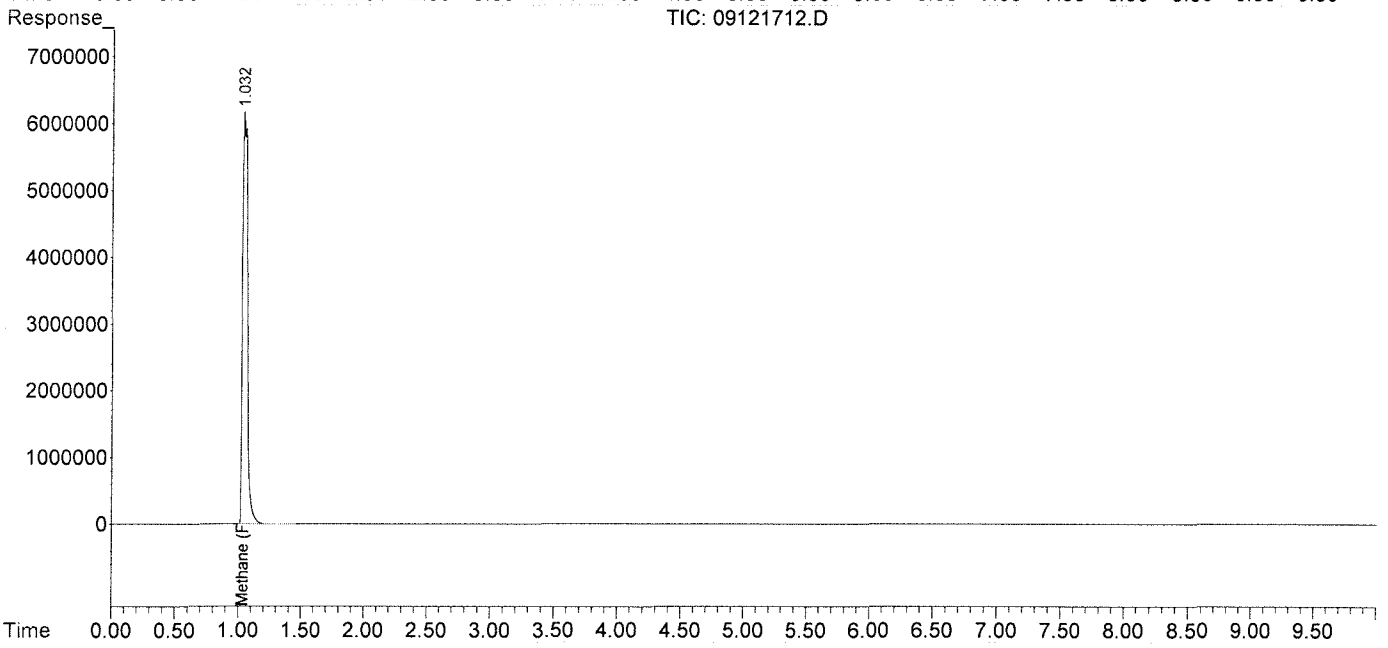
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units			
Target Compounds								
1)	Oxygen/Argon	1.843	2922459	3.687	ppm			
2)	Carbon monoxide	1.843	2922459	N.D.	ppm			
3)	Methane (TCD)	0.000	0	N.D.	ppm	actual	%	
4)	Carbon dioxide	0.000	0	N.D.	ppm			
6)	Methane (FID)	1.063	13748	1.516	ppm	~~1500~~	1.50	101.1
7)	Ethylene	1.598	24153	1.443	ppm	~~1500~~	1.50	96.2
8)	Ethane	1.850	24488	1.445	ppm	~~1500~~	1.50	96.3
9)	Propylene	4.221	36004	1.537	ppm	~~1500~~	1.50	102.5
10)	Propane	4.350	37738	1.517	ppm	~~1511~~	1.51	100.5
11)	Isobutylene	0.000	0	N.D.	ppm			
12)	Isobutane	6.579f	48019	1.804	ppm	9/14/17		
13)	n-Butane	6.579f	48019	1.804	ppm			

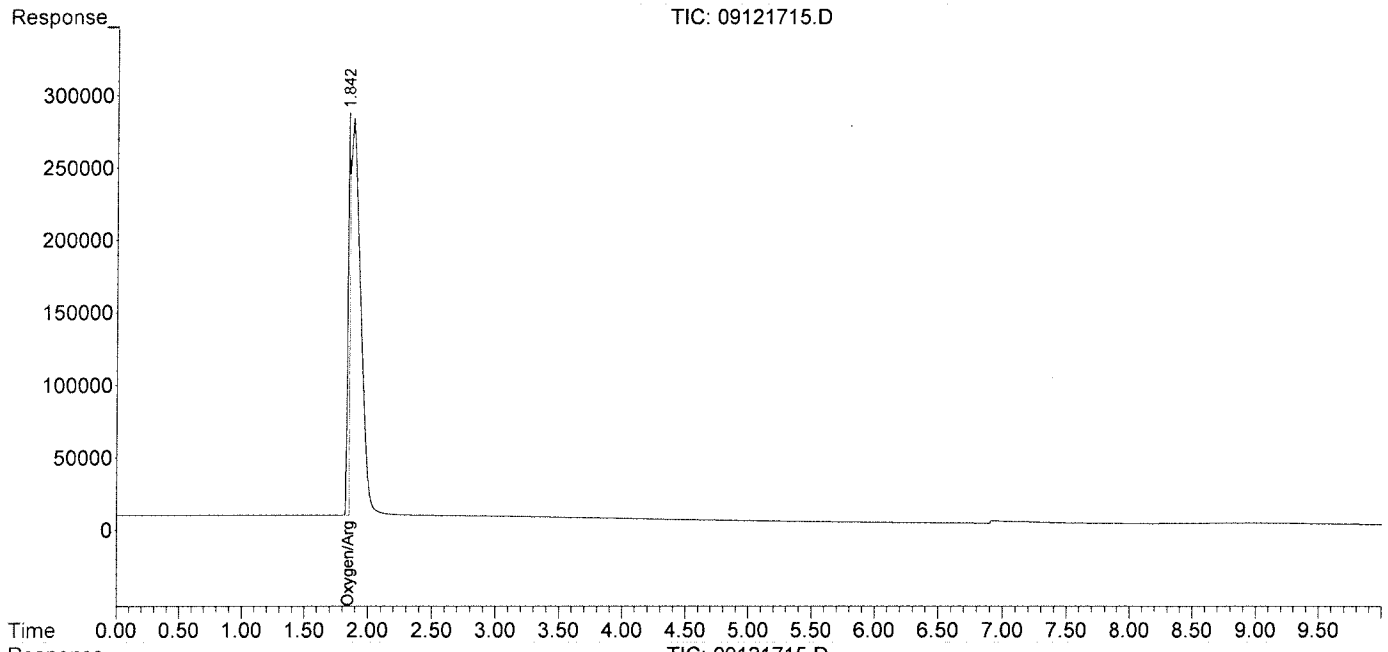
(f)=RT Delta > 1/2 Window (m)=manual int.

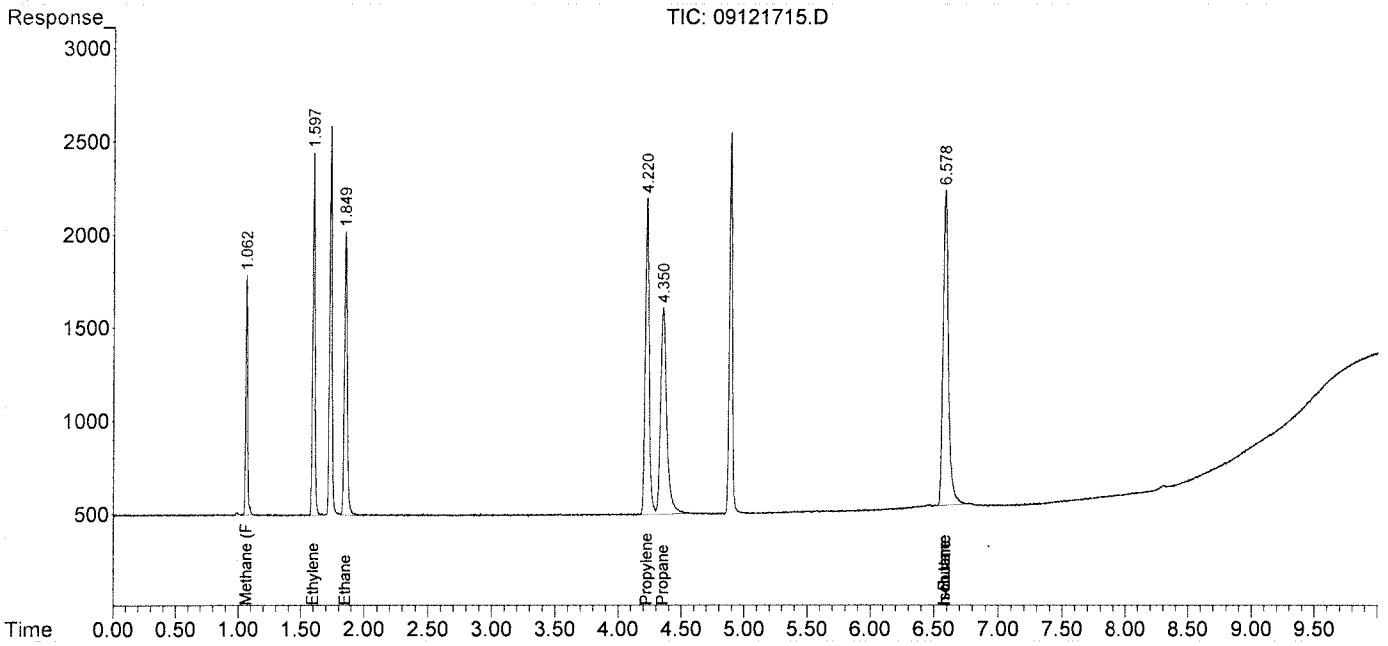
9/14/17

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Dissolved Gases by RSK175

ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : Shaw Environment & Infrastructure, Inc. Analyst : CB
Service Request: P2102422 Date Analysis : 05/12/21
Sample Vol. (ml) : 32.00 ml Head Space Vol.(ml) : 8.00 ml

Instrument : GC#10
Detector : FID#10, TCD#10
Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Methane	Ethylene	Ethane
STD S32-05221901 0.1ml	0.100	93.343	99.260	98.649
ACTUAL		101.50	100.90	101.40
%Difference		8.0%	1.6%	2.7%
MCS 0.1mL	0.100	0.108	0.000	0.000
RB 0.1mL	0.100	0.131	0.000	0.000
LCS 0.1mL	0.100	1.627	1.130	1.305
LCSD 0.1mL	0.100	1.396	1.100	1.272
2422-001 0.1mL	0.100	0.216	0.000	0.000
STD S32-05221901 0.1mL		92.070	97.985	97.584
ACTUAL		101.50	100.90	101.40
%Difference		9.3%	2.9%	3.8%

FINAL HEAD SPACE RESULT (ppm)

	Methane	Ethylene	Ethane
WWt.	16.04	28.05	30.07
HENRY'S CONSTANT	3.76E+04	1.02E+04	2.63E+04
RL	1.30	1.00	0.60
MCS 0.1mL	1.080	0.000	0.000
LCS 0.1mL	16.270	11.300	13.050
LCSD 0.1mL	13.960	11.000	12.720
2422-001 0.1mL	2.160	0.000	0.000

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122101.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 08:15
Operator : CB
Sample : STD S32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

CB
5/14/21

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 12 09:37:56 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

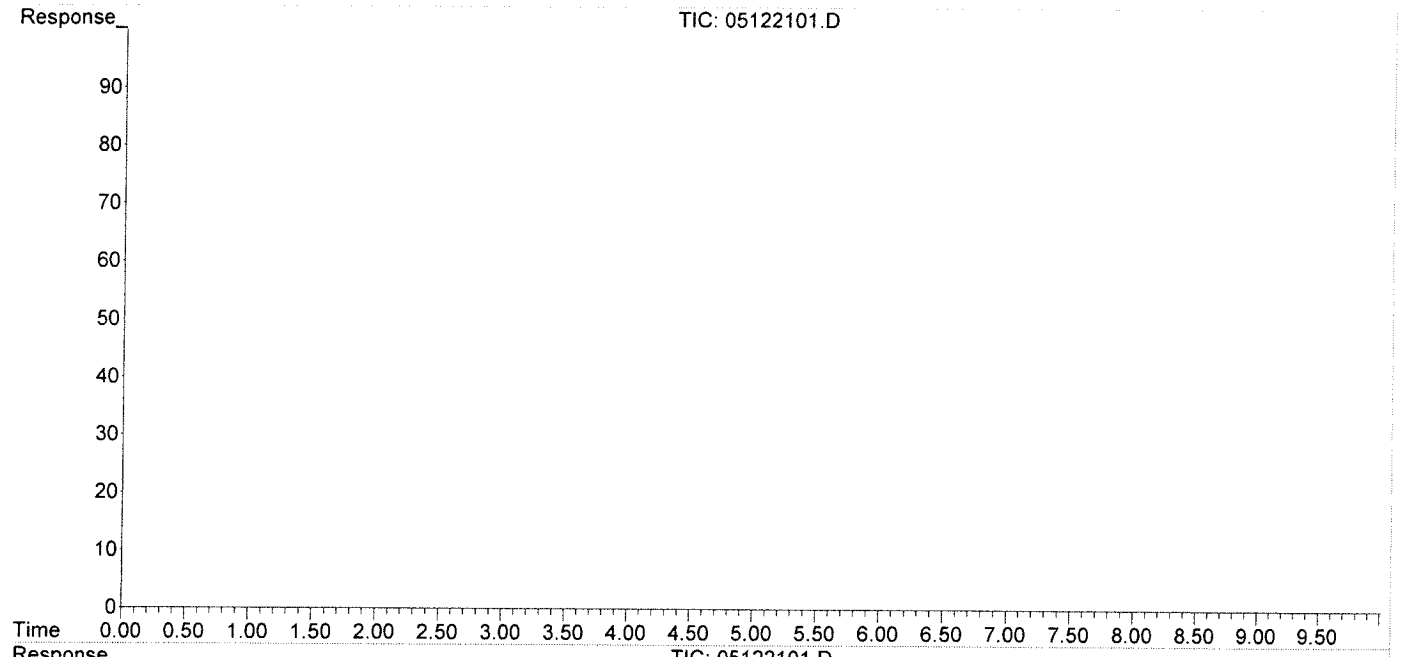
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.103	846682	93.343	ppm
7)	Ethylene	1.666	1661055	99.260	ppm
8)	Ethane	1.927	1672113	98.649	ppm
9)	Propylene	4.302	2440157	104.140	ppm
10)	Propane	4.423	2508230	100.812	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

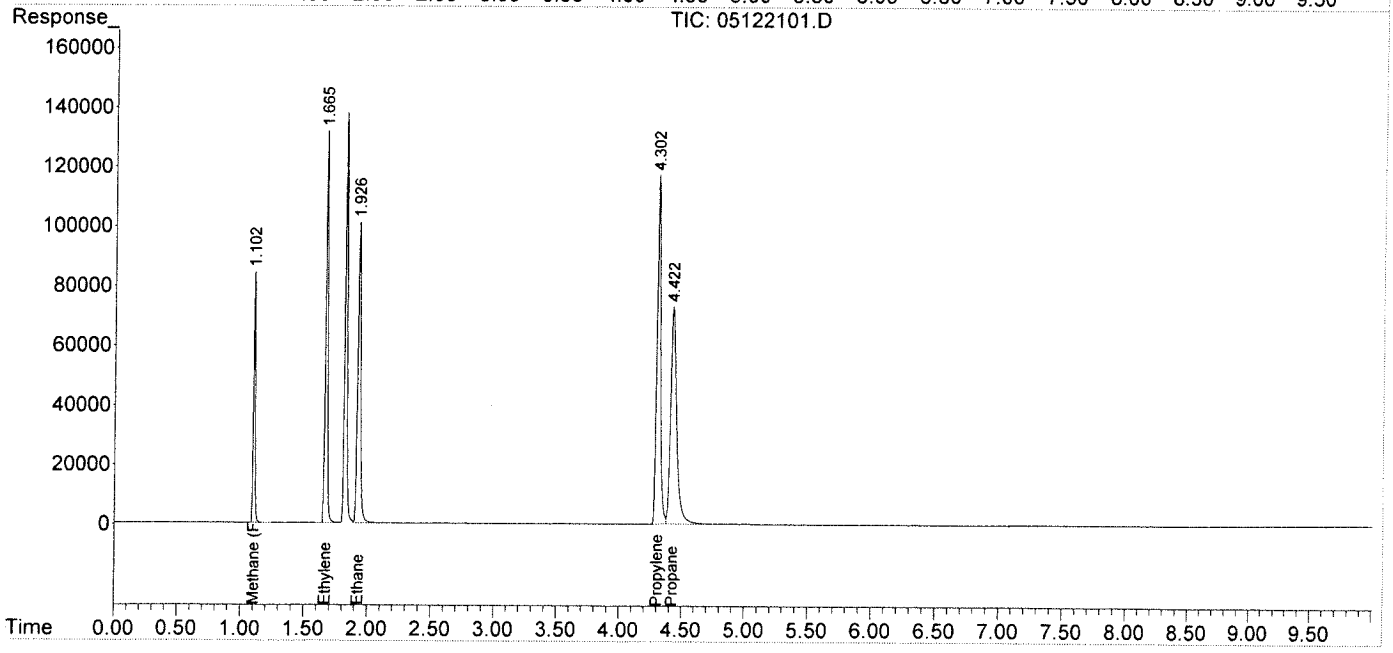
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122101.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 08:15
Operator : CB
Sample : STD S32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 12 09:37:56 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122116.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 14:52
Operator : CB
Sample : STD S32-05221901 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 12 16:24:28 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

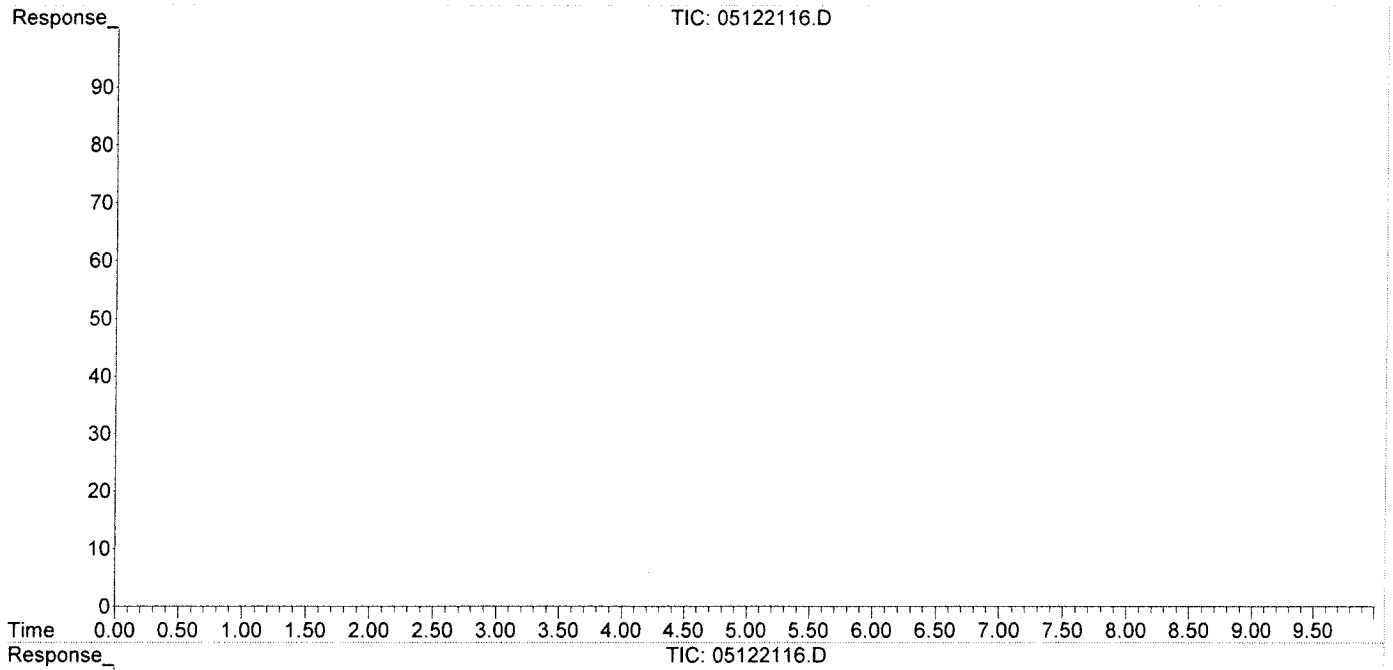
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.095	835134	92.070	ppm
7)	Ethylene	1.655	1639710	97.985	ppm
8)	Ethane	1.915	1654066	97.584	ppm
9)	Propylene	4.294	2406930	102.722	ppm
10)	Propane	4.415	2477992	99.597	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

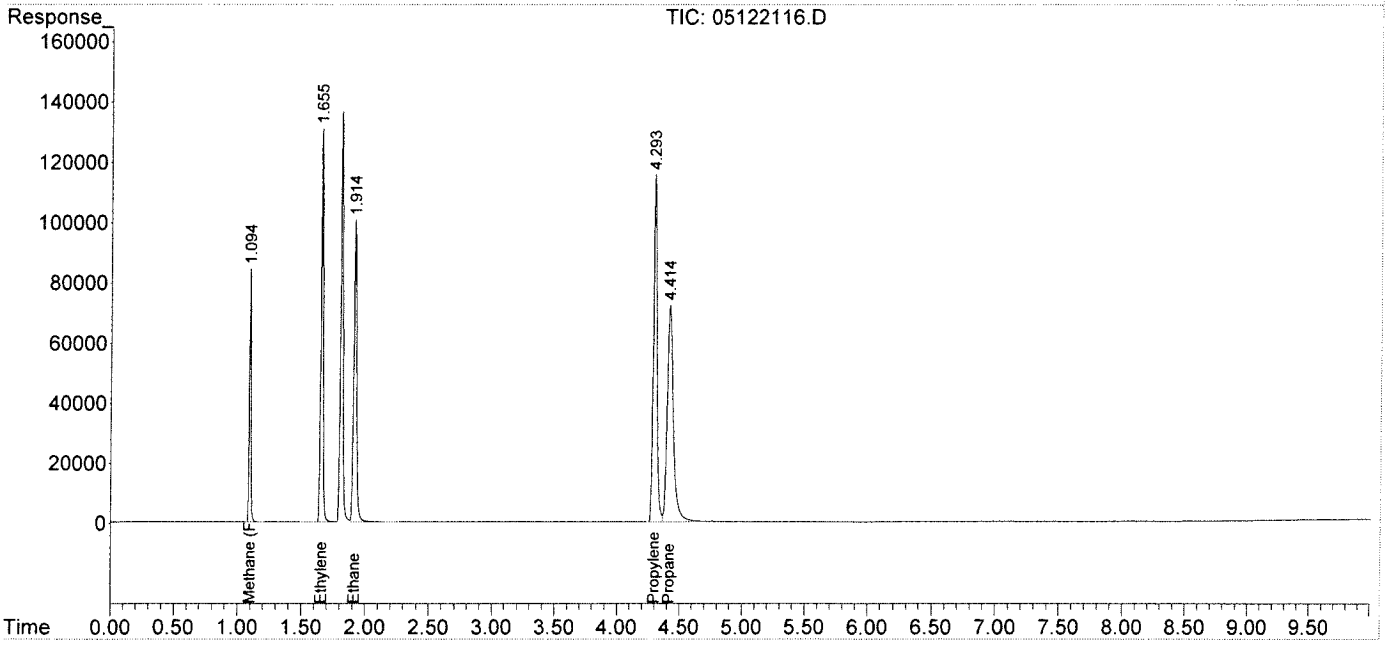
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2021_05\12\
Data File : 05122116.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-May-2021, 14:52
Operator : CB
Sample : STD S32-05221901 0.1mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 12 16:24:28 2021
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_09\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-Sep-17, 08:38:08	09121701.D	test		MC	RSKBOTH.M	
2	12-Sep-17, 10:52:40	09121702.D	0.151ppm 0.250ml s32-09121702		MC	RSKBOTH.M	Curve
3	12-Sep-17, 11:05:49	09121703.D	0.302ppm 0.5ml s32-09121702		MC	RSKBOTH.M	Curve
4	12-Sep-17, 11:45:34	09121704.D	1.51ppm 0.1ml s32-09051701		MC	RSKBOTH.M	Curve
5	12-Sep-17, 12:09:33	09121705.D	4.53ppm 0.3ml s32-09051701		MC	RSKBOTH.M	Curve
6	12-Sep-17, 12:30:23	09121706.D	10.57ppm 0.7ml s32-09051701		MC	RSKBOTH.M	Curve
7	12-Sep-17, 12:47:18	09121707.D	200ppm 0.1ml s32-09121701		MC	RSKBOTH.M	Curve
8	12-Sep-17, 13:00:22	09121708.D	600ppm 0.3ml s32-09121701		MC	RSKBOTH.M	Curve
9	12-Sep-17, 13:47:48	09121709.D	1000ppm 0.5ml s32-09121701		MC	RSKBOTH.M	Curve
10	12-Sep-17, 14:07:58	09121710.D	2000ppm 1ml s32-09121701		MC	RSKBOTH.M	Curve
11	12-Sep-17, 14:48:48	09121711.D	4000ppm 0.1ml s32-08231701		MC	RSKBOTH.M	Curve
12	12-Sep-17, 15:21:51	09121712.D	20000ppm 0.5ml s32-08231701		MC	RSKBOTH.M	Curve
13	12-Sep-17, 15:38:59	09121713.D	mb 0.5ml		MC	RSKBOTH.M	Pass
14	12-Sep-17, 15:55:35	09121714.D	mb 0.1ml		MC	RSKBOTH.M	Pass
15	12-Sep-17, 16:15:26	09121715.D	icv s30-05241604		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2021_05\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-May-21, 07:21:31	05122100.D	purge		CB	RSKBOTH.M	
2	12-May-21, 08:15:08	05122101.D	STD S32-05221901 0.1mL		CB	RSKBOTH.M	
3	12-May-21, 09:40:00	05122102.D	RB 0.1mL		CB	RSKBOTH.M	
4	12-May-21, 10:01:26	05122103.D	MCS 0.1mL		CB	RSKBOTH.M	
5	12-May-21, 10:15:51	05122104.D	LCS 0.1mL		CB	RSKBOTH.M	
6	12-May-21, 10:41:59	05122105.D	LCSD 0.1mL		CB	RSKBOTH.M	
7	12-May-21, 11:03:36	05122106.D	k2104380-001 0.1mL		CB	RSKBOTH.M	
8	12-May-21, 12:09:09	05122107.D	k2104380-001 MS 0.1mL		CB	RSKBOTH.M	
9	12-May-21, 12:26:56	05122108.D	k2104380-001 MSD 0.1mL		CB	RSKBOTH.M	
10	12-May-21, 12:53:19	05122109.D	k2104380-002 0.1mL		CB	RSKBOTH.M	
11	12-May-21, 13:10:13	05122110.D	k2104380-014 0.1mL		CB	RSKBOTH.M	
12	12-May-21, 13:23:58	05122111.D	k2104380-005 0.1mL		CB	RSKBOTH.M	
13	12-May-21, 13:38:12	05122112.D	k2104380-007 0.1mL		CB	RSKBOTH.M	
14	12-May-21, 13:56:26	05122113.D	k2104380-003 0.1mL		CB	RSKBOTH.M	
15	12-May-21, 14:17:08	05122114.D	2422-001 0.1mL		CB	RSKBOTH.M	
16	12-May-21, 14:38:49	05122115.D	P2102461-001 0.1mL		CB	RSKBOTH.M	
17	12-May-21, 14:52:55	05122116.D	STD S32-05221901 0.1mL		CB	RSKBOTH.M	
18	12-May-21, 17:05:55	05122117.D	P2102461-002 0.1mL		CB	RSKBOTH.M	
19	12-May-21, 17:53:45	05122118.D	STD S32-05221901 0.1mL		CB	RSKBOTH.M	

Subject: **Final Monthly Managers' Meeting (MMM), Longhorn Army Ammunition Plant (LHAAP)**
Location of Meeting: **Teleconference**
Date of Meeting: **19 January 2022– 10:30 AM Central Standard Time (CST)**

Attendees:

Army BRAC:	Rose M. Zeiler (RMZ)
USEPA:	Brian Follin (BF), and Chris Braun and Patty Ging with USGS in support of the USEPA joined by phone
TCEQ:	April Palmie (AP)-joined by phone
USACE:	Aaron Williams (AW), Anthony Ruby and Chelsea Montoya
AEC:	Lena Sierocinski and Ana Nieves
Bhate:	Kim Nemmers (KN), Scott Beesinger (SB), Marcia Olive (MO) and Zack Beck (ZB); MO and ZB joined by phone
APTIM:	William Foss (WF) and Praveen Srivastav (PS); PS joined by phone
TLI:	Kyra Donnell (KD), Eric Middleditch (EM), and Paul Chang (PC); KD, EM and PC joined by phone
HDR:	Phil Werner (PW)- joined by phone
USFWS:	Paul Bruckwicki (PB)-joined by phone

Defense Environmental Restoration Program (DERP) Performance-Based Remediation (PBR) Update

- No action items to discuss.

Groundwater Treatment Plant (GWTP) – SB stated that the GWTP is operating properly but that there were some pretreatment issues still being resolved. SB stated that treated effluent is being discharged to the INF pond following ion exchange vessel (IX) treatment currently. KN stated that SB had been marking the samples for rush turn around but sufficient data has been collected to support that the perchlorate is being treated by the IX vessels. KN explained that effluent is sampled from a port between the two IX vessels so any elevated detections would be treated by the second IX vessel. The effluent is now being analyzed by the laboratory on a standard turn around.

SB then discussed the recent unplanned discharge from the INF pond. SB said that the valve at the INF pond was found to have been opened and the pond had drained. It was discovered that the gate off Tyler Avenue, which was locked, had the hinges removed and the gate was put to the side. SB said that the plan is to replace the gate with another gate from within LHAAP.

RMZ then discussed the background of the INF pond explaining that the pond was associated with former, nearby buildings and developed for Intermediate Range Nuclear Forces (INF) Treaty static discharge of rocket motors. RMZ said that there was a drought in the early 1990s and that the creek was too dry for discharge so LHAAP began using the lined INF pond, which was never used before. RMZ said that the fluidized bed reactor and IX vessels were added at a later date.

Field Work – SB stated that the groundwater sampling at LHAAP-50 was completed in January 2022. SB said that LHAAP-16 was planned to be completed the following week.

KN asked everyone to refer to the Document and Issues (DI) Tracking Table dated 19 January 2022.

- **Task 1** (Project Management) – KN said that the December 2021 MMM were issued Final. KN said the Restoration Advisory Board (RAB) meeting is being held in the evening at the Karnack Community Center, and that a toll-free number was available to those that were remote.

- **Task 4** (LHAAP-04) –PS stated that the Year 2 Quarter 4 performance groundwater sampling was completed in November 2021. The validated data for the event was included for January 2022 MMM. WF stated that the oxidation reduction potential (ORP) and dissolved oxygen (DO) are trending back to normal and that no rebounding of contamination is being observed. PS said that the next groundwater sampling event is in February 2022, which will be Year 3 of the groundwater sampling and the first semi-annual groundwater sampling event. PS said that if there is one more round of clean analytical results then further discussion regarding closing LHAAP-04 may be appropriate.
- **Task 5** (LHAAP-12) – PS said that the annual sampling event at LHAAP-12 was completed in December 2021. The validated data for the December 2021 event will be presented at the February 2022 meeting.
- **Task 6** (LHAAP-16) – PS stated that the Year 2 Quarter 4 groundwater sampling was ongoing as SB had mentioned. The validated data would be presented at the March 2022 MMM. PS said that the Year 1 Remedial Action – Operation (RA-O) Report (submitted to the Regulators on 27 October 2021) regulatory comments were received on 14 January 2022.
- **Task 9** (LHAAP-37) – PS said that response to the USEPA comments on the Year 4 RA-O Report are in progress. PS said that the Year 5 semi-annual RA-O sampling event was completed in November 2021. The validated data for the event will be presented in the February 2022 MMM package. KN asked about the due date of the response to comments, which should have been 6 January 2022. RMZ said that she would prepare an email notice of the delay to the Regulators (**Action Item 1**). RMZ also noted that the RA-O Reports are not primary documents, but we use the Federal Facility Agreement primary document response requirements to help keep us on track.
- **Task 10** (LHAAP-46) – BF said that EPA comments on the Year 7 RA-O Report have been received and responses are in review. Since response to comments were due 16 January 2022, RMZ will include this extension request in the email to the Regulators (**Action Item 1**). PS said that the next groundwater sampling event will be completed in February 2022 with the validated data to be presented at the April 2022 MMM.
- **Task 11** (LHAAP-50) **–** PS stated the Year 2 Quarter 3 sampling was completed in January 2022 and anticipates the validated data will be presented at the March 2022 MMM. The Year 7 RA-O Report was submitted on 9 December 2021, and the regulatory review period was extended to 31 January 2022.
- **Task 12** (LHAAP-58) – ZB stated that comments on the Year 7 RA-O Report had been received from TCEQ on 17 December 2021 and from USEPA on 20 December 2021. KN stated that the response to comments were due 20 January 2022. ZB said that the responses to comments were with the USACE/Army. RMZ agreed to include LHAAP-58 response to comments to the email to the Regulators (**Action Item 1**). ZB added that the validated results from the December 2021 groundwater sampling of the western plume were anticipated to be available for the February 2022 MMM.
- **Task 13** (LHAAP-67) – PS stated that the Draft Final Year 7 RA-O Report has been posted to the AR. PS stated that the Year 8 Annual RA-O sampling was completed in November 2021 and that the validated data should be available for the February 2022 MMM.
- **Task 14** (LHAAP-001-R and –003-R) – ZB said no activities were ongoing for this task.
- **Task 16** (GWTP) **–** ZB said that the 3rd Quarter GWTP Report was submitted 14 December 2021 and that the Regulatory review period was extended to 8 February 2022. ZB said that the 4th Quarter 2021 was being prepared and would be submitted to the regulators in April 2022.

- **Task 17** (LHAAP-18/24) – ZB said that the semi-annual sampling event was completed in December 2021, and that the data will be included with the February 2022 MMM validated data.
- **Task 18** (Surface Water) – ZB said that surface water samples were able to be collected at the very end of December 2021 and that the validated data was provided for the January 2022 MMM. ZB said that the Annual Surface Water Report would be submitted in the next few days to the Regulators.
- **Task 19:** (2021 Land Use Control [LUC] Management Plan) – No discussion.
- **Administrative Record (AR) –** PS said APTIM is compiling the July – September 2021 AR documents.

Update on other DERP Sites:

- **LHAAP 18/24 –** PW stated that the Draft Pre-Design Investigation (PDI) Report regulatory review period was extended to 24 January 2022. PW said that TCEQ comments were received on 19 January 2022 but that USEPA comments were pending. PW noted that there were no TCEQ comments that needed to be discussed further at this time.
- **LHAAP-29** – PW said that a Technical Memorandum to present the re-analysis of samples and results is planned for submittal to the Regulators in January 2022, which will likely also include a conference call for discussion.
- **LHAAP-47** – PW said that comments from the Regulators on the Revised Draft Record of Decision are currently being addressed. PW stated that responses to comments are due on 31 January 2022.
- **LHAAP-17** - KD provided a summary and an update to the LHAAP-17 field work to date. KD stated that the soil from all the pre-existing stockpiles have all been sifted and exported or staged for export. All but approximately 40 cubic yard (CY) of the 4,000 awarded CY has been excavated. All of the areas have been excavated or over-excavated with the exception of Area J and the north wall of Area M. KD explained that a contract modification is needed to complete these excavations. A total of 52 individual items have been identified and are currently in storage onsite that are either munitions and explosives of concern (MEC) or materials presenting a potential explosive hazard (MPPEH) and couldn't be confirmed that they are not MEC. The 52 items total 7.21 pounds Net Explosives Weight, which is below the storage capacity of the alcohol, tobacco, and firearms (ATF) storage magazine. KD stated that over 11,000 pounds of Munitions Debris has been collected which has been documented as safe, and over 31,000 pounds of Non Munitions Related Debris has been collected.

  KD discussed the soil confirmation samples collected from the open excavations some of which are still pending. KD explained that there is backfill onsite and are looking for approval to backfill a portion of the excavation areas. KD said that applicable confirmation soil data has been submitted to the regulators. KD explained that the specific issue that has arisen from the analytical results is that the dinitrotoluene (DNT) limit of detection is not meeting the screening limit. MO explained that the laboratory is meeting the detection limits but that the nature of the soil is causing some issues. Specifically, the soil particularly on the floor samples is muddy and that the High-performing liquid chromatography (HPLC) is getting clogged when analyzing the samples. The laboratory is working to avoid a dilution by centrifuging the samples for 20 – 30 minutes and using a 2-micron filter. These additional steps are helping the samples be analyzed via HPLC with a 1 times dilution. MO explained that a dilution is typically needed for soil samples to get through this phase. MO explained that the detection limit is what the lowest detection the laboratory can reach with no dilution. AP stated that she understands the results but does not understand why all of

the results are above the screening level. AP said that the data does not present an explanation of the results. Further, she explained that she can see the improvement in the detection limits but expressed frustration that there was no explanation that accompanied the results table requesting approval.

RMZ explained that the Army is looking for Regulatory approval to be able to backfill the open excavations and that the Quality Assurance Project Plan (QAPP) requires regulatory approval. RMZ explained that the Army will not proceed without regulatory approval as set forth in the QAPP. EM pointed out that Worksheet 15 presents the detection limits that the laboratory can meet and that the laboratory can achieve the detection limits in the QAPP. While the screening limit of 42 parts per billion (ppb) is not being achieved, MO stated that the laboratory is achieving 75 ppb (the limit of detection) per the QAPP. Additionally, the DQOs set forth in the QAPP have been satisfied and addressed during the validation process with only minor data qualification. RMZ noted that there are no DNT plumes at the site. AP stated that this would support the argument that the results are acceptable if an appropriate response is provided on why the site conditions indicate that leaving soil slightly above the screening criteria in place is appropriate. RMZ stated that additional text would be prepared to include site conditions and other rationale. KN asked if TCEQ has a guidance regarding laboratory detection limits as this is unlikely an isolated occurrence. AP requested that the contractor evaluate and incorporate into a response. KD took the action item to evaluate DNT detections at LHAAP-17 and provide a written discussion regarding the DNT detections (**Action Item 2**).

Transfer Update: RMZ said that Anthony Ruby is currently writing a report. PB and RMZ discussed a PII Transfer issue

Schedule Next Managers' Meeting: The next MMM will be held on Wednesday16 February 2022 at 10:00 am CST via a conference call. RMZ stated that she would ask the RAB to consider a shift in the meetings to February, June, and November.

Meeting concluded at approximately 11:42 pm CST.

ACRONYM LIST

%	percent
ACM	Asbestos Containing Material
AP	April Palmie
APTIM	APTIM Federal Services, LLC
AR	Administrative Record
ATF	Alcohol, Tobacco and Firearms
AW	Aaron Williams
BF	Brian Follin
Bhate	Bhate Environmental Associates, Inc.
BRAC	Base Realignment and Closure
CST	Central Standard Time
CY	Cubic Yards
DERP	Defense Environmental Restoration Program
DI	Documents and Issues
DNT	Dinitrotoluene
DO	Dissolved oxygen
EM	Eric Middleditch
GWTP	Groundwater Treatment Plant
HDR	HDR, Inc.
HPLC	High-performing liquid chromatography
INF	Intermediate Range Nuclear Forces
IX	Ion Exchange
KN	Kim Nemmers
LHAAP	Longhorn Army Ammunition Plant
LOD	Level of detection
LUC	Land use control
MEC	Munitions of Explosive Concern
MMM	Monthly Managers' Meeting
ORP	Oxidation Reduction Potential
PBR	Performance-Based Remediation
ppm	Parts per million
PS	Praveen Srivastav
PW	Phil Werner
QAPP	Quality Assurance Project Plan
RAB	Restoration Advisory Board
RA-O	Remedial Action – Operation
RD	Remedial Design
RMZ	Rose M. Zeiler
TCEQ	Texas Commission on Environmental Quality
TLI	TLI Solutions
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
USFWS	United Fish and Wildlife Service
WF	William (Bill) Foss
ZB	Zack Beck

LHAAP Validated Data Packages for January 2022 Monthly Manager's Meeting

LHAAP Area	Analytical Method
LHAAP-04	*Remedial Performance Monitoring (Year 2, Quarter 4)-November 2021* Perchlorate (EPA 6850) Alkalinity (SM2320B) Nitrate, Nitrite, and Sulfate (SW9056A) Total Organic Carbon (SM5310B) Field Measurements (Dissolved Oxygen, Oxidation Reduction Potential, Ferrous Iron, and pH)
LHAAP Surface Water	*Quarterly Perchlorate Sampling - December 2021* Perchlorate (EPA 6850)

LHAAP-04 Remedial Performance Monitoring
Year 2 Quarter 4
November 2021

			Location Code	04WW01		04WW02		04WW04		04WW05		04WW06	
			Sample ID	04WW01-211104		04WW02-211104		04WW04-211104		04WW05-211109		04WW06-211104	
			Sample Date	11/4/2021		11/4/2021		11/4/2021		11/9/2021		11/4/2021	
			Location Description:	Shallow Zone, Downgradient of Plume		Shallow Zone, Upgradient of Plume		Shallow Zone, Within Plume Area		Shallow Zone, Within Plume Area		Shallow Zone, Cross-Gradient to Plume Area	
Analyte	**Units**	**PCL**		**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
Field Measurements													
Dissolved oxygen	mg/L	NV		0.38		1.22		0.48		0.52		0.47	
Ferrous Iron	mg/L	NV		NM		NM		NM		2.15		NM	
Oxidation Reduction Potential	mV	NV		-50		39		25		-4		44	
pH	Std. Units	NV		6.39		6.24		5.63		6.18		6.01	
General Chemistry (SM2320B/SM5310B/SW9056A)													
Alkalinity	mg/L	NV		NA		NA		NA		606		NA	
Nitrate	mg/L	NV		NA		NA		NA		0.0598	J	NA	
Nitrite	mg/L	NV		NA		NA		NA		< 0.1	U	NA	
Sulfate	mg/L	NV		NA		NA		NA		119		NA	
Total organic carbon	mg/L	NV		NA		NA		NA		6.29		NA	
Perchlorate (EPA 6850)													
Perchlorate	µg/L	17		< 0.2	U	< 0.2	U	< 0.2	U	< 0.2	U	< 0.2	U

Notes:

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

< - The analyte was not detected above the concentration shown

UJ – Undetected estimated. The analyte was analyzed for but was not detected. Even though the analyte was not detected, certain discrepancies in meeting analyte specific quality control were noted.

The perchlorate detection limits for some samples are elevated due to sample dilution

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

ID - identification

FD - field duplicate

mV - millivolts

Std. Units - standard pH units

mg/L - milligrams per liter

ug/L - micrograms per liter

NV - No value, PCL values are only shown for constituents of concern

Val Qual - validation qualfier

NM - not measured

NA - not analyzed

LHAAP-04 Remedial Performance Monitoring
Year 2 Quarter 4
November 2021

	Location Code	04WW07				04WW08		04WW09		04WW10	
	Sample ID	04WW07-211109		04WW07-211109-FD		04WW08-211104		04WW09-211109		04WW10-211109	
	Sample Date	11/9/2021		11/9/2021		11/4/2021		11/9/2021		11/9/2021	
	Location Description:	Shallow Zone, Downgradient of Plume Area				Intermediate Zone, Slightly Upgradient of Plume Area		Shallow Zone, Within Treatment Area		Shallow Zone, Within Treatment Area	
Analyte	**Units**	**PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
Field Measurements												
Dissolved oxygen	mg/L	NV	3.46		3.46		0.46		0.22		1.64	
Ferrous Iron	mg/L	NV	0.36		0.36		NM		2.78		1.42	
Oxidation Reduction Potential	mV	NV	-34		-34		9		-85		-35	
pH	Std. Units	NV	6.36		6.36		6.21		6.4		6.72	
General Chemistry (SM2320B/SM5310B/SW9056A)												
Alkalinity	mg/L	NV	723		719		NA		838		614	
Nitrate	mg/L	NV	0.0562	J	0.0585	J	NA		0.06	J	< 0.1	U
Nitrite	mg/L	NV	< 0.1	U	< 0.1	U	NA		< 0.1	U	< 0.1	UJ
Sulfate	mg/L	NV	112		109		NA		11.9		686	
Total organic carbon	mg/L	NV	12.1		15.3		NA		60.8		3.52	
Perchlorate (EPA 6850)												
Perchlorate	µg/L	17	< 0.2	U	< 0.2	U	< 0.2	U	< 0.2	U	< 0.2	U

Notes:

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LHAAP-04 Remedial Performance Monitoring
Year 2 Quarter 4
November 2021

		Location Code	04WW11		LHSMW01				LHSMW02	
		Sample ID	04WW11-211104		LHSMW01-211104		LHSMW01-211104-FD		LHSMW02-211104	
		Sample Date	11/4/2021		11/4/2021		11/4/2021		11/4/2021	
		Location Description:	Shallow Zone, Downgradient of Plume		Shallow Zone, Cross-Gradient to Plume Area				Shallow Zone, Cross-gradient to Plume Area	
Analyte	Units	PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Field Measurements										
Dissolved oxygen	mg/L	NV	0.44		0.74		0.74		0.39	
Ferrous Iron	mg/L	NV	NM		NM		NM		NM	
Oxidation Reduction Potential	mV	NV	129		154		154		87	
pH	Std. Units	NV	5.86		5.83		5.83		5.73	
General Chemistry (SM2320B/SM5310B/SW9056A)										
Alkalinity	mg/L	NV	NA		NA		NA		NA	
Nitrate	mg/L	NV	NA		NA		NA		NA	
Nitrite	mg/L	NV	NA		NA		NA		NA	
Sulfate	mg/L	NV	NA		NA		NA		NA	
Total organic carbon	mg/L	NV	NA		NA		NA		NA	
Perchlorate (EPA 6850)										
Perchlorate	µg/L	17	< 0.2	U	< 0.2	U	< 0.2	U	< 0.2	U

Notes:

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

< - The analyte was not detected above the concentration shown

UJ – Undetected estimated. The analyte was analyzed for but was not detected. Even though the analyte was not detected, certain discrepancies in meeting analyte specific quality control were noted.

The perchlorate detection limits for some samples are elevated due to sample dilution

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

ID - identification

FD - field duplicate

mV - millivolts

Std. Units - standard pH units

mg/L - milligrams per liter

ug/L - micrograms per liter

NV - No value, PCL values are only shown for constituents of concern

Val Qual - validation qualfier

NM - not measured

NA - not analyzed


04WW02
04WW06
LHSMW01
LHSMW02
04WW08
04WW04
04WW09
LHAAP-04
AVE "F"
04WW05
04WW07
04WW11
04WW10
04WW01
60TH ST.
6TH ST.
Shallow Monitoring Well
Intermediate Monitoring Well
Limits of Excavation at Surface
(Source: LHAAP-04 Final Completion Report, Shaw, 2011)
Stream
Road
Building
Site Boundary
Notes:
1.Blue = Monitoring well will be analyzed for perchlorate and MNA parameters as defined on Table 2-1.
Green = Monitoring well will only be analyzed for perchlorate.
2. LHAAP = Longhorn Army Ammunition Plant
3. RA-O = Remedial Action Operations
N
0 35 70
Feet
U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA
bhate
APTIM
Figure 2-1
RA-O Monitoring Well Location Map
First Annual RA-O Report
LHAAP-04
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
Date: 4/14/2021
Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP04\RAO\Year1\LHAAP04_RAO Monitoring LocationMap.mxd

LHAAP-Quarterly Surface Water Sampling

December 2021 (Quarter 4)

Location ID: / Sample Date:	Units	PCL	HBW7_122221 12/22/21	HBW7_122221_a 12/22/21	HBW10_122221 12/22/21	HBW1_122221 12/22/21	GPW1_122221 12/22/21	GPW3_122221 12/22/21
Perchlorate (6850)			Harrison Bayou				Goose Prairie Creek	
Perchlorate	µg/L	17	**0.0359 J**	**0.0353 J**	**0.0464 J**	< 0.0500 U	**0.0394 J**	**0.0344 J**

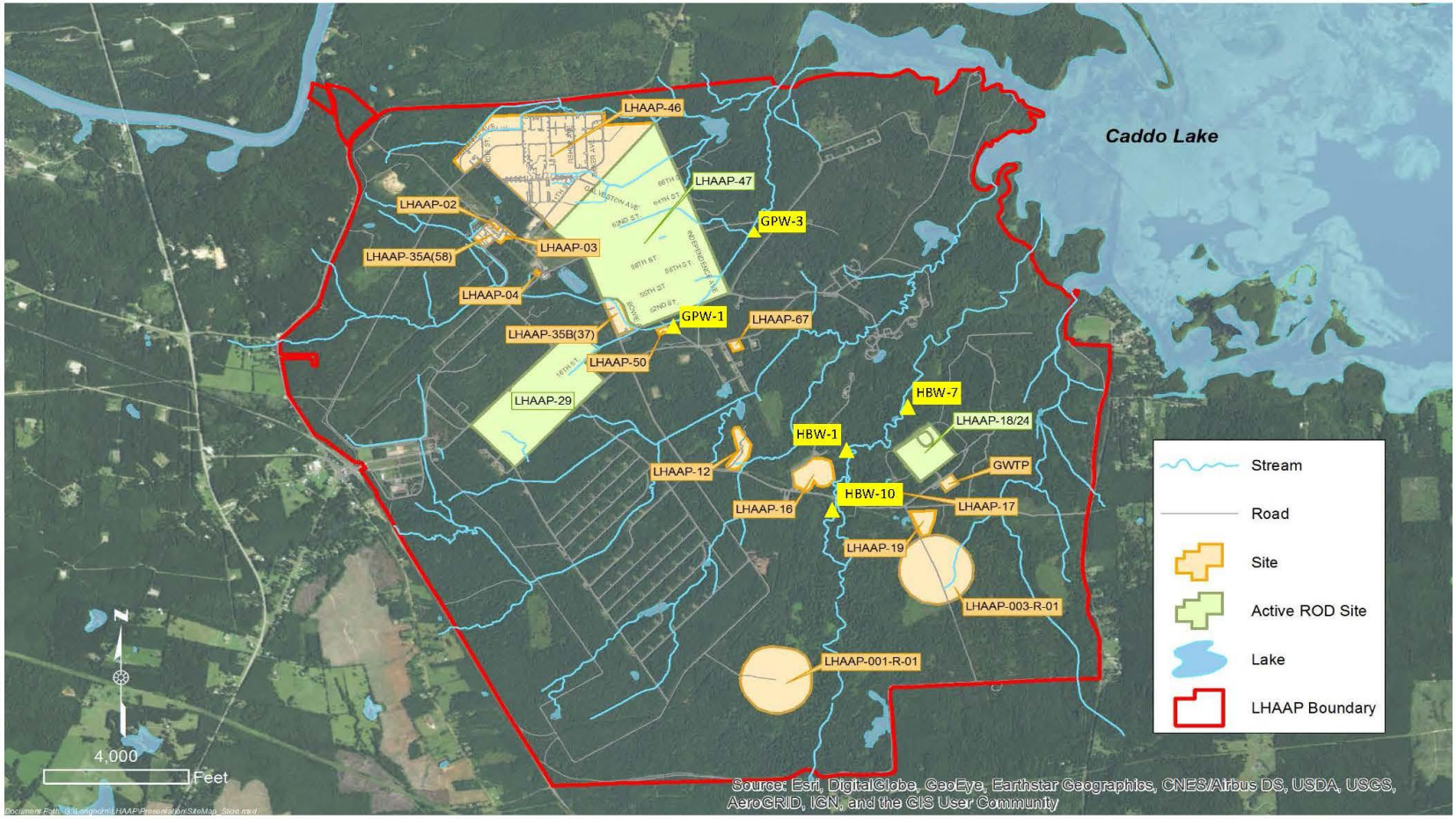
PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

µg/L - micrograms per liter

J - estimated value between the detection limit and limit of quantitation and/or due to quality contol issues

U - nondetect; reported to the limit of detection

Longhorn Army Ammuntion Plant Creek Sampling Locations



DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 24, 2022

DAIN-ODB-LO

Ms. April Palmie
Texas Commission on Environmental Quality Superfund Section – MC-136
Remediation Division
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Draft Final Pre-Design Investigation Report, LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas

Dear Ms. Palmie,

An electronic copy of the above-referenced document is being transmitted to you for your review. The document includes revisions based upon the Texas Commission on Environmental Quality (TCEQ) and Environmental Protection Agency's (EPA) comments on the Draft received January 18, 2022, and January 24, 2022, respectively. In accordance with the Federal Facility Agreement, this Draft Final will be considered Final after 30 days without further comment. Responses to comments on the Draft version of the document are included within this Draft Final.

The document was prepared by HDR Environmental, Operations and Construction, Inc. (HDR) on behalf of the Army as part of HDR's contract for the facility. I ask that Phil Werner, HDR's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.zeiler@calibresys.com.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
B. Follin, USEPA Region 6, Dallas, TX (1 electronic only)
P. Bruckwicki, Caddo Lake NWR, TX (1 hard copy, 1 CD)
A. Williams, USACE, Tulsa District, OK (1 electronic only)
C. Montoya, USAE, Tulsa District OK (1 electronic only)
M. Bowlby, USAEC, San Antonio, TX (1 electronic only)
L. Sierocinski, USAEC, San Antonio, TX (1 electronic only)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 24, 2022

DAIN-ODB-LO

Mr. Brian Follin
U.S. Environmental Protection Agency
Federal Facilities Section R6
1201 Elm Street, Suite 500
Dallas, TX 75202-2102

Re: Draft Final Pre-Design Investigation Report, LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas

Dear Mr. Follin,

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The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.zeiler@calibresys.com.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

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L. Sierocinski, USAEC, San Antonio, TX (1 electronic only)

Comments Response Matrix

Draft Report: Pre-Design Investigation Report, LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond Longhorn Army Ammunition Plant Karnack, Texas

Document Date: November 12, 2021
Comment Date: January 18, 2022
Reviewer: April Palmie, TCEQ Project Manager
Respondent: Dr. Rose Zeiler, Longhorn AAP Site Manager

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X)
2. Commenter Agrees (A) with response, or Does Not Agree (D) with response

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
Reviewer #1:						
1	General		Please include adobe bookmarks in the final version with links to table of contents, each section, figures, tables, and each attachment.	C	TOC, figures, tables, and attachments will be bookmarked in the final adobe version.	
2	Acronyms		Add PCL, Add TRRP. This would be consistent with the work plan.	C	PCL and TRRP have been separated and added.	
3	1.3	1st bullet	Change relevant text to "Texas Risk Reduction Program (TRRP) Tier 1 Residential Groundwater Protective Concentration Level (PCL)". TRRP has different types of PCLs. Since LHAAP only uses Tier 1 Groundwater, you can use TRRP PCL after this point, but it needs to be explained correctly first usage.	C	Text has been revised accordingly.	
4	1.3	3rd bullet	Correct ")" typo at 156 area.	C	Text has been revised accordingly.	
5	3.0	Groundwater Summary tables	Should reference the current TRRP tables; these are updated every year.	C	Notes have been revised in Tables 2, 3, and 4 to reference January 2021 TRRP PCL levels.	
6	3.0	Tables General	Some of the results have thousand separator commas, others don't. Please update for consistency. Also, please shade cells with results that exceed MCL, MSC, or PCL (suggest light blue).	C	Tables have been revised accordingly for consistency and presentation.	

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
7	Figures	General	Please revise and replace the figures with higher resolution images that take up more of the space on the pages. Please add figure number to the title section below or by the legend. Example, Figure 1: LHAAP18/24 Site Location Map. I include a similar comment for most HDR reports. Please consider when you prepare LHAAP-29 PDI. If you would insert the pdf versions of the figures as part of the pdf document assembly, rather than inserting the figures into a word document, I believe this issue would go away. There is not "extra" information (except a page number) in the word document wrap around for each figure. Page numbers can be added in adobe.	C	Figures have been revised accordingly.	
8	Figure 6		Why is there a 5,000 ring around MW-21 (3,900)? The concentration > 1,000 and 500 are also not encompassing the correct locations. For example, 1824DPT18 (135) should be between the 500 and 50 rings. Please check other figures to makes sure the isocontours include the correct locations. I noticed a couple on figure 9 too, but I did not check every data point on every figure for correct placement.	C	Iso-concentration contours have been revised by changing the iso-concentration values and redrawing the contours. Note that new figures have been added and old Figure 6 is now Figure 9 titled "Extent of TCE Groundwater Contamination Outside the Northeast ICT Boundary".	
9	Figures	General	Should the figures for perchlorate (for example) really include the results for VOCs? Including all of the results on each figure makes the figures very busy and more difficult to view the trends of that specific COC. I suggest one figure with no isocontours that includes all results for a medium and area, then the figures for specific COC with isocontours should only include that COC in the data pop-outs.	C	Figures have been revised accordingly. Figures have been added to show perchlorate and VOC soil and groundwater concentrations Outside the Northeast Boundary and the Shallow Zone ISB Grids. These are captured in new Figures 4, 7, and 10. Note: Figures 4, 5, and 6 have been revised to remove the GWP-Ind reference and values because they are not applicable to saturated soils collected at depth from the saturated zone. The text provides the GWP-Ind in the data tables for range of impact assessment only.	
10	Section 4	General	Header document name changes to PDI Work Plan.	C	Header has been revised accordingly.	
11	General		Thank you for cross-sections with concentrations and photo log.		Acknowledged.	

Comments Response Matrix

Draft Report: Pre-Design Investigation Report, LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond Longhorn Army Ammunition Plant Karnack, Texas

Document Date: November 12, 2021
Comment Date: January 24, 2022
Reviewer: Brian Follin, EPA
Respondent: Dr. Rose Zeiler, Longhorn AAP Site Manager

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X)
2. Commenter Agrees (A) with response, or Does Not Agree (D) with response

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
Reviewer #1:						
1	Section 1.1, Page 1-2		In the following statement…"These two units are separated by a mostly contiguous clay layer which is believed to be present across the entire site," I believe that the authors meant to say "continuous" rather than "contiguous," and even then…if it is "mostly continuous," it still would not be present across the entire site…just the "majority of the site."	C	Text has been revised to state, "These two units are separated by a mostly continuous clay layer which is believed to be present across much of the site."	
2	Section 1.1, Page 1-2		Statements such as the highlighted portion of the following are somewhat presumptuous…"Historic data suggests that contaminants in the saturated zone occur as dissolved plumes within the containment area and outside the containment area where contaminants migrated off-site before installation of the ICTs and GWTP." Is there concrete evidence to suggest that the ICTs are 100% effective at containing the contaminated groundwater? Couldn't contaminants be migrating offsite through the ICTs currently or historically at times when the ICTs and GWTP have been offline? Assuming the ICTs and GWTP are 100% effective at preventing off-site migration of contaminated groundwater (and all contaminants migrated off-site prior to installation, that would suggest that the ICTs should have been constructed further to the north and east relative to their actual construction locations.	C	Based on the 3rd Quarter Groundwater Treatment Plant report prepared by Bhate, changes observed in perchlorate, TCE, and MC concentrations trends indicate that the plumes are stable, supporting the conclusion that the extraction system is effective in minimizing contaminant transport offsite and reducing COC concentrations. The text has been revised accordingly, "Historic data suggests that contaminants in the saturated zone occur as dissolved plumes within the containment area and outside the containment area where contaminants may have migrated off-site before installation of the ICTs and GWTP.	
3	Section 1.4, Page 1-3 and Section 2, Page 2-1		Says that 44 DPT boreholes will be advanced; I'm only seeing 42 DPT locations on figure 2. Are the two remaining boreholes the collocated 1824DPT27A and 1824DPT29A? If so, labels for these two borings should be added to figure 2.	C	Labels for 1824DPT27A and 1824DPT29A have been added to **Figure 2**.	

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
4	Section 1.4, Page 1-3		Says that 5 Shallow Zone monitoring wells will be installed to a depth of 40 ft bgs outside the Northeast ICTs Boundary and in the vicinity of 18WW17; I'm only seeing 4 new monitoring well locations in that area on fig. 2. Is the 5th well 1824DPTMW05, which is located just west of the westernmost Shallow Zone ISB Grid?	C	Correct, the decision was made during the PDI field investigation, after review of preliminary DPT data, to place four of the monitoring wells outside the Northeast ISB Boundary and move the fifth well to the Shallow Zone ISB Grid. The text has been revised to state, "Installation and development of 4 Shallow Zone monitoring wells to a depth of 40 ft bgs outside the Northeast ICTs Boundary and in the vicinity of 18WW17"… and "Installation and development of 1 monitoring well to a depth of 40 ft bgs within the Shallow Zone ISB Grid".	
5	Section 2.1.3, Page 2-3		Based on the following statement…" Outside the Northeast ICT Boundary, shallow wells were placed so that the area up and down gradient of well 18WW17 had coverage," the placement of 1824DPTMW03 and 1824DPTMW04 are somewhat confusing. Are these two wells considered to be upgradient of 18WW17? It's difficult to say because groundwater-level altitude contours, although collected in conjunction with this sampling effort (section 2.1, Page 2-2), were not included in the report. Looking at the groundwater-level altitude contours from the ROD (figure 2-5), it seems possible that these wells were considered to be upgradient from 18WW17, although there are very few wells located to the northeast of the ICT based on figure 2-5 in the ROD, so confidence in the contours shown in figure 2-5 should be considered limited, and most of the contours in this portion of the figure should have been dashed.	E	Noted. The PDI wells (and DPTs) were placed to provide coverage of the perchlorate plume to support the remedial design. Groundwater flow directions in this area are complicated and influenced not only by the ICTs but also by 18WW17, an extraction well. A potentiometric map of the PDI wells and other site wells will be included in the 4th Quarter Groundwater Treatment Plant Report. Groundwater data for the temporary DPT and monitoring wells was provided in the report in **Attachment 5, DPT Borings Data Sheet**. The name of the attachment has been revised to make it more descriptive of the contents. It is now **DPT Temporary Well and Monitoring Well Summary**. Elevation data from other site monitoring wells evaluated in this PDI have been added to **Attachment 5** and **Figure 2**.	

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
6	Section 2.3, Page 2-3		The following statements in quotations were made…" One composite IDW soil sample was collected from the drill cuttings and tested for hazardous substances using the Toxicity Characteristic Leaching Procedure (TCLP). The analytical results determined that the soil is non-hazardous and does not require special handling or disposal. The non-hazardous soil cuttings will be dumped and leveled next to the respective DPT and/or well boring location." My comments regarding these statements are as follows: a.) A reference should have been provided for the TCLP. b.) According to the text that describes the TCLP in the link I provided, the TCLP does not test for hazardous substances. The TCLP is "designed to determine the mobility of both organic and inorganic analytes present in liquid, solid, and multiphasic wastes" c.) Based on the results provided in this report for soils (table 1), a single composite soil sample should not have been assumed to be representative. Multiple samples probably should have been submitted for laboratory analyses prior to determining a course of action. d.) The simplest solution would have been to pay for offsite disposal of presumed hazardous soils.	C E E D	a. The following reference has been added to **Section 5**, "SW-846 Test Method 1311: Toxicity Characteristic Leaching. https://www.epa.gov › hw-sw846 › sw-846-test-method. September, 2021." b. Toxicity Characteristic Leaching Procedure is a chemical analysis process used to determine whether there are hazardous elements present in a waste. The test involves a simulation of leaching through a landfill and can provide a rating that can prove if the waste is dangerous to the environment or not by determining if a waste may meet the definition of EP Toxicity, that is, carrying a hazardous waste code under RCRA (40 CFR Part 261) of D004 through D052. No change to document made. c. IDW TCLP sample collection and analyses was performed in accordance with the approved work plan. No change to document made. d. Per the TCLP results, the soil cuttings are not characterized as hazardous and therefore do not require special handling or disposal requirements. No change to document made.	

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
7	Section 2.4, Page 2-3		The following statement is a little bit problematic…" To ensure defensible data, HDR met the project-specific Data Quality Objectives (DQOs) for sampling, analysis, and Quality Assurance/Quality Control (QA/QC) by collecting the proper quantities and types of samples, using the correct analytical methodologies…" The use of terms like "proper" in reference to "quantities and types of samples" and "correct" in reference to "analytical methodologies" are completely subjective. Would be more appropriate to state that "…the quantities and types of samples collected and the analytical methodologies used aligned with project-specific Data Quality Objectives (DQOs) for sampling, analysis, and Quality Assurance/Quality Control (QA/QC)." After which a reference should be provided for whichever report contains the DQOs for sampling, analysis, and Quality Assurance/Quality Control (QA/QC).	C	The text has been revised to state, "To ensure defensible data, the quantities and types of samples collected, and the analytical methodologies used aligned with project-specific Data Quality Objectives (DQOs) for sampling, analysis, and Quality Assurance/Quality Control (QA/QC) (HDR, 2021)."	
8	Section 2.4, Page 2-4		The discussion related to J, UJ, and J+ qualifiers that refers to a "given sample," a "number of samples," "one sample" and "one set of parent/field duplicate samples" should specify which sample(s)/site(s) these comments apply to in each case to add value to the discussion and enable verification by reviewers.	C	Descriptions of the qualifications and rationale for all samples collected are provided in the Data Validation Report, and as shown in the data summary tables. The following text has been added to the document, "The **Data Validation Report** (**Attachment 6**) provides descriptions and rationale for all qualifications that are listed in the data summary tables (**Tables 1 – 4**)."	
9	Section 3.1, Page 3-1		The phrase "eleven VOCs were detected at multiple DPT borings" is misleading when taken in concert with the remaining text in the paragraph…consider rewording as "a total of eleven VOCs were detected in the collective DPT borings with some VOCs detected in multiple borings."	C	The text has been revised to state, "A total of eleven VOCs were detected in the collective DPT borings with some VOCs detected at multiple borings. The detected VOCs included 1,1,2-trichloro-1,2,2-trifluoroethane, 1,1-dichloroethane (1,1-DCA), 1,1-DCE, acetone, chloroform, cis-1,2-DCE, MC, trans-1,2-DCE, TCE, PCE, and VC."	

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
10	Section 3.1, Page 3-1		The 2nd paragraph states that the "…COCs MC, PCE, and TCE were detected at multiple borings" but then states later in the same paragraph that "…PCE was detected in one boring."	C	The text has been revised to state, "The COCs MC and TCE were detected at multiple borings. The VOC with the highest concentration was TCE, which was detected at boring 1824DPT17 at an estimated (J) concentration of 933 J micrograms per kilograms (µg/kg). MC was the most prevalent COC detected in the DPT borings with nine, while TCE was detected in seven borings."	
11	Section 3.1, Page 3-1		The following statement is somewhat misleading…" Contaminant depth ranged between 24 and 41 ft bgs, with the highest concentrations observed at 29 ft (1824DPT17)." Consider rewording as "Depths at which soil samples submitted for VOC analyses were collected ranged from 24 to 41 ft bgs in the DPT borings, and each DPT boring was sampled at a single depth."	D	The intent of the paragraph (and section) is to provide the remedial design engineers with a general narrative of where the extent of contamination is present (e.g., spatial and vertical). No change to document made.	
12	Section 3.1, Page 3-1		The following statement is not technically true because 1824DPT18 is not located along the northeast boundary of the site…" The highest perchlorate soil concentrations are in the same area as the VOCs along the northeast boundary of the site."	C	The text has been revised to state, "The highest perchlorate soil concentrations are in the same area as the VOCs in proximity of the northeast boundary of the site."	
13	Section 3.1, Page 3-4		The phrase "thirteen VOCs were detected at multiple DPT temporary wells" is misleading when taken in concert with the remaining text in the paragraph…consider rewording as "a total of thirteen VOCs were detected in the collective DPT temporary wells with some VOCs detected in multiple wells."	C	The text has been revised to state, "A total of thirteen VOCs were detected in the collective DPT temporary wells with some VOCs detected in multiple wells."	

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
14	Section 3.2, Page 3-5		There are numerous issues with the following two sentences…" Eight DPT temporary monitoring were installed to further evaluate the extent of perchlorate and VOC contaminated groundwater in the southwest corner of the ISB Grids. All eight VOC COCs were detected at multiple DPT temporary wells including 1,1,2-trichloroethane (1,1,2-TCA), benzene, BDCM, cis-1,2-DCE, MC, PCE, TCE, and VC." Ten VOCs (not eight) were identified as COCs in the shallow zone in section 1.2. The word "monitoring" should be replaced with the term "wells." There are 27 DPT temporary wells located in the vicinity of the Shallow Zone ISB Grids; which eight are the authors referring to?	C	The text has been revised to state, "A total of 27 DPT borings were installed in and around the Shallow Zone ISB Grids. Sixteen DPT borings (1824DPT01 – 1824DPT16) were installed within the proposed treatment areas centered on wells MW-23 and 18CPTMW03SW, while 11 were installed outside the two grids (1824DPT32 – 1824DPT42). Temporary wells were installed in each boring to further evaluate the extent of perchlorate and VOC contaminated groundwater. Eight of the 10 VOC COCs were detected at multiple DPT temporary wells including 1,1,2-trichloroethane (1,1,2-TCA), benzene, BDCM, cis-1,2- DCE, MC, PCE, TCE, and VC."	
15	Section 4, Page 4-1		In the following sentence, what does "albeit much lower" referring to?..." Farther to the east of the ICT Boundary, the higher perchlorate and VOC concentrations, albeit much lower, were found in the shallower (1824DPT27A) of the nested wells 1824DPT27 and 1824DPT27A."	C	The text has been revised to state, "Farther to the east of the ICT Boundary, the higher perchlorate and VOC concentrations, albeit much lower than observed in nested wells 1824DPT29 and 1824DPT29A, were detected in the shallower (1824DPT27A) of the nested wells 1824DPT27 and 1824DPT27A."	
16	Section 4, Page 4-2		In the following sentence, what do perchlorate and TCE exhibit higher concentrations than?..."Perchlorate and VOC groundwater contamination is widespread within the Shallow Zone ISB grids with perchlorate and TCE exhibiting higher concentrations."	C	The text has been revised to state, "Perchlorate and VOC groundwater contamination is widespread within the Shallow Zone ISB grids with perchlorate and TCE exhibiting the highest concentrations of the COCs."	
17	Section 4, Page 4-2		In the following sentence, what is this a "good example" of?..." A good example is comparing the perchlorate results from permanent monitoring well 1824DPTMW05 (576,000 µg/L) and down gradient temporary DPT well 1824DPT40 (495,000 µg/L)."	C	The text has been removed.	

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
18	Figure 5		Should indicate what value is associated with the GWP-Ind MSC for perchlorate in the explanation.		The GWP-Ind MSC for perchlorate was provided in the "Notes" box in the upper left corner of the figure. However, the figure has been revised to remove the GWP-Ind reference and values because they are not applicable to saturated soils collected at depth from the saturated zone. The text provides the GWP-Ind in the data tables for range of impact assessment only. The data shown in old **Figure 5** will now be presented in **Figure 6**.	
19	Figure 6		Need to check the labels associated with the TCE concentration contours in the explanation; there are numerous violations, including the existence of a 5,000 µg/L TCE contour that surrounds MW-21, when the TCE concentration at MW-21 is only 3,900 µg/L.	C	The figure has been revised accordingly. The data shown in old **Figure 6** is now **Figure 9**.	
20	Figure 7		1824DPT21 is located between the 40 µg/L and 10,000 µg/L contours even though it has a concentration of 33.6 µg/L. The author(s) should indicate in the text that perchlorate data collected from this temporary well was not considered during the contouring process and offer a possible explanation for why the perchlorate concentration is perhaps lower than expected at this location.	C	The figure has been revised to include 1824DPT21 inside the 17 ug/L contour. The iso-concentration contour has been revised to indicate >17 ug/L (TRRP $^{GW}GW_{Ing}$ PCL for Perchlorate). This data is now **Figure 8**.	
21	Figure 8		There should be a 10,000 µg/L contour surrounding the 20,000 µg/L contour. Consider adding a 1,000 µg/L contour surrounding MW-14 in the northwest corner of the site.	C	The figure has been revised accordingly. This data is now **Figure 12**.	

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
22	Figure 8		In the following sentence…" However, there is an area where VOCs are an order of magnitude higher." It is unclear what the VOC concentrations in the "area" are being referred to. Also, it is hard to compare concentrations of VOCs collectively when each VOC analyte can vary so widely from one well to the next. It would probably be helpful to make concentration comparisons for a single VOC analyte at a time (preferably TCE in this case because that is the analyte that has associated contours in this figure).	C	The text in **Section 3.2**, page 3-12, has been revised to state, "As shown in **Figure 12**, TCE groundwater contamination is widespread across the entire Shallow Zone ISB Grid area at high concentrations. However, there is an area where TCE is an order of magnitude higher." The figure has been revised and is now **Figure 12**.	
23	Figure 9		Should also include a 15,000 µg/L outside of the 25,000 µg/L contour.	C	The figure has been revised and is now **Figure 11**.	
24	General Comment		Add figure numbers to all of the figures.	C	Figure numbers have been moved from the top left corner of the page to the title block in response to this comment.	
25	General Comment		It would be helpful if groundwater-level altitude contours were included on fig. 2.	E	Groundwater elevation data collected during the PDI field effort is presented in **Attachment 5**. To supplement this data, the groundwater elevation data from pre-existing wells where chemical data was used in this report have been added. Further, the groundwater elevation data has been added to Figure 2. However, due to the small sample set included in the PDI, groundwater contours were not prepared, but will be included with the 4th Quarter Groundwater Treatment Plant Report. Please see the response to Comment No. 5.	
26	General Comment		Boreholes 1824DPT29 and 1824DPT29A appear to be located either within the ICT or upgradient of the ICT based on fig. 2. Is there an explanation for this placement?	C	To clarify, the following text has been added to **Section 4**, "Nested wells 1824DPT29 and 1824DPT29A are located west and upgradient of the ICTs, and within the LHAAP-18/24 northeast boundary." The GPS coordinates place the DPTs just upgradient of the ICT, but due to the icon size causes this effect.	

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Draft Final
Pre-Design Investigation Report

LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond
Longhorn Army Ammunition Plant
Karnack, Texas

February 2022

Prepared For:

U.S. Army Corps of Engineers – Tulsa District

Prepared By:

HDR
2650 Park Tower Drive, Suite 400
Vienna, VA 22180

Contract No. W912BV 19D0016
Task Order No. W912BV 20F0096

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Draft Final
Pre-Design Investigation
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Attachment 2. Well Completion Forms

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Attachment 4. Low-flow Sample Data Forms

Attachment 5. DPT Temporary Well and Monitoring Well Summary

Attachment 6. Data Validation Report

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Attachment 8. Full Analytical Data Table

Attachment 9. Field Activities Photo Log

Attachment 10. Cross Sections – Outside Northeast ICT Boundary and Shallow Zone ISB Grids

Acronyms and Abbreviations

ACD	Air curtain destructor
AECOM	AECOM Technical Services, Inc.
BDCM	Bromodichloromethane
bgs	below ground surface
BTOC	below top of casing
COCs	Chemicals of Concern
DCA	Dichloroethane
DCE	Dichloroethene
DNAPL	Dense Non-aqueous Phase Liquid
DPT	direct push technology
DQO	Data Quality Objectives
EISB	enhanced in-situ bioremediation
ft	feet
GWP-Ind	medium-specific concentration for industrial use based on groundwater protection
GWTP	groundwater treatment plant
HDR	HDR Environmental, Operations and Construction, Inc.
ICTs	Interceptor-collection trenches
IDW	Investigation derived waste
IRA	Interim Remedial Action
ISB	In-situ Bioremediation
IWWP	Installation Wide Work Plan
J	Estimated Value
LHAAP	Longhorn Army Ammunition Plant
LUCs	Land Use Controls
MCL	Maximum Contaminant Level
MC	Methylene chloride
MDL	Method Detection Limit
MS/MSD	Matrix spike/matrix spike duplicate
PCE	Tetrachloroethene
PCL	Protective Concentration Level
PDI	Pre-Design Investigation
PPE	personnel protective equipment
PSI	Post-Screening Investigation
PVC	Polyvinylchloride
QA	Quality Assurance
QC	Quality Control
RD	remedial design
ROD	Record of Decision

Acronyms and Abbreviations (cont.d)

SDWA	Safe Drinking Water Act
TCA	trichloroethane
TCE	trichloroethylene
TCEQ	Texas Commission on Environmental Quality
TCLP	toxicity characteristic leaching procedure
TNB	Trinitrobenzene
TRRP	Texas Risk Reduction Program
µg/L	micrograms per liter
µg/kg	micrograms per kilograms
UEP	unlined evaporation pond
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VC	Vinyl Chloride
VOC	volatile organic compound

1 Introduction

HDR Environmental, Operations and Construction, Inc. (HDR) has prepared this Pre-Design Investigation (PDI) Report to meet the objectives specified in the Final LHAAP-18/24 Record of Decision (ROD [HDR, 2019]) to further define groundwater impacted by 1,4-dioxane, perchlorate, and volatile organic compounds (VOCs) at the former Longhorn Army Ammunition Plant (LHAAP) site LHAAP-18/24, Burning Ground No. 3, and Unlined Evaporation Pond (UEP) located in Karnack, Texas. The purpose of this investigation was to gather additional site data to support development of the Remedial Design (RD) by refining the extent of groundwater contaminated by 1,4-dioxane, perchlorate, and/or VOCs outside the northeast site boundary (Northeast interceptor-collection trenches [ICTs] Boundary), adjacent to 18CPT03 and 18CPTMW03SW (within the proposed enhanced in-situ bioremediation [EISB] grids), and near well MW-14. In addition, soil samples were collected outside the Northeast ICTs Boundary to investigate perchlorate and VOC soil contaminant levels at the contact interval between the clay and sand and includes both soil types. This document has been prepared under the U. S. Army Corps of Engineers (USACE) Tulsa District Contract Number W912BV 19D0016; Task Order No. W912BV 20F0096.

This PDI Report provides the observations and results of the field investigation conducted from March 12 through June 30, 2021. The PDI field investigation was conducted in accordance with procedures outlined in relevant sections of the Installation Wide Work Plan (IWWP) (AECOM, 2014); specifically, those procedures for conducting direct push technology drilling (DPT); soil sample collection, handling and laboratory analyses; temporary and permanent well installation, and sample collection, handling, and laboratory analyses; decontamination; handling and disposal of investigation derived waste (IDW); and surveying. The IWWP was reviewed by and concurrence was obtained from the Texas Commission on Environmental Quality (TCEQ) and the U.S. Environmental Protection Agency (USEPA). These procedures were presented in the Final Pre-Design Investigation Work Plan for LHAAP-18/24, Burning Ground NO. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas dated May 2021 (HDR, 2021).

1.1 Site History and Background Information

LHAAP-18/24 is a 34.5-acre cleared area within a heavily wooded section of LHAAP. The area is vegetated primarily with grass and has asphalt-paved roads. It is situated on a natural topographic high slightly west of the crest of a small topographic divide between Harrison Bayou and Saunders Branch. Topography of the site has been altered by operations over the past 35 years. The burning ground area is mostly level with more relief near the western corner and near the northern corner that contains the mounded surface of the former UEP. There are no surface water bodies or watercourses running through LHAAP-18/24. Surface drainage occurs in all directions, but flow is generally directed to the north and west by both natural and manmade ditches and drainage swales towards Harrison Bayou. Harrison Bayou drains into Caddo Lake which is located approximately 2.5 miles northeast of LHAAP-18/24 (HDR, 2019).

LHAAP-18/24 is comprised of the former Burning Ground No. 3 (LHAAP-18) and UEP (LHAAP-24). LHAAP-18 Burning Ground No. 3 operated between 1955 and 1998, while LHAAP-24 UEP was operational from 1963 to 1984. The area was used for the treatment, storage, and disposal of solid and liquid explosive, pyrotechnic, and combustible solvent waste by open burning/open detonation, incineration, evaporation, and burial (HDR, 2019). The UEP was used to collect water from the washout of rocket motor casings and process waste sumps. Sludge from the UEP was removed in

1986 and the impoundment was capped. Most impacts to the soil were remediated during the 1997 LHAAP-18/24 Interim Remedial Action (IRA) when approximately 32,000 cubic yards of soil was removed. A groundwater extraction system incorporating approximately 5,000 feet (ft) of ICTs and a Groundwater Treatment Plant (GWTP) were installed in 1997 to control the migration of contaminated groundwater and to protect surface water. The area within the ICTs is considered the containment area. The LHAAP-18/24 site location map is presented in **Figure 1**.

Contamination from historical activities at LHAAP-18/24 has impacted two groundwater zones: Shallow Zone extending from the surface to a depth of approximately 45 ft below ground surface (bgs), and the Wilcox Formation below the Shallow Zone. These two units are separated by a mostly continuous clay layer which is believed to be present across much of the site.

VOCs and 1,4-dioxane, metals, and perchlorate releases associated with past operations of the former burn pits, burial trenches, an air curtain destructor (ACD) built in 1979, and the UEP were the contamination sources in soil at LHAAP-18/24. Most of the contaminated soil was remediated during the IRA; however, some residual contaminants remain in the unsaturated soil that could be an ongoing source of groundwater contamination.

Groundwater remains a medium of concern at LHAAP-18/24 and was the focus of this PDI. Historic data suggests that contaminants in the saturated zone occur as dissolved plumes within the containment area and outside the containment area where contaminants may have migrated off-site before installation of the ICTs and GWTP. Additionally, residual Dense non-aqueous phase liquid (DNAPL) is present in the UEP and former ACD areas.

Groundwater contaminants evaluated during the PDI include perchlorate and VOCs in the Shallow Zone. Groundwater contaminants evaluated in the Wilcox Formation include perchlorate, VOCs, and 1,4-dioxane. Concentrations of VOCs and perchlorate were detected in wells screened in the Shallow Zone and in localized areas in the Wilcox Formation, though Shallow Zone contamination is more widespread. Perchlorate was detected in groundwater in 1999 and in 2001 a fluidized bed reactor treatment system was installed at the GWTP. The compound 1,4-dioxane was added in 2017 as a chemical of concern after completion of a Supplement to the Updated Post-Screening Investigation (PSI) Report (AECOM, 2016).

1.2 Summary of Selected Remedy

The final selected remedy for LHAAP-18/24 includes enhanced groundwater extraction and treatment, Land Use Controls (LUCs), EISB for Shallow Zone and Wilcox formation groundwater inside and outside the containment area, thermal DNAPL removal, maintenance of the existing cap over the UEP, unsaturated soil excavation and off-site disposal, Monitored Natural Attenuation (MNA) and long-term monitoring (HDR, 2019).

The final selected remedy for LHAAP-18/24 protects human health and the environment by preventing human and ecological receptors from being exposed to contaminated soil and contaminated groundwater. The human health risk assessment scenarios evaluated were based on the hypothetical future maintenance worker. In the soil, chemicals of concern (COCs) are volatile organic compounds (VOCs) (TCE, MC, PCE) and the anion perchlorate. In the Shallow Zone groundwater, COCs include VOCs (MC, TCE, cis-1,2-dichloroethene [DCE], PCE, benzene, 1,1,2-trichloroethane [TCA], vinyl chloride [VC], bromodichloromethane (BDCM), 1,3,5-trinitrobenzene [TNB], and 1,4-dioxane), metals (arsenic, barium, chromium, cobalt, and nickel), and the anion perchlorate. In the underlying Wilcox Formation groundwater, COCs include VOCs (MC, TCE, cis-1,2-DCE, PCE, benzene, vinyl chloride, BDCM, 1,3,5-TNB, and 1,4-dioxane), metals (arsenic and

barium), and the anion perchlorate. Residual MC and TCE DNAPL acting as a source material at two locations in the Shallow Zone and Wilcox Formation groundwater may be considered a principal threat waste at LHAAP-18/24 (HDR, 2019).

1.3 Objective

The primary objectives of the PDI field investigation were as follows:

- Further evaluate the extent of perchlorate and VOC contaminated groundwater present outside the Northeast ICTs Boundary of the site at levels exceeding the Safe Drinking Water Act (SDWA) maximum contaminant levels (MCL) or the Texas Risk Reduction Program (TRRP) Tier 1 Residential Groundwater Protective Concentration Level (PCL) where MCLs have not been established;
- Evaluate perchlorate and VOC contamination in soil present outside the Northeast ICTs Boundary of the site;
- Further evaluate the extent of perchlorate and VOC contaminated groundwater present adjacent to 18CPT03 and 18CPTMW03SW EISB grids and burning Cage 156 area at levels exceeding the MCL or TRRP PCL;
- Further evaluate the extent of perchlorate and VOC contaminated groundwater present adjacent to the MW-23 EISB grid at levels exceeding the MCL or TRRP PCL;
- Further evaluate the extent of 1,4-dioxane, perchlorate, and VOC contaminated groundwater present in the northwest corner near MW-14 at levels exceeding the MCL or TRRP PCL; and
- Provide extent for contaminated groundwater that supports development of the RD.

1.4 Scope of Work

The scope of the field work included the following activities:

- Advancement of 44 DPT boreholes;
- Installation of 1-inch temporary wells at each DPT location for collection and analysis of groundwater samples for perchlorate (SW 6850) and VOCs (SW 8260B);
- Collection of one (1) soil sample for perchlorate and VOC analyses at the sand/clay interface at all DPT borings located outside the Northeast ICTs Boundary (17 total);
- Installation and development of 4 Shallow Zone monitoring wells to a depth of 40 ft bgs outside the Northeast ICTs Boundary and in the vicinity of 18WW17;
- Installation and development of 1 monitoring well to a depth of 40 ft bgs within the Shallow Zone ISB Grid:
- Installation and development of 1 monitoring well in the Wilcox Formation to a depth of 51 ft bgs northwest of well MW-14 near ICT 13A;
- Purging and collection of 1 groundwater sample for perchlorate (SW 6850) and VOC (SW 8260B) analysis from the 5 newly installed Shallow Zone wells;
- Purging and collection of 1 groundwater sample for 1,4-dioxane analysis (via Method SW 8270) from the Wilcox Formation well;
- Survey of all newly installed well locations by a licensed Texas land surveyor;
- Perform a topographic survey of the LHAAP-18/24 site depicted at 1-foot contour intervals to include the Refuge boundary; and
- Handling and disposal of IDW development/purge water and soil cuttings.

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2 Field Investigation Activities

This section provides the activities and methods to be used to perform groundwater sampling and analyses, well installation and development, well surveying, soil sampling, topographic surveying of the site, IDW handling and disposal, and quality control/quality assurance procedures and data validation.

Field efforts were focused on further delineating the spatial extent of 1,4-dioxane (Wilcox only), perchlorate, and VOC contamination in the Shallow Zone outside of the Northeast ICTs Boundary, adjacent to boring 18CPT03 and Wilcox Formation well 18CPTMW03SW, adjacent to Shallow Zone well MW-23, and Wilcox Formation well MW-14. In addition, soil samples were collected to evaluate the presence of perchlorate and VOC contamination outside the Northeast ICTs Boundary. Groundwater results were compared to MCLs or the TRRP PCL, where MCLs have not been established. In total, soil borings were advanced at 44 locations using a GeoProbe 7730 DT rig outfitted with dual sampling tubes.

2.1 DPT Advancement: Soil Sampling and Analyses, Temporary Well Installation and Groundwater Sampling and Analyses

Continuous soil cores were collected at each boring location using the dual tube method that uses two sets of probe rods, where the larger diameter set of rods is driven into the ground as an outer casing. These outer rods receive the driving force from the hammer and provide a sealed hole from which soil samples may be recovered without the threat of cross contamination. The second, smaller set of rods are placed inside the outer casing. The smaller rods hold the macro sample liner in place as the outer casing is driven one sampling interval (~4 ft bgs) at a time. The small rods are then retracted to retrieve the macro core sample liner. After retrieval, the acetate sleeve containing the soil core was removed from the sample barrel and logged using the Unified Soil Classification System Standard Practice for Classification of Soils. Soil boring logs are provided in **Attachment 1**.

Soil samples were collected in the saturated zone at the contact interval between the overlying sands and underlying clay unit and included both soil types. This contact interval was targeted since it has been identified as a continuing source of perchlorate and VOC contamination. At completion depth (~27 – 40 ft bgs), temporary 1-inch polyvinylchloride (PVC) wells with 10-foot screens and 0.01-inch slot size were installed. All temporary well completion depths were seated 1 to 2 feet into the underlying clay to evaluate groundwater contamination at the contact interval and top of the clay unit. The temporary wells were allowed a minimum of 24 hours to stabilize before sampling was conducted.

Locations of the five shallow wells were selected after review of the groundwater results collected from the temporary wells. In general, wells installed outside the Northeast ICT Boundary were placed to provide coverage up - and down gradient of well 18WW17. The remaining shallow well was placed to provide coverage around the EISB Shallow Zone grid centered on well 18CPTMW03SW. One deep well was installed in the Wilcox Formation near monitoring well MW-14 to confirm that the proposed Shallow and Wilcox ISB remedy will adequately address the extent of contamination in this area. Each well was constructed with flush-joint threaded, schedule 40 PVC.

The PVC well screen was constructed of 10-foot lengths with 0.01-inch slots. A threaded PVC bottom cap was secured to the bottom of the screen interval. Solid PVC casing was installed from the top of the screen interval to approximately three feet above surface grade. A filter pack consisting of clean silica sand (20 to 40 size) was placed in the auger or drill stem annulus from the well bottom to approximately two feet above the screen interval. A three-foot-thick bentonite seal (pellets or chips) was placed above the sand filter pack and hydrated with potable water. The annular space from the top of the bentonite seal to the surface was filled with a bentonite-cement grout. Surface completion consisted of an above-ground protective steel casing (approximately 4 ft), with a hinged, lockable lid set in a concrete pad. Concrete-filled steel bollards were installed at the corners of the concrete pad. Well completion forms are provided in **Attachment 2**.

The newly installed monitoring wells were allowed 24 hours to stabilize prior to development. Well development was performed by pumping and gentle surging of the screened interval using a surge block. Water quality parameters (temperature, pH, electrical conductivity, and turbidity) were monitored during development and continued until the water quality parameters stabilized and the water visually clear. Development water was containerized and disposed at the GWTP. **Attachment 3** provides the well development forms.

Wells were purged using low flow techniques. Prior to purging the monitoring wells, water level measurements were collected and recorded and then purged. Purging was considered complete when measurements of temperature, pH, electrical conductivity, and turbidity stabilized. Except for turbidity, measurements were collected using an inline flow cell. Turbidity measurements were collected separately using a turbidity meter. Again, purge water was collected and disposed at the GWTP. Low-flow sample data sheets are provided in **Attachment 4**. Once purging was complete, VOC samples were collected first followed by perchlorate and 1,4-Dioxane (Wilcox well only). At the time of purging/sampling, monitoring well 1824DPTMW03 did not appear to have fully recovered from the initial well development when the depth to water level was 27.84 feet below the top of casing (BTOC). At the time of purging, depth to water was 35.9 feet BTOC.

2.1.1 Outside Northeast ICT Boundary

Seventeen (17) DPT borings were advanced outside the Northeast ICT Boundary between the ICT boundary and east of well 18WW17, and further east and down gradient of well 18WW17. Total depth was dependent on the sand – clay contact interval but generally was between 27 and 42 ft bgs. This contact between sandy units and underlying clays was targeted since they are continuing sources of perchlorates and VOCs. At two collocated borings (1824DPT27A and 1824DPT29A) shallower groundwater and soil samples were collected to evaluate perchlorate and VOC contamination. A total of seventeen soil and groundwater samples were collected from this area. The sample locations are shown in **Figure 2**.

2.1.2 Shallow Zone ISB Grids (18CPT03 and MW-23)

Twenty-seven (27) DPT borings were advanced within and outside of the Shallow Zone ISB grids centered on 18CPT03 and well MW-23 shown in **Figure 2**. Total depths ranged between 31 and 48 ft bgs. Historic groundwater results collected in 2016 showed perchlorate levels of 260 µg/L and TCE levels of 153 µg/L at well 18CPTMW03SW (AECOM, 2016). The objective of this data collection effort was to confirm contaminant levels and spatial extent. A total of 27 groundwater samples were collected from this area.

2.1.3 Shallow and Wilcox Formation Monitoring Wells

New well locations were selected based on the findings of the DPT temporary well groundwater sample results. Outside the Northeast ICT Boundary, shallow wells were placed so that the area up- and down gradient of well 18WW17 had coverage. In 2020, this well had a perchlorate detection of 763,000 µg/L. Four wells (1824DPTMW01 – 1824DPTMW04) were installed in this area at depths ranging between 32 and 40 ft bgs. One shallow well (1824DPTMW05) was installed west and adjacent to ISB Shallow Zone grid centered on 18CPT03 to a total depth of 40 ft bgs. The placement of this well was based on the DPT temporary well sample results collected from this area. One well (1824DPTMW6) was installed in the Wilcox Formation north of well MW-14 at the terminus of the Shallow Zone and Wilcox Formation ISB trenches shown in **Figure 2**. Total depth was 51 ft bgs. The objective of the Wilcox Formation well is to confirm that the Shallow and Wilcox ISB remedy (coverage area) will adequately address the extent (specifically to the north of well MW-14) of contamination in this area.

2.2 Surveying

MTX Surveying, professionally licensed in the State of Texas, completed a topographic survey of LHAAP-18/24 and all associated structures (excluding wells) in June 2021. The survey depicts contour intervals at 1-foot, horizontal coordinates (northing and easing) based on the North American Datum of 1983, vertical elevations based on the North American Vertical Datum of 1988, and includes the Refuge boundary. The topographic survey is provided in **Figure 3** and will be incorporated and support development of the Remedial Design.

HDR collected horizontal coordinates (northing and easting) for each borehole location using a Trimble Global Positioning Unit. The data is based on the North American Datum of 1983 and included in the field work master tracker sheet provided in **Attachment 5** (**DPT Temporary Well and Monitoring Well Summary**).

2.3 Investigative Derived Waste Handling and Disposal

IDW generated during the investigation included soil cuttings, development and purge water, disposable sampling equipment, equipment decontamination fluids, and personal protection equipment (PPE). Decontamination fluids, development water and purge water were collected and and transported to the GWTP for disposal. One composite IDW soil sample was collected from the drill cuttings and tested for hazardous substances using the Toxicity Characteristic Leaching Procedure (TCLP). The analytical results determined that the soil is non-hazardous and does not require special handling or disposal. The non-hazardous soil cuttings will be dumped and leveled next to the respective DPT and/or well boring location.

2.4 Quality Assurance/Quality Control and Data Validation

To ensure defensible data, the quantities and types of samples collected, and the analytical methodologies used aligned with project-specific Data Quality Objectives (DQOs) for sampling, analysis, and Quality Assurance/Quality Control (QA/QC) (HDR, 2021). QA/QC procedures are described below.

Field QC was performed during sample collection, shipping, and handling. Sample QC for the analytical samples was assessed through the collection of duplicate samples. Eight (8) duplicate samples, two soil and six groundwater, were collected from the 42 DPT borings. Duplicate samples are collected to evaluate field and laboratory precision.

A total of seven matrix spike/matrix spike duplicates (MS/MSD) were collected and used by the laboratory to measure matrix interference. Since the observed lithology is relatively heterogeneous across the site, the MS/MSD and QC sample locations were selected in the field to achieve a representative distribution.

Five equipment rinsate blanks were collected by pouring analyte free source water over a decontaminated macro-core. Equipment rinsate blanks were collected to assess the adequacy of the decontamination process.

Temperature blanks provided by the laboratory were included in each sample cooler. Temperature blanks are a sample of laboratory-grade distilled water that travels with the project coolers from the laboratory to the sampling site and back to the laboratory without being opened. The temperature of the blank is obtained by the laboratory when samples are received to verify that the temperature of the samples during transportation did not exceed 4°C.

Review of the analytical data was completed as a Stage 2AVM validation (100%) as described in the USEPA Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (USEPA, 2009), while 10% was completed as a Stage 3VM validation. Laboratory data were acceptable with qualification as noted below. No data were rejected. Completeness was 100%, which met the goal of 90% for the project. The Data Validation Report (**Attachment 6**) provides descriptions and rationale for all qualifications that are listed in the data summary tables (Tables 1 – 4).

The J and UJ qualifiers for all VOC analytes in a given sample were due to sample extractions and analyses performed one day after the holding time. The late analysis is not expected to affect usability of sample results.

The J qualifiers for a few VOC analytes (trichlorotrifluoroethane, trichloroethene, and cis-1,2-dichloroethene) or perchlorate in a given sample were due to re-analyses at dilution performed after the holding time. Samples required re-extraction and analysis due to high analyte concentrations that required dilution. The late analysis is not expected to adversely affect usability of sample results.

The UJ qualifiers for a few VOC analytes (vinyl acetate, dichlorodifluoromethane, and bromomethane) in a given sample were due to initial calibration verification standard results or continuing calibration results outside required limits.

The J+ qualifiers for bromomethane in two samples were due to detection of this analyte at a comparable level in the associated trip blank. The J+ qualifiers for 2-butanone in one sample and acetone in a number of samples were due to detection of these analytes at comparable levels in the associated equipment rinse blanks.

The J+ qualifier for one 1,4-dioxane result was due to a high surrogate recovery. The J qualifiers for trichloroethene and trichlorotrifluoroethane in one sample were due to one low surrogate recovery and one high surrogate recovery.

The J and UJ qualifiers for trichloroethene, trichlorotrifluoroethane, 2-chlorotoluene, and 1,2-dichlorobenzene in one sample were due to MS/MSD results outside control limits. The UJ qualifiers for trichloroethene, 4-chlorotoluene, and the three dichlorobenzenes in one sample were due to MS/MSD results outside control limits. The J qualifiers for trichloroethene in two samples, 1,4-dioxane in one sample, and perchlorate in one sample were due to MS/MSD results outside control limits.

The J qualifiers for trichlorotrifluoroethane and perchlorate in one set of parent/field duplicate samples were due to field duplicate results outside control limits.

The qualifiers due to calibrations, surrogate recoveries, MS/MSD results, and field duplicate results were not considered widespread throughout this project. The data validation report is provided in **Attachment 6** and the raw analytical data package is provided in **Attachment 7**.

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3 Investigation Findings

This section presents the soil and groundwater sample results from the PDI field investigation. Groundwater sample results are compared to SWDA MCLs or the TRRP PCLs, where MCLs have not been established. Summary tables of LHAAP-18/24 COCs for each specific location are presented below. The full list of analytical results is provided in **Attachment 8**. Photos of site activities are provided in **Attachment 9**.

3.1 Outside Northeast ICT Boundary

Soils

Soil samples were collected at the contact between the overlying sands/silts of the Shallow Zone and the clay layer separating the Shallow Zone from the Wilcox Formation. Soil samples were a composite of both the sands/silts and clay units. Results for VOCs and perchlorate detected in soil outside the Northeast ICT Boundary are provided in **Figure 4.**

A total of eleven VOCs were detected in the collective DPT borings with some VOCs detected at multiple borings. The detected VOCs included 1,1,2-trichloro-1,2,2-trifluoroethane, 1,1-dichloroethane (1,1-DCA), 1,1-DCE, acetone, chloroform, cis-1,2-DCE, MC, trans-1,2-DCE, TCE, PCE, and VC. The COCs MC and TCE were detected at multiple borings. The VOC with the highest concentration was TCE, which was detected at boring 1824DPT17 at an estimated (J) concentration of 933 J micrograms per kilograms (µg/kg). MC was the most prevalent COC detected in the DPT borings with nine, while TCE was detected in seven borings.

Perchlorate was the most prevalent COC detected in this area with 16 of the 17 DPT borings having concentrations above the method detection limit (MDL). Concentrations ranged between 1.38 J µg/kg and 23,900 µg/kg, with the highest detections observed at 1824DPT17, 1824DPT18, and 1824DPT29. Summary results of the COC detections in soil outside the Northeast ICT Boundary are provided in **Table 1**, while the full analytical results are provided in **Attachment 8**.

The highest VOC soil concentrations are located outside the northeast boundary of LHAAP-18/24 just beyond the ICTs and extending approximately 300 ft to the northeast. The area of higher contamination outside of the ICTs is found at DPT borings 1824DPT17, 1824DPT18, and 1824DPT20. The highest VOC value (TCE at 933 J µg/kg) was observed at 1824DPT17. This value was an order of magnitude higher than concentrations observed at 1824DPT18 and 1824DPT20, which were below 50 µg/kg. VOC concentrations decreased with distance from the site to the northeast. Contaminant depth ranged between 24 and 41 ft bgs, with the highest concentrations observed at 29 ft (1824DPT17). DPT boring 1824DPT29 and -29A, which are collocated inside the ICTs, also exhibited high concentrations of TCE. Soil sample results and areas of TCE soil contamination are provided in **Figure 5**.

The highest perchlorate soil concentrations are in the same area as the VOCs in proximity of the northeast boundary of the site. However, the contaminated area extends farther down gradient approximately 700 ft to the northeast. As shown in **Figure 6**, the highest perchlorate concentration was found at 1824DPT18 at 23,900 µg/kg, 1824DPT17 at 11,000 µg/kg, and 1824DPT29 at 10,200 µg/kg. To the northeast, perchlorate concentrations decrease with distance from 1824DPT18 (which had the highest observed perchlorate concentration).

Table 1. Soil Summary – Outside the Northeast ICT Boundary

Chemical Name	Sample ID	1824DPT17 (29)		1824DPT18 (24)		1824DPT19 (42)		1824DPT20 (41)		1824DPT21 (38)	
	Collection Date	3/19/2021		3/25/2021		3/25/2021		3/25/2021		3/25/2021	
	Sampled Media	Soil		Soil		Soil		Soil		Soil	
	Percent Solids	83.2		80.3		82.1		80.2		81.3	
	Comparison Level (GWP-Ind [ug/kg])	Result (ug/kg)	Qualifier	Result (ug/kg)	Qualifier	Result (ug/kg)	Qualifier	Result (ug/kg)	Qualifier	Result (ug/kg)	Qualifier
Perchlorate (ug/kg)											
Perchlorate	7,200(1)	**11,000**	J	**23,900**		307		2,800		4.57	J
VOCs (ug/kg)											
Methylene chloride	500(1)	<1.96	U	<2.02	U	<1.73	U	<1.92	U	<1.94	U
Tetrachloroethene	500(1)	0.850	J	<1.01	U	<0.863	U	<0.958	U	<0.970	U
Trichloroethene	500(1)	**933**	J	31.7		<0.863	U	12.3	J	<0.970	U

Chemical Name	Sample ID	1824DPT22 (38)		1824DPT23 (38)		DUP-04		1824DPT24 (27.5)		1824DPT25 (28)	
	Collection Date	3/25/2021		3/23/2021		3/23/2021		3/17/2021		3/17/2021	
	Sampled Media	Soil		Soil		Soil		Soil		Soil	
	Percent Solids	79.6		82.3		82.1		76.6		79.7	
	Comparison Level (GWP Ind [ug/kg])	Result (ug/kg)	Qualifier	Result (ug/kg)	Qualifier	Result (ug/kg)	Qualifier	Result (ug/kg)	Qualifier	Result (ug/kg)	Qualifier
Perchlorate (ug/kg)											
Perchlorate	7,200(1)	2,720		1.38	J	1.83	J	6.69		<2.51	U
VOCs (ug/kg)											
Methylene chloride	500(1)	<1.92	U	<1.62	U	<1.91	U	20.0		<1.87	U
Tetrachloroethene	500(1)	<0.960	U	<0.810	U	<0.955	U	<4.92	U	<0.933	U
Trichloroethene	500(1)	<0.960	U	<0.810	U	<0.955	U	<4.92	U	<0.933	U

Notes:
Bolded/Shaded result indicates exceedance of comparison level
1 - Texas Commission on Environmental Quality GWP-Ind soil medium-specific concentration (MSC) for industrial use, based on groundwater protection. Not applicable to saturated soils; only used to provide a range of impact assessment.
ug/kg = micrograms per kilogram
J = estimated value
U = not detected

Table 1. Soil Summary – Outside the Northeast ICT Boundary (cont.d)

Chemical Name	Sample ID	1824DPT26 (38)		1824DPT27 (39)		1824DPT27A (30)		1824DPT28 (40)		1824DPT29 (40)	
	Collection Date	6/11/2021		6/11/2021		6/11/2021		6/11/2021		6/10/2021	
	Sampled Media	Soil		Soil		Soil		Soil		Soil	
	Percent Solids	80.9		81.5		83.6		82.5		80.8	
	Comparison Level (GWP-Ind [ug/kg])	Result (ug/kg)	Qualifier	Result (ug/kg)	Qualifier	Result (ug/kg)	Qualifier	Result (ug/kg)	Qualifier	Result (ug/kg)	Qualifier
Perchlorate (ug/kg)											
Perchlorate	7,200(1)	53.7		3.21	J	8.22		2.05	J	**10,200**	
VOCs (ug/kg)											
Methylene chloride	500(1)	1.23	J	1.13	J	1.97	J	2.02	J	1.43	J
Tetrachloroethene	500(1)	<0.948	U	<0.974	U	<0.921	U	<0.920	U	<0.926	U
Trichloroethene	500(1)	<0.948	U	<0.974	U	<0.921	U	<0.920	U	16.8	

Chemical Name	Sample ID	1824DPT29A (38)		1824DPT30 (37)		1824DPT31 (36)		DUP-05	
	Collection Date	6/10/2021		6/10/2021		6/10/2021		6/10/2021	
	Sampled Media	Soil		Soil		Soil		Soil	
	Percent Solids	79.8		84.0		81.7		82.1	
	Comparison Level (GWP-Ind [ug/kg])	Result (ug/kg)	Qualifier	Result (ug/kg)	Qualifier	Result (ug/kg)	Qualifier	Result (ug/kg)	Qualifier
Perchlorate (ug/kg)									
Perchlorate	7,200(1)	1,090		5,840		783	J	1,360	J
VOCs (ug/kg)									
Methylene chloride	500(1)	1.08	J	2.63	J	2.16	J	2.79	J
Tetrachloroethene	500(1)	<0.828	U	<0.861	U	<0.899	U	<0.939	U
Trichloroethene	500(1)	21.0		1.23	J	0.732	J	0.590	J

Notes:
Bolded/Shaded result indicates exceedance of comparison level
1 - Texas Commission on Environmental Quality GWP-Ind soil medium-specific concentration (MSC) for industrial use, based on groundwater protection. Not applicable to saturated soils; only used to provide a range of impact assessment.
ug/kg = micrograms per kilogram
J = estimated value
U = not detected

Groundwater

A total of thirteen VOCs were detected in the collective DPT temporary wells with some VOCs detected in multiple wells. The detected VOCs included 1,1,2-trichloro-1,2,2-trifluoroethane, 1,1-DCA, 1,1-DCE, 2-hexanone, acetone, benzene, chloroform, cis-1,2- DCE, MC, PCE, trans-1,2-DCE, TCE, and VC. TCE exceeded the MCL at nine temporary wells, VC exceeded the MCL at two temporary wells, and cis-1,2-DCE exceeded the MCL at one temporary well. TCE concentrations ranged from 0.253 J µg/L to 695 µg/L. VC concentrations ranged between from 0.52 J µg/L to 21.5 µg/L. The VOC cis-1,2-DCE concentrations ranged from 0.78 J µg/L to 135 µg/L. The COCs benzene, cis-1,2-DCE, MC, PCE, TCE, and VC were detected at multiple temporary wells but generally at concentrations below the MCL or TRRP PCL. **Figure 7** shows the VOCs and perchlorate concentrations detected in groundwater.

Perchlorate was detected in all temporary wells with concentrations ranging from 1.19 J µg/L to 148,000 µgL, with 13 detections exceeding the TRRP PCL of 17 µg/L. Summary results of the COC detections in DPT temporary wells outside the Northeast ICT Boundary are provided in **Table 2**, while the full analytical results are provided in **Attachment 8**. **Figure 8** shows the extent of perchlorate groundwater contamination.

The highest VOC concentration in the DPT temporary wells was observed at 1824DPT20 where TCE was detected at 695 µg/Land DPT boring 1824DPT18. The groundwater results generally correspond to the VOC soil concentrations detected. **Figure 9** shows the extent of TCE groundwater contamination. Temporary wells were set 1 to 2 feet into the clay separating the Shallow Zone and Wilcox Formation; samples were collected 2 feet from the bottom of the temporary wells. The clay contact separating the two groundwater zones ranges in depth between 30 and 44 ft bgs. At nested temporary wells 1824DPT29 and 1824DPT29A, located inside the ICTs, higher VOC concentrations were detected in the deeper screened well 1824DPT29 suggesting that higher contaminant concentrations are located along the clay separating the Shallow Zone and Wilcox Formation. Groundwater flow in the area is to the east – northeast (Bhate, 2021).

The highest perchlorate groundwater concentrations are located outside of the ICTs at DPT 1824DPT18 and monitoring well 1824DPTMW02. As shown in **Figure 8**, perchlorate concentrations decrease west-southwest inside the ICTs and farther to the northeast away from 1824DPT18 and 1824DPTMW02. This suggests perchlorate is being partially captured by the ICTs. The perchlorate plume appears to have migrated from the contained area at some point in the past and is being influenced by the ICTs and extraction well 18WW17, with the center of mass between them. At nested temporary wells 1824DPT29 and 1824DPT29A higher perchlorate concentrations were similarly detected in the deeper screened well 1824DPT29 suggesting that higher concentrations are located along the clay separating the Shallow Zone and Wilcox Formation.

Four permanent monitoring wells were installed outside the Northeast ICT Boundary area including 1824DPTMW01, 1824DPTMW02, 1824DPTMW03, and 1824DPTMW04. Wells were seated 1 to 2 feet into the clay separating the Shallow and Wilcox Formation and ranged in depth between 32 and 40 ft bgs. Samples were collected 2 – 3 feet from the bottom of each well, depending on the water level. Well completion logs are provided in **Attachment 2**.

Three VOCs (BDCM, cis-1,2-DCE, and TCE) were detected in the permanent monitoring wells. TCE was detected in three wells with well 1824DPTMW02 having the only concentration (466 µg/L)

exceeding the MCL. BDCM (2 detections) and cis-1,2-DCE (1 detection) were detected at low concentrations below their respective TRRP PCL and MCL. Summary results of the COC detections in permanent monitoring wells outside the Northeast ICT Boundary are provided in **Table 3**.

Perchlorate was more prevalent with detections in each permanent well, three that exceeded the TRRP PCL. Concentrations ranged between a low estimated value of 4.61 J µg/L to a high of 112,000 µg/L. Higher concentrations were detected in well 1824DPTMW02, which is located between DPT temporary wells 1824DPT18 and 1824DPT20. These two temporary wells generally had high VOC and perchlorate concentrations. Summary results are provided in **Table 3**.

Permanent well 1824DPTMW02, located approximately 188 feet to the southeast of DPT boring 1824DPT18 and in the middle of the VOC/perchlorate plume defined by the DPT borings, had the highest concentrations of the permanent wells. The well screen is placed between 30 – 40 ft bgs and 2 feet into the clay separating the Shallow and Wilcox Formation. Monitoring wells 1824DPTMW01 and 1824DPTMW04 are also located within the perchlorate plume defined by the DPT temporary wells. Monitoring well 1824DPTMW04 is located approximately 438 feet southeast of 1824DPTMW02, while 1824DPTMW01 is located down gradient approximately 625 feet to the northeast. Both had concentrations (321 J µg/L and 274 J µg/L) that exceeded the TRRP PCL, but lower than the detection at 1824DPTMW02. Permanent well locations and full results are provided in **Figures 2** and **7**, respectively**.** Perchlorate and TCE groundwater contamination detected outside the Northeast ICT Boundary are shown in **Figures 8** and **9**, respectively.

Table 2. DPT Temporary Well Groundwater Summary – Outside the Northeast ICT Boundary

Chemical Name	Sample ID	1824DPT17		1824DPT18		1824DPT19		1824DPT20		1824DPT21	
	Collection Date	3/26/2021		3/26/2021		3/26/2021		3/26/2021		3/26/2021	
	Sampled Media	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater	
	Comparison Level (TRRP PCL [ug/L])	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier
SW6850 - Perchlorate (ug/L)											
Perchlorate	17(2)	**6,410**		**148,000**		**16,200**		**39,200**		**33.6**	
SW8260B - VOCs (ug/L)											
1,1,2-Trichloroethane	5(1)	<1.00	U	<0.500	U	<1.00	U	<2.50	U	<0.500	U
Benzene	5(1)	<0.500	U	<0.250	U	<0.500	U	<1.25	U	<0.250	U
Bromodichloromethane	15(2)	<1.00	U	<0.500	U	<1.00	U	<2.50	U	<0.500	U
cis-1,2-Dichloroethene*	70(1)	**135**		14.4		0.780	J	10.3		<0.500	U
Methylene chloride	5(1)	<1.00	U	<0.500	U	<1.00	U	<2.50	U	<0.500	U
Tetrachloroethene	5(1)	<1.00	U	0.260	J	<1.00	U	<2.50	U	<0.500	U
Trichloroethene	5(1)	**229**		**135**		**99.5**		**695**		<0.500	U
Vinyl chloride*	2(1)	0.520	J	0.660	J	<1.00	U	<2.50	U	<0.500	U

Notes:
Bolded/Shaded result indicates exceedance of comparison level
*Trichloroethene daughter products
1 - Safe Drinking Water Act (SDWA) maximum contaminant level (MCL)
2 - TRRP Tier 1 Residential Groundwater Protective Concentration Level (PCL) from January 2021, https://www.tceq.texas.gov/remediation/trrp/trrppcls.html
ug/L = micrograms per liter
J = estimated value
J+ = estimated value, possibly biased high
UJ = not detected, level of detection is estimated
U = not detected

Table 2. DPT Temporary Well Groundwater Summary – Outside the Northeast ICT Boundary (cont,d)

Chemical Name	Sample ID	1824DPT22		1824DPT23		1824DPT24		DUP-03		1824DPT25	
	Collection Date	3/26/2021		3/26/2021		3/18/2021		3/18/2021		3/18/2021	
	Sampled Media	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater	
	Comparison Level (TRRP PCL [ug/L])	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier
SW6850 - Perchlorate (ug/L)											
Perchlorate	17(2)	**47,500**		**65.9**		9.82		**23.5**		**41.7**	
SW8260B - VOCs (ug/L)											
1,1,2-Trichloroethane	5(1)	<0.500	U	<0.500	U	<0.500	U	<0.500	U	<0.500	U
Benzene	5(1)	<0.250	U	<0.250	U	<0.250	U	<0.250	U	<0.250	U
Bromodichloromethane	15(2)	<0.500	U	<0.500	U	<0.500	U	<0.500	U	<0.500	U
cis-1,2-Dichloroethene*	70(1)	1.37		<0.500	U	<0.500	U	<0.500	U	<0.500	U
Methylene chloride	5(1)	<0.500	U	<0.500	U	<0.500	U	<0.500	U	<0.500	U
Tetrachloroethene	5(1)	<0.500	U	<0.500	U	<0.500	U	<0.500	U	<0.500	U
Trichloroethene	5(1)	**12.5**		<0.500	U	<0.500	U	<0.500	U	<0.500	U
Vinyl chloride*	2(1)	<0.500	U	<0.500	U	<0.500	U	<0.500	U	<0.500	U

Notes:
Bolded/Shaded result indicates exceedance of comparison level
*Trichloroethene daughter products
1 - Safe Drinking Water Act (SDWA) maximum contaminant level (MCL)
2 - TRRP Tier 1 Residential Groundwater Protective Concentration Level (PCL) from January 2021, https://www.tceq.texas.gov/remediation/trrp/trrppcls.html
ug/L = micrograms per liter
J = estimated value
J+ = estimated value, possibly biased high
UJ = not detected, level of detection is estimated
U = not detected

Table 2. DPT Temporary Well Groundwater Summary – Outside the Northeast ICT Boundary (cont.d)

Chemical Name	Sample ID	1824DPT26		1824DPT27		1824DPT27A		1824DPT28		1824DPT29	
	Collection Date	6/16/2021		6/16/2021		6/16/2021		6/16/2021		6/12/2021	
	Sampled Media	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater	
	Comparison Level (TRRP PCL [ug/L])	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier
SW6850 - Perchlorate (ug/L)											
Perchlorate	17(2)	**95.6**		1.19	J	9.08		10.6		**41,000**	
SW8260B - VOCs (ug/L)											
1,1,2-Trichloroethane	5(1)	<0.500	UJ	<0.500	UJ	<0.500	UJ	<0.500	UJ	<0.500	U
Benzene	5(1)	<0.250	UJ	<0.250	UJ	<0.250	UJ	<0.250	UJ	<0.250	U
Bromodichloromethane	15(2)	<0.500	UJ	<0.500	UJ	<0.500	UJ	<0.500	UJ	<0.500	U
cis-1,2-Dichloroethene*	70(1)	<0.500	UJ	<0.500	UJ	<0.500	UJ	<0.500	UJ	48.8	
Methylene chloride	5(1)	<0.500	UJ	<0.500	UJ	<0.500	UJ	<0.500	UJ	0.250	J
Tetrachloroethene	5(1)	<0.500	UJ	<0.500	UJ	<0.500	UJ	<0.500	UJ	0.430	J
Trichloroethene	5(1)	0.379	J	<0.500	UJ	0.253	J	<0.500	UJ	**273**	
Vinyl chloride*	2(1)	<0.500	UJ	<0.500	UJ	<0.500	UJ	<0.500	UJ	**21.5**	

Notes:
Bolded/Shaded result indicates exceedance of comparison level
*Trichloroethene daughter products
1 - Safe Drinking Water Act (SDWA) maximum contaminant level (MCL)
2 - TRRP Tier 1 Residential Groundwater Protective Concentration Level (PCL) from January 2021, https://www.tceq.texas.gov/remediation/trrp/trrppcls.html
ug/L = micrograms per liter
J = estimated value
J+ = estimated value, possibly biased high
UJ = not detected, level of detection is estimated
U = not detected

Table 2. DPT Temporary Well Groundwater Summary – Outside the Northeast ICT Boundary (cont.d)

Chemical Name	Sample ID	DUP-07		1824DPT29A		1824DPT30		1824DPT31		DUP-06	
	Collection Date	6/12/2021		6/12/2021		6/12/2021		6/12/2021		6/12/2021	
	Sampled Media	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater	
	Comparison Level (TRRP PCL [ug/L])	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier
SW6850 - Perchlorate (ug/L)											
Perchlorate	17(2)	**39,700**		**5,450**		**35,400**		**11,400**		**11,300**	
SW8260B - VOCs (ug/L)											
1,1,2-Trichloroethane	5(1)	<0.500	U	<0.500	U	<0.500	U	<0.500	U	<0.500	U
Benzene	5(1)	0.240	J	0.210	J	<0.250	U	<0.250	U	<0.250	U
Bromodichloromethane	15(2)	<0.500	U	<0.500	U	<0.500	U	<0.500	U	<0.500	U
cis-1,2-Dichloroethene*	70(1)	48.9		35.5		4.54		7.82		7.24	
Methylene chloride	5(1)	<0.500	U	0.320	J	0.590	J	0.340	J	0.270	J
Tetrachloroethene	5(1)	0.490	J	0.620	J	<0.500	U	<0.500	U	<0.500	U
Trichloroethene	5(1)	**260**		**193**		**28.8**		**56.4**		**52.6**	
Vinyl chloride*	2(1)	**21.5**		**10.3**		1.26		**3.99**		**3.85**	

Notes:
Bolded/Shaded result indicates exceedance of comparison level
*Trichloroethene daughter products
1 - Safe Drinking Water Act (SDWA) maximum contaminant level (MCL)
2 - TRRP Tier 1 Residential Groundwater Protective Concentration Level (PCL) from January 2021, https://www.tceq.texas.gov/remediation/trrp/trrppcls.html
ug/L = micrograms per liter
J = estimated value
J+ = estimated value, possibly biased high
UJ = not detected, level of detection is estimated
U = not detected

Table 3. DPT Permanent Monitoring Well Groundwater Summary

Chemical Name	Sample ID	1824DPTMW01		1824DPTMW02		1824DPTMW03		1824DPTMW04		1824DPTMW05		1824DPTMW06	
	Collection Date	6/25/2021		6/28/2021		6/30/2021		6/28/2021		6/28/2021		6/29/2021	
	Sampled Media	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater	
	Comparison Level (TRRP PCL [ug/L])	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier
Perchlorate	17(2)	**321**	J	**112,000**	J	4.61	J	**274**	J	**576,000**	J	0.327	J
SW8260B - VOCs (ug/L)													
1,1,2-Trichloroethane	5(1)	<0.500	U	<2.50	U	<0.500	U	<0.500	U	<25.0	U	<0.500	U
Benzene	5(1)	<0.250	U	<1.25	U	<0.250	U	<0.250	U	**26.5**		<0.250	U
Bromodichloromethane	15(2)	0.51	J	<2.50	U	1.58		<0.500	U	<25.0	U	<0.500	U
cis-1,2-Dichloroethene*	70(1)	<0.500	U	26		<0.500	U	<0.500	U	50		5.31	
Methylene chloride	5(1)	<0.500	U	<2.50	U	<0.500	U	<0.500	U	<25.0	U	<0.500	U
Tetrachloroethene	5(1)	<0.500	U	<2.50	U	<0.500	U	<0.500	U	<25.0	U	<0.500	U
Trichloroethene	5(1)	<0.500	U	**466**		0.88	J	1.21		**8,890**		**37.3**	J
Vinyl chloride*	2(1)	<0.500	U	<2.50	U	<0.500	U	<0.500	U	<25.0	U	<0.500	U
SW8270C-SIM - SVOCs (ug/L)													
1,4-Dioxane	9.1(2)	NA		NA		NA		NA		NA		6.13	J

Notes:
Bolded/Shaded result indicates exceedance of comparison level
*Trichloroethene daughter products
1 - Safe Drinking Water Act (SDWA) maximum contaminant level (MCL)
2 - TRRP Tier 1 Residential Groundwater Protective Concentration Level (PCL) from January 2021, https://www.tceq.texas.gov/remediation/trrp/trrppcls.html
ug/L = micrograms per liter
J = estimated value
U = not detected

3.2 Shallow Zone ISB Grids

A total of 27 DPT borings were installed in and around the Shallow Zone ISB Grids. Sixteen DPT borings (1824DPT01 – 1824DPT16) were installed within the proposed treatment areas centered on wells MW-23 and 18CPTMW03SW, while 11 were installed outside the two grids (1824DPT32 – 1824DPT42). Temporary wells were installed in each boring to further evaluate the extent of perchlorate and VOC contaminated groundwater. Eight of the 10 VOC COCs were detected at multiple DPT temporary wells including 1,1,2-trichloroethane (1,1,2-TCA), benzene, BDCM, cis-1,2-DCE, MC, PCE, TCE, and VC. Except for BDCM, each COC was detected at least twice at concentrations that exceeded their respective MCL. The most prevalent VOCs were TCE (all samples exceeded the MCL), cis-1,2-DCE (15 exceedances), VC (12 exceedances), and benzene (11 exceedances). TCE concentrations, which were the highest of all VOCs detected, ranged from 217 µg/L to 38,400 J µg/L. The VOC cis-1,2-DCE concentrations ranged from 4.23 µg/L to 16,100 µg/L, while VC ranged from 0.45 J µg/L to 648 µg/L. Benzene concentrations ranged from 0.24 J µg/L to 31.9 µg/L. Temporary wells were set 1 foot into the clay separating the Shallow and Wilcox Formation; samples were collected 2 feet from the bottom of the temporary wells. The clay contact separating the two groundwater zones occurred between 36 and 44 ft bgs. **Figure 10** shows the VOCs and perchlorate concentrations detected in groundwater at the Shallow Zone ISB Grids.

Perchlorate was detected in all temporary wells installed at the Shallow Zone ISB Grid area at concentrations that exceeded the TRRP PCL of 17 µg/L. Concentrations ranged from 2,350 µg/L to 495,000 µg/L. Summary results of perchlorate and VOC detections in DPT temporary wells installed at the Shallow Zone ISB Grid area are provided in **Table 4**, while the full analytical results are provided in **Attachment 8**. **Figure 11** shows perchlorate contamination detected in groundwater at the Shallow Zone ISB Grids.

As shown in **Figure 12**, TCE groundwater contamination is widespread across the entire Shallow Zone ISB Grid area at high concentrations. However, there is an area where TCE is an order of magnitude higher. The area encompasses the majority of the ISB grid centered on wells 18CPTMW03SW and 18CPT03 and expands outward to the southwest and northeast. This area is defined by DPT borings 1824DPT39, 1824DPT40, 1824DPT41, and 1824DPT42 on the southwest and 1824DPT01, 1824DPT03, and 1824DPT08, and 1824DPT32 to the northeast. The highest concentrations were observed at 1824DPT40 and 1824DPT41, respectively. Based on Shallow Zone groundwater potentiometric surface maps in the June 2021 Second Quarterly Evaluation Report (Bhate, 2021), mounding occurs just north of wells 18CPTMW03SW and 18CPT03 with radial flow outward. This may explain the expansion of contaminant concentrations to the southwest and northeast from the more concentrated areas centered on these wells.

Perchlorate is also prevalent across the Shallow Zone ISB Grid area at high concentrations greater than 100,000 µg/L. The highest levels, in descending order, occur at DPT temporary wells 1824DPT40, 1824DPT03, 1824DPT07, 1824DPT41, 1824DPT39, 1824DPT08, and 1824DPT04. The extent of perchlorate contamination is shown in **Figure 11**.

One permanent monitoring well, 1824DPTMW05, was installed at the Shallow Zone ISB Grid area. The work plan called for two permanent wells to be installed within the ISB grids. However, after a review of preliminary DPT groundwater data with the regulators, the decision was made that only one well was needed. Shallow well 1824DPTMW05 is seated 2 feet into the clay separating the

Shallow and Wilcox Formation and is screened from 30 to 40 ft bgs. The sample was collected 3 feet from the bottom of the well. VOCs detected included benzene, cis-1,2-DCE, and TCE. In comparison, the VOC concentrations detected at 1824DPTMW05 were less than those reported in the surrounding DPT temporary wells but, benzene and TCE levels still exceeded the MCLs. TCE detected at 1824DPTMW05 is shown in **Figure 10**.

The highest recorded perchlorate concentration was observed at monitoring well 1824DPTMW05, higher than observed at the surrounding temporary DPT wells, including 1824DPT40, 1824DPT03, and 1824DPT41. Summary results for the permanent monitoring well sample collected at 1824DPTMW05 are provided in **Table 3**, while the full analytical results are provided in **Attachment 8**. Levels of perchlorate detected at 1824DPTMW05 are provided in **Figure 10**. The well completion log is provided in **Attachment 2**.

3.3 Northwest Corner Near MW-14

A permanent monitoring well was installed in the northwest corner to further evaluate the extent of 1,4-dioxane, perchlorate, and VOC contaminated groundwater present at levels exceeding the MCL or TRRP PCL. Monitoring well 1824DPTMW06 was installed in the Wilcox Formation and is screened from 41 to 51 ft bgs. Care was taken to avoid setting the well screen in a gravel layer within the top of the Wilcox Formation. During well installation, once the top of the gravel was reached, the drill stem was stopped, and bentonite was introduced to the hole as backfill to avoid contact with the gravel. The intent of the Wilcox well is to determine whether the Shallow and Wilcox ISB remedy (coverage area), depicted on **Figure 2,** will adequately address the extent of contamination in this area. The depth is intended to provide the same coverage (vertical extent) as well MW-14. Perchlorate, cis-1,2-DCE, TCE and 1,4-dioxane were detected at well 1824DPTMW06. Except for TCE, the compounds were detected at very low concentrations below the TRRP PCL and MCL. TCE was detected at an estimated concentration of 37.3 J µg/L, exceeding the MCL of 5 µg/L. Based on the recent results, the Wilcox groundwater has not been impacted to the same degree as the Shallow Zone groundwater within this area or exhibit levels seen at the upgradient Wilcox well MW-14. Summary results for the permanent monitoring well samples collected at 1824DPTMW06 are provided in **Table 3**, while the full analytical results are provided in **Attachment 8**. **Figures 11** and **12** provide the levels of perchlorate and TCE detected, respectively. The well completion log is provided in **Attachment 2**.

Table 4. DPT Temporary Well Groundwater Summary – Shallow Zone ISB Grids

Chemical Name	Sample ID	1824DPT01		1824DPT02		1824DPT03		1824DPT04		1824DPT05	
	Collection Date	3/18/2021		3/18/2021		3/18/2021		3/17/2021		3/18/2021	
	Sampled Media	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater	
	Comparison Level (TRRP PCL [ug/L})	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier
SW6850 - Perchlorate (ug/L)											
Perchlorate	17(2)	**2,350**		**32,400**		**214,000**		**85,000**		**35,600**	
SW8260B - VOCs (ug/L)											
1,1,2-Trichloroethane	5(1)	**5.53**		0.548	J	<10.0	U	1.81		2.35	
Benzene	5(1)	**11.3**		4.26		**7.73**		4.31		**6.51**	
Bromodichloromethane	15(2)	<0.500	U	<0.500	U	<10.0	U	<0.500	U	<0.500	U
cis-1,2-Dichloroethene*	70(1)	**16,100**		**122**		19.6		**74.5**		**1570**	
Methylene chloride	5(1)	4.88		0.757	J	<10.0	U	1.45		4.29	
Tetrachloroethene	5(1)	1.85		2.83		<10.0	U	3.18		3.30	
Trichloroethene	5(1)	**7,530**		**6,340**		**2,810**		**5,620**		**12,700**	
Vinyl chloride*	2(1)	**445**		<50.0	U	<10.0	U	**3.73**		**26.6**	

Notes:
Bolded/Shaded result indicates exceedance of comparison level
*Trichloroethene daughter products
1 - Safe Drinking Water Act (SDWA) maximum contaminant level (MCL)
2 - TRRP Tier 1 Residential Groundwater Protective Concentration Level (PCL) from January 2021, https://www.tceq.texas.gov/remediation/trrp/trrppcls.html
ug/L = micrograms per liter
J = estimated value
U = not detected

Table 4. DPT Temporary Well Groundwater Summary – Shallow Zone ISB Grids (cont,d)

Chemical Name	Sample ID	1824DPT06		1824DPT07		1824DPT08		DUP-02		1824DPT09	
	Collection Date	3/18/2021		3/18/2021		3/17/2021		3/17/2021		3/17/2021	
	Sampled Media	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater	
	Comparison Level (TRRP PCL [ug/L])	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier
SW6850 - Perchlorate (ug/L)											
Perchlorate	17(2)	**26,200**		**137,000**		**87,300**		**91,000**		**56,900**	
SW8260B - VOCs (ug/L)											
1,1,2-Trichloroethane	5(1)	2.81		1.65		0.823	J	0.874	J	1.20	
Benzene	5(1)	**7.72**		**8.62**		2.52		2.52		**5.60**	
Bromodichloromethane	15(2)	<0.500	U	<0.500	U	<0.500	U	<0.500	U	<0.500	U
cis-1,2-Dichloroethene*	70(1)	**2,150**		**317**		44.1		43.6		**231**	J
Methylene chloride	5(1)	4.57		2.21		1.13		1.19		3.78	
Tetrachloroethene	5(1)	4.00		3.57		1.30		1.19		**7.62**	
Trichloroethene	5(1)	**13,100**		**11,200**		**3,540**		**3,440**		**4,260**	
Vinyl chloride*	2(1)	**18.7**		**5.11**		1.34		1.36		**3.98**	

Notes:
Bolded/Shaded result indicates exceedance of comparison level
*Trichloroethene daughter products
1 - Safe Drinking Water Act (SDWA) maximum contaminant level (MCL)
2 - TRRP Tier 1 Residential Groundwater Protective Concentration Level (PCL) from January 2021, https://www.tceq.texas.gov/remediation/trrp/trrppcls.html
ug/L = micrograms per liter
J = estimated value
U = not detected

Table 4. DPT Temporary Well Groundwater Summary – Shallow Zone ISB Grids (cont,d)

Chemical Name	Sample ID	1824DPT10		DUP-01		1824DPT11		1824DPT12		1824DPT13	
	Collection Date	3/17/2021		3/17/2021		3/18/2021		3/18/2021		3/17/2021	
	Sampled Media	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater	
	Comparison Level (TRRP PCL [ug/L])	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier
SW6850 - Perchlorate (ug/L)											
Perchlorate	17(2)	**42,000**		**45,100**		**65,900**		**59,500**		**71,300**	
SW8260B - VOCs (ug/L)											
1,1,2-Trichloroethane	5(1)	0.650	J	0.742	J	0.328	J	0.573	J	1.58	
Benzene	5(1)	**9.04**		**9.20**		1.26		1.54		3.63	
Bromodichloromethane	15(2)	<0.500	U	<0.500	U	<0.500	U	<0.500	U	<0.500	U
cis-1,2-Dichloroethene*	70(1)	51.5		51.6		11.0		18.6		**94.1**	
Methylene chloride	5(1)	1.13		1.12		0.407	J	0.886	J	1.42	
Tetrachloroethene	5(1)	3.55		3.54		0.940	J	1.14		3.44	
Trichloroethene	5(1)	**5,380**		**4,580**		**2,930**		**3,040**		**5,550**	
Vinyl chloride*	2(1)	1.52		1.46		0.647	J	0.969	J	**2.04**	

Notes:
Bolded/Shaded result indicates exceedance of comparison level
*Trichloroethene daughter products
1 - Safe Drinking Water Act (SDWA) maximum contaminant level (MCL)
2 - TRRP Tier 1 Residential Groundwater Protective Concentration Level (PCL) from January 2021, https://www.tceq.texas.gov/remediation/trrp/trrppcls.html
ug/L = micrograms per liter
J = estimated value
U = not detected

Table 4. DPT Temporary Well Groundwater Summary – Shallow Zone ISB Grids (cont,d)

Chemical Name	Sample ID	1824DPT14		1824DPT15		1824DPT16		1824DPT32		1824DPT33	
	Collection Date	3/18/2021		3/18/2021		3/18/2021		6/12/2021		6/12/2021	
	Sampled Media	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater	
	Comparison Level (TRRP PCL [ug/L])	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier
SW6850 - Perchlorate (ug/L)											
Perchlorate	17(2)	**36,700**		**51,300**		**47,900**		**26,200**		**51,500**	
SW8260B - VOCs (ug/L)											
1,1,2-Trichloroethane	5(1)	0.909	J	0.967	J	0.409	J	**5.19**		1.24	
Benzene	5(1)	3.25		2.98		1.49		**10.8**		**6.79**	
Bromodichloromethane	15(2)	<0.500	U	<0.500	U	<0.500	U	<0.500	U	<0.500	U
cis-1,2-Dichloroethene*	70(1)	**120**		37.1		15.9		**8,800**		**140**	
Methylene chloride	5(1)	1.19		1.13		0.611	J	4.51		1.67	
Tetrachloroethene	5(1)	**5.26**		4.40		1.22		3.81		**13.9**	
Trichloroethene	5(1)	**3,810**		**4,400**		**2,890**		**13,400**		**6,470**	
Vinyl chloride*	2(1)	1.93		1.07		0.787	J	**94.6**		**2.40**	

Notes:
Bolded/Shaded result indicates exceedance of comparison level
*Trichloroethene daughter products
1 - Safe Drinking Water Act (SDWA) maximum contaminant level (MCL)
2 - TRRP Tier 1 Residential Groundwater Protective Concentration Level (PCL) from January 2021, https://www.tceq.texas.gov/remediation/trrp/trrppcls.html
ug/L = micrograms per liter
J = estimated value
U = not detected

Table 4. DPT Temporary Well Groundwater Summary – Shallow Zone ISB Grids (cont,d)

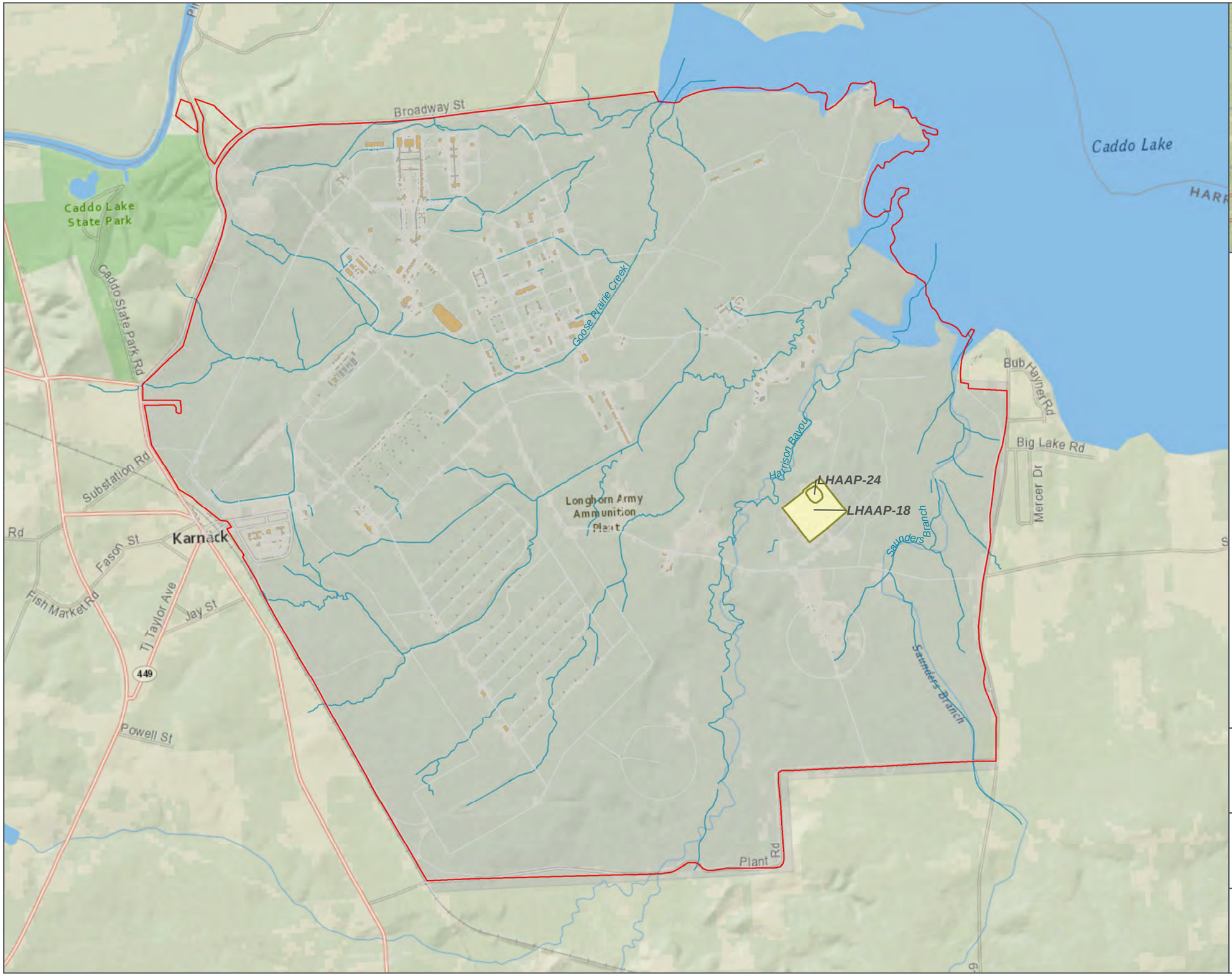
Chemical Name	Sample ID	1824DPT34		1824DPT35		1824DPT36		1824DPT37		1824DPT38	
	Collection Date	6/12/2021		6/12/2021		6/12/2021		6/12/2021		6/12/2021	
	Sampled Media	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater	
	Comparison Level (TRRP PCL [ug/L])	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier
SW6850 - Perchlorate (ug/L)											
Perchlorate	17(2)	**29,500**		**40,600**		**19,100**		**17,400**		**13,300**	
SW8260B - VOCs (ug/L)											
1,1,2-Trichloroethane	5(1)	0.740	J	<0.500	U	0.310	J	<0.500	U	<0.500	U
Benzene	5(1)	**20.1**		1.27		2.06		0.310	J	0.240	J
Bromodichloromethane	15(2)	<0.500	U	<0.500	U	<0.500	U	<0.500	U	<0.500	U
cis-1,2-Dichloroethene*	70(1)	**230**		5.78		32.4		4.23		7.65	
Methylene chloride	5(1)	0.980	J	0.340	J	0.740	J	1.31		<0.500	U
Tetrachloroethene	5(1)	**10.2**		0.250	J	0.690	J	<0.500	U	<0.500	U
Trichloroethene	5(1)	**4,940**		**1,150**		**2,530**		**279**		**217**	
Vinyl chloride*	2(1)	**4.68**		<0.500	U	<0.500	U	0.450	J	1.47	

Notes:
Bolded/Shaded result indicates exceedance of comparison level
*Trichloroethene daughter products
1 - Safe Drinking Water Act (SDWA) maximum contaminant level (MCL)
2 - TRRP Tier 1 Residential Groundwater Protective Concentration Level (PCL) from January 2021, https://www.tceq.texas.gov/remediation/trrp/trrppcls.html
ug/L = micrograms per liter
J = estimated value
U = not detected

Table 4. DPT Temporary Well Groundwater Summary – Shallow Zone ISB Grids (cont,d)

Chemical Name	Sample ID	1824DPT39		1824DPT40		1824DPT41		1824DPT42	
	Collection Date	6/12/2021		6/12/2021		6/12/2021		6/12/2021	
	Sampled Media	Groundwater		Groundwater		Groundwater		Groundwater	
	Comparison Level (TRRP PCL [ug/L])	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier	Result (ug/L)	Qualifier
SW6850 - Perchlorate (ug/L)									
Perchlorate	17(2)	**89,000**		**495,000**		**124,000**		**3,500**	
SW8260B - VOCs (ug/L)									
1,1,2-Trichloroethane	5(1)	0.460	J	3.54		**14.2**		1.00	
Benzene	5(1)	4.28		**31.9**		4.88		0.770	
Bromodichloromethane	15(2)	<0.500	U	0.270	J	<0.500	UJ	<0.500	U
cis-1,2-Dichloroethene*	70(1)	43.0		**118**		**202**		**8,730**	
Methylene chloride	5(1)	1.12		3.54		**7.27**		**6,980**	
Tetrachloroethene	5(1)	1.58		**8.94**		**15.9**		**15.1**	
Trichloroethene	5(1)	**4,940**	J	**14,000**	J	**38,400**	J	**6,860**	
Vinyl chloride*	2(1)	<0.500	U	1.02		**18.3**		**648**	

Notes:
Bolded/Shaded result indicates exceedance of comparison level
*Trichloroethene daughter products
1 - Safe Drinking Water Act (SDWA) maximum contaminant level (MCL)
2 - TRRP Tier 1 Residential Groundwater Protective Concentration Level (PCL) from January 2021, https://www.tceq.texas.gov/remediation/trrp/trrppcls.html
ug/L = micrograms per liter
J = estimated value
U = not detected





LEGEND

- Roads
- Stream
- Building
- Site
- LHAAP Installation Boundary

CLWSC – Caddo Lake Water Supply Corporation
KWSC – Karnack Water Supply Corporation

DATA SOURCES: AECOM, 2017. Final Revised Feasibility Study for LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas, January.

DISCLAIMER: Map information was compiled from the best available sources. No warranty is made for its accuracy or completeness.

LHAAP-18/24 SITE LOCATION MAP

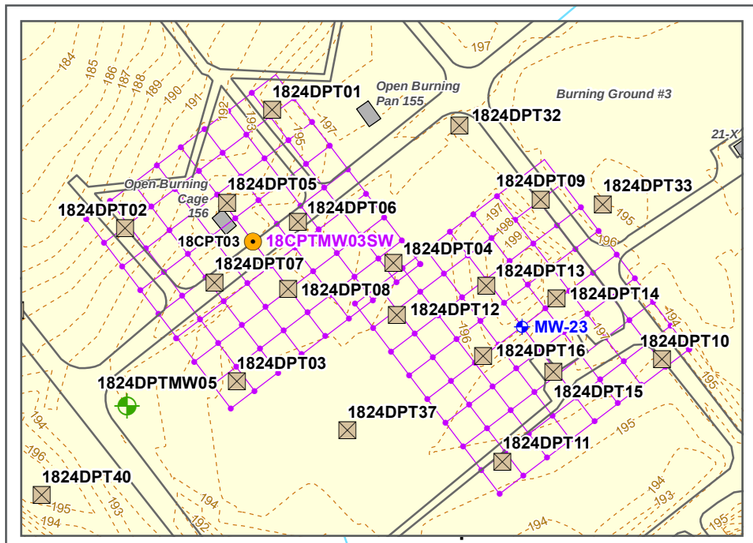
LHAAP-18/24 PDI REPORT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

N

0 0.5 1
MILES

FIGURE 1

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LEGEND

- New Wilcox Monitoring Well Locations
- New Monitoring Well Locations
- New DPT Locations
- Collocated DPT Boring
- Extraction Location
- ICT Locations
- Contours 1ft Interval
- Road
- Stream
- Site
- Former Building or Concrete Slab
- Shallow Zone Monitoring Well
- Wilcox Formation Monitoring Well
- Soil Boring - May 2013

(166.6 amsl) Groundwater elevation above mean sea level.

Notes: HDR and Bhate Data Collected June 2021. HDR samples collected at the sand/clay interface (2 feet from bottom of well/DPT Boring).

DATA SOURCES: AECOM, 2017. Final Revised Feasibility Study for LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas, January.

SAMPLE LOCATIONS OUTSIDE ICT BOUNDARY
SHALLOW ZONE ISB GRIDS
AND MONITORING WELLS
LHAAP-18/24 PDI REPORT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Alternative 5 Activities

- Shallow Zone ISB
- Wilcox ISB
- Shallow Zone ISB Grid
- Shallow Zone ISB Grid after DNAPL Removal

Notes

ISB In-Situ Bioremediation

ACD – Air Curtain Destructor

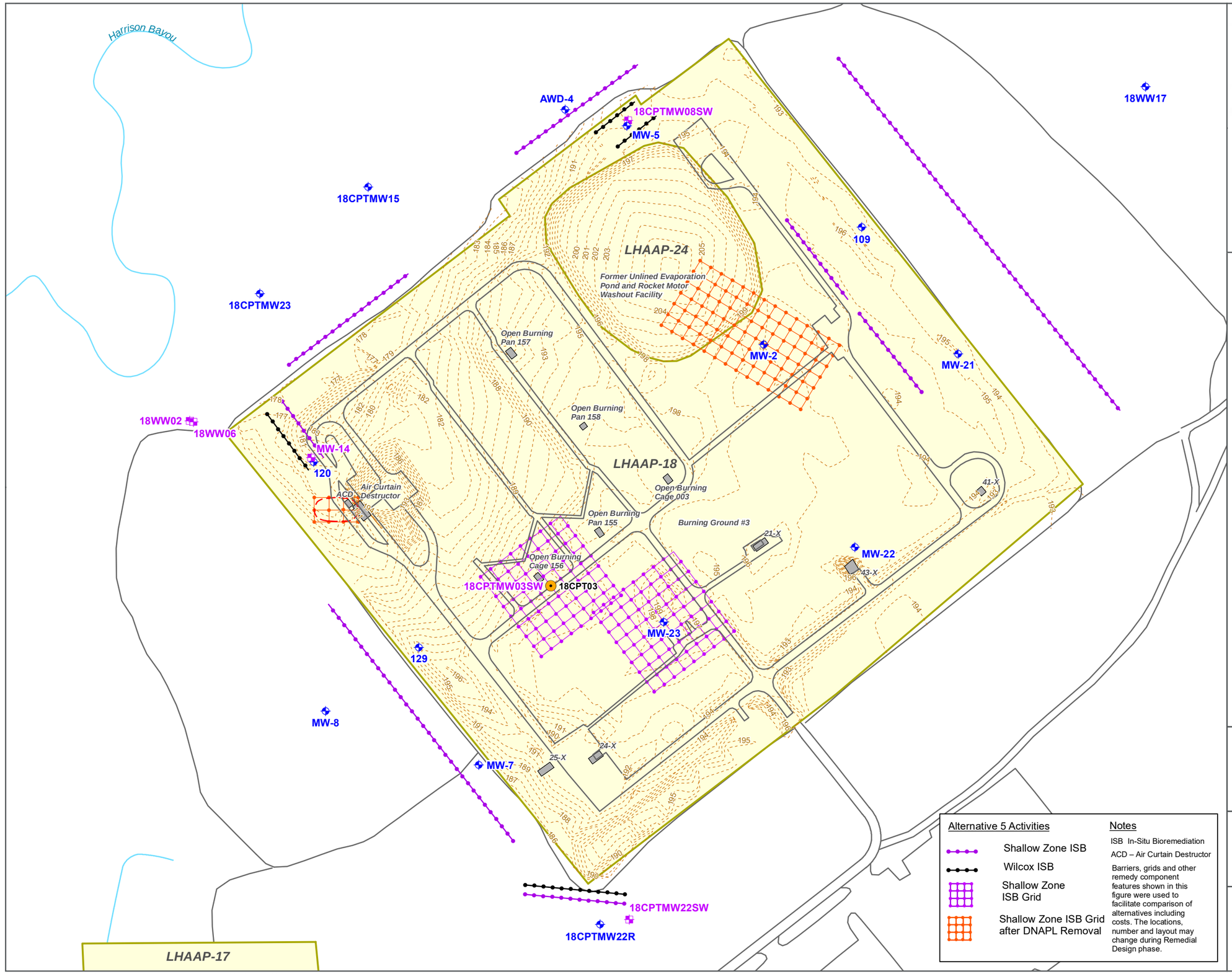
Barriers, grids and other remedy component features shown in this figure were used to facilitate comparison of alternatives including costs. The locations, number and layout may change during Remedial Design phase.

N

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FEET

FIGURE 2

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LEGEND

- Contours 1ft Interval
- Road
- Stream
- Site
- Former Building or Concrete Slab
- Shallow Zone Monitoring Well
- Wilcox Formation Monitoring Well
- Soil Boring - May 2013

Alternative 5 Activities

- Shallow Zone ISB
- Wilcox ISB
- Shallow Zone ISB Grid
- Shallow Zone ISB Grid after DNAPL Removal

Notes

ISB In-Situ Bioremediation

ACD – Air Curtain Destructor

Barriers, grids and other remedy component features shown in this figure were used to facilitate comparison of alternatives including costs. The locations, number and layout may change during Remedial Design phase.

DATA SOURCES: AECOM, 2017. Final Revised Feasibility Study for LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas, January.

DISCLAIMER: Map information was compiled from the best available sources. No warranty is made for its accuracy or completeness.

LHAAP-18/24 TOPOGRAPHIC SURVEY

LHAAP-18/24 PDI REPORT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

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FIGURE 3

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Harrison Bayou

1824DPT31 - 36' bgs
Perchlorate - 783 J ug/kg
Methylene Chloride - 2.16 J ug/kg
Trichloroethene - 0.732 J ug/kg

1824DPT30 - 37' bgs
Perchlorate - 5,830 ug/kg
Methylene Chloride - 2.63 J ug/kg
Trichloroethene - 1.23 J ug/kg

1824DPT29 - 40' bgs
Perchlorate - **10,200 ug/kg**
Methylene Chloride 1.43 J ug/kg
Trichloroethene - 16.8 ug/kg

1824DPT29A - 30' bgs
Perchlorate - 1,090 ug/kg
Methylene Chloride - 1.08 J ug/kg
Trichloroethene - 21 ug/kg

1824DPT18 - 24' bgs
Perchlorate - 23,900 ug/kg
Trichloroethene - 31.7 ug/kg

1824DPT17 - 29' bgs
Perchlorate - **11,000 ug/kg**
Tetrachloroethene - 0.850 ug/kg
Trichloroethene - 933 ug/kg

1824DPT25 - 28' bgs
Non-detects

1824DPT26 - 38' bgs
Perchlorate - 53.7 ug/kg
Methylene Chloride - 1.23 J ug/kg

1824DPT27 - 39' bgs
Perchlorate - 3.21 J ug/kg
Methylene Chloride - 1.13 J ug/kg

1824DPT27A - 30' bgs
Perchlorate - 8.22 ug/kg
Methylene Chloride - 1.97 J ug/kg

1824DPT23 - 38' bgs
Perchlorate - 1.38 J ug/kg

1824DPT22 - 38' bgs
Perchlorate - 2,720 ug/kg

1824DPT21 - 38' bgs
Perchlorate - 4.57 J ug/kg

1824DPT24 - 27.5' bgs
Perchlorate - 6.69 ug/kg
Methylene chloride - 20 ug/kg

1824DPT28 - 40' bgs
Perchlorate - 2.05 J ug/kg
Methylene Chloride - 2.02 J ug/kg

1824DPT19 - 42' bgs
Perchlorate - 307 ug/kg

1824DPT20 - 41' bgs
Perchlorate - 2,800 ug/kg
Trichloroethene - 12.3 J ug/kg

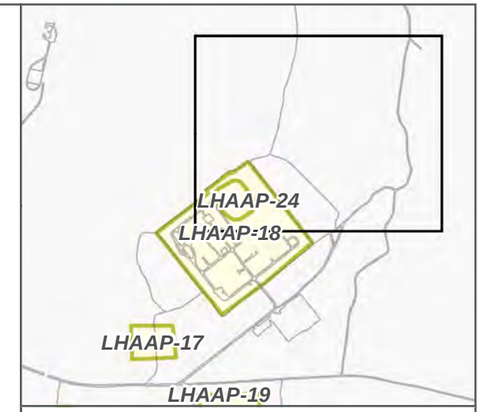
C-06
18CPTMW18
1824DPTMW01
1824DPTMW03
1824DPTMW02
1824DPTMW04
18WW17
AWD-4
18CPTMW08SW
MW-5
MW-2
MW-21
109
ICT-14A
ICT-14B
ICT-14C
ICT-14D
ICT-14E
1824DPT31
1824DPT30
1824DPT29
1824DPT18
1824DPT17
1824DPT25
1824DPT26
1824DPT27
1824DPT23
1824DPT22
1824DPT21
1824DPT24
1824DPT28
1824DPT19
1824DPT20

LHAAP-24
LHAAP-18
LHAAP-17
LHAAP-19

Former Unlined Evaporation Pond and Rocket Motor Washout Facility

Open Burning Pan 157

Open Burning Pan 158



LEGEND

- New Monitoring Well Locations
- New DPT Locations
- Extraction Location
- ICT Locations
- Road
- Stream
- Site
- Former Building or Concrete Slab
- Shallow Zone Monitoring Well
- Wilcox Formation Monitoring Well
- Soil Boring - May 2013

Notes:
ug/kg = micrograms per kilogram
J = estimated value

PDI data collected from New DPT and Monitoring Wells March - June 2021.

DATA SOURCES: AECOM, 2017. Final Revised Feasibility Study for LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas, January.

Alternative 5 Activities

- Shallow Zone ISB
- Wilcox ISB
- Shallow Zone ISB Grid
- Shallow Zone ISB Grid after DNAPL Removal

Notes

ISB In-Situ Bioremediation

ACD – Air Curtain Destructor

Barriers, grids and other remedy component features shown in this figure were used to facilitate comparison of alternatives including costs. The locations, number and layout may change during Remedial Design phase.

DPT SOIL SAMPLE RESULTS
PERCHLORATE AND VOCS
OUTSIDE THE NORTHEAST ICT BOUNDARY
LHAAP-18/24 PDI REPORT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

N

0 250 500
FEET

FIGURE 4

PATH: J:\2018\18-025_LHAAP_SITES29_47_18AND24_ROD_(WERNER)\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\LHAAP18_24\PDI_2021\LHAAP_18_24_PDI_OUTSIDE_ICT_SOIL_SAMPLE_RESULTS_TCE_FIG4.MXD - USER: KLOFGREN - DATE: 2/21/2022

Harrison Bayou

1824DPT31 - 36' bgs
Trichloroethene - 0.732 J ug/kg

1824DPT30 - 37' bgs
Trichloroethene - 1.23 J ug/kg

1824DPT29 - 40' bgs
Trichloroethene - 16.8 ug/kg

1824DPT29A - 30' bgs
Trichloroethene - 21 ug/kg

1824DPT18 - 24' bgs
Trichloroethene - 31.7 ug/kg

1824DPT17 - 29' bgs
Trichloroethene - 933 ug/kg

1824DPT20 - 41' bgs
Trichloroethene - 12.3 J ug/kg

1824DPT19 - 42' bgs
Trichloroethene - ND

1824DPT27 - 39' bgs
Trichloroethene - ND

1824DPT27A - 30' bgs
Trichloroethene - ND

1824DPT25 - 28' bgs
Trichloroethene - ND

1824DPT26 - 38' bgs
Trichloroethene - ND

1824DPT22 - 38' bgs
Trichloroethene - ND

1824DPT21 - 38' bgs
Trichloroethene - ND

1824DPT23 - 38' bgs
Trichloroethene - ND

1824DPT24 - 27.5' bgs
Trichloroethene - ND

1824DPT28 - 40' bgs
Trichloroethene - ND

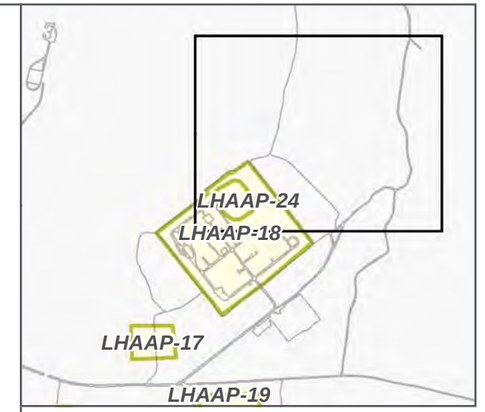
C-06
18CPTMW18
1824DPTMW01
1824DPTMW03
1824DPTMW02
1824DPTMW04
18WW17
1824DPT31
1824DPT30
1824DPT18
1824DPT29
1824DPT17
1824DPT27
1824DPT25
1824DPT26
1824DPT22
1824DPT21
1824DPT23
1824DPT19
1824DPT20
1824DPT24
1824DPT28
AWD-4
18CPTMW08SW
MW-5
ICT-14A
ICT-14B
ICT-14C
ICT-14D
ICT-14E
109
MW-2
MW-21

LHAAP-24
LHAAP-18
LHAAP-17
LHAAP-19

Former Unlined Evaporation Pond and Rocket Motor Washout Facility

Open Burning Pan 157

Open Burning Pan 158



LEGEND

- New Monitoring Well Locations
- New DPT Locations
- Extraction Location
- ICT Locations

Trichloroethene Concentrations

- > 20 ug/L
- > 500 ug/L
- Soil plume is dashed where inferred
- Road
- Stream
- Site
- Former Building or Concrete Slab
- Shallow Zone Monitoring Well
- Wilcox Formation Monitoring Well
- Soil Boring - May 2013

Notes:
ug/kg = micrograms per kilogram
J = estimated value
ND = Non-detect

PDI data collected from New DPT and Monitoring Wells
March - June 2021.

DATA SOURCES: AECOM, 2017. Final Revised Feasibility Study for LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas, January.

Alternative 5 Activities

- Shallow Zone ISB
- Wilcox ISB
- Shallow Zone ISB Grid
- Shallow Zone ISB Grid after DNAPL Removal

Notes

ISB In-Situ Bioremediation
ACD – Air Curtain Destructor

Barriers, grids and other remedy component features shown in this figure were used to facilitate comparison of alternatives including costs. The locations, number and layout may change during Remedial Design phase.

TCE SOIL CONTAMINATION OUTSIDE THE NORTHEAST ICT BOUNDARY

LHAAP-18/24 PDI REPORT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

N

0 250 500
FEET

FIGURE 5

PATH: J:\2018\18-025_LHAAP_SITES29_47_18AND24_ROD_(WERNER)\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\LHAAP18_24\PDI_2021\LHAAP_18_24_PDI_OUTSIDE_ICT_SOIL_CONTAMINATION_EXTENT_TCE_FIG5.MXD - USER: KLOFGREN - DATE: 2/24/2022

Harrison Bayou

1824DPT31 - 36' bgs
Perchlorate - 783 J ug/kg

1824DPT30 - 37' bgs
Perchlorate - 5,830 ug/kg

1824DPT29 - 40' bgs
Perchlorate - **10,200 ug/kg**

1824DPT29A - 30' bgs
Perchlorate - 1,090 ug/kg

1824DPT18 - 24' bgs
Perchlorate - 23,900 ug/kg

1824DPT17 - 29' bgs
Perchlorate - **11,000 ug/kg**

1824DPT22 - 38' bgs
Perchlorate - 2,720 ug/kg

1824DPT21 - 38' bgs
Perchlorate - 4.57 J ug/kg

1824DPT19 - 42' bgs
Perchlorate - 307 ug/kg

1824DPT20 - 41' bgs
Perchlorate - 2,800 ug/kg

1824DPT25 - 28' bgs
Perchlorate - ND

1824DPT26 - 38' bgs
Perchlorate - 53.7 ug/kg

1824DPT27 - 39' bgs
Perchlorate - 3.21 J ug/kg

1824DPT27A - 30' bgs
Perchlorate - 8.22 ug/kg

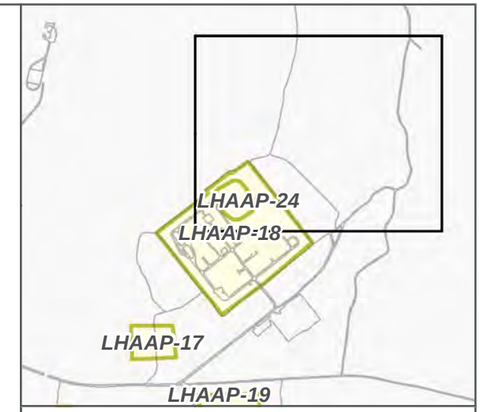
1824DPT23 - 38' bgs
Perchlorate - 1.38 J ug/kg

1824DPT24 - 27.5' bgs
Perchlorate - 6.69 ug/kg

1824DPT28 - 40' bgs
Perchlorate - 2.05 J ug/kg

C-06
18CPTMW18
1824DPTMW01
1824DPTMW03
1824DPTMW02
1824DPTMW04
1824DPT31
1824DPT30
1824DPT18
1824DPT29
1824DPT22
1824DPT21
1824DPT19
1824DPT20
1824DPT17
1824DPT25
1824DPT26
1824DPT27
1824DPT23
1824DPT24
1824DPT28
18WW17
AWD-4
18CPTMW08SW
MW-5
MW-2
MW-21
109
ICT-14A
ICT-14B
ICT-14C
ICT-14D
ICT-14E

LHAAP-24
LHAAP-18
LHAAP-17
LHAAP-19
Former Unlined Evaporation Pond and Rocket Motor Washout Facility
Open Burning Pan 157
Open Burning Pan 158



LEGEND

- New Monitoring Well Locations
- New DPT Locations
- Extraction Location
- ICT Locations

Perchlorate Concentrations

- > 2,000 ug/L
- > 10,000 ug/L
- Soil plume is dashed where inferred
- Road
- Stream
- Site
- Former Building or Concrete Slab
- Shallow Zone Monitoring Well
- Wilcox Formation Monitoring Well
- Soil Boring - May 2013

Notes:
ug/kg = micrograms per kilogram
J = estimated value
ND = Non-detect

PDI data collected from New DPT and Monitoring Wells March - June 2021.

GWP-Ind MSC for perchlorate = 7,200 ug/kg

DATA SOURCES: AECOM, 2017. Final Revised Feasibility Study for LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas, January.

Alternative 5 Activities

- Shallow Zone ISB
- Wilcox ISB
- Shallow Zone ISB Grid
- Shallow Zone ISB Grid after DNAPL Removal

Notes

ISB In-Situ Bioremediation
ACD – Air Curtain Destructor

Barriers, grids and other remedy component features shown in this figure were used to facilitate comparison of alternatives including costs. The locations, number and layout may change during Remedial Design phase.

PERCHLORATE SOIL CONTAMINATION OUTSIDE THE NORTHEAST ICT BOUNDARY
LHAAP-18/24 PDI REPORT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

N
0 250 500
FEET

FIGURE 6

PATH: J:\2018\18-025_LHAAP_SITES29_47_18AND24_ROD_(WERNER)\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\LHAAP18_24\PDI_2021\LHAAP_18_24_PDI_OUTSIDE_ICT_SOIL_CONTAMINATION_EXTENT_PERCHORLATE_FIG6.MXD - USER: KLOFGREN - DATE: 2/24/2022

Notes:
Bolded result indicates exceedance of comparison level
ug/L = micrograms per liter
J = estimated value

Comparison Levels: TRRP PCL
Perchlorate - 17 ug/L2
1,1,2-Trichloroethane - 5 ug/L1
1,4-Dioxane - 9.1 ug/L2
cis-1,2-Dichloroethene - 70 ug/L1
Benzene - 5 ug/L1
Methylene Chloride - 5 ug/L1
Tetrachloroethene - 5 ug/L1
Trichloroethene - 5 ug/L1
Vinyl Chloride - 2 ug/L1

Perchlorate = Nondetect June, 2020
C-06

1824DPT26
Perchlorate - 95.6 ug/L
Trichloroethene - 0.379 ug/L
1824DPT26

1824DPT25
Perchlorate - **41.7 ug/L**
1824DPT25

1824DPT30
Perchlorate - **35,400 ug/L**
cis-1,2-Dichloroethene - 4.54 ug/L
Methylene Chloride - 0.59 ug/L
Trichloroethene - **28.8 ug/L**
Vinyl Chloride - 1.28 ug/L

1824DPT31
Perchlorate - **11,400 ug/L**
cis-1,2-Dichloroethene - 7.82 ug/L
Methylene Chloride - 0.34 ug/L
Trichloroethene - **56.4 ug/L**
Vinyl Chloride - **3.99 ug/L**

1824DPT29
Perchlorate - **41,000 ug/L**
cis-1,2-Dichloroethene - 48.8 ug/L
Methylene Chloride - 0.25 ug/L
Tetrachloroethene - 0.43 ug/L
Trichloroethene - **273 ug/L**
Vinyl Chloride - **21.5 ug/L**

18CPTMW18 - Shallow[1]
Perchlorate - 0.0 ug/L
Trichloroethene - 0.0 ug/L
18CPTMW18

1824DPT18
Perchlorate - **148,000 ug/L**
cis-1,2-Dichloroethene - 14.4 ug/L
Tetrachloroethene - 0.26 ug/L J
Trichloroethene - **135.0 ug/L**
Vinyl Chloride - 0.66 ug/L J

1824DPTMW03
Perchlorate - 4.61 J ug/L
Bromodichloromethane - 1.58 ug/L
Trichloroethene - 0.88 J ug/L
1824DPTMW03

1824DPTMW01
Perchlorate - **321 J ug/L**
Bromodichloromethane - 0.51 J ug/L
1824DPTMW01

1824DPT27
Perchlorate - 1.19 ug/L
1824DPT27A
Perchlorate - 9.08 ug/L
Trichloroethene - 0.253 ug/L
1824DPT27

1824DPT23
Perchlorate - **65.9 ug/L**
1824DPT23

1824DPT29A
Perchlorate - **5,450 ug/L**
cis-1,2-Dichloroethene - 35.5 ug/L
Benzene - 0.21 ug/L
Methylene Chloride - 0.32 ug/L
Tetrachloroethene - 0.62 ug/L
Trichloroethene - **193 ug/L**
Vinyl Chloride - **10.3 ug/L**

1824DPT22
Perchlorate - **47,500 ug/L**
cis-1,2-Dichloroethene - 1.37 ug/L
Trichloroethene - **12.5 ug/L**
1824DPT22

1824DPT24
Perchlorate - 9.82 ug/L
1824DPT24

1824DPT28
1824DPT28
Perchlorate - 10.6 ug/L

18WW17 - Shallow[1]
Perchlorate - **76,800 ug/L**
Trichloroethene - **42 ug/L**
18WW17

1824DPT31
1824DPT30
1824DPT18
1824DPT29
1824DPT21
1824DPT21
Perchlorate - **33.6 ug/L**

AWD-4
18CPTMW08SW
MW-5
ICT-14A
ICT-14B
ICT-14C
ICT-14D
ICT-14E

1824DPTMW02
Perchlorate - **112,000 ug/L**
cis-1,2-Dichloroethene - 26 ug/L
Trichloroethene - **466 ug/L**
1824DPTMW02

1824DPT19
Perchlorate - **16,200 ug/L**
cis-1,2-Dichloroethene - 0.78 J ug/L
Trichloroethene - **99.5 ug/L**
1824DPT19

1824DPT20
Perchlorate - **39,200 ug/L**
cis-1,2-Dichloroethene - 10.3 ug/L
Trichloroethene - **695.0 ug/L**
1824DPT20

1824DPTMW04
Perchlorate - **274 J ug/L**
Trichloroethene - 1.21 ug/L
1824DPTMW04

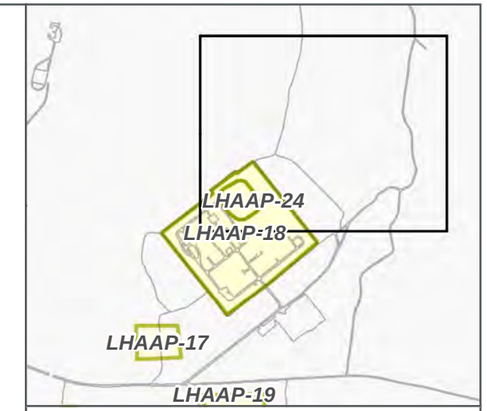
LHAAP-18
LHAAP-24

109
Perchlorate - **20,400 ug/L**
cis-1,2-Dichloroethene - **83.0 ug/L**
Trichloroethene - **240.0 ug/L**
109

1824DPT17
Perchlorate - **6,410 ug/L**
cis-1,2-Dichloroethene - **135.0 ug/L**
Trichloroethene - **229 ug/kg**
Vinyl Chloride - 0.52 ug/L J
1824DPT17

Open Burning Pan 157

MW-21
Perchlorate - **10,600 ug/L**
1,1,2-Trichloroethane - **5.2 ug/L**
1,2-Dichloroethane - **16.0 ug/L**
cis-1,2-Dichloroethene - **210.0 ug/L**
Trichloroethene - **3,900 ug/L**
Vinyl Chloride - **13 ug/L**
MW-2
MW-21



LEGEND
- Extraction Location
- New Shallow Monitoring Well Locations
- New DPT Locations
- ICT Locations
- Road
- Stream
- Site
- Former Building or Concrete Slab
- Shallow Zone Monitoring Well
- Wilcox Formation Monitoring Well
- Soil Boring - May 2013

Notes: PDI data collected from New DPT and Monitoring Wells March - June 2021. Other sample data was collected in June 2021 (Bhate, 2021).

DATA SOURCES: AECOM, 2017. Final Revised Feasibility Study for LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas, January.

DPT GROUNDWATER SAMPLE RESULTS
PERCHLORATE AND VOCS
OUTSIDE THE NORTHEAST ICT BOUNDARY
LHAAP-18/24 PDI REPORT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Alternative 5 Activities
- Shallow Zone ISB
- Wilcox ISB
- Shallow Zone ISB Grid
- Shallow Zone ISB Grid after DNAPL Removal

Notes
ISB In-Situ Bioremediation
ACD – Air Curtain Destructor
Barriers, grids and other remedy component features shown in this figure were used to facilitate comparison of alternatives including costs. The locations, number and layout may change during Remedial Design phase.

N
0 250 500
FEET

FIGURE 7

PATH: J:\2018\18-025_LHAAP_SITES29_47_18AND24_ROD_(WERNER)\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\LHAAP18_24\PDI_2021\LHAAP_18_24_PDI_OUTSIDE_ICT_DPT_MW_SAMPLE_RESULTS_PERCH_VOC_FIG7.MXD - USER: KLOFGREN - DATE: 2/17/2022

Notes:
Bolded result indicates exceedance of comparison level
ug/L = micrograms per liter
J = estimated value
ND = Non-detect

Comparison Levels: TRRP PCL
Perchlorate - 17 ug/L2

Perchlorate = Nondetect June, 2020
C-06

1824DPT26
Perchlorate - 95.6 ug/L
1824DPT26

1824DPT25
Perchlorate - **41.7 ug/L**
1824DPT25

1824DPT27
Perchlorate - 1.19 ug/L
1824DPT27

1824DPT27A
Perchlorate - 9.08 ug/L

18CPTMW18 - Shallow[1]
Perchlorate - 0.0 ug/L
18CPTMW18

1824DPT30
Perchlorate - **35,400 ug/L**

1824DPT31
Perchlorate - **11,400 ug/L**

1824DPT29
Perchlorate - **41,000 ug/L**

1824DPT29A
Perchlorate - **5,450 ug/L**

1824DPT18
Perchlorate - **148,000 ug/L**

1824DPTMW03
Perchlorate - 4.61 J ug/L
1824DPTMW03

1824DPTMW01
Perchlorate - **321 J ug/L**
1824DPTMW01

1824DPT23
Perchlorate - **65.9 ug/L**
1824DPT23

1824DPT22
Perchlorate - **47,500 ug/L**
1824DPT22

18WW17 - Shallow[1]
Perchlorate - **76,800 ug/L**
18WW17

1824DPT24
Perchlorate - 9.82 ug/L
1824DPT24

1824DPT28
1824DPT28
Perchlorate - 10.6 ug/L

1824DPT21
Perchlorate - **33.6 ug/L**
1824DPT21

1824DPTMW02
Perchlorate - **112,000 ug/L**
1824DPTMW02

1824DPT19
Perchlorate - **16,200 ug/L**
1824DPT19

1824DPT20
Perchlorate - **39,200 ug/L**
1824DPT20

1824DPTMW04
Perchlorate - **274 J ug/L**
1824DPTMW04

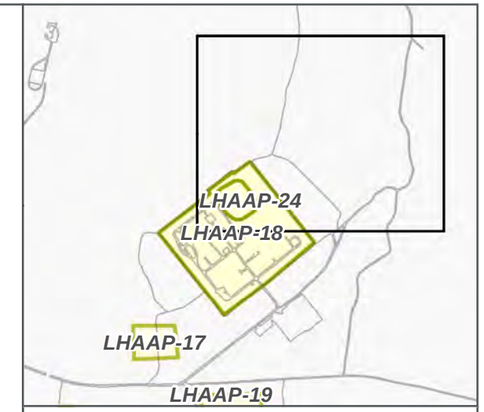
1824DPT17
Perchlorate - **6,410 ug/L**
1824DPT17

109
Perchlorate - **20,400 ug/L**
109

MW-21
Perchlorate - **10,600 ug/L**
MW-21

AWD-4
18CPTMW08SW
MW-5
ICT-14A
ICT-14B
ICT-14C
ICT-14D
ICT-14E
MW-2

LHAAP-24
LHAAP-18
Former Unlined E
Pond and Rocke
Washout Facility
Open Burning
Pan 157
Open Burning
Pan 158



LEGEND

- Extraction Location
- New Monitoring Well Locations
- New DPT Locations
- ICT Locations

Perchlorate Concentrations

- > 17 ug/L (TRRP $^{GW}GW_{Ing}$ PCL for Perchlorate)
- > 10,000 ug/L
- > 100,000 ug/L
- Groundwater plume is dashed where inferred
- Road
- Stream
- Site
- Former Building or Concrete Slab
- Shallow Zone Monitoring Well
- Wilcox Formation Monitoring Well
- Soil Boring - May 2013

Notes: PDI data collected from New DPT and Monitoring Wells March - June 2021. Other sample data was collected in June 2021 (Bhate, 2021).

DATA SOURCES: AECOM, 2017. Final Revised Feasibility Study for LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas, January.

Alternative 5 Activities

- Shallow Zone ISB
- Wilcox ISB
- Shallow Zone ISB Grid
- Shallow Zone ISB Grid after DNAPL Removal

Notes

ISB In-Situ Bioremediation

ACD – Air Curtain Destructor

Barriers, grids and other remedy component features shown in this figure were used to facilitate comparison of alternatives including costs. The locations, number and layout may change during Remedial Design phase.

PERCHLORATE GROUNDWATER CONTAMINATION OUTSIDE THE NORTHEAST ICT BOUNDARY
LHAAP-18/24 PDI REPORT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

N
0 250 500
FEET

FIGURE 8

PATH: J:\2018\18-025_LHAAP_SITES29_47_18AND24_ROD_(WERNER)\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\LHAAP18_24\PDI_2021\LHAAP_18_24_PDI_OUTSIDE_ICT_DPT_MW_CONTAMINATION_EXTENT_PERCHLORATE_FIG8.MXD - USER: KLOFGREN - DATE: 2/24/2022

Notes:
Bolded result indicates exceedance of comparison level
ug/L = micrograms per liter
J = estimated value
ND = Non-detect

Comparison Levels: TRRP PCL
Trichloroethene - 5 ug/L1

C-06

1824DPT26
Trichloroethene - 0.379 ug/L

1824DPT25
Trichloroethene - ND

1824DPT26

1824DPT25

18CPTMW18 - Shallow[1]
Trichloroethene - 0.0 ug/L

1824DPT27
Trichloroethene - ND

1824DPT27A
Trichloroethene - 0.253 ug/L

1824DPT27

1824DPT30
Trichloroethene - **28.8 ug/L**

1824DPT18
Trichloroethene - **135.0 ug/L**

18CPTMW18

1824DPTMW01
Trichloroethene - ND

1824DPTMW01

1824DPT31
Trichloroethene - **56.4 ug/L**

1824DPTMW03
Trichloroethene - 0.88 J ug/L

1824DPT29
Trichloroethene - **273 ug/L**

1824DPTMW03

1824DPT23
Trichloroethene - ND

1824DPT23

1824DPT29A
Trichloroethene - **193 ug/L**

1824DPT22
Trichloroethene - **12.5 ug/L**

1824DPT31

1824DPT22

18WW17 - Shallow[1]
Trichloroethene - **42 ug/L**

1824DPT24
Trichloroethene - ND

1824DPT28

1824DPT24

18WW17

AWD-4

18CPTMW08SW

MW-5

ICT-14A

1824DPT30

1824DPT18

1824DPT21

1824DPT21
Trichloroethene - ND

1824DPT28
Trichloroethene - ND

1824DPT29

ICT-14B

1824DPTMW02
Trichloroethene - **466 ug/L**

1824DPTMW02

1824DPT19
Trichloroethene - **99.5 ug/L**

109

1824DPT19

ICT-14C

1824DPT20

1824DPT20
Trichloroethene - **695.0 ug/L**

LHAAP-24

LHAAP-18

Former Unlined Evaporation Pond and Rocket Motor Washout Facility

109
Trichloroethene - **240.0 ug/L**

1824DPT17

1824DPTMW04

1824DPTMW04
Trichloroethene - 1.21 ug/L

ICT-14D

MW-21

1824DPT17
Trichloroethene - **229 ug/kg**

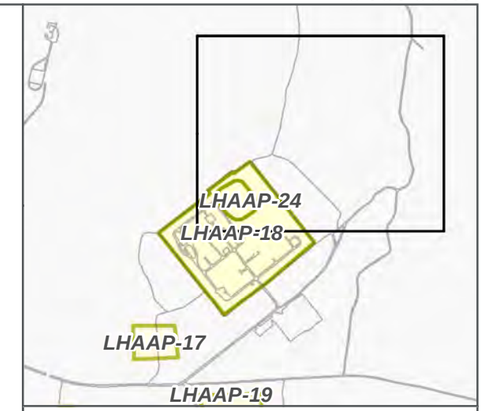
MW-2

MW-21
Trichloroethene - **3,900 ug/L**

Open Burning Pan 157

Open Burning Pan 158

ICT-14E



LEGEND

- Extraction Location
- New Shallow Monitoring Well Locations
- New DPT Locations
- ICT Locations

Trichloroethene Concentrations

- > 5 ug/L (SDWA MCL for Trichloroethene)
- > 100 ug/L
- > 500 ug/L
- > 1,000 ug/L
- Groundwater plume is dashed where inferred
- Road
- Stream
- Site
- Former Building or Concrete Slab
- Shallow Zone Monitoring Well
- Wilcox Formation Monitoring Well
- Soil Boring - May 2013

Notes: PDI data collected from New DPT and Monitoring Wells March - June 2021. Other sample data was collected in June 2021 (Bhate, 2021).

DATA SOURCES: AECOM, 2017. Final Revised Feasibility Study for LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas, January.

Alternative 5 Activities

- Shallow Zone ISB
- Wilcox ISB
- Shallow Zone ISB Grid
- Shallow Zone ISB Grid after DNAPL Removal

Notes

ISB In-Situ Bioremediation

ACD – Air Curtain Destructor

Barriers, grids and other remedy component features shown in this figure were used to facilitate comparison of alternatives including costs. The locations, number and layout may change during Remedial Design phase.

TCE GROUNDWATER CONTAMINATION OUTSIDE THE NORTHEAST ICT BOUNDARY

LHAAP-18/24 PDI REPORT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

N

0 250 500
FEET

FIGURE 9

PATH: J:\2018\18-025_LHAAP_SITES29_47_18AND24_ROD_(WERNER)\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\LHAAP18_24\PDI_2021\LHAAP_18_24_PDI_OUTSIDE_ICT_DPT_MW_CONTAMINATION_EXTENT_TCE_FIG9.MXD - USER: KLOFGREN - DATE: 2/24/2022

1824DPTMW06
Perchlorate - 0.327 J ug/L
Trichloroethene - **37.3 ug/L**
1,4-Dioxane - 6.13 J ug/L

1824DPTMW06

MW-14
Perchlorate - **198,000 ug/L**
TCE - **9,000 ug/L**

MW-14

120

1824DPT42
Perchlorate - **3,500 ug/L**
cis-1,2-Dichloroethene - **8,730 ug/L**
Methylene Chloride - **6,980 ug/L**
Tetrachloroethene - **15.1 ug/L**
Trichloroethene - **6,860 ug/L**
Vinyl Chloride - **648 ug/L**

ACD
Air Curtain Destructor

1824DPT02
Perchlorate - **32,400 ug/L**
1,1,2-Trichloroethane - 0.548 ug/L
Benzene - 4.26 ug/L
cis-1,2-Dichloroethene* - **122 ug/L**
Methylene chloride - 0.757 ug/L
Tetrachloroethene - 2.83 ug/L
Trichloroethene - **6,340 ug/L**

1824DPT06
Perchlorate - **26,200 ug/L**
1,1,2-Trichloroethane - 2.81 ug/L
Benzene - **7.72 ug/L**
cis-1,2-Dichloroethene* - **2,150 ug/L**
Methylene chloride - 4.57 ug/L
Tetrachloroethene - 4.0 ug/L
Trichloroethene - **13,100 ug/L**
Vinyl chloride* - **18.7 ug/L**

18CPTMW03SW (Wilcox)
Perchlorate - 0.65 ug/L
cis-1,2-Dichloroethene - 6.3
Trichloroethene - **18 ug/L**

1824DPT05
Perchlorate - **35600 ug/L**
1,1,2-Trichloroethane - 2.35 ug/L
Benzene - **6.51 ug/L**
cis-1,2-Dichloroethene* - **1570 ug/L**
Methylene chloride - 4.29 ug/L
Tetrachloroethene - 3.30 ug/L
Trichloroethene - **12,700 ug/L**
Vinyl chloride* - **26.6 ug/L**

1824DPT42

1824DPT04
Perchlorate - **85,000 ug/L**
1,1,2-Trichloroethane - 1.81 ug/L
Benzene - 4.31 ug/L
cis-1,2-Dichloroethene* - **74.5 ug/L**
Methylene chloride - 1.45 ug/L
Tetrachloroethene - 3.18 ug/L
Trichloroethene - **5,620 ug/L**
Vinyl chloride* - **3.73 ug/L**

1824DPT01
Perchlorate - **2,350 ug/L**
1,1,2-Trichloroethane - **5.5 ug/L**
Benzene - **11.3 ug/L**
cis-1,2-Dichloroethene* - **16,100 ug/L**
Methylene chloride - 4.88 ug/L
Tetrachloroethene - 1.85 ug/L
Trichloroethene - **7,530 ug/L**
Vinyl chloride* - **445 ug/L**

1824DPT01

Open Burning Pan 155

1824DPT12
Perchlorate - **59,500 ug/L**
1,1,2-Trichloroethane - 0.573 ug/L
Benzene - 1.54 ug/L
cis-1,2-Dichloroethene* - 18.6 ug/L
Methylene chloride - 0.886 ug/L
Tetrachloroethene - 1.14 ug/L
Trichloroethene - 3,040 ug/L
Vinyl chloride* - **0.969 ug/L**

1824DPT32
Perchlorate - **26,200 ug/L**
1,1,2-Trichloroethane - **5.19 ug/L**
cis-1,2-Dichloroethene - **8,800 ug/L**
Benzene - **10.8 ug/L**
Trichloroethene - **13,400 ug/L**
Vinyl Chloride - **94.6 ug/L**

Open Burning Cage 003

1824DPT32

Burning Ground #3

1824DPT09
Perchlorate - **56,900 ug/L**
1,1,2-Trichloroethane - 1.20 ug/L
Benzene - **5.60 ug/L**
cis-1,2-Dichloroethene* - **231 ug/L**
Methylene chloride - 3.78 ug/L
Tetrachloroethene - **7.62 ug/L**
Trichloroethene - **4,260 ug/L**
Vinyl chloride* - **3.98 ug/L**

1824DPT33
Perchlorate - **51,500 ug/L**
cis-1,2-Dichloroethene - **140 ug/L**
Benzene - **6.79 ug/L**
Tetrachloroethene - **13.9 ug/L**
Trichloroethene - **6,470 ug/L**
Vinyl Chloride - **2.4 ug/L**

1824DPT34
Perchlorate - **29,500 ug/L**
cis-1,2-Dichloroethene - **230 ug/L**
Benzene - **20.1 ug/L**
Tetrachloroethene - **10.2 ug/L**
Trichloroethene - **4,940 ug/L**
Vnyl Chloride - **4.68 ug/L**

1824DPT34

21-X

MW-22

43-X

1824DPT33

1824DPT09

1824DPT05

Open Burning Cage 156

1824DPT06

1824DPT02

18CPTMW03SW

18CPT03

1824DPT04

1824DPT08

1824DPT07

LHAAP-18

1824DPT13

1824DPT14

1824DPT12

MW-23

1824DPT16

1824DPT10

1824DPT15

1824DPT07
Perchlorate - **137,000 ug/L**
1,1,2-Trichloroethane - 1.65 ug/L
Benzene - **8.62 ug/L**
cis-1,2-Dichloroethene* - **317 ug/L**
Methylene chloride - 2.21 ug/L
Tetrachloroethene - 3.57 ug/L
Trichloroethene - **11,200 ug/L**
Vinyl chloride* - **5.11 ug/L**

1824DPT13
Perchlorate - **71,300 ug/L**
1,1,2-Trichloroethane - 1.58 ug/L
Benzene - 3.63 ug/L
cis-1,2-Dichloroethene* - **94.1 ug/L**
Methylene chloride - 1.42 ug/L
Tetrachloroethene - 3.44 ug/L
Trichloroethene - **5,550 ug/L**
Vinyl chloride* - **2.04 ug/L**

1824DPT41
Perchlorate - **124,000 ug/L**
1,1,2-Trichloroethane - **14.2 ug/L**
cis-1,2-Dichloroethene - **202 ug/L**
Methylene Chloride - **7.27 ug/L**
Tetrachloroethene - **15.9 ug/L**
Trichloroethene - **38,400 ug/L**
Vinyl CHloride - **18.3 ug/L**

1824DPT41

129
Perchlorate - **7,780 ug/L**
Trrichloroethene - **770 ug/L**

129

MW-23
Perchlorate - **76,800 ug/L**
Trichloroethene - **2,200 ug/L**

1824DPTMW05

1824DPT14
Perchlorate - **36,700 ug/L**
1,1,2-Trichloroethane - 0.909 ug/L
Benzene - 3.25 ug/L
cis-1,2-Dichloroethene* - **120 ug/L**
Methylene chloride - 1.19 ug/L
Tetrachloroethene - **5.26 ug/L**
Trichloroethene - **3,810 ug/L**
Vinyl chloride* - 1.93 ug/L

1824DPT03

1824DPT37

1824DPT11

1824DPT08
Perchlorate - **87,300 ug/L**
1,1,2-Trichloroethane - 0.823 ug/L
Benzene - 2.52 ug/L
cis-1,2-Dichloroethene* - 44.1 ug/L
Methylene chloride - 1.13 ug/L
Tetrachloroethene - 1.30 ug/L
Trichloroethene - **3,540 ug/L**
Vinyl chloride* - 1.34 ug/L

1824DPTMW05
Perchlorate - **576,000 ug/L**
Benzene - **26.5 ug/L**
Trichloroethene - **8,890 ug/L**

1824DPT37
Perchlorate - **17,400 ug/L**
Trichloroethene - **279 ug/L**

1824DPT10
Perchlorate - **42,000 ug/L**
1,1,2-Trichloroethane - 0.650 ug/L
Benzene - **9.04 ug/L**
cis-1,2-Dichloroethene* - 51.5 ug/L
Methylene chloride - 1.13 ug/L
Tetrachloroethene - 3.55 ug/L
Trichloroethene - **5,380 ug/L**
Vinyl chloride* - 1.52 ug/L

1824DPT40

1824DPT40
Perchlorate - **495,000 ug/L**
cis-1,2-Dichloroethene - **118 ug/L**
Benzene - **31.9 ug/L**
Tetrachloroethene - **8.94 ug/L**
Trichloroethene - **14,000 ug/L**

1824DPT36
Perchlorate - **19,100 ug/L**
Trichloroethene - **2,530 ug/L**

1824DPT36

MW-8

MW-8
Perchlorate - **2,500 ug/L**
cis-1,2-Dichloroethene - 18 ug/L
Trichloroethene - **120 ug/L**

1824DPT39

1824DPT39
Perchlorate - **89,000 ug/L**
Trichloroethene - **4,940 ug/L**

1824DPT35

1824DPT35
Perchlorate - **40,600 ug/L**
Trichloroethene - **1,150 ug/L**

1824DPT15
Perchlorate - **51,300 ug/L**
1,1,2-Trichloroethane - 0.967 ug/L
Benzene - 2.98 ug/L
cis-1,2-Dichloroethene* - 37.1 ug/L
Methylene chloride - 1.13 ug/L
Tetrachloroethene - 4.40 ug/L
Trichloroethene - **4,400 ug/L**
Vinyl chloride* - 1.07 ug/L

24-X

25-X

1824DPT03
Perchlorate - **214,000 ug/L**
Benzene - **7.73 ug/L**
cis-1,2-Dichloroethene* - 19.6 ug/L
Trichloroethene - **2,810 ug/L**

MW-7

MW-7
Perchlorate - **13,100 ug/L**
cis-1,2-Dichloroethene - 18 ug/L
Trichloroethene - **2,000 ug/L**

1824DPT11
Perchlorate - **65,900 ug/L**
1,1,2-Trichloroethane - 0.328 ug/L
Benzene - 1.26 ug/L
cis-1,2-Dichloroethene* - 11.0 ug/L
Methylene chloride - 0.407 ug/L
Tetrachloroethene - 0.940 ug/L
Trichloroethene - **2,930 ug/L**
Vinyl chloride* - 0.647 ug/L

1824DPT38
Perchlorate - **13,300 ug/L**
Trichloroethene - **217 ug/L**

1824DPT38

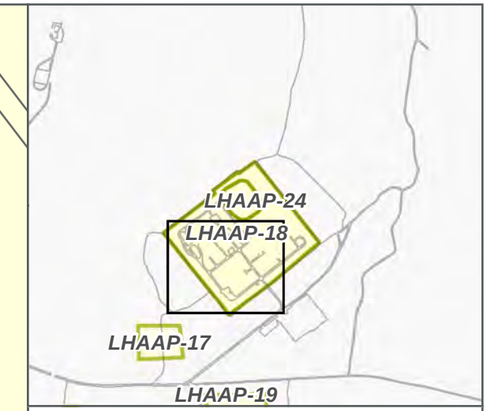
1824DPT16
Perchlorate - **47,900 ug/L**
1,1,2-Trichloroethane - 0.409 ug/L
Benzene - 1.49 ug/L
cis-1,2-Dichloroethene* - 15.9 ug/L
Methylene chloride - 0.611 ug/L
Tetrachloroethene - 1.22 ug/L
Trichloroethene - **2,890 ug/L**
Vinyl chloride* - 0.787 ug/L

Notes:
Bold - Exceeds Screening Level
1 = Safe Drinking Water Act (SDWA) maximum contaminant level (MCL)
2 = TRRP PCL
ug/L = micrograms per liter

Comparison Levels:
Perchlorate - 17 ug/L2
1,1,2-Trichloroethane - 5 ug/L1
1,4-Dioxane - 9.1 ug/L2
cis-1,2-Dichloroethene - 70 ug/L1
Benzene - 5 ug/L1
Methylene Chloride - 5 ug/L1
Tetrachloroethene - 5 ug/L1
Trichloroethene - 5 ug/L1
Vinyl Chloride - 2 ug/L1

Alternative 5 Activities
- Shallow Zone ISB
- Wilcox ISB
- Shallow Zone ISB Grid
- Shallow Zone ISB Grid after DNAPL Removal

Notes
ISB In-Situ Bioremediation
ACD – Air Curtain Destructor
Barriers, grids and other remedy component features shown in this figure were used to facilitate comparison of alternatives including costs. The locations, number and layout may change during Remedial Design phase.



LEGEND
- New Shallow Monitoring Well Locations
- New DPT Locations
- Road
- Stream
- Site
- Former Building or Concrete Slab
- Shallow Zone Monitoring Well
- Wilcox Formation Monitoring Well
- Soil Boring - May 2013

Notes: PDI data collected from New DPT and Monitoring Wells March - June 2021. Other sample data was collected in June 2021 (Bhate, 2021).

DATA SOURCES: AECOM, 2017. Final Revised Feasibility Study for LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas, January.

GROUNDWATER SAMPLE RESULTS
PERCHLORATE AND VOCS
SHALLOW ZONE ISB GRIDS
LHAAP-18/24 PDI REPORT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

N
0 100 200
FEET

FIGURE 10

PATH: J:\2018\18-025_LHAAP_SITES29_47_18AND24_ROD_(WERNER)\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\LHAAP18_24\PDI_2021\LHAAP_18_24_PDI_ISB_DPT_MW_SAMPLE_RESULTS_PERCH_VOCS_FIG10.MXD - USER: KLOFGREN - DATE: 2/17/2022

1824DPTMW06
Perchlorate - 0.327 J ug/L

1824DPTMW06

MW-14
Perchlorate - **198,000 ug/L**

MW-14

120

1824DPT42
Perchlorate - **3,500 ug/L**

ACD

Air Curtain Destructor

1824DPT42

1824DPT02
Perchlorate - **32,400 ug/L**

1824DPT07
Perchlorate - **137,000 ug/L**

1824DPT41
Perchlorate - **124,000 ug/L**

129
Perchlorate - **7,780 ug/L**

129

1824DPTMW05
Perchlorate - **576,000 ug/L**

MW-8

MW-8
Perchlorate - **2,500 ug/L**

1824DPT40
Perchlorate - **495,000 ug/L**

MW-7

MW-7
Perchlorate - **13,100 ug/L**

Open Burning Pan 158

1824DPT06
Perchlorate - **26,200 ug/L**

1824DPT01
Perchlorate - **2,350 ug/L**

18CPTMW03SW (Wilcox)
Perchlorate - 0.65 ug/L

1824DPT05
Perchlorate - **35600 ug/L**

1824DPT01

Open Burning Pan 155

Open Burning Cage 156

1824DPT05

1824DPT06

1824DPT02

18CPTMW03SW

18CPT03

1824DPT04

1824DPT08

1824DPT07

1824DPT41

1824DPT08
Perchlorate - **87,300 ug/L**

1824DPT03

1824DPTMW05

1824DPT03
Perchlorate - **214,000 ug/L**

1824DPT40

1824DPT04
Perchlorate - **85,000 ug/L**

1824DPT12
Perchlorate - **59,500 ug/L**

1824DPT32
Perchlorate - **26,200 ug/L**

Open Burning Cage 003

1824DPT32

Burning Ground #3

LHAAP-18

MW-23

MW-23
Perchlorate - **76,800 ug/L**

1824DPT12

1824DPT16

1824DPT15

1824DPT37

1824DPT37
Perchlorate - **17,400 ug/L**

1824DPT36
Perchlorate - **19,100 ug/L**

1824DPT36

1824DPT39

1824DPT39
Perchlorate - **89,000 ug/L**

1824DPT38
Perchlorate - **13,300 ug/L**

1824DPT38

24-X

25-X

1824DPT09
Perchlorate - **56,900 ug/L**

1824DPT33
Perchlorate - **51,500 ug/L**

1824DPT34
Perchlorate - **29,500 ug/L**

2-X

1824DPT34

MW-22

43-X

1824DPT09

1824DPT33

1824DPT13

1824DPT14

1824DPT13
Perchlorate - **71,300 ug/L**

1824DPT10

1824DPT10
Perchlorate - **42,000 ug/L**

1824DPT14
Perchlorate - **36,700 ug/L**

1824DPT11

1824DPT15
Perchlorate - **51,300 ug/L**

1824DPT11
Perchlorate - **65,900 ug/L**

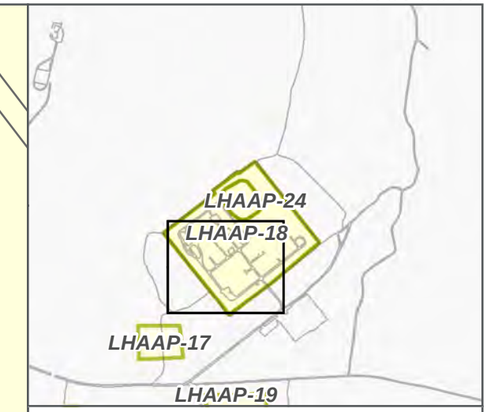
1824DPT16
Perchlorate - **47,900 ug/L**

1824DPT35

1824DPT35
Perchlorate - **40,600 ug/L**

Notes:
Bold - Exceeds Screening Level
1 = Safe Drinking Water Act (SDWA) maximum contaminant level (MCL)
2 = TRRP PCL
ug/L = micrograms per liter

Comparison Levels:
Perchlorate - 17 ug/L2



LEGEND

- New Shallow Monitoring Well Locations
- New DPT Locations

Perchlorate Concentrations

- 15,000 ug/L
- 25,000 ug/L
- 50,000 ug/L
- 100,000 ug/L
- 200,000 ug/L
- 400,000 ug/L
- Groundwater plume is dashed where inferred
- Road
- Stream
- Site
- Former Building or Concrete Slab
- Shallow Zone Monitoring Well
- Wilcox Formation Monitoring Well
- Soil Boring - May 2013

Notes: PDI data collected from New DPT and Monitoring Wells March - June 2021. Other sample data was collected in June 2021 (Bhate, 2021).

DATA SOURCES: AECOM, 2017. Final Revised Feasibility Study for LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas, January.

Alternative 5 Activities

- Shallow Zone ISB
- Wilcox ISB
- Shallow Zone ISB Grid
- Shallow Zone ISB Grid after DNAPL Removal

Notes

ISB In-Situ Bioremediation

ACD – Air Curtain Destructor

Barriers, grids and other remedy component features shown in this figure were used to facilitate comparison of alternatives including costs. The locations, number and layout may change during Remedial Design phase.

PERCHLORATE GROUNDWATER CONTAMINATION AT THE SHALLOW ZONE ISB GRIDS

LHAAP-18/24 PDI REPORT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

N

0 100 200
FEET

FIGURE 11

PATH: J:\2018\18-025_LHAAP_SITES29_47_18AND24_ROD_(WERNER)\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\LHAAP18_24\PDI_2021\LHAAP_18_24_PDI_ISB_DPT_MW_CONTAMINATION_EXTENT_PERCHORLATE_FIG11.MXD - USER: KLOFGREN - DATE: 2/24/2022

1824DPTMW06
Trichloroethene - **37.3 ug/L**

1824DPTMW06

MW-14
Trichloroethene - **9,000 ug/L**

MW-14

120

ACD *Air Curtain Destructor*

Open Burning Pan 158

1824DPT01
Trichloroethene - **7,530 ug/L**

1824DPT06
Trichloroethene - **13,100 ug/L**

18CPTMW03SW (Wilcox)
Trichloroethene - **18 ug/L**

1824DPT04
Trichloroethene - **5,620 ug/L**

Open Burning Cage 003

1824DPT32
Trichloroethene - **13,400 ug/L**

1824DPT09
Trichloroethene - **4,260 ug/L**

1824DPT33
Trichloroethene - **6,470 ug/L**

1824DPT34
Trichloroethene - **4,940 ug/L**

LHAAP-18

Burning Ground #3

1824DPT42
Trichloroethene - **6,860 ug/L**

1824DPT05
Trichloroethene - **12,700 ug/L**

1824DPT02
Trichloroethene - **6,340 ug/L**

1824DPT07
Trichloroethene - **11,200 ug/L**

1824DPT41
Trichloroethene - **38,400 ug/L**

129
Trrichloroethene - **770 ug/L**

129

1824DPT08
Trichloroethene - **3,540 ug/L**

1824DPTMW05
Trichloroethene - **8,890 ug/L**

1824DPT40
Trichloroethene - **14,000 ug/L**

MW-8

MW-8
Trichloroethene - **120 ug/L**

Open Burning Pan 155

21-X

43-X

MW-22

1824DPT01

1824DPT42

1824DPT32

1824DPT34

1824DPT09

1824DPT33

1824DPT05

1824DPT06

1824DPT02

18CPTMW03SW

18CPT03

1824DPT12
Trichloroethene - 3,040 ug/L

1824DPT13
Trichloroethene - **5,550 ug/L**

1824DPT04

1824DPT08

1824DPT07

1824DPT13

1824DPT14

1824DPT41

1824DPT12

1824DPT14
Trichloroethene - **3,810 ug/L**

MW-23

MW-23
Trichloroethene - **2,200 ug/L**

1824DPT16

1824DPT10

1824DPT15

1824DPT03

1824DPT10
Trichloroethene - **5,380 ug/L**

1824DPT37

1824DPT03
Trichloroethene - **2,810 ug/L**

1824DPT11

1824DPT15
Trichloroethene - **4,400 ug/L**

1824DPT37
Trichloroethene - **279 ug/L**

1824DPT11
Trichloroethene - **2,930 ug/L**

1824DPT40

1824DPT36
Trichloroethene - **2,530 ug/L**

1824DPT36

1824DPT16
Trichloroethene - **2,890 ug/L**

1824DPT35

1824DPT39

1824DPT39
Trichloroethene - **4,940 ug/L**

1824DPT35
Trichloroethene - **1,150 ug/L**

24-X

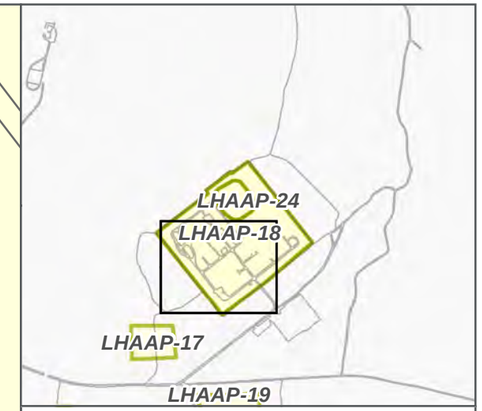
25-X

MW-7

MW-7
Trichloroethene - **2,000 ug/L**

1824DPT38
Trichloroethene - **217 ug/L**

1824DPT38



LEGEND

- New Shallow Monitoring Well Locations
- New DPT Locations

Trichloroethene Concentrations

- > 1,000 ug/L
- > 10,000 ug/L
- > 20,000 ug/L
- Groundwater plume is dashed where inferred
- Road
- Stream
- Site
- Former Building or Concrete Slab
- Shallow Zone Monitoring Well
- Wilcox Formation Monitoring Well
- Soil Boring - May 2013

Notes: PDI data collected from New DPT and Monitoring Wells March - June 2021. Other sample data was collected in June 2021 (Bhate, 2021).

DATA SOURCES: AECOM, 2017. Final Revised Feasibility Study for LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas, January.

Notes:
Bold - Exceeds Screening Level
1 = Safe Drinking Water Act (SDWA) maximum contaminant level (MCL)
2 = TRRP PCL
ug/L = micrograms per liter

Comparison Levels:
Trichloroethene - 5 ug/L1

Alternative 5 Activities

- Shallow Zone ISB
- Wilcox ISB
- Shallow Zone ISB Grid
- Shallow Zone ISB Grid after DNAPL Removal

Notes

ISB In-Situ Bioremediation

ACD – Air Curtain Destructor

Barriers, grids and other remedy component features shown in this figure were used to facilitate comparison of alternatives including costs. The locations, number and layout may change during Remedial Design phase.

TCE GROUNDWATER CONTAMINATION AT THE SHALLOW ZONE ISB GRIDS

LHAAP-18/24 PDI REPORT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

N

0 100 200
FEET

FIGURE 12

PATH: J:\2018\18-025_LHAAP_SITES29_47_18AND24_ROD_(WERNER)\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\LHAAP18_24\PDI_2021\LHAAP_18_24_PDI_ISB_DPT_MW_CONTAMINATION_EXTENT_TCE_FIG12.MXD - USER: KLOFGREN - DATE: 2/24/2022

4 Summary

Forty-four (44) DPT borings were advanced to the clay layer separating the Shallow Zone from the Wilcox Formation to further evaluate the extent of perchlorate and VOC contaminated groundwater and soil present outside the Northeast ICTs Boundary and the ISB grids in the southwest corner of the site. Soil samples were collected at 17 DPT borings advanced outside the Northeast ICTs Boundary; soil samples were not collected from DPT borings installed within the ISB grids. All temporary DPT wells and five permanent monitoring wells were installed a foot or two into the clay at each location and fitted with 10-foot screens. One permanent monitoring well was installed in the northwest corner near MW-14 to evaluate the extent of contamination in the upper Wilcox. After the completion of all well installations, MTX Surveying performed a topographic survey of the site recording all site features and contour intervals at 1-foot relief.

Outside Northeast ICT Boundary

Soils

VOCs were present in saturated soil samples from multiple DPT borings, but generally at relatively low concentrations. The exception was a 933 ug/kg detection of TCE at DPT boring 1824DPT17. Perchlorate was more widespread in soil and at higher levels. The higher perchlorate concentrations are located outside beyond the location of the Shallow Zone ISB remedy depicted on **Figure 6**. Farther east, VOC and perchlorate concentrations decrease considerably (one to two orders of magnitude lower). DPT soil samples were collected at the contact between the overlying sands/silts of the Shallow Zone and the clay layer separating the Shallow Zone from the Wilcox Formation at depths between 24 and 41 ft bgs. As such, contaminated soils do not present a direct contact hazard but could contribute to groundwater contamination. The soil and groundwater contamination are generally collocated. Cross sections of the area are provided in **Attachment 10** (Cross Sections A-A', B-B', and C-C').

Groundwater

VOC and perchlorate groundwater contamination are more widespread when compared to the soil contamination, but largely the higher concentrations are located along the northeast boundary corresponding well to the location of high soil levels that were detected. The highest levels of perchlorate in groundwater are located outside the ICTs between the Shallow Zone ISB and the area around extraction well 18WW17 (see **Figure 8**). To the northeast of this area, concentrations decrease with distance (one to two orders of magnitude lower). At nested temporary wells 1824DPT29 and 1824DPT29A higher perchlorate and VOC concentrations were detected in the deeper well (1824DPT29), where the well screen extends just into the clay separating the Shallow Zone from the Wilcox formation. Nested wells 1824DPT29 and 1824DPT29A are located west and upgradient of the ICTs, and within the LHAAP-18/24 northeast boundary. Farther to the east of the ICT Boundary, the higher perchlorate and VOC concentrations, albeit much lower than observed in nested wells 1824DPT29 and 1824DPT29A, were detected in the shallower (1824DPT27A) of the nested wells 1824DPT27 and 1824DPT27A. Results and extent of VOC and perchlorate contamination is provided in **Figures 7**, **8, and 9**.

Shallow Zone ISB Grids

Groundwater

Perchlorate and VOC groundwater contamination is widespread within the Shallow Zone ISB grids with perchlorate and TCE exhibiting the highest concentrations of the COCs. TCE concentrations in several temporary DPT wells (1824DPT5, 1824DPT6, 1824DPT7, 1824DPT32, 1824DPT40, and 1824DPT41) indicate the presence of residual DNAPL (assumed when the concentration of TCE is greater than 10,000 µg/L). These temporary DPT wells were located within the ISB grid centered on wells 18CPTMW03SW and 18CPT03 and to the southwest outside the grid area. Regardless, concentrations of perchlorate and TCE exceeding the TRRP PCL and TCE MCL extend outside the confines of both Shallow Zone ISB Grids, especially to the south and southwest. Based on the PDI results, the spatial extent of perchlorate and TCE contamination in the Shallow Zone extends beyond the ISB grid depicted in **Figures 11** and **12**. Contamination occurs at the clay sand/silt contact separating the Shallow Zone and Wilcox Formation.

Cross sections of the area are provided in **Attachment 10** (Cross Sections AA-AA', BB-BB', and CC-CC').

Northwest Corner Near MW-14

Permanent monitoring well 1824DPTMW06 was installed northwest of well MW-14 and the Shallow Zone and Willcox ISB grids to further evaluate the extent of 1,4-dioxane, perchlorate, and VOC contaminated groundwater. Perchlorate, cis-1,2-DCE, TCE and 1,4-dioxane were detected at very low concentrations below the TRRP PCL and MCL, except for TCE. TCE was detected at an estimated concentration of 37.3 J µg/L, exceeding the MCL of 5 µg/L. Perchlorate (198,000 µg/L) and TCE (9,000 µg/L) concentrations in well MW-14 exceeded the TRRP PCL and MCL, respectively. The VOC and perchlorate groundwater sample results are provided in **Figure 10**.

5 References

AECOM, 2014. Final Installation-Wide Work Plan for Longhorn Army Ammunition Plant, Karnack, Texas. July, 2014.

AECOM, 2016. Supplement to the Updated Post-Screening Investigation (PSI) Report Longhorn Army Ammunition Plant, Karnack, Texas. July, 2016.

Bhate, 2021. Quarterly Evaluation Report, 2nd Quarter (April - June) 2021, Groundwater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas. August, 2021.

HDR, 2019. Final Record of Decision for LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas. December, 2019.

HDR, 2021. Final Pre-Design Investigation Work Plan, LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas. May 2021.

Jacobs, 2001. Remedial Investigation Report for the Group 2 Sites Remedial Investigation (Sites 12, 17, 18/24, 29, and 32) at the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas, Final, St. Louis, Missouri, April.

USEPA, 2017. National Functional Guidelines for Superfund Organic Methods Data Review. OLEM 9355.0-136. January 2017.

USEPA, 2021. SW-846 Test Method 1311: Toxicity Characteristic Leaching. https://www.epa.gov › hw-sw846 › sw-846-test-method. September, 2021.

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Attachment 1. Soil Boring Logs

01076956

1. HOLE NUMBER

DRILLING LOG
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

2. DIVISION

3. INSTALLATION: LHAAP

SHEET 1 OF 4 SHEETS

4. PROJECT: LHAAP 18/24

5. LOCATION (Coordinates or Station): LHAAP

6. DRILLING AGENCY: WHE

7. HOLE NUMBER (as shown on drawing title and title number): 18~~2~~DPT1

8. NAME OF DRILLER: Kerri Powell

9. DIRECTION OF HOLE: [X] a. VERTICAL [ ] b. INCLINED c. DEG. FROM VERT.

10. THICKNESS OF OVERBURDEN: —

11. DEPTH DRILLED INTO ROCK: —

12. TOTAL DEPTH OF HOLE: 42'

13. SIZE AND TYPE OF BIT: 2 1/4" DIAMETER

14. DATUM FOR ELEVATION SHOWN (TBM or MSL): ~

15. MANUFACTURERS DESIGNATION OF DRILL: GEOPROBE 7822DT

16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: a. DISTURBED — b. UNDISTURBED —

17. TOTAL NUMBER CORE BOXES: —

18. ELEVATION GROUND WATER: ~

19. DATE HOLE (YYYYMMDD): a. STARTED 03/14/2021 b. COMPLETED 03/14/2021

20. ELEVATION TOP OF HOLE (feet): —

21. TOTAL CORE RECOVERY FOR BORING %: —

22. SIGNATURE OF INSPECTOR

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		1	SILTY CLAY, DARK BROWN TO RED, LOW PLAST, MED. STIFF, ~~to~~ MOIST	2/4 %		
		2		%		
		3		%		
		4	CLAYEY SAND, LT. BROWN, COHESIVE, FINE, MOIST			
		5		2.5/4 %		
		6	SILTY CLAY, LT. BROWN, SOFT, LOW PLAST., MOIST	%		
		7				
		8		%		
		9		%		

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PROJECT

HOLE NUMBER

VERSION 1.0

01076957

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT1

SHEET 2 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	10		SILTY CLAY W/ SAND, LT. BROWN, SOFT, LOW PLAST., MOIST	3.5/4 %		
	11			%		
	12					
	13		SAA	%		
	14			3.75/4 %		
	15		CLAYEY SAND W/ SILT, LT. BROWN TO ORANGE, COHESIVE, FINE, MOIST	%		
	16					
	17		SILTY SAND, LT. BROWN TO ORANGE, LOOSE, FINE TO MED, MOIST TO WET	% 3.5/4		
	18			%		
	19			%		
	20					
	21		SAA, LIGHT BROWN/ ORANGE TO GREY	% 2.5/4		
	22			%		
	23			%		
	24					

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6. PROJECT

7. HOLE NUMBER

VERSION 1.0

01076958

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT1

SHEET 3 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	25		SAND, LT. BROWN TO GREY, MED. GRAIN, LOOSE, WET	%		
	26			3.5/4 %		
	27		CLAYEY SAND W/ SILT, LT. BROWN TO GREY, FINE, COHESIVE, WET	%		
	28		SAA	2/2 %		
	29		SILT, LT. BROWN TO GREY, LOW PLAST., SOFT, WET			
	30		SAA	%		
	31		SILTY SAND, LT. BROWN, FINE, COHESIVE, WET	2/2 %		
	32		SAA	2/2 %		
	33		SILTY CLAY, LT. BROWN, SOFT, ~~MED.~~ HIGH PLAST., WET			
	34		SILTY SAND W/ CLAY, LT. BROWN, COHESIVE, FINE GRAIN, WET	2/2 %		
	35					
	36		SAA, CLAY LENSE @ 37'	2/2 %		
	37					
	38		SILTY CLAY W/ TRACE SAND, LIGHT BROWN, STIFF, MED. PLAST., MOIST TO WET	2/2 %		
	39					

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6. PROJECT

7. HOLE NUMBER

01076959

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT1

SHEET 4 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		40		%		
			CLAY, GREY, STIFF, HIGH PLAST., MOIST	2/2		SET WELL @ 42' BGS, SCREEN 32'-42'
		41		%		
		42				
		43		%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		

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6. PROJECT

7. HOLE NUMBER

01076960

1. HOLE NUMBER

DRILLING LOG
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

2. DIVISION

3. INSTALLATION: LHAAP

SHEET 1 OF 4 SHEETS

4. PROJECT: LHAAP 18/24

5. LOCATION (Coordinates or Station): LHAAP

6. DRILLING AGENCY: WHE

7. HOLE NUMBER (as shown on drawing title and title number): 1824DPT2

8. NAME OF DRILLER: KERRI POWELL

9. DIRECTION OF HOLE: [X] a. VERTICAL [ ] b. INCLINED c. DEG. FROM VERT.

10. THICKNESS OF OVERBURDEN: —

11. DEPTH DRILLED INTO ROCK: —

12. TOTAL DEPTH OF HOLE: 38'

13. SIZE AND TYPE OF BIT: 2 1/4" DIAMETER

14. DATUM FOR ELEVATION SHOWN (TBM or MSL): —

15. MANUFACTURERS DESIGNATION OF DRILL: GEOPROBE 7822DT

16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: a. DISTURBED —; b. UNDISTURBED —

17. TOTAL NUMBER CORE BOXES: —

18. ELEVATION GROUND WATER: —

19. DATE HOLE (YYYYMMDD): a. STARTED 03/14/2021; b. COMPLETED 03/14/2021

20. ELEVATION TOP OF HOLE (feet): —

21. TOTAL CORE RECOVERY FOR BORING %: —

22. SIGNATURE OF INSPECTOR: JL Moore

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	1–4		SILTY CLAY, MOTTLED LT. BROWN, GREY & RED, STIFF, ~~HIGHLY~~ MED. PLAST., MOIST	2/4 %		
	5–6		SAA, LT. BROWN TO GREY	3.5/4 %		
	7–8		SANDY CLAY W/ SILT, LT. BROWN TO GREY, HIGH PLAST., SOFT, MOIST	%		
	9			%		

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PROJECT

HOLE NUMBER

VERSION 1.0

01076961

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT2

SHEET 2 OF ~~4~~ 3 SHEETS

3. PROJECT: LHAAP1824

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS *(Description)*	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS *(Drilling Time, water loss, depth of weathering, etc., if significant)*
	10		~~SAA~~ fm SILTY CLAY, TRACE SAND, ~~MED~~ fm MOTTLED LT. BROWN, GREY & ORANGE, MED. STIFF, HIGH PLAST., MOIST	3.75/4 %		
	12					
	13		SAA	3.5/4 %		
	14					
	15		CLAYEY SAND, LT. BROWN TO REDDISH BROWN, LOOSE, FINE TO MED., MOIST	%		
	16					
	17		SAA	%		
	18			3/4 %		
	19			%		
	20					
	21		SILTY SAND W/ CLAY, LT. BROWN, SOFT, FINE, COHESIVE, WET	4/4 %		
	22			%		
	23					
	24			%		

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6. PROJECT

7. HOLE NUMBER

VERSION 1.0

01076962

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DBT2

SHEET 3 OF 4fm3 SHEETS

3. PROJECT: LHAAP 1824

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	25		SAA	%		
	26		CLAYEY SILT, MOTTLED LT. BROWN, GREY & ORANGE, SOFT, WET	4/4 %		
	27			%		
	28					
	29		SAA, LT. BROWN TO GREY, TRACE SAND	2/2 %		
	30					
	31		SAA	% 2/2		
	32		SILTY SAND, LT. BROWN TO GREY, FINE TO MED, COHESIVE, WET	%		
	33		SAA	2/2 %		
	34					
	35		SAA	% 2/2		
	36		SILTY CLAY, MOTTLED LT. BROWN, GREY & ORANGE, STIFF, HIGH PLAST., MOIST	%		
	37		CLAY, LT. BROWN TO GREY, STIFF, HIGH PLAST., MOIST	2/2 %		SET WELL @ 38' BGS, SCREEN 28'-38'
	38					
	39			%		

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6. PROJECT

7. HOLE NUMBER

01076963

1. HOLE NUMBER

DRILLING LOG
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

2. DIVISION

3. INSTALLATION: LHAAP

SHEET 1 OF 4 SHEETS

4. PROJECT: LHAAP 18/24

5. LOCATION (Coordinates or Station): LHAAP

6. DRILLING AGENCY: WHE

7. HOLE NUMBER (as shown on drawing title and title number): 1824DPT3

8. NAME OF DRILLER: KERRI POWELL

9. DIRECTION OF HOLE: [X] a. VERTICAL [ ] b. INCLINED c. DEG. FROM VERT.

10. THICKNESS OF OVERBURDEN: —

11. DEPTH DRILLED INTO ROCK: —

12. TOTAL DEPTH OF HOLE: 42'

13. SIZE AND TYPE OF BIT: 2¼" DIAMETER

14. DATUM FOR ELEVATION SHOWN (TBM or MSL): —

15. MANUFACTURERS DESIGNATION OF DRILL: GEOPROBE 7822DT

16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: a. DISTURBED —; b. UNDISTURBED —

17. TOTAL NUMBER CORE BOXES: —

18. ELEVATION GROUND WATER: —

19. DATE HOLE (YYYYMMDD): a. STARTED 03/14/2021; b. COMPLETED 03/14/2021

20. ELEVATION TOP OF HOLE (feet): —

21. TOTAL CORE RECOVERY FOR BORING %: —

22. SIGNATURE OF INSPECTOR: [signature]

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		1	SANDY SILT W/ CLAY, DARK BROWN TO LIGHT BROWN, SOFT, WET	2/4 %		
		2		%		
		3		%		
		4		%		
		5	SILTY CLAY, LT. BROWN TO GREY, STIFF, HIGH PLAST., MOIST	4/4 %		
		6		%		
		7		%		
		8		%		
		9		%		

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PROJECT

HOLE NUMBER

VERSION 1.0

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824 DBT3

SHEET 2 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		10	SAA	%		
		11	SANDY CLAY, LT. BROWN TO ORANGE-BROWN, SOFT, MED. PLAST., MOIST	3.5/4 %		
		12	SAA	%		
		13		4/4		
		14	CLAYEY SAND, LT. BROWN TO GREY, FINE GRAIN, COHESIVE, MOIST	%		
		15		%		
		16	SILTY SAND, LT. BROWN, GREY & ORANGE, COHESIVE, FINE TO MED. GRAIN, MOIST	%		
		17		%		
		18		3.5/4 %		
		19		%		
		20	SAA, INCREASING CLAY CONTENT, WET	%		
		21		3.75/4 %		
		22		%		
		23		%		
		24		%		

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6. PROJECT

7. HOLE NUMBER

VERSION 1.0

Q1076965

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE: —

2. HOLE NUMBER: 1824DPT3

SHEET 3 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	25		SAA	3.75/4 %		
	26					
	27			%		
	28		SILTY CLAY W/ SAND, LT BROWN, GREY & ORANGE, SOFT, LOW PLAST., WET	2/2 %		
	29					
	30		SANDY SILT, LT. BROWN TO GREY, SOFT, WET	%		
	31			2/2		
	32		SILTY SAND, FINE TO MED., COHESIVE, WET, LT. BROWN TO ORANGE	%		
	33			2/2 %		
	34		SAA	2/2 %		
	35					
	36		CLAYEY SILT W/ SAND, SOFT, LOW PLAST, WET	%		
	37			2/2 %		
	38		SAA, INCREASING CLAY CONTENT	2/2 %		
	39					

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6. PROJECT

7. HOLE NUMBER

01076966

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER To: 1824DPT3

SHEET 4 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		40		%		
			SAA			SET WELL @ 42' BGS, SCREEN 32'-42'
		41		2/2 %		
			CLAY, LT. BROWN TO GREY, STIFF, HIGH PLAST., WET			
		42		%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		

ENG FORM 1836A, JUN 1967 PREVIOUS EDITIONS ARE OBSOLETE. (Translucent)

6. PROJECT

7. HOLE NUMBER

01076967

1. HOLE NUMBER

DRILLING LOG
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

2. DIVISION

3. INSTALLATION: LHAAP

SHEET 1 OF 4 SHEETS

4. PROJECT: LHAAP 18/24

5. LOCATION (Coordinates or Station): LHAAP

6. DRILLING AGENCY: WHE

7. HOLE NUMBER (as shown on drawing title and title number): 1824DPT 4

8. NAME OF DRILLER: KERRI POWELL

9. DIRECTION OF HOLE: ☒ a. VERTICAL ☐ b. INCLINED c. DEG. FROM VERT.

10. THICKNESS OF OVERBURDEN: —

11. DEPTH DRILLED INTO ROCK: —

12. TOTAL DEPTH OF HOLE: 43'

13. SIZE AND TYPE OF BIT: 2 1/4" DIAMETER

14. DATUM FOR ELEVATION SHOWN (TBM or MSL): —

15. MANUFACTURERS DESIGNATION OF DRILL: GEOPROBE 7822DT

16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: a. DISTURBED —; b. UNDISTURBED —

17. TOTAL NUMBER CORE BOXES: —

18. ELEVATION GROUND WATER: —

19. DATE HOLE (YYYYMMDD): a. STARTED 03/14/2021; b. COMPLETED

20. ELEVATION TOP OF HOLE (feet): —

21. TOTAL CORE RECOVERY FOR BORING %: —

22. SIGNATURE OF INSPECTOR: J. Moore

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	1		SILTY CLAY W/ SAND, DARK BROWN TO LT. BROWN, LOW PLAST., SOFT, WET	1.75/4 = %		
	2					
	3					
	4		CLAY, REDDISH BROWN TO LT. BROWN, HIGH PLAST., MED. STIFF, MOIST	4/4 = %		
	5					
	6					
	7					
	8					
	9					

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PROJECT

HOLE NUMBER

VER 1.00.1.9

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT4

SHEET 2 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	10–12		SANDY CLAY, LT. BROWN, ~~DK GRN~~ SOFT, MED. PLAST., MOIST	4/4 = %		
	12–16		CLAYEY SAND, LT. BROWN TO GREY, COHESIVE, FINE GRAIN, MOIST	3.5/4 = %		
	16–20		SAA, CLAY LENSE @ 18'	3/4 = %		DISCOLORATION AROUND 17'-18' BGS
	20–24		SAA, FINE TO MED. GRAIN, WET	2.75/4 = %		

01076969

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPTH

SHEET 3 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	25		SILTY SAND, REDDISH BROWN TO GREY, COHESIVE, FINE TO MED., WET	3.75/4 %		
	26					
	27			%		
	28		SAA	2/2 %		
	29		SANDY SILT, LT. BROWN, SOFT, WET			
	30		SILTY CLAY W/ SAND, LT. BROWN, SOFT, WET, LOW PLAST.	2/2 %		
	31					
	32		SILTY SAND, LT. BROWN, COHESIVE, FINE, WET	2/2 %		
	33		CLAYEY SILT W/ SAND, SOFT, WET			
	34		SAA	2/2 %		
	35					
	36		SILTY SAND, LT. BROWN, FINE, WET	%		
	37		SAA, COARSENING	2/2 %		
	38		SANDY SILT W/ CLAY, SOFT, WET	2/2 %		
	39					

ENG FORM 1836A, JUN 1967 PREVIOUS EDITIONS ARE OBSOLETE. (Translucent)

6. PROJECT

7. HOLE NUMBER

01076970

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT4

SHEET 4 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	40		CLAYEY SAND W/ SILT, LT. BROWN, FINE TO MED. WET	%		
	41		SAA	2/2 %		
	42		CLAY, STIFF, GREY, HIGH PLAST, WET			SET WELL @ 43' BGS, SCREEN 33'-43'
	43		SAA	1/1 %		
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		

ENG FORM 1836A, JUN 1987 PREVIOUS EDITIONS ARE OBSOLETE. (Translucent)

6. PROJECT

7. HOLE NUMBER

01076971

1. HOLE NUMBER

DRILLING LOG
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG

2. DIVISION

3. INSTALLATION
LHAAP

SHEET 1 OF 4 SHEETS

PROJECT
LHAAP 18/24

LOCATION (Coordinates or Station)
LHAAP

DRILLING AGENCY
WHE

HOLE NUMBER (as shown on drawing title and title number)
1824DPT5

NAME OF DRILLER
Kerri Powell

DIRECTION OF HOLE
[X] a. VERTICAL [ ] b. INCLINED c. DEG. FROM VERT.

10. THICKNESS OF OVERBURDEN —

11. DEPTH DRILLED INTO ROCK —

12. TOTAL DEPTH OF HOLE 42'

13. SIZE AND TYPE OF BIT 2¼" Diameter

14. DATUM FOR ELEVATION SHOWN (TBM or MSL)
—

15. MANUFACTURERS DESIGNATION OF DRILL
Geoprobe 7822DT

16. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	a. DISTURBED	b. UNDISTURBED
	—	—

17. TOTAL NUMBER CORE BOXES —

18. ELEVATION GROUND WATER —

19. DATE HOLE (YYYYMMDD)	a. STARTED	b. COMPLETED
	03/15/2021	03/15/2021

20. ELEVATION TOP OF HOLE (feet) —

21. TOTAL CORE RECOVERY FOR BORING % —

22. SIGNATURE OF INSPECTOR
A. Mann

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	1		SILTY CLAY, DARK BROWN TO RED, MED. PLAST, SOFT TO MED. STIFF, WET	2/4 %		
	2			%		
	3			%		
	4		SANDY CLAY W/ SILT, MOTLED LT. BROWN, RED & GREY, LOW PLAST., MED. STIFF, WET	4/4 %		
	5			%		
	6			%		
	7			%		
	8			%		
	9			%		

ENG FORM 1836, MAY 1971 PREVIOUS EDITIONS ARE OBSOLETE. (Translucent)

PROJECT

HOLE NUMBER

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT5

SHEET 2 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	10		SAA	4/4 %		
	11		CLAYEY SAND, LT. BROWN TO ORANGE, COHESIVE, FINE, WET	%		
	12		SANDY CLAY, LT. BROWN, HIGH PLAST., MED. STIFF, MOIST	%		
	13		CLAYEY SAND, LT. BROWN TO GREY, COHESIVE, FINE, MOIST	3.75/4 %		
	14			%		
	15			%		
	16		SILTY SAND W/ TRACE CLAY, ~~AAA~~ COHESIVE, FINE TO MED., MOIST	%		
	17			3/4 %		
	18			%		
	19			%		
	20		SAA	%		
	21			4/4 %		
	22		SANDY SILT W/ CLAY, LT. BROWN TO GREY, SOFT, WET	%		
	23			%		
	24			%		

ENG FORM 1836A, JUN 1967 PREVIOUS EDITIONS ARE OBSOLETE. *(Translucent)*

6. PROJECT

7. HOLE NUMBER

VERSION 1.0

01076973

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT5

SHEET 3 OF 4 SHEETS

3. PROJECT: LHAAP18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		25	SILTY CLAY W/ SAND, LT. BROWN TO GREY, SOFT TO MED. STIFF, MED. PLAST., WET	4/4 %		
		26		%		
		27		%		
		28	SILTY SAND, GREY, COHESIVE, FINE, WET	2/2 %		
		29		%		
		30	SAA	%		
		31	SILTY CLAY, LT. BROWN TO GREY, SOFT, MED. PLAST., WET	2/2 %		
		32	CLAYEY SILT, LT. BROWN, SOFT, WET	2/2 %		
		33		%		
		34	SAA	2/2 %		
		35		%		
		36	SILTY CLAY, LT. BROWN, MED. STIFF, ~~MED.~~ HIGH PLAST. WET	%		
		37	CLAYEY SAND, LT. BROWN, COHESIVE, FINE TO MED., WET	2/2 %		
		38	SAA	2/2 %		
		39		%		

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6. PROJECT

7. HOLE NUMBER

01076974

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT5

SHEET 4 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
			SAA	%		
	40					
			CLAY, LT. BROWN TO GREY, STIFF, HIGH PLAST., WET	2/2 %		SET WELL @ 42' BGS, SCREEN 32'-42'
	41					
	42					
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		

ENG FORM 1836A, JUN 1967 PREVIOUS EDITIONS ARE OBSOLETE. (Translucent)

6. PROJECT

7. HOLE NUMBER

01076975

1. HOLE NUMBER

DRILLING LOG For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG	2. DIVISION	3. INSTALLATION LHAAP	SHEET 1 OF 4 SHEETS
4. PROJECT LHAAP18/24		13. SIZE AND TYPE OF BIT 2 1/4" DIAMETER	
5. LOCATION (Coordinates or Station) LHAAP		14. DATUM FOR ELEVATION SHOWN (TBM or MSL) —	
6. DRILLING AGENCY WHE		15. MANUFACTURERS DESIGNATION OF DRILL GEOPROBE 7822DT	
7. HOLE NUMBER (as shown on drawing title and title number) 1824DPT6		16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN a. DISTURBED — b. UNDISTURBED —	
8. NAME OF DRILLER KERRI POWELL		17. TOTAL NUMBER CORE BOXES —	
9. DIRECTION OF HOLE X a. VERTICAL ☐ b. INCLINED c. DEG. FROM VERT.		18. ELEVATION GROUND WATER —	
10. THICKNESS OF OVERBURDEN —		19. DATE HOLE (YYYYMMDD) a. STARTED 03/15/2021 b. COMPLETED 03/15/2021	
11. DEPTH DRILLED INTO ROCK —		20. ELEVATION TOP OF HOLE (feet) —	
12. TOTAL DEPTH OF HOLE 43'		21. TOTAL CORE RECOVERY FOR BORING % —	
		22. SIGNATURE OF INSPECTOR D. Mason	

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	1		SILTY CLAY, REDDISH BROWN, MED. PLAST., SOFT, MOIST	%		
	2			2/4 %		
	3			%		
	4		SAA			
	5			%		
	6		SANDY CLAY, LT. BROWN TO GREY, MED. STIFF, LOW PLAST, MOIST	3/4 %		
	7			%		
	8			%		
	9			%		

ENG FORM 1836, MAR 1971 PREVIOUS EDITIONS ARE OBSOLETE (Translucent) PROJECT HOLE NUMBER

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT6

SHEET 2 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	10		SAA	3.5/4 %		
	11			%		
	12			%		
	13		SAA	3/4 %		
	14					
	15		CLAYEY SAND, MOTTLED LT. BROWN, ORANGE & GREY, COHESIVE, FINE, MOIST	%		
	16		SANDY CLAY W/ SILT, LT. BROWN TO ORANGE, SOFT, LOW PLAST., MOIST TO WET	%		
	17			3/4 %		
	18		CLAYEY SAND, LT. BROWN TO DARK BROWN, COHESIVE, FINE TO MED., WET	%		
	19			%		
	20		SAA, MED. TO COARSE	~~3.75~~ AM %		
	21			3/4 %		
	22			%		
	23			%		
	24					

ENG FORM 1836A, JUN 1967 PREVIOUS EDITIONS ARE OBSOLETE. *(Translucent)*

6. PROJECT

7. HOLE NUMBER

01076977

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT6

SHEET 3 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	25		SAA	%		
	26		SILTY CLAY, LT. GREY, SOFT, LOW PLAST., WET	3.75/4 %		
	27			%		
	28		CLAYEY SAND W/ SILT, LT. BROWN TO GREY, COHESIVE, FINE TO MED., WET	%		
	29		SILTY CLAY, LT. GREY, LOW PLAST., SOFT, WET	2/2 %		
	30		SILTY SAND, LT. BROWN, FINE TO MED, LOOSE, WET	%		
	31			2/2 %		
	32		SAA, INCREASED CLAY CONT.	%		
	33			2/2 %		
	34		SANDY SILT W/ CLAY, LT. BROWN, LOW PLAST., SOFT, WET	%		
	35			2/2 %		
	36		SAA	%		
	37			%		
	38			%		
	39			%		

ENG FORM 1836A, JUN 1987 PREVIOUS EDITIONS ARE OBSOLETE. (Translucent)

6. PROJECT

7. HOLE NUMBER

01076978

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT6

SHEET 4 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVE	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
			SAA	2/2 %		
	40		SILTY CLAY W/ SAND, LT. BROWN, SOFT, LOW TO MED. PLAST., WET	2/2 %		
	42		CLAY, STIFF LT. BROWN TO GREY, STIFF, HIGH PLAST., MOIST	1/1 %		SET WELL @ 43', SCREEN 33'-43'
	43			%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		

ENG FORM 1836A, JUN 1967 PREVIOUS EDITIONS ARE OBSOLETE. (Translucent)

6. PROJECT

7. HOLE NUMBER

01076979

1. HOLE NUMBER

DRILLING LOG
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG

2. DIVISION

3. INSTALLATION: LHAAP

SHEET 1 OF 4 SHEETS

4. PROJECT: LHAAP 18/24

5. LOCATION (Coordinates or Station): LHAAP

6. DRILLING AGENCY: WHE

7. HOLE NUMBER (as shown on drawing title and title number): 1824DPT7

8. NAME OF DRILLER: Kerri Powell

9. DIRECTION OF HOLE: [X] a. VERTICAL [ ] b. INCLINED c. DEG. FROM VERT.

10. THICKNESS OF OVERBURDEN: —

11. DEPTH DRILLED INTO ROCK: —

12. TOTAL DEPTH OF HOLE: 42'

13. SIZE AND TYPE OF BIT: 2¼" DIAMETER

14. DATUM FOR ELEVATION SHOWN (TBM or MSL): —

15. MANUFACTURERS DESIGNATION OF DRILL: GEOPROBE 7822DT

16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: a. DISTURBED —; b. UNDISTURBED —

17. TOTAL NUMBER CORE BOXES: —

18. ELEVATION GROUND WATER: —

19. DATE HOLE (YYYYMMDD): a. STARTED 03/15/2021; b. COMPLETED 03/15/2021

20. ELEVATION TOP OF HOLE (feet): —

21. TOTAL CORE RECOVERY FOR BORING %: —

22. SIGNATURE OF INSPECTOR: JL Moore

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	1		~~SILTY SAND~~ CLAYEY SILT, DARK BROWN TO REDDISH BROWN, SOFT, WET	2/4 %		
	2					
	3		CLAY, LT. BROWN TO REDDISH BROWN, STIFF, HIGH PLAST, MOIST	%		
	4					
	5		SAA	3.5/4 %		
	6					
	7			%		
	8					
	9			%		

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PROJECT

HOLE NUMBER

01076980

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT7

SHEET 2 OF 4 SHEETS

3. PROJECT: LHAAP 18/27

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		10	SAA	3.5/4 %		
		11	CLAYEY SAND W/ SILT, LT. BROWN, FINE, COHESIVE, MOIST	%		
		12				
		13	SAA, MED. TO COARSE	%		
		14		3.5/4 %		
		15		%		
		16				
		17	SAA	%		
		18		3.25/4 %		
		19		%		
		20				
		21	SAA, WET	%		
		22		4/4 %		
		23		%		
		24				

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6. PROJECT

7. HOLE NUMBER

VERSION 1.0

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT7

SHEET 3 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		25	SAA, INCREASING SILT CONTENT, WET	4/4 %		
		26				
		27		%		
		28	SILTY SAND, LT. BROWN TO GREY, COHESIVE, WET, FINE TO COARSE	2/2 %		
		29				
		30	SAA, MED. TO COARSE	%		
		31	SANDY SILT, LT. BROWN, SOFT, WET	2/2 %		
		32	CLAYEY SILT W/ SAND, LIGHT BROWN, SOFT, WET	2/2 %		
		33				
		34	SAA	2/2 %		
		35				
		36	SAA, SAND LENSE FROM 37'-37.5'	2/2 %		
		37				
		38	SAA, INCREASING SAND CONT.	2/2 %		
		39				

ENG FORM 1836A, JUN 1967 PREVIOUS EDITIONS ARE OBSOLETE. (Translucent)

6. PROJECT

7. HOLE NUMBER

01076982

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT7

SHEET 4 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
			SILTY CLAY, LT. BROWN TO ORANGISH BROWN, MED. STIFF, HIGH PLAST., WET	%		
	40					
			CLAY, MED. STIFF TO STIFF, LT. BROWN TO DARK BROWN/GREY, HIGH PLAST., WET	2/2 %		SET WELL @ 42' BGS, SCREEN 32-42
	41					
	42					
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		

ENG FORM 1836A, JUN 1967 PREVIOUS EDITIONS ARE OBSOLETE. (Translucent)

6. PROJECT

7. HOLE NUMBER

01076983

1. HOLE NUMBER

DRILLING LOG
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG

2. DIVISION

3. INSTALLATION: LHAAP

SHEET 1 OF 4 SHEETS

4. PROJECT: LHAAP 18/24

5. LOCATION (Coordinates or Station): LHAAP

6. DRILLING AGENCY: WHE

7. HOLE NUMBER (as shown on drawing title and title number): 1824DPT8

8. NAME OF DRILLER: Kerri Powell

9. DIRECTION OF HOLE: [X] a. VERTICAL [ ] b. INCLINED c. DEG. FROM VERT.

10. THICKNESS OF OVERBURDEN: —

11. DEPTH DRILLED INTO ROCK: —

12. TOTAL DEPTH OF HOLE

13. SIZE AND TYPE OF BIT: 2¼" DIAMETER

14. DATUM FOR ELEVATION SHOWN (TBM or MSL): —

15. MANUFACTURERS DESIGNATION OF DRILL: GEOPROBE 7822DT

16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: a. DISTURBED — b. UNDISTURBED —

17. TOTAL NUMBER CORE BOXES: —

18. ELEVATION GROUND WATER: —

19. DATE HOLE (YYYYMMDD): a. STARTED 03/15/2021 b. COMPLETED 03/15/2021

20. ELEVATION TOP OF HOLE (feet): —

21. TOTAL CORE RECOVERY FOR BORING %: —

22. SIGNATURE OF INSPECTOR: John Moore

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	1		CLAYEY SILT, DARK BROWN, SOFT, WET	2/4 %	—	
	2		SILTY CLAY, REDDISH BROWN, STIFF, HIGH PLAST., MOIST	4 %		
	4		SILTY CLAY W/ SAND, BROWN TO REDDISH BROWN, STIFF, MED. PLAST., MOIST	3.75/4 %		
	8			%		

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PROJECT

HOLE NUMBER

VERSION 1.0

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT8

SHEET 2 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	10			4/4 %		
	11		CLAYEY SAND, LT. BROWN, COHESIVE, FINE, MOIST	%		
	12		SANDY CLAY W/ SILT, BROWN, SOFT, LOW PLAST., MOIST	%		
	13			3.5/4 %		
	14		CLAYEY SAND W/ SILT, REDDISH BROWN, DARK BROWN, LT. BROWN, FINE TO MED., COHESIVE, WET	%		
	15			%		
	16			%		
	17		SAA, MED. TO COARSE, WET, DARK REDDISH BROWN TO REDDISH BROWN	4/4 %		
	18			%		
	19			%		
	20			%		
	21		SAA, LT. BROWN TO ORANGE	3.5/4 %		
	22			%		
	23			%		
	24			%		

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6. PROJECT

7. HOLE NUMBER

VERSION 1.0

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT8

SHEET 3 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	25		SAA	4/4 %		
	26					
	27			%		
	28					
	29		SAA	2/2 %		
	30					
	31		SANDY SILT, SOFT, LT. BROWN, FINE TO MED., WET	2/2 %		
	32		SAA, FINE GRAIN	2/2 %		
	33					
	34					
	35		SILTY SAND, LT. BROWN, COHESIVE, WET, FINE GRAIN	2/2 %		
	36		SAA	%		
	37		SANDY SILT, LT. BROWN, SOFT, WET	2/2 %		
	38		SILTY CLAY, MED STIFF, HIGH PLAST., LT. BROWN, WET	2/2 %		
	39					

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6. PROJECT

7. HOLE NUMBER

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT8

SHEET 4 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
			SANDY SILT, LT. BROWN TO ORANGE, FINE, SOFT, WET			
	40			0%		
			CLAY, STIFF, LT. BROWN TO GREY, HIGH PLAST., MOIST TO WET	2/2 100%		SET WELL @ 42' BGS, SCREEN 32'-42'
	42					
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		

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6. PROJECT

7. HOLE NUMBER

01076987

1. HOLE NUMBER

DRILLING LOG
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

2. DIVISION

3. INSTALLATION: LHAAP

SHEET 1 OF 4 SHEETS

4. PROJECT: LHAAP 18/24

5. LOCATION (Coordinates or Station): KARNACK, TX

6. DRILLING AGENCY: WHE

7. HOLE NUMBER (as shown on drawing title and title number): 1824DPT9

8. NAME OF DRILLER: KERRI POWELL

9. DIRECTION OF HOLE: [X] a. VERTICAL [ ] b. INCLINED c. DEG. FROM VERT.

10. THICKNESS OF OVERBURDEN: —

11. DEPTH DRILLED INTO ROCK: —

12. TOTAL DEPTH OF HOLE: 43' BGS

13. SIZE AND TYPE OF BIT: 2 1/4" DIAMETER

14. DATUM FOR ELEVATION SHOWN (TBM or MSL): —

15. MANUFACTURERS DESIGNATION OF DRILL: GEOPROBE 7822DT

16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: a. DISTURBED —; b. UNDISTURBED —

17. TOTAL NUMBER CORE BOXES: —

18. ELEVATION GROUND WATER: —

19. DATE HOLE (YYYYMMDD): a. STARTED 3/12/2021; b. COMPLETED 3/12/2021

20. ELEVATION TOP OF HOLE (feet): —

21. TOTAL CORE RECOVERY FOR BORING %: —

22. SIGNATURE OF INSPECTOR: [signature]

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		1	SILTY SAND, DARK BROWN TO REDDISH BROWN, FINE GRAIN, MOIST	3.75/4 %		
		2	SANDY CLAY, LT. BROWN, MED PLAST., MED. STIFF, MOIST	%		
		3		%		
		4	SAA, MOTLED REDDISH BROWN, LT. BROWN & GREY	4/4 %		
		5		%		
		6		%		
		7		%		
		8		%		
		9		%		

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PROJECT | HOLE NUMBER

VERSION 1.0

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT9

SHEET 2 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		10	SAA, INCREASING SAND CONTENT,	3.75/4		
		11				
		12	SAA, LT. BROWN TO GREY, MOIST	4/4		
		13				
		14				
		15				
		16	CLAYEY SAND, MOTTLED LT. BROWN, GREY & ORANGE, FINE TO MED. GRAIN, COHESIVE, DRY TO MOIST	4/4		
		17				
		18				
		19				
		20	SAA			
		21	SILTY SAND, LT. BROWN TO ORANGISH BROWN, FINE TO MED GRAIN, COHESIVE, WET	4/4		
		22				
		23				
		24				

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6. PROJECT

7. HOLE NUMBER

VERSION 1.0

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE	2. HOLE NUMBER	SHEET 3 OF 4 SHEETS
	1824DPT9	

PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	25		SANDY SILT, LT. BROWN TO ORANGE, FINE GRAIN, WET, COHESIVE	4/4 %		
	26			%		
	27			%		
	28		SAA, LT. BROWN TO GREY	%		
	29			4/4 %		
	30			%		
	31			%		
	32		SAA, SOME CLAY, WET	%		
	33			4/4 %		
	34			%		
	35			%		
	36		SAA	1/1 %		
	37		SAA	1/1 %		
	38		SAA	1/1 %		
	39		INCREASING CLAY CONT.	%		

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT9

SHEET 4 OF 4 SHEETS

PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	40			%		
	41			%		
	42		CLAY, LT. BROWN, STIFF, HIGH PLAST., WET	1/1 %		SET WELL @ 43' BGS, SCREEN 33'-43'
	43			%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		

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6. PROJECT

7. HOLE NUMBER

VERSION 1.0

01076991

1. HOLE NUMBER

DRILLING LOG
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

2. DIVISION

3. INSTALLATION: LHAAP

SHEET 1 OF 4 SHEETS

4. PROJECT: LHAAP 18/24

5. LOCATION *(Coordinates or Station)*: LHAAP

6. DRILLING AGENCY: WHE

7. HOLE NUMBER *(as shown on drawing title and title number)*: ~~KERRI POWELL~~ JM 1824DPT10

8. NAME OF DRILLER: KERRI POWELL

9. DIRECTION OF HOLE: [X] a. VERTICAL [ ] b. INCLINED c. DEG. FROM VERT.

10. THICKNESS OF OVERBURDEN: —

11. DEPTH DRILLED INTO ROCK: —

12. TOTAL DEPTH OF HOLE

13. SIZE AND TYPE OF BIT: 2 1/4" DIAMETER

14. DATUM FOR ELEVATION SHOWN *(TBM or MSL)*: —

15. MANUFACTURERS DESIGNATION OF DRILL: GEOPROBE 7822DT

16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: a. DISTURBED —; b. UNDISTURBED —

17. TOTAL NUMBER CORE BOXES: —

18. ELEVATION GROUND WATER: —

19. DATE HOLE *(YYYYMMDD)*: a. STARTED 03/12/2021; b. COMPLETED 03/12/2021

20. ELEVATION TOP OF HOLE *(feet)*: —

21. TOTAL CORE RECOVERY FOR BORING %: —

22. SIGNATURE OF INSPECTOR: JM Moore

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS *(Description)*	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS *(Drilling Time, water loss, depth of weathering, etc., if significant)*
		1	SANDY/SILTY CLAY, DARK BROWN, LOW PLAST, MED. STIFF, MOIST	2.75/4 = %		
		2		%		
		3		%		
		4		%		
		5	SAA, STIFF, MED. PLAST., LT. BROWN TO GREY	3.5/4 = %		
		6		%		
		7		%		
		8		%		
		9	CLAY, LT. BROWN TO GREY, HIGH PLAST., STIFF, MOIST	%		

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT10

SHEET 2 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS *(Description)*	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS *(Drilling Time, water loss, depth of weathering, etc., if significant)*
		10		%		
				4/4		
		11		%		
		12				
			SAA	%		
		13				
			SANDY CLAY, SOME SAND LENSES THROUGHOUT, MOTTLED LT. BROWN, DARK BROWN & GREY, LOW PLAST., MED. STIFF, MOIST TO WET	3/4		
		14		%		
		15		%		
		16				
			SAA	%		
		17				
				4/4		
		18		%		
			CLAYEY SAND W/ SILT, LT. BROWN TO GREY, FINE, COHESIVE, MOIST			
		19		%		
		20				
			SILTY CLAY W/ TRACE SAND, LT. BROWN TO GREY, LOW PLAST., SOFT, MOIST	%		
		21				
				4/4		
		22		%		
		23				
		24		%		

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT10

SHEET 3 OF 4 SHEETS

PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	25		SILTY CLAY, LT. BROWN TO ORANGE-BROWN, MED. STIFF, ~~MED. PLAST.~~, MOIST TO WET HIGH PLASTICITY	3/4 %		
	26					
	27			%		
	28		CLAYEY SAND W/ SILT, LT. BROWN, COHESIVE, FINE GRAIN, WET	4/4 %		
	29					
	30			%		
	31			%		
	32		CLAYEY SILT, LT. BROWN, LOW PLAST., SOFT, WET	3/4 %		1540 - LINER STUCK DOWN IN HOLE, ALL RODS
	33					1600 - SAMPLE RETRIEVED, CONT. DRILLING
	34			%		
	35			%		
	36		SILTY SAND, LT. BROWN, COHESIVE, FINE, WET	1/1		
	37		SAA	1/1 %		
	38		SAA	%		
	39					

01076994

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT10

SHEET 2 OF 4 SHEETS

PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		40	SAA, SAND COARSENING NEAR 40'	2/2		
		41				
		42	SAA, INCREASING CLAY NEAR 42'	2/2		SET WELL @ 43' BGS, SCREEN 33'-43'
		43	CLAY, LT. BROWN TO GREY, HIGH PLAST. STIFF, MOIST			

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6. PROJECT

7. HOLE NUMBER

VERSION 1.0

01076995

1. HOLE NUMBER

DRILLING LOG
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

2. DIVISION

3. INSTALLATION: LHAAP

SHEET 1 OF 4 SHEETS

4. PROJECT: LHAAP 18/24

5. LOCATION (Coordinates or Station): LHAAP

6. DRILLING AGENCY: WHE

7. HOLE NUMBER (as shown on drawing title and title number): 1824DPT11

8. NAME OF DRILLER: KERRI POWELL

9. DIRECTION OF HOLE: ☒ a. VERTICAL ☐ b. INCLINED c. DEG. FROM VERT.

10. THICKNESS OF OVERBURDEN: —

11. DEPTH DRILLED INTO ROCK: —

12. TOTAL DEPTH OF HOLE

13. SIZE AND TYPE OF BIT: 2¼" DIAMETER

14. DATUM FOR ELEVATION SHOWN (TBM or MSL): —

15. MANUFACTURERS DESIGNATION OF DRILL: GEOPROBE 7822DT

16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: a. DISTURBED —; b. UNDISTURBED —

17. TOTAL NUMBER CORE BOXES: —

18. ELEVATION GROUND WATER: —

19. DATE HOLE (YYYYMMDD): a. STARTED 03/13/2021; b. COMPLETED 03/13/2021

20. ELEVATION TOP OF HOLE (feet): —

21. TOTAL CORE RECOVERY FOR BORING %: —

22. SIGNATURE OF INSPECTOR: JM Moore

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		1	SILTY CLAY, DARK BROWN, LOW TO MED PLAST., SOFT, WET	2/4 %		
		2				
		3		%		
		4				
		5	SANDY CLAY, MOTTLED LT. BROWN, GREY & RED, MED. PLAST., MED. STIFF, MOIST	4/4 %		
		6				
		7	SAND LENSE FROM 7'-9' BGS	%		
		8				
		9	SAA, LT. BROWN	%		

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PROJECT

HOLE NUMBER

VERSION 1.0

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT11

SHEET 2 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		10		4/4 %		
		11		%		
		12	CLAYEY SAND, LT. BROWN TO GREY, COHESIVE, FINE, MOIST	%		
		13		4/4 %		
		14		%		
		15		%		
		16	SANDY CLAY, LT. BROWN, LOW PLAST., MED. STIFF, MOIST	%		
		17		4/4 %		
		18		%		
		19		%		
		20	SILTY CLAY, MOTTLED LT. BROWN & GREY, MED. PLAST., SOFT, WET	%		
		21		4/4 %		
		22		%		
		23		%		
		24				

01076997

DRILLING LOG (Continuation Sheet) For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.	1. ELEVATION TOP OF HOLE	2. HOLE NUMBER 1824DPT11	SHEET 3 OF 4 SHEETS
3. PROJECT LHAAP 18/24		4. INSTALLATION LHAAP	

5 ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		25	SANDY SILT, GREY, COHESIVE, FINE GRAIN, WET.	4/4 %		
		26		%		
		27		%		
		28	SAA	2/2 %		
		29	SILTY SAND, LT. BROWN, FINE TO MED., COHESIVE, WET			
		30	SILT, LT. BROWN, COHESIVE, WET, SOFT	2/2 %		
		31				
		32	~~SANDY SILT~~ SM LT. BROWN, COHESIVE, SOFT, WET, FINE SILTY SAND	2/2 %		
		33				
		34	SAA, FINE TO MED. GRAIN	2/2 %		
		35				
		36	SAA	2/2 %		
		37				
		38	SAA	2/2 %		
		39				

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01076998

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE	2. HOLE NUMBER	SHEET 4 OF 4 SHEETS
	1824DPT11	

3. PROJECT	4. INSTALLATION
LHAAP 18/29	LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
			SANDY SILT, LT. BROWN, WET	%		
	40					SET WELL @ 42' BGS, SCREEN 32'-42'
			CLAY, LT. BROWN, HIGH PLAST, SOFT, MOIST	2/2 %		
	42					
	43			%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		

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6. PROJECT

7. HOLE NUMBER

01076999

1. HOLE NUMBER

DRILLING LOG
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

2. DIVISION

3. INSTALLATION

SHEET 1 OF 4 SHEETS

4. PROJECT
LWAAP 18/24

5. LOCATION *(Coordinates or Station)*
LWAAP

6. DRILLING AGENCY
WHE

7. HOLE NUMBER *(as shown on drawing title and title number)*
1824DPT12

8. NAME OF DRILLER
KERRI POWELL

9. DIRECTION OF HOLE
☒ a. VERTICAL ☐ b. INCLINED c. DEG. FROM VERT.

10. THICKNESS OF OVERBURDEN —

11. DEPTH DRILLED INTO ROCK —

12. TOTAL DEPTH OF HOLE

13. SIZE AND TYPE OF BIT 2¼" DIAMETER

14. DATUM FOR ELEVATION SHOWN *(TBM or MSL)* —

15. MANUFACTURERS DESIGNATION OF DRILL
GEOPROBE 7822DT

16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN — a. DISTURBED — b. UNDISTURBED —

17. TOTAL NUMBER CORE BOXES —

18. ELEVATION GROUND WATER —

19. DATE HOLE *(YYYYMMDD)* a. STARTED 03/13/2021 b. COMPLETED 03/13/2021

20. ELEVATION TOP OF HOLE *(feet)* —

21. TOTAL CORE RECOVERY FOR BORING % —

22. SIGNATURE OF INSPECTOR
Jake Moore

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS *(Description)*	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS *(Drilling Time, water loss, depth of weathering, etc., if significant)*
		1	CLAYEY SILT, TRACE SAND, LT. BROWN, LOW PLAST., SOFT, WET	2/4 %		
		2		%		
		3		%		
		4				
		5	SILTY CLAY, LT. BROWN TO GREY, HIGH PLAST., MED. STIFF, MOIST	3.5/4' %		
		6		%		
		7	CLAYEY SILT, LT. BROWN, SOFT, WET			
		8		%		
		9		%		

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PROJECT 1

HOLE NUMBER

VERSION 1.0

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT12

SHEET 2 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS *(Description)*	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS *(Drilling Time, water loss, depth of weathering, etc., if significant)*
	10		SANDY CLAY, LT. BROWN TO GREY, MED. PLAST., MED. STIFF, MOIST	4/4 %		
	11		SAND LENSE @ 11' BGS	%		
	12		SAA	%		
	13					
	14		SAND, LT. BROWN TO ORANGE, COHESIVE, FINE GRAIN, MOIST	4/4 %		
	15			%		
	16					
	17		SAA	%		
	18			3/4 %		
	19		CLAYEY SAND, W/ SILT, COHESIVE, LT. BROWN TO GREY, FINE, MOIST	%		
	20		SAA			
	21		SAND, LT. BROWN TO REDDISH BROWN, LOOSE, FINE TO MED. GRAIN, MOIST	2.75/4 %		
	22					
	23					
	24			%		

ENG FORM 1836A, JUN 1967 PREVIOUS EDITIONS ARE OBSOLETE. *(Translucent)*

6. PROJECT

7. HOLE NUMBER

VERSION 1.0

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT12

SHEET 3 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	25		SILTY CLAY W/ SAND, LT. BROWN TO GREY, LOW PLAST., SOFT, MOIST	4/4 %		
	26					
	27		SILTY SAND, GREY, LOOSE, FINE, MOIST	%		
	28		SANDY SILT, LT. BROWN, TRACE CLAY, LOW PLAST., SOFT, COHESIVE, WET, FINE GRAIN	%		
	29			4/4 %		
	30					
	31			%		
	32		SILT, LT. BROWN, SOFT, COHESIVE, FINE, WET	%		
	33			4/4 %		
	34					
	35			%		
	36		SAA	%		
	37		SANDY SILT, LT. BROWN, FINE GRAIN, SOFT, WET	2/2 %		
	38					
	34			%		

ENG FORM 1836A, JUN 1967 PREVIOUS EDITIONS ARE OBSOLETE. (Translucent)

6. PROJECT

7. HOLE NUMBER

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT12

SHEET 4 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		40	SAA	2/2 %		
		41	SAA	2/2 %		
		42	CLAY, GREY, HIGH PLAST., MED. STIFF, WET			SET WELL @ 43' BGS, SCREEN 33'-43'
		43	SAA, STIFF, LT. BROWN TO GREY	1/1 %		
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		

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6. PROJECT

7. HOLE NUMBER

01077003

1. HOLE NUMBER

DRILLING LOG
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

2. DIVISION

3. INSTALLATION: LHAAP

SHEET 1 OF 4 SHEETS

4. PROJECT: LHAAP 18/24

5. LOCATION *(Coordinates or Station)*: LHAAP

6. DRILLING AGENCY: WHE

7. HOLE NUMBER *(as shown on drawing title and title number)*: 1824DPT13

8. NAME OF DRILLER: Kerri Powell

9. DIRECTION OF HOLE
☒ a. VERTICAL ☐ b. INCLINED c. DEG. FROM VERT.

10. THICKNESS OF OVERBURDEN: —

11. DEPTH DRILLED INTO ROCK: —

12. TOTAL DEPTH OF HOLE: 43' 0GS

13. SIZE AND TYPE OF BIT: 2¼" DIAMETER

14. DATUM FOR ELEVATION SHOWN *(TBM or MSL)*: —

15. MANUFACTURERS DESIGNATION OF DRILL: GEOPROBE 7822DT

16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: a. DISTURBED —; b. UNDISTURBED —

17. TOTAL NUMBER CORE BOXES: —

18. ELEVATION GROUND WATER: —

19. DATE HOLE *(YYYYMMDD)*: a. STARTED 03/13/2021; b. COMPLETED 03/13/2021

20. ELEVATION TOP OF HOLE *(feet)*: —

21. TOTAL CORE RECOVERY FOR BORING %: —

22. SIGNATURE OF INSPECTOR: J. Moore

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS *(Description)*	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS *(Drilling Time, water loss, depth of weathering, etc., if significant)*
		1	SANDY SILT, DARK BROWN TO LIGHT BROWN, SOFT, FINE TO MED., WET	2/4 %		
		2		%		
		3		%		
		4	CLAY, MOTTLED LT. BROWN, RED & GREY, HIGH PLAST., MED. STIFF, MOIST	3/4 %		
		5		%		
		6		%		
		7		%		
		8		%		
		9		%		

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT13

SHEET 2 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS *(Description)*	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS *(Drilling Time, water loss, depth of weathering, etc., if significant)*
	10		SANDY CLAY, LT. BROWN TO GREY, LOW PLAST., MED. STIFF, MOIST	4/4 %		
	11			%		
	12			%		
	13		SAA	2/4 %		
	14			%		
	15		SILTY SAND, MOTTLED LT. BROWN, GREY & ORANGE, FINE, COHESIVE, DRY TO MOIST	%		
	16		CLAYEY SAND, LT. BROWN TO ORANGE, COHESIVE, FINE GRAIN, MOIST	%		
	17			%		
	18			3/4 %		
	19			%		
	20			%		
	21		SAA, COARSENING NEAR BOTTOM	%		
	22			3/4 %		
	23			%		
	24			%		

DRILLING LOG (Continuation Sheet) For use of this form, see EM 1110-1-1804 the proponent agency is CECW-EG.	1. ELEVATION TOP OF HOLE	2. HOLE NUMBER 1824DPT13	SHEET 3 OF 4 SHEETS
3. PROJECT LHAAP 18/24		4. INSTALLATION LHAAP	

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
			SAA	%		
	25		SILTY CLAY, LT. BROWN TO ORANGE, HIGH PLAST., ~~MOIST~~ SOFT, MOIST	3.5/4 %		
	26					
	27		SILTY SAND, LT. BROWN TO GREY, FINE TO MED., MOIST	%		
	28		SAA	%		
	29		SILT, LT. BROWN TO GREY, SOFT, MOIST TO WET	4/4 %		
	30					
	31			%		
	32		SAA, WET	%		
	33			4/4 %		
	34					
	35			%		
	36		SANDY SILT, LT. BROWN TO GREY, SOFT, COHESIVE, WET	2/2 %		
	37					
	38		SAA	2/2 %		
	39					

6. PROJECT	7. HOLE NUMBER

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT13

SHEET 4 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	40		SILTY SAND, LT. BROWN, COHESIVE, FINE TO MED, WET	%		
	41		SAA, WET	2/2 %		
	42		CLAY, LT. BROWN TO ORANGE, WET			
	43		CLAY, LT. GROWN TO GREY, HIGH PLAST, MED. STIFF, WET	1/1 %		SET WELL @ 43' BGS, SCREEN 33'-43'
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		

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6. PROJECT

7. HOLE NUMBER

01077007

1. HOLE NUMBER

DRILLING LOG
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

2. DIVISION

3. INSTALLATION: LHAAP

SHEET 1 OF 4 SHEETS

4. PROJECT: LHAAP 18/24

5. LOCATION (Coordinates or Station): LHAAP

6. DRILLING AGENCY: WHE

7. HOLE NUMBER (as shown on drawing title and title number): 1824DPT14

8. NAME OF DRILLER: Kerri Powell

9. DIRECTION OF HOLE: [X] a. VERTICAL [ ] b. INCLINED c. DEG. FROM VERT.

10. THICKNESS OF OVERBURDEN: —

11. DEPTH DRILLED INTO ROCK: —

12. TOTAL DEPTH OF HOLE: 44' BGS

13. SIZE AND TYPE OF BIT: 2¼" DIAMETER

14. DATUM FOR ELEVATION SHOWN (TBM or MSL): —

15. MANUFACTURERS DESIGNATION OF DRILL: Geoprobe 7822DT

16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: a. DISTURBED —; b. UNDISTURBED —

17. TOTAL NUMBER CORE BOXES: —

18. ELEVATION GROUND WATER: —

19. DATE HOLE (YYYYMMDD): a. STARTED 03/13/2021; b. COMPLETED 03/13/2021

20. ELEVATION TOP OF HOLE (feet): —

21. TOTAL CORE RECOVERY FOR BORING %: —

22. SIGNATURE OF INSPECTOR: John Moore

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		1	SILTY CLAY, DARK BROWN TO RED, MED. PLAST., MED. STIFF, MOIST	2.5/4 = %		
		2	SANDY SILT, LT. BROWN, SOFT, WET	%		
		3		%		
		4	CLAY, MOTTLED LT. BROWN, GREY, REDDISH BROWN, MED. STIFF, HIGH PLAST., MOIST	%		
		5		%		
		6		3/4 = %		
		7		%		
		8		%		
		9		%		

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PROJECT

HOLE NUMBER

VERSION 1.0

01077008

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT14

SHEET 2 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	10		SILTY CLAY W/ SAND, LT. BROWN TO GREY, STIFF, LOW PLAST., MOIST	4/4		
	12					
	13		SAA	4/4		
	14					
	15		CLAYEY SAND, LT. BROWN TO GREY, FINE TO MED., COHESIVE, MOIST			
	16					
	17		SAA	3.75/4		
	18					
	19					
	20					
	21		SANDY CLAY, LT. BROWN TO GREY, LOW PLAST., MED. STIFF, MOIST	2.5/4		
	22		CLAYEY SAND, LT. BROWN TO GREY, COHESIVE, FINE GRAIN, MOIST			
	23					
	24					

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT14

SHEET 3 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	25		SAA	%		
	26		SANDY CLAY, MOTTLED LT. BROWN, REDDISH BROWN & GREY, MED. STIFF, HIGH PLAST., MOIST	3.5/4 %		
	27			%		
	28		SILTY SAND, LT. BROWN TO GREY, COHESIVE, FINE, WET	%		
	29		SILTY CLAY, LT. BROWN, MED. PLAST., SOFT, WET	4/4 %		
	30			%		
	31		CLAYEY SAND, LT. BROWN TO GREY, COHESIVE, FINE, WET.	%		1245 - SLEEVE STUCK DOWN IN HOLE
	32		SAA			1300 - SAMPLE RETRIEVED
	33		SILT, LT. BROWN TO GREY, SOFT, WET	2/4 %		
	34			%		
	35					1315 - SLEEVE STUCK DOWN IN HOLE
	36		SAA, LT. BROWN	%		1330 - SAMPLE RETRIEVED
	37			1/2 %		
	38		SANDY SILT, LT. BROWN, SOFT, WET, FINE			
	39			1/2 %		

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6. PROJECT

7. HOLE NUMBER

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824 DPT 14

SHEET 4 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	40			%		
	41		SILTY SAND, LT. BROWN, COHESIVE, FINE, WET	1.75/2 %		
	42					1410 - SLEEVE STUCK DOWN IN HOLE
	43		CLAY, LT. BROWN TO GREY, HIGH PLAST, STIFF, WET	2/2 %		1420 - SAMPLE RETRIEVED SET WELL @ 44' BGS, SCREEN 34'-44'
	44			%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		

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6. PROJECT

7. HOLE NUMBER

01077011

1. HOLE NUMBER

DRILLING LOG
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

2. DIVISION

3. INSTALLATION: LHAAP

SHEET 1 OF 4 SHEETS

4. PROJECT: LHAAP 18/24

5. LOCATION (Coordinates or Station): LHAAP

6. DRILLING AGENCY: WHE

7. HOLE NUMBER (as shown on drawing title and title number): 1824DPT15

8. NAME OF DRILLER: Kerri Powell

9. DIRECTION OF HOLE: ☒ a. VERTICAL ☐ b. INCLINED c. DEG. FROM VERT.

10. THICKNESS OF OVERBURDEN: —

11. DEPTH DRILLED INTO ROCK: —

12. TOTAL DEPTH OF HOLE

13. SIZE AND TYPE OF BIT: 2¼" DIAMETER

14. DATUM FOR ELEVATION SHOWN (TBM or MSL): —

15. MANUFACTURERS DESIGNATION OF DRILL: GEOPROBE 7822DT

16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: a. DISTURBED —; b. UNDISTURBED —

17. TOTAL NUMBER CORE BOXES: —

18. ELEVATION GROUND WATER: —

19. DATE HOLE (YYYYMMDD): a. STARTED 03/13/2021; b. COMPLETED 03/13/2021

20. ELEVATION TOP OF HOLE (feet): —

21. TOTAL CORE RECOVERY FOR BORING %: —

22. SIGNATURE OF INSPECTOR: JL Moore

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		1	SILTY CLAY, REDDISH BROWN, HIGH PLAST., MED. STIFF, MOIST	2/4 %		
		2	ASH/FILL			
		3	SANDY SILT, DARK BROWN TO GREY, SOFT, MOIST	%		
		4	SILTY CLAY, TRACE SAND, ~~STIFF~~ LT. BROWN TO GREY, HIGH PLAST., STIFF, MOIST	%		
		5		~~2.5~~ %		
		6		2/4 %		
		7		%		
		8		%		
		9		%		

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PROJECT

HOLE NUMBER

VERSION 1.0

01077012

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT15

SHEET 2 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	10		SAA	%		
	11		CLAYEY SAND, LT. BROWN, FINE TO MED., COHESIVE, WET	3.75/4 %		
	12		SILTY CLAY W/ SAND, MOTTLED LT. BROWN & GREY, MED. STIFF, MED. PLAST., MOIST	%		
	13		CLAYEY SAND W/ SILT, LT. BROWN TO GREY, FINE GRAIN, WET	%		
	14			3.5/4 %		
	15			%		
	16			%		
	17		SAA, CLAY LENSES THROUGHOUT	%		
	18			2/4 %		
	19		SAAD, ORANGE, FINE TO MED, LOOSE, MOIST	%		
	20		SANDY SILT, MOTTLED LT. BROWN, GREY & ORANGE, SOFT, ~~HIGH~~ MED. PLAST., MOIST	%		
	21			3.5/4 %		
	22			%		
	23			%		
	24			%		

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6. PROJECT

7. HOLE NUMBER

VERSION 1.0

01077013

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT15

SHEET 3 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	25		SAA, SAND LENSE @ 24'	%		
	26		SILTY SAND W/ TRACE CLAY, MOTTLED LT. BROWN, ORANGE & GREY, FINE GRAIN, COHESIVE, MOIST	3.5/4 %		
	27			%		
	28		SAA, WET	2/2 %		
	29					
	30		CLAY, LT. BROWN TO GREY, HIGH PLAST., MED. STIFF, MOIST	%		
	31		SILTY SAND, LT. BROWN, COHESIVE, FINE TO MED. GRAIN, WET	2/2 %		
	32		SAA, LT. BROWN TO GREY	2/2 %		
	33					
	34		SANDY SILT, LT. BROWN, SOFT, WET	%		
	35		SILTY SAND, LT. BROWN TO GREY, COHESIVE, FINE TO MED., WET	2/2 %		
	36		SAA	%		
	37			2/2 %		
	38		SAA	2/2 %		
	39					

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6. PROJECT

7. HOLE NUMBER

01077014

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT15

SHEET 4 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		40		%		
		41	SAA, INCREASING SILT CONTENT	2/2 %		
		42	~~ST~~ CL CLAY, LT. BROWN, MED. STIFF, HIGH PLAST., WET	1/1 %		43' BGS SET WELL @ ~~48' BGS~~ SCREEN ~~34'-44'~~ 33'-43'
		43		2/2 %		
		44		%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		

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6. PROJECT

7. HOLE NUMBER

01077015

1. HOLE NUMBER

DRILLING LOG
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

2. DIVISION

3. INSTALLATION: LHAAP

SHEET 1 OF 4 SHEETS

4. PROJECT: LHAAP 18/24

5. LOCATION (Coordinates or Station): LHAAP

6. DRILLING AGENCY: WHE

7. HOLE NUMBER (as shown on drawing title and title number): 1824DPT16

8. NAME OF DRILLER: Kerri Powell

9. DIRECTION OF HOLE: [X] a. VERTICAL [ ] b. INCLINED c. DEG. FROM VERT.

10. THICKNESS OF OVERBURDEN: —

11. DEPTH DRILLED INTO ROCK: —

12. TOTAL DEPTH OF HOLE: 43'

13. SIZE AND TYPE OF BIT: 2 ¼" DIAMETER

14. DATUM FOR ELEVATION SHOWN (TBM or MSL): —

15. MANUFACTURERS DESIGNATION OF DRILL: Geoprobe 7822DT

16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: a. DISTURBED —; b. UNDISTURBED —

17. TOTAL NUMBER CORE BOXES: —

18. ELEVATION GROUND WATER: —

19. DATE HOLE (YYYYMMDD): a. STARTED 03/14/2021; b. COMPLETED 03/14/2021

20. ELEVATION TOP OF HOLE (feet): —

21. TOTAL CORE RECOVERY FOR BORING %: —

22. SIGNATURE OF INSPECTOR: [signature]

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		1	SILTY CLAY, DARK BROWN, LOW PLAST., SOFT, MOIST	1.75/4 = %		
		2		%		
		3		%		
		4	SANDY CLAY W/ SILT, MOTTLED LT. BROWN, DARK BROWN & GREY, ~~LOW~~ STIFF, MED. PLAST., MOIST	3/4 = %		
		5		%		
		6		%		
		7		%		
		8		%		
		9		%		

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PROJECT

HOLE NUMBER

VERSION 1.0

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DBT16

SHEET 2 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	10		SAA, MED. STIFF, LOW PLAST.	4/4 = %		
	11			%		
	12		SAA, SOFT	%		
	13					
	14			3.75/4 = %		
	15			%		
	16		CLAYEY SAND, LT. BROWN TO GREY, COHESIVE, FINE GRAIN, MOIST	%		
	17					
	18			3.75/4 = %		
	19					
	20			%		
	21		SAA, FINE TO MED., MOIST	%		
	22			%		
	23					
	24			%		

01077017

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: LB24DPT16

SHEET 3 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	25		SAA	%		
	26		SILTY CLAY, LT. BROWN TO GREY, HIGH PLAST., STIFF, MOIST TO WET	4/4 %		
	27		CLAYEY SAND, LT. BROWN TO GREY, COHESIVE, FINE TO MED., WET	%		
	28		SAA	2/2 %		
	29		CLAYEY SILT W/ SAND, LT. BROWN TO GREY, LOW PLAST., WET, SOFT	%		
	30		SAA, INCREASING SAND CONTENT	2/2 %		
	31			%		
	32		SAA	2/2 %		
	33		SILTY CLAY W/ SAND, LT. BROWN TO GREY, SOFT, LOW PLAST., WET	%		
	34		SILTY SAND, LT. BROWN TO GREY, FINE TO MED., COHESIVE, WET	2/2 %		
	35			%		
	36		SAA	2/2 %		
	37			%		
	38			%		
	39					

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6. PROJECT

7. HOLE NUMBER

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT16

SHEET 4 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
			SAND SILT, LT. BROWN, COHESIVE, SOFT, WET	2/2 %		
		40	SANDY CLAY W/ SILT, LT. BROWN TO GREY, SOFT, LOW PLAST, WET	2/2 %		SEE WELL @ 33'-43' BGS
		41				
		42	CLAY, LT. BROWN TO GREY, HIGH PLAST., STIFF, MOIST TO WET	1/1 %		
		43		%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		

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6. PROJECT

7. HOLE NUMBER

01077019

1. HOLE NUMBER

DRILLING LOG For use of this form, see EM 1110-1-1804, the proponent agency is CECW-EG	2. DIVISION	3. INSTALLATION LHAAP	SHEET 1 OF 3 SHEETS

4. PROJECT LHAAP 18/24	13. SIZE AND TYPE OF BIT 2¼" DIAMETER
5. LOCATION (Coordinates or Station) LHAAP	14. DATUM FOR ELEVATION SHOWN (TBM or MSL) —
6. DRILLING AGENCY WHE	15. MANUFACTURERS DESIGNATION OF DRILL GEOPROBE 7822DT
7. HOLE NUMBER (as shown on drawing title and title number) 1824DPT17	16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: a. DISTURBED —; b. UNDISTURBED —
8. NAME OF DRILLER KERRI POWELL	17. TOTAL NUMBER CORE BOXES —
9. DIRECTION OF HOLE ☑ a. VERTICAL ☐ b. INCLINED c. DEG. FROM VERT.	18. ELEVATION GROUND WATER —
10. THICKNESS OF OVERBURDEN —	19. DATE HOLE (YYYYMMDD): a. STARTED 03/19/2021; b. COMPLETED 03/19/2021
11. DEPTH DRILLED INTO ROCK —	20. ELEVATION TOP OF HOLE (feet) —
12. TOTAL DEPTH OF HOLE 30' BGS	21. TOTAL CORE RECOVERY FOR BORING % —
	22. SIGNATURE OF INSPECTOR Josh Moore

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	1		CLAYEY SILT W/ SAND, DARK BROWN TO LT. BROWN, SOFT, WET	4/4 %		
	2					
	3			%		
	4		~~CLAYEY SAND, LT. BROWN, FINE TO MED., DRY TO MOIST~~			
	5		SANDY CLAY, LT. BROWN TO REDDISH BROWN, STIFF, MED PLAST., DRY TO MOIST	4/4 %		
	6					
	7			%		
	8		CLAYEY SAND, LT. BROWN, COHESIVE, FINE TO MED., DRY TO MOIST	4/4 %		
	9					

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PROJECT HOLE NUMBER

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT17

SHEET 2 OF 3 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS *(Description)*	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS *(Drilling Time, water loss, depth of weathering, etc., if significant)*
		10		%		
		11		%		
		12				
		13	SAA	% 4/4		
		14		%		
		15		%		
		16				
		17	SILTY CLAY, TRACE SAND, LT. BROWN TO REDDISH BROWN, SOFT, MED. PLAST., MOIST	%		
		18		3.5/4 %		
		19				
		20	INCREASING SAND CONT.	%		
		21	SANDY CLAY, REDDISH BROWN TO ORANGE, SOFT, LOW PLAST., MOIST	%		
		22		3.5/4 %		
		23				
		24		%		

01077021

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 824DPT17

SHEET 3 OF 3 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
			SAA			
	25		CLAYEY SAND, LT. BROWN TO GREY, COHESIVE, ~~FINE~~ TO COARSE, WET	3.5/4 %		
	26					
	27			%		
	28		SAA	2/2 %		
	29		CLAY, LT. BROWN TO GREY, STIFF, HIGH PLAST., WET			SET WELL @ 30' BGS, SCREEN 20'-30'
	30			%		SOIL SAMPLES COLLECTED @ 29' BGS
	31					
	32			%		
	33			%		
	34			%		
	35			%		
	36			%		
	37			%		
	38			%		
	39			%		

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6. PROJECT

7. HOLE NUMBER

01077022

1. HOLE NUMBER

DRILLING LOG
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

2. DIVISION

3. INSTALLATION: LHAAP

SHEET 1 OF 3 SHEETS

4. PROJECT: LHAAP 18/24

5. LOCATION (Coordinates or Station): LHAAP

6. DRILLING AGENCY: WHE

7. HOLE NUMBER (as shown on drawing title and title number): 1824DPT18

8. NAME OF DRILLER: KERRI POWELL

9. DIRECTION OF HOLE: [X] a. VERTICAL [ ] b. INCLINED c. DEG. FROM VERT.

10. THICKNESS OF OVERBURDEN: —

11. DEPTH DRILLED INTO ROCK: —

12. TOTAL DEPTH OF HOLE: 30' BGS

13. SIZE AND TYPE OF BIT: 2¼" DIAMETER

14. DATUM FOR ELEVATION SHOWN (TBM or MSL): —

15. MANUFACTURERS DESIGNATION OF DRILL: GEOPROBE 7822DT

16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: a. DISTURBED — b. UNDISTURBED —

17. TOTAL NUMBER CORE BOXES: —

18. ELEVATION GROUND WATER: —

19. DATE HOLE (YYYYMMDD): a. STARTED 03/25/2021 b. COMPLETED 03/25/2021

20. ELEVATION TOP OF HOLE (feet): —

21. TOTAL CORE RECOVERY FOR BORING %: —

22. SIGNATURE OF INSPECTOR: John Moore

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	0–4		SILTY CLAY, ORANGISH BROWN, MED. STIFF, HIGH PLAST., WET	2/4 = %		
	4–7		SAA	4/4 = %		
	7–8		SANDY CLAY, LT. BROWN TO GREY, SOFT, MED. PLAST., WET	%		
	8–9			%		

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PROJECT

HOLE NUMBER

VERSION 1.1

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE	2. HOLE NUMBER	SHEET
	1824DPT18	2 OF 3 SHEETS

3. PROJECT	4. INSTALLATION
LHAAP 18/24	LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS *(Description)*	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS *(Drilling Time, water loss, depth of weathering, etc., if significant)*
	10		SAA, INCREASING SAND CONTENT	4/4		
	11					
	12		SAA			
	13			2.5/4		
	14					
	15		SILTY CLAY W/ TRACE SAND, MOTTLED LT. BROWN, GREY, ORANGE, STIFF, MED. PLAST., MOIST			
	16		SAA			
	17		SILTY SAND W/ CLAY, LT. BROWN, COHESIVE, FINE GRAIN, MOIST	4/4		
	18					
	19					
	20		SAA, DRY TO MOIST			
	21			4/4		
	22					
	23					
	24					

01077024

DRILLING LOG (Continuation Sheet) For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.	1. ELEVATION TOP OF HOLE	2. HOLE NUMBER 1824DPT18	SHEET 3 OF 3 SHEETS
3. PROJECT LHAAP 18/24		4. INSTALLATION LHAAP	

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	25		SAA, MED TO COARSE, WET	%		
	26			4/4 %		
	27		SANDY SILT W/ CLAY, LT. BROWN TO GREY, SOFT, ~~LOW PLAST.~~ MED. PLAST., MOIST	%		
	28					
	29		SILTY SAND W/ CLAY, LT. BROWN TO GREY, COHESIVE, MED. TO COARSE, WET	2/2 %		WILCOX CLAY REACHED, SET WELL @ 30' BGS SAMPLE @ 29' @ 1000
	30		CLAY, LT. BROWN, STIFF, HIGH PLAST., WET	%		
	31			%		
	32			%		
	33			%		
	34			%		
	35			%		
	36			%		
	37			%		
	38			%		
	39			%		

ENG FORM 1836A, JUN 1967	PREVIOUS EDITIONS ARE OBSOLETE. (Translucent)	6. PROJECT	7. HOLE NUMBER

01077025

1. HOLE NUMBER

DRILLING LOG For use of this form, see EM 1110-1-1804, the proponent agency is CECW-EG	2. DIVISION	3 INSTALLATION	SHEET 1 OF 4 SHEETS

4. PROJECT: LHAAP 18/24	13. SIZE AND TYPE OF BIT: 2¼" DIAMETER
5. LOCATION (Coordinates or Station): LHAAP	14. DATUM FOR ELEVATION SHOWN (TBM or MSL): —
6. DRILLING AGENCY: WHE	15. MANUFACTURERS DESIGNATION OF DRILL: GEOPROBE 7822DT
7. HOLE NUMBER (as shown on drawing title and title number): 1824DPT19	16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: a. DISTURBED — b. UNDISTURBED —
8. NAME OF DRILLER: KERRI POWELL	17. TOTAL NUMBER CORE BOXES —
9. DIRECTION OF HOLE: [X] a. VERTICAL [ ] b. INCLINED c. DEG. FROM VERT.	18. ELEVATION GROUND WATER —
10. THICKNESS OF OVERBURDEN —	19. DATE HOLE (YYYYMMDD): a. STARTED 03/25/2021 b. COMPLETED 03/25/2021
11. DEPTH DRILLED INTO ROCK —	20. ELEVATION TOP OF HOLE (feet) —
12. TOTAL DEPTH OF HOLE 44' BGS	21. TOTAL CORE RECOVERY FOR BORING % —
	22. SIGNATURE OF INSPECTOR: John Moore

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	1		CLAYEY SILT W/SAND, DARK BROWN, SOFT, WET	2/4 %		
	2			%		
	3			%		
	4		CLAY W/ TRACE SAND, REDDISH BROWN, STIFF, MED. PLAST., MOIST	3/4 %		
	5			%		
	6			%		
	7		CLAYEY SAND, LT. BROWN, COHESIVE, FINES DRY TO MOIST	%		
	8			%		
	9			%		

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT19

SHEET 2 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	10		SAA	4/4 %		
	11			%		
	12					
	13		SAA, DRY	%		
	14		SANDY CLAY, LT. BROWN, STIFF, LOW PLAST., DRY	4/4 %		
	15			%		
	16		SAA, MOIST, MED PLAST.	%		
	17			4/4 %		
	18			%		
	19			%		
	20					
	21		SAA	3/4 %		
	22		SILTY SAND W/ CLAY, LT. BROWN TO GREY, ~~SOFT~~ FINE TO MED., MOIST TO WET. COHESIVE	%		
	23			%		
	24			%		

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6. PROJECT

7. HOLE NUMBER

VERSION 1.0

01077027

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT19

SHEET 3 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	6. DEPTH	7. LEGEND	8. CLASSIFICATION OF MATERIALS (Description)	9. % CORE RECOVERY	10. BOX OR SAMPLE NUMBER	11. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	25		CLAYEY SAND W/ SILT, LT. BROWN TO GREY, COHESIVE, MED. TO COARSE, WET	3/4 %		
	26					
	27			%		
	28		SILTY SAND, ORANGISH BROWN TO GREY, MED TO COARSE, COHESIVE, WET FINE GRAIN @ BOTTOM	2/2 %		
	29					
	30		SANDY SILT W/ CLAY, LT. BROWN TO GREY, SOFT, WET	2/2 %		
	31					
	32		~~COARSE~~ SAND W/SILT, LT. BROWN TO ORANGISH BROWN, MED. TO COARSE, COHESIVE, WET	2/2 %		
	33					
	34		SAA, LT. BROWN TO GREY	2/2 %		
	35					
	36		SAA, SOME CLAY	2/2 %		
	37					
	38		SAA	%		
	39					

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6. PROJECT

7. HOLE NUMBER

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT19

SHEET 4 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		40	SANDY/SILTY CLAY, MED. STIFF, MED. PLAST., WET, LT. BROWN	2/2 %		
		41	SAA, MOTTLED ORANGE, LT. BROWN, GREY	2/2 %		
		42	CLAY, STIFF, LT. BROWN TO GREY, HIGH PLAST., WET	2/2 %		WILCOX CLAY REACHED @ 42' BGS, SET WELL 34-44'. SAMPLE TAKEN 42' BGS @ 1340
		43		%		
		44		%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		

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6. PROJECT

7. HOLE NUMBER

01077029

1. HOLE NUMBER

DRILLING LOG For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.	2. DIVISION	3 INSTALLATION LHAAP	SHEET 1 OF 4 SHEETS

4. PROJECT LHAAP 18/24	13. SIZE AND TYPE OF BIT 2¼" DIAMETER
5. LOCATION *(Coordinates or Station)* LHAAP	14. DATUM FOR ELEVATION SHOWN *(TBM or MSL)* —
6. DRILLING AGENCY WHE	15. MANUFACTURERS DESIGNATION OF DRILL GEOPROBE 7822DT
7. HOLE NUMBER *(as shown on drawing title and title number)* 18LHDPT20	16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: a. DISTURBED — b. UNDISTURBED —
8. NAME OF DRILLER KERRI POWELL	17. TOTAL NUMBER CORE BOXES —
9. DIRECTION OF HOLE [X] a. VERTICAL [ ] b. INCLINED c. DEG. FROM VERT.	18. ELEVATION GROUND WATER —
10. THICKNESS OF OVERBURDEN —	19. DATE HOLE *(YYYYMMDD)*: a. STARTED 03/25/2021 b. COMPLETED 03/25/2021
11. DEPTH DRILLED INTO ROCK —	20. ELEVATION TOP OF HOLE *(feet)* —
12. TOTAL DEPTH OF HOLE 42' BGS	21. TOTAL CORE RECOVERY FOR BORING % —
	22. SIGNATURE OF INSPECTOR JL Moore

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS *(Description)*	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS *(Drilling Time, water loss, depth of weathering, etc., if significant)*
	0–4		SILTY CLAY W/ TRACE SAND, BROWN TO ORANGE, LOOSE, WET, LOW PLAST.	1.75/4 = %		
	4–6		CLAY, REDDISH BROWN; STIFF, HIGH PLAST., MOIST	4/4 = %		
	6–8		CLAYEY SAND, LT. BROWN, BRITTLE, FINE TO MED., DRY TO MOIST.	%		
	8–9			%		

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VERSION 1.0

01077030

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT20

SHEET 2 OF 4 SHEETS

3. PROJECT: LWAAP 18/24

4. INSTALLATION: LWAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS *(Description)*	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS *(Drilling Time, water loss, depth of weathering, etc., if significant)*
		10	~~Soft~~ CLAYEY SAND, COHESIVE, MED. TO COARSE, DRY TO MOIST, COHESIVE	4/4 %		
		11	SANDY CLAY, LT. BROWN, STIFF, LOW TO MED. PLAST., DRY TO MOIST, SAND LENSES THROUGHOUT	%		
		12	CLAYEY SAND, LT. BROWN, MED. TO	%		
		13	COARSE, BRITTLE, DRY			
		14		4/4 %		
		15		%		
		16				
		17	SAA	%		
		18	SILTY CLAY, MOTTLED LT. BROWN & GREY, STIFF, MED. PLAST.,	4/4 %		
		19	MOIST	%		
		20				
		21	SANDY CLAY W/ SILT, LT. BROWN, SOFT, LOW PLAST., MOIST TO WET	%		
		22	CLAYEY SAND W/ SILT, LT. BROWN TO GREY, COHESIVE, FINE TO MED.,	3/4 %		
		23	MOIST	%		
		24				

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6. PROJECT

7. HOLE NUMBER

VERSION 1.0

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT20

SHEET 3 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		25	SAA, WET, INCREASING CLAY/SILT	3.25/4 %		
		26		%		
		27		%		
		28	SAA, MED TO COARSE	2/2 %		
		29				
		30	SILTY CLAY W/ SAND, LT. BROWN TO GREY, SOFT, MED. PLAST., WET	2/2 %		
		31				
		32	SILTY SAND W/ CLAY, LT. BROWN, MED TO COARSE, COHESIVE, WET	2/2 %		
		33				
		34	SAA, MOTTLED LT. BROWN & GREY	2/2 %		
		35				
		36	SAA, WET, FINE TO MED.	2/2 %		
		37				
		38	~~SILTY SAND~~ SAA	2/2 %		
		39				

01077032

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT20

SHEET 4 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS *(Description)*	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS *(Drilling Time, water loss, depth of weathering, etc., if significant)*
		40		%		
			SAA	2/2		WILCOX CLAY REACHED @ 41' BGS, SET WELL 32'-42' BGS
		41		%		
			CLAY, LT. BROWN TO GREY, STIFF, HIGH PLAST., MOIST TO WET			SAMPLE COLLECTED @ 41' BGS, MS/MSD COLLECTED
		42		%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		

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6. PROJECT

7. HOLE NUMBER

VERSION 1.0

~~01077033~~

1. HOLE NUMBER

DRILLING LOG For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.	2. DIVISION	3. INSTALLATION LHAAP	SHEET 1 OF 4 SHEETS
4. PROJECT LHAAP 18/24		13. SIZE AND TYPE OF BIT 2 ¼" DIAMETER	
5. LOCATION *(Coordinates or Station)* LHAAP		14. DATUM FOR ELEVATION SHOWN *(TBM or MSL)* —	
6. DRILLING AGENCY WHE		15. MANUFACTURERS DESIGNATION OF DRILL GEOPROBE 7822DT	
7. HOLE NUMBER *(as shown on drawing title and title number)* 1824DPT21		16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN	a. DISTURBED b. UNDISTURBED —
8. NAME OF DRILLER KERRI POWELL		17. TOTAL NUMBER CORE BOXES —	
9. DIRECTION OF HOLE ☒ a. VERTICAL ☐ b. INCLINED c. DEG. FROM VERT.		18. ELEVATION GROUND WATER —	
10. THICKNESS OF OVERBURDEN —		19. DATE HOLE *(YYYYMMDD)*	a. STARTED 03/25/2021 b. COMPLETED 03/25/2021
11. DEPTH DRILLED INTO ROCK —		20. ELEVATION TOP OF HOLE *(feet)* —	
12. TOTAL DEPTH OF HOLE 40' BGS		21. TOTAL CORE RECOVERY FOR BORING % —	
		22. SIGNATURE OF INSPECTOR John Moore	

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS *(Description)*	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS *(Drilling Time, water loss, depth of weathering, etc., if significant)*
		1	CLAYEY SILT, DARK BROWN, SOFT, WET	2/4 %		
		2	SILTY CLAY W/ TRACE SAND, REDDISH BROWN, STIFF, MOIST, MED. PLAST.	%		
		3		%		
		4	SAA	4/4 %		
		5	SANDY CLAY, LT. BROWN TO GREY, MED. STIFF, MED. PLAST., MOIST	%		
		6		%		
		7		%		
		8		%		
		9		%		

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VER 2021.1.9

01077034

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824PPT21

SHEET 2 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	10		SAA	4/4 %		
	11		CLAYEY SAND, LT. BROWN TO ORANGE, COHESIVE FINE TO MED., MOIST	%		
	12					
	13		SAA.	% 4/4 %		
	14					
	15		SANDY CLAY W/ SILT, MOTLED BROWN & GREY, MED. STIFF, MED. PLAST., MOIST	%		
	16					
	17		SAA, HIGH PLAST.	%		
	18			4/4 %		
	19			%		
	20					
	21		CLAYEY SAND, LT. BROWN, COHESIVE, MED. TO COARSE, MOIST	% 4/4		
	22			%		
	23					
	24			%		

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6. PROJECT

7. HOLE NUMBER

VERSION 1.0

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT21

SHEET 3 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		25	SAA, INCREASING CLAY CONTENT	%		
		26		3.25/4 %		
		27		%		
		28				
		29	SILTY SAND, LT. BROWN, COHESIVE, FINE, WET	2/2 %		
		30				
		31	CLAYEY SILT W/ SAND, LT. BROWN, SOFT, WET	2/2 %		
		32				
		33	SILTY CLAY W/ SAND, GREY TO LT. BROWN, SOFT, ~~DOUGH~~ PLAST., WET MED.	2/2 %		
		34				
		35	CLAYEY SILT W/ SAND, GREY TO LT. BROWN, SOFT, WET	2/2 %		
			SILTY SAND W/ CLAY, LT. BROWN, FINE TO MED. COHESIVE, WET			
		36	SAND: SILT, LT. BROWN TO GREY, SOFT, WET	%		
		37		2/2 %		
			SILTY SAND W/ CLAY, FINE, COHESIVE, WET, LT. BROWN TO ORANGE			
		38				
		39		%		

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6. PROJECT

7. HOLE NUMBER

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT21

SHEET 4 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		40	CLAY, ORANGE, LT. BROWN & GREY, STIFF, HIGH PLAST., MOIST TO WET	2/2 %		WILCOX CLAY REACHED @ 38', SET WELL 30'-40', SAMPLE TAKEN 38'865 @ 1510
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		

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6. PROJECT

7. HOLE NUMBER

01077037

1. HOLE NUMBER

DRILLING LOG
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

2. DIVISION

3. INSTALLATION: LHAAP

SHEET 1 OF 4 SHEETS

4. PROJECT: LHAAP 18/24

5. LOCATION (Coordinates or Station): LHAAP

6. DRILLING AGENCY: WHE

7. HOLE NUMBER (as shown on drawing title and title number): 1824DPT22

8. NAME OF DRILLER: KERRI POWELL

9. DIRECTION OF HOLE: [X] a. VERTICAL [ ] b. INCLINED c. DEG. FROM VERT.

10. THICKNESS OF OVERBURDEN: —

11. DEPTH DRILLED INTO ROCK: —

12. TOTAL DEPTH OF HOLE: 40' BGS

13. SIZE AND TYPE OF BIT: 2¼" DIAMETER

14. DATUM FOR ELEVATION SHOWN (TBM or MSL): —

15. MANUFACTURERS DESIGNATION OF DRILL: GEOPROBE 7822DT

16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: a. DISTURBED —; b. UNDISTURBED —

17. TOTAL NUMBER CORE BOXES: —

18. ELEVATION GROUND WATER: —

19. DATE HOLE (YYYYMMDD): a. STARTED 03/25/2021; b. COMPLETED 03/25/2021

20. ELEVATION TOP OF HOLE (feet): —

21. TOTAL CORE RECOVERY FOR BORING %: —

22. SIGNATURE OF INSPECTOR: [signature]

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		1	SANDY SILT W/ CLAY, DARK BROWN TO LT. BROWN, SOFT, WET	1.5/4 %		
		2				
		3	SILTY CLAY, REDDISH BROWN, MED. STIFF, MED. PLAST., WET			
		4	SAA			
		5				
		6		2/4 %		
		7	CLAYEY SAND, LT. BROWN TO GREY, COHESIVE, FINE, DRY TO MOIST			
		8				
		9		3.75/4 %		

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT22

SHEET 2 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	10		SAA, BRITTLE, DRY TO MOIST, COARSENING NEAR BOTTOM	%		
	11			%		
	12		SAA, INCREASING CLAY CONTENT	%		
	13			4/4		
	14			%		
	15			%		
	16		SAA, LT. BROWN TO ORANGE, MED. TO COARSE, CLAY LENSES THROUGHOUT	%		
	17			4/4		
	18			%		
	19			%		
	20		SAA	%		
	21			4/4		
	22			%		
	23		SILTY, CLAY W/ SAND, LT. BROWN TO GREY, SOFT, LOW PLAST., WET	%		
	24		SAND, LITE BROWN, FINE TO			

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6. PROJECT

7. HOLE NUMBER

VERSION 1.0

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DBT22

SHEET 3 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
			MED. COHESIVE, WET	%		
		25	SILTY SAND W/ CLAY, LT. BROWN, FINE, COHESIVE, WET	4/4		
		26		%		
		27	SILTY CLAY, LT. BROWN, SOFT, LOW PLAST., WET, TRACE SAND	%		
		28	SILTY SAND W CLAY, LT. BROWN, MED. TO COARSE, COHESIVE, WET	2/2		
		29	SANDY CLAY, LT. BROWN TO GREY, SOFT, LOW PLAST., WET	%		
		30	SILTY SAND, LT. BROWN, FINE TO MED., COHESIVE, WET	%		
		31		2/2		
		32		%		
		33	SAA, MED. TO COARSE, SOME CLAY	2/2		
		34		%		
		35	SANDY CLAY, LT. BROWN, MED. STIFF, MED. PLAST., WET	2/2		
		36		%		
		37	CLAYEY SAND, LT. BROWN TO DARK BROWN, ~~COARSE~~ COHESIVE, FINE, WET	2/2		
		38		%		
		39		%		

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6. PROJECT

7. HOLE NUMBER

01077040

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT22

SHEET 4 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	40		CLAY, LT. BROWN TO GREY, STIFF, HIGH PLAST., WET	2/2 %		WILCOX CLAY REACHED @ 38', SET WELL SCREEN 30'-40' BGS, SAMPLE TAKEN 38' BGS @ 1720
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		

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6. PROJECT

7. HOLE NUMBER

1. HOLE NUMBER

DRILLING LOG For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG	2. DIVISION	3. INSTALLATION LHAAP	SHEET 1 OF 3 SHEETS
4. PROJECT LHAAP 18/24		13. SIZE AND TYPE OF BIT 2 ¼" DIAMETER	
5. LOCATION (Coordinates or Station) LHAAP		14. DATUM FOR ELEVATION SHOWN (TBM or MSL) —	
6. DRILLING AGENCY WHE		15. MANUFACTURERS DESIGNATION OF DRILL GEOPROBE 7822DT	
7. HOLE NUMBER (as shown on drawing title and title number) 1824DPT23		16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN	a. DISTURBED — b. UNDISTURBED —
8. NAME OF DRILLER KERRI Powell		17. TOTAL NUMBER CORE BOXES —	
9. DIRECTION OF HOLE ☒ a. VERTICAL ☐ b. INCLINED c. DEG. FROM VERT.		18. ELEVATION GROUND WATER —	
10. THICKNESS OF OVERBURDEN —		19. DATE HOLE (YYYYMMDD)	a. STARTED 03/23/2021 b. COMPLETED 03/23/2021
11. DEPTH DRILLED INTO ROCK —		20. ELEVATION TOP OF HOLE (feet) —	
12. TOTAL DEPTH OF HOLE 39' BGS		21. TOTAL CORE RECOVERY FOR BORING % —	
		22. SIGNATURE OF INSPECTOR Jh Moomm	

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
			SILTY CLAY W/ SAND, LT. BROWN, LOW PLAST., SOFT, WET	1.5 / 4 %		
			CLAY, REDDISH BROWN, MED. STIFF, MED. PLAST., MOIST	%		
			SAA, TRACE SAND	4 / 4 %		
				%		
				%		
				%		

1 2 3 4 5 6 7 8 9

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PROJECT

HOLE NUMBER

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DAT23

SHEET 2 OF 3 SHEETS

3 PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		10	SAA, INCREASING SAND	4/4		
		11	CLAYEY SAND W/ SILT, LT. BROWN TO GREY, COHESIVE, DRY TO MOIST			
		12	SANDY CLAY OR SILT, LT. BROWN, SOFT, MED. PLAST., MOIST			
		13	~~CLAYEY SAND, MOTTLED~~ LT. BROWN, GREY & ~~ORANGE~~, ~~COHESIVE, FINE GRAIN~~, ~~MOIST~~ SAA, INCREASING	3.5/4		
		14	SAND			
		15				
		16	SAA			
		17		3.5/4		
		18	CLAYEY SAND, LT. BROWN, COHESIVE, FINE GRAIN,			
		19	MOIST			
		20	SAA, WET			
		21		4/4		
		22				
		23				
		24				

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6. PROJECT

7. HOLE NUMBER

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT23

SHEET 3 OF 3 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		25	SAA, INCREASING GRAIN SIZE	3.5/4 %		
		26				
		27		%		
		28	SAA			
		29		2/2 %		
			CLAY, GREY, MED. STIFF, HIGH PLAST., WET			
		30	SANDY CLAY, LT. BROWN TO GREY, MED. STIFF, LOW PLAST., WET	1/1 %		
		31	CLAYEY SAND W SILT, LT. BROWN TO GREY, COHESIVE, ~~FINE~~, WET, FINE TO MED. GRAIN	2/2 %		
		32				
			SILTY CLAY, LT. BROWN TO GREY, MED. STIFF, HIGH PLAST., WET			
		33	SILTY SAND, LT. BROWN TO GREY, FINE, COHESIVE, WET	%		
		34		2/2 %		
		35	SILTY SAND W/ CLAY, LT. BROWN, COHESIVE, FINE			
		36		2/2 %		
		37	SAA, INCREASING CLAY	%		WILCOX CLAY REACHED @ 39', SET WELL, SCREEN 29'-39'
		38	CLAY, LT. BROWN & GREY, STIFF, HIGH PLAST., WET	2/2 %		
		39				

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6. PROJECT

7. HOLE NUMBER

01077044

1. HOLE NUMBER

DRILLING LOG For use of this form, see EM 1110-1-1804, the proponent agency is CECW-EG	2. DIVISION	3 INSTALLATION LHAAP	SHEET 1 OF 3 SHEETS
4. PROJECT LHAAP 18/24		13. SIZE AND TYPE OF BIT 2 1/4". DIAMETER	
5. LOCATION (Coordinates or Station) LHAAP		14. DATUM FOR ELEVATION SHOWN (TBM or MSL) ~	
6. DRILLING AGENCY WHE		15. MANUFACTURERS DESIGNATION OF DRILL GEOPROBE 7822DT	
7. HOLE NUMBER (as shown on drawing title and title number) 1824DPT24		16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN a. DISTURBED ~ b. UNDISTURBED ~	
8. NAME OF DRILLER KERRI POWELL		17. TOTAL NUMBER CORE BOXES ~	
9. DIRECTION OF HOLE ☒ a. VERTICAL ☐ b. INCLINED c. DEG. FROM VERT.		18. ELEVATION GROUND WATER ~	
10. THICKNESS OF OVERBURDEN ~		19. DATE HOLE (YYYYMMDD) a. STARTED 03/17/2021 b. COMPLETED 03/17/2021	
11. DEPTH DRILLED INTO ROCK ~		20. ELEVATION TOP OF HOLE (feet) ~	
12. TOTAL DEPTH OF HOLE 32', GROUT, NEW HOLE @ 29'		21. TOTAL CORE RECOVERY FOR BORING % ~	
		22. SIGNATURE OF INSPECTOR [signature]	

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		1	SILTY CLAY W/ SAND, DARK BROWN, LT. BROWN, GREY, SOFT, LOW PLAST., WET	2/4 %		
		2				
		3				
		4	CLAY, LT. BROWN TO GREY, MED. STIFF, HIGH PLAST, MOIST			
		5		3.75/4 %		
		6	SANDY CLAY, LT. BROWN, MED. STIFF, MED. PLAST., MOIST			
		7				
		8				
		9				

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT24

SHEET 2 OF 3 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	10		SAA	4/4 %		
	11		CLAYEY SAND, LT. BROWN TO ORANGE, COHESIVE, FINE GRAIN, MOIST			
	12			%		
	13		SAA, SANDY CLAY LENSES THROUGHOUT	4/4 %		
	14					
	15			%		
	16					
	17		SAA	2/2 %		
	18		SANDY CLAY, LT. BROWN, MED. STIFF, MED. PLAST., MOIST			
	19		SILTY CLAY W/ SAND, LT. BROWN, MED. STIFF, MED. PLAST., MOIST	2/2 %		
	20			%		
	21		SANDY CLAY, LT. BROWN, SOFT, LOW PLAST., MOIST TO WET	2/2 %		
	22		CLAYEY SAND, LT. BROWN, COHESIVE, FINE TO MED, MOIST TO WET			
	23		SILTY SAND, LT. BROWN TO GREY, ~~MOIST TO WET~~ COHESIVE, FINE TO MED., WET	2/2 %		
	24			%		

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6. PROJECT

7. HOLE NUMBER

VERSION 1.0

01077046

DRILLING LOG (Continuation Sheet)
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT24

SHEET 3 OF 3 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		25	SAA, MED. TO COARSE	2/2 %		
		26		%		
		27	SAA, INCREASING SILT CONT.	2/2 %		
		28	CLAY, MED. STIFF, HIGH PLAST., LT. BROWN TO GREY, WET			
		29	SAA, STIFF, DARK GREY	2/2 %		
		30				WILCOX CLAY REACHED @ 27.5', DRILLED TOO FAR INTO CLAY, DRILL NEW HOLE & SET WELL @ 29' BGS, SCREEN 19'-29', SAMPLES TAKEN @ 27.5'
		31	SAA	2/2 %		
		32		%		
		33		%		
		34		%		
		35		%		
		36		%		
		37		%		
		39		%		
		39		%		

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6. PROJECT

7. HOLE NUMBER

01077047

1. HOLE NUMBER

DRILLING LOG For use of this form, see EM 1110-1-1804, the proponent agency is CECW-EG	2. DIVISION	3 INSTALLATION LHAAP	SHEET 1 OF 3 SHEETS

4. PROJECT LHAAP 18/24	13. SIZE AND TYPE OF BIT 2¼" DIAMETER
5. LOCATION (Coordinates or Station) LHAAP	14. DATUM FOR ELEVATION SHOWN (TBM or MSL) —
6. DRILLING AGENCY WHE	15. MANUFACTURERS DESIGNATION OF DRILL GEOPROBE 7822-DT
7. HOLE NUMBER (as shown on drawing title and title number) 1824DPT25	16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: a. DISTURBED — b. UNDISTURBED —
8. NAME OF DRILLER Kerri Powell	17. TOTAL NUMBER CORE BOXES —
9. DIRECTION OF HOLE [X] a. VERTICAL [ ] b. INCLINED c. DEG. FROM VERT.	18. ELEVATION GROUND WATER —
10. THICKNESS OF OVERBURDEN —	19. DATE HOLE (YYYYMMDD): a. STARTED 03/17/2021 b. COMPLETED 03/17/2021
11. DEPTH DRILLED INTO ROCK —	20. ELEVATION TOP OF HOLE (feet) —
12. TOTAL DEPTH OF HOLE 30' BGS	21. TOTAL CORE RECOVERY FOR BORING % —
	22. SIGNATURE OF INSPECTOR John Moorman

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	1		SILTY CLAY W/ SAND, DARK BROWN TO LT. BROWN, SOFT, LOW PLAST., WET	2/4 %		
	2			%		
	3			%		
	4					
	5		SANDY CLAY, LT. BROWN TO GREY, MED. STIFF, LOW PLAST., MOIST	4/4 %		
	6			%		
	7					
	8					
	9			%		

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804, the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT25

SHEET 2 OF 3 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		10	SAA	3/4 %		
		11	CLAYEY SAND, LT. BROWN TO GREY, MED TO COARSE, COHESIVE, MOIST TO WET	%		
		12				
		13	SAA	%		
		14		3/4 %		
		15	SANDY CLAY W/ SILT, LT. BROWN TO GREY, MED. STIFF, LOW PLAST., MOIST	%		
		16				
		17	SAA, INCREASING SILT CONT.	%		
		18	~~SANDY SILT,~~ SILTY CLAY W/ SAND, LT. BROWN TO GREY, SOFT, MED. PLAST., MOIST	3.75/4 %		
		19		%		
		20				
		21	SANDY SILT W/ CLAY, SOFT, WET	%		
		22		4/4 %		
		23				
		24	SILTY SAND, FINE TO MED, COHESIVE, LT. BROWN, WET	%		

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6. PROJECT

7. HOLE NUMBER

VERSION 1.0

DRILLING LOG (Continuation Sheet) For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.	1. ELEVATION TOP OF HOLE	2. HOLE NUMBER 1824DPT25	SHEET 3 OF 3 SHEETS
3. PROJECT LHAAP 18/24		4. INSTALLATION LHAAP	

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	25		SILTY CLAY W/ SAND, LT. BROWN TO ORANGE, SOFT, MED PLAST., WET	%		
	26		CLAYEY SAND W/ SILT, LT. BROWN TO ORANGE, FINE TO MED., WET	3.5/4 %		
	27		SILTY CLAY, MED. STIFF, HIGH PLAST., MOIST	%		
	28		CLAY, STIFF, HIGH PLAST, LT. BROWN, TO GREY, MOIST	2/2 %		SET WELL @ 30' BGS, SCREEN 20'-30'
	29					TAKE SOIL SAMPLE @ ~ 28' BGS
	30			%		
				%		
				%		
				%		
				%		
				%		
				%		

ENG FORM 1836A, JUN 1987	PREVIOUS EDITIONS ARE OBSOLETE. (Translucent)	6. PROJECT	7. HOLE NUMBER

01077050

1. HOLE NUMBER

DRILLING LOG For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG	2. DIVISION	3. INSTALLATION LHAAP	SHEET 1 OF 4 SHEETS

4. PROJECT LHAAP 18/24	13. SIZE AND TYPE OF BIT 2 ¼" DIAMETER
5. LOCATION (Coordinates or Station) KARNACK, TX	14. DATUM FOR ELEVATION SHOWN (TBM or MSL) —
6. DRILLING AGENCY WHE	15. MANUFACTURERS DESIGNATION OF DRILL GEOPROBE 7822DT
7. HOLE NUMBER (as shown on drawing title and title number) 1824DPT26	16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: a. DISTURBED — b. UNDISTURBED —
8. NAME OF DRILLER KERRI POWELL	17. TOTAL NUMBER CORE BOXES —
9. DIRECTION OF HOLE ☒ a. VERTICAL ☐ b. INCLINED c. DEG. FROM VERT.	18. ELEVATION GROUND WATER —
10. THICKNESS OF OVERBURDEN —	19. DATE HOLE (YYYYMMDD): a. STARTED 06/11/2021 b. COMPLETED 06/11/2021
11. DEPTH DRILLED INTO ROCK —	20. ELEVATION TOP OF HOLE (feet) —
12. TOTAL DEPTH OF HOLE 40' BGS	21. TOTAL CORE RECOVERY FOR BORING % —
	22. SIGNATURE OF INSPECTOR

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
	0–4		SILTY CLAY W/ SAND, DARK BROWN, MED. STIFF, LOW PLAST., WET	2/4 = 50%		
	4–8		SANDY CLAY, LT. BROWN TO GREY, ~~FIRM~~ STIFF, LOW PLAST., DRY TO MOIST	3.5/4 = 87.5%		

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PROJECT

HOLE NUMBER

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DAT26

SHEET 2 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS *(Description)*	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS *(Drilling Time, water loss, depth of weathering, etc., if significant)*
	10		SAA	2.75 / 4 %		
	11		CLAYEY SAND, LT. BROWN TO GREY, FINE GRAIN, COHESIVE, MOIST	%		
	12			%		
	13		SAA, INCREASING GRAIN SIZE	3.75 / 4 %		
	14			%		
	15			%		
	16			%		
	17		SANDY CLAY, LT. BROWN TO ORANGE, MED. STIFF, LOW PLAST., MOIST	1.5 / 4 %		
	18			%		
	19			%		
	20			%		SWITCH TO 2" RUNS, SLEEVE GETTING STUCK IN BARREL
	21		SAA	1.75 / 2 %		
	22		CLAYEY SAND, LT. BROWN TO GREY, MED. TO COARSE, WET	%		
	23		SAA	1.75 / 2 %		
	24			%		

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6. PROJECT

7. HOLE NUMBER

VERSION 1.0

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT26

SHEET 3 OF 4 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS *(Description)*	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS *(Drilling Time, water loss, depth of weathering, etc., if significant)*
	25		SANDY CLAY, LT. BROWN, MED. STIFF, LOW PLAST., WET	1.75 / 2 %		
	26			%		
	27		CLAY, LT. BROWN, STIFF, HIGH PLAST., MOIST	2 / 2 %		
	28					
	29		SAA, LT. BROWN TO GREY	2 / 2 %		
	30					
	31		~~SANDY~~ CLAY, LT. BROWN TO GREY, MED. STIFF, MED TO HIGH PLAST., MOIST, TRACE SAND	% 2 / 2 %		
	32					
	33		CLAYEY SAND, LT. BROWN TO ORANGE, MED. GRAIN, COHESIVE, WET	2 / 2 %		
	34					
	35		SAA, MED TO COARSE, SILTY, GREY NEAR 35.5'	% 2 / 2		
	36			%		
	37		SILTY CLAY W/ TRACE SAND, GREY, SOFT, MED. PLAST., WET	2 / 2 %		
	38		SILT, GREY, SOFT, LOW PLAST, WET			
	39			%		

DRILLING LOG (Continuation Sheet) For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.	1. ELEVATION TOP OF HOLE	2. HOLE NUMBER 1824DPT26	SHEET 4 OF 4 SHEETS
3. PROJECT LHAAP 18/24		4. INSTALLATION LHAAP	

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		40	CLAY, LT. BROWN TO GREY, STIFF, HIGH PLAST., MOIST TO WET	2/2 %		SET WELL 30'-40' BGS
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		
				%		

01077054

1. HOLE NUMBER

DRILLING LOG For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.	2. DIVISION	3. INSTALLATION LHAAP	SHEET 1 OF 3 SHEETS
4. PROJECT LHAAP 18/24		13. SIZE AND TYPE OF BIT 2¼" DIAMETER	
5. LOCATION (Coordinates or Station) KARNACK, TX		14. DATUM FOR ELEVATION SHOWN (TBM or MSL) —	
6. DRILLING AGENCY WHE		15. MANUFACTURERS DESIGNATION OF DRILL GEOPROBE 7822 DT	
7. HOLE NUMBER (as shown on drawing title and title number) 1824DPT27		16. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN a. DISTURBED — b. UNDISTURBED —	
8. NAME OF DRILLER KERRI POWELL		17. TOTAL NUMBER CORE BOXES —	
9. DIRECTION OF HOLE ☒ a. VERTICAL ☐ b. INCLINED c. DEG. FROM VERT.		18. ELEVATION GROUND WATER —	
10. THICKNESS OF OVERBURDEN —		19. DATE HOLE (YYYYMMDD) a. STARTED 06/11/21 b. COMPLETED	
11. DEPTH DRILLED INTO ROCK —		20. ELEVATION TOP OF HOLE (feet) —	
12. TOTAL DEPTH OF HOLE 38' BGS		21. TOTAL CORE RECOVERY FOR BORING % —	
		22. SIGNATURE OF INSPECTOR	

23. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		1	CLAYEY SILT, DARK BROWN TO LT. BROWN, SOFT, LOW PLAST, WET	2/4 %		
		2				
		3		%		
		4	SILTY CLAY, LT. BROWN TO REDDISH BROWN, SOFT, MED. PLAST., WET			
		5		2.5/4 %		
		6	SANDY CLAY, LT. BROWN, STIFF, MED. PLAST., MOIST			
		7				
		8		%		
		9		%		

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT27

SHEET 2 OF 3 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		10	SAA	4/4 %		
		11	CLAYEY SAND, LT. BROWN TO GREY, MED GRAIN, COHESIVE	%		
		12	SAND, ORANGISH BRWN. TO GREY, LOOSE, FINE TO MED, DRY TO MOIST	%		
		13	SANDY CLAY, DARK BRWN. TO ORANGISH BRWN., STIFF, LOW PLAST., DRY TO MOIST	4/4 %		
		14		%		
		15	CLAYEY SAND, ORANGISH BRWN., FINE TO MED., COHESIVE, MOIST	%		
		16		%		
		17	SAA, MOTTLED LT. BRWN., GREY, ORANGISH BRWN.,	4/4 %		
		18		%		
		19		%		
		20	CLAYEY SAND, DARK BROWN TO ORANGISH BROWN, MED TO COARSE, WET, SILTY @ BOTTOM	3.5/4 %		
		21		%		
		22		%		
		23		%		
		24		%		

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6. PROJECT

7. HOLE NUMBER

VERSION 1.0

DRILLING LOG *(Continuation Sheet)*
For use of this form, see EM 1110-1-1804; the proponent agency is CECW-EG.

1. ELEVATION TOP OF HOLE

2. HOLE NUMBER: 1824DPT27

SHEET 3 OF 3 SHEETS

3. PROJECT: LHAAP 18/24

4. INSTALLATION: LHAAP

5. ELEVATION	a. DEPTH	b. LEGEND	c. CLASSIFICATION OF MATERIALS (Description)	d. % CORE RECOVERY	e. BOX OR SAMPLE NUMBER	f. REMARKS (Drilling Time, water loss, depth of weathering, etc., if significant)
		25	SILTY CLAY W/ SAND, GRAYISH BROWN, SOFT, LOW TO MED. PLAST., WET	%		
		26	SILTY SAND, MED TO COARSE, LT. BROWN, COHESIVE, WET	4/4 %		
		27	~~SILTY CLAY, SOFT, LT. BR~~ GM	%		
		28	SAA, FINE, SOME CLAY	2/2 %		
		29				
		30	SAA, MED. TO COARSE	%		
		31		2/2 %		
		32	SAA	%		
		33		2/2 %		
		34	SAA	%		
		35	SANDY CLAY W/ SILT, LT. BROWN, SOFT, LOW PLAST., WET	2/2 %		
		36	CLAY, GREY, MED. STIFF, HIGH PLAST., MOIST TO WET	%		SET WELL 28'-30' BGS
		37		%		
		38		%		
		39				

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6. PROJECT

7. HOLE NUMBER

VERSION 1.0